

1994
VOLUME 3

**ADVERTISERS
TECHNICAL
DATA**

IC MASTER

- Manufacturers & Distributors Directory
- Military Parts Directory
- Application Note Directory
- Advertisers Technical Data

VOLUME 1

Selection Guides & Function Index

VOLUME 2

Part Number Index/Guide & Alternate Sources

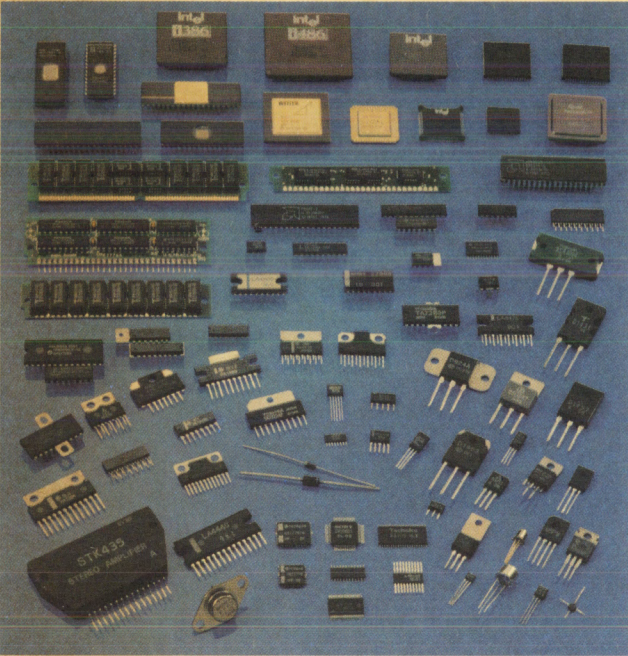


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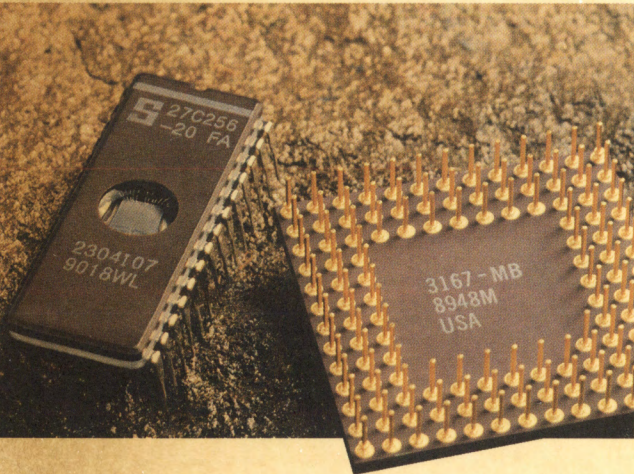
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HOW TO USE THE IC MASTER

The 1994 edition of the IC MASTER is arranged in three volumes. Each volume serves a specific purpose to help you find the integrated circuit or related product you need. The table of contents on the preceding page describes what is in each volume. The table of contents for Volume 3 also gives the starting page numbers for advertisers' data pages.

The IC MASTER is a functional work. You know what you need. The MASTER helps you find it.

Here are typical problems.

Q. What kinds of functions does the MASTER cover?

A. Turn to page 10 in Volume One. Here is a functional index for the devices covered. The page and line numbers refer you to the exact location within a Section in which a particular function appears.

Q. Who makes a 16K x 1 static RAM with an access time of 70 ns or faster? What are my technology choices?

A. Turn to the MEMORY section, in Volume 1. The first page of the section tells you where the listings of your device begin.

Turn to Static RAMs — General Purpose, and browse through the pages until you reach the 16K x 1 listings. Now look through the listings until you find the access time and characteristics you need. Device numbers are shown by manufacturer. The device numbers of advertisers in the 1994 IC MASTER appear in bold face. The page number following the device number is where additional information may be found in Volume Three. At the extreme right you will see line numbers. These are the specific lines where a device appears.

Q. Which microprocessors are listed in the MASTER? How do I find the microprocessor I need?

A. All commercially available microprocessors are listed in the MASTER. Start with the **microprocessor** listing in the **Master Selection Guide Function Index** (starts on page 10). Here you will find CISC, RISC and Microcontrollers listed according to clock rate. Turn to the various pages shown and then to the advertisers' page where more information may be available.

Q. Who makes a Dual, Low Offset Voltage Op Amp?

A. This is a **LINEAR** device. Turn to the **LINEAR** section in Volume One. The first page of the section shows the starting page for each category. Turn to the page where Dual Units appear. Look down the list for the device you need. Advertisers' devices are listed in bold face. Turn to the page in Volume Three where more information may be available.

Q. I need an IC with Music capability. Which Master Selection Guide should I use?

A. Turn to the **Master Selection Guide Function Index** starting on page 10. Look through the list until you find **Music**. The page numbers for each kind of device are shown.

Q. I am looking for an application note on a specific device. Where can I find out if one is currently available?

A. Pick up Volume Three. Turn to the Application Note Directory. Here you will find application notes arranged by **function**. Find the function involved and turn to the page where the note is listed.

Q. We need a device that meets MIL standards. Where do I look in the MASTER?

A. Turn to the **MILITARY** section in Volume Three. The first part lists manufacturers and screening levels available. The second part is a functional index. The last two sections provide cross references from commercial to military and military to commercial part numbers.

Q. I know the basic part number is 2502 and that's all I know. Where do I look?

A. Go to the Part Number Index in Volume 2. All prefixes and suffixes have been stripped away. Turn to the page where 2502 appears. All manufacturers with that base number appear in order along with the full part number and the page and line number where the device is described.

Q. How many manufacturers claim to make a pin-for-pin and function-for-function equivalent to a Motorola MC68000?

A. Turn to the Alternate Source Directory in the back of Volume Two. Turn to Motorola's listings. Those manufacturers who claim to have equivalent parts are listed in order. If you have an IBM or compatible computer with a hard drive, you can get the 1994 IC **MASTER Alternate Source Directory** on a disk. This disk provides the complete list of alternate sources and allows you to add your own part numbers, as well as notes such as prices or sources. Call Hearst (516) 227-1300 and ask for Book Sales for further information.

Q. I looked in the Alternate Source Directory. The part I want an alternate source for isn't listed. Why not?

A. Are you sure you looked through the entire listing for the original manufacturer? Some devices may be listed in odd ways depending on how the MASTER's editors receive the information. Then there is the probability that no other manufacturer makes an exact replacement for your part. It is important for you to understand how the Alternate Source Directory is compiled. Manufacturers supply the information that **their** part is an exact replacement for **another** part. The original manufacturer does **not** tell us his part can be replaced by those listed.

Q. What do the manufacturers' part numbers mean? I have a Philips NE592N. What do all the letters and numbers mean?

A. Look in Volume Two for the Part Number Guide. Turn to the Philips portion. Now you know the N prefix means, zero to plus seventy degrees Centigrade. The N suffix indicates the package style. The numbers and letters in the middle are the device type. Each manufacturer has a different code system. Understanding the systems is a great help in comparing devices.

Q. Where can I find the addresses and telephone numbers of manufacturers, local sales offices and distributors?

A. Pick up Volume Three. Turn to the Manufacturers and Distributors Directory. Within each manufacturer, sales offices and distributors are listed alphabetically by state.

Q. I just saw a new device advertised in Electronic Products magazine. It isn't listed in the MASTER. Why not? When will it be listed?

A. Preparing the information for the annual IC MASTER is a tremendous undertaking. It requires the cooperation of every single manufacturer. All of the material must be organized, cross referenced and placed in the data base. This data base must be closed off in November in order to meet the publishing date of late January. That is why some devices are not listed. They came on the market too late for the deadline. There are two updates to the annual MASTER. They are called the **IC MASTER UPDATE**. One is issued in the late Spring and the other in the early Fall. Be sure to sign up for copies when you get your new IC MASTER. If you are not sure whether or not you have requested the updates, please write to the Circulation Department at the address shown on page 2 of this MASTER. Be sure to indicate which edition of the MASTER you are using.

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ABBREVIATIONS OF COMPANY NAMES

Acculin	Acculin, Inc.	Commodore	Commodore Semiconductor Group	Honeywell	Honeywell
Actel	Actel Corporation	Crosspoint	Crosspoint Solutions, Inc.	HP	Hewlett-Packard-Logic Systems Division
AD	Analog Devices	ControlData	Control Data	Hughes	Hughes Aircraft Co.
Adaptec	Adaptec	Cybernetic	Cybernetic Micro Systems		
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AHA	Advanced Hardware Architectures, Inc.			IBM	International Business Machines Corporation
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AnalogSys	Analog Systems	ECI Semi	ECI Semiconductor	ILC-DDC	ILC Data Device Corp.
AMCC	AMCC (Applied Micro Circuits Corp)	EDI	Electronic Designs Inc.	ILSI	Integrated Logic Systems Inc.
Aptek	Aptek Microsystems	Elantec	Elantec, Inc.	IMI	International Microcircuits, Inc.
AppMicroSys	Applied Microsystems Corporation	Eletech	Eletech Electronics	IMP	International Microelectronic Products
Apex	Apex Microtechnology Corporation	Elite Micro	Elite Microelectronics, Inc.	IntMeasSys	Integrated Measurement Systems
Aspen	Aspen Semiconductor Corp.	EM Micro	EM Microelectronic-Marin SA	Intergraph	Intergraph
Astec Semi	Astec Semiconductor	Epson	Epson America Inc.	Intel	Intel Corporation
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Gazelle Semiconductor	<i>Triquint Semiconductor (merged)</i>
GE, RCA and Intersil	<i>ICs available from Harris Corporation</i>
General Instrument Microelectronics Division	<i>Microchip Technology</i>
Gould AMI	<i>American Microsystems Inc.</i>
Harris Microwave Semiconductor	<i>Samsung Microwave Semiconductor</i>
Honeywell Semiconductors	<i>Signal Processing Technologies</i>
Hybrid Systems Corporation	<i>Sipex Corporation (merged)</i>
Inova	<i>No longer in business</i>
Integrated CMOS Systems	<i>Vertex Semiconductor</i>
Intersil	<i>See GE</i>
Lambda Semiconductor	<i>ICs available from Semtech Corporation</i>
Monolithic Memories, Inc. (MMI)	<i>Now part of Advanced Micro Devices</i>
Mostek Semiconductors	<i>Now part of Thomson-CSF</i>
Plus Logic	<i>Now part of Xilinx</i>
Precision Monolithics Inc. (PMI)	<i>Now part of Analog Devices</i>
RCA	<i>See GE</i>
RIFA	<i>Ericsson Components</i>
Scorpion	<i>MSI/Scorpion</i>
Silicon General	<i>Linfinity Microsystems</i>
Sprague Semiconductor	<i>Allegro Microsystems</i>
TRW LSI Products	<i>Raytheon-LaJolla</i>
ZAXTEK	<i>Zax Corp.</i>

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The Manufacturers and Distributors/Representatives Directory is a comprehensive telephone directory of the entire integrated circuit industry. It places at your fingertips the names and phone numbers you need to know. The directory includes domestic and international sales offices, representatives and distributors; it also tells you where and whom to call to obtain technical and ordering information.

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TX	Carrollton, Tech Mktg, Inc.	214-387-3601
TX	Dallas, Altera Corp.	214-701-2330
TX	Houston, Tech Mktg, Inc.	713-783-4497
UT	Salt Lake City, Compass Mktg & Sls	801-322-0391
WA	Bellevue, Phase II, Tech Sales	206-828-8182
WI	Brookfield, Oasis Sales Corp.	414-782-6660
Can	British Columbia, Burnaby, Kaytronics	604-294-2000
Can	Ont., Mississauga, Kaytronics	416-612-9200
Can	Ontario, Calgary, Kaytronics	403-275-7000
Can	Ontario, Mississauga, Kaytronics	416-507-6400
Can	Quebec, Ville St. Laurent, Kaytronics	514-745-5800
Intl	England, Buckinghamshire, Altera UK	44-628-488800, 44-628-488811
Intl	France, Sevres, Altera France	33-1-69-85-5630
Intl	Germany, Eching, Altera GmbH	49-89-3196014
Intl	Italy, Torino, Altera Italia	39-11-223-8588
Intl	Japan, Tokyo, Altera Japan K.K.	81-03-3716-2241
Distributors		
Intl	Argentina, Buenos Aires, YEL S.R.L.	54-1-372-7140
Intl	Australia, Burwood, Victoria, Veltex	61-3-808-7511
Intl	Austria, Wien, Hitronik	43-1-601290
Intl	Belgium, Antwerpen, D & D Electrn.	32-3-8277934
Intl	Brazil, Sao Paulo, Uniao Digital COM E REP	55-11 536-4121
Intl	China, Beijing, CIDC	86-1-467-7381
Intl	Denmark, Koebenhavn, E.V. Johanssen Elektronik A/S	45-31-83-90-22
Intl	England, Aylesbury, Bucks, Ambar Cascom Ltd.	44-296-434141
Intl	England, Thame, Oxfordshire, Thame Comps Ltd.	44-844-261188
Intl	Finland, Espoo, Yleiselektronikka Oy	358-0-452-621
Intl	France, Sevres, Tekelec Airtronic SA	33-1-46-232425
Intl	Germany, Muenchen, Electrn 2000.	49-89-45110-01
Intl	Hong Kong, Kowloon, Eastele	852-798-8860
Intl	India, Jayanagar, Bangalore, Sritech Info Technlg Ltd	91-80-640-661
Intl	Israel, Herzlia B, Vectronics Ltd.	972-9-556-070
Intl	Italy, Milano, Lasti Elettronica S.p.A	39-2-661431
Intl	Japan, Tokyo, Paltek Corp.	81-45 9101381
Intl	Japan, Yokohama City, Altima Corp.	81-45-939-6113
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Intl	Netherlands, Delft, Koning en Hartman	31-15-609906
Intl	Norway, Oslo, Eltron A/S	47-22-500650
Intl	Singapore, Serial Sys Mktg	65-280-0200
Intl	Spain, Madrid, Selco	34-1-359 4346
Intl	Sweden, Solna, Nortec Elektronik AB.	46-8-705-1800
Intl	Switzerland, Wettingen, Eljapex	41-56-275-777
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CA	San Diego, Access Technologies	619-530-1911
CA	San Mateo, Scamp Design Co.	415-573-0501
CA	Santa Clara, Manco	408-496-6611
CA	Tustin, American Automation	714-731-1661
CO	Broomfield, Hannah-Hill	303-465-5027
CT	Bethany, Tri-Logic Assocs.	203-777-9001
IL	Arlington Heights, Comtel Midwest	708-392-4040
IN	Indianapolis, Comtel Midwest	317-253-1681
KS	Shawnee Mission, Comtel Midwest	913-268-0762
MD	Columbia, Analyzers Only	301-995-6322
MA	West Boylston, Design Automation Sales	508-835-2473
MA	Wilmington, Tri-Logic Assocs.	508-658-3800
MI	Southfield, Comtel Instrs	313-358-2505
MN	Rosemont, Nytram Corp.	612-437-1964
MO	Manchester, Comtel Midwest	314-227-7220
NJ	Newark, Rical Assocs.	201-643-0880
NM	Albuquerque, R and R Tech. Sls.	505-821-0222
NM	Albuquerque, Hannah-Hill	505-268-0950
OH	Columbus, Comtel Instrs	614-876-8305
OH	Dayton, Comtel Instrs	513-426-5310
OH	Highlands Heights, Comtel Instrs	216-442-8080
OR	Wilsonville, Syntek	503-682-2750
PA	Huntington Valley, Scientific Repts	215-322-6500
PA	Pittsburgh, Comtel Instrs	412-922-5720
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UT	Salt Lake City, Hannah-Hill	801-364-0606
WA	Bellevue, Syntek	206-462-7700
WI	New Berlin, Comtel Midwest	414-544-6042
Can	British Columbia, Vancouver, Jerome & Francis Co. Ltd.	1-604-986-1286
Can	Ontario, Scarborough, Multitest Electrn	1-416-609-9396
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Intl	Australia, Clayton, Victoria, Kenelec Pty Ltd.	011-61-3-560-1011
Intl	Austria, Wien, Rekirsch Electronische	43-222-253626
Intl	Belgium, Peuti, Simac Electrn	32-2-2523690
Intl	Brazil, Sao Paulo, Sistronics	011-55-11-247-5588
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Intl	Spain, Madrid, Novatron S.A.	34-1-534-7388
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Intl	United Kingdom, Basingstoke, AFS Microsystems	44-0256-381687
Distributors		
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Intl	Belgium, Brussels, DETRON	32-2-4242506
Intl	Denmark, Horsens, Instrutek A/S	FAX: 45-5-615658
Intl	France, Wissous, Fontaine Electronique	33-1-69-30-80-50
Intl	Germany, Martinried, Allmos Electrn GmbH	49-89-857-0000
Intl	India, Adyar, Madras, Indchem Electrn Ltd.	91-44-418387
Intl	Indonesia, Hariff	62-22-7-1880
Intl	Italy, Milano, Medea (Italy HQ)	39-2-4454744
Intl	Italy, Milano, Kontron Electrn	39-2-50721

Intl	Italy, Roma, Medea	39-6-8889-758
Intl	Korea, Seoul, Myoung Corp.	82-784-9942
Intl	Netherlands, Veldhoven, Simac Electrn	040-582911
Intl	South Africa, Sandton, Specitec (Pty) Ltd.	2711-789-1743
Intl	Spain, Madrid, Kontron Instrs	34-1-358-1815
Intl	Switzerland, Kontron Electronik AG	411-736-4111
Intl	Switzerland, Zurich, Traco Electronik AG	41-1-2010771
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CA	Santa Ana, Jones & Mc Geoy Sales, Inc.	714-547-6466
CA	Santa Clara, I2 Inc.	408-988-3400
CA	Tustin, Sales Office	714-573-8199
CO	Denver, Elcom, Inc.	303-337-2300
CT	Hamden, Datcom	203-288-7005
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IL	Elk Grove Village, Control Sales	414-797-9500
IN	FT.Wayne, Sales Office	219-489-4992
IN	Indianapolis, Electro Repts, Inc.	317-842-7202
IN	Kokomo, Sales Office	317-452-5151
IA	Cedar Rapids, R. F. Welch Co.	319-362-6824
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MD	Towson, Advanced Technology Sales, Inc.	301-296-9360
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MA	Waltham, Datcom	617-891-4600
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NY	Victor, T-Squared Elec.	716-924-9101
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NC	Zebulon, Southeast Tech. Sls.	919-269-5589
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WA	Redmond, Sales Office	206-869-6236
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PR San Juan, Electrn Tech. Sales, Inc.	809-798-1300	IL Buffalo Grove, Torkelson Assocs.	312-520-0710	Int'l United Kingdom, Analog Devices, Inc.	0932-246-200
<i>Distributors</i>					
AL Huntsville, Future Elec.	205-830-2322	IN Indianapolis, Torkelson Assocs.	317-244-7867	Int'l United Kingdom, Analog Devices, Inc.	0932-25-33-20
AZ Phoenix, Future	602-968-7140	IA Cedar Rapids, Torkelson Assoc	319-373-0200	Int'l United Kingdom, Analog Devices, Inc.	0506-30306
CA Chatsworth, Future	818-772-6240	KS Analog Devices, Inc	913-829-2800	Int'l United States Of America, Analog Devices, Inc.	617-329-4700
CA Irvine, Future	714-250-4141	KS Olathe, Tech Sales Assocs.	913-829-2800	PR Analog Devices, Inc	809-753-8905
CA San Diego, Future	619-278-5020	MD Analog Devices, Inc	410-992-1995	<i>Distributors</i>	
CA San Jose, Future	408-434-1122	MD Columbia, Analog Devices, Inc.	410-992-1995	AL Allied	205-721-3500
CO Westminster, Future	303-421-0123	MA Analog Devices, Inc	617-329-4700	AL Bell	205-837-1074
CT Bethel, Future	203-743-9594	MI Analog Devices	313-489-1500	AL Hall-Mark	205-837-8700
FL Altamonte Springs, Future	407-767-8414	MI Analog Devices, Inc	313-489-1500	AL Pioneer	205-837-9300
FL Clearwater, Future	813-530-1222	MN Minneapolis, Torkelson Assocs.	612-835-2414	AZ Allied	602-437-9080
FL Ft. Lauderdale, Nu Horizons	305-735-2555	MO Analog Devices, Inc	313-348-5795	AZ Bell	602-966-7800
GA Norcross, Future	404-441-7676	MO Analog Devices, Inc	314-521-2044	AZ Hall-Mark	602-437-1200
IL Schaumburg, Future	708-882-1255	MO Ferguson, Tech Sales	314-521-2044	AZ Wyle	602-437-2088
MA Wakefield, Nu Horizons	617-246-4442	NM Analog Devices, Inc	505-828-1300	CA Allied	415-770-0590
MA Westborough, Future	508-779-3000	NM Albuquerque, Piper Sales	505-828-1300	CA Allied	818-882-6981
MI Detroit, CAM RPC	313-261-9555	NY Analog Devices, Inc	315-682-5571	CA Allied	213-373-8828
MI Livonia, Future	313-261-5270	NY Analog Devices, Inc	516-366-0765	CA Allied	714-727-3010
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NJ Marlton, Nu Horizons	716-248-5980	NY Huntington, Harwood-Sandler Assocs.	516-673-1900	CA Allied	415-952-9599
NJ Marlton, Future	609-778-7600	NC Analog Devices, Inc	919-460-7771	CA Bell	310-826-6778
NJ Parsippany, Future	201-299-0400	NC Charlotte, Currie Peak & Frazier	704-846-1702	CA Bell	916-652-0410
NJ Pinebrook, Nu Horizons	201-882-8300	NC Greensboro, Currie, Peak & Frazier	919-373-0380	CA Bell	408-734-8574
NY E. Rochester, Nu Horizons	716-248-5980	OH Analog Devices, Inc.	216-247-0060	CA Bell	818-879-9494
NY Hauppauge, Future	516-234-4000	OH Dublin, Analog Devices, Inc.	614-792-5171	CA Bell	714-895-7801
NY Liverpool, Future	315-451-2371	PA Analog Devices, Inc	412-745-8441	CA Bell	619-268-1277
NY N. Amityville, Nu Horizons	516-226-6000	PA Ft. Washington, Analog Devices, Inc.	215-643-7790	CA Hall-Mark	818-773-4500
NY Rochester, CAM RPC	716-427-9999	TN Smyrna, Currie, Peak & Frazier	615-459-0743	CA Hall-Mark	714-727-6000
NY Rochester, Future	716-272-1120	TX Richardson, Analog Devices, Inc.	214-231-5094	CA Hall-Mark	619-268-1201
NC Charlotte, Future	704-529-5500	UT Analog Devices, Inc	801-466-9336	CA Hall-Mark	408-432-4000
NC Raleigh, Future	919-790-7111	UT Salt Lake City, Piper Sales	801-466-9336	CA Hall-Mark	916-624-9781
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OH Columbus, CAM RPC	614-888-7777	WI Waukesha, Torkelson Assocs.	414-784-7736	CA Pioneer	619-434-4107
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Can Ontario, Downsview, Future	416-638-4771	Int'l Germany, Analog Devices	030-391-90-35	CO Hall-Mark	303-790-1662
		Int'l Germany, Analog Devices	089-57-005-0	CO Wyle	303-457-9953
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		Int'l Italy, Bologna, Dott. Ing. Giuseppe de Mico	51-555614	FL Hall-Mark	813-541-7440
		Int'l Japan, Osaka, Analog Devices K.K.	6-372-1814	FL Pioneer	407-834-9090
		Int'l Korea, Analog Devices, Inc.	2-554-3301	FL Pioneer	305-428-8877
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		Int'l South Africa, Johannesburg, Analog Data Products	11-882-1620	IL Allied	708-535-0038
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		Int'l Switzerland, Analog Devices, S.A.	21-803-25-50	IL Bell	217-328-1077
				IL Hall-Mark	708-860-3800
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FL Tampa, Currie Peak & Frazier	813-963-1076
FL W. Melbourne, Currie Peak & Frazier	407-724-6795
GA Analog Devices, Inc	404-263-3719
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GA Duluth, Currie, Peak & Frazier	404-497-9404

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KS Hall-Mark	913-888-4747	TX Allied	512-389-3771	Intl Malaysia, Excelpoint Sus (PTE) Ltd	03-2448929
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LA Allied	800-445-8795	TX Allied	915-779-6294	Intl Netherlands, TME Comps BV	073-211010
LA Allied	504-885-1195	TX Allied	713-446-8005	Intl New Zealand, NSD Australia	61-3-8900970
MD Allied	301-381-1560	TX Allied	713-455-3993	Intl Norway, BIT Elektronik	02-98-13-70
MD Bell	410-290-5100	TX Bell	214-690-0466	Intl Poland, Alfine	61-301-4500
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CA	Cameron Park, ProMerge Sales, Inc	916-676-2025
CA	Fair Oaks, ProMerge Sales, Inc	916-965-3255
CA	Irvine, Atmel (Southwest Office)	714-727-3762
CA	San Diego, Harper & Strong	619-549-5360
CA	San Jose, Atmel (Northwest Office)	408-436-4270
CA	San Jose, ProMerge Sales, Inc	408-453-5544
CA	San Jose, Atmel Design Center	408-441-0311
CA	Signal Hill, Harper & Strong	310-424-3030
CO	Colorado Springs, Atmel	719-576-3300
CO	Englewood, Thorson Rocky Mountain	303-773-6300
CT	Meriden, DELTA-CONN Tech Sales	203-634-8558

FL	N Ft Lauderdale, Comp Design Mktg	305-726-5444
FL	Orlando, Comp Design Mktg	407-240-3903
FL	Tampa, Comp Design Mktg	813-886-9721
GA	Atlanta, Electronic Mktg Assoc	404-448-1215
IL	Hoffman Estates, Atmel (N Central)	708-310-1200
IL	Rolling Meadows, Phase II Mktg	708-577-9401
IN	Fort Wayne, Corrao Marsh, Inc	219-482-2725
IN	Greenfield, Corrao Marsh, Inc	317-462-4446
IA	Cedar Rapids, Dy-tronix Inc	319-377-8275
KS	Leawood, Dy-tronix Inc	913-339-6333
KS	Wichita, Dy-tronix Inc	316-838-0884
MD	Columbia, Avtek Assoc	301-740-5100
MD	Hanover, Atmel Design Center	410-712-4950
MA	Braintree, Atmel (Northeast Office)	617-849-0220
MA	Tewksbury, Professional Comp Assoc	508-858-0100
MI	Bloomfield Hills, Trilogy Mktg Corp	313-338-2470
MN	Bloomington, PSI	612-944-8545
MO	Bridgeton, Dy-tronix Inc	314-291-4777
NJ	Mahwah, Northeast Comps	201-825-0233
NM	Albuquerque, Quatra Assocs	505-296-6781
NY	E. Rochester, Empire Tech Assoc	716-381-8500
NY	Skaneateles, Empire Tech Assoc	315-685-5703
NC	Matthews, Electrn Mktg Assoc	704-845-2236
NC	Raleigh, Electrn Mktg Assoc	919-847-8800
NC	Raleigh, Atmel (Southeast)	919-850-9889
OH	Cincinnati, Luebbe Sales Co	513-530-0600
OH	Dayton, Luebbe Sales Co	513-438-0490
OH	Westlake, Luebbe Sales Co	216-899-0071
OR	Tirgard, Earl and Brown Co, Inc	503-639-2100
PA	Erdenheim, Omni Sales	215-233-4600
PA	Pittsburg, Luebbe Sales Co	412-364-0490
TX	Austin, Quad State Sis and Mktg	512-346-7002
TX	Dallas, Quad State Sis and Mktg	214-669-8567
TX	Dallas, Atmel (S Central)	214-733-3366
TX	Houston, Quad State Sis and Mktg	713-893-8585
UT	Salt Lake City, Thorson Rocky Mtn	801-942-1683
VA	Esmont, Avtek Assoc	804-295-1294
WA	Redmond, Earl and Brown Co, Inc	206-885-5064
WI	Wauwatosa, Phase II Mktg	414-771-9986
Can	Ontario, Brampton, Clark-Hurman Assoc	416-840-6066
Can	Ontario, Nepean, Clark-Hurman Assoc	613-727-5626
Can	Quebec, Pointe Claire, Clark-Hurman Assoc	514-426-0453

Int'l	Australia, Leichhardt, Braemac Pty Ltd	61-2858-5966
Int'l	Austria, Perchtoldsdorf, Codico Gesmbh & Co KG	43-222-862428
Int'l	Belgium, Zaventem, Acal Auriema	32-2-720-5983
Int'l	Brazil, Sao Paulo, Hastec	55-11-522-1799
Int'l	Bulgaria, Sofia, Fila c/o Nercom AG	359-2707597
Int'l	Denmark, Horsholm, Merel A/S	45-42-571000
Int'l	England, Camberley, Surrey, Atmel U.K., Ltd	44-276-686677
Int'l	England, Essex, Pronto Electrn Sys. Ltd	44-815-546222
Int'l	England, Sevenoaks, Kent, Impulse Elctms	44-732-743110
Int'l	England, Twyford, Berks, GD Technik LTD	44-734-432277
Int'l	Finland, Espoo, Korndel OY	358-0-5023200
Int'l	France, Les Ulis Cedex, Micro Puissance	33-1-69071211
Int'l	France, Rungis Cedex, Newtek	33-1-46872200
Int'l	Germany, Frankenthal, MSC Vertriebs GmbH	49-6233-26643
Int'l	Germany, Frankfurt, Atmel GmbH	49-69-7075910
Int'l	Germany, Heidenheim, Ineltek GmbH	49-7321-20077
Int'l	Germany, Jena-Goschwitz, MSC Vertriebs GmbH	37-3641-7688011
Int'l	Germany, Leonberg, MSC Vertriebs GmbH	49-7152-26031
Int'l	Germany, Moenchengladbach, Silicom Elctms Vertriebs	49-2161-15074
Int'l	Germany, Monchengladbach, MSC Vertriebs GmbH	49-2166-46071
Int'l	Germany, Munchen, MSC Vertriebs GmbH	49-89-4361046
Int'l	Germany, Wiesbaden, MSC Vertriebs GmbH	49-611-718093
Int'l	Hong Kong, Kowloon, Atmel Asia, Ltd	852-7219778
Int'l	Hungary, Budapest, Nercom Informatik KFT	36-2610433

Int'l	Hungary, Budapest, Nercom AG	36-118-03252
Int'l	Israel, Herzlia, Unitech, Ltd	972-52-576-006
Int'l	Italy, Cassina de Vecchi, CEFRA S.p.A	39-2-9530-2777
Int'l	Italy, Milano, Lasi Electrn	39-2-66101370
Int'l	Italy, Romano Canavese, CEFRA S.p.A	39-125-713689
Int'l	Japan, Chiyoda-Ku, Atmel Japan K.K.	81-3-5259-0211
Int'l	Japan, Chuo-Ku, Osaka, Sumisho Elecs Dvcs	81-6-263-5131
Int'l	Japan, Kita-Ku, Takachiho Koheki Co Ltd	81-6-313-0671
Int'l	Japan, Naka-Nagoya, Sumisho Elctms Dvcs	81-52-953-1291
Int'l	Japan, Tokyo, MCM Japan Tama Sis Off.	81-423-72-8600
Int'l	Japan, Tokyo, MCM Japan	81-3-3487-8477
Int'l	Japan, Tokyo, Takachiho Koheki Co Ltd	81-3-3355-6695
Int'l	Japan, Tokyo, Chiyoda-Ku, Kanto Elctms Corp	81-3-3257-6255
Int'l	Japan, Tokyo, Chiyoda-Ku, Sumisho Elctms Devices	81-3-5399-5951
Int'l	Japan, Toyo, Atmel Japan K.K.	81-3-5259-0211
Int'l	Korea, Seoul, Atmel Korea, Ltd	82-2-8421695
Int'l	Korea, Seoul, D & S Corp	82-2-5754490
Int'l	Netherlands, Eindhoven, Acal Auriema	31-40-502602
Int'l	Norway, Skedsmokorset, BT Hightech A/S	47-6-879330
Int'l	Portugal, Lisboa, Anatronica-Portugal S.A.	351-1-7933299
Int'l	Singapore, Atmel Singapore Pte, Ltd	65-299-9212
Int'l	Singapore, Hamilton Elctrs Pte, Ltd	65-283-7828
Int'l	Spain, Barcelona, Anatronica S.A.	34-3-258-1906
Int'l	Spain, Madrid, Anatronica S.A.	1-542-44-55
Int'l	Sweden, Sollentuna, Lagercrantz Keltech AB	46-88620693
Int'l	Switzerland, Anatec AG	41-42-412441
Int'l	Taiwan, Taipei, Prospec Technology	886-2-820-5353
Int'l	Taiwan, Taipei, Allreach	886-02-321-4229
Int'l	Taiwan, Taipei, Neolec Intl Inc	886-2-736-9973
Int'l	Taiwan, Taipei Hsien, Princeton Tech Corp	886-2-917-8856

Distributors

AL	Huntsville, Nu Horizons	205-722-9330
AL	Huntsville, Time Elctms	800-824-6598
AZ	Scottsdale, Added Value	602-951-9788
AZ	Tempe, Insight Elctms	602-829-1800
AZ	Tempe, Time Elctms	602-967-2000
CA	Agoura, Insight Elctms	818-707-2100
CA	Agoura Hills, Time Elctms	818-707-2890
CA	Chatsworth, Time Elctms	818-998-7200
CA	Irvine, Insight Elctms	800-677-7716
CA	Reseda, Jan Devices	818-708-1100
CA	San Diego, Time Elctms	619-674-2800
CA	San Diego, Insight Elctms	619-587-9757
CA	San Diego, All American	800-831-8300
CA	San Jose, All American	408-943-1200
CA	San Jose, Merit Elctms	408-434-0800
CA	Sunnyvale, Insight Elctms	408-720-9222
CA	Sunnyvale, Time Elctms	408-734-9888
CA	Torrance, AllAmerican	213-320-0240
CA	Torrance, Time Elctms	213-320-0880
CA	Tustin, Added Value	714-259-8258
CA	Tustin, Time Elctms	714-669-0100
CO	Englewood, Time Elctms	303-721-8882
CO	Wheatridge, Added Value (AVED)	303-422-1701
CT	Danbury, Phase I Technology	203-791-9042
CT	Millford, Milgray/Connecticut	203-878-5538
CT	Wallingford, Cronin Elctms, Inc	203-265-3134
FL	Fort Lauderdale, Nu Horizons	305-735-2555
FL	Ft. Lauderdale, Time Elctms	800-331-7010
FL	Lake Mary, Milgray/Florida	407-321-2555
FL	Miami, All American Semiconductor	305-621-8282
FL	Orlando, Time Elctms	800-824-6598
FL	Sunrise, All American Semiconductor	305-572-7999
GA	Atlanta, Jan Dvcs	404-876-1421
GA	Norcross, Nu Horizons	404-416-8666
GA	Norcross, Milgray/Atlanta	404-446-9777
GA	Norcross, Time Elctms	800-824-6598
IL	Palatine, Milgray/Chicago	708-202-1900
IL	Rosemont, Advent Elctms	708-297-6200
IL	Schaumburg, Time Elctms	708-303-3000

MANUFACTURERS & DISTRIBUTORS DIRECTORY

MFGS. & DIST. DIRECTORY

IN Indianapolis, Advent Electrms	317-872-4910
IA Cedar Rapids, Advent Electrms	319-363-0221
KS Overland Park, Milgray/Kansas City	913-236-8800
MD Baltimore, Resco/Baltimore	301-931-8200
MD Beltsville, Resco/Washington	301-937-9100
MD Columbia, Nu Horizons	410-995-6330
MD Columbia, Milgray/Washington	301-621-8169
MD Columbia, Time Electrms	301-964-3090
MA Melrose, Jan Dvcs Inc	617-662-3901
MA Needham, Cronin Electrms, Inc.	617-449-5000
MA Peabody, Time Electrms	508-532-9900
MA Wakefield, Nu Horizons	617-246-4442
MA Wilmington, Milgray/New England	508-657-5900
MI Farmington Hills, Advent Electrms	313-477-1650
MN Eden Prairie, All American	612-944-2151
MN Edina, Time Electrms	612-830-1252
MO Manchester, Time Electrms	314-391-6444
NH Manchester, Cronin Electrms, Inc.	603-624-0105
NJ Elmwood Pk, Phase I Tech	201-791-2990
NJ Marlton, Milgray/Delaware Valley	609-983-5010
NJ Marlton, Nu Horizons Electrms	609-596-1833
NJ Marlton, Time Electrms	609-596-6700
NJ Parsippany, Milgray/New Jersey	201-335-1766
NJ Pine Brook, Nu Horizons Electrms	201-882-8300
NJ West Berlin, GCI Corp.	609-768-6767
NY Amityville, Nu Horizons	516-226-6000
NY Deer Park, Phase I Technology	516-254-2600
NY E. Rochester, Nu Horizons	716-292-0777
NY Farmingdale, Milgray/New York	516-420-9800
NY Hauppauge, Time Electrms	516-273-0100
NY Pittsford, Milgray/Upstate New York	716-381-9700
NY Ronkonkoma, All American	516-981-3935
NC Raleigh, Milgray/Raleigh	919-790-8094
NC Raleigh, Time Electrms	800-824-6598
OH Cleveland, Milgray/Cleveland	216-447-1520
OH Columbus, Time Electrms	614-794-3301
OR Beaverton, Insight Electrms	503-644-3300
OR Portland, Time Electrms	503-684-3782
TX Austin, Insight Electrms, Inc.	512-331-5887
TX Austin, Time Electrms	512-339-3054
TX Dallas, Milgray/Dallas	214-248-1603
TX Houston, Time Electrms	713-530-0800
TX Richardson, All American	214-231-5300
TX Richardson, Insight Electrms, Inc.	214-783-0800
TX Richardson, Time Electrms	214-644-4644
TX Stafford, Milgray/Houston	713-240-5360
TX Sugarland, Insight Electrms, Inc.	713-448-0800
UT Murray, Milgray/Utah	801-261-2999
UT Salt Lake City, Added Value	801-975-9500
UT West Valley, Time Electrms	801-973-8494
WA Kirkland, Time Electrms	206-820-1525
WA Kirkland, Insight Electrms	206-820-8100
WI Mukwonago, Advent Electrms	414-549-9035
Can Alberta, Calgary, ITT Multicomponents	403-273-2780
Can Alberta, Edmonton, ITT Multicomponents	403-436-9555
Can British Columbia, Burnaby, ITT Multicomponents	604-421-6222
Can Manitoba, Winnipeg, ITT Multicomponents	204-786-8401
Can Ontario, Concord, ITT Multicomponents	416-736-1144
Can Ontario, Mississauga, Milgray/Toronto	416-678-0958
Can Ontario, Nepean, ITT Multicomponents	613-596-6980
Can Quebec, St. Laurent, ITT Multicomponents	514-335-7697

ASI, Cadence Design Systems, Inc., 1505 Commerce Ave., Brookfield, Wisconsin 53045, Tel: 414-784-6400

AVASEM CORPORATION, 1271 Parkmoor Avenue, San Jose, California 95126, Tel: 408-297-1201, FAX: 408-925-9460

Sales Office & Representatives

AL Huntsville, Elcom	205-830-4001
CA Los Gatos, Martin Fletcher (Australia)	408-356-2418
CA Mountain View, Nexus Mfgs Reps.	415-691-1100
CA Santa Clara, Rymex Int'l Corp.	408-296-6626

CA Tustin, RTS	714-730-9561
CO Wheat Ridge, Waugaman Assoc. Inc.	303-423-1020
CT Collinsville, Dynamic Sales of New England	203-693-6567
FL Altamonte Springs, CM Mktg, Inc.	407-682-7709
FL Clearwater, CM Mktg, Inc.	813-443-6390
FL Ft. Lauderdale, CM Mktg, Inc.	305-973-9373
GA Norcross, Elcom	404-447-8200
IL Arlington Heights, KMA Sales	708-398-5300
IN Carmel, Technology Mktg Corp	317-844-8462
IN Ft. Wayne, Technology Mktg Corp.	219-432-5552
IN Kokomo, Technology Mktg Corp.	317-459-5153
KS Louisville, Technology Mktg Corp.	502-893-1377
MA Burlington, Dynamic Sales of New England	617-272-5676
MI Bloomfield Hills, Enco Mktg, Inc.	313-338-8600
MN Prior Lake, Gleason Assoc. Inc.	612-447-7020
NJ Fairfield, Metro Logic	201-575-5585
ND Portland, Electrn Engr Sales	503-639-3978
OH Centerville, Technology Mktg Corp.	502-435-8641
OH Middleburg Heights, Technology Mktg Corp.	216-234-1202
PA Treviso, Omega Electrn Sales, Inc.	215-244-4000
TX Austin, Quad State Sales & Mktg	512-338-2125
TX Dallas, Quad State Sales & Mktg	214-669-8567
TX Houston, Quad State Sales & Mktg	713-893-8585
UT Salt Lake City, Waugaman Assoc. Inc.	801-261-0802
VT Granitville, Dynamic Sales of New England	802-426-4223
WA Redmond, Electrn Engr Sales	206-883-3374
WI Milwaukee, KMA Sales	414-259-1771
Intl Germany, Munchen, Neutron	011-49-89-5212861
Intl Hong Kong, Kowloon, Sun On City	011-852-751-1623
Intl Hong Kong, Kwai Chung, Electrocon Products, LTD.	011-852-416022
Intl Japan, Chuo-Ku, Osaka, Nichimen Electrn Comps Corp.	011-81-6-223-5570
Intl Korea, Seoul, Acoetronix	011-82-2-796-4561
Intl Singapore, Serial System Mktg	011-65-2938830
Intl Taiwan, Taipei Hsien ROC, Princeton Technology Corp.	011-886-2-9178856

BENCHMARK MICROELECTRONICS, 2611

Westgrove, Suite 109, Carrollton, Texas 75006, Tel: 214-407-0011, FAX: 214-407-9845

Sales Office & Representatives

AL Daphne, Interep Assoc	205-621-1036
AL Huntsville, Interep Assoc	205-881-1096
AZ Scottsdale, Aztech Comp Sales	602-991-6300
CA Irvine, Benchmark (Western Area)	714-511-8402
CA Los Angeles, Harper and Strong	310-424-3030
CA San Diego, Addem	619-729-9216
CA Santa Clara, Criterion Sales Inc.	408-988-6300
CO Denver, Straube Assoc	303-426-0890
CT Cheshire, ConnTech Sales	203-272-1277
FL Ft. Lauderdale, Dyne-A-Mark	305-485-3500
FL Maitland, Dyne-A-Mark	407-660-1661
FL Palm Bay, Dyne-A-Mark	407-725-7470
GA Norcross, Interep Assoc	404-449-8680
ID Meridian, Intermountain Tech Mktg	208-888-6071
IL Chicago, Micro Sales, Inc.	708-285-1000
IN Fort Wayne, M/S Sales & Assocs, Inc.	219-436-3023
IA Cedar Rapids, M.I.N.K. Assocs.	319-393-0373
KS Overland Park, M.I.N.K. Assocs	913-341-8309
MD Columbia, Avtek Assocs, Inc	410-740-5100
MA Boston, ProComp Assoc Inc	508-858-0100
MI Livonia, Giesting & Assocs	313-478-8106
MN Minneapolis, Vector Comp Sales	612-631-1334
MO Bridgeton, M.I.N.K. Assocs, Inc	314-291-5454
NJ Cherry Hill, Tritex Sales Inc.	609-667-0200
NJ Fairfield, Metro Logic Corp	201-575-5585
NY Binghamton, Empire Tech Assoc	607-785-3865
NY Kingston, Empire Tech Assoc	914-339-7139
NY Pt. Jefferson, Benchmark (Eastern Area)	516-331-3999
NY Rochester, Empire Tech Assoc	716-381-8500
NY Skaneateles, Empire Tech Assoc	315-685-5703
NC Charlotte, Quantum Mktg	704-523-8822
NC Raleigh, Quantum Mktg	919-846-5728
OH Cincinnati, Giesting & Assocs	513-385-1105
OR Beaverton, Comps West Inc	503-642-9110
PA Pittsburgh, Giesting & Assocs	412-828-3553

Distributors

AL Huntsville, Marshall Inds	205-881-9235
AL Huntsville, Nu Horizons Electrms Corp	205-722-9330
AL Huntsville, Arrow Electrms	205-837-6955
AZ Phoenix, Marshall Inds	602-496-0290
AZ Phoenix, Wyle Labs	602-437-2088
AZ Tempe, Arrow Electrms	602-431-0030
AZ Tucson, Marshall Inds	602-790-5887
CA Calabassas, Wyle Labs	818-880-9000
CA Calabassas, Marshall Inds	818-878-7065
CA Calabassas, Arrow Electrms	818-880-9686
CA Chatsworth, Marshall Inds	818-407-4100
CA El Monte, Marshall Inds (Corporate Off.)	818-307-6000
CA El Segundo, Wyle Labs	213-322-1763
CA Fremont, Arrow Electrms	510-490-9477
CA Irvine, Marshall Inds	714-458-5301
CA Irvine, Wyle Labs	714-863-9953
CA Irvine, Arrow Electrms	714-587-0404
CA Rancho Cordova, Marshall Inds	916-635-9700
CA Sacramento, Wyle Labs	916-638-5282
CA Sacramento, Marshall Inds	916-635-9700
CA San Diego, Marshall Inds	619-578-9600
CA San Diego, Wyle Labs	619-565-9171
CA San Diego, Arrow Electrms	619-565-4800
CA San Francisco, Marshall Inds	408-942-4600
CA San Jose, Arrow Electrms	408-441-9700
CA Santa Clara, Wyle Labs	408-727-2500
CO Denver, Wyle Labs	303-457-9953
CO Denver, Marshall Inds	303-451-8383
CO Englewood, Arrow Electrms	303-799-0258
CO Thornton, Marshall Inds	303-451-8383
CT Connecticut, Marshall Inds	203-265-3822
CT Wallingford, Arrow Electrms	203-265-7741
FL Altamonte Springs, Marshall Inds	407-767-8585
FL Altamonte Springs, Vantage Comps, Inc	407-682-1199

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FL	Deerfield Bch, Vantage Comps, Inc	305-429-1001
FL	Deerfield Beach, Arrow Electrms	305-429-8200
FL	Ft Lauderdale, Marshall Inds	305-977-4880
FL	Ft. Lauderdale, Nu Horizons Elctms Corp	305-735-2555
FL	Lake Mary, Arrow Electrms	407-333-9300
FL	St Petersburg, Marshall Inds	813-573-1399
GA	Duluth, Arrow Electrms	404-497-1300
GA	Norcross, Marshall Inds	404-923-5750
GA	Norcross, Nu Horizons Elctms Corp	404-416-8666
IL	Itasca, Arrow Electrms	708-250-0500
IL	Schaumburg, Marshall Inds	708-490-0155
IN	Indianapolis, Marshall Inds	317-297-0483
IN	Indianapolis, Arrow Electrms	317-299-2071
IA	Cedar Rapids, Arrow Electrms	319-395-7230
KS	Lenexa, Marshall Inds	913-492-3121
KS	Lenexa, Arrow Electrms	913-541-9542
MD	Columbia, Vantage Comps, Inc	301-621-8555
MD	Columbia, Nu Horizons Elctms Corp	410-995-6330
MD	Columbia, Arrow Electrms	301-596-7800
MD	Silver Springs, Marshall Inds	301-622-1118
MA	Andover, Vantage Comps, Inc	508-667-2400
MA	Boston, Wyle Labs	617-272-7300
MA	Wakefield, Nu Horizons Elctms Corp	617-246-4442
MA	Wilmington, Marshall Inds	508-658-0810
MA	Wilmington, Arrow Electrms	508-658-0900
MI	Livonia, Marshall Inds	313-525-5850
MI	Livonia, Arrow Electrms	313-462-2290
MN	Eden Prairie, Arrow Electrms	612-941-5280
MN	Plymouth, Marshall Inds	612-559-2211
MO	Bridgeton, Marshall Inds	314-291-4650
MO	St. Louis, Arrow Electrms	314-567-6888
NJ	Clifton, Vantage Comps, Inc	201-777-4100
NJ	Fairfield, Marshall Inds	201-882-0320
NJ	Marlton, Nu Horizons Elctms Corp	609-596-1833
NJ	Marlton, Arrow Electrms	609-596-8000
NJ	Mt. Laurel, Marshall Inds	609-234-9100
NJ	Pine Brook, Nu Horizons Elctms Corp	201-882-8300
NJ	Pine Brook, Arrow Electrms	201-227-7880
NY	Amityville, Nu Horizons Elctms Corp	516-226-6000
NY	Binghamton, Marshall Inds	607-785-2345
NY	Hauppauge, Marshall Inds	516-273-2424
NY	Hauppauge, Arrow Electrms	516-231-1000
NY	Rochester, Marshall Inds	716-235-7620
NY	Rochester, Nu Horizons Elctms Corp	716-292-0777
NY	Rochester, Arrow Electrms	716-427-0300
NY	Smithtown, Vantage Comps, Inc	516-543-2000
NC	Raleigh, Marshall Inds	919-878-9882
NC	Raleigh, Arrow Electrms	919-876-3132
OH	Centerville, Arrow Electrms	513-435-5563
OH	Dayton, Marshall Inds	513-898-4480
OH	Solon, Marshall Inds	216-248-1788
OH	Solon, Arrow Electrms	216-248-3990
OK	Tulsa, Arrow Electrms	918-252-7537
OR	Beaverton, Marshall Inds	503-644-5050
OR	Beaverton, Arrow Electrms	503-629-8090
OR	Portland, Wyle Labs	503-643-7900
PA	Pittsburgh, Marshall Inds	412-788-0441
PA	Pittsburgh, Arrow Electrms	412-963-6807
TX	Austin, Marshall Inds	512-837-1991
TX	Austin, Wyle Labs	512-345-8853
TX	Austin, Arrow Electrms	512-835-4180
TX	Carrollton, Marshall Inds	214-705-0600
TX	Carrollton, Arrow Electrms	214-380-6464
TX	Dallas, Wyle Labs	214-235-9953
TX	El Paso, Marshall Inds	915-593-0706
TX	Houston, Marshall Inds	713-895-9200
TX	Houston, Wyle Labs	713-879-9953
TX	Houston, Arrow Electrms	713-530-4700
TX	San Antonio, Marshall Inds	210-734-5100
UT	Salt Lake City, Marshall Inds	801-485-1551
UT	Salt Lake City, Wyle Labs	801-974-9953
UT	Salt Lake City, Arrow Electrms	801-973-6913
WA	Bellevue, Arrow Electrms	206-643-9992
WA	Bothell, Marshall Inds	206-488-5747
WA	Seattle, Wyle Labs	206-881-1150
WI	Brookfield, Arrow Electrms	414-792-0150
WI	Waukesha, Marshall Inds	414-797-8400
Can	Alb., Calgary, Arrow Electrms	403-250-1690
Can	B.C., Burnaby, Arrow Electrms	604-421-2333
Can	Ont., Belleville, Arrow Electrms	613-967-6881

Can	Ont., Brampton, G.S. Marshall Co.	416-458-8046
Can	Ont., Mississauga, Arrow Electrms	416-670-7769
Can	Ont., Nepean, Arrow Electrms	613-226-6903
Can	Ont., Ottawa, G.S. Marshall Co.	613-564-0166
Can	Que., Dorval, Arrow Electrms	514-421-7411
Can	Que., Montreal, G.S. Marshall Co.	514-694-8142
Can	Western Canada, G.S. Marshall	800-366-2356

BROOKTREE CORPORATION, 9950 Barnes Canyon Road, San Diego, California 92121, Tel: 619-535-3494, TELEX: 383596, FAX: 619-597-0673

Sales Office & Representatives		
AL	Huntsville, Group 2000 Sls	205-536-2000
AZ	Phoenix, Oasis Sales	602-277-2714
CA	Calabasas, Centaur Corp	818-591-1655
CA	Fallbrook, Gary Chilcote Assoc.	619-728-7678
CA	Irvine, Centaur Corp	714-261-2123
CA	San Diego, Brooktree Corp.	619-535-3463
CA	Santa Clara, Quorum	408-980-0812
CA	Santa Clara, Brooktree Corp	408-492-9151
CO	Boulder, Brooktree Corp/Base 2	303-494-4484
CO	Littleton, Lange Sls Inc	303-795-3600
CT	Cheshire, ConnTech Sls	203-272-1277
FL	Altamonte Springs, SEC	407-830-8444
FL	Deerfield Bch, SEC	305-426-4601
FL	Orlando, Chip Supply	407-298-7100
GA	Norcross, Group 2000 Sls	404-729-1889
ID	Boise, Lange Sls Inc	208-323-0713
IL	Elk Grove Village, Oasis Sales	708-640-1850
IL	Schaumburg, Brooktree Corp.	708-397-2222
IN	Ft. Wayne, Corrao Marsh Inc	219-482-2725
IN	Greenfield, Corrao Marsh Inc	317-432-4446
IA	Cedar Rapids, Stan Clothier Co.	319-393-1576
KS	Lenexa, Stan Clothier Co.	913-492-2124
MD	Gaithersburg, Deltatronics	301-253-0615
MA	Westford, The Nashoba Grp	508-692-7503
MI	Brighton, A.P. Assocs.	313-229-6550
MN	Eden Prairie, Stan Clothier Co.	612-944-3456
MO	St. Charles, Stan Clothier Co.	314-928-8078
NY	Buffalo, Quality Comps	716-837-5430
NY	Commack, ERA	516-543-5010
NY	Manlius, Quality Comps	315-682-8885
NY	Rochester, Quality Comps	716-342-7229
NC	Cary, Group 2000 Sls	919-481-1530
NC	Wilmington, Brooktree Corp.	919-256-8384
OH	Dayton, Lyons	513-278-0714
OH	Richfield, Lyons	216-659-9224
OH	Westerville, Lyons	614-278-0714
OR	Portland, Westerberg & Assocs.	503-620-1931
PA	Blue Bell, Deltatronics	215-641-9930
TX	Austin, OM Assoc.	512-794-8971
TX	Dallas, Brooktree Corp.	214-490-1945
TX	Houston, OM Assoc.	713-789-4426
TX	Richardson, OM Assoc.	214-690-6746
UT	Salt Lake City, Lange Sls Inc	801-487-0843
VA	Alexandria, Deltatronics	703-971-1733
WA	Bellevue, Westerberg & Assocs.	206-453-8881
WI	Brookfield, Oasis Sales	414-782-6660
Can	Ont. Ottawa, Dynasty Comps	613-596-9800
Intl	Australia, Melbourne, Zatek Comps	61-3763-8899
Intl	Australia, Sydney, Zatek Comps	61-2874-0122
Intl	Austria, Muehlgasse, CODICO	43-222-862-428
Intl	Bayshore, EIM Intl Elctms Inc	516-243-1400
Intl	Belguim, Kontich, Alcom Elctms B.V.B.A.	32-3-458-30-33
Intl	Denmark, Gladsaxevej, Scansupply	45-3966-5090
Intl	Finland, Helsinki, Comodo Oy	358-0-351-5100
Intl	France, Sevres Cedex, Tekelec Airtronic	331-46-23-2229
Intl	Germany, Munich, Brooktree Corp.	49-89-937520
Intl	Germany, Munich, Tekelec Airtronic GmbH	49-89-51-6410
Intl	Hong Kong, Brooktree Corp	852-8130699
Intl	Hong Kong, Tsumshatsui, Lestina International, Ltd.	852-735-1736
Intl	India, Bombay, Oriole Services	91-22-512-2973
Intl	Ireland, Limerick, MEMEC Ireland	353-61-411-842
Intl	Italy, Milan, Compril s.p.a.	3936-2-553-991
Intl	Japan, Osaka-shi, H.Y. Assocs	81-06-266-0611
Intl	Japan, Tokyo, Brooktree Corp.	81-3-3588-0414
Intl	Japan, Tokyo, H.Y. Assocs.	81-33-929-7111
Intl	Japan, Tokyo, Nissei Elctms	81-33-504-7921
Intl	Korea, Seoul, Kortronics Enterprise	82-2-523-5233
Intl	Norway, Oslo, Scandcomp	47-22-500-650

Intl	Singapore, Desner Electrms	65-285-1566
Intl	Spain, Barcelona, Semiconductores, S.A.	34-3-217-2340
Intl	Spain, Madrid, Semiconductores	34-1-742-2313
Intl	Sweden, Hagersten, Martinsson Electronik AB	46-8-744-0300
Intl	Switzerland, Geneva, Abalec AG	41-22-757-2902
Intl	Switzerland, Schlieren, Abalec AG	41-1-730-04-55
Intl	Taiwan, Taipei, Serlek	886-2-501-0055
Intl	Taiwan, Taipei, Tonsam Corp	886-02-651-0011
Intl	The Netherlands, Alcom	31-10-451-9533
Intl	United Kingdom, Thame, Oxfordshire, Brooktree Ltd.	44-844-261989
Intl	United Kingdom, Thame, Oxfordshire, Thame Comps Ltd.	44-844-426-1188
PR	San Juan, ETS, Inc	809-798-1300

Distributors		
AL	Huntsville, Marshall	205-881-9235
AL	Huntsville, Hamilton/Avnet	205-837-7211
AZ	Phoenix, Marshall	602-496-0290
AZ	Tempe, Anthem	602-966-6600
AZ	Tempe, Hamilton/Avnet	602-902-4700
CA	Calabasas, Marshall	818-878-7000
CA	Chatsworth, Anthem	818-700-1000
CA	Costa Mesa, Hamilton/Avnet	714-641-4100
CA	Culver City, Hamilton/Avnet (Corporate)	310-558-2065
CA	El Monte, Marshall (Corporate)	818-307-6000
CA	Irvine, Anthem	714-768-4444
CA	Irvine, Marshall	714-859-5050
CA	Milpitas, Marshall	408-942-4600
CA	Rancho Cordova, Marshall	916-635-9700
CA	Rocklin, Anthem	916-624-9744
CA	Roseville, Hamilton/Avnet	916-781-6614
CA	San Diego, Anthem	619-453-9005
CA	San Diego, Marshall	619-578-9600
CA	San Diego, Hamilton/Avnet	619-571-5740
CA	San Jose, Anthem (Corporate)	408-453-1200
CA	Sunnyvale, Hamilton/Avnet	408-743-3300
CA	Woodland Hills, Hamilton/Avnet	818-594-8242
CO	Englewood, Anthem	303-790-4500
CO	Englewood, Hamilton/Avnet	303-799-7800
CO	Thornton, Marshall	303-451-8383
CT	Danbury, Hamilton/Avnet	203-743-9799
CT	Wallingford, Marshall	203-265-3822
CT	Waterbury, Anthem	203-575-1575
FL	Altamonte Springs, Marshall	407-767-8686
FL	Clearwater, Hamilton/Avnet	813-530-0644
FL	Ft. Lauderdale, Marshall	305-977-4880
FL	Ft. Lauderdale, Hamilton/Avnet	305-733-6300
FL	St Petersburg, Marshall	813-573-1399
FL	Winter Park, Hamilton/Avnet	407-657-3300
GA	Duluth, Hamilton/Avnet	404-623-5475
GA	Norcross, Marshall	404-923-5750
IL	Bensenville, Hamilton/Avnet	708-860-7700
IL	Schaumburg, Anthem	708-884-0200
IL	Schaumburg, Marshall	708-490-0155
IN	Carmel, Hamilton/Avnet	317-844-9533
IN	Indianapolis, Marshall	317-297-0483
IA	Cedar Rapids, Hamilton/Avnet	319-393-0033
KS	Lenexa, Marshall	913-492-3121
KS	Lenexa, Hamilton/Avnet	913-888-8900
MD	Columbia, Anthem	410-995-6640
MD	Columbia, Hamilton/Avnet	410-995-3560
MD	Silver Spring, Marshall	301-622-1118
MA	Peabody, Hamilton/Avnet	508-532-3701
MA	Wilmington, Anthem	508-657-5170
MA	Wilmington, Marshall	508-658-0810
MI	Livonia, Marshall	313-525-5850
MI	Novi, Hamilton/Avnet	313-347-4271
MN	Eden Prairie, Anthem	612-944-5454
MN	Minnetonka, Hamilton/Avnet	612-932-0600
MN	Plymouth, Marshall	612-559-2211
MO	Bridgeton, Marshall	314-291-4650
MO	Chesterfield, Hamilton/Avnet	314-537-1600
NJ	Cherry Hill, Hamilton/Avnet	609-751-2539
NJ	Fairfield, Marshall	201-882-0320
NJ	Mt. Laurel, Marshall	609-234-9100
NJ	Parsippany, Hamilton/Avnet	201-575-3490
NJ	Pine Brook, Anthem	201-227-7960
NM	Albuquerque, Alliance Electrms	505-292-3360
NM	Albuquerque, Hamilton/Avnet	505-828-1058
NY	Commack, Anthem	516-493-2225
NY	Endicott, Marshall	607-785-2345
NY	Hauppauge, Marshall	516-273-2424
NY	Hauppauge, Hamilton/Avnet	516-434-7420
NY	N. Syracuse, Hamilton/Avnet	315-453-4000
NY	Rochester, Hamilton/Avnet	716-475-9130

NY Rochester, Marshall	716-235-7620
NC Raleigh, Marshall	919-878-9882
NC Raleigh, Hamilton/Avnet	919-878-0819
OH Columbus, Hamilton/Avnet	614-882-7389
OH Dayton, Marshall	513-898-4480
OH Dayton, Hamilton/Avnet	513-439-6721
OH Independence, Hamilton/Avnet	216-573-7400
OH Solon, Marshall	216-248-1788
OK Tulsa, Hamilton/Avnet	918-252-7297
OR Beaverton, Marshall	503-644-5050
OR Beaverton, Anthem	503-643-1114
OR Beaverton, Hamilton/Avnet	503-526-6200
PA Horsham, Anthem	215-443-5150
PA Mars, Hamilton/Avnet	412-772-1881
TX Austin, Marshall	512-837-1991
TX Austin, Hamilton/Avnet	512-832-4306
TX Dallas, Hamilton/Avnet	214-308-8137
TX Houston, Marshall	713-467-1666
TX Houston, Hamilton/Avnet	713-861-8517
TX Richardson, Marshall	214-705-0600
TX Richardson, Anthem	214-238-7100
UT Salt Lake City, Anthem	801-973-8555
UT Salt Lake City, Marshall	801-973-2288
UT Salt Lake City, Hamilton/Avnet	801-972-2800
WA Bothell, Marshall	206-486-5747
WA Bothell, Anthem	206-483-7242
WA Redmond, Hamilton/Avnet	206-881-6697
WI Waukesha, Marshall	414-797-8400
WI Waukesha, Hamilton/Avnet	414-784-4510
Can B.C. Burnaby, Hamilton/Avnet	604-420-4101
Can Ont. Mississauga, Hamilton/Avnet	416-795-3832
Can Ont., Nepean, Hamilton/Avnet	613-226-1700
Can Ontario, Brampton, Marshall	416-458-8046
Can Que., Pointe Claire, Marshall	514-694-8142
Can Que., St. Laurent, Hamilton/Avnet	514-335-1000
Intl Australia, Melbourne, Zatek Comps	61-3763-8899
Intl Australia, Sydney, Zatek Comps	61-2874-0122
Intl Austria, Muehlgasse, CODICO	43-222-862-428
Intl Bayshore, EIM Intl Elctns Inc	516-243-1400
Intl Belgium, Kontich, Alcom Elctns B.V.B.A.	32-3-458-30-33
Intl Denmark, Gladsaxevej, Scansupply A/S	45-3966-5090
Intl Finland, Helsinki, Comodo Oy	358-0-351-5100
Intl France, Sevres Cedex, Tekelec Airtronic	331-46-23-2229
Intl Germany, Munich, Tekelec Airtronic GmbH	49-89-51-6410
Intl Hong Kong, Tsumhatsui, Lestina International, Ltd.	852-735-1736
Intl India, Bombay, Oriole Services	91-22-512-2973
Intl Ireland, Limerick, MEMEC Ireland	353-61-411-842
Intl Italy, Milan, Compres s.p.a.	3936-2-553-991
Intl Japan, Osaka-shi, H.Y. Assocs	81-6-266-0611
Intl Japan, Tokyo, H.Y. Assoc.	81-33-929-7111
Intl Japan, Tokyo, Nissei Elctns	81-33-504-7921
Intl Korea, Seoul, Kortronics Enterprise	82-02-523-5233
Intl Norway, Oslo, Scandcomp	47-22-500-650
Intl Singapore, Desner Elctns	65-285-1566
Intl Spain, Barcelona, Semiconductores, S.A.	34-3-217-2340
Intl Spain, Madrid, Semiconductores	34-1-742-2313
Intl Sweden, Hagersten, Martinsson Electronk AB	46-8-744-0300
Intl Switzerland, Geneva, Abalec AG	41-22-757-2902
Intl Switzerland, Schlieren, Abalec AG	41-1-730-04-55
Intl Taiwan, Taipei, Tonsam Corp	886-02-651-0011
Intl Taiwan, Taipei, Sertek	886-2-501-0055
Intl The Netherlands, Alcom	31-10-451-9533
Intl United Kingdom, Thame, Oxfordshire, Thame Comps Ltd.	44-84-426-1188
PR Rio Piedras, Hamilton/Avnet	809-764-1199



FAX: 602-741-3895

BURR-BROWN CORPORATION, 6730 S. Tucson Blvd., Tucson, Arizona 85706, Tel: 602-746-1111, BBS:602-741-3978, 3/12/248-N-1, X/ZModem, TELEX: 066-6491, FAX: 602-741-3895

Sales Office & Representatives

AL Huntsville, Rep, Inc	205-881-9270
AZ Scottsdale, Summit Sls	602-998-4850
CA Agoura Hills, Burr-Brown	818-991-8544
CA Santa Ana, Burr-Brown	714-835-0712
CA Santa Clara, I Squared, Inc	408-988-3400
CO Ft. Collins, Sales Technlg, Inc	303-530-9409
FL Altamonte Springs, VG Sls Co., Inc	407-831-8688
FL Ft. Lauderdale, VG Sls Co., Inc	305-938-4333
FL Largo, VG Sls Co., Inc	813-536-7787
GA Tucker, Rep, Inc	404-938-4358
IL Rolling Meadows, Sumer, Inc	708-991-8500
IN Indianapolis, LM Devco Co	317-842-3245
IA Cedar Rapids, Rep Assocs Corp	319-373-0152
MA Burlington, Burr-Brown	617-229-0300
MI Milford, Electr Comp Sls, Inc	313-360-3790
MN Bloomington, Electr Sls Agency, Inc	612-884-8291
MO Bridgeton, Hitec Central, Inc	314-291-5920
MO Independence, Hitec Central, Inc	816-796-6684
MO Rockville, Marktron, Inc	301-251-8990
NY E. Syracuse, Elcom Sls Inc	315-685-8967
NY Hicksville, J-Square Mktg	516-935-3200
NY Pittsford, Elcom Sls Inc	516-385-1400
NC Morrisville, Rep, Inc	919-469-9997
OH Willoughby Hills, Versatron Inc	216-944-0082
PA Hatboro, Delta Tech Sls	215-957-0600
TN Jefferson City, Rep, Inc	615-475-4105
TX Dallas, Burr-Brown	214-783-4555
TX Houston, Development Tech Sls, Inc	713-988-6546
UT Murray, Front Range Mktg	801-288-2500
WA Federal Way, Wilson Elctns Sls Team	206-946-8016
WI Brookfield, Sumer, Inc	414-784-6641
Can Alb., Calgary, Dynasty Comps	403-560-1212
Can B.C., Vancouver, Dynasty Comps	604-657-4433
Can Ont., Ottawa, Dynasty Comps	613-596-9800
Can Ont., Toronto, Dynasty Comps	416-672-5977
Can Que., Montreal, Dynasty Comps	514-843-1879
Intl Australia, Victoria, Kenelec Pty Ltd	(61) 3-560-1011
Intl Austria, Vienna, Burr-Brown Resch GmbH	(43) 1-602-63-71
Intl Belgium, Brussels, Microlink N.V.	(32) 2-5218650
Intl Brazil, Sao Paulo, Aplicacoes Elctrnas Artimar	(55) 11 231 0277
Intl Chile, Santiago, Coasin Chile Ltda	(56) 2-225-1848
Intl China, Wanchai, Schmidt & Co (H.K.) Ltd	(852) 5070222
Intl Colombia, Bogota, Instrumentacion Ltda	(57) 1-6121313
Intl Denmark, Lyngbe, Prescom A/S	(45) 42 189800
Intl Finland, Hyvinkaa, Perel Oy	(358) 14434600
Intl France, Le Chesnay, Burr-Brown Intl S.A.	(33) 1-39-54-35-58
Intl France, Lyon, Burr-Brown Intl S.A.	(33) 78-64-09-77
Intl France, Toulouse, Burr-Brown Intl S.A.	(33) 61-40-03-06
Intl Germany, Bremen, Burr-Brown Intl S.A.	(49) 421-25-39-31
Intl Germany, Dusseldorf, Burr-Brown Intl S.A.	(49) 21-54-84-45
Intl Germany, Erlangen, Burr-Brown Intl S.A.	(49) 91-31-2-40-36

Intl Germany, Frankfurt, Burr-Brown Intl S.A.	(49) 61-54-8-20-91
Intl Germany, Munchen, Burr-Brown Intl S.A.	(49) 89-61-77-37
Intl Germany, Stuttgart, Burr-Brown Intl GmbH	(49) 711-77040
Intl Germany, Zirndorf, Siex Elektronikelemente	(49) 911-60-7014
Intl Greece, Athens, Peter Caritato & Assoc. S.A.	(301) 9020115
Intl Hong Kong, Wanchai, Schmidt & Co. (H.K.) Ltd	(852) 507-0222
Intl India, Bombay, Oriole Svcs & Consits Pvt, Ltd	(91) 22-511-3621
Intl Israel, Ramat-Hasharon, Gallium Elctns Ltd	(972) 3-5402242
Intl Italy, Milano, Burr-Brown Intl S.r.l.	(39) 2-580-10504
Intl Japan, Atsugi, Burr-Brown Japan Ltd	(81) 462-48-4695
Intl Japan, Nagoya, Burr-Brown Japan Ltd	(81) 52-775-6761
Intl Japan, Osaka, Burr-Brown Japan Ltd	(81) 6-305-3287
Intl Japan, Tokyo, Burr-Brown Japan Ltd	(81) 33-586-8141
Intl Malaysia, Penang, M.A. Elctns (M) SDN BHO	(60) 4-214-518
Intl Mexico, Col San Rafael, Borcia S.A. de C.V.	(52) 5-7031751
Intl Netherlands, Maarsse, Burr-Brown Intl B.V.	(31) 3465-50204
Intl New Zealand, Auckland, Enertec Svcs Ltd	(64) 9-479-2377
Intl Norway, Oslo, Hefro Elektronikk A/S	(47) 22-67-68-00
Intl Poland, Warsaw, Delta Tech	(48) 22-465370
Intl Portugal, Amadora, Ibertronics LDA	(351) 1-4716587
Intl Singapore, Microtronics Assocs Pte Ltd	(65) 748-1835
Intl Slovenia, Ljubljana, I&R Elctns	(38) 61-222007
Intl So. Africa, Johannesburg, Advanced Semiconductor	(27) 11-444-2333
Intl South Korea, Seoul, Oyang Corp	(82) 2-732-8031
Intl Spain, Madrid, Unitronics SA	(34) 1-5425204
Intl Sweden, Taebys, Bexab Sweden AB	(46) 8-630-8800
Intl Switzerland, Rueschlikon, Burr-Brown AG	(41) 7240928
Intl Taiwan, Taipei, Alpha Precision Instrmn.	(886) 2-508-3066
Intl Thailand, Nonthaburt, Microtronics Thai Ltd	(66) 2584-5807
Intl Turkey, Istanbul, Inter Muhendislik Danismanlik ve Ticaret A.S.	(90) 1-349-9400
Intl U.K., Watford, Burr-Brown Intl Ltd	(44) 923-233837
Intl Venezuela, Caracas, Autotrol Tecnologia CA	(58) 2-241-6214
PR Mayaguez, VG Sls Co., Inc	809-831-4050

C & C TECHNOLOGY INC., 245 W. Roosevelt Road, Bldg 9, Unit 60, West Chicago, Illinois 60185, Tel: 312-231-0015, TELEX: 4974811, FAX: 312-231-0345

CALOGIC CORPORATION, 237 Whitney Place, Fremont, California 94539, Tel: 510-656-2900, FAX: 510-651-1076

Sales Office & Representatives

AL Huntsville, New Age Elctns Inc	205-895-9400
AZ Phoenix, Sunwest Mktg	602-839-6288
CA San Jose, Tri-Par Assoc	408-263-7133
FL Apopka, Micro Mktg	407-889-2022
GA Duluth, New Age Elctrn Inc	404-476-0079
IL Des Plaines, Elctrn Mktg	708-298-2330
IN Indianapolis, HI Tek	317-887-2564
MA Sterling, Compatible Comps Inc	508-422-3327
MN New Hope, Customer 1st Inc	612-533-5604
NY Jericho, J-Square Mktg	516-935-3200
OH Beachwood, Elctrn Salesmaster Inc	216-831-9555
OR Oloha, Cain-Sweet & Co	503-591-0647
WA Bellevue, Cain-Sweet & Co	206-462-2118
Can B.C., Burnaby, Cain-Sweet & Co	604-420-6886
Intl England, Hants, Calogic Corp.	0-256-51569

IC MASTER

Intl	France, Les Ulis Cedex, Micro Puissance	1-69-07-1211
Intl	Germany, Metzingen, Ingenieurbuero	07123-20169
Intl	Israel, Tirat-Yehuda, El-Gev Electrms Ltd	03-9712056
Intl	Italy, Assago (MI), Eurelettronica S.p.A.	02-457841
Intl	Sweden, Bro, Repretech	08-58243125

Distributors

AL	Huntsville, CDI	205-851-7800, 800-888-0331
CO	Littleton, CDI	303-770-6214, 800-551-7357
FL	Clearwater, CDI	813-796-0466
FL	Palm Bay, CDI	407-724-9910, 800-558-2351
GA	Norcross, CDI	404-441-3320, 800-874-7209
NJ	Bloomfield, Solid State Inc	800-631-2075
NJ	Dover, Electrospec	201-361-6300
NY	Bohemia, Edge Electrms	516-567-6300
TX	Dallas, CDI	214-644-0373, 800-848-4234
Intl	Denmark, Aabyhoj, Tech Partner	86-250055
Intl	Germany, Diez, Milgray Elektronik	06432-1073
Intl	Germany, Hamburg, Ingenieurbuero Karl-Heinz Dreyer	040-66-90-27
Intl	Germany, Ludwigsburg, Manz-Electrm-Systeme	07141-86-01-63
Intl	Germany, Muenchen, Protec GmbH	089-609-70-01
Intl	Germany, Osnabruck, Milgray Elektronik Vertriebs GmbH	0541-139080
Intl	Germany, Schleswig, Ingenieurbuero Karl-Heinz Dreyer (Main Off)	04621-2-40-55
Intl	Italy, Assago (MI), Eurelettronica S.p.A.	02-457841
Intl	Italy, Modena, Eurelettronica S.p.A.	059-235996
Intl	Italy, Roma, Eurelettronica S.p.A.	06-86800842
Intl	Japan, Tokyo, Hirel Co. Ltd	081-3-260-8401
Intl	Norway, Lillestrom, Boxab Norge	47-63033600
Intl	Santa Clara, CA, Kortek International	408-970-0821
Intl	Sweden, Soina, Nord Comp	08-7646710
Intl	U.K., England, Yateley/Camberley Surrey, Consort Elect Lid	0252-871717

CATALYST RESEARCH, Mine Safety Appliances Company, 3706 Crondall Lane, Owings Mills, Maryland 21117, Tel: 301-356-2400, TELEX: 87-768, FAX: 301-581-0346



FAX: 408-980-8209

CATALYST SEMICONDUCTOR, 2231 Calle de Luna, Santa Clara, CA 95054, Tel: 408-748-7700, FAX: 408-980-8209

Sales Office & Representatives

CA	Santa Clara, Catalyst Semi Inc (Southwest/Northwest/Far East)	408-748-7700
FL	Altamonte Springs, Catalyst Semi, Inc (Southeast)	407-682-1995
IL	Schaumburg, Catalyst Semi, Inc (Central)	708-240-1253
NH	Nashua, Catalyst Semi, Inc (Northeast)	603-888-9053
Intl	Belgium, Strombeek, Catalyst Semi, Inc (Northern/Southern Europe)	32-2-267-7025
Intl	Germany, Hamburg, Catalyst Semi, Inc (Central Europe)	49-40-209-9955
Intl	Japan, Tokyo, Nippon Catalyst KK.	81-3-5389-6311

CE INFOSYS OF AMERICA, INC., 512-A Herndon Parkway, Herndon, Virginia 22070, Tel: 703-435-3800, FAX: 703-435-5129

CERMETEK MICROELECTRONICS, INC., 1308 Borregas Avenue, P.O. Box 3565, Sunnyvale, California 94089, Tel: 408-752-5000, TWX: 910-379-6931, FAX: 408-752-5004

Sales Office & Representatives

AL	Huntsville, WLA & Assoc.	205-721-1788
CA	San Diego, Earl Assoc.	619-278-5441
CA	San Jose, HTS I	408-453-2111
CO	Parker, Parker-Webster Co.	303-841-4888
CT	Cheshire, Datatrack Engrn	203-271-1311
FL	Altamonte Spring, Vg Sales Co. Inc.	407-831-8688
FL	Ft. Lauderdale, Vg Sales Co. Inc.	305-938-4333
FL	Largo, Vg Sales Co. Inc.	813-536-7787
GA	Norcross, EnVision, Inc.	404-840-1055
ID	Boise, Harris Mktg, Inc.	208-338-6515
IL	Itasca, LTD Technlgs, Inc.	708-773-2900
IN	Fishers, CMP, Inc.	317-842-9277
IA	Marion, A.E.M. Inc.	319-377-1129
KS	Lenexa, A.E.M. Inc.	913-888-0022
MD	Baltimore, Muncy Sales	410-484-6376
MA	Woburn, Compass Technlg, Inc.	617-933-3336
MI	Farmington Hills, CMP, Inc.	313-477-7700
MN	Eden Prairie, Aldridge Assoc.	612-944-8433
MO	Bridgeton, A.E.M. Inc.	314-298-9900
NJ	Teaneck, Strategic Sales Inc.	201-833-0099
NM	Albuquerque, SynTech	505-266-7951
NY	Rochester, Lamb Comps, Inc.	716-328-6350, 315-255-2116
NC	Raleigh, EnVision, Inc.	919-231-9939
OH	Dayton, Bell Inds	513-435-5922
OH	Englewood, CMP, Inc.	513-836-0951
OH	Parma, CMP, Inc.	216-398-0400
OH	Solon, Bell Inds	216-498-2002
OR	Beaverton, L-Squared Ltd.	503-629-8555
PA	Pittsburgh, CMP, Inc.	412-826-3800
PA	Trevoise, Bell Inds	215-953-2899
SC	Columbia, EnVision, Inc.	803-699-3360
TN	Nashville, EnVision, Inc.	615-662-7666
TX	Austin, Comp Tech.	512-288-7328
TX	Dallas, Comp Tech	214-783-8831
TX	Houston, Comp Tech.	713-690-3011
UT	Murray, Parker-Webster Co.	801-266-9939
VA	Sterling, Beacon North Inc.	703-478-2480
WA	Kirkland, L-Squared Inc.	206-827-8555
Can	British Columbia, Vancouver, Birde Mktg Inc.	604-431-0426
Can	Ontario, Markham, Birde Mktg Inc.	416-477-7722
Can	Ontario, Ottawa, Birde Mktg Inc.	613-592-5411
Can	Quebec, St. Laurent, Birde Mktg Inc.	514-335-4050
Intl	Belgium, Brussels, Master Chips PVBA	011-32-2-219-58-62
Intl	Hong Kong, Electrn Scientific Eng	011-852-5592041
Intl	Israel, Rishon Le Zion, Odem Adv Electrms	011-972-3-966-0340
Intl	Korea, Seoul, A-Men Trading Co	011-82-2-587-9701
Intl	Singapore, Bubble Memories Agency	011-65-4693193
Intl	Taiwan, Taipei, ROC, Fairply Enterprises Inc	011-886-2-321-5496
PR	Mayaguez, Vg Sales Co., Inc	809-831-4150

Distributors

AZ	Tempe, Bell Inds	602-966-3600
CA	Agoura Hills, Bell Inds	818-879-9492
CA	Cypress, Bell Inds	714-895-7801
CA	Los Angeles, Bell Inds (Hdqtrs)	310-826-2355
CA	Los Angeles, Bell Inds	310-473-7693
CA	Rocklin, Bell Inds	916-652-0418
CA	San Diego, Bell Inds	619-268-1277
CA	Santa Fe Springs, Bell Inds	310-921-1580
CA	Sunnyvale, Bell Inds	408-734-8570
CO	Denver, Bell Inds	303-691-9270
CT	Meriden, Bell Inds	203-639-6000
FL	Altamonte Spring, Bell Inds	407-339-0078
GA	Norcross, Bell Inds	404-446-7176
IL	Elk Grove Village, Bell Inds	708-640-1910
IN	Ft. Wayne, Bell Inds	219-422-4300
IN	Indianapolis, Bell Inds	317-875-8200
MD	Columbia, Bell Inds	410-290-5100
MA	Andover, Bell Inds	508-474-8880

NJ	Fairfield, Bell Inds	201-227-6060
NM	Albuquerque, Bell Inds	505-292-2700
OH	Dayton, Bell Inds	513-434-8231
OR	Beaverton, Bell Inds	503-644-3444
TX	Richardson, Bell Inds	214-690-0482
UT	Midvale, Bell Inds	801-561-9691
WA	Redmond, Bell Inds	206-881-2140
WI	Waukesha, Bell Inds	414-547-8879
Intl	Australia, Burwood, Veltek Pty Ltd	011-613-808-7511

Intl	Belgium, Brussels, Master Chips PVBA	011-32-2-219-58-62
Intl	Finland, Dalma Electrms Oy	011-358-0-271-1800
Intl	Holland, Hattem, COMEX Tech Trading	011-31-520641214
Intl	Spain, Madrid, Amiron-Arrow S.A.	011-34-1-5420906
Intl	Switzerland, Zurich, Egli, Fischer & Co. Ltd	011-41-1-2098111

CHERRY SEMICONDUCTOR

CORPORATION, 2000 South County Trail, East Greenwich, Rhode Island 02818, Tel: 401-885-3600, TELEX: WUI-6817157, FAX: 401-885-5786

CHIPS AND TECHNOLOGIES,

INCORPORATED, 3050 Zanker Road, San Jose, California 95134, Tel: 408-434-0600, TWX: 272929 CHIPS UR

CIRRUS LOGIC, INC., 3100 W. Warren Ave, Fremont, California 94538, Tel: 510-623-8300

Sales Office & Representatives

AL	Huntsville, REP, Inc.	205-881-9270
AZ	Tempe, Altek Comps	602-345-4575
AZ	Tucson, Altek Comps	602-529-0443
CA	Milpitas, BT Sales	408-263-9366
CA	Mission Viejo, Crystal Semiconductor	714-348-8770
CA	San Diego, Quest Rep	619-565-8797
CA	San Jose, Cirrus Logic Sls Off (Northwest)	408-436-7110
CA	San Jose, Crystal Semiconductor	408-437-7743
CA	Simi Valley, Dynarep, Inc.	818-591-7366
CA	Thousand Oaks, Cirrus Logic Sls Off (SouthWest)	805-371-5381
CA	Tustin, Cirrus Logic Sls Off (SouthWest)	714-258-8303
CA	Tustin, Dynarep, Inc.	714-258-8002
CO	Denver, Cirrus Logic Sls Off (Rocky Mt. Area)	303-786-9696
CO	Longmont, Luscombe Engrn	303-772-3342
CT	Wallingford, Technology Sales, Inc.	203-269-8853
FL	Boca Raton, Cirrus Logic Sls Off (Southeastern Area)	407-362-5225
FL	Maitland, EIR Inc.	407-660-9600
GA	Tucker, REP, Inc.	404-938-4358
ID	Meridian, Intermountain Tech Mktg	208-888-6071
IL	Chicago, Cirrus Logic (Central)	708-490-5940
MD	Columbia, Thirdwave Solutions Inc.	301-290-5990
MA	Andover, Cirrus Logic Sls Off (Northeastern Area)	508-474-9300
MA	North Andover, Crystal Semiconductor	508-794-1194
MA	Waltham, Technology Sales, Inc.	617-890-5700
MI	Plymouth, Jay Mktg Assoc. Inc.	313-459-1200
MI	Minneapolis, Reptek, Inc.	612-331-1212
NY	Calverton, RGK Co.	516-369-9732
NY	Fairport, Technology Sales, Inc.	716-223-7500
NY	Ithaca, Technology Sales, Inc.	607-257-7070
NC	Charlotte, REP, Inc.	704-563-5554
NC	Morrisville, REP, Inc.	919-469-9997
NC	Raleigh, Crystal Semiconductor	919-846-4832
OH	Beachwood, Thompson & Assoc	216-831-6277
OH	Dayton, Thompson & Assoc	513-435-7733
OH	Orient, Thompson & Assoc	614-877-4304
OR	Beaverton, Electra Tech Sales	503-643-5074
PA	Philadelphia, Cirrus Logic Sls Off (Northeastern Area)	215-625-0781
PA	Plymouth Meeting, CMS Mktg	215-834-6840
TN	Jefferson City, REP, Inc.	615-475-4105
TX	Austin, Cirrus Logic Sls Off (So. Central Area)	512-794-8490
TX	Austin, Crystal Semiconductor	512-445-7222

MANUFACTURERS & DISTRIBUTORS DIRECTORY

MFGS & DIST DIRECTORY

TX	Plano, Cirrus Logic Sls Off (So. Central Area)	214-985-2334
UT	Salt Lake City, Luscombe Engrn	801-268-3434
WA	Kirkland, Electra Tech Sales	206-821-7442
WI	Milwaukee, Coombs Assoc, Inc.	414-351-6123
Can Alb.	Calgary, Intelatech Inc	403-230-3190
Can Ont.	Ottawa, Intelatech Inc.	613-769-5618
Can Ontario,	Mississauga, Intelatech Inc.	416-629-0082
Intl	Finland, Helsinki, IE Oy	358-90-351-3133
Intl	France, Voisins-le-Bretonneux, Eurocomposant	1-30-649515
Intl	Germany, Herrsching, Cirrus Logic Sls Off	49-08152-2030
Intl	Germany, Markt Zudersdorf, APZ Elektronik	49-8136-7092
Intl	Germany, Planegg, Scantec GmbH	49-9-859-8021
Intl	Hong Kong, Tsimshatsui, Lestina Intl	852-7351736
Intl	India, Bangalore, Malhar Sales	12-56-8772
Intl	Ireland, Limerick, Memec Ireland Ltd.	353-61-411842
Intl	Italy, Milano, Elco MI S.R.L.	39-2-619-6452
Intl	Japan, Tokyo, Cirrus Logic Sls Off	81-3-3340-9111
Intl	Japan, Tokyo, Marubun Corp.	81-3-3639-9844
Intl	Japan, Tokyo, Dia Semicon Sys	81-3-3439-2700
Intl	Korea, Seoul, Crown Corp.	82-2-521-9527
Intl	Norway, Hvalstad, BIT Electronikk AS.	47-2-981-370
Intl	Singapore, Cirrus Logic Sls Off	65-3532122
Intl	Sweden, Sdansa, Egevo Elektronik AB	46-8-795-9650
Intl	Switzerland, Liebefeld Bern, Modulator Komponenten AG	41-31-59-2222
Intl	Taiwan, Taipei, Micromax	886-2-718-8306
Intl	Taiwan, Taipei ROC, Cirrus Logic Sls Off	886-2-718-4533
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Intl	U.K., Berkshire, Sequoia Tech	44-734-311822
Intl	U.K., Hertfordshire, Cirrus Logic Sls Off	44-0727-872424
PR	San German, Technology Sales, Inc.	809-892-4745

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CORPORATION, Microcircuits Division, 2000 West 14th Street, Tempe, Arizona 85281, Tel: 602-921-4545, FAX: 602-921-6298

COMLINEAR CORPORATION, 4800 Wheaton Dr., Fort Collins, Colorado 80525, Tel: 303-226-0500, 800-776-0500, FAX: 303-226-0564

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AZ	Tempe, Cain Technlg	602-966-4322
CA	Los Altos, Cain White & Co	415-948-6533
CA	Van Nuys, Cain Technlg	818-904-9392
CO	Englewood, Front Range Microwave	303-791-4405
FL	Clearwater, Beacon Elctms	813-796-2378
FL	Longwood, Beacon Elctms	407-332-1940
GA	Atlanta, Beacon Elctms	404-256-9640
IL	Arlington Heights, Dytec Central	708-394-3380
IN	Indianapolis, Dytec Central	317-578-0474
MA	Lexington, R.J. Sickles Assocs	617-862-5100
MN	Edina, Ohms Technlg	612-932-2920
NM	Albuquerque, Nelco TWO Co	505-293-1399
NY	Kings Park, U.S. Tech Mktg	516-724-4250
NY	Skaneateles, Robtron	315-685-5731
NC	Raleigh, Beacon Elctms	919-787-0330
OH	Worthington, Cain-Forlaw Co, Inc	614-436-3004
TN	Knoxville, Beacon Elctms	615-691-0062
TX	Dallas, The Thorson Co	214-233-5744
VA	Sterling, Beacon North	800-877-3747
WA	Bellevue, Cain Sweet & Co	206-462-2118
Can B.C.	Burnaby, Cain Sweet Canada	604-420-6866
Can Ont.	Kanata, RF Microwave, Ltd	613-592-3379
Can Que.	St. Laurent, RF Microwave, Ltd	514-335-2335
Intl	Belgium, Halle, Tekelec Belgium NV/SA	011-32-2-3601288

Intl	Czechoslovakia, Prague, Transtech Praha spol. s.r.o.	011-42-2-806-753
Intl	Denmark, Copenhagen, Exatec A/S	011-45-31-19-10-22
Intl	England, Birmingham, Joseph Elctms, Ltd	011-4421-643-6999
Intl	France, Les Ulis, Cedex, Micro Puissance	011-33-1-69071211
Intl	Germany, Heilbronn, Transtech Hochfrequenztechnik GmbH & Co. KG	011-49-7131-593-0
Intl	Germany, Munich, Transtech Hochfrequenztechnik GmbH & Co KG	011-49-89-843017
Intl	Israel, Tel-Aviv, Elul Technlgs, Ltd	011-972-3-6970707
Intl	Italy, Milano, Microelit S.P.A.	011-39-2-4817900
Intl	Japan, Tokyo, Internix, Inc	011-81-33-3691101
Intl	Netherlands, Zoetermeer, Tekelec Airtronic B.V.	011-31-7-9310100
Intl	S. Korea, Seoul, Hanaro Corp	011-82-2-516-1144
Intl	Spain, Madrid, Anatronc, S.A.	011-34-1-542-4455
Intl	Sweden, Kista, Dipcom Elctms	011-46-8-7522480
Intl	Switzerland, Wettingen, Transtech Hochfrequenz AG	011-41-56-271893
Intl	Taiwan ROC, Taipei, Evergo Elctms Corp	011-886-2-7150283
Intl	United Kingdom, England, Joseph Elctms, Ltd	011-4421-643-6999

Distributors

AL	Huntsville, Comps Dists, Inc	205-851-7800
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CA	Sunnyvale, Penstock, Inc	408-730-0300
CA	West Lake Village, Sertek, Inc	805-375-6680
CO	FL Collins, Comlinear Corp	800-776-0500
FL	Palm Bay, Comp Dists, Inc	407-724-9910
GA	Norcross, Comp Dists, Inc	404-441-3320
MA	Lexington, Sickles Dists Sls	617-862-5100
NY	Skaneateles, Robtron Sales Co	315-685-5731
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Intl	Belgium, Halle, Tekelec Belgium NV/SA	011-32-2-3601288
Intl	Czechoslovakia, Prague, Transtech Praha spol s.r.o.	011-42-2-806-753
Intl	Denmark, Copenhagen, Exatec A/S	011-45-31-19-10-22
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Intl	Germany, Heilbronn, Transtech Hochfrequenztechnik GmbH & Co. KG	011-49-7131-593-0
Intl	Germany, Munich, Transtech Hochfrequenztechnik GmbH & Co. KG	011-49-89-843017
Intl	Israel, Tel-Aviv, Elul Technologies, Ltd	011-972-3-6970707
Intl	Italy, Milano, Microelit S.P.A.	011-39-2-4817900
Intl	Japan, Tokyo, Internix, Inc	011-81-33-3691101
Intl	Netherlands, Zoetermeer, Tekelec Airtronic B.V.	011-31-7-9310100
Intl	S. Korea, Seoul, Hanaro Corp	011-82-2-516-1144
Intl	Spain, Madrid, Anatronc, S.A.	011-34-1-542-4455
Intl	Sweden, Kista, Dipcom Elctms	011-46-8-7522480
Intl	Switzerland, Wettingen, Transtech Hochfrequenz AG	011-41-56-271893
Intl	Taiwan ROC, Taipei, Evergo Elctms Corp	011-886-2-7150283
Intl	U.K., England, Birmingham, Joseph Elctms, Ltd	011-4421-643-6999

COMMODORE SEMICONDUCTOR GROUP.

950 Rittenhouse Road, Norristown, PA 19403, Tel: 215-666-7950, FAX: 215-647-0791

Sales Office & Representatives

CA	Laguna Hills, H-Tech Sales, Inc.	714-583-1488
CA	Los Gatos, Commodore Semiconductor Group	408-395-3303
CA	Santa Clara, Pinnacle Sales Corp.	408-249-7400
CO	Aurora, High Tech Assoc	303-695-1990
IL	Elgin, RHI Sales Corp	312-888-0099
MD	Baltimore, Conroy Sales Company	301-296-2444
MA	Woburn, Alpha Omega	617-933-0237
NJ	Cherry Hill, Vantage Sales Company	609-424-6777

OR	Beaverton, Quest Mktg	503-641-7377
WA	Bellevue, Quest Mktg	206-747-9424

CONTROL DATA, Computer Systems and Services,
P.O. Box 0, Minneapolis, Minnesota 55440, Tel: 612-853-8390

CONTROL DATA, Scientific Information Services,
8100-34th Ave. South, Minneapolis, Minnesota 55420, Tel: 612-853-3511

CORNES U.S.A. LTD., 9010 Miramar Road, Suite 100, San Diego, California 92126, Tel: 619-586-6200, FAX: 619-586-0529

Sales Office & Representatives
Intl England, London, Cornes UK Ltd. 71-253-3744
Intl Japan, Tokyo, Cornes & Co, Ltd. 03-272-5771

Distributors
CA San Diego, Cornes USA Ltd 619-586-6200

CROSSPOINT SOLUTIONS, INC., 5000 Old Ironsides Drive, Santa Clara, California 95054, Tel: 408-988-1584, FAX: 408-980-9594

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AZ Phoenix, Sun State Tech Sls 602-220-0595
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CA Mt. View, Nexus, Inc 415-691-1100
CA Santa Clara, Crosspoint Solutions, Inc (HQ) 408-988-1584
CA Tustin, Dynarep, Inc 714-258-8002
CA Woodland Hills, Dynarep, Inc 818-346-2200
CO Boulder, Front Range Mktg 303-443-4780
CO Littleton, Lange Sls 303-795-3600
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FL Longwood, Beacon Elctm Assocs 407-332-1940
FL W. Palm Bch, Beacon Elctm Assocs 407-966-4741
GA Atlanta, Beacon Elctm Assocs 404-256-9640
ID Boise, Lange Sls 208-323-0713
IL Rolling Meadows, Eagle Tech Sls 708-991-0700
IN Kokomo, Skylines Sls 317-452-6500
MA Burlington, New Tech Solutions, Inc 617-229-8888

MA Concord, Crosspoint Solutions, Inc ... 508-287-0303
MN Edina, GP Sls, Inc 612-831-2362
NJ Mt. Laurel, S-J Mid-Atlantic, Inc 609-866-1234
NY Rochester, Micro-Tech Mktg, Inc 315-458-5254
NY Rockville Centre, S-J Assocs, Inc 516-536-4242
NC Raleigh, Beacon Elctm Assocs 919-787-0330
OH Cincinnati, Applied Data Mgt 513-579-8108
SC Greenville, Beacon Elctm Assocs 803-297-7830
TN Knoxville, Beacon Elctm Assocs 615-691-0062
TX Austin, Vielock Assocs 512-345-8498
TX Houston, Vielock Assocs 713-974-3287
TX Plano, Vielock Assocs 214-881-1940
UT Salt Lake City, Lange Sls 801-487-0843
VA Falls Church, S-J Chesapeake, Inc 703-533-2233
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Can Ont., Mississauga, INTELATECH Inc 416-629-0082
Can Ont., Nepean, INTELATECH Inc 613-769-5618
Can Que., Montreal, INTELATECH Inc 514-369-1317

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Intl Austria, Vienna, Thomas NEUROTH GmbH 43-1-82-56-45
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Intl France, Rungis Cedex, Misil 33-1-45-60-00-21
Intl Germany, Munich, Tekelec Airtronic GmbH 49-089-5164-0
Intl Hong Kong, Chai Wan, Synthesis Sys Design, Ltd 852-557-1102
Intl Italy, Milan, EL. CO. MI 39-02-6196452
Intl Japan, Tokyo, ASCII & Mitsui Co Semi Corp 81-03-3486-9188
Intl Japan, Tokyo, Soliton Sys K.K. 81-03-3356-6310
Intl Korea, Seoul, I&C Microsystems Co Ltd 82-02-577-9131

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Intl	Norway, Oslo, Art Chip A/S	47-2-656
Intl	Switzerland, Langenthal, Memotec AG	
		41-63-28-11-22
Intl	U.K., England, AM&T	44-272-237594

CRYSTAL SEMICONDUCTOR CORP., 4210 S Industrial Dr., Austin, Texas 78744, Tel: 512-445-7222, FAX: 512-445-7581

Sales Office & Representatives

AL	Huntsville, Currie, Peak & Frazier, Inc	205-536-1506
AZ	Scottsdale, Western High Tech Mktg, Inc.	602-860-2702
CA	Fountain Valley, Bager Electrms	714-957-3367
CA	Mission Viejo, Crystal Semiconductor Corp.	714-348-8770
CA	Roseville, NORCOMP, Inc	916-782-8070
CA	San Diego, Earle Assoc, Inc.	619-278-5441
CA	San Jose, Crystal Semiconductor Corp.	408-437-7743
CA	Santa Clara, NORCOMP, Inc	408-727-7707
CA	Woodland Hills, Bager Electrms	818-712-0011
CO	Denver, Promo Tech	303-692-8484
FL	Orlando, Currie, Peak & Frazier, Inc	407-855-0843
GA	Duluth, Currie, Peak & Frazier, Inc	404-497-9404
IL	Itasca, Micro Sales Inc.	708-285-1000
IN	Carmel, TMC Electrms	317-844-8462
IN	Ft. Wayne, TMC Electrms	219-432-5553
IN	Kokomo, TMC Electrms	317-459-5152
IA	Cedar Rapids, Stan Clothier Co.	319-393-1576
KS	Olathe, Stan Clothier Co.	913-829-0073
KY	Louisville, TMC Electrms	502-245-7411
MD	Severna Park, New Era Sales, Inc.	410-544-4100
MA	North Andover, Crystal Semiconductor Corp.	508-794-1194
MA	North Reading, Alpha-Omega Sales Corp.	508-664-1118
MI	Grand Rapids, J.M.J. & Assoc, Inc.	616-285-8887
MN	Plymouth, The Twist Co.	612-550-0922
MO	St. Charles, Stan Clothier Co.	314-928-8078
NJ	Cherry Hill, Vantage Sales Co.	609-424-6777
NJ	Fort Lee, Nexus Technology Sales	201-947-0151
NY	Ithaca, Bob Dean, Inc.	607-257-1111
NY	Wappingers Falls, Bob Dean, Inc.	914-297-6406
NC	Greensboro, Currie, Peak & Frazier, Inc	919-373-0380
NC	Raleigh, Crystal Semiconductor Corp.	919-846-4832
OH	Cincinnati, TMC Electrms	513-271-3860
OH	Middleburg Heights, TMC Electrms	216-885-5544
OR	Portland, Electrms Engr Sales	503-639-3978
TX	Austin, Crystal Semiconductor Corp.	512-445-7222
TX	Austin, TL Maarketing, Inc.	512-837-7272
TX	Dallas, TL Mktg	214-490-9300
TX	Houston, TL Mktg, Inc.	713-587-8100
UT	Bountiful, Anderson Assoc	801-292-8991
VA	Charlottesville, New Era Sales, Inc.	804-979-2470
WA	Redmond, Electrm Engr Sales	206-883-3374
WI	Brookfield, Micro Sales, Inc.	414-786-1403

Distributors

AL	Huntsville, Reptron Electrms	205-722-9500
AL	Huntsville, Nu Horizons Electrms	205-722-9330
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AZ	Tucson, Insight Electrms	602-792-1800
CA	Irvine, Insight Electrms	714-727-3291
CA	Los Angeles, Insight Electrms	213-466-1196
CA	San Diego, Insight Electrms	619-587-0471
CA	San Fernando Valley, Insight Electrms	818-707-2100
CA	San Gabriel, Insight Electrms	818-358-0389
CA	Sunnyvale, Insight Electrms	408-720-9222
CO	Aurora, Insight Electrms	303-693-4256
FL	Fort Lauderdale, Nu Horizons Electrms	305-735-2555
GA	Norcross, Nu Horizons Electrms	404-416-8666
IL	Schaumburg, Reptron Electrms	708-882-1700
MD	Columbia, Nu-Horizons Electrms	410-995-6330
MA	Wilmington, North Star Electrms	508-657-5155
MI	Livonia, Reptron Electrms	313-525-2700
MN	Minnetonka, Reptron Electrms	612-938-0000
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NJ	Mt. Laurel, Nu Horizons Electrms	609-231-0800
NJ	Pine Brook, Nu-Horizons Electrms	201-882-8300

NY	North Amityville, Nu-Horizons Electrms	516-226-6000
NY	Rochester, Nu-Horizons Electrms	716-292-0777
NC	Raleigh, Reptron Electrms	919-870-5189
OH	Solon, Reptron Electrms	216-349-1415
OH	Worthington, Reptron Electrms	614-436-6675
OR	Beaverton, Insight Electrms	503-644-3300
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Intl Portugal, Lisboa, Amilton Arrow Electrna Lda	351-1-3621-283/4
Intl Spain, Madrid, Amilton Arrow S.A.	34-1-541-54-02, 34-1-542-09-06
Intl Sweden, Solna, NC Nordcomp Sweden AB	46-8-764-6710
Intl Switzerland, Regensdorf, Eurodis Electrn AG	41-1-843-31-11
Intl Switzerland, Zurich, Futurel	41-1-632-57-31
Intl Taiwan, Taipei ROC, Solomon Technlg Corp	886-2-760-58-58
Intl Turkey, Geneve, Fudem Trading SA.	022-311-98-22
Intl U.K., Essex, Pronto Elctrn Sys Ltd	44-81-554-5700

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AZ Scottsdale, Fred Board Assocs	602-994-9388
AZ Tucson, Fred Board Assocs	602-299-1508
CA Cupertino, Costar, Inc	408-446-9339
CA Encinitas, Bager Electrms	619-632-8816
CA Fountain Valley, Bager Electrms	714-957-3367
CA Woodland Hills, Bager Electrms	818-712-0011
CO Colorado Springs, Western Region Mktg	719-548-8282
CO Westminster, Western Region Mktg	303-428-8088
FL Casselberry, Dyne-A-Mark	407-831-2822
GA Norcross, Concoro Comp	404-416-9597
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IN Indianapolis, C.C. Electro Sales, Inc	317-921-5000
KS Shawnee Mission, Microtronics	913-262-1444
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MA Needham Heights, Rosen Assocs, Inc	617-449-4700
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NJ Parlin, JMR Sales, Inc	908-525-8000
NY Pittsford, Elcom Sales, Inc	716-385-1400
NY Skaneateles, Elcom Sales, Inc	315-685-8967
NY Wading River, Niktronics	516-929-4671
NC Raleigh, WLA & Assocs	919-231-9939
OH Sheffield, J.D. Babb	216-934-4454
OR Portland, Matrex Sales	503-245-8080
PA Trevoese, Omega Electrn Sales	215-244-4000
SC Columbia, WLA & Assocs	803-699-3360
TX Austin, Comp Tech Sales	512-288-7328
TX Dallas, Comp Tech Sales	214-783-8831
TX Houston, Comp Tech Sales	713-690-3011
UT Salt Lake City, Western Region Mktg	801-268-9768
WA Bellevue, Matrex Sales	206-643-0363
WI Milwaukee, LTD Technologies	414-774-1000
Can Ont, Markham, Epson Mfg	416-479-8866

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AL Huntsville, Bell Incls, Inc	205-722-9330
AZ Scottsdale, Electrn Supply	800-622-3726
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CA Cypress, Bell Incls, Inc	714-895-7801
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CA Los Angeles, Bell Incls, Inc	310-826-2355
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CA Rocklin, Bell Incls, Inc	916-652-0414
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CA San Diego, Bell Incls, Inc	619-268-1277
CA San Diego, Electrn Supply	619-693-8222
CA San Jose, Electrn Supply	408-453-3770
CA San Jose, Merit Electrms, Inc	408-434-0800
CA Sunnyvale, Bell Incls, Inc	408-734-8570
CA Sunnyvale, Integrated Electrms	408-734-8500

CO Denver, Bell Incls, Inc	303-691-9010
CO Denver, Integrated Electrms	303-292-5537
CT Nu Horizons Electrms Corp	203-265-0162
CT Wallingford, Cronin Electrms, Inc.	203-265-3134
CT Wallingford, Bell Incls, Inc	203-269-6901
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FL Ft. Lauderdale, Bell Incls, Inc	305-421-1997
FL Ft. Lauderdale, Bell Incls, Inc	305-735-2555
FL Melbourne, Pro-Formance Electrms	407-788-2856
FL Tampa, Bell Incls, Inc	813-541-4434
GA Norcross, Bell Incls, Inc	404-446-7167
GA Norcross, Bell Incls, Inc	404-416-8666
IL Bensenville, Voyager Electrms	708-860-1300
IL Elk Grove Village, Bell Incls, Inc	708-640-1910
IL Hoffman Estates, Integrated Electrms	708-843-2040
IL Urbana, Bell Incls, Inc	217-328-1077
IN Ft. Wayne, Bell Incls, Inc	219-423-3422
IN Indianapolis, Bell Incls, Inc	317-875-8200
IN Indianapolis, Custom Service Electrms	317-879-9119
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KS Olathe, ECS, Inc	913-782-7787
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KY Bell Incls, Inc	800-445-8795
MD Columbia, Bell Incls, Inc	410-995-6330
MD Jessup, Bell Incls, Inc	301-290-5100
MA Andover, Bell Incls, Inc	508-474-8880
MA Needham, Cronin Electrms, Inc	617-449-5000
MA Wakefield, Nu Horizons Electrms Corp	617-246-4442
MI Bell Incls, Inc	800-937-2355
MN Bell Incls, Inc	612-941-1493
MN Fridley, Voyager Electrms	612-571-7766
MN Thief River Falls, Digi-Key Corp	612-944-5855
MO Bell Incls, Inc	314-647-2355
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NJ Mt. Laurel, Bell Incls, Inc	609-231-0900
NJ Pine Brook, Nu Horizons Electrms Corp	201-882-8300
NM Albuquerque, Bell Incls, Inc	505-292-2700
NY Amityville, Nu Horizons Electrms Corp	516-226-6000
NY E. Setauket, Dove Electrms	516-689-7733
NY Rochester, Nu Horizons Electrms Corp.	716-292-0777
NC Bell Incls, Inc	919-821-4041
OH Dayton, Bell Incls, Inc	513-435-8660
OH Dayton, Bell Incls, Inc	513-434-8231
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TN Bell Incls, Inc	615-367-4400
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TX Austin, Omni-Pro Electrms	512-794-9200
TX Carrollton, Omni-Pro Electrms	214-713-9000
TX Dallas, Norvell Electrms, Inc	214-233-0020
TX Houston, Norvell Electrms, Inc	713-462-1666
TX Houston, Omni-Pro Electrms	713-270-1700
TX Richardson, Bell Incls, Inc	214-690-0466
UT Midvale, Bell Incls, Inc	801-255-9611
UT West Valley City, Integrated Electrms	801-977-9750
VA Vienna, Dove Electrms	703-893-1821
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WA Bellevue, Integrated Electrms	206-455-2727
WI Waukesha, Bell Incls, Inc	414-547-8879

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CA Cupertino, PEI Assocs.	408-253-1960
CA Garden Grove, ElSCO Elec.	714-891-4621

IC MASTER

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CT	Bloomfield, SIR Assocs.	203-243-9343
FL	Orlando, Richmar Assocs.	407-352-3755
GA	Atlanta, Electrn Mktg. Assocs.	404-448-1215
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IN	Indianapolis, Richmar Elec.	317-577-9950
IA	Iowa City, Richmar Elec.	319-354-8894
MA	Westford, SIR Assocs.	508-692-2500
MA	Whitinsville, Power Factor & Assocs	
		508-234-6415
NJ	Parlin State, JMR Sls.	201-525-8000
NY	Wading River, Niktronics	516-929-5756
NC	Raleigh, Electrn Mktg. Assocs.	919-847-8800
SC	Greenville, Elec. Mktg. Assoc.	803-233-4637
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CA	Cerritos, Exar Corp (Southern)	231-860-1919
CA	Costa Mesa, Competitive Technlg	714-540-5501
CA	Escondido, Eagle Tech Sls	619-743-6550
CA	San Jose, Exar Corp (Northern)	408-434-6400
CA	San Jose, Tri Par	408-262-3190
CO	Boulder, Front Range Mktg	303-443-4780
FL	Altamonte Springs, Semtronic Assocs	
		407-831-8233
FL	Clearwater, Semtronic Assocs	813-461-4675
FL	Ft. Lauderdale, Semtronic Assocs	305-731-2484
GA	Norcross, Interep Assocs	404-449-8680
IL	Mt. Prospect, Exar Corp (Central)	708-670-7062
IL	Northbrook, Dolin Sls Co Inc	708-498-6770
IN	Kokomo, Schillinger Assocs Inc	317-457-7241
IA	Cedar Rapids, C.H. Horn & Assoc	319-393-8703
KS	Wichita, DLE Elctrns	316-683-6400
MD	Columbia, Cheasapeake Technlg Inc	
		410-740-2993
MA	Burlington, Exar Corp (Eastern)	617-273-3927
MA	Tewksbury, A/D Sls	508-851-5400
MI	Ann Arbor, Exar Corp (Central)	313-994-1423
MI	Farmington Hills, Action Comps Sls	313-442-9880
MO	St. Louis, The John G. Macke Co	314-432-2830
NJ	Haddonfield, Sunday-O'Brien	609-429-4013
NM	Albuquerque, System Sls of Ariz.	505-889-2901
NY	Buffalo, Quality Comps	716-837-5430
NY	Central Islip, Exar Corp (Eastern)	516-582-4420
NY	Manlius, Quality Comps	315-682-8885
NC	Raleigh, Zucker Assocs	919-782-8433
TN	Greenville, Interep Inc	
		615-639-3491, 615-639-3492
TX	Austin, Bravo Sls Inc	512-836-8323
TX	Dallas, Bravo Sls Inc	214-250-2900
TX	Lewisville, Exar Corp (Central)	214-315-2182
TX	Tomball, Bravo Sls Inc	713-320-0500
UT	Murray, Front Range Mktg	801-566-2500
WI	Glendale, Dolin Sls Co Inc	414-482-1111
Can	Ont., Brampton, Clark Hurman Assoc	
		416-840-6066
Can	Ont., Nepean, Clark Hurman Assoc	613-727-5626
Can	Que., Pointe Claire, Clark Hurman Assoc	
		514-426-0453
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		61-3-555-6777
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		43-222-610660
Int'l	Austria, Vienna, Codico GmbH & Co. KG	
		43-222-862428
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		5511-240-9211
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		358-0-452-1255
Int'l	Finland, Kemi, Spellcon Oy	358-698-21517
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		33-1-4623-2229
Int'l	Germany, Korschbroich, Rohm Elctrns GmbH	
		49-2161-610135

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		31-20-549-5969
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		011-852-375-6262
Int'l	India, Bangalore, Testech Elctrns	91-81-2611201
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		044-852-5121
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Int'l	Japan, Minatoku, Exar Tokyo Off	03-3280-1755
Int'l	Japan, Tokyo, Tokyo Electron Ltd	03-3340-8257
Int'l	Korea, Seoul, HB Corp	011-82-2-579-3495
Int'l	Mexico, Electrna Comp	525-575-8465
Int'l	Norway, Skedsmokorset, Hefro Elektronikka	
		47-687-0250
Int'l	Portugal, Lisboa, Niposom J. Nabais Lda	
		351-1-896610
Int'l	Singapore, Exar Technlgs Pte Ltd	
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Int'l	So. Africa, Randburg, Fairmont	27-11-886-2920
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		41-56-840171
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		011-886-2-768-2505
Int'l	Turkey, Istanbul, Inter A.S.	90-1-360-4374
PR	Hato Rey, Semtronic Assoc	809-766-0701

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AL	Huntsville, Nu-Horizons	205-722-9330
AZ	Phoenix, Sterling Elctrns	602-437-5565
AZ	Phoenix, Marshall Elctrns	602-496-0290
AZ	Phoenix, Future Elctrns	602-968-7140
AZ	Scottsdale, A.V.E.D.	602-951-9788
AZ	Tempe, Bell Inds	602-966-7800
CA	Agoura Hills, Bell Inds	818-879-9494
CA	Calabasas, Marshall Elctrns	818-878-7000
CA	Chatsworth, Future Elctrns	818-772-6240
CA	Cypress, Bell Inds	714-895-7801
CA	El Monte, Marshall Elctrns	818-307-6000
CA	Irvine, Marshall Elctrns	714-458-5360
CA	Irvine, Future Elctrns	714-250-4141
CA	Los Angeles, Bell Inds	213-826-6778
CA	Los Angeles, Bell Inds	213-826-6778
CA	Milpitas, Marshall Elctrns	408-942-4600
CA	Rancho Cardova, Marshall Elctrns	916-635-9700
CA	Rocklin, Bell Inds	916-652-0414
CA	San Diego, Bell Inds	619-268-1277
CA	San Diego, Marshall Elctrns	619-578-9600
CA	San Diego, Future Elctrns	619-625-2800
CA	San Diego, A.V.E.D.	619-558-8890
CA	San Jose, Future Elctrns	408-434-1122
CA	San Jose, Jaco	408-432-9290
CA	Sunnyvale, Bell Inds	408-734-8570
CA	Tustin, A.V.E.D.	714-259-8258
CA	Tustin, Jaco	714-258-9003
CA	Visalia, A.V.E.D.	209-734-8661
CA	Westlake Village, Jaco	805-495-9998
CO	Broomfield, Future Elctrns	303-421-0123
CO	Denver, Bell Inds	303-691-9010
CO	Englewood, Sterling Elctrns	303-792-3939
CO	Thornton, Marshall Elctrns	303-451-8444
CO	Wheatridge, A.V.E.D.	303-422-1701
CT	Nu Horizons	203-265-0162
CT	Bethel, Future Elctrns	203-743-9594
CT	Wallingford, Marshall Elctrns	203-265-3822
CT	Wallingford, Bell Inds	203-269-6801
FL	Altamonte Springs, Marshall Elctrns	305-767-8585
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FL	Largo, Future Elctrns	813-530-1222
FL	St. Petersburg, Marshall Elctrns	813-573-1399
FL	Tampa, Repron Elctrns	813-855-4656
GA	Norcross, Repron Elctrns	404-446-1300
GA	Norcross, Future Elctrns	404-441-7676

GA	Norcross, Marshall Elctrns	404-923-5750
GA	Norcross, Nu-Horizons	404-416-8666
IL	Elk Grove Village, Bell Inds	708-640-1910
IL	Hoffman Estates, Future Elctrns	708-882-1255
IL	Schaumburg, Marshall Elctrns	708-490-0155
IL	Schaumburg, Repron Elctrns	708-882-1700
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IN	Indianapolis, Marshall Elctrns	317-297-0483
IN	Indianapolis, Bell Inds	317-634-8200
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MD	Columbia, Vantage	301-720-5100
MD	Columbia, Future Elctrns	301-290-0600
MD	Columbia, Nu Horizons	410-995-6330
MD	Columbia, Jaco	301-995-6620
MD	Jessup, Bell Inds	301-953-2566
MD	Silver Springs, Marshall Elctrns	301-622-1118
MA	Andover, Bell Inds	508-474-8880
MA	Boston, Future Elctrns	508-779-3000
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MA	Wakefield, Nu Horizons	617-246-4442
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NJ	Parsippany, Future Elctrns	201-299-0400
NJ	Pine Brook, Nu Horizons	201-882-8300
NJ	West Berlin, GCI	609-768-6767
NM	Albuquerque, Bell Inds	505-292-2700
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NY	Hauppauge, Jaco	516-273-5500
NY	Hauppauge, Future Elctrns	516-234-4000
NY	Johnson City, Marshall Elctrns	607-798-1611
NY	Liverpool, Future Elctrns	315-451-2371
NY	N. Amityville, Nu Horizons	516-226-6000
NY	Rochester, Marshall Elctrns	716-235-7620
NY	Rochester, Future Elctrns	716-272-1120
NY	Rochester, Nu Horizons	716-292-0777
NC	Concord, Future Elctrns	704-455-9030
NC	Raleigh, Marshall Elctrns	919-878-9882
NC	Raleigh, Repron Elctrns	919-832-3117
NC	Raleigh, Future Elctrns	919-790-7111
NC	Raleigh, Jaco	919-876-7767
OH	Dayton, Marshall Elctrns	513-898-4480
OH	Dayton, Bell Inds	513-434-8231
OH	Dayton, Bell Inds	513-435-8660
OH	Mayfield Heights, Future Elctrns	216-449-6996
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OH	Solon, Repron Elctrns	216-349-1415
OR	Beaverton, Future Elctrns	503-645-9454
OR	Beaverton, Marshall Elctrns	503-644-5050
OR	Beaverton, Bell Inds	503-644-1500
PA	McKean, Advacom	814-476-7774
PA	Pittsburgh, Marshall Inds	412-788-0441
PA	Trevoise, Bell Inds	215-953-2800
TN	Nashville, Bell Inds	615-367-4400
TX	Addison, Jaco	214-733-4300
TX	Austin, Jaco	512-835-0220
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TX	El Paso, Marshall Elctrns	915-593-0706
TX	Houston, Marshall Elctrns	713-467-1666
TX	Richardson, Future Elctrns	214-437-2437
TX	Richardson, Bell Inds	214-690-0466
TX	Stafford, Jaco	713-240-2255
UT	Midvale, Bell Inds	801-561-9691
UT	Salt Lake City, Marshall Elctrns	801-973-2288
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UT	Westvalley, A.V.E.D.	801-975-9500
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WA	Redmond, Future Elctrns	206-881-8199
WI	Waukesha, Marshall Elctrns	414-797-8400
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WI	Waukesha, Future Elctrns	414-786-1884
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Can	Alb., Calgary, Future Elctrns	403-250-5550

Can Alb, Edmonton, Future Elctms	403-438-2858
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Sales Office & Representatives

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CA	Diamond Bar, Eltec Enterprises	714-861-4779
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CA	San Jose, Exel Microelec	408-432-0500
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FL	Altamonte Springs, Semtronic Assoc.	407-831-8233
FL	Clearwater, Semtronic Assoc.	813-461-4675
FL	Ft Lauderdale, Semtronic Assoc.	305-731-2484
GA	Duluth, Strategic Mktg	404-381-7430
IL	Northbrook, Dolin Sales Co.	708-498-6770
IN	Kokomo, Schillinger Assoc.	317-455-2708
MD	Towson, Advanced Technology Sales	301-296-9360
MA	Harvard, Cycle Sales Inc.	508-456-6868
MI	Grasse Point Park, Greiner Assoc. Inc.	313-499-0188
MN	Minneapolis, Comps Group	612-374-1250
MO	St. Louis, John Macke	314-432-2830
NJ	E. Hanover, Emtec Sls	201-428-0600
NM	Albuquerque, System Sales of Arizona	505-889-2901
NY	Buffalo, Quality Comps	716-837-5430
NY	Manlius, Quality Comps	315-682-8885
OR	Portland, ES/Chase Co., Inc.	503-292-8840
TN	Jonesboro, Strategic Mktg	615-753-5518
TN	Nashville, Strategic Mktg	615-883-7882
TX	Austin, Sage Mktg	512-335-0300
TX	Bedford, Sage Mktg	817-267-7781
UT	Salt Lake City, R2 Mktg	801-595-0631
WA	Kirkland, ES/Chase Co., Inc.	206-823-9535
Can Ont, Islington, Pipe-Thompson Ltd	416-236-2355	
Can Ont, Kanata, Pipe Thompson Ltd	613-591-1821	
Intl	Australia, Victoria, Tronic Bits	011-613-555-6777
Intl	France, Rungis Cedex, Rohm Elctms GmbH	011-33-1-46-759051

Intl	Hong Kong, Kowloon, RTI Inds Co.Ltd.	011-852-795-7421
Intl	Hong Kong, Kowloon, Rohm Elctms Co. Ltd.	011-852-7399791-8
Intl	India, Bombay, Integrated Circuits Pvt. Ltd.	011-91-22-411-45-85
Intl	Japan, Tokyo, KH Elctms Corp.	011-81-3-587-1041
Intl	Japan, Tokyo, Sys Mktg	011-81-3-254-2751
Intl	Korea, Seoul, Hanaro Corp.	011-82-2-558-1144
Intl	Malaysia, Penang, Microtronics Assoc Pte. Ltd.	04-214518
Intl	Mexico, Electma Comp Modulos	011-52-604-95-19
Intl	New Zealand, Auckland, Professional Elctms. Ltd.	64-9-463-048
Intl	Singapore, Industrial Park, Microtronics Assoc. PTD, Ltd.	011-65-748-1835
Intl	So. Africa, Randburg, Fairmont Elctms	011-2711-886-2920
Intl	Taiwan, Taipei, Sea Union Eng. Ltd.	011-886-2-7516856
Intl	Tawian, Taipei, Jeritron Ltd.	011-886-2-882-0710
Intl	Thailand, Bangkok, Microtronics Thai Ltd.	662-254-8676
Intl	United Kingdom, Milton Keynes, Rohm Elctms, U.K.	011-44-908-271311
Intl	West Germany, Korschbroich, Rohm Elctms GmbH	011-49-2161-6101
PR	Hado Rey, Semtronic Assoc	809-766-0701

Distributors

AL	Huntsville, Nu Horizons	205-772-9330
AL	Huntsville, Repron	205-722-9500
AL	Huntsville, Marshall Inds	205-881-9235
AZ	Phoenix, Marshall Inds	602-496-0290
AZ	Scottsdale, Added Value Electr	602-951-9788
AZ	Tempe, Bell Inds	602-966-7800
CA	Agoura Hills, Bell Inds	818-706-2608
CA	Calabasas, Marshall Inc.	818-878-7000
CA	Cypress, Bell Inds	714-895-7801
CA	El Monte, Marshall Ind. (Corp. Office)	818-307-6097
CA	Irvine, Marshall Ind.	714-458-5360
CA	Los Angeles, Bell Inds (Corporate)	213-826-6778
CA	Milpitas, Marshall Ind.	408-942-4600
CA	Rancho Cordova, Marshall Ind.	916-635-9700
CA	Rocklin, Bell Inds	916-652-0414
CA	San Diego, Added Value Elctms	619-558-8890
CA	San Diego, Bell Inds	619-268-1277
CA	San Diego, Marshall Ind.	619-578-9600
CA	Sunnyvale, Bell Inds	408-734-8570
CA	Tustin, Added Value Elctms	714-259-8258
CO	Thornton, Marshall Ind.	303-451-8383
CO	Wheatridge, Added Value Elctms	303-422-1701
CO	Wheatridge, Bell Inds	303-424-1985
CT	Wallingford, Marshall Ind.	203-265-3822
CT	Wallingford, Bell Inds	203-269-6801
FL	Altamonte Springs, Bell Inds	407-339-0078
FL	Altamonte Springs, Marshall Ind.	407-767-8585
FL	Altamonte Springs, Vantage Comps Inc.	407-682-1199
FL	Fort Lauderdale, Repron	305-735-1112
FL	Ft Lauderdale, Nu Horizons	305-735-2555
FL	Ft Lauderdale, Marshall Ind.	305-977-4880
FL	St. Petersburg, Marshall Ind.	813-576-1399
FL	Tampa, Repron	813-855-4656
FL	Tampa, Repron (Corporate)	813-854-2351
GA	Norcross, Nu Horizons	404-416-8666
GA	Norcross, Bell Elctms	404-662-0923
GA	Norcross, Repron	404-446-1300
GA	Norcross, Marshall Ind.	404-923-5750
IL	Elk Grove Village, Bell Inds	708-640-1910
IL	Schaumburg, Marshall Ind.	708-490-0755
IL	Schaumburg, Repron	708-882-1700
IN	Ft Wayne, Bell Elctms	219-423-3422
IN	Indianapolis, Bell Elctms	317-875-8200
IN	Indianapolis, Marshall Ind.	317-297-0483
KS	Lenexa, Marshall Ind.	913-492-5121
MD	Columbia, Vantage (Corporate)	301-720-5100
MD	Columbia, Nu Horizons	301-995-6330
MD	Jessup, Bell Inds	301-953-2566
MD	Silver Springs, Marshall Ind.	301-622-1118
MA	Andover, Bell Inds	508-474-8880
MA	Andover, Vantage Comps Inc	508-588-3900
MA	Wakefield, Nu Horizons	617-246-4442
MA	Wilmington, Marshall Ind.	508-658-0810
MI	Livonia, Repron Elctms	313-525-2700

MI	Livonia, Marshall Ind.	313-525-5850
MN	Fridley, Voyager Elctms	612-571-7766
MN	Minnetonka, Repron	612-930-0000
MN	Plymouth, Marshall Ind.	612-559-2211
MO	Bridgeton, Marshall Ind.	314-291-4650
NJ	Clifton, Vantage Comps	201-777-4100
NJ	East Brunswick, Bell Inds	201-613-0200
NJ	Fairfield, Marshall Ind.	201-882-0390
NJ	Mt. Laurel, Nu Horizons	609-231-0900
NJ	Mt. Laurel, Marshall Ind.	609-234-9100
NJ	Pine Brook, Nu Horizons	201-882-8300
NM	Albuquerque, Bell Inds	505-292-2700
NY	Amityville, Nu Horizons	516-226-6000
NY	E. Rochester, Nu Horizons	716-240-5980
NY	Endicott, Marshall Ind.	607-785-2345
NY	Johnson City, Marshall Ind.	607-790-1611
NY	Rochester, Marshall Ind.	716-235-7690
NY	Smithtown, Vantage Comps	516-543-2000
NC	Raleigh, Repron	919-870-5189
NC	Raleigh, Marshall Ind.	919-878-9882
OH	Dayton, Marshall Ind.	513-898-4480
OH	Dayton, Bell Inds	513-435-8660
OH	Solon, Marshall Ind.	216-248-1788
OH	Solon, Repron	216-349-1415
OH	Worthington, Repron Elctms.	614-436-6675
OR	Beaverton, Bell Inds	503-635-6500
OR	Beaverton, Marshall Ind.	503-644-5050
PA	Pittsburgh, Marshall Ind.	412-788-0441
PA	Trevoise, Bell Inds	215-953-2899
TN	Nashville, SMD Inc	615-331-6045
TX	Austin, Marshall Ind.	512-837-1991
TX	Carrollton, Marshall Ind.	214-233-5200
TX	Houston, Marshall Ind.	713-895-9200
TX	Richardson, Bell Inds	214-690-0466
TX	Sugarland, Jaco	713-240-2255
UT	Midvale, Bell Inds	801-255-9611
UT	Salt Lake City, Marshall Ind.	801-973-2288
UT	West Valley City, Added Value Elctms	801-975-9500
WA	Bothell, Marshall Ind.	206-486-5747
WA	Redmond, Bell Inds	206-451-3883
WI	Waukesha, Marshall Ind.	414-797-8400
WI	Waukesha, Bell Ind.	414-547-8879
Can Alberta, Calgary, ITT Multicomponents	403-273-2780	
Can Alberta, Edmonton, ITT Multicomponents	403-436-9555	
Can British Columbia, Burnaby, ITT Multicomponents	604-291-8866	
Can Manitoba, Winnipeg, ITT Multicomponents	204-697-2300	
Can Ont. Brampton, G.S. Marshall	416-458-8046	
Can Ontario, Concord, ITT Multicomponents	416-736-1144	
Can Ontario, Nepean, ITT Multicomponents	613-596-6980	
Can Que, Pointe Claire, G.S. Marshall	514-694-8142	
Can Quebec, St. Laurent, ITT Multicomponents	514-335-7697	

FUJITSU MICROELECTRONICS, INC.,
Semiconductor Division, 3545 N. First St., San Jose,
California 95134-1804, Tel: 408-922-9000, FAX:
408-432-9044

Sales Office & Representatives

AL	Huntsville, CSR Elctms	205-533-2444
AZ	Scottsdale, Aztech Comp Sales, Inc.	602-991-6300
CA	Chula Vista, Solano Electma (SONIKA)	619-424-9190
CA	Chula Vista, Solano Electma (Sonika)	619-424-9190
CA	Granite Bay, Norcomp	916-791-7776
CA	Irvine, Fujitsu Microelec	714-724-8777
CA	Irvine, Infinity Sales	714-833-0300
CA	Irvine, Fujitsu Microelec	714-724-8777
CA	San Diego, Infinity Sales	619-535-9300
CA	Santa Clara, Fujitsu Microelec	408-982-1800
CA	Santa Clara, Norcomp	408-727-7077
CO	Boulder, Talisman Assoc.	303-444-7300
CO	Englewood, Fujitsu Microelec Inc	303-740-8880
CT	Cheshire, Connecticut Applied Tech	203-272-6564
FL	Altamonte Springs, Semtronic Assocs	407-831-8233
FL	Clearwater, Semtronic Assocs	813-461-4675

MANUFACTURERS & DISTRIBUTORS DIRECTORY

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NY	Farmingdale, GEC Plessey	516-293-8638
NY	Rochester, Regan Compar	716-271-2230
NY	Syracuse, Regan Compar	315-432-8232
NC	Raleigh, Tingen Tech Sls	919-870-6670
OH	Cincinnati, Scott Elec, Inc.	513-791-2513
OH	Cleveland, Scott Elec, Inc.	216-473-5050
OH	Dayton, Scott Elec, Inc.	513-294-0539
OH	Westerville, Scott Elec, Inc.	614-882-6100
PA	Wynnewood, Metz Benham Assocs Inc	215-896-7300
TX	Austin, Oeler & Menelaides, Inc.	512-453-0275
TX	Dallas, GEC Plessey	214-690-4930
TX	Dallas, Oeler & Menelaides, Inc.	214-361-8876
WI	Brookfield, Micro Sls, Inc.	414-786-1403
Can	Ontario, Mississauga, GM Assoc., Inc.	416-671-8111
Can	Ontario, Richmond, GM Assoc., Inc.	613-838-4480
Can	Que. Pointe Claire, GEC Plessey	514-697-0095
Can	Quebec, St. Laurent, GM Assoc., Inc.	514-335-9572
Intl	Australia NSW, GE Brown Elctms	612-638-1888
Intl	Denmark, Artus, Scansupply Randers	45-86-12-77-88
Intl	Denmark, Copenhagen, Scansupply A/S	31-83-50-90
Intl	England, London, CTL Empexion Ltd.	081-543-0911
Intl	Finland, Helsinki, Oy Ferrado AB	98-0550-002
Intl	France, Les Ulis Cedex, GEC Plessey Cust. Svc.	1-64-46-23-45
Intl	Germany, Bad Toelz, FA Bernhard GmbH	80-41-41-676
Intl	Hong Kong, YES Products Ltd.	41-4424-216
Intl	India, New Delhi, Mekaster Telecom Pvt Ltd	11-3312110
Intl	Italy, Milano, GEC Plessey Cust. Svc	02-33-00-10-44/45
Intl	Japan, Osaka, Comes & Co.Ltd.	6-532-1012
Intl	Japan, Tokyo, Comes & Co. Ltd.	3-272-5771
Intl	Japan, Tokyo, Microtek Inc.	3-371-1811
Intl	Japan, Tokyo, GEC Plessey Cust. Svc.	03-3296-0281
Intl	Korea, Seoul, KML Corp.	2-588-2011/6
Intl	Malaysia, Adequip Enterprise Sdn Bhd	2423522
Intl	Norway, Oslo, Skandinavisk Elektronikk A/S	2-64-11-50
Intl	Switzerland, Gec Plessey Cust. Svc.	089-36-0906-0
Intl	Taiwan, Taipei, King & Kings Technlg Ltd	886-2-732-6170
Intl	Thailand, Bangkok, Westech Elec. Co. Ltd.	2-512-5531
Intl	UK, Wiltshire, Plessey Semiconductors Ltd.	0793-518000

Distributors

AL	Huntsville, Pioneer Tech.	205-837-9300
AL	Huntsville, Hammond	205-830-4764
AZ	Tempe, Insight Elec.	602-829-1800
CA	Agoura, Insight Elec.	818-707-2100
CA	Irvine, Insight Elec.	714-727-2111
CA	San Diego, Insight Elec.	619-587-0471
CA	San Jose, Pioneer Tech.	408-954-9100
CA	Sunnyvale, Insight Elec.	408-720-9222
CT	Meriden, Jaco Elec.	203-235-1422
CT	Norwalk, Pioneer/Norwalk	203-853-1515
FL	Altamonte Springs, Pioneer Tech.	407-834-9090
FL	Deerfield Beach, Pioneer Tech.	305-428-8877
FL	Ft. Lauderdale, Hammond Ft. Lauderdale	305-973-7103
FL	Orlando, Hammond Orlando	407-841-1010
GA	Duluth, Pioneer Tech.	404-623-1003
GA	Norcross, Hammond	404-449-1996
IL	Addison, Pioneer/Standard	312-495-9680
IN	Indianapolis, Pioneer/Standard	317-573-0880
MD	Columbia, Jaco Elec.	301-995-6620
MD	Gaithersburg, Pioneer/Tech Grip Inc	301-921-0660
MA	Lexington, Pioneer/Standard	617-861-9200
MA	Tewksbury, Jaco Elec.	508-640-0010
MI	Grand Rapids, Pioneer	616-698-1800
MI	Livonia, Pioneer/Standard	313-525-1800
MN	Eden Prairie, Pioneer/Standard	612-944-3355
MO	St.Louis, Pioneer St. Louis	314-432-4350
NJ	Fairfield, Pioneer/Standard	201-575-3510
NJ	Wayne, Jaco Elec.	201-942-4000
NM	Albuquerque, Alliance Elctms	505-292-3360

NY	Pioneer/Standard	716-381-7070
NY	Binghamton, Pioneer/Standard	607-722-9300
NY	Hauppauge, Jaco Elec.	516-273-5500
NY	Ronkonkoma, Mast	516-471-4422
NY	Woodbury, Pioneer/Standard	516-921-8700
NC	Charlotte, Pioneer Tech.	704-527-8188
NC	Durham, Pioneer Tech.	919-544-5400
NC	Greensboro, Hammond	919-275-6391
OH	Cleveland, Pioneer/Standard	216-587-3600
OH	Dayton, Pioneer	513-236-9900
OR	Beaverton, Insight	503-644-3300
PA	Horsham, Pioneer Tech.	215-674-4000
PA	Pittsburgh, Pioneer/Standard	412-782-2300
SC	Greenville, Hammond	803-232-0872
TX	Austin, Pioneer/Standard	512-835-4000
TX	Dallas, Pioneer/Standard	214-386-7300
TX	Houston, Pioneer/Standard	713-495-4700
TX	Richardson, Insight	214-783-0800
WA	Kirkland, Insight	206-820-8100
WI	Brookfield, Pioneer Wisconsin	414-784-3480
Can	Alberta, Calgary, Semad	403-252-5664
Can	B.C., Burnaby, Semad	604-420-9889
Can	Ontario, Markham, Semad	416-475-8500
Can	Ontario, Ottawa, Semad	613-727-8325
Can	Quebec, Pt. Claire, Semad	514-694-0860
Intl	Australia, New South Wales, GEC George Brown Elctm	612-638-1888
Intl	Austria, Wien, Moor-Lackner GmbH	222-610620
Intl	Belgium, Halle, Tekelec Airtronic NV	02-362-1288
Intl	Belgium, Koutmalen, Heynen	011-52-5757
Intl	France, CGE Composants, S.A.	49-52-88-88
Intl	France, Antony, Aquitech	1-40-96-94-94
Intl	France, Cedex, CGE Composants S.A.	56-36-40-40
Intl	France, Cedex, CGE Composants S.A.	99-50-40-40
Intl	France, Chamalieres, ICC	73-36-71-41
Intl	France, Colmar, CGE Composants S.A.	89-41-15-43
Intl	France, Echirrolles, Matelec	010-33-76-40-38-33
Intl	France, Garadignan, ICC	56-31-17-17
Intl	France, Marseille, ICC	91-03-12-12
Intl	France, Merignac, Aquitech	56-55-10-30
Intl	France, Meudon, CGE Composants S.A.	1-46-30-01-29
Intl	France, Rennes, Aquitech	99-78-31-32
Intl	France, St. Laurent, CGE Composants	93-07-77-67
Intl	France, Toulouse, ICC	61-26-14-10
Intl	France, Toulouse, CGE Composants S.A.	61-20-82-38
Intl	France, Villeneuve-D, CGE Composants S.A.	20-67-04-04
Intl	France, Villeurbanne, CGE Composants S.A.	78-68-32-29
Intl	France, Villeurbanne, Rhonalco	33-78-53-00-25
Intl	France, Malakoff, Matelco	010-33-1-46-57-70-55
Intl	Germany, Deisenhofen, Astronic GmbH	089-61-30303
Intl	Germany, Dortmund, Weisbauer Elektronik GmbH	0231-57-95-47
Intl	Germany, Hamburg, AS Elctm Vertriebs GmbH	061172-458931
Intl	Germany, Renningen, Micronetics GmbH	071-59-6019
Intl	Greece, Piraeus, Impel Ltd.	010-30-1-49-67815
Intl	Italy, Fanton S.R.L.	2-3287312
Intl	Italy, Milan, Eureletronica SpA	2-4880022
Intl	Italy, Milan, Adelsi SpA	2-3580641
Intl	Italy, Milano, Alpha Microonde Snc	06-66-35-273
Intl	Italy, Milano, Con Sys SRL	02-99-04-19-77
Intl	Japan, Tokyo, Nissho Iwai Aerospace Corp	3-588-2111
Intl	Japan, Tokyo, Yamada Corp	3-475-1121
Intl	Netherlands, Heyen B.V.	8851-96111
Intl	Netherlands, Tekelec Airtronic BV	79-310100
Intl	Spain, Madrid, Anatron SA	91-542-4455
Intl	Spain, Madrid, Master Elctm SA	91-5194342
Intl	Sweden, Solna, Pronesto AB	08-733-9300
Intl	Switzerland, Wettingen, Elbatex AG	41-56-27-51-11
Intl	Switzerland, Zurich, Basix fuer Elektronik AG	01-276-1111
Intl	Taiwan, Taipei, Kings & Kings Technlg Ltd	886-2-732-6170
Intl	Turkey, Istanbul, Empa	0-143-621213
Intl	U.K. Herts, Unitel Ltd	0438-312393
Intl	UK, Berkshire, Gothic Crellon Ltd.	0734-788878

Intl	UK, Birmingham, Gothic Crellon Ltd.	021-6436365
Intl	UK, Essex, STC Electrn Svs. Ltd.	0279-626777
Intl	UK, Herts, 2001 Elec. Comps. Ltd.	0438-742001
Intl	UK, Leeds, Farnell Elec. Comps. Ltd.	0532-790101
Intl	UK, Manchester, Whiteaway Laidlaw (Overseas)	031-273-3229
Intl	UK, Middlesex, Semiconductor Specs. Ltd.	0895-445522
Intl	UK, Slough, Macro	0628-604383
Intl	UK, Swindon Wilts, Plessey Semiconductors Ltd.	0793-518510
Intl	UK, Berks, Celdis Ltd.	0734-585171

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<i>Sales Office & Representatives</i>		
CA	Auburn, Ewing-Foley	916-885-6591
CA	Los Altos, Ewing-Foley	415-941-4525
FL	Brandon, Simon, R.C. & Company, Inc.	813-689-6524
FL	Lighthouse Point, Simon, R.C. & Company, Inc.	305-941-2757
IL	Arlington Heights, Coombs Assoc. Inc.	708-439-9810
IN	Indianapolis, CC Electro Sales Inc.	317-921-5000
KS	Olathe, Impaq Sales Co	913-780-6565
NY	Shirley, Tri-Tek Assoc	516-395-3391
PA	Yardley, Micro Circuit Assoc. Inc.	215-321-2350
TX	Austin, Impaq Sales Company	512-335-9666
TX	Houston, Impaq Sales Co	713-820-0288
TX	Irving, Impaq Sales Company	214-650-0000
Intl	Australia, Castle Hill, NSW, David Spalding Pty Ltd (ASICs Only)	61-2-839-3507
Intl	Australia, Wollongong, NSW, Micro Max Pty. Ltd.	61-42-26-6777
Intl	Belgium, Kontich, Alcom Elctms BV	32-3-458-3033
Intl	France, Les Ulis Cedex, Micro Puissance	33-1-69-071211
Intl	Germany, Ellerau, Intraco GmbH	49-4106-72086
Intl	Italy, Milano, Sprague Italiana S.P.A.	39-248012355
Intl	Japan, Tokyo, Gennum Corp.	81-3-3247-8838
Intl	Switzerland, Villars Sur Glane, Electronitel SA	41-37-41-0060
Intl	The Netherlands, Alcom Elctms BV	31-10-451-9533, TLX (44) 26160
Intl	U.K. Richmond, Surrey, Colsan Microelec Ltd	44-81-940-0033

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GOAL ELECTRONICS INC., Westmount P.O. 22027, Waterloo, Ontario, Canada N2L 6J7, Tel: 519-725-0932, FAX: 519-725-0205

Sales Office & Representatives
Can Que., Montreal, Goal Elctms Inc 514-523-0192

GOLDSTAR TECHNOLOGY, INC., 3003 N. First St., San Jose, California 95134, Tel: 408-432-1331, FAX: 408-432-6053

<i>Sales Office & Representatives</i>		
AL	EMA (Western Regional Off.)	205-830-4030
AZ	Carefree, Integrated Rep Co. Inc.	602-254-9778
CA	Calsbad, GoldStar Technology, Inc. (Western Area)	619-931-7841
CA	Escondido, Eagle Tech Sales	619-743-6550
CA	Huntington Beach, Prism Assocs.	714-848-5569
CA	San Diego, Southland Comps	619-673-3800
CA	San Jose, Goldstar Technology Inc (Western Area)	408-432-1331
CA	Santa Clara, Magna Sales	408-727-8753
CA	Santa Clara, Bradus Micro	408-988-8900
CO	Longmont, Luscombe Engrn Co.	303-772-3342

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CO Monument, Luscombe Engrn Co.	719-481-3001	Intl West Germany, GoldStar Deutschland GmbH		Intl Sweden, Norsborg, Miko Komponent AB	
CT New Milford, Les Goldsmith-Connecticut			49-2154-492172		753-890-80
	203-354-2923	Intl West Germany, Lucky-Goldstar (Deutschland) GmbH		Intl Switzerland, Unterengstringen, Etronics AG	
GA Roswell, EMA	404-992-7240		49-69-663-0070		1-750-35-11
IL Bensville, Horizon Tech Sales Inc.	708-860-7900	<i>Distributors</i>		Intl Taiwan, Taipei R.O.C., Golden Seven Enterprise Co., Ltd.	02-507-1186
IL Chicago, GoldStar Technology, Inc.(Eastern Area)	312-693-0450	CA Agoura Hills, Almo Electrms, Inc.	818-991-3984	Intl Taiwan, Taipei R.O.C., Unitech Device Corp.	02-776-0560/5
IL Schaumburg, Q.P.S. Electrms	312-884-6620	CA Anaheim, Almo Electrms, Inc.	714-779-5855	Intl Taiwan, Taipei R.O.C., Bright Up Inds Co., Ltd.	02-773-2194/8, 776-5455/9
IA Cedar Rapids, Advent Electrms	319-363-0221	CA San Jose, All American Semiconductor, Inc.	408-943-1200	Intl Turkey, Istanbul, Comtec San Ve Tic Koll Sti	1-337-2245
MD Annapolis, CMS Mktg	301-269-1898	CA San Jose, JACO Electrms	408-432-9290	Intl United Kingdom, Cambridgeshire, Ice Electrms Ltd.	0480-49-6466
MA North Reading, Alpha Omega Sales Corp.		CA Torrance, All American Semiconductor, Inc.		Intl United Kingdom, Leicestershire, Flint Distribution Ltd.	0530-51-0333
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MN	Edina, Gibb Technlg Sls	612-835-3370	MD	Baltimore, Hamilton/Avnet	301-995-3500	Intl	Germany, Planegg, Scantec GmbH	089-8-59-80-21
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NY (516) 226-6000
 CT (203) 285-0182
 NJ (201) 882-9300
 MA (617) 246-4442
 No. NY (716) 292-0777
 MD (410) 995-6330
 PA (609) 231-0900
 OH (216) 349-2008
 FL (305) 735-2555
 No. FL (407) 831-8008
 GA (404) 416-8666
 AL (205) 722-9330
 INT'L (201) 882-4290

IXYS SEMICONDUCTOR

IXYS CORPORATION, 3540 Bassett St, Santa Clara, California 95054-2704, Tel: 408-982-0700, FAX: 408-496-0670

Sales Office & Representatives

AL	Huntsville, EMA, Inc	205-830-4030
AZ	Tempe, EDS	602-438-1547
CA	IXYS (Western Region)	619-597-7576
CA	La Mirada, Select Electrms	714-739-8891
CA	San Diego, Pro Sales	619-467-7150
CO	Denver, Moss Mktg	303-340-8535
CT	Guilford, SJ-New England	203-458-7558
FL	Altamonte Springs, Tech Sales Specialists	407-332-0067
FL	Boca Raton, Tech Sales Specialists	407-391-3718
FL	Clearwater, Tech Sales Specialists	813-460-9570
GA	Roswell, EMA, Inc	404-992-7240
IL	Schaumburg, Martan, Inc	708-303-5660
IN	Ft. Wayne, R.O. Whitesell & Assoc.	219-489-0588
IN	Kokomo, R.O. Whitesell & Assoc.	317-457-9127
KY	Versailles, R.O. Whitesell & Assoc.	606-873-1182
MD	Rockville, Marktron, Inc	301-251-8990
MA	IXYS (Eastern Region)	617-235-2600
MA	Wenham, SJ-New England	508-468-5057
MI	Grand Blanc, R.O. Whitesell & Assoc.	313-695-0770
MI	Grand Rapids, R.O. Whitesell & Assoc.	616-942-5420
MI	Southfield, R.O. Whitesell & Assoc.	313-352-5454
MI	St. Joseph, R.O. Whitesell & Assoc.	616-983-7337
MN	Minneapolis, R.W. Marshall Co., Inc.	612-929-0457
NM	Albuquerque, Nelco Electronix	505-293-1399
NY	Rochester, Apex Association	716-272-7040
NY	Rockville Center, S.J. Assocs, Inc.	516-536-4242
NC	Raleigh, Zucker Assocs	919-782-8433
OH	Cincinnati, R.O. Whitesell & Assoc.	513-528-5644
OH	Cleveland, R.O. Whitesell & Assoc.	216-447-9020
OH	Columbus, R.O. Whitesell & Assoc.	614-888-9396
OH	Dayton, R.O. Whitesell & Assoc.	513-298-9546
PA	Erdenheim, OMNI Sales	215-233-4600
PA	Pittsburg, R.O. Whitesell & Assoc.	412-963-6161
TX	IXYS (Central Region)	214-644-4115
TX	Austin, Barry Sales, Inc	512-837-3616
TX	Houston, Barry Sales, Inc	713-784-5860
TX	Richardson, Barry Sales, Inc	214-234-0255
UT	Salt Lake City, Moss Mktg	801-363-5875
WA	Bellevue, Advanced Power Comps	206-747-9127
WA	Seattle, Advanced Power Comps	206-527-7945
WA	Spokane, Advanced Power Comps	509-928-7959
WA	Vancouver, Advanced Power Comps	206-896-4239
WI	Mequon, Martan	414-241-4955
Can	Ontario, Astec	416-669-4022
Can	Vancouver, Advanced Power Comps	604-436-0552

Distributors

AL	Huntsville, Future Electrms	205-830-2322
AL	Huntsville, Nu Horizons	205-722-9330
AZ	Phoenix, Future Electrms	602-968-7140
CA	Broomfield, Future Electrms	303-421-0123
CA	Chatsworth, Future Electrms	818-772-6240
CA	Irvine, Future Electrms	714-250-4141
CA	San Diego, Future Electrms	619-625-2800
CA	San Jose, All American	408-943-1200
CA	San Jose, Future Electrms	408-434-1122
CA	San Jose, Jaco	408-432-9290
CA	Torrance, All American	213-320-0240

CA	Westlake, Jaco	805-495-9998
CO	Aurora, QPS	303-343-9260
CO	Denver, All American	303-756-0817
CT	Nu Horizons	203-265-0162
CT	Bethel, Future Electrms	203-743-9594
CT	Meridian, Jaco	203-235-1422
FL	Altamonte Springs, Future Electrms	407-767-8414
FL	Boca Raton, Jaco	407-241-7943
FL	Fl. Lauderdale, Nu Horizons	305-735-2555
FL	Largo, Future Electrms	813-530-1222
FL	Miami, All American	305-621-8282
FL	Sunrise, All American	305-572-7999
GA	Norcross, Future Electrms	404-441-7676
GA	Norcross, Jaco	404-449-0508
GA	Norcross, Nu Horizons	404-416-8666
IL	Hoffman Estates, Future Electrms	708-882-1255
IL	La Fox, Richardson Electrn	708-208-2200
IL	Schaumburg, Marsh Electrms	708-240-9290
IL	Schaumburg, QPS	708-884-6620
MD	Columbia, Future Electrms	301-290-0600
MD	Columbia, Jaco	301-995-6620
MD	Columbia, Nu Horizons	301-995-6330
MD	Rockville, All American	301-251-1205
MA	Bolton, Future Electrms	508-779-3000
MA	Tewksbury, Jaco	509-640-0010
MA	Wakefield, All American	617-246-2300
MA	Wakefield, Nu Horizons	617-246-4441
MI	Livonia, Future Electrms	313-261-5270
MN	Eden Prairie, Future Electrms	612-944-2200
MN	Minneapolis, All American	612-944-2151
MO	St. Louis, Future Electrms	314-469-6805
NJ	Marlton, Future Electrms	609-569-1833
NJ	Marlton, Nu Horizons	609-566-1833
NJ	Parsippany, Future Electrms	201-299-0400
NJ	Pine Brook, Nu Horizons	201-882-8300
NY	Amityville, Nu Horizons	516-226-6000
NY	Canandaigua, Advacom	716-396-9050
NY	East Rochester, Nu Horizons	716-248-5980
NY	Hauppauge, Future Electrms	516-234-4000
NY	Hauppauge, Jaco	516-273-5500
NY	Liverpool, Future Electrms	315-451-2371
NY	Rochester, Future Electrms	716-272-1120
NY	Ronkonkoma, All American	516-981-3935
NC	Concord, Future Electrms	704-455-9030
NC	Raleigh, Future Electrms	919-790-7111
NC	Raleigh, Jaco	919-876-7767
OH	Cleveland, Darrah Elec	216-631-0912
OH	Cleveland, Future Electrms	216-449-6996
OH	Delaware, Advacom	614-369-8884
OH	Stow, Advacom	216-688-5311
OK	Tulsa, Jaco	916-664-8414
OR	Beaverton, Future Electrms	503-645-9452
OR	Portland, All American	503-297-5295
OR	Portland, Dunn Electrms	503-285-0214
PA	Export, Advacom	412-325-7551
PA	McKean, Advacom	814-476-7774
PA	York, Advacom	717-741-9277
TX	Addison, Jaco	214-733-4300
TX	Austin, Jaco	512-835-0220
TX	Dallas, Thyristor Power	215-241-1398
TX	Houston, Future Electrms	713-556-8696
TX	Richardson, All American	214-231-5300
TX	Richardson, Future Electrms	214-437-2437
TX	Sugarland, Jaco	713-240-2255
UT	Salt Lake City, Future Electrms	801-972-8489
WA	Redmond, Future Electrms	206-881-8199
WA	Redmond, Jaco	206-881-9700
WI	Milwaukee, Marsh Electrms	414-475-6000
WI	Waukesha, Future Electrms	414-786-1884
Can	Alb., Calgary, Future Electrms	403-250-5551
Can	Alb., Edmonton, Future Electrms	403-438-2858
Can	B.C. Vancouver, Future Electrms	604-294-1166
Can	Manitoba, Winnipeg, Future Electrms	204-786-7711
Can	Ont., Mississauga, Future Electrms	416-612-9200
Can	Ont., Mississauga, R-Theta	416-890-0221
Can	Ont., Ottawa, Future Electrms	613-820-8313
Can	Que., Pierrefond, R-Theta	514-620-2325
Can	Que., Pointe Claire, Future Electrms	514-694-7710
Can	Que., Quebec City, Future Electrms	418-877-6666



FAX: 602-820-1707

KRUEGER COMPANY, 1544 W. Mineral Road,
Tempe, Arizona 85283, Tel: 800-245-2235,
602-820-5330, FAX: 602-820-1707



FAX: 602-438-0138

LANSDALE SEMICONDUCTOR, INC., 2929
South 48th Street, Ste. 2, Tempe, Arizona 85282, Tel:
602-438-0123, FAX: 602-438-0138

Sales Office & Representatives

AL	Huntsville, CSR Elctms	205-533-2444
AZ	Paradise Valley, CMA Sales	602-840-8383
CA	Costa Mesa, Solid State Sales	714-650-8414
CA	Pleasanton, Leddy Assoc, Inc.	510-417-1033
FL	Longwood, Beacon Electms	407-332-1940
GA	Atlanta, CSR Electrms	404-396-3720
IL	Park Ridge, Synmark Sales, Inc.	708-390-9696
IN	Indianapolis, TPS & Assoc	317-841-3046
IA	Cedar Rapids, Spectrum Sales	319-366-0576
KS	Prairie Village, Spectrum Sales	913-648-6811
MA	Amesbury, Carl Sheys Assoc	508-388-3616
MN	Wayzata, Cardinal Sales Co.	612-475-0042
MO	Florissant, Spectrum Sales	314-921-1313
NY	Endwell, Reagan/Compar, Inc.	607-754-2171, 607-754-8946
NY	Hicksville, J-Square Mktg, Inc.	516-935-3200
NC	Indian Trail, CSR Electrms	704-882-3995
NC	Raleigh, CSR Electrms	919-878-9200
OH	Stow, Lee Tronics, Inc.	216-688-8832
OH	Tipp City, Cleary Sales Co.	513-667-7703
OR	Portland, Index, Inc.	503-289-9627
PA	Southampton, Campbell Assocs	215-322-6630
TN	Knoxville, CSR Electrms	615-637-0293
TX	Richardson, Interactive Comp Sales, Inc.	214-669-2277
VA	Reston, Boyle Assoc	703-620-9558
WA	Renton, Index, Inc.	206-271-2979
Can	Ont, Mississauga, Tech-Trek, Ltd	416-238-0366

Distributors

Intl	Japan, Fuji Elctms	310-214-5100
Intl	United Kingdom, Oxfordshire, Versa dis Limited	0844-261686

LATTICE SEMICONDUCTOR CORP., 5555 N.E.
Moore Ct, Hillsboro, Oregon 97124, Tel:
1-800-FASTGAL, FAX: 503-681-3037

Sales Office & Representatives

AL	Huntsville, CSR Elctms Inc	205-533-2444
AZ	Scottsdale, Summit Sales	602-998-4850
CA	Fountain Valley, Bager Electrms	714-957-3367
CA	Irvine, Lattice Semiconductor Corp.	714-580-3880
CA	San Diego, Earle Assoc	619-278-5441
CA	Santa Clara, Criterion Sales	408-988-6300
CA	Santa Clara, Lattice Semiconductor Corp.	408-980-7878
CA	Woodland Hills, Bager Electrms	818-712-0011
CO	Wheat Ridge, Waugaman Assoc	303-423-1020
CT	Hamden, Comp Rep Assocs	203-230-8369
FL	Altamonte Springs, Sales Engr Concepts	407-830-8444

FL	Deerfield Bch, Sales Engr Concepts	305-426-4601
GA	Atlanta, CSR Elctms Inc	404-396-3720
GA	Norcross, Lattice Semiconductor Corp.	404-446-2930
IL	Itasca, Lattice Semiconductor Corp	708-250-3118
IL	Rolling Meadows, Sumer	708-991-8500
IN	Indianapolis, Electrn Sales & Engrn	317-849-4260
IA	Cedar Rapids, Stan Clothier Co	319-393-1576
KS	Lenexa, Stan Clothier Co.	913-492-2124
MD	Gaithersburg, Deltatronics	301-253-0615
MA	Burlington, Lattice Semiconductor Corp.	617-229-5819
MA	Westwood, Comp Rep Assocs	617-329-3454
MI	Grosse Pointe Park, Greiner & Assoc	313-499-0188
MN	Eagan, Lattice Semiconductor Corp.	612-686-8747
MN	Eden Prairie, Stan Clothier Co	612-944-3456
MO	St. Charles, Stan Clothier Co.	314-928-8078
NJ	Lattice Semiconductor Corp.	201-744-5908
NJ	West Caldwell, Tech Mktg, Group	201-226-3300
NY	E. Rochester, Tri Tech Electrms	716-385-6500
NY	Fayetteville, Tri Tech Electrms	315-446-2881
NY	Fishkill, Tri Tech Electrms	914-897-5611
NY	Melville, Tech Mktg. Group	516-351-8833
NC	Indian Trail, CSR Elctms Inc	704-882-3995
NC	Raleigh, CSR Elctms Inc	919-878-9200
OH	Cincinnati, Makin & Assoc	513-871-2424
OH	Dublin, Makin & Assoc	614-793-9545
OH	Solon, Makin & Assoc	216-248-7370
OK	Tulsa, West Assoc	918-492-4300
OR	Beaverton, Comps West	503-642-9110
OR	Hillsboro, Lattice Semiconductor Corp.	503-691-2657
PA	Blue Bell, Deltatronics	215-641-9930
TN	Knoxville, CSR Elctms Inc	615-637-0293
TX	Austin, West Assoc	512-343-1199
TX	Austin, Lattice Semiconductor Corp	512-343-4506
TX	Houston, West Assoc	713-999-0101
TX	Irving, Lattice Semiconductor Corp.	214-650-1236
TX	Richardson, West Assoc	214-680-2800
UT	Murray, Waugaman Assocs.	801-261-0802
VA	Alexandria, Deltatronics	703-971-1733
WA	Redmond, Comps West	206-885-5880
WI	Brookfield, Sumer	414-784-6641
Can	Alb., Calgary, Dynasty Comps	403-686-2362
Can	British Columbia, Vancouver, Dynasty Comps	604-880-0301
Can	Ontario, Ottawa, Dynasty Comps	613-596-9800
Can	Ontario, Toronto, Dynasty Comps	416-672-5977
Can	Que., Montreal, Dynasty Comps	514-843-1879
Intl	Australia, Austimer NSW, RAE Intl Elec Pty	61-42-673722
Intl	Australia, Sidney, Zatek Comps	61-2-874-0122
Intl	Austria, Wein, Steiner Electrn GmbH	43-1-877-7474-0
Intl	Belguim, Kontich, Alcom Electrms nv/sa	32-3-458-3033
Intl	Denmark, Brendby, Ditz Schweitzer	45-42-45-30-44
Intl	Finland, Helsinki, Integrated Electrms OY	358-0-351-3134
Intl	France, Sevres, Lattice Semiconductor	33-1-45-34-10-10
Intl	France, Antony Cedex, Almex	33-1-4096-5400
Intl	France, Antony Cedex, Franelec	33-1-4096-0909
Intl	Germany, Munchen, Lattice Semiconductor	49-8165-9516-0
Intl	Germany, Munchen, Avnet/E2000 GmbH	49-89-45-11-0-04
Intl	Germany, Quickborn, A.N. Enatechnik GmbH	49-4106-612-0
Intl	Hong Kong, Lattice Semiconductor	852-529-0356
Intl	Hong Kong, Kowloon, RTI Inds Co. Ltd.	852-795-7421
Intl	India, Bombay, Hindetron	91-812-348-266
Intl	Ireland, Kilkenny, Silicon Concepts	353-56-64002
Intl	Israel, Tel-Aviv, Telsys Ltd	03-492001-11
Intl	Italy, Milano, Compel S.R.L.	39-2-61206415
Intl	Italy, Milano, Compel S.P.A.	39-3-62553991
Intl	Japan, Osaka, Hoei Denki	81-6-394-4596
Intl	Japan, Tokyo, Ado Electrn Indust. Co.	81-3-3257-2600
Intl	Japan, Tokyo, Hakuto Company, Ltd.	81-3-3597-8954

Intl	Japan, Tokyo, Chuo-ku, Lattice Semiconductor	81-3-5820-3533
Intl	Japan, Yokohama, Japan Macnics Corp.	81-45-939-6140
Intl	Korea, Seoul, Ellen & Company	82-2-579-3330
Intl	Korea, Seoul, Wooyoung Tech Co. Ltd	82-2-369-7099
Intl	Netherlands, IJssel, Alcom Electrms B.V.	31-10-4519533
Intl	Norway, Oslo, Henaco A/S	47-22162110
Intl	S. Africa, Isando, Pace Electrms Comps	27-11-974-1525
Intl	Scotland, Silicon Concepts	44-661-843955
Intl	Singapore, Technology Distribution	65-299-7811
Intl	Spain, Madrid, ATD	34-1-661-6551
Intl	Sweden, Jarfalla, Pelcon Electrms	46-8-795-9870
Intl	Switzerland, Baden-Dattwil, Eurodis Primotec AG	41-5684-0171
Intl	Taiwan, Taipei, Master Electrms Corp.	886-02-735-0905
Intl	Taiwan, Taipei, Score Zap Inds	886-2-627-7045
Intl	U.K. Berkshire, Lattice Semiconductor	44-753-830-842
Intl	U.K. England, Oxon, Micro Call	44-84-426-1939
Intl	U.K., Wales, Gwent, Silicon Concepts Ltd	44-291-624101
Intl	U.K., England, Hampshire, Silicon Concepts Ltd	44-428-751617
Intl	U.K., England, Slough, Macro Mktg.	44-628-604383
PR	Ponce, Sales Engrg Concepts	809-841-4220

Distributors

AL	Huntsville, Arrow Electrms	205-837-6955
AL	Huntsville, Marshall Inds	205-881-9235
AL	Huntsville, Hamilton Hallmark	205-837-3700
AZ	Phoenix, Hamilton Hallmark	602-437-1200
AZ	Phoenix, Marshall Inds	602-496-0290
AZ	Tempe, Arrow Electrms	602-431-0030
AZ	Tempe, Insight Electrms	602-829-1800
CA	Calabasas, Arrow Electrms	818-880-9686
CA	Calabasas, Marshall Inds	818-878-7000
CA	Costa Mesa, Hamilton Hallmark	714-641-4100
CA	El Monte, Marshall Inds	818-307-6000
CA	Irvine, Arrow Electrms	714-587-0404
CA	Irvine, Insight Electrms	714-727-3291
CA	Irvine, Marshall Inds	714-458-5301
CA	Milpitas, Marshall Inds	408-942-4600
CA	Rancho Cordova, Marshall Inds	916-635-9700
CA	Rocklin, Hamilton Hallmark	916-624-9781
CA	San Diego, Arrow Electrms	619-565-4800
CA	San Diego, Hamilton Hallmark	619-571-7540
CA	San Diego, Insight Electrms	619-587-1100
CA	San Diego, Marshall Inds	619-627-4140
CA	San Jose, Arrow Electrms	408-441-9700
CA	San Jose, Arrow Electrms	408-428-6400
CA	Sunnyvale, Insight Electrms	408-720-9222
CA	Sunnyvale, Hamilton Hallmark	408-743-3300
CA	Westlake Village, Insight Electrms	818-707-2101
CA	Woodland Hills, Hamilton Hallmark	818-594-0404
CO	Englewood, Arrow Electrms	303-799-0258
CO	Englewood, Hamilton Hallmark	303-790-1662
CO	Englewood, Insight Electrms	303-649-1800
CO	Thornton, Marshall Inds	303-451-8383
CT	Cheshire, Hamilton Hallmark	203-271-2844
CT	Wallingford, Arrow Electrms	203-265-7741
CT	Wallingford, Marshall Inds	203-265-3822
FL	Altamonte Springs, Marshall Inds	407-767-8585
FL	Deerfield Beach, Arrow Electrms	305-429-8200
FL	Ft. Lauderdale, Hamilton Hallmark	305-484-5482
FL	Ft. Lauderdale, Marshall Inds	305-977-4880
FL	Lake Mary, Arrow Electrms	407-333-9300
FL	Largo, Hamilton Hallmark	813-541-7440
FL	St. Petersburg, Marshall Inds	813-573-1399
FL	Winter Park, Hamilton Hallmark	407-657-3300
GA	Duluth, Arrow Electrms	404-497-1300
GA	Duluth, Hamilton Hallmark	404-623-4400
GA	Norcross, Marshall Inds	404-923-5750
IL	Bensonville, Hamilton Hallmark	708-860-7780
IL	Itasca, Arrow Electrms	708-250-0500
IL	Schaumburg, Marshall Inds	708-490-0155
IN	Indianapolis, Arrow Electrms	317-299-2071
IN	Indianapolis, Hamilton Hallmark	317-872-8875
IN	Indianapolis, Marshall Inds	317-297-0483
IA	Cedar Rapids, Arrow Electrms	319-395-7230
KS	Lenexa, Arrow Electrms	913-541-9542
KS	Lenexa, Marshall Inds	913-492-3121
KS	Lenexa, Hamilton Hallmark	913-888-4747
MD	Columbia, Arrow Electrms	301-596-7800

MFGS. & DIST. DIRECTORY

IC MASTER

MD	Columbia, Hamilton Hallmark	410-988-9800
MD	Silver Springs, Marshall Inds	301-622-1118
MA	Peabody, Hamilton Hallmark	508-532-9808
MA	Wilmington, Arrow Electrms	508-658-0900
MA	Wilmington, Marshall Inds	508-658-0810
MI	Livonia, Arrow Electrms	313-462-2290
MI	Livonia, Marshall Inds	313-525-5850
MI	Novi, Hamilton Hallmark	313-347-4271
MN	Bloomington, Hamilton Hallmark	612-881-2600
MN	Eden Prairie, Arrow Electrms	612-941-5280
MN	Plymouth, Marshall Inds	612-559-2211
MO	Bridgeton, Marshall Inds	314-291-4650
MO	Earth City, Hamilton Hallmark	314-291-5350
MO	St. Louis, Arrow Electrms	314-567-6888
NJ	Cherry Hill, Hamilton Hallmark	609-424-0110
NJ	Fairfield, Marshall Inds	201-882-0320
NJ	Marlton, Arrow Electrms	609-596-8000
NJ	Mt Laurel, Marshall Inds	609-234-9100
NJ	Parsippany, Hamilton Hallmark	201-515-5300
NJ	Pinebrook, Arrow Electrms	201-227-7880
NY	Endicott, Marshall Inds	607-785-2345
NY	Hauppauge, Arrow Electrms	516-231-1000
NY	Hauppauge, Marshall Inds	516-273-2424
NY	Hauppauge, Hamilton Hallmark	516-434-7470
NY	Melville, Arrow Electrms	516-391-1300
NY	Rochester, Arrow Electrms	716-427-0300
NY	Rochester, Marshall Inds	716-235-7620
NY	Rochester, Hamilton Hallmark	716-475-9130
NY	Ronkonkoma, Hamilton Hallmark	516-737-0600
NC	Raleigh, Arrow Electrms	919-876-3132
NC	Raleigh, Marshall Inds	919-878-9882
NC	Raleigh, Hamilton Hallmark	919-872-0712
OH	Centerville, Arrow Electrms	513-435-5563
OH	Dayton, Marshall Inds	513-898-4480
OH	Dayton, Hamilton Hallmark	513-439-6735
OH	Solon, Arrow Electrms	216-248-3990
OH	Solon, Marshall Inds	216-248-1788
OH	Solon, Hamilton Hallmark	216-498-1100
OH	Worthington, Hamilton Hallmark	614-888-3313
OK	Tulsa, Arrow Electrms	918-252-7537
OK	Tulsa, Hamilton Hallmark	918-254-6110
OR	Beaverton, Almac-Arrow Electrms	503-629-8090
OR	Beaverton, Insight Electrms	503-526-6200
OR	Beaverton, Marshall Inds	503-644-5050
PA	Pittsburgh, Marshall Inds	412-788-0441
TX	Austin, Arrow Electrms	512-835-4180
TX	Austin, Insight Electrms	512-331-5887
TX	Austin, Hamilton Hallmark	512-258-8848
TX	Austin, Marshall Inds	512-837-1991
TX	Carrollton, Arrow Electrms	214-380-6464
TX	Dallas, Hamilton Hallmark	214-553-4300
TX	Houston, Arrow Electrms	713-530-4700
TX	Houston, Marshall Inds	713-895-9200
TX	Houston, Hamilton Hallmark	713-781-6100
TX	Richardson, Insight Electrms	214-783-0800
TX	Richardson, Marshall Inds	214-705-0600
TX	Sugarland, Insight Electrms	713-448-0800
UT	Salt Lake City, Arrow Electrms	801-973-6913
UT	Salt Lake City, Hamilton Hallmark	801-266-2022
UT	Salt Lake City, Marshall Inds	801-973-2288
WA	Bellevue, Almac-Arrow Electrms	206-643-9992
WA	Bothell, Marshall Inds	206-486-5747
WA	Kirkland, Insight Electrms	206-820-8100
WA	Redmond, Hamilton Hallmark	206-881-6697
WI	Brookfield, Arrow Electrms	414-792-0150
WI	New Berlin, Hamilton Hallmark	414-797-7844
WI	Waukesha, Marshall Inds	414-797-8400
Can	Alberta, Calgary, Future Electrms	403-250-5550
Can	Alberta, Edmonton, Future Electrms	403-438-2858
Can	B.C., Burnaby, Hamilton Hallmark	604-420-4101
Can	British Columbia, Burnaby, Arrow Electrms	604-421-2333
Can	British Columbia, Vancouver, Future Electrms	604-294-1166
Can	Manitoba, Winnipeg, Future Electrms	204-786-7711
Can	Ont., Mississauga, Hamilton Hallmark	416-564-6060
Can	Ont., Nepean, Hamilton Hallmark	613-226-1700
Can	Ontario, Brampton, Marshall Inds	416-458-8046
Can	Ontario, Mississauga, Arrow Electrms	416-670-7769
Can	Ontario, Mississauga, Future Electrms	416-612-9200
Can	Ontario, Nepean, Arrow Electrms	613-226-6903
Can	Ontario, Ottawa, Future Electrms	613-820-8313

Can	Que., Ville St. Laurent, Hamilton Hallmark	514-335-1000
Can	Quebec, Dorval, Arrow Electrms	514-421-7411
Can	Quebec, Pointe Claire, Future Electrms	514-694-7710
Can	Quebec, Pointe Claire, Marshall Inds	514-694-8142
Can	Quebec, Quebec City, Future Electrms	418-877-6666
Intl	Australia, Parramatta, ZATEK Comps, Ltd	61-2-895-5534
Intl	Australia, Sidney, ZATEK Comps, Ltd	61-2-874-0122
Intl	Australia, Thirroul, RAE Intl Elec Pty	61-42-673722
Intl	Austria, Wein, Ing. E. Steiner GmbH	43-222-827-4740
Intl	Belguim, Kontich, Alcom Electrms B.V.B.A.	32-3-458-3033
Intl	Denmark, Brendby, Ditz Schweitzer	45-42-45-30-44
Intl	Finland, Espoo, Telercas OY	358-0-804-521622
Intl	France, Antony Cedex, Franelec	33-1-4096-0909
Intl	France, Massey Cedex, DataDis	33-69-20-4141
Intl	Germany, Haar bei Munchen, EBV/MHV	49-89-420-1107
Intl	Germany, Munich, Alfatron GmbH	49-89-4204-910
Intl	Hong Kong, Kowloon, RTI Inds Co. Ltd.	852-795-7421
Intl	India, Bombay, Hindetron	91-812-348-266
Intl	Ireland, Kilkenny, Silicon Concepts	353-566-4002
Intl	Israel, Herzlia, Unitec	972-52-576006
Intl	Italy, Milano, Compres SRL	39-2-61206415
Intl	Italy, Milano, Compres S.P.A.	39-2-6120641
Intl	Japan, Osaka, Hoei Denki	81-6-394-1113
Intl	Japan, Tokyo, Ado Electrn Indust. Co.	81-3-3257-2600
Intl	Japan, Tokyo, Hakuto Co., Ltd.	81-3-3597-8910
Intl	Japan, Yokohama, Japan Macnics Corp.	81-45-939-6140
Intl	Korea, Seoul, Ellen & Company	82-02-587-5724
Intl	Netherlands, IJssel, Alcom Electrms B.V.	31-10-4519533
Intl	Norway, Oslo, Henaco A/S	47-2162110
Intl	S. Africa, Isando, Multikomponent	27-11-974-1525
Intl	Singapore, Technology Distribution	65-368-6065
Intl	Spain, Madrid, ATD	34-1-661-6551
Intl	Sweden, Spanga, Pelcon Electrms	46-8-795-9870
Intl	Switzerland, Baden-Dattwil, Ascrom Primotec AG	41-5684-0171
Intl	Taiwan, Taipei, Master Electrms Corp.	886-02-735-7316
Intl	U.K., England, Slough, Macro Mktg.	44-628-604383
Intl	U.K., Wales, Gwent, Silicon Concepts Ltd	44-291-624101
Intl	U.K., England, Hampshire, Silicon Concepts	44-428-751617
Intl	U.K., England, Oxon, Micro Call	44-84-426-1939

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AL	Huntsville, M Squared, Inc	205-830-0498
AZ	Phoenix, Reptonix, Ltd.	602-230-2630
CA	Campbell, Level One (Western Area)	408-879-2627
CA	San Diego, S C Cubed, Inc.	619-458-5808
CA	Sunnyvale, Trinity Technologies, Inc.	408-733-9000
CA	Tustin, RTS Assocs.	714-730-9561
CO	Englewood, Thorson Rocky Mountain Inc	303-773-6300
CO	Wheat Ridge, AVED Inc	303-422-1701
CT	Fairfield, NRG Limited	203-384-1112
FL	Maitland, EIR, Inc.	407-660-9600
FL	Miami, Level One (Eastern Area)	305-271-3577
GA	Norcross, M Squared, Inc	404-447-6124
IL	Bensenville, Horizon Tech Sls	708-860-7900
IL	Itasca, Beta Tech. Sales, Inc.	708-250-9586
IL	Lisle, Comps, Inc	708-852-7707
IN	Carmel, STB & Assocs.	317-844-9227
KS	Overland, QDC	913-341-2214
MD	Columbia, Third Wave Solutions, Inc.	410-290-5990

MA	Burlington, New Tech Solutions, Inc	617-229-8888
MN	Fridley, Voyager Electrms Corp	612-571-7766
MN	Minneapolis, Russell & Assocs.	612-854-1166
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NM	Albuquerque, Reptonix, Inc.	505-292-1718
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NY	Rockville Centre, S-J Assocs., Inc.	516-536-4242
NC	Raleigh, M Squared, Inc	919-851-0010
OH	Columbus, S-J Assocs., Inc	614-885-6700
OH	Parma, S-J Assocs., Inc.	216-888-7004
OR	Portland, Matrex Mktg. & Sales	503-245-8080
TX	Austin, Mil-Rep Assocs., Inc.	512-346-6331
TX	Carrollton, Level One (Central Area)	214-418-2956
TX	Houston, Mil-Rep Assocs., Inc.	713-444-2557
TX	Richardson, Mil-Rep Assocs., Inc.	214-644-6731
UT	Salt Lake City, Thorson Rocky Mountain Inc	801-942-1683
WA	Bellevue, Matrex Mktg. & Sales	206-643-0363
WI	Milwaukee, Beta Technology Sales, Inc.	414-543-6609
Can	British Columbia, Vancouver, Electro Source, Inc.	604-275-2734
Can	Ontario, Kanata, Electro Source, Inc.	613-592-3214
Can	Ontario, Rexdale, Electro Source, Inc.	416-675-4490
Can	Quebec, Pointe Claire, Electro Source, Inc.	514-630-7486
Intl	Australia, North Ryde, NSW, Composite Elctrn Comps	61-2-878-5099
Intl	Austria, Unterpremstatten, Austria Mikro Systeme Intl AG	43-03136-500
Intl	Belgium, Halle, Tekelec Belgium N.V.	32-2-360-1288
Intl	Denmark, Copenhagen, E.V. Johanssen Elektronik A/S	45-31-83-90-22
Intl	England, Gwent, Silicon Concepts Ltd	44-291-62-4101
Intl	England, Hampshire, Silicon Concepts Ltd	44-428-751617
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Intl	Germany, Hannover, Topas Electrn	49-511-131217
Intl	Germany, Kirchheim/Teck, Scantec	49-7021-54027
Intl	Germany, Planegg, Scantec	49-89-8598021
Intl	Germany, Quickborn, Topas Electrn	49-4106-73097
Intl	Germany, Ruckersdorf, Scantec	49-91-1-579529
Intl	India, Bangalore, Mancomp	91-812-647770
Intl	Israel, Azur, Seg Tec	972-3-556-7458
Intl	Italy, Milano, ECC Elettronica S.P.A.	39-2-48401547
Intl	Japan, Yokohama, Macnica	81-45-939-6140
Intl	Korea, Seoul, Sunin Trading Co	82-2-705-0852
Intl	Netherlands, Zoetermeer, Tekelec Airtroic	31-79-310100
Intl	Norway, Lillestrom, Bexab Norge A/S	47-68-33800
Intl	Portugal, Lisboa, Compa, LDA	351-1-3621283
Intl	Singapore, Serial System PTE Ltd	65-2800-200
Intl	Spain, Madrid, Amritron	34-542-09-06
Intl	Sweden, Tabby, Bexab Sweden AB	46-8-630-88-00
Intl	Switzerland, Baden-Dattwil, Ascrom Primotec AG	41-56-84-01-71
Intl	Taiwan, Taipei, ROC, Jeritronics, Ltd	886-2-58513636
Intl	Turkey, (Forest City, CA), Interex	415-574-0767
Intl	Turkey, Istanbul, Inter Muhendislik Danismanlik vd	90-1-349-9400

Distributors

AZ	Scottsdale, AVED Inc.	602-951-9788
CA	San Diego, AVED Inc.	619-558-8890
CA	San Jose, Bell Microproducts	408-451-9400
CA	Tustin, AVED Inc.	714-259-8258
CA	Visalia, AVED Inc.	209-734-8861
CA	Westlake Village, Bell Microproducts	805-496-2606
CT	Danbury, Phase 1 Tech. Corp.	203-791-9042

MD	Burtonsville, U.S. Electrms, Inc.	301-384-3300
MA	Wilmington, Bell Microproducts, Inc.	508-658-0222
NJ	Eirnwood Park, Phase 1 Tech. Corp.	201-791-2990
NJ	West Berlin, GCI Corp.	609-768-6767
NY	Deer Park, Phase 1 Tech. Corp.	516-254-2600
TX	Austin, AVED Inc.	512-454-8845
TX	Carrollton, LCD Electrms, Inc.	214-245-0600
TX	Dallas, AVED Inc.	214-404-1144
TX	Round Rock, LCD Electrms, Inc.	512-388-0900
UT	West Valley City, AVED Inc.	801-975-9500
Can	Ontario, Rexdale, Valtrite Mktg, Inc.	416-798-2555
Intl	Australia, North Ryde, NSW, Composite Elctrn Comps	61-2-878-5099
Intl	Austria, Unterpremstatten, Austria Micro Systeme Intl AG	43-03136-500
Intl	Belgium, Halle, Tekelec Belgium N.V.	32-2-360-1288
Intl	Denmark, Copenhagen, E.V. Johanssen Elektronik A/S	45-31-83-90-22
Intl	England, Gwent, Silicon Concepts Ltd	44-291-62-4101
Intl	England, Hampshire, Silicon Concepts Ltd	44-428-751617
Intl	Finland, Espoo, Komdel OY/Bexab Finland OY	358-502-3200
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Intl	France, Massy, Reprtronics, sa	33-1-60-13-9300
Intl	Germany, Hannover, Topas Electrn	49-511-131217
Intl	Germany, Kirchheim/Teck, Scantec	49-7021-54027
Intl	Germany, Planegg, Scantec	49-89-8598021
Intl	Germany, Quickborn, Topas Electrn	49-4106-73097
Intl	Germany, Ruckersdorf, Scantec	49-911-579529
Intl	India, Bangalore, Mancomp	91-812-647770
Intl	Israel, Azur, Seg Tec	972-3-556-7458
Intl	Italy, Milano, ECC Elettronica S.P.A.	39-2-48401547
Intl	Japan, Yokohama, Macnica	81-45-939-6140
Intl	Korea, Seoul, Sunin Trading Co	82-2-705-0852
Intl	Netherlands, Zoetermeer, Tekelec Airtronic	31-79-310100
Intl	Norway, Lillestrom, Bexab Norge A/S	47-68-33800
Intl	Portugal, Lisboa, Compa, LDA	351-1-3621283
Intl	Singapore, Serial System PTE Ltd	65-2800-200
Intl	Spain, Madrid, Amritron	34-542-09-06
Intl	Sweden, Taby, Bexab Sweden AB	46-8-630-88-00
Intl	Switzerland, Baden-Dattwil, Ascorm Primotec AG	41-56-84-01-71
Intl	Taiwan, Taipei, ROC, Jeritronics, Ltd	886-2-5851636
Intl	Turkey (Forest City, CA), Interex	415-574-0767
Intl	Turkey, Istanbul, Inter Muhendislik Danismanlik vd	90-1-349-9400

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Sales Office & Representatives

AL	Eicom	205-830-4001
AK	Linear Technlg Corp	408-432-1900
AZ	Tusar	602-998-3688
CA	Bager Electrms	714-957-3367
CA	Bager Electrms	818-712-0011
CA	Harvey King	619-695-9300
CA	Milpitas, Linear Technlg Corp	408-428-2050
CA	Woodland Hills, Linear Technlg Corp	818-703-0835
CO	Waugaman Assoc	303-423-1020
CT	Delta Conn Tech Sls	203-634-8558
FL	QXI, Inc	813-894-4556
FL	QXI, Inc	305-978-0120
FL	QXI, Inc	407-872-2321
GA	Eicom	404-447-8200
IL	Micro Sls	708-285-1000

IL	Addison, Linear Technlg Corp	708-620-6910
IN	Gen II Mktg Inc	317-848-3083
IN	Gen II Mktg Inc	219-436-4485
IA	Gassner & Clark Co	319-393-5763
KS	Lorenz Sls	913-469-1312
KS	Lorenz Sls	316-721-0500
KY	Gen II Mktg, Inc	502-894-9903
MD	DGR, Inc	410-583-1360
MD	DGR, Inc	301-271-4209
MD	DGR, Inc	410-377-4788
MA	Linear Technlg Corp	508-658-3881
MI	Action Comp Sls	313-442-9880
MN	Vector Comp Sls, Inc	612-631-1334
MO	Lorenz Sls	314-997-4558
NE	Lorenz Sls	402-475-4660
NM	Nelco Electronix	505-293-1399
NY	S-J Assocs	516-536-4242
NY	Tri Tech Electrms	315-446-2881
NY	Tri Tech Electrms	716-385-6500
NY	Tri Tech Electrms	914-897-5611
NC	Quantum Mktg Inc	919-846-5728
OH	Omega Sls Inc	216-360-9400
OH	Omega Sls Inc	513-434-5507
OR	Micro Sls	503-645-2841
PA	Omega Electrn Sls Inc	215-244-4000
PA	Langhorne, Linear Technlg Corp	215-757-8578
SC	Quantum Mktg Inc	704-523-8822
TX	Austin, Mil-Rep Assoc	512-346-6331
TX	Dallas, Linear Technlg Corp	214-733-3071
TX	Dallas, Mil-Rep Assoc	214-644-6731
TX	Houston, Mil-Rep Assoc	713-444-2557
UT	Waugaman Assoc	801-261-0802
VA	DGR, Inc	703-742-0060
WA	Micro Sls	206-451-0568
WI	Micro Sls	414-786-1403
Can	British Columbia, Electro Source	604-275-2734
Can	British Columbia, Davetek	604-430-3680
Can	Ontario, Electro Source	416-675-4490
Can	Ontario, Electro Source	613-592-3214
Can	Quebec, Electro Source	514-630-7486
Intl	France, Chateau Malabry, Linear Technlg S.A.R.L	33-1-46316161
Intl	Germany, Eching, Linear Technlg GmbH	49-89-3197410
Intl	Japan, Tokyo, Linear Technlg KK	81-3-3237-7891
Intl	Korea, Seoul, Linear Technlg Korea Branch	82-2-792-1617
Intl	Singapore, Linear Technlg Pte Ltd	65-293-5322
Intl	Taiwan, Taipei ROC, Linear Technlg Corp	886-2-521-7575
Intl	United Kingdom, Surrey, Linear Technlg (UK) Ltd	44-276-677676

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AL	Hammond Electrms	205-830-4764
AL	Marshall Inds	205-881-9235
AZ	Arrow/Schweber	602-431-0030
AZ	Insight Electrms	602-829-1800
AZ	Marshall Inds	602-496-0290
CA	Arrow/Schweber	818-880-9686
CA	Arrow/Schweber	714-587-0404
CA	Arrow/Schweber	619-565-4800
CA	Arrow/Schweber	408-441-9700
CA	Insight Electrms	619-587-1100
CA	Insight Electrms	714-727-2111
CA	Insight Electrms	800-677-7716
CA	Jan Devices	818-708-1100
CA	Marshall Inds	408-942-4600
CA	Marshall Inds	619-578-9600
CA	Marshall Inds	714-458-5301
CA	Marshall Inds	818-878-7000
CA	Marshall Inds	916-635-9700
CA	Marshall Inds	714-921-9000
CA	Zeus Comps	408-629-4789
CA	Zeus Comps	818-889-3838
CO	Arrow/Schweber	303-799-0258
CO	Marshall Inds	303-451-8383
CT	Arrow/Schweber	203-265-7741
CT	Marshall Inds	203-265-3822
FL	Arrow/Schweber	407-333-9300
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FL	Hammond Electrms	305-973-7103
FL	Marshall Inds	407-767-8585
FL	Marshall Inds	305-977-4880
FL	Marshall Inds	813-573-1399

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GA	Arrow/Schweber	404-497-1300
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GA	Marshall Inds	404-923-5750
IL	Arrow/Schweber	708-250-0500
IL	Marshall Inds	708-490-0155
IN	Arrow/Schweber	317-299-2071
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IA	Arrow/Schweber	319-395-7230
KS	Arrow/Schweber	913-541-9542
KS	Marshall Inds	913-492-3121
MD	Arrow/Schweber	410-596-7500
MD	Marshall Inds	410-235-9464
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MD	Zeus Comps	410-997-1118
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MA	Marshall Inds	508-658-0810
MA	Zeus Comps	617-246-8200
MA	Sertech Labs Inc	508-927-5820
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MN	Marshall Inds	612-559-2211
MO	Arrow/Schweber	314-567-6888
MO	Marshall Inds	314-291-4650
NJ	Arrow/Schweber	201-227-7880
NJ	Arrow/Schweber	609-596-8000
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NJ	Marshall Inds	609-234-9100
NJ	Phase 1 Technlg	201-403-0002
NJ	Vantage Comps	201-777-4100
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NY	Arrow/Schweber	516-231-1000
NY	Marshall Inds	607-785-2345
NY	Marshall Inds	716-235-7620
NY	Phase 1 Technlg	516-254-2600
NY	Vantage Comps	516-543-2000
NY	Zeus Comps	516-737-4500
NY	Zeus Comps	914-837-7400
NC	Arrow/Schweber	919-876-3132
NC	Hammond Electrms	919-275-6391
NC	Marshall Inds	919-878-9882
OH	Arrow/Schweber	216-248-3990
OH	Arrow/Schweber	513-435-5563
OH	Marshall Inds	216-248-1788
OH	Marshall Inds	513-898-4480
OH	Marshall Inds	800-627-1034
OH	Zeus Comps	513-293-6162
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OK	Marshall Inds	918-622-7151
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OR	Insight	503-644-3300
OR	Marshall Inds	503-644-5050
PA	Arrow/Schweber	609-596-8000
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SC	Hammond Electrms	803-233-4121
TX	Arrow/Schweber	214-380-6464
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TX	Arrow/Schweber	713-530-4700
TX	Insight	214-783-0800
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TX	Marshall Inds	713-467-1666
TX	Marshall Inds	915-593-0706
TX	Zeus Comps	214-783-7010
TX	Minco Tehcnlg Labs Inc	512-834-2022
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UT	Marshall Inds	801-973-2288
UT	Almac/Arrow	206-643-9992
UT	Insight Electrms	206-820-8100
UT	Marshall Inds	206-486-5747
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WI	Marshall Inds	414-797-8400
Can	British Columbia, Arrow/Schweber	604-421-2333
Can	British Columbia, Electro Sonic	403-255-9550
Can	British Columbia, Electro Sonic	604-273-2911
Can	British Columbia, ITT/RAE	403-273-2780
Can	British Columbia, ITT/RAE	604-291-8866
Can	Manitoba, Electro Sonic	204-783-3105
Can	Manitoba, ITT/RAE	204-786-8401
Can	Ontario, Arrow/Schweber	416-670-7769
Can	Ontario, Arrow/Schweber	613-226-6903

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Can Ontario, ITT/RAE	613-226-7406
Can Ontario, Marshall Inds	416-458-8046
Can Quebec, Arrow/Schweber	514-421-7411
Can Quebec, ITT/RAE	514-335-7697
Can Quebec, Marshall Inds	514-694-8142
Intl Australia, Advanced Comp Distrib	02-534-6200
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Intl Belgium, Alcom Elctms BVBA	03-4583033
Intl Denmark, E.V. Johanssen Elektronik	031-839022
Intl Finland, OY Fintronik AB	0-6926022
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Intl France, Tekelec Airtronic	1-46232425
Intl Germany, Enatechnik GmbH	04106-6120
Intl Germany, Metronik GmbH	089-611080
Intl Germany, Setron	0531-80980
Intl Hong Kong, Leadertronics Co	3-890384
Intl Israel, Vectronics, Ltd	052-556070
Intl Italy, Silverstar	02-66125
Intl Japan, Macnica, Inc	045-939-6140
Intl Japan, Tomen Elctms Corp	03-3506-3670
Intl Korea, J-Tek Corp	02-786-9013
Intl Korea, Sangsoo Elctms	02-780-5360
Intl Netherlands, Alcom Elctms BV	010-4519533
Intl Norway, Eltron A/S	02-500650
Intl Portugal, Comps Electros	01-632563
Intl Singapore, Westech Elctms	743-6355
Intl South Africa, Multitech Elctms Corp	21-644103
Intl Spain, Amiron	01-2485863
Intl Sweden, Svensk Teleindustri	08-7617300
Intl Switzerland, Ascom Primotec	056-840171
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Intl Taiwan, Morihan Intl Corp	02-752-2200
Intl U.K., Promate Elctmc Co	02-7763512
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Intl U.K. Thame, Microcall Ltd	0844-261939

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AL Huntsville, STG	205-534-2376
AZ Phoenix, ISDS	602-971-6250
CA Anaheim, First Rep	714-938-8855
CA Chatsworth, First Rep	818-718-6155
CA Santa Clara, Electec Sls. Inc.	408-496-0706
CA Solana Beach, Cerco	619-792-5555
CO Englewood, Thorsen Rocky Mountain, Inc.	303-799-3435
CT Southbury, Dynamic Technlgs.	203-262-6220
FL Altamonte Springs, SEC	407-682-4800
FL Deerfield Beach, SEC	305-426-4601
GA Lawrence, STG	404-979-2055
IL Arlington Hgts., KMA Sls. Co.	708-398-5300
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IN Kokomo, R.O. Whitesell & Assoc.	317-457-9127
IA Cedar Rapids, Rep Assocs. Corp.	319-373-0152
KS Olathe, Stan Clothier Co.	913-829-0073
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DE	Tai Corp.	609-778-5353
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IN	Tech. Mktg. Grp.	317-844-8462
IA	JR Sls. Engrng, Inc.	319-393-2232
KS	Delltron	816-436-6445
LA	BP Sales	214-234-8438
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MA	Comp Rep Assocs.	617-329-3454
MN	Mel Foster Tech Sls, Inc.	612-941-9790
MS	M2i Montgomery Mktg, Inc.	205-830-0498
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MO	Delltron	816-436-6445
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OH	Lyons Corp.	216-659-9224
OH	Lyons Corp.	614-895-1447
OK	BP Sales	214-234-8438
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Intl Belgium, Bruxelles, Masterchips 011-322-219-5862	Intl France, Les Ulis Cedex, Micro Puissance 011-33-1-6907-1211
Intl Denmark, Lyngse, Prescom 011-45-4218-9800	Intl Germany, Heidenheim, Inetlek GmbH 011-49-7321-20077
Intl France, Les Ulis Cedex, Micro Puissance 011-33-1-6907-1211	Intl Hong Kong, National City Intl 011-852-407-4216
Intl Germany, Heidenheim, Inetlek GmbH 011-49-7321-20077	Intl Hong Kong, Aberdeen, Maxvale Co. Ltd 011-852-555-3310
Intl Hong Kong, National City Intl 011-852-407-4216	Intl Israel, Tel Aviv, Trittech Ltd 011-972-3-544-7293
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Intl Sweden, Stockholm, Dipcom Elctms AB 011-46-8-644-9190	Intl Taiwan, Taipei, Ironic Corp 011-886-2-531-5467
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AZ Scottsdale, Pinnacle Comp Sales 602-994-0441	CA Milpitas, Marcon Sales 408-263-3660
CA Irvine, Spectrum Rep Co 714-453-1525	CA San Diego, Hadden Assoc, Inc. 619-565-9444
CA Milpitas, Marcon Sales 408-263-3660	CO Denver, Alliance Elctms 303-433-1648
CA San Diego, Hadden Assoc, Inc. 619-565-9444	FL Oviedo, Conley & Assoc, Inc. 407-365-3283
CO Denver, Alliance Elctms 303-433-1648	GA Atlanta, EMA, Inc. 404-448-1215
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IL	Highland Park, Mid-Tek Mktg	708-831-1130	TX	Richardson, Synergistic Sales, Inc.	214-644-3500	GA	Norcross, Marshall Inds	404-923-5750
IN	Ft. Wayne, Corrao & Marsh	219-482-2725	UT	Salt Lake City, Lange Sales Inc.	801-487-0843	GA	Norcross, Milgray Electrms Inc.	404-446-9777
IN	Greenfield, Corrao & Marsh	317-462-4446	VA	Richmond, Advanced Technlg Sls, Inc	804-320-8756	IL	Palatine, Milgray Electrms Inc.	708-202-1900
IA	Cedar Rapids, Midwest Tech. Sls.	319-377-1688	WA	Redmond, Sales Tech Assoc	206-869-5412	IL	Schaumburg, Marshall Inds	708-490-0155
KS	Lenexa, Midwest Tech. Sls.	913-888-5100	WI	Brookfield, Synergistic Sales	414-821-1516	IN	Indianapolis, Marshall Inds	317-297-0483
MD	Falls Church, SJ Assocs.	301-583-8353	Can	Ontario, Mississauga, Designtronics	416-564-7111	KS	Lenexa, Marshall Inds	913-492-3121
MA	Worcester, Micro Networks	508-852-5400	Can	Quebec, Pointe Claire, Designtronics	514-695-3124	KS	Overland Park, Milgray Electrms Inc.	913-236-8800
MI	Farmington Hills, Tritech	313-442-1206	Intl	Australia, Leichhardt NSW, Braemac Pty Ltd	02-564-1211	MD	Columbia, Milgray Electrms Inc.	410-995-6169
MN	Eden Prairie, Aldridge and Assocs.	612-944-8433	Intl	Austria, Wien, Ing. Otto Folger GES M.B.H.	01-402-51-21	MD	Silver Springs, Marshall Inds	301-622-1118
MO	Earth City, Midwest Tech. Sls.	314-298-8787	Intl	Belgium, Antwerp, Trade Mark Electrms BVBA	03-325-19-10	MA	Norwood, Gerber Electrms	617-769-6000
NJ	Mt. Laurel, Wyck Mktg	609-727-1070	Intl	Denmark, Bagsvaerd, Alfa Tech Comp AS	44-37-71-00	MA	Wilmington, Marshall Inds	508-657-5900
NY	Liverpool, Foster & Wager	315-457-7954	Intl	Finland, Espoo, Yleiselektronikka OY	358-0-4526-21	MA	Wilmington, Milgray Electrms Inc.	508-657-5900
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NC	Raleigh, EMA, Inc.	919-847-8800	Intl	France, Le Chesnay, A2M SA	1-39-54-91-13	MN	Plymouth, Marshall Inds	612-559-2211
OH	Centerville, Omega	513-434-5507	Intl	France, Les Ulis, Micro Power Sys, S.A.	33-16928-3131	MO	Bridgeton, Marshall Inds	314-291-4650
OK	Tulsa, Comp Tech	918-622-7744	Intl	Germany, Ismaning, Dacom Electrn Vertriebs GmbH	089-99-65-49-0	NJ	Fairfield, Marshall Inds	201-882-0320
OR	Beaverton, James J. Backer Co.	503-627-0775	Intl	Germany, Kandel, Kamaka Electrn GmbH	07275-86-00	NJ	Marton, Milgray Electrms Inc.	609-983-5010
SC	Greenville, EMA, Inc.	803-233-4637	Intl	Germany, Munchen, Avnet E2000	089-45110-256	NJ	Mt. Laurel, Marshall Inds	609-234-9100
TX	Houston, Comp Tech	713-492-0005	Intl	Germany, Osnabrueck, Milgray Elektronik Vertriebs GmbH	0541-139-08-0	NY	Parsippany, Milgray Electrms Inc.	201-335-1766
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UT	Bountiful, Anderson Assoc.	801-292-8991	Intl	Hong Kong, Kowloon, Tekcomp Electrms Ltd	852-710-8121	NY	Farmingdale, Milgray Electrms Inc.	516-420-9800
VA	Falls Church, SJ Assocs.	703-533-2233	Intl	India, Secunderabad, Samura Electrms PVT., Ltd	91-842-862453	NY	Hauppauge, Marshall Inds	516-273-2424
WA	Seattle, James J. Backer Co.	206-285-1300	Intl	Israel, Tel Aviv, Star Tronics	3-260148/9	NY	Pittsford, Milgray Electrms Inc.	716-381-9700
Can	Quebec, Lachine, Vitel Electrms	514-636-5951	Intl	Italy, Velco	39-444-922922	NY	Rochester, CAM RPC Electrms	716-436-5070
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Intl	West Germany, Unterhaching, Unitrode Electrms GmbH	49-89-619004	Intl	Norway, Oslo, Henaco A/S	22-16-21-10	OH	Cleveland, Milgray Electrms Inc.	216-447-1520
			Intl	Singapore, Serial Sys Pte Ltd	65-280-0200	OH	Dayton, Marshall Inds	513-898-4480
			Intl	So. Africa, Transvaal, Pace Electrn Comps (Pty) Ltd	974-12-11	OH	Highland Heights, CAM RPC Electrms	216-461-4700
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			Intl	Switzerland, Zug, Anatec A.G.	042-41-24-41	PA	Pittsburgh, CAM RPC Electrms	412-963-6202
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			Intl	U.K., England, Quarndon Electrms Ltd	0332-32651	TX	Carrollton, Marshall Inds	214-770-0602
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			Intl	United Kingdom, England, Surrey, Micro Power Sys, LTD.	44-932-857315	TX	Houston, Marshall Inds	713-467-1666
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						UT	Salt Lake City, Marshall Inds	810-973-2288
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						WI	Waukesha, Marshall Inds	414-797-8400
						Can	Ontario, Brampton, Marshall Inds	416-458-8046
						Can	Ontario, Mississauga, Milgray Electrms	416-678-0958
						Can	Quebec, Pointe Claire, Marshall Inds	514-694-8142
						Can	Quebec, Pointe Claire, Milgray Electrms	514-426-5900
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						Intl	Austria, Wien, Ing. Otto Folger GES M.B.H.	01-402-51-21
						Intl	Belgium, Antwerp, Trade Mark Electrms BVBA	03-325-19-10
						Intl	Denmark, Bagsvaerd, Alfa Tech Comp AS	44-37-71-00
						Intl	Finland, Espoo, Yleiselektronikka OY	358-0-4526-21
						Intl	France, Antony, C.C.I.	1-46-74-47-00
						Intl	France, Le Chesnay, A2M SA	1-39-54-91-13
						Intl	France, Les Ulis Cedex, Microel S.A.	1-69-07-08-24
						Intl	Germany, Ismaning, Dacom Electrn Vertriebs GmbH	089-99-65-49-0
						Intl	Germany, Kandel, Kamaka Electrn GmbH	07275-86-00
						Intl	Germany, Munchen, Avnet E2000	089-45110-256
						Intl	Germany, Osnabrueck, Milgray Elektronik Vertriebs GmbH	0541-139-08-0
						Intl	Hong Kong, Kowloon, Nanco Electrms Supply Ltd	852-765-3000
						Intl	Hong Kong, Kowloon, Tekcomp Electrms Ltd	852-710-8121
						Intl	India, Secunderabad, Samura Electrms PVT., Ltd	91-842-862453
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						Intl	Italy, Velco	39-444-922922
						Intl	Korea, Seoul, Mainsail Mercantile Ltd	822-745-2761
						Intl	Netherlands, Dordrecht, Added Value Electrms BV	078-13-82-88
						Intl	Norway, Oslo, Henaco A/S	22-16-21-10
						Intl	Singapore, Serial Sys Pte Ltd	65-280-0200

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CA	Irvine, Micro Power Sys (Western Reg)	714-559-6179
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CA	Santa Ana, Unitech Sls, Inc	714-556-8661
CA	Santa Clara, Micro Power Sys, Inc	408-727-5350
CO	Littleton, Lange Sales, Inc	303-795-3600
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IN	Ft. Wayne, R.L. Bontempo Assocs., Inc.	219-478-1057
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FL	St. Petersburg, Marshall Inds	813-573-1399

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 Intl U.K., England, Force Technlgs Ltd 0256-880788

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 85281, Tel: 602-968-6411

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 Sunnyvale, California 94086, Tel: 408-720-9300, FAX:
 910-373-2047

MICROCHIP TECHNOLOGY, INC., 2355 West
 Chandler Boulevard, Chandler, Arizona 85224-6199, Tel:
 602-786-7200, TWX: 910-950-1963, FAX: 602-899-9210

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 AZ Chandler, Microchip Technlg Inc (Corporate) 602-786-7200
 AZ Scottsdale, Western High Tech Mktg 602-860-2702
 CA Costa Mesa, Competitive Technlg 714-540-5501
 CA Escondido, Eagle Tech Sls 619-743-6550
 CA Sunnyvale, Trinity Technlg 408-733-9000
 CO Westminster, Western Region Mktg 303-428-8088
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 FL Altamonte Springs, Electramark Inc. 407-830-0844
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 FL Tampa, Electramark, Inc. 813-962-1882
 GA Marietta, Microchip Technlg Inc 404-509-8800
 GA Norcross, Electramark 404-446-7915
 IL Itasca, Janus Inc 708-250-9650
 IN Fort Wayne, Electro Reps Inc. 219-489-8205
 IN Indianapolis, Electro Reps Inc. 317-842-7202
 IA Cedar Rapids, Spectrum Sls 319-366-0576
 KS Overland, Spectrum Silks 913-648-6811
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 OH Middleburg Hghts, TMC Electrms 216-885-5544
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 TX Austin, Comptech Sales, Inc. 512-343-0300
 TX El Paso, Comp Tech Sales Inc. 915-590-4590
 TX Houston, Comptech Sales, Inc. 713-492-0005
 TX Irving, Comptech Sales 214-751-1181
 UT Salt Lake City, Western Region Mktg 801-268-9768
 WA Bellevue, Micro Sls 206-451-0568
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 AZ Tempe, Bell Inds 602-966-7800
 CA Agoura Hills, Bell Inds 818-879-9494
 CA Carlsbad, Aeges Electrn 619-729-2026
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 CA Irvine, Pioneer Standard 800-535-1430
 CA Irvine, Hall-Mark Electrms 714-727-6000
 CA Rocklin, Hall-Mark Electrms 916-624-9781
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 CA San Diego, Future Electrms 619-625-2800
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 IL Wood Dale, Hall-Mark Electrms 708-860-3800
 IN Ft. Wayne, Bell Inds 219-422-4300
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CA	San Diego, Mitel Semiconductor	619-276-3421
CA	Solano Bch, D ² Sales, Inc	619-481-9310
CA	Thousand Oaks, Eltec Thousand Oaks	805-484-8298
CO	Arvada, Gemini Electrms	303-428-5600
CT	Guilford, Datamark	203-453-0575
FL	Deerfield Beach, Micro-Electrms Comps Corp.	305-426-8944
FL	Largo, Micro-Electrms Comps Corp.	813-393-5011
FL	Mt. Dora, Mitel Semiconductor	904-383-8877
FL	Winter Park, Micro-Electrms Comps Corp.	407-628-3198
IL	Park Ridge, Melcom Assocs. Corp	708-696-1490
IN	Indianapolis, Precision Electrn Comps	317-842-3740
MD	Pasadena, Electrn Engrn & Sales Inc.	410-255-9686
MA	Waltham, Dynasel	617-690-6777
MI	Farmington Hills, Leading Edge Sales Corp.	313-478-6700
MN	Minneapolis, Tecteam Sales Inc.	612-854-8031
MO	Bridgeton, Hitec Central Inc.	314-291-5920
MO	Independence, Hitec Central Inc.	816-796-6684
NV	Henderson, Chapparral Electrms, Inc	702-433-5486
NJ	Haddonfield, Mesa Tech. Assocs.	609-429-9531
NM	Albuquerque, Chapparral Electrms, Inc	505-237-2838
NY	Penfield, Gen-Tech Electrms	716-381-5159
NY	Ronkonkoma, Comtronic Assocs.	516-737-2400
NY	Syracuse, Gen-Tech Electrms	315-455-7346
NY	Williamsville, Gen-Tech Electrms	716-689-2378
NC	Charlotte, Godwin Assocs.	704-549-8500
NC	Raleigh, Godwin Assocs.	919-878-8000
OH	Dayton, The Lyons Corp.	513-278-0714
OH	Richfield, The Lyons Corp.	216-659-9224
OH	Westerville, The Lyons Corp.	614-895-1447
OR	Beaverton, Quadra Sales	503-690-4897
TX	Austin, Logic 1 Sales	512-345-2952
TX	Houston, Logic 1 Sales	713-444-7594
TX	Richardson, Logic 1 Sales	214-234-0765
WA	Bothell, Quadra Sales Corp.	206-489-3428
Can	Alb., Calgary, Cana Rep Group Inc	403-255-0294
Can	Alb., Edmonton, Cana Rep Group Inc	403-487-5578
Can	B. C., Surrey, Cana Rep Group Inc	604-599-1232
Can	Ont., Kanata, Mitel Semiconductor	613-592-2122
Can	Ont., Manotick, Cana Rep Group Inc	613-692-4682
Can	Ont., Markham, Cana Rep Group Inc	416-930-4621
Can	Ont., Oakville, Cana Rep Group Inc	416-338-3399
Can	Que., Bromont, Mitel Semiconductor	514-534-2321
Can	Que., Montreal, Cana Rep Group Inc	514-276-4477
Can	Que., Montreal, Balcorp Ltd	514-939-0909
Intl	Argentina, Buenos Aires, YEL S.R.L.	54-1-40-1025
Intl	Australia, Rydalmere, G E C Electrms Div	61-2-638-1888
Intl	Austria, Wein, Codico GMBH & Co. KG	43-222-86-24-28
Intl	Belguim, Zaventem, Acal N.V. Betae SA	32-2-720-5983
Intl	Brazil, Sao Paulo, Hastec Assessoramento	11-522-1799
Intl	Chile, Santiago, Corporacion Rabco SA	56-2-251-3444
Intl	Denmark, Copenhagen, N C Scand Comp Denmark	45-31-19-44-33
Intl	Finland, Espoo, Nordic Comps	358-0-859-3699
Intl	France, Bievres, Miel Sarl	33-1-60-19-34-52

IC MASTER

Int'l	Germany, Mitel Telecom Ltd.	49-711-7701-522
Int'l	Germany, Berlin, Fest Electronik GMBH	49-30-784-1078
Int'l	Germany, Munchen, Avnet E-2000 GmbH	49-89-45-110-04
Int'l	Germany, Munich, Atlantik Elektronik GMBH	49-89-85-700-00
Int'l	Greece, Athens, Semicon Ltd.	30-1-32-53-626
Int'l	Holland, Eindhoven, Acal Auriema	31-40-502602
Int'l	Hong Kong, Kowloon, Chinam Assocs. Ltd.	852-7441186
Int'l	Hungary, Budapest, Codix	36-1-156-6330
Int'l	India, Bombay, Balcorp(India) Pvt. Ltd.	23-03-19
Int'l	Indonesia, P.T. Centronix	8581187
Int'l	Iran, Tehran, Pars Hafezeh (RACC)	98-21-227-2872
Int'l	Ireland, Dublin, Electrms 2000 Ltd.	353-1-298-7466
Int'l	Israel, Gallium Electrms	972-3-5402242
Int'l	Italy, Milano, Celta SRL	39-2-2666-295
Int'l	Italy, Roma, Celta SRL	39-6-8277-664
Int'l	Japan, Kasuga City, Mitel Semiconductor	81-94-292-0051
Int'l	Japan, Tokyo, Tokyo Electron Ltd.	81-3-3340-8257
Int'l	Korea, (Gardena, CA), Ellen & Company Inc.	310-366-1314
Int'l	Korea, Seoul, Sung-III Trading Co.	02-782-4905-4906
Int'l	Korea, Seoul, ENC-Korea	82-2-579-3330
Int'l	Malaysia, Penang, BBS Electrms Pte. Ltd	60-04-281710
Int'l	Norway, Odin Electrms AS	47-22-677390
Int'l	Pakistan, Islamabad, Makkays High-Tech Sys	051-828831
Int'l	Poland, Warszawa, Codico	48-22-31-43-74
Int'l	Portugal, Lisboa, Cornelta LDA	351-1-941
Int'l	Singapore, DOS Electrms Pte. Ltd	4458880
Int'l	Singapore, Mitel Semiconductor	65-321-8958
Int'l	Singapore, BBS Electrms Pte. Ltd	65-7488400
Int'l	So. Africa, Capetown, Tarsus Technlgs Pty Ltd	27-21-419-0320
Int'l	So. Africa, Randburg, Tarsus Technlgs Pty Ltd	27-11-886-3165
Int'l	Spain, Barcelona, Matrix Electrna	34-93-588-6172
Int'l	Spain, Madrid, Matrix Electrna	34-1-365-2412
Int'l	Sweden, Taby, Lagercrantz Keltech AB	46-8-630-8590
Int'l	Switzerland, Zurich, Egli Fischer & Co. Ltd.	01-209-81-11
Int'l	Taiwan, Taipei, Fairply Enterprises Inc.	02-321-5496
Int'l	Thailand, Bangkok, Electrms Source Co Ltd	662-226-4145/6, 662-225-6985/6
Int'l	Turkey, Istanbul, Barkey Sanayi Matzemelevi	90-2-248-91-47
Int'l	United Kingdom, Bucks, Electrms 2000 Ltd.	44-494-44-40-44
Int'l	United Kingdom, Cambridge, DIP Electrms Ltd.	44-223-462244
Int'l	United Kingdom, Gwent, Mitel Telecom Ltd.	44-291-430000
Int'l	United Kingdom, Oxfordshire, Ambar Comps Ltd	44-844-261144
PR	Caquas, MEC/Caribe	809-746-9897
Distributors		
AL	Jaco/QC, Inc	1-800-776-5226
AL	Time Electrms	1-800-258-8513
AZ	Tempe, Bell Inds	602-966-7800
AZ	Tempe, Time Electrms	602-967-2000
CA	Agoura Hills, Bell Inds	818-879-9494
CA	Agoura Hills, Time Electrms	818-707-2890
CA	Chatsworth, Time Electrms	818-998-7200
CA	Culver City, Time/Avnet Prod Mgmt	310-558-2429
CA	Cypress, Bell Inds	714-895-7801
CA	Irvine, Sterling Electrms	714-453-7660
CA	Los Angeles, Bell Inds	310-826-2355
CA	Rocklin, Bell Inds	916-652-0414
CA	San Diego, Sterling Electrms	619-560-8097
CA	San Diego, Bell Inds	619-826-6778
CA	San Diego, Time Electrms	619-586-1331
CA	San Jose, Sterling Electrms	408-453-0835
CA	San Jose, Jaco Electrms	408-432-9290, 1-800-696-0948
CA	Sunnyvale, Time Electrms	408-734-9888
CA	Sunnyvale, Bell Inds	408-734-8570
CA	Tustin, Jaco Electrms	714-258-9003

CA	Tustin, Time Electrms	714-669-0100
CA	Westlake Village, Sterling Electrms	818-865-2333
CA	Westlake Village, Jaco Electrms	805-495-9998
CA	Woodland Hills, Time Electrms	213-320-0880
CO	Englewood, Sterling Electrms	303-792-3939
CO	Englewood, Time Electrms	303-721-8882
CT	Time Electrms	203-271-3200
CT	Wallingford, Sterling Electrms	203-265-9535
FL	Coral Springs, Jaco Electrms	305-341-8280
FL	Orlando, Time Electrms	407-244-5700
GA	Jaco Electrms	1-800-776-5226
GA	Time Electrms	1-800-258-8513
IL	Northbrook, Classic Comps	708-272-9650
IL	Schaumburg, Time Electrms	708-303-3000
IL	Schaumburg, Sterling Electrms	708-303-9900
IN	Ft. Wayne, Bell Inds	219-423-3422
IN	Indianapolis, Bell Inds	317-875-8200
KS	Lenexa, Sterling Electrms	913-492-5406
MD	Columbia, Time Electrms	410-964-3090
MD	Columbia, Jaco Electrms	410-995-6620
MD	Columbia, Sterling Electrms	410-290-3800
MA	Peabody, Time Electrms	508-532-6200
MA	Tewksbury, Jaco Electrms	508-640-0010
MA	Woburn, Sterling Electrms	617-938-6200
MN	Minneapolis, Sterling Electrms	612-831-2666
MS	Jaco Electrms	1-800-776-5226
MO	Manchester, Time Electrms	314-391-6444
NJ	Edison, Sterling Electrms	908-417-1000
NJ	Marlton, Time Electrms	609-596-6700
NJ	Moorestown, Mid-Atlantic Electrms	609-235-1771, 215-923-8868
NJ	Mt. Laurel, Sterling Electrms	609-273-6420
NJ	Wayne, Jaco Electrms	201-904-9510
NM	Albuquerque, Bell Inds	505-292-2700
NM	Albuquerque, Sterling Electrms	505-684-1900
NY	East Syracuse, Time Electrms	315-432-0355
NY	Hauppauge, Jaco Electrms	516-273-5500
NC	Time Electrms	1-800-258-8513
NC	Raleigh, Jaco Electrms	919-876-7767
NC	Raleigh, Sterling Electrms	919-790-8634
OH	Dayton, Bell Inds	513-435-8660
OH	Solon, Sterling Electrms	216-248-1122
OK	Tulsa, Sterling Electrms	918-663-2410
OR	Beaverton, Time Electrms	503-626-3055
OR	Beaverton, Bell Inds	503-644-1500
SC	Time Electrms	1-800-258-8513
TN	Jaco/QC, Inc	1-800-776-5226
TX	Addison, Jaco/QC, Inc.	214-733-4300
TX	Austin, Jaco Electrms	512-835-0220
TX	Austin, Sterling Electrms	512-836-1341
TX	Carrollton, Sterling Electrms	214-243-1600
TX	Houston, Sterling Electrms	713-627-9800
TX	Richardson, Time Electrms	214-644-4644
TX	Richardson, Jaco Electrms	214-234-5565
TX	Sugarland, Jaco/QC, Inc.	713-240-2255
UT	Salt Lake City, Sterling Electrms	801-972-5444
UT	Salt Lake City, Time Electrms	801-973-8494
VA	Richmond, Sterling Electrms	804-323-5510
WA	Kirkland, Time Electrms	206-820-1525
WA	Redmond, Bell Inds	206-881-2140
WI	New Berlin, Classic Comps	414-786-5300
Can	Alb., Calgary, Zentrionics	403-291-1988
Can	B. C., Richmond, Zentrionics	604-273-5575, 1-800-972-0215
Can	Ont., Mississauga, Zentrionics	416-507-2600
Can	Ont., Nepean, Zentrionics	613-226-8840
Can	Que., Montreal, Balcorp Ltd	514-939-0909
Can	Que., Ste. Foy, Zentrionics	418-654-1077
Can	Que., Ville St. Laurent, Zentrionics	514-737-9700
Int'l	Argentina, YEL S.R.L.	54-1-40-1025
Int'l	Australia, Rydalmere, GEC Electrms Div	61-2-638-1888
Int'l	Austria, Wein, Codico GMBH & Co. KG	43-222-86-24-28
Int'l	Belguim, Zaventem, Acal N.V. Betea SA	32-2-720-5983
Int'l	Brazil, Sao Paulo, Hastec Assessoramento	11-522-1799
Int'l	Chile, Santiago, Corporacion Rabco SA	56-2-251-3444
Int'l	Denmark, Copenhagen, NC Scand Comp Denmark	45-31-19-44-33
Int'l	Finland, Espoo, Nordic Comps	358-0-859-3699
Int'l	France, Bievres, Miel Sarl	33-01-60-19-34-52
Int'l	Germany, Berlin, Fest Electronik GMBH	49-30-784-1078

Int'l	Germany, Munchen, Avnet E-2000 GmbH	49-89-45-110-04
Int'l	Germany, Munich, Atlantik Elektronik GMBH	49-89-85-700-00
Int'l	Greece, Athens, Semicon Ltd.	30-1-32-53-626
Int'l	Holland, Eindhoven, Acal Auriema	31-40-502602
Int'l	Hong Kong, Kowloon, Chinam Assocs. Ltd.	852-7441186
Int'l	Hungary, Budapest, Codix	36-1-156-6330
Int'l	India, Bombay, Balcorp(India) Pvt. Ltd.	23-03-19
Int'l	Indonesia, P.T. Centronix	8581187
Int'l	Iran, Tehran, Pars Hafezeh (RACC)	98-21-227-2872
Int'l	Ireland, Dublin, Electrms 2000 Ltd.	353-1-298-7466
Int'l	Israel, Gallium Electrms	972-3-5402242
Int'l	Italy, Milano, Celta SRL	39-2-2666-965
Int'l	Italy, Roma, Celta SRL	39-6-8277-664
Int'l	Japan, Tokyo, Tokyo Electron Ltd.	81-3-3340-8257
Int'l	Korea, (Gardena, CA), Ellen & Company Inc.	310-366-1314
Int'l	Korea, Seoul, Sung-III Trading Co.	02-782-4905-4906
Int'l	Korea, Seoul, ENC-Korea	82-2-579-3330
Int'l	Malaysia, Penang, BBS Electrms Pte. Ltd	60-04-281710
Int'l	Norway, Odin Electrms AS	47-22-677390
Int'l	Pakistan, Islamabad, Makkays High-Tech Sys	051-828831
Int'l	Poland, Warszawa, Codico	48-22-31-43-74
Int'l	Portugal, Lisboa, Cornelta LDA	351-1-941
Int'l	Singapore, DOS Electrms Pte. Ltd.	4458880
Int'l	Singapore, BBS Electrms Pte. Ltd	65-7488400
Int'l	So. Africa, Capetown, Tarsus Technlgs Pty Ltd	27-21-419-0320
Int'l	So. Africa, Randburg, Tarsus Technlgs Pty Ltd	27-11-886-3165
Int'l	Spain, Barcelona, Matrix Electrna	34-93-588-6172
Int'l	Spain, Madrid, Matrix Electrna	34-1-365-2412
Int'l	Sweden, Taby, Lagercrantz Keltech AB	46-8-630-8590
Int'l	Switzerland, Zurich, Egli Fischer & Co. Ltd.	01-209-81-11
Int'l	Taiwan, Taipei, Fairply Enterprises Inc.	02-321-5496
Int'l	Thailand, Bangkok, Electrms Source Co Ltd	662-226-4145/6, 662-225-6985/6
Int'l	Turkey, Istanbul, Barkey Sanayi Matzemelevi	90-2-248-91-47
Int'l	United Kingdom, Bucks, Electrms 2000 Ltd.	44-494-44-40-44
Int'l	United Kingdom, Cambridge, DIP Electrms Ltd.	44-223-462244
Int'l	United Kingdom, Oxfordshire, Ambar Comps Ltd	44-844-261144
PR	Caquas, MEC/Caribe	809-746-9897



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MITSUBISHI ELECTRONICS AMERICA,
 INC., Electronic Device Group, 1050 East Arques
 Avenue, Sunnyvale, California 94086, Tel: 408-730-5900,
 FAX: 408-732-9382

Sales Office & Representatives

CA	Cypress, Mitsubishi Electrms (Southwest)	714-236-6270
CA	San Diego, Mitsubishi Electrms	619-451-9618
CA	Sunnyvale, Mitsubishi Electrms (Northwest)	408-730-5900
CO	Boulder, Mitsubishi Electrms (Rocky Mountain)	303-546-6300
FL	Boca Raton, Mitsubishi Electrms (Southeast)	407-487-7747
GA	Norcross, Mitsubishi Electrms	404-368-4852
IL	Mt. Prospect, Mitsubishi Electrms (North Central)	708-298-9223
IN	Indianapolis, Mitsubishi Electrms	317-257-0828

MANUFACTURERS & DISTRIBUTORS DIRECTORY

MA	Woburn, Mitsubishi Elctms (Northeast)	617-937-4300
MN	Minnetonka, Mitsubishi Elctms (Northern)	612-938-7779
NJ	Somerset, Mitsubishi Elctms (Mid-Atlantic)	908-469-8833
NY	Fishkill, Mitsubishi Elctms	914-896-0896
NC	Cary, Mitsubishi Elctms (South Atlantic)	919-460-0404
TX	Austin, Mitsubishi Elctms	512-338-1100
TX	Irving, Mitsubishi Elctms (South Central)	214-929-0046
Can	Ont. Mississauga, Mitsubishi Elctms	905-670-8711
Can	Ont., Kanata, Mitsubishi Elctms	613-591-3348
Intl	Australia, N.S.W., Mitsubishi Elec Australia Pty. Ltd.	02-684-7200
Intl	France, Cedex, Mitsubishi Elec Europe GmbH	1-47087800
Intl	Germany, Munchen, Munich Office	89-96079430
Intl	Germany, Flatingen, Mitsubishi Elec Europe GmbH	02102-4860
Intl	Hong Kong, North Point, Mitsubishi Elec (H.K.) Ltd.	510-0555
Intl	Italy, Milano, Mitsubishi Elec Europe GmbH	39-60531
Intl	Japan, Hyogo-ken, Overseas Mktg Manager	0727-82-5131
Intl	Japan, Tokyo, Mitsubishi Elec Corp Overseas Mktg Semicond	03-3218-2863
Intl	Singapore, Melco Sales Singapore Pte. Ltd.	4732308
Intl	Sweden Sollentuna, Mitsubishi Elec Europe GmbH	8-625-1000
Intl	Taiwan, Taipei R.O.C., Melco-Taiwan Co. Ltd.	02-735-3030
Intl	United Kingdom, England, Mitsubishi Elec (U.K.) Ltd.	0044-7072-76100
PR	Santurce, Mitsubishi Elctms	809-728-5040

MOSAIC SEMICONDUCTOR, INC., 7420 Carroll Road, San Diego, California 92121, Tel: 619-271-4565, FAX: 619-271-6058

Sales Office & Representatives

AL	Huntsville, Geisting & Assocs	205-830-4554
AZ	Scottsdale, Western High Tech Mktg, Inc.	602-860-2702
CA	Carlsbad, Aegis Elctm Grp., Inc.	619-729-2026
CA	San Diego, Interstate Mktg	619-693-3220
CA	San Jose, Tech Rep	408-261-8287
CA	Woodland Hills, Interstate Mktg	818-883-7606
CO	Colorado Springs, Alliance Elctms	719-282-0111
CO	Denver, Alliance Elctms	303-433-1648
CO	Englewood, Insight Elctms, Inc	303-649-1800
FL	Boca Raton, Electrocraft, Inc	407-394-9686
FL	Largo, Electrocraft, Inc	813-544-1766
FL	Longwood, Electrocraft, Inc	407-682-7832
GA	Duluth, Geisting & Assocs	404-476-0025
IL	Elk Grove Village, Oasis Sls	708-640-1850
IL	Schaumburg, Insight Elctms, Inc	708-885-9700
IN	Carmel, Giesting & Assocs.	317-844-5222
IA	Cedar Rapids, Lorenz Sls, Inc.	319-377-4666
KS	Overland Park, Lorenz Sls, Inc.	913-469-1312
KS	Wichita, Lorenz Sls, Inc.	316-721-0500
KY	Versailles, Giesting & Assocs.	606-873-2330
MD	Baltimore, Micro Comp Inc	301-644-5700
MA	Burlington, Insight Elctms, Inc	617-229-5813
MA	Needham, Apex Assocs	617-444-8070
MI	Coloma, Giesting & Assocs.	616-468-4200
MI	Comstock, Giesting & Assocs.	616-784-9437
MI	Livonia, Giesting & Assocs.	313-478-8106
MN	St.Paul, Cahill, Schmitz & Cahill Inc.	612-646-7217
MO	St.Louis, Lorenz Sls, Inc.	314-997-4558
NE	Lincoln, Lorenz Sls, Inc.	402-475-4660
NJ	Teaneck, Strategic Sales Inc.	201-833-0099
NM	Albuquerque, Western High Tech Mkt. Inc.	505-884-2256
NY	E. Rochester, Tri-Tech Elctms, Inc	716-385-6500
NY	Fayetteville, Tri-Tech Elctms, Inc	315-446-2881
NY	Fishkill, Tri-Tech Elctms, Inc	914-897-5611
OH	Cincinnati, Giesting & Assocs.	513-385-1105
OH	Cleveland, Giesting & Assocs.	216-261-9705
OH	Columbus, Giesting & Assocs.	614-459-4800
OK	Coatsco, Comptech Sls, Inc.	918-266-1966
OR	Beaverton, Quest Mktg. Inc.	503-641-7377
PA	Pittsburgh, Giesting & Assocs.	412-828-3553

TX	Austin, Comptech Sls, Inc.	512-343-0300
TX	El Paso, Comptech Sls, Inc.	915-566-1022
TX	Houston, Comptech Sls, Inc.	713-492-0005
TX	Irving, Comptech Sls, Inc.	214-751-1181
WA	Renton, Quest Mktg.	206-228-2660
WI	Brookfield, Oasis Sls	414-782-6660
Can	Ont., Mississauga, Intelatech Inc.	416-629-0082
Can	Que., Kirkland, Intelatech Inc.	514-630-6041
Intl	Hong Kong, Kowloon, Hi-Link Elctms	852-745-3099
Intl	Israel, Herzalia, Unitec Ltd	9-55-6070
Intl	Japan, Tokyo, Synerdyne, Inc.	03-3461-9311
Intl	Japan, Tokyo, Synerdyne, Inc.	03-3764-5350
<i>Distributors</i>		
AZ	Tempe, Insight Elctms, Inc.	602-829-1800
CA	Irvine, Insight Elctms, Inc.	714-727-3291
CA	San Diego, Insight Elctms, Inc.	619-587-1100
CA	Sunnyvale, Insight Elctms, Inc.	408-720-9222
CA	Westlake Village, Insight Elctms, Inc.	818-707-2101
FL	Altamonte Springs, Vantage Comps, Inc.	407-682-1199
FL	Deerfield Beach, Vantage Comps, Inc.	407-682-1199
MD	Andover, Vantage Comps, Inc.	508-687-3900
MD	Columbia, Vantage Comps, Inc.	301-621-8555
NJ	Cherry Hill, Vantage Sls. Co.	609-424-6777
NJ	Clifton, Vantage Comps, Inc.	201-777-4100
NY	Smithtown, Vantage Comps, Inc.	516-543-2000
OR	Beaverton, Insight Elctms, Inc.	503-644-3300
TX	Austin, Insight Elctms, Inc.	512-331-5887
TX	Richardson, Insight Elctms, Inc.	214-783-0800
TX	Sugarland, Insight Elctms, Inc.	713-448-0800
WA	Kirkland, Insight Elctms, Inc.	206-820-8100

MOSEL-VITELIC, 3910 N. First Street, San Jose, California 95134-1501, Tel: 408-433-6000, FAX: 408-433-0331

Sales Office & Representatives

AL	Huntsville, BITS, Inc	205-881-2900
AZ	Phoenix, Compass Mktg & Sls	602-996-0635
CA	Irvine, Spectrum	714-453-1525
CA	Long Beach, Mosel-Vitellic (Southeastern Sls Off)	310-498-3314
CA	San Diego, Harvey King	619-695-9300
CA	San Jose, Mosel-Vitellic (Northwestern Sls Off)	408-433-6000
CA	Santa Clara, Zeuslec Sls	408-987-0164
CA	Westlake Village, Spectrum	818-706-2919
CO	Englewood, ELCOM, Inc	303-792-3330
CT	Hamden, Datcom	203-288-7005
FL	Ft. Lauderdale, QXI Inc	305-978-0120
FL	Oriando, QXI Inc	407-872-2321
FL	St. Petersburg, QXI Inc	813-894-4556
GA	Norcross, BITS, Inc	404-564-5599
ID	Meridian, Oakridge Mktg	208-888-7345
IL	Hoffman Estates, Victory Sls Inc	708-490-0300
IN	Ft. Wayne, Electro Reps, Inc	219-489-8205
IN	Indianapolis, Electro Reps, Inc	317-842-7202
IA	Cedar Rapids, Cahill, Schmitz, & Howe	319-377-8219
KS	Olathe, Impaq Sls	913-780-6565
MA	Tewksbury, Procomp	508-858-0100
MI	Troy, C.B. Jensen & Assoc	313-643-0506
MN	St. Paul, Cahill, Schmitz & Cahill	612-646-7217
NH	Nashua, Mosel-Vitellic (Northeastern Sls Off)	603-891-2007
NJ	Cherry Hill, Tritex Sls	609-667-0200
NJ	Fairfield, Metro Logic	201-575-5585
NM	Albuquerque, Compass Mktg & Sls	505-344-9990
NY	Syracuse, PiTronics	315-455-7346
NC	Raleigh, BITS, Inc	919-676-1880
OH	Centerville, Omega Sls	513-434-5507
OH	Cleveland, Omega Sls	216-360-9400
TX	Austin, Impaq Sls Co	512-335-9666
TX	Houston, Impaq Sls Co	713-820-0288
TX	Irving, Impaq Sls Co	214-850-0000
TX	Richardson, Mosel-Vitellic (Cen. & Southeastern Sls Off)	214-690-1402
UT	Farmington, Oakridge Mktg, Inc	801-451-7563
VA	Fairfax, Elex Sys Grp, Inc	703-934-6053
WI	Brookfield, Victory Sls Inc	414-789-5770
Can	B.C., Vancouver, GMA Inc	604-439-3383
Can	Ont., Mississauga, GMA Inc	416-671-8111
Can	Ont., Nepean, GMA Inc	613-820-3822

Can	Que., St. Laurent, GMA Inc	514-335-9572
Intl	Australia, NSW, Petersham, Uni-Carter Semi Pty Ltd	61-2-550-0166
Intl	Australia, Sydney, Braemac Pty, Ltd	61-2-564-1211
Intl	Austria, Erchtolds, Codico	222-862428
Intl	Belguim, Alcom	03-458-3033
Intl	England, Cambridge, DIP Elctms Ltd	44-223-462-244
Intl	England, Hants, Force Tech	44-256880788
Intl	Finland, Helsinki, Fintronic	35-806926022
Intl	France, Cedex, Almex	33-140965400
Intl	France, Cedex, Microel	33-169070824
Intl	Germany, Markt Indersdorf, API Elektronik	4981-367092
Intl	Germany, Munich, EPIC 2000	Fax 49-89422775
Intl	Germany, Munich, Tekelec Airtronic GmbH	49-8951640
Intl	Holland, Ijcapelle a/d ijssel, Alcom	010-4519533
Intl	Hong Kong, Causeway Bay, Hennison Technology Ltd	852-890-1967
Intl	Hong Kong, Kowloon, Tektron Elctms Ltd.	852-388-0629
Intl	Hong Kong, Kowloon Bay, Dynatek Elctms Ltd	852-796-6689
Intl	Hong Kong, Taipo, NT, Mosel-Vitellic (Worldwide Off)	852-665-4883
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Intl	Japan, Kawasaki, Teksel Co. Ltd.	81-44-812-7430
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Intl	Korea, Seoul, Mosel-Vitellic (Worldwide Off)	82-2-553-3385
Intl	Singapore, Electec	65-294-8389
Intl	Singapore, Westech Elctms PTE Ltd	65-743-6355
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Intl	Sweden, Stockholm, Titan	46-08-644-7260
Intl	Sweden, Stockholm, DIP Elctms	46-8-644-9190
Intl	Switzerland, Electronitel S.A.	41-374-10060
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Intl	Taiwan, Taipei, Mosel-Vitellic (Worldwide Off)	886-2-740-0829(30)
Intl	Taiwan, Taipei, Wisdom Technology Co Ltd	886-2-731-8496
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AL	Huntsville, Arrow Elctms	205-837-6955
AZ	Phoenix, Hamilton Hallmark	602-437-1200
AZ	Scottsdale, A.V.E.D.	602-951-9788
AZ	Tempe, Time Elctms	602-967-2000
AZ	Tempe, Arrow Elctms	602-431-0030
CA	Anaheim, Time Elctms	714-937-0911
CA	Calabasas, Arrow Elctms	818-880-9686
CA	Camarillo, Milgray Elctms	805-484-4055
CA	Chatsworth, Hamilton Hallmark	818-773-4500
CA	Chatsworth, Time Elctms	818-998-7200
CA	Fountain Valley, Bell Microproducts	714-963-0667
CA	Irvine, Hamilton Hallmark	714-727-6000
CA	Irvine, Milgray Elctms	714-753-1282
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CA	Milpitas, Bell Microproducts	408-434-1150
CA	Rocklin, Hamilton Hallmark	916-624-9781
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CA	San Jose, Merit Elec.	408-434-0800
CA	San Jose, Arrow Elctms	408-441-9700
CA	Sunnyvale, Time Elctms	408-734-9888
CA	Torrance, Time Elctms	213-320-0880
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FL	Orlando, Time Elctms	407-841-6565	WI	New Berlin, Hamilton Hallmark	414-797-7844	KS	Wichita, Melinda Shores/Kelly Greiving(Full Line Rep)	316-838-0190
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GA	Duluth, Hamilton Hallmark	404-447-8000	Can	B.C., Arrow Elctms	604-421-2333	MA	Woburn, Motorola	617-932-9700
GA	Duluth, Arrow Elctms	404-497-1300	Can	Ont., Ottawa, Future Elctms	613-820-8313	MI	Detroit, Motorola	313-347-6800
GA	Norcross, Milgray Elctms	404-623-4400	Can	Ont., Ottawa, Time Elctms	416-672-5300	MN	Minnetonka, Motorola	612-932-1500
GA	Norcross, Time Elctms	404-448-4448	Can	Ont., Toronto, Future Elctms	416-638-4771	MO	St Louis, Motorola	314-275-7380
IL	Arlington Heights, Milgray Elctms	708-253-1212	Can	Ont., Toronto, Milgray Elctms	800-268-3315	NV	Reno, Galena Tech. Crp. (Full Line Rep)	702-746-0642
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IL	Schaumburg, Time Elctms	708-303-3000	Can	Que., Quebec City, Future Elctms	418-682-8092	NM	Albuquerque, S & S Technlgs Inc (Full Line Rep)	505-298-7177
IL	Wood Dale, Hamilton Hallmark	312-860-3800	Can	Quebec, Arrow Elctms	514-421-7411	NY	Fairport, Motorola	716-425-4000
IN	Indianapolis, Hamilton Hallmark	317-872-8875	Intl	Australia, NSW, Petersham, Uni-Carter Semi Pty Ltd	61-2-550-0166	NY	Hauppauge, Motorola	516-361-7000
IN	Indianapolis, RM Elctms	317-291-7110	Intl	Australia, Sydney, Braemac Pty Ltd	61-2-564-1211	NY	Poughkeepsie/Fishkill, Motorola	914-473-8102
IN	Indianapolis, Arrow Elctms	317-299-2071	Intl	Austria, Erchtolds, Codico	222-862428	NC	Raleigh, Motorola	919-870-4355
IA	Cedar Rapids, Arrow Elctms	319-395-7230	Intl	Belgium, Alcom	03-458-3033	OH	Cleveland, Motorola	216-349-3100
KS	Lenexa, Hamilton Hallmark	913-888-4747	Intl	England, Cambridge, DIP Elctms Ltd	44-223-462-244	OH	Columbus/Worthington, Motorola	614-431-8492
KS	Lenexa, Arrow Elctms	913-541-9542	Intl	England, Hants, Force Tech.	44-256880788	OH	Dayton, Motorola	513-495-6800
KS	Overland Park, Milgray Elctms	913-236-8800	Intl	Finland, Helsinki, Fintronic	35-806926022	OK	Tulsa, Motorola	800-544-9496
MD	Columbia, Time Elctms	301-964-3090	Intl	France, Cedex, Almex	33-140965400	OR	Portland, Motorola	503-641-3681
MD	Columbia, Hamilton Hallmark	301-988-9800	Intl	France, Cedex, Microel	33-169070824	PA	Colmar, Motorola	215-997-1020
MD	Columbia, Milgray Elctms	301-621-8169	Intl	Germany, Markt Idersdorf, API Electronik	4981-367092	PA	Philadelphia/Horsham, Motorola	215-957-4100
MD	Columbus, Arrow Elctms	301-596-7800	Intl	Germany, Munich, EPIC 2000	49-89422775	TN	Knoxville, Motorola	615-690-5593
MA	Billerica, Hamilton Hallmark	508-935-9777	Intl	Germany, Munich, Tekelec Airtronic GmbH	49-8951640	TX	Austin, Motorola	512-873-2000
MA	Needham, Cronin Elctms	508-449-5000	Intl	Holland, Ijcapelle a/d Ijssel, Alcom	010-4519533	TX	Houston, Motorola	800-343-2692
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MA	Wilmington, Arrow Elctms	508-658-0900	Intl	Hong Kong, Kowloon Bay, Dynatec Elctms Ltd	852-796-6689	VA	Richmond, Motorola	804-285-2100
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MI	Plymouth, Hamilton Hallmark	313-416-5800	Intl	Japan, Seoul, Inhwa Co Ltd	82-2-703-7231	Can	B.C., Vancouver, Motorola	604-293-7605, 604-294-0619
MN	Bloomington, Hamilton Hallmark	612-881-2600	Intl	Japan, Seoul, Acetronix Co Ltd	82-2-796-4561	Can	Ont., Ottawa, Motorola	613-226-3491
MN	Eden Prairie, Arrow Elctms	612-941-5280	Intl	Japan, Singapore, Electec	65-294-8389	Can	Ont., Toronto, Motorola	416-497-8181
MO	Earth City, Hamilton Hallmark	314-291-5350	Intl	Japan, Singapore, Westech Elctms PTE Ltd	65-743-6355	Can	Que., Montreal, Motorola	514-731-6881
MO	St. Louis, Time Elctms	314-391-6444	Intl	Spain, Madrid, ADM Electra, S.A.	34-1-5304121	Intl	Argentina, Buenos Aires, Argonics, S.A. (Full Line Rep.)	541-30-2461, 541-343-1787
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NJ	Carlton, Milgray Elctms	708-983-5010	Intl	Switzerland, Electronitel S.A.	41-374-10060	Intl	Brazil, Sao Paulo, Motorola	55-11-815-4200
NJ	Clifton, Vantage Comps, Inc	201-777-4100	Intl	Switzerland, Baden Dattwill, Ascrom Primotec AG	41-56-840171	Intl	China, Beijing, Motorola	86-505-2180
NJ	Marlton, Time Elctms	215-337-0900	Intl	Taiwan, Taipei, Veiga Technlg Corp	886-2-933-2341	Intl	China, Helsinki, Motorola	358-0-351-6119
NJ	Marlton, Arrow Elctms	609-596-8000	Intl	Taiwan, Taipei, Wisdom Technlg Co Ltd	886-2-731-8496	Intl	France, Paris, Motorola	33-1-40-955-900
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NJ	Parsippany, Hamilton Hallmark	201-515-3000	PRODUCTS, 5005 East McDowell Road, Phoenix, Arizona 85008					
NJ	Parsippany, Milgray Elctms	201-335-1766	<i>Sales Office & Representatives</i>					
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NY	East Syracuse, Cronin Elctms	315-433-0033	AZ	Tempe, Motorola	602-897-5056	Intl	Germany, Munich, Motorola	49-89-92103-0
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OK	Tulsa, Hamilton Hallmark	918-254-6110						
OK	Tulsa, Arrow Elctms	918-252-7537						
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PA	Pittsburgh, Arrow Elctms	412-968-6807						
TX	Austin, A.V.E.D.	512-454-8845						
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TX	Dallas, A.V.E.D.	214-404-1144						
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CA Calabasas, Wyle Labs	818-880-9000	IL Chicago, Newark Elctns Corp	312-784-5100	NY Rochester, Arrow/Schweber Elctns	716-427-0300
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CA	San Jose, Exis	408-456-1650
CA	Santa Ana, ASIC Design Centers	714-546-0501
CA	Santa Ana, NEC Elctrns (Western)	714-546-0501
CA	Santa Clara, NEC Elctrns (Northern CA)	408-986-1020
CO	Aurora, NEC Elctrns (Western)	303-755-6353
CO	Englewood, Compass Mktg. & Sls. Inc.	303-721-9663
CO	Thornton, Marshall Inds	303-451-8383
CT	Cheshire, Datacraft Engr, Inc.	203-271-1311
FL	Altamonte Springs, V.G. Sales Co. Inc.	407-831-8688
FL	Cooper City, NEC Elctrns (Eastern)	305-436-8114
FL	Fl. Lauderdale, V.G. Sales Co. Inc.	305-938-4333
FL	Largo, V.G. Sales Co. Inc.	813-536-7787
FL	Maitland, NEC Electronics (Eastern)	407-875-1145
GA	Norcross, 20th Century Mktg Inc.	404-446-1999
GA	Norcross, NEC Elctrns (Eastern)	404-447-4409
IL	Hoffman Estates, ASIC Design Center	708-519-3930
IL	Hoffman Estates, NEC Elctrns (Central)	708-519-3930
IL	Schaumburg, Martan Inc.	708-303-5660
IN	Carmel, Technology Mktg Corp.	317-844-8462
IN	Ft. Wayne, Technology Mktg Corp.	219-432-5553
IN	Kokomo, Technology Mktg. Corp.	317-459-5152
IA	Cedar Rapids, Stan Clothier Co.	319-393-1576
KS	Overland Park, AME Sales	913-492-3971
KY	Louisville, TMC	502-245-7411
MD	Glen Burnie, TRI-MARK Inc.	301-761-6000
MA	Natick, ASIC Design Center	508-655-8833
MA	Natick, NEC Elctrns (Eastern)	508-650-4100
MA	Woburn, Compass Technology	617-933-3336
MI	Kentwood, Miltimore Sales	616-554-9292

MI	Novi, Miltimore Sales	313-349-0260
MI	Troy, NEC Elctrns (Central)	313-680-0506
MN	Eden Prairie, Stan Clothier Company	612-944-3456
MN	Minneapolis, NEC Elctrns (Central)	612-844-0209
MO	St. Charles, AME Sales	314-928-2599
NJ	Fairfield, Metro Logic Corp.	201-575-5585
NJ	Moorestown, TAI Corp.	609-778-5353
NJ	Somerset, NEC Elctrns (Eastern)	908-469-5005
NY	Bohemia, Edge Elctrns, Inc	516-567-6300
NY	Fairport, NEC Elctrns (Eastern)	716-425-4590
NY	Fishkill, NEC Elctrns (Eastern)	914-897-2101
NY	Melville, NEC-Eastern Region	516-753-7526
NY	Pittsford, Elcom Sales	716-385-1400
NY	Skaneateles, Elcom Sales	315-685-8245
NC	Cary, NEC Elctrns (Eastern)	919-460-1890
NC	Charlotte, Quantum Mktg Inc.	704-523-8822
NC	Durham, ASIC Design Center	919-544-4132
NC	Raleigh, Quantum Mktg Inc.	919-846-5728
OH	Cincinnati, TMC of Ohio	513-271-3860
OH	Columbus, NEC Elctrns (Central)	614-436-1778
OH	Middleburg Hgts., TMC of Ohio	216-885-5544
OH	Pepper Pike, NEC Elctrns (Central)	216-831-0067
OR	Portland, Venture Elctrns	503-624-0617
OR	Tigard, NEC-Elctrns (Western)	503-671-0177
OR	Tigard, ASIC Design Center	503-671-0177
PA	Allentown, NEC Elctrns (Eastern)	215-391-9094
PA	Trevoise, NEC Elctrns (Eastern)	215-244-8196
TN	Knoxville, 20th Century Mktg. Inc.	615-539-0887
TX	Austin, TL Mktg. Inc.	512-837-7272
TX	Dallas, ASIC Design Center	214-250-4522
TX	Dallas, TL Mktg. Inc.	214-490-9300
TX	Dallas, NEC Elctrns (Central)	214-931-0641
TX	Houston, NEC Elctrns (Central)	713-320-0524
TX	Houston, TL Mktg. Inc.	713-587-8100
TX	Leander, NEC-Midwest	512-259-4947
UT	Salt Lake City, Compass Mktg. & Sls Inc.	801-322-0391
WA	Bellevue, Venture Elctrns	206-454-4594
WI	Mequon, Martan Inc.	414-241-4955
Can	Alb., Calgary, Kaytronics	403-275-7000
Can	B. C., Burnaby, Kaytronics	604-294-2000
Can	Ont., Kanata, Kaytronics	613-592-6606
Can	Ont., Mississauga, Kaytronics	416-507-6400
Can	Que., Ville St-Laurent, Kaytronics	514-745-5800
PR	Mayaguez, V.G. Sales Co. Inc.	809-831-4050
<i>Distributors</i>		
AL	Huntsville, Marshall Inds	205-881-9235
AL	Huntsville, Repron Elctrns	205-722-9500, 800-659-5056
AZ	Phoenix, Marshall Inds.	602-496-0290
AZ	Phoenix, Sterling Elctrns	602-437-5563
CA	Agoura Hills, Western Microtechnlg	818-707-0731
CA	Calabasas, Marshall Inds.	818-878-7000
CA	Camarillo, Milgray Elctrns	805-484-4055, 800-635-7812
CA	Chatsworth, Sterling Elctrns	818-407-8850
CA	El Monte, Marshall Inds.	818-307-6000
CA	Fountain Valley, Bell Microproducts	714-963-0667
CA	Irvine, Milgray Elctrns	714-753-1282, 800-468-9277
CA	Irvine, Marshall Inds.	714-859-5050
CA	Milpitas, Marshall Inds.	408-942-4600
CA	Orange, Western Microtechnlg	714-637-0200
CA	Rancho Cordova, Marshall Inds.	916-635-9700
CA	San Diego, Sterling Elctrns	619-560-8097
CA	San Diego, Marshall Inds.	619-627-4184
CA	San Diego, Western Microtechnlg	619-453-8430
CA	San Jose, Bell Microproducts	408-451-9400
CA	San Jose, Sterling Elctrns	408-435-0835
CA	San Jose, Merit Elctrns	408-434-0800
CA	San Jose, Milgray Elctrns	408-456-0900, 800-442-0946
CA	Saratoga, Western Microtechnlg	408-725-1660
CA	Tustin, Sterling Elctrns	714-259-0900
CA	Westgate Village, Bell Microproducts	805-496-2606
CO	Englewood, Sterling Elctrns	303-792-3939
CT	Milford, Milgray Elctrns	203-878-5538, 800-922-6911
CT	Wallingford, Marshall Inds.	203-265-3822
CT	Wallingford, Sterling Elctrns	1-800-800-9535, 203-265-9535
FL	Altamonte Springs, Marshall Inds.	407-767-8585
FL	Ft. Lauderdale, Marshall Inds.	305-977-4880

MANUFACTURERS & DISTRIBUTORS DIRECTORY

MFGS & DIST. DIRECTORY

FL	Ft. Lauderdale, Repron Elctms	305-735-1112
FL	Lake Mary, Milgray Elctms	
	407-321-2555, 800-367-0780	
FL	St. Petersburg, Marshall Inds.	813-573-1399
FL	Tampa, Repron Elctms	
	813-854-2351, 800-659-1361	
GA	Norcross, Marshall Inds.	404-923-5750
GA	Norcross, Milgray Elctms	404-446-9777
GA	Norcross, Repron Elctms	404-446-1300
IL	Palatine, Milgray Elctms	
	708-202-1900, 800-322-6271	
IL	Schaumburg, Marshall Inds.	708-490-0155
IL	Schaumburg, Sterling Elctms	708-303-9900
IL	Schaumburg, Repron Elctms	
	708-882-1700, 800-659-3595	
IN	Indianapolis, Marshall Inds.	317-297-0483
KS	Lenexa, Marshall Inds.	913-492-3121
KS	Lenexa, Sterling Elctms	913-492-5406
KS	Overland Park, Milgray Elctms	
	913-236-8800, 800-255-6576	
MD	Columbia, Milgray Elctms	
	301-995-6169, 800-638-6656	
MD	Columbia, Sterling Elctms	301-290-3800
MD	Columbia, Vantage Comps	301-720-5100
MD	Silver Spring, Marshall Inds.	301-622-1118
MA	Burlington, Western Microtechnlg	617-273-2800
MA	Hopkinton, Interface Elctms	508-435-0100
MA	Wilmington, Bell Microproducts	508-658-0222
MA	Wilmington, Marshall Inds.	508-658-0810
MA	Wilmington, Milgray Elctms	
	508-657-5900, 800-334-6941	
MA	Woburn, Sterling Elctms	617-938-6200
MI	Livonia, Marshall Inds.	313-525-5850
MI	Livonia, Repron Elctms	
	313-525-2700, 800-659-3844	
MN	Minneapolis, Sterling Elctms	612-831-2666
MN	Minnetonka, Repron Elctms	
	612-938-0000, 800-659-4990	
MN	Plymouth, Marshall Inds.	612-559-2211
MO	Bridgeton, Marshall Inds.	
	314-291-4650, 800-227-2894	
NJ	Clifton, Vantage Comps	201-777-4100
NJ	Edison, Sterling Elctms	908-417-1000
NJ	Fairfield, Marshall Inds.	201-882-0320
NJ	Marlton, Milgray Elctms	
	609-983-5010, 800-257-7111	
NJ	Marlton, Interface Elctms	609-988-5448
NJ	Marlton, Western Microtechnlg	609-596-7775
NJ	Mt. Laurel, Marshall Inds.	609-234-9100
NJ	Parsippany, Milgray Elctms	
	201-335-1766, 800-622-0291	
NM	Albuquerque, Sterling Elctms	505-884-1900
NY	Endicott, Marshall Inds.	800-678-0010
NY	Farmingdale, Milgray Elctms	516-420-9800
NY	Pittsford, Milgray Elctms	716-381-9700
NY	Rochester, Marshall Inds.	716-235-7620
NY	Smithtown, Vantage Comps	516-543-2000
NC	Raleigh, Marshall Inds.	919-878-9882
NC	Raleigh, Milgray Elctms	
	919-790-8094, 800-562-3118	
NC	Raleigh, Repron Elctms	
	919-870-5189, 800-659-5190	
OH	Dayton, Marshall Inds.	513-898-4480
OH	Independence, Milgray Elctms	216-447-1520
OH	Solon, Sterling Elctms	216-248-1122
OH	Solon, Marshall Inds.	216-248-1788
OH	Solon, Repron Elctms	
	216-349-1415, 800-659-7476	
OH	W. Chester, Sterling Elctms	513-779-0418
OK	Tulsa, Sterling Elctms	
	800-331-3514, 918-663-2410	
OR	Beaverton, Marshall Inds.	503-644-5050
OR	Beaverton, Western Microtechnlg	503-629-2082
PA	Pittsburgh, Marshall Inds.	412-788-0441
TX	Austin, Marshall Inds.	512-837-1991
TX	Austin, Sterling Elctms	512-836-1341
TX	Carrollton, Sterling Elctms	214-243-1600
TX	Dallas, Milgray Elctms	
	214-248-1603, 800-637-7227	
TX	Houston, Marshall Inds.	713-467-1666
TX	Houston, Sterling Elctms	713-627-9800
TX	Mansfield, Mouser Elctms	
	817-483-4422, 800-346-6873	
TX	Richardson, Marshall Inds.	214-705-0600
TX	Stafford, Milgray Elctms	
	800-962-1849, 713-240-5360	
UT	Murray, Milgray Elctms	
	801-261-2999, 800-537-9739	

UT	Salt Lake City, Marshall Inds.	801-973-2288
UT	Salt Lake City, Sterling Elctms	801-972-5444
VA	Richmond, Sterling Elctms	804-226-2190
WA	Bothell, Marshall Inds.	206-486-5747
WA	Kirkland, Western Microtechnlg	206-828-2741
WI	Milwaukee, Marsh Elctms	414-475-6000
WI	Waukesha, Marshall Inds.	414-797-8400
Can Alb,	Calgary, ITT Multicomponents	403-273-2780
Can Alb,	Calgary, MEMCO	403-258-3399
Can Alb,	Edmonton, MEMCO	403-258-3399
Can B.C.,	Burnaby, ITT Multicomponents	
	604-421-6222	
Can B.C.,	Surrey, MEMCO CORP	604-590-1553
Can B.C.,	Victoria, MEMCO	604-383-2400
Can Manitoba,	Winnipeg, ITT Multicomponents	
	204-697-2330	
Can Manitoba,	Winnipeg, MEMCO	403-258-3399
Can Ont.,	Brampton, Marshall Inds.	416-458-8046
Can Ont.,	Concord, ITT Multicomponents	
	416-798-7884	
Can Ont.,	Mississauga, Milgray Elctms	416-678-0958
Can Ont.,	Nepean, ITT Multicomponents	613-596-6980
Can Que.,	Pointe Claire, Marshall Inds.	514-694-8142
Can Que.,	St. Laurent, ITT Multicomponents	
	514-335-7697	
Can Saskatchewan,	Saskatoon, MEMCO	
	403-258-3399	

NEWBRIDGE MICROSYSTEMS, 603 March Road, Kanata, Ontario, Canada K2K 2M5, Tel: 613-592-0714, 1-800-267-7231 (from USA), TELEX: 053-4501, FAX: 613-592-1320

Sales Office & Representatives

AL	Huntsville, Hughes Assocs Inc	205-533-9108
AZ	Tempe, Elctms Tech Sls	602-921-7122
CA	Livermore, United Technical Mktg	510-449-7644
FL	Boca Raton, Perrott Assoc	407-362-0191
FL	Casselberry, Perrott Assoc	407-830-0094
FL	Melbourne, Perrott Assoc	407-676-0305
FL	Palm Harbor, Hughes Assocs Inc	813-785-6696
GA	Norcross, Hughes Assocs Inc	404-662-1587
IL	Bensenville, Horizon Tech. Sales	708-860-7000
MD	Burtonsville, Chesapeake Technlg	301-236-0530
MA	Wayland, Daner Hayes Inc	508-655-0888
MI	Ann Arbor, The Sys Grp	313-930-1800
MS	Corinth, Hughes Assocs	601-287-2915
NC	Cary, Hughes Assocs Inc	919-467-7029
OR	Lake Oswego, Salestech Assoc	503-678-2443
OR	Lake Oswego, Salestech Assoc	503-636-9559
TN	Knoxville, Hughes Assocs Inc	615-558-0283
TX	Austin, Oeler & Menelaides	512-453-0275
TX	Dallas, Oeler & Menelaides	214-361-8876
TX	Shanondohah, Oeler & Menelaides	713-894-5021
WA	Redmond, Salestech Assoc	206-869-5412
Intl	Australia, NSW, Petersham, Uni-Carter Semiconductor	
	612-550-0166	
Intl	Australia, Victoria, Ringwood, Dynamic Comp Sales	
	3-873-4755	
Intl	Belgium, Microtron	32-1521-2223
Intl	Denmark, Herlev, Nortec Elctms A/S	42-842000
Intl	England, Kent, Mogul Elctms	44732741841
Intl	France, Malmaison, ISC France	33147083530
Intl	France, Malmaison, Rep France	33147083090
Intl	Germany, Ludwigsburg, PI Elctm Engrg	
	4971414204647	
Intl	Italy, Milanino, El Co Mi Srl	39-02-619-6452
Intl	Japan, Tokyo, K.K. Rocky	81332284511
Intl	Korea, Seoul, M-Sys	8228335548
Intl	Singapore, BBS Elctms	65-748-8400
Intl	Taiwan, Taipei, Data Fast Elctms	02-766-3226

Distributors

AL	Huntsville, Nu Horizons	205-722-9330
CA	Ressed, JAN Devices	818-708-1100
CA	San Jose, JACO Elctms Inc	408-432-9290
CA	Tustin, JACO Elctms Inc	714-258-9003
CA	Westlake Village, JACO Elctms Inc	805-495-9998
DC	Washington, DC, Vantage Comps	
	1-800-843-0707, 301-621-8555	
FL	Altamonte Springs, Vantage Comps	
	407-682-1199	
FL	Baca Platon, JACO Elctms Inc	407-241-7943
FL	Ft. Lauderdale, Nu Horizons	305-735-2555
GA	Norcross, Nu Horizons	404-416-8666
MD	Columbia, JACO Elctms Inc	301-995-6620
MD	Columbia, Nu Horizons	301-995-6330

MD	Columbia, Vantage Comps	410-720-5100
MA	Billerica, Vantage Comps	
	1-800-552-4305, 508-667-2400	
MA	Tewksbury, JACO Elctms Inc	508-640-0010
MA	Wakefield, Nu Horizons	617-246-4442
NJ	Clifton, Vantage Comps	201-777-4100
NJ	Marlton, Nu Horizons	609-596-1833
NJ	Pine Brook, Nu Horizons	201-582-8300
NY	Amityville, Nu Horizons	516-226-6000
NY	Amityville, Nu Horizons	516-226-6000
NY	Hauppauge, JACO Elctms Inc	516-273-5500
NY	Rochester, Nu Horizons	716-292-0777
NY	Smithtown, Vantage Comps	516-543-2000
NC	Raleigh, JACO Elctms Inc	919-876-7767
NC	Raleigh, Vantage Comps	919-870-9905
TX	Addison, JACO Elctms Inc	214-733-4300
TX	Austin, JACO Elctms Inc	512-835-0220
TX	Stafford, JACO Elctms Inc	713-240-2255



FAX: 415-969-1409

NJR CORPORATION, Div. of New Japan Radio Co. Ltd., 340-B East Middlefield Rd, Mountain View, California 94043, Tel: 415-961-3901, FAX: 415-969-1409
Needham, Cronin Elctms, Inc ... 617-449-5000, 222

Sales Office & Representatives

AL	Huntsville, Electramark, Inc	205-830-4400
AZ	Scottsdale, TDSI	602-988-2444
CA	Mission Viejo, Petra Prods	714-768-0491
CA	San Diego, KSA, Inc	619-453-5720
CA	San Jose, Silicon Valley Sls	408-432-1967
CA	Santa Paula, Petra Prods	805-525-9599
CT	Bethel, Ray Perron Co	203-798-0261
CT	Prospect, Ray Perron Co	203-758-5262
FL	Deerfield Bch, MEC	305-428-8944
FL	Largo, MEC	813-393-5011
FL	Winter Springs, MEC	407-366-1379
GA	Norcross, Electramark, Inc	404-446-7915
IN	Crawfordsville, Edmar Rep Assocs	317-364-1871
IA	Cedar Rapids, Advanced Tech Sls	319-393-8280
KS	Olathe, Advanced Tech Sls	913-782-8702
KY	Louisville, Technology Mktg Corp	502-245-7411
MA	Needham, Ray Perron Co	617-449-6162
MI	Madison Heights, Dem Elctms Sls	313-583-1500
MI	Eden Prairie, Corn-Tek Sls	612-941-7181
MO	Bridgeton, Advanced Tech Sls	314-291-5003
NV	Incline Village, Elctm Sls Professionals	
	702-831-7784	
NH	Bedford, Ray Perron Co	603-472-9872
NJ	Glenrock, WD Sls, Inc	201-447-8821
NM	Albuquerque, TDSI	505-883-4343
NY	Eastchester, WD Sls, Inc	914-779-8738
NY	Webster, Impaq Elctm Sls	716-265-2540
OH	Cincinnati, Technology Mktg Corp	513-271-3860
OH	Middleburg Hghts, Technology Mktg Corp	
	216-885-5544	
OR	Portland, Venture Elctms, Inc	503-620-0617
TX	Austin, Oeler & Menelaides, Inc	512-453-0275
TX	Dallas, Oeler & Menelaides, Inc	214-361-8876
TX	The Woodlands, Oeler & Menelaides, Inc	
	713-894-5021	
VA	Reston, Boyle Assocs, Inc	703-620-9558
WA	Belleuve, Venture Elctms, Inc	206-454-4594
Can	Ont., Kanata, Canadian Source Corp	
	613-592-5641	
Can	Ont., Markham, Canadian Source Corp	
	416-415-1951	
Can	Ont., Pointe Claire, Canadian Source Corp	
	514-694-1147	
Intl	Germany, Blumerg, Loco Elektronische Bauelemente GmbH	7702-35412
Intl	Germany, Dusseldorf, Okura & Co, GmbH	
	2-11-16007-0	
Intl	Germany, Nauhlein, Emtron Elctm Vertribs GmbH	
	61-52-61081	

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Int'l	Germany, Wiemersdorf, Heribert Lehner Opto-Und Spezial Elektronik GmbH	4192-5007-0
Int'l	Hong Kong, Causeway Bay, Hip Hook Electrms Co.	803-4008-9
Int'l	Hong Kong, Kowloon, G-Tek Scientific Ltd.	3-812327
Int'l	Hong Kong, Kowloon, Micro Electrms Ltd	343-0181-6
Int'l	Korea, Kyonggi-Do, Cosmic Electrm Co. Ltd.	2-643-3052/3
Int'l	Korea, Seoul, Kong Shin Semiconductor Co Ltd	785-3441-2
Int'l	Korea, Seoul, KEYANG Trading Co. Ltd.	2-739-5911-2
Int'l	Korea, Seoul, Shinmyung Int'l. Co., Ltd.	2-561-8462
Int'l	Singapore, Singapore Representative Office	65-2972102,2972567
Int'l	Spain, Barcelona, Laboratorio De Electro-Acustica, SA	93-219-99-20
Int'l	Switzerland, Gegendorf, Axco AG	1-843-36-36
Int'l	Switzerland, Langenthal, Memotec AG	63281122
Int'l	Taiwan, Taipei, Nanlien Int'l. Corp.	2-7002911
Int'l	Taiwan, Taipei, Chanel Trading Co., Ltd.	2-561-8462
Int'l	Taiwan, Taipei, Cassna Int'l. Co., Ltd.	2-701-3626-8
Int'l	Taiwan, Taipei, Taiwan EHEN Enterprise Co., Ltd.	2-322-5970
Int'l	Taiwan, Taipei ROC, Keystone Technology Inc	
Int'l	United Kingdom, Bucks, Young Ecc Electrms	628-810727
Distributors		
AZ	Scottsdale, Added Value	602-951-9788
AZ	Tempe, Sertek, Inc	602-894-9405
CA	Chola Vista, Inter Elctms, Corp	619-476-0577
CA	Industry, Ital Elctms Sls, Inc	818-968-8515
CA	Irvine, Kelex	800-422-7224
CA	Newbury Park, Sertek, Inc	805-375-6680
CA	San Diego, Added Value	619-558-8890
CA	Tustin, Added Value	714-259-8250
CA	Visalia, Added Value	209-734-8861
CO	Englewood, Sertek, Inc	800-334-7127
CO	Wheat Ridge, Added Value	303-422-1701
CT	Wallingford, Cronin Elctms, Inc	203-265-3134
FL	Coral Springs, Global Resource Elctms, Inc	305-341-1103
FL	Longwood, RM Elctms	407-767-8005
IL	Elmhurst, Semicond. Specialists, Inc	708-279-1000
IN	Indianapolis, RM Elctms	317-580-9999
KS	Kansas City, Semicond. Specialists, Inc	816-452-3900
MD	Gaithersburg, MS Elctms	301-921-0200
MI	Grand Rapids, RM Elctms	616-531-9300
MN	Eden Prairie, Supply Line	612-941-7181
MN	Minneapolis, Semicond. Specialists, Inc	612-854-8841
NH	Manchester, Cronin Elctms, Inc	603-624-0105
NJ	Newark, Samar Elctms	201-344-4453
NY	Rochester, CAM/RPC Elctms	716-427-9999
OH	Cincinnati, CAM/RPC Elctms	513-771-6666
OH	Dayton, CAM/RPC Elctms	513-898-1111
OH	Highland Hghts, CAM/RPC Elctms	216-461-4700
OH	Worthington, CAM/RPC Elctms	614-888-7777
PA	Pittsburgh, CAM/RPC Elctms	412-963-6202
PA	Pittsburgh, Semicond. Specialists, Inc	412-963-7241
TX	El Paso, Intertron, S.A. de C.V.	915-857-8105
UT	West Valley City, Added Value	801-975-9500
WA	Kent, Shannon Industrial, Inc	206-575-8600
Int'l	France, Rue Anatole, AXCO S.a.r.l.	1-47581220
Int'l	Germany, Stuttgart, W. Moor Micro Electrm GmbH	711-458960
Int'l	Hong Kong, Array Electrms, Ltd.	4816832
Int'l	Hong Kong, Kowloon, HI-REEL (Hong Kong) Ltd.	3-7588688
Int'l	Hong Kong, North Point, S & T Enterprises, Ltd.	5-784921
Int'l	Mexico, Colonia Santo Tomas, Intertron, S.A. de C.V.	525-341-7772
Int'l	Mexico, Colonia Tecnologico, Intertron, S.A. de C.V.	5283-59-62-40
Int'l	Mexico, Guadalajara, Jalisco, Intertron, S.A. de C.V.	5236-13-66-27
Int'l	Mexico, Tijuana, Intertron, S.A. de C.V.	5266-84-01-60

Int'l	Singapore, S & T Enterprises, Ltd.	745-9235
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FL Largo, HAMILTON HALLMARK	813-541-7440	OH Dayton, Marshall Inds	513-898-4480		
FL Winter Park, HAMILTON HALLMARK	407-657-3300	OH Solon, Arrow/Schweber Elctms	216-248-3990		
GA Duluth, Arrow/Schweber Elctms	404-497-1300	OH Solon, HAMILTON HALLMARK	216-498-1100		
GA Duluth, HAMILTON HALLMARK	404-623-5475	OH Solon, Marshall Inds	216-248-1788		
GA Duluth, Wyle Laboratories, EMG	404-418-0380	OH Worthington, HAMILTON HALLMARK	614-888-3313		
GA Norcross, Marshall Inds	409-923-5750	OK Tulsa, Arrow/Schweber Elctms	918-252-7537		
IL Bensenville, HAMILTON HALLMARK	708-860-7780	OK Tulsa, HAMILTON HALLMARK	918-254-6110		
IL Itasca, Arrow/Schweber Elctms	708-250-0500	OR Beaverton, Almac/Arrow Elctms	503-629-8090		
IL Schaumburg, Anthem Elctms	708-884-0200	OR Beaverton, Anthem Elctms	503-643-1114		
IL Schaumburg, Marshall Inds	708-490-0155	OR Beaverton, HAMILTON HALLMARK	503-526-6200		
IL Schaumburg, Wyle Laboratories, EMG	800-853-9953	OR Beaverton, Wyle Laboratories, EMG	503-643-7900		
IN Indianapolis, HAMILTON HALLMARK	317-872-8875	OR Beaverton, Marshall Inds	503-644-5050		
IN Indianapolis, Arrow/Schweber Elctms	317-299-2071	PA Horsham, Anthem Elctms	215-443-5150		
IN Indianapolis, Marshall Inds	317-297-0483	PA Pittsburgh, Arrow/Schweber Elctms	412-963-6807		
KS Lenexa, Arrow/Schweber Elctms	913-541-9542	TX Austin, Anthem Elctms	512-388-0049		
KS Lenexa, HAMILTON HALLMARK	913-888-4747	TX Austin, HAMILTON HALLMARK	512-258-8848		
KS Lenexa, Marshall Inds	913-492-3121	TX Austin, Arrow/Schweber Elctms	512-935-4180		
KY Lexington, HAMILTON HALLMARK	800-235-6039	TX Austin, Marshall Inds	512-837-1991		
MD Columbia, Anthem Elctms	410-995-6640	TX Austin, Wyle Laboratories, EMG	512-345-8853		
MD Columbia, Arrow/Schweber Elctms	410-596-7800	TX Carrollton, Zeus Elctms	214-380-4330		
MD Columbia, HAMILTON HALLMARK	410-988-9800	TX Carrollton, Arrow/Schweber Elctms	214-380-6464		
MD Columbia, Wyle Laboratories, EMG	301-490-2170	TX Dallas, HAMILTON HALLMARK	214-553-4300		
MD Silver Spring, Marshall Inds	301-622-1118	TX Houston, HAMILTON HALLMARK	713-781-6100		
MA Burlington, Wyle Laboratories, EMG	617-272-7300	TX Houston, Arrow/Schweber Elctms	713-895-9200		
MA Norwood, Gerber Elctms	617-329-2400	TX Houston, Marshall Inds	713-467-1666		
MA Peabody, HAMILTON HALLMARK	508-532-9808	TX Houston, Wyle Laboratories, EMG	713-879-9953		
MA Wilmington, Arrow/Schweber Elctms	508-658-0900	TX Richardson, Marshall Inds	214-706-0800		
MA Wilmington, Zeus Elctms	508-658-4776	TX Richardson, Anthem Elctms	214-238-7100		
MA Wilmington, Anthem Elctms	508-657-5170	TX Richardson, Wyle Laboratories, EMG	214-235-9953		
MA Wilmington, Marshall Inds	508-658-0810	UT Salt Lake City, Anthem Elctms	801-973-8555		
MI Livonia, Arrow/Schweber Elctms	313-462-2290	UT Salt Lake City, Arrow/Schweber Elctms	801-973-6913		
MI Livonia, Marshall Inds	313-525-5850	UT Salt Lake City, HAMILTON HALLMARK	801-266-2022		
MI Novi, HAMILTON HALLMARK	313-347-4271	UT Salt Lake City, Marshall Inds	801-973-2288		
MI Plymouth, HAMILTON HALLMARK	317-416-5800	UT West Valley City, Wyle Laboratories, EMG	801-974-9953		
MN Bloomington, HAMILTON HALLMARK	612-881-2600	WA Bellevue, Almac/Arrow Elctms	206-643-9992		
MN Eden Prairie, Arrow/Schweber Elctms	612-941-5280	WA Bothell, Anthem Elctms	206-486-5747		
MN Eden Prairie, Anthem Elctms	612-944-5454	WA Bothell, Marshall Inds	206-486-5747		
MN Minneapolis, Wyle Laboratories, EMG	612-921-5910	WA Redmond, HAMILTON HALLMARK	206-881-6697		
MN Plymouth, Marshall Inds	612-559-2211	WA Redmond, Wyle Laboratories, EMG	206-881-1150		
		WI Brookfield, Arrow/Schweber Elctms	414-792-0150		
		WI New Berlin, HAMILTON HALLMARK	414-797-7844		

PHYLON INC., 4027 Clipper Court, Fremont, California 94538, Tel: 415-656-2606

PLUS LOGIC, See Xilinx Corp

PLX TECHNOLOGY, INC., 625 Clyde Avenue, Mountain View, California 94043, Tel: 415-960-0448

POWER INTEGRATIONS, INC., 411 Clyde Avenue, Mountain View, California 94043, Tel: 415-960-3572, FAX: 800-468-0809 (CA 415-940-1541)

Sales Office & Representatives

AL Huntsville, The Novus Grp, Inc	205-534-0044
AZ Phoenix, Sanford Sls Assocs, Inc	602-957-3570
AR Hot Springs Village, Southern States Mktg	501-922-0807
CA Mt. View, Power Integrations, Inc	415-960-3572
CA San Diego, Hadden Assocs, Inc	619-565-9444
CA Santa Ana, Power Integrations Inc	714-662-1564
CA Santa Clara, Electec Sls, Inc	408-496-0706
CA Woodland Hills, Varigon, Inc	818-594-5080
CO Denver, Seale & Assocs Inc	303-695-1980
GA Norcross, The Novus Grp, Inc	404-263-0320
IL Park Ridge, Metcom Assocs Corp	708-696-1490
IA Davenport, Rush & West Assoc Inc	319-388-9494
KS Olathe, Rush & West Assoc, Inc	913-764-2700
MD Columbia, Delta III Assocs Inc	410-730-4700
MD Gaithersburg, Pioneer Technlgs Grp	301-921-0660
MD Towson, Power Integrations Inc	301-832-7502
MA Needham, Apex Assocs	617-444-8070
MI Plymouth, Jay Mktg Assocs	313-459-1200
MI Troy, Pioneer Standard Elctms	313-641-0555
MN Minneapolis, Reptek, Inc	612-331-1212
MO St. Louis, Rush & West Assoc, Inc	314-965-3322
NJ Cherry Hill, Tritex Sls	609-667-0200
NJ Springfield, Radix Inc	201-467-4970
NC Cary, The Novus Grp, Inc	919-460-7771
OH Dayton, Midwest Mktg Assocs (Southern)	513-433-2511
OH Lyndhurst, Midwest Mktg Assocs (Northern)	216-381-8575
OH Solon, Pioneer Standard Elctms	216-349-1300
OH Twinsburg, Pioneer Standard Elctms	216-487-5500
OR Portland, Electr Engrn Sls	503-639-3978
TN Maryville, The Novus Grp, Inc	615-681-8895
TX Austin, Southern States Mktg	512-835-5822
TX El Paso, Sanford Sls Assocs, Inc	915-598-1455
TX Houston, Southern States Mktg	713-868-5180
TX Richardson, Southern States Mktg	214-238-7500
WA Redmond, Electr Engrn Sls	206-883-3374
WI West Allis, Metcom Assocs Corp	414-476-1300

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Intl	Bulgaria, Sofia, Macro Grp	2/525537
Intl	Bulgaria, Sofia, Macro Grp	2-525537
Intl	Croatia, Accord Srl	040-899-2230
Intl	Czechoslovakia, Praha, Macro Well spol. s.r.o.	311-2182
Intl	Denmark, Lyngse, Prescom A/S	4218-9800
Intl	England, Hampshire, Power Integrations (Europe) Ltd	0256-468186
Intl	England, Reading Berks, Sirretta Microelec Ltd	734-756-121
Intl	Finland, Vantaa, Aspects Oy	507-2299
Intl	France, Wissous, Axsess Technlg	1-6011-1110
Intl	Germany, Dreieich, Tekelec Airtronic GmbH	6103-35257
Intl	Germany, Hamburg, Tekelec Airtronic GmbH	40-656-896
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Intl	Germany, Munich, Tekelec Airtronic GmbH	89-51640
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Intl	India, Bangalore, Priya Intl Ltd	214027, 214395
Intl	India, Bombay, Priya Intl Ltd	286-3611
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Intl	India, Madras, Priya Intl Ltd	45-1031
Intl	India, New Delhi, Priya Intl Ltd	331451
Intl	India, Secunderabad, Priya Intl Ltd	81-3549
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Intl	Japan, Kyoto, Matsushita Elctrns Corp	75-951-8151
Intl	Japan, Tokyo, Tomen Integrated Technlg Corp	0425-28-3641
Intl	Malaysia, Electrn Resources (Malaysia) SDN	3-703-8498
Intl	Netherlands, Sonetech Nederland bv	40-83-7075
Intl	Norway, Skedemokorset, NC Nordcomp Norway AS	63-879-330
Intl	Poland, Macropool Co. Ltd	22-11-29-33
Intl	Singapore, Elctrn Resources Private Ltd	2830-888
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Intl	Slovenia, Ljubljana, Acorn d.o.o.	061-182-520
Intl	Spain, Madrid, Selco SA	1-359-4346
Intl	Sweden, Solna, NC Nordcomp Sweden AB	8-764-6710
Intl	Switzerland, Wettingen, Elbatex	56-275-111
Intl	Taiwan, Taipei, ROC, MSI Grp	2-5063320

Distributors

AL	Huntsville, Pioneer Technlgs Grp	205-837-9300
AZ	Tempe, Bell Inds	602-966-3600
CA	Agoura Hills, Bell Inds	818-879-9492
CA	Concord, Pioneer Standard Elctrns	415-676-1355
CA	Cypress, Bell Inds	714-895-7801
CA	Irvine, Pioneer Standard Elctrns	800-535-1430
CA	Los Angeles, Power Plus	310-446-4860
CA	Milpitas, Pioneer Standard Elctrns	408-945-9100
CA	Rocklin, Bell Inds	916-652-0418
CA	San Diego, Bell Inds	619-268-1277
CA	San Jose, Pioneer Technlgs Grp	408-954-9100
CA	Santa Fe Springs, Just-In-Time	310-921-3611
CA	Sunnyvale, Bell Inds	408-734-8570
CO	Denver, Bell Inds	303-691-2460
CT	Shelton, Pioneer Standard Elctrns	203-929-5600
CT	Wallingford, Bell Inds	203-269-6801
FL	Altamonte Springs, Pioneer Technlgs Grp	407-834-9090
FL	Altamonte Springs, Bell Inds	407-339-0078
FL	Deerfield Bch, Pioneer Technlgs Grp	305-428-8877
GA	Duluth, Pioneer Technlgs Grp	404-623-1003
GA	Norcross, Bell Inds	404-446-7167
IL	Addison, Pioneer Standard Elctrns	708-495-9680
IL	Elk Grove Village, Bell Inds	708-640-1910
IN	Fort Wayne, Bell Inds	219-422-4300
IN	Indianapolis, Just-In-Time	317-876-3740
IN	Indianapolis, Pioneer Standard Elctrns	317-573-0880
IN	Indianapolis, Bell Inds	317-875-8200
MD	Columbia, Bell Inds	410-290-5100
MA	Andover, Bell Inds	508-474-8880

MA	Lexington, Pioneer Standard Elctrns	617-861-9200
MI	Grand Rapids, Pioneer Standard Elctrns	616-698-1800
MI	Livonia, Pioneer Standard Elctrns	313-525-1800
MN	Eden Prairie, Pioneer Standard Elctrns	612-944-3355
MO	St. Louis, Pioneer Standard Elctrns	800-255-4350
NJ	Fairfield, Pioneer Standard Elctrns	201-575-3510
NJ	Fairfield, Bell Inds	201-227-6060
NM	Albuquerque, Bell Inds	505-292-2700
NY	Binghamton, Pioneer Standard Elctrns	607-722-9300
NY	Fairport, Pioneer Standard Elctrns	716-381-7070
NY	New York, Pioneer Standard Elctrns	212-971-9562
NY	Woodbury, Pioneer Standard Elctrns	516-921-8700
NC	Morrisville, Pioneer Technlgs Grp	919-460-1530
OH	Cincinnati, Pioneer Standard Elctrns	606-628-0028
OH	Cleveland, Pioneer Standard Elctrns	216-587-3600
OH	Dayton, Bell Inds	513-435-5922
OH	Dayton, Pioneer Standard Elctrns	513-236-9900
OH	Lexington, Pioneer Standard Elctrns	606-233-4564
OH	Reynoldsburg, Pioneer Standard Elctrns	614-236-1000
OK	Tulsa, Pioneer Standard Elctrns	918-665-7840
OR	Beaverton, Bell Inds	503-644-3444
PA	Horsham, Pioneer Technlgs Grp	215-674-4000
PA	Pittsburgh, Pioneer Standard Elctrns	412-782-2300
PA	Trevoise, Bell Inds	215-953-2899
TX	Austin, Pioneer Standard Elctrns	512-835-4000
TX	Dallas, Pioneer Standard Elctrns	214-386-7300
TX	Fort Worth, Pioneer Standard Elctrns	214-263-3168
TX	Houston, Pioneer Standard Elctrns	713-879-3326
TX	Richardson, Bell Inds	214-690-0468
TX	San Antonio, Pioneer Standard Elctrns	512-377-3440
UT	Midvale, Bell Inds	801-561-9691
WA	Redmond, Bell Inds	206-881-2140
WI	Brookfield, Pioneer Standard Elctrns	414-784-3480
WI	Waukesha, Bell Inds	414-547-8879

PROXIMITY TECHNOLOGY INC., 3511 NE
22nd Av, Ft. Lauderdale, Florida 33308, Tel:
305-566-3511

QUALCOMM INCORPORATED, VLSI Products
Division, 10555 Sorrento Valley Road, San Diego,
California 92121-1617, Tel: 619-597-5005, FAX:
619-452-9096

Sales Office & Representatives

AZ	Tempe, Cain Technlg	602-966-4322
CA	Folsom, Disman-Bakner	916-983-1029
CA	Mountain View, Disman-Bakner	415-969-3010
CA	Van Nuys, Cain Technlg	818-904-9392
CO	Englewood, Cain Technlg	303-220-8118
FL	Palm Bay, Spar Tech Assocs	407-727-8045
FL	Palm Harbor, Spar Tech Assocs	813-787-0745
GA	Lawrenceville, Spar Tech Assocs	404-985-8282
IN	Fisher, Phoenix Mktg Grp Inc	317-439-5889
IA	Cedar Rapids, Midwest Tech Slis	319-377-1688
KS	Augusta, Midwest Tech Slis	316-775-2565
KS	Lenexa, Midwest Tech Slis	913-888-5100
MD	Columbia, Roberts Elctrn Slis	410-995-1900
MO	Earth City, Midwest Tech Slis	314-298-8787
NH	Amherst, TMR Assocs	603-672-9336
NY	Cicero, Bertram Aaron & Co	315-699-1573
NY	Pelham, Bertram Aaron & Co	914-738-2019
OR	Portland, Thorson Co. Northwest	503-293-9001
PA	Ft. Washington, Beta Slis	215-643-6650
TX	Austin, Thorson Co. Southwest	512-467-2737
TX	Dallas, Thorson Co. Southwest	214-233-5744
TX	Houston, Thorson Co. Southwest	713-558-8205
WA	Bellevue, Thorson Co. Northwest	206-455-9180
Can	B.C., Burnaby, Giga-Tron Assocs. Ltd	604-299-4244
Can	Ont., Ottawa, Giga-Tron Assocs. Ltd	613-225-4090

QUALITY SEMICONDUCTOR, 851 Martin
Avenue, Santa Clara, California 95050, Tel:
408-450-8080, FAX: 408-496-0773

Sales Office & Representatives

AL	Madison, Concord Comp Reps, Inc.	205-772-8883
AZ	Chandler, Techni-Source Corp	602-497-0711
CA	Encinitas, Bager Elctrns, Inc	619-632-8816
CA	Fountain Valley, Bager Elctrns, Inc	714-957-3367
CA	Santa Clara, Proherge	408-748-2970
CA	Santa Clara, QSI Main Slis Off	408-450-8080
CA	Woodland Hills, Bager Elctrns, Inc	818-712-0011
CO	Colorado Spring, Western Region Mktg, Inc.	719-548-8282
CO	Westminster, Western Region Mktg, Inc.	303-428-8088
FL	Deerfield Beach, Delmac Slis	305-427-7788
FL	Longwood, Delmac Slis	407-831-0040
FL	Tampa, Delmac Slis	813-935-1477
GA	Norcross, Concord Comp Reps, Inc.	404-416-9597
IL	Rolling Meadows, Eagle Tech. Slis	708-991-0700
IN	Indianapolis, L.M. Devos Co	317-842-3245
KS	Olathe, G.M. Brown & Assocs	913-829-3086
MD	Glen Burnie, Logical Technlg	301-766-7444
MA	Burlington, Anacon Slis Assoc Inc	617-272-9080
MA	Frammingham, QSI Eastern Slis Off	508-826-2200
MI	Grosse Pointe, Greiner Assocs Inc	313-499-0188
MN	Minneapolis, George Russell & Assocs.	612-854-1166
NY	Babylon, Astrorep Inc	516-422-2500
NY	Rochester, H.C. Johnston	716-586-0777
NC	Raleigh, Concord Comp Reps Inc	919-783-8038
OH	Centerville, Bear Mktg Inc	513-436-2061
OH	Richfield, Bear Mktg Inc	216-659-3131
OK	Brooken Arrow, Quad State Slis & Mktg	918-357-1352
OR	Portland, ES/Chase Co Inc	508-292-8840

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PA	Allison Pk, Bear Mktg Inc	412-492-1150
PA	Plymouth Meeting, CMS Sls & Mktg, Inc.	215-834-6840
TX	Austin, Quad State Sls	512-346-7002
TX	Dallas, Quad State Sls	214-669-8567
TX	Houston, Quad State Sls	713-893-8585
TX	Plano, QSI (Central Sls Off)	214-516-0488
UT	Salt Lake City, Western Region Mktg, Inc.	801-268-9768
WA	Kirkland, ES/Chase Co Inc	206-823-9535
WI	Waukesha, Eagle Tech Sls	414-968-2418
Can	Ont., Brampton, Cantec Toronto	416-791-5922
Can	Ont., Ottawa, Cantec Ottawa	613-725-3704
Can	Que., St. Eustache, Cantec Montreal	514-623-5496
Int'l	Australia, Victoria, Veltek Pty. Ltd.	011-61-3-8087511
Int'l	Austria, Wien, Steiner	011-43-222-877-7474-0
Int'l	Belgium, Kontich, Alcom	03-458-30-33
Int'l	Bulgaria, Sofia, Macro Group Branch	011-35-92325537
Int'l	Czech Republic, Praha, Macro Weil Spol	011-42-23112182
Int'l	Denmark, Bronby, Ditz Schweitzer	011-45-424-53044
Int'l	Finland, Espoo, Bexab Finn-Crimp	011-935-805023200
Int'l	France, Lissieu Hymelec Comps	011-33-78476810
Int'l	Germany, Munich, Tekelec	011-49-89-51640
Int'l	Holland, Capelle a/d IJssel, Alcom	31-0-10-451-95-33
Int'l	Hong Kong, Kowloon, Comex	011-852-7350325
Int'l	Hungary, Budapest, Macro Info Srvc	011-36-11868033
Int'l	India, Bangalor, Micronics	011-91-812-606631
Int'l	Israel, Givataim, Eldis Technlgs Ltd.	011-972-571-0222
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Int'l	Singapore, Scan Technlg	011-65-294-2112
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Int'l	Switzerland, Zurich, Elliptic	011-411-493-1000
Int'l	Taiwan ROC Taipei, Qumac	011-886-2-71-3178
Int'l	Taiwan, Taipei, Jet-Lit Interprise	011-886-2-737-4200
Int'l	Taiwan, Taipei ROC, Weiking	011-886-2-6590303
Int'l	U.K., England, Silicon Concepts Ltd	011-44-0428-751-617
Distributors		
AL	Huntsville, Nu Horizons	205-722-9330
AL	Huntsville, Arrow Elctms	205-837-6955
AZ	Tempe, Arrow Elctms	602-431-0030
CA	Catlabasas, Arrow Elctms	818-880-9686
CA	Carlsbad, Aegis Elctm Grp.	619-729-2026
CA	Fountain Valley, Bell Micro Prods Inc.	714-963-0667
CA	Fremont, Arrow Elctms	510-490-9477
CA	Hayward, Arrow Elctms	510-487-8416
CA	Irvine, Arrow Elctms	714-587-0404
CA	San Diego, Arrow Elctms	619-565-4800
CA	San Jose, Arrow Elctms	408-441-9700
CA	San Jose, Arrow Elctms	408-428-6400
CA	San Jose, Bell Micro Prods Inc	408-451-9400
CA	San Jose, Zeus Elctms	408-629-4789
CA	Westlake Village, Bell Micro Prods Inc	805-496-2606
CA	Yorba Linda, Zeus Elctms	714-921-9000
CO	Englewood, Arrow Elctms	303-799-0258
CT	Wallingford, Arrow Elctms	203-265-7741
FL	Altamonte Springs, Zeus Elctms	407-831-8008
FL	Deerfield, Arrow Elctms	305-429-8200
FL	Fl. Lauderdale, Nu Horizons	305-735-2555
FL	Lake Mary, Arrow Elctms	407-333-9300
GA	Duluth, Arrow Elctms	404-497-1300
GA	Norcross, Nu Horizons	404-416-8866
IL	Itasca, Arrow Elctms	708-250-0500

IN	Indianapolis, Arrow Elctms	317-299-2071
IA	Cedar Rapids, Arrow Elctms	319-395-7230
KS	Lenexa, Arrow Elctms	913-541-9542
MD	Columbia, Nu Horizons	410-995-6330
MD	Columbia, Arrow Elctms	301-596-7800
MD	Gaithersburg, Arrow Elctms	301-670-1600
MA	Wakefield, Nu Horizons	617-248-4442
MA	Wilmington, Bell MicroProducts, Inc.	508-658-0222
MA	Wilmington, Arrow Elctms	508-658-0900
MI	Livonia, Arrow Elctms	313-462-2290
MN	Eden Prairie, Arrow Elctms	612-941-5280
MO	St. Louis, Arrow Elctms	314-567-6888
NJ	Holmdel, Arrow Elctms	908-949-4700
NJ	Marlton, Nu Horizons	609-596-1833
NJ	Marlton, Arrow Elctms	609-596-8000
NJ	Pine Brook, Arrow Elctms	201-227-7880
NJ	Pine Brook, Nu-Horizons	201-882-8300
NY	Amityville, Nu Horizons	516-226-6000
NY	Amityville, Nu-Horizons	516-226-6000
NY	Hauppauge, Arrow Elctms	516-231-2500
NY	Melville, Arrow Elctms	516-391-1300
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NY	Rochester, Arrow Elctms	716-427-0300
NY	Rochester, Nu-Horizons	716-292-0777
NY	Ronkonkoma, Arrow Elctms	516-467-1000
NC	Raleigh, Arrow Elctms	919-876-3132
OH	Centerville, Arrow Elctms	513-435-5563
OH	Solon, Arrow Elctms	216-248-3990
OK	Tulsa, Arrow Elctms	918-252-7537
OR	Beaverton, Arrow Elctms	503-629-8090
PA	Pittsburg, Arrow Elctms	412-963-6807
TX	Austin, Arrow Elctms	512-835-4180
TX	Carrollton, Arrow Elctms	214-380-6464
TX	Houston, Arrow Elctms	713-530-4700
UT	Salt Lake City, Arrow Elctms	801-973-6913
WA	Bellevue, Arrow Elctms	206-643-9992
WI	Brookfield, Arrow Elctms	414-792-0150
Can	B.C., Burnaby, Arrow Elctms	604-421-3132
Can	B.C., Burnaby, Arrow Elctms	604-421-3132
Can	Ont., Mississauga, Arrow Elctms	416-670-7769
Can	Ont., Nepean, Arrow Elctms	613-226-6903
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Sales Office & Representatives		
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CA	Manhattan Beach, QuickLogic (Southwest)	310-546-5589
CA	Newport Beach, Leading Concept Technlg	714-851-0654
CA	San Diego, Littlefield & Smith Assoc	619-455-0055
CA	San Jose, EXIS	408-456-1650
CA	Santa Clara, QuickLogic (Northwest)	408-987-2000
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FL	Longwood, Delmac Sls, Inc	407-831-0040
FL	Tampa, Delmac Sls, Inc	813-447-5192
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MA	Westford, Nashoba Grp	508-692-7503
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NY	Buffalo, Quality Comps, Inc	716-837-5430
NY	Manlius, Quality Comps, Inc	315-682-8885
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Int'l	Germany, Planegg, Scantec Mikroelektronik GmbH	49-89-859-80-21
Int'l	Germany, Quickborn, Topas Electrn GmbH	49-4106-73097
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NY Hauppauge, Raytheon Rgn Sls Off	516-582-3646
NY Syracuse, PiTronics, Inc.	315-455-7346
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OH Dayton, Raytheon District Off	513-293-1888
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TX Richardson, Interactive Comps Sls	214-669-2277
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 CA Agoura Hills, Bell Inds 818-879-9492
 CA Calabasas, Kent/Shelley-Ragon 818-876-1800
 CA Costa Mesa, Eric Elctms 714-751-1185
 CA Cypress, Bell Inds 714-895-7801
 CA Fremont, Acacia/Deanco 510-623-7500
 CA Gilroy, Mouser Elctms 800-346-6873
 CA Industry, Ital Elctm Sls 818-968-8515
 CA Irvine, Acacia/Deanco 714-660-0834
 CA Irvine, Kelex Elctms 714-863-1230
 CA Irvine, Integrated Elctms 714-753-0127
 CA Irvine, Sterling Elctms 714-453-7660
 CA Los Angeles, Bell Inds 310-825-2355
 CA Milpitas, Kent/Shelley-Ragon 408-262-5300
 CA Milpitas, Projections Unlimited 408-942-1717
 CA Rocklin, Bell Inds 916-652-0418
 CA Sacramento, Integrated Elctms 916-363-6030
 CA San Diego, Neumann Elctms 619-695-3005
 CA San Diego, Kent/Shelley-Ragon 619-453-7133
 CA San Diego, Sterling Elctms 619-560-8097
 CA San Diego, Bell Inds 619-268-1277
 CA San Diego, Acacia/Deanco 619-597-0577
 CA San Diego, All American 619-458-5850
 CA San Diego, Projections Unlimited 619-453-8444
 CA San Jose, Sterling Elctms 408-435-5566
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 CA San Jose, Jaco Elctms 408-432-9290
 CA San Jose, All American 408-943-1200
 CA Santa Maria, Garrett IEU 805-922-0594
 CA Santee, Mouser Elctms 619-449-2222

CA Sunnyvale, PSC Elctms 408-373-1333
 CA Sunnyvale, Bell Inds 408-734-8570
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 CA Tustin, JACO Elctms 714-258-9003
 CA Tustin, Projections Unlimited 714-544-2700
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 CA Westlake Village, Sterling Elctms 818-865-2333
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 CO Denver, Bell Inds 303-691-9010
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 IL Elk Grove Village, Kent/Shelley-Ragon 708-364-1300
 IL Elk Grove Village, Bell Inds 708-640-1910
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 IL Schaumburg, Sterling Elctms 708-303-9900
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 IA Cedar Rapids, Dee Elctms 319-365-7551
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TX Austin, Sterling Elctms	512-836-1341
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Can Ont., Nepean, Carsten Elctms	613-726-9250
Can Que., St. Laurent, Carsten Elctms	514-334-8321

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408-922-0238

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CA San Diego, Littlefield & Smith	619-455-0055
CA San Jose, S-MOS Sys, Inc.	408-922-0200
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CT Bethel, Future Elctms	203-743-9594
CT Woodbury, Anacon Sales	203-266-0707
FL Casselbury, Dyne-A-Mark Corp.	305-831-2822

FL Clearwater, Dyne-A-Mark Corp.	813-441-4702
FL Ft. Lauderdale, Dyne-A-Mark Corp.	305-771-6501
GA Norcross, Electm Sales, Inc.	404-448-6554
GA Roswell, S-MOS Sys, Inc. (Southwest Regional Off.)	404-992-7731
IL Naperville, S-MOS Sys, Inc (N. Central Regional Off.)	708-357-0010
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IN Indianapolis, Precision Elctms Comps	317-842-3740
IA Marion, AEM, Inc.	319-377-1129
KS Lenexa, AEM Inc.	913-888-0022
MD Glen Burnie, Logical Technology	301-766-7444
MA Burlington, Anacon Sales	617-272-9080
MA Wakefield, S-MOS Sys, Inc. (Eastern Area)	617-246-3600
MI Farmington Hills, Tritech Sales, Inc.	313-553-3370
MN Eden Prairie, Electro-Mark	612-944-5850
MO Brigeton, AEM, Inc.	314-298-9900
NY Fayetteville, H.C. Johnson Agencies, Inc.	315-637-1143
NY Rochester, H.C. Johnson Agencies, Inc.	716-586-0777
NY Woodbury, Comp Consultants, Inc.	516-364-8020
NC Cary, Electm Sales, Inc.	919-467-8486
NC Charlotte, Electm Sales, Inc.	704-543-8705
NC Raleigh, S-MOS Sys, Inc. (Southeast Area)	919-878-1120
OH Dayton, The Lyons Corp.	513-278-0714
OH Richfield, The Lyons Corp.	216-659-9224
OH Westerville, The Lyons Corp.	614-895-1447
OR Tigard, Electm Comps Sales	503-245-2342
PA Trevoise, Omega Electm Sales	215-244-4000
TX Austin, Southwestern Tech Sales	512-258-6297
TX Dallas, Southwestern Tech Sales	214-369-0977
TX Houston, Southwestern Tech Sales	713-440-9200
WA Mercer Island, Electm Comp Sales	206-232-9301
WI Glendale, Dolin Sales Company	414-482-1111
Can British Columbia, Surry, Dynasty Comps	604-597-0068
Can Ontario, Mississauga, Dynasty Comps	416-674-8060
Can Ontario, Nepean, Dynasty Comps	613-723-0725
Can Quebec, Pointe Claire, Dynasty Comps	514-694-0275
PR San Juan, ETS, Inc.	809-798-1300

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AZ Tempe, Schweber Elctms	602-431-0030
CA Agoura Hills, Western Micro	818-707-0377
CA Calabasas, Schweber Elctms	818-880-9686
CA Chatsworth, Future Elctms	818-700-0914
CA Irvine, Schweber Elctms	714-863-0200
CA Irvine, Future	714-250-4141
CA Orange, Western Micro	714-637-0200
CA San Diego, Western Micro	619-453-8430
CA San Diego, Schweber Elctms	619-495-0015
CA San Diego, Future	619-278-5020
CA San Jose, Schweber Elctms	408-432-7171
CA Saratoga, Western Micro	408-725-1660
CO Englewood, Schweber Elctms	303-799-0258
CO Westminster, Future Elctms	303-650-0123
CT Oxford, Schweber Elctms	203-264-4700
FL Altamonte Springs, Future Elctms	305-767-8414
FL Altamonte Springs, Schweber Elctms	407-331-7555
FL Clearwater, Future Elctms	813-578-2770
FL Deerfield Beach, Vantage Comps	305-429-1001
FL Pompano Beach, Schweber Elctms	305-997-7511
GA Norcross, Schweber Elctms	404-449-9170
GA Norcross, Future Elctms	404-441-7676
IL Bensenville, GBL Goold	312-860-7171
IL Schaumburg, Schweber Elctms	708-330-2888
IL Schaumburg, Future Elctms	312-892-1255
IN Indianapolis, Schweber Elctms	317-843-1050
IA Cedar Rapids, Schweber Elctms	319-373-1417
KS Overland Park, Schweber Elctms	913-492-2922
MD Columbia, Schweber Elctms	301-596-7800
MD Columbia, Future Elctms	301-955-1222
MD Columbia, Vantage Comps	301-720-5100
MA Andover, Vantage Comps	508-687-3900
MA Burlington, Western Micro	617-273-2800
MA Westborough, Future Elctms	617-366-2400
MA Wilmington, Schweber Elctms	508-694-9100
MI Livonia, Future Elctms	313-261-5270

MI Livonia, Schweber Elctms	407-331-7555
MN Eden Prairie, Schweber Elctms	612-941-5280
MN Eden Prairie, Future Elctms	612-944-2200
MO Earth City, Schweber Elctms	314-739-0520
MO St. Louis, Future Elctms	314-537-0688
NJ Clifton, Vantage Comps	201-777-4100
NJ Fairfield, Future Elctms	201-227-4366
NJ Marlton, Western Micro	609-596-7775
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NJ Pinebrook, Schweber Elctms	201-227-7880
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NY Hauppauge, Schweber Elctms	516-231-2500
NY Liverpool, Future Elctms	315-451-2371
NY Mt. Vernon, Janesway Elctms	914-699-6710
NY Pittsford, Schweber Elctms	716-383-8020
NY Rochester, CAM RPC Elctms	716-427-9999
NY Rochester, Future Elctms	716-272-1120
NY Smithtown, Vantage Comps	516-543-2000
NY Westbury, Schweber Elctms Corp. Office	516-334-7474
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NC Raleigh, Schweber Elctms	919-867-0000
OH Beachwood, Schweber Elctms	216-464-2970
OH Cleveland, CAM RPC Elctms	216-461-4700
OH Dayton, Schweber Elctms	513-439-1800
OK Tulsa, Schweber Elctms	918-622-8000
OR Beaverton, Western Micro	503-629-2082
OR Beaverton, Future Elctms	503-645-9454
PA Pittsburgh, Schweber Elctms	412-963-6804
PA Pittsburgh, CAM RPC Elctms	412-782-3770
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TX Austin, Schweber Elctms	512-339-0088
TX Dallas, Western Micro	214-248-3775
TX Dallas, Omni Pro Elctms	214-233-0500
TX Dallas, Schweber Elctms	214-247-6300
TX Houston, Schweber Elctms	713-784-3600
TX Richardson, Future Elctms	214-437-2437
UT Salt Lake City, Future Elctms	801-972-8489
UT Salt Lake City, Integrated Elctms	801-977-9750
WA Bellevue, Future Elctms	206-881-8199
WA Redmond, Western Micro	206-881-6737
WI New Berlin, Schweber Elctms	414-784-9551
Can Alberta, Calgary, Semad	403-252-5664
Can British Columbia, Burnaby, Semad	604-420-9889
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NY Clark Mills, KLM Garner, Inc	315-853-6126
NY Great Neck, Trionic Assocs	516-466-2300
OH Cincinnati, Giesting & Assocs	513-385-1105
PA Ivyland, Microwave Comps Mktg	215-953-1711
TX Carrollton, Seaton Corp	214-980-9860
VA Fairfax, Schibley Assocs, Inc	703-591-3008
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Int'l	Germany, Solingen, Vertriebs GmbH	49-212-59-30-11
Int'l	Germany, Stuttgart, Dacom Electrm	49-711-78068-0
Int'l	Germany, Stuttgart, Metronik GmbH	49-711-76-40-33
Int'l	Hong Kong, Electrocon Products Ltd.	0-481602-2
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FL	Oviedo, Zeus Comps	407-365-2356
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MD	Columbia, Zeus Comps	301-997-1118
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PA	Horsham, Anthem	215-443-5150
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TX	Richardson, Zeus Comps	214-783-7010
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Can	Ontario, Ottawa, Future Electrms	613-820-8313
Can	Quebec, Pointe Claire, Future Electrms	514-694-7710



FAX: 408-433-3214

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Semiconductor Products Group, 1150 Ringwood Court,
San Jose, CA 95131, Tel: 408-433-3208, FAX:
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Sales Office & Representatives

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CA	Irvine, Premier Technlg Sl	714-262-0522
CA	Marina Del Ray, Premier Technlg Sl	310-821-7878
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CA	San Jose, Seiko Instrs	408-433-3208
CA	San Jose, H-Tech Sls Inc	408-453-2111
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MO	St. Louis, Electri-Rep	314-993-4421
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NJ	Marlton, BGR Assocs	609-983-1020
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OR	Tigard, Earl & Brown Co Inc	503-639-2100
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CA	San Jose, Sterling Elctms	408-435-0835
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CA	Torrance, All American	310-320-0240
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CO	Englewood, Sterling Elctms	303-792-3939
CT	Wallingford, Sterling Elctms	203-265-9535
FL	Miami, All American	305-621-8282
FL	Sunrise, All American	305-572-7999
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IL	Schaumburg, Sterling Elctms	708-303-9900
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KS	Lenexa, Sterling Elctms	913-492-5406
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TX	Houston, Sterling Elctms	713-627-9800
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WA	Bothell, Cypress Elctms	206-483-1144
WI	West Allis, Advent Elctms	414-475-6860

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A SEPONIX CORPORATION

FAX: 408-922-0137

SEPONIX CORPORATION, 2151 O'Toole Avenue, Suite L, San Jose, California 95131, Tel: 408-922-0133, 800-237-4590, FAX: 408-922-0137

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Sales Office & Representatives

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FL	Tampa, Comp Design Mktg	813-886-9721
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IN	Kokomo, Micro-Comps	317-454-6988
IN	Leo, Mohrfield Mktg	219-627-5355
IA	Cedar Rapids, Spectrum Sls	319-366-0576
KS	Overland Park, Spectrum Sls	913-648-6811
KY	Lexington, Mohrfield Mktg	606-276-0478
MD	Towson, Advanced Technlg Sls	410-296-9360
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MI	Bloomfield Hills, Sharp Elctrons Corp	313-338-9944
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MO	Florissant, Spectrum Sls	314-921-1313
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NY	Melville, Tech Mktg Grp	516-351-8833
NY	New Paltz, Micro-Tech Mktg	914-255-7019
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NC	Raleigh, Sharp Elctrons Corp	919-941-0065
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MI	Livonia, Repron Electrms	313-525-2700
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MN	Minnetonka, Repron Electrms	612-938-0000
MN	Plymouth, Marshall Inds	612-559-2211
MO	Bridgeton, Marshall Inds	314-291-4650
NJ	Edison, Sterling Electrms	908-417-1000
NJ	Fairfield, Marshall Inds	201-882-0320
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NJ	Marlton, Western Microtechnology	609-594-7775
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NM	Albuquerque, Sterling Electrms	505-884-1900
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NY	Farmingdale, Milgray Electrms	516-420-9800
NY	Hempstead, Marshall Inds	516-273-1515
NY	Pittsford, Milgray Electrms	716-381-9700
NY	Rochester, Marshall Inds	716-235-7620
NY	West Babylon, Sterling Electrms	516-293-6622
NC	Raleigh, Marshall Inds	919-878-9882
NC	Raleigh, Milgray Electrms	919-790-8094
NC	Raleigh, Repron Electrms	919-870-5189
NC	Raleigh, Sterling Electrms	919-790-8634
OH	Cleveland, Milgray Electrms	216-447-1520
OH	Dayton, Marshall Inds	513-898-4480
OH	Solon, Marshall Inds	216-248-1788
OH	Solon, Repron Electrms	216-349-1415
OH	Solon, Sterling Electrms	216-248-1122
OK	Tulsa, Sterling Electrms	918-663-2410
OR	Beaverton, Marshall Inds	503-644-5050
OR	Beaverton, Western Microtechnology	503-629-2082
PA	Pittsburgh, Marshall Inds	412-788-0441
TX	Austin, Marshall Inds	512-837-1991
TX	Austin, Sterling Electrms	512-836-1341
TX	Carrollton, Marshall Inds	214-233-5200
TX	Carrollton, Sterling Electrms	214-243-1600
TX	Dallas, Milgray Electrms	214-248-1603
TX	Houston, Marshall Inds	713-467-1666
TX	Houston, Sterling Electrms	713-627-9800
TX	Stafford, Milgray Electrms	713-240-5360
UT	Murray, Milgray Electrms	801-261-2999
UT	Salt Lake City, Marshall Inds	801-973-2888
UT	Salt Lake City, Sterling Electrms	801-972-5444
UT	West Valley City, Added Value Electrms	801-975-9500
VA	Richmond, Sterling Electrms	804-226-2190
WA	Bothell, Marshall Inds	206-486-5747
WA	Kirkland, Western Microtechnology	206-828-2741
WI	Waukesha, Marshall Inds	414-767-8400
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Can Alb,	Edmonton, Future Electrms	403-438-2858
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Can	Manitoba, Winnipeg, Future Electrms	204-786-7711
Can Ont,	Brampton, Marshall Inds	416-458-8046
Can Ont,	Mississauga, Future Electrms	416-612-9200
Can Ont,	Mississauga, Milgray Electrms	416-678-0958
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Can Que,	Pointe Claire, Future Electrms	514-694-7710
Can Que,	Pointe Claire, Marshall Inds	514-694-8142
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Can Que,	Quebec City, Future Electrms	418-877-6666
PR	Canovanas, Milgray Electrms	809-876-8200

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CA	Cupertino, Siemens Comps, Inc.	408-777-4500
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CA	Simi Valley, DynaRep, Inc.	818-591-7366
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CO	Littleton, Lange Sales, Inc.	303-795-3600
GA	Norcross, Siemens Comps, Inc.	404-449-3981
GA	Norcross, Interep Assocs, Inc.	404-449-8680

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IL	Arlington Heights, KMA Sls. Co.	708-398-5300
IL	Schaumburg, Siemens Comps, Inc.	708-884-7009
IN	Indianapolis, Leslie M. DeVoe Co.	317-842-3245
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MD	Baltimore, Micro-Comp, Inc.	301-644-5700
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NJ	Mt. Laurel, Siemens Comps, Inc.	609-273-6677
NM	Albuquerque, Repron, Ltd.	505-292-1718
NY	Fairport, L-Mar Assocs, Inc.	716-425-9100
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NY	Woodbury, Pioneer-Standard/Pioneer Tech	516-921-8700
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OH	Columbus, Frank J Campisano Co	614-538-1176
OH	Dayton, Pioneer-Standard/Pioneer Tech	513-236-9900
OH	Mentor, Frank J Campisano Co	216-975-9300
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OH	Twinsburg, Pioneer-Standard/Pioneer Tech (Corp. Distrib)	216-487-5500
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PA	Hatboro, Delta Tech. Sls.	215-957-0600
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TX	Dallas, Quad Sts. Sls. & Mktg.	214-669-8709
TX	Houston, Quad Sts. Sls. & Mktg.	713-893-8585
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IL	Rosemont, Advent Elctms	312-297-6200
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IN	Indianapolis, Marshall	317-297-0483
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NY	Rochester, Marshall	716-235-7620
NC	Morrisville, Pioneer-Standard/Pioneer Tech	919-460-1530
NC	Raleigh, Marshall	919-878-9882
OH	Cleveland, Pioneer-Standard/Pioneer Tech	216-587-3600
OH	Dayton, Marshall	513-898-4480
OH	Reynoldsburg, Pioneer-Standard/Pioneer Tech	614-236-1000
OK	Solon, Marshall	216-248-1788
OK	Tulsa, Pioneer-Standard/Pioneer Tech	918-665-7840
OR	Beaverton, Marshall	503-644-5050
OR	Beaverton, Insight Elctms	503-644-3300
PA	Pittsburgh, Marshall	412-788-0441
TX	Austin, Pioneer-Standard/Pioneer Tech	512-835-4000
TX	Austin, Marshall	512-837-1991
TX	Austin, Insight Elctms	512-467-0800
TX	Carrollton, Marshall	214-233-5200
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TX	Houston, Marshall	713-895-9200
TX	Richardson, Insight Elctms	214-783-0800
TX	Sugarland, Insight Elctms	713-448-0800
UT	Salt Lake City, Marshall	801-973-2288
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OH	Worthington, Arthur Baier Co	614-764-1144
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PA	Pittsburgh, Arthur Baier Co	412-367-7799
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Can	Que., Montreal, Cantec Repts Inc	514-623-5496
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CA	Irvine, Milgray Elctms	800-468-9277, 714-753-1282
CA	San Jose, ITT Multicomponents	408-453-1404
CA	San Jose, Bell Microproducts	408-451-9400
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FL	Lake Mary, Milgray Elctms	800-367-0780, 407-321-2555
GA	Norcross, Milgray Elctms	800-241-5523, 404-446-9777
IL	Palatine, Milgray Elctms	800-322-6271, 708-202-7300
KS	Overland Park, Milgray Elctms	913-236-8800
MD	Columbia, Milgray Elctms	800-638-6656, 301-621-8169
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MA	Wilmington, Bell Microproducts	508-658-0222
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NJ	Marlton, Milgray Elctms	800-257-7111, 609-983-5010
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OH	Cleveland, Milgray Elctrms	800-321-0006, 216-447-1520
TX	Dallas, Milgray Elctrms	214-248-1603
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FL	Palm Harbor, Perrott Assocs., Inc.	813-789-9393
GA	Norcross, ELCOM	404-447-8200
IL	Chicago, Leeds Elctrms	312-625-3800
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OH	Orient, Thompson & Assocs Inc	614-877-4304
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CT	Wallingtonford, Cronin Elec, Inc.	203-265-3134
FL	Winter Park, Milgray Elctrms, Inc.	800-432-0645, 407-647-5747
GA	Norcross, Milgray Elctrms, Inc.	800-241-5523, 404-446-9777
IL	Palatine, Milgray Elctrms, Ltd.	708-202-1900
IN	Indianapolis, Meunier Elctrn Supply	800-382-9022, 317-635-3511
KS	Overland Park, Milgray Elctrms, Ltd.	913-236-9800
MD	Columbia, Migray Elctrms, Inc.	800-638-6656, 301-621-8129
MA	Needham, Cronin Elctrms, Inc.	617-449-5000
MA	Wilmington, Milgray Elctrms, Ltd.	508-657-5900
NH	Manchester, Cronin Elctrn, Inc.	603-624-0105
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OH	Cleveland, Milgray Elctrms, Inc.	216-447-1520
TX	Dallas, Milgray Elctrms, Inc.	800-627-7227, 214-248-1603
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Can Ontario	Willowdale, Milgray Elctrms, Inc.	800-268-3315, 416-756-4481
Can Quebec	Pt. Claire, Milgray Elctrms, Inc.	514-426-5900
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Intl	Denmark, Kobenhavn, Advanced Elctrn A/S	45-31-194433
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KS Sony	708-773-7667
KY Giesting	606-873-2330
LA B-P Sales	214-234-8438
ME S-J Assoc	617-272-5552
MD S-J Assoc	703-533-2233
MA S-J Assoc	617-272-5552
MA Newton, Sony Corp. of America (Northeast)	617-630-8812
MI Giesting	313-478-8106
MN Vector Sales	612-631-1334
MS Rep, Inc.	205-881-9270
MO Sony	708-773-6072
MT Electrodyne	801-264-8050
MT Northwest Comp	206-828-2104
NE Vector Sales	612-631-1334

NV Parsons	916-965-3255
NV Reptronix	602-230-2630
NH S-J Assoc	617-272-5552
NJ S-J Assoc	516-536-4242
NJ S-J Assoc	609-866-1234
NM Reptronix	505-292-1718
NY S-J Assoc	716-394-3281
NY S-J Assoc	516-536-4242
NC Rep, Inc.	919-469-9997
NC Morrisville, Sony Corp. of America (Southeast)	919-380-0786
ND Vector Sales	612-631-1334
OH Cincinnati, Giesting	513-385-1105
OH Cleveland, Giesting	216-261-9705
OK B-P Sales	214-234-8438
OR Northwest Comps	503-620-3285
PA S-J Assoc	609-866-1234
PA Pittsburgh, Giesting	412-828-3553
RI S-J Assoc	617-272-5552
SC Rep Inc	919-469-9997
SD Vector Sales	612-631-1334
TN Jefferson City, Rep, Inc.	615-475-4105
TX Austin, B-P Sales	512-346-9186
TX Dallas, B-P Sales	214-234-8438
TX El Paso County, Reptronix	505-292-1718
TX Houston, B-P Sales	713-782-4144
UT Salt Lake City, Electrodyne	801-264-8050
VT S-J Assoc	617-272-5552
VA S-J Assoc	703-533-2233
WA Northwest Comp	206-284-6376
WV Giesting	513-385-1105
WI Vector Sales	612-631-1334
WI Micro-Tex, Inc.	414-542-5352
WY Comps Sales	303-779-8060
Can Ontario, Willowdale, Sony of Canada, Ltd.	416-499-1414

Distributors

AL Huntsville, Marshall Ind.	205-881-9235
AZ Phoenix, Marshall Ind.	602-496-0290
CA El Monte, Marshall Ind. (Headquarters)	818-307-6000
CA Ftn. Valley, Bell Micro	714-963-0667
CA Irvine, Marshall Ind.	714-458-5395
CA Irvine, Milgray Electrms	714-753-1282
CA Los Angeles, Western Micro	818-707-0377
CA Los Angeles, Marshall Ind.	818-878-7000
CA Los Angeles, Milgray Electrms	800-635-7812
CA Orange, Western Micro	714-637-0200
CA Sacramento, Marshall Ind.	916-635-9700
CA San Diego, Marshall Ind.	619-627-4140
CA San Diego, Western Micro	619-453-8430
CA San Francisco, Marshall Ind.	408-942-4600
CA San Jose, Merit Electrms, Inc.	408-434-0800
CA San Jose, Bell Micro	408-451-9400
CA Saratoga, Western Micro	408-725-1660
CA Westlake Village, Bell Micro	805-496-2606
CO Denver, Marshall Ind.	303-451-8444
CT Danbury, Phase I	203-791-9042
CT Milford, Milgray Electrms	800-922-6911, 203-878-5538
CT Wallingford, Marshall Ind.	203-265-3822
FL Deerfield, Vantage Comps	305-429-1001
FL Ft. Lauderdale, Marshall Ind.	305-977-4880
FL Lake Mary, Milgray Electrms	800-367-0780, 407-321-2555
FL Orlando, Marshall Ind.	407-767-8585
FL Tampa, Marshall Ind.	813-576-1399
GA Atlanta, Marshall Ind.	404-923-5750
GA Norcross, Milgray Electrms	800-241-5523, 404-446-9777
IL Chicago, Milgray Electrms	708-202-1900
IL Chicago, Marshall Ind.	708-490-0155
IN Indianapolis, Marshall Ind.	317-297-0483
KS Kansas City, Marshall Ind.	913-492-3121
KS Overland Park, Milgray Electrms	913-236-8800
MD Columbia, Milgray Electrms	800-638-6656, 410-621-8169
MD Columbia, Vantage Comps	410-720-5100
MD Silver Springs, Marshall Ind.	301-622-1118
MA Billerica, Vantage	508-667-2400
MA Boston, Marshall Ind.	508-658-0810
MA Burlington, Western Micro	800-345-2921, 617-273-2800
MA Wilmington, Milgray Electrmcs	508-657-5900
MI Livonia, Marshall Ind.	313-525-5850

MN Minneapolis, Marshall Ind.	612-559-2211, 612-559-1014
MO St. Louis, Marshall Ind.	314-291-4650
NJ Clifton, Vantage Comps	201-777-4100
NJ Elmwood Park, Phase I	201-781-2996
NJ Fairfield, Marshall Ind.	201-982-0320
NJ Marlton, Milgray Electrms	800-257-7111, 609-983-5010
NJ Mt. Laurel, Marshall Ind.	609-234-9100
NJ Parsippany, Milgray Electrms	201-335-1766
NJ West Berlin, GCI	609-760-6767
NY Binghamton, Marshall Ind.	607-798-2345
NY Deer Park, Phase I	516-254-2600
NY Farmingdale, Milgray Electrms	800-MILGRAY, 516-420-9800
NY Hauppauge, Marshall Ind.	516-273-2424
NY Pittsford, Milgray Electrms	716-834-9405, 716-381-9700
NY Rochester, Marshall Ind.	716-235-7620
NY Smithtown, Vantage Componets	516-543-2005
NC Raleigh, Milgray	919-790-8094
NC Raleigh, Marshall Ind.	919-878-9882
OH Cleveland, Marshall Ind.	216-248-1788
OH Cleveland, Milgray Electrms	800-321-0006, 216-447-1520
OH Dayton, Marshall Ind.	800-627-1034, 513-898-4480
OR Beaverton, Western Micro	503-629-2082
OR Portland, Marshall Ind.	503-644-5050
TX Austin, Marshall Ind.	512-837-1991
TX Dallas, Marshall Ind.	214-233-5200
TX Dallas, Milgray	214-248-1603
TX Houston, Milgray Electrms	713-240-5360
TX Houston, Marshall Ind.	713-467-1366
UT Salt Lake City, Milgray Electrms	801-261-2999
UT Salt Lake City, Marshall Ind.	801-973-2288
WA Redmond, Western Micro	206-881-6737
WA Seattle, Marshall Ind.	206-486-5747
WI Milwaukee, Marshall Ind.	414-797-8400
Can B.C. Vancouver, Marshall	800-456-6640
Can Ontario, Ottawa, Milgray	800-268-3315
Can Ontario, Ottawa, Marshall	800-456-6640
Can Ontario, Toronto, Milgray	416-678-0958
Can Ontario, Toronto, Marshall	416-458-8046
Can Quebec, Montreal, Marshall	514-694-8142
Can Quebec, Montreal, Milgray	514-426-5900

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California Ave., Palo Alto, California 94304, Tel: 415-493-6700, FAX: 415-493-4648

SPACE RESEARCH TECHNOLOGY, INC.,
31255 Cedar Valley Drive, Suite 308, Westlake Village,
California 91362, Tel: 818-991-0693, FAX: 818-991-7021

SPANCOM CORPORATION, 528 Weddell Drive,
Suite 11, Sunnyvale, California 94089, Tel:
408-745-1788, FAX: 408-745-0435

STAC ELECTRONICS, 5993 Avenida Encinas,
Carlsbad, California 92008, Tel: 619-431-7474, FAX:
619-431-5726

Sales Office & Representatives

AL Huntsville, M-Squared, Inc	205-830-0498
AZ Phoenix, Oasis Sls, Inc	602-277-2714
CA Mt. View, Brooks Tech Grp	415-960-3880
CA San Diego, SC Cubed	619-458-5808
CA Thousand Oaks, SC Cubed	805-496-7307
CA Tustin, SC Cubed	714-731-9206
CO Boulder, Thorson Rocky Mountain	303-541-9921
CO Englewood, Thorson Rocky Mountain	303-773-6300
FL Ft. Lauderdale, QXI, Inc	305-978-2321
FL Melbourne, QXI, Inc	407-676-1491
FL Orlando, QXI, Inc	407-872-2321
FL St. Petersburg, QXI, Inc	813-894-4556
GA Norcross, M-Squared, Inc	404-447-6124
IL Hoffman Estates, micro-TEX	708-765-3000
MA Woburn, Mill-Bern Assoc	617-932-3311
MI Farmington Hills, Action Comps Sls	313-442-9880
MN Edina, Gibb Technlg Sls	612-835-3370
MO Chesterfield, Gibb Technlg Sls	314-530-0595
MO Kansas City, Gibb Technlg Sls	816-483-6785

IC MASTER

NJ	Moorestown, TAI Corp	609-778-5353
NY	E. Syracuse, Advanced Comps Corp	315-437-6700
		516-351-1000
NY	Melville, Parallax	919-851-0010
NC	Raleigh, M-Squared, Inc	513-278-0714
OH	Dayton, The Lyons Corp	216-659-9224
OH	Richfield, The Lyons Corp	614-895-1447
OH	Westerville, The Lyons Corp	918-492-4300
OK	Tulsa, West Assocs	503-292-8840
OR	Portland, ES Chase	512-343-1199
TX	Austin, West Assocs	713-999-0101
TX	Houston, West Assocs	214-680-2800
TX	Richardson, West Assocs	801-942-1683
UT	Salt Lake City, Thorson Rocky Mountain	206-823-9535
WA	Kirkland, ES Chase	414-542-5352
WI	Waukesha, micro-TEX	604-275-2734
Can	B.C., Vancouver, Electro Source	613-592-3214
Can	Ont., Kanata, Electro Source	416-675-4490
Can	Ont., Rexdale, Electro Source	514-630-7486
Can	Que., Pointe Claire, Electro Source	32-2-224-2951
Intl	Belgium, Inelco	49-89-611080
Intl	Germany, Metronik	852-418-0909
Intl	Hong Kong, Kwai Fong, NT, Memec (Asia Pacific) Ltd	39-2-439-0832
Intl	Italy, Acis	044-852-5121
Intl	Japan, Kanagawa, CTC Comps Sys Co Ltd	02-563-5277
Intl	Korea, Seoul, Memec (Asia Pacific) Ltd	31-40-816-565
Intl	Netherlands, Acal	65-222-4962
Intl	Singapore, Memec (Asia Pacific) Ltd	886-2-760-2028
Intl	Taiwan, Memec (Asia Pacific)	

OK	Tulsa, West Assocs	918-492-4300
OR	Beaverton, Quest Mktg, Inc	503-641-7377
TX	Austin, West Assocs	512-343-1199
TX	Austin, Standard Microsystems Corp	512-502-0070
TX	Houston, West Assocs	713-999-0101
TX	Richardson, West Assocs	214-680-2800
VA	Falls Church, S-J Chesapeake	703-533-2233
WA	Renton, Quest Mktg, Inc	206-228-2660
WI	Milwaukee, LTD Technlgs	414-774-1000
Can	Ont., Mississauga, Longman Sls	416-670-8100
Can	Que., Kirkland, Longman Sls	514-694-3911
Intl	Austria, Wien, Moor Elektronik GmbH	43-1-610620
Intl	Belgium, Zaventem, Acal Belgium S.A./N.V.	32-2-720-5983
Intl	Denmark, Skovlunde, Exatec A/s	45-4492700
Intl	England, Berkshire, Kudos Thame Ltd	44-734-351010
Intl	Finland, Helsinki, Oxxo Oy	358-034-55377
Intl	Finland, Helsinki, Field Oy	358-0-777571
Intl	France, Rungis Cedex, Compress	33-1-4687-8020
Intl	France, Sevres, Tekelec Airtronic	33-1-4623-2425
Intl	Germany, Berlin, Metronik	49-3043-61134
Intl	Germany, Burghausen, Standard Microsystems GmbH	49-8677-4011/4012
Intl	Germany, Darmstadt, Metronik	49-6151-730540
Intl	Germany, Dortmund, Metronik	49-231-217041
Intl	Germany, Heddeshheim, Metronik	49-6203-4701
Intl	Germany, Kaltenkirchen, Metronik	49-4191-4206
Intl	Germany, Nurnberg, Metronik	49-911-363536
Intl	Germany, Sarstedt, Dacom	49-5066-5519
Intl	Germany, Stuttgart, Metronik	49-711-764033
Intl	Germany, Unterhaching, Metronik	49-89-611080
Intl	Hong Kong, Kowloon, Protech Comps Ltd	852-793-0882
Intl	Hong Kong, Kowloon, FTI Inds Co Ltd	852-795-7421
Intl	India, Ahmedabad, Shivam Computers	91-272-409161
Intl	Israel, Ra'anana, Aviv Elctns Ltd	972-522-983232
Intl	Italy, Milano, Dott Ing Giuseppe De Mico Spa	39-2-95343600
Intl	Japan, Tokyo, Toyo Microsystems Corp	813-5721-2271
Intl	Korea, Seoul, Jace Intl Inc	822-521-3651
Intl	Netherlands, Eindhoven, Auriema Nederland BV	31-40-502602
Intl	Norway, Oslo, Odin Elctns A/S	47-2267-6800
Intl	S.Africa, Ferndale, Randburg, Tarsus Technlgs (Pty) Ltd	27-11-8863165
Intl	Singapore, Logic Devices (S) Pte. Ltd	65-295-2682
Intl	Spain, Madrid, Amritron S.A.	34-1-542-0906
Intl	Sweden, Solna, Satco Komponent AB	46-8-734-0040
Intl	Switzerland, Dietikon, Datacomp AG	41-1-7405140
Intl	Taiwan, ROC Taipei, Union Technlg Corp	886-2-5063320
Intl	Taiwan, ROC Taipei, Ultima Elctns Corp	886-2-778-5470
Intl	Taiwan, ROC Taipei, Andev Technlg Co Ltd	886-2-763-0910
Intl	Taiwan, Taipei, Standard Microsystems Corp	886-2711-2840
Intl	Thailand, Bangkok, Nu-Era Co Ltd	66-2-3186453
PR	San Juan, P.C. Elctns, Inc	809-753-9811, 809-753-9805

Distributors

AL	Huntsville, Future Elctns Corp	205-830-2322
AL	Huntsville, Nu Horizons	205-722-9330
AZ	Phoenix, Future Elctns Corp	602-968-7140
CA	Camrillo, Milgray Elctns, Inc	805-484-4055
CA	Chatsworth, Future Elctns Corp	818-772-6240
CA	Irvine, Future Elctns Corp	714-250-4141
CA	Irvine, Milgray Elctns, Inc	714-753-1282
CA	San Diego, Future Elctns Corp	619-625-2800
CA	San Jose, Future Elctns Corp	408-434-1122
CA	San Jose, Milgray Elctns, Inc	408-456-0900
CO	Lakewood, Future Elctns Corp	303-232-2008
CT	Bethel, Future Elctns Corp	203-743-9594
CT	Milford, Milgray Elctns, Inc	203-878-5538
FL	Altamonte Springs, Future Elctns Corp	407-767-8414
FL	Ft. Lauderdale, Nu Horizons	305-735-2555

FL	Lake Mary, Milgray Elctns, Inc	407-321-2555
FL	Largo, Future Elctns Corp	813-530-1222
GA	Norcross, Future Elctns Corp	404-441-7676
GA	Norcross, Milgray Elctns, Inc	404-446-9777
GA	Norcross, Nu Horizons	404-416-8666
ID	Boise, Radar Elec Co, Inc	208-336-2227
IL	Hoffman Estates, Future Elctns Corp	708-882-1255
IL	Palatine, Milgray Elctns, Inc	708-202-1900
KS	Overland Park, Milgray Elctns, Inc	913-236-8800
MD	Columbia, Future Elctns Corp	301-290-0060
MD	Columbia, Milgray Elctns, Inc	301-621-8169
MD	Columbia, Nu Horizons	410-995-6330
MA	Bolton, Future Elctns Corp	508-779-3000
MA	Wakefield, Nu Horizons	617-246-4442
MA	Wilmington, Milgray Elctns, Inc	508-657-5900
MN	Livonia, Future Elctns Corp	313-261-5270
MN	Eden Prairie, Future Elctns Corp	612-944-2200
MO	St. Louis, Future Elctns Corp	314-469-6805
NJ	Marlton, Future Elctns Corp	609-596-4080
NJ	Marlton, Milgray Elctns, Inc	609-983-5010
NJ	Parsippany, Future Elctns Corp	201-299-0400
NJ	Parsippany, Milgray Elctns, Inc	201-335-1766
NJ	Pinebrook, Nu Horizons	201-882-8300
NY	Amityville, Nu Horizons	516-226-6000
NY	Farmingdale, Milgray Elctns, Inc	516-420-9800
NY	Hauppauge, Future Elctns Corp	516-234-4000
NY	Pittsford, Milgray Elctns, Inc	716-381-9700
NY	Rochester, Future Elctns Corp	716-272-1120
NY	Rochester, Nu Horizons	716-292-0777
NY	Syracuse, Future Elctns Corp	315-451-2371
NC	Raleigh, Future Elctns Corp	919-790-7111
NC	Raleigh, Milgray Elctns, Inc	919-790-8094
OH	Cleveland, Milgray Elctns, Inc	216-447-1520
OR	Beaverton, Future Elctns Corp	503-645-9454
OR	Portland, Radar Elec Co, Inc	503-232-3404
PA	Philadelphia, Nu Horizons	215-557-6450
TX	Addison, Jaco Elctns	214-733-4300
TX	Austin, Future Elctns	512-502-0991
TX	Austin, Jaco Elctns	512-835-0220
TX	Dallas, Milgray Elctns, Inc	214-249-1603
TX	Richardson, Future Elctns Corp	214-437-2437
TX	Richardson, Jaco Elctns	214-234-5565
TX	Stafford, Milgray Elctns, Inc	713-240-5360
TX	Stafford, Jaco Elctns	713-240-2255
UT	Murray, Milgray Elctns, Inc	801-261-2999
UT	Salt Lake City, Future Elctns Corp	801-972-8489
WA	Bothell, Future Elctns Corp	206-489-3400
WA	Richland, Radar Elec Co, Inc	509-943-8336
WA	Seattle, Radar Elec Co, Inc	206-282-2511
WA	Spokane, Radar Elec Co, Inc	509-747-3053
WI	Waukesha, Future Elctns Corp	414-786-1884
Can	Alb., Calgary, Future Elctns, Inc	403-235-5325
Can	Alb., Edmonton, Future Elctns, Inc	403-438-2858
Can	B.C., Vancouver, Future Elctns, Inc	604-294-1166
Can	Manitoba, Winnipeg, Future Elctns, Inc	204-786-7711
Can	Ont., Mississauga, Future Elctns, Inc	416-612-9200
Can	Ont., Mississauga, Milgray Elctns, Inc	416-678-0958
Can	Ont., Ottawa, Future Elctns, Inc	613-820-8313
Can	Que., Pointe Claire, Future Elctns, Inc	514-694-7710
Can	Que., Pointe Claire, Milgray Elctns, Inc	514-426-5900
Can	Que., Quebec, Future Elctns, Inc	418-877-6666
Intl	Austria, Wien, Moor Elektronik GmbH	43-1-610620
Intl	Belgium, Zaventem, Acal Belgium SA./N.V.	32-2-720-5983
Intl	Denmark, Skovlunde, Exatec A/S	45-44927000
Intl	England, Berkshire, Kudos Thame Ltd	44-734-351010
Intl	Finland, Helsinki, Oxxo Oy	358-034-55377
Intl	Finland, Helsinki, Field Oy	358-0-777571
Intl	France, Rungis Cedex, Compress	33-1-4687-8020
Intl	France, Sevres, Tekelec Airtronic	33-1-4623-2425
Intl	Germany, Berlin, Metronik	49-3043-61134
Intl	Germany, Burghausen, Standard Microsystems GmbH	49-8677-4011/4012
Intl	Germany, Darmstadt, Metronik	49-6151-730540
Intl	Germany, Dortmund, Metronik	49-231-217041
Intl	Germany, Heddeshheim, Metronik	49-6203-4701
Intl	Germany, Kaltenkirchen, Metronik	49-4191-4206
Intl	Germany, Nurnberg, Metronik	49-911-363536
Intl	Germany, Sarstedt, Dacom	49-5066-5519

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MA (617) 246-4442

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MD (410) 825-5330
PA (609) 231-0900
OH (216) 349-2008
FL (305) 735-2555
No. FL (407) 831-8008
GA (404) 416-8666
AL (205) 722-9330
INT'L (201) 882-4290

NY (516) 226-6000
CT (203) 265-0162
NJ (201) 882-8300
MA (617) 246-4442

STANDARD MICROSYSTEMS CORPORATION, 80 Arkay Drive, Hauppauge, New York 11788, Tel: 516-435-6000, 275608 SMC UR, TELEX: 510-227-8898, FAX: 516-231-6004 (Sales)

Sales Office & Representatives

AL	Madison, Concord Comps Reps, Inc	205-772-8883
AZ	Phoenix, Southwest Tech Sls	602-893-1209
CA	Cupertino, Costar, Inc	408-446-9339
CA	Newport Bch, Jones & McGeoy Sls, Inc	714-724-8080
CA	San Jose, Standard Microsystems Corp	408-441-0455
CO	Englewood, Elcom, Inc	303-792-3330
CT	Southington, Orion Grp	203-621-8371
FL	Deerfield Beach, MEC	305-426-8944
FL	Largo, MEC	813-393-5011
FL	Winter Springs, MEC	407-366-1379
GA	Norcross, Concord Comps Reps, Inc	404-416-9597
IL	Itasca, LTD Technlgs	708-773-2900
IN	Ft. Wayne, Arete Sls, Inc	219-423-1478
IN	Greenwood, Arete Sls, Inc	317-882-4407
KS	Overland Park, Electri-Rep	913-649-2168
MD	Baltimore, S-J Chesapeake	410-256-0090
MA	N. Reading, Alpha Omega Sls Corp	508-664-1118
MI	Canton, Techrep, Inc	313-981-1950
MN	Roseville, Vector Comp Sls	612-631-1334
MO	St. Louis, Electri-Rep	314-993-4421
NJ	Cherry Hill, Tritek Sls, Inc	609-667-0200
NJ	Flemington, Standard Microsystems Corp	908-806-3125
NY	Melville, Parallax	516-351-1000
NY	Pittsford, Elcom Sls Inc	716-385-1400
NY	Skaneateles, Elcom Sls Inc	315-685-8967
NC	Raleigh, Concord Comp Reps, Inc	919-783-8038
OH	Columbus, S-J Great Lakes	614-885-6700

Intl Germany, Stuttgart, Metronik	49-711-764033
Intl Germany, Unterhaching, Metronik	49-89-611080
Intl Hong Kong, Kowloon, Protech Comps Ltd	852-793-0882
Intl Hong Kong, Kowloon, RTI Inds Co Ltd	852-795-7421
Intl India, Ahmedabad, Shivam Computers	91-272-409161
Intl Israel, Ra'anana, Aviv Elctms Ltd	972-52-983232
Intl Italy, Milano, Dott Ing Giuseppe DeMico Spa	39-2-95343600
Intl Japan, Tokyo, Toyo Microsystems Corp	813-5721-2271
Intl Korea, Seoul, Jace Intl Inc	822-521-3651
Intl Netherlands, Eindhoven, Auriema Nederland BV	31-40-502602
Intl Norway, Oslo, Odin Elctms A/S	47-2267-6800
Intl S.Africa, Ferndale, Randburg, Tarsus Technlgs (Pty) Ltd	27-11-8863165
Intl Singapore, Logic Dives (S) Pte. Ltd	65-295-2682
Intl Spain, Madrid, Amtron S.A.	34-1-542-0906
Intl Sweden, Solna, Satco Komponent AB	46-8-734-0040
Intl Switzerland, Dietikon, Datacomp AG	41-1-7405140
Intl Taiwan, ROC Taipei, Union Technlg Corp	886-2-5063320
Intl Taiwan, ROC Taipei, Ultima Elctms Corp	886-2-778-5470
Intl Taiwan, ROC Taipei, Andev Technlg Co Ltd	886-2-763-0910
Intl Taiwan, Taipei, Standard Microsystems Corp	886-2711-2840
Intl Thailand, Bangkok, Nu-Era Co Ltd	66-2-3186453

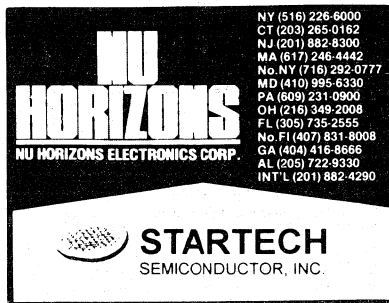
STANFORD TELECOMMUNICATIONS

INC., 2421 Mission College Blvd., Santa Clara, California 95056, Tel: 408-980-5684, FAX: 408-727-1482

Sales Office & Representatives

AL Huntsville, Southern Mktg. Assoc.	205-534-6020
AZ Tuscon, Blackhart Assoc.	602-579-0399
CA Los Altos, Cain-White & Co.	415-948-8533
CA Santa Clara, Stanford Telecommunications, Inc.	408-980-5684
CA Tustin, Youngewirth & Olenick	714-838-5144
CO Silt, Blackhart Assocs.	303-876-5605
FL Longwood, Southern Mktg. Assoc.	407-682-7317
FL Satellite Beach, Southern Mktg. Assoc.	407-777-3587
GA Atlanta, Southern Mktg. Assoc.	404-565-0603
IL Arlington Hts., DYTEC/Central	708-394-3380
IN Indianapolis, DYTEC/Central	317-578-0474
MD Randallstown, Beacon North, Inc.	703-478-2480
MA Natick, Wayland Engrn Sales	508-655-6080
NH Londonderry, Wayland Engrn Sls.	603-432-2822
NJ Totowa, Tech Mktg Assoc.	201-812-0356
PA Collegeville, Beacon North, Inc.	215-287-5479
PA Langhorne, Beacon North, Inc.	215-741-4952
TX Dallas, Mc Donald Assoc.	214-239-3293
VA Sterling, Beacon North	703-478-2480
Can Australia, Unley(S.A.), Sabtek Elec.	08-373-0233
Can India, Bangalore, Accutrol Sys.	644556
Can Japan, Tokyo, Yamada Intl.	033-475-1121
Can Spain, Madrid, Tekelec Espana	1-320-4160
Intl France, St. Denis, P2M	1-34611184
Intl Israel, Neve-Monosan, Regev Aviation	02-335-32359
Intl Italy, Milano Micro Elit	4817900
Intl Italy, Roma, Micro Elit	06-889-04323
Intl Switzerland, Schlieren, Dimos AG	730-4088
Intl United Kingdom, London, Walmore Elec.	071-454-7800
Intl West Germany, Munchen, Alfatron	089-42-04-91-32

STAR SEMICONDUCTOR CORPORATION,
25 Independence Blvd., Warren, New Jersey 07059, Tel: 908-647-9400, FAX: 908-647-4755



STARTECH SEMICONDUCTOR, INC., 1101 S. Winchester Blvd, Bldg. A101, San Jose, California 95128, Tel: 1-800-245-6781, 408-247-8781, FAX: 408-247-0292

Sales Office & Representatives

AL Novus Grp	205-534-0044
AZ Suntech Sls	602-860-8262
CA H-Tech Sls	408-453-2111
CA Infinity Sls	714-833-0300
CA Pro Assocs	408-248-5300
CA Infinity Sls	310-455-2566
CO AKI Enterprises	303-756-0700
CT Dynamic Sls	203-693-0451
FL SEC	407-830-8444
FL SEC	305-426-4601
GA Novus Grp	404-263-0320
ID Electrn Comp Sls	208-342-8072
IL Micro Sls Inc	708-285-1000
MD Avtek	410-740-5100
MA Dynamic Sls	617-272-5676
MI J.M.J. & Assocs	616-285-8887
MN Murnco	612-854-4161
NY ERA Inc	516-543-0510
NC Novus Grp	704-846-4055
OH ADM	513-579-8108, 216-946-6812
OR Electrn Comp. Sls	503-245-2342
PA Campbell Assocs	215-322-6630
TX Bravo Sls	214-250-2900
TX Bravo Sls	512-328-7550
TX Bravo Sls	713-320-0500
VT Dynamic Sls	802-476-4223
WA Electrn Comp. Sls	206-232-9301
WA Electrn Comp. Sls	509-456-0100
WI Micro Sls, Inc.	414-786-1403
Can Intelatech, Inc	416-629-0082
Can Intelatech, Inc	403-230-3190
Can Intelatech, Inc	613-769-5618
Intl Bacher Elctms	43-1-81-602-000
Intl TME Elctms	32-3-325-1910
Intl Prescom A/S	45-4218-9800
Intl 2001 Elctn Comps	44-438-742001
Intl Discomp Elektronik GmbH	49-2722-7157
Intl Heitek GmbH	49-89-614-9010
Intl Kamaka Elektronik GmbH	49-7275-8600
Intl Digipro Mktg. Pvt. Ltd	91-812-566706
Intl Kevin	39-2-4870-6300
Intl Star-Tronics Ltd	972-3-696-0148
Intl I & C Microsystems Co	82-2-577-9131
Intl Micotronics	65-748-1835
Intl Ave Elctms	31-78-138288
Intl Bexab Technlg	46-8-630-8810
Intl Jatron Elctms, Inc	886-2-3070152
Intl England, Britcomp Sls. Ltd.	44-372-377779
Intl France, Almex	33-1-40-96-54-00
Intl Germany, Electrocomp Elektronik GmbH	49-6031-61076
Intl Hong Kong, Tektron Elctms	852-388-0629
Intl Japan, ISI	81-3-3264-3301
Intl Singapore, Serial Sys. Mktg	65-280-0200

Distributors

MN Roseville, Parts One	800-247-0867
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STC COMPONENTS, Semiconductors Division,
Maidstone Road, Sidcup, Kent, United Kingdom DA14 5HT, Tel: 441-300-3333, TELEX: 896599 STC FC G, FAX: 441-300-9609

Sales Office & Representatives

CA Los Angeles, STC Comps Inc.	805-495-8667
IL Schaumburg, STC Comps, Inc.	708-490-7150, 800-624-6491(US), 800-624-6494(CAN)
NY Bohemia, STC Comps Inc.	516-563-0170
Intl France, Rungis-Cedex, STC Comps S.A.	33-1-4560-4700

SUNSHINE SEMICONDUCTOR INC., 328 N. Newport Blvd., Newport Beach, California 92663, Tel: 714-642-5790

SUPERTEX, INC., 1225 Bordeaux Drive, Sunnyvale, California 94088, Tel: 408-744-0100, TWX: 910-339-9388, FAX: 408-734-5247

Sales Office & Representatives

AL Huntsville, Elctrn Sls Inc	205-533-1735
AL Huntsville, All American	205-837-1555, 800-831-8300
AZ Scottsdale, Jackson Mktg	602-998-0831
CA Chatsworth, Wes-K/Raltech, Inc	818-700-0933
CA Mt. View, Straube Assocs	415-969-6060
CA San Diego, Earle Assocs	619-278-5441
CA Sunnyvale, Supertex Inc	408-744-0100
CO Denver, AKI Enterprises	303-756-0700
CT Nu Horizons	203-265-0162
CT Cheshire, Connecticut Applied Technlg	203-272-6564
FL Casselbury, Dyne-A-Mark	407-831-2822
FL Ft. Lauderdale, Dyne-A-Mark	305-771-6501
FL Lake Mary, Milgray Elctms	407-321-2555, 800-367-0780
GA Norcross, Elctrn Sls Inc	404-448-6554
IL Itasca, Janus	708-250-9650
IN Ft. Wayne, Arete Sls	219-423-1478
IN Greenwood, Arete Sls	317-882-4407
IA Cedar Rapids, Spectrum Sls	319-366-0576
KS Prairie Village, Spectrum Sls	913-648-6811
MD Columbia, Third Wave Solutions Inc	410-290-5990
MD Rockville, All American	301-251-1205
MA Tewksbury, ProComp Assocs	508-858-0100
MN Roseville, Vector Comps	612-631-1334
MO Florissant, Spectrum Sls	314-921-1313
NJ Englewood Cliffs, Supertex, Inc	201-947-3844
NJ Ft. Lee, Nexus Technlg Sls	201-947-0151
NY E. Rochester, Empire Tech. Assocs	716-381-8500
NY New York, Cogil Inc	212-832-1340
NY Skaneateles, Empire Tech Assocs	315-685-5703
NC Charlotte, Quantum Mktg	704-523-8822
NC Raleigh, Quantum Mktg Inc	919-846-5728
OH Centerville, Omega Sls	513-434-5507
OH Cleveland, Omega Sls	216-360-9400
OK Catoosa, Comptech Sls	918-266-1966
OR Beaverton, Electrn Comp. Sls	503-245-2342
PA Horsham, Nexus Technlg Sls	215-675-9600
TX Austin, Comptech Sls	512-343-0300
TX El Paso, Comtech Sls	915-590-4590
TX Ft. Worth, Supertex, Inc	800-487-8737, 817-457-5677
TX Harlingen, Comtech Sls	210-421-4501
TX Houston, Comptech Sls	713-492-0005
TX Irving, Comptech Sls	214-751-1181
TX San Antonio, Comptech Sls	210-525-9913
UT Salt Lake City, All American	801-261-4210, 800-682-8313
WA Edmonds, Zeus Comps	206-774-4814
WA Mercer Island, Electrn Comp. Sls	206-232-9301
WI Delafield, Janus	414-646-5420
Can Ont., Mississauga, R.N. Longman Sls	416-670-8100
Can Que. Kirkland, R.N. Longman Sls	514-694-3911
Intl U.K., So. Wales, Supertex, Inc	0269-832-180

Distributors

AL Huntsville, Nu Horizons	205-722-9330
AZ Phoenix, Arizona Comps	602-269-5655
CA Agoura Hills, Zeus Comps	818-889-3838
CA Burbank, Elmo	818-768-7400

IC MASTER

CA Irvine, IEC	714-837-9960
CA Irvine, Milgray Elctms	714-753-1282, 800-468-9277
CA Los Angeles, Milgray Elctms	805-484-4055, 800-635-7812
CA Sacramento, IEC	916-363-6030
CA San Diego, Neumann Elctms	619-695-3005
CA San Diego, All American	619-458-5850, 800-382-3441
CA San Jose, All American	408-943-1200, 800-222-6001
CA San Jose, Milgray Elctms	408-456-0900
CA San Jose, Zeus Comps	408-629-4789
CA Torrance, All American	310-320-0240, 800-831-8300
CA Yorba Linda, Zeus Comps	714-921-9000
CO Denver, IEC	303-292-6121
CT Milford, Milgray Elctms	203-878-5538, 800-922-6911
FL Altamonte Springs, Zeus Comps	407-788-9100, 800-829-9464
FL Ft. Lauderdale, All American	305-572-7999
FL Ft. Lauderdale, Nu Horizons	305-735-2555
FL Miami, All American	305-621-8282
GA Atlanta, Milgray Elctms	404-446-9777, 800-241-5523
GA Atlanta, Nu Horizons	404-416-8666
IL Chicago, IEC	708-843-2040
IL Chicago, Milgray Elctms	708-202-1900, 800-322-6271
IN Indianapolis, Custom Services Elctms	317-879-9119
KS Kansas City, Milgray Elctms	913-236-8800, 800-255-6576
MD Columbia, Milgray Elctms	800-638-6656, 410-995-6169
MD Columbia, Nu Horizons	410-995-6330
MD Columbia, Zeus Comps	301-997-1118
MA Beverly, Serstech	617-924-9820
MA Wakefield, All American	617-248-2300, 800-674-2334
MA Wakefield, Nu Horizons	617-246-4442
MA Wakefield, Zeus Comps	617-246-8200
MA Wilmington, Milgray Elctms	508-657-5900, 800-648-3595
MN Minneapolis, All American	612-944-2151, 800-342-7364
NJ Marlton, Milgray Elctms	609-963-5010
NJ Mt. Laurel, Nu Horizons	609-231-0900
NJ Parsippany, Milgray Elctms	201-335-1766, 800-622-0291
NJ Pine Brook, Nu Horizons	201-882-8300
NJ W. Berlin, GCI Corp	609-768-6767
NM Albuquerque, Elctm Devices	505-822-1300
NY Amityville, Nu Horizons	516-226-6000
NY Farmingdale, Milgray Elctms	800-Milgray, 516-420-9800
NY Pittsford, Milgray Elctms	716-381-9700
NY Port Chester, Zeus Comps	914-937-7400
NY Rochester, Nu Horizons	716-292-0777
NY Ronkonkoma, All American	516-981-3935, 800-874-2830
NC Raleigh, Milgray Elctms	919-790-8094, 800-562-3118
OH Cincinnati, Schuster Elctms	513-489-1400
OH Cleveland, Milgray Elctms	216-447-1520, 800-321-0006
OH Dayton, Zeus Comps	513-293-6162
OH Twinsburg, Schuster Elctms	216-425-8134
OR Portland, IEC	503-641-1690
TX Dallas, Milgray Elctms	800-637-7227, 214-248-1603
TX Dallas, All American	214-231-5300, 800-541-1435
TX Dallas, Zeus Comps	214-783-7010
TX Houston, Milgray Elctms	713-240-5360, 800-962-1849
UT Salt Lake City, IEC	801-977-9750
UT Salt Lake City, Milgray Elctms	801-261-2999, 800-537-9739
WA Bellevue, IEC	206-455-2727
Can Ont., Toronto, Milgray Elctms	416-678-0958
Can Que., Montreal, Milgray Elctms	514-426-5900
Intl Argentina, Colgil Inc	54-1-40-2293
Intl Australia, Victoria, Arlec Holdings Pty Ltd	3-727-8777
Intl Austria, Vienna, Steiner Elctms Vertrieb GmbH	222-877-7474-0
Intl Belgium, Wemmel, Rodelco N.V. Elctms	2-460-0560

Intl Brazil, Sao Paulo, Colgil Inc	55-11-66-3285
Intl Denmark, Kokkedal, C-88 A.S.	42-244-888
Intl Finland, Jarvenpaa, Dalma Elctms OY	358-0-2711-800
Intl France, Micro Puissance	1-69-07-12-11
Intl Germany, Hamburg, Infratech Vertrieb GmbH	40-817578
Intl Germany, Hannover, Topas Elctm GmbH	511-131217
Intl Germany, Kirchheim, Scantec GmbH	7021-83094
Intl Germany, Osnabruck, Milgray Elektronik Vertiebes GmbH	541-13908-0
Intl Germany, Planegg, Scantec GmbH	89-859-8021
Intl Germany, Quickborn, Topas Elctm GmbH	4106-73097
Intl Hong Kong, Kowloon, A & N Enterprises	852-796-3788
Intl Hong Kong, Kowloon, Leadertronics	852-3890-384
Intl Israel, Nes Ziona, Codai Ltd	972-8-404263
Intl Italy, Milano, Siverstar-Celdis	2-661-251
Intl Italy, Milano, Kevin S.R.L.	2-48706300
Intl Italy, Milano, Dott Ing Giuseppe de Mico S.P.A.	2-95343600
Intl Japan, Tokyo, Microtek, Inc.	3-3371-4071
Intl Japan, Tokyo, Sys Mktg	3-3254-2751
Intl Korea, Seoul, Leadertronics Korea Co.	2-705-1267
Intl Korea, Seoul, Jingusa Ltd	82-02-244-7492
Intl Netherlands, Breda, Rodelco BV	76-784-911
Intl Norway, Oslo, Nortelco A/S	2-674020
Intl Portugal, Lisbon, Compa Electrons LDA	351-1-3621283
Intl Singapore, Seamax Eng.	65-445-1828
Intl Singapore, QuadRep Mktg. (S) PTE. LTD.	65-346-1933
Intl So. Africa, Johannesburg, Communica	12-333-7975
Intl So. Africa, Pretoria, Communica	12-322-7613
Intl Spain, Madrid, Armitron S.A.	34-1-542-0906
Intl Sweden, Bromma, Integrerad Elektronik	8-804-685
Intl Switzerland, Zurich, Egli Fischer & Co.	1-209-8111
Intl Taiwan, Don Business Corp	2-760-7801
Intl Thailand, Bangkok, Seamax	662-3917020
Intl U.K., Reading, Berks, Kudos Elctms Ltd	734-35-1010

SYMPHONY LABORATORIES, 2620 Augustine Drive, Suite 250, Santa Clara, California 95054, Tel: 408-986-1701



FAX: 408-737-0831

SYNERGY SEMICONDUCTOR CORPORATION, 3450 Central Expressway, Santa Clara, California 95051, Tel: 408-730-1313, FAX: 408-737-0831

Sales Office & Representatives

AL Huntsville, BITS, Inc	205-881-2900
AZ Tempe, ALTEK Comps	602-345-4575
AZ Tucson, ALTEK Comps	602-529-0443
AR Hot Springs Village, Southern States Mktg, Inc.	501-922-0807
CA Irvine, Spectrum Rep Co.	714-453-1525
CA San Diego, Excel Assoc	619-587-0545
CA Santa Clara, Synergy Semi (Corp. Hdqts)	408-730-1313
CA Sunnyvale, Nexus Mtgs' Rep	408-720-4787
CA Westlake Village, Spectrum Rep Co.	818-706-2919
CO Wheat Ridge, Waugaman Assoc. Inc	303-423-1020
CT Wallingford, Technology Sales, Inc.	203-269-8853
FL Boca Raton, ElectroCraft Inc	407-394-9686
FL Largo, ElectroCraft Inc	813-544-1766
FL Longwood, ElectroCraft Inc	407-682-7832
GA Norcross, BITS, Inc	404-564-5599
IL Elgin, Elctm Comps. Intl	708-888-0099

MD Annapolis, Elctms & Technology Sls	301-858-8530, 410-974-9351
MA Sudbury, Synergy Semi	508-443-1440
MA Waltham, Technology Sales, Inc.	617-890-5700
MN Minneapolis, HMR Inc.	612-888-2122
NJ Mt. Laurel, Wyck Mktg, Inc	609-727-1070
NY Fairport, Technology Sales, Inc.	716-223-7500
NY Hicksville, J-Square Mktg	516-935-3200
NC Raleigh, BITS, Inc	919-676-1880
OR Portland, General Elctms, Inc.	503-297-8500
TX Austin, Southern States Mktg	512-835-5822
TX Houston, Southern States Mktg	713-868-5180
TX Richardson, Southern States Mktg	214-238-7500
UT Salt Lake City, Waugaman Assoc	801-261-0802
WA Stanwood, General Elctms, Inc.	206-246-8096
Can Ont., Brampton, Clark-Hurman Assoc.	416-840-6066
Can Ont., Nepean, Clark-Hurman Assoc	613-727-5626
Can Que., Pointe Claire, Clark-Hurman Assoc.	514-426-0453
Intl Germany, Munich, U.S.E. GmbH	011-49-89-33-92-92
Intl Japan, Tokyo, H.Y.Assoc. Co.Ltd	011-81-03-39297111
Intl Japan, Tokyo, Musashino, AMSC Co. Ltd.	011-81-0422-54-6801
Intl Japan, Yokohama City, Macnica	011-81-045-939-6160

Distributors

AL Huntsville, Nu Horizons Elctms Corp	205-722-9330
AZ Tempe, Insight Elctms, Inc.	800-677-7716, 602-829-1800
CA Irvine, Insight Elctms, Inc.	800-677-7716, 714-727-3291
CA San Diego, Insight Elctms, Inc.	619-587-1100
CA Sunnyvale, Insight Elctms, Inc.	800-677-7716, 408-720-9222
CA Westlake Village, Insight Elctms, Inc.	800-677-7716, 818-707-2101
CO Highlands Ranch, Insight Elctms, Inc.	800-677-7716, 303-791-7516
FL Ft. Lauderdale, Nu Horizons Elctms Corp.	305-735-2555
GA Norcross, Nu Horizons Elctms Corp.	404-416-8666
IL Schaumburg, Insight Elctms, Inc.	800-667-7716, 708-885-9700
MD Columbia, Nu Horizons Elctms Corp	410-995-6330
MA Wakefield, Nu Horizons Elctms Corp	617-246-4442
NJ Mt. Laurel, Nu Horizons Elctms Corp.	609-231-0900
NJ Pine Brook, Nu Horizons Elctms	201-882-8300
NY Amityville, Nu Horizons Elctms Corp.	516-226-6000
NY Rochester, Nu Horizons Elctms Corp.	716-292-0777
OR Beaverton, Insight Elctms, Inc.	800-677-7716, 503-644-3300
TX Austin, Insight Elctms, Inc.	800-677-7716, 512-250-0885
TX Richardson, Insight Elctms, Inc.	800-677-7716, 214-783-0800
TX Sugar Land, Insight Elctms, Inc.	800-677-7716, 713-879-0577
WA Kirkland, Insight Elctms, Inc	800-677-7716, 206-820-8100

SYSTRONIX, INC., 754 East Roosevelt Avenue, Salt Lake City, Utah 84152-6398, Tel: 801-487-7412, TELEX: 6503091533, FAX: 801-487-3130

TECHNITROL, INC., 1952 East Allegheny Avenue, Philadelphia, Pennsylvania 19134, Tel: 215-426-9105, FAX: 215-426-2836

TEKTRONIX, INC., P.O. Box 500, M/S 59-420, Beaverton, Oregon 97077, Tel: 503-627-2515, TELEX: 910-467-8708, FAX: 503-627-5660

Sales Office & Representatives

CA Newport Beach, Leading Concept Tech. Inc	714-851-0654
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MANUFACTURERS & DISTRIBUTORS DIRECTORY

CA	Santa Clara, Quorum Tech Sales	408-980-0812
CA	Woodland Hills, Los Angeles Field Office	
	818-999-1711	
FL	Longwood, Delmac Sls, Inc	407-831-0040
IL	Elk Grove Vlg, Oasis Sales Corp	708-640-1850
IA	Cedar Rapids, Oasis Sales Corp	319-377-8738
MD	Gaithersburg, Tektronix, National Sales	
	301-590-7580	
MA	Burlington, Dynamic Sales of New England, Inc	
	617-272-5676	
MN	Bloomington, Oasis Sales corp	612-941-1917
NY	Melville, Parallax	516-351-1000
NC	Apex, Eastern Region	919-662-2213
OR	Beaverton, Northwest Region	503-627-1039
TX	Richardson, OM Assoc.	214-690-6746
WI	Brookfield, Oasis Sales Corp	414-782-6660

TELEDYNE COMPONENTS, 1300 Terra Bella Avenue, P.O. Box 7267, Mountain View, California 94039-7267, Tel: 415-968-9241, TWX: 910-379-6494, FAX: 415-967-1590

Sales Office & Representatives

AZ	Tempe, Elctm Tech Sls	602-921-7122
CA	Heidsburg, ProLine Tech	916-442-8681
CA	Mountain View, Teledyne Comps	415-968-9241
CA	San Diego, Btronics, Inc.	619-693-1111
CA	San Jose, Pro Merge Sls, Inc	408-748-2970
CA	Santa Ana, Unitech Sls Inc	714-556-8661
CO	Denver, AKI Enterprises	303-756-0700
IL	Algonquin, Teq Sls	708-854-4501
IA	Cedar Rapids, Rep Assocs Corp	319-373-0152
MD	Towson, Arbotek Assocs	410-825-0775
MA	North Reading, Alpha-Omega Sales	
	508-664-1118	
MA	Wellsley, Teledyne Comps	617-237-9696
MI	Farmington Hills, Luebbs Sls Co	313-489-8828
MN	Eden Prairie, Comprehensive Tech Sls	
	612-941-7181	
MO	Raytown, CenTech Inc	816-358-8100
NJ	Fairfield, Metro Logic	201-575-5585
NJ	Mount Laurel, S-J Mid-Atlantic	609-866-1234
OH	Cincinnati, Luebbs Sls Co	513-530-0600
OH	Dayton, Luebbs Sls Co	513-438-0490
OH	Westlake, Luebbs Sls Co	216-899-0071
OR	Beaverton, Comps West	503-642-9110
PA	Pittsburgh, Luebbs Sls Co	412-364-0490
TX	Austin, Bravo Sls	512-328-7550
TX	Houston, Bravo Sls	713-230-0500
TX	Richardson, Bravo Sls	214-238-7500
UT	Salt Lake City, AKI Enterprises	303-756-0700
WA	Redmond, Comps West	206-885-5980
WI	Wauwatosa, Larsen Assoc	414-258-0529
Can	B. C., Vancouver, Weiss Co	604-873-1112
Can	Manitoba, Winnipeg, Weiss Co	204-772-3665
Can	Ont., Mississauga, Weiss Co	416-673-0011
Can	Ont., Nepean, Weiss Co	613-692-0617
Can	Que., Dorval, Weiss Co	514-685-6644
Intl	England, Middlesex, Teledyne Comps	
	44-1-571-9596	
Intl	West Germany, Wiesbaden, Teledyne Comps	
	49-611-76360	

Distributors

AL	Huntsville, Future Elctms	205-830-2322
AL	Huntsville, Marshall Inds	205-881-9235
AZ	Phoenix, Future Elctms	602-968-7140
AZ	Phoenix, Marshall Inds	602-496-0290
CA	Burbank, Elmo Semiconductor Corp	
	818-768-7400	
CA	Calabasas, Marshall Inds	818-878-7000
CA	Chatsworth, Future Elctms	818-772-6240
CA	El Monte, Marshall Inds	1-800-522-0084
CA	Invine, Marshall Inds	714-458-5301
CA	Invine, Future Elctms	714-250-4141
CA	Milpitas, Marshall Inds	408-942-4600
CA	Rancho Cordova, Marshall Inds	916-635-9700
CA	San Diego, All American	619-458-5850
CA	San Diego, Marshall Inds	619-627-4140
CA	San Diego, Future Elctms	619-625-2800
CA	San Jose, Future Elctms	408-434-1122
CA	San Jose, All American	408-943-1200
CA	Torrance, All American	310-320-0240
CO	Lakewood, Future Elctms	303-232-2008
CO	Thornton, Marshall Inds	303-451-8383
CT	Bethel, Future Elctms	203-743-9594
CT	Wallingford, Marshall Inds	203-265-3822

FL	Altamonte Springs, Marshall Inds	407-767-8585
FL	Altamonte Springs, Future Elctms	407-767-8414
FL	FL Lauderdale, Marshall Inds	305-977-4880
FL	Largo, Future Elctms	813-530-1222
FL	Miami, All American	305-621-8282
FL	Orlando, Chip Supply	407-298-7100
FL	St. Petersburg, Marshall Inds	813-573-1399
FL	Sunrise, All American	305-572-7999
GA	Norcross, Future Elctms	404-441-7676
GA	Norcross, Marshall Inds	404-923-5750
IL	Rosemont, Advent Elctms	708-298-4210
IL	Schaumburg, Future Elctms	708-882-1255
IL	Schaumburg, Marshall Inds	708-490-0155
IN	Indianapolis, Marshall Inds	317-297-0483
IN	Indianapolis, Advent Elctms	317-872-4910
IA	Cedar Rapids, Advent Elctms	319-363-0221
KS	Lenexa, Marshall Inds	913-492-3121
MD	Columbia, Future Elctms	301-290-0600
MD	Rockville, All American	301-251-1205
MD	Silver Springs, Marshall Inds	301-622-1118
MA	Bolton, Future Elctms	508-779-3000
MA	Wakefield, All American	617-246-2300
MA	Wilmington, Marshall Inds	508-658-0810
MA	Wilmington, North Star Elctms	508-657-5155
MI	Farmington Hills, Advent Elctms	313-477-1650
MI	Livonia, Future Elctms	313-261-5270
MI	Livonia, Marshall Inds	313-525-5850
MN	Eden Prairie, All American	612-944-2151
MN	Eden Prairie, Future Elctms	612-944-2200
MN	Plymouth, Marshall Inds	612-559-2211
MN	Thief River Falls, Digi-Key	218-681-6674
MO	Bridgeton, Marshall Inds	314-291-4650
MO	St. Louis, Future Elctms	314-469-6805
NJ	Fairfield, Marshall Inds	201-882-0320
NJ	Marlton, Future Elctms	609-596-4080
NJ	Mt. Laurel, Marshall Inds	609-234-9100
NJ	Parsippany, Future Elctms	201-299-0400
NY	Endicott, Marshall Inds	607-785-2345
NY	Hauppauge, Future Elctms	516-234-4000
NY	Hauppauge, Marshall Inds	516-273-2424
NY	Rochester, Future Elctms	716-272-1120
NY	Rochester, Marshall Inds	716-235-7620
NY	Ronkonkoma, All American	516-981-3935
NY	Syracuse, Future Elctms	315-451-2371
NC	Concord, Future Elctms	704-455-9030
NC	Raleigh, Future Elctms	919-790-7111
OH	Dayton, Marshall Inds	513-898-4480
OH	Mayfield, Future Elctms	216-449-6996
OH	Solon, Marshall Inds	216-248-1788
OR	Beaverton, Marshall Inds	503-644-5050
OR	Beaverton, Future Elctms	503-645-9454
TX	Austin, Marshall Inds	512-837-1991
TX	Houston, Marshall Inds	713-467-1666
TX	Houston, Future Elctms	713-556-8696
TX	Richardson, All American	214-231-5300
TX	Richardson, Marshall Inds	214-705-0600
TX	Richardson, Future Elctms	214-437-2437
UT	Salt Lake City, Future Elctms	801-972-8489
UT	Salt Lake City, Marshall Inds	801-973-2288
UT	Salt Lake City, All American	801-261-4210
WA	Bothell, Marshall Inds	206-486-5747
WA	Bothell, Future Elctms	206-489-3400
WI	Waukesha, Future Elctms	414-786-1884
WI	Waukesha, Marshall Inds	414-797-8400
WI	West Allis, Advent Elctms	414-475-6860
Can	Alb., Calgary, Future Elctms	403-250-5550
Can	Alb., Edmonton, Future Elctms	403-438-2858
Can	B. C., Vancouver, Future Elctms	604-294-1166
Can	Manitoba, Winnipeg, Future Elctms	204-786-7711
Can	Ont., Brampton, Marshall Inds	416-458-8046
Can	Ont., Mississauga, Future Elctms	416-612-9200
Can	Ont., Ottawa, Future Elctms	613-820-8313
Can	Que., Pointe Claire, Marshall Inds	514-694-8142
Can	Que., Pointe Claire, Future Elctms	514-694-7710
Can	Que., Quebec City, Future Elctms	418-877-6866
Intl	Argentina, Buenos Aires, Tinko SA	45-6563
Intl	Australia, Victoria, R & D Elctms	3-558-0444
Intl	Denmark, Copenhagen, Prescom A/S	
	45-42-189800	
Intl	Finland, Helsinki, ITT Multicomponets	
	011-468-83-0020	
Intl	Finland, Helsinki, ITT Multicomponets	
	011-03586926022	
Intl	France, ITT Multicomponets	
	1-64-46-0200	
Intl	France, Sevres, Tekelec Airtronic SA	
	011-146-232-425	

Intl	Germany, Future Elctms	49-89-957-1956
Intl	Germany, Weisbauer Elektronik GmbH	
	011-49231579547	
Intl	Germany, Semitron W. Rock GmbH	
	011-49-774290010	
Intl	Germany, CED Ditronec GmbH	
	011-49-711-720010	
Intl	Germany, Hamburg, Adelo Elektronik GmbH	
	011 49 41082024	
Intl	Hong Kong, Dynatek	011-852-796-6655
Intl	Italy, Vicenza, Velco SRL	011-39-444-922922
Intl	Japan, Osaka, Tomen Elctms Corp.	
	011-81-6208-3636	
Intl	Japan, Tokyo, Tomen Elctms Corp.	
	01181-3-506-3477	
Intl	Japan, Tokyo, Shinjuku-Ku, Hi-Rel Co Ltd	
	01181-3-2608401	
Intl	Korea, Seoul, Vine-Overseas Trading Corp.	
	011-82-2-266-1663	
Intl	Malaysia, Kuala Lumpur, NIE Elctms	
	011-603-6212122	
Intl	Netherlands, ITT Multicomponents	46-8-830020
Intl	Norway, Oslo, ITT Multicomponents	468-83-00-20
Intl	Orlando, FL (Mexican Distrib.), Chip Supply	
	305-298-7100	
Intl	Portugal, Compa	011-351-1362-1283/84
Intl	Russia, Moscow, PC Techno	709-546-18775
Intl	Singapore, NIE Elctms	011-4833133
Intl	Spain, Madrid, Amritron S.A.	01134-542-0906
Intl	Sweden, ITT Multicomponents	011-468-83-00-20
Intl	Switzerland, Oberlunkhofen, ENA AG	
	011-4157342834	
Intl	Taiwan, Taipei, Timkuo Taiwan Ltd.	
	011-886-2-752-5577	
Intl	Turkey, Istanbul, Empa	011-90-599-3050
Intl	U. K., Castlehill, Phoenix Elctms	
	01144-0555-751566	
Intl	U. K., Surrey, Redhill, Trident Microsystems Ltd.	
	011-44-737765-900	
Intl	U.K., Berks, Future Elctms Ltd	
	011-44-753-687-000	

TELSTONE CORPORATION, 22121-20th Avenue, SE, Bothell, Washington 98021-4408, Tel: 206-487-1515, 1-800-426-3926, FAX: 206-487-2288

Sales Office & Representatives

AL	Huntsville, A.C.M. Corp.	205-881-5493
CA	Irvine, Vale Elctms	714-551-4004
CA	Mountain View, G.N.A., Inc.	415-961-6740
FL	Longwood, Beacon Elctms	407-332-1940
FL	West Palm Bch, Beacon Elctms	407-996-4741
GA	Norcross, A.C.M. Corp.	404-448-7025
IL	The Dombrow Co	708-253-3326
MA	Wayland, Daner-Hayes	
	800-225-8760, 508-655-0888	
NY	Vestal, DH Tech	607-729-3906
TX	Dallas/FtWorth, Miles J. Cooley Co.	
	214-262-5893	
WA	Bothell, Telstone Corp	
	1-800-426-3926, 206-487-1515	
WI	The Dombrow Co	414-263-4116
Intl	New Zealand, Auckland, Philips Comps	
	64-9-849-4160	

Distributors

AL	Bell Inds	205-837-1074
AL	Huntsville, Comp Distributors	
	800-888-0331, 205-851-7800	
AZ	Phoenix, Bell Inds	602-966-7800
CA	Agoura Hills, Bell Inds	818-879-9494
CA	Cypress, Bell Inds	714-895-7801
CA	Sacramento, Bell Inds	916-852-0418
CA	Sacramento, G.N.A. Inc	209-223-3389
CA	San Diego, Bell Inds	619-268-1277
CA	Sunnyvale, Bell Inds	408-734-8570
CA	Tustin, High Tech. Semi.	714-259-7733
CO	Denver, Bell Inds	303-691-9010
CO	Denver, Comp Distributors	
	303-770-6214, 1-800-557-7357	
CT	Hartford, Bell Inds	203-269-6000
CT	Wellingford, Cronin Elctms	203-265-3134
FL	Clearwater, Comp Distributors	813-796-0466
FL	FL Lauderdale, Bell Inds	305-421-1997
FL	Orlando, Bell Inds	407-339-0078
FL	Palm Bay, Comp Distributors	
	800-558-2351, 407-724-9910	
FL	Tampa, Bell Inds	813-541-4434

MANUFACTURERS & DISTRIBUTORS DIRECTORY

MFGS & DIR

GA	Marshall	404-923-5750
IL	Marshall	708-490-0155
IL	Anthem	708-884-0200
IL	Bensenville, Hall-Mark	312-860-3800
IL	Chicago, Newark	312-784-5100
IL	Elk Grove Village, Arrow/Schweber	708-250-0500
IN	Indianapolis, Hall-Mark	317-872-8875
IN	Indianapolis, Arrow/Schweber	317-299-2071
IN	Indianapolis, Marshall	317-297-0483
IA	Cedar Rapids, Arrow/Schweber	319-395-7230
KS	Kansas City, Marshall	913-492-3121
KS	Kansas City, Hall-Mark	913-888-4747
KS	Kansas City, Arrow/Schweber	913-541-9542
MD	Marshall	301-622-1118
MD	Zeus	301-997-1118
MD	Hall-Mark	301-988-9800
MD	Anthem	301-995-6640
MD	Baltimore, Arrow/Schweber	301-590-7800
MA	Zeus	617-246-8200
MA	Hall-Mark	508-667-0902
MA	Anthem	508-657-5170
MA	Wyle	617-273-7300
MA	Billerica, Arrow/Schweber	508-658-0900
MA	Burlington, Marshall	508-658-0810
MI	Detroit, Marshall	313-525-5850
MI	Detroit, Arrow/Schweber	313-462-2290
MI	Detroit, Newark	313-967-0600
MI	Detroit, Hall-Mark	313-416-5800
MN	Hallmark	612-881-2600
MN	Marshall	612-559-2211
MN	Anthem	612-944-5454
MN	Edina, Arrow/Schweber	612-941-5280
MO	St. Louis, Arrow/Schweber	314-567-6888
MO	St. Louis, Hall-Mark	314-291-5350
MO	St. Louis, Marshall	314-291-4650
NJ	Hall-Mark	201-515-3000, 609-235-1900
NJ	Arrow/Schweber	201-227-7880, 609-596-8000
NJ	Marshall	609-234-9100, 201-882-0320
NJ	Anthem	201-227-7960
NM	Alliance	505-292-3360
NY	Hauppauge, Arrow/Schweber	516-231-1000
NY	Long Island, Zeus	914-937-7400
NY	Long Island, Marshall	516-273-2424
NY	Long Island, Hall-Mark	516-737-0600
NY	Long Island, Anthem	516-864-6600
NY	Rochester, Arrow/Schweber	716-427-0300
NY	Rochester, Marshall	716-235-7620
NY	Rochester, Hall-Mark	716-425-3300
NY	Syracuse, Marshall	607-785-2345
NC	Hall-Mark	919-872-0712
NC	Marshall	919-878-9882
NC	Winston-Salem, Arrow/Schweber	919-876-3132
OH	Cleveland, Arrow/Schweber	216-248-3990
OH	Cleveland, Marshall	216-248-1788
OH	Cleveland, Hall-Mark	216-349-4632
OH	Columbus, Hall-Mark	614-888-3313
OH	Dayton, Zeus	513-293-6162
OH	Dayton, Marshall	513-898-4480
OH	Dayton, Arrow/Kierulff	513-435-5563
OK	Hall-Mark	918-254-6110
OK	Tulsa, Arrow/Schweber	918-252-7537
OR	Almac/Arrow	503-629-8090
OR	Marshall	503-644-5050
OR	Anthem	503-643-1114
OR	Hillsboro, Wyle	503-643-7900
PA	Anthem	215-443-5150
PA	Marshall	412-788-0441
PA	Ft. Washington, GRS	215-922-7037, 609-964-8560
PA	Ft. Washington, Arrow/Schweber	215-928-1800
TX	Austin, Arrow/Schweber	512-835-4180
TX	Austin, Wyle	512-345-8853
TX	Austin, Hall-Mark	512-258-8848
TX	Austin, Marshall	512-837-1991
TX	Dallas, Zeus	214-783-7010
TX	Dallas, Arrow/Schweber	214-380-6464
TX	Dallas, Marshall	214-233-5200
TX	Dallas, Wyle	214-235-9953
TX	Dallas, Hall-Mark	214-553-4300
TX	Dallas, Anthem	214-238-7100
TX	Houston, Marshall	713-467-1666
TX	Houston, Wyle	713-879-9953
TX	Houston, Arrow/Schweber	713-530-4700
TX	Houston, Hall-Mark	713-781-6100
UT	Marshall	801-973-2288
UT	Anthem	801-973-8555
UT	Salt Lake City, Arrow/Schweber	801-973-6913

UT	Salt Lake City, Wyle	801-974-9953
WA	Marshall	206-486-5747
WA	Anthem	206-483-1700
WA	Bellevue, Wyle	206-881-1150
WA	Seattle, Almac/Arrow	206-643-9992
WI	Marshall	414-797-8400
WI	Oak Creek, Arrow/Schweber	414-792-0150
WI	Oak Creek, Hall-Mark	414-797-7844
Can	Alb., Calgary, Future	403-235-5325
Can	Alb., Edmonton, Future	403-438-2858
Can	B.C., Vancouver, Future	604-294-1166
Can	Ont., Ottawa, Future	613-820-8313
Can	Ont., Ottawa, Arrow/Schweber	613-226-6903
Can	Ont., Toronto, Arrow/Schweber	416-670-7769
Can	Ont., Toronto, Future	416-612-9200
Can	Ont., Toronto, Marshall	416-458-8046
Can	Que., Montreal, Arrow/Schweber	514-421-7411
Can	Que., Montreal, Marshall	514-694-8142
Can	Que., Montreal, Future	514-694-7710
Can	Quebec, Future	418-897-6666

THALER CORP., 2015 N. Forbes Blvd. 109, Tucson, Arizona 85745, Tel: 602-742-5572, TELEX: 825193, FAX: 602-742-9826

Sales Office & Representatives

CA	Costa Mesa, Solid State Sls	714-650-8414
CA	Los Altos, Kolm Mktg	415-948-2635
CO	FL Collins, Sales Technlg	303-530-9409
IL	Chicago, LGS Elctms	708-456-9616
MA	Peabody, JK Assocs	508-535-8068
MI	Milford, Electrn Comp Sls Inc	313-360-3790
NY	Eastchester, WD Sales Inc	914-779-8738
OH	Novelty, Rogers Sales	216-338-8500
TX	Sherman, Repmaster	214-247-6236
WA	Federal Way, Wilson Elctrn Sls	206-946-8016

Distributors

Can	Ontario, Intelatech	416-629-0082
Intl	England, Surry, Rhpoint Ltd	44-0883-717988
Intl	Hong Kong, Kowloon, Lead Wealth Elctms	852-362-8131
Intl	Israel, Yehuda, El Gev Elctms	972-3-971-2056
Intl	Japan, Tokyo, Meisho Elctms	81-03-3-980-6541

THIRD DOMAIN, INC., 8075 E. Research Court, 104, Tucson, Arizona 85710, Tel: 602-290-1820, FAX: 602-885-1189

Sales Office & Representatives

CA	La Canada, C.E.M.	818-790-8358
CA	San Diego, C.E.M.	619-583-8571
CA	Santa Ana, C.E.M.	714-835-2702
CA	Sunnyvale, Logan Sls Assocs	408-732-6020
IN	Ft. Wayne, Bontempo & Assocs	219-478-1057
MA	West Peabody, J-K Assocs	508-535-8068
NY	Rego Park, Techmar	718-275-6800
TX	Lewisville, Elctrn Prod Reps	214-436-4772
Intl	France, Meudon-La-Forêt, Sacasa	011-33-1-630-68-39
Intl	Germany, Munchen, Cosys Elctrn GmbH	011-49-89-904-5064
Intl	Israel, Nes Ziona, Codal Intl Elctms Ltd.	972-8-40-42-63
Intl	Japan, Tokyo, Internix, Inc.	011-81-3-3-369-1105
Intl	Korea, Seoul, Cross Intl Inc.	011-82-2-517-8438-9
Intl	Singapore, Taiga Elctms Pte Ltd.	011-65-221-4156

THOMSON COMPONENTS AND TUBES CORPORATION, Thomson Military and Space Components Division, 40G Commerce Way, Totowa, New Jersey 07511, Tel: 201-812-9000, FAX: 201-812-9050

Sales Office & Representatives

NJ	Totowa, Thomson Comps and Tubes Corp	201-812-9000
Intl	France, Courbevoie Cedex, Thomson Composants	331-49-05-39-26
Intl	Germany, Munchen, Thomson Bauelemente GmbH	4989-78-79-0
Intl	Italy, Roma, Thomson Compi SpA	396-639-02-48, 396-638-14-58
Intl	Japan, Tokyo, Dasco	813-5351-1184

Intl	Spain, Madrid, Thomson Tubos Y Compes S.A.	341-564-02-72
Intl	Sweden, Tyreso, Thomson Comps AB	468-742-02-10
Intl	U.K., Hants, Thomson Elctrn Comps Ltd.	44256-84-33-23

TLSI INCORPORATED, 815 Broadhollow Road, Farmingdale, New York 11735, Tel: 516-755-7005, FAX: 516-755-7626

Sales Office & Representatives

AL	Huntsville, Over & Over Inc.	205-837-7105
CA	Placentia, SMK Elec. Corp., USA	714-996-0960
CT	Norwalk, SMK Elec. Corp., USA	203-847-6919
FL	Altamonte Springs, Over & Over Inc.	407-332-1222
GA	Norcross, Over & Over Inc.	404-449-6205
IL	Deerfield, Mar-con Assocs. Inc.	708-848-9441
IL	Glendale Heights, Mar-con Assocs. Inc.	708-653-3214
IL	Highland Park, Mar-con Assocs. Inc.	708-433-1226
IL	Skokie, Mar-con Assocs., Inc.	708-675-6450
MD	Laurel, R.W. Mitscher Co., Inc.	301-498-6090
MA	Brocton, Deltek Sales	508-588-4051
MI	Livonia, Electro Sls. Assocs.	313-421-7500
NJ	Collingswood, R.W. Mitscher Co., Inc.	609-858-6440
NY	Binghamton, R.W. Mitscher Co., Inc.	607-724-6561
NY	Clarence, R.W. Mitscher Co., Inc.	716-759-2350
NY	Pittsford, R.W. Mitscher Co., Inc.	716-586-4012
NY	Rochester, R.W. Mitscher Co., Inc.	716-227-0839
NY	Williamsville, R.W. Mitscher Co., Inc.	716-759-2350
NC	Charlotte, Over & Over Inc.	704-542-9111
NC	Raleigh, Over & Over Inc.	919-876-7338
OH	Chesterland, Electro Sls. Assocs.	216-729-0190
OH	Dayton, Electro Sls. Assocs.	513-426-5551
PA	Pittsburgh, Electro Sls. Assocs.	412-322-9000
RI	Westerly, Deltech/Promerge Sls.	401-348-1037
VA	Richmond, R.W. Mitscher Co., Inc.	804-320-7350
Intl	England, Devon, Noram Comps	803-86-2271
Intl	UK, Norfolk, Noram Comps	692-53-6142

TOKO AMERICA INC., 1250 Feehanville Drive, Mt. Prospect, Illinois 60056, Tel: 708-297-0070, FAX: 708-699-7864

Sales Office & Representatives

AL	Huntsville, TOKO America, Inc.	205-772-8904
CA	San Jose, TOKO America, Inc.	408-432-8281
CO	Colorado Springs, TOKO America, Inc IC Center	719-528-2200
CT	Danbury, TOKO America, Inc	203-748-6871
IL	Mt. Prospect, TOKO America, Inc	708-297-0070
Intl	France, Paris, Les Composants TOKO S.a.r.l.	01-4557-4465
Intl	Germany, Dusseldorf, TOKO Elctrn Europe GmbH	0211-682281
Intl	Hong Kong, Kowloon, TOKO, Inc	03-428131-9
Intl	Italy, Milano, TOKO S.r.l.	02-325384,39267131
Intl	Japan, Tokyo, TOKO, Inc	03-3727-1161
Intl	Korea, Kyung-Sang-Nam-Do, Korea TOKO Co., Ltd	0551-93-1101-3
Intl	Korea, Seoul, Korea TOKO Co., Ltd	02-556-2754
Intl	Malaysia, Pulau Penang, TOKO Elctrn Malaysia Sdn Bhd	04-870851
Intl	Malaysia, Selangor, TOKO Elctrn Malaysia Sdn Bhd	03-7761927
Intl	Singapore, TOKO, Inc	255-4000
Intl	Taiwan, Kaohsiung, Taiwan TOKO Elctms Co., Ltd	07-361-2011-18
Intl	Taiwan, Taipei, Huacheng TOKO Elctms Co., Ltd	02-768-4131-4
Intl	U.K., England, TOKO (U.K.) Ltd	0753-854057-9

Distributors

CA	San Jose, Passive Technlg	408-435-5566
CA	Sunnyvale, Penstock	408-730-0300

IC MASTER

MA Wilmington, North Star Elctms 508-657-5155
 MN So. Thief River Falls, Digi-Key Corp .. 800-344-4539

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC., 9775 Toledo Way, Irvine, California 92718, Tel: 714-455-2000, FAX: 714-859-3963

Sales Office & Representatives

AL Huntsville, Toshiba America Elctm Comps, Inc 205-721-1467

AL Huntsville, M-Squared, Inc 205-830-0498

AZ Scottsdale, Summit Sales 602-998-4850

CA Encinitas, Bager Elctms 619-632-8816

CA Fountain Valley, Bager Elctms 714-957-3367

CA Irvine, Toshiba America Elctm Comps 714-453-0224

CA Irvine, Toshiba America Elctm Comps 714-455-2000

CA Los Altos, Elrepro Inc. 415-962-0660

CA Sunnyvale, Toshiba America Elctm Comps 408-737-9844

CA Woodland Hills, Bager Elctms 818-712-0011

CA Woodland Hills, Toshiba America Elctm Comps 818-596-2170

CO Englewood, Toshiba America Elctm Comps 303-220-9848

CO Westminster, Straube Assoc. Mountain States, Inc. 302-426-0890

FL Altamonte Springs, Toshiba America Elctm Comps 407-332-0966

FL Altamonte Springs, Sales Engrn Concepts 407-830-8444

FL Boca Raton, Toshiba America Elctm Comps 407-998-9204

FL Deerfield Bch, Sales Engrn Concepts 305-426-4601

GA Norcross, Toshiba America Elctm Comps 404-368-0203

GA Norcross, M-Squared, Inc 404-447-6124

IL Deerfield, Toshiba America Elctm Comps 708-945-1500

IL Elk Grove Village, Carlson Elctm Sales 708-956-8240

IN Indianapolis, Precision Elctm Comps. 317-842-3740

IA Cedar Rapids, Carlson Elctm Sls 319-378-1450

KS Wichita, D.L.E. Elctms 316-683-6400

MD Lutherville, D.G.R. Inc 410-583-1360

MA Needham, CTC Assocs 617-444-1995

MA Wakefield, Toshiba America Elctm Comps 617-224-0074

MI Farmington Hills, Action Comp Sls, Inc 313-442-9880

MI Southfield, Toshiba America Elctm Comps 313-827-7700

MN Bloomington, Toshiba America Elctm Comps 612-853-9888

MN Minneapolis, Elec Comps Sls, Inc. 612-933-2594

MO St. Louis, Tech Sls Assocs 314-521-2044

NJ Edison, Toshiba America Elctm Comps 908-248-8070

NJ Fort Lee, Nexus Technology 201-947-0151

NY Syracuse, Leonard D. Allen, Inc. 315-437-8387

NC Raleigh, Toshiba America Elctm Comps 919-859-2800

NC Raleigh, M-Squared, Inc 919-836-1350, 919-851-0010

OH Chagrin Falls, J. R. Thornberry 216-247-0060

OH Columbus, J. R. Thornberry 614-478-1882

OR Beaverton, Toshiba America Elctm Comps 503-629-0818

OR Beaverton, Comps West 503-642-9110

PA Bridgeville, J. R. Thornberry 412-745-8441

PA Horsham, Nexus Technology 215-675-9600

TX Austin, MIL-REP Assocs, Inc. 512-346-6331

TX Austin, Toshiba America Elctm Comps 512-335-2270

TX Houston, MIL-REP Assocs, Inc. 713-444-2557

TX Richardson, MIL-REP Assocs., Inc. 214-644-6731

TX Richardson, Toshiba America Elctm Comps 214-480-0470

UT Salt Lake City, Straube Assoc. Mountain States, Inc. 801-263-2640

WA Bellevue, Toshiba America Elctm Comps 206-646-6258

WA Redmond, Comps West 206-885-5880

WI Milwaukee, Carlson Elctm Sales 414-476-2790

Can BC, Vancouver, Electro Source 604-275-2734

Can Ont, Kanata, Toshiba of Canada Ltd 613-592-2824

Can Ontario, Kanata, Electro Source 613-592-3214

Can Ontario, Rexdale, Electro Source 416-675-4490

Can Quebec, Pointe Claire, Electro Source 514-630-7486

Distributors

AL Huntsville, Marshall Inds. 205-881-9235

AL Huntsville, Nu Horizons Elctms 205-722-9330

AL Huntsville, Repron Elctms 205-722-9500

AZ Phoenix, Sterling Elctms 602-437-5565

AZ Phoenix, Marshall Inds 602-496-0290

AZ Tempe, Insight Elctms 602-829-1800

CA Agoura Hills, Western Microtechnology 818-707-0731

CA Calabasas, Marshall Inds 818-878-7000

CA El Monte, Marshall Inds 818-307-6000

CA Irvine, Marshall Inds 714-458-5301

CA Irvine, Insight Elctms 714-727-3291

CA Milpitas, Marshall Inds. 408-942-4600

CA Orange, Western Microtechnology ... 714-637-0200

CA Rancho Cordova, Marshall Inds. 916-635-9700

CA San Diego, Western Microtechnology 619-453-8430

CA San Diego, Sterling Elctms 619-560-8097

CA San Diego, Insight Elctms 619-587-1100

CA San Diego, Marshall Inds. 619-627-4140

CA San Jose, Merit Elctms, Inc. 408-434-0800

CA San Jose, Sterling Elctms 408-435-5566

CA Saratoga, Western Microtechnology 408-725-1660

CA Sunnyvale, Insight Elctms 800-677-7716, 408-720-9222

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CT	Wallingford, John E. Boeing Co., Inc.	203-265-1318
FL	Altamonte Springs, Semtronic	407-831-8233
FL	Clearwater, Semtronic	813-461-4675
FL	Ft. Lauderdale, Semtronic	305-731-2484
GA	Norcross, The Novus Group	404-263-0320
IL	Itasca, Beta Technology Sales	708-250-9586
IL	Schaumburg, Xilinx, Inc.	708-605-1972
IN	Carmel, Gen II Mktg	317-848-3083
IN	Ft. Wayne, Gen II Mktg	219-436-4485

IA	Cedar Rapids, Advanced Tech Sales	319-393-8280
KS	Olathe, Advanced Tech Sales	913-782-8702
KY	Louisville, Gen II Mktg	502-894-9900
MD	Baltimore, Micro Comp	410-644-5700
MA	Burlington, Genesis Assoc	617-270-9540
MI	Kentwood, Miltimore Sls Inc	616-554-9292
MI	Novi, Miltimore Sls Inc	313-349-0260
MN	Eden Prairie, Com-Tek	612-941-7161
MO	Bridgeton, Advanced Tech Sales	314-291-5060
NH	Nashua, Xilinx, Inc.	603-891-1055
NM	Albuquerque, Quatra Assocs	505-296-8781
NY	E. Syracuse, Electra Sls Corp	315-463-1248
NY	Melville, Parallax	516-351-1000
NY	Rochester, Electra Sls Corp	716-427-7860
NC	Cary, The Novus Group	919-460-7771
NC	Raleigh, Xilinx, Inc.	919-846-3922
NC	Weddington, Novus Grp	704-846-4044
OH	Centerville, Bear Mktg, Inc.	513-436-2061
OH	Richfield, Bear Mktg	216-859-3131
OR	Portland, Thorson Company Northwest	503-293-9001
PA	Allison Park, Bear Mktg	412-492-1150
PA	Hatboro, Delta Tech Sales	215-957-0600
PA	Malvern, Xilinx, Inc.	215-296-8302
TN	Maryville, Novus Group	615-681-8895
TX	Austin, Bonser-Philhower Sales	512-346-9186
TX	Dallas, Xilinx, Inc.	214-960-1043
TX	Houston, Bonser-Philhower Sales	713-782-4144
TX	Richardson, Bonser-Philhower Sales	214-234-8438
UT	Salt Lake City, Luscombe Engr	801-268-3634
VA	Lynchburg, Micro Comp. Inc.	804-239-2626
WA	Bellevue, Thorson Company Northwest	206-455-9180
WI	Milwaukee, Beta Technology Sales	414-543-6609
Can	British Columbia, Vancouver, Electro Source	604-275-2734
Can	British Columbia, Vancouver, Thorson Co. Northwest	206-455-9180
Can	Ontario, Kanata, Electro Source, Inc.	613-592-3214
Can	Ontario, Rexdale, Electro Source	416-675-4490
Can	Quebec, Pointe Claire, Electro Source	514-630-7486
Intl	Argentina, Buenos Aires, Reycom Electronica SRL	54-1-45-6459/49-7030
Intl	Australia, Bayswater, ACD	61-3-762-7644
Intl	Australia, Bentley, ACD	61-9-472-3232
Intl	Australia, Norwood, ACD	61-8-364-2844
Intl	Australia, Sydney, ACD	61-2-534-6200
Intl	Austria, Wien, Eljapex GmbH	43-1-8615311
Intl	Belgium, Wommel, Rodeico NV	32-2-460-0560
Intl	Brazil, Sao Paulo, Hitech	55-11-531-9355
Intl	Chile, Santiago, DTS Ltda	56-2-699-3316
Intl	Czech Republic, Eljapex/Elbatex G.m.b.H.	02-692-8087
Intl	Denmark, Aabyhoej, Dana Tech	45-86-253100
Intl	Denmark, Bagsvaerd, Dana Tech AS	45-44-377110
Intl	Finland, Helsinki, Field OY Instrumentarium	358-0-777571
Intl	France, Vostorg	33-1-6920-4613
Intl	France, Cesson Sevigne, AVNET Composit	33-99-83-84-85
Intl	France, Chatillon, AVNET/EMG	33-1-49-65-25-00
Intl	France, Heillecourt Cedex, AVNET Composit	33-83-53-12-34
Intl	France, Labège Cedex, AVNET Composit	33-61-39-21-12
Intl	France, Massy, Rep'tronic	33-1-60139300
Intl	France, Merignac, AVNET Composit	33-56-55-92-92
Intl	France, Meylan, AVNET Composit	33 76 90 11 88
Intl	France, St. Herblain, AVNET Composit	33-40-63-23-00
Intl	France, Toulon, AVNET Composit	33-94-03-32-56
Intl	France, Venissieux, AVNET Composit	33-78-00-07-26
Intl	Germany, Xilinx, GmbH	49-89-904-5024
Intl	Germany, Berlin, Metronik GmbH	49-30-436-1219
Intl	Germany, Berlin, Avnet E2000	49-30-2110761
Intl	Germany, Darmstadt, Metronik GmbH	49-6151-73-0540
Intl	Germany, Dortmund, Metronik GmbH	49-231-214741/43

TN	EnVision	615-862-7666
TX	Austin, Nova Mktg	512-343-2321
TX	Dallas, Nova Mktg	214-265-4600
TX	Houston, Nova Mktg	713-988-6082
WA	Blair Hirsh Co.	206-774-8151
WI	James R. Johnson	612-478-9442
WI	Paltronics	608-276-7602
Can	Alberta, Yamaha Corp. of America	800-543-7457
Can	British Columbia, Yamaha Corp. of America	800-543-7457
Can	Ontario, Indigo Electrms Ltd.	416-670-0284
Can	Ontario, Indigo Electrms Ltd.	613-591-1053
Can	Quebec, Indigo Electrms Ltd.	514-696-6104
Intl	Brazil, Round Valley Services	011-825-3111
Intl	Brazil, Round Valley Services	011-832-9667
Intl	Brazil, Round Valley Services	011-284-5133
Intl	Mexico, Yamaha Corp. of America	800-543-7457
Intl	S. America, Round Valley Services	011-825-3111

Distributors

AL	Huntsville, Marshall Inds	205-881-9235
AZ	Phoenix, Marshall Inds	602-496-0290
AZ	Scottsdale, Added Value Electrms	602-951-9788
CA	Calabasas, Marshall Inds	818-878-7000
CA	Camarillo, Milgray Electrms	805-484-4055
CA	El Monte, Marshall Inds	818-307-6000
CA	Irvine, Marshall Inds	714-458-5301
CA	Irvine, Milgray Electrms	714-753-1282
CA	Milpitas, Marshall Inds	408-942-4600
CA	Rancho Cordova, Marshall Inds	916-635-9700
CA	San Diego, Added Value Electrms	619-558-8890
CA	San Diego, Marshall Inds	619-627-4140
CA	San Jose, Milgray Electrms	408-456-0900
CA	Tustin, Added Value Electrms	714-259-8258
CA	Visalia, Added Value Electrms	209-734-8861
CA	West Lake Village, Added Value Electrms	818-889-2861
CO	Thornton, Marshall Inds	303-451-8383
CO	Wheat Ridge, Added Value Electrms	303-422-1701
CT	Milford, Milgray Electrms	203-878-5538
CT	Wallingford, Marshall Inds	203-265-3822
FL	Altamonte Springs, Marshall Inds	407-767-8585
FL	FL. Lauderdale, Marshall Inds	305-977-4880
FL	Lake Mary, Milgray Electrms	407-321-2555
FL	St. Petersburg, Marshall Inds	813-573-1399
GA	Norcross, Marshall Inds	404-923-5750
GA	Norcross, Milgray Electrms	404-446-9777
IL	Palatine, Milgray Electrms	708-202-1900
IL	Schaumburg, Marshall Inds	708-490-0155
IN	Indianapolis, Marshall Inds	317-297-0483
KS	Lenexa, Marshall Inds	913-492-3121
KS	Overland Park, Milgray Electrms	913-236-8800
MD	Columbia, Milgray Electrms	301-995-6169
MD	Silver Spring, Marshall Inds	301-622-1118
MA	Wilmington, Marshall Inds	508-658-0810
MA	Wilmington, Milgray Electrms	508-657-5900
MI	Livonia, Marshall Inds	313-525-5850
MN	Plymouth, Marshall Inds	612-559-2211
MO	Bridgton, Marshall Inds	314-291-4650
NJ	Fairfield, Marshall Inds	201-882-0320
NJ	Marlton, Milgray Electrms	609-983-5010
NJ	Mt. Laurel, Marshall Inds	609-234-9100
NJ	Parsippany, Milgray Electrms	201-335-1766
NY	Endicott, Marshall Inds	607-785-2345
NY	Farmingdale, Milgray Electrms	516-420-9800
NY	Hauppauge, Marshall Inds	516-273-2695
NY	Holtsville, Apollo Display Technologies	516-654-1143
NY	Pittsford, Milgray Electrms	716-381-9700
NY	Rochester, Marshall Inds	716-235-7620
NC	Raleigh, Marshall Inds	919-878-9882
NC	Raleigh, Milgray Electrms	919-790-8094
OH	Cleveland, Milgray Electrms	216-447-1520
OH	Dayton, Marshall Inds	513-898-4480
OH	Solon, Marshall Inds	216-248-1788
OR	Beaverton, Marshall Inds	503-644-5050
TX	Austin, Marshall Inds	512-837-1991
TX	Dallas, Milgray Electrms	214-248-1603
TX	Houston, Marshall Inds	713-467-1666
TX	Richardson, Marshall Inds	214-705-0600
TX	Stafford, Milgray Electrms	713-240-5360
UT	Murray, Milgray Electrms	801-272-4999
UT	Salt Lake City, Marshall Inds	801-973-2288
UT	West Valley City, Added Value Electrms	801-975-9500
WA	Bothell, Marshall Inds	206-486-5747

WI	Waukesha, Marshall Inds	414-797-8400
Can	Ont., Toronto, Marshall Inds	416-458-8046
Can	Ontario, Milgray Electrms	416-678-0958
Can	Que., Montreal, Marshall Inds	514-694-8142
Can	Quebec, Milgray Electrms	514-426-5900
Intl	Brazil, Brazilia, Micro Services Ind. E Com. Ltda	061-226-1232
Intl	Brazil, Sao Paulo, Micro Services Ind. E Com. Ltda	011-581-7842

ZAX CORP., See Zaxtek

ZAXTEK, 42 Corporate Park, Irvine, California 92714, Tel: 714-474-1170

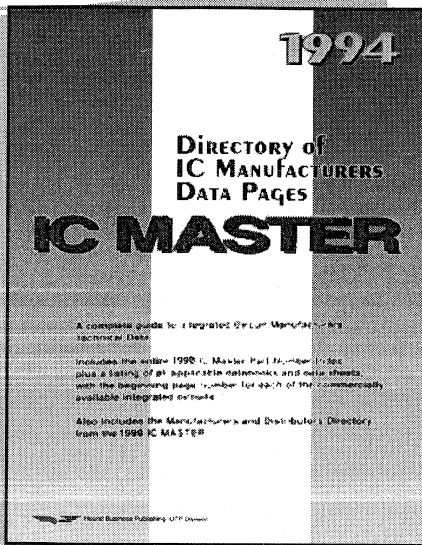
ZILOG, INC., 210 East Hacienda Avenue, Campbell, California 95008-6600, Tel: 408-370-8000, TWX: 910-338-7621, FAX: 408-370-8056

Sales Office & Representatives

CA	Agoura, Zilog, Inc.	818-707-2160
CA	Campbell, Zilog, Inc.	408-370-8120
CA	Irvine, Zilog, Inc.	714-453-9701
CO	Boulder, Zilog, Inc.	303-494-2905
FL	Largo, Zilog, Inc.	813-585-2533
GA	Norcross, Zilog, Inc.	404-448-8370
IL	Schaumburg, Zilog, Inc.	708-517-8080
MN	Minneapolis, Zilog, Inc.	612-944-0737
NH	Nashua, Zilog, Inc.	603-888-8590
NC	Raleigh, Zilog, Inc.	919-790-7706
OH	Independence, Zilog, Inc.	216-447-1480
PA	Ambler, Zilog, Inc.	215-653-0230
TX	Dallas, Zilog, Inc.	214-987-9987
WA	Seattle, Zilog, Inc.	206-523-3591
Can	Toronto, Zilog, Inc.	416-673-0634
Intl	Germany, Munich, Zilog, Inc.	49-89-672-045
Intl	Germany, Sommerda, Zilog, Inc.	37-626-23906
Intl	Hong Kong, Kowloon, Zilog, Inc.	852-7238979
Intl	Japan, Tokyo, Zilog, Inc.	81-3-3587-0528
Intl	Korea, Seoul, Zilog, Inc.	82-2-552-5401
Intl	Singapore, Zilog, Inc.	65-23571555
Intl	Taiwan, Taipei, Zilog, Inc.	886-2-741-3125
Intl	U.K., Maidenhead, Zilog, Inc.	44-626-392-00

ZYMOS INC., 477 N. Mathilda Ave., Sunnyvale, California 94086, Tel: 408-730-5400

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MILITARY PARTS DIRECTORY

Military Parts include devices reported by the Defense Electronics Supply Center (DESC), Dayton, OH 45444-5270. The Standardized Military Drawing (SMD) Numbers refer to either the MIL-M-38510 specification numbers or the Federal Stock Designators of Class 5962.

**Military Device Screening Available
by Manufacturer**

Military Parts Sorted by Function

Military Parts Sorted by SMD Number

**Military Parts Sorted by Generic
Industry Part Number**

MANUFACTURER	MIL-M-38510 QPL					MIL-STD-883 SCREENING		OTHER SCREENING		RADIATION HARDENED
	MEMORY	LINEAR	TTL	OTHER BIPOLAR	CMOS	CLASS B	CLASS S	MILITARY	INDUSTRIAL	
Advanced Analog						X	X	X	X	X
Advanced Linear Devices						X		X	X	
Advanced Micro Devices						X		X	X	
Altera						X		X	X	
Analog Devices		X		X	X	X	X	X	X	X
Analog Systems						X		X	X	
Apex Microechnology						X		X	X	
Applied Micro Circuits						X	X	X	X	X
Aptek Technologies						X		X	X	
Astec Semiconductor									X	
Atmel Corp.						X	X	X	X	
Avasem Corp.								X	X	
Benchmark Microelectronics									X	
Burr-Brown		X				X	X	X	X	X
Catalyst Semiconductor						X		X	X	
Cherry Semiconductor									X	
Comlinear Corp.						X	Limited	X	X	
Crystal Semiconductor						X		X	X	
Cypress Semiconductor	X				X	X	X	X	X	Rad. Tol.
Datel						X	Limited	X	X	
Dense-Pac Microsystems						X		X	X	Rad. Tol.
Dionics Inc.				X		X		X	X	
ECI Semiconductor						X	X	X	X	
EG&G Reticon						X		X	X	
Elantec						X	X	X	X	
EXEL Microelectronics						X			X	X
Fujitsu Microelectronics						X			X	
Gennum Corp.						X	X	X	X	
Gould AMI						X	Limited	X	X	
Harris Semiconductor	X	X		X	X	X	X	X	X	X
Holt Integrated Circuits Inc.						X	X	X	X	
Honeywell Solid State Elec.					QML	X	X	X	X	X
Hughes Aircraft						X	X	X	X	X
Ideal Semiconductor						X	X	X	X	X
ILC Data Device Corp.						X	X	X	X	X
Integrated Device Technology						X		X	X	X
Intel Corp.	X			µP		X		X	X	
Int'l Microcircuits			X		X	X	Limited	X	X	X
Int'l Microelectronic Products						X		X	X	
Interpoint						X	X	X	X	X
Intronics						X		X	X	
Lansdale Semiconductor Inc.	X	X	X	X		X		X	X	
Lattice Semiconductor					X	X			X	Rad. Tol.
Linear Integrated Systems						X		X	X	X
Linear Technology Corp.		X				X	X	X	X	X
Logic Devices	X				X	X		X	X	
Logical Solutions					X	X		X	X	
LSI Computer Systems						X	X	X	X	
Maxim Integrated Products						X	X	X	X	
Micrel						X	X	X	X	X
Microchip Technology Inc.						X		X	X	
Micro Networks						X		X	X	
Micro Linear		X	X	X		X		X	X	
Micro Power Systems						X	X	X	X	X
Mitel Semiconductor						X		X	X	

MANUFACTURER	MIL-M-38510 QPL					MIL-STD-883 SCREENING			OTHER SCREENING		RADIATION HARDENED
	MEMORY	LINEAR	TTL	OTHER BIPOLAR	CMOS	CLASS B	CLASS S	MILITARY	INDUSTRIAL		
Mosaic Semiconductor	x						x		x	x x	
Motorola Semiconductor	x	x	x	x	x	x	x	x	x		
MSI/Scorpion Semiconductor	x				x	x	x	x	x		
MX-COM						x		x	x		
National Semiconductor	x	x	x	x	x	x	x	x	x	x	
NCM Corp.					x	x		x	x	x	
Newbridge Microsystems					x	x	x	x	x		
Optical Electronics Inc.		x		x		x		x	x		
Paradigm Technology	x				x	x		x	x		
Performance Semiconductor						x		x	x		
Philips	x	x				x	x	x	x		
Proxim, Inc.						x	Limited	x	x		
Qualcomm						x	x	x	x	x	
Quality Semiconductor						x		x	x		
Raytheon Semiconductor	x	x	x	x		x	x	x	x	x	
R & E International								x	x		
Rochester Electronics Inc.						x	Limited	x	x		
Samsung Microwave						x	x	x	x		
SemTech						x		x	x		
Signal Processing Technologies						x		x	x		
Silicon General		x		x	x	x	x	x	x	x	
Siliconix						x		x	x		
Sipex		x		x	x	x	x	x	x	x	
Solitron		x				x	x	x	x		
Space Research Tech, Inc.					x	x		x	x		
Standard Microsystems Corp.									x		
STC Semiconductors						x	Limited	x	x		
Sunshine Semiconductor					x	x		x	x		
Technitrol						x		x	x		
Teledyne Components								x	x		
Texas Instruments	x	x	x	x		x	x	x	x		
TriQuint						x	x	x	x		
TRW LSI						x		x	x		
Unitrode Corp.		x		x		x	x	x	x		
United Tech Micro Ctr.	x				x	x	x	x	x	x	
Vitesse Semiconductor						x	x	x	x		
VLSI Technology Inc.						x		x	x		
Xicor		x			x	x	Limited	x	x		
Xilinx						x		x	x		

EXPLANATION:

The "MIL-M-38510" section indicates the IC manufacturers currently providing Q.P.L. ICs. More detailed information on the specific devices is given in the Qualified Products Listings which are at the end of this section.

The "MIL-STD-883 Screening" section lists those manufacturers who are both set up and actively want to screen devices to the levels indicated.

"Other Screening" shows those who report that they want business calling for special military and industrial environmental screening procedures.

MILITARY PARTS
SORTED BY FUNCTION

MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN		
Gates 1 /		AND GATE TRIPLE 3-INPUT WITH TTL-COMPATIBLE INPUTS		4019B /05352		HEX INVERTER SCHMITT TRIGGER		54HCT30 5962-8974601			
AND GATE DUAL 4-INPUT		54HCT11 5962-8970901		COMPLIMENTARY PAIR DUAL		40106B 5962-8550101 54HC14 5962-8409101 54AC14 5962-8782401 54F14 5962-8875201 54LS14 /31302 54AC14 /75702 54HC14 /65702 5414 /15102 40106B /17702 14584 5962-8550102		NAND GATE DUAL 4-INPUT			
4082B 5962-7705901 54HC21 5962-8857601 54AS21 5962-8780401 54F21 5962-8955401 54ALS21 5962-8414301 4082B /17002 54LS21 /31003		AND-OR-INVERT GATE		4007A /05301 4007UB /05351		EXCLUSIVE-NOR GATE QUAD		930 /03001 54ALS20A 5962-8858901 5413 /15101 54H20 /02302 4012A /05002 54L20 /02002 5420 /00102 54AC20 /75003 54HC20 5962-8403901 54HC20 /65003 54ALS20A /37003 54F20 /33004 4012B /05052 54S20 /07006 54AC11020 /75023 54L20 /30007 54AC20 5962-8761301 54AC11020 5962-8761302		EXCLUSIVE-NOR GATE QUAD 2-INPUT	
AND GATE HEX		54LS54 /30402		4077B /17204		EXCLUSIVE-NOR GATE QUAD 2-INPUT (OPEN DRAIN OUTPUT)		HEX INVERTER SCHMITT TRIGGER WITH TTL-COMPATIBLE INPUTS			
10597 /06202		AND-OR-INVERT GATE 2-2-2-3 INPUT		54LS266 /30303 54HC7266 5962-8404302 54HC7266 /65105		54HCT14 5962-8689001 54HC14 /65752		HEX INVERTER TTL-COMPATIBLE INPUTS			
AND GATE QUAD 2-INPUT		54H53 /04003 54H54 /04004		EXCLUSIVE-NOR GATE QUAD 2-INPUT		54HCT14 5962-8689001 54HC14 /65752		HEX INVERTER UNBUFFERED			
54C08 5962-7703601 4081B /17001 4081B 5962-7702401 5408 /01601 54F08 /34001 54ALS08 5962-8684201 4081B 5962-7702402 10H504 5962-8750401 54F11 /34002 54S08 /08003 54ALS08 /37401 54LS08 /31004 54AC08 /75203 54AC08 5962-8761501 54HC08 5962-8404701 54AC11008 5962-8761502 54HC08 /65203		AND-OR-INVERT GATE 2-WIDE 4-INPUT		54H55 /04005 54L55 /04103		EXCLUSIVE-OR GATE QUAD		54HCU04 5962-8601001			
54C08 5962-7703601 4081B /17001 4081B 5962-7702401 5408 /01601 54F08 /34001 54ALS08 5962-8684201 4081B 5962-7702402 10H504 5962-8750401 54F11 /34002 54S08 /08003 54ALS08 /37401 54LS08 /31004 54AC08 /75203 54AC08 5962-8761501 54HC08 5962-8404701 54AC11008 5962-8761502 54HC08 /65203		AND-OR-INVERT GATE 4-2-2-2 INPUT		54H55 /04005 54L55 /04103		54HC266 5962-8404301 54HC266 /65103		54ACT04 5962-8973401 54HCT04 /65751 54ACT11004 5962-8973402 54HCT04 5962-8974701			
AND GATE QUAD 2-INPUT WITH OPEN-COLLECTOR OUTPUTS		54F64 /33401		EXCLUSIVE-OR GATE QUAD 2-INPUT		10H513 5962-8755801 4070B /17203		HEX INVERTER WITH ENABLE			
54ALS09 5962-8414201 54LS09 5962-8001901 54F09 5962-8872301 5409 /01602 54S09 /08004 54LS09 /31005		AND-OR-INVERT GATE 4-WIDE 3-2-2-3 INPUT		54F85 /34501 54L86 /02601 5486 /00701 54AC86 5962-8955001 54LS86 5962-8862101 54S86 /07501 54L86 /30502 54AC86 /75202 54HC86 5962-8404601 4030A /05303 54HC86 /65202 4030B /05353		HEX INVERTER WITH OPEN-COLLECTOR OUTPUTS		10H589 5962-8751001			
54ALS09 5962-8414201 54LS09 5962-8001901 54F09 5962-8872301 5409 /01602 54S09 /08004 54LS09 /31005		AND-OR-INVERT GATE 4-WIDE 2-INPUT		54H54 /00504		HEX INVERTER WITH OPEN-DRAIN OUTPUTS		54HC05 5962-8871801			
AND GATE QUAD 2-INPUT WITH OPEN-DRAIN OUTPUTS		54S53 /00503 4086B /17202		EXCLUSIVE-OR GATE QUAD 2-INPUT TTL-COMPATIBLE INPUTS		54HCT86 5962-8984401		MULTIFUNCTION GATE 8-INPUT			
54HC09 5962-8862001		AND-OR-INVERT GATE DUAL 2-WIDE 2-INPUT		54HCT86 5962-8984401		EXCLUSIVE-OR/NOR GATE QUAD		4048A /05304 4048B /05354			
AND GATE QUAD 2-INPUT WITH TTL-COMPATIBLE INPUTS		54H54 /04102		EXCLUSIVE-OR/NOR GATE TRIPLE 2-INPUT		54S135 /07502		NAND GATE 12-INPUT TS			
54ACT11008 5962-8954701 54HCT08 5962-8688301 54ACT08 5962-8954702		AND-OR-INVERT GATE DUAL 2-WIDE 2-INPUT 2-WIDE 3-INPUT		10H507 5962-8772701 10507 /06005		EXCLUSIVE-OR/NOR GATE TRIPLE 2-INPUT		54S134 /07010			
AND GATE TRIPLE 3-INPUT		54H51 /04002 54LS51 /30401 5450 /00501 5451 /00502 54LS1 /04101		HEX INVERTER		54HCT86 5962-8984401		NAND GATE 13-INPUT			
4073B 5962-7705101 54ALS11A 5962-8684101 54S11 /08001 54LS11 /31001 4073B /17003 54ALS11 /37402 54AC11 5962-8761101 54AC11011 5962-8761102 54AC11 /75204 54HC11 5962-8404801 54HC11 /65204		AND-OR-INVERT GATE DUAL 4-2-3-2 INPUT		4069UB /17401 54HC04 /65701 54HC04 5962-8409801 54AC04 /75701 4069UB 5962-7702701 54AC04 5962-8760901 54AC11004 5962-8760902 MIC935 /03002 54F04 /33002 936 /03003 54ALS04B 5962-8684301 54S04 /07003 54LS04 /30003 54L04 /02005 54H04 /02305 5404 /00105 54ALS04B /37006		AND-OR-INVERT GATE QUAD 4-2-3-2 INPUT		NAND GATE 8-INPUT		NAND GATE QUAD 2-INPUT HIGH-VOLTAGE WITH OPEN-COLLECTOR OUTPUTS	
54ALS15 /31002 54S15 /08002		54S65 /07403		54HCT86 5962-8984401		54S133 5962-8859001 54HC133 5962-8772301 54ALS133 /37005 54S133 /07009		54LS26 /32102 54LS26 5962-7602001			
AND GATE TRIPLE 3-INPUT WITH OPEN-COLLECTOR INPUTS		54S64 /07402		HEX INVERTER		54ALS133 5962-8859001 54HC133 5962-8772301 54ALS133 /37005 54S133 /07009		NAND GATE QUAD 2-INPUT SCHMITT TRIGGER			
54LS15 /31002 54S15 /08002		AND/NAND GATE QUAD 2-INPUT		4069UB /17401 54HC04 /65701 54HC04 5962-8409801 54AC04 /75701 4069UB 5962-7702701 54AC04 5962-8760901 54AC11004 5962-8760902 MIC935 /03002 54F04 /33002 936 /03003 54ALS04B 5962-8684301 54S04 /07003 54LS04 /30003 54L04 /02005 54H04 /02305 5404 /00105 54ALS04B /37006		10504 /06201		NAND GATE 8-INPUT TTL-COMPATIBLE INPUTS		54LS132 5962-7600401 54LS132 /31303 54132 /15103 54HC132 5962-8984502 54HC132 /65005	
54LS15 /31002 54S15 /08002		AND/OR SELECT GATE QUAD		10504 /06201		54HCT132 5962-8984501		NAND GATE QUAD 2-INPUT WITH OPEN DRAIN OUTPUTS			
54LS15 /31002 54S15 /08002		4019A /05302		4019A /05302		54HC03 5962-8764701		54HC03 5962-8764701			

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MILITARY PARTS
SORTED BY FUNCTION

MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
BUFFER/DRIVER NOR QUAD 2-INPUT		54LS541	5962-8415601	BUS BUFFER GATE QUAD WITH THREE-STATE OUTPUTS		10525	/06302	54ACT823	5962-9161001
5428	/16201	54HCT241	/65754	54BCT125	5962-9093701	VOLT. LEVEL SHIFTER LOW TO HIGH		FLIP-FLOP D-TYPE DUAL	
54LS28	5962-8512602	54AC241	/75704	BUS BUFFER 10-BIT INVERTING HIGH PERFORMANCE		40109B	/17404	54S74	/07101
54LS28	/30204	54ALS241	/38302	29C828	5962-8766702	VOLT. LEVEL SHIFTER TTL TO ECL QUAD		54F074	/34101
54ALS1002	/38402	54HC244	/65705	29C928	5962-8766704	Flip-Flops 3/		4013B	5962-7901101
BUFFER/DRIVER NOR QUAD 2-INPUT WITH OPEN-COLLECTOR OUTPUTS		54F244	/33203	BUS BUFFER 10-BIT NONINVERTING HIGH PERFORMANCE		10524	/06301	4013A	/05101
54LS33	5962-8512601	54AC241	5962-8755101	29C827	5962-8766701	BUS INTERFACE FLIP-FLOP 10-BIT WITH INVERTING INPUTS AND THREE-STATE OUTPUTS		10631	/06102
BUFFER/DRIVER OCTAL HIGH-CURRENT WITH OPEN-COLLECTOR OUTPUTS		54HCT244	/38303	29C927	5962-8766703	BUS INTERFACE FLIP-FLOP 10-BIT WITH NONINVERTING INPUTS AND THREE-STATE OUTPUT		54LS74A	/30102
54F30244	5962-8872201	54VCT244	/65755	BUS BUFFER QUAD WITH THREE-STATE OUTPUTS		54AS822	5962-9078002	4013B	5962-7901102
BUFFER/DRIVER OCTAL NON-INVERTING WITH THREE-STATE OUTPUTS AND TTL-COMP. INPUTS		54AC244	/75705	54BCT126	5962-9088901	BUS INTERFACE FLIP-FLOP 10-BIT WITH INVERTING INPUTS AND THREE-STATE OUTPUTS		4013B	/05151
54ACT11244	5962-8776002	54AC11241	5962-8755102	BUS BUFFER/SEPARATOR 4-BIT		54AS821	5962-9078001	54L74	/02105
BUFFER/DRIVER OCTAL NON-INVERTING WITH THREE-STATE OUTPUTS TTL-COMPATIBLE		54HC541	/65711	1856	/47601	BUS INTERFACE FLIP-FLOP 8-BIT WITH INVERTING INPUTS AND THREE-STATE OUTPUTS		5474	/00205
25S240	5962-8672401	54LS241	/32402	1857	/47602	BUS INTERFACE FLIP-FLOP 8-BIT WITH NONINVERTING INPUTS AND THREE-STATE OUTPUTS		5479	/00207
BUFFER/DRIVER OCTAL INVERTING THREE-STATE OUTPUTS		54AC244	5962-8755201	EXTENDER DUAL 4-INPUT		54AS826	5962-9078004	54H74	/02203
25S240	5962-8672401	54LS244	/32403	933	/03105	BUS INTERFACE FLIP-FLOP 8-BIT WITH INVERTING INPUTS AND THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE DUAL 4-BIT WITH CLEAR AND THREE-STATE OUTPUTS	
BUFFER/DRIVER OCTAL INVERTING THREE-STATE OUTPUTS		54AC11244	5962-8755202	HEX BUFFER NONINVERTING		BUS INTERFACE FLIP-FLOP 8-BIT WITH NONINVERTING INPUTS AND THREE-STATE OUTPUTS		54ALS874B	5962-8401001
54AC240	/75703	54LS541	/32405	4050A	/05504	FLIP-FLOP D-TYPE DUAL 4-BIT WITH PRESET AND THREE-STATE INVERTED OUTPUTS		54ALS874B	/37106
54HCT240	5962-8550501	BUFFER/DRIVER OCTAL NON-INVERTING WITH THREE-STATE OUTPUTS TTL-COMPATIBLE		4050B	/05554	FLIP-FLOP D-TYPE DUAL 4-BIT WITH TRUE OUTPUTS		FLIP-FLOP D-TYPE DUAL 4-BIT WITH PRESET AND THREE-STATE INVERTED OUTPUTS	
54F240	/33201	54ACT241	5962-8984701	HEX BUFFER WITH ENABLE		54AS825	5962-9078003	54ALS876	5962-8401002
54AC240	5962-8755001	54FCT541	5962-8976601	10H588	5962-8750901	FLIP-FLOP D-TYPE DUAL POSITIVE EDGE-TRIGGERED		54ALS876	/37107
54HCT240	/65753	54FCT241	5962-8973201	HEX INVERTER BUFFER		950	/03303	FLIP-FLOP D-TYPE DUAL POSITIVE EDGE-TRIGGERED WITH CLEAR AND SET	
54ALS240A	5962-8859101	54FCT244	5962-8763001	4049UB	5962-7901401	FLIP-FLOP BINARY		54AC74	5962-8852001
54ALS240A	/38301	54FCT244A	5962-8763001	4049A	/05503	FLIP-FLOP BUS INTERFACE WITH THREE-STATE OUTPUTS		54AC74	/75302
54LS540	5962-8415501	54FCT1241A	5962-8973202	4049UB	/05553	FLIP-FLOP D-TYPE MASTER SLAVE DUAL		54HCT74	5962-8405601
54LS240	5962-7801201	54ACT11241	5962-8984702	LOGIC-LEVEL CONVERTER ECL-TO-TTL		54AS823	5962-8952501	54HC74	5962-8405601
54HC240	/65703	54FCT541A	5962-8976602	10H525	5962-8750801	FLIP-FLOP D-TYPE MASTER SLAVE DUAL		54HC74	/65302
54HCT240	5962-8407401	54FCT244A	5962-8763002	LOGIC-LEVEL CONVERTER TTL-TO-ECL QUAD		10H531	5962-8756101	FLIP-FLOP D-TYPE DUAL WITH PRESET AND CLEAR	
54AC11240	5962-8755002	54ACT244	5962-8776001	10H524	5962-8756001	FLIP-FLOP D-TYPE MASTER SLAVE HEX		54ACT74	5962-8752501
54LS240	/32401	BUFFER/DRIVER OCTAL WITH OPEN-COLLECTOR OUTPUTS		OR DRIVER QUAD 2-INPUT		10H576	5962-8751201	54ACT11074	5962-8752502
54HC540	/65710	54AS756	5962-9056301	54AS1032A	5962-8873001	FLIP-FLOP D-TYPE MASTER SLAVE HEX WITH RESET		FLIP-FLOP D-TYPE DUAL WITH PRESET AND CLEAR AND TTL-COMPATIBLE INPUTS	
54F540	/33204	BUFFER/DRIVER OR HEX 2-INPUT		POWER BUFFER FAST 0150 MA		10H586	5962-8756301	54HCT74	5962-8685301
54LS540	/32404	54AS832B	5962-8852301	LT1010	5962-8856201	FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		54HCT74	/65352
BUFFER/DRIVER OCTAL INVERTING WITH THREE-STATE OUTPUTS TTL-COMPATIBLE		BUFFER/DRIVER OR QUAD 2-INPUT		REGISTERED TRANSCIEVER BIDIRECTIONAL I/O PORTS INVERTING 8-BIT		FLIP-FLOP D-TYPE 9-BIT POS. EDGE-TRIGGERED TTL-COMP INPUTS TS-OUTPUTS		FLIP-FLOP D-TYPE HEX	
54ACT11240	5962-8775902	54ALS1032	/38408	2953A	5962-8777202	54AC821	5962-9160601	25LS174	/33106
54FCT240	5962-8765501	BUFFER/DRIVER QUAD 2-INPUT INVERTING		TRUE/COMPLIMENT BUFFER QUAD		54ACT821	5962-8870501	54174	/01701
54FCT240A	5962-8765502	54LS125A	/32301	4041A	/05505	FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		40174B	5962-8202201
54FCT540	5962-8976701	54HC126	5962-8684801	4041UB	/05555	FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		10576	/06103
54FCT540A	5962-8976702	54125	/15301	VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		40174B	/17505
BUFFER/DRIVER OCTAL NON-INVERTING WITH OPEN-COLLECTOR OUTPUTS		54126	/15302	VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		54LS174	/30106
54AS760	5962-8776701	54LS126	/32302	VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		54F174	/34107
BUFFER/DRIVER OCTAL NON-INVERTING WITH THREE-STATE OUTPUTS		BUFFER/DRIVER QUAD NON-INVERTING WITH THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54ALS541	5962-8960201	54HC125	5962-8772101	VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54ALS1244A	5962-8873801	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54HC244	5962-8409601	54BCT240	5962-9074201	VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54F241	5962-8687401	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54ALS241	5962-8859601	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54HCT244	5962-8513001	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54ALS244A	5962-8683901	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54AC541	5962-8870601	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
25S244	5962-8753601	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54AC541	/75711	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54HCT541	/65761	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54F241	/33202	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54LS244	5962-7705701	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
54HCT241	/65704	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	
25S241	5962-8672501	BUFFER/LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		VOLT. LEVEL SHIFTER ECL TO TTL QUAD		FLIP-FLOP D-TYPE 10-BIT WITH THREE-STATE OUTPUTS AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE DUAL	

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MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
FLIP-FLOP D-TYPE HEX WITH CLEAR		54ALS564A	5962-8872801	FLIP-FLOP D-TYPE OCTAL WITH NONINVERTING THREE-STATE OUTPUTS		54ALS175	/37202	RESET	
54ALS174	5962-8301901	54ALS374	5962-8302002	54HCT374	5962-8550701	FLIP-FLOP D-TYPE QUAD WITH MASTER RESET		54HCT107	5962-9084901
54HC174	5962-8407301	54ALS374	/37204	54HCT374	/65652	54AC175	5962-8955201	FLIP-FLOP JK DUAL POSITIVE EDGE-TRIGGERED WITH CLEAR AND SET	
54HC174	/65307	FLIP-FLOP D-TYPE OCTAL POSITIVE EDGE-TRIGGERED WITH THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE OCTAL WITH NONINVERTING THREE-STATE OUTPUTS TTL-COMPATIBLE		54AC175	/75308	54AC109	5962-8955101
54ALS174	/37201	54LS374	5962-7801101	54FCT374	5962-8762801	FLIP-FLOP D-TYPE QUAD WITH RESET TTL-COMPATIBLE INPUTS		54AC109	/75304
FLIP-FLOP D-TYPE HEX WITH COMMON RESET		54LS374	/32503	54FCT374A	5962-8762802	54ACT273	5962-8973501	FLIP-FLOP JK DUAL POSITIVE EDGE-TRIGGERED WITH TTL-COMPATIBLE INPUTS	
10586	5962-8779301	FLIP-FLOP D-TYPE OCTAL WITH CLEAR		FLIP-FLOP D-TYPE OCTAL WITH THREE-STATE OUTPUTS		54HCT175	5962-8970101	54ACT109	5962-8853401
FLIP-FLOP D-TYPE HEX WITH ENABLE		54LS273	5962-7801001	54FCT534	5962-8865501	FLIP-FLOP D-TYPE QUAD WITH STANDARD AND THREE-STATE OUTPUTS		54ACT1109	5962-8853402
54HC273	5962-8409901	54ALS273	5962-8413601	54FCT574	5962-8951301	2918	5962-8671501	FLIP-FLOP JK DUAL WITH CLEAR AND PRESET (ACTIVE HIGH)	
54HC174	/65307	54AC273	/75601	54AC374	5962-8769401	2918	/44201	54ALS109A	5962-8400001
54LS378	5962-8992501	54LS273	/32501	54F574	5962-8972401	FLIP-FLOP D-TYPE QUAD WITH THREE-STATE OUTPUTS		54ALS109A	/37102
FLIP-FLOP D-TYPE HEX WITH MASTER RESET		54AC273	5962-8775601	54AC374	/75602	54HC173	5962-8682501	FLIP-FLOP JK DUAL WITH CLEAR AND PRESET (ACTIVE LOW)	
54AC174	5962-8762601	54HC273	/65601	54HC374	5962-8407101	54HC173	/65306	54ALS112A	5962-8400002
54AC174	/75307	FLIP-FLOP D-TYPE OCTAL WITH CLEAR AND TTL-COMPATIBLE INPUTS		54FCT534A	5962-8865502	FLIP-FLOP JK		54ALS112A	/37103
FLIP-FLOP D-TYPE HEX WITH MASTER RESET AND TTL-COMPATIBLE INPUTS		54HCT273	5962-8772501	54ACT564	5962-8955701	54L72	/02102	FLIP-FLOP JK DUAL WITH PRESET	
54ACT174	5962-8775701	FLIP-FLOP D-TYPE OCTAL WITH CLEAR TTL-COMPATIBLE		54FCT574	5962-8951302	54H72	/02201	54S114	/07104
FLIP-FLOP D-TYPE HEX WITH RESET TTL COMPATIBLE-INPUTS		54FCT273	5962-8765601	54F574	/34110	54H101	/02205	54LS114	/30105
54HCT174	5962-8974301	54FCT273A	5962-8765602	54F564	/34111	FLIP-FLOP JK MASTER SLAVE DUAL		FLIP-FLOP JK DUAL WITH PRESET AND CLEAR	
FLIP-FLOP D-TYPE OCTAL		FLIP-FLOP D-TYPE OCTAL WITH CLOCK ENABLE		54ALS574A	5962-8400101	FLIP-FLOP JK DUAL		54HC76	5962-8773201
54LS377	/32504	54HCT273	5962-8772501	54HC574	/65604	54HC109	5962-8415001	54S113	/07103
FLIP-FLOP D-TYPE OCTAL INVERTING POS. EDGE-TRIGGERED WITH 3-STATE OUTPUTS		54ACT174	5962-8775701	54FCT534A	5962-8865502	5473	/30101	54LS113	/30104
54HCT534	5962-8984901	FLIP-FLOP D-TYPE OCTAL WITH CLOCK ENABLE AND TTL-COMPATIBLE INPUTS		54ACT11534	5962-8965802	4027A	/05102	FLIP-FLOP JK DUAL WITH RESET	
FLIP-FLOP D-TYPE OCTAL WITH INVERTED THREE-STATE OUTPUTS TTL COMPATIBLE		54FCT273	5962-8765601	54ACT11374	5962-8763102	54F109	/34102	54HC73	/65301
54BCT534	5962-9074701	54FCT273A	5962-8765602	FLIP-FLOP D-TYPE OCTAL WITH TRANSPARENT LATCH AND THREE-STATE OUTPUTS		54S112	/07102	54HC73	5962-8515301
FLIP-FLOP D-TYPE OCTAL EDGE-TRIGGERED WITH ASYNCHRONOUS MASTER RESET		FLIP-FLOP D-TYPE OCTAL WITH CLOCK ENABLE TTL-COMPATIBLE INPUTS		54ALS373	5962-8302001	54L78	/02104	54HC107	5962-8515401
54F273	5962-8855001	54ACT377	5962-8762701	54ALS373	/37203	54HC109	/65304	54HC107	/65303
FLIP-FLOP D-TYPE OCTAL EDGE-TRIGGERED WITH CLOCK ENABLE		54FCT377A	5962-8762702	FLIP-FLOP D-TYPE QUAD		5476	/00204	FLIP-FLOP JK DUAL WITH SET AND RESET	
54F377	5962-9091001	FLIP-FLOP D-TYPE OCTAL WITH DATA ENABLE AND TTL-COMPATIBLE INPUTS		54LS173A	/36101	10535	/06104	54HC112	5962-8408801
FLIP-FLOP D-TYPE OCTAL EDGE-TRIGGERED WITH INVERTED THREE-STATE OUTPUTS		54HCT377	5962-8976901	54F379	/34109	4027B	/05152	54HC112	/65305
54HC564	5962-8681501	FLIP-FLOP D-TYPE OCTAL WITH ENABLE		54HC175	5962-8408901	9093	/03304	FLIP-FLOP JK DUAL WITH SET AND RESET TTL-COMPATIBLE INPUTS	
54HC564	/65606	54HCT377	5962-8976901	54175	/01702	54H73	/02202	54HCT109	5962-9070101
FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE OCTAL WITH INVERTED THREE-STATE OUTPUTS		25LS175	/33107	54LS107	/30108	54HCT112	5962-8970201
54BCT374	5962-9051601	54HC534	5962-8681401	54F175	/34104	54H76	/02204	FLIP-FLOP JK GATED	
FLIP-FLOP D-TYPE OCTAL EDGE-TRIGGERED WITH THREE-STATE OUTPUTS		54ALS576A	5962-8400102	54S174	/07105	54S109	/30109	4095B	/17502
54BCT374	5962-9051601	54HC534	/65605	54S175	/07106	54H103	/02206	4096B	/17503
FLIP-FLOP D-TYPE OCTAL EDGE-TRIGGERED WITH CLEAR AND SET		54ALS576A	/37105	54LS175	/30107	FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED		FLIP-FLOP JK SINGLE	
54AC112	/75305	FLIP-FLOP D-TYPE OCTAL WITH CLEAR		54HC175	/65308	54LS76A	5962-7601301	5472	/00201
54ALS175	5962-8301902	54ACT175	5962-8969301	FLIP-FLOP D-TYPE QUAD TTL-COMPATIBLE INPUTS		54LS76A	/30110	5470	/00206
FLIP-FLOP D-TYPE QUAD WITH MASTER RESET		FLIP-FLOP D-TYPE QUAD TTL-COMPATIBLE INPUTS		54HCT173	5962-8875901	FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH CLEAR AND SET		FLIP-FLOP RS/JK	
54HCT107	5962-9084901	54ACT175	5962-8969301	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		54L71	/02101
FLIP-FLOP JK DUAL POSITIVE EDGE-TRIGGERED WITH CLEAR AND SET		FLIP-FLOP D-TYPE QUAD WITH CLEAR		54ALS175	5962-8301902	FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54AC109	5962-8955101	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54AC109	/75304	54HCT173	5962-8875901	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL POSITIVE EDGE-TRIGGERED WITH TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54ACT109	5962-8853401	54HCT173	5962-8875901	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54ACT1109	5962-8853402	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH CLEAR AND PRESET (ACTIVE HIGH)		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54ALS109A	5962-8400001	54HCT173	5962-8875901	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54ALS109A	/37102	54FCT374	5962-8762801	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH CLEAR AND PRESET (ACTIVE LOW)		54FCT374A	5962-8762802	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54ALS112A	5962-8400002	FLIP-FLOP D-TYPE OCTAL WITH CLEAR TTL-COMPATIBLE		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54ALS112A	/37103	54HCT273	5962-8772501	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH PRESET		FLIP-FLOP D-TYPE OCTAL WITH CLEAR TTL-COMPATIBLE		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54S114	/07104	54FCT273	5962-8765601	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54LS114	/30105	54FCT273A	5962-8765602	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH PRESET AND CLEAR		FLIP-FLOP D-TYPE OCTAL WITH CLOCK ENABLE		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC76	5962-8773201	54ACT377	5962-8870201	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54S113	/07103	54ACT377	/75603	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54LS113	/30104	FLIP-FLOP D-TYPE OCTAL WITH DATA ENABLE AND TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH RESET		54HCT377	5962-8976901	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC73	/65301	FLIP-FLOP D-TYPE OCTAL WITH ENABLE		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC73	5962-8515301	54HCT377	5962-8976901	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC107	5962-8515401	FLIP-FLOP D-TYPE OCTAL WITH INVERTED THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC107	/65303	54HC534	5962-8681401	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH SET AND RESET		54ALS576A	5962-8400102	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC112	5962-8408801	54HC534	/65605	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HC112	/65305	54ALS576A	/37105	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK DUAL WITH SET AND RESET TTL-COMPATIBLE INPUTS		FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HCT109	5962-9070101	54AC534	/75605	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54HCT112	5962-8970201	54AC564	/75606	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK GATED		FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
4095B	/17502	FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
4096B	/17503	54HC534	/65605	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP JK SINGLE		54ALS576A	/37105	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
5472	/00201	FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
5470	/00206	54HC534	/65605	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP RS		FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54L71	/02101	54AC534	/75605	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP RS/JK		54AC564	/75606	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
54L71	/02101	FLIP-FLOP D-TYPE OCTAL WITH INVERTING THREE-STATE OUTPUTS		FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	
FLIP-FLOP RS/JK		54BCT374	5962-9051601	FLIP-FLOP D-TYPE QUAD WITH CLEAR		FLIP-FLOP JK DUAL NEGATIVE EDGE-TRIGGERED WITH		FLIP-FLOP RS/JK	

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MILITARY

MILITARY PARTS
SORTED BY FUNCTION

MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
945 948	/03301 /03302	INPUTS		54ACT573	5962-8766401	MULTIVIBRATOR DUAL MONOSTABLE RETRIGGERABLE WITH CLEAR		54LS122	5962-7600301 /31403
FLIP-FLOP TYPE D 8-BIT TTL-COMPATIBLE INPUTS POSITIVE EDGE-TRIGGERED		54ACT373	5962-8755601	LATCH D-TYPE OCTAL WITH THREE-STATE OUTPUTS		MULTIVIBRATOR DUAL MONOSTABLE WITH CLEAR		MULTIVIBRATOR MONOSTABLE RETRIGGERABLE W/CLEAR	
54ACT825	5962-9161101	54ACT11373	5962-8755602	54BCT373	5962-9074601	54LS123	5962-7603901 /31401	54L122	/04202
FLIP-FLOPS 10-BIT BUS INTERFACE WITH 3-STATE OUTPUTS		LATCH D-TYPE TRANSPARENT OCTAL WITH INVERTED THREE-STATE OUTPUTS		LATCH DUAL 4-BIT		MULTIVIBRATOR DUAL MONOSTABLE WITH SCHMITT-TRIGGER INPUTS AND CLEAR		MULTIVIBRATOR MONOSTABLE/ASTABLE	
54ALS29821	5962-9061601	8283	5962-8417902	93L08	/04502	54LS221	5962-7604201 /31402	4047B	5962-8102001 5962-8102002
LATCH 4-BIT		8283	5962-8417904	4508B	/17602	MULTIVIBRATOR DUAL NON-RETRIGGERABLE MONOSTABLE WITH RESET		MULTIVIBRATOR ONE-SHOT	
5477	/01502	54ALS580	5962-8401202	LATCH MULTI-MODE BUFFERED INV. (THREE-STATE)		54HC221	5962-8780501 5962-8780502	9601	/01204
LATCH 4-BIT BISTABLE		LATCH D-TYPE TRANSPARENT OCTAL WITH THREE STATE OUTPUTS		54F432	5962-9058501	MULTIVIBRATOR DUAL ONE-SHOT		Combinatorial gates /4	
5475	/01501	8282	5962-8417903	LATCH OCTAL D-TYPE WITH INVERTED THREE-STATE OUTPUTS		9602	/01205	ADDER 2-BIT	
54LS75	5962-7601201	LATCH D-TYPE TRANSPARENT OCTAL WITH THREE-STATE OUTPUTS		54AC563	/75405	MULTIVIBRATOR DUAL RETRIGGERABLE MONOSTABLE		5482	/00601
54LS75	/31601	54AC373	5962-8755501	LATCH OCTAL D-TYPE WITH THREE-STATE OUTPUTS		MULTIVIBRATOR DUAL RETRIGGERABLE MONOSTABLE		ADDER 4-BIT	
54LS375	/31604	54ALS573	/38201	54AC573	/75406	MULTIVIBRATOR DUAL RETRIGGERABLE MONOSTABLE WITH RESETS TTL-COMPATIBLE INPUTS		5483	/00602
LATCH 4-BIT WITH MASTER RESET		54ALS563A	5962-8870001	LATCH OCTAL TRANSPARENT		54HC423A	5962-8949201 54HC123 5962-8684701 54HC123A 5962-8684702	ADDER 4-BIT BINARY FULL WITH FAST CARRY	
93L14	/04501	8282	5962-8417901	54FCT533	5962-8865101	MULTIVIBRATOR DUAL RETRIGGERABLE PRECISION MONOSTABLE		ADDER 4-BIT FULL WITH FAST CARRY	
9314	/01504	54HC563	5962-8606201	54FCT533A	5962-8865102	MULTIVIBRATOR DUAL RETRIGGERABLE MONOSTABLE WITH RESETS TTL-COMPATIBLE INPUTS		54HC283	5962-8976501
LATCH 4-BIT/DECODER 4-TO-16-LINE		54ACT373	5962-8755502	LATCH OCTAL TRANSPARENT WITH INVERTED THREE-STATE OUTPUTS		54HCT123	5962-8970001	ADDER 4-BIT FULL WITH FAST CARRY	
4514B	/17301	54AC373	/75403	54FCT573	5962-8863901	MULTIVIBRATOR DUAL RETRIGGERABLE PRECISION MONOSTABLE		4008A	/05401
4514B	5962-7703501	54ALS573	5962-8401201	54FCT573A	5962-8863902	MULTIVIBRATOR DUAL RETRIGGERABLE RESET-TABLE MONOSTABLE		54F283	/34201
LATCH 8-BIT ADDRESSABLE		54HC563	/65405	LATCH RS 4-BIT		54HC4538	5962-8688601	4008B	/05451
9334	/16001	54HCT373	5962-8686701	54LS279	5962-7601801	MULTIVIBRATOR DUAL RETRIGGERABLE PRECISION MONOSTABLE		ADDER 4-BIT FULL WITH FAST CARRY	
54ALS259	5962-8874101	54HCT373	/65453	54LS279	/31602	MULTIVIBRATOR DUAL RETRIGGERABLE RESET-TABLE MONOSTABLE		54LS83A	5962-7601401 /31201
54HC259	5962-8551901	LATCH D-TYPE 4-BIT		LATCH RS 4-BIT WITH THREE-STATE OUTPUTS		26S02	5962-8766201	54LS283	5962-7604301 /31202
54F259	5962-8972301	4042B	5962-8101901	4044B	5962-7702601	MULTIVIBRATOR DUAL RETRIGGERABLE/RESET-TABLE MONOSTABLE		54LS283	/31202
54LS259	/31603	LATCH D-TYPE 8-BIT EDGE-TRIGGERED READ BACK		4043A	/05103	MULTIVIBRATOR DUAL RETRIGGERABLE/RESET-TABLE MONOSTABLE		ADDER DUAL	
4099B	/17601	54ALS996	5962-8994501	4043B	/05153	MULTIVIBRATOR DUAL RETRIGGERABLE/RESET-TABLE MONOSTABLE		9304	/00603
54LS259B	/31605	LATCH D-TYPE 8-BIT WITH INVERTED THREE-STATE OUTPUTS		LATCH TRANSPARENT DUAL 2-BIT BISTABLE TTL-COMPATIBLE INPUTS		4528B	5962-7704501 4098B 5962-7705501 4528B 5962-7704502 4098B /17504	ADDER FULL	
54HC259	/65402	54HC533	5962-8681301	54HCT75	5962-9075801	MULTIVIBRATOR MONOSTABLE		5480	/00604
LATCH BUS INTERFACE 10-BIT NONINVERTING WITH 3-STATE OUTPUTS TTL-COMPATIBLE		54HC533	/65404	LATCH TRANSPARENT DUAL 2-BIT		MULTIVIBRATOR MONOSTABLE RETRIGGERABLE		ALU/FUNCTION GENERATOR 4-BIT	
54FCT841A	5962-8857501	LATCH D-TYPE 8-BIT WITH INVERTED THREE-STATE OUTPUTS		54HC75	5962-8407001 54HC75 /65401	MULTIVIBRATOR MONOSTABLE RETRIGGERABLE WITH CLEAR		ARITHMETIC LOGIC UNIT 16-BIT CASCADABLE	
54FCT841B	5962-8857502	54HCT573	5962-8685601	MULTIVIBRATOR DUAL MONOSTABLE		MULTIVIBRATOR MONOSTABLE RETRIGGERABLE WITH CLEAR		ARITHMETIC LOGIC UNIT 4-BIT	
LATCH D-TYPE TRANSPARENT DUAL 4-BIT WITH INVERTED THREE-STATE OUTPUTS		LATCH D-TYPE 8-BIT WITH THREE-STATE OUTPUTS AND LSTTL-COMPATIBLE INPUTS		54221	5962-8771101	MULTIVIBRATOR MONOSTABLE RETRIGGERABLE WITH CLEAR		ARITHMETIC LOGIC	
54ALS880	5962-8403202	54HCT573	5962-8685601	54123	/01203	MULTIVIBRATOR MONOSTABLE RETRIGGERABLE WITH CLEAR			
54ALS880	/38204	LATCH D-TYPE 8-BIT WITH THREE-STATE OUTPUTS TTL-COMPATIBLE INPUTS							
LATCH D-TYPE TRANSPARENT DUAL 4-BIT WITH THREE-STATE OUTPUTS		54ACT563	5962-8955601						
54ALS873	5962-8403201								
54ALS873	/38203								
LATCH D-TYPE TRANSPARENT OCTAL W/NONINVERTING 3-STATE OUTPUTS TTL-COMPATIBLE									
54FCT373	5962-8764401								
54FCT373A	5962-8764402								
LATCH D-TYPE TRANSPARENT OCTAL WITH 3-STATE OUTPUTS AND TTL-COMPATIBLE									

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MASTER SELECTION INDEX

MILITARY PARTS SORTED BY FUNCTION

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
UNIT/FUNCTION GENERATOR		54HC251B	5962-8512501	54ALS857	5962-8753301	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH STORAGE		54HC154	5962-8682201
54LS382	5962-8688101	54ALS251	5962-8413501	54ALS857A	/37901	54LS298	5962-7601901	54HC154	/65804
BI-QUINARY COUNTER		54AC251	5962-8769201	DATA SEL/MULTIPLEXER QUAD 2-INPUT		54LS298	/30909	DECODER 4-TO-16-LINE WITH LATCHED INPUTS	
10538	5962-9093501	54C251	/76205	54LS157	5962-7600201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE INVERTED OUTPUTS		4515B	5962-7703201
BUS INTERFACE LATCH D-TYPE 9-BIT WITH THREE-STATE OUTPUTS		54S251	/07905	54HC157	5962-8686101	54S258	5962-8002301	4515B	/17302
54ALS29843	5962-9072001	54S251	/30905	54ALS157	5962-8686901	54S258	/07907	DECODER BCD-TO-7-SEGMENT	
COMPARATOR 5-BIT		54F251A	/33905	54ACT158	5962-8875501	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE NONINVERTING OUTPUTS		9317	/15802
93L24	/04401	54HC251B	/66205	54AC157	5962-8972901	54S258	/07907	5448	/01008
CONVERTER BINARY-TO-BCD 6-BIT		DATA SEL/MULTIPLEXER 8-INPUT WITH THREE-STATE OUTPUTS TTL-COMPATIBLE INPUTS		54S157	/76203	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER BCD-TO-7-SEGMENT WITH OPEN-COLLECTOR OUTPUTS	
54185A	5962-7703001	54ACT251	5962-8959901	54I157	/01405	54HCT257	5962-8970501	54LS47	5962-7604501
CONVERTER HEX LOGIC LEVEL DOWN		DATA SEL/MULTIPLEXER DUAL 4-INPUT		54AC158	/76204	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		54LS47	/30704
54HC4050	5962-8682001	54AC153	5962-8762501	54S157	/07903	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		5446	/01006
DATA GENERATOR/MULTIPLEXER 1-OF-16 WITH THREE-STATE OUTPUTS		54ALS153	5962-8413401	54S158	/07904	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		5447	/01007
54AS250A	5962-9056201	54LS153	5962-7601101	54F157A	/33903	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		5449	/01009
DATA SEL/MULTIPLEXER 16-INPUT		54HC153B	5962-8409301	54HC157B	/66203	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER BCD-TO-DECIMAL	
54150	/01401	54I153	/01403	54F158A	/33904	40257B	/17803	54LS42	5962-7603101
DATA SEL/MULTIPLEXER 4-TO-1-LINE		54AC153	/76202	DATA SEL/MULTIPLEXER QUAD 2-INPUT NONINVERTING		54HC257	5962-8512401	5442	/02901
93L09	/04601	9309	/01404	10H558	5962-8756601	54AC257	5962-8870301	54HC42	/65801
DATA SEL/MULTIPLEXER 8-INPUT		54S153	/07902	DATA SEL/MULTIPLEXER QUAD 2-INPUT INVERTING TTL-COMPATIBLE INPUTS		54ALS257	5962-8509701	4028A	/05901
54LS151	5962-7601001	54LS153	/30902	54HCT158	5962-9070301	54ACT258	5962-8870401	4028B	/05951
54ALS151	5962-8414101	54F153	/33902	DATA SEL/MULTIPLEXER QUAD 2-INPUT NONINVERTING TTL-COMPATIBLE INPUTS		54ALS258	5962-8862601	54HC42	5962-8682101
54AC151	5962-8769101	54HC153B	/66202	54HCT157	5962-9070201	54AC257	/76207	54LS42	/30703
9312	/01402	54F352	/33909	DATA SEL/MULTIPLEXER QUAD 2-INPUT TTL-COMPATIBLE INPUTS		54S257	/07906	5445	/01004
54AC151	/76201	DATA SEL/MULTIPLEXER DUAL 4-INPUT TTL-COMPATIBLE INPUTS		54HCT157	5962-9070201	54F257A	/33906	76L42A	/02906
54S151	/07901	54ACT153	5962-8769801	DATA SEL/MULTIPLEXER QUAD 2-INPUT TTL-COMPATIBLE INPUTS		54HC257	/66207	93L01	/02907
54151	/01406	54HCT153	5962-9050501	54ACT157	5962-8968801	54F258A	/33907	DECODER BCD-TO-DECIMAL WITH OPEN-COLLECTOR OUTPUTS	
54LS151	/30901	DATA SEL/MULTIPLEXER DUAL 4-INPUT WITH THREE-STATE OUTPUTS		DATA SEL/MULTIPLEXER QUAD 2-INPUT TTL-COMPATIBLE INPUTS		DECODER 1-TO-4-LINE		54145	/01005
54F151A	/33901	54ALS253	5962-8509601	54ACT157	5962-8968801	9321	/15801	DECODER BINARY TO 1-4	
DATA SEL/MULTIPLEXER 8-INPUT THREE-STATE TTL-COMPATIBLE INPUTS		54LS353	5962-8550801	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH 3-STATE INVERTING OUTPUTS TTL-COMPATIBLE		DECODER 3-LINE-TO-8-LINE		10H571	5962-8756801
54HCT251	5962-9052401	54LS253	5962-7601701	54HCT258	5962-8970801	54LS138	/30701	DECODER BINARY TO 1-OF-8	
DATA SEL/MULTIPLEXER 8-INPUT TTL-COMPATIBLE INPUTS		54AC253	5962-8769301	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH 3-STATE OUTPUTS TTL-COMPATIBLE INPUTS		54HCT138	5962-8550401	DECODER BINARY-TO-OCTAL	
54HCT151	5962-9065201	54C253	/76206	54ACT257	5962-8968901	54HC138	5962-8406201	8250	/15204
DATA SEL/MULTIPLEXER 8-INPUT WITH ENABLE		54S253	/07908	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH 3-STATE OUTPUTS TTL-COMPATIBLE INPUTS		54LS138	5962-7600501	DECODER DUAL 1-OF-4	
54HC151B	5962-8412801	54LS253	/30908	54ACT257	5962-8968901	54HC138	5962-7600501	54FCT139	5962-8950801
93L12	/04602	54F253	/33908	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH ENABLE		54HCT138	5962-8765401	54FCT139A	5962-8950802
54HC151B	/66201	54F353	/33910	54LS158	5962-7603301	54FCT138A	5962-8765402	DECODER DUAL 2-LINE-TO-4-LINE	
DATA SEL/MULTIPLEXER 8-INPUT WITH THREE-STATE OUTPUTS		DATA SEL/MULTIPLEXER DUAL 4-INPUT WITH THREE-STATE OUTPUTS		54LS157	/04603	DECODER 3-TO-8-LINE		54LS155	/32601
54ALS251	5962-7601601	54ACT11353	5962-9090601	54LS158	/30904	54F138	/33701	54LS139	5962-7600701
54S251	5962-8002201	DATA SEL/MULTIPLEXER DUAL 4-LINE TO 1-LINE WITH THREE-STATE OUTPUTS		DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH ENABLE AND THREE-STATE OUTPUTS		DECODER 3-TO-8-LINE WITH ADDRESS LATCHES		54ALS139	5962-8768301
DATA SEL/MULTIPLEXER 8-INPUT WITH THREE-STATE OUTPUTS		54HC253B	5962-8868201	54LS257B	5962-7603701	54ALS139	5962-8409201	54155	/15202
93L12	/04602	54HC253B	/66206	54LS257B	/30906	54HC139	5962-8762301	54F139	/33702
54HC151B	/66201	DATA SEL/MULTIPLEXER DUAL 4-TO-1		DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH INVERTED OUTPUTS		54AC139	5962-8762301	54LS139	/30702
DATA SEL/MULTIPLEXER 8-INPUT WITH THREE-STATE OUTPUTS		10H574	5962-8750601	54HC158B	5962-8682301	54AC139	5962-8762301	54156	/15203
54LS251	5962-7601601	DATA SEL/MULTIPLEXER HEX 2-INPUT WITH THREE-STATE OUTPUTS		54HC158B	/66204	54HC139	5962-8762301	54HC139	/65803
54S251	5962-8002201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH ENABLE		54HCT139	5962-8762301	54HCT139	/65853
DATA SEL/MULTIPLEXER 8-INPUT WITH THREE-STATE OUTPUTS		DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		54LS158	5962-7603301	DECODER 4-TO-10-LINE		DECODER DUAL 2-LINE-TO-4-LINE WITH OPEN-COLLECTOR OUTPUTS	
54LS251	5962-7601601	54ALS251	5962-8413501	54LS157	/04603	8251	/15205	54LS156	/32602
54S251	5962-8002201	54ALS251	5962-8413501	54LS158	/30904	8252	/15206	DECODER 4-TO-16-LINE	
DATA SEL/MULTIPLEXER 8-INPUT WITH THREE-STATE OUTPUTS		54ALS251	5962-8413501	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH INVERTED OUTPUTS		54154	/15201	DECODER 4-TO-16-LINE	
54ALS251	5962-8413501	54ALS251	5962-8413501	54LS257B	5962-7603701	54HCT154	5962-8670101	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54LS257B	/30906	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		54LS258	5962-8862601	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT158	5962-9070301	54AC257	/76207	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54S257	/07906	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54F257A	/33906	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54HC257	/66207	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54F258A	/33907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	5962-7603801	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	DATA SEL/MULTIPLEXER QUAD 2-INPUT WITH THREE-STATE OUTPUTS		DECODER 4-TO-16-LINE	
54S251	5962-8002201	54ALS251	5962-8413501	54HCT157	5962-9070201	54LS258B	/30907	DECODER 4-TO-16-LINE	
54S251	5962-8002201								

MILITARY PARTS
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MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN			
DECODER EXCESS-3-GRAY-TO-DECIMAL		DECODER/DRIVER BCD-TO-SEVEN-SEGMENT		54FCT182	5962-8865201			100355	5962-9165401	LMU8U60	5962-8873907	
5444	/01003	54LS248	5962-8994401	54FCT182A	5962-8865202			MULTIPLIER 16-BIT PARALLEL 30 NS MULTIPLY TIME		MULTIPLIER 8 X 8 UNSIGNED MAGNITUDE 70 NS MULTIPLY TIME		
54L44	/02903			MAGNITUDE COMPARATOR 4-BIT				(SEE DWG)	5962-8873304	TMC28KUV	5962-8873903	
DECODER EXCESS-3-TO-DECIMAL		DISPLAY DECODER BCD-TO-7-SEGMENT		54HC85	5962-8601301			MULTIPLIER 16-BIT PARALLEL 40 NS MULTIPLY TIME		MULTIPLIER BINARY 2-BIT-BY-4-BIT		
54L43	/02902	54L46	/02904	54C85	5962-7703701			(SEE DWG)		5962-8873305	54LS261	/31801
5443	/01002	54L47	/02905	54S85	/08201						54LS261	5962-8002601
DECODER N-BIT 1-OF-8		DIVIDER FIXED MODULUS 500 MHZ ^ 2		54F85	5962-8606901			MULTIPLIER 16-BIT PARALLEL 42 NS MULTIPLY TIME		MULTIPLIER/ACCUMULATOR 12 X 12 BIT 170 NS MULTIPLY TIME		
1853	5962-7901901	SP8602	5962-9205901	54LS85	/31101			7216L-40		5962-8687301		
1853	/47401			54HCT85	5962-8867201			7217L-40		5962-8768601		
DECODER/DEMULTIPLER 3-LINE-TO-8-LINE		FULL ADDER DUAL CARRY-SAVE		5485	/15001			MULTIPLIER 16-BIT PARALLEL 55 NS MULTIPLY TIME		MULTIPLIER/ACCUMULATOR 12 X 12 BIT 55 NS MULTIPLY TIME		
54AC138	5962-8762201	54LS183	5962-9054101	5485B	5962-7703702			1010		5962-8873301		
54S138	/07701			MAGNITUDE COMPARATOR 8-BIT				7216L-55		5962-8687302		
54ALS138	/37701	HEX TRANSLATOR TTL-TO-ECL		54AS885	5962-8975701			7217L-55		5962-8768602		
54HC238	5962-8688401	100324	5962-9153001	54HC688	5962-8681801			MULTIPLIER 16-BIT PARALLEL 65 NS MULTIPLY TIME		MULTIPLIER/ACCUMULATOR 12 X 12 BIT 65 NS MULTIPLY		
54ALS138	5962-8688601	IDENTITY COMPARATOR 8-BIT		MAGNITUDE COMPARATOR 8-BIT WITH ENABLE				1010		5962-8873302	LMA1009/2009	
54AC138	/75802	54ALS688	5962-8857801	54AC521	5962-9098501			7217L-75		5962-8768603	9099604	
54S138	5962-7604101	25LS2521	5962-8671301	54ACT11521	5962-9098502			MULTIPLIER 16-BIT PARALLEL 75 NS ACCESS TIME		MULTIPLIER/ACCUMULATOR 12 X 12 BIT 95 NS MULTIPLY TIME		
54ACT138	5962-8755401	54F521	/34701	MAGNITUDE COMPARATOR 8-BIT WITH LSTTL-COMPATIBLE INPUTS				7217L-75		5962-8768603	LMA1009/2009	
DECODER/DEMULTIPLER 3-LINE-TO-8-LINE TTL-COMPATIBLE INPUTS		54ALS520	5962-8869101	54HCT688	5962-8685701			MULTIPLIER 16-BIT PARALLEL 75 NS MULTIPLY TIME		MULTIPLIER/ACCUMULATOR 8 X 8		
54HCT238	5962-8974501	54F520	5962-8871201	MANCHESTER ENCODER/DECODER				7216L-75		5962-8687303	9099602	
DECODER/DEMULTIPLER 3-LINE-TO-8-LINE W/ ADDRESS LATCHES TTL-COMPATIBLE		54ACT520	5962-8979301	15530	5962-7802901			MULTIPLIER 8 X 8 TWO'S COMPLEMENT 45 NS MULTIPLY TIME		MULTIPLIER/ACCUMULATOR 8 X 8		
54HCT237	5962-9061301	54FCT521	5962-8854301	MANCHESTER ENCODER/DECODER 1.25 MEGABIT/S				LMU0845		5962-8873906	TMC2208J4V	
DECODER/DEMULTIPLER 3-LINE-TO-8-LINE WITH ADDRESS LATCH		54FCT521A	5962-8854302	HD1-15531	5962-9054901			MULTIPLIER 8 X 8 TWO'S COMPLEMENT 50 NS MULTIPLY TIME		MULTIVIBRATOR DUAL PRECISION RETRIGGERABLE/RESETTABLE MONOSTABLE		
54HC237	5962-8860601	54ACT521	5962-8979302	MANCHESTER ENCODER/DECODER 2.50 MEGABIT/S				TMC208KV1		5962-8873902	14538B	
DECODER/DEMULTIPLER 4-LINE-TO-16-LINE		54FCT521B	5962-8854303	HD1-15531B	5962-9054902			MULTIPLIER 8 X 8 TWO'S COMPLEMENT 60 NS MULTIPLY TIME		PARITY GENERATOR/CHECKER 12-BIT		
54LS154	5962-8301701	54ACT11520	5962-8979303	MULTIPLEXER 8-INPUT				LMU0860		5962-8873905	93S48	
DECODER/DEMULTIPLER 8-INPUT TTL-COMPATIBLE		54ACT11521	5962-8979304	10H564	5962-8772901			MULTIPLIER 8 X 8 TWO'S COMPLEMENT 70 NS MULTIPLY TIME		PARITY GENERATOR/CHECKER 8-BIT		
54ACT151	5962-8875601	KEYBOARD ENCODER 16-KEY WITH THREE-STATE OUTPUTS		10564	5962-8852701			TMC208KV		5962-8873901	10H560	
DECODER/DEMULTIPLER DUAL 1-TO-4-LINE		54C922	5962-8752101	MULTIPLEXER DUAL 8-INPUT				MULTIPLIER 8 X 8 UNSIGNED MAGNITUDE 45 NS MULTIPLY TIME		PARITY GENERATOR/CHECKER 9-BIT		
4555B	5962-7704701	LATCH 9-BIT BUFFERED NON-INVERTING W/THREE-STATE OUTPUT TTL COMPATIBLE		100363	5962-9165501			LMU8U45		5962-8873908	54F280	
4556B	5962-7704801	54F518	5962-8871001	MULTIPLEXER QUAD 2-INPUT NONINVERTING				MULTIPLIER 8 X 8 UNSIGNED MAGNITUDE 50 NS MULTIPLY TIME		PARITY GENERATOR/CHECKER 9-BIT ODD/EVEN		
4555B	/17304	54F519	5962-8871101	10558	5962-8779201			TMC28KUV1		5962-8873904	54LS280	
4556B	/17305	KEYBOARD ENCODER 16-KEY WITH THREE-STATE OUTPUTS		MULTIPLEXER QUAD 2-INPUT THREE-STATE OUTPUTS				MULTIPLIER 8 X 8 UNSIGNED MAGNITUDE 60 NS MULTIPLY TIME		PARITY GENERATOR/CHECKER 9-BIT WITH BUS DRIVER PARITY I/O PORT		
DECODER/DEMULTIPLER DUAL 2-TO-4-LINE		54C922	5962-8752101	54AC258	5962-9160401			LMU8U45		5962-8873908	82562	
54S139	5962-7700401	LATCH D-TYPE 10-BIT BUS INTERFACE WITH THREE-STATE OUTPUTS		MULTIPLEXER QUAD 2-INPUT W/STORAGE				MULTIPLIER 8 X 8 UNSIGNED MAGNITUDE 60 NS MULTIPLY TIME				
54ACT139	5962-8755301	54ALS29842	5962-9071001	54F398	/35001							
54S139	/07702	LOOK AHEAD CARRY GENERATOR		54F399	/35002							
DECODER/DRIVER BCD-TO-7-SEGMENT		54F182	/33802	MULTIPLEXER/LATCH QUAD 2-INPUT								
54HC4511	5962-8773301	54S182	/07802									
DECODER/DRIVER BCD-TO-DECIMAL		54182	/01102									
54LS145	5962-8508401	LOOKAHEAD CARRY GENERATOR HIGH-SPEED										

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
54AS286	5962-8966301	PATIBLE INPUTS		54FCT163A	5962-8865702	54FCT161	5962-8864001	BINARY COUNTER 8-BIT WITH INPUT REGISTERS	
PARITY GENERATOR/CHECKER DUAL 8-BIT HIGH-SPEED TTL-COMPATIBLE INPUTS		54HCT40102	5962-9057401	54FCT163	5962-8865703	54FCT161	5962-8864002	54LS592	5962-8762101
54FCT480	5962-9079801	BCD DECADE COUNTER 4-BIT SYNCHRONOUS RESET TTL-COMPATIBLE INPUTS		BINARY COUNTER 4-BIT SYNCHRONOUS PRESETTABLE TTL-COMPATIBLE		BINARY COUNTER 4-BIT SYNCHRONOUS WITH ASYNC. CLEAR AND LSTTL-COMPATIBLE INPUTS		BINARY COUNTER 8-BIT WITH THREE-STATE OUTPUT REGISTERS	
54FCT480A	5962-9079802	54HCT162	5962-8970701	54FCT163	5962-8865701	54HCT161	5962-8685401	54LS590	5962-8751701
54FCT480B	5962-9079803	BCD DECADE COUNTER ASYNCHRONOUS RESET TTL-COMPATIBLE INPUTS		BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN		BINARY COUNTER 4-BIT SYNCHRONOUS WITH ASYNCHRONOUS CLEAR		54HC590	5962-8960301
POLYNOMIAL GENERATOR/CHECKER SERIAL DATA		54HCT160	5962-9070501	54AC169	5962-9160301	54ALS161B	/38001	BINARY COUNTER DUAL 4-BIT	
54F402	5962-9059301	BINARY COUNTER 12-BIT		54ALS191	5962-8684001	54HC161	5962-8407501	54HC393	5962-8410001
PRESCALER TWO-MODULUS ECL-TO-TTL TRANSLATOR		4040B	5962-7705801	54FCT193	5962-9066901	54HC161	/66302	54LS393	/32702
12511	5962-8774301	BINARY COUNTER 12-STAGE RIPPLE		54ALS169B	5962-8302501	54HC161	5962-8302201	54HC393	/66309
PRESCALER TWO-MODULUS ECL-TO-TTL TRANSLATOR		54HCT160	5962-9070501	54LS193	5962-7600601	BINARY COUNTER 4-BIT SYNCHRONOUS WITH SYNCHRONOUS CLEAR		BINARY COUNTER DUAL 4-STAGE TTL COMPATIBLE INPUTS	
12509	5962-8774801	4040B	5962-7705801	54ALS193	5962-8669801	54ALS161	5962-8302201	BINARY COUNTER DUAL 4-STAGE TTL COMPATIBLE INPUTS	
PRESCALER TWO-MODULUS ECL-TO-TTL TRANSLATOR WITH DIVIDE BY 10 AND 11		54HC4040	5962-8500401	54F169	5962-8607201	BINARY COUNTER 4-BIT SYNCHRONOUS WITH SYNCHRONOUS CLEAR		54HCT393	5962-8989001
12513	5962-8774901	54HC4040	/66313	54FCT193A	5962-9066902	54LS163A	5962-7603401	BINARY COUNTER DUAL UP/DOWN	
PRESCALER TWO-MODULUS ECL-TO-TTL TRANSLATOR WITH DIVIDE BY 2 AND DIVIDE BY 5 SECTIONS		54HC4040	/66313	54F191	/34303	54ALS163B	/38002	4520B	5962-7702301
12513	5962-8774901	BINARY COUNTER 12-STAGE RIPPLE-CARRY TTL-COMPATIBLE INPUTS		54LS169	5962-8001802	54HC163	/66304	BINARY COUNTER DUAL WITH DIVIDE BY 2 AND DIVIDE BY 5 SECTIONS	
54147	/15601	54HCT4040	5962-8994701	54ALS169B	/38003	54ALS163	5962-8302202	54HC390	5962-8600901
54HC147	5962-8406401	BINARY COUNTER 14-STAGE		54F193	/34304	54ALS163	5962-8302202	54HC390	/66308
PRIORITY ENCODER 10-TO-4-LINE		54HC4060	5962-8768001	54LS169	/31506	54HC163	5962-8607601	BINARY COUNTER UP/DOWN WITH PRESET AND RIPPLE CLOCK	
54147	/15601	4020A	/05603	54LS193	/31508	54LS163A	/31512	54AC191	5962-8974901
54HC147	5962-8406401	4020B	/05653	54193	/01309	BINARY COUNTER 4-BIT SYNCHRONOUS WITH THREE-STATE OUTPUTS		54AC191	/76305
PRIORITY ENCODER 8-INPUT		BINARY COUNTER 14-STAGE RIPPLE		BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH PRESET AND RIPPLE CLOCK		BINARY COUNTER 4-BIT SYNCHRONOUS WITH THREE-STATE OUTPUTS		BINARY COUNTER UP/DOWN WITH PRESET AND RIPPLE CLOCK	
93L18	/04301	54HCT4040	5962-8994701	54FCT191	5962-8973303	54ALS561A	/38004	BINARY COUNTER/Divider AND OSCILLATOR 14-STAGE RIPPLE CARRY	
4532B	/17303	54HC4060	5962-8768001	BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH ASYNCHRONOUS RESET		54ALS561A	5962-8302203	54AC191	5962-8974901
9318	/15603	4020A	/05603	54HCT191	5962-8867101	BINARY COUNTER 4-BIT PRESETTABLE SYNCHRONOUS ASYNCHRONOUS RESET TTL-COMPT.		54AC191	/76305
PRIORITY ENCODER 8-LINE-TO-3-LINE		4020B	/05653	BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH ASYNCHRONOUS RESET		BINARY COUNTER 7-STAGE		BINARY COUNTER/Divider AND OSCILLATOR 14-STAGE RIPPLE CARRY	
54LS148	5962-7802701	BINARY COUNTER 14-STAGE RIPPLE TTL COMPATIBLE INPUTS		54HC193	5962-8772401	4024A	/05605	BINARY/DECADE COUNTER 4-BIT PRESETTABLE UP/DOWN	
54LS148	/36001	54HCT4020	5962-8945801	54HC193	/66307	4024B	/05655	4029B	5962-8101601
25LS2513	5962-8754201	BINARY COUNTER 14-STAGE WITH OSCILLATOR AND TTL COMPATIBLE INPUTS		BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH PRESET		BINARY COUNTER 7-STAGE RIPPLE		BUS INTERFACE REGISTER 10-WIDE	
54F148	5962-8607001	54HCT4020	5962-8945801	54HC191	5962-8689101	BINARY COUNTER 8-BIT BIDI-RECTIONAL		29821A	5962-8775501
54148	/15602	BINARY COUNTER 14-STAGE WITH OSCILLATOR AND TTL COMPATIBLE INPUTS		54HC191	/66305	BINARY COUNTER 8-BIT BIDI-RECTIONAL WITH THREE-STATE OUTPUTS		29921A	5962-8775504
PRIORITY ENCODER 8-LINE-TO-3-LINE TS		54HCT4060	5962-8977101	BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH PRESET		BINARY COUNTER 8-BIT BIDI-RECTIONAL WITH THREE-STATE OUTPUTS		BUS INTERFACE REGISTER 8-BIT	
54LS348	/36002	BINARY COUNTER 4-BIT		54FCT191	5962-8973301	54F269	5962-8862701	54ALS29825	5962-9069501
Sequential registers/counters 5/		93S16	5962-8672701	54FCT191A	5962-8973302	BINARY COUNTER 8-BIT SYNCHRONOUS		BUS INTERFACE REGISTER 8-BIT NONINVERTING TTL-COMPATIBLE	
BCD COUNTER 4-BIT SYNCHRONOUS WITH MODE CONTROL		10H416	5962-8759001	54FCT191A	5962-8973302	54HC40103	5962-9055301	54FCT825A	5962-8867401
54LS190	5962-7603501	5493	/01302	54FCT191A	5962-8973304	BINARY COUNTER 8-BIT SYNCHRONOUS UP/DOWN		54FCT825B	5962-8867402
54LS190	/31513	54L93	/02502	BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH PRESET AND RIPPLE CLOCK		BINARY COUNTER 8-BIT SYNCHRONOUS UP/DOWN		BUS INTERFACE REGISTER 8-WIDE	
BCD COUNTER 4-BIT SYNCHRONOUS WITH SYNCHRONOUS RESET		54LS293	/32004	54LS191	5962-7600901	54AS869	5962-8952601	29825A	5962-8775503
54HC162	5962-8409401	BINARY COUNTER 4-BIT SYNCHRONOUS		54LS191	/31509	BINARY COUNTER 8-BIT SYNCHRONOUS UP/DOWN WITH ASYNCHRONOUS CLEAR		29925A	5962-8775506
54HC162	/66303	54LS161	5962-7600801	BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH PRESET AND RIPPLE CLOCK		BINARY COUNTER 8-BIT SYNCHRONOUS UP/DOWN WITH ASYNCHRONOUS CLEAR		BUS INTERFACE REGISTER 9-WIDE	
BCD COUNTER 8-BIT SYNCHRONOUS DOWN TTL-COM-		54F161A	/34301	54FCT191	5962-8973301	54AS867	5962-8966801		
		54F163A	/34302	54FCT191A	5962-8973302				
		54F163A	/01304	54FCT191A	5962-8973304				
		54LS161	/31504	BINARY COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH PRESET AND RIPPLE CLOCK					
		93L16	/02505	25LS2569	5962-8754401				
		54161	/01306	54ALS569A	5962-8302502				
		BINARY COUNTER 4-BIT SYNCHRONOUS PRESETTABLE		54ALS569A	/38005				
		54AC161	/76302	BINARY COUNTER 4-BIT SYNCHRONOUS PRESETTABLE TTL-COMPATIBLE					
		54AC161	5962-8956101						
		54AC163	5962-8958201						
		54AC163	/76304						

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MILITARY

MILITARY PARTS
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MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
29823A 29923A	5962-8775502 5962-8775505	54162 54F162A 54ALS560 54ALS568 54LS162A	/01305 /34402 /38104 /38105 /31511	54LS197 54LS197	5962-7601501 /32002	REGISTER FILE 4 X 4 WITH OPEN COLLECTOR OUTPUTS		54F378 54F378	/34108 5962-8855501
COUNTER 4-BIT SYNCHRONOUS UP/DOWN		DECADE COUNTER 4-BIT SYNCHRONOUS BCD		FLIP-FLOP 9-BIT BUS INTER-FACE THREE-STATE OUTPUTS INVERTING INPUTS		54LS170 54LS170	5962-8002501 /31902	REGISTER D-TYPE QUAD WITH STANDARD AND THREE-STATE OUTPUTS	
4029B 54L193	5962-8101602 /02503	54160 54F160A 54ALS160	/01303 /34401 /38101	54ALS29824	5962-9067502	REGISTER FILE DUAL 16-WORD BY 4-BIT		29LS18	5962-8671901
COUNTER BCD SYNCHRONOUS		DECADE COUNTER 4-BIT SYNCHRONOUS UP/DOWN		FLIP-FLOP 9-BIT BUS INTER-FACE THREE-STATE OUTPUTS NONINVERTING INPUTS		54ALS870	5962-8988901	REGISTER D-TYPE QUAD WITH TO INDEPENDENTLY CONTROLLED THREE-STATE OUTPUTS	
93L10	/02504	54HC190 54LS668 54LS168 54LS168 54F190 54F192 54ALS168 54192	5962-8994601 5962-8687601 5962-8001801 /31505 /34403 /34404 /38103 /01308	54ALS29823	5962-9067501	REGISTER 10-BIT NONINVERTING		25LS2519	5962-8670201
COUNTER BINARY 4-BIT		DECADE COUNTER 4-BIT SYNCHRONOUS UP/DOWN		MULTI-PORT REGISTER 8-BIT		54FCT821A 54FCT821B	5962-8860801 5962-8860802	REGISTER QUAD 2-PORT	
54L90	/02501	54HC190 54LS668 54LS168 54LS168 54F190 54F192 54ALS168 54192	5962-8994601 5962-8687601 5962-8001801 /31505 /34403 /34404 /38103 /01308	9338	/15701	REGISTER 16-BIT		54LS399	5962-8415401
COUNTER DIVIDE BY 10 OR 11 LOW POWER		DECADE COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH ASYNCHRONOUS RESET		PIPELINE REGISTER		93L28	/02803	REGISTER QUAD DUAL-PORT TTL-COMPATIBLE	
SP8690A	5962-8767801	54HC192 54HC192	5962-8780801 /66306	AM29C818	5962-9051501	LPR520 LPR521	5962-8971603 5962-8971606	54FCT399 54ACT399 54FCT399A	5962-8965201 5962-9093401 5962-8965202
COUNTER DIVIDE BY 64 OR 65		DECADE COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH CLEAR ENABLE		PIPELINE REGISTER 16 X 8 DUAL VARIABLE DELAY 20 NS		REGISTER 4 X 16-BIT MULTI-LEVEL PIPELINE 18 NS		REGISTER QUAD TWO-INPUT HIGH-SPEED	
SP8718	5962-8861701	54HC192 54HC192	5962-8780801 /66306	29C525	5962-9169602	LPR520 LPR521	5962-8971602 5962-8971605	25LS399	5962-8670801
COUNTER DIVIDE BY 64 PRESCALER WITH TTL-COMPATIBLE OUTPUTS		DECADE COUNTER 4-BIT SYNCHRONOUS UP/DOWN WITH CLEAR ENABLE		PIPELINE REGISTER 16 X 8 DUAL VARIABLE DELAY 25 NS		REGISTER 4 X 16-BIT MULTI-LEVEL PIPELINE 24 NS		SHIFT REGISTER 1-T0-64 BIT	
SP8755	5962-8868401	54LS192 54LS192	5962-7603601 /31507	29C525	5962-9169601	LPR520 LPR521	5962-8971601 5962-8971604	4557B	5962-7901601
COUNTER DIVIDE-BY-12		DECADE COUNTER 4-BIT SYNCHRONOUS WITH ASYNCHRONOUS RESET		PIPELINE REGISTER 4 X 8-BIT MULTILEVEL 16 NS		REGISTER 4-BIT		SHIFT REGISTER 10-BIT NON-INVERTING	
54LS92	/31510	54HC160 54HC160	5962-8682401 /66301	L29C520 L29C521	5962-9176203 5962-9176206	54L95 93L00	/02801 /02804	54F821	5962-8943801
COUNTER DIVIDE-BY-8		DECADE COUNTER 4-BIT SYNCHRONOUS WITH SYNCHRONOUS CLEAR		PIPELINE REGISTER 4 X 8-BIT MULTILEVEL 30 NS		REGISTER 8-BIT		SHIFT REGISTER 16-BIT PAR. TO SER.	
4022A 4022B	/05604 /05654	54ALS162 54ALS162A	5962-8407901 /38102	L29C520 L29C521	5962-9176202 5962-9176205	54L164	/02802	54LS674	5962-8860701
COUNTER DIVIDE-BY-N		DECADE COUNTER DUAL		PIPELINE REGISTER 8-BIT DIAGNOSTIC TTL-COMPATIBLE INPUTS		REGISTER 8-BIT SERIAL-IN PARALLEL-OUT		SHIFT REGISTER 16-BIT SERIAL-IN SERIAL-OUT WITH 16-BIT PARALLEL-OUT STORAGE	
4018A 4018B	/05602 /05652	54LS490	/32703	54ACT818	5962-9160901	76L70	/02805	54LS673	5962-8860201
COUNTER DIVIDE-BY-TWELVE		DECADE COUNTER DUAL 4-BIT WITH A AND B INPUTS		PIPELINE REGISTER MULTI-LEVEL		REGISTER 9-BIT NONINVERTING		SHIFT REGISTER 16-BIT SERIAL-PARALLEL-IN SERIAL-OUT	
5492	/01301	54LS390 54LS390	/32701 5962-7802601	29FCT520A 29FCT521A 29FCT520B 29FCT521B	5962-8873601 5962-8873602 5962-8873603 5962-8873604	54FCT823A 54FCT823B	5962-8865601 5962-8865602	54F676	5962-8854601
COUNTER PROGRAMMABLE DIVIDE-BY-N		DECADE COUNTER/DIVIDER		PIPELINE REGISTER WITH SERIAL SHADOW REGISTER DIAGNOSTICS		REGISTER 9-BIT WIDE BUFFERED TTL-COMPATIBLE WITH INVERTED 3-STATE OUTPUTS		SHIFT REGISTER 32-BIT CASCADABLE BARREL 40 NS	
54HC4059	5962-8944501	54HC4017 54HC4017	5962-8601101 /66310	29818A	5962-8954901	54FCT824A 54FCT824B	5962-8966501 5962-8966502	LSH32	5962-8971702
COUNTER PROGRAMMABLE DIVIDE-BY-N WITH TTL-COMPATIBLE INPUTS		DECADE COUNTER/DIVIDER WITH 10 DECODED OUTPUTS TTL-COMPATIBLE INPUTS		REGISTER FILE 4 X 4		REGISTER 9-BIT SERIAL-IN PARALLEL-OUT		SHIFT REGISTER 32-BIT CASCADABLE BARREL 50 NS	
54HCT4059	5962-8862401	54LS196 54LS196	5962-7701001 /32001	54170	/01801	29C821 29C921	5962-8851601 5962-8851603	LSH32	5962-8971701
DECADE COUNTER		DECADE/BINARY COUNTER 4-BIT PRESETTABLE 30 MHZ		REGISTER FILE 4 X 4 THREE-STATE OUTPUTS		REGISTER BUS INTERFACE 10-WIDE HIGH PERFORMANCE		SHIFT REGISTER 4-BIT	
4017A 4017B	/05601 /05651	54LS93 54LS90 54LS90 54LS93 54LS290 5490	5962-7700101 /31501 5962-7603201 /31502 /32003 /01307	54LS670 54LS670	5962-7704201 /31901	29C823 29C923	5962-8851602 5962-8851604	5495 9300	/00901 /15901
DECADE COUNTER 4-BIT		DECADE/BINARY COUNTER PRESETTABLE 50/30-MHZ		REGISTER D-TYPE HEX PARALLEL		REGISTER BUS INTERFACE 9-WIDE HIGH PERFORMANCE		SHIFT REGISTER 4-BIT BIDI-RECTIONAL	
54LS160A 54LS160A	5962-7700901 /31503	54S194 54S194 54S195 54194 54195	/07601 5962-7604001 /30601 /07602 /00905 /00906						

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SHIFT REGISTER 4-BIT BIDI-RECTIONAL UNIVERSAL		54HC165 / 5962-8409501 54HC165 / 66502		TMC2111V / 5962-8944602		BIT UNIVERSAL		(SEE DWG) / 5962-8201008	
54HC194 / 5962-8682601 54HC194 / 66504		SHIFT REGISTER 8-BIT PARALLEL-IN SERIAL-OUT WITH LSTTL-COMPATIBLE INPUTS		SHIFT REGISTER 8-BIT WITH I/P LATCH TTL-COMPATIBLE INPUTS		54LS299 / 5962-7802401 25LS299 / 5962-7802402		DYNAMIC RAM 64K X 1 THREE-STATE OUTPUTS 150 NS ACCESS TIME	
SHIFT REGISTER 4-BIT BIDI-RECTIONAL UNIVERSAL CASCADABLE		54HCT165 / 5962-8685501		54HCT597 / 5962-8974101		SHIFT/STORAGE REGISTER 8-BIT UNIVERSAL WITH COMMON PARALLEL I/O PINS		(SEE DWG) / 5962-8201006 (SEE DWG) / 5962-8201002 (SEE DWG) / 5962-8201009 (SEE DWG) / 5962-8201004 (SEE DWG) / 5962-8201001	
54F194 / 33601 54F194 / 5962-8685001		SHIFT REGISTER 8-BIT PARALLEL-INPUT WITH CLEAR		SHIFT REGISTER 8-BIT WITH INPUT LATCHES		54AC299 / 5962-8875401 54AC299 / 776506		DYNAMIC RAM 64K X 1 THREE-STATE OUTPUTS 200 NS ACCESS TIME	
SHIFT REGISTER 4-BIT BIDI-RECTIONAL TS		54LS166 / 5962-8001701 54LS166 / 30609		54HC597 / 5962-8681701		SHIFT/STORAGE REGISTER 8-BIT UNIVERSAL WITH COMMON PARALLEL I/O PINS TTL-COMP		(SEE DWG) / 5962-8201010 (SEE DWG) / 5962-8201007 (SEE DWG) / 5962-8201005 (SEE DWG) / 5962-8201003	
54LS295B / 30606		SHIFT REGISTER 8-BIT PARALLEL-OUT		SHIFT REGISTER 8-BIT WITH OUTPUT LATCHES		54ACT299 / 5962-8877101		DYNAMIC RAM 64K X 1 WITH THREE-STATE OUTPUTS	
SHIFT REGISTER 4-BIT PARALLEL		54164 / 00903 54LS164 / 30605		54HC595 / 5962-8681601 54HC595 / 66507		SHIFT/STORAGE REGISTER 8-BIT UNIVERSAL WITH SYNCHRONOUS RESET AND COMMON I/O		(SEE DWG) / 5962-8201010 (SEE DWG) / 5962-8201007 (SEE DWG) / 5962-8201005 (SEE DWG) / 5962-8201003	
54HC195 / 5962-8682701 54HC195 / 66505		SHIFT REGISTER 8-BIT PARALLEL-OUT SERIAL		SHIFT REGISTER 8-BIT WITH THREE-STATE OUTPUTS		54ACT323 / 5962-9160701		DYNAMIC RAM 64K X 1 WITH THREE-STATE OUTPUTS	
SHIFT REGISTER 4-BIT PARALLEL ACCESS		54ALS164 / 5962-8687001		54LS595 / 5962-8671701		SHIFT/STORAGE REGISTER 8-BIT UNIVERSAL WITH THREE-STATE OUTPUTS		2164 / 24402 2164 / 24401 2164 / 24403	
54LS195A / 30602 54LS95B / 30603		SHIFT REGISTER 8-BIT PARALLEL/SERIAL INPUT		SHIFT REGISTER D-TYPE 4-BIT		54F299 / 5962-8957301		DYNAMIC RAM 64K X 4 100 NS ACCESS TIME	
SHIFT REGISTER 4-BIT PARALLEL-IN/PARALLEL-OUT		54165 / 00904 4014A / 05702 4021A / 05704 54HC166 / 66503 4014B / 05752		4076B / 17501		STORAGE REGISTER OCTAL LOW-POWER		MT4067-10 / 5962-8767604	
4035B / 5962-8101701 14035B / 5962-8101702		SHIFT REGISTER 8-BIT SERIAL-IN PARALLEL-OUT		SHIFT REGISTER DUAL 4-STAGE/5 STAGE		54LS396 / 5962-9050301		DYNAMIC RAM 64K X 4 120 NS ACCESS TIME	
SHIFT REGISTER 4-BIT UNIVERSAL		54F164 / 5962-8607101		4006B / 05751		UNIVERSAL COUNTER		MT4067-12 / 5962-8767601	
10H541 / 5962-8751101		SHIFT REGISTER 8-BIT SERIAL-IN/PARALLEL-OUT TTL-COMPATIBLE INPUTS		SHIFT REGISTER DUAL 4-STAGE		54H536 / 5962-8700101		DYNAMIC RAM 64K X 4 150 NS ACCESS TIME	
SHIFT REGISTER 4-BIT UNIVERSAL TS		54HCT164 / 5962-8970401		4015A / 05703 4015B / 05753		RAM /6		MT4067-15 / 5962-8767602	
54LS395A / 30607		SHIFT REGISTER 8-BIT SERIAL/PARALLEL WITH SIGN EXTEND AND THREE-STATE OUTPUTS		SHIFT REGISTER DUAL 8-BIT		RAM 64K X 4 MULTIPOINT VIDEO		MT4067-20 / 5962-8767603	
SHIFT REGISTER 4-BIT WITH THREE-STATE OUTPUTS		54F322 / 5962-8607401		9328 / 15902		SMJ4461 / 5962-8956001		DYNAMIC RAM 64K X 4 200 NS ACCESS TIME	
25S10 / 5962-8671801 54F350 / 5962-8607501		SHIFT REGISTER 8-BIT UNIVERSAL		SHIFT REGISTER QUAD 2-INPUT		DYNAMIC RAM 4K X 1 WITH THREE-STATE OUTPUTS		DYNAMIC RAM 256K X 1	
SHIFT REGISTER 5-BIT		4034A / 05706 4034B / 05756		25S09 / 5962-8672801		MCM6604A / 23602 MCM6605 / 23601		M41256N-15 / 24604 M41256P-15 / 24602 M41256P-12 / 24601 M41256N-12 / 24603	
5496 / 00902 54LS96 / 30604		SHIFT REGISTER 8-BIT UNIVERSAL TTL-COMPATIBLE WITH THREE-STATE OUTPUTS		SHIFT REGISTER STATIC		DYNAMIC RAM 16K X 1		DYNAMIC RAM 256K X 1 120 NS ACCESS TIME	
SHIFT REGISTER 64-STAGE		54FCT299 / 5962-8686201 54FCT299A / 5962-8686202		4021B / 5962-7901201 4021B / 05754		(SEE DWG) / 5962-8101501		(SEE DWG) / 5962-8515203	
4031B / 05755		SHIFT REGISTER 8-BIT UNIVERSAL		SHIFT REGISTER UNIVERSAL		DYNAMIC RAM 16K X 1 200 NS ACCESS TIME		DYNAMIC RAM 256K X 1 150 NS ACCESS TIME	
SHIFT REGISTER 64-STAGE STATIC		54HC299 / 5962-8780601 54HC299 / 66506		10541 / 5962-8855701		4116 / 24003 2117 / 24004 2117 / 24002		(SEE DWG) / 5962-8515202	
4031A / 05705		SHIFT REGISTER 8-BIT BIDI-RECTIONAL UNIVERSAL		SHIFT REGISTER/LATCH 8-STAGE THREE-STATE OUTPUTS		DYNAMIC RAM 16K X 1 250 NS ACCESS TIME		DYNAMIC RAM 256K X 1 200 NS ACCESS TIME	
54F198 / 5962-9050201		SHIFT REGISTER 8-BIT PARALLEL LOAD		4094B / 5962-7702501		2117 / 24005		(SEE DWG) / 5962-8515202	
54LS165A / 5962-7700601 54ALS165 / 5962-8957401 54LS165A / 30608		SHIFT REGISTER 8-BIT SERIAL-IN/PARALLEL-OUT		SHIFT/STORAGE REGISTER 8-BIT BIDIRECTIONAL UNIVERSAL WITH THREE-STATE OUTPUTS		DYNAMIC RAM 16K X 1 WITH THREE-STATE OUTPUTS		DYNAMIC RAM 1M X 4 100 NS ACCESS TIME	
SHIFT REGISTER 8-BIT PARALLEL-IN SERIAL-OUT		54HC164 / 5962-8416201 54HC164 / 66501		54ALS299 / 37601 54ALS299 / 5962-8302101 54ALS323 / 5962-8302102 54ALS323 / 37602		2117 / 24001		(SEE DWG) / 5962-9084702	
		SHIFT REGISTER 8-BIT VARIABLE-LENGTH (1-16 STAGES) 30 MHZ		SHIFT/STORAGE REGISTER 8-		DYNAMIC RAM 64K X 1 THREE-STATE OUTPUTS 120 NS ACCESS TIME		DYNAMIC RAM 1M X 4 120 NS ACCESS TIME	

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ACCESS TIME		27S02-20	5962-8605107	THREE-STATE OUTPUTS 55 NS ACCESS TIME		NS ACCESS TIME		CMM5114	/24506
(SEE DWG)	5962-9084703	STATIC RAM 16 X 4 WITH OPEN COLLECTOR OUTPUTS 30 NS ACCESS TIME		27LS00	5962-8602001	(SEE DWG)	5962-8770303	7C148	/28902
DYNAMIC RAM 1024K X 1		27S02A	5962-8605102	STATIC RAM 256 X 4		STATIC RAM 256 X 9 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 4 25 NS ACCESS TIME	
411024-100	/24902	STATIC RAM 16 X 4 WITH OPEN COLLECTOR OUTPUTS 50 NS ACCESS TIME		7C123	5962-9069603	(SEE DWG)	5962-8770302	9150-25	5962-8759201
411024-150	/24904	27S02	5962-8605101	7C123	5962-9069601	(SEE DWG)	5962-8770301	(SEE DWG)	5962-8751304
411024-80	/24901	STATIC RAM 16 X 4 WITH THREE-STATE OUTPUTS 20 NS ACCESS TIME		1822	/47102	STATIC RAM 256 X 9 WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		STATIC RAM 1K X 4 35 NS ACCESS TIME	
411024-120	/24903	27S03-20	5962-8605108	7C123	5962-9069602	(SEE DWG)	5962-8770301	(SEE DWG)	5962-8751305
DYNAMIC RAM 4M X 1 100 NS ACCESS TIME		STATIC RAM 16 X 4 WITH THREE-STATE OUTPUTS 20 NS ACCESS TIME		STATIC RAM 256 X 4 15 NS ACCESS TIME		STATIC RAM 1K X 1		9150-35	5962-8759202
(SEE DWG)	5962-9062202	27S03A	5962-8605105	(SEE DWG)	5962-8859401	STATIC RAM 1K X 1		STATIC RAM 1K X 4 40 NS ACCESS TIME	
DYNAMIC RAM 4M X 1 120 NS ACCESS TIME		STATIC RAM 16 X 4 WITH THREE-STATE OUTPUTS 30 NS ACCESS TIME		STATIC RAM 256 X 4 25 NS ACCESS TIME		STATIC RAM 1K X 1 LOW-POWER WITH OPEN-COLLECTOR OUTPUTS 70 NS ACCESS TIME		1821	/47101
(SEE DWG)	5962-9062201	27S03A	5962-8605105	(SEE DWG)	5962-8859403	STATIC RAM 1K X 1 LOW-POWER WITH OPEN-COLLECTOR OUTPUTS 70 NS ACCESS TIME		1HC34-25	/61504
DYNAMIC RAM 4M X 1 80 NS ACCESS TIME		STATIC RAM 16 X 4 WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		STATIC RAM 256 X 4 35 NS ACCESS TIME		STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		1HC34-25	/61501
(SEE DWG)	5962-9062203	27S03	5962-8605104	(SEE DWG)	5962-8859402	STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		STATIC RAM 1K X 4 45 NS ACCESS TIME	
STATIC RAM 16 X 4 15 NS ACCESS TIME		STATIC RAM 16 X 4 WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		93L415	/23103	STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		9150-45	5962-8759203
10545	5962-8856001	93419	/23201	(SEE DWG)	5962-8859501	STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		(SEE DWG)	5962-8751306
STATIC RAM 16 X 4 2-PORT		STATIC RAM 128 X 8		STATIC RAM 256 X 4 LOW-POWER WITH OPEN-COLLECTOR OUTPUTS 75 NS ACCESS TIME		STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		1HC34-20	/61502
29705A	5962-8602501	1823	5962-7901801	93L412	/23111	STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		1HC34-20	/61505
STATIC RAM 16 X 4 25 NS ACCESS TIME		6810	/40201	STATIC RAM 256 X 4 LOW-POWER WITH THREE-STATE OUTPUTS 55 NS ACCESS TIME		STATIC RAM 1K X 1 LOW-POWER WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		STATIC RAM 1K X 4 67 NS ACCESS TIME	
7C190	5962-8969401	STATIC RAM 256 X 1		93L422A	/23115	STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 45 NS ACCESS TIME		1HC34-15	/61506
STATIC RAM 16 X 4 INVERTING THREE-STATE		82S16	5962-8602301	STATIC RAM 256 X 4 LOW-POWER WITH THREE-STATE OUTPUTS 75 NS ACCESS TIME		STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 45 NS ACCESS TIME		1HC34-15	/61503
54S189	5962-7801502	93410	/23001	STATIC RAM 256 X 4 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 4 WITH RESET 15 NS ACCESS TIME	
STATIC RAM 16 X 4 LOW-POWER NONINVERTING THREE-STATE		STATIC RAM 256 X 1 INV.		93L422	/23112	STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		(SEE DWG)	5962-8858803
27LS07	5962-7801504	93L420	/23004	STATIC RAM 256 X 4 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 4 WITH RESET 25 NS ACCESS TIME	
27LS07-30	5962-7801506	93411	/23003	STATIC RAM 256 X 4 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		(SEE DWG)	5962-8858802
STATIC RAM 16 X 4 LOW-POWER WITH OPEN COLLECTOR OUTPUTS 65 NS ACCESS TIME		STATIC RAM 256 X 1 WITH OPEN-COLLECTOR OUTPUTS 45 NS ACCESS TIME		93412	/23109	STATIC RAM 1K X 1 WITH OPEN-COLLECTOR OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 4 WITH RESET 35 NS ACCESS TIME	
27LS02	5962-8605103	93421	/23002	STATIC RAM 256 X 4 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		(SEE DWG)	5962-8858801
STATIC RAM 16 X 4 LOW-POWER WITH THREE-STATE OUTPUTS 30 NS ACCESS TIME		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		93422A	/23114	STATIC RAM 1K X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 1K X 4 WITH THREE-STATE OUTPUTS	
27LS03-30	5962-8605109	93422	/23110	STATIC RAM 256 X 4 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		2148	/28904
STATIC RAM 16 X 4 LOW-POWER WITH THREE-STATE OUTPUTS 65 NS ACCESS TIME		27LS01	5962-8602003	STATIC RAM 256 X 4 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME		STATIC RAM 1K X 1 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME		6518	/23902
27LS03	5962-8605106	STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		93422	/23110	STATIC RAM 1K X 1 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME		2114	/23802
STATIC RAM 16 X 4 NONINVERTING THREE-STATE		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 256 X 8		STATIC RAM 1K X 4		6508	/23901
27S07A	5962-7801501	27LS01A	5962-8602004	STATIC RAM 256 X 8 WITH I/O PORTS AND TIME		AM91L30AF /23706		STATIC RAM 1K X 8 DUAL PORT (MASTER) 35 NS ACCESS TIME	
27S07-20	5962-7801505	STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		8X350	5962-8605201	(SEE DWG)	5962-8102406	(SEE DWG)	5962-8687504
27S07	5962-7801503	STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		8156	5962-8759302	(SEE DWG)	5962-8102407	(SEE DWG)	5962-8687508
STATIC RAM 16 X 4 WITH OPEN COLLECTOR OUTPUTS 20 NS ACCESS TIME		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 256 X 8 WITH I/O PORTS AND TIMER		AM91L30CFM /23707		STATIC RAM 1K X 8 DUAL PORT (MASTER) 55 NS ACCESS TIME	
27LS00A	5962-8602002	STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		8155	5962-8759301	AM91L30CFM /23707		(SEE DWG)	5962-8687507
STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 256 X 9 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		AM91L30CFM /23706		(SEE DWG)	5962-8687503
STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 256 X 9 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		AM91L30CFM /23706		STATIC RAM 1K X 8 DUAL PORT (MASTER) 35 NS ACCESS TIME	
STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 256 X 9 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		AM91L30CFM /23706		STATIC RAM 1K X 8 DUAL PORT (MASTER) 55 NS ACCESS TIME	
STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		STATIC RAM 256 X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 256 X 9 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		AM91L30CFM /23706		STATIC RAM 1K X 8 DUAL PORT (MASTER) 55 NS ACCESS TIME	

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
STATIC RAM 1K X 8 DUAL PORT (MASTER) 70 NS ACCESS TIME		STATIC RAM 2K X 16 DUAL PORT (SLAVE) 70 NS ACCESS TIME		6116 /29104 (SEE DWG) 5962-8403603 (SEE DWG) 5962-8103901		POWER 35 NS ACCESS TIME		(SEE DWG) 5962-8670503 (SEE DWG) 5962-8670512 (SEE DWG) 5962-8670504	
(SEE DWG) 5962-8687506 (SEE DWG) 5962-8687502		(SEE DWG) 5962-8866504 (SEE DWG) 5962-8861004		STATIC RAM 2K X 8 DUAL PORT		STATIC RAM 4K X 1		STATIC RAM 4K X 4 40 NS ACCESS TIME	
STATIC RAM 1K X 8 DUAL PORT (MASTER) 90 NS ACCESS TIME		STATIC RAM 2K X 16 DUAL PORT (SLAVE) 90 NS ACCESS TIME		7C146 5962-9062011 7C136 5962-9062008 7C136 5962-9062007 7C142 5962-9062006 7C146 5962-9062012 7C132 5962-9062002 7C132 5962-9062003 7C132 5962-9062001 7C142 5962-9062004 7C146 5962-9062010 7C136 5962-9062009 7C142 5962-9062005		MM5280 /23505 AM91L40AFC /23714 AM91L40CFM /23715 TMS4060 /23503 AM91L40CFC /23713 TMS4050 /23502 TMS4060 /23501 6504 /24501 AM9140CFC /23709 (SEE DWG) 5962-8102403 AM9140AFC /23710 2147H-2 /23807 2147H /23803 AM9140AFM /23712 MCM6604A /23604 (SEE DWG) 5962-8102407 2147H-3 /23805 CMM5104 /24505 (SEE DWG) 5962-8102401 MM5280 /23506 TMS4050 /23504 AM91L40AFM /23716 MCM6605 /23603 6504RH /24503 AM9140CFM /23711 (SEE DWG) 5962-8102405	2169-40 5962-8608106		
(SEE DWG) 5962-8687501 (SEE DWG) 5962-8687505		(SEE DWG) 5962-8866502 (SEE DWG) 5962-8861002		STATIC RAM 2K X 8 DUAL PORT (MASTER) 45 NS ACCESS TIME		2147H-2 /23807 2147H /23803 AM9140AFM /23712 MCM6604A /23604 (SEE DWG) 5962-8102407 2147H-3 /23805 CMM5104 /24505 (SEE DWG) 5962-8102401 MM5280 /23506 TMS4050 /23504 AM91L40AFM /23716 MCM6605 /23603 6504RH /24503 AM9140CFM /23711 (SEE DWG) 5962-8102405	2168-45 5962-8608105 (SEE DWG) 5962-8670505 (SEE DWG) 5962-8670506 (SEE DWG) 5962-8670513		
STATIC RAM 1K X 8 DUAL PORT (SLAVE) 35 NS ACCESS TIME		STATIC RAM 2K X 8 120 NS ACCESS TIME		7132SA-45 5962-8700201 7132LA-45 5962-8700205		STATIC RAM 4K X 1 25 NS ACCESS TIME		STATIC RAM 4K X 4 50 NS ACCESS TIME	
(SEE DWG) 5962-8687518		(SEE DWG) 5962-8103902 (SEE DWG) 5962-8403615 (SEE DWG) 5962-8403607 (SEE DWG) 5962-8103907		STATIC RAM 2K X 8 DUAL PORT (MASTER) 55 NS ACCESS TIME		(SEE DWG) 5962-8751301		2169-50 5962-8608103	
STATIC RAM 1K X 8 DUAL PORT (SLAVE) 45 NS ACCESS TIME		STATIC RAM 2K X 8 150 NS ACCESS TIME		7132SA-55 5962-8700204 7132LA-55 5962-8700208		STATIC RAM 4K X 1 35 NS ACCESS TIME		STATIC RAM 4K X 4 55 NS ACCESS TIME	
(SEE DWG) 5962-8687512 (SEE DWG) 5962-8687516		(SEE DWG) 5962-8403604 6116 /29101		STATIC RAM 2K X 8 DUAL PORT (MASTER) 70 NS ACCESS TIME		(SEE DWG) 5962-8751302 (SEE DWG) 5962-8858702 7C147 /28901		(SEE DWG) 5962-8670507 2168-55 5962-8608101 (SEE DWG) 5962-8670514 (SEE DWG) 5962-8670508	
STATIC RAM 1K X 8 DUAL PORT (SLAVE) 55 NS ACCESS TIME		STATIC RAM 2K X 8 200 NS ACCESS TIME		7132SA-70 5962-8700203 7132LA-70 5962-8700207		STATIC RAM 4K X 1 45 NS ACCESS TIME		STATIC RAM 4K X 4 WITH SEPARATE I/O 25 NS ACCESS TIME	
(SEE DWG) 5962-8687515 (SEE DWG) 5962-8687511		(SEE DWG) 5962-8969002		STATIC RAM 2K X 8 DUAL PORT (SLAVE) 90 NS ACCESS TIME		(SEE DWG) 5962-8858701 (SEE DWG) 5962-8751303		(SEE DWG) 5962-8861105	
STATIC RAM 1K X 8 DUAL PORT (SLAVE) 70 NS ACCESS TIME		STATIC RAM 2K X 8 200 NS ACCESS TIME		7132LA-90 5962-8700206 7132SA-90 5962-8700202		STATIC RAM 4K X 1 WITH OPEN-COLLECTOR OUTPUTS		STATIC RAM 4K X 4 WITH SEPARATE I/O 35 NS ACCESS TIME	
(SEE DWG) 5962-8687514 (SEE DWG) 5962-8687510		6516 /29102 (SEE DWG) 5962-8103908 (SEE DWG) 5962-8103904 (SEE DWG) 5962-8103903 6116 /29105 (SEE DWG) 5962-8403601 (SEE DWG) 5962-8403605 (SEE DWG) 5962-8103905		STATIC RAM 2K X 8 DUAL PORT (SLAVE) 90 NS ACCESS TIME		93470 /23301		(SEE DWG) 5962-8861104	
STATIC RAM 1K X 8 DUAL PORT (SLAVE) 90 NS ACCESS TIME		STATIC RAM 2K X 8 25 NS ACCESS TIME		7142SA-45 5962-8700209 7142LA-45 5962-8700213		STATIC RAM 4K X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 4K X 4 WITH SEPARATE I/O 45 NS ACCESS TIME	
(SEE DWG) 5962-8687509 (SEE DWG) 5962-8687513		(SEE DWG) 5962-8969001		STATIC RAM 2K X 8 DUAL PORT (SLAVE) 55 NS ACCESS TIME		2147 /23801 93471 /23302 2147 /28903		(SEE DWG) 5962-8861103	
STATIC RAM 512 X 8 NON-VOLATILE 300 NS ACCESS TIME		STATIC RAM 2K X 8 35 NS ACCESS TIME		7142LA-55 5962-8700216 7142SA-55 5962-8700212		STATIC RAM 4K X 16 DUAL PORT		STATIC RAM 4K X 4 WITH SEPARATE I/O 55 NS ACCESS TIME	
2004 5962-8771202		(SEE DWG) 5962-8403614		STATIC RAM 2K X 8 DUAL PORT (SLAVE) 70 NS ACCESS TIME		7024 5962-9166208 7024 5962-9166207 7024 5962-9166201 7024 5962-9166202 7024 5962-9166206 7024 5962-9166204 7024 5962-9166203 7024 5962-9166205		(SEE DWG) 5962-8861102	
STATIC RAM 2K X 16 DUAL PORT (MASTER) 55 NS ACCESS TIME		STATIC RAM 2K X 8 45 NS ACCESS TIME		7142SA-70 5962-8700211 7142LA-70 5962-8700215		STATIC RAM 4K X 4 25 NS ACCESS TIME		STATIC RAM 4K X 4 WITH SEPARATE I/O 70 NS ACCESS TIME	
(SEE DWG) 5962-8866505 (SEE DWG) 5962-8861005		(SEE DWG) 5962-8403614		STATIC RAM 2K X 8 DUAL PORT (SLAVE) 90 NS ACCESS TIME		(SEE DWG) 5962-8670501 (SEE DWG) 5962-8670502 (SEE DWG) 5962-8670511		(SEE DWG) 5962-8861101	
STATIC RAM 2K X 16 DUAL PORT (MASTER) 70 NS ACCESS TIME		STATIC RAM 2K X 8 55 NS ACCESS TIME		7142LA-90 5962-8700214 7142SA-90 5962-8700210		STATIC RAM 4K X 4 35 NS ACCESS TIME		7025 5962-9161702 7025 5962-9161703 7025 5962-9161704 7025 5962-9161701 7025 5962-9161706 7025 5962-9161707 7025 5962-9161708 7025 5962-9161705	
(SEE DWG) 5962-8866501 (SEE DWG) 5962-8866503		(SEE DWG) 5962-8403611 (SEE DWG) 5962-8403610		STATIC RAM 2K X 8 LOW-POWER 25 NS ACCESS TIME					
STATIC RAM 2K X 16 DUAL PORT (MASTER) 90 NS ACCESS TIME		STATIC RAM 2K X 8 70 NS ACCESS TIME		(SEE DWG) 5962-8874002					
(SEE DWG) 5962-8866501 (SEE DWG) 5962-8861001		(SEE DWG) 5962-8403606 (SEE DWG) 5962-8403613 65162 /29110 (SEE DWG) 5962-8403612		STATIC RAM 2K X 8 LOW-POWER 25 NS ACCESS TIME					
STATIC RAM 2K X 16 DUAL PORT (SLAVE) 55 NS ACCESS TIME		STATIC RAM 2K X 8 90 NS ACCESS TIME							
(SEE DWG) 5962-8866506 (SEE DWG) 5962-8861006		(SEE DWG) 5962-8403616 (SEE DWG) 5962-8103906 (SEE DWG) 5962-8403602							

MILITARY

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**MILITARY PARTS
SORTED BY FUNCTION**

MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
STATIC RAM 8K X 8		STATIC RAM 8K X 8 70 NS ACCESS TIME		STATIC RAM 16K X 1 40 NS ACCESS TIME		(SEE DWG) 5962-8685915 (SEE DWG) 5962-8685907 (SEE DWG) 5962-8685916 (SEE DWG) 5962-8685908		STATIC RAM 16K X 4 WITH SEPARATE I/O 25 NS ACCESS TIME	
(SEE DWG) 5962-3829401 (SEE DWG) 5962-8969106 (SEE DWG) 5962-3829412		(SEE DWG) 5962-3829420 (SEE DWG) 5962-3829432 (SEE DWG) 5962-3829407 (SEE DWG) 5962-8552504 (SEE DWG) 5962-3829406 (SEE DWG) 5962H3829436 (SEE DWG) 5962-8552511 (SEE DWG) 5962-3829436 (SEE DWG) 5962-3829421		2167-40	5962-8200704			(SEE DWG) 5962-8971203	
STATIC RAM 8K X 8 100 NS ACCESS TIME		STATIC RAM 8K X 8 85 NS ACCESS TIME		STATIC RAM 16K X 1 45 NS ACCESS TIME		STATIC RAM 16K X 4 55 NS ACCESS TIME		STATIC RAM 16K X 4 WITH SEPARATE I/O 35 NS ACCESS TIME	
(SEE DWG) 5962-3829431 (SEE DWG) 5962-8552503 (SEE DWG) 5962-3829405 (SEE DWG) 5962-3829404 (SEE DWG) 5962-8552512		(SEE DWG) 5962H3829435 (SEE DWG) 5962-3829435		51C67 /29106 (SEE DWG) 5962-8413202 (SEE DWG) 5962-8413209		(SEE DWG) 5962-8685920 (SEE DWG) 5962-8685919 (SEE DWG) 5962-8685906 (SEE DWG) 5962-8685914 (SEE DWG) 5962-8685905 (SEE DWG) 5962-8685913		(SEE DWG) 5962-8971202	
STATIC RAM 8K X 8 120 NS ACCESS TIME		STATIC RAM 8K X 8 SELEC-TABLE MODE		STATIC RAM 16K X 1 55 NS ACCESS TIME		STATIC RAM 16K X 4 70 NS ACCESS TIME		STATIC RAM 16K X 4 WITH SEPARATE I/O 45 NS ACCESS TIME	
(SEE DWG) 5962-3829402 (SEE DWG) 5962-8552502 (SEE DWG) 5962-3829403 (SEE DWG) 5962-8552513		65643 /29206 65642 /29205		2167-55 5962-8200703 (SEE DWG) 5962-8413208		(SEE DWG) 5962-8685912 (SEE DWG) 5962-8685911 (SEE DWG) 5962-8685903 (SEE DWG) 5962-8685904		(SEE DWG) 5962-8971201	
STATIC RAM 8K X 8 15 NS ACCESS TIME		STATIC RAM 8K X 8 SELEC-TABLE MODE 35 NS ACCESS TIME		STATIC RAM 16K X 1 70 NS ACCESS TIME		STATIC RAM 16K X 4 85 NS ACCESS TIME		STATIC RAM 16K X 8 DUAL PORT	
(SEE DWG) 5962-3829418 (SEE DWG) 5962-3829419 (SEE DWG) 5962-8969104		65616-1 /61001		2167-70 5962-8200702 (SEE DWG) 5962-8413203		(SEE DWG) 5962-8685902 (SEE DWG) 5962-8685901		7006 5962-9150803 7006 5962-9150805 7006 5962-9150801 7006 5962-9150802 7006 5962-9150804 7006 5962-9150806	
STATIC RAM 8K X 8 150 NS ACCESS TIME		STATIC RAM 8K X 8 SELEC-TABLE MODE 45 NS ACCESS TIME		STATIC RAM 16K X 1 85 NS ACCESS TIME		STATIC RAM 16K X 4 WITH OE AND CE 20 NS ACCESS TIME		STATIC RAM 32K X 8 100 NS ACCESS TIME	
(SEE DWG) 5962-8552501		65616-2 /61002		65262 /29103 (SEE DWG) 5962-8413201		(SEE DWG) 5962-8989103		(SEE DWG) 5962-8866201	
STATIC RAM 8K X 8 20 NS ACCESS TIME		STATIC RAM 8K X 8 SELEC-TABLE MODE 55 NS ACCESS TIME		STATIC RAM 16K X 1 WITH THREE-STATE OUTPUTS		STATIC RAM 16K X 4 WITH OE AND DUAL CE 15 NS ACCESS TIME		STATIC RAM 32K X 8 25 NS ACCESS TIME	
(SEE DWG) 5962-3829417 (SEE DWG) 5962-3829416 (SEE DWG) 5962-3829430		65616-3 /61003		65262 /29109		(SEE DWG) 5962-8989106 (SEE DWG) 5962-8989105		(SEE DWG) 5962-8866206	
STATIC RAM 8K X 8 25 NS ACCESS TIME		STATIC RAM 8K X 9		STATIC RAM 16K X 4		STATIC RAM 16K X 4 WITH OE AND DUAL CE 20 NS ACCESS TIME		STATIC RAM 32K X 8 35 NS ACCESS TIME	
(SEE DWG) 5962-8969102 (SEE DWG) 5962-8969101 (SEE DWG) 5962-3829415 (SEE DWG) 5962-3829414 (SEE DWG) 5962-3829428 (SEE DWG) 5962-3829429		(SEE DWG) 5962-8988303 (SEE DWG) 5962-8988302 (SEE DWG) 5962-8988301		7B162 5962-9217203 7B166 5962-9159305 51C98-35 /61301 7B166 5962-9159304 7B164 5962-9159303 51C98-55 /61303 7B164 5962-9159302 7B164 5962-9159301 7B162 5962-9217202 7B162 5962-9217201 7B166 5962-9159306 51C98-45 /61302		(SEE DWG) 5962-8989104		(SEE DWG) 5962-8866205	
STATIC RAM 8K X 8 35 NS ACCESS TIME		STATIC RAM 8K X 9 25 NS ACCESS TIME		STATIC RAM 16K X 4 15 NS ACCESS TIME		STATIC RAM 16K X 4 WITH OE AND DUAL CE 25 NS ACCESS TIME		STATIC RAM 32K X 8 60 NS ACCESS TIME	
(SEE DWG) 5962-8552507 (SEE DWG) 5962-3829427 (SEE DWG) 5962-3829426 (SEE DWG) 5962-3829413 (SEE DWG) 5962-8552508		(SEE DWG) 5962-8868303		(SEE DWG) 5962-8969206 (SEE DWG) 5962-8969205		(SEE DWG) 5962-8989102		(SEE DWG) 5962H9215301	
STATIC RAM 8K X 8 45 NS ACCESS TIME		STATIC RAM 8K X 9 35 NS ACCESS TIME		STATIC RAM 16K X 4 20 NS ACCESS TIME		STATIC RAM 16K X 4 WITH OE AND DUAL CE 25 NS DATA RETENTION		STATIC RAM 32K X 8 LOW-POWER 100 NS ACCESS TIME	
(SEE DWG) 5962-3829425 (SEE DWG) 5962-8552509 (SEE DWG) 5962-8552506 (SEE DWG) 5962-3829410 (SEE DWG) 5962-3829424 (SEE DWG) 5962-3829411		(SEE DWG) 5962-8868302		(SEE DWG) 5962-8969204 (SEE DWG) 5962-8969203		(SEE DWG) 5962-8989101		(SEE DWG) 5962-8855201	
STATIC RAM 8K X 8 55 NS ACCESS TIME		STATIC RAM 8K X 9 45 NS ACCESS TIME		STATIC RAM 16K X 4 25 NS ACCESS TIME		STATIC RAM 16K X 4 WITH OE 15 NS ACCESS TIME		STATIC RAM 32K X 8 LOW-POWER 25 NS ACCESS TIME	
(SEE DWG) 5962-8552505 (SEE DWG) 5962-3829409 (SEE DWG) 5962-3829437 (SEE DWG) 5962-3829433 (SEE DWG) 5962-3829423 (SEE DWG) 5962-3829408 (SEE DWG) 5962-8552510 (SEE DWG) 5962H3829437 (SEE DWG) 5962-3829422		(SEE DWG) 5962-8868301		(SEE DWG) 5962-8969202 (SEE DWG) 5962-8969201		(SEE DWG) 5962-8989205 (SEE DWG) 5962-8989206		(SEE DWG) 5962-8855206	
STATIC RAM 16K X 1 25 NS ACCESS TIME		STATIC RAM 16K X 1 35 NS ACCESS TIME		STATIC RAM 16K X 4 35 NS ACCESS TIME		STATIC RAM 16K X 4 WITH OE 20 NS ACCESS TIME		STATIC RAM 32K X 8 LOW-POWER 35 NS ACCESS TIME	
(SEE DWG) 5962-8413207 (SEE DWG) 5962-8413206		4167 5962-8200701		(SEE DWG) 5962-8685924 (SEE DWG) 5962-8685918 (SEE DWG) 5962-8685923 (SEE DWG) 5962-8685909 (SEE DWG) 5962-8685910 (SEE DWG) 5962-8685917		(SEE DWG) 5962-8989203 (SEE DWG) 5962-8989204		(SEE DWG) 5962-8855204 (SEE DWG) 5962-8855209	
STATIC RAM 16K X 1 35 NS ACCESS TIME		STATIC RAM 16K X 4 45 NS ACCESS TIME		STATIC RAM 16K X 4 45 NS ACCESS TIME		STATIC RAM 16K X 4 WITH SEPARATE I/O 20 NS ACCESS TIME		STATIC RAM 32K X 8 LOW-POWER 55 NS ACCESS TIME	
(SEE DWG) 5962-8413204 (SEE DWG) 5962-8413205		(SEE DWG) 5962-8685921 (SEE DWG) 5962-8685922		(SEE DWG) 5962-8685921 (SEE DWG) 5962-8685922		(SEE DWG) 5962-8989202 (SEE DWG) 5962-8989201		(SEE DWG) 5962-8855203 (SEE DWG) 5962-8855208	
STATIC RAM 16K X 4 45 NS ACCESS TIME						STATIC RAM 16K X 4 WITH SEPARATE I/O 20 NS ACCESS TIME		STATIC RAM 32K X 8 LOW-	
(SEE DWG) 5962-8971204						(SEE DWG) 5962-8971204			

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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
POWER 70 NS ACCESS TIME		(SEE DWG) 5962-8969602 (SEE DWG) 5962-8969601		ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE 35 NS ACCESS TIME		POWER 35 NS ACCESS TIME	
(SEE DWG) 5962-8855207 (SEE DWG) 5962-8855202		STATIC RAM 64K X 1 WITH THREE-STATE OUTPUTS 35 NS ACCESS TIME		7C194 5962-29319BL		(SEE DWG) 5962-8952404 MT5C2565 /29315 7C196 /29306		(SEE DWG) 5962-8959811	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE 20 NS ACCESS TIME		(SEE DWG) 5962-8601501 (SEE DWG) 5962-8601502		STATIC RAM 64K X 4 25 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE 45 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER 45 NS ACCESS TIME	
MT5C2568 /29317		STATIC RAM 64K X 1 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		7C194 /29311		(SEE DWG) 5962-8952403 MT5C2565 /29314 7C196 /29305		(SEE DWG) 5962-8959810	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE 25 NS ACCESS TIME		(SEE DWG) 5962-8601503 7187545 /29202 (SEE DWG) 5962-8601504		STATIC RAM 64K X 4 35 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE LOW POWER 20 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER 55 NS ACCESS TIME	
7C198 /29313		STATIC RAM 64K X 1 WITH THREE-STATE OUTPUTS 55 NS ACCESS TIME		7C194 /29304 (SEE DWG) 5962-8868101		(SEE DWG) 5962-8952403 MT5C2565 /29314 7C196 /29305		(SEE DWG) 5962-8959809	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE 35 NS ACCESS TIME		(SEE DWG) 5962-8601503 7187545 /29202 (SEE DWG) 5962-8601504		STATIC RAM 64K X 4 45 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE LOW POWER 25 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER 70 NS ACCESS TIME	
7C198 /29309		STATIC RAM 64K X 1 WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		7C194 /29303 (SEE DWG) 5962-8868102		MT5C2565 /29324		(SEE DWG) 5962-8959804 (SEE DWG) 5962-8959808	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE 45 NS ACCESS TIME		7187L55 /29203 (SEE DWG) 5962-8601505 (SEE DWG) 5962-8601506 7187555 /29201		STATIC RAM 64K X 4 55 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE LOW POWER 25 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER 85 NS ACCESS TIME	
7C198 /29308 (SEE DWG) 5962-8866204		STATIC RAM 64K X 1 WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		(SEE DWG) 5962-8868103 (SEE DWG) 5962-8952402		MT5C2565 /29323		(SEE DWG) 5962-8959807 (SEE DWG) 5962-8959803	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE 55 NS ACCESS TIME		7187L70 /29204 (SEE DWG) 5962-8601508 (SEE DWG) 5962-8601507		STATIC RAM 64K X 4 70 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE LOW POWER 35 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER DUAL CE 100 NS ACCESS TIME	
(SEE DWG) 5962-8866203 7C198 /29307		STATIC RAM 64K X 16 100 NS ACCESS TIME		(SEE DWG) 5962-8868104 (SEE DWG) 5962-8952401		MT5C2565 /29322		(SEE DWG) 5962-8959814	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE LOW POWER 20 NS ACCESS TIME		(SEE DWG) 5962-9085802		STATIC RAM 64K X 4 LOW POWER 20 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE LOW POWER 45 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER DUAL CE 120 NS ACCESS TIME	
MT5C2568 /29328		STATIC RAM 64K X 16 55 NS ACCESS TIME		7C194 /29332		MT5C2565 /29321		(SEE DWG) 5962-8959813	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE LOW POWER 25 NS ACCESS TIME		(SEE DWG) 5962-9085808		STATIC RAM 64K X 4 LOW POWER 35 NS ACCESS TIME		STATIC RAM 64K X 4 WITH OUTPUT ENABLE LOW POWER 45 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER DUAL CE 20 NS ACCESS TIME	
MT5C2568 /29327		STATIC RAM 64K X 16 85 NS ACCESS TIME		7C194 /29330		STATIC RAM 64K X 4 LOW POWER 25 NS ACCESS TIME		(SEE DWG) 5962-8959821	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE LOW POWER 35 NS ACCESS TIME		(SEE DWG) 5962-9085804		STATIC RAM 64K X 4 LOW POWER 45 NS ACCESS TIME		7C194 /29331		STATIC RAM 128K X 8 LOW-POWER DUAL CE 25 NS ACCESS TIME	
MT5C2568 /29326		STATIC RAM 64K X 16 LOW-POWER 100 NS ACCESS TIME		(SEE DWG) 5962-8854501		STATIC RAM 128K X 8		(SEE DWG) 5962-8959820	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE LOW POWER 45 NS ACCESS TIME		(SEE DWG) 5962-9085801		STATIC RAM 64K X 4 LOW-POWER 35 NS ACCESS TIME		WS-128K8-45C 5962- 5315606 WS-128K8-55C 5962- 9315605 WS-128K8-70C 5962- 9315604 WS-128K8-35C 5962- 9315607 WS-128K8-120 5962- 9315601 WS-128K8-100 5962- 9315602 WS-128K8-25C 5962- 9315608 WS-128K8-85C 5962- 9315603		STATIC RAM 128K X 8 LOW-POWER DUAL CE 35 NS ACCESS TIME	
MT5C2568 /29325		STATIC RAM 64K X 16 LOW-POWER 55 NS ACCESS TIME		STATIC RAM 64K X 4 LOW-POWER 45 NS ACCESS TIME		(SEE DWG) 5962-8959802 (SEE DWG) 5962-8959806		(SEE DWG) 5962-8959819	
STATIC RAM 32K X 8 WITH OUTPUT ENABLE LOW POWER 55 NS ACCESS TIME		(SEE DWG) 5962-9085807		(SEE DWG) 5962-8854502		STATIC RAM 128K X 8 LOW-POWER 100 NS ACCESS TIME		STATIC RAM 128K X 8 LOW-POWER DUAL CE 45 NS ACCESS TIME	
MT5C2568 /29325		STATIC RAM 64K X 16 LOW-POWER 70 NS ACCESS TIME		STATIC RAM 64K X 4 LOW-POWER 55 NS ACCESS TIME		(SEE DWG) 5962-8854503		(SEE DWG) 5962-8959818	
STATIC RAM 62K X 16 70 NS ACCESS TIME		(SEE DWG) 5962-9085805		STATIC RAM 64K X 4 LOW-POWER 70 NS ACCESS TIME		(SEE DWG) 5962-8854504		STATIC RAM 128K X 8 LOW-POWER DUAL CE 55 NS ACCESS TIME	
(SEE DWG) 5962-9085806		STATIC RAM 64K X 16 LOW-POWER 85 NS ACCESS TIME		(SEE DWG) 5962-8854504		STATIC RAM 128K X 8 LOW-POWER 120 NS ACCESS TIME		(SEE DWG) 5962-8959817	
STATIC RAM 64K X 1 15 NS ACCESS TIME		(SEE DWG) 5962-9085803		STATIC RAM 64K X 4 WITH OUTPUT ENABLE 20 NS ACCESS TIME		(SEE DWG) 5962-8959805 (SEE DWG) 5962-8959801		STATIC RAM 128K X 8 LOW-POWER DUAL CE 70 NS ACCESS TIME	
(SEE DWG) 5962-8969606 (SEE DWG) 5962-8969605		STATIC RAM 64K X 4		MT5C2565 5962-29320BN		STATIC RAM 128K X 8 LOW-POWER 25 NS ACCESS TIME		(SEE DWG) 5962-8959816	
STATIC RAM 64K X 1 20 NS ACCESS TIME		7C191 5962-9066403 7C191 5962-9066402 7C192 5962-8993501 7C192 5962-8993502 7C194 /29319 MT5C2565 /29320 7C192 5962-8993503 7C191 5962-9066401		STATIC RAM 64K X 4 WITH OUTPUT ENABLE 25 NS ACCESS TIME		(SEE DWG) 5962-8959812		STATIC RAM 128K X 8 LOW-POWER DUAL CE 85 NS ACCESS TIME	
(SEE DWG) 5962-8969604 (SEE DWG) 5962-8969603		STATIC RAM 64K X 4 20 NS		MT5C2565 /29312 (SEE DWG) 5962-8952405 7C196 /29316		STATIC RAM 128K X 8 LOW-		STATIC RAM 128K X 8 STAN-	
STATIC RAM 64K X 1 25 NS ACCESS TIME									

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MILITARY PARTS
SORTED BY FUNCTION

MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
DARD POWER 100 NS ACCESS TIME (SEE DWG) 5962-8959823		(SEE DWG) 5962-8959835		STATIC RAM 256K X 1 LOW-POWER 35 NS ACCESS TIME (SEE DWG) 5962-8854401		ACCESS TIME V2500H 5962-9154602		PAL10L8A /50315	
STATIC RAM 128K X 8 STANDARD POWER 120 NS ACCESS TIME (SEE DWG) 5962-8959822		STATIC RAM 128K X 8 STANDARD POWER DUAL CE 55 NS ACCESS TIME (SEE DWG) 5962-8959834		STATIC RAM 256K X 1 LOW-POWER 45 NS ACCESS TIME (SEE DWG) 5962-8854402		LOGIC ARRAY 38-INPUT 24-OUTPUT AND-OR 35 NS ACCESS TIME V2500H 5962-9154601		PROG. ARRAY LOGIC 12 X 48 X 8 PLS161 5962-8850401	
STATIC RAM 128K X 8 STANDARD POWER 25 NS ACCESS TIME (SEE DWG) 5962-8959829		STATIC RAM 128K X 8 STANDARD POWER DUAL CE 70 NS ACCESS TIME (SEE DWG) 5962-8959833		STATIC RAM 256K X 1 LOW-POWER 55 NS ACCESS TIME (SEE DWG) 5962-8854403		LOGIC ARRAY 38-INPUT 25-OUTPUT AND-OR 25 NS ACCESS TIME V2500H 5962-9154502		PROG. ARRAY LOGIC 12-INPUT 10-OUTPUT AND-OR-INVERT PAL12L10 5962-8680402	
STATIC RAM 128K X 8 STANDARD POWER 35 NS ACCESS TIME (SEE DWG) 5962-8959828		STATIC RAM 128K X 8 STANDARD POWER DUAL CE 85 NS ACCESS TIME (SEE DWG) 5962-8959832		STATIC RAM 256K X 1 LOW-POWER 70 NS ACCESS TIME (SEE DWG) 5962-8854404		LOGIC ARRAY 38-INPUT 25-OUTPUT AND-OR 35 NS ACCESS TIME V2500H 5962-9154501		PROG. ARRAY LOGIC 12-INPUT 6-OUTPUT AND-OR-INVERT PAL12H6 5962-8103502 PAL12H6 /50302 PAL12H6A 5962-8103511 PAL12H6A /50311	
STATIC RAM 128K X 8 STANDARD POWER 45 NS ACCESS TIME (SEE DWG) 5962-8959827		STATIC RAM 256K X 1 7C197 /29318 7C197 /29335 7C197 /29334 7C197 /29333 7C197 /29336		STATIC RAM 256K X 8 WS-256K8-25C 5962-9315708 WS-256K8-35C 5962-9315707 WS-256K8-85C 5962-9315703 WS-256K8-70C 5962-9315704 WS-256K8-120 5962-9315701 WS-256K8-100 5962-9315702 WS-256K8-55C 5962-9315705 WS-256K8-45C 5962-9315706		LOGIC DEVICE ERASABLE PROGRAMMABLE 1800-GATE 90 NS ACCESS TIME (SEE DWG) 5962-8854901		PROG. ARRAY LOGIC 12-INPUT 6-OUTPUT AND-OR-INVERT PAL12L6 5962-8103507 PAL12L6 /50307 PAL12L6A 5962-8103515 PAL12L6A /50316	
STATIC RAM 128K X 8 STANDARD POWER 55 NS ACCESS TIME (SEE DWG) 5962-8959826		STATIC RAM 256K X 1 20 NS ACCESS TIME 7C197 5962-29318BL		STATIC RAM NON-VOLATILE 256 X 4 300 NS ACCESS TIME (SEE DWG) 5962-8995101 (SEE DWG) 5962-8995102 (SEE DWG) 5962-8995103		LOGIC DEVICE ERASABLE PROGRAMMABLE 600-GATE (SEE DWG) 5962-8686401		PROG. ARRAY LOGIC 14-INPUT 4-OUTPUT AND-OR PAL14H4 5962-8103503 PAL14H4 /50303 PAL14H4A 5962-8103512 PAL14H4A /50312	
STATIC RAM 128K X 8 STANDARD POWER 70 NS ACCESS TIME (SEE DWG) 5962-8959825		STATIC RAM 256K X 1 25 NS ACCESS TIME 7C197 /29310 (SEE DWG) 5962-8872505		STATIC RAM NON-VOLATILE 512 X 8 250 NS ACCESS TIME 2004-25 5962-8771201		LOGIC SEQUENCER FIELD PROGRAMMABLE (20 X 45 X 12) PLS179 5962-8850701		PROG. ARRAY LOGIC 14-INPUT 4-OUTPUT AND-OR-INVERT PAL14L4 5962-8103508 PAL14L4 /50308 PAL14L4A 5962-8103516 PAL14L4A /50317	
STATIC RAM 128K X 8 STANDARD POWER 85 NS ACCESS TIME (SEE DWG) 5962-8959824		STATIC RAM 256K X 1 35 NS ACCESS TIME 7C197 /29302 (SEE DWG) 5962-8872501		STATIC RAM RAD-HARD 16K X 1 WITH THREE-STATE OUTPUTS 65C262RH /29107 65T262RH /29108		LOGIC SEQUENCER FIELD PROGRAMMABLE 16 X 48 X 8 82S105 5962-8670901 82S105 5962-8670902		PROG. ARRAY LOGIC 14-INPUT 8-OUTPUT AND-OR-INVERT PAL14L8 5962-8680403	
STATIC RAM 128K X 8 STANDARD POWER DUAL CE 100 NS ACCESS TIME (SEE DWG) 5962-8959831		STATIC RAM 256K X 1 45 NS ACCESS TIME 7C197 /29301 (SEE DWG) 5962-8872502		ROM/PROM/PAL /7		PROG. ARRAY LOGIC 16X48X8 82S100 /50202		PROG. ARRAY LOGIC 16-INPUT 2 OUTPUT AND-OR-INVERT PAL16L2A 5962-8103517 PAL16L2A /50318	
STATIC RAM 128K X 8 STANDARD POWER DUAL CE 120 NS ACCESS TIME (SEE DWG) 5962-8959830		STATIC RAM 256K X 1 55 NS ACCESS TIME (SEE DWG) 5962-8872503		FIELD PROGRAMMABLE GATE ARRAY 1200 GATE 1010 5962-9096401		PROG. ARRAY LOGIC 10 X 10 1800-GATE 33 MHZ TOGGLE SPEED 2018 5962-8863802		PROG. ARRAY LOGIC 16-INPUT 2-OUTPUT AND-OR PAL16H2 5962-8103504 PAL16H2 /50304 PAL10H8A 5962-8103510 PAL10H8A /50310 PAL16H2A 5962-8103513 PAL16H2A /50313	
STATIC RAM 128K X 8 STANDARD POWER DUAL CE 20 NS ACCESS TIME (SEE DWG) 5962-8959838		STATIC RAM 256K X 1 70 NS ACCESS TIME (SEE DWG) 5962-8872504		GATE ARRAY FIELD PROGRAMMABLE 2000 GATE 1020 5962-9096501		PROG. ARRAY LOGIC 10 X 10 1800-GATE 50 MHZ TOGGLE SPEED 2018 5962-8863803		PROG. ARRAY LOGIC 16-INPUT 2-OUTPUT AND-OR/AND-OR-INVERT PAL16C1 5962-8103505 PAL16C1 /50305	
STATIC RAM 128K X 8 STANDARD POWER DUAL CE 25 NS ACCESS TIME (SEE DWG) 5962-8959837		STATIC RAM 256K X 1 LOW POWER 20 NS ACCESS TIME 7C197 5962-29336BL		LOGIC ARRAY 18 X 42 X 10 FIELD-PROGRAMMABLE 82S153A 5962-8768201		PROG. ARRAY LOGIC 10-INPUT 8-OUTPUT AND-OR PAL10H8 5962-8103501 PAL10H8 /50301		PROG. ARRAY LOGIC 16-INPUT 4-OUTPUT AND-OR PAL16R4A 5962-8103610 PAL16R4A /50404	
STATIC RAM 128K X 8 STANDARD POWER DUAL CE 35 NS ACCESS TIME (SEE DWG) 5962-8959836		STATIC RAM 256K X 1 LOW POWER 25 NS ACCESS TIME 7C197 5962-29335BL		LOGIC ARRAY 38-INPUT 24-OUTPUT AND-OR 25 NS		PROG. ARRAY LOGIC 10-INPUT 8-OUTPUT AND-OR-INVERT PAL10L8 5962-8103506 PAL10L8 /50306 PAL10L8A 5962-8103514			
STATIC RAM 128K X 8 STANDARD POWER DUAL CE 45 NS ACCESS TIME		STATIC RAM 256K X 1 LOW POWER 45 NS ACCESS TIME 7C197 5962-29333BL							

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MASTER SELECTION INDEX

MILITARY PARTS SORTED BY FUNCTION

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
PROG. ARRAY LOGIC 16-INPUT 4-OUTPUT REGISTERED AND-CARRY-OR EXCLUSIVE OR		INPUT 8-OUTPUT 6-REGISTER AND-OR-INVERT		WITH PRODUCT TERM SHARING		PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT AND-OR-INVERT	
PAL16A4	5962-8103606	(SEE DWG)	5962-8851503	(SEE DWG)	5962-8753001	PAL20L8B	5962-8767101
PAL16A4	/50406					PAL20L8A	5962-8412901
PROG. ARRAY LOGIC 16-INPUT 4-OUTPUT REGISTERED AND-OR		PROG. ARRAY LOGIC 16-INPUT 8-OUTPUT 8-REGISTER AND-OR-INVERT		PROG. ARRAY LOGIC 20-INPUT 10-OUTPUT AND-OR-INVERT		PLUS20L8	5962-8767105
C16R4-40	5962-8871304	(SEE DWG)	5962-8851502	PAL20L10A	5962-8412905	PAL20L8-15	5962-8767107
PAL16R4A-4	5962-8506504					PAL20L8A-2	5962-8412909
PAL16R4-20	5962-8515504	PROG. ARRAY LOGIC 16-INPUT 8-OUTPUT AND-OR		PROG. ARRAY LOGIC 20-INPUT 10-OUTPUT REGISTERED AND-OR		PAL20L8A	/50501
PAL16R4-30	5962-8515508	PAL16R8A	5962-8103608	PAL20RA10	5962-8680301	PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT REGISTERED AND-OR	
C16R4-30	5962-8871308	PAL16R8A	/50402			PAL20R8B	5962-8767102
C16R4-20	5962-8871312	PROG. ARRAY LOGIC 16-INPUT 8-OUTPUT AND-OR-INVERT		PROG. ARRAY LOGIC 20-INPUT 10-OUTPUT REGISTERED AND-OR W/ PRODUCT TERM SHARING		PAL20R8A	5962-8412902
PAL16R4-15	5962-8515512	C16L8-40	5962-8871301	(SEE DWG)	5962-8753002	PLUS20R8	5962-8767106
PAL16R4-12	5962-8515516	PAL16L8-20	5962-8515501	PROG. ARRAY LOGIC 20-INPUT 10-OUTPUT REGISTERED AND-OR XOR		PAL20R8-15	5962-8767108
PAL16R4-10	5962-8515520	C16L8-30	5962-8871305	PAL20X10A	5962-8412907	PAL20R8A-2	5962-8412910
PAL16R4	5962-8103604	PAL16L8-30	5962-8871305	PROG. ARRAY LOGIC 20-INPUT 10-OUTPUT REGISTERED AND-OR XOR		PAL20R8-12	5962-8767112
PAL16R4A-2	5962-8103614	PAL16L8-15	5962-8515509			PAL20R8-10	5962-8767116
PAL16R4A2	/50410	C16L8-20	5962-8871309			PAL20R8A	/50502
PAL16R4B	/50604	PAL16L8A-12	5962-8515513	PROG. ARRAY LOGIC 20-INPUT 2-OUTPUT AND-OR-INVERT		PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT REGISTERED AND-OR W/PRODUCT TERM SHARING	
PAL16R4B2	/50608	PAL16L8-10	5962-8515517	PAL20L2	5962-8680405	(SEE DWG)	5962-8753003
PAL16R4-15	/50612	PAL16L8	5962-8103601	PAL20C1	5962-8680406	PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT REGISTERED AND-OR XOR	
PROG. ARRAY LOGIC 16-INPUT 4-OUTPUT REGISTERED AND-OR EXCLUSIVE OR		PAL16L8A	5962-8103607	PROG. ARRAY LOGIC 20-INPUT 4-OUTPUT REGISTERED AND-OR		PAL20X8A	5962-8412906
PAL16X4	5962-8103605	PAL16L8B	/50601	PAL20R4A	5962-8412904	PROG. ARRAY LOGIC 22 X 42 X 10	
PAL16X4	/50405	PAL16L8B2	/50605	PAL20R4B	5962-8767104	PLS173	5962-8850402
PROG. ARRAY LOGIC 16-INPUT 6-OUTPUT AND-OR		PAL16L8-15	/50609	PAL20L4-15	5962-8767110	PROG. ARRAY LOGIC 22-INPUT 10 OUTPUT REGISTERED AND-OR	
PAL16R6A	5962-8103609	PROG. ARRAY LOGIC 16-INPUT 8-OUTPUT COMBINATORIAL AND-OR-INVERT		PAL20R4A-2	5962-8412912	PAL22VP10-25	5962-8605303
PAL16R6A	/50403	(SEE DWG)	5962-8851501	PAL20R4-12	5962-8767114	PROG. ARRAY LOGIC 22-INPUT 10-OUTPUT AND-OR	
PROG. ARRAY LOGIC 16-INPUT 6-OUTPUT AND-OR-INVERT		PROG. ARRAY LOGIC 16-INPUT 8-OUTPUT REGISTERED AND-OR		PAL20R4-10	5962-8767118	C22V10L	5962-8975501
PAL16L6	5962-8680404	PAL16R8-20	5962-8515502	PAL20R4A	/50504	C22V10L	5962-8975502
PROG. ARRAY LOGIC 16-INPUT 6-OUTPUT REGISTERED AND-OR		C16R8-40	5962-8871302	PROG. ARRAY LOGIC 20-INPUT 4-OUTPUT REGISTERED AND-OR W/PRODUCT TERM SHARING		C22V10L	5962-8975503
C16R6-40	5962-8871303	PAL16R8A-4	5962-8506502	(SEE DWG)	5962-8753004	C22V10L	5962-8975504
PAL16R6-20	5962-8515503	PAL16R8-30	5962-8515506	PROG. ARRAY LOGIC 20-INPUT 4-OUTPUT REGISTERED AND-OR XOR		PROG. ARRAY LOGIC 22-INPUT 10-OUTPUT AND-OR 15 NS ACCESS TIME	
PAL16R6A-4	5962-8506503	C16R8-30	5962-8871306	PAL20X4A	5962-8412908	C22V10	5962-8867005
PAL16R6-30	5962-8515507	C16R8-20	5962-8871310	PROG. ARRAY LOGIC 20-INPUT 6-OUTPUT REGISTERED AND-OR		C22V10	5962-8975502
C16R6-30	5962-8871307	PAL16R8-15	5962-8515510	PAL20R6B	5962-8767103	C22V10	5962-8975503
PAL16R6-15	5962-8515511	PAL16R8A-12	5962-8515514	PAL20R6A-15	5962-8767109	C22V10L	5962-8975504
C16R6-20	5962-8871311	PAL16R8-10	5962-8515518	PAL20R6A-2	5962-8412911	PROG. ARRAY LOGIC 22-INPUT 10-OUTPUT AND-OR 25 NS ACCESS TIME	
PAL16R6-12	5962-8515515	PAL16R8	5962-8103602	PAL20R6-12	5962-8767113	C22V10	5962-8867001
PAL16R6-10	5962-8515519	PAL16R8A-2	5962-8103612	PAL20R6-10	5962-8767117	C22V10	/50702
PAL16R6	5962-8103603	PAL16R8B2	/50408	PAL20R6A	/50503	PROG. ARRAY LOGIC 22-INPUT 10-OUTPUT AND-OR 30 NS ACCESS TIME	
PAL16R6A-2	5962-8103613	PAL16R8B	/50602	PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT AND-OR INVERT		C22V10	5962-8867002
PAL16R6A2	/50409	PAL16R8B2	/50606	PAL20L8-12	5962-8767111	PROG. ARRAY LOGIC 22-INPUT 10-OUTPUT AND-OR 25 NS ACCESS TIME	
PAL16R6B	/50603	PAL16R8-15	/50610	PAL20L8-10	5962-8767115	PROG. ARRAY LOGIC 22-INPUT 10-OUTPUT AND-OR 30 NS ACCESS TIME	
PAL16R6B2	/50607	PROG. ARRAY LOGIC 16X48X8		PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT AND-OR INVERT		C22V10	5962-8867002
PAL16R6-15	/50611	82S101	/50201	PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT AND-OR INVERT		PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 25 NS ACCESS TIME	
PROG. ARRAY LOGIC 16-INPUT 8 OUTPUT AND-OR-INVERT		PROG. ARRAY LOGIC 18-INPUT 4-OUTPUT AND-OR		PAL20R6B	5962-8767103	PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 10 NS ACCESS TIME	
PAL16L8A-2	5962-8103611	PAL18L4	5962-8680401	PAL20R6A	5962-8412903	16V8	5962-8983904
PAL16L8A2	/50407	PROG. ARRAY LOGIC 18-INPUT 8-OUTPUT AND-OR		PAL20R6-15	5962-8767109	PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 15 NS ACCESS TIME	
PROG. ARRAY LOGIC 16-INPUT 8-OUTPUT 4-REGISTER AND-OR-INVERT		PAL18P8A	5962-8752801	PAL20R6A-2	5962-8412911	16V8A	5962-8983903
(SEE DWG)	5962-8851504	PAL18P8B	5962-8752802	PAL20R6-12	5962-8767113	PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 20 NS ACCESS TIME	
PROG. ARRAY LOGIC 16-INPUT 10-OUTPUT AND-OR		PAL18P8AL	5962-8752803	PAL20R6-10	5962-8767117	16V8A	5962-8983902
		PAL18P8L	5962-8752804	PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT AND-OR INVERT		16V8	5962-8983906
		PAL18P8Q	5962-8752805	PROG. ARRAY LOGIC 20-INPUT 8-OUTPUT AND-OR INVERT		PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 25 NS ACCESS TIME	
		PROG. ARRAY LOGIC 20-INPUT 10-OUTPUT AND-OR		PAL20L8-12	5962-8767111	PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 25 NS ACCESS TIME	
				PAL20L8-10	5962-8767115	PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 25 NS ACCESS TIME	

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MILITARY PARTS
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MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
16V8	5962-8983905	PROG. ARRAY LOGIC UV ERASABLE 16-INPUT 8-OUTPUT AND-OR INVERTED		INPUT 8-OUTPUT 4 NS PROP. DELAY		(SEE DWG) 5962-9055503	7644	/20603	PROM 1K X 4 WITH OPEN-COLLECTOR OUTPUTS
PROG. ARRAY LOGIC ELECTR. ERASABLE 16-INPUT 8-OUTPUT AND-OR 30 NS ACCESS TIME		C16L8-40	5962-8867801	10E302	5962-9057302	PROGRAMMABLE LOGIC DEVICE ASYNCHRONOUS 25 NS	53S440 /20601		PROM 1K X 4 WITH THREE-STATE OUTPUTS
16V8A	5962-8983901	C16L8-30	5962-8867805	PROG. LOGIC DEVICE 16-INPUT 8-OUTPUT 5 NS PROP. DELAY		(SEE DWG) 5962-9055502	53S441 /20602 82S137A /20604		PROM 1K X 8 POWER SWITCHED 75 NS ACCESS TIME
PROG. ARRAY LOGIC ELECTR. ERASABLE 20-INPUT 8-OUTPUT AND-OR 15 NS ACCESS TIME		C16L8-20	5962-8867809	10E301	5962-9057301	PROGRAMMABLE LOGIC DEVICE ASYNCHRONOUS 35 NS	(SEE DWG) 5962-9055501		PROM 1K X 8 POWER SWITCHED 90 NS ACCESS TIME
20V8	5962-8984003	PROG. ARRAY LOGIC UV ERASABLE 16-INPUT 8-OUTPUT REGISTERED AND-OR		PROG. LOGIC DEVICE 30 NS PROP. DELAY		(SEE DWG) 5962-9055501	5962-9055503		PROM 1K X 8 WITH OPEN-COLLECTOR OUTPUTS 90 NS ACCESS TIME
PROG. ARRAY LOGIC ELECTR. ERASABLE 20-INPUT 8-OUTPUT AND-OR 20 NS ACCESS TIME		C16R8-40	5962-8867802	20G10-30	5962-8863702	PROGRAMMABLE LOGIC DEVICE ERASABLE 900-GATE	(SEE DWG) 5962-8854801		(SEE DWG) 5962-7902402
20V8	5962-8984002	C16R8-30	5962-8867806	PROG. LOGIC DEVICE 40 NS PROP. DELAY		(SEE DWG) 5962-8854801	5962-8854801		PROM 1K X 8 POWER SWITCHED 90 NS ACCESS TIME
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR		C16R8-20	5962-8867810	20G10-40	5962-8863701	PROGRAMMABLE LOGIC DEVICE ONE-TIME PROGRAMMABLE ASYNCHRONOUS REGISTERED 25 NS	CY7C331-25 5962-8985503		(SEE DWG) 5962-7902401
20V8	5962-8984001	PROG. ARRAY LOGIC UV ERASABLE 22-INPUT 10-OUTPUT AND-OR		PROG. LOGIC DEVICE UV ERASABLE 32-MACROCELL 25 NS ACCESS TIME		(SEE DWG) 5962-8985503	CY7C331-30 5962-8985502		PROM 1K X 8 WITH OPEN-COLLECTOR OUTPUTS 90 NS ACCESS TIME
PROG. ARRAY LOGIC ELECTR. ERASABLE 20-INPUT 8-OUTPUT AND-OR 30 NS ACCESS TIME		C22V10L-25	5962-8872401	PROG. LOGIC DEVICE UV ERASABLE 32-MACROCELL 35 NS ACCESS TIME		(SEE DWG) 5962-9061102	CY7C331-40 5962-8985501		PROM 1K X 8 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME
20V8	5962-8984002	C22V10	5962-8753901	PROG. LOGIC DEVICE UV ERASABLE 75 NS ACCESS TIME		(SEE DWG) 5962-8854902	5962-8985501		(SEE DWG) 5962-8765101
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR 15 NS ACCESS TIME		C22V10	5962-8753902	PROG. LOGIC DEVICE UV ERASEABLE 128-MACROCELL 35 NS DELAY TIME		(SEE DWG) 5962-8946801	5962-9075403		PROM 1K X 8 WITH THREE-STATE OUTPUTS 55 NS ACCESS TIME
22V10	5962-8984103	C22V10L-30	5962-8872402	PROGRAMMABLE ARRAY 2000 GATE 8 X 8 50 MHZ		3020	5962-8994801	5962-9075402	
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR 20 NS ACCESS TIME		C22V10L-40	5962-8872403	PROGRAMMABLE ARRAY 2000 GATE 8 X 8 70 MHZ		3020	5962-8994802	5962-9075401	
22V10	5962-8984102	C22V10	5962-8753903	PROGRAMMABLE ARRAY 4200 GATE 12 X 12 50 MHZ		3042	5962-8971301	5962-9075401	
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR 30 NS ACCESS TIME		C22V10	5962-8753904	PROGRAMMABLE ARRAY 4200 GATE 12 X 12 70 MHZ		3042	5962-8971302	5962-8954601	
22V10	5962-8984104	PROG. ARRAY LOGIC UV ERASABLE 22-INPUT 10-OUTPUT AND-OR 25 NS ACCESS TIME		PROGRAMMABLE ARRAY 9000-GATE 16X20 50 MHZ TOGGLE SPEED		3090-50	5962-8982301	5962-8954603	
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR 20 NS ACCESS TIME		V750	5962-8872603	PROGRAMMABLE ARRAY 9000-GATE 16X20 70 MHZ TOGGLE SPEED		3090-70	5962-8982302	5962-8954602	
22V10	5962-8984102	V750L	5962-8872607	PROGRAMMABLE ARRAY 9000-GATE 16X20 50 MHZ TOGGLE SPEED		PROGRAMMABLE LOGIC DEVICE ASYNCHRONOUS 20 NS		PROM 1K X 4	
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR 30 NS ACCESS TIME		V750L	5962-8872606	PROGRAMMABLE ARRAY 9000-GATE 16X20 70 MHZ TOGGLE SPEED		PROGRAMMABLE LOGIC DEVICE ASYNCHRONOUS 25 NS		PROM 1K X 4 WITH OPEN-COLLECTOR OUTPUTS	
22V10	5962-8984101	PROG. ARRAY LOGIC UV ERASABLE 22-INPUT 10-OUTPUT AND-OR 40 NS ACCESS TIME		PROGRAMMABLE ARRAY 2000 GATE 8 X 8 50 MHZ		PROGRAMMABLE LOGIC DEVICE ONE-TIME PROGRAMMABLE ASYNCHRONOUS REGISTERED 40 NS		PROM 1K X 8 WITH THREE-STATE OUTPUTS 90 NS ACCESS TIME	
PROG. ARRAY LOGIC ELECTR. ERASABLE 22-INPUT 10-OUTPUT AND-OR		V750	5962-8872601	PROGRAMMABLE ARRAY 2000 GATE 8 X 8 70 MHZ		PROGRAMMABLE LOGIC DEVICE UV ERASABLE ASYNCHRONOUS REGISTERED 30 NS ACCESS		PROM 256 X 4	
22V10	5962-8984104	PROG. ARRAY LOGIC UV ERASABLE 22-INPUT 10-OUTPUT AND-OR		PROGRAMMABLE ARRAY 4200 GATE 12 X 12 50 MHZ		PROGRAMMABLE LOGIC DEVICE UV ERASABLE ASYNCHRONOUS REGISTERED 40 NS ACCESS		IM5603A /20201 IM5623 /20202	
22V10	5962-8984105	PROG. ARRAY LOGIC UV ERASABLE 300 GATE		PROGRAMMABLE ARRAY 4200 GATE 12 X 12 70 MHZ		PROGRAMMABLE LOGIC DEVICE UV ERASABLE ASYNCHRONOUS REGISTERED 40 NS ACCESS		PROM 256 X 4 WITH OPEN-COLLECTOR OUTPUTS	
PROG. ARRAY LOGIC ELECTRICALLY ERASABLE 600-GATE 20 NS ACCESS TIME		C22V10L	5962-8872404	PROGRAMMABLE ARRAY 9000-GATE 16X20 50 MHZ TOGGLE SPEED		PROGRAMMABLE LOGIC DEVICE UV ERASABLE ASYNCHRONOUS REGISTERED 40 NS ACCESS		5300-1 /20301 82S126A /20303	
610	5962-9169501	V750	5962-8872604	PROGRAMMABLE ARRAY 9000-GATE 16X20 70 MHZ TOGGLE SPEED		PROGRAMMABLE SYNCHRONOUS STATE MACHINE 28 MHZ		PROM 256 X 4 WITH THREE-STATE OUTPUTS	
PROG. ARRAY LOGIC UV ERASABLE 16-INPUT 4-OUTPUT REGISTERED AND-OR		(SEE DWG)	5962-8863501	PROGRAMMABLE ARRAY 9000-GATE 16X20 50 MHZ TOGGLE SPEED		PROGRAMMABLE SYNCHRONOUS STATE MACHINE 28 MHZ		5301-1 /20302	
C16R4-40	5962-8867804	PROG. LOGIC ARRAY 22-INPUT 10-OUTPUT AND-OR 15 NS DELAY TIME		PROGRAMMABLE ARRAY 9000-GATE 16X20 70 MHZ TOGGLE SPEED		PROGRAMMABLE SYNCHRONOUS STATE MACHINE 50 MHZ		PROM 256 X 4 WITH THREE-STATE OUTPUTS 40 NS ACCESS TIME	
C16R4-30	5962-8867808	C22V10-15	/50804	PROGRAMMABLE ARRAY 9000-GATE 16X20 50 MHZ TOGGLE SPEED		PROGRAMMABLE SYNCHRONOUS STATE MACHINE 40 MHZ		82S129A 5962-8778802	
C16R4-20	5962-8867812	PROG. LOGIC ARRAY 22-INPUT 10-OUTPUT AND-OR 30 NS DELAY TIME		PROGRAMMABLE LOGIC DEVICE ASYNCHRONOUS 20 NS		PROGRAMMABLE SYNCHRONOUS STATE MACHINE 40 MHZ		PROM 256 X 4 WITH THREE-STATE OUTPUTS 60 NS ACCESS TIME	
PROG. ARRAY LOGIC UV ERASABLE 16-INPUT 6-OUTPUT REGISTERED AND-OR		C22V10-30	/50801	PROGRAMMABLE LOGIC DEVICE ASYNCHRONOUS 20 NS		PROM 1K X 4		82S129A 5962-8778801 82S129A /20304	
C16R6-40	5962-8867803	PROG. LOGIC DEVICE 16-						PROM 2K X 4 WITH OPEN-	
C16R6-30	5962-8867807								
C16R6-20	5962-8867811								

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

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COLLECTOR OUTPUTS 125 NS ACCESS TIME		27S19A 5962-8670302		40 NS ACCESS TIME		PROM 8K X 8 WITH THREE-STATE OUTPUTS		(SEE DWG) 5962-7802205	
7684	/20901	PROM 32 X 8 WITH THREE-STATE OUTPUTS 50 NS ACCESS TIME		(SEE DWG) 5962-8851803		82HS641A-70 /21201 93Z665-50 /21203		PROM UV ERASABLE 2K X 8 200 NS ACCESS TIME	
PROM 2K X 4 WITH THREE-STATE OUTPUTS 125 NS ACCESS TIME		27S19 5962-8670301		(SEE DWG) 5962-7801602		PROM 8K X 8 WITH THREE-STATE OUTPUTS 55 NS ACCESS TIME		(SEE DWG) 5962-7802206	
29651	/20902	PROM 4K X 4 WITH THREE-STATE OUTPUTS		PROM 512 X 8 WITH OPEN-COLLECTOR OUTPUTS		(SEE DWG) 5962-8200902 93Z665-55 /21202 82HS641A-45 /21204		PROM UV ERASABLE 2K X 8 250 NS ACCESS TIME	
PROM 2K X 4 WITH THREE-STATE OUTPUTS 55 NS ACCESS TIME		76165 /21005		7640 /20801 5348-1 /20804		PROM ELECTR. ERASABLE 256 X 16		(SEE DWG) 5962-7802207	
82S185A	/20910	PROM 4K X 8 TS 40 NS ACCESS TIME		PROM 512 X 8 WITH THREE-STATE OUTPUTS		93CS66 5962-9154901		PROM UV ERASABLE 2K X 8 300 NS ACCESS TIME	
PROM 2K X 4 WITH THREE-STATE OUTPUTS 90 NS ACCESS TIME		(SEE DWG) 5962-8200803		82S115 /20803 29621 /20805		PROM ELECTR. ERASABLE 512 X 8		(SEE DWG) 5962-7802208	
29651	/20908	PROM 4K X 8 TS 70 NS ACCESS TIME		PROM 512 X 8 WITH THREE-STATE OUTPUTS 45 NS ACCESS TIME		(SEE DWG) 5962-8959001		PROM UV ERASABLE 2K X 8 35 NS ACCESS TIME	
PROM 2K X 8 105 NS ACCESS TIME		(SEE DWG) 5962-8200804 29671 /21103		27S29A 5962-8769002		PROM UV ERASABLE 512 X 8		(SEE DWG) 5962-8765003	
(SEE DWG) 5962-8954002		PROM 4K X 8 WITH THREE-STATE OUTPUTS 55 NS ACCESS TIME		PROM 512 X 8 WITH THREE-STATE OUTPUTS 70 NS ACCESS TIME		6654 /21901		PROM UV ERASABLE 2K X 8 350 NS ACCESS TIME	
PROM 2K X 8 140 NS ACCESS TIME		(SEE DWG) 5962-8200802 82HS321A /21101		27S29 5962-8769001		PROM UV ERASABLE 1K X 8		(SEE DWG) 5962-7802203 (SEE DWG) 5962-7802204	
(SEE DWG) 5962-8954001		PROM 4K X 8 WITH THREE-STATE OUTPUTS 95 NS ACCESS TIME		PROM 512 X 8 WITH THREE-STATE OUTPUTS 90 NS ACCESS TIME		2708 /22001		PROM UV ERASABLE 2K X 8 45 NS ACCESS TIME	
PROM 2K X 8 25 NS ACCESS TIME		(SEE DWG) 5962-8200801 29671 /21102		(SEE DWG) 5962-7801601 5341-1 /20802		PROM ELECTR. ERASABLE 2K X 8		(SEE DWG) 5962-8765004	
(SEE DWG) 5962-8873404		PROM 512 X 4 THREE-STATE 40 NS ACCESS TIME		PROM 64 X 8		(SEE DWG) 5962-8966701 NMC2816 /22601 X2816A-45 /22701 X2816A-35 /22702 X2816A-30 /22703 X2816A-25 /22704		PROM UV ERASABLE 2K X 8 450 NS ACCESS TIME	
PROM 2K X 8 35 NS ACCESS TIME		27S13A 5962-8854101		MCM5304 /20102		PROM ELECTR. ERASABLE 2K X 8 55 NS ACCESS TIME		(SEE DWG) 5962-7802201 (SEE DWG) 5962-7802202 (SEE DWG) 5962-7802209 2716 /22101	
(SEE DWG) 5962-8873403		PROM 512 X 4 THREE-STATE 60 NS ACCESS TIME		PROM 64 X 8 WITH OPEN-COLLECTOR OUTPUTS		HPROM-512 /20101		PROM UV ERASABLE 2K X 8 50 NS ACCESS TIME	
PROM 2K X 8 45 NS ACCESS TIME		27S13 5962-8854102		PROM 8K X 8 25 NS ACCESS TIME		PROM 8K X 8 25 NS ACCESS TIME		(SEE DWG) 5962-8765001	
(SEE DWG) 5962-8873402		PROM 512 X 4 WITH OPEN-COLLECTOR OUTPUTS		(SEE DWG) 5962-9080304 (SEE DWG) 5962-9080308		PROM 8K X 8 35 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 55 NS ACCESS TIME	
PROM 2K X 8 55 NS ACCESS TIME		5305-1 /20401 82S130A /20403		PROM 8K X 8 35 NS ACCESS TIME		(SEE DWG) 5962-9080303 (SEE DWG) 5962-9080307		(SEE DWG) 5962-8867602	
(SEE DWG) 5962-8873401		PROM 512 X 4 WITH THREE-STATE OUTPUTS		PROM 8K X 8 45 NS ACCESS TIME		PROM 8K X 8 45 NS ACCESS TIME		PROM ELECTR. ERASABLE 2K X 8 70 NS ACCESS TIME	
PROM 2K X 8 WITH OPEN-COLLECTOR OUTPUTS		29611 /20402 82S131A /20404		(SEE DWG) 5962-9080302 (SEE DWG) 5962-9080306		PROM 8K X 8 55 NS ACCESS TIME		(SEE DWG) 5962-8867603	
53S1680 /21001 93Z510 /21003		PROM 512 X 8 REGISTERED 30 NS ACCESS TIME		PROM 8K X 8 55 NS ACCESS TIME		(SEE DWG) 5962-8867601		PROM ELECTR. ERASABLE 2K X 8 90 NS ACCESS TIME	
PROM 2K X 8 WITH THREE-STATE OUTPUTS		(SEE DWG) 5962-8851801		(SEE DWG) 5962-9080301 (SEE DWG) 5962-9080305		PROM UV ERASABLE 2K X 8 REGISTERED 35 NS ACCESS TIME		(SEE DWG) 5962-8765002	
27S191 /21002 28S166A /21004		PROM 512 X 8 140 NS ACCESS TIME		PROM 8K X 8 TS 100 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 REGISTERED 35 NS ACCESS TIME		(SEE DWG) 5962-8868004	
PROM 32 X 8 WITH OPEN-COLLECTOR OUTPUTS		(SEE DWG) 5962-8869002		(SEE DWG) 5962-9080302 (SEE DWG) 5962-9080306		PROM UV ERASABLE 2K X 8 REGISTERED 45 NS ACCESS TIME		(SEE DWG) 5962-8868003	
5330 /20701 82S23A /20703		PROM 512 X 8 220 NS ACCESS TIME		PROM 8K X 8 55 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 REGISTERED 35 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 POWER DOWN 25 NS SETUP TIME	
PROM 32 X 8 WITH THREE-STATE OUTPUTS		(SEE DWG) 5962-8869001		(SEE DWG) 5962-9080301 (SEE DWG) 5962-9080305		PROM UV ERASABLE 2K X 8 REGISTERED 35 NS ACCESS TIME		(SEE DWG) 5962-8868004	
5331 /20702 82S123A /20704		PROM 512 X 8 REGISTERED 35 NS ACCESS TIME		PROM 8K X 8 TS 100 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 REGISTERED 45 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 POWER DOWN 30 NS SETUP TIME	
PROM 32 X 8 WITH THREE-STATE OUTPUTS 35 NS ACCESS TIME		(SEE DWG) 5962-8851802		(SEE DWG) 5962-8200901		PROM UV ERASABLE 2K X 8 REGISTERED 35 NS ACCESS TIME		(SEE DWG) 5962-8868003	
		PROM 512 X 8 REGISTERED		PROM 8K X 8 TS 45 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 150 NS ACCESS TIME		PROM UV ERASABLE 2K X 8 POWER DOWN 35 NS SETUP TIME	
				(SEE DWG) 5962-8200903				(SEE DWG) 5962-8868002	

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PROM UV ERASABLE 2K X 8 POWER DOWN 50 NS SETUP TIME	(SEE DWG) 5962-8868001	(SEE DWG) 5962-8001210		28C64-300 /26002 (SEE DWG) 5962-8751402 (SEE DWG) 5962-8683003 (SEE DWG) 5962-8751407 (SEE DWG) 5962-8683009 (SEE DWG) 5962-8751414 (SEE DWG) 5962-8751419 (SEE DWG) 5962-8751424 X2864A-30 /22803		2764-450 5962-8200501		(SEE DWG) 5962-8953702 (SEE DWG) 5962-8953802	
PROM UV ERASABLE 2K X 8 REGISTERED 18 NS ACCESS TIME	(SEE DWG) 5962-8981503	(SEE DWG) 5962-8001205		PROM ELECTR. ERASABLE 8K X 8 350 NS ACCESS TIME		PROM UV ERASABLE 8K X 8 55 NS ACCESS TIME	(SEE DWG) 5962-8751502 27HC64-155 /27402 (SEE DWG) 5962-8751506	PROM UV ERASABLE 16K X 8 65 NS ACCESS TIME	(SEE DWG) 5962-8953701 (SEE DWG) 5962-8953801
PROM UV ERASABLE 2K X 8 REGISTERED 25 NS ACCESS TIME	(SEE DWG) 5962-8981502 (SEE DWG) 5962-8873504	(SEE DWG) 5962-8001201 (SEE DWG) 5962-8001202 (SEE DWG) 5962-8001204 (SEE DWG) 5962-8001206 (SEE DWG) 5962-8001211		PROM ELECTR. ERASABLE 8K X 8 70 NS ACCESS TIME		PROM UV ERASABLE 8K X 8 70 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 70 NS ACCESS TIME	(SEE DWG) 5962-8766108
PROM UV ERASABLE 2K X 8 REGISTERED 35 NS ACCESS TIME	(SEE DWG) 5962-8981501 (SEE DWG) 5962-8873503	(SEE DWG) 5962-8751412		PROM ELECTR. ERASABLE 8K X 8 90 NS ACCESS TIME		PROM UV ERASABLE 8K X 8 90 NS ACCESS TIME	57C64-70 5962-8510207 (SEE DWG) 5962-8751503 27HC64-170 /27401	PROM UV ERASABLE 16K X 8 90 NS ACCESS TIME	(SEE DWG) 5962-8766101
PROM UV ERASABLE 4K X 8	2532 /22201	(SEE DWG) 5962-8751411		PROM ELECTR. ERASABLE 8K X 8 450 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 100 NS ACCESS TIME	27C64-90 5962-8510204 (SEE DWG) 5962-8751504	PROM UV ERASABLE 16K X 8 TS 150 NS ACCESS TIME	(SEE DWG) 5962-8202506
PROM UV ERASABLE 4K X 8 35 NS ACCESS TIME	57C43C-35 5962-9065804	PROM ELECTR. ERASABLE 8K X 8 120 NS ACCESS TIME		X2864A-45 /22801		PROM UV ERASABLE 16K X 8 120 NS ACCESS TIME	(SEE DWG) 5962-8202507	PROM ELECTR. ERASABLE 32K X 8 90 NS ACCESS TIME	(SEE DWG) 5962-8663403 (SEE DWG) 5962-8863404
PROM UV ERASABLE 4K X 8 45 NS ACCESS TIME	57C43C-45 5962-9065803	PROM ELECTR. ERASABLE 8K X 8 150 NS ACCESS TIME		PROM UV ERASABLE 8K X 8 120 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 150 NS ACCESS TIME	(SEE DWG) 5962-8766102	PROM ELECTR. ERASABLE 32K X 8 120 NS ACCESS TIME	(SEE DWG) 5962-8863401 (SEE DWG) 5962-8863402
PROM UV ERASABLE 4K X 8 55 NS ACCESS TIME	57C43C-55 5962-9065802	PROM ELECTR. ERASABLE 8K X 8 200 NS ACCESS TIME		27C64-12 5962-8510205		PROM UV ERASABLE 16K X 8 200 NS ACCESS TIME	(SEE DWG) 5962-8766103	PROM ELECTR. ERASABLE 32K X 8 150 NS ACCESS TIME	(SEE DWG) 5962-8852506 (SEE DWG) 5962-8852507 28C256-150 /26105 28C256-150 /26111
PROM UV ERASABLE 4K X 8 70 NS ACCESS TIME	57C43C-70 5962-9065801	(SEE DWG) 5962-8683001 (SEE DWG) 5962-8751403 28C64-250 /26003 (SEE DWG) 5962-8683004 (SEE DWG) 5962-8683005 55C64-250 /26005 (SEE DWG) 5962-8751405 (SEE DWG) 5962-8683006 28C65-250 /26006 (SEE DWG) 5962-8683008 (SEE DWG) 5962-8751408 (SEE DWG) 5962-8751415 (SEE DWG) 5962-8751420 (SEE DWG) 5962-8751425 (SEE DWG) 5962-8751427 X2864A-25 /22804 X2864A-25 /22806 2864-250 /22808 2864H-250 /22809 5564-250 /22810 5564-250 /22811		PROM UV ERASABLE 8K X 8 250 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 250 NS ACCESS TIME	(SEE DWG) 5962-8202503 (SEE DWG) 5962-8766105 (SEE DWG) 5962-8202508	PROM ELECTR. ERASABLE 32K X 8 200 NS ACCESS TIME	(SEE DWG) 5962-8852504 28C256-200 /26104 28C256-200 /26110
PROM UV ERASABLE 4K X 8 150 NS ACCESS TIME	(SEE DWG) 5962-8001207	(SEE DWG) 5962-8683001 (SEE DWG) 5962-8751403 28C64-250 /26003 (SEE DWG) 5962-8683004 (SEE DWG) 5962-8683005 55C64-250 /26005 (SEE DWG) 5962-8751405 (SEE DWG) 5962-8683006 28C65-250 /26006 (SEE DWG) 5962-8683008 (SEE DWG) 5962-8751408 (SEE DWG) 5962-8751415 (SEE DWG) 5962-8751420 (SEE DWG) 5962-8751425 (SEE DWG) 5962-8751427 X2864A-25 /22804 X2864A-25 /22806 2864-250 /22808 2864H-250 /22809 5564-250 /22810 5564-250 /22811		PROM UV ERASABLE 8K X 8 200 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 300 NS ACCESS TIME	(SEE DWG) 5962-8202502 (SEE DWG) 5962-8202505 (SEE DWG) 5962-8766106	PROM ELECTR. ERASABLE 32K X 8 250 NS ACCESS TIME	(SEE DWG) 5962-8852503 (SEE DWG) 5962-8852505 (SEE DWG) 5962-8764903 28C256-250 /26103 28C256-250 /26106 28C256-250 /26109 28C256-250 /26112
PROM UV ERASABLE 4K X 8 200 NS ACCESS TIME	(SEE DWG) 5962-8001208	(SEE DWG) 5962-8683001 (SEE DWG) 5962-8751403 28C64-250 /26003 (SEE DWG) 5962-8683004 (SEE DWG) 5962-8683005 55C64-250 /26005 (SEE DWG) 5962-8751405 (SEE DWG) 5962-8683006 28C65-250 /26006 (SEE DWG) 5962-8683008 (SEE DWG) 5962-8751408 (SEE DWG) 5962-8751415 (SEE DWG) 5962-8751420 (SEE DWG) 5962-8751425 (SEE DWG) 5962-8751427 X2864A-25 /22804 X2864A-25 /22806 2864-250 /22808 2864H-250 /22809 5564-250 /22810 5564-250 /22811		PROM UV ERASABLE 8K X 8 350 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 450 NS ACCESS TIME	(SEE DWG) 5962-8202502 (SEE DWG) 5962-8202505 (SEE DWG) 5962-8766106	PROM ELECTR. ERASABLE 32K X 8 300 NS ACCESS TIME	(SEE DWG) 5962-8852502 (SEE DWG) 5962-8764902 28C256-300 /26102 28C256-300 /26108
PROM UV ERASABLE 4K X 8 300 NS ACCESS TIME	(SEE DWG) 5962-8001203 (SEE DWG) 5962-8001209	(SEE DWG) 5962-8683001 (SEE DWG) 5962-8751403 28C64-250 /26003 (SEE DWG) 5962-8683004 (SEE DWG) 5962-8683005 55C64-250 /26005 (SEE DWG) 5962-8751405 (SEE DWG) 5962-8683006 28C65-250 /26006 (SEE DWG) 5962-8683008 (SEE DWG) 5962-8751408 (SEE DWG) 5962-8751415 (SEE DWG) 5962-8751420 (SEE DWG) 5962-8751425 (SEE DWG) 5962-8751427 X2864A-25 /22804 X2864A-25 /22806 2864-250 /22808 2864H-250 /22809 5564-250 /22810 5564-250 /22811		PROM UV ERASABLE 8K X 8 450 NS ACCESS TIME		PROM UV ERASABLE 16K X 8 55 NS ACCESS TIME	(SEE DWG) 5962-8202501	PROM ELECTR. ERASABLE 32K X 8 350 NS ACCESS TIME	

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(SEE DWG) 5962-8852501 (SEE DWG) 5962-8764901 28C256-350 /26101 28C256-350 /26107		27256-35	5962-8411101	PROM UV ERASABLE 64K X 16 200 NS ACCESS TIME		28F010	5962-9089907	PROM 8K X 8 TS 100 NS ACCESS TIME	
PROM UV ERASABLE 32K X 8		PROM ELECTR. ERASABLE 64K X 8 120 NS ACCESS TIME		(SEE DWG) 5962-8774401 (SEE DWG) 5962-8680503		PROM ELECTR. ERASABLE 128K X 8 200 NS ACCESS TIME		(SEE DWG) 5962-8200901	
27C256-200 /27602		28C512 5962-9086907 28C512 5962-9086908 28C513 5962-9086915 28C513 5962-9086916 (SEE SPEC) /26509 (SEE SPEC) /26510		PROM UV ERASABLE 64K X 16 250 NS ACCESS TIME		28F010 5962-9089902 28C010 5962-3826703 28C010 5962-3826704 28F010 5962-9089906		PROM 8K X 8 WITH THREE- STATE OUTPUTS	
PROM UV ERASABLE 32K X 8 45 NS ACCESS TIME		PROM ELECTR. ERASABLE 64K X 8 150 NS ACCESS TIME		(SEE DWG) 5962-8774402 (SEE DWG) 5962-8680502		PROM ELECTR. ERASABLE 128K X 8 250 NS ACCESS TIME		82HS641A-70 /21201 93Z665-50 /21203	
(SEE DWG) 5962-8981702		28C512 5962-9086905 28C512 5962-9086906 28C513 5962-9086913 28C513 5962-9086914 (SEE SPEC) /26507 (SEE SPEC) /26508		PROM UV ERASABLE 64K X 16 300 NS ACCESS TIME		28C010 5962-3826701 28F010 5962-9089901 28C010 5962-3826702 28F010 5962-9089905		PROM 8K X 8 WITH THREE- STATE OUTPUTS 55 NS ACCESS TIME	
PROM UV ERASABLE 32K X 8 55 NS ACCESS TIME		PROM ELECTR. ERASABLE 64K X 8 200 NS ACCESS TIME		(SEE DWG) 5962-8680501		PROM UV ERASABLE 128K X 8 55 NS ACCESS TIME		(SEE DWG) 5962-8200902 93Z665-55 /21202 82HS641A-45 /21204	
(SEE DWG) 5962-8981701		28C512 5962-9086903 28C512 5962-9086904 28C513 5962-9086911 28C513 5962-9086912 (SEE SPEC) /26505 (SEE SPEC) /26506		PROM UV ERASABLE 64K X 8 120 NS ACCESS TIME		(SEE DWG) 5962-8961409		PROM POWER-SWITCHED 2K X 8 (THREE-STATE) 65 NS ACCESS TIME	
PROM UV ERASABLE 32K X 8 70 NS ACCESS TIME		PROM ELECTR. ERASABLE 64K X 8 250 NS ACCESS TIME		27C512 5962-8764804		PROM UV ERASABLE 128K X 8 70 NS ACCESS TIME		27PS191A 5962-8552602 27PS291A 5962-8552604	
(SEE DWG) 5962-8606308		28C512 5962-9086903 28C512 5962-9086904 28C513 5962-9086911 28C513 5962-9086912 (SEE SPEC) /26505 (SEE SPEC) /26506		PROM UV ERASABLE 64K X 8 150 NS ACCESS TIME		PROM UV ERASABLE 128K X 8 90 NS ACCESS TIME		PROM POWER-SWITCHED 2K X 8 (THREE-STATE) 75 NS ACCESS TIME	
PROM UV ERASABLE 32K X 8 90 NS ACCESS TIME		PROM ELECTR. ERASABLE 64K X 8 300 NS ACCESS TIME		27C512 5962-8764801		(SEE DWG) 5962-8961408		27PS191 5962-8552601 27PS291 5962-8552603	
(SEE DWG) 5962-8606307		28C512 5962-9086901 28C512 5962-9086902 28C513 5962-9086909 28C513 5962-9086910 (SEE SPEC) /26503 (SEE SPEC) /26504		PROM UV ERASABLE 64K X 8 200 NS ACCESS TIME		(SEE DWG) 5962-8961407		PROM REGISTERED UV ERASABLE 2K X 8 35 NS SETUP TIME	
PROM UV ERASABLE 32K X 8 120 NS ACCESS TIME		PROM ELECTR. ERASABLE 64K X 8 350 NS ACCESS TIME		27C512 5962-8764802 27512-20 5962-8513505		PROM UV ERASABLE 128K X 8 120 NS ACCESS TIME		(SEE DWG) 5962-8752902	
(SEE DWG) 5962-8606306		28C512 5962-9086901 28C512 5962-9086902 28C513 5962-9086909 28C513 5962-9086910 (SEE SPEC) /26503 (SEE SPEC) /26504		PROM UV ERASABLE 64K X 8 250 NS ACCESS TIME		(SEE DWG) 5962-8961406		PROM REGISTERED UV ERASABLE 2K X 8 45 NS SETUP TIME	
PROM UV ERASABLE 32K X 8 150 NS ACCESS TIME		PROM ELECTR. ERASABLE 64K X 8 400 NS ACCESS TIME		27512-25 5962-8513501 27C512 5962-8764803		PROM UV ERASABLE 128K X 8 150 NS ACCESS TIME		(SEE DWG) 5962-8752901	
(SEE DWG) 5962-8606305		(SEE SPEC) /26501 (SEE SPEC) /26502		PROM UV ERASABLE 64K X 8 300 NS ACCESS TIME		(SEE DWG) 5962-8961405		PROM REGISTERED 1K X 8 30 NS ACCESS TIME	
PROM UV ERASABLE 32K X 8 170 NS ACCESS TIME		PROM UV ERASABLE 64K X 16 70 NS ACCESS TIME		27512-30 5962-8513503		PROM UV ERASABLE 128K X 8 170 NS ACCESS TIME		7C235-30 5962-8863602	
(SEE DWG) 5962-8606304 27256-170 5962-8411104 27256-170 /22403		(SEE DWG) 5962-8680508		PROM UV ERASABLE 64K X 8 350 NS ACCESS TIME		(SEE DWG) 5962-8961404		PROM REGISTERED 1K X 8 40 NS ACCESS TIME	
PROM UV ERASABLE 32K X 8 200 NS ACCESS TIME		PROM UV ERASABLE 64K X 16 90 NS ACCESS TIME		27512-35 5962-8513502		PROM UV ERASABLE 128K X 8 200 NS ACCESS TIME		7C235-40 5962-8863601	
(SEE DWG) 5962-8606301 27256-200 5962-8411103 27256-200 /22402		(SEE DWG) 5962-8680507		PROM UV ERASABLE 64K X 8 450 NS ACCESS TIME		(SEE DWG) 5962-8961403		PROM REGISTERED 1K X 8 WITH PROGRAMMABLE INI- TIALIZE (ASYNCHRONOUS)	
PROM UV ERASABLE 32K X 8 250 NS ACCESS TIME		PROM UV ERASABLE 64K X 16 120 NS ACCESS TIME		27512-45 5962-8513504		PROM UV ERASABLE 128K X 8 250 NS ACCESS TIME		27S35A 5962-8670602	
27256-250 5962-8411102 (SEE DWG) 5962-8606302 27C256-250 /27601 27256-250 /22401		(SEE DWG) 5962-8680506		PROM ELECTR. ERASABLE 128K X 8 120 NS ACCESS TIME		(SEE DWG) 5962-8961402		PROM REGISTERED 1K X 8 WITH PROGRAMMABLE INI- TIALIZE (ASYNCHRONOUS)	
PROM UV ERASABLE 32K X 8 300 NS ACCESS TIME		PROM UV ERASABLE 64K X 16 150 NS ACCESS TIME		28F010 5962-9089904 28C010 5962-3826707 28F010 5962-9089908		PROM UV ERASABLE 128K X 8 300 NS ACCESS TIME		PROM REGISTERED 1K X 8 WITH PROGRAMMABLE INI- TIALIZE (ASYNCHRONOUS)	
(SEE DWG) 5962-8606303 27256-30 5962-8411105		(SEE DWG) 5962-8680505		PROM ELECTR. ERASABLE 128K X 8 150 NS ACCESS TIME		(SEE DWG) 5962-8961401		27S35 5962-8670601	
PROM UV ERASABLE 32K X 8 350 NS ACCESS TIME		PROM UV ERASABLE 64K X 16 170 NS ACCESS TIME		28F010 5962-9089903 28C010 5962-3826705 28C010 5962-3826706		PROM 8K X 8 TS 45 NS ACCESS TIME		PROM REGISTERED 1K X 8 WITH PROGRAMMABLE INI- TIALIZE (SYNCHRONOUS)	
		(SEE DWG) 5962-8680504				(SEE DWG) 5962-8200903			

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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
27S37 27S37A	5962-8670603 5962-8670604	TERMINAL AND MONITOR		AM85C30-8	5962-8868906	CONTROLLER INTERFACE SERIAL 16 MHZ		CONTROLLER VMEBUS	
PROM REGISTERED 2K X 8 WITH PROGRAMMABLE INITIALIZE (ASYNCHRONOUS)		UT1553BBCRTM 8957701	5962-	COMMUNICATION INTERFACE PROGRAMMABLE		82C52	5962-8501501	68172	5962-8770501
27S45 27S45A	5962-8552701 5962-8552702	BUS CONTROLLER SCSI 2 MHZ		8251A 8251A	5962-8754801 5962-8754802	CONTROLLER 8-BIT HIGH PERFORMANCE WITH 16K BYTES PROGR. EPROM		CONTROLLER/BUS DRIVER	
PROM REGISTERED 2K X 8 WITH PROGRAMMABLE INITIALIZE (SYNCHRONOUS)		L5380 L53C80	5962-9054801 5962-9054802	COMMUNICATIONS CONTROLLER SERIAL 4.0 MHZ		87C51FB-12 87C51FB-16	5962-9056401 5962-9056402	8228	/42301
27S47 27S47A	5962-8552703 5962-8552704	BUS INTERFACE LATCH 8-BIT NONINVERTING TTL-COMPATIBLE		Z0853004 Z8030	5962-8752702 5962-8551802	CONTROLLER ASYNCHRONOUS SERIAL		COPROCESSOR FLOATING POINT 16 MHZ	
STATIC ROM 512 X 8		54FCT845A 54FCT845B	5962-8867501 5962-8867502	COMMUNICATIONS CONTROLLER SERIAL 6.0 MHZ		CONTROLLER DUAL SERIAL INPUT/OUTPUT 2.5 MHZ		68882-16	5962-8946301
1832	/47201	CLOCK GENERATOR AND CONTROLLER 10 MHZ		Z85C3006 Z0853006 Z8030A Z85C3006SCC	5962-8868901 5962-8752701 5962-8551801 /48601	82510	5962-8972501	COPROCESSOR FLOATING POINT 20 MHZ	
STATIC ROM 2K X 8 WITH THREE-STATE OUTPUTS		Z0858110	5962-8752601	COMMUNICATIONS CONTROLLER SERIAL 8.0 MHZ		Z8442	5962-8301502	68882-20	5962-8946302
34000	/40301	CLOCK GENERATOR AND CONTROLLER 6.0 MHZ		Z85C3008 85C3008SCC	5962-8868902 /48602	CONTROLLER DUAL SERIAL INPUT/OUTPUT 4.0 MHZ		68882-25	5962-8946303
Microprocessors and interface peripherals/FIFO 8/		Z0858106	5962-8752602	COMMUNICATIONS CONTROLLER SERIAL 16.0 MHZ		Z8442A	5962-8301501	COPROCESSOR FLOATING POINT 33 MHZ	
ADDRESS GENERATOR		CLOCK GENERATOR AND READY INTERFACE 6 MHZ		Z85C3010	5962-8868907	CONTROLLER GPIB		68882-33	5962-8946304
TVB382	/61601	82C284-6	5962-8773403	COMMUNICATIONS CONTROLLER SERIAL WITH SDLC ENHANCEMENTS 10.0 MHZ		9914A	5962-8751901	COPROCESSOR FLOATING-POINT	
BUS ARBITER 8 MHZ		CLOCK GENERATOR AND READY INTERFACE 8 MHZ		COMMUNICATIONS CONTROLLER SERIAL WITH SDLC ENHANCEMENTS 12.0 MHZ		CONTROLLER I/O		68881-16 68881-20	5962-8602102 5962-8602103
82C89	5962-8552801	82C284-8	5962-8773402	COMMUNICATIONS CONTROLLER SERIAL WITH SDLC ENHANCEMENTS 12.0 MHZ		Z80ASIO/2	/48101	COUNTER/TIMER AND PARALLEL I/O PERIPHERAL UNIT	
BUS CONTROLLER		CLOCK GENERATOR AND RESET INTERFACE 12.5 MHZ		AM85C30-10 Z8523010	5962-8868903 5962-8868908	CONTROLLER MICROPROGRAM		Z8536 Z8536A	5962-8300101 5962-8300102
M82C288-6 M82C288-8 M82C288-10	5962-9099701 5962-9099702 5962-9099703	82384-12	5962-8766902	COMMUNICATIONS CONTROLLER SERIAL WITH SDLC ENHANCEMENTS 16.0 MHZ		2910 2910A	5962-7801701 5962-7801702	COUNTER/TIMER AND PARALLEL I/O UNIT 4.0 MHZ	
BUS CONTROLLER 6 MHZ		CLOCK GENERATOR AND READY INTERFACE 10 MHZ		AM85C30-12	5962-8868904	CONTROLLER MICROPROGRAM (9 DEEP STACK)		Z8036	5962-8551702
82288-6	5962-8514901	82C284-10	5962-8773401	COMMUNICATIONS CONTROLLER SERIAL WITH SDLC ENHANCEMENTS 16.0 MHZ		29C10A	5962-8770801	COUNTER/TIMER AND PARALLEL I/O UNIT 6.0 MHZ	
BUS CONTROLLER 8 MHZ		CLOCK GENERATOR AND RESET INTERFACE 16 MHZ		AM85C30-16 Z8523016	5962-8868905 5962-8868909	CONTROLLER MICROPROGRAM (17 DEEP STACK)		Z8036A	5962-8551701
82C88 82288-8	5962-8406901 5962-8514902	82384-16	5962-8766901	COMMUNICATIONS CONTROLLER SERIAL WITH SDLC ENHANCEMENTS 8.0 MHZ		7C910-51 7C910-46	5962-8770804 5962-8770805	COUNTER/TIMER UNIT 2.5 MHZ	
BUS CONTROLLER INTEGRATED		CLOCK GENERATOR 31 MHZ		Z8523008	5962-8868910	CONTROLLER MICROPROGRAM (33 DEEP STACK)		Z8430 Z80CTC	5962-8301602 /48302
82188	5962-8767201	2925	5962-8859801	COMMUNICATIONS CONTROLLER UNIVERSAL SERIAL DUAL		39C10B 39C10C	5962-8770802 5962-8770803	COUNTER/TIMER UNIT 4.0 MHZ	
BUS CONTROLLER REMOTE TERMINAL		CLOCK GENERATOR 50 MHZ		68562	5962-8681001	CONTROLLER MULTI-PROTOCOL SERIAL		Z8430A Z80ACTC	5962-8301601 /48301
UT1553BB	5962-8862801	2925A	5962-8859802	CONTROL UNIT STATUS AND SHIFT 4-BIT		8274	5962-8771301	COUNTER/TIMER UNIT 6.17 MHZ	
BUS CONTROLLER REMOTE		ICM7170	5962-8765301	2904	5962-8601701	CONTROLLER SERIAL COMMUNICATION		Z84C3006	5962-8951501

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LTC1090	5962-8983001	9517A 9517A-4	5962-8757501 5962-8757502	ERROR DETECTION/CORRECTION CKT 16-BIT 36 NS DETECT TIME 73 NS CORRECT TIME 39C60 5962-8861302 ERROR DETECTION/CORRECTION UNIT 16-BIT 2960 5962-8760201 FFT CONTROLLER AND ARITHMETIC UNIT 16/19-BIT 15 MHZ TMC2310V 5962-9096301 FFT CONTROLLER AND ARITHMETIC UNIT 16/19-BIT 20 MHZ TMC2310V1 5962-9096302 GENERATOR MICROPROCESSOR WATCHDOG/BATTERY SWITCHOVER/RESET MAX693 5962-9071102 FIFO 4K X 9 20 NS ACCESS TIME (SEE DWG) 5962-9071507 FIFO 4K X 9 30 NS ACCESS TIME (SEE DWG) 5962-9071506 FIFO 4K X 9 40 NS ACCESS TIME (SEE DWG) 5962-9071505 FIFO 4K X 9 50 NS ACCESS TIME (SEE DWG) 5962-9071504 FIFO 4K X 9 65 NS ACCESS TIME (SEE DWG) 5962-9071503 FIFO 4K X 9 80 NS ACCESS TIME (SEE DWG) 5962-9071502 FIFO 4K X 9 120 NS ACCESS TIME (SEE DWG) 5962-9071501 FIFO 8K X 9 DUAL PORT 30 NS ACCESS TIME		(SEE DWG) 5962-9167703 FIFO 8K X 9 DUAL PORT 50 NS ACCESS TIME (SEE DWG) 5962-9167702 FIFO 8K X 9 DUAL PORT 80 NS ACCESS TIME (SEE DWG) 5962-9167701 FIFO MEMORY 64 X 4 CASCADABLE 7 MHZ C57401 5962-8779105 FIFO MEMORY 64 X 4 CASCADABLE 10 MHZ C57401A 5962-8779107 FIFO MEMORY 64 X 4 STAND-ALONE THREE-STATE 12 MHZ 57L4013D 5962-8779111 FIFO MEMORY 64 X 4 STAND-ALONE 7 MHZ 57401 5962-8779101 FIFO MEMORY 64 X 4 STAND-ALONE 10 MHZ 57401A 5962-8779103 FIFO MEMORY 64 X 4 STAND-ALONE 12 MHZ 57L401D 5962-8779109 FIFO MEMORY 64 X 4 10 MHZ (SEE DWG) 5962-8952301 FIFO MEMORY 64 X 4 15 MHZ (SEE DWG) 5962-8952302 FIFO MEMORY 64 X 4 25 MHZ (SEE DWG) 5962-8952303 FIFO MEMORY 64 X 4 35 MHZ (SEE DWG) 5962-8952304 FIFO MEMORY 64 X 4 STAND-ALONE 12 MHZ 57L402D 5962-8779110 FIFO MEMORY 64 X 5 CASCADABLE 7 MHZ C57402 5962-8779106	FIFO MEMORY 64 X 5 CASCADABLE 10 MHZ C57402A 5962-8779108 FIFO MEMORY 64 X 5 PARALLEL 10 MHZ 72404L10 5962-8684601 FIFO MEMORY 64 X 5 PARALLEL 15 MHZ 72404L15 5962-8684602 FIFO MEMORY 64 X 5 PARALLEL 25 MHZ 72404L25 5962-8684603 FIFO MEMORY 64 X 5 PARALLEL 35 MHZ 72404L35 5962-8684604 FIFO MEMORY 64 X 5 STAND-ALONE 7 MHZ 57402 5962-8779102 FIFO MEMORY 64 X 5 STAND-ALONE 10 MHZ 57402A 5962-8779104 FIFO MEMORY 64 X 8 15 MHZ (SEE DWG) 5962-8966401 FIFO MEMORY 64 X 8 25 MHZ (SEE DWG) 5962-8966402 FIFO MEMORY 64 X 9 15 MHZ (SEE DWG) 5962-8966101 FIFO MEMORY 64 X 9 25 MHZ (SEE DWG) 5962-8966102 FIFO MEMORY 256 X 9 PARALLEL 30 NS ACCESS TIME (SEE DWG) 5962-8966606 FIFO MEMORY 256 X 9 PARALLEL 40 NS ACCESS TIME (SEE DWG) 5962-8966605 FIFO MEMORY 256 X 9 PARALLEL 50 NS ACCESS TIME (SEE DWG) 5962-8966604 FIFO MEMORY 256 X 9 PARALLEL 65 NS ACCESS TIME		
DATA ACQUISITION SYSTEM 12-BIT 8 CHANNEL MN7140 5962-9079701 DATA PROCESSOR NUMERIC 5 MHZ 8087 5962-8854702 DATA PROCESSOR NUMERIC 8 MHZ 8087-2 5962-8854701 DIGITAL SIGNAL PROCESSOR 25 MHZ 320C30 5962-9052602 DIGITAL SIGNAL PROCESSOR 28 MHZ 320C30 5962-9052601 DIGITAL SIGNAL PROCESSOR 56-BIT GENERAL PURPOSE 56001-20 5962-8951201 DISPLAY CONTROLLER GRAPHICS 82720 5962-8608801 DMA ADDRESS GENERATOR 2940 5962-8603001 DMA CONTROLLER Z80ADMA /48201 Z80DMA /48202 DMA CONTROLLER 32-BIT WITH INTEGRATED SYSTEM SUPPORT PERIPHERALS 16 MHZ 82380 5962-8959301 DMA CONTROLLER 32-BIT WITH INTEGRATED SYSTEM SUPPORT PERIPHERALS 20 MHZ 82380 5962-8959302 DMA CONTROLLER EXTENDED DUAL CHANNEL 68442-8 5962-8681101 DMA CONTROLLER MULTI-MODE	DMA CONTROLLER PROGRAMMABLE 5 MHZ 82C37A-5 5962-9054301 DMA CONTROLLER PROGRAMMABLE 8 MHZ 82C37A 5962-9054302 82C237 5962-9054304 DMA CONTROLLER PROGRAMMABLE 12.5 MHZ 82C37A-12 5962-9054303 82C237-12 5962-9054305 DYNAMIC MEMORY CONTROLLER 2964B 5962-8757401 2968A 5962-8869601 DYNAMIC MEMORY CONTROLLER WITH OUTPUT ENABLE 2968A 5962-8869602 EPLD 64-MACROCELL (SEE DWG) 5962-9215801 (SEE DWG) 5962-9215802 ERROR DETECTION AND CORRECTION UNIT 32-BIT 21 NS ACCESS TIME 49C460C 5962-8853306 ERROR DETECTION AND CORRECTION UNIT 32-BIT 21 NS DETECT TIME 29C660C 5962-8853305 ERROR DETECTION AND CORRECTION UNIT 32-BIT 28 NS DETECT TIME 49C460B 5962-8853302 29C660B 5962-8853304 ERROR DETECTION AND CORRECTION UNIT 32-BIT 33 NS DETECT TIME 49C460A 5962-8853301 29C660A 5962-8853303 ERROR DETECTION/CORRECTION CKT 16-BIT 24 NS DETECT TIME 35 NS CORRECT TIME 39C60A 5962-8861301 29C60A 5962-8861303								

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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
(SEE DWG)	5962-8966603	FIFO MEMORY 1K X 9 PARALLEL 40 NS ACCESS TIME		ACCESS TIME		Z84C206	5962-8951601	29C941	5962-8760303
FIFO MEMORY 256 X 9 PARALLEL 80 NS ACCESS TIME		(SEE DWG)	5962-8953604	(SEE DWG)	5962-8866902	I/O CONTROLLER PARALLEL		LATCH BUS INTERFACE 9-WIDE	
(SEE DWG)	5962-8966602	FIFO MEMORY 1K X 9 PARALLEL 65 NS ACCESS TIME		FIFO MEMORY 2K X 9 80 NS ACCESS TIME		Z80APIO /48401		29C843	5962-8760302
FIFO MEMORY 256 X 9 PARALLEL 120 NS ACCESS TIME		(SEE DWG)	5962-8953603	(SEE DWG)	5962-8866901	Z80PIO /48402		29C943	5962-8760304
(SEE DWG)	5962-8966601	FIFO MEMORY 1K X 9 PARALLEL 80 NS ACCESS TIME		FIFO MEMORY 4K X 9 PARALLEL SERIAL 120 NS ACCESS TIME		I/O CONTROLLER PARALLEL 2.5 MHZ		MEMORY MANAGEMENT BLOCK PROTECTION UNIT 20 MHZ	
FIFO MEMORY 512 X 9		(SEE DWG)	5962-8953602	(SEE DWG)	5962-8994301	Z8420	5962-8418602	P1753	5962-8950504
MKB4501-81 /25001		FIFO MEMORY 1K X 9 PARALLEL 120 NS ACCESS TIME		FIFO MEMORY 4K X 9 PARALLEL SERIAL 50 NS ACCESS TIME		I/O CONTROLLER PARALLEL 4.0 MHZ		MEMORY MANAGEMENT BLOCK PROTECTION UNIT 30 MHZ	
MKB4501-80 /25002		(SEE DWG)	5962-8953601	(SEE DWG)	5962-8994304	Z8420A	5962-8418601	P1753	5962-8950505
FIFO MEMORY 512 X 9 PARALLEL 30 NS ACCESS TIME		FIFO MEMORY 2K X 9		(SEE DWG)	5962-8994304	I/O CONTROLLER PARALLEL 6.17 MHZ		MEMORY MANAGEMENT BLOCK PROTECTION UNIT 40 MHZ	
7201LA30	5962-8753101	(SEE DWG)	5962-8994201	FIFO MEMORY 4K X 9 PARALLEL SERIAL 65 NS ACCESS TIME		Z84C2006	5962-8951401	P1753	5962-8950506
FIFO MEMORY 512 X 9 PARALLEL 50 NS ACCESS TIME		(SEE DWG)	5962-8994202	(SEE DWG)	5962-8994303	I/O PORT 8-BIT		MEMORY MANAGEMENT BLOCK PROTECTION UNIT 40 MHZ	
7201LA50	5962-8753102	(SEE DWG)	5962-8994203	FIFO MEMORY 4K X 9 PARALLEL SERIAL 80 NS ACCESS TIME		1852 /47301		P1753	5962-8950506
FIFO MEMORY 512 X 9 PARALLEL 80 NS ACCESS TIME		(SEE DWG)	5962-8994204	(SEE DWG)	5962-8994302	8212 /42101		MEMORY MANAGEMENT BLOCK PROTECTION UNIT WITH BUS ARBITRATION 20 MHZ	
7201LA80	5962-8753103	FIFO MEMORY 2K X 9 PARALLEL 40 NS ACCESS TIME		FIFO MEMORY 4K X 9 PARALLEL SERIAL 80 NS ACCESS TIME		I/O PORT 8-BIT BIDIRECTIONAL LATCHED		P1753	5962-8950501
MKB4501-88 /25003		(SEE DWG)	5962-8956705	(SEE DWG)	5962-8994302	I/O PORT PROGRAMMABLE ADDRESSABLE BIDIRECTIONAL ASYNCHRONOUS		MEMORY MANAGEMENT BLOCK PROTECTION UNIT WITH BUS ARBITRATION 30 MHZ	
FIFO MEMORY 512 X 9 25 NS ACCESS TIME		FIFO MEMORY 2K X 9 PARALLEL 50 NS ACCESS TIME		FIFO MEMORY 4K X 9 PARALLEL 40 NS ACCESS TIME		8X376	5962-8685101	P1753	5962-8950502
(SEE DWG)	5962-8986306	(SEE DWG)	5962-8956704	(SEE DWG)	5962-8956805	INTERFACE UNIT BUS TO MICROPROCESSOR MIL-STD-1553		MEMORY MANAGEMENT BLOCK PROTECTION UNIT WITH BUS ARBITRATION 40 MHZ	
FIFO MEMORY 512 X 9 30 NS ACCESS TIME		FIFO MEMORY 2K X 9 PARALLEL 65 NS ACCESS TIME		(SEE DWG)	5962-8956805	BUS-66300II	5962-8858601	P1753	5962-8950502
(SEE DWG)	5962-8986305	(SEE DWG)	5962-8956703	FIFO MEMORY 4K X 9 PARALLEL 50 NS ACCESS TIME		INTERRUPT CONTROLLER PROGRAMMABLE		MEMORY MANAGEMENT BLOCK PROTECTION UNIT WITH BUS ARBITRATION 40 MHZ	
FIFO MEMORY 512 X 9 40 NS ACCESS TIME		FIFO MEMORY 2K X 9 PARALLEL 80 NS ACCESS TIME		(SEE DWG)	5962-8956804	8259A	5962-8751801	P1753	5962-8950503
(SEE DWG)	5962-8986304	(SEE DWG)	5962-8956702	FIFO MEMORY 4K X 9 PARALLEL 65 NS ACCESS TIME		INTERRUPT CONTROLLER PROGRAMMABLE 5 MHZ		MICROCOMPUTER 8-BIT	
FIFO MEMORY 512 X 9 50 NS ACCESS TIME		FIFO MEMORY 2K X 9 PARALLEL 120 NS ACCESS TIME		(SEE DWG)	5962-8956803	82C59A-5	5962-8501601	8048	/49001
(SEE DWG)	5962-8986303	(SEE DWG)	5962-8956701	FIFO MEMORY 4K X 9 PARALLEL 80 NS ACCESS TIME		INTERRUPT CONTROLLER PROGRAMMABLE 8 MHZ		8035L	/49002
FIFO MEMORY 512 X 9 65 NS ACCESS TIME		FIFO MEMORY 2K X 9 30 NS ACCESS TIME		(SEE DWG)	5962-8956802	82C59A	5962-8501602	8048AH	5962-8856802
(SEE DWG)	5962-8866905	(SEE DWG)	5962-8956701	FIFO MEMORY 4K X 9 PARALLEL 120 NS ACCESS TIME		INTERRUPT CONTROLLER UNIVERSAL		8751H	5962-8419002
FIFO MEMORY 512 X 9 80 NS ACCESS TIME		FIFO MEMORY 2K X 9 40 NS ACCESS TIME		(SEE DWG)	5962-8956801	9519A	5962-8759701	8751H	5962-8419002
(SEE DWG)	5962-8986302	(SEE DWG)	5962-8866905	GRAPHICS SYSTEM PROCESSOR		INTERRUPT CONTROLLER VECTORED PRIORITY		8751H-8	5962-8419001
FIFO MEMORY 512 X 9 80 NS ACCESS TIME		FIFO MEMORY 2K X 9 50 NS ACCESS TIME		34020-28	5962-9162301	2914	5962-8602901	8035AHL	5962-8856801
(SEE DWG)	5962-8986301	(SEE DWG)	5962-8866903	34020-30	5962-9162302	INTERVAL TIMER PROGRAMMABLE		8035AHL	5962-8856801
FIFO MEMORY 1K X 9 PARALLEL 30 NS ACCESS TIME		FIFO MEMORY 2K X 9 65 NS		I/O CONTROLLER DUAL		82C54	5962-8406501	8097	5962-8506301
(SEE DWG)	5962-8953605			Z-80SIO/2 /48102		9513A	5962-8552301	8X305	5962-8550201
				I/O CONTROLLER DUAL SERIAL 6.17 MHZ		8253	5962-8752001	8X305-10	5962-8550202
						8253	5962-8752002		
						8253-5	5962-8752003		
						LATCH BUS INTERFACE 10-WIDE			
						29C841	5962-8760301		

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8X320	5962-8550301	MICROCONTROLLER 8-BIT WITH 8K-BYTES EPROM MEMORY (3.5 TO 12 MHZ)		MICROPROCESSOR 16-BIT		Z8001ACPU	5962-8000303	MICROPROCESSOR 32-BIT WITH FLOATING POINT AND MMU 16 MHZ	
MICROCONTROLLER 16-BIT 12 MHZ		87C52	5962-9157601	29C116	5962-8861201	Z8001ACPU	/52003	80960MC-16	5962-9094601
80C196KB	5962-8998201	87C52	5962-9157603	29116	5962-8686301	Z8002A CPU	/52004	MICROPROCESSOR 32-BIT WITH FLOATING POINT AND MMU 20 MHZ	
8097BH	5962-8959601	MICROCONTROLLER 8-BIT WITH 8K-BYTES EPROM MEMORY (3.5 TO 16 MHZ)		9900A	/46001	Z8002ACPU	5962-8000306	80960MC-20	5962-9094602
MICROCONTROLLER 16-BIT WITH 16K-BYTES OF ON-CHIP EPROM 16 MHZ		87C52-16	5962-9157602	29C116-1	5962-8861202	MICROPROCESSOR 16-BIT 8 MHZ		MICROPROCESSOR 32-BIT WITH FLOATING POINT AND MMU 25 MHZ	
87C196KC	5962-9069201	87C52-16	5962-9157604	SBP9989	/46501	80286-8	5962-8514801	80960MC-25	5962-9094603
MICROCONTROLLER 16-BIT WITH 8K BYTES ON-CHIP ROM 12 MHZ		MICROCONTROLLER 8-BIT WITH A MASK PROGRAMMABLE ROM (3.5 TO 12 MHZ)		29C116-2	5962-8861203	M80186-8	5962-8501001	MICROPROCESSOR 4-BIT	
8397BH	5962-8977201	80C51	5962-8506402	7C9116-40	5962-8861204	80C86-2	5962-8405202	2901A	5962-7700701
MICROCONTROLLER 16-BIT WITH EPROM		MICROCONTROLLER 8-BIT WITH A MASK PROGRAMMABLE ROM (3.5 TO 16 MHZ)		8086	/53001	MICROPROCESSOR 16-BIT WITH MIL-STD-1750 INSTRUCTION SET ARCHITECTURE		2903A	5962-8867701
8797BH	5962-8680901	80C31BH-16	5962-8506404	MICROPROCESSOR 16-BIT FIXED INSTRUCTION		FX1750A	5962-8951991	AM2901	5962-7700702
MICROCONTROLLER 16-BIT WITH MASK-PROGRAMMABLE ROM		MICROCONTROLLER 8-BIT WITH A/D PWM 2K 1-TIME PROGR. EPROM MEMORY (3.5-12MHZ)		MKB68000-6	5962-8202101	MICROPROCESSOR 16-BIT WITH MIL-STD-1750 INSTRUCTION SET ARCHITECTURE 15.0 MHZ		MICROPROCESSOR 4-BIT SLICE 27 NS CYCLE TIME	
8397	5962-8552001	MICROCONTROLLER 8-BIT WITH A/D PWM 2K 1-TIME PROGR. EPROM MEMORY (3.5-16MHZ)		MKB68000-8	5962-8202102	F9450-15	5962-8416901	7C901-27	5962-8853502
MICROCONTROLLER 8-BIT (3.5 TO 12 MHZ)		87C752	5962-9157703	68000-10	5962-8202103	F9450-F15	5962-8416904	7C901-32	5962-8853501
80C31	5962-8506401	MICROCONTROLLER 8-BIT WITH A/D PWM 2K 1-TIME PROGR. EPROM MEMORY (3.5-12 MHZ)		68000-12	5962-8202104	MICROPROCESSOR 16-BIT WITH MIL-STD-1750 INSTRUCTION SET ARCHITECTURE 18.0 MHZ		MICROPROCESSOR 8-BIT	
MICROCONTROLLER 8-BIT (3.5 TO 16 MHZ)		87C752-16	5962-9157704	68000-6	/54001	F9450-F20	5962-8416903	Z-80ACPU	/48001
80C31-1	5962-8506403	MICROCONTROLLER 8-BIT WITH A/D PWM 2K EPROM MEMORY (3.5-12 MHZ)		68000-8	/54002	MICROPROCESSOR 16-BIT WITH MIL-STD-1750 INSTRUCTION SET ARCHITECTURE 20.0 MHZ		6800	/40001
MICROCONTROLLER 8-BIT EPROM		87C752	5962-9157701	68000-10	/54003	F9450-F20	5962-8416903	80C88	5962-8601601
87C451	5962-9154201	MICROCONTROLLER 8-BIT WITH A/D PWM 2K EPROM MEMORY (3.5-16 MHZ)		80C186-10	5962-8850101	MICROPROCESSOR 16-BIT WITH MIL-STD-1750A INSTRUCTION SET ARCHITECTURE		Z-80CPU	/48002
MICROCONTROLLER 8-BIT EEPROM 2K BYTES RAM 256 BYTES		87C752-16	5962-9157702	80C286-10	5962-9067801	FX1750A	5962-8951901	8088	5962-8768501
68HC811E2	5962-8952701	MICROCONTROLLER HIGH PERFORMANCE		80286-10	5962-8514803	MICROPROCESSOR 32-BIT		1802D	/47001
MICROCONTROLLER 8-BIT ROM AND EEPROM DISABLED 256 BYTES RAM		HCP16003	5962-9054401	Z8001B	5962-8000304	68020-12	5962-8603201	Z-80BCPU	/48003
68HC11A0	5962-9051001	HPC16083	5962-9054402	Z8002B	5962-8000305	68020-16	5962-8603203	Z-80BCMOS	/48501
MICROCONTROLLER 8-BIT ROM DISABLED 256 BYTES RAM 512 BYTES EEPROM		MICROCONTROLLER I/O EXPANDED		MICROPROCESSOR 16-BIT 12.5 MHZ		MICROPROCESSOR 32-BIT ENHANCED		MICROPROCESSOR 8-BIT 2.5 MHZ	
68HC11A1	5962-9051002	80C451	5962-8972601	80C186-12	5962-8850102	68030-16	5962-8946401	NSC800	5962-8301301
MICROCONTROLLER 8-BIT WITH 2 KILOBYTES EPROM MEMORY		MICROCONTROLLER I/O EXPANDED WITH MASK-PROGRAMMABLE ROM		MICROPROCESSOR 16-BIT 15 MHZ		68030-20	5962-8946402	NSC800-4	5962-8301302
87C751	5962-9156601	83C451	5962-8972602	1750A-15	5962-8766501	68030-25	5962-8946403	MICROPROCESSOR 8-BIT FIXED INSTRUCTION	
MICROCONTROLLER 8-BIT WITH 4K-BYTES EPROM MEMORY (3.5 TO 12 MHZ)		MICROPROCESSOR SLICE 16-BIT		MICROPROCESSOR 16-BIT 20 MHZ		68030-33	5962-8946404	8080A	/42001
87C51	5962-8768401	7C9101-45	5962-8951701	1750A-20	5962-8766502	MICROPROCESSOR 32-BIT 12.5 MHZ		8080A	5962-7700201
MICROCONTROLLER 8-BIT WITH 4K-BYTES EPROM MEMORY (3.5 TO 16 MHZ)		7C9101-35	5962-8951702	MICROPROCESSOR 16-BIT 40 MHZ		80386-12	5962-8766802	MICROPROCESSOR 8-BIT N-CHANNEL FIXED INSTRUCTION	
87C51-16	5962-8768402	MICROPROCESSOR SLICE 4-BIT		P1750A-40	5962-8766504	80386-16	5962-8766801	8085A	5962-7901001
		2901C	5962-8405701	MICROPROCESSOR 16-BIT 5 MHZ		MICROPROCESSOR 32-BIT 16 MHZ		MICROPROCESSOR NUMERIC 80-BIT 10 MHZ	
		2901C	/44001	80C86	5962-8405201	80386-20	5962-8766803	80287-10	5962-8513301
		MICROPROCESSOR SLICE 4-BIT		MICROPROCESSOR 16-BIT 6 MHZ		MICROPROCESSOR 32-BIT 20 MHZ		MICROPROCESSOR NUMERIC 80-BIT 6 MHZ	
				M80186-6	5962-8501002	80386-25	5962-8766804	80287-5	5962-8513303
				80286-6	5962-8514802	MICROPROCESSOR 32-BIT 25 MHZ		MICROPROCESSOR NUMERIC 80-BIT 8 MHZ	
				MICROPROCESSOR 16-BIT 6.0 MHZ				80287-8	5962-8513302

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MILITARY

MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
MICROPROCESSOR SIGNAL PROCESSING 10 MHZ		80387-25	5962-8953403	TION INPUTS 20 MHZ		320C15	5962-8763307	HA-5147	5962-8962703
2100ATG	5962-8773504	NUMERIC PROCESSOR 80-BIT 10 MHZ		P1754	5962-8864201	SIGNAL PROCESSOR DIGITAL 6.7 - 25 MHZ		OP AMP 4-CHANNEL PROGRAMMABLE	
MICROPROCESSOR SIGNAL PROCESSING 6 MHZ		80C287-10	5962-9065601	PROCESSOR INTERFACE WITH SYSTEM CONFIGURATION INPUTS 30 MHZ		320CF10-25	5962-8763305	HA-2400	5962-8778301
2100SG	5962-8773501	80C187-10	5962-8944901	PROCESSOR INTERFACE WITH SYSTEM CONFIGURATION INPUTS 40 MHZ		320C15-25	5962-8763308	OP AMP 7.0 V/ES	
MICROPROCESSOR SIGNAL PROCESSING 8 MHZ		NUMERIC PROCESSOR 80-BIT 12 MHZ		P1754	5962-8864202	SIGNAL PROCESSOR DIGITAL WITH EPROM 20 MHZ		HA-5127	5962-8962701
2100TG	5962-8773502	80C187-12	5962-8944902	PROCESSOR INTERFACE WITH SYSTEM CONFIGURATION INPUTS 40 MHZ		320E15	5962-8763306	OP AMP BI-FET LOW POWER	
2100ASG	5962-8773503	PERIPHERAL INTERFACE ADAPTOR		P1754	5962-8864203	SIGNAL PROCESSOR DIGITAL WITH MASK PROGRAMMABLE ROM 25 MHZ		061	5962-8102301
MICROPROGRAM SEQUENCER 16-BIT WITH 33-DEEP STACK		MC6821	/40101	PROGRAM CONTROL UNIT 4-BIT		320CM10	5962-8763303	061	/11901
49C410	5962-8864301	PERIPHERAL INTERFACE PROGRAMMABLE		2930	5962-8757301	320CM10-25	5962-8763304	071	/11904
49C410A	5962-8864302	8255A	5962-8757001	PROGRAM CONTROL UNIT/PUSH-POP STACK		TIMING CONTROL UNIT 10 MHZ		071	5962-8102304
MICROPROGRAM SEQUENCER 4-BIT		8255A-5	5962-8757002	AM2932	5962-8605001	32C201-10	5962-8859901	OP AMP CHOPPER-STABILIZED	
2909A	5962-8602701	PERIPHERAL INTERFACE PROGRAMMABLE 5.0 MHZ		PROGRAMMABLE TIMER/COUNTER DMA ADDRESS GENERATOR		32C201-10	/55201	LTC1052	5962-8978201
2911A	5962-8602801	82C55A-5	5962-8406601	2942	5962-8680101	OP AMP CLAMPING LOW-GAIN FAST-SETTLING		CLC502	5962-9174301
MULTIPLEXED TERMINAL MIL-STD-1553 BC/RTU/MT		PERIPHERAL INTERFACE PROGRAMMABLE 6.0 MHZ		REAL TIME CLOCK		OP AMP DUAL		LH2101A	/10105
(SEE DWG)	5962-8869201	82C55A	5962-8406602	8572	5962-9164101	LH2108A	/10108	1555	/10108
(SEE DWG)	5962-9173401	PERIPHERAL INTERFACT REMOTE UNIVERSAL		REMOTE TERMINAL INTER-FACE MIL-STD-1553B		OP AMP DUAL LOW-NOISE		5532A	/13102
(SEE DWG)	5962-8869202	8744H-10	5962-8997101	UT1553BCRTMP	5962-8950101	OP AMP DUAL MATCHED HIGH PERFORMANCE		OP14A	5962-8771401
(SEE DWG)	5962-9173402	PERIPHERAL MULTIFUNCTION		UT1553BRTI	/55501	OP14B	5962-8876001	LT1013A	5962-8876001
(SEE DWG)	5962-9173403	68C901B-8	5962-9086403	REMOTE TERMINAL MULTI-PROTOCOL		LT1013	5962-8876002	OP AMP DUAL PRECISION	
(SEE DWG)	5962-9173404	PERIPHERAL MULTIFUNCTION 4 MHZ		1553RTMP	5962-8864501	OP AMP DUAL PRECISION JFET-INPUT		TLC272	5962-8949401
MULTIPLEXED TERMINAL MIL-STD-1553 BC/RTU/MT TRANSCEIVER		PERIPHERAL MULTIFUNCTION 4.0 MHZ		SIGNAL PROCESSING ELEMENT		TLC277	5962-8949402	OP AMP DUAL PRECISION JFET-INPUT	
(SEE DWG)	5962-8869203	68C901B-4	5962-9086401	(SEE SPEC) /62001		OP AMP DUAL PRECISION JFET-INPUT WITH BALANCE ADJUST		OP215A	5962-8853801
MULTIPLEXED TERMINAL MIL-STD-1553 BC/RTU/MT TRANSCEIVERLESS		PERIPHERAL MULTIFUNCTION 5 MHZ		(SEE SPEC) /62002		OP215B	5962-8853802	OP AMP DUAL PRECISION JFET-INPUT WITH BALANCE ADJUST	
(SEE DWG)	5962-8869204	68C901B-5	5962-9086402	SIGNAL PROCESSOR DIGITAL		OP215BR	5962-8853803	OP AMP DUAL PRECISION JFET-INPUT WITH BALANCE ADJUST	
MULTIPLIER 12-BIT PARALLEL		PROCESSOR INTERFACE 20 MHZ		32010	5962-8405301	OP AMP DUAL PRECISION LOW POWER		TLC27L2	5962-8949403
MPY012HC1V/50005		P1754	5962-8864204	SIGNAL PROCESSOR DIGITAL 20 MHZ		TLC27L7	5962-8949404	OP AMP DUAL BI-FET LOW POWER	
MULTIPLIER 16-BIT PARALLEL		PROCESSOR INTERFACE 30 MHZ		320C10	5962-8763301	OP AMP DUAL BI-FET LOW POWER		062	5962-8102302
MPY016HC1V/50006		P1754	5962-8864205	SIGNAL PROCESSOR DIGITAL 25 MHZ		062	/11902	072	/11905
MULTIPLIER 8-BIT PARALLEL		PROCESSOR INTERFACE 40 MHZ		320C10-25	5962-8763302	072	5962-8102305	OP AMP DUAL FAST-SETTLING	
TDC1008C1V /50001		P1754	5962-8864206	SIGNAL PROCESSOR DIGITAL 40 MHZ		LM6118	5962-9156501		
MPY008HC2V/50004		PROCESSOR INTERFACE WITH SYSTEM CONFIGURATION		320C25	5962-8861901				
MULTIPLIER/ACCUMULATOR 12 X 12				320C25-50	5962-8861902				
TDC1009C1V /50002				SIGNAL PROCESSOR DIGITAL 6.7 - 20 MHZ					
MULTIPLIER/ACCUMULATOR 16 X 16									
TDC1010C1V /50003									
NUMERIC PROCESSOR EXTENSION 80-BIT									
80387-16	5962-8953401								
80387-20	5962-8953402								

Operational amplifiers 9/

BUFFER AMPLIFIER WIDE-BAND

CLC110 5962-8997501
EL2072 5962-8997502

CURRENT AMPLIFIER

LH0002 5962-7801301

INSTRUMENTATION AMPLIFIER

INA101 5962-8778002

INSTRUMENTATION AMPLIFIER LOW-NOISE PRECISION

AMP-01A 5962-8863001
AMP-01B 5962-8863002

INSTRUMENTATION AMPLIFIER PRECISION

AD524S /14301
AD524 5962-8853901

INSTRUMENTATION AMPLIFIER PROGRAMMABLE GAIN

AD625 5962-8771901

INSTRUMENTATION AMPLIFIER WITH GAIN SENSE

INA101 5962-8778001

OP AMP

4250 5962-7703901
CA3130BT 5962-7703301
LM107 5962-8958901
0032 5962-8001301

OP AMP 14 V/ES

HA-5137 5962-8962702

OP AMP 28 V/ES

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MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
OP AMP DUAL HIGH-SPEED CURRENT-FEEDBACK		OFFSET MATCHED		OP AMP HIGH-SPEED OUTPUT CLAMPING		OP AMP JFET-INPUT HIGH-OUTPUT-DRIVE MICROPOWER		OP-07A	5962-8203601
OP-260A	5962-9053601	OP207	5962-8771501	CLC500	5962-9092501	TLE2061M	5962-9080701	OP-07A	/13501
OP AMP DUAL HIGH-SPEED CURRENT FEEDBACK		OP AMP FAST SETTLING VIDEO		OP AMP HIGH-SPEED PROGRAMMABLE SUPPLY CURRENT		OP AMP LOW-NOISE		OP-27A	/13503
EL2232	5962-9167501	HOS-050A	5962-8857901	CLC505	5962-9099301	5534A	/13101	2500	/12204
OP AMP DUAL HIGH-SPEED LOW-POWER		HOS-060SH	5962-8857902	OP AMP HIGH-SPEED FAST SETTLING PRECISION		HA-5101	5962-8963501	OP AMP PRECISION CHOPPER-STABILIZED	
AD827	5962-9211701	OP AMP FAST SETTLING UNITY GAIN STABLE		CLC505	5962-9099301	OP AMP LOW-NOISE CHOPPER-STABILIZED		TLC2652M	5962-9089501
TLE2022	5962-9088102	AD841	5962-8964101	OP AMP GENERAL PURPOSE		TLC2654M	5962-9089502	TLC2652A	5962-9089503
OP AMP DUAL HIGH-SPEED PRECISION		OP AMP GENERAL PURPOSE DUAL		OP-42A	5962-8851301	OP AMP LOW-NOISE HIGH-SPEED PRECISION		OP AMP PRECISION FAST-SETTLING	
OP249A	5962-9151901	741A	/10101	OP-42B	5962-8851302	LT1007A	5962-8757801	AD843	5962-9098001
OP AMP DUAL JFET HIGH-SPEED		LM101A	/10103	OP-42	/12208	TLE2027M	5962-9089601	OP AMP QUAD	
LT1057A	5962-9081701	LM108A	/10104	OP AMP HIGH-SPEED LOW-POWER		OP AMP LOW-NOISE HIGH-SPEED PRECISION UNCOMPENSATED		LM124	5962-7704301
LT1057	5962-9081702	LM709	5962-7800701	TLE2021	5962-9088101	LT1037A	5962-8856701	LM148	/11001
OP AMP DUAL JFET-INPUT HIGH-OUTPUT-DRIVE MICROPOWER		OP AMP GENERAL PURPOSE DUAL		OP AMP HIGH-SPEED OUTPUT CLAMPING		LT1028AM	5962-8862201	LM124A	5962-7704302
TLE2062M	5962-9080801	747A	/10102	CLC501	5962-8997401	LT1037A	5962-8856701	LM149	/11002
OP AMP DUAL LOW-NOISE		OP AMP HIGH SPEED PRECISION JFET		OP AMP HIGH-SPEED PRECISION JFET-INPUT		LT1028AM	5962-8862202	4156	/11003
HA-5102	5962-8954801	LT1055A	5962-8997601	LT1022A	5962-8962201	TLE2037M	5962-9089602	4136	/11004
OP AMP DUAL LOW-NOISE UNCOMPENSATED		LT1056A	5962-8997602	LT1022	5962-8962202	OP AMP LOW-NOISE HIGH-SPEED PRECISION		LM124	/11005
HA-5112	5962-8963201	LT1055	5962-8997603	OP AMP HIGH-SPEED PRECISION JFET		OP-37A	5962-8853701	LM124A	/11006
OP AMP DUAL LOW-NOISE HIGH-SPEED		LT1056	5962-8997604	OP44A	5962-8980401	OP37B	5962-8853702	OP AMP QUAD PRECISION	
OP-271A	5962-8872102	OP AMP HIGH SPEED VOLTAGE FEEDBACK		OP44A	/12207	OP37C	5962-8853703	LT1014A	5962-8967701
OP AMP DUAL LOW-NOISE PRECISION		CLC420A	5962-9175801	OP AMP HIGH-SPEED WIDE-BANDWIDTH		OP-37A	/13505	LT1014	5962-8967702
OP-270A	5962-8872101	CLC420B	5962-9175802	OP64A	5962-9053501	OP AMP LOW-NOISE PRECISION HIGH-SPEED		064	5962-8102303
OP AMP DUAL LOW-OFFSET LOW-NOISE		OP AMP HIGH SPEED WIDE-BAND		OP AMP HIGH-SPEED WIDE-BAND		OP37B	5962-8853702	064	/11903
OP-227A	5962-8688701	CLC221A	5962-9083601	OP249A	5962-9151901	OP37C	5962-8853703	074	/11906
OP-227A	/13504	OP AMP HIGH VOLTAGE		OP AMP HIGH-SPEED WIDE-BAND		OP-37A	/13505	074	5962-8102306
OP AMP DUAL LOW-OFFSET LOW-NOISE HIGH-SPEED		PA84M	5962-9073601	CLC200A	5962-8991001	OP AMP LOW-NOISE UNCOMPENSATED		OP AMP QUAD BIFET	
OP-237A	5962-9056801	OP AMP HIGH-OUTPUT-CURRENT		CLC231A	5962-8959401	HA-5111	5962-8963101	AD713S	5962-9063301
OP-237C	5962-9056802	OP-50A	5962-8967301	CLC220A	5962-8991101	OP AMP LOW-OFFSET		AD713T	5962-9063302
OP AMP DUAL LOW-OFFSET LOW-POWER		OP-50B	5962-8967302	OP AMP HIGH-VOLTAGE		OP-77B	5962-8773801	OP AMP QUAD HIGH-SPEED LOW-NOISE	
OP-200A	5962-8859301	OP AMP HIGH-POWER		LM144	5962-7800301	714	/13502	OP-471A	5962-8856502
OP AMP DUAL LOW-POWER		42106	5962-8762001	2640	5962-7800302	OP-07	5962-8203602	OP AMP QUAD HIGH-SPEED LOW-POWER	
LM158	5962-8771001	OPA541	5962-8870101	LM143	5962-7800303	OP-77A	5962-8773802	TLE2024	5962-9088103
LM158A	5962-8771002	PA51	5962-8762002	1536	5962-7800304	OP AMP LOW-POWER		OP AMP QUAD JFET-INPUT HIGH-OUTPUT-DRIVE MICROPOWER	
HA-5142	5962-8965602	OP AMP HIGH-POWER (0.2A OUTPUT) EXTERNALLY COMPENSATED		OP AMP JFET		HA-5141	5962-8965601	TLE2064	5962-9080901
OP AMP DUAL PRECISION LOW-VOLTAGE MICROPOWER		LH0041	5962-8508701	LF155	/11401	2700	/12201	OP AMP QUAD LOW-NOISE	
OP-290	5962-8978301	OP AMP HIGH-POWER (1A OUTPUT) EXTERNALLY COMPENSATED		LF156	/11402	OP AMP LOW-POWER HIGH PRECISION		HA-5104	5962-8850201
OP AMP DUAL ULTRA-LOW		LH0021	5962-8508801	LF157	/11403	OP AMP MULTIPLEXER QUAD		OP AMP QUAD LOW-NOISE UNCOMPENSATED	
		LM6161	5962-8962101	LF155A	/11404	LM604	5962-8963901	HA-5114	5962-8963401
		LM6164	5962-8962401	LF156A	/11405	OP AMP POWER		OP AMP QUAD LOW-OFFSET LOW POWER	
		LM6165	5962-8962501	LF157A	/11406	M10P42119	5962-9170001	OP-400A	5962-8777101
		2510	/12205	OP AMP JFET-INPUT (INTERNALLY COMPENSATED)		M10P42116	5962-9072301	OP AMP QUAD LOW-POWER	
		2520	/12206	OP-15A	5962-8954201	PA83M/883	5962-9162101	OP421B	5962-8855901
		LM118	/10107	OP-15B	5962-8954202	M10P42114	5962-9063801	OP421C	5962-8855902
				OP-16A	5962-8954301	M10P42109	5962-9065901	HA-5144	5962-8965603
				OP-16B	5962-8954302	M10P42115	5962-9082801		
				OP-16C	5962-8954303	PA02	5962-9067901		
						LH101A	5962-8508901		
						LH101	5962-8508902		
						OP AMP PRECISION			

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MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
OP AMP QUAD LOW-VOLTAGE MICROPOWER		OP AMP WIDEBAND HIGH SLEW RATE		MAGNITUDE COMPARATOR 8-BIT		VOLT. COMPARATOR HIGH-SPEED OPEN-EMITTER OUTPUT		1825	5962-8768101
OP490A	5962-8967001	EL2038	5962-9153501	54LS682	5962-8415101	685	5962-8600801	PULSE WIDTH MODULATOR CONTROLLER OFF-LINE CURRENT MODE	
OP AMP QUAD MATCHED		HA-2539	5962-8778701	54LS684	5962-8415201	685	5962-8600802	1842	5962-8670401
OP-11A	5962-8980101	CLC404	5962-9099401	MAGNITUDE COMPARATOR 8-BIT WITH ENABLE AND PULL-UP RESISTORS		6685	5962-8600803	1843	5962-8670402
OP-11B	5962-8980102	EL-2039	5962-8778702	54AC520	5962-9091601	96685	5962-8600804	1844	5962-8670403
OP AMP QUAD PRECISION		OP AMP WIDEBAND HIGH SLEW RATE HIGH OUTPUT CURRENT		54AC11520	5962-9091602	VOLT. COMPARATOR HIGH-SPEED PRECISION WITH LATCH CIRCUIT		1845	5962-8670404
TLC274	5962-9060401	HA-2542	5962-8964301	MAGNITUDE COMPARATOR 8-BIT WITH OUTPUT ENABLE		AD790	5962-9150501	PULSE WIDTH MODULATOR CURRENT MODE	
TLC279	5962-9060402	OP AMP WIDEBAND HIGH-SPEED		54LS688	5962-8415301	VOLT. COMPARATOR QUAD		1847	/70202
OP AMP QUAD PRECISION HIGH-SPEED JFET		CLC201A	5962-9083301	VOLT. COMPARATOR		LM139	5962-7700801	1847	5962-8680602
LT1058A	5962-8989701	OP AMP WIDEBAND LOW DISTORTION		LT1011A	5962-9062701	LM139	/11201	PULSE WIDTH MODULATOR REGULATING	
LT1058	5962-8989702	CLC207A	5962-9097701	LT1011	5962-9062702	LM139A	5962-8773901	1525A	5962-8951101
OP AMP QUAD SINGLE SUPPLY		CLC232A	5962-9166501	VOLT. COMPARATOR DIFFERENTIAL		VOLT. COMPARATOR QUAD DIFFERENTIAL		1524B	5962-8764501
35074	5962-8996901	OP AMP WIDEBAND OVER-DRIVE PROTECTED		710	/10301	TLC374	5962-8765901	1524	/12601
35074A	5962-8996902	CLC206A	5962-8985801	VOLT. COMPARATOR DIFFERENTIAL HIGH-SPEED		VOLT. COMPARATOR QUAD DIFFERENTIAL LOW-POWER		1524	5962-7802801
OP AMP QUAD VERY LOW NOISE		CLC205A	5962-9083501	LM160	5962-8767401	TLC3704M	5962-9096901	1526	5962-8551501
OP-470A	5962-8856501	OP AMP WIDEBAND WITH DISABLE		760	5962-8754501	VOLT. COMPARATOR QUAD LOW-POWER PRECISION		1526A	/12602
OP AMP ULTRA-HIGH FREQUENCY EXTERNAL COMPENSATION		CLC410	5962-9060001	529	5962-8757202	CMP404A	5962-8990401	1526A	5962-8551502
5539	5962-8606401	OP AMP/VOLT. REFERENCE		LM161	5962-8757203	CMP404B	5962-8990402	1527A	5962-8951102
OP AMP VIDEO		LM10	5962-8760401	VOLT. COMPARATOR DIFFERENTIAL HIGH-SPEED WITH EMITTER-FOLLOWER INPUT		CMP04B	5962-8990403	1524A	5962-8764502
HA-2544	5962-8950201	TRANSISTOR ARRAY		527	5962-8757201	VOLT. COMPARATOR QUAD PRECISION		UC1525A	5962-8951103
OP AMP WIDEBAND		3018A	/10801	VOLT. COMPARATOR DUAL		HA-4902	5962-8686001	1526	/12603
1437	5962-8981301	VIDEO AMPLIFIER TWO-STAGE DIFFERENTIAL INPUT DIFFERENTIAL OUTPUT		LT1017	5962-8950401	VOLT. COMPARATOR QUAD BUFFER PRECISION		UC1527A	5962-8951104
2600	/12202	VOLT. FOLLOWER		LT1018	5962-8950402	LM111	5962-8687701	1527A	/12604
2620	/12203	LM102	/10601	LM193	/11202	LM111	/10304	VOLT. REFERENCE PROGRAMMABLE	
HA-2540	5962-8964801	LM2110	/10603	AM687	5962-7801901	VOLT. REGULATOR		431	5962-8410901
EL-2040	5962-8964802	733	5962-8418501	AM6687	5962-7801902	HA-4902	5962-8686001	VOLT. REGULATOR 12V 1.0A LOW DROPOUT	
OP AMP WIDEBAND FAST SETTLING		592	5962-8418502	AD96687	5962-7801903	VOLT. COMPARATOR/BUFFER PRECISION		LM2940K-12	5962-9088401
HA-5190	5962-8778401	VOLT. FOLLOWER HIGH-SPEED		LH2111	/10305	LM111	5962-8687701	VOLT. REGULATOR 15V 1.0A LOW DROPOUT	
AD840	5962-8964001	LM110	5962-8760601	VOLT. COMPARATOR DUAL DIFFERENTIAL		LM111	/10304	LM2940K-15	5962-9088501
EL-2190	5962-8778402	LM110	/10602	521	5962-8751601	Regulators 12/		LM2940K-8	5962-9088301
OP AMP WIDEBAND FAST SETTLING CURRENT FEEDBACK		VOLTAGE FOLLOWER/BUFFER AMPLIFIER WITH FET INPUTS		TLC372	5962-8765801	BINARY CORRELATOR AND TEMPLATE MATCHER 1024-TAP 16 MHZ		VOLT. REGULATOR 8V 1.0A LOW DROPOUT	
400	5962-8997001	LH0033	5962-8001401	711	/10302	L64230-16	5962-9050402	VOLT. REGULATOR 8V 1.0A LOW DROPOUT	
OP AMP WIDEBAND FAST SETTLING HIGH GAIN		WIDEBAND AMPLIFIER TWO-CHANNEL INPUT		TL514	5962-8687801	MODULATOR/DEMODULATOR CONTINUOUSLY VARIABLE SLOPE DELTA		VOLT. REGULATOR ADJ.	
CLC401	5962-8997301	1545	5962-8671201	VOLT. COMPARATOR DUAL HIGH-SPEED		3517	5962-8764301	VOLT. REGULATOR ADJ. NEGATIVE	
EL2171	5962-8997302	WIDEBAND AMPLIFIER WIT AGC		LM119	5962-8601401	POWER SUPPLY CONTROL CIRCUIT SWITCHED-MODE		VOLT. REGULATOR ADJ. NEGATIVE 3.0A	
OP AMP WIDEBAND FAST SETTLING HIGH OUTPUT CURRENT		1590	5962-8765701	LT119A	5962-8601402	5560	5962-8672201	LM104	5962-8760501
AD842	5962-8964201	Comparators 10/		LM119	/10306	PULSE WIDTH MODULATOR CONTROLLER CURRENT-MODE		LM137	5962-7703403
OP AMP WIDEBAND FAST SETTLING UNITY GAIN STABLE				LT119A	/10307	PULSE WIDTH MODULATOR CONTROLLER HIGH SPEED		LT137A	5962-7703406
HA-2541	5962-8778501			VOLT. COMPARATOR FAST PRECISION		UC1846	5962-8680601	79MG	/11801
EL-2041	5962-8778502			CMP-01	5962-8987101	1846	/70201	79G	/11802
				VOLT. COMPARATOR HIGH-SPEED				LM137H	/11803
				LM106	5962-8003701			LM137K	/11804
				LT1016	5962-8684501			VOLT. REGULATOR ADJ. NEGATIVE HIGH VOLTAGE	
				AM686	5962-7801801			LM137HV	5962-7703404
				LM106	/10303			LT137AHV	5962-7703408

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MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	
VOLT. REGULATOR ADJ. POSITIVE		OM7509SC	5962-8949001	POSITIVE 15V 1.0A		Drivers/receivers 13/		VERTING		
723	/10201	VOLT. REGULATOR FIXED DUAL +15V AND -5V OUTPUT		7815A	5962-8855301			54FCT827A	5962-8950601	
LM117	5962-7703401	OM7507SC	5962-8949008	VOLT. REGULATOR FIXED POSITIVE 24V 1.0 A				54FCT827B	5962-8950602	
(SEE DWG)	5962-8952001	VOLT. REGULATOR FIXED DUAL +5V AND -12V OUTPUT		7824A	5962-8855401	BUFFER/DRIVER AND HEX 2-INPUT		BUS DRIVER HEX		
78MG	/11701	VOLT. REGULATOR FIXED DUAL +5V AND -12V OUTPUT				54ALS808		5962-8869501	54LS368	/32204
78G	/11702	OM7502SC	5962-8949003	VOLT. REGULATOR FIXED POSITIVE 5V		BUFFER/DRIVER HEX INVERTING WITH COMMON ENABLES AND THREE-STATE OUTPUTS		BUS DRIVER HEX NTDS		
LM117H	/11703	VOLT. REGULATOR FIXED DUAL +5V AND -15V OUTPUT		LM109	/10701	54HC366 /65707		MOH0268D		5962-8858101
LM117K	/11704			LM109	5962-8777401	54HC366		BUS DRIVER LATCHING INVERTING OCTAL		
LM105	5962-8958801			LM123	5962-8777501	5962-8682801		82C83		5962-8406702
LT117A	5962-7703405			VOLT. REGULATOR FIXED POSITIVE 5V 5A		BUFFER/DRIVER NAND HEX 2-INPUT		BUS DRIVER LATCHING OCTAL		
LM138K	/11706			LT1003	5962-8987301	54ALS804		5962-8869301	82C82	5962-8406701
VOLT. REGULATOR ADJ. POSITIVE 1.0A		OM7503SC	5962-8949004	VOLT. REGULATOR FIXED POSITIVE 6V 1.0A		BUFFER/DRIVER NOR HEX 2-INPUT		BUS TRANCEIVER OCTAL		
(SEE DWG)	5962-8998101	VOLT. REGULATOR FIXED DUAL +5V AND -5V OUTPUT		7806A	5962-8962601	54ALS805A		5962-8869401	54BCT623	5962-9094001
VOLT. REGULATOR ADJ. POSITIVE 2.0A		OM7501SC	5962-8949002	VOLT. REGULATOR FIXED POSITIVE 8V 1.0A		BUFFER/DRIVER OCTAL INVERTING WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER		
(SEE DWG)	5962-8864601	VOLT. REGULATOR FIXED NEGATIVE -12V 1.0A		7808A	5962-8962801	54AC540		5962-8769501	UT63M105	5962-8864401
VOLT. REGULATOR ADJ. POSITIVE 3.0A		7912A	5962-8874701	VOLT. REGULATOR FIXED POSITIVE LOW DROPOUT 5V 1.0A		54AC540		/75710	UT63M107	5962-8864402
150	5962-8767501	VOLT. REGULATOR FIXED NEGATIVE -15V 1.0A		LM2940-5.0	5962-8958701	BUFFER/DRIVER OCTAL INVERTING WITH THREE-STATE OUTPUTS TTL-COMPATIBLE		UT63M115		5962-8864403
150	5962-8767502	7915A	5962-8874801	VOLT. REGULATOR HIGH EFFICIENCY		54ACT240		5962-8775901	UT63M117	5962-8864404
LM150K	/11705	VOLT. REGULATOR FIXED NEGATIVE -5V 1.0A		1834	5962-8774201	BUFFER/DRIVER OCTAL WITH OPEN COLLECTOR OUTPUTS		BUS TRANSCEIVER AND REGISTER OCTAL WITH THREE-STATE OUTPUTS		
VOLT. REGULATOR ADJ. POSITIVE 5.0A		7905A	5962-8874601	VOLT. REGULATOR HIGH-POWER SWITCHING WITH INTERNAL 1.25A SWITCH		54BCT760		5962-9093801	54AS646	5962-8759501
(SEE DWG)	5962-8952101	VOLT. REGULATOR FIXED NEGATIVE 0.5A 1.0A		LT1072	5962-9082503	BUFFER/DRIVER OR HEX 2-INPUT		BUS TRANSCEIVER 10-BIT BIDIRECTIONAL WITH THREE-STATE OUTPUTS		
VOLT. REGULATOR ADJ. POSITIVE HIGH VOLTAGE		79M05	/11501	LT1072HV	5962-9082506	BUFFER/DRIVER OR HEX 2-INPUT		29861A		5962-8860401
LM117HV	5962-7703402	LM120H-05	5962-7704001	VOLT. REGULATOR HIGH-POWER SWITCHING WITH INTERNAL 2.5A SWITCH		54ALS832		5962-8414501	BUS TRANSCEIVER 10-BIT NONINVERTING TTL-COMPATIBLE	
LT117AHV	5962-7703407	LM120H-12	5962-7704003	LT1071	5962-9082502	BUFFER/LINE DRIVE OCTAL WITH THREE-STATE OUTPUTS		54FCT861A		5962-8953301
VOLT. REGULATOR DUAL TRACKING		LM120H-15	5962-7704004	LT1071HV	5962-9082505	54BCT241		5962-9074301	54FCT861B	5962-8953302
4194	5962-7705401	79M12	/11502	VOLT. REGULATOR HIGH-POWER SWITCHING WITH INTERNAL 5A SWITCH		BUFFER/LINE DRIVER HEX NONINVERTING THREE-STATE TTL-COMPATIBLE INPUTS		BUS TRANSCEIVER 10-BIT HIGH PERFORMANCE		
VOLT. REGULATOR DUAL POLARITY TRACKING		LM120H-15	5962-7704004	LT1070	5962-9082501	BUFFER/LINE DRIVER/MOS DRIVER OCTAL WITH INVERTED THREE-STATE OUTPUTS		29C861		5962-8770401
1568	5962-8876301	79M15	/11503	LT1070HV	5962-9082504	54HCT367		5962-9070601	29C961	5962-8770403
VOLT. REGULATOR DUAL POLARITY TRACKING WITH BALANCE ADJUST		LM120H-24	5962-7704005	VOLT. REGULATOR SWITCHING		BUFFER/LINE/MOS DRIVER OCTAL WITH INVERTED THREE-STATE OUTPUTS		BUS TRANSCEIVER 8-BIT NONINVERTING		
1568	5962-8876302	79M24	/11504	LM1578	5962-8958601	54BCT2240		5962-9093901	54FCT833A	5962-8973101
VOLT. REGULATOR FIXED DUAL +12V AND -12V OUTPUT		7905	/11505	LM1578A	5962-8958602	BUFFER/LINE/MOS DRIVER OCTAL WITH THREE-STATE OUTPUTS		54FCT833B		5962-8973102
OM7505SC	5962-8949006	7912	/11506	VOLT. REGULATOR SWITCHING SUBSYSTEM		54BCT2244		5962-9074101	BUS TRANSCEIVER 9-BIT BIDIRECTIONAL WITH THREE-STATE OUTPUTS	
VOLT. REGULATOR FIXED DUAL +12V AND -15V OUTPUT		7915	/11507	78S40	5962-8876101	BUS CONTROLLER DUAL REDUNDANT RTU		29863A		5962-8860402
OM7506SC	5962-8949007	7924	/11508	VOLT. REGULATOR/COMPARATOR MICROPOWER		BUS-65600		5962-8858501	BUS TRANSCEIVER 9-BIT HIGH PERFORMANCE	
VOLT. REGULATOR FIXED DUAL +12V AND -5V OUTPUT		7924A	5962-8874901	LT1020	5962-9084101	BUS DRIVER 10-BIT NONIN-		29C863		5962-8770402
OM7504SC	5962-8949005	VOLT. REGULATOR FIXED NEGATIVE 8V						29C963		5962-8770404
VOLT. REGULATOR FIXED DUAL +15V AND -12V OUTPUT		7908A	5962-8987001							
OM7508SC	5962-8949009	VOLT. REGULATOR FIXED POSITIVE								
VOLT. REGULATOR FIXED DUAL +15V AND -15V OUTPUT		78M05	/10702							
OM7505SC	5962-8949006	78M12	/10703							
		78M15	/10704							
		78M24	/10705							
		7805	/10706							
		7812	/10707							
		7815	/10708							
		7824	/10709							
		VOLT. REGULATOR FIXED POSITIVE 1.0A								
		7805A	5962-8778201							
		7812A	5962-8777601							
		VOLT. REGULATOR FIXED								

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BUS TRANSCEIVER 9-BIT NONINVERTING		FORM		82C87H-5 5962-8757702 8287 5962-8686802		WITH THREE-STATE INVERTING OUTPUTS		WITH INTERFACE LOGIC AND 2.0V INPUT RECEIVER THRESHOLD	
54FCT863A	5962-8866101	55ALS056	5962-9062801	BUS TRANSCEIVER OCTAL INVERTING OUTPUTS		54F620	5962-8946601	2907	5962-8770701
54FCT863B	5962-8866102	55ALS057	5962-9062901	BUS TRANSCEIVER OCTAL INVERTING 3-STATE TTL COMPATIBLE INPUTS		BUS TRANSCEIVER OCTAL WITH THREE-STATE NONINVERTING OUTPUTS		2907	/44103
BUS TRANSCEIVER DIFFERENTIAL RS-485		82C86H-5 5962-8757701		54BCT640	5962-9075201	BUS TRANSCEIVER OCTAL WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER QUAD WITH INTERFACE LOGIC AND THREE-STATE OUTPUTS	
DS16F95	5962-8961501	BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH 8-BIT PARITY GENERATOR/CHECKER		54HCT640 5962-8974001		54F623	5962-9050601	2917A 5962-8671401	
BUS TRANSCEIVER DUAL		54F657 5962-8953501		BUS TRANSCEIVER OCTAL INVERTING WITH OPEN-COLLECTOR OUTPUTS		BUS TRANSCEIVER OCTAL WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER QUAD WITH THREE-STATE OUTPUTS	
UT63M125	5962-8864405	BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH INVERTING THREE-STATE OUTPUTS		54LS642	5962-8974801	54BCT543	5962-9087001	54ALS242B 5962-8401301	
UT63M127	5962-8864406	2946	5962-8672302	BUS TRANSCEIVER OCTAL INVERTING WITH THREE-STATE OUTPUTS		54HC623	5962-8998901	54ALS243A 5962-8401302	
UT63M135	5962-8864407	BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH NONINVERTING THREE-STATE OUTPUTS		54ALS640A	/38501	54AS640	5962-8955301	2916 /44105	
UT63M137	5962-8864408	2947	5962-8672301	54HC640	5962-8780901	54ALS1245A	5962-8873701	2917 /44106	
BUS TRANSCEIVER DUAL ASYNCHRONOUS		BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH THREE-STATE INPUTS/OUTPUTS		54ALS640A	/38506	54LS640	5962-8416101	54ALS242B /38506	
88C681	5962-8953201	54AC245 /75503		54HC640	5962-8872701	54HCT540	/65760	54ALS243A /38507	
88C681	5962-8953202	54AC245 5962-8775801		54ALS640A	/65506	54ALS245A	5962-8403001	BUS TRANSCEIVER UART	
BUS TRANSCEIVER DUAL CHANNEL		BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH THREE-STATE OUTPUTS		54HC640	/65506	54LS245	5962-8002101	1854 5962-7901701	
BUS-63125	5962-8757901	54ACT245 5962-8766301		54ALS640A	/65506	54LS245	/32803	BUS TRANSCEIVER OCTAL WITH THREE-STATE OUTPUTS	
BUS TRANSCEIVER DUAL CHANNEL LOW-POWER		BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH THREE-STATE OUTPUTS		54HC640	/65506	54LS245	/32804	54FCT646 5962-8877501	
BUS-63125II	5962-8757902	54ACT11245 5962-8766302		54HCT245	5962-8550601	54BCT245	5962-9051401	54FCT646A 5962-8877502	
ARX2411	5962-8757903	54AC640 /75506		BUS TRANSCEIVER OCTAL NONINVERTING		54ALS643	/38504	BUS TRANSCEIVER/REGISTER	
ARX3411	5962-8757904	54F545 /34804		82R6	5962-8886801	54HC643	/65507	1854 5962-7901701	
NH1-1500	5962-8757905	54AC643 /75507		54FCT645A	5962-8865302	54HCT643	/65509	BUS TRANSCEIVER/REGISTER OCTAL WITH THREE-STATE OUTPUTS	
FC1553623	5962-8757906	BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER OCTAL NONINVERTING WITH THREE-STATE OUTPUTS		AM29855A	5962-9051303	54F646 5962-8975401	
CT1487D	5962-8757907	54ACT245 5962-8766301		54F245	5962-8551101	AM29853A	5962-9051302	BUS TRANSCEIVER/REGISTER	
BUS TRANSCEIVER DUAL CHANNEL MIL-STD-1553 5V		BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH THREE-STATE OUTPUTS		54ALS645A	5962-8403301	BUS TRANSCEIVER PARITY WITH LATCH OPTION		BUS TRANSCEIVER/REGISTER INVERTED	
BUS-63147	5962-8952201	54HCT245 5962-8762901		54HC245	5962-8408501	BUS TRANSCEIVER PARITY WITH REGISTER OPTION		54F648 5962-8975402	
2453	5962-8952202	BUS TRANSCEIVER OCTAL GENERAL PURPOSE INTERFACE		54HCT245	5962-8550601	BUS TRANSCEIVER QUAD		BUS TRANSCEIVER/REGISTER OCTAL INVERTING WITH 3-STATE AND OPEN-COLLECTOR OUTPUT	
NH1-1529	5962-8952203	55ALS161 5962-8968101		54ALS652	5962-8867301	AM29833A	5962-9051301	54ALS653 5962-8968701	
BUS-63148	5962-8952204	BUS TRANSCEIVER OCTAL BIDIRECTIONAL WITH THREE-STATE OUTPUTS TTL-COMPATIBLE		54HC245	/65503	BUS TRANSCEIVER QUAD 2-INPUT		BUS TRANSCEIVER/REGISTER OCTAL INVERTING WITH THREE-STATE OUTPUTS	
CT2521	5962-8952205	54ACT245 5962-8766301		54HCT245	/65503	26S12	5962-8753401	54ALS651 5962-8875301	
FC1553921	5962-8952206	BUS TRANSCEIVER OCTAL GENERAL PURPOSE INTERFACE		54ALS645A	/38505	26S10	5962-8672001	54ALS648 5962-9052301	
FC1553923	5962-8952207	55ALS160 5962-8968001		54HCT245	/65553	26S12A	5962-8753402	BUS TRANSCEIVER/REGISTER OCTAL NONINVERTING WITH THREE-STATE OUTPUTS	
3453	5962-8952208	BUS TRANSCEIVER OCTAL NONINVERTING WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER OCTAL NONINVERTING WITH THREE-STATE OUTPUTS TTL-COMPATIBLE		BUS TRANSCEIVER QUAD 2-INPUT		54ALS653 5962-8968701	
BUS TRANSCEIVER DUAL RS232		54ACT245 5962-8766301		54F245	5962-8551101	2905	/44101	BUS TRANSCEIVER/REGISTER OCTAL INVERTING WITH THREE-STATE OUTPUTS	
LT1081	5962-8766602	BUS TRANSCEIVER OCTAL GENERAL PURPOSE INTERFACE		54HC245	5962-8762901	2906	/44102	54ALS651 5962-8875301	
BUS TRANSCEIVER DUAL RS232 WITH SHUTDOWN		55ALS161 5962-8968101		54FCT245A	5962-8762902	2915	/44104	54ALS648 5962-9052301	
LT1080	5962-8766601	BUS TRANSCEIVER OCTAL NONINVERTING WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER OCTAL WITH INVERTING OUTPUTS		BUS TRANSCEIVER QUAD BIDIRECTIONAL WITH THREE-STATE OUTPUTS		BUS TRANSCEIVER/REGISTER OCTAL NONINVERTING WITH THREE-STATE OUTPUTS	
BUS TRANSCEIVER HIGH PERFORMANCE CMOS PARITY		54AC623 /75505		54BCT520A	5962-9075001	54HC243	5962-8409001	54ALS646 5962-8952301	
29C855	5962-8857302	BUS TRANSCEIVER OCTAL BIDIRECTIONAL INVERTING TTL-COMPATIBLE		BUS TRANSCEIVER OCTAL WITH OPEN-COLLECTOR NON-INVERTING OUTPUTS		54HC243	/65502	BUS TRANSCEIVER/REGISTER OCTAL WITH THREE-STATE OUTPUTS	
29C833A	5962-8857304	54FCT640 5962-8865401		54F621	5962-9050602	BUS TRANSCEIVER QUAD INVERTING WITH THREE-STATE OUTPUTS		54ALS646 5962-8995801	
BUS TRANSCEIVER HIGH PERFORMANCE CMOS PARITY WITH LATCH OPTION		54FCT640A 5962-8865402		BUS TRANSCEIVER OCTAL WITH OPEN-COLLECTOR OUTPUTS		54LS242	5962-8002001	54ALS652 5962-8868701	
29C853A	5962-8857303	BUS TRANSCEIVER OCTAL GENERAL PURPOSE INTERFACE		54ALS641	/38502	54HC242	/65501	BUS TRANSCEIVER/REGISTER OCTAL WITH THREE-STATE OUTPUTS	
BUS TRANSCEIVER HIGH PERFORMANCE CMOS PARITY WITH PARITY LOGIC DEFAULT		55ALS160 5962-8968001		54ALS642	/38503	54F242	/34801	54ALS646 5962-8688501	
29C853	5962-8857301	BUS TRANSCEIVER OCTAL INVERTING		BUS TRANSCEIVER OCTAL WITH REGISTERS		54LS242	/32801	54BCT652 5962-9155301	
BUS TRANSCEIVER INTERFACE TRAPEZOIDAL-WAVE-		54F544 5962-8955501		54F544 5962-8955501		BUS TRANSCEIVER QUAD NONINVERTING WITH THREE-STATE OUTPUTS		54AC648 /75509	
		54LS648 /32805		54LS648 /32805		BUS TRANSCEIVER QUAD		54HC646 /65508	
								BUS TRANSCEIVER/REGISTERS OCTAL WITH THREE-STATE OUTPUTS	
								54BCT646 5962-9155501	
								BUS/MOS MEMORY DRIVER 10-BIT WITH INVERTED 3-	

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STATE OUTPUTS		0006	5962-8761701	AND B) RECEIVER STANDBY HIGH		DYNAMIC MEMORY DRIVER OCTAL WITH THREE-STATE OUTPUTS AND NONINVERTING DRIVERS		LINE DRIVER QUAD DIFFERENTIAL HIGH SPEED	
54BCT2828A	5962-9074501	DRIVER HIGH VOLTAGE HIGH CURRENT 3.0A		3231	5962-8959201	2966 5962-8670702		26LS31	5962-7802301
BUS/MOS MEMORY DRIVER 10-BIT WITH THREE-STATE OUTPUTS		0008	5962-8761702	3231	5962-8959203	LATCHED DRIVER 8-BIT SERIAL-INPUT 100V OUTPUT		26F31	5962-7802302
54BCT2827A	5962-9074401	DRIVER INVERTING POWER MOSFET		DRIVER-RECEIVER SINGLE CHANNEL (MIL-STD-1553 A AND B) RECEIVER STANDBY LOW		UCS5822 5962-8764101		LINE DRIVER QUAD DIFFERENTIAL RS-485 COMPARABLE	
CLOCK DRIVER MOS DUAL		TSC429	5962-8877001	ARX3467	5962-8959205	LINE DRIVER ARINC BUS INTERFACE		96F172	5962-9076501
MMH0026	/03501	TSC4429	5962-8877002	DRIVER-RECEIVER SINGLE CHANNEL (RECEIVER IDLE NORMALLY HIGH)		HI-8382	5962-8687901	96F174	5962-9076502
0026	5962-7800802	DRIVER MOSFET DUAL POWER		DRIVER-RECEIVER SINGLE CHANNEL (RECEIVER IDLE NORMALLY LOW)		LINE DRIVER DUAL		LINE DRIVER QUAD DIFFERENTIAL WITH THREE-STATE OUTPUTS	
CLOCK DRIVER MOS DUAL WITH VBB CONNECTION		ICL7667	5962-8766001	FC155372	5962-9082902	55121 5962-8776901		55ALS194 5962-8864801	
0056	5962-7800801	DRIVER NONINVERTING POWER MOSFET		ARX3424	5962-9082904	55110A 5962-8754701		LINE DRIVER QUAD RS423 WITH THREE-STATE OUTPUTS	
CLOCK GENERATOR/DRIVER		TSC4420	5962-8877003	NHI-1545	5962-9082906	LINE DRIVER DUAL 4-INPUT NAND		26LS29	5962-8767001
8224	/42201	DRIVER-RECEIVER (UNIVERSAL TRANSCEIVER) SINGLE CHANNEL LOW POWER		CT1589MI	5962-9082908	54S140 /08101		LINE DRIVER/RECEIVER DUAL DIFFERENTIAL	
CLOCK GENERATOR/DRIVER 25 MHZ		NHI-1551	5962-9208501	DRIVER-RECEIVER SINGLE CHANNEL (RECEIVER IDLE NORMALLY LOW)		LINE DRIVER DUAL DIFFERENTIAL		7832	5962-8004102
82C84A	5962-8406801	ARX-4451	5962-9208502	FC155371	5962-9082901	55113 5962-8874401		7832	/10407
82C84A	5962-8406802	ARX-4418	5962-9208503	ARX3420	5962-9082903	55114 /10403		LINE DRIVER/RECEIVER DUAL DIFFERENTIAL W/OUTPUT DIODE CLAMPING	
COLUMN DRIVER ELECTRO-LUMINESCENT		NHI-1515	5962-9208504	NHI-1531	5962-9082905	LINE DRIVER DUAL DIFFERENTIAL RS-422 PARTY LINE/QUAD SINGLE ENDED RS-423		7831	5962-8004101
55553	5962-8605501	CT1589D	5962-8982606	CT1589M	5962-9082907	26LS30 5962-8672101		7831	/10406
55554	5962-8605502	MR63125MFR	5962-8757908	DRIVER-RECEIVER SINGLE CHANNEL (UNIVERSAL TRANSCEIVER) LOW POWER		LINE DRIVER DUAL DIFFERENTIAL CMOS-COMPATIBLE		9627	5962-8978701
DISPLAY DRIVER AC PLASMA (LINE SELECT)		BUS-63127II	5962-8982601	NHI-1513	5962-9174902	78C120 5962-8963001		9622	5962-8752201
55500	5962-8601801	ARX3419	5962-8982602	BUS63102II	5962-9174903	LINE DRIVER DUAL DIFFERENTIAL HIGH-SPEED		55107	/10401
DISPLAY DRIVER AC PLASMA (MATRIX-ADDRESSABLE)		ARX-1502	5962-8982603	3232	5962-9174906	9638 5962-8754601		LINE RECEIVER DUAL DIFFERENTIAL	
55501	5962-8601802	NHI-1523	5962-8982604	3232	5962-9174907	LINE DRIVER DUAL DIFFERENTIAL TS		7820A	5962-7900801
DRIVER 4-BIT LATCHED		FC1553721	5962-8982605	4404	5962-9174909	55113 /10405		55115	5962-8874501
UCS-5800	5962-8764002	CT1589D	5962-8982606	DRIVER-RECEIVER SINGLE CHANNEL (UNIVERSAL TRANSCEIVER) RECEIVER STANDBY HIGH		LINE DRIVER OCTAL WITH NONINVERTING THREE-STATE OUTPUTS		55183	5962-7900901
DRIVER 8-BIT LATCHED		MR63125MFR	5962-8757908	3232	5962-8959202	54BCT541 5962-9074901		9637A	5962-8752401
UCS-5801	5962-8764001	DRIVER-RECEIVER DUAL CHANNEL RECEIVER IDLE NORMALLY HIGH		3232	5962-8959204	LINE DRIVER OCTAL WITH INVERTING THREE-STATE OUTPUTS		55115	/10404
DRIVER DUAL HIGH-POWER MOSFET		ARX3416	5962-8944701	DRIVER-RECEIVER SINGLE CHANNEL (UNIVERSAL TRANSCEIVER) RECEIVER STANDBY LOW		54BCT540 5962-9074801		LINE RECEIVER DUAL DIFFERENTIAL PROGRAMMABLE SLEW RATE	
TSC4423	5962-8850304	NHI-1501	5962-8944702	ARX3464	5962-8959206	LINE DRIVER OCTAL WITH THREE-STATE OUTPUTS		9636A	5962-8752301
TSC4424	5962-8850305	FC1553622	5962-8944703	DRIVER-RECEIVER SINGLE CHANNEL (INTERFACES WITH MANCHESTER ENCODER-DECODER)		54BCT244 5962-9062501		LINE RECEIVER DUAL OC	
TSC4425	5962-8850306	BUS63135II	5962-8944704	BUS-63105II	5962-8604902	LINE DRIVER OCTAL WITH THREE-STATE OUTPUTS		55108	/10402
DRIVER DUAL HIGH-SPEED INVERTING		DRIVER-RECEIVER LOW POWER		DRIVER/RECEIVER TRIPLE RS-232		54BCT244 5962-9062501		LINE RECEIVER HEX NTDS	
SG1626	5962-8871601	FC155391	5962-8979901	(SEE DWG)	5962-8875102	LINE DRIVER OCTAL WITH THREE-STATE OUTPUTS		MOH0272C	5962-8858201
DRIVER DUAL POWER MOSFET		FC155392	5962-8979902	DRIVER/RECEIVER TRIPLE RS-232 WITH SHUTDOWN AND BIAS		54BCT244 5962-9062501		LINE RECEIVER QUAD	
TSC4423	5962-8850304	DRIVER-RECEIVER SINGLE CHANNEL (INTERFACES WITH MANCHESTER ENCODER-DECODER)		(SEE DWG)	5962-8875101	LINE DRIVER QUAD		55189	5962-8688801
TSC4424	5962-8850305	BUS-63105	5962-8604901	DYNAMIC MEMORY DRIVER OCTAL WITH THREE-STATE OUTPUTS AND INVERTING DRIVERS		55188 5962-8688901		55189A	5962-8688802
TSC4425	5962-8850306	ARX2402	5962-8604903	2965	5962-8670701	LINE DRIVER QUAD DIFFERENTIAL		LINE RECEIVER QUAD DIFFERENTIAL	
DRIVER DUAL HIGH-POWER MOSFET		ARX3402	5962-8604904	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26LS32	5962-7802001
TSC426	5962-8850301	BUS-8553	5962-8604905	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26LS32B	5962-8761601
TSC427	5962-8850302	NHI-1509	5962-8604906	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		10H515	5962-8750101
TSC428	5962-8850303	FC155361	5962-8604907	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26LS34	5962-8759601
DRIVER DUAL HIGH-SPEED INVERTING		DRIVER-RECEIVER SINGLE CHANNEL (MIL-STD-1553 A AND B) LOW POWER		AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26LS33	5962-7802002
SG1626	5962-8871601	NHI-1514	5962-9174901	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26C32	5962-9164001
DRIVER DUAL POWER MOSFET		BUS63104II	5962-9174904	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26LS32A	5962-7802003
TSC426	5962-8850301	3231	5962-9174905	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26LS33A	5962-7802004
TSC427	5962-8850302	4407	5962-9174908	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901		26F32	5962-7802005
TSC428	5962-8850303	DRIVER-RECEIVER SINGLE CHANNEL (MIL-STD-1553 A AND B) LOW POWER		AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901			
DRIVER DUAL POWER MOSFET WITH LATCH PROOF OUTPUTS FOR INDUCTIVE LOADS		NHI-1514	5962-9174901	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901			
TSC4426	5962-8850307	BUS63104II	5962-9174904	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901			
TSC4427	5962-8850308	3231	5962-9174905	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901			
TSC4428	5962-8850309	4407	5962-9174908	AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901			
DRIVER HIGH VOLTAGE 1.5A		DRIVER-RECEIVER SINGLE CHANNEL (MIL-STD-1553 A AND B) LOW POWER		AND B) RECEIVER STANDBY HIGH		26C31 5962-9163901			

MILITARY

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MILITARY PARTS
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MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
LINE RECEIVER QUAD DIFFERENTIAL RS-485		55452 /12903		RECEIVER/TRANSMITTER DUAL ASYNCHRONOUS		(SEE DWG) 5962-8987701		MEMORY CORE DRIVER DUAL	
96F175 5962-9076601		55460 /12906		2681 5962-8856601		TRANSCEIVER/REGISTER OCTAL WITH THREE-STATE OUTPUTS		55325 /13001	
96F173 5962-9076602		55462 /12908		68C681 5962-8953203		54F652 5962-8955801		MEMORY CORE DRIVER QUAD	
LINE RECEIVER QUAD DIFFERENTIAL WITH THREE-STATE OUTPUTS				68681 5962-8856603		54AC646 5962-8968201		55326 /13002	
55ALS195 5962-8864901				RECEIVER/TRANSMITTER DUAL ASYNCHRONOUS WITH 7-BIT INPUT AND 8-BIT OUTPUT PORTS		54AC646 /75508		55327 /13003	
LINE RECEIVER QUINT DIFFERENTIAL		DS1632 5962-9052201		2681 5962-8856602		TRANSISTOR ARRAY		D/A converters 16/	
100314 5962-9162901		PERIPHERAL DRIVER DUAL NOR		REGISTERED TRANSCEIVER BIDIRECTIONAL I/O PORTS NONINVERTING 8-BIT		3045 /10802		D/A CONVERTER 10-BIT	
LINE RECEIVER TRIPLE		55454 5962-8871501		2952A 5962-8777201		2005 /14105		561 /13301	
10H516 5962-8750201		55464 5962-8871502		REGISTERED TRANSCEIVERS OCTAL WITH THREE-STATE OUTPUTS		TRANSISTOR ARRAY DARLINGTON		7520 /12702	
LINE RECEIVER TRIPLE DIFFERENTIAL WITH COMMON RESET		55474 5962-8871503		54BCT544 5962-9155401		2001 /14101		1020 /12705	
10516 5962-7800901		55454 /12905		REMOTE TERMINAL UNIT DUAL REDUNDANT		2002 /14102		D/A CONVERTER 12-BIT	
LINE TRANSCEIVER DIFFERENTIAL WITH THREE-STATE RECEIVER OUTPUT CIRCUITRY		55464 /12910		BUS-65142 5962-8979801		2003 /14103		AD767 5962-8961701	
55116 5962-8851101		PERIPHERAL DRIVER DUAL NOR CMOS-COMPATIBLE OPEN-COLLECTOR OUTPUTS		BUS-65143 5962-8979802		2004 /14104		ADH-030 5962-9063401	
55117 5962-8851102		DS1634 5962-8982101		REMOTE TERMINAL UNIT LOW POWER DUAL REDUNDANT		2801 /14106		TDC1112-1 5962-9165201	
55118 5962-8851103		PI-BUS TRANSCEIVER OCTAL BIDIRECTIONAL LATCHED		BUS-65111 5962-8763201		2802 /14107		TDC1112-2 5962-9165202	
55119 5962-8851104		54F776 5962-8870701		ROW DRIVER ELECTROLUMINESCENT		2804 /14109		7521 /12703	
NAND DRIVER QUAD 2-INPUT 30 OHM		UH-508 5962-8550001		55551 5962-8605401		2805 /14110		565 /12103	
54F3037 5962-9056501		POWER DRIVER AND QUAD 2-INPUT		55563A 5962-9081301		TRANSISTOR ARRAY DARLINGTON EIGHT-GATE		566 /12104	
NAND DRIVER QUAD HIGH-OUTPUT VOLTAGE AND CURRENT		UC1707 5962-8761901		(SEE DWG) 5962-9168701		2803 5962-8605801		1220 /12706	
UH-507 5962-8986701		POWER DRIVER NOR QUAD 2-INPUT 100V		(SEE DWG) 5962-9168702		2803 /14108		1218 /12707	
NTDS FAST DRIVER HEX		UH-532 5962-8960403		SOURCE DRIVER HIGH CURRENT		TRANSLATOR/RECEIVER/DRIVER HEX PROGRAMMABLE		D/A CONVERTER 12-BIT BINARY INPUT CODE	
MOF1305D 5962-8858301		POWER DRIVER NOR QUAD 2-INPUT 40V		UDS2981 5962-8851901		LTC1045 5962-9054501		DAC-HKB 5962-8952801	
OR DRIVER QUAD 2-INPUT HIGH-OUTPUT VOLTAGE AND CURRENT		UH-432 5962-8960401		UDS2983 5962-8851902		TRANSMISSION LINE/BACKPLANE TRANSCEIVER OCTAL 30-OHM NONINVERTING		D/A CONVERTER 12-BIT BUFFERED	
UH502 5962-8856401		POWER DRIVER NOR QUAD 2-INPUT 70V		55552 5962-8605402		54F30245 5962-8972201		7545S 5962-8770201	
OUTPUT DRIVER DUAL		UH-432-1 5962-8960402		55564A 5962-9081302		Timers 14/		7545T 5962-8770202	
UC1706 5962-8961101		POWER DRIVER OR QUAD 2-INPUT		TRANSCEIVER 8-BIT OCTAL LATCHED NONINVERTING WITH TS OUTPUTS TTL-COMPATIBLE		TIMER DUAL PRECISION		7545U 5962-8770203	
PERIPHERAL DRIVER DUAL AND		UH503 5962-8855101		54FCT543 5962-8973001		TLC556 5962-8950302		7545G 5962-8770204	
55451 /12902		RECEIVER TRANSMITTER UNIVERSAL ASYNCHRONOUS 2.0 MHZ		54FCT543A 5962-8973002		556 /10902		7545B 5962-8770205	
55461 /12907		HD-6402R 5962-9052501		TRANSCEIVER DUAL CHANNEL MIL-STD-1553 05V		TLC556 /14902		7545A 5962-8770206	
PERIPHERAL DRIVER DUAL AND CMOS COMPATIBLE WITH OPEN COLLECTOR OUTPUTS		RECEIVER TRANSMITTER UNIVERSAL ASYNCHRONOUS 8.0 MHZ		MR63147M 5962-9206101		TIMER DUAL LOW-POWER PRECISION		D/A CONVERTER 12-BIT BUFFERED MULTIPLYING	
DS1631 5962-8863101		HD-6402B 5962-9052502		TRANSCEIVER DUAL RS-232		7556 5962-8950304		(SEE DWG) 5962-8877801	
PERIPHERAL DRIVER DUAL NAND		RECEIVER QUAD NTDS FAST/ANEW		LT1181 5962-9172902		7556 /14904		(SEE DWG) 5962-8877802	
55450 /12901		MOR1623K 5962-8858401		TRANSCEIVER DUAL RS-232 WITH SHUTDOWN		TIMER LOW-POWER PRECISION		D/A CONVERTER 12-BIT CURRENT OUTPUT MICRO-PROCESSOR-COMPATIBLE	
55452 5962-7704901				LT1180 5962-9172901		7555 5962-8950303		AD567S 5962-8780101	
				TRANSCEIVER DUAL RS232		7555 /14903		D/A CONVERTER 12-BIT DUAL	
						555LV /14905		7547S 5962-8965701	
						TIMER PRECISION		7547T 5962-8965702	
						555 /10901		7547U 5962-8965703	
						TLC555 /14901		D/A CONVERTER 12-BIT MULTIPLYING	
						TLC555 5962-8950301		AD7541AS 5962-8948101	
						LM122 5962-9163101		AD7541AT 5962-8948102	
						555 /10903		PM7541AB 5962-8948103	
						Core Drivers 15/		PM7541AA 5962-8948104	
								7541 /12704	
								D/A CONVERTER 12-BIT TWO'S COMPLEMENT	
								DAC-HKB-2 5962-8952802	
								D/A CONVERTER 12-BIT .024	

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MILITARY PARTS
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PERCENT ELD		D/A CONVERTER 16-BIT 0 TO +10V OUTPUT		FULL MICROPROCESSOR INTERFACE		WITH OUTPUT AMPLIFIERS		+5V	
TDC1012	5962-9059602	MN3290T/B-V	5962-8953103	AD558T	/14401	7226	5962-8780201	MN5245	5962-8959501
D/A CONVERTER 12-BIT .048 PERCENT ELD		D/A CONVERTER 16-BIT 15-BIT LINEARITY		AD558S	5962-8778901	D/A CONVERTER TRIPLE 8-BIT WITH 256X24 COLOR PALETTE		A/D CONVERTER 12-BIT 0 TO +5V WITH THREE-STATE OUTPUTS	
TDC1012	5962-9059601	HS9378SB	5962-8986202	AD558T	5962-8778902	BT458	5962-8992801	MN5245A	5962-8959502
D/A CONVERTER 12-BIT EXTERNAL REFERENCE 2 MA FS		D/A CONVERTER 16-BIT 16-BIT LINEARITY		D/A CONVERTER 8-BIT WITH INPUT REGISTER		A/D Converters 17/		A/D CONVERTER 12-BIT 0V TO -10V EXTERNAL REFERENCE	
562	5962-8100801	HS9378TB	5962-8986201	HS3020	5962-8971801			MN5203	5962-8958302	MN5203	/12002
562	/12101	D/A CONVERTER 16-BIT 0 TO 10V OUTPUT		D/A CONVERTER DUAL 12-BIT BUFFERED MULTIPLYING		A/D CONVERTER 10-BIT SAMPLING WITH (8+2) READ INTERFACING STRUCTURE		A/D CONVERTER 12-BIT 0V TO -10V INTERNAL REFERENCE	
D/A CONVERTER 12-BIT HIGH-SPEED		DAC-HPB-1	5962-8953102	DAC8221A	5962-8967101	AD7579	5962-8969801	MN5200	5962-8958301
AD568SQ	5962-8980801	D/A CONVERTER 16-BIT 0.5V OUTPUT		D/A CONVERTER DUAL 12-BIT DOUBLE-BUFFERED MULTIPLYING		A/D CONVERTER 10-BIT SAMPLING WITH A 10-BIT PARALLEL WORD		5200	/12001
AD568SE	5962-8980802	MN3291T/B-V	5962-8953104	DAC8222A	5962-8967201	AD7579	5962-8969801	A/D CONVERTER 12-BIT 0V TO 10V INTERNAL REFERENCE	
D/A CONVERTER 12-BIT INTERNAL REFERENCE 2 MA FS		D/A CONVERTER 8-BIT		D/A CONVERTER DUAL 12-BIT 8 + 4 LOADING STRUCTURE 11-BIT LINEARITY		AD7579	5962-8969801	5206	/12007
563	5962-8100802	DAC-08	/11301	7537S	5962-8776301	AD7580	5962-8969802	MN5206	5962-8958307
563	/12102	7523	/12701	D/A CONVERTER DUAL 12-BIT 8 + 4 LOADING STRUCTURE 12-BIT LINEARITY		A/D CONVERTER 10-BIT WITH MICROPROCESSOR INTERFACE		A/D CONVERTER 12-BIT 1 MHZ 0.2 LSB	
D/A CONVERTER 12-BIT RANGE PROGRAMMABLE VOLTAGE OUTPUT		DAC-08A	/11302	7537T	5962-8776302	AD573S	5962-8850501	A/D CONVERTER 12-BIT 1 MHZ 0.3 LSB	
DAC87	5962-8300301	D/A CONVERTER 8-BIT MULTIPLYING BUFFERED WITH .125 LSB		7537U	5962-8776303	A/D CONVERTER 10-BIT WITH THREE-STATE BUFFERED OUTPUTS		CS5412-TC1	5962-9095701
DAC87	/13702	7524	5962-8770003	D/A CONVERTER DUAL 12-BIT 0.5 LSB		AD573S	5962-8850501	A/D CONVERTER 12-BIT 1 MHZ 0.3 LSB	
D/A CONVERTER 12-BIT RANGE-PROGRAMMABLE VOLTAGE OUTPUT		D/A CONVERTER 8-BIT MULTIPLYING BUFFERED WITH .5 LSB		7549T	5962-8876502	A/D CONVERTER 10-BIT WITH THREE-STATE BUFFERED OUTPUTS		CS5412-SC1	5962-9095702
DAC87	/13701	7524	5962-8770001	D/A CONVERTER DUAL 12-BIT 0.1.0 LSB		AD571	/13401	A/D CONVERTER 12-BIT 11-BIT LINEARITY	
DAC87	5962-8300201	D/A CONVERTER 8-BIT VIDEO		7549S	5962-8876501	AD571	5962-8680202	AD7672TQ10	5962-8965501
DAC87	/13703	BT102	5962-8965301	D/A CONVERTER DUAL 8-BIT BUFFERED 0.1 LSB'S OF GAIN ERROR		A/D CONVERTER 12-BIT		AD7672TQ05	5962-8965503
D/A CONVERTER 12-BIT VOLTAGE OUTPUT MICROPROCESSOR COMPATIBLE		D/A CONVERTER 8-BIT -2V TO +2V OUTPUT		7528	5962-8770103	CS5012	5962-8967901	A/D CONVERTER 12-BIT 12-BIT LINEARITY	
AD667S	5962-8865901	MN3009	5962-8768802	D/A CONVERTER DUAL 8-BIT BUFFERED 0.2 LSB'S OF GAIN ERROR		ADC-HX	5962-8850801	AD7672JQ10	5962-8965502
D/A CONVERTER 12-BIT WITH INPUT REGISTER		D/A CONVERTER 8-BIT 0V TO +4V OUTPUT		7528	5962-8770102	CLC925B	5962-9099501	AD7672JQ05	5962-8965504
MN3860	5962-9057001	MN3008	5962-8768801	D/A CONVERTER DUAL 8-BIT BUFFERED 0.4 LSB'S OF GAIN ERROR		AD9005A	5962-9066601	A/D CONVERTER 12-BIT HIGH PERFORMANCE MULTI-CHIP W/MICROPROCESSOR INTERFACE	
D/A CONVERTER 14-BIT DEGLITCHED 0.006% FSR		D/A CONVERTER 8-BIT HIGH-SPEED MULTIPLYING		7528	5962-8770101	ADC-HZ	5962-8850802	A/D CONVERTER 12-BIT HIGH PERFORMANCE MULTI-CHIP W/MICROPROCESSOR INTERFACE	
DAC02310-113	5962-8851702	DAC08	5962-8993201	D/A CONVERTER DUAL 8-BIT BUFFERED 0.4 LSB'S OF GAIN ERROR		5207	/12008	A/D CONVERTER 12-BIT HIGH PERFORMANCE MULTI-CHIP W/MICROPROCESSOR INTERFACE	
D/A CONVERTER 14-BIT DEGLITCHED 0.012% FSR		D/A CONVERTER 8-BIT MULTIPLYING BUFFERED WITH .25 LSB		7528	5962-8770101	5217	/12016	674AU	5962-8861501
DAC02310-112	5962-8851701	7524	5962-8770002	D/A CONVERTER QUAD 12-BIT		A/D CONVERTER 12-BIT -10V TO +10V EXTERNAL REFERENCE		674AT	5962-8861502
D/A CONVERTER 16-BIT		D/A CONVERTER 8-BIT TRIPLE COLOR-MAPPED VIDEO		AD390S	5962-8850901	MN5205	5962-8958306	674AU	/14005
DAC703	5962-8856301	RGBDAC3808H	5962-8950901	HS9324	5962-8862901	5205	/12006	674AT	/14006
D/A CONVERTER 16-BIT VOLTAGE OUTPUT		D/A CONVERTER 8-BIT VOLTAGE-MODE		AD390T	5962-8850902	A/D CONVERTER 12-BIT -10V TO +10V INTERNAL REFERENCE		A/D CONVERTER 12-BIT HIGH PERFORMANCE WITH MICRO-PROC. INTERFACE AND S/H	
AD7846	5962-8969701	7228T	5962-8866301	AD394S	5962-8851001	5202	/12005	674ZA	5962-9169001
D/A CONVERTER 16-BIT 0 TO +10V AND 0.5V OUTPUT		7228U	5962-8866302	AD394T	5962-8851002	MN5202	5962-8958305	A/D CONVERTER 12-BIT HIGH-SPEED	
DAC-HPB	5962-8953101	D/A CONVERTER 8-BIT WITH		AD395S	5962-8851003	A/D CONVERTER 12-BIT -5V TO +5V EXTERNAL REFERENCE		AD578SD	5962-8865801
				AD395T	5962-8851004	5204	/12004	AD578TD	5962-8865802
				D/A CONVERTER QUAD 8-BIT MULTIPLYING WITH MEMORY		MN5204	5962-8958304	AD578ZSD	5962-8865803
				DAC-8408A	5962-8967801	A/D CONVERTER 12-BIT -5V TO +5V INTERNAL REFERENCE		AD578ZTD	5962-8865804
				DAC-8408B	5962-8967802	5201	/12003	A/D CONVERTER 12-BIT HIGH-SPEED -10V TO +10V EXTERNAL REFERENCE	
				D/A CONVERTER QUAD 8-BIT		MN5201	5962-8958303	MN5215	5962-8958406
						A/D CONVERTER 12-BIT 0 TO		5215	/12014

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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
SPEED -10V TO +10V INTERNAL REFERENCE		CS5014-S	5962-8967401	MP7684AT	5962-8977703	7575S	5962-8776201	CHANNEL WIDEBAND VIDEO	
MN5212	5962-8958405	CS5014-T	5962-8967402	MP7684AS	5962-8977704	7575T	5962-8776202	HI524	5962-8761801
5212	/12013	A/D CONVERTER 16-BIT		A/D CONVERTER 8-BIT VIDEO		A/D CONVERTER 8-BIT WITH TRACK/HOLD 00.5 LSB		ANALOG MULTIPLEXER 8-CHANNEL	
A/D CONVERTER 12-BIT HIGH-SPEED -5V TO +5V EXTERNAL REFERENCE		MN5295	5962-8956901	AD9048T	5962-9092701	AD7820U	5962-8865001	MUX-08A	5962-8771601
MN5214	5962-8958404	A/D CONVERTER 16-BIT RESOLUTION		AD9048S	5962-9092702	A/D CONVERTER 8-BIT WITH TRACK/HOLD 01.0 LSB		MUX-08B	5962-8771602
5214	/12012	MN5290	5962-8956301	A/D CONVERTER 8-BIT 4-CHANNEL 00.5 LSB		AD7820T	5962-8865002	ANALOG MULTIPLEXER 8-CHANNEL DIFFERENTIAL	
A/D CONVERTER 12-BIT HIGH-SPEED -5V TO +5V INTERNAL REFERENCE		MN5291	5962-8956302	7824U	5962-8876402	A/D CONVERTER 9-BIT		4097B	/17802
MN5211	5962-8958403	A/D CONVERTER 16-BIT SAMPLING		7824T	5962-8876401	1049	5962-8853201	507	/19003
5211	/12011	MN6400T	5962-9177001	A/D CONVERTER 8-BIT 4-CHANNEL 01.0 LSB		A/D CONVERTER HIGH-SPEED		ANALOG MULTIPLEXER 8-CHANNEL LATCHABLE	
A/D CONVERTER 12-BIT HIGH-SPEED 0V TO -10V EXTERNAL REFERENCE		A/D CONVERTER 16-BIT 100 KHZ		7828U	5962-8876404	AD7572S12	5962-8759101	DG528	5962-8768901
MN5213	5962-8958402	CS5101A-SD	5962-9169101	A/D CONVERTER 8-BIT 8-CHANNEL 00.5 LSB		AD7572T12	5962-8759102	ANALOG MULTIPLEXER 8-CHANNEL LATCHED	
5213	/12010	CS5101A-TD	5962-9169102	7828T	5962-8876403	AD7572U12	5962-8759103	ADG527A	5962-8971002
A/D CONVERTER 12-BIT HIGH-SPEED 0V TO -10V INTERNAL REFERENCE		A/D CONVERTER 16-BIT 16.25 ES		A/D CONVERTER 8-BIT 8-CHANNEL 01.0 LSB		AD7572S05	5962-8759104	ANALOG MULTIPLEXER 8-CHANNEL TTL-COMPATIBLE INPUTS	
MN5210	5962-8958401	CS5016-S	5962-8967601	7828T	5962-8876403	AD7572U05	5962-8759106	54HCT4051	5962-9065401
5210	/12009	A/D CONVERTER 16-BIT 16.25 ES		A/D CONVERTER 8-BIT FLASH		VOLT.-TO-FREQUENCY CONVERTER		ANALOG MULTIPLEXER DUAL 4-CHANNEL	
A/D CONVERTER 12-BIT HIGH-SPEED 0V TO 10 INTERNAL REFERENCE		CS5016-T	5962-8967602	SP1078B	5962-8997901	AD650	/13803	509	/19008
MN5216	5962-8958407	A/D CONVERTER 16-BIT SAMPLING 400 HKZ		A/D CONVERTER 8-BIT MICROPROCESSOR COMPATIBLE		Analogue switches/multiplexers 18/			
5216	/12015	AD1385TD/883	5962-9171201	ADC0802	5962-9096601	ANALOG LATCH CURRENT SENSING WITH DIGITAL RESET			
A/D CONVERTER 12-BIT MEDIUM PERFORMANCE WITH MICROPROC. INTERFACE AND S/H		A/D CONVERTER 16-BIT 00.003 %FSR		A/D CONVERTER 8-BIT MICROPROCESSOR-COMPATIBLE		1549	5962-8684901	ANALOG MULTIPLEXER/DEMUTIPLEXER 16-CHANNEL WITH OVER-VOLTAGE PROTECTION	
6742B	5962-9169002	HS9576T	5962-9079502	ADC-908A	5962-8961601	ANALOG MULTIPLEXER			
A/D CONVERTER 12-BIT TRACK/HOLD		A/D CONVERTER 16-BIT 00.006 %FSR		ADC-908B	5962-8961602	54HC4053	5962-8775401	ANALOG MULTIPLEXER/DEMUTIPLEXER 8-CHANNEL	
ADC00300	5962-8854201	HS9576S	5962-9079501	PM-7574A	5962-8961603	(SEE DWG) 5962-7705201			
A/D CONVERTER 12-BIT WITH MICROPROCESSOR INTERFACE		A/D CONVERTER 6-BIT FLASH		PM-7574B	5962-8961604	508	/19007	ANALOG MULTIPLEXER/DEMUTIPLEXER 8-CHANNEL DIFFERENTIAL W/ OVERVOLTAGE PROTECT	
574AU	/14001	TDC1044	5962-8982801	A/D CONVERTER 8-BIT WITH INPUT AMPLIFIER		4067B	/17801	ANALOG MULTIPLEXER/DEMUTIPLEXER 8-CHANNEL DIFFERENTIAL WITH OVERVOLTAGE PROTE	
574AU	5962-8512701	A/D CONVERTER 8-BIT		670S	5962-8763501	ANALOG MULTIPLEXER 16-CHANNEL LATCHED			
574AT	5962-8512702	TDC1046	5962-8778601	A/D CONVERTER 8-BIT WITH SERIAL CONTROL 1.1 MHZ		506	/19001	ANALOG MULTIPLEXER/DEMUTIPLEXER 8-CHANNEL WITH OVER-VOLTAGE PROTECTION	
574AT	/14002	A/D CONVERTER 8-BIT FLASH		AD673S	5962-8850502	4067B	/17801	507A	5962-8513102
574AU	/14003	TDC1048	5962-8760001	A/D CONVERTER 8-BIT WITH SERIAL CONTROL 2.048 MHZ		MUX-16A	5962-8771701	507A	/19004
574AU	5962-8512703	AD9012S	5962-8965401	TLC549	5962-9084502	MUX-16B	5962-8771702	ANALOG MULTIPLEXER/DEMUTIPLEXER 8-CHANNEL DIFFERENTIAL WITH OVERVOLTAGE PROTE	
674BT	5962-9169003	AD9012T	5962-8965402	A/D CONVERTER 8-BIT WITH THREE-STATE BUFFERED OUTPUTS		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
574AT	/14004	A/D CONVERTER 8-BIT FLASH 10 MHZ		AD570	5962-8680201	ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
574AT	5962-8512704	A/D CONVERTER 8-BIT FLASH 20 MHZ		AD7821	5962-8951801	ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
A/D CONVERTER 12-BIT 02.5V		IDT75C48S20	5962-8874301	A/D CONVERTER 8-BIT WITH TRACK/HOLD		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
MN5246	5962-8959503	HS1068	5962-8877601	AD7821	5962-8951801	ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
A/D CONVERTER 12-BIT 02.5V WITH THREE-STATE OUTPUTS		IDT75C48S30	5962-8874302	A/D CONVERTER 8-BIT WITH TRACK/HOLD AMPLIFIER		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
MN5246A	5962-8959504	A/D CONVERTER 8-BIT FLASH 10 MHZ		A/D CONVERTER 8-BIT WITH TRACK/HOLD AMPLIFIER		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
A/D CONVERTER 14-BIT		7684T	5962-8977701	A/D CONVERTER 8-BIT WITH TRACK/HOLD AMPLIFIER		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
SP9588	5962-9063101	7684S	5962-8977702	A/D CONVERTER 8-BIT WITH TRACK/HOLD AMPLIFIER		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			
A/D CONVERTER 14-BIT 14.25 ES		A/D CONVERTER 8-BIT FLASH 20 MHZ		A/D CONVERTER 8-BIT WITH TRACK/HOLD AMPLIFIER		ANALOG MULTIPLEXER 4-CHANNEL DIFFERENTIAL			

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MILITARY PARTS
SORTED BY FUNCTION

MILITARY

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
VOLT. REFERENCE PRECISION 2.5V (1%)		Sample and hold 20/		(SEE DWG) 5962-8968303		NEL		Other digital devices /23	
580S	5962-8686101			DR/D CONVERTER 1.0 V 400 HZ		66079	5962-9167601		
VOLT. REFERENCE PRECISION +10.000V		AMPLIFIER 16-BIT TRACK AND HOLD		SDC14567-112	5962-9055102	OPTOCOUPLER SINGLE CHANNEL HIGH-SPEED			
2700	5962-8503001			SDC14567-114	5962-9055103	HCPL-5601 5962-9085501			
2700U	5962-8503002	SP9760 5962-9063001		SDC14567-115	5962-9055104	OPTOCOUPLER SINGLE CHANNEL TRANSISTOR OUTPUT		BINARY CORRELATOR AND TEMPLATE MATCHER 1024-TAP 12 MHZ	
VOLT. REFERENCE PRECISION +10V ADJUSTABLE OUTPUT		SAMPLE AND HOLD AMPLIFIER		DR/D CONVERTER 1.0 V 400 HZ TRIMMED VELOCITY		HCPL-5501 5962-9085401		L64230-12 5962-9050401	
REF10A	5962-8947901	2420 5962-8001601		SDC14569-111	5962-9055105	OPTOCOUPLER SINGLE-CHANNEL		BIT PROCESSOR DATA TERMINAL MIL-STD-1553	
REF10A	5962-8947902	198 5962-8760801		SDC14569-112	5962-9055106	HCPL-5201 5962-8876801		CT1820 5962-9063601	
REF10A	/12403	HA-5330 5962-8767701		SDC14569-114	5962-9055107	OPTOCOUPLER SINGLE-CHANNEL HIGH-GAIN		BIT PROCESSOR MIL-STD-1553 DATA TERMINAL	
VOLT. REFERENCE PRECISION +5V ADJUSTABLE OUTPUT		5537 /12502		SDC14569-115	5962-9055108	66058 5962-8981001		ARX2410 5962-9063603	
REF02A	5962-8551401	SAMPLE AND HOLD AMPLIFIER 16-BIT		SDC14567-111	5962-9055101	OPTOCOUPLER SINGLE-CHANNEL HIGH-SPEED		ARX3410 5962-9063604	
VOLT. REFERENCE PRECISION -10.000V		HS9716 5962-8956601		6N140A	5962-8302401	HCPL-5401 5962-8957001		BIT PROCESSOR MIL-STD-1553 DATA TERMINAL WITH HIGH DATA BUS DRIVER CAPABILITY	
2701	5962-8503005	SAMPLE AND HOLD AMPLIFIER HIGH-SPEED		OPTOCOUPLER 4-CHANNEL		REMOTE TERMINAL UNIT DUAL REDUNDANT		CT1820-2 5962-9063602	
2701	5962-8503006	AD585 5962-8754001		4860-83 /14201		BUS-65112 5962-8753501		14490A 5962-8764601	
VOLT. REFERENCE PRECISION 10V		HTC-0300A 5962-9073001		OPTOCOUPLER AC/DC TO LOGIC INTERFACE		2452 5962-8753502		CONTACT BOUNCE ELIMINATOR HEX	
(SEE DWG)	5962-8688201	SAMPLE AND HOLD AMPLIFIER LOW-DROOP-RATE		HCPL-5761 5962-8947701		RESOLVER TO DIGITAL CONVERTER 400 HZ		CT1820-2 5962-9063602	
LT1019A-10	5962-9059501	SMP-11A 5962-8954101		OPTOCOUPLER DUAL		HSDC-8920A 5962-8768701		DIGITAL SIGNAL PROCESSOR 16-BIT	
(SEE DWG)	5962-8688202	SMP-11B 5962-8954102		66072 5962-8102801		HSDC-8920 5962-8768702		WEDSP-16 5962-9070401	
(SEE DWG)	5962-8688203	SMP-10A 5962-8954103		4N55 5962-8767901		RESOLVER TO DIGITAL CONVERTER 400 HZ 6V INPUT		BFRP10 /63001	
LT1019-10	5962-9059505	SMP-10B 5962-8954104		OPTOCOUPLER DUAL CHANNEL		RDC14505-641 5962-8768703		FFT PROCESSOR 20 MHZ	
VOLT. REFERENCE PRECISION 2.5V		Hybrids /22		HCPL-5231 5962-8876901		S-R/D CONVERTER 11.8V 400 HZ		54HC297 5962-8999001	
LM136A-2.5	5962-8418001			OPTOCOUPLER DUAL CHANNEL LINE RECEIVER		SDC14531-690 5962-9082001		IMAGE RESAMPLING SEQUENCER 15 MHZ	
LT1019A-2.5	5962-9059504			HCPL-1931 5962-8957201		SDC14531-631 5962-9082002		TMC2301 5962-8971501	
LT1019-2.5	5962-9059508			OPTOCOUPLER DUAL CHANNEL WITH COMMON SUPPLY VOLTAGE AND GROUND CONNECTIONS		SYNCHRO-TO DIGITAL CONVERTER 60 HZ 90V		IMAGE RESAMPLING SEQUENCER 18 MHZ	
VOLT. REFERENCE PRECISION 4.5V		HS9403-8 5962-8851401		66071-001 5962-8978501		SDC14502-605 5962-9070703		TMC2301 5962-8971502	
LT1019A-4.5	5962-9059503	HS9403-16 5962-8851402		66056 5962-8102802		SYNCHRO-TO-DIGITAL CONVERTER 400 HZ 11.8V		INTERRUPT GENERATOR	
LT1019-4.5	5962-9059507	DC/DC CONVERTER 15W 015V DUAL OUTPUT		HCPL-5531 5962-8767902		SDC14500-635 5962-9070701		68154 5962-8857201	
VOLT. REFERENCE PRECISION 5.0V		AHE2815D/CH5962-9157501		HCPL-5431 5962-8957101		SDC14500-636 5962-9070702		INTERRUPT HANDLER	
LT1021BM-5	5962-8876201	AHE2815D/CH5962-9157502		OPTOCOUPLER DUAL CHANNEL WITH SEPARATE SUPPLY VOLT. AND GND. CONNECTIONS		HSD1024-C672 5962-9070705		68155 5962-8866601	
LT1021CM-5	5962-8876202	AHE2815D/CH5962-9157503		HCPL-6231 5962-8876902		HSD1024-C673 5962-9070706		OUTPUT CORRELATOR DIGITAL 64-BIT 25 MHZ	
LM136A-5.0	5962-8418002	DC/DC CONVERTER 20W 12V OUTPUT		OPTOCOUPLER DUAL CHANNEL WITH SEPARATE SUPPLY VOLTAGE AND GROUND CONNECTIONS		SYNCHRO-TO-DIGITAL CONVERTER 60 HZ 90V		L10C23 5962-8971101	
LT1021DM-5	5962-8876203	AHE2812S 5962-9158001		HCPL-6731 5962-8978502		SDC14502-606 5962-9070704		OUTPUT CORRELATOR DIGITAL 64-BIT 30 MHZ	
10215	/12407	AHE2812S-SLV 5962-9158002		66125 5962-8767903		HSD1024-C674 5962-9070707		TMC2023V1 5962-8971102	
VOLT. REFERENCE PRECISION 5V		AHE2812S-MST 5962-9158003		HCPL-6431 5962-8957102		SYNCHRO-TO-DIGITAL CONVERTER 60 HZ 90V		OUTPUT CORRELATOR DIGITAL 64-BIT 35 MHZ	
LT1019A-5	5962-9059502	DC/DC CONVERTER 30W 015V OUTPUT		66123 5962-8102803		HSD1024-C675 5962-9070708			
LT1019-5	5962-9059506	ATW2815D/CH 5962-9161301		OPTOCOUPLER SINGLE CHAN-					
VOLT. REFERENCE PRECISION 010.000V		ATW2815D/CHS 5962-9161302							
2702S	5962-8503003	ATW2815D/CHM 5962-9161303							
2702U	5962-8503004	DC/DC CONVERTER 5-VOLT SINGLE CHANNEL							
VOLT. REFERENCE PRO-GRAMMABLE		(SEE DWG) 5962-8968301							
584S	/12801	(SEE DWG) 5962-8968302							
AD584S	5962-3812801								
584T	/12802								
AD584T	5962-3812802								

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MILITARY PARTS
SORTED BY FUNCTION

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN			
TMC2023V2	5962-8971103	AD7569T	5962-8962902	MHF+2805S	5962-9213901	DSC11520-114	5962-8998603	1648M	5962-8977801			
OUTPUT CORRELATOR DIGITAL 64-BIT 50 MHZ		ANALOG MULTIPLIER 4-QUADRANT		DC-DC CONVERTER 15W 12V OUTPUT		DIODE ARRAY QUAD SCHOTTKY 1 AMP		OSCILLATOR VOLTAGE-CONTROLLED DUAL				
TMC2023V3	5962-8971104	534T	/13901	MHF+2812S	5962-9166401	UC1611	5962-9053801	54LS629	5962-8102101			
PHASE/FREQUENCY DETECTOR		534S	/13902	DC-DC CONVERTER 15W 012V OUTPUT		FEEDBACK GENERATOR ISOLATED		54LS124	5962-7704101			
12540	5962-8775201	532S	/13903	MHF+2812D	5962-9214401	UC1901	5962-8944101		PHASE-LOCKED LOOP SYSTEM			
RATE GENERATOR PROGRAMMABLE BIT		4213	/13904	DC-DC CONVERTER 15W 015V OUTPUT		FILTER 4TH-ORDER ELLIPTIC NOTCH		XR2211M	5962-7705001			
HD-4702	5962-9051801			MHF+2815D	5962-9161401	LMF90	5962-9096801		PHASE-LOCKED LOOP WITH VOLTAGE-CONTROLLED OSCILLATOR			
REMOTE TERMINAL FOR STORES WITH 1K X 16 RAM		BALANCED MODULATOR/DEMODULATOR		DC/DC CONVERTER 15V SINGLE CHANNEL		FILTER 6TH-ORDER SWITCHED CAPACITOR BUTTERWORTH LOW-PASS		54HCT4046A	5962-8875701			
UT1760ARTS	5962-8957501	AD630	5962-8980701	MHF+2815S	5962-9160101	LMF60-100	5962-9096701	54HC4046A	5962-8960901			
REMOTE TERMINAL INTERFACE MIL-STD-1553B		BUFFER AMPLIFIER FET-INPUT CLOSED-LOOP 012V		DC/DC CONVERTER 15W +5V AND 015V TRIPLE OUTPUT		LMF60-50	5962-9096702		PHASE/FREQUENCY DETECTOR			
UT1553BRTIA/55502		MSK332B-12	5962-9090201	ATO2815T/CH	5962-9095401			MC4344	5962-8780301			
REMOTE TERMINAL INTERFACE WITH 1K X 16 RAM		BUFFER AMPLIFIER FET-INPUT CLOSED-LOOP 015V		DC/DC CONVERTER 15W +5V 012V TRIPLE OUTPUT		FILTER CAUER LOW PASS LOW NOISE 8TH ORDER CLOCK SWEEPABLE			POWER SUPPLY OUTPUT SUPERVISORY CIRCUIT			
UT1553BRTR	5962-8957601	MSK332B-15	5962-9090202	ATO2812T/CH	5962-9160201	LTC1064-4	5962-9064901	1543	5962-8774001			
S/D CONVERTER 10-BIT 90V 60 HZ		BUFFER AMPLIFIER HIGH-SPEED VIDEO		DC/DC CONVERTER 15W 012V DUAL OUTPUT		AFC-461	5962-9099001	1544	5962-8774002			
HSD1510-369	5962-9161501	HA-5033	5962-8963301	AHE2812D/CH	5962-9204001				POWER SUPPLY SUPERVISORS DUAL			
VOLTAGE TRANSLATOR ECL-TO-TTL		BUFFER AMPLIFIER LOW POWER 70 MHZ		AHE2812D/CHS	5962-9204002	FILTER EMI 4.0A			TL7770-5M	5962-9093201		
10H750	5962-9058801	EL2001A	5962-9153401	AHE2812D/CHM	5962-9204003	AFC-461	5962-9099001		TL7770-12M	5962-9093202		
		EL2001	5962-9153402	BUFFER FET					TL7770-15M	5962-9093203		
		BUFFER HIGH SPEED		EL2004	5962-8965901	FM IF SYSTEM HIGH PERFORMANCE LOW-POWER				PULSE WIDTH MODULATOR CONTROLLER		
		LM6125	5962-9081501	BUS INTERFACE CIRCUIT ARINC		604A	5962-8956401			1823	5962-8990501	
		LM6121	5962-9081201	HS3282	5962-8688001	FREQUENCY CONTROLLER PHASE LOCKED					R/D CONVERTER 11.8 V 400 HZ 1.0 MINUTE ACCURACY	
		AMPLIFIER CURRENT FEEDBACK		H18282	5962-8688002	UC1633	5962-9098701				SDC14565-115	5962-8990802
		EL2030	5962-9081801	CONTROLLER SWITCHED-MODE FOR DC MOTOR DRIVE		INTERFACE CIRCUIT ANALOG					HRD1066-341V	5962-8990807
		AMPLIFIER LOGARITHMIC WIDEBAND 120 MHZ		UC1637	5962-8995701	TLC32040M	5962-9086301				R/D CONVERTER 11.8 V 400 HZ 2.0 MINUTES ACCURACY	
		SL523AC	5962-8980301	CURRENT BUFFER WIDEBAND HIGH OUTPUT		INTERFACE CIRCUIT ANALOG VOICE-BAND					SDC14565-114	5962-8990801
		AMPLIFIER LOGARITHMIC WIDEBAND 140 MHZ		HA-5002	5962-8963601	TLC32044M	5962-9086302				SDC14565-616	5962-8990803
		SL521	5962-9079201	CURRENT FEEDBACK AMPLIFIER		LINE DRIVER VIDEO					HRD1066-341H	5962-8990806
		AMPLIFIER PROGRAMMABLE GAIN		EL2020	5962-8962001	EL2003	5962-8962301				R/D CONVERTER 11.8 V 400 HZ 80 HZ BANDWIDTH 2.0 MINUTES ACCURACY	
		AD526	5962-9089401	CURRENT MODE CONTROLLER CMOS		EL2033	5962-8962302				HRD1066-381H	5962-8990808
		AMPLIFIER VOLTAGE-CONTROLLED GAIN		TSC170	5962-8963801	LOGARITHMIC AMPLIFIER DC COUPLED DEMODULATING 120 MHZ					R/D CONVERTER 11.8 V 400 HZ TRIMMED VELOCITY 1.0 MINUTE ACCURACY	
		CLC520	5962-9169401	TSC171	5962-8963802	AD640	5962-9095501				SDC14566-115	5962-8990804
		ANALOG I/O SYSTEM 8-BIT 0 LSB FOR DAC AND ADC		DC TO DC CONVERTER CONTROL CIRCUIT		1596	5962-8857101				R/D CONVERTER 7.0 V 400 HZ 80 HZ BANDWIDTH 2.0 MINUTES ACCURACY	
		AD7569S	5962-8962901	35063	5962-9075701	MULTIPLIER/DIVIDER DUAL-CHANNEL WIDEBAND					SDC14565-618	5962-8990805
		ANALOG I/O SYSTEM 8-BIT 0 1/2 LSB FOR DAC AND ADC		DC-DC CONVERTER 12W 5V OUTPUT		OSCILLATOR VOLTAGE-CONTROLLED						
		AHF2805S	5962-9160001	DSC11520-112	8998601							
				DSC11520-113	8998602							

MILITARY

Analog circuit functions 24/

AMPLIFIER CURRENT FEEDBACK
EL2030 5962-9081801

AMPLIFIER LOGARITHMIC WIDEBAND 120 MHZ
SL523AC 5962-8980301

AMPLIFIER LOGARITHMIC WIDEBAND 140 MHZ
SL521 5962-9079201

AMPLIFIER PROGRAMMABLE GAIN
AD526 5962-9089401

AMPLIFIER VOLTAGE-CONTROLLED GAIN
CLC520 5962-9169401

ANALOG I/O SYSTEM 8-BIT 0 LSB FOR DAC AND ADC
AD7569S 5962-8962901

ANALOG I/O SYSTEM 8-BIT 0 1/2 LSB FOR DAC AND ADC

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MILITARY PARTS
SORTED BY FUNCTION

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
<p>GATE ARRAY 0 3500 GATES (SEE SPEC) /60002</p> <p>GATE ARRAY 0 5000 GATES (SEE SPEC) /60003</p> <p>LINEAR ARRAY 12 MACROCELL LOCATIONS (SEE SPEC) /70602</p> <p>LINEAR ARRAY 16 MACROCELL LOCATIONS (SEE SPEC) /70603</p> <p>LINEAR ARRAY 4 MACROCELL LOCATIONS (SEE SPEC) /70604</p> <p>LINEAR ARRAY 8 MACROCELL LOCATIONS (SEE SPEC) /70601</p> <p>LINEAR ARRAY MULTICHIP MULTICHIP /70605</p>									



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MILITARY PARTS
SORTED BY GENERIC INDUSTRY P/N

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
0006	5962-8761701	10597	/06202	1527A	/12604	20RA10	5962-9212101	27256-170	5962-8411104
0008	5962-8761702	10598	5962-8777301	1527A	5962-8951102	20RA10	5962-9212102	27256-200	/22402
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10535	/06104	1218	/12707	1856	/47601	2640	5962-7800302	27S03-20	5962-8605108
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1056F	5962-92A0701	14490A	5962-8764601	2002	/14102	26L332B	5962-8761601	27S29A	5962-8769002
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2907	/44103	29FCT520BT	5962-9220503	4008A	/05401	4072B	5962-7706001	51C98-35	/61301
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2918	5962-8671501	302	/11603	4012A	/05002	4086B	/17202	5211	/12011
2925	5962-8859801	3020	5962-8994801	4012B	/05052	4093B	/17701	5212	/12013
2925A	5962-8859802	3020	5962-8994802	4013A	/05101	4093B	5962-7704601	5212A	5962-9212901
2930	5962-8757301	3020-100	5962-8994803	4013B	/05151	4093B	5962-7704602	5213	/12010
2936	5962-9233501	3020-125	5962-8994804	4013B	5962-7901101	4094B	5962-7702501	5214	/12012
2940	5962-8603001	303	/11604	4014A	5962-7901102	4095B	/17502	5215	/12014
2942	5962-8680101	304	/11605	4014B	/05702	4096B	/17503	5216	/12015
2946	5962-8672302	3042	5962-8971301	4015A	/05752	4097B	/17802	5217	/12016
2947	5962-8672301	3042-100	5962-8971302	4015B	/05753	4098B	/17504	527	5962-8757201
2952A	5962-8777201	3042-125	5962-8971303	4016A	/05801	4098B	5962-7705501	529	5962-8757202
2953A	5962-8777202	3042-125	5962-8971304	4016B	/05851	4099B	/17601	5305-1	/20401
2960	5962-8760201	3045	/10802	4017A	5962-9064001	411024-100	/24902	5306-1	/20402
2964B	5962-8757401	305	/11606	4017B	5962-8202201	411024-120	/24903	532S	/13903
2965	5962-8670701	306	/11607	4017A	/17505	411024-80	/24901	5348-1	/20804
29651	/20908	307	/11608	4017B	/05601	4116	/24003	5349-1	/20805
2966	5962-8670702	3090-100	5962-8982303	4017A	/05651	4136	/11004	534S	/13902
29671	/21103	3090-125	5962-8982304	4017B	/05652	4167	5962-8200701	534T	/13901
2968A	5962-8869601	3090-50	5962-8982301	4018A	/05602				
2968A	5962-8869602	3090-70	5962-8982302	4018B	/05652				

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

MILITARY

MILITARY PARTS
SORTED BY GENERIC INDUSTRY P/N

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
53S3281	/21102	5479	/00207	54AC253	5962-8769301	54ACT258	5962-8870401	54ALS165	5962-8957401
53S841	/20902	5480	/00604	54AC257	/76207	54ACT273	5962-8973501	54ALS168	/38103
5400	/00104	5482	/00601	54AC257	5962-8870301	54ACT299	5962-8877101	54ALS169B	/38003
5401	/00107	5483	/00602	54AC258	/76208	54ACT323	5962-8973601	54ALS169B	5962-8302501
5402	/00401	5485	/15001	54AC258	5962-9160401	54ACT323	5962-9160701	54ALS174	/37201
5403	/00109	5486	/00701	54AC273	/75601	54ACT373	5962-8755601	54ALS174	5962-8301901
5404	/00105	5490	/01307	54AC273	5962-8775601	54ACT374	5962-8763101	54ALS175	/37202
5405	/00108	5492	/01301	54AC280	5962-9220101	54ACT377	5962-8769701	54ALS175	5962-8301902
5406	/00801	5493	/01302	54AC299	/76506	54ACT399	5962-9093401	54ALS191	5962-8684001
5407	/00803	5495	/00901	54AC299	5962-8875401	54ACT520	5962-8979301	54ALS193	5962-8869801
5408	/01601	5496	/00902	54AC32	/75201	54ACT521	5962-8979302	54ALS20A	/37003
5409	/01602	54ABT16244	5962-9317401	54AC32	5962-8761401	54ACT534	5962-8965801	54ALS20A	5962-8858901
5410	/00103	54ABT16245	5962-9317501	54AC373	/75403	54ACT563	5962-8955601	54ALS21	5962-8414301
54107	/00203	54ABT244	5962-9214701	54AC373	5962-8755501	54ACT564	5962-8955701	54ALS240A	/36301
5412	/00106	54ABT543	5962-9231401	54AC374	/75602	54ACT573	5962-8766401	54ALS240A	5962-8859101
54121	/01201	54AC00	/75001	54AC374	5962-8769401	54ACT574	5962-8960101	54ALS241	/38302
54122	/01202	54AC00	5962-8754901	54AC377	/75603	54ACT74	5962-8752501	54ALS241	5962-8859601
54123	/01203	54AC02	/75101	54AC377	5962-8870201	54ACT818	5962-9160901	54ALS242B	/38506
54125	/15301	54AC02	5962-8761201	54AC378	5962-9160501	54ACT821	5962-8870501	54ALS242B	5962-8401301
54126	/15302	54AC04	/75701	54AC378	5962-9160501	54ACT823	5962-9161001	54ALS243A	/38507
5413	/15101	54AC04	5962-8760901	54AC520	5962-9091601	54ACT825	5962-9161101	54ALS243A	5962-8401302
54132	/15103	54AC05	5962-9059001	54AC521	5962-9091601	54ACT899	5962-9314101	54ALS244A	/38303
5414	/15102	54AC08	/75203	54AC533	/75404	54ACTQ02	5962-9218101	54ALS244A	5962-8683901
54145	/01005	54AC08	5962-8761501	54AC534	/75605	54ACTQ10	5962-9218201	54ALS245A	5962-8403001
54147	/15601	54AC10	/75002	54AC540	/75710	54ACTQ14	5962-9218301	54ALS251	5962-8413501
54148	/15602	54AC10	5962-8761001	54AC541	/75711	54ACTQ240	5962-9218401	54ALS253	5962-8509601
54150	/01401	54AC109	/75304	54AC541	5962-8870601	54ACTQ245	5962-9218601	54ALS257	5962-8509701
54151	/01406	54AC109	5962-8955101	54AC563	/75405	54ACTQ245	5962-9218701	54ALS258	5962-8862601
54153	/01403	54AC11	/75204	54AC564	/75606	54ACTQ373	5962-9218801	54ALS259	5962-8874101
54154	/15201	54AC11	5962-8761101	54AC573	/75406	54ACTQ377	5962-9219001	54ALS27	/37302
54155	/15202	54AC1100	/75021	54AC574	/75604	54ACTQ657	5962-9219701	54ALS27	5962-8683801
54156	/15203	54AC11000	5962-8754902	54AC623	/75505	54ACTQ841	5962-9220001	54ALS273	5962-8413601
54157	/01405	54AC11002	5962-8761202	54AC640	/75506	54ALS00A	/37001	54ALS29821	5962-9061601
5416	/00802	54AC11004	5962-8760902	54AC643	/75507	54ALS00A	5962-8683301	54ALS29823	5962-9067501
54160	/01303	54AC11008	5962-8761502	54AC646	/75508	54ALS02	/37301	54ALS29824	5962-9067502
54161	/01306	54AC11010	/75022	54AC646	5962-8969201	54ALS02	5962-8684401	54ALS29825	5962-9069501
54162	/01305	54AC11010	5962-8761002	54AC648	/75509	54ALS04B	/37006	54ALS29842	5962-9071001
54163A	/01304	54AC11011	5962-8761102	54AC74	/75302	54ALS04B	5962-8684301	54ALS29843	5962-9072001
54164	/00903	54AC11020	/75023	54AC74	5962-8852001	54ALS05A	5962-8854001	54ALS299	/37601
54165	/00904	54AC11020	5962-8761302	54AC821	5962-9160601	54ALS08	/37401	54ALS299	5962-8302101
5417	/00804	54AC11030	/75024	54AC86	/75202	54ALS08	5962-8684201	54ALS30A	/37004
54170	/01801	54AC11074	5962-8852002	54AC86	5962-8955001	54ALS09	5962-8414201	54ALS30A	5962-8683701
54174	/01701	54AC112	/75305	54ACQ244	5962-9217601	54ALS10	/37002	54ALS32	/37501
54175	/01702	54AC11240	5962-8755002	54ACT00	5962-8769901	54ALS1000A	5962-8405901	54ALS32	5962-8683601
54180	/01901	54AC11241	5962-8755102	54ACT04	5962-8973401	54ALS1002	/38402	54ALS323	/37602
54181	/01101	54AC11244	5962-8755202	54ACT08	5962-8954702	54ALS1003	/38403	54ALS323	5962-8302102
54182	/01102	54AC11244	5962-8755202	54ACT109	5962-8853401	54ALS1004	/38409	54ALS37	/38401
54185A	5962-7703001	54AC11373	5962-8755502	54ACT11000	5962-8769902	54ALS1004	5962-8406101	54ALS373	/37203
54192	/01308	54AC11521	5962-9098502	54ACT11004	5962-8973402	54ALS1005	/38410	54ALS373	5962-8302001
54193	/01309	54AC138	/75802	54ACT11008	5962-8954701	54ALS1008A	/38404	54ALS374	/37204
54194	/00905	54AC138	5962-8762201	54ACT11032	5962-8973602	54ALS1008A	5962-8409701	54ALS374	5962-8302002
54195	/00906	54AC139	/75803	54ACT11074	5962-8752502	54ALS1010A	/38405	54ALS38A	5962-8687101
5420	/00102	54AC139	5962-8762301	54ACT11109	5962-8853402	54ALS1010A	5962-8406001	54ALS520	5962-8869101
54221	5962-8771101	54AC14	/75702	54ACT11138	5962-8755402	54ALS1011	/38406	54ALS534	5962-8866801
5423	/00402	54AC14	5962-8762401	54ACT112	5962-8995001	54ALS1020	/38407	54ALS541	5962-896201
5425	/00403	54AC151	/76201	54ACT11240	5962-8775902	54ALS1032	/38408	54ALS560	/38104
5426	/00805	54AC151	5962-8769101	54ACT11241	5962-8984702	54ALS1034	/38411	54ALS561A	/38004
5427	/00404	54AC153	/76202	54ACT11244	5962-8776002	54ALS1034	5962-8403101	54ALS561A	5962-8302203
5428	/16201	54AC153	5962-8762501	54ACT11245	5962-8766302	54ALS1035	/38412	54ALS563A	5962-8870001
5430	/00101	54AC157	/76203	54ACT11353	5962-9090601	54ALS1035	5962-8874201	54ALS564A	5962-8872801
5432	/16101	54AC157	5962-8953901	54ACT11373	5962-8755602	54ALS109A	/37102	54ALS568	/38105
54365	/16301	54AC158	/76204	54ACT11374	5962-8763102	54ALS109A	5962-8400001	54ALS569A	/38005
54366	/16302	54AC158	5962-8972901	54ACT11520	5962-8979303	54ALS10A	5962-8686501	54ALS569A	5962-8302502
54367	/16303	54AC161	/76302	54ACT11521	5962-8979304	54ALS11	/37402	54ALS573	/38201
54368	/16304	54AC161	5962-8956101	54ACT11534	5962-8965802	54ALS112A	/37103	54ALS573	5962-8401201
5437	/00302	54AC163	/76304	54ACT138	5962-8755401	54ALS12A	5962-8400002	54ALS574A	/37104
5438	/00303	54AC163	5962-8958201	54ACT139	5962-8755301	54ALS11A	5962-8684101	54ALS574A	5962-8400101
5440	/00301	54AC169	5962-9160301	54ACT151	5962-8875801	54ALS1244A	5962-8873801	54ALS576A	/37105
5442	/01001	54AC174	/75307	54ACT153	5962-8769801	54ALS1245A	5962-8873701	54ALS576A	5962-8400102
5443	/01002	54AC174	5962-8762601	54ACT157	5962-8968801	54ALS133	/37005	54ALS580	/38202
5444	/01003	54AC175	/75308	54ACT158	5962-8875501	54ALS133	5962-8859001	54ALS580	5962-8401202
5445	/01004	54AC175	5962-8955201	54ACT161	5962-9172201	54ALS137	5962-9066501	54ALS640A	/38501
5446	/01006	54AC191	/76305	54ACT16240	5962-9201801	54ALS138	/37701	54ALS640A	5962-8872701
5447	/01007	54AC191	5962-8974901	54ACT16244	5962-9202201	54ALS138	5962-8686601	54ALS641	/38502
5448	/01008	54AC20	/75003	54ACT16245	5962-9202301	54ALS139	5962-8768301	54ALS642	/38503
5449	/01009	54AC20	5962-8761301	54ACT163	5962-9172301	54ALS151	5962-8414101	54ALS643	/38504
5450	/00501	54AC240	/75703	54ACT16373	5962-9202401	54ALS153	5962-8413401	54ALS645A	/38505
5451	/00502	54AC240	5962-8755001	54ACT16374	5962-9202501	54ALS157	5962-8686901	54ALS645A	5962-8403301
5453	/00503	54AC241	/75704	54ACT174	5962-8775701	54ALS158	5962-8862501	54ALS646	5962-8995601
5454	/00504	54AC241	5962-8755101	54ACT175	5962-8969301	54ALS160	/38101	54ALS648	5962-9052301
5470	/00206	54AC244	/75705	54ACT240	5962-8775901	54ALS161B	/38001	54ALS652	5962-8867301
5472	/00201	54AC244	5962-8755201	54ACT241	5962-8984701	54ALS161B	5962-8302201	54ALS653	5962-8968701
5473	/00202	54AC245	/75503	54ACT244	5962-8776001	54ALS162	5962-8407901	54ALS688	5962-8857801
5474	/00205	54AC245	5962-8775801	54ACT245	5962-8766301	54ALS162A	/38102	54ALS74A	/37101
5475	/01501	54AC251	/76205	54ACT251	5962-8959901	54ALS163B	/38002	54ALS74A	5962-8401101
5476	/00204	54AC251	5962-8769201	54ACT253	5962-8776101	54ALS163B	5962-8302202	54ALS804	5962-8869301
5477	/01502	54AC253	/76206	54ACT257	5962-8968901	54ALS164	5962-8687001	54ALS805A	5962-8869401

MILITARY

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MILITARY PARTS
SORTED BY FUNCTION

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
54ALS808	5962-8669501	54F153	/33902	54F574	/34110	54FCT257AT	5962-9221103	54FCT541A	5962-8976602
54ALS832	5962-8414501	54F157A	/33903	54F574	5962-8972401	54FCT257A	5962-9221104	54FCT541AT	5962-9223703
54ALS857	5962-8753301	54F158A	/33904	54F579	5962-8954501	54FCT257CT	5962-9221105	54FCT541AT	5962-9223704
54ALS857A	/37901	54F160A	/34401	54F620	5962-8946601	54FCT257CT	5962-9221106	54FCT541CT	5962-9223705
54ALS86	5962-8862101	54F161A	/34301	54F621	5962-9050602	54FCT257T	5962-9221101	54FCT541CT	5962-9223706
54ALS870	5962-8988901	54F162A	/34402	54F623	5962-9050601	54FCT257T	5962-9221102	54FCT541T	5962-9223701
54ALS873	/38203	54F163A	/34302	54F64	/33401	54FCT273	5962-8765601	54FCT541T	5962-9223702
54ALS873	5962-8403201	54F164	5962-8607101	54F646	5962-8975401	54FCT273A	5962-8765602	54FCT543	5962-8973001
54ALS874B	/37106	54F169	5962-8607201	54F648	5962-8975402	54FCT273AT	5962-9221503	54FCT543A	5962-8973002
54ALS874B	5962-8401001	54F174	/34107	54F652	5962-8955801	54FCT273AT	5962-9221504	54FCT543AT	5962-9222102
54ALS876	/37107	54F175	/34104	54F657	5962-8953501	54FCT273CT	5962-9221505	54FCT543CT	5962-9222105
54ALS876	5962-8401002	54F181	/33801	54F676	5962-8854601	54FCT273CT	5962-9221506	54FCT543CT	5962-9222103
54ALS880	/38204	54F181	5962-8671002	54F776	5962-8870701	54FCT273T	5962-9221501	54FCT543CT	5962-9222106
54ALS880	5962-8403202	54F182	/33802	54F777	5962-9159701	54FCT273T	5962-9221502	54FCT543T	5962-9222101
54ALS996	5962-8994501	54F190	/34403	54F821	5962-8943801	54FCT299	5962-8686201	54FCT543T	5962-9222104
54AS1000A	5962-9162701	54F191	/34303	54F827	5962-9209001	54FCT299A	5962-8686202	54FCT543T	5962-9222104
54AS1004A	5962-8872901	54F191	5962-9058201	54F85	5962-8606901	54FCT299A	5962-9221603	54FCT573	5962-8663901
54AS1032A	5962-8873001	54F192	/34404	54F86	/34501	54FCT299A	5962-9221604	54FCT573A	5962-8663902
54AS1034A	5962-8873101	54F193	/34304	54FCT138	5962-8765401	54FCT299CT	5962-9221605	54FCT573AT	5962-9223805
54AS21	5962-8780401	54F194	/33601	54FCT138A	5962-8765402	54FCT299CT	5962-9221606	54FCT573CT	5962-9223806
54AS250A	5962-9056201	54F194	5962-8685001	54FCT138AT	5962-9223303	54FCT299CT	5962-9221607	54FCT573CT	5962-9223806
54AS286	5962-8966301	54F198	5962-9050201	54FCT138AT	5962-9223304	54FCT299T	5962-9221602	54FCT573T	5962-9223801
54AS640	5962-8955501	54F20	/33004	54FCT138CT	5962-9223305	54FCT299T	5962-8764401	54FCT573T	5962-9223804
54AS646	5962-8759501	54F21	5962-8955401	54FCT138CT	5962-9223306	54FCT377	5962-8764402	54FCT574	5962-8951301
54AS651	5962-8875301	54F240	/33201	54FCT138T	5962-9223301	54FCT373A	5962-9221702	54FCT574	5962-9222201
54AS652	5962-8868701	54F241	/33202	54FCT138T	5962-9223302	54FCT373AT	5962-9221705	54FCT574	5962-9222202
54AS756	5962-9056301	54F241	5962-8687401	54FCT139	5962-8950801	54FCT373CT	5962-9221703	54FCT574A	5962-9222203
54AS760	5962-8776701	54F242	/34801	54FCT139A	5962-8950802	54FCT373CT	5962-9221706	54FCT574A	5962-9222204
54AS804	5962-8776601	54F243	/34802	54FCT157AT	5962-9220803	54FCT373T	5962-9221701	54FCT574C	5962-9222205
54AS805	5962-8779401	54F243	5962-8683401	54FCT157AT	5962-9220804	54FCT373T	5962-9221704	54FCT574C	5962-9222206
54AS808	5962-8852201	54F244	/33203	54FCT157CT	5962-9220805	54FCT374	5962-8762801	54FCT640	5962-8665401
54AS821	5962-9078001	54F245	/34803	54FCT157CT	5962-9220806	54FCT374A	5962-8762802	54FCT640A	5962-8665402
54AS822	5962-9078002	54F245	5962-8551101	54FCT157T	5962-9220801	54FCT374AT	5962-9221803	54FCT640AT	5962-9224303
54AS823	5962-8952501	54F251A	/33905	54FCT157T	5962-9220802	54FCT374AT	5962-9221804	54FCT640AT	5962-9224304
54AS825	5962-9078003	54F251	/33908	54FCT161	5962-8864001	54FCT374CT	5962-9221805	54FCT640CT	5962-9224305
54AS826	5962-9078004	54F257A	/33906	54FCT161	5962-8864002	54FCT374CT	5962-9221806	54FCT640CT	5962-9224306
54AS832B	5962-8852301	54F258A	/33907	54FCT161A	5962-8864003	54FCT374T	5962-9221801	54FCT640T	5962-9224301
54AS867	5962-8966801	54F259	5962-8972301	54FCT161AT	5962-9220903	54FCT377	5962-8762701	54FCT645	5962-8665302
54AS869	5962-8952601	54F269	5962-8862701	54FCT161AT	5962-9220904	54FCT377A	5962-8762702	54FCT645A	5962-9224402
54AS874	5962-9152901	54F27	5962-8951001	54FCT161CT	5962-9220905	54FCT377AT	5962-9221905	54FCT645AT	5962-9224403
54AS885	5962-8975701	54F273	5962-8855001	54FCT161CT	5962-9220901	54FCT377CT	5962-9221903	54FCT645CT	5962-9224403
54BCT125	5962-9093701	54F280	/34901	54FCT161T	5962-9220902	54FCT377CT	5962-9221906	54FCT645CT	5962-9224406
54BCT126	5962-9088901	54F283	/34201	54FCT161T	5962-9220902	54FCT377T	5962-9221901	54FCT645T	5962-9224401
54BCT2240	5962-9093901	54F299	5962-8957301	54FCT163	5962-8865701	54FCT377T	5962-9221904	54FCT645T	5962-9224404
54BCT2244	5962-9074101	54F30	5962-8870801	54FCT163	5962-8865702	54FCT399	5962-8965201	54FCT646	5962-8877501
54BCT240	5962-9074201	54F30244	5962-8872201	54FCT163A	5962-8865704	54FCT399A	5962-8965202	54FCT646A	5962-8877502
54BCT241	5962-9074301	54F30245	5962-8972201	54FCT182	5962-8865202	54FCT399AT	5962-9221203	54FCT646AT	5962-9222304
54BCT244	5962-9062501	54F3037	5962-9056501	54FCT182A	5962-8865202	54FCT399CT	5962-9221205	54FCT646AT	5962-9222305
54BCT245	5962-9051401	54F32	/33501	54FCT191	5962-8973301	54FCT399CT	5962-9221206	54FCT646CT	5962-9222306
54BCT2827A	5962-9074401	54F322	5962-8607401	54FCT191A	5962-8973303	54FCT399CT	5962-9221201	54FCT646CT	5962-9222301
54BCT2828A	5962-9074501	54F350	5962-8607501	54FCT191A	5962-8973304	54FCT399T	5962-9221202	54FCT646T	5962-9222302
54BCT373	5962-9074601	54F352	/33909	54FCT193	5962-9066901	54FCT399T	5962-9079801	54FCT646T	5962-9222302
54BCT374	5962-9051601	54F353	/33910	54FCT193A	5962-9066902	54FCT480A	5962-9079802	54FCT652AT	5962-9224602
54BCT534	5962-9074701	54F36	5962-8870901	54FCT240	5962-8765501	54FCT480B	5962-9079803	54FCT652AT	5962-9224605
54BCT540	5962-9074801	54F365	/35101	54FCT240A	5962-8765502	54FCT480B	5962-9079803	54FCT652CT	5962-9224606
54BCT541	5962-9074901	54F367	5962-8985701	54FCT240AT	5962-9221303	54FCT521	5962-8854302	54FCT652CT	5962-9224601
54BCT543	5962-9087001	54F37	/35201	54FCT240AT	5962-9221304	54FCT521A	5962-8854302	54FCT652T	5962-9224604
54BCT544	5962-9155401	54F373	/34105	54FCT240CT	5962-9221305	54FCT521AT	5962-9223403	54FCT652T	5962-9224604
54BCT620A	5962-9075001	54F374	5962-9091001	54FCT240CT	5962-9221306	54FCT521B	5962-8854303	54FCT821A	5962-8860801
54BCT623	5962-9094001	54F377	/34108	54FCT240CT	5962-9221307	54FCT521BT	5962-9223405	54FCT821A	5962-9222501
54BCT640	5962-9075201	54F378	5962-8855501	54FCT240T	5962-9221302	54FCT521BT	5962-9223406	54FCT821AT	5962-9222502
54BCT646	5962-9155501	54F378	5962-8855501	54FCT240T	5962-8973201	54FCT521CT	5962-9223407	54FCT821B	5962-8860802
54BCT652	5962-9155301	54F379	/34109	54FCT241	5962-8973202	54FCT521CT	5962-9223408	54FCT821B	5962-9222503
54BCT760	5962-9093801	54F38	/35202	54FCT241A	5962-8973202	54FCT521CT	5962-9223401	54FCT821B	5962-9222504
54C08	5962-7703601	54F38	5962-8687201	54FCT241AT	5962-9223204	54FCT521T	5962-9223401	54FCT821BT	5962-9222505
54C85	5962-7703701	54F381	/33803	54FCT241AT	5962-9223205	54FCT521T	5962-9223402	54FCT821CT	5962-9222506
54C906	5962-7705601	54F381	5962-8671001	54FCT241CT	5962-9223206	54FCT521T	5962-9223403	54FCT823A	5962-8665601
54C922	5962-8752101	54F382	/33804	54FCT241CT	5962-9223207	54FCT533A	5962-8665102	54FCT823A	5962-9222901
54F00	/33001	54F398	/35001	54FCT241T	5962-9223202	54FCT533A	5962-8665102	54FCT823AT	5962-9222902
54F02	/33301	54F399	/35002	54FCT241T	5962-9223202	54FCT534	5962-8665502	54FCT823AT	5962-9222901
54F04	/33002	54F40	/35203	54FCT241T	5962-9223202	54FCT534A	5962-8665502	54FCT823B	5962-8665602
54F074	/34101	54F402	5962-9059301	54FCT244	5962-8763001	54FCT534AT	5962-9223602	54FCT823B	5962-9222903
54F08	/34001	54F432	5962-9058501	54FCT244A	5962-8763002	54FCT534AT	5962-9223605	54FCT823BT	5962-9222904
54F09	5962-8872301	54F51	5962-8877401	54FCT244AT	5962-9220302	54FCT534CT	5962-9223606	54FCT823CT	5962-9222905
54F10	/33003	54F518	5962-8871001	54FCT244AT	5962-9220303	54FCT534CT	5962-9223601	54FCT823CT	5962-9222906
54F109	/34102	54F519	5962-8871101	54FCT244CT	5962-9220304	54FCT534T	5962-9223604	54FCT824A	5962-8966501
54F11	/34003	54F520	5962-8871201	54FCT244CT	5962-9220305	54FCT540	5962-8976701	54FCT824A	5962-8966502
54F112	/34103	54F521	/34701	54FCT244CT	5962-9220306	54FCT540A	5962-8976702	54FCT825A	5962-8667401
54F112	5962-9060602	54F523	/34602	54FCT244T	5962-9220304	54FCT540AT	5962-9222003	54FCT825AT	5962-9223002
54F113	5962-9060601	54F534	/34106	54FCT244T	5962-8762901	54FCT540AT	5962-9222004	54FCT825AT	5962-9223003
54F125	5962-9078101	54F540	/33204	54FCT245A	5962-8762902	54FCT540CT	5962-9222005	54FCT825B	5962-8667402
54F132	5962-8948701	54F541	5962-9175301	54FCT245AT	5962-9221403	54FCT540CT	5962-9222006	54FCT825BT	5962-9223004
54F138	/33701	54F544	5962-8955501	54FCT245CT	5962-9221406	54FCT540T	5962-9222001	54FCT825CT	5962-9223005
54F139	/33702	54F545	/34804	54FCT245CT	5962-9221405	54FCT540T	5962-9222002	54	

**MILITARY PARTS
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Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
54FCT827A	5962-8950601	54HC160	5962-8682401	54HC4002	/65104	54HCT153	5962-9050501	54L86	/02601
54FCT827AT	5962-9224701	54HC161	/66302	54HC4002	5962-8404401	54HCT154	5962-8670101	54L90	/02501
54FCT827AT	5962-9224702	54HC161	5962-8407501	54HC40103	5962-9055301	54HCT157	5962-9070201	54L93	/02502
54FCT827B	5962-8950602	54HC162	/66303	54HC4015	5962-8995301	54HCT158	5962-9070301	54L95	/02801
54FCT827BT	5962-9224703	54HC162	5962-8409401	54HC4016	5962-8875801	54HCT160	5962-9070501	54LS00	/30001
54FCT827BT	5962-9224704	54HC163	/66304	54HC4017	/66310	54HCT161	5962-8685401	54LS02	/30301
54FCT827CT	5962-9224705	54HC163	5962-8607601	54HC4017	5962-8601101	54HCT162	5962-8970701	54LS03	/30002
54FCT827CT	5962-9224706	54HC164	/66501	54HC4020	/66311	54HCT164	5962-8970401	54LS04	/30003
54FCT833A	5962-8973101	54HC164	5962-8416201	54HC4020	5962-8500301	54HCT165	5962-8685501	54LS05	/30004
54FCT833B	5962-8973102	54HC165	/66502	54HC4024	/66312	54HCT173	5962-8875901	54LS08	/31004
54FCT841A	5962-8857501	54HC165	5962-8409501	54HC4024	5962-8601201	54HCT174	5962-8974301	54LS09	/31005
54FCT841B	5962-8857502	54HC166	/66503	54HC4040	/66313	54HCT175	5962-8970101	54LS09	5962-8001901
54FCT843A	5962-8975801	54HC173	/65306	54HC4040	5962-8500401	54HCT191	5962-8867101	54LS10	/30005
54FCT843B	5962-8975802	54HC173	5962-8682501	54HC4046A	5962-8960901	54HCT193	5962-9084801	54LS107	/30108
54FCT843C	5962-8975803	54HC174	/65307	54HC4049	5962-8681901	54HCT237	5962-9061301	54LS109	/30109
54FCT845A	5962-8667501	54HC174	5962-8407301	54HC4050	5962-8682001	54HCT238	5962-8974501	54LS11	/31001
54FCT845B	5962-8667502	54HC175	/65308	54HC4052	5962-8855601	54HCT240	/65753	54LS112	/30103
54FCT861A	5962-8953301	54HC175	5962-8408901	54HC4053	5962-8775401	54HCT240	5962-8550501	54LS113	/30104
54FCT861B	5962-8953302	54HC190	5962-8994601	54HC4059	5962-8944501	54HCT241	/65754	54LS114	/30105
54FCT863A	5962-8666101	54HC191	/66305	54HC4059	5962-8944501	54HCT244	/65755	54LS12	/30006
54FCT863B	5962-8666102	54HC191	5962-8689101	54HC4060	5962-8768001	54HCT244	5962-8513001	54LS122	/31403
54H00	/02304	54HC192	/66306	54HC4066	5962-8950701	54HCT245	/65553	54LS122	5962-7600301
54H01	/02306	54HC192	5962-8780801	54HC4075	5962-8772201	54HCT245	5962-8550601	54LS123	/31401
54H04	/02305	54HC193	/66307	54HC4078	5962-8857401	54HCT251	5962-9052401	54LS123	5962-7603901
54H10	/02303	54HC193	5962-8772401	54HC42	/65801	54HCT257	5962-8970501	54LS124	5962-7704101
54H101	/02205	54HC194	/66504	54HC42	5962-8682101	54HCT258	5962-8970801	54LS125A	/32302
54H103	/02206	54HC194	5962-8682601	54HC423A	5962-8949201	54HCT259	5962-8985201	54LS126	/31301
54H20	/02302	54HC195	/66505	54HC4511	5962-8773301	54HCT27	5962-8970301	54LS132	/31303
54H22	/02307	54HC195	5962-8682701	54HC4520	5962-8995401	54HCT273	5962-8772501	54LS132	5962-7600401
54H30	/02301	54HC20	/65003	54HC4538	5962-8688601	54HCT299	5962-8943601	54LS136	5962-9231901
54H40	/02401	54HC20	5962-8403901	54HC51	5962-9151301	54HCT30	5962-8974601	54LS138	/30701
54H50	/04001	54HC21	5962-8857601	54HC533	/65404	54HCT32	5962-8685201	54LS138	5962-7800501
54H51	/04002	54HC221	5962-8780501	54HC533	5962-8681301	54HCT367	5962-9070601	54LS139	/30702
54H53	/04003	54HC221A	5962-8780502	54HC534	5962-8681401	54HCT373	/65453	54LS139	5962-7600701
54H54	/04004	54HC237	5962-8660601	54HC534	5962-8681401	54HCT373	5962-8686701	54LS14	/31302
54H55	/04005	54HC238	5962-8689401	54HC540	/65710	54HCT374	/65652	54LS145	5962-8508401
54H72	/02201	54HC240	/65703	54HC541	/65711	54HCT377	5962-8950701	54LS148	/36001
54H73	/02202	54HC240	5962-8407401	54HC563	/65405	54HCT390	5962-9098401	54LS15	/31002
54H74	/02203	54HC241	/65704	54HC563	5962-8606201	54HCT393	5962-8989001	54LS151	/30901
54H76	/02204	54HC242	/65501	54HC564	/65606	54HCT40102	5962-9057401	54LS151	5962-7601001
54HC00	/65001	54HC243	/65502	54HC564	5962-8681501	54HCT4020	5962-8945801	54LS153	/30902
54HC00	5962-8403701	54HC243	5962-8409001	54HC573	/65406	54HCT4040	5962-8994701	54LS153	5962-7601101
54HC02	/65101	54HC244	/65705	54HC573	5962-8512801	54HCT4046A	5962-8875701	54LS154	5962-8301701
54HC02	5962-8404101	54HC244	5962-8409601	54HC574	/65604	54HCT4051	5962-9065401	54LS155	/32601
54HC03	5962-8764701	54HC245	5962-8409601	54HC590	5962-8960301	54HCT4052	5962-9163001	54LS156	/32602
54HC04	/65701	54HC245	/65503	54HC595	/66507	54HCT4059	5962-8862401	54LS157	/30903
54HC04	5962-8409801	54HC245	5962-8408501	54HC595	5962-8681601	54HCT4060	5962-8977101	54LS157	5962-7600201
54HC05	5962-8871801	54HC251B	/66205	54HC597	5962-8681701	54HCT534	5962-8984901	54LS158	/30904
54HC08	/65203	54HC251B	5962-8512501	54HC623	5962-8998901	54HCT540	/65760	54LS158	5962-7603301
54HC08	5962-8404701	54HC253B	/66206	54HC640	/65506	54HCT541	/65761	54LS160A	/31503
54HC09	5962-8682001	54HC253B	5962-8686201	54HC640	5962-8780901	54HCT573	5962-8685601	54LS160A	5962-7700901
54HC10	/65002	54HC257	5962-8512401	54HC643	/65507	54HCT574	5962-8974201	54LS161	/31504
54HC10	5962-8403801	54HC259	/65402	54HC646	/65508	54HCT597	5962-8974101	54LS161	5962-7600801
54HC107	/65303	54HC259	5962-8551901	54HC646	5962-8688501	54HCT640	5962-8974001	54LS162A	/31511
54HC107	5962-8515401	54HC266	/65103	54HC648	/65509	54HCT688	5962-8685701	54LS163A	/31512
54HC109	/65304	54HC266	5962-8404301	54HC688	5962-8681801	54HCT74	/65352	54LS163A	5962-7603401
54HC109	5962-8415001	54HC27	/65102	54HC7266	/65105	54HCT75	5962-9075801	54LS164	/30605
54HC11	/65204	54HC27	5962-8404201	54HC7266	5962-8404302	54HCT85	5962-8667201	54LS165A	/30608
54HC11	5962-8404801	54HC273	/65601	54HC73	5962-8515301	54HCT86	5962-8984401	54LS165A	5962-7700601
54HC112	/65305	54HC273	5962-8409901	54HC74	/65302	54HCU04	5962-8601001	54LS166	5962-8001701
54HC112	5962-8408801	54HC280	5962-8607701	54HC74	5962-8405601	54L00	/02004	54LS168	/31505
54HC113	5962-8969501	54HC283	5962-8976501	54HC75	/65401	54L02	/02701	54LS168	5962-8001801
54HC123	5962-8684701	54HC297	5962-8999001	54HC75	5962-8407001	54L03	/02006	54LS169	/31506
54HC123A	5962-8684702	54HC299	/66506	54HC76	5962-8773201	54L04	/02005	54LS169	5962-8001802
54HC125	5962-8772101	54HC300	5962-8780601	54HC85	5962-8601301	54L10	/02003	54LS170	/31902
54HC126	5962-8684801	54HC30	/65004	54HC86	/65202	54L121	/04201	54LS170	5962-8002501
54HC132	/65005	54HC30	5962-8404001	54HC86	5962-8404601	54L122	/04202	54LS173A	/36101
54HC132	5962-8984502	54HC32	/65201	54HC86	5962-8404601	54L164	/02802	54LS174	/30106
54HC133	5962-8772301	54HC32	5962-8404501	54HCT00	5962-8683101	54L193	/02503	54LS175	/30107
54HC138	/65802	54HC32	5962-8404501	54HCT02	5962-8975101	54L20	/02002	54LS181	/30801
54HC138	5962-8406201	54HC365	/65706	54HCT04	/65751	54L30	/02001	54LS183	5962-9054101
54HC139	/65803	54HC365	5962-8500101	54HCT04	5962-8974701	54L42	/02901	54LS190	/31513
54HC139	5962-8409201	54HC366	/65707	54HCT08	5962-8688301	54L43	/02902	54LS190	5962-7603501
54HC14	/65702	54HC366	5962-8682801	54HCT10	5962-8984301	54L44	/02903	54LS191	/31509
54HC14	5962-8409101	54HC367	/65708	54HCT107	5962-9084901	54L46	/02904	54LS191	5962-7600901
54HC147	5962-8406401	54HC367	5962-8500201	54HCT109	5962-9070101	54L47	/02905	54LS192	/31507
54HC151B	/66201	54HC368	/65709	54HCT112	5962-8970101	54L51	/04101	54LS192	5962-7603601
54HC151B	5962-8412801	54HC368	5962-8681201	54HCT112	5962-8970201	54L54	/04102	54LS193	/31508
54HC153B	/66202	54HC373	/65403	54HCT123	5962-8970001	54L55	/04103	54LS193	5962-7600601
54HC153B	5962-8409301	54HC373	5962-8407201	54HCT126	5962-9065101	54L71	/02101	54LS194A	/30601
54HC154	/65804	54HC374	/65602	54HCT132	5962-8984501	54L72	/02102	54LS195A	/30602
54HC154	5962-8682201	54HC374	5962-8407101	54HCT132	5962-8984501	54L73	/02103	54LS196	/32001
54HC157B	/66203	54HC377	/65603	54HCT137	5962-9173201	54L74	/02105	54LS196	5962-7701001
54HC157B	5962-8606101	54HC377	5962-8780701	54HCT138	/65852	54L78	/02104	54LS197	/32002
54HC158B	/66204	54HC390	/66308	54HCT138	5962-8550401				
54HC158B	5962-8600901	54HC390	5962-8600901	54HCT139	/65853				
54HC160	/66301	54HC393	/66309	54HCT14	/65752				
		54HC393	5962-8410001	54HCT151	5962-8689601				
					5962-9065201				

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

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54LS197	5962-7601501	54LS590	5962-8751701	55108	/10402	57C43C-55	5962-9065802	68C901B-5	5962-9086402
54LS20	/30007	54LS592	5962-8762101	55109A	5962-8754702	57C43C-70	5962-9065801	68C901B-8	5962-9086403
54LS21	/31003	54LS595	5962-8671701	55110A	5962-8754701	57C64-70	5962-8510207	68HC000-10	5962-8946202
54LS22	/30008	54LS597	5962-8944401	55113	/10405	57L4013D	5962-8779111	68HC000-12	5962-8946203
54LS221	/31402	54LS598	5962-8975601	55113	5962-8874401	57L401D	5962-8779109	68HC000-8	5962-8946201
54LS221	5962-7604201	54LS598	5962-9204601	55114	5962-8874402	57L402D	5962-8779110	68HC001-10	5962-8946205
54LS240	/32401	54LS629	5962-8102101	55115	5962-8874501	580S	5962-8686101	68HC001-12	5962-8946206
54LS240	5962-7801201	54LS640	5962-8416101	55116	5962-8851101	580U	5962-8686103	68HC001-8	5962-8946204
54LS241	/32402	54LS642	5962-8974801	55117	5962-8851102	584S	/12801	68HC001-12	5962-8946204
54LS242	/32801	54LS646	/32804	55118	5962-8851103	584T	/12802	68HC001-8	5962-8946204
54LS242	5962-8002001	54LS648	/32805	55119	5962-8851104	592	5962-8418502	68HC11A0	5962-9051001
54LS243	/32802	54LS668	5962-8687601	55121	5962-8776901	604A	5962-8956401	68HC11A1	5962-9051002
54LS243	5962-8002002	54LS670	/31901	55183	5962-7900901	605	5962-9064401	68HC811E2	5962-8952701
54LS244	/32403	54LS670	5962-7704201	55188	5962-8688901	610	5962-9169501	6N134	5962-8102801
54LS244	5962-7705701	54LS673	5962-8860201	55189	5962-8688801	6116	/29101	6N140A	5962-8302401
54LS245	/32803	54LS674	5962-8860701	55189A	5962-8688802	6116	/29105	7006	5962-9150801
54LS245	5962-8002101	54LS682	5962-8415101	5521	5962-9087901	6116	/29105	7006	5962-9150802
54LS245	5962-8994401	54LS684	5962-8415201	55325	/13001	6116	5962-9088801	7006	5962-9150803
54LS251	/30905	54LS688	5962-8415301	55326	/13002	6409	5962-9088801	7006	5962-9150804
54LS251	5962-7601601	54LS73	/30101	55327	/13003	6504	/24501	7006	5962-9150805
54LS253	/30908	54LS74A	/30102	5532A	/13102	6504RH	/24503	7024	5962-9166201
54LS253	5962-7601701	54LS75	/31601	5534A	/13101	6508	/23901	7024	5962-9166202
54LS257B	/30906	54LS75	5962-7601201	5537	/12502	6514	/24502	7024	5962-9166203
54LS257B	5962-7603701	54LS76A	/30110	5539	5962-8606401	6514RH	/24504	7024	5962-9166204
54LS258B	/30907	54LS76A	5962-7601301	55450	/12901	6516-1	/29102	7024	5962-9166205
54LS258B	5962-7603801	54LS83A	54LS83A	55451	/12902	6516-2	/61001	7024	5962-9166206
54LS259	/31603	54LS83A	5962-7601401	55451	5962-7704902	6516-3	/61003	7024	5962-9166207
54LS259B	/31605	54LS85	/31101	55452	/12903	65162	/29110	7025	5962-9161701
54LS26	/32102	54LS86	/30502	55452	5962-7704901	6518	/23902	7025	5962-9161702
54LS26	5962-7602001	54LS90	/31501	55453	/12904	65262	/29103	7025	5962-9161703
54LS261	/31801	54LS90	5962-7603201	55454	/12905	65262	/29109	7025	5962-9161704
54LS261	5962-8002601	54LS92	/31510	55454	5962-8871501	65642	/29205	7025	5962-9161705
54LS266	/30303	54LS93	/31502	55460	5962-8871501	65643	/29206	7025	5962-9161706
54LS27	/30302	54LS93	5962-7700101	55461	/12907	65C262RH	/29107	7025	5962-9161707
54LS273	/32501	54LS95B	/30603	55462	/12908	65T262RH	/29108	710	/10301
54LS273	5962-7801001	54LS96	/30604	55463	/12909	66079	5962-9167601	711	/10302
54LS279	/31602	54S00	/07001	55464	/12910	6654	/21901	7132LA-45	5962-8700205
54LS279	5962-7601801	54S02	/07301	55464	5962-8871502	6665	/24401	7132LA-55	5962-8700208
54LS28	/30204	54S03	/07002	55474	5962-8871503	6665	/24402	7132LA-70	5962-8700207
54LS28	5962-8512602	54S04	/07003	555	/10901	6665	/24403	7132LA-90	5962-8700206
54LS280	/32901	54S05	/07004	555	/10903	6685	5962-8600803	7132LA-45	5962-8700201
54LS283	/31202	54S08	/08003	55500	5962-8601801	670S	5962-8763501	7132SA-45	5962-8700204
54LS283	5962-7604301	54S09	/08004	55501	5962-8601802	674AT	/14006	7132SA-55	5962-8700204
54LS290	/32003	54S09	/07005	55511	5962-8605401	674AT	5962-8861502	7132SA-70	5962-8700203
54LS293	/32004	54S10	/08001	55522	5962-8605402	674AU	/14005	7132SA-90	5962-8700202
54LS293B	/30606	54S11	/07102	55553	5962-8605501	674AU	5962-8861501	714	/13502
54LS298	/30909	54S112	/07103	55553	5962-8605502	674BT	5962-9169003	7142LA-45	5962-8700213
54LS298	5962-7601901	54S113	/07103	55554	5962-8605502	674Z	5962-9169001	7142LA-55	5962-8700216
54LS299	5962-7802401	54S114	/07104	55563A	5962-9081301	674ZA	5962-9169002	7142LA-70	5962-8700215
54LS30	/30009	54S133	/07009	55564A	5962-9081302	674ZB	5962-9169002	7142LA-90	5962-8700214
54LS32	/30501	54S134	/07010	556	/10902	6800	/40001	7142LA-45	5962-8700212
54LS33	5962-8512601	54S135	/07502	5560	5962-8672201	68000-10	/54003	7142SA-55	5962-8700211
54LS348	/36002	54S138	/07701	5564-250	/22810	68000-10	5962-8202103	7142SA-70	5962-8700212
54LS353	5962-8550801	54S138	5962-7604101	5564-250	/22811	68000-12	5962-8202104	7142SA-90	5962-8700210
54LS365	/32201	54S139	5962-7700401	55ALS056	5962-9062801	68000-6	/54001	7187LS-55	/29203
54LS366	/32202	54S139	5962-7700401	55ALS057	5962-9062901	68000-8	5962-8202101	7187L70	/29204
54LS367	/32203	54S140	/08101	55ALS160	5962-8968001	68000-8	/54002	7187S45	/29202
54LS368	/32204	54S15	/08002	55ALS161	5962-8968101	68000-8	5962-8202102	7187S55	/29201
54LS37	/30202	54S151	/07901	55ALS194	5962-8864801	68020-12	5962-8603201	7206	5962-9317701
54LS373	/32502	54S153	/07902	55ALS195	5962-8864901	68020-16	5962-8603202	7206	5962-9317702
54LS374	/32503	54S157	/07903	55C64-250	/26005	68020-20	5962-8603203	7206	5962-9317703
54LS374	5962-7801101	54S158	/07904	56001-20	5962-8951201	68030-16	5962-8946402	7216L-40	5962-8687301
54LS375	/31604	54S174	/07105	561	/13301	68030-16	5962-8946401	7216L-55	5962-8687302
54LS377	/32504	54S175	/07106	562	/12101	68030-25	5962-8946403	7216L-75	5962-8687303
54LS378	5962-8992501	54S181	/07801	562	5962-8100801	68030-33	5962-8946404	7216L20	5962-8687306
54LS38	/30203	54S182	/07802	563	/12102	68154	/40201	7216L25	5962-8687305
54LS382	5962-8688101	54S189	5962-7801502	563	5962-8100802	68155	5962-8857201	7216L30	5962-8687304
54LS390	/32701	54S194	/07601	565	/12103	68172	5962-8770501	7217L-40	5962-8768601
54LS390	5962-7802601	54S194	5962-7604001	566	/12104	68230-10	5962-9317002	7217L-55	5962-8768602
54LS393	/32702	54S195	/07602	567	5962-8700301	68230-8	5962-9317001	7217L-75	5962-8768603
54LS395A	/30607	54S20	/07006	57401	5962-8779101	6831B	/40301	7226	5962-8780201
54LS396	5962-9050301	54S22	/07007	57401A	5962-8779103	68442-8	5962-8681101	7228T	5962-8686301
54LS399	5962-8415401	54S251	/07905	57402	5962-8779102	685	5962-8600801	7228U	5962-8686302
54LS40	/30201	54S251	5962-8002201	57402A	5962-8779104	685	5962-8600802	723	/10201
54LS42	/30703	54S253	/07908	574AT	/14002	685	5962-8600802	7240L10	5962-8684601
54LS42	5962-7603101	54S257	/07906	574AT	/14004	68562	5962-8681001	7240L15	5962-8684602
54LS442	5962-9166101	54S258	/07907	574AT	5962-8512702	68681	5962-8856603	7240L25	5962-8684603
54LS47	/30704	54S258	5962-8002301	574AT	5962-8512704	68881-12	5962-8602101	7240L35	5962-8684604
54LS47	5962-7604501	54S30	/07008	574AT	5962-8512708	68881-16	5962-8602102	733	5962-8418501
54LS490	/32703	54S40	/07401	574AU	/14001	68881-20	5962-8602103	741A	/10101
54LS502	5962-9080001	54S51	/07401	574AU	/14003	68882-16	5962-8946301	747A	/10102
54LS51	/30401	54S572	/20601	574AU	5962-8512701	68882-20	5962-8946302	7520	/12702
54LS54	/30402	54S64	/07402	574AU	5962-8512703	68882-25	5962-8946303	7521	/12703
54LS540	/32404	54S74	/07101	574AU	5962-8512707	68882-33	5962-8946304	7523	/12701
54LS540	5962-8415501	54S85	/08201	574ZA	5962-8512705	68901-4	5962-8850601	7524	5962-8770001
54LS541	/32405	54S86	/07501	57AZB	5962-8512706	68901-5	5962-8850602	7524	5962-8770002
54LS541	5962-8415601	55107	/10401	57C43C-35	5962-9065804	68C681	5962-8953203	7524	5962-8770003
				57C43C-45	5962-9065803	68C901B-4	5962-9086401		

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

MILITARY PARTS
SORTED BY GENERIC INDUSTRY P/N

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
7528	5962-8770101	7C132	5962-9062001	8088	5962-8768501	82S101	/50201	93422A	/23114
7528	5962-8770102	7C132	5962-9062002	80960MC-16	5962-9094601	82S105	5962-8670901	93425	/23102
7528	5962-8770103	7C132	5962-9062003	80960MC-20	5962-9094602	82S105	5962-8670902	93425	/23106
7537S	5962-8776301	7C136	5962-9062007	80960MC-25	5962-9094603	82S115	/20803	93425A	/23108
7537T	5962-8776302	7C136	5962-9062008	80960XA-16	5962-9094604	82S123A	/20704	93427A	/23102
7537U	5962-8776303	7C136	5962-9062009	80960XA-20	5962-9094605	82S126A	/20303	93470	/23301
7541	/12704	7C142	5962-9062004	80960XA-25	5962-9094606	82S129A	/20304	93471	/23302
7545A	5962-8770206	7C142	5962-9062005	8097	5962-8506301	82S130A	/20403	936	/03003
7545B	5962-8770205	7C142	5962-9062006	8097BH	5962-8959601	82S131A	/20404	93CS66	5962-9154901
7545G	5962-8770204	7C146	5962-9062010	80C186-10	5962-8850101	82S137A	/20604	93L00	/02804
7545S	5962-8770201	7C146	5962-9062011	80C186-12	5962-8850102	82S153A	5962-8768201	93L01	/02907
7545S	5962-8770207	7C146	5962-9062012	80C186EB-13	5962-9310902	82S16	5962-8602301	93L08	/04502
7545T	5962-8770202	7C147	/28901	80C186EB-16	5962-9310903	82S185A	/20910	93L09	/04601
7545U	5962-8770203	7C148	/28902	80C186EB-8	5962-9310901	82S23A	/20703	93L10	/02504
7547S	5962-8965701	7C190	5962-8969401	80C187-10	5962-8944901	82S2708	/20905	93L12	/04602
7547T	5962-8965702	7C191	5962-9066401	80C187-12	5962-8944902	82S62	5962-8754301	93L14	/04501
7547U	5962-8965703	7C191	5962-9066402	80C196KB	5962-8998201	8397	5962-8552001	93L16	/02505
7549S	5962-8876501	7C191	5962-9066403	80C286-10	5962-9067801	8397BH	5962-8977201	93L18	/04301
7549T	5962-8876502	7C192	5962-8993501	80C286-12	5962-9067802	83C451	5962-8972602	93L22	/04603
7555	/14903	7C192	5962-8993502	80C287-10	5962-9065601	8572	5962-9164101	93L24	/04401
7555	5962-8950303	7C192	5962-8993503	80C31BH	5962-8506401	8744H-10	5962-8997101	93L28	/02803
7556	/14904	7C194	/29303	80C31BH-16	5962-8506403	8748H	5962-9051201	93L412	/23111
7556	5962-8950304	7C194	/29304	80C451	5962-8972601	8751H	5962-8419002	93L415	/23103
7575S	5962-8776201	7C194	/29311	80C51BH	5962-8506402	8751H-8	5962-8419001	93L420	/23004
7575T	5962-8776202	7C194	/29319	80C51BH-16	5962-8506404	8797BH	5962-8680901	93L422	/23112
760	5962-8754501	7C194	/29329	80C51FB	5962-9097601	87C196KC	5962-9069201	93L422A	/23115
7602	/20701	7C194	/29330	80C51FB-16	5962-9097602	87C451	5962-9154201	93L425	/23104
7603	/20702	7C194	/29331	80C86	5962-8405201	87C51	5962-8768401	93L425A	/23113
7616S	/21005	7C194	/29332	80C86-2	5962-8405202	87C51-16	5962-8768402	93S16	5962-8672701
7640	/20801	7C196	/29305	80C88	5962-8601601	87C51FB-12	5962-9056401	93S48	5962-8672601
7641	/20802	7C196	/29306	8155	5962-8759301	87C51FB-16	5962-9056402	93Z451	/20909
7643	/20602	7C196	/29316	8156	5962-8759302	87C51FC	5962-9169701	93Z460	/20906
7644	/20603	7C197	/29301	8212	/42101	87C51FC-16	5962-9169702	93Z510	/21003
7680	/20903	7C197	/29302	82188	5962-8767201	87C52	5962-9157601	93Z511	/21002
7681	/20904	7C197	/29310	8224	/42201	87C52	5962-9157603	93Z665-45	/21204
7684	/20901	7C197	/29319	8226	/42301	87C52-16	5962-9157602	93Z665-50	/21203
7684S	5962-8977702	7C197	/29333	82288-6	5962-8514901	87C52-16	5962-9157604	93Z665-55	/21202
7684T	5962-8977701	7C197	/29334	82288-8	5962-8514902	87C552	5962-9233301	93Z665-70	/21201
7690AS	5962-8977706	7C197	/29335	82380	5962-8959301	87C552	5962-9233302	944	/03102
7690AT	5962-8977705	7C197	/29336	82380	5962-8959302	87C654	5962-9056403	945	/03301
76L42A	/02906	7C198	/29307	82384-12	5962-8766902	87C654-16	5962-9056404	946	/03004
76L70	/02805	7C198	/29308	82384-16	5962-8766901	87C751	5962-9156601	948	/03302
77S190	/21001	7C198	/29309	8250	/15204	87C751	5962-9156602	950	/03303
7805A	5962-8778201	7C198	/29313	8251	/15205	87C751-16	5962-9156603	951	/03201
7806A	5962-8962601	7C235-30	5962-8863602	82510	5962-8972501	87C751-16	5962-9156604	9513A	5962-8552301
7808A	5962-8962801	7C235-40	5962-8863601	8251A	5962-8754801	87C752	5962-9157701	9517A	5962-8757501
7812A	5962-8777601	7C269	5962-9083101	8251A	5962-8754802	87C752	5962-9157702	9517A-4	5962-8757502
7815A	5962-8855301	7C269	5962-9083102	8252	/15206	87C752-16	5962-9157702	9519A	5962-8757901
7818A	5962-8991501	7C269	5962-9083103	8253	5962-8752001	87C752-16	5962-9157704	957	/03103
7820A	5962-7900801	7C269	5962-9083104	8253	5962-8752002	88C681	5962-8953201	958	/03104
7824A	5962-8855401	7C269	5962-9093001	8253-5	5962-8752003	88C681	5962-8953202	96002-33	5962-9315001
7824T	5962-8876401	7C269	5962-9093002	8255A	5962-8757001	8X305	5962-8550201	9601	/01204
7824U	5962-8876402	7C269	5962-9093003	8255A-5	5962-8757002	8X305-10	5962-8550202	9602	/01205
7828T	5962-8876403	7C285	5962-9232201	8259A	5962-8751801	8X320	5962-8550301	9614	/10403
7828U	5962-8876404	7C285	5962-9232202	82720	5962-8608801	8X350	5962-8605201	9615	/10404
7831	/10406	7C901-27	5962-8853502	8274	5962-87711301	8X371	5962-8757601	962	/03005
7831	5962-8004101	7C901-32	5962-8853501	8282	5962-8417901	8X376	5962-8685101	9622	5962-8752201
7832	/10407	7C910-46	5962-8770805	8282	5962-8417902	9093	/03304	9627	5962-8978701
7832	5962-8004102	7C910-51	5962-8770804	8283	5962-8417903	9150-25	5962-8759201	9636A	5962-8752301
78C120	5962-8963001	7C9101-35	5962-8951702	8283	5962-8417904	9150-35	5962-8759202	9637A	5962-8752401
78C20	5962-9321101	7C9101-45	5962-8951701	8286	5962-8686801	9150-45	5962-8759203	9638	5962-8754601
78C29	5962-9321101	7C9116-40	5962-8861204	8287	5962-8686802	930	/03001	9668S	5962-8600804
78C30	5962-8988201	80286-10	5962-8514803	82C237	5962-9054304	9300	/15901	96F172	5962-9076501
78G	/11702	80286-6	5962-8514802	82C237-12	5962-9054305	9304	/00603	96F173	5962-9076602
78MG	/11701	80286-8	5962-8514801	82C284-10	5962-8773401	9308	/01503	96F174	5962-9076502
78S40	5962-8876101	80287-10	5962-8513301	82C284-6	5962-8773403	9309	/01404	96F175	5962-9076601
7905A	5962-8874601	80287-5	5962-8513303	82C284-8	5962-8773402	9312	/01402	9900A	/46001
7908A	5962-8987001	80287-8	5962-8513302	82C37A	5962-9054302	9314	/01504	9914A	5962-8751901
7912A	5962-8874701	8035AHL	5962-8856801	82C37A-12	5962-9054303	9317	/15802	AD1385TD/883	5962-9171201
7915A	5962-8874801	8035L	/49002	82C37A-5	5962-9054301	9318	/15603	AD1671	5962-9312601
7924A	5962-8874901	80386-12	5962-8766802	82C52	5962-8501501	932	/03101	AD1674	5962-9316401
7968-125V	5962-9052701	80386-16	5962-8766801	82C54	5962-8406501	9321	/15801	AD2S80A	5962-9096201
7969-125V	5962-9052801	80386-20	5962-8766803	82C54-12	5962-8406502	9324	/15002	AD346	5962-8994001
79G	/11802	80386-25	5962-8766804	82C55A	5962-8406602	9328	/15902	AD390S	5962-8850901
79MG	/11801	80387-16	5962-8953401	82C55A-5	5962-8406601	933	/03105	AD390T	5962-8850902
7B162	5962-9217201	80387-20	5962-8953402	82C59A	5962-8501602	9334	/16001	AD394S	5962-8851001
7B162	5962-9217202	80387-25	5962-8953403	82C59A-5	5962-8501601	9338	/15701	AD394T	5962-8851002
7B162	5962-9217203	8048	/49001	82C82	5962-8406701	93410	/23001	AD395S	5962-8851003
7B164	5962-9159301	80486DX-25	5962-9310501	82C83	5962-8406702	93411	/23003	AD395T	5962-8851004
7B164	5962-9159302	80486DX-33	5962-9310502	82C84A	5962-8406801	93412	/23004	AD524	5962-8853901
7B164	5962-9159303	8048AH	5962-8856802	82C84A	5962-8406802	93415	/23101	AD524S	/14301
7B166	5962-9159304	8080A	/42001	82C86H-5	5962-8757701	93415	/23105	AD526	5962-9089401
7B166	5962-9159305	8080A	5962-7700201	82C87H-5	5962-8757702	93415	/23107	AD539	5962-8980901
7B166	5962-9159306	8085A	5962-7901001	82C88	5962-8406901	93417	/20301	AD558S	5962-8778901
7C123	5962-9069601	8086	/53001	82C89	5962-8552801	93419	/23201	AD558T	/14401
7C123	5962-9069602	8087	5962-8854702	82HS321A	/21101	93421	/23002	AD558T	5962-8778902
7C123	5962-9069603	8087-2	5962-8854701	82S100	/50202	93422	/23110	AD567S	5962-8780101

MILITARY

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

MASTER SELECTION INDEX

MILITARY PARTS SORTED BY FUNCTION

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
AD568SE	5962-8980802	AD96687	5962-7801903	ARX3464	5962-8959206	C22V10	5962-8867003	DAC8221A	5962-8967101
AD568SQ	5962-8980801	AD9696	5962-9234701	ARX3467	5962-8959205	C22V10	5962-8867004	DAC8222A	5962-8967201
AD570	5962-8680201	AD9698	5962-9234702	ATO28127/CH	5962-9160201	C22V10	5962-8867005	DAC8412A	5962-9176401
AD571	/13401	ADC-908A	5962-8961601	ATR2815T/CH	5962-9095401	C22V10-15	/50804	DAC8412B	5962-9176402
AD571	5962-8680202	ADC-908B	5962-8961602	ATR2815TF/CH	5962-9315801	C22V10-20	/50803	DAC8413A	5962-9176403
AD573S	5962-8850501	ADC-HX	5962-8850801	ATR2815TF/CH	5962-9215901	C22V10-25	/50802	DAC8413B	5962-9176404
AD578SD	5962-8865801	ADC-HZ	5962-8850802	ATS2812D/CH	5962-9210901	C22V10-30	/50801	DAC87	/13701
AD578TD	5962-8865802	ADC00300	5962-8854201	ATW2805S/CH	5962-9157901	C22V10L	5962-8872404	DAC87	/13702
AD578ZSD	5962-8865803	ADC0802	5962-9096601	ATW2805S/CHM	5962-9157902	C22V10L	5962-8975501	DAC87	/13703
AD578ZTD	5962-8865804	ADC1241	5962-9157801	ATW2805S/CHS	5962-9157902	C22V10L	5962-8975502	DAC87	5962-8300201
AD584S	5962-3812801	ADC12441	5962-9157802	ATW2812D/CHM	5962-9210903	C22V10L	5962-8975503	DAC87	5962-8300301
AD584T	5962-3812802	ADG201HST	5962-8671603	ATW2812D/CHS	5962-9210902	C22V10L	5962-8975504	DAC87	5962-8300301
AD585	5962-8754001	ADG526A	5962-8971001	ATW2815D/CH	5962-9161301	C22V10L-25	5962-8872401	DG129A	5962-7801401
AD586S	5962-8982401	ADG527A	5962-8971002	ATW2815D/CHM	5962-9161302	C22V10L-30	5962-8872402	DG180A	5962-8767301
AD586T	5962-8982402	ADG528A	5962-9063502	ATW2815D/CHS	5962-9161303	C22V10L-40	5962-8872403	DG181A	/11101
AD587SQ	5962-8982501	ADG529A	5962-9063502	BFRP10	/63001	C57401	5962-8779105	DG182A	/11102
AD587TQ	5962-8982502	ADH-030	5962-9063401	BT102	5962-8965301	C57401A	5962-8779107	DG184A	/11103
AD587UQ	5962-8982503	AH5010	5962-9087801	BT458	5962-8992801	C57402	5962-8779108	DG185A	/11104
AD588S	5962-8972801	AH5012	5962-9088001	BU-61580X1	5962-9306503	C57402A	5962-8779108	DG187A	/11105
AD588T	5962-8972802	AHE2812D/CH	5962-9204001	BU-61580X2	5962-9306504	CA3130BT	5962-7703301	DG188A	/11106
AD590J	5962-8757101	AHE2812D/CHM	5962-9204002	BU-61581X1	5962-9306507	CLC110	5962-8997501	DG189	5962-9068901
AD590K	5962-8757102	AHE2812D/CHS	5962-9204002	BU-61581X2	5962-9306508	CLC114	5962-8997501	DG190A	/11107
AD590L	5962-8757103	AHE2812S	5962-9158001	BU-65170X1	5962-9306501	CLC200A	5962-8991001	DG191A	/11108
AD590M	5962-8757104	AHE2812S-MST	5962-9158003	BU-65170X2	5962-9306502	CLC201A	5962-8991001	DG271	5962-8671602
AD598	5962-9067101	AHE2812S-SLV	5962-9158002	BU-65170X2	5962-9306502	CLC201A	5962-9083301	DG401	5962-9056901
AD625	5962-8771901	AHE2815D/CH	5962-9157501	BU-65171X1	5962-9306505	CLC205A	5962-9083501	DG403	5962-8976301
AD630	5962-8980701	AHE2815D/CH	5962-9157502	BU-65171X2	5962-9306506	CLC206A	5962-8986101	DG405	5962-8996101
AD637	5962-8963701	AHE2815S	5962-9162501	BUS-63105	5962-8604901	CLC207A	5962-9097101	DG408	5962-9204201
AD640	5962-9095501	AHE2815S-MST	5962-9162502	BUS-63105II	5962-8604902	CLC220A	5962-8991701	DG409	5962-9204202
AD650	/13803	AHE2815S-SLV	5962-9162502	BUS-63125	5962-8604902	CLC221A	5962-9083601	DG411	5962-9073101
AD664TD-BIP	5962-8871902	AHF2805S	5962-9160001	BUS-63125I	5962-8757902	CLC221A	5962-9083601	DG412	5962-9073102
AD664TD-UNI	5962-8871901	AHF2812D/CH	5962-9211101	BUS-63125II	5962-8757902	CLC231A	5962-8959401	DG413	5962-9073103
AD664TE	5962-8871903	AHF2815D/CH	5962-9235101	BUS-63127II	5962-8982601	CLC232A	5962-9166501	DG417A	5962-9073701
AD667S	5962-8865901	AHV2805SF/CH	5962-9177301	BUS-63147	5962-8952201	CLC401	5962-8997301	DG418A	5962-9073702
AD673S	5962-8850502	AHV2812TF/CH	5962-9211101	BUS-65112	5962-8753501	CLC402	5962-9099401	DG419A	5962-9073703
AD684	5962-9201301	AHV2815TF/CH	5962-9211501	BUS-65142	5962-8979801	CLC406	5962-9200401	DG419A	5962-9204101
AD688	5962-9321401	AM27C020-150	5962-9091203	BUS-65143	5962-8979802	CLC409	5962-9203401	DG422A	5962-9204102
AD713S	5962-9063302	AM27C020-200	5962-9091202	BUS-65153	5962-9216201	CLC410	5962-9203401	DG5140	5962-8100609
AD713T	5962-9063302	AM27C020-250	5962-9091202	BUS-65154	5962-9216202	CLC414	5962-9203401	DG5141	5962-8100610
AD7541AS	5962-8948101	AM2901	5962-7700702	BUS-65160	5962-8858501	CLC415	5962-9203501	DG5144	5962-8100613
AD7541AT	5962-8948102	AM2932	5962-8605001	BUS-65600	5962-8858501	CLC420A	5962-9175802	DG5145	5962-8100606
AD7569S	5962-8962901	AM29833A	5962-9051301	BUS-66300II	5962-8858601	CLC420B	5962-9175802	DG528	5962-8788901
AD7569T	5962-8962902	AM29833A	5962-9051302	BUS-66310II	5962-8604905	CLC430	5962-9203001	DG542	5962-9155201
AD7572	5962-8759101	AM29835A	5962-9051303	BUS-66314II	5962-9174903	CLC500	5962-9092501	DS1631	5962-8863101
AD7572	5962-8759102	AM29835A	5962-9051302	BX1750A	5962-8944704	CLC502	5962-8997401	DS1632	5962-9052201
AD7572	5962-8759103	AM29C818	5962-9051501	BX1750A	5962-8951902	CLC505	5962-9174301	DS1634	5962-8982101
AD7572	5962-8759104	AM29C821A	5962-8851605	BX1750A	5962-8951903	CLC520	5962-9099301	DS16F95	5962-8961501
AD7572	5962-8759105	AM29C823A	5962-8851606	BX1750A	5962-8951991	CLC525	5962-9099501	DS1776	5962-9231701
AD7572	5962-8759106	AM6687	5962-7801902	BX1750A	5962-8951992	CMM5104	/24505	DSC11520-112	5962-8988601
AD7579	5962-8969801	AM686	5962-7801801	BX1750A	5962-8951993	CMM5114	/24506	DSC11520-113	5962-8988602
AD7580	5962-8969802	AM687	5962-7801901	C16L8-20	5962-8867809	CMP-01	5962-8987101	DSC11520-114	5962-8988603
AD767	5962-8961702	AM85C30-10	5962-8868903	C16L8-20	5962-8867809	CMP04B	5962-8990401	DSC11520-115	5962-8988604
AD7672TQ05	5962-8965503	AM85C30-12	5962-8868904	C16L8-20	5962-8871309	CMP404A	5962-8990401	EF4442	5962-9071901
AD7672TQ10	5962-8965501	AM85C30-16	5962-8868905	C16L8-30	5962-8867805	CMP404B	5962-8990402	EL-2039	5962-8778702
AD7672UQ05	5962-8965504	AM85C30-8	5962-8868906	C16L8-30	5962-8871305	CS5012	5962-8967901	EL-2040	5962-8964802
AD7672UQ10	5962-8965502	AM9130AFC	/23702	C16L8-40	5962-8867801	CS5014-S	5962-8967401	EL-2041	5962-8778502
AD7820T	5962-8865002	AM9130AFM	/23704	C16L8-40	5962-8871301	CS5014-T	5962-8967401	EL-2190	5962-8778402
AD7820U	5962-8865001	AM9130CFM	/23703	C16R4-20	5962-8867812	CS5016-S	5962-8967601	EL2001	5962-9153402
AD7821	5962-8951801	AM9130CFM	/23703	C16R4-20	5962-8871312	CS5016-T	5962-8967601	EL2001A	5962-9153401
AD7846	5962-8969701	AM9140AFC	/23710	C16R4-20	5962-8871313	CS5016-TD	5962-8967601	EL2002	5962-9050902
AD7874	5962-9152101	AM9140AFM	/23712	C16R4-30	5962-8871308	CS5101A-SD	5962-9169102	EL2002A	5962-9050901
AD790	5962-9150501	AM9140CFM	/23709	C16R4-30	5962-8867804	CS5101A-TD	5962-9169102	EL2003	5962-8962301
AD811	5962-9211701	AM9140CFM	/23711	C16R4-40	5962-8867804	CS5102A-S	5962-9169201	EL2004	5962-8965901
AD827	5962-9312901	AM91L30AF	/23706	C16R6-20	5962-8867811	CS5102A-T	5962-9169201	EL2018	5962-9175501
AD829	5962-9313001	AM91L30AFM	/23708	C16R6-20	5962-8867812	CS5412-SC1	5962-9095702	EL2019	5962-9212801
AD840	5962-8964001	AM91L30CFM	/23707	C16R6-30	5962-8867807	CS5412-TC1	5962-9095701	EL2020	5962-8962201
AD841	5962-8964101	AM91L40AFC	/23714	C16R6-30	5962-8871307	CT1487D	5962-8757907	EL2030	5962-9081801
AD842	5962-8964201	AM91L40AFM	/23716	C16R6-40	5962-8867803	CT1589D	5962-8982606	EL2033	5962-8962302
AD843	5962-9098001	AM91L40CFM	/23713	C16R6-40	5962-8867804	CT1589M	5962-9082908	EL2038	5962-9153501
AD844	5962-8964401	AM91L40CFM	/23715	C16R8-20	5962-8867810	CT1589MI	5962-9082908	EL2072	5962-8997502
AD845	5962-8964501	AMP-01A	5962-8863001	C16R8-20	5962-8871310	CT1820-2	5962-9063602	EL2171	5962-8997302
AD846	5962-8964601	AMP-01B	5962-8863002	C16R8-30	5962-8871311	CT2521	5962-8952205	EL2232	5962-9167501
AD847S	5962-8964701	AP1	5962-9210401	C16R8-30	5962-8871306	CY7C331-25	5962-8985503	EN2015	5962-8977501
AD872	5962-9306001	AP2	5962-9210601	C16R8-40	5962-8867802	CY7C331-30	5962-8985502	EN2016A	5962-8977601
AD9002S	5962-9050801	ARX-4418	5962-9208503	C16R8-40	5962-8871302	CY7C331-40	5962-8985501	EN2016B	5962-8977602
AD9002T	5962-9050802	ARX-4451	5962-9208502	C22V10	/50701	DAC-08	/11301	F9450-15	5962-8416901
AD9005A	5962-9066601	ARX2402	5962-8604903	C22V10	/50702	DAC-08A	/11302	F9450-F15	5962-8416902
AD9012S	5962-8965401	ARX2410	5962-9063603	C22V10	/50703	DAC-8408A	5962-8967801	F9450-F18	5962-8416902
AD9012T	5962-8965402	ARX2411	5962-8757903	C22V10	/50704	DAC-8408B	5962-8967802	F9450-F20	5962-8416903
AD9048S	5962-9092702	ARX3402	5962-8604904	C22V10	5962-8753901	DAC-HKB	5962-8952801	FC1553621	5962-8604907
AD9048T	5962-9092701	ARX3410	5962-9063604	C22V10	5962-8753902	DAC-HKB-2	5962-8952802	FC1553622	5962-8757909
AD9300	5962-9201401	ARX3411	5962-8757904	C22V10	5962-8753903	DAC-HPB	5962-8953101	FC1553623	5962-8944703
AD9617S	5962-9086801	ARX3416	5962-8944701	C22V10	5962-8753904	DAC-HPB-1	5962-8953102	FC1553623	5962-8757906
AD9617T	5962-9086802	ARX3419	5962-8982602	C22V10	5962-8753905	DAC02310-112	5962-8851702	FC155371	5962-9082901
AD9618S	5962-9086803	ARX3420	5962-9082903	C22V10	5962-8867001	DAC02310-113	5962-8851701	FC155372	5962-9082902
AD9618T	5962-9086804	ARX3424	5962-9082904	C2					

MILITARY PARTS
SORTED BY GENERIC INDUSTRY P/N

Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN	Industry P/N	Military* PN
FC155392	5962-8979902	H18282	5962-8688002	LH0041	5962-8508701	LM144	5962-7800301	LT1013	5962-8876002
FC1553921	5962-8952206	HOS-050A	5962-8857901	LH0101	5962-8508901	LM148	/11001	LT1013A	5962-8876001
FC1553923	5962-8952207	HOS-060SH	5962-8857902	LH0101A	5962-8508901	LM149	/11002	LT1014	5962-8967702
FLP	5962-9210301	HPC16083	5962-9054402	LH2101A	/10105	LM150K	/11705	LT1014A	5962-8967701
FXP	5962-9202601	HPROM-512	/20101	LH2108A	/10106	LM1575-ADJ	5962-9167101	LT1016	5962-8684501
HA-2400	5962-8778301	HRD1066-341H	5962-8990806	LH2111	/10305	LM1577-12	5962-9216701	LT1017	5962-8950401
HA-2520	5962-8988001	HRD1066-341V	5962-8990807	LM10	5962-8760401	LM1577-15	5962-9216801	LT1018	5962-8950402
HA-2522	5962-8988001	HRD1066-381H	5962-8990808	LM101A	/10103	LM1577-ADJ	5962-9216601	LT1019-10	5962-9059505
HA-2529	5962-8972101	HS-1840RH	5962-8753801	LM102	/10601	LM1578	5962-8958601	LT1019-2.5	5962-9059508
HA-2539	5962-8778701	HS1068	5962-8877601	LM103H-1.8	5962-7702801	LM1578A	5962-8958602	LT1019-4.5	5962-9059507
HA-2540	5962-8964801	HS3282	5962-8688001	LM103H-2.0	5962-7702802	LM158	5962-8771001	LT1019-5	5962-9059506
HA-2541	5962-8778501	HS362	5962-8956501	LM103H-2.2	5962-7702803	LM158A	5962-8771002	LT1019A-10	5962-9059501
HA-2542	5962-8964301	HS9324	5962-8862901	LM103H-2.4	5962-7702804	LM160	5962-8767401	LT1019A-2.5	5962-9059504
HA-2544	5962-8950201	HS9378SB	5962-8986201	LM103H-2.7	5962-7702805	LM161	5962-8757203	LT1019A-4.5	5962-9059503
HA-2546	5962-9325101	HS9378TB	5962-8986201	LM103H-3.0	5962-7702806	LM185-1.2	5962-8759401	LT1019A-5	5962-9059502
HA-4902	5962-8686001	HS9403-16	5962-8851402	LM103H-3.3	5962-7702807	LM185-2.5	5962-8759402	LT1019A-5	5962-9059502
HA-5002	5962-8963601	HS9403-8	5962-8851401	LM103H-3.6	5962-7702808	LM185B	5962-9091401	LT1020	5962-9084101
HA-5033	5962-8963301	HS9576S	5962-9079501	LM103H-3.9	5962-7702809	LM185B X1.2	5962-8759403	LT1021BM-10	5962-8860001
HA-5101	5962-8963501	HS9716T	5962-9079502	LM103H-4.3	5962-7702810	LM185B X2.5	5962-8759404	LT1021BM-5	5962-8876201
HA-5102	5962-8954801	HS9716	5962-8956601	LM103H-4.7	5962-7702811	LM185BY1.2	5962-8759405	LT1021BM-7	5962-8864701
HA-5104	5962-8850201	HSD1024-C672	5962-9070705	LM103H-5.1	5962-7702812	LM185BY2.5	5962-8759406	LT1021CM-5	5962-8860002
HA-5111	5962-8963101	HSD1024-C673	5962-9070706	LM103H-5.6	5962-7702813	LM193	/11202	LT1021DM-10	5962-8876203
HA-5112	5962-8963201	HSD1024-C674	5962-9070707	LM104	5962-8760501	LM194	5962-8777701	LT1021DM-5	5962-8860002
HA-5114	5962-8963401	HSD1024-C675	5962-9070708	LM105	5962-8958801	LM195	5962-8777801	LT1021DM-7	5962-8876203
HA-5127	5962-8962701	HSD1046341H2	5962-9156002	LM106	/10303	LM199	/12404	LT1022	5962-8962202
HA-5137	5962-8962702	HSD1046341S2	5962-9156003	LM106	5962-8003701	LM199	5962-8856102	LT1022A	5962-8962201
HA-5141	5962-8965601	HSD1046341V2	5962-9156001	LM107	5962-8958901	LM199A	/12401	LT1028AM	5962-8862201
HA-5142	5962-8965602	HSD1066-341H	5962-8949904	LM107	/10104	LM199A	5962-8856101	LT1028M	5962-8862201
HA-5144	5962-8965603	HSD1066-341V	5962-8949905	LM108A	/10701	LM199A-20	/12405	LT1029	5962-9051902
HA-5147	5962-8962703	HSD1066-349H	5962-8949803	LM109	5962-8777401	LM199A-20	5962-8856103	LT1029A	5962-9051901
HA-5190	5962-8778401	HSD1066-349V	5962-8949804	LM110	/10602	LM2110	/10603	LT1031B	5962-8980201
HA-5221	5962-9163401	HSD1066-381H	5962-8949906	LM110	5962-8760601	LM2940-5.0	5962-8958701	LT1031B	5962-8980201
HA-5222	5962-9163402	HSD1510-369	5962-9165101	LM111	/10304	LM2940K-12	5962-9088401	LT1031C	5962-8980202
HA-5330	5962-8767701	HSDC-8915	5962-9055402	LM111	5962-8687701	LM2940K-15	5962-9088501	LT1031D	5962-8980203
HA-5340	5962-9306301	HSDC-8915A	5962-9055401	LM113	5962-8671101	LM2940K-8	5962-9088301	LT1033	5962-8774101
HA2444	5962-9309501	HSDC-8920	5962-9073702	LM113-1	5962-8671102	LM604	5962-8963901	LT1037A	5962-8856701
HCP16003	5962-9054401	HSDC-8920A	5962-8768701	LM113-2	5962-8671103	LM6118	5962-9156501	LT1054M	5962-8956201
HCPL-1931	5962-8957201	HSRD1006-341	5962-9213801	LM117	5962-7703401	LM612	5962-9300201	LT1055	5962-8997603
HCPL-5201	5962-8876801	HSRD1006-341	5962-9213802	LM117H	/11703	LM6121	5962-9081201	LT1055A	5962-8997601
HCPL-5231	5962-8876901	HSRD1006-341	5962-9213803	LM117HV	5962-7703402	LM6125	5962-9081201	LT1056	5962-8997602
HCPL-5401	5962-8957001	HSRD1006-341	5962-9213804	LM117K	/11704	LM6161	5962-8962101	LT1056A	5962-8997602
HCPL-5431	5962-8957101	HSRR-7111	5962-9314001	LM118	/10107	LM6162	5962-9216501	LT1057	5962-9081702
HCPL-5501	5962-9085401	HTC-0300	/14201	LM119	/10306	LM6162	5962-9216501	LT1057A	5962-9081701
HCPL-5531	5962-8767902	ICL7667	5962-8766001	LM119	5962-8601401	LM6164	5962-8962401	LT1058	5962-8989702
HCPL-5601	5962-9085501	ICL8038	5962-8877201	LM120H-05	/11501	LM6165	5962-8962501	LT1058A	5962-8989701
HCPL-5631	5962-8102802	ICL8211	5962-8984201	LM120H-12	5962-7704001	LM709	5962-7800701	LT1070	5962-9082501
HCPL-5701	5962-8981001	ICL8212	5962-8984202	LM120H-15	5962-7704003	LM759	5962-9086201	LT1070HV	5962-9082502
HCPL-5731	5962-8978501	ICM7170	5962-8765301	LM120H-24	5962-7704004	LMA1009/2009	5962-9099602	LT1071	5962-9082502
HCPL-5761	5962-8947701	IDT75C48S20	5962-8874301	LM120H-24	5962-7704005	LMA1009/2009	5962-9099603	LT1071HV	5962-9082503
HCPL-6231	5962-8876902	IDT75C48S30	5962-8874302	LM120H-24	5962-7704006	LMA1009/2009	5962-9099604	LT1072	5962-9082505
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HCPL-6531	5962-8767903	IHS042	5962-8100603	LM120H-24	5962-7704008	LMA1009/2009	5962-9099606	LT1078	5962-9163203
HCPL-6631	5962-8102803	IHS043	5962-8100604	LM120H-24	5962-7704009	LMA1009/2009	5962-9099607	LT1078A	5962-9163204
HCPL-6731	5962-8978502	IHS044	5962-8100605	LM120K-05	/11505	LMA1009/2009	5962-9099608	LT1079	5962-9163201
HD-4702	5962-9051801	IHS046	5962-8100606	LM120K-15	/11506	LMA1009/2009	5962-9099609	LT1079A	5962-9163202
HD-6402B	5962-9052502	IHS046	5962-8100607	LM120K-15	/11507	LMA1009/2009	5962-9099610	LT1080	5962-8766601
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HDSR2056P34H	5962-9155903	IHS048	5962-8513107	LM124A	/11006	LMA1009/2009	5962-9099616	LT1181	5962-9172902
HDSR2056P34S	5962-9155904	IHS048	5962-8513108	LM124A	5962-7704302	LMA1009/2009	5962-9099617	LT119A	/10307
HDSR2056P34V	5962-9155901	IHS048	5962-8513109	LM124A	5962-7704303	LMA1009/2009	5962-9099618	LT119A	5962-8601402
HDSR2056P34V	5962-9155902	IHS048	5962-8513110	LM129A	/12402	LMA1009/2009	5962-9099619	LT1229	5962-9318401
HI-516	5962-8869901	IHS048	5962-8513111	LM129A	5962-8992101	LMA1009/2009	5962-9099620	LT1230	5962-9318402
HI-8382	5962-8687901	IHS048	5962-8513112	LM129B	/12406	LMA1009/2009	5962-9099621	LT1237A	5962-8777502
HI201HS	5962-8671601	IHS048	5962-8513113	LM129B	5962-8992102	LMA1009/2009	5962-9099622	LT1237A	5962-7703406
HI5040	5962-8100601	IHS048	5962-8513114	LM129C	5962-8992103	LMA1009/2009	5962-9099623	LT137AHV	5962-7703408
HI5042	5962-8100612	IHS048	5962-8513115	LM131A	5962-8760701	LMA1009/2009	5962-9099624	LT137A	5962-8884701
HI5043	5962-8100613	IHS048	5962-8513116	LM136A-2.5	5962-8418001	LMA1009/2009	5962-9099625	LTC1044	5962-3770701
HI5045	5962-8100614	IHS048	5962-8513117	LM136A-5.0	5962-8418002	LMA1009/2009	5962-9099626	LTC1045	5962-9054501
HI5046	5962-8100615	IHS048	5962-8513118	LM137	5962-7703403	LMA1009/2009	5962-9099627	LTC1052	5962-8978201
HI5046A	5962-8100616	IHS048	5962-8513119	LM137H	/11803	LMA1009/2009	5962-9099628	LTC1052	5962-8978201
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HI5047A	5962-8100618	IHS048	5962-8513121	LM137K	/11804	LMA1009/2009	5962-9099630	LTC1062	5962-9159501
HI5048	5962-8100619	IHS048	5962-8513122	LM138K	/11706	LMA1009/2009	5962-9099631	LTC1064	5962-8948301
HI5049	5962-8100620	IHS048	5962-8513123	LM139	/11201	LMA1009/2009	5962-9099632	LTC1064-1A	5962-90693

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M82C288-10	5962-9099703	MN7130	5962-9057101	OP-270A	5962-8872101	PAL16C1	5962-8103505	PAL20L8B	5962-8767101
M82C288-6	5962-9099701	MN7140	5962-9079701	OP-271A	5962-8872102	PAL16C1A	/50314	PAL20R4-10	5962-8767118
M82C288-8	5962-9099702	MOF1305D	5962-8858301	OP-27A	/13503	PAL16C1A2	/50323	PAL20R4-12	5962-8767114
MAX333	5962-9318001	MOH0268D	5962-8858101	OP-290	5962-8978301	PAL16H2	/50304	PAL20R4-15	5962-8767110
MAX543AM	5962-9234501	MOH0272C	5962-8858201	OP-37A	/13505	PAL16H2A	5962-8103504	PAL20R4A	/50504
MAX543BM	5962-9234502	MOR1623K	5962-8858401	OP-37A	5962-8853701	PAL16H2A	/50313	PAL20R4A	5962-8412904
MAX631A	5962-9214101	MP7636AS	5962-9174002	OP-42	/12208	PAL16H2A2	5962-8103513	PAL20R4A-2	5962-8767104
MAX631B	5962-9214102	MP7636AT	5962-9174001	OP-42A	5962-8851301	PAL16L2	/50309	PAL20R6-10	5962-8767117
MAX632A	5962-9214103	MP7684AS	5962-8977704	OP-42B	5962-8851302	PAL16L2A	5962-8103509	PAL20R6-12	5962-8767113
MAX632B	5962-9214104	MP7684AT	5962-8977703	OP-470A	5962-8856501	PAL16L2A	/50318	PAL20R6-15	5962-8767109
MAX633A	5962-9214105	MPY008HC2V	/50004	OP-471A	5962-8856502	PAL16L2A	5962-8103517	PAL20R6A	/50503
MAX633B	5962-9214106	MPY012HC1V	/50005	OP-50A	5962-8967301	PAL16L2A2	/50327	PAL20R6A-2	5962-8412903
MAX634	5962-9212401	MPY016HC1V	/50006	OP-50B	5962-8967302	PAL16L6	5962-8680404	PAL20R6B	5962-8767103
MAX638A	5962-9212701	MR63125M	5962-8757908	OP-77A	5962-8773802	PAL16L8	5962-8515517	PAL20R8-10	5962-8767116
MAX638B	5962-9212702	MR63147M	5962-9206101	OP-77B	5962-8773801	PAL16L8-10	/50609	PAL20R8-12	5962-8767112
MAX663	5962-9212601	MR63147M-2	5962-9206102	OP-97	5962-8954401	PAL16L8-15	5962-8515509	PAL20R8-15	5962-8767108
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MAX666	5962-9212603	MSK332B-15	5962-9090202	OP14B	5962-8771402	PAL16L8-30	5962-8515505	PAL20R8A-2	5962-8412902
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MAX690	5962-9071201	MT4067-10	5962-8767604	OP215A	5962-8853801	PAL16L8A-12	5962-8515513	PAL20R8B	5962-8767102
MAX691	5962-9071101	MT4067-12	5962-8767601	OP215B	5962-8853802	PAL16L8A-2	5962-8103611	PAL20R10A	5962-8680301
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MAX694	5962-9071203	MT5C2565	/29312	OP37B	5962-8853702	PAL16L8A2	/50407	PAL20X8A	5962-8412906
MAX695	5962-9071103	MT5C2565	/29315	OP37C	5962-8853703	PAL16L8B	/50601	PAL22V10	5962-8605305
MAX697	5962-9312501	MT5C2565	/29320	OP400A	5962-8777101	PAL16L8B2	/50605	PAL22V10-12	5962-8605304
MAX738	5962-9312101	MT5C2565	/29322	OP421B	5962-8855901	PAL16R4	5962-8103604	PAL22V10-20	5962-8605301
MAX8211	5962-9081101	MT5C2565	/29323	OP421C	5962-8855902	PAL16R4	5962-8515520	PAL22V10A	5962-8605303
MAX8212	5962-9081102	MT5C2565	/29324	OP44A	/12207	PAL16R4-10	5962-8515516	PAL22VP10-25	5962-8605303
MC4344	5962-8780301	MT5C2568	/29317	OP44A	5962-8980401	PAL16R4-12	5962-8515516	PLS161	5962-8850401
MC6821	/40101	MT5C2568	/29325	OP490A	5962-8967001	PAL16R4-15	/50612	PLS168	5962-9201201
MCM5304	/20102	MT5C2568	/29326	OP64A	5962-9053501	PAL16R4-15	5962-8515512	PLS173	5962-8850402
MCM6604A	/23602	MT5C2568	/29327	OP90A	5962-8989601	PAL16R4-20	5962-8515504	PLS179	5962-8850701
MCM6604A	/23604	MT5C2568	/29328	OPA541	5962-8870101	PAL16R4-30	5962-8515508	PLS179	5962-8850702
MCM6605	/23601	MT5C2568	/29327	P1750A-40	5962-8766504	PAL16R4A	/50404	PLUS20L8	5962-8767106
MCM6605	/23603	MT5C2568	/29328	P1753	5962-8950501	PAL16R4A	5962-8103610	PLUS20R8	5962-8767106
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MHF+2815D	5962-9161401	MUX-16B	5962-8771702	P1753	5962-8950505	PAL16R4B	/50604	PM7541AB	5962-8948103
MHF+2815S	5962-9161001	MUX-24A	5962-8771801	P1753	5962-8950506	PAL16R4B2	/50608	R675B-3	/13602
MIC5011	5962-9313901	MUX-24B	5962-8771802	P1754	5962-8864201	PAL16R6	5962-8103603	R675B-4	/13601
MIC5012	5962-9313902	NHI-1500	5962-8757905	P1754	5962-8864202	PAL16R6-10	5962-8515519	RDC14505-641	5962-8768703
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MIOP42119	5962-9170001	NHI-1514	5962-9174901	PA02	5962-9067901	PAL16R6-30	5962-8515507	REF02A	5962-8551401
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MKB4501-81	/25001	NHI-1523	5962-8982604	PA51	5962-8762002	PAL16R6A	5962-8103609	REF10A	5962-8947901
MKB4501-88	/25003	NHI-1529	5962-8952203	PA83M/883	5962-9162101	PAL16R6A-2	5962-8103613	REF10B	5962-8947902
MM5280	/23505	NHI-1531	5962-9082905	PA84M	5962-9073801	PAL16R6A-4	5962-8506503	RGBDAC3808H	5962-8950901
MM5280	/23506	NHI-1545	5962-9082906	PAL10H8	/50301	PAL16R6A-2	5962-8506503	SBP9989	/46501
MMH0026	/03501	NHI-1551	5962-9208501	PAL10H8	5962-8103501	PAL16R6A2	/50409	SDC14500-635	5962-9070701
MN3008	5962-8768801	NMC2816	/22601	PAL10H8A	/50310	PAL16R6B	/50603	SDC14500-636	5962-9070702
MN3009	5962-8768802	NSC800	5962-8301301	PAL10H8A	5962-8103510	PAL16R6B2	/50607	SDC14502-605	5962-9070703
MN3020	5962-8971801	NSC800-4	5962-8301302	PAL10H8A2	/50319	PAL16R8	5962-8103602	SDC14502-606	5962-9070704
MN3290T/B-V	5962-8953103	OM2541SKB	5962-9083801	PAL10L8	/50306	PAL16R8-10	5962-8515518	SDC14531-631	5962-9082002
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MN346	5962-8994002	OM7502SC	5962-8949003	PAL10L8A	/50315	PAL16R8-15	5962-8515510	SDC14531-631	5962-9082002
MN376	5962-9073001	OM7503SC	5962-8949004	PAL10L8A	5962-8103514	PAL16R8-20	5962-8515502	SDC14531-631	5962-9082002
MN3860	5962-9057001	OM7504SC	5962-8949005	PAL10L8A2	/50324	PAL16R8-30	5962-8515506	SDC14560-114	5962-8949901
MN5100	5962-9207301	OM7505SC	5962-8949006	PAL12H6	/50302	PAL16R8A	/50402	SDC14560-115	5962-8949902
MN5101	5962-9207302	OM7506SC	5962-8949007	PAL12H6	5962-8103502	PAL16R8A	5962-8103608	SDC14560-605	5962-8949903
MN5200	5962-8958301	OM7507SC	5962-8949008	PAL12H6A	/50311	PAL16R8A-12	5962-8515514	SDC14560-605	5962-8949901
MN5201	5962-8958303	OM7508SC	5962-8949009	PAL12H6A	5962-8103511	PAL16R8A-2	5962-8103612	SDC14561-114	5962-8949802
MN5202	5962-8958305	OM7509SC	5962-8949001	PAL12H6A2	/50320	PAL16R8A-4	5962-8506502	SDC14561-114	5962-8990801
MN5203	5962-8958302	OP-07	5962-8203602	PAL12L10	5962-8680402	PAL16R8A2	/50408	SDC14565-115	5962-8990802
MN5204	5962-8958304	OP-07A	/13501	PAL12L6	/50307	PAL16R8B	/50602	SDC14565-115	5962-8990803
MN5205	5962-8958307	OP-07A	5962-8203601	PAL12L6	5962-8103507	PAL16R8B2	/50606	SDC14565-115	5962-8990804
MN5206	5962-8958307	OP-09	5962-9308301	PAL12L6A	/50316	PAL16X4	/50405	SDC14566-114	5962-8990805
MN5210	5962-8958401	OP-11A	5962-8980101	PAL12L6A	5962-8103515	PAL16X4	5962-8103605	SDC14567-112	5962-9055101
MN5211	5962-8958403	OP-11B	5962-8980102	PAL12L6A2	/50325	PAL16X4	5962-8103605	SDC14567-112	5962-9055102
MN5212	5962-8958405	OP-15A	5962-8954201	PAL12L6A2	/50325	PAL18L4	5962-8680401	SDC14567-112	5962-9055103
MN5213	5962-8958402	OP-15B	5962-8954202	PAL14H4	/50303	PAL18PA	5962-8752803	SDC14567-112	5962-9055103
MN5214	5962-8958404	OP-16A	5962-9090501	PAL14H4	5962-8103503	PAL18PB	5962-8752803	SDC14567-112	5962-9055104
MN5215	5962-8958406	OP-16A	5962-8954301	PAL14H4A	/50312	PAL18PB	5962-8752804	SDC14569-111	5962-9055105
MN5216	5962-8958407	OP-16B	5962-8954302	PAL14H4A2	/50321	PAL18PBQ	5962-8752805	SDC14569-112	5962-9055106
MN5245	5962-8959501	OP-16C	5962-8954303	PAL14L4	/50308	PAL20C1	5962-8680406	SDC14569-114	5962-9055107
MN5245A	5962-8959502	OP-17A	5962-8770601	PAL14L4	5962-8103508	PAL20L10A	5962-8412905	SDC14571-112	5962-9204801
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SDC14577-114	5962-9204905	SP8741	5962-9159001	TSC427	5962-8850302	WS-128K8-85C	5962-9315603		
SDC14578-112	5962-9205002	SP8755	5962-8868401	TSC428	5962-8850303	WS-256K8-100	5962-9315702		
SDC14578-114	5962-9205003	SP9588	5962-9063101	TSC429	5962-8877001	WS-256K8-120	5962-9315701		
SDC14579-112	5962-9204904	SP9760	5962-9063001	TSC4420	5962-8877003	WS-256K8-25C	5962-9315708		
SDC14579-114	5962-9204906	SW-06B	5962-8966901	TSC4423	5962-8850304	WS-256K8-45C	5962-9315707		
SDC14600-112	5962-9173601	TDC1008C1V	/50001	TSC4424	5962-8850305	WS-256K8-55C	5962-9315706		
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SDC14601-112	5962-9173603	TDC1010C1V	/50003	TSC4426	5962-8850307	WS-256K8-85C	5962-9315703		
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SDC14604-112	5962-9205103	TDC1049	5962-8853201	UC1527A	5962-8951104	WS512K8-85CQ	5962-9207803		
SDC14605-112	5962-9173605	TDC1112-1	5962-9165201	UC1611	5962-9053801	WS512K8100CQ	5962-9207802		
SDC14605-114	5962-9173609	TDC1112-2	5962-9165202	UC1625	5962-9168901	WS512K8120CQ	5962-9207801		
SDC14605T112	5962-9173606	TL040	5962-9311701	UC1633	5962-9098701	X2816A-25	/22704		
SDC14605T114	5962-9173610	TL431	/14801	UC1637	5962-8995701	X2816A-30	/22703		
SDC14606-112	5962-9173607	TL514	5962-8887801	UC1706	5962-8961101	X2816A-35	/22702		
SDC14606-114	5962-9173611	TL7702AM	5962-8868502	UC1707	5962-8761901	X2816A-45	/22701		
SDC14606T112	5962-9173608	TL7702B	5962-8868504	UC1838A	5962-8989901	X2864A-25	/22804		
SDC14606T114	5962-9173612	TL7705AM	5962-8868503	UC1840	5962-8992201	X2864A-30	/22803		
SDC14607-112	5962-9205105	TL7705B	5962-8868503	UC1841	5962-8992202	X2864A-35	/22802		
SDC14607-114	5962-9205109	TL7705B	5962-8868505	UC1846	5962-8680601	X2864A-45	/22801		
SDC14607T112	5962-9205106	TL7770-12M	5962-9093202	UC1864	5962-9203101	XR2211M	5962-7705001		
SDC14607T114	5962-9205110	TL7770-15M	5962-9093203	UC1901	5962-8944101	Z-80ACPMU	/48001		
SDC14608-112	5962-9205203	TL7770-5M	5962-9093201	UC1903	5962-8697901	Z-80BCMOS	/48501		
SDC14608-114	5962-9205205	TLC2201M	5962-9088201	UCS-5800	5962-8764002	Z-80BCPU	/48003		
SDC14608T112	5962-9205204	TLC2202M	5962-9088202	UCS-5822	5962-8764101	Z-80CPU	/48002		
SDC14608T114	5962-9205206	TLC2274	5962-9318201	UCS5822	5962-8764101	Z-80SIO/2	/48102		
SDC14609-112	5962-9205107	TLC2652A	5962-9089503	UDS2981	5962-8851901	Z08400	5962-3848001		
SDC14609-114	5962-9205111	TLC2652M	5962-9089501	UDS2983	5962-8851902	Z08400	5962-3848002		
SDC14609T112	5962-9205108	TLC2654M	5962-9089502	UH-432	5962-8960401	Z08400	5962-3848003		
SDC14609T114	5962-9205112	TLC272	5962-8949401	UH-432-1	5962-8960402	Z0853004	5962-8752702		
SDC14610-112	5962-9205301	TLC274	5962-9060401	UH-507	5962-8986701	Z0855006	5962-8752701		
SDC14610T112	5962-9205302	TLC277	5962-8949402	UH-508	5962-8986701	Z0858106	5962-8752601		
SDC14611-112	5962-9205303	TLC279	5962-9060402	UH-532	5962-8550001	Z0858110	5962-8752602		
SDC14611T112	5962-9205304	TLC27L2	5962-8949403	UH503	5962-8855101	Z8001ACPU	/52003		
SDC14612-112	5962-9205401	TLC27L4	5962-9060405	UH503	5962-8855101	Z8001ACPU	5962-8000303		
SDC14612T112	5962-9205402	TLC27L7	5962-8949404	UT1553BB	5962-8862801	Z8001B	5962-8000304		
SDC14613-112	5962-9205501	TLC27L9	5962-9060406	UT1553BCRTM	5962-8957701	Z8001CPU	/52001		
SDC14613T112	5962-9205502	TLC27M2	5962-8949405	UT1553BCRTMP	5962-8950101	Z8001CPU	5962-8000301		
SDC14614-112	5962-9205403	TLC27M4	5962-9060403	UT1553BRTI	/55501	Z8002ACPU	5962-8000306		
SDC14614T112	5962-9205404	TLC27M7	5962-8949406	UT1553BRTR	5962-8957601	Z8002B	5962-8000305		
SDC14615-112	5962-9205305	TLC27M9	5962-9060404	UT1760ARTS	5962-8957501	Z8002CPU	/52002		
SDC14615-114	5962-9205309	TL032040M	5962-9086301	UT63M105	5962-8864401	Z8002CPU	5962-8000302		
SDC14615T112	5962-9205306	TL032044M	5962-9086302	UT63M115	5962-8864403	Z8030	5962-8551802		
SDC14615T114	5962-9205310	TL03704AM	5962-9096901	UT63M125	5962-8864405	Z8030A	5962-8551801		
SDC14616-112	5962-9205307	TL0372	5962-8765801	UT63M127	5962-8864406	Z8036	5962-8551702		
SDC14616-114	5962-9205311	TL0374	5962-8765901	UT63M135	5962-8864407	Z8036A	5962-8551701		
SDC14616T112	5962-9205308	TL0548	5962-9084501	UT69151	5962-9211801	Z80ADMA	/48301		
SDC14616T114	5962-9205312	TL0549	5962-9084502	V2500H	5962-9154501	Z80APIO	/48401		
SDC14617-112	5962-9205405	TL0555	/14901	V2500H	5962-9154601	Z80ASIO/2	/48101		
SDC14617-114	5962-9205409	TL0555	5962-8950301	V2500H	5962-9154602	Z80CTC	/48302		
SDC14617T112	5962-9205406	TL0556	/14902	V2500H	5962-9154603	Z80DMA	/48202		
SDC14617T114	5962-9205410	TL0556	5962-8950302	V2500L	5962-9154503	Z80PIO	/48402		
SDC14618-112	5962-9205503	TL0556	5962-8950302	V750	5962-8872601	Z8420	5962-8418602		
SDC14618-114	5962-9205505	TL0556	5962-8950302	V750	5962-8872602	Z8420A	5962-8418601		
SDC14618T112	5962-9205504	TL0556	5962-8950302	V750	5962-8872603	Z8430	5962-8301602		
SDC14618T114	5962-9205506	TL0556	5962-8950302	V750	5962-8872604	Z8430A	5962-8301601		
SDC14619-112	5962-9205407	TL0556	5962-8950302	V750L	5962-8872606	Z8442	5962-8301502		
SDC14619-114	5962-9205411	TL0556	5962-8950302	V750L	5962-8872607	Z8442A	5962-8301501		
SDC14619T112	5962-9205408	TL0556	5962-8950302	VAC068A	5962-9200901	Z84C2006	5962-8951401		
SDC14619T114	5962-9205412	TL0556	5962-8950302	VFC32	/13801	Z84C3006	5962-8951501		
SDV14604T112	5962-9205104	TL0556	5962-8950302	VFC320	/13802	Z84C4206	5962-8951601		
SG1626	5962-8871601	TMC2009	5962-9099601	VIC068A	5962-9201001	Z8523008	5962-8668910		
SG1644	5962-9165301	TMC2011V	5962-8944601	WE-128K8-150	5962-9315402	Z8523010	5962-8668908		
SG3081	5962-8866401	TMC2023V	5962-8971101	WE-128K8-200	5962-9315401	Z8523016	5962-8668909		
SL2524	5962-9231501	TMC2023V1	5962-8971102	WE-256K8-150	5962-9315502	Z8536	5962-8300101		
SL521	5962-9079201	TMC2023V2	5962-8971103	WE-256K8-200	5962-9315501	Z8536A	5962-8300102		
SL523AC	5962-8980301	TMC2023V3	5962-8971104	WE-512K8-200	5962-9309104	Z85C3006	5962-8668901		
SL531	5962-9208401	TMC208KV	5962-8873902	WE-512K8-250	5962-9309103	Z85C3006SCC	/48601		
SL532	5962-9052101	TMC208KV1	5962-8873902	WE-512K8-300	5962-9309102	Z85C3008	5962-8668902		
SL560AC	5962-9052001	TMC2111V	5962-8944602	WE512K8150CQ	5962-9309101	Z85C3010	5962-8668907		
SMJ4461	5962-8956001	TMC2208J4V	5962-9070801	WEDSP-16	5962-9070401				
SMP-10A	5962-8954103	TMC2301	5962-8971501	WS-128K8-100	5962-9315602				
SMP-10B	5962-8954104	TMC2310V	5962-8971502	WS-128K8-120	5962-9315601				
SMP-11A	5962-8954101	TMC2310V1	5962-9096302	WS-128K8-25C	5962-9315608				
SMP-11B	5962-8954102	TMC28KUV	5962-8873903	WS-128K8-35C	5962-9315607				
SP1078B	5962-8997901	TMC28KUV1	5962-8873904	WS-128K8-45C	5962-9315606				
SP8602	5962-9205901	TMS4050	/23502						
SP8620	5962-9097001	TMS4050	/23504						
SP8630	5962-9200301	TMS4060	/23501						
SP8647	5962-9061801	TMS4060	/23503						
SP8670	5962-9208801	TSC170	5962-8963801						

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/00101	5430	/02004	54L00	/05202	4001A	/07401	54S51	/11201	LM139
/00102	5420	/02005	54L04	/05203	4002A	/07402	54S64	/11202	LM193
/00103	5410	/02006	54L03	/05204	4025A	/07403	54S65	/11301	DAC-08
/00104	5400	/02101	54L71	/05251	4000B	/07501	54S86	/11302	DAC-08A
/00105	5404	/02102	54L72	/05252	4001B	/07502	54S135	/11401	LF155
/00106	5412	/02103	54L73	/05253	4002B	/07601	54S194	/11402	LF156
/00107	5401	/02104	54L78	/05254	4025B	/07602	54S195	/11403	LF157
/00108	5405	/02105	54L74	/05301	4007A	/07701	54S138	/11404	LF155A
/00109	5403	/02201	54H72	/05302	4019A	/07702	54S139	/11405	LF156A
/00201	5472	/02202	54H73	/05303	4030A	/07801	54S181	/11406	LF157A
/00202	5473	/02203	54H74	/05304	4048A	/07802	54S182	/11501	LM120H-05
/00203	54107	/02204	54H76	/05351	4007UB	/07901	54S151	/11502	LM120H-12
/00204	5476	/02205	54H101	/05352	4019B	/07902	54S153	/11503	LM120H-15
/00205	5474	/02206	54H103	/05353	4030B	/07903	54S157	/11504	LM120H-24
/00206	5470	/02301	54H30	/05354	4048B	/07904	54S158	/11505	LM120K-05
/00207	5479	/02302	54H20	/05401	4008A	/07905	54S251	/11506	LM120K-12
/00301	5440	/02303	54H10	/05451	4008B	/07906	54S257	/11507	LM120K-15
/00302	5437	/02304	54H00	/05501	4009A	/07907	54S258	/11508	LM120K-24
/00303	5438	/02305	54H04	/05502	4010A	/07908	54S253	/11601	300
/00401	5402	/02306	54H01	/05503	4049A	/08001	54S11	/11602	301
/00402	5423	/02307	54H22	/05504	4049A	/08002	54S15	/11603	302
/00403	5425	/02401	54H40	/05505	4050A	/08003	54S08	/11604	303
/00404	5427	/02501	54L90	/05551	4009UB	/08004	54S09	/11605	304
/00501	5450	/02502	54L93	/05552	4010B	/08101	54S140	/11606	305
/00502	5451	/02503	54L193	/05553	4049UB	/08201	54S85	/11607	306
/00503	5453	/02504	93L10	/05554	4050B	/10101	741A	/11608	307
/00504	5454	/02505	93L16	/05555	4041UB	/10102	747A	/11701	78MG
/00601	5482	/02601	54L86	/05601	4017A	/10103	LM101A	/11702	78G
/00602	5483	/02701	54L02	/05602	4018A	/10104	LM108A	/11703	LM117H
/00603	9304	/02801	54L95	/05603	4020A	/10105	LH2101A	/11704	LM117K
/00604	5480	/02802	54L164	/05604	4022A	/10106	LH2108A	/11705	LM150K
/00701	5486	/02803	93L28	/05605	4024A	/10107	LM118	/11706	LM138K
/00801	5406	/02804	93L00	/05606	4017B	/10108	1558	/11801	79MG
/00802	5416	/02805	76L70	/05652	4018B	/10201	723	/11802	79G
/00803	5407	/02901	54L42	/05653	4020B	/10301	710	/11803	LM137H
/00804	5417	/02902	54L43	/05654	4022B	/10302	711	/11804	LM137K
/00805	5426	/02903	54L44	/05655	4024B	/10303	LM106	/11901	061
/00901	5495	/02904	54L46	/05701	4006A	/10304	LM111	/11902	062
/00902	5496	/02905	54L47	/05702	4014A	/10305	LH2111	/11903	064
/00903	54164	/02906	76L42A	/05703	4015A	/10306	LM119	/11904	071
/00904	54165	/02907	93L01	/05704	4021A	/10307	LT119A	/11905	072
/00905	54194	/03001	930	/05705	4031A	/10401	55107	/11906	074
/00906	54195	/03002	MIC935	/05706	4034A	/10402	55108	/12001	5200
/01001	5442	/03003	936	/05751	4006B	/10403	9614	/12002	5203
/01002	5443	/03004	946	/05752	4014B	/10404	9615	/12003	5201
/01003	5444	/03005	962	/05753	4015B	/10405	55113	/12004	5204
/01004	5445	/03101	932	/05754	4021B	/10406	7831	/12005	5202
/01005	54145	/03102	944	/05755	4031B	/10407	7832	/12006	5205
/01006	5446	/03103	957	/05756	4034B	/10501	5040	/12007	5206
/01007	5447	/03104	958	/05801	4016A	/10502	5041	/12008	5207
/01008	5448	/03105	933	/05802	4066A	/10503	5042	/12009	5210
/01009	5449	/03201	951	/05851	4016B	/10504	5043	/12010	5213
/01101	54181	/03301	945	/05852	4066B	/10505	5044	/12011	5211
/01102	54182	/03302	948	/05901	4028A	/10506	5045	/12012	5214
/01201	54121	/03303	950	/05951	4028B	/10507	IH5046	/12013	5212
/01202	54122	/03304	9093	/06001	10501	/10508	IH5047	/12014	5215
/01203	54123	/03501	MMH0026	/06002	10502	/10601	LM102	/12015	5216
/01204	9601	/04001	54H50	/06003	10505	/10602	LM110	/12016	5217
/01205	9602	/04002	54H51	/06004	10506	/10603	LM2110	/12101	562
/01301	5492	/04003	54H53	/06005	10507	/10701	LM109	/12102	563
/01302	5493	/04004	54H54	/06006	10509	/10702	LM140H-05	/12103	565
/01303	54160	/04005	54H55	/06101	10531	/10703	LM140H-12	/12104	566
/01304	54163A	/04101	54L51	/06102	10631	/10704	LM140H-15	/12201	2700
/01305	54162	/04102	54L54	/06103	10576	/10705	LM140H-24	/12202	2600
/01306	54161	/04103	54L55	/06104	10535	/10706	LM140K-05	/12203	2620
/01307	5490	/04201	54L121	/06201	10504	/10707	LM140K-12	/12204	2500
/01308	54192	/04202	54L122	/06202	10597	/10708	LM140K-15	/12205	2510
/01309	54193	/04301	93L18	/06301	10524	/10709	LM140K-24	/12206	2520
/01401	54150	/04401	93L24	/06302	10525	/10801	3018A	/12207	OP44A
/01402	9312	/04501	93L14	/07001	54S00	/10802	3045	/12208	OP-42
/01403	54153	/04502	93L08	/07002	54S03	/10901	555	/12301	200
/01404	9309	/04601	93L09	/07003	54S04	/10902	556	/12302	201
/01405	54157	/04602	93L12	/07004	54S05	/10903	555	/12401	LM199A
/01406	54151	/04603	93L22	/07005	54S10	/11001	LM148	/12402	LM129A
/01501	5475	/05001	4011A	/07006	54S20	/11002	LM149	/12403	REF10A
/01502	5477	/05002	4012A	/07007	54S22	/11003	4741	/12404	LM199
/01503	9308	/05003	4023A	/07008	54S30	/11004	4136	/12405	LM199A-20
/01504	9314	/05051	4011B	/07009	54S133	/11005	LM124	/12406	LM129B
/01601	5408	/05052	4012B	/07010	54S134	/11006	LM124A	/12407	10215
/01602	5409	/05053	4023B	/07101	54S74	/11101	DG181A	/12408	10217
/01701	54174	/05101	4013A	/07102	54S112	/11102	DG182A	/12409	102110
/01702	54175	/05102	4027A	/07103	54S113	/11103	DG184A	/12501	198
/01801	54170	/05103	4043A	/07104	54S114	/11104	DG185A	/12502	5537
/01901	54180	/05151	4013B	/07105	54S174	/11105	DG187A	/12601	1524
/02001	54L30	/05152	4027B	/07106	54S175	/11106	DG188A	/12602	1525A
/02002	54L20	/05153	4043B	/07201	54S40	/11107	DG190A	/12603	1526
/02003	54L10	/05201	4000A	/07301	54S02	/11108	DG191A	/12604	1527A

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/12701	7523	/15802	9317	/21005	76165	/23902	6518	/29306	7C196
/12702	7520	/15901	9300	/21101	82HS321A	/24001	2117	/29307	7C198
/12703	7521	/15902	9328	/21102	53S3281	/24002	2117	/29308	7C198
/12704	7541	/16001	9334	/21103	29671	/24003	4116	/29309	7C198
/12705	1020	/16101	5432	/21201	93Z665-70	/24004	45H16	/29310	7C197
/12706	1220	/16201	5428	/21202	93Z665-55	/24005	45H16	/29311	7C194
/12707	1218	/16301	54365	/21203	93Z665-50	/24401	6665	/29312	MT5C2565
/12801	584S	/16302	54366	/21204	93Z665-45	/24402	6665	/29313	7C198
/12802	584T	/16303	54367	/21901	6654	/24403	6665	/29314	MT5C2565
/12901	55450	/16304	54368	/22001	2708	/24501	6504	/29315	MT5C2565
/12902	55451	/17001	4081B	/22101	2716	/24502	6514	/29316	7C196
/12903	55452	/17002	4082B	/22201	2532	/24503	6504RH	/29317	MT5C2568
/12904	55453	/17003	4073B	/22401	27256-250	/24504	6514RH	/29318	7C197
/12905	55454	/17101	4071B	/22402	27256-200	/24505	CMM5104	/29319	7C194
/12906	55460	/17102	4072B	/22403	27256-170	/24506	CMM5114	/29320	MT5C2565
/12907	55461	/17103	4075B	/22601	NMC2916	/24601	M41256P-12	/29321	MT5C2565
/12908	55462	/17201	4085B	/22701	X2816A-45	/24602	M41256P-15	/29322	MT5C2565
/12909	55463	/17202	4086B	/22702	X2816A-35	/24603	M41256N-12	/29323	MT5C2565
/12910	55464	/17203	4070B	/22703	X2816A-30	/24604	M41256N-15	/29324	MT5C2565
/13001	55325	/17204	4077B	/22704	X2816A-25	/24901	411024-80	/29325	MT5C2568
/13002	55326	/17301	4514B	/22801	X2864A-45	/24902	411024-100	/29326	MT5C2568
/13003	55327	/17302	4515B	/22802	X2864A-35	/24903	411024-120	/29327	MT5C2568
/13101	5534A	/17303	4532B	/22803	X2864A-30	/24904	4C1024-150	/29328	MT5C2568
/13102	5532A	/17304	4555B	/22804	X2864A-25	/25001	MKB4501-81	/29329	7C194
/13301	561	/17305	4556B	/22805	X2864A-35	/25002	MKB4501-80	/29330	7C194
/13401	AD571	/17401	4069UB	/22806	X2864A-25	/25003	MKB4501-88	/29331	7C194
/13501	OP-07A	/17402	40107B	/22807	2864-350	/26001	28C64-350	/29332	7C194
/13502	714	/17403	4502B	/22808	2864-250	/26002	28C64-350	/29333	7C194
/13503	OP-27A	/17404	40109B	/22809	2864H-250	/26003	28C64-250	/29334	7C197
/13504	OP-227A	/17501	4076B	/22810	5564-250	/26004	28C64-250	/29335	7C197
/13505	OP-37A	/17502	4095B	/22811	5564-250	/26005	55C64-250	/29336	7C197
/13601	R675B-4	/17503	4096B	/23001	93410	/26006	28C65-250	/30001	54LS00
/13602	R675B-3	/17504	4098B	/23002	93421	/26007	28C65-350	/30002	54LS03
/13701	DAC87	/17505	40174B	/23003	93411	/26101	28C256-350	/30003	54LS04
/13702	DAC87	/17601	4099B	/23004	93L420	/26102	28C256-300	/30004	54LS05
/13703	DAC87	/17602	4506B	/23101	93415	/26103	28C256-250	/30005	54LS10
/13801	VFC32	/17701	4093B	/23102	93425	/26104	28C256-200	/30006	54LS12
/13802	VFC320	/17702	40106B	/23103	93L415	/26105	28C256-150	/30007	54LS20
/13803	AD650	/17801	4067B	/23104	93L425	/26106	28C256-250	/30008	54LS22
/13901	534T	/17802	4097B	/23105	93415	/26107	28C256-350	/30009	54LS30
/13902	534S	/17803	40257B	/23106	93425	/26108	28C256-300	/30101	54LS73
/13903	532S	/19001	506	/23107	93415	/26109	28C256-250	/30102	54LS74A
/13904	4213	/19002	506A	/23108	93425A	/26110	28C256-200	/30103	54LS112
/14001	574AU	/19003	507	/23109	93412	/26111	28C256-150	/30104	54LS113
/14002	574AT	/19004	507A	/23110	93422	/26112	28C256-250	/30105	54LS114
/14003	574AU	/19005	508A	/23111	93L412	/26501	(SEE DWG)	/30106	54LS174
/14004	574AT	/19006	509A	/23112	93L422	/26502	(SEE DWG)	/30107	54LS175
/14005	674AU	/19007	508	/23113	93L425A	/26503	(SEE DWG)	/30108	54LS107
/14006	674AT	/19008	509	/23114	93L425A	/26504	(SEE DWG)	/30109	54LS109
/14101	2001	/20101	HPROM-512	/23115	93L422A	/26505	(SEE DWG)	/30110	54LS76A
/14102	2002	/20102	MCM5304	/23201	93419	/26506	(SEE DWG)	/30201	54LS40
/14103	2003	/20201	IM5603A	/23202	93419	/26507	(SEE DWG)	/30202	54LS37
/14104	2004	/20202	IM5623	/23301	93470	/26508	(SEE DWG)	/30203	54LS38
/14105	2005	/20301	93417	/23302	93471	/26509	(SEE DWG)	/30204	54LS28
/14106	2801	/20302	93427	/23501	TMS4060	/26510	(SEE DWG)	/30301	54LS02
/14107	2802	/20303	82S126A	/23502	TMS4050	/27401	27HC64-170	/30302	54LS27
/14108	2803	/20304	82S129A	/23503	TMS4060	/27402	27HC64-155	/30303	54LS266
/14109	2804	/20401	5305-1	/23504	TMS4050	/27501	27C64-350	/30401	54LS51
/14110	2805	/20402	5306-1	/23505	MM5280	/27502	27C64-250	/30402	54LS54
/14201	HTC-0300	/20403	82S130A	/23506	MM5280	/27503	27C64-200	/30501	54LS32
/14301	AD524S	/20404	82S131A	/23601	MCM6605	/27601	27C256-250	/30502	54LS86
/14401	AD558T	/20601	54S572	/23602	MCM6604A	/27602	27C256-200	/30601	54LS194A
/14801	TL431	/20602	7643	/23603	MCM6605	/28901	7C147	/30602	54LS195A
/14802	LT1009	/20603	7644	/23701	MCM6604A	/28902	7C148	/30603	54LS95B
/14901	TLC555	/20604	82S137A	/23702	AM9130CFC	/28903	2147	/30604	54LS96
/14902	TLC556	/20701	7602	/23703	AM9130CFM	/28904	2148	/30605	54LS164
/14903	7555	/20702	7603	/23704	AM9130AFM	/29101	6116	/30606	54LS295B
/14904	7556	/20703	82S23A	/23705	AM9130CFM	/29102	6516	/30607	54LS395A
/14905	LMC555	/20704	82S123A	/23706	AM91L30AF	/29103	65262	/30608	54LS165A
/15001	5485	/20801	7640	/23707	AM91L30CFM	/29104	6116	/30609	54LS166
/15002	9324	/20802	7641	/23708	AM91L30AFM	/29105	6116	/30701	54LS138
/15101	5413	/20803	82S115	/23709	AM9140CFC	/29106	51C67	/30702	54LS139
/15102	5414	/20804	5348-1	/23710	AM9140AFC	/29107	65C262RH	/30703	54LS42
/15103	54132	/20805	5349-1	/23711	AM9140CFM	/29108	65T262RH	/30704	54LS47
/15201	54154	/20901	7684	/23712	AM9140AFM	/29109	65262	/30801	54LS181
/15202	54155	/20902	53S841	/23713	AM91L40CFC	/29110	65162	/30901	54LS151
/15203	54156	/20903	7680	/23714	AM91L40AFC	/29201	7187S55	/30902	54LS153
/15204	8250	/20904	7681	/23715	AM91L40CFM	/29202	7187S45	/30903	54LS157
/15205	8251	/20905	82S2708	/23716	AM91L40AFM	/29203	7187L55	/30904	54LS158
/15206	8252	/20906	93Z460	/23801	2147	/29204	7187L70	/30905	54LS251
/15301	54125	/20907	29651	/23802	2114	/29205	65642	/30906	54LS257B
/15302	54126	/20909	93Z451	/23803	2147H	/29206	65643	/30907	54LS258B
/15601	54147	/20910	82S185A	/23804	2114A	/29301	7C197	/30908	54LS253
/15602	54148	/21001	77S190	/23805	2147H-3	/29302	7C197	/30909	54LS298
/15603	9318	/21002	93Z511	/23806	2148H	/29303	7C194	/31001	54LS11
/15701	9338	/21003	93Z510	/23807	2147H-2	/29304	7C194	/31002	54LS15
/15801	9321	/21004	28S166A	/23901	6508	/29305	7C196	/31003	54LS21

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

MILITARY PARTS
SORTED BY GENERIC MILITARY P/N

Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
/31004	54LS08	/33905	54F251A	/38204	54ALS880	/50315	PAL10L8A	/60607	(SEE DWG)
/31005	54LS09	/33906	54F257A	/38301	54ALS240A	/50316	PAL12L6A	/60608	(SEE DWG)
/31101	54LS85	/33907	54F258A	/38302	54ALS241	/50317	PAL14L4A	/60609	(SEE DWG)
/31201	54LS83A	/33908	54F253	/38303	54ALS244A	/50318	PAL16L2A	/60610	(SEE DWG)
/31202	54LS283	/33909	54F352	/38401	54ALS37	/50319	PAL10H8A2	/60611	(SEE DWG)
/31301	54LS13	/33910	54F353	/38402	54ALS1002	/50320	PAL12H6A2	/60612	(SEE DWG)
/31302	54LS14	/34001	54F08	/38403	54ALS1003	/50321	PAL14H4A2	/60613	(SEE DWG)
/31303	54LS132	/34002	54F11	/38404	54ALS1008A	/50322	PAL16H2A2	/60614	(SEE DWG)
/31401	54LS123	/34101	54F074	/38405	54ALS1010A	/50323	PAL16C1A2	/60615	(SEE DWG)
/31402	54LS221	/34102	54F109	/38406	54ALS1011	/50324	PAL10L8A2	/60616	(SEE DWG)
/31403	54LS122	/34103	54F112	/38407	54ALS1020	/50325	PAL12L6A2	/60617	(SEE DWG)
/31501	54LS90	/34104	54F175	/38408	54ALS1032	/50326	PAL14L4A2	/60618	(SEE DWG)
/31502	54LS93	/34105	54F374	/38409	54ALS1004	/50327	PAL16L2A2	/60619	(SEE DWG)
/31503	54LS160A	/34106	54F534	/38410	54ALS1005	/50401	PAL16L8A	/60620	(SEE DWG)
/31504	54LS161	/34107	54F174	/38411	54ALS1034	/50402	PAL16R8A	/60701	(SEE DWG)
/31505	54LS168	/34108	54F378	/38412	54ALS1035	/50403	PAL16R6A	/60702	(SEE DWG)
/31506	54LS169	/34109	54F379	/38501	54ALS640A	/50404	PAL16R4A	/60703	(SEE DWG)
/31507	54LS192	/34110	54F574	/38502	54ALS641	/50405	PAL16X4	/60704	(SEE DWG)
/31508	54LS193	/34111	54F564	/38503	54ALS642	/50406	PAL16A4	/60705	(SEE DWG)
/31509	54LS191	/34201	54F283	/38504	54ALS643	/50407	PAL16L8A2	/60706	(SEE DWG)
/31510	54LS92	/34301	54F161A	/38505	54ALS645A	/50408	PAL16R8A2	/60707	(SEE DWG)
/31511	54LS162A	/34302	54F163A	/38506	54ALS242B	/50409	PAL16R6A2	/60708	(SEE DWG)
/31512	54LS163A	/34303	54F191	/38507	54ALS243A	/50410	PAL16R4A2	/60709	(SEE DWG)
/31513	54LS190	/34304	54F193	/40001	6800	/50501	PAL20L8A	/60710	(SEE DWG)
/31601	54LS75	/34401	54F160A	/40101	MC6821	/50502	PAL20R8A	/60711	(SEE DWG)
/31602	54LS279	/34402	54F162A	/40201	6810	/50503	PAL20R6A	/60712	(SEE DWG)
/31603	54LS259	/34403	54F190	/40301	6831B	/50504	PAL20R4A	/60713	(SEE DWG)
/31604	54LS375	/34404	54F192	/42001	8080A	/50601	PAL16L8B	/60714	(SEE DWG)
/31605	54LS259B	/34501	54F86	/42101	8212	/50602	PAL16R8B	/60715	(SEE DWG)
/31801	54LS261	/34601	54F373	/42201	8224	/50603	PAL16R6B	/60716	(SEE DWG)
/31901	54LS670	/34602	54F533	/42301	8228	/50604	PAL16R4B	/60717	(SEE DWG)
/31902	54LS170	/34603	54F563	/44001	2901C	/50605	PAL16L8B2	/60718	(SEE DWG)
/32001	54LS196	/34604	54F573	/44101	2905	/50606	PAL16R8B2	/60719	(SEE DWG)
/32002	54LS197	/34701	54F521	/44102	2906	/50607	PAL16R6B2	/60720	(SEE DWG)
/32003	54LS290	/34801	54F242	/44103	2907	/50608	PAL16R4B2	/60801	(SEE DWG)
/32004	54LS293	/34802	54F243	/44104	2915	/50609	PAL16L8-15	/60802	(SEE DWG)
/32102	54LS26	/34803	54F245	/44105	2916	/50610	PAL16R8-15	/60803	(SEE DWG)
/32201	54LS365	/34804	54F545	/44106	2917	/50611	PAL16R6-15	/60804	(SEE DWG)
/32202	54LS366	/34901	54F280	/44201	2918	/50612	PAL16R4-15	/60805	(SEE DWG)
/32203	54LS367	/35001	54F398	/46001	9900A	/50701	C22V10	/60806	(SEE DWG)
/32204	54LS368	/35002	54F399	/46501	SBP9989	/50702	C22V10	/60807	(SEE DWG)
/32301	54LS125A	/35101	54F365	/47001	1802D	/50703	C22V10	/60808	(SEE DWG)
/32302	54LS126	/35201	54F37	/47101	1821	/50704	C22V10	/60809	(SEE DWG)
/32401	54LS240	/35202	54F38	/47102	1822	/50801	C22V10-30	/60810	(SEE DWG)
/32402	54LS241	/35203	54F40	/47201	1832	/50802	C22V10-25	/60811	(SEE DWG)
/32403	54LS244	/36001	54LS148	/47301	1852	/50803	C22V10-20	/60812	(SEE DWG)
/32404	54LS540	/36002	54LS348	/47401	1853	/50804	C22V10-15	/60813	(SEE DWG)
/32405	54LS541	/36101	54LS173A	/47601	1856	/52001	Z8001CPU	/60814	(SEE DWG)
/32501	54LS273	/37001	54ALS00A	/47602	1857	/52002	Z8002CPU	/60815	(SEE DWG)
/32502	54LS373	/37002	54ALS10	/48001	Z-80ACPU	/52003	Z8001ACPU	/60816	(SEE DWG)
/32503	54LS374	/37003	54ALS20A	/48002	Z-80BCPU	/52004	Z8002A CPU	/60817	(SEE DWG)
/32504	54LS377	/37004	54ALS30A	/48003	Z-80CCPU	/53001	8096	/60818	(SEE DWG)
/32601	54LS155	/37005	54ALS133	/48101	Z80ASIO/2	/54001	68000-6	/60819	(SEE DWG)
/32602	54LS156	/37006	54ALS04B	/48102	Z-80SIO/2	/54002	68000-8	/60820	(SEE DWG)
/32701	54LS390	/37101	54ALS74A	/48201	Z80ADMA	/54003	68000-10	/61001	6516-1
/32702	54LS393	/37102	54ALS109A	/48202	Z80DMA	/55201	32C201-10	/61002	6516-2
/32703	54LS490	/37103	54ALS112A	/48301	Z80ACTC	/55501	UT1553BRTI	/61003	6516-3
/32801	54LS242	/37104	54ALS574A	/48302	Z80CTC	/55502	UT1553BRTIA	/61301	51C98-35
/32802	54LS243	/37105	54ALS576A	/48401	Z80APIO	/60001	(SEE DWG)	/61302	51C98-45
/32803	54LS245	/37106	54ALS874B	/48402	Z80PIO	/60002	(SEE DWG)	/61303	51C98-55
/32804	54LS646	/37107	54ALS876	/48501	Z-80BCMOS	/60003	(SEE DWG)	/61501	1HC34-25
/32805	54LS648	/37201	54ALS174	/48601	Z85C3006SCC	/60501	(SEE DWG)	/61502	1HC34-10
/32901	54LS280	/37202	54ALS175	/48602	Z85C3008SCC	/60502	(SEE DWG)	/61503	1HC34-25
/33001	54F00	/37203	54ALS373	/49001	8048	/60503	(SEE DWG)	/61504	1HC34-20
/33002	54F04	/37204	54ALS374	/49002	8035L	/60504	(SEE DWG)	/61505	1HC34-15
/33003	54F10	/37301	54ALS302	/50001	TDC1008C1V	/60505	(SEE DWG)	/61601	TVB382
/33004	54F20	/37302	54ALS27	/50002	TDC1009C1V	/60506	(SEE DWG)	/62001	(SEE DWG)
/33106	25LS174	/37401	54ALS308	/50003	TDC1010C1V	/60507	(SEE DWG)	/62002	(SEE DWG)
/33107	25LS175	/37402	54ALS311	/50004	MPY008HC2V	/60508	(SEE DWG)	/63001	BFRP10
/33201	54F240	/37501	54ALS332	/50005	MPY012HC1V	/60509	(SEE DWG)	/65001	54HC00
/33202	54F241	/37601	54ALS299	/50006	MPY016HC1V	/60510	(SEE DWG)	/65002	54HC10
/33203	54F244	/37602	54ALS323	/50201	82S101	/60511	(SEE DWG)	/65003	54HC20
/33204	54F540	/37701	54ALS138	/50202	82S100	/60512	(SEE DWG)	/65004	54HC30
/33301	54F02	/37901	54ALS857A	/50301	PAL10H8	/60513	(SEE DWG)	/65005	54HC132
/33401	54F64	/38001	54ALS161B	/50302	PAL12H6	/60514	(SEE DWG)	/65101	54HC02
/33501	54F32	/38002	54ALS163B	/50303	PAL14H4	/60515	(SEE DWG)	/65102	54HC27
/33601	54F194	/38003	54ALS169B	/50304	PAL16H2	/60516	(SEE DWG)	/65103	54HC266
/33701	54F138	/38004	54ALS561A	/50305	PAL16C1	/60517	(SEE DWG)	/65104	54HC4002
/33702	54F139	/38005	54ALS569A	/50306	PAL10L8	/60518	(SEE DWG)	/65105	54HC7266
/33801	54F181	/38101	54ALS160	/50307	PAL12L6	/60519	(SEE DWG)	/65201	54HC32
/33802	54F182	/38102	54ALS162A	/50308	PAL14L4	/60520	(SEE DWG)	/65202	54HC86
/33803	54F381	/38103	54ALS168	/50309	PAL16L2	/60601	(SEE DWG)	/65203	54HC08
/33804	54F382	/38104	54ALS560	/50310	PAL10H8A	/60602	(SEE DWG)	/65204	54HC11
/33901	54F151A	/38105	54ALS568	/50311	PAL12H6A	/60603	(SEE DWG)	/65301	54HC73
/33902	54F153	/38201	54ALS573	/50312	PAL14H4A	/60604	(SEE DWG)	/65302	54HC74
/33903	54F157A	/38202	54ALS580	/50313	PAL16H2A	/60605	(SEE DWG)	/65303	54HC107
/33904	54F158A	/38203	54ALS873	/50314	PAL16C1A	/60606	(SEE DWG)		

*Part numbers beginning with a slash "/" are MIL-M-38510 numbers. All others are DESC drawing numbers.

MILITARY

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MILITARY PARTS SORTED BY GENERIC MILITARY P/N

Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
/65304	54HC109	/75002	54AC10	5962-3829426	(SEE DWG)	5962-7703403	LM137	5962-7802402	25LS299
/65305	54HC112	/75003	54AC20	5962-3829427	(SEE DWG)	5962-7703404	LM137HV	5962-7802601	54LS390
/65306	54HC173	/75021	54AC1100	5962-3829428	(SEE DWG)	5962-7703405	LT117A	5962-7802701	54LS148
/65307	54HC174	/75022	54AC11010	5962-3829429	(SEE DWG)	5962-7703406	LT137A	5962-7802801	1524
/65308	54HC175	/75023	54AC11020	5962-3829430	(SEE DWG)	5962-7703407	LT117AHV	5962-7802901	15530
/65352	54HCT74	/75024	54AC11030	5962-3829431	(SEE DWG)	5962-7703408	LT137AHV	5962-7900801	7820A
/65401	54HC75	/75101	54AC02	5962-3829432	(SEE DWG)	5962-7703501	4514B	5962-7900901	55183
/65402	54HC259	/75201	54AC32	5962-3829433	(SEE DWG)	5962-7703601	54C08	5962-7901001	8085A
/65403	54HC373	/75202	54AC86	5962-3829434	(SEE DWG)	5962-7703701	54C85	5962-7901101	4013B
/65404	54HC533	/75203	54AC08	5962-3829438	(SEE DWG)	5962-7703702	4585B	5962-7901102	4013B
/65405	54HC563	/75204	54AC11	5962-3829440	(SEE DWG)	5962-7703901	4250	5962-7901201	4021B
/65406	54HC573	/75302	54AC74	5962-3829442	(SEE DWG)	5962-7704001	LM120H-05	5962-7901301	4023B
/65453	54HCT373	/75304	54AC109	5962-3829443	(SEE DWG)	5962-7704003	LM120H-12	5962-7901401	4049UB
/65501	54HC242	/75305	54AC112	5962-3829444	(SEE DWG)	5962-7704004	LM120H-15	5962-7901501	4052B
/65502	54HC243	/75307	54AC174	5962-3848001	Z08400	5962-7704005	LM120H-24	5962-7901502	4052B
/65503	54HC245	/75308	54AC175	5962-3848002	Z08400	5962-7704101	54LS124	5962-7901601	4557B
/65506	54HC640	/75403	54AC373	5962-3848003	Z08400	5962-7704201	54LS670	5962-7901701	1854
/65507	54HC643	/75404	54AC533	5962-3870501	LP2951	5962-7704301	LM124	5962-7901801	1823
/65508	54HC646	/75405	54AC563	5962-3870701	LTC1044	5962-7704302	LM124A	5962-7901901	1853
/65509	54HC648	/75406	54AC573	5962-3870201	54LS157	5962-7704401	4078B	5962-7902401	(SEE DWG)
/65553	54HCT245	/75503	54AC245	5962-7600301	54LS122	5962-7704402	4078B	5962-7902402	(SEE DWG)
/65601	54HC273	/75505	54AC623	5962-7600401	54LS132	5962-7704501	4528B	5962-8000301	Z8001CPU
/65602	54HC374	/75506	54AC640	5962-7600501	54LS138	5962-7704601	4093B	5962-8000302	Z8002CPU
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/66313	54HC4040	5962-3829409	(SEE DWG)	5962-7702010	LM103H-2.2	5962-7802001	26LS32	5962-8100616	HI5047
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/70605	(SEE DWG)	5962-3829423	(SEE DWG)	5962-7703101	4060A	5962-7802301			

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5962-8102304	062	5962-8202503	(SEE DWG)	5962-8406501	82C54	5962-8418602	Z8420	5962-8515506	PAL16R8-30
5962-8102305	071	5962-8202504	(SEE DWG)	5962-8406502	82C54-12	5962-8419001	8751H-8	5962-8515507	PAL16R6-30
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5962-8103515	PAL12L6A	5962-8302202	54ALS561A	5962-8409501	54HC165	5962-8508801	LH0021	5962-8551502	1526A
5962-8103516	PAL14L4A	5962-8302401	6N140A	5962-8411001	27256-35	5962-8508901	LH0101A	5962-8551701	Z8036A
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5962-8103604	PAL16R4	5962-8400101	54ALS574A	5962-8411105	27256-30	5962-8510203	27C64-20	5962-8552001	8397
5962-8103605	PAL16X4	5962-8400102	54ALS576A	5962-8412801	54HC151B	5962-8510204	27C64-90	5962-8552002	9513A
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5962-8200502	2764-250	5962-8403606	(SEE DWG)	5962-8413207	(SEE DWG)	5962-8513102	H1547	5962-8552021	27S47
5962-8200503	2764A-35	5962-8403607	(SEE DWG)	5962-8413208	(SEE DWG)	5962-8513103	H1549	5962-8552022	27S47A
5962-8200504	2764A-25	5962-8403608	(SEE DWG)	5962-8413209	(SEE DWG)	5962-8513104	IH5116	5962-8552023	27S47A
5962-8200505	2764A-20	5962-8403609	(SEE DWG)	5962-8413301	(SEE DWG)	5962-8513105	IH5216	5962-8552024	82C89
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5962-8200702	2167-70	5962-8403613	(SEE DWG)	5962-8413305	(SEE DWG)	5962-8513109	H1509	5962-8600804	96685
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5962-8200704	2167-40	5962-8403615	(SEE DWG)	5962-8413307	(SEE DWG)	5962-8513302	80287-5	5962-8601001	54HC40U
5962-8200801	(SEE DWG)	5962-8403616	(SEE DWG)	5962-8413308	(SEE DWG)	5962-8513303	80287-8	5962-8601101	54HC4017
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5962-8200803	(SEE DWG)	5962-8403801	54HC10	5962-8413401	54ALS153	5962-8513502	27512-30	5962-8601301	54HC85
5962-8200804	(SEE DWG)	5962-8403901	54HC20	5962-8413402	54ALS153	5962-8513503	27512-30	5962-8601401	LM119
5962-8200901	(SEE DWG)	5962-8404001	54HC30	5962-8413403	54ALS251	5962-8513504	27512-45	5962-8601402	LT119A
5962-8200902	(SEE DWG)	5962-8404101	54HC02	5962-8413404	54ALS251	5962-8513505	27512-20	5962-8601501	(SEE DWG)
5962-8200903	(SEE DWG)	5962-8404201	54HC27	5962-8413405	54ALS251	5962-8514801	80286-8	5962-8601502	(SEE DWG)
5962-8201001	(SEE DWG)	5962-8404301	54HC266	5962-8413406	54ALS251	5962-8514802	80286-6	5962-8601503	(SEE DWG)
5962-8201002	(SEE DWG)	5962-8404401	54HC266	5962-8413407	54ALS251	5962-8514803	80286-10	5962-8601504	(SEE DWG)
5962-8201003	(SEE DWG)	5962-8404402	54HC4002	5962-8413408	54ALS251	5962-8514901	82288-6	5962-8601505	(SEE DWG)
5962-8201004	(SEE DWG)	5962-8404501	54HC32	5962-8413409	54ALS251	5962-8514902	82288-8	5962-8601506	(SEE DWG)
5962-8201005	(SEE DWG)	5962-8404601	54HC86	5962-8413410	54ALS251	5962-8515201	(SEE DWG)	5962-8601507	(SEE DWG)
5962-8201006	(SEE DWG)	5962-8404701	54HC08	5962-8413411	54ALS251	5962-8515202	(SEE DWG)	5962-8601508	(SEE DWG)
5962-8201007	(SEE DWG)	5962-8404801	54HC11	5962-8413412	54ALS251	5962-8515203	(SEE DWG)	5962-8601601	80C88
5962-8201008	(SEE DWG)	5962-8404901	54HC86	5962-8413413	54ALS251	5962-8515301	54HC73	5962-8601701	2904
5962-8201009	(SEE DWG)	5962-8405001	80C86	5962-8413414	54ALS251		</		

MILITARY PARTS
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Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
5962-8601801	55500	5962-8670504	(SEE DWG)	5962-8683002	(SEE DWG)	5962-8687502	(SEE DWG)	5962-8751411	(SEE DWG)
5962-8601802	55501	5962-8670505	(SEE DWG)	5962-8683003	(SEE DWG)	5962-8687503	(SEE DWG)	5962-8751412	(SEE DWG)
5962-8602001	27LS00	5962-8670506	(SEE DWG)	5962-8683004	(SEE DWG)	5962-8687504	(SEE DWG)	5962-8751413	(SEE DWG)
5962-8602002	27LS00A	5962-8670507	(SEE DWG)	5962-8683005	(SEE DWG)	5962-8687505	(SEE DWG)	5962-8751414	(SEE DWG)
5962-8602003	27LS01	5962-8670508	(SEE DWG)	5962-8683006	(SEE DWG)	5962-8687506	(SEE DWG)	5962-8751415	(SEE DWG)
5962-8602004	27LS01A	5962-8670509	(SEE DWG)	5962-8683007	(SEE DWG)	5962-8687507	(SEE DWG)	5962-8751416	(SEE DWG)
5962-8602101	68881-12	5962-8670510	(SEE DWG)	5962-8683008	(SEE DWG)	5962-8687508	(SEE DWG)	5962-8751417	(SEE DWG)
5962-8602102	68881-16	5962-8670511	(SEE DWG)	5962-8683009	(SEE DWG)	5962-8687509	(SEE DWG)	5962-8751418	(SEE DWG)
5962-8602103	68881-20	5962-8670512	(SEE DWG)	5962-8683010	(SEE DWG)	5962-8687510	(SEE DWG)	5962-8751419	(SEE DWG)
5962-8602301	82S16	5962-8670513	(SEE DWG)	5962-8683101	54HCT00	5962-8687511	(SEE DWG)	5962-8751420	(SEE DWG)
5962-8602501	29705A	5962-8670514	(SEE DWG)	5962-8683101	54ALS00A	5962-8687512	(SEE DWG)	5962-8751421	(SEE DWG)
5962-8602701	2909A	5962-8670515	(SEE DWG)	5962-8683401	54F243	5962-8687513	(SEE DWG)	5962-8751422	(SEE DWG)
5962-8602801	2911A	5962-8670601	27S35	5962-8683601	54ALS32	5962-8687514	(SEE DWG)	5962-8751423	(SEE DWG)
5962-8602901	2914	5962-8670602	27S35A	5962-8683701	54ALS30A	5962-8687515	(SEE DWG)	5962-8751424	(SEE DWG)
5962-8603001	2940	5962-8670603	27S37	5962-8683801	54ALS27	5962-8687516	(SEE DWG)	5962-8751425	(SEE DWG)
5962-8603201	68020-12	5962-8670604	27S37A	5962-8683901	54ALS244A	5962-8687517	(SEE DWG)	5962-8751426	(SEE DWG)
5962-8603202	68020-16	5962-8670701	2965	5962-8684001	54ALS191	5962-8687518	(SEE DWG)	5962-8751427	(SEE DWG)
5962-8603203	68020-20	5962-8670702	2966	5962-8684101	54ALS11A	5962-8687519	(SEE DWG)	5962-8751428	(SEE DWG)
5962-8604901	BUS-63105	5962-8670801	25LS399	5962-8684201	54ALS08	5962-8687520	(SEE DWG)	5962-8751429	(SEE DWG)
5962-8604902	BUS-63105II	5962-8670901	82S105	5962-8684301	54ALS04B	5962-8687521	(SEE DWG)	5962-8751501	(SEE DWG)
5962-8604903	ARX2402	5962-8670902	82S105	5962-8684401	54ALS02	5962-8687522	(SEE DWG)	5962-8751502	(SEE DWG)
5962-8604904	ARX3402	5962-8671001	54F381	5962-8684501	LT1016	5962-8687601	54LS668	5962-8751503	(SEE DWG)
5962-8604905	BUS-8553	5962-8671002	54F181	5962-8684601	72404L10	5962-8687701	LM111	5962-8751504	(SEE DWG)
5962-8604906	NHI-1509	5962-8671101	LM113	5962-8684602	72404L15	5962-8687801	TL514	5962-8751505	(SEE DWG)
5962-8604907	FC155361	5962-8671102	LM113-1	5962-8684603	72404L25	5962-8687901	HI-8382	5962-8751506	(SEE DWG)
5962-8605001	AM2932	5962-8671103	LM113-2	5962-8684604	72404L35	5962-8688001	HS3282	5962-8751507	(SEE DWG)
5962-8605101	27S02	5962-8671201	1545	5962-8684701	54HC123	5962-8688002	HI8282	5962-8751508	(SEE DWG)
5962-8605102	27S02A	5962-8671301	25LS2521	5962-8684702	54HC123A	5962-8688010	54LS382	5962-8751509	(SEE DWG)
5962-8605103	27LS02	5962-8671401	2917A	5962-8684801	54HC126	5962-8688202	(SEE DWG)	5962-8751510	(SEE DWG)
5962-8605104	27S03	5962-8671501	2918	5962-8684901	1549	5962-8688203	(SEE DWG)	5962-8751511	(SEE DWG)
5962-8605105	27S03A	5962-8671601	HI201HS	5962-8685001	54F194	5962-8688204	(SEE DWG)	5962-8751512	(SEE DWG)
5962-8605106	27LS03	5962-8671602	DG271	5962-8685101	8X376	5962-8688301	54HCT08	5962-8751601	521
5962-8605107	27S02-20	5962-8671603	ADG201HST	5962-8685201	54HCT32	5962-8688301	54HCT08	5962-8751701	54LS590
5962-8605108	27S03-20	5962-8671701	54LS595	5962-8685301	54HCT74	5962-8688401	54HC238	5962-8751801	8259A
5962-8605109	27LS03-30	5962-8671801	25S10	5962-8685401	54HCT161	5962-8688501	54HC646	5962-8751901	9914A
5962-8605201	8X350	5962-8671901	29LS18	5962-8685501	54HCT165	5962-8688601	54HC4538	5962-8752001	8253
5962-8605301	PAL22V10A	5962-8672001	26S10	5962-8685601	54HCT573	5962-8688701	OP-227A	5962-8752002	8253
5962-8605302	PAL22V10	5962-8672101	26LS30	5962-8685701	54HCT688	5962-8688800	55189	5962-8752003	8253-5
5962-8605303	PAL22VP10-25	5962-8672201	5560	5962-8685901	(SEE DWG)	5962-8688802	55189A	5962-8752101	54C922
5962-8605304	PAL22V10-20	5962-8672301	2947	5962-8685902	(SEE DWG)	5962-8688901	55188	5962-8752201	9622
5962-8605305	PAL22V10-12	5962-8672302	2946	5962-8685903	(SEE DWG)	5962-8689001	54HCT14	5962-8752301	9636A
5962-8605401	55551	5962-8672401	25S240	5962-8685904	(SEE DWG)	5962-8689101	54HC191	5962-8752401	9637A
5962-8605402	55552	5962-8672501	25S241	5962-8685905	(SEE DWG)	5962-8700101	10H536	5962-8752501	54ACT74
5962-8605501	55553	5962-8672601	93S48	5962-8685906	(SEE DWG)	5962-8700201	7132SA-45	5962-8752502	54ACT11074
5962-8605502	55554	5962-8672701	93S16	5962-8685907	(SEE DWG)	5962-8700202	7132SA-90	5962-8752601	20858110
5962-8605801	2803	5962-8672801	25S09	5962-8685908	(SEE DWG)	5962-8700203	7132SA-70	5962-8752602	20858106
5962-8606101	54HC157B	5962-8680101	2942	5962-8685909	(SEE DWG)	5962-8700204	7132LA-55	5962-8752701	20853006
5962-8606201	54HC563	5962-8680201	AD570	5962-8685910	(SEE DWG)	5962-8700205	7132LA-90	5962-8752702	20853004
5962-8606301	(SEE DWG)	5962-8680202	AD571	5962-8685911	(SEE DWG)	5962-8700206	7132LA-45	5962-8752801	PAL18P8A
5962-8606302	(SEE DWG)	5962-8680203	AD571	5962-8685912	(SEE DWG)	5962-8700207	7132LA-55	5962-8752802	PAL18P8B
5962-8606303	(SEE DWG)	5962-8680301	PAL20RA10	5962-8685913	(SEE DWG)	5962-8700208	7132LA-55	5962-8752803	PAL18P8A
5962-8606304	(SEE DWG)	5962-8680401	PAL18L4	5962-8685914	(SEE DWG)	5962-8700209	7142SA-45	5962-8752804	PAL18P8B
5962-8606305	(SEE DWG)	5962-8680402	PAL12L10	5962-8685915	(SEE DWG)	5962-8700210	7142SA-90	5962-8752804	PAL18P8L
5962-8606306	(SEE DWG)	5962-8680403	PAL14L8	5962-8685916	(SEE DWG)	5962-8700211	7142SA-90	5962-8752901	PAL18P8Q
5962-8606307	(SEE DWG)	5962-8680404	PAL16L6	5962-8685917	(SEE DWG)	5962-8700212	7142SA-55	5962-8752901	(SEE DWG)
5962-8606308	(SEE DWG)	5962-8680405	PAL20L2	5962-8685918	(SEE DWG)	5962-8700213	7142LA-45	5962-8752902	(SEE DWG)
5962-8606401	5539	5962-8680406	PAL20C1	5962-8685919	(SEE DWG)	5962-8700214	7142LA-90	5962-8753001	(SEE DWG)
5962-8606901	54F85	5962-8680501	(SEE DWG)	5962-8685920	(SEE DWG)	5962-8700215	7142LA-70	5962-8753002	(SEE DWG)
5962-8607001	54F148	5962-8680502	(SEE DWG)	5962-8685921	(SEE DWG)	5962-8700216	7142LA-55	5962-8753004	(SEE DWG)
5962-8607101	54F164	5962-8680503	(SEE DWG)	5962-8685922	(SEE DWG)	5962-8700301	567	5962-8753101	(SEE DWG)
5962-8607201	54F169	5962-8680504	(SEE DWG)	5962-8685923	(SEE DWG)	5962-8700301	10H501	5962-8753102	(SEE DWG)
5962-8607401	54F322	5962-8680505	(SEE DWG)	5962-8685924	(SEE DWG)	5962-8700401	10H504	5962-8753103	(SEE DWG)
5962-8607501	54F350	5962-8680506	(SEE DWG)	5962-8686001	HA-4902	5962-8750101	10H515	5962-8753201	2069
5962-8607601	54HC163	5962-8680507	(SEE DWG)	5962-8686101	580S	5962-8750201	10H516	5962-8753202	2070
5962-8607701	54HC280	5962-8680508	(SEE DWG)	5962-8686102	1503A	5962-8750301	10H501	5962-8753203	2070
5962-8608101	2168-55	5962-8680601	UC1846	5962-8686103	580U	5962-8750401	10H504	5962-8753204	2070
5962-8608102	2168-70	5962-8680602	1847	5962-8686201	54FCT299	5962-8750501	10H535	5962-8753205	2070
5962-8608103	2169-50	5962-8680901	8797BH	5962-8686202	54FCT299A	5962-8750601	10H574	5962-8753206	2070
5962-8608104	2169-70	5962-8681001	68562	5962-8686301	29116	5962-8750701	10H505	5962-8753207	2070
5962-8608105	2169-70	5962-8681101	68442-8	5962-8686401	(SEE DWG)	5962-8750801	10H525	5962-8753208	2070
5962-8608106	2168-45	5962-8681201	54HC368	5962-8686501	54ALS10A	5962-8750901	10H588	5962-8753209	2070
5962-8608107	2169-40	5962-8681301	54HC533	5962-8686601	54ALS138	5962-8751001	10H589	5962-8753301	2452
5962-8608801	82720	5962-8681401	54HC534	5962-8686701	54HCT373	5962-8751101	10H541	5962-8753302	2452
5962-8670101	54HCT154	5962-8681501	54HC564	5962-8686801	8286	5962-8751201	10H576	5962-8753303	2452
5962-8670201	25LS2519	5962-8681601	54HC595	5962-8686802	8287	5962-8751301	(SEE DWG)	5962-8753304	C22V10
5962-8670301	27S19A	5962-8681701	54HC597	5962-8686901	54ALS157	5962-8751401	(SEE DWG)	5962-8753305	C22V10
5962-8670401	1842	5962-8681801	54HC688	5962-8687001	54ALS164	5962-8751501	(SEE DWG)	5962-8753306	C22V10
5962-8670402	1843	5962-8681901	54HC4049	5962-8687101	54ALS38A	5962-8751601	(SEE DWG)	5962-8753307	C22V10
5962-8670403	1844	5962-8682001	54HC4050	5962-8687201	54F38	5962-8751701	(SEE DWG)	5962-8753308	C22V10
5962-8670404	1845	5962-8682101	54HC42	5962-8687301	7216L-40	5962-8751801	(SEE DWG)	5962-8753309	C22V10
5962-8670405	1842A	5962-8682201	54HC154	5962-8687401	7216L-55	5962-8751901	(SEE DWG)	5962-8753401	HS-1840RH
5962-8670406	1843A	5962-8682301	54HC158B	5962-8687501	7216L-75	5962-8752001	(SEE DWG)	5962-8753402	BUS-65112
5962-8670407	1844A	5962-8682401	54HC160	5962-8687601	7216L-55	5962-8752101	(SEE DWG)	5962-8753403	2452
5962-8670408	1845A	5962-8682501	54HC173	5962-8687701	7216L-55	5962-8752201	(SEE DWG)	5962-8753404	2452
5962-8670501	(SEE DWG)	5962-8682601	54HC194	5962-8687801	7216L-55	5962-8752301	(SEE DWG)	5962-8753405	2452
5962-8670502	(SEE DWG)	5962-8682701	54HC195	5962-8687901	7216L-55	5962-8752401	(SEE DWG)	5962-8753406	2452
5962-8670503	(SEE DWG)	5962-8682801	54HC366	5962-8688001	54F241	5962-8752501	(SEE DWG)	5962-875	

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Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
5962-8754901	54AC00	5962-8760701	LM131A	5962-8766105	(SEE DWG)	5962-8770001	752A	5962-8775505	29923A
5962-8754902	54AC11000	5962-8760801	198	5962-8766106	(SEE DWG)	5962-8770002	752A	5962-8775506	29925A
5962-8755001	54AC240	5962-8760901	54AC04	5962-8766107	(SEE DWG)	5962-8770003	752A	5962-8775507	54ACT273
5962-8755002	54AC11240	5962-8760902	54AC11004	5962-8766108	(SEE DWG)	5962-8770101	7528	5962-8775508	54ACT174
5962-8755101	54AC241	5962-8761001	54AC10	5962-8766201	26S02	5962-8770102	7528	5962-8775509	54AC245
5962-8755102	54AC11241	5962-8761002	54AC11010	5962-8766301	54ACT245	5962-8770103	7528	5962-8775510	54ACT240
5962-8755201	54AC244	5962-8761101	54AC11	5962-8766302	54ACT11245	5962-8770201	7545S	5962-8775902	54ACT11240
5962-8755202	54AC11244	5962-8761102	54AC11011	5962-8766401	54ACT573	5962-8770202	7545T	5962-8776001	54ACT244
5962-8755301	54ACT139	5962-8761201	54AC02	5962-8766501	1750A-15	5962-8770203	7545U	5962-8776002	54ACT11244
5962-8755401	54ACT138	5962-8761202	54AC11002	5962-8766502	1750A-20	5962-8770204	7545G	5962-8776101	54ACT253
5962-8755402	54ACT11138	5962-8761301	54AC20	5962-8766503	1750A-30	5962-8770205	7545H	5962-8776201	7575S
5962-8755501	54AC373	5962-8761302	54AC11020	5962-8766504	P1750A-40	5962-8770206	7545A	5962-8776202	7575T
5962-8755502	54AC11373	5962-8761401	54AC32	5962-8766601	LT1080	5962-8770207	7545S	5962-8776301	7537S
5962-8755601	54ACT373	5962-8761402	54AC08	5962-8766602	LT1081	5962-8770301	(SEE DWG)	5962-8776302	7537T
5962-8755602	54ACT11373	5962-8761501	54AC11008	5962-8766603	29C827	5962-8770302	(SEE DWG)	5962-8776303	7537U
5962-8755701	10H502	5962-8761601	26LS32B	5962-8766604	29C828	5962-8770303	(SEE DWG)	5962-8776601	54AS804
5962-8755801	10H513	5962-8761701	0006	5962-8766701	29C828	5962-8770401	29C861	5962-8776701	54S760
5962-8755901	10H518	5962-8761702	0008	5962-8766702	29C927	5962-8770402	29C863	5962-8776901	55121
5962-8756001	10H524	5962-8761801	HI524	5962-8766703	29C928	5962-8770403	29C961	5962-8777001	1532
5962-8756101	10H531	5962-8761901	UC1707	5962-8766704	29C828A	5962-8770404	29C963	5962-8777101	OP400A
5962-8756201	10H560	5962-8762001	42106	5962-8766705	29C861-16	5962-8770405	29C963A	5962-8777201	2952A
5962-8756301	10H586	5962-8762002	PA51	5962-8766801	80386-16	5962-8770406	29C863A	5962-8777202	2953A
5962-8756401	10H506	5962-8762101	54LS592	5962-8766802	80386-20	5962-8770501	68172	5962-8777301	10598
5962-8756501	10H503	5962-8762201	54AC138	5962-8766803	80386-25	5962-8770601	OP-17A	5962-8777401	LM109
5962-8756601	10H558	5962-8762301	54AC139	5962-8766804	80386-25	5962-8770602	OP-17B	5962-8777501	LM123
5962-8756701	10H561	5962-8762401	54AC174	5962-8766901	82384-16	5962-8770701	2907	5962-8777502	LT123AK
5962-8756801	10H571	5962-8762501	54AC153	5962-8766902	82384-12	5962-8770801	29C10A	5962-8777601	7812A
5962-8756901	10H609	5962-8762601	54AC174	5962-8767001	26LS29	5962-8770802	29C10B	5962-8777701	LM194
5962-8757001	8255A	5962-8762701	54FCT377	5962-8767101	PAL20L8B	5962-8770803	39C10B	5962-8777801	LM195
5962-8757002	8255A-5	5962-8762702	54FCT377A	5962-8767102	PAL20R8B	5962-8770804	39C10C	5962-8778001	INA101
5962-8757101	AD590J	5962-8762801	54FCT374	5962-8767103	PAL20R6B	5962-8770805	7C910-10	5962-8778002	INA101
5962-8757102	AD590K	5962-8762802	54FCT374A	5962-8767104	PAL20R4B	5962-8770806	7C910-46	5962-8778201	7805A
5962-8757103	AD590L	5962-8762901	54FCT245	5962-8767105	PLUS20L8	5962-8771001	LM158	5962-8778301	HA-2400
5962-8757104	AD590M	5962-8762902	54FCT245A	5962-8767106	PLUS20R8	5962-8771002	LM158A	5962-8778302	HA-5190
5962-8757201	527	5962-8763001	54FCT244	5962-8767107	PAL20L8-15	5962-8771101	54221	5962-8778401	EL-2190
5962-8757202	529	5962-8763002	54FCT244A	5962-8767108	PAL20R8-15	5962-8771201	2004-25	5962-8778501	EL-2041
5962-8757203	LM161	5962-8763101	54ACT374	5962-8767109	PAL20R6-15	5962-8771202	2004	5962-8778502	EL-2041
5962-8757301	2930	5962-8763102	54ACT374	5962-8767110	PAL20R4-15	5962-8771203	8274	5962-8778601	TDC1046
5962-8757401	2964B	5962-8763103	54ACT11374	5962-8767111	PAL20L8-12	5962-8771401	OP14A	5962-8778701	HA-2539
5962-8757501	9517A	5962-8763201	BUS-65111	5962-8767112	PAL20R8-12	5962-8771402	OP14B	5962-8778702	EL-2039
5962-8757502	9517A-4	5962-8763301	320C10	5962-8767113	PAL20R6-12	5962-8771501	OP207	5962-8778801	27521
5962-8757503	8X371	5962-8763302	320C10-25	5962-8767114	PAL20R4-12	5962-8771601	MUX-08A	5962-8778802	27521A
5962-8757504	82C86H-5	5962-8763303	320CM10	5962-8767115	PAL20L8-10	5962-8771602	MUX-08B	5962-8778901	AD558S
5962-8757701	82C87H-5	5962-8763304	320CM10-25	5962-8767116	PAL20R8-10	5962-8771701	MUX-16A	5962-8778902	AD558T
5962-8757702	82C87H-5	5962-8763305	320CF10-25	5962-8767117	PAL20R6-10	5962-8771702	MUX-16B	5962-8779001	57401
5962-8757801	LT1007A	5962-8763306	320E15	5962-8767118	PAL20R4-10	5962-8771801	MUX-24A	5962-8779002	57402A
5962-8757802	BUS-63125	5962-8763307	320C15	5962-8767119	20R8-7	5962-8771802	MUX-24B	5962-8779101	C57402
5962-8757901	BUS-63125II	5962-8763308	320C15-25	5962-8767201	82188	5962-8771901	AD625	5962-8779102	C57401A
5962-8757902	ARX2411	5962-8763309	670S	5962-8767301	DG180A	5962-8772101	54HC125	5962-8779103	57402A
5962-8757903	ARX3411	5962-8763401	UCS-5801	5962-8767401	LM160	5962-8772201	54HC4075	5962-8779104	C57401
5962-8757904	NH1-1500	5962-8764001	UCS-5800	5962-8767501	150A	5962-8772301	54HC133	5962-8779105	C57402
5962-8757905	FC1553623	5962-8764102	UCS-5822	5962-8767601	MT4067-12	5962-8772401	54HC193	5962-8779106	C57401A
5962-8757906	CT1487D	5962-8764301	3517	5962-8767701	MT4067-15	5962-8772501	54HC273	5962-8779107	57402A
5962-8757907	MR63125M	5962-8764401	54FCT373	5962-8767801	MT4067-20	5962-8772701	10H507	5962-8779108	57L401D
5962-8757908	FC1553621	5962-8764402	54FCT373A	5962-8767901	MT4067-15	5962-8772801	10H519	5962-8779109	57L402D
5962-8758001	10H416	5962-8764501	1524B	5962-8768001	MT4067-20	5962-8772901	10H564	5962-8779110	57L4013D
5962-8758101	AD7572	5962-8764601	14490A	5962-8768101	MT4067-10	5962-8773001	10H521	5962-8779201	10558
5962-8758102	AD7572	5962-8764701	54HC03	5962-8768201	MT4067-10	5962-8773201	54HC76	5962-8779301	10586
5962-8758103	AD7572	5962-8764801	27C512	5962-8768301	SP8690A	5962-8773301	54HC4511	5962-8779401	54AS805
5962-8758104	AD7572	5962-8764901	54HC03	5962-8768401	4N55	5962-8773401	82C284-10	5962-8779501	AD567S
5962-8758105	AD7572	5962-8765001	27C512	5962-8768501	HCP-6531	5962-8773402	82C284-8	5962-8780001	7226
5962-8758106	AD7572	5962-8765101	27C512	5962-8768601	HCP-6531	5962-8773403	82C284-6	5962-8780002	MC4344
5962-8758107	AD7572	5962-8765201	27C512	5962-8768701	54HC4060	5962-8773501	2100SG	5962-8780003	54AS21
5962-8758201	9150-25	5962-8765301	27C512	5962-8768801	1825	5962-8773502	2100TSG	5962-8780004	54HC221
5962-8758202	9150-35	5962-8765401	54FCT138	5962-8768901	82S153A	5962-8773503	2100ASG	5962-8780005	54HC221A
5962-8758301	8155	5962-8765501	54FCT138A	5962-8769001	54ALS139	5962-8773504	2100ATG	5962-8780006	54HC299
5962-8758302	8156	5962-8765601	54FCT240	5962-8769101	87C51-16	5962-8773801	OP-77B	5962-8780007	54HC377
5962-8758401	LM185-1.2	5962-8765701	54FCT273	5962-8769201	87C51-16	5962-8773802	OP-77A	5962-8780008	54HC192
5962-8758402	LM185B1.2	5962-8765801	54FCT138	5962-8769301	8088	5962-8773803	LT1001A	5962-8780009	54HC640
5962-8758403	LM185B2.5	5962-8765901	54FCT138A	5962-8769401	7217L-40	5962-8773804	LM139A	5962-8850101	80C186-10
5962-8758404	LM185B1.2	5962-8766001	54FCT240	5962-8769501	7217L-55	5962-8774001	1543	5962-8850102	80C186-12
5962-8758405	LM185B2.5	5962-8766101	54FCT273	5962-8769601	7217L-75	5962-8774002	1544	5962-8850201	HA-5104
5962-8758501	54AS646	5962-8766201	54FCT273A	5962-8769701	7217L-75	5962-8774101	LT1033	5962-8850301	TSC426
5962-8758601	26LS34	5962-8766301	54FCT273	5962-8769801	HSDC-8920A	5962-8774201	1834	5962-8850302	TSC427
5962-8758701	9519A	5962-8766401	54FCT273	5962-8769901	HSDC-8920	5962-8774301	12511	5962-8850303	TSC428
5962-8758801	3183A	5962-8766501	54FCT273	5962-8770001	RDC14505-641	5962-8774401	(SEE DWG)	5962-8850304	TSC4423
5962-8760001	TDC1048	5962-8766601	54FCT273A	5962-8770101	MN3008	5962-8774402	(SEE DWG)	5962-8850305	TSC4424
5962-8760201	2960	5962-8766701	54FCT2						

MILITARY PARTS
SORTED BY GENERIC MILITARY P/N

Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
5962-8850801	ADC-HX	5962-8854503	(SEE DWG)	5962-8860502	29828A	5962-8864901	55ALS195	5962-8867810	C16R8-20
5962-8850802	ADC-HZ	5962-8854504	(SEE DWG)	5962-8860601	54HC237	5962-8865001	AD7820U	5962-8867811	C16R6-20
5962-8850901	AD390S	5962-8854601	54F676	5962-8860701	54LS674	5962-8865002	AD7820T	5962-8867812	C16R4-20
5962-8850902	AD390T	5962-8854701	8087-2	5962-8860801	54FCT821A	5962-8865101	54FCT533	5962-8868001	(SEE DWG)
5962-8851001	AD394S	5962-8854702	8087	5962-8860802	54FCT821B	5962-8865201	54FCT533A	5962-8868002	(SEE DWG)
5962-8851002	AD394T	5962-8854801	(SEE DWG)	5962-8861001	(SEE DWG)	5962-8865202	54FCT182	5962-8868003	(SEE DWG)
5962-8851003	AD395S	5962-8854901	(SEE DWG)	5962-8861002	(SEE DWG)	5962-8865203	54FCT182A	5962-8868004	(SEE DWG)
5962-8851004	AD395T	5962-8854902	(SEE DWG)	5962-8861003	(SEE DWG)	5962-8865301	54FCT182A	5962-8868101	(SEE DWG)
5962-8851101	55116	5962-8855001	54F273	5962-8861004	(SEE DWG)	5962-8865302	54FCT645	5962-8868102	(SEE DWG)
5962-8851102	55117	5962-8855101	UH503	5962-8861005	(SEE DWG)	5962-8865303	54FCT645A	5962-8868103	(SEE DWG)
5962-8851103	55118	5962-8855201	(SEE DWG)	5962-8861006	(SEE DWG)	5962-8865401	54FCT640	5962-8868104	(SEE DWG)
5962-8851104	55119	5962-8855202	(SEE DWG)	5962-8861007	(SEE DWG)	5962-8865402	54FCT640A	5962-8868201	54HC253B
5962-8851301	OP-42A	5962-8855203	(SEE DWG)	5962-8861008	(SEE DWG)	5962-8865501	54FCT534	5962-8868202	54HC253B
5962-8851302	OP-42B	5962-8855204	(SEE DWG)	5962-8861009	(SEE DWG)	5962-8865502	54FCT534A	5962-8868301	(SEE DWG)
5962-8851401	HS9403-8	5962-8855205	(SEE DWG)	5962-8861010	(SEE DWG)	5962-8865601	54FCT823A	5962-8868302	(SEE DWG)
5962-8851402	HS9403-16	5962-8855206	(SEE DWG)	5962-8861011	(SEE DWG)	5962-8865602	54FCT823B	5962-8868303	(SEE DWG)
5962-8851403	HDAS-8	5962-8855207	(SEE DWG)	5962-8861012	(SEE DWG)	5962-8865701	54FCT163	5962-8868401	SPR755
5962-8851404	HDAS-16	5962-8855208	(SEE DWG)	5962-8861101	(SEE DWG)	5962-8865702	54FCT163A	5962-8868501	TL7705AM
5962-8851501	(SEE DWG)	5962-8855209	(SEE DWG)	5962-8861102	(SEE DWG)	5962-8865703	54FCT163	5962-8868502	TL7702AM
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5962-8851503	(SEE DWG)	5962-8855401	7824A	5962-8861104	(SEE DWG)	5962-8865801	AD578SD	5962-8868504	TL7702B
5962-8851504	(SEE DWG)	5962-8855501	54F378	5962-8861105	(SEE DWG)	5962-8865802	AD578TD	5962-8868505	TL7705B
5962-8851601	29C281	5962-8855601	54HC4052	5962-8861201	29C116	5962-8865903	AD578ZSD	5962-8868701	54AS652
5962-8851602	29C823	5962-8855701	10541	5962-8861202	29C116-1	5962-8866001	AD578ZTD	5962-8868901	Z85C3006
5962-8851603	29C921	5962-8855801	OP421B	5962-8861203	29C116-2	5962-8866501	AD6675	5962-8868902	Z85C3008
5962-8851604	29C923	5962-8855901	OP421C	5962-8861204	7C9116-40	5962-8866601	54FCT863A	5962-8868903	AM85C30-10
5962-8851605	AM29C821A	5962-8856001	10545	5962-8861301	39C60A	5962-8866602	54FCT863B	5962-8868904	AM85C30-12
5962-8851606	AM29C823A	5962-8856101	LM199A	5962-8861302	39C60A	5962-8866603	(SEE DWG)	5962-8868905	AM85C30-16
5962-8851701	DAC02310-112	5962-8856102	LM199	5962-8861303	39C60A	5962-8866604	(SEE DWG)	5962-8868906	AM85C30-16
5962-8851702	DAC02310-113	5962-8856201	LM199A-20	5962-8861401	674AU	5962-8866605	(SEE DWG)	5962-8868907	Z85C3010
5962-8851801	(SEE DWG)	5962-8856202	LT1010	5962-8861502	674AT	5962-8866606	(SEE DWG)	5962-8868908	Z85C3010
5962-8851802	(SEE DWG)	5962-8856301	DAC703	5962-8861701	SP8718	5962-8866607	(SEE DWG)	5962-8868909	Z8523016
5962-8851803	(SEE DWG)	5962-8856401	UH502	5962-8861902	320C25	5962-8866608	(SEE DWG)	5962-8869001	(SEE DWG)
5962-8851901	UDS2981	5962-8856501	OP-470A	5962-8861903	320C25-50	5962-8866609	(SEE DWG)	5962-8869002	(SEE DWG)
5962-8851902	UDS2983	5962-8856502	OP-471A	5962-8862001	54HC09	5962-8866610	(SEE DWG)	5962-8869101	54ALS520
5962-8852001	54AC74	5962-8856601	2681	5962-8862101	54ALS86	5962-8866611	7228T	5962-8869201	(SEE DWG)
5962-8852002	54AC11074	5962-8856602	2681	5962-8862201	LT1028M	5962-8866612	7228U	5962-8869202	(SEE DWG)
5962-8852201	54AS808	5962-8856603	68681	5962-8862202	LT1028AM	5962-8866613	SG3081	5962-8869203	(SEE DWG)
5962-8852301	54AS832B	5962-8856701	LT1037A	5962-8862501	54ALS2059	5962-8866614	54CT86301	5962-8869204	(SEE DWG)
5962-8852501	(SEE DWG)	5962-8856801	8035AHL	5962-8862601	54ALS258	5962-8866615	(SEE DWG)	5962-8869301	54ALS804
5962-8852502	(SEE DWG)	5962-8856802	8048AH	5962-8862701	54F269	5962-8866616	(SEE DWG)	5962-8869401	54ALS805A
5962-8852503	(SEE DWG)	5962-8857101	1596	5962-8862801	54F253BB	5962-8866617	(SEE DWG)	5962-8869501	54ALS808
5962-8852504	(SEE DWG)	5962-8857201	68154	5962-8862901	HS9324	5962-8866618	(SEE DWG)	5962-8869601	2968A
5962-8852505	(SEE DWG)	5962-8857301	29C853	5962-8863001	AMP-01A	5962-8866619	(SEE DWG)	5962-8869602	2968A
5962-8852506	(SEE DWG)	5962-8857302	29C855	5962-8863002	AMP-01B	5962-8866620	(SEE DWG)	5962-8869701	UC1903
5962-8852507	(SEE DWG)	5962-8857303	29C853A	5962-8863101	DS1831	5962-8866621	(SEE DWG)	5962-8869801	54ALS193
5962-8852508	(SEE DWG)	5962-8857304	29C833A	5962-8863401	(SEE DWG)	5962-8866622	(SEE DWG)	5962-8869802	HI-516
5962-8852509	(SEE DWG)	5962-8857501	54FCT841A	5962-8863402	(SEE DWG)	5962-8866623	(SEE DWG)	5962-8870001	54ALS563A
5962-8852510	(SEE DWG)	5962-8857502	54FCT841B	5962-8863403	(SEE DWG)	5962-8866624	(SEE DWG)	5962-8870101	OPAS41
5962-8852511	(SEE DWG)	5962-8857601	54HC21	5962-8863404	(SEE DWG)	5962-8866625	(SEE DWG)	5962-8870201	54AC377
5962-8852512	(SEE DWG)	5962-8857701	10521	5962-8863501	(SEE DWG)	5962-8866626	(SEE DWG)	5962-8870301	54AC257
5962-8852513	(SEE DWG)	5962-8857801	54ALS688	5962-8863601	(SEE DWG)	5962-8866627	(SEE DWG)	5962-8870401	54ACT258
5962-8852514	(SEE DWG)	5962-8857901	HOS-050A	5962-8863701	7C235-40	5962-8866628	(SEE DWG)	5962-8870501	54ACT821
5962-8852515	(SEE DWG)	5962-8857902	MOS-060SH	5962-8863801	20G10-40	5962-8866629	(SEE DWG)	5962-8870601	54AC541
5962-8852701	10564	5962-8858101	H0H0268D	5962-8863901	20G10-30	5962-8866630	(SEE DWG)	5962-8870701	54F776
5962-8853201	TDC1049	5962-8858201	M0H0272C	5962-8863702	20G10-30	5962-8866631	54ALS534	5962-8870801	54F30
5962-8853301	49C460A	5962-8858301	MOR1623K	5962-8863802	2018	5962-8866632	(SEE DWG)	5962-8870901	54F36
5962-8853302	49C460B	5962-8858401	MOF1305D	5962-8863803	2018	5962-8866633	(SEE DWG)	5962-8871001	54F518
5962-8853303	29C660A	5962-8858501	BUS-65600	5962-8863901	54FCT573	5962-8866634	(SEE DWG)	5962-8871101	54F519
5962-8853304	29C660B	5962-8858601	BUS-66300II	5962-8863902	54FCT573A	5962-8866635	(SEE DWG)	5962-8871201	54F520
5962-8853305	29C660C	5962-8858701	(SEE DWG)	5962-8864001	54FCT161	5962-8866636	(SEE DWG)	5962-8871301	C16R8-40
5962-8853306	49C460C	5962-8858702	(SEE DWG)	5962-8864002	54FCT161A	5962-8866637	(SEE DWG)	5962-8871302	C16R8-40
5962-8853401	54ACT109	5962-8858801	(SEE DWG)	5962-8864101	LTC1060A	5962-8866638	(SEE DWG)	5962-8871303	C16R6-40
5962-8853402	54ACT11109	5962-8858802	(SEE DWG)	5962-8864201	P1754	5962-8866639	(SEE DWG)	5962-8871304	C16R4-40
5962-8853501	7C901-32	5962-8858803	(SEE DWG)	5962-8864202	P1754	5962-8866640	(SEE DWG)	5962-8871305	C16L8-30
5962-8853502	7C901-27	5962-8858901	54ALS20A	5962-8864203	P1754	5962-8866641	(SEE DWG)	5962-8871306	C16R8-30
5962-8853701	OP-37A	5962-8859001	54ALS133	5962-8864204	P1754	5962-8866642	(SEE DWG)	5962-8871307	C16R6-30
5962-8853702	OP37B	5962-8859101	54ALS240A	5962-8864205	P1754	5962-8866643	(SEE DWG)	5962-8871308	C16R4-30
5962-8853703	OP37C	5962-8859301	OP-200A	5962-8864206	P1754	5962-8866644	(SEE DWG)	5962-8871309	C16R8-20
5962-8853801	OP215A	5962-8859401	(SEE DWG)	5962-8864207	P1754	5962-8866645	(SEE DWG)	5962-8871310	C16R8-20
5962-8853802	OP215B	5962-8859402	(SEE DWG)	5962-8864208	P1754	5962-8866646	(SEE DWG)	5962-8871311	C16R6-20
5962-8853803	OP215BR	5962-8859403	(SEE DWG)	5962-8864209	P1754	5962-8866647	(SEE DWG)	5962-8871312	C16R4-20
5962-8853901	AD52A	5962-8859501	(SEE DWG)	5962-8864301	49C410A	5962-8866648	(SEE DWG)	5962-8871501	55454
5962-8854001	54ALS05A	5962-8859601	54ALS241	5962-8864302	49C410A	5962-8866649	(SEE DWG)	5962-8871502	55464
5962-8854101	27S13A	5962-8859701	LT1004-1.2	5962-8864401	UT63M105	5962-8866650	(SEE DWG)	5962-8871503	55474
5962-8854102	27S13	5962-8859702	LT1004-2.5	5962-8864402	UT63M115	5962-8866651	(SEE DWG)	5962-8871601	SG1626
5962-8854201	ADC00300	5962-8859801	2925	5962-8864403	UT63M117	5962-8866652	(SEE DWG)	5962-8871801	54HC05
5962-8854301	54FCT521	5962-8859802	2925A	5962-8864404	UT63M125	5962-8866701	2903A	5962-8871901	AD664TD-UNI
5962-8854302	54FCT521A	5962-8859901	32C201-10	5962-8864405	UT63M127	5962-8867001	C16L8-40	5962-8871902	AD664TD-BIP
5962-8854303	54FCT521B	5962-8860001	LT1021BM-10	5962-8864406	UT63M13				

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MILITARY PARTS SORTED BY GENERIC MILITARY P/N

Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
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5962-8872501	(SEE DWG)	5962-8877101	54ACT299	5962-8950401	LT1017	5962-8954104	SMP-10B	5962-8959504	MN5246A
5962-8872502	(SEE DWG)	5962-8877201	ICL8038	5962-8950402	LT1018	5962-8954201	OP-15A	5962-8959601	8097BH
5962-8872503	(SEE DWG)	5962-8877401	54F51	5962-8950501	P1753	5962-8954202	OP-15B	5962-8959801	(SEE DWG)
5962-8872504	(SEE DWG)	5962-8877501	54FCT646	5962-8950502	P1753	5962-8954301	OP-16A	5962-8959802	(SEE DWG)
5962-8872505	(SEE DWG)	5962-8877502	54FCT646A	5962-8950503	P1753	5962-8954302	OP-16B	5962-8959803	(SEE DWG)
5962-8872601	V750	5962-8877601	HS1068	5962-8950504	P1753	5962-8954303	OP-16C	5962-8959804	(SEE DWG)
5962-8872602	V750	5962-8877801	(SEE DWG)	5962-8950505	P1753	5962-8954401	OP-97	5962-8959805	(SEE DWG)
5962-8872603	V750	5962-8877802	(SEE DWG)	5962-8950506	P1753	5962-8954501	54F579	5962-8959806	(SEE DWG)
5962-8872604	V750	5962-8877802	(SEE DWG)	5962-8950601	54FCT827A	5962-8954601	(SEE DWG)	5962-8959807	(SEE DWG)
5962-8872606	V750L	5962-8877802	(SEE DWG)	5962-8950602	54FCT827B	5962-8954602	(SEE DWG)	5962-8959808	(SEE DWG)
5962-8872607	V750L	5962-8877802	(SEE DWG)	5962-8950701	54HC4066	5962-8954603	(SEE DWG)	5962-8959809	(SEE DWG)
5962-8872701	54ALS640A	5962-8877802	(SEE DWG)	5962-8950801	54FCT139	5962-8954701	54ACT11008	5962-8959810	(SEE DWG)
5962-8872801	54ALS564A	5962-8877802	(SEE DWG)	5962-8950802	54FCT139A	5962-8954702	54ACT08	5962-8959811	(SEE DWG)
5962-8872901	54AS1004A	5962-8877802	(SEE DWG)	5962-8950802	54FCT139A	5962-8954801	HA-5102	5962-8959812	(SEE DWG)
5962-8873001	54AS1032A	5962-8877802	(SEE DWG)	5962-8950901	RGBDAC3808H	5962-8954901	29818A	5962-8959813	(SEE DWG)
5962-8873101	54AS1034A	5962-8877802	(SEE DWG)	5962-8951001	54F27	5962-8955001	54AC86	5962-8959814	(SEE DWG)
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5962-8873302	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951102	1527A	5962-8955201	54AC175	5962-8959816	(SEE DWG)
5962-8873303	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951103	UC1525A	5962-8955301	54AS640	5962-8959817	(SEE DWG)
5962-8873305	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951104	UC1527A	5962-8955401	54F21	5962-8959818	(SEE DWG)
5962-8873401	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951105	UC1527A	5962-8955501	54F544	5962-8959819	(SEE DWG)
5962-8873402	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951201	56001-20	5962-8955601	54ACT563	5962-8959820	(SEE DWG)
5962-8873403	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951301	54FCT574	5962-8955701	54ACT564	5962-8959821	(SEE DWG)
5962-8873404	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951302	54FCT574A	5962-8955801	54F652	5962-8959822	(SEE DWG)
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5962-8873504	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951701	7C9101-45	5962-8956301	MN5290	5962-8959826	(SEE DWG)
5962-8873505	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951702	7C9101-35	5962-8956302	MN5291	5962-8959827	(SEE DWG)
5962-8873506	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951801	AD7821	5962-8956401	604A	5962-8959828	(SEE DWG)
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5962-8873508	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8951902	AD7821	5962-8956601	HS9716	5962-8959830	(SEE DWG)
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5962-8873523	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952005	AD7821	5962-8956810	(SEE DWG)	5962-8959845	(SEE DWG)
5962-8873524	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952006	AD7821	5962-8956811	(SEE DWG)	5962-8959846	(SEE DWG)
5962-8873525	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952007	AD7821	5962-8956812	(SEE DWG)	5962-8959847	(SEE DWG)
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5962-8873527	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952009	AD7821	5962-8956814	(SEE DWG)	5962-8959849	(SEE DWG)
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5962-8873532	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952014	AD7821	5962-8956819	(SEE DWG)	5962-8959854	(SEE DWG)
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5962-8873534	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952016	AD7821	5962-8956821	(SEE DWG)	5962-8959856	(SEE DWG)
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5962-8873536	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952018	AD7821	5962-8956823	(SEE DWG)	5962-8959858	(SEE DWG)
5962-8873537	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952019	AD7821	5962-8956824	(SEE DWG)	5962-8959859	(SEE DWG)
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5962-8873540	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952022	AD7821	5962-8956827	(SEE DWG)	5962-8959862	(SEE DWG)
5962-8873541	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952023	AD7821	5962-8956828	(SEE DWG)	5962-8959863	(SEE DWG)
5962-8873542	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952024	AD7821	5962-8956829	(SEE DWG)	5962-8959864	(SEE DWG)
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5962-8873545	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952027	AD7821	5962-8956832	(SEE DWG)	5962-8959867	(SEE DWG)
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5962-8873547	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952029	AD7821	5962-8956834	(SEE DWG)	5962-8959869	(SEE DWG)
5962-8873548	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952030	AD7821	5962-8956835	(SEE DWG)	5962-8959870	(SEE DWG)
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5962-8873552	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952034	AD7821	5962-8956839	(SEE DWG)	5962-8959874	(SEE DWG)
5962-8873553	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952035	AD7821	5962-8956840	(SEE DWG)	5962-8959875	(SEE DWG)
5962-8873554	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952036	AD7821	5962-8956841	(SEE DWG)	5962-8959876	(SEE DWG)
5962-8873555	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952037	AD7821	5962-8956842	(SEE DWG)	5962-8959877	(SEE DWG)
5962-8873556	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952038	AD7821	5962-8956843	(SEE DWG)	5962-8959878	(SEE DWG)
5962-8873557	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952039	AD7821	5962-8956844	(SEE DWG)	5962-8959879	(SEE DWG)
5962-8873558	(SEE DWG)	5962-8877802	(SEE DWG)	5962-8952040	AD7821	5962-8956845	(SEE DWG)	5962-8959880	(SEE DWG)
5962-8873559	(SEE DWG)</								

MILITARY PARTS
SORTED BY GENERIC MILITARY P/N

MILITARY

Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
5962-8963601	HA-5002	5962-8969301	54ACT175	5962-8975601	54LS598	5962-8982605	FC1553721	5962-8990808	HRD1066-381H
5962-8963701	AD637	5962-8969401	7C190	5962-8975701	54AS885	5962-8982606	CT1589D	5962-8991001	CLC200A
5962-8963801	TSC170	5962-8969501	54HC113	5962-8975801	54FCT843A	5962-8982801	TDC1044	5962-8991101	CLC220A
5962-8963802	TSC171	5962-8969601	(SEE DWG)	5962-8975901	54FCT843B	5962-8983001	LTC1090	5962-8991501	7818A
5962-8963901	LM604	5962-8969602	(SEE DWG)	5962-8976001	54FCT843C	5962-8983002	LTC1290B	5962-8992001	UC1840
5962-8964001	AD840	5962-8969603	(SEE DWG)	5962-8976301	DG403	5962-8983003	LTC1290C	5962-8992002	UC1841
5962-8964101	AD841	5962-8969604	(SEE DWG)	5962-8976401	(SEE DWG)	5962-8983004	LTC1290D	5962-8992101	LM129A
5962-8964201	AD842	5962-8969605	(SEE DWG)	5962-8976402	(SEE DWG)	5962-8983901	16V8A	5962-8992102	LM129B
5962-8964301	HA-2542	5962-8969606	(SEE DWG)	5962-8976403	(SEE DWG)	5962-8983902	16V8A	5962-8992103	LM129C
5962-8964401	AD844	5962-8969701	AD7846	5962-8976404	(SEE DWG)	5962-8983903	16V8A	5962-8992501	54LS378
5962-8964501	AD845	5962-8969801	AD7579	5962-8976405	(SEE DWG)	5962-8983904	16V8	5962-8992801	BT458
5962-8964601	AD846	5962-8969802	AD7580	5962-8976406	(SEE DWG)	5962-8983905	16V8	5962-8993201	DAC08
5962-8964701	AD847S	5962-8970001	54HCT123	5962-8976407	(SEE DWG)	5962-8983906	16V8	5962-8993501	7C192
5962-8964801	HA-2540	5962-8970101	54HCT112	5962-8976408	(SEE DWG)	5962-8984001	20V8	5962-8993502	7C192
5962-8964802	EL-2040	5962-8970201	54HCT175	5962-8976501	54HC283	5962-8984002	20V8	5962-8993503	7C192
5962-8965201	54FCT399	5962-8970301	54HCT27	5962-8976501	54HC283	5962-8984003	20V8	5962-8994001	AD346
5962-8965202	54FCT399A	5962-8970401	54HCT164	5962-8976601	54FCT541	5962-8984101	22V10	5962-8994002	MN346
5962-8965301	BT102	5962-8970501	54HCT257	5962-8976602	54FCT541A	5962-8984102	22V10	5962-8994201	(SEE DWG)
5962-8965401	AD9012S	5962-8970701	54HCT162	5962-8976701	54FCT540	5962-8984103	22V10	5962-8994202	(SEE DWG)
5962-8965402	AD9012T	5962-8970801	54HCT258	5962-8976702	54FCT540A	5962-8984104	22V10	5962-8994203	(SEE DWG)
5962-8965501	AD7672TQ10	5962-8970901	54HCT11	5962-8976703	7684T	5962-8984105	22V10	5962-8994204	(SEE DWG)
5962-8965502	AD7672UQ10	5962-8971001	ADG526A	5962-8977101	8397BH	5962-8984106	22V10	5962-8994501	(SEE DWG)
5962-8965503	AD7672TQ05	5962-8971102	ADG527A	5962-8977501	EN2015	5962-8984201	ICL8211	5962-8994301	(SEE DWG)
5962-8965504	AD7672UQ05	5962-8971103	TMC2023V	5962-8977502	EN2015A	5962-8984202	ICL8212	5962-8994302	(SEE DWG)
5962-8965601	HA-5141	5962-8971104	TMC2023V2	5962-8977601	EN2016	5962-8984301	ICL8210	5962-8994303	(SEE DWG)
5962-8965602	HA-5142	5962-8971105	TMC2023V3	5962-8977602	EN2016A	5962-8984401	54HCT86	5962-8994304	(SEE DWG)
5962-8965603	HA-5144	5962-8971201	(SEE DWG)	5962-8977701	7684T	5962-8984501	54HCT132	5962-8994401	54LS248
5962-8965701	7547S	5962-8971202	(SEE DWG)	5962-8977702	7684S	5962-8984502	54HC132	5962-8994501	54AL5996
5962-8965702	7547T	5962-8971203	(SEE DWG)	5962-8977703	MP7684AT	5962-8984702	54ACT241	5962-8994601	54HC190
5962-8965703	7547U	5962-8971204	(SEE DWG)	5962-8977704	MP7684AS	5962-8984901	54HCT534	5962-8994701	54HCT4040
5962-8965801	54ACT534	5962-8971301	3042	5962-8977705	790AAT	5962-8985201	54HCT259	5962-8994801	3020
5962-8965802	54ACT11534	5962-8971302	3042	5962-8977706	7690AAS	5962-8985501	CY7C331-40	5962-8994802	3020
5962-8965901	EL200A	5962-8971303	3042-100	5962-8977707	7690AS	5962-8985502	CY7C331-30	5962-8994803	3020-1025
5962-8966101	(SEE DWG)	5962-8971304	3042-125	5962-8977801	1648M	5962-8985503	CY7C331-25	5962-8995001	54ACT112
5962-8966102	(SEE DWG)	5962-8971501	TMC2301	5962-8978201	LTC1050	5962-8985701	10H509	5962-8995101	(SEE DWG)
5962-8966301	54AS286	5962-8971602	TMC2301	5962-8978202	OP-292	5962-8985801	54F367	5962-8995102	(SEE DWG)
5962-8966401	(SEE DWG)	5962-8971603	LPR520	5962-8978203	OP-290	5962-8985802	CLC206A	5962-8995103	(SEE DWG)
5962-8966402	(SEE DWG)	5962-8971604	LPR520	5962-8978501	HCPL-5731	5962-8986201	HS9378TB	5962-8995301	(SEE DWG)
5962-8966501	54FCT824A	5962-8971605	LPR520	5962-8978502	HCPL-6731	5962-8986202	HS9378SB	5962-8995401	54HC4015
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5962-8966601	(SEE DWG)	5962-8971607	LPR521	5962-8979002	(SEE DWG)	5962-8986302	(SEE DWG)	5962-8995601	54AL5646
5962-8966602	(SEE DWG)	5962-8971608	LPR521	5962-8979003	(SEE DWG)	5962-8986303	(SEE DWG)	5962-8995701	UC1637
5962-8966603	(SEE DWG)	5962-8971701	LSH32	5962-8979004	(SEE DWG)	5962-8986304	(SEE DWG)	5962-8995901	L4C381-45
5962-8966604	(SEE DWG)	5962-8971702	LSH32	5962-8979301	54ACT520	5962-8986305	(SEE DWG)	5962-8996101	DG305
5962-8966605	(SEE DWG)	5962-8971801	MN3020	5962-8979302	54ACT521	5962-8986306	(SEE DWG)	5962-8996701	(SEE DWG)
5962-8966606	(SEE DWG)	5962-8971802	HA-2529	5962-8979303	54ACT11520	5962-8986701	UH-507	5962-8996702	(SEE DWG)
5962-8966701	(SEE DWG)	5962-8972101	54F30245	5962-8979304	54ACT11521	5962-8987001	90B8A	5962-8996703	(SEE DWG)
5962-8966801	54AS867	5962-8972401	54F259	5962-8979801	BU-65142	5962-8987002	CMP-01	5962-8996704	(SEE DWG)
5962-8966901	SW-06B	5962-8972402	54F574	5962-8979802	FC155391	5962-8987101	LTC1003	5962-8996901	35074
5962-8967001	OP490A	5962-8972501	82510	5962-8979803	FC155392	5962-8987301	2023	5962-8996902	35074A
5962-8967101	DAC8221A	5962-8972601	80C451	5962-8980101	OP-11A	5962-8987601	(SEE DWG)	5962-8997001	400
5962-8967201	DAC8222A	5962-8972602	83C451	5962-8980201	OP-11B	5962-8987701	HA-2522	5962-8997101	8744H-10
5962-8967301	OP-50A	5962-8972801	AD588S	5962-8980202	LT1031B	5962-8988001	HA-2520	5962-8997301	CLC401
5962-8967401	C5S014-S	5962-8972802	AD588T	5962-8980203	LT1031C	5962-8988002	HA-2520	5962-8997302	EL271
5962-8967402	C5S014-T	5962-8972901	54ACT158	5962-8980301	SL523AC	5962-8988201	78C30	5962-8997401	CLC501
5962-8967501	C5S016-S	5962-8973001	54FCT543	5962-8980401	OP44A	5962-8988301	(SEE DWG)	5962-8997501	CLC110
5962-8967601	C5S016-T	5962-8973101	54FCT543A	5962-8980701	AD630	5962-8988302	(SEE DWG)	5962-8997502	EL2072
5962-8967701	LT1014A	5962-8973201	54FCT833B	5962-8980801	AD568SQ	5962-8988303	(SEE DWG)	5962-8997601	LT1055A
5962-8967702	LT1014	5962-8973202	54FCT241	5962-8980802	AD568SE	5962-8988901	54ALS870	5962-8997602	LT1056A
5962-8967801	DAC-8408A	5962-8973203	54FCT241A	5962-8980901	AD539	5962-8989001	54HCT393	5962-8997603	LT1055
5962-8967802	DAC-8408B	5962-8973301	54FCT191	5962-8981001	HCPL-5701	5962-8989101	(SEE DWG)	5962-8997604	LT1056
5962-8967901	C5S012	5962-8973302	54FCT191A	5962-8981101	1437	5962-8989102	(SEE DWG)	5962-8997901	SP1078B
5962-8968001	55ALS160	5962-8973303	54FCT191A	5962-8981301	(SEE DWG)	5962-8989103	(SEE DWG)	5962-8998101	(SEE DWG)
5962-8968101	55ALS161	5962-8973304	54FCT191A	5962-8981502	(SEE DWG)	5962-8989104	(SEE DWG)	5962-8998201	80C196KB
5962-8968201	54AC646	5962-8973401	54ACT04	5962-8981503	(SEE DWG)	5962-8989105	(SEE DWG)	5962-8998601	DSC11520-112
5962-8968301	(SEE DWG)	5962-8973402	54ACT11004	5962-8981701	(SEE DWG)	5962-8989106	(SEE DWG)	5962-8998602	DSC11520-113
5962-8968302	(SEE DWG)	5962-8973501	54ACT273	5962-8981702	(SEE DWG)	5962-8989201	(SEE DWG)	5962-8998603	DSC11520-114
5962-8968303	(SEE DWG)	5962-8973601	54ACT32	5962-8981703	(SEE DWG)	5962-8989202	(SEE DWG)	5962-8998604	DSC11520-115
5962-8968401	2821	5962-8973602	54ACT11032	5962-8981704	(SEE DWG)	5962-8989203	(SEE DWG)	5962-8998605	54HC623
5962-8968501	2823	5962-8974001	54HCT640	5962-8981705	(SEE DWG)	5962-8989204	(SEE DWG)	5962-8999001	54HC297
5962-8968601	2824	5962-8974101	54HCT597	5962-8981706	(SEE DWG)	5962-8989205	(SEE DWG)	5962-9005001	54F198
5962-8968701	54ALS653	5962-8974201	54HCT574	5962-8982101	DS1634	5962-8989206	(SEE DWG)	5962-9005002	54LS396
5962-8968801	54ACT157	5962-8974301	54HCT174	5962-8982301	3090-50	5962-8989601	OP90A	5962-9005003	L64230-12
5962-8968901	(SEE DWG)	5962-8974401	54HCT238	5962-8982302	3090-70	5962-8989701	LT1058A	5962-9005004	L64230-16
5962-8969001	(SEE DWG)	5962-8974501	54HCT30	5962-8982303	3090-100	5962-8989702	LT1058	5962-9005005	54HCT153
5962-8969002	(SEE DWG)	5962-8974601	54HCT30	5962-8982304	3090-125	5962-8989703	LT1058	5962-9005006	54F623
5962-8969101	(SEE DWG)	5962-8974701	54HCT04	5962-8982401	AD586E	5962-8990401	CMP404A	5962-9005007	54F621
5962-8969102	(SEE DWG)	5962-8974801	54LS642	5962-8982402	AD586T	5962-8990402	CMP404B	5962-9005008	AD9002S
5962-8969103	(SEE DWG)	5962-8974901	54AC191	5962-8982501	AD587SQ	5962-8990403	CMP04B	5962-9005009	AD9002T
5962-8969104	(SEE DWG)	5962-8975101	54HCT02	5962-8982502	AD587TQ	5962-8990501	1823	5962-9005010	EL2002A
5962-8969201	(SEE DWG)	5962-8975401	54F646	5962-8982503	AD587UQ	5962-8990801	SDC14565-114	5962-9005011	EL2002
5962-8969202	(SEE DWG)	5962-8975402	54F648	5962-8982601	BUS-63127II	5962-8990802	SDC14565-115	5962-9005101	68HC11A0
5962-8969203	(SEE DWG)	5962-8975501	C22V10L	5962-8982602	ARX3419	5962-8990803	SDC14565-616	5962-9005102	68HC11A1
5962-8969204	(SEE DWG)	5962-8975502	C22V10L	5962-8982603	NHI-1502	5962-8990804	SDC14566-115	5962-9005103	8748H
5962-8969205	(SEE DWG)	5962-8975503	C22V10L	5962-8982604	NHI-1523	5962-8990805	SDC14565-618	5962-9005104	AM29833A
5962-8969206	(SEE DWG)	5962-8975504	C22V10L						

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5962-9051401	54BCT245	5962-9060301	REF-43	5962-9070301	54HCT158	5962-9081301	55563A
5962-9051501	AM29C818	5962-9060401	TLC274	5962-9070401	WEDSP-16	5962-9081302	55564A
5962-9051601	54BCT374	5962-9060402	TLC279	5962-9070501	54HCT160	5962-9081501	LM6125
5962-9051801	HD-4702	5962-9060403	TLC27M4	5962-9070601	54HCT367	5962-9081701	LT1057A
5962-9051901	LT1029A	5962-9060404	TLC27M9	5962-9070701	SDC14500-635	5962-9081702	LT1057A
5962-9051902	LT1029A	5962-9060405	TLC27L4	5962-9070702	SDC14500-636	5962-9081801	EL2030
5962-9052001	SL560AC	5962-9060406	TLC27L9	5962-9070703	SDC14502-605	5962-9082001	SDC14531-690
5962-9052101	SL532	5962-9060601	54F113	5962-9070704	SDC14502-606	5962-9082002	SDC14531-631
5962-9052201	DS1632	5962-9060602	54F112	5962-9070705	HSD1024-C672	5962-9082502	LT1071
5962-9052301	54ALS648	5962-9061101	(SEE DWG)	5962-9070706	HSD1024-C673	5962-9082503	LT1072
5962-9052401	54HCT251	5962-9061102	(SEE DWG)	5962-9070707	HSD1024-C674	5962-9082504	LT1070HV
5962-9052501	HD-6402R	5962-9061301	54HCT237	5962-9070708	HSD1024-C675	5962-9082505	LT1071HV
5962-9052502	HD-6402B	5962-9061601	54ALS29821	5962-9070801	TMC2208J4V	5962-9082506	LT1072HV
5962-9052601	32C030	5962-9061701	(SEE DWG)	5962-9071101	MAX691	5962-9082801	MIOP42115
5962-9052602	32C030	5962-9061702	(SEE DWG)	5962-9071102	MAX693	5962-9082901	FC155371
5962-9052603	32C030	5962-9061703	(SEE DWG)	5962-9071103	MAX695	5962-9082902	FC155372
5962-9052701	7968-125V	5962-9061704	(SEE DWG)	5962-9071104	MAX699	5962-9082903	ARX3420
5962-9052801	7969-125V	5962-9061801	SP8647	5962-9071201	MAX699	5962-9082904	ARX3424
5962-9053501	OP64A	5962-9062001	7C132	5962-9071202	MAX692	5962-9082905	NHI-1531
5962-9053601	OP-260A	5962-9062002	7C132	5962-9071203	MAX694	5962-9082906	NHI-1545
5962-9053801	UC1611	5962-9062003	7C132	5962-9071501	(SEE DWG)	5962-9082907	CT1589M
5962-9054101	54LS183	5962-9062004	7C142	5962-9071502	(SEE DWG)	5962-9082908	CT1589MI
5962-9054301	82C37A-5	5962-9062005	7C142	5962-9071503	(SEE DWG)	5962-9083101	7C269
5962-9054302	82C37A	5962-9062006	7C142	5962-9071504	(SEE DWG)	5962-9083102	7C269
5962-9054303	82C37A-12	5962-9062007	7C136	5962-9071505	(SEE DWG)	5962-9083103	7C269
5962-9054304	82C237	5962-9062008	7C136	5962-9071506	(SEE DWG)	5962-9083301	CLC201A
5962-9054305	82C237-12	5962-9062009	7C136	5962-9071901	EF4442	5962-9083302	CLC205A
5962-9054401	HCP16003	5962-9062010	7C146	5962-9072001	54ALS29843	5962-9083501	CLC221A
5962-9054402	HPC16083	5962-9062011	7C146	5962-9072301	MIOP42116	5962-9083601	CLC221A
5962-9054501	LTC1045	5962-9062012	7C146	5962-9072701	34010-40	5962-9083801	OM2541SKB
5962-9054801	L5380	5962-9062201	(SEE DWG)	5962-9072702	34010-50	5962-9084101	LT1020
5962-9054802	L53C80	5962-9062202	(SEE DWG)	5962-9073001	MN376	5962-9084201	LT1012
5962-9054901	HD1-15531	5962-9062203	(SEE DWG)	5962-9073101	DG411	5962-9084202	LT1012A
5962-9054902	HD1-15531B	5962-9062501	54BCT244	5962-9073102	DG412	5962-9084501	TLC548
5962-9055101	SDC14567-111	5962-9062701	LT1011A	5962-9073103	DG413	5962-9084502	TLC549
5962-9055102	SDC14567-112	5962-9062702	LT1011	5962-9073601	PA84M	5962-9084701	(SEE DWG)
5962-9055103	SDC14567-114	5962-9062801	55ALS056	5962-9073701	DG417A	5962-9084702	(SEE DWG)
5962-9055104	SDC14567-115	5962-9062901	55ALS057	5962-9073702	DG418A	5962-9084703	(SEE DWG)
5962-9055105	SDC14569-111	5962-9063001	SP9760	5962-9073703	DG419A	5962-9084801	54HCT193
5962-9055106	SDC14569-112	5962-9063101	SP9588	5962-9074101	54BCT2244	5962-9084901	54HCT107
5962-9055107	SDC14569-114	5962-9063301	AD713S	5962-9074201	54BCT240	5962-9085401	HCPCL-5501
5962-9055108	SDC14569-115	5962-9063302	AD717S	5962-9074301	54BCT241	5962-9085501	HCPCL-5601
5962-9055301	54HC40103	5962-9063401	ADH-030	5962-9074401	54BCT2827A	5962-9085801	(SEE DWG)
5962-9055401	HSDC-8915A	5962-9063501	ADG528A	5962-9074501	54BCT2828A	5962-9085802	(SEE DWG)
5962-9055402	HSDC-8915	5962-9063502	ADG529A	5962-9074601	54BCT373	5962-9085803	(SEE DWG)
5962-9055501	(SEE DWG)	5962-9063601	CT1820	5962-9074701	54BCT534	5962-9085804	(SEE DWG)
5962-9055502	(SEE DWG)	5962-9063602	CT1820-2	5962-9074801	54BCT540	5962-9085805	(SEE DWG)
5962-9055503	(SEE DWG)	5962-9063603	ARX2410	5962-9074901	54BCT541	5962-9085806	(SEE DWG)
5962-9055701	14538B	5962-9063604	ARX3410	5962-9075001	54BCT620A	5962-9085807	(SEE DWG)
5962-9055702	14538B	5962-9063801	MIOP42114	5962-9075201	54BCT640	5962-9085808	(SEE DWG)
5962-9055703	10565	5962-9064001	4016B	5962-9075401	(SEE DWG)	5962-9086201	LM759
5962-9056201	54AS250A	5962-9064401	605	5962-9075402	(SEE DWG)	5962-9086301	TLC32040M
5962-9056301	54AS756	5962-9064901	LTC1064-4	5962-9075403	(SEE DWG)	5962-9086302	TLC32044M
5962-9056401	87C51FB-12	5962-9065101	54HCT126	5962-9075701	35063	5962-9086401	68C901B-4
5962-9056402	87C51FB-16	5962-9065201	54HCT151	5962-9075801	54HCT75	5962-9086402	68C901B-8
5962-9056403	87C654	5962-9065401	54HCT4051	5962-9075802	96F172	5962-9086403	68C901B-8
5962-9056404	87C654-16	5962-9065601	80C287-10	5962-9076501	96F174	5962-9086801	AD9617S
5962-9056501	54F3037	5962-9065701	16C30	5962-9076502	96F175	5962-9086802	AD9617S
5962-9056801	OP-237A	5962-9065801	57C43C-70	5962-9076601	96F175	5962-9086803	AD9618S
5962-9056802	OP-237C	5962-9065802	57C43C-55	5962-9076602	96F173	5962-9086804	AD9618T
5962-9056901	DG401	5962-9065803	57C43C-45	5962-9078001	54AS821	5962-9086901	28C512
5962-9057001	MN3880	5962-9065804	57C43C-35	5962-9078002	54AS822	5962-9086902	28C512
5962-9057101	MN7130	5962-9065901	PA12M	5962-9078003	54AS825	5962-9086903	28C512
5962-9057301	10E301	5962-9066401	7C191	5962-9078004	54AS826	5962-9086904	28C512
5962-9057302	10E302	5962-9066402	7C191	5962-9078101	54F125	5962-9086905	28C512
5962-9057401	54HCT40102	5962-9066403	7C191	5962-9079201	SL521	5962-9086906	28C512
5962-9058201	54F191	5962-9066601	54ALS137	5962-9079501	HS9576S	5962-9086907	28C512
5962-9058501	54F432	5962-9066602	AD9005A	5962-9079502	HS9576T	5962-9086908	28C512
5962-9058801	10H750	5962-9066901	54FCT193	5962-9079701	MN7140	5962-9086909	28C513
5962-9059001	54AC05	5962-9066902	54FCT193A	5962-9079801	54FCT480	5962-9086910	28C513
5962-9059301	54F402	5962-9067101	AD598	5962-9079802	54FCT480A	5962-9086911	28C513
5962-9059401	(SEE DWG)	5962-9067501	54ALS29823	5962-9079803	54FCT480B	5962-9086912	28C513
5962-9059402	(SEE DWG)	5962-9067502	54ALS29824	5962-9080001	54LS502	5962-9086913	28C513
5962-9059403	(SEE DWG)	5962-9067801	80C286-10	5962-9080301	(SEE DWG)	5962-9086914	28C513
5962-9059404	(SEE DWG)	5962-9067802	80C286-12	5962-9080302	(SEE DWG)	5962-9086915	28C513
5962-9059501	LT1019A-10	5962-9067901	PA02	5962-9080303	(SEE DWG)	5962-9086916	28C513
5962-9059502	LT1019A-5	5962-9067902	DG189	5962-9080304	(SEE DWG)	5962-9087001	54BCT543
5962-9059503	LT1019A-4.5	5962-9069201	87C196KC	5962-9080306	(SEE DWG)	5962-9087801	AH5010
5962-9059504	LT1019A-2.5	5962-9069301	LTC1064-1	5962-9080307	(SEE DWG)	5962-9087901	5521
5962-9059505	LT1019-10	5962-9069302	LTC1064-1A	5962-9080308	(SEE DWG)	5962-9088001	AH5012
5962-9059506	LT1019-4.5	5962-9069501	54ALS29825	5962-9080701	TLE2061M	5962-9088101	TLE2021
5962-9059507	LT1019-2.5	5962-9069601	7C123	5962-9080702	TLE2062M	5962-9088102	TLE2022
5962-9059508	LT1019-2.5	5962-9069602	7C123	5962-9080801	TLE2062M	5962-9088103	TLE2021
5962-9059601	TDC1012	5962-9069603	7C123	5962-9080802	TLE2062M	5962-9088201	TLC2201M
5962-9059602	TDC1012	5962-9069604	7C123	5962-9081101	MAX8211	5962-9088202	TLC2202M
5962-9059701	54HCT4017	5962-9070101	54HCT109	5962-9081102	MAX8212	5962-9088301	LM2940K-8
5962-9060001	CLC410	5962-9070201	54HCT157	5962-9081201	LM6121		
						5962-9088401	LM2940K-12
						5962-9088501	LM2940K-15
						5962-9088801	6409
						5962-9088901	54BCT126
						5962-9089401	AD526
						5962-9089501	TLC2652M
						5962-9089502	TLC2654M
						5962-9089503	TLC2652A
						5962-9089601	TLE2027M
						5962-9089602	TLE2037M
						5962-9089901	28F010
						5962-9089902	28F010
						5962-9089903	28F010
						5962-9089904	28F010
						5962-9089905	28F010
						5962-9089906	28F010
						5962-908990	

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5962-9099604	LMA1009/2009	5962-9160301	54AC169	5962-9172301	54ACT163	5962-9204202	DG409	5962-9207803	WS512K8-85CQ
5962-9099701	M82C288-6	5962-9160401	54AC258	5962-9172901	LT1180	5962-9204601	54LS628	5962-9207804	WS512K8-70CQ
5962-9099702	M82C288-8	5962-9160501	54AC378	5962-9172902	LT1181	5962-9204801	SDC14570-112	5962-9207805	WS512K8-55CQ
5962-9099703	M82C288-10	5962-9160601	54AC821	5962-9173201	54HCT137	5962-9204802	SDC14571-112	5962-9207806	WS512K8-45CQ
5962-9150501	AD790	5962-9160701	54ACT323	5962-9173401	(SEE DWG)	5962-9204803	SDC14575-112	5962-9207807	WS512K8-35CQ
5962-9150801	7006	5962-9160901	54ACT818	5962-9173402	(SEE DWG)	5962-9204804	SDC14576-112	5962-9207808	WS512K8-25CQ
5962-9150802	7006	5962-9161001	54ACT823	5962-9173403	(SEE DWG)	5962-9204805	SDC14575-114	5962-9208401	SI 531
5962-9150803	7006	5962-9161101	54ACT825	5962-9173404	(SEE DWG)	5962-9204806	SDC14576-114	5962-9208501	NHI-1551
5962-9150804	7006	5962-9161301	ATW2815D/CH	5962-9173601	SDC14600-112	5962-9204901	SDC14572-112	5962-9208502	ARX-4451
5962-9150805	7006	5962-9161302	ATW2815D/CHM	5962-9173602	SDC14600T112	5962-9204902	SDC14574-112	5962-9208503	ARX-4418
5962-9150806	7006	5962-9161303	ATW2815D/CHM	5962-9173603	SDC14601-112	5962-9204903	SDC14577-112	5962-9208504	NHI-1515
5962-9151301	54HC51	5962-9161401	MHF+2815D	5962-9173604	SDC14601T112	5962-9204904	SDC14579-112	5962-9208801	SP8670
5962-9151801	10E474L	5962-9161501	HSD1510-369	5962-9173605	SDC14605-112	5962-9204905	SDC14579-114	5962-9209001	54F827
5962-9151802	10E474L	5962-9161701	7025	5962-9173606	SDC14605T112	5962-9204906	SDC14579-114	5962-9209002	LMC660
5962-9151901	OP249A	5962-9161702	7025	5962-9173607	SDC14606-112	5962-9205001	SDC14578-112	5962-9209003	LPC660
5962-9152101	AD7874	5962-9161703	7025	5962-9173608	SDC14606T112	5962-9205002	SDC14578-112	5962-9209004	LPC662
5962-9152801	100301	5962-9161704	7025	5962-9173609	SDC14605-114	5962-9205003	SDC14602-112	5962-9209402	LPC662
5962-9152802	100302	5962-9161705	7025	5962-9173610	SDC14605T114	5962-9205101	SDC14602-112	5962-9209403	LPC662
5962-9152901	54AS874	5962-9161706	7025	5962-9173611	SDC14606-114	5962-9205102	SDC14602T112	5962-9209701	43891GM-20
5962-9153001	100324	5962-9161707	7025	5962-9173612	SDC14606T114	5962-9205103	SDC14604-112	5962-9209702	43891GM-25
5962-9153101	100325	5962-9161708	7025	5962-9174001	MP7836AT	5962-9205104	SDV14604T112	5962-9210101	(SEE DWG)
5962-9153301	LMF100	5962-9162101	PA83M/883	5962-9174002	MP7836AS	5962-9205105	SDC14607-112	5962-9210102	(SEE DWG)
5962-9153401	EL2001A	5962-9162301	34020-28	5962-9174301	CLC502	5962-9205106	SDC14607T112	5962-9210103	(SEE DWG)
5962-9153402	EL2001	5962-9162302	34020-30	5962-9174401	(SEE DWG)	5962-9205107	SDC14609-112	5962-9210301	FLP
5962-9153501	EL2038	5962-9162401	(SEE DWG)	5962-9174402	(SEE DWG)	5962-9205108	SDC14609T112	5962-9210401	AP1
5962-9153601	100331	5962-9162402	(SEE DWG)	5962-9174801	10180A	5962-9205109	SDC14607-114	5962-9210501	(SEE DWG)
5962-9153701	100304	5962-9162501	AHE2815S	5962-9174802	10180B	5962-9205110	SDC14607T114	5962-9210502	(SEE DWG)
5962-9154201	87CA51	5962-9162502	AHE2815S-SLV	5962-9174901	NHI-1514	5962-9205111	SDC14609-114	5962-9210601	AP2
5962-9154501	V2500H	5962-9162503	AHE2815S-MST	5962-9174902	NHI-1513	5962-9205112	SDC14609T114	5962-9210901	AT2812D/CH
5962-9154502	V2500H	5962-9162701	54AS1000A	5962-9174903	BUS63102II	5962-9205201	SDC14603T112	5962-9210902	ATW2812D/CHM
5962-9154503	V2500L	5962-9162901	100314	5962-9174904	BUS63104II	5962-9205202	SDC14603T112	5962-9210903	ATW2812D/CHS
5962-9154601	V2500H	5962-9163001	54HCT4052	5962-9174905	3231	5962-9205203	SDC14608-112	5962-9211101	AHF2812D/CH
5962-9154602	V2500H	5962-9163101	LM122	5962-9174906	3232	5962-9205204	SDC14608T112	5962-9211102	AHV2812TF/CH
5962-9154603	V2500H	5962-9163201	LT1079	5962-9174907	3232	5962-9205205	SDC14608-114	5962-9211601	AHV2815TF/CH
5962-9154901	93CS66	5962-9163202	LT1079A	5962-9174908	4407	5962-9205206	SDC14608T112	5962-9211701	AD827
5962-9155201	DG542	5962-9163203	LT1078	5962-9174909	4404	5962-9205301	SDC14610-112	5962-9211801	UT89151
5962-9155301	54BCT852	5962-9163204	LT1078A	5962-9175201	(SEE DWG)	5962-9205302	SDC14610T112	5962-9212101	20RA10
5962-9155401	54BCT544	5962-9163401	HA-5221	5962-9175202	(SEE DWG)	5962-9205303	SDC14611-112	5962-9212102	20RA10
5962-9155501	54BCT646	5962-9163402	HA-5222	5962-9175203	(SEE DWG)	5962-9205304	SDC14611T112	5962-9212201	49C465A
5962-9155901	HDSR2056P34V	5962-9163403	26C31	5962-9175204	(SEE DWG)	5962-9205305	SDC14615-112	5962-9212401	MAX634
5962-9155902	HDSR2056P34V	5962-9163901	26C32	5962-9175205	(SEE DWG)	5962-9205306	SDC14615T112	5962-9212601	MAX663
5962-9155903	HDSR2056P34H	5962-9164101	8572	5962-9175301	54F541	5962-9205307	SDC14616-112	5962-9212602	MAX664
5962-9155904	HDSR2056P34S	5962-9164201	8572	5962-9175501	54F541	5962-9205308	SDC14616T112	5962-9212701	MAX638B
5962-9156001	HSD1046341V2	5962-9165201	TDG1112-1	5962-9175801	CLC420A	5962-9205309	SDC14615-114	5962-9212801	EL2019
5962-9156002	HSD1046341H2	5962-9165202	TDG1112-2	5962-9175802	CLC420B	5962-9205310	SDC14615T114	5962-9212901	52L20A
5962-9156003	HSD1046341S2	5962-9165301	SG1644	5962-9176001	(SEE DWG)	5962-9205311	SDC14616-114	5962-9213801	HSRD1006-341
5962-9156501	LM6118	5962-9165401	100355	5962-9176002	(SEE DWG)	5962-9205312	SDC14616T114	5962-9213802	HSRD1006-341
5962-9156601	87C751	5962-9165501	100363	5962-9176003	(SEE DWG)	5962-9205401	SDC14617-112	5962-9213803	HSRD1006-341
5962-9156602	87C751	5962-9166101	54LS424	5962-9176004	(SEE DWG)	5962-9205402	SDC14617T112	5962-9213901	MHF+2805S
5962-9156603	87C751	5962-9166201	7024	5962-9176005	(SEE DWG)	5962-9205403	SDC14617-114	5962-9214001	27C2048
5962-9156604	87C751-16	5962-9166202	7024	5962-9176006	(SEE DWG)	5962-9205404	SDC14617T114	5962-9214002	27C2048
5962-9156605	87C751-16	5962-9166203	7024	5962-9176007	(SEE DWG)	5962-9205405	SDC14617T112	5962-9214003	27C2048
5962-9156801	(SEE DWG)	5962-9166204	7024	5962-9176008	(SEE DWG)	5962-9205406	SDC14617T112	5962-9214101	MAX631A
5962-9156802	(SEE DWG)	5962-9166205	7024	5962-9176009	(SEE DWG)	5962-9205407	SDC14617T112	5962-9214102	MAX631B
5962-9157401	MSK801B	5962-9166206	7024	5962-9176010	(SEE DWG)	5962-9205408	SDC14619-112	5962-9214103	MAX632A
5962-9157501	AHE2815D/CH	5962-9166207	7024	5962-9176011	(SEE DWG)	5962-9205409	SDC14619T112	5962-9214104	MAX632B
5962-9157502	AHE2815D/CH	5962-9166208	7024	5962-9176012	(SEE DWG)	5962-9205410	SDC14619T112	5962-9214105	MAX633A
5962-9157503	AHE2815D/CH	5962-9166209	7024	5962-9176013	(SEE DWG)	5962-9205411	SDC14619-114	5962-9214106	MAX633B
5962-9157601	87C52	5962-9166210	7024	5962-9176014	(SEE DWG)	5962-9205412	SDC14619T114	5962-9214401	MHF+2812D
5962-9157602	87C52-16	5962-9166401	MHF+2812S	5962-9176015	(SEE DWG)	5962-9205413	SDC14619T114	5962-9215301	(SEE DWG)
5962-9157603	87C52	5962-9166501	CLC232A	5962-9176016	(SEE DWG)	5962-9205414	SDC14613-112	5962-9215501	(SEE DWG)
5962-9157604	87C52-16	5962-9167101	LM1575-ADJ	5962-9176017	(SEE DWG)	5962-9205415	SDC14613T112	5962-9215502	(SEE DWG)
5962-9157701	87C752	5962-9167501	EL2232	5962-9176018	(SEE DWG)	5962-9205501	SDC14618-112	5962-9215601	1280
5962-9157702	87C752-16	5962-9167601	66079	5962-9176019	(SEE DWG)	5962-9205502	SDC14618-114	5962-9215602	1280-1
5962-9157703	87C752	5962-9167701	(SEE DWG)	5962-9176020	(SEE DWG)	5962-9205503	SDC14618T112	5962-9215701	49FC7805A
5962-9157704	87C752-16	5962-9167702	(SEE DWG)	5962-9176021	(SEE DWG)	5962-9205504	SDC14618T114	5962-9215702	49FC7806
5962-9157801	ADC1241	5962-9167703	(SEE DWG)	5962-9176022	(SEE DWG)	5962-9205505	SDC14618T114	5962-9215703	49FC7806A
5962-9157802	ADC12441	5962-9168201	29C010	5962-9176023	(SEE DWG)	5962-9205506	SDC14618T114	5962-9215801	(SEE DWG)
5962-9157901	ATW2805S/CH	5962-9168202	29C010	5962-9176024	(SEE DWG)	5962-9205507	SDC14618-112	5962-9215802	(SEE DWG)
5962-9157902	ATW2805S/CHS	5962-9168203	29C010	5962-9176025	(SEE DWG)	5962-9205508	SDC14618-114	5962-9215901	ATR2815TF/CH
5962-9157903	ATW2805S/CHM	5962-9168204	29C010	5962-9176026	(SEE DWG)	5962-9205509	SDC14618T112	5962-9216201	BUS-65153
5962-9158001	AHE2812S	5962-9168205	29C010	5962-9176027	(SEE DWG)	5962-9205510	SDC14618T114	5962-9216202	BUS-65154
5962-9158002	AHE2812S-SLV	5962-9168206	674ZB	5962-9176028	(SEE DWG)	5962-9205511	SDC14618T114	5962-9216501	LM6162
5962-9158003	AHE2812S-MST	5962-9168207	674TB	5962-9176029	(SEE DWG)	5962-9205512	SDC14618T114	5962-9216601	LM1577-ADJ
5962-9158401	(SEE DWG)	5962-9169101	CS5101A-SD	5962-9176030	(SEE DWG)	5962-9205513	SDC14618T114	5962-9216701	LM1577-12
5962-9158402	(SEE DWG)	5962-9169102	CS5101A-TD	5962					

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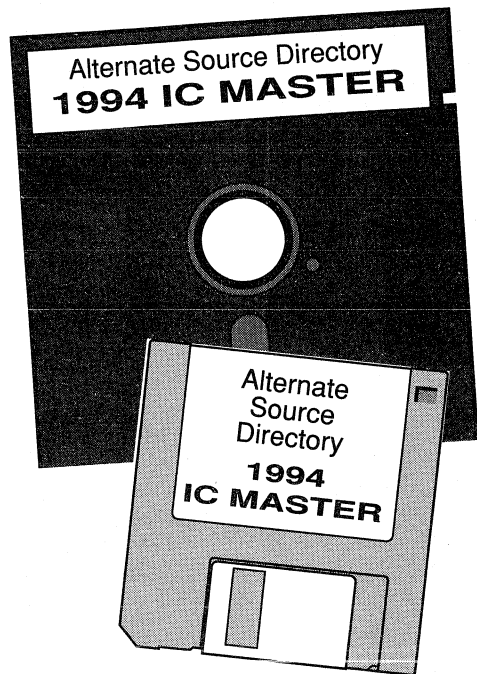
MILITARY PARTS SORTED BY GENERIC MILITARY P/N

Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN	Military* P/N	Industry PN
5962-9218201	54ACTQ10	5962-9221906	54FCT377CT	5962-9224401	54FCT645T	5962-9306001	AD872	5962-9316602	(SEE DWG)
5962-9218301	54ACTQ14	5962-9222001	54FCT540T	5962-9224402	54FCT645AT	5962-9306301	HA-5340	5962-9316603	(SEE DWG)
5962-9218401	54ACTQ240	5962-9222002	54FCT540T	5962-9224403	54FCT645CT	5962-9306501	BU-65170X1	5962-9316604	(SEE DWG)
5962-9218601	54ACTQ244	5962-9222003	54FCT540AT	5962-9224404	54FCT645T	5962-9306502	BU-65170X2	5962-9316605	(SEE DWG)
5962-9218701	54ACTQ245	5962-9222004	54FCT540AT	5962-9224405	54FCT645AT	5962-9306503	BU-61580X1	5962-9316606	(SEE DWG)
5962-9218801	54ACTQ373	5962-9222005	54FCT540CT	5962-9224406	54FCT645CT	5962-9306504	BU-61580X2	5962-9317001	68230-8
5962-9219001	54ACTQ377	5962-9222006	54FCT540CT	5962-9224601	54FCT652T	5962-9306505	BU-65171X1	5962-9317002	68230-10
5962-9219101	54ACTQ657	5962-9222101	54FCT543T	5962-9224602	54FCT652AT	5962-9306506	BU-65171X2	5962-9317003	68230-12
5962-9220001	54ACTQ841	5962-9222102	54FCT543AT	5962-9224603	54FCT652CT	5962-9306507	BU-61581X1	5962-9317004	54ABT16244
5962-9220101	54AC280	5962-9222103	54FCT543CT	5962-9224604	54FCT652T	5962-9306508	BU-61581X2	5962-9317005	54ABT16245
5962-9220301	54FCT244T	5962-9222104	54FCT543T	5962-9224605	54FCT652AT	5962-9308301	OP-09	5962-9317006	7206
5962-9220302	54FCT244AT	5962-9222105	54FCT543AT	5962-9224606	54FCT652CT	5962-9308701	110	5962-9317007	7206
5962-9220303	54FCT244CT	5962-9222106	54FCT543CT	5962-9224701	54FCT827AT	5962-9309101	WE512K8150CQ	5962-9318001	MAX333
5962-9220304	54FCT244T	5962-9222201	54FCT574	5962-9224702	54FCT827AT	5962-9309102	WE-512K8-300	5962-9318201	TLCT2274
5962-9220305	54FCT244AT	5962-9222202	54FCT574	5962-9224703	54FCT827BT	5962-9309103	WE-512K8-250	5962-9318401	LT1220
5962-9220306	54FCT244CT	5962-9222203	54FCT574A	5962-9224704	54FCT827BT	5962-9309104	WE-512K8-200	5962-9318402	LT1230
5962-9220501	29FCT520AT	5962-9222204	54FCT574A	5962-9224705	54FCT827CT	5962-9309501	HA2444	5962-9318901	(SEE DWG)
5962-9220502	29FCT520AT	5962-9222205	54FCT574C	5962-9224706	54FCT827CT	5962-9309801	10E416	5962-9318902	(SEE DWG)
5962-9220503	29FCT520BT	5962-9222206	54FCT574C	5962-9225301	MN6450T	5962-9309802	100E416	5962-9318903	(SEE DWG)
5962-9220504	29FCT520BT	5962-9222301	54FCT646T	5962-9228401	29000	5962-9309901	10E501	5962-9319401	3550
5962-9220505	29FCT520CT	5962-9222302	54FCT646AT	5962-9228402	29000	5962-9309902	100E501	5962-9321001	78C29
5962-9220506	29FCT520CT	5962-9222303	54FCT646AT	5962-9230401	(SEE DWG)	5962-9310001	10E504	5962-9321101	78C20
5962-9220801	54FCT157T	5962-9222304	54FCT646AT	5962-9230401	100336	5962-9310002	100E504	5962-9321201	LT1111
5962-9220802	54FCT157T	5962-9222305	54FCT646CT	5962-9230601	100336	5962-9310101	10E507	5962-9321401	AD688
5962-9220803	54FCT157AT	5962-9222306	54FCT646CT	5962-9231301	145152-2	5962-9310102	100E507	5962-9325101	AD-2546
5962-9220804	54FCT157AT	5962-9222307	54FCT646CT	5962-9231301	145152-2	5962-9310401	10E551		
5962-9220805	54FCT157CT	5962-9222308	54FCT646CT	5962-9231401	54ABT543	5962-9310402	100E551		
5962-9220806	54FCT157CT	5962-9222309	54FCT821AT	5962-9231501	SL252A	5962-9310501	80486DX-25		
5962-9220901	54FCT161T	5962-9222310	54FCT821AT	5962-9231701	DS1776	5962-9310502	80486DX-33		
5962-9220902	54FCT161T	5962-9222311	54FCT821BT	5962-9231801	35164	5962-9310503	80C186EB-8		
5962-9220903	54FCT161AT	5962-9222312	54FCT821BT	5962-9231901	54LS136	5962-9310901	(SEE DWG)		
5962-9220904	54FCT161AT	5962-9222313	54FCT821CT	5962-9232101	(SEE DWG)	5962-9310902	80C186EB-13		
5962-9220905	54FCT161AT	5962-9222314	54FCT823AT	5962-9232102	(SEE DWG)	5962-9310903	80C186EB-16		
5962-9220906	54FCT161CT	5962-9222315	54FCT823AT	5962-9232103	(SEE DWG)	5962-9311101	10592		
5962-9220907	54FCT161CT	5962-9222316	54FCT823BT	5962-9232201	7C285	5962-9311701	TL040		
5962-9221101	54FCT257T	5962-9222317	54FCT823BT	5962-9232202	7C285	5962-9312001	MAX680		
5962-9221102	54FCT257T	5962-9222318	54FCT823CT	5962-9232701	10E511	5962-9312101	MAX738		
5962-9221103	54FCT257AT	5962-9222319	54FCT823CT	5962-9232702	100E511	5962-9312201	(SEE DWG)		
5962-9221104	54FCT257AT	5962-9222320	54FCT825AT	5962-9233301	87C552	5962-9312202	(SEE DWG)		
5962-9221105	54FCT257CT	5962-9222321	54FCT825AT	5962-9233302	87C552	5962-9312203	(SEE DWG)		
5962-9221106	54FCT257CT	5962-9222322	54FCT825BT	5962-9233501	2936	5962-9312204	(SEE DWG)		
5962-9221201	54FCT399T	5962-9222323	54FCT825BT	5962-9233601	LP2953A	5962-9312301	(SEE DWG)		
5962-9221202	54FCT399T	5962-9222324	54FCT825CT	5962-9233801	16L8	5962-9312302	(SEE DWG)		
5962-9221203	54FCT399AT	5962-9222325	54FCT825CT	5962-9233802	16R8	5962-9312303	(SEE DWG)		
5962-9221204	54FCT399AT	5962-9222326	54FCT825CT	5962-9233803	16R6	5962-9312304	(SEE DWG)		
5962-9221205	54FCT399CT	5962-9222327	54FCT825CT	5962-9233804	16R4	5962-9312501	MAX697		
5962-9221206	54FCT399CT	5962-9222328	54FCT825CT	5962-9233805	16L8	5962-9312601	AD1671		
5962-9221301	54FCT240T	5962-9222329	54FCT825CT	5962-9233806	16R8	5962-9312801	(SEE DWG)		
5962-9221302	54FCT240T	5962-9222330	54FCT825CT	5962-9233807	16R6	5962-9312802	(SEE DWG)		
5962-9221303	54FCT240AT	5962-9222331	54FCT825CT	5962-9233808	16R4	5962-9312803	(SEE DWG)		
5962-9221304	54FCT240AT	5962-9222332	54FCT138T	5962-9233901	CLC114	5962-9312804	(SEE DWG)		
5962-9221305	54FCT240CT	5962-9222333	54FCT138T	5962-9234301	10E516	5962-9312901	AD829		
5962-9221306	54FCT240CT	5962-9222334	54FCT138AT	5962-9234302	100E516	5962-9313001	AD830		
5962-9221401	54FCT245T	5962-9222335	54FCT138AT	5962-9234501	MAX543AM	5962-9313101	AD811		
5962-9221402	54FCT245T	5962-9222336	54FCT138AT	5962-9234502	MAX543BM	5962-9313801	(SEE DWG)		
5962-9221403	54FCT245AT	5962-9222337	54FCT138CT	5962-9234701	AD9696	5962-9313802	(SEE DWG)		
5962-9221404	54FCT245AT	5962-9222338	54FCT138CT	5962-9234702	AD9698	5962-9313803	(SEE DWG)		
5962-9221405	54FCT245CT	5962-9222339	54FCT138CT	5962-9235001	L293D	5962-9313901	MIC5011		
5962-9221406	54FCT245CT	5962-9222340	54FCT138CT	5962-9235101	AHF2815D/CH	5962-9313902	MIC5012		
5962-9221501	54FCT1273T	5962-9222341	54FCT138CT	5962-92A0201	1056A2	5962-9314001	HSSR7111		
5962-9221502	54FCT1273T	5962-9222342	54FCT138CT	5962-92A0301	1056B2	5962-9314101	54ACT899		
5962-9221503	54FCT1273AT	5962-9222343	54FCT138CT	5962-92A0401	1056C	5962-9315001	96002-33		
5962-9221504	54FCT1273AT	5962-9222344	54FCT138CT	5962-92A0501	1056D2	5962-9315301	(SEE DWG)		
5962-9221505	54FCT1273CT	5962-9222345	54FCT138CT	5962-92A0601	1056E	5962-9315302	(SEE DWG)		
5962-9221506	54FCT1273CT	5962-9222346	54FCT138CT	5962-92A0701	1056F	5962-9315303	(SEE DWG)		
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ACT™ Family Chart

Device		A1010B			A1020B			A1225A			A1240A			A1280A			A1415A		A1425 A1425A		A1440A		A1460A		A14100A	
Speed Grades		Std	-1	-2	Std	-1	-2	Std	-1	-2	Std	-1	-2	Std	-1	-2	Std	-1	Std	-1	Std	-1	Std	-1	Std	-1
Gate Array Gates		1,200			2,000			2,500			4,000			8,000			1,500		2,500		4,000		6,000		10,000	
PREP Capacity		TBD			TBD			10.4			16.1			28.7			4.1*		6.8		10.8*		16.3*		27.1*	
Equip. Packages	TTLs	30			50			60			100			200			40		60		100		150		250	
	20-pin PALS	12			20			25			40			80			15		25		40		60		100	
Logic Modules		295			546			431			684			1,232			200		310		564		848		1,377	
Flip-Flops	Dedicated	0			0			231			348			624			264		360		568		768		1,153	
	Max.	147			273			382			568			998			312		435		706		976		1,493	
User I/O		57			69			83			104			140			80		100		140		168		228	
CMOS Process		1.0µm			1.0µm			1.0µm			1.0µm			1.0µm			0.8µm		0.8µm		0.8µ		0.8µ		0.8µ	
Max. Clock (in MHz)		48	57	65	48	57	65	110	120	130	90	110	125	75	90	105	125	150	125	150	125	150	100	120	100	120
PREP Mean Internal Performance (in MHz)	System	TBD	TBD	TBD	TBD	TBD	TBD	38	45	50*	36	42	48	29	35	45*	59*	69*	59	69*	59*	69*	55*	65*	55*	65*
	16-bit Load Counters	TBD	TBD	TBD	TBD	TBD	TBD	43	51	60*	44	52	58	35	41	51*	70*	82*	70	82*	70*	82*	68*	80*	68*	80*
	16-bit Accumulators	TBD	TBD	TBD	TBD	TBD	TBD	27	32	38*	27	32	36	24	28	36*	40*	47*	40	47*	40*	47*	40*	47*	40*	47*
	Datapath	TBD	TBD	TBD	TBD	TBD	TBD	75	90	105*	66	80	100	50	75	85*	125*	150*	125	150*	125*	150*	100*	120*	100*	120*

PREP Capacity is calculated by averaging the number of repetitions of the nine PREP benchmarks. ACT 3 I/O register capacity is not included in these PREP benchmarks. System performance is calculated by averaging the mean internal performance of the nine benchmarks.

ACT Package and Testing Options

Device	A1010B			A1020B			A1225A			A1240A			A1280A			A1415A		A1425 A1425A		A1440A		A1460A		A14100A			
	Std	-1	-2	Std	-1	-2	Std	-1	-2	Std	-1	-2	Std	-1	-2	Std	-1	Std	-1	Std	-1	Std	-1	Std	-1		
Package Type	PLCC	44	X	X	X	X	X	X																			
		68	X	X	X	X	X	X																			
		84				X	X	X	X	X	X	X	X	X				P	P	X	X						
	PFQ	100	X	X	X	X	X	X	X	X	X							P	P	X	X						
		144										X	X	X													
		160													X	X	X			X	X	P	P				
		208																						X	X		
	VQFP	80	X	X	X	X	X	X																			
		84				X	X	X																			
172														X	X	X											
CPGA	84	X	X	X	X	X	X																				
	100							X	X	X							P	P									
	132										X	X	X														
	133																		X	X							
	175																				P	P					
	176													X	X	X											
	207																						X	X			
	256																								P	P	
Temperature and Qualification Levels	Comm Temp	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	P	X	X	P	P	X	X	P	P	
	Ind Temp	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	P	P	X	X			P	P	X	X	
	Mil Temp	X	X		X	X					X	X		X	X					X							
	883 Qual	X	X		X	X					X	X		X	X					P				P			
	Extended Testing				X									X									P		P		

PLCC=Plastic J-leaded Chip Carrier; PQFP=Plastic Quad Flatpack; VQFP=Very Thin (1.0mm) Plastic Quad Flatpack; CQFP=Ceramic Quad Flatpack; CPGA=Ceramic Pin Grid Array; P=Pending; X=Available Today.



Actel Corporation
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 Sunnyvale, CA 94086
1.800.228.3532

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Actel Corporation is the leading supplier of antifuse field programmable gate arrays (FPGA) and associated CAE software development systems and programming hardware. Actel's family of PLICE® antifuse and channeled gate array architecture offers the designer a full range of logic, I/O, speed and cost alternatives... the best price/performance match in the industry.

Actel's CAE software, including Designer for Windows, provides full design capabilities including 100% automatic place and routing and a guaranteed gate utilization of 85%. With Actel FPGAs you don't waste valuable engineering time or speed/logic capacity. It's the right device for your application.



Presentations use or include the most recent uncertified (*) PREP PLD Benchmark data which was measured according to Benchmark Suite #1, Version 1.2, dated 3-28-93. Any analysis is not endorsed by PREP.

Actel

American Microsystems, Inc.

2300 Buckskin Road, Pocatello, Idaho 83201 • (208) 233-4690

Fax: (208) 234-6795 or 234-6796



Digital ASICs

The AMI Digital ASIC product portfolio includes both Gate Array and Standard Cell 0.8-micron and 1.0-micron devices. The 0.8-micron Gate Arrays (AMI8GX) and the 0.8-micron Standard Cells (AMI8S) are among the fastest ASICs available today (see spec below).

Gate Arrays

AMI's series of 0.8-micron and 1.0-micron gate arrays exploit a proprietary power grid and track routing architecture on a compact, channelless, sea-of-gates design to provide one of the highest performance, cost effective array products available today.

AMI offers gate array in 0.8-micron (AMI8GX series) triple or double metal CMOS processes. The 0.8-micron gate array useable gates range from 2,630 to 464,350 (see attached table).

Standard Cells

AMI's "AMI8S" standard cell family continues the AMI leadership tradition of combing true compact building block standard cells and megacells with high speed memory and datapath functions. Using the 0.8-micron high performance CMOS process, the AMI8S product can offer a lower cost alternative to gate array for high volume applications.

AMI8GX Gate Array Family

Part Number	Raw Gates	Usable		Available I/O Cells	Available Bond Pads ²
		Triple Metal	Double Metal		
AMI8G663	663,350	464,350	331,700	732	528
AMI8G392	392,160	274,500	196,100	564	424
AMI8G247	246,790	172,750	123,400	448	336
AMI8G201	200,740	140,500	100,400	404	304
AMI8G142	141,590	99,100	70,800	340	256
AMI8G93	92,740	64,900	46,400	276	208
AMI8G65	65,420	45,800	32,700	232	176
AMI8G55	54,700	38,300	27,400	212	160
AMI8G44	44,460	31,100	22,200	192	144
AMI8G34	33,860	23,700	16,900	168	128
AMI8G21	20,800	14,550	10,400	132	100
AMI8G15	14,960	10,470	7,480	112	84
AMI8G9	8,900	6,230	4,450	88	68
AMI8G5	5,250	3,670	2,630	68	52

Note 1: Exact usable gate count will vary depending on design interconnect and macro selection.

Note 2: 24 optional fixed power pins (6 in each corner) are not included in this number.

AMI8S Standard Cell Family Overview

Feature	Description	Comment
Complexity	Up to 700,000 gates Up to 410,00 gates	50% memory, 50% megacell and user logic 100% user defined logic
I/O Count	Up to 512 pins Up to 585 pins	Test equipment limit; signal pins only Die size limit; includes power supply pins
Delay Time	Internal Gate 169ps (Fanouts=1, L=0mm) 205ps (Fanout=2, L=2mm)	2 input NAND gate, T=25°C, Vdd=5V
	Input Buffer 725ps (Fanout=2, L=2mm)	CMOS Input buffer, T=25°C, Vdd=5V
	Output Buffer 1.17ns(CI-15pf)	CMOS Output buffer, T=25°C, Vdd=5V
Megacells	MG29C01, MG29C10, MG65C02 MG80C85, MG82Cxx, MGMC51	Functionally compatible with popular standard designs, soft macrocells allow user modifications.
Datapath Synthesizers	xx by yy multipliers, adders, subtractors, FIFOs, barrel shifters	See soft datapath library table.
Memory Compilers	syn. single port RAM (over 400 sizes) syn. dual port RAM (over 2000 sizes) sync. ROM (over 8000 sizes) asynchronous single port RAM	See memory compiler library table Under development

Note 1: Compact memory arrays increase gate count on an equivalent gate basis

AMI8GX/AMI8S Features

- **3V, 5V, and combined 3V/5V operation:** Each individual pad can be driven independently by a 3V or 5V supply. 3V to 5V and 5V to 3V level shift is available in the I/O cells. The core can be either 3V for low power or 5V for high speed.
- **Excellent Performance:**
 - 210pS delay (FO+2) for a 2-input NAND gate.
 - 310 MHz maximum toggle rate on clocked flip-flops (AMI8S)
 - 260 MHz maximum toggle rate on clocked flip-flops (AMI8GX).
- **Operating Temperature equals -55 to 125°C:** Few competing products allow this range.
- **1 to 16mA drive per single I/O cell:** Selectable I/O drive with controllable slew rate. Extra I/O cells allow combined I/O drive up to 96mA without reducing pad count.
- **Clock tree generation:** ≤400 ps clock skew (fan out=3500 at 80 MHz).
- **Automatic test program generation:** Includes scan macros (NETSCAN™) for high fault coverage.
- **JTAG Boundary Scan Macro Support**
- **Cost driven architecture:**
 - Offers both 2 and 3 level metal interconnect to provide the lowest user cost for the number of gates and pads required.
 - Provides 6 extra power pads per corner to preserve more I/O cells for signal use.
- **Wide range of packaging:** Full QFP and LCC line, DIPs and PGAs, individual die and ball grid array. Burn-in capability as needed.
- Full operating voltage range from 2.7V to 5.5V
- ESD protection ≥ 2kV, latchup > 100mA
- Power equals 3.1 uW/MHz/cell (Standard Cell AMI8S)
Power equals 3.2 uW/MHz/cell (Gate Array AMI8GX)
- **AMI libraries support most common workstations including:**
 - Cadence™
 - Viewlogic®
 - Valid®
 - Ikos® simulation accelerator (AMI's sign-off simulator)
 - Synopsys®
 - Mentor Graphics®
 - Verilog® simulation

Soft Datapath Library (xx by yy)

Name	Function
MGAxxyDv	Adder
MGAxxyEv	Adder-subtractor
MGBxxyAv	Arithmetic/barrel shifter
MGBxxBv	Barrel shifter
MGBxxCv	Arithmetic shifter
MGCxAv	2-function binary comparator
MGCxvBv	6-function comparator
MGDXxAV	Decrementer
MGFxxvC1	Latch-based FIFO
MGlxAv	Incrementer
MGlxvBv	Incrementer/decrementer
MGMxxyDv	Signed/unsigned multiplier
MGMxxyEv	Multiplier-accumulator
MGSoxxyAv	Signed/unsigned subtractor



CMOS EEPLDs

Electrically erasable programmable logic devices are ideal for small and medium-scale integration system design in low-volume production. Our lowest development cost ASICs, these devices deliver plenty of performance and offer a surprising measure of versatility and customer-control.

Built using our unique PEEL (Programmable Electrically Erasable Logic) technology, these PLDs are user-programmable, so there's no customer design and development risk. You may use industry-standard PLD programmers to configure the macrocells and, if necessary, to repeatedly erase and reconfigure them.

PEEL™ is a trademark of International CMOS Technology, Inc.

CMOS ROMs General Description

The AMI family of ROMs are mask programmable and organized by 8 or 16 bits. The devices are fully TTL compatible on all inputs and outputs and use a single +5V power supply. There are no requirements for clocks or refreshing, because they are static in operation. The three-state outputs facilitate memory expansion by allowing the outputs to be OR-ties to other devices. The control pin function and active level as well as the memory contents, are user defined. AMI is the largest U.S ROM supplier offering a full range 16K-16 Meg of ROM products.

Telecommunications Products

Station products

- DTMF Tone Generators
- Digital Time/Space Crosspoint Switches

Modems, Filters and PCM Products

- Bell 103/V.21 Single Chip MODEM
- Single Frequency Tuneable Bandpass Filter
- Programmable Low Pass Filter
- Programmable High Pass Filter

- A-LAW Synchronous Combo CODEC w/Filter
- u-LAW Synchronous Combo CODEC w/Filter

Display Driver Circuits

- 32-bit Driver

Mixed Signal Solution

AMI pioneered the development of the application specific integrated circuit in the late 1960's, and was one of the first companies to implement analog functions in ASICs. When you work with the engineers at AMI, you tap into true in-depth expertise in analog and mixed-signal design. The engineers at AMI have implemented hundreds of analog and mixed-signal ASICs over the past twenty years.

Cell-Based Custom Design

Flexibility, Efficiency and Security

Cell-base custom chips integrate the greatest possible number of functions into a given area, contribute to product differentiation, and enhance security, since they are difficult to copy. Cell-based custom circuits are ideal for high-speed requirements, special interfaces, very high volume production, and mixed-signal applications.

AMI's cell-based custom design methodology allows sys-

tem designers ultimate flexibility in realizing mixed-signal ASICs. AMI's Mixed Signal Design Solutions (MSDS) enables customers to design and simulate mixed-signal ASICs at their own facilities. MSDS can also be used in combination with AMI designed megacells, custom cells and existing standard cells.

CMOS PLD Family

Part No.	Architecture	Complexity	Speed	Replaces
18CV8	20pin E ² PLD	74 product terms x 38 input array	10/15/15ns Tpd	Bipolar PLDs
20CG10	24 pin E ² PLD	92 product terms x 44 input array	15/25ns Tpd	20VS, 20G10
22CV10Z	24 pin E ² PLD	132 product t terms x 44 inputs	25 ns Tpd	Bipolar PLDs Zero power mode
22CV10	24 pin E ² PLD	132 product terms x 44 inputs	15/25ns Tpd	Bipolar PLDs
PEEL153	20 pin E ² PLD	42 product terms x 36 inputs 10 sum terms x 32 product terms	30ns Tpd	Bipolar PLS 153
PEEL 173	24 pin E2PLD	42 product terms x 44 inputs 10 sum terms x 32 product terms	30ns Tpd	Bipolar PLS173
PEEL 253	20 pin E2PLD	42 product terms x 36 inputs 20 sum terms x 42 product terms	30ns Tpd	Bipolar PLS 153 PEEL153
PEEL 273	24 pinE2PLD	42 product terms x 44 inputs 20 sum terms x 42 product terms	30ns Tpd	Bipolar PLS173 PEEL173
PA7024	24 pin E2PLD	Over 80 sum of product terms	13/20ns Tpd	MULTI-PLDs

Military/Aerospace Applications

AMI has the capability to fully service your military/aerospace or other High Reliability ASIC requirements. AMI's ASIC manufacturing is certified to MIL-I-38535(QML) and MIL-STD-883, while also offering Hi-Rel Plastic processing. A full compliment of ceramic, plastic, and TAB packaging is available for these products. AMI's Hi-Rel Standard Products include MIL-STD-1553 and ARINC-629 Databus Terminals. Please also inquire about our active flat panel display driver products.

ASIC Foundry

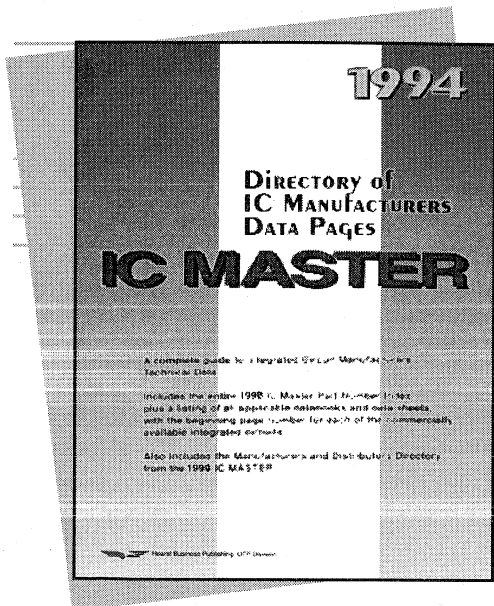
AMI offers it's ASIC foundry customers a unique benefit in process capability and variability to match the need of your design. Quality in manufacturing is based on the Statistical Process Control customized to our manufacturing which includes a broad spectrum of CMOS and NMOS processes. Our expertise in SPC is continuing to optimize each individual process step with a real time monitoring procedure for operators and engineers to assure qualitative and quantitative measures. This approach has qualified AMI as the first ASIC company approved for QML. To continue our effort we are currently in the process of becoming ISO 9000 qualified.

ASIS Division-Application Specific Integrated Systems

The ASIS division of American Microsystems Inc. was chartered in 1990 with the mission to offer AMI's customers total system solutions beyond the standard packaged silicon. Since conception, the ASIS division has developed system solutions utilizing innovative MCM technologies (MCM-L, MCM-C, MCM-D).

The ASIS division has been a member of the PCMCIA for the past two years, and offers a full line of PCMCIA/JEIDA standard memory cards.

American Microsystems, Inc.



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The pages that follow in IC Master contain product selection trees/guides that offer a quick and efficient way to select a group of products that meet an application's primary specifications. The selection trees and guides that follow represent the major product categories found in Analog Devices' comprehensive set of reference manuals. Analog Devices also has available a full range of JAN, SMD, and 883 military products (Class S and B). Contact factory or your nearest sales office for more information. Listed below are the 1992/1993 reference manuals, each followed by its major categories.

Six Volumes with Complete Technical Data on High Performance Amplifiers, Data Converters, Analog Signal Processing, Signal Conditioning, Audio/Video Products, Digital Signal Processing Components and Related Products

DATA CONVERTER PRODUCTS REFERENCE MANUAL (VOLUME I)

D/A Converters
Audio/Video Products
S/D Converters
Communications Products
Digital Panel Meters
Digital Signal Processing Products
Bus Interface & Serial I/O Products
Application Specific ICs
Power Supplies

DATA CONVERTER PRODUCTS REFERENCE MANUAL (VOLUME II)

A/D Converters
Audio/Video Products
V/F & F/V Converters
Sample/Track-Hold Amplifiers
Switches & Multiplexers
Voltage References
Data Acquisition Subsystems
Analog I/O Ports
Application Specific ICs
Power Supplies

AMPLIFIER REFERENCE MANUAL

Operational Amplifiers
Comparators
Instrumentation Amplifiers
Isolation Amplifiers
Mixed-Signal ASICs
Power Supplies

SPECIAL LINEAR REFERENCE MANUAL

Analog Multipliers/Dividers
Signal Compression Components
RMS-to-DC Converters
Mass Storage Components
ATE Components
Special Function Components
Matched Transistors
Temperature Sensors
Signal Conditioning Components
Automotive Components
Digital Signal Processing Products
Mixed Signal ASICs
Power Supplies

MILITARY/AEROSPACE REFERENCE MANUAL

Data Converters
Amplifiers
Analog Signal Processing
Voltage References
Switches and Multiplexers
Data Acquisition Subsystems
Digital Signal Processing Components
Special Function Components
Space Qualified Products
Radiation Information

APPLICATIONS REFERENCE MANUAL

A compilation of application notes, technical articles and design tutorials spanning 22 subject areas including:
Audio and Video Circuits
A/D and D/A Conversion
Data Acquisition
Signal Conditioning
Digital Signal Processing
Sigma-Delta Conversion

For literature, contact the Analog Devices Literature Distribution Center: telephone (800) 262-5643 or fax (617) 821-4273.

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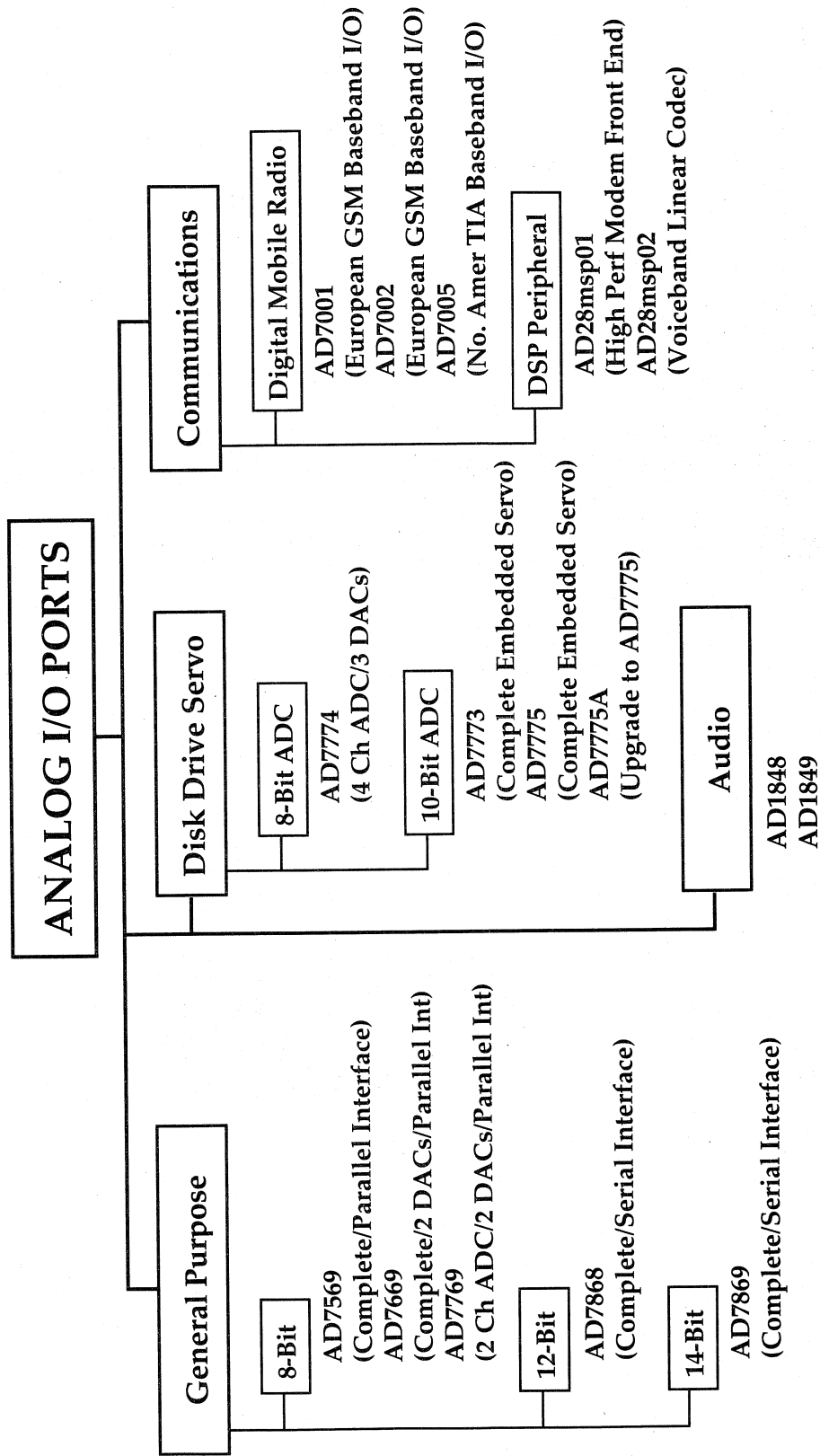
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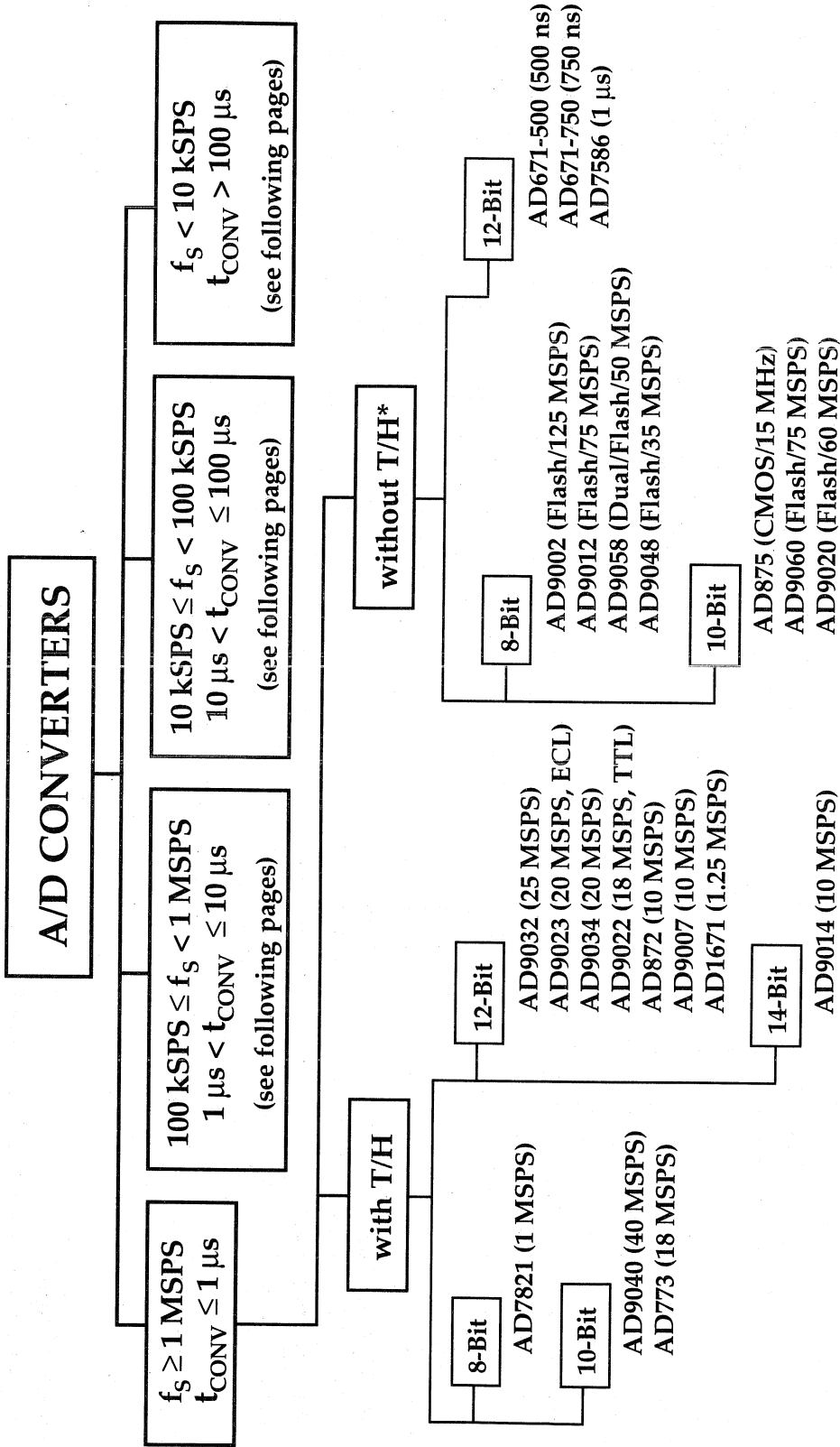
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Analog I/O Ports — Selection Tree



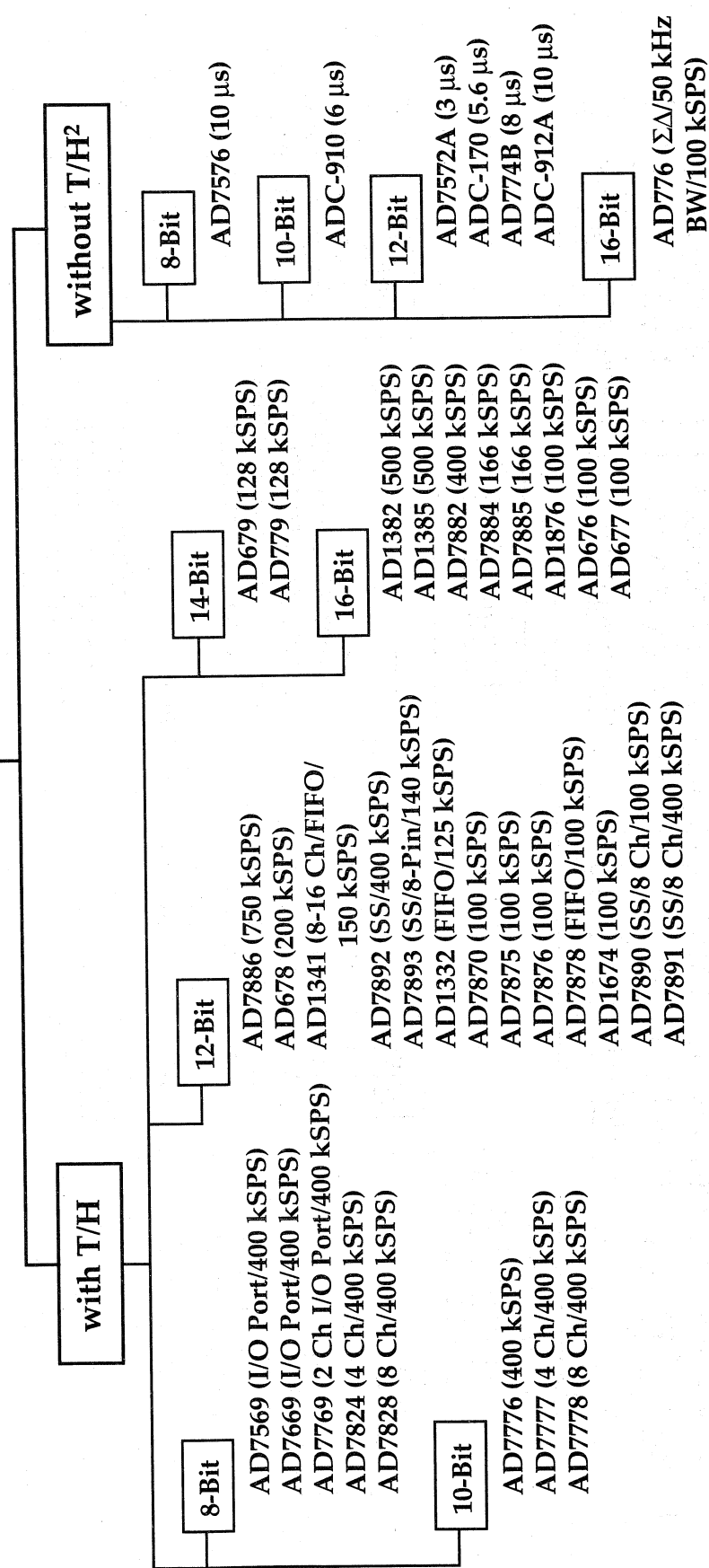
Analog-to-Digital Converters — Selection Trees



*Flash ADCs generally do not require a T/H, however performance can be enhanced with the AD9101 Sampler™.



A/D CONVERTERS
 $100 \text{ kSPS} \leq f_s < 1 \text{ MSPS}$ ¹
 $1 \mu\text{s} < t_{\text{CONV}} \leq 10 \mu\text{s}$

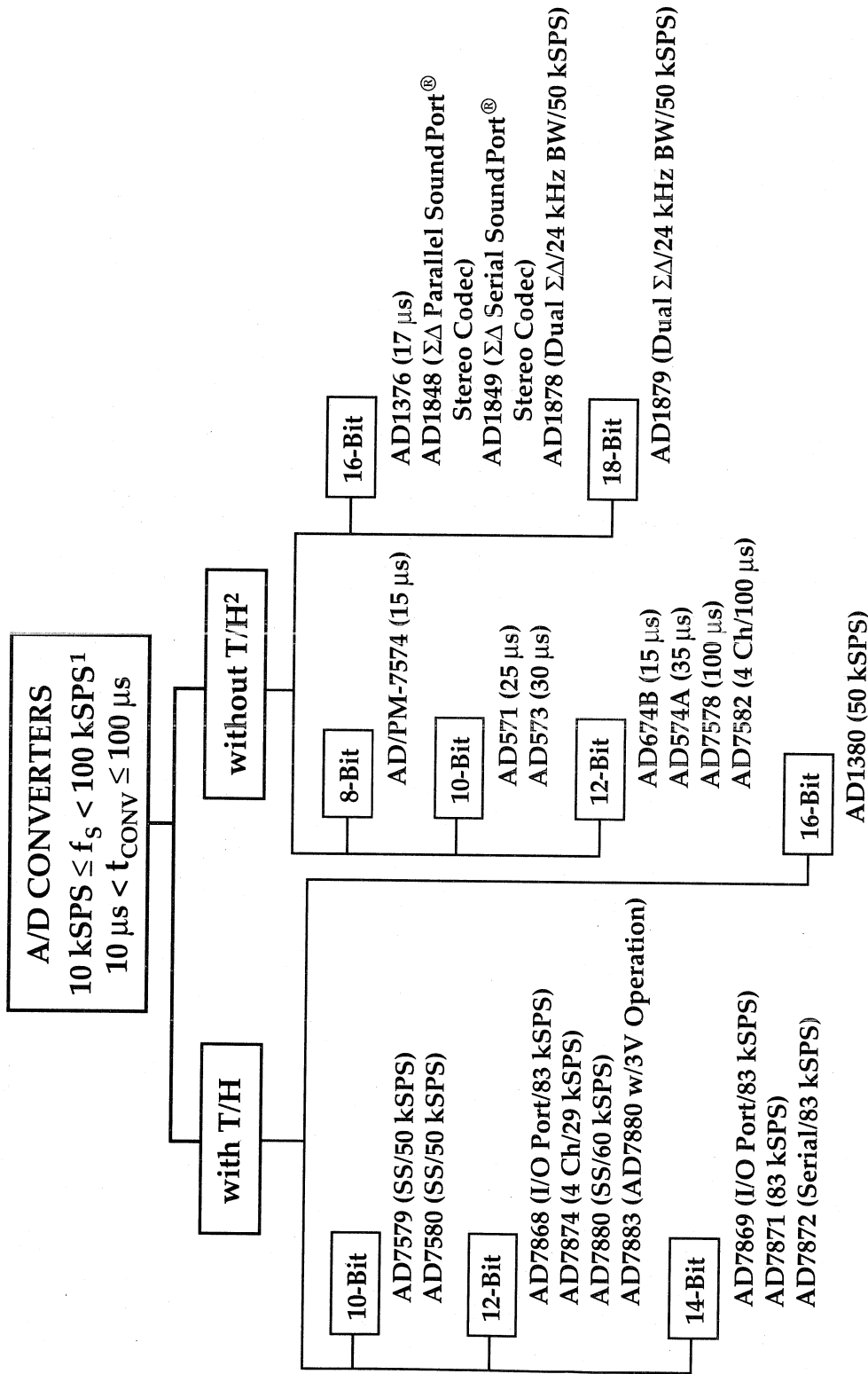


SS – Single Supply

¹Primary selection of $\Sigma\Delta$ ADCs is by output data rate in kSPS.

² $\Sigma\Delta$ ADCs generally do not require a T/H.

Analog-to-Digital Converters — Selection Trees

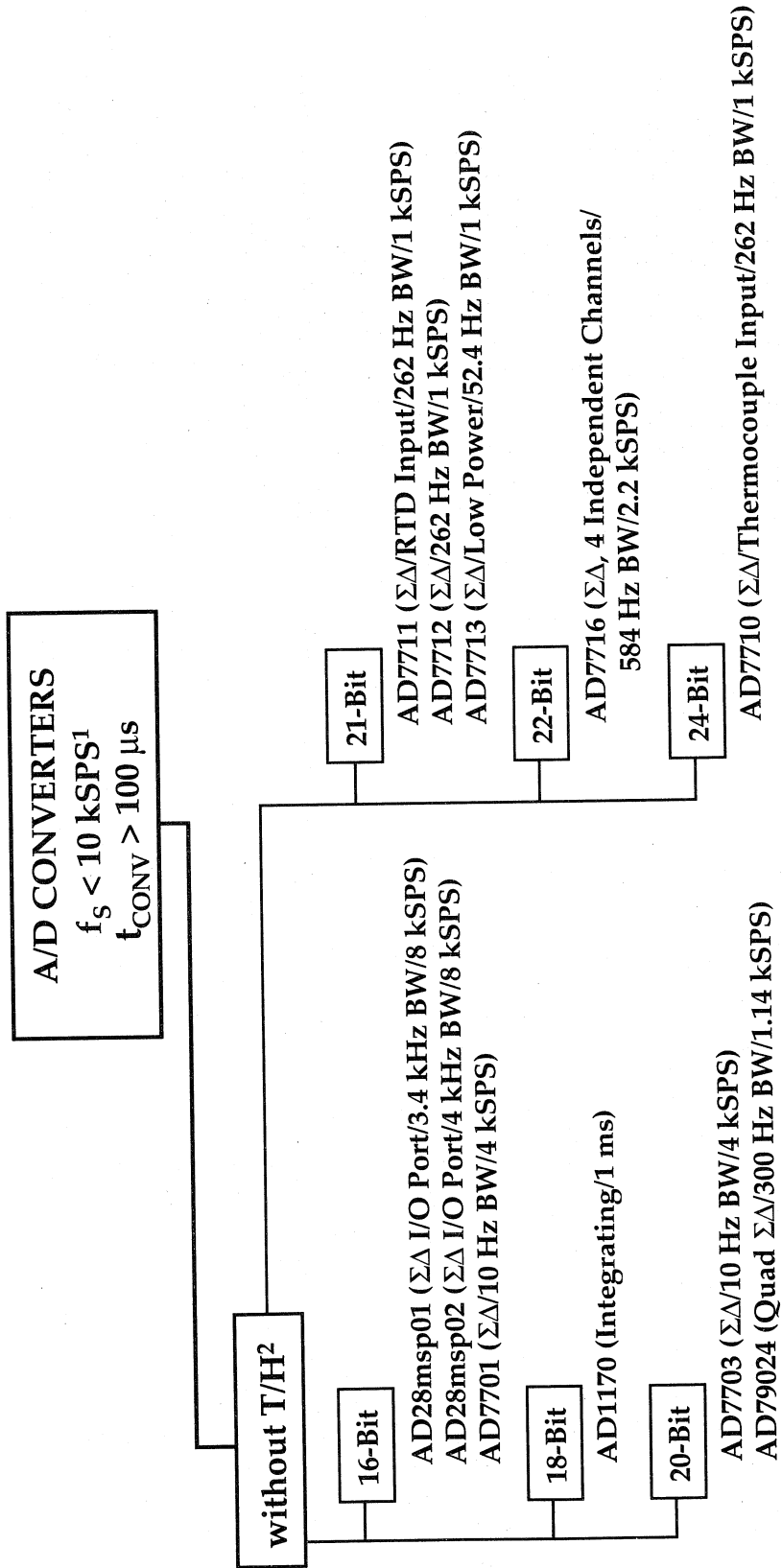


SS - Single Supply

¹Primary selection of $\Sigma\Delta$ ADCs is by output data rate in kSPS.

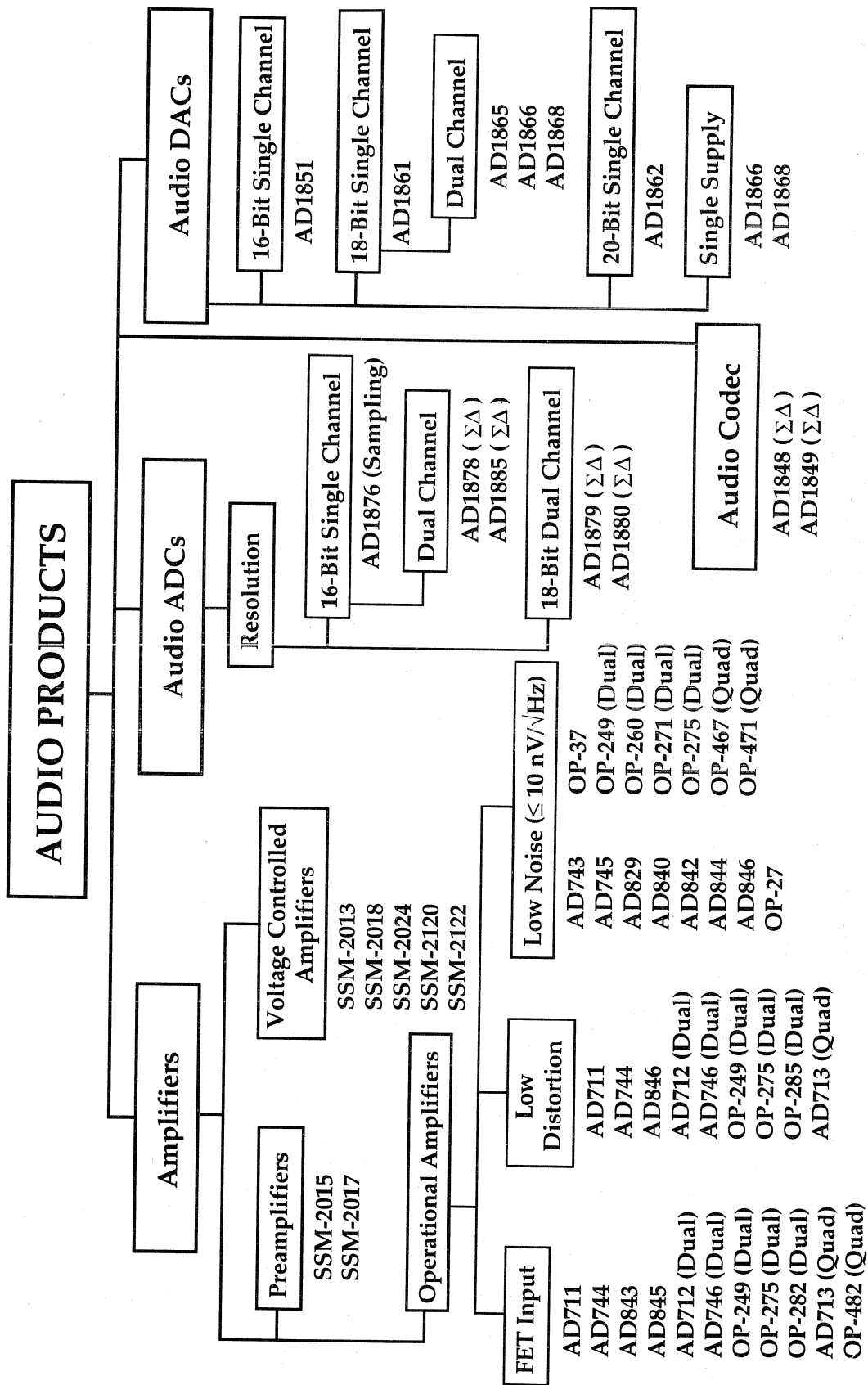
² $\Sigma\Delta$ ADCs generally do not require a T/H.



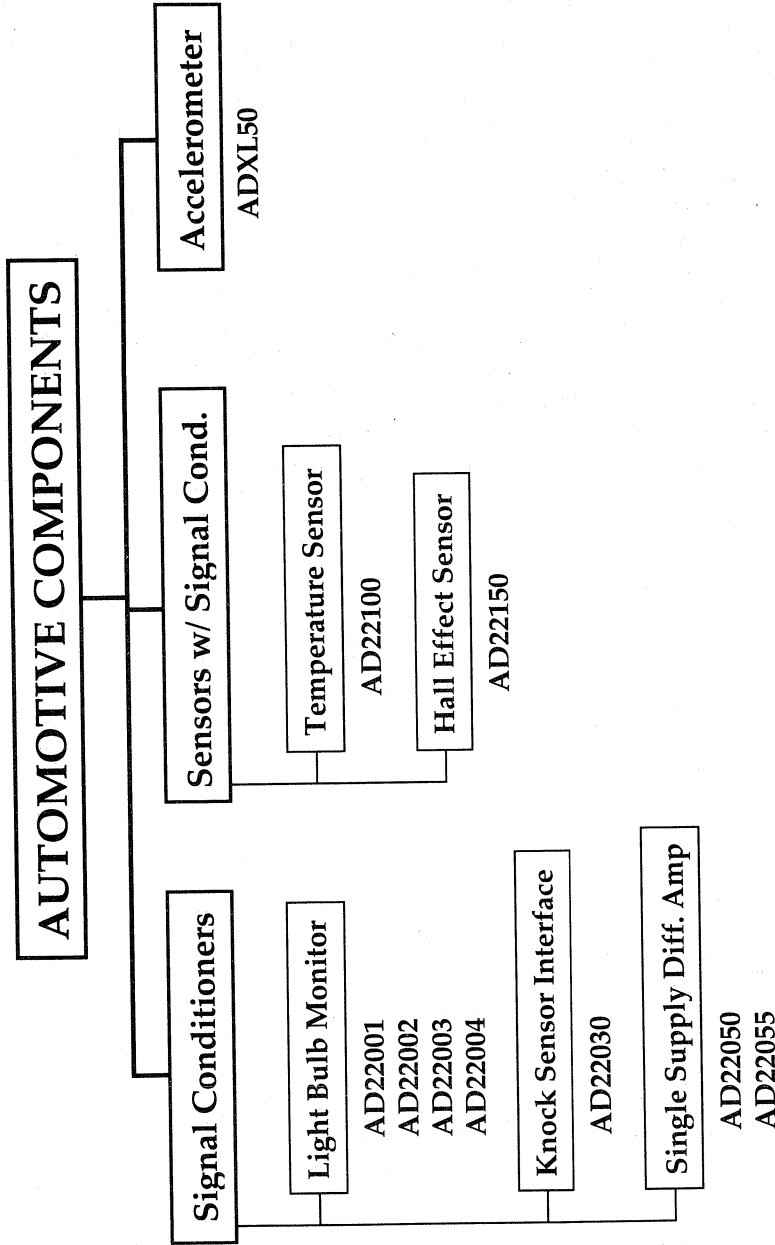


¹Primary selection of $\Sigma\Delta$ ADCs is by output data rate in kSPS.
² $\Sigma\Delta$ ADCs generally do not require a T/H.

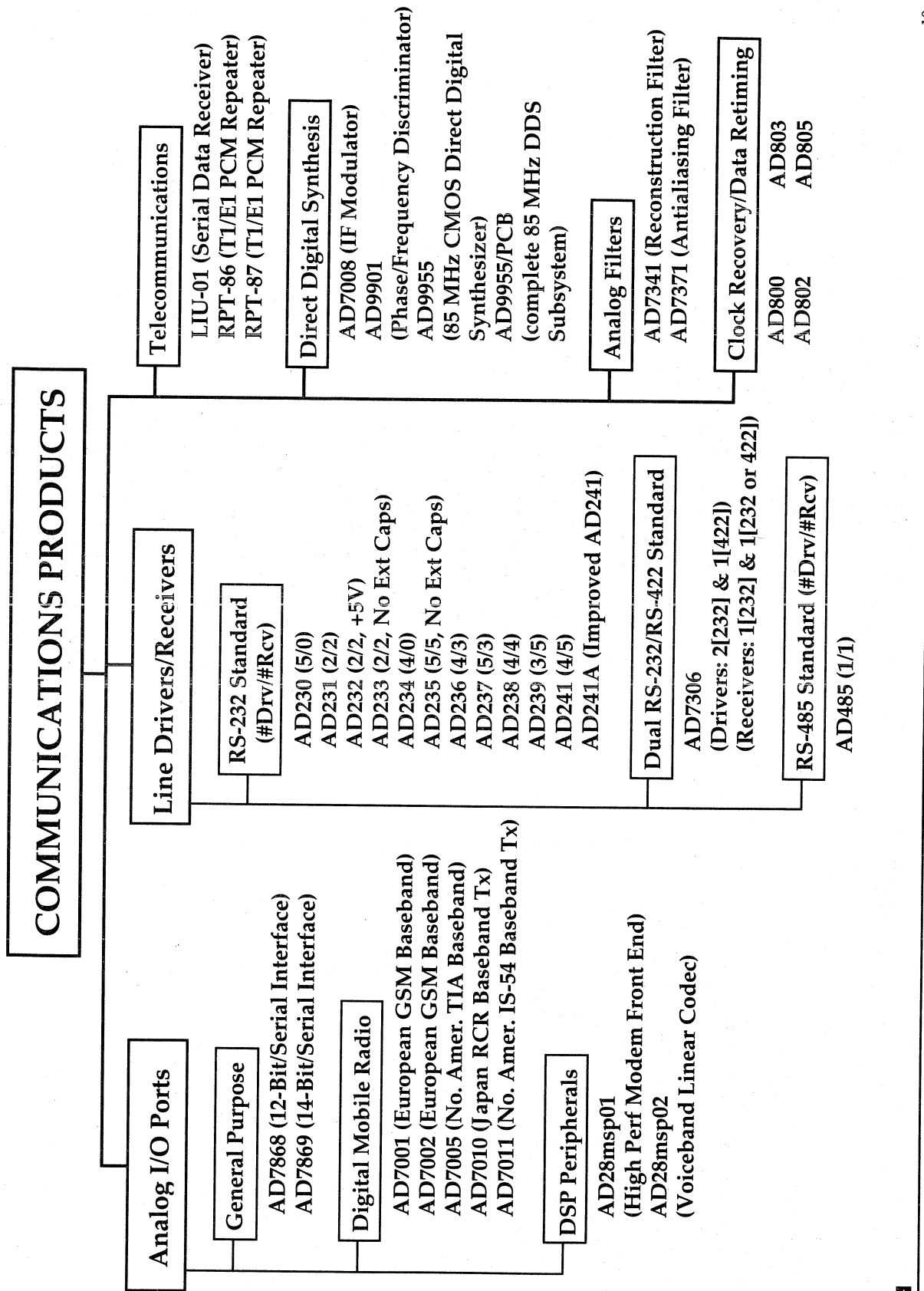
Audio Products—Selection Tree



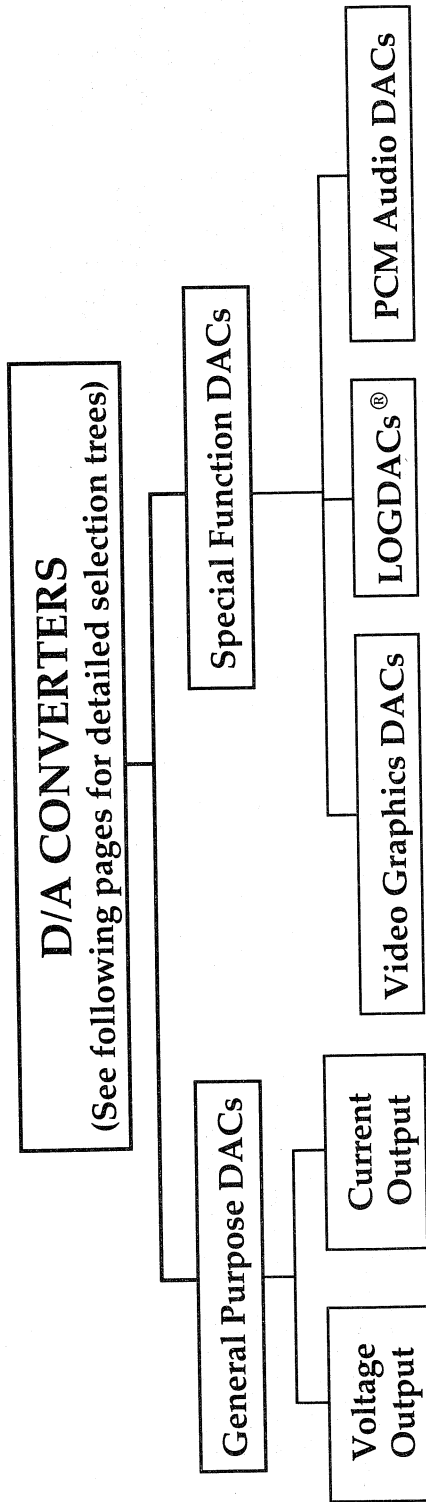
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Communications Products — Selection Tree

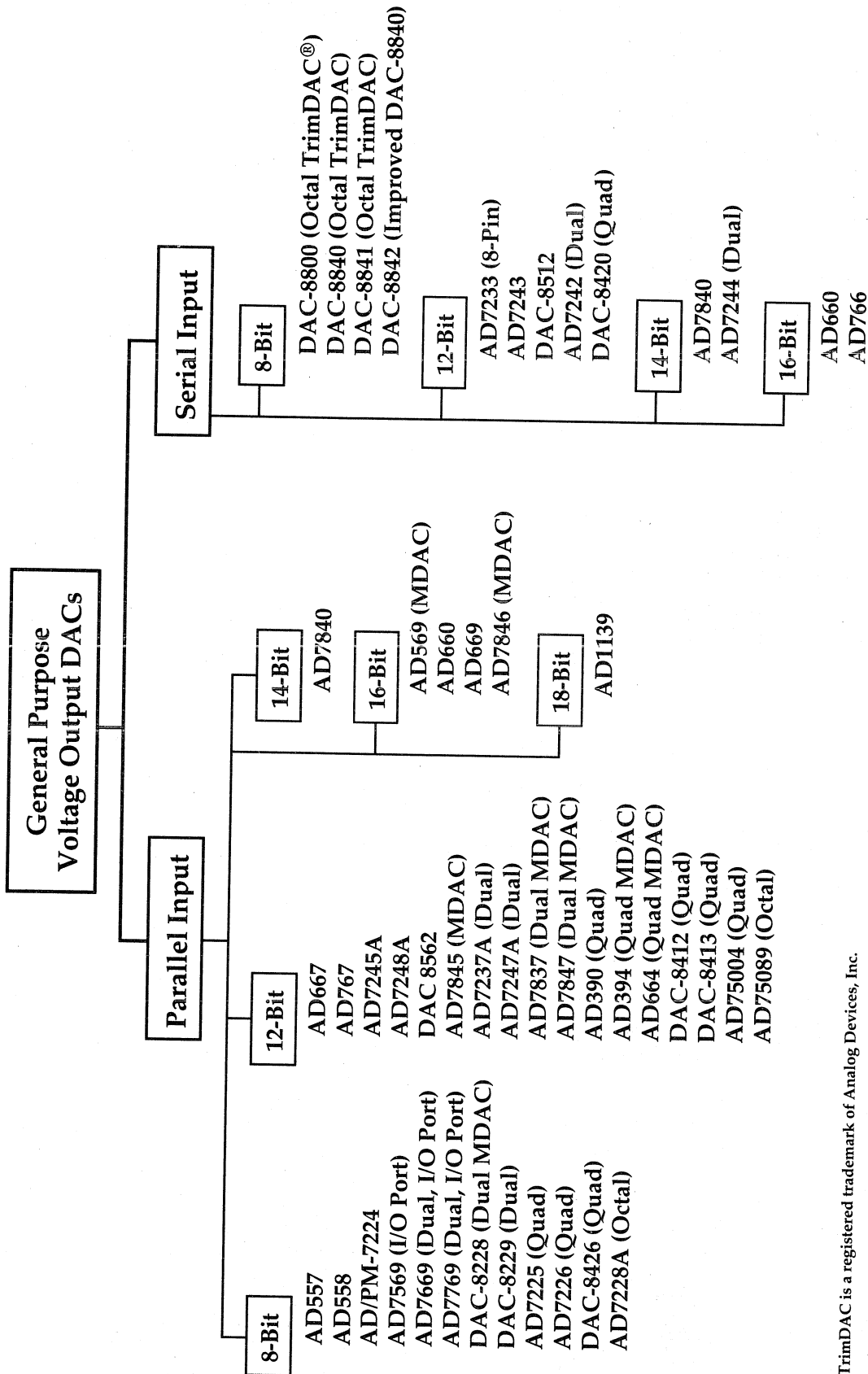


Digital-to-Analog Converters— Selection Trees



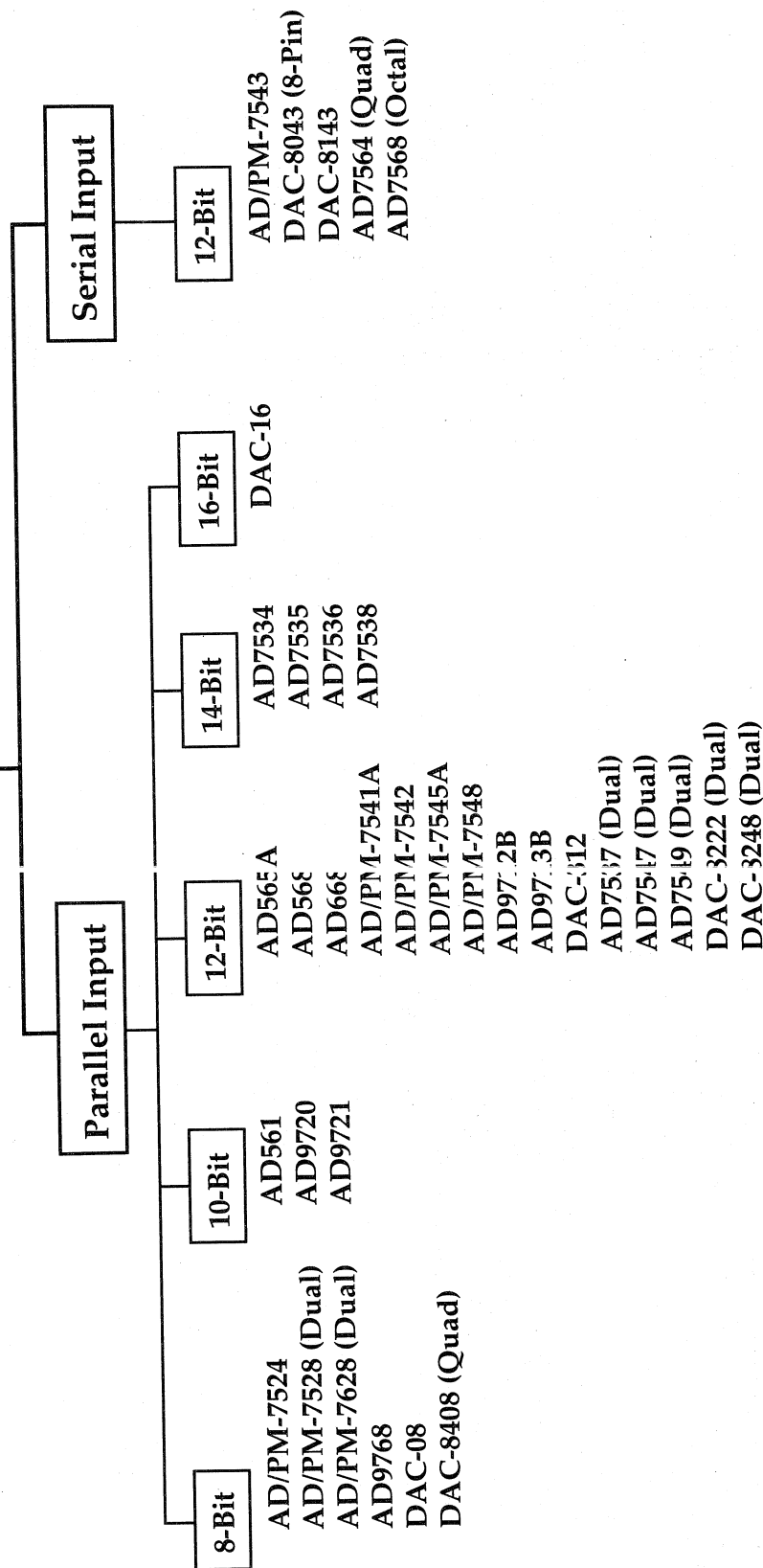
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Digital-to-Analog Converters — Selection Trees

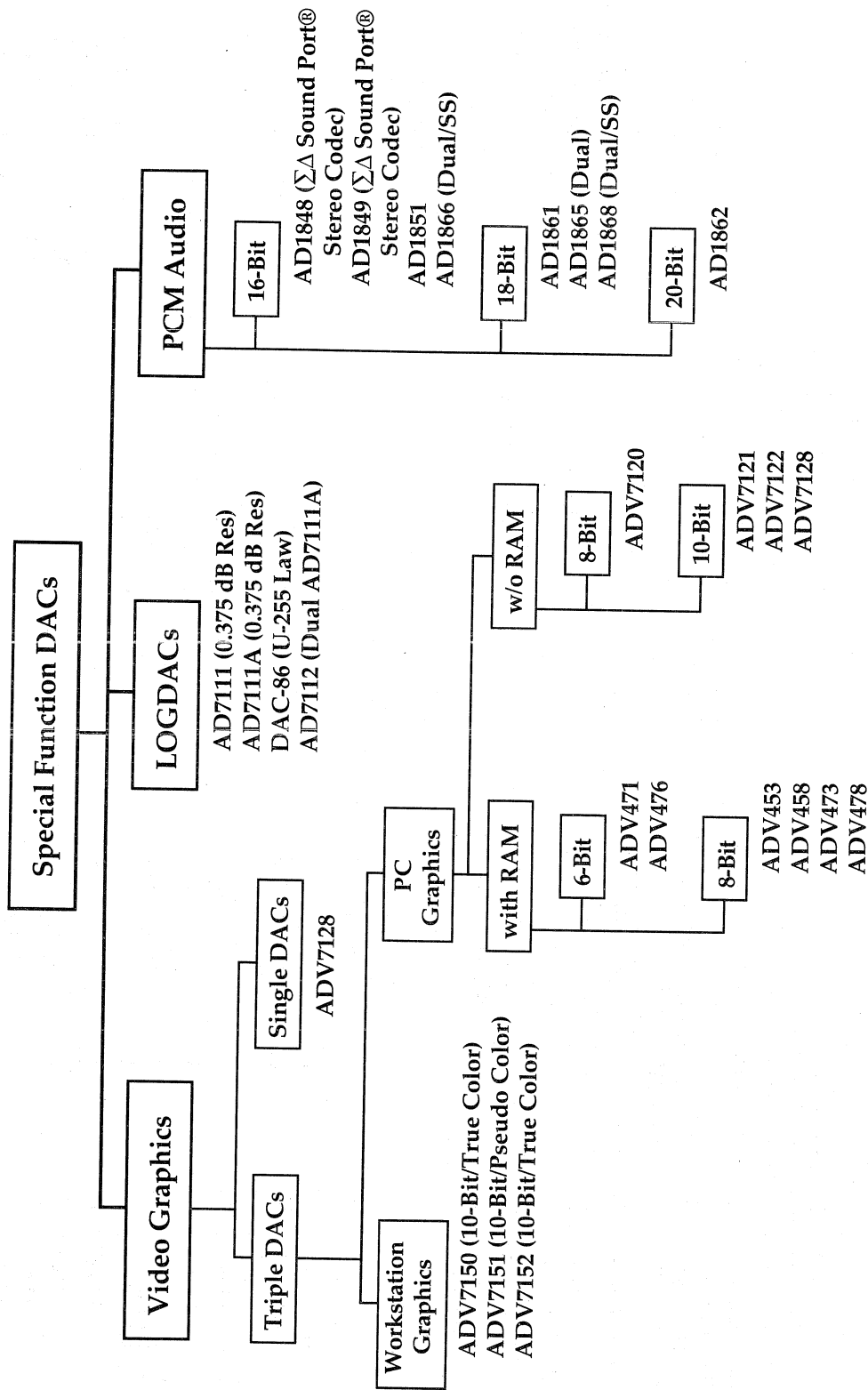


TrimDAC is a registered trademark of Analog Devices, Inc.

**General Purpose
Current Output DACs**



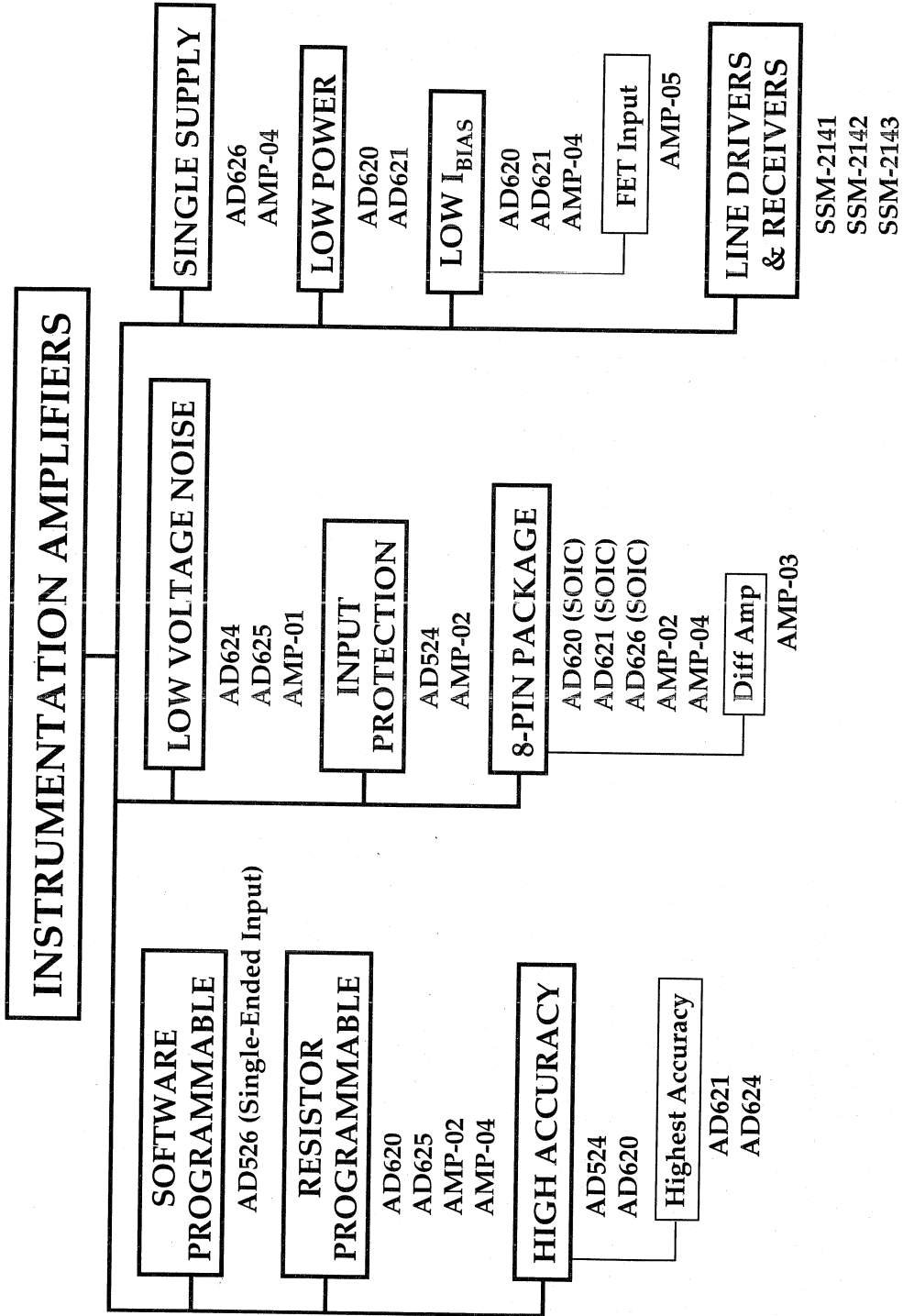
Digital-to-Analog Converters — Selection Trees



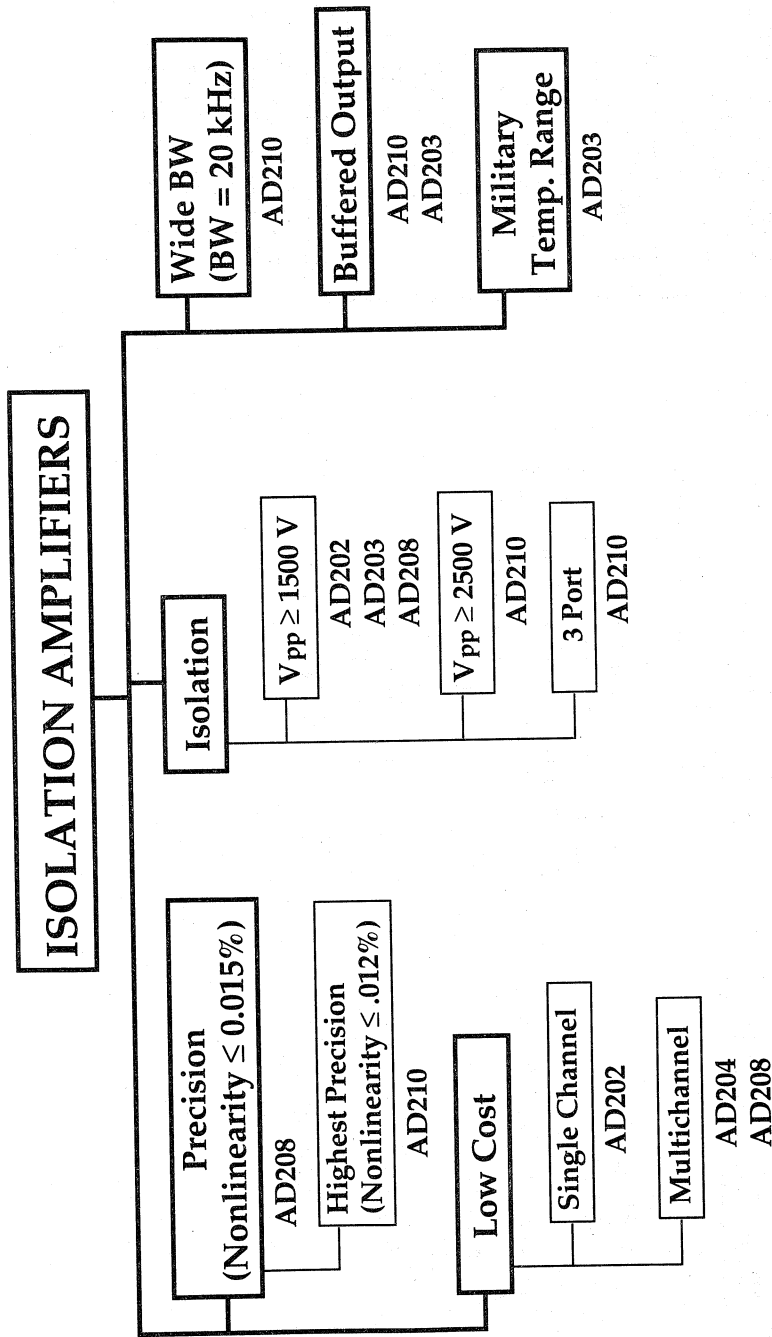
SS - Single Supply

*VGA is a trademark of International Business Machines Corp.
SOUNDPORT is a trademark of Analog Devices, Inc.

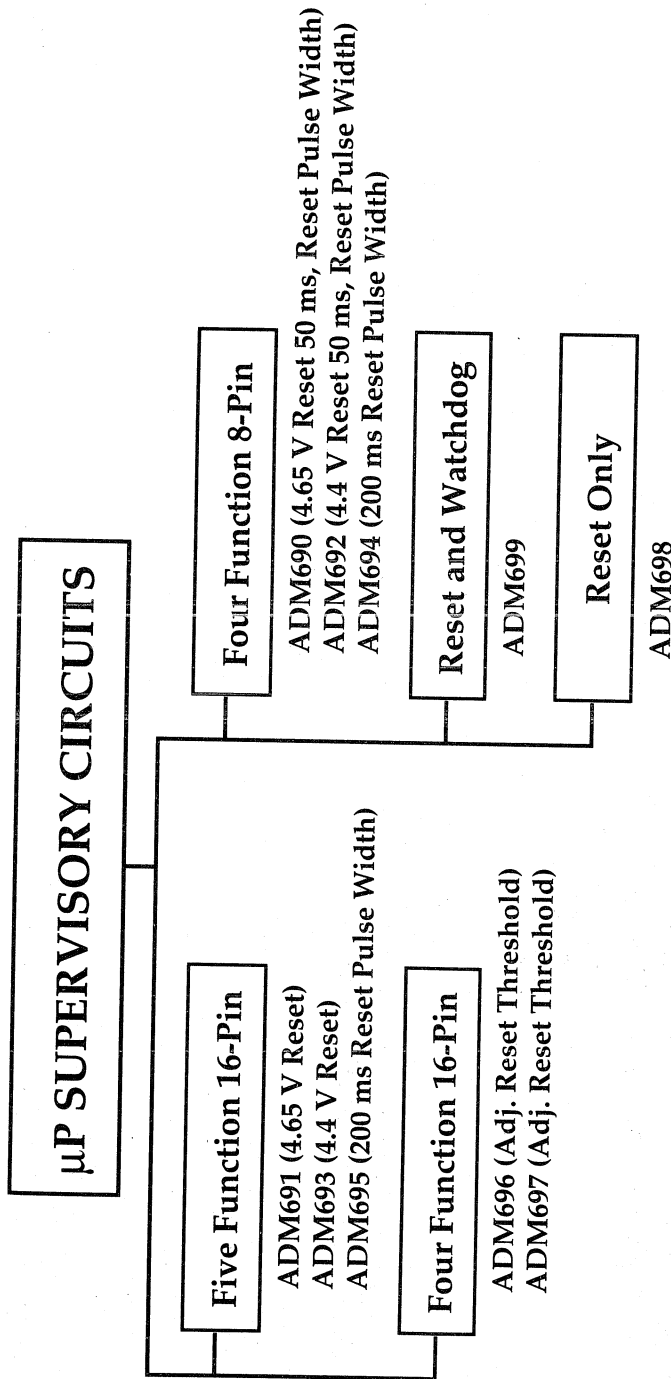
Instrumentation Amplifiers — Selection Tree



Isolation Amplifiers—Selection Tree



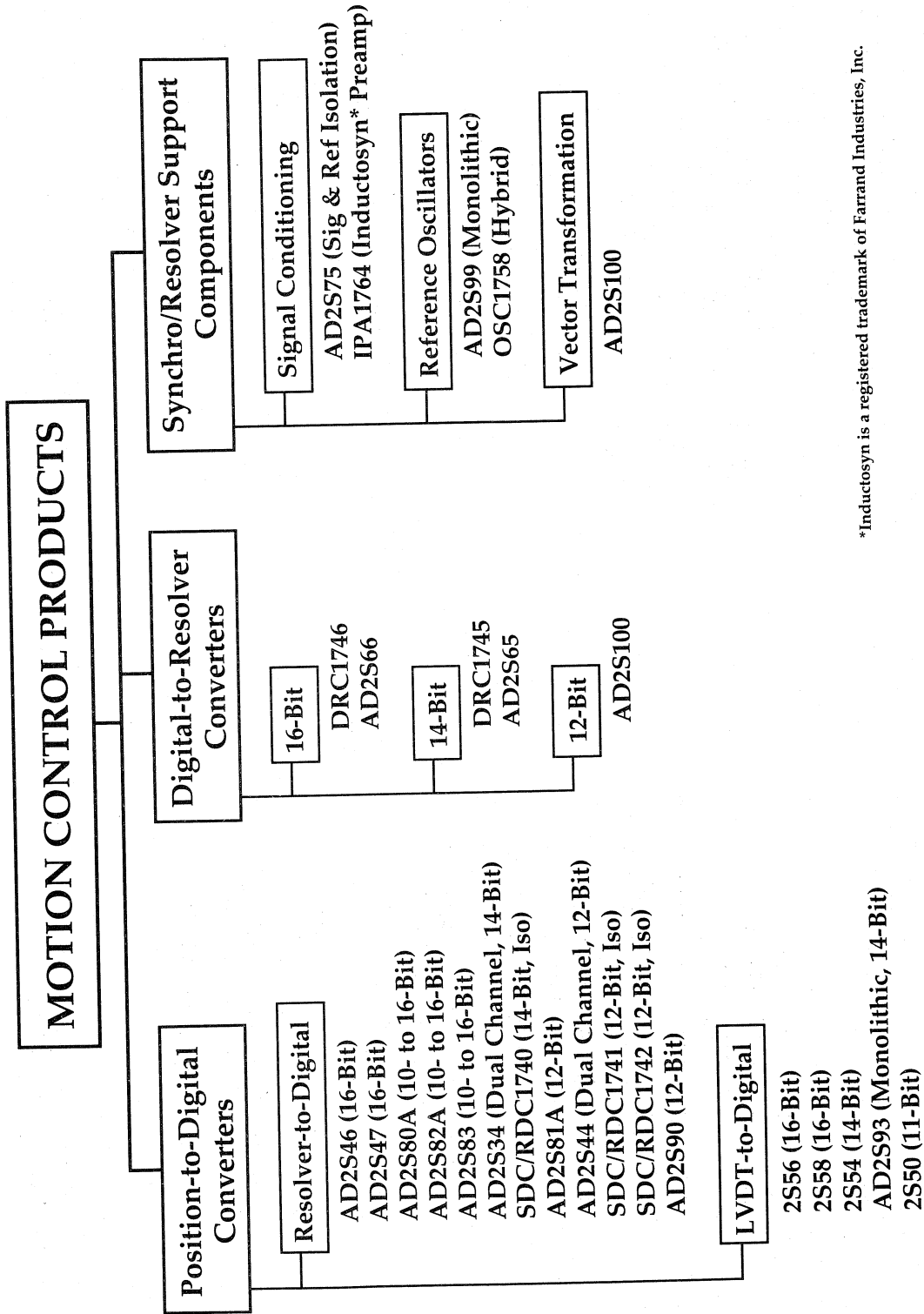
Microprocessor Supervisory Circuits—Selection Tree



Function Table:

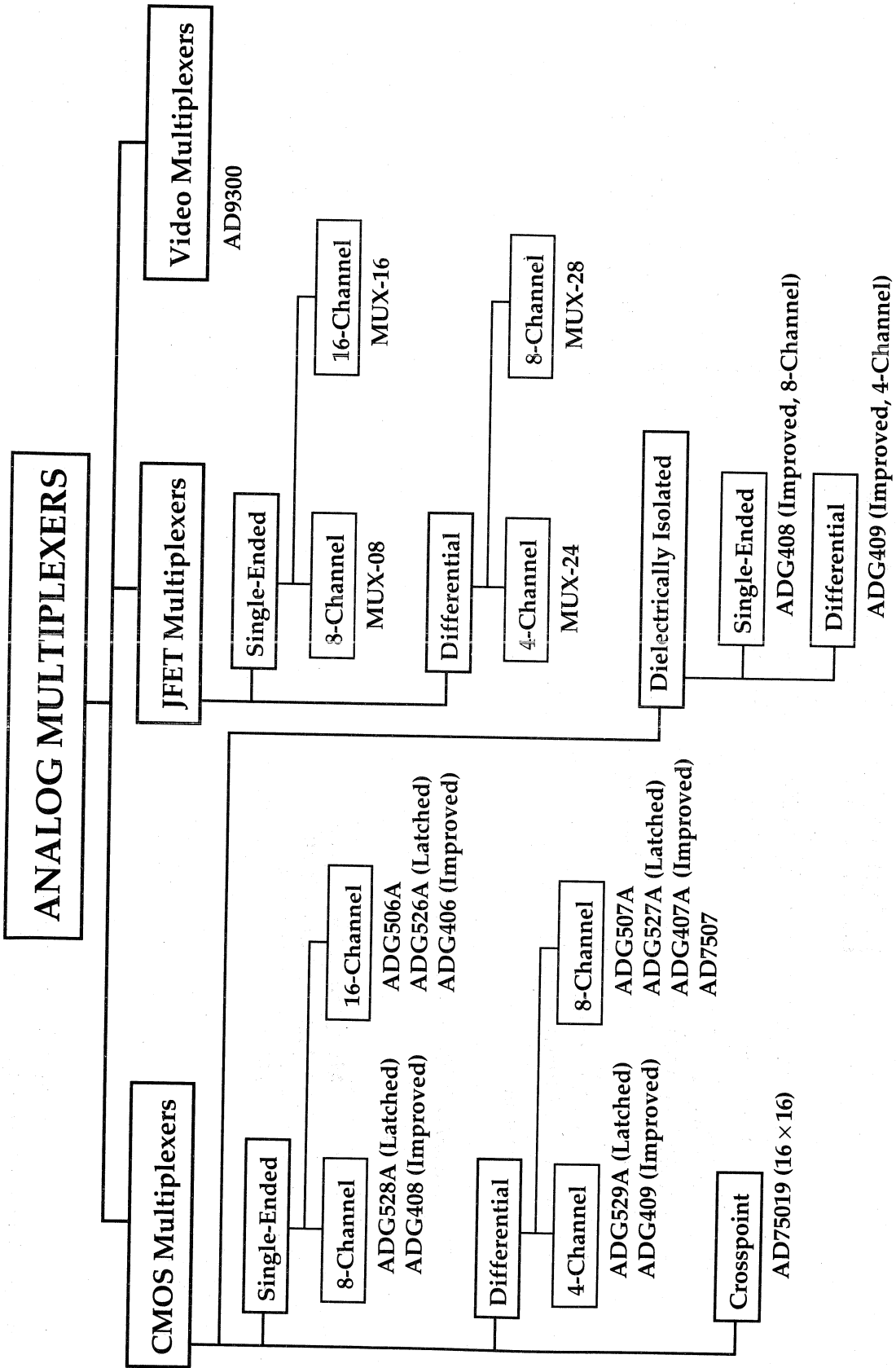
ADM690-ADM699 Functions	ADM690	ADM691	ADM692	ADM693	ADM694	ADM695	ADM696	ADM697	ADM698	ADM699
Fixed Power Up/Down Reset	✓	✓	✓	✓	✓	✓	✓		✓	✓
Variable Power Up/Down Reset							✓	✓		
Battery Backup Switching	✓	✓	✓	✓	✓	✓	✓			
Watchdog Timer	✓	✓	✓	✓	✓	✓	✓	✓		✓
Power Failing Warning	✓	✓	✓	✓	✓	✓	✓	✓		
Write Protect		✓		✓		✓		✓		

Motion Control Products— Selection Tree

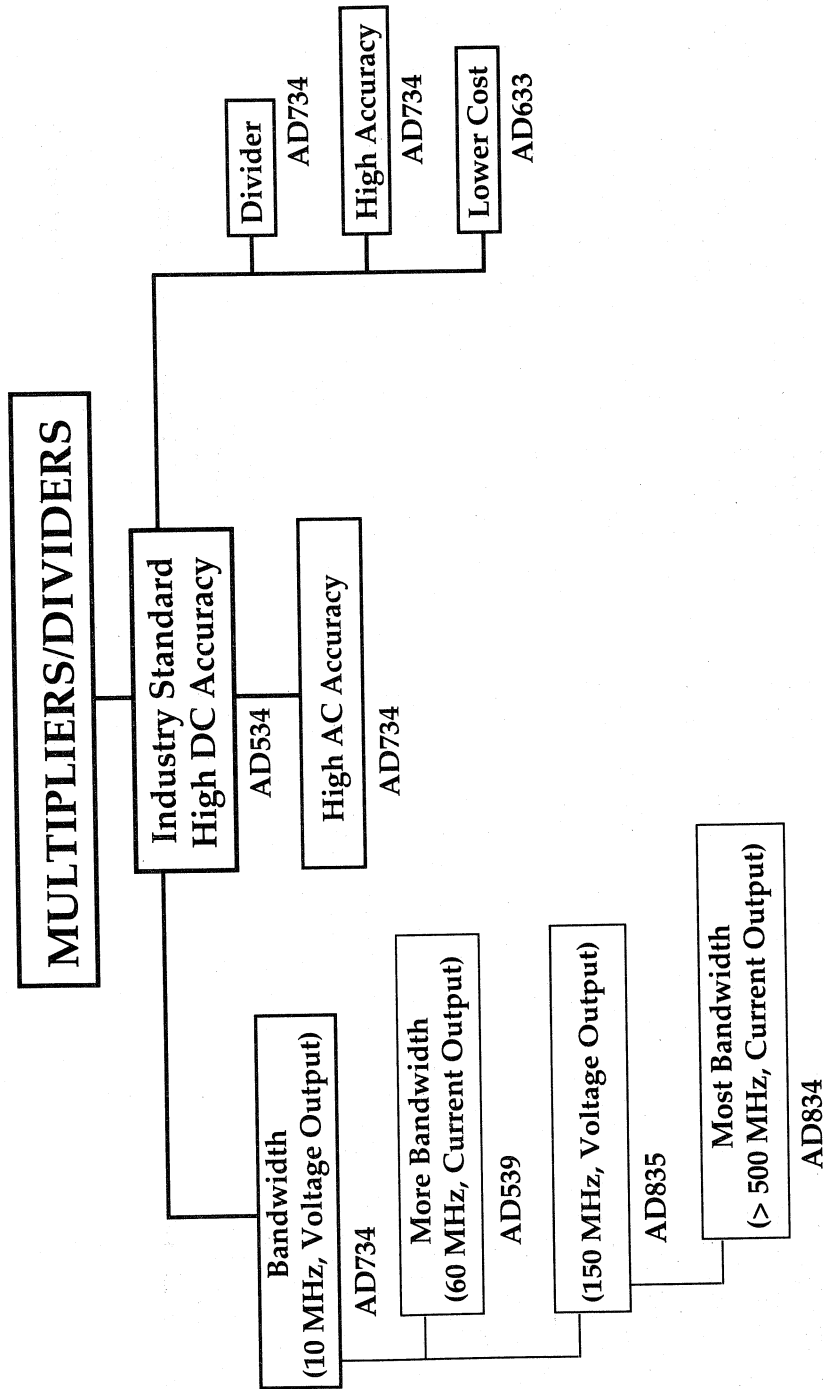


*Inductosyn is a registered trademark of Farrand Industries, Inc.

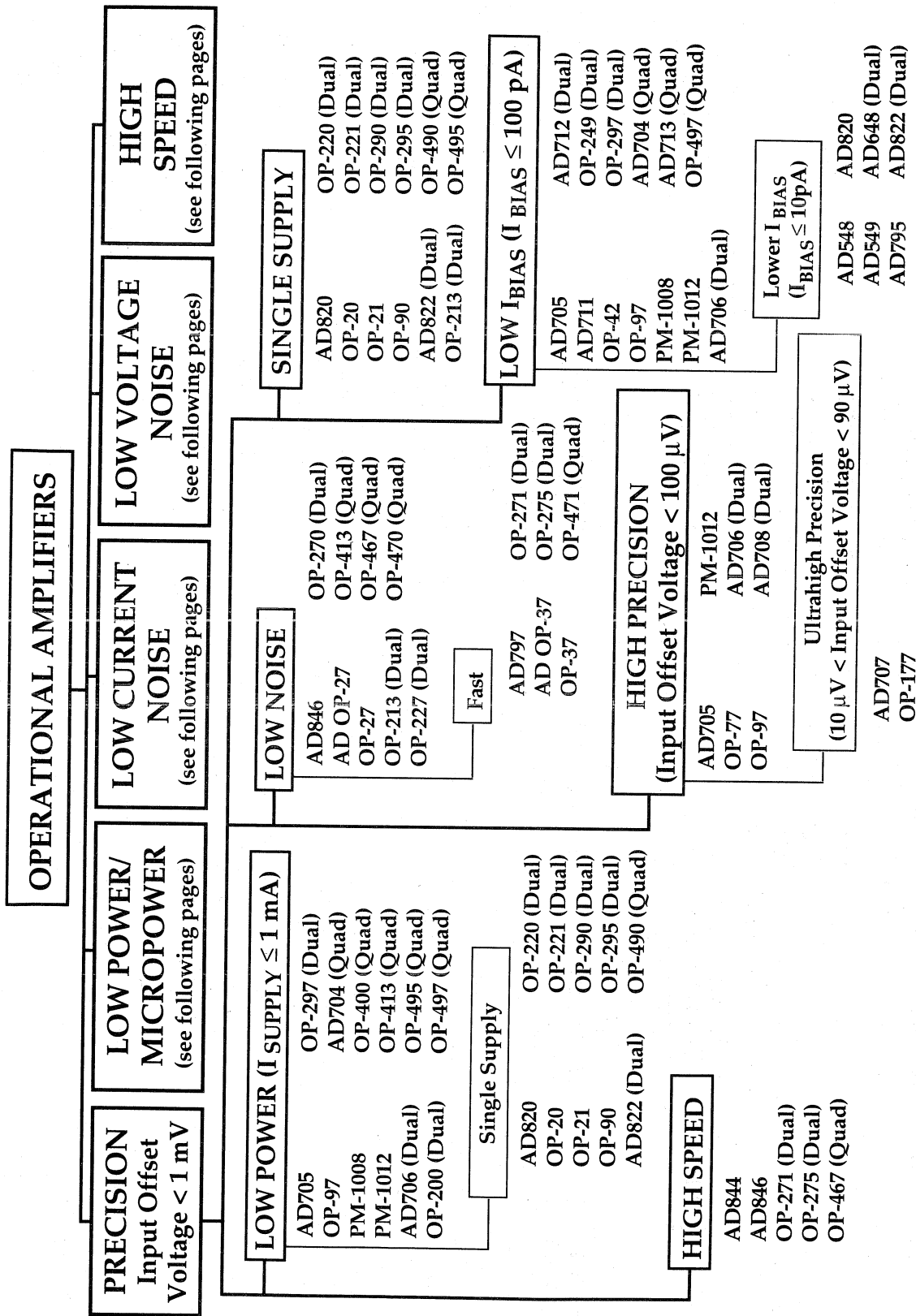
Multiplexers, Analog—Selection Tree



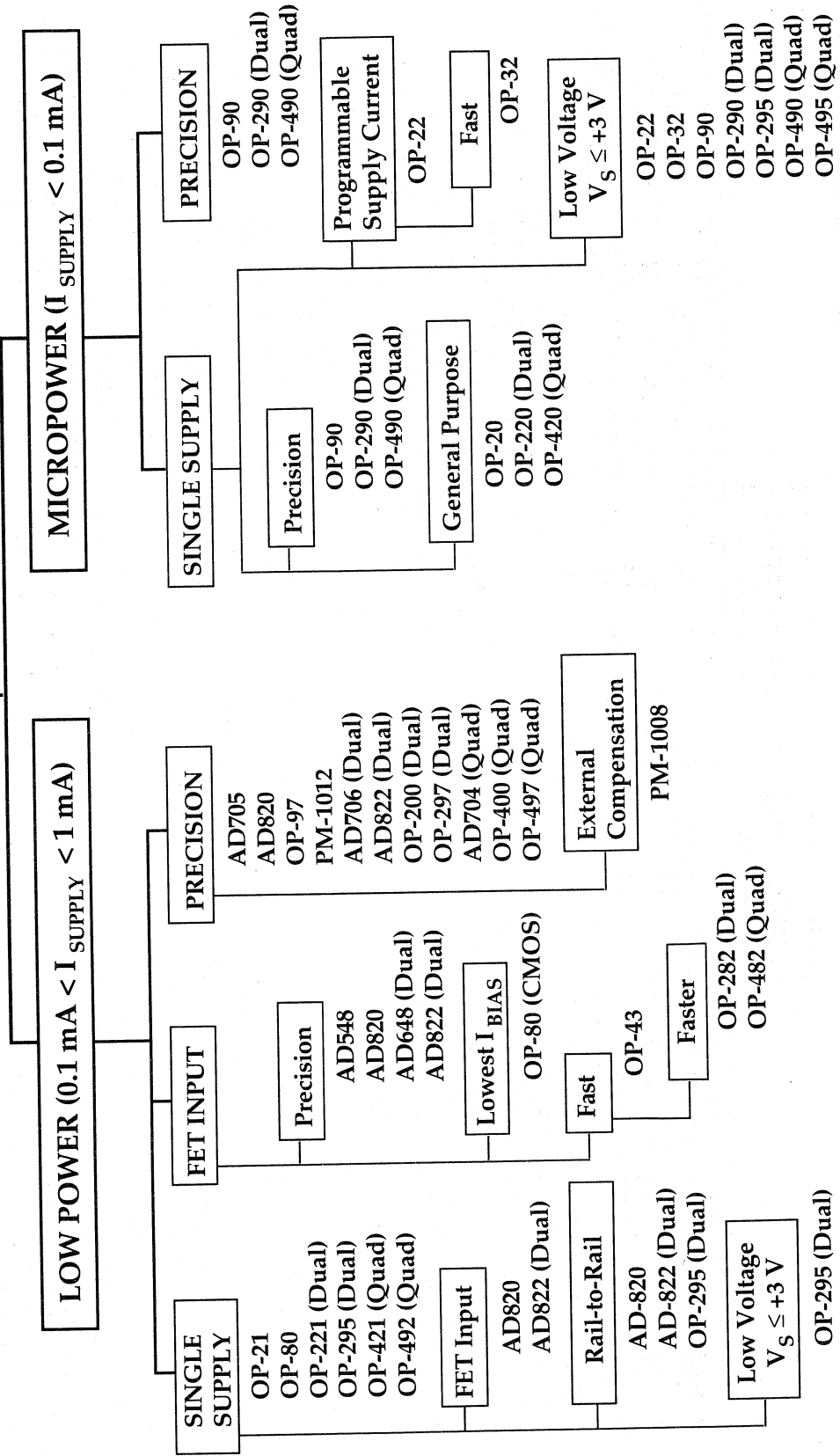
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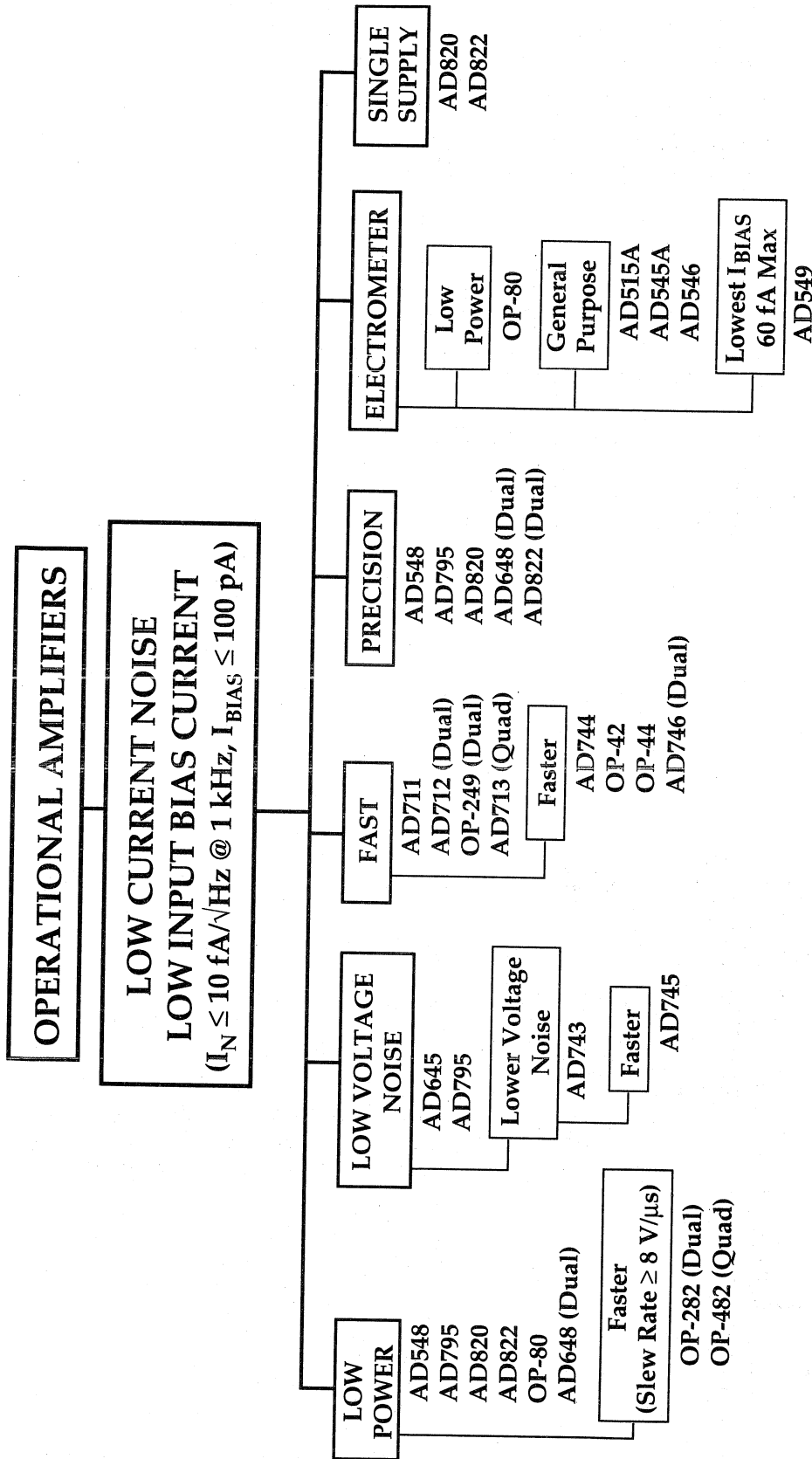
Operational Amplifiers — Selection Trees



OPERATIONAL AMPLIFIERS
LOW POWER/MICROPOWER

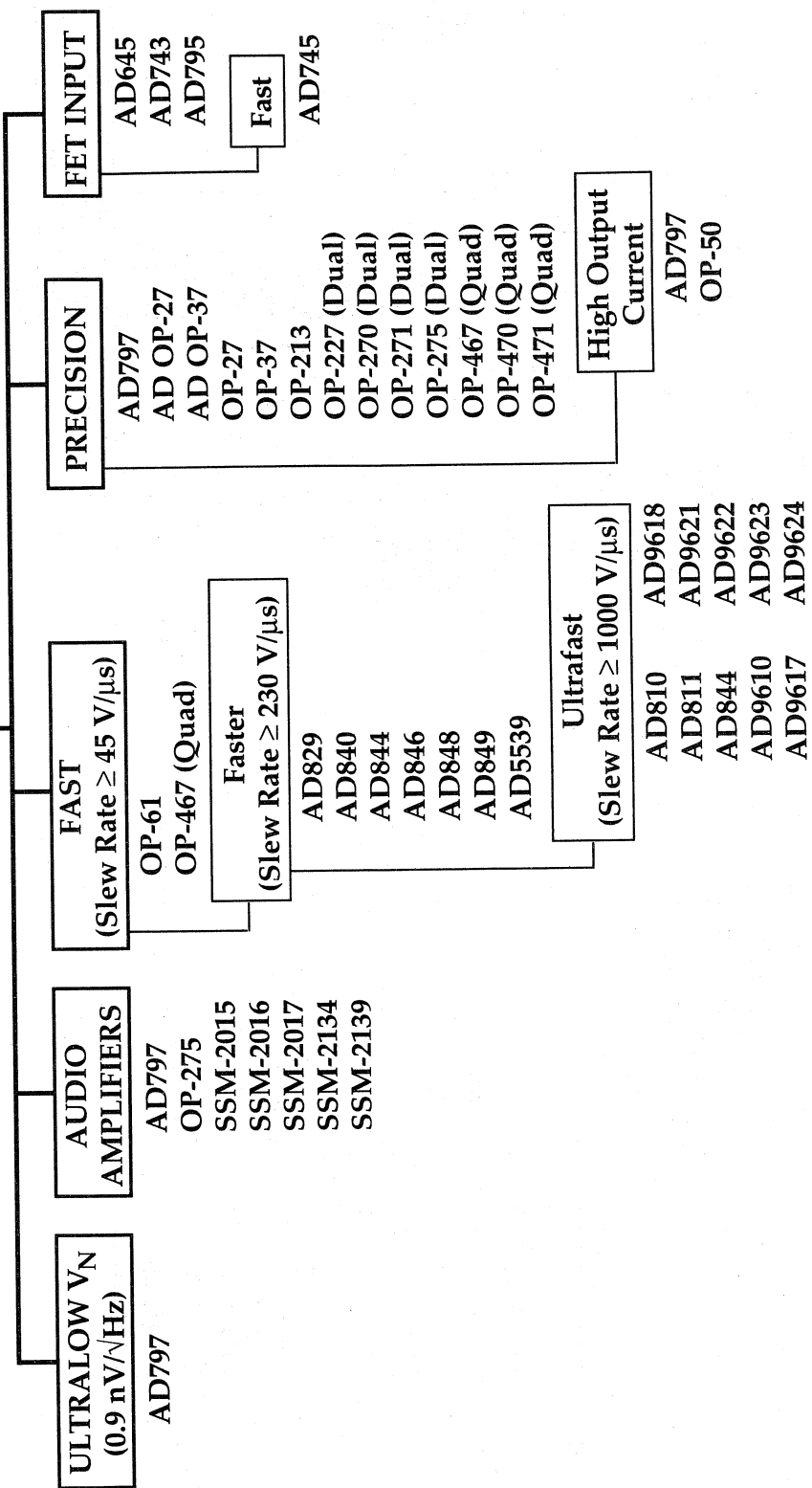


Operational Amplifiers— Selection Trees

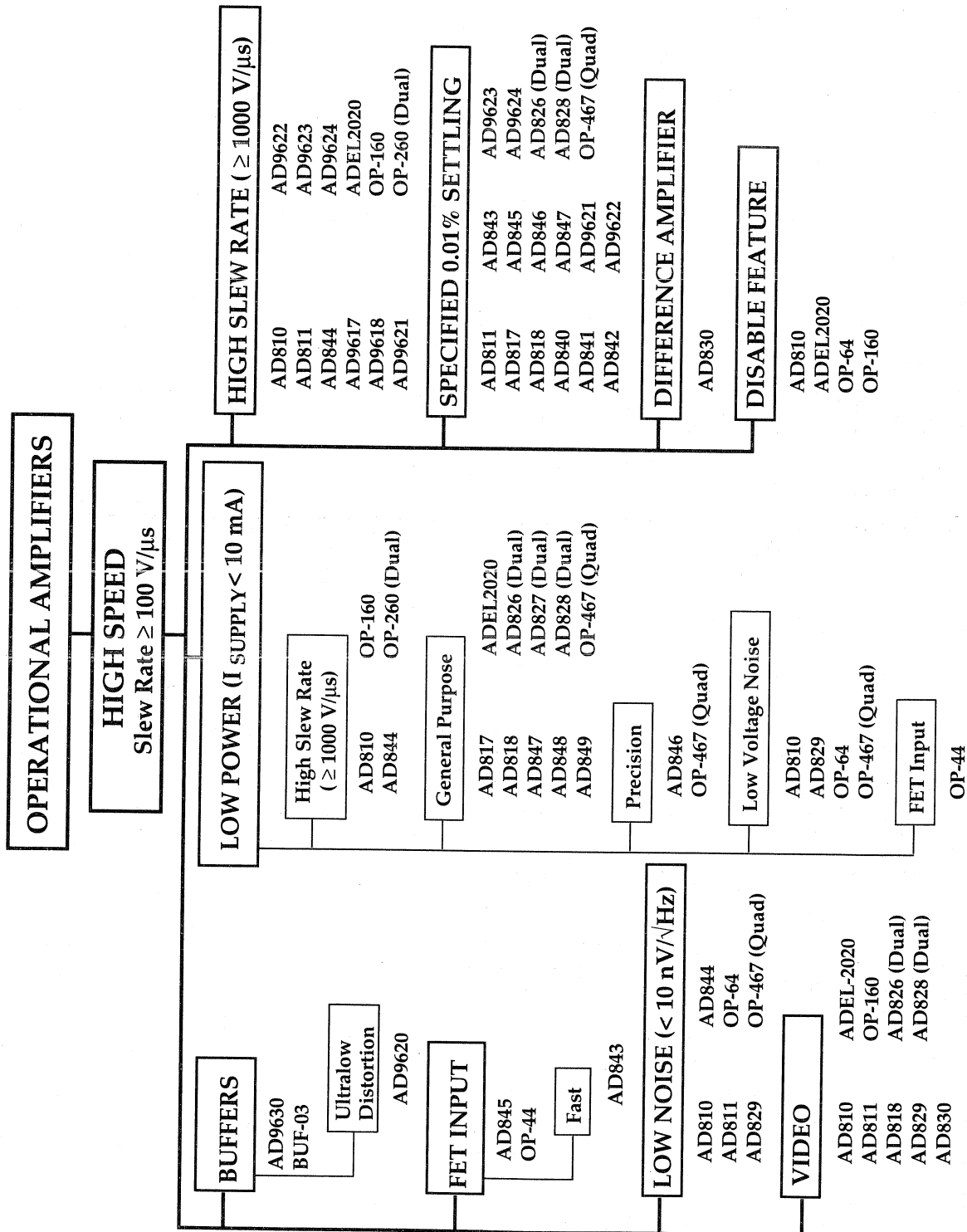


OPERATIONAL AMPLIFIERS

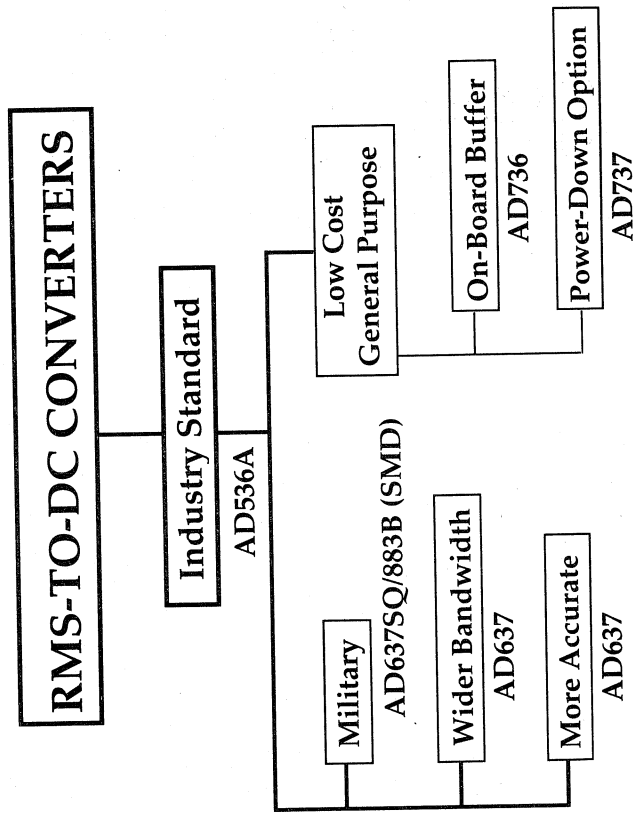
LOW VOLTAGE NOISE - V_N ($V_N \leq 10 \text{ nV}/\sqrt{\text{Hz}}$ @ 1 kHz)



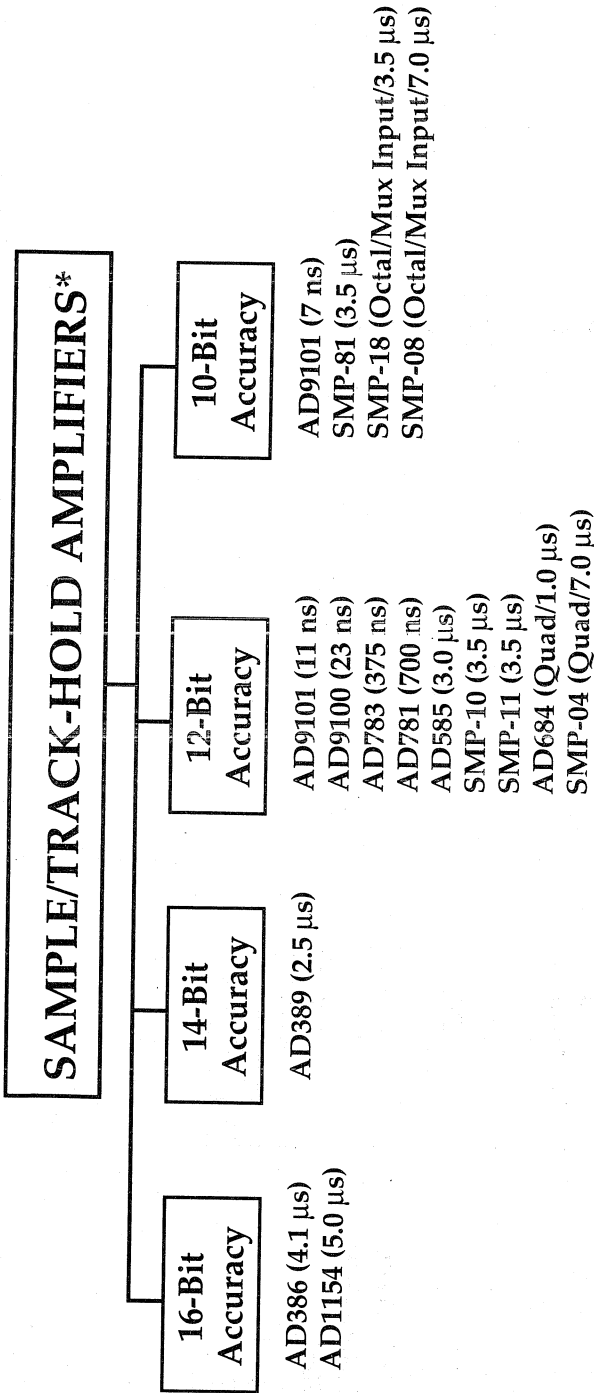
Operational Amplifiers — Selection Trees



RMS-to-DC Converters— Selection Tree

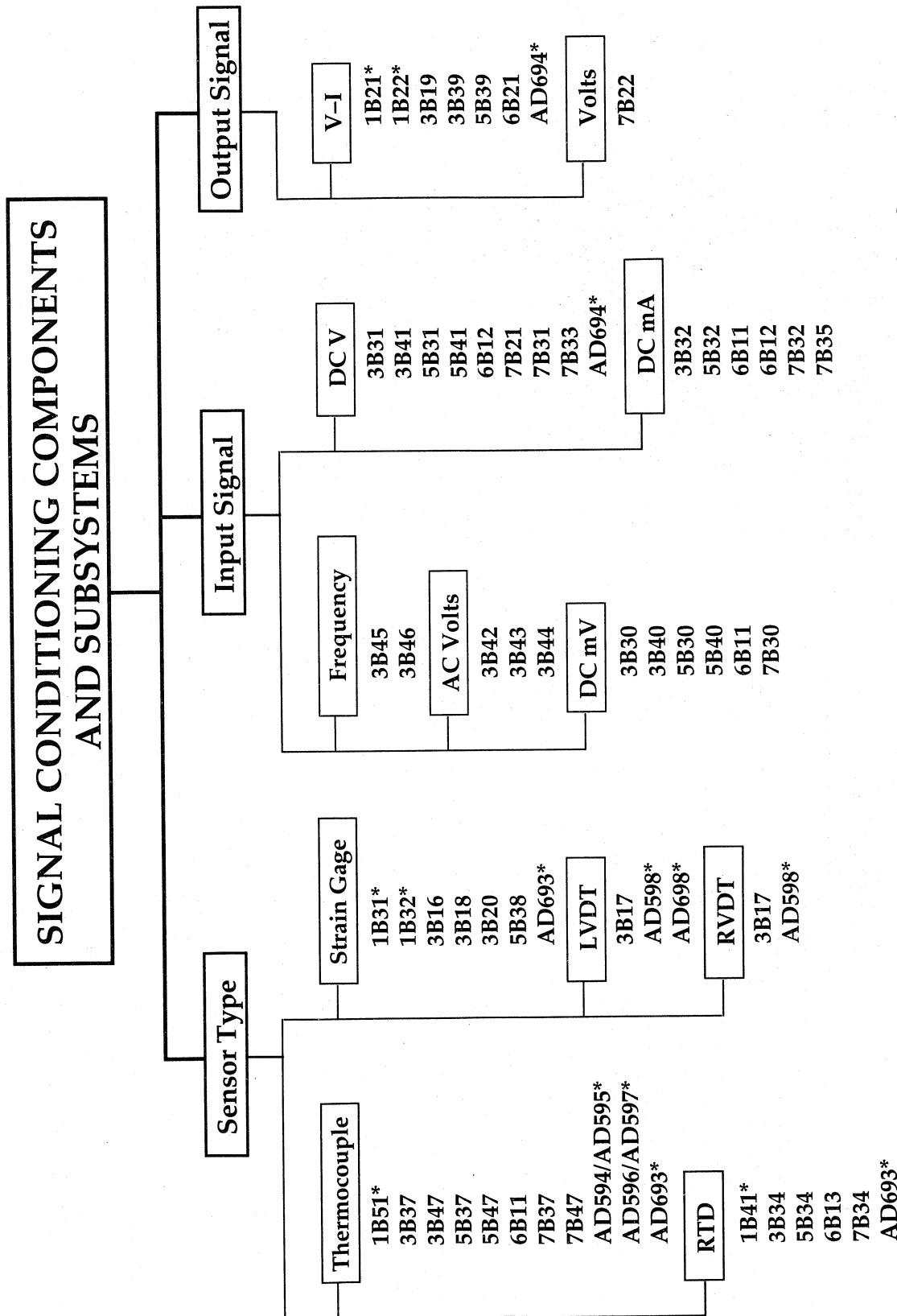


Sample/Track-Hold Amplifiers — Selection Tree



*Times noted are acquisition times to rated accuracy.

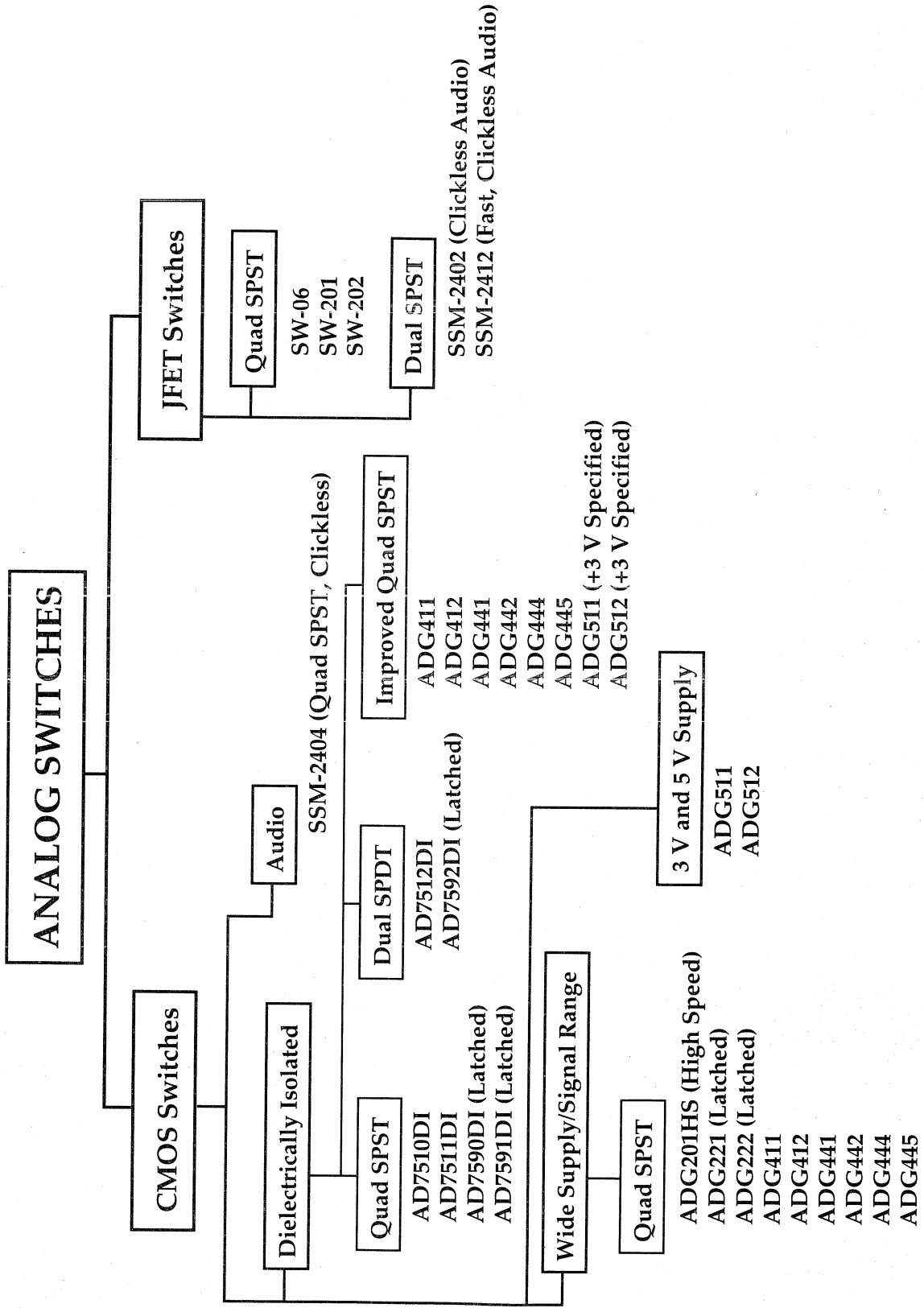
Signal Conditioning Components & Subsystems — Selection Tree



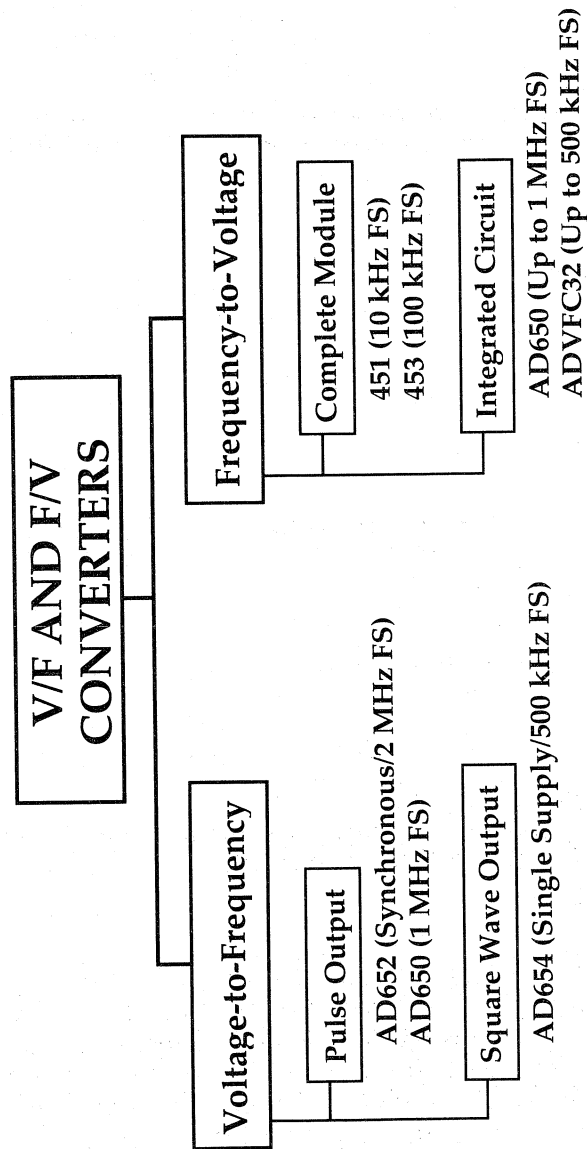
*Identifies Signal Conditioning Components (the remainder being Subsystem Modular Devices)



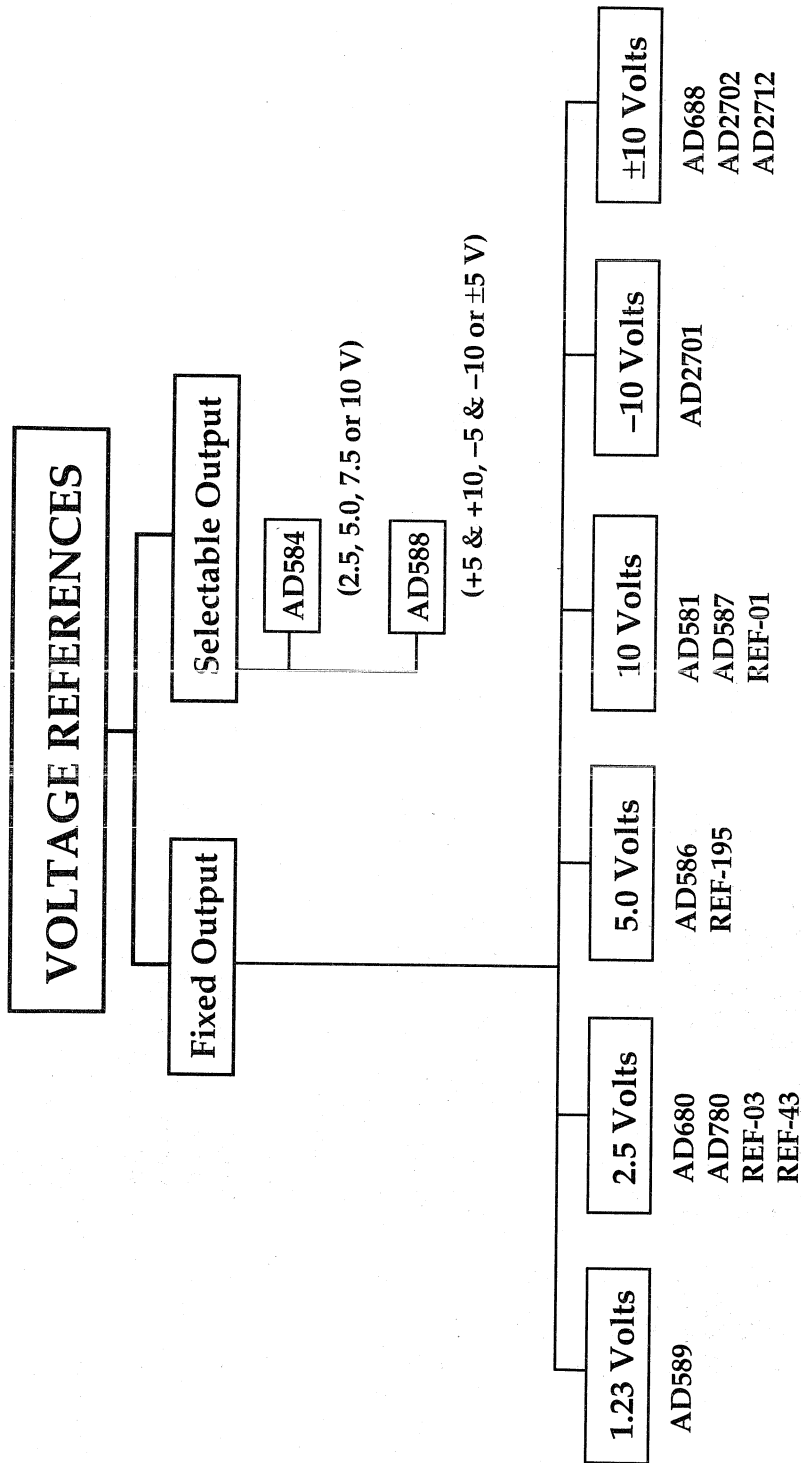
Switches, Analog—Selection Tree



V/F and F/V Converters— Selection Tree



Voltage References—Selection Tree



ATE Components — Selection Guides

Pin Drivers

Model	Speed MHz	V_{RANGE}	Slew Rate at 5 V (V/ns)	Output Capacitance pF	Linearity % of V_{REF}	Package Options	Temp Range
AD1324	200	-2 V to 7 V	1.8	3.5	0.15	Z	C
AD1320	40	-12 V to +12 V	0.5	20	0.5	Q	C

Comparators

Model	Prop Delay ns	Common-Mode Range	Dispersion ps	Input Capacitance pF typ	Input Offset mV max	Package Options	Temp Range
AD1317	2.5	-2 V to 7 V	250	2 (max)	± 10	Z	C
AD96685	3.5	-2.5 V to 5 V	50	2	2	Q, E, P, H	I, m/DS
AD96687‡	3.5	-2.5 V to 5 V	50	2	2	Q, E, P	I, m/DS
AD9696	7.0	-2.2 V to 3.7 V	100	3	2	N, Q, R, H	C, m/S
AD9698‡	7.0	-2.2 V to 3.7 V	100	3	2	N, Q, R	C, m/

Active Load

Model	Prop Delay ns	Program Current mA	Input Leakage nA	V_{OUT} Capacitance pF	Package Options	Temp Range
AD1315	1.5	± 50	± 200	2	Z	C

Delay Generators

Model	Description	Package Options	Temp Range
AD9500	ECL Digitally Programmable Delay Generator	Q, E, P	C, m/
AD9501	TTL/CMOS Digitally Programmable Delay Generator	N, Q, P	C, m/
AD9505	60 MHz "On the Fly" Programmable Delay Generator	P	C

Boldface Type: Product recommended for new design.
‡Dual Comparators.

ATE-Related Components—Selection Guides

Parametric Measurement Components

Model	Description	Package Options	Temp Range
AD676	16-Bit, 10 μ s Sampling ADC	D, N	C, I, M
AD1376	16-Bit, 17 μ s ADC	D	C
AD1377	16-Bit, 10 μ s ADC	D	C
AD1380	16-Bit, 20 μ s Sampling ADC	D	C
AD1382/AD1385	16-Bit, 2 μ s Sampling ADC	D	C, M

Level-Setting Components

Model	Description	Package Options	Temp Range
AD664	Quad 12-Bit DAC, V_{OUT} Reset, Readback	D, N, E, P	C, I, M/d
AD7228	Octal 8-Bit DAC, V_{OUT}	N, Q, E, P, R	C, I, M/
AD7244	Dual 14-Bit DAC, V_{OUT} , Ref, Serial I/O	N, Q, R	C, I, M
AD7568	Octal 12-Bit DAC, I_{OUT} , Serial I/O	S	I
AD75004	Quad 12-Bit DAC, V_{OUT} , Reference	N, P	C
AD75069	Octal 12-Bit DAC, V_{OUT} , Readback, Ref	P, J	C, I
DAC-8412	Quad 12-Bit DAC, V_{OUT} , Reset to Midscale	D, N, E, P	I, M/
DAC-8413	Quad 12-Bit, DAC, V_{OUT} , Reset to Zero	D, N, E, P	I, M/
SMP-08	Octal Mux/SHA, 4 μ s Acquisition Time	N, Q, R	I, M
SMP-18	Octal Mux/SHA, 2 μ s Acquisition Time	N, Q, R	I

Multiplexer

Model	Description	Package Option	Temp Range
AD75019	16 \times 16 Analog Crosspoint Switch	P	C, I

Boldface Type: Product recommended for new design.

Comparators — Selection Guide

Model	Prop Delay ns	Dispersion ps	Logic	V _{os} mV	Package Options	Temp Range	Comments
AD1317	2.5	250	ECL	10	Z	I, M/D	Dedicated Window Comparator with Wide CM Range
AD96685	3.5	50	ECL	2	Q, E, P, R, H	I, M/D	Ultrafast
AD96687	3.5	50	ECL	2	Q, E, P, R	I, M/	Dual AD96685
AD9696	7.0	100	TTL	2	N, Q, R, H, Z	C, M/	Single Comparator
AD9698	7.0	100	TTL	2	Q, R, H, Z	C, M/	Dual Comparator
AD790	45	—	TTL	0.25-1	N, Q, R	C, I, M/D	Fast, Precise Single or Dual Supply
CMP-05	55	—	TTL	0.6	N, Q, R, H	I, M/	High Speed Precision Comparator
PM-111	180	—	TTL	3.0	D, N, E, R, H	I, M/	Fast, Wide Input Range, General Purpose
PM-211	180	—	TTL	3.0	D, N, E, R, H	I, M	Fast, Wide Input Range, General Purpose
CMP-01	180	—	TTL	0.8	N, Q, H	C, M/D	Fast Precision Comparator
CMP-02	270	—	TTL	0.8	N, Q, H	C, M	Low Input Current Precision Comparator
CMP-04	300 typ	—	TTL	1.0	N, Q, R	I, M/D	Quad Low Power Precision Comparator
PM-139	1300	—	TTL	2	D, N, E	I, M/D/J	Low Power, Single or Dual Supply
PM-239	1300	—	TTL	2	D, N, E	I, M	Low Power, Single or Dual Supply

Data Acquisition Subsystems — Selection Guide

Model	Resolution Bits	Throughput Rate kHz	No. Channels	Bus Interface	Package Options	Temp Range	Comments
AD1341	12	150	16/8	16	Z	C, M/	Complete, Programmable DAS with Fast Bus Interface
AD1334	12	65	4	12	D	I, M/	Four-Channel 12-Bit Sampling ADC, On-Chip FIFO
AD364R	12	20	16/8	12	D	C, M	High Speed 16-Channel 12-Bit DAS
AD363R	12	25	16/8	12	D	C, M	16-Channel 12-Bit DAS
AD7850	12	10	1	Serial	N, P	C	Small Signal DAS with Instrumentation Amplifiers and Reference
AD7716	20	0.30	1	Serial	N, R	C	Quad 20-Bit Sigma Delta ADC, Low Power

⚡ Boldface Type: Product recommended for new design.

Mass Storage Components—Selection Guides

Optical Storage Component

Model	Description	Package Options	Temp
AD880	Optical Disk Drive Data/Servo Channel Processor	R	C

Magnetic Read/Write Channel Components

Model	Description	Package Options	Temp
AD890	Precision, Wideband Channel Processing Element	Q, P	C
AD891	Rigid Disk Data Channel Qualifier	Q, P	C
AD891A	50 Mb/s Rigid Disk Data Qualifier	P	C
AD892T/E	30 Mb/s Peak Detector	P	C
AD896	Programmable Filter	N, R	C
AD897	40 Mb/s Peak Detector and Data Synchronizer	N, S	C
AD899	32 Mb/s Read-Channel Electronics	R	C

Mass Storage Servo Components

Model	Description	Package Options	Temp
AD7569	Complete, 8-Bit Analog I/O Port with DAC, ADC, SHA, Amps, and Reference	N, Q, E, P	C, I, M/D
AD7669	Complete, 8-Bit Analog I/O Port with 2 DACs, ADC, SHA, Amps, and Reference	N, P	C, I, M
AD7769	8-Bit Analog I/O Port with Two-Channel ADC/DAC	N, P	C

Boldface Type: Product recommended for new design.

Signal Compression Components—Selection Guide

Model	Input Range	Log Conformity RTI	BW kHz	Package Options	Temp Range	Comments
755	1 nA-1 mA	0.5%	10	Module	I	Complete, Current and Voltage, 6 Decade, High Accuracy
759	20 nA-0.2 mA	1.0%	200	Module	I	Complete, Current and Voltage, 4 Decade, Lowest Cost
AD640	0.75 mV-200 mV	±0.6 dB	120 MHz	D, N, E, P	C, I, M/Ds	120 MHz, 45 dB, DC Demodulating Logarithmic Amplifier
AD600	±2 V	±0.5 dB	30 MHz	N, R	C, I, M/	Dual 0 to +40 dB Variable Gain Amplifier
AD602	±2 V	±0.5 dB	30 MHz	N, R	C, I, M/	Dual -10 dB to +30 dB Variable Gain Amplifier
AD603	±2 V	±0.4 dB	100 MHz	N, R	I, M	Single Channel Variable Gain Amplifier
AD606	-80 to +10 dBm (50 Ω)	±1 dB	50 MHz	N, R	C	50 MHz, 80 dB Demodulating Logarithmic Amplifier with Limiter Output

Special Function Components—Selection Guide

Model	Description	Package Options	Temp Range
AD639	Universal Trigonometric Function Converter	D	I, M/
PKD-01	Monolithic Peak Detector with Reset-and-Hold Mode	N, Q	C, M/
ADXL-50	Monolithic Accelerometer with Signal Conditioning	D, H	M
AD730	Programmable Clock Generator	R	C
AD720	RGB to NTSC/PAL Encoder	P	C
AD9560	High Speed Monolithic Pulse Width Modulator	N, R	C

Boldface Type: Product recommended for new design.

Temperature Sensors—Selection Guide

Model	I _{OUT} μA/K	V _{OUT} mV/K	Cal Error °C max	Nonlin °C max	Package Options	Temp Range	Comments
AC2626	1	—	0.5-5	0.3-1.5 Steel Sheath	3/16" Stainless H, F	C, M	General Purpose Temperature Probe 4" and 6" Length
AD590	1	—	0.5-5	0.3-1.5	N	M+/DS	Wide Temperature Range, Accurate
AD592	1	—	0.5-2.5	0.15-0.35	N	I+	Low Cost, Accurate
TMP-01	—	5	1.2-6	0.4-1.0	N, Q, R, H, Y	I, M+	Complete Programmable Temperature Controller

Transistors, Matched—Selection Guide

Model	Type	V _{OS} Max μV	TCV _{OS} Max μV/°C	hFE Min ¹	ΔhFE max %	en max nV/√Hz ²	Package Options	Temp Range	Comments
MAT-01	Dual NPN	100	0.5	500	3	7.5	Q	M/	Low Cost
MAT-02	Dual NPN	50	0.1	500	2	1	N	I, M/	Low Noise, Low I _{BE}
MAT-03	Dual PNP	100	0.5	100	2	1	N	I, M/	Low Noise
MAT-04	Quad NPN	200	1	300	2	2.5	N	I, M/	Low Cost
SSM-2210	Dual NPN	200	1	300	5	1	P	I	Low Cost, Audio
SSM-2220	Dual PNP	200	1	80	6	1	R	I	Low Cost, Audio

¹I_C = 1 mA
²f_C ≥ 100 Hz
 Boldface Type: Product recommended for new design.

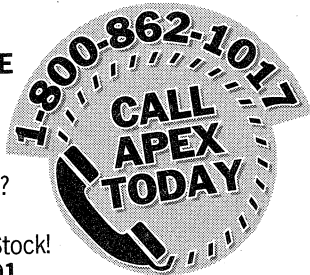


HIGH POWER, HIGH VOLTAGE, HIGH SPEED POWER AMPLIFIERS

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QUALITY PRODUCTS FROM APEX

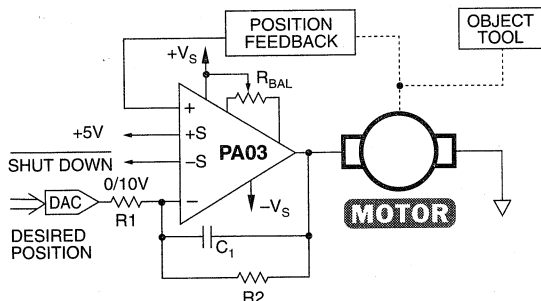
Apex products are built to provide you with the highest level of quality and reliability in the industry. Apex team members use statistical process control (SPC) to minimize variations. They take ownership in the quality of their output. This mindset is part of the Apex Sigma Plus total quality management program adopted throughout the company to continually improve quality and service.

LIFETIME WARRANTY

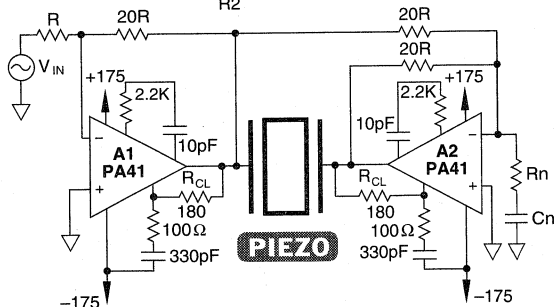
All products manufactured by APEX MICROT TECHNOLOGY are warranted to be free of defects when operated within the published specified operating conditions for the life of the equipment in which the APEX component is originally installed. The warranty applies to the original customer who purchased the component from APEX, or the first system buyer of the original equipment from an APEX customer. (See current Pricing & Ordering data sheet for warranty information.)

TYPICAL APPLICATIONS

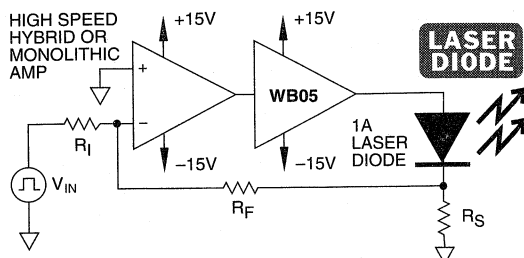
HIGH POWER



HIGH VOLTAGE

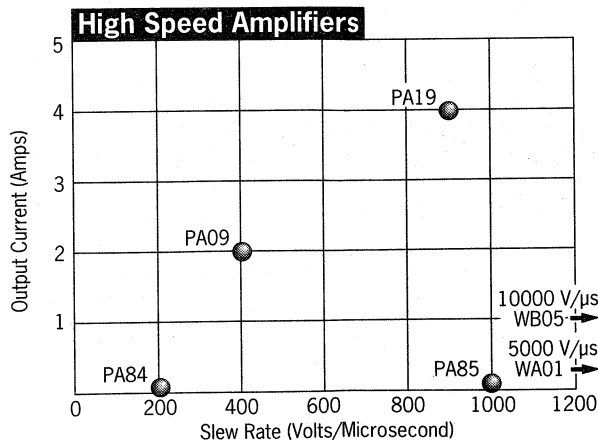
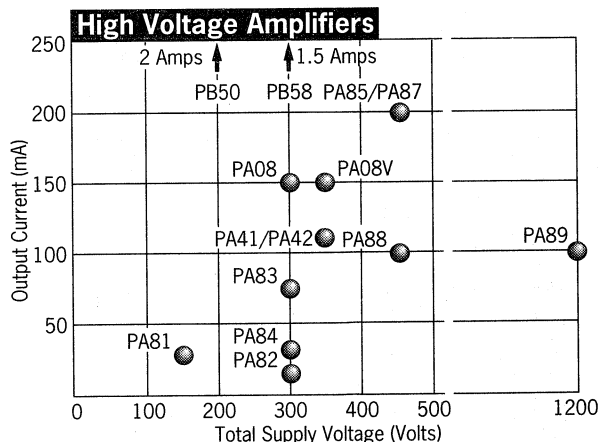
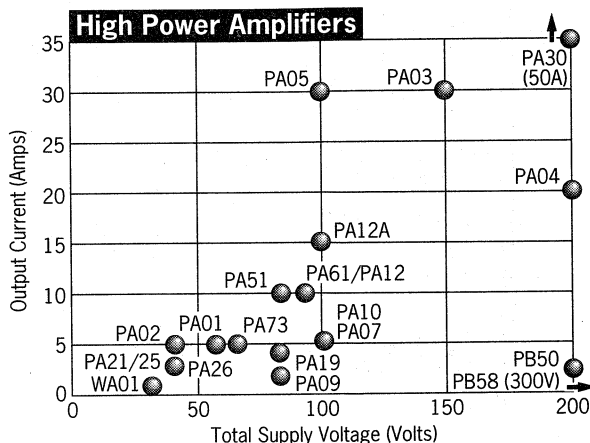


HIGH SPEED



PRODUCT DEFINITIONS

- HIGH POWER AMPLIFIER: $I_{OUT} > \pm 1.0A$
- HIGH VOLTAGE AMPLIFIER: $V_s > \pm 50V$
- HIGH SPEED AMPLIFIER: Slew Rate $> 400V/\mu s$



Apex Microtechnology



HIGH VOLTAGE/HIGH SPEED PRODUCT SELECTOR GUIDE



APEX MICROTECHNOLOGY CORPORATION • APPLICATIONS HOTLINE 800 546-APEX

HIGH VOLTAGE

Apex Microtechnology

Model	±Supply Range Volts Min/Max	Output Current (Cont.) mA, Min	Saturation @ I _o Max (V _s -V _o) Volts, Max	Internal Power Watts Max	Slew Rate V/μs Typ	V _{os} Initial mV Max	V _{os} vs Temp μV/°C Max	Bias Current nA Max	I _q mA Max	Gain BW Product MHz Typ	Current Limit (Amps)	Thermal Shutdown	Temp Range °C Min/Max	Packaging Type
PA89	50/600	75	30	40	16	2	30	.05	6	10	Ext Adj	No	-25/85	MO-127
PA89A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
PA85	15/225	200	10	35	1000	2	30	.05	25	100	Ext Adj	No	-25/85	TO-3
PA85A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
PA85M	*	*	*	*	400	4	30	.05	*	*	*	*	-55/125	*
PA87	50/225	200	15	7.5	20	10	50	2	3.0	3.1	Ext Adj	No	-25/85	SIP10
PA87A	*	*	*	*	35	3	25	*	*	*	*	*	*	*
PA88	15/225	100	10	15	30	2	30	.05	2	2	Ext Adj	No	-25/85	TO-3
PA88A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
PA88M	*	*	*	*	15	4	30	.05	*	*	*	*	*	*
PA41	50/175	120	16	12	40	60	130	.05	2	1.6	Ext Adj	No	-25/85	TO-3
PA41A	*	*	14	*	*	30	65	*	1.8	*	*	*	*	*
PA41M	*	*	16	*	5	60	130	*	2	*	*	*	-55/125	*
PA42	50/175	120	16	9	40	60	130	2	2	1.6	Ext Adj	No	-25/85	SIP10
PA42A	*	*	14	*	*	30	*	*	1.8	*	*	*	*	*
PA08V	15/175	150	15	17.5	30	2	30	.05	8.5	5	Ext Adj	Yes	-25/85	TO-3
PA08	15/150	*	*	*	*	*	*	*	*	*	*	*	*	*
PA08A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
FA08M/883	*	*	*	*	*	2	30	.05	*	*	*	*	-55/125	*
PB58	15/150	1500	11	80	100	1750	7000	—	12	2.5	Ext Adj	No	-25/85	TO-3
PB58A	*	2000	*	*	*	1000	*	—	*	*	*	*	*	*
PA83	15/150	75	10	17.5	30	3	25	.05	8.5	5	(.1)	Yes	-25/85	TO-3
PA83A	*	*	*	*	*	1	10	.01	*	*	*	*	*	*
PA83M/883	*	*	*	*	*	3	25	.05	*	*	*	*	-55/125	*
PA84	15/150	40	7	17.5	200	3	25	.05	7.5	76	(.05)	Yes	-25/85	TO-3
PA84A	*	*	*	*	*	1	10	.01	*	*	*	*	*	*
PA84M/883	*	*	*	*	*	3	25	.05	*	*	*	*	-55/125	*
PA84S	*	*	*	*	*	*	*	*	*	*	*	*	-25/85	*
PA82J	70/150	15	5	11.5	20	3	25	.05	8.5	5	(.025)	Yes	0/70	TO-3
PB50	30/100	2000	11	35	100	1750	7000	—	18	2.5	Ext Adj	No	-25/85	TO-3
PA81J	32/75	30	5	11.5	20	3	25	.05	8.5	5	(.05)	Yes	0/70	TO-3

†Specifications apply for T_c = 25°C, unless otherwise stated.

*Specification is same as above.

HIGH SPEED

Model	Slew Rate V/μs Typ	Output Current (Cont.) Amps., Min	±Supply Range Volts Min/Max	Saturation @ I _o Max (V _s -V _o) Volts, Max	Internal Power Watts Max	V _{os} Initial mV Max	V _{os} vs Temp μV/°C Max	Bias Current nA Max	I _q mA Max	Gain BW Product MHz Typ	Current Limit (Amps)	Thermal Shutdown	Temp Range °C Min/Max	Packaging Type
WA01	5000	.4	12/16	4	10.5	10	50	20000	30	—	(.6)	No	-25/85	TO-3
WA01A	*	*	*	*	*	5	25	10000	*	*	*	*	*	*
WB05	10000	1	5/15	6.5	15	100	500	30000	30	250	(1.5)	No	-25/85	TO-3
PA85	1000	.2	15/225	10	35	2	30	.05	25	100	Ext Adj	No	-25/85	TO-3
PA85A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
PA85M	*	*	*	*	*	2	30	.05	*	*	*	*	-55/125	*
PA19	900	.4	15/40	5	78	3	30	.2	120	100	Ext Adj	Yes	-25/85	TO-3
PA19A	*	*	*	*	*	.5	10	.05	*	*	*	*	*	*
PA09	400	.2	12/40	8	78	3	30	.1	85	150	(4.5)	Yes	-25/85	TO-3
PA09A	*	*	*	*	*	.5	10	.02	*	*	*	*	*	*
PA09M/883	*	*	*	*	*	3	30	.1	*	*	*	*	-55/125	*

†Specifications apply for T_c = 25°C, unless otherwise stated.

*Specification is same as above.



HIGH POWER/DESC SMD AVAILABILITY

PRODUCT SELECTOR GUIDE

APEX MICROTECHNOLOGY CORPORATION • APPLICATIONS HOTLINE 800 546-APEX



HIGH POWER

Model	Internal Power Watts Max	Output Current (Cont.) Amps., Min	±Supply Range Volts Min/Max	Saturation @ I _o Max (V _s -V _o) Volts, Max	Slew Rate V/μs Typ	V _{OS} Initial mV Max	V _{OS} vs Temp μV/°C Max	Bias Current nA Max	I _q mA Max	Gain BW Product MHz Typ	Current Limit (Amps)	Thermal Shutdown	Temp Range °C Min/Max	Packaging Type
PA30	1000	50	15/100	7.5/9.5 ⁽¹⁾	45	10	50	.05	40	1	Ext Adj	Yes	-25/85	SL15
PA03	500	30	15/75	7	8	2	30	.05	300	1	Thermal	Yes	-25/85	MO-127
PA03A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
PA04	200	20	15/100	5.3/8.8 ⁽¹⁾	50	10	50	.05	90	2	Ext Adj	No	-25/85	MO-127
PA04A	*	*	*	*	*	5	30	.02	*	*	*	*	*	*
PA05	250	30	15/50	5.8/9.5 ⁽¹⁾	100	10	50	.05	120	3	Ext Adj	Yes	-25/85	MO-127
PA05A	*	*	*	*	*	5	30	.02	*	*	*	*	*	*
PA12	125	10	10/45	6	4	6	65	30	50	4	Ext Adj	No	-25/85	TO-3
PA12A	*	15	10/50	7	*	3	40	20	*	*	*	*	-55/125	*
PA12M/883	*	*	10/45	6	*	6	65	30	*	*	*	*	*	*
PA12H	*	1	*	4	*	6	*	30	100	*	*	*	-25/200	*
PA61 ⁽²⁾	97	10	10/45	7	2.8	6	65	30	10	1	Ext Adj	No	-25/85	TO-3
PA61A ⁽²⁾	*	*	*	6	*	3	40	20	*	*	*	*	*	*
PA61M/883 ⁽²⁾	*	*	*	7	*	6	65	30	*	*	*	*	-55/125	*
PA51 ⁽²⁾	97	10	10/36	8	2.6	10	65	40	10	1	Ext Adj	No	-25/85	TO-3
PA51A ⁽²⁾	*	*	10/40	*	*	5	40	20	*	*	*	*	*	*
PA51M/883 ⁽²⁾	*	*	10/36	*	*	10	65	40	*	*	*	*	*	*
PA07	67	5	12/50	5	5	2	30	.05	30	1.3	Ext Adj	Yes	-25/85	TO-3
PA07A	*	*	*	*	*	.5	10	.01	*	*	*	*	*	*
PA07M/883	*	*	*	*	*	2	30	.05	*	*	*	*	-55/125	*
PA10	67	5	10/45	8	5	6	65	30	30	6	Ext Adj	No	-25/85	TO-3
PA10A	*	*	10/50	6	*	3	40	20	*	*	*	*	-55/125	*
PA10M/883	*	*	10/45	8	*	6	65	30	*	*	*	*	*	*
PA73 ⁽²⁾	67	5	10/30	8	2.6	10	65	40	5	1	Ext Adj	No	-25/85	TO-3
PA73M/883 ⁽²⁾	*	*	*	*	*	*	*	*	*	*	*	*	-55/125	*
PA01	67	5	10/28	10	2.6	12	65	50	50	1	Ext Adj	No	-25/85	TO-3
PA02	48	5	7/19	4	20	10	50	.2	37	4.5	Ext Adj	No	-25/85	TO-3
PA02A	*	*	*	*	*	3	25	.1	*	*	*	*	-55/125	*
PA02M/883	*	*	*	*	*	3	50	.2	37	*	*	*	-55/125	*
PA21	36	2.5	2.5/20	3.0	1.2	10	15 typ	1000	90	.6	(3)	Yes	-25/85	TO-3
PA21A	*	3.0	*	3.5	*	4	10 typ	250	*	*	(4)	*	*	*
PA21M	*	2.5	*	3.0	*	10	15 typ	1000	*	*	(3)	*	-55/125	*
PA25	36	2.5	2.5/20	3.0	1.2	10	15 typ	1000	90	.6	(3)	Yes	-25/85	TO-3
PA25A	*	3.0	*	3.5	*	4	10 typ	25	*	*	(4)	*	*	*
PA26	36	2.5	2.5/20	3.0	1.2	10	15 typ	1000	90	.6	(3)	Yes	-25/85	SIP12
PB50	35	2	30/100	11	100	1750	7000	—	18	2.5	Ext Adj	No	-25/85	TO-3
PB58	80	1.5	15/150	11	100	1500	7000	—	12	2.5	Ext Adj	No	-25/85	TO-3
PB58A	*	2.0	*	*	*	1000	*	—	*	*	*	*	*	*

†Specifications apply for T_c = 25°C, unless otherwise stated.

*Specification is same as above.

(1) 1st number with Boost Voltage = V_s + 5V; 2nd number without Boost Voltage (2) Class "C" output—optimized for low cost—not recommended above 1KHz

Apex Microtechnology

DESC SMD AVAILABILITY

Apex Model Number	SMD Part #	Apex Model Number	SMD Part #
High Power			
PA02M/883	5962-9067901HXX	PA08M/883	5962-9072301HXX
PA07M/883	5962-9063801HXX	PA83M/883	5962-9162101HXX
PA10M/883	5962-9082801HXX	PA84M/883	5962-9073601HXX
PA12M/883	5962-9065901HXX	High Speed	
PA51M/883	5962-8762002YX	PA09M/883	5962-9170001HXX



Company Information

Burr-Brown Corporation is a leading designer and manufacturer of precision microcircuits and microelectronic-based systems for use in data acquisition, signal conditioning, measurement, instrumentation, and control.

We make our products for customers who pursue business success the same way we do—through worldwide competition based on high performance, high quality, and high value. Our customers include OEMs, sophisticated end-users, and systems integrators who demand an extra measure of performance for their products and operations.

COMPANY FACTS

- ✓ Founded in 1956.
- ✓ Corporate headquarters: Tucson, Arizona, USA.
- ✓ 1404 employees.
- ✓ Manufacturing and technical facilities: Tucson; Livingston, Scotland; Atsugi, Japan.
- ✓ Sales and distribution subsidiaries in Austria, France, Germany, Italy, Japan, the Netherlands, Switzerland; and the United Kingdom; 12 international sales representative organizations worldwide.
- ✓ Superior customer service from more than 200 sales and service staff worldwide.
- ✓ 1000+ high-performance products.

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Operational Amplifiers

SPECIAL PURPOSE OPERATIONAL AMPLIFIERS

Boldface = NEW

Description	Model	Offset Voltage, max		Bias Current (25°C), max (µA)	Open Loop Gain, min (dB)	Frequency Response		Rated Output, min		Temp Range ⁽¹⁾	Pkg
		At 25°C, (±mV)	Temp Drift, (±µV/°C)			Unity Gain (MHz)	Slew Rate (V/µs)	(±V)	(±mA)		
Two-Channel	OPA675	1	5	35	65	185 ⁽²⁾	350	2.1	30	Com, Mil	DIP
	OPA676	1	5	35	65	185 ⁽²⁾	350	2.1	30	Com, Mil	DIP
	OPA678	1.5	20	50	50	200	350	2.5	30	Com, Mil	DIP, SOIC
Voltage Controlled Gain	VCA610	—	—	6 ⁽³⁾	⁽⁴⁾	30 ⁽⁵⁾	60	3.0 ⁽⁶⁾	80 ⁽⁷⁾	Ind	DIP, SOIC

NOTES: (1) Com = 0°C to +70°C, Mil = -55°C to +125°C. (2) -3dB BW at Gain of +10V/V. (3) Typical. (4) C/L Gain range: -40 to +40dB. (5) Gain = 40dB. (6) Vp-p typ. (7) Short circuit current.

LOW DRIFT OPERATIONAL AMPLIFIERS

Boldface = NEW

Description	Model	Offset Voltage, max		Bias Current (25°C), max (nA)	Open Loop Gain, min (dB)	Frequency Response		Rated Output, min		Temp Range ⁽¹⁾	Pkg
		At 25°C, (±mV)	Temp Drift, (±µV/°C)			Unity Gain (MHz)	Slew Rate ⁽³⁾ (V/µs)	(±V)	(±mA)		
FET	OPA627	0.1	0.8	.005	112	16	55	11.5	45 ⁽³⁾	Ind	TO-99, DIP, SOIC
	OPA637	0.1	0.8	.005	112	80	135	11.5	45 ⁽³⁾	Ind	TO-99, DIP, SOIC
	OPA111	0.25	1	±0.001	120	2	2	11	5.5	Ind	TO-99
	OPA124	0.25	2	±0.001	120	1.5	1	11	5.5	Ind	DIP, SOIC
	OPA671	5.0	10 ⁽³⁾	.05	74	35	107	10.5	50	Ind	DIP
Wideband	OPA602	0.25	2	±.001	92	6.5	35	11.5	15	Ind	TO-99, DIP, SOIC
	OPA606	0.5	5	±0.01	100	13	35	12	5	Com	TO-99, DIP
	OPA671	5.0	10 ⁽³⁾	.05	74	35	107	10.5	50	Ind	DIP
Dual FET	OPA2111	0.5	2.8	±0.004	114	2	2	10	5	Ind, Mil	TO-99, DIP
	OPA2107	0.5	5	.005	84	4.5	18	11	5.5	Ind	TO-99, DIP, SOIC
Low Power (Dual) Single Supply Operation	OPA1013	0.15	2	20	120	0.6	.35	13	6.5	Com	DIP
Bipolar	OPA177	0.01	0.1	1.5	134	0.6	0.3	12	12	Ind	DIP, SOIC
	OPA77	0.025	0.3	2.0	134	0.6	0.3	12	12	Ind	DIP
	OPA27	0.025	0.6	±40	120	8	1.9	12	16.7	Mil, Com	TO-99, DIP, SOIC
	OPA37	0.025	0.6	±40	120	63 ⁽²⁾	11.9	12	16.7	Mil, Com	TO-99, DIP, SOIC

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C. (2) Gain BW Product at G = 5. (3) Typical. (4) Gain BW Product at G = 10.

LOW BIAS CURRENT OPERATIONAL AMPLIFIERS

Boldface = NEW

Description	Model	Offset Voltage, max		Bias Current (25°C), max (pA)	Open Loop Gain, min (dB)	Frequency Response		Rated Output, min		Temp Range ⁽¹⁾	Pkg
		At 25°C, (±mV)	Temp Drift, (±µV/°C)			Unity Gain (MHz)	Slew Rate ⁽²⁾ (V/µs)	(±V)	(±mA)		
FET	OPA111	0.25	1	±1	120	2	2	11	5.5	Ind	TO-99
	OPA124	0.25	2	±0.001	120	1.5	1	11	5.5	Ind	DIP, SOIC
	OPA627	0.1	0.8	5	112	16	55	11.5	45 ⁽²⁾	Ind	TO-99, DIP, SOIC
	OPA637	0.1	0.8	5	112	80 ⁽⁴⁾	135	11.5	45 ⁽²⁾	Ind	TO-99, DIP, SOIC
	OPA671	5.0	10 ⁽³⁾	50	74	35	107	10.5	50	Ind	DIP
Ultra-Low Bias Current	OPA128	0.5	5	±0.075	110	1	3	10	5	Com	TO-99
	OPA129	1.5	15	±0.250	94	1	3	10	5	Com	DIP, SOIC
Dual FET	OPA2111	0.5	2.8	±4	114	2	2	10	5	Ind	TO-99, DIP
	OPA2107	0.5	5	5	84	4.5	18	11	5.5	Ind	TO-99, DIP, SOIC
Quad FET	OPA404	0.75	3 ⁽²⁾	±4	92	6.4	35	11.5	5	Ind	DIP, SOIC
Low Cost	OPA121	2	10	±5	110	2	2	11	5.5	Com	TO-99, DIP, SOIC
	OPA602	0.25	2	1	92	6.5	35	11.5	15	Ind	TO-99, DIP, SOIC
Wideband	OPA606	0.5	5	±10	100	13	35	12	5	Com	TO-99, DIP
	OPA654	3	40 ⁽²⁾	50	94 ⁽²⁾	32	750	11	200 ⁽²⁾	Ind	TO-3
	OPA671	5.0	10 ⁽³⁾	50	74	35	107	10.5	50	Ind	DIP

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C. (2) Typical. (3) Gain = 3V/V. (4) Gain BW Product at G = 10.

LOW NOISE OPERATIONAL AMPLIFIERS

Boldface = NEW

Description	Model	Noise Voltage at 10kHz, max (nV/√Hz)	Bias Current (25°C), max (pA)	Offset Voltage, max		Open Loop Gain, min (dB)	Frequency Response		Rated Output, min		Temp Range ⁽¹⁾	Pkg
				at 25°C (±mV)	Temp Drift (±µV/°C)		Gain BW (MHz)	Slew Rate, min (V/µs)	(±V)	(±mA)		
Bipolar	OPA27	3.8	±40nA	0.025	0.6	120	8	1.7	12	16.7	Mil	TO-99, DIP, SOIC
	OPA37	3.8	±40nA	0.025	0.6	120	63	11	12	16.7	Mil	TO-99, DIP, SOIC
	OPA177	10 ⁽²⁾	1.5nA	0.01	0.1	134	0.6	0.1	12	12	Ind	DIP, SOIC
	OPA77	11	2.0nA	0.025	0.3	134	0.6	0.1	12	12	Ind	SOIC, DIP
FET	OPA111	8	±1	0.25	1	120	2	1	11	5.5	Ind	TO-99
	OPA124	6⁽²⁾	±1	.25	2	120	1.5	1	11	5.5	Ind	DIP, SOIC
	OPA602	12 ⁽²⁾	1	0.25	2	92	6.5	28	11.5	15	Ind	TO-99, DIP, SOIC
	OPA627	6	5	0.1	0.8	112	16	40	11.5	45 ⁽²⁾	Ind	TO-99, DIP, SOIC
	OPA637	6	5	1	0.8	112	80	100	11.5	45 ⁽²⁾	Ind	TO-99, DIP, SOIC
	OPA604 ⁽³⁾	10 ⁽²⁾	50 ⁽²⁾	3	8 ⁽²⁾	80	20	15	11	35 ⁽²⁾	Ind	DIP, SOIC
	OPA2604 ⁽³⁾	10 ⁽²⁾	100 ⁽²⁾	3	8 ⁽²⁾	80	20	15	11	35 ⁽²⁾	Ind	DIP, SOIC

NOTES: (1) Ind = -25°C to +85°C, Mil = -55°C to +125°C, Com = 0°C to +70°C. (2) Typical. (3) Low distortion, 0.0003%.

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LOW NOISE OPERATIONAL AMPLIFIERS (CONTINUED)

Boldface = NEW

Description	Model	Noise Voltage at 10kHz, max (nV/√Hz)	Bias Current (25°C), max (pA)	Offset Voltage, max at 25°C		Open Loop Gain, min (dB)	Frequency Response		Rated Output, min		Temp Range ⁽¹⁾	Pkg
				Temp Drift (±mV/°C)	Slew Rate, min (V/μs)		Gain BW (MHz)	Rate, min (V/μs)	(±V)	(±mA)		
Low Cost	OPA27	4.5	±80nA	0.100	1.8	117	8	1.7	12	16.7	Com	DIP, SOIC
	OPA37	4.5	±80nA	0.100	1.8	117	63	11	12	16.7	Com	DIP, SOIC
Dual FET	OPA2111	8	±4	0.5	2.8	114	2	1	10	5	Ind	TO-99, DIP

NOTES: (1) Ind = -25°C to +85°C, Mil = -55°C to +125°C, Com = 0°C to +70°C. (2) Typical. (3) Low distortion, 0.0003%.

UNITY-GAIN BUFFER OPERATIONAL AMPLIFIERS

Boldface = NEW

Description	Model	Rated Output, min		Frequency Responses			Input Gain (V/V)	Input Impedance (Ω)	Temp Range ⁽¹⁾	Pkg
		(±V)	(±mA)	-3dB (MHz)	Full Power (MHz)	SlewRt (V/μs)				
High	3553	10	200	300	32	2000	≈1	10 ¹¹	Ind	TO-3
Low Cost	BUF634	10	250	180		2000	≈1	50M	Ind	DIP, SO-8, TO-220
	OPA633	11	80	275	65	2500	≈1	1.5M	Ind	DIP
Transconductance Amp and Buffer	OPA660	3.7	10	850	570	3000	≈1	1M	XInd	DIP, SOIC
High Slew Rate	BUF600	3.3	20	650	320	3400	≈1	4.8M	XInd	DIP, SOIC
	BUF601	3.3	20	900	320	3600	≈1	2.5M	XInd	DIP, SOIC

NOTE: (1) Ind = -25°C to +85°C. (2) XInd = -40°C to +85°C.

WIDE BANDWIDTH OPERATIONAL AMPLIFIERS

Boldface = NEW

Description	Model	Frequency Response Slew			Comp	Rated Output, min		Offset Voltage, max at 25°C		Open Loop Gain, min (dB)	Temp Range ⁽¹⁾	Pkg
		Gain BW (MHz)	Rate min (V/μs)	t _r ±0.1% (ns)		(±V)	(±mA)	At 25°C (±mV)	Temp Drift (±μV/°C)			
FET	OPA602	6.5	28	600	int	11.5	15	0.25	2	92	Ind	TO-99, DIP, SOIC
	OPA604	20	15	1μs	int	11	35 ⁽²⁾	3	8 ⁽²⁾	80	Ind	DIP, SOIC
	OPA654	500	750 ⁽²⁾	150	ext	11	200 ⁽²⁾	3	40 ⁽²⁾	94 ⁽²⁾	Ind	TO-3
	OPA671	35	120 ⁽²⁾	150	int	10	50 ⁽²⁾	5	5 ⁽²⁾	74 ⁽²⁾	Ind	DIP
Dual	OPA2107	4.5	13	1.5μs	int	11	5.5	0.5	5	84	Ind, Mil	TO-99, DIP, SOIC
Dual	OPA2604	20	15	1μs	int	11	35 ⁽²⁾	3	8 ⁽²⁾	80	Ind	DIP, SOIC
	OPA606	13	25	1μs	int	12	5	0.5	5	100	Com	TO-99, DIP
	OPA627	16	40	450	int	11.5	45 ⁽²⁾	0.1	0.8	112	Ind	TO-99, DIP, SOIC
	OPA637	80	100	300	G>5	11.5	45 ⁽²⁾	0.1	0.8	112	Ind	TO-99, DIP, SOIC
	3554	1700, A=1000	1000	120	ext	10	100	1	15	100	Ind	TO-3
Current-Feedback	OPA603	160	1000 ⁽²⁾	50	int	10	150 ⁽²⁾	5	8 ⁽²⁾	440kΩ ⁽⁷⁾	Ind	DIP
	OPA644	400	2500	9	int	3.2	25	3.0	45	2MΩ⁽⁷⁾	Ind, Mil	DIP, SOIC
Low Power High Slew Rate	OPA623	350	2100 ⁽²⁾	9	NA	3.0	70	-8 ⁽²⁾	125 ⁽²⁾	53	XInd	DIP, SOIC
Transconductance Amp and Buffer	OPA660	850	3000 ⁽²⁾	25	NA	4.0	10	+7 ⁽²⁾	50 ⁽²⁾	125 ⁽⁶⁾	Ind	DIP, SOIC

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WIDE BANDWIDTH OPERATIONAL AMPLIFIERS (Continued)

Boldface = NEW

Description	Model	Frequency Response			Comp	Rated Output, min		Offset Voltage, max		Open Loop Gain, min	Temp Range ⁽¹⁾	Pkg
		Gain BW (MHz)	Slew Rate min (V/μs)	t _s ±0.1% (ns)		(±V)	(±mA)	At 25°C (±mV)	Temp Drift (±μV/°C)			
Dual Trans-conductance Amp	OPA2662	370	2000 ⁽²⁾	2.6 ⁽⁵⁾	NA	3.4	75	12 ⁽²⁾	35	580 ⁽⁶⁾	XInd	DIP, SOIC
Quad FET	OPA404	6.4	28	600	int	11.5	5	0.75	3 ⁽²⁾	92	Ind	DIP, SOIC
Low Noise Bipolar	OPA27	8, A=1	1.7	—	int	12	16.7	0.025	0.6	120	Mil	TO-99, DIP
	OPA37	63, A=5	11	—	int ⁽³⁾	12	16.7	0.025	0.6	120	Mil	TO-99, DIP
Low Distortion	OPA628	160	310⁽²⁾	20	int	3	30	1	6⁽²⁾	90	XInd	DIP, SOIC
	OPA642	450	380	11.5	int	2.5	35	1.0	2.0 typ	95⁽²⁾	XInd, Mil	DIP, SOIC
	OPA643	1.5GHz A=5	1000	11.5	int	2.2	35	1.5	3 typ	95⁽²⁾	XInd, Mil	DIP, SOIC
Very Wideband Low Noise	OPA640	1.3GHz	350	18	int	2.2	25	2.0	6 typ	57⁽²⁾	XInd, Mil	DIP, SOIC
	OPA641	1.6GHz A=2	650	18	int	2.2	25	2.0	6 typ	57⁽²⁾	XInd, Mil	DIP, SOIC
Low Power	OPA646	650	180	11	int	2.0	25	2.5	12	51⁽²⁾	XInd, Mil	DIP, SOIC
Low Noise Wideband	OPA620	300	175	10	int	3	150 ⁽²⁾	0.5	8 ⁽²⁾	55	Ind, Mil	DIP, SOIC
	OPA621	500, A=10	350	15	int	3	150 ⁽²⁾	0.5	12 ⁽²⁾	55	Ind, Mil	DIP, SOIC
High Slew Rate	OPA622	250	1600 ⁽²⁾	17	NA	3	70	0.1 ⁽²⁾	210 ⁽²⁾	50	XInd	DIP, SOIC
Fast Settling	OPA600	5000, A=1000	500	80	ext	9	180	4	40	86	Ind	DIP
Very Fast Settling Switched Input	OPA675	3000, A=16	240	15	ext	2.1	30 ⁽²⁾	1	5	65	Com, Mil	DIP
	OPA676	3000, A=16	240	15	ext	2.1	30 ⁽²⁾	1	5	65	Com, Mil	DIP
	OPA678	200, A=1	350 ⁽²⁾	15	ext	2.5	40 ⁽²⁾	1	5	50	Ind, Mil	DIP, SOIC
Low Cost	OPA27	8, A=1	1.7	—	int	12	16.7	0.100	1.8	117	Com	DIP, SOIC
	OPA37	63, A=5	11	—	int ⁽³⁾	12	16.7	0.100	1.8	117	Com	DIP, SOIC
Voltage Controlled Gain	VCA610	30	60	—	int	3	80	—	—	C/L	Ind	DIP, SOIC

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, XInd = -40°C to +85°C, Mil = -55°C to +125°C. (2) Typical. (3) G = 5 min. (4) Typical G ≥ 50. (5) Rise time, 10% to 90%. (6) Current output, mA/ns. (7) Transconductance, mA/V. (8) Open-loop transimpedance.

Burr-Brown



Instrumentation Amplifiers

INSTRUMENTATION AMPLIFIERS

Boldface = NEW

Description	Model	Gain Range	Gain Accuracy, G=100 25°C, max(%)	Gain Drift, G=100 (ppm/°C)	Non-Linearity G=100 max(%)	Input Parameters		Dynamic Response, G=100 -3dB BW (kHz)	Temp Range ⁽¹⁾	Pkg
						CMR ⁽⁵⁾ min(dB)	Offset Voltage vs Temp max(μV/°C)			
Very High Accuracy	INA114	1-10,000⁽²⁾	0.5	25	±0.002	96	±(0.25+5/G)	10	Ind	DIP, SOIC
	INA115	1-10,000⁽²⁾	0.5	25	±0.002	96	±(0.25+5/G)	10	Ind	SOIC
	INA131	100	0.024	10	±0.002	110	±0.25	50	Ind	DIP, SOIC
	INA120	1, 10, 100, 1000	0.5	30	±0.01	96	±(0.25±10/G)	20	Ind	DIP
	INA104	1-1000 ⁽²⁾	0.15	22 ⁽³⁾	±0.003	96	±(0.25±10/G)	25	Ind	DIP
	INA101	1-1000 ⁽²⁾	0.03	22 ⁽³⁾	±0.003	96	±(0.25±10/G)	25	Ind, Mil	DIP
		1-1000 ⁽²⁾	0.3	22 ⁽³⁾	±0.007	90	±(2±20/G) typ	25	Com	TO-100, DIP, SOIC
Low Quiescent Power	INA118	1-10,000	0.5	25	±0.002	96	±(0.5 + 5/G)	100	Ind	DIP, SOIC
	INA102	1,10,100, 1000	0.15	15	±0.02	90	±(2±5/G)	3	Com, Ind	DIP, SOIC
Low Noise, Low Distortion	INA103	1-1000 ⁽²⁾	0.1	25	±0.004	100	±(0.5+10/G) typ	800	Ind	DIP
		1-1000 ⁽²⁾	0.25	25	±0.010	90	±(0.5+20/G) typ	800	Com	DIP, SOIC
Fast Settling FET Input	INA110	1,10,100, 200,500	0.1	20	±0.01	96	±(2±50/G)	470	Ind	DIP, SOIC
	INA111	1-10,000 ⁽²⁾	0.5	25	±0.01	96	±(5+100/G)	450	Ind	DIP, SOIC
Unity-Gain Difference Amp	INA105	1V/V, fixed	0.01 ⁽³⁾	5	±0.001 ⁽³⁾	86 ⁽⁴⁾	10	1000 ⁽³⁾	Ind	TO-99, DIP, SOIC
	3627	1V/V, fixed	0.01 ⁽³⁾	5	±0.001 ⁽³⁾	100	20	800 ⁽³⁾	Ind	TO-99
Gain of 10 Diff. Amp	INA106	10V/V, fixed	0.01	10	±0.001	100 ⁽⁴⁾	2	500	Ind	DIP, SOIC
High Com. Mode Volt. Diff. Amp (200VDC CMV)	INA117	1V/V, fixed	0.02	10	±0.001	86 ⁽⁴⁾	20	200 ⁽³⁾	Ind	TO-99, DIP
4-20mA Loop Receiver	RCV420	4-20mA in 0 - 5V Out	0.05	25	±0.002	86	25 ⁽⁶⁾	150	Com, Ind	DIP

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C. (2) Set with external resistor. (3) Unity-gain. (4) No source imbalance. (5) DC to 60Hz, Gain = 10, (or specified gain of device). (6) RTO.



DIGITALLY PROGRAMMABLE GAIN AMPLIFIERS

Boldface = NEW

Description	Model	Digitally Selected Gains	Gain Accuracy, G=100 25°C, max(%)	Gain Drift, G=100 (ppm/°C)	Non-Linearity G=100 max(%)	Input Parameters		Dynamic Response, G=100 ±3dB BW (kHz)	Temp Range ⁽¹⁾	Pkg
						CMR min (dB)	Offset Voltage vs Temp max (µV/°C)			
Noninverting Amplifier	PGA100	1, 2, 4... to 128	0.02	10	±0.005	NA	6 typ	5MHz	Ind	DIP
	PGA102	1, 10, 100	0.01	20	±0.01	NA	3, G=100	250	Com, Ind	DIP
	PGA103	1, 10, 100	0.1	20	±0.01	NA	2 typ	250	Ind	DIP, SOIC
Instrumentation Amplifier Input	PGA200	1, 10, 100, 1000	0.02	10	±0.003	96	0.4, G=100	30	Ind	DIP
Fast Settling 2µs to 0.01%	PGA202	1, 10, 100, 1000	0.15	5	±0.012	86	±(3+25/G)	1000	Ind, Com	DIP
	PGA203	1, 2, 4, 8	0.15	5	±0.012	86	±(3+25/G)	1000	Ind, Com	DIP
Low Cost	PGA204	1, 10, 100, 1000	0.024	10	±0.002	96	±(0.25 + 5/G)	10	Ind	DIP, SOL-16
	PGA205	1, 2, 4, 8	0.024	10	±0.002	96	±(0.25 + 5/G)	100	Ind	DIP, SOL-16
	3606	1, 2, 4, 8 to 1024	0.02	10	±0.004	90, G=1	±(1+20/G)	40	Ind	DIP

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C.

4-20mA CURRENT TRANSMITTERS

Boldface = NEW

Description	Model	Span			Input Parameters			Output Parameters			Temp Range ⁽¹⁾	Pkg
		Untrimmed Error, max (%)	Non-linearity, max (%)	Temp Drift (ppm/°C)	Offset Voltage max	Temp vs Offset max (µV/°C)	CMR, DC, min (dB)	Current Range (mA)	Offset Current Error, max (µA)	FS Output Current Error, max (µA)		
Two-Wire	XTR101	5	0.01	±100	±30µV	±0.75	90	4-20	±6	±30	Ind	DIP, SOIC
Two-Wire RTD Linearity Compensation	XTR103	1	0.01	±50	±2500	±2.5	86	4-20	±25	50	Ind⁽²⁾	DIP, SOIC
Two-Wire Bridge Linearity Compensation	XTR104	1	0.01	±50	±2500	±2.5	86	4-20	±25	±50	Ind⁽²⁾	DIP, SOIC
Three-Wire and Current Source	XTR110	0.2	0.005	30	—	—	—	4-20, 0-20, 5-25	±16	±32	Ind	DIP, SOIC

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C. (2) -40°C to +85°C.

PRECISION CURRENT TRANSMITTERS

Boldface = NEW

Two-Wire	IXR100	See Isolation Products
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Isolation Products

OPTICALLY-COUPLED ISOLATION AMPLIFIERS

Boldface = NEW

Descrip	Model	Isolation Voltage (V)		Isolation Mode Rejection, typ		Leakage Current at Test Voltage (μA)	Iso Impedance (Ω) (pF)	Gain Non-linearity		Voltage Drift (±μV/°C) max	Bias Current max	±3dB Freq (kHz)	Ext Iso Power Req	Temp ⁽¹⁾	
		Cont Peak	Pulse Test, Peak	DC (dB)	60Hz (dB)			max (%)	typ (%)						
Balanced Current Input	3650	2000	5000	140	120	0.35 ⁽²⁾	10 ¹²	1.8	±0.05	±0.02	5	40nA	15	Yes	Ind
Balanced	3652	2000	5000	140	120	0.35 ⁽²⁾	10 ¹²	1.8	±0.1	±0.05	25	50pA	15	Yes	Ind
Low Drift Wide BW	ISO100	750	2500	146 ⁽³⁾	108 ⁽³⁾	0.3 ⁽²⁾	10 ¹²	2.5	0.07	0.02	2.5 ⁽³⁾	10nA	60	Yes	Ind

NOTES: All packages are DIPs. (1) Ind = -25°C to +85°C. (2) At 240V/60Hz. (3) R_{IN} = 10kΩ.

CAPACITOR-COUPLED ISOLATION AMPLIFIERS

Boldface = NEW

Descrip	Model	Isolation Voltage (V)		Isolation Mode Rejection, typ		Leakage Current at Test Voltage (μA)	Iso Impedance (Ω) (pF)	Gain Non-linearity		Voltage Drift (±μV/°C) max	Bias Current max	±3dB Freq (kHz)	Ext Iso Power Req	Temp ⁽¹⁾	
		Cont Peak	Pulse Test, Peak	DC (dB)	60Hz (dB)			max (%)	typ (%)						
1500VAC Isolation	ISO102	2121	4000	160	120	1.0	10 ¹⁴	6	±0.003	±0.002	±250	—	70	Yes	Ind ⁽³⁾
	ISO120	2121	2500 ⁽²⁾	160	115	0.5	10 ¹⁴	2	±0.01	±0.005	±150	—	60	Yes	Ind ⁽³⁾
	ISO122	2121	2400 ⁽²⁾	160	140	0.5	10 ¹⁴	2	±0.02	±0.008	±200 ⁽⁴⁾	—	50	Yes	Com
3500VAC Isolation	ISO106	4950	8000	160	130	1.0	10 ¹⁴	6	±0.025	±0.007	±250	—	70	Yes	Ind ⁽³⁾
	ISO121	4950	5600 ⁽²⁾	160	115	0.5	10 ¹⁴	2	±0.01	±0.005	±150	—	60	Yes	Ind ⁽³⁾

NOTES: All packages are DIPs except ISO122 which is also available in SOIC. (1) Ind = -25°C to +85°C. Com = 0°C to +70°C. (2) Partial discharge voltage. (3) Hermetic. (4) Typical.

TRANSFORMER-COUPLED ISOLATION AMPLIFIERS

Boldface = NEW

Descrip	Model	Isolation Voltage (V)		Isolation Mode Rejection, typ		Leakage Current at Test Voltage (μA)	Iso Impedance (Ω) (pF)	Gain Non-linearity		Voltage Drift (±μV/°C) max	Bias Current max	±3dB Freq (kHz)	Ext Iso Power Req	Temp ⁽¹⁾	
		Cont Peak	Pulse Test, Peak	DC (dB)	60Hz (dB)			max (%)	typ (%)						
High Isolation Voltage	3656	3500	8000	160	125	0.5	10 ¹²	6	±0.05	±0.03	5+	100nA	30	No	Ind
Low Cost Self-Powered	ISO212	1060	1200 ⁽²⁾	160	115	2	10 ¹⁰	12	±0.025	±0.015	±30	50nA	1	No	Com

NOTES: The package for the 3656G is a DIP, the package for the ISO212P is a SIP. (1) Ind = -25°C to +85°C, Com = 0°C to +70°C. (2) Partial discharge voltage.



CAPACITOR-COUPLED ISOLATION AMPLIFIER, WITH POWER

Boldface = NEW

Description	Model	Isolation Voltage (V)		Isolation Mode Rejection, typ		Leakage Current at Test Voltage (μA)	Iso Impedance		Gain Non-linearity		Voltage Drift (±μV/°C) max	Bias Current	±3dB Freq (kHz)	Temp ⁽¹⁾
		Cont Peak	Pulse Test, Peak	DC (dB)	60Hz (dB)		(Ω)	(pF)	max (%)	typ (%)				
1500VAC Input Power	ISO103	2121	5657	160	130	2.0	10 ¹²	9	.05	.018	250	—	20	Ind
1500VAC Output Power	ISO113	2121	5657	160	130	2.0	10 ¹²	9	0.02	0.012	250	—	20	Ind
2500VAC Input Power	ISO107	3500	8000	160	100	2.0	10 ¹²	13	0.025	0.01	400	—	20	Ind

NOTES: All packages are DIPs. (1) Ind = -25°C to +85°C.

ISOLATION POWER SUPPLIES⁽¹⁾

Boldface = NEW

Description	Model	Isolation Voltage (V)		Input Voltage (VDC)		Leakage Current 240VAC 60Hz (μA)	Isolation Impedance		Current, Balanced Loads On All Outputs (mA)		Sensitivity To Input Change (V/V)	Temp ⁽²⁾	Pkg
		Cont Peak	Pulse Test Peak	min	max		(Ω)	(pF)	Rated	Max ⁽¹⁾			
Single ±15V Output	PWS725A PWS726A	2121 4950	4000 8000	7	18	2	10 ¹²	9	±15	±40	1.15	Ind	DIP
Dual ±15V Output	0722	4950	8000	5	16	1	10 ¹⁰	6	±3-40	±50	1.13	Ind	Mod
Quad ±8V Output	0724	1000	3000	5	16	1	10 ¹⁰	6	±3-16	±60	0.63	Ind	Mod
Multiple Output (1-8)	PWS740 PWS745 ⁽⁸⁾ PWS750	2121 1060 1060	4000 1200 ⁽⁹⁾ 1200 ⁽⁹⁾	7	20	1.5	10 ¹²	3	30 ⁽³⁾	60 ⁽³⁾	1.20	Ind	Sys ⁽⁴⁾
				4.5 ⁽⁵⁾	18 ⁽⁶⁾	1.5	10 ¹²	8	±15	30	⁽⁷⁾	Ind	Comp
				4.5 ⁽⁵⁾	18 ⁽⁶⁾	1.5	10 ¹²	8	±15	30	⁽⁷⁾	Ind	Comp

NOTES: (1) See complete Product Data Sheet for full specifications, especially regarding output current capabilities. (2) Ind = -25°C to +85°C. Com = 0°C to +70°C. (3) Per channel. (4) 1 TO-3 driver per 8 channels, plus 2 DIPs per channel. (5) 5V operation. (6) 15V operation. (7) 5V operation: 4.12; 15V operation: 1.2. (8) PWS745-1 driver may also be used with PWS740 and PWS750 components. (9) Partial discharge voltage.

CAPACITOR-COUPLED, DIGITAL COUPLER

Boldface = NEW

Description	Model	Isolation Voltage (V)		Leakage Current 240VAC 60Hz (μA)	Iso Impedance		Data Rate (MHz)	Common Mode Transient Immunity (kV/μs)	Power Consumption per Channel (mW)	Ext Power Req	Temp ⁽¹⁾
		Cont Peak	Pulse Test, Peak		(Ω)	(pF)					
Dual Isolated Transceiver	ISO150 ⁽²⁾	2121	2400	0.6	10 ¹²	5	40	3 ⁽³⁾	250	Yes	XInd

NOTES: (1) XInd = 40°C to +85°C. (2) DIP Package. (3) Typical.



SPECIAL FUNCTIONS

Boldface = NEW

Description	Model	Isolation Voltage	Isolation Mode	Leakage Current	Isolation Impedance	Gain Non-linearity	Frequency Response	Input Bias Current	Reference Voltage	Isolated Power Req	Temp. Range	Pkg
Precision Measured Channel	ISC300	500rms	60Hz cont	4 μ Arms	2G Ω||15pF	\pm 0.01% (typ)	3.5Hz	35nA (typ)	Yes	No	0°C to +70°C	Mod

ISOLATION CURRENT TRANSMITTER

Boldface = NEW

Description	Model	Span	Temperature Drift	Input	Output	Temperature Range	Pkg
Two-wire	IXR100	untrimmed error (max): -2.5% non-linearity (max): 0.01% (EMF), 0.1% (RTD)	50ppm (typ) 100ppm (max)	Offset Voltage 500 μ V (max) Offset Voltage vs Temp 5 μ V/°C CMR vs Supply 100dB	Current Range 4 - 20mA Current Limit 32mA Isolation Voltage 1500rms	-20 to +70°C	Mod

Special Functions

SPECIAL FUNCTIONS

Function	Model	Description	Comments	Temp Range ⁽¹⁾	Pkg
Multifunction Converter	4302	Y (Z/X) ^m This function may be used to multiply, divide, raise to powers, take roots and form sine and cosine functions.	Plastic Package.	Ind	DIP
Logarithmic Amplifier	LOG100	K Log (I ₁ /I ₂)	Optimized for log ratio of current inputs. Specified over six decades of input (1nA to 1mA), 55mV total error, 0.25% log conformity.	Com	DIP
	4127	K Log (I ₁ /I _{REF})	A more versatile part that contains an internal reference and a current inverter. 1% and 0.5% accuracy.	Com	DIP
	4341	True rms-to-DC conversion based on a log-antilog proportional approach. Pin compatible with 4340.	Some external trimming required. Lower cost in plastic package.	Ind	DIP
Switched Integrator	ACF2101	This is a dual, integrating, transimpedance amplifier that converts an input current to an output voltage by integrating the current for a user determined period of time. Eliminates large feedback resistor of traditional I to V converters.	Includes HOLD and RESET switches and output multiplexer. $V_{OUT} = -\frac{1}{C} \int i_{IN} dt$	Ind	DIP, SOIC
Photodiode	OPT201	Photodiode and Amplifier 0.090 x 0.090 inch photodiode with transimpedance amplifier.	Includes internal 1M Ω feedback resistor.	Com	DIP
	OPT202	Photodiode and Amplifier similar to OPT201 but response to 50kHz.	Includes internal 1M Ω feedback resistor.	Com	DIP

NOTE: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C.

**MULTIPLIERS/DIVIDERS****Boldface = NEW**

Model	Transfer Function	Error at +25°C max (%)	Temp Coeff (%/°C)	Feed-through (mV)	Offset Voltage (mV)	1% BW (kHz)	Temp Range ⁽¹⁾	Pkg
MPY100	$[(X_1 - X_2)(Y_1 - Y_2)/10] + Z_2$	±0.5	0.008	30	7	70	Ind	TO-100
MPY534	$[(X_1 - X_2)(Y_1 - Y_2)/10] + Z_2$	±0.25	0.008	0.05%	2	3MHz	Com	TO-100
MPY600	$[(X_1 - X_2)(Y_1 - Y_2)/2] + Z_2$	±0.025	0.02	2	5	10MHz	Ind	DIP
MPY634	$[(X_1 - X_2)(Y_1 - Y_2)/10] + Z_2$	±0.5	0.015	0.15%	2	10MHz	Ind	TO-100, DIP, SOIC

NOTE: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C.

DIVIDERS

Model	Transfer Function	Input Range	Accuracy D = 250mV max (%)	Temp Coeff (%/°C)	0.5% BW (kHz)	Rated Output, min	Temp Range ⁽¹⁾	Pkg
DIV100	10 x N/D	250mV to 10V	0.25	0.2	15	±10V, ±5mA	Com	DIP

NOTE: (1) Com = 0°C to +70°C.

FREQUENCY PRODUCTS**Boldface = NEW**

Function	Model	Description	Comments	Temp Range ⁽¹⁾	Pkg
Oscillator	4423	Very low cost in plastic package. Provides resistor-programmable quadrature outputs (sine and cosine wave outputs simultaneously available).	Frequency range: 0.002Hz to 20kHz. Frequency stability: 0.01%/°C. Quadrature phase error: ±0.1%.	Com	DIP
Universal Active Filter	UAF42	These filters provide a complex pole pair. State-variable type, low-pass, high-pass, and bandpass outputs.	Add only resistors to determine pole location (frequency and Q). Easily cascaded for complex filter responses.	Ind	DIP, SOIC
	UAF41			Ind	DIP
	UAF21			Ind	DIP

NOTE: Com = 0°C to +70°C, Ind = -25°C to +85°C.



References and Regulators

VOLTAGE REFERENCE Boldface = NEW

Description	Model	Output (V)	Min Output (mA)	Max Drift ±ppm/°C	Power Supply (V) (mA)	Typ Range	Pkg
+5V Precision Voltage Reference	REF02M, G	+5.00 ±0.09	10	10	+7/40 1.4	Mil, Ind	TO-99 Ceramic
Guaranteed Long-Term Stability—25± ppm/1k hrs	REF02P, U	+5.00 ±0.03	10	8.5	+7/40 1.4	Com, Ind	PDIP, SO Die TO-99
+10V Precision Voltage Reference	REF01M, G	+10.00 ±0.025	10	10	+11.4/40 1.4	Mil, Ind	TO-99 Ceramic
Guaranteed Long-Term Stability	REF01P, U	+10.00 ±0.020	10	8.5	+11.4/40 1.4	Ind, Com	PDIP, SO Die TO-99
+10V Precision Voltage Reference	REF10M	+10.00 ±0.005	10	1	+13.5/35 4.5	Com	TO-99
±10V Precision Voltage Reference	REF101	±10.00 ±0.005	10	1	+13.5/35 4.5	Com	TO-99
±10V Precision Voltage Reference	REF102	±10.00 ±0.0025	10	2.5	+11.4/36 1.4	Ind, Mil	TO-99, DIP, SOIC
Precision Micropower Voltage Reference	REF1004C	+1.235 ±0.002	10mA	0.6Ω	20ppm/°C	Com	SOIC
	REF1004I	+1.235 ±0.0004	10mA	0.6Ω	20ppm/°C	Ind	SOIC
	REF1004C	+2.50 ±0.0009	20mA	0.6Ω	20ppm/°C	Com	SOIC
	REF1004I	+2.50 ±.018	20mA	0.6Ω	20ppm/°C	Ind	SOIC

NOTE: (1) Com = 0°C to +70°C. Ind = -25°C to +85°C, Mil = -55°C to +125°C.

CURRENT REFERENCE Boldface = NEW

Model	Output I (µA)	Max Drift Compliance	(ppm/°C)	Comments	Temp Range ⁽¹⁾	Pkg
REF200	Dual 100 ±0.5	2.5 V to 40V	25	Includes 0.5% accurate current mirror	Ind	DIP, SOIC

NOTE: (1) Ind = -25°C to +85°C.

VOLTAGE REGULATORS Boldface = NEW

Description	Model	Output Voltage	Dropout Voltage at 800mA	Line Regulation (mV)	Load Regulation (mV)	Quiescent Current mA	Operating Junction Temp	Pkg
+2.85V Voltage Regulator For SCSI-2 Active Termination	REG1117-2.85	+2.85	1.2V (max)	6 (max)	10 (max)	10 (max)	0°C to +125°C	SOT-223
+5.0V Voltage Regulator	REG1117-5	+5	1.2V (max)	10 (max)	15 (max)	10 (max)	0°C to +125°C	SOT-223
	REG1117-3, 3.3	+3, +3.3	1.2V (max)	7 (max)	12 (max)	10 (max)	0°C to +125°C	SOT-223

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Digital-to-Analog Converters

AUDIO, VIDEO AND COMMUNICATIONS DIGITAL-TO-ANALOG CONVERTERS

Boldface = NEW

Model	Resolution (Bits)	Max Update Rate	Max THD + N (V _{OUT} = FS)	Output Range	Input Format	Power Supply (V)	Package ⁽¹⁾	Max Power Dissipation (mW)
DAC600	12	256MHz	-74dB SFDR	-1V, -20mA	Parallel	-5.2	68 PLCC	1.3W
DAC650	12	500MHz	-70dB SFDR	±1V, ±20mA	Parallel	±15, ±5	68 LEAD	2.0W
PCM53	16	500kHz	-88dB (JP) -92dB (KP)	±10V, ±1mA	Parallel	±15, +5	DDIP	600
PCM54	16	500kHz	-82dB (HP) -88dB (JP) -92dB (KP)	±3V, ±1mA	Parallel	±5 to ±12	DDIP	300
PCM55	16	500kHz	-82dB (HP) -88dB (JP)	±3V, ±1mA	Parallel	±5	SO	125
PCM56	16	800kHz	-82dB (P) -88dB (P-J) -92dB (P-K)	±3V, ±1mA	Serial Latched	±5 to ±12	DIP, SO	260
PCM66	16	200kHz	-82dB (P) -88dB (P-J)	2.6Vp-p, 2-Channel	Serial Latched	+5 Latched	SO	50
PCM1700 (Dual DAC)	18	800kHz	-82dB (P) -88dB (P-J) -92dB (P-K)	±3V, ±0.67mA	Serial Latched	±5	DDIP, SO	475
PCM58	18	1MHz	-92dB (P) -94dB (P-J) -96dB (P-K)	±1mA	Serial Latched	+5, -12	DDIP	400
PCM61	18	800kHz	-82dB (P) -88dB (P-J) -92dB (P-K)	±3V, ±1mA	Serial Latched	±5 to ±12	DDIP	260
PCM63	20	1MHz	-88dB (P) -92dB (P-J) -96dB (P-K)	±2mA	Serial Latched	±5	DDIP	300
PCM67/69 (Dual DAC)	18	1MHz	-82dB (P) -88dB (P-J) -92dB (P-K)	1.2mA	Serial Latched	+5	DIP, SO	105
PCM1702	20	1MHz	-88dB (P, U) -92dB (P-J) -96dB (P-K)	±1.2mA	Serial Latched	±5	DIP, SO	250

NOTE: (1) DIP = 0.3" wide DIP, DDIP = 0.6" wide DIP, SO = Small Outline Surface Mount.

DIGITAL SIGNAL PROCESSING DIGITAL-TO-ANALOG CONVERTERS

Boldface = NEW

Model	Resolution (Bits)	Linearity Error (%FSR)	Settling Time (µs)	Output Range	Signal-to-Noise + Distortion Ratio (dB)	Total Harmonic Distortion (dB)	Temp Range ⁽¹⁾	Pkg ⁽²⁾
DSP-Compatible Digital Interface (Single—DSP201, Dual—DSP202):								
DSP201	18	±0.006	—	±3V	86, f _{OUT} = 2kHz	-90	Ind	DDIP
DSP202	18	±0.006	—	±3V	86, f _{OUT} = 2kHz	-90	Ind	DDIP

NOTES: (1) Com = 0°C to +70°C, Ind = (-25°C to +85°C). (2) DDIP = 0.6" wide DIP.

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INSTRUMENTATION DIGITAL-TO-ANALOG CONVERTERS

Boldface = NEW

Description	Model	Resolution (Bits)	Linearity Error (%FSR)	Settling Time (µs)	Output Range	Temp Range ⁽¹⁾	Pkg ⁽²⁾
Very High Resolution	DAC729	18	±0.00075	5	±1mA, -2mA; +5V, +10V, ±5V, ±10V	Com	DDIP
General Purpose	DAC700	16	±0.0015	1	-2mA	Com, Ind, Mil	DDIP
	DAC701	16	±0.0015	8	+10V	Com, Ind, Mil	DDIP
	DAC702	16	±0.0015	1	±1mA	Com, Ind, Mil	DDIP
	DAC703	16	±0.0015	8	±10V	Com, Ind, Mil	DDIP, SO
Lowest Cost	DAC1600	16	±0.003	8 typ	±10V	Com	DDIP
Bus Interface:							
16-Bit Parallel	DAC707	16	±0.003	8	±10V	Com, Ind, Mil	DDIP
Serial/8-bit Parallel	DAC708	16	±0.003	1	±1mA, -2mA	Com, Ind, Mil	DDIP
Serial/8-bit Parallel	DAC709	16	±0.003	8	±5V, ±10V, +10V	Com, Ind, Mil	DDIP
Dual, Ser./8-bit Par.	DAC725	16	±0.003	8	±10V	Com, Ind	DDIP
Industry Standard	DAC7541A	12	±0.012	1	0 to 1mA	Com, Ind, Mil	DIP, SO
Ind. Std. w/Latch	DAC7545	12	±0.012	2	0 to 1mA	Com, Ind, Mil	DIP, SO
Dual w/Bus Interface:							
Serial Input	DAC7800	12	±0.012	0.8	0 to 1mA	Ext	DIP, SO
8-bit Port Interface	DAC7801	12	±0.012	0.8	0 to 1mA	Ext	DIP, SO
12-bit Port Interface	DAC7802	12	±0.012	0.8	0 to 1mA	Ext	DIP, SO
Single w/Bus Interface, Serial Input	DAC8043	12	±0.012	0.25 typ	0 to 1mA	Ind, Com	DIP, SO, Die
	DAC543	12	±0.012	0.25 typ	0 to 1mA	Ind, Com	DIP, SO, Die
Flexible Bus Interface:							
Industry Standard Pinout	DAC667	12	±0.006	4	±2.5V, ±5V, ±10V +5V, +10V	Com, Ind, Mil	DIP
	DAC811	12	±0.006	4	±5V, ±10V, +10V	Com, Ind, Mil	DDIP, SO
Small, Low Cost	DAC813	12	±0.006	4	±5V, ±10V, +10V	Com, Ext, Mil	DIP, SO
Lowest Cost	DAC1201	12	±0.018	4 typ	±5V, ±10V, +10V	Com	DDIP
Industry Standard, General Purpose	DAC80	12	±0.012	0.3, 3 typ	±1mA, -2mA; +5V, +10V, ±5V, ±10V	Com	DDIP
Dual, 12-bit Port	DAC2813	12	±0.006	6	±10, 0 to 10	Ext	DDIP
Dual, Multiplying Serial Port	DAC2814	12	±0.012	10	+V _S , -1.4V -V _S , +1.4V	Ext	DDIP
Dual Multiplying 8-bit Port	DAC2815	12	±0.012	10	+V _S , -1.4V -V _S , +1.4V	Ext	DDIP
QUAD, 12-bit Port	DAC4813	12	±0.012	6	±10	Ext	DDIP
QUAD, Multiplying Serial Port	DAC4814	12	±0.012	10	+V _S , -1.4V -V _S , +1.4V	Ext	DDIP
Dual Multiplying 8-bit Port	DAC4815	12	±0.012	10	+V _S , -1.4V -V _S , +1.4V	Ext	DDIP
Dual Multiplying DAC	DAC7528	8	±0.012	0.18	0 to 1mA	Ind, Com	DIP, SO, Die

NOTES: (1) Temperature Range: Com = 0°C to +70°C, Ind = -25°C to +85°C, Ext = -40°C to +85°C, Mil = -55°C to +125°C. (2) DIP = 0.3" wide DIP, DDIP = 0.6" wide DIP, SO = small outline surface mount.

STILL AVAILABLE BUT NOT IN DATA BOOK

Description	Model	Resolution (Bits)	Linearity Error (%FSR)	Settling Time (µs)	Output Range	Temp Range	Pkg ⁽¹⁾
Industry Standard, General Purpose	DAC85H	12	±0.012	3 typ	+10V, ±5V, ±10V	Ind	DDIP
	DAC87H	12	±0.012	3 typ	+10V, ±5V, ±10V	Mil	DDIP

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Analog Multiplexers

ANALOG MULTIPLEXERS

Boldface = NEW

Description	Model	Channels	Input Range (V)	On Resistance max (Ω)	Settling Time (to 0.01%)	Temp Range ⁽¹⁾	Pkg ⁽²⁾
Protected Inputs	MPC506AP	16-channel single ended	±15	1.8k	3.5μs	Com	28-p PDIP
	MPC506AG	16-channel single ended	±15	1.8k	3.5μs	Ext	28-p CDIP
	MPC506AU	8-channel differential	±15	1.8k	3.5μs	Com	29-p SOIC
	MPC507AP	8-channel differential	±15	1.8k	3.5μs	Com	28-p PDIP
	MPC507AG	8-channel differential	±15	1.8k	3.5μs	Ext	28-p CDIP
	MPC507AU	8-channel	±15	1.8k	3.5μs	Com	28-p SOIC
	MPC508AP	8-channel single ended	±15	1.8k	3.5μs	Com	16-p PDIP
	MPC508AG	8-channel single ended	±15	1.8k	3.5μs	Ext	16-p CDIP
	MPC508AU	8-channel single ended	±15	1.8k	3.5μs	Com	16-p SOIC
	MPC509AP	4-channel differential	±15	1.8k	3.5μs	Com	16-p PDIP
	MPC509AG	4-channel differential	±15	1.8k	3.5μs	Ext	16-p CDIP
	MPC509AU	4-channel differential	±15	1.8k	3.5μs	Com	16-p SOIC
	High Speed	MPC800KG	16 single or 8 differential	±15	750	800ns	Com	CDIP
MPC800SG		16 single or 8 differential	±15	750	800ns	Mil	CDIP
MPC801KG		8 single or 4 differential	±15	750	800ns	Com	CDIP
MPC801SG		8 single or 4 differential	±15	700	800ns	Mil	CDIP
Buffered 4 x 1	MPC100AP	4-channel single ended	±4.2	0.88MΩ	450MHz	Ext	14-p PDIP
	MPC100AU	4-channel single ended	±4.2	0.88MΩ	450MHz	Ext	14-p SOIC
Buffered Dual 2 x 1	MPC102AP	dual 2-channel single ended	±4.2	0.88MΩ	450MHz	Ext	14-p PDIP
	MPC102AU	dual 2-channel single ended	±4.2	0.88MΩ	450MHz	Ext	14-p PDIP

NOTES: (1) Temperature Range: Com = 0°C to +70°C, Ext = -40°C to +85°C, Mil = -55°C to +125°C. (2) CDIP = Ceramic DIP, PDIP = Plastic DIP.

Burr-Brown

Sample/Hold Amplifiers

HIGH-SPEED SAMPLE/HOLD AMPLIFIERS

Boldface = NEW

Description	Model	Gain Error (%)	Offset Error (mV)	Ampl BW -3dB, (MHz)	Acq Time (μs max)	Droop Rate (μV/μs)	Temp Range ⁽¹⁾	Input Range (Vp-p)	Pkg ⁽²⁾	Q ⁽³⁾ Screen
High Speed	SHC804	±0.1	±3	16	0.35	±5	Ind	20	HMD	Q
High Speed with Buffer	SHC803	±0.1	±3	16	0.35	±5	Ind	20	HMD	Q
Ultra-High Speed	SHC600	±0.1	±5	70	0.05	±180	Ind	2.5	CDIP	Q
Low Cost	SHC605	±0.1	±5	125	0.02⁽⁴⁾	±5000	Ext	4.0	16-p SOIC	—
High Linearity	SHC702	±0.1	±3	3	0.8	±2	Ind	20	24-p HMD	—

NOTES: (1) Temperature Range: Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C, Ext = -40°C to +85°C. (2) MC = Metal Can, PDIP = Plastic DIP, HCD = Hermetic Ceramic DIP, CD = Ceramic DIP, HMD = Hermetic Metal DIP, SOIC = Surface Mount Package. (3) Q indicates optional reliability screening is available for this model. BI indicates that an optional 160 hour burn-in is available for the model. (4) Typical.

SAMPLE/HOLD AMPLIFIERS

Boldface = NEW

Description	Model	Gain Error (%)	Offset Error (mV)	Charge Offset (mV)	Acq Time (μs max)	Droop Rate (μV/ms)	Temp Range ⁽¹⁾	Pkg ⁽²⁾	Q, BI ⁽³⁾ Screen
Fast, High Accuracy	SHC76	±0.02	±3	±6 typ	3	1	Ind, Com, Mil	HMD	—
Low Cost, Fast Industry Std	SHC5320	NA	±0.5	±1 typ	1.5	0.5	Com, Mil	HCD PDIP, SOIC, Die	BI
Lowest Cost Industry Std	SHC298	±0.01	±7	±25 max	10	100	Com, Ind	PDIP, MC, SOIC	BI
Wideband DC Restoration Circuit	SHC615	TBD	±0.5	NA	30μs	TBD	Xlind	PDIP, SOIC	—

NOTES: (1) Temperature Range: Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C, Ext = -40°C to +85°C. (2) MC = Metal Can, PDIP = Plastic DIP, HCD = Hermetic Ceramic DIP, CD = Ceramic DIP, HMD = Hermetic Metal DIP, SOIC = Surface Mount Package. (3) Q indicates optional reliability screening is available for this model. BI indicates that an optional 160 hour burn-in is available for the model. (4) Typical.



Voltage-to-Frequency Converters

VOLTAGE-TO-FREQUENCY CONVERTERS

Boldface = NEW

Description	Model	Frequency Range (kHz)	V _{IN} Range (V)	Linearity, max (% of FSR)	Tempco, max (ppm of FSR/°C)	Temp Range ⁽¹⁾	Pkg
Low-Cost Monolithic	VFC32	User-selected 500kHz, max	User-selected	±0.01 at 10kHz ±0.05 at 100kHz	75 typ ±100	Com Ind, Mil	DIP, SOIC TO-100,
Low-Cost Complete	VFC42	0 to 10	0 to +10	±0.01	±100	Ind	DIP
	VFC52	0 to 100	0 to +10	±0.05	±150	Ind	DIP
Precision Monolithic	VFC62	User-selected	User-selected	±0.002 at 10kHz	±20	Ind	DIP, TO-100
	VFC320	User-selected 1MHz max	User-selected	±0.002 at 10kHz	±20	Ind, Mil	DIP, TO-100
Synochronized Monolithic	VFC100	Clock-Programmed 2MHz max	0 to +10	0.1 at 1MHz	±50	Ind, Mil	DIP
	VFC101	Clock-Programmed, 2MHz max	0 to +10, 0 to +5, 0 to +8, -5 to +5	±0.02 at 100kHz	±40	Ind	PLCC
High-Performance	VFC110	User-selected 4MHz max	0 to +10	±0.05 at 1MHz	±50	Ind	DIP
Single Supply, Low Power	VFC121	User-selected 1.5MHz max	User-selected	±0.03 at 100kHz	±40	Ind	DIP

NOTE: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C.

Data Acquisition Components

HIGH-SPEED ANALOG-TO-DIGITAL CONVERTERS

Boldface = NEW

Description	Model	Resolution (Bits)	Linearity Error, max (%FSR)	Input Range (V)	Sampling Rate	THD (dB, typ)	Temp Range ⁽¹⁾	Pkg ⁽²⁾	Q ⁽³⁾ Screen
High Accuracy, High Resolution	ADC701	16	±0.003	10V/20V	512kHz	94w/SHC702	Com	TDIP	Q
	ADC750	22	±0.003	10V	400kHz	—	Com	Board	—
High Speed	ADC614	14	±0.006	±1.25	5.12MHz	88/Nyquist	Ind	QDIP	Q
Medium Resolution	ADC603	12	±0.018	±1.25	10MHz	68	Com, Ind, Mil	QDIP	Q
	ADC601	12	±0.012	10V/20V	1MHz	70w/SHC804	Com	TDIP	—
	ADS602	12	±0.03	10V/20V	1MHz	66	Com	TDIP	—
	ADC803	12	±0.012	10V/20V	1MHz	NA	Ind, Mil	HMD	Q

AUDIO ANALOG-TO-DIGITAL CONVERTERS

Description	Model	Resolution (Bits)	Typical DC Linearity Accuracy	Input Range (V)	Conversion Time (µs)	THD+N dB, max (V _{IN} = ±FS)	Output Format	Pkg ⁽²⁾
Low Cost	PCM78	16	14-Bit	±3	5	-88	Serial	DDIP
Dual	PCM1750	18	14-Bit	±2.75	5	-90	Serial	DDIP, SOIC
Dual ΔΣ	PCM1760	20	16-Bit	±2.5	20	-90	Serial	DDIP, SOIC
Single Channel	DSP101	18	14-Bit	±2.75	5	-90	Serial	DDIP
Dual Channel	DSP102	18	14-Bit	±2.75	5	-90	Serial	DDIP

NOTES: (1) Com = 0°C to +70°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C. (2) DIP = 0.3" wide DIP, DDIP = 0.6" wide DIP, TDIP = 0.9" wide DIP, PLCC = Plastic Leaded Chip Carrier, SO = Small Outline Surface Mount. QDIP = 1.2" wide DIP. (3) Q indicates optional reliability screening is available for this model.

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INSTRUMENTATION ANALOG-TO-DIGITAL CONVERTERS

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Description	Model	Resolution (Bits)	Linearity Error (%FSR)	Input Range (V) ⁽¹⁾	Conversion Time or Sampling Rate	NMC Resolution	Temp Range ⁽²⁾	Pkg ⁽³⁾
Data-Bus Interface	ADC700	16	±0.003	5, 10, 20 U/B	17µs	14	Mil, Ind, Com	TDIP
Industry Std Pinouts	ADC71	16	±0.003	5, 10, 20 U/B	50µs	14	Ind, Com	TDIP
	ADC76	16	±0.003	5, 10, 20 U/B	17µs	14	Ind, Com	TDIP
Sampling 574 Type	ADS574	12	±0.012	10, 20, U/B	40kHz	12	Com, Mil	DIP, DDIP SO
Sampling 774 Type	ADS774	12	±0.012	10, 20, U/B	8.5µs	12	Com, Mil	DIP, DDIP SO
Sampling, Interface	ADS7800	12	±0.012	10, 20 B	333kHz	12	Com, Ind	DIP SO
High-Accuracy, 4-Channel, Auto-Calibration, Sampling	ADC7802	12	±0.012	0 to +5	8.5µs	12	Ext	DDIP, PLCC
	ADS7803	12	±0.018	0 to +5	8.5µs	12	Ext	DDIP, PLCC
CMOS Sampling Family	ADS7804	12	±0.012	20B	10µs	12	Ext	DIP, SO
	ADS7805	16	±0.0015	20B	10µs	16	Ext	DIP, SO
	ADS7806	12	±0.012	4, 5, 20U/B	25µs	12	Ext	DIP, SO
	ADS7807	16	±0.0015	4, 5, 20U/B	25µs	16	Ext	DIP, SO
	ADS7808	12	±0.012	4, 5, 10, 20U/B	10µs	12	Ext	DIP, SO
	ADS7809	16	±0.0015	4, 5, 10, 20U/B	10µs	16	Ext	DIP, SO
	ADS7810	12	±0.012	20B	1.25µs	12	Ext	DIP, SO
	ADS7819	12	±0.012	5B	1.25µs	12	Ext	DIP, SO
Industry Std Pinout and Interface	ADC574A	12	±0.012	10, 20 U/B	25µs	12	Mil, Ind, Com	DDIP
	ADC674A	12	±0.012	10, 20 U/B	15µs	12	Mil, Ind, Com	DDIP
	ADC774	12	±0.012	10, 20 U/B	8.5µs	12	Mil, Ind, Com	DDIP
	ADC80AG	12	±0.012	5, 10, 20 U/B	25µs	12	Ind	TDIP
Medium Speed Monolithic	ADC80MAH	12	±0.012	5, 10, 20 U/B	25µs	12	Ind	TDIP
	ADC84KG	12	±0.012	5, 10, 20 U/B	10µs	12	Ind	TDIP
Medium Speed	ADC85H	12	±0.012	5, 10, 20 U/B	10µs	12	Com	TDIP
	ADC87H	12	±0.012	5, 10, 20 U/B	10µs	12	Mil	TDIP
Mil Temperature Range	ADC87H	12	±0.012	5, 10, 20 U/B	10µs	12	Mil	TDIP
High Accuracy	DDC101	20	±2.5ppm ⁽⁴⁾	Current and Voltage	64µs	TBD	Ind	DDIP, SOIC

NOTES: (1) U/B indicates the input voltage range for the model: U = unipolar, B = Bipolar. (2) Com = 0°C to +70°C, Ext = -40°C to +85°C, Ind = -25°C to +85°C, Mil = -55°C to +125°C. (3) DIP = 0.3" wide DIP, DDIP = 0.6" wide DIP, TDIP = 0.9" wide DIP, PLCC = Plastic Leaded Chip Carrier, SO = Small Outline Surface Mount. (4) Linearity errors ±0.025% reading ±2.5ppm FSR.

STILL AVAILABLE BUT NOT IN DATA BOOK

Description	Model	Resolution (Bits)	Linearity Error (%FSR)	Input Range (V) ⁽¹⁾	Conversion Time or Sampling Rate	NMC Resolution	Temp Range ⁽²⁾	Pkg ⁽³⁾
Serial Output	ADC804	12	±0.012	5, 10, 20 U/B	17µs	12	Mil, Ind, Com	DDIP

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Density	Device	Access Time (ns)	Icc (Max/Standby)	# Pins	Pkg Types	Voltage	Production Availability
1 MEG (128Kx8)	CAT28F010	120, 150, 200	30mA/100µA	32	P, N, T	12 V	NOW
	CAT29C010	90, 120, 150	40mA/20µA	32	P, N, T	3, 5 V	4Q94
	CAT28F001BX-T	120, 150, 200	30mA/100µA	32	P, N, T	12 V	4Q94
	CAT28F001BX-B	120, 150, 200	30mA/100µA	32	P, N, T	12 V	4Q94
2 MEG (256Kx8)	CAT28F020	120, 150, 200	30mA/100µA	32	P, N, T	12 V	1Q94
4 MEG (256Kx16)	CAT28F400	120, 150, 200	45mA/100µA	44	T	12 V	2Q94

Contact factory for PCMCIA flash cards and die availability.

Parallel E²PROMs

Density	Device	Features	Access Time (ns)	Icc (Max/Standby)	# Pins	Pkg Types	Voltage	Production Availability
16K-Bit (2Kx8)	CAT28C16A	Data polling Hardware write protection	200	25 mA/100µA	24 32	P, K, J N	5V	NOW
	CAT28C17A	Data polling Hardware write protection RDY/BUSY hardware pin	200	25mA/100µA	28 32	P, K, J N	5V	NOW
64K-Bit (8Kx8)	CAT28C64B	Data polling, Toggle bit Software Data Protection- (SDP) 32 byte page	150/200	25mA/100µA	28 32	P, K, J N, T	5V	NOW
	CAT28C65B	Data polling, Toggle bit Software Data Protection- (SDP) 32 byte page RDY/BUSY hardware pin	150/200	25mA/100µA	28 32	P, K, J N, T	5V	NOW
256K-Bit (32Kx8)	CAT28C256	Data polling, Toggle bit Software Data Protection- (SDP) 64 byte page	200/250/300	30mA/150µA	28 32	P N	5V	NOW

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2-Wire Bus Structure

Density	Device	Features	Icc (Max/Standby)	Max Clock Freq	# Pins	Pkg Types	Voltage	Production Availability
1K (128x8)	CAT24C01	I ² C compatible. Hardware Write Protect pin. 8 byte page	3mA/4μA	100kHz	8 14	P, J J	5V	2Q94
	CAT24LC01	I ² C compatible. Hardware Write Protect pin. 8 byte page	3mA/4μA	100kHz	8 14	P, J J	3-6V	2Q94
2K (256x8)	CAT24C02	I ² C compatible. Hardware Write Protect pin. 8 byte page	3mA/4μA	100kHz	8 14	P, J J	5V	NOW
	CAT24LC02	I ² C compatible. Hardware Write Protect pin. 8 byte page	3mA/4μA	100kHz	8 14	P, J J	3-6V	NOW
	CAT24C02A	I ² C compatible. 8 byte page	3mA/4μA	100kHz	8 14	P, J J	5V	NOW
	CAT24LC02A	I ² C compatible. 8 byte page	3mA/4μA	100kHz	8 14	P, J J	3-6V	NOW
4K (512x8)	CAT24C04	I ² C compatible. 16 byte page	3mA/4μA	100kHz	8 14	P, J J	5V	NOW
	CAT24LC04	I ² C compatible. 16 byte page	3mA/4μA	100kHz	8 14	P, J J	3-6V	NOW
8K (1024x8)	CAT24C08	I ² C compatible. 16 byte page	3mA/4μA	100kHz	8 14	P, J J	5V	NOW
	CAT24LC08	I ² C compatible. 16 byte page	3mA/4μA	100kHz	8 14	P, J J	3-6V	NOW
16K (2048x8)	CAT24C16	I ² C compatible. 16 byte page	3mA/4μA	100kHz	8 14	P, J J	5V	NOW
	CAT24LC16	I ² C compatible. 16 byte page	3mA/4μA	100kHz	8 14	P, J J	3-6V	NOW

Note:

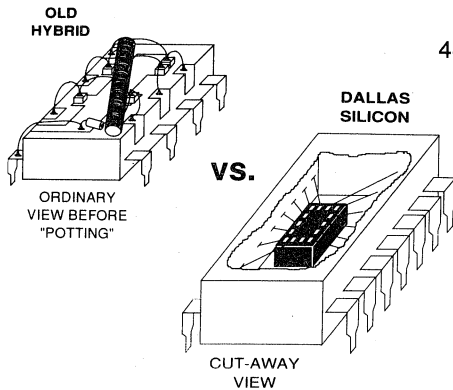
- (1) All I²C (2-wire Bus) devices offered in Zero Power™ (I_{SBZ} = 0μA) version. (2) Catalyst Semiconductor is licensed by Philips Corporation to carry the I²C Bus Protocol.
 (3) For information on military temperature devices, please contact the factory.

3-Wire Bus Structure

Density	Device	Features	Icc (Max/Standby)	Max Clock Freq	# Pins	Pkg Types	Voltage	Production Availability
1K (64x16 or 128x8)	CAT93C46A	National 93C46 compatible 64 x 16 only Pin 7 = no connect	3mA/100μA	1MHz	8	P, K, S	5V	NOW
	CAT93C46	Org. pin for x8 or x16 National 93C46 compatible	3mA/100μA	1MHz	8	P, K, S, J	5V	NOW
	CAT33C101	Org. pin for x8 or x16 National 93C46 compatible	2mA/50μA	250kHz	8	P, K, J	3V	NOW
2K (126x16 or 256x8)	CAT93C56	Org. pin for x8 or x16 National 93C56 compatible	3mA/1000μA	1MHz	8	P, K, S	5V	NOW 2Q94
	CAT93LC56	Org. pin for x8 or x16 National 93C56 compatible	2mA/50μA	250kHz	8	P, K, S	3V	NOW 2Q94
	CAT35C102	Org. pin for x8 or x16	3mA/100μA	1MHz	8	P, K, S	5V	NOW 2Q94
4K (256x16 or 512x8)	CAT33C104	Org. pin for x8 or x16 National 93C66 compatible	2mA/50μA	250kHz	8	P, K, S	3V	NOW 2Q94
	CAT35C104	Org. pin for x8 or x16 National 93C66 compatible	3mA/100μA	1MHz	8	P, K, S	5V	NOW 2Q94
16K (1024x16 or 2048x8)	CAT33C116	Org. pin for x8 or x16 Hardware Write Protect pin Sequential Read Operation	2mA/10μA	1MHz	8	P, S	3V	NOW
	CAT35C116	Org. pin for x8 or x16 Hardware Write Protect pin Sequential Read Operation	3mA/10μA	3MHz	8	P, S	5V	NOW

Note: (1) For information on military temperature devices, please contact the factory.

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- TTL/CMOS-compatible
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5-TAP DEVICES

DS1000 5-Tap Silicon Delay Line	8 & 14-Pin DIP & GULLWING 14-Pin DIP Sheared NC 8 & 16-Pin SOIC	20 to 500ns delays Pin compatible with standard hybrids
DS1004 5-Tap Silicon Delay Line Tap-to-tap tolerances	8-Pin DIP & GULLWING 8-Pin SOIC	2 to 5ns tap-to-tap increments Fully temperature and voltage compensated
DS1005 5-Tap Silicon Delay Line Voltage Compensated	8 & 14-Pin DIP & GULLWING 14-Pin DIP Sheared NC 16-Pin SOIC	60 to 250ns delays Temperature and voltage compensated and compatible with standard hybrids

RISC APPLICATION DEVICES

DS1003 4-Tap Silicon Delay Line	8 & 14-Pin DIP & GULLWING	Tolerance ±0.5ns
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10-TAP DEVICES

DS1010 10-Tap Silicon Delay Line	14-Pin DIP & GULLWING 16-Pin SOIC	50 to 1000ns delays Pin compatible with standard hybrids
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MULTIPLE INDEPENDENT DELAY DEVICES

DS1007 7-in-1 Silicon Delay Line	16-Pin DIP & GULLWING 16-Pin SOIC	3 to 40ns delays High speed device with 7 independent delays
DS1012 2-in-1 Sub-Miniature Silicon Delay Line with Logic	8-Pin DIP & GULLWING 8-Pin SOIC	5 to 50ns delays Can be used as frequency doubler or combinatorial logic with delays
DS1013 3-in-1 Silicon Delay Line	8 & 14-Pin DIP & GULLWING 16-Pin SOIC	10 to 200ns delays Temperature and voltage compensated
DS1033 3-in-1 Silicon Delay Line 3.3 Volt Device	8-Pin DIP 8-Pin SOIC	8 to 50ns delays Low power, high speed and fully temperature and voltage compensated
DS1035 3-in-1 Silicon Delay Line	8-Pin DIP 8-Pin SOIC	6 to 50ns delays High speed, temperature and voltage compensated

PROGRAMMABLE DEVICES

DS1020 8-Bit Programmable Silicon Delay Line	16-Pin DIP 16-Pin SOIC	0.25 to 2.00ns steps Resolution to 0.25ns with a simple parallel interface
DS1040 Programmable One-Shot Pulse Generator	8-Pin DIP & GULLWING 8-Pin SOIC	5 to 500ns pulse width No external capacitors required
DS1045 4-Bit Dual Programmable Silicon Delay Line	16-Pin DIP 16-Pin SOIC	9 to 84ns delays Precise independent delays from one timing source

*** OSCILLATORS ***

DS1055 Crystal-Free Oscillator with Power On Reset	8-Pin DIP 8-Pin SOIC	*** NEW PRODUCT *** Samples available 3Q94 Production available 4Q94
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Specification temp. 0° to 70°C ● Storage temp. -55°C to +125°C ● Soldering temp. 260°C for 10 seconds

Dallas Semiconductor

ALL SILICON DELAY LINE

DESCRIPTION

The 3D7000* series delay line is a completely silicon delay line, which features unique circuits to compensate for temperature and power supply variations. It offers 5 & 10 equally spaced taps providing delays from 5 ns to 500 ns. This series comes in a standard 14 pin DIP package, which is compatible with other standard Hybrid delay lines. It is also offered in a 16 pin SOIC package for surface mount technology to reduce P.C. board area.

The 3D7000* series is designed to produce both leading and trailing edge delay time with equal precision. Each tap capable of driving up to ten 74LS type loads.

5 Taps SERIES

Part Number		Total Delay (Ns)	Delay/Tap (ns)	Max Operating Freq (MHz)
DIP	SOIC			
**3D7005-25	**3D7005S-25	25	5	67
3D7005-30	3D7005S-30	30	6	55
3D7005-35	3D7005S-35	35	7	43
3D7005-40	3D7005S-40	40	8	41
3D7005-45	3D7005S-45	45	9	37
3D7005-50	3D7005S-50	50	10	33
3D7005-60	3D7005S-60	60	12	26
3D7005-75	3D7005S-75	75	15	22
3D7005-80	3D7005S-80	80	16	19
3D7005-100	3D7005S-100	100	20	16
3D7005-125	3D7005S-125	125	25	15
3D7005-150	3D7005S-150	150	30	11
3D7005-200	3D7005S-200	200	40	8
3D7005-225	3D7005S-225	225	45	7
3D7005-250	3D7005S-250	250	50	6
3D7005-300	3D7005S-300	300	60	8
3D7005-400	3D7005S-400	400	80	7
3D7005-500	3D7005S-500	500	100	6

10 Taps SERIES

Part Number		Total Delay (Ns)	Delay/Tap (ns)	Max Operating Freq (MHz)
DIP	SOIC			
**3D7010-50	**3D7010S-50	50	5	67
3D7010-60	3D7010S-60	60	6	55
3D7010-75	3D7010S-75	75	7.5	43
3D7010-80	3D7010S-80	80	8	41
3D7010-90	3D7010S-90	90	9	37
3D7010-100	3D7010S-100	100	10	33
3D7010-125	3D7010S-125	125	12.5	26
3D7010-150	3D7010S-150	150	15	22
3D7010-175	3D7010S-175	175	17.5	19
3D7010-200	3D7010S-200	200	20	16
3D7010-250	3D7010S-250	250	25	15
3D7010-300	3D7010S-300	300	30	11
3D7010-400	3D7010S-400	400	40	8
3D7010-450	3D7010S-450	450	45	7
3D7010-500	3D7010S-500	500	50	6

* Patented

** 1st Tap Delay = 7 ± 1 ns

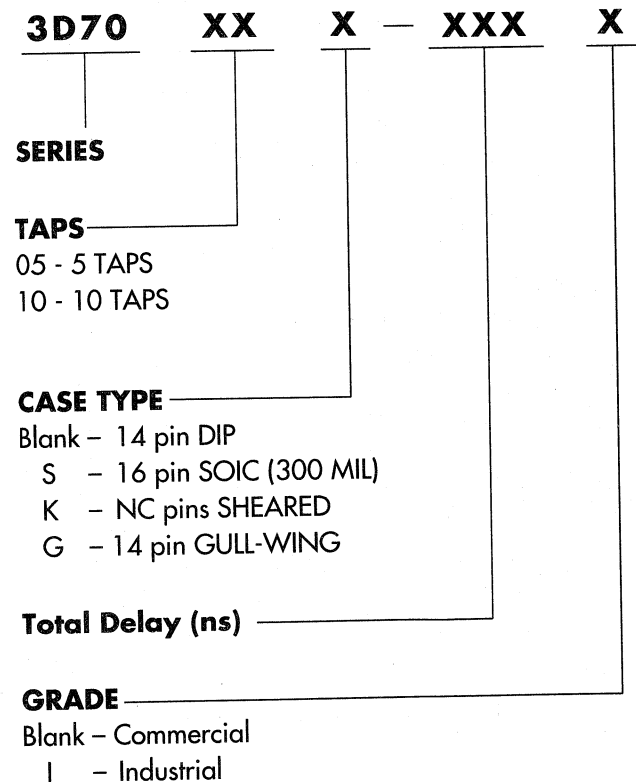
FEATURES

- High operating frequency (100MHz)
- Very low ground-bounce noise.
- Voltage & temperature compensated.
- Auto-insertable
- TTL/CMOS compatible, Low power CMOS.
- Vapor phase, IR and wave solderable.

SPECIFICATIONS

- Standard 14 pin DIP & 16 pin SOIC.
- Leading & trailing edge accuracy.
- Delay tolerance: ±5% or ±2ns, whichever is greater (others on request).
- Custom delays available: Any increment from 5 to 50 ns not listed.
- Minimum input pulse width: 20% of total delay.

PART NUMBER MAKE-UP



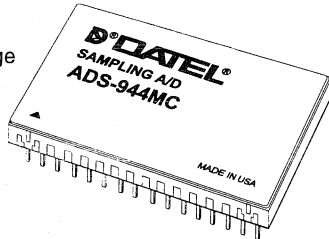
data delay devices

3 Mt. Prospect Avenue, Clifton, New Jersey 07013
(201) 773-2299 • FAX (201) 773-9672

14-bit, 5MHz Sampling A/D

Model ADS-944

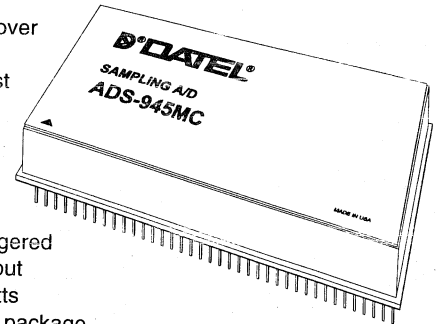
- No missing codes over temperature
- Sampling to Nyquist frequencies
- -80dB peak harmonics, 78dB SNR
- Functionally complete
- Edge triggered
- Small, 32-pin TDIP package
- Low power, 2.9 Watts
- Commercial & military temperature ranges



14-bit, 10MHz Sampling A/D

Model ADS-945

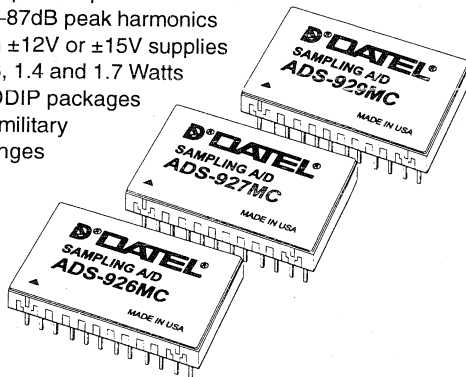
- No missing codes over temperature
- Sampling to Nyquist frequencies
- -82dB peak harmonics, 77dB SNR
- Functionally complete, edge triggered
- Buffered 100kΩ input
- Low power, 4.9 Watts
- Custom 2" x 4" DIP package



14-bit, 0.5, 1 and 2MHz Sampling A/D's

Models ADS-926, ADS-927 and ADS-929

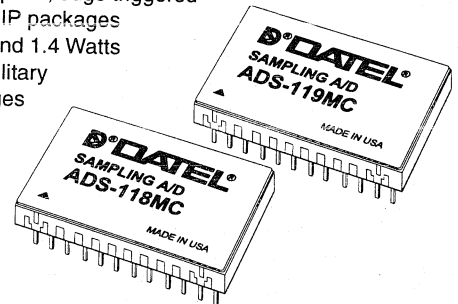
- No missing codes over temperature
- Sampling to Nyquist frequencies
- -92, -91, and -87dB peak harmonics
- Operation from ±12V or ±15V supplies
- Low power, 1.3, 1.4 and 1.7 Watts
- Small, 24-pin DDIP packages
- Commercial & military temperature ranges



12-bit, 5 and 10MHz Sampling A/D's

Models ADS-118 and ADS-119

- No missing codes over temperature
- Sampling to Nyquist frequencies
- -75 and -72dB harmonics, 70 and 67dB SNR's
- Functionally complete, edge triggered
- Small, 24-pin DDIP packages
- Low power, 1.3 and 1.4 Watts
- Commercial & military temperature ranges

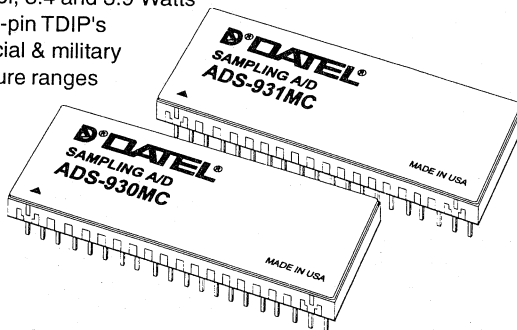


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16-bit, 0.5 and 1MHz Sampling A/D's

Models ADS-930 and ADS-931

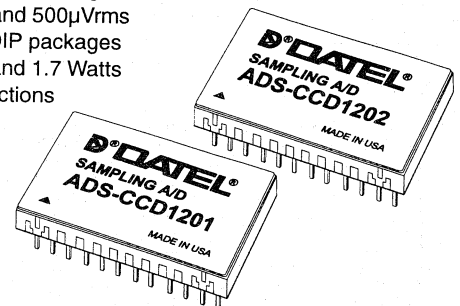
- No missing codes
- Sampling to Nyquist Frequencies
- -90 and -91dB peak harmonics
- Low power, 3.4 and 3.9 Watts
- Small, 40-pin TDIP's
- Commercial & military temperature ranges
- Low cost!



**12-bit, 1.2 and 2MHz Sampling A/D's
Optimized for Electronic Imaging**

Models ADS-CCD1201 and ADS-CCD1202

- ±1/4 and ±3/8LSB differential nonlinearities
- Full scale step response with 1 count error
- Immune to input overvoltage saturation
- Low noise, 300 and 500μVrms
- Small, 24-pin DDIP packages
- Low power, 1.3 and 1.7 Watts
- Internal CDS functions on the way



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Sampling Analog-to-Digital Converters

Model	Resolution (Bits)	Throughput Rate (MHz)	DNL Error (LSB)	INL Error (LSB)	NMC (Bits)	BW (MHz)	Peak Harmonics (-dB)	SINAD (dB)	SNR w/o Distortion (dB)	Power (Watts)	Package
ADS-111	12	0.5	±1/2	±1/2	12	2	70	—	—	1.4	24-pin DDIP
ADS-112	12	1.0	±1/2	±1/2	12	10	81	70	72	1.3	24-pin DDIP
ADS-117	12	2.0	±1/2	±1/2	12	10	81	70	72	1.6	24-pin DDIP
ADS-118/118A	12	5.0	±3/4	±1 1/2	12	20	75	70	72	1.3	24-pin DDIP
ADS-119	12	10.0	±3/4	±1	12	60	72	67	70	1.4	24-pin DDIP
ADS-193	12	1.0	±3/4	±3/4	12	10	81	70	72	1.3	40-pin TDIP
ADS-CCD1201	12	1.2	±1/8	±1/4	12	7	82	71	72	1.3	24-pin DDIP
ADS-CCD1202	12	2.0	±3/8	±3/8	12	6	87	77	78	1.7	24-pin DDIP
ADS-132	12	2.0	±3/4	±1/2	12	16	81	70	72	2.9	32-pin TDIP
ADS-131	12	5.0	±1 1/2	±2	12	65	70	66	70	3.6	40-pin TDIP
ADS-130	12	10.0	±1	±1	12	65	70	66	70	3.8	40-pin TDIP
ADS-924	14	0.3	±1/2	±1/2	14	2	76	—	—	1.4	24-pin DDIP
ADS-916/926	14	0.5	±1/2	±1/2	14	7	92	79	80	1.3	24-pin DDIP
ADS-928	14	0.5	±1/2	±1/2	14	6	88	80	88	3.1	32-pin TDIP
ADS-917/927	14	1.0	±1/2	±1/2	14	7	91	78	79	1.4	24-pin DDIP
ADS-941	14	1.0	±1/4	±1/2	14	6	92	81	90	2.8	32-pin TDIP
ADS-942/942A	14	2.0	±1/2	±1/2	14	6	92	80	85	2.4	32-pin TDIP
ADS-929	14	2.0	±1/2	±1/2	14	6	87	77	78	1.7	24-pin DDIP
ADS-944	14	5.0	±1/2	±1/2	14	20	80	78	81	2.9	32-pin TDIP
ADS-945	14	10.0	±1/2	±1/2	14	100	82	77	81	4.9	Custom DIP
ADS-930	16	0.5	±3/4	±1	16	2	90	83	87	3.4	40-pin TDIP
ADS-931	16	1.0	±3/4	±1	16	2	91	83	87	3.9	40-pin TDIP

Evaluation boards available for all Sampling AD's

Analog-to-Digital Converters

Model	Resolution (Bits)	Conversion Time (ns)	DNL Error (LSB)	INL Error (LSB)	NMC (Bits)	Input Range (V)	Power Supplies (V)	Power (Watts)	Package
ADC-207	7	50	±0.3	±0.8	7	0 to +5	+5	0.250	18-pin DIP
ADC-208	8	50	±1/2	±1/2	8	0 to +5	+5	0.660	24-pin DDIP
ADC-228	8	50	±1/2	±1/2	8	0 to +5	±15, +5	1.5	24-pin DDIP
ADC-304	8	50	±1/2	±1/2	8	-2, +3 to +5	±5 or +5	0.390	28-pin DDIP
ADC-317	8	8	±1/2	±1/2	8	0 to -2	-5	0.870	42-pin DDIP
ADC-530	12	350	±1/2	±1/2	12	+10, +20, ±10	±15, +5	2.1	32-pin TDIP
ADC-511	12	1000	±1/2	±1/2	12	+10, ±5	±15, +5	0.925	24-pin DDIP
ADC-914	14	2400	±1/2	±1/2	14	+10, ±5	±15, +5	0.925	24-pin DDIP
ADC-908	14	1000	±1/4	±1/2	14	+10, +20, ±5	±15, +5	2.7	32-pin TDIP

Date!

Sample-Hold Amplifiers

Model	Linearity (%)	Acquisition Time (ns)	Input Range (V)	Aperture Delay (ns)	Aperture Jitter (ps)	Gain	Bandwidth (MHz)	Hold Mode Droop (µV/µs)	Power Dissipation (mW)	Package
SHM-20	0.01	1000	±10	30	1000	+1	2	0.8	330	14-pin DIP
SHM-30	0.01	500	±10	-25	100	+1	4.5	0.01	735	14-pin DIP
SHM-40	0.1	40	±2.5	3	10	+1	40	100	1800	24-pin DDIP
SHM-43	0.01	25	±2	5	1	+1	150	1	545	14-pin DIP
SHM-45	0.01	160	±10	6	50	-0.5, -1, -2	16	0.5	730	24-pin DDIP
SHM-4860	0.01	160	±10	6	50	-1	16	0.5	730	24-pin DDIP
SHM-49	0.01	160	±10	10	25	-1	16	0.5	365	8-pin MINI
SHM-91 (dual)	0.002	2000	±10	15	300	+1	2	5	700	24-pin DDIP
SHM-945	0.001	400	±10	5	10	-1	16	0.5	305	24-pin DDIP
MSH-840 (Quad)	0.01	775	±10	6	15	-1	13	1	2250	32-pin TDIP

(x10 option CH 3 & 4)

Hybrid Data Acquisition Systems

Model	Resolution (Bits)	Input Channels	Throughput Rate (kHz)	DNL Error (LSB)	INL Error (LSB)	Input Range (V)	Input Impedance (Ω)	Power Supplies (V)	Power Dissipation (W)	Package
HDAS-8/16	12	8SE/4DE	50	±3/4	±3/4	±0.1 to ±10	10 ¹²	±15, +5	1.45	62-pin QDIP
HDAS-75/76	12	8SE/4DE	75	±3/4	±3/4	±0.1 to ±10	10 ¹²	±15, +5	0.500	40-pin DDIP
HDAS-534/538	12	8SE/4DE	250	±3/4	±3/4	±0.1 to ±10	10 ¹²	±15, +5	2.6	40-pin DDIP
HDAS-524/528	12	8SE/4DE	400	±3/4	±3/4	±0.1 to ±10	10 ¹²	±15, +5	2.6	40-pin DDIP

Contact DATEL for availability of MIL-STD-883 devices

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Multiplexers

Model	Channels	Settling Time to 0.01% (μ s)	Access Time (ns)	Input Range (V)	On Resistance (Ω)	Off Channel Input Leakage (pA)	On Channel Input Leakage (pA)	Power (mW)	Power Supplies (V)	Package
MX-826	8 SE	0.225 (400ns to 0.003%)	70	± 10	2500	—	—	395	$\pm 15, +5$	24-pin DDIP
MX-850	4 SE	0.050 (100ns to 0.001%)	20	± 10	18 to 70	20	400	207	$\pm 15, +5$	14-pin DIP
MV-808	8 SE	2.8	350	± 15	250	20	100	55	± 15	16-pin DIP
MV-1606	16 SE	2.4	300	± 15	270	30	1000	105	± 15	28-pin DIP
MVD-409	4 DE	2.8	350	± 15	250	20	50	55	± 15	16-pin DIP
MVD-807	8 DE	2.4	300	± 15	270	30	1000	105	± 15	28-pin DIP
MX-808	8 SE	3.0	500	± 15	1500	30	100	105	± 15	16-pin DIP
MX-818	8SE/4DE	3.0	400	± 15	750	50	100	540	± 15	18-pin DIP
MX-1606	16 SE	3.0	500	± 15	1500	30	100	105	± 15	28-pin DIP
MX-1616	16 SE	0.800	150	± 15	750	10	40	900	± 15	28-pin DIP
MXD-409	4 DE	3.0	500	± 15	1500	30	100	105	± 15	16-pin DIP
MXD-807	8 DE	3.0	500	± 15	1500	30	100	105	± 15	28-pin DIP

Amplifiers

Model	DC Open Loop Gain (V/V)	Settling Time to 0.01% (ns)	Slew Rate (V/ μ s)	Gain Bandwidth (MHz)	Input Offset Error (mV)	Operating Amplifier Type	Power Supply Range (V)	Package
AM-500	10^6	200	1000	130	± 0.5	Operational	± 10 to ± 18	14-pin DIP
AM-1435	10^5	70	300	1000	± 2	Operational	± 12 to ± 16	14-pin DIP
AM-551	—	3 μ s	23	0.6	± 1	Instrumentation	± 5 to ± 18	16-pin DIP

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Tuneable Low-Pass Active Filters

Model	Poles	Filter Type	Low Pass	High Pass	Band Pass	Band Reject	Rolloff (dB/Octave)	Frequency Cutoff Range (f_c)	Gain	Package
FLT-C1	7	CH	*				52	78Hz-20kHz	1, 2, 4, 8	32-pin DIP
FLJ-D Series	2	BU, CH, BE	*	*	*	*	12	1Hz-159kHz	1-10	40-pin QDIP
FLJ-D5/D6 Series	5/6	CA	*				60/80	10Hz-20kHz	0 \pm 0.3dB	40-pin QDIP
FLJ-V Series	2, 4	BU	*	*	*	*	12, 24	20Hz-100kHz	0 \pm 0.5-1dB	40-pin QDIP
FLJ-R Series	3-8	CA	*				100-135	10Hz-20kHz	0 \pm 0.1dB	40-pin QDIP
FLJ-UR Series	1, 2, 4	BU, CH	*	*	*	*	12, 24, 42	40Hz-20kHz	0 \pm 1-3dB	20-pin SIP
FLT-U2	2	BU, CH, BE, CH	*	*	*	*	12	0.001Hz-200kHz	0.1-1000	16-pin DIP

BU = Butterworth CH = Chebyshev CA = Causer/Elliptical BE = Bessel

Digital-to-Analog Converters

Model	Resolution (Bits)	Settling Time (μ s)	Output Mode	I_{out} Current (mA)	DNL Error (LSB)	INL Error (LSB)	Power Dissipation (mW)	Input Coding	Package
DAC-HF8	8	0.025	Current	+5, ± 2.5	$\pm 1/2$	$\pm 1/2$	750	Binary	24-pin DDIP
DAC-HF10	10	0.025	Current	+5, ± 2.5	$\pm 1/2$	$\pm 1/2$	825	Binary	24-pin DDIP
DAC-HF12	12	0.050	Current	+5, ± 2.5	± 1	± 1	900	Binary	24-pin DDIP
DAC-HZ12	12	3	Voltage/Current	-2, ± 1	$\pm 3/4$	$\pm 1/2$	390	C Binary/C BCD	24-pin DDIP
DAC-HK12	12	3	Voltage/Current	-2, ± 1	$\pm 3/4$	$\pm 1/2$	700	Binary, 2C	24-pin DDIP
DAC-HP16	16	15	Voltage	—	$\pm 3/4$	$\pm 1/2$	675	C Binary	24-pin DDIP

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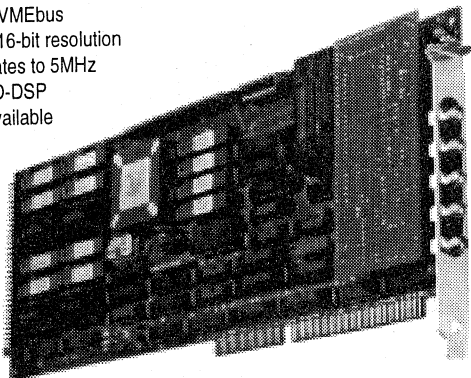
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Single Output

Model	V _{OUT} (Volts)	I _{OUT} (mA)	Input Range (Volts)	Efficiency (Min.)	Package (Inches)
UWR-3.3/1800-D5	3.33	1800	4.75-7	70%	2 x 1
UWR-3.3/2500-D12	3.33	2500	9-18	75%	2 x 1
UWR-3.3/1800-D48	3.33	1800	18-72	73%	2 x 1
UWR-3.3/4250-D5	3.33	4250	4.6-13.2	73%	2 x 2
UWR-3.3/4850-D12	3.33	4850	9-18	75%	2 x 2
UWR-3.3/4850-D48	3.33	4850	18-72	79%	2 x 2
UWR-5/500-D5	5	500	4.5-9	70%	DDIP
UWR-5/500-D12	5	500	9-18	70%	DDIP
UWR-5/500-D48	5	500	18-72	75%	DDIP
UWR-5/1600-D5	5	1600	4.75-7	73%	2 x 1
UWR-5/2000-D12	5	2000	9-18	79%	2 x 1
UWR-5/1800-D48	5	1800	18-72	78%	2 x 1
UWR-5/3000-D5	5	3000	4.6-13.2	78%	2 x 2
UWR-5/4000-D12	5	4000	9-18	82%	2 x 2
UWR-5/4000-D48	5	4000	18-72	81%	2 x 2
UWR-5.2/1500-D5	5.2	1500	4.75-7	73%	2 x 1
UWR-5.2/3000-D5	5.2	3000	4.6-13.2	78%	2 x 2
UWR-12/250-D5	12	250	4.5-9	72%	DDIP
UWR-12/250-D12	12	250	9-18	72%	DDIP
UWR-12/250-D48	12	250	18-72	82%	DDIP
UWR-12/665-D5	12	665	4.7-7	75%	2 x 1
UWR-12/830-D12	12	830	9-18	81%	2 x 1
UWR-12/750-D48	12	750	18-72	81%	2 x 1
UWR-12/1250-D5	12	1250	4.6-13.2	79%	2 x 2
UWR-12/1650-D12	12	1650	9-18	82%	2 x 2
UWR-12/1650-D48	12	1650	18-72	82%	2 x 2
UWR-15/200-D5	15	200	4.5-9	72%	DDIP
UWR-15/200-D12	15	200	9-18	72%	DDIP
UWR-15/200-D48	15	200	18-72	82%	DDIP
UWR-15/530-D5	15	530	4.7-7	74%	2 x 1
UWR-15/665-D12	15	665	9-18	82%	2 x 1
UWR-15/600-D48	15	600	18-72	81%	2 x 1
UWR-15/1000-D5	15	1000	4.6-13.2	80%	2 x 2
UWR-15/1300-D12	15	1300	9-18	84%	2 x 2
UWR-15/1300-D48	15	1300	18-72	84%	2 x 2

Analog I/O Boards

- PC/AT and VMEbus
- 12, 14 and 16-bit resolution
- Sampling rates to 5MHz
- A/D and A/D-DSP
- Software available



Call today for FREE catalogs!

Dual Output

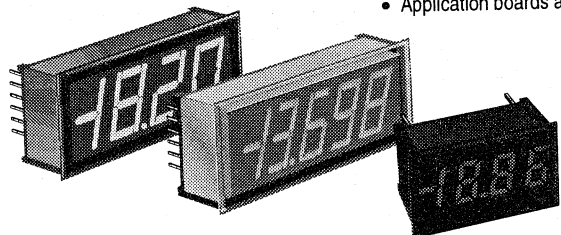
Model	V _{OUT} (Volts)	I _{OUT} (mA)	Input Range (Volts)	Efficiency (Min.)	Package (Inches)
BWR-5/700-D5	±5	700	4.75-7	74%	2 x 1
BWR-5/800-D12	±5	800	9-18	78%	2 x 1
BWR-5/700-D48	±5	700	18-72	77%	2 x 1
BWR-5/1500-D5	±5	1500	4.6-13.2	78%	2 x 2
BWR-5/1700-D12	±5	1700	9-36	80%	2 x 2
BWR-5/1700-D48	±5	1700	18-72	82%	2 x 2
BWR-9/850-D5	±9	850	4.6-13.2	78%	2 x 2
BWR-12/105-D5	±12	105	4.5-9	70%	DDIP
BWR-12/125-D12	±12	125	9-18	75%	DDIP
BWR-12/125-D48	±12	125	18-72	80%	DDIP
BWR-12/335-D5	±12	335	4.75-7	73%	2 x 1
BWR-12/415-D12	±12	415	9-18	82%	2 x 1
BWR-12/415-D48	±12	415	18-72	79%	2 x 1
BWR-12/625-D5	±12	625	4.6-13.2	80%	2 x 2
BWR-12/830-D12	±12	830	9-36	83%	2 x 2
BWR-12/830-D48	±12	830	18-72	82%	2 x 2
BWR-15/85-D5	±15	85	4.5-9	70%	DDIP
BWR-15/100-D12	±15	100	9-18	75%	DDIP
BWR-15/100-D48	±15	100	18-72	82%	DDIP
BWR-15/275-D5	±15	275	4.75-7	73%	2 x 1
BWR-15/330-D12	±15	330	9-18	83%	2 x 1
BWR-15/330-D48	±15	330	18-72	80%	2 x 1
BWR-15/500-D5	±15	500	4.6-13.2	81%	2 x 2
BWR-15/670-D12	±15	670	9-36	83%	2 x 2
BWR-15/670-D48	±15	670	18-72	82%	2 x 2

Triple Output

Model	V _{OUT} (Volts)	I _{OUT} (mA)	Input Range (Volts)	Efficiency (Min.)	Package (Inches)
TWR-5/1000-12/125-D5	5/±12	1000/125	4.7-7	73%	2 x 1
TWR-5/1000-12/210-D12	5/±12	1000/210	9-18	81%	2 x 1
TWR-5/1200-12/250-D48	5/±12	1200/250	18-72	81%	2 x 2
TWR-5/1500-12/250-D48	5/±12	1500/250	18-72	79%	2 x 2
TWR-5/1800-12/200-D48	5/±12	1800/200	18-72	81%	2 x 2
TWR-5/800-15/150-D5	5/±15	800/150	4.7-7	73%	2 x 1
TWR-5/1000-15/200-D12	5/±15	1000/200	9-18	82%	2 x 1
TWR-5/1000-15/250-D48	5/±15	1000/250	18-72	79%	2 x 2
TWR-5/1500-15/250-D48	5/±15	1500/250	18-72	81%	2 x 2
TWR-5/1800-15/150-D48	5/±15	1800/150	18-72	80%	2 x 2

Digital Voltmeters

- 3½ and 4½ digits
- LED and LCD displays
- Very low cost
- Subminiature sizes
- Choice of 7 bright colors
- Application boards available

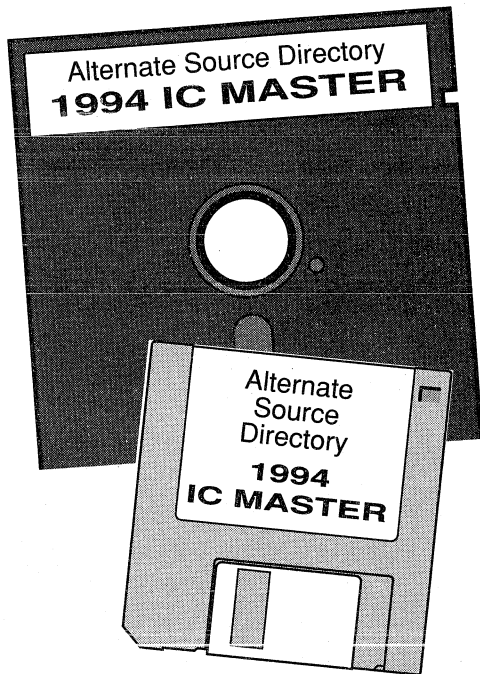


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ALTERNATE SOURCE DIRECTORY



The all new 1994 ICMASD-IC Alternate Source Directory on Disk is identical to the Alternate Source Directory Section contained in Volume Two of the printed version of the 1994 IC Master. All you need is an IBM XT/AT or 100% compatible personal computer with hard drive.

ICMASD is the most comprehensive and reliable guide available to all integrated circuits known to have a realistic replacement or alternative. The 1994 version contains over 106,000 listings to help you find the functional equivalents for both current and discontinued parts.

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Published annually in March

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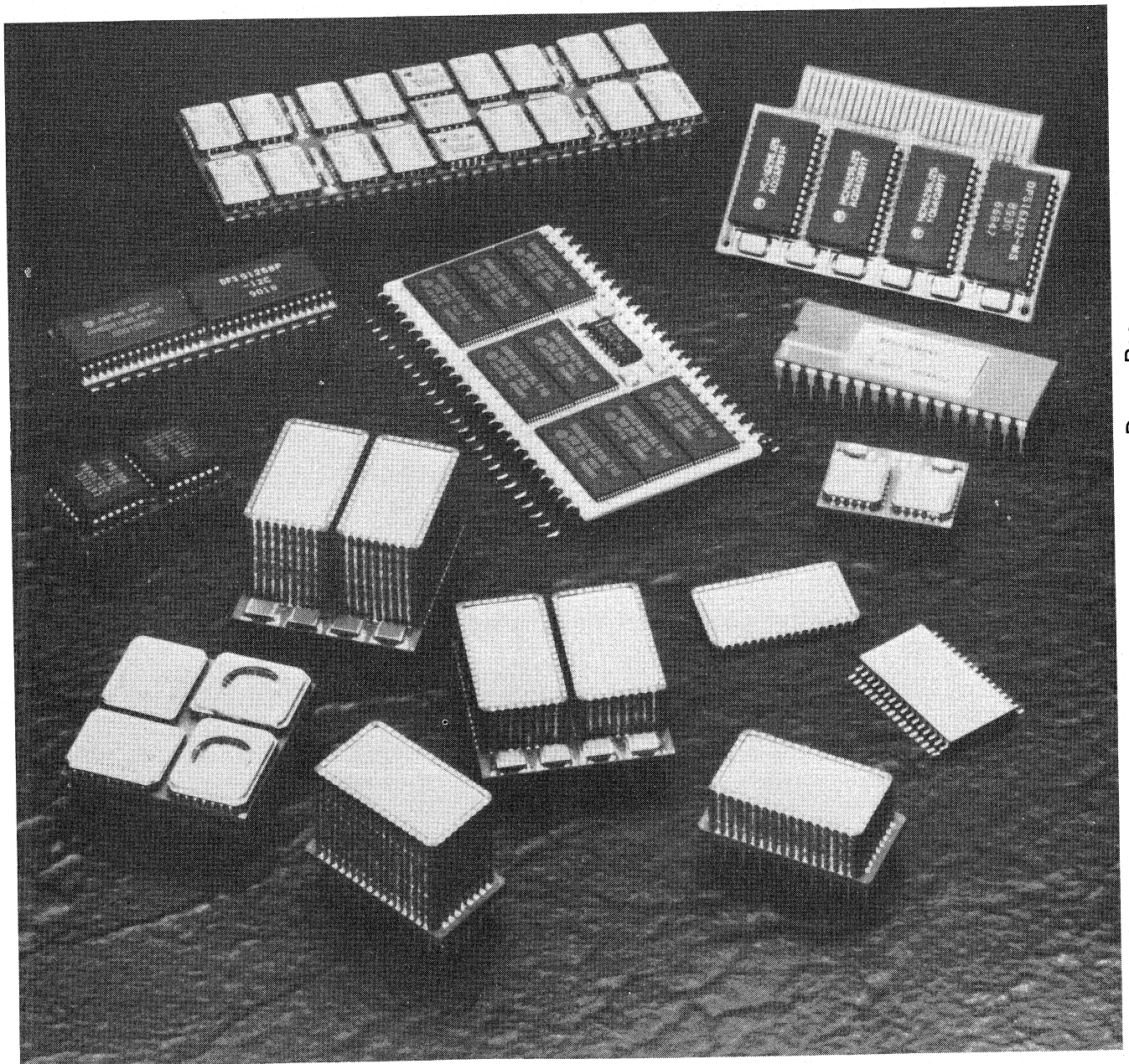
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DENSE-PAC MICROSYSTEMS, INC.

... Breaking Space Barriers

SHORT FORM CATALOG



Dense-Pac

SECOND GENERATION STACKS



SRAM PRODUCTS

DPS1MS16P/XP	. . . . .	.2Megx8/1Megx16, 85 - 150ns, DIP/Gullwing
DPS1MS8U	. . . . .	.1Megx8, 70 - 150ns, SIP
DPS256X24P	. . . . .	.256Kx24/512Kx12, 25 - 45ns, DIP
DPS256S32W	. . . . .	.1Megx8/512Kx16/256Kx32, 70 - 150ns, SIMM
DPS256X32L/W	. . . . .	.256Kx32/512Kx16/1Megx8, 20 - 35ns, SIP/SIMM
DPS256W36L	. . . . .	.256Kx36 / 512Kx18, 20 - 45ns, ZIP
DPS256S8AP	. . . . .	.256Kx8, 25 - 70ns, DIP
DPS256S8P/PL/PLL	. . . . .	.256Kx8, 70 - 150ns, DIP
DPS512S8AP	. . . . .	.512Kx8, 25 - 70ns, DIP
DPS512S8EJ4/EL4/RJ4/RL4	. . . . .	.512Kx8, 20 - 45ns, SOJ
DPS512S8H4	. . . . .	.512Kx8, 70 - 150ns, SOP
DPS512S8P/PL/PLL	. . . . .	.512Kx8, 70 - 150ns, DIP
DPS512S8U512Kx8, 70 - 150ns, SIP

DRAM PRODUCTS

DPD16MX8PH416Meg x 8, 70 - 120, SOP
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EPROM PRODUCTS

DPV12832VA128Kx32/256Kx16/512Kx8, 120 - 250ns, PGA
DPV256S32W1Megx8/512Kx16/256Kx32, 150 - 250ns, SIMM

FLASH PRODUCTS

DPZ128X32VTP	. . . . .	.128Kx32/256Kx16/512Kx8, PGA
DPZ1MS16P/XP	. . . . .	.1Megx16/2Megx8, 150 - 250ns, DIP/SOP
DPZ2MX16P/XP	. . . . .	.2Megx16/4Megx8, 150 - 250ns, DIP/SOP

NEW PRODUCTS

DPS1MS8EJ4/EL4/RJ4/RL41Megx8, 25 - 45ns, SOJ
------------------------	-----------	-------------------------

Dense-Pac

REFERENCE BY SIZE

SIZE	PART NUMBER	ORGANIZATION	SPEED (ns)	PACKAGE
SRAM PRODUCT				
2 Megabit	DPS256S8AP	256Kx8	25, 35, 45, 55, 70	32-Pin DIP
	DPS256S8P/PL/PLL	256Kx8	70, 85, 100, 120, 150	32-Pin DIP
4 Megabit	DPS512S8AP	512Kx8	25, 35, 45, 55, 70	32-Pin DIP
	DPS512S8EJ4/EL4/RJ4/RL4	512Kx8	20, 25, 30, 35, 45	32/36-Pin SOJ
	DPS512S8H4	512Kx8	70, 85, 100, 120, 150	32-Pin SOP
	DPS512S8P/PL/PLL	512Kx8	70, 85, 100, 120, 150	32-Pin DIP
	DPS512S8U	512Kx8	70, 85, 100, 120, 150	36-Pin SIP
6 Megabit	DPS256X24P	256Kx24	25, 35, 45	50-Pin DIP
8 Megabit	DPS1MS8EJ4/EL4/RJ4/RL4	1Megx8	25, 30, 35, 45	32/36-Pin SOJ
	DPS1MS8U	1Megx8	70, 85, 100, 120, 150	36-Pin SIP
	DPS256S32W	1Megx8, 512Kx16, 256Kx32	85, 100, 120, 150	64-Pin SIMM
	DPS256X32L/W	256Kx32, 512Kx16, 1Megx8	20, 25, 35	64-Pin ZIP/SIMM
9 Megabit	DPS256W36L	256Kx36, 512Kx18	20, 25, 30, 35, 45	64-Pin ZIP
16 Megabit	DPS1MS16P/XP	1Megx16, 2Megx8	85, 100, 120, 150	48-Pin DIP/GULL
DRAM PRODUCT				
128 Megabit	DPD16MX8PH4	16Megx8	70, 85, 100, 120, 150	34-Pin SOP
EPROM PRODUCT				
4 Megabit	DPV12832VA	128Kx32, 256Kx16, 512Kx8	120, 150, 170, 200, 250	66-Pin PGA
8 Megabit	DPV256S32W	1Megx8, 512Kx16, 256Kx32	150, 170, 200, 250	64-Pin SIMM
FLASH PRODUCT				
4 Megabit	DPZ128X32VTP	128Kx32, 256Kx16, 512K x 8	150, 170, 200, 250	66-Pin PGA
16 Megabit	DPZ1MS16P/XP	1Megx16, 2Megx8	150, 200, 250	50-Pin DIP/GULL
32 Megabit	DPZ2MX16P/XP	2Megx16, 4Megx8	200, 250, 300	50-Pin DIP/GULL

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PRODUCTS

Standard and custom monolithic memories and memory/logic/analog modules manufactured since 1981.

DESIGN CAPABILITY

Dense-Pac digital and analog design engineers are in tune with your custom design requirements. We will work with you from conceptual design, through prototype, until you are satisfied with the custom part in its application. Dense-Pac's CAD system can provide short design cycles. Combined with our designers' experience in optimizing module performance in terms of minimizing parasitic impedances, Dense-Pac can supply a turn key product in an abbreviated turn-around time. Modules may be designed using PCB, thick film or co-fired ceramic substrates in DIP, SIP, ZIP or PGA configurations. Dense-Pac also has 3-dimensional packaging techniques which can be designed into custom applications where board space savings is paramount. With 10 years of custom module design behind us, we are fully prepared to satisfy your every need from circuit design to thermal analysis.

TEST CAPABILITY

Dense-Pac has made major investments in both automated test equipment (ATE) and in test software engineering. Six modern ATE testers are supplemented with two functional testers, all with temperature forcing capabilities. Attention is paid to every detail, such as measuring the exact case temperature of each module under test. To further assure the highest quality parts, limits on critical parameters are not just set at data sheet values but set at product design values to eliminate parts falling outside the normal distribution. All Dense-Pac manufactured monolithic devices are 100% parametrically tested at temperature, standard modules are 100% functionally tested at temperature. All non-standard/custom modules are tested per customer request, and all are functionally tested over temperature and fully warranted to meet specifications.

MILITARY PROCESSING CAPABILITY

Dense-Pac has full test, burn-in and environmental test capabilities to process product in accordance with the following methods from MIL-STD-883C:

Screening Capabilities

- Internal Visual per Method 2010, Test Condition B
- Temperature Cycle per Method 1010, Test Condition C
- Thermal Shock per Method 1011, Test Condition A
- Constant Acceleration per Method 2001, Test Condition E; Y1 orientation only
- Three-Temperature Testing per Dense-Pac Specification or Customer S.C.D.
- P.I.N.D. (optional) per Method 2020, Test Condition A
- Burn-In per Method 1015, 160 Hrs. @ +125°C
- Seal (Fine and Gross Leak) per Method 1014
- External Visual per Method 2009

Qualification and Quality Conformance Inspection Capabilities

- Resistance to Solvents per Method 2015
- Solderability per Method 2022 or 2003
- Bond Strength per Method 2011
- Steady State Life Testing per Method 1005
- Physical Dimensions per Method 2016
- Lead Integrity per Method 2004 Test Condition B2 (Lead Fatigue)
- Moisture Resistance per Method 1004
- Mechanical Shock per Method 2002, Test Condition B
- Vibration, Variable Frequency per Method 2007, Test Condition A
- Salt Atmosphere per Method 1009, Test Condition A
- Internal Water Vapor Content per Method 1018, 5000 ppm max. H₂O content @ +100°C

QUALITY

Dense-Pac has an absolute commitment to quality which is evident by the results of our 100% pass rate for military vendor quality surveys to MIL-I-45208. Dense-Pac has been approved as a MIL-I-45208 vendor by over 20 major U.S. defense and aerospace prime contractors and by several major overseas corporations. Dense-Pac Quality Assurance reviews all purchase orders, customer specifications, and any other applicable documentation against our drawings, test software, test procedures, travelers, etc. for each customer order. Dense-Pac maintains a complete MIL-I-45208 system for all products produced (Commercial, Industrial, and Military grades). Dense-Pac's quality system, including a complete configuration management system, has been extremely successful, evident by our level of customer satisfaction and an extremely low product return rate.

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DPS128M8 CERAMIC 128K X 8 CMOS MONOLITHIC SRAM

Description

The DPS128M8 is a 128K x 8 asynchronous static RAM fabricated on a monolithic CMOS chip. It is designed for use in high-density, high-speed, low-power applications. All pins are TTL-compatible and a single +5 Volt power supply is required.

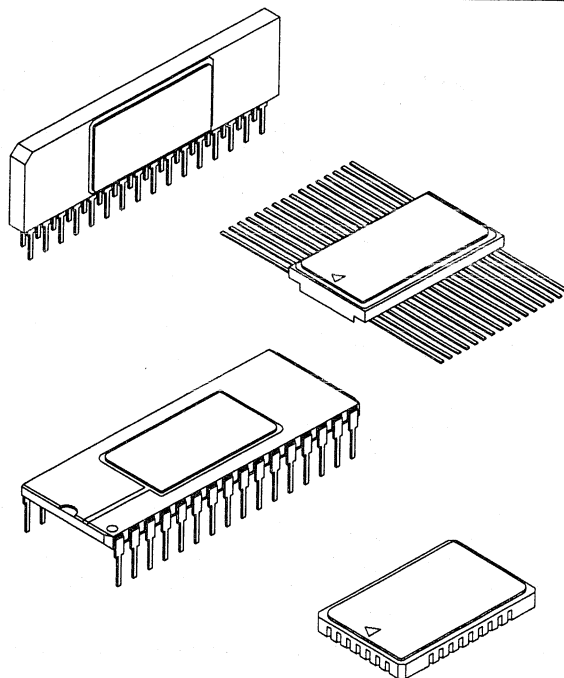
The DPS128M8 has extremely low standby power dissipation making it suitable for battery back up.

The 600-mil wide, 32-pin ceramic, dual-in-line package conforms to the JEDEC standard. Dens-Pac also offers the DPS128M8 as a space saving ceramic ZIP, ceramic leadless chip carrier and ceramic Small Outline Gullwing "flatpack" for surface-mount applications.

All Dens-Pac military monolithic packages are available screened to selected test methods from MIL-STD-883, which are further described in the Military Processing Capability section.

Features

- 131, 072 word by 8-bit organization
- Fast Access Times: 70, 85, 100, 120, 150ns
- Higher Speed (25ns to 55ns) Available 2H'91
- Low Power Dissipation - 10 μ W (typ.) standby
75 mW (typ.) operating
- 2-Volt Data Retention
- Output Enable Function
- Two Chip Enables



DPS512S8 512K X 8 CMOS SRAM MODULE (Military and Commercial)

Description

The DPS512S8 is a 512K X 8 high-density, low-power static RAM module comprised of four 128K X 8 monolithic SRAM's, advanced, high-speed CMOS decoder and decoupling capacitors surface mounted on a co-fired ceramic substrate having side-brazed leads.

The DPS512S8 is available in a 600-mil-wide, 32-pin dual-in-line package that conforms to the same JEDEC standard pin configuration as the future JEDEC four megabit monolithics.

The DPS512S8 operates from a single +5V supply and all input and output pins are completely TTL-compatible. The low standby power of the DPS512S8 make it ideal for battery-backed applications.

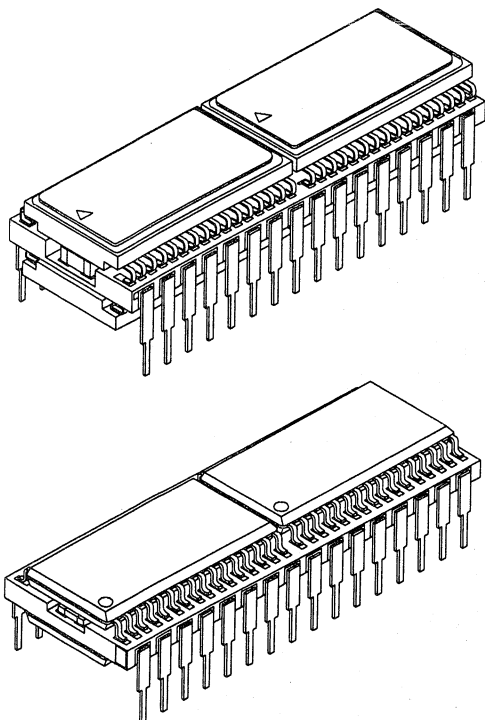
Military modules are available using components screened to selected test methods from MIL-STD-883, which are further described in the Military Processing Capability section.

Features

- 524, 288 word by 8 bit configuration
- Fast Access Times:

DPS512S8AP	25, 35, 45, 55, 70ns
DPS512S8N	85, 100, 120, 150ns
DPS512S8P\PL\PLL	70, 85, 100, 120, 150ns
- Low Power Dissipation:

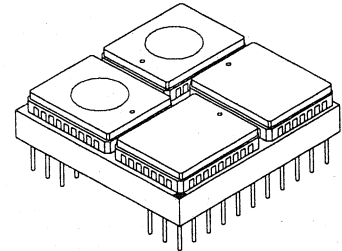
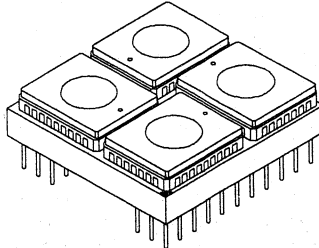
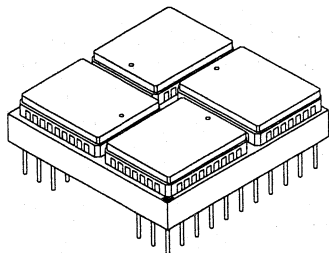
Standby:	40 μ W (typ.) (DPS512S8N/P)
	25 μ W (typ.) (DPS512S8PL/PLL)
	2.0 mW (typ.) (DPS512S8AP)
Operating:	375 mW (typ.) (DPS512S8N/P/PL/PLL)
	450 mW (typ.) (DPS512S8AP)
- 2-Volt data retention
- All Inputs and Outputs are TTL-compatible
- Fully Static Operation - No clock or refresh required
- 600 mil, 32-pin JEDEC standard DIP pinout



Dens-Pac

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VERSAPAC OFFERS 32-BIT WIDE MEMORY IN ONE SQUARE INCH SRAM / EPROM / EEPROM / FLASH EEPROM



The VERSAPAC series of memory modules consist of SRAM, EPROM, EEPROM or Flash EEPROM devices surface mounted on a co-fired ceramic PGA substrate. The VERSAPAC can be a heterogeneous combination of technology such as SRAM/EPROM or SRAM/EEPROM; or a homogeneous configuration of SRAM, EPROM, EEPROM or Flash EEPROM, on one substrate. The 32-bit wide architecture is ideal for use with the latest microprocessors and digital signal processors. The module can also be addressed in 8, 16 or 24 bit words.

Standard components available for use on the Versapac are:

SRAM	128Kx8, 32Kx8 and 8Kx8
EPROM	128Kx8 and 32Kx8 (64Kx8 in homogeneous only)
EEPROM	128Kx8, 32Kx8 and 8Kx8
Flash EEPROM	128Kx8 (64Kx8 in homogeneous only)

Advantages

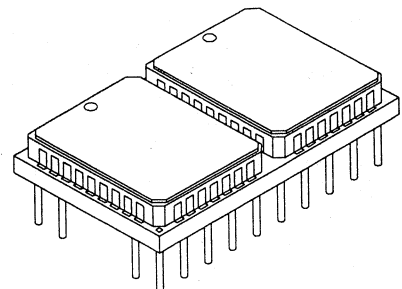
- 32-bit wide architecture.
- Most combinations of SRAM, EPROM, EEPROM or Flash EEPROM can be mixed on the same module while the pin-out connections remain constant.
- 66-PIN PGA
- Includes four 0.1 μ F on board bypass capacitors.
- Central lower gap can accommodate a heat rail if desired.
- Each memory device on the module can be accessed independently with its own chip enable.
- EPROM programming adaptors are available.

HALF-VERSAPACS FOR 16-BIT WIDE APPLICATIONS

The new Halfpac family of memory modules from Dense-Pac offer the same board densities and flexibility as our Versapacs, but are intended for 8 and 16-bit wide applications. Like the Versapac, a mixture of technology can be integrated on the same module (one 32Kx8 SRAM with one 128Kx8 EPROM for example), as well as 16 bits of a single technology .

Features:

- 16-bit data width.
- Supports a mixture of SRAM, EPROM, EEPROM, or FLASH EEPROM on the same module.
- 40-Pin PGA (1.009" x 0.596")
- Central 0.3" gap on the underside can accommodate a heat rail if desired.
- Each memory device can be accessed individually.



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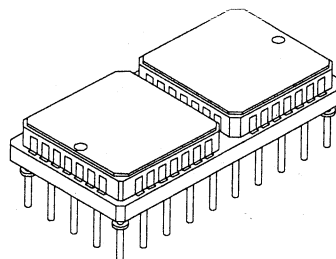
REDUCE YOUR PLD BOARD SPACE DENSE-PAC'S PROGRAMMABLE LOGIC MODULE

The Dense-Pac Programmable Logic Module (DPLD) is a 48-pin Pin Grid Array (PGA) designed to support two "22V10" field programmable array logic, 22 input, 10 macrocell output devices (DPL22V10A), including decoupling capacitor, at a 50% board space savings over conventional through hole (DIP) technology. Standard Electrically Erasable (E²), One Time Programmable (OTP) and UV erasable devices are available. Complete programmability and functional access are maintained for both devices.

The DPLD can be used to save board space with other standard PLD's, typically used in 24-Pin DIP packages and available in 28-pad LCC's, by mounting them on the module.

The DPLD module is available for military use with semiconductor components manufactured in compliance with MIL-STD-883, Class B, making it ideally suited for use in the most demanding applications requiring the highest levels of reliability and performance.

- Adapts Two Standard 22V10 PLD's in One Package
- 50% Board Space Reduction
- Easily Programmable Using Standard Equipment and Program Adapter
- Includes On Board Decoupling Capacitor
- Available in Standard CMOS E², OTP and UV Erasable
- Separate Clock/ Programming Inputs
- Measures Only 0.495 x 0.990 inches
- Speeds as fast as 25ns and faster as those devices become available



DENSE-PAC LOGIC MODULES SAVE 35% OR MORE BOARD SPACE

Dense-Pac

The Dense-Pac Logic Module (DPL's) are a family of memory support modules available in 16-bit or dual 8-bit configurations. The DPL family will save from 35% to 50% of the logic board space typically populated by standard 20-pin DIP packages, permitting a tighter, more compact final design. The DPL's are available to support all logic families: "FCT", "F", "ACT", "HC", "HCT", "LS" and others. Various module types include dual buffers/drivers, transceivers, registers, latches, and other types of logic.

The DPL module is available for military use with semiconductor components manufactured in compliance with MIL-STD-883, Class B, making it ideally suited for use in the most demanding applications requiring the highest levels of reliability and performance.

- 35% To 50% Board Space Savings vs. Conventional DIP Packages
- Buffers/Drivers
- Transceivers
- Registers
- Latches
- Other Standard Logic Devices
- Includes On Board Decoupling Capacitors
- Pin Grid Array (PGA) Package
- CMOS and/or TTL Compatible

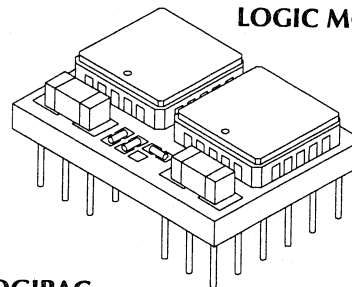
LOGIC MODULE

- 16 Bit Logic Support
- 35% (min.) Board Space Savings (0.590" x 0.790")
- Common Clock/Control Lines
- Heat Rail Accomodating Central Gap
- Ideal for 16 and 32 Bit Buffering

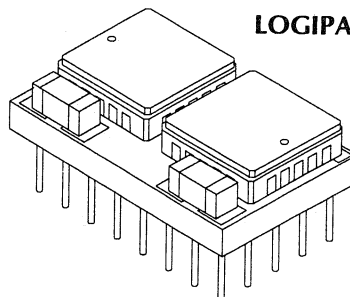
LOGIPAC

- 8 and 16 Bit Logic Support
- 50% (min.) Board Space Savings (0.490" x 0.790")
- Homogeneous/Heterogeneous Configurations
- Separate Control/Clock Lines
- Mix Logic for Your Custom Application

LOGIC MODULE



LOGIPAC



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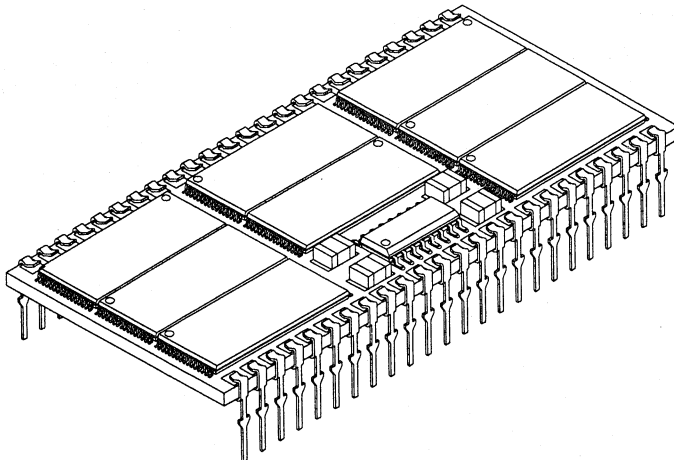
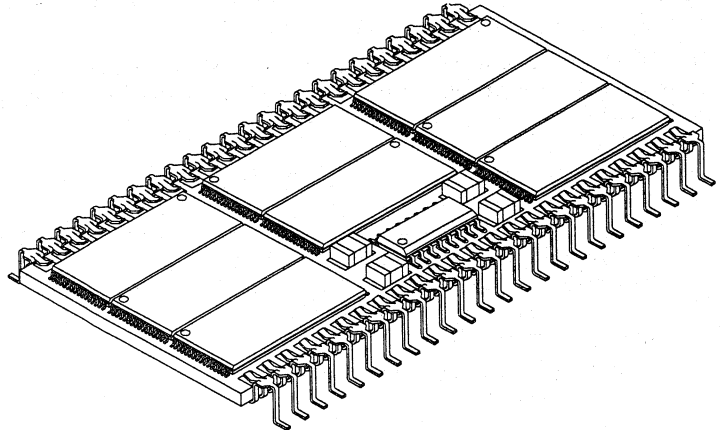
16 Megabit SRAM Module in Surface Mount or DIP Package!

Description

The DPS1MS16P/XP is a 2048K x 8 or 1024K x 16 bit high-density, low-power static RAM module consisting of 16 individual, ultra low-power, 128K x 8 CMOS SRAMs packaged in Thin Small Outline Packages (TSOPs).

By using TSOPs and advanced surface-mount techniques, the Dense-Pac DPS1MS16P/XP memory module offers high density packaging for both surface mount and through-hole applications. The low power RAMs are capable of retaining data at only two volts while drawing typically only 16 μ A of current making the DPS1MS16P/XP ideal for battery backed applications.

The DPS1MS16P/XP is the first in a family of commercial grade memory modules that takes advantage of the space savings gained by employing TSOP packages.



Features

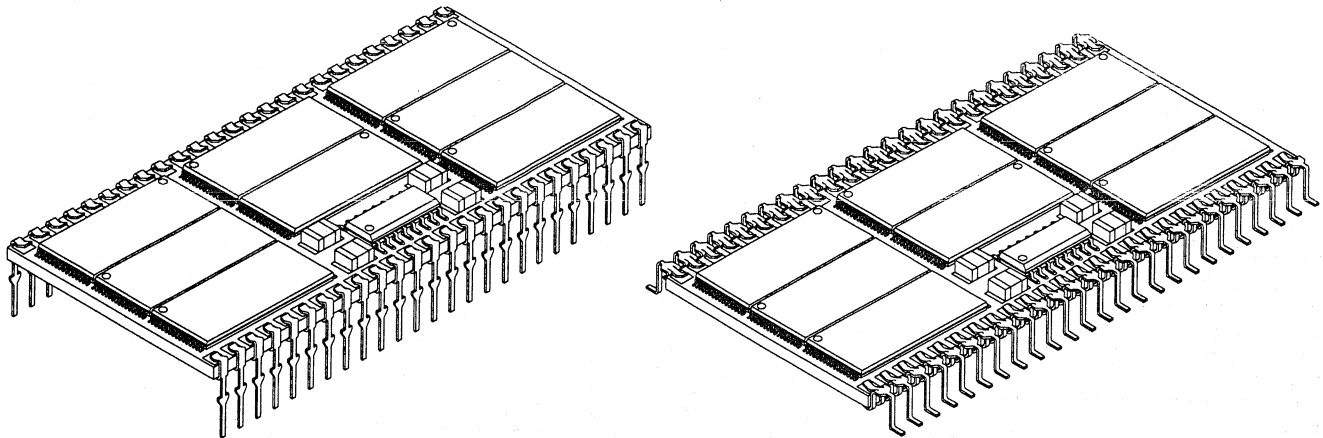
- 1024K by 16 or 2048K by 8 Bit Configuration
- Fast Access Times: 85, 100, 120, 150ns
- Low Power CMOS Design
- 2-Volt Data Retention
- 48-pin Flat Pack or Dual-Inline Package
- All Inputs and Outputs TTL Compatible
- Industrial Screening Available
- 2.50" x 1.20" x 0.24"

Dense-Pac

NOTE FOR SURFACE MOUNT VERSION: The module's ceramic substrate allows the use of a high temperature solder (240°C for mounting the TSOP components and 300°C for lead attach) in constructing the module. This assures that the module will not itself re-flow during the process of attaching it to a surface mount P.C.B.

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16/32 Megabit FLASH EEPROM Module in Surface Mount or DIP Package!



Description

The DPZ1MS16P and DPZ2MS16P are 16 megabit and 32 megabit respectively, CMOS FLASH Electrically Programmable and Erasable nonvolatile memory modules. The module is built with sixteen, 128K x 8 (DPZ1MS16P) or sixteen 256K x 8 (DPZ2MS16P) FLASH memory devices and 2 high speed decoders. The DPZ1MS16P can be user configurable as 1024K x 16 or 2048K x 8 bits, while the DPZ2MS16P can be user configurable as 2048K x 16 or 4096K x 8 bits.

By using TSOPs and advanced surface-mount techniques, the Dense-Pac DPZ1MS16P is able to attain a density of over 5 Megabits per square inch of board space while maintaining a low profile (0.200" max.) and the DPZ2MS16P is able to attain a density of over 10 Megabits per square inch. The modules are available with either through-hole leads (DPZ1MS16P/DPZ2MS16P), or surface mount leads (DPZ1MS16XP/DPZ2MS16XP).

The DPZ1MS16P and DPZ2MS16P are ideal for use in systems that require periodic code updates, or for use as a high speed nonvolatile storage medium.

Features

- Organizations:
 - 1024K x 16 or 2048K x 8 (DPZ1MS16P/XP)
 - 2048K x 16 or 4096K x 8 (DPZ2MS16P/XP)
- Fast Read Access Times:
 - 150, 200, 250ns (DPZ1MS16P/XP)
 - 200, 250, 300ns (DPZ2MS16P/XP)
- Low Power:
 - 75mA Maximum Active (16 bit Mode)
 - 45mA Maximum Active (8 bit Mode)
 - 1.6mA Maximum Standby
- 10,000 Erase/Program Cycles Minimum
- Command Register Architecture for Microprocessor Compatible Write Interface
- 12.0V \pm 5% Vpp
- TTL Compatible Inputs and Outputs
- 50-pin Flat Pack or Dual-Inline Package
- 2.50" x 1.20" x 0.24"

NOTE FOR SURFACE MOUNT VERSION: The module's ceramic substrate allows the use of a high temperature solder (240°C for mounting the TSOP components and 300°C for lead attach) in constructing the module. This assures that the module will not itself re-flow during the process of attaching it to a surface mount P.C.B.

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If you can't find a module to suit your application, a custom module may be the answer. Fill out the form below, and we will make a recommendation.

Custom Module Request for Quote		
Customer Name:		
Contact:		
Telephone:	Date Requested:	
FAX:	Date Required:	
MODULE INFORMATION		
1.	Type: <i>(SRAM, EEPROM, EPROM Flash, etc.)</i>	
2.	Amount of Memory per Module:	
3.	Amount of Memory per Board/System:	
4.	Speed:	
5.	Grade: <i>(Commercial, Military, etc.)</i>	
6.	Width of Data Bus:	
7.	Special Test Requirements:	
8.	Special Power Requirements:	
9.	Board Space: <i>(L x W x H)</i>	
10.	Form Factor: <i>(DIP, PGA, F/P, ZIP, etc.)</i>	
11.	Application:	
12.	Quantity / yr.: <i>(Boards / Systems)</i>	
13.	Delivery / Time Frame:	
14.	Special Configuration Information: <i>(Attach)</i>	
15.	Other:	

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Please call your local representative (see page 18 - 19) with this information and we will propose a solution, either with existing hardware or with a custom design.

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SECOND GENERATION STACKS



DENSE-PAC MICROSYSTEMS, INC.

... Breaking Space Barriers

First Generation 3-D Stack Technology

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3-D Stack Technology Features:

HIGH MEMORY DENSITY -

THE FIRST GENERATION STACK FAMILY OF MODULES OFFERS A HIGHER BOARD DENSITY OF MEMORY THAN AVAILABLE WITH CONVENTIONAL THROUGH-HOLE, SURFACE MOUNT, MODULE, OR HYBRID TECHNIQUES.

VERTICALLY EXPANDABLE MEMORY (VEM) -

INCREASE YOUR MEMORY UP TO EIGHT TIMES WITH NO PC BOARD CHANGES.

REDUCED PARASITICS -

THE PHYSICAL DISTANCE SIGNALS MUST TRAVEL BETWEEN IC'S IS DRAMATICALLY REDUCED, THEREBY REDUCING PARASITIC IMPEDANCES.

SURFACE MOUNT OR THROUGH-HOLE -

CURRENTLY AVAILABLE ON 50 OR 66 PIN GRID ARRAY SUBSTRATES OR WITH 48 PIN "J" OR "GULL" LEAD SURFACE MOUNT PINOUTS.

SRAM OR FLASH EEPROM -

AVAILABLE IN EITHER 1MB SRAM OR 1MB FLASH. 4MB SRAM, 8MB FLASH, 16MB DRAM AND VIDEO RAM AVAILABLE IN THE NEAR FUTURE.

MECHANICALLY RUGGED -

DESIGNED INTO SPACE, AIRBORNE AND NUMEROUS OTHER HOSTILE INDUSTRIAL ENVIRONMENTS.

EXCELLENT THERMAL CHARACTERISTICS -

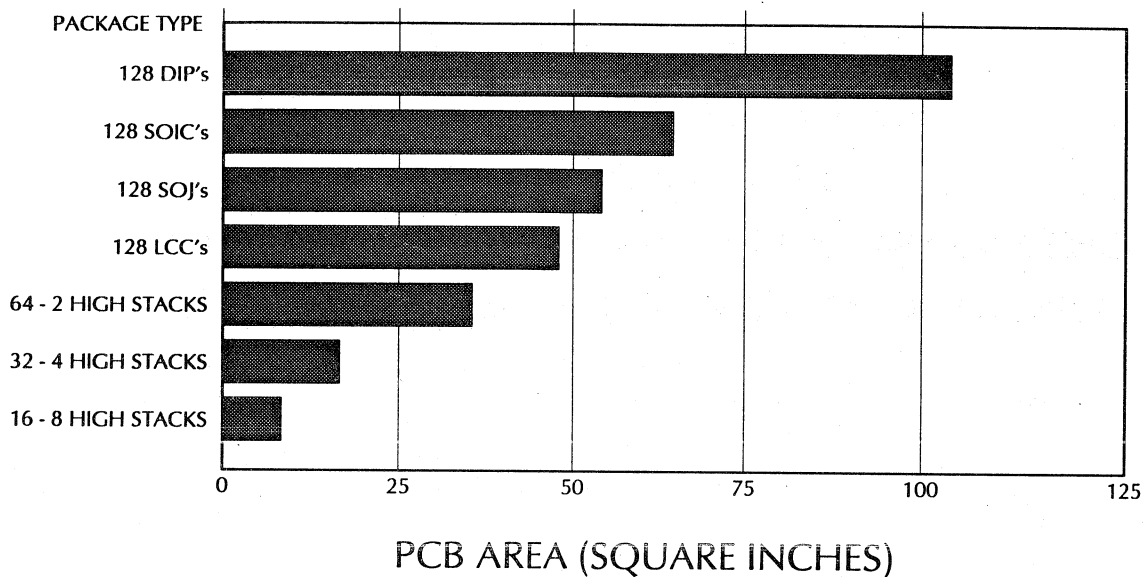
SEE THERMAL ANALYSIS ON PAGE 8.

FULLY TESTED AND SCREENED SUB-SYSTEM -

TESTED AND SCREENED TO COMMERCIAL, INDUSTRIAL, MILITARY, B-GRADE OR SOURCE CONTROL DRAWINGS.

DENSITY COMPARISONS

COMPARISONS OF PCB SPACE REQUIRED FOR A 16 MEGABYTE SRAM SYSTEM FOR DIFFERENT PACKAGE TYPES



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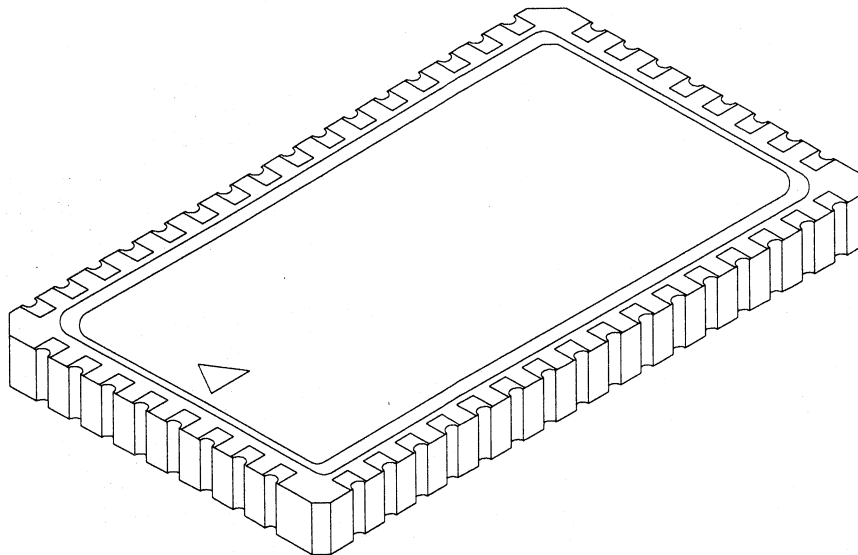
STACK TECHNOLOGY REDUCES TOTAL SYSTEM COSTS:

- SMALLER BOARD SIZE
- REDUCED BOARD COMPLEXITY
- IMPROVED PARASITIC IMPEDENCES
- EASIER BOARD/SYSTEM LEVEL REWORK
- REDUCED OPPORTUNITY OF DESIGN ERRORS
- MORE THOROUGH TESTING & PROCESSING

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STACKABLE LEADLESS CHIP CARRIER (SLCC) THE KEY TO DENSE-STACK TECHNOLOGY

SURFACE MOUNT TECHNOLOGY
LEADS ON TOP, SIDE AND BOTTOM
HERMETICALLY SEALED
OPERATES OVER FULL MILITARY TEMPERATURE RANGE
TYPICALLY HOLDS ONE I.C. (CAN ACCEPT MULTIPLE)
SMALL SIZE
A PROGRAMMABLE PACKAGE

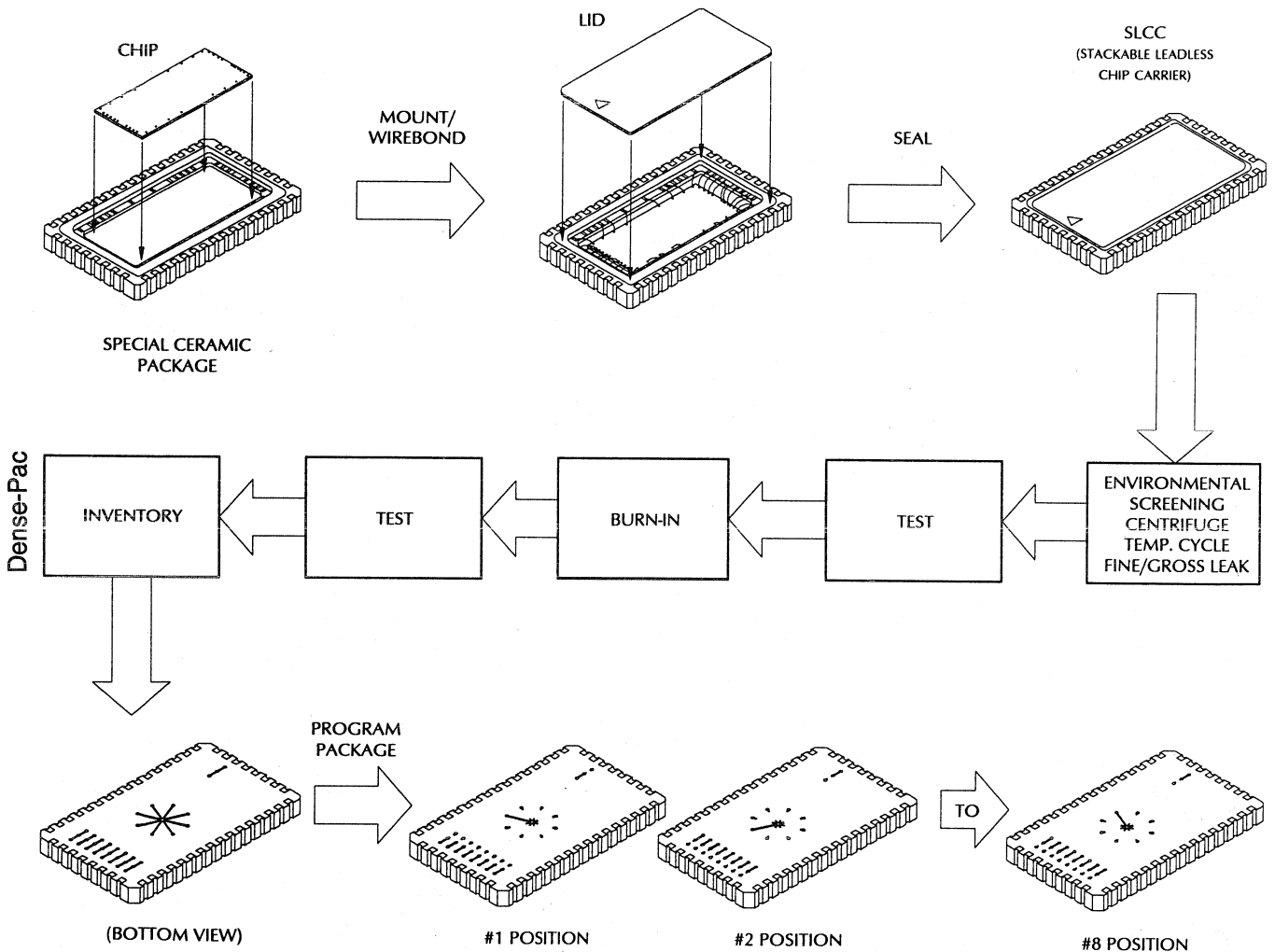


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3-D STACK ASSEMBLY FLOW

STACKABLE LEADLESS CHIP CARRIER (SLCC)

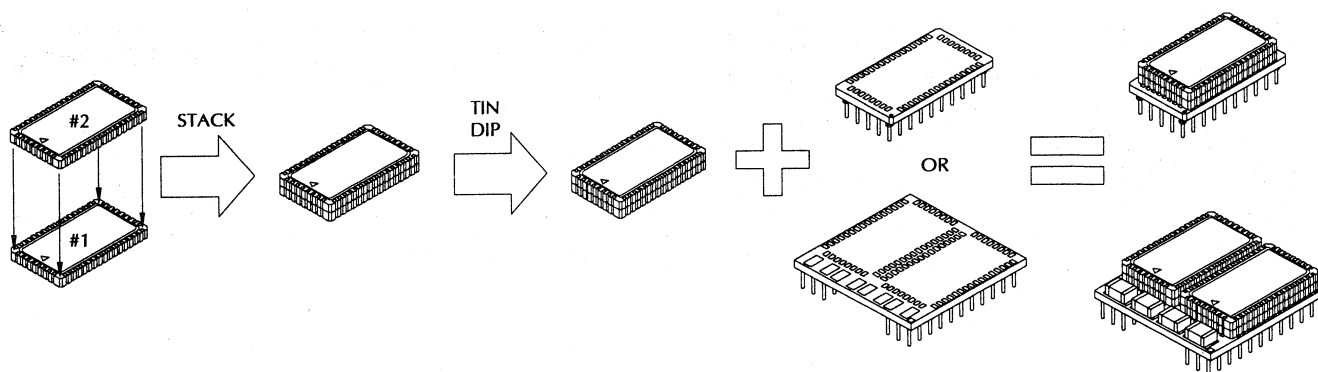


THE STACKABLE LEADLESS CHIP CARRIER (SLCC) SHOWN ABOVE, IS A PROGRAMMABLE PACKAGE. THE SLCC IS PROGRAMMED FOR THE POSITION IT WILL OCCUPY IN THE STACK. THE BOTTOM VIEW, SHOWN ABOVE, SHOWS A WHEEL WITH EIGHT SPOKES. THE HUB OF THE WHEEL IS CONNECTED TO CHIP ENABLE (OR CAS) OF THE CHIP. EACH SPOKE OF THE WHEEL GOES TO A DIFFERENT EXTERNAL SLCC PAD LOCATION. CUTTING ALL BUT ONE SPOKE WILL PROGRAM THE SLCC FOR A SPECIFIC STACK LOCATION. THE OTHER TRACES ARE FOR HIGH CHIP ENABLE AND I/O ASSIGNMENTS.

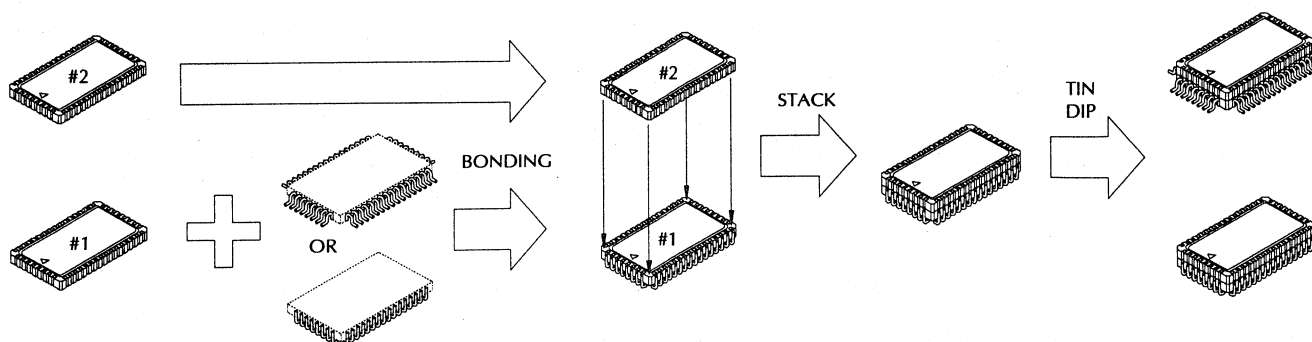
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3-D STACK ASSEMBLY FLOW

THROUGH-HOLE PGA SUBSTRATE



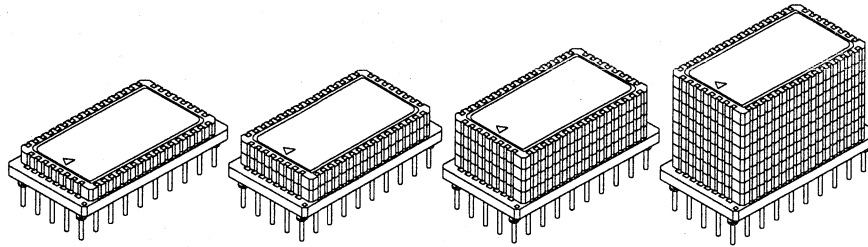
SURFACE MOUNT "J" AND "GULL" LEAD



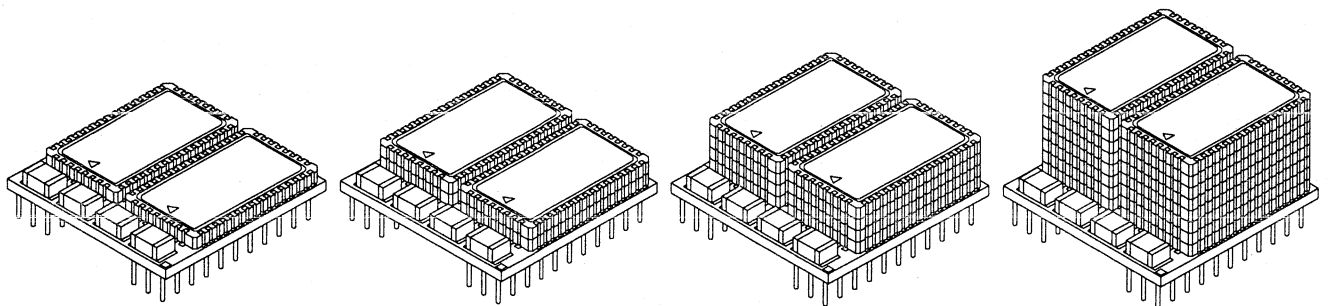
Dense-Pac

VERTICALLY EXPANDABLE MEMORY (VEM)

START OUT WITH ANY OF THE FOUR FOOTPRINTS SHOWN BELOW AND INCREASE YOUR MEMORY UP TO EIGHT TIMES WITH NO PC BOARD CHANGES !!!

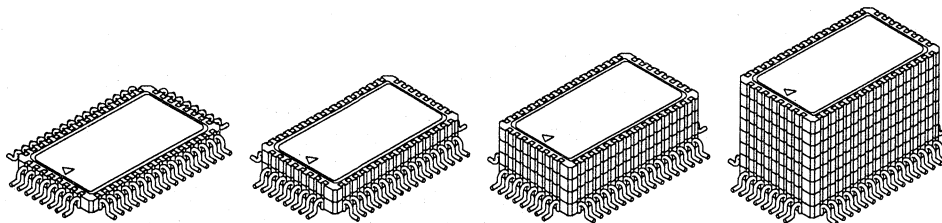


SINGLE STACK (50 PIN PGA)

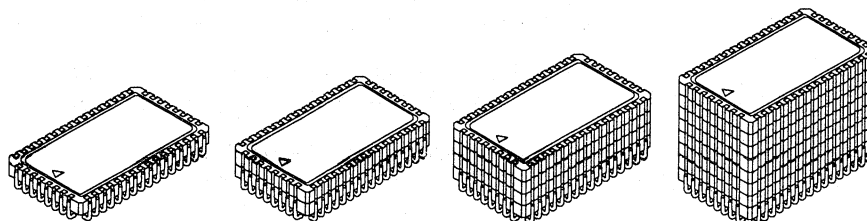


DOUBLE STACK (66 PIN PGA)

Dense-Pac



"GULL" LEAD STACK (48 PIN)



"J" LEAD STACK (48 PIN)

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STACKING TECHNOLOGY VITAL STATISTICS

	PGA DENSE-STACK	PGA VERSA-STACK	"J" LEADED STACK	"GULL" LEADED STACK	"I" LEADED STACK
DIMENSIONS (inches):	(W x L x H)	(W x L x H)	(W x L x H)	(W x L x H)	(W x L x H)
1 HIGH	0.540 x 0.990 x 0.205	1.090 x 1.090 x 0.203	0.520 x 0.890 x 0.142	0.605 x 0.975 x 0.110	0.520 x 0.890 x 0.082
2 HIGH	0.540 x 0.990 x 0.294	1.090 x 1.090 x 0.292	0.520 x 0.890 x 0.230	0.605 x 0.975 x 0.184	0.520 x 0.890 x 0.171
4 HIGH	0.540 x 0.990 x 0.472	1.090 x 1.090 x 0.470	0.520 x 0.890 x 0.409	0.605 x 0.975 x 0.362	0.520 x 0.890 x 0.349
8 HIGH	0.540 x 0.990 x 0.828	1.090 x 1.090 x 0.826	0.520 x 0.890 x 0.765	0.605 x 0.975 x 0.718	0.520 x 0.890 x 0.707
AREA (square inches):					
1 HIGH	0.535	1.188	0.463	0.731	0.463
2 HIGH	0.535	1.188	0.463	0.731	0.463
4 HIGH	0.535	1.188	0.463	0.731	0.463
8 HIGH	0.535	1.188	0.463	0.731	0.463
VOLUME 1 (cubic inches):					
1 HIGH	0.110	0.241	0.066	0.069	0.066
2 HIGH	0.157	0.347	0.106	0.135	0.106
4 HIGH	0.253	0.558	0.189	0.265	0.189
8 HIGH	0.443	0.981	0.354	0.525	0.354
VOLUME 2 (cc):					
1 HIGH	1.800	3.958	1.079	1.140	1.079
2 HIGH	2.581	5.693	1.748	2.207	1.748
4 HIGH	4.144	9.163	3.108	4.342	3.108
8 HIGH	7.269	16.103	5.812	8.613	5.812
WEIGHT (grams):					
1 HIGH	5.0	9.5	3.0	3.0	3.0
2 HIGH	7.0	13.5	5.0	5.0	5.0
4 HIGH	11.0	21.5	9.0	9.0	9.0
8 HIGH	19.0	37.5	17.0	17.0	17.0

* ALL VALUES ARE MAX.

VERSA-STACK SHOCK AND VIBRATION DATA

Five samples of DPS512X32V3 Versa-Stacks, consisting of two 8-high stacks (2 megabytes), were subjected to, and passed, the following tests by an independent test house:

- > Mechanical shock as per MIL-STD-883 Method 2002.3, Condition B (1500 G for 0.5ms in the X1, X2, Y1, Y2, Z1, Z2 orientation).
- > Vibration, variable frequency as per MIL-STD-883 Method 2007.1, Condition A (20 G peak acceleration in the X, Y, Z orientation).

SECOND GENERATION STACKS



DENSE-PAC MICROSYSTEMS, INC.

... Breaking Space Barriers

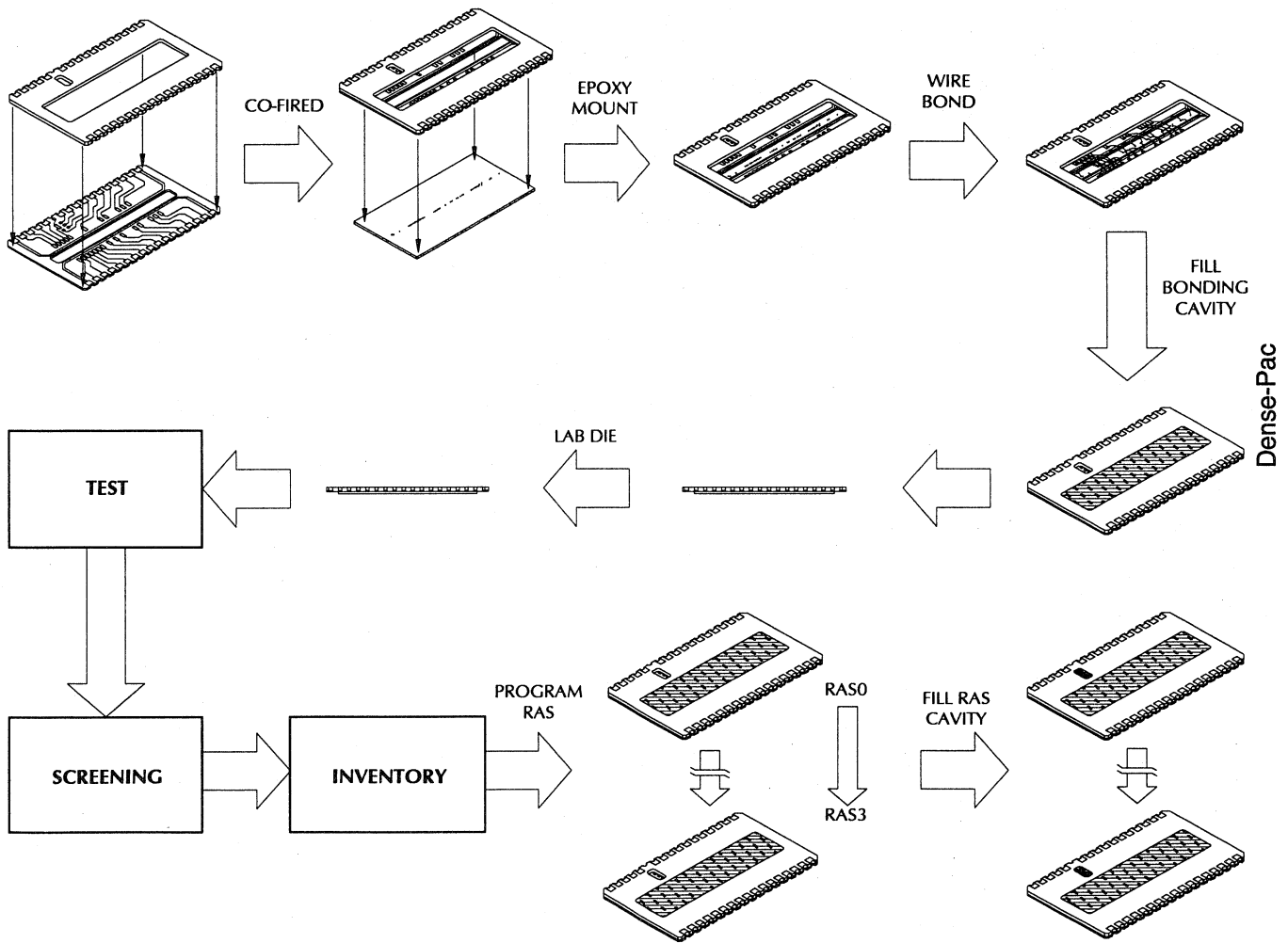
Second Generation Stack Technology

1994

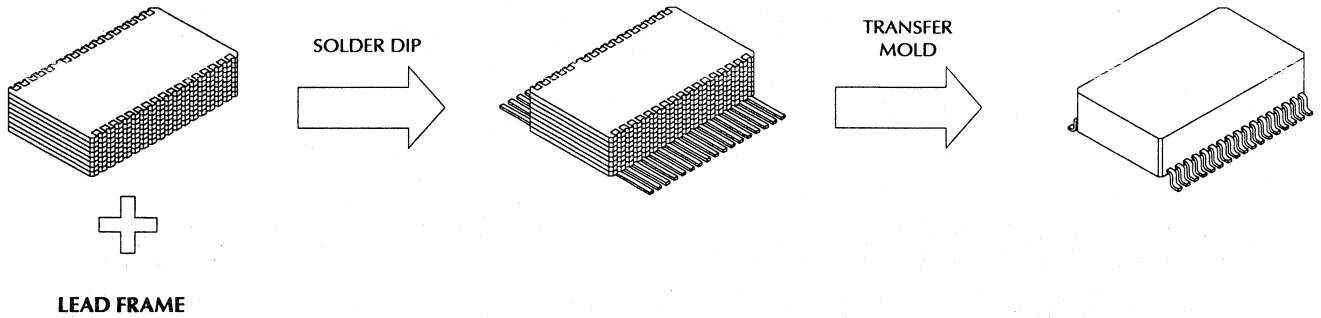
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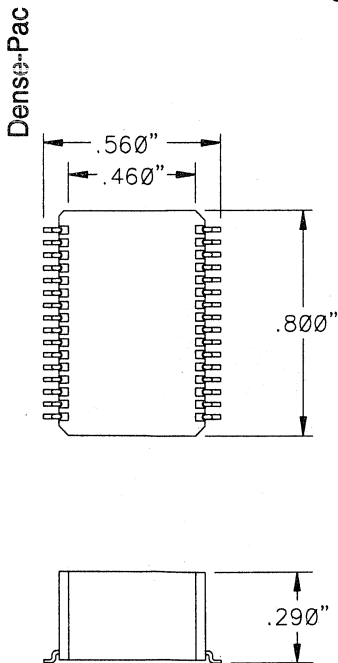
Example Assembly Flow Using 16 Meg DRAM Die



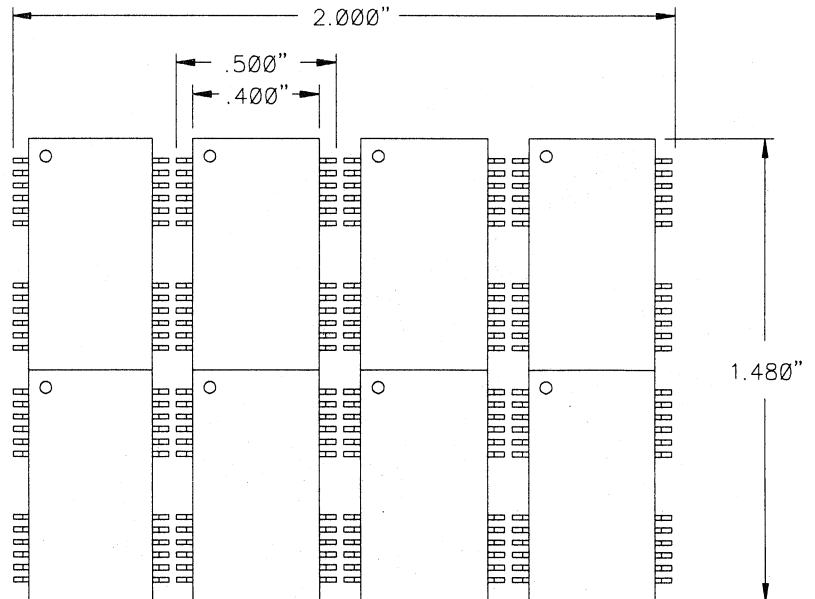
Molded Plastic Stack Assembly and Comparison



8-HIGH 16 Meg DRAM STACK vs. 8 TSOP's

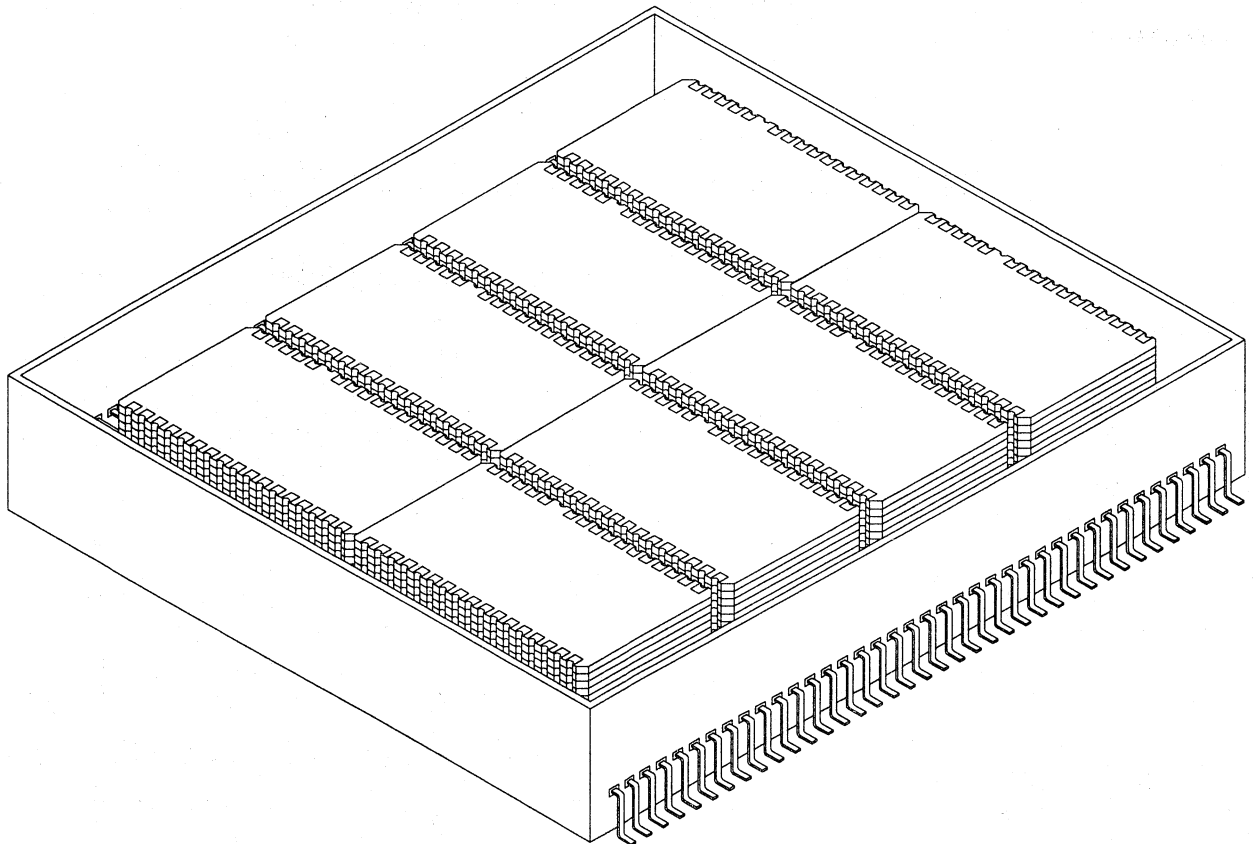


STACK
AREA = .448 in²
(15%)



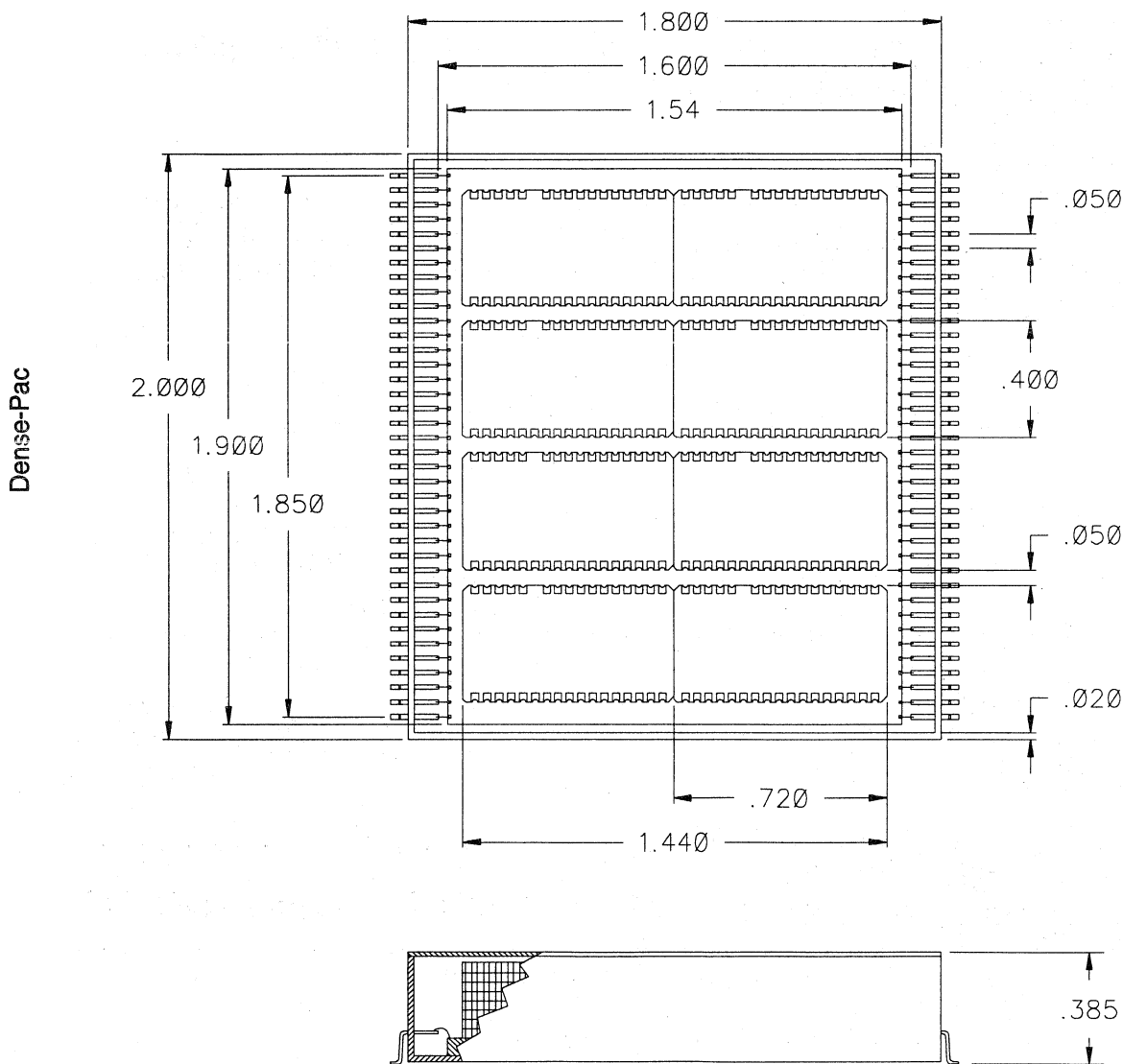
TSOP's
AREA = 2.96 in²

Hermetic Package Option Using 16 Meg Dram Stack Building Block



Dense-Pac

Hermetic 1 Gigabit Dram Stack Exapmle



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Second Generation Stack Technology Design Features

- ✓ **3-D Density** - Dramatic density improvements are now available at very reasonable costs. A 16 Megabyte plastic molded module occupies less than 0.13 cubic inches. Reduced printed circuit board size, complexity, parasitic impedances and board/system level rework help keep total systems costs down.
- ✓ **Accepts Any Standard Die (Center or End Bonded)** - The unique Stackable Chip Carrier (SCC) substrate can be designed to accept almost any mass production die. The bonding window may be placed down the center for the new center bonded die or windows may be placed on the ends to accept the more traditional end bonded die. Using mass produced silicon helps keep final module cost as low as possible.
- ✓ **Pre-Stacking Testability** - Each die is fully tested and screened before it is committed to the stack. This ability to test the die prior to stacking dramatically improves the final stack yield thereby dramatically reducing the final module cost.
- ✓ **Programmable Package** - The Stackable Chip Carrier (SCC) has a programming window which is used to program the unit for its unique position in the stack. This feature helps keep inventory under control and cost down.
- ✓ **Conventional Packaging Technologies** - Only conventional manufacturing process steps are required to build the second generation stacks. No expensive experimental or unproven manufacturing technology needs to be developed, this helps keep final unit costs under control.
- ✓ **Universal Building Block** - The Stackable Chip Carrier (SCC) is a very flexible building block. The SCC can be stacked from 2 to 8 high with the same silicon at all levels of the stack or different memory technologies can be mixed within the same stack. For example, SRAM, Flash and EEPROM can be combined within the same stack. Two smaller die can be mounted on one SCC while a single larger die is mounted at another layer of the stack. The SCC can be mounted on a substrate which is then hermetically sealed for applications targeted for hostile environments. A fully tested and stacked SCC can be mounted on a Multi-Chip Module (MCM). This gives the user very high MCM substrate densities of known good die.
- ✓ **Reduced Module Costs** - All of the above features of the Second Generation Stack technology work together to provide the designer with the lowest priced 3-D module to meet high density board requirements.

SECOND GENERATION REVOLUTIONARY AND EVOLUTIONARY 512K x 8 SRAM with Logic

DESCRIPTION:

The DPS512S8EJ4/EH4/RJ4/RL4 surface mount SRAM modules are a revolutionary memory subsystems using Dense-Pac Microsystems' new 2nd Generation Stacking Technology. The module combines four Stackable Chip Carriers (SCC), each containing a 128Kx8 SRAM die, integrated into an encapsulated leaded substrate with decoder logic. The complete module assembly is fully compatible with the JEDEC Standard fast 512Kx8 SRAM monolithics in 32 pin or 36 pin, 400-mil wide surface mount packages. By using SCCs, the 2nd Generation Stack family of modules offers a higher board density of memory than available with conventional through-hole, surface mount, module, or hybrid techniques.

FEATURES:

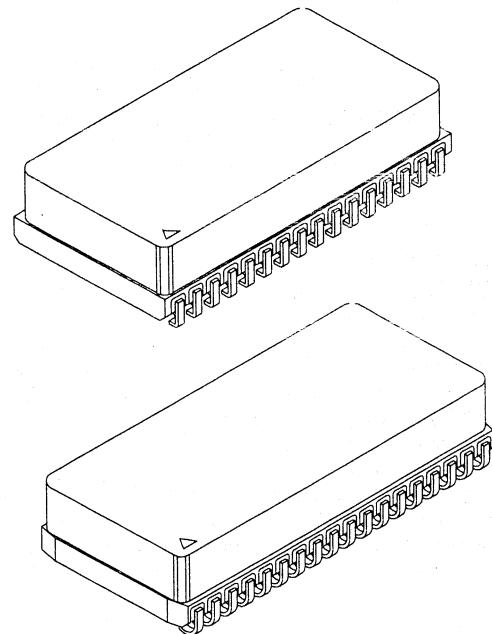
- Organization: 524,288 by 8 bit configuration
- Fast Access Times: 20*, 25, 30, 35, 45ns (max.)
- TTL Compatible Inputs and Outputs
- Common I/O with Three State Outputs
- Fully Static Operation - No Clock or Refresh
- Fully Compatible with 512Kx8 SRAM Monolithics
- 400 mil Surface Mount Packages
- Available Packages:

Evolutionary 32-Pin:

- 'J' Leaded Stack (height = .260)
- 'L' Leaded Stack (height = .245)

Revolutionary 36-Pin:

- 'J' Leaded Stack (height = .225)
- 'L' Leaded Stack (height = .210)



SECOND GENERATION REVOLUTIONARY AND EVOLUTIONARY 1 Megabit x 8 SRAM with Logic

DESCRIPTION:

The DPS1MS8EJ4/EH4/RJ4/RL4 surface mount SRAM modules are a revolutionary memory subsystems using Dense-Pac Microsystems' new 2nd Generation Stacking Technology. The module combines eight Stackable Chip Carriers (SCC), each containing a 128Kx8 SRAM die, integrated into an encapsulated leaded substrate with decoder logic. The complete module assembly is fully compatible with the JEDEC Standard fast 1Meg x 8 SRAM monolithics in 32 pin or 36 pin, 400-mil wide surface mount packages. By using SCCs, the 2nd Generation Stack family of modules offers a higher board density of memory than available with conventional through-hole, surface mount, module, or hybrid techniques.

FEATURES:

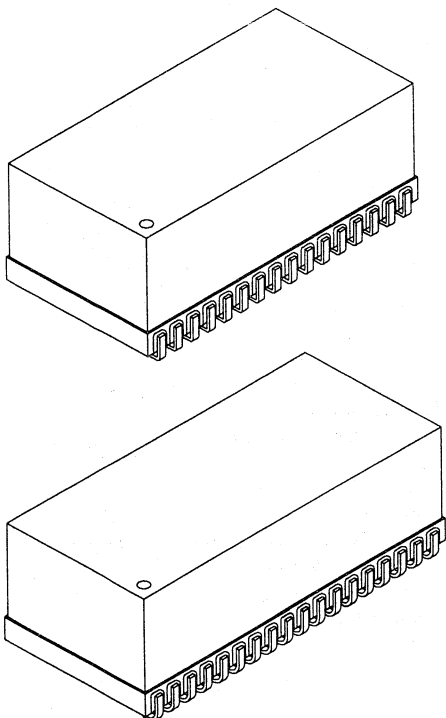
- Organization: 1 Meg by 8 bit configuration
- Fast Access Times: 25, 30, 35, 45ns (max.)
- TTL Compatible Inputs and Outputs
- Common I/O with Three State Outputs
- Fully Static Operation - No Clock or Refresh
- Fully Compatible with 512Kx8 SRAM Monolithics
- 400 mil Surface Mount Packages
- Available Packages:

Evolutionary 32-Pin:

- 'J' Leaded Stack (height = .390)
- 'L' Leaded Stack (height = .375)

Revolutionary 36-Pin:

- 'J' Leaded Stack (height = .355)
- 'L' Leaded Stack (height = .340)



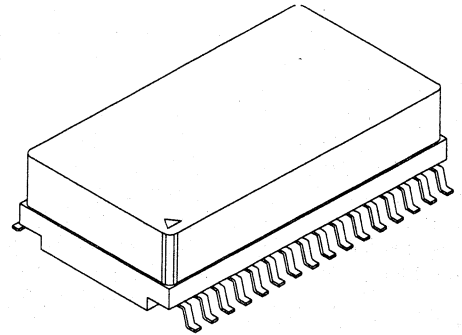
Dense-Pac

SECOND GENERATION REVOLUTIONARY AND EVOLUTIONARY 512K x 8 SRAM with Logic

DESCRIPTION:

The DPS512S8H4 surface mount CMOS SRAM module is a revolutionary memory subsystem using Dense-Pac Microsystems' new 2nd Generation Stacking Technology. The module combines four Stackable Ceramic Carriers (SCC), each containing a 128Kx8 SRAM die, integrated into a leaded encapsulated substrate with decoder logic. The complete module assembly is fully compatible with the JEDEC Standard 512Kx8 SRAM monolithics in a 32 pin surface mount, gullwing leaded package.

By using SCCs, the 2nd Generation Stack family of modules offers a higher board density of memory than available with conventional through-hole, surface mount, module, or hybrid techniques.



FEATURES:

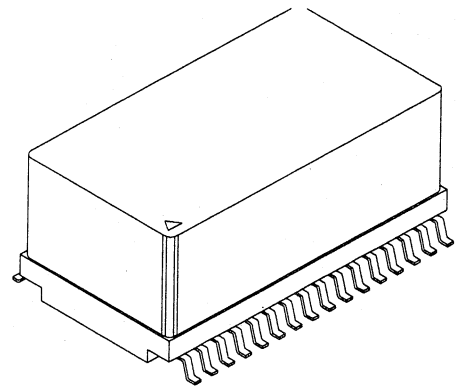
- 524, 288 by 8 Bit Configuration
- Access Times: 70, 85, 100, 120, 150ns
- Low Power Dissipation:
375 mW (typ.) Operating
- 2-Volt Data Retention
- Fully Static Operation - No Clock or Refresh Required
- All inputs and Outputs are TTL-Compatible
- Industry Standard,
32-Pin Gull Leaded Surface Mount Package

SECOND GENERATION REVOLUTIONARY AND EVOLUTIONARY 512K x 8 SRAM with Logic

DESCRIPTION:

The DPS1MS8H4 surface mount CMOS SRAM module is a revolutionary memory subsystem using Dense-Pac Microsystems' new 2nd Generation Stacking Technology. The module combines eight Stackable Ceramic Carriers (SCC), each containing a 128Kx8 SRAM die, integrated into a leaded encapsulated substrate with decoder logic. The complete module assembly provides a compatible upgrade path for the JEDEC Standard 512Kx8 SRAM monolithics in a 32 pin surface mount, gullwing leaded package.

By using SCCs, the 2nd Generation Stack family of modules offers a higher board density of memory than available with conventional through-hole, surface mount, module, or hybrid techniques.



FEATURES:

- 1 Meg by 8 Bit Configuration
- Access Times: 70, 85, 100, 120, 150ns
- Low Power Dissipation:
375 mW (typ.) Operating
- 2-Volt Data Retention
- Fully Static Operation - No Clock or Refresh Required
- All inputs and Outputs are TTL-Compatible
Industry Standard, 32-Pin Gullwing
Leaded Surface Mount Package

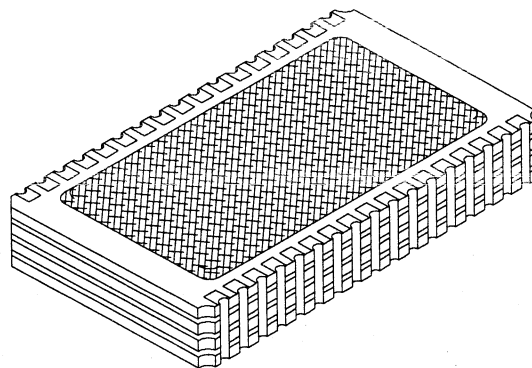
8 Meg x 8 DRAM Surface Mount Stackable SCC

DESCRIPTION:

The DPD8MX8PY4 DRAM module is a revolutionary memory system using Dense-Pac Microsystems' new 2nd Generation Stacking Technology. The module combines four stackable ceramic carriers (SCC). Each SCC contains a 4M X 4 DRAM die. This module offers 64 Megabits of DRAM in a single ceramic surface mount package.

By using SCCs, the 2nd Generation Stack family of modules, offers a higher density of memory than available with conventional through-hole, surface mount, modules, or hybrid techniques.

Modules are assembled using SN96 solder.

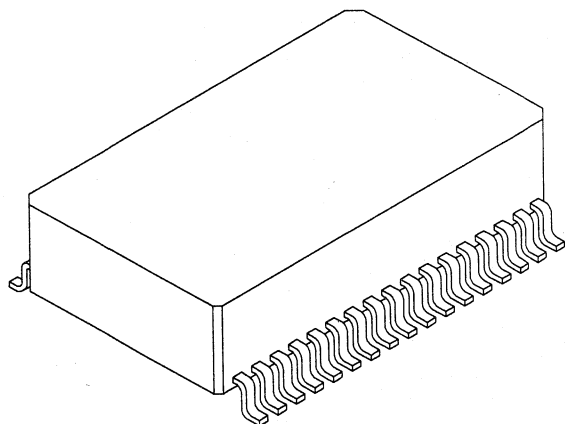


FEATURES:

- Organization: 8 Meg x 8 bits
- Fast Read Access Times: 60, 70, 80, 100ns
- TTL Compatible Input and Outputs
- Common Data Inputs and Outputs
- Fast Page
- 4096 Cycles / 64 ms Refresh
- 34-Pin Surface Mount "STACK" Package

Dense-Pac

16 Meg x 8 or 32 Meg x 4 DRAM Gullwing Leaded



DESCRIPTION:

The DPD16MX8PH4/DPD32MX4PH4 DRAM module is a revolutionary memory system using Dense-Pac Microsystems' new 2nd Generation Stacking Technology. The module combines eight stackable ceramic carriers (SCC). Each SCC contains a 4M X 4 DRAM die. This module offers 128 Megabits of DRAM in a single gullwing package.

By using SCCs, the 2nd Generation Stack family of modules, offers a higher density of memory than available with conventional through-hole, surface mount, modules, or hybrid techniques.

FEATURES:

- Organization:
 - 16 Meg x 8 bit (DPD16MX8PH4)
 - 32 Meg x 4 bit (DPD32MX4PH4)
- Fast Read Access Times: 60, 70, 80, 100, 120ns (max.)
- TTL Compatible Input and Outputs
- Common Data Inputs and Outputs
- 4096 Cycles / 64 ms Refresh
- Fast Page (DPD16MX8PH4)
- Fast Page, Static Column, Write per Bit (DPD32MX4PH4)

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SALES OFFICE LISTING



DOMESTIC REPRESENTATIVES

ALABAMA

Hughes Associates
2913 Governors Drive
Huntsville, AL 35805
Tel: 205/ 533-9108
FAX: 205/ 533-4667

ARIZONA

Call Dense-Pac

CALIFORNIA

(SO.) Technology Solutions, Inc.
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Irvine, CA 92718
Tel: 714/ 707-4565
FAX: 714/ 707-4510

Technology Solutions, Inc.
5525 Oakdale Ave #275
Woodland Hills, CA 91364
Tel: 818/ 704-1693
FAX: 818/ 704-6165

SAN DIEGO KSA Inc.
6540 Lusk Blvd Ste. C276
San Diego, CA 92121
Tel: 619/ 453-5720
FAX: 619/ 453-1695

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FAX: 609/ 667-8741

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Tampa, FL 33617
Tel: 813/ 985-1900
FAX: 813/ 985-2049

Perrott Associates
1900 S. Harbor City Blvd #203
Melbourne, FL 32901
Tel: 407/ 676-0305
FAX: 407/ 676-0709

Perrott Associates
262 Wilshire Blvd
Casselberry, FL 32707
Tel: 407/ 830-0094
FAX: 407/ 830-9188

Perrott Associates
7251 W. Palmetto Park Rd. #2005
Boca Raton, FL 33433
Tel: 407/ 362-0191
FAX: 407/ 362-0192

GEORGIA

Hughes Associates
3500 Winterwood Dr.
Marietta, GA 30062
Tel: 404/ 578-0064
FAX: 404/ 578-0820

IOWA

M.I.N.K. Associates, Inc.
443 Teakwood Lane NE
Cedar Rapids, IA 52402
Tel: 319/ 393-0373
FAX: 319/ 393-1782

IDAHO

Quadrep Crown
17020 S.W. Upper Boones Ferry Rd.
Portland, OR 97224
Tel: 503/ 620-8320
FAX: 503/ 639-4023

ILLINOIS

Heartland Technical Marketing
1615 Colonial Pkwy
Inverness, IL 60067
Tel: 708/ 358-6622
FAX: 708/ 358-7660

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Heartland Technical Marketing
7098 N. Shadeland Ave #J
Indianapolis, IN 46220
Tel: 317/ 842-5480
FAX: 317/ 842-6205

KANSAS

M.I.N.K. Associates, Inc.
9147 Robinson 2G
Overland Park, KS 66212
Tel: 913/ 341-8309
FAX: 913/ 341-2605

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We take pride in our facility and we encourage you to visit us in Santa Clara. If you have any questions regarding the products or services provided by ECI Semiconductor, call one of our technical support engineers at (408) 727-6562 or FAX your requirements to us at (408) 986-9059. Thank you for considering ECI for your custom and semicustom circuits.

PGA Family Components

The transistors in the PGA family are designed to be used for both analog and digital applications. All inputs are protected by clamping diodes to help prevent input signals larger than the power supply from

damaging the chip. Capacitors, zener diodes, and resistors up to 5 Megohms are also available. For additional information on the PGA transistors call us.

Products

- Replace 4000 Series
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- Negative Voltage Generator
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- Analog Circuits
- D/A Converters
- Flip Flops
- Schmitt Triggers
- Low Voltage Circuits

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- Analog/Digital Circuits
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- 5000 Volt ESD Protection
- 5 MHz Frequency at 12 Volts
- Design with one metal layer at the component level for maximum utilization
- 12 to 576 Gates
- Kit Parts and Layout Library
- Design your chip on a PC or let ECI generate the design

Available Components

Chip Type	P12	P36	P72	P144	P288	P576
Chip Size Mils Width x Length	59 x 63	79 x 87	87 x 126	126 x 138	138 x 220	224 x 220
Split Gate N Transistors	24	72	144	288	576	1152
Split Gate P Transistors	24	72	144	288	576	1152
Pads	14	18	24	32	44	60
N Drivers	4	8	8	16	16	32
N Driver Gate Caps	4	8	8	16	16	32
N Buffers	3	5	10	10	22	22
P Buffers	3	5	10	10	22	22
Hi Z Pairs	1	1	2	2	2	2
6.3 Volt Zeners	2	2	2	2	2	2
1.7 Kohm Resistors	18	72	180	360	792	1584
0.8 Kohm Resistors	36	72	72	144	144	288
Cell Underpass						
Inside-620 ohms	12	36	72	144	288	576
Outside-800 ohms	10	33	66	138	276	564

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The 700 Chip Series

There are eight chips in the 700 Series. The smallest one fits into any surface-mounted package. The remaining seven chips form a smooth progression in size; each chip is approximately 30% larger in area than the next smaller one.

Each chip contains the same basic components and is based on an identical architecture. In the center portion of the chips are islands of 12 transistors each, 10 of which are convertible from NPN to PNP and 2 are Schottky NPN transistors. These islands are

surrounded by a field of resistors. The number of resistors and the total resistance is extra large, which makes it easier to design an IC, especially for a first-time design.

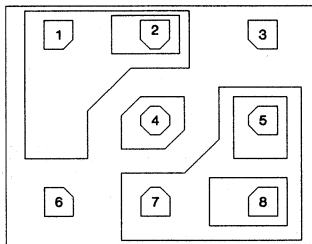
Between the pads along the periphery are all other devices: large (200mA) NPN transistors, large (6mA) PNP transistors, pinch (high-value) resistors and junction capacitors. Sprinkled throughout each chip are low-value cross-under resistors.

Chip Series	710	712	713	723	724	734	736	747
Die Size mils	33 x 33	47 x 53	53 x 66	70 x 66	74 x 79	98 x 79	98 x 105	118 x 119
Die Size square mils	1089	2491	3498	4620	5846	7742	10290	14042
Pads	4	17	22	25	30	30	41	48
Dual NPN/PNP Transistors	14	27	39	60	80	120	180	280
Schottky NPN Transistors	4	10	11	12	16	24	36	56
Large NPN Transistors	1	1	2	3	4	9	5	9
Large PNP Transistors	0	1	2	3	3	6	4	5
Total Transistors	33	66	93	143	183	279	405	630
750 Ohm Resistors	120	214	412	635	900	1270	1735	2400
Total Base Resistance	90k	160k	310k	475k	675k	950k	1.3M	1.8M
Base Pinch Resistors	2	9	9	8	11	8	14	16
Epi Pinch Resistors	1	2	2	2	2	2	2	2
Junction Capacitors	1	2	4	7	7	9	12	10
Cross-Unders	40	70	160	200	300	450	650	950

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Components

The basic transistor in the 700 Series has three modes of operation, NPN transistor, lateral PNP transistor, and substrate PNP transistor.



Pin Function

- | | |
|----------------------------|----------------------------|
| 1. NPN Base, PNP Collector | 5. NPN Emitter |
| 2. NPN Emitter | 6. NPN Collector, PNP Base |
| 3. NPN Collector, PNP Base | 7. NPN Base, PNP Collector |
| 4. PNP Emitter | 8. NPN Emitter |

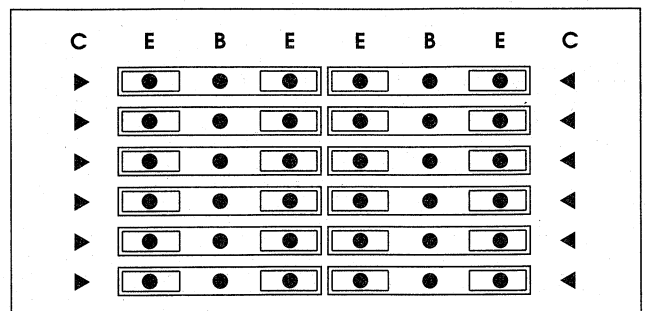
Large NPN Transistors

Large NPN transistors contain 24 emitters identical to those of the small device. The 24 identical emitters provide 200 mA, a substantial amount of current, and are very useful to create current ratios anywhere between 1 and 24.

- | | | |
|-----------------|---|-----------------|
| Current gain | = | 100 to 300 |
| ft | = | 400MHz |
| Current | = | 8mA per emitter |
| Maximum current | = | 200mA |

700 Series - A Comparison with GEC Plessey Chips

700 Series	713	MMA	747	MMF
Die Dimensions, mils	53 x 66	56 x 69	118 x 119	109 x 133
Die Area, mils ²	3498	3864	14042	14495
Small Transistors	50	40	336	168
Large NPN Transistors	2(0.2A)	1(0.1A)	9(0.2A)	8(0.1A)
Large PNP Transistors	1	0	5	0
Base Resistance	310k	93k	1.8M	610k
Pads	22	14	48	30
Capacitors	4	1	10	3
20 Volt Pinch Resistors	2	1	2	1
5 Volt Pinch Resistors	9	2	16	16
Schottky Diodes	11	0	56	0
Cross Unders	160	50	950	224



Transistors in Die Form

Family	Description		Die Size	I.C. Max
M04	General Purpose Low Noise	NPN	13 x 17 MILS	200 mA
M05	Darlington	NPN	18 x 24 MILS	500 mA
M09	General Purpose Audio	NPN	19 x 22 MILS	1 Amp
M10	General Purpose Audio	NPN	19 x 22 MILS	500 mA
M11	General Purpose Audio	NPN	19 x 22 MILS	500 mA
M13	Medium Power Switch	NPN	17 x 20 MILS	500 mA
M16	High Voltage-Gas Display Driver	NPN	24 x 32 MILS	600 mA
M23	General Purpose Switch	NPN	11 x 18 MILS	100 mA
M37	Audio Driver	NPN	25 x 33 MILS	1 Amp
M38	Audio Driver	NPN	25 x 33 MILS	1 Amp
M39	Audio Driver	NPN	25 x 33 MILS	1 Amp
M42	UHF/VHF Amplifier	NPN	10 x 15 MILS	30 mA
M43	RF Amplifier	NPN	10 x 15 MILS	10 mA
M44	Low Noise VHF Amplifier AGC	NPN	10 x 15 MILS	30 mA
M48	Video Output	NPN	24 x 32 MILS	500 mA
M55	Darlington	PNP	18 x 24 MILS	500 mA
M60	General Purpose Audio	PNP	19 x 22 MILS	500 mA
M63	Medium Power Switch	PNP	17 x 20 MILS	500 mA
M66	General Purpose Switch	PNP	11 x 18 MILS	100 mA
M71	General Purpose Low Noise	PNP	13 x 17 MILS	200 mA
M74	High Voltage Amplifier	PNP	24 x 32 MILS	600 mA
M77	Audio Driver	PNP	25 x 33 MILS	1 Amp
M78	Audio Driver	PNP	25 x 33 MILS	1 Amp
M79	Audio Driver	PNP	25 x 33 MILS	1 Amp
M98	High Voltage Amplifier	PNP	24 x 32 MILS	500 mA

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JFETs By Process

- Process 50 N-Channel
- Process 51 N-Channel
- Process 52 N-Channel
- Process 53 N-Channel
- Process 55 N-Channel
- Process 58 N-Channel
- Process 83 N-Channel Monolithic Dual
- Process 84 N-Channel Monolithic Dual
- Process 86 N-Channel Monolithic Dual
- Process 87 N-Channel Analog Switch
- Process 88 P-Channel
- Process 89 P-Channel
- Process 90 N-Channel
- Process 92 N-Channel
- Process 93 N-Channel Monolithic Dual
- Process 94 N-Channel Monolithic Dual
- Process 95 N-Channel Monolithic Dual
- Process 96 N-Channel Monolithic Dual
- Process 98 N-Channel Monolithic Dual

RF Transistors in Die Form

Family	Description		Die Size	I.C. Max
41	105 Volt, 600 MHz	NPN	19 x 23 MILS	30 mA
72	105 Volt, 600 MHz	PNP	19 x 23 MILS	30 mA
232	120 Volt, 1.6 GHz	NPN	36 x 23 MILS	70 mA
264	120 Volt, 1.6 GHz	PNP	36 x 23 MILS	70 mA

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ECI 1994 Product List

Device	Function	Package	Cross Reference
F10,000	4 Bit Shift Register	16 pin DIP	Fairchild, Teledyne, Motorola
F10,010	BCD Decade Counter	16 pin DIP	Fairchild, Teledyne, Motorola
F10,016	4 Bit Binary Counter	16 pin DIP	Fairchild, Teledyne, Motorola
1004	Voltage Reference	TO-92, SO-8	Linear Tech, TI
2576	Switching Regulator	TO-220, 5 lead	National
2950	Voltage Regulator	TO-92	National
2951	Adjustable V. Regulator	TO-8/SO-8	National
2931	Voltage Regulator	TO-92	National
324	Quad Op-Amp	14 pin DIP	National, TI
339	Quad Comparator	14 pin DIP	National, TI
385	Voltage Regulator	TO-92	National, TI
3854	Power Factor Correction	16 pin DIP	Unitrode
3852	Power Factor Correction	8 pin DIP	Unitrode
3001	Frequency to Voltage Converter	8 pin DIP	ECI Only
431	Voltage Reference	TO-92/SOT23	TI, NSC, Motorola
5010	Voltage Reference	TO-92, SO-8	Si Gen, Teledyne
OP72	OpAmp	TO-92	PMI OP-27
OP77	OpAmp	TO-92	PMI OP-77
78C120	Differential Line Receiver	16 pin DIP	National
78CX120	High Speed Diff Line Driver	16 pin DIP	National
AIT100	Ultra Sound Programmable Gain Amplifier	14 pin CERDIP	ECI Only

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ECI Semiconductor was founded in 1974 as Monosil, the original wafer foundry in Silicon Valley. Over the past two decades, we have built a reputation for solid engineering, manufacturing flexibility, and dependable delivery.

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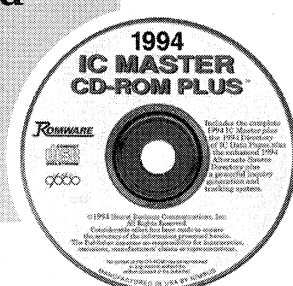
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Product Reference Guide

Part Number	Features	Op. Temp. Range	Package
Subscriber Line Interface Circuits			
PBL 3762	Resistive Battery feed SLIC for Moderate Loop Length applications requiring High Longitudinal Balance, On-Hook Transmission, Low power dissipation, and Wide Operating Voltage Range.	0°C / 70°C -40°C / +85°C	22-pin CerDIP 28-pin CLCC 32-pin LCC
PBL 3764	Constant Current Battery feed version.	0°C / 70°C -40°C / +85°C	22-pin CerDIP 28-pin CLCC 32-pin LCC
PBL 3762A	Enhanced Performance PBL3762.	-40°C / +85°C	22-pin CerDIP 28-pin PLCC
PBL 3764A	Enhanced Performance PBL3764.	-40°C / +85°C	22-pin CerDIP 28-pin PLCC
PBL3860	Constant Current feed SLIC for Short Loop Length applications.	-40°C / +85°C	28-pin PLCC
PBL 3766	Low Cost Constant Current Battery feed SLIC for Short Loop Length applications. Includes On-Hook Transmission, Low Power Dissipation, and Wide Operating Voltage Range.	0°C / 70°C	22-pin PDIP 28-pin PLCC
PBL 3767	Low Cost Resistive Battery feed SLIC with Current Limiting for Short Loop Length applications.	0°C / 70°C	28-pin PLCC
Ericsson	PBL 3796	Resistive Battery feed SLIC with Short-Loop Current Limiting for Long Loop Length applications requiring High Longitudinal Balance, On-Hook Transmission, and Minimal Power Dissipation. Includes on-chip Switch Mode Regulator.	0°C / 70°C 28-pin PDIP 32-pin LCC
	PBL 3798	Constant Current Battery feed version.	0°C / 70°C 28-pin PDIP 28-pin CerDIP 32-pin PLCC 44-pin PLCC
	PBL 3799	Resistive Battery feed version.	0°C / 70°C 28-pin PDIP 28-pin CerDIP 32-pin PLCC 44-pin PLCC
PBL 3797	Constant Current Battery feed SLIC for Long Loop Applications with integral Metering Tone pulse shaping and AGC, High, Longitudinal Balance, and On-Hook Transmission.	0°C / 70°C	44-pin PLCC
PBL 3829	Companion 4-channel DC-DC Converter Controller.	0°C / 70°C	44-pin PLCC
Line Protection Resistors			
PBR 5110/1	Matched dual 10 Ohm Resistors	-40°C / +85°C	4-pin SIP
PBR 5111/1	Matched dual 20 Ohm Resistors	-40°C / +85°C	4-pin SIP
PBR 5112/1	Matched dual 40 Ohm Resistors	-40°C / +85°C	4-pin SIP
PBR 5232/3	Matched dual 50 Ohm Resistors with integral thermal fuse	-40°C / +85°C	4-pin SIP
Telephone Circuits			
PBL 3726/6	Speech Circuit with volume control amplifier, differential microphone input, low current operation, and gain regulation with line length. Balanced receiver output stage.	-40°C / 70°C	16-pin PDIP 16-pin SOIC
PBL 3726/16	Speech Circuit with volume control amplifier, differential microphone input, low current operation, and gain regulation with line length. Adjustable output drive capability.	-40°C / 70°C	16-pin PDIP 16-pin SOIC



Part Number	Features	Op. Temp. Range	Package
PBL 3726/18	Speech Circuit with internal regulator for external DTMF/microprocessor, separate DTMF and microphone inputs, low current operation, and gain regulation with line length. Balanced receiver output stage.	-40°C / 70°C	16-pin PDIP 16-pin SOIC
PBL 3726/19	Speech Circuit with soft clipping, universal microphone input, low current operation, and gain regulation with line length. Balanced receiver output stage.	-40°C / 70°C	16-pin PDIP 16-pin SOIC
PBL 3781	Speech Circuit with differential microphone input, gain regulation with line length, and Ultra-Low Voltage operation. Drives low impedance receivers.	-20°C / 70°C	16-pin PDIP
PBL 3781/2	Speech Circuit with differential microphone input, gain regulation with line length, and Ultra-Low Voltage operation. Drives high impedance receivers.	-20°C / 70°C	16-pin PDIP 16-pin SOIC
PBL 3786	Line-Powered, Voice-Switched Speakerphone Circuit with integral Tone Ringer, direct loudspeaker driver, and adjustable gain dynamics. Drives low impedance receivers.	-20°C / 70°C	22-pin PDIP
PBL 3786/2	Line-Powered, Voice-Switched Speakerphone Circuit with integral Tone Ringer, direct loudspeaker driver, and adjustable gain dynamics. Drives high impedance receivers.	-20°C / 70°C	22-pin PDIP
PBL 3786/4	Line-Powered, Voice-Switched Speakerphone Circuit with integral Tone Ringer, direct loudspeaker driver, and adjustable gain dynamics. DC power amplifier gain control.	-20°C / 70°C	28-pin PDIP

Motor Drivers (Stepper /DC)

PBD 3517	Unipolar Driver with integral controller operating in half-step, full-step, and bilevel drive modes. 500mA maximum output drive current per phase.	0°C / +70°C	16-pin PDIP 16-pin SOIC
PBL 3717/2	Single Channel, Switched-mode Bipolar constant current Driver for bidirectional control of dc or stepper motors. Features half- and full-step modes, thermal overload protection, and built-in recirculation diodes. 1.2A maximum current.	0°C / +70°C	16-pin PDIP 28-pin PLCC
PBL 3770A	Single Channel, Switched-mode Bipolar constant current Driver for bidirectional control of dc or stepper motors. Features half- and full-step modes, and thermal overload protection. 1.8A maximum current.	0°C / +70°C	16-pin PDIP 28-pin PLCC
PBL 3771	Dual Channel, Switched-mode Bipolar constant current Driver featuring close matching between channels for high microstepping accuracy. 700mA maximum current per Channel.	0°C / +70°C	22-pin PDIP 28-pin PLCC
PBL 3772	Dual Channel, Switched-mode Bipolar constant current Driver featuring close matching between channels for high microstepping accuracy. 1.2A maximum current per Channel.	-40°C / +85°C	22-pin PDIP 28-pin PLCC
PBL 3773	Dual Channel, Switched-mode Bipolar constant current Driver. Low external component count, high impedance current control inputs and disable input for simplified half-stepping control. 850mA maximum current per Channel.	-20°C / +85°C	22-pin PDIP 28-pin PLCC
PBL 3774	Dual Channel, Switched-mode Bipolar constant current Driver. Disable input for simplified half-stepping control and close matching between channels for high microstepping accuracy. 1.2A maximum current per Channel.	-40°C / +85°C	22-pin PDIP 28-pin PLCC
PBL 3775	Dual Channel, Switched-mode Bipolar constant current Driver. Low external component count and disable input for simplified half-stepping control. 850mA maximum current per Channel.	-20°C / +85°C	22-pin PDIP 28-pin PLCC
PBL 3776	Dual Channel, Switched-mode Bipolar constant current controller IC for driving external transistors in High Current applications. Capable of controlling any MosFET or Bipolar power transistor. Disable input for simplified half-stepping control.	-40°C / +85°C	24-pin PDIP
PBL 3960	Dual Channel Microstepping Controller featuring fast/slow current decay control matched to our Dual Channel Drivers.	0°C / +70°C	22-pin PDIP 28-pin PLCC

Intelligent Power Drivers

PBD 3545/1	Low side Driver with Short Circuit and Thermal Protection and integral ERROR output for diagnostic action. Open Circuit detection. 2A continuous output current at 45V maximum.	-40°C / +85°C	5-pin TO-220
PBD 3548/1	High side Driver with Short Circuit and Thermal Protection and integral ERROR output for diagnostic action. Open Circuit detection. 2A continuous output current at 45V maximum.	-40°C / +85°C	5-pin TO-220

Ericsson

MB81C1000A-60/-70/-80/-10

CMOS 1M x 1 BIT FAST PAGE MODE DYNAMIC RAM

The Fujitsu MB81C1000A is a CMOS, fully decoded dynamic RAM organized as 1,048,576 words x 1 bit. The MB81C1000A has been designed for mainframe memories, buffer memories, video image memories requiring high speed and high-band width output with low power dissipation, as well as for memory systems of hand-held computers which need very low power dissipation.

Fujitsu's advanced three-dimensional stacked capacitor cell technology gives the MB81C1000A high α -ray soft error immunity and extended refresh time. CMOS technology is used in the peripheral circuits to provide low power dissipation and high speed operation.

Parameter	MB81C1000A -60	MB81C1000A -70	MB81C1000A -80	MB81C1000A -10	
RAS Access Time	60 ns max	70 ns max.	80 ns max.	100 ns	
Random Cycle Time	110 ns min.	125 ns min.	140 ns min.	170 ns min.	
Address Access Time	30 ns max.	35 ns max.	40 ns max.	50 ns max.	
CAS Access Time	15 ns max.	20 ns max.	20 ns max.	25 ns max.	
Fast Page Mode Cycle Time	40 ns min.	45 ns min.	45 ns min.	55 ns min.	
Low Power Dissipation	Operating Current	407 mW max.	374 mW max.	341 mW max.	297 mW max.
	Standby Current	11 mW max. (TTL level) / 5.5 mW max. (CMOS level)			

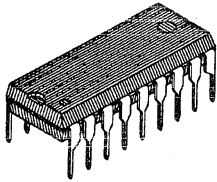
Fujitsu

- 1,048,576 words x 1 bit organization
- Silicon gate, CMOS, 3-D stacked capacitor cell
- All inputs and outputs are TTL compatible
- 512 refresh cycles every 8.2 ms
- Common I/O capability by using early write
- RAS only, CAS-before-RAS, or hidden refresh
- Fast page mode, Read-Modify-Write capability
- On-chip substrate bias generator for high performance

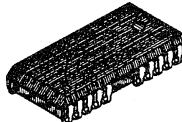
Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Voltage at any pin relative to V_{SS}	V_{IN}, V_{OUT}	-1 to +7	V
Voltage of V_{CC} supply relative to V_{SS}	V_{CC}	-1 to +7	V
Power dissipation	PD	1.0	W
Short circuit output current	—	50	mA
Storage temperature	T_{STG}	-55 to +125	°C

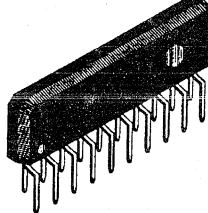
Note: Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.




DIP-18P-M04



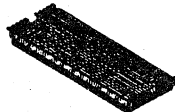
LCC-26P-M04



ZIP-20P-M02



* FPT-24P-M04



* FPT-24P-M05

* Available for 70/80/100 ns versions

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB81C4256A-60/-70/-80/-10

CMOS 256K x 4 BIT FAST PAGE MODE DYNAMIC RAM

The Fujitsu MB81C4256A is a CMOS, fully decoded dynamic RAM organized as 262,144 words x 4 bits. The MB81C4256A has been designed for mainframe memories, buffer memories, video image memories requiring high speed and high-band width output with low power dissipation, as well as for memory systems of handheld computers which need very low power dissipation.

Fujitsu's advanced three-dimensional stacked capacitor cell technology gives the MB81C4256A high α -ray soft error immunity and extended refresh time. CMOS technology is used in the peripheral circuits to provide low power dissipation and high speed operation..

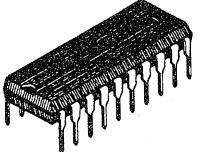
Parameter		MB81C4256A -60	MB81C4256A -70	MB81C4256A -80	MB81C4256A -10
$\overline{\text{RAS}}$ Access Time		60 ns max	70 ns max.	80 ns max.	100 ns
Random Cycle Time		110 ns min.	125 ns min.	140 ns min.	170 ns min.
Address Access Time		30 ns max.	35 ns max.	40 ns max.	50 ns max.
$\overline{\text{CAS}}$ Access Time		15 ns max.	20 ns max.	20 ns max.	25 ns max.
Fast Page Mode Cycle Time		40 ns min.	45 ns min.	45 ns min.	55 ns min.
Low Power Dissipation	Operating Current	407 mW max.	374 mW max.	341 mW max.	297 mW max.
	Standby Current	11 mW max. (TTL level) / 5.5 mW max. (CMOS level)			

- 262,144 words x 4 bits organization
- Silicon gate, CMOS, 3-D stacked capacitor cell
- All inputs and outputs are TTL compatible
- 512 refresh cycles every 8.2 ms
- Early write or $\overline{\text{OE}}$ controlled write capability
- $\overline{\text{RAS}}$ only, $\overline{\text{CAS}}$ -before- $\overline{\text{RAS}}$, or Hidden Refresh
- Fast page mode, Read-Modify-Write capability
- On-chip substrate bias generator for high performance

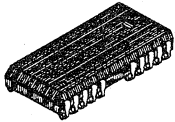
Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Voltage at any pin relative to V_{SS}	V_{IN}, V_{OUT}	-1 to +7	V
Voltage of V_{CC} supply relative to V_{SS}	V_{CC}	-1 to +7	V
Power dissipation	PD	1.0	W
Short circuit output current	—	50	mA
Storage temperature	T_{STG}	-55 to +125	$^{\circ}\text{C}$

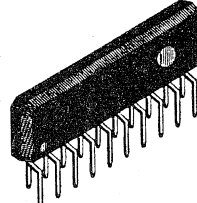
Note: Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.




DIP-20P-M03




LCC-26P-M04



ZIP-20P-M02



*** FPT-24P-M04**



*** FPT-24P-M05**

*** Available for 70/80/100 ns versions**

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB814100A-60/-70/-80

CMOS 4M x 1 BIT FAST PAGE MODE DRAM

CMOS 4,194,304 x 1 BIT FAST PAGE MODE DYNAMIC RAM

The Fujitsu MB814100A is a fully decoded CMOS Dynamic RAM (DRAM) that contains a total of 4,194,804 memory cells in a x1 configuration. The MB814100A features a "fast page" mode of operation whereby high-speed random access of up to 2,048-bits of data within the same row can be selected. The MB814100A DRAM is ideally suited for main-frame, buffers, hand-held computers video imaging equipment, and other memory applications where very low power dissipation and high bandwidth are basic requirements of the design. Since the standby current of the MB814100A is very small, the device can be used as a non-volatile memory in equipment that uses batteries for primary and/or auxiliary power.

The MB814100A is fabricated using silicon gate CMOS and Fujitsu's advanced four-layer polysilicon process. This process, coupled with three-dimensional stacked capacitor memory cells, reduces the possibility of soft errors and extends the time interval between memory refreshes. Clock timing requirements for the MB814100A are not critical and all inputs are TTL compatible.

PRODUCT LINE & FEATURES

Parameter		MB814100A-60	MB814100A-70	MB814100A-80
RAS Access Time		60ns max.	70ns max.	80ns max.
CAS Access Time		15ns max.	20ns max.	20ns max.
Address Access Time		30ns max.	35ns max.	40ns max.
Random Cycle Time		110ns min.	125ns min.	140ns min.
Fastpage Mode Cycle Time		40ns min.	45ns min.	45ns min.
Low Power Dissipation	Operating current	605mW max.	550mW max.	495mW max.
	Standby current	11mW max. (TTL level) 5.5mW max. (CMOS level)		

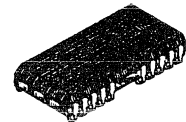
- 4,194,304 word x 1 bit organization
- Silicon gate, CMOS, 3D-Stacked Capacitor Cell
- All input and output are TTL compatible
- On chip substrate bias generator for high performance
- Common I/O capability by using early write
- $\overline{\text{RAS}}$ only, $\overline{\text{CAS}}$ -before- $\overline{\text{RAS}}$, or Hidden Refresh
- Fast Mode, Read-Modify-Write capability
- 1024 refresh cycles every 16.4ms

ABSOLUTE MAXIMUM RATINGS (see Note)

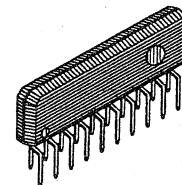
Parameter	Symbol	Value	Unit
Voltage at any pin relative to VSS	V_{IN}, V_{OUT}	-1 to +7	V
Voltage of V_{CC} supply relative to VSS	V_{CC}	-1 to +7	V
Power Dissipation	PD	1.0	W
Short Circuit Output Current		50	mA
Storage Temperature	TSTG	-55 to +125	°C

Note: Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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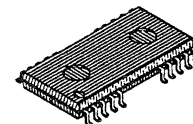


LCC-26P-M04

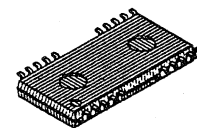


ZIP-20P-M02

Marking side



(Normal Bend)
FPT-26P-M01



Marking side

(Reserve Bend)
FPT-26P-M02

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB814400A-60/-70/-80

CMOS 1M x 4 BIT FAST PAGE MODE DRAM

CMOS 1,048,576 x 4 BIT FAST PAGE MODE DYNAMIC RAM

The Fujitsu MB814400A is a fully decoded CMOS Dynamic RAM (DRAM) that contains a total of 1,048,576 memory cells in 4-bit increments. The MB814400A features a "fast page" mode of operation whereby high-speed random access of up to 1,024-bits of data within the same row can be selected. The MB814400A DRAM is ideally suited for mainframe, buffers, hand-held computers video imaging equipment, and other memory applications where very low power dissipation and high bandwidth are basic requirements of the design. Since the standby current of the MB814400A is very small, the device can be used as a non-volatile memory in equipment that uses batteries for primary and/or auxiliary power.

The MB814400A is fabricated using silicon gate CMOS and Fujitsu's advanced four-layer polysilicon process. This process, coupled with three-dimensional stacked capacitor memory cells, reduces the possibility of soft errors and extends the time interval between memory refreshes. Clock timing requirements for the MB814400A are not critical and all inputs are TTL compatible.

PRODUCT LINE & FEATURES

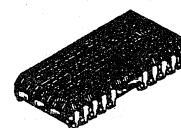
Parameter		MB814400A-60	MB814400A-70	MB814400A-80
R $\overline{A}S$ Access Time		60ns max.	70ns max.	80ns max.
C $\overline{A}S$ Access Time		15ns max.	20ns max.	20ns max.
Address Access Time		30ns max.	35ns max.	40ns max.
Random Cycle Time		110ns min.	125ns min.	140ns min.
Fastpage Mode Cycle Time		40ns min.	45ns min.	45ns min.
Low Power Dissipation	Operating current	605mW max.	550mW max.	495mW max.
	Standby current	11mW max. (TTL level) 5.5mW max. (CMOS level)		

- 1,048,576 word x 4 bit organization
- Silicon gate, CMOS, 3D-Stacked Capacitor Cell
- All input and output are TTL compatible
- On chip substrate bias generator for high performance
- Early write or \overline{OE} controlled write capability
- R $\overline{A}S$ only, C $\overline{A}S$ -before-R $\overline{A}S$, or Hidden Refresh
- Fast Mode, Read-Modify-Write capability
- 1024 refresh cycles every 16.4ms

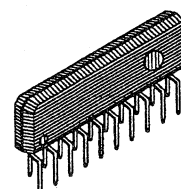
ABSOLUTE MAXIMUM RATINGS (see Note)

Parameter	Symbol	Value	Unit
Voltage at any pin relative to VSS	V $_{IN}$, V $_{OUT}$	-1 to +7	V
Voltage of V $_{CC}$ supply relative to VSS	V $_{CC}$	-1 to +7	V
Power Dissipation	PD	1.0	W
Short Circuit Output Current		50	mA
Storage Temperature	TSTG	-55 to +125	°C

Note: Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

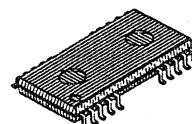


LCC-26P-M04

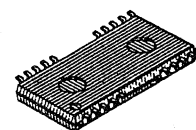


ZIP-20P-M02

Marking side



(Normal Bend)
FPT-26P-M01



Marking side

(Reserve Bend)
FPT-26P-M02

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB814260A-70/-80/-10

CMOS 256K x 16 Bits Fast Page Mode Dynamic RAM

The Fujitsu MB814260A is a fully decoded CMOS Dynamic RAM (DRAM) that contains 4,194,304 memory cells accessible in 16- or 8-bit increments. The MB814260A features a fast page mode of operation whereby high-speed access of up to 512 x 16 bits of data can be selected in the same row. The MB814260A DRAM is ideally suited for memory applications where very low power dissipation and high bandwidth are basic requirements of the design such as embedded control buffers, portable computers, and video imaging equipment.

The MB814260A is fabricated using silicon gate CMOS and Fujitsu's advanced four-layer polysilicon process. This process, coupled with three-dimensional stacked capacitor memory cells, reduces the possibility of soft errors and extends the time interval between memory refreshes.

Parameter		MB814260A-70	MB814260A-80	MB814260A-10
RAS Access Time		70 ns max.	80 ns max.	100 ns max.
CAS Access Time		20 ns max.	20 ns max.	25 ns max.
Address Access Time		35 ns max.	40 ns max.	45 ns max.
Random Cycle Time		125 ns min.	140 ns min.	170 ns min.
Fast Page Mode Cycle Time		45 ns min.	50 ns min.	55 ns min.
Low Power Dissipation	Operating Current	853 mW max.	770 mW max.	633 mW max.
	Standby Current	11 mW max. (TTL level)/5.5 mW max. (CMOS level)		

Fujitsu

- 262,144 words x 16 bits organization
- Silicon gate, CMOS, 3D-stacked capacitor cell
- All inputs and outputs are TTL compatible
- 512 refresh cycles every 8.2 ms
- 9 rows x 9 columns address scheme
- 1 $\overline{WE}/2 \overline{CAS}$
- Early write or \overline{OE} controlled write capability
- RAS only, \overline{CAS} -before-RAS, or hidden refresh
- Fast page mode, Read-Modify-Write capability
- On-chip substrate bias generator for high performance

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Voltage at any pin relative to V_{SS}	V_{IN}, V_{OUT}	-1 to +7	V
Voltage of V_{CC} supply relative to V_{SS}	V_{CC}	-1 to +7	V
Power dissipation	PD	1.0	W
Short circuit output current	—	50	mA
Storage temperature	T_{STG}	-55 to +125	°C

— Note —

Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

PRELIMINARY

Plastic ZIP
(ZIP-40P-M01)

Plastic SOJ
(LCC-40P-M01)

Marking side

Marking side

Plastic TSOP-II
(normal bend leads)
(FPT-44P-M07) (reverse bend leads)
(FPT-44P-M08)

Package and Ordering Information

- 40-pin plastic (475 mil) ZIP, order as MB814260A-xxPZ
- 40-pin plastic (400 mil) SOJ, order as MB814260A-xxPJ
- 44-pin plastic (400 mil) TSOP-II with normal bend leads, order as MB814260A-xxPFTN
- 44-pin plastic (400 mil) TSOP-II with reverse bend leads, order as MB814260A-xxPFTR

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB8116100-60/-70/-80

CMOS 16M x 1 BIT FAST PAGE MODE DYNAMIC RAM

CMOS 16,777,216 x 1 Bit Fast Page Mode Dynamic RAM

The Fujitsu MB8116100 is a fully decoded CMOS Dynamic RAM (DRAM) that contains a total of 16,777,216 memory cells in a x1 configuration. The MB8116100 features a "fast page" mode of operation whereby high-speed random access of up to 4,096-bits of data within the same row can be selected. The MB8116100 DRAM is ideally suited for mainframe, buffers, hand-held computers video imaging equipment, and other memory applications where very low power dissipation and high bandwidth are basic requirements of the design. Since the standby current of the MB8116100 is very small, the device can be used as a non-volatile memory in equipment that uses batteries for primary and/or auxiliary power.

The MB8116100 is fabricated using silicon gate CMOS and Fujitsu's advanced four-layer polysilicon and two layer aluminum process. This process, coupled with advanced stacked capacitor memory cells, reduces the possibility of soft errors and extends the time interval between memory refreshes. Clock timing requirements for the MB8116100 are not critical and all inputs are TTL compatible.

PRODUCT LINE & FEATURES

Parameter	MB8116100-60	MB8116100-70	MB8116100-80
RAS Access Time	60ns max.	70ns max.	80ns max.
Random Cycle Time	110ns min.	130ns min.	150ns min.
Address Access Time	30ns max.	35ns max.	40ns max.
CAS Access Time	15ns max.	17ns max.	20ns max.
Fast Page Mode Cycle Time	40ns min.	45ns min.	50ns min.
Low Power Dissipation	550mW max.	495mW max.	440mW max.
<ul style="list-style-type: none"> Operating current Standby current 	11mW max. (TTL level) / 5.5mW max. (CMOS level)		

- 16,777,216 words x 1 bit organization
- Silicon gate, CMOS, Advanced Stacked Capacitor Cell
- All input and output are TTL compatible
- 4096 refresh cycles every 65.6ms
- Common I/O capability by using early write
- RAS only, CAS-before-RAS, or Hidden Refresh
- Fast page Mode, Read-Modify-Write capability
- On chip substrate bias generator for high performance

ABSOLUTE MAXIMUM RATINGS (see NOTE)

Parameter	Symbol	Value	Unit
Voltage at any pin relative to VSS	V_{IN}, V_{OUT}	-1 to +7	V
Voltage of V_{CC} supply relative to VSS	V_{CC}	-1 to +7	V
Power Dissipation	PD	1.0	W
Short Circuit Output Current	—	50	mA
Operating Temperature	T_{OPE}	0 to 70	°C
Storage Temperature	T_{STG}	-55 to +125	°C

NOTE: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

PRELIMINARY

**Plastic SOJ Package
(LCC-28P-M06)**

**Plastic ZIP Package
(ZIP-24P-M03)**

Marking side

**Plastic TSOP Packages
(FPT-28P-M05) (FPT-28P-M06)**
(Normal Bend) (Reverse Bend)

Marking side

Fujitsu

Package and Ordering Information

- 28-pin plastic (400mil) SOJ, order as MB8116100-xxPJ
- 24-pin plastic (475mil) ZIP, order as MB8116100-xxPZ
- 28-pin plastic (400mil) TSOP-II with normal bend leads, order as MB8116100-xxPFTN
- 28-pin plastic (400mil) TSOP-II with reverse bend leads, order as MB8116100-xxPFTR

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB8116400-60/-70/-80

CMOS 4M x 4 BIT FAST PAGE MODE DYNAMIC RAM

CMOS 4,194,304 x 4 BIT Fast Page Mode Dynamic RAM

The Fujitsu MB8116400 is a fully decoded CMOS Dynamic RAM (DRAM) that contains 16,777,216 memory cells accessible in 4-bit increments. The MB8116400 features a "fast page" mode of operation whereby high-speed random access of up to 1,024-bits of data within the same row can be selected. The MB8116400 DRAM is ideally suited for mainframe, buffers, hand-held computers video imaging equipment, and other memory applications where very low power dissipation and high bandwidth are basic requirements of the design. Since the standby current of the MB8116400 is very small, the device can be used as a non-volatile memory in equipment that uses batteries for primary and/or auxiliary power.

The MB8116400 is fabricated using silicon gate CMOS and Fujitsu's advanced four-layer polysilicon and two-layer aluminum process. This process, coupled with advanced stacked capacitor memory cells, reduces the possibility of soft errors and extends the time interval between memory refreshes. Clock timing requirements for the MB8116400 are not critical and all inputs are TTL compatible.

PRODUCT LINE & FEATURES

Parameter	MB8116400-60	MB8116400-70	MB8116400-80
RAS Access Time	60ns max.	70ns max.	80ns max.
Random Cycle Time	110ns min.	130ns min.	150ns min.
Address Access Time	30ns max.	35ns max.	40ns max.
CAS Access Time	15ns max.	17ns max.	20ns max.
Fast Page Mode Cycle Time	40ns min.	45ns min.	50ns min.
Low Power Dissipation	550mW max.	495mW max.	440mW max.
• Operating current	11mW max. (TTL level) / 5.5mW max. (CMOS level)		
• Standby current			

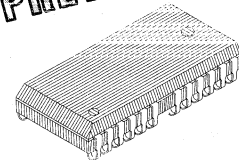
Fujitsu

- 4,194,304 words x 4 bit organization
- Silicon gate, CMOS, Advanced Capacitor Cell
- All input and output are TTL compatible
- 4096 refresh cycles every 65.6ms
- Early write or \overline{OE} controlled write capability
- \overline{RAS} only, \overline{CAS} -before- \overline{RAS} , or Hidden Refresh
- Fast page Mode, Read-Modify-Write capability
- On chip substrate bias generator for high performance

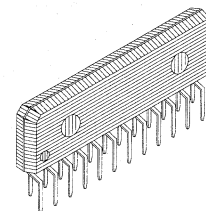
ABSOLUTE MAXIMUM RATINGS (see NOTE)

Parameter	Symbol	Value	Unit
Voltage at any pin relative to VSS	V_{IN}, V_{OUT}	-1 to +7	V
Voltage of V_{CC} supply relative to VSS	V_{CC}	-1 to +7	V
Power Dissipation	PD	1.0	W
Short Circuit Output Current	—	50	mA
Operating Temperature	T_{OPE}	0 to 70	°C
Storage Temperature	T_{STG}	-55 to +125	°C

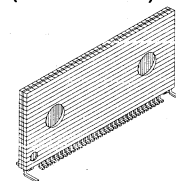
PRELIMINARY



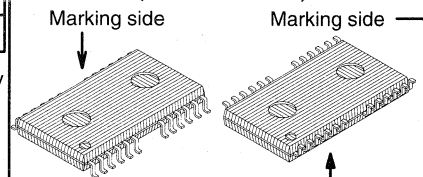
Plastic SOJ Package
(LCC-28P-M06)



Plastic ZIP Package
(ZIP-24P-M03)



Plastic VSMP Package
(VSMP-32P-M02)



Plastic TSOP Packages
(FPT-28P-M05) (FPT-28P-M06)
(Normal Bend) (Reverse Bend)

Package and Ordering Information

- 28-pin plastic (400mil) SOJ, order as MB8116400-xxPJ
- 24-pin plastic (475mil) ZIP, order as MB8116400-xxPZ
- 32-pin plastic (13 x 25mm) VSMP, order as MB8116400-xxPV
- 28-pin plastic (400mil) TSOP-II with normal bend leads, order as MB8116400-xxPFTN
- 28-pin plastic (400mil) TSOP-II with reverse bend leads, order as MB8116400-xxPFTR

NOTE: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB8117400-60/-70/-80

CMOS 4M x 4 BIT FAST PAGE MODE DYNAMIC RAM

PRELIMINARY

CMOS 4,194,304 x 4 BIT Fast Page Mode Dynamic RAM

The Fujitsu MB8117400 is a fully decoded CMOS Dynamic RAM (DRAM) that contains 16,777,216 memory cells accessible in 4-bit increments. The MB8117400 features a "fast page" mode of operation whereby high-speed random access of up to 8,196-bits of data within the same row can be selected. The MB8117400 DRAM is ideally suited for mainframe, buffers, hand-held computers video imaging equipment, and other memory applications where very low power dissipation and high bandwidth are basic requirements of the design. Since the standby current of the MB8117400 is very small, the device can be used as a non-volatile memory in equipment that uses batteries for primary and/or auxiliary power.

The MB8117400 is fabricated using silicon gate CMOS and Fujitsu's advanced four-layer polysilicon and two-layer aluminum process. This process, coupled with advanced stacked capacitor memory cells, reduces the possibility of soft errors and extends the time interval between memory refreshes. Clock timing requirements for the MB8117400 are not critical and all inputs are TTL compatible.

PRODUCT LINE & FEATURES

Parameter	MB8117400-60	MB8117400-70	MB8117400-80
RAS Access Time	60ns max.	70ns max.	80ns max.
Random Cycle Time	110ns min.	130ns min.	150ns min.
Address Access Time	30ns max.	35ns max.	40ns max.
CAS Access Time	15ns max.	17ns max.	20ns max.
Fast Page Mode Cycle Time	40ns min.	45ns min.	50ns min.
Low Power Dissipation	660mW max.	550mW max.	468mW max.
<ul style="list-style-type: none"> Operating current Standby current 	11mW max. (TTL level) / 5.5mW max. (CMOS level)		

- 4,194,304 words x 4 bit organization
- Silicon gate, CMOS, Advanced Capacitor Cell
- All input and output are TTL compatible
- 2048 refresh cycles every 32ms
- Early write or OE controlled write capability
- RAS only, CAS-before-RAS, or Hidden Refresh
- Fast page Mode, Read-Modify-Write capability
- On chip substrate bias generator for high performance

ABSOLUTE MAXIMUM RATINGS (see NOTE)

Parameter	Symbol	Value	Unit
Voltage at any pin relative to VSS	V _{IN} , V _{OUT}	-1 to +7	V
Voltage of V _{CC} supply relative to VSS	V _{CC}	-1 to +7	V
Power Dissipation	PD	1.0	W
Short Circuit Output Current	—	50	mA
Operating Temperature	T _{OP}	0 to 70	°C
Storage Temperature	T _{STG}	-55 to +125	°C

NOTE: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Plastic SOJ Package (LCC-28P-M06)

Plastic ZIP Package (ZIP-24P-M03)

Plastic VSMP Package (VSMP-32P-M02)

Plastic TSOP Packages (FPT-28P-M05) (FPT-28P-M06)
(Normal Bend) (Reverse Bend)

Marking side

Marking side

Package and Ordering Information

- 28-pin plastic (400mil) SOJ, order as MB8117400-xxPJ
- 24-pin plastic (475mil) ZIP, order as MB8117400-xxPZ
- 32-pin plastic (13 x 25mm) VSMP, order as MB8117400-xxPV
- 28-pin plastic (400mil) TSOP-II with normal bend leads, order as MB8117400-xxPFTN
- 28-pin plastic (400mil) TSOP-II with reverse bend leads, order as MB8117400-xxPFTR

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB85336-60/-70/-80/-10

CMOS 256K x 36 Fast Page Mode DRAM Module

The Fujitsu MB85336 is a fully decoded, CMOS dynamic random access memory (DRAM) module consisting of eight MB81C4256A devices and four MB81C256A devices. The MB85336 is optimized for applications requiring high speed, high performance, and large memory storage. The operation and electrical characteristics of the MB85336 are the same as the MB81C4256A, which features fast page mode operation. For ease of memory expansion, the MB85336 is offered in a 72-pad Single In-Line Memory Module (SIMM) package.

- Organization: 262,144 words x 36 bits

Module	Maximum Access Time			Standby Power
	RAS	CAS	Column Address	
MB85336-60	60 ns	15 ns	30 ns	4884 mW
MB85336-70	70 ns	20 ns	35 ns	4488 mW
MB85336-80	80 ns	20 ns	40 ns	4092 mW
MB85336-10	100 ns	25 ns	50 ns	3564 mW

- Standby power: 66 mW maximum (CMOS level)
132 mW maximum (TTL level)
- Fast page mode
- Single +5V supply, ± 10% tolerance
- TTL compatible I/O
- Decoupling capacitor: 0.22 µF, 12 pcs
- JEDEC standard package outline:
72-pad SIMM MB85336-XXPS
72-pad SIMM MB85336-XXPSG (gold pad)

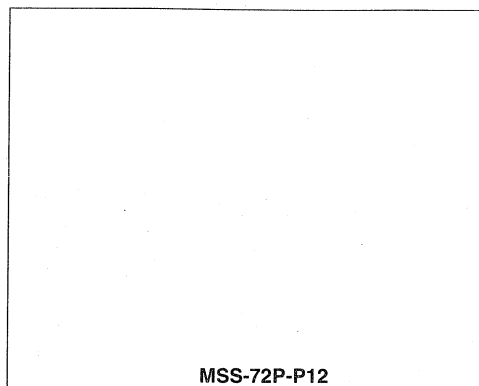
Presence Detect Table

Pin No.	Pin Name	-60	-70	-80	-10
67	PD1	NC	NC	NC	NC
68	PD2	V _{SS}	V _{SS}	V _{SS}	V _{SS}
69	PD3	NC	V _{SS}	NC	V _{SS}
70	PD4	NC	NC	V _{SS}	V _{SS}

ABSOLUTE MAXIMUM RATINGS (see Note)

Rating	Symbol	Value	Unit
Supply voltage	V _{CC}	-1.0 to +7.0	V
Input voltage	V _{IN}	-1.0 to +7.0	V
Output voltage	V _{OUT}	-1.0 to +7.0	V
Short circuit output current	I _{OUT}	± 50	mA
Clamp circuit input voltage	P _D	12.0	W
Storage temperature	T _{STG}	-55 to +125	°C

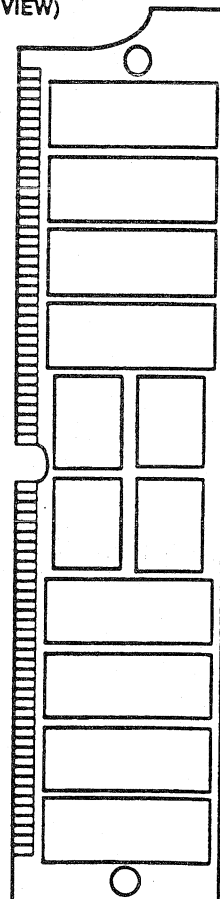
Note: Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



MSS-72P-P12

PAD ASSIGNMENT (TOP VIEW)

- | | | | |
|-------|----|----|-------|
| DQ0 | 2 | 1 | VSS |
| DQ1 | 4 | 3 | DQ18 |
| DQ2 | 6 | 5 | DQ19 |
| DQ3 | 8 | 7 | DQ20 |
| DQ4 | 10 | 9 | DQ21 |
| VCC | 18 | 11 | NC |
| A0 | 12 | 13 | A1 |
| A2 | 14 | 15 | A3 |
| A4 | 16 | 17 | A5 |
| A6 | 18 | 19 | NC |
| DQ4 | 20 | 21 | DQ22 |
| DQ5 | 22 | 23 | DQ23 |
| DQ6 | 24 | 25 | DQ24 |
| DQ7 | 26 | 27 | DQ25 |
| A7 | 28 | 29 | NC |
| VCC | 30 | 31 | A8 |
| NC | 32 | 33 | NC |
| /RAS2 | 34 | 35 | DQ26 |
| DQ8 | 36 | | |
| | | | |
| DQ35 | 38 | 37 | DQ17 |
| /CAS0 | 40 | 39 | VSS |
| /CAS3 | 42 | 41 | /CAS2 |
| /RAS0 | 44 | 43 | /CAS1 |
| NC | 46 | 45 | NC |
| NC | 48 | 47 | /WE |
| DQ27 | 50 | 49 | DQ9 |
| DQ28 | 52 | 51 | DQ10 |
| DQ29 | 54 | 53 | DQ11 |
| DQ30 | 56 | 55 | DQ12 |
| DQ31 | 58 | 57 | DQ13 |
| DQ32 | 60 | 59 | VCC |
| DQ33 | 62 | 61 | DQ14 |
| DQ34 | 64 | 63 | DQ15 |
| NC | 66 | 65 | DQ16 |
| PD2 | 68 | 67 | PD1 |
| PD4 | 70 | 69 | PD3 |
| VSS | 72 | 71 | NC |

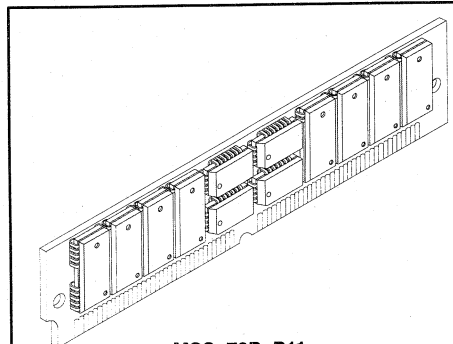


This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB85346-80/-10

CMOS 1M x 36 Fast Page Mode DRAM Module

The Fujitsu MB85346 is a fully decoded, CMOS dynamic random access memory (DRAM) module consisting of eight MB814400 devices and four MB81C1000A devices. The MB85346 is optimized for those applications requiring high speed, high performance and large memory storage. The operation and electrical characteristics of the MB85346 are the same as the MB814400 which features fast page mode operation. For ease of memory expansion, the MB85346 is offered in a 72-pad Single In-Line Memory Module Package (SIM).



MSS-72P-P11
MSS-72P-P23

- Organization: 1,048,576 words x 36 bits
- RAS Access Time: 80 ns max. (MB85346-80) 100 ns max (MB85346-10)
- CAS Access Time: 20 ns max. (MB85346-80) 25 ns max. (MB85346-10)
- Column Address Access Time: 40 ns max. (MB85346-80) 50 ns max. (MB85346-10)
- Active Power: 4664 mW max. (MB85346-80) 4048 mW max. (MB85346-10)
- Standby Power: 66 mW max. (CMOS Level) 132 mW max. (TTL Level)
- Fast Page Mode
- Single +5 V Supply $\pm 10\%$ Tolerance
- TTL Compatible I/O
- Decoupling Capacitor: 0.22 μ F, 12 pcs
- Package and Ordering Information: 72-pad SIM, order as MB85346-xxPS (PS = Solder Pad) or MB85346-xxPSG (PSG = Gold Pad)

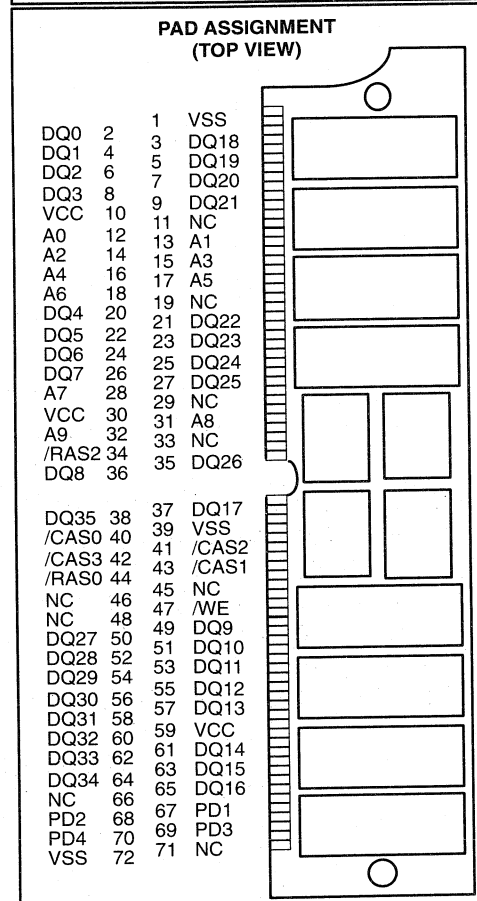
PRESENCE DETECT TABLE

Pin No.	Pin Name	-80	-10
67	PD1	V _{SS}	V _{SS}
68	PD2	V _{SS}	V _{SS}
69	PD3	NC	V _{SS}
70	PD4	V _{SS}	V _{SS}

ABSOLUTE MAXIMUM RATINGS (See note)

Rating	Symbol	Value	Rating
Supply Voltage	V _{CC}	-1.0 to +7.0	V
Input Voltage	V _{IN}	-1.0 to +7.0	V
Output Voltage	V _{OUT}	-1.0 to +7.0	V
Short Circuit Output Current	I _{OUT}	± 50	mA
Power Dissipation	P _D	12.0	W
Storage Temperature	T _{STG}	-55 to +125	$^{\circ}$ C

Note: Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operation sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltage to this high impedance circuit.

MB87033B Series

SCSI Protocol Controller (SPC) With On-Chip Drivers/Receivers

GENERAL DESCRIPTION

The MB87033 SCSI Protocol Controller (SPC) is a CMOS LSI circuit specifically designed to control a Small Computer Systems Interface (SCSI). The MB87033 rounds out Fujitsu's SPC family of protocol controllers by providing software enhancements and other functional features that will meet all facets of the SCSI specification (ANSI X 3.131-1986).

To achieve optimum performance and interface flexibility, the MB87033 provides an 8-byte First-In First-Out (FIFO) data buffer register and a 28-bit transfer byte counter which allows burst transfers of up to 256 megabytes. To improve programming requirements, "Attention Detect" and "Arbitration Fail" interrupts are provided and on-chip driver/receiver circuits simplify interface connections. Data transfers can be executed in either the asynchronous or synchronous mode with a maximum offset of 8-bytes.

SCSI Compatibility

- Supports all mandatory commands, many optional commands, and some extended commands of SCSI Specification (ANSI X3.131, 1986)
- Software compatible with MB87030/31
- Serves as either INITIATOR or TARGET

Data Buses

- Independent buses for CPU and DMA controller

Transfer Modes

- Asynchronous
- Synchronous mode transfers with programmable offset of up to eight bytes (8-byte FIFO)

Data Transfer Speed

- Up to a maximum of 5-megabyte/sec

Selectable Operating Modes

- DMA transfers
- Program transfers
- Manual Transfers
- Diagnostic

Interface

- On-chip single ended Drivers/Receivers
- Guaranteed to sink 48mA regardless of the number of outputs simultaneously asserted

Enhancements

- On-chip parity generation
- Attention condition detect interrupt
- Arbitration fail interrupt

Clock Requirements

- 10MHz clock

Technology/Power Requirements

- Silicon-gate CMOS
- Single +5V power supply

Available Packaging

- 84-pin plastic leadless chip carrier
- 80-pin plastic flat package

Fujitsu

ABSOLUTE MAXIMUM RATINGS¹

Rating	Symbol	Values		Unit
		Min	Max	
Supply Voltage	V _{DD}	V _{SS} ² - 0.3	6.0	V
Input Voltage	V _I	V _{SS} ² - 0.3	V _{DD} + 0.3	V
Output Voltage ²	V _O	V _{SS} ² - 0.3	V _{DD} + 0.3	V
Storage Temperature (Ceramic)	T _{STG}	-65	+125	°C

NOTES:

1. Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.
2. V_{SS} = 0 V
3. Not more than one output may be shorted at a time for a maximum duration of one second.

MB98A8081-20/8091-20/8101-20/8111-20

Flash Card Memory

FLASH ERASABLE PROGRAMMABLE MEMORY CARD 256K/512K/1M/2M-BYTE

The Fujitsu MB98A8081, MB98A8091, MB98A8101 and MB98A8111 are flash memory cards capable of storing and retrieving large amounts of data. Each flash memory card contains multiple 1M-bit flash memory devices.

The flash memory card circuits are housed in a credit-card sized 68-pin package. Internal circuitry is protected by metal plates on the top and bottom of the card to help reduce chip damage from electrostatic discharge.

A unique feature of the Fujitsu memory cards allows the user to organize the card into either an 8-bit or a 16-bit organization. All cards are portable and operate at high speed with low power needs.

- Card dimensions: 85.6 length x 54.0 width x 3.3 thickness (mm)
- Connector type: Two-piece 68-pin (built-in 68-pin receptacle, 2-row type)
- Command control for Write/Erase operation
- Write protect function
- +5.0 V \pm 5% power supply (12.0 V \pm 5% V_{PP})



AVAILABLE ORGANIZATIONS

Part Number	Mounted Memory Devices	Access Time	Memory Organization ¹
MB98A8081-20	1M-bit flash memory x 2 pcs	200 ns	256 K x 8 bits/128 K x 16 bits
MB98A8091-20	1M-bit flash memory x 4 pcs	200 ns	512 K x 8 bits/256 K x 16 bits
MB98A8101-20	1M-bit flash memory x 8 pcs	200 ns	1M x 8 bits/512 K x 16 bits
MB98A8111-20	1M-bit flash memory x 16 pcs	200 ns	2M x 8 bits/1M x 16 bits

Note: ¹To be configured by user.

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.5 to +6.0	V
Input Voltage	V_{IN}	-0.5 to +6.0	V
Output Voltage	V_{IO}	-0.5 to +6.0	V
Programming Voltage ^{1, 2}	V_{PP1}, V_{PP2}	-2.0 to 14.0	V
Temperature under Bias	T_{BIAS}	-10 to +70	°C
Operating Temperature	T_A	0 to +60	°C
Storage Temperature	T_{STG}	-30 to +70	°C

Notes: Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operation sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

¹Minimum DC input voltage is -0.5 V. During transitions, inputs may undershoot to -2.00 V for periods less than 20 ns.

²Maximum DC input voltage on V_{PP} may overshoot to +14.0 V for periods less than 20 ns.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB98A8092x- / 8102x- / 8112x- / 8122x-25 FLASH MEMORY CARD

FLASH ERASEABLE AND PROGRAMMABLE MEMORY CARD 512K / 1M / 2M / 4M -BYTE

The Fujitsu MB98A8092x, MB98A8102x, MB98A8112x and MB98A8122x are Flash electrically erasable and programmable (Flash) memory cards capable of storing and retrieving large amounts of data. The memory circuits are housed in a credit-card sized 68-pin package. Internal circuit is protected by two metal panels, one at the top and bottom of the card, that help to reduce chip damage from electrostatic discharge.

A unique feature of the Fujitsu memory cards allows the user to organize the card into either an 8-bit or a 16-bit bus configuration. All cards are portable and operate on low power at high speed.

In accordance with the Personal Computer Memory Card Internal Association (PCMCIA) and Japan Electrical Industry Development Association (JEIDA) industry standard specification, Flash memory cards offer additional EEPROM memory that is used to store attribute data. The attribute memory is an Flash memory card option. (See page 2 for description of the three available options.)

- PCMCIA and JEIDA industry standard for 68-pin memory card
- Credit card size dimensions: 85.6mm (length) x 54.0mm (width) x 3.3mm (thick)
- PCMCIA / JEIDA industry standard, two-piece 68-pin connector (with a two-row built-in receptacle)
- Single +5V±5% power supply (+12.0V±5%VPP)
- Command control for Write / Erase operation
- Write protect function



CRD-68P-M05

Fujitsu

ABSOLUTE MAXIMUM RATINGS (see NOTE)

Rating	Symbol	Value	Unit
Supply Voltage	VCC	-0.5 to +6.0	V
Input Voltage	VIN	-0.5 to +6.0	V
Output Voltage	VOUT	-0.5 to +6.0	V
Programming Voltage *1	VPP1, VPP2	-2.0 to +14.0	V
Temperature under Bias	TBIAS	-10 to +70	°C
Storage Temperature	TSTG	-30 to +70	°C

Note: *1 Minimum DC input voltage is -0.5V.

NOTE: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

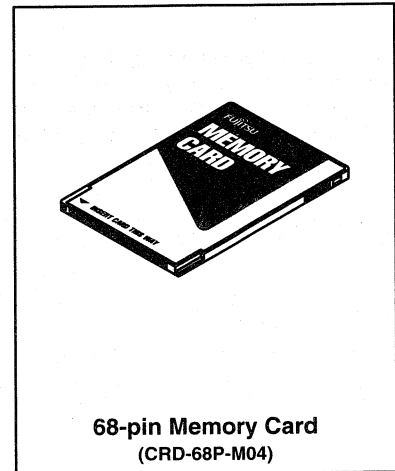
MB98A9061x, MB9071x, MB9081x, and 9091x-20 Low Power SRAM Memory Card 64K, 128K, 256K, and 512k-Byte

The Fujitsu MB98A9061x, MB98A9071x, MB98A9081x and MB98A9091x are Static Random Access Memory (SRAM) cards capable of storing and retrieving large amounts of data. The memory circuits are housed in a credit-card sized 68-pin package. Internal circuitry is protected by two metal panels, one at the top and the bottom of the card, to reduce chip damage from electrostatic discharge.

When the SRAM card is not powered by its system, an on-board, replaceable lithium battery (coin-type) is used to retain data. When the lithium battery must be replaced, two rechargeable batteries that are built into the SRAM card, maintain data. (See the BLOCK DIAGRAM for location of batteries.)

A unique feature of the Fujitsu memory cards allows the user to organize the card into either an 8-bit or a 16-bit bus configuration. This new series (MB98A9061x-20 etc.) of SRAM cards consume less power than the MB98A9060x-20 series, thus extending system battery life and performance.

In accordance with the Personal Computer Memory Card International Association (PCMCIA) and Japan Electrical Industry Development Association (JEIDA) industry standard specification, SRAM cards offer additional EEPROM memory for storing attribute data. The attribute memory is an SRAM memory card option. (See page 2 for a description of the three available options.)



- PCMCIA and JEIDA industry standard for 68-pin memory card
- Credit card size: 85.6 mm (length) x 54.0 mm (width) x 3.3 mm (thick).
- PCMCIA/JEIDA industry standard, two-piece 68-pin connector (with a two-row built-in 68-pin receptacle)
- Low operating and standby power consumption
- Replaceable lithium battery
- Built-in, rechargeable batteries for data retention during lithium battery replacement
- Battery voltage detect and write protect function

ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.5 to +6.0	V
Input Voltage	V_{IN}	-0.5 to $V_{CC} + 0.5$	V
Output Voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$	V
Temperature Under Bias	T_{BIAS}	-10 to +60 ¹	°C
Storage Temperature	T_{STG}	-20 to +65 ²	°C

Notes: ¹ This value does not apply to the replaceable battery.
² This value does not apply to the replaceable battery and data retention.

— Note —

Permanent device damage may occur if absolute maximum ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB98A9102x-20/9112x-20

LOW POWER SRAM MEMORY CARD

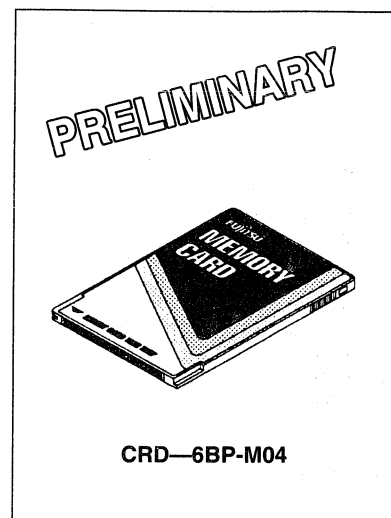
LOW POWER STATIC RANDOM ACCESS MEMORY CARD 1M/ 2M-BYTE

The Fujitsu MB98A9102x and MB98A9112x are Static Random Access Memory (SRAM) cards capable of storing and retrieving large amounts of data. The memory circuits are housed in a credit-card sized 68-pin package. Internal circuitry is protected by two metal panels, one at the top and one at the bottom of the card, that help to reduce chip damage from electrostatic discharge.

When the SRAM card is not powered by its system, an on-board, replaceable lithium battery (coin-type) is used to retain data. When the lithium battery must be replaced, two rechargeable batteries that are built into the SRAM card, maintain data. (See the BLOCK DIAGRAM for location of batteries.)

A unique feature of the Fujitsu memory cards allows the user to organize the card into either an 8-bit or a 16-bit bus configuration. All cards are portable and operate on low power at high speed.

In accordance with the Personal Computer Memory Card Internal Association (PCMCIA) and Japan Electrical Industry Development Association (JEIDA) industry standard specification, SRAM cards offer additional EEPROM memory that is used to store attribute data. The attribute memory is an SRAM memory card option. (See page 2 for a description of the three available options.)



Fujitsu

- PCMCIA and JEIDA industry standard for 68-pin memory card
- Credit card size: 85.6mm (length) x 54.0mm (width) x 3.3mm (thick).
- PCMCIA/JEIDA industry standard, two-piece 68-pin connector (with a two-row built-in 68-pin replaceable)
- Low operating and standby power consumption
- Replaceable lithium battery
- Built-in, rechargeable batteries for data retention during lithium battery replacement
- Battery voltage detect and write protect function

ABSOLUTE MAXIMUM RATINGS (see Note)

Rating	Symbol	Value	Unit
Supply Voltage	V_{CC}	-0.5 to + 6.0	V
Input Voltage	V_{IN}	-0.5 to $V_{CC} + 0.5$	V
Output Voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$	V
Temperature under Bias	T_{BIAS}	-10 to + 60 ¹	°C
Storage Temperature	T_{STG}	-20 to + 65 ²	°C

- Notes: 1. This value does not apply to the replaceable battery.
2. This value does not apply to the replaceable battery and data retention.

Note: Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB1510

DUAL SERIAL INPUT PLL FREQUENCY SYNTHESIZER

DUAL SERIAL INPUT PLL FREQUENCY SYNTHESIZER WITH GHz PRESCALER

DESCRIPTION

The Fujitsu MB1510 is a 1.1 GHz dual serial input PLL (Phase Locked Loop) frequency synthesizer designed for cellular telephone and cordless telephone applications.

The MB1510 has two PLL circuits on a single chip: PLL1 and PLL2. An analog switch is provided for each PLL circuit decrease lock up time. Separate power supply pins are provided for each PLL circuit as well.

1.1 GHz dual modulus prescalers are on chip and enables a pulse swallow function.

It operates from a supply voltage of 3.0V typ. and dissipates 15 mA typ. of current realized through the use of Fujitsu's unique U-ESBIC Bi-CMOS technology.

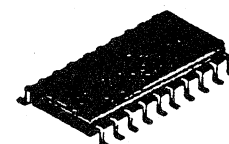
FEATURES

- High operating frequency: $f_{in} = 1.1 \text{ GHz}$ ($V_{in} = -10 \text{ dBm}$, $V_{CC} = 3V$)
- Pulse swallow function: 64/65 or 128/129
- Low power supply current: $I_{CC} = 15 \text{ mA typ. @} 3V$.
- Serial input reference divider: $R = 512$ or 1024
- Serial input 18-bit programmable divider consisting of:
 - Binary 7-bit swallow counter: 0 to 127
 - Binary 11-bit programmable counter: 16 to 2047
 - Tx and Rx programmable counters may be controlled separately.
- Low power supply voltage: $V_{CC} = 2.7$ to $5.5V$
- On-chip analog switches achieve fast lockup time
- Fast lock up by bipolar charge pumps
- Wide operating temperature: $T_A = -40$ to 85°C
- Plastic 20-pin flat package (Suffix: -PF)

ABSOLUTE MAXIMUM RATINGS (see NOTE)

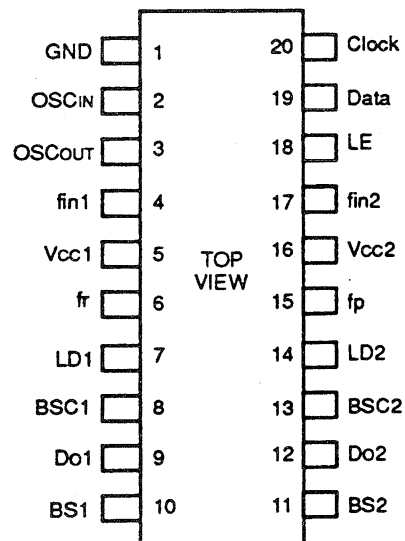
Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	-0.5 to 7.0	V
Output Voltage	V_{OUT}	-0.5 to $V_{CC}+0.5$	V
Output Current	I_{OUT}	± 10	mA
Storage Temperature	T_{STG}	-55 to +125	$^\circ\text{C}$

NOTE: Permanent device damage may occur if the above Absolute Maximum Ratings are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



Plastic Package
FPT-20P-M01

Pin Assignment



Pin Assignment might be changed to improve the characteristics without notice.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

MB87091 SERIAL INPUT PLL FREQUENCY SYNTHESIZER

CMOS SERIAL INPUT PLL FREQUENCY SYNTHESIZER WITH POWER SAVING FUNCTION

The Fujitsu MB87091 is a CMOS serial input Phase Locked Loop (PLL) frequency synthesizer ideal for use in cordless telephone sets and other radio equipment. It incorporates an inverter for an oscillation circuit, a programmable reference divider (14-bit binary programmable reference counter), a shift register control register, latches, a programmable divider (6-bit binary swallow counter with 12-bit binary programmable counter and dual modulus prescaler), a phase comparator, an intermittent mode control circuit, and a constant-current charge pump. The power save control input pin (PS) for the intermittent mode control circuit is used to switch between the stand-by and active modes. This is used for phase synchronization at the beginning of operation. The MB87091 permits construction of PLL frequency synthesizers with operating frequencies of up to 380 MHz.

FEATURES

- Single power supply voltage: $V_{DD} = 2.7$ to $3.3V$
- Built-in inverter for an oscillator
- Adjustable output current of the charge pump with an external resistor
- Intermittent mode control circuit
- Two phase comparator outputs (for external and internal charge pumps)
- Wide operating temperature range (T_A) $-40^{\circ}C$ to $60^{\circ}C$
- Plastic dual in line package (Suffix: -P), Plastic small outline package (Suffix: -PF)
- Setting the divide ratio

Use the below formula to define the parameters for setting the divide ratio

$$f_{VCO} = (N \times M \div A) \times (f_{osc} \div B) \quad (N > A)$$

(1) (2) (3) (4) (5) (6)

- (1) Output frequency of the external VCO
- (2) Preset divide ratio of 12-bit binary programmable counter (5 to 4,095)
- (3) Preset modulus of external dual modulus prescaler (64)
- (4) Preset divide ratio of 6-bit binary swallow counter (0 to 63)
- (5) Output frequency of the external reference frequency oscillator
- (6) Preset divide ratio of 14-bit binary programmable reference counter (5 to 16,383)

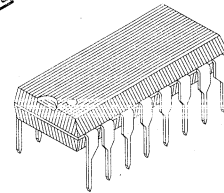
ABSOLUTE MAXIMUM RATINGS (See NOTE)

($V_{SS}=0V$)

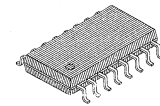
Rating	Symbol	Value	Unit
Supply voltage	V_{DD}	$V_{SS}-0.5$ to $V_{SS}+6.0$	V
Input voltage	V_{IN}	$V_{SS}-0.5$ to $V_{DD}+0.5$	V
Output voltage	V_{OUT}	$V_{SS}-0.5$ to $V_{DD}+0.5$	V
Output current	I_{OUT}	± 10	mA
Ambient temperature	T_A	-40 to $+60$	$^{\circ}C$
Storage temperature	T_{stg}	-40 to $+125$	$^{\circ}C$
Power dissipation	P_D	300	mW

NOTE: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

PRELIMINARY

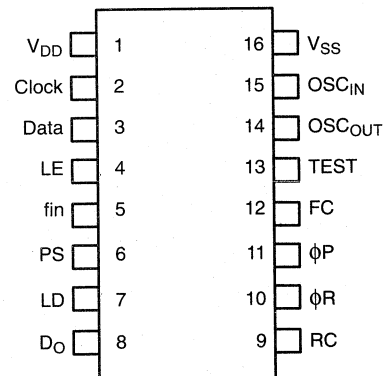


(DIP-16P-M04)



(FPT-16P-M06)

PIN ASSIGNMENT (TOP VIEW)



This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

Fujitsu

Fujitsu Multichip Modules

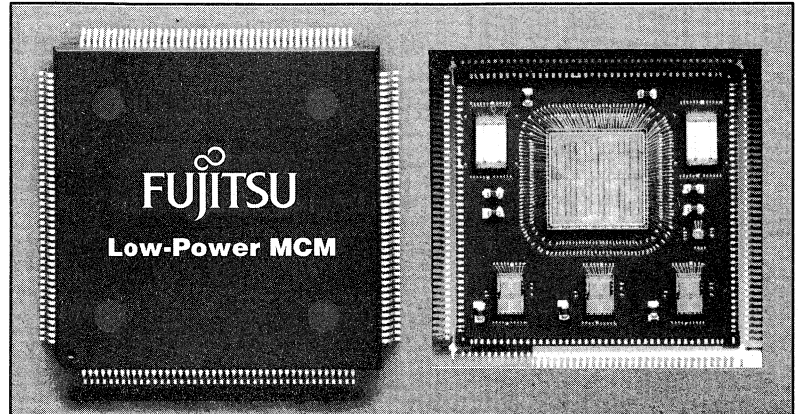
Low-Power MCMs

Description

Fujitsu's Low-Power Multichip Module (MCM) is the most cost effective advanced packaging solution to solve the speed and density barriers imposed by traditional packaging and interconnection approaches.

Our MCM family is built on a multilayer ceramic substrate with a semiconductor die mounted on both sides and housed in a surface mountable plastic quad flat package.

Some of the features and their benefits are listed below.



Features

- Highest component density possible with dual side mounting
- Excellent control of transmission line parameters
- 100% module testing
- Inclusion of both analog and digital functions
- I/O configuration options: 80, 104, 168, and 256 pins
- Package mount height options: 4.4 mm and 3.0 mm

Benefits

- Maximizes system performance and integration
- Reduces ringing and signal reflection
- High reliability
- Mixed signal
- Standard package sizes
- Low profile

Product Applications

- Telecommunications equipment
- Portable computers
- High speed workstations
- Industrial controls
- ATE/ instrumentation
- Hand-held POS terminals
- Computer peripherals
- Multimedia

CG31 Series

0.8-micron CMOS Gate Arrays

DESCRIPTION

The CG31 series of 0.8µm CMOS gate arrays are currently available in three device types with from 120K to 200K gates. These arrays achieve the ultra fast speed of 0.37 ps per gate. Thank to the channelless (sea-of-gates) structure of the CG31 gate array, CG31 basic cells can be used for logic cells, memory cells, or wiring area in order to implement the desired functions. The full utilization of the array surface and the three-layer metal interconnect technology produce a 65 percent maximum gate usability ratio

The logic and I/O cells for the CG31 series are functionally compatible with Fujitsu's AU, UHB, CG10, and CG21 series of gate arrays to simplify upgrading. User-specifiable RAM and ROM configurations are also available, These are arrays facilitate the implementation of large-scale devices such as computers and graphic processors on single chips.

FEATURES

- 0.8 micron CMOS sea-of-gates technology
 - 3 layer metal interconnect
- Ultra high speed
 - 0.37 ns/gate for 2-input NAND with F/O=2
 - 0.55 ns/gate for power 2-input NAND with F/O=2
- High basic cell usage
 - 65% maximum for logic with RAM/ROM
 - 55% maximum for logic only
- High sink current capability
 - sink current up to 12mA planned
- Minimum delay clock buffer true option
- High current clock drivers
 - Low-skew clock signal distribution
- Extensive unit cell library (logic cell, RAM, ROM, PLA, etc.)
 - Unit cells functionally compatible with Fujitsu's AU, UHB, CG10, and CG21 series gate arrays
- Automatic test pattern generation optional with Fujitsu scan testing
- On-chip pull-up/pull-down resistors
- High pin count ceramic packages
- High-density RAM and ROM compilers
 - up to 18K bit RAM block
 - up to 64K ROM block

Fujitsu

PRODUCT FAMILY

Device	Available BCs (2-input gate +4 N-ch Tr)	Usable Logic Basic Cells (55% utilization)	Max Signal I/O
CG31134	V _{CC}	71 K	300
CG31134	V _{IN}	88 K	332
CG31134	V _{OUT}	115 K	332*

Note: Package constrained

AVAILABLE PACKAGE¹

Package	CG31134	CG31164	CG31204	Type
PGA-135	●	●	⊕	Cavity up
PGA-155	⊕	⊕	⊕	Cavity down
PGA-179	●	●	⊕	Cavity up
PGA-208	●	●	⊕	Cavity up
PGA-223	⊕	⊕	⊕	Cavity down
PGA-256	●	●	⊕	Cavity up
PGA-299	⊕	⊕	⊕	Cavity down ²
PGA-321	⊕	⊕	⊕	Cavity down ²
PGA-361	⊕	⊕	⊕	Cavity down ²
PGA-401	⊕	⊕	⊕	Cavity down ²

- Notes: 1. All packages are ceramic pin grid arrays (PGAs)
 2. These packages features 70-mil interstitial pin arrangement and metal heatspreader with optional heatsink
- =available
 - ⊕ =under development

CMOS Embedded Arrays

Fujitsu's advanced embedded array technology combines the fast, flexible logic implementation of Fujitsu's sea-of-gates arrays with the high performance hardware macros offered by Fujitsu's standard cells. The result is a high-performance device that maximizes overall ASIC performance while minimizing cost, turnaround time, and customer.

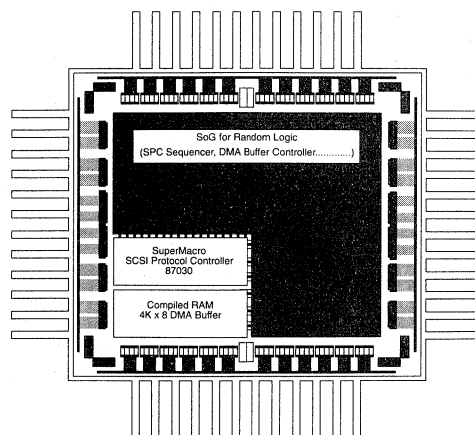
Embedded arrays can be implemented using Fujitsu's 0.8-micron or sea-of-gates technology for logic cells and any of the compiled RAM/ROM/datapath operator cells available through Fujitsu's standard cell technology.

the development of embedded arrays is a concurrent process, providing time and cost savings to the designer. Once the designer identifies the embedded functions, Function begins base wafer fabrication. Simultaneously with base wafer production, the customer defines and simulates the logic requirements of the array. This concurrent process results in shorter turnaround time for prototypes. Embedded arrays also offer cost savings if alternations to the design are necessary. Typically, pre-defined functions of the array remain unchanged and, therefore, alterations are not as costly as re-designing from the base wafer.

- All-layer base wafer fabrication
 - Maximum ASIC performance
 - Optimum size/performance ratio
 - Highest compiled cell density
- Flexible logic implementation using proven CMOS 0.8-micron or 1.2-micron sea-of-gates architecture
 - for 0.8-micron:
 - all CG21/CG31 unit cells available
 - 370 ps/gate delay (F/O = 2, 2 mm wire)
 - up to 200K gates available
 - for 1.2-micron:
 - all CG21/CG31 unit cells available
 - 370 ps/gate delay (F/O = 2, 2 mm wire)
 - up to 200K gates available
- Wide choice of compiled cells
 - High speed RAM
 - High density RAM
 - ROM
- Custom crafted I/O cells
- Industry standard and proprietary functions including Super-Macros™ from ASIC Gallery™
 - Peripheral functions
 - SCSI and Ethernet™ macros
 - JTAG IEEE 1149.1 boundary Scan Macros
- Supported by popular commercial design tools
 - Cadence
 - Dazix
 - Mentor
 - Valid
 - Viewlogic
 - Synopsys
- Mask-metal-only prototype cycle
 - fast turnaround time
 - low risk customer corrections
 - maximum customer options
- Customary bonding pad locations in established production die frame outlines
- No special testing requirements

Fujitsu

Peripheral Controller: An example of an application of embedded arrays



This peripheral controller serves as an interface between the host and peripheral such as disk drives of printer. The embedded functions include a SCSI SuperMacro and a compiled singled-port RAM.

INTELLIGENT CONTROLLER FOR ETHERNET WITH 10BASE-T

APRIL 1993

FEATURES

Host Interface Features

- LANCE-compatible architecture and buffer management structure with enhancements to ease programming, improve performance, and enhance flexibility
- Selectable 32-bit EISA or 486-compatible bus modes
- Non-multiplexed 32-bit address and data buses
- Operation as 32-bit bus master or 16/32-bit bus slave
- Supports bus preemption with preemption time programmable up to 64 bus clocks
- Page-boundary detection in bus master mode for page accesses to DRAM
- Generates chip select and read signals to access external ID PROM and boot PROM
- Direct and indirect (LANCE-compatible) addressing of all internal registers
- Initialization via direct access to initialization register set, or via initialization block in shared memory
- 33 Mbyte/sec data throughput in EISA mode and 80 Mbyte/sec data throughput in 486 mode

Ethernet Controller Features

- Transmit and receive descriptor rings each support up to 512 entries
- Enhanced transmit buffer descriptor includes collision count, enable/disable CRC and carrier sense status
- Enhanced receive buffer descriptor identifies packet as Broadcast, Multicast, Runt or Loopback type
- 128-byte FIFO auto-configured for most efficient use during transmit and receive operations
- Programmable transmit and receive FIFO threshold and burst size
- Four 16-bit counters with programmable interrupt level to allow automatic gathering of statistics on any of 15 events
- 32-bit programmable timer with interrupt
- Hash filter for multicast packet reception

Media Interface Features

- Direct interface to AUI and 10BASE-T outputs
- Fully compliant with IEEE 802.3 specifications
- Automatic AUI/10BASE-T selection
- Integrated pulse shaper and transmit and receive filters
- Selectable 100/150 ohm termination permits operation with shielded or unshielded twisted-pair cable
- Reverse-polarity detection and correction
- On-chip jabber logic, link test and SQE test with enable/disable options
- Output drivers for LEDs to indicate receive, transmit, collision and link-test pass

General Features

- Powerdown mode reduces power dissipation
- Low-power CMOS technology
- Single 5-volt power supply
- 160-pin, plastic quad flat package

DESCRIPTION

Fujitsu's MB86970 Intelligent Controller for 10BASE-T Ethernet (ICE-T), is a single-chip, high performance, 16-/32-bit Ethernet controller for adapter card and motherboard applications. It incorporates a fully IEEE 802.3 compliant Ethernet encoder/decoder, 10BASE-T transceiver and pulse shaper and filters and features two selectable bus interface modes. In the EISA-compatible mode it provides 32-bit bus master operation with both single cycle and burst read and write capability or 16-/32-bit bus slave access to all internal registers. In its 486-compatible mode, useful for the construction of motherboards or other systems with integrated Ethernet capability, the MB86970 can operate as a 32-bit bus master or 16-/32-bit bus slave at a bus clock rate of up to 40 MHz.

The programming model for the MB86970 is based on the LANCE architecture, which allows previously developed software to be used with little or no modification. Numerous enhancements have been incorporated to ease programming, improve performance and enhance flexibility. For example, the size of the transmit and receive buffer descriptor rings are

ETHERCOUPLER SINGLE-CHIP ETHERNET CONTROLLER

DATA SHEET

APRIL 1993

FEATURES

- Provides interface to the I/O bus of PC/XT™/AT® or compatible computers
- Optional, generic host interface to connect to industry-standard microprocessor buses
- Interface to serial EEPROM for Node ID and configuration option storage allows construction of jumperless, electronically configurable adapter cards
- Automatic polarity detection and correction on twisted-pair 10BASE-T cable
- Allows automatic selection of nonconflicting I/O address for self-installing under software control
- High-performance, packet-buffer architecture pipelines data for highest throughput
- On-chip buffer management controls buffer pointers to reduce software overhead and improve performance
- Hash filter for multicast packet reception
- Manchester encoder/decoder tolerates input jitter up to ± 18 ns
- Fully compliant with ISO/ANSI/IEEE 8802-3 specifications
- Two network ports, AUI and 10BASE-T, with automatic port selection
- Integrated pulse shape, and transmit and receive filters
- Selectable 150 Ω and 100 Ω termination for shielded or unshielded twisted-pair cable, respectively
- Powerdown mode to reduce power dissipation in battery-powered equipment
- Low-power CMOS technology
- Single 5-volt power supply
- 160-pin plastic quad flat package (PQFP)

GENERAL DESCRIPTION

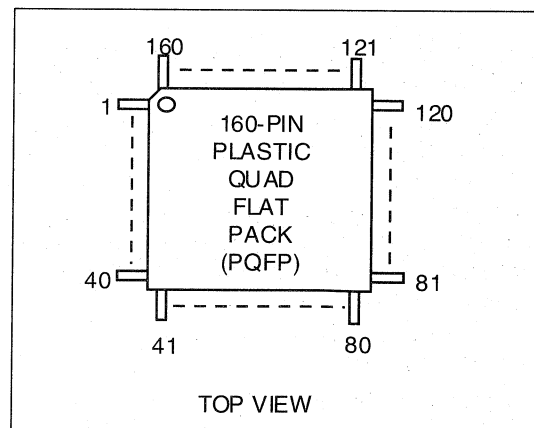
The MB86965 EtherCoupler™ Controller is a high-performance, highly integrated monolithic device that incorporates a network controller with buffer management, 10BASE-T transceiver with on-chip transmit and receive filters, Manchester encoder/decoder, and bus interface for a PC/XT/AT/ISA bus. EtherCoupler allows implementation of adapter solutions with as few as four chips. With its optional native bus mode for use directly on a microprocessor bus, it is ideal for use on

daughter and motherboards, as well as expansion-bus adapter boards. An EEPROM can be interfaced to the chip for storage of Ethernet ID and configuration settings. EtherCoupler is designed to be configured electronically, thus eliminating the jumpers typically used to configure the system network adapters.

The buffer management architecture of the MB86965 allows packet data to access a buffer memory area simultaneously from the host and from the network media. The network controller updates all receive and transmit pointers automatically to reduce the software overhead needed to control these operations, which results in superior benchmark speed and application performance. EtherCoupler's transmit buffer is programmable as a single 2-kbyte bank or as two banks of 2, 4, or 8 kbytes each. This buffer chains multiple data packets and transmits them to the network from a single transmit command, thereby offering greater design flexibility and throughput. A ring buffer that can be sized from 4 to 62 kbytes, depending on the amount of available memory used for the transmit buffer, captures the receive packets.

The MB86965 performs pulse shaping and filtering internally, which eliminates the need for external filtering components and reduces overall system cost.

PIN CONFIGURATION



MB86961/MB86961A



UNIVERSAL INTERFACE FOR 10BASE-T (TWISTED-PAIR) ETHERNET

DATA SHEET

APRIL 1993

Note: All descriptions apply to both MB86961 and MB86961A unless otherwise noted.

FEATURES

- Combines Manchester encoder/decoder and twisted pair transceiver functions
- Direct interface to all popular Ethernet controllers
- Direct interface to AUI and 10BASE-T outputs
- Manual or automatic AUI /10BASE-T selection
- Integrated pulse shaper and Tx/Rx filters
- Selectable 100 Ω /150 Ω termination permits operation with shielded or unshielded twisted pair cable
- Reverse-polarity detection for receiver with automatic correction
- On-chip jabber logic, SQE test and link test with enable/disable option
- Remote signaling of link down and jabber conditions
- Programmable receive threshold for extended range
- Power down mode for minimum power dissipation
- Output drivers for receive, transmit, collision and link test pass LED indicators
- Low power CMOS technology, single 5 volt power supply
- TP loopback disable for external loopback testing (MB86961A only)
- 44-pin PLCC package

Additional features in MB86961A only

- Automatic shut-down of unused port
- TP external loopback enable for testing

GENERAL DESCRIPTION

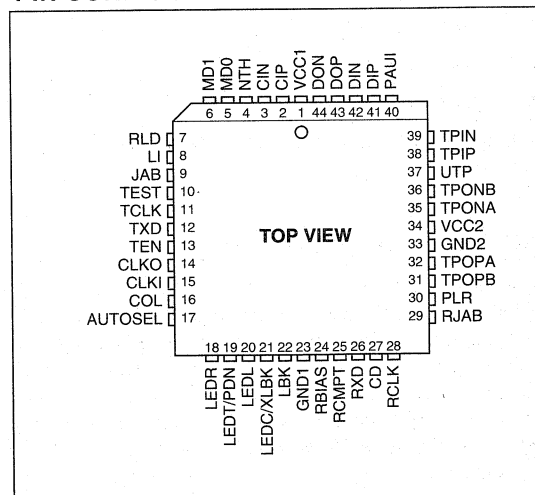
The MB86961(A) Universal Interface for 10BASE-T (Twisted-Pair) Ethernet is fully compliant with the IEEE 802.3 specifications for AUI (Attachment Unit Interface) and 10BASE-T (Twisted-Pair) interfaces and provides the electrical interface between an Ethernet

controller and the DB15 (AUI) and RJ45 (10BASE-T) connections to an Ethernet local area network. Functions provided by the MB86961(A) include Manchester encoding and decoding of the serial data stream, level conversion, collision detection, signal quality error (SQE) and link integrity testing, jabber control, loopback, and automatic correction of polarity reversal on the twisted-pair input.

Pulse shaping and filtering functions are performed by the MB86961(A) to eliminate the need for external filtering components and thus reduce overall system cost. The device also provides outputs for receive, transmit, collision and link test LEDs and provides compatibility with both shielded and unshielded twisted pair cables. The receive threshold can be reduced to allow an extended range between nodes in low noise environments. Its wide range of features and its ability to interface to virtually all popular controllers make the MB86961(A) the ideal device for twisted pair Ethernet applications.

The MB86961(A) is part of a complete family of Ethernet devices available from Fujitsu. It is fabricated in a low-power CMOS technology and is supplied in a 44-pin PLCC package.

PIN CONFIGURATION



MB86930



SPARC^{lite}™ 32-BIT RISC EMBEDDED PROCESSOR

PRELIMINARY INFORMATION

JANUARY 1993

FEATURES

- 40 MHz (25ns/cycle) operating frequency
- SPARC[®] high-performance RISC architecture
- 2 Kbytes 2-way set associative instruction cache
- 2 Kbytes 2-way set associative data cache
- Flexible locking mechanism for data and instruction cache entries
- Harvard-style separate instruction and data buses on-chip
- 8 window, 136 word register file
- Fast interrupt response time
- 247 address spaces, 4 Gbyte each
- User and supervisor modes
- Buffered writes and instruction pre-fetching
- Fast page-mode DRAM support
- Programmable address decoder and wait-state generator
- 16-bit auto reload timer
- On-chip clock generator circuit
- JTAG test interface
- Emulator support hardware
- Single vector trapping
- 0.8 micron gate, 3 level metal CMOS technology

GENERAL DESCRIPTION

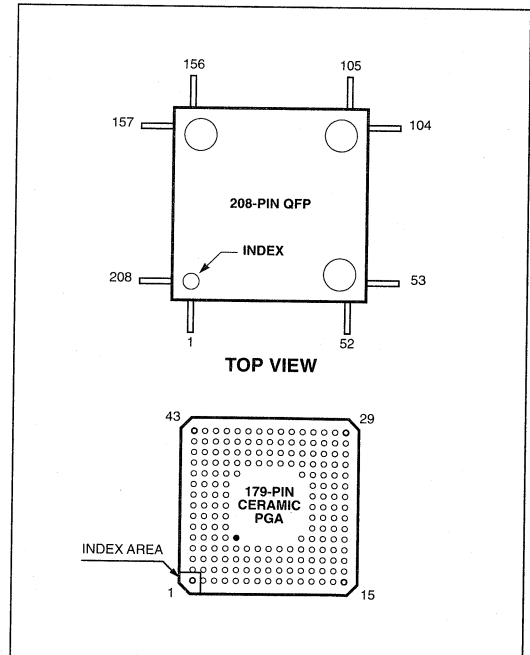
The MB86930 is a member of the SPARC^{lite} series of RISC processors which offers high performance and high integration for a wide range of embedded applications. The processor is based on the SPARC architecture and is upward code compatible with previous implementations. At 40 MHz, the processor executes with 40 MIPs peak and 37 MIPs sustained performance.

On-chip data and instruction caches are included to help decouple the processor from external memory latency. Separate on-chip instruction and data paths provide a high bandwidth interface between the IU and caches. Included to maximize the performance of the system with minimum glue logic, are chip select outputs, programmable wait-state generation and built-in support for a high performance connection to page-mode DRAM. See MB86930 block diagram on page 5.

Support for debug and diagnostic tools has been included on-chip and allows for direct connection to hardware emulators and improves debug capability when using ROM based monitors.

These features combine to give the MB86930 superior speed, flexibility and efficiency to make it the ideal choice for a wide variety of low-cost, high-performance embedded systems.

PIN CONFIGURATION



Fujitsu

MB86932



SPARClite™ 32-BIT RISC EMBEDDED PROCESSOR

PRELIMINARY INFORMATION

JANUARY 1993

FEATURES

- 40 MHz (25ns/cycle) operating frequency
- SPARC® high performance RISC architecture
- 8 Kbytes 2-way set associative instruction cache
- 2 Kbytes 2-way set associative data cache
- Support for burst mode cache fills
- Flexible locking mechanism for data and instruction cache entries
- Harvard-style separate instruction and data buses on-chip
- 8 window, 136 word register file
- Fast interrupt response time
- 247 address spaces, 4 Gbyte each
- 16 entry TLB (Translation Lookaside Buffer)
- Buffered writes and instruction pre-fetching
- Fast page-mode DRAM support
- 2 channel DMA controller
- Support for execution out of 8, 16, or 32-bit wide boot memory
- Parity generation and checking
- Programmable address decoder and wait-state generator
- 16-bit auto reload timer
- On-chip clock generator circuit
- JTAG test interface
- Emulator support hardware
- Single vector trapping
- 0.8 micron gate, 3 level metal CMOS technology

GENERAL DESCRIPTION

The MB86932 is the fourth of the SPARClite series of RISC processors which offers high performance and high integration for a wide range of embedded applications. The processor is based on the SPARC architecture and is upward code compatible with

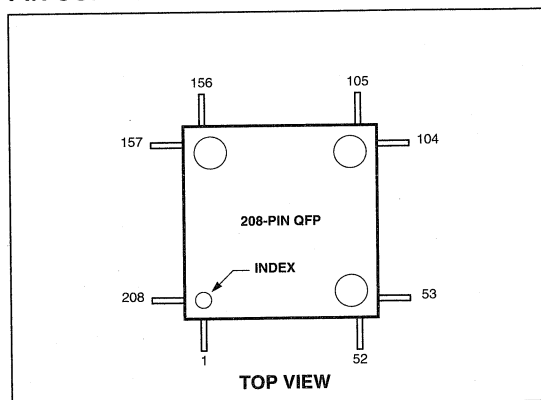
previous implementations. At 40 MHz, the processor executes with 40 MIPs peak and 37 MIPs sustained performance.

On-chip data and instruction caches are included to help decouple the processor from external memory latency. Separate on-chip instruction and data paths provide a high bandwidth interface between the IU and caches. An on-chip 2-channel DMA controller makes use of the processor bus even while the integer unit is executing out of cache. Support for virtual memory and access protection is provided through the on-chip Translation Lookaside Buffer (TLB). Included to maximize the performance of the system with minimum glue logic, are chip select outputs, programmable wait state generation, built-in support for a high performance connection to page-mode DRAM and support for booting from 8 and 16-bit memory. See MB86932 block diagram on page 3.

Support for debug and diagnostic tools has been included on-chip and allows for direct connection to hardware emulators and improves debug capability when using ROM based monitors.

These features combine to give the MB86932 superior speed, flexibility and efficiency to make it the ideal choice for a wide variety of low cost, high performance embedded systems.

PIN CONFIGURATION



SPARC^{lite}™ 32-BIT RISC EMBEDDED PROCESSOR

ADVANCE INFORMATION

JANUARY 1993

FEATURES

- 20 MHz (50ns/cycle) operating frequency
- SPARC[®] high performance RISC architecture
- 6 window, 104 word register file
- Fast interrupt response time
- 16 address spaces, 256 Mbyte each
- User and supervisor modes
- Fast page-mode DRAM support
- Programmable address decoder and wait-state generator
- Support for execution from 8, 16, and 32-bit wide boot memory
- 16-bit auto reload timer
- On-chip clock generator circuit
- JTAG test interface
- Single vector trapping
- 0.8 micron gate, 3 level metal CMOS technology

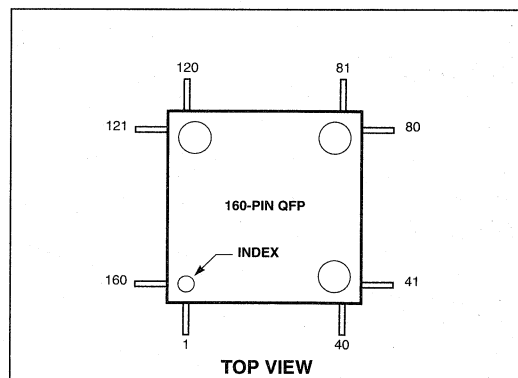
GENERAL DESCRIPTION

The MB86933 is the next of the SPARC^{lite} series of RISC processors which offers high performance and low cost for a wide range of embedded applications at the most aggressive price point of any SPARC processor. The processor is based on the SPARC architecture and is upward code compatible with previous implementations. At 20 MHz, the processor executes with 20 MIPs peak and 18 MIPs sustained performance.

Included to maximize the performance of the system with minimum glue logic, are chip select outputs, programmable wait state generation and built-in support for a high performance connection to page-mode DRAM. See MB86933 block diagram on page 3.

These features combine to allow the MB86933 to offer high performance and SPARC compatibility at a low cost to make it the right choice for a wide range of cost sensitive yet performance oriented embedded designs.










PIN CONFIGURATION



HARRIS ANSWERFAX.

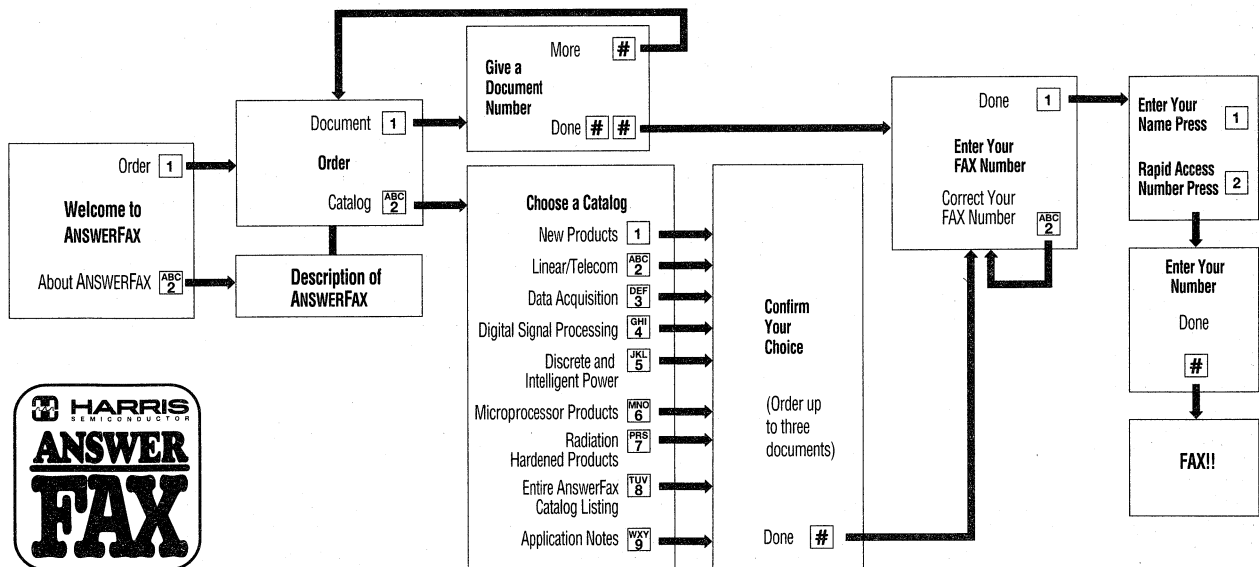
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Harris Semiconductor

YOUR MAP TO ANSWERFAX



Inside, you'll find the product listings and ANSWERFAX numbers you need to make your order.



New Products From Harris Semiconductor

LINEAR CIRCUITS	DESCRIPTION	ANSWER FAX DOCUMENT NO.
Buffers		
HFA1110	+1 Buffer Pinout	2944
HFA1112	-1, +1, +2 Op Amp Pinout	2992
HFA1113	+2, +1, -1 Op Amp Pinout, Clamped Output	1342
Single Op Amps		
HA-2842	$A_V \geq 2$, Cable Driver	2766
HFA1100	$A_V \geq 1$, CFB	2945
HFA1120	HFA1100 w/Offset Adjust	2945
HFA1130	$A_V \geq 1$, CFB, Prog Output Clamps	3369
HA-2544	$A_V \geq 1$	2900
HA-2841	$A_V \geq 1$, Low lcc	2843
HFA1105	$A_V \geq 1$, Low lcc, CFB	3395
HFA1106	HFA1105 w/Compensation Pin	3395
HFA1135	$A_V \geq 1$, Low lcc, CFB, Prog Output Clamps	3395
HFA1145	$A_V \geq 1$, Low lcc, CFB, Output Disable	3395
Quad Op Amps		
HA-5024	$A_V \geq 1$, CFB	3550
HA-5025	$A_V \geq 1$, CFB	3591
HA-2444	$A_V \geq 1$, 4-Channel Muxed Output	2490
Transistor Arrays		
HFA3127/28, HFA3046/96	5npn	3076
SPECIAL FUNCTION		
HA-2546/47	Quad Multiplier	2861/2862
HA-2556/57	Quad Multiplier	2477/2478
HA-7210	Crystal Oscillator - Very Low Power	3389
SWITCHES AND MUXES		
DG400 Series	Analog Switches/ Muxes	7050
HI201HS	Quad Video Switch	3123
HI222	Dual Video Switch	3124
HI524	4-Channel Video Mux	3148
DSP		
HSP45256	Correlator	2814
HSP43124	Serial I/O Filter	3555
HSP9520/21	Multifunction Pipeline Register	2811
HSP43168	Dual FIR Filter	2808
HSP43220	Decimating Digital Filter	2486
HSP43481	Digital Filter	2759
HSP43881	Digital Filter	2758
HSP43891	Digital Filter	2785
HSP45102	12-bit NCO	2810
HSP45106	16-bit NCO	2809
HSP45116	NCOM	2485
HSP45240	24-bit Address Sequencer	2489
HSP48410	Histogrammer	3185
HSP48901	3 x 3 Image Filter	2459
HSP48908	Two Dimensional Convolver	2456
HSP9501	Programmable Data Buffer	2786
HSP43216	Halfband Filter	3365

New Products From Harris Semiconductor

Harris Semiconductor

INTELLIGENT POWER	DESCRIPTION	ANSWER FAX DOCUMENT NO.
HIP4080	80V Full Bridge FET Driver	3178
HIP4081	80V Full Bridge FET Driver	3556
HIP2500	500V Half Bridge MOSFET Driver	2801
SP600	500V Half Bridge MOSFET Driver	2428
SP601	500V Half Bridge MOSFET Driver	2429
HIP5500 ¹	500V Half Bridge MOSFET Driver — PWM Oscillator	3210
HV400	Power MOSFET Driver — 300 KHz	2850
ICL7667	Power MOSFET Driver — 200 KHz	2853
HIP4011	3 Phase Motor Drive	2939
HIP0080 ¹	36V Quad DMOS Output Driver With Diagnostic Interface	3018
HIP0081 ¹	80V Quad DMOS Output Driver With Diagnostic Interface	3018
CA3242	Quad Inverting Power Driver	1561
CA3262	Quad Inverting Power Driver — Output Current Limiting	1836
CA3272	Quad Inverting Power Driver — Thermal Shutdown	2223
CA3274	Power MOSFET Driver — Current Limiting	2222
CA3282	Octal Serial Solenoid Driver With SPI Interface	2767
CA3292 ¹	Quad Inverting Power Driver With Output Protection Clamp	2946
HIP1030 ¹	1A High Side Driver With Overload Protection	2788
HIP1031 ¹	0.5A High Side Driver With Transient Protection	3596
HIP1090	1A High Side Driver With Transient Protection	3398
HIP5060	Switching Regulator — single output, full feature	3207
HIP5061	Switching Regulator — single output, low cost	3390
HIP5062	Switching Regulator — dual/triple output	3208
HIP5063	Switching Regulator — single output, reduced feature	3209
HV2405E	Offline AC/DC Power Supply With DC Regulator	2487
HIP3600 ¹	Offline AC/DC Converter With Programmable Output	3623
HIP5600 ¹	AC/DC or DC/DC 3-Terminal Regulator	3270
CA3277	Dual Linear Regulator	2792
CA3059	ZVS Triac Driver	490
CA3275	Dual H Bridge	2159
CA3273	High Side Driver	2113
ICL7660	CMOS Voltage Converter	3072
ICL7660S	Super Voltage Converter	3179
ICL7662	CMOS Voltage Converter	3181
ICL7663S	CMOS Programmable μ power Voltage Regulator	3180
ICL7665S	CMOS μ power Over/Under Voltage Detector	3182
ICL7673	Automatic Battery Backup Switch	3183
ICL8211/2	Programmable Voltage Detectors	3184
DISCRETE POWER		
Power MOSFETS	Request Catalog #5	
IGBTs	Request Catalog #5	
MCTV35P60F1	35A, 600V P-Type MOS	3602
MCTX65P100F1	65A, 1000V P-Type MOS	3516
MCTX75P60E1	75A, 600V P-Type MOS	3374
PROTECTION		
SP720	ESD And Overvoltage Protection Array (14 Lines)	2791
SP721	ESD And Overvoltage Protection Array (6 Lines)	3590
ML Series	Multilayer Transient Voltage Suppressors	2461
LA/ZA Series	Radial Lead Transient Surge Suppressors	2190, 2184
HA Series	Heavy-duty Surge Protectors (130 - 2800 VAC)	2973

¹: Contact factory for availability



HIGH SPEED DATA CONVERTERS

Analog to Digital Converters

P/N	Features	Resolution (bits)	Conversion Rate (min) (MSPS)	Bandwidth (MHz)	Power Dissipation (mW)	Logic Type	Answer Fax (Doc #)
HI5800	12-bit A/D Conversion System	12	3	20	1800	CMOS/TTL	2938
HI1276	Wideband Flash A/D	8	500	300 (min)	2800	ECL	3578
HI1166	Low Power Wideband Flash A/D	8	250	200 (min)	1400	ECL	3579
HI1396	Accurate Wideband Flash A/D	8	125	200 (min)	870	ECL	3576
HI1386	Wideband Flash A/D	8	75	150 (min)	580	ECL	3583
HI1176	HI1175 with Sync Clamp, Clamp Pulse Generator, DC Restore	8	20	18	60	TTL	3582
HI1175	Very Low Power Flash A/D with Voltage Reference	8	20	18	60	TTL	3577
HI5700	Very Low Cost 8-bit Flash A/D	8	20	18	725	TTL	3174
CA3318	Rugged 8-bit Flash A/D	8	15	2.5	150	TTL	3103
HI5701	Low Cost 6-bit Flash A/D	6	30	20	250	CMOS/TTL	2937
CA3306	Low Power Flash A/D	6	15	30	70	TTL	3102
CA3304	Low Power Flash A/D	4	25	40	25	TTL	1790

Digital to Analog Converters

			Update Rate (MHz)	Glitch Area (pV-s)			
HI20201	Voltage Output, Analog Multiplying Function, 75Ω Drive Capacity	10	160	15	420	ECL	3581
HI20203	8-bit Version of HI20201	8	160	15	420	ECL	3581
HI1171	Very Low Power Video DAC with Current Output	8	40	30	65	TTL	3580
CA3338	Low Power Video DAC with Voltage Output	8	50	150	100	CMOS/TTL	1850

Typical Values @ 25°C unless otherwise specified.

ANALOG/DIGITAL STANDARD CELL

PRODUCT	TECH	MINIMUM FEATURE	PROGRAM LAYERS	INTEGRATION	SUPPLY VOLTAGE	F _T (GHz) NPN/PNP	DESIGN SYSTEM	COMMENTS
HBC2500	BICMOS	3.0	ALL	2500 dig/100 analog	3-15	0.6/0.35	FASTRACK	60V DMOS
HPA2000	BICMOS	4.0	ALL	1000 dig/10 analog	15-60	1.5/0.02	FASTRACK	
HBC1000	BICMOS	2.0	ALL	10000 dig/100 analog	5-10	4.0/1.50	CUSTOM	
HDI1000	40V DI	11.0	ALL	500 dig/25 analog	40	0.7/0.40	FASTRACK	
HDI2000	20V DI	10.0	ALL	700 dig/30 analog	20	1.2/1.00	FASTRACK	

ANALOG TILE ARRAYS

PRODUCT	TECH	MINIMUM FEATURE	PROGRAM LAYERS	INTEGRATION	SUPPLY VOLTAGE	F _T (GHz) NPN/PNP	DESIGN SYSTEM	COMMENTS
HTA1000	40V DI	11.0	4	10 op amp equiv.	40	0.7/0.40	FASTRACK	
HTA2000	20V DI	10.0	4	10 op amp equiv.	20	1.2/1.00	FASTRACK	
HTA3000	10V DI	3.0	4	10 op amp equiv.	10	8.0/4.00	FASTRACK	

DEVICE LEVEL

PRODUCT	TECH	MINIMUM FEATURE	PROGRAM LAYERS	INTEGRATION	SUPPLY VOLTAGE	F _T (GHz) NPN/PNP	DESIGN SYSTEM	COMMENTS
HDI1000	40V DI	11.0	ALL	25 op amp equiv.	40	0.7/0.40	FASTRACK	w/CELLS
HDI2000	20V DI	10.0	ALL	30 op amp equiv.	20	1.2/1.00	FASTRACK	w/CELLS
HDI3000	10V DI	3.0	ALL	50 op amp equiv.	10	8.0/4.00	FASTRACK	
HDI4000	80V DI	11.0	ALL	25 op amp equiv.	80	0.3/0.06	FASTRACK	SiCr Res, 200V option

For more information call: Harris Analog ASIC Marketing, 407-724-7143, Melbourne, Florida

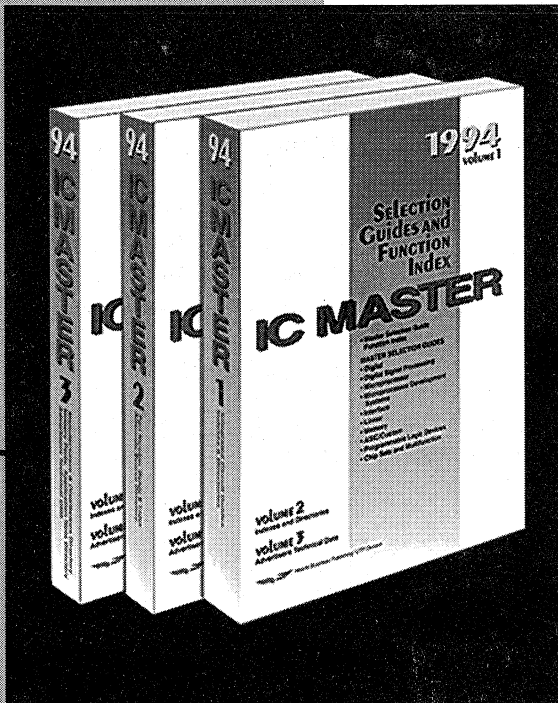
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ISI IDEAL SEMICONDUCTOR, INC.

"YOUR BEST DEFENSE AGAINST OBSOLESCENCE"

About the Company

Ideal Semiconductor is a Woman Owned Small Business which began operations in 1987. By continuing to build with the Original Manufacturers Tooling and Wafers, Ideal "Bridges the Gap" created when the major semiconductor manufactures obsolete or discontinue their product lines. The special package and test requirements of Specification Control Drawings which are no longer procurable from the original semiconductor manufacturer, can also be supported by Ideal Semiconductor.

Additional Product Lines are Regularly acquired from the Original Semiconductor Manufacturers. If your programs require obsolete microcircuits, semi-conductors or Hybrids, call Ideal Semiconductor before you redesign. We will manufacture new products to your specifications using the same exact circuitry.

Our radiation hardness testing provides total dose or non-destructive latch up/dose rate measurements of individual devices on wafers or packaged devices.

Our manufacturing processes are in accordance with Mil-Std-883, Class B and Class S, Mil-M-38535 (38510)/19500 and Mil-Std-750/202. Our quality assurance program is in accordance with Mil-I-45208A. Our calibration procedures are in accordance with Mil-I-45662A.

Ideal Service:

- **Contract Management:** Represents Customer interests in assuring contracted products and services adhere to quality, performance, and delivery requirements.
- **Design:** Simulates, emulates, and integrates aftermarket analog and digital circuits offering performance and reliability (e.g., rad hard) enhancements.
- **Process:** Manufactures all Diminishing Source Technologies, including Gold Doped processes, per Mil-Std 883/38510 and Mil S-19500/750/202.
- **Packaging:** Assembles to Customer specifications all JEDEC outlines in DESC suitable facilities per Mil-Std 883/38510/1835 and Mil-S-19500.
- **Qualification:** Tests and qualifies die and packaged components to Mil-Std 883, Class B and Class S in DESC suitable facilities per Methods 5004 and 5005.
- **Radiation:** Neutron irradiation and total dose measurements are performed per Customer requirements on wafers and packaged components.
- **Bonded Stores:** Stores Customer materials under environmentally controlled conditions, handling all devices per Mil-Std-1686.

Ideal Semiconductor

Ideal is dedicated to the supply and manufacture of aftermarket semiconductor components specific to the requirements of MIL-STD 883.

Ideal is a strategic partner for Military Contractor's requiring a guaranteed supply of obsoleted semiconductor components. Located in the heart of Silicon Valley, Ideal's semiconductor design, manufacturing, assembly, test and qualification capabilities are such that it can support virtually any Military program threatened by component obsolescence.

Ideal works for its Contractors by offering the most expedient, most cost effective, and most reliable "defense against obsolescence." To meet the on going requirements of its Contractors, Ideal is constantly increasing its own inventories of products and technologies. What Ideal doesn't have, it will find. And what Ideal can't find, it will build.

Ideal's Search Team can quickly assess on-shore/off-shore availability of a required component. Ideal's Package and Qualification Team can quickly upgrade a required component to meet the Contractor's specifications. And when required, Ideal's Design and Manufacturing Team can quickly and cost effectively manufacture replacement components.

Ideal's in the business to say, "Yes! Ideal is the Partner."

Ideal Inventory

In the course of serving its Customers, Ideal has acquired or developed the tooling, processes, and/or inventory of products obsoleted by the following original manufacturers:

Advanced Micro Devices/MMI	Philips/Signetics
Harris/Intersil Semiconductor	Samsung/Zytrex
Integrated Device Technology	Texas Instruments

Product types corresponding to the above manufacturers for which Ideal maintains inventories include the following:

AHCT/HCTLS/FCT (54/74)	PAL's
Decoders	Processors
Memories	SAR's (CMOS/Bipolar)
Micro Controllers	Servo Amplifiers
MOSFETs/Transistors	Video DAC's

Ideal maintains ready access to Wafers and Die manufactured by the following:

Allegro	Maxim	SGS Thompson
Analog Devices	MicroSemi	Supertex
Harris	Motorola	Teddyne
IDT	National	Texas Instruments
Intel	VLSI Technology	Quality
Raytheon	International	Semiconductor
	Rectifier	

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ISI IDEAL SEMICONDUCTOR, INC.

"YOUR BEST DEFENSE AGAINST OBSOLESCENCE"

HIGH-SPEED CMOS LOGIC PRODUCTS

The 54/74HCTLS Family is a direct plug-in replacement for industry standard 54/74LS and 54/764HCT.

Part Number	Description	Indicative Max. Speed (ns)		Max. Mil.	ICC (μA) Com'l.
		Mil.	Com'l.		
54/74HCTLS00	Quad 2-Input NAND Gates	22	18	40	20
54/74HCTLS01	Quad 2-Input NAND Gates with Open-Drain Outputs	37	31	40	20
54/74HCTLS02	Quad 2-Input NOR Gates	22	18	40	20
54/74HCTLS03	Quad 2-Input NAND Gates with Open Drain Outputs	37	31	40	20
54/74HCTLS04	Hex Inverters	22	18	40	20
54/74HCTLS05	Hex Inverters with Open-Drain Outputs	37	31	40	20
54/74HCTLS08	Quad 2-Input AND Gates	30	25	40	20
54/74HCTLS09	Quad 2-Input AND Gates with Open-Drain Outputs	37	31	40	20
54/74HCTLS10	Triple 3-Input NAND Gates	22	18	40	20
54/74HCTLS11	Triple 3-Input AND Gates	30	25	40	20
54/74HCTLS12	Triple 3-Input NAND Gates with Open-Drain Outputs	37	31	40	20
54/74HCTLS14	Hex Schmitt-Trigger Inverters	33	28	40	20
54/74HCTLS32	Quad 2-Input OR Gates	26	22	40	20
54/74HCTLS51	Dual AND-OR-Invert Gates	30	25	40	20
54/74HCTLS58	Dual AND-OR Gates	30	25	40	20
54/74HCTLS73A	Dual J-K Negative-Edge-Triggered Flip-Flops with Clear	30	25	80	40
54/74HCTLS74A	Dual D-Type Positive-Edge-Triggered Flip-Flops with Preset and Clear	37	31	80	40
54/74HCTLS76A	Dual J-K Flip-Flops with Preset and Clear	30	25	80	40
54/74HCTLS78A	Dual J-K Flip-Flops with Preset and Common Clear and Clock	30	25	80	40
54/74HCTLS86	Quad 2-Input Exclusive-OR Gates	30	25	40	20
54/74HCTLS107A	Dual J-K Negative-Edge-Triggered Flip-Flops with Clear	30	25	80	40
54/74HCTLS109	Dual J-K Positive-Edge-Triggered Flip-Flops with Preset and Clear	37	31	80	80
54/74HCTLS112A	Dual J-K Triggered Flip-Flops with Preset and Clear	30	25	80	40
54/74HCTLS121	Monostable with Schmitt-Trigger Inputs				
54/74HCTLS123	Dual Retriggerable Monostable Multivibrators				
54/74HCTLS138	3-Line to 8-Line Decoders/Multiplexers	45	37	160	80
54/74HCTLS139	Dual 1-to-4 Line Decoders/Multiplexers	45	37	160	80
54/74HCTLS148	8-Line to 3-Line Priority Encoders	41	34	160	80
54/74HCTLS155	Dual 2-to-4 Line Decoders/Multiplexers	35	29	160	80
54/74HCTLS157	Quad 2-Line to 1-Line Data Selectors/Multiplexers	21	18	160	80
54/74HCTLS158	Quad 2-Line to 1-Line Data Selectors/Multiplexers	21	18	160	80
54/74HCTLS161A	Synchronous 4-Bit Binary Counters	53	44	160	80
54/74HCTLS163A	Synchronous 4-Bit Binary Counters	53	44	160	80
54/74HCTLS164	8-Bit Serial-In/Parallel-Out Shift Registers	54	45	160	80
54/74HCTLS165	8-Bit Serial-In/Parallel-Out Shift Registers	53	44	160	80
54/74HCTLS166	8-Bit Serial-In/Parallel-Out Shift Registers with Clear	45	37	160	80
54/74HCTLS173	4-Bit D-Type Registers with 3-State Outputs	41	34	160	80
54/74HCTLS174	Hex D-Type Flip-Flops with Clear	45	37	160	80
54/74HCTLS175	Quad D-Type Flip-Flops with Clear	37	31	160	80
54/74HCTLS191	Synchronous 4-Bit Up/Down Binary Counters	60	50	160	80
54/74HCTLS193	Synchronous 4-Bit Up/Down Binary Counters with Dual Clock	37	31	160	80
54/74HCTLS240	Octal Buffers and Line Drivers with 3-State Outputs	27	22	160	80
54/74HCTLS241	Octal Buffers and Line Drivers with 3-State Outputs	27	22	160	80
54/74HCTLS244	Octal Buffers and Line Drivers with 3-State Outputs	27	22	160	80
54/74HCTLS245	Octal Bus Transceivers with 3-State Outputs	18	15	160	80
54/74HCTLS257	Quad 2-Line to 1-Line Data Selectors/Multiplexers with 3-State Outputs	27	23	160	80
54/74HCTLS258	Quad 2-Line to 1-Line Data Selectors/Multiplexers with 3-State Outputs	27	23	160	80
54/74HCTLS259	8-Bit Addressable Latches	45	37	160	80
54/74HCTLS266	Quad Exclusive-NOR Gates with Open-Drain Outputs	37	31	40	20
54/74HCTLS273	Octal D-Type Flip-Flops with Clear	40	33	160	80
54/74HCTLS299	8-Bit Universal Shift/Storage Registers with 3-State Outputs	53	44	160	80
54/74HCTLS365A	Hex Bus-Drivers with 3-Bit Outputs	28	24	160	80
54/74HCTLS366A	Hex Bus-Drivers with 3-Bit Outputs	25	21	160	80
54/74HCTLS367A	Hex Bus-Drivers with 3-Bit Outputs	28	24	160	80
54/74HCTLS368A	Hex Bus-Drivers with 3-Bit Outputs	25	21	160	80
54/74HCTLS373	Octal D-Type Transparent Latches with 3-State Outputs	27	23	160	80
54/74HCTLS374	Octal D-Type Flip-Flops with 3-State Outputs	42	35	160	80
54/74HCTLS393	Dual 4-Bit Binary Counters	30	25	160	80
54/74HCTLS399	Quad 2-Part Registers	45	37	160	80
54/74HCTLS533	Octal D-Type Transparent Latches with 3-State Outputs	27	23	160	80
54/74HCTLS534	Octal D-Type Flip-Flops with 3-State Outputs	42	35	160	80
54/74HCTLS540	Octal Buffers and Line Drivers with 3-State Outputs	23	19	160	80
54/74HCTLS541	Octal Buffers and Line Drivers with 3-State Outputs	23	19	160	80
54/74HCTLS563	Octal D-Type Transparent Latches with 3-State Outputs	27	23	160	80
54/74HCTLS564	Octal D-Type Flip-Flops with 3-State Outputs	42	35	160	80
54/74HCTLS573	Octal D-Type transparent Latches with 3-State Outputs	27	23	160	80
54/74HCTLS574	Octal D-Type Flip-Flops with 3-State Outputs	42	35	160	80
54/74HCTLS590	8-Bit Binary Counters with 3-State Output Register				
54/74HCTLS592	8-Bit Binary Counters with Input Register				
54/74HCTLS593	8-Bit Binary Counters with Bidirectional Input Register/Counter Output				
54/74HCTLS640	Octal Bus Transceivers	18	15	160	80
54/74HCTLS643	Octal Bus Transceivers	18	15	160	80
54/74HCTLS646	Octal 3-State Bus Transceivers with Registers	29	24	160	80
54/74HCTLS648	Octal 3-State Bus Transceivers with Registers	29	24	160	80

Ideal Semiconductor

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ADVANCED HIGH-SPEED CMOS LOGIC PRODUCTS

The 54/74 AHCT Family is a direct plug-in replacement for 54/74ALS.

Part Number	Description	Indicative Max. Speed (ns)		Max. (µA)	ICC Com'l.
		Mil.	Com'l.		
54/74AHCT00	Quad 2-Input NAND Gates	12	10	40	20
54/74AHCT01	Quad 2-Input NAND Gates with Open-Drain Outputs	37	31	40	20
54/74AHCT02	Quad 2-Input NOR gates	13	11	40	20
54/74AHCT03	Quad 2-Input NAND Gates with Open-Drain Outputs	37	31	40	20
54/74AHCT04	Hex Inverters	12	10	40	20
54/74AHCT05	Hex Inverters with Open-Drain Outputs	37	31	40	20
54/74AHCT08	Quad 2-Input AND Gates	14	12	40	20
54/74AHCT09	Quad 2-Input AND Gates with Open-Drain Outputs	37	31	40	20
54/74AHCT10	Triple 3-Input NAND Gates	18	15	40	20
54/74AHCT11	Triple 3-Input AND Gates	18	15	40	20
54/74AHCT12	Triple 3-Input NAND Gates with Open Drain Outputs	37	31	40	20
54/74AHCT14	Hex Schmitt-Trigger Inverters	17	14	40	20
54/74AHCT32	Quad 2-Input OR Gates	16	13	40	20
54/74AHCT51	Dual AND-OR-Invert Gates	18	15	40	20
54/74AHCT58	Dual AND-OR Gates	18	15	40	20
54/74AHCT73	Dual J-K Negative-Edge-Triggered Flip-Flops with Clear	20	17	80	40
54/74AHCT74	Dual D-Type Positive-Edge-Triggered Flip-Flops with Preset and Clear	20	17	80	40
54/74AHCT86	Quad 2-Input Exclusive-or Gates	13	11	40	20
54/74AHCT107	Dual J-K Negative-Edge-Triggered Flip-Flops with Clear	20	17	80	40
54/74AHCT109	Dual J-K Positive-Edge-Triggered Flip-Flops with Preset and Clear	20	17	80	40
54/74AHCT112	Dual J-K Negative-Edge-Triggered Flip-Flops with Preset and Clear	20	17	80	40
54/74AHCT121	Monostable Multivibrators with Schmitt-Trigger Inputs				
54/74AHCT123	Dual Retriggerable Monostable Multivibrators				
54/74AHCT138	3-Line to 8-Line Decoders	24	20	160	80
54/74AHCT139	Dual 1-of-4 Decoders/Multiplexers	20	17	160	80
54/74AHCT148	8-Line 3-Line Priority Encoders	20	17	160	80
54/74AHCT155	Dual 2-4 Line Decoders/Multiplexers	22	18	160	80
54/74AHCT157	Quad 2-Line to 1-Line Data Selectors/Multiplexers	14	11	160	80
54/74AHCT158	Quad 2-Line to 1-Line Data Selectors/Multiplexers	14	11	160	80
54/74AHCT161	Synchronous 4-Bit Binary Counters	19	16	160	80
54/74AHCT163	Synchronous 4-Bit Binary Counters	20	16	160	80
54/74AHCT164	8-Bit Serial-In/Parallel-Out Shift Registers	24	20	160	80
54/74AHCT165	8-Bit Parallel-In/Serial-Out Registers	30	25	160	80
54/74AHCT166	8-Bit Parallel-In/Serial-Out Shift Registers with Clear	20	17	160	80
54/74AHCT173	4-Bit D-Type Registers with 3-State Outputs	25	21	160	80
54/74AHCT174	Hex D-Type Flip-Flops with Clear	19	16	160	80
54/74AHCT175	Quad D-Type Flip-Flops with Clear	19	16	160	80
54/74AHCT191	Synchronous 4-Bit Up/Down Binary Counters	30	25	160	80
54/74AHCT193	Synchronous 4-Bit Up/Down Binary Counters with Dual Clock	23	19	160	80
54/74AHCT240	Octal Buffers and Line Drivers with 3-State Outputs	12	10	160	80
54/74AHCT241	Octal Buffers and Line Drivers with 3-State Outputs	12	10	160	80
54/74AHCT244	Octal Buffers and Line Drivers with 3-State Outputs	12	10	160	80
54/74AHCT245	Octal Bus Transceivers with 3-State Outputs	14	10	160	80
54/74AHCT257	Quad 2-Line to 1-Line Data Selectors/Multiplexers with 3-State Outputs	12	10	160	80
54/74AHCT258	Quad 2-Line to-Line Data Selectors/Multiplexers with 3-State Outputs	12	10	160	80
54/74AHCT259	8-Bit Addressable Latches	24	20	160	80
54/74AHCT266	Quad Exclusive -NOR Gates with Open-Drain Outputs	37	31	40	20
54/74AHCT273	Octal D-Type Flip-Flops with Clear	17	14	160	80
54/74AHCT299	8-Bit Universal Shift/Storage Registers with 3-State Outputs	20	17	160	80
54/74AHCT365	Hex Bus-Drivers with 3-State Outputs	14	12	160	80
54/74AHCT366	Hex Bus-Drivers with 3-State Outputs	12	10	160	80
54/74AHCT367	Hex Bus-Drivers with 3-State Outputs	14	12	160	80
54/74AHCT368	Hex Bus-Drivers with 3-State Outputs	12	10	160	80
54/74AHCT373	Octal D-Type Transparent Latches with 3-State Outputs	17	14	160	80
54/74AHCT374	Octal D-Type Flip-Flops with 3-State Outputs	17	14	160	80
54/74AHCT393	Dual 4-Bit Binary Counters	16	13	160	80
54/74AHCT399	Quad 2-Port Registers	23	19	160	80
54/74AHCT423	Dual Retriggerable Monostable Multivibrators				
54/74AHCT533	Octal D-Type Transparent Latches with 3-State Outputs	19	16	160	80
54/74AHCT534	Octal D-Type Transparent Flip-Flops with 3-State Outputs	17	14	160	80
54/74AHCT540	Octal Buffers and Line Drivers with 3-State Outputs	12	10	160	80
54/74AHCT541	Octal Buffers and Line Drivers with 3-State Outputs	12	10	160	80
54/74AHCT563	Octal D-Type Transparent Latches with 3-State Outputs	17	14	160	80
54/74AHCT564	Octal D-Type Flip-Flops with 3-State Outputs	17	14	160	80
54/74AHCT573	Octal D-Type Transparent Latches with 3-State Outputs	17	14	160	80
54/74AHCT574	Octal D-Type Flip-Flops with 3-State Outputs	17	14	160	80
54/74AHCT590	8-Bit Binary Counters with 3-State Output Register				
54/74AHCT592	8-Bit Binary Counters with Input Register				
54/74AHCT593	8-Bit Binary Counters with Bidirectional Input Register/Counter Output				
54/74AHCT640	Octal Bus Transceivers	14	11	160	80
54/74AHCT643	Octal Bus Transceivers	14	11	160	80
54/74AHCT646	Octal 3-State Bus Transceivers with Registers	18	11	160	80
54/74AHCT648	Octal 3-State Bus Transceivers with Registers	18	11	160	80

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ISI IDEAL SEMICONDUCTOR, INC.

"YOUR BEST DEFENSE AGAINST OBSOLESCENCE"

HIGH-SPEED CMOS LOGIC PRODUCTS

Part Number	Description
25C02	8 Bit TTL Successive Approximation Register (Direct Plug In Replacements for the AM2502 and DM2502, TTL Successive Approximation Registers)
25C03	8 Bit TTL Successive Approximation Register (Direct Plug In Replacement for the AM2503 and DM2503, TTL Successive Approximation Registers)
25C04	12 Bit TTL Successive Approximation Register (Direct Plug In Replacement for the AM2504 and DM2504, TTL Successive Approximation Registers)
29C01	4 Bit CMOS Microprocessor Slice (Pin for Pin Replacement for the Bipolar 2901)
29C09 A/B	CMOS Microprogram Sequencer (Pin for Pin Replacement for the Bipolar 2909, A Version meets Bipolar 2909 A speeds, B version improves speed 20%)
29C10	CMOS Microprogram Controller (Pin for Pin Replacement for the Bipolar 2910)
29C11 A/B	CMOS Microprogram Sequencer (Pin for Pin Replacement for the Bipolar 2911, A Version meets Bipolar 2911 A speeds, B version improves speed 20%)

ADDITIONAL PRODUCTS

Ideal Semiconductor Part Number	Description
ID89404	HAL16C1
ID89405	HAL12H6
ID89406	HAL14H4
ID89407	HAL10H8
ID89408	HAL16L2
ID89409	HAL14L4
ID89410	HAL12L6
ID89411	HAL10L8
ID89412	HAL16H2
ID89413	HAL16L8
ID89414	27LS00 256 x 1 Static RAM
ID89415	4116 16K x 1 Dynamic RAM
MC3403	Quad Low Power of Amplifier
NE5034	High Speed 8-Bit A/D Converter
NE5045	7 Channel Decoder
NE5060	Hi Speed Precision
NE5150	LIN Triple 4-Bit Video DAC-MEM
NE5151	Triple 4-Bit Video DAC
NE5152	LIN Triple 4-Bit DAC-MEM-TTL
NE530	LIN High Slew OP Amplifier
NE5520	LIN LVDT Signal Conditioning CKT
NE5535	LIN Dual High Slew OP Amplifier
NE565	LIN Phase Locked Loop
SG3526	Switched-mode power supply control circuits
538	High slew rate operational amplifier
544	Servo amplifier
589	LED decoder/driver
SCB2675	CRT, color/monochrome attributes controller
SCB2677	CRT, video attributes controller

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DD28F032SA 32-MBIT (2 MBIT x 16, 4 MBIT x 8) FLASHFILE™ MEMORY

- User-Selectable 3.3V or 5V V_{CC}
- User-Configurable x8 or x16 Operation
- 70 ns Maximum Access Time
- 0.43 MB/sec Write Transfer Rate
- 1 Million Erase Cycles per Block
- 56-Lead, 1.2 x 14 x 20mm Dual Die Advanced TSOP Package Technology
- Revolutionary Architecture
 - 100% Backwards Compatible with Intel 28F016SA
 - Pipelined Command Execution
 - Write during Erase
- 2 mA Typical I_{CC} in Static Mode
- 2 μA Typical Deep Power-Down
- 64 Independently Lockable Blocks
- State-of-the-Art 0.6 μm ETOX™ IV Flash Technology

Intel's DD28F032SA 32-Mbit FlashFile™ Memory is a revolutionary architecture which enables the design of truly mobile, high performance, personal computing and communication products. With innovative capabilities, low power operation and very high read/write performance, the DD28F032SA is also the ideal choice for designing embedded mass storage flash memory systems.

The DD28F032SA is the result of highly advanced packaging innovation which encapsulates two 28F016SA die in a single Dual Die Thin Small Outline Package (DDTSOP).

The DD28F032SA is the highest density, highest performance non-volatile read/write solution for solid-state storage applications. Its symmetrically blocked architecture (100% compatible with the 28F016SA 16-Mbit FlashFile memory), very high cycling, low power 3.3V operation, very fast write and read performance and selective block locking provide a highly flexible memory component suitable for high density memory cards, Resident Flash Arrays and PCMCIA-ATA Flash Drives. The DD28F032SA's dual read voltage enables the design of memory cards which can interchangeably be read/written in 3.3V and 5.0V systems. Its x8/x16 architecture allows the optimization of memory to processor interface. The flexible block locking option enables bundling of executable application software in a Resident Flash Array or memory card. The DD28F032SA will be manufactured on Intel's 0.6 μm ETOX™ IV technology.

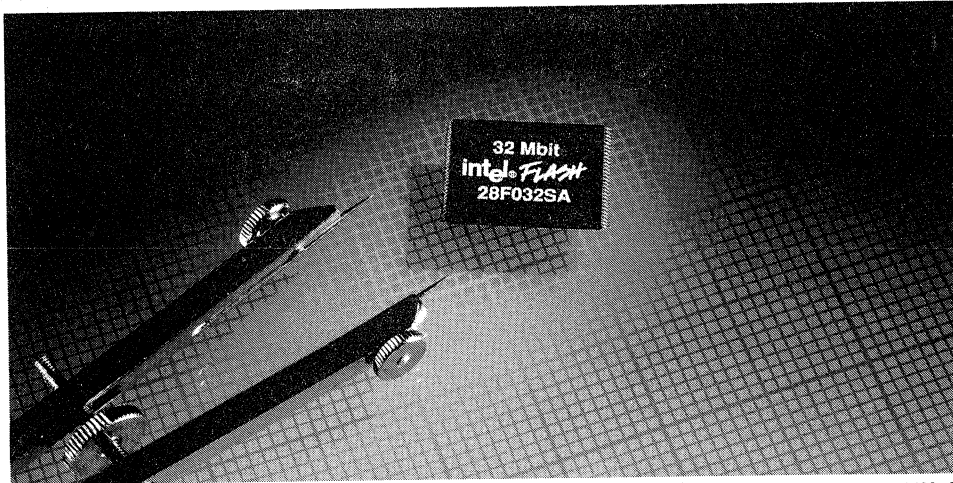


Figure 1

290490-2

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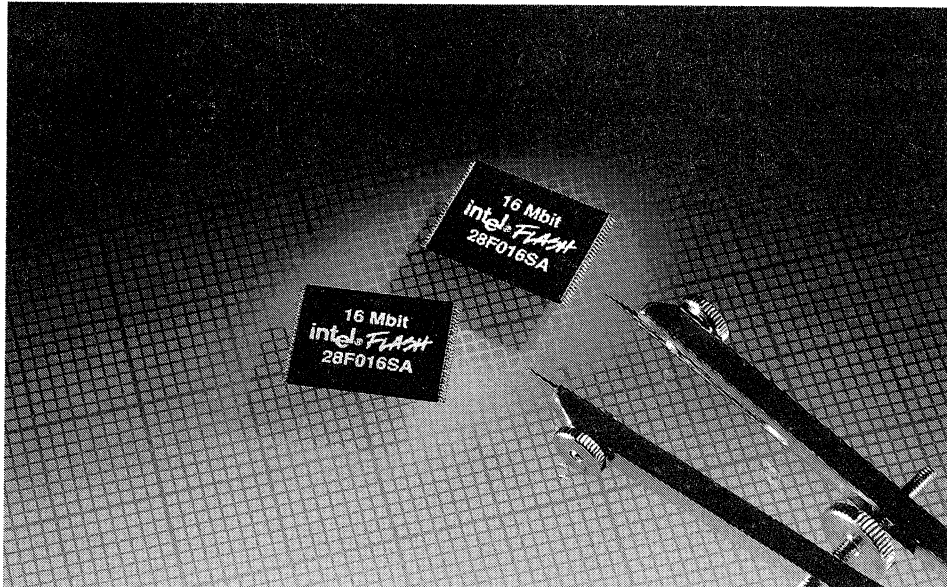


28F016SA 16 MBIT (1 MBIT x 16, 2 MBIT x 8) FLASHFILE™ MEMORY

- User-Selectable 3.3V or 5V V_{CC}
- User-Configurable x8 or x16 Operation
- 70 ns Maximum Access Time
- 0.43 MB/sec Write Transfer Rate
- 1 Million Erase Cycles per Block
- 56-Lead, 1.2mm x 14mm x 20mm TSOP Package
- Revolutionary Architecture
 - Pipelined Command Execution
 - Write During Erase
 - Command Superset of Intel 28F008SA
- 1 mA Typical I_{CC} in Static Mode
- 1 μA Typical Deep Power-Down
- 32 Independently Lockable Blocks
- State-of-the-Art 0.6 μm ETOX™ IV Flash Technology

Intel's 28F016SA 16-Mbit FlashFile™ Memory is a revolutionary architecture which enables the design of truly mobile, high performance, personal computing and communication products. With innovative capabilities, low power operation and very high read/write performance, the 28F016SA is also the ideal choice for designing embedded mass storage flash memory systems.

The 28F016SA is a very high density, highest performance non-volatile read/write solution for solid-state storage applications. Its symmetrically blocked architecture (100% compatible with the 28F008SA 8-Mbit FlashFile™ memory), extended cycling, low power 3.3V operation, very fast write and read performance and selective block locking provide a highly flexible memory component suitable for high density memory cards, Resident Flash Arrays and PCMCIA-ATA Flash Drives. The 28F016SA's dual read voltage enables the design of memory cards which can interchangeably be read/written in 3.3V and 5.0V systems. Its x8/x16 architecture allows the optimization of memory to processor interface. The flexible block locking option enables bundling of executable application software in a Resident Flash Array or memory card. Manufactured on Intel's 0.6 μm ETOX™IV process technology, the 28F016SA is the most cost-effective, high-density 3.3V flashfile memory.



290489-1

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Order Number: 290489-001



PRELIMINARY

28F008SA 8-MBIT (1-MBIT x 8) FLASH MEMORY

- **High-Density Symmetrically Blocked Architecture**
 - Sixteen 64-Kbyte Blocks
- **Extended Cycling Capability**
 - 100,000 Block Erase Cycles
 - 1.6 Million Block Erase Cycles per Chip
- **Automated Byte Write and Block Erase**
 - Command User Interface
 - Status Register
- **System Performance Enhancements**
 - RY/BY# Status Output
 - Erase Suspend Capability
- **Deep-Powerdown Mode**
 - 0.20 μ A I_{CC} Typical
- **Very High-Performance Read**
 - 85 ns Maximum Access Time
- **SRAM-Compatible Write Interface**
- **Hardware Data Protection Feature**
 - Erase/Write Lockout during Power Transitions
- **Industry Standard Packaging**
 - 40-Lead TSOP, 44-Lead PSOP
- **ETOX III Nonvolatile Flash Technology**
 - 12V Byte Write/Block Erase
- **Independent Software Vendor Support**
 - Microsoft* Flash File System (FFS)

Intel's 28F008SA 8-Mbit FlashFile™ Memory is the highest density nonvolatile read/write solution for solid state storage. The 28F008SA's extended cycling, symmetrically blocked architecture, fast access time, write automation and low power consumption provide a more reliable, lower power, lighter weight and higher performance alternative to traditional rotating disk technology. The 28F008SA brings new capabilities to portable computing. Application and operating system software stored in resident flash memory arrays provide instant-on, rapid execute-in-place and protection from obsolescence through in-system software updates. Resident software also extends system battery life and increases reliability by reducing disk drive accesses.

For high density data acquisition applications, the 28F008SA offers a more cost-effective and reliable alternative to SRAM and battery. Traditional high density embedded applications, such as telecommunications, can take advantage of the 28F008SA's nonvolatility, blocking and minimal system code requirements for flexible firmware and modular software designs.

The 28F008SA is offered in 40-lead TSOP (standard and reverse) and 44-lead PSOP packages. Pin assignments simplify board layout when integrating multiple devices in a flash memory array or subsystem. This device uses an integrated Command User Interface and state machine for simplified block erasure and byte write. The 28F008SA memory map consists of 16 separately erasable 64-Kbyte blocks.

Intel's 28F008SA employs advanced CMOS circuitry for systems requiring low power consumption and noise immunity. Its 85 ns access time provides superior performance when compared with magnetic storage media. A deep powerdown mode lowers power consumption to 1 μ W typical thru V_{CC} , crucial in portable computing, handheld instrumentation and other low-power applications. The RP# power control input also provides absolute data protection during system powerup/down.

Manufactured on Intel's 0.8 micron ETOX process, the 28F008SA provides the highest levels of quality, reliability and cost-effectiveness.

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28F200BX-T/B, 28F002BX-T/B 2-MBIT (128K x 16, 256K x 8) BOOT BLOCK FLASH MEMORY FAMILY

- **x8/x16 Input/Output Architecture**
 - 28F200BX-T, 28F200BX-B
 - For High Performance and High Integration 16-bit and 32-bit CPUs
- **x8-only Input/Output Architecture**
 - 28F002BX-T 28F002BX-B
 - For Space Constrained 8-bit Applications
- **Optimized High Density Blocked Architecture**
 - One 16-KB Protected Boot Block
 - Two 8-KB Parameter Blocks
 - One 96-KB Main Block
 - One 128 KB Main Block
 - Top or Bottom Boot Locations
- **Extended Cycling Capability**
 - 100,000 Block Erase Cycles
- **Automated Word/Byte Write and Block Erase**
 - Command User Interface
 - Status Registers
 - Erase Suspend Capability
- **SRAM-Compatible Write Interface**
- **Automatic Power Savings Feature**
 - 1 mA Typical I_{CC} Active Current in Static Operation
- **Hardware Data Protection Feature**
 - Erase/Write Lockout during Power Transitions
- **Very High-Performance Read**
 - 60/80 ns Maximum Access Time
 - 30/40 ns Maximum Output Enable Time
- **Low Power Consumption**
 - 20 mA Typical x8 Active Read Current
 - 25 mA Typical x16 Active Read Current
- **Reset/Deep Power-Down Input**
 - 0.2 μ A I_{CC} Typical
 - Acts as Reset for Boot Operations
- **Extended Temperature Operation**
 - -40°C to +85°C
- **Write Protection for Boot Block**
- **Industry Standard Surface Mount Packaging**
 - 28F200BX: JEDEC ROM Compatible
44-Lead PSOP
56-Lead TSOP
 - 28F002BX: 40-Lead TSOP
- **12V Word/Byte Write and Block Erase**
 - V_{pp} = 12V \pm 5% Standard
 - V_{pp} = 12V \pm 10% Option
- **ETOX III Flash Technology**
 - 5V Read
- **Independent Software Vendor Support**

Intel

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28F001BX-T/28F001BX-B 1M (128K x 8) CMOS FLASH MEMORY

- **High Integration Blocked Architecture**
 - One 8 KB Boot Block w/Lock Out
 - Two 4 KB Parameter Blocks
 - One 112 KB Main Block
- **100,000 Erase/Program Cycles Per Block**
- **Simplified Program and Erase**
 - Automated Algorithms via On-Chip Write State Machine (WSM)
- **SRAM-Compatible Write Interface**
- **Deep-Powerdown Mode**
 - 0.05 μ A I_{CC} Typical
 - 0.8 μ A I_{pp} Typical
- **12.0V \pm 5% V_{pp}**
- **High-Performance Read**
 - 120 ns Maximum Access Time
 - 5.0V \pm 10% V_{CC}
- **Hardware Data Protection Feature**
 - Erase/Write Lockout during Power Transitions
- **Advanced Packaging, JEDEC Pinouts**
 - 32-Pin PDIP
 - 32-Lead PLCC, TSOP
- **ETOX II Nonvolatile Flash Technology**
 - EPROM-Compatible Process Base
 - High-Volume Manufacturing Experience
- **Extended Temperature Options**

Intel's 28F001BX-B and 28F001BX-T combine the cost-effectiveness of Intel standard flash memory with features that simplify write and allow block erase. These devices aid the system designer by combining the functions of several components into one, making boot block flash an innovative alternative to EPROM and EEPROM or battery-backed static RAM. Many new and existing designs can take advantage of the 28F001BX's integration of blocked architecture, automated electrical reprogramming, and standard processor interface.

The 28F001BX-B and 28F001BX-T are 1,048,576 bit nonvolatile memories organized as 131,072 bytes of 8 bits. They are offered in 32-pin plastic DIP, 32-lead PLCC and 32-lead TSOP packages. Pin assignment conform to JEDEC standards for byte-wide EPROMs. These devices use an integrated command port and state machine for simplified block erasure and byte reprogramming. The 28F001BX-T's block locations provide compatibility with microprocessors and microcontrollers that boot from high memory, such as Intel's MCS-186 family, 80286, i386™, i486™, i860™ and 80960CA. With exactly the same memory segmentation, the 28F001BX-B memory map is tailored for microprocessors and microcontrollers that boot from low memory, such as Intel's MCS-51, MCS-196, 80960KX and 80960SX families. All other features are identical, and unless otherwise noted, the term 28F001BX can refer to either device throughout the remainder of this document.

The boot block section includes a reprogramming write lock out feature to guarantee data integrity. It is designed to contain secure code which will bring up the system minimally and download code to the other locations of the 28F001BX. Intel's 28F001BX employs advanced CMOS circuitry for systems requiring high-performance access speeds, low power consumption, and immunity to noise. Its 120 ns access time provides no-WAIT-state performance for a wide range of microprocessors and microcontrollers. A deep-powerdown mode lowers power consumption to 0.25 μ W typical through V_{CC} , crucial in laptop computer, handheld instrumentation and other low-power applications. The RP# power control input also provides absolute data protection during system powerup or power loss.

Manufactured on Intel's ETOX process base, the 28F001BX builds on years of EPROM experience to yield the highest levels of quality, reliability, and cost-effectiveness.

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Order Number: 290406-005

October 1993

Intel



SERIES 2+ FLASH MEMORY CARDS 40 MEGABYTES

IMC040FLSP

- Single Power Supply Operation
- Automatically Reconfigures for 3.3V and 5V Systems
- 200 ns Maximum Access Time with 10 MB/S Read Throughput
- High Performance Random Writes
 - 0.85 MB/S Sustained Throughput
 - 1 KB Burst Write @ 10 MB/S
- PCMCIA 2.0/JEIDA 4.1 Compatible
- PCMCIA Type 1 Form Factor
- Revolutionary Architecture
 - Pipelined Command Execution
 - Write During Erase
 - Series 2 Command Superset
- 50 μ A Typical Deep PowerDown
- State-of-the-Art 0.6 μ m ETOX IV Flash Technology
- 1 Million Erase Cycles per Block
- 640 Independent Lockable Blocks

Intel's Series 2+ Flash Memory Card sets the new record for high-performance disk emulation and XIP applications in mobile PC's and dedicated equipment. Manufactured with Intel's DD28F032SA 32-Mbit FlashFile™ Memory, this card takes advantage of a revolutionary architecture that provides innovative capabilities, low power operation and very high read/write performance.

The Series 2+ Card provides today's highest density, highest performance non-volatile read/write solution for solid-state storage applications. These applications are further enhanced with this product's symmetrically blocked architecture, extended MTBF, low power 3.3V operation, built-in V_{PP} generator, and multiple block-locking methods. The Series 2+ Card's dual read and write voltages allow interchange between 3.3V and 5V systems.

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Order Number: 290512-001

October 1993



SERIES 2+ FLASH MEMORY CARDS 4 and 20 Megabytes

iMC004FLSP, iMC020FLSP

- Single Power Supply Operation
- Automatically Reconfigures for 3.3V and 5V Systems
- 200 ns Maximum Access Time with 10 MB/S Read Throughout
- High Performance Random Writes
 - 0.85 MB/S Sustained Throughout
 - 1 KB Burst Write @ 10 MB/S
- PCMCIA 2.0/JEIDA 4.1 Compatible
- PCMCIA Type 1 Form Factor
- Revolutionary Architecture
 - Pipelined Command Execution
 - Write During Erase
 - Series 2 Command Superset
- 12 μ A Typical Deep Powerdown
- State-of-the Art 0.6 μ m ETOX IV Flash Technology
- 1 Million Erase Cycles per Block
- 320 Independent Lockable Blocks

Intel's Series 2+ Flash Memory Card sets the new record for high-performance disk emulation and XIP applications in mobile PC's and dedicated equipment. Manufactured with Intel's 28F016SA 16-Mbit FlashFile™ Memory, this card takes advantage of a revolutionary architecture that provides innovative capabilities, low power operation and very high read/write performance.

The Series 2+ Card provides today's highest density, highest performance non-volatile read/write solution for solid-state storage applications. These applications are further enhanced with this product's symmetrically blocked architecture, extended MTBF, low power 3.3V operation, built-in V_{PP} generator, and multiple block-locking methods. The Series 2+ Card's dual read and write voltages allow interchange between 3.3V and 5V systems.



290491-8

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iMC004FLKA 4-MBYTE FLASH MEMORY CARD

- **Inherent Nonvolatility (Zero Retention Power)**
 - No Batteries Required for Back-up
- **High-Performance Read**
 - 200 ns Maximum Access Time
- **CMOS Low Power Consumption**
 - 40 mA Typical Active Current (X8)
 - 800 μ A Typical Standby Current
- **Flash Electrical Zone-Erase**
 - 2 Seconds Typical per 256 Kbyte Zone
 - Multiple Zone-Erase
- **Random Writes to Erased Zones**
 - 10 μ s Typical Byte Write
- **Write Protect Switch to Prevent Accidental Data Loss**
- **Command Register Architecture for Microprocessor/Microcontroller Compatible Write Interface**
- **ETOX II Flash Memory Technology**
 - 5V Read, 12V Erase/Write
 - High-Volume Manufacturing Experience
- **PCMCIA/JEIDA 68-Pin Standard**
 - Byte- or Word-wide Selectable
- **Independent Software & Hardware Vendor Support**
 - Integrated System Solution Using Flash Filing Systems

Intel's iMC004FLKA Flash Memory Card is the removable solution for storing and transporting important user data and application code. The combination of rewritability and nonvolatility make the Intel Flash Memory Card ideal for data acquisition and updatable firmware applications. Designing with Intel's Flash Memory Card enables OEM system manufacturers to produce portable and dedicated function systems that are higher performance, more rugged, and consume less power.

The iMC004FLKA conforms to the PCMCIA1.0 international standard, providing standardization at the hardware and data interchange level. OEMs may opt to write the Card Information Structure (CIS) at the memory card's address 00000H with a format utility. This information provides data interchange functional capability. The 200 ns access time allows for "execute-in-place" capability, for popular low-power microprocessors. Intel's 4-MByte Flash Memory Card operates in a byte-wide and word-wide configuration providing performance/power options for different systems.

Intel's Flash Memory card employs Intel's ETOX II Flash Memories. Filing systems, such as Microsoft's* Flash File System (FFS), facilitate data file storage and card erasure using a purely nonvolatile medium in the DOS environment. Flash filing systems, coupled with the Intel Flash Memory Card, effectively create an all-silicon nonvolatile read/write random access memory system that is more reliable and higher performance than disk-based memory systems.

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Order Number: 290388-004

Intel



iMC002FLKA 2-MBYTE FLASH MEMORY CARD

- **Inherent Nonvolatility (Zero Retention Power)**
 - No Batteries Required for Back-up
- **High-Performance Read**
 - 200 ns Maximum Access Time
- **CMOS Low Power Consumption**
 - 25 mA Typical Active Current (X8)
 - 400 μ A Typical Standby Current
- **Flash Electrical Zone-Erase**
 - 2 Seconds Typical per 256 Kbyte Zone
 - Multiple Zone-Erase
- **Random Writes to Erased Zones**
 - 10 μ s Typical Byte Write
- **Write Protect Switch to Prevent Accidental Data Loss**
- **Command Register Architecture for Microprocessor/Microcontroller Compatible Write Interface**
- **ETOX II Flash Memory Technology**
 - 5V Read, 12V Erase/Write
 - High-Volume Manufacturing Experience
- **PCMCIA/JEIDA 68-Pin Standard**
 - Byte- or Word-wide Selectable
- **Independent Software & Hardware Vendor Support**
 - Integrated System Solution Using Flash Filing Systems

Intel's iMC002FLKA Flash Memory Card is the removable solution for storing and transporting important user data and application code. The combination of rewritability and nonvolatility make the Intel Flash Memory Card ideal for data acquisition and updatable firmware applications. Designing with Intel's Flash Memory Card enables OEM system manufacturers to produce portable and dedicated function systems that are higher performance, more rugged, and consume less power.

The iMC002FLKA conforms to the PCMCIA 1.0 international standard, providing standardization at the hardware and data interchange level. OEMs may opt to write the Card Information Structure (CIS) at the memory card's address 00000H with a format utility. This information provides data interchange functional capability. The 200 ns access time allows for "execute-in-place" capability, for popular low-power microprocessors. Intel's 2-MByte Flash Memory Card operates in a byte-wide and word-wide configuration providing performance/power options for different systems.

Intel's Flash Memory card employs Intel's ETOX II Flash Memories. Filing systems, such as Microsoft's* Flash File System (FFS), facilitate data file storage and card erasure using a purely nonvolatile medium in the DOS environment. Flash filing systems, coupled with the Intel Flash Memory Card, effectively create an all-silicon nonvolatile read/write random access memory system that is more reliable and higher performance than disk-based memory systems.

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Order Number: 290412-003



iMC001FLKA 1-MBYTE FLASH MEMORY CARD

- **Inherent Nonvolatility (Zero Retention Power)**
 - No Batteries Required for Back-Up
- **High-Performance Read**
 - 200 ns Maximum Access Time
- **CMOS Low Power Consumption**
 - 25 mA Typical Active Current (X8)
 - 400 μ A Typical Standby Current
- **Flash Electrical Zone-Erase**
 - 1 Second Typical per 128 Kbyte Zone
 - Multiple Zone Erase > 128 KB/s
- **Random Writes to Erased Zones**
 - 10 μ s Typical Byte Write
- **Write Protect Switch to Prevent Accidental Data Loss**
- **Command Register Architecture for Microprocessor/Microcontroller Compatible Write Interface**
- **ETOX II Flash Memory Technology**
 - 5V Read, 12V Erase/Write
 - High-Volume Manufacturing Experience
- **PCMCIA/JEIDA 68-Pin Standard**
 - Byte- or Word-Wide Selectable
- **Independent Software & Hardware Vendor Support**
 - Integrated System Solution Using Flash Filing Systems

Intel's iMC001FLKA Flash Memory Card is the removable solution for storing and transporting important user data and application code. The combination of rewritability and nonvolatility make the Intel Flash Memory Card ideal for data acquisition and updatable firmware applications. Designing with Intel's Flash Memory Card enables OEM system manufacturers to produce portable and dedicated function systems that are higher performance, more rugged, and consume less power.

The iMC001FLKA conforms to the PCMCIA 1.0 international standard, providing compatibility at the hardware and data interchange level. OEMs may opt to write the Card Information Structure (CIS) at the memory card's address 00000H with a format utility. This information provides data interchange functional compatibility. The 200 ns access time allows for "execute-in-place" capability, for popular low-power microprocessors. Intel's 1-Mbyte Flash Memory Card operates in a byte-wide and word-wide configuration providing performance/power options for different systems.

Intel's Flash Memory card employs Intel's ETOX II Flash Memories. Filing systems, such as Microsoft's* Flash File System (FFS), facilitate data file storage and card erasure using a purely nonvolatile medium in the DOS environment. Flash filing systems, coupled with the Intel Flash Memory Card, effectively create an all-silicon nonvolatile read/write random access memory system that is more reliable and higher performance than disk-based memory systems.

*Microsoft is a trademark of Microsoft Corp.

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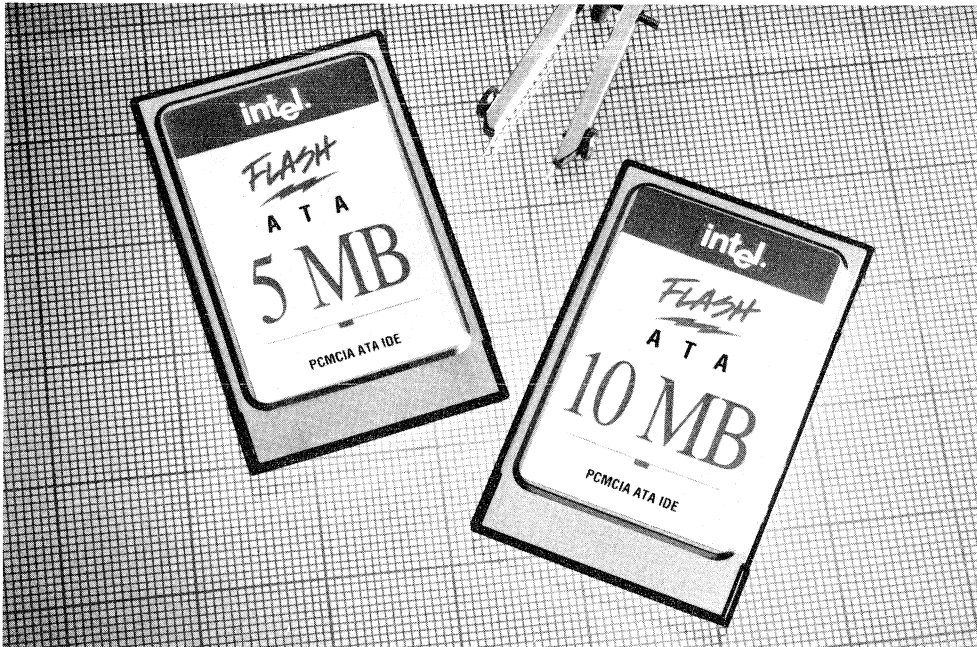
October 1993

Intel



Flash Drive iFD005P2SA/iFD010P2SA

- PCMCIA-ATA Type-2 PC Card
- 10 mW Idle, Standby, and Sleep Power
- 5 MB/s Interface Transfer Rate
- 1000G Shock
- Four PCMCIA-ATA Modes
- IDE-ATA Mode
- Absolutely Silent
- Compatible with Standard Data Compression Utilities
- 5 and 10-Mbyte versions
- Embedded Flash Memory Cycle Management
- Weighs only 1 oz. (29 gms)
- Nonvolatile; No Batteries Required
- Single +5 Volt Supply
- 32-Kbyte Buffer
- Uses FlashFile™ Architecture ETOX™ III 0.8μ Flash Memory Technology



ETOX and FlashFile are trademarks of Intel Corporation.

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THE COMPANY

The **Krueger Company** combines 19 years of experience, a 20,000 square foot facility, and a reputation for quality that has made "Kruegerized" an industry standard for excellence in component conditioning. Krueger offers a number of opportunities to its customers, which include the following services and products:

THE SERVICES

- **Component Retrieval.** Krueger's patented infrared process can reliably remove most components from PC boards without degradation of the component. Thermal stress is absorbed primarily by the board. The rate of internal temperature change of an IC on the board is less than 1° C per second, well within Mil Spec. This service is ideal for companies that redesign their boards but have in-process inventory with expensive or scarce components soldered onto them or whose boards were accidentally stuffed with incorrect parts which are of more value than the boards. It also provides a way for a company to obtain value from parts on obsolete boards by enabling the sale of the components as part of a reclamation program.
- **Component Conditioning.** Krueger's skilled personnel and proprietary procedures provide a reusable product with leads that have been deoxidized, retinned, and straightened to conform to original manufacturer specs. UV windows are cleaned and UV erasable parts are erased. This service is ideal for eliminating contact problems on parts with older date codes (whether new or retrieved) and for preparing desocketed parts for reuse.
- **DRAM Testing and EPROM Programming.** Krueger offers a testing service for DRAMs and EPROMs as well as an EPROM programming service.
- **Microprocessor Testing.** Krueger offers functional test capability for 80386, 80486, and 68030 microprocessors in PGA packages as well as 68881 or 68882 FPU's.
- **Part Location.** As a result of an extensive network developed over 19 years in the component market, Krueger can locate many hard to find components and may be able to offer an assortment of ICs, discrete semiconductors, passive devices, and other components from surplus product inventories.
- **Reconditioned ICs.** Krueger is the source for low cost but reliable ICs that have been professionally reconditioned and are supported with an unconditional 30 day warranty. A typical example of parts likely to be available from Krueger in new or refurbished condition is listed on the following page.

Check with Krueger for any IC, current or obsolete, except for programmed parts that cannot be erased.

Phone : (800) 245-2235 or (602) 820-5330

Fax : (602)820-1707

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THE PRODUCTS

Krueger offers a wide variety of ICs that have been fully conditioned as described above. Typical examples can be found in the *IC Master* listings. Krueger also offers thousands of parts that are not in the listings. Feel free to check with Krueger about your requirements at any time. Among the most popular ICs available from Krueger have been:

- 1. DYNAMIC RAM.** Krueger can offer **DRAMs** ranging from 4K through 4M in capacity in all of the standard through hole, surface mount, and socketable packages. Among available **DRAMs** are the **4027, 4116, 4164, 41464, 41256, 511000, 514256, 514100, and 514400**. Also ask about 8 bit or 16 bit wide **DRAMs**, Page, Nibble, Static Column and Write Per Bit modes, and Multiport **DRAMs** such as the **41264** and other video **RAMs**.
- 2. PSEUDOSTATIC RAM.** Krueger's **PSRAMs** are generally available in DIP and SOIC packages and include the **658512 (512Kx8), 658128 (128Kx8), and the 65256 (32Kx8)** as well as lower capacities. These make great printer buffers.
- 3. STATIC RAM.** Krueger offers **SRAMs** ranging from 1K (256 bit x 4 or 1K x 1) through 1M (128K x 8) in all of the popular through hole, socketable, and surface mount packages appropriate to the specific part. Typical parts include the **2114, 2125, 2128, 2147, 2148, 2149, 4801, 6116, 6167, 6168, 6264, 6287, 6288, 62256, and 93422**. Ask also about Cache Data and Cache Tag **SRAMs**, **FIFOs**, and special purpose **SRAMs** such as the **48C02**.
- 4. EPROM.** Krueger offers UV erasable **EPROMs** ranging from 2K through 4M in capacity. Higher capacity **EPROMs** are available in both the 8 bit and 16 bit width Typical examples include the **1702, 2708, 2716 (SV and TV), 2532, 2732, 2764, 68764, 68766, 27128, 27256, 27512, 27010, 27020, 27040, 27210, 27220, 27240, and 27301** in DIP and, where applicable, CLCC packages. CMOS AND NMOS product is available for most appropriate parts. Ask also about Superfast **EPROMs**, Latched Address **EPROMs**, **EEPROMs**, **Flash Memory** and **EPLDs**.
- 5. MICROPROCESSORS and CONTROLLERS.** Krueger offers most popular microprocessors, **FPU**s, and microcontrollers including the **65xx, 68xx, 68xxx (through 68040), 68851, 68881, 68882, 80x86 (through 80486), 8087, 80287, 80387, Z8 and Z80** series; the **687xx, 803x-874x-875x** series of microcontrollers, and many more. Ask about Digital Signal Processors, Graphics chips, Network chips, and other special purpose processors and coprocessors.
- 6. SUPPORT CHIPS and PERIPHERAL CONTROLLERS.** Krueger offers most support chips and peripheral controllers at various levels of integration. Clock/Calendars (**146818** etc.), SCSI Controllers (**5380** etc.), Serial Ports/ACIAs (**8250, 16C450, 16C550** etc.), CRT Controllers (from the **6845** to the most recent SVGA controllers), **FDCs (179x, 765, 37C65, and many more)**, and most **82xx** and **82Cxxx** series support chips and chipsets are generally available.
- 7. DISPLAY DRIVERS.** LCD and Plasma Display Drivers (**LCD1600, 44100, 44780, 751506, 751508, and more**) are generally available.
- 8. TELECOMMUNICATIONS.** Krueger also offers a variety of codecs, dialers, and other telecommunications chips.

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Lansdale has purchased the rights to manufacture these products from the original manufacturers. IC's are fabricated in our own wafer foundry using the original masks, tooling and specifications. Lansdale truly "makes 'em like they used to".

The following is a partial cross-reference listing of Lansdale product available as of 10/1/93. It is organized by original manufacturer and shows the Lansdale replacement for each part listed. If there is a product you need but do not see on the list, contact Lansdale or your Lansdale Representative to determine if it has been recently acquired, has a Lansdale alternative, or can be specially manufactured for you.

Lansdale

Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
AMD		HM-7611B	HL7611B	MOTOROLA	
AM2501	AL2501	HM-7620	HL7620		
AM2506	AL2506	HM-7620A	HL7620A	SUHL/TTL	
AM2905	AL2905	HM-7620B	HL7620B	MC400	ML400
AM2906	AL2906	HM-7621	HL7621	MC401	ML401
AM2915	AL2915	HM-7621A	HL7621A	MC402	ML402
AM8T26	AL8T26	HM-7621B	HL7621B	MC403	ML403
FAIRCHILD		HM-7640	HL7640	MC404	ML404
3262A	FL3262A	HM-7640A	HL7640A	MC405	ML405
3262B	FL3262B	HM-7641	HL7641	MC406	ML406
3341	FL3341	HM-7641A	HL7641A	MC407	ML407
3341A	FL3341A	HM-7642	HL7642	MC408	ML408
3342	FL3342	HM-7642A	HL7642A	MC409	ML409
3348	FL3348	HM-7642B	HL7642B	MC410	ML410
3349	FL3349	HM-7643	HL7643	MC411	ML411
3351	FL3351	HM-7643A	HL7643A	MC412	ML412
3357	FL3357	HM-7643B	HL7643B	MC413	ML413
3708	FL3708	HM-7644A	HL7644A	MC414	ML414
4609	FL4609	HM-7649	HL7649	MC415	ML415
4611	FL4611	HM-7649A	HL7649A	MC416	ML416
54198	FL54198	HM-7681	HL7681	MC419	ML419
54H08	FL54H08	HM-7681A	HL7681A	MC420	ML420
HARRIS		HM-7685	HL7685	MC421	ML421
HD-6600	HL6600	HM-7685A	HL7685A	MC422	ML422
HDI-234	HL234	HM-76161	HL76161	MC423	ML423
HD-245	HL245	HM-76161A	HL76161A	MC424	ML424
HD-246	HL246	HM-76161B	HL76161B	MC425	ML425
HD-248	HL248	HM-76165	HL76165	MC426	ML426
HM-0104	HL0104	HM-76321	HL76321	MC427	ML427
HM-0168	HL0168	HM-76641	HL76641	MC428	ML428
HM-0186	HL0186	HM-76641A	HL76641A	MC429	ML429
HM-0198	HL0198	INTEL		MC450	ML450
HM-0410	HL0410	M8080A	IL8080A	MC451	ML451
BIPOLAR PROM		M8212	IL8212	MC452	ML452
HPROM-0512	HL0512	M8214	IL8214	MC453	ML453
HM-7602	HL7602	M8216	IL8216	MC454	ML454
HM-7603	HL7603	M8224	IL8224	MC455	ML455
HM-7610	HL7610	M8226	IL8226	MC456	ML456
HM-7610A	HL7610A	M8228	IL8228	MC457	ML457
HM-7610B	HL7610B	M8282	IL8282	MC458	ML458
HM-7611	HL7611	M8283	IL8283	MC459	ML459
HM-7611A	HL7611A	M8284A	IL8284A	MC460	ML460
		M8286	IL8286	MC461	ML461
		M8287	IL8287	MC462	ML462
		M8288	IL8288	MC463	ML463
		M8289	IL8289	MC464	ML464
				MC465	ML465

Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
MC466	ML466	HTL		MC829	ML829
MC469	ML469	MC660T	ML660T	MC864	ML864
MC470	ML470	MC661T	ML661T	MC867	ML867
MC471	ML471	MC662T	ML662T	MC870	ML870
MC472	ML472	MC663T	ML663T	MC871	ML871
MC473	ML473	MC664T	ML664T	MC874	ML874
MC474	ML474	MC665T	ML665T	MC875	ML875
MC475	ML475	MC666T	ML666T	MC876	ML876
MC476	ML476	MC667T	ML667T	MC877	ML877
MC477	ML477	MC668T	ML668T	MC878	ML878
MC478	ML478	MC669T	ML669T	MC879	ML879
MC479	ML479	MC670T	ML670T	MC880	ML880
MC500	ML500	MC671T	ML671T	MC881	ML881
MC501	ML501	MC672T	ML672T	MC882	ML882
MC502	ML502	MC673T	ML673T	MC883	ML883
MC503	ML503	MC674T	ML674T	MC884	ML884
MC504	ML504	MC675T	ML675T	MC885	ML885
MC505	ML505	MC676T	ML676T	MC886	ML886
MC506	ML506	MC677T	ML677T	MC887	ML887
MC507	ML507	MC678T	ML678T	MC888	ML888
MC508	ML508	MC679T	ML679T	MC889	ML889
MC509	ML509	MC680T	ML680T	MC890	ML890
MC510	ML510	MC681T	ML681T	MC891	ML891
MC511	ML511	MC682T	ML682T	MC892	ML892
MC512	ML512	MC683T	ML683T	MC893	ML893
MC513	ML513	MC684T	ML684T	MC894	ML894
MC514	ML514	MC685T	ML685T	MC896	ML896
MC515	ML515	MC686T	ML686T	MC897	ML897
MC516	ML516	MC688T	ML688T	MC898	ML898
MC519	ML519	MC689T	ML689T	MC899	ML899
MC520	ML520	MC690T	ML690T	MC900	ML900
MC521	ML521	MC691T	ML691T	MC901	ML901
MC522	ML522	MC693T	ML693T	MC902	ML902
MC523	ML523	MC696T	ML696T	MC903	ML903
MC524	ML524	MC697T	ML697T	MC904	ML904
MC525	ML525	MC699	ML699	MC905	ML905
MC526	ML526	RTL		MC906	ML906
MC527	ML527	MC800	ML800	MC907	ML907
MC528	ML528	MC801	ML801	MC908	ML908
MC529	ML529	MC802	ML802	MC909	ML909
MC550	ML550	MC803	ML803	MC910	ML910
MC551	ML551	MC804	ML804	MC911	ML911
MC552	ML552	MC805	ML805	MC912	ML912
MC553	ML553	MC806	ML806	MC913	ML913
MC554	ML554	MC807	ML807	MC914	ML914
MC555	ML555	MC808	ML808	MC915	ML915
MC556	ML556	MC809	ML809	MC916	ML916
MC557	ML557	MC810	ML810	MC917	ML917
MC558	ML558	MC811	ML811	MC918	ML918
MC559	ML559	MC812	ML812	MC919	ML919
MC560	ML560	MC813	ML813	MC920	ML920
MC561	ML561	MC814	ML814	MC921	ML921
MC562	ML562	MC815	ML815	MC922	ML922
MC563	ML563	MC816	ML816	MC924	ML924
MC564	ML564	MC817	ML817	MC925	ML925
MC565	ML565	MC818	ML818	MC926	ML926
MC566	ML566	MC819	ML819	MC927	ML927
MC569	ML569	MC820	ML820	MC928	ML928
MC570	ML570	MC821	ML821	MC929	ML929
MC571	ML571	MC822	ML822	MC971	ML971
MC572	ML572	MC824	ML824	MC974	ML974
MC573	ML573	MC825	ML825	MC975	ML975
MC574	ML574	MC826	ML826	MC976	ML976
MC575	ML575	MC827	ML827	MC978	ML978
MC576	ML576	MC828	ML828	MC981	ML981
MC577	ML577			MC982	ML982
MC578	ML578			MC983	ML983
MC579	ML579			MC984	ML984
				MC985	ML985

Lansdale

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Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
MC986	ML986	MC939	ML939	LINEAR	
MC988	ML988	MC940	ML940		
MC989	ML989	MC941	ML941	MC1503	ML1503
MC990	ML990	MC944	ML944	MC1506	ML1506
MC991	ML991	MC945	ML945	MC1510	ML1510
MC992	ML992	MC946	ML946	MC1512	ML1512
MC993	ML993	MC947	ML947	MC1514	ML1514
MC996	ML996	MC948	ML948	MC1520	ML1520
MC997	ML997	MC949	ML949	MC1530	ML1530
MC998	ML998	MC950	ML950	MC1531	ML1531
MC999	ML999	MC951	ML951	MC1533	ML1533
MC9801	ML9801	MC952	ML952	MC1535	ML1535
MC9802	ML9802	MC953	ML953	MC1538	ML1538
MC9804	ML9804	MC955	ML955	MC1552	ML1552
MC9807	ML9807	MC956	ML956	MC1553	ML1553
MC9809	ML9809	MC957	ML957	MC1561	ML1561
MC9813	ML9813	MC958	ML958	MC1563	ML1563
MC9814	ML9814	MC961	ML961	MC1569	ML1569
MC9815	ML9815	MC962	ML962	MC1590	ML1590
MC9818	ML9818	MC963	ML963	MC1710	ML1710
MC9819	ML9819	MC1800	ML1800	MC3357	ML3357
MC9820	ML9820	MC1801	ML1801	MC3558	ML3558
MC9821	ML9821	MC1802	ML1802	MC10318	ML10318
MC9822	ML9822	MC1803	ML1803	MMH0026	ML0026
MC9823	ML9823	MC1804	ML1804	TTL II/SUHL	
MC9824	ML9824	MC1805	ML1805		
MC9825	ML9825	MC1806	ML1806	MC2000	ML2000
DTL		MC1807	ML1807	MC2001	ML2001
MC830	ML830	MC1808	ML1808	MC2002	ML2002
MC831	ML831	MC1809	ML1809	MC2003	ML2003
MC832	ML832	MC1810	ML1810	MC2004	ML2004
MC833	ML833	MC1811	ML1811	MC2005	ML2005
MC834	ML834	MC1812	ML1812	MC2006	ML2006
MC835	ML835	MC1813	ML1813	MC2007	ML2007
MC836	ML836	MC1814	ML1814	MC2009	ML2009
MC837	ML837	MC1815	ML1815	MC2011	ML2011
MC838	ML838	MC1816	ML1816	MC2012	ML2012
MC839	ML839	MC1818	ML1818	MC2013	ML2013
MC840	ML840	MC1900	ML1900	MC2016	ML2016
MC841	ML841	MC1901	ML1901	MC2018	ML2018
MC843	ML843	MC1902	ML1902	MC2023	ML2023
MC844	ML844	MC1903	ML1903	MC2024	ML2024
MC845	ML845	MC1904	ML1904	MC2025	ML2025
MC846	ML846	MC1905	ML1905	MC2026	ML2026
MC847	ML847	MC1906	ML1906	MC2028	ML2028
MC848	ML848	MC1907	ML1907	MC2050	ML2050
MC849	ML849	MC1908	ML1908	MC2051	ML2051
MC850	ML850	MC1909	ML1909	MC2052	ML2052
MC851	ML851	MC1910	ML1910	MC2053	ML2053
MC852	ML852	MC1911	ML1911	MC2054	ML2054
MC853	ML853	MC1912	ML1912	MC2055	ML2055
MC855	ML855	MC1913	ML1913	MC2056	ML2056
MC856	ML856	MC1914	ML1914	MC2057	ML2057
MC857	ML857	MC1915	ML1915	MC2059	ML2059
MC858	ML858	MC1916	ML1916	MC2061	ML2061
MC861	ML861	MC1917	ML1917	MC2062	ML2062
MC862	ML862	MC1918	ML1918	MC2063	ML2063
MC863	ML863	MECL		MC2065	ML2065
MC930	ML930	MC1217	ML1217	MC2066	ML2066
MC931	ML931	MC1226	ML1226	MC2068	ML2068
MC932	ML932	MC1239	ML1239	MC2073	ML2073
MC933	ML933	MC1668	ML1668	MC2074	ML2074
MC934	ML934	MC1674	ML1674	MC2075	ML2075
MC935	ML935	MC1694	ML1694	MC2076	ML2076
MC936	ML936	MC10687	ML10687	MC2078	ML2078
MC937	ML937	MC12560	ML12560	MC2100	ML2100
MC938	ML938			MC2101	ML2101

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Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
MC4351	ML4351	MC5448	ML5448	MC54190	ML54190
MC4352	ML4352	MC5449	ML5449	MC54191	ML54191
MC4353	ML4353	MC5450	ML5450	MC54192	ML54192
MC4354	ML4354	MC5451	ML5451	MC54193	ML54193
MC4355	ML4355	MC5453	ML5453	MC54194	ML54194
MC4356	ML4356	MC5454	ML5454	MC54195	ML54195
MC4358	ML4358	MC5460	ML5460	MC54196	ML54196
MC4360	ML4360	MC5470	ML5470	MC54197	ML54197
MC4362	ML4362	MC5472	ML5472	MC54198	ML54198
MC4364	ML4364	MC5473	ML5473	MC54199	ML54199
MC4368	ML4368	MC5474	ML5474	MC54279	ML54279
TTL-SUHL II		MC5475	ML5475	MC54290	ML54290
MC5090	ML5090	MC5476	ML5476	MC54293	ML54293
MC5092	ML5092	MC5477	ML5477	MC54298	ML54298
MC5111	ML5111	MC5479	ML5479	MC15482	ML15482
MC5113	ML5113	MC5480	ML5480	MC25482	ML25482
MC5121	ML5121	MC5481	ML5481	MC7400	ML7400
MC5123	ML5123	MC5483	ML5483	MC7401	ML7401
MC5131	ML5131	MC5484	ML5484	MC7402	ML7402
MC5133	ML5133	MC5485	ML5485	MC7403	ML7403
MC5141	ML5141	MC5486	ML5486	MC7404	ML7404
MC5143	ML5143	MC5490	ML5490	MC7405	ML7405
MC5151	ML5151	MC5490A	ML5490A	MC7406	ML7406
MC5153	ML5153	MC5491A	ML5491A	MC7407	ML7407
MC5163	ML5163	MC5492	ML5492	MC7408	ML7408
MC5171	ML5171	MC5492A	ML5492A	MC7409	ML7409
MC5181	ML5181	MC5493	ML5493	MC7410	ML7410
MC5183	ML5183	MC5493A	ML5493A	MC7412	ML7412
MC5191	ML5191	MC5494	ML5494	MC7413	ML7413
MC5193	ML5193	MC5495	ML5495	MC7414	ML7414
TTL		MC5495A	ML5495A	MC7416	ML7416
MC5400	ML5400	MC5496	ML5496	MC7417	ML7417
MC5401	ML5401	MC5497	ML5497	MC7420	ML7420
MC5402	ML5402	MC54100	ML54100	MC7423	ML7423
MC5403	ML5403	MC54107	ML54107	MC7425	ML7425
MC5404	ML5404	MC54120	ML54120	MC7426	ML7426
MC5405	ML5405	MC54121	ML54121	MC7427	ML7427
MC5406	ML5406	MC54122	ML54122	MC7428	ML7428
MC5407	ML5407	MC54123	ML54123	MC7430	ML7430
MC5408	ML5408	MC54128	ML54128	MC7437	ML7437
MC5409	ML5409	MC54132	ML54132	MC7438	ML7438
MC5410	ML5410	MC54136	ML54136	MC7440	ML7440
MC5412	ML5412	MC54141	ML54141	MC7441A	ML7441A
MC5413	ML5413	MC54145	ML54145	MC7442	ML7442
MC5414	ML5414	MC54150	ML54150	MC7442A	ML7442A
MC5416	ML5416	MC54151	ML54151	MC7443	ML7443
MC5417	ML5417	MC54152	ML54152	MC7444	ML7444
MC5420	ML5420	MC54153	ML54153	MC7445	ML7445
MC5423	ML5423	MC54154	ML54154	MC7446	ML7446
MC5425	ML5425	MC54155	ML54155	MC7447	ML7447
MC5426	ML5426	MC54156	ML54156	MC7448	ML7448
MC5427	ML5427	MC54160	ML54160	MC7449	ML7449
MC5428	ML5428	MC54161	ML54161	MC7450	ML7450
MC5430	ML5430	MC54162	ML54162	MC7451	ML7451
MC5437	ML5437	MC54163	ML54163	MC7453	ML7453
MC5438	ML5438	MC54164	ML54164	MC7454	ML7454
MC5440	ML5440	MC54164A	ML54164A	MC7460	ML7460
MC5441A	ML5441A	MC54165	ML54165	MC7470	ML7470
MC5442	ML5442	MC54166	ML54166	MC7472	ML7472
MC5442A	ML5442A	MC54167	ML54167	MC7473	ML7473
MC5443	ML5443	MC54174	ML54174	MC7474	ML7474
MC5444	ML5444	MC54175	ML54175	MC7475	ML7475
MC5445	ML5445	MC54176	ML54176	MC7476	ML7476
MC5446	ML5446	MC54177	ML54177	MC7477	ML7477
MC5447	ML5447	MC54178	ML54178	MC7479	ML7479
		MC54179	ML54179	MC7480	ML7480
		MC54180	ML54180	MC7481	ML7481
		MC54181	ML54181	MC7483	ML7483
		MC54182	ML54182	MC7484	ML7484

Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
MC7485	ML7485	TTL III		MC74H52	ML74H52
MC7486	ML7486	MC54H00	ML54H00	MC74H53	ML74H53
MC7490	ML7490	MC54H01	ML54H01	MC74H54	ML74H54
MC7490A	ML7490A	MC54H02	ML54H02	MC74H55	ML74H55
MC7491A	ML7491A	MC54H04	ML54H04	MC74H60	ML74H60
MC7492	ML7492	MC54H05	ML54H05	MC74H61	ML74H61
MC7492A	ML7492A	MC54H08	ML54H08	MC74H62	ML74H62
MC7493	ML7493	MC54H10	ML54H10	MC74H71	ML74H71
MC7493A	ML7493A	MC54H11	ML54H11	MC74H72	ML74H72
MC7494	ML7494	MC54H12	ML54H12	MC74H73	ML74H73
MC7495	ML7495	MC54H20	ML54H20	MC74H74	ML74H74
MC7495A	ML7495A	MC54H21	ML54H21	MC74H79	ML74H79
MC7496	ML7496	MC54H22	ML54H22	MC74H86	ML74H86
MC7497	ML7497	MC54H28	ML54H28	MC74H87	ML74H87
MC74100	ML74100	MC54H29	ML54H29	MC74H89	ML74H89
MC74107	ML74107	MC54H30	ML54H30	MC74H101	ML74H101
MC74120	ML74120	MC54H31	ML54H31	MC74H102	ML74H102
MC74121	ML74121	MC54H32	ML54H32	MC74H103	ML74H103
MC74122	ML74122	MC54H36	ML54H36	MC74H108	ML74H108
MC74123	ML74123	MC54H39	ML54H39	MC74H116	ML74H116
MC74128	ML74128	MC54H40	ML54H40	MC74H117	ML74H117
MC74132	ML74132	MC54H50	ML54H50	MC74H119	ML74H119
MC74136	ML74136	MC54H51	ML54H51	MC74H120	ML74H120
MC74141	ML74141	MC54H52	ML54H52	Super Schottky TTL	
MC74145	ML74145	MC54H53	ML54H53	MC54SS00	ML54SS00
MC74150	ML74150	MC54H54	ML54H54	MC54SS02	ML54SS02
MC74151	ML74151	MC54H55	ML54H55	MC54SS04	ML54SS04
MC74152	ML74152	MC54H60	ML54H60	MC54SS08	ML54SS08
MC74153	ML74153	MC54H61	ML54H61	MC54SS10	ML54SS10
MC74154	ML74154	MC54H62	ML54H62	MC54SS11	ML54SS11
MC74155	ML74155	MC54H71	ML54H71	MC54SS20	ML54SS20
MC74156	ML74156	MC54H72	ML54H72	MC54SS21	ML54SS21
MC74160	ML74160	MC54H73	ML54H73	MC54SS27	ML54SS27
MC74161	ML74161	MC54H74	ML54H74	MC54SS32	ML54SS32
MC74162	ML74162	MC54H79	ML54H79	MC54SS51	ML54SS51
MC74163	ML74163	MC54H86	ML54H86	MC54SS64	ML54SS64
MC74164	ML74164	MC54H87	ML54H87	MC54SS74	ML54SS74
MC74164A	ML74164A	MC54H89	ML54H89	MC54SS86	ML54SS86
MC74165	ML74165	MC54H101	ML54H101	MC54SS133	ML54SS133
MC74166	ML74166	MC54H102	ML54H102	MC54SS138	ML54SS138
MC74167	ML74167	MC54H103	ML54H103	MC54SS151	ML54SS151
MC74174	ML74174	MC54H108	ML54H108	MC54SS153	ML54SS153
MC74175	ML74175	MC54H116	ML54H116	MC54SS157	ML54SS157
MC74176	ML74176	MC54H117	ML54H117	MC54SS158	ML54SS158
MC74177	ML74177	MC54H119	ML54H119	MC54SS174	ML54SS174
MC74178	ML74178	MC54H120	ML54H120	MC54SS175	ML54SS175
MC74179	ML74179	MC74H00	ML74H00	MC54SS181	ML54SS181
MC74180	ML74180	MC74H01	ML74H01	MC54SS182	ML54SS182
MC74181	ML74181	MC74H02	ML74H02	MC54SS251	ML54SS251
MC74182	ML74182	MC74H04	ML74H04	MC54SS258	ML54SS258
MC74190	ML74190	MC74H05	ML74H05	MC54SS328	ML54SS328
MC74191	ML74191	MC74H08	ML74H08	TTL	
MC74192	ML74192	MC74H10	ML74H10	MC7200	ML7200
MC74193	ML74193	MC74H11	ML74H11	MC7201	ML7201
MC74194	ML74194	MC74H12	ML74H12	MC7202	ML7202
MC74195	ML74195	MC74H20	ML74H20	MC7203	ML7203
MC74196	ML74196	MC74H21	ML74H21	MC7233	ML7233
MC74197	ML74197	MC74H22	ML74H22	MC7234	ML7234
MC74198	ML74198	MC74H28	ML74H28	MC7235	ML7235
MC74199	ML74199	MC74H29	ML74H29	MC7241	ML7241
MC74279	ML74279	MC74H30	ML74H30	MC7242	ML7242
MC74290	ML74290	MC74H31	ML74H31	MC7250	ML7250
MC74293	ML74293	MC74H32	ML74H32	MC7251	ML7251
MC74298	ML74298	MC74H36	ML74H36	MC7260	ML7260
MC17482	ML17482	MC74H39	ML74H39	MC7261	ML7261
MC27482	ML27482	MC74H40	ML74H40		
		MC74H50	ML74H50		
		MC74H51	ML74H51		

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Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
MC7266	ML7266	MC9307	ML9307	RM212	RL212
MC7267	ML7267	MC9308	ML9308	RM213	RL213
MC7270	ML7270	MC9309	ML9309	RM214	RL214
MC7271	ML7271	MC9310	ML9310	RM215	RL215
MC7280	ML7280	MC9311	ML9311	RM216	RL216
MC7281	ML7281	MC9312	ML9312	RM217	RL217
MC7284	ML7284	MC9314	ML9314	RM220	RL220
MC7285	ML7285	MC9316	ML9316	RM221	RL221
MC7288	ML7288	MC9317	ML9317	RM224	RL224
MC7290	ML7290	MC9318	ML9318	RM225	RL225
MC7291	ML7291	MC9322	ML9322	RM226	RL226
MC8200	ML8200	MC9324	ML9324	RM227	RL227
MC8201	ML8201	MC9328	ML9328	RM231	RL231
MC8202	ML8202	MC9601	ML9601	RM234	RL234
MC8203	ML8203	MC9602	ML9602	RM236	RL236
MC8233	ML8233	CMOS		RM241	RL241
MC8234	ML8234	MC14002B	ML14002B	RM246	RL246
MC8235	ML8235	MC14006B	ML14006B	RM261	RL261
MC8241	ML8241	MC14008B	ML14008B	RM266	RL266
MC8242	ML8242	MC14022B	ML14022B	RM286	RL286
MC8250	ML8250	MC14034B	ML14034B	RM288	RL288
MC8251	ML8251	MC14035B	ML14035B	RM296	RL296
MC8260	ML8260	MC14068B	ML14068B	DTL	
MC8261	ML8261	MC14078B	ML14078B	RM930	ML930
MC8266	ML8266	MC14162B	ML14162B	RM932	ML932
MC8267	ML8267	MC14163B	ML14163B	RM933	ML933
MC8270	ML8270	MC14194B	ML14194B	RM934	ML934
MC8271	ML8271	MC14506A	ML14506A	RM935	ML935
MC8280	ML8280	MC14508B	ML14508B	RM936	ML936
MC8281	ML8281	MC14510B	ML14510B	RM937	ML937
MC8284	ML8284	MC14514B	ML14514B	RM939	ML939
MC8285	ML8285	MC14515B	ML14515B	RM940	ML940
MC8288	ML8288	MC14516B	ML14516B	RM941	ML941
MC8290	ML8290	MC14521B	ML14521B	RM944	ML944
MC8291	ML8291	MC14522B	ML14522B	RM945	ML945
TTL-Interface		MC14524B	ML14524B	RM946	ML946
MC8T95	ML8T95	MC14526B	ML14526B	RM948	ML948
MC8T96	ML8T96	MC14529B	ML14529B	RM949	ML949
MC8T97	ML8T97	MC14531B	ML14531B	RM950	ML950
MC8T98	ML8T98	MC14549B	ML14549B	RM951	ML951
TTL		MC14551B	ML14551B	RM957	ML957
MC8300	ML8300	MC14553B	ML14553B	RM958	ML958
MC8301	ML8301	MC14556B	ML14556B	RM961	ML961
MC8304	ML8304	MC14559B	ML14559B	RM962	ML962
MC8306	ML8306	MC14560B	ML14560B	RM963	ML963
MC8307	ML8307	MC14561B	ML14561B	RM993	ML953
MC8308	ML8308	MC14562B	ML14562B	RM994	ML956
MC8309	ML8309	MC14568B	ML14568B	RM997	ML955
MC8310	ML8310	NATIONAL		RM999	ML952
MC8311	ML8311	DM75L54	NL75L54	TTL	
MC8312	ML8312	RAYTHEON		RM8200	SL8200
MC8314	ML8314	DTL		RM8201	SL8201
MC8316	ML8316	RM201	RL201	RM8203	SL8203
MC8317	ML8317	RM202	RL202	RM8230	SL8230
MC8318	ML8318	RM204	RL204	RM8231	SL8231
MC8322	ML8322	RM206	RL206	RM8232	SL8232
MC8324	ML8324	RM208	RL208	RM8241	SL8241
MC8328	ML8328	RM210	RL210	RM8242	SL8242
MC8601	ML8601	RM211	RL211	RM8243	SL8243
MC8602	ML8602			RM8250	SL8250
MC9300	ML9300			RM8251	SL8251
MC9301	ML9301			RM8252	SL8252
MC9304	ML9304			RM8260	SL8260
MC9306	ML9306			RM8261	SL8261

Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
RM8263	SL8263	RG171	ML560	SE112	SL112
RM8264	SL8264	RG180	ML511	SE113	SL113
RM8267	SL8267	RG181	ML561	SE115	SL115
RM8270	SL8270	RG190	ML512	SE116	SL116
RM8274	SL8274	RG191	ML562	SE124	SL124
RM8275	SL8275	RG200	ML2111	SE125	SL125
RM8277	SL8277	RG201	ML2161	SE150	SL150
RM8280	SL8280	RG210	ML2100	SE155	SL155
RM8281	SL8281	RG211	ML2150	SE156	SL156
RM8284	SL8284	RG220	ML2101	SE157	SL157
RM8285	SL8285	RG221	ML2151	SE160	SL160
RM8290	SL8290	RG223	ML2051	SE161	SL161
RM8291	SL8291	RG230	ML2102	SE162	SL162
RM8293	SL8293	RG231	ML2152	SE170	SL170
TTL - SUHL		RG240	ML2103	SE180	SL180
RF30	ML521	RG241	ML2153	SE181	SL181
RF31	ML571	RG250	ML2104	SE415	SL415
RF50	RL50	RG251	ML2154	SE416	SL416
RF51	ML565	RG260	ML2105	SE417	SL417
RF60	ML516	RG261	ML2155	SE440	SL440
RF61	ML566	RG270	ML2106	SE455	SL455
RF100	ML523	RG271	ML2156	SE470	SL470
RF101	ML573	RG280	ML527	SE471	SL471
RF110	RL110	RG281	ML577	SE480	SL480
RF111	ML574	RG290	ML528	SE481	SL481
RF120	ML2123	RG291	ML578	SE490	SL490
RF121	ML2173	RG300	ML2112	SE511	SL511
RF130	ML2124	RG301	ML2162	SE526	SL526
RF131	ML2174	RG310	ML2113	SE616	SL616
RF200	ML2125	RG311	ML2163	SE620	SL620
RF201	ML2175	RG320	ML2107	SE629	SL629
RF210	ML2126	RG321	ML2157	SE631	SL631
RF211	ML2176	RG330	RL330	SE659	SL659
RF230	ML2075	RG331	RL331	SE670	SL670
RF250	ML2109	RG340	RL340	SE680	SL680
RF251	ML2159	RG341	RL341	SE690	SL690
RF9601	ML9601	RG370	ML529	CS700	SL700
TTL-SUHL		RG371	ML579	CS701	SL701
RG40	ML500	RG380	ML2116	CS704	SL704
RG41	ML550	RG381	ML2166	CS705	SL705
RG50	ML501	RG7520	ML2165	CS709	SL709
RG51	ML551	RG7521	ML2165	CS716	SL716
RG60	ML502	TTL-SUHL		CS720	SL720
RG61	ML552	RL10	ML4326	CS721	SL721
RG70	ML520	RL11	ML4327	CS727	SL727
RG71	ML570	RL20	ML4328	CS729	SL729
RG80	ML526	RL21	ML4329	CS730	SL730
RG81	ML576	RL30	ML4330	CS731	SL731
RG83	ML476	RL31	ML4331	CS732	SL732
RG88	ML503	RL40	ML4332	S8162	SL8162
RG91	ML553	RL61	ML4335	S8415	SL8415
RG110	ML505	RL71	ML4337	S8416	SL8416
RG111	ML555	RL80	ML4304	S8417	SL8417
RG120	ML506	RL81	ML4305	S8440	SL8440
RG121	ML556	SIGNETICS		S8455	SL8455
RG130	ML507	DTL		S8470	SL8470
RG131	ML557	SE101	SL101	S8471	SL8471
RG140	ML508	SE102	SL102	S8480	SL8480
RG141	ML558	SE105	SL105	S8481	SL8481
RG150	ML509	SE106	SL106	S8490	SL8490
RG151	ML559	SE110	SL110	UTILOGIC II	
RG160	ML519	SE111	SL111	SP300	SL300
RG161	ML569			SP301	SL301
RG170	ML510			SP302	SL302
				SP304	SL304
				SP305	SL305

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Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
SP306	SL306	S5439	SL5439	S54199	SL54199
SP314	SL314	S5440	SL5440	S54221	SL54221
SP315	SL315	S5442	SL5442	S54279	SL54279
SP316	SL316	S5445	SL5445	S54298	SL54298
SP317	SL317	S5447	SL5447	S54365A	SL54365A
SP320	SL320	S5448	SL5448	S54366A	SL54366A
SP321	SL321	S5450	SL5450	S54367A	SL54367A
SP322	SL322	S5451	SL5451	S54368A	SL54368A
SP328	SL328	S5453	SL5453	N7400	SL7400
SP331	SL331	S5454	SL5454	N7401	SL7401
SP332	SL332	S5460	SL5460	N7402	SL7402
SP333	SL333	S5470	SL5470	N7403	SL7403
SP334	SL334	S5472	SL5472	N7404	SL7404
SP337	SL337	S5473	SL5473	N7405	SL7405
SP352	SL352	S5474	SL5474	N7406	SL7406
SP356	SL356	S5475	SL5475	N7407	SL7407
SP357	SL357	S5476	SL5476	N7408	SL7408
SP358	SL358	S5480	SL5480	N7409	SL7409
SP362	SL362	S5483	SL5483	N7410	SL7410
SP363	SL363	S5485	SL5485	N7411	SL7411
SP370	SL370	S5486	SL5486	N7413	SL7413
SP374	SL374	S5490	SL5490	N7414	SL7414
SP375	SL375	S5492	SL5492	N7416	SL7416
SP377	SL377	S5493	SL5493	N7417	SL7417
SP380	SL380	S5494	SL5494	N7420	SL7420
SP381	SL381	S5495	SL5495	N7421	SL7421
SP384	SL384	S5496	SL5496	N7425	SL7425
SP387	SL387	S54100	SL54100	N7426	SL7426
SP391	SL391	S54107	SL54107	N7427	SL7427
SP3271	SL3271	S54109	SL54109	N7428	SL7428
SP3280	SL3280	S54116	SL54116	N7430	SL7430
SP3281	SL3281	S54121	SL54121	N7432	SL7432
LINEAR		S54123	SL54123	N7433	SL7433
		S54125	SL54125	N7437	SL7437
		S54126	SL54126	N7438	SL7438
MC1488	SL1488	S54128	SL54128	N7439	SL7439
MC1489	SL1489	S54132	SL54132	N7440	SL7440
MC1489A	SL1489A	S54145	SL54145	N7442	SL7442
TTL		S54148	SL54148	N7445	SL7445
		S54150	SL54150	N7447	SL7447
		S54151	SL54151	N7448	SL7448
S5400	SL5400	S54152	SL54152	N7450	SL7450
S5401	SL5401	S54153	SL54153	N7451	SL7451
S5402	SL5402	S54154	SL54154	N7453	SL7453
S5403	SL5403	S54155	SL54155	N7454	SL7454
S5404	SL5404	S54156	SL54156	N7460	SL7460
S5405	SL5405	S54157	SL54157	N7470	SL7470
S5406	SL5406	S54158	SL54158	N7472	SL7472
S5407	SL5407	S54160	SL54160	N7473	SL7473
S5408	SL5408	S54161	SL54161	N7474	SL7474
S5409	SL5409	S54163	SL54163	N7475	SL7475
S5410	SL5410	S54164	SL54164	N7476	SL7476
S5411	SL5411	S54165	SL54165	N7480	SL7480
S5413	SL5413	S54166	SL54166	N7483	SL7483
S5414	SL5414	S54170	SL54170	N7485	SL7485
S5416	SL5416	S54173	SL54173	N7486	SL7486
S5417	SL5417	S54174	SL54174	N7490	SL7490
S5420	SL5420	S54175	SL54175	N7492	SL7492
S5421	SL5421	S54180	SL54180	N7493	SL7493
S5425	SL5425	S54181	SL54181	N7494	SL7494
S5426	SL5426	S54182	SL54182	N7495	SL7495
S5427	SL5427	S54190	SL54190	N7496	SL7496
S5428	SL5428	S54191	SL54191	N74100	SL74100
S5430	SL5430	S54192	SL54192	N74107	SL74107
S5432	SL5432	S54193	SL54193	N74109	SL74109
S5433	SL5433	S54194	SL54194	N74116	SL74116
S5437	SL5437	S54195	SL54195	N74121	SL74121
S5438	SL5438	S54198	SL54198	N74123	SL74123

Original P/N	Lansdale P/N	Original P/N	Lansdale P/N	Original P/N	Lansdale P/N
N74S00	SL74S00	S8234	SL8234	Bipolar Memory	
N74S02	SL74S02	S8235	SL8235		
N74S03	SL74S03	S8241	SL8241	S82LS16	SL82LS16
N74S04	SL74S04	S8242	SL8242	S82LS181	SL82LS181
N74S05	SL74S05	S8243	SL8243	Schottky TTL	
N74S08	SL74S08	S8250	SL8250		
N74S10	SL74S10	S8251	SL8251	S82S09	SL82S09
N74S11	SL74S11	S8252	SL8252	S82S16	SL82S16
N74S20	SL74S20	S8260	SL8260	S82S19	SL82S19
N74S32	SL74S32	S8261	SL8261	S82S41	SL82S41
N74S37	SL74S37	S8262	SL8262	S82S52	SL82S52
N74S38	SL74S38	S8263	SL8263	S82S62	SL82S62
N74S40	SL74S40	S8264	SL8264	S82S82	SL82S82
N74S51	SL74S51	S8266	SL8266	S82S83	SL82S83
N74S64	SL74S64	S8267	SL8267	S82S212	SL82S212
N74S74	SL74S74	S8269	SL8269	TTL - Interface	
N74S85	SL74S85	S8270	SL8270		
N74S86	SL74S86	S8271	SL8271	S8T04	SL8T04
N74S112	SL74S112	S8273	SL8273	S8T05	SL8T05
N74S113	SL74S113	S8274	SL8274	S8T06	SL8T06
N74S133	SL74S133	S8275	SL8275	S8T09	SL8T09
N74S134	SL74S134	S8277	SL8277	S8T10	SL8T10
N74S135	SL74S135	S8280	SL8280	S8T13	SL8T13
N74S138	SL74S138	S8281	SL8281	S8T14	SL8T14
N74S139	SL74S139	S8284	SL8284	S8T15	SL8T15
N74S140	SL74S140	S8285	SL8285	S8T16	SL8T16
N74S151	SL74S151	S8288	SL8288	S8T18	SL8T18
N74S153	SL74S153	S8290	SL8290	S8T20	SL8T20
N74S157	SL74S157	S8291	SL8291	S8T23	SL8T23
N74S158	SL74S158	S8292	SL8292	S8T24	SL8T24
N74S168A	SL74S168A	S8293	SL8293	S8T26	SL8T26
N74S169A	SL74S169A	TTL		S8T26A	SL8T26A
N74S172	SL74S172				
N74S174	SL74S174	S8806	SL8806	S8T28	SL8T28
N74S175	SL74S175	S8808	SL8808	S8T31	SL8T31
N74S181	SL74S181	S8815	SL8815	S8T32	SL8T32
N74S182	SL74S182	S8816	SL8816	S8T33	SL8T33
N74S189	SL74S189	S8819	SL8819	S8T34	SL8T34
N74S194	SL74S194	S8821	SL8821	S8T35	SL8T35
N74S195	SL74S195	S8822	SL8822	S8T36	SL8T36
N74S225	SL74S225	S8824	SL8824	S8T37	SL8T37
N74S240	SL74S240	S8825	SL8825	S8T38	SL8T38
N74S241	SL74S241	S8826	SL8826	S8T80	SL8T80
N74S242	SL74S242	S8827	SL8827	S8T90	SL8T90
N74S243	SL74S243	S8828	SL8828	S8T95	SL8T95
N74S244	SL74S244	S8829	SL8829	S8T96	SL8T96
N74S251	SL74S251	S8840	SL8840	S8T97	SL8T97
N74S253	SL74S253	S8848	SL8848	S8T98	SL8T98
N74S257	SL74S257	S8855	SL8855	S8T125	SL8T125
N74S258	SL74S258	S8859	SL8859	S8T126	SL8T126
N74S260	SL74S260	S8870	SL8870	S8T129	SL8T129
N74S266	SL74S266	S8875	SL8875	S8T245	SL8T245
N74S273	SL74S273	S8879	SL8879	S8T380	SL8T380
N74S280	SL74S280	S8880	SL8880	S8T3404	SL8T3404
N74S280	SL74S280	S8881	SL8881	LSI	
N74S301	SL74S301	S8885	SL8885		
N74S350	SL74S350	S8888	SL8888	8X41	SL8X41
N74S373	SL74S373	S8889	SL8889	8X60	SL8X60
N74S374	SL74S374	S96106	SL96106	8X305	SL8X305
N74S534	SL74S534	INTERFACE		8X350	SL8X350
TTL					
S8200	SL8200	S8H16	SL8H16	8X371	SL8X371
S8201	SL8201	S8H20	SL8H20	8X372	SL8X372
S8202	SL8202	S8H21	SL8H21	8X376	SL8X376
S8203	SL8203	S8H22	SL8H22	8X401	SL8X401
S8230	SL8230	S8H70	SL8H70	8X801	SL8X801
S8231	SL8231	S8H80	SL8H80	8X801A	SL8X801A
S8232	SL8232				

Lansdale



PART MARKING INFORMATION

ORIGINAL MANUFACTURER INFORMATION

A AMD
 F FAIRCHILD
 H HARRIS
 I INTEL
 M MOTOROLA
 N NATIONAL
 R RAYTHEON
 S SIGNETICS
 T TEXAS INSTRUMENTS

PROCESSING INFORMATION

BLANK NON BURNED-IN CERAMIC
 1 HIGH RELIABILITY CERAMIC
 P COMMERCIAL TEMP. PLASTIC

LEAD FINISH INFORMATION

A SOLDER DIP
 B MATTE TIN
 C GOLD

PACKAGING INFORMATION

LETTER	DESCRIPTION
A	14-LEAD FLAT PACK (1/4" X 1/4")
B	14-LEAD FLAT PACK (3/16" X 1/4")
C	14-LEAD DUAL INLINE (1/4" X 3/4")
D	14-LEAD FLAT PACK (1/4" X 3/8")
E	16-LEAD DUAL INLINE (1/4" X 7/8")
F	16-LEAD FLAT PACK (1/4" X 3/8")
G	8-LEAD CAN
H	10-LEAD FLAT PACK (1/4" X 1/4")
I	10-LEAD CAN
J	24-LEAD DUAL INLINE (1/2" X 1 1/4")
K	24-LEAD FLAT PACK (3/8" X 5/8")
L	24-LEAD DUAL INLINE (1/4" X 1 1/4")
M	12-LEAD CAN
P	8-LEAD DUAL INLINE (1/4" X 3/8")
Q	40-LEAD DUAL INLINE (9/16" X 2 1/16")
R	20-LEAD DUAL INLINE (1/4" X 1 1/16")
S	20-LEAD FLAT PACK (1/4" X 1/2")
V	18-LEAD DUAL INLINE (1/4" X 15/16")
W	22-LEAD DUAL INLINE (3/8" X 1 1/8")
Y	28-LEAD DUAL INLINE (1/2" X 1 1/2")



LANSDALE

SEMICONDUCTOR, INC.

2929 S. 48th St., Ste. 2
 Tempe, AZ 85282
 Tel: (602)438-0123
 Fax: (602)438-0138

Lansdale manufactures older technology integrated circuits and has complete foundry facilities. Following is a summary of the current product line, showing the original manufacturer and product type.

ORIGINAL MANUFACTURER	PRODUCT	PART NUMBER
AMD	Bipolar Digital	2501, 2506, 2905, 2906, 2915
HARRIS	Bipolar PROM Quad Power Strobe Monolithic Diode Bipolar PROM	0512 6600 0168, 0186, 0410, 0104, 0198 7600 Series
INTEL	Microprocessor Peripherals Octal	8080A 8200 Series 828X Series
MOTOROLA	SUHL/TTL HTL RTL DTL Linear SUHL/TTL II TTL III TTL SUHL/TTL TTL TTL III Super Schottky TTL TTL TTL CMOS	400/500 Series 660T Series 800/900 Series 830/930 Series 1500 Series/1710 2000/2100 Series 3000/3100 Series 4000/4300 Series 5000/5100 Series 5400/7400 Series 54H00/74H00 Series 54SS00/74SS00 Series 7200/8200 Series 8300/9300 Series 14000 Series
NATIONAL/FAIRCHILD	PMOS PMOS	3300 Series 3262, 2466, 3708, 3844, 3845
RAYTHEON	DTL	200 Series
SIGNETICS	DTL UTiLOGIC II DTL TTL Schottky TTL Low Power Schottky TTL TTL III TTL - Interface TTL Schotty TTL TTL TTL - Interface LSI ECL	100, 400, 700 Series 300 Series 600 Series 5400/7400 Series 54S00/74S00 Series 54LS00/74LS00 Series 54H00/74H00 Series 8T00 Series 8200 Series 82S00 Series 8800 Series 8H00 Series 8X00 Series 10100 Series

Lansdale

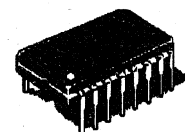
- **JAN Class B Certified**
- **883 1.2.1 Compliant Products Available**
- **Complete Foundry Service**

- Mask Provided

- Custom, Semi-custom

- **Reverse Engineering Available**

- **Dedicated to TQC**



COMPANY ACQUISITIONS, MERGERS & CHANGES

Former Name

Fairchild Semiconductor
Ferranti Interdesign
Gazelle Semiconductor
GE, RCA and Intersil
General Instrument Microelectronics Division
Gould AMI
Harris Microwave Semiconductor
Honeywell Semiconductors
Hybrid Systems Corporation
Inova
Integrated CMOS Systems
Intersil
Lambda Semiconductor
Monolithic Memories, Inc. (MMI)
Mostek Semiconductors
Plus Logic
Precision Monolithics Inc. (PMI)
RCA
RIFA
Scorpion
Silicon General
Sprague Semiconductor
TRW LSI Products
ZAXTEK

New Name

*Now part of National Semiconductor
Custom Arrays Corporation
Triquint Semiconductor (merged)
ICs available from Harris Corporation
Microchip Technology
American Microsystems Inc.
Samsung Microwave Semiconductor
Signal Processing Technologies
Sipex Corporation (merged)
No longer in business
Vertex Semiconductor
See GE
ICs available from Semtech Corporation
Now part of Advanced Micro Devices
Now part of Thomson-CSF
Now part of Xilinx
Now part of Analog Devices
See GE
Ericsson Components
MSI/Scorpion
Linfinity Microsystems
Allegro Microsystems
Raytheon-LaJolla
Zax Corp.*

Extra-custom™ VS Other-custom

Extra-custom is our Analog and Digital Full-Custom Service providing **EXTRA** benefits not available with any **OTHER** custom service.

Extra Benefit #1

You get a complete turnkey solution for your custom IC needs. Your engineers are not tied up doing IC and test program design. We do all the work using State-of-the-Art CAE/CAD for circuit design, schematic capture, simulation, layout and verification of the custom IC and advanced ATE to 100% test each IC.

Extra Benefit #2

Your system integration is maximized because we take the trouble to completely understand your system. Using our system and circuit design expertise, we innovate solutions to include all the ANALOG and DIGITAL functions which can be integrated. (We can help with your system design too.)

Extra Benefit #3

Your circuit design and layout are optimized to reduce function area, interconnect and pin count. This minimizes unit price and maximizes performance and reliability.

Extra Benefit #4

You are offered the LSI process which is best suited for your application. We can do this because we purchase wafer fabrication from foundries with a broad range of process capabilities.

Extra Benefit #5

Your production is multi-sourced at every step of the manufacturing process. Masks, wafer fabrication and assembly are each procured from several reliable sources, ensuring on-time production deliveries.

Extra Benefit #6

You have the ultimate in proprietary protection for your product design. Your competition sees what your product does, but with a proprietary Extra-custom IC working for you, they won't be able to easily decipher technique, or compete with your manufacturing cost.

Extra Benefit #7

You receive quality service in every aspect of the custom circuit's development and production. We provide the support required to guarantee your product's success.

Extra Benefit #8

You have our experience working for you. We have been satisfying demanding, high volume custom circuit requirements since 1969.

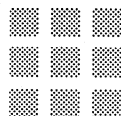
LSI/CSI

A Special version of our Extra-custom service

When you need a special IC and don't need proprietary rights, our Special-custom service gives you what you need. You get the benefits of our Extra-custom service, except for exclusivity, and save on development and production costs. *Call for details.*

Talk to us!
We want to be your IC supplier.

LSI/CSI



LSI COMPUTER SYSTEMS, INC

1235 Walt Whitman Road, Melville, NY 11747-3086

Telephone (516) 271-0400

FAX (516) 271-0405

PROGRAMMABLE DIGITAL DELAY TIMER

LS7210 (14 Pin DIP)

Programmable Digital Delay Timer

- Generates delays from milliseconds to "infinity"
- Delays programmed by 5 Binary Weighted inputs and input frequency
- External clock or external RC at oscillator port sources input frequency
- Four selectable Operating Modes:
DUAL DELAY DELAYED OPERATE
ONE-SHOT DELAYED RELEASE
- 4.75V to 15V operation

DIVIDERS

RED SERIES (8 Pin DIP)

50Hz/60Hz CMOS Time Base Generators

- Frequency division of 50 Hz/60 Hz sine waves
- 50 Hz/60 Hz DIVISION SELECT input
- RESET and ENABLE input controls
- CLOCK input shaping network can interface directly with 50Hz/60Hz AC Line through an external current limiting resistor
- 4.5V to 15V operation
- Available Dividers:
5/6, 50/60, 100/120, 300/360, 500/600, 3000/3600

RDD 104 (8 Pin DIP)

Selectable Four Decade CMOS Divider

- Divides by 10, 100, 1000 or 10,000
- DIVISION SELECT determined by state of two inputs
- RESET input
- External Clock or external Crystal across active oscillator network sources input frequency
- 4.5V to 15V operation

COUNTERS

LS7030 (40 Pin DIP)

Eight Decade Up Counter

- DC to 10 MHz Count Frequency
- Multiplexed BCD and 7 Segment data outputs
- Leading Zero Blanking output
- Decimal Point and Overflow control inputs
- On-chip Scan Oscillator
- 4.75V to 15V operation

LS7031 (40 Pin DIP)

Six Decade Up Counter with Eight Decade Latch

- DC to 10 MHz Count Frequency
- Multiplexed BCD data outputs
- Access to the two LSD latches allows attachment of external prescalers for counting to 1 GHz
- Leading Zero Blanking output
- Decimal Point and Overflow control inputs
- On-chip Scan Oscillator
- 4.75V to 15V operation

COUNTERS (cont'd)

LS7040 (40 Pin DIP)

Dual Three Decade Up/Down Counter

- DC to 350 KHz Count Frequency
- Fully Synchronous counting
- Cascadable
- Parallel BCD outputs
- Separate Reset and Enable control inputs for each three decade counter
- 4.75V to 15V operation

LS7055-LS7056 (40 Pin DIP)

Six Decade Pre-Determining Up/Down Counter

- DC to 250 KHz Count Frequency
- Fully Synchronous counting
- Multiplexed BCD and 7 Segment data outputs
- Preset, Presignal and Mainsignal Storage Registers
- Three Comparators with Output Flags
- Thumbwheel interface for loading registers
- On-chip Scan Oscillator
- 4.75V to 15V operation

LS7060/LS7062 (18 Pin DIP)

32-Bit/Dual 16-Bit Binary Up Counter

- DC to 15 MHz Count Frequency
- Byte multiplexed Three-State data outputs
- Unique Cascade Feature allows data bytes from many counters to be sequentially multiplexed to the output bus in a Multiple Counter System
- 32-bit latch
- 4.75V to 5.25V operation

LS7061/LS7063 (24 Pin DIP)

32-Bit/Dual 16-Bit Binary Up Counter

- Same features as LS7060/LS7062 except there is a 40-bit latch instead of 32-bit latch
- Ability to latch external eight bits allows attachment of external prescaler for counting to 3.84 GHz

LS7166 (20 Pin DIP)

24-Bit Multi-Mode Counter

- DC to 20 MHz Count Frequency
- 8-bit I/O bus for Microprocessor communication and control
- Programmable modes are: Up/Down, Binary, BCD, 24 Hour Clock, Divide-by-N, Single Cycle, and X1, X2 and X4 Quadrature
- 24-bit comparator for preset count comparison
- TTL and CMOS compatible
- 4.5V to 5.5V operation

LSI-CSI

QUADRATURE PULSE DECODERS

LS7082 (14 Pin DIP)

Quadrature Clock Converter

- Interface for Optical or Magnetic Encoder signals to standard UP/DOWN Counters
- On-chip filtering of Quadrature Clocks
- X1, X2 and X4 mode selection
- Up to 16 MHz Output Clock Frequency
- Adjustable output clock pulse width
- UP/DOWN count control output
- INDEX input and output
- TTL and CMOS compatible

LS7083/LS7084 (8 Pin DIP)

Quadrature Clock Converters

- Same features as LS7082 except no X2 mode and no INDEX input and output
- LS7083 Outputs: UP CLOCK and DOWN CLOCK
- LS7084 Outputs: CLOCK and UP/DOWN count control

LIGHTING CONTROLS

LS7231-LS7234 (8 Pin DIP)

Touch Control Continuous Dimmer Light Switch

- Touch or mechanical switch SENSE input control
- Momentary SENSE input activation causes ON/OFF switching
- Prolonged SENSE input activation causes variable dimming operation
- Brightness Memory and Dimming Direction Reverse features depending on Part Number
- DOZE input for external control of DIM-TO-OFF time
- SLAVE input for control by Remote Extension

LS7237 (8 Pin DIP)

Touch Control Step Dimmer Light Switch

- Touch or mechanical switch SENSE input control
- MODE input selects 1, 3, or 4 level Brightness Sequence
- SLAVE input for control by Remote Extension

LS7331 (14 Pin DIP)

Touch Control Continuous Dimmer Light Switch with Interface Signals for Microprocessor Control

- Same features as the LS7231
- Light Status outputs allow for Microprocessor control

LS7338 (8 Pin DIP)

Touch Control Light Switch with Timed-ON and Delayed-OFF Modes

- Touch or mechanical switch SENSE input control
- Operating Sequence: TIMED-ON → DELAYED-OFF → OFF
- Manual or Automatic Sequence Advance
- External RC controls Timed-On period
- Transition from Timed-On mode to Delayed-Off mode indicated by reduction of light brightness
- Light DIMS-TO-OFF during the programmed Delayed-Off period

LS7339-LS7340 (8 Pin DIP)

Touch Control ON-OFF Light Switch with Retriggerable Timed-ON Mode.

- Touch or mechanical switch ON and OFF input controls
- External RC controls Timed-On period
- On period timer retriggers with each activation of ON input

LIGHTING CONTROLS (cont'd)

LS7314-LS7315 (16 Pin DIP)

Touch Control Multi-Level Light Switch

- Touch or mechanical switch input controls
- Up to ten selectable BRIGHTNESS LEVEL inputs
- A selected BRIGHTNESS LEVEL input becomes an output which can drive an LED to indicate the selected Brightness

LS7534-LS7535 (8 Pin DIP)

Touch Control Dimmer Light Switch with Up and Down Controls

- Touch or mechanical switch UP and DOWN input controls
- Momentary UP/DOWN input activation cause ramping to MEMORY ON/OFF states
- Prolonged UP/DOWN input activation cause variable dimming operation towards MAX/MIN Brightness Levels
- DOZE input for external control of DIM-TO-OFF time

BRUSHLESS DC MOTOR CONTROLS

LS7260-LS7262 (20 Pin DIP)

Brushless DC Motor Commutator/Controller

- Open or closed loop control of 3 and 4 phase motors
- HALL SENSOR inputs control output commutation sequence for electrical sensor spacings of 60°, 120°, 240°, or 300°
- Speed controlled by Pulse Width Modulation of output drivers
- Control inputs include ANALOG SPEED, FORWARD/REVERSE, OUTPUT ENABLE and POSITIVE STATIC BRAKING
- OVERCURRENT SENSING disables output drivers
- Direct drive of FETs (LS7260) and Bipolar Transistors (LS7261/LS7262)
- Controls Brush DC Motors in "H-Bridge" configuration
- 5V to 28V operation

LS7362 (20 Pin DIP)

Brushless DC Motor Commutator/Controller

- Same features as LS7262 except Pulse Width Modulation occurs only in low-side drivers allowing use with High-Voltage motors

LS7263 (18 Pin DIP)

Three Phase Brushless DC Motor Speed Controller

- Regulates speed to +/- 0.1% accuracy for 3600 RPM applications
- 3.58 MHz crystal time base
- Other speeds accommodated with modified ROM and crystal frequency
- Rapid acceleration to speed
- Positive Static Braking
- Overcurrent Sensing
- Low Speed Detection output
- Direct drive of Bipolar Transistors
- 10V to 28V operation

LS7264 (16 Pin DIP)

Four Phase Brushless DC Motor Speed Controller

- Same features as LS7263 except as shown below
- 2.4576 MHz crystal time base
- Forward/Reverse control input

AC MOTOR CONTROLS

LS7237 (8 Pin DIP)

AC Motor Sequential Step Speed Controller

- Controls speed of small AC motors
- Touch or mechanical switch input control
- MODE input selects 1, 3, or 4 step speed sequence

LS7310-LS7313 (18 Pin DIP)

Multi-Level AC Motor Speed Controllers

- Touch or mechanical switch input controls
- Up to ten selectable SPEED LEVEL inputs
- A selected SPEED LEVEL input becomes an output which can drive an LED to indicate the selected speed
- ON, OFF and PULSE control inputs

LS7314-LS7315 (16 Pin DIP)

Multi-Level AC Motor Speed Controller

- Same features as LS7310-LS7313 except there are no ON and PULSE control inputs

LS7339-LS7340 (8 Pin DIP)

On-Off AC Motor Control with Retriggerable Timed-On Mode

- Touch or mechanical switch input controls
- External RC controls Timed-On period
- On period timer retriggers with each application of ON input
- Applications include Auto Shut-Off appliance timers

DYNAMIC SCATTERING LIQUID CRYSTAL DISPLAY DRIVERS

LS7100 (16 Pin DIP)

BCD TO 7 Segment Latch/Decoder/Driver

- Drives Dynamic Scattering Liquid Crystal Displays
- Up to 50V drive per segment output
- 5V to 60V operation
- BLANKING and LOAD input controls
- Inputs are TTL and CMOS compatible

LS7110 (16 Pin DIP)

Binary Addressable Latched Eight Channel Demultiplexer/Driver

- Drives Dynamic Scattering Liquid Crystal Displays
- Up to 50V drive per output
- 5V to 60V operation
- ADDRESS and LOAD input controls
- Inputs are TTL and CMOS compatible

MASK PROGRAMMABLE MELODY GENERATORS

LS3404-XX (8 Pin DIP)

High Quality Melody Circuits

- Produces chime quality musical sound
- 255 note capacity Mask-Programmable ROM
- Excellent pitch resolution
- Exponential decay imposed on each note
- Direct drive of Piezo Transducer
- Single transistor interface for standard speaker
- 4.5V to 15V operation
- Thirty-one programmed melodies available

PROGRAMMABLE DIGITAL LOCKS

LS7220 (14 Pin DIP)

Automotive Ignition Digital Lock Circuit

- 5,040 four digit Combinations (for a 10 number keypad)
- Combinations are hard-wire programmed
- SENSE input enables chip operation
- Save Memory feature saves Unlock Condition for Valet Parking
- SAVE input sets Save Memory and LOCK input resets SAVE Memory
- Save Memory and Lock Status outputs
- Convenience Delay determined by external capacitor
- Static or Momentary Lock Control output

LS7222-LS7223 (20 Pin DIP)

Keypad Programmable Digital Lock Circuit

- 38,416 four digit Combinations (for a 4 x 4 keypad matrix)
- 3 different user programmable codes
- LS7222 Programmable Codes: Arm, Disarm, Duress
- LS7223 Programmable Codes: Lock 1, Lock 2, Duress
- Lock and Program Status Outputs
- Static and Momentary Lock Control outputs
- Alarm and Tamper Detection outputs

LS7225-LS7226 (14 Pin DIP)

Machine or Area Access Digital Lock Circuit

- 5,040 four digit Combinations (for a 10 number keypad)
- Combinations are hard-wire programmed
- SEQUENCE ENABLE input enables Combination Entry
- Combination Entry time controlled by external capacitor
- Static and Momentary Lock Control outputs
- Tamper Detection output
- Lock Status output

LS7228-LS7229 (16 Pin DIP)

Serial Address Decoder/ 2 Pushbutton Digital Lock Circuit

- 512 nine bit Combinations
- Combinations are hard-wire programmed
- LS7228: Dual pulse train input combination entry
- LS7229: Two pushbutton input combination entry
- Static or Momentary Lock Control output
- Code bit-entry time controlled by external capacitor

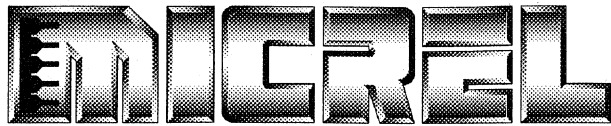
TELEPHONE LINE CONTROLS

LS75XX (16 Pin DIP)

Tone Activated Telephone Line Switch Controllers

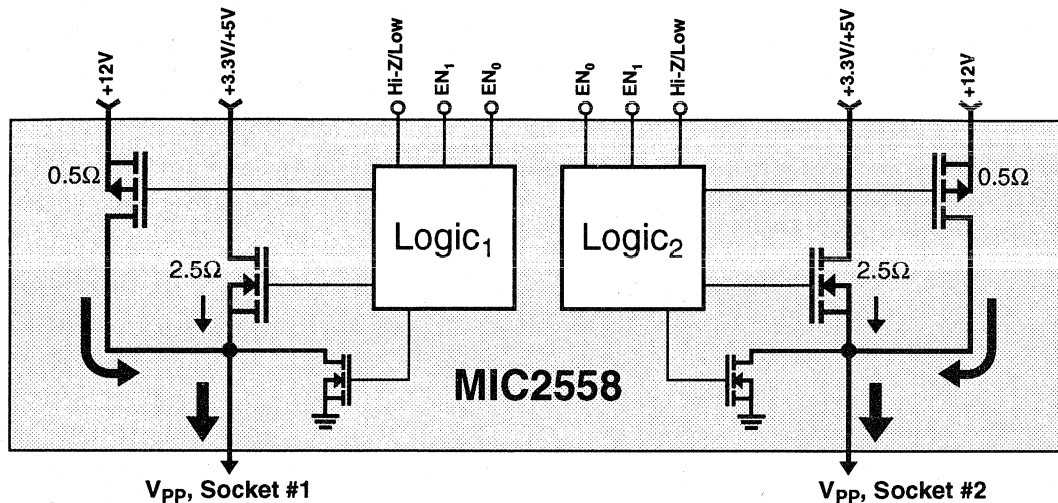
- Circuit activated by Tone with specific Frequency and Time Duration
- Frequency and Time Duration values are mask programmable
- Small Signal (as low as -30 DBM) and Digital Level Tone signals accommodated.
- On-chip active oscillator network and 32,768 Hz Crystal generates timing.
- Low power consumption
- 2.5V to 6V operation.
- Ten programmed frequencies available.
- Applications include Remote Telephone Line Testing, Remote Meter Reading, and Security System Auto-Dialers

LSI-CSI



PCMCIA Power Control

Micrel is the world leader in PCMCIA power switching.

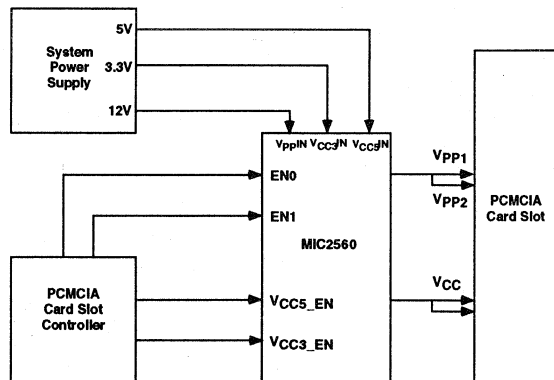
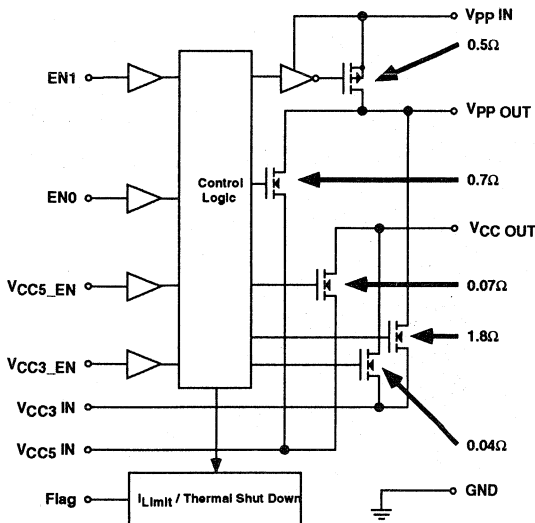


The Industry-Standard MIC2557/2558 V_{pp} Switching Matrix

Micrel

The NEW, High Performance, Fully Protected MIC2560 V_{CC}/V_{PP} Switching Matrix

- Provides ALL PCMCIA power control functions
- Up to 1A of V_{CC} output (5V and/or 3.3V)
- Up to 200mA of V_{PP} output (12V, 5V, or 3.3V)
- Full protected
 - Over-current protection
 - Over-temperature protection
- Easy to use—No external components required
- Error Flag for fault detection
- Controlled switching waveform

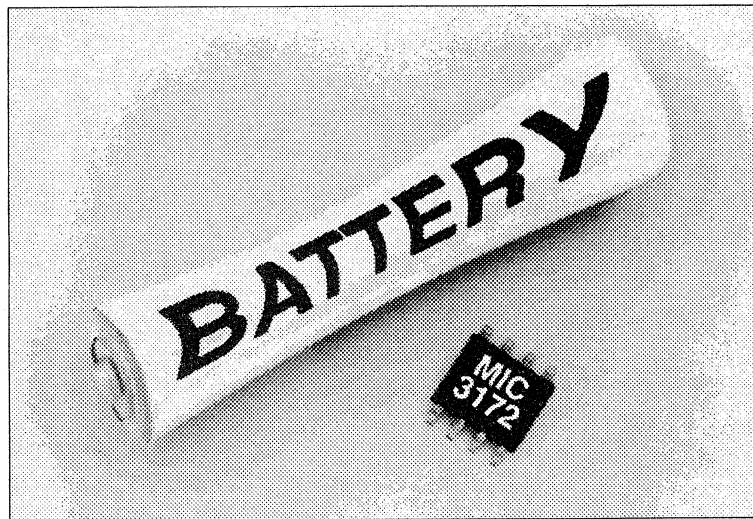


MIC2560 Typical Application. The MIC2560 provides complete power switching for your PCMCIA slot.



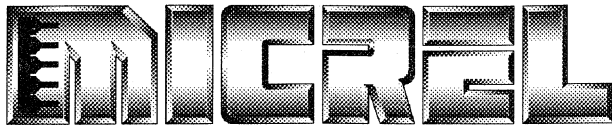
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Device	Input Voltage Range	Preferred Topology	Maximum Input Current	Control Mode	Maximum Frequency	Features				Package
						Front Edge Blanking	Shut-down	Over Current Shutdown / Current Limit	Thermal Protection	
MIC2172 3.3, 5.0, 12, 15	3V to 40V	Boost	1.25A	Current	100kHz			•	•	SOIC P-DIP CerDIP
MIC3172 3.3, 5.0, 12, 15	3V to 40V	Boost	1.25A	Current	100kHz		•	•	•	
LM2574 3.3, 5.0, 12, 15	4V to 40V	Buck	0.5A	Voltage	52kHz		•	•	•	SOIC TO-263 P-DIP
LM1575/ 2575 3.3, 5.0, 12, 15	4V to 40V	Buck	1A	Voltage	52kHz		•	•	•	TO-3 TO-220 TO-263 P-DIP SOIC
LM1576/ 2576 3.3, 5.0, 12, 15	4V to 40V	Buck	3A	Voltage	52kHz		•	•	•	TO-3 TO-220 TO-263 P-DIP SOIC
MIC18xC42/ 43/44/45 MIC38xC42/ 43/44/45	8V to 18V	Buck or Boost	1A	Current	500kHz			•		P-DIP CerDIP SOIC
MIC3830/ 31/32/33	8V to 21V	Current- Fed	—	Current or Voltage	500kHz	•	•	•		P-DIP CerDIP SOIC
MIC631/2/3 3.3, 5.0, 12, 15	2V to 16.5V	Boost	450mA	Hysteretic	50kHz				•	P-DIP CerDIP SOIC
MIC641/2/3 3.3, 5.0, 12, 15	2V to 16.5V	Boost	Limited by external MOSFET	Hysteretic	50kHz				•	P-DIP CerDIP SOIC



Stretch your system's battery life with Micrel regulators!

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Low Drop-out Linear Regulators

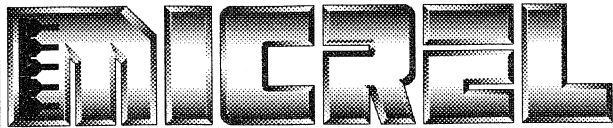
Device	V _{OUT} 3.0 3.3 4.8 5.0 12 15 Adjust.	Accuracy	I _{OUT} (mA)	Dropout Voltage @ I (Max. @ 25°C)	Features						Package
					I _{LM}	Therm Protect	Error Flag	Logic Control	Reverse Supply	Load Dump	
MIC5200	• • • •	1.0%	100	450mV	•	•	•	•		SO-8, SOT-223	
MIC5202 dual	• • • •	1.0%	100	450mV	•	•	•	•		SO-8	
LP2950	•	0.5% 1.0%	100	450mV @ 100mA	•	•				TO-92	
LP2951	1.2 to 29	0.5% 1.0%			•	•	•	•		P DIP, Cer DIP, SO-8	
MIC2950	•	0.5% 1.0%	150	300mV @ 100mA	•	•		•	•	TO-92	
MIC2951	1.2 to 29	0.5% 1.0%			•	•	•	•	•	P DIP, CerDIP, SO-8	
MIC5201	• • • •	1.0%	200	450mV	•	•	•	•		SO-8, SOT-223	
MIC2954	• 1.2 to 29	0.5% 1.0%	250	500mV @ 250mA	•	•	•	•	•	TO-92, TO-220 SOT-223, SO-8	
MIC2920A	• • • •	1.0%	400	450mV	•	•		•	•	TO-220, SOT-223	
MIC29201	• • • •			@ 250mA	•	•	•	•	•	TO-220-5, TO-263-5	
MIC29202	1.2 to 26			370mV typ.	•	•		•	•	TO-220-5, TO-263-5	
MIC29203	1.2 to 26				•	•	•	•	•	TO-220-5, TO-263-5	
MIC29204	1.2 to 26				•	•	•	•	•	P DIP, CerDIP, SO-8	
MIC2937A	• • • • •	1.0%	750	450mV @ 500mA	•	•		•	•	TO-220, TO-263	
MIC29371	• • • • •			@ 500mA	•	•	•	•	•	TO-220-5, TO-263-5	
MIC29372	1.2 to 26			325mV typ	•	•	•	•	•	TO-220-5, TO-263-5	
MIC29373	1.2 to 26				•	•	•	•	•	TO-220-5, TO-263-5	
MIC2940A	• • • •	1.0%	1250	450mV	•	•		•	•	TO-3, TO-220, TO-263	
MIC2941A	1.2 to 26				•	•	•	•	•	TO-3, TO-220-5, TO-263-5	
MIC29150	• • • •	1%	1.5A	450mV	•	•		•	•	TO-220, TO-263, TO-3	
MIC29151	• • • •	1%	1.5A	450mV	•	•	•	•	•	TO-220, TO-263, TO-3	
MIC29152	•	1%	1.5A	450mV	•	•	•	•	•	TO-220, TO-263	
MIC29153	•	1%	1.5A	450mV	•	•	•	•	•	TO-220, TO-263	
MIC29300	• • • •	1%	3A	450mV	•	•		•	•	TO-220, TO-263, TO-3	
MIC29301	• • • •	1%	3A	450mV	•	•	•	•	•	TO-220, TO-263, TO-3	
MIC29302	•	1%	3A	450mV	•	•	•	•	•	TO-220, TO-263	
MIC29303	•	1%	3A	450mV	•	•	•	•	•	TO-220, TO-263	
MIC29500	• • • •	1%	5A	450mV	•	•		•	•	TO-220, TO-263, TO-3	
MIC29501	• • • •	1%	5A	450mV	•	•	•	•	•	TO-220, TO-263, TO-3	
MIC29502	•	1%	5A	450mV	•	•	•	•	•	TO-220, TO-263	
MIC29503	•	1%	5A	450mV	•	•	•	•	•	TO-220, TO-263	
MIC29750	• • • •	1%	7.5A	450mV	•	•		•	•	TO-3	
MIC29751	• • • •	1%	7.5A	450mV	•	•	•	•	•	TO-3	
MIC29752	•	1%	7.5A	450mV	•	•	•	•	•	TO-3	
MIC29753	•	1%	7.5A	450mV	•	•	•	•	•	TO-3	
MIC5156	• • • •	1%	①	①	•	•	•	•		P DIP, CerDIP	
MIC5157	② ② ②	1%	①	①	•	•	•	•			
MIC5158	③ ③	1%	①	①	•	•	•	•			

① Max. I_{OUT} and dropout determined by choice of external MOSFET

② Selectable: 3.3V/5V/12V

③ Selectable: 5V/adjustable

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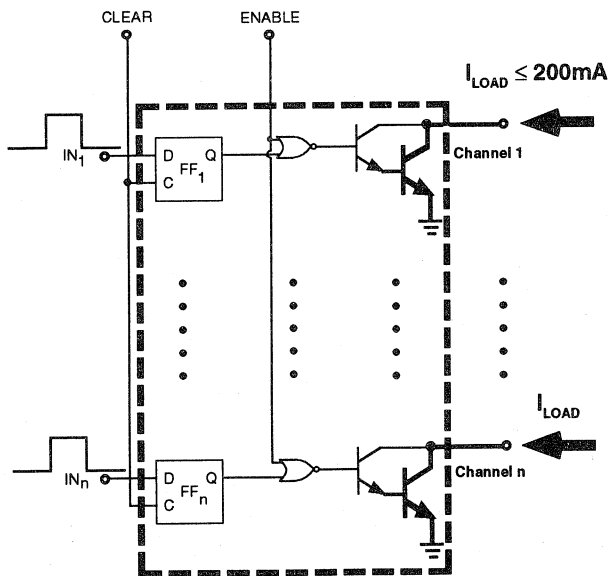
Latched Drivers

All Micrel Latched Drivers are available in die form. Special package options available on most latched drivers: please contact factory for details.

Latched Driver	Maximum Voltage	I _{OUT}	Transient Protection	Temp Range*	Package
MIC4807 Protected Addressable Low Side Driver	80V	200mA	Diode	A,B	CerDIP, PDIP
MIC5800 4 Bit Parallel Input	50V	500mA	Diode	A,B	CerDIP, PDIP, SOIC
MIC5801 8-Bit Parallel Input	50V	500mA	Diode	A,B,C	CerDIP, PDIP, SIP
MIC58P01 8-Bit Parallel, Protected	80V	500mA	Diode	A,B	CerDIP, PDIP
MIC58P50 8-Bit Parallel, Protected	80V	500mA	Diode	A,B	CerDIP, PDIP
MIC5821 8-Bit Serial Input	50V	500mA	—	A,B,C	CerDIP, PDIP
MIC5822 8-Bit Serial Input	80V	500mA	—	A,B	CerDIP, PDIP
MIC5841 8-Bit Serial Input	50V	500mA	Diode	A,B	CerDIP, PDIP, SOIC, PLCC
MIC5842 8-Bit Serial Input	80V	500mA	Diode	A,B	CerDIP, PDIP, SOIC, PLCC
MIC58P42 8-Bit Serial, Protected	80V	500mA	Diode	A,B	CerDIP, PDIP, SOIC, PLCC
MIC58P60 8-Bit Serial, Protected	80V	500mA	Diode	A,B	CerDIP, PDIP, SOIC, PLCC

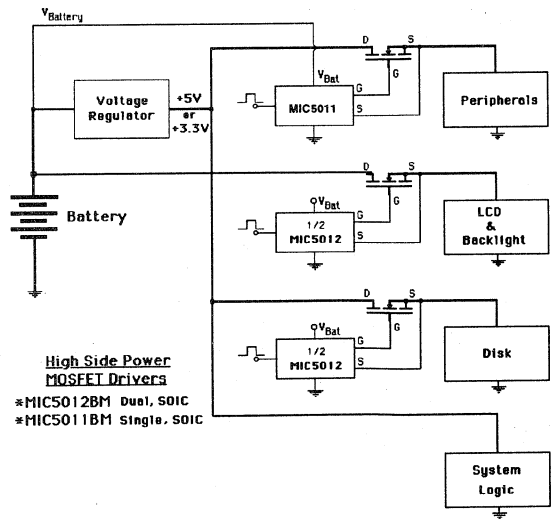
* A = -55°C to +125°C, B = -40°C to +85°C, C = 0°C to +70°C.

Latched Power Switching



MIC5800/5801 Parallel Input Latched Drivers
MIC5821/5822, MIC5841/42 Serial Input Latched Drivers
 4 or 8 Channels

Laptop Computer Power Management



Achieve greater battery life in laptop computer applications with high-efficiency power switching using MIC5010-series High-side power MOSFET drivers.

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Micrel Power MOSFET Drivers

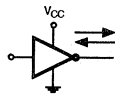
Micrel Features the industry's broadest line of Power MOSFET drivers.

From the blindingly fast MIC4451 family of low side drivers to the full featured MIC5010/20 family of high and low side drivers, Micrel can truly claim "One family drives all FETs"

Why use N-Channel Power MOSFETs?

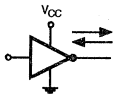
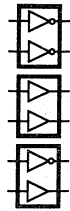
Price! That's why! Compared to P-Channel devices, the N-Channel MOSFET costs far less - one-third to one-half of the PMOS price. What do you get for that 2.5X surcharge? Some say ease of high-side driving. But with the Micrel MIC5010 family, this argument no longer holds true. The low cost MIC5014 provides high performance high-side or low-side switching with low power dissipation and extremely low (CMOS compatible) drive requirements. The MIC5021 provides a current sense function that automatically protects the MOSFET when an overcurrent situation occurs. All this ease-of-design and expanded functionality is inherent with a N-Channel power MOSFET paired with a Micrel MOSFET driver, and at a cost less than just the PMOS pass device.

Low Side
High or Low Side



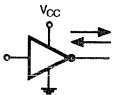
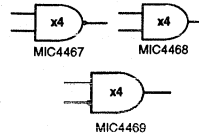
MIC426/1426/4426 and MIC4423 Families

- Two High Current Drivers in a 8-pin Package
- 1.2A to 3A Peak Drive capability (each half)
- Surface mount available



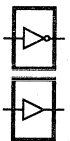
MIC4467/4468/4469

- Quad 1.2A MOSFET drivers
- Latch-up protected
- Three logic choices
- Surface mount available



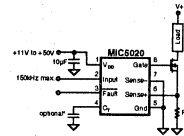
MIC4420/4421 and MIC4451 Families

- Largest MOSFET drive available
- 6A to 12A of Peak Drive capability
- Latch-up protected
- Drives 100,000pF MOSFETs or IGBTs
- Available in a variety of packages, including the 8-pin surface mount



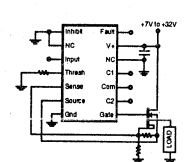
MIC5020

- Low power, fully protected driver
- Programmable overcurrent shutdown
- Internal charge pump
- Surface mount available



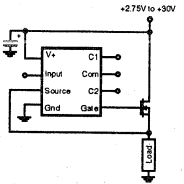
MIC5010

- Full featured predriver
- Optional speed-up capacitors
- Wide supply range
- Internal charge pump
- Over-current sensing with error flag
- Surface mount available



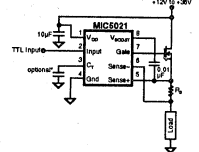
MIC5014/5015/5016/5017

- Internal charge pump
- 2.75V to 30V supply
- Minimum parts count
- "Load dump" protected
- Surface mount available



MIC5021

- Internal charge pump
- High speed high side driver
- Programmable overcurrent shutdown
- Surface mount available



Micrel's Product Line:

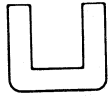
- High-Current Low-Side MOSFET Drivers
- High Side Power MOSFET Drivers
- Low Drop-out Linear Regulators
- High Efficiency Switching Regulators
- PCMCIA Power Control Matrices
- Power Latched Drivers
- Display Drivers
- P-Channel MOSFETs
- Open Drain Power Switches

For your FREE copy of MICREL's full-line Data Book or for the name of your local representative or distributor, please contact:

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San Jose, CA 95131

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Micro Networks, a division of Unित्रode Corporation, is an established world leader in the design, development and manufacturing of high-performance data conversion products for military/aerospace and industrial applications. Our military data conversion products are manufactured in accordance with the requirements of MIL-STD-883, Method 5008 in our MIL-STD-1772 Qualified Facility. This qualification also enables us to participate in DESC's Standardized Military Drawing (SMD) Program. Micro Networks has also been granted

"Registered Firm" status under IS/ISO 9001/EN29001, which complements our existing TQM (Total Quality Management) and SPC (Statistical Process Control) Programs. Additionally, we extend the high-performance and reliability of our military products to fulfill the demanding requirements found in the high-end industrial marketplace. The following selection guides represent our complete data converter and standard precision oscillator product offerings from Micro Networks.

- Analog to Digital Converters**
- Track-Hold Amplifiers**
- Precision Oscillators**
- Digital to Analog Converters**
- Data Acquisition Systems**
- V/F Converters**
- Sampling A/D Converters**
- CMOS Flash A/D Converters**
- Custom Hybrids**

Sampling Analog-to-Digital Converters

Resolution	Model Number	Input Voltage Range		Specified Temperature Range (°C)	Minimum Sampling Rate	Minimum Input Bandwidth	SNR	Harmonics	DIP Pkg.	DESC SMD (5962-)
		Unipolar	Bipolar							
16-Bits	MN6500	0 to +5V 0 to +10V	±5V ±10V	0 to +70 -5 to +125	100kHz	50kHz	88dB	-96dB	24 Pin	(Note 1)
	MN6400	0 to +5V 0 to +10V	±5V ±10V	0 to +70 -55 to +125	50kHz	25kHz	88dB	-98dB	28 Pin	9177001
	MN6450	0 to +5V 0 to +10V	±5V ±10V	0 to +70 -55 to +125	47kHz	23.5kHz	88dB	-98dB	32 Pin	9225301
	MN6290 MN6291	0 to -10V N.A.	±5V ±10V	0 to +70 -55 to +125	20kHz	10kHz	84dB	-88dB	32 Pin	(Note 1)
14-Bits	MN5430	N.A.	±5V	0 to +70 -55 to +125	10MHz	5MHz	TBD	TBD	32 Pin	(Note 1)
	MN6259	N.A.	±5V	0 to +70 -55 to +125	1MHz	500KHz	82dB	-78dB	40 Pin	(Note 1)
12-Bits	MN6249	N.A.	±2.5V ±5V	0 to +70 -55 to +125	2MHz	1MHz	68dB	-72dB	40 Pin	(Note 1)


NOTES: 1. Contact the factory for information regarding DESC SMD's for these device types.

Analog-to-Digital Converters

Resolution	Model Number	Maximum Conversion Time (μ sec) (1)	Internal Clock	Specified Temperature Range ($^{\circ}$ C)	Maximum Linearity Error (%FSR)	Guaranteed No Missing Codes Over Temperature	Power (mW)	DIP Package (Pins)	Hi-Rel Option	DESC SMD (5962-)
16-Bits	MN5295 MN5296	17	Yes	0 to +70 -55 to +125	± 0.003 ± 0.006	Yes (2) Yes (3)	945	32	Yes	8956901
	MN5290 MN5291	40	Yes	0 to +70 -55 to +125	± 0.003 ± 0.006	Yes (2) Yes (3)	810	32	Yes	8956301
	MN5284 Series	50	Yes	0 to +70	± 0.003	Yes (4)	255	32	No	N.A.
12-Bits	ADC84	8	Yes	0 to +70 -25 to +85	± 0.012	Yes	975	32	No	N.A.
	ADC85	8	Yes	0 to +70 -25 to +85	± 0.012	Yes	975	32	No	N.A.
	ADC87	8	Yes	-25 to +85 -55 to +125	± 0.012	Yes	1110	32	Yes	8850802
	MN5210 Series	13	No	0 to +70 -55 to +125	± 0.012	Yes	845	24	Yes	89584 01-07
	ADC80	25	Yes	-25 to +85	± 0.012	Yes	593	32	No	N.A.
	MN5200 Series	50	No	0 to +70 -55 to +125	± 0.012	Yes	845	24	Yes	89583 01-07
	MN5250 Series	175	No	0 to +70 -55 to +125	± 0.012	Yes	56	24	Yes	(Note 5)
8-Bits	MN5825	1	Yes	0 to +70 -55 to +85	± 0.2	Yes	925	24	Yes	(Note 5)
	MN5101 MN5100	0.9 1.5	No	0 to +70 -55 to +125	± 0.2	Yes	1125	24	Yes	(Note 5)
	MN5130 Series	2.5	No	0 to +70 -55 to +125	± 0.2	Yes	680	18	Yes	(Note 5)
	MN5140 Series	2.5	No	0 to +70 -55 to +125	± 0.2	Yes	680	18	Yes	(Note 5)
	MN5150	2.5	No	0 to +70 -55 to +125	± 0.2	Yes	680	24	Yes	(Note 5)
	MN5120	6	No	0 to +70 -55 to +125	± 0.2	Yes	680	18	Yes	(Note 5)

- NOTES: 1. For models with an external clock, the table shows the minimum conversion time that will result in specified accuracy. For units with internal clock, maximum conversion time is listed.
2. No missing codes for 14 bits guaranteed over temperature.
3. No missing codes for 13 bits guaranteed over temperature.
4. No missing codes for 15 bits guaranteed over temperature.
5. Contact factory for information regarding DESC SMD's for these device types.

Micro Networks



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CMOS Flash Converters

Resolution	Model Number	Sampling Rate	SINAD (dB)	Specified Temp. Range (°C)	Maximum Linearity Error (LSB)	Guaranteed No Missing Codes Over Temperature	Power (mW)	DIP Package (Pins)	Hi-Rel Option	DESC SMD (5962-)
8-Bits	MN5902	20MHz	41	0 to +70 -55 to +125	±1	Yes	400	24	Yes	(Note 1)
	MN5908	15MHz	41	0 to +70 -55 to +125	±1	Yes	450	24	Yes	(Note 1)
6-Bits	MN5909	100MHz	34	0 to +70	±1	Yes	200	20	No	N.A.
	MN5906	50MHz	35	0 to +70 -55 to +125	±1	Yes	225	18	Yes	93262
	MN5911	35MHz	TBD	0 to +70	±1	Yes	675	44PLCC	No	N.A.

NOTES: 1. Contact factory for information regarding DESC SMD's for those device types.

Data Acquisition Systems

Resolution	Model	Input Channels	Acquisition Time to ±½LSB (µsec)	Conversion Time (µsec)	Throughput (Channels/sec)	Maximum Linearity Error (%FSR)	Power (mW)	DIP Package	Specified Temp Range (°C)	Hi-Rel Option	DESC SMD (5962-)
8-Bits	MN7120	8	5	6	90,000	±0.2	680	32 Pin	0 to +70 -55 to +125	Yes	(Note 1)
12-Bits	MN7150-8 MN7150-16	8 16	9	9	55,000	±0.012	1785	62 Pin	0 to +70 -25 to +85 -55 to +125	Yes	8851404
	MN7145 MN7146 MN7147	8	8	20	35,000	±0.012 ±0.024	710	28 Pin	0 to +70 -55 to +125	Yes	(Note 1)
	MN7140	8 (Expandable)	8	40	20,000	±0.012	1250	40 Pin	0 to +70 -25 to +85 -55 to +125	Yes	9079701
	MN7130	16 (Expandable)	6.5	N.A.	N.A.	±0.002 (Typ)	900	32 Pin	0 to +70 -55 to +125	Yes	9057101
16-Bits	MN7450 MN7451	8	15 (Note 2)	16 (Note 2)	47,700 (Note 2)	±0.0015	658	40 Pin	0 to +70 -55 to +125	Yes	(Note 1)

- NOTES: 1. Contact the factory for information regarding DESC SMD's for these device types.
 2. Due to the design of the MN7450 Series DAS, the channel switching and PGA settling time can be pipelined with A/D conversion allowing for total throughput in the pipelined mode of 47.7kHz.



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Digital-to-Analog Converters

Micro Networks

Resolution	Model Number	Maximum Settling Time (μ sec) (1)	Internal Ref. and Output Op Amp	Specified Temperature Range ($^{\circ}$ C)	Maximum Linearity Error (%FSR)	Monotonic Over Temperature	Power (mW)	DIP Package	Hi-Rel Option	DESC SMD (5962-)
16-Bits	DAC71-V DAC71-I	10 1	Yes (2)	0 to +70	± 0.003	(Note 3)	525	24 Pin	No	N.A.
	MN3290-V MN3290-I Series	8 1	Yes (2)	0 to +70 -55 to +125	± 0.003	(Note 3)	525 435	24 Pin	Yes	8953103 8953104 8953102
12-Bits	DAC80-V DAC80-I	4 0.3 (Typ)	Yes (2)	0 to +70	± 0.012	Yes	345	24 Pin	No	N.A.
	DAC85-V DAC85-I	4 0.3 (Typ)	Yes (2)	0 to +70 -25 to +85	± 0.012	Yes	345	24 Pin	No	N.A.
	DAC87	4	Yes	-25 to +85 -55 to +125	± 0.012	Yes	345	24 Pin	Yes	8300201
	DACHK	4	Yes	0 to +70 -55 to +125	± 0.012	Yes	975	24 Pin	Yes	(Note 4)
	MN3850	4	Yes	0 to +70 -55 to +125	± 0.012	Yes	345	24 Pin	Yes	(Note 4)
	DAC88	7	Yes	0 to +70 -55 to +125	± 0.012	Yes	495	24 Pin	Yes	(Note 4)
	MN3860	7	Yes	0 to +70 -55 to +125	± 0.012	Yes	495	24 Pin	Yes	9057001
	MN3348	8	Yes	0 to +70 -55 to +125	± 0.012	Yes	195	24 Pin	Yes	(Note 4)
	MN3349	10	Yes	0 to +70 -55 to +125	± 0.012	Yes	195	24 Pin	Yes	(Note 4)
	MN370 MN371	60 35	Yes	0 to +70 -55 to +125	± 0.012	Yes	90	18 Pin	Yes	8981401 8981402
10-Bits	MN3040	10	Yes	0 to +70 -55 to +125	± 0.05	Yes	450	18 Pin	Yes	(Note 4)
	MN3003 Series	30	Yes	0 to +70 -55 to +125	± 0.05	Yes	450	16 Pin	Yes	(Note 4)
8-Bits	MN3008 MN3009	1	Yes	0 to +70 -55 to +125	± 0.2	Yes	495	16 Pin	Yes	8768801 8768802
	MN3020	3	Yes	0 to +70 -55 to +125	± 0.2	Yes	505	18 Pin	Yes	8971801
	MN3014	2.5	Yes	0 to +70 -55 to +125	± 0.2	Yes	420	16 Pin	Yes	(Note 4)
	MN3000 Series	30	Yes	0 to +70 -55 to +125	± 0.2	Yes	510	14 Pin	Yes	(Note 4)

- NOTES: 1. Specified for a full scale output step settling to $\pm 1/2$ LSB.
 2. Current-output models do not have internal output op amps.
 3. Monotonicity for 14 bits guaranteed over temperature.
 4. Contact the factory for information regarding DESC SMD's for these device types.

Low Noise Pre-Amplifiers

Model Number	Voltage Noise	Current Noise	Fixed Gain	Specified Temp Range ($^{\circ}$ C)	Bandwidth	Power (mW)	Package	Hi-Rel Option	DESC SMD (5962-)
MN2310 Series	1.5nV/ $\sqrt{\text{Hz}}$	4fA/ $\sqrt{\text{Hz}}$	30dB 40dB 50dB	0 to +70 -55 to +125	1MHz	240mW	44CLCC	Yes	(Note 1)
MN2320 Series	0.8nV/ $\sqrt{\text{Hz}}$	4fA/ $\sqrt{\text{Hz}}$	40dB 50dB 60dB	0 to +70 -55 to +125	1MHz	240mW	44CLCC	Yes	(Note 1)

- NOTES: 1. Contact the factory for information regarding DESC SMD's for these device types.



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Instrumentation Amplifier MN2200

Gain Ranges	Max Gain Error (%)	Offset Voltage (RTI, μ V)	Offset Drift (μ V/ $^{\circ}$ C)	Small Signal BW (kHz)	Power (mW)	Specified Temp Range ($^{\circ}$ C)	DIP Pkg.	Mil-Std-883 Hi-Rel Option	DESC SMD (5962-)
1, 10, 100, 1000 Internal, 1 to 1000 with External Resistor	± 0.01 to ± 0.1 Depending on Range	± 100 (G=100)	± 0.6 (G=100)	750 (G=1)	240	-25 to +85 -55 to +125	18 Pin	Yes	(Note 2)

Programmable-Gain Amplifier MN2020

Gain Ranges	Max Gain Error (%)	Offset Voltage (RTI, μ V)	Offset Drift (μ V/ $^{\circ}$ C)	Small Signal BW (kHz)	Power (mW)	Specified Temp Range ($^{\circ}$ C)	DIP Pkg.	Mil-Std-883 Hi-Rel Option	DESC SMD (5962-)
1, 2, 4, 8, 16, 32, 64, 128 Digitally Programmed	± 0.005 to ± 0.2 Depending on Range	± 100	± 5	5000 (G=1)	275	0 to +70 -55 to +125	18 Pin	Yes	(Note 2)

Track-Hold Amplifiers

Application	Maximum Linearity Error (%)	Acquisition Time	Gain and Voltage Range	Model	Specified Temp Range ($^{\circ}$ C)	Aperture Jitter (psec)	Droop Rate (μ V/ μ s)	Power (mW)	DIP Package	Hi-Rel Option	DESC SMD (5962-)
7-9 Bits	± 0.1	35nsec 5V Step to $\pm 0.1\%$	+1, ± 2.5 V	MN379	0 to +70 -55 to +125	1	± 500	1575	24 Pin	Yes	(Note 2)
12-Bits	± 0.01	40nsec 2V Step to $\pm 0.1\%$	+1, ± 1 V	MN4000	0 to +70 -55 to +125	50	± 200	750	24 Pin	Yes	9085601
	± 0.01	160nsec 10V Step to $\pm 0.01\%$	-1, ± 10 V	MN376	0 to +70 -55 to +125	40	± 0.5	730	24 Pin	Yes	9073001
	± 0.01	250nsec 10V Step to $\pm 0.01\%$	-1, ± 10 V	MN0300A	0 to +70 -55 to +125	400	± 5	730	24 Pin	Yes	(Note 2)
	± 0.01	1 μ sec 10V Step to $\pm 0.01\%$	-1, ± 10 V	MN346	0 to +70 -55 to +125	400	± 0.1	640	14 Pin	Yes	8994002
	± 0.01	1 μ sec 10V Step to $\pm 0.05\%$	-1, ± 10 V	MN347	0 to +70 -55 to +125	400	± 0.5	640	14 Pin	Yes	(Note 2)
	± 0.01	65 μ sec 20V Step to $\pm 0.01\%$	-1, ± 10 V	MN7130	0 to +70 -55 to +125	60 (Note 1)	± 4	900	32 Pin	Yes	9057101
	± 0.01	75 μ sec 10V Step to $\pm 0.01\%$	-1, ± 10 V	MN343	0 to +70 -55 to +125	2000	± 0.1	345	14 Pin	Yes	(Note 2)
	± 0.01	75 μ sec 10V Step to $\pm 0.05\%$	-1, ± 10 V	MN344	0 to +70 -55 to +125	2000	± 0.4	345	14 Pin	Yes	(Note 2)
14-16 Bits	± 0.003	3 μ sec 10V Step to $\pm 0.003\%$	-1, ± 10 V	MN374	0 to +70 -55 to +125	400	± 0.1	390	14 Pin	Yes	(Note 2)
	± 0.003	85 μ sec 10V Step to $\pm 0.003\%$	± 1 , ± 10 V	MN373	0 to +70 -55 to +125	1000	± 0.5	300	14 Pin	Yes	(Note 2)

- NOTES: 1. Listed specification is for typical Aperture Delay Time in nsec.
2. Contact the factory for information regarding DESC SMD's for these device types.



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V/F, F/V Converters

Full-Scale Range	Model #	Input Range	Dynamic Range	Type	Linearity	Power (mW)	DIP Package
2MHz	MD3802	0 to -10V	>2,000,000:1 > 126 dB	V/F, F/V	$\pm 0.01\%FS$ $\pm 0.01\%$ of Input	750	24 Pin
5MHz	MD3805	0 to -10V	>5,000,000:1 > 134 dB	V/F, F/V	$\pm 0.02\%FS$ $\pm 0.02\%$ of Input	850	24 Pin
10MHz	MD3810	0 to -10V	>10,000,000:1 > 142 dB	V/F, F/V	$\pm 0.05\%FS$ $\pm 0.05\%$ of Input	1000	24 Pin
2MHz	MD3902	0 to -10V	>2,000,000:1 > 126 dB	V/F	$\pm 0.01\%FS$ $\pm 0.01\%$ of Input	650	24 Pin
5MHz	MD3905	0 to -10V	>5,000,000:1 > 134 dB	V/F	$\pm 0.02\%FS$ $\pm 0.02\%$ of Input	800	24 Pin
10MHz	MD3910	0 to -10V	>10,000,000:1 > 140 dB	V/F	$\pm 0.05\%FS$ $\pm 0.05\%$ of Input	850	24 Pin

V/F - Based 20-Bit A/D Converters MD2840/2841/2842

Conversion Time (msec)	Model #	V/F Full-Scale	Differential Linearity (ppm)	Integral Linearity	Power (mW)	DIP Package
100	MD2840	10MHz	0.1	$\pm 0.05\%FS$ $\pm 0.05\%$ of Input	1195	32 Pin
200	MD2841	5MHz	0.2	$\pm 0.02\%FS$ $\pm 0.02\%$ of Input	1195	32 Pin
500	MD2842	2MHz	0.5	$\pm 0.01\%FS$ $\pm 0.01\%$ of Input	1195	32 Pin

24-Bit, 50MHz Counter/Timer MD5024

Counter Range	Programmable Time Base	Operating Mode	μP Interface	Application Mode	Power (mW)	DIP Package
24 Bits	1 to 16×10^7 Clock Periods	Continuous or Triggered	8 or 16 Bits	Frequency Counting or Period Measurement	700	40 Pin

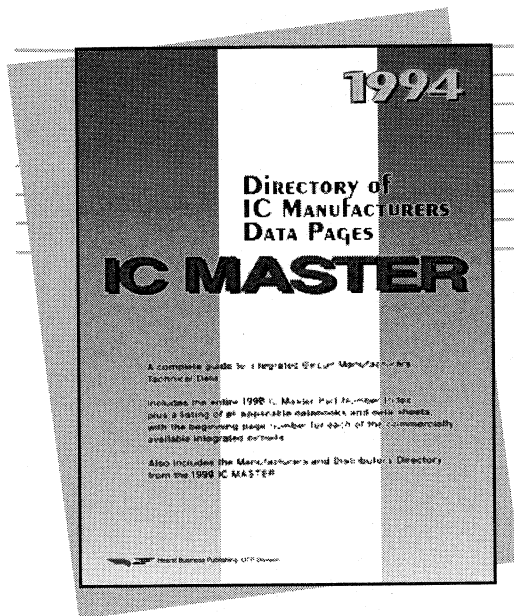
Precision Oscillators

Model Number	Function	Frequency	Jitter (psec)	Temperature Range ($^{\circ}C$)	Output Format	DIP Package
MD100 Series	Master Clock Oscillator	50MHz to 650MHz	25	0 to +70 -25 to +85	ECL PECL ECLInps	24 Pin
MD200/210 Series	Frequency Multiplier	50MHz to 650MHz	25	0 to +70 -25 to +85	ECL PECL ECLInps	24 Pin
MD300 Series	Voltage Controlled Oscillator	50MHz to 650MHz	25	0 to +70 -25 to +85	PECL	14 Pin



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Published annually in February



Product Selection Guide

Mosel-Vitellic Inc. designs, manufactures, and markets high performance and application specific DRAMs, SRAMs, and Video RAMs worldwide. The company is headquartered in the Science Based Industrial Park,

Taiwan and has subsidiaries in the US, Hong Kong, and Japan. Mosel-Vitellic's US headquarters is located at 3910 N. First Street, San Jose, CA 95134. Telephone number is 408-433-6000.

DRAMs

Part Number	Description	Speed(s) (ns)	Package(s)	Icc Max. (mA)	Iccsb Max. (mA)	Availability
V53C256A	256K x 1 DRAM	70, 80, 100	J, P	60	1.2	Now
V53C464A	64K x 4 DRAM	70, 80, 100	J, P	65	0.2	Now
V53C864	64K x 8 DRAM	70, 80, 100	K, P	65	1	Now
V53C100F	1 Meg x 1 DRAM	60, 70, 80	K, P	90/80/70	2	Now
V53C100H	1 Meg x 1 DRAM	45, 50, 55, 60	K, P	110/100/90/85	0.15	Now
V53C100N	1 Meg x 1 DRAM 3.3-V	60, 70, 80	K, P	45/40/35	0.04	Now
V53C104F	256K x 4 DRAM	60, 70, 80	K, P	90/80/70	2	Now
V53C104H	256K x 4 DRAM	45, 50, 55, 60	K, P	110/100/90/85	0.15	Now
V53C104N	256K x 4 DRAM 3.3-V	60, 70, 80	K, P	45/40/35	0.04	Now
V53C664	64K x 16 DRAM	80, 100	K	115/90	1	Now
V53C8256H	256K x 8 DRAM	45, 50, 55, 60	K, P	160/150/145/135	1	Now
V53C8256N	256K x 8 DRAM 3.3-V	60, 70, 80	K, P	65/60/55	1	Q1'94
V53C9512	512K x 8 DRAM	50, 60, 70	K	120/110/105	1	Q1'94
V53C9512	512K x 9 DRAM	50, 60, 70	K	105/90/75	1	Q1'94
V53C400F	4 Meg x 1 DRAM	60, 70, 80, 100	K	100/90/80/70	1	Now
V53C404F	1 Meg x 4 DRAM	60, 70, 80, 100	K	100/90/80/70	1	Now

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DRAM Modules

Part Number	Description	Speed(s) (ns)	Package(s)	Icc Max. (mA)	Iccsb Max. (mA)	Availability
V104J8	256K x 8 SIMM (2 chips)	60, 70, 80	S	130	2	Now
V100J8	1 Meg x 8 SIMM (8 chips)	60, 70, 80	S	480	8	Now
V404J8	1 Meg x 8 SIMM (2 chips)	70, 80	S	140	2	Now
V400J8	4 Meg x 8 SIMM (8 chips)	70, 80	S	560	8	Now
V104J9	256K x 9 SIMM (3 chips)	70, 80	S	160	4	Now
V100J9	1 Meg x 9 SIMM (9 chips)	60, 70, 80	S	540	9	Now
V404J9	1 Meg x 9 SIMM (3 chips)	70, 80	S	240	3	Now
V400J9	4 Meg x 9 SIMM (9 chips)	70, 80	S	660	13	Now
V104J36	256K x 36 SIMM (12 chips)	70, 80	S	760	12.8	Now
V104J236	512K x 36 SIMM (24 chips)	70, 80	S	1320	24	Now
V400J36	4 Meg x 36 SIMM	70, 80	S	3780	36	Now
V404J36	1 Meg x 36 SIMM (12 chips)	70, 80	S	900	12	Now
V404J236	2 Meg x 36 SIMM	70, 80	S	3240	40	Now

- Notes: 1. Iccsb = CMOS standby current
2. Contact factory for x32 DRAM module information



Product Selection Guide

Video RAMs

Part Number	Description	Speed(s) (ns)	Package(s)	Icc Max. (mA)	Iccsb Max. (mA)	Availability
V53C261	64K x 4 Video RAM	100, 120	K, P, Z	60/50	6	Now
V52C4256/8	256K x 4 Video RAM	60, 70, 80, 100	K, Z	95/85/75/65	7	Now
V52C8126/8	128K x 8 Video RAM	70, 80, 100	K, Z	90/80/70	7	Now
V52C8254	256K x 8 Video RAM	60, 70, 80	K	95/85/75	8	Q1'94
V52C8255	256K x 8 Video RAM	60, 70, 80	K	95/85/75	8	Q1'94
V52C8256	256K x 8 Hyper Page Mode VRAM	60, 70, 80	K	95/85/75	8	Q1'94
V52C8258	256K x 8 Video RAM	60, 70, 80	K	95/85/75	8	Q1'94

High Speed SRAMs

Part Number	Description	Speed(s) (ns)	Package(s)	Icc Max. (mA)	Iccsb Max. (mA)	Availability
MS6264A	8K x 8 SRAM	20, 25, 35	N, R	150	0.1 / 3	Now
MS62256A	32K x 8 SRAM	20, 25, 35, 45	N, R	180	10	Now
MS62256H	32K x 8 High Speed SRAM	15, 20, 25, 35	N, R	200	40	Now
MS621002	256K x 4 SRAM	20, 25, 35	K	130	1	Now
MS621008	128K x 8 SRAM	20, 25, 35	K	150	2	Now

Standard SRAMs

Part Number	Description	Speed(s) (ns)	Package(s)	Icc Max. (mA)	Iccsb Max. (mA)	Availability
MS6516	2K x 8 SRAM	100	P, S	70	0.01	Now
MS6264	8K x 8 SRAM	70, 100	F, P	85	0.1	Now
MS6264N	8K x 8 SRAM 3.3V	100	F, P	50	0.1	Now
MS6265	8K x 8 Low Power SRAM	100	F, N, P	40	0.01	Now
MS62256	32K x 8 SRAM	100	N, F, P	70	0.1	Now
		70	N, F, P	80	0.1	Now
MS62256C	32K x 8 SRAM - Low Low Power	70, 100	F, N, P	80	0.02	Now
MS62256N	32K x 8 SRAM 3.3V	70, 100	S, R	60	0.1	Now
MS628128	128K x 8 SRAM	80, 100, 120	F, P	80	3	Q2'94

FIFOs

Part Number	Description	Speed(s) (ns)	Package(s)	Icc Max. (mA)	Iccsb Max. (mA)	Availability
MS7200	256 x 9 FIFO	25, 35	F, J, N, P	125	0.5	Now
MS7201A	512 x 9 FIFO					
MS7202A	1K x 9 FIFO	50, 80	F, J, N, P	80	0.5	Now
MS7203	2K x 9 FIFO	50, 80	F, J, N, P	125	2	
		20, 25, 35	J, N, P	125	2	
MS7204	4K x 9 FIFO	50, 80	F, J, N, P	125	2	Now
		20, 25, 35	J, P	125	2	Now
MS76215	512 x 18 Synchronous FIFO	20, 25, 30	G, J	200	--	Now
MS76225	1K x 18 Synchronous FIFO					
MS76500A	64 x 16 Bi-Directional FIFO	25, 30	J	75		Now
MS76502A	256 x 16 Bi-Directional FIFO	25, 30	J	75		Now
MS76542	256 x 36 x 2 Bi-Directional FIFO	25, 30, 35	G, Q	180	1	Now

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Static NMOS-RAMs

Part Number	Organization	Access Time (ns)
AM9122	256x4	25,35
AM91L22	256x4	25,45
AM9044	4096x1	45,30,25,20
AM90L44	4096x1	45,30,25,20
AM9114	1024x4	45,30,20
AM91L14	1024x4	45,30,20
AM2147	4096x1	35,45,55,70

Static NMOS-RAMs

Part Number	Organization	Access Time (ns)
AM21L47	4096x1	45,55,70
AM2148	1024x4	35,45,55,70
AM21L48	1024x1	45,55,70
AM2149	1024x1	35,45,55,70
AM21L49	1024x1	45,55,70
AM9150	1024x4	20,25,35,45
AM91L50	1024x4	25,35,45

Static NMOS-RAMs

Part Number	Organization	Access Time (ns)
AM2167	16,384x1	35,45,55,70
AM2168	4096x4	35,45,55,70
AM2169	4096x4	40,50,70
AM9128	2048x8	70,90,10,12 15,20
AM2130	1024x8	55,70,10,12

Shift Registers

Part Number	Capacity/Organization	Mode
AM2802/1402	Quad 256	Dynamic
AM2803/1403	Dual 512	Dynamic
AM2804/1404	Single 1024	Dynamic
AM2833	Single 1024	Static
AM2847/3347	Quad 80	Static
AM2855	Quad 128	Static
AM2856	Dual 256	Static
AM2857	Single 512	Static

First-In First-Out Memories

Part Number	Organization	Temp. Range
AM2812	32 x 8	C,E*
AM2812A	32 x 8	C,E
AM2813	32 x 8	C,E
AM2813A	32 x 8	C,E
AM2841	64 x 4	C,E
AM2841A	64 x 4	C
AM3341	64 x 4	C,E
AM3341A	64 x 4	C

U.V. Erasable Proms

Part Number	Organization	Temp. Range
AM1702A	256 x 8	C,E
AM1702AL	256 x 8	C,E
AM1702A-1	256 x 8	C,E
AM1702AL-1	256 x 8	C,E
AM1702A-2	256 x 8	C,E
AM1702AL-2	256 x 8	C,E

*E is extended temperature range, -55°C to 85°C.

NOTE: CMOS Flash Memory AM28F020 (256K X 8) - Low Endurance, Also Available.

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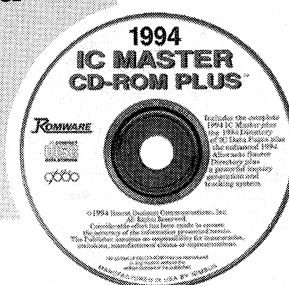
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53C810/53C820/53C825

PCI/SCSI FAMILY

Highlights

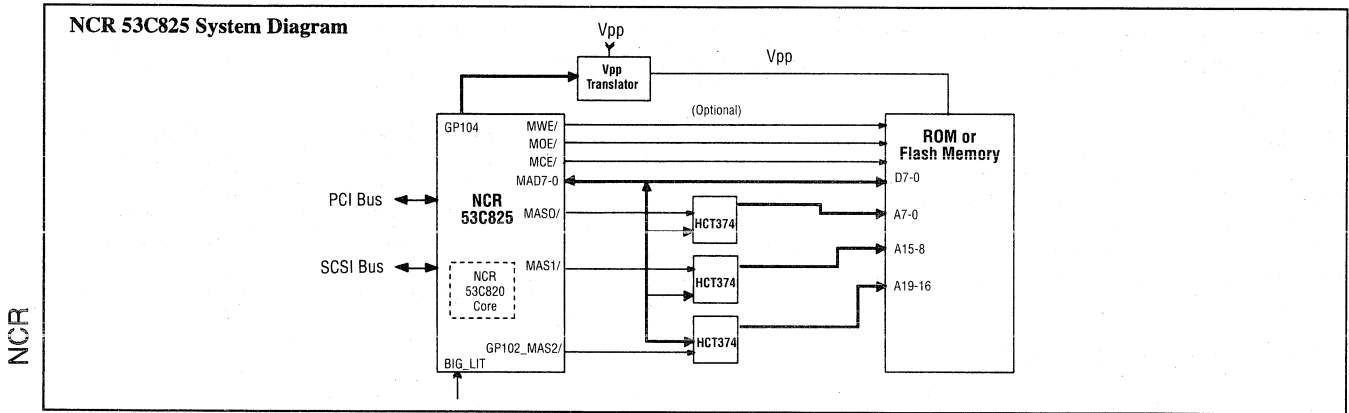
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53C820; 144-pin PQFP
53C825; 160-pin PQFP

The NCR 53C810 and 53C820 include all the high-performance features of the NCR 53C720, and are designed to connect gluelessly to the standard Peripheral Component Interconnect (PCI) bus. These devices are ideal for placement directly on a motherboard, allowing PCI-based workstations or personal computers to achieve the maximum I/O performance provided by SCSI. Both devices support fast SCSI transfer rates and burst transfers on the PCI bus in excess of 110 MB/s.

The 53C810, 53C820 and 53C825 provide full SCSI-2 capabilities, including command queuing. They feature NCR TolerANT® SCSI driver and receiver technology, and are SCRIPTS-compatible with the NCR 53C720. The 53C820 includes all of the features of the 53C810, with additional support for wide SCSI (16-bit) data transfers and differential operation. The 53C825 adds support for local PROM; burst op-code fetches built-in flash memory programming logic; big and little endian modes.



53C720

FAST AND WIDE SCSI I/O PROCESSOR

Highlights

- Supports SCSI A or wide P cable and 16 SCSI devices
- Host bus DMA burst transfer rate of 101 Mbytes/sec.
- 16- or 32-bit bus master
- Memory-to-memory transfers in excess of 53 Mbytes/sec.
- TolerANT® technology with NCR's proprietary Active Negation Technology
- Highest performance SCSI core
- Fully supported by NCR SDMS software

The 53C720 provides host-to-peripheral interfacing by allowing a full range of SCSI transfer rates (10 Mbytes/sec. asynchronous and 20 Mbytes/sec. synchronous) and supporting eight different host bus configurations. Providing the functions of an intelligent adapter board on a single chip, the 53C720 greatly reduces SCSI I/O overhead time and improves CPU bus utilization. In addition, the 53C720 features an advanced SCRIPTS™ processor, permitting it to support wide SCSI with odd byte transfers and 16 devices on the SCSI bus. Its TolerANT® drivers improve data integrity in any cabling environment. The 53C720 is downward SCRIPTS-compatible with the 53C710.

Package: 208-pin PQFP

53C406A/53CF406A

EISA/ISA-TO-SCSI HOST ADAPTERS

Highlights

- Software-compatible with the industry standard 53C94/95/96
- 24 mA drivers provide direct connection to the PCI/AT bus
- 48 mA TolerANT® drivers allow direct connection to SCSI bus
- Low power mode minimizes power consumption for mobile computing applications
- 8/16-bit programmed I/O or DMA data transfers
- 53CF406A transfers data at 10 Mbytes/sec. on SCSI bus
- Fully supported by NCR SDMS software

NCR's 53C406A 16-bit single-chip, EISA/ISA-to-SCSI host adapter delivers all of the performance and connectivity of SCSI to the PC. At the core of the device is the NCR 53C94/95/96, as well as support logic for an external ROM BIOS and an off-chip floppy controller. The chip also has 256 bytes of on-board RAM for scratch pad use by the SDMS CAMcore BIOS and 128 bytes of FIFO for speed matching on the host bus. And for reliable performance regardless of cabling, the 53C406A's SCSI drivers feature NCR's TolerANT® Active Negation Technology. Software-compatible with the industry-standard 53C94/95/96, the 53C406A allows data transfers of up to 5 Mbytes/sec. while the 53CF406A transfers data up to 10 Mbytes/sec.

Package: 100-pin PQFP

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Products Division
(800) 334-5454

NCR SCSI, SCSI DISK ARRAY CONTROLLER AND GUI PRODUCTS

53C400A

ADVANCED SINGLE-CHIP SCSI HOST ADAPTER

Highlights

- *Cost-effective solution*
- *I/O mapping, maintaining compatibility with existing PCs*
- *Low power feature minimizes power consumption for mobile computing applications*
- *Zero wait-state improves performance, eliminates timing problems*
- *Fully supported by NCR SDMS software*
- *Operates in initiator or target role*

Package: 68-pin PLCC

The 53C400A delivers high performance and low cost in a single or multiple chip host adapter solution. It's designed to work with IBM® PC/XT™/AT™ and PS/2 Model 25, 30 or 30-286 system buses plus a variety of laptop or single-board computers and host adapters. The 53C400A is also software-compatible with NCR 53C400 and 53C80 SCSI chips and gives users improved asynchronous SCSI bus performance plus on-chip dual 128-byte alternating buffers which provide data buffering for speed matching.

53CF94/53CF96

FAST SCSI CONTROLLERS

Highlights

- *Fully-compatible with 53C94/53C96 advanced SCSI controllers*
- *Sustained data transfer rates up to 10 Mbytes/sec. synchronous; 7 Mbytes/sec. asynchronous*
- *53CF94 has on-chip 48 mA drivers for single-ended transmission*
- *53CF96 offers single-ended and differential mode operation*

Package: 84-pin PLCC or 100-pin PQFP

The 53CF94/96 controllers are high-performance CMOS devices that maximize SCSI transfer rates. The fast devices are fully pin-compatible with the 53C94/96 advanced SCSI controllers, providing all of the advanced series functions as well as additional features such as fast SCSI, TolerANT® Active Negration Technology, a 24-bit transfer counter and a unique ID code which includes the chip revision level. These fast devices meet SCSI-1 and SCSI-2 standards and effectively reduce protocol overhead by performing common SCSI algorithms in response to a single command. The controllers operate in four different host bus configurations (two single-bus and two dual-bus modes.)

NCR

77C32BLT

VL-BUS GRAPHICAL USER INTERFACE (GUI) ACCELERATOR WITH BLOCK LOGIC TRANSFER

Highlights

- *TruColor GUI Accelerator*
- *110 MHz dot clock*
- *Fully autonomous BLT engine with embedded clipping, fill and line draw support*
- *Full 32-bit, glue-free VL interface (including BIOS and RAMDAC) for zero wait state operation*
- *BLT rates over 60 MB/s*
- *Monitor power management support*

Package: 208-pin PQFP

The 77C32BLT is a TruColor GUI accelerator for VL bus. The 110 MHz dot clock supports display of 1280 x 1024, 256 colors non-interlaced. Frame buffer data rates in excess of 120 MB/s, 150 MB/s peak (using 60 ns DRAMs) are supported, without interleaving or extra buffers, through the full 32-bit architecture and advanced DRAM frame buffer controller. The 77C32BLT features a fully automatic BLT engine with 256 op BLTs, color expand, monochrome and color transparency, pattern fetch, imbedded masking and special text BLT modes. The full 32-bit VL interface eliminates external decode delays, plus provides a direct interface to all BIOS and RAMDAC signals with no glue and no ISA bus connections. Linear frame buffer addressing and a memory mapped accelerator control menu provide optimum performance with a simple, easy to use, software interface. The 77C32BLT also supports DPMS (Display Power Management System) through sync signal level controls.

NCR ADP 93-01/04

SCSI DISK ARRAY CONTROLLER

The NCR ADP-93-01 and ADP-93-04 are intelligent disk array controllers capable of managing an array of up to 35 SCSI disk drives. The controllers can manage an array in either a RAID-0 (data-striped), RAID-1 (mirrored), RAID-3 (parallel transfer), or RAID-5 (independent

transfer) level of operation. The NCR ADP-93-01 provides a high-bandwidth, SCSI-2 single-ended channel connection to the host system. The NCR ADP-93-04 provides a high-bandwidth, SCSI-2 differential channel connection to the host system.

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Company Profile

Nippon Precision Circuits Ltd. (NPC), established in 1975, designs and manufactures high-performance integrated circuits for Audios, Oscillators, Data-acquisitions and Communications applications. The NPC headquarters is located in Tokyo, Japan and has sales representatives and distributors all over the world to support customers' needs.

Product Selection Guide

Digital Filters

Part Number	Configuration	X fs	Passband ripple (db)	Stopband attenuation (db)	Input/Output	Typical Application	Package
SM5803A	2 channels	4, 8	+/-0.00005	110	Serial	Wide functionality	28 pin DIP
SM5813A	2 channels	8	+/-0.00005	110	Serial	High efficiency	28 pin DIP
SM5841A	2 channels	4, 8	0.2+/-0.03	53	Serial	CD, DAT, PCM replay	18 pin DIP 22 pin SOP
SM5841B	2 channels	4, 8	0.2+/-0.03	53	Serial	CD, PCM replay DC offset	18 pin DIP 22 pin SOP
SM5841C	2 channels	8	0.2+/-0.03	53	Serial	CD, PCM replay Mode select	18 pin DIP 22 pin SOP
SM5841D	2 channels	4, 8	0.2+/-0.03	53	Serial	Hi speed Dubbing application	18 pin DIP 22 pin SOP
SM5815	2 channels	1/4, 1/2	+/-0.0005 +/-0.0002	88 95	Serial	1/4 decimation in frequency filter	18 pin DIP
SM5842A	2 channels	8	+/-0.00002	117	Serial	24 bit input Professional use	28 pin DIP
SM5843A	2 channels	8	+/-0.00005	110	Serial	20 bit input Dual filter	28 pin DIP 28 pin SOP
SM5881	2 channels	4, 8	0.125+/-0.03	55	Serial	High performance Low power	22 pin SOP
SM5831	4 on chip multiplier	15/25 MHz	Programmable	Programmable	Parallel	High speed video	64 pin QFP 68 pin PGA

Nippon Circuits Ltd.

Audio Digital Signal Processor

Part Number	Description	Features	Package
SM5852A	Audio DSP	Digital Dynamic Bass Boost and Digital Dynamic-Range Compression Sound	16 pin SOP
SM5853A	Audio DSP	Digital Dynamic Bass Boost and Digital Dynamic-Range Compression Sound with 8fs Digital filter and 1 bit D/A converter	44 pin QFP

D/A converters with DF

DAC with DF

Part Number	X fs of DF	Noise shaper frequency (X fs)	Noise shaper	THD+N (%)	S/N ratio (dB)	Future	Package
SM5871A	8	32	3rd order ZSNS	0.0022	108	Double speed operation	28 pin SOP
SM5872A	8	32	4th order ZSNS	0.0020	102	Hi performance	28 pin SDIP 28 pin SOP
SM5874A	8	32	3rd order	0.0025	96	Hi performance	28 pin SSOP

For Immediate Product Assistance, Call Toll-Free 1-800-237-4590 (Outside CA.)

TEL: 408-922-0133 FAX: 408-922-0137

SEPONIX CORP. 2151 O'Toole Ave., Suite L, San Jose CA 95131

Product Selection Guide

A/D Converters

Part Number	Description	Features	Package
SM6103	8 bit A/D converter	0.65 us conversion time, +/-1/2 LSB linearity, 200 mV/us input throughput, no external sample and hold circuit, CPU interface.	20 pin DIP 20 pin SOP
SM6104	6 bit flash A/D converter	20 MHz conversion rate, +/-1/2 LSB linearity (typ.), three-state control output, no external sample and hold circuit.	18 pin DIP 18 pin SOP
SM6106	8 channel, 8 bit A/D	0.7 us conversion time, +/-1/2 LSB linearity, 200 mV/us input throughput, no external sample and hold circuit, CPU interface	28 pin DIP 28 pin SOP
SM6011	8 bit A/D, two 8 bit D/As	1.0 us A/D conversion time, no external sample and hold circuit, 2.5us D/A settling time, voltage output.	28 pin DIP 28 pin SOP

Peripheral ICs

Part Number	Description	Features	Package
SM5823A	24 bit serial-to-parallel / parallel-to-serial converter	Two-way conversion for 8-, 16-, and 24-bits, 30 MHz operating frequency	42-pin SDIP
SM5829P	High-speed, 8-bit variable length shift register	8-bit parallel I/O, 2 to 129 stages user-selectable, shift and rotate modes, 33 MHz max. operation	30-pin SDIP
SM5824P	High-speed, advanced 10-bit shift register	10-bit parallel I/O, 2 to 65 stages user-selectable, operating frequency 33.3 MHz mxs.	30-pin SDIP

PLL

Part Number	Description	Features	Package
PLL2001	General purpose high frequency PLL	250 MHz (typ) direct input, serial data input for programmable divider	16 pin DIP 16 pin SOP
PLL0305	High speed serial input synthesizer	30 MHz input frequency	18 pin DIP

Oscillator modules

Part Number	Osc. (MHz) Frequency		Division	Supply current (mA)	Internal capacitance		Rf (Ω)	Package
	3V	5V			Cg (pF)	Cd (pF)		
SM5603		50	1, 1/2	12.8	—	—	2.5M	Die
SM5605		30	1, 1/2, ... 1/16	3.2	20	20	2.5M	Die
SM5606		30	1, 1/2, ... 1/256	16	20	20	2.5M	Die
SM5610		30	1, 1/2, 1/4, 1/8	4, 16	27	27	2.5M	Die/SOP
SM5613		22-50	1	4, 16	15	15	2.5M	Die/SOP
SM5617		22-70	1	4, 16	10/12	10/17	2.7-4.5k	Die/SOP
SM5619		30	1, 1/2, ... 1/8	4, 16	21	21	100k	Die
SM5623	33-70	45-100	1	16	10/17	10/17	2.2-4.7k	Die
SM5624	30	30	1, 1/2, ... 1/8	4, 16	20	20	2.5M	Die

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SEPONIX CORP. 2151 O'Toole Ave., Suite L, San Jose CA 95131

BIPOLAR LINEAR INTEGRATED CIRCUITS

Operational Amplifiers

Part Number	Main Feature	Circuits /Unit	Operating Voltage	Supply Current	Output Current	Unity Gain Frequency	Package
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Single Supply

NJM2904 *	General Purpose	2	3 to 32V	0.7mA	20mA	0.8MHz	D, L, M, E8, S9
NJM3404A *	Low Distortion	2	to 36V	2.0mA	20mA	1.2MHz	D, L, M, E8, S9
NJM3415 *	High Output Current	2	to 15V	5.5mA	110mA	1.3MHz	D, L, M, E8, S9
NJM3403A *	Low Distortion	4	to 36V	3.0mA	20mA	1.2MHz	D, M14

Dual Supply

NJM318 *	High Speed	1	to $\pm 20V$	5.0mA	20mA	15MHz	D, T, M, E8
NJM4250 *	Low Supply Current	1	± 1 to $\pm 18V$	Variable	Variable	Variable	D, M, E8
NJM5534 *	Low Noise	1	to $\pm 22V$	4.0mA	50mA	10MHz	D, M8
NJM4558 *	General Purpose	2	to $\pm 18V$	3.5mA	12mA	2MHz	D, L, T, M, E8, S9
NJM022B *	Low Supply Current	2	± 2 to $\pm 18V$	250 μA	10mA	—	D, L, M, E8
NJM4560 *	Low Noise	2	to $\pm 18V$	3.5mA	25mA	10MHz	D, L, T, M, E8, S9
NJM2041 *	Low Noise	2	to $\pm 22V$	6.0mA	25mA	7MHz	D, L, M, E8, S9
NJM062 *	J-FET Input	2	to $\pm 18V$	400 μA	12mA	1MHz	D, L, M, E8, S9
NJM072B *	J-FET Input	2	to $\pm 18V$	3.0mA	25mA	3MHz	D, L, M, E8, S9
NJM353 *	J-FET Input	2	to $\pm 18V$	3.6mA	16mA	4MHz	D, T, M8
NJM2082 *	J-FET Input	2	to $\pm 18V$	4.0mA	40mA	5MHz	D, L, M8, S9
NJM2068 *	Low Noise	2	to $\pm 18V$	5.0mA	50mA	5.5MHz	D, L, M, E8, S9
NJM5532 *	Low Noise	2	to $\pm 22V$	9.0mA	50mA	10MHz	D, M8, S9
NJM4556 *	High Output Current	2	to $\pm 18V$	9.0mA	70mA	8MHz	D, L, M, E8, S9
NJM2058 *	General Purpose	4	to $\pm 18V$	3.5mA	12mA	2MHz	D, M14
NJM2060 *	Low Noise	4	to $\pm 18V$	3.5mA	25mA	10MHz	D, M14
NJM064 *	J-FET Input	4	to $\pm 18V$	800 μA	12mA	1MHz	D, M14
NJM074 *	J-FET Input	4	to $\pm 18V$	6.0mA	25mA	3MHz	D, M14

Audio and Video ICs

Part No.	Description	Application Examples	Package
NJM386 *	Low Voltage Power Amplifier	AM/FM Radios, Portable Tape Player	D, L, M, E, S9
NJM2067 *	Dual Pre-amplifier	Head Phone Stereos	D, M14
NJM2073 *	Dual Power Amplifier	AM/FM Radios, Portable Tape Player	D, M8, S9
NJM592 *	Differential Video Amplifier	VCR, Audio Equipment	D, M14
NJM2219 *	RF Modulator	VCR	D16
NJM2228 *	Frequency Doubler/Tripler	VCR	D, M8, S9
NJM2234 *	3-input 1-output Video Switch	VCR, Audio Equipment	D, M8, S9
NJM2244 *	Video Switch with 75 Ω Driver	VCR, Audio Equipment	D, M8, S9

OPTO DEVICES

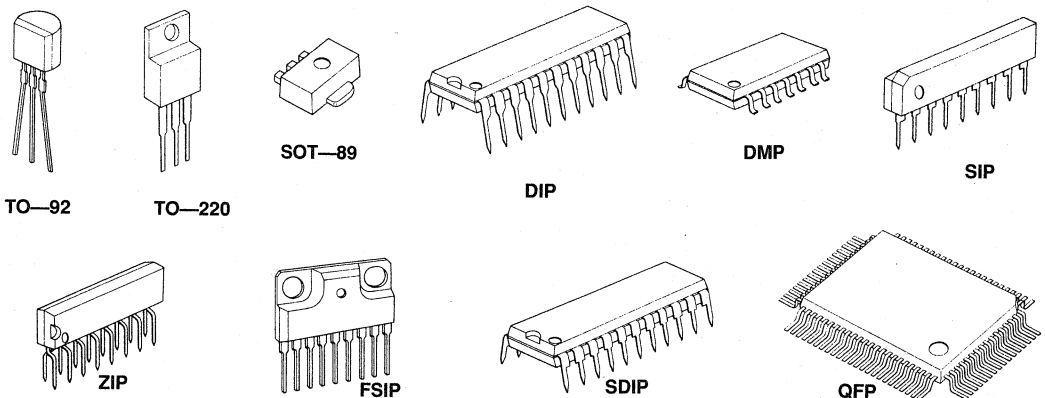
Photo Couplers

Part Number	Couplers /Unit	Isolation Voltage	Emitter		Detector		Package
			Forward Current	Reverse Voltage	C-E Voltage	Collector Current	
NJL5151 **	1	4000V	to 70mA	6V	35V	50mA	D, M4
NJL5152 **	2	4000V	to 50mA	6V	35V	50mA	D, M8
NJL5153 **	3	4000V	to 50mA	6V	35V	50mA	D, M12

Package Outlines

Package Table

TYPE	SYMBOL
TO-92	-
TO-220	-
SOT-89	U
TO-220F	F
DIP	D
DMP	M
EMP	E
SIP/ZIP	S
SOP	G
FSIP	S
HDIP	K
SDIP/SIP	L
QFP	F



* SMT packages are available (M-packages are Japanese standard size packages, and E-packages are U.S. standard). ** Packages are (not standard).



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C-MOS LINEAR / DIGITAL INTEGRATED CIRCUITS

Voltage Regulators

Part Number	Output Voltage	Maximum Input Voltage	Output Current	Line Regulation	Package (see previous page)
NJU7201 *	+1.2, 1.5, 2.5, 2.7, 3.0, 3.2 +3.5, 4.0, 4.5, 5.0, 5.2, 5.5	+14V	100 mA	0.1%V	L, U
NJU7211 *	-3.0, -5.0V	-18V	100 mA	0.1%V	L, U

Voltage Converters

Part Number	Operating Voltage	Voltage Conv. Rate	Int. Osc.	External Components	Package (see previous page)
NJU7660 *	+1.5V ÷ +10.0V	99.9% (Neg.)	5 KHZ	2 Caps (Neg.) 2 Caps, 2 Res, 1 Diode (pos.)	D, M
NJU7662 *	+4.5 ÷ +20.0V	99.9% (Neg.)	10 KHZ	2 Caps (Neg.) 2 Caps, 2 Res, 1 Diode (pos.)	D, M

Operational Amplifiers

Part Number	Main Feature	Circuits /Unit	Operating Voltage	Supply Current	Input Current	Band Width	Package (see previous page)
NJU7001 *	Low Supply Current	1	1 to 18V	15µA	1pA	0.1MHz	D, M8
NJU7002 *	Low Supply Current	2	1 to 18V	30µA	1pA	0.1MHz	D, M8
NJU7004 *	Low Supply Current	4	1 to 18V	60µA	1pA	0.1MHz	D, M14

Quartz Crystal Oscillators

Part Number	Operating Voltage	Operating Current	Stand-by Current	Fanout Ability	Frequency	Package (see previous page)
NJU6323 *	3 to 6V	10mA	100µA	10LSTTL	to 50MHz	E8, Chip
NJU6331 *	4 to 6V	15mA	100µA	5TTL	20 to 75MHz	E8, Chip
NJU6332 *	4 to 6V	15mA	100µA	10LSTTL	20 to 75MHz	E8, Chip
NJU6341 *	4 to 6V	25mA	100µA	5TTL	to 120MHz	E8, Chip

LCD Controller/Drivers

Part Number	Description	Package (see previous page)
NJU6408 *	Dot Matrix LCD Display Controller Driver (8C x 2L)	F80
NJU6420 *	1-chip Dot Matrix LCD Display Controller Driver (16C x 2L)	F100
NJU6423 *	1-chip Dot Matrix LCD Display Controller Driver (20C x 2L)	F100
NJU6406 *	1-chip Dot Matrix LCD Display Controller Driver (24C x 2L)	Chip 118
NJU6426 *	Dot Matrix LCD Display Controller Driver (8C x 4L) with Expansion	F100
NJU6407 *	Dot Matrix LCD Display Expansion Driver (40 seg.)	F56
NJU6417 *	Dot Matrix LCD Display Expansion Driver (64 seg.)	F80
NJU6432 *	104-Segment 1/2 duty LCD Driver	F64
NJU6435 *	1/2 duty (80 seg.) 1/2 duty (120 seg.) LCD Driver with Key Scan	F64
NJU6418 *	Dot Matrix LCD Display Common Driver (68 com.)	F80
NJU6419 *	Dot Matrix LCD Display Segment Driver (80 seg.)	F100

Microprocessor Peripheral

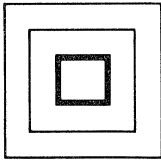
Part Number	Description	Package (see previous page)
NJU6355 *	Serial Interface Real Time Clock for 4-bit CPU	D, M8
NJU3711 *	8-bit Serial In Parallel Out	D, M14
NJU3712 *	8-bit Serial In Parallel Out with Cascade Function	D, M16
NJU3713 *	12-bit Serial In Parallel Out	D, G18
NJU3715 *	16-bit Serial In Parallel Out	L, G22
NJU3718 *	20-bit Serial In Parallel Out with Cascade Function	L, G28
NJU3719 *	24-bit Serial In Parallel Out	L15

*SMT packages are available (M-packages are Japanese standard size packages, and E-packages are U.S. standard).



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DRAM MEMORY MODULES

PART NUMBER	ORGANIZATION	DIMENSIONS	PKG.
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64 K DRAM BASED MODULES SPEEDS — 120, 150, 200 nS.

PEP4064EC4	64KX4	2.2X0.42X0.180	22 PIN SIP
PEP4064EC5	64KX5	2.9X0.42X0.180	24 PIN SIP
PEP4064EL8*	64KX8	3.0X0.60X0.180	30 PIN SIP
PEP4064EL9*	64KX9	3.0X0.60X0.180	30 PIN SIP

256 K DRAM BASED MODULES — 60, 70, 80, 100, 120, 150 nS.

PEP4256EC4	256KX4	2.2X0.42X0.180	22 PIN SIP
PEP4256EC5	256KX5	2.9X0.42X0.180	24 PIN SIP
† PEP4256EL8*	256KX8	3.0X0.60X0.180	30 PIN SIP
† PEP4256EL9*	256KX9	3.0X0.60X0.180	30 PIN SIP
PEP4256EL8-LP	256KX8	3.0X0.45X0.320	30 PIN SIP
PEP4256EL9-LP	256KX9	3.0X0.45X0.320	30 PIN SIP

1 M BIT DRAM BASED MODULES — 60, 70, 80, 100 nS.

PEP1MX4	1MX4	2.8X0.42X0.180	24 PIN SIP
PEP1MX5	1MX5	3.5X0.42X0.180	26 PIN SIP
† PEP1MX8*	1MX8	3.2X0.775X0.190	30 PIN SIP
† PEP1MX9*	1MX9	3.2X0.775X0.190	30 PIN SIP
PEP1MX8-LP	1MX8	3.5X0.435X0.320	30 PIN SIP
PEP1MX9-LP	1MX9	3.5X0.435X0.320	30 PIN SIP

4M BIT DRAM BASED MODULES — 60, 70, 80 nS.

PEP4MX8*	4MX8	3.5X0.975X0.180	30 PIN SIP
PEP4MX9*	4MX9	3.5X0.975X0.180	30 PIN SIP
PEP4MX9	4MX9	3.50X0.950X0.190	30 PIN SIMM
PEP25636	256KX36	4.25X1.0X0.190	72 PIN SIMM
PEP51236	256KX36	4.25X1.0X0.325	72 PIN SIMM
PEP1MX36	1MX36	4.25X1.00X0.190	72 PIN SIMM
PEP2MX36	2MX36	4.25X1.0X0.325	72 PIN SIMM
PEP4MX36	4MX36	4.6X1.3X0.325	72 PIN SIMM
PEP1MX33	1MX33	4.25X1.0X0.190	72 PIN SIMM
PEP2MX33	2MX33	4.25X1.0X0.325	72 PIN SIMM
PEP4MX33	4MX33	4.60X1.0X0.325	72 PIN SIMM
PEP1MX40	1MX40	4.25X1.0X0.190	72 PIN SIMM
PEP2MX40	2MX40	4.25X1.0X0.325	72 PIN SIMM
NTX4M	4MX8	3.55X0.810X0.190	64 PIN SIMM
NTX4000	1MX8	3.55X0.810X0.190	64 PIN SIMM
AST1000	256KX36	3.55X0.810X0.190	64 PIN SIMM
AST4000	1MX36	3.55X0.810X0.190	64 PIN SIMM

STATIC RAM MODULES — 30, 45, 55, 70, 100, 120 nS.

S128KX8	128KX8 80, 100, 120	1.80X0.680
S256KX8	256KX8 80, 100	1.70X0.620
S512KX8	512KX8 80, 100	1.70X0.620
1PE0176	256KX8 55, 70	2.60X0.620
L16432	64KX32 20-55 NS	3.00X0.620
L125632	256KX32 20-55 NS	3.00X0.620

CALL FOR 16MX9
4MX36
8MX36
SIMMS

NOTES: *Also available in SIMM package. † Also available in 3 chip solution.

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80C31/80C51/87C51 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The Philips 80C31/80C51/87C51 is a high-performance microcontroller fabricated with Philips high-density CMOS technology. The CMOS 8XC51 is functionally compatible with the NMOS 8031/8051 microcontrollers. The Philips CMOS technology combines the high speed and density characteristics of HMOS with the low power attributes of CMOS. Philips epitaxial substrate minimizes latch-up sensitivity.

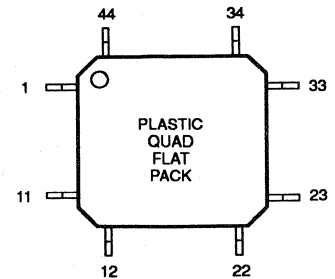
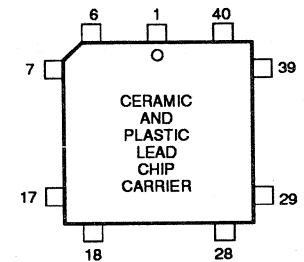
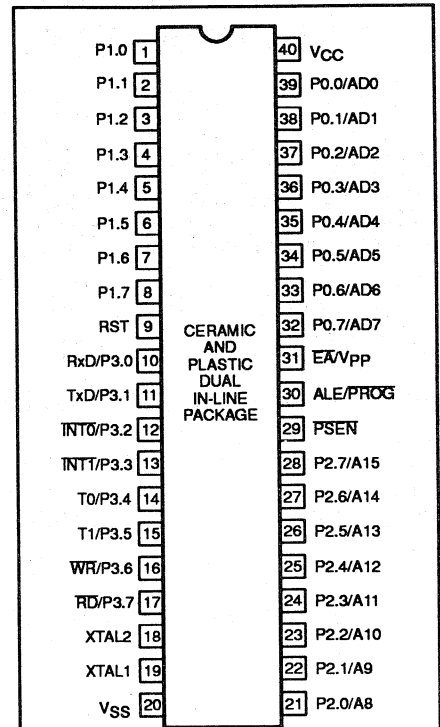
The 8XC51 contains a 4k × 8 ROM (80C51) EPROM (87C51), a 128 × 8 RAM, 32 I/O lines, two 16-bit counter/timers, a five-source, two-priority level nested interrupt structure, a serial I/O port for either multi-processor communications, I/O expansion or full duplex UART, and on-chip oscillator and clock circuits.

In addition, the device has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

FEATURES

- 8031/8051 compatible
 - 4k × 8 ROM (80C51)
 - 4k × 8 EPROM (87C51)
 - ROMless (80C31)
 - 128 × 8 RAM
 - Two 16-bit counter/timers
 - Full duplex serial channel
 - Boolean processor
- Memory addressing capability
 - 64k ROM and 64k RAM
- Power control modes:
 - Idle mode
 - Power-down mode
- CMOS and TTL compatible
- Five speed ranges at $V_{CC} = 5V$
 - 12MHz
 - 16MHz
 - 24MHz
 - 30MHz
 - 33MHz
- Five package styles
- Extended temperature ranges
- OTP package available

PIN CONFIGURATIONS

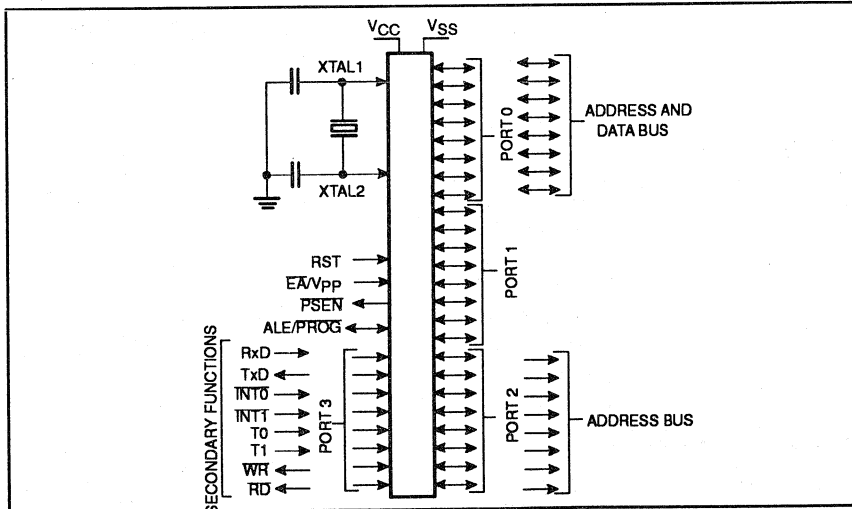


SEE DATA SHEET FOR QFP AND LCC PIN FUNCTIONS.

01/26/93

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LOGIC SYMBOL



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PHILIPS

80C32/80C52/87C52 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

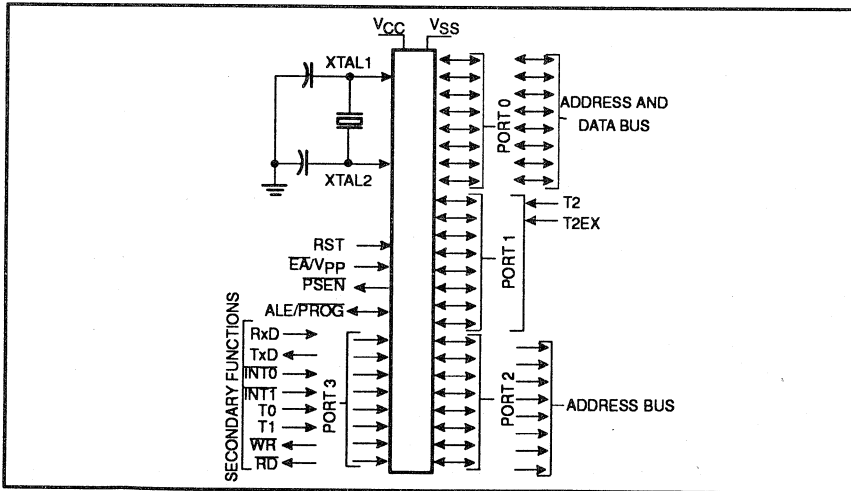
The Philips 80C32/80C52/87C52 is a high-performance microcontroller fabricated with Philips high-density CMOS technology. The CMOS 8XC52 is functionally compatible with the NMOS SCN8032/8052 microcontrollers. The Philips CMOS technology combines the high speed and density characteristics of HMOS with the low power attributes of CMOS. Philips epitaxial substrate minimizes latch-up sensitivity.

The 8XC52 contains an 8k × 8 ROM (80C52) EPROM (87C52), a 256 × 8 RAM, 32 I/O lines, three 16-bit counter/timers, a six-source, two-priority level nested interrupt structure, a serial I/O port for either multi-processor communications, I/O expansion or full duplex UART, and on-chip oscillator and clock circuits.

In addition, the 8XC52 has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

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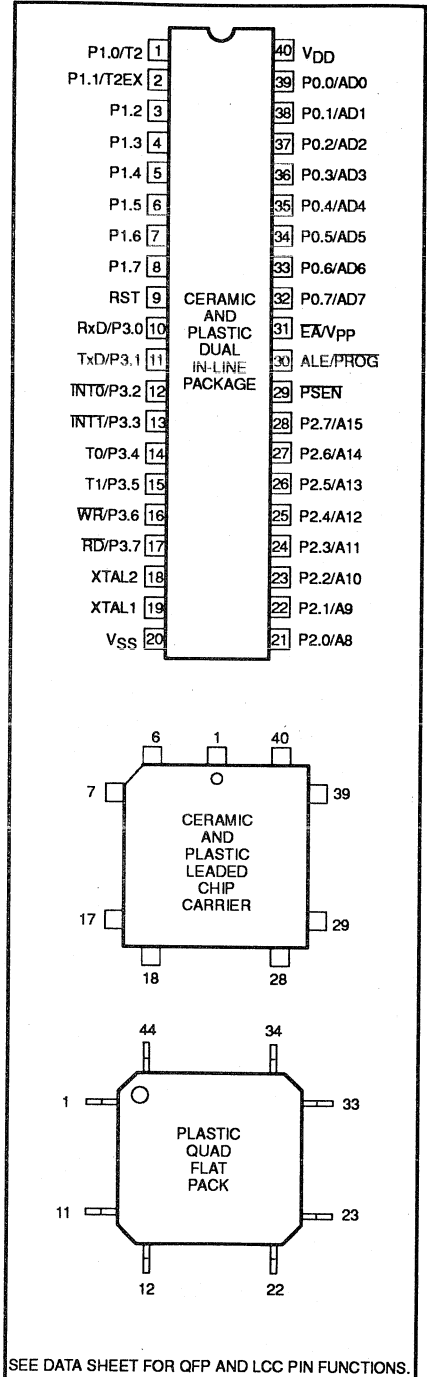
LOGIC SYMBOL



FEATURES

- 80C51 based architecture
- 8032/8052 compatible
 - 8k × 8 ROM (80C52)
 - 8k × 8 EPROM (87C52)
 - ROMless (80C32)
 - 256 × 8 RAM
 - Three 16-bit counter/timers
 - Full duplex serial channel
 - Boolean processor
- Memory addressing capability
 - 64k ROM and 64k RAM
- Power control modes:
 - Idle mode
 - Power-down mode
- CMOS and TTL compatible
- Two speed ranges:
 - 3.5 to 16MHz
 - 3.5 to 24MHz
- Five package styles
- Extended temperature ranges
- OTP package available

PIN CONFIGURATIONS



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Philips Semiconductors



PHILIPS

80CL51 – Low-Voltage Single-Chip 8-Bit Microcontroller

FEATURES

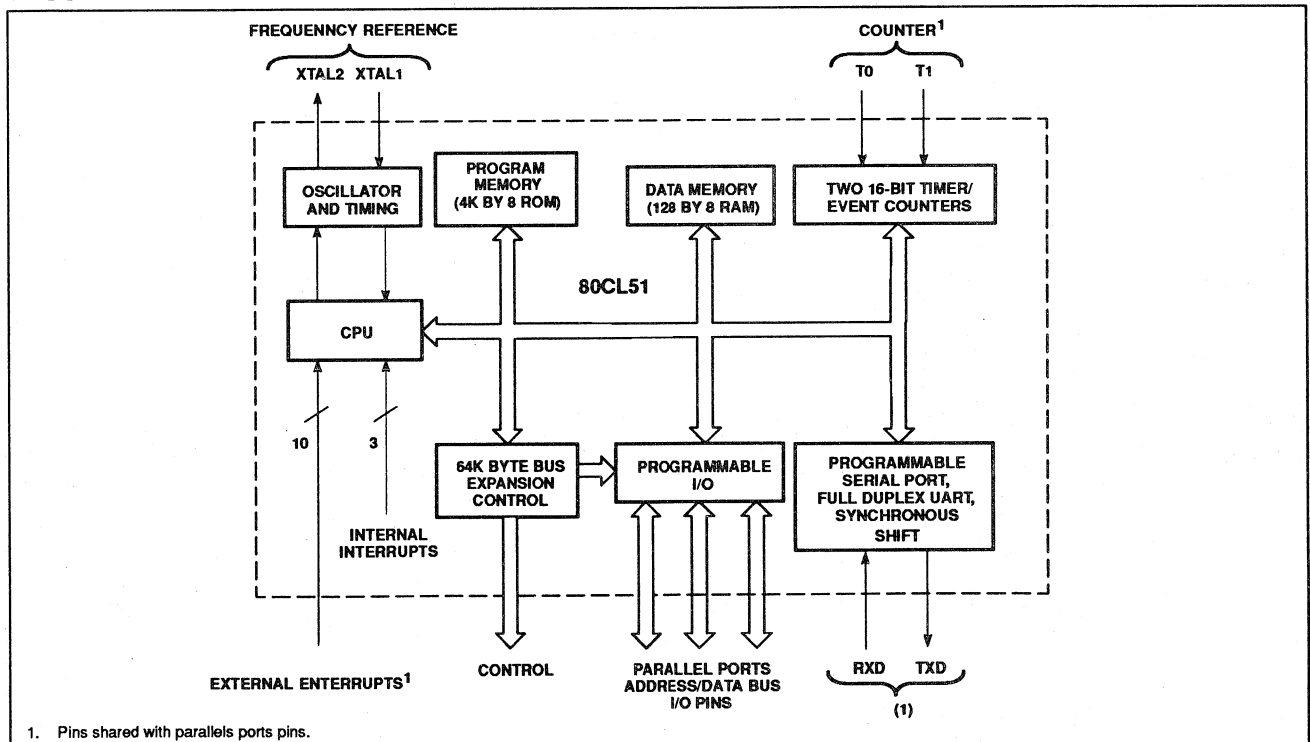
- Full static 80C51 CPU
- 8-bit CPU, ROM, RAM, I/O in a single 40-lead DIL / mini-pack
- 4K x 8 ROM, expandable externally to 64K bytes
- 128 bytes RAM, expandable externally to 64K bytes
- Four 8-bit ports, 32 I/O lines
- Two 16-bit timer / event counters
- External memory expandable up to 128K, external ROM up to 64K and / or RAM up to 64K
- On-chip oscillator suitable for RC, LC, quartz crystal or ceramic resonator
- Thirteen source, thirteen vector interrupt structure with two priority levels

- Full duplex serial port (UART)
- Enhanced architecture with:
 - non-page oriented instructions
 - direct addressing
 - four eight byte RAM register banks
 - stack depth up to 128 bytes
 - multiply, divide, subtract and compare instructions
- Power-Down and IDLE instructions
- Wake-up via external interrupts at Port 1
- Single supply voltage of 1.8V to 6.0V
- Frequency range of 32 kHz to 12MHz
- Very low current consumption
- Operating temperature range: -40 to +85°C

DESCRIPTION

The 80CL51 is manufactured in an advanced CMOS technology. The instruction set of the 80CL51 is based on that of the 8051. The 80CL51 is a general purpose microcontroller especially suited for battery-powered application. The device has low power consumption and a wide range of supply voltage. For emulation purposes, the 85CL000 (Piggy-back version) with 256 bytes of RAM is recommended. The 80CL51 has two software selectable modes of reduced activity for further power reduction: Idle and Power-down. The 80CL51 also functions as an arithmetic processor having facilities for both binary and BCD arithmetic plus bit-handling capabilities. The instruction set consists of over 100 instructions: 49 one-byte, 46 two-byte, and 16 three-byte.

BLOCK DIAGRAM



11/92-PRELIM

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PHILIPS

80CL410/83CL410 – Low Voltage/Low Power Single-Chip 8-Bit Microcontroller with I²C

DESCRIPTION

The 80CL410/83CL410 (hereafter generically referred to as 8XCL410) is manufactured in an advanced CMOS process that allows the part to operate at supply voltages down to 1.8V and oscillator frequencies down to DC. The 8XCL410 has the same instruction set as the 80C51.

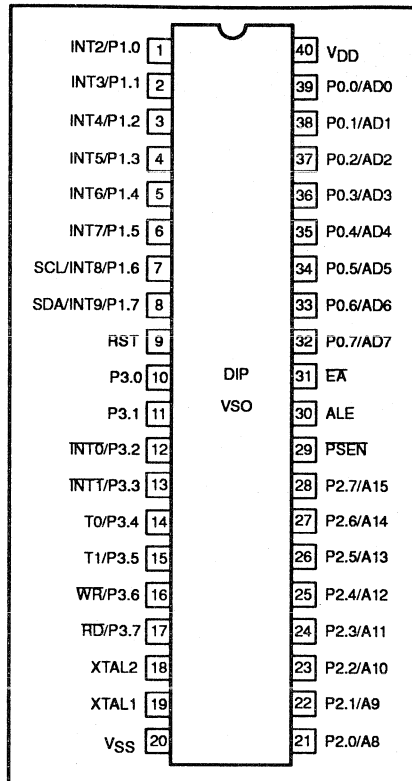
The 8XCL410 features a 4k byte ROM (83CL410), 128 bytes RAM (both ROM and RAM are externally expandable to 64k bytes), four 8-bit ports, two 16-bit timer/counters, an I²C serial interface, a thirteen source, two priority level nested interrupt structure, and on-chip oscillator circuitry suitable for quartz crystal, ceramic resonator, RC, or LC.

The 8XCL410 has two reduced power modes that are the same as those on the standard 80C51. The special reduced power feature of this part is that it can be stopped and then restarted. Running from an external clock source, the clock can be stopped and after a period of time restarted. The 8XCL410 will resume operation from where it was when the code stopped with no loss of internal state, RAM contents, or Special Function Register contents. If the internal oscillator is used the part cannot be stopped and started, but the power-down mode, which can be terminated via an interrupt, can be used to achieve similar power savings and then restart without loss of on-chip RAM and Special Function Register values.

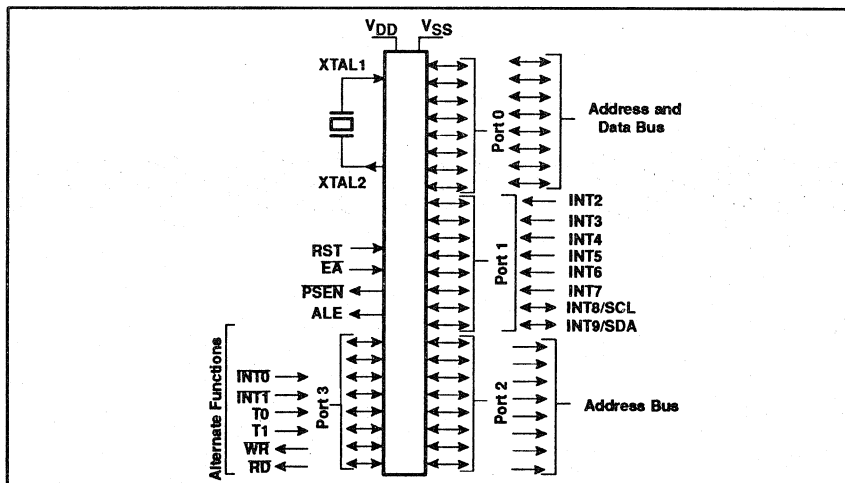
FEATURES

- Supply voltage from 1.8 to 6.0V
- Operating frequency from 32kHz to 12MHz
- 80C51 based architecture
 - 4k × 8 ROM (64k external)
 - 128 × 8 RAM (64k external)
 - Four 8-bit I/O ports
 - Two 16-bit timer/counters
 - A thirteen-source, two-level, nested priority interrupt structure
 - 10 external interrupts
- Fully static 80C51 CPU
- I²C Serial Interface
- Two power control modes
 - Idle mode
 - Power-down mode – can be terminated by reset or external interrupt
- Wake-up via external interrupts at port 1
- On-chip oscillator (quartz crystal, ceramic resonator, RC, LC)
- Very low power consumption
- Operating temperature range: –40 to +85°C

PIN CONFIGURATION



LOGIC SYMBOL



12/16/91

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PHILIPS

80C451/83C451/87C451 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The Philips 8XC451 is an I/O expanded single-chip microcontroller fabricated with Philips high-density CMOS technology. Philips epitaxial substrate minimizes latch-up sensitivity.

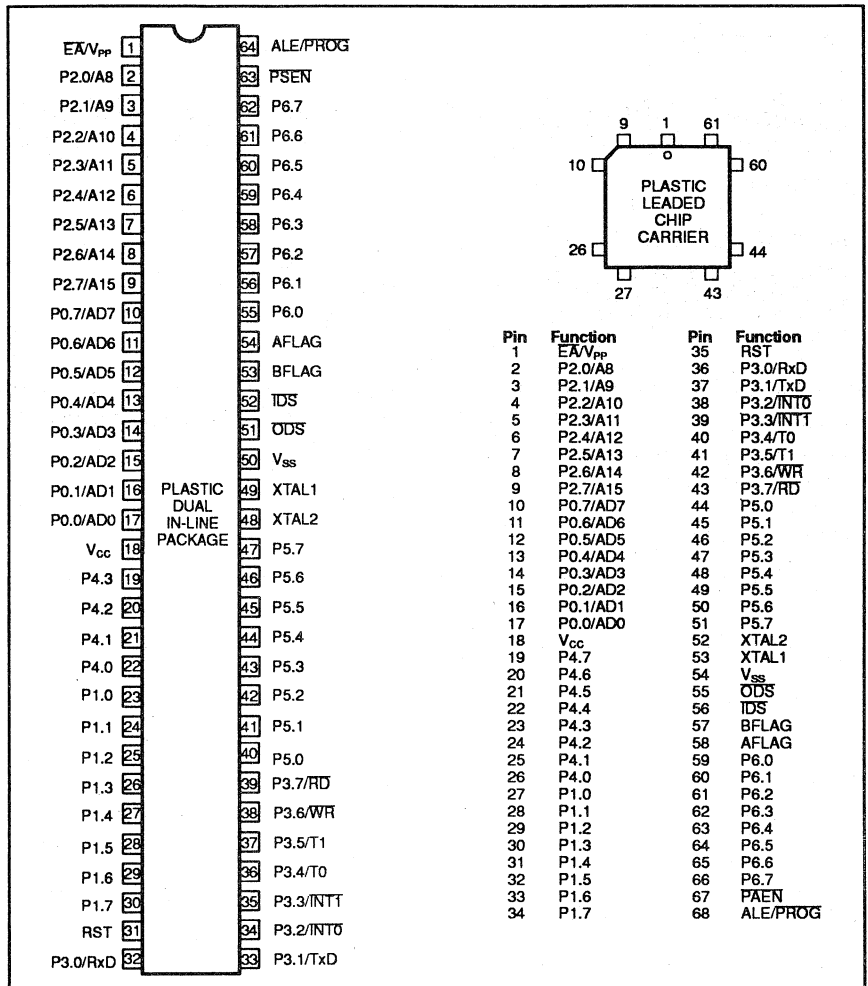
The 8XC451 is a functional extension of the 87C51 microcontroller with three additional I/O ports and four I/O control lines. The LCC version has a total of 68 pins. Four control lines associated with port 6 facilitate high-speed asynchronous I/O functions.

The 8XC451 includes a 4k × 8 ROM (83C451) EPROM (87C451), a 128 × 8 RAM, 56 (LCC) or 52 (DIP) I/O lines, two 16-bit timer/counters, a five source, two priority level, nested interrupt structure, a serial I/O port for either a full duplex UART, I/O expansion, or multi-processor communications, and on-chip oscillator and clock circuits. The 80C451 includes all of the 83C451 features except the on-board 4k × 8 ROM.

The 87C451 has 4k of EPROM on-chip as program memory and is otherwise identical to the 83C451.

The 8XC451 has two software selectable modes of reduced activity for further power reduction; idle mode and power-down mode. Idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. Power-down mode freezes the oscillator, causing all other chip functions to be inoperative while maintaining the RAM contents.

PIN CONFIGURATIONS



01/07/93

FEATURES

- 80C51 based architecture
- 68-pin LCC and 64-pin DIP packages:
 - Seven 8-bit I/O ports (LCC version)
 - Six 8-bit ports and one 4-bit port (DIP version)
- Port 6 features:
 - Eight data pins
 - Four control pins
 - Direct MPU bus interface
 - Parallel printer interface

- On the microcontroller:
 - 4k × 8 ROM (83C451)
 - 4k × 8 EPROM (87C451)
 - ROMless version (80C451)
 - 128 × 8 RAM
 - Two 16-bit counter/timers
 - Two external interrupts
- External memory addressing capability
 - 64k ROM and 64k RAM

- Low power consumption:
 - Normal operation: less than 24mA at 5V, 12MHz
 - Idle mode
 - Power-down mode



Philips

87C524 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The 87C524 single-chip 8-bit microcontroller is manufactured in an advanced CMOS process and is a derivative of the 80C51 microcontroller family. The 87C524 has the same instruction set as the 80C51.

This device provides architectural enhancements that make it applicable in a variety of applications in consumer, telecom and general control systems, especially in those systems which need large ROM and RAM capacity on-chip.

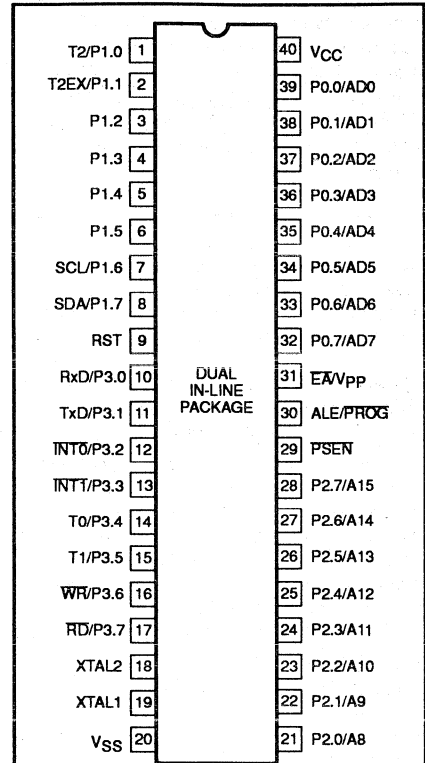
The 87C524 contains a 16k × 8 EPROM, a 512 × 8 RAM, four 8-bit I/O ports, two 16-bit timer/event counters (identical to the timers of the 80C51), a 16-bit timer (identical to the timer 2 of the 80C52), a watchdog timer with a separate oscillator, a multi-source, two-priority-level, nested interrupt structure, two serial interfaces (UART and I²C-bus), and on-chip oscillator and timing circuits.

In addition, the 87C524 has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

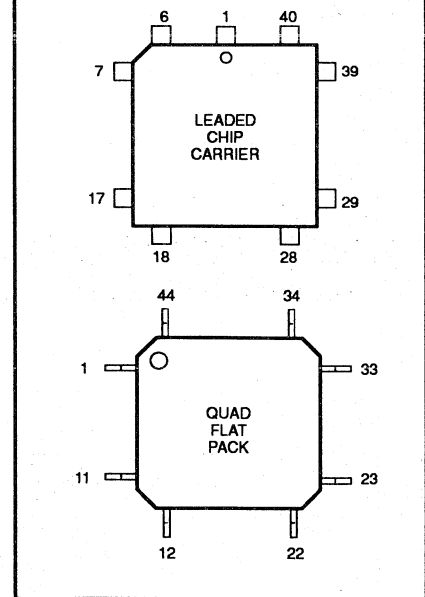
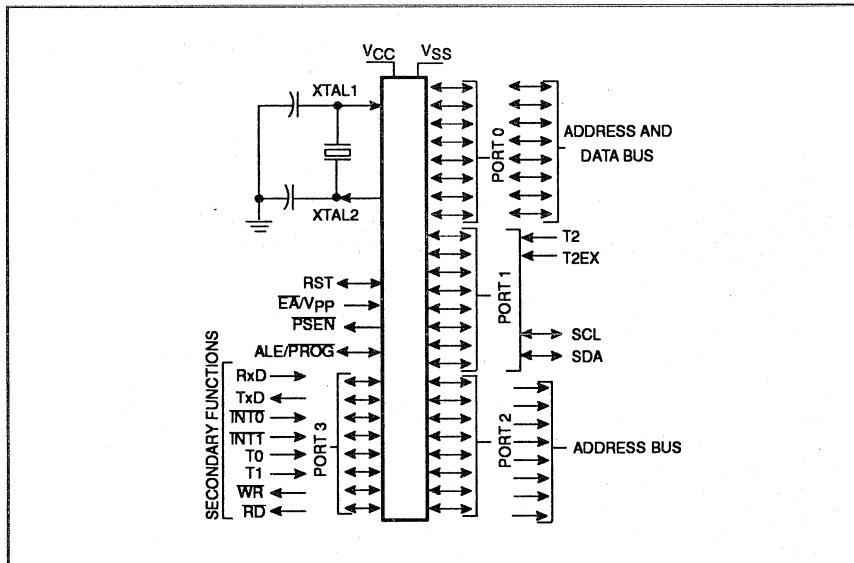
FEATURES

- 80C51 instruction set
 - 16k × 8 EPROM
 - 512 × 8 RAM
 - Memory addressing capability 64k ROM and 64k RAM
 - Three 16-bit counter/timers
 - On-chip watchdog timer with oscillator
 - Full duplex UART
 - I²C serial interface
- Power control modes:
 - Idle mode
 - Power-down mode
 - Warm start from power-down
- CMOS and TTL compatible
- Two speed ranges at V_{CC} = 5V ±10%
 - 3.5 to 16MHz
 - 3.5 to 20MHz
- Extended temperature ranges
- OTP package available
- EPROM code protection

PIN CONFIGURATIONS



LOGIC SYMBOL



01/07/93

Philips Semiconductors



PHILIPS

87C528 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The 87C528 single-chip 8-bit microcontroller is manufactured in an advanced CMOS process and is a derivative of the 80C51 microcontroller family. The 87C528 has the same instruction set as the 80C51. Three versions of the derivative exist:

- 83C528—32k bytes mask programmable ROM
- 80C528—ROMless version of the 83C528
- 87C528—32k bytes EPROM

This device provides architectural enhancements that make it applicable in a variety of applications in consumer, telecom and general control systems, especially in those systems which need large ROM and RAM capacity on-chip.

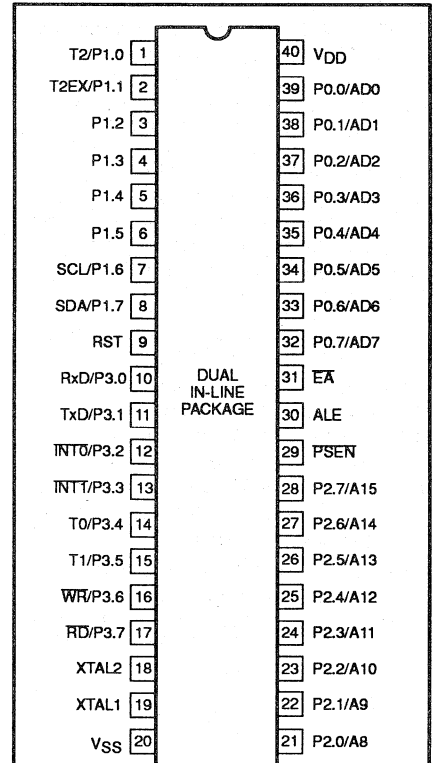
The 87C528 contains a 32k × 8 EPROM, a 512 × 8 RAM, four 8-bit I/O ports, two 16-bit timer/event counters (identical to the timers of the 80C51), a 16-bit timer (identical to the timer 2 of the 80C52), a watchdog timer with a separate oscillator, a multi-source, two-priority-level, nested interrupt structure, two serial interfaces (UART and I²C-bus), and on-chip oscillator and timing circuits.

In addition, the 87C528 has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

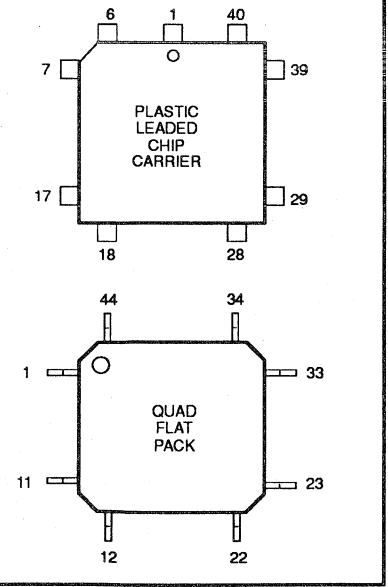
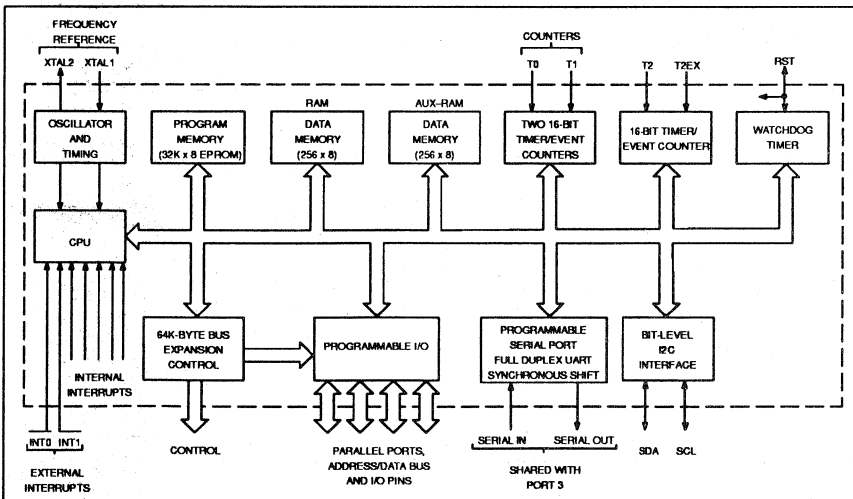
FEATURES

- 80C51 instruction set
 - 32k × 8 EPROM
 - 512 × 8 RAM
 - Memory addressing capability 64k ROM and 64k RAM
 - Three 16-bit counter/timers
 - On-chip watchdog timer with oscillator
 - Full duplex UART
 - I²C serial interface
- Power control modes:
 - Idle mode
 - Power-down mode
 - Warm start from power-down
- CMOS and TTL compatible
- Extended temperature ranges
- EPROM code protection
- OTP package available
- Two speed ranges at V_{CC} = 5V
 - 16MHz
 - 20MHz

PIN CONFIGURATIONS



BLOCK DIAGRAM



Philips

01/07/93



80C550/83C550/87C550 – CMOS Single-Chip 8-Bit Microcontroller with A/D and Watchdog Timer

DESCRIPTION

The Philips 8XC550 is a high-performance microcontroller fabricated with Philips high-density CMOS technology. This Philips CMOS technology combines the high speed and density characteristics of HMOS with the low power attributes of CMOS. Philips epitaxial substrate minimizes latch-up sensitivity. The CMOS 8XC550 has the same instruction set as the 80C51.

The 8XC550 contains a 4k × 8 EPROM (87C550)/ROM (83C550)/ROMless (80C550 has no program memory on-chip), a 128 × 8 RAM, 8 channels of 8-bit A/D, four 8-bit ports (port 1 is input only), a watchdog timer, two 16-bit counter/timers, a seven-source, two-priority level nested interrupt structure, a serial I/O port for either multi-processor communications, I/O expansion or full duplex UART, and an on-chip oscillator and clock circuits.

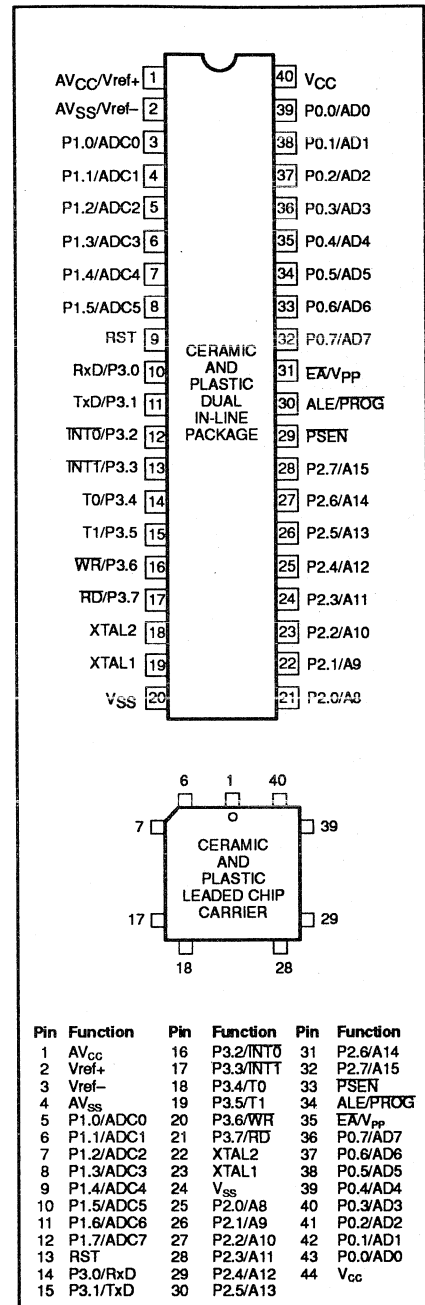
In addition, the 8XC550 has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial port, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

Philips

FEATURES

- 80C51 based architecture
 - 4k × 8 EPROM (87C550)/ROM (83C550)
 - 128 × 8 RAM
 - Eight channels of 8-bit A/D
 - Two 16-bit counter/timers
 - Watchdog timer
 - Full duplex serial channel
 - Boolean processor
- Memory addressing capability
 - 64k ROM and 64k RAM
- Power control modes:
 - Idle mode
 - Power-down mode
- CMOS and TTL compatible
- One speed range at $V_{CC} = 5V \pm 10\%$
 - 3.5 to 16MHz
- Four package styles
- Extended temperature ranges
- OTP package available

PIN CONFIGURATIONS



12/29/92

Philips Semiconductors



PHILIPS

87C552 – Single-Chip 8-Bit Microcontroller

DESCRIPTION

The 87C552 Single-Chip 8-Bit Microcontroller is manufactured in an advanced CMOS process and is a derivative of the 80C51 microcontroller family. The 87C552 has the same instruction set as the 80C51. Three versions of the derivative exist:

- 83C552—8k bytes mask programmable ROM
- 80C552—ROMless version of the 83C552
- 87C552—8k bytes EPROM

The 87C552 contains a 8k × 8 a volatile 256 × 8 read/write data memory, five 8-bit I/O ports, one 8-bit input port, two 16-bit timer/event counters (identical to the timers of the 80C51), an additional 16-bit timer coupled to capture and compare latches, a 15-source, two-priority-level, nested interrupt structure, an 8-input ADC, a dual DAC pulse width modulated interface, two serial interfaces (UART and I²C-bus), a "watchdog" timer and on-chip oscillator and timing circuits. For systems that require extra capability, the 87C552 can be expanded using standard TTL compatible memories and logic.

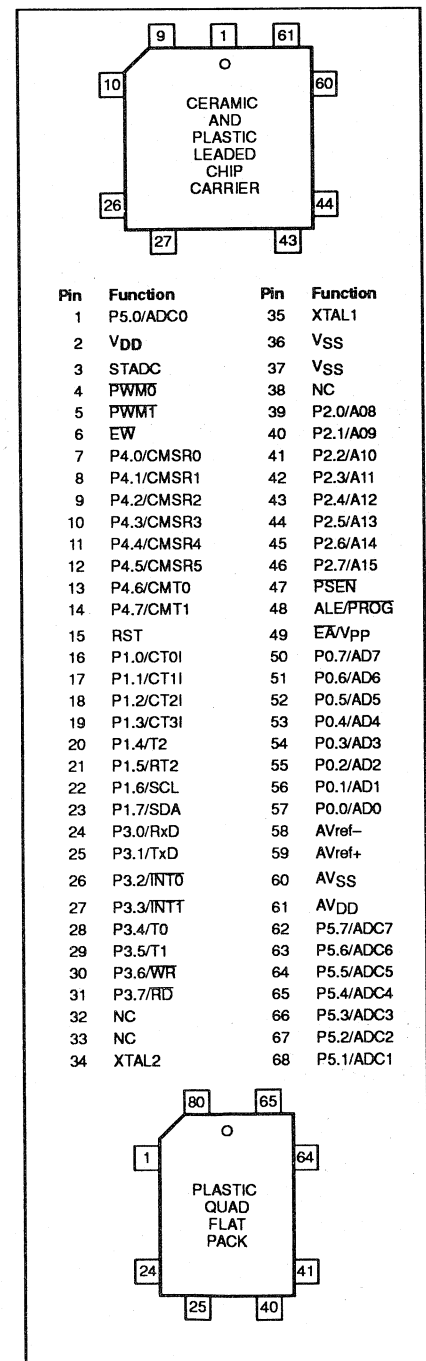
In addition, the 87C552 has two software selectable modes of power reduction—idle mode and power-down mode. The idle mode freezes the CPU while allowing the RAM, timers, serial ports, and interrupt system to continue functioning. The power-down mode saves the RAM contents but freezes the oscillator, causing all other chip functions to be inoperative.

The device also functions as an arithmetic processor having facilities for both binary and BCD arithmetic plus bit-handling capabilities. The instruction set consists of over 100 instructions: 49 one-byte, 45 two-byte, and 17 three-byte. With a 16MHz (24MHz) crystal, 58% of the instructions are executed in 0.75µs (0.5µs) and 40% in 1.5µs (1µs). Multiply and divide instructions require 3µs (2µs).

FEATURES

- 80C51 central processing unit
- 8k × 8 EPROM expandable externally to 64k bytes
- An additional 16-bit timer/counter coupled to four capture registers and three compare registers
- Two standard 16-bit timer/counters
- 256 × 8 RAM, expandable externally to 64k bytes
- Capable of producing eight synchronized, timed outputs
- A 10-bit ADC with eight multiplexed analog inputs
- Two 8-bit resolution, pulse width modulation outputs
- Five 8-bit I/O ports plus one 8-bit input port shared with analog inputs
- I²C-bus serial I/O port with byte oriented master and slave functions
- Full-duplex UART compatible with the standard 80C51
- On-chip watchdog timer
- Three speed ranges:
 - 16MHz
- Extended temperature ranges
- OTP package available

PIN CONFIGURATIONS



Philips

01/07/93

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PHILIPS

80C575/83C575/87C575 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The Philips 80C575/83C575/87C575 is a high-performance microcontroller fabricated with Philips high-density CMOS technology. The Philips CMOS technology combines the high speed and density characteristics of HMOS with the low power attributes of CMOS. Philips epitaxial substrate minimizes latch-up sensitivity.

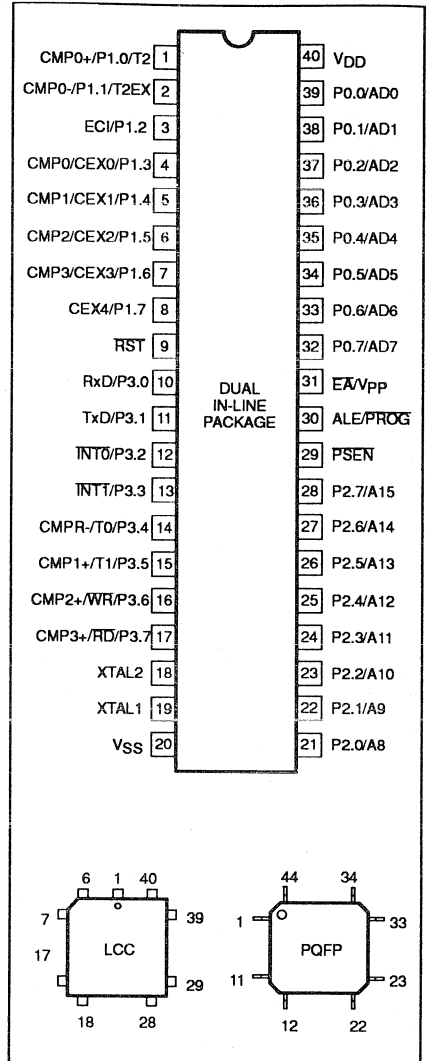
The 8XC575 contains an 8k × 8 ROM (83C575) EPROM (87C575), a 256 × 8 RAM, 32 I/O lines, three 16-bit counter/timers, a Programmable Counter Array (PCA), a seven-source, two-priority level nested interrupt structure, an enhanced UART, four analog comparators, power-fail detect and oscillator fail detect circuits, and on-chip oscillator and clock circuits.

In addition, the 8XC575 has a low active reset, and the port pins are reset to a low level. There is also a fully configurable watchdog timer, and internal power on clear circuit. The part includes idle mode and power-down mode states for reduced power consumption.

FEATURES

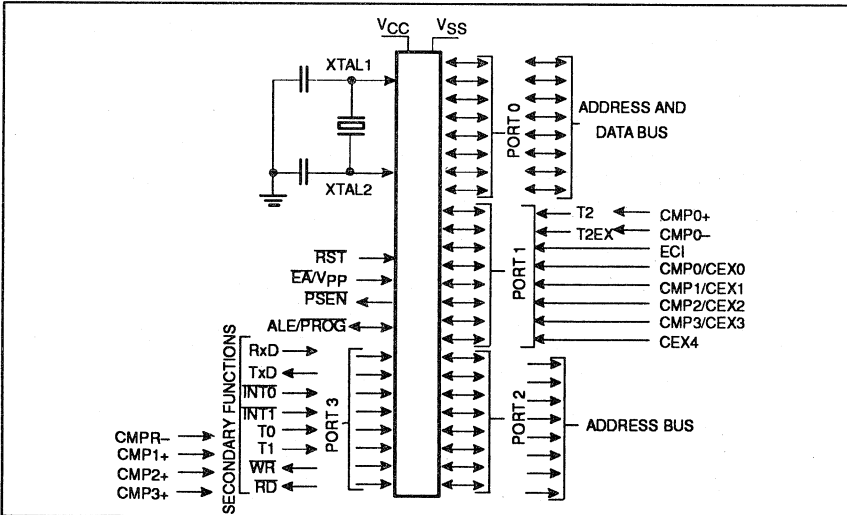
- 80C51 based architecture
 - 8k × 8 ROM (83C575)
 - 8k × 8 EPROM (87C575)
 - ROMless (80C575)
 - 256 × 8 RAM
 - Three 16-bit counter/timers
 - Programmable Counter Array
 - Enhanced UART
 - Boolean processor
 - Oscillator fail detect
 - Low active reset
 - Asynchronous low port reset
 - Schmitt trigger inputs
 - 4 analog comparators
 - Watchdog timer
 - Low V_{CC} detect
- Memory addressing capability
 - 64k ROM and 64k RAM
- Power control modes:
 - Idle mode
 - Power-down mode
- CMOS and TTL compatible
- 4.0 to 16MHz
- Extended temperature ranges
- OTP package available

PIN CONFIGURATIONS



Philips

LOGIC SYMBOL



Philips Semiconductors



PHILIPS

80CL580/83CL580 – Low-Voltage Single-Chip 8-Bit Microcontroller

GENERAL DESCRIPTION

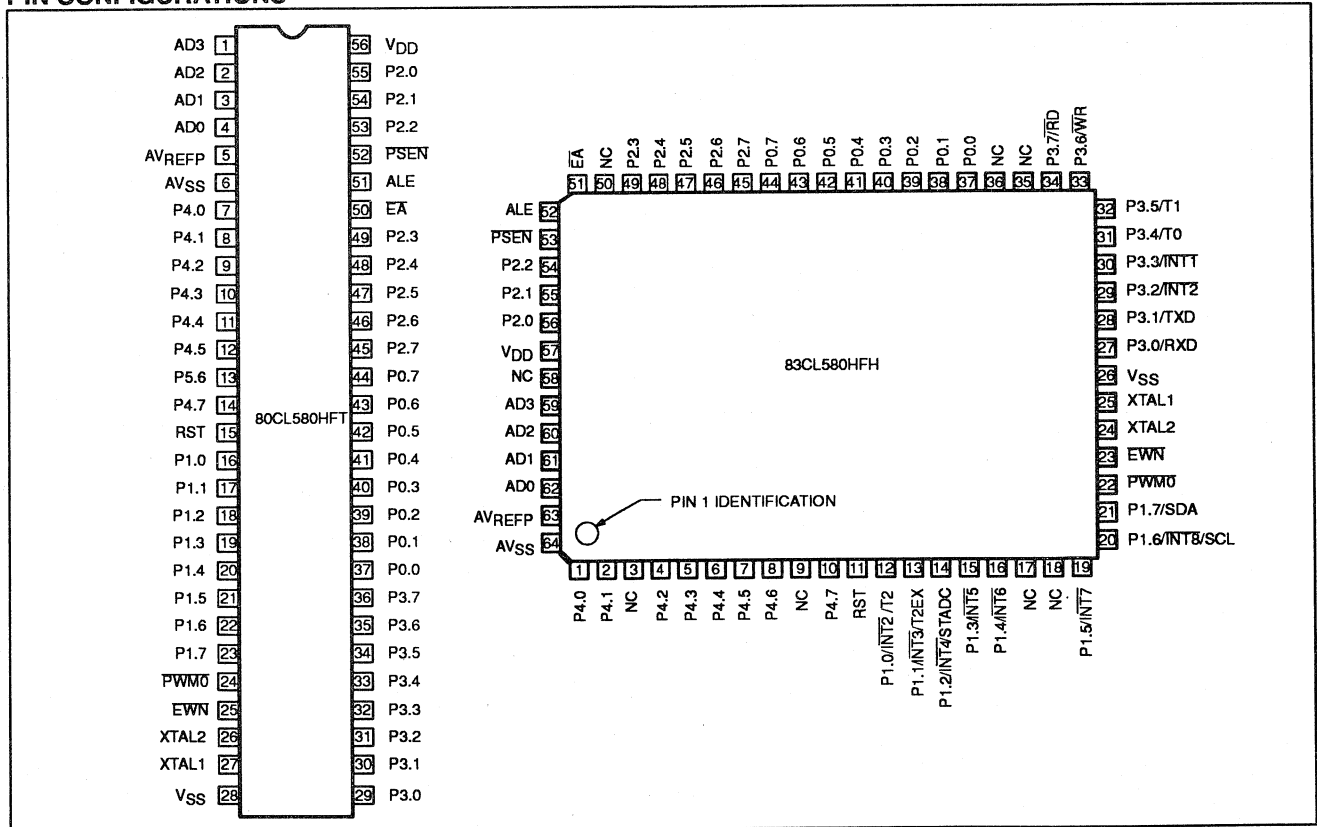
The 83CL580 is manufactured in an advanced CMOS technology. The instruction set of the 83CL580 is based on that of the 8051. The 83CL580 is an 8-bit general purpose microcontroller especially suited for cordless telephones and mobile communication applications. The device has low power consumption and a wide range of supply voltage. For emulation purposes, the 85CL580 (Piggy-back version) with 256 bytes of RAM is recommended. The 83CL580 has two software selectable modes of reduced activity for further power reduction: Idle and Power-down. The 83CL580 also functions as an arithmetic processor having facilities for both binary and BCD arithmetic plus bit-handling capabilities. The instruction set consists of over 100 instructions: 49 one-byte, 46 two-byte, and 16 three-byte.

FEATURES

- Full static 80C51 CPU
- 8-bit CPU, ROM, RAM, I/O in a single 56-lead VSO56 or 64-lead QFP64 package
- 6K × 8 ROM, expandable externally to 64K bytes
- 256 bytes RAM, expandable externally to 64K bytes
- Five 8-bit ports, 40 I/O lines
- Three 16-bit timer / event counters
- External memory expandable up to 128K, external ROM up to 64K and / or RAM up to 64K
- On-chip oscillator suitable for RC, LC, quartz crystal or ceramic resonator
- Fifteen source, fifteen vector interrupt structure with two priority levels
- Full duplex serial UART
- I²C-bus interface for serial transfer on two lines

- A/D converter with power-down mode (8-bit, 4 inputs)
- Pulse width modulated output (8-bit resolution)
- Watchdog timer
- Enhanced architecture with:
 - non-page oriented instructions
 - four eight byte RAM register banks
 - direct addressing
 - multiply, divide, subtract and compare instructions
 - stack depth limited only by available internal RAM (max. 256 bytes)
- Power-Down and IDLE instructions
- Wake-up via external interrupts at Port 1
- Single supply voltage of 2.5V to 6.0V
- Frequency range of 32kHz to 12MHz
- Very low current consumption: typically 6mA at 3.5V / 8MHz
- Operating temperature range: -40 to +85°C

PIN CONFIGURATIONS



12/92-OBJECTIVE

Philips Semiconductors



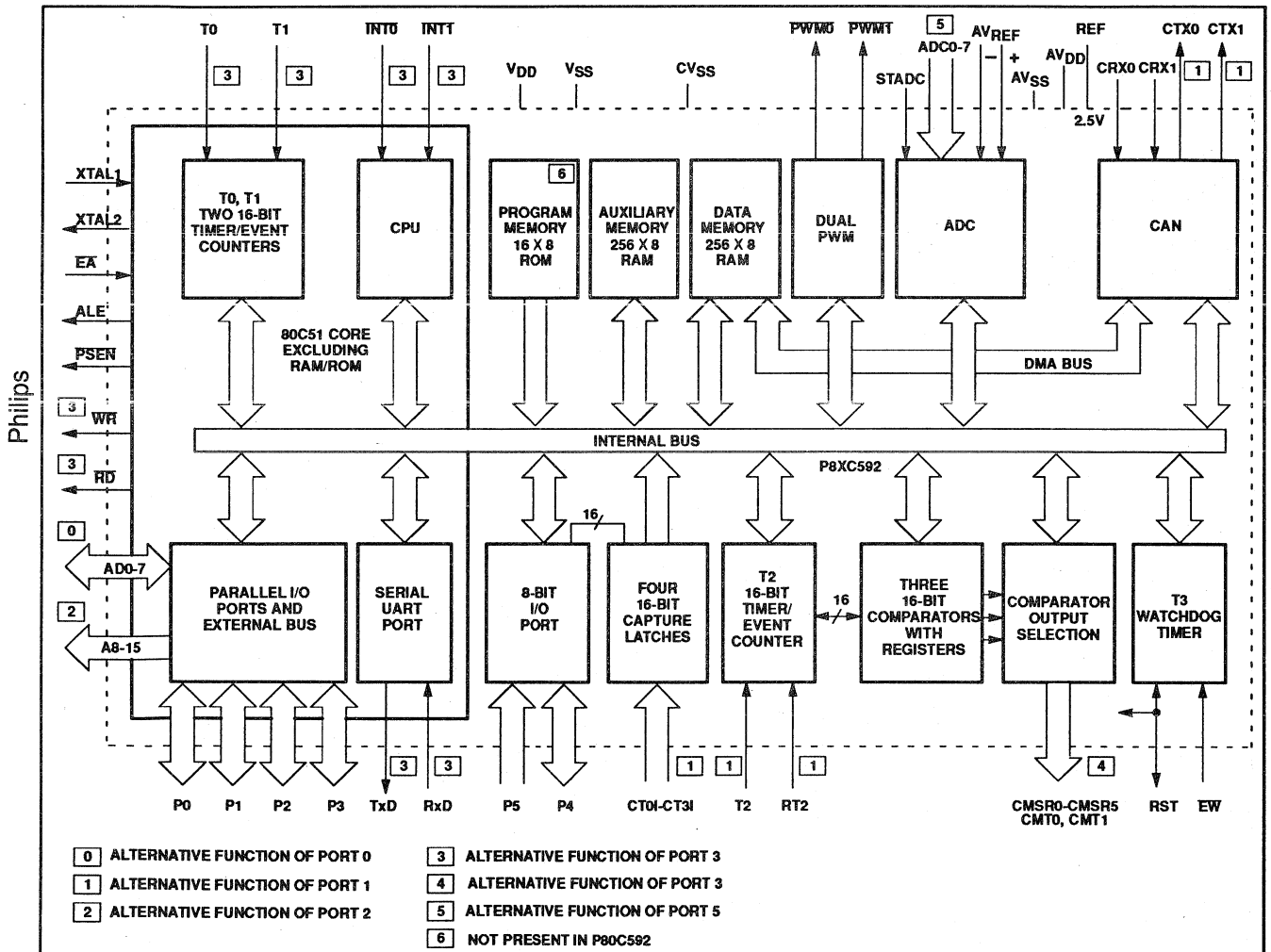
PHILIPS

80C592/83C592/87C592 – Single-Chip 8-Bit Microcontroller with CAN Controller

FEATURES

- 80C51 core architecture
- 16k x 8 EPROM (87C592)
- 16k x 8 ROM (83C592)
- ROMless (80C592)
- 512 x 8 RAM expandable externally to 64k bytes
- Two standard 16-bit timer/counters
- An additional 16-bit timer/counter coupled to four capture registers and three compare registers
- A 10-bit ADC with eight multiplexed analog inputs
- Two 8-bit resolution pulse width modulation outputs
- 15 interrupt sources with 2 priority levels
- Five 8-bit I/O ports plus one 8-bit input port shared with analog inputs
- CAN controller with DMA transfer between internal data RAM and CAN registers
- Up to 1 Mbit/s CAN-controller with bus failure management facility
- $V_{DD}/2$ reference voltage
- Full-duplex UART compatible with the standard 80C51
- On-chip watchdog timer
- Extended temperature ranges (-40 to +125°C)
- OTP package available
- ROM code protection

BLOCK DIAGRAM



11/92-PRELIM

Philips Semiconductors



PHILIPS

87C652 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The 87C652 Single-Chip 8-Bit Microcontroller is manufactured in an advanced CMOS process and is a derivative of the 80C51 microcontroller family. The 87C652 has the same instruction set as the 80C51.

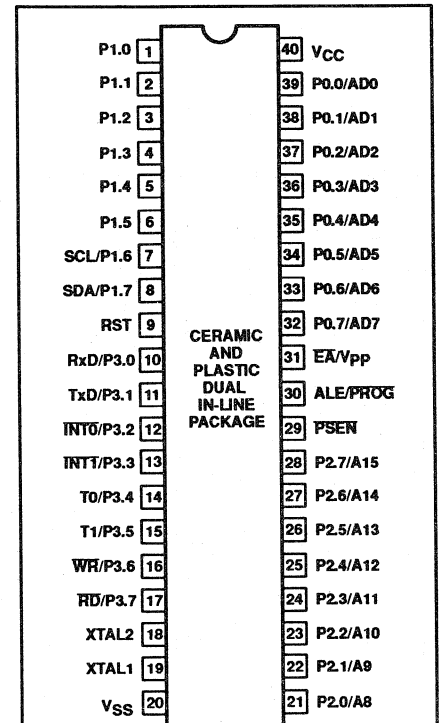
This device provides architectural enhancements that make it applicable in a variety of applications for general control systems. The 87C652 contains a non-volatile 8k x 8 EPROM, a volatile 256 x 8 read/write data memory, four 8-bit I/O ports, two 16-bit timer/event counters (identical to the timers of the 80C51), a multi-source, two-priority-level, nested interrupt structure, an I²C interface, UART and on-chip oscillator and timing circuits. For systems that require extra capability, the 87C652 can be expanded using standard TTL compatible memories and logic.

The device also functions as an arithmetic processor having facilities for both binary and BCD arithmetic plus bit-handling capabilities. The instruction set consists of over 100 instructions: 49 one-byte, 45 two-byte and 17 three-byte. With a 16MHz crystal, 58% of the instructions are executed in 0.75µs and 40% in 1.5µs. Multiply and divide instructions require 3µs.

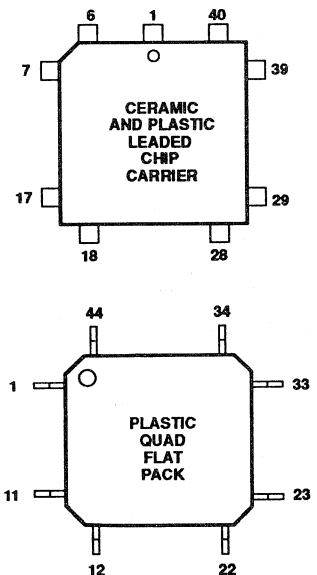
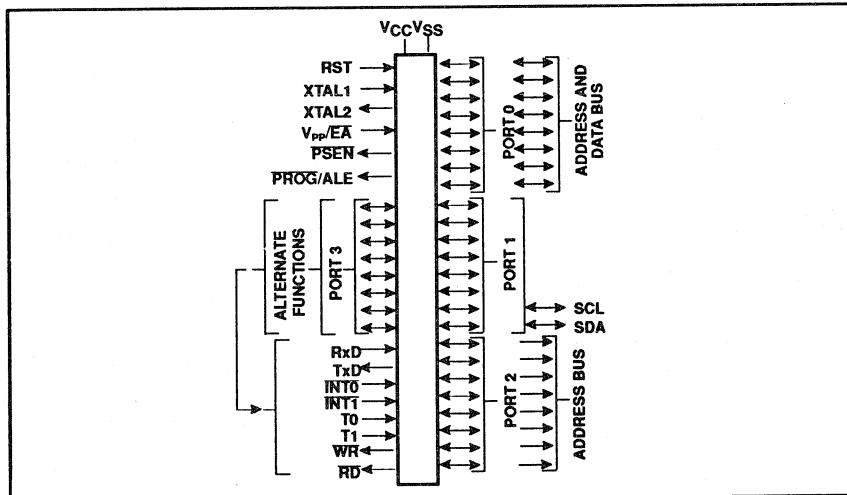
FEATURES

- 80C51 central processing unit
- 8k x 8 EPROM expandable externally to 64k bytes (EPROM is not expandable)
- 256 x 8 RAM, expandable externally to 64k bytes
- Two standard 16-bit timer/counters
- Four 8-bit I/O ports
- I²C-bus serial I/O port with byte oriented master and slave functions
- Full-duplex UART facilities
- Power control modes
 - Idle mode
 - Power-down mode
- Five package styles
- Extended temperature range
- OTP package available
- Three speed ranges
 - 16MHz
 - 20MHz

PIN CONFIGURATION



LOGIC SYMBOL



Philips

01/07/93

Philips Semiconductors



PHILIPS

87C654 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The 87C654 Single-Chip 8-Bit Microcontroller is manufactured in an advanced CMOS process and is a derivative of the 80C51 microcontroller family. The 87C654 has the same instruction set as the 80C51. Two versions of the derivative exist:

83C654—16k bytes mask programmable ROM

87C654—EPROM version

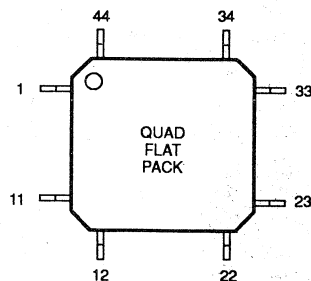
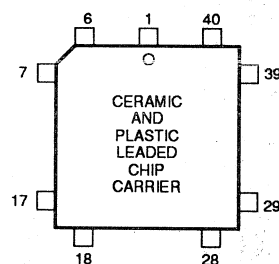
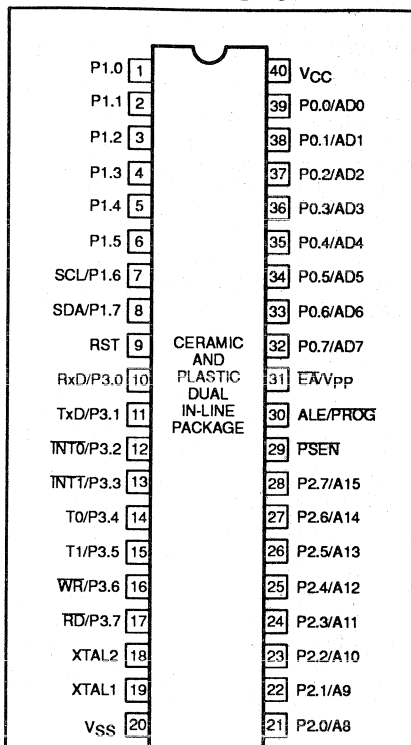
This device provides architectural enhancements that make it applicable in a variety of applications for general control systems. The 87C654 contains a non-volatile 16k × 8 EPROM, a volatile 256 × 8 read/write data memory, four 8-bit I/O ports, two 16-bit timer/event counters (identical to the timers of the 80C51), a multi-source, two-priority-level, nested interrupt structure, an I²C interface, UART and on-chip oscillator and timing circuits. For systems that require extra capability, the 87C654 can be expanded using standard TTL compatible memories and logic.

The device also functions as an arithmetic processor having facilities for both binary and BCD arithmetic plus bit-handling capabilities. The instruction set consists of over 100 instructions: 49 one-byte, 45 two-byte and 17 three-byte. With a 16MHz crystal, 58% of the instructions are executed in 0.75µs and 40% in 1.5µs. Multiply and divide instructions require 3µs.

FEATURES

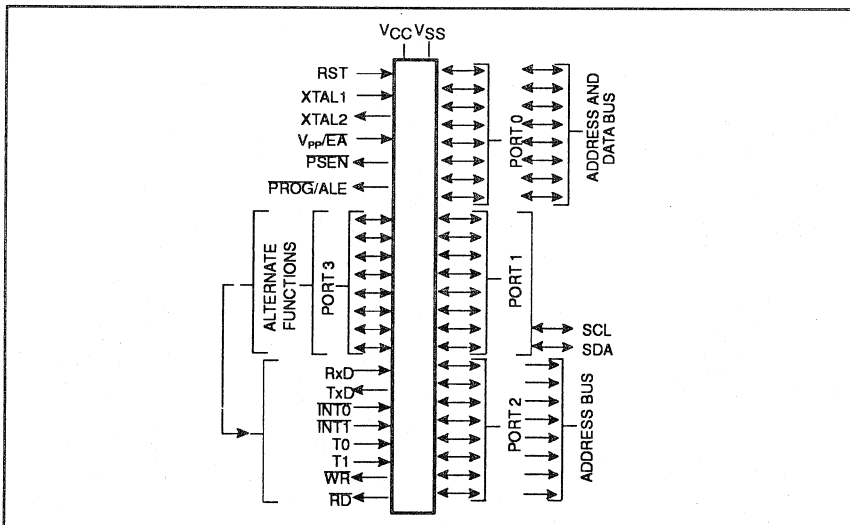
- 80C51 central processing unit
- 16k × 8 EPROM expandable externally to 64k bytes
- 256 × 8 RAM, expandable externally to 64k bytes
- Two standard 16-bit timer/counters
- Four 8-bit I/O ports
- I²C-bus serial I/O port with byte oriented master and slave functions
- Full-duplex UART facilities
- Power control modes
 - Idle mode
 - Power-down mode
- Five package styles
- Extended temperature range
- OTP package available
- Three speed ranges
 - 16MHz
 - 20MHz

PIN CONFIGURATIONS



Philips

LOGIC SYMBOL



01/07/93

Philips Semiconductors



PHILIPS

87C750 – CMOS Single-Chip 8-Bit Microcontroller

DESCRIPTION

The Philips 87C750 offers the advantages of the 80C51 architecture in a small package and at low cost.

The 87C750 Microcontroller is fabricated with Philips high-density CMOS technology. Philips epitaxial substrate minimizes CMOS latch-up sensitivity.

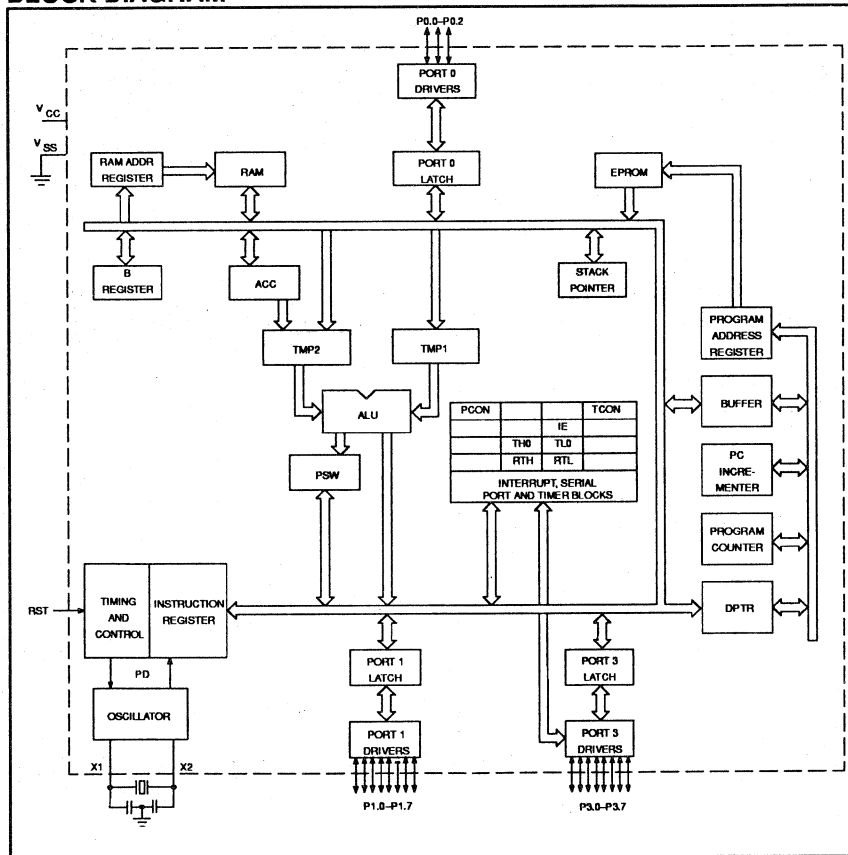
The 87C750 contains a 1k × 8 EPROM, a 64 × 8 RAM, 19 I/O lines, a 16-bit auto-reload counter/timer, a five-source, fixed-priority level interrupt structure and an on-chip oscillator.

FEATURES

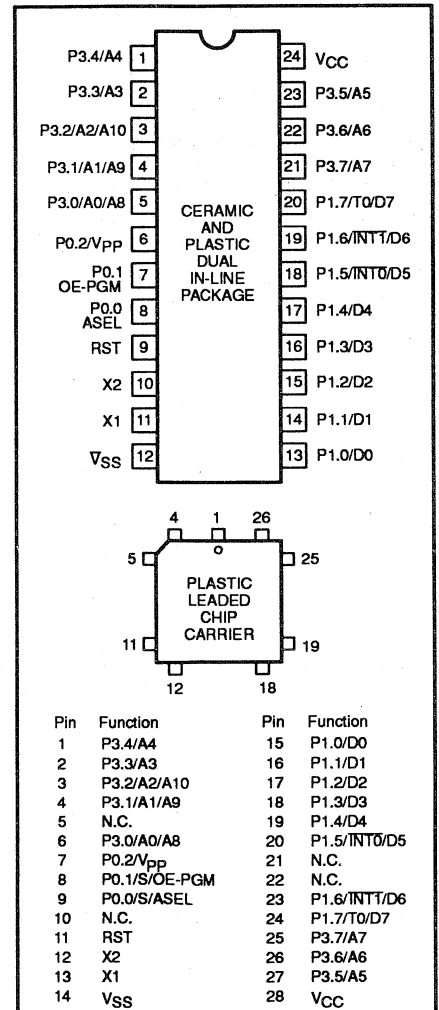
- 80C51 based architecture
- Wide oscillator frequency range—up to 40MHz
- Small package sizes
 - 24-pin DIP (300 mil "skinny DIP")
 - 28-pin PLCC
- 87C750 available in erasable quartz lid or one-time programmable plastic packages
- Low power consumption:
 - Normal operation: less than 11mA @ 5V, 12MHz
 - Idle mode
 - Power-down mode

- 1k × 8 EPROM (87C750)
- 64 × 8 RAM
- 16-bit auto reloadable counter/timer
- Fixed-rate timer
- Boolean processor
- CMOS and TTL compatible
- Well suited for logic replacement, consumer and industrial applications
- LED drive outputs

BLOCK DIAGRAM



PIN CONFIGURATIONS



05/25/93

Philips

Philips Semiconductors



PHILIPS

NE/SA5224 and NE/SA5225 – Fiber Optic Postamplifiers

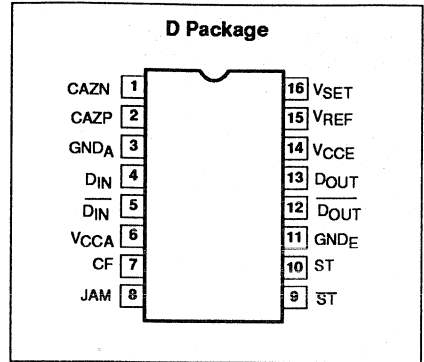
DESCRIPTION

The NE/SA5224 and NE/SA5225 are high-gain limiting amplifiers that are designed to process signals from fiber optic preamplifiers. Capable of operating at 125Mb/s, the 5224 chip is FDDI compatible and has input signal level-detection with a user-adjustable threshold. The DATA and LEVEL-DETECT outputs are differential for optimum noise margin and ease of use. The NE/SA5225 is an ECL 10K version of the NE/SA5224.

FEATURES

- Wideband operation: 1.0kHz to 120MHz typical
- Operation with single +5V or -5.2V supply
- Differential ECL outputs
 - 5224 = 100k
 - 5225 = 10k
- Programmable input signal level-detection
- Fully differential for excellent PSRR to 1GHz

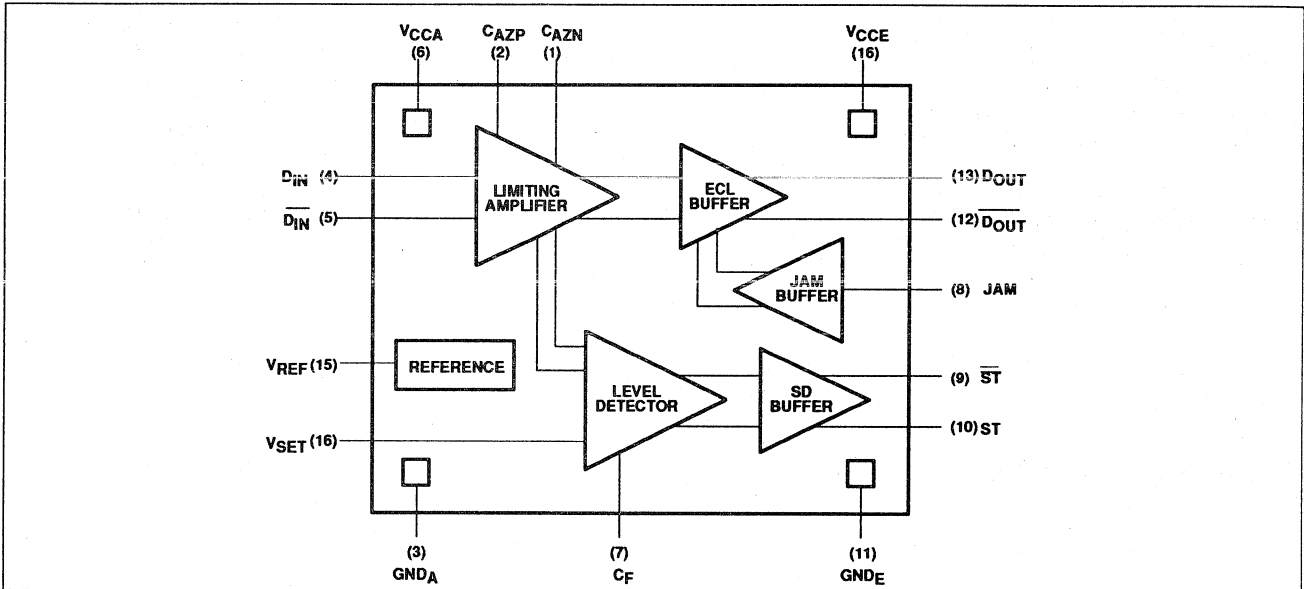
PIN DESCRIPTION



GENERAL APPLICATIONS

- Data communication in noisy industrial environments
- LANs

BLOCK DIAGRAM



02-92/05550

Philips

Philips Semiconductors



PHILIPS

NE8392A – Coaxial Transceiver Interface for Ethernet/Thin Ethernet

DESCRIPTION

The NE8392A Coaxial Transceiver Interface (CTI) is a coaxial line driver/receiver for Ethernet (10base5) and Thin Ethernet (10base2) local area networks. The CTI is connected between the coaxial cable and the Data Terminal Equipment (DTE) and consists of a receiver, transmitter, collision detector, heartbeat generator and jabber timer (see Block Diagram). The transmitter output connects directly to a doubly terminated 50Ω cable, while the receiver output, collision detector output and transmitter input are connected to the DTE through isolation transformers. Isolation between the CTI and the DTE is an IEEE 802.3 requirement that can be met on signal lines by using a set of pulse transformers normally available in a standard 16-pin DIP. Power isolation for the CTI is achieved using DC-to-DC conversion through a power transformer.

During transmission the jabber timer is initiated to disable the CTI transmitter in the event of a longer than legal length data pack-

et. Collision detection circuitry monitors the signals on the coaxial cable to determine the presence of colliding packets and signals the DTE in the event of a collision. At the end of every transmission the heartbeat generator creates a pseudo collision for a short time to ensure that the collision circuitry is functioning correctly. The heartbeat function can be disabled for repeater applications.

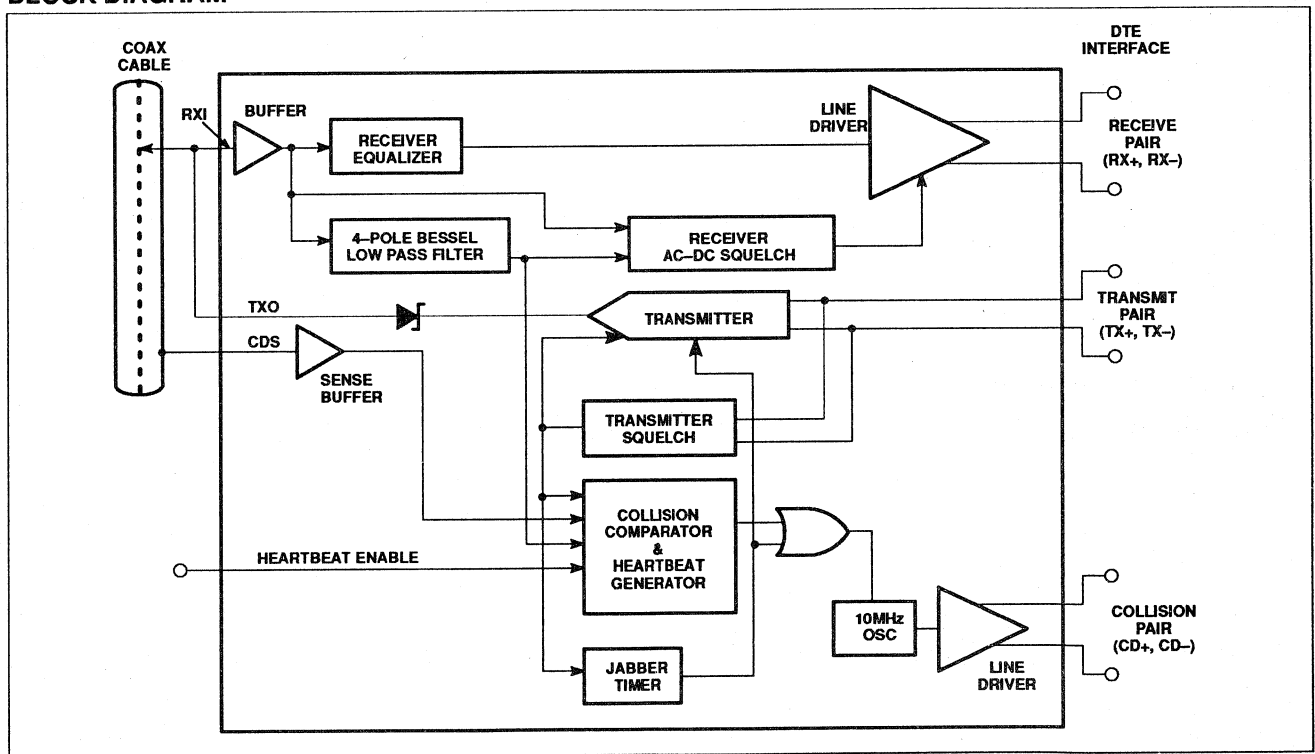
The CTI is normally part of a three chip set that implements a complete Ethernet/ Thin Ethernet network interface for a DTE (see Figure 2, Interface Diagram). The other chips are a Serial Network Interface (SNI) and a Network Interface Controller (NIC). The SNI provides Manchester Encoding and Decoding while the NIC handles the media access protocol and buffer management tasks.

FEATURES

- Compatible with Ethernet II, IEEE 802.3 10base5 and 10base2, and ISO 8802/3 interface specifications

- Integrates all transceiver electronics except signal and power isolation
- Only one external resistor required for setting coaxial signaling current
- Jabber timer function integrated on chip
- Heartbeat generator can be externally disabled for operation as IEEE 802.3 compatible repeaters
- On-chip precision voltage reference for receive mode collision detection
- Squelch circuitry on all signal inputs rejects noise
- Full ESD protection
- Standard 16-pin DIP with special lead frame minimizes the operating die temperature
- Power-on reset prevents glitches on coaxial cable during power up.

BLOCK DIAGRAM



10/09/90

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PHILIPS

NE86C92 – Twisted-Pair Transceiver Interface

DESCRIPTION

The NE86C92 is a twisted-pair transceiver that implements the IEEE 802.3 10BASE-T Ethernet specification. The circuit provides the connection between the Manchester encoder/decoder and the twisted-pair cable and includes a receiver, transmitter, collision detector, heartbeat generator, jabber timer, link integrity monitor, and control circuits and drivers for five LED status indicators.

The NE86C92 includes receive polarity detection with automatic polarity correction, smart squelch on all signal inputs for improved noise immunity, and a highly reliable crystal oscillator to set pre-distortion timing and the collision signal frequency.

The NE86C92 also allows for automatic selection between AUI and twisted-pair (RJ-45) connections; thus eliminating the need for end-users to remove the interface board and move jumpers to switch between connections. An application note is available which describes implementation of this feature.

The twisted-pair outputs and inputs connect to the twisted-pair cable through transmit and receive filters while the receiver output, collision detector output and transmitter input are connected to the Manchester encoder/decoder through pulse transformers. This interface to the encoder/decoder is, therefore, directly compatible with current 10Base2/10Base5 connections and allows easy expansion of existing interface cards for twisted-pair wiring.

During transmission the jabber timer is initiated to disable the NE86C92 in the event of a longer than legal length data packet. Collision detection circuitry monitors both the transmit path and the receiver input to determine the presence of colliding packets and signals the Manchester encoder/decoder in the event of a collision. At the end of every transmission the heartbeat generator creates a pseudo collision for a short time to ensure that the collision circuitry is functioning correctly. The link integrity monitor emits pulses onto the twisted-pair cable and expects to receive pulses from the twisted-pair cable at regular intervals. If no pulses or packets are received, a link failure has occurred; this is indicated by the RLED status indicator. Both heartbeat and link integrity monitor functions can be disabled.

The NE86C92 is normally part of a three chip set for implementing a complete twisted-pair Ethernet network interface. The other chips are the Manchester encoder/decoder, such as the NE502A, and a Network Interface Controller, such as the NE86950.

FEATURES

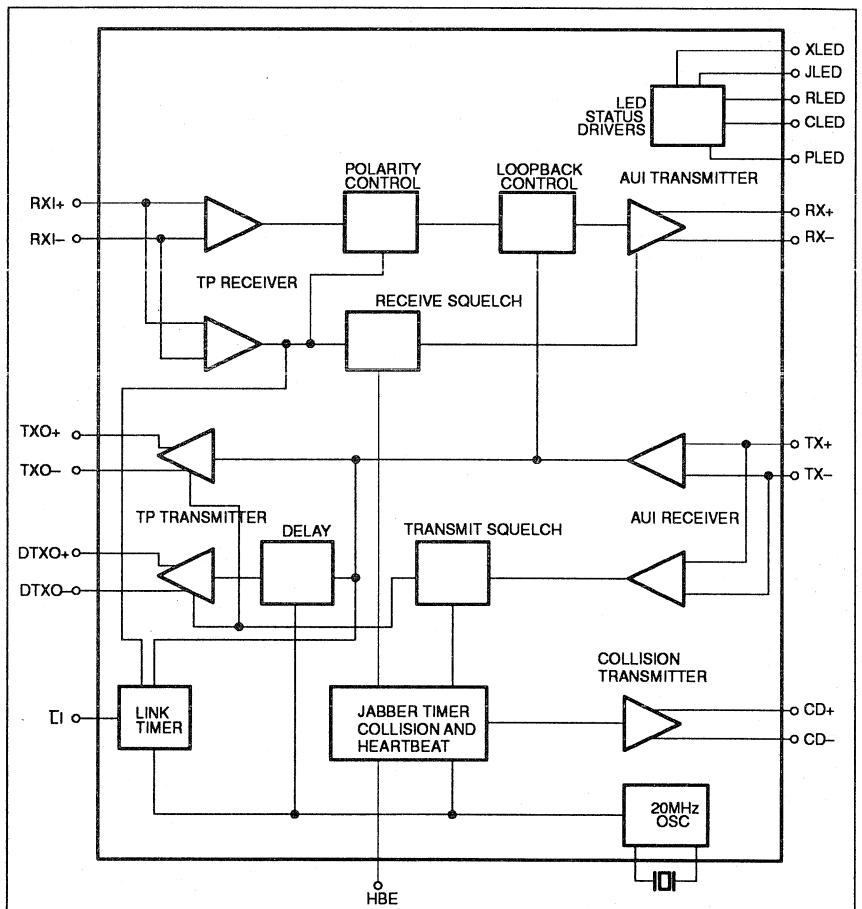
- Compatible with IEEE 802.3 10BASE-T specifications
- Integrates all transceiver functions, with selectable heartbeat and link test generators
- Twisted-pair polarity detection and automatic correction
- Smart squelch on all data inputs

- Internal transmitter pre-distortion generator
- Supports automatic selection between AUI and RJ-45 connections
- Five LED status signals with on-chip drivers for transmit, receive and link integrity, collision, jabber status and twisted pair polarity reversal
- Advanced CMOS process uses single 5V supply
- Extremely low power operation: 24mA typical idle current

APPLICATIONS

- 10BASE-T network interfaces for computers and workstations
- External 10BASE-T transceiver units

BLOCK DIAGRAM



07/29/91

Philips

Philips Semiconductors



PHILIPS

SC26C92 – Dual Universal Asynchronous Receiver/Transmitter (DUART) SC26C/68C94 – Quad Universal Asynchronous Receiver/Transmitter (QUART)

DESCRIPTION

The SC26C92 is a pin and function replacement for the SCC2692 with added features and deeper FIFOs. Its configuration on power up is that of the 2692. Its differences from the 2692 are: 8 character receiver, 8 character transmit FIFOs, receiver watch dog timer, mode register 0 is added, extended baud rate and overall faster speeds, programmable receiver and transmitter interrupts. (The SCC2692 is not being discontinued.)

The Philips Semiconductors SC26C92 Dual Universal Asynchronous Receiver/Transmitter (DUART) is a single-chip CMOS-LSI communications device that provides two full-duplex asynchronous receiver/transmitter channels in a single package. It interfaces directly with microprocessors and may be used in a polled or interrupt driven system.

The operating mode and data format of each channel can be programmed independently. Additionally, each receiver and transmitter can select its operating speed as one of eighteen fixed baud rates, a 16X clock derived from a programmable counter/timer, or an external 1X or 16X clock. The baud rate generator and counter/timer can operate directly from a crystal or from external clock inputs. The ability to independently program the operating speed of the receiver and transmitter make the DUART particularly attractive for dual-speed channel applications such as clustered terminal systems.

Each receiver and transmitter is buffered by eight character FIFOs to minimize the potential of receiver overrun, transmitter underrun and to reduce interrupt overhead in interrupt driven systems. In addition, a flow control capability is provided to disable a remote transmitter when the receiver buffer is full.

Also provided on the SC26C92 are a multipurpose 7-bit input port and a multipurpose 8-bit output port. These can be used as general purpose I/O ports or can be assigned specific functions (such as clock inputs or status/interrupt outputs) under program control.

The SC26C92 is available in two package versions: 40-pin 0.6" wide DIP and a 44-pin PLCC.

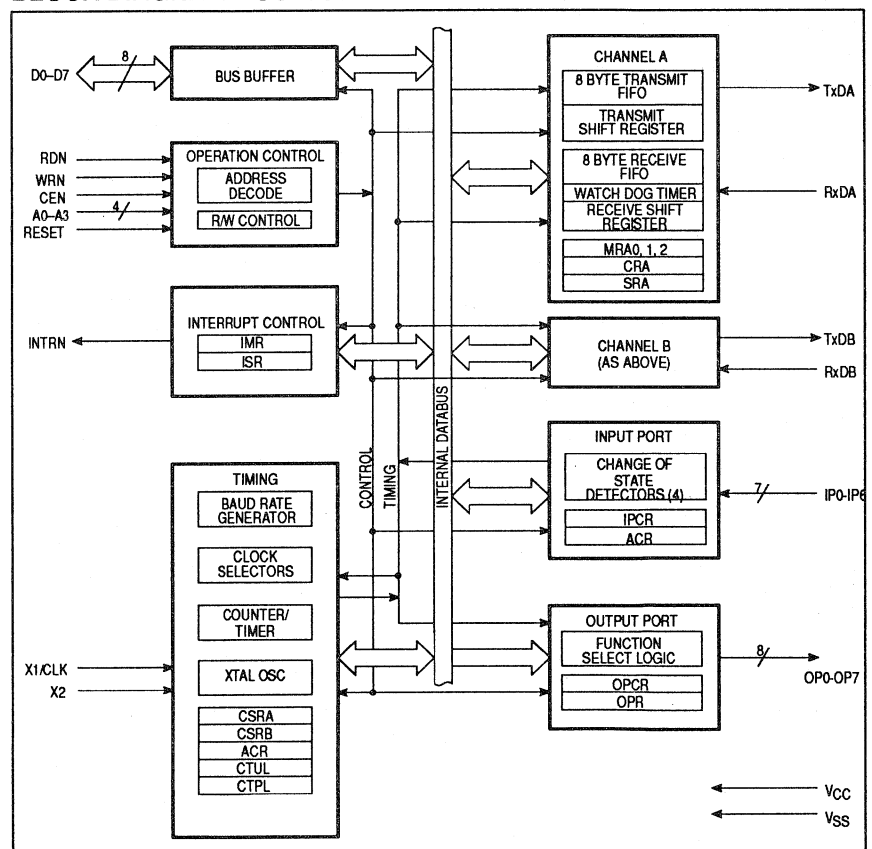
BASIC FEATURES

- Dual full-duplex independent asynchronous Rx/Tx
- 8 character FIFOs for each Receiver and Transmitter
- Programmable data format and baud rate
- Parity, framing and overrun error detection
- Multidrop address detection
- On-chip crystal oscillator
- Power down mode
- Receiver timeout mode
- Single +5V supply

ADDITIONAL FEATURES OF QUARTs

- 16MHz clock rate for 1MHz datarate
- 8-fold increase in interrupt efficiency due to new arbitration system
- Expanded internal baud rate select to 500KHz
- Watchdog timer for each receiver
- Designed for both Intel and Motorola interfaces

BLOCK DIAGRAM – SC26C92



NOTE: SC26/68C94 has 2 more independent Rx/Tx channels.

7/29/92

Philips Semiconductors



PHILIPS

SC26C460/SC68C460 – Input/output Processor (IOP)

DESCRIPTION

The Philips Semiconductors SC26C460 I/O Processor (IOP) is a co-processor that greatly reduces the CPU overhead required to service a large number of I/O devices. It can inspect, modify or delete the data it transfers. Each channel can have its own channel program, which can branch depending on device status or a data test.

The IOP includes the features of a 32-channel Direct Memory Access (DMA) controller. This helps in handling multi-channel devices such as the Philips Semiconductors 2698 OCT-ART. It can create a data buffer chain in memory to transfer sequential blocks, greatly reducing the number of times the CPU needs to be interrupted.

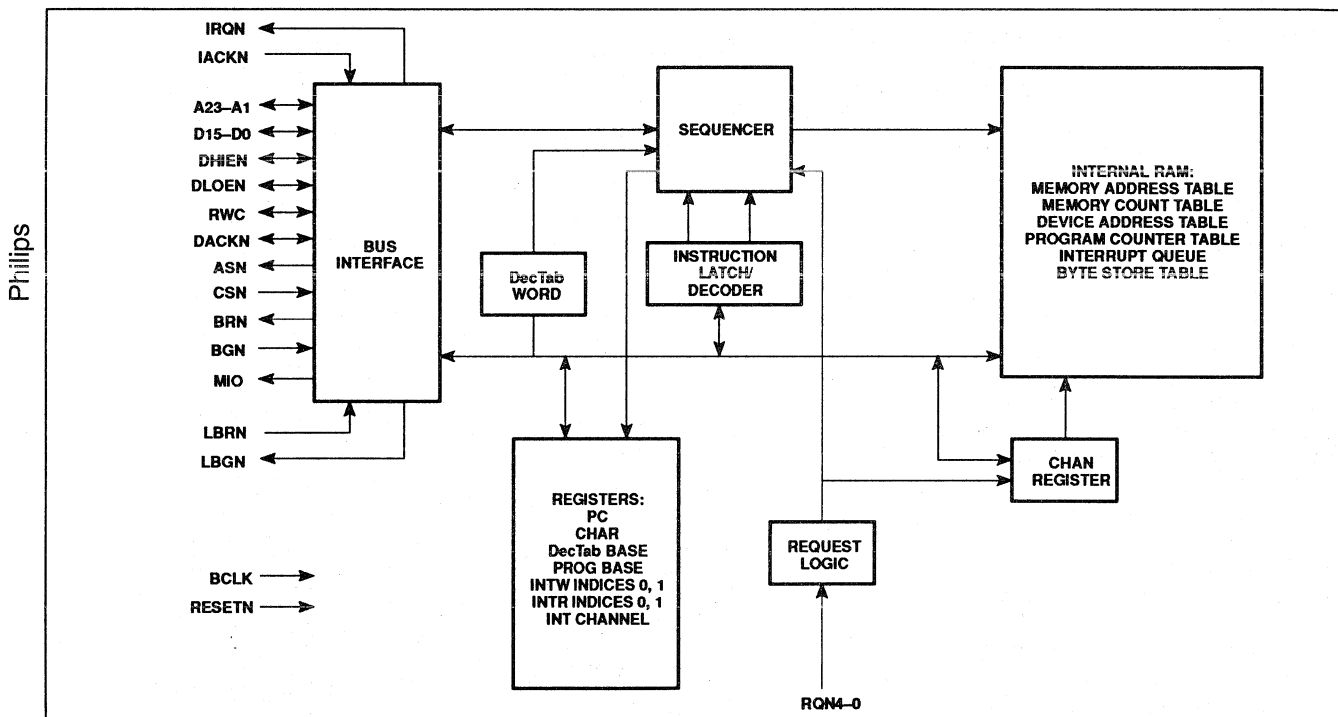
The IOP can be attached directly to the system bus, or for higher performance, can support an additional local I/O bus.

FEATURES

- 32 channel DMA processor
- Separate memory address and length for each channel
- Separate I/O device address for each channel
- Separate channel program entry point for each channel
- Programmable to handle virtually all types of peripherals
- Custom instruction set

- Can interpret peripheral status for channel selection, error checking
- Can interpret data characters for buffer termination checking, control sequence transformation
- 8- or 16-bit data transfers
- 24-bit memory addresses: 16Mbyte address space
- 2-level interrupt queue minimizes host microprocessor overhead
- Stores and fetches data similar to Intel processors
- Can transfer multiple blocks without interrupting the CPU
- High-speed CMOS technology
- 68-pin PLCC

BLOCK DIAGRAM



05-92/06659

Philips Semiconductors



PHILIPS

SCC2698B – Enhanced Octal Universal Asynchronous Receiver/Transmitter (Octal UART)

DESCRIPTION

The SCC2698B Enhanced Octal Universal Asynchronous Receiver/Transmitter (Octal UART) is a single chip MOS-LSI communications device that provides eight full-duplex asynchronous receiver/transmitter channels in a single package. It is fabricated with CMOS technology which combines the benefits of high density and low power consumption.

The operating speed of each receiver and transmitter can be selected independently as one of eighteen fixed baud rates, a 16X clock derived from a programmable counter/timer, or an external 1X or 16X clock. The baud rate generator and counter/timer can operate directly from a crystal or from external clock inputs. The ability to independently program the operating speed of the receiver and transmitter make the Octal UART particularly attractive for dual-speed channel applications such as clustered terminal systems.

The receiver is quadruple buffered to minimize the potential of receiver overrun or to reduce interrupt overhead in interrupt driven systems. In addition, a handshaking capability is provided to disable a remote UART transmitter when the receiver buffer is full.

The UART provides a power-down mode in which the oscillator is frozen but the register contents are stored. This results in reduced power consumption on the order of several magnitudes. The Octal UART is fully TTL compatible and operates from a single +5V power supply.

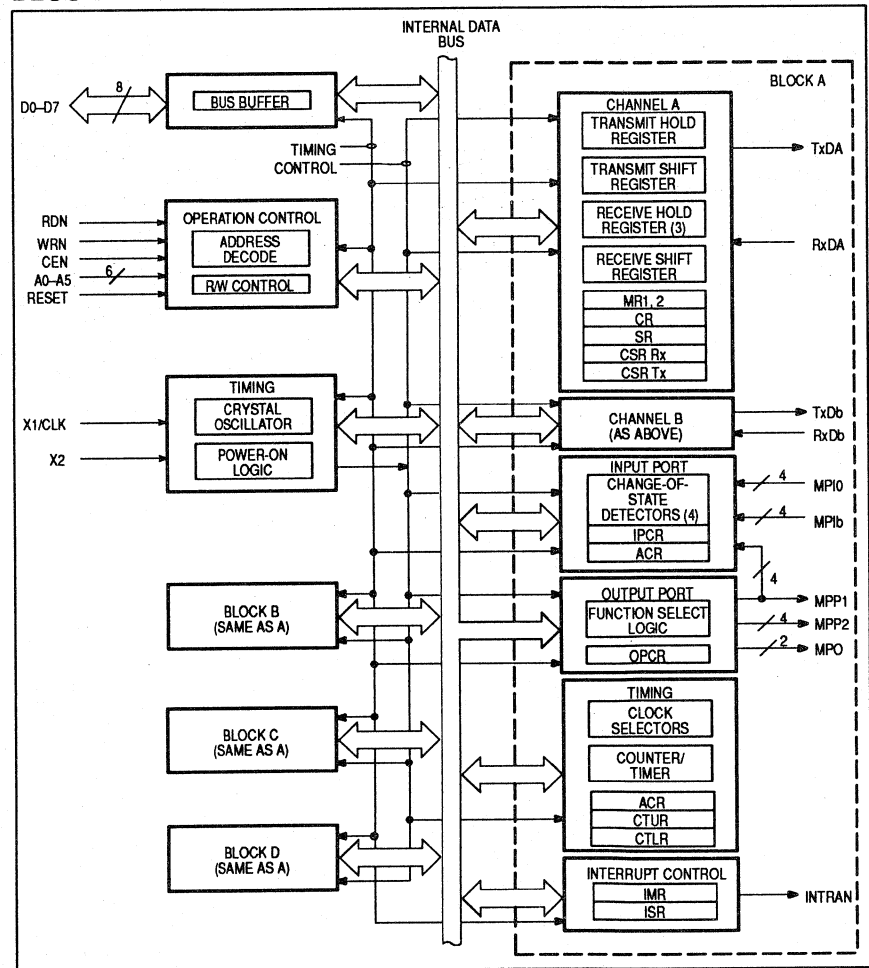
The SCC2698B is an upwardly compatible version of the 2698A Octal UART. In PLCC packaging, it is enhanced by the addition of receiver ready or FIFO full status outputs, and transmitter empty status outputs for each channel on 16 multipurpose I/O pins. The multipurpose I/O pins of the SCC2698B were inputs only on the SCC2698A.

FEATURES

- Eight full-duplex asynchronous receiver/transmitters
- Quadruple buffered receiver data register
- Programmable data format:
 - 5 to 8 data bits plus parity
 - Odd, even, no parity or force parity
 - 1, 1.5 or 2 stop bits programmable in 1/16-bit increments

- Baud rate for the receiver and transmitter selectable from:
 - 18 fixed rates: 50 to 38.4K baud
 - Non-standard rates to 115.2K baud
 - User-defined rates from the programmable counter/timer associated with each of four blocks
 - External 1x or 16x clock
- Parity, framing, and overrun error detection
- False start bit detection
- Line break detection and generation
- Programmable channel mode
 - Normal (full-duplex), automatic echo, local loop back, remote loopback
- Four multi-function programmable 16-bit counter/timers
- Four interrupt outputs with eight maskable interrupting conditions for each output
- Receiver ready/FIFO full and transmitter ready status available on 16 multi-function pins in PLCC package
- On-chip crystal oscillator
- TTL compatible
- Single +5V power supply with low power mode

BLOCK DIAGRAM



Philips



PHILIPS

SC26C562/68C562 – CMOS Dual Universal Serial Communications Controller (CDUSCC) SCN26/68562 – NMOS Dual Universal Serial Communications Controller (NDUSCC)

DESCRIPTION

The Philips Semiconductors SC26C562 Dual Universal Serial Communications Controller (CDUSCC) is a single-chip CMOS-LSI communications device that provides two independent, multi-protocol, full-duplex receiver/transmitter channels in a single package. It supports bit-oriented and character-oriented (byte count and byte control) synchronous data link controls as well as asynchronous protocols. The SC26C562 interfaces to synchronous bus MPUs and is capable of program-pollled, interrupt driven, block-move or DMA data transfers.

The SC26C562 (CDUSCC) is (PIN) hardware and (REGISTER) software compatible with the existing SCN26562 (DUSCC). CDUSCC will automatically configure to the NMOS DUSCC register map (default mode) on power up.

HIGH PERFORMANCE FEATURES

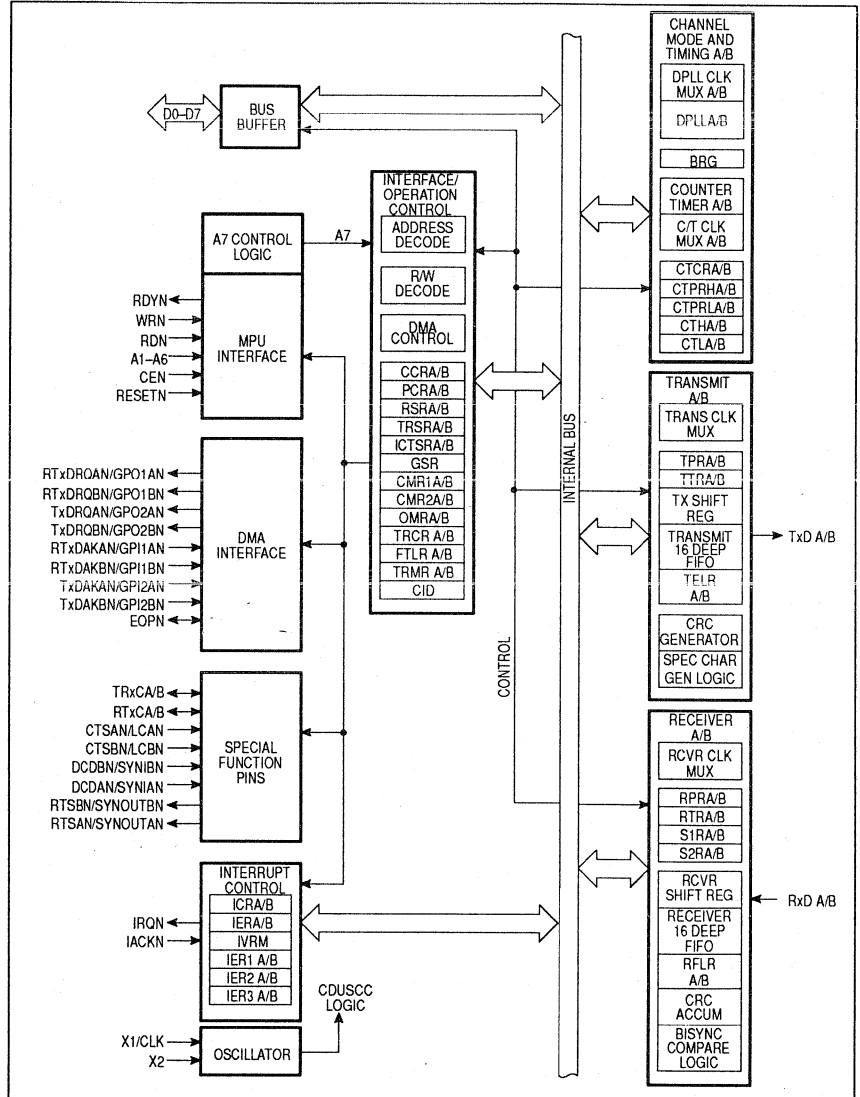
- Dual full duplex receiver
- Multi-protocol operations
 - Async
 - COP (BiSync, DDCMP, etc.)
 - BOP (HDLC, SDLC, X.21, X.25, Frame Relay, etc.) (with additional software drivers)
- High performance with up to 10Mb/s serial data rate
- Tx and Rx FIFOs: 4 characters for NDUSCC and 16 characters for CDUSCC
- Parity and FCS generation and checking
- Host interface: Polled I/O, interrupt I/O, DMA transfer, wait on ready bus cycle
- Tx and Rx clock selection: Internal counter/timer, internal fixed BRG, clock recovery through digital PLL
- DLE and SYN stripping in BiSync transparent mode
- Vectored and modified vector interrupt acknowledge
- Masking of up to 19 status bits for interrupts
- Interrupt priority selection by channel, function and interleaved

- DMA interface signals (DMAREQ, DMACK, DONE, etc.)
- Modem control and interface signals (RTS, CTS, etc.)
- User programmable multipurpose I/O signals
- Frame status byte through DMA (CDUSCC only)

APPLICATIONS

- Network terminals
- Network interface cards
- Workstations
- Network bridges
- Hubs and Smart Hubs
- Routers
- Gateways

BLOCK DIAGRAM — SC26C562



04/07/93

Philips

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PHILIPS

Cellular Radio Chip Set

UMA1000/1014, NE605 or 606 family, NE5750/5751, PCF8282/8XC552

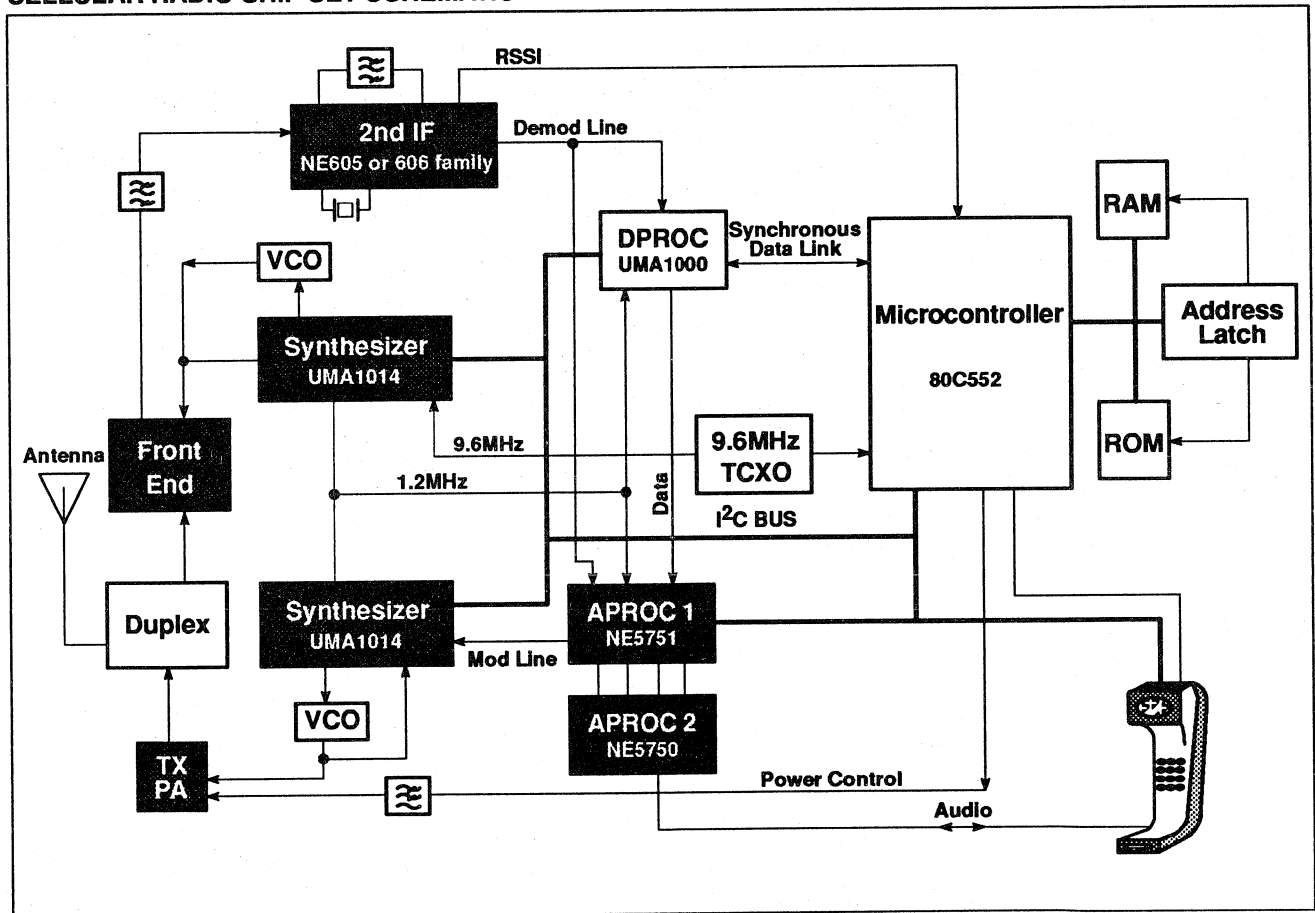
COMPONENTS

- NE605 or 606 Family – Low Power Single Chip FM Systems
- NE5750 – Audio Processor - Companding and Amplifier
- NE5751 – Audio Processor - Filter and Control Section
- UMA1000 – Data Processor for Cellular Radio
- UMA1014 – Low-Power Universal Synthesizer for Radio Communication
- S80C552 – Single Chip 8-Bit Microcontroller with A/D, Capture/Compare Timer, with High-Speed Outputs, PWM

FEATURES

- 6 key ICs for maximum integration
- Integrated filters, amplifiers, and companders to reduce off-chip components
- Designed for minimum current consumption, i.e., maximum use of standby modes, low current IC design
- I²C serial control bus

CELLULAR RADIO CHIP SET SCHEMATIC



Philips

Philips Semiconductors



PHILIPS

NE/SA568A – 150MHz Phase-Locked Loop

DESCRIPTION

The NE568A is a monolithic phase-locked loop (PLL) which operates from 1Hz to frequencies in excess of 150MHz and features an extended supply voltage range and a lower temperature coefficient of the V_{CO} center frequency in comparison with its predecessor, the NE 568. The NE568A is function and pin-compatible with the NE568, requiring only minor changes in peripheral circuitry. Temperature compensation network is different, no resistor on Pin 12, needs to be grounded and Pin 13 has a 3.9kΩ resistor to ground. Timing cap, C₂, is different and for 70MHz operation with temperature compensation network should be 16pF, not 34pF as was used in the NE568. The NE568A has the following improvements: ESD protected; extended V_{CC} range from 4.5V to 5.5V; operating temperature range -55 to 125°C (see Philips Semiconductors Military 568A data sheet); less layout sensitivity; and lower T_C of VCO (center frequency). The integrated circuit consists of a limiting amplifier, a current-controlled oscillator (ICO), a phase detector, a level shift circuit, V/I and I/V converters, an output buffer, and bias circuitry with temperature and frequency compensating characteristics. The design of the NE568A is particularly well-suited for demodulation of FM signals

with extremely large deviation in systems which require a highly linear output. In satellite receiver applications with a 70MHz IF, the NE568A will demodulate ±20% deviations with less than 1.0% typical non-linearity. In addition to high linearity, the circuit has a loop filter which can be configured with series or shunt elements to optimize loop dynamic performance. The NE568A is available in 20-pin dual in-line and 20-pin SO (surface mounted) plastic packages.

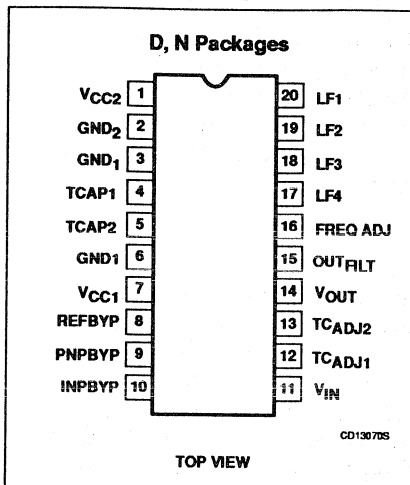
FEATURES

- Operation to 150MHz
- High linearity buffered output
- Series or shunt loop filter component capability
- External loop gain control
- Temperature compensated
- ESD protected¹

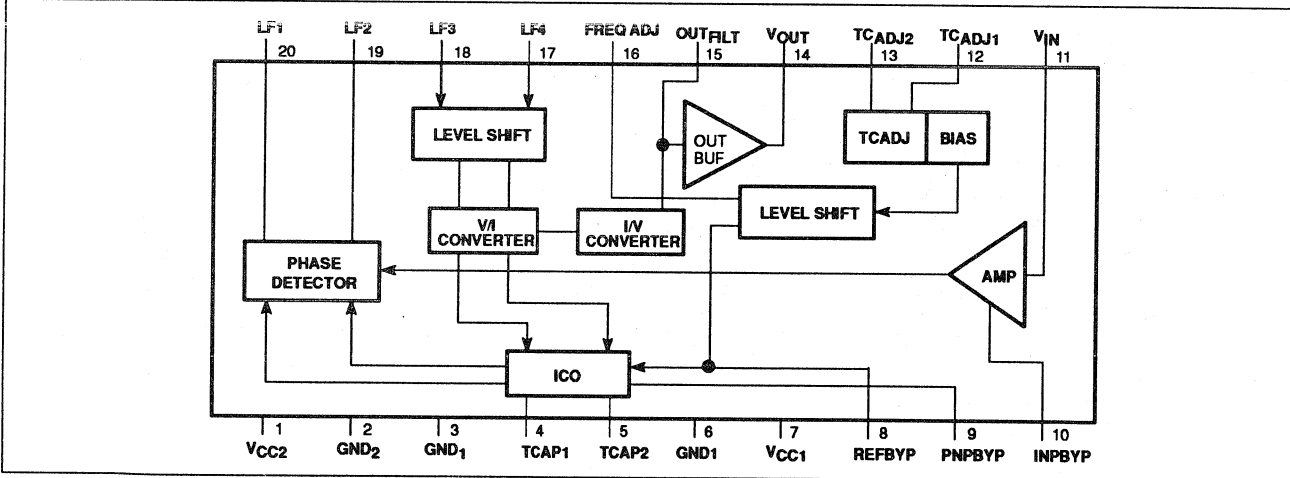
APPLICATIONS

- Satellite receivers
- Fiber optic video links
- VHF FSK demodulators
- Clock Recovery

PIN CONFIGURATION



BLOCK DIAGRAM



NOTE:

1. Pins 4 and 5 can tolerate 1000V only, and all other pins, greater than 2000V for ESD (human body model).

04/15/92

Philips Semiconductors



PHILIPS

NE/SA600 – 1GHz LNA and Mixer

DESCRIPTION

The NE/SA600 is a combined low noise amplifier (LNA) and mixer designed for high-performance low-power communication systems from 800-1200MHz. The low-noise preamplifier has a 2dB noise figure at 900MHz with 16dB gain and an IM_3 intercept of -10dBm at the input. Input and output impedances are 50Ω and the gain is stabilized by on-chip compensation to vary less than ± 0.5 dB over the -40 to +85°C temperature range. The wide-dynamic-range mixer has a 14dB noise figure and IM_3 intercept of +6dBm at the input at 900MHz. Mixer input impedance is 50Ω with an open-collector output. The chip incorporates an option so the LNA can be disabled and replaced by a through connection. The amplifier IM_3 intercept increases to +26dBm in this mode; thus, large signals can be handled. The

nominal current drawn from a single 5V supply is 13mA and 4.2mA in the LNA thru mode.

- UHF frequency conversion
- Portable radio
- Spread spectrum receivers
- 900MHz cordless phones

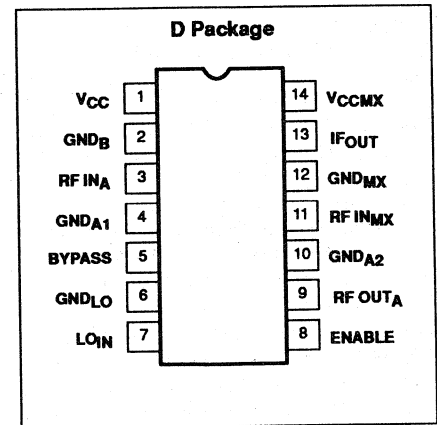
FEATURES

- Low current consumption: 13mA nominal, 4.2mA in the LNA thru mode
- Excellent noise figure: 2dB for the amplifier and 14dB for the mixer at 900MHz
- Excellent gain stability versus temperature
- Switchable overload capability
- Amplifier matched to 50Ω
- Mixer input matched to 50Ω
- Oscillator input matched to 50Ω

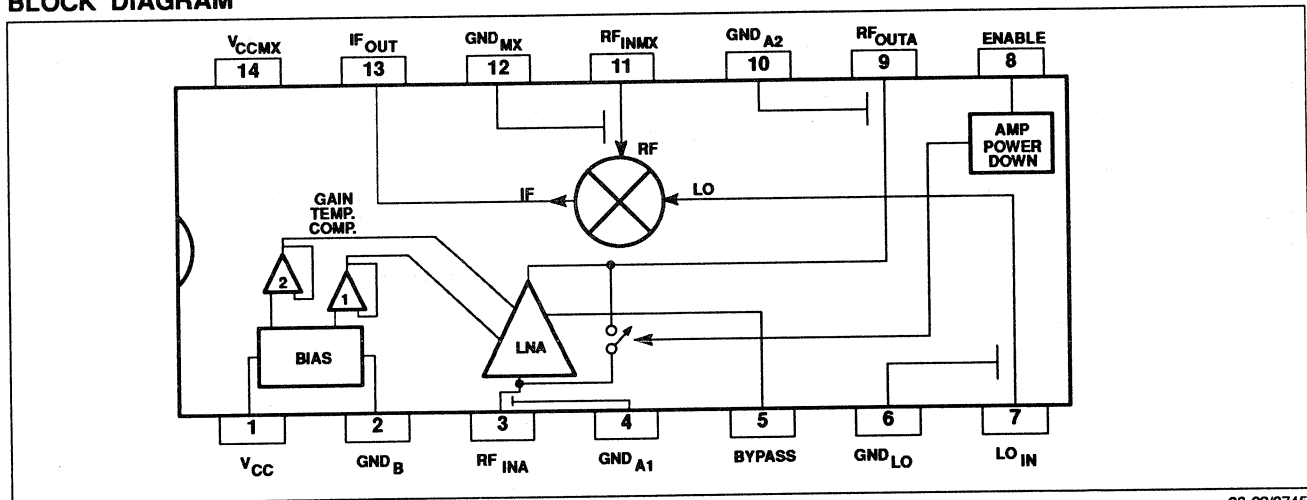
APPLICATIONS

- 900MHz front end for GSM/AMPS/TACS/ hand-held units
- RF data links

PIN CONFIGURATION



BLOCK DIAGRAM



08-92/07458

Philips

Philips Semiconductors



PHILIPS

NE/SA602A – Double-Balanced Mixer and Oscillator

DESCRIPTION

The NE/SA602A is a low-power VHF monolithic double-balanced mixer with input amplifier, on-board oscillator, and voltage regulator. It is intended for high performance, low power communication systems. The guaranteed parameters of the SA602A make this device particularly well suited for cellular radio applications. The mixer is a "Gilbert cell" multiplier configuration which typically provides 18dB of gain at 45MHz. The oscillator will operate to 200MHz. It can be configured as a crystal oscillator, a tuned tank oscillator, or a buffer for an external LO. For higher frequencies the LO input may be externally driven. The noise figure at 45MHz is typically less than 5dB. The gain, intercept performance, low-power and noise characteristics make the NE/SA602A a superior choice for high-performance battery operated equipment. It is available in an 8-lead dual in-line plastic package and an 8-lead SO (surface-mount miniature package).

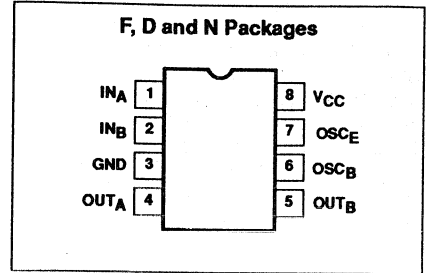
FEATURES

- Low current consumption: 2.4mA typical
- Excellent noise figure: <4.7dB typical at 45MHz
- High operating frequency
- Excellent gain, intercept and sensitivity
- Low external parts count; suitable for crystal/ceramic filters
- SA602A meets cellular radio specifications

APPLICATIONS

- Cellular radio mixer/oscillator
- Portable radio
- VHF transceivers
- RF data links
- HF/VHF frequency conversion
- Instrumentation frequency conversion
- Broadband LANs

PIN CONFIGURATION



04/17/90

NE/SA604A – High Performance Low Power FM IF System

DESCRIPTION

The NE/SA604A is an improved monolithic low-power FM IF system incorporating two limiting intermediate frequency amplifiers, quadrature detector, muting, logarithmic received signal strength indicator, and voltage regulator. The NE/SA604A features higher IF bandwidth (25MHz) and temperature compensated RSSI and limiters permitting higher performance application compared with the NE/SA604. The NE/SA604A is available in a 16-lead dual-in-line plastic and 16-lead SO (surface-mounted miniature) package.

FEATURES

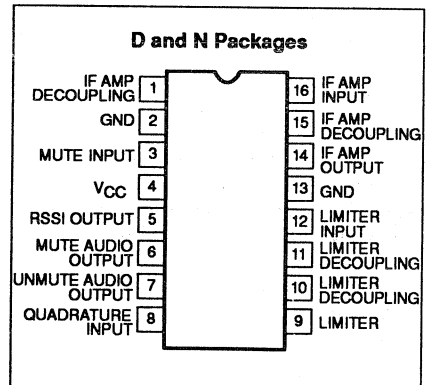
- Low power consumption: 3.3mA typical
- Temperature compensated logarithmic Received Signal Strength Indicator (RSSI) with a dynamic range in excess of 90dB

- Two audio outputs - muted and unmuted
- Low external component count; suitable for crystal/ceramic filters
- Excellent sensitivity: 1.5µV across input pins (0.22µV into 50Ω matching network) for 12dB SINAD (Signal to Noise and Distortion ratio) at 455kHz
- SA604A meets cellular radio specifications

APPLICATIONS

- Cellular radio FM IF
- High performance communications receivers
- Intermediate frequency amplification and detection up to 25MHz
- RF level meter
- Spectrum analyzer
- Instrumentation
- FSK and ASK data receivers

PIN CONFIGURATION



11/03/92

Philips Semiconductors



PHILIPS

NE/SA612A – Double-Balanced Mixer and Oscillator

DESCRIPTION

The NE/SA612A is a low-power VHF monolithic double-balanced mixer with on-board oscillator and voltage regulator. It is intended for low cost, low power communication systems with signal frequencies to 500MHz and local oscillator frequencies as high as 200MHz. The mixer is a "Gilbert cell" multiplier configuration which provides gain of 14dB or more at 45MHz.

The oscillator can be configured for a crystal, a tuned tank operation, or as a buffer for an external L.O. Noise figure at 45MHz is typically below 6dB and makes the device well suited for high performance cordless phone/cellular radio. The low power consumption makes the NE/SA612A excellent for battery operated equipment. Networking and other communications products can benefit from very low radiated energy levels within systems. The NE/SA612A is available in an 8-lead dual in-line plastic package and an 8-lead SO (surface mounted miniature package).

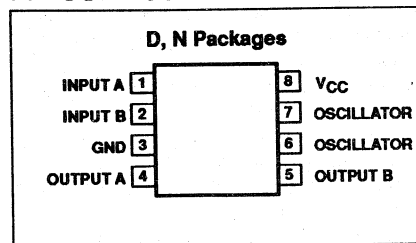
FEATURES

- Low current consumption
- Low cost
- Operation to 500MHz
- Low radiated energy
- Low external parts count; suitable for crystal/ceramic filter
- Excellent sensitivity, gain, and noise figure

APPLICATIONS

- Cordless telephone
- Portable radio
- VHF transceivers
- RF data links
- Sonabuys
- Communications receivers
- Broadband LANs
- HF and VHF frequency conversion
- Cellular radio mixer/oscillator

PIN CONFIGURATION



09/17/90

NE/SA614A – Low Power FM IF System

DESCRIPTION

The NE/SA614A is an improved monolithic low-power FM IF system incorporating two limiting intermediate frequency amplifiers, quadrature detector, muting, logarithmic received signal strength indicator, and voltage regulator. The NE/SA614A features higher IF bandwidth (25MHz) and temperature compensated RSSI and limiters permitting higher performance application compared with the NE/SA604. The NE/SA614A is available in a 16-lead dual-in-line plastic and 16-lead SO (surface-mounted miniature) package.

FEATURES

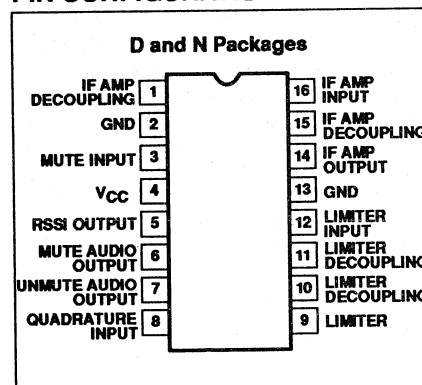
- Low power consumption: 3.3mA typical
- Temperature compensated logarithmic Received Signal Strength Indicator (RSSI) with a dynamic range in excess of 90dB
- Two audio outputs - muted and unmuted

- Low external component count; suitable for crystal/ceramic filters
- Excellent sensitivity: 1.5µV across input pins (0.22µV into 50Ω matching network) for 12dB SINAD (Signal to Noise and Distortion ratio) at 455kHz
- SA614A meets cellular radio specifications

APPLICATIONS

- Cellular radio FM IF
- High performance communications receivers
- Intermediate frequency amplification and detection up to 25MHz
- RF level meter
- Spectrum analyzer
- Instrumentation
- FSK and ASK data receivers

PIN CONFIGURATION



Philips

11/03/92

Philips Semiconductors



PHILIPS

NE/SA605 and NE/SA615 – High Performance Low Power Mixer FM IF System

DESCRIPTION

The NE/SA605 and NE/SA615 are high performance monolithic low-power FM IF systems incorporating a mixer/oscillator, two limiting intermediate frequency amplifiers, quadrature detector, muting, logarithmic received signal strength indicator (RSSI), and voltage regulator. The NE/SA605 and NE/SA615 combine the functions of Philips Semiconductors NE602 and NE604A, but feature a higher mixer input intercept point, higher IF bandwidth (25MHz) and temperature compensated RSSI and limiters permitting higher performance application. The NE/SA605 and NE/SA615 are available in 20-lead dual-in-line plastic, 20-lead SOL (surface-mounted miniature package) and 20-lead SSOP (shrink small outline package).

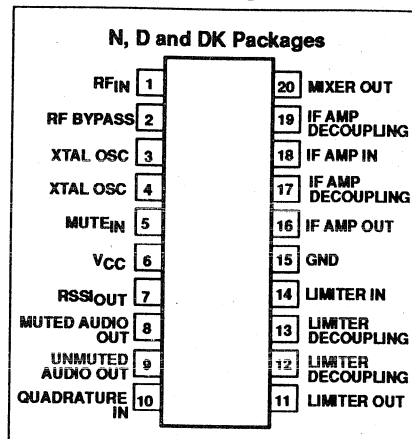
The NE/SA605 and NE/SA615 are functionally the same device types. The difference between the two devices lies in the guaranteed specifications. The NE/SA615 has a higher I_{CC} , lower input third order intercept point, lower conversion mixer gain, lower limiter gain, lower AM rejection, lower SINAD, higher THD, and higher RSSI error than the NE/SA605. Both the NE/SA605 and NE/SA615 devices will meet the EIA specifications for AMPS and TACS cellular radio applications.

Philips

FEATURES

- Low power consumption: 5.7mA typical at 6V
- Mixer input to >500MHz
- Mixer conversion power gain of 13dB at 45MHz
- Mixer noise figure of 4.6dB at 45MHz
- XTAL oscillator effective to 150MHz (L.C. oscillator to 1GHz local oscillator can be injected)
- 102dB of IF Amp/Limiter gain
- 25MHz limiter small signal bandwidth
- Temperature compensated logarithmic Received Signal Strength Indicator (RSSI) with a dynamic range in excess of 90dB
- Two audio outputs - muted and unmuted
- Low external component count; suitable for crystal/ceramic/LC filters
- Excellent sensitivity: $0.22\mu V$ into 50Ω matching network for 12dB SINAD (Signal to Noise and Distortion ratio) for 1kHz tone with RF at 45MHz and IF at 455kHz
- SA605 meets cellular radio specifications
- ESD hardened

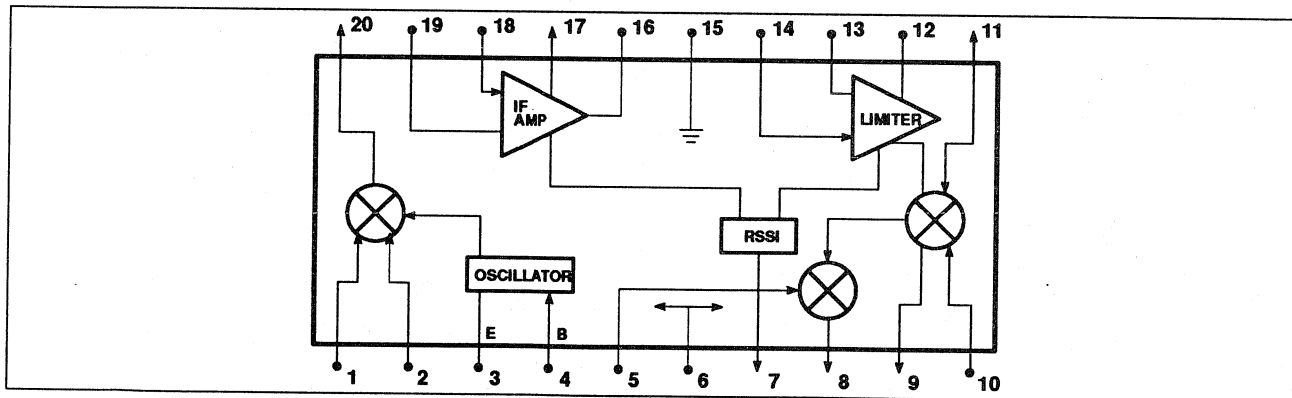
PIN CONFIGURATION



APPLICATIONS

- Cellular radio FM IF
- High performance communications receivers
- Single conversion VHF/UHF receivers
- SCA receivers
- RF level meter
- Spectrum analyzer
- Instrumentation
- FSK and ASK data receivers
- Log amps
- Wideband low current amplification

BLOCK DIAGRAM



11/03/92

Philips Semiconductors



PHILIPS

NE/SA625 – High Performance Low Power Mixer RF IF System with High-Speed RSSI

DESCRIPTION

The NE/SA625 is pin-to-pin compatible with the NE/SA605, but has faster RSSI rise and fall times. The NE/SA625 is a high performance monolithic low-power FM IF system incorporating a mixer/oscillator, two limiting intermediate frequency amplifiers, quadrature detector, muting, logarithmic received signal strength indicator (RSSI) with fast rise and fall time, and voltage regulator. The NE/SA625 combines the functions of Signetics' NE602A and NE624. The NE/SA625 is available in 20-lead dual-in-line plastic and 20-lead SOL (surface-mounted miniature package) and 20-lead SSOP (shrink small outline package).

FEATURES

- Fast RSSI rise and fall times
- Low power consumption: 5.8mA typical at 6V
- Mixer input to >500MHz
- Mixer conversion power gain of 13dB at 45MHz
- Mixer noise figure of 4.6dB at 45MHz
- XTAL oscillator effective to 150MHz (L.C. oscillator to 1GHz local oscillator can be injected)

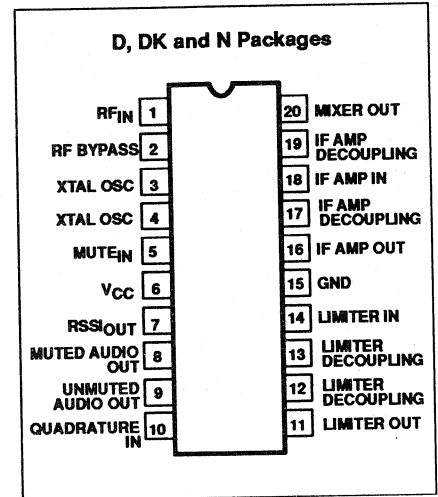
- 102dB of IF Amp/Limiter gain
- 25MHz limiter small signal bandwidth
- Temperature compensated logarithmic Received Signal Strength Indicator (RSSI) with a dynamic range in excess of 90dB
- Two audio outputs - muted and unmuted
- Low external component count; suitable for crystal/ceramic/LC filters
- Excellent sensitivity: 0.22 μ V into 50 Ω matching network for 12dB SINAD (Signal to Noise and Distortion ratio) for 1kHz tone with RF at 45MHz and IF at 455kHz
- SA625 meets cellular radio specifications
- ESD hardened

APPLICATIONS

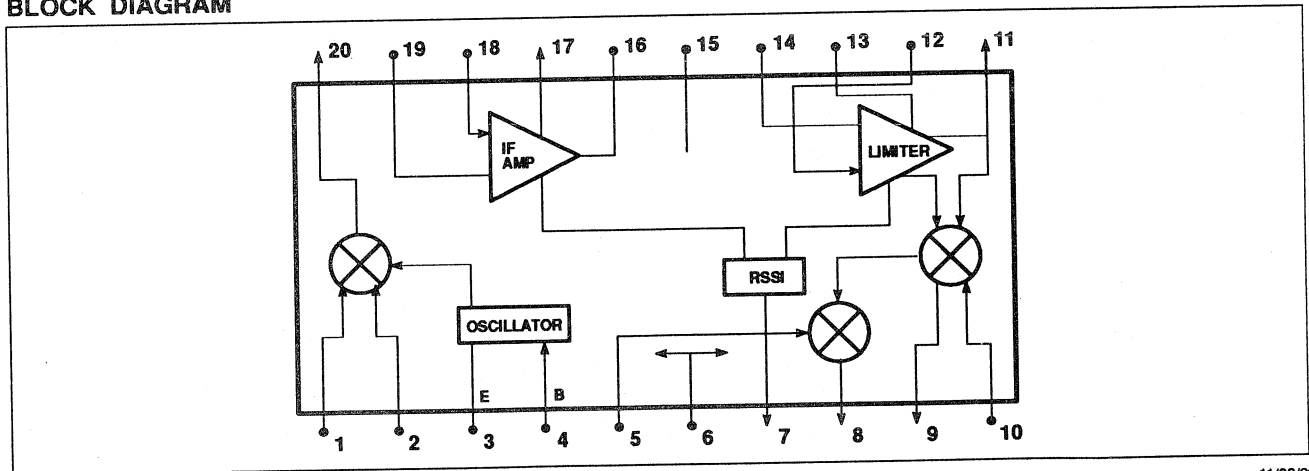
- Digital cellular base stations
- High performance communications receivers
- Single conversion VHF/UHF receivers
- SCA receivers
- RF level meter
- Spectrum analyzer

- Instrumentation
- FSK and ASK data receivers
- Log amps
- Wideband low current amplification
- Digital cordless telephones

PIN CONFIGURATION



BLOCK DIAGRAM



11/03/92

Philips

Philips Semiconductors



PHILIPS

SA626 – Low Voltage High Performance Mixer FM IF System with High-Speed RSSI

DESCRIPTION

The SA626 is a low-voltage high performance monolithic FM IF system incorporating a mixer/oscillator, two limiting intermediate frequency amplifiers, quadrature detector, high speed logarithmic received signal strength indicator (RSSI), voltage regulator and audio and fast RSSI op amps. The SA626 is available in 20-lead SOL (surface-mounted small outline large package) and 20-lead SSOP (shrink small outline package).

The SA626 was designed for high bandwidth portable communication applications and will function down to 2.7V. The RF section is similar to the famous NE605. The audio and RSSI outputs have amplifiers. The RSSI output has access to the feedback pin. This enables the designer to level adjust the outputs or add filtering.

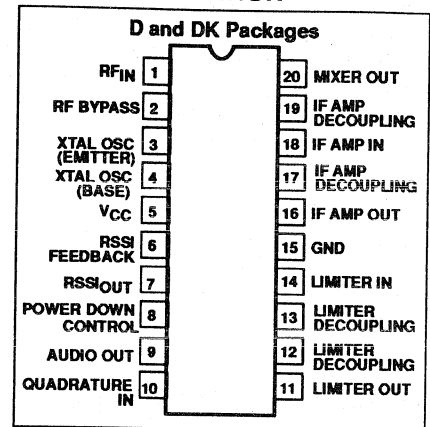
SA626 incorporates a power down mode which powers down the device when Pin 8 is low. Power down logic levels are CMOS and TTL compatible with high input impedance.

FEATURES

- Fast RSSI rise and fall times
- Low power consumption: 6.5mA typ at 3V

- Power down mode ($I_{CC} = 200\mu A$)
- Mixer input to >500MHz
- Mixer conversion power gain of 11dB at 240MHz
- Mixer noise figure of 14dB at 240MHz
- XTAL oscillator effective to 150MHz (L.C. oscillator to 1GHz local oscillator can be injected)
- 92dB of IF Amp/Limiter power gain
- 25MHz limiter small signal bandwidth
- Temperature compensated logarithmic Received Signal Strength Indicator (RSSI) with a dynamic range in excess of 90dB
- Audio output internal op amp
- RSSI output internal op amp
- Internal op amps with rail-to-rail outputs
- 10.7MHz filter matching (330Ω) reduces external component count; suitable for crystal/ceramic/LC filters
- Excellent sensitivity: $0.54\mu V$ into 50Ω matching network for 12dB SINAD (Signal to Noise and Distortion ratio) for 1kHz tone with RF at 240MHz and IF at 10.7MHz
- SA626 meets cellular radio specifications
- ESD hardened

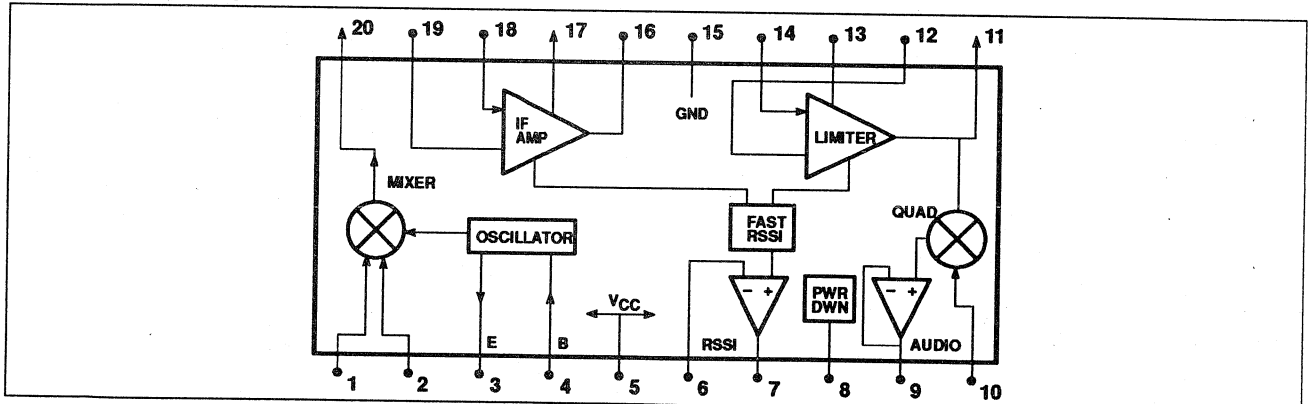
PIN CONFIGURATION



APPLICATIONS

- Digital cordless telephones
- Digital cellular telephones
- Digital cellular base stations
- Portable high performance communications receivers
- Single conversion VHF/UHF receivers
- SCA receivers
- RF level meter
- Spectrum analyzer
- Instrumentation
- FSK and ASK data receivers
- Log amps
- Wideband low current amplification

BLOCK DIAGRAM



5/7/93

Philips Semiconductors



PHILIPS

NE/SA630 – Single Pole Double Throw (SPDT) Switch

DESCRIPTION

The NE630 is a wideband RF switch fabricated in BiCMOS technology and incorporating on-chip CMOS/TTL compatible drivers. Its primary function is to switch signals in the frequency range DC - 1GHz from one 50Ω channel to another. The switch is activated by a CMOS/TTL compatible signal applied to the enable channel 1 pin (ENCH1).

The extremely low current consumption makes the NE/SA630 ideal for portable applications. The excellent isolation and low loss makes this a suitable replacement for PIN diodes.

The NE/SA630 is available in an 8-pin dual in-line plastic package and an 8-pin SO (surface mounted miniature) package.

FEATURES

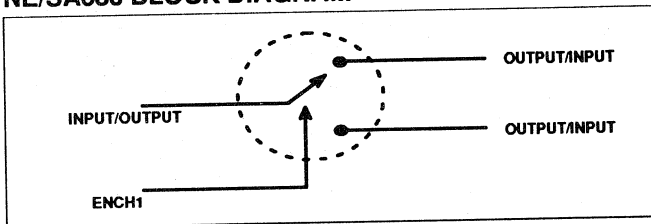
- Wideband (DC - 1GHz)
- Low through loss (1dB typical at 200MHz)
- Unused input is terminated internally in 50Ω
- Excellent overload capability (1dB gain compression point +18dBm at 300MHz)
- Low DC power (170μA from 5V supply)

- Fast switching (20ns typical)
- Good isolation (off channel isolation 60dB at 100MHz)
- Low distortion (IP₃ intercept +33dBm)
- Good 50Ω match (return loss 18dB at 400MHz)
- Full ESD protection
- Bidirectional operation

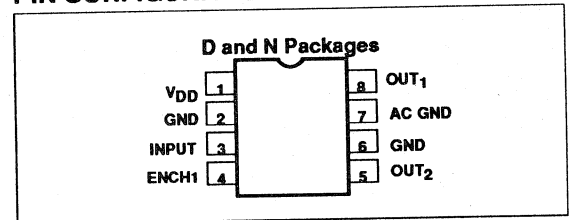
APPLICATIONS

- Digital transceiver front-end switch
- Antenna switch
- Filter selection
- Video switch
- FSK transmitter

NE/SA630 BLOCK DIAGRAM



PIN CONFIGURATION



10-91/04269

Philips

Philips Semiconductors



PHILIPS

SA701 – Divide by: 128/129-64/65 Dual Modulus Low Power ECL Prescaler
SA702 – Divide by: 64/65/72 Triple Modulus Low Power ECL Prescaler
SA703 – Divide by: 128/129/144 Triple Modulus Low Power ECL Prescaler

FEATURES

- Low voltage operation
- Low current consumption
- Operation up to 1.1GHz
- ESD hardened

APPLICATIONS

- Cellular phones
- Cordless phones
- RF LANs
- Test and measurement
- Military radio
- VHF/UHF mobile radio
- VHF/UHF hand-held radio

SA701 DESCRIPTION

The SA701 is an advanced dual modulus (Divide By 128/129 or 64/65) low power ECL prescaler. The minimum supply voltage is 2.7V and is compatible with the new CMOS UMF1005 and UMF1009 synthesizers from Philips and other logic circuits. The low supply current allows application in battery operated low-power equipment. Maximum input signal frequency is 1.1GHz for cellular and other land mobile applications. There is no lower frequency limit due to a fully static design. The circuit is implemented in ECL technology on the QUBiC process. The circuit will be available in an 8-pin SO package with 150 mil package width and in 8-pin dual-in-line plastic package, and is pin compatible with Fujitsu MB501, Plessey SP8704 and Motorola MC12022.

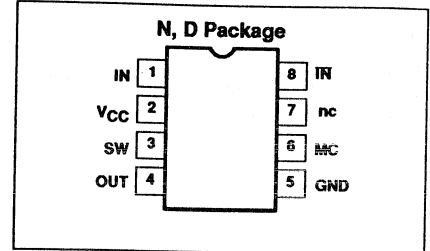
SA702 DESCRIPTION

The SA702 triple modulus (Divide By 64/65/72) low power ECL prescaler is used in synthesizer systems to achieve low phase lock time, broad operating range, high reference frequency and small frequency step sizes. The minimum supply voltage is 2.7V and is compatible with the CMOS UMA1005 synthesizer from Philips and other logic circuits. The low supply current allows application in battery operated low-power equipment. Maximum input signal frequency is 1.1GHz for cellular and other land mobile applications. There is no lower frequency limit due to a fully static design. The circuit is implemented in ECL technology on the QUBiC process. The circuit will be available in an 8-pin SO package with 150 mil package width and in 8-pin dual in-line plastic package.

SA703 DESCRIPTION

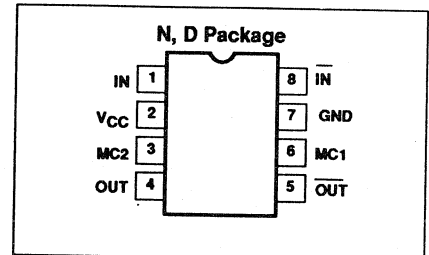
The SA703 triple modulus (Divide By 128/129/144) low power ECL prescaler is used in synthesizer systems to achieve low phase lock time, broad operating range, high reference frequency and small frequency step sizes. The minimum supply voltage is 2.7V and is compatible with the UMA1005 synthesizer from Philips and other logic circuits. The low supply current allows application in battery operated low-power equipment. Maximum input signal frequency is 1.1GHz for cellular and other land mobile applications. There is no lower frequency limit due to a fully static design. The circuit is implemented in ECL technology on the QUBiC process. The circuit will be available in an 8-pin SO package with 150 mil package width and in 8-pin dual in-line plastic package.

SA701 PIN CONFIGURATION



06/17/93

SA702 AND SA703 PIN CONFIGURATION



06/17/93

Philips

Philips Semiconductors



PHILIPS

NE/SA5200 – RF Dual Gain-Stage

DESCRIPTION

The NE/SA5200 is a dual amplifier with DC to 1200MHz response. Low noise (NF = 3.6dB) makes this part ideal for RF front-ends, and a simple power-down mode saves current for battery operated equipment. Inputs and outputs are matched to 50Ω.

The enable pin allows the designer the ability to turn the amplifiers on or off, allowing the part to act as an amplifier as well as an attenuator. This is very useful for front-end buffering in receiver applications.

FEATURES

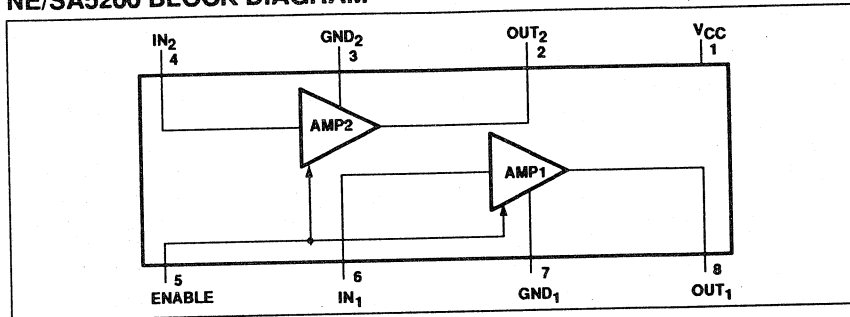
- Dual amplifiers
- DC - 1200MHz operation
- Low DC power consumption (4.2mA per amplifier @ V_{CC} = 5V)
- Power-Down Mode (I_{CC} = 95μA typical)
- 3.6dB noise figure at 900MHz
- Unconditionally stable
- Fully ESD protected
- Low cost

- Supply voltage 4-9V
- Gain S₂₁ = 7dB at f = 1GHz
- Input and output match S₁₁, S₂₂ typically <-14dB

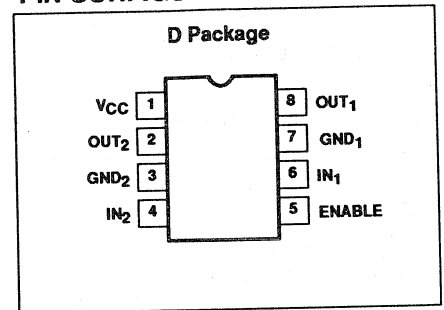
APPLICATIONS

- Cellular radios
- RF IF strips
- Portable equipment

NE/SA5200 BLOCK DIAGRAM



PIN CONFIGURATION



10/91

NE/SA5209/5219 – Wideband Variable Gain Amplifiers

DESCRIPTION

The NE5209/5219 products represent a breakthrough in monolithic amplifier design featuring several innovations. This unique design has combined the advantages of a high speed bipolar process with the proven Gilbert architecture.

The NE5209/5219 are linear broadband RF amplifiers whose gain is controlled by a single DC voltage. The amplifier runs off a single 5 volt supply and consumes only 40mA. The amplifier has high impedance (1kΩ) differential inputs. The output is 50Ω differential. Therefore, the products can simultaneously perform AGC, impedance transformation, and the balun functions.

The dynamic range is excellent over a wide range of gain setting. Furthermore, the noise performance degrades at a comparatively slow rate as the gain is reduced. This is an important feature when building linear AGC systems.

FEATURES

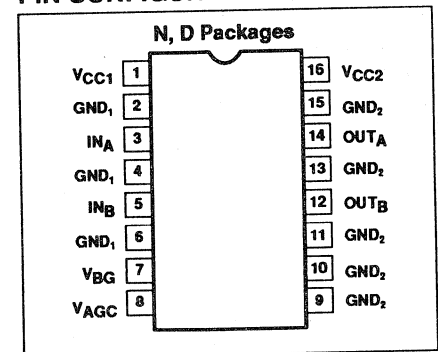
- Gain to 1.5GHz
- 850MHz bandwidth for NE/SA5209; 700MHz bandwidth for NE/SA5219
- High impedance differential input
- 50Ω differential output
- Single 5V power supply
- 0 - 1V gain control pin
- >60dB gain control range at 200MHz
- 26dB maximum gain differential
- Exceptional V_{CONTROL} / V_{GAIN} linearity
- 7dB noise figure minimum
- Full ESD protection
- Easily cascadable

- Fiber optic AGC
- RADAR
- User programmable fixed gain block
- Video
- Satellite receivers
- Cellular communications

APPLICATIONS

- Linear AGC systems
- Very linear AM modulator
- RF balun
- Cable TV multi-purpose amplifier

PIN CONFIGURATION



08/90

Philips

Philips Semiconductors



PHILIPS

NE/SA577 – Unity Gain Level Programmable Low Power Compandor

DESCRIPTION

The NE/SA577 is a unity gain level programmable compandor designed for low power applications. The NE577 is internally configured as an expander and a compressor to minimize external component count.

The NE577 is available in a 14-pin plastic DIP and an SO package.

FEATURES

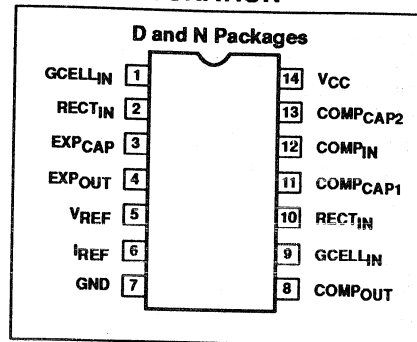
- Operating voltage range: 1.8V to 7V
- Low power consumption (1.4mA @ 3.6V)
- 0dB level programmable (10mV_{RMS} to 1.0V_{RMS})
- Over 90dB of dynamic range
- Wide input/output swing capability (rail-to-rail)

- Low external component count
- SA577 meets cellular radio specifications
- ESD hardened

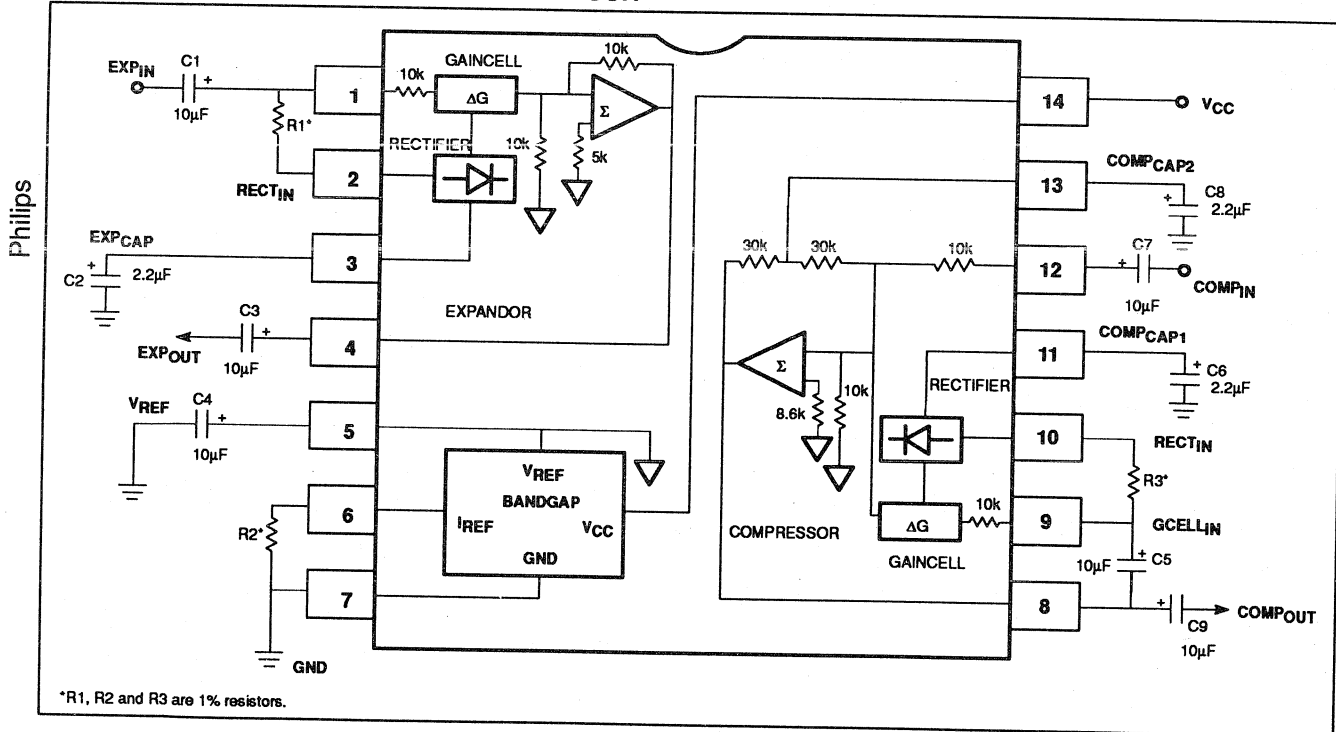
APPLICATIONS

- High performance portable communications
- Cellular radio
- Cordless telephone
- Consumer audio
- Wireless microphones
- Modems
- Electric organs
- Hearing aids
- Automatic level control (ALC)

PIN CONFIGURATION



NE/SA577 BLOCK DIAGRAM AND TEST CIRCUIT



11/03/92

Philips Semiconductors



PHILIPS

NE/SA606 and NE/SA616 – Low-Voltage High Performance Mixer FM IF Systems

DESCRIPTION

The NE/SA606 and NE/SA616 are low-voltage high performance monolithic FM IF systems incorporating a mixer/oscillator, two limiting intermediate frequency amplifiers, quadrature detector, logarithmic received signal strength indicator (RSSI), voltage regulator and audio and RSSI op amps. The products are available in 20-lead dual-in-line plastic, 20-lead SOL (surface-mounted small outline large) and 20-lead SSOP (shrink small outline) packages.

These devices were designed for portable communication applications and will function down to 2.7V. The RF section is similar to the famous NE605/615. The audio and RSSI outputs have amplifiers with access to the feedback path. This enables the designer to level adjust the outputs or add filtering.

FEATURES

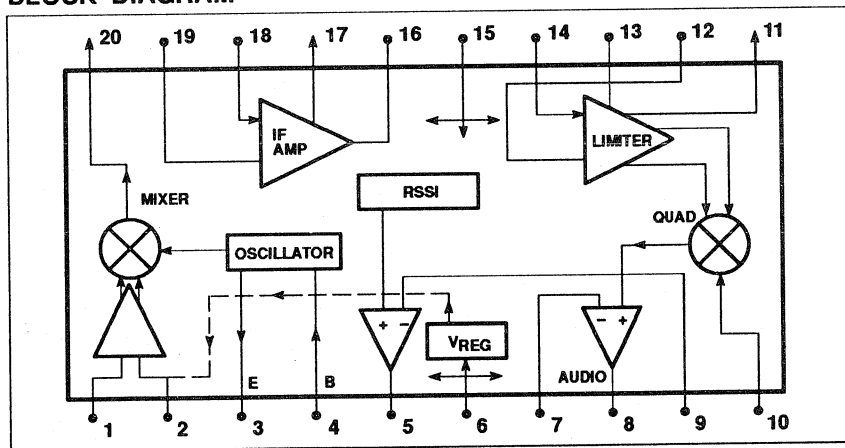
- Low power consumption: 3.5mA typical at 3V
- Mixer input to >150MHz
- Mixer conversion power gain of 17dB at 45MHz
- XTAL oscillator effective to 150MHz (L.C. oscillator or external oscillator can be used at higher frequencies)
- 102dB of IF Amp/Limiter gain
- 2MHz limiter small signal bandwidth
- Temperature compensated logarithmic Received Signal Strength Indicator (RSSI) with a 80dB to 90dB dynamic range
- Low external component count; suitable for crystal/ceramic/LC filters
- Excellent sensitivity: 0.31 μ V into 50 Ω matching network for 12dB SINAD (Signal to Noise and Distortion ratio) for 1kHz tone with RF at 45MHz and IF at 455kHz

- SA606/616 meets cellular radio specifications
- Audio output internal op amp
- RSSI output internal op amp
- Internal op amps with rail-to-rail outputs
- ESD protection: Human Body Model 2kV
Robot Model 200V

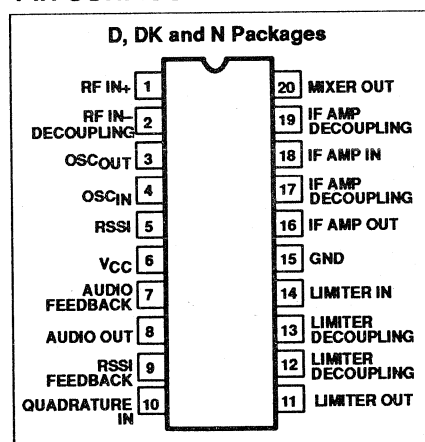
APPLICATIONS

- Portable cellular radio FM IF
- Cordless phones
- Wireless systems
- RF level meter
- Spectrum analyzer
- Instrumentation
- FSK and ASK data receivers
- Log amps
- Portable high performance communication receiver
- Single conversion VHF receivers

BLOCK DIAGRAM



PIN CONFIGURATION



Philips

11/03/92

Philips Semiconductors



PHILIPS

SA5752 – Audio Processor – Companding, VOX and Amplifier Section

DESCRIPTION

The SA5752 is a high performance low power audio signal processing system especially designed to meet the requirements for small size and low voltage operation of hand-held equipment. The SA5752 subsystem includes a low noise microphone preamplifier with adjustable gain, a noise cancellation switching amplifier with adjustable threshold, a voice operated transmitter (VOX) switch, VOX control, an audio compressor with buffered input, audio expander, and an internal bandgap voltage regulator with power down capability. When used with Philips Semiconductors SA5753, the complete audio processing function of an AMPS or TACS cellular telephone is easily implemented. The system also meets the requirements of the proposed NAMPS or NTACS specifications. The SA5752 can also be used without the SA5753 in a wide variety of radio communications applications.

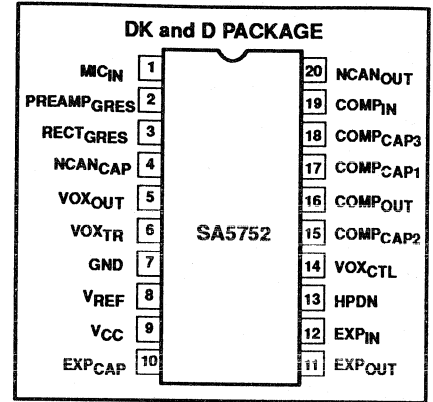
FEATURES

- Operating voltage range: 2V to 5.5V
- Miniature SSOP and SO packages
- High performance
- Adjustable VOX and noise cancellation threshold
- Adjustable gain preamplifier
- Audio companding
- ESD protected
- Open collector VOX output
- Logic inputs CMOS compatible
- Power down mode
- Few external components
- Meets AMPS/TACS/NAMPS/NTACS requirements

BENEFITS

- Very compact applications
- Long battery life in portable equipment
- Complete cellular audio function with the SA5753

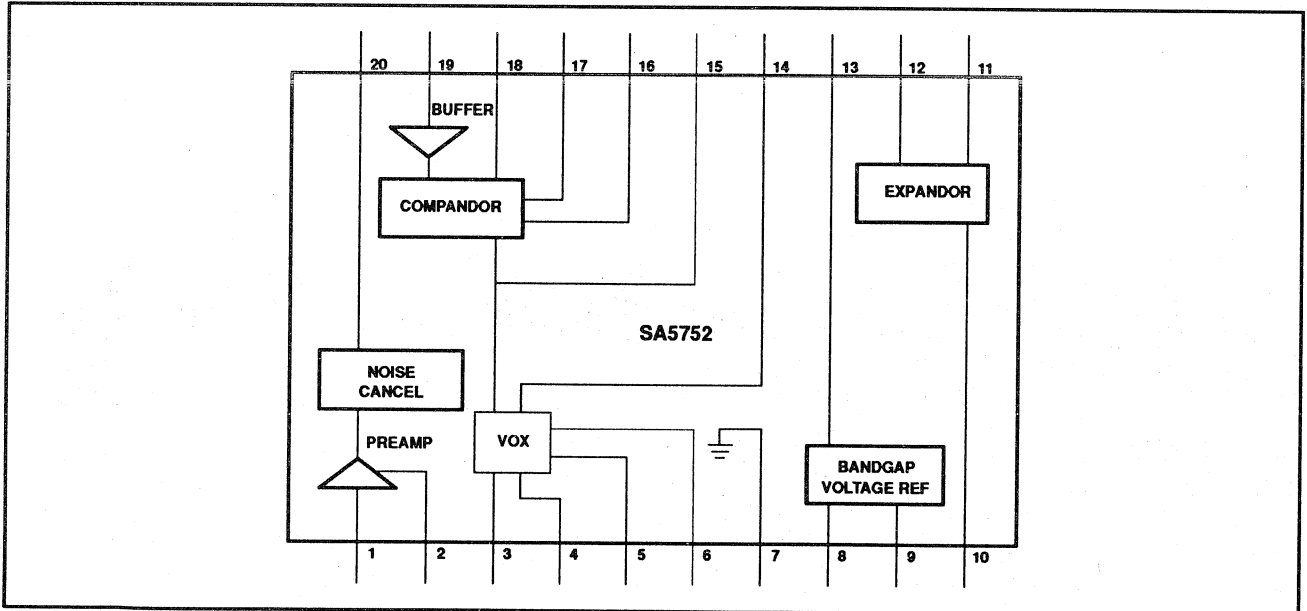
PIN CONFIGURATION



APPLICATIONS

- Cellular radio
- Mobile communications
- High performance cordless telephones
- 2-way radio

BLOCK DIAGRAM



3/24/93

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SAA5252 – Line Twenty-one Acquisition and Display (LITOD)

FEATURES

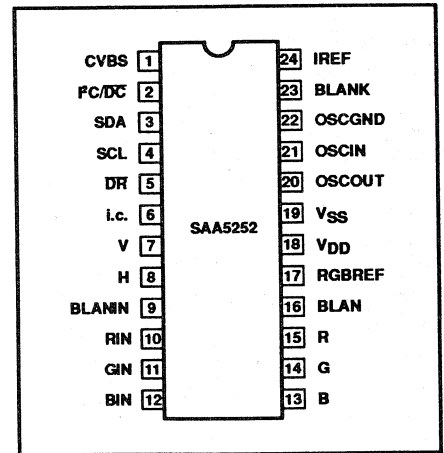
- Complete stand-alone Line 21 decoder in one package
- On-chip display RAM allowing full page Text mode
- Enhanced character display modes
- Full color captions
- RGB interface for standard color decoder ICs
- Automatic handling of Field 2 data
- Automatic selection of (1H, 1V), (2H, 1V) or (2H, 2V) scan modes
- Onboard OSD facility using Character Display (OSD) device is also possible.
- RGB inputs to support existing OSD ICs

- I²C-bus or "stand alone" pin control
- Automatic data-ready signal generation on data acquisition
- Can decode signals recorded on standard VHS and S-VHS tape.

GENERAL DESCRIPTION

The SAA5252 (LITOD) is a single-chip CMOS device which will acquire, decode and display Line 21 Closed Captioning data from a 525 line composite video signal. Operation as an On-Screen Display (OSD) device is also possible. Normal and line progressive scan modes are supported.

PIN CONFIGURATION



04/93-PRELIMINARY

SAA7169 – 35 MHz Triple 9-Bit D/A Converter for High-Speed Video

FEATURES

- CMOS circuit to convert high-speed video data from digital to analog
- Three equal 9-bit digital-to-analog converters
- Input signals TTL-compatible
- Input registers for positive edge-triggered data signals
- Clock frequency for a conversion rate up to 35MHz
- 20MHz analog bandwidth
- 2V (p-p) analog output voltage range without load on output (0.2 to 2.2 V_{DC})
- 1 V/75Ω outputs (0.1 to 1.1 V_{DC})
- No de-glitching circuit required
- Typical 225mW power dissipation

GENERAL DESCRIPTION

The triple high-speed D/A converter can be used in applications for:

- desktop video processing
- digital television
- graphic displays
- television decoders
- general high frequency conversion

FUNCTIONAL DESCRIPTION

The integrated monolithic CMOS circuit SAA7169 is a triple 9-bit digital-to-analog converter for high-speed video applications. Its three channels are equal. The maximum conversion rate is 35MHz.

The converters use a combination of resistor chains with low-impedance output buffers. The bottom output voltage is 200mV to reduce integral non-linearity errors. The analog signal, without load on output pin, is between 0.2 and 2.2V.

Each digital-to-analog converter has its own supply pin for purpose of decoupling. V_{DDA4} is the supply voltage for the resistor chains of the three DACs. The accuracy of this supply voltage influences directly the output amplitudes.

The current CUR into pin 5 is 0.3mA (V_{DDA4} = 5V, R₅₋₆ = 15kΩ); a larger current improves the bandwidth but increases the integral non-linearity.

04/92-PRELIMINARY

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SAA7186 – Digital Video Scaler

FEATURES

- Scaling of video picture windows down to randomly sized windows
- Processes maximum 1023 pixels per line and 1023 lines per field
- Two-dimensional data processing for improved signal quality of scaled video data and for compression of video data
- 16-bit YUV input data buffer
- Interlace/non-interlace video data processing and field control

- Line memories in Y path and UV path to store two lines, each with $2 \times 768 \times 8$ bit capacity
- Vertical sync processing by scale control
- Non-scaled mode to get full picture or to gate videotext lines
- UV input and output data binary/two's complement
- Switchable RGB matrix and anti-gamma ROMs

- 16-word FIFO register for 32-bit output data
- Output formats: 5-bit and 8-bit RGB, 8-bit YUV or 8-bit monochrome

GENERAL DESCRIPTION

The CMOS circuit SAA7186 scales and filters digital video data to randomly sized picture windows. YUV input data in 4:2:2 format are required (SAA7191B source).

05/93-PRELIMINARY

SAA7197 – Clock Signal Generator Circuit for Desktop Video Systems (SCGC)

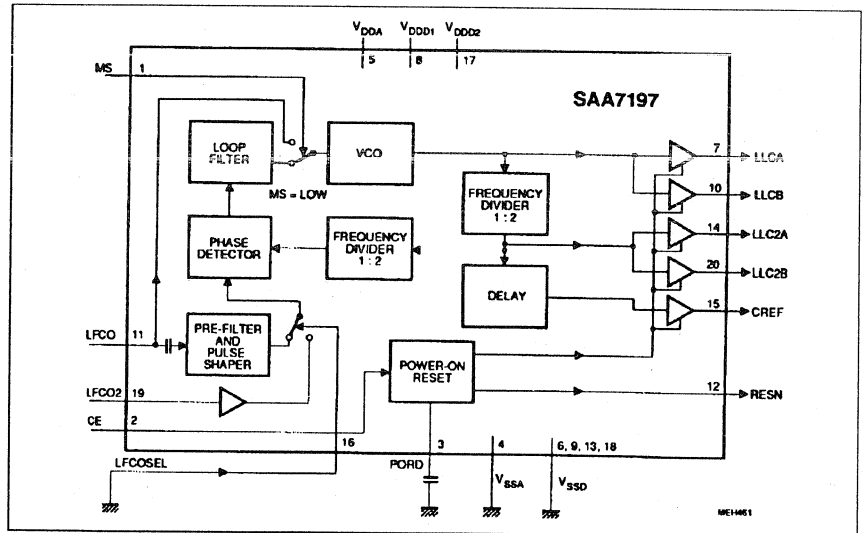
FEATURES

- Suitable for Desktop Video systems
- Two different sync sources selectable
- PLL frequency multiplier to generate 4 times of input frequency
- Dividers to generate clocks LLC A, LLC B, LLC2A and LLC2B (second and fourth multiples of input frequency)
- PLL mode or VCO mode selectable
- Reset control and power fail detection

GENERAL DESCRIPTION

The SAA7197 generates all clock signals required for a digital TV system suitable for the SAA719x family. The circuit operates in either the phase-locked loop mode (PLL) or voltage controlled oscillator mode (VCO).

BLOCK DIAGRAM



05/92-PRELIMINARY

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SAA7191B – Digital Multistandard Color Decoder, Square Pixel (DMSD-SQP)

FEATURES

- Separate 8-bit luminance (Y or CVBS) and 8-bit chrominance inputs (CVBS or C) from CVBS, Y/C, S-Video (S-VHS or Hi8) sources
- Luminance and chrominance signal processing for standards PAL-B/G, NTSC-M, SECAM
- Horizontal and vertical sync detection for all standards
- Real-time control output RTC to be used for frequency-locked digital video encoder (SAA7199B). RTCO contains serialized information about actual clock frequency, subcarrier frequency and PAL/SECAM sequence.
- Controls via the I²C-bus

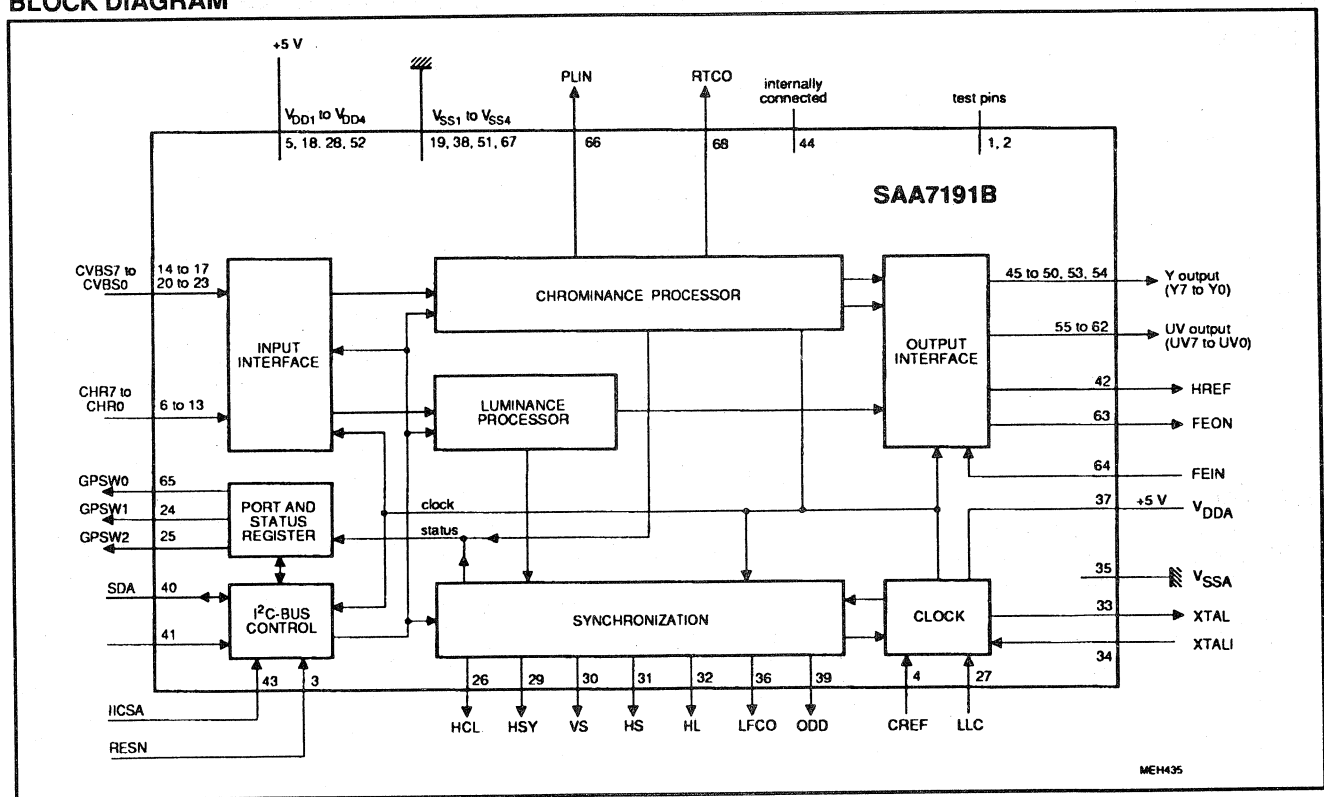
- User programmable aperture correction (horizontal peaking)
- Compatible with memory-based features (line-locked clock)
- Cross-color reduction by chrominance comb-filtering (NTSC) or by special cross color cancellation (SECAM)
- 8-bit quantization of input signals
- 768/640 active samples per line equals 50/60Hz (SQP)
- The YUV bus supports data rates of $780 \times f_H$ equal to 12.2727MHz for 60Hz (NTSC-M) and $944 \times f_H$ equal to 50Hz (PAL-B/G, SECAM) in 4:1:1 or 4:2:2 formats (via the I²C-bus)
- One crystal oscillator of 26.8MHz

GENERAL DESCRIPTION

The SAA7191B is a digital multistandard color decoder suitable for 8-bit CVBS input signals or for 8-bit luminance and 8-bit chrominance input signals (Y/C).

The SAA7191B is down-compatible with SAA7191. The SAA7191B has additional outputs RTCO, GPSW0 and ODD. These new outputs are in high-impedance state when NFEN-bit = 0.

BLOCK DIAGRAM



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SAA7151B – Digital Multistandard Decoder with SCART Interface (DMSD2-SCART)

FEATURES

- 8-bit performance on chip for luminance and chrominance signal processing for PAL, NTSC and SECAM standards
- Separate 8-bit luminance and 8-bit chrominance input signals from Y/C, CVBS, S-Video (S-VHS or Hi8) sources
- SCART signal insertion by means of RGB/YUV conversion; fast switch handling
- Horizontal and vertical sync detection for all standards

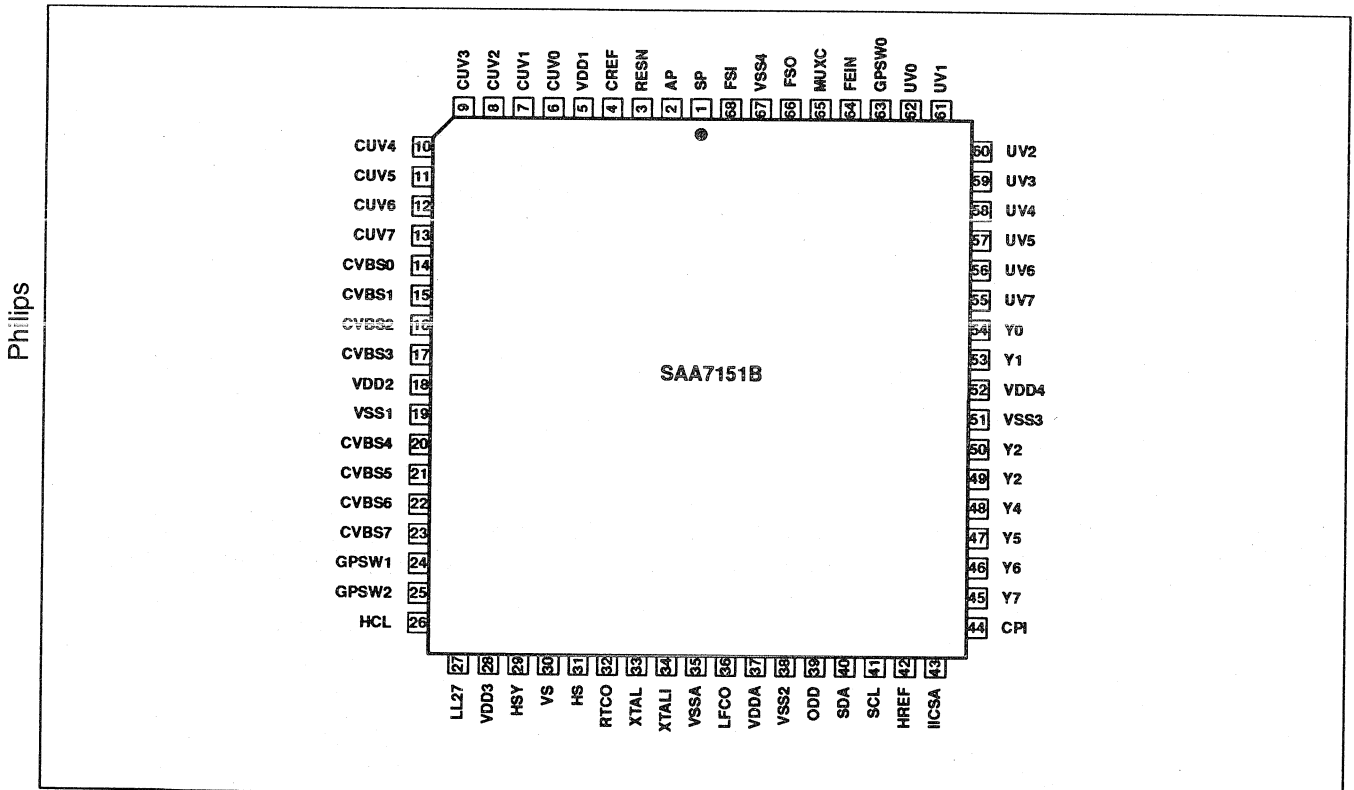
- Real time control output RTCO
- Fast sync recovery of vertical blanking for VCR signals (bottom flutter compensation)
- Controls via the I²C-bus
- User programmable aperture correction (horizontal peaking)
- Cross-color reduction by chrominance comb-filtering (NTSC) or by special cross-color cancellation (SECAM)
- 8-bit quantization of output signals in 4:1:1 or 4:2:2 formats
- 720 active samples per line

- The YUV bus supports a data rate of 13.5MHz (CCIR 601)
 - (864 × f_H) for 50Hz
 - (858 × f_H) for 60Hz
- Compatible with memory-based features (line-locked clock)
- One 24.576MHz crystal oscillator for all standards

GENERAL DESCRIPTION

The SAA7151B is a digital multistandard color-decoder having two 8-bit input channels, one for CVBS or Y, the other for chrominance or time-multiplexed color-difference signals.

PIN CONFIGURATION



04/93-PRELIMINARY

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SAA7194 – Digital Video Decoder and Scaler Circuit (DESC)

FEATURES

- Digital 8-bit luminance input video (Y or CVBS)
- Digital 8-bit chrominance input (CVBS or C from CVBS, Y/C, S-video (S-VHS or Hi8))
- Luminance and chrominance signal processing for main standards PAL, NTSC and SECAM
- Horizontal and vertical sync detection for all standards
- User programmable luminance peaking for aperture correction
- Compatible with memory-based features (line-locked clock, square pixel)
- Cross-color reduction by chrominance comb filtering for NTSC or special cross-color cancellation for SECAM
- UV signal delay lines for PAL to correct chrominance phase errors
- Square-pixel format with 768/640 active samples per line
- The bidirectional Expansion Port (YUV-bus) supports data rates of $780 \times f_H$ (NTSC) and $944 \times f_H$ (PAL, SECAM) in 4:2:2 format
- Brightness, contrast, hue and saturation controls for scaled outputs
- Down-scaling of video windows with 1023 active samples per line and 1023 active lines per frame to randomly sized windows
- 2 D data processing for improved signal quality of scaled luminance

- data, especially for compression applications
- Chroma key (α -generation)
- YUV to RGB conversion including anti-gamma ROM tables for RGB
- 16-word FIFO register for 32-bit output data
- Output configurable for 32/24/16-bit video data bus
- Scaled 16-bit 4:2:2 YUV output
- Scaled 15-bit RGB (5-5-5+ α) and 24-bit 8-8-8- α output
- Scaled 8-bit monochrome output
- Line increment, field sequence (odd/even, interlace/non-interlace), and vertical reset control for easy memory interfacing
- Output of discontinuous data bursts of scaled video data or continuous data output with corresponding qualifier signals
- Real-time status information
- I²C-bus control
- Only one crystal of 26.8MHz

GENERAL DESCRIPTION

The CMOS circuit SAA7194, digital video decoder and scaler (DESC), is a highly integrated circuit for DeskTop Video applications. It combines the functions of a digital multistandard decoder (SAA7191B) and a digital video

scaler (SAA7186). The decoder is based on the principle of line-locked clock decoding. It runs at square-pixel frequencies to achieve correct aspect ratio.

Monitor controls are provided to ensure best display. Four data ports are supported: Ports CVBS(7-0) and CHR(7-0) of the input interface are used in Y/C mode to decode digitized luminance and chrominance signals (digitized in two external ADCs). In normal mode, the CVBS(7-0) input is only used, and only one ADC is necessary.

The 32-bit VRAM output port is interface to the video memory; it outputs the down-scaled video data. Different formats and operation modes are supported by this circuit. The circuit is I²C-bus-controlled. The I²C-bus interface is clocked by LLC to ensure proper control.

The I²C-bus control is divided into two sections:

- subaddress 00h to 1F for the decoder part
- subaddress 20h to 3F for the scaler part

The programming of the subaddresses for the scaler part becomes effective at the first vertical sync pulse VS after a transmission.

04/93-PRELIMINARY

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SAA7199B – Digital Video Encoder, GENLOCK-Capable

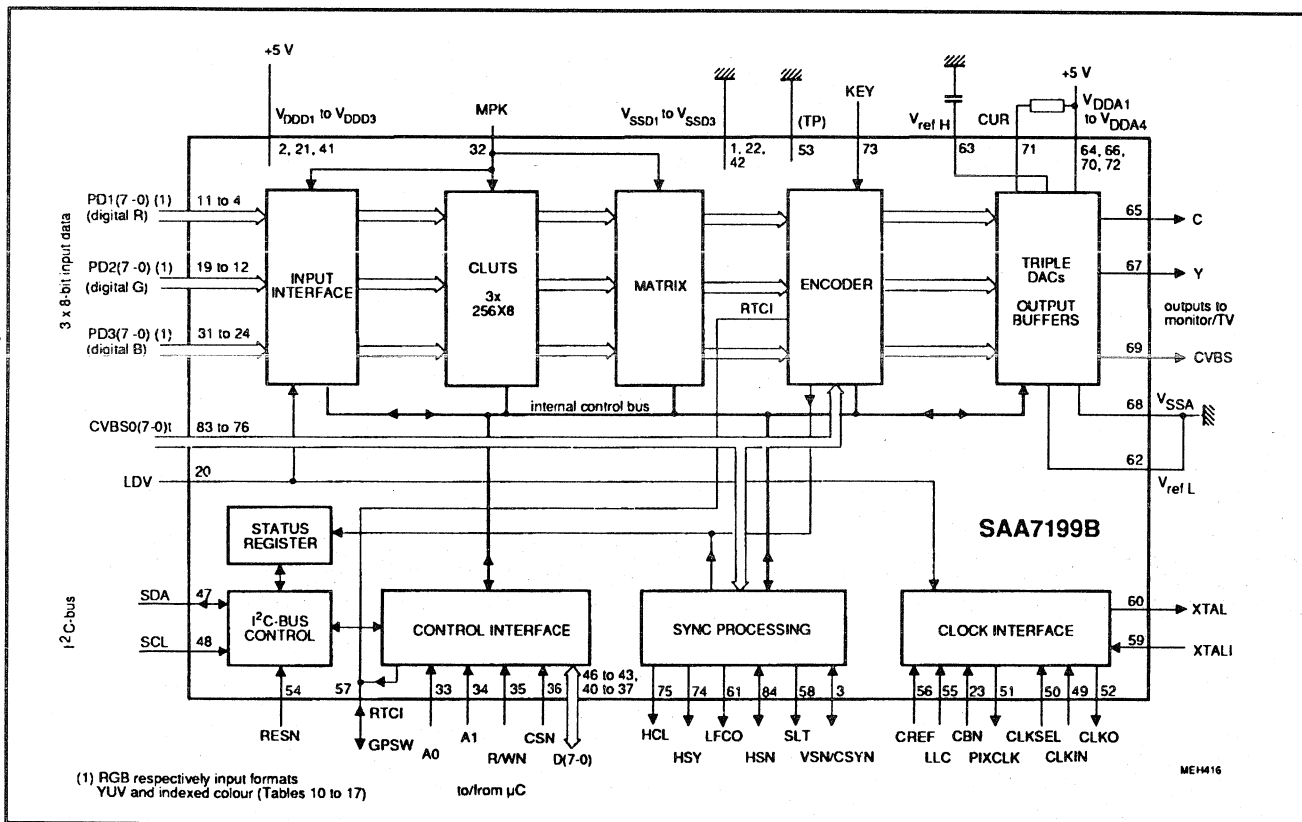
FEATURES

- Monolithic integrated CMOS video encoder circuit
- Standard MPU (12 lines) and I²C-bus interfaces for controls
- Three 8-bit signal inputs PD(7-0) for RGB respectively YUV or indexed color signals
- Square pixel and CCIR input data rates
- Band-limited composite sync pulses
- Three 256X8 color look-up tables (CLUTs) e.g., for gamma-correction
- External subcarrier from a digital decoder (SAA7151B or SAA7191B)
- Multi-purpose key for real-time format switching
- Autonomous internal blanking
- Optional GENLOCK operation with adjustable horizontal sync timing and adjustable subcarrier phase
- Stable GENLOCK operation in VCR standard playback mode
- Optional still video capture extension
- Three suitable video 9-bit digital-to-analog converters
- Composite analog output signals CVBS, Y and C for PAL/NTSC
- "Line 21" data insertion possible

GENERAL DESCRIPTION

The SAA7199B encodes digital base-band color/video data into analog Y, C and CVBS signals (S-Video included). Pixel clock and data are line-locked to the horizontal signal. The circuit can be used in a square pixel or in a consumer TV application. Flexibility is provided by programming facilities via MPU-bus (parallel) or I²C-bus (serial).

BLOCK DIAGRAM



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04/93-PRELIMINARY



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TDA8703 – 8-Bit High-Speed Analog-to-Digital Converter

FEATURES

- 8-bit resolution
- Sampling rate up to 40MHz
- High signal-to-noise ratio over a large analog input frequency range (7.1 effective bits at 4.43MHz full-scale input)
- Binary or two's complement 3-state TTL outputs
- Overflow/underflow 3-state TTL output
- TTL compatible digital inputs
- Low-level AC clock input signal allowed
- Internal reference voltage generator

- Power dissipation only 290mW (typical)
- Low analog input capacitance, no buffer amplifier required
- No sample-and-hold circuit required

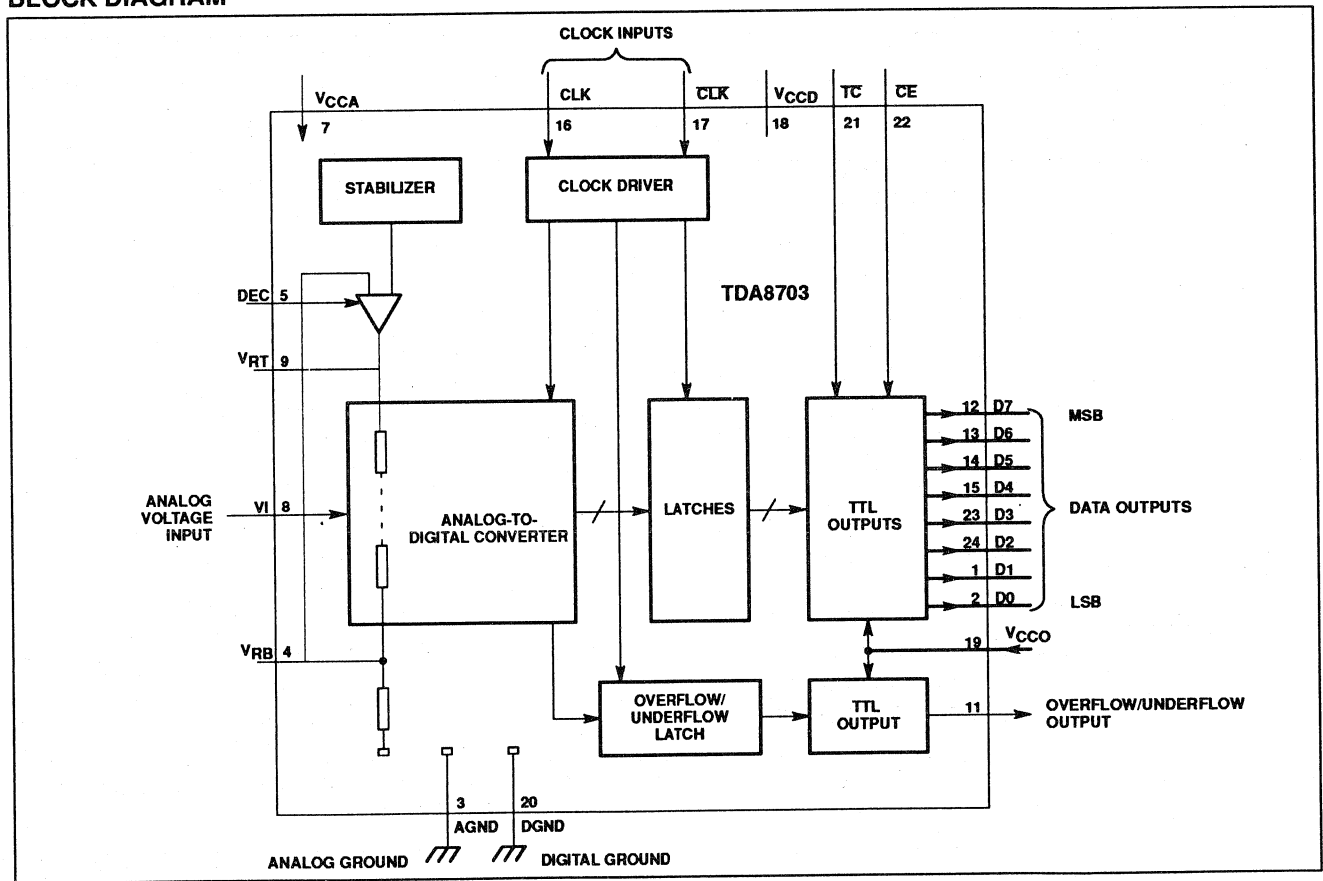
APPLICATIONS

- General purpose high-speed analog-to-digital conversion
- Digital TV, IDTV
- Subscriber TV decoder
- Satellite TV decoders
- Digital VCR

GENERAL DESCRIPTION

The TDA8703 is an 8-bit high-speed analog-to-digital converter (ADC) for video and other applications. It converts the analog input signal into 8-bit binary-coded digital words at a maximum sampling rate of 40MHz. All digital inputs and outputs are TTL compatible, although a low-level AC clock input signal is allowed.

BLOCK DIAGRAM



04/93-EHV

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TDA8708A – Video Analog Input Interface

FEATURES

- 8-bit resolution
- Sampling rate up to 32MHz
- Binary or two's complement 3-state TTL outputs
- TTL-compatible digital inputs and outputs
- Internal reference voltage regulator
- Power dissipation of 365mW (typical)
- Input selector circuit (one out of three video inputs)
- Clamp and Automatic Gain Control (AGC) functions for CVBS and Y signals
- No sample-and-hold circuit required

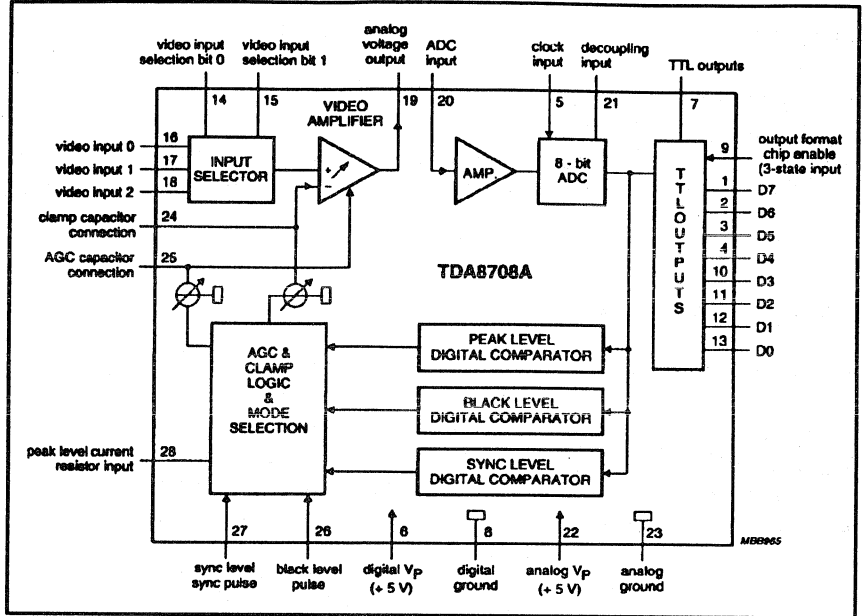
APPLICATIONS

- Video signal decoding
- Scrambled TV (encoding and decoding)
- Digital picture processing
- Frame grabbing

GENERAL DESCRIPTION

The TDA8708A is an analog input interface for video signal processing. It includes a video amplifier with clamp and gain control, an 8-bit analog-to-digital converter (ADC) with a sampling rate of 32MHz and an input selector.

BLOCK DIAGRAM



04/93-EHV

TDA8709A – Video Analog Input Interface

FEATURES

- 8-bit resolution
- Sampling rate up to 32MHz
- TTL-compatible digital inputs and outputs
- Internal reference voltage regulator
- Low level AC clock inputs and outputs
- Clamp function with selection for '16' or '128'
- No sample-and-hold circuit required
- Three selectable video inputs

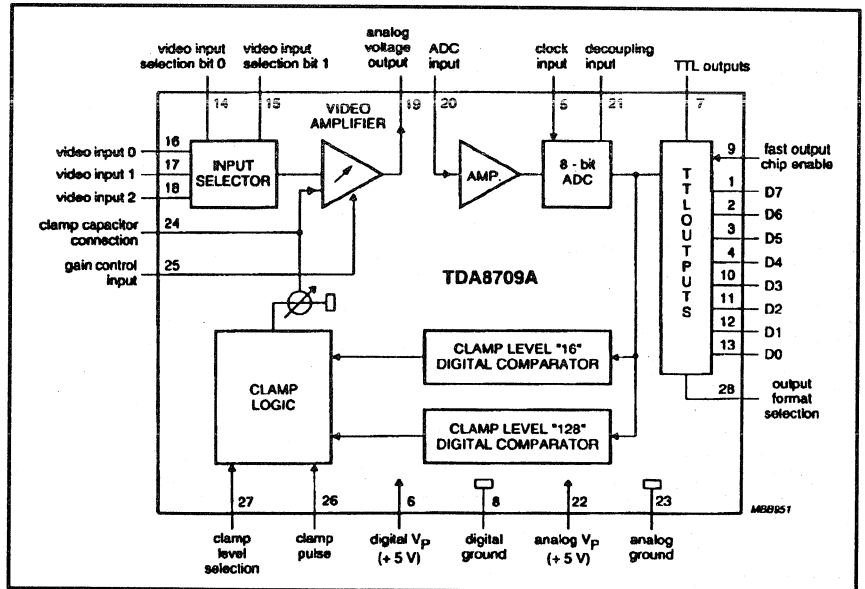
APPLICATIONS

- Video signal decoding
- Digital picture processing
- Frame grabbing
- Color difference signals (U, V)
- R, G, B signals
- Chrominance signal (C)

GENERAL DESCRIPTION

The TDA8709A is an analog input interface for video signal processing. It includes an input selector (1 out of 3 video signals), video amplifier with clamp and external gain control, an 8-bit analog-to-digital converter (ADC) with a sampling rate of 32MHz and an input selector.

BLOCK DIAGRAM



04/93-EHV

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TDA8714 – 8-Bit High-Speed Analog-to-Digital Converter

FEATURES

- 8-bit resolution
- Sampling rate up to 75MHz
- High signal-to-noise ratio over a large analog input frequency range (7.6 effective bits at 4.43MHz full-scale input at a 75MHz clock frequency)
- Overflow/underflow 3-state TTL output allowed
- TTL compatible digital inputs
- Low-level AC clock input signal allowed
- External reference voltage generator
- Power dissipation only 325mW (typical)
- Low analog input capacitance, no buffer amplifier required
- No sample-and-hold circuit required

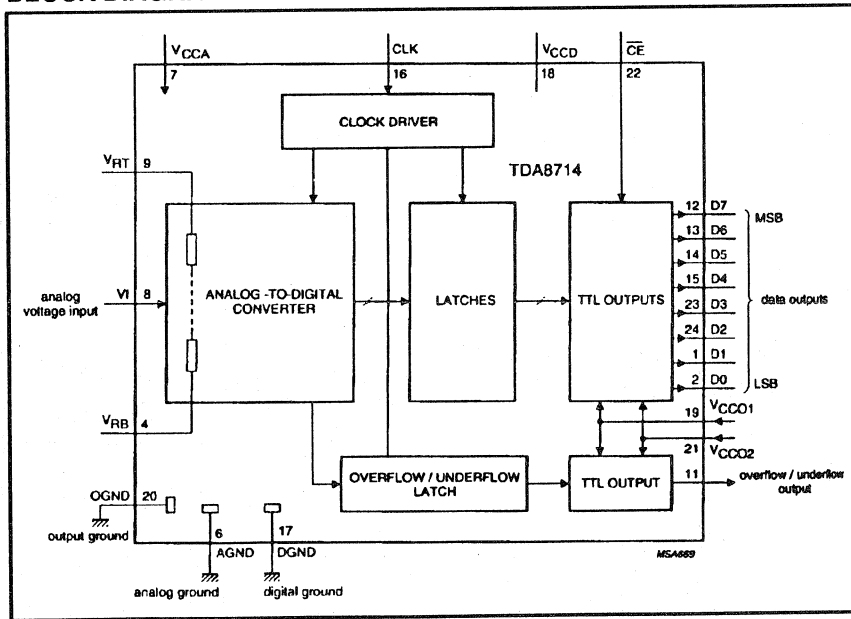
APPLICATIONS

- High-speed analog-to-digital conversion for:
 - video data digitizing
 - radar pulse analysis
 - transient signal analysis
 - high energy physics research
 - $\Sigma\Delta$ modulators
 - medical imaging

DESCRIPTION

The TDA8714 is an 8-bit high-speed analog-to-digital converter (ADC) for professional video and other applications. It converts the analog input signal into 8-bit binary-coded digital words at a maximum sampling rate of 75MHz. All digital inputs and outputs are TTL compatible, although a low-level sine wave clock input signal is allowed.

BLOCK DIAGRAM



04/93-PRELIM

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TDA7050(T) – 150mW BTL or 2 x 75mW Low-Voltage Amplifier

DESCRIPTION

This low-voltage amplifier is for small mono (BTL) or stereo apparatus with headphones.

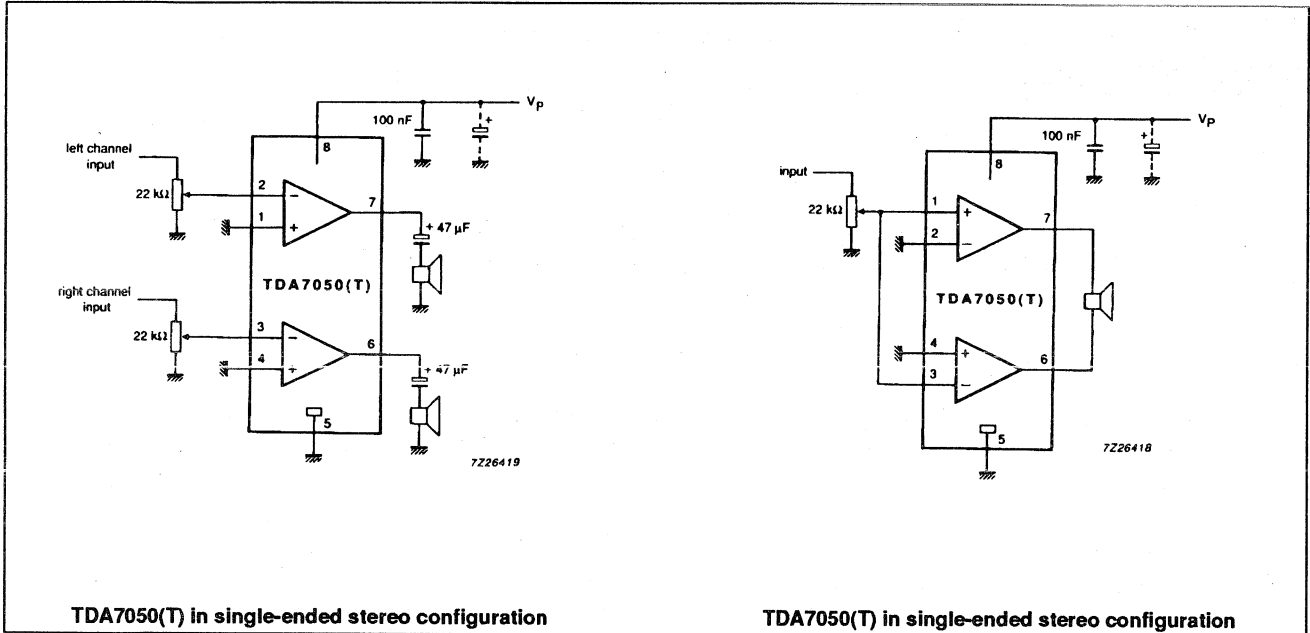
It's in an 8-pin plastic DIL package (TDA7050) or in an 8-pin small outline (SO) plastic package for surface mounting (TDA7050T).

Power output at $d_{tot} = 10\%$		
POWER OUTPUT (W)	SUPPLY VOLTAGE (V)	LOAD IMPEDANCE (Ω)
Mono BTL		
0.15	4.5	64
0.14	3	32
Stereo		
2 x 0.075	4.5	32
2 x 0.035	3	32

FEATURES

- Requires no external components in BTL configuration
- Operates with battery supplies from 6V down to 1.6V
- Very low quiescent current (typically 3.2mA with 3V supply)
- Closed-loop voltage gain fixed at 26dB in the stereo configuration or 32dB in the BTL configuration (floating differential input, 3V supply and 32 Ω load)

BLOCK DIAGRAM



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TDA7050(T) in single-ended stereo configuration

TDA7050(T) in single-ended stereo configuration

ARH/0792

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PHILIPS

TDA7052/TDA7053 – 1W/2x1W BTL Amplifiers

DESCRIPTION

The proprietary circuit design of these amplifiers makes use of the bridge-tied load (BTL) principle to achieve low-voltage operation without sacrifice of output power. They are therefore primarily intended for battery-powered radios, telephone sets, and portable equipment. Its wide supply voltage range (3V to 18V) makes it suitable for a broad range of applications.

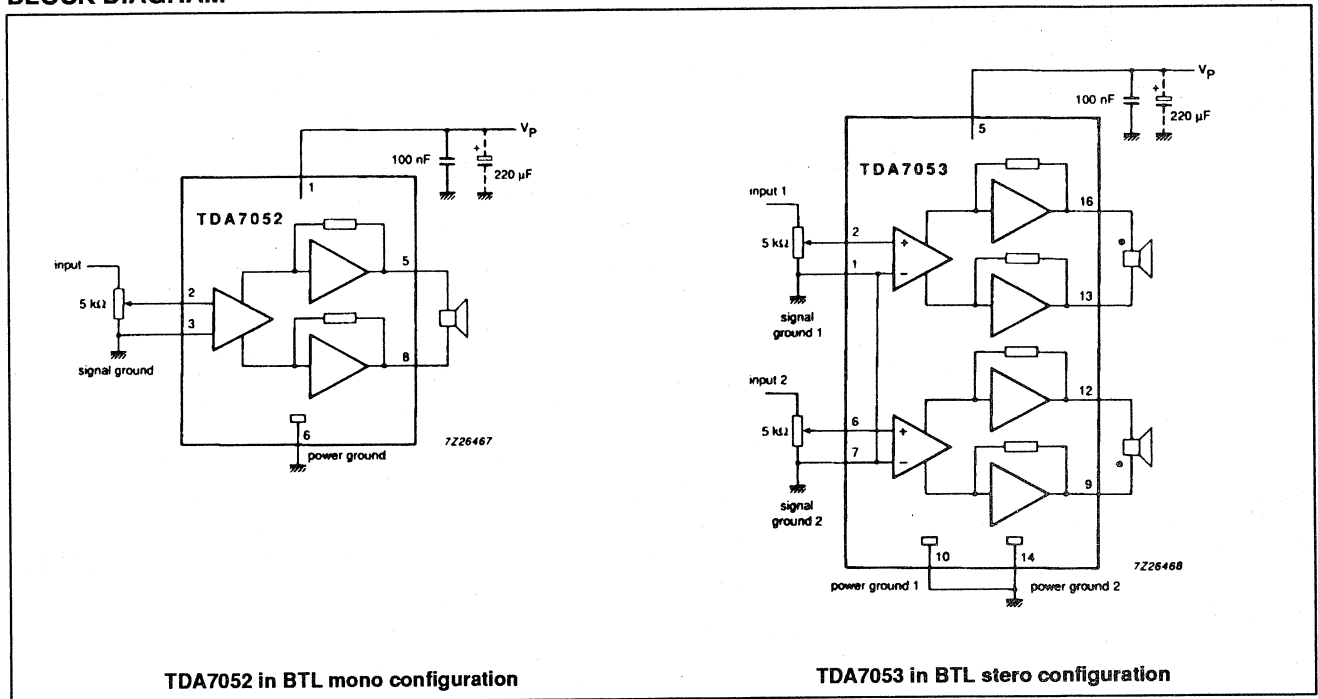
The TDA7052 is in an 8-plastic DIL package and is pin-compatible with half of the TDA7053 which is in a 16-pin plastic DIL package.

Power output at $d_{tot} = 10\%$		
POWER OUTPUT (W)	SUPPLY VOLTAGE (V)	LOAD IMPEDANCE (Ω)
TDA7052		
1	6	8
2	11	25
TDA7053		
2 x 1	6	8
2 x 2	11	25

FEATURES

- No external components required
- Excellent overall stability
- No external heatsink required
- Low power consumption
- No switch-on or switch-off clicks
- Supply voltage range 3V to 18V
- Fixed closed-loop voltage gain of 39dB (6V supply, 8 Ω load)

BLOCK DIAGRAM



TDA7052 in BTL mono configuration

TDA7053 in BTL stereo configuration

ARH/0792

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TDA7056A – 3W BTL Amplifier with DC Volume Control

DESCRIPTION

This BTL amplifier is primarily intended for battery-powered portables. However their wide supply voltage range (4.5V to 18V) also makes them suitable for AC powered applications such as monitors and computers.

The amplifier has a built-in DC volume control with a logarithmic characteristic providing control over a range of more than 80dB. When the DC control voltage drops below 0.3V, the amplifier is muted. Except for pin 5 (DC volume control), the amplifier is pin-compatible with the TDA7056.

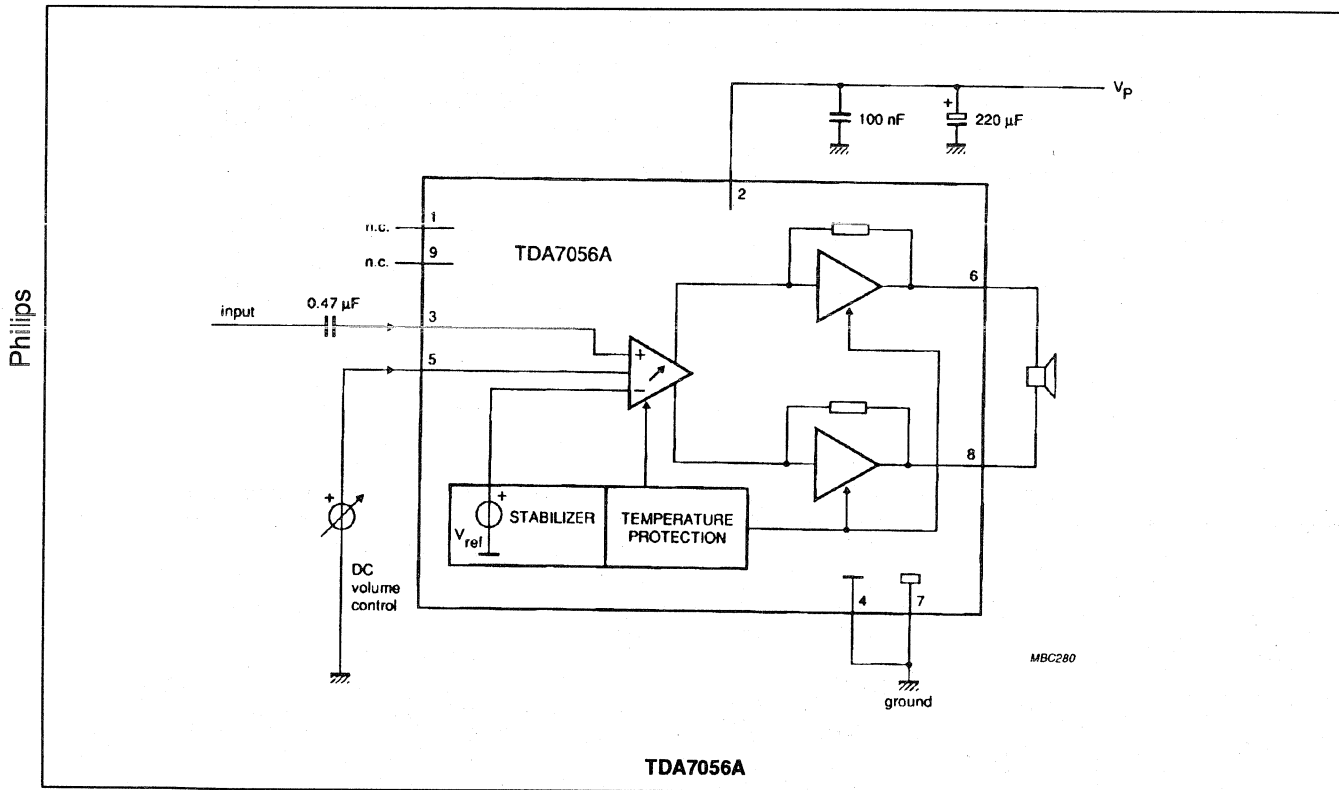
The TDA7056A is in a 9-pin medium-power plastic SIL package.

Power output at $d_{tot} = 10\%$		
POWER OUTPUT (W)	SUPPLY VOLTAGE (V)	LOAD IMPEDANCE (Ω)
3.4	12	16

FEATURES

- No external components required
- Excellent overall stability
- Output protected against short-circuit to V_{CC} , ground, across load
- Low power consumption
- No switch-on/switch-off clicks
- Supply voltage range 4.5V to 18V
- Incorporates DC volume control with a control range >80dB

BLOCK DIAGRAM



ARH/0792

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TDA7056/TDA7057Q – 3W/2x3 BTL Amplifiers

DESCRIPTION

These BTL amplifiers are primarily intended for battery-powered portables. However their wide supply voltage range (3V to 18V) also makes them suitable for AC powered applications such as monitors and computers.

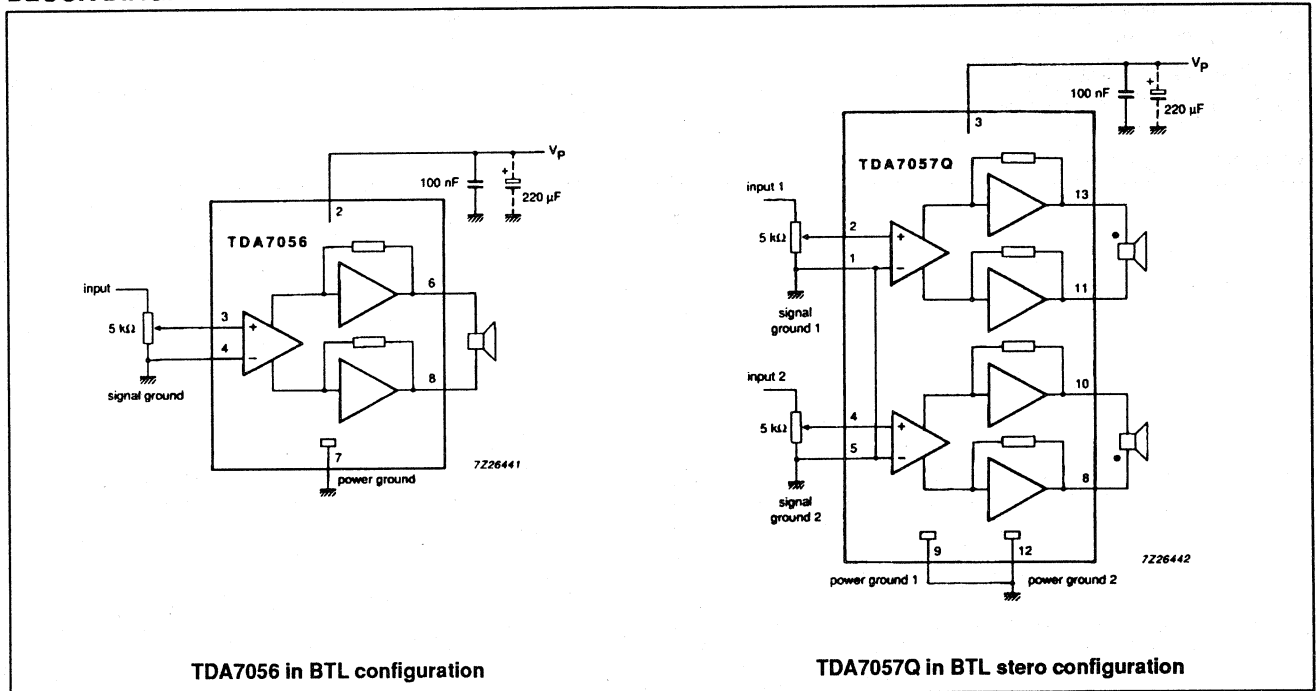
The TDA7056 is in a 9-pin power plastic SIL package. The TDA7057Q is in a 13-pin plastic SIL package with the pins bent to DIL format.

Power output at $d_{tot} = 10\%$		
POWER OUTPUT (W)	SUPPLY VOLTAGE (V)	LOAD IMPEDANCE (Ω)
TDA7056		
3	11	16
TDA7057Q		
2 x 3	11	16

FEATURES

- No external components required
- Excellent overall stability
- Low power consumption
- No switch-on/switch-off clicks
- Supply voltage range 3V to 18V
- Fixed closed-loop voltage gain of 39dB (11V supply, 16 Ω load)

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UMA1016xT – Frequency Synthesizer for Radio Communication Equipment

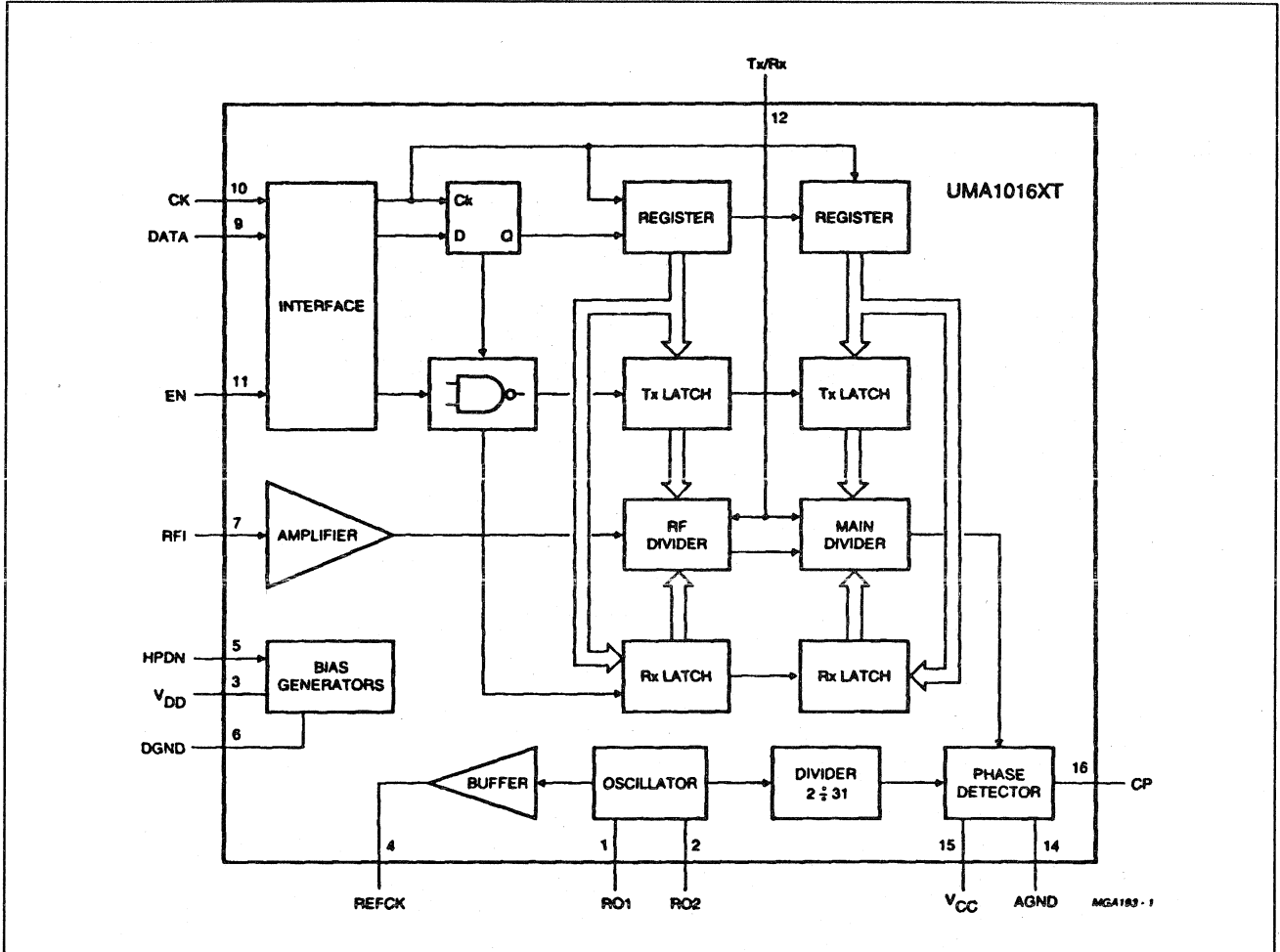
DESCRIPTION

The UMA1016xT is a low power synthesizer for radio communications. Manufactured in bipolar technology, it is designed for a 70 to 1000kHz channel spacing in the 500 to 1000MHz band. The device includes a prescaler, a reference oscillator and dividers, a

3-state phase and frequency comparator, charge pump, and control circuits for the data bus to transfer serial data into the two internal registers. The internal dual register architecture allows a single synthesizer to be used in Fast Frequency Hopping systems without

increasing microcontroller overhead. Fast switching between transmit and receive frequencies is achieved without the need for bus overhead. A power-down mode enables the circuit to be idled. The part uses a 3-wire serial bus for programming channels.

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PRELIM/1092

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UAA2080T – Advanced Pager Receiver

DESCRIPTION

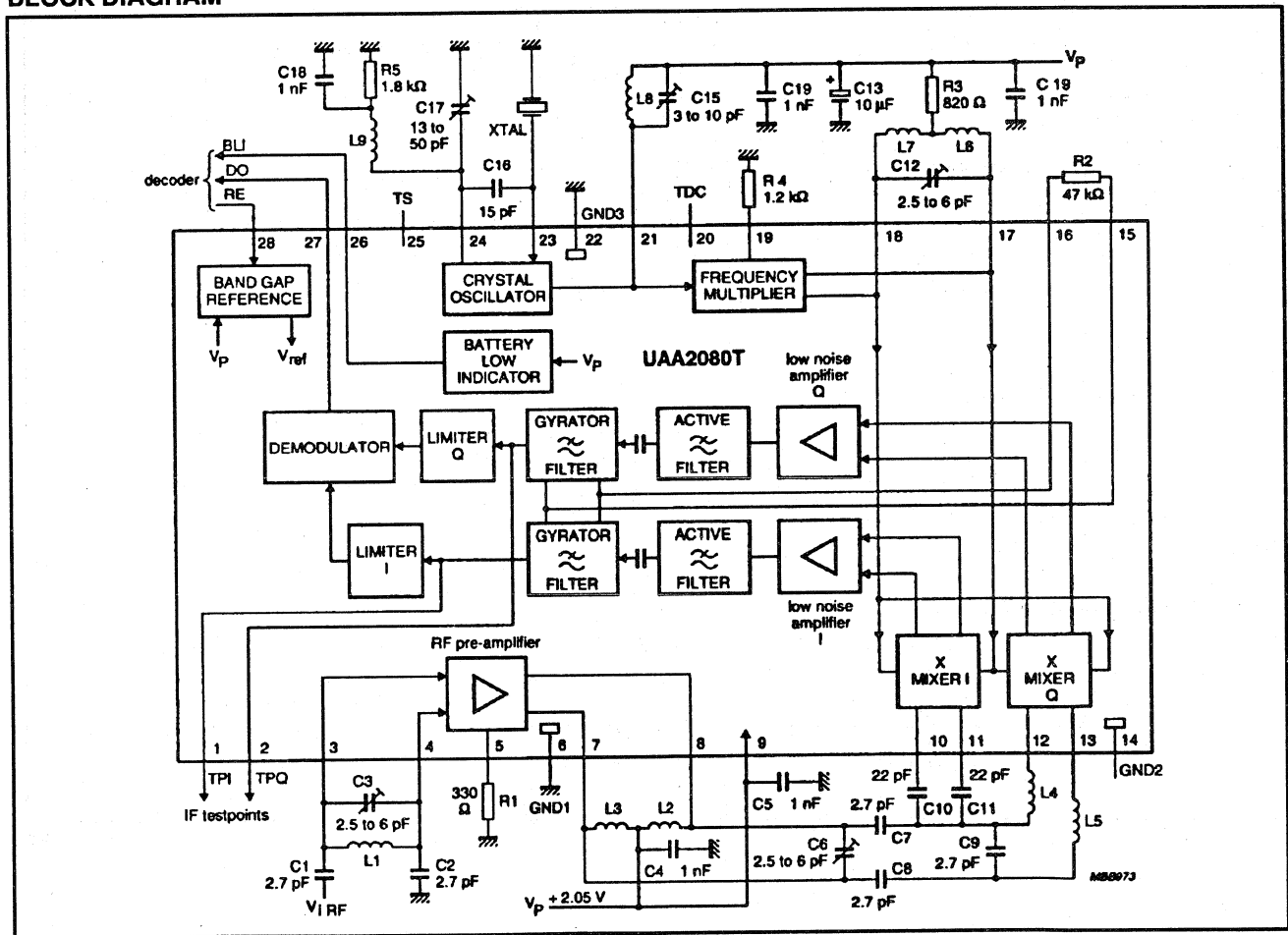
The UAA2080T is a high performance low-power radio receiver circuit, primarily intended for VHF and UHF (25 to 512 MHz) pager receivers for wide area digital paging systems, employing direct FM non-return-to-zero (NRZ) frequency shift keying (FSK). The receiver design is based on the "direct conversion" principle where the input

signal is mixed directly down to the baseband by a local oscillator on the signal frequency. Two complete signal paths with signals of 90° phase difference are required to demodulate the signal. The circuit makes extensive use of on-chip capacitors to minimize the number of external components.

FEATURES

- Wide frequency range up to 512MHz
- High sensitivity (-126dBm typ.)
- Electronically adjustable filters on chip
- Wide frequency offset range and wide deviation range
- Fully POCSAG compatible
- Power on/off mode selectable by the chip enable input
- Low supply voltage; low power consumption (2.7mA @ 2V typ.)
- High integration level

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CMOS 8-Bit Microprocessors and Peripherals				
Part Number	Type	Description	Speed	Package
R65C02 R65NC02 R65C102 R65C112	Microprocessor	MPU, Internal Clock MPU, Internal Clock MPU, Quad Clock MPU, Slave Processor	1, 2, 3, 4 MHz 1, 2, 3 MHz 1, 2, 3, 4 MHz 1, 2, 3 MHz	40-pin DIP 44-pin PLCC
R65C21	I/O	Peripheral Interface Adapter (PIA) interfaces to two 8-bit bidirectional parallel data ports with four control lines and an interrupt request output on each port.	1, 2, 3, 4 MHz	40-pin DIP 44-pin PLCC
R65C22	I/O	Versatile Interface Adapter (VIA) interfaces to two 8-bit bidirectional parallel data ports plus two 16-bit timers and an 8-bit serial port.	1, 2, 3, 4 MHz	40-pin DIP 44-pin PLCC
R65C24	I/O	Peripheral Interface Adapter/Timer (PIAT) interfaces two 8-bit bidirectional parallel data ports and a 16-bit Counter/Timer.	1, 2, 3, 4 MHz	40-pin DIP 44-pin PLCC
R65C51	ACIA	Asynchronous Communications Interface Adapter (ACIA) with on-board baud generator interfaces an asynchronous channel with 5-8 data bits; 1 or 2 stop bits; and odd, even, or no parity; at 1 of 15 selectable rates (to 38,000 baud) or 1/16 external clock rate.	1, 2, MHz	28-pin DIP 28-pin PLCC
R65C52	Dual ACIA	Dual Asynchronous Communications Interface Adapter (DACIA) is a dual channel version of the R65C51 ACIA.	1, 2, 3, 4 MHz	40-pin DIP 44-pin PLCC
R68C552	Dual ACIA	R68C552 DACIA is a 68000 bus-compatible version of the R65C52.	Baud range from 50 to 28,400 bps	40-pin DIP 44-pin PLCC

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NMOS 8-Bit Microprocessors and Peripherals				
Part Number	Type	Description	Speed	Package
R6502 R6503 R6504 R6505 R6512	Microprocessor	8-bit MPUs	1, 2 MHz 1, 2 MHz 1, 2 MHz 1, 2 MHz 1, 2 MHz	40-pin DIP 28-pin DIP 28-pin DIP 28-pin DIP 40-pin DIP
R6520	I/O	Peripheral Interface Adapter (PIA) interfaces to two 8-bit bidirectional parallel data ports with four control lines and an interrupt request output on each port.	1, 2 MHz	40-pin DIP
R6522	I/O, Timer	Versatile Interface Adapter (VIA) interfaces to two 8-bit bidirectional parallel data ports plus two 16-bit timers and an 8-bit serial port.	1, 2 MHz	40-pin DIP
R6532	RAM, I/O, Timer	RAM-I/O Timer (RIOT) integrates 128 x 8 static RAM, two 8-bit bidirectional data ports, and an interval timer with interrupt.	1 MHz	40-pin DIP
R6545	CRT Controller	CRT Controller (CRTC) controls a CRT raster scan video display at a character clock frequency of 2.5 MHz or 3.7 MHz using 19 registers to program display parameters such as number of rows, number of lines, sync positions and widths, row/column or straight binary addressing selection, and interlaced/non-interlaced scan selection.	2.5, 3.7 MHz	40-pin DIP 44-pin PLCC
R6551	ACIA	Asynchronous Communications Interface Adapter (ACIA) with on-board baud generator interfaces an asynchronous channel with 5-8 data bits; 1 or 2 stop bits; and odd, even, or no parity; at 1 of 15 selectable rates (to 38,000 baud) or 1/16 external clock rate.	1, 2 MHz	28-pin DIP

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DIGITAL COMMUNICATIONS DIVISION
Microcontroller/microprocessor components
from Rockwell provide you with:
SUPERIOR TECHNOLOGY • LOW SYSTEM COST
WORLDWIDE SALES/SUPPORT NETWORK
HIGHEST QUALITY/RELIABILITY • PROVEN ARCHITECTURE
ADVANCED PACKAGING/MANUFACTURING TECHNOLOGY

R6500 Family of CMOS and NMOS Microcontrollers

R6500 8-bit Microcontroller Product Features

Features	R6500/1	R6500/11	R6500/12	R6500/13	R6500/15	R65C10
Instruction Speed	1000 ns	1000 ns	1000 ns	1000 ns	1000 ns	1000 ns
Max Internal Clock Speed	2MHz	2MHz	2MHz	2MHz	2MHz	2MHz
ROM (x8)	2K	3K	3K	256	4K	2K
RAM (x8)	64	192	192	192	192	64
I/O Lines	32	32	56	32	32	32
Serial Communications	–	USART	USART	USART	USART	USART
16-bit Counters	1	2	2	2	2	1
Expansion Bus	–	16K	16K	65K	16K	–
Interrupts External	5	6	6	6	6	5
Internal	1	4	4	4	4	1
OperaPower (mW typ)	750	800	800	800	800	40
Standby Power (mW typ)	35*	12*	12*	12*	12*	4†
Packaging Options	44 PLCC 40 DIP	44 PLCC 40 DIP	68 PLCC 64 QUIP	68 PLCC 64 QUIP	44 PLCC 40 DIP	44 PLCC 40 DIP

• Standby RAM. † Stop mode.

**Enhanced Instruction Set 8-bit
Microcontroller Product Features**

Features	R65C19	R65C29	R65C2901J	R65C39
Instruction Speed	200 ns	200 ns	200 ns	200 ns
Max Internal Clock Speed	10MHz	10MHz	10MHz	10MHz
ROM (x8)	16K	8K	–	8K
RAM (x8)	512	1K	1K	1K
I/O Lines	44	40	40	40
Serial Communications	USART	USART	USART	USART
DMA Access	–	–	–	Yes
16-bit Counters	2	2	2	2
17-bit Time Generators	2	2	2	2
Host Bus Interface	16450	16450	16450	16450/16550
Expansion Bus	64K	512K	512K	512K
Interrupts	8	8	8	8
Operating Power (mW per MHz typ)	20	15	15	15
Sleep Power (mW per MHz typ)	3.5 IDLE	1.8	1.8	1.1
Stop Power (mW typ)	0.6	–	–	–
Packaging Options	80 PQFP 68 PLCC 64 QUIP	80 PQFP 84 PLCC	84 PLCC	80 PQFP 84 PLCC

**ROM-less 8-bit Microcontroller
Product Features**

Features	R6501Q	R6511Q	R6518
Instruction Speed	1000 ns	1000 ns	1000 ns
Max Internal Clock Speed	2MHz	2MHz	2MHz
RAM (x8)	192	192	192
I/O Lines	32	32	16
Serial Communications	USART	USART	USART
16-bit Counters	2	2	2
Expansion Bus	64K	64K	16K
Interrupts External	6	6	6
Internal	4	4	4
Operating Power (mW typ)	800	800	800
Standby Power (mW typ)	12	12	12
Packaging Options	68 PLCC 64 QUIP	68 PLCC 64 QUIP	44 PLCC 40 DIP

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NV RAMs

Features

- 5-V single power supply.
- Electrically erasable and programmable ROM
- Three-state outputs
- Store and recall are controlled by a narrow signal width : >200ns (parallel type)
- 10,000 or 100,000 erase/write cycles for EPROM
- Ten-year data retention
- Erroneous store protection: =3.5V
- Wide operating temperature (1 type) -40°C to +85°C

Applications

- Constant setting
- Data memory
- Rewritable programs and firmware
- System configuration setting
- System parameter and part No. setting
- Systems status monitor

SPECIFICATIONS

Model No.	Memory size (bit)	Composition	Operating voltage (V)	Current consumption		Static RAM operation			Store operation (ms)	Array recall operation (ns)	Package
				Operating (mA) Max.	Standby (µA) Max.	Clock frequency (Hz) Max.	Read cycle time (ns) Min.	Write cycle time (ns) Min.	Store time Max.	Recall cycle time Min.	
S-24H30R/I	64	8 × 8 Serial	5 ± 10%	10	1	1M	—	—	10	2500	8 DIP/SOP
S-24S30R/I	64	8 × 8 Serial	5 ± 10%	10	1	1M	—	—	10	2500	8 DIP/SOP
S-24H45R/I	256	16 × 16 Serial	5 ± 10%	10	1	1M	—	—	10	2500	8 DIP/SOP
S-24S45R/I	256	16 × 16 Serial	5 ± 10%	10	1	1M	—	—	10	2500	8 DIP/SOP
S-22H10R/I	256	64 × 4 Parallel	5 ± 10%	20/30*1	1	—	200	200	10	1300	18 DIP/SOP
S-22S10R/I	256	64 × 4 Parallel	5 ± 10%	20/30*3	1	—	200	200	10	1300	18 DIP/SOP
S-22H12R/I	1K	256 × 4 Parallel	5 ± 10%	20/30*2	1	—	200	200	10	1300	18 DIP/SOP
S-22S12R/I	1K	256 × 4 Parallel	5 ± 10%	20/30*4	1	—	200	200	10	1300	18 DIP/SOP

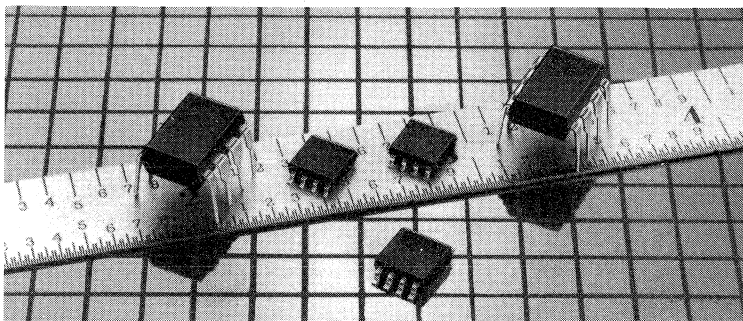
Note) H type All inputs/outputs are compatible with TTL and can be connected directly to TTL.
S type Schmitt inputs are available to Store and Recall terminals.

*1 S-22H10R : 20. S-22H10I : 30 *2 S-22H12R : 20. S-22H12I : 30
*3 S-22S10R : 20. S-22S10I : 30 *4 S-22S12R : 20. S-22S12I : 30

EEPROMs

Features

- Low current consumption
- 5-V single power supply
- Write operation with built-in timer
- Data retention: 10 years
- Memory protection (S-2918, S-2961)



NEW PRODUCTS:

HIGH SPEED CMOS LOGIC ("FCT-T")

- (Available Now)
- Equivalent to Quality Semiconductor's QSOP products.
 - Functionally compatible with 74F series and 74FCT series.
 - < 7.5 mw power consumption.* TTL compatible inputs and outputs.* 150 mils x 340 mils surface mount pkg..
 - 25 mils pin spacing.

SOT-23 PACKAGE

- Voltage Regulators
- Voltage Detectors

STEP-DOWN REGULATORS

S-812XXPG SERIES - HIGH PRECISION VOLTAGE REGULATORS (Available Now)

- +/- 2.4% accuracy.
- 1.0 µA power consumption
- < 1 volt I/O difference
- 40 mA output current maximum
- Available in .1 volt steps from 1.1 to 6.0 volts.

SPECIFICATIONS

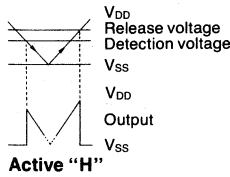
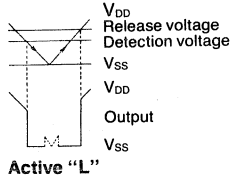
Model No.	Memory size (bit)	Configuration	Operating voltage (V)		Current consumption		Clock frequency (MHz) Max.	Address access time (ns) Max.	Package	Note
			Read Min.	Write Min.	Operating (mA) Max.	Standby (µA) Max.				
S-2913AR/I	1K	64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	NS code, sequential
S-2913CR/I	1K	32 × 16 + 32 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	NS code, sequential, Memory protection
S-2914AR/I	1K	64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	NS code, Compatible with NMC93C46 (DIP)
S-2914AID	1K	64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 SOP	NS code, Compatible with NMC93C46
S-2919AR/I	1K	64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port
S-2919CR/I	1K	32 × 16 + 32 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port, Memory protection
S-2919GR/I	1K	32 × 16 + 32 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port, Memory protection, CS active "L"
S-2922AR/I	2K	128 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	NS code, sequential
S-2923CR/I	2K	64 × 16 + 64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Conform to NS code, sequential, Memory protection
S-2924AR/I	2K	128 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Conform to NS code
S-2929AR/I	2K	128 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port
S-2929CR/I	2K	64 × 16 + 64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port, Memory protection
S-2929GR/I	2K	64 × 16 + 64 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port, Memory protection, CS active "L"
S-2933CR/I	4K	128 × 16 + 128 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	NS code, sequential, Memory protection
S-2934AR/I	4K	256 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	NS code, compatible with NMC93C66 (DIP)
S-2939AR/I	4K	256 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port
S-2939CR/I	4K	128 × 16 + 128 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port, Memory protection
S-2939GR/I	4K	128 × 16 + 128 × 16 Serial	1.8	2.7	2.0	1.0	2.0	-	8 DIP/SOP	Easy interface with serial port, Memory protection, CS active "L"
S-2940I	128	16 × 8 Serial	2.7	3.8	5.0	1.0	0.15	-	8 DIP/SOP	Easy interface with serial port
S-2961I	384	39 × 8 + 9 × 8 Serial	2.7	3.8	5.0	1.0	0.15	-	8 DIP/SOP	Easy interface with serial port, Memory protection
S-2980I	768	768 × 1 Bit sequential	2.4	4.5	2.0	20	0.25	-	8 DIP/SOP	Compatible with MB8541
S-2911R/I	1K	64 × 16, 128 × 8 Serial	4.5	4.5	3.0/4.0	100	0.25	-	8 DIP	GI code, compatible with ER5911
S-2914R	1K	64 × 16, 128 × 8 Serial	4.5	4.5	3.0	100	0.25	-	8 DIP	NS code, compatible with NMC93C46
S-2917I	1K	64 × 16, 128 × 8 Serial	4.5	4.5	4.0	100	0.50	-	8 DIP/SOP	Easy interface with serial port
S-2918I	1K	32 × 8 + 96 × 8 Serial	4.5	4.5	4.0	100	0.50	-	8 DIP/SOP	Easy interface with serial port, Memory protection
S-2840A(R)	16K	2K × 8 Parallel	4.5	4.5	25	100	-	200	24 DIP	Compatible with INTEL2816
*S-28F512R	512K	64K × 8 Parallel	4.5	4.5	30	100	-	150/200	32 DIP/SOP	Compatible with INTEL28F512 (Vpp = 12V)

* Under development

VOLTAGE DETECTORS (S-807 SERIES)

SELECTION GUIDE AND SPECIFICATIONS

Operation Timing Chart



Additional models/detection voltages are available—contact Seiko Instruments for details.

*The "X" after the SOT-89 part-name becomes "S" when shipped in stick form, and "T1" or "T2" when supplied on tape reels.

Model No.		Detection voltage (V)	Hysteresis width (V)	Output state	Current consumption (μA) Typ.	Output current (V _{DS} =0.5V)				Operating voltage (V)
TO-92	SOT-89*					Nch I _{out} (mA)	Typ. V _{op} (V)	Pch I _{out} (mA)	Min. V _{op} (V)	
S-80718AL	S-80718AL-AF-X	1.8V ± 2.4%	0.09	CMOS output (Low)	1.4 (V _{DD} = 3.0V)	0.50	1.2	0.36	4.8	1.0~15.0
S-80719AL	S-80719AL-AG-X	1.9V ± 2.4%	0.095							
S-80721AL	S-80721AL-AJ-X	2.1V ± 2.4%	0.105							
—	S-80723AL-AL-X	2.3V ± 2.4%	0.115		1.3 (V _{DD} = 4.5V)	0.50	1.2	0.36	4.8	
S-80725AL	S-80725AL-AN-X	2.5V ± 2.4%	0.125							
S-80730AL	S-80730AL-AT-X	3.0V ± 2.4%	0.15		1.0 (V _{DD} = 4.5V)	0.50	1.2	0.36	4.8	
S-80731AL	S-80731AL-AV-X	3.1V ± 2.4%	0.155							
S-80733AL	S-80733AL-AX-X	3.3V ± 2.4%	0.165							
S-80734AL	S-80734AL-AY-X	3.4V ± 2.4%	0.17							
S-80735AL	S-80735AL-AZ-X	3.5V ± 2.4%	0.175							
S-80740AL	S-80740AL-A4-X	4.0V ± 2.4%	0.2							
S-80741AL	S-80741AL-A5-X	4.1V ± 2.4%	0.205							
S-80745AL	S-80745AL-A9-X	4.5V ± 2.4%	0.225	2.6 (V _{DD} = 6.0V)	0.50	1.2	0.46	6.0		
S-80744HL	S-80744HL-U8-X	4.295 ~ 4.605	Release voltage 4.70 max.							
—	S-80720AN-DH-X	2.0V ± 2.4%	0.1	Nch opendrain	1.4 (V _{DD} = 3.0V)	0.50	1.2	—	—	
S-80721AN	S-80721AN-DJ-X	2.1V ± 2.4%	0.105							
S-80727AN	S-80727AN-DQ-X	2.7V ± 2.4%	0.135							
S-80728AN	S-80728AN-DR-X	2.8V ± 2.4%	0.14		1.0 (V _{DD} = 4.5V)	0.50	1.2	—	—	
S-80730AN	S-80730AN-DT-X	3.0V ± 2.4%	0.15							
—	S-80732AN-DW-X	3.2V ± 2.4%	0.16		1.0 (V _{DD} = 6.0V)	0.50	1.2	—	—	
S-80733AN	S-80733AN-DX-X	3.3V ± 2.4%	0.165							
S-80734AN	S-80734AN-DY-X	3.4V ± 2.4%	0.17							
S-80735AN	S-80735AN-DZ-X	3.5V ± 2.4%	0.175		1.0 (V _{DD} = 6.0V)	0.50	1.2	—	—	
S-80740AN	S-80740AN-D4-X	4.0V ± 2.4%	0.2							
S-80741AN	S-80741AN-D5-X	4.1V ± 2.4%	0.205		1.0 (V _{DD} = 6.0V)	0.50	1.2	—	—	
S-80745AN	S-80745AN-D9-X	4.5V ± 2.4%	0.225							
S-80740AH	S-80740AH-B4-X	4.0V ± 2.4%	0.2		CMOS output (High)	1.0 (V _{DD} = 6.0V)	9.60	6.0	0.03	1.2

VOLTAGE REGULATORS

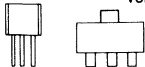
The S-802 and S-812 have are CMOS voltage regulators. Both Series have internally-fixed output voltage. The S-802 Series is a negative voltage regulator and the S-812 is a positive voltage regulator. SOT-89 package available for surface mount.

Features

- Low current consumption
- Low input/output voltage difference
- Low temperature coefficient of output voltage (±0.38 mV/°C for the S-81230AG typ.)
- Wide operating voltage range
- Good input stability (0.1%/V typ.)

Applications

- Automobile voltage regulator
- High stability voltage standard
- Constant voltage power supply for battery-powered equipment, communications equipment, video equipment, and other equipments which require accurate voltage control



TO-92 SOT-89

Specifications

Model No.	Output Voltage (V)	Output Current (mA) Typ.	Load Stability (mV) Typ.	Input/Output Voltage Difference (mV) Typ.	Current Consumption (μA) Typ.	Input Voltage (V) Max.	Absolute Maximum Rating (V)
S-80230AG	-3 ± 5%	30 (V _{IN} = -5V)	60 (I _{OUT} = 1 to 20 mA)	60 (I _{OUT} = 1 mA)	2.5	-10	-12
S-80250AG	-5 ± 5%	50 (V _{IN} = -7V)	40 (I _{OUT} = 1 to 40 mA)	30 (I _{OUT} = 1 mA)	3.0	-10	-12
S-81211AG	1.1 ± 5%	3 (V _{IN} = 1.5V)	100 (I _{OUT} = 40 to 500 μA)	250	2.2	10	12
S-81225AG	2.5 ± 5%	25 (V _{IN} = 4.5V)	80 (I _{OUT} = 1 to 10 mA)	100	2.5	10	12
S-81230AG	3 ± 5%	30 (V _{IN} = 5V)	60 (I _{OUT} = 1 to 20 mA)	60 (I _{OUT} = 1 mA)	2.5	10	12
S-81250AG	5 ± 5%	50 (V _{IN} = 7V)	40 (I _{OUT} = 1 to 40 mA)	30 (I _{OUT} = 1 mA)	3.0	10	12
S-81250HG	5 ± 5%	50 (V _{IN} = 7V)	40 (I _{OUT} = 1 to 40 mA)	30 (I _{OUT} = 1 mA)	3.0	12	18
S-81350AG	5 ± 5%	40 (V _{IN} = 5.2V)	80 (I _{OUT} = 1 to 60 mA)	200 (I _{OUT} = 40 mA)	25	8	10

VOLTAGE REGULATOR WITH DC-DC CONVERTER

S-8430AF is a high-precision DC-DC converter consisting of a CR oscillating circuit, a switching regulator, a series regulator and a Schottky-diode. The S-8430AF serves as a series regulator when the input voltage is higher than the output voltage. On the other hand, it serves as a step-up switching regulator and as a series regulator when the input voltage is lower than the output voltage. Therefore, the output level is kept constant. The

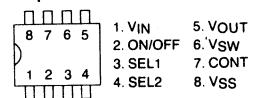
output voltage can be changed from 3V to 5V, and vice versa by an external signal. The S-8430AF is provided with a standby function that stops an internal CR oscillating circuit by a remote external signal.

Features

- Low current consumption
Operating: 11μA typ.
Standby: 0.2μA max.

- High-precision output voltage
3.0V ± 5%, 5.0V ± 4%
- Low voltage operation
0.9V min.
- Selectable output voltage
(switchable from 3V to 5V,
and vice versa)
- Standby function

Pin Arrangement 8-pin SOP



REALTIME CLOCK

The S-3520CF is a realtime clock that inputs/outputs serial clock and calendar data into/from CPU. A built-in voltage regulator provides good frequency stability and low power consumption. Even during backup operation, the S-3520CF is effective in extending the battery service life. Because it has a built-in 120-bit SRAM, it is also useful for CPU data backup.

FEATURES

- Low Current Consumption
- Wide data retention voltage range
- Clock and calendar data correction with the increment method
- Built-in auto-calendar until the year 2099
- Built-in 30 x 4-bit SRAM
- Easy serial interface to CPU with 5 lines

Model No.	Operating voltage range (V)	Current consumption (μA) Typ. V _{DD} =5.0V	Data retention voltage (V)	Oscillation frequency deviation (ppm) (Spread between ICs)	Voltage deviation of oscillating frequency (ppm) V _{DD} +2.0 to 6.0V	Package
S-3520 CF	3.0 to 6.0	2.0	2.0 to 6.0	-15 to +15	-5 to +5	14 SOP

SHARP

SHARP ELECTRONICS CORPORATION
MICROELECTRONICS GROUP

Since its founding in 1912, Sharp Corporation has constantly explored new fields, achieving many 'firsts' in Japan and the world. These include the 'Ever-Sharp' mechanical pencil, from which the company derives its name and trademark; radios; televisions; microwave ovens; solar cells; and electronic organizers. Sharp was the first firm in the world to develop and manufacture electronic calculators; the first to mass-produce LCDs; and, in 1988, the first to develop the 14-inch thin-film transistor (TFT) color LCD, another product of our energetic drive to open up new technologies and new markets.

Today Sharp products, including semiconductors, are used extensively all over the world. Sharp is a complete semiconductor manufacturer, performing its own process de-

velopment, circuit design, wafer fabrication, assembly, and test. Sharp is an international company, with its Microelectronic Group headquartered in Camas, Washington.

Sharp's integrated circuits include memory products and digital-signal-processing products. The memory product lineup includes: SRAMs (high speed and low power), Pseudo SRAMs, Mask ROMs, and FIFO memories. The digital-signal-processing product lineup includes: a high-performance DSP chip set consisting of a 24-bit 40 MHz fixed-point digital signal processor, and an address generator that can provide more than 150 memory-address sequences.

Sharp's memory devices are used extensively in personal computers, mainframes, workstations, lap-

tops, and also in the newly emerging 'hand-held' and 'pen-input' computing applications.

Sharp's digital-signal-processing products are used in applications such as radar, sonar, medical electronics, image processing, robotics, spread-spectrum communications, digital video/radio, high-end instrumentation, telecommunications, and audio signal and speech communications.

To keep pace with the rapid changes in society, Sharp will continue to direct its efforts towards understanding the crucial trends of the moment, and by supplying our customers with products that truly meet their needs. In short, contributing towards a better standard of life in this age of expanding technology.

Pseudo SRAMs

DENSITY	ORGANIZATION	MODEL NUMBER	ACCESS TIMES (ns)					CYCLE TIMES (ns)					PACKAGE SK-									
			50	60	70	80	100	120	70	100	110	130	140	150	160	190	SDIP	DIP	SOP	SOJ	DIP	TSOP
PSEUDO SRAM	256K	32K x 8	LH5P832														28	28			28	
	512K	64K x 8	LH5P864														32					
	1M	128K x 8	LH5P8128 ²													32	32				32 ³	
		128K x 8	LH5P8129 ¹													32	32				32 ³	

NOTES:
 = Not available.
 = Operating frequency or access/cycle time parts that are either available now or soon to be available. Contact your Sharp representative for availability.

- CS Control
- CE Control
- TSOP(I)
- TSOP(II) - Consult factory for availability.

MD-7AA

Sharp Electronics

SHARP

SHARP ELECTRONICS CORPORATION

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Fax: 206-834-8903

Static RAMs

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PROCESS	DENSITY	ORGANIZATION	MODEL NUMBER	ACCESS TIME (ns)										PACKAGE SK-							
				70	80	100	120	150	200	260	300	500	1000	DIP	DIP	SOP	TSOP	SOJ			
LOW-POWER STATIC RAM	FULL CMOS	1K	256K x 4	LH5101													22				
		4K	1K x 4	LH5114														18			
		16K	2K x 8	LH5116/H														24	24	24	
				LH5116S															24	24	24
		LH5118/H																24	24	24	
	64K	8K x 8	LH5168/H															28	28	28	28
			LH5168SH															28	28	28	
			LH5168ST																	28	
	256K	32K x 8	LH5168Z8															28			
			LH5168Z9															28			
CMOS PERIPHERY	64K	8K x 8	LH5268A													28	28	28			
	256K	32K x 8	LH51256L													28	28				
	256K	32K x 8	LH52252A													24			24		
			LH52253													28			28		
			LH52258A													28			28		
HIGH SPEED STATIC RAM	CMOS PERIPHERY	1M	256K x 4	LH521002															28		
			128K x 8	LH521007A															32		
			LH521008																32		
	1.125 M	32K x 36	64K x 18	LH521028															52		
			LH52V1036B2																TQFP 100		
			LH52V1036C4																TQFP 100		

NOTES:
 □ = Not available.
 ■ = Operating frequency or access/cycle time parts that are either available now or soon to be available. Contact your Sharp representative for availability.

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TYPE	DENSITY	ORGANIZATION	MODEL NUMBER	OPERATING FREQUENCY (MHz)			PACKAGE				
				35	25	15	DIP	SOJ	SK-DIP	PLCC	
SHALLOW ASYNCH.	0.5K	64 x 8	LH5481	█	█	█			28	28	
		64 x 9	LH5491	█	█	█			28	28	
DEEPER ASYNCH.	4.5K	512 x 9	LH5496/96H	█	█	█	█	█	28	28	32
	9K	1K x 9	LH5497/97H	█	█	█	█	█	28	28	32
	9K	1K x 9	LH540202	█	█	█	█	█	28	28	32
	18K	2K x 9	LH5498	█	█	█	█	█	28	28	32
	18K	2K x 9	LH540203	█	█	█	█	█	28	28	32
	36K	4K x 9	LH5499	█	█	█	█	█	28		32
	36K	4K x 9	LH540204	█	█	█	█	█	28	28	32
	72K	8K x 9	LH540205	█	█	█	█	█	28	28	
CLOCK SYNCH.	9K	512 x 18	LH540215	█	█	█	█	█			68
	18K	1K x 18	LH540225	█	█	█	█	█			68
	36K	4K x 9	LH5492	█	█	█	█	█			32
	36K	1K x 36	LH543620	█	█	█	█	█			132
BIDIRECTIONAL	18K	256 x 36 x 2	LH5420	█	█	█	█	█			120 132
	18K	256 x 36 x 2	LH543601	█	█	█	█	█			120 132
	36K	512 x 36 x 2	LH543611	█	█	█	█	█			120 132

TYPE	DENSITY	ORGANIZATION	MODEL NUMBER	ACCESS TIME (ns)						PACKAGE				
				15	20	25	35	50	65	80	DIP	SOJ	SK-DIP	PLCC
DEEPER ASYNCH.	4.5K	512 x 9	LH5496/96H	█	█	█	█	█	█	█	█	28	28	32
	9K	1K x 9	LH5497/97H	█	█	█	█	█	█	█	█	28	28	32
	9K	1K x 9	LH540202	█	█	█	█	█	█	█	█	28	28	32
	18K	2K x 9	LH5498	█	█	█	█	█	█	█	█	28	28	32
	18K	2K x 9	LH540203	█	█	█	█	█	█	█	█	28	28	32
	36K	4K x 9	LH5499	█	█	█	█	█	█	█	█	28		32
	36K	4K x 9	LH540204	█	█	█	█	█	█	█	█	28	28	32
	72K	8K x 9	LH540205	█	█	█	█	█	█	█	█	28	28	

TYPE	DENSITY	ORGANIZATION	MODEL NUMBER	CYCLE TIME (ns)					PACKAGE
				15	20	25	30	35	
CLOCK SYNCH.	9K	512 x 18	LH540215	█	█	█	█	█	68
	18K	1K x 18	LH540225	█	█	█	█	█	68
	36K	4K x 9	LH5492	█	█	█	█	█	32
	36K	1K x 36	LH543620	█	█	█	█	█	132
BIDIRECTIONAL	18K	256 x 36 x 2	LH5420	█	█	█	█	█	120 132
	18K	256 x 36 x 2	LH543601	█	█	█	█	█	120 132
	36K	512 x 36 x 2	LH543611	█	█	█	█	█	120 132

NOTES:
 □ = Contact your Sharp representative for availability.
 █ = Operating frequency or access/cycle time parts which either are available now or are soon to be available. Contact your Sharp representative for availability. Asynchronous parts are specified according to access time or operating frequency; synchronous parts are specified according to cycle time.

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Sharp Electronics

Mask ROMs

PINOUT	DENSITY	ORGANIZATION	MODEL NUMBER	ACCESS TIME (ns)							PACKAGE					
				55	70	80	100	120	150	200	500	DIP	SOP	TSOP	QFP	
JEDEC STANDARD EPROM PINOUT	256K	32K x 8	LH53259									28	28		44 ²	
	512K	64K x 8	LH53515									28	28		44 ²	
	1M	128K x 8	LH530800A										32	32		44 ²
			LH530800A-Y										32	32		44 ²
			LH53H0900										32	32		
	2M	256K x 8	LH532100B										32	32	32 ⁴	
			LH534100B										32	32		
	4M	512K x 8	LH534K00										32	32	32 ⁴	
			LH534R00										32	32	32 ⁴	
			LH53H4100										32	32	32 ⁴	
	8M	1M x 8	LH538300B										32	32	32 ⁴	
			LH538R00A										32	32	32 ⁴	
	x 8/x 16 MASK ROM PINOUT	1M	128K x 8	LH531000B									28	28		44 ¹
		2M	256K x 8 128K x 16	LH532000B									40	40	48 ³	44 ^{1,2}
				LH532000B-S									40	40	48 ³	44 ^{1,2}
		4M	512K x 8 256K x 16	LH534000B									40	40	48 ³	44 ^{1,2}
				LH534000B-S									40	40	48 ³	44 ^{1,2}
				LH534500A										40	40	48 ³	44^{1}
LH534600A													40	40	48 ³	44 ¹
8M		1M x 8 512K x 16	LH534P00										40	40	48 ³	44 ¹
			LH53H4000										40	40	48 ³	
			LH538000-S										42	44	48 ³	64
			LH538500B										42	44	48 ³	44 ⁶⁴
16M		2M x 8 1M x 16	LH538600										42	44	48 ³	44 ⁶⁴
			LH538P00A										42	44	48 ³	
32M		4M x 8 2M x 16	LH5316501										42	44		
			LH5316500C										42	44	48 ³	
			LH5332500										44		64	

NOTES:
 □ = Not available.
 ▨ = Operating frequency or access/cycle time parts that are either available now or soon to be available. Contact your Sharp representative for availability.

LH5XXX: CMOS
 1. 14 x 14 mm² package
 2. QFP also available in 10 x 10 mm² package
 3. TSOP (Type I)
 4. TSOP (Type II)

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Sharp Electronics

8-Bit Microcontrollers

Siemens Part Number	Clock Frequency	Package Type(s)	Description	Features
SAB 8031A	12 MHz	PDIP 40 PLCC 44	8-Bit	- Features timer/counters, interrupt controller, serial and parallel ports, with on-chip oscillator
SAB 8031A-16	16 MHz	PDIP 40 PLCC 44		- Lower power, increased operating voltage range over SAB 8031
SAB 8031A-20	20 MHz	PDIP 40 PLCC 44		
SAB 8051A	12 MHz	PDIP 40 PLCC 44	8-Bit	- An SAB 8031A with 4K of on-chip ROM for program memory
SAB 8051A-16	16 MHz	PDIP 40 PLCC 44		
SAB 8032B	12 MHz	PDIP 40 PLCC 44	8-Bit	- Enhanced version of SAB 8031A
SAB 8032B-16	16 MHz	PDIP 40 PLCC 44		- Additional RAM, timer/counter, interrupt source
SAB 8032B-20	20 MHz	PDIP 40		
SAB 8052B	12 MHz	PDIP 40 PLCC 44	8-Bit	- An SAB 8032B with 8K of on-chip ROM for program memory
SAB 8052B-16	16 MHz	PDIP 40 PLCC 44		
SAB 8052B-20	20 MHz	PDIP 40 PLCC 44		
SAB 80515	12 MHz	PLCC 68	8-Bit	- Enhanced (software compatible) version of the SAB 8051A - 8K ROM, 256 Bytes RAM, 6 ports, 8-Bit A/D converter with programmable reference voltages, three 16-Bit timer/counters, timer/counter register array with PWM capability on 4 channels, 12 interrupt sources, serial interface, watchdog timer
SAB 80535	12 MHz	PLCC 68	8-Bit	- An SAB 80515 without the 8K of on-chip ROM for program memory
SAB C501-L	12 MHz 20 MHz 40 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- Same as 80C32, ROMLESS
SAB C501-R	12 MHz 20 MHz 40 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- Same as 80C52
SAB C502-L	12 MHz 20 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- Same as 80C32 ROMLESS plus 256 bytes XRAM, 8 datapointers and 2 watchdogs
SAB C502-R	12 MHz 20 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- Same as C502-L plus 16K ROM
SAB C502-2H	12 MHz	PLCC 44	8-Bit CMOS	- Hybrid version of SAB C502-R with 16K EEPROM
SAB C503-L	12 MHz 20 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- Same as 80C32 plus 10-bit A/D, 2 watchdogs
SAB C503-R	12 MHz 20 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- Same as 80C52 plus 10-bit A/D, 2 watchdogs
SAB C503-1H	12 MHz	PLCC 44	8-Bit CMOS	- Hybrid version of SAB C503-R with 8K EEPROM
SAB 80C32	12 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- CMOS version of the SAB 8032
SAB 80C32-16	16 MHz	PDIP 40 PLCC 44		
SAB 80C32-20	20 MHz	PDIP 40 PLCC 44		
SAB 80C52	12 MHz	PDIP 40 PLCC 44	8-Bit CMOS	- CMOS version of SAB 8052 - 8K of on-chip ROM for program memory
SAB 80C52-16	16 MHz	PDIP 40 PLCC 44		
SAB 80C52-20	20 MHz	PDIP 40 PLCC 44		
SAB 80C535	12 MHz	PLCC 68	8-Bit CMOS	- CMOS version of the SAB 80535 with power saving modes
SAB 80C535-16	16 MHz			

Being replaced by SAB C501 2Q94

Ordering information for all Integrated Circuits: All devices should be ordered by Part Number followed by the Package Designator (example — SAB 8031AP).

Legend	Package	Designator	Description
	PDIP	P	Plastic Dual In-line Package
	PLCC	N	Plastic J-Leaded Chip Carrier
	PQFP	S	Plastic Quad Flat Pak

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8-Bit Microcontrollers

Siemens Part Number	Clock Frequency	Package Type(s)	Description	Features
SAB 80C515	12 MHz	PLCC 68	8-Bit CMOS	- 80C535 with 8K of on-chip ROM for program memory
SAB 80C515-16	16 MHz			
SAB 83C515H-3J	12 MHz	PLCC 68	8-Bit CMOS Hybrid	- Hybrid combination of 80C515 with EEPROM that gives 8K ROM user programmable device
SAB 80C515A	18 MHz	PLCC 68	8-Bit CMOS	- Enhanced (software compatible) version of SAB 80C515 - ROMless, 256 Bytes on-chip RAM, 1K Byte on-chip XRAM, 8 input 10-Bit A/D converter, 3 16-Bit timer/counters, 1 datapointer, 2 watchdog timers, compare/capture unit with up to 4 high-speed PWM - 12 interrupt vectors with 4 selectable priority levels
SAB 83C515A-5	18 MHz	PLCC 68	8-Bit CMOS	- Same as 80C515A with 32K ROM
SAB 83C515AH-5J	18 MHz	PLCC 68	8-Bit CMOS Hybrid	- Hybrid combination of 83C515A with 32K ROM EEPROM
SAB 80C537	12 MHz	PQFP 100 PLCC 84	8-Bit CMOS	- Enhanced (software compatible) version of the SAB 80C515 - ROMLESS, 256 Bytes RAM, 9 ports, 8-Bit A/D converter with programmable reference voltages, four 16-Bit timer/counters, powerful compare/capture Unit with PWM capability on up to 21 channels, fast 32-Bit division and 16-Bit multiplication, 8 datapointers, 2 serial interfaces, 14 interrupt sources, 2 watchdog timers
SAB 80C537-16	16 MHz	PLCC 84 PQFP 100	8-Bit CMOS	- Same as 12 MHz version
SAB 80C517	12 MHz	PLCC 84	8-Bit CMOS	- An 80C537 with the 8K of on-chip ROM for program memory
SAB 80C517-16	16 MHz	PLCC 84 PQFP 100	8-Bit CMOS	- Same as 12 MHz version
SAB 83C517H-3J	12 MHz	PLCC 84	8-Bit CMOS Hybrid	- Hybrid combination of 80C517 with EEPROM that gives 8K ROM user programmable device
SAB 80C517A	18 MHz	PLCC 84 PQFP 100	8-Bit CMOS	- Enhanced (software compatible) version of the SAB 80C517 - ROMless, 256 Bytes on-chip RAM, 2K Bytes on-chip XRAM, 12 input 10-Bit A/D converter, four 16-Bit timer/counters, powerful compare/capture unit with up to 21 high-speed PWM 16-Bit outputs and 5 capture inputs, fast 32-Bit division and 16-Bit multiplication, 32-Bit normalize and shift by hardware, 8 datapointers, 2 full duplex serial interfaces with programmable baud rate generators, 17 interrupt vectors with 4 selectable priority levels, 2 watchdog timers
SAB 83C517A-5	18 MHz	PLCC 84 PQFP 100	8-Bit CMOS	- 32K ROM version of the SAB 80C517A
SAB 83C517AH-5J	18 MHz	PLCC 84	8-Bit CMOS	- Hybrid combination of 80C517A with 32K EEPROM

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16-Bit Microcontrollers

Siemens Part Number	Clock Frequency	Package Type(s)	Description	Features
SAB C165-L	20 MHz	MQFP 100	16-Bit CMOS	- Proprietary 16-bit CPU based on SAB 80C166 architecture, 2K on-chip RAM, 5 general purpose 16-bit timer/counters, 1 USART and 1 synchronous serial channel, 16 priority levels in each of 4 groups, peripheral event controller, 16M address space, Boolean arithmetic and bit processing, 77 general purpose I/O lines, 5 bus configurations with chip selects, Watchdog
SAB 80C166	20 MHz	PQFP 100	16-Bit CMOS	- Proprietary 16-Bit CPU, ROMless, 1K on-chip RAM, 10 channel 10-Bit A/D, 16 capture/compare channels, 5 general purpose 16-Bit timer/counters, 2 USART interfaces, 16 priority levels in each of 4 groups, peripheral event controller, 256K address space, Boolean arithmetic and bit processing, 76 general purpose I/O lines, Watchdog
SAB 83C166-5	20 MHz	MQFP 100	16-Bit CMOS	- Same as 80C166 with 32K ROM
SAB C167-L	20 MHz	MQFP 144	16-Bit CMOS	- Proprietary 16-bit CPU based on SAB 80C166 architecture, 2K on-chip RAM, 16 channels 10-bit A/D, 32 capture/compare channels, 5 general purpose 16-bit timer/counters, 1 USART and 1 synchronous serial channel, 16 priority levels in each of 4 groups, peripheral event controller, 16M address space, Boolean arithmetic and bit processing, 3 general purpose I/O lines, 5 bus configurations with chip selects, 4 channel 78 KHz PWM, Watchdog
SAB C167-1R	20 MHz	MQFP 144	16-Bit CMOS	- Same as SAB C167-L with 8K ROM

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Communication Integrated Circuits

Siemens Part Number	Package Type(s)	Description	Features
Digital Terminal ICs			
PEB 2070	PDIP 24 PLCC 28	ISDN Communications Controller (ICC)	<ul style="list-style-type: none"> - Support for LAPD protocol - Build-up of ISDN frame (2B + D) - Switching function for B-channels
PEB 2086	PDIP 40 PLCC 44	ISDN Subscriber Access Controller (ISAC-S)	<ul style="list-style-type: none"> - Combines features of PEB 2070 and PEB 2080
PSB 2110	PDIP 40 PLCC 44	ISDN Terminal Adaptor (ITAC)	<ul style="list-style-type: none"> - CCITT defined 'R' to 'S' interface adaptor - Supports rate adaption X.30 and V.110, ECMA 102, V.120, DMI MODE 2
PSB 2160	PDIP 24 PLCC 28	Audio Ringing Codec Filter (ARCOFI)	<ul style="list-style-type: none"> - ISDN programmable DSP codec filter for terminals - Includes DTMP and ringing generator
PSB2165	PDIP 28 PLCC 28R	Audio Ringing Codec Filter with Speakerphone (ARCOFI-SP)	<ul style="list-style-type: none"> - Programmable codec filter for terminals - Includes digital speakerphone control - Includes DTMF and ringing generator - Single 5V power supply
PSB 45030	PDIP 28 SO 28	Hands-free Add-on Circuit (HAC)	<ul style="list-style-type: none"> - Speakerphone Circuit for analog and digital phone applications - Anticlippping and automatic gain control - On-chip reference voltage
Data Communication ICs			
SAB 82525	PLCC 44	High Level Serial Communications Controller Extended (HSCX)	<ul style="list-style-type: none"> - SAB 82520 with DMA and other features
SAB 82526	PLCC 44	High Level Serial Communications Controller Extended (HSCX 1)	<ul style="list-style-type: none"> - A single channel SAB 82525
SAB 82532	PLCC 68	Enhanced Serial Communications Controller (ESCC2)	<ul style="list-style-type: none"> - ESCC2 is an upgraded version of SAB 82525 (HSCX) - Supports a number of different communication protocols: HDLC, SDLC, BISYNC, ASYNC (e.g., RS232) - Two independent full-duplex switchable serial channels - Transfer rate up to 10 Mbps (synchronous)
SAB 82538	160 QMPF	Eight Channel Enhanced Serial Communications Controller (ESCC8)	<ul style="list-style-type: none"> - ESCC8 is an 8 channel version of SAB 82532 (ESCC 2) - Supports a number of different communication protocols: HDLC, SDLC, BISYNC, ASYNC (e.g., RS232) - Eight independent full-duplex switchable serial channels - Transfer rates up to 10 Mbps (synchronous)
*PEB 20320	PMQFP 160	Multichannel Network Interface Controller for HDLC (MUNICH32)	<ul style="list-style-type: none"> - 32 channel HDLC controller - Supports H0, H11, H12 ISDN channels - On chip 64 channel DMA controller - 32 bit microprocessor interface - JTAG boundary scan test
* Advance Information			
Wireless Communication ICs			
TBB 200G	P-DSO-14	PLL	<ul style="list-style-type: none"> - Bit serial control with IIC bus - Modulus control - Voltage doubler for high phase detector output voltage - Extremely fast phase detector with very short anti-backlash pulse - High input frequency (70 MHz) - High input sensitivity (50 mV)
TBB 206G	P-DSO-14	PLL	<ul style="list-style-type: none"> - As above with 3-wire control bus - High input frequency (90 MHz) - High input sensitivity (100mV)

Ordering information for all Integrated Circuits: All devices should be ordered by Part Number followed by the Package Designator (example—SAB 82525N).

Legend	Package	Designator	Description
	PDIP	P	Plastic Dual In-line Package
	PLCC	N	Plastic J-Leaded Chip Carrier
	SO	T	Small Out-line Package
	PMQFP	H	Plastic Metric Quad Flat Package

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Communication Integrated Circuits

Siemens Part Number	Package Type(s)	Description	Features
Wireless Communication ICs (continued)			
TBB 204G	P-DSO-14	Mixer/Oscillator	<ul style="list-style-type: none"> - Integrated mixer, balanced RF oscillator and buffer amplifier for operation between 10 MHz and 1 GHz - Separate input and output pins for the mixer and oscillator allow independent operation
PMB 2200T PMB 2200T-16 PMB 2200S	P-DSO-20 P-DSO-16 P-DSO-20S	RF Transmitter Circuit	<ul style="list-style-type: none"> - Direct quadrature modulation - LO frequency range 800 MHz to 1 GHz - Modulation frequency range 0 to 400 MHz - Double balanced mixers - Generation of orthogonal carriers without external components
PMB 2205T PMB 2205S	P-DSO-20 P-DSO-20S	RF Transmitter Circuit	<ul style="list-style-type: none"> - As above with LO frequency range 50 MHz to 800 MHz - Direct drive of internal phase shifter
PMB 2206S	P-DSO-20S	RF Transmitter and Mixer	<ul style="list-style-type: none"> - Forward integration of RF Transmitter Circuit PMB 2205 and Mixer PMB 2330
PMB 2210T	P-DSO-20	Quadrature Modulator	<ul style="list-style-type: none"> - Quadrature modulation up to 1 GHz - Double-balanced mixer with two Gilbert cells
PMB 2220S	P-DSO-20S	DECT Transmitter	<ul style="list-style-type: none"> - Two integrated VCOs - 64/65 prescaler - Frequency doubler for receive and transmit mode with balanced driver outputs - Supply voltage regulator for the two VCOs
PMB 2230S	P-DSO-24S	FM Transmitter	<ul style="list-style-type: none"> - VCO offset modulator with integrated RF and IF VCOs for applications in FMI and QPSK systems - High gain output (> -4dBm up to 1.5 GHz)
PMB2306T	P-DSO-T	PLL	<ul style="list-style-type: none"> - 3-wire serial control bus for fast programming (max. clock frequency 10 MHz) - Phase detector signal with adjustable anti-backlash pulses - Extremely fast phase detection (<100 ps) - High input frequency (220 MHz)
PMB2312T	P-DSO-8	Prescaler	<ul style="list-style-type: none"> - Switchable divide ratios 1:64/65 and 1:128/129 for single and dual modulus frequency synthesizer - Wide input frequency range (140 MHz-1100 MHz)
PMB 2330T	P-DSO-8	Mixer	<ul style="list-style-type: none"> - Universal mixer for frequencies up to 2.5 GHz - Very highly isolated RF, IF and LO ports
PMB 2401S	P-DSO-24S	RF Receiver	<ul style="list-style-type: none"> - Heterodyne receiver with on-board quadrature demodulation - Double-balanced front end mixer up to 1.2 GHz - Downward mixing from 900 MHz receiver band to the base band - Two balanced operational amplifiers for additional base band filtering
PMB 2402S	P-DSO-24S	RF Receiver	<ul style="list-style-type: none"> - As above with an output bandwidth of 13.5 MHz
PMB 2403S	P-DSO-24S	RF Receiver	<ul style="list-style-type: none"> - Same features as PMB 2403 without demodulator
PMB 2420S	P-DSO-28S	DECT Receiver	<ul style="list-style-type: none"> - Single-balanced RF mixer - Limiter and RSSI dynamic range > 70dB - Data slicer to compensate possible frequency offsets
PMB 2430S	P-DSO-28S	FM Receiver	<ul style="list-style-type: none"> - Double conversion heterodyne receiver with limiter/demodulator - Double balanced Gilbert cell mixers on first and second IF stages - IF limiter amplifier gain >90 dB at second IF stage
PMB 2432S	P-DSO-28S	FM Receiver	<ul style="list-style-type: none"> - Same features as PMB 2432 with first double balanced mixer - Integrated oscillator for the second IF
PMB 2434S	P-DSO-28S	FM Receiver	<ul style="list-style-type: none"> - Same features as PMB 2430 - Second IF max. 15 MHz - Signal output bandwidth max. 1 MHz
Exchange ICs			
PEB 2052	PDIP 40 PLCC 44	PCM Interface Controller (PIC)	<ul style="list-style-type: none"> - Linecard controller for Analog Loop applications - Programmable time-slot assignment - One full duplex PCM highway for the system interface
PEB 2055	PDIP 40 PLCC 44	Extended PCM Interface Controller (EPIC)	<ul style="list-style-type: none"> - Linecard controller for ISDN applications - Programmable time-slot assigner for four system interfaces - Compatible to SLD and IOM interfaces

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Communication Integrated Circuits

Siemens Part Number	Package Type(s)	Description	Features
Exchange ICs (continued)			
PEB 2060	PDIP 22 PLCC 28	Signal Processing Codec Filter (SICOFI)	- Programmable DSP codec filter - A/D, D/A conversion and PCM coding/decoding in A-law and U-law
PEB 2075	PDIP 28 PLCC 44	ISDN D-Channel Exchange Controller (IDEC)	- 4 PEB 2070 ICCs on one chip
PEB 2081	PDIP 28 PLCC 28	S Bus Interface Circuit Extended (SBCX)	- Enhanced S Bus transceiver according to 1.430 - Automatic handling of S and Q Bit messages - Software controlled maintenance interface - 11-Bit buffer for phase wander compensation in network applications
PEB 2091	PLCC 44	ISDN Echo Cancellation Circuit (IEC-Q)	- 2BIQ "U" interface transceiver - Conforms to North American "U" interface standard
PEB 2260	PLCC 28	Signal Processing Codec Filter (SICOFI II)	- Two PEB 2060s on a single chip - Will support both SLD and IOM ² interfaces
PRI/Switching ICs			
PEB 2035	PDIP 40 PLCC 44	Advanced CMOS Frame Aligner (ACFA)	- Provides frame alignment 1.544 and 2.048 Mbit systems - Supports T1 and CEPT ISDN formats - Coding and decoding for HDB3 and B8ZS - Error checking via CRC 4 or CRC 6
PEB 2045	PDIP 40 PLCC 44	Memory Time Switch CMOS (MTSC)	- Time/Space switch for 2.048, 4.096 and 8.192 Mbit systems - Microprocessor interface for writing to/reading from connection memory
PEB 2046	PDIP 40 PLCC 44	Memory Time Switch Small (MTSS)	- A Time/Space switch with limited functionality for smaller networks
PEB 2047	PDIP 40 PLCC 44	Memory Time Switch Large (MTSL)	- A Time/Space switch for larger networks - Switching capacity 1024 x 512 subscribers
PEB 2236	PDIP 28 PLCC 28	ISDN Primary Access Transceiver (IPAT 2)	- Transceiver for 1.544 Mbit and 2.048 Mbit systems - Supports CEPT and T1 ISDN formats
PEB 2245	PLCC 44	Multipoint Switching and Conference Unit (MUSAC)	- Up to 64 conference channels in any combination - Up to 21 independent conferences simultaneously (3 subscribers) - Switching up to 512 incoming PCM channels to 256 outgoing PCM channels
*PEB 3040	PLCC 44	Link Controller for Signaling System #7 (LCS7)	- Two independent signaling channels - Support of SS#7 protocol in auto mode

* Advance Information

Automotive Integrated Circuits

Siemens Part Number	Voltage Supply	Package Type(s)	Description	Features
Hall Effect Integrated Circuits				
TLE4905L	4.3 to 24	SFP 3	Switch	- Low Cost - Reverse Polarity Protected
TLE 4921-2G	3.5 to 24	SO 8	Differential – Dynamic	- Wide Airgap – 3.5mm - Fully Protected*
TLE 4921-2U	4.5 to 24	UFP 4	Differential – Dynamic	- Wide Airgap – 3.5mm - Fully Protected*
TLE 4935L	3.5 to 24	SFP 3	Latch	- Low Cost - Reverse Polarity Protected
TLE 4974U	4.5 to 24	UFP 4	Differential – Static	- Fully Protected* - Zero RPM Sensing - Ultra Flat Package - Symmetrical Output
Motor Drivers				
TLE 4202B	3.5 to 40	TO 220-7	Dual 2 Amp Driver	- Low Voltage Operation - Short and Temp Protected - Integrated Freewheeling Diodes - Temp Range –40°C to 130°C
TLE 4203	5 to 45	TO 220-7	Dual 4 Amp Driver	- Short and Temp Protected - Integrated Output Diodes - Temp Range –40°C to 130°C
TLE 4205	6.5 to 45	PDIP 18	Dual 1 Amp Driver	- Short and Temp Protected - Integrated Output Diodes - Temp Range = -40 to 130°C
Intelligent Power Switches				
TLE 4211	5 to 20	TO 220-7	Dual 2 A Low-Side	- Error Monitoring (Status) - Temp Range = -40 to 125°C
TLE 4214	6.5 to 18	PDIP 8	Dual 0.5 A Low-Side	- Fully Protected** - Integrated Clamp Diodes
TLE 4215	6.5 to 45	PDIP 16	Dual 0.5 A High-Side	
TLE 4216	5.2 to 30	PDIP 20	Hex Low-Side	- Error Monitoring (Status) - Temp Range = -40 to 110°C
TLE 4220	6.5 to 18	TO 220-7	Single 4 Amp Low-Side	- Fully Protected**
TLE 4224	6.5 to 40	TO 220-7	Single 4 Amp Low-Side	- Error Monitoring (Status) - Fully Protected** - Temp Range = -40 to 110°C - BiMOS Technology RDS "ON" = 0.25 Ohms
Low Drop Voltage Regulators				
TLE 4260	6 to 40	TO220-7	5V, 500mA LDVR	- On Chip Reset - 700uA Standby Current - Fully protected* - Temp Range = -40 to 125°C - EMI Rating > 120V/m
TLE 4260-2	6 to 40	TO220-7	5V, 500mA LDVR	- 2% Tolerance Version of the TLE4260
TLE 4261	6 to 40	TO220-7	5V, 500mA LDVR	- On Chip Reset - On Chip Watchdog - Inhibit Input - 50uA Standby Current - Fully Protected* - Temp Range = -40 to + 125°C - EMI Rating > 120V/m
TLE 4261-2	6 to 40	TO220-7	5V, 500mA LDVR	- 2% Tolerance Version of the TLE 4261
TLE 4262G	5.2 to 45	SO20L	5V, 200mA LDVR	- On Chip Reset - Inhibit Input - 50uA (inhibit) Current - Fully Protected* - Temp Range = -40 to + 125°C - EMI Rating > 120V/m - Output Tolerance 2%
TLE4263G	5.2 to 45	SO20L	5V, 200mA LDVR	- On Chip Reset - On Chip Watchdog - Inhibit Input - 50uA (inhibit) Current - Fully Protected* - Temp Range = -40 to + 125°C - EMI Rating > 120V/m - Output Tolerance 2%

Ordering information for all Integrated Circuits: All devices should be ordered by Part Number followed by the Package Designator (example—TLE 4905L).

Legend	Package	Designator	Description	Package	Designator	Description	* Overvoltage Protected	** Power Limitation
FP	F	F	3 Pin Single In-line Package	SIP	F	3 Pin Single In-line Package	Reverse Polarity Protected	Overvoltage
SO	G, X	G, X	Small Out-line Package	TO 220	NONE	Plastic Power Package	Load Dump Protected	Overtemperature
DIP	None	None	Dual In-line Package					Short Circuit
UFP	U	U	Ultra flat 4 Pin-SIP					
SFP	L	L	Small Out-line 3 Pin-SIP					

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Power / Smart SIPMOS

Siemens Part Number	Drain-Source Voltage	Drain-Source On-State Resistance	Continuous Drain Current	Package Type(s)	Features	Note
TEMPFET			MOS			
BTS 100	-50	300 mOhm	-8A	TO 220	- P Channel	TEMPFET: Short circuit and overtemperature protected chip-on-chip transistor. The protection is provided by the sensor chip that shuts off the power chip when the junction temperature is >150°C. Available in N- and P-channel versions.
BTS 110	100	200 mOhm	10A	TO 220		
BTS 112A	60V	150 mOhm	12A	TO 220		
BTS 113A	60V	170 mOhm	11.5A	TO 220	- Logic Level	
BTS 114A	50	100 mOhm	14A	TO 220	- N Channel	
BTS 115A	50	125 mOhm	12.5A	TO 220	- Logic Level	
BTS 120A	100	100 mOhm	19A	TO 220		
BTS 121A	100	120 mOhm	22A	TO 220		
BTS 129	60	50 mOhm	27A	TO 220		
BTS 130	50	50 mOhm	27A	TO 220		
BTS 131	50	60 mOhm	25A	TO 220	- Logic Level	
BTS 132	60	65 mOhm	24A	TO 220	- Logic Level	
BTS 140A	50	28 mOhm	42A	TO 220		
BTS 240A	50	18 mOhm	58A	TO 218		
PROFET (Single Output)			ISO MOS			
BTS 410D	>50	200 mOhm	1.6A	13A	TO 220-5	<ul style="list-style-type: none"> - Short circuit protection - Overtemperature protection - Overload protection - Over/under voltage shutdown - Open load detection - ESD protection - Status feedback to monitoring system - PWM control (629A) PROFET: A fully protected intelligent CMOS and TTL compatible high-side switch. Constructed using monolithic or chip-on-chip technology. ISO current rating at Tc=85°C. MOS current rating at Tc=25°C.
BTS 410E	>50	200 mOhm	1.6A	13A	TO 220-5	
BTS 410F	>50	200 mOhm	1.6A	13A	TO 220-5	
BTS 410H	>50	220 mOhm	1.6A	13A	TO 220-5	
BTS 412A	45	400 mOhm	1.0A	9.5A	TO 220-5	
BTS 412B	>50	300 mOhm	1.4A	12A	TO 220-5	
BTS 413A	45	400 mOhm	1.0A	9.5A	TO 220-5	
BTS 432D	>50	38 mOhm	9A	20A	TO 220-5	
BTS 432E	>50	38 mOhm	9A	20A	TO 220-5	
BTS 432F	>50	38 mOhm	9A	20A	TO 220-5	
BTS 432L1	>50	38 mOhm	9A	20A	TO 220-5	
BTS 542D	>50	22 mOhm	17A	42A	TO 218-5	
BTS 542E	>50	22 mOhm	17A	42A	TO 218-5	
BTS 629A	>50	180 mOhm	2.0A	14A	TO 220-7	

Legend	Package	Designator	Description
	TO 220	None	Plastic Power Package
	TO 218	None	Plastic Power Package

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Industrial

Siemens Part Number	Voltage Supply	Package Type(s)	Description	Features
Power Factor Correction and Switch Mode Power Supply Controllers				
TDA 4700A	10.5 to 30	PDIP 24	SMPS Controller	<ul style="list-style-type: none"> - Feed-forward control - Over/under voltage protection - Double pulse suppression
TDA 4718A	10.5 to 30	PDIP 18	SMPS Controller	<ul style="list-style-type: none"> - Feed-forward control - Over/under voltage protection - Double pulse suppression
TDA 4814A	<17	PDIP 14	IC for Lamp Ballasts	<ul style="list-style-type: none"> - Facilitates design of SMPS with sinusoidal line current consumption and design of electronic ballasts - Power factor = 0.97 - With start/stop function
TDA 4815A TDA 4815G	<17	PDIP 20 PDSO 20	Power Factor Controller	<ul style="list-style-type: none"> - Trapezoidal waveform - Power factor = 0.97 - Wide range input voltage - Feed forward control - Fully protected - Fixed frequency - SIPMOS driver output - Under 500 W
TDA 4816G	<17	PDSO 16	IC for Lamp Ballasts	<ul style="list-style-type: none"> - Facilitates design of SMPS with sinusoidal line current consumption - Fixed frequency - Free oscillation
TDA 4817A TDA 4817G	<17	PDIP 8 PDSO 8	IC for Lamp Ballasts	<ul style="list-style-type: none"> - Facilitates design of SMPS with sinusoidal line current consumption and design of electronic ballasts - Power factor = 0.97 - Without start/stop function
TDA 4818A TDA 4818G	<17	PDIP 20 PDSO 20	Power Factor Controller	<ul style="list-style-type: none"> - Triangular waveform - Power factor = 0.97 - Wide range input voltage - Feed forward control - Fully protected - SIPMOS driver output - Under 500 W
TDA 4819A TDA 4819G	<17	PDIP 16 PDSO 20	Power Factor Controller	<ul style="list-style-type: none"> - Trapezoidal waveform - Power factor = 0.97 - Wide range input voltage - Feed forward control - Fully protected - SIPMOS driver output
TDA 4918A TDA 4918G	30	PDIP 20 SO 20	Control for Push-Pull SMPS	<ul style="list-style-type: none"> - SIPMOS driver output - 150 KHz operation
TDA 4919A TDA 4919G	30	PDIP 20 SO 20	Control for Single-Ended SMPS	<ul style="list-style-type: none"> - SIPMOS driver output - 300 KHz operation

Siemens

Ordering information for all Integrated Circuits: All devices should be ordered by Part Number followed by the Package Designator (example—TCA 305AP).

Legend	Package	Designator	Description
	PDIP	P	Plastic Dual In-line Package
	Micropack	K	Tape Mounted Circuit
	SO	G	Small Out-line Package

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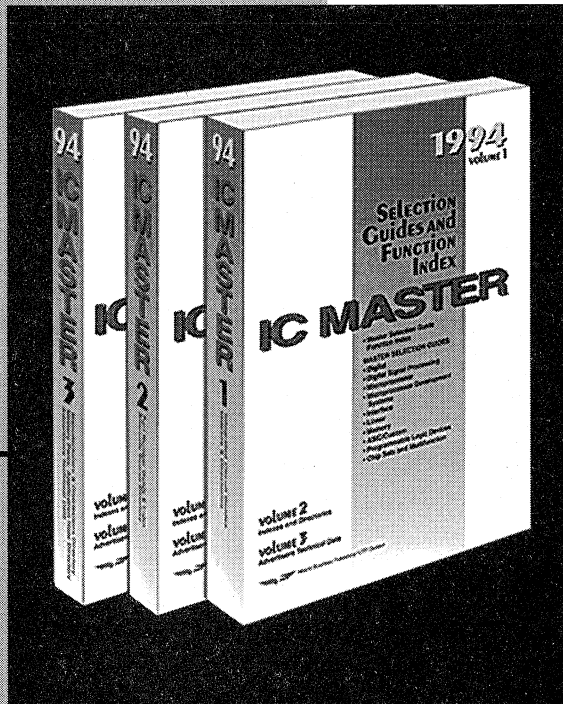
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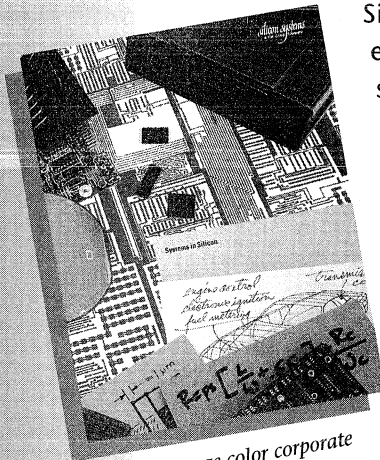
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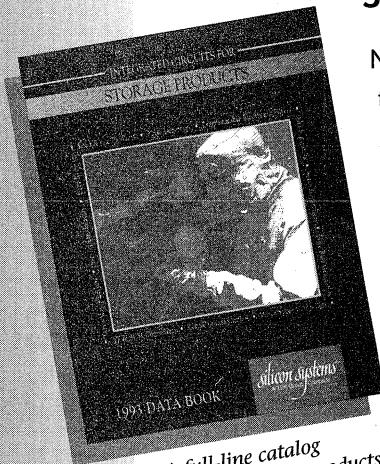
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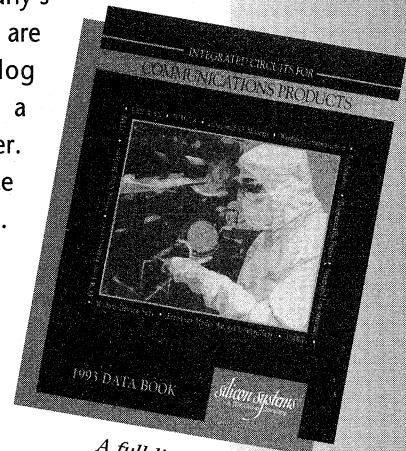
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Storage Products Selector Guide

Device Number	Head Type	Number of Channels	Max Input Noise (nV/√Hz)	Max Input Capacitance (pF)	Read Gain (typ)	Write Current Range (mA)	Power Supplies (V)	Write Data Ports	Min. Head Swing (V)
HDD READ/WRITE AMPLIFIERS									
SSI 32R511/511R	3 Terminal	4, 6, 8	1.5	20	100	10 to 40	+5, +12	TTL	7.0 (0-pk)
SSI 32R516	3 Terminal	4, 6, 8	1.3	18	120	10 to 60	+5, +12	TTL	7.0 (0-pk)
SSI 32R5161R	3 Terminal	10	1.3	18	150	10 to 60	+5, +12	TTL	7.0 (0-pk)
SSI 32R1200/1201	3 Terminal	2, 4	1.2	17	200	15 to 50	+5	TTL	6.0 (0-pk)
SSI 32R512/512R	3 Terminal	8, 9	0.85	35	150	10 to 40	+5, +12	TTL	7.0 (0-pk)
SSI 32R5121/5121R	2 Terminal	14	0.85	35	250	10 to 40	+5, +12	TTL	7.0 (0-pk)
SSI 32R524R	2 Terminal	8	0.75	60	100	20 to 40	+5, +12	TTL	7.0 (0-pk)
SSI 32R528R	2 Terminal	8, 9	0.85	35	150	10 to 40	+5, +12	Differential	7.0 (0-pk)
SSI 32R5281	2 Terminal	14	0.85	35	250	10 to 40	+5, +12	Differential	7.0 (0-pk)
SSI 32R1510R	MR	8	0.95	18	150	20 to 50	+5, +12	Differential	8.0 (0-pk)
SSI 32R2010R/2011R	2 Terminal	10	0.84	26	150	10 to 25	+5, +12	Differential	7.0 (0-pk)
SSI 32R2015R	2 Terminal	16	0.84	26	150	10 to 25	+5, +12	TTL	7.0 (0-pk)
SSI 32R2020R/2021R	2 Terminal	2, 4, 10	0.8	20	300	5 to 35	+5	TTL	4.2 (0-pk)
SSI 32R2024	2 Terminal	4, 4	0.75	22	150, 200, 300	5 to 40	+5	TTL	4.2 (0-pk)
SSI 32R2025	2 Terminal	4	0.75	22	300	5 to 35	+5	TTL	4.2 (0-pk)
SSI 32R2026	2 Terminal	4	0.75	22	300	5 to 35	+5	TTL	4.2 (0-pk)
SSI 32R2030A/2031A	2 Terminal	2, 4	0.85	35	250	10 to 35	+5	TTL	3.4 (0-pk)
SSI 32R2040	2 Terminal	14	0.8	22	250	10 to 40	+5, +12	Differential	7.0 (0-pk)
SSI 32R2041	2 Terminal	4, 6	0.8	22	250	10 to 40	5, 12	ECL	7.0 (0-pk)
SSI 32R2060	2 Terminal	8	0.75	22	150	5 to 35	+5	TTL	4.2 (0-pk)
SSI 32R2063/64/65	2 Terminal	4	0.75	22	150, 200	3 to 40	+5	TTL/ECL	4.2 (0-pk)
SSI 32R2100	2 Terminal	10	0.70	18	250	5 to 40	+5, +12	ECL	10.0 (0-pk)
SSI 32R2110	2 Terminal	18, 24	0.70	18	250	5 to 40	+5, +12	ECL	10.0 (0-pk)
SSI 32R2200/2201	2 Terminal	4, 6	0.70	18	250	3 to 35	+5	ECL/TTL	6.0 (0-pk)
SSI 32R2300/2300R/2310	2 Terminal	4	0.75	20	200	3 to 25	+3.3/+5	TTL	3.4 (0-pk)
SSI 32R410A/411A	2 Terminal	2, 4, 8	0.85	35	200	10 to 35	+5	TTL	3.4 (0-pk)
Device Number Circuit Function Features									
HDD PULSE DETECTION									
SSI 32P544	Pulse Detector								
SSI 32P547	Pulse Detector								
SSI 32P549	Read Data Processor								
SSI 32P5491	Read Data Processor								
SSI 32P3000/3001	Pulse Detector / Programmable Filter								
SSI 32P3013	Pulse Detector / Programmable Filter								
SSI 32P3015	Pulse Detector / Programmable Filter								
SSI 32P3030	Pulse Detector / Servo Demodulator								
SSI 32P3040/41	Pulse Detector / Programmable Filter								
HDD READ CHANNEL COMBINATION DEVICES									
SSI 32P5482	Pulse Detector / Data Synchronizer								
SSI 32P4730	Complete Read Channel								
SSI 32P4733	Complete Read Channel								
SSI 32P4741	Complete Read Channel								
SSI 32P4742	Complete Read Channel								
SSI 32P4743	Complete Read Channel								
SSI 32P4744	Complete Read Channel								
SSI 32P4745	Complete Read Channel								
HDD ACTIVE FILTERS									
SSI 32F8001/02/03	Low Power Programmable Electronic Filter								
SSI 32F8011/8012	Programmable Electronic Filter								
SSI 32F8020A	Low Power Programmable Electronic Filter								
SSI 32F8030	Programmable Electronic Filter								
SSI 32F8101/2/3/4	Low Power Digitally Programmable Filter								
SSI 32F8120	Low Power Digitally Programmable Filter								
SSI 32F8130/31	Low Power Digitally Programmable Filter								

HDD DATA RECOVERY			
SSI 32D4040/41	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC, 20 to 64 Mbit/s, Write Precompensation Window Shift; 4041 has no write data F/F	
SSI 32D5321	Data Separator	Data Synchronizer / 2, 7 RLL ENDEC 7.5 to 10 Mbit/s	
SSI 32D5322A	Data Separator	Data Synchronizer / 2, 7 RLL ENDEC 7.5 to 13 Mbit/s	
SSI 32D534A	Data Separator	Data Synchronizer / MFM ENDEC / Write Precompensation	
SSI 32D5351A	Data Separator	Data Synchronizer / 2, 7 RLL ENDEC / Write Precompensation 8 to 18 Mbit/s	
SSI 32D5362A	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC / Write Precompensation 10 to 20 Mbit/s	
SSI 32D5371/2	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC / Write Precompensation 12 to 24 Mbit/s	
SSI 32D5373/4	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC / Write Precompensation 15 to 32 Mbit/s	
SSI 32D539	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC / 8-bit parallel NRZ 24 to 48 Mbit/s	
SSI 32D5391/3	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC / Serial NRZ 24 to 40 Mbit/s	
SSI 32D5392/4	Data Separator	Data Synchronizer / 1, 7 RLL ENDEC / Dual-bit NRZ 24 to 48 Mbit/s	
SSI 32D4680/1/2/3/4/5/6	Time Base Generator	Up to 100 MHz Reference Frequency PIC for Constant Density Recording	
HDD HEAD POSITIONING			
SSI 32H523AR	Servo Read/Write	Single-channel Thin Film Read/Write Device	
SSI 32H566R	Servo Read/Write	Single-channel Ferrite Read/Write Device	
SSI 32H569R	Servo Motor Driver	Head Parking, Spindle Motor Braking	
SSI 32H633	Combo Servo & Motor Speed Control	Embedded & Hybrid Servo, Hall Sensorless Motor Speed Control, 5400 RPM	
SSI 32H6110	Pre-amplifier - Thin Film head	AV = 250 or 300, BW = 20 MHz, e _n = 0.85 nV/√Hz	
SSI 32H6210	Servo Demodulator	Di-bit Quadrature Servo Pattern; PLL Synchronization AGC Adjustment	
SSI 32H6215	Servo 5V Demodulator	5V, 500 kHz frame rate Dedicated Servo Demodulator	
SSI 32H6220	Servo Controller	Track & Seek Mode Operation; Microprocessor Interface	
SSI 32H6230/1	Servo Motor Driver	Head Parking, Spindle Motor Braking, Voltage Clamp	
SSI 32H6240	Servo Motor Driver	Pre-driver for Bipolar H-bridge	
SSI 32H6510	Servo 5V Driver	Low Voltage Retract, 1Ω drivers	
SSI 32H6520	Servo Acquisition and D/A	10-bit A/D D/A circuits, DSP interface	
SSI 32H6810/6810A	Servo/Spindle 5V Driver	Combo driver supports 5V @ 1.0A, Voltage IN	
SSI 32H6811	Servo/Spindle 5V Driver	Combo driver supports 5V @ 1.0A, Voltage IN, Serial Port with DACs	
SSI 32H6830	Servo/Spindle DSP Controller	DSP with 10-bit A/D & Dual D/A converters	
HDD SPINDLE MOTOR CONTROL			
SSI 32M593A	3-Phase Motor Speed Control	+0.037% Speed Accuracy; Bipolar Operation, 5 1/4" Drives	
SSI 32M594	3-Phase Motor Speed Control	-0.037% Speed Accuracy; Bipolar Operation, 3 1/2" & 5 1/4" Drives	
SSI 32M595	3-Phase Sensor-less MSC	Hall Sensorless; Motor Speed Control	
SSI 32M7010	Motor Speed Control 5V Driver	Hall Sensorless; Commutator Digital Speed Control, 5V 1Ω Driver	
SSI 32M7011	Motor Speed Control 5V Commutator	Hall Sensorless; Commutator, 5V 1Ω Driver	
HDD CONTROLLER/INTERFACE			
SSI 32C9001	ATA Combo Controller	48 Mbit/s; High Performance ATA Disk Controller	
SSI 32C9003	High Perf. ATA Combo Controller	72 Mbit/s; LBA mode; Automated multi commands	
SSI 32C9020	Dual-bit High Perf. SCSI Combo Controller	48 Mbit/s; SCSI-2 compatible; Fast SCSI; single ended	
SSI 32C9022	Dual-bit High Perf. SCSI Combo Controller	Dual-bit NRZ, 48 Mbit/s; SCSI-2 compatible; Fast SCSI	
SSI 32C9023	Dual-bit High Perf. SCSI Combo Controller	Dual-bit NRZ, 72 Mbit/s; SCSI-2 compatible; Fast SCSI	
SSI 32C9024	Dual-bit High Perf. SCSI Combo Controller	Dual-bit NRZ, 72 Mbit/s; SCSI-2 compatible; Fast SCSI; Differential	
SSI 32C9301	High Perf. ATA Combo Controller (3V, 5V)	32 Mbit/s (3V), 48 Mbit/s (5V); LBA mode support	
SSI 32C9302	Dual-bit High Perf. ATA Combo Cont. (3V, 5V)	Dual-bit NRZ, 32 Mbit/s (3V), 48 Mbit/s (5V); LBA mode support	
SSI 32C9340	Dual-bit PCMCIA/ATA Combo Controller (3V, 5V)	Dual-bit NRZ, 48 Mbit/s (3V/5V)	
SSI 32C9600	ATA-2 Controller	160 Mbit/s; ATA/ATA-2 Compatible; Write Buffer; Advanced Reed-Solomon ECC	
FLOPPY DISK DRIVES			
SSI 34P553/5531	Pulse Detector/Date Synchronizer	0.6 - 1.6 Mbit/s data rate, MFM or 2, 7 RLL code	
SSI 34P3200	Pulse Detector/Date Synchronizer	250K - 6 Mbit/s	
SSI 34P3201	Pulse Detector/Date Synchronizer	250K - 8 Mbit/s	
SSI 34R1203R	5V, 2-, 4-Channel, 3-Terminal R/W	Selectable gain, 250 V/V and 85 V/V	
OPTICAL DISK DRIVES			
SSI 33P3733	Read Channel, No ENDEC	Pulse detector/filter/time base generator/data separator, 8 - 26.5 Mbit/s	
SSI 33P3733A	Read Channel, No ENDEC	33P3733 with MO pit qualifier	
TAPE DRIVES			
SSI 34P553/5531	Pulse Detector/Date Synchronizer	0.6 - 1.6 Mbit/s data rate, MFM or 2, 7 RLL code	
SSI 34P3200	Pulse Detector/Date Synchronizer	250K - 6 Mbit/s	
SSI 34P3201	Pulse Detector/Date Synchronizer	250K - 8 Mbit/s	

Communication/Industrial Products Selector Guide

Device Number	B212 B103	B202	CCITT V.21	CCITT V.23	CCITT V.22bis	Description	Power Supply	Available Packages
K-SERIES SINGLE CHIP MODEM FAMILY								
SSI 73K212	X					Bell 212A/103	+12V	28 DIP, 28 PLCC
SSI 73K212S	X					73K212 with serial interface only	+12V	22 DIP
SSI 73K212L	X					Low Power 73K212	+5V	28 DIP, 28 PLCC
SSI 73K212SL	X					73K212L with serial interface only	+5V	22 DIP
SSI 73K221			X			CCITT V.22/V.21	+12V	22, 28 DIP, 28 PLCC
SSI 73K221S			X			73K221 with serial interface only	+12V	22 DIP
SSI 73K221L			X			Low Power 73K221	+5V	22, 28 DIP, 28 PLCC
SSI 73K221SL			X			73K221L with serial interface only	+5V	22 DIP
SSI 73K222	X		X			Bell 212A/103, CCITT V.22/V.21	+12V	22, 28 DIP, 28 PLCC
SSI 73K222S	X		X			73K222 with serial interface only	+12V	22 DIP
SSI 73K222L	X		X			Low Power 73K222	+5V	22, 28 DIP, 28 PLCC
SSI 73K222SL	X		X			73K222L with serial interface only	+5V	22 DIP
SSI 73K222J	X		X			73K222L with 16C450 UART	+5V	40 DIP, 44 PLCC
SSI 73K224L	X		X		X	Bell 212A/103, CCITT V.22bis/V.22/V.21	+5V	28 DIP, 28, 32 PLCC, 52 QFP, 64 TQFP
SSI 73K224SL	X		X		X	73K224L with serial interface	+5V	22 DIP
SSI 73K302L	X	X				Bell 212A/202/103	+5V	28 DIP, 28 PLCC
SSI 73K302SL	X	X				Bell 212A/202/103; serial interface only	+5V	22 DIP
SSI 73K312L	B103	X	X			BELL 202/103; CCITT V.21/V.23	+5V	28 DIP, 28 PLCC, 52 QFP, 64 TQFP
SSI 73K321L			X			CCITT V.23/V.21	+5V	28 DIP, 28 PLCC
SSI 73K321SL			X			73K321L with serial interface only	+5V	22 DIP
SSI 73K322L			X	X		CCITT V.23/V.22/V.21	+5V	28 DIP, 28 PLCC
SSI 73K322SL			X	X		73K322L with serial interface only	+5V	22 DIP
SSI 73K324L	B212		X	X	X	CCITT V.22bis/V.22/V.23/V.21	+5V	28 DIP, 28, 32 PLCC 52 QFP, 64 TQFP
MODEM PROTOCOL PRODUCTS/ DEVICE SETS								
SSI 73D240	X	X	X		X	Modem Device Set w/ AT (73K224L based design)	+5V	Various DIP & PLCC
SSI 73D247/Z	X	X	X		X	Modem Device Set w/ AT, MNP 4&5	+5V	Various DIP & PLCC
SSI 73D2248/2348	2248		2348	X	X	Modem Device Set w/ AT, MNP	+5V	Various QFP & TQFP
Device Number								
Circuit Function								
Features								
Power								
Available Packages								
BUS INTERFACE PRODUCTS								
SSI 73M550		16C550 pin compatible UART				Receive and Transmit FIFOs	+5V	40 DIP, 44 PLCC, 48 GT
SSI 73M650		Serial Packet Controller				Multi-function Sync/Async communication IC	+5V	40 DIP, 44 PLCC, 64 GT
SSI 73M1550		28-pin version of 73M650				Full UART in 28-pin package	+5V	28 DIP, PLCC
SSI 73M1650		28-pin version of 73M650				SPC in 28-pin package	+5V	28 DIP, PLCC
SSI 73M2550		28-pin version of 73M650				Adds µPRST function	+5V	28 DIP, PLCC

ANALOG SIGNALLING AND SWITCHING PRODUCTS			
SSI 75T201	Integrated DTMF Receiver	Binary coded 2-of-8 output	22 DIP
SSI 75T202	Integrated DTMF Receiver	Low power, binary output	18 DIP
SSI 75T203	Integrated DTMF Receiver	Early detect, binary output	18 DIP
SSI 75T204	Integrated DTMF Receiver	Low power, binary output	14 DIP, 16 SO
SSI 75T2089	Integrated DTMF Transceiver	Generator & receiver, μ P interface	22 DIP
SSI 75T2090	Integrated DTMF Transceiver	Like 75T2089 w/ call progress detect	28 DIP, PLCC
SSI 75T2091	Integrated DTMF Transceiver	Like 75T2090 w/ early detect	8 DIP
SSI 75T980	Imprecise Call Progress Detector	Energy detect in 305-640 Hz band, Telone	40 DIP, 44 PLCC
SSI 78A093A/B	12x8x1 Crosspoint Switch	Low ON resistance, two versions	20 DIP
SSI 78A207	Integrated MF Receiver	Detects central office toll signals	
PCM PRODUCTS			
SSI 78P233	DS-1 Line Interface	T1 clock & data recovery, transmit equalization	24 DIP, SDIP, SO
SSI 78P234	2048 kb/s PCM Interface	Receive clock & data recovery, transmit drivers	20 DIP, SO
SSI 78P236	DS-3 Line Interface	T3 clock & data recovery, transmit equalization	28 DIP
SSI 78P300	T1/E1 Short Haul Transceiver	Receive jitter attenuation	28 DIP, PLCC
SSI 78P304A	Low-Power 38P300	Receive jitter attenuation	28 DIP, PLCC
SSI 78P2361	STS-1 Line Interface Transceiver	STS-1 clock & data recovery, transmit equalization	28 DIP
SSI 78P2362	CEPT E-3 Line Interface Transceiver	E3 clock & data recovery, transmit equalization	28 DIP
SSI 78P7200	DS-3 Line Interface Transceiver	DS-3 Transceiver w/Receive equalization & higher transmitter drive	28 DIP
LAN PRODUCTS			
SSI 78Q902	10Base-T MAU Transceiver	Direct interface to twisted pair and AUJ	28 DIP, PLCC
SSI 78Q903	10Base-T Hub Transceiver	Programmable squelch, detect/correct reverse polarity	24 DIP, 28 PLCC
SSI 78Q8330	802.3 Coax Transceiver	10Base-2 applications	20 DIP, PLCC, 64 TOFP
SSI 78Q8330A	802.3 Coax Transceiver	10Base-2/10Base-5 applications	20 DIP, PLCC, 64 TOFP
SSI 78Q8360	Ethernet Controller/ENDEC Combo	Fully integrated MAC ENDEC & AUJ	100 QFP, TOFP
SPECIAL MODEM PRODUCTS			
SSI 73M214	2400 bit/s Modem Filter	V.22bis/V.22/V.21, Bell 212/103 modes	28 DIP, PLCC
SSI 73M223	1200 bit/s Modem IC	Compact HDX V.23 modem	16 DIP, 16 SOL
SSI 73M376	Integrated Line Interface	The active components of a DAA in a chip used on 73M9001	28 PLCC, 24 VSOP

Automotive Products Selector Guide

Device Number	Circuit Function	Features	Power	Available Packages
AUTOMOTIVE PRODUCTS				
SSI 67F687	Engine Interface Peripheral	Ignition timing and fuel injection control	+5V	68 PLCC
SSI 67F6612	Ignition Pre-driver	External power transistor driver, 2, 3, and 4 channels	+5V	14 SOL, 16 SOL, 20 SOL, 20 VSOP



STK12C68

CMOS nvSRAM

8K x 8 High Performance

AutoStore™ Nonvolatile Static RAM

FEATURES

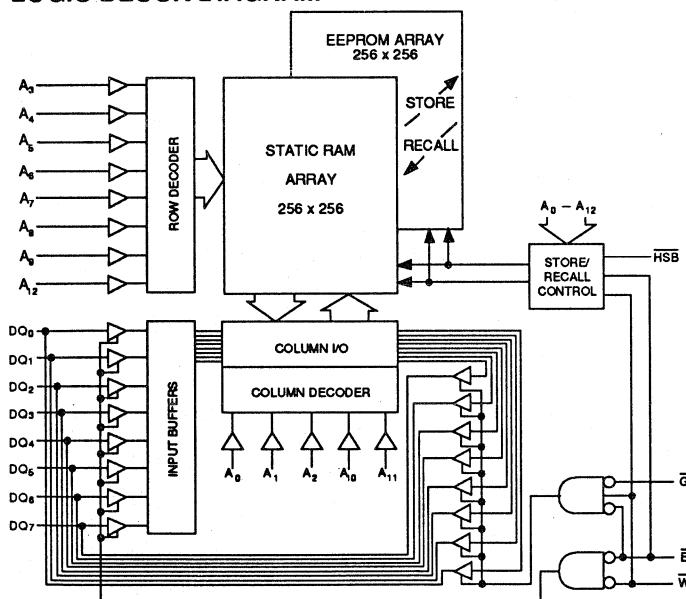
- 30, 35 and 45ns Access Times
- 15 mA I_{CC} at 200ns Access Speed
- Automatic *STORE* to EEPROM on Power Down
- Hardware or Software Initiated *STORE* to EEPROM
- Automatic *STORE* Timing
- 10⁴ or 10⁵ *STORE* cycles to EEPROM
- 10 year data retention in EEPROM
- Automatic *RECALL* on Power Up
- Software Initiated *RECALL* from EEPROM
- Unlimited *RECALL* cycles from EEPROM
- Single 5V±10% Operation
- Commercial and Industrial Temperatures
- Available in multiple standard packages

DESCRIPTION

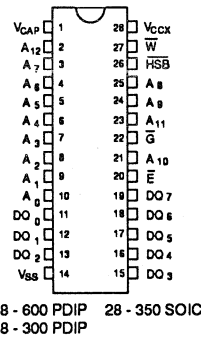
The Simtek STK12C68 is a fast static RAM (30, 35 and 45ns), with a nonvolatile EEPROM element incorporated in each static memory cell. The SRAM can be read and written an unlimited number of times, while independent nonvolatile data resides in EEPROM. Data transfers from the SRAM to the EEPROM (the *STORE* operation) take place automatically upon power down using charge stored in an inexpensive 100 μF electrolytic capacitor. Transfers from the EEPROM to the SRAM (the *RECALL* operation) take place automatically on power up. Software sequences may also be used to initiate both *STORE* and *RECALL* operations. A *STORE* can also be initiated via a single pin.

The STK12C68 is available in the following packages: a 28-pin 300 mil plastic DIP, a 28-pin 600 mil plastic DIP and a 28-pin SOIC. Military versions are also planned.

LOGIC BLOCK DIAGRAM



PIN CONFIGURATIONS



PIN NAMES

Pin Name	Description
A ₀ - A ₁₂	Address Inputs
W	Write Enable
DQ ₀ - DQ ₇	Data In/Out
E	Chip Enable
G	Output Enable
V _{CCX}	Power (+5V)
V _{SS}	Ground
V _{CAP}	Capacitor
HSB	Hardware Store/Busy

Simtek

Simtek Corporation
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STK12C88

32K x 8 *AutoStore*TM nvSRAM

High Performance CMOS

Nonvolatile Static RAM

ADVANCE

FEATURES

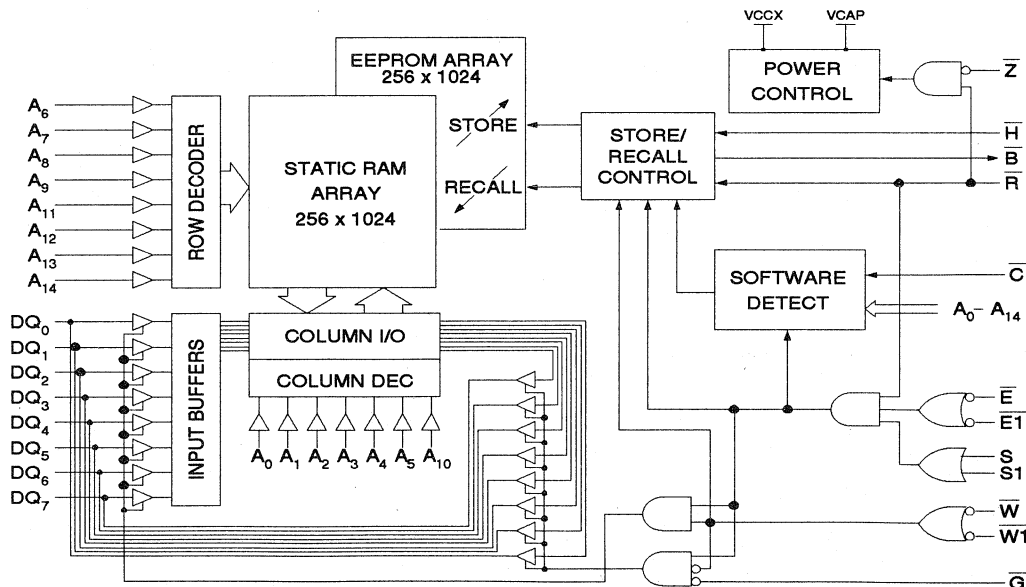
- 25ns and 30ns Access Times
- 12ns and 15ns Output Enable Times
- Store to EEPROM Initiated by Hardware, Software or *AutoStore* on Power Down
- Recall to SRAM Initiated by Hardware, Software or Power Restore
- Low Power Sleep Mode: $I_{CC} < 20\mu A$
- 15mA I_{CC} at 200ns Cycle Time
- Separate Strobe Input for Software Control
- Multiple Select and Enable Pins for Flexible Interface to Processors
- Unlimited Recalls from EEPROM to SRAM
- 10^5 Store Cycles to EEPROM
- 10 Year Data Retention in EEPROM
- Commercial and Industrial Temp. Range
- 64 Pin PQFP and 40 Pin 600 mil PDIP Packages

DESCRIPTION

The Simtek STK12C88 is a fast static RAM (25 and 30ns) with a nonvolatile, electrically-erasable PROM (EEPROM) element incorporated in each static memory cell. The SRAM can be read and written an unlimited number of times, while independent non-volatile data resides in EEPROM. Data transfers from the SRAM to the EEPROM (the *STORE* operation) can take place automatically on power down using charge stored in an external capacitor. Transfers from the EEPROM to the SRAM (the *RECALL* operation) take place automatically on restoration of power. Initiation of STORE and RECALL cycles can also be controlled by separate input pins or by entering specific command sequences.

Military versions are also planned.

LOGIC BLOCK DIAGRAM



Simtek

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STK1390 nvTiME™

8K x 8 Nonvolatile Static RAM with Real Time Clock

PRELIMINARY

FEATURES

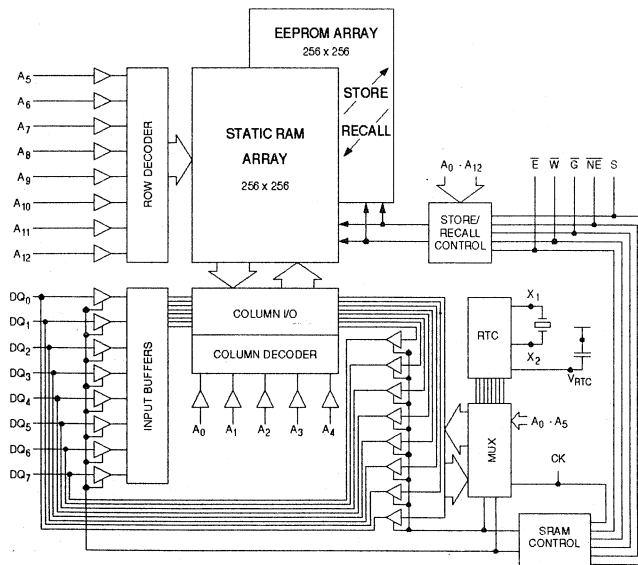
- Solid-state nonvolatile SRAM/RTC solution - no batteries required
- Ideal for metering applications
- 25, 30, 35 and 45 ns SRAM read/write access
- Unlimited read/write cycles to SRAM
- NOVCEL™ technology - true nonvolatile RAM
- Software and hardware controlled nonvolatile cycles
- 10 year data retention from each store cycle
- Full-featured Real Time Clock on-chip
- RTC operates from external capacitor - typical 1 month operation from 0.47F supercap
- Uses standard 32.768kHz Watch Crystal
- Commercial and industrial temperatures
- 600 mil 32-pin DIP or 400 mil SOIC package

DESCRIPTION

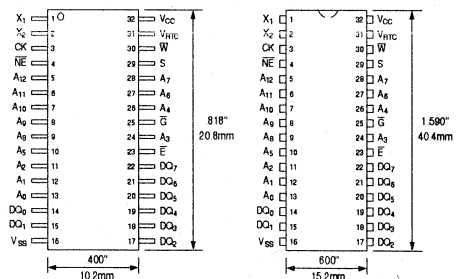
The Simtek STK1390 contains both an 8K fast static RAM with nonvolatile EEPROM shadow and a monolithic real time clock. The SRAM can be read and written an unlimited number of times while independent nonvolatile data resides in EEPROM. The RTC information consists of an additional 64 8-bit registers. The lower 12 registers are used for time and configuration information. The upper 52 registers are available for user information and are shadowed by EEPROM with each STORE cycle. The RTC registers are accessible through the SRAM I/O pins.

The STK1390 supports long-term, unpowered operation of the RTC from a capacitor. This eliminates the need for batteries without the need for complex alternate power sources.

LOGIC BLOCK DIAGRAM



PINOUTS AND PACKAGES



Pin	Function
A ₀ - A ₁₂	Address Inputs
W	Write Enable
DQ ₀ - DQ ₇	Data In/Out
E	Chip Enable
S	Chip Select
NE	Nonvolatile Enable
G	Output Enable
CK	RTC Control
V _{CC}	Power (+5)
V _{SS}	Ground
V _{RTC}	Capacitor Input

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STK10C68 / STK11C68 STK10C48 / STK11C48

CMOS nvSRAM

High Performance Nonvolatile Static RAM

FEATURES

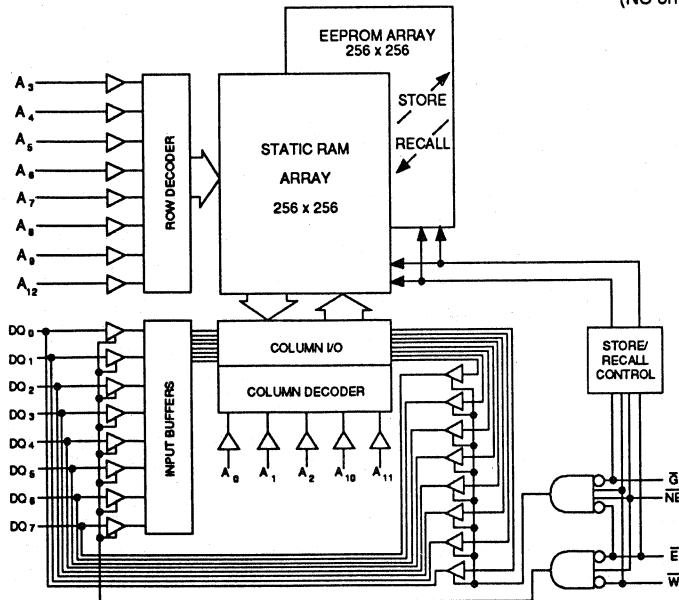
- 25, 30, 35 and 45ns Access Times
- 12, 15, 20 and 25ns Output Enable Access
- Unlimited Read and Write to SRAM
- Hardware or Software *STORE* Initiation
- Automatic *STORE* Timing
- 10^4 or 10^5 *STORE* cycles to EEPROM
- 10 year data retention in EEPROM
- Automatic *RECALL* on Power Up
- Hardware or Software *RECALL* Initiation
- Unlimited *RECALL* cycles from EEPROM
- Single $5V \pm 10\%$ Operation
- Commercial, Industrial and Military Temperatures
- Available in multiple standard packages

DESCRIPTION

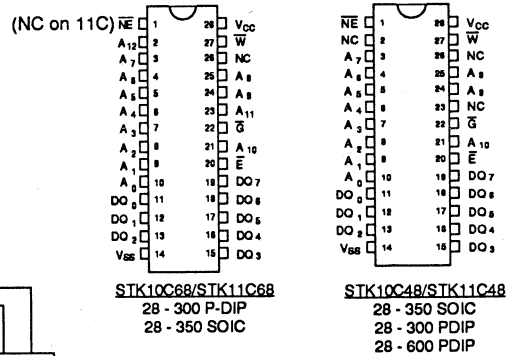
Simtek's STK10C68, STK10C48, STK11C68 and STK11C48 nvSRAMs are fast static RAMs, with a nonvolatile electrically-erasable PROM (EEPROM) element incorporated in each static memory cell. The SRAM can be read and written an unlimited number of times, while independent nonvolatile data resides in EEPROM. Data may easily be transferred from the SRAM to the EEPROM (*STORE*), or from the EEPROM to the SRAM (*RECALL*). It combines the high performance and ease of use of a fast SRAM with nonvolatile data integrity.

The STK10C and STK11C feature industry standard pinouts for nonvolatile RAMs in 28-pin 300 mil plastic DIP, 28-pin 300 mil ceramic DIP, 28 pad LCC, and a 28-pin SOIC package. MIL-STD-883 and Standard Military Drawing devices are available for the STK10C68 and STK11C68 versions.

LOGIC BLOCK DIAGRAM



PIN CONFIGURATIONS



PIN NAMES

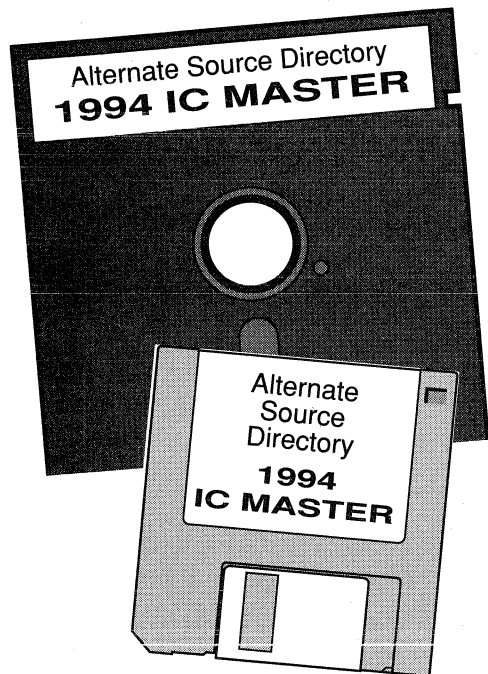
$A_0 - A_{12}$	Address Inputs
W	Write Enable
$DQ_0 - DQ_7$	Data In/Out
E	Chip Enable
\bar{G}	Output Enable
NE	Nonvolatile Enable (STK10C)
V _{CC}	Power (+5V)
V _{SS}	Ground

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SONY® CXK584000TM/YM/M/P -55L/70L/10L -55LL/70LL/10LL

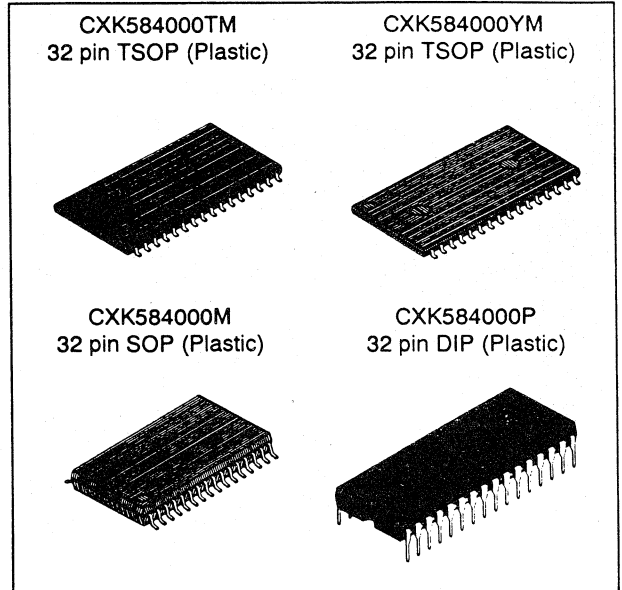
524288-word × 8-bit High Speed CMOS Static RAM

Description

CXK584000TM/YM/M/P is a 4,194,304 bits high speed CMOS static RAM organized as 524,288-word by 8-bit. Polysilicon TFT cell technology realized extremely low stand-by current and higher data retention stability. Operating on a single 3.0 to 5.5V supply, this asynchronous IC is suitable for high speed and low power consumption applications where battery back up for nonvolatility is required.

Features

- Wide supply voltage range: 3.0 to 5.5V
- Fast access time: 5V operation/3.3V operation
 - 55L/55LL 55ns/100ns (Max.)
 - 70L/70LL 70ns/120ns (Max.)
 - 10L/10LL 100ns/150ns (Max.)
- Low stand-by current:
 - 55L/70L/10L 100 μ A (Max.)
 - 55LL/70LL/10LL 50 μ A (Max.)
- Low data retention current:
 - 55L/70L/10L 15 μ A (Max.) Ta=0 to +40 °C
 - 55LL/70LL/10LL 3 μ A (Max.) Ta=0 to +40 °C
- Low voltage data retention: 2.0V (Min.)
- Package line-up
 - CXK584000TM/YM 400mil 32 pin TSOP (Type II)
 - CXK584000M 525mil 32 pin SOP
 - CXK584000P 600mil 32 pin DIP



Function

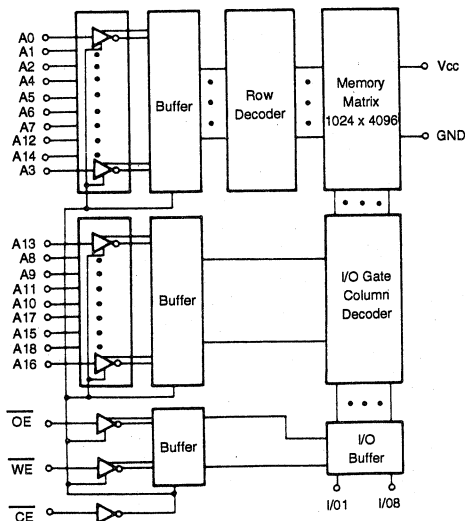
524288-word × 8-bit static RAM

Structure

Silicon gate CMOS IC

Sony

Block Diagram



Sony Electronics Inc. - 10833 Valley View Street - Cypress, CA 90630
Phone 800/288-Sony - Fax 714/229-4333

SONY CXK581000ATM/AYM/AM/AP -55LL/70LL/10LL -55SL/70SL/10SL

131072-word × 8-bit High Speed CMOS Static RAM

Description

The CXK581000ATM/AYM/AM/AP is a high speed CMOS static RAM organized as 131072-words by 8 bits.

A polysilicon TFT cell technology realized extremely low stand-by current and higher data retention stability.

Special feature are low power consumption, high speed and broad package line-up.

The CXK581000ATM/AYM/AM/AP is a suitable RAM for portable equipment with battery back up.

Features

- Fast access time:

CXK581000ATM/AYM/AM/AP	(Access time)
-55LL/55SL,	55ns (Max.)
-70LL/70SL,	70ns (Max.)
-10LL/10SL,	100ns (Max.)

- Low standby current:

CXK581000ATM/AYM/AM/AP	
-55LL/70LL/10LL,	20 μ A (Max.)
-55SL/70SL/10SL,	12 μ A (Max.)

- Low data retention current

CXK581000ATM/AYM/AM/AP	
-55LL/70LL/10LL,	12 μ A (Max.)
-55SL/70SL/10SL,	4 μ A (Max.)

- Single +5V supply: +5V \pm 10%
- Low voltage data retention: 2.0V (Min.)

- Broad package line-up

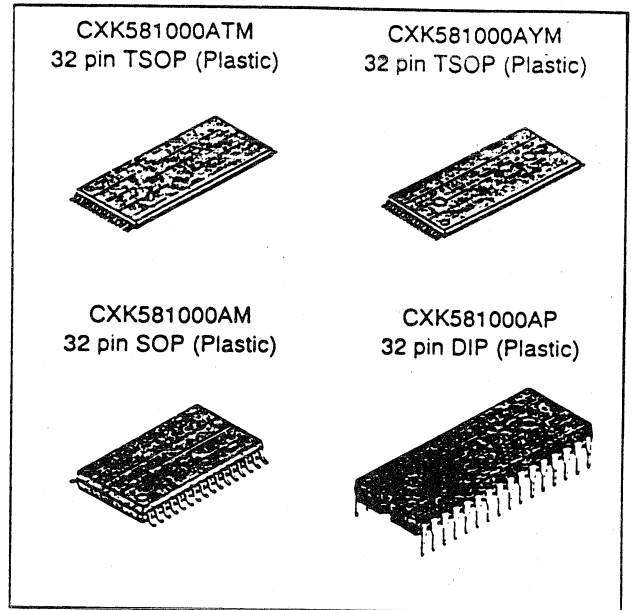
CXK581000ATM/AYM	8mm \times 20mm 32 pin TSOP package
CXK581000AM	525mil 32 pin SOP package
CXK581000AP	600mil 32 pin DIP package

Functions

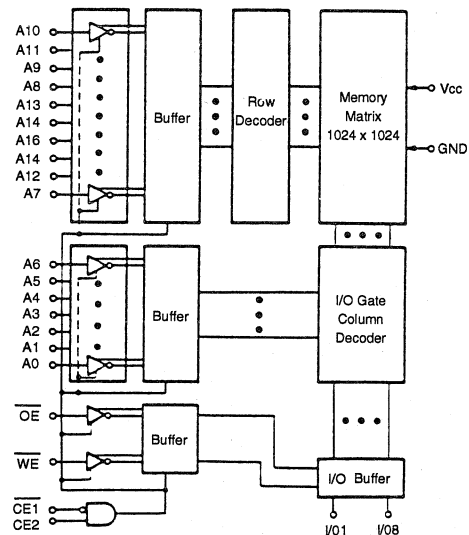
131072-word \times 8-bit static RAM

Structure

Silicon gate CMOS IC



Block Diagram



Sony Electronics Inc. - 10833 Valley View Street - Cypress, CA 90630
Phone 800/288-Sony - Fax 714/229-4333

262,144 word by 4-bit High Speed CMOS Synchronous Static RAM *Preliminary***Description**

The CXK77410J is a high speed CMOS synchronous static RAM with separate I/O pins, organized as 262,144-words by 4-bits. This synchronous SRAM integrates input registers, high speed SRAM and output registers onto a single monolithic IC. All input signals are latched at the positive edge of an external clock (CLK). The RAM data from the previous cycle is presented at the positive edge of the subsequent clock cycle. Write operation is initiated by the positive edge of CLK and is internally selftimed. This feature eliminates complex off-chip write pulse generation and provides increased flexibility for incoming signals. Pass-thru capability is also provided. 100MHz operation is obtained from a single 5V power supply.

Function

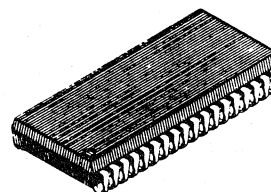
There are three possible user capabilities with this chip: Read operation, Write operation, and Pass-through operation.

- The read operation requires \overline{WE} = "HIGH" at the rising edge of CLK. The memory location specified by the address inputs is latched and read internally. At the subsequent rising edge of CLK, if \overline{OE} = "LOW", the contents of the previous cycle are captured by the Data-out registers. The state of the output terminals reflect the contents of the Data-out registers.
- The write and pass-through operations require \overline{WE} and \overline{WEI} to be "LOW" at the rising edge of CLK. The contents of the Data-in registers are written into the memory locations specified by the address inputs. The write operation is entirely self-timed. The contents of the Data-in registers are also captured by the Data-out registers when \overline{OE} goes "LOW" at the subsequent rising edge of CLK and are also passed to the output terminals for write through operation.
- The pass through operation requires \overline{WE} = "LOW" and \overline{WEI} = "HIGH" at the rising edge of CLK. The data is not written to memory, however the contents of Data-in registers are captured by the Data-out registers when \overline{OE} = "LOW" at the subsequent rising edge of CLK. It is also presented to the output terminals.

Wait states are not required between read and write cycles.

The FOM pin is used to control output timing, allowing the user to skew CLK to output and hold times.

36 pin SOJ (Plastic)

**Structure**

Silicon gate CMOS IC

Features

- Fast Cycle Time: (Cycle) (Frequency)

CXK77410J-10	10.0ns	100MHz
CXK77410J-12	12.5ns	80MHz
CXK77410J-15	15.0ns	66.7MHz
- High speed, low power consumption
- Single +5V power supply: 5V \pm 5%
- Inputs and outputs are TTL compatible
- Write-through capability
- Separate data input and output
- 10ns cycle time (100MHz)
- All inputs and outputs are registered on a single clock edge
- Self-timed write cycle
- Arbitrary consecutive read/write cycles with no write recovery cycles
- Available in a 36pin 50mil lead pitch 400mil SOJ package

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Description

The CXK77910J is a 1,179,648 bit Self-Timed Static Random Access Memory organized as 128K words by 9 bits. This STRAM integrates Input Registers, High Speed SRAM and Output Registers onto a single monolithic circuit. All Registers are triggered with the positive edge of an external clock (CLK). At the positive edge of CLK, the RAM data of the previous CLK cycle is presented. Write operation is initiated by the positive edge of CLK and internally self-timed. This feature eliminates complex off-chip write pulse generation and provides increased flexibility for incoming signals.

Function

There are three possible user transactions with the STRAM. (Read operation, write operation and deselect operation.)

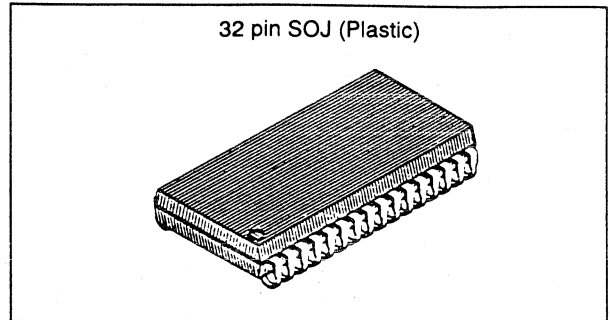
The read operation requires $\overline{WE} = \text{"HIGH"}$ and $\overline{OE} = \overline{CE} = \text{"low"}$ on the positive edge of CLK.

The memory location pointed to by the contents of the Address registers is read internally and the contents of the location are captured in the Data-out registers on the next positive edge of CLK. The state of Data-out will reflect the contents of the Data-out registers.

The write operation requires $\overline{CE} = \overline{WE} = \text{"LOW"}$ on the positive edge of CLK. The memory location pointed to by the contents of the Address registers is written with the contents of the Data-in registers. The write operation is entirely self-timed, eliminating critical timing edges.

The deselect cycle requires $\overline{CE} = \text{"HIGH"}$ or $\overline{OE} = \overline{WE} = \text{"HIGH"}$ on the positive edge of CLK. Write operation and internal read operation are disabled during the clock cycle. The data outputs are forced to a high impedance state during the next clock cycle. During the deselect cycle by $\overline{CE} = \text{"HIGH"}$, STRAM turns to power down mode.

The write cycle needs three preceding deselect cycles since the data for the write cycle must be supplied to I/O terminals during high impedance state. But immediately after power-on of the STRAM, the write operation can start on the first positive edge of CLK since the I/O terminals are initialized to be in high-impedance state.



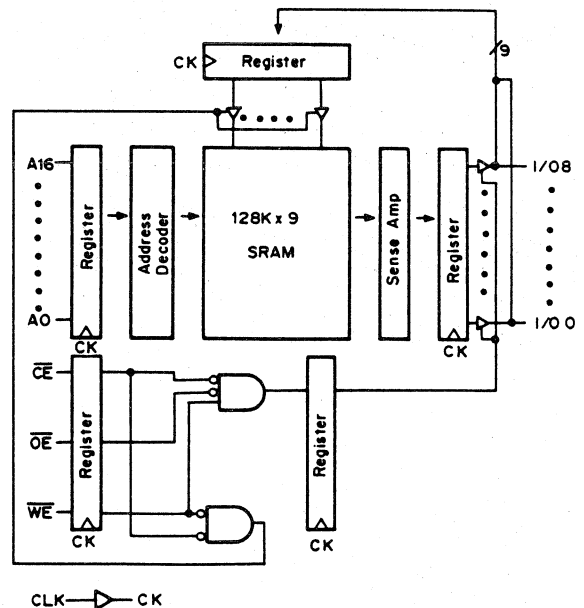
Features

- Fast Cycle Time: (Cycle) (Frequency)
 CXK77910J-17 16.6ns 60MHz
 CXK77910J-20 20.0ns 50MHz
- Fast Clock to Data Valid
 CXK77910J-17/20 10ns
- Available in Plastic 32 pin 400mil SOJ
- All inputs and outputs registered with clock
- Direct TTL compatible
- Low power consumption (min. cycle, 100% duty)
 CXK77910J-17/20 715mW (Max.)

Structure

Silicon gate CMOS IC

Block Diagram



Sony

SONY

CXK58257ATM/AYM -12LB

32768-word × 8-bit High Speed CMOS Static RAM

Description

CXK58257ATM/AYM is a 256K bits, 32768 words by 8 bits, CMOS static RAM. Operating on a single 2.7 to 5.5V supply. It is suitable for portable and battery back-up systems which require extremely small package and low stand-by current.

Features

- Wide supply voltage range operation: 2.7 to 5.5V
- Thin small-outline package:
 - CXK58257ATM: 8mm × 13.4mm 28 pin TSOP
 - CXK58257AYM: 8mm × 13.4mm 28 pin TSOP (Mirror image pinout)
- Fast access time: (Access time)
 - 3V ± 10% operation; 240ns (Max.)
 - 5V ± 10% operation; 120ns (Max.)
- Low power consumption operation:
 - Standby / DC operation
 - 3V operation; 0.75 μW (Typ.) / 1.2mW (Typ.)
 - 5V operation; 2.5 μW (Typ.) / 15mW (Typ.)
- Fully static memory...No clock or timing strobe required.
- Equal access and cycle time
- Common data input and output: three state output
- Directly TTL compatible: All inputs and outputs
- Low voltage data retention: 2.0V (Min.)

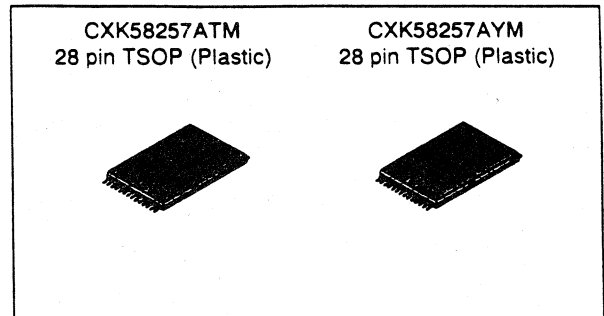
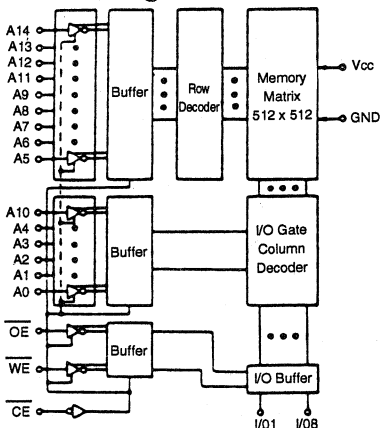
Function

32768-word × 8-bit static RAM

Structure

Silicon gate CMOS IC

Block Diagram

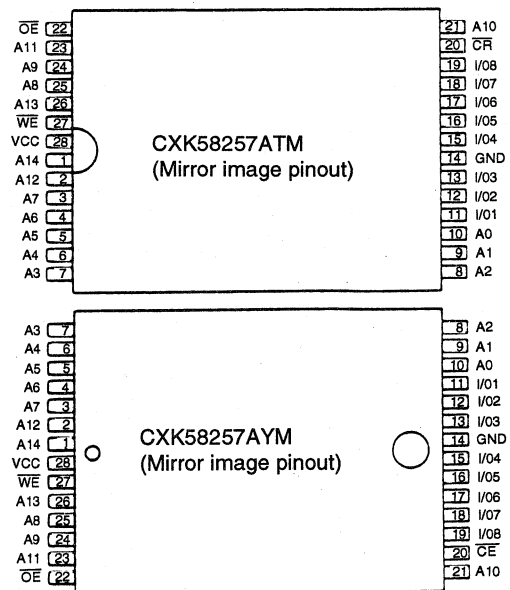


Pin Description

Symbol	Description
A0 to A14	Address input
I/O1 to I/O8	Data input/output
CE	Chip enable input
WE	Write enable input
OE	Output enable input
Vcc	2.7 to 5.5V power supply
GND	Ground

Pin Configuration

(Top View)



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131072-word × 8-bit High Speed CMOS Static RAM

Description

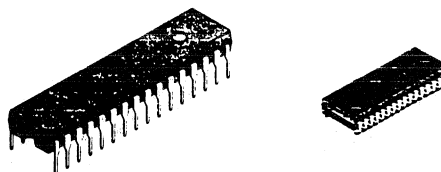
CXK581020SP/J are 131,072-word × 8-bit high speed CMOS static RAMs suitable for use in high speed and low power applications.

Organized as 131,072 words by 8 bits, it operates from a single 5V supply.

Features

- Fast access time : (Access time)
 CXK581020SP/J-35 35ns (Max.)
 CXK581020SP/J-45 45ns (Max.)
 CXK581020SP/J-55 55ns (Max.)
- Low power operation : (Standby) (Operation)
 CXK581020SP/J-35, 45, 55
 50 μW(Typ.) 150mW(Typ.)
- Single +5V supply : +5V ± 10%
- Fully static memory ... No clock or timing strobe required.
- Equal access and cycle time.
- Directly TTL compatible : All inputs and outputs.
- Available in 32 pin 400-mil DIP and 400-mil SOJ

CXK581020SP 32 pin DIP (Plastic) CXK581020J 32 pin SOJ (Plastic)



Function

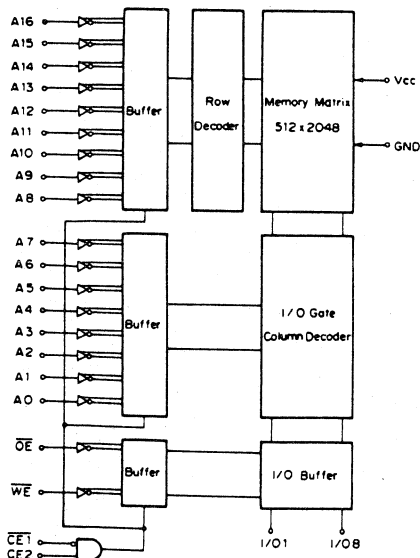
131,072-word × 8-bit static RAM

Structure

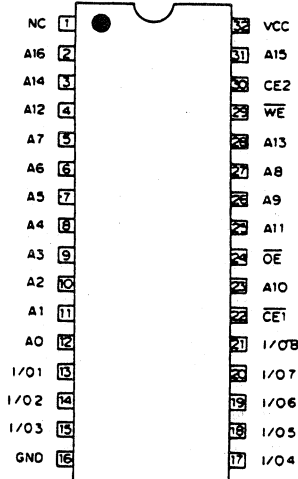
Silicon gate CMOS IC

Sony

Block Diagram



Pin Configuration (Top View)



Pin Description

Symbol	Description
A0 to A16	Address input
I/O1 to I/O8	Data input output
CE1, CE2	Chip enable 1, 2 input
WE	Write enable input
OE	Output enable input
Vcc	+5V Power supply
GND	Ground
NC	No connection

131,072-WORDS X 8-BITS HIGH SPEED CMOS STATIC RAM

PRELIMINARY

Description

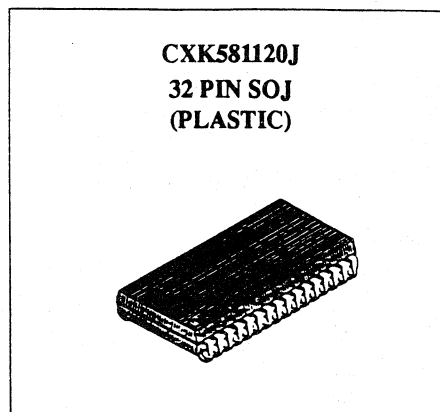
The CXK581120J is a high speed 1M-bit CMOS static RAM organized as 131 072-words X 8-bits. It operates at 15/17/20ns access time from a single 5V power supply, utilizing center-ground/power pin architecture.

Features

- High speed, low power consumption:

	Access time (Max.)	Power consumption (Typ., Cycle = Min.)
CXK581120J - 15	15ns	550mW
CXK581120J - 17	17ns	500mW
CXK581120J - 20	20ns	475mW
- Single +5V power supply:

-15/17	5V +/-5%
-20	5V +/-10%
- Fully static memory...No clock or timing strobe required.
- Equal access and cycle time.
- Directly TTL compatible: All inputs and outputs.
- Common data input and output: three state output.
- Available in 32 pin 400mil SOJ package.



Function

131,072-words X 8-bits static RAM

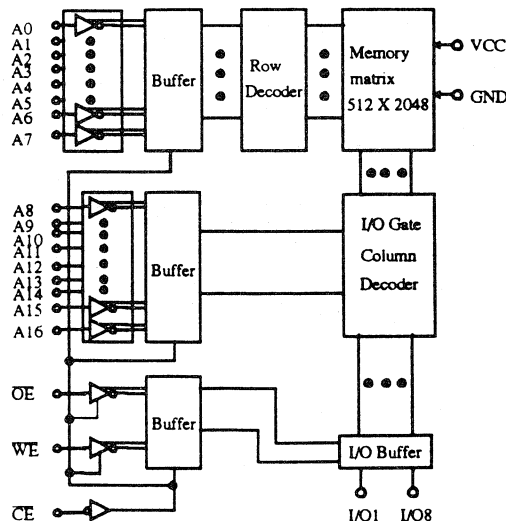
Structure

Silicon gate CMOS IC

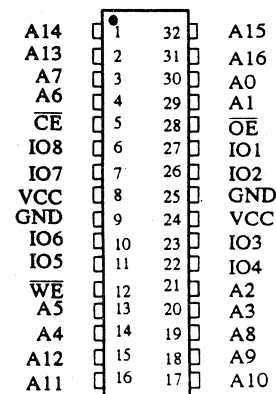
Pin Description

Symbol	Description
A0 to A16	Address input
I/O1 to I/O8	Data input/output
\overline{CE}	Chip enable input
\overline{WE}	Write enable input
\overline{OE}	Output enable input
Vcc	+5V power supply
GND	Ground

Block Diagram



Pin Configuration (Top View)



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Video Processing Color Decoding (Analog)

Part Number	Function	Volt	Package
CXA1585Q*	NTSC/PAL, Video in, RGB out	5V	32P QFP
CXA1218S/1228S*	NTSC/PAL, Video in, YUV output	5V	28P SDIP
SBX1761-01*	Video Input Module, NTSC 18bit Input RGB out	5V	64P SDIP
SBX1762-01*	Video Input Module, NTSC 24bit Input RGB out	5V	64P SDIP
SBX1761-10	Video Input Module, NTSC/S-Video Input 18bit RGB out	5V	64P
SBX1761-50	Video Input Module, PAL/S-Video Input 18bit RGB out	5V	64P
SBX1793-01/21	S-Video Input Module, NTSC/S-Video Input 24bit RGB out	5V	64P

Color Encoding (Analog)

CXA1145P/M*	RGB input, NTSC/PAL Video out	5V	24P DIP/SOP
CXA1219/1229P/M*	YUV input, NTSC/PAL Video out	5V	24P DIP/SOP
CXA1645M*	Delay Line BPF built in, RGB input, NTSC/PAL Video out	5V	28P SDIP

Analog to Digital Conversion

CXD1172 AM/AP	6bit 20MSPS Video A/D Converter	5V	16 SOP/DIP
CXD1176Q	8bit 20MSPS Video A/D Converter	5V	32P QFP
CXD1179Q	8bit 35MSPS Video A/D Converter	5V	32P QFP

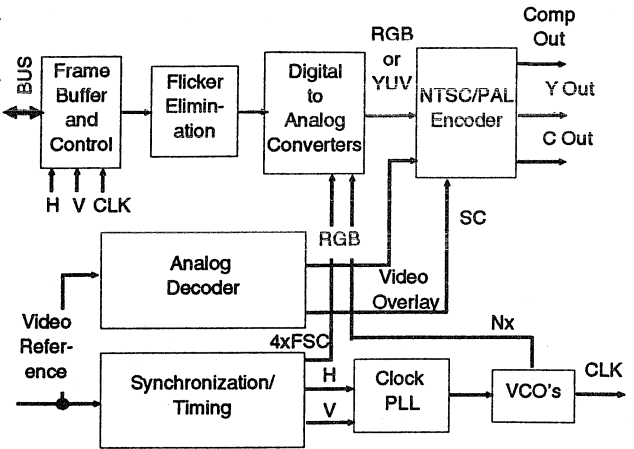
Digital to Analog Conversion

CXD1177Q	8bit 40MSPS RGB 2-channel D/A Converter	5V	32P QFP
CXD1178Q	8bit 40MSPS RGB 3-channel D/A Converter	5V	48P QFP

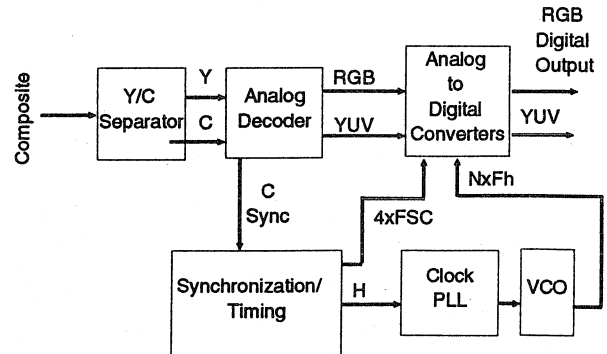
Digital Processing

CXD2011Q*	Digital Comb Filter	5V	80P QFP
CXK1202Q	Digital Delay Line Memory	5V	32P QFP
CXK1202S	Digital Delay Line Memory	5V	32P QFP
CXK1206 AM/ATM	1.2Mbit, 3 port Video Memory	5V	38P SOP/44Pin TSOP
CXK48324Q/R	2.4Mbits, 3 ports Video Memory	5V	64P QFP/80Pin VQFP

Video Output with Graphics Overlay



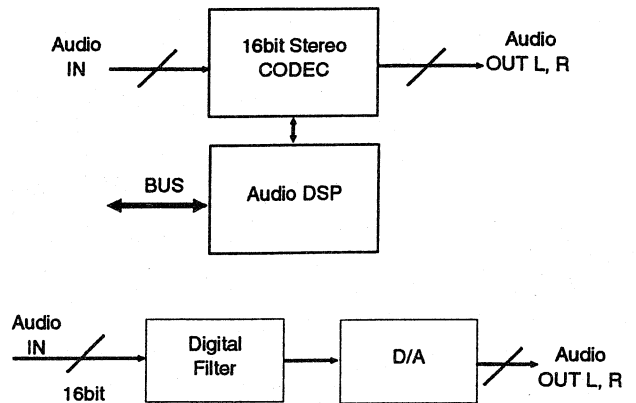
Video Input Digitizing



Audio Processing

Part Number	Function	Volt	Package
CXD2555Q*	Audio Delta Sigma Type A/D+D/A+D/F	5V	48P QFP
CXD2570Q*	Audio Delta Sigma Type A/D+D/A+D/F	5V	48P QFP

Digital Audio



Application Notes

Number	IC's/Applications
CAV01	CXD2555Q PCB
CAV02	Video Input Module
CAV03	CXD2570Q PCB

Evaluation Board

Description

NTSC/PAL Decoders; CXA1218S, CXA1228S

CXA1585Q PCB

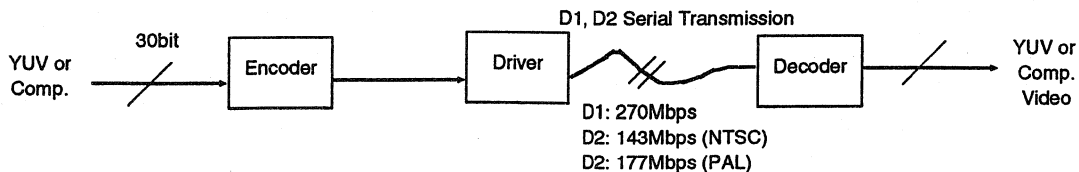
NTSC/PAL Encoders; CXA1145P/M, CXA1219P/M, CXA1229P/M

VIM PCB, SBX1761-01, SBX1762-01

* Evaluation Board Available

Communication Audio/Video

Number	Description	Package	Voltage
SBX1601A	Serial Interface/Transmission Encoder	37 Pin PGA	±5V
SBX1602A	Serial Interface/Transmission Decoder	37 Pin PGA	±5V
CXA1389AQ	Cable Driver for Digital Transfer	32 Pin QFP	-5V
CXD8068G	4:2:2 D1 Video Encoder	132 Pin PGA	5V
CXD8069G	4:2:2 D1 Video Decoder	132 Pin PGA	5V
CXD8110K	D2 Video Transmitter CoProcessor	68 Pin PLCC	5V
CXD8129K	D2 Video Receiver CoProcessor	68 Pin PLCC	5V



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MONOLITHIC NCOs

PRODUCT	CLOCK FREQUENCY	DESCRIPTION
STEL-1130	60 MHz	Linear Quadrature Amplitude Modulator
STEL-1172B	50 MHz	32-bit NCO, Quadrature Outputs
STEL-1173	50 MHz	48-bit NCO, Sub-MicroHz Resolution
STEL-1173RH	40 MHz	Rad Hard with 1 MRad Tolerance
STEL-1174	50 MHz	16-bit NCO, Low Price
STEL-1175	80 MHz	32-bit NCO with Linear PM
STEL-1176	80 MHz	83/4 Decade Decimal NCO with BCD Control
STEL-1177	60 MHz	32-bit NCO with Linear PM and FM ports
STEL-1178A	80 MHz	32-bit NCO Dual with PSK
STEL-1179	25 MHz	24-bit NCO, PSK and Low Price
STEL-1180	60 MHz	32-bit Chirp Generating NCO
STEL-2172	300 MHz	28-bit ECL NCO
STEL-2173	1 GHz	GaAs NCO with PSK

BOARD LEVEL DDS PRODUCTS

PRODUCT	CLOCK FREQUENCY	DESCRIPTION
STEL-1272	Quadrature output 0 to 22 MHz	DDS
STEL-1273	0 to 22 MHz	DDS with Sub- MicroHz Resolution
STEL-1275	0 to 35 MHz	DDS with Linear PM
STEL-1276	0 to 35 MHz	DDS with 0.1 Hz Resolution and BCD Control
STEL-1277	0 to 35 MHz	DDS with Linear PM and FM
STEL-1375A	0 to 35 MHz	Miniature DDS Module with Linear PM
STEL-1376	0 to 35 MHz	Miniature DDS Module with BCD Control
STEL-1377	0 to 35 MHz	Miniature DDS Module with Linear PM and FM
STEL-1378A	Dual 0 to 35 MHz	Miniature DDS Module with PSK
STEL-1479	0 to 12 MHz	Hybrid DDS, 1.5" by 0.8", Low price
STEL-2272	0 to 130 MHz	DDS
STEL-2273A	0 to 400 MHz	DDS with PSK
STEL-2373	0 to 400 MHz	DDS Hybrid with PSK, 2" by 1.1"

CHASSIS LEVEL DDS PRODUCTS

PRODUCT	CLOCK FREQUENCY	DESCRIPTION
STEL-9272	0 to 130 MHz	Complete DDS with Phase Lockable Clock
STEL-9275	0 to 400 MHz	Complete DDS with Phase Lockable Clock

Wireless Communication at Your Finger Tips



Low Cost Convolutional Encoder/Viterbi Decoder

With a 12 Mbps data rate, the STEL-2030B operates at code rate 1/2 and also with punctured codes at code rates 2/3 and 3/4. It also includes a V.35 Scrambler and BER Monitor.

Highest Flexibility PN Coder

At 30 Mcps and up to 32 taps per coder the STEL-1032 Triple PN Coder has the flexibility to generate a wide variety of codes for many spread spectrum applications.

Digital Downconverter and Carrier Tracker

The STEL-2130A can be used to convert signals digitized at up to 40 Msamples/sec at I.F. directly to baseband.

Highest Performance Digital Matched Filter (cascadable)

The STEL-3310 64-Tap Cascadable Complex Matched Filter provides fast acquisition of PN sequences up to 256 chips/symbol at up to 22 Msamples/sec.

Low Cost and Low Power Digital Matched Filter (nonscascadable)

The STEL-3340 can be used in many of the same application as the STEL-3310 with a limit of 64 chips/symbol, with lower cost and power consumption.

Phase Modulated NCO

The STEL-1175 Numerically Controlled Oscillator offers 32-bit resolution and 80 MHz clock frequency. It can be phase modulated at up to 20 MHz.

Highest Speed Accumulator/Correlator

At a 70 Msamples/sec accumulation rate, and up to 32K samples without overflow, the STEL-2410 is the industry's highest speed signal accumulator/correlator for spread spectrum applications.

Bit Synchronizer and BPSK/QPSK Demodulator

The STEL-2110A can be used for coherent and differential demodulation of signals up to 6 Mbps BPSK and 12 Mbps QPSK. The STEL-2110A includes a symbol timing NCO and phase or frequency discriminator for carrier tracking.

Differential BPSK/QPSK Demodulator

The STEL-2120 can be used for differential demodulation of signals up to 8 Mbps BPSK and 16 Mbps QPSK in both Spread Spectrum and Clear Channel applications

Fastest Burst Data Acquisition

The STEL-2210 Block Phase Estimator allows fast acquisition of burst data. It can be used for coherent demodulation of signals at up to 8 Mbps BPSK and 16 Mbps QPSK without a carrier tracking PLL

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Technology

Synergy has implemented a world leadership bipolar-based technology which incorporates the most advanced process modules and isolation techniques to produce the industry's fastest speeds at lower power levels than previously achievable. Unlike other bipolar technologies, Synergy's proprietary ASSET™ (All Spacer Separated Element Transistor) Technology is optimized to produce both memory and logic products offering superior performance compared to all domestic and foreign-based competitors.

Synergy's patented architectural innovations produce significant customer benefits in both performance and density:

- Spacers allow element separations to be determined by film thickness rather than by lithographic space, resulting in a dramatic reduction in element separation;

- ASSET's trench isolation results in transistors which are 40% smaller than competitive transistors produced under similar lithographic conditions.

Initial products were produced with a very conservative 1.5 μ implementation of ASSET, ensuring manufacturability while providing leadership performance. The current 1.2 μ version produces devices which achieve an ft of 17GHz and unloaded gate delays of 70ps at just 1mW.

ASSET is a fully self-aligned technology which is scalable to submicron levels. Using the current 1.2 μ version of ASSET, Synergy is producing 16Kx4 SRAMs, an Advanced Self-Timed 2Kx9 STRAM, and the System Elements™ family. In the next twelve months, the company will introduce the first products designed in its ASSET-based BiCMOS, ASSET II technology (offering further advancements in density and performance), and an exciting array of new products.

The result of combining Synergy's patented circuit design and processing technologies is the highest-performance, manufacturable *system solutions*.

Products

Synergy currently offers a complete series of ultra-fast 1K, 4K, 16K and 64K ECL SRAMs; the ECLinPS™ Logic Family (including ECLinPS Lite); the Super-300K™ Logic Family; and both RAM-Intensive and Universal System Elements (RISE™ and USE™, respectively). With speeds to 3ns (1K and 4K) and 5ns (16K and 64K), all SRAMs are designed for alpha-particle immunity and feature balanced read and write times. Additional customer benefits include tighter skews, 2000V ESD protection and 10KH/100K I/O options.

New products to be introduced in 1993, most of which are contained in this catalog, include ultra-fast FIFOs, PECL Clock Distribution circuits (Positive ECL with TTL outputs) for TTL systems operating at 50MHz and above, 9-bit high-speed translators and an increasing range of RISE™ and USE™ semi-custom System Elements™. Synergy will continue to develop unique and complementary product families which will increase the usable speed available to the high-performance system designer.

Strategic Alliance

In order to ensure our customers large volumes of cost-effective ultra-high-performance complex products, Synergy Semiconductor has entered into a comprehensive strategic alliance with Toshiba Corporation. This strategic alliance incorporates four closely linked

agreements:

- a joint R&D pact,
- a manufacturing agreement,
- a technology licensing agreement, and
- an equity investment.

Under the terms of the manufacturing agreement, Toshiba will provide Synergy with the use of a new high-volume (6-inch, submicron) IC fabrication line, which will run Synergy's high-performance bipolar ASSET and BiCMOS technologies. This fab will allow Synergy to utilize world-class manufacturing capabilities to produce its current SRAM, logic and System Element products, as well as future products.

Through its equity investment in Synergy, Toshiba has recognized Synergy's leadership in bipolar-based process and design technologies. Toshiba is a minority shareholder (<10%).

Facilities

Synergy is headquartered in Santa Clara, California. The company's operations are housed in a 48,000 square foot facility which incorporates all aspects of its business from R&D to design, wafer fabrication, test, shipping and administration. The facility includes a 7,000 square foot, modern wafer fab clean room with equipment operating in a sub-Class 20 environment. The fab area contains state-of-the-art high resolution steppers, dry etchers, films deposition systems, etc. The production test area utilizes advanced test equipment capable of holding uniquely tight picosecond-level testing accuracies.

Synergy Semiconductor, a leader in the high-performance market, designs, manufactures and markets the industry's fastest memory, logic and semi-custom products. Synergy utilizes a unique proprietary process, combined with design innovations, to provide the very best in *UltraFast Usable SpeedSM* products.

A key factor in the company's early success has been the *synergy* between a highly experienced and motivated team, in-house wafer fabrication and state-of-the-art technology and test capabilities. These components will continue to keep Synergy in the forefront of the high-performance market.

European Joint Venture

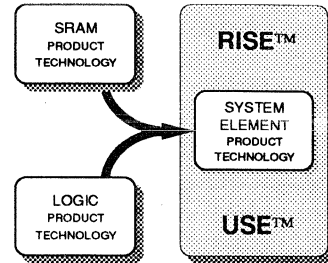
Synergy is also the managing partner of System Microelectronic Innovation GmbH (SMI). SMI is a joint venture between Synergy Semiconductor and the German government, and is located in Frankfurt (Oder). The plant houses a large wafer fabrication facility, as well as plastic and hermetic package assembly lines, a large CAD design capability and production test areas. Synergy has licensed its ASSET technology to the new venture.

SMI will continue to market its existing products into consumer, computer, industrial and telecom markets. It will also market Synergy's family of ultra-fast ECL SRAMs, logic, clock control, translator and semicustom products into the European sector. Manufacturing capability for ASSET products will be on-line in late 1993, and the two companies will continue working together on the development of new products — primarily aimed at high-performance telecommunications and computation applications emerging throughout Europe. The company also expects to establish foundry relationships to produce both digital and analog products for both North American and European customers.

Synergy

BENEFITS

- Fastest throughput
 - Highest-density logic cells
 - Reduced interconnect delays — logic/memory on same chip
- Fastest, highest-density, proven SRAM (<3ns)
 - Embedded blocks on RISE devices
 - Compiled RAM on all devices — ORCA™
- Mixed signal capability via ANALOG ZONE™
- Lower power than competing products
- Interface flexibility — ECL, TTL and analog I/O
- State-of-the-art CAD/CAE tool set — DAVE™
- Assured supply
 - Production-proven process technology — ASSET™
 - True second-source available now

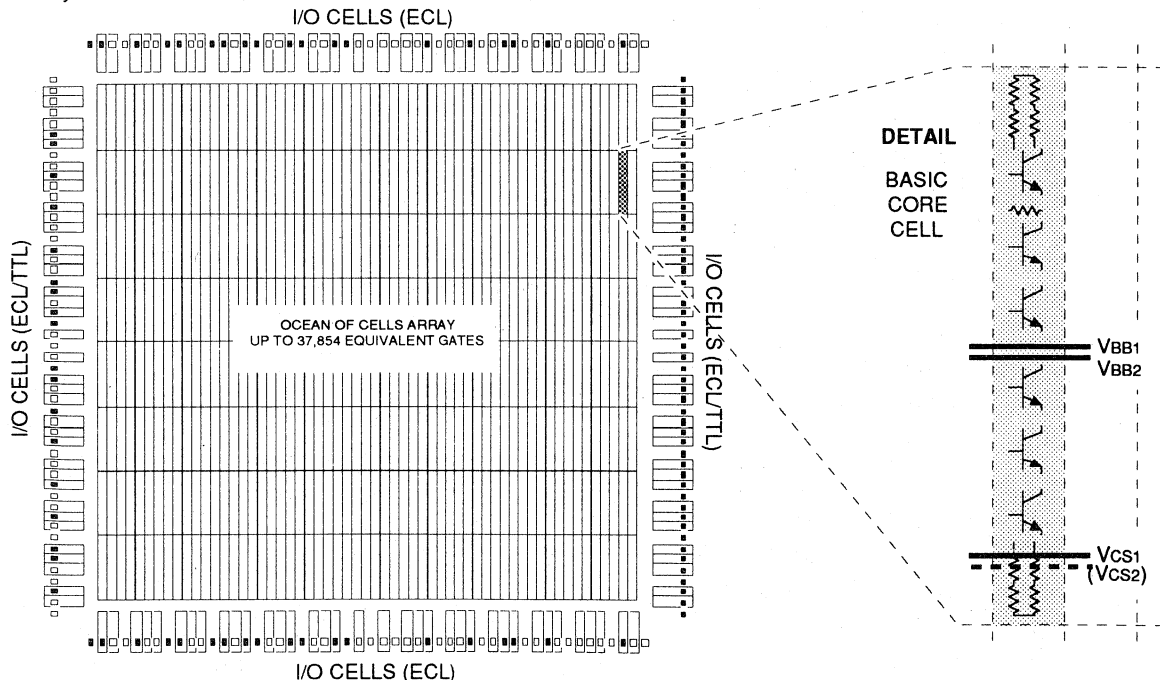


UNIVERSAL SYSTEM ELEMENTS (USE™)

Device Part Number	Gross Cells	Analog Capable?	I/O Pins	Total Pins	Available Date	'92 Data Book Page No.
SY05BP00	495	Yes	24	32	*	N/A
SY1BP00	898	Yes	32	64	NOW	9-8
SY2BP00	2,184	Yes	60	86	NOW	N/A
SY4BP00	5,180	Yes	80	120	NOW	9-11
SY11BP00	11,730	Yes	112	168	NOW	9-14
SY21BP00	20,680	Yes	144	216	NOW	9-17
SY34BP00	37,854	Yes	192	296	NOW	9-20

Synergy

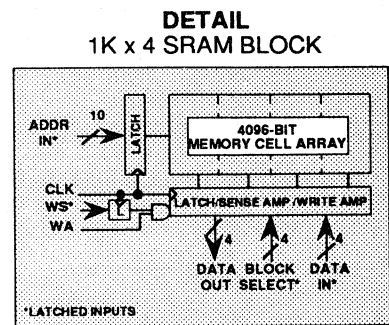
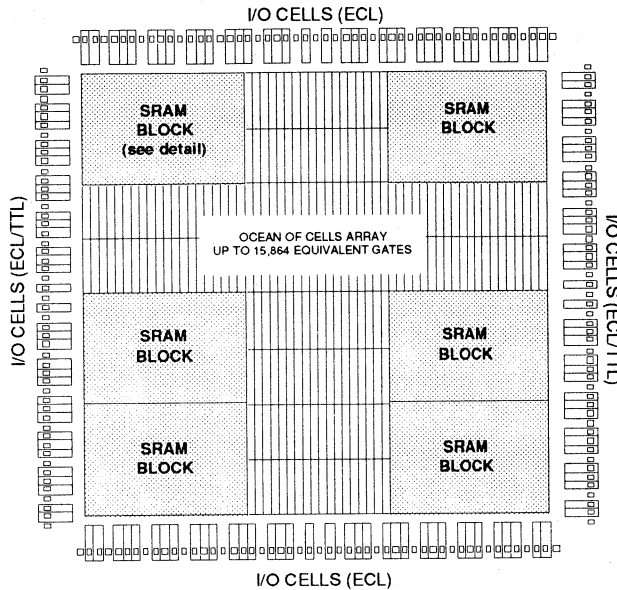
*Contact factory.



RAM INTENSIVE SYSTEM ELEMENTS (RISE™)

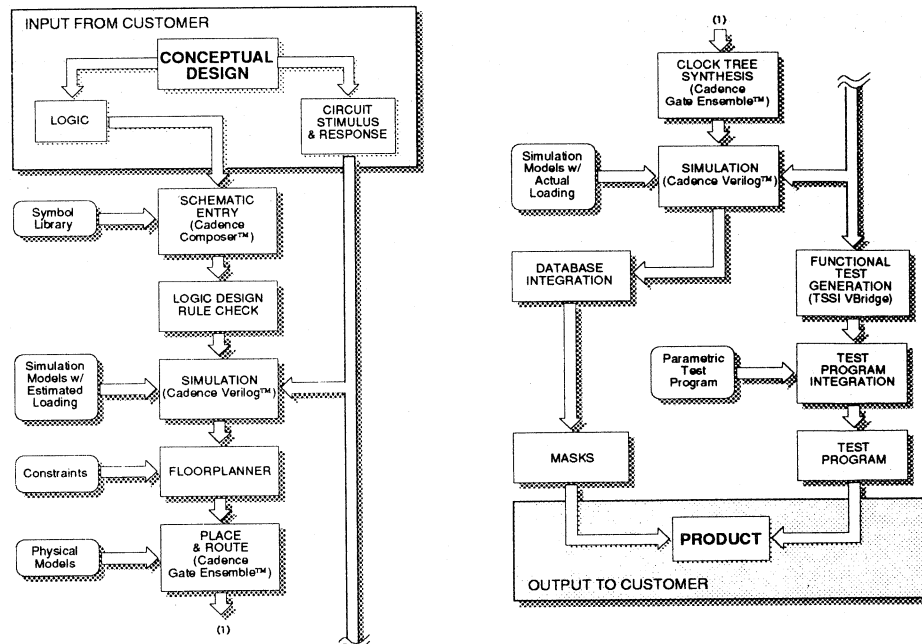
Device P/N	Gross Cells	SRAM Block Size	# Blocks	Analog Capable?	I/O Pins	Total Pins	Available Date	'92 Data Book Page No.
SY8BP4R2	7,578	64 x 28	4	Yes	112	168	*	9-23
SY9BP6R4	7,410	1K x 4	6	Yes	144	216	NOW	9-26
SY15BP10R4	15,864	1K x 4	10	Yes	192	296	NOW	N/A

*Contact factory.



**EXAMPLE SHOWN
IS SY9BP6R4**

DESIGN FLOW



BENEFITS

- Ultra-low jitter
- High noise immunity with differential VCO and filter
- Superior ESD protection of 2000V
- Single supply PECL and TTL
- Ideal high frequency clock source for TTL or ECL systems

Device Part Number	Description	Frequency Range	Features	Avail.	'92 Data Bk Page No.
SY89424	Frequency Multiplier w/Oscillator	200-250MHz	5x Multiplier, < ±25ps Jitter	1Q'94	N/A
SY89429	Programmable Clock Generator	25-400MHz	1MHz Step, < ±25ps Jitter	NOW	N/A

TRANSLATORS

BENEFITS

- High speed; low power
- Choice of bus width and package type for flexibility
- Superior ESD protection of 2000V
- Single or dual supply translation
- Suitable for TTL/PECL/ECL systems

Device Part Number	Description	Input/Output Bus Width	Translation Speed (ns)	Single/Differential	Avail.	'92 Data Bk Page No.
SY10H/100H600	TTL-to-ECL/Output Enable	9	3.5	Single In/Single Out	NOW	6-2
SY10H/100H601	ECL-to-TTL/3-State Enable	9	4.8	Single In/Single Out	NOW	6-4
SY10H/100H602	Latched TTL-to-ECL	9	3.5	Single In/Single Out	NOW	6-6
SY10H/100H603	Latched ECL-to-TTL	9	4.8	Single In/Single Out	NOW	6-8
SY10H/100H606	Registered Hex TTL-to-PECL	6	3.0	Single In/Differential Out	NOW	N/A
SY10H/100H607	Registered Hex PECL-to-TTL	6	6.5	Differential In/Single Out	NOW	N/A
SY100S324	TTL-to-ECL	6	1.5	Single In/Differential Out	NOW	6-20
SY100S325	ECL-to-TTL	6	3.0	Differential In/Single Out	NOW	6-24
SY100S328	Octal TTL-ECL Bi-directional w/Latch	8	3.8	EN-to-ECL Out	3Q'93	6-28
SY100S329	Octal TTL-ECL Bi-directional w/Register	8	3.9	EN-to-ECL Out	NOW	N/A
SY10ELT/100ELT22	Dual TTL-to-Differential PECL	2	1.5	Single In/Differential Out	NOW	N/A
SY10ELT/100ELT23	Dual Differential PECL-to-TTL	2	3.0	Differential In/Single Out	NOW	N/A

Synergy

BENEFITS

- Ultra low skew; ideal for systems requiring low skew clock networks
- Superior ESD protection of 2000V
- 20ps step delay lines for precise clock edge placement
- Single power supply PECL/TTL/ECL

Device Part Number	Description	Output Clocks	Pin-to-Pin Skew (Max. ps)	Avail.	'92 Data Bk Page No.
SY10H/100H641	Single Supply PECL-to-TTL 1:9 Clock Driver	9	500	NOW	7-2
SY10H646	Single Supply PECL/TTL-to-TTL 1:8 TTL Clock Driver	8	500	NOW	N/A
SY10H/100H841	Single Supply PECL-to-TTL 1:4 Clock Driver w/Output Enable	4	500	NOW	7-7
SY10H/100H842	Single Supply PECL-to-TTL 1:4 Clock Driver w/Latched Output Enable	4	500	NOW	7-8
SY10H/100H843	Single Supply PECL-to-TTL 1:4 Clock Driver w/ Latched Output Enable and Synchronized Disable	4	500	*	7-13
SY10E/100E111	1:9 Differential Clock Driver	9	50	NOW	7-14
SY10E/100E195	Programmable Delay Chip	N/A	N/A	NOW	4-77
SY10E/100E196	Programmable Delay Chip & Analog	N/A	N/A	NOW	4-83
SY69401 CopyClock™	Master/Slave Auto De-Skew Clock Distribution System (PECL-to-TTL, Single Supply)	8	500/System	NOW	N/A

* Consult factory.

Synergy

FIFOs

BENEFITS

- Fastest, highest density, *proven* technology
- System clock speeds to 1GHz
- Data bus widths to 24 bits produce highly-efficient data transfers
- Both ECL I/O and TTL I/O devices
- Status flag outputs (Full, Half-Full, Empty)
- May be customized to meet specialized requirements
- Lower power than competing products
- Cost-effective, thermally-enhanced packages (plastic and/or ceramic)
- Programmable-length capability

Device P/N	Cycle Time (ns) ⁽¹⁾	Organization		Power Diss. Watts (typ.)	I/O Pins	Package Size	Available Date	'92 Data Bk Page No.
		Words	Bits					
SY69164	3	1024	24	16	24/24	208	*	8-1
SY69165	1	3072	8	16	8/8	208	*	8-2
SY69167	5	64	18	3	18/18	64	NOW	8-3
SY69168	10 ⁽²⁾	64	18	3	18/18	64	NOW	8-4
SY69170	3 ⁽²⁾	2 to 2048	12	16	12/12	208	*	8-5

NOTES:

- * Contact factory.
- 1. Time required for a single Read or a single Write.
- 2. Time required for Read plus Write.

BENEFITS

- Ultra-fast gate speeds for performance-oriented ECL systems
- 100% compatible with Motorola
- Packaged in space-efficient high-performance 28-lead PLCC
- Superior ESD protection of 2000V
- Typical edge rates of 500ps
- Industry standard 10KH and 100K I/O levels
- Extended supply voltage option:
 - VEE = -4.2V to -5.46V

Part Number	Description	Max. Delay (ps)	10KH IEE Min. mA	100K IEE Min. mA	Avail.	1992 Data Book Page No.
SY10E/100E016	8-Bit Synchronous Binary Up Counter	700MHz*	181	208	NOW	4-2
SY10E/100E101	Quad 4-Input OR/NOR Gate	500	36	42	NOW	4-10
SY10E/100E104	Quint 2-Input AND/NAND Gate	600	46	53	NOW	4-12
SY10E/100E107	Quint 2-Input XOR/NOR Gate	600	50	58	NOW	4-14
SY10E/100E111	1:9 Differential Clock Driver	630	60	69	NOW	4-16
SY10E/100E112	Quad Driver with Enable	600	56	65	NOW	4-19
SY10E/100E116	5-Bit Differential Line Receiver	450	35	40	NOW	4-21
SY10E/100E122	9-Bit Buffer	500	49	57	NOW	4-23
SY10E/100E131	4-Bit D Flip-Flop	700	70	81	NOW	4-25
SY10E/100E136	6-Bit Universal Counter	550MHz*	150	170	NOW	4-28
SY10E/100E137	8-Bit Ripple Counter	2200	145	167	NOW	4-34
SY10E/100E141	8-Bit Shift Register	975	157	181	NOW	4-37
SY10E/100E142	9-Bit Shift Register	1000	145	165	NOW	4-39
SY10E/100E143	9-Bit Hold Register	1000	145	165	NOW	4-42
SY10E/100E150	6-Bit Latch	550	62	72	NOW	4-45
SY10E/100E151	6-Bit D Register	800	78	90	NOW	4-47
SY10E/100E154	5-Bit 2:1 Mux-Latch	700	91	105	NOW	4-49
SY10E/100E155	6-Bit 2:1 Mux-Latch	700	102	117	NOW	4-51
SY10E/100E156	3-Bit 4:1 Mux-Latch	900	90	103	NOW	4-53
SY10E/100E157	Quad 2:1 Mux, Individual Select	550	38	44	NOW	4-55
SY10E/100E158	5-Bit 2:1 Multiplexer	550	40	46	NOW	4-57
SY10E/100E160	12-Bit Parity Generator/Checker	950	98	113	NOW	4-59
SY10E/100E163	Dual 8-Input Multiplexer	800	88	100	NOW	4-62
SY10E/100E164	16:1 Multiplexer	850	71	81	NOW	4-64
SY10E/100E166	9-Bit Magnitude Comparator	1100	136	156	NOW	4-66
SY10E/100E167	6-Bit 2:1 Mux-Register	800	113	130	NOW	4-68
SY10E/100E171	3-Bit 4:1 Multiplexer	650	67	77	NOW	4-70
SY10E/100E175	8-Bit Error Detection/Correction (EDAC)	800	132	152	NOW	4-72
SY10E/100E193	8-Bit EDAC/Parity	1000	134	155	NOW	4-74
SY10E/100E195	Programmable Delay Chip	1765	156	179	NOW	4-77
SY10E/100E196	Programmable Delay Chip & Analog	1765	156	179	NOW	4-83

*Guaranteed minimum operating frequency.

Synergy

Part Number	Description	Max. Delay (ps)	10KH IEE Min. mA	100K IEE Min. mA	Avail.	1992 Data Book Page No.
SY10E197	Data Separator	150MHz*	180	N/A	1Q'94	N/A
SY10E/100E212	3-Bit Scannable ECL Driver	1025	96	212	NOW	4-90
SY10E/100E241	8-Bit Scannable Register	975	150	173	NOW	4-92
SY10E/100E256	3-Bit 4:1 Mux-Latch	900	83	96	NOW	4-95
SY10E/100E336	3-Bit Registered Bus Transceiver	1000	150	173	NOW	4-97
SY10E/100E337	3-Bit Scannable Register Bus Transceiver	1000	174	200	NOW	4-100
SY10E/100E404	Quad High Frequency Diff. AND	650	127	146	NOW	4-103
SY10E/100E416	Quint High Frequency Line Receiver	500	162	186	NOW	4-105
SY10E/100E431	3-Bit Diff. Set/Rest Flip-Flop	750	132	152	NOW	4-107
SY10E/100E445	4-Bit Serial/Parallel Converter	2000MHz*	185	212	NOW	4-109
SY10E/100E446	4:1 Parallel/Serial Converter	1300MHz*	185	212	NOW	4-115
SY10E/100E451	6-Bit D-Reg., Diff. Data & CLK Inputs	800	101	116	NOW	4-116
SY10E/100E452	5-Bit D-Reg., Diff. Data, CLK & Q	800	89	102	NOW	4-118
SY10E/100E457	Triple High Frequency Diff. 2:1 Mux	650	110	127	NOW	4-120
SY10E1651	Dual Analog Comparator w/Latch	1150	55	N/A	NOW	N/A
SY10E1652	High-Perf. Dual Analog Comp. w/Latch	1150	55	N/A	NOW	N/A

ECLinPS™ LITE

Part Number	Description	Max. Speed (ps)	10KH IEE Max. mA	100K IEE Max. mA	Avail.	Data Book Page No.
SY10EL/100EL01	4-Input OR/NOR	350	17	20	1Q'94	N/A
SY10EL/100EL04	2-Input AND/NAND	395	17	20	NOW	N/A
SY10EL/100EL05	2-Input Differential AND/NAND	420	22	25	1Q'94	N/A
SY10EL/100EL07	2-Input XOR/XNOR	415	17	20	1Q'94	N/A
SY10EL/100EL11	2:1 Differential Fanout Buffer	365	31	36	1Q'94	N/A
SY10EL/100EL12	Low-Impedance Driver	480	17	20	1Q'94	N/A
SY10EL/100EL16	Differential Receiver	355	22	26	1Q'94	N/A
SY10EL/100EL31	D Flip-Flop with Set & Reset	2200MHz*	32	37	NOW	N/A
SY10EL/100EL32	+2 Divider	2600MHz*	30	35	1Q'94	N/A
SY10EL/100EL33	+4 Divider	3800MHz*	33	37	1Q'94	N/A
SY10EL/100EL35	JK Flip-Flop	1800MHz*	32	37	1Q'94	N/A
SY10EL/100EL51	Differential Clock D Flip-Flop	2200MHz*	29	36	1Q'94	N/A
SY10EL/100EL52	Differential Data & Clock D Flip-Flop	2200MHz*	25	29	1Q'94	N/A
SY10EL/100EL58	2:1 Multiplexer	360	17	19	1Q'94	N/A
SY10EL89	Coaxial Cable Driver	490	28	N/A	1Q'94	N/A
SY10ELT/100ELT22	Dual TTL-to-Diff PECL Translator	1500	Icc = 30mA		NOW	N/A
SY10ELT/100ELT23	Dual Diff PECL-to-TTL Translator	3000	Icc = 20mA		NOW	N/A

*Guaranteed minimum operating frequency.

BENEFITS

- Ultra-fast gate speeds for performance-oriented ECL systems
- SUPER-300K devices are pin-compatible with National and Signetics F100K and National 300K
- SUPER-300K devices offer almost twice the speed at similar power of 300K
- SUPER-300K functions offer almost twice the speed and half the power of F100K functions from National and Signetics
- SUPER-300K devices packaged in CERPAC, CERPAC and PLCC
- Superior ESD protection of 2000V
- Typical edge rates of 500ps
- Fully compatible with industry standard 100K ECL power supply and I/O levels
- Extended supply voltage option:
 - VEE = -4.2V to -5.46V

Synergy

Part Number	Description	Max. Speed (ps)			IEE Min. mA	Avail.	'92 Data Bk Page No.
		DIP	Flat	PLCC			
SY100S301	Triple 5-Input OR/NOR Gate	900	800	750	-25	NOW	5-2
SY100S302	Quint 2-Input OR/NOR Gate	800	750	700	-45	NOW	5-5
SY100S304	Quint AND/NAND Gate	1250	1150	1050	-60	NOW	5-8
SY100S307	Quint Exclusive OR/NOR Gate	1200	1100	1000	-58	NOW	5-11
SY100S313	Quad Driver	900	850	800	-60	NOW	5-14
SY100S314	Quint Differential Line Receiver	1100	1000	900	-60	NOW	5-17
SY100S317	Triple 2-Wide OA/OAI Gate	1100	1000	900	-48	NOW	5-20
SY100S318	5-Wide 5, 4, 4, 4, 2 OA/OAI Gate	1000	900	800	-55	NOW	5-23
SY100S321	9-Bit Inverter	900	800	700	-55	NOW	5-26
SY100S322	9-Bit Buffer	900	800	700	-55	NOW	5-29
SY100S324	Hex TTL-to-ECL Translator	1500	1400	1400	-70	NOW	5-32
SY100S325	Hex ECL-to-TTL Translator	3000	2900	2900	-37	NOW	5-36
SY100S328	Octal ECL/TTL Bi-Directional w/Latch	3800	3600	3600	-169	NOW	5-40
SY100S329	Octal ECL/TTL Bi-Directional w/Reg	3900	3700	3700	-199	NOW	N/A
SY100S331	Triple D Flip-Flop	900	800	700	-80	NOW	5-42
SY100S336	4-Stage Counter/Shift Register	1300	1200	1100	-170	NOW	5-47
SY100S341	8-Bit Shift Register	1200	1100	1000	-150	NOW	5-55
SY100S350	Hex D Latch	1050	1000	900	-98	NOW	5-60
SY100S351	Hex D Flip-Flop	1400	1200	1200	-98	NOW	5-65
SY100S355	Quad Multiplexer/Latch	1300	1200	1100	-80	NOW	5-70
SY100S360	Dual Parity Checker/Generator	2400	2300	2200	-70	NOW	5-82
SY100S363	Dual 8-Input Multiplexer	1100	1000	900	-92	NOW	5-86
SY100S364	16-Input Multiplexer	1500	1400	1300	-63	NOW	5-90
SY100S366	9-Bit Comparator	1700	1600	1500	-120	NOW	5-101
SY100S370	Universal Demux/Decoder	1400	1300	1200	-92	NOW	5-105
SY100S371	Triple 4-Input Multiplexer w/Enable	1200	1100	1000	-68	NOW	5-110
SY100S891	5-Bit Registered Transceiver	—	—	1500	-216	NOW	5-114

FEATURES

- Ultra-fast access times
- Ultra-fast write times
- Eliminates write recovery glitch found on competitors' ECL RAMs
- Designed for alpha particle immunity
- 1500V ESD protection
- Fully compatible with industry standard 10K and 100K ECL power supply and I/O levels
- Extended supply voltage option:
 - 100K = -4.5V with 100K I/O
 - 101K = -5.2V with 100K I/O
- Industry standard architecture and pinouts

Part Number	Description	Data Sheet Limits (ns)		Min. mA IEE	Availability	'92 Data Bk Page No.
		tAA	tww			
SY10L/100L/101L422-5	256 x 4 ECL RAM	5	3.5	-150	NOW	3-1
SY10L/100L/101L422-7	256 x 4 ECL RAM	7	5	-150	NOW	3-1
SY10L/100L/101L474-5	1K x 4 ECL RAM	5	5	-180	NOW	3-10
SY10L/100L/101L474-7	1K x 4 ECL RAM	7	5	-180	NOW	3-10
SY10L/100L/101L484-7	4K x 4 ECL RAM	7	6	-220	NOW	3-19
SY10L/100L/101L484-8	4K x 4 ECL RAM	8	7	-220	NOW	3-19
SY10L/100L/101L484-10	4K x 4 ECL RAM	10	8	-220	NOW	3-19

ULTRA-FAST ECL RAMs

Part Number	Description	Data Sheet Limits (ns)		Min. mA IEE	Availability	'92 Data Bk Page No.
		tAA	tww			
SY10/100/101422-3	256 x 4 ECL RAM	3	3	-250	NOW	2-1
SY10/100/101422-4	256 x 4 ECL RAM	4	4	-250	NOW	2-1
SY10/100/101474-3	1K x 4 ECL RAM	3	3	-300	NOW	2-7
SY10/100/101474-4	1K x 4 ECL RAM	4	4	-300	NOW	2-7
SY10/100/101480-6	16K x 1 ECL RAM	6	6	-260	NOW	2-13
SY10/100/101480-8	16K x 1 ECL RAM	8	10	-260	NOW	2-19
SY10/100/101480-10	16K x 1 ECL RAM	10	10	-220	NOW	2-19
SY10/100/101484-4.5	4K x 4 ECL RAM	4.5	4.5	-350	NOW	2-25
SY10/100/101484-5	4K x 4 ECL RAM	5	5	-350	NOW	2-25
SY10/100/101484-6	4K x 4 ECL RAM	6	6	-350	NOW	2-25
SY101492-5	2K x 9 Advanced ECL STRAM	5	5	-500	*	2-32
SY101492-6	2K x 9 Advanced ECL STRAM	6	6	-450	*	2-32
SY10/100/101494-5	16K x 4 ECL RAM	5	5	-395	NOW	2-45
SY10/100/101494-6	16K x 4 ECL RAM	6	6	-395	NOW	2-45
SY10/100/101494-7	16K x 4 ECL RAM	7	7	-395	NOW	N/A

*Contact factory.

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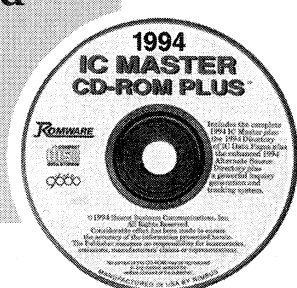
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Toshiba.

World Leader in Memory: Dynamic RAM.

Preliminary

262,144 Word x 16 Bit Multiport DRAM
Silicon Gate CMOS

TC524262SF/FT-60, TC524262SF/FT-70
TC524265SF/FT-60, TC524265SF/FT-70

The TC524262/265 is a 4Mb CMOS multiport memory equipped with a 262,144-word by 16-bit dynamic random access memory (RAM) port and a 512-word by 16-bit static serial access memory (SAM) port. The TC524262/265 supports three types of operations: Random access to and from the RAM port, high speed serial access from the SAM port and transfer of data from any selected row in the RAM to the SAM. To realize a high performance graphic frame buffer system the TC524262/265 features various special

operations such as the write-per-bit, the pipelined page mode, the block write and flash write function on the RAM port and the read transfer operations from the RAM to the SAM port. In addition, extended fast page mode is available where an output data remains valid when the CASL/CASU is high (TC524265 only). The TC524262/265 is fabricated using Toshiba's CMOS silicon gate process as well as advanced circuit designs to provide low power dissipation and wide operating margins.

FEATURES

	-60	-70
t_{RAC} RAS Access Time (Max.)	60ns	70ns
t_{CAC} CAS Access Time (Max.)	15ns	20ns
t_{AA} Column Address Access Time (Max.)	30ns	35ns
t_{RC} Cycle Time (Min.)	115ns	130ns
t_{PC} Page Mode Cycle Time (Min.)	35ns	40ns
t_{SCA} Serial Access Time (Max.)	15ns	20ns
t_{SCC} Serial Cycle Time (Min.)	18ns	23ns
t_{RACP} t_{RAC} In Pipelined Fast Page	85ns	90ns
t_{CAC1} t_{CAC} In Pipelined Fast Page	15ns	20ns
t_{PCP} Pipelined Fast Page Mode Cycle Time	30ns	30ns
I_{CC1} RAM Operating Current (SAM: Standby)	110mA	100mA
I_{CC2A} SAM Operating Current (RAM: Standby)	60mA	60mA
I_{CC2} Standby Current	10mA	10mA

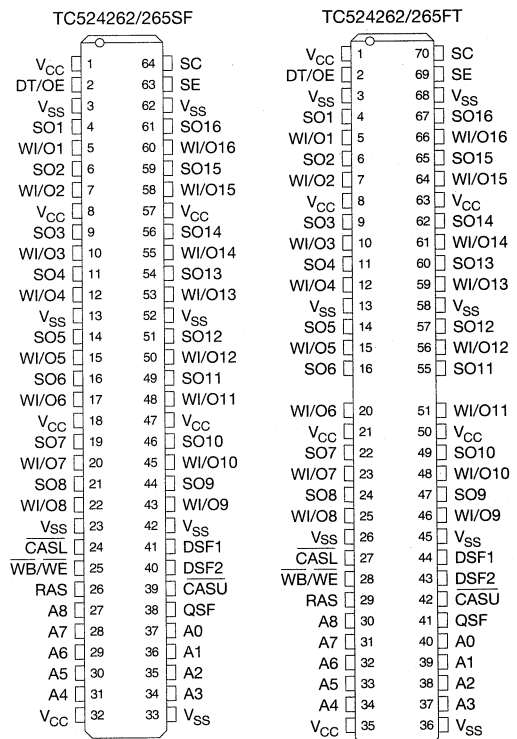
- ▶ **Single power supply of 5V±10% with a built-in V_{BB} generator**
- ▶ **All inputs and outputs TTL compatible**
- ▶ **Organization**
RAM Port: 262,144 Words x 16 Bits
SAM Port: 512 Words x 16 Bits
- ▶ **RAM Port**
Fast Page Mode (TC524262), Extended Fast Page Mode (TC524265), Read-Modify-Write, Pipelined Fast Page Mode, CAS before RAS Auto Refresh, Hidden Refresh, RAS only Refresh, Write per Bit (New/Old Mask Mode), Masked Flash Write (New/Old Mask Mode), Block Write, Masked Block Write (New/Old Mask Mode), Load Mask Register/Color Register Cycle, 512 refresh cycles/8ms
- ▶ **SAM Port**
Addressable TAP Capability
Stop Address (Binary Boundary) Capability
Fully Static Register
Single Register/Split Register Mode Capability
- ▶ **RAM-SAM Transfer**
Read/Real Time Read Transfer
Split Read Transfer
- ▶ **Package**
TC524262/265SF: SSOP64-P-525
TC524262/265FT: TSOP70-P-400

PIN NAMES

A0~A8	Address inputs
RAS	Row Address Strobe
CASL/CASU	Column Address Strobe
DT/OE	Data Transfer/Output Enable
WB/WE	Write per Bit/Write Enable
DSF1, DSF2	Special Function Control
W1/O1 ~ W1/O16	Write Mask/Data IN, OUT

SC	Serial Clock
SE	Serial Enable
SO1 ~ SO16	Serial Output
QSF	Special Flag Output
V_{CC}/V_{SS}	Power (5V)/Ground
NC	No Connection

PIN CONNECTION (TOP VIEW)



525mil SSOP (0.8mm pitch)

Toshiba

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

**262,144 Word x 16 Bit Multiport DRAM
Silicon Gate CMOS**

**TC524162SF/FT-60, TC524162SF/FT-70
TC524165SF/FT-60, TC524165SF/FT-70**

The TC524162/165 is a 4Mb CMOS multiport memory equipped with a 262,144-word by 16-bit dynamic random access memory (RAM) port and a 512-word by 16-bit static serial access memory (SAM) port. The TC524162/165 supports three types of operations: Random access to and from the RAM port, high speed serial access from the SAM port and transfer of data from any selected row in the RAM to the SAM. To realize a high performance graphic frame buffer system the TC524162/165 features various special

operations such as the write-per-bit, the pipelined page mode, the block write and flash write function on the RAM port and the read transfer operations from the RAM to the SAM port. In addition, extended fast page mode is available where an output data remains valid when the $\overline{\text{CAS}}$ is high (TC524165 only). The TC524162/165 is fabricated using Toshiba's CMOS silicon gate process as well as advanced circuit designs to provide low power dissipation and wide operating margins.

FEATURES

	-60	-70
t_{RAC} RAS Access Time (Max.)	60ns	70ns
t_{CAC} $\overline{\text{CAS}}$ Access Time (Max.)	15ns	20ns
t_{AA} Column Address Access Time (Max.)	30ns	35ns
t_{RC} Cycle Time (Min.)	115ns	130ns
t_{PC} Page Mode Cycle Time (Min.)	35ns	40ns
t_{SCA} Serial Access Time (Max.)	15ns	20ns
t_{SCC} Serial Cycle Time (Min.)	18ns	23ns
t_{RACP} t_{RAC} in Pipelined Fast Page	85ns	90ns
t_{CAC1} t_{CAC} in Pipelined Fast Page	15ns	20ns
t_{PCP} Pipelined Fast Page Mode Cycle Time	30ns	30ns
I_{CC1} RAM Operating Current (SAM: Standby)	110mA	100mA
I_{CC2A} SAM Operating Current (RAM: Standby)	60mA	60mA
I_{CC2} Standby Current	10mA	10mA

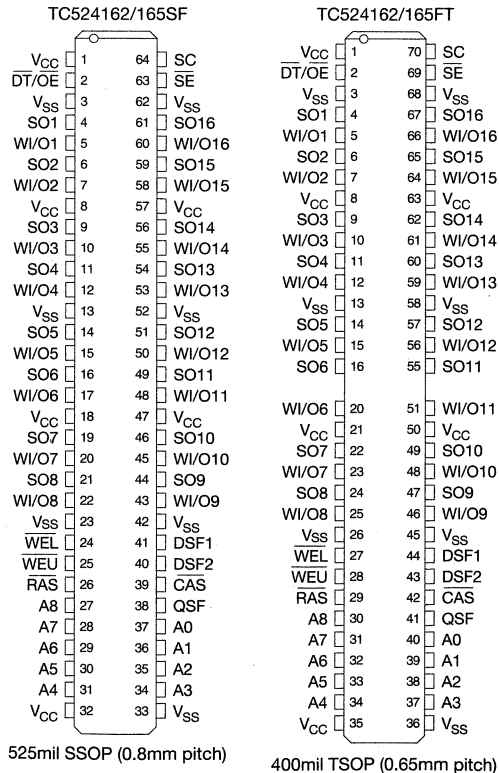
PIN NAMES

A0~A8	Address inputs
RAS	Row Address Strobe
$\overline{\text{CAS}}$	Column Address Strobe
$\overline{\text{DT/OE}}$	Data Transfer/Output Enable
WEL/WEU	Write per Bit/Write Enable
DSF1, DSF2	Special Function Control
W1/IO1~W16/IO16	Write Mask/Data IN, OUT
SC	Serial Clock
$\overline{\text{SE}}$	Serial Enable
SO1~SO16	Serial /Output
QSF	Special Flag Output
$V_{\text{CC}}/V_{\text{SS}}$	Power (5V)/Ground
NC	No Connection

Toshiba

- Single power supply of $5V \pm 10\%$ with a built-in V_{BB} generator
- All inputs and outputs TTL compatible
- Organization
RAM Port: 262,144 Words x 16 Bits
SAM Port: 512 Words x 16 Bits
- RAM Port
Fast Page Mode (TC524162)
Extended Fast Page Mode (TC524165)
Read-Modify-Write
Pipelined Fast Page Mode
CAS before RAS Auto Refresh
Hidden Refresh
RAS only Refresh
Write per Bit (New/Old Mask Mode)
Masked Flash Write (New/Old Mask Mode)
Block Write
Masked Block Write (New/Old Mask Mode)
Load Mask Register/Color Register Cycle
512 refresh cycles/8ms
- SAM Port
Addressable TAP Capability
Stop Address (Binary Boundary) Capability
Fully Static Register
Single Register/Split Register Mode Capability
- RAM-SAM Transfer
Read/Real Time Read Transfer
Split Read Transfer
- Package
TC524162/165SF: SSOP64-P-525
TC524162/165FT: TSOP70-P-400

PIN CONNECTION (TOP VIEW)



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

1,048,576 Word x 16 Bit Dynamic RAM
Toshiba MOS Digital Integrated Circuit
Silicon Gate CMOS

TC5116160AJ/AFT-60
TC5116160AJ/AFT-70

The TC5116160A is the new generation dynamic RAM organized 1,048,576 words by 16 bits. The TC5116160A utilizes Toshiba's CMOS silicon gate process technology as well as advanced circuit techniques to provide wide operating margins, both internally and to the system user.

Multiplexed address inputs permit the TC5116160A to be

packaged in 42 pin plastic SOJ and 50/44 pin plastic TSOP. The package size provides high system bit densities and is compatible with widely available automated testing and insertion equipment. System oriented features include single power supply of 5V±10% tolerance, direct interfacing capability with high performance logic families such as Schottky TTL.

FEATURES

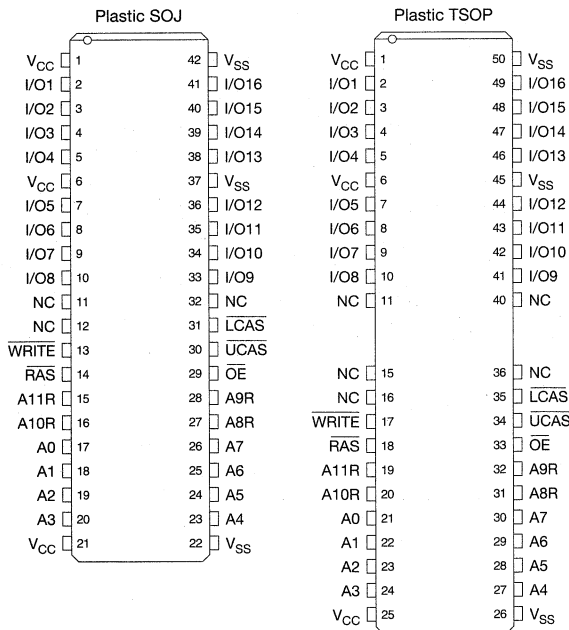
t _{RAC}	RAS Access Time	60ns	70ns
t _{AA}	Column Address Access Time	30ns	35ns
t _{CAC}	CAS Access Time	15ns	20ns
t _{RC}	Cycle Time	110ns	130ns
t _{PC}	Fast Page Mode Cycle Time	40ns	45ns

PIN NAMES

A0 ~ A11	Address Inputs
RAS	Row Address Strobe
UCAS	Column Address Strobe/Upper Byte Control
LCAS	Column Address Strobe/Lower Byte Control
WRITE	Read/Write Input
OE	Output Enable
I/O1 ~ I/O16	Data Input/Output
V _{CC}	Power (+5V)
V _{SS}	Ground
NC	No Connection

- 1,048,576 word by 16 bit organization
- Fast access time and cycle time
- Single power supply of 5V±10% with a built-in V_{BB} generator
- Low Power
523mW MAX. Operating (TC5116160AJ/AFT-60)
440mW MAX. Operating (TC5116160AJ/AFT-70)
5.5mW MAX. Standby
- Outputs unlatched at cycle end allows two-dimensional chip selection
- Read-Modify-Write, CAS before RAS refresh, RAS-only refresh, Hidden refresh, and Fast Page Mode capability
- All inputs and outputs TTL compatible
- 4096 refresh cycles/64ms
- Package
TC5116160AJ: SOJ42-P-400
TC5116160AFT: TSOP50-P-400

PIN CONNECTION (TOP VIEW)



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

1,048,576 Word x 16 Bit Dynamic RAM Toshiba MOS Digital Integrated Circuit Silicon Gate CMOS	TC5118160AJ/AFT-70 TC5118160AJ/AFT-80
---	--

The TC5118160A is the new generation dynamic RAM organized 1,048,576 words by 16 bits. The TC5118160A utilizes Toshiba's CMOS silicon gate process technology as well as advanced circuit techniques to provide wide operating margins, both internally and to the system user. Multiplexed address inputs permit the TC5118160A to be packaged in 42 pin plastic SOJ and 50/44 pin plastic

TSOP. The package size provides high system bit densities and is compatible with widely available automated testing and insertion equipment. System oriented features include single power supply of 5V±10% tolerance, direct interfacing capability with high performance logic families such as Schottky TTL.

FEATURES

t _{RAC} $\overline{\text{RAS}}$ Access Time	70ns	80ns
t _{AA} Column Address Access Time	35ns	40ns
t _{CAC} $\overline{\text{CAS}}$ Access Time	20ns	20ns
t _{RC} Cycle Time	130ns	150ns
t _{PC} Fast Page Mode Cycle Time	45ns	50ns

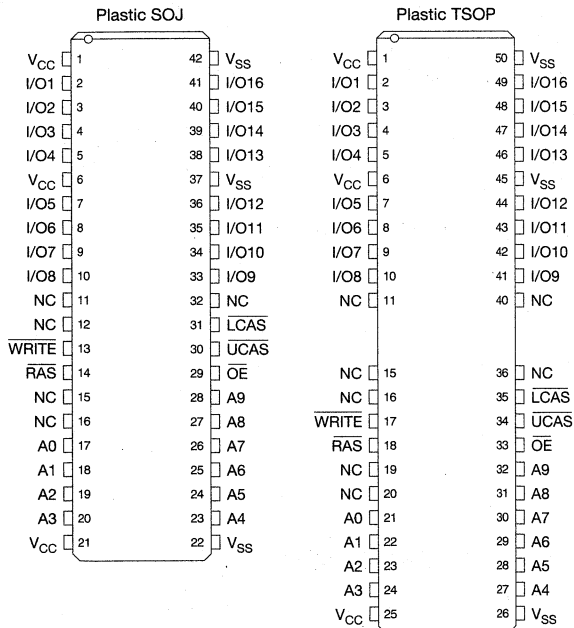
- 1,048,576 word by 16 bit organization
- Fast access time and cycle time
- Single power supply of 5V±10% with a built-in V_{BB} generator
- Low Power
770mW MAX. Operating (TC5118160AJ/AFT-70)
660mW MAX. Operating (TC5118160AJ/AFT-80)
5.5mW MAX. Standby
- Outputs unlatched at cycle end allows two-dimensional chip selection
- Read-Modify-Write, $\overline{\text{CAS}}$ before $\overline{\text{RAS}}$ refresh, $\overline{\text{RAS}}$ -only refresh, Hidden refresh, and Fast Page Mode capability
- All inputs and outputs TTL compatible
- 1024 refresh cycles/16ms
- Package
TC5118160AJ: SOJ42-P-400
TC5118160AFT: TSOP50-P-400

PIN NAMES

A0 ~ A9	Address Inputs
$\overline{\text{RAS}}$	Row Address Strobe
$\overline{\text{UCAS}}$	Column Address Strobe/Upper Byte Control
$\overline{\text{LCAS}}$	Column Address Strobe/Lower Byte Control
WRITE	Read/Write Input
$\overline{\text{OE}}$	Output Enable
I/O1 ~ I/O16	Data Input/Output
V _{CC}	Power (+5V)
V _{SS}	Ground
NC	No Connection

Toshiba

PIN CONNECTION (TOP VIEW)



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

2,097,152 Word x 8 Bit Dynamic RAM
Toshiba MOS Digital Integrated Circuit
Silicon Gate CMOS

TC5117800ANJ/ANT-60
TC5117800ANJ/ANT-70

The TC5117800A series is Toshiba's new generation dynamic RAM organized 2,097,152 words by 8 bits. The TC5117800A series utilizes Toshiba's CMOS silicon gate process technology as well as advanced circuit techniques to provide wide operating margins, both internally and to the system user.

Multiplexed address inputs permit the TC5117800ANJ/ANT

to be packaged in 28 pin plastic SOJ and 28 pin plastic TSOP. The package size provides high system bit densities and is compatible with widely available automated testing and insertion equipment. System oriented features include single power supply of 5V±10% tolerance, direct interfacing capability with high performance logic families such as Schottky TTL.

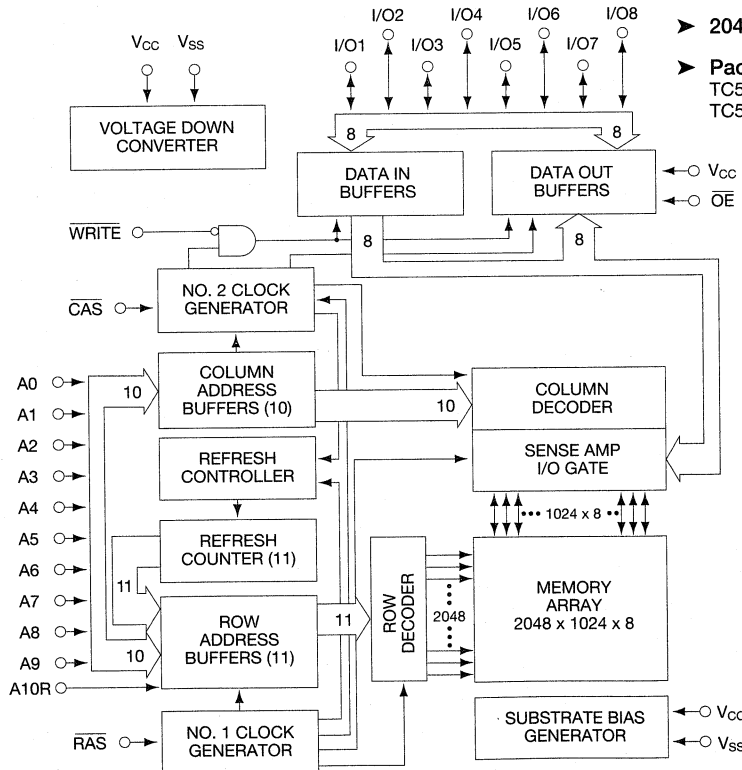
FEATURES

- 2,097,152 word by 8 bit organization
- Fast access time and cycle time:

t _{RAC}	$\overline{\text{RAS}}$ Access Time	60ns	70ns
t _{AA}	Column Address Access Time	30ns	35ns
t _{CAC}	$\overline{\text{CAS}}$ Access Time	15ns	20ns
t _{RC}	Cycle Time	110ns	130ns
t _{PC}	Fast Page Mode Cycle Time	40ns	45ns

- Single power supply of 5V±10% with a built-in V_{BB} generator
- Low Power
 633mW MAX. Operating (60ns Version)
 523mW MAX. Operating (70ns Version)
 5.5mW MAX. Standby
- Outputs unlatched at cycle end allow two-dimensional chip selection
- Read-Modify-Write, $\overline{\text{CAS}}$ before $\overline{\text{RAS}}$ refresh, $\overline{\text{RAS}}$ -only refresh, Hidden refresh, Fast Page Mode and Test Mode capability

BLOCK DIAGRAM



- All inputs and outputs TTL compatible
- 2048 refresh cycles/32ms
- Package
 TC5117800ANJ: SOJ28-P-400C
 TC5117800ANT: TSOP-28-P-400

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

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Toshiba

Toshiba.

World Leader in Memory: Static RAM.

Preliminary

524,288 Word x 8 Bit Static RAM
Silicon Gate CMOS

TC554002PL/FL/FTL/TRL-55, -70, -85, -10

The TC554002PL is a 4,194,304 bit static random access memory organized as 524,288 words by 8 bits and operated from a single 5V supply. Advanced circuit techniques provide both high speed and low power features with an operating current of 5mA/MHz (Typ.) and a minimum cycle time of 55ns. The TC554002PL has two control inputs. The chip enable input (CE) allows for device selection and data retention control. When CE is a logical high, the device is placed in a low power standby

mode in which the standby current is 100µA. The output enable input (OE) provides fast memory access. The TC554002PL is suitable for use in microprocessor applications where high speed, low power, and battery backup are required.

The TC554002PL is offered in a dual-in-line 32 pin standard plastic package, small outline plastic package and thin small outline plastic package (forward or reverse type).

FEATURES

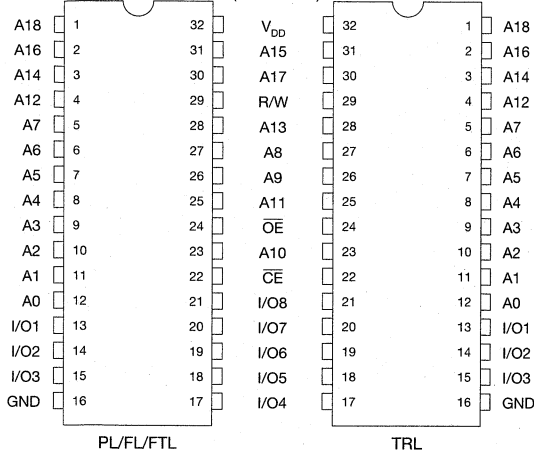
ACCESS TIME (Max.)	TC554002PL/FL/FTL/TRL			
	-55	-70	-85	-10
Access Time	55ns	70ns	85ns	100ns
CE Access Time	55ns	70ns	85ns	100ns
OE Access Time	30ns	35ns	45ns	50ns

- **Low power dissipation:**
Operation: 80mA (MAX.)
Standby: 100µA (MAX.)
- **Single power supply: 5V ± 10%**
- **Data retention supply voltage: 2.0 ~ 5.5V**
- **All inputs and outputs TTL compatible**
- **Package:**
TC554002PL: DIP32-P-600
TC554002FL: SOP32-P-525
TC554002FTL: TSOP32-P-400
TC554002TRL: TSOP32-P-400A

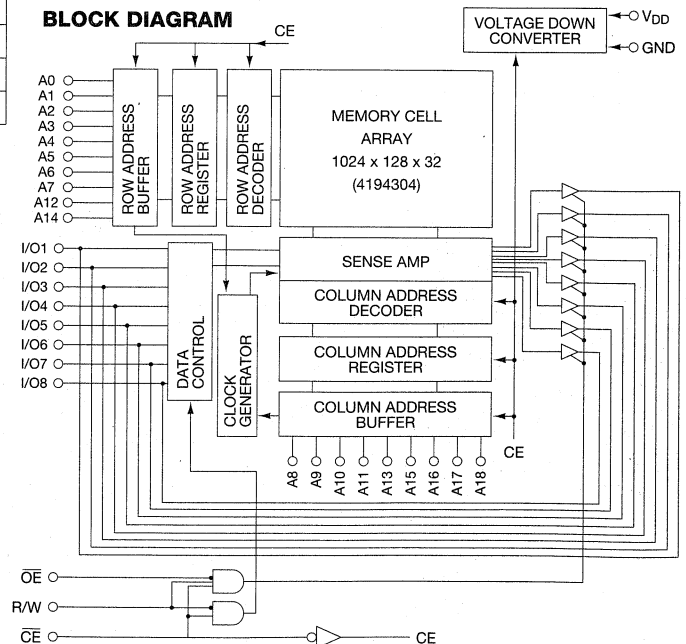
PIN NAMES

A0~A18	Address Inputs
R/W	Read/Write Control Input
OE	Output Enable Input
CE	Chip Enable Input
I/O1~I/O8	Data Input/Output
V _{DD}	Power
GND	Ground

PIN CONNECTION (TOP VIEW)



BLOCK DIAGRAM



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

**32,768 Word x 8 Bit CMOS Static RAM
Silicon Gate CMOS**

**TC55V328J-20
TC55V328J-25
TC55V328J-35**

The TC55V328J is a 262,144 bit high speed static random access memory organized as 32,768 words by 8 bits and operated from a single 3.3-volt supply. Toshiba's CMOS technology and advanced circuit design enable low voltage high speed operation.

The TC55V328J is suitable for use in portable computer cache memory or other applications where high speed and low voltage operation is required. All inputs and outputs are LVTTTL compatible.

The TC55V328J features a low power dissipation standby mode when the SRAM is deselected using chip enable (CE), and has an output enable input (OE) for fast memory access.

The TC55V328J is available in a 28 pin, 300mil SOJ package suitable for high density assembly.

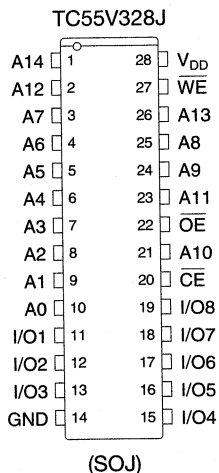
FEATURES

- ▶ **Fast access time:**
 TC55V328J-20 20ns (MAX.)
 TC55V328J-25 25ns (MAX.)
 TC55V328J-35 35ns (MAX.)
- ▶ **Low power dissipation:**
 Operation: TC55V328J-20 70mA (MAX.)
 TC55V328J-25 70mA (MAX.)
 TC55V328J-35 70mA (MAX.)
 Standby: 300µA (MAX.)
- ▶ **Single power supply: 3.3V ± 0.3V**
- ▶ **Fully static operation**
- ▶ **Inputs and outputs LVTTTL compatible**
- ▶ **Output buffer control: OE**
- ▶ **Package:**
 TC55V328J : SOJ28-P-300A

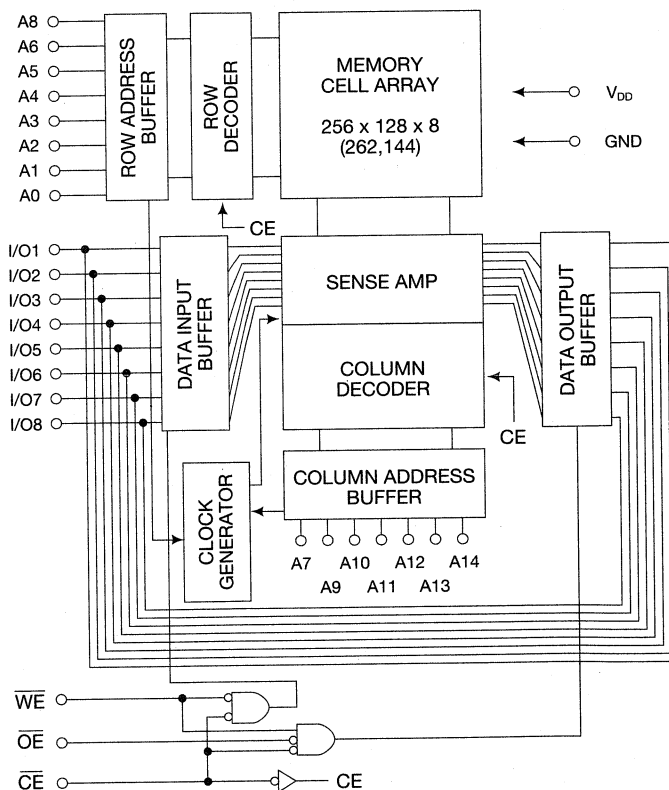
PIN NAMES

A0 ~ A14	Address Inputs
I/O1 ~ I/O8	Data Inputs/Outputs
CE	Chip Enable Input
WE	Write Enable Input
OE	Output Enable Input
V _{DD}	Power (+ 3.3V)
GND	Ground

PIN CONNECTION (TOP VIEW)



BLOCK DIAGRAM



Toshiba

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

**262,144 Word x 4 Bit Synchronous Static RAM
Silicon Gate BiCMOS**

**TC55BS4258J-10
TC55BS4258J-12**

The TC55BS4258J is a 1,048,576 bit synchronous static random access memory fabricated using BiCMOS technology and organized as 262,144 words by 4 bits.

Designed for pipelined architectures, this device has internal input and output registers which are triggered on the positive edge of an external clock (CLK). For read cycles, data is output one clock cycle after the address is

presented. Write operations are internally self-timed and are initiated on the positive edge of CLK. A write cycle pass-through feature allows outputs to follow inputs with a one cycle delay if output is enabled. All inputs and outputs are TTL compatible.

The TC55BS4258J is available in a 36 pin, 400mil SOJ package suitable for high density assembly.

FEATURES

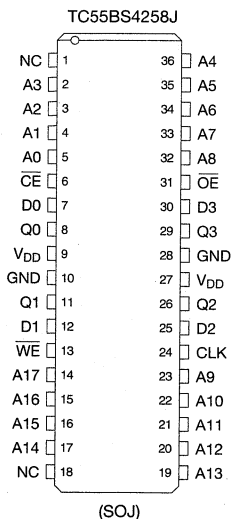
- **Fast cycle time:**
TC55BS4258J-10: 10ns (MAX.)
TC55BS4258J-12: 12ns (MAX.)
- **Fast clock access time:**
TC55BS4258J-10: 5ns (MAX.)
TC55BS4258J-12: 6ns (MAX.)
- **Input and output registers for synchronous operation**
- **Pass-through mode in write cycle**
- **Single power supply: 5V±10%**
- **Separate data inputs and outputs**
- **Inputs and outputs TTL compatible**
- **Package:**
JEDEC standard pinout
36 pin, 400mil SOJ
(SOJ36-P-400)

PIN NAMES

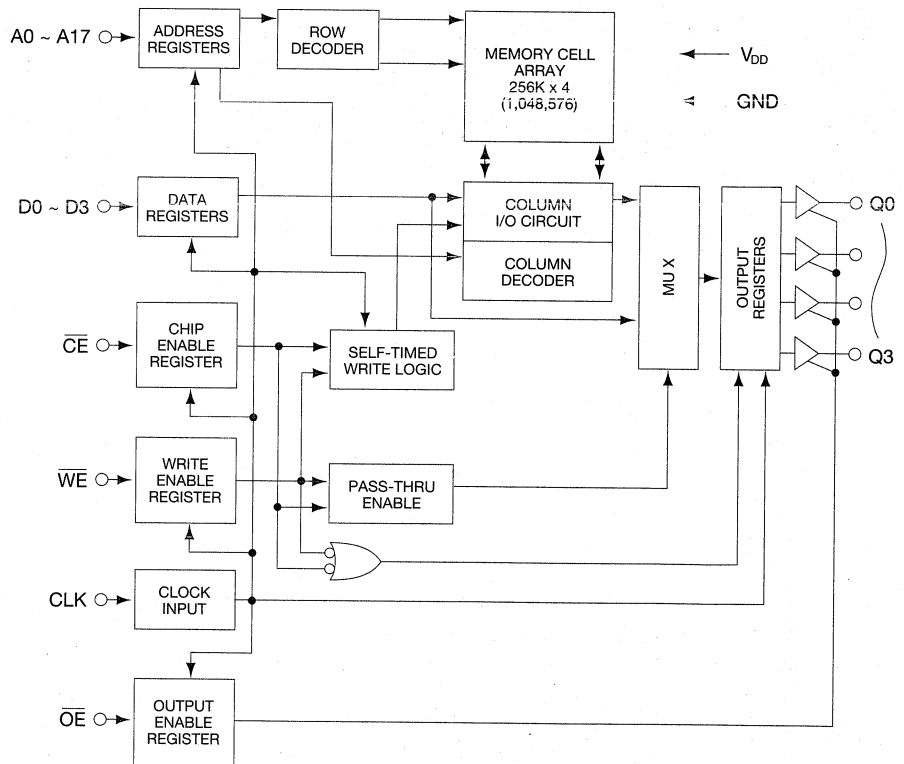
A0 ~ A17	Address Inputs
D0 ~ D3	Data Inputs
Q0 ~ Q3	Data Outputs
CLK	Clock Input
CE	Chip Enable Input
WE	Write Enable Input
OE	Output Enable Input
V _{DD}	Power
GND	Ground
NC	No Connection

Toshiba

PIN CONNECTION (TOP VIEW)



BLOCK DIAGRAM



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

**131,072 Word x 8 Bit Synchronous Static RAM
with input registers, output registers and pass-through function
Silicon Gate BiCMOS**

**TC55BS8128J-10
TC55BS8128J-12**

The TC55BS8128J is a 1,048,576 bit synchronous static random access memory fabricated using BiCMOS technology and organized as 131,072 words by 8 bits.

Designed for pipelined architectures, this device has internal input and output registers which are triggered on the positive edge of an external clock (CLK). For read cycles, data is output one clock cycle after the address is

presented. Write operations are internally self-timed and are initiated on the positive edge of CLK. A write cycle pass-through feature allows outputs to follow inputs with a one cycle delay. All inputs and outputs are TTL compatible.

The TC55BS8128J is available in a 40 pin, 400mil SOJ package suitable for high density assembly.

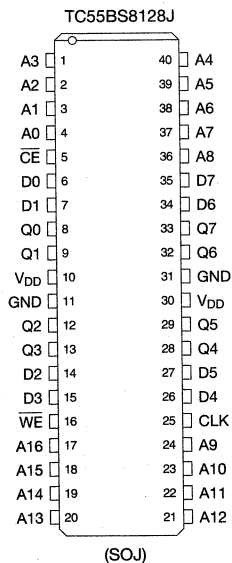
FEATURES

- **Fast cycle time:**
TC55BS8128J-10: 10ns (MAX.)
TC55BS8128J-12: 12ns (MAX.)
- **Fast clock access time:**
TC55BS8128J-10: 5ns (MAX.)
TC55BS8128J-12: 6ns (MAX.)
- **Input and output registers for synchronous operation**
- **Pass-through mode in write cycle**
- **Single power supply: 5V±10%**
- **Separate data inputs and outputs**
- **Inputs and outputs TTL compatible**
- **Package:**
JEDEC standard pinout
40 pin, 400mil SOJ
(SOJ40-P-400)

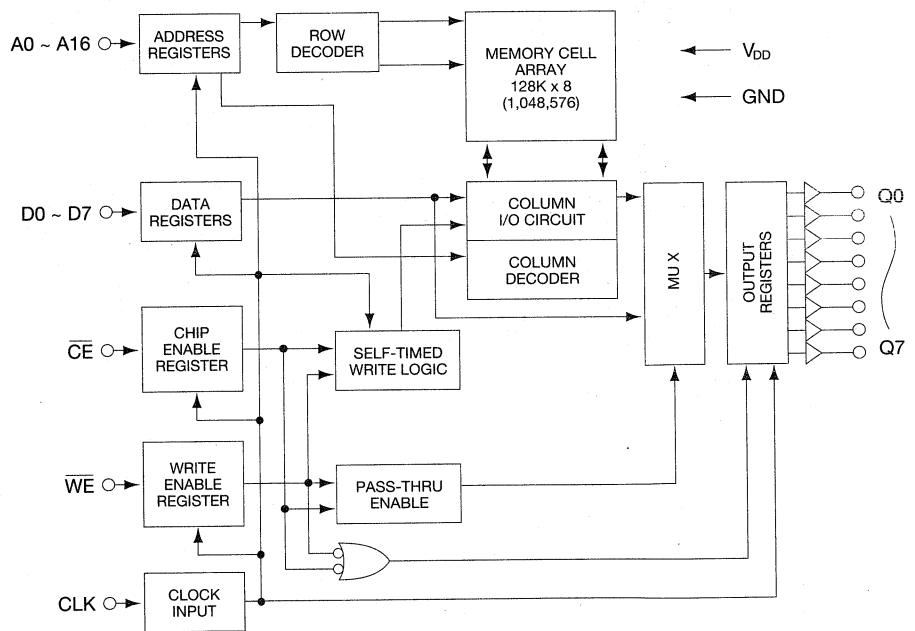
PIN NAMES

A0 ~ A16	Address Inputs
D0 ~ D7	Data Inputs
Q0 ~ Q7	Data Outputs
CLK	Clock Input
CE	Chip Enable Input
WE	Write Enable Input
V _{DD}	Power
GND	Ground

PIN CONNECTION (TOP VIEW)



BLOCK DIAGRAM



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

**131,072 Word x 8 Bit Synchronous Static RAM
with input registers, output registers
Silicon Gate BiCMOS**

**TC55BS8125J-10
TC55BS8125J-12**

The TC55BS8125J is a 1,048,576 bit synchronous static random access memory fabricated using BiCMOS technology and organized as 131,072 words by 8 bits.

Designed for pipelined architectures, this device has internal input and output registers which are triggered on the positive edge of an external clock (CLK). For read

cycles, data is output one clock cycle after the address is presented. Write operations are internally self-timed and are initiated on the positive edge of CLK. All inputs and outputs are TTL compatible.

The TC55BS8125J is available in a 36 pin, 400mil SOJ package suitable for high density assembly.

FEATURES

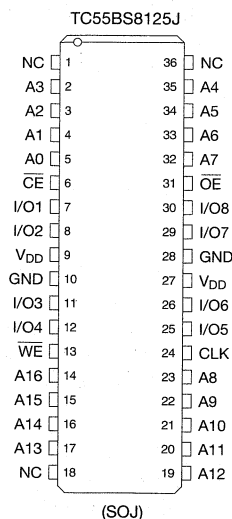
- **Fast cycle time:**
TC55BS8125J-10: 10ns (MAX.)
TC55BS8125J-12: 12ns (MAX.)
- **Fast clock access time:**
TC55BS8125J-10: 5ns (MAX.)
TC55BS8125J-12: 6ns (MAX.)
- **Input and output registers for synchronous operation**
- **Single power supply: 5V±10%**
- **Common data I/O**
- **Inputs and outputs TTL compatible**
- **Package:**
JEDEC standard pinout
36 pin, 400mil SOJ
(SOJ36-P-400)

PIN NAMES

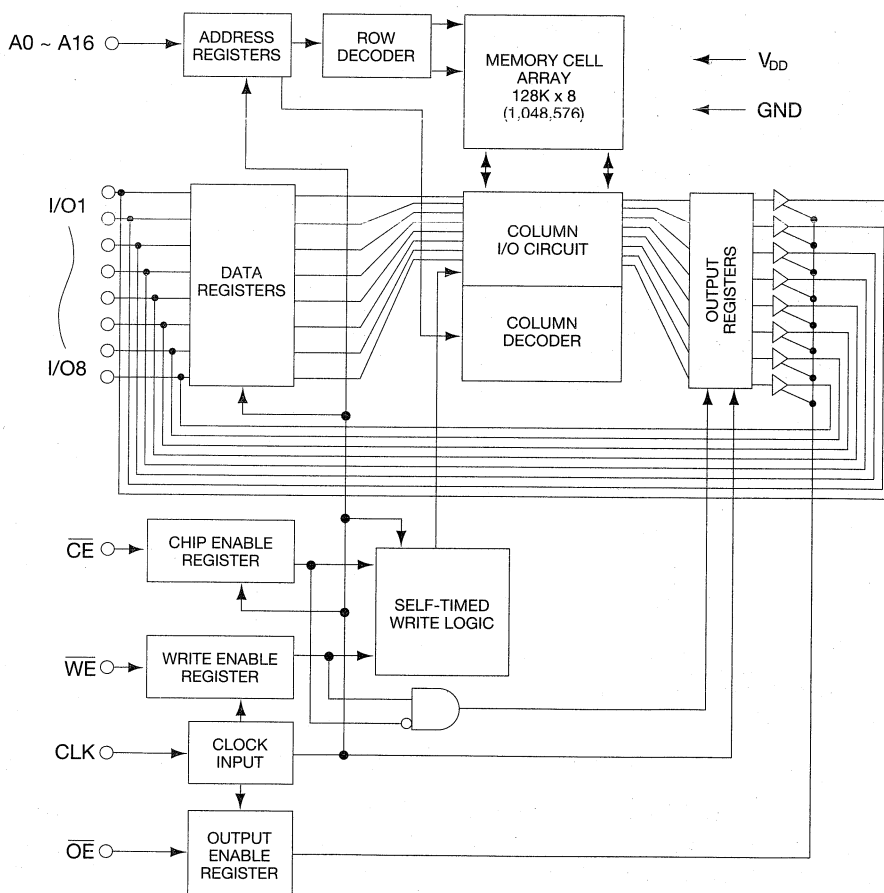
A0 ~ A16	Address Inputs
I/O1 ~ I/O8	Data Input and Output
CLK	Clock Input
\overline{CE}	Chip Enable Input
\overline{WE}	Write Enable Input
\overline{OE}	Output Enable Input
V _{DD}	Power
GND	Ground
NC	No Connection

Toshiba

PIN CONNECTION (TOP VIEW)



BLOCK DIAGRAM



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

**4,194,304 Word x 1 Bit/1,048,576 Word x 4 Bit CMOS Static RAM
Silicon Gate CMOS**

**TC551402J-20
TC551402J-25
TC551402J-30**

The TC551402J is a 4,194,304 bit high speed CMOS static random access memory. It is configurable to an organization of either 4,194,304 words by 1 bit or 1,048,576 words by 4 bits and operates from a single 5V supply. Toshiba's CMOS technology and advanced circuit design enable high speed operation.

mode when the SRAM is deselected using chip enable (CE), and has output enable (OE) for fast memory access. It is suitable for use in high speed applications such as cache memory, high speed storage, and main memory. All inputs and outputs are TTL compatible.

The TC551402J features a low power dissipation standby

The TC551402J is available in a 32 pin, 400mil SOJ package suitable for high density assembly.

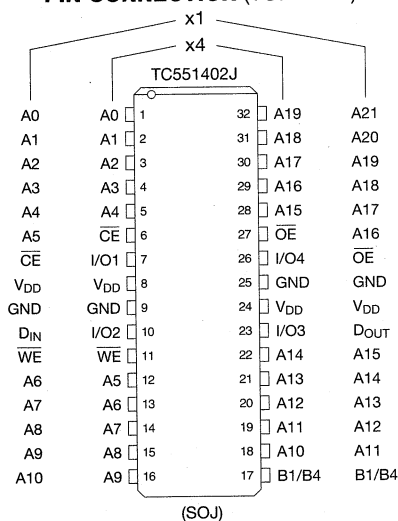
FEATURES

- ▶ **Fast access time:**
TC551402J-20: 20ns (MAX.)
TC551402J-25: 25ns (MAX.)
TC551402J-30: 30ns (MAX.)
- ▶ **Low power dissipation:**
Operation:
TC551402J-20: 160mA (MAX.)
TC551402J-25: 160mA (MAX.)
TC551402J-30: 150mA (MAX.)
Standby: 10mA (MAX.)
- ▶ **Single power supply: 5V±10%**
- ▶ **Fully static operation**
- ▶ **Inputs and outputs TTL compatible**
- ▶ **Separate data I/O (x1 mode), Common data I/O (x4 mode)**
- ▶ **Output buffer control: OE**
- ▶ **Package:**
32 pin, 400mil SOJ (SOJ32-P-400A)

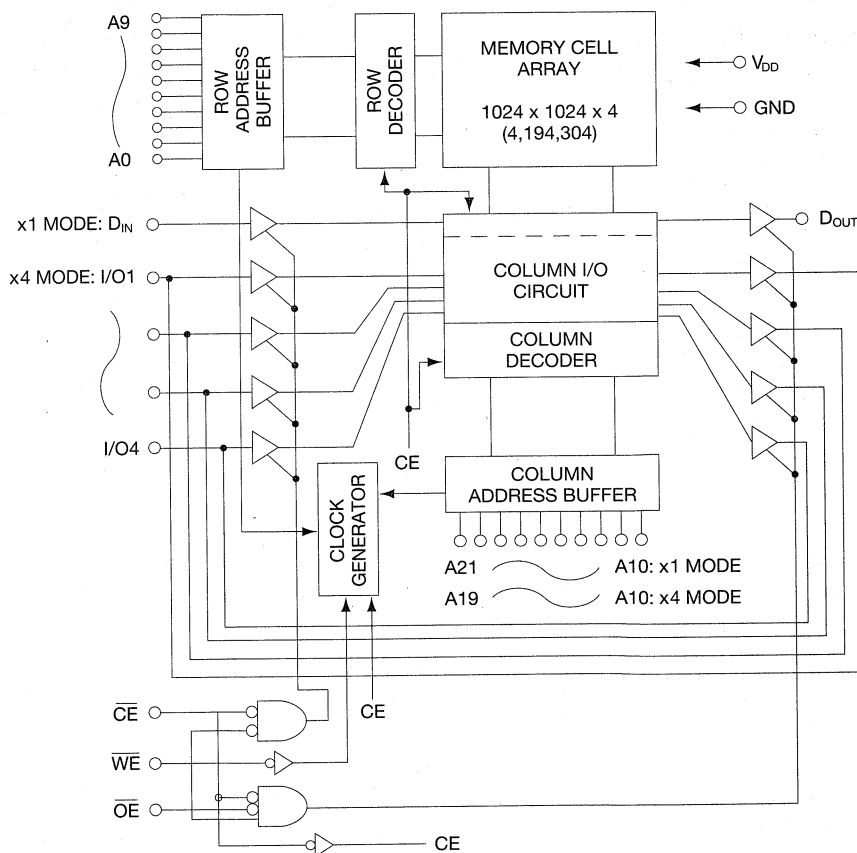
PIN NAMES

A0 ~ A21	Address Inputs
I/O1 ~ I/O4	Data Inputs/Outputs
D _{IN}	Data Input
D _{OUT}	Data Output
CE	Chip Enable Input
WE	Write Enable Input
OE	Output Enable Input
V _{DD}	Power (+5V)
GND	Ground
B1/B4	Bits: x1, x4

PIN CONNECTION (TOP VIEW)



BLOCK DIAGRAM



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Toshiba Mask ROM.

Economy at the Leading Edge.

Preliminary

16Mb (1M Words x 16 Bits/2M Words x 8 Bits) CMOS Mask ROM
Toshiba MOS Integrated Circuit
Silicon Gate CMOS

TC5316210BP/BF/BFT

The TC5316210BP/BF/BFT is a 16,777,216 bit read-only memory organized as 1,048,576 words by 16 bits when BYTE is logical high, and organized as 2,097,152 words by 8 bits when BYTE is logical low.

The TC5316210BP/BF/BFT is highly suitable for use as program memory, data memory or character generation.

Page read mode allows two to eight words of 16 bit data to be quickly read in the same page. \overline{CE} and address lines A3..A19 must not change during a page read. Page read access time is 60ns.

The TC5316210BP/BF/BFT is packaged in a standard 600mil 42 pin DIP, 600mil 44 pin SOP, or 400mil 44 pin TYPE II TSOP.

PIN NAMES

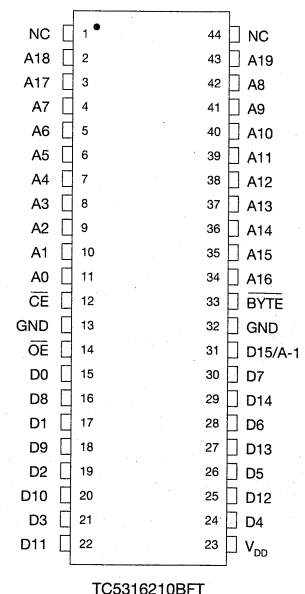
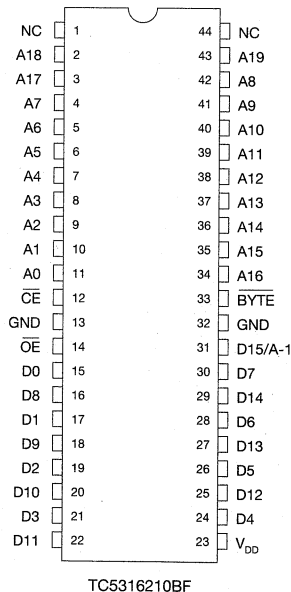
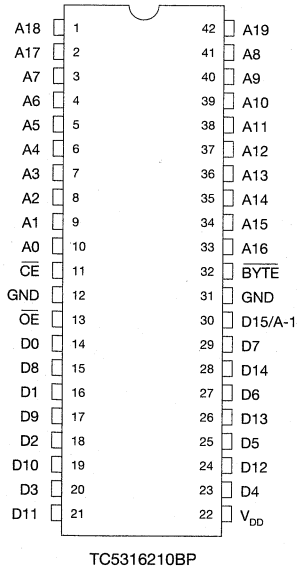
A0-A19	Address Inputs
D0-D14	Data Outputs
\overline{CE}	Chip Enable Input
\overline{OE}	Output Enable Input
D15/A-1	Data Output/Address Input
\overline{BYTE}	Word, Byte Selection Input
V_{DD}	Power Supply
GND	Ground
NC	No Connection

FEATURES

- Single 5V Power Supply
- Access Time
Normal Mode: 150ns (Max.)
Page Access Mode: 60ns (Max.)
- Power Dissipation
Operating Current: 150mA (Max.)
Standby Current: 1mA (Max.)
- Fully Static Operation
- All inputs and outputs TTL compatible
- Three State Outputs
- TC5316210BP: DIP42-P-600
- TC5316210BF: SOP44-P-600
- TC5316210BFT:
TSOP44-P-400

Toshiba

PIN CONNECTION (TOP VIEW)



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

16Mb (2M Words x 8 Bits) CMOS NAND EEPROM
Toshiba MOS Integrated Circuit
Silicon Gate CMOS

TC5816FT/TR

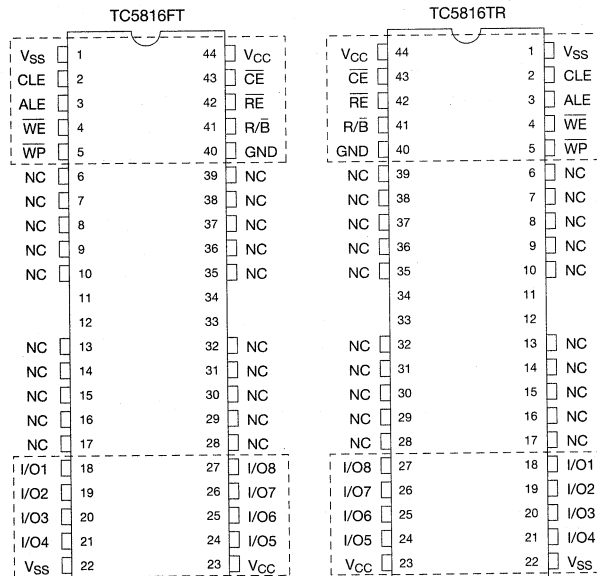
The TC5816FT/TR device is a single 5 volt 16.5Mb NAND Electrically Erasable and Programmable Read Only Memory (NAND EEPROM) organized as 264 bytes x 16 pages x 512 blocks. The device has a 264-byte static register which allows program and read data to be transferred between the register and the memory cell array in 264-byte increments. The erase operation is implemented in either a single block unit (4KB + 128 bytes: 264 bytes x 16 pages) or multiple blocks at the same time.

The TC5816FT/TR is a serial type of memory device which utilizes the I/O pins for both address and data input/output as well as command inputs. The erase and program operations are automatically executed making the device most suitable for applications such as solid state file storage, voice recording, image file memory for still cameras and other systems which require large density, non-volatile memory data storage.

PIN ASSIGNMENT

CLE	Command Latch Enable
ALE	Address Latch Enable
CE	Chip Enable
WE	Write Enable
RE	Read Enable
WP	Write Protect
I/O 1-8	Input/Output
V _{CC} /V _{SS}	5V/GND

PIN CONNECTION (TOP VIEW)



FEATURES

- ▶ **Organization**
 Memory cell array: 264 bytes x 8K pages
 Register: 264 bytes
 Page Size: (256+8) bytes
 Block Size: (4K+128) bytes
- ▶ **User Features**
 Auto page programming
 Auto block multi-block erase
 Multiplexed address and data lines
 Additional memory bits on each page for error correction, etc.
 Separate Ready/Busy pin
 Protection pin to prevent accidental Write/Erase
 Suspend/resume interrupt capability
 Device status read bits available
- ▶ **Access Time**
 Cell array-register: 25µs max.
 Serial access: 80ns max.
- ▶ **Mode Control**
 Serial input/output
 Command control
- ▶ **W/E Cycle: 10⁶ cycles (target)**
- ▶ **Power supply: V_{CC} = 5V ± 5%**
- ▶ **Program/Erase Time**
 Program: Average 300µs/264 bytes
 Block Erase: Typical 6ms
- ▶ **Operating Current**
 Read (80ns cycle): 15mA typ.
 Program (ave.): 40mA typ.
 Erase (ave.): 20mA typ.
 Standby: 100µA
- ▶ **Package: 400 mil TSOP Type II**
 T5816FT: TSOP44-P-400B
 TC5816TR: TSOP44-P-400C

Toshiba

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Toshiba. Wide Selection of Processors.

4-Bit Microcontrollers

Toshiba offers a large variety of 4-bit microcontrollers with on-board functions including LCD, LED, VFD, PWM outputs, watchdog timers, SIO, A/D, D/A, dual clock, beep output, DTMF generator and standard timer/counters. These microcontrollers can be used in a wide range of applications, such as appliances, industrial

controllers, telephones, televisions, VCRs, lighting equipment, meters and most other consumer applications. To make code development simple, Toshiba offers In-Circuit Emulators, piggybacks, EPROMs, and One Time Programmable Devices.

TLCS42 Series

Type	ROM (bit)	RAM (bit)	I/O Port (bit)	MIN. Instruction Execution Time (μ S)	Supply Voltage (V)	Package	Piggyback Board	Function
TMP42C40P	512 x 8	32 x 4	11	1.0 (2.5)	4.5~5.5 (4.0~6.0)	DIP16	BM4211A	Standard
TMP42C60P	1024 x 8	32 x 4	11	1.0 (2.5)	4.5~5.5 (4.0~6.0)	DIP16	BM4211A	
TMP42C50N/M	512 x 8	32 x 4	23	1.0 (2.5)	4.5~5.5 (4.0~6.0)	SDIP/SOP28	BM4211A	
TMP42C70N/M	1024 x 8	32 x 4	23	1.0 (2.5)	4.5~5.5 (4.0~6.0)	SDIP/SOP28	BM4211A	
TMP42C66P	1024 x 8	32 x 4	15	1.0 (2.5)	4.5~5.5 (4.0~6.0)	DIP20	BM4212	Pulse (remote-controlled) output circuit AC zero-crossing detection circuit
TMP42C00Y	External (1024 x 8)	32 x 4	23	1.0 (2.5)	4.5~5.5 (4.0~6.0)	PGA64	—	Evaluator Chip

Toshiba

TLCS47E Series

Type	ROM (byte)	RAM (nibble)	I/O Port	MIN. Instruction Execution Time (μ S)	Line Voltage (V)	Package	Piggyback (conversion adapter)	OTP Version (EPROM writer connection adapter)	Function
TMP47C101P/M	1K	64	11	1.3	2.2~5.5	DIP16 SOP16	TMP47C990E (BM1160)	TMP47P201VP	LED Driver
TMP47C201P/M	2K	128	11	1.3	2.2~5.5	DIP16 SOP16	TMP47C990E (BM1160)	TMP47P201VP	
TMP47C102P/M	1K	64	15	1.3	2.2~5.5	DIP20 SOP20	—	(planned)	
TMP47C202P/M	2K	128	15	1.3	2.2~5.5	DIP20 SOP20	—	(planned)	
TMP47C103N/M	1K	64	23	1.3	2.2~5.5	SDIP28 SOP28	—	TMP47P403VN/M (BM1140/BM1141)	8-bit SIO LED Driver
TMP47C203N/M	2K	128	23	1.3	2.2~5.5	SDIP28 SOP28	—	TMP47P403VN/M (BM1140/BM1141)	
TMP47C241N/M	2K	128	21	1.3	2.7~6.0	SDIP28 SOP28	TMP47C940AE (BM1152)	TMP47P241VN/M (BM1156/BM1157)	A/D Converter LED Driver

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

TLCS47 Series (CMOS)

Type	ROM (byte)	RAM (nibble)	I/O Port	MIN. Instruction Execution Time (μS)	Line Voltage (V)	Package	Piggyback (conversion adapter)	OTP Version (EPROM writer connection adapter)	Function
TMP47C200BN/F	2K	128	36	1.9	2.7-6.0	SDIP42 QFP44	TMP47C990E/G	TMP47P400AN/F (BM1118/BM1125)	Standard (LED driver)
TMP47C400BN/F	4K	256	36	1.9	2.7-6.0	SDIP42 QFP44	TMP47C990E/G	TMP47P400AN/F (BM1118/BM1125)	
TMP47C460AN/F	4K	256	58	1.9	4.5-6.0	SDIP64 QFP67	TMP47C960AE	—	
TMP47C210AN/F	2K	128	36	1.9	4.5-6.0	SDIP42 QFP44	TMP47C991E/G	TMP47P410AN/F (BM1118/BM1125)	VFT driver
TMP47C410AN/F	4K	256	36	1.9	4.5-6.0	SDIP42 QFP44	TMP47C991E/G	TMP47P403VN/M (BM1140/BM1141)	
TTMP47C212AN	2K	128	35	1.9	4.5-6.0	SDIP42	TMP47C991E/G	—	
TMP47C412AN	4K	256	35	1.9	4.5-6.0	SDIP42	TMP47C991E/G	—	VFT driver D/A conversion (PWM) output Watchdog timer
TMP47C475AN	4K	256	55	1.9 (244)	4.5-6.0	SDIP64	TMP47C975AE	—	
TMP47C221AF	2K	192	28	1.9	4.5-6.0	QFP64	TMP47C921AG	TMP47P421AF (BM1114)	LCD driver
TMP47C421AF	4K	256	28	1.9	4.5-6.0	QFP64	TMP47C921AG	TMP47P421AF (BM1114)	
TMP47C423AF	4K	256	28	1.9	4.5-6.0	QFP64	—	—	LCD driver High-speed event counter
TMP47C425AF	4K	256	27	1.9 (244)	4.5-6.0	QFP67	TMP47C925AG	—	LCD driver
TMP47C231AN	2K	128	24	1.9	4.5-6.0	SDIP30	TMP47C931AE (BM1103)	—	D/A conversion (PWM) output LED driver 4-bit A/D conversion input Remote control judgement circuit
TMP47C233AN	2K	128	36	1.9	4.5-6.0	SDIP42	TMP47C933AE	—	D/A conversion (PWM) output LED driver 3-bit A/D conversion input
TMP47C433AN	4K	256	36	1.9	4.5-6.0	SDIP42	TMP47C933AE	—	
TMP47C236AN	2K	128	20	1.9	4.5-6.0	SDIP30	—	—	D/A conversion (PWM) output LED driver 3-bit A/D conversion input On-screen display
TMP47C336AN	3K	192	20	1.9	4.5-6.0	SDIP30	—	—	
TMP47C237AN	2K	128	24	1.9	4.5-6.0	SDIP30	—	—	D/A conversion (PWM) output LED driver 3-bit A/D conversion input Bar display OSD
TMP47C337AN	3K	192	24	1.9	4.5-6.0	SDIP30	TMP47C937AE (BM1103)	—	
TMP47C242BN	2K	128	23	1.9	2.7-6.0	SDIP30	TMP47C940AE (BM1113)	TMP47P242VN (BM1124)	A/D converter Watchdog timer LED driver
TMP47C440AN/F	4K	256	34	1.9	4.5-6.0	SDIP42 QFP44	TMP47C940AE/G	TMP47P440AN/F (BM1118/BM1125)	
TMP47C441AN/F	4K	256	34	1.9	4.5-6.0	SDIP42 QFP44	TMP47C941AE/G	TMP47P441AN/F (BM1118/BM1125)	A/D converter Watchdog timer VFT driver
TMP47C446AF	4K	256	24	1.9 (244)	4.5-6.0	QFP64	TMP47C946AG	TMP47P446VF (BM1127)	A/D converter Watchdog timer LCD driver
TMP47C451BN	4K	768	23	16.7	2.2-6.0	SDIP30	TMP47C952AE (BM1104)	TMP47P451VN (BM1119)	DTMF generator
TMP47C452BN/F	4K	768	35	16.7	2.2-6.0	SDIP42 QFP44	TMP47C952AE/G	TMP47P452VN/F (BM1120/BM1121)	
TMP47C453AN/F	4K	768	35	8.3	2.2-6.0	SDIP42 QFP44	TMP47C953AE/G	TMP47P453VN/F (BM1120/BM1121)	
TMP47C454AN	4K	768	23	2.1	2.7-6.0	SDIP30	—	TMP47P454VN (BM1119)	
TMP47C407AN/F	4K	768	35	2.1	2.7-6.0	SDIP42 QFP44	—	TMP47P407VN/F (BM1120/BM1121)	
TMP47C456AF	4K	768	35	8.3 (244)	2.7-6.0	QFP80	TMP47C956AG	—	DTMF generator LCD driver

Note: (244) - indicates slow mode

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

Toshiba

TLCS470 Series

Type	ROM (byte)	RAM (nibble)	I/O Port	MIN. Instruction Execution Time (μS)	Line Voltage (V)	Package	Piggyback (conversion adapter)	OTP Version (EPROM writer connection adapter)	Function
TMP47C800N/F	8K	512	36	1.3 (244)	4.5-6.0	SDIP42 QFP44	TMP47C980E	TMP47P800N/F (BM1108/BM1111)	Standard (LED driver)
TMP47C620F	6K	384	36	1.3 (244)	4.5-6.0	QFP80	TMP47C020G	TMP47P820VF (BM1112)	LCD driver (32 x 4) High-speed timer/counter
TMP47C820F	8K	512	36	1.3 (244)	4.5-6.0	QFP80	TMP47C020G	TMP47P820VF (BM1112)	
TMP47C434N/F	4K	265	28	1.9	4.5-6.0	SDIP42 QFP44	TMP47C034E (BM1105)	—	On-screen display circuit D/A conversion (PWM) output 3-bit A/D conversion input Remote control signal preprocessing
TMP47C634N/F	6K	384	28	1.9	4.5-6.0	SDIP42 QFP44	TMP47C034E (BM1105)	—	
TMP47C635N	6K	384	41	1.9	4.5-6.0	SDIP54	TMP47C034E (BM1106)	—	
TMP47C834N/F	8K	512	28	1.9	4.5-6.0	SDIP42 QFP44	—	TMP47P834N (BM1117)	
TMP47C647F	6K	384	35	1.3 (244)	4.5-6.0	QFP80	—	TMP47P847VF (BM1135)	A/D converter (8-bit x 8-ch) LCD driver (32 x 4)
TMP47C847F	8K	512	35	1.3 (244)	4.5-6.0	QFP80	—	TMP47P847VF (BM1135)	
TMP47C850N/F	8K	512	52	2.23 (244)	4.5-5.5	SDIP64 QFP64	TMP47C050E TMP47C050G	*TMP47P850VN/F (BM1161/BM1165)	DTMF receiver 4-bit A/D conversion input
TMP47C655F	6K	896	36	8.3 (244)	2.2-6.0	QFP80	TMP47C055G	TMP47P855VF (BM1123)	LCD driver (32 x 4) DTMF generator
TMP47C855F	8K	1024	36	8.3 (244)	2.2-6.0	QFP80	TMP47C055G	TMP47P855VF (BM1123)	
TMP47C858F	8K	512	36	8.3 (244)	2.7-6.0	QFP100	TMP47C058G	—	LCD driver (44 x 10) DTMF generator
TMP47C660N/F	6K	384	56	1.3 (244)	4.5-6.0	SDIP64 QFP64	TMP47C060E	TMP47P860N/F (BM1102/BM1109)	A/D converter (8-bit x 8-ch) Remote control signal preprocessing LED driver
TMP47C860N/F	8K	512	56	1.3 (244)	4.5-6.0	SDIP64 QFP64	TMP47C060E	TMP47P860N/F (BM1102/BM1109)	
TMP47C662AN	6K	384	55	1.3 (244)	4.5-6.0	SDIP64	—	TMP47P862VN (BM1128)	A/D converter (8-bit x 8-ch) Remote control signal preprocessing LED driver Pulse Generator VFT driver (16 x 11)
TMP47C862AN	8K	512	55	1.3 (244)	4.5-6.0	SDIP64	—	TMP47P862VN (BM1128)	
TMP47C670N	6K	384	53	1.3 (244)	4.5-6.0	SDIP64	TMP47C070E	TMP47P870N (BM1107)	VFT driver (automatic) D/A conversion (PWM) output 4-bit A/D conversion input Remote control signal preprocessing
TMP47C870N	8K	512	53	1.3 (244)	4.5-6.0	SDIP64	TMP47C070E	TMP47P870N (BM1107)	

TLCS470A Series

Type	ROM (byte)	RAM (nibble)	I/O Port	MIN. Instruction Execution Time (μS)	Line Voltage (V)	Package	Piggyback (conversion adapter)	OTP Version (EPROM writer connection adapter)	Function
TMP47C1220F	12K	768	36	1.3 (244)	4.5-6.0	QFP80	—	TMP47P1620VF (BM1162)	LCD driver (32 x 4) High-speed timer/counter
TMP47C1620F	16K	768	36	1.3 (244)	4.5-6.0	QFP80	—	TMP47P1620VF (BM1162)	
TMP47C1237N	12K	512	32	1.3 (244)	4.5-6.0	SDIP42	TMP47C038E (BM1105)	TMP47P1637VN (*BM1168)	On-screen display circuit D/A conversion (PWM) output 4-bit A/D conversion input Remote control signal preprocessing
TMP47C1637N	16K	512	32	1.3 (244)	4.5-6.0	SDIP42	TMP47C038E (BM1105)	TMP47P1637VN (*BM1168)	
TMP47C1238AN	12K	512	41	1.3 (244)	4.5-6.0	SDIP54	TMP47C038E (BM1106)	*TMP47P1638VN (*BM1169)	
TMP47C1638AN	16K	512	41	1.3 (244)	4.5-6.0	SDIP54	TMP47C038E (BM1106)	*TMP47P1638VN (*BM1169)	
TMP47C853N/F	8K	1024	35	8.3 (244)	2.2-6.0	SDIP42 QFP44	—	TMP47P853VN/F (BM1120/BM1121)	DTMF generator
TMP47C457N/F	4K	768	35	2.1 (244)	2.7-6.0	SDIP42 QFP44	—	TMP47P857VN/F (BM1120/BM1121)	
TMP47C857N/F	8K	1024	35	2.1 (244)	2.7-6.0	SDIP42 QFP44	—	TMP47P857VN/F (BM1120/BM1121)	
TMP47C1260N/F	12K	768	56	1.3 (244)	4.5-6.0	SDIP64 QFP64	TMP47C006E	TMP47P1660VN/F (BM1130/BM1132)	A/D converter (8-bit x 8-ch) Remote control signal preprocessing LED driver
TMP47C1660N/F	16K	768	56	1.3 (244)	4.5-6.0	SDIP64 QFP64	TMP47C006E	TMP47P1660VN/F (BM1130/BM1132)	
TMP47C1270AN	12K	768	53	1.3 (244)	4.5-6.0	SDIP64	TMP47C007E	TMP47P1670VN (BM1133)	VFT driver (16 x 2-12 x 16) D/A conversion (PWM) output 4-bit A/D conversion input Remote control signal preprocessing
TMP47C1670AN	16K	768	53	1.3 (244)	4.5-6.0	SDIP64	TMP47C007E	TMP47P1670VN (BM1133)	

Note: (244) - indicates slow mode

* Under development. () Min. execution time during low frequency clock operation. Type suffix: P: Plastic Standard Dual In-Line Package (DIP), N: Plastic Shrink Dual In-Line Package (SDIP), M: Plastic Small Outline Package (SOP), F: Plastic Flat Package (QFP), G: Ceramic Flat Package (QFC), E: Ceramic Shrink Dual In-Line Package (SDIC)

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

8-Bit Microcontrollers

TLCS870 Series (CMOS)

Features

Basic Functions

- Original architecture
- Max. 64KB address space
- Minimum instruction execution time:
0.5μs (at 8MHz/4.5V)
122μs (at 32.8KHz/2.7V)
- Basic instructions: 129 types, 412 instructions
Multiplication (8-bit ÷ 8-bit)
Division (16-bit x 8-bit)
Variety of bit manipulations
16-bit data operation
1-byte length jump/call
- Max. 15 interrupt sources
High-speed task switching by register bank switching
External interrupt input with edge selection and noise rejection function
- Dual-clock system to switch between high-speed operation and low power operation
- General purpose register banks

- Eight 8-bit registers x 16 banks
- Various standby modes

Additional Functions

- Multifunction timer/counter
16-bit timer/counter: 1-2ch
8-bit timer/counter: 2-4ch
Time-base timer: 1ch
Watchdog timer: 1ch
- Divider output function (for piezoelectric buzzer device), PWM, PPG, event counter
- 8-bit serial interface: 1-2ch
Built-in 64-bit transmit/receive data buffer
- VFT driver
- LCD driver
- LED driver
- 8-bit A/D converter
- I²C bus interface

TLCS870 Series

Type	ROM (byte)	RAM (byte)	I/O Port	MIN. Instruction Execution Time (μS)	Line Voltage (V)	Operating Temperature (°C)	OTP Version (EPROM writer connection adapter)	Package	Function
TMP87C800N/F	8K	256	58	0.50/122 0.95/122	4.5-6 2.7-6	-30~70	TMP87PH00N/F (BM1136/BM1137)	SDIP64 QFP64	LED driver Timer/counter x 4ch Serial interface x 2ch Watchdog timer Time-base timer
TMP87CH00N/F	16K	256	58	0.50/122 0.95/122	4.5-6 2.7-6	-30~70	TMP87PH00N/F (BM1136/BM1137)	SDIP64 QFP64	
TMP87CH00LF	16K	256	58	0.95/122	1.8-5.5	-30~70	—	SDIP64 QFP64	
TMP87CC20F	12K	512	45	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PH20F (BM1138)	QFP80	LCD driver (32 ~ 24 segments x 4 commons) Timer/counter x 5ch Serial interface x 1ch Watchdog timer Time-base timer
TMP87CH20F	16K	512	45	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PH20F (BM1138)	QFP80	
*TMP87C832N	8K	256	34	0.50/122	4.5-6	-30~70	—	SDIP42	On-screen display circuit (closed caption support)
TMP87C840N/F	8K	256	56	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PH40N/F **TMP87PK40KF (BM1136/BM1137)	SDIP64 QFP64	LED driver 8-bit A/D converter x 8ch Timer/counter x 4ch Serial interface x 2ch Watchdog timer Time-base timer
TMP87CC40N/F	12K	512	56	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PH40N/F **TMP87PK40KF (BM1136/BM1137)	SDIP64 QFP64	
TMP87CH40N/F	16K	512	56	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PH40N/F **TMP87PK40KF (BM1136/BM1137)	SDIP64 QFP64	
TMP87CK40N/F	24K	1K	56	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PM40N (BM1136)	SDIP64	
TMP87CH40KF	24K	1K	56	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PM40N (BM1136)	SDIP64	
*TMP87CM40AN/F	32K	1K	56	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	TMP87PM40N (BM1136)	SDIP64	
TMP87CK42N	24K	512	35	0.50/122 0.95/122	4.6-6 2.7-6	-30~70	*TMP87PK42N (BM1163)	SDIP42	
TMP87CC70F	12K	512	73	0.50/122	4.5-6.0	-30~70	TMP87PM70F (BM1150)	QFP80	VFT driver (16seg x 16dig) 6-bit A/D conversion input x 6ch Timer/counter x 4ch Serial interface Watchdog timer Time-base timer
TMP87CH70F	16K	512	73	0.50/122	4.5-6.0	-30~70	TMP87PM70F (BM1150)	QFP80	
TMP87CK70AF	24K	512	73	0.50/122 0.95/122	4.5-6 2.7-6	-30~70	TMP87PM70F (BM1150)	QFP80	
TMP87CM70AF	32K	512	73	0.50/122 0.95/122	4.5-6 2.7-6	-30~70	TMP87PM70F (BM1150)	QFP80	

NOTE: * Under development, **Only for sample
Type suffix: N: Plastic Shrink Dual In-Line Package (SDIP), F: Plastic Flat Package (QFP)

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

8-Bit Microcontrollers

TLCS90 Series

Features

Memory Capacity

- Wide selection from ROM-less versions to 32KB versions
- Wide selection from RAM-less versions to 1KB versions
- Externally expandable memory and I/O; Program memory: Max. 8MB
- Data memory: Max. 8MB

Basic Processor Functions

- Original architecture
- Minimum instruction execution time: 250ns (at 16MHz)
- 167 instruction types, multiplication/division instructions, 16-bit arithmetic instruction, bit manipulation instruction
- Internal interrupt, external interrupt, micro DMA function, standby function

Additional Functions

- 8-bit A/D converter ➤ General purpose serial interface
- Multifunction 16-bit timer/event counter (PPG output mode, frequency measurement, pulse width measurement, time difference measurement)
- 8-bit timer (PWM output mode, PPG output mode)
- Stepper motor control ➤ Watchdog timer
- MMU (data memory: 8MB)
- Slave bus function
- 8-bit half flash A/D converter
- 8-bit D/A converter
- Built-in RTC (Real Time Clock)
- DRAM controller

Toshiba

Type	Built-in ROM (byte)	Built-in RAM (byte)	I/O Port	MIN. Instr. Execution Time (ns)	Operating Temp. (°C)	Package	OTP Version (EPROM writer connection adapter)	Function
TMP90C840AN/AF	8K	256	54	320	-20 ~ 70	SDIP64 QFP64	TMP91P640E-10/N-10 (BM1115A) TMP91P640F-10 (BM1116A)	A/D converter: 8-bit x 6ch Timer/counter: 16-bit x 1 ch (capture/PPG) Timer: 8-bit x 4ch (PWM/PPG) Serial: 1ch (UART, I/O Expansion) Stepping motor control port Watchdog timer Micro DMA function Program memory: 64KB Data memory: 1 MB
TMP90C841AN/AF	-	256	28	320	-20 ~ 70	SDIP64 QFP64	TMP91P640E-10/N-10 (BM1115A) TMP91P640F-10 (BM1116A)	
TMP91C640N/F	16K	512	54	320	-20 ~ 70	SDIP64 QFP64	TMP91P640E-10/N-10 (BM1115A) TMP91P640F-10 (BM1116A)	
TMP91C641N/F	-	512	28	320	-20 ~ 70	SDIP64 QFP64	TMP91P640E-10/N-10 (BM1115A) TMP91P640F-10 (BM1116A)	
TMP90CM40N/F	32K	1K	54	320	-20 ~ 70	SDIP64 QFP64	TMP90PM40N/F (BM1115A/BM1116A)	
TMP90C041N/F-15 TMP90C041N/F	-	-	28	267	0 ~ 60	SDIP64 QFP64	-	
TMP90C141N/F	-	1K	28	320	-20 ~ 70	SDIP64 QFP64	-	
TMP90C802P/M	8K	128	32	320	-20 ~ 70	DIP40 SOP40	TMP90P802AP/AM (BM1158/BM1159)	Timer/counter: 8-bit x 4ch Serial: 1ch Program/data memory: 64KB
TMP90C802AP/AM	8K	512	32	320	-20 ~ 70	DIP40 SOP40	TMP90P802AP/AM (BM1158/BM1159)	
TMP90CH02M/P	16K	512	32	320	-20 ~ 70	DIP40 SOP40	TMP90PH02M/P (BM1159/BM1158)	
TMP90C803AP/AM	-	256	6	320	-20 ~ 70	DIP40 SOP40	TMP90P802AP/AM (BM1158/BM1159)	
TMP90CH03M/P	-	512	6	320	-20 ~ 70	DIP40 SOP40	-	
TMP90C400N/F	4K	128	56	320	-20 ~ 70	SDIP64 QFP64	TMP90P800N/F (BM1142/BM1147)	Timer/counter: 8-bit x 4ch Serial: 1ch 22 programmable pull-up port Program/data memory: 64KB
TMP90C401N/F	-	128	38	320	-20 ~ 70	SDIP64 QFP64	TMP90P800N/F (BM1142/BM1147)	
TMP90C800N/F	8K	256	56	320	-20 ~ 70	SDIP64 QFP64	TMP90P800N/F (BM1142/BM1147)	
TMP90C801N/F	-	256	38	320	-20 ~ 70	SDIP64 QFP64	TMP90P800N/F (BM1142/BM1147)	
TMP90C844N/F	8K	256	54	250	-20 ~ 70	SDIP64 QFP64	TMP90PH44N/F (BM1148/BM1149)	Slave bus function 90C840A with upgraded I/O function
TMP90CH44N/F	16K	512	54	250	-20 ~ 70	SDIP64 QFP64	TMP90PH44N/F (BM1148/BM1149)	
TMP90C845N/F	-	256	38	250	-20 ~ 70	SDIP64 QFP64	-	Version with expanded external memory 90C840A with upgraded I/O function Program memory: 4MB; Data memory: 8MB
TMP90CH45N/F	-	512	38	250	-20 ~ 70	SDIP64 QFP64	-	
TMP91C642N/F	16K	320	54	400	-20 ~ 70	SDIP64 QFP64	TMP91P642N/F (BM1144/BM1145)	VCR servo Built-in VCR dedicated circuit
TMP90CH42DF/F	16K	640	72	320	-20 ~ 70	100QFP	TMP90M42DF/F (BM1151/1154)	
TMP90CK42F	24K	640	72	320	-20 ~ 70	QFP100	TMP90PM42F (BM1154)	
TMP90C846F	8K	256	28	400	-20 ~ 70	MFP44	TMP90P846F (BM1143)	Flash A/D converter: 8-bit x 2ch D/A converter: 8-bit x 2ch Timer (8-bit x 4ch, 16-bit x 1ch)
TMP90C051F	-	-	31	250	-20 ~ 70	QFP80	-	Built-in high-speed micro DMA, RTC, MMU, DRAM controller: TPH controller
TMP90C848F	8K	512	62	400	-20 ~ 70	QFP80	TMP90PH48F (BM1153)	8-bit PWM: 8ch; Flash A/D converter: 8-bit x 16ch; Dual clock system
TMP90CM38F/T TMP90CM37F/T	32K -	1K	64	250	-20 ~ 70	80MFP 84PLCC	TMP90PM38F/T (BM1181/1182)	8-bit: 8ch ADC; 8-bit: 2ch DAC Serial: 3ch; Programmable Timing Pulse Generator; Program/data memory: 64KB
TMP90CM38F/T	32	1K	66	250	-20 ~ 70	80MFP 84PLCC	TMP90CM38F/T (BM1181/1182)	8-bit: 8ch ADC; Serial: 3ch Stepping Motor Control Port Programmable/data memory: 64KB

NOTE: *Under development. OC: Output compare. IC: Input capture; Type suffix: P: Plastic Standard Dual In-line Package (DIP), N: Plastic Shrink Dual In-line Package (SDIP), M: Plastic Small Outline Package (SOP), F: Plastic Flat Package (QFP), E: Ceramic Shrink Dual In-line Package (SDIC);

Note 1: A minimum instruction execution time of 320ns is guaranteed for an operating temperature between -20°C and 70°C and 400ns for an operating temperature between -40°C and 85°C.

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

8-Bit Microcontrollers

TMP68HC05/11 Series (CMOS)

Features

Memory Capacity

- ▶ TMP68HC05: Built-in 4KB
Built-in 176-byte RAM

TMP68HC11: Selectable from no ROM to 16KB ROM
Built-in RAM: max. 512 bytes
Built-in EEPROM: max. 512 bytes

Basic Processor Functions

- ▶ Pin and software compatible with Motorola M68HC05 and M68HC11 families
- ▶ Minimum instruction execution time:
0.96 μ s (at 2.1MHz)
0.67 μ s (at 3.0MHz)

TMP68HC05/11 Series

Type	ROM (byte)	EEPROM (byte)	RAM (byte)	I/O Port	MIN. Instruction Execution Time (μ S)	Line Voltage (V)	Operating Temperature ($^{\circ}$ C)	Package	Function
TMP68HC05C4P	4160	—	176	31	0.96	3.0-5.5	0-70	DIP40 DIC40	Free-run counter: 16-bit x 1ch OC: 1ch, IC: 1ch Serial: 2ch (synchronous, asynchronous)
TMP68HC11A8P/N/T/F*	8K	512	256	38	0.96	4.5-5.5	-40-85	DIP48 SDIP64 PLCC52 *QFP64	A/D converter: 8-bit, 8ch Pulse accumulator: 8-bit x 1ch Free-run counter: 16-bit x 1ch OC: 5ch, IC: 3ch Serial: 2ch (synchronous, asynchronous) Watchdog timer Clock monitor reset Illegal operation code trap
TMP68HC11A1P/N/T/F*	—	512	256	22	0.96	4.5-5.5	-40-85	DIP48 SDIP64 PLCC52 *QFP64	
TMP68HC11A0P/N/T/F*	—	—	256	22	0.96	4.5-5.5	-40-85	DIP48 SDIP64 PLCC52 *QFP64	
TMP68HC11A1T-3 *TMP68HC11A1F-3	—	512	256	22	0.67	4.5-5.5	0-70	PLCC52 QFP64	
TMP68HC11A0T-3 *TMP68HC11A0F-3	—	—	256	22	0.67	4.5-5.5	0-70	PLCC52 QFP64	
TMP68HP11A1T-A TMP68HP11A1P-A	—	512	256	22	0.96	4.5-5.5	-40-85	PLCC52 DIP48		Watchdog timer enabled product
TMP68HC11E9N/T/F*	12K	512	512	38	0.96	4.5-5.5	-40-85	SDIP64 PLCC52 *QFP64	A/D converter: 8-bit • 8ch Pulse accumulator: 8-bit x 1ch Free-run counter: 16-bit x 1ch OC: 5ch, IC: 4ch Serial: 2ch (synchronous, asynchronous) Watchdog timer Clock monitor reset Illegal operation code trap
TMP68HC11E1N/T/F*	—	512	512	22	0.96	4.5-5.5	-40-85	SDIP64 PLCC52 *QFP64	
TMP68HC11E0N/T/F*	—	—	512	22	0.96	4.5-5.5	-40-85	SDIP64 PLCC52 *QFP64	
TMP68HC11E1T-3 *TMP68HC11E1F-3	—	512	512	22	0.67	4.5-5.5	0-70	PLCC52 *QFP64	
TMP68HC11E0T-3 *TMP68HC11E0F-3	—	—	512	22	0.67	4.5-5.5	0-70	PLCC52 *QFP64	
TMP68HP11E1T-A	—	512	512	22	0.96	4.5-5.5	0-70	PLCC52		Watchdog timer enabled product
TMP68HC11J6N/T/F*	16K	—	512	54	0.63	4.5-5.5	-40-85	SDIP64 SDIC64 PLCC68	I/O and ROM enhanced version of 68HC11E9
TMP68C711J6N/E/T/F*	(16K)	—	512	54	0.63	4.5-5.5	-40-85	SDIP64 SDIC64 PLCC68	

NOTE: * Under development, () EPROM or OTPROM size, OC: Output compare, IC: Input capture Type suffix: P: Plastic Standard Dual In-Line Package (DIP), N: Plastic Shrink Dual In-Line Package (SDIP), F: Plastic Flat Package (QFP), T: Plastic Leaded Chip Carrier (PLCC), E: Ceramic Shrink Dual In-Line Package (SDIC)

Toshiba

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

8-Bit Microprocessors

TLCSZ80 Series (CMOS) & Z80-Based ASSP (CMOS)

TLCSZ80 Series

Features

- Software and hardware compatible with Zilog's Z80 family
- Low power dissipation (approx. 1/10 of NMOS)
- Static operation/HOLD function
- Plastic DIP, plastic leaded chip carrier (PLCC), and plastic small-outline package (SOP) available

TLCSZ80 Series (Supply Voltage: 4.5 ~ 5.5V, Operating Temp.: -40 ~ 85°C, Clock Rate: DC ~8MHz)

Part Number			Instruction Cycle Time (μs)	Supply Current Max. (mA)	No. of Pins	Compatible Component	Function
6MHz	8MHz	10MHz					
TMPZ84C00A1-6	TMPZ84C00AP-8	TMPZ84C00AP-10	0.6/0.5/0.4	15/20	40	Z80A/B/H CPU	Microprocessor (6/8/10MHz)
TMPZ84C10AP-6	—	—	—	6	40	Z80A/B/H DMA	Direct memory access controller (6/8MHz)
TMPZ84C20AP-6	TMPZ84C20AP-8	—	—	3/4	40	Z80A/B/HP10	Parallel I/O controller (6/8MHz)
TMPZ84C30AP-6	TMPZ84C30AP-8	—	—	4/5	28	Z80A/B/H CTC	Counter timer circuit (6/8MHz)
TMPZ84C40AP-6	TMPZ84C40AP-8	—	—	4/5	40	Z80A/B/H SIO/0	Serial I/O controller (6/8MHz)
TMPZ84C41AP-6	TMPZ84C41AP-8	—	—	4/5	40	Z80A/B/H SIO/1	Serial I/O controller (6/8MHz)
TMPZ84C42AP-6	TMPZ84C42AP-8	—	—	4/5	40	Z80A/B/H SIO/2	Serial I/O controller (6/8MHz)
TMPZ84C61AP-6	—	—	—	4	16	Z80 CGC	Clock generator/controller (6MHz)
TMPZ84C00AT-6	TMPZ84C00AT-8	TMPZ84C00AT-10	0.6/0.5/0.4	15/20	44	Z80A/B/H CPU	Microprocessor (6/8/10MHz)
TMPZ84C10AT-6	—	—	—	6	44	Z80A/B/H DMA	Direct Memory Access Controller (6/8MHz)
TMPZ84C20AT-6	TMPZ84C20AT-8	—	—	3/4	44	Z80A/B/H P10	Parallel I/O controller (6/8MHz)
TMPZ84C30AT-6	TMPZ84C30AT-8	—	—	4/5	44	Z80A/B/H CTC	Counter timer circuit (6/8MHz)
TMPZ84C44AT-6	TMPZ84C44AT-8	—	—	4/5	44	Z80A/B/H SIO/0	Serial I/O controller (6/8MHz)

Z80-Based ASSP (Application Specific Standard Products)

Features

- Integration of diverse peripheral functions with the Z80 CPU as the core
- Wide selection of processors covering an extensive range of applications

Note: Z80 is a trademark of Zilog in the U.S.A.

Z80 ASSP

Type	Package			MIN. Instruction Execution Time (μs)	Standard Line Current (mA)	Function
	DIP No. of pins	QFP No. of pins	PLCC No. of pins			
TMPZ84C011BF-6/BF-8	—	100	—	0.6/0.5	22/31	CPU+CGC+CTC+I/O (8 x 5)
TMPZ84C013AT-6/AT-8/AT-10	—	—	84	0.6/0.5/0.4	22/31/40	CPU+SIO+CTC+CGC+Watchdog Timer
TMPZ84C015BF-6/BF-8/BF-10/BF-12*	—	100	—	0.6/0.5/0.4/0.3	25/35/45/55	CPU+SIO+CTC+PIO+CGC+Watchdog Timer
TMPZ84C112BN-6/BF-6	64	64	—	0.6	15	CPU+256-byte RAM+I/O (8 x 2, 7 x 1) + free-run timer + clock generator
TMPZ84C810BF-6/BF-8/BF-10	—	100	—	0.6/0.5/0.4	25/35/45	CPU+SIO+CTC+DMA+I/O (8 x 1) + OUTPUT (5 x 1) + WDT + MMU x CGC

Operating Temperature: -40~85°C Line Voltage: 4.5~5.5V (-40~70°C guaranteed for 8/10MHz products)

NOTE: * Under development, Type suffix: P: Plastic Standard Dual In-Line Package (DIP), M: Plastic Small Outline Package (SOP), F: Plastic Flat Package (QFP), T: Plastic Leaded Chip Carrier (PLCC)

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

8-Bit Microprocessors

TLCS85 Series (CMOS) & TLCS48 Series (CMOS)

TLCS85 Series

Features:

- Industry standard 8-bit microprocessor and peripherals
 - 80 instructions
- Min. 0.8μs instruction cycle time at 10MHz
 - High-speed CMOS peripherals

TLCS85 Series

Part Number			Supply Current (mA)	No. of Pins	Function
5MHz	8MHz	10MHz			
TMP8085AP-2	—	—	170	40	8-bit microprocessor, .8μs instruction cycle time
TMP82C51AP-2	—	TMP82C51AP-10	1.2/3.0	28	Programmable communication interface
—	—	TMP82C54P-2	3.0	24	Programmable interval timer
TMP82C55AP-2	—	TMP82C55AP-10	2.0/2.0	40	Programmable peripheral interface
—	TMP82C59AP-2	—	1.0	28	Programmable interrupt controller
TMP82C79P-2	—	—	2.0	40	Programmable keyboard/display interface
TMP82C255AN-2	—	TMP82C255AN-10	3.0/3.0	64	Programmable peripheral interface
TMP82C265AF-2	—	TMP82C265AF-10	3.0/3.0	80	Programmable peripheral interface
TMP82C37AM-5	TMP82C37BM-8	—	5.0/16.0	40	Programmable DMA controller
TMP82C51AM-2	—	TMP82C51AM-10	1.2/3.0	28	Programmable communications interface
—	—	TMP82C54M-2	3.0	24	Programmable interval timer
TMP82C55AM-2	—	TMP82C55AM-10	2.0/2.0	40	Programmable peripheral interface
—	TMP82C59AM-2	—	1.0	28	Programmable interrupt controller

TLCS48 Series

Features:

Memory

- Max. 4KB ROM and 256 byte RAM

Processor

- Software and pin compatible with Intel's 8048 series
- 96/97 instructions, min. 2.5/1.36μs at 6/11MHz ops.

Additional Functions

- 8-bit interval timer/event counter

TLCS48 Series

Part Number ROM (ROMLESS)	ROM (bit)	RAM (bit)	I/O Port (bit)	Instruction Cycle Time (μS)	Supply Voltage (V)	Supply Current Max. (mA)	Operating Temp. (°C)	Package
TMP80C48AP-6 (TMP80C35AP-6)	1024 x 8 4096 x 8 External	64 x 8	27 (19)	2.5	4.0-6.0	10 <0.01>	-40-85	40 Pin DIP
TMP80C48AP (TMP80C35AP)	1024 x 8 4096 x 8 External	64 x 8	27 (19)	1.36	4.5-5.5	15 <0.01>	0-70 40 to 85	
TMP80C48T (TMP80C35AT)	1024 x 8 4096 x 8 External	64 x 8	27 (19)	1.36	4.5-5.5	15 <0.01>	0-70 -40 to 85	44 Pin PLCC
TMP80C49AP-6 (TMP80C39AP-6)	2048 x 8 4096 x 8 External	128 x 8	27 (19)	2.5	4.0-6.0	10	-40-85	40 Pin DIP
TMP80C49AP (TMP80C39AP)	2048 x 8 4096 x 8 External	128 x 8	27 (19)	1.36	4.5-6.5	15 <0.01>	0-70 -40 to 85	40 Pin DIP
TMP80C49AT (TMP80C39AT)	2048 x 8 4096 x 8 External	128 x 8	27 (19)	1.36	4.5-6.5	15 <0.01>	0-70 -40 to 85	44 Pin PLCC
TMP80C50AP-6 (TMP80C40AP-6)	4096 x 8 4096 x 8 External	256 x 8	27 (19)	2.5	4.0-6.0	10 <0.01>	-40-85	40 Pin DIP
TMP80C50AP (TMP80C40AP)	4096 x 8 4096 x 8 External	256 x 8	27 (19)	1.36	4.5-5.5	15 <0.01>	0-70 -40 to 85	
TMP82C43P	I/O Expander				4.0-6.0	2	-40-85	24 Pin DIP

NOTE: < > Hold current
() With external ROM

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

16-Bit Microprocessors

TLCS900 Series (CMOS)

Features

Basic Processor Functions

- Original 16-bit architecture (Upward compatibility with TLCS90 instruction set)
- Minimum instruction execution time 200ns (at 20MHz)
- Large linear address space
Program: 64KB/16MB
Data: 16MB
- General purpose register method (Accumulators)
- Register bank method
Switchable with 1 instruction
- Powerful instruction sets
8/16/32-bit transfer, arithmetic
16 x 16 = 32-bit multiplication
32 ÷ 16 = 16 . . . 16-bit division
Bit transfer, arithmetic, search
16-bit multiplication-addition arithmetic
Optimized to support efficient C compiler
- Improved reliability
System mode/normal mode
Illegal instruction interrupt

- High-speed micro DMA
4-channel, 16MB space
1.6µs/word (at 20 MHz)

Additional Functions

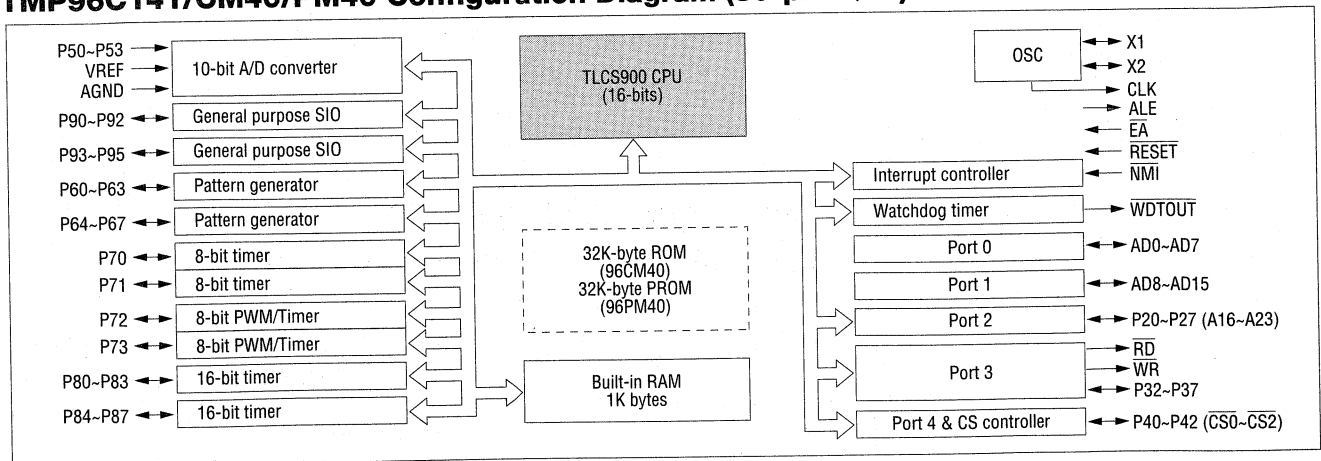
- CS/WAIT controller
Mixture of external 8/16-bit buses
WAIT width control
- 3 programmable chip selects
- Interrupt controller
7-level priority method
- 8-bit timers
- 8-bit PWM timers
- Multifunction 16-bit timers
- Pattern generator (Stepper motor control)
- General purpose serial interface
- 10-bit A/D converter
- Watchdog timer
- Tri-state bus (for external DMA)

TLCS900 Series

Toshiba

Type	ROM (byte)	RAM (byte)	I/O Port	MIN. Instruction Execution Time (ns)	Operating Temperature (°C)	Package	One-time PROM product (EPROM writer connection adapter)	Function
TMP96C141F	—	1K	47	200	-20~70	QFP80	—	Timer/counter: 16-bit x 2ch Timer: 8-bit x 2ch PWM timer: 8-bit x 2ch Serial interface: 2ch Pattern generator: 4-bit x 2ch A/D converter: 10-bit x 4ch Watchdog timer CS/WAIT control
TMP96CM40F	32K	1K	65	200 (note 1)	-20~70	QFP80	TMP96PM40F (BM1139)	

TMP96C141/CM40/PM40 Configuration Diagram (80-pin QFP)



Note 1: A minimum instruction execution time of 200ns is guaranteed for an operating between -20°C and 70°C and 250ns for an operating temperature between -40°C and 85°C

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

16-Bit Microprocessors

TLCS68000 Series

Features

- Pin and software compatible with Motorola M68000 family
- 32-bit architecture general purpose microprocessors
- Powerful instruction sets
- Upward instruction compatibility
- Large linear address space (16MB/4GB)
- Flexible addressing mode
- Memory-mapped I/O
- Virtual memory/machine support
- Separates operation mode and address space
- Variety of data types: bit, digit, byte, word, long-word
- Variety of high-performance peripheral devices
- UNIX software support
- ASSP (Application Specific Standard Products) incorporating peripheral functions with CMOS 16-bit TMP68HC000 as the core

Note: M68000 is a trademark of Motorola Semiconductor in the U.S.A.
UNIX is a trademark of AT&T.

TLCS68000 Series

Type	Speed (MHz)	Package Type (No. of pins)						Equivalent Product	Function
		P	C	YC	Y	N	T		
TMP68000	8, 10, 12.5*	64	—	68	—	64	—	MC68000	16-bit MPU (internal 32-bits, external 16-bits)
TMP68HC000	10, 12.5*, 16.67	64	—	—	68	64	68	MC68HC000	CMOS 16-bit MPU
TMP68010	8, 10, 12.5	64	—	—	—	—	—	MC68010	16-bit virtual memory MPU
TMP68230	8, 10	48	—	—	—	—	—	MC68230	Parallel interface timer
TMP68440	8, 10	64	—	—	—	—	—	MC68440	Dual DMA controller
TMP68450	8, 10	—	64	—	—	—	—	MC68450	4-channel DMA controller
TMP68681	1 Mbit/s	40	—	—	—	—	—	MC68681	Dual universal asynchronous receiver transmitter
TMP68901	4	48	—	—	—	—	—	MC68401	Multifunction peripheral

NOTE: *12.5MHz is available with P and YC. Type suffix: P: Plastic DIP, C: Ceramic DIP, YC: PGA without standoff, Y: PGA with standoff, N: Plastic Shrink DIP, T: Plastic PLCC

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TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

Application Specific Standard Products (ASSP)

68HC000-Based Integrated Microprocessors

TMP68301

Features

- 68HC000 core-based microprocessor
- 3 asynchronous serial ports with baud rate generator and optional modem control signals
- 16-bit parallel interface with optional Centronics interface mode
- 3 timer channels: 16-bits each with an 8-bit prescaler

- Built-in interrupt controller: 3 external and 7 internal sources with automatic interrupt vector generation
- Sophisticated address decoder: includes relocatable chip select generation for internal registers and external chip selects
- Automatic DTACK generation with 0 to 7 programmable wait states and programmable BERR generation

TMP68301

Device No.	Process	Speed	Package
TMP680301AF-12	CMOS	12MHz	QFP100
TMP68301AF-16	CMOS	16.67MHz	QFP100
TMP68301AFR-12	CMOS	12MHz	QFP100
TMP68301AFR-16	CMOS	16.67MHz	QFP100

TMP68303

Features

- 68HC000 core-based microprocessor
- 17 32-bit data and address registers
- 16MB direct addressing
- 56 powerful instruction types
- 14 addressing modes
- Memory mapped I/O
- Serial I/F: 2-channel (UART)
- Parallel I/F: 10-bit I/O
- Timer: 5-channel (including built-in watchdog timer)

- Interrupt controller: 12-channel (external: 3-channels, internal: 9-channels)
- Address decoder: external chip select signals ($\overline{CS0}$, $\overline{CS1}$)
- DMA controller: 3-channel
- DRAM controller: RAS, \overline{CAS} , multiplexed address, A1-A11 for up to 8MB of DRAM
- Programmable wait state insertion
- Bus error detection
- Stepper motor controller: 2-channel, 4-phase
- Low power consumption (CMOS)

TMP68303

Device No.	Process	Speed	Package
TMP68303F-16	CMOS	16.67MHz	QFP100

TMP68305

Features

- 68HC000 core-based microprocessor
- Serial I/O: 2-channel (UART)
- 16-bit counter/timer with 8-bit prescaler
- Clock generator
- Interrupt controller: 9-channel (external: 4-channels, internal: 5-channels)

- Bus error detection
- Address decoder: 4 external chip select outputs
- DMA controller: 2-channel, 16MB direct memory access
- Block size: 128KB max.
- Transfer speed: 8MB/sec. max. (f=16MHz, single address)

TMP68305

Device No.	Process	Speed	Package
TMP68305F-16	CMOS	16.67MHz	QFP100

NOTE:
QFP: Quad flat package (square type)
RFP: Rectangle flat package (rectangular type)

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TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

Neuron Chip

TMPN3150, TMPN3120

Features

- ▶ Three 8-bit processors
 - Two processors dedicated to LONTALK™ protocol processing
 - A third processor dedicated to the node's specific application
- ▶ Eleven applications I/O pins, usable in many different combinations:
 - 11 individually configurable digital inputs or outputs
 - A parallel interface to an external microprocessor, with 8 data and 3 control lines
 - 8 digital I/O pins, plus a 3-pin serial interface
- ▶ Two programmable, 16-bit counter/timers, one that can be multiplexed to 4 of the digital I/O pins
- ▶ A memory subsystem including:
 - 2KB of RAM, for variables and buffers
 - 512 bytes of EEPROM, for network parameters and application program storage
- ▶ A 48-bit Neuron ID unique to every device, irreversibly programmed into 6 of the EEPROM bytes
- ▶ A Service PIN for facilitating network installation
- ▶ A 5-pin LONTALK network interface that connects to either an external LONWORKS™ transceiver or, with external circuitry, to baseband media such as twisted pair
- ▶ Power-down, wake-up, watchdog timer, and other housekeeping circuitry

Neuron Chip

Part Number	CPUs	RAM	ROM	EEPROM	16-Bit Timer/Counter	External Memory Interface	Package	Pins	Description
TMPN3150AF (BR,D)	3	2K	—	512 Bytes	2	Yes	QFP	64	Communication and control processors for distributed sense and control applications. All layers of the OSI Networking Model have been implemented in the included LONTALK™ Firmware-based protocol.
TMPN3120AM (D)	3	1K	10K	512 Bytes	2	No	SOIC	32	

The TMPN3150AF is programmed with the LONBUILDER™ Developer's Workbench which provides sophisticated platform development and system integration over twisted pair, powerline, RF and other networking media. Part number is BMN20000. Copyrights: Neuron, 3150, 3120, LONTALK, LONBUILDER/Echelon Corporation

CMOS Microcomputer Peripheral LSI

Microprocessor Peripherals

Features

- ▶ Total CMOS solution for low power consumption and heat dissipation
- ▶ Many devices available in both DIP and surface mount packages
- ▶ Many devices compatible with accepted industry standards

Type Number	Package		Compatible Part	Production Availability	Description
TC8250AP	DIP16	RTC	TOSHIBA ORIGINAL	NOW	Real Time Clock/Calendar
TC8521AP	DIP18	RTC	TOSHIBA ORIGINAL	NOW	
TC8505AP	DIP40	CRTC	MOTO/HITACHI 6845 (NMOS) PINOUT	NOW	CRT Display Controller
TC8505AF	MFP44	CRTC	MOTO/HITACHI 6845 (NMOS) PINOUT	NOW	
TC85041F	QFP100	BIA	TOSHIBA ORIGINAL	NOW	Bus Interface Adapter PC/AT
TC8563AF, F	QFP60	VFO	TOSHIBA ORIGINAL	NOW	VFO for HDC
TC8564AF, F	QFP60	VFO	TOSHIBA ORIGINAL	NOW	
TC8565P	DIP40	FDC	NEC µPD 765 INTEL 8272A	NOW	Floppy Disk Controller
TC8565F	MFP44	FDC	NEC µPD 765 INTEL 8272A	NOW	
TC8566AF	MFP100	FDC	FDC WITH VCO	NOW	
TC8569AF	MFP80	FDC	TOSHIBA ORIGINAL	NOW	Floppy Disk Controller (Perpendicular Recording)
TC8576AF	MFP44	CPC	TOSHIBA ORIGINAL	NOW	Centronics I/O + RS232C
TC8577AP	DIP40	CPC	TOSHIBA ORIGINAL	NOW	Centronics Output + RS232C
TC8578AP	DIP40	CPC	TOSHIBA ORIGINAL	NOW	Centronics Input + RS232C
TC8554F	QFP100	ODC	TOSHIBA ORIGINAL	NOW	Error correction for optical disk
TC8570AP	QFP44	UART	TOSHIBA ORIGINAL	NOW	Universal Asynchronous R/T
TC8570AF	QFP44	UART	TOSHIBA ORIGINAL	NOW	

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Toshiba

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Leading Provider of MIPS-Based RISC Platforms.

Preliminary

High-Performance RISC Microprocessor

TC86R4600

Toshiba's 64-bit TC86R4600 microprocessor along with advanced operating systems like Windows NT™ gives the PC manufacturer a favorable product differentiation over the rest of the PC manufacturers. Toshiba is protecting end-user software investments and also provides an open software environment by allowing TC86R4600-based systems to run a choice of advanced operating systems, such as Windows NT and UNIX®. The TC86R4600 processor operates at 100MHz internally (50MHz externally) and sustains performance in excess of 60 SPECmarks.

Overview

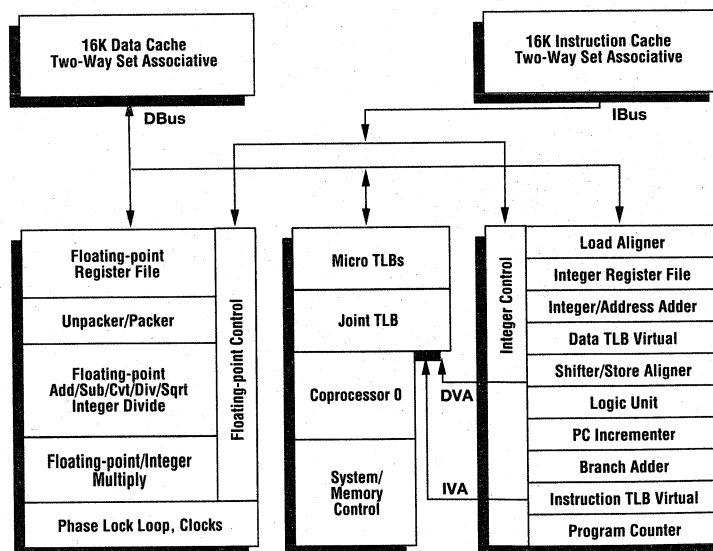
Toshiba's TC86R4600 microprocessor is a highly integrated, single-chip RISC microprocessor designed for high-performance mainstream PCs, high-performance notebook computers, and high-performance embedded applications. The TC86R4600 processor provides complete application software compatibility with the MIPS R2000, R3000, and R4000 processors. The TC86R4600 implements the extended MIPS instruction set architecture, and thus is fully compatible with applications running on earlier generation parts. The TC86R4600 includes the same additions to the instruction set as found in the R4000 family of the processors. The TC86R4600 provides a compatible, timely, and necessary path from 32-bit to true 64-bit computing for users and software developers.

Features

- ▶ Fully software compatible with R4000 RISC processor family
- ▶ Pin-compatible with R4000PC and R4400PC microprocessors
- ▶ True 64-bit microprocessor:
 - 64-bit Integer operations
 - 64-bit floating-point operations
 - 64-bit registers
 - 64-bit virtual address space
- ▶ High level of integration:
 - 64-bit integer CPU and 64-bit floating-point unit
- ▶ Built-in first level instruction and data caches
 - Two-way set associative caches
 - 16KB instruction cache and 16KB data cache
 - Fixed 32-byte line size
 - Writeback with per-page-write-through option
- ▶ Low-power operation:
 - 3.3V power supply
 - Power consumption is approximately 4W @ 50MHz
 - Extensive power-down of unused circuits with no performance penalty
 - Standby mode reduces internal power to 30mW
- ▶ The TC86R4600 microprocessor is packaged in 179-pin ceramic PGA (pin compatible with 179-pin R4000PC and R4400PC) or 208-pin CQFP (Ceramic QFP)
- ▶ 100MHz internal and 50MHz external frequency

Toshiba

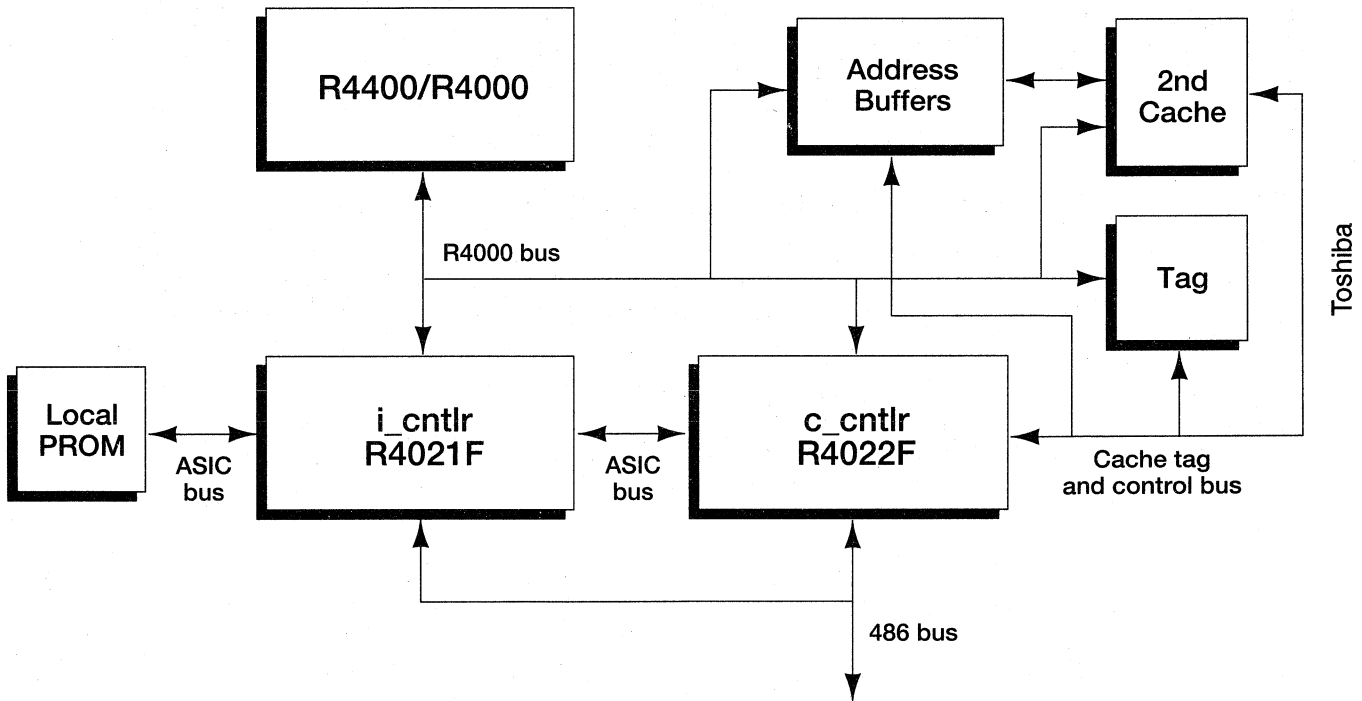
TC86R4600 Block Diagram



TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

Windows NT is a trademark of Microsoft Corporation.
UNIX is a registered trademark of UNIX System Laboratories, Inc.

- **Tigershark Chipset Features:**
 - Converting R4000 SysAD system bus to 80486DX-25, 33, 50MHz system bus
 - Support for 3.3V/5.0V
- Support for R4000PC, R4400PC and R4600 processors
- Build-in support for second level cache
 - Direct-mapped
 - 16- or 32-byte cache lines
 - Write-through protocols
 - Second-level cache timing is programmable
 - Support for 64K-1M cache sizes



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Toshiba. World's Largest Supplier of CMOS Logic.

From high-drive LVQ to mixed-voltage LVX to high speed VHC, Toshiba offers the world's most complete line of CMOS logic. Our advanced high speed 74AC series boasts typical prop delay times of 3.5ns, and maximum clock frequencies of 150MHz — 33% faster than the original 74HC series. And our VHC has average prop delays of 8.5ns — three times faster than HCMOS — as

well as low noise and low EMI. The surface mount technology and fine pitch packaging of all our LVQ, LVX and VHC families saves board space, while providing increased functionality and thermal conductivity. We offer two lines of biCMOS logic: a full line of bus interface devices; as well as several gate functions, and we continue to offer a full line of 4000 series logic.

TOSHIBA HIGH SPEED (HC), ADVANCED HIGH SPEED (AC) CMOS AND BiCMOS (BC and ABT) FUNCTION SELECTION GUIDE

FUNCTION		HIGH SPEED TC74HC	ADVANCED HIGH SPEED TC74AC	BiCMOS	
				TD74ABT	TD74BC
GATE	NAND	00A, T00A, 03A, 10A, 20A, 30A, 132A, 133A	00, T00, 10, T20, T10		00
	NCR	02A, T02A, 27A, 4002A, 4007A, 4078A	02, T02		
	AND	08A, T08A, 09A, 11A, 21A	08, T08, 11		08
	OR	32A, T32A, 4072A, 4075A, 4078A	32, T32		32
	INVERTER	04A, U04A, T04A, 05A, 07A	04, T04, 05		
	SCHMITT TRIGGER	14A, 132A	14, T14		
	MULTIFUNCTION	51A, 86A, T86A, 266A, 386A, 7266A	86, T86		
BUFFER		4049A, 4050A, T7007A			
	3-STATE	125A, 126A, 240A, T204A, 241A, T241A, 244A, T244A, 365A, 366A, 367A, 368A, 540A, T540A, 541A, T541A, 7240A, 7241A, 7244A	125, 126, 240, T240, 241, T241, 244, T244, 367, 368, 540, T540, 541, T541	240, 241, 244, 540, 541, 2240, 2241, 2244	230, 231, 240, 241, 244, 365, 366, 367, 368, 540, 541
	BIDIRECTIONAL	242A, 243A, 245A, T245A, 620A, 623A, 640A, T640A, 634A, T634A, 7640A, 7643A, 7645A	245, T245, 620, 623, 640, T640, 643, 646, T646, 648, T648	245, 543, 544, 620, 623, 640, 643	242, 243, 620, 623, 640, 643, 645
FLIP FLOP J-K TYPE		73A, 76A, 107A, 109A, 112A, 113A	109, T109, 112, T112		
	D TYPE	74A, T74A, 174A, T174A, 175A, 273A, T273A, 377A	74, T74, 174, T174, 175, T175, 273, T273, 377, T377		
	3-STATE	374A, T374A, 534A, T534A, 564A, T564A, 574A, T574A, 646A, 648A, T648A, 651A, T651A, 652A, T652A	374, T374, 534, T534, 564, T564, 574, T574, 646, T646, 648, T648, 821, T821, 823, T823, 825, T825	374, 534, 564, 574, 646, 648, 651, 652, 653, 654, 821, 822	374
LATCH		75A, 77A, 259A, 279A, 375A			
	3-STATE	373A, T373A, 533A, T533A, 563A, T563A, 573A, T573A	373, T373, 533, T533, 563, T563, 573, T573, 841, T841, 843, T843	373, 533, 563, 573, 841, 842	373, 533, 563, 573
MULTIVIBRATOR		123A, 221A, 423A, 4538A			
DECODER		42A, 131A, 137A, T137A, 138A, T138A, 139A, T139A, 154A, 155A, 237A, 238A, 4028A, 4514A, 4515A	138, T138, 139, T139		
	7-SEGMENT	4511A, 453A			
ENCODER		147A, 148A			
REGISTER		164A, T164A, 165A, 166A, 173A, 194A, 195A, 299A, 323A, 595A, 597A, 670A, 4094A, 40105A	164, T164, 166, 299, T299, 323, T323, 670		
COUNTER	BINARY	161A, 163A, 191A, 193A, 393A, 590A, 592A, 593A, 691A, 693A, 697A, 699A, 4520A	161, T161, 163, T163, 169, 191, 393		
	DECADE	160A, 162A, 190A, 192A, 390A, 690A, 692A, 696A, 698A, 4518A	160, 162, 390		
	DIVIDER	4017A, 4020A, 4022A, 4024A, 4040A, 4060A, 40102A, 40103A, 7292A, 7294A			
MULTIPLEXER		4016A, 4051A, 4052A, 4053A, 4066A, 4316A, 4351A, 4352A, 4353A			
	DIGITAL	151A, 153A, 157A, T157A, 158A, T158A, 251A, 253A, 257A, T257A, 258A, T258A, 298A, 352A, 353A, 354A, 356A	151, T151, 153, 157, T157, 158, T158, 251, T251, 253, 257, T257, 258, T258		
OTHER	COMPARATOR	85A, 688A, T688A	520, T520, 521, T521		
	ADDER	283A	283, T283		
	ALU	181A, 182A			
	PARITY TREE	280A	280, T280	280	

TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

TOSHIBA VERY HIGH SPEED (VHC), LOW VOLTAGE (LVQ, LVX) CMOS FUNCTION SELECTOR GUIDE

FUNCTION		VERY HIGH SPEED TC74VHC	LOW VOLTAGE	
			TC74LVQ	TC74LVX
GATE	NAND	00, T00, 10, 20	00	00
	NOR	02, 27	02	02
	AND	08, T08, 11, 21	08	08
	OR	32	32	32
	INVERTER	04, T04, V04	04	04
	SCHMITT TRIGGER	14, 132	14	14
	EXCLUSIVE OR	86	86	86
BUFFER	3-STATE	125, 126, 240, T240, 244, T244, 367, 368, 540, T540, 541, T541	240, 241, 244	125, 240, 244
	BIDIRECTIONAL	245, T245	245	245
FLIP FLOP J-K TYPE		112, T112		
	D TYPE	74, T74, 174, 175, 273	74, 174, 273	74, 174, 273
	3-STATE	374, T374, 574, T574	374	374
LATCH	3-STATE	373, T373, 573, T573	373, 573	373, 573
MULTIVIBRATOR		123A, 221A		
DECODER		138, T138, 139, 238	138	138
REGISTER		164, 165, 299, T299, 595		
COUNTER	BINARY	161, 163, 393, 4040		
MULTIPLEXER	DIGITAL	153, 157, 257	151, 157	157

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TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

TOSHIBA STANDARD FUNCTION SELECTION GUIDE

GATE BUFFERS	NAND	TC4011BP/BF, TC4011UBP, TC4012BP/BF, TC4023BP/BF, TC4068BP/BF, TC7400BP	
	NOR	TC4000BP, TC4001BP/BF, TC4001UBP, TC4002BP/BF, TC4025BF/BP, TC4078BP/BF	
	AND	TC4068BP/BF, TC4073BP/BF, TC4081BP/BF, TC4082BP	
	OR	TC4071BP/BF, TC4072BP/BF, TC4075BP/BF, TC4078BP/BF	
	INVERTER	TC4007UBP/UBF, TC4009UBP/BF, TC4049BP/BF, TC4069UBP/UBF, TC7404UBP	
	BUFFERS		TC4009UBP, TC4010BP, TC4049BP/BF, TC4050BP/BF
		3-STATE	TC4502BP, TC5012BP/BF, TC5024BP, TC5025BP
		OPEN DRAIN	TC40107BP, TC5029BP, TC5064BP, TC5065BP, TC5066BP, TC5067BP
	MULTIFUNCTION	TC4019BP/BF, TC4030BP/BF, TC4077BP//BF, TC4085BP, TC4086BP, TC4501BP, TC4519BP, TC4530BP, TC4572BP/BF	
	SCHMITT TRIGGER	TC4093BP/BF, TC4583BP, TC4584BP/BF	
LEVEL SHIFTER	TC4009UPB, TC4010BP, TC4049BP/BF, TC4050BP/BF, TC5020BP		
FLIP FLOP		TC4013BP/BF, TC4027BP/BF, TC40174BP/BF, TC40175BP/BF, TC7476BP	
LATCHES		TC4042BP/BF, TC4043BP, TC4044BP/BF, TC4099BP/BF, TC4508BP	
MULTIVIBRATORS		TC4047BP, TC4528BP/BF, TC4538BP/BF	
DECODERS		TC4028BP/BF, TC4514BP, TC4515BP, TC4555BP, TC4556BP/BF	
DISPLAY DRIVER	LED	TC4511BP/BF, TC5002BP, TC5022BP	
	LCD	TC4054BP/BF, TC4055BP, TC4056BP/BF, TC4543BP/BF	
	DIGITRON	TC5068BP, TC5069BP	
ENCODER		TC4532BP	
REGISTERS	SHIFT	TC4006BP, TC4014BP, TC4015BP/BF, TC4021BP, TC4034BP, TC4035BP, TC4094BP/BF, TC40104BP, TC40194BP, TC5050P	
	STORAGE	TC4076BP	
COUNTERS	BINARY	TC4029BP/BF, TC40161BP, TC40163BP, TC40193BP, TC4516BP/BF, TC4520BP/BF, TC5018BP, TC5027BP	
	DECADE	TC40209BP/BF, TC40160BP, TC40162BP, TC40192BP, TC4510BP/BF, TC4518BP/BF, TC5026BP	
	DIVIDER	TC4020BP/BF, TC4024BP/BF, TC4040BP/BF, TC4521BP, TC5036P, TC5048P	
	DIVIDE-BY-"N"	TC4018BP, TC40102BP, TC40103BP, TC4522BP, TC4526BP/BF	
	N-DIGIT DECADE	TC5001P, TC5032P, TC5037P, TC5051P, TC5052P, TC5053P, TC5054P, TC5070P	
	OTHER	TC4017BP/BF, TC4022BP	
TIMERS		TC5043P, TC5071P, TC5072P	
MULTI- PLEXERS	ANALOG	TC4051BPBG, TC4052BP/BF, TC4053BP/BF	
	DIGITAL	TC4512BP/BF, TC4539BP.BF, TC5023BP	
ARITHMETIC CIRCUITS	ADDER	TC4008BP, TC4032BP, TC4038BP, TC4560BP	
	COMPARATOR	TC4063BP/BF, TC4585BP	
	PARITYTREE	TC4531BP	
	RATE MULTIPLIER	TC4527BP	
	9's COMPLEMENTER	TC4561BP	
MEMORIES (RAM)		TC4036BP, TC4039BP	
A/D CONVERTERS		TC5090AP, TC5091AP, TC5092AP, TC5093AP	
ANALOG SWITCH		TC4016BP/BF, TC4066BP/BF	
OTHER		TC40117BP	

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TOSHIBA AMERICA ELECTRONIC COMPONENTS, INC.

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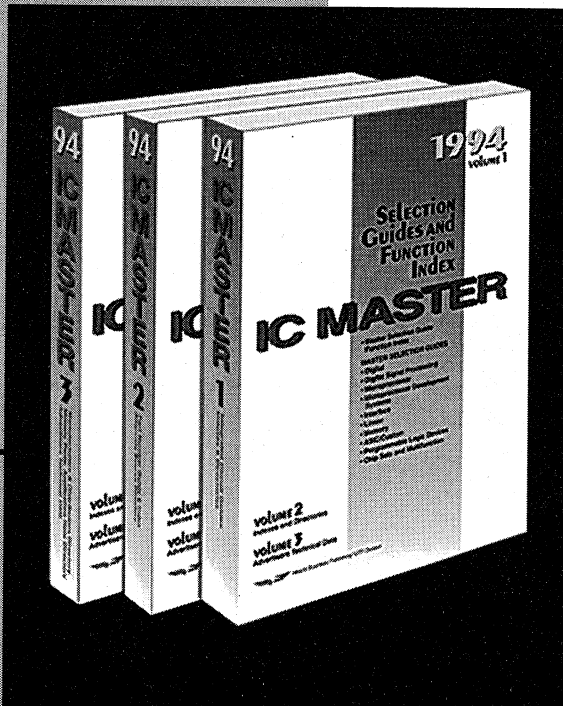
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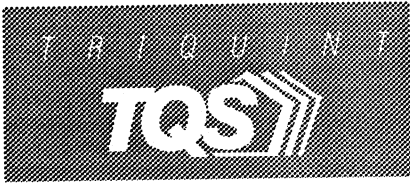
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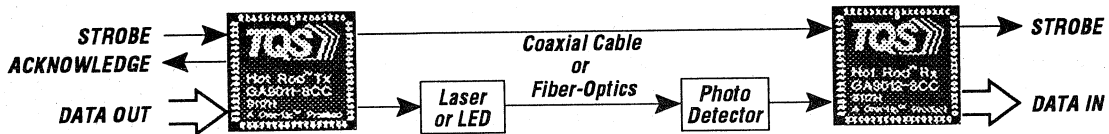
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POINT-TO-POINT COMMUNICATIONS



TriQuint's Computing and Networking division offers solutions to bottlenecks in high-speed workstations and personal computers. These +5V, fully TTL-compatible circuits are 100% compatible with existing silicon ICs, making them natural companions to CMOS gate arrays and all popular microprocessors.

TriQuint

**Hot Rod™
Devices**

Part #	Description	Line Rate	Package
GA9011-xCC	Hot Rod Transmitter	250-1000 Mbaud	68-Pin CLCC
GA9012-xCC	Hot Rod Receiver	250-1000 Mbaud	68-Pin CLCC

**ESCON™ and
Fiber Channel
Devices**

Part #	Description	Line Rate	Package
FC-200	ESCON Chip Set	200 Mbaud	3 Chips
FC-265	Fiber Channel Chip Set	265.625 Mbaud	3 Chips
FC-1000	Fiber Channel Chip Set	1000 Mbaud	3 Chips
GA9040A	Fiber-Optic Module Set	800 Mbit/s	3 Modules

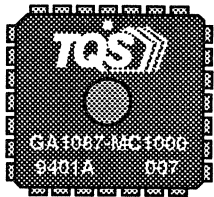
Interface Cards

Part #	Description	Line Rate	Max. Link
HRC-xxxC	Hot Rod Coax Card	250-1000 Mbaud	10-30 meters
HRC-xxxFS	Hot Rod F-Optic Card - CD Laser	250-1000 Mbaud	2 Km-300 m
HRC-800FLC	Hot Rod F-Optic Card -1300nm Laser	1000 Mbaud	10 Km
FCC-200FL	Fiber Channel Fiber-Optic Card	200 Mbaud	3 Km
FCC-265FL	Fiber Channel Fiber-Optic Card	265.625 Mbaud	2 Km
FCC-266FL	Fiber Channel Fiber-Optic Card	265.625 Mbaud	2 Km
FCC-265C	Fiber Channel Coax Card	265.625 Mbaud	100 ft.

Development Systems

The Hot Rod and ESCON / Fiber Channel Development Systems provide a convenient means for evaluating and testing data communications media and TriQuint's interface cards and chip sets. With a user-supplied terminal or PC, the Development System is ideal for use in both prototyping and production test environments.

SYSTEM TIMING

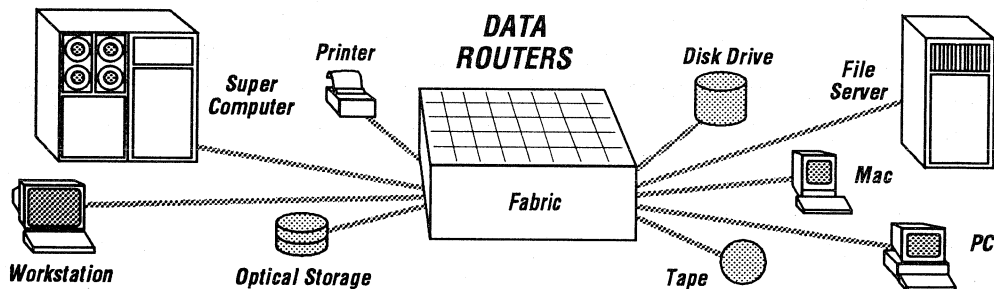


System Timing Devices

TriQuint pioneered the design and manufacture of precision clocking devices with ultra low skew and features such as output edge placement, selectable harmonics and subharmonics, and precision control of phase shift and pulse widths.

Part #	Description	Input Frequency	Package
GA1085	11-Output Configurable Clock Buffer	24 - 105 MHz	28-Pin MQuad
GA1087	11-Output Configurable Clock Buffer	24 - 105 MHz	28-Pin MQuad
GA1088	11-Output Configurable Clock Buffer	18 - 105 MHz	28-Pin MQuad
GA1089	11-Output Configurable Clock Buffer	65 - 90 MHz and 130 - 180 MHz	28-Pin MQuad
TQ1086L	11-Output Configurable Clock Buffer	18 - 105 MHz	28-Pin MQuad
GA1086	11-Output Clock Buffer	30 - 80 MHz	28-Pin MQuad
TQ2060	High-Frequency Clock Generator	300 - 400 MHz	28-Pin MQuad
TQ2061	High-Frequency Clock Generator	500 - 600 MHz	28-Pin MQuad
GA1000	Custom Clock Buffer	20 - 80 MHz	16-Pin DIP or 28-Pin MQuad
GA1110E	Multi-Phase Clock Buffer	20, 25, 33, 40, 50 MHz	16-Pin DIP or 28-Pin MQuad
GA1210E	Clock Doubler/2-Phase Generator	20, 25, 33, 40, 50 MHz	16-Pin DIP or 28-Pin MQuad

SPECIALTY PRODUCTS



TriQuint's Digital Communications and Signal Processing division provides products for telecommunications, advanced signal processing and military and aerospace applications. Representative of TriQuint's specialty products are the following:

Cross Point Switches, D-to-A Converters, Line Drivers

Part #	Description	Speed	Package
TQ8016-M	16 x 16 Digital Cross Point Switch	1.3 Gbit/s	132-Pin Ceramic
TQ8032-M	32 x 32 Digital Cross Point Switch	800 Mbit/s	196-Pin Ceramic
TQ6122-M	8-Bit D-to-A Converter	1 Gsample/s	44-Pin Ceramic
TQ6140	14-Bit D-to-A Converter	1 Gsample/s	44-Pin Ceramic
TQ6332-M	Variable-Amplitude Line Driver	130 ps. P-to-P	44-Pin Ceramic

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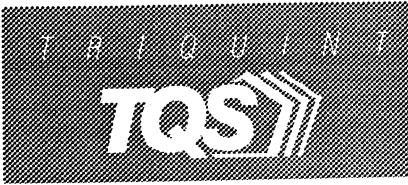
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TriQuint
SEMICONDUCTOR



QLSI STANDARD CELLS

TriQuint provides powerful solutions to the industry's most difficult challenges. QLSI Standard cells have demonstrated excellence in delivering solutions in the following areas:

Precision 2.5 GHz ASIC Design

Application	Example
Time-Division Multiplexing	622 Mbit/s to 2.5 Gbit/s and higher
Clock Generation	Internal Low-Jitter PLLs up to 2.5 Gbit/s
Direct Digital Synthesis	1 GHz clock rates with on-board DACs
Mixed Signal	Pin Electronics
Data Path	Building Block Arithmetic Functions

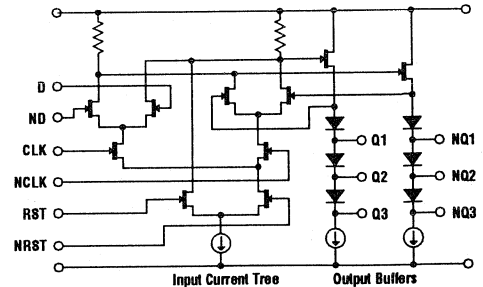
TriQuint leads the market in high-performance GaAs ASICs with a structured custom methodology. The keys to delivering precision ASIC design involves these elements:

Process

Our mature 0.9 μm airbridge GaAs process is the basis for our QLSI standard cell family. TriQuint is introducing a next-generation standard cell family, based on a 0.6 μm process to provide improved performance and density.

Circuit Family

QLSI is based on a circuit topology called Source-Coupled FET Logic (SCFL). This logic family is ideal for delivering high-performance circuits for data flow architectures. SCFL is fully differential, with a three-level current-steering logic family. QLSI's basic efficiency can be seen in this sample, which implements a Master Latch with Reset in one "unit cell."



Performance

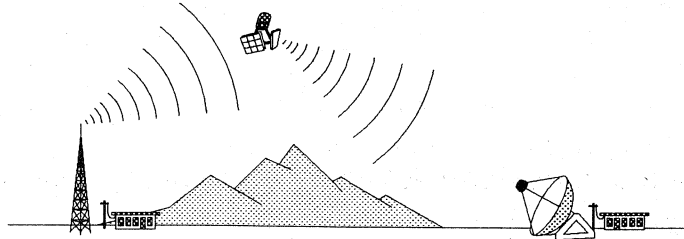
QLSI's performance is demonstrated by what can be done with one unit cell. The following specifications are worst-case performance of cells driving a fanout of two, driving 1 mm of interconnect, over variations in process, temperature and voltage.

Cell	Specification	Value
Flip-Flop	Max. toggle rate	2.5 GHz
	Setup / Hold	216 ps
2-Input NOR	Prop. delay	142 ps
4:1 Mux	Prop. delay	152 ps

QLSI standard cells are available for both commercial and military temperature ranges. Densities to 5000 equivalent gates are achievable in both package and die form. Please request the QLSI Standard Cell Manual for more information.

TriQuint

WIRELESS COMMUNICATIONS



TriQuint's Wireless Communications division offers a broad spectrum of RFIC products and services. Solutions include standard RFIC products, custom designs and foundry services. TriQuint's expertise ranges from high-volume commercial applications, such as cellular telephones, wireless LANs and GPS, to high-reliability satcomm applications.

Standard RFIC Components

Part #	Description	Speed	Package
TQ9111N	1-8 GHz Amplifier	1-8 GHz	20-Pin Ceramic
TQ9113N	IF/AGC Amplifier	30-500 MHz	8-Pin SOIC
TQ9114N	IF/AGC Amplifier	30-500 MHz	8-Pin SOIC
TQ9121N	Low-Noise Amplifier	1.2-1.6 GHz	8-Pin SOIC
TQ9121F	Low-Noise Amplifier	1.2-1.6 GHz	8-Pin Flat Pack
TQ9122N	Low-Noise Amplifier	100-2500 MHz	8-Pin SOIC
TQ9132N	50 mW Power Amplifier	800-2500 MHz	8-Pin SOIC
TQ9151	SPDT Reflective Switch w/TTL Driver	DC - 10 GHz	20-Pin Ceramic
TQ9152	SPDT Reflective Switch (no Driver)	DC - 10 GHz	20-Pin Ceramic
TQ9153	SPDT Absorptive Switch w/Driver	DC - 10 GHz	20-Pin Ceramic
TQ9172N	Active-Frequency Mixer	150-2500 MHz	8-Pin SOIC
TQ9201J	Low-Current RFIC Downconverter	500-1600 MHz	14-Pin SOIC
TQ9203J	Low-Current RFIC Downconverter	800-1000 MHz	14-Pin SOIC
TQ9205K	2.4 GHz Amplifier/Switch Front End	2.4 GHz	24-Pin SSOP
TQ9206	2.4 GHz Up/Down Converter	2.4 GHz	24-Pin SSOP
TQ9272P	Gen.-Purpose RFIC Downconverter	500-2500 MHz	20-Pin Ceramic

TriQuint

RFIC DESIGN CENTER

Design Center Features

Extensive design and training are available for customers interested in their own RFIC design and development capabilities. TriQuint has several state-of-the-art GaAs processes to accommodate a wide range of customer applications.

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> • Custom turnkey design services
Circuit simulations, layout
Testing, verification • IC design consulting and training
Classes, design manuals, simulation models | <ul style="list-style-type: none"> • Flexible choice of processes
<u>1D, 1A</u>: 1-μm Depletion-mode
<u>HA</u>: 0.5-μm Depletion-mode;
Ft to 21 GHz
<u>QED/A</u>: 1-μm E/D-mode;
Ft to 15 GHz | <ul style="list-style-type: none"> • Volume production capability
Fully automated 4" wafer processing
Wafer sawing
Advanced packaging capability
Die sort and package testing • Support services |
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TriQuint
SEMICONDUCTOR

ASICs

UTMC's ASIC design capabilities consist of flexible design methodologies including array-based and cell-based, as well as multiple design services and interfaces. UTMC's semicustom products offer densities of up to 100,000 usable gates and are fabricated in advanced silicon gate CMOS processes which include UTE/-R (1.2 μ drawn, 0.9 μ leff) and UTD/-R (1.5 μ drawn, 1.2 μ leff). Designed specifically for high-reliability applications, UTMC ASICs are available in Class B, Class S, Jan, and radiation-hardened quality levels. They meet radiation hardness requirements up to 3.0E6 rads(Si) total dose functional and less than 1.0E-10 SEU hardness.

Array-based Products

1.2 μ (0.9 μ leff) UTE/-R Gate Array Family

Device ¹	Equivalent Usable Gates ²	I/O Circuits		
		Signal	Power & Ground	Total
UTE25D/-R	25,000	176	40	216
UTE35T/-R	35,000	176	40	216
UTE75D/-R	75,000	256	80	296
UTE100T/-R	100,000	256	80	296

Notes:

1. The -R denotes the radiation-hardened option.
2. Based on NAND2 equivalents. Actual usable gate count is design-dependent. Estimates reflect a mix of functions, including RAM.
3. The number of usable device V_O pads may be limited by the selected package, pinout, and use of JTAG option.

1.5 μ (1.2 μ leff) UTD/-R Gate Array Family

Device ¹	Equivalent Usable Gates ²	I/O Circuits		
		Signal	Power & Ground	Total
UT116D/-R	3,400	100	16	116
UT160D/-R	6,000	136	24	160
UT180D/-R	7,800	156	24	180
UT212D/-R	11,000	186	32	212

Notes:

1. The -R denotes the radiation-hardened option.
2. Based on NAND2 equivalents. Actual usable gate count is design-dependent.
3. The number of usable device V_O pads may be limited by the selected package and pinout.

Cell-based Products

UTMC's cell-based capabilities offer high levels of functional integration in both UTE/-R and UTD/-R processes. This design methodology is supported by an extensive cell library which includes a variety of macros and analog functions. Using the cell-based approach, complex designs including data paths, state machines, RAM, ROM, and analog functions can be integrated on a single ASIC with maximum layout flexibility and efficiency.

EDA Support

UTMC's libraries and tools run on Mentor® and Cadence® workstations and are integrated with a host of other design and analysis tools. Using a combination of state-of-the-art proprietary and third-party design tools, UTMC delivers the EDA support and capability to handle complex, high-performance ASIC designs. In addition, UTMC supports design translation and synthesis to and from VHDL, EDIF, and FPGA source files, and third-party netlists.

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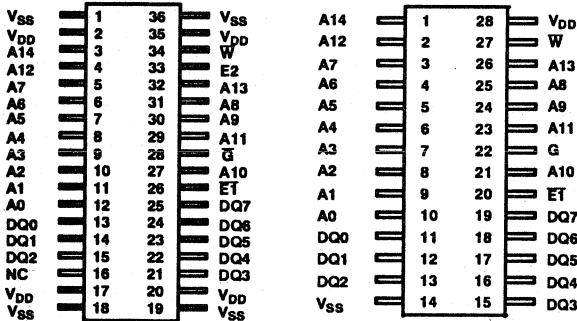
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Rad-Hard SRAMs

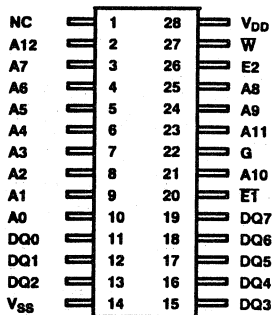
FEATURES -- UT7156 SEU-Hard SRAM

- Asynchronous operation for compatibility with industry-standard 32K x 8 SRAM
- 45ns maximum address access time, LET threshold greater than 70 MeV-cm²/mg (-55°C to +125°C)
- CMOS and TTL compatible input and output levels
- Three-state bidirectional data bus
- Low operating and standby current
- Full military operating temperature range, -55°C to +125°C, screened to specific test methods listed in Table I MIL-STD-883 Method 5004 for Level S or Level B
- Radiation-hardened process and design; total dose irradiation testing to MIL-STD-883 Method 1019
 - Total-dose: 1.0E6 rads(Si)
 - Dose rate upset: 1.0E9 rads(Si)/sec
 - Dose rate survival: 1.0E12 rads(Si)/sec
 - LET threshold: > 70 MeV-cm²/mg
 - Latchup immune
- Post-radiation AC/DC performance characteristics guaranteed by MIL-STD-883 Method 1019 testing at 1.0E6 rads(Si)
- Packaging options:
 - 36-pin 50-mil center flatpack (0.7 x 1.0)
 - 28-pin 100-mil center DIP (.600 x 1.4)
- 5-volt operation



32K x 8 SRAM Pinout (36)

32K x 8 SRAM Pinout (28)



8K x 8 SRAM Pinout (28)

For more information call 1-800-645-UTMC.

FEATURES -- UT67164 SEU-Hard SRAM

- Asynchronous operation for compatibility with industry-standard 8K x 8 SRAM
- JAN Class S QPL listed 5962-38294
- 55ns maximum address access time, LET threshold greater than 45 MeV-cm²/mg (-55°C to +125°C)
- TTL-compatible input and output levels
- Three-state bidirectional data bus
- Low operating and standby current
- Full military operating temperature range, -55°C to +125°C, screened to specific test methods listed in Table I MIL-STD-883 Method 5004 for Level S or Level B
- Radiation-hardened process and design; total dose irradiation testing to MIL-STD-883, Method 1019
 - Total dose 1.0E6 rads(Si)
 - Dose rate upset 1.0E9 rads(Si)/sec
 - Dose rate survival 1.0E12 rads(Si)/sec
 - LET threshold: > 45 MeV-cm²/mg
 - Latchup immune
- Post-radiation AC/DC performance characteristics guaranteed by MIL-STD-883 Method 1019 testing at 1.0E6 rads(Si)
- Packaging options:
 - 28-pin 100-mil center DIP (0.600 x 1.4)
 - 28-pin 50-mil center flatpack (0.700 x 0.75)
- 5-volt operation

PIN NAMES

A(14:0) A(12:0)	Address	\bar{W}	Write
DQ(7:0)	Data Input/Output	\bar{G}	Output Enable
$\bar{E}1$	Enable 1	V _{DD}	Power
E2	Enable 2	V _{SS}	Ground

Device Operation Truth Table

\bar{G}	W	$\bar{E}1$	E2	I/O Mode	Mode
X ¹	X	X	0	3-state	Standby
X	X	1	X	3-state	Standby
X	0	0	1	Data in	Write
1	1	0	1	3-state	Read ²
0	1	0	1	Data out	Read

Notes:

1. "X" is defined as a "don't care" condition.
2. Device active; outputs disabled.



1553/1773 UT69151 S μ MMIT™ Family

FEATURES

- Serial μ -coded Monolithic Multi-mode Intelligent Terminal (S μ MMIT)
- Comprehensive MIL-STD-1553 dual redundant Bus Controller (BC), Remote Terminal (RT), and Monitor Terminal (MT)
- Compliant MIL-STD-1553B Notice II RT
- MIL-STD-1773 compatible
- Internal illegalization in the RT mode of operation
- Full 16-bit (R/W) time-tag with user-defined resolution
- Simultaneous RTI/MT mode of operation
- Powerful BC instruction set with 15 opcodes and 7 condition codes
- Autonomous operation in all three modes of operation - ROM initialization
- Flexible host interface with DMA architecture
- Programmable interrupt scheme with internally-generated interrupt history list available
- Built-In-Test capability
- Supports IEEE Standard 1149.1 (JTAG)
- Assembler available to ease programming
- Built on a low-power, 1.2 μ CMOS process
- Standard Military Drawings available

United Technologies

INTRODUCTION

The UT69151 S μ MMIT family provides the system designer with an intelligent solution to MIL-STD-1553 multiplexed serial data bus design problems. The S μ MMIT family implements all three of the defined MIL-STD-1553 functions - Remote Terminal, Bus Controller, and Monitor. Operating either autonomously or with a tightly coupled host, the S μ MMIT family can solve a wide range of MIL-STD-1553 interface problems. A powerful RISC processing unit provides automatic message handling, message status, general status, and interrupt information. The register-based interface architecture provides many programmable functions as well as extensive information pertinent to device maintenance.

Using MCM-C package technology, the S μ MMIT Family integrates transceiver, memory, and a memory management unit into a single package. Component integration via package technology supplies system designers with a proven low risk solution to the MIL-STD-1553 interface problem.

Features	S μ MMIT	S μ MMIT LX/DX	S μ MMIT XT
Internal Transceivers	No	Yes	Yes
Internal Memory	No	No	32K x 16
External Memory	64K x 16	64K x 16	No
Internal Memory Management	No	No	Yes
Package Offerings	84-pin Pingrid Array 84-lead Flatpack	96-pin Pingrid Array 100-lead Flatpack	140-pin Pingrid Array 140-lead Flatpack
Package Area	1.2in ²	1.3in ²	1.9in ²
MIL-STD-1773 Compatible	Yes	No	No
BC, RT, and MT	Yes	Yes	Yes
Power Supplies	5 volt only	5 volt only -15 volt and 5 volt -12 volt and 5 volt	5 volt only -15 volt and 5 volt -12 volt and 5 volt

S μ MMIT is a trademark of United Technologies Microelectronics Center, Inc.

For more information call 1-800-645-UTMC.



Rad-Hard Programmable Logic

FEATURES -- UT22VP10 RPAL

- High speed Universal RPAL
 - t_{PD} : 25ns maximum (CMOS)
 - 30ns maximum (TTL)
 - f_{MAX} : 30MHz maximum
 - Supported by industry-standard programmers
 - Amorphous silicon anti-fuse
- Asynchronous & synchronous RPAL operation
 - Synchronous PRESET
 - Asynchronous RESET and PRELOAD
- Up to 22 input and 10 output drivers may be configured
 - CMOS & TTL-compatible input and output levels
 - Three-state output drivers
- Variable product terms, 8 to 16 per output
- 10 user-programmable output macrocells
 - Registered or combinatorial operation
 - Output driver polarity control selectable
 - 2 feedback paths available
- Low operating current
 - I_{DD} : 60ma + 1.5mA/MHz
- V_{DD} : 5.0 volts \pm 10%
- Radiation-hardened process and design; total dose irradiation testing to MIL-STD-883, Method 1019
 - Total dose: 1.0E6 rads(Si)
 - Single event effects:
 - Upset threshold 42 MeV-cm²/mg (min)
 - Latchup immune
 - Dose rate upset: 1.0E8 rads(Si)/sec
 - Dose rate survival: 1.0E10 rads(Si)/sec
 - Neutron fluence: 1.0E14 n/cm²
- QML Q & V compliant part (check factory for availability)
- Packaging options:
 - 24-pin 100-mil center DIP (0.300 x 1.2)
 - 24-lead flatpack
 - 28-lead quad-flatpack

FEATURES -- UT28F256 PROM

- Programmable, read-only, asynchronous, radiation-hardened, 32K x 8 memory
 - Supported by industry standard programmers
- 45ns maximum address access time (-55 °C to +125 °C)
- TTL and CMOS compatible input and output levels
- Three-state data bus
- Low operating and standby current
 - Operating: 155mA maximum (@22.2MHz)
 - Standby: 1mA maximum (post-rad)
 - Derating: 7mA/MHz
- Radiation-hardened process and design; total dose irradiation testing to MIL-STD-883, Method 1019
 - Total dose: 1.0E6 rads(Si)
 - Single event effects:
 - Upset threshold 80 MeV-cm²/mg (min)
 - Latchup Immune
 - Dose rate upset: 1.0E8 rads(Si)/sec
 - Dose rate survival: 1.0E10 rads(Si)/sec
 - Neutron fluence: 1.0E14 n/cm²
- QML Q & V compliant part (check factory for availability)
 - AC and DC testing at factory
- Packaging options:
 - 28-pin 100-mil center DIP (0.600 x 1.4)
 - 28-lead 50-mil center flatpack (0.700 x 0.75)
 - 28-lead 50-mil center flatpack (0.490 x 0.74)
- V_{DD} : 5.0 volts \pm 10%

For more information call 1-800-645-UTMC.





KeyCoder™ ICs and Boards HCMOS Keyboard Encoders

Features

- Off-the-shelf availability
- For PC/XT/AT/PS2, RS232, DEC, SUN, ACCESS.bus or HP-HIL systems
- 8042 auxiliary port for external keyboard, mouse, barcode reader, etc.
- Custom versions available
- Wide temperature range, -40°C to +85°C
- Low power consumption, 5 and 3 volt operation
- Quad Flat Pack, PLCC or DIP package options
- Affordable evaluation kits are immediately available

Applications

- Laptop/notebook keyboards
- Control panels
- POS Systems
- Foreign language terminals
- Test and measurement equipment
- Automatic teller machines
- Specialized data entry devices
- Mobile computing devices
- Industrial keyboards/keypads
- Pen-based computers
- Medical instruments
- DEC compatible keyboards
- Software specific input devices
- Instrumentation
- Single-board and chip set based systems
- Energy Star™ Computers

USAR PART NUMBER	MAX NO OF KEYS	SCANNING MODE	STATUS LEDS	COMMUNICATION PROTOCOL	AUX PORT	PACKAGE*	BOARDS AVAILABLE	COMMENTS
CUSTOM CONTROL PANELS AND KEYPADS								
K25C81	144	Two-Key Inhibit		PC/XT/AT/PS2	Yes	40-P 44-FN 44-FB	Yes	Single chip solution. Supports additional external keyboard. Maintains data integrity of custom keypads.
S25C8	144	Two-Key Inhibit		RS232		40-P 44-FN 44-FB		Serial encoder with optical knob interface.
LAPTOP/NOTEBOOK, STANDARD AND LARGE KEYBOARDS								
UR5HC408	144	N-Key Rollover		PC/XT/AT/PS2	Yes	40-P 44-FN 44-FB	Yes	Supports multiple key combinations. Suitable for large keyboards.
UR5HC418	128	N-Key Rollover	Yes	PC/XT/AT/PS2	Yes	40-P 44-N 44-FB	Yes	Support of integrated pointing device and all functions of 101/102 standard keyboard.
UR5HCFJL	128	N-Key Rollover	Yes	PC/XT/AT/PS2	Yes	40-P 44-FN 44-FB	Yes	Self-power management. Lowest power consumption for battery systems.
UR5HCFJ8	82	N-Key Rollover	Yes	PC/XT/AT/PS2	Yes	40-P 44-FN 44-FB	Yes	Interfaces Fujitsu and other laptop/notebook keyboards to BIOS compatible systems.
USER-PROGRAMMABLE								
UR5HC439	128	N-Key Rollover	Yes	PC/XT/AT/PS2	Yes	40-P 44-FN 44-FB	Yes	RAM programmable key assignments.
UR5HC449	144	N-Key Rollover	Yes	PC/XT/AT/PS2 or RS232	Yes	52-FN 64-FB	Yes	User-programmable keys including macros. Retains data without battery support.
INTEGRATED POINTING DEVICES								
UR5HCDMP	3		Yes	PS2/RS232			Yes	Dome point integrated pointing devices.
PROTOCOL CONVERTERS								
UR6HCPCS	PC/XT/AT/PS2 to RS232					40-P 44-FN 44-FB		Convert PC/XT/AT/PS2 keyboard communication protocol to RS232, Parallel, or HP-HIL. Interface inexpensive PC keyboards to proprietary systems.
UR6HCPCP	PC/XT/AT/PS2 to Parallel							
UR6HCPCH	PC/XT/AT/PS2 to HP-HIL							
NEW INTERFACES								
NEW	Interfaces for HP-HIL, SUN, ACCESS.bus			New set of input device encoders to interface a variety of input devices - including custom keyboards, keypads, PS2 style mice, and pointing devices, etc. - to HP-HIL, SUN & ACCESS.bus compatible systems.				

Package Definitions*

P Dual-in-Line Plastic FN (PLCC) FB Quad Flat Pack

*For technical data and other information, contact
Customer Support, Tel. 212.226.2042
Fax. 212.226.3215*

USAR SYSTEMS, INC., 568 BROADWAY, NO. 405, NEW YORK, NY 10012

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THE WESTERN DESIGN CENTER, INC.

2166 East Brown Road • Mesa, Arizona 85213 • 602-962-4545 • FAX 602-835-6442

The Western Design Center, Inc. (WDC), was founded in 1978 in Mesa, Arizona. The company designs, licenses, and sells microprocessors and microcomputers. WDC is known primarily for its W65C product line, which includes enhanced CMOS versions of the 6502 microprocessor.

WDC licenses its core microprocessors for application specific uses.

Microprocessors

W65C02S CMOS 8-bit Microprocessor offers complete hardware and software compatibility with existing 6500 series products as well as significant enhancements. Ten new instructions (twenty-nine new opcodes) and two new addressing modes have also been added. The W65C02S is able to run at higher clock speeds than the previous designs and is fully static. The popularity of the 6502 instruction set and small die size make the W65C02S an excellent choice as a core microprocessor in single-chip microcomputer ASIC devices. Available in a 40 lead plastic DIP, 44 lead PLCC, 44 lead QFP or as die.

KEY FEATURES: ▲CMOS low power process with microamp standby current ▲Wide operating voltage range, 1.2-6.0V ▲66 microprocessor instructions ▲180 operational codes ▲15 addressing modes ▲64K-byte addressable memory ▲Power management instructions ▲BE pin controls I/O state of data bus, address bus and RWB ▲Early address valid allows use with slower, lower cost memories ▲Decimal and binary arithmetic ▲Pipeline architecture ▲Variable length stack ▲Interrupt capability ▲Non-maskable interrupt ▲"Ready" input ▲Bit manipulation instructions.

W65C816S CMOS 16-bit Microprocessor features total software compatibility with the 8-bit W65C02S. The W65C816S extends addressing to a full 16 megabytes. A software switch determines whether the processor is in the 8-bit "emulation" mode, or in the native mode, thus allowing existing systems to use the expanded features. The ABORT input can interrupt the currently executing instruction without modifying internal register, thus allowing virtual memory system design. Available in a 40 lead plastic DIP, 44 lead PLCC, 44 lead QFP or as die.

KEY FEATURES: ▲CMOS low power process with microamp standby current ▲Wide operating voltage range, 1.2-6.0V ▲Emulation mode allows complete hardware and software compatibility with 6502 designs ▲24-bit address bus allows access to 16 MBytes of memory space ▲Full 16-bit ALU, Accumulator, Stack Pointer and Index Registers ▲Abort (ABORT) input and associated vector supports virtual memory system design ▲Separate program and data bank registers allow program segmentation of full 16 MByte linear addressing ▲New Direct Register and stack relative addressing provides capability for re-entrant, re-recursive and re-locatable programming ▲24 addressing modes-13 original 6502 modes with 91 instructions using 255 opcodes ▲Wait-for Interrupt (WAI) and Stop-the-Clock (STP) instructions further reduce power consumption, decrease interrupt latency and allows synchronization with external events ▲Block move ability.

Microcomputers

W65C134S CMOS 8-bit Microcomputer is a complete fully static 8-bit microcomputer fabricated on a single chip using a low power CMOS process. The W65C134S complements the W65C02S 8-bit microprocessor. The following features make the static W65C134S a leading candidate for hi-rel and medical industry applications. Available in a 68 lead PLCC or 80 lead QFP surface mount.

KEY FEATURES: ▲CMOS low power process with microamp standby current ▲Wide operating voltage range, 1.0-6.0V ▲W65C02S compatible CPU ▲Single chip microcomputer: 56 CMOS compatible I/O lines, 4096x8 ROM; 192x8 RAM ▲Low power modes ▲Twenty-two priority encoded interrupts ▲UART 7/8-bit w/wo odd or even parity ▲64K byte linear address space ▲4x16 bit timer/counters ▲Bus control register for external memory ▲Internal or external ROM ▲8 decoded Chip Select outputs ▲Real time clock features ▲Industry standard development support tools for all languages.

W65C265S CMOS 16-bit Microcomputer is a complete fully static 16-bit microcomputer. The W65C265S complements the W65C816S 16-bit microprocessor. The following features make the W65C265S a leading candidate for 16-bit microcomputer applications. Available in a 80 lead PLCC or 100 lead QFP surface mount.

KEY FEATURES: ▲CMOS low power process with microamp standby current ▲Wide operating voltage range, 1.0-6.0V ▲W65C816S compatible CPU ▲Single chip microcomputer: 2 Tone Generators, 64 CMOS compatible I/O lines, 8Kx8 ROM; 576x8 RAM, fast oscillator start and stop feature ▲16Mbyte linear address space ▲Twenty-nine priority encoded interrupts ▲Four UART's ▲Time of Day (ToD) clock features ▲8x16 bit timer/counters ▲Bus Control Register ▲8 Programmable chip select outputs ▲Industry standard development support tools for all languages.

Peripheral

W65C22S CMOS Versatile Interface Adaptor (VIA) is a flexible I/O device for use with the W65C series microprocessor family. Two program controlled 8-bit directional peripheral I/O ports allow direct interfacing between the microprocessor and selected peripheral units. Each port has input data latching capability. Two programmable Data Direction Registers allow selection of data direction (input or output) on an individual line basis. Also provided are two programmable 16-bit interval timer/counters with latches. Serial Data transfers are provided by a serial-to-parallel/parallel-to-serial shift register. Application versatility is further increased by various control registers, including an interrupt flag register, an interrupt enable register and two function Control Registers. Available in a 40 lead plastic DIP, 44 lead PLCC, 44 lead QFP.

KEY FEATURES: ▲CMOS low power process with microamp standby current ▲Wide operating voltage range, 1.2-6.0V ▲Two 8-bit, bidirectional peripheral I/O Ports ▲Two powerful 16-bit programmable Interval Timer/Counters ▲Serial bidirectional peripheral I/O Port ▲Enhanced "handshake" feature ▲Latched Input/Output Registers on both I/O Ports ▲Programmable Data Direction Registers ▲Bus compatible with high-speed W65C02S and W65C816S.

Benchmarks

Execution speeds in microseconds at 8MHz operating frequency.

Operation	Data Type	WDC	Intel	Motorola
		65C816S 8MHz	8086 8MHz	MC68000 8MHz
Register to register move	Byte/word	0.25	0.25	0.50
	double word	0.50	0.50	0.50
Memory to register move	Byte/word	0.38/0.50	2.12/2.12	1.50/1.50
	double word	1.00	4.25	2.00
Add memory to register	Byte/word	.038/0.50	4.37/4.37	2.50/2.50
	double word	1.25	8.75	3.75
Compare memory to memory	Byte/word	0.75/1.00	2.25/2.25	1.50/1.50
	double word	2.00	4.50	2.25
Conditional Branch	Branch taken	0.38	1.00	1.25
	not taken	0.25	0.50	1.00
Modify Index branch if zero	Branch taken	0.62	1.37	1.25
Branch to subroutine	Branch taken	0.75	2.37	2.25
Interrupt Latency	Interrupt	1.50	22.75	21.75

Power consumption is directly related to the number of active devices and to the speed of operation.

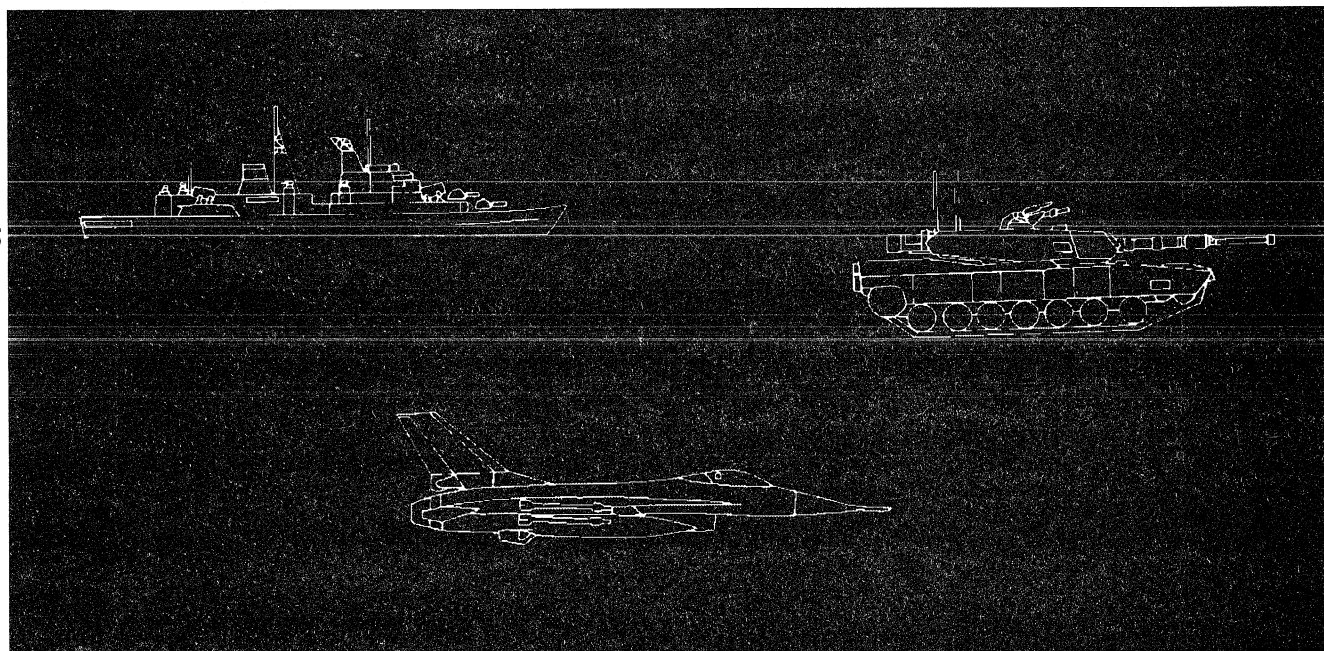
The differences between the device families is significant as can be seen when we compare the numbers of transistors on the CMOS versions of them as follows:

	65C816S	8086	68000
Number of transistors	21,000	100,000+	100,000+

Western Design Center

EFA E2C **EA-6B** **M1-A2** **F18** **F16** SH-60
 MK50 **ARC-210** **AYK-14** OV-10D ALQ-149 **Patriot**
CH-46 F15-E **HH60** **KC-130** **AH-1**
 SAHRS CH-53 **AV-8B** GPWSII **S3**
P-3 **F-14** **ALQ-149** **CAIS** C-17
Rafale **DSP** **CPU-140** **M1-A2** **HARM**
EPLRS **F22** **Cruise** **RISC** Futurebus+ **Multimode**
UYK44

White Technology



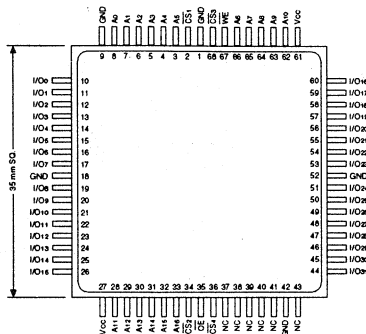
MIL-883
MEMORY
FOR CHALLENGING
APPLICATIONS

WS-128K32-XG4X

4 Megabit CMOS SRAM Module

FEATURES

- Access Times of 25 to 120nS
- 68 lead, CQFP, 1.38 inch square Hermetic Gullwing Package
- Configurable as 128Kx32, 256Kx16 or 512Kx8
- Upgradable to 512Kx32 in same package.
- Commercial, Industrial and Military Temperature Ranges
- TTL Compatible Inputs and Outputs
- Low Power CMOS Fully Static Design
- 5 Volt Power Supply
- Built in Decoupling Caps and Multiple Ground Pins for Low Noise Operation

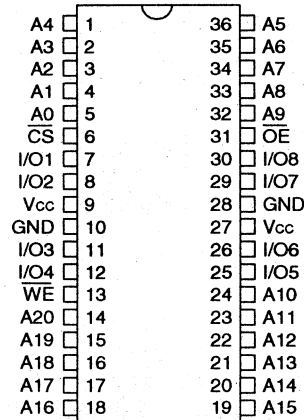


WS-2M8-XCX

2M x 8 CMOS SRAM Module

FEATURES

- Access Times 25 to 120nS
- 36 Pin DIP
- Hermetic Ceramic Package
- Full MIL Screening Available
- Low Power CMOS Fully Static Design
- Data Retention as low as 2.0 Volts

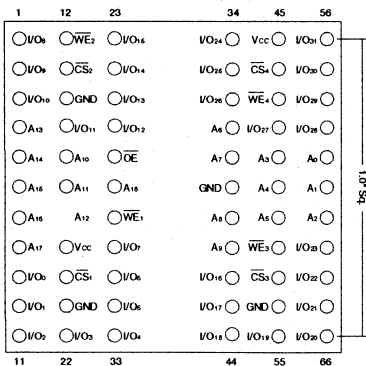


WS-512K32-XHX

16 Megabit CMOS SRAM Module

FEATURES

- Access Times of 25 to 120nS
- 66 Pin, PGA Type, 1.38 inch square HIP, Hermetic Ceramic Package
- Configurable as 512Kx32, 1024Kx16 or 2Mx8
- Battery Back-Up Operation
- Commercial, Industrial and Military Temperature Ranges
- TTL Compatible Inputs and Outputs
- Low Power CMOS Fully Static Design
- 5 Volt Power Supply
- Built In Decoupling Caps and Multiple Ground Pins for Low Noise Operation

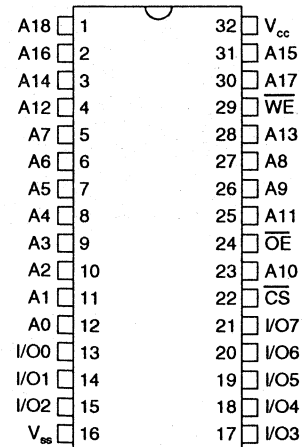


WS-512K8-XPX

512K x 8 CMOS SRAM Module

FEATURES

- Access Times of 25 to 55nS
- 32 Pin DIP, JEDEC Pinout
- FR4/Plastic Package
- Commercial and Industrial Temperature Ranges
- 5 Volt Operation
- All CMOS Fully Static Design, No Clocks
- Battery Back-Up Operation
- TTL Compatible Inputs and Outputs
- Onboard Decoupling Capacitors



■ Many WTI SRAM memory modules can be manufactured with radiation tolerant die for space applications. Contact factory for details and radiation information.
 ■ WTI supplies full MIL-883 certified SRAM modules per EQC-92-138 and Standard Military Drawings: 5962-93156, 5962-93157 and 5962-92078.

White Technology, 4246 E. Wood Street, Phoenix, AZ 85040, (602) 437-1520, Fax: (602) 437-9120

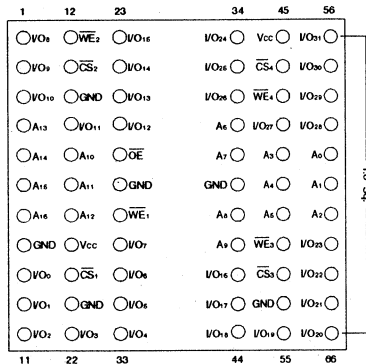
White Technology

WE-128K32-XHX

4 Megabit CMOS EEPROM Module

FEATURES

- Access Time of 150nS
- 66 Pin, PGA Type, 1.18 inch square HIP, Hermetic Ceramic Package
- Configurable as 128Kx32, 256Kx16 or 512Kx8
- Commercial, Industrial and Military Temp Ranges
- Low Power CMOS, 5mA Standby
- Automatic Page Write Operation
- Data Polling for End of Write Detection
- Hardware and Software Data Protection
- TTL Compatible Inputs and Outputs
- 5 Volt Power Supply
- Built In Decoupling Caps and Multiple Ground Pins for Low Noise Operation
- Data Retention @ 25°C, 10 Years
- Write Endurance, 10,000 Cycles

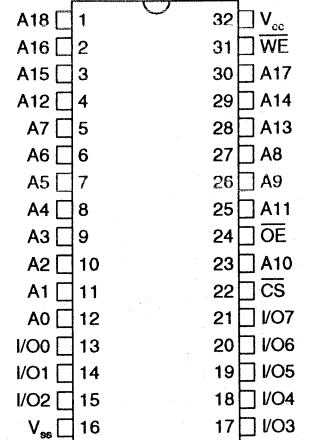


WE-512K8-XCX

512K x 8 CMOS EEPROM Module

FEATURES

- SMD number 5962-93091
- Read Access Time 150nS
- JEDEC Standard 32 Pin DIP, Hermetic Ceramic Package
- Full Military and Industrial Temperature Ranges
- MIL-STD-883D Compliant Devices Available, QML 38534, EQC-92-070
- Low Power CMOS Operation: 3mA Standby Typical, 80mA Operating Max.
- Automatic Page Write Operation
- Data Polling for End of Write Detection
- Hardware and Software Data Protection
- CMOS and TTL Compatible Inputs and Outputs
- Write Endurance 10,000 Cycles
- Data Retention at 25°C, 10 Years

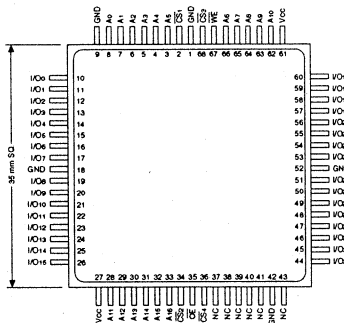


WE-128K32-XG4X

4 Megabit CMOS EEPROM Module

FEATURES

- Access Times of 120nS, 150nS
- 68 lead, CQFP, 1.38 inch square, Hermetic Gullwing Package
- Configurable as 128Kx32, 256Kx16 or 512Kx8
- Commercial, Industrial and Military Temp Ranges
- Low Power CMOS, 5mA Standby
- Automatic Page Write Operation
- Data Polling for End of Write Detection
- Hardware and Software Data Protection
- TTL Compatible Inputs and Outputs
- 5 Volt Power Supply
- Built In Decoupling Caps and Multiple Ground Pins for Low Noise Operation
- Data Retention @ 25°C, 10 Years
- Write Endurance, 10,000 Cycles



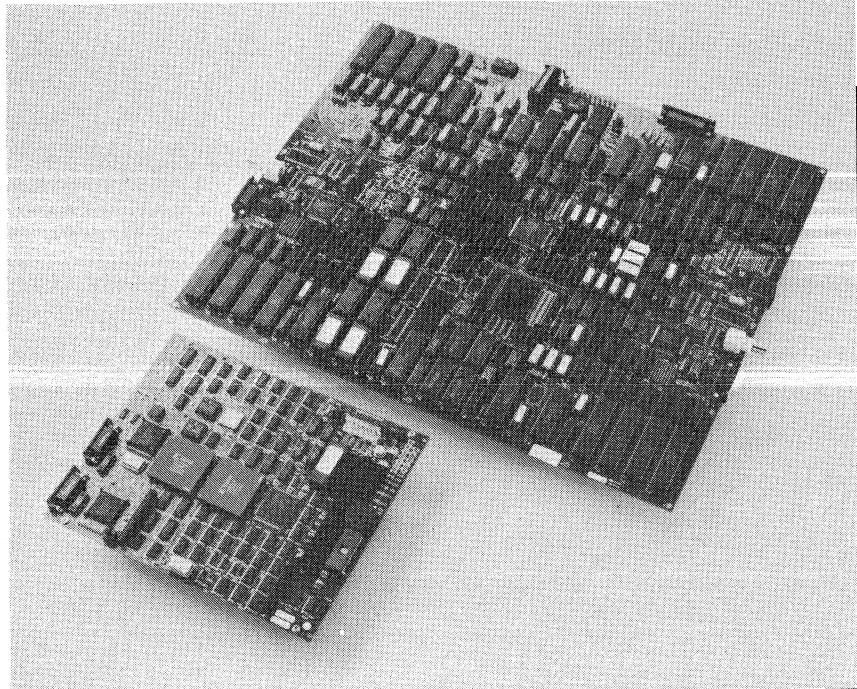
Unique on-chip system features produce the industry's highest integration FPGA.

The newest Xilinx FPGA family introduces several industry firsts for FPGA devices. The XC4000 Family integrates unique system features on-chip, and delivers the highest level of system integration in any field programmable device. In addition, our XACT® development system has been tailored to support these XC4000 features. The result – much lower chip count, easier design implementation, and greatly improved system performance.

Xilinx

On-Chip System Features:

- User-programmable RAM
- Wide-edge decoders
- Dedicated carry logic
- Eight dedicated clock nets
- JTAG boundary scan
- Internal 3-state busses
- 12/24 mA output current



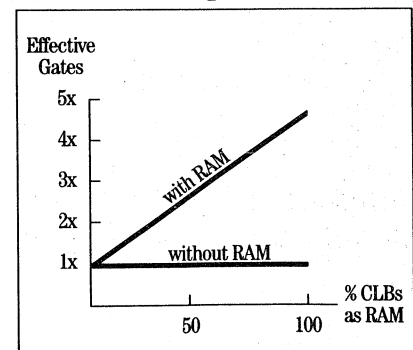
User-programmable RAM

Historically, small, fast and inexpensive RAM has not been available as an on-chip system design resource. By providing programmable logic and programmable memory on the same chip, the XC4000 Family redefines the design methodology used in developing overall system and board architectures.

Functions that were previously designed using many internal registers or expensive off-chip SRAMs – like deep register files, small FIFOs, and multiple accumulators – are now more easily implemented and significantly faster with the XC4000 programmable memory resource. An example is a 256 x 9 FIFO which, when designed on an XC4010™, runs well in excess of 25 MHz and occupies less than 20% of the device.

Additionally, the XACT development system software provides an easy to use memory compiler (MEMGEN), complete with custom RAM symbol and automatic logic/memory partitioning.

Benefits of On-Chip RAM



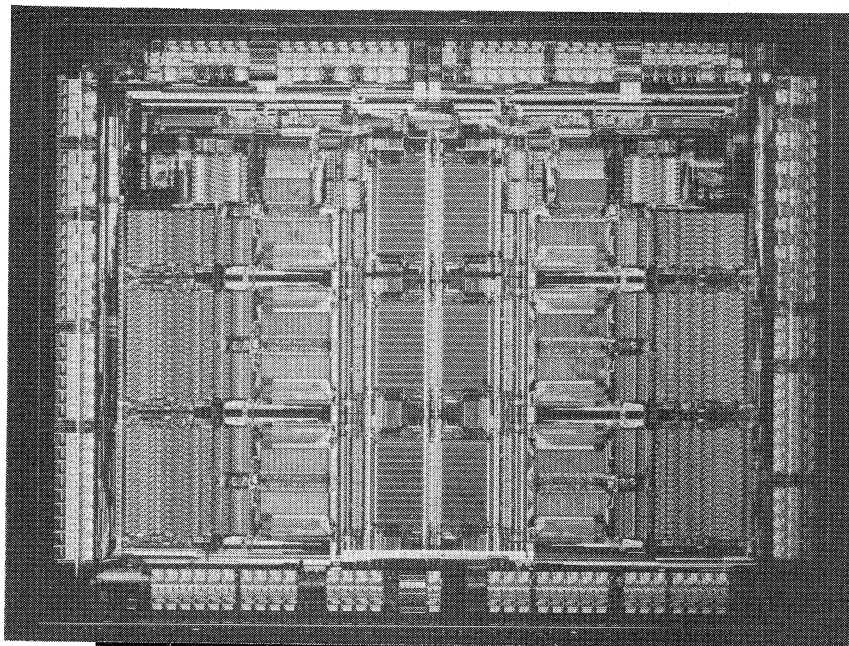
On-chip RAM provides dramatic increase in gate utilization.

XC7300 EPLD Family

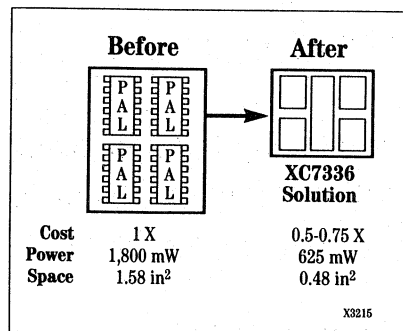


High speed, high density EPLDs provide the best solution for PAL® conversion

In today's competitive market, designers rely on increased levels of product integration to reduce board space, cost and power, while minimizing time-to-market. In particular, users of multiple low-density PALs are turning to more complex devices to meet these goals. With a PAL-like architecture and easy-to-use software, the XC7300 EPLD family offers the *best* solution for converting multiple PALs or GALs to a single complex programmable logic device. Its unique Dual-Block™ architecture delivers both high speed and logic density while minimizing the risk of changing technologies.



Direct PAL Conversion



PAL Conversion Highlights

- PAL conversion without redesign
- 100% routing via the UIM™. Guarantees that once PALs are converted to XC7300 function blocks they can be interconnected as they appear in the original design.
- Automatic PAL conversion software directly converts PAL designs to XC7300 family devices.
- Fast Function Blocks work as high speed PAL targets, with <10 ns pin-to-pin delay and >80 MHz cycle time.
- High density function blocks work as complex PAL targets. With up to 17 product terms per output, they operate at greater than 55 MHz, *including interconnect*.
- Conversion software requires less than 5 minutes to convert, optimize and map PALs into an EPLD.

System Feature Highlights

- Dual Block architecture is *fast and complex*.
- User selectable I/O allows 3.3 volt or 5 volt I/O operation.
- Simplified system interface with embedded ALUs, input registers, and multiple clocking options.
- High performance 0.8 micron CMOS EPROM technology for high reliability and reprogrammability.
- Supported by the low cost, menu driven DS550 translator and the new Xilinx Base Development System.
- Programmable power management allows control of speed and power on a macrocell by macrocell basis.

Xilinx

XILINX INC., 2100 LOGIC DRIVE, SAN JOSE, CA 95124 (408) 559-7778

Family Architecture Comparison

Architecture	EPLDs		FPGAs	
	XC7200 Family	XC7300 Family	XC2000/L XC3000/A/L XC3100 Family	XC4000/A/H Family
	PAL-like, AND-OR plane Macrocells and product terms	Advanced PLD – high speed, high density function blocks (FB) in the same device	Gate array – like Many small blocks	Gate array – like Many small blocks
Logic Capacity	36 – 72 macrocells Integrate 4 – 8 PAL/ 22V10s	36 – 144 macrocells Integrate 4 – 16 PAL/ 22V10s	800 – 9,000 gates Integrate TTL, MSI, PLDs	2,000 – 13,000 + gates Integrate TTL, MSI, PLDs, RAM
Design Timing	Fixed, PAL-like 60 MHz – predictable for most applications	Fixed, PAL-like 80 MHz – predictable for most applications	Gate array-like – depends on application Can be >100 MHz, typically 25 – 40 MHz (XC3000) or 50 – 80 MHz (XC3100)	Gate array-like – depends on application Can be >100 MHz, typically 30 – 50 MHz
Number of I/Os	Fewer – like EPLD/PAL 36 – 72	38 – 156	Many – like gate array 58 – 176	Many – like gate array 64 – 192
Number of FF	Fewer – like EPLDs 72 – 144	36 – 234	Many – like gate array 122 – 1,320	Very large number - 256 – 1,536 plus on-chip RAM - up to 18.4 K bits
Power Consumption	0.5 – 1.25 W static 0.75 – 1.5 W typical	0.4 – 2.0 W static 0.5 – 2.25 W typical Programmable power management	Very low, mW static Dynamic – depends on application 0.12 – 1.0 W typical	Very low, mW static Dynamic – depends on application 0.25 – 2.0 W typical
System Features	Arithmetic carry logic 100% interconnect guaranteed ALU per macrocell	Like XC7200 plus: Carry look ahead High output drive	Two global clock buffers Programmable output slew rate Internal 3-state busses Power-down mode 8 mA output drive for XC3100	Eight global clock buffers Programmable output slew rate Internal 3-state busses RAM for FIFOs and registers JTAG for board test Fast carry logic for arithmetic Wide decode 12 mA output drive, 24 mA per pair (24 mA/48 mA for A/H families)
Process	CMOS EPROM	CMOS EPROM	CMOS static RAM	CMOS static RAM
Programming Method	PROM programmer OTP or UV erasable Configuration on chip	PROM programmer OTP or UV erasable Configuration on chip	Programmed in circuit Four modes Configuration stored externally	Programmed in circuit Six modes Configuration stored externally
Re-programmable	Yes – after UV erasure	Yes – after UV erasure	Yes – in milliseconds Reprogrammable in circuit	Yes – in milliseconds Reprogrammable in circuit
Factory Tested	Yes	Yes	Yes	Yes
Key Applications	Complex state machines Complex counters Bus & peripheral interface Memory control PAL-cruncher Accumulators/incrementors Magnitude/window comparators	High speed graphics Multiport memory controllers High speed bus interface 50 MHz, 16 bit accumulators	Simple state machines General logic replacement Reprogrammable applications Battery-powered logic 3 V operation Very fast counters	Simple state machines Complex logic replacement Board integration Adders/comparators Reprogrammable applications RAM application: FIFOs, buffers Fast/compact counters JTAG boards Bus interfacing

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Speed and Density

	EPLDs			FPGAs					
	XC7200A (-16)	XC7336 (-7)*	XC7354 (-10)	XC3000 (-125)		XC3100 (-3)		XC4000 (-5)	
16-Bit Synchronous Binary Counter	60 MHz	83 MHz	83 MHz	51 MHz 24 CLBs		102 MHz 24 CLBs		111 MHz 17 CLBs	
16-Bit Unidirectional Loadable Counter	Max Density	60 MHz	83 MHz	83 MHz	18 MHz 16 CLBs	31 MHz 16 CLBs	43 MHz 9 CLBs		
	Max Speed	60 MHz	83 MHz	83 MHz	32 MHz 24 CLBs	55 MHz 24 CLBs	43 MHz 9 CLBs		
16-Bit U/D Counter	Max Density	60 MHz	83 MHz	83 MHz	15 MHz 16 CLBs	28 MHz 16 CLBs	43 MHz 9 CLBs		
	Max Speed	60 MHz	83 MHz	83 MHz	30 MHz 27 CLBs	50 MHz 27 CLBs	43 MHz 9 CLBs		
8:1 Multiplexer	22 ns	7.5 ns	10 ns	16 ns 8 CLBs	10 ns 8 CLBs	16 ns 5 CLBs			
12-Bit Decode From Input Pad	22 ns	7.5 ns	10 ns	15 ns 4 CLBs	12 ns 4 CLBs	12 ns 0 CLBs			
16-Bit Accumulator	17 MHz	n/a	51 MHz	21 MHz 29 CLBs	36 MHz 29 CLBs	39 MHz 9 CLBs			
Data Path ¹	60 MHz	83 MHz	83 MHz	50 MHz 16 CLBs	95 MHz 16 CLBs	85 MHz 12 CLBs			
Timer Counter ²	60 MHz	83 MHz	83 MHz	28 MHz 23 CLBs	52 MHz 23 CLBs	40 MHz 12 CLBs			
State Machine ³	60 MHz	83 MHz	83 MHz	18 MHz 34 CLBs	30 MHz 34 CLBs	31 MHz 25 CLBs			
Arithmetic ⁴	12 MHz	n/a	31 MHz	17 MHz 23 CLBs	29 MHz 23 CLBs	20 MHz 16 CLBs			
16 Channel, 32-Bit DMA	n/a	n/a	n/a	n/a n/a	n/a n/a	20 MHz 72 CLBs			

* Estimated

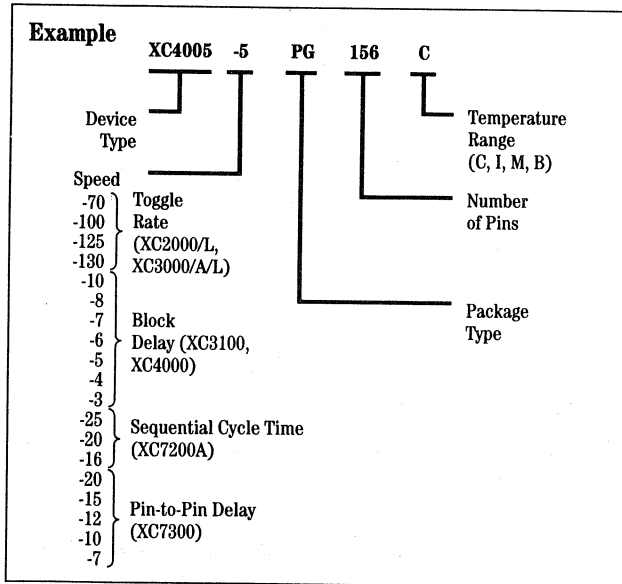
Notes:

- 32 inputs, 4:1 mux, register, 8-bit shift register
- 8-bit T/C, latch, mux, compare
- 16 states, 40 transitions, 10 inputs, 8 outputs
- 4x4 multiplier, 8-bit accumulator

- Benchmark data, including design files is available in the XAPP Application Handbook and on the Xilinx bulletin board as XAPP files.
- System speeds for slower parts (e.g. -100, -70) can be approximated by derating with the ratio (e.g. 0.67 for -100, 0.47 for -70).
- All speeds are worst case temperature and voltage.

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Ordering Information



XC1700 Serial PROMs (for configuration storage)

		PACKAGE OPTIONS			
Device	Density	PD8	S08	DD8	PC20
XC1718D	18K	X	X	X	X
XC1736D	36K	X		X	X
XC1765D	64K	X		X	X
XC17128	128K	X		X	X

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Product Comparison

		Typical Gates	Typical Gates Using RAM	Max I/Os	Flip-Flops	RAM bits	Macrocells	Available CLBs
EPLDs	XC7200A Family							
	XC7236A	1600	n/a	36	68	n/a	36	n/a
	XC7272A	3200	n/a	72	126	n/a	72	n/a
	XC7300 Family							
	XC7336	1000	n/a	48	36	n/a	36	n/a
	XC7354	2200	n/a	66	108	n/a	54	n/a
	XC7372	3000	n/a	84	126	n/a	72	n/a
	XC73108	4600	n/a	120	198	n/a	108	n/a
XC73144	6200	n/a	156	234	n/a	144	n/a	
FPGAs	XC2000 Family							
	XC2064/L	0.8K-1.8K	n/a	58	122	0	n/a	64
	XC2018/L	1.2K-1.5K	n/a	74	174	0	n/a	100
	XC3000/XC3100 Family							
	XC3020/A/L/XC3120	1.3K-1.8K	n/a	64	256	0	n/a	64
	XC3030/A/L/XC3130	2.0K-2.7K	n/a	80	360	0	n/a	100
	XC3042/A/L/XC3142	2.0K-3.7K	n/a	96	480	0	n/a	144
	XC3064/A/L/XC3164	4.0K-5.5K	n/a	120	688	0	n/a	224
	XC3090/A/L/XC3190	5.0K-7.5K	n/a	144	928	0	n/a	320
	XC3195	6.5K-9.0K	n/a	176	1,320	0	n/a	484
	XC4000 Family							
	XC4002A	1.6K-2.0K	2.2K-2.8K	64	256	2,048	n/a	64
	XC4003/XC4003A	2.5K-3.0K	3.5K-4.2K	80	360	3,200	n/a	100
	XC4003H	2.5K-3.0K	3.5K-4.2K	160	200	3,200	n/a	100
	XC4004A	3.2K-4.0K	4.6K-5.6K	96	480	4,608	n/a	144
	XC4005/XC4005A	4.0K-5.0K	6.0K-7.0K	112	616	6,272	n/a	196
	XC4005H	4.0K-5.0K	6.0K-7.0K	192	392	6,272	n/a	196
	XC4006	5.0K-6.0K	7.5K-8.5K	128	768	8,192	n/a	256
	XC4008	6.5K-8.0K	9.7K-11.2K	144	936	10,368	n/a	324
	XC4010	8.0K-10.0K	12.0K-14.0K	160	1,120	12,800	n/a	400
XC4013	10.0K-13.0K	12.0K-16.0K	192	1,536	18,432	n/a	576	

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* Assumes 10% of device used as RAM.

XC2000/XC3000 Product Family Extension Summary

Family	5-Volt Applications				3-Volt Applications	
	XC2000	XC3000	XC3000A	XC3100	XC2000L	XC3000L
Speed (T _{IL0})	5.5 ns	5.5 ns	4.1 ns	2.7 ns	9.5 ns	6.7 ns
Density Range (Available CLBs)	64 - 100	64 - 320	64 - 320	64 - 484	64 - 100	64 - 320
Cost	Lowest	Low	Low	Medium	Lowest	Low
Special Features			✓ ✓ ✓	✓		✓ ✓ ✓
Advanced Packaging	VQFP		VQFP	VQFP	VQFP	VQFP
Low Power (I _{CCPD})	500 µA	250 µA	50 µA	5 mA	10 µA	10 µA

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Package Options

	Standard Lead Pitch Body Temp Options Ordering Code	Surface Mount					Thru-hole	
		PLCC	PQFP	TQFP	VQFP	CQFP	PGA	BGA
		JEDEC 50 mil Plastic C, I PC	EIAJ 0.65/0.5 mm Plastic C, I PQ	EIAJ 0.5 mm Plastic C, I TQ	EIAJ 0.5 mm Plastic C, I, V, Q	JEDEC 25 mil Ceramic M, B CB	JEDEC 100 mil Ceramic/Plastic C, I, M, B PG, PP	JEDEC 1.5 mm FR4 C, WB, PB
EPLD Family	XC7236A	44						
	XC7272A	68, 84						
	XC7336	44					84	225
	XC7354	44, 68						
	XC7372	68, 84						
	XC73108 XC73144	84	160				144 184	225 225
FPGA Family	XC2064/L	44, 68					68	
	XC2018/L	44, 68, 84		100	64, 100		84	
	XC3020/XC3120	68, 84	100	100		100	84	
	XC3030/XC3130	44, 68, 84	100	100	64		84	
	XC3042/XC3142	84	100	100	100		84, 132	
	XC3064/XC3164	84	160	144		100	132	
	XC3090/XC3190	84	160, 208				175	
	XC3195	84	160, 208			164	175, 223	
	XC4002A	84	100	100			120	
	XC4003A	84	100	100		100	120	
	XC4003H		208				191	
	XC4004A	84	160	144			120	
	XC4005A	84	160, 208	144			156	
	XC4005H		240			164	223	
	XC4006		160, 208				156	
XC4008		208				191		
XC4010		208			196	191		
XC4013		208, 240				223		

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I/O Pins Per Package

Package Pins/ Type	EPLD Family										FPGA Family															
	XC1286A	XC1286A	XC1286A	XC1286A	XC1286A	XC1286A	XC1286A	XC1286A	XC1286A	XC1286A	XC3090A/L/XC3120	XC3090A/L/XC3130	XC3090A/L/XC3142	XC3090A/L/XC3164	XC3195	XCA002A	XCA002A	XCA003H	XCA004A	XCA005A	XCA005H	XCA006	XCA008	XCA010	XCA013	
Max I/O	36	72	48	60	84	120	156	58	74	64	80	96	120	144	176	64	80	160	96	112	192	128	144	160	192	
44 PC WC	36		48	38				34	34		34															
48 PD								38	38																	
64 VQ								54	54	54	54															
68 PC PG WC		56		58				58	64	58	58															
84 PC PG WC		72				72			74	64	74	74	70	70	70	61	61		61	61						
100 PQ TQ CB VQ CQ									74	64	80	82				64	77									
120 PG																64	80		95							
132 PG PP												96	110													
144 TQ PG						120						96	120						96	112						
156 PG																				112		125				
160 PQ						120							120	138	138				96	112		128				
164 CB CQ														144						112						
175 PG														144	144											
176 TQ													120	144												
191 PG																		160					144	160		
196 CB																							144	160		
208 PQ MQ														144	176			160		112		128	144	160	160	
223 PG														176							192					192
224 CB																										192
225 BG																								160	192	
225 WB PB						120																				
240 PQ MQ																						192				192

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Base Development System

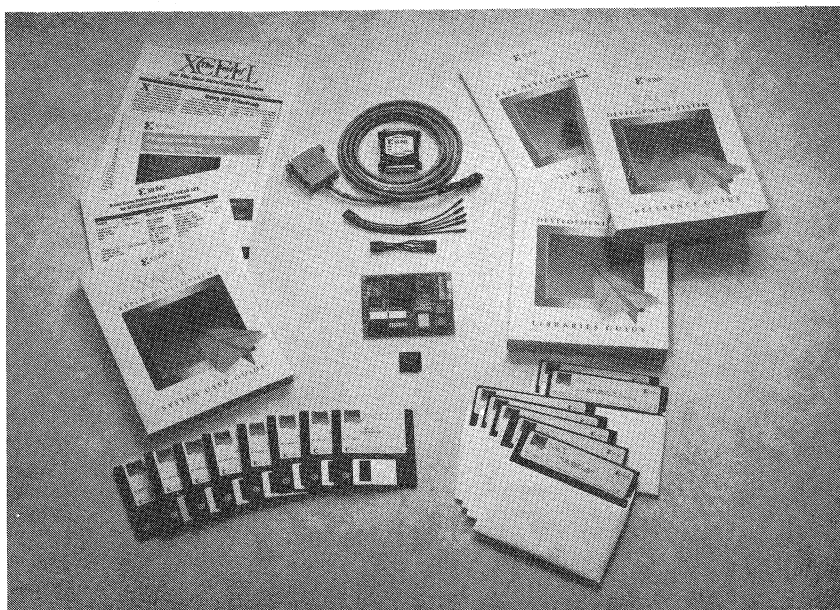


Low cost, entry-level, PC-based software for designing with Xilinx EPLDs and FPGAs

The Base Development System provides PAL and TTL logic designers with an extremely cost-effective, easy-to-use migration path to EPLD and FPGA architectures. Using a familiar design methodology, the software supports nine Xilinx devices and offers a complete OrCAD® or Viewlogic Systems™ interface. The many benefits of programmable logic, including higher logic integration and greater system performance, can now be realized *without* making a major software investment.

Product Highlights

- Supports multiple technologies — Xilinx EPLDs and FPGAs.
- Cost effective. Get started with programmable logic for under \$1,000.
- Wide variety of device support — from XC7200 and XC7300 EPLDs to XC2000, XC3000 and XC3100 FPGAs (up to XC3130).
- Includes interfaces to OrCAD or Viewlogic schematic capture and simulation tools.



The Base Development System provides a cost-effective migration path to Xilinx EPLDs and FPGAs

One Design Environment Supports Xilinx FPGAs And EPLDs

Now you can design with a wide range of programmable logic devices using one development system. The Base Development System supports Xilinx EPLDs and FPGAs, up to 3,000* gates in density. In addition, the XACT® Design Manager provides a common user interface, so there's no need to learn a different development system environment.

Breaking The Software Price Barrier

In the past, moving up to advanced programmable logic meant increasing your budget. Not any more. At \$995, the Base Development System provides a low-cost, efficient way to get started with programmable logic. What's more, the Base Development System supports eight different devices ranging from the advanced XC7200 and XC7300 series EPLDs to the high speed XC3100 FPGAs. As the adjacent table indicates, dozens of packaging options are available for these devices.

* See chart below for actual devices supported.

Devices Supported	Packages				
	PLCC	PQFP	TQFP	CQFP	PGA
EPLDs:					
XC7236/36A™	✓				✓
XC7272™	✓				✓
XC73108™	✓	✓			✓
FPGAs:					
XC2018™	✓		✓		✓
XC2064™	✓				✓
XC3020™	✓	✓		✓	✓
XC3030™	✓	✓	✓		✓
XC3120™	✓	✓		✓	✓
XC3130™	✓	✓		✓	✓

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Xilinx and Third-Party Options for Designing Xilinx Devices

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	OrCAD		Viewlogic						Mentor V8		Synopsys		
	PC		PC			WS-Sun 4			WS-HP700 Sun 4, Apollo		WS-HP700 Sun 4, Apollo		
EPLD Families	Base	Standard	Base	Standard	Extended	Base	Standard	Extended	CYQ194				
XC7236 XC7272 XC73108													
FPGA Families	Base	Standard	Base	Standard	Extended	Base	Standard	Extended			Standard	Extended	Standard
XC2064/L XC2018/L													
XC3020/L/A XC3030/L/A XC3042/L/A XC3064/L/A XC3090/L/A													
XC3120 XC3130 XC3142 XC3164 XC3190 XC3195													
XC4002A XC4003/3A XC4003H* XC4004A XC4005/5A XC4005H* XC4006 XC4008 XC4010 XC4013*													
X-BLOX (XC4000 only)													
Stand-alone (S) System Options			/S Base	/S Std	/S Ext								
Schematic capture Simulator (<5000 gates) Simulator (unlimited) VHDL synthesis													
Package Features													
Base			Standard			Extended							
<ul style="list-style-type: none"> EPLD device support (PC only) FPGA devices (up to XC3130) Libraries and interface FPGA & EPLD core implementation software 6 month support for PC 12 month support & updates for workstation 			<ul style="list-style-type: none"> EPLD device support (PC only) FPGA devices XC2000, XC3000, XC3100, XC4000 Libraries and interface FPGA & EPLD core implementation software 12 month support & updates 			<ul style="list-style-type: none"> EPLD device support (PC only) FPGA devices XC2000, XC3000, XC3100, XC4000 Libraries and interface FPGA & EPLD core implementation software X-BLOX architectural synthesis 12 month support & updates 							
Stand-alone (S) System Features													
Stand-alone Base			Stand-alone Standard			Stand-alone Extended							
Includes all the Base Development System features plus: <ul style="list-style-type: none"> Schematic editor (ViewDraw) Simulator, 5000 gate limit (ViewSim) 12 month support & updates for PC 			Includes all the Standard Development System features plus: <ul style="list-style-type: none"> Schematic editor (ViewDraw) Simulator, unlimited (ViewSim) 			Includes all the Extended Development System features plus: <ul style="list-style-type: none"> Schematic editor (ViewDraw) Simulator, unlimited (ViewSim) Synthesis (ViewSynthesis) 							

* Integrated product release Q1 '94, order separately if required.

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Alliance Program – Companies and Products

Company	Product Name	Version	Function	Vendor Interface Name	Libraries		X-BLOX Entry
					2K/3K	4K	
Accel	Tango	1.3	Schematic Entry	SCH2XNF	✓	✓	
ALDEC	Susie	6.12	Simulation	SusieXNF	✓	✓	-
Altium	P-CAD	6.0	Schematic Entry	PC-Xilinx	✓	Q4	
Cadence (Valid)	Concept	1.3	Schematic Entry	Xilinx Front End	✓	✓	✓
	Rapidsim	2.0	Simulation	Xilinx Front End	✓	✓	-
	Composer	4.2	Schematic Entry	Xilinx Front End	✓	✓	✓
	Verilog	1.6	Simulation	Xilinx Front End	✓	✓	-
Compass	Asic Navigator		Capture/ Synthesis/ Simulation	Xilinx Design Kit	Q4	Q4	
CV (Prime)	Design Entry	2.0	Schematic Entry	Xilinx Kit	✓	✓	
Data I/O	FutureNet 6.0	5.03	Schematic Entry		✓	✓	✓
	ECS	2.41	Schematic Entry	Xilinx Library	✓	✓	
EPS	SIMETRI	2.0	Simulation	XNF2SIM	✓	✓	-
Exemplar Logic	CORE	1.2	Synthesis	FS-001	✓	✓	
GenRad	System Hilo	4.3	Simulation	Xilinx Tool Kit	✓	✓	-
IKOS	IKOS 2800/2900	5.02	Hardware Accelerator	Xilinx Tool Kit	✓	✓	-
	Voyager	1.2	VHDL Simulation	Xilinx Tool Kit	✓	✓	-
Intergraph	ACE Plus	4.7.5.5	Schematic Entry	Xilinx Design Kit 2.0	✓	✓	✓
	Advansim	7.0	Simulation	Xilinx Design Kit 2.0	✓	✓	-
ISDATA	LOG/iC	3.4	Synthesis	XNF-PP	✓	✓	-
Logic Modeling	SmartModel Library	-	Simulation Models	(In Library)	✓	✓	-
	LM1200	-	Hardware Modeler	Xilinx Logic Module	✓	✓	-
MINC	PLDesigner-XL	3.0	Synthesis	Xilinx Design Module	✓	✓	-
Nishimura	G-DRAW	5.0	Schematic Entry	GDL2XNF	✓	✓	-
	G-LOG	4.03	Simulation	XNF2GDL	✓	✓	-
Omaton	Schema III	3.34	Schematic Entry	Schema Xilinx Interface	✓	✓	Q4
Phase Three Logic	CapFast	2.2	Schematic Entry	SCH2XNF	✓	✓	
Quad Design (ViewLogic Division)	Motive	3.4 Plus	Timing Analysis	XNF2MTV	✓	✓	-
	Visula	5.2	Schematic Entry	Xilinx Design Kit	✓	✓	
Racal-Redac	CADAT	8.1&2000	Simulation	Xilinx Design Kit	✓	✓	-
	Silcsyn	2.1	Synthesis	Xilinx Design Kit	✓	✓	-
	Silocs III	92.115	Simulation	Included	✓	✓	-
Simucad	Case Vanguard	4.1	Schematic Entry	Vanguard I/F Kit	✓	✓	
Teradyne	Lazar	6.4	Simulation	Laser I/F Kit	✓	✓	-

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YAMAHA INTEGRATION

Seeking the best in sound reproduction, Yamaha has captured sound as digital information and created its own sound-oriented semiconductor technology.

Through this digital sound processing technology, Yamaha has mastered the art of making sophisticated LSI chips for ...

- CD players • Digital Audio •
- Audio/Visual System •
- Graphic Processing • Communications •
- Multimedia PC Sound • Custom Applications •

SOUND for PC and Game

DEVICE NAME	PACKAGE	DESCRIPTION	FEATURES
NEW			
YMF278 (OPL4)	80-pin QFP	FM + PCM single chip synthesizer	<ul style="list-style-type: none"> • Backward compatible with OPL2 and OPL3 • 24-voice Wavetable synthesizer • Digital mixing of FM and Wavetable synthesizer
NEW			
YAC513 (DAC)	16-pin DIP 16-pin SOP	2-channel floating D/A converter	<ul style="list-style-type: none"> • DAC for YMF278 • 16-bit dynamic range
NEW			
YRW801	44-pin SOP	Wavetable ROM	<ul style="list-style-type: none"> • OPL4 Wavetable Library for General MIDI
NEW			
YSS225 (EP)	100-pin QFP	Effect processor	<ul style="list-style-type: none"> • Reverberation, delay, flange, distortion, autopanning • 4 stereo channels in, 2 stereo channels out • Use 2 or 4 256k external pseudo-SRAMs
NEW			
YMF262 (OPL3)	24-pin SOP	FM Operator Type-L3	<ul style="list-style-type: none"> • Register compatible with YM3812 (OPL2). • Maximum 6 sounds in 4 operator. • "18 melody sounds" or "15 melody sounds with 5 rhythm" in 2 operator. • 4 channel output.
NEW			
YAC512 (DAC)	16-pin SOP	2-channel floating D/A converter	<ul style="list-style-type: none"> • DAC for YMF262 • 16-bit dynamic range
NEW			
YMZ263B (MMA)	64-pin QFP	Multimedia audio & game interface controller	<ul style="list-style-type: none"> • 22.05K, 11.025K, 7.35K, 5.5125KHz record/play-back in 4-bit ADPCM. • 44.1K, 22.05K, 11.025K, 7.35KHz record/play-back in 12-bit PCM. • Directly connected with PC bus, DMA/CPU data transmission mode through built-in 2-channel 128-byte FIFO. • UART and 16-byte FIFO for MIDI. • Game port.
NEW			
YM3802 (MCS)	40-pin DIP 64-pin QFP	MIDI communication and service controller	<ul style="list-style-type: none"> • For Musical Instrument Digital Interface. • Asynchronous serial communication interface. • Frequency divider circuit for baud-rate generation. • Interface with magnetic tape.
NEW			
YM3812 (OPL2)	24-pin DIP 24-pin SOP	FM Operator Type-L2	<ul style="list-style-type: none"> • FM sound generator system for realistic sound. • "9 melody sounds" or "6 melody sounds with rhythm" in 2 operator.
NEW			
YM3014B (DAC-SS)	8-pin DIP 16-pin SOP	Serial input floating D/A converter	<ul style="list-style-type: none"> • DAC for YM3812. • 16-bit dynamic range.
NEW			
YMU251XXX (FMM2)	16-pin DIP	Custom FM Sound melody generator	<ul style="list-style-type: none"> • Built-in ROMs for tones and melody. • 4 sound generated simultaneously. • Maximum 8 songs can be included. • Output for external control. • +3V single power supply.
NEW			
YMZ280 (PCMD8)	64-pin QFP	8-channel PCM/ADPCM sound generator	<ul style="list-style-type: none"> • 4-bit ADPCM or 8/16-bit PCM • Wavedata (maximum 44, 1KHz) in external ROM or SRAM • Pitch change, panpot
NEW			
YM6616	64-pin QFP	ADPCM sound analysis/synthesis	<ul style="list-style-type: none"> • 4 bit ADPCM sound analysis/synthesis. • Interface to external DRAM and ROM (up to 4Mbit). • Maximum sampling frequency: 20kHz (øM=10MHz). • Control by 4 bit CPU possible. • Repeated playback possible

COMMUNICATION

DEVICE NAME	PACKAGE	DESCRIPTION	FEATURES
YM7405 (IDNDCH)	80-pin QFP	ISDN basic access interface with D channel packet	<ul style="list-style-type: none"> For ISDN user-network interface (Full-Duplex, 4-Wire). Full support of layer 1 and layer 2 (LAP-D protocol). Layer 3 processor interface function, built-in analog driver and receiver. Power-down mode.
NEW YTD402 (TA110)	44-pin QFP	V110, X30 Terminal Adaptor	<ul style="list-style-type: none"> Bit rate adaption according to CCITT V.110 and X.30 Synchronous 600, 1200, 2400, 4800, 7200, 9600, 14.4K, 19.2K, 48K, 56K, 64K. Asynchronous 50, 75, 110, 150, 200, 300, 600, 1200, 2400, 3600, 4800, 7200, 9600, 14.4K, 19.2K. V.24 and X.21 interfaces. AT command, X.21 and V.25bis calling procedure support.
NEW YTM403B (MD9624)	64-pin SDIP 64-pin QFP 64-pin TQFP	Single chip FAX/DATA/VOICE modem (FAXVodem)	<ul style="list-style-type: none"> CCITT V.29/V.27ter/V.26bis/V.23/V.22bis/V.22/V.21. BELL 212A/202/103. Built-in voice data recording and playback (PCM/ADPCM). Power-down/power-save mode.
NEW GTM407 (MC9642)	80-pin QFP 80-pin SQFP	FAXVodem controller	<ul style="list-style-type: none"> Built-in microcontroller : driver for FAX Vodemware. <ul style="list-style-type: none"> Hayes AT Command sets for autodialer and Voice extensions. TIA/EIA-578 (Class 1) and TIA/EIA-592 (Class 2.0) communication standard with ECM. V.42bis error correction, data compression, and MNP1-5. 16550 UART registers.
YM7109C (MD96FX)	40-pin DIP 64-pin QFP 68-pin PLCC	Single chip 9600bps fax modem	<ul style="list-style-type: none"> For Group 3 Fax. Synchronous half-duplex 9600bps/7200bps/4800bps/2400bps/300bps (CCITT V.29, V.27ter, V.21ch2, V.23 backward ch, V.21). Duplex tone generation, tone detection, DTMF detection function. +5V single power-supply, Low power consumption (typ. 200mW).
YTM401 (MD96DX)	40-pin DIP 64-pin QFP 68-pin PLCC 44-pin TQFP	Single chip 9600bps fax modem	<ul style="list-style-type: none"> Pin layout and software upper compatible with YM7109 Power down mode. <ul style="list-style-type: none"> HDLC function. External clock synchronization. <ul style="list-style-type: none"> External input/output port.
YTF409 (FAXCE)	100-pin QFP	Group 3 Fax controller	<ul style="list-style-type: none"> Group 3 Fax transmission procedure (T.30) in External EPROM. Band compression function (MH encoding method). Modem interface for YM7109. Image sensor interface (CCD/CIS). Thermal head interface Pulse motor interface. Extension memory interface up to 8Mbyte. Host CPU interface.
YTM414 (MD96LX)	44-pin TQFP 64-pin QFP	9600bps fax modem	<ul style="list-style-type: none"> Pin layout & software compatible with YTM401 Power saving functions <ul style="list-style-type: none"> 3.3V or 5.0V For Group 3 Fax. <ul style="list-style-type: none"> UART functions. HDLC function.

GRAPHICS

DEVICE NAME	PACKAGE	DESCRIPTION	FEATURES
V9990 (E-VDP-III)	128-pin QFP	Video display processor	<ul style="list-style-type: none"> 2 types of pattern display mode for games. 4 types of bit map display mode for NTSC or PAL monitor of audio-visual equipment. 2 types of bit map display mode for high resolution monitor of office automation equipment.
YGV604 (VSG)	100-pin QFP	Video screen generator	<ul style="list-style-type: none"> 2 types of bit map display mode for NTSC and PAL. Smooth scrolling, Superinpose. Linear RGB output.
YGV605 (PVDC)	80-pin QFP	Pattern mode video display controller	<ul style="list-style-type: none"> Able to drive a variety of display equipments. 1 pattern graphic plane (scroll screen) and 64 sprite planes (movable screens). Built-in VRAM, External ROM data transfer function. Divided screen scrolling. Linear RGB output.
NEW YGV606 (AVDP)	80-pin QFP	Advanced video display processor	<ul style="list-style-type: none"> Bit map display mode for NTSC and PAL. Smooth scrolling, Sprite display. Use external 1M/4M DRAM. Linear RGB output.
V9958 (E-VDP-II)	64-pin SDIP	Video display processor for new media	<ul style="list-style-type: none"> Display up to 256 colors simultaneously. Linear RGB output. Superimposing and digitizing. Display 8 sprites for each horizontal line. Vertical and horizontal scroll.
V6366C (PCDC)	100-pin QFP 84-pin PLCC	Panel and CRT display controller	<ul style="list-style-type: none"> IBM CGA/MDA and HGC (Hercules) compatible. For CRT, LCD, plasma and EL. Convert (640 x 200) data to (640 x 400 or 640 x 350) resolution. Chinese characters display function.

YAMAHA **LSI**

AV SYSTEM

DEVICE NAME	PACKAGE	DESCRIPTION	FEATURES
NEW			
YSS220 (SP3)	64-pin QFP	Digital surround Processor	<ul style="list-style-type: none"> Analog input/output by means of built-in 15-bit A/D, D/A converter. Sampling frequency of 32kHz. Up to 512ms delay with a 256k DRAM. Programmable surround parameters. Easy control by built-in preset data.
YM7128B (SP2)	16-pin DIP 24-pin SOP	Digital surround processor	<ul style="list-style-type: none"> Built-in over-sampling filter. Digital delay, mixing volume and feed back loop programmable. Analog input/output by means of built-in 14-bit A/D, D/A converter. 100ms digital delay for Hi-Fi and 200ms for microphone echo.
YM7306C (DPLD)	64-pin QFP	Dolby Pro Logic decoder	<ul style="list-style-type: none"> Realization of Dolby Pro Logic decoder in 1-chip. Built-in direction emphasizing circuit, noise sequencer, 7kHzLPF, modified B-type N.R., A/D, D/A converters. Sound-field simulation by using up to 370ms digital delay..
YSS215 (AVSP)	64-pin QFP	Dolby Pro Logic decoder	In addition to functions of YM7306, <ul style="list-style-type: none"> Capable of mixing 8 taps at surround channel in Dolby Pro Logic mode. Built-in Auto Input Balance circuit. Sound-field simulation by using 29 taps.
YSS205B (KP)	16-pin DIP	Karaoke processor	<ul style="list-style-type: none"> Key control, Microphone echo, voice canceler and digital surround are integrated in 1 chip. Digital input/output as well as analog input/output. 5 operation modes.
YSS216B (KP2)	64-pin QFP	Karaoke processor	<ul style="list-style-type: none"> Key control, microphone echo and voice canceler in 1 chip. Digital input/output, Analog input. Easy operation with a small number of parameters.
YSS222 (KPB)	16-pin DIP 16-pin SOP	Key controller	<ul style="list-style-type: none"> Analog input/output 1-channel key controller. Various control modes, Usable without microprocessor.
YM3411 (SP)	16-pin DIP	Digital surround processor	<ul style="list-style-type: none"> Built-in under-sampling filter and over-sampling filter. Programmable digital delay and mixing volume. Analog input, analog output by means of built-in 14-bit A/D, D/A converter. Up to 30ms digital delay.
YM3428 (SP-B)	16-pin DIP	Digital Surround processor	<ul style="list-style-type: none"> Built-in over sampling filter. Programmable digital delay and mixing volume. Analog input, analog output by means of built-in 14-bit A/D, D/A converter. Up to 30ms digital delay.
YM6063B (CDC)	80-pin QFP	Data controller for CD-I or CD-ROM	<ul style="list-style-type: none"> Real time error detection and correction (hardware) for CD-I or CD-ROM. Capable of interfacing to CD audio signal processing format of any manufacturer. ADPCM data transferred directly to YM6064 (ADP).
YM6064 (ADP)	80-pin QFP	ADPCM audio signal processor for CD-I	<ul style="list-style-type: none"> Convert CD-I format ADPCM data into 16-bit linear PCM data. Built-in circuit for digital mixing real time audio and sound map audio. Built-in double over-sampling digital filter for the CD-I format level C.
YM7302 (MPC)	100-pin QFP	Master peripheral controller for CD-I	<ul style="list-style-type: none"> Direct interface to 68000MPU. Mouse, DMA, timer, interrupt handler and other circuits are built in.
YVZ152B (CDGD)	64-pin QFP	CD Graphics Decoder	<ul style="list-style-type: none"> Deinterleave, error detection and correction for CD subcode R-W. Interface with the subcode output from the CD signal processor. 256K DRAW connected. Interface with digital audio interface receiver YM3623 and YM3436. Linear RGB output.
YVL151D (LVP)	80-pin QFP	Video signal processor for LD	<ul style="list-style-type: none"> Jitter absorption by means of digital TBC, Spindle servo control. Digital processing drop-out compensation, Adaptable noise reduction, Built-in video DAC. C&A code decode, 24 character x 10 line character generator.
YM3558 (FMDET)	16-pin DIP	FM detector for LD video signal	<ul style="list-style-type: none"> FM demodulate video signal by pulse count method. 4 channel contained.
YM7110 (LVFM)	24-pin DIP	Digital FM detector of LD analog sound signal	<ul style="list-style-type: none"> FM demodulate analog sound signal as a digital data. Built-in CX-NR decoder. Output digital audio interface signal in combination with YSD221.
YM6020 (VMC)	80-pin QFP	Video memory controller for LD	<ul style="list-style-type: none"> Digital screen processing with specified A/D, D/A and 2 x 1Mbit VRAM. Built-in 22 character x 7 line character generator. Video processing of still picture and multi-speed playback in combination with YVL151.

Yamaha

DIGITAL AUDIO

DEVICE NAME	PACKAGE	DESCRIPTION	FEATURES
YDC103 (SPC7)	80-pin QFP	CD servos and digital signal processing	<ul style="list-style-type: none"> Built-in digital PLL and 16K SRAM. Signal processing for EFM demodulation and error correction Focus, tracking, feed and disk servo control. Built-in 3-order sigma-delta DAC. Digital audio interface output.
YM7121C (SPC-5)	80-pin QFP	CD servos and digital signal processing	<ul style="list-style-type: none"> Built-in 16K SRAM and VCO. Signal processing for EFM demodulation error correction. Focus, tracking, feed and disk servo control. 4-times oversampling digital filter. Digital audio interface output.
GDR101 (ASP)	48-pin QFP	CD Player servo signal processing IC	<ul style="list-style-type: none"> Built-in most of analog system functions, such as RF amplifier, focus and tracking preamplifier. Built-in analog switch which operates according to FCS, TROF, TRHD or TRGL from digital signal processing LSI. Output of each timing signal of FRF, /FZC, HF and TER to digital signal processing LSI.
YSF210B (OSF22)	24-pin DIP	2-channel 8-times oversampling digital filter	<ul style="list-style-type: none"> Signal processing with 20-bit input, 22-bit output (fs=32~48kHz). Operated by system clock independent of serial input clock. Stop band attenuation at least 100 dB, pass band ripple within ± 0.00005dB.
YM3433B (ALCDF)	16-pin DIP 24-pin SOP	2-channel 8-times oversampling digital filter	<ul style="list-style-type: none"> Operated by system clock independent of input serial signals. Signal processing of MSB first serial signal with 32kHz-48kHz sampling frequency. Stop band attenuation at least 70dB and pass band ripple within ± 0.002dB, 18-bit output selectable for PCM58.
YM3434 (AFUDF)	16-pin DIP	2-channel 8-times oversampling digital filter	<ul style="list-style-type: none"> Operated by system clock independent of serial input signals. Signal processing of MSB first serial signal with 32kHz-48kHz sampling frequency. Stop band attenuation at least 100dB and pass band ripple within ± 0.0001dB, 18-bit output selectable for PCM58.
YM3414 (ACDDF)	16-pin DIP	2-channel 8-times oversampling digital filter	<ul style="list-style-type: none"> Signal processing of MSB first serial signal with 32kHz-48kHz sampling frequency. Stop band attenuation at least 100dB and pass band ripple within ± 0.0001dB, 18-bit output selectable.
YM3404B (CDDF)	16-pin DIP	2-channel 4-times oversampling digital filter	<ul style="list-style-type: none"> Signal processing of MSB first serial signal with 32kHz-48kHz sampling frequency. Stop band attenuation at least 99dB and pass band ripple within ± 0.0001dB, 18-bit output selectable.
YM3437C (DIT2)	16-pin DIP 16-pin QFP	Digital audio interface transmitter	<ul style="list-style-type: none"> Modulation for digital audio interface signal. Usable for 24-bit. Setting of precise control code possible for both professional and consumer products.
YSD221 (DIT3)	16-pin DIP 16-pin SOP	Digital audio interface transmitter	<ul style="list-style-type: none"> Modulation for digital audio interface signal. Full digitalization of multidisk player sound signal in combination with YM7110.
YM3436D (DIR2)	44-pin QFP	Digital audio interface receiver	<ul style="list-style-type: none"> Demodulation of digital audio interface signal by means of built-in PLL circuit. Usable for 24-bit. Output of precise control code possible for both professional and consumer products.
YM3423B (DIR)	28-pin DIP	Digital audio interface receiver	<ul style="list-style-type: none"> Follows automatically to 32kHz-48kHz sampling frequency input signal by built-in PLL circuit. MSB first serial DAC signal output, CD sub-code output, error monitor output terminal provided.
YAC502 (FDSM2)	44-pin QFP	2-channel 1-bit digital-to-analog converter	<ul style="list-style-type: none"> 3-order sigma-delta digital-to-analog converter. Built-in 8-times oversampling digital filter.
YM3412B (COMP)	18-pin DIP 24-pin SOP	Compressor and digital volume.	<ul style="list-style-type: none"> For 2 channel, 16-bit, MSB first digital signal. Automatically compresses dynamic range according to input signal level (4 types of compression characteristics selectable). Digital volume control by 0.375dB step with compressor function.
YM3608 (DEQ)	24-pin DIP	Digital equalizer	<ul style="list-style-type: none"> Microprogram and coefficients are controlled with serial interface. Multiple 16-bit data by 32-bit coefficient with one clock. Multiple 32-bit data by 32-bit coefficient with two clock. Microprogram up to 128 steps.
NEW YSF224 (SAP)	16-pin DIP 16-pin SOP	Sound analysis processor	<ul style="list-style-type: none"> Band pass filtering and level detection for spectrum analysis. Programmable pass band frequency by digital filtering. Output level data to microcontroller by 3dB.

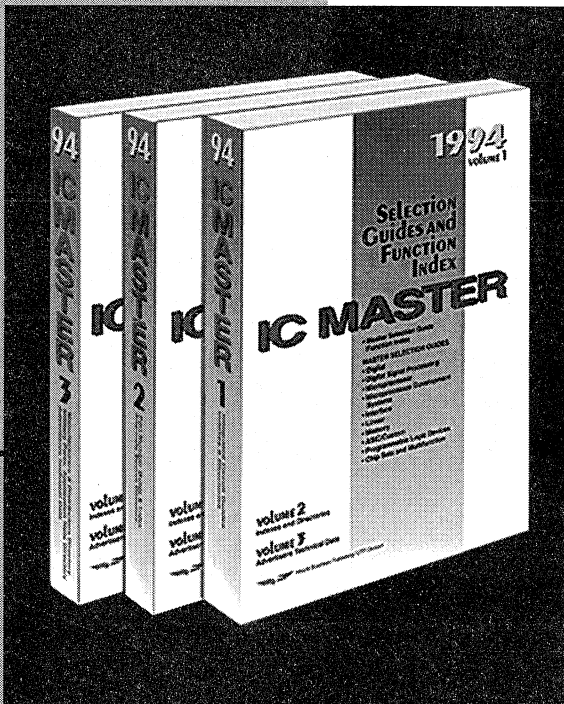
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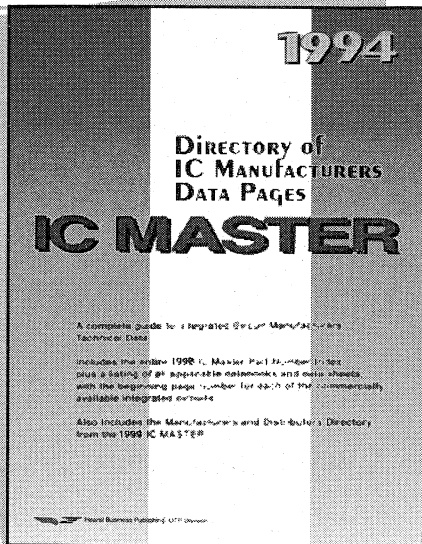
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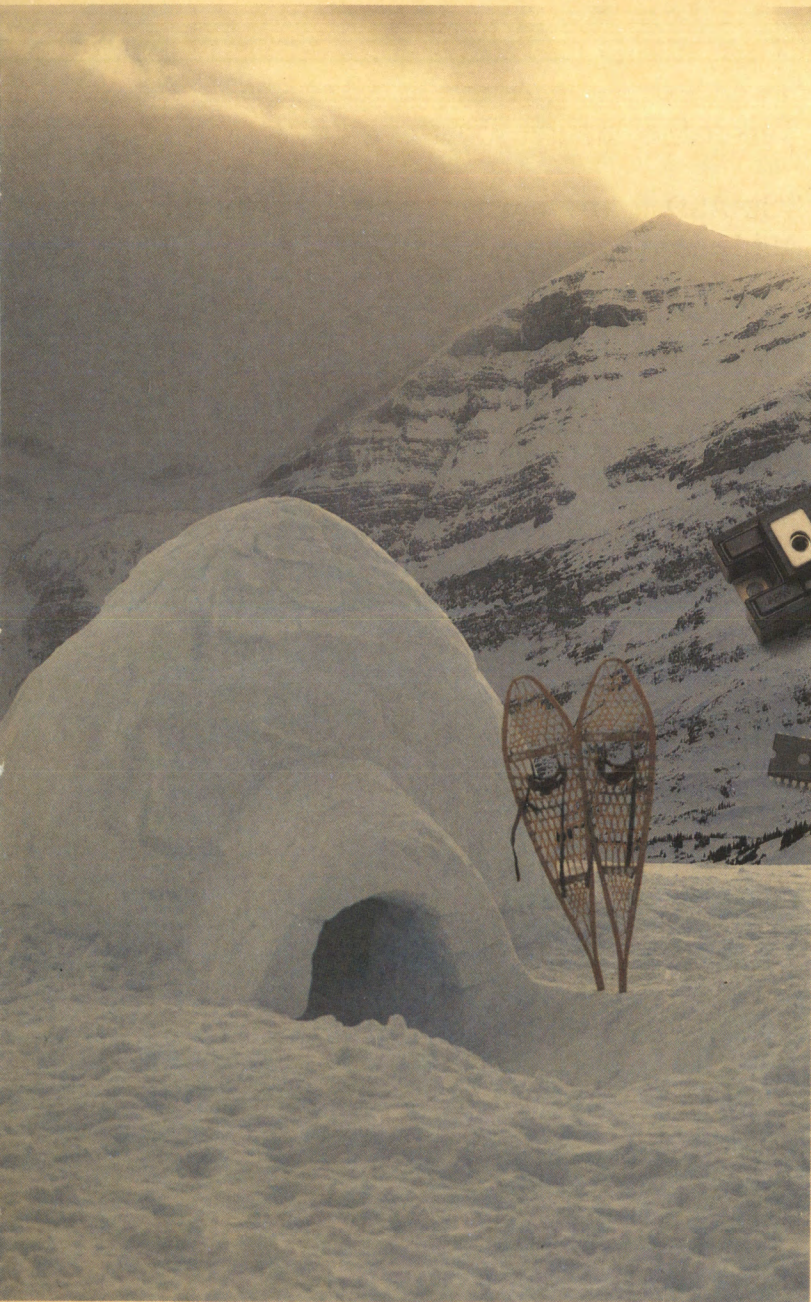
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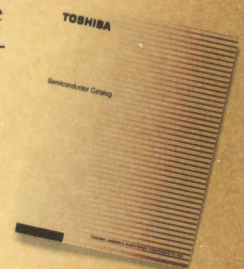
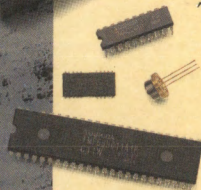
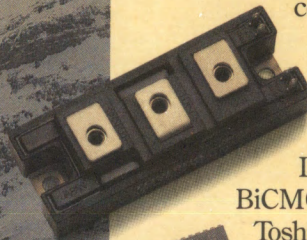
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