

# FAIRCHILD SEMICONDUCTOR

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
DTL · TRANSISTORS · ZENERS · FLIP-FLO  
PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY



# **FULL LINE CONDENSED CATALOG**

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**FAIRCHILD**  
SEMICONDUCTOR





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# **INTRODUCTION AND "HOW TO USE THIS CATALOG"**

This full line condensed catalog is designed as a quick reference source on all Fairchild Semiconductor products. Products are listed alphanumerically by device number in Section 1 and by family and function in Section 2. To determine the location of key operational parameters, when the part number is known, refer to Section 1. When the device family and function is known, but not the device number, refer to Section 2. This section, Condensed Product Data, is organized into ten subsections. The first eight—Discrete, Linear, Interface, Digital, Bipolar Memory, MOS and CMOS, Microprocessor and CCD products—list key operational characteristics and reference a code number for logic symbols and package outlines. The logic symbols and package outlines are in the last two separate subsections where they are organized in alphanumeric order.

To keep you informed of new products from Fairchild, this catalog includes devices which are scheduled for availability in the near future as well as those already in production. Most new products are indicated by an asterisk and the note "to be announced" in Section 2. More complete product data is available from Fairchild in data books, application handbooks and individual data sheets. Contact your local Fairchild Sales or Representative Office for additional data or product information.



# ORDERING INFORMATION

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
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BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY

# ORDERING INFORMATION

## DISCRETES

Fairchild Discrete Products may be ordered by the Device Number listed in either the Product Index (Section 1) or the Condensed Product Data listing (Section 2).

## INTEGRATED CIRCUITS

Fairchild Integrated Circuits may be ordered using a simplified purchasing code. Three basic units of information are contained in this code, as shown in the typical code examples below.

Linear	741	D	C
Interface	7591	P	C
Digital	93L28	F	M
Bipolar Memories	93410	D	C
MOS	3341	D	C
CMOS	34085	D	C
CCD	CCD450	D	C
Hybrids	SHO323	H	C

_____	_____	_____	_____
Device Type	Package	Temperature	
No.	Code	Range	

Order codes are given in the Product Index in Section 1 where the codes are listed alphanumerically. Section 2, the Condensed Product Data listing, only gives the basic "Device Type Numbers". Explanations for the Package and Temperature Codes are given below. Coding will differ on second-source devices. If questions arise on second-source devices, check with your local Fairchild Salesperson or Representative before ordering.



## PACKAGE CODES

- D — Ceramic Dual In-Line  
TO-116-2, 6A, 6B, 6J, 6N, 6Q, 7A, 7B, 7E1, 7E2, 7E3, 7E4, 7E5, 7I, 7K, 7M, 7T, 7Y, 8C, 8T
- E — Epoxy Cylindrical  
TO-105, TO-106
- F — Flatpak  
TO-85, TO-86, TO-91, 3I, 3F, 4L, 4M, 4Q
- H — Metal Can TO-5 Type  
TO-39, TO-99, TO-100, TO-101, 5B, 5E, 5F, 5G, 5H, 5U
- J — Metal Power Package  
TO-66
- K — Metal Power Package  
TO-3, 5H
- P — Plastic Dual In-Line  
TO-116, TO-116-3, 9A, 9B, 9F, 9L, 9M, 9N, 9T, 9U
- T — Plastic Mini-DIP  
9V1, 9V2, 9V3, 9W
- U — Epoxy Cylindrical  
TO-220
- W — Epoxy TO-92 Type  
TO-92

## TEMPERATURE CODES

C	(MOS, DTL, C $\mu$ L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD) Consult Field Salesperson or Representative	
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C



# **SALES OFFICES**

**CMOS · MOS · MACROLOGIC · MICROPROC  
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NERATORS · IMAGE SENSORS · SCHOTTKY**



# FAIRCHILD FRANCHISED DISTRIBUTORS

## ALABAMA

HALLMARK ELECTRONICS  
4739 Commercial Drive  
Huntsville, Alabama 35805  
Tel: 205-837-8700 TWX: 810-726-2187

HAMILTON/AVNET ELECTRONICS  
805 Oster Drive, N.W.  
Huntsville, Alabama 35805  
Tel: 205-533-1170  
Telex: None — use HAMAVLECB DAL 73-0511  
(Regional Hq. in Dallas, Texas)

## ARIZONA

HAMILTON/AVNET ELECTRONICS  
2615 S. 21st Street  
Phoenix, Arizona 85034  
Tel: 602-275-7851 TWX: 910-951-1535

LIBERTY ELECTRONICS/ARIZONA  
3130 N. 27th Avenue  
Phoenix, Arizona 85016  
Tel: 602-257-1272 TWX: 910-951-4282

## CALIFORNIA

AVNET ELECTRONICS  
10916 W. Washington Blvd.  
Culver City, California 90230  
Tel: 213-558-2345 TWX: 910-340-6364

ELMAR ELECTRONICS  
2288 Charleston Rd.  
Mountain View, California 94042  
Tel: 415-961-3611 TWX: 910-379-6437

HAMILTON ELECTRO SALES  
10912 W. Washington Blvd.  
Culver City, California 90230  
Tel: 213-558-2121 TWX: 910-340-6364

HAMILTON/AVNET ELECTRONICS  
575 E. Middlefield Road  
Mountain View, California 94040  
Tel: 415-961-8600 TWX: 910-379-6486

HAMILTON/AVNET ELECTRONICS  
8917 Complex Drive  
San Diego, California 92123  
Tel: 714-279-2421  
Telex: HAMAVELEC SDG 69-5415

G.S. MARSHALL COMPANY  
9674 Telstar Avenue  
El Monte, California 91731  
Tel: 213-686-0141 TWX: 910-587-1565

G.S. MARSHALL COMPANY  
17975 Skypark Blvd.  
Irvine, California 92707  
Tel: 714-556-6400

G.S. MARSHALL COMPANY  
8057 Raytheon Rd., Suite 1  
San Diego, California 92111  
Tel: 714-278-6350 TWX: 910-335-1191

G.S. MARSHALL COMPANY  
788 Palomar Avenue  
Sunnyvale, California 94086  
Tel: 408-732-1100 TWX: 910-339-9263

LIBERTY ELECTRONICS  
124 Maryland Street  
El Segundo, California 90245  
Tel: 213-322-8100 TWX: 910-348-7111

LIBERTY ELECTRONICS/SAN DIEGO  
8248 Mercury Court  
San Diego, California 92111  
Tel: 714-565-9171 TWX: 910-335-1590

## COLORADO

ELMAR ELECTRONICS  
6777 E. 50th Avenue  
Commerce City, Colorado 80022  
Tel: 303-287-9611 TWX: 910-936-0770

G.S. MARSHALL COMPANY  
5633 Kendall Court  
Arvada, Colorado 80002  
Tel: 303-423-9670 TWX: 910-938-2902

HAMILTON/AVNET ELECTRONICS  
5921 N. Broadway  
Denver, Colorado 80216  
Tel: 303-534-1212 TWX: 910-931-0510

## CONNECTICUT

HAMILTON/AVNET ELECTRONICS  
643 Danbury Road  
Georgetown, Connecticut 06829  
Tel: 203-762-0361  
TWX: None — use 710-897-1405  
(Regional Hq. in Mt. Laurel, N.J.)

SCHWEBER ELECTRONICS  
Finance Drive  
Commerce Industrial Park  
Danbury, Connecticut 06810  
Tel: 203-792-3500

## FLORIDA

HALLMARK ELECTRONICS  
1302 W. McNab Road  
Ft. Lauderdale, Florida 33309  
Tel: 305-971-9280 TWX: 510-956-3092

HALLMARK ELECTRONICS  
7233 Lake Ellenor Drive  
Orlando, Florida 32809  
Tel: 305-855-4020 TWX: 810-850-0183

HAMILTON/AVNET ELECTRONICS  
4020 North 29th Avenue  
Hollywood, Florida 33021  
Tel: 305-925-5401 TWX: 510-954-9808

SCHWEBER ELECTRONICS  
2830 North 28th Terrace  
Hollywood, Florida 33020  
Tel: 305-927-0511 TWX: 510-954-0304

## GEORGIA

HAMILTON/AVNET ELECTRONICS  
6700 Interstate 85 Access Road, Suite 1E  
Norcross, Ga. 30071  
Tel: 404-448-0800  
Telex: None — use HAMAVLECB DAL 73-0511  
(Regional Hq. in Dallas, Texas)

SCHWEBER ELECTRONICS  
4126 Pleasantsdale Rd., Suite 14  
Atlanta, Ga. 30340  
Tel: 404-449-9170

## ILLINOIS

ALLIED ELECTRONICS  
1355 Sleepy Hollow Road  
Elgin, Illinois 60120  
Tel: 312-697-8200  
Telex: 72-2465 or 72-2466

KIERULFF ELECTRONICS  
9340 Williams Street  
Rosemont, Illinois 60018  
Tel: 312-678-8560 TWX: 910-227-3166

HAMILTON/AVNET ELECTRONICS  
3901 N. 25th Avenue  
Schiller Park, Illinois 60176  
Tel: 312-678-6310 TWX: 910-227-0060

SCHWEBER ELECTRONICS, INC.  
1380 Jarvis Ave.  
Elk Grove Village, Ill. 60007  
Tel: 312-593-2740 TWX: 910-222-3453

SEMICONDUCTOR SPECIALISTS, INC.  
(mailing address)  
O'Hare International Airport  
P.O. Box 66125  
Chicago, Illinois 60666

(shipping address)  
195 Spangler Avenue  
Elmhurst Industrial Park  
Elmhurst, Illinois 60126  
Tel: 312-279-1000 TWX: 910-254-0169

## INDIANA

PIONEER INDIANA ELECTRONICS, INC.  
6408 Castleplace Drive  
Indianapolis, Indiana 46250  
Tel: 317-849-7300 TWX: 810-260-1794

SEMICONDUCTOR SPECIALISTS, INC.  
(mailing address)  
Weir Cook Airport  
P.O. Box 41630  
Indianapolis, Indiana 46241

(shipping address)  
1885 Banner Ave.  
Indianapolis, Indiana 46241  
Tel: 317-243-8271 TWX: 810-341-3126

## IOWA

SCHWEBER ELECTRONICS  
Suite 302, Executive Plaza  
4403 First Avenue S E  
Cedar Rapids, Iowa 52402  
Tel: 319-393-9125

## KANSAS

HAMILTON/AVNET ELECTRONICS  
37 Lenexa Industrial Center  
9900 Pflumm Road  
Lenexa, Kansas 66215  
Tel: 913-888-8900  
Telex: None — use HAMAVLECB DAL 73-0511  
(Regional Hq. in Dallas, Texas)

## LOUISIANA

STERLING ELECTRONICS CORP.  
5029 Veterans Memorial Highway  
Metairie, Louisiana 70002  
Tel: 504-887-7610  
Telex: STERLE LEC MRIE 58-328

## MARYLAND

HAMILTON/AVNET ELECTRONICS  
(mailing address)  
Friendship International Airport  
P.O. Box 8647  
Baltimore, Maryland 21240  
  
(shipping address)  
7255 Standard Drive  
Hanover, Maryland 21076  
Tel: 301-796-5000 TWX: 710-862-1861  
Telex: HAMAVELECA HNVE 87-968

SCHWEBER ELECTRONICS  
5640 Fisher Lane  
Rockville, Maryland 20852  
Tel: 301-881-2970 TWX: 710-828-0536

PIONEER WASHINGTON ELECTRONICS, INC.  
9100 Gaither Road  
Gaithersburg, Maryland 20760  
Tel: 301-948-0710 TWX: 710-828-9784

## MASSACHUSETTS

HAMILTON/AVNET ELECTRONICS  
185 Cambridge Street  
Burlington, Massachusetts 01803  
Tel: 617-273-2120 TWX: 710-332-1201

KIERULFF ELECTRONICS  
13 Fortune Drive  
Billerica, Massachusetts 01865  
Tel: 617-667-8331 (Local)  
617-935-5134 (from Boston Area)  
TWX: 710-390-1449

SCHWEBER ELECTRONICS  
213 Third Avenue  
Waltham, Massachusetts 02154  
Tel: 617-890-8484

# FAIRCHILD FRANCHISED DISTRIBUTORS (cont.)

## MICHIGAN

HAMILTON/AVNET ELECTRONICS  
12870 Farmington Rd.  
Livonia, Michigan 48150  
Tel: 313-522-4700 TWX: 810-242-8775

## PIONEER/DETROIT

13485 Stamford  
Livonia, Michigan 48150  
Tel: 313-525-1800

## SCHWEBER ELECTRONICS

86 Executive Drive  
Troy, Michigan 48084  
Tel: 313-583-9242

## SHERIDAN SALES CO.

24543 Indoplex Drive (P.O. Box 529)  
Farmington, Mich. 48024  
Tel: 313-477-3800

## MINNESOTA

HAMILTON/AVNET ELECTRONICS  
7683 Washington Ave. South  
Edina, Minnesota 55435  
Tel: 612-941-3801  
TWX: None — use 910-227-0060  
(Regional Hq. in Chicago, Ill.)

## SCHWEBER ELECTRONICS

7015 Washington Ave. South  
Edina, Minnesota 55435  
Tel: 612-941-5280

## SEMICONDUCTOR SPECIALISTS, INC.

8030 Cedar Avenue South  
Minneapolis, Minnesota 55420  
Tel: 612-854-8841 TWX: 910-576-2812

## MISSOURI

HAMILTON/AVNET ELECTRONICS  
364 Brookes Lane  
Hazelwood, Missouri 63042  
Tel: 314-731-1144  
Telex: HAMAVLECA HAZW 44-2348

## SEMICONDUCTOR SPECIALISTS, INC.

3805 N. Oak Trafficway  
Kansas City, Mo. 64116  
Tel: 816-452-3900 TWX: 910-771-2114

## SEMICONDUCTOR SPECIALISTS, INC.

Lakeview Square  
1020 Anglum Road  
Hazelwood, Missouri 63042  
Tel: 314-731-2400 TWX: 910-762-0645

## NEW JERSEY

HAMILTON/AVNET ELECTRONICS  
113 Gaither Drive  
East Gate Industrial Park  
Mt. Laurel, N.J. 08057  
Tel: 609-234-2133 TWX: 710-897-1405

## HAMILTON/AVNET ELECTRONICS

218 Little Falls Road  
Cedar Grove, New Jersey 07009  
Tel: 201-239-0800 TWX: 710-994-5787

## KIERULFF ELECTRONICS

#5 Industrial Drive  
Rutherford, New Jersey 07070  
Tel: 201-935-2120 TWX: 710-989-0225

## STERLING ELECTRONICS

774 Pfeiffer Blvd.  
Perth Amboy, N.J. 08861  
Tel: 201-442-8000 Telex: 138-679

## SCHWEBER ELECTRONICS

43 Belmont Drive  
Somerset, N.J. 08873  
Tel: 201-469-6008 TWX: 710-480-4733

## NEW MEXICO

CENTURY ELECTRONICS  
121 Elizabeth, N.E.  
Albuquerque, New Mexico 87123  
Tel: 505-292-2700 TWX: 910-989-0625

## HAMILTON/AVNET ELECTRONICS

2450 Baylor Dr. S.E.  
Albuquerque, New Mexico 87119  
Tel: 505-765-1500  
TWX: None — use 910-379-6486  
(Regional Hq. in Mt. View, Ca.)

## NEW YORK

HAMILTON/AVNET ELECTRONICS  
167 Clay Road  
Rochester, New York 14623  
Tel: 716-442-7820  
TWX: None — use 710-332-1201  
(Regional Hq. in Burlington, Mass.)

## HAMILTON/AVNET ELECTRONICS

6500 Joy Road  
E. Syracuse, New York 13057  
Tel: 315-437-2642 TWX: 710-541-0959

## HAMILTON/AVNET ELECTRONICS

70 State Street  
Westbury, L.I., New York 11590  
Tel: 516-333-5800 TWX: 510-222-8237

## SCHWEBER ELECTRONICS

Jericho Turnpike  
Westbury, L.I., New York 11590  
Tel: 516-334-7474 TWX: 510-222-3660

## SCHWEBER ELECTRONICS, INC.

2 Town Line Circle  
Rochester, New York 14623  
Tel: 716-461-4000

## SEMICONDUCTOR CONCEPTS

195 Engineers Rd.  
Hauppauge, New York 11787  
Tel: 516-273-1234 TWX: 510-227-6232

## SUMMIT DISTRIBUTORS, INC.

916 Main Street  
Buffalo, New York 14202  
Tel: 716-884-3450 TWX: 710-522-1692

## NORTH CAROLINA

HALLMARK ELECTRONICS  
3000 Industrial Drive  
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Many device numbers shown in the Product Index include alpha suffixes. For Fairchild integrated circuits, the last letter of such a suffix is the Temperature Range Code. The next-to-last letter is the Package Code. These codes are explained at the top of each page of the Product Index.

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PACKAGE CODES			TEMPERATURE RANGE CODES			
C	Dual In-Line	K	Cylindrical, Metal	C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
D	Dual In-Line	P	Dual In-Line	C	(7400 TTL)	0°C to +70°C
F	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)	C	(CMOS)	-40°C to +85°C
F	Flat	U	Cylindrical, Plastic	C	(CCD)	Consult Field Salesperson or Representative
H	Cylindrical, Metal	W	Epoxy TO-92	L	(MOS)	-55°C to +85°C
J	Cylindrical, Metal			L	(LIC)	-20°C to +85°C
				M		-55°C to +125°C

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BAX16	"	2-6/18
BAY71	"	2-4/10
BAY72	"	2-5/16
BAY73	"	2-7/14
BAY74	"	2-4/11
BAY82	"	2-4/2
BA128	"	2-6/13
BA129	"	2-6/14
BA130	"	2-6/15
BA217	"	2-6/16
BA219	"	2-6/17
BCY70	"	2-22/4
BCY71	"	2-22/25
BCY72	"	2-21/8
BC113	Discrete, Transistor	2-25/16
BC114	"	2-25/17
BC115	"	2-25/24
BC116A	"	2-22/21
BC119	"	2-17/29
BC126	"	2-21/25
BC140	"	2-18/20
BC140-10	"	2-18/23
BC140-16	"	2-18/25
BC140-25	"	2-18/26
BC140-6	"	2-18/21
BC141	"	2-19/23
BC141-10	"	2-19/27
BC141-16	"	2-19/29
BC141-25	"	2-20/1
BC141-6	"	2-19/24
BC142	"	2-20/6
BC143	"	2-23/29
BC153	"	2-28/21
BC154	"	2-28/22
BC160	"	2-22/11
BC160-10	"	2-22/13
BC160-16	"	2-22/15
BC160-25	"	2-22/16
BC160-6	"	2-22/12

Device No.	Family	Page/Item
BC161	Discrete, Transistor	2-23/14
BC161-10	"	2-23/17
BC161-16	"	2-23/19
BC161-25	"	2-23/21
BC161-6	"	2-23/12
BC177	"	2-29/5
BC177A	"	2-29/7
BC177B	"	2-29/8
BC177VI	"	2-29/6
BC178	"	2-28/11
BC178A	"	2-28/13
BC178B	"	2-28/14
BC178VI	"	2-28/12
BC179	"	2-28/8
BC179A	"	2-28/9
BC179B	"	2-28/10
BC204	"	2-28/27
BC204A	"	2-28/29
BC204B	"	2-29/1
BC204VI	"	2-28/28
BC205	"	2-28/1
BC205A	"	2-28/2
BC205B	"	2-28/3
BC205C	"	2-28/4
BC207	"	2-26/12
BC207A	"	2-26/3
BC207B	"	2-26/4
BC208	"	2-25/2
BC208A	"	2-25/3
BC208B	"	2-25/4
BC208C	"	2-25/5
BC209	"	2-25/6
BC209B	"	2-25/7
BC209C	"	2-25/8
BC286	"	2-20/7
BC287	"	2-23/30
BC317	"	2-26/5
BC317A	"	2-26/6
BC317B	"	2-26/7
BC318	"	2-25/25

# PRODUCT INDEX

PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line	K Cylindrical, Metal	C (MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C		
D Dual In-Line	P Dual In-Line	C (7400 TTL)	0°C to +70°C		
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)	C (CMOS)	-40°C to +85°C		
F Flat	U Cylindrical, Plastic	C (CCD)	Consult Field Salesperson or Representative		
H Cylindrical, Metal	W Epoxy TO-92	L (MOS)	-55°C to +85°C		
J Cylindrical, Metal		L (LIC)	-20°C to +85°C		
		M	-55°C to +125°C		

Device No.	Family	Page/Item	Device No.	Family	Page/Item
BC318A	Discrete, Transistor	2-25/26	BC528-25	Discrete, Transistor	2-24/11
BC318B	"	2-25/27	BC528-6	"	2-24/5
BC318C	"	2-25/28	BC530	"	2-31/2
BC319	"	2-25/9	BC531	"	2-31/4
BC319B	"	2-25/10	BC532	"	2-30/4
			BC533	"	2-30/8
BC319C	"	2-25/11			
BC320	"	2-29/2	BC537	"	2-19/21
BC320A	"	2-29/3	BC537-10	"	2-19/26
BC320B	"	2-29/4	BC537-16	"	2-19/28
BC321	"	2-28/15	BC537-25	"	2-19/30
			BC537-6	"	2-19/22
BC321A	"	2-28/16			
BC321B	"	2-28/17	BC538	"	2-20/9
BC321C	"	2-28/18	BC538-10	"	2-20/12
BC322	"	2-28/5	BC538-16	"	2-20/13
BC322B	"	2-28/6	BC538-25	"	2-20/14
			BC538-6	"	2-20/10
BC322C	"	2-28/7			
BC323	"	2-33/7	BC727	"	2-21/28
BC520	"	2-27/14	BC727-10	"	2-21/29
BC520B	"	2-27/15	BC727-16	"	2-21/30
BC520C	"	2-27/16	BC727-6	"	2-21/26
			BC728	"	2-21/12
BC521	"	2-27/4			
BC521C	"	2-27/5	BC728-10	"	2-21/13
BC521D	"	2-27/6	BC728-16	"	2-21/15
BC522	"	2-25/12	BC728-6	"	2-21/11
BC522C	"	2-25/13	BC737	"	2-18/10
			BC737-10	"	2-18/12
BC522D	"	2-25/14			
BC522E	"	2-25/15	BC737-16	"	2-18/13
BC523	"	2-27/1	BC737-6	"	2-18/11
BC523B	"	2-27/2	BC738	"	2-17/18
BC523C	"	2-27/3	BC738-10	"	2-17/20
			BC738-16	"	2-17/22
BC526	"	2-29/12			
BC526A	"	2-29/13	BC738-6	"	2-17/19
BC527	"	2-23/13	BD115	"	2-30/14
BC527-10	"	2-23/16	BD220	"	2-35/18
BC527-16	"	2-23/18	BD221	"	2-35/7
			BD222	"	2-35/12
BC527-25	"	2-23/22			
BC527-6	"	2-23/10	BD223	"	2-36/12
BC528	"	2-24/6	BD224	"	2-36/2
BC528-10	"	2-24/8	BD225	"	2-36/7
BC528-16	"	2-24/10	BFX34	"	2-33/8
			BFX37	"	2-29/19

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
BFX39	Discrete, Transistor	2-22/30
BFX40	"	2-24/3
BFX41	"	2-24/2
BFY50	"	2-18/14
BFY51	"	2-17/28
BFY52	"	2-17/5
BFY56	"	2-19/11
BFY57	"	2-30/3
BFY64	"	2-22/7
BF152	"	2-32/3
BF159	"	2-32/4
BF160	"	2-32/2
BF162	"	2-32/12
BF163	"	2-32/5
BF167	"	2-32/7
BF222	"	2-32/10
BF257	"	2-30/7
BF258	"	2-30/22
BF259	"	2-30/28
BF336	"	2-30/13
BF337	"	2-30/15
BF338	"	2-30/21
BSX20	"	2-15/15
BSX26	"	2-15/9
BSX29	"	2-16/3
BSX32	"	2-15/22
BSX39	"	2-15/19
CA3018	LIC—Special Function	2-68/2
CA3018A	"	2-68/3
CA3019	"	2-68/4
CA3026	"	2-68/5
CA3036	"	2-68/6
CA3039	"	2-68/7
CA3045	"	2-68/8
CA3046	"	2-68/9
CA3054	"	2-68/10
CA3086	"	2-68/11
CCD101DC	CCD	2-153/1
CCD110DC	"	2-153/2
CCD121DC	"	2-153/3

Device No.	Family	Page/Item
CCD201ADC	CCD	2-153/4
CCD201BDC	"	2-153/4
CCD211DC	"	2-153/5
CCD311DC	"	2-154/3
CCD450DC	"	2-138/11
		2-154/1
CCD460DC	"	2-154/2
DN2222A	Discrete, Transistor	2-43/11
DN2369A	"	2-43/16
DN2484	"	2-43/6
DN2907	"	2-43/12
DN3014	"	2-43/18
DN3019	"	2-43/13
DN3468	"	2-43/20
DN3725	"	2-43/19
DN3904	"	2-43/9
DN3906	"	2-43/10
DN3930	"	2-43/15
DN3962	"	2-43/7
DN4033	"	2-43/14
DN4209	"	2-43/17
DN918	"	2-43/8
EN2484	"	2-27/12
EN3962	"	2-29/14
EN5172	"	2-17/14
FCD802	Discrete, Opto	2-48/1
FCD806	"	2-48/2
FCD810	"	2-48/3
FCD820	"	2-48/4
FCD820A	"	2-48/5
FCD820B	"	2-48/6
FD300	Discrete, Diode	2-7/6
FD333	"	2-7/7
FD400	"	2-5/8
FD600	"	2-4/25
FD700	"	2-4/1
FD777	"	2-4/4
FD6666	"	2-5/6
FDC3070	"	2-14/1
FDC3600	"	2-14/3
FDC4376	"	2-14/4

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PACKAGE CODES			TEMPERATURE RANGE CODES			
C	Dual In-Line	K	Cylindrical, Metal	C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
D	Dual In-Line	P	Dual In-Line	C	(7400 TTL)	0°C to +70°C
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)	C	(CMOS)	-40°C to +85°C
F	Flat	U	Cylindrical, Plastic	C	(CCD)	Consult Field Salesperson or Representative
H	Cylindrical, Metal	W	Epoxy TO-92	L	(MOS)	-55°C to +85°C
J	Cylindrical, Metal			M	(LIC)	-20°C to +85°C
						-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
FDC485B	Discrete, Diode	2-14/2	FLV341	Discrete, Opto	2-46/24
FDH300	"	2-7/8	FLV346	"	2-46/25
FDH333	"	2-7/9	FLV350	"	2-46/28
FDH400	"	2-5/9	FLV351	"	2-46/29
FDH444	"	2-5/14	FLV352	"	2-47/1
FDH600	"	2-4/26	FLV355	"	2-47/2
FDH666	"	2-5/2	FLV356	"	2-47/3
FDH900	"	2-6/19	FLV360	"	2-47/4
FDH999	"	2-6/20	FLV365	"	2-47/5
FH1100	"	2-9/9	FLV410	"	2-47/6
FJT1100	"	2-7/19	FLV440	"	2-47/7
FLS010	Discrete, Opto	2-45/9	FLV445	"	2-47/8
FLS011	"	2-45/10	FLV450	"	2-47/9
FLS012	"	2-45/11	FLV455	"	2-47/10
FLV103	"	2-46/1	FLV460	"	2-47/11
FLV104	"	2-46/2	FLV465	"	2-47/12
FLV110	"	2-46/3	FLX2110	"	2-53/1
FLV111	"	2-46/4	FMS002	Discrete, Transistor	2-42/31
FLV112	"	2-46/5	FMT1060	"	2-42/11
FLV117	"	2-46/6	FMT1060A	"	2-42/12
FLV118	"	2-46/7	FMT1061	"	2-42/13
FLV119	"	2-46/8	FMT1061A	"	2-42/14
FLV140	"	2-46/9	FMT1090	"	2-42/15
FLV141	"	2-46/10	FMT1091	"	2-42/16
FLV150	"	2-46/11	FMT1190	"	2-42/17
FLV151	"	2-46/12	FMT2060	"	2-42/18
FLV152	"	2-46/13	FMT4000	"	2-42/19
FLV160	"	2-46/14	FMT4005	"	2-42/20
FLV161	"	2-46/15	FMT4013	"	2-42/21
FLV162	"	2-46/16	FMT4014	"	2-42/22
FLV210	"	2-46/17	FMT4015	"	2-42/23
FLV240	"	2-46/18	FMT4016	"	2-42/24
FLV250	"	2-46/19	FMT4020	"	2-42/26
FLV251	"	2-46/20	FMT4021	"	2-42/27
FLV252	"	2-46/21	FMT4215	"	2-42/25
FLV260	"	2-46/22	FMT4225	"	2-42/28
FLV310	"	2-46/26	FMT4575	"	2-42/29
FLV315	"	2-46/27	FMT4578	"	2-42/30
FLV340	"	2-46/23	FMT940	"	2-33/1
			FMT941	"	2-33/2



# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>p</sub> L, LIC, most TTL)		0°C to +75°C
C	(7400 TTL)		0°C to +70°C
C	(CMOS)		-40°C to +85°C
C	(CCD)		Representative
L	(MOS)		-55°C to +85°C
L	(LIC)		-20°C to +85°C
M			-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item
FMT980	Discrete, Transistor	2-33/3
FMT981	"	2-33/4
FND357	Discrete, Opto	2-47/15
FND358	"	2-47/16
FND500	"	2-47/17
FND501	"	2-47/18
FND507	"	2-47/19
FND508	"	2-47/20
FND70	"	2-47/13
FND71	"	2-47/14
FNX8004	"	2-53/2
FNX8209	"	2-53/4
FNX8213	"	2-53/3
FPA100	"	2-48/7
FPA101	"	2-48/8
FPA102	"	2-48/9
FPA103	"	2-49/7
FPA104	"	2-49/8
FPA105	"	2-49/9
FPA700	"	2-49/1
FPA700A	"	2-49/2
FPA710	"	2-49/3
FPA710A	"	2-49/4
FPA720	"	2-49/5
FPA720A	"	2-49/6
FPE100	"	2-50/1
FPE104	"	2-50/2
FPE106	"	2-50/3
FPQ3467	Discrete, Transistor	2-41/9
FPQ3468	"	2-41/11
FPQ3724	"	2-41/5
FPQ3725	"	2-41/7
FPT100	Discrete, Opto	2-51/1
FPT100A	"	2-51/2
FPT100B	"	2-51/3
FPT101	"	2-51/4
FPT102	"	2-51/5
FPT110	"	2-51/6
FPT110A	"	2-51/7
FPT110B	"	2-51/8

Device No.	Family	Page/Item
FPT120	Discrete, Opto	2-51/9
FPT120A	"	2-51/10
FPT120B	"	2-51/11
FPT130	"	2-51/12
FPT130A	"	2-51/13
FPT130B	"	2-51/14
FPT131	"	2-51/15
FPT132	"	2-51/16
FPT136	"	2-52/1
FPT137	"	2-52/2
FPT220	"	2-52/3
FPT230	"	2-52/4
FPT320	"	2-52/5
FPT330	"	2-52/6
FPT610	"	2-52/7
FPT630	"	2-52/8
FPX110	"	2-53/5
FPX111	"	2-53/6
FQ3467	Discrete, Transistor	2-41/10
FQ3468	"	2-41/12
FQ3724	"	2-41/5
FQ3725	"	2-41/8
FSA2500M	Discrete, Diode	2-13/6
FSA2501M	"	2-13/7
FSA2503M	"	2-13/9
FSA2504M	"	2-13/10
FSA2510M	"	2-13/8
FSA2619M	"	2-13/11
FSA2620M	"	2-13/14
FSA2621M	"	2-13/16
FSA2719M	"	2-13/12
FSA2720M	"	2-13/15
FSA2721M	"	2-13/17
FT2955	Discrete, Transistor	2-36/11
FT401	"	2-37/29
FT402	"	2-38/2
FT410	"	2-37/28
FT411	"	2-37/30
FT413	"	2-38/3
FT423	"	2-38/4
FT430	"	2-38/1

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PACKAGE CODES	
C Dual In-Line	K Cylindrical, Metal
D Dual In-Line	P Dual In-Line
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)
F Flat	U Cylindrical, Plastic
H Cylindrical, Metal	W Epoxy TO-92
J Cylindrical, Metal	

TEMPERATURE RANGE CODES	
C (MOS, DTL, C <sub>p</sub> L, LIC, most TTL)	0°C to +75°C
C (7400 TTL)	0°C to +70°C
C (CMOS)	-40°C to +85°C
C (CCD)	Consult Field Salesperson or Representative
L (MOS)	-55°C to +85°C
L (LIC)	-20°C to +85°C
M	-55°C to +125°C

Device No.	Family	Page/Item
FT431	Discrete Transistor	2-38/5
FT3055	"	2-35/17
FT5415	"	2-34/10
FT5416	"	2-34/11
FT601	"	2-39/24
F8	Microprocessor	2-140
LM301AD	Linear Op Amp	2-61/18
LM301AH	"	"
LM301AN	"	"
LM302H	"	2-61/22
LM304H	Linear VR	2-58/4
LM305AH	"	2-58/3
LM305H	"	2-58/3
LM307H	Linear Op Amp	2-61/19
LM307N	"	"
LM308AH	"	2-61/21
LM308H	"	2-61/20
LM309K	Linear VR	2-58/5
LM310H	Linear Voltage Follower	2-61/23
LM311H	Linear Comp	2-64/6
LM311N	"	"
LM376N	Linear VR	2-58/6
MC1458CG	Linear Op Amp	2-61/24
MC1458CP1	"	"
MC1458G	"	"
MC1458P1	"	"
MC3302P	Linear Comp	2-64/7
MC3401P	Linear Op Amp	2-61/25
MC3403L	"	2-61/26
MC3403P	"	2-61/26
MD2218A	Discrete, Transistor	2-40/5
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MD2369A	"	2-40/1
MD2369B	"	2-40/2
MD918A	"	2-40/3
MD918B	"	2-40/4
MPSA05	"	2-19/25
MPSA06	"	2-20/11
MPSA10	"	2-18/15
MPSA12	"	2-43/1
MPSA13	"	2-43/2
MPSA14	"	2-43/3

Device No.	Family	Page/Item
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MPSA42	"	2-30/26
MPSA43	"	2-30/17
MPSA55	"	2-23/15
MPSA56	"	2-24/7
MPSA70	"	2-22/3
MPSA92	"	2-31/9
MPSA93	"	2-31/8
MPSL01	"	2-30/1
MPSL51	"	2-31/1
MPS2924	"	2-17/11
MPS2925	"	2-17/8
MPS3392	"	2-17/9
MPS3393	"	2-17/13
MPS3638A	"	2-21/18
MPS3646	"	2-15/13
MPS3702	"	2-21/16
MPS3703	"	2-21/24
MPS3704	"	2-17/27
MPS5172	"	2-17/15
MPS5551M	"	2-30/9
MPS6514	"	2-17/10
MPS6515	"	2-17/7
MPS6516	"	2-22/2
MPS6519	"	2-21/5
MPS6530	"	2-18/22
MPS6531	"	2-18/24
MPS6534M	"	2-22/14
MPS6560	"	2-17/23
MPS6561	"	2-17/6
MPS6562	"	2-21/19
MPS6563	"	2-21/4
NE555V	LIC Special Functions Interface	2-67/2
NE556A	LIC Special Functions Interface	2-83/4
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N8T14E	"	2-83/5
N8T23E	"	2-75/9
N8T24E	"	2-112/1
	"	2-113/1
	"	2-73/10
	"	2-113/2
	"	2-75/13
	"	2-113/2

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CμL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
PE3100	Discrete Transistor	2-32/1
PE5025	"	2-32/6
PE5029	"	2-32/8
PE5030B	"	2-32/9
PE5031	"	2-32/17
PE6020	"	2-20/4
PE6021	"	2-20/17
PE7058	"	2-30/19
PE7059	"	2-30/27
PE8050	"	2-17/21
PE8051	"	2-18/9
PE8052	"	2-17/2
PE8550	"	2-21/14
PE8551	"	2-21/27
PE8552	"	2-21/1
PN2219A	"	1-19/5
PN2222A	"	2-19/7
PN2369	"	2-15/6
PN2484	"	2-27/13
PN2905A	"	2-23/26
PN2907A	"	2-23/28
PN3251	"	2-22/9
PN3563	"	2-32/20
PN3565	"	2-25/20
PN3566	"	2-25/20
PN3567	"	2-18/28
PN3568	"	2-20/3
PN3639	"	2-16/3
PN3640	"	2-16/10
PN3642	"	2-19/13
PN3643	"	2-18/8
PN3644	"	2-22/29
PN3645	"	2-23/9
PN3690	"	2-32/14
PN3693	"	2-19/9
PN3694	"	2-19/10
PN4248	"	2-28/26
PN4249	"	2-29/17
PN4250	"	2-28/24

Device No.	Family	Page/Item
PN4258	Discrete, Transistor	2-16/8
PN4355	"	2-23/5
PN4888	"	2-31/5
PN4889	"	2-31/7
PN4916	"	2-21/22
PN4917	"	2-21/23
PN5138	"	2-28/20
PN5139	"	2-21/2
PN6076	"	2-21/7
PN918	"	2-32/15,21
RF400	Discrete Diode	2-9/10
RF401	"	2-9/11
SE3002	Discrete Transistor	2-32/22
SE4001	"	2-25/23
SE4002	"	2-25/22
SE4010	"	2-25/21
SE4020	"	2-27/10
SE4021	"	2-26/10
SE6020	"	2-20/5
SE6021	"	2-20/18
SE7055	"	2-30/18
SE7056	"	2-30/20
SE9300	"	2-35/16
SE9301	"	2-35/23
SE9302	"	2-35/24
SE9303	"	2-37/12
SE9304	"	2-37/23
SE9305	"	2-37/27
SE9331	"	2-34/21
SH0323KC	Linear, VR	2-58/9
SH2001HC	Interface	2-80/14
SH2001HM	"	2-80/Note
SH2002HC	"	2-80/15
SH2002HM	"	2-80/Note
SH2002PC	"	2-80/15
SH2200HC	"	2-80/16
SH2200HM	"	2-80/Note

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
SH2200PC	Interface	2-80/16
SH3002HC	"	2-84/9
SH3002HM	"	2-84/Note
SH3733PC	"	2-83/3
SN55450BJ	"	2-79/1
		2-80/4
SN55451BJ	"	2-79/2
		2-80/5
SN55452BJ	"	2-79/3
		2-80/6
SN55453BJ	"	2-79/4
		2-80/7
SN55454BJ	"	2-79/5
		2-89/8
SN75107AJ	"	2-72/3
		2-75/6
		2-103/9
SN75108AJ	"	2-72/4
		2-75/7
		2-103/10
SN75109J	"	2-73/5
		2-102/4
SN75110J	"	2-73/6
		2-102/5
SN75121J	"	2-73/7
SN75121N	"	2-73/7
SN75122J	"	2-75/10
SN75122N	"	2-75/10
SN75123J	"	2-73/8
SN75123N	"	2-73/8
SN75124J	"	2-75/11
SN75124N	"	2-75/11
SN75207J	"	2-72/5
		2-75/8
SN75208J	"	2-72/6
		2-75/9
SN75234J	"	2-82/7
SN75234N	"	2-82/7
SN75235J	"	2-82/8
SN75235N	"	2-82/8
SN7524J	"	2-81/3
SN7524N	"	2-81/3
SN7525J	"	2-81/4
SN7525N	"	2-81/4
SN7528J	"	2-81/5
SN7528N	"	2-81/5
SN7529J	"	2-81/6
SN7529N	"	2-81/6
SN7534J	"	2-82/1

Device No.	Family	Page/Item
SN7534N	Interface	2-82/1
SN7535J	"	2-82/2
SN7535N	"	2-82/2
SN75450AJ	"	2-80/4
SN75450AN	"	"
SN75450BJ	"	2-79/1
		2-80/4
SN75450BN	"	2-79/1
		2-80/4
SN75451AL	"	2-79/2
		2-80/5
SN75451AP	"	2-79/2
		2-80/5
SN75451BL	"	2-79/2
		2-80/5
SN75451BP	"	2-79/2
		2-80/5
SN75452AL	"	2-79/3
		2-80/6
SN75452AP	"	2-79/3
		2-80/6
SN75452BL	"	2-79/3
		2-80/6
SN75452BP	"	2-79/3
		2-80/6
SN75453AL	"	2-79/4
		2-80/7
SN75453AP	"	2-79/4
		2-80/7
SN75453BL	"	2-79/4
		2-80/7
SN75453BP	"	2-79/4
		2-80/7
SN75454AL	"	2-79/5
		2-80/8
SN75454AP	"	2-79/5
		2-80/8
SN75454BL	"	2-79/5
		2-80/8
SN75454BP	"	2-79/5
		2-80/8
SN75491AN	"	2-80/2
SN75491N	"	"
SN75492AN	"	2-80/3
TIP29	Discrete, Transistor	2-35/6
TIP29A	"	2-35/11

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
1N4376JAN	Discrete, Diode	2-9/4
1N4376JTX	"	2-9/5
1N4446	"	2-4/20
1N4447	"	2-4/21
1N4448	"	2-4/22
1N4450	"	2-5/3
1N4454	"	2-5/1
1N4454JAN	"	2-9/6
1N4454JTX	"	2-9/7
1N4454TXV	"	2-9/8
1N456	"	2-7/20
1N456A	"	2-7/21
1N457	"	2-7/16
1N457JAN	"	2-8/1
1N457A	"	2-7/17
1N458	"	2-7/10
1N458JAN	"	2-8/2
1N458A	"	2-7/10
1N459	"	2-7/2
1N459JAN	"	2-8/3
1N459A	"	2-7/3
1N461A	"	2-6/1
1N462	"	2-6/2
1N462A	"	2-6/3
1N463	"	2-6/4
1N463A	"	2-6/5
1N4728A	"	2-10/8
1N4729A	"	2-10/11
1N4730A	"	2-10/14
1N4731A	"	2-10/17
1N4732A	"	2-10/20
1N4733A	"	2-10/23
1N4734A	"	2-10/26
1N4735A	"	2-10/30
1N4736A	"	2-11/3
1N4737A	"	2-11/7
1N4738A	"	2-11/11
1N4739A	"	2-11/16
1N4740A	"	2-11/20
1N4741A	"	2-11/23

Device No.	Family	Page/Item
1N4742A	Discrete, Diode	2-11/27
1N4743A	"	2-11/30
1N4744A	"	2-12/3
1N4745A	"	2-12/6
1N4746A	"	2-12/10
1N4747A	"	2-12/14
1N4748A	"	2-12/17
1N4749A	"	2-12/20
1N4750A	"	2-12/24
1N4751A	"	2-12/28
1N4752A	"	2-12/31
1N482B	"	2-7/18
1N483B	"	2-7/15
1N483BJAN	"	2-8/4
1N483BJTX	"	2-8/5
1N484A	"	2-7/12
1N485A	"	2-7/4
1N485B	"	2-7/5
1N485BJAN	"	2-8/6
1N485BJTX	"	2-8/7
1N486B	"	2-7/1
1N486BJAN	"	2-8/8
1N486BJTX	"	2-8/9
1N5221B	"	2-10/1
1N5222B	"	2-10/2
1N5223B	"	2-10/3
1N5224B	"	2-10/4
1N5225B	"	2-10/5
1N5226B	"	2-10/7
1N5227B	"	2-10/10
1N5228B	"	2-10/13
1N5229B	"	2-10/16
1N5230B	"	2-10/19
1N5231B	"	2-10/22
1N5232B	"	2-10/25
1N5233B	"	2-10/27
1N5234B	"	2-10/29
1N5235B	"	2-11/2
1N5236B	"	2-11/6
1N5237B	"	2-11/10

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PACKAGE CODES			TEMPERATURE RANGE CODES			
C	Dual In-Line	K	Cylindrical, Metal	C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
D	Dual In-Line	P	Dual In-Line	C	(7400 TTL)	0°C to +70°C
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)	C	(CMOS)	-40°C to +85°C
F	Flat	U	Cylindrical, Plastic	C	(CCD)	Consult Field Salesperson or Representative
H	Cylindrical, Metal	W	Epoxy TO-92	L	(MOS)	-55°C to +85°C
J	Cylindrical, Metal			M	(LIC)	-20°C to +85°C
						-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
1N5238B	Discrete, Diode	2-11/12	1N748A	Discrete, Diode	2-10/12
1N5239B	"	2-11/15	1N749A	"	2-10/15
1N5240B	"	2-11/19	1N750A	"	2-10/18
1N5241B	"	2-11/22	1N751A	"	2-10/21
1N5242B	"	2-11/26	1N752A	"	2-10/24
1N5243B	"	2-11/29	1N753A	"	2-10/28
1N5244B	"	2-11/31	1N754A	"	2-10/31
1N5245B	"	2-12/2	1N755A	"	2-11/4
1N5246B	"	2-12/5	1N756A	"	2-11/8
1N5247B	"	2-12/7	1N757A	"	2-11/13
1N5248B	"	2-12/9	1N758A	"	2-11/17
1N5249B	"	2-12/11	1N759A	"	2-11/24
1N5250B	"	2-12/13	1N816	"	2-6/7
1N5251B	"	2-12/16	1N842	"	2-5/12
1N5252B	"	2-12/19	1N914	"	2-4/12
1N5253B	"	2-12/21		"	2-13/1
1N5254B	"	2-12/23	1N914JAN	"	2-8/14
1N5255B	"	2-12/25	1N914JTX	"	2-8/15
1N5256B	"	1-12/27	1N914A	"	2-4/13
1N5257B	"	2-12/30	1N914B	"	2-4/14
1N5282	"	2-4/5	1N916	"	2-4/15
1N625	"	2-5/24	1N916A	"	2-4/16
1N626	"	2-5/23	1N916B	"	2-4/17
1N627	"	2-5/19	1N957B	"	2-11/1
1N628	"	2-5/15	1N958B	"	2-11/5
1N629	"	2-5/10	1N959B	"	2-11/9
1N643	"	2-5/11	1N960B	"	2-11/14
1N643JAN	"	2-8/10	1N961B	"	2-11/18
1N658	"	2-5/17	1N962B	"	2-11/21
1N658JAN	"	2-8/11	1N963B	"	2-11/25
1N659	"	2-5/7	1N964B	"	2-11/28
1N660	"	2-5/18	1N965B	"	2-12/1
1N661	"	2-6/6	1N966B	"	2-12/4
1N662	"	2-5/20	1N967B	"	2-12/8
1N662JAN	"	2-8/12	1N968B	"	2-12/12
1N662A	"	2-5/21	1N969B	"	2-12/15
1N663	"	2-5/22	1N970B	"	2-12/18
1N663JAN	"	2-8/13	1N971B	"	2-12/22
1N746A	"	2-10/6	1N972B	"	2-12/26
1N747A	"	2-10/9	1N973B	"	2-12/29
			1544	Diode	2-6/8

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<b>PACKAGE CODES</b>		<b>TEMPERATURE RANGE CODES</b>	
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, C <sub>u</sub> L, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M	0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C

Device No.	Family	Page/Item
1N842	Discrete, Diode	2-5/12
1N914	"	2-4/12
	"	2-13/1
1N914JAN	"	2-8/14
1N914JTX	"	2-8/15
1N914A	"	2-4/13
1N914B	"	2-4/14
1N916	"	2-4/15
1N916A	"	2-4/16
1N916B	"	2-4/17
1N957B	"	2-11/1
1N958B	"	2-11/5
1N959B	"	2-11/9
1N960B	"	2-11/14
1N961B	"	2-11/18
1N962B	"	2-11/21
1N963B	"	2-11/25
1N964B	"	2-11/28
1N965B	"	2-12/1
1N966B	"	2-12/4
1N967B	"	2-12/8
1N968B	"	2-12/12
1N969B	"	2-12/15
1N970B	"	2-12/18
1N971B	"	2-12/22
1N972B	"	2-12/26
1N973B	"	2-12/29
1544	"	2-6/8
15920	"	2-6/9
15921	"	2-6/10
15922	"	2-6/11
15923	"	2-6/12
10000DC	Digital ECL	2-122/9
10000PC	"	2-122/9
10010DC	"	2-123/6
10010PC	"	"
100101FC	"	2-119/10
100102FC	"	2-119/15
100107FC	"	2-119/16
100114FC	"	2-125/2
100117FC	"	2-119/20
100123FC	"	2-124/2
100130FC	"	2-120/17
100131FC	"	2-120/7
10014DC	"	2-125/3
10014PC	"	"

Device No.	Family	Page/Item
100150FC	Digital ECL	2-120/23
100151FC	"	2-120/10
100155FC	"	2-121/4
10016DC	"	2-123/3
10016PC	"	"
100170FC	"	2-122/6
100171FC	"	2-121/6
100415FC	Digital ECL Memory	2-127/10
	"	2-133/22
10101DC	Digital ECL	2-119/14
10101PC	"	"
10102DC	"	2-118/19
10102PC	"	"
10103DC	"	2-118/5
10104DC	"	2-118/7
10105DC	"	2-119/9
10105PC	"	"
10106DC	"	2-118/12
10106PC	"	2-118/12
10107DC	"	2-119/12
10107PC	"	"
10109DC	"	2-119/1
10110DC	"	2-118/2
10110PC	Digital ECL	2-118/2
10111DC	"	2-118/9
10111PC	"	"
10113DC	"	2-118/6
10114DC	"	2-124/5
10114PC	"	"
10115DC	"	2-125/1
10115PC	"	"
10116DC	"	2-124/6
10116PC	"	"
10117DC	"	2-119/22
10118DC	"	2-119/17
	"	2-119/21
10119DC	"	2-119/19
10119PC	"	"
10121DC	"	2-119/23
10123DC	"	2-124/1
10124DC	Interface, ECL	2-78/7
	"	2-114/6
	"	2-125/6
10124PC	"	2-78/7
	"	2-114/6
	"	2-125/6

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item
10125DC	Interface, ECL	2-78/8
	"	2-114/7
	"	2-125/7
10125PC	"	2-78/8
	"	2-114/7
	"	2-125/7
10130DC	Digital ECL	2-120/16
10130PC	"	"
10131DC	"	2-120/5
10131PC	"	"
10132DC	"	2-121/1
10132PC	"	"
10133DC	"	2-120/19
10133PC	"	"
10134DC	"	2-121/2
10134PC	"	"
10135DC	"	2-120/14
10135PC	"	"
10136DC	"	2-123/4
10137DC	"	2-123/7
10141DC	"	2-122/10
10141PC	"	2-122/10
10145AC	Digital ECL Memory	2-133/15
10153DC	"	2-120/20
10153PC	"	"
10160DC	"	2-126/9
10160PC	Digital ECL	2-126/9
10161DC	"	2-122/2
10161PC	"	"
10162DC	"	2-122/3
10162PC	"	"
10164DC	"	2-121/10
10164PC	"	"
10165DC	"	2-126/7
10165PC	"	"
10166DC	"	2-126/6
10166PC	"	"
10168DC	"	2-120/21
10168PC	"	"
10170DC	"	2-126/8
10170PC	"	"
10171DC	"	2-122/4
10171PC	"	"
10172DC	"	2-122/5
10172PC	"	"

Device No.	Family	Page/Item
10173DC	Digital ECL	2-121/3
10173PC	"	"
10174DC	"	2-121/5
10174PC	"	"
10175DC	"	2-120/22
10175PC	"	"
10176DC	"	2-120/8
10176PC	"	"
10179DC	"	2-126/3
10179PC	"	"
10180DC	"	2-126/2
10180PC	"	"
10181DC	"	2-126/10
10186DC	"	2-120/9
10186PC	"	"
10210DC	"	2-118/3
10211DC	"	2-118/10
10231DC	"	2-120/6
10231PC	"	2-120/6
10405DC	Digital ECL Memory	2-127/4
	"	2-133/16
10410DC	"	2-127/5
	"	2-133/17
10411DC	"	2-127/11
	"	2-133/23
10415DC	"	2-127/7
	"	2-133/19
10415ADC	"	2-127/6
	"	2-133/18
11C01FC	Digital ECL	2-119/2
11C05DC	"	2-123/8
11C05DM	"	"
11C006DC	"	2-120/1
11C006PC	"	2-120/1
11C24DC	"	2-125/9
11C44DC	"	2-125/10
11C58DC	"	2-125/8
11C70DC	"	2-120/11
11C70PC	"	"
11C90DC	"	2-123/12
11C91DC	"	2-123/10
1103DC	MOS	2-137/1
1103SDC	"	2-137/2
11031DC	"	2-137/3
1458CG	Linear Op Amp	2-61/24
1458CP1	"	2-61/24
1458G	"	2-61/24
1458P1	"	2-61/24



# PRODUCT INDEX

**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
2N1132	Discrete, Transistor	2-22/1
2N1613	"	2-19/18
2N1711	"	2-19/20
2N1893	"	2-20/16
2N2218	"	2-17/30
2N2218A	"	2-18/29
2N2219	"	2-18/5
2N2219A	"	2-19/4
2N2221	"	2-18/1
2N2221A	"	2-18/30
2N2222	"	2-18/6
2N2222A	"	2-19/6
2N2270	"	2-19/14
2N2369	"	2-15/5
2N2369A	"	2-15/7
2N2405	"	2-20/20
2N2484	"	2-27/11
2N2725	"	2-43/5
2N2857	"	2-42/1
2N2894	"	2-16/12
2N2904	"	2-22/17
2N2904A	"	2-23/23
2N2905	"	2-22/22
2N2905A	"	2-23/25
2N2906A	"	2-23/24
2N2907	"	2-22/23
2N2907A	"	2-23/27
2N2913	"	2-40/7
2N2914	"	2-40/10
2N2915	"	2-40/9
2N2917	"	2-40/8
2N2918	"	2-40/11
2N2920	"	2-40/12
2N2920A	"	2-40/13
2N3009	"	2-15/10
2N3013	"	2-15/11
2N3014	"	2-15/18
2N3019	"	2-20/19
2N3020	"	2-20/15

Device No.	Family	Page/Item
2N3053	Discrete, Transistor	2-19/19
2N3054	"	2-34/14
2N3055	"	2-37/13
2N3114	"	2-30/6
2N3117	"	2-27/17
2N3209	"	2-16/17
2N3250	"	2-22/5
2N3250A	"	2-23/2
2N3251	"	2-22/8
2N3251A	"	2-23/3
2N3253	"	2-15/23
2N3300	"	2-18/3
2N3302	"	2-18/4
2N3439	"	2-34/2
2N3440	"	2-34/1
2N3444	"	2-15/27
2N3467	"	2-16/19
2N3468	"	2-16/21
2N3502	"	2-22/26
2N3503	"	2-23/6
2N3504	"	2-22/27
2N3505	"	2-23/7

# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>p</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item
2N3563	Discrete, Transistor	2-32/13
2N3565	"	2-25/19
2N3566	"	2-17/26
2N3567	"	2-18/27
2N3568	"	2-20/2
2N3569	"	2-19/3
2N3570	"	2-42/2
2N3571	"	2-42/3
2N3572	"	2-42/4
2N3638	"	2-21/9
2N3638A	"	2-21/17
2N3639	"	2-16/4
2N3640	"	2-16/11
2N3641	"	2-18/2
2N3642	"	2-19/12
2N3643	"	2-18/7
2N3644	"	2-22/28
2N3645	"	2-23/8
2N3646	"	2-15/12
2N3683	"	2-42/5
2N3713	"	2-37/9
2N3714	"	2-37/21
2N3715	"	2-37/10
2N3716	"	2-37/22
2N3724	"	2-15/20
2N3725	"	2-15/25
2N3740	"	2-35/3
2N3741	"	2-35/5
2N3766	"	2-34/16
2N3767	"	2-34/19
2N3771	"	2-37/3
2N3772	"	2-37/14
2N3789	"	2-37/9
2N3790	"	2-37/19
2N3791	"	2-37/11
2N3792	"	2-37/21
2N3800	"	2-40/16
2N3802	"	2-40/18
2N3804	"	2-40/20

Device No.	Family	Page/Item
2N3805	Discrete, Transistor	2-41/2
2N3806	"	2-40/17
2N3808	"	2-40/19
2N3810	"	2-40/21
2N3811	"	2-41/3
2N3839	"	2-42/6
2N3880	"	2-42/7
2N3903	"	2-18/17
2N3904	"	2-18/18
2N3905	"	2-22/6
2N3906	"	2-22/10
2N3947	"	2-18/19
2N3962	"	2-29/20
2N3964	"	2-29/9
2N3965	"	2-29/18
2N4013	"	2-15/21
2N4014	"	2-15/26
2N4017	"	2-41/4
2N4020	"	2-40/14
2N4023	"	2-40/15
2N4025	"	2-41/1
2N4030	"	2-23/11
2N4032	"	2-23/20
2N4033	"	2-24/9
2N4036	"	2-24/1
2N4037	"	2-22/20
2N4047	"	2-15/24
2N4123	"	2-17/25
2N4124	"	2-17/12
2N4125	"	2-21/20
2N4126	"	2-21/6
2N4208	"	2-16/6
2N4209	"	2-16/14
2N4231	"	2-34/13
2N4232	"	2-34/17
2N4233	"	2-34/20
2N4234	"	2-34/3
2N4235	"	2-34/5
2N4236	"	2-34/7
2N4237	"	2-33/5

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
2N4238	Discrete, Transistor	2-33/10
2N4239	"	2-33/14
2N4248	"	2-28/25
2N4249	"	2-29/16
2N4250	"	2-28/23
2N4250A	"	2-29/15
2N4257	"	2-16/2
2N4258	"	2-16/7
2N4258A	"	2-16/5
2N4274	"	2-15/2
2N4275	"	2-15/4
2N4313	"	2-16/9
2N4348	"	2-16/9
2N4354	"	2-23/1
2N4355	"	2-23/4
2N4356	"	2-24/4
2N4398	"	2-39/4
2N4399	"	2-39/14
2N4400	"	2-19/1
2N4401	"	2-19/8
2N4402	"	2-22/19
2N4403	"	2-22/24
2N4409	"	2-19/15
2N4410	"	2-20/8
2N4895	"	2-33/11
2N4896	"	2-33/12
2N4897	"	2-33/16
2N4898	"	2-35/1
2N4899	"	2-35/2
2N4900	"	2-35/4
2N4901	"	2-39/1
2N4902	"	2-39/5
2N4903	"	2-39/15
2N4904	"	2-39/2
2N4905	"	2-39/6
2N4906	"	2-39/16
2N4907	"	2-39/3
2N4908	"	2-39/10
2N4909	"	2-39/20
2N4910	"	2-34/12

Device No.	Family	Page/Item
2N4911	Discrete, Transistor	2-34/15
2N4912	"	2-34/18
2N4913	"	2-37/2
2N4914	"	2-37/6
2N4915	"	2-37/18
2N4926	"	2-30/16
2N4927	"	2-30/23
2N5022	"	2-16/20
2N5023	"	2-16/18
2N5031	"	2-42/8
2N5058	"	2-30/25
2N5059	"	2-30/24
2N5067	"	2-37/1
2N5068	"	2-37/5
2N5069	"	2-37/17
2N5086	"	2-29/11
2N5087	"	2-29/10
2N5088	"	2-26/1
2N5089	"	2-25/18
2N5128	"	2-17/1
2N5130	"	2-32/16
2N5133	"	2-25/1
2N5134	"	2-15/1
2N5135	"	2-17/16
2N5136	"	2-17/4
2N5138	"	2-28/19
2N5142	"	2-21/3
2N5179	"	2-42/9
2N5209	"	2-27/8
2N5210	"	2-27/7
2N5223	"	2-17/3
2N5224	"	2-15/3
2N5225	"	2-17/17
2N5226	"	2-21/10
2N5227	"	2-21/21
2N5228	"	2-16/1
2N5301	"	2-37/4
2N5302	"	2-37/16
2N5303	"	2-37/26
2N5320	"	2-33/13

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PACKAGE CODES		TEMPERATURE RANGE CODES	
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, C <sub>μ</sub> L, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M	0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C

Device No.	Family	Page/Item
2N5321	Discrete, Transistor	2-33/6
2N5322	"	2-34/6
2N5323	"	2-34/4
2N5334	"	2-33/9
2N5335	"	2-33/15
2N5336	"	2-33/17
2N5337	"	2-33/18
2N5338	"	2-33/20
2N5339	"	2-33/21
2N5400	"	2-31/3
2N5401	"	2-31/6
2N5550	"	2-30/5
2N5679	"	2-34/8
2N5680	"	2-34/9
2N5681	"	2-33/19
2N5682	"	2-33/22
2N5761	"	2-42/10
2N5769	"	2-15/8
2N5770	"	2-32/18,19
2N5771	"	2-16/15
2N5772	"	2-15/14
2N5830	"	2-30/2
2N5831	"	2-30/10
2N5832	"	2-30/11
2N5833	"	2-30/12
2N5871	"	2-37/7
2N5872	"	2-37/17
2N5873	"	2-37/7
2N5874	"	2-37/19
2N5875	"	2-37/8
2N5876	"	2-37/18
2N5877	"	2-37/8
2N5878	"	2-37/20
2N5879	"	2-37/12
2N5880	"	2-37/22
2N5881	"	2-37/11
2N5882	"	2-37/24
2N5883	"	2-37/13

Device No.	Family	Page/Item
2N5884	Discrete, Transistor	2-37/23
2N5885	"	2-37/15
2N5886	"	2-37/25
2N5910	"	2-16/16
2N5961	"	2-27/9
2N5962	"	2-26/9
2N6121	"	2-35/10
2N6122	"	2-35/13
2N6123	"	2-35/20
2N6124	"	2-36/5
2N6125	"	2-36/8
2N6126	"	2-36/14
2N6129	"	2-35/9
2N6130	"	2-35/15
2N6131	"	2-35/22
2N6132	"	2-36/4
2N6133	"	2-36/10
2N6134	"	2-36/16
2N697	"	2-19/2
2N708	"	2-15/17
2N718	"	2-17/24
2N718A	"	2-19/17
2N914	"	2-15/16
2N915	"	2-19/16
2N918	"	2-32/11
2N930	"	2-26/8
2N997	"	2-43/4
2102DC	MOS	2-137/4
2102DL	"	2-137/4
2102DM	"	2-137/4
2102FDC	"	2-137/7
2102FDL	"	2-137/7
2102FDM	"	2-137/7
21021DC	"	2-137/6
21021DL	"	2-137/6
21021DM	"	2-137/6
21022DC	"	2-137/5

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>p</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
20122DL	MOS	2-137/5
21022DM	"	2-137/5
2240	LIC Special Function	2-68/1
2533DC	MOS	2-138/1
2533PC	"	2-138/1
301AD	Linear Op Amp	2-61/18
301AH	"	2-61/18
301AN	"	2-61/18
302H	"	2-61/22
304H	Linear VR	2-58/4
305AH	"	2-58/3
305H	"	2-58/3
307H	Linear Op Amp	2-61/19
307N	"	2-61/19
308AH	"	2-61/21
308H	"	2-61/20
309K	Linear VR	2-58/5
310H	Linear Op Amp	2-61/23
311H	Linear Comp	2-64/6
311N	"	2-64/6
3257DC	MOS	2-137/13
3258DC	"	2-137/14
32581DC	"	2-137/14
32581PC	"	2-137/14
32582DC	"	2-137/14
32582PC	"	2-137/14
3260DC	"	2-137/17
3262ADC	"	2-139/1
3262BDC	"	2-139/1
3262CDC	"	2-139/1
3301P	LIC, Op Amp	2-61/note
3302P	Linear Comp	2-64/7
3303D	LIC, Op Amps	2-61/note
3303PD	"	2-61/note
3401P	Linear Op Amp	2-61/25
3403L	"	2-61/26
3403P	"	2-61/26
3341ADC	MOS	2-138/13
3341ADL	"	2-138/13
3341ADM	"	2-138/13
3341APC	"	2-138/13
3341DC	"	2-138/12
3341DL	"	2-138/12
3341DM	"	2-138/12
3341PC	"	2-138/12
3342DC	"	2-138/3

Device No.	Family	Page/Item
3342PC	MOS	2-138/3
3347DC	"	2-138/4
3347PC	"	2-138/4
3348DC	"	2-138/5
3349DC	"	2-138/6
3349PC	"	2-138/6
33511DC	"	2-138/15
33511DL	"	2-138/15
33511DM	"	2-138/15
33511PC	"	2-138/15
33512DC	"	2-138/14
33512PC	"	2-138/14
3355DC	"	2-138/2
3355DL	"	2-138/2
3355PC	"	2-138/2
33561DC	"	2-138/8
33561DL	"	2-138/8
33562DC	"	2-138/7
33571DC	"	2-138/9
33571PC	"	2-138/9
33572DC	"	2-138/8
34001DC	CMOS	2-142/5
34001DM	"	2-142/5
34001FM	"	2-142/5
34001PC	"	2-142/5
34002DC	"	2-142/7
34002DM	"	2-142/7
34002FM	"	2-142/7
34002PC	"	2-142/7
34006DC	"	2-144/7
34006DM	"	2-144/7
34006FM	"	2-144/7
34006PC	"	2-144/7
34007DC	"	2-142/21
34007DM	"	2-142/21
34007FM	"	2-142/21
34007PC	"	2-142/21
34008DC	"	2-148/5
34008DM	"	2-148/5
34008FM	"	2-148/5
34008PC	"	2-148/5
340085DC	"	2-148/8
340085DM	"	2-148/8
340085FM	"	2-148/8
340085PC	"	2-148/8

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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, C <sub>μ</sub> L, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M	0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C		

Device No.	Family	Page/Item	Device No.	Family	Page/Item
340097DC	CMOS	2-142/15	340161FM	CMOS	2-145/2
340097DM	"	2-142/15	340161PC	"	2-145/2
340097FM	"	2-142/15	340162DC	"	2-145/3
340097PC	"	2-142/15	340162DM	"	2-145/3
340098DC	"	2-142/14	340162FM	"	2-145/3
340098DM	"	2-142/14	340162PC	"	2-145/3
340098FM	"	2-142/14	340163DC	"	2-145/4
340098PC	"	2-142/14	340163DM	"	2-145/4
3401PC	LIC, Op Amp	2-61/25	340163FM	"	2-145/4
34011DC	CMOS	2-142/1	340163PC	"	2-145/4
34011DM	"	2-142/1	34017DC	"	2-146/6
34011FM	"	2-142/1	34017DM	"	2-146/6
34011PC	"	2-142/1	34017FM	"	2-146/6
34012DC	"	2-142/3	34017PC	"	2-146/6
34012DM	"	2-142/3	340174DC	"	2-143/4
34012FM	"	2-142/3	340174DM	"	2-143/4
34012PC	"	2-142/3	340174FM	"	2-143/4
34013DC	"	2-143/2	340174PC	"	2-143/4
34013DM	"	2-143/2	340175DC	"	2-143/3
34013FM	"	2-143/2	340175DM	"	2-143/3
34013PC	"	2-143/2	340175FM	"	2-143/3
34014DC	"	2-144/5	340175PC	"	2-143/3
34014DM	"	2-144/5	34018DC	"	2-146/7
34014FM	"	2-144/5	34018DM	"	2-146/7
34014PC	"	2-144/5	34018FM	"	2-146/7
34015DC	"	2-144/4	34018PC	"	2-146/7
34015DM	"	2-144/4	34019DC	"	2-143/10
34015FM	"	2-144/4	34019DM	"	2-143/10
34015PC	"	2-144/4	34019FM	"	2-143/10
34016DC	"	2-148/1	34019PC	"	2-143/10
34016DM	"	2-148/1	340192DC	"	2-145/9
34016FM	"	2-148/1	340192DM	"	2-145/9
34016PC	"	2-148/1	340192FM	"	2-145/9
340160DC	"	2-145/1	340192PC	"	2-145/9
340160DM	"	2-145/1	340193DC	"	2-145/10
340160FM	"	2-145/1	340193DM	"	2-145/10
340160PC	"	2-145/1	340193FM	"	2-145/10
340161DC	"	2-145/2	340193PC	"	2-145/10
340161DM	"	2-145/2	340194DC	"	2-144/2
			340194DM	"	2-144/2

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PACKAGE CODES		TEMPERATURE RANGE CODES	
C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		
		C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)
		C	(7400 TTL)
		C	(CMOS)
		C	(CCD)
		L	(MOS)
		L	(LIC)
		M	
			0°C to +75°C
			0°C to +70°C
			-40°C to +85°C
			Consult Field Salesperson or Representative
			-55°C to +85°C
			-20°C to +85°C
			-55°C to +125°C

Device No.	Family	Page/Item
340194FM	CMOS	2-144/2
340194PC	"	2-144/2
340195DC	"	2-144/3
340195DM	"	2-144/3
340195FM	"	2-144/3
340195PC	"	2-144/3
34020DC	"	2-146/4
34020DM	"	2-146/4
34020FM	"	2-146/4
34020PC	"	2-146/4
34021DC	"	2-144/6
34021DM	"	2-144/6
34021FM	"	2-144/6
34021PC	"	2-144/6
34022DC	"	2-146/5
34022DM	"	2-146/5
34022FM	"	2-146/5
34022PC	"	2-146/5
34023DC	"	2-142/2
34023DM	"	2-142/2
34023FM	"	2-142/2
34023PC	"	2-142/2
34024DC	"	2-146/2
34024DM	"	2-146/2
34024FM	"	2-146/2
34024PC	"	2-146/2
34025DC	"	2-142/6
34025DM	"	2-142/6
34025FM	"	2-142/6
34025PC	"	2-142/6
34027DC	"	2-143/1
34027DM	"	2-143/1
34027FM	"	2-143/1
34027PC	"	2-143/1
34028DC	"	2-144/11
34028DM	"	2-144/11
34028FM	"	2-144/11
34028PC	"	2-144/11
340283DC	"	2-148/6
340283DM	"	2-148/6
340283FM	"	2-148/6
340283PC	"	2-148/6

Device No.	Family	Page/Item
34029DC	CMOS	2-145/11
34029DM	"	2-145/11
34029FM	"	2-145/11
34029PC	"	2-145/11
3403PCDC	LIC, Op Amp	2-61/26
34030DC	CMOS	2-142/16
34030DM	"	2-142/16
34030FM	"	2-142/16
34030PC	"	2-142/16
34035DC	"	2-144/1
34035DM	"	2-144/1
34035FM	"	2-144/1
34035PC	"	2-144/1
34040DC	"	2-146/3
34040DM	"	2-146/3
34040FM	"	2-146/3
34040PC	"	2-146/3
34042DC	"	2-143/5
34042DM	"	2-143/5
34042FM	"	2-143/5
34042PC	"	2-143/5
34043DC	"	2-143/6
34043DM	"	2-143/6
34043FM	"	2-143/6
34043PC	"	2-143/6
34044DC	"	2-143/7
34044DM	"	2-143/7
34044FM	"	2-143/7
34044PC	"	2-143/7
34049DC	"	2-142/12
34049DM	"	2-142/12
34049FM	"	2-142/12
34049PC	"	2-142/12
34050DC	"	2-142/13
34050DM	"	2-142/13
34050FM	"	2-142/13
34050PC	"	2-142/13
34051DC	"	2-144/15
		2-148/4

# PRODUCT INDEX

PACKAGE CODES			TEMPERATURE RANGE CODES	
C Dual In-Line	K Cylindrical, Metal	C (MOS, DTL, C <sub>p</sub> L, LIC, most TTL)		0°C to +75°C
D Dual In-Line	P Dual In-Line	C (7400 TTL)		0°C to +70°C
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)	C (CMOS)		-40°C to +85°C
F Flat	U Cylindrical, Plastic	C (CCD)	Consult Field Salesperson or Representative	-55°C to +85°C
H Cylindrical, Metal	W Epoxy TO-92	L (MOS)		-20°C to +85°C
J Cylindrical, Metal		L (LIC)		-55°C to +125°C
		M		

Device No.	Family	Page/Item	Device No.	Family	Page/Item
34051DM	CMOS	2-144/15 2-148/4	34077PC	CMOS	2-142/18
34051FM	"	2-144/15 2-148/4	34078DC	"	2-142/8
34051PC	"	2-144/15 2-148/4	34078DM	"	2-142/8
34052DC	"	2-144/14 2-148/3	34078FM	"	2-142/8
34052DM	"	2-144/14 2-148/3	34078PC	"	2-142/8
34052FM	"	2-144/14 2-148/3	34081DC	"	2-142/9
34052PC	"	2-144/14 2-148/3	34081DM	"	2-142/9
34066DC	"	2-148/2	34081FM	"	2-142/9
34066DM	"	2-148/2	34081PC	"	2-142/9
34066FM	"	2-148/2	34085DC	"	2-142/19
34066PC	"	2-148/2	34085DM	"	2-142/19
34068DC	"	2-142/4	34085FM	"	2-142/19
34068DM	"	2-142/4	34085PC	"	2-142/19
34068FM	"	2-142/4	34086DC	"	2-142/20
34068PC	"	2-142/4	34086DM	"	2-142/20
34069DC	"	2-142/11	34086FM	"	2-142/20
34069DM	"	2-142/11	34086PC	"	2-142/20
34069FM	"	2-142/11	34099DC	"	2-143/9
34069PC	"	2-142/11	34099DM	"	2-143/9
34070DC	"	2-142/17	34099FM	"	2-143/9
34070DM	"	2-142/17	34099PC	"	2-143/9
34070FM	"	2-142/17	34104DC	"	2-147/2
34070PC	"	2-142/17	34104DM	"	2-147/2
34071DC	"	2-142/10	34104FM	"	2-147/2
34071DM	"	2-142/10	34104PC	"	2-147/2
34071FM	"	2-142/10	34510DC	"	2-145/7
34071PC	"	2-142/10	34510DM	"	2-145/7
34077DC	"	2-142/18	34510FM	"	2-145/7
34077DM	"	2-142/18	34510PC	"	2-145/7
34077FM	"	2-142/18	34512DC	"	2-143/13
			34512DM	"	2-143/13
			34512FM	"	2-143/13
			34512PC	"	2-143/13
			34514DC	"	2-144/12
			34514DM	"	2-144/12
			34514FM	"	2-144/12
			34514PC	"	2-144/12
			34515DC	"	2-144/13
			34515DM	"	2-144/13
			34515FM	"	2-144/13



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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, Cpl, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) M (LIC)	0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C		

Device No.	Family	Page/Item	Device No.	Family	Page/Item
34515PC	CMOS	2-144/13	34556PC	CMOS	2-144/10
34516DC	"	2-145/8	34582DC	"	2-148/7
34516DM	"	2-145/8	34582DM	"	2-148/7
34516FM	"	2-145/8	34582FM	"	2-148/7
34516PC	"	2-145/8	34582PC	"	2-148/7
34518DC	"	2-145/12	34702DC	"	2-146/8
34518DM	"	2-145/12	34702DM	"	2-146/8
34518FM	"	2-145/12	34702FM	"	2-146/8
34518PC	"	2-145/12	34702PC	"	2-146/8
34519DC	"	2-143/11	34703DC	"	2-149/4
34519DM	"	2-143/11	34703DM	"	2-149/4
34519FM	"	2-143/11	34703FM	"	2-149/4
34519PC	"	2-143/11	34703PC	"	2-149/4
34520DC	"	2-146/1	34704DC	"	2-148/9
34520DM	"	2-146/1	34704DM	"	2-148/9
34520FM	"	2-146/1	34704FM	"	2-148/9
34520PC	"	2-146/1	34704PC	"	2-148/9
34522DC	"	2-145/5	34705DC	"	2-148/10
34522DM	"	2-145/5	34705DM	"	2-148/10
34522FM	"	2-145/5	34705FM	"	2-148/10
34522PC	"	2-145/5	34705PC	"	2-148/10
34526DC	"	2-145/6	34706DC	"	2-149/5
34526DM	"	2-145/6	34706DM	"	2-149/5
34526FM	"	2-145/6	34706FM	"	2-149/5
34526PC	"	2-145/6	34706PC	"	2-149/5
34528DC	"	2-147/1	34707DC	"	2-148/11
34528DM	"	2-147/1	34707DM	"	2-148/11
34528FM	"	2-147/1	34707FM	"	2-148/11
34528PC	"	2-147/1	34707PC	"	2-148/11
34539DC	"	2-143/12	34710DC	"	2-149/2
34539DM	"	2-143/12	34710DM	"	2-149/2
34539FM	"	2-143/12	34710FM	"	2-149/2
34539PC	"	2-143/12	34710PC	"	2-149/2
34555DC	"	2-144/9	34720DC	"	2-149/3
34555DM	"	2-144/9	34720DM	"	2-149/3
34555FM	"	2-144/9	34720FM	"	2-149/3
34555PC	"	2-144/9	34720PC	"	2-149/3
34556DC	"	2-144/10	34723DC	"	2-143/8
34556DM	"	2-144/10	34723DM	"	2-143/8
34556FM	"	2-144/10	34723FM	"	2-143/8

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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line	K Cylindrical, Metal	C (MOS, DTL, C <sub>p</sub> L, LIC, most TTL)			
D Dual In-Line	P Dual In-Line	C (7400 TTL)			0°C to +75°C
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)	C (CMOS)			0°C to +70°C
F Flat	U Cylindrical, Plastic	C (CCD)			-40°C to +85°C
H Cylindrical, Metal	W Epoxy TO-92	L (MOS)			Consult Field Salesperson or Representative
J Cylindrical, Metal		L (LIC)			-55°C to +85°C
		M			-20°C to +85°C
					-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
34723PC	CMOS	2-143/8	3851DC	Microprocessor	2-150
34725DC	"	2-149/1	3852DC	"	2-150
34725DM	"	2-149/1	3853DC	"	2-150
34725FM	"	2-149/1	3854DC	"	2-150
34725PC	"	2-149/1	4096DC	MOS	2-137/12
34731DC	"	2-144/8	54H00DM	Digital TTL	2-88/6
34731DM	"	2-144/8	54H00FM	"	2-88/6
34731FM	"	2-144/8	54H01DM	"	2-88/7
34731PC	"	2-144/8	54H01FM	"	2-88/7
3514XDC	MOS	2-137/18	54H04DM	"	2-88/1
3515XDC	"	2-137/19	54H04FM	"	2-88/1
35151DC	"	2-137/20	54H05DM	"	2-88/2
35381DC	"	2-137/10	54H05FM	"	2-88/2
35381DL	"	2-137/10	54H08DM	"	2-90/3
35381DM	"	2-137/10	54H08FM	"	2-90/3
35382DC	"	2-137/9	54H09DM	"	2-90/4
35382DL	"	2-137/9	54H09FM	"	2-90/4
35382DM	"	2-137/9	54H10DM	"	2-88/14
3538FDC	"	2-137/11	54H10FM	"	2-88/14
3538FDL	"	2-137/11	54H101DM	"	2-92/4
3538FDM	"	2-137/11	54H102DM	"	2-92/7
3705DC	"	2-139/2	54H102FM	"	2-92/7
3705DL	"	2-139/2	54H103DM	"	2-92/18
3705DM	"	2-139/2	54H103FM	"	2-92/18
3708DC	"	2-139/2	54H106DM	"	2-92/23
3708DL	"	2-139/2	54H106FM	"	2-92/23
3708DM	"	2-139/2	54H11DM	"	2-90/6
37083DC	"	2-139/2	54H11FM	"	2-90/6
37083DL	"	2-139/2	54H15DM	"	2-90/7
37083PC	"	2-139/2	54H15FM	"	2-90/7
376N	Linear VR	2-58/6	54H20DM	"	2-88/16
3814DC	MOS	2-139/3	55H20FM	"	2-88/16
3815DC	"	2-139/4	54H21DM	"	2-90/8
3816DC	"	2-139/5	54H21FM	"	2-90/8
3816PC	"	2-139/5	54H22DM	"	2-89/1
3817DC	"	2-139/6	54H22FM	"	2-89/1
3819	"	2-139/7	54H30DM	"	2-89/5
3850DC	Microprocessor	2-150	54H30FM	"	2-89/5
			54H40DM	"	2-89/2
			54H40FM	"	2-89/2
			54H50DM	"	2-91/3

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>PL</sub> , LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
54H50FM	Digital TTL	2-91/3	54LS09DM	Digital TTL	2-90/4
54H51DM	"	2-91/4	54LS09FM	"	2-90/4
54H51FM	"	2-91/4	54LS10DM	"	2-88/14
54H52DM	"	2-91/2	54LS10FM	"	2-88/14
54H52FM	"	2-91/2	54LS109DM	"	2-93/9
54H53DM	"	2-91/5	54LS109FM	"	2-93/9
54H53FM	"	2-91/5	54LS11DM	"	2-90/6
54H54DM	"	2-91/6	54LS11FM	"	2-90/6
54H54FM	"	2-91/6	54LS112DM	"	2-93/2
54H55DM	"	2-91/10	54LS112FM	"	2-93/2
54H55FM	"	2-91/10	54LS113DM	"	2-92/20
54H60DM	"	2-91/13	54LS113FM	"	2-92/20
54H61DM	"	2-91/12	54LS114DM	"	2-93/6
54H61FM	"	2-91/12	54LS114FM	"	2-93/6
54H62DM	"	2-91/14	54LS132DM	"	2-88/13
54H62FM	"	2-91/14	54LS132FM	"	2-88/13
54H71DM	"	2-92/3	54LS133DM	"	2-89/6
54H72FM	"	2-92/3	54LS133FM	"	2-89/6
54H72DM	"	2-92/6	54LS136DM	"	2-90/11
54H72FM	"	2-92/6	54LS136FM	"	2-90/11
54H73DM	"	2-92/17	54LS138DM	"	2-100/1
54H73FM	"	2-92/17	54LS138FM	"	2-100/1
54H74DM	"	2-92/10	54LS139DM	"	2-99/3
54H74FM	"	2-92/10	54LS139FM	"	2-99/3
54H76DM	"	2-92/22	54LS14DM	"	2-88/5
54H76FM	"	2-92/22	54LS14FM	"	2-88/5
54H78DM	"	2-93/26	54LS15DM	"	2-90/7
54H78FM	"	2-93/26	54LS15FM	"	2-90/7
54LS00DM	"	2-88/6	54LS151DM	"	2-98/9
54LS00FM	"	2-88/6	54LS151FM	"	2-98/9
54LS02DM	"	2-89/8	54LS152DM	"	2-98/14
54LS02FM	"	2-89/8	54LS152FM	"	2-98/14
54LS03DM	"	2-88/7	54LS153DM	"	2-97/17
54LS03FM	"	2-88/7	54LS153FM	"	2-97/17
54LS04DM	"	2-88/1	54LS155DM	"	2-99/6
54LS04FM	"	2-88/1	54LS155FM	"	2-99/6
54LS05DM	"	2-88/2	54LS156DM	"	2-99/8
54LS05FM	"	2-88/2	54LS156FM	"	2-99/8
54LS08DM	"	2-90/3	54LS157DM	"	2-97/4
54LS08FM	"	2-90/3	54LS157FM	"	2-97/4

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
54LS158DM	Digital TTL	2-97/6
54LS158FM	"	2-97/6
54LS160DM	"	2-106/2
54LS160FM	"	2-106/2
54LS161DM	"	2-106/4
54LS161FM	"	2-106/4
54LS162DM	"	2-106/6
54LS162FM	"	2-106/6
54LS163DM	"	2-106/8
54LS163FM	"	2-106/8
54LS164DM	"	2-103/6
54LS164FM	"	2-103/6
54LS170DM	"	2-96/1 2-104/9
54LS170FM	"	2-96/1 2-104/9
54LS174DM	"	2-95/8 2-103/9
54LS174FM	"	2-95/8 2-103/9
54LS175DM	"	2-94/15 2-103/12
54LS175FM	"	2-94/15 2-103/12
54LS181DM	"	2-108/7
54LS181FM	"	2-108/7
54LS190DM	"	2-106/14
54LS190FM	"	2-106/14
54LS191DM	"	2-106/16
54LS191FM	"	2-106/16
54LS192DM	"	2-106/10
54LS192FM	"	2-106/10
54LS193DM	"	2-106/12
54LS193FM	"	2-106/12
54LS194DM	"	2-103/3
54LS194FM	"	2-103/3

Device No.	Family	Page/Item
54LS195DM	Digital TTL	2-102/13
54LS195FM	"	2-102/13
54LS196DM	"	2-94/10 2-105/11
54LS196FM	"	2-94/10 2-105/11
54LS197DM	"	2-94/12 2-105/13
54LS197FM	"	2-94/12 2-105/13
54LS20DM	"	2-88/16
54LS20FM	"	2-88/16
54LS21DM	"	2-90/8
54LS21FM	"	2-90/8
54LS22DM	"	2-89/1
54LS22FM	"	2-89/1
54LS251DM	"	2-98/11
54LS251FM	"	2-98/11
54LS253DM	"	2-98/2
54LS253FM	"	2-98/2
54LS257DM	"	2-97/8
54LS257FM	"	2-97/8
54LS258DM	"	2-97/10
54LS258FM	"	2-97/10
54LS259DM	"	2-95/11 2-99/14
54LS259FM	"	2-95/11 2-99/44
54LS266DM	"	2-90/14
54LS266FM	"	2-90/14
54LS27DM	"	2-89/10
54LS27FM	"	2-89/10
54LS279DM	"	2-94/4
54LS279FM	"	2-94/4
54LS283DM	"	2-108/3
54LS283FM	"	2-108/3

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>PL</sub> , LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
54LS295DM	Digital TTL	2-102/15
54LS295FM	"	2-102/15
54LS298DM	"	2-95/2
		2-97/13
		2-103/14
54LS298FM	"	2-95/2
		2-97/13
		2-103/14
54LS30DM	"	2-89/5
54LS30FM	"	2-89/5
54LS32DM	"	2-90/9
54LS32FM	"	2-90/9
54LS37DM	"	2-88/10
54LS37FM	"	2-88/10
54LS38DM	"	2-88/11
54LS38FM	"	2-88/11
54LS40DM	"	2-89/2
54LS40FM	"	2-89/2
54LS42DM	"	2-99/17
		2-90/10
54LS42FM	"	2-99/17
		2-90/10
54LS51DM	"	2-91/4
54LS52FM	"	2-91/4
54LS54DM	"	2-91/7
54LS54FM	"	2-91/7
54LS55DM	"	2-91/11
54LS55FM	"	2-91/11
54LS67ODM	"	2-96/2
		2-104/10
54LS67OFM	"	2-96/2
		2-104/10
54LS73DM	"	2-92/15
54LS73FM	"	2-92/15
54LS74DM	"	2-92/12
54LS74FM	"	2-92/12
54LS83DM	"	2-108/1
54LS83FM	"	2-108/1

Device No.	Family	Page/Item
54LS86DM	Digital TTL	2-90/10
54LS86FM	"	2-90/10
54LS90DM	"	2-105/3
54LS90FM	"	2-105/3
54LS92DM	"	2-105/4
54LS92FM	"	2-105/4
54LS93DM	"	2-105/7
54LS93FM	"	2-105/7
54LS95DM	"	2-102/8
54LS95FM	"	2-102/8
54S00DM	"	2-88/6
54S02DM	"	2-89/8
54S03FM	"	"
54S03DM	"	2-88/7
54S02FM	"	"
54S04DM	"	2-88/1
54S05DM	"	2-88/2
54S05FM	"	"
54S08DM	"	2-90/3
54S08FM	"	"
54S09DM	"	2-90/4
54S09FM	"	"
54S10DM	"	2-88/14
54S10FM	"	"
54S11DM	"	2-90/6
54S11FM	"	"
54S132DM	"	2-88/13
54S132FM	"	"
54S133DM	"	2-89/6
54S133FM	"	"
54S134DM	"	2-89/7
54S134FM	"	"
54S135DM	"	2-90/13
54S135FM	"	"
54S140DM	"	2-89/3
54S140FM	"	"
54S15DM	"	2-90/7
54S15FM	"	"
54S20DM	"	2-88/16
54S30DM	"	2-89/5
54S30FM	"	"

# PRODUCT INDEX

## PACKAGE CODES

## TEMPERATURE RANGE CODES

C Dual In-Line  
 D Dual In-Line  
 E Cylindrical, Plastic  
 F Flat  
 H Cylindrical, Metal  
 J Cylindrical, Metal

K Cylindrical, Metal  
 P Dual In-Line  
 T Dual In-Line (Mini-DIP)  
 U Cylindrical, Plastic  
 W Epoxy TO-92

C (MOS, DTL, CuL, LIC, most TTL)  
 C (7400 TTL)  
 C (CMOS)  
 C (CCD)  
 L (MOS)  
 L (LIC)  
 M

0°C to +75°C  
 0°C to +70°C  
 -40°C to +85°C  
 Consult Field Salesperson or Representative  
 -55°C to +85°C  
 -20°C to +85°C  
 -55°C to +125°C

Device No.	Family	Page/Item
54S32DM	Digital, TTL	2-90/9
54S32FM	"	"
54S40DM	"	2-89/2
54S51DM	"	2-91/4
54S51FM	"	"
54S64DM	"	2-91/8
54S65DM	"	2-91/9
54S65FM	"	"
54S86DM	"	2-90/10
54S86FM	"	"
5400DM	"	2-88/6
5400FM	"	"
5401DM	"	2-88/8
5401FM	"	"
5402DM	"	2-89/8
5402FM	"	"
5403DM	"	2-88/7
5404DM	"	2-88/1
5404FM	"	"
5405DM	"	2-88/2
5405FM	"	"
5406DM	"	2-88/3
5406FM	"	"
5407DM	"	2-90/2
5407FM	"	"
5408DM	"	2-90/3
5408FM	"	"
5409DM	"	2-90/4
5409FM	"	"
5410DM	"	2-88/14
5410FM	"	"
54107DM	"	2-92/16
5411DM	"	2-90/6
5411FM	"	"
54116DM	"	2-95/5
5412DM	"	2-88/15
54121DM	"	2-84/5
	"	2-107/6
54121FM	"	2-84/5
	"	2-107/6
54122DM	"	2-84/7
	"	2-107/7

Device No.	Family	Page/Item
54123DM	Digital, TTL	2-84/8
	"	2-107/8
54132DM	"	2-88/13
5414DM	"	2-88/5
54145DM	"	2-100/3
	"	2-100/13
	"	2-110/1
54150DM	"	2-98/15
54151DM	"	2-98/8
54152DM	"	2-98/13
54152FM	"	"
54153DM	"	2-97/16
54154DM	"	2-100/16
54155DM	"	2-99/5
54156DM	"	2-99/7
54157DM	"	2-97/3
5416DM	"	2-78/3
5416FM	"	"
54164DM	"	2-103/5
54165DM	"	2-104/1
54166DM	"	2-104/2
5417DM	"	2-90/1
5417FM	"	"
54170DM	"	2-95/14
	"	2-104/8
54174DM	"	2-95/6
	"	2-103/7
54175DM	"	2-94/13
	"	2-103/10
54176DM	"	2-105/8
54177DM	"	2-105/9
54179DM	"	2-102/11
54180DM	"	2-109/3
54181DM	"	2-108/5
54181FM	"	"
54182DM	"	2-108/11
54182FM	"	"
54190DM	"	2-106/13
54191DM	"	2-106/15
54192DM	"	2-106/9
54193DM	"	2-106/11

# PRODUCT INDEX

**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, CplL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
54194DM	Digital, TTL	2-103/1
54195DM	"	2-102/12
54196DM	"	2-94/9
	"	2-105/10
54197DM	"	2-94/9
	"	2-105/12
54198DM	"	2-103/4
54199DM	"	2-102/14
5420DM	"	2-88/16
5420FM	"	"
5421DM	"	2-90/8
5423DM	"	2-88/12
5425DM	"	2-78/11
5426DM	"	2-88/9
5427DM	"	2-89/10
54283DM	"	2-108/2
5430DM	"	2-89/5
5430FM	"	"
5432DM	"	2-90/9
5437DM	"	2-88/10
5437FM	"	"
5438DM	"	2-88/11
5438FM	"	"
5439DM	"	2-88/12
5440DM	"	2-89/2
5440FM	"	"
5442DM	"	2-99/16
	"	2-100/9
5443DM	"	2-100/11
5444DM	"	2-100/12
5445DM	"	2-99/15
	"	2-100/8
	"	2-109/11
5447DM	"	2-110/8
5448DM	"	2-110/3
5450DM	"	2-91/3
5450FM	"	"
5451DM	"	2-91/4
5451FM	"	"
5453DM	"	2-91/5
5453FM	"	"

Device No.	Family	Page/Item
5454DM	Digital, TTL	2-91/6
5454FM	"	"
5460DM	"	2-91/13
5460FM	"	"
5470DM	"	2-92/8
5470FM	"	"
5472DM	"	2-92/5
5472FM	"	"
5473DM	"	2-91/5
5473FM	"	"
5474DM	"	2-92/9
5474FM	"	"
5475DM	"	2-94/7
5476DM	"	2-92/21
5477FM	"	2-94/8
5480DM	"	2-107/9
5480FM	"	"
5482DM	"	2-107/12
5482FM	"	"
5483DM	"	2-107/13
5483FM	"	"
5485DM	"	2-108/19
5486DM	"	2-90/10
5486FM	"	"
5490DM	"	2-105/2
5490FM	"	"
5492DM	"	2-105/4
5492FM	"	"
5493DM	"	2-105/6
5493FM	"	"
5494DM	"	2-102/6
	"	2-103/15
5495DM	"	2-102/7
5495FM	"	"
5496DM	"	2-102/9
55107DM	Interface	2-75/Note
	"	2-82/Note
55108DM	"	2-75/Note
	"	2-82/Note
55109DM	"	2-73/Note
55110DM	"	2-73/Note
55121DM	"	2-73/Note

# PRODUCT INDEX

PACKAGE CODES		TEMPERATURE RANGE CODES	
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, CμL, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M	0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
55122DM	Interface	2-75/Note	711PC	Linear, Comparator	2-64/2
55450DM	"	2-80/Note	715DC	Linear, Op Amp	2-61/3
55451HM	"	2-80/Note	715DM	"	2-61/Note
55452HM	"	2-79/Note	715HC	"	2-61/3
55453HM	"	2-80/Note	715HM	"	2-61/Note
55454HM	"	2-80/Note			
			723DC	Linear, VR	2-46/1
55460DM	"	2-80/Note	723DM	"	2-46/Note
55461HM	"	2-80/Note	723HC	"	2-46/1
55462HM	"	2-80/Note	723HM	"	2-46/Note
55463HM	"	2-80/Note	723PC	"	2-46/1
55464HM	"	2-80/Note			
			725HC	Linear, Op Amp	2-61/4
555V	LIC Special Functions Interface	2-67/2 2-83/4	725HM	"	2-61/Note
556A	LIC Special Functions Interface	2-57/3 2-83/5	725AHM	"	2-61/Note
			725EHC	"	2-61/5
			726HC	Linear, Sp Func	2-68/1
702DC	Linear Op Amp	2-61/1	726HM	"	2-68/1
702DM	"	2-61/Note	727HC	Linear, Op Amp	2-61/6
702FM	"	"	727HM	"	2-61/Note
702HC	"	2-61/1	730HC	"	2-61/7
702HM	"	2-61/Note	730HM	"	2-61/Note
709DC	"	2-61/2			
709DM	"	2-61/Note	733DC	Interface	2-83/1
709FM	"	"	733DM	"	2-83/Note
709HC	"	2-61/2	733FM	"	2-83/Note
709HM	"	2-61/Note	733HC	"	2-83/1
709PC	"	2-61/2	733HM	"	2-83/Note
709ADM	"	2-61/Note	734DC	Linear, Comparator	2-64/3
709AFM	"	"	734DM	"	2-64/Note 7
709AHM	"	"	734HC	"	2-64/3
710DC	Linear, Comparator	2-64/1	734HM	"	2-64/Note 7
710DM	"	2-64/Note 7	739DC	Linear, Op Amp	2-83/2
710FM	"	"	739PC	"	"
710HC	"	2-64/1	74H00DC	Digital, TTL	2-88/6
710HM	"	2-64/Note 7	74H00PC	"	"
710PC	"	2-64/1	74H01DC	"	2-88/7
711DC	"	2-64/2	74H01PC	"	"
711DM	"	2-64/Note 7	74H04DC	"	2-88/1
711FM	"	"	74H04PC	"	"
711HC	"	2-64/2	74H05DC	"	2-88/2
711HM	"	2-64/Note 7	74H05PC	"	"



# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
74H08DC	Digital, TTL	2-90/3
74H08PC	"	"
74H09DC	"	2-90/4
74H09FC	"	"
74H09PC	"	"
74H10DC	"	2-88/14
74H10PC	"	"
74H101DC	"	2-92/4
74H102DC	"	2-92/7
74H103DC	"	2-92/18
74H103PC	"	"
74H106DC	"	2-92/23
74H106PC	"	"
74H108DC	"	2-93/27
74H108PC	"	"
74H11DC	"	2-90/6
74H11PC	"	"
74H15DC	"	2-90/7
74H15FC	"	"
74H15PC	"	"
74H183DC	"	2-107/11
74H20DC	"	2-88/16
74H20PC	"	2-88/16
74H21DC	"	2-90/8
74H21PC	"	"
74H22DC	"	2-89/1
74H22PC	"	"
74H30DC	"	2-89/5
74H30PC	"	"
74H40DC	"	2-89/2
"	"	2-111/6
"	Interface	2-74/1
74H40PC	Digital, TTL	2-89/2
"	"	2-111/6
"	Interface	2-74/1
74H50DC	Digital, TTL	2-91/3
74H50PC	"	"
74H51DC	"	2-91/4
74H51PC	"	"
74H52DC	"	2-91/2
74H52PC	"	"
74H53DC	"	2-91/5
74H53PC	"	"

Device No.	Family	Page/Item
74H54DC	Digital, TTL	2-91/6
74H54PC	"	"
74H55DC	"	2-91/10
74H55PC	"	"
74H60DC	"	2-91/13
74H60PC	"	"
74H61DC	"	2-91/12
74H61PC	"	"
74H62DC	"	2-91/14
74H62PC	"	"
74H71DC	"	2-92/3
74H71PC	"	"
74H72DC	"	2-92/6
74H72PC	"	"
74H73DC	"	2-92/17
74H73PC	"	"
74H74DC	"	2-92/10
74H74PC	"	"
74H76DC	"	2-92/22
74H76PC	"	"
74H78DC	"	2-93/26
74H78PC	"	"
74H87DC	"	2-109/6
74LS00DC	"	2-88/6
74LS00FC	"	"
74LS00PC	"	"
74LS02DC	"	2-89/8
74LS02FC	"	"
73LS02PC	"	"
74LS03DC	"	2-88/7
74LS03FC	"	"
74LS03PC	"	"
74LS04DC	"	2-88/1
74LS04FC	"	"
74LS04PC	"	"
74LS05DC	"	2-88/2
74LS05FC	"	"
74LS05PC	"	"
74LS08DC	"	2-90/3
74LS08FC	"	"
74LS08PC	"	"

# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
74LS09DC	Digital, TTL	2-90/4
74LS09FC	"	"
74LS09PC	"	"
74LS10DC	"	2-88/14
74LS10FC	"	"
74LS10PC	"	"
74LS109DC	"	2-93/9
74LS109FC	"	"
74LS109PC	"	"
74LS11DC	"	2-90/6
74LS11FC	"	"
74LS11PC	"	"
74LS112DC	"	2-93/2
74LS112FC	"	"
74LS112PC	"	"
74LS113DC	"	2-92/20
74LS113FC	"	"
74LS113PC	"	"
74LS114DC	"	2-93/6
74LS114FC	"	"
74LS114PC	"	"
74LS132DC	"	2-88/13
74LS132FC	"	"
74LS132PC	"	"
74LS133DC	"	2-89/6
74LS133FC	"	"
74LS133PC	"	"
74LS136DC	"	2-90/11
74LS136FC	"	"
74LS136PC	"	"
74LS138DC	"	2-100/1
74LS138FC	"	"
74LS138PC	"	"
74LS139DC	"	2-99/3
74LS139FC	"	"
74LS139PC	"	"
74LS14DC	"	2-88/5
74LS14FC	"	"
74LS14PC	"	"
74LS15DC	"	2-90/7
74LS15FC	"	"
74LS15PC	"	"

Device No.	Family	Page/Item
74LS151DC	Digital, TTL	2-98/9
74LS151FC	"	"
74LS151PC	"	"
74LS152DC	"	2-98/14
74LS152FC	"	"
74LS152PC	"	"
74LS153DC	"	2-97/17
74LS153FC	"	"
74LS153PC	"	"
74LS155DC	"	2-99/6
74LS155FC	"	"
74LS155PC	"	"
74LS156DC	"	2-99/8
74LS156FC	"	"
74LS156PC	"	"
74LS157DC	"	2-97/4
74LS157FC	"	"
74LS157PC	"	"
74LS158DC	"	2-97/6
74LS158FC	"	"
74LS158PC	"	"
74LS160DC	"	2-106/2
74LS160FC	"	"
74LS160PC	"	"
74LS161DC	"	2-106/4
74LS161FC	"	"
74LS161PC	"	"
74LS162DC	"	2-106/6
74LS162FC	"	"
74LS162PC	"	"
74LS163DC	"	2-106/8
74LS163FC	"	"
74LS163PC	"	"
74LS164DC	"	2-103/6
74LS164FC	"	"
74LS164PC	"	"
74LS170DC	"	2-96/1
"	"	2-104/9
74LS170FC	"	2-96/1
"	"	2-104/9
74LS170PC	"	2-96/1
"	"	2-104/9

# PRODUCT INDEX

**PACKAGE CODES**

**TEMPERATURE RANGE CODES**

C Dual In-Line  
 D Dual In-Line  
 E Cylindrical, Plastic  
 F Flat  
 H Cylindrical, Metal  
 J Cylindrical, Metal

K Cylindrical, Metal  
 P Dual In-Line  
 T Dual In-Line (Mini-DIP)  
 U Cylindrical, Plastic  
 W Epoxy TO-92

C (MOS, DTL, C<sub>PL</sub>, LIC, most TTL)  
 C (7400 TTL)  
 C (CMOS)  
 C (CCD)  
 L (MOS)  
 L (LIC)  
 M

0°C to +75°C  
 0°C to +70°C  
 -40°C to +85°C  
 Consult Field Salesperson or Representative  
 -55°C to +85°C  
 -20°C to +85°C  
 -55°C to +125°C

Device No.	Family	Page/Item
74LS174DC	Digital, TTL	2-95/8 2-103/9
74LS174FC	"	2-95/8 2-103/9
74LS174PC	"	2-95/8 2-103/9
74LS175DC	"	2-94/15 2-103/12
74LS175FC	"	2-94/15 2-103/12
74LS175PC	"	2-94/15 2-103/12
74LS181DC	"	2-108/7
74LS181FC	"	2-108/7
74LS181PC	"	2-108/7
74LS190DC	"	2-106/14
74LS190FC	"	2-106/14
74LS190PC	"	2-106/14
74LS191DC	"	2-106/16
74LS191FC	"	2-106/16
74LS191PC	"	2-106/16
74LS192DC	"	2-106/10
74LS192FC	"	2-106/10
74LS192PC	"	2-106/10
74LS193DC	"	2-106/12
74LS193FC	"	2-106/12
74LS193PC	"	2-106/12
74LS194DC	"	2-103/3
74LS194FC	"	2-103/3
74LS194PC	"	2-103/3
74LS195DC	"	2-102/13
74LS195FC	"	2-102/13
74LS195PC	"	2-102/13
74LS196DC	"	2-94/10 2-105/11
74LS196FC	"	2-94/10 2-105/11

Device No.	Family	Page/Item
74LS196PC	Digital TTL	2-94/10 2-105/11
74LS197DC	"	2-94/12 2-105/13
74LS197FC	"	2-94/12 2-105/13
74LS197PC	"	2-94/12 2-105/13
74LS20DC	"	2-88/16
74LS20FC	"	2-88/16
74LS20PC	"	2-88/16
74LS21DC	"	2-90/8
74LS21FC	"	2-90/8
74LS21PC	"	2-90/8
74LS22DC	"	2-89/1
74LS22FC	"	2-89/1
74LS22PC	"	2-89/1
74LS251DC	"	2-98/11
74LS251FC	"	2-98/11
74LS152PC	"	2-98/11
74LS253DC	"	2-98/2
74LS253FC	"	2-98/2
74LS253PC	"	2-98/2
74LS257DC	"	2-97/8
74LS257FC	"	2-97/8
74LS257PC	"	2-97/8
74LS258DC	"	2-87/10
74LS258FC	"	2-87/10
74LS258PC	"	2-87/10
74LS259DC	"	2-85/11 2-89/14
74LS259FC	"	2-85/11 2-89/14
74LS259PC	"	2-85/11 2-89/14
74LS266DC	"	2-80/14
74LS266FC	"	2-80/14
74LS266PC	"	2-80/14

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>u</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
74LS27DC	Digital TTL	2-89/10
74LS27FC	"	2-89/10
74LS27PC	"	2-89/10
74LS279DC	"	2-84/4
74LS279FC	"	2-84/4
74LS279PC	"	2-84/4
74LS283DC	"	2-98/3
74LS283FC	"	2-98/3
74LS283PC	"	2-98/3
74LS295DC	"	2-92/15
74LS295FC	"	2-92/15
74LS295PC	"	2-92/15
74LS298DC	"	2-85/2
		2-87/13
		2-93/14
74LS298FC	"	2-84/2
		2-87/13
		2-93/14
74LS298PC	"	2-85/2
		2-87/13
		2-93/14
74LS30DC	"	2-89/5
74LS30FC	"	2-89/5
74LS30PC	"	2-89/5
74LS32DC	"	2-90/9
74LS32FC	"	2-90/9
74LS32PC	"	2-90/9
74LS37DC	"	2-88/10
74LS37FC	"	2-88/10
74LS37PC	"	2-88/10
74LS38DC	"	2-88/11
74LS38FC	"	2-88/11
74LS38PC	"	2-88/11
74LS40DC	"	2-89/2
74LS40FC	"	2-89/2
74LS40PC	"	2-89/2
74LS42DC	"	2-99/17
		2-100/10

Device No.	Family	Page/Item
74LS42FC	Digital TTL	2-99/17
		2-100/10
74LS42PC	"	2-99/17
		2-100/10
74LS51DC	"	2-91/4
74LS51FC	"	2-91/4
74LS51PC	"	2-91/4
74LS54DC	"	2-91/7
74LS54FC	"	2-91/7
74LS54PC	"	2-91/7
74LS55DC	"	2-91/11
74LS55FC	"	2-91/11
74LS55PC	"	2-91/11
74LS670DC	"	2-86/2
		2-94/10
74LS670FC	"	2-86/2
		2-94/10
74LS670PC	"	2-86/2
		2-94/10
74LS73DC	"	2-92/15
74LS73FC	"	2-92/15
74LS73PC	"	2-92/15
74LS74DC	"	2-92/12
74LS74FC	"	2-92/12
74LS74PC	"	2-92/12
74LS83DC	"	2-108/1
74LS83FC	"	2-108/1
74LS83PC	"	2-108/1
74LS86DC	"	2-90/10
74LS86FC	"	2-90/10
74LS86PC	"	2-90/10
74LS90DC	"	2-105/3
74LS90FC	"	2-105/3
74LS90PC	"	2-105/3
74LS92DC	"	2-105/4
74LS92FC	"	2-105/4
74LS92PC	"	2-105/4
74LS93DC	"	2-105/7
74LS93FC	"	2-105/7

# PRODUCT INDEX

PACKAGE CODES				TEMPERATURE RANGE CODES			
C	Dual In-Line	K	Cylindrical, Metal	C	(MOS, DTL, C <sub>p</sub> L, LIC, most TTL)		0°C to +75°C
D	Dual In-Line	P	Dual In-Line	C	(7400 TTL)		0°C to +70°C
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)	C	(CMOS)		-40°C to +85°C
F	Flat	U	Cylindrical, Plastic	C	(CCD)	Consult Field Salesperson or Representative	
H	Cylindrical, Metal	W	Epoxy TO-92	L	(MOS)		-55°C to +85°C
J	Cylindrical, Metal			L	(LIC)		-20°C to +85°C
				M			-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
74LS93PC	Digital TTL	2-105/7	74S134PC	Digital TTL	2-89/7
74LS95DC	"	2-102/8	74S135DC	"	2-90/13
74LS95FC	"	2-102/8			2-109/7
74LS95PC	"	2-102/8	74S135PC	"	2-90/13
74S00DC	"	2-88/6			2-109/7
74S00PC	"	2-88/6	74S138DC	"	2-100/2
74S02DC	"	2-89/8	74S139DC	"	2-99/4
74S02FC	"	2-89/8	74S140DC	Interface	2-74/7
74S02PC	"	2-89/8		Digital TTL	2-89/3
74S03DC	"	2-88/7		Digital TTL	2-111/8
74S03PC	"	2-88/7	74S140PC	Interface	2-74/7
74S04DC	"	2-88/1		Digital TTL	2-89/3
74S04PC	"	2-88/1		Digital TTL	2-111/8
74S05DC	"	2-88/2	74S15DC	"	2-90/7
74S05PC	"	2-88/2	74S15PC	"	2-90/7
74S08DC	"	2-90/3	74S151DC	"	2-98/10
74S08FC	"	2-90/3	74S153DC	"	2-98/1
74S08PC	"	2-90/3	74S157DC	"	2-97/5
74S09DC	"	2-90/4	74S158DC	"	2-97/7
74S09FC	"	2-90/4	74S174	"	2-103/8
74S09PC	"	2-90/4			2-95/7
74S10DC	"	2-88/14	74S175DC	"	2-94/15
74S10PC	"	2-88/14			2-103/11
74S109DC	"	2-93/4	74S182DC	"	2-108/12
74S109FC	"	2-93/4	74S182DM	"	2-108/12
74S109PC	"	2-93/4	74S182FM	"	2-108/12
74S11DC	"	2-90/6	74S182PC	"	2-108/12
74S11PC	"	2-90/6	74S194DC	"	2-103/2
74S112DC	"	2-93/24	74S20DC	"	2-88/16
74S112PC	"	2-93/24	74S20PC	"	2-88/16
74S113DC	"	2-92/19	74S22DC	"	2-88/16
74S113PC	"	2-92/19	74S22PC	"	2-88/16
74S114DC	"	2-93/1	74S251DC	"	2-98/12
74S114PC	"	2-93/1	74S253DC	"	2-98/3
74S132DC	"	2-88/13	74S257DC	"	2-97/9
74S132FC	"	2-88/13	74S258DC	"	2-97/11
74S132PC	"	2-88/13	74S30DC	"	2-89/5
74S133DC	"	2-89/6	74S30FC	"	2-89/5
74S133PC	"	2-89/6			
74S134DC	"	2-89/7			

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
J	Cylindrical, Metal	W	Epoxy TO-92

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
74S30PC	Digital, TTL	2-89/5
74S32DC	"	2-90/9
74S32FC	"	2-90/9
74S32PC	"	2-90/9
74S40DC	Interface	2-74/5
74S40DC	Digital TTL	2-89/2
74S40PC	Interface	2-74/5
	Digital TTL	2-89/2
74S51DC	Digital TTL	2-91/4
74S51FC	"	2-91/4
74S51PC	"	2-91/4
74S64DC	"	2-91/8
74S64PC	"	2-91/8
74S65DC	"	2-91/9
74S65PC	"	2-91/9
74S74DC	"	2-92/11
74S74PC	"	2-92/11
74S86DC	"	2-90/10
74S86DM	"	2-90/10
74S86PC	"	2-90/10
740HC	LIC, Op Amp	2-61/8
740HM	"	2-61/note
7400DC	Digital TTL	2-88/6
7400PC	"	2-88/6
7401DC	"	2-88/8
7401PC	"	2-88/8
7402DC	"	2-89/8
7402PC	"	2-89/8
7403DC	"	2-88/7
7403PC	"	2-88/7
7404DC	"	2-88/1
7404PC	"	2-88/1
7405DC	"	2-88/2
7405PC	"	2-88/2
7406DC	"	2-88/3
7406PC	"	2-88/3
7404DC	"	2-90/2
7407PC	"	2-90/2
7408DC	"	2-90/3
7408PC	"	2-90/3

Device No.	Family	Page/Item
7409DC	Digital, TTL	2-90/4
7409PC	"	2-90/4
741DC	LIC, Op Amp	2-61/9
741DM	"	2-61/note
741FM	"	2-61/note
741HC	"	2-61/9
741HM	"	2-61/note
741PC	"	2-61/9
741TC	"	2-61/note
741ADM	"	2-61/note
741AFM	"	2-61/note
741AHM	"	2-61/10
741EDC	"	2-61/10
741EHC	"	2-61/10
7410DC	Digital TTL	2-88/14
7410PC	"	2-88/14
74107DC	"	2-92/16
74107PC	"	2-92/16
74109DC	"	2-93/3
74109FC	"	2-93/3
74109PC	"	2-93/3
7411DC	"	2-90/6
7411PC	"	2-90/6
74116DC	"	2-95/5
74116DM	"	2-95/5
74116PC	"	2-95/5
7412DC	"	2-88/15
7412PC	"	2-88/15
74121DC	"	2-107/6
		2-84/5
74121PC	"	2-107/6
		2-84/5
74122DC	"	2-107/7
		2-84/7
74122PC	"	2-107/7
		2-84/7
74123DC	"	2-107/8
		2-84/8
74123PC	"	2-107/8
		2-84/8

# PRODUCT INDEX

<b>PACKAGE CODES</b> C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal		<b>TEMPERATURE RANGE CODES</b> C (MOS, DTL, C <sub>μ</sub> L, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M		0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C
K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92				

Device No.	Family	Page/Item
74132DC	Digital, TTL	2-88/13
74132PC	"	2-88/13
7414DC	"	2-88/5
7414PC	"	2-88/5
74141DC	"	2-109/9
74141PC	"	2-109/9
74145DC	"	2-110/1 2-100/3 2-100/13
74145PC	"	2-110/1 2-100/3 2-100/13
74150DC	"	2-98/15
74150PC	"	2-98/15
74151DC	"	2-98/8
74151PC	"	2-98/8
74152DC	"	2-98/13
74152PC	"	2-98/13
74153DC	"	2-97/16
74153PC	"	2-97/16
74154DC	"	2-100/16
74154DM	"	2-100/16
74154PC	"	2-100/16
74155DC	"	2-99/5
74155PC	"	2-99/5
74156DC	"	2-99/7
74156PC	"	2-99/7
74157DC	"	2-97/3
74157DM	"	2-97/3
74157PC	"	2-97/3
7416DC	"	2-88/3
7416PC	"	2-88/3
74160DC	"	2-106/1
74160FC	"	2-106/1
74160PC	"	2-106/1
74161DC	"	2-106/3
74161FC	"	2-106/3
74161PC	"	2-106/3
74162DC	"	2-106/5
74162FC	"	2-106/5

Device No.	Family	Page/Item
74162PC	Digital TTL	2-106/5
74163DC	"	2-106/7
74163DM	"	2-106/7
74163FM	"	2-106/7
74163PC	"	2-106/7
74164DC	"	2-103/5
74164PC	"	2-103/5
74165DC	"	2-104/1
74165PC	"	2-104/1
74166DC	"	2-104/2
74166PC	"	2-104/2
7417DC	"	2-90/1
7417PC	"	2-90/1
74170DC	"	2-104/8 2-95/14
74170PC	"	2-104/8 2-95/14
74174DC	"	2-103/7 2-95/6
74174PC	"	2-103/7 2-95/6
74175DC	"	2-103/10 2-94/13
74175PC	"	2-103/10 2-94/13
74176DC	"	2-105/8
74176PC	"	2-105/8
74177DC	"	2-105/9
74177PC	"	2-105/9
73178DC	"	2-102/10
74178PC	"	2-102/10
74179DC	"	2-102/11
74179PC	"	2-102/11
74180DC	"	2-109/3
74180PC	"	2-109/3
74181DC	"	2-108/5
74181FC	"	2-108/5

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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, CuL, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M			0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
74181PC	Digital TTL	2-108/5	7426PC	Digital TTL	2-88/9
74182DC	"	2-108/11	7427DC	"	2-88/10
74182FC	"	2-108/11	7427PC	"	2-88/10
74182PC	"	2-108/11	74279DC	"	2-94/3
74190DC	"	2-106/13	74279FC	"	2-94/3
74190PC	"	2-106/13	74279PC	"	2-94/3
74191DC	"	2-106/15	74283DC	"	2-108/2
74191PC	"	2-106/15	74283DM	"	2-108/2
74192DC	"	2-106/9	74283FM	"	2-108/2
74192PC	"	2-106/9	74283PC	"	2-108/2
74193DC	"	2-106/11	74290DC	"	2-105/1
74193PC	"	2-106/11	74290DM	"	2-105/1
74194DC	"	2-103/1	74290FM	"	2-105/1
74194FC	"	2-103/1	74290PC	"	2-105/1
74194PC	"	2-103/1	74293DC	"	2-105/5
74195DC	"	2-102/12	74293FC	"	2-105/5
74195FC	"	2-102/12	74293PC	"	2-105/5
74195PC	"	2-102/12	74298DC	"	2-95/1
74196DC	"	2-105/10 2-94/9			2-97/12 2-103/13
74196PC	"	2-106/10 2-94/9	74298FC	"	2-95/1 2-97/12 2-103/13
74197DC	"	2-94/9 2-105/12	74298PC	"	2-95/1 2-97/12 2-103/13
74197PC	"	2-94/9 2-105/12			
74198DC	"	2-103/4	7430DC	"	2-89/5
74198PC	"	2-103/4	7430PC	"	2-89/5
74199DC	"	2-102/14	7432DC	"	2-90/9
			7432PC	"	2-90/9
74199PC	"	2-102/14	7437DC	Interface Digital TTL	2-74/2 2-88/10
				"	2-111/1
742DC	LIC Sp. Func.	2-68/4	7437PC	Interface Digital TTL	2-75/2 2-88/10
7420DC	Digital TTL	2-88/16		"	2-111/1
7420PC	"	2-88/16			
7421	"	2-90/8	7438DC	Interface Digital TTL	2-74/3 2-88/11
7423DC	"	2-88/12		"	2-111/2
7423PC	"	2-88/12			
7425DC	"	2-88/11			
7425PC	"	2-88/11			
7426DC	"	2-88/9			



# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>PL</sub> , LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item
7438PC	Interface	2-74/3
	Digital TTL	2-88/11
	"	2-111/2
7439DC	Digital TTL	2-88/12
7440DC	Interface	2-74/4
	Digital TTL	2-89/2
	"	2-111/5
7440PC	Interface	2-74/4
	Digital TTL	2-89/2
	"	2-111/5
7441DC	Digital TTL	2-109/8
7441PC	"	2-109/8
7442DC	"	3-99/16
		2-100/9
7442PC	"	2-99/16
		2-100/9
7443DC	"	2-100/11
7443PC	"	2-100/11
7444DC	"	2-100/12
7444PC	"	2-100/12
7445DC	"	2-99/15
		2-100/8
		2-109/11
7445PC	"	2-99/15
		2-100/8
		2-109/11
7446ADC	"	2-110/7
7446APC	"	2-110/7
7447ADC	"	2-110/8
7447APC	"	2-110/8
7448DC	"	2-110/3
7448PC	"	2-110/3
7450DC	"	2-91/3
		2-110/4
7450PC	"	2-91/3
		2-110/4
7451DC	"	2-91/4

Device No.	Family	Page/Item
7451PC	Digital TTL	2-91/4
7453DC	"	2-91/5
7453PC	"	2-91/5
7454DC	"	2-91/6
7454PC	"	2-91/6
7460DC	"	2-91/13
7460PC	"	2-91/13
747DC	LIC, Op Amps	2-61/11
747DM	"	2-61/note
747HC	"	2-61/11
747HM	"	2-61/note
747PC	"	2-61/11
747ADM	"	2-61/note
747AHM	"	2-61/note
747EDC	"	2-61/12
747EHC	"	2-61/12
7470DC	Digital TTL	2-92/8
7470PC	"	2-92/8
7472DC	"	2-92/5
7472PC	"	2-92/5
7473DC	"	2-92/15
7473PC	"	2-92/15
7474DC	"	2-92/9
7474PC	"	2-92/9
7475DC	"	2-94/7
7475PC	"	2-94/7
7476DC	"	2-92/21
7476PC	"	2-92/21
7477DC	"	2-94/8
7477FC	"	2-94/8
7477PC	"	2-94/8
748DC	"	2-61/13
748DM	"	2-61/note
748FM	"	2-61/note
748HC	"	2-61/13
748HM	"	2-61/note
748TC	"	2-61/13
7480DC	"	2-107/9
7480PC	"	2-107/9
7482DC	"	2-107/12

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**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
7482PC	"	2-107/12
7483DC	"	2-107/12
7483PC	"	2-107/12
7483ADC	"	2-107/13
7483APC	"	2-107/13
7485PC	"	2-108/14
7486DC	"	2-90/10
7486PC	"	2-90/10
7489DC	Dig. TTL Mem.	2-115/6 2-132/12
7489FC	"	2-115/6 2-132/12
7489PC	"	2-115/6 2-132/12
7490ADC	Digital TTL	2-105/2
7490APC	"	2-105/2
7492DC	"	2-105/4
7492PC	"	2-105/4
7493ADC	"	2-105/6
7493AFC	"	2-105/6
7493APC	"	2-105/6
7494DC	"	2-102/6 2-103/15
7494PC	"	2-102/6 2-103/15
7495DC	"	2-102/7
7495PC	"	2-102/7
7496DC	"	2-102/9
7496PC	"	2-102/9
75107DC	Interface	2-75/6 2-82/3 2-113/9
75107PC	"	2-75/6 2-82/3 2-113/9
74108DC	"	2-75/7 2-82/4 2-113/10

Device No.	Family	Page/Item
74108PC	Interface	2-75/7 2-82/4 2-113/10
75109DC	"	2-73/5 2-112/4
75109PC	"	2-73/5 2-112/4
75110DC	"	2-73/6 2-112/5
75110PC	"	2-73/6 2-112/5
75121DC	"	2-73/7 2-112/1
75121PC	"	2-73/7 2-112/1
75122DC	"	2-75/10 2-113/1
75122PC	"	2-75/10 2-113/1
75123DC	"	2-73/8 2-112/2
75123PC	"	2-73/8 2-112/2
75124DC	"	2-75/11 2-113/2
75124PC	"	2-75/11 2-113/2
75207DC	"	2-75/8 2-82/5
75207PC	"	2-75/8 2-82/5
75208DC	"	2-75/9 2-82/6

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or

Device No.	Family	Page/Item
75208PC	Interface	2-75/9 2-82/6
75234DC	"	2-82/7
75234PC	"	2-82/7
75235DC	"	2-82/8
75235PC	"	2-82/8
7524DC	"	2-81/3
7524PC	"	2-81/3
7525DC	"	2-81/4
7525PC	"	2-81/4
7528DC	"	2-81/5
7528PC	"	2-81/5
7529DC	"	2-81/6
7529PC	"	2-81/6
75325DC	"	2-81/2
75325FM	"	2-81/2
75325PC	"	2-81/2
7534DC	"	2-82/1
7534PC	"	2-82/1
7535DC	"	2-82/2
7535PC	"	2-82/2
75400DC	"	2-79/1
75450DC	"	2-79/1 2-80/4
75450PC	"	2-79/1 2-80/4
75451HC	"	2-79/2 2-80/5
75451TC	"	2-79/2 2-80/5
75452HC	"	2-79/3 2-80/6
75452TC	"	2-79/3 2-80/6
75453HC	"	2-79/4 2-80/7
75453TC	"	2-79/4 2-80/7
75454HC	"	2-79/5 2-80/8
75454TC	"	2-79/5 2-80/8
75454TC	"	2-80/8
75460DC	"	2-80/9
75460PC	"	2-80/9
75461TC	"	2-80/10

Device No.	Family	Page/Item
75461HC	Interface	2-80/10
75462HC	"	2-80/11
75462TC	"	2-80/11
75463HC	"	2-80/12
75463TC	"	2-80/12
75464HC	"	2-80/13
75464TC	"	2-80/13
75491PC	"	2-77/10
75492PC	"	2-77/11
760DC	Linear, Comparator	2-64/4
760DM	"	2-64/Note 7
760HC	"	2-64/4
760HM	"	2-64/Note 7
775DC	"	2-64/5
775DM	"	2-64/Note 7
775PC	"	2-64/5
776DC	"	2-61/14,15
776DM	LIC Op Amp	2-61/Note
776HC	"	2-61/14, 15
776HM	"	2-61/Note
776TC	"	2-61/14, 15
777DC	"	2-61/16
777DM	"	2-61/Note
777FM	"	2-61/Note
777HC	"	2-61/16
777HM	"	2-61/Note
777TC	"	2-61/16
78H05KC	"	2-56/9
78L02WC	LIC VR	2-56/10
78L02AWC	"	2-56/10
78L05HC	"	2-56/11
78L05WC	"	2-56/11
78L05AHC	"	2-56/11
78L05AWC	"	2-56/11
78L06WC	"	2-56/12
78L06AWC	"	2-56/12
78L12HC	"	2-56/13
78L12WC	"	2-56/13

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>p</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
78L12AHC	LIC VR	2-56/13	79M06UC	LIC VR	2-84/11
78L12AWC	"	2-56/13	79M06AHC	"	2-84/11
78L15HC	"	2-56/14	79M06AUC	"	2-84/11
78L15WC	"	2-56/14	79M08HC	"	2-84/12
78L15AHC	"	2-56/14	79M08HM	"	2-84/Note
78L15AWC	"	2-56/14	79M08UC	"	2-84/12
78MGT1C	"	2-84/1	79M08AHC	"	2-84/12
78MGT2C	"	2-84/1	79M08AUC	"	2-84/12
78MGT3C	"	2-84/1	79M12HC	"	2-84/13
78M05HC	"	2-84/2	79M12HM	"	2-84/Note
78M05HM	"	2-84/Note	79M12UC	"	2-84/13
78M05UC	"	2-84/2	79M12AHC	"	2-84/13
78M06HC	"	2-84/3	79M12AUC	"	2-84/13
78M06HM	"	2-84/Note	79M15HC	"	2-57/14
78M06UC	"	2-84/3	79M15HM	"	2-57/Note
78M08HC	"	2-84/4	79M15UC	"	2-57/14
78M08HM	"	2-84/Note	79M15AHC	"	2-57/14
78M08UC	"	2-84/4	79M15AUC	"	2-57/14
78M12HC	"	2-84/5	79M20HC	"	2-57/15
78M12HM	"	2-84/Note	79M20HM	"	2-57/Note
78M12UC	"	2-84/5	79M20UC	"	2-57/15
78M15HC	"	2-84/6	79M20AHC	"	2-57/15
78M15HM	"	2-84/Note	79M20AUC	"	2-57/15
78M15UC	"	2-84/6	79M24HC	Linear, VR	2-58/1
78M20HC	"	2-84/7	79M24HM	"	2-58/Note
78M20HM	"	2-84/Note	79M24UC	"	2-58/1
78M20UC	"	2-84/7	79M24AHC	"	2-58/1
78M24HC	"	2-84/8	79M24AUC	"	2-58/1
78M24HM	"	2-84/Note	7805KC	"	2-56/2
78M24UC	"	2-84/8	7805KM	"	2-56/Note
79MGT1C	"	2-84/9	7805UC	"	2-56/2
79MGT2C	"	2-84/9	7806KC	"	2-56/3
79MGT3C	"	2-84/9	7806KM	"	2-56/Note
89M05HC	"	2-84/10	7806UC	"	2-56/3
79M05HM	"	2-84/Note	7808KC	"	2-56/4
79M05UC	"	2-84/10	7808KM	"	2-56/Note
79M05AHC	"	2-84/10	7808UC	"	2-56/4
79M05AUC	"	2-84/10	7812KC	"	2-56/5
79M06HC	"	2-84/11	7812KM	"	2-56/Note
79M06HM	"	2-84/Note	7812UC	"	2-56/5

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item
7815KC	Linear, VR	2-56/6
7815KM	"	2-56/Note
7815UC	"	2-56/6
7818KC	"	2-56/7
7818KM	"	2-56/Note
7818UC	"	2-56/7
7824KC	"	2-56/8
7824KM	"	2-56/Note
7824UC	"	2-56/8
791KC	Linear, Op Amp	2-61/17
8T13E	LIC Special Functions Interface	2-75/9
8T14E	"	2-112/1
8T23E	"	2-75/12
8T24E	"	2-113/1
8T23E	"	2-73/10
8T24E	"	2-113/2
8T24E	"	2-75/13
8T24E	"	2-113/2
8242	Digital TTL	2-90/14
9H00DC	"	2-88/6
8H00DM	"	2-88/6
9H00FM	"	2-88/6
9H00PC	"	2-88/6
9H01DC	"	2-88/7
9H01DM	"	2-88/7
9H01FM	"	2-88/7
9H01PC	"	2-88/7
9H04DC	"	2-88/1
9H04DM	"	2-88/1
9H04FM	"	2-88/1
9H04PC	"	2-88/1
9H05DC	"	2-88/2
9H05DM	"	2-88/2
9H05FM	"	2-88/2
9H05PC	"	2-88/2
9H08DC	"	2-90/3
9H08DM	"	2-90/3
9H08FM	"	2-90/3
9H08PC	"	2-90/3
9H09DC	"	2-90/4
9H09FC	"	2-90/4
9H09PC	"	2-90/4
9H09DM	"	2-90/4
9H09FM	"	2-90/4
9H10DC	"	2-88/14

Device No.	Family	Page/Item
9H10DM	Digital, TTL	2-88/14
9H10FM	"	2-88/14
9H10PC	"	2-88/14
9H101DC	"	2-92/4
9H101DM	"	2-92/4
9H102DC	"	2-92/7
9H102DM	"	2-92/7
9H102FM	"	2-92/7
9H103DC	"	2-92/18
9H103DM	"	2-92/18
9H103FM	"	2-92/18
9H103PC	"	2-92/18
9H106DC	"	2-92/23
9H106DM	"	2-92/23
9H106FM	"	2-92/23
9H106PC	"	2-92/23
9H108DC	"	2-93/27
9H108PC	"	2-93/27
9H11DC	"	2-90/6
9H11DM	"	2-90/6
9H11FM	"	2-90/6
9H11PC	"	2-90/6
9H15DC	"	2-90/7
9H15FC	"	2-90/7
9H15PC	"	2-90/7
9H15DM	"	2-90/7
9H15FM	"	2-90/7
9H20DC	"	2-88/16
9H20DM	"	2-88/16
9H20FM	"	2-88/16
9H20PC	"	2-88/16
9H21DC	"	2-90/8
9H21DM	"	2-90/8
9H21FM	"	2-90/8
9H21PC	"	2-90/8
9H22DC	"	2-89/1
9H22DM	"	2-89/1
9H22FM	"	2-89/1
9H22PC	"	2-89/1
9H30DC	"	2-89/5
9H30DM	"	2-89/5
9H30FM	"	2-89/5
9H30PC	"	2-89/5
9H40DC	"	2-89/2
		2-101/6

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item	Device No.	Family	Page/Item
9H40DC	Digital, TTL	2-64/1	9H71FM	Digital TTL	2-92/3
	"	2-64/Note	9H71PC	"	2-92/3
9H40DM	"	2-89/2	9H72DC	"	2-92/6
	"	2-101/6	9H72DM	"	2-92/6
9H40FM	"	2-89/2	9H72FM	"	2-92/6
	"	2-101/6			
9H40PC	"	2-89/2	9H72PC	"	2-92/6
	"	2-101/6	9H73DC	"	2-92/17
9H50DC	"	2-91/3	9H73DM	"	2-92/17
			9H73FM	"	2-92/17
9H50DM	"	2-91/3	9H73PC	"	2-92/17
9H50FM	"	2-91/3			
9H50PC	"	2-91/3	9H74DC	"	2-92/10
9H51DC	"	2-91/4	9H74DM	"	2-92/10
9H51DM	"	2-91/4	9H74FM	"	2-92/10
			9H74PC	"	2-92/10
9H51FM	"	2-91/4	9H76DC	"	2-92/22
9H51PC	"	2-91/4			
9H52DC	"	2-91/2	9H76DM	"	2-92/22
9H52DM	"	2-91/2	9H76FM	"	2-92/22
9H52FM	"	2-91/2	9H76PC	"	2-92/22
			9H78DC	"	2-92/26
9H52PC	"	2-91/2	9H78DM	"	2-93/26
9H53DC	"	2-91/5			
9H53PC	"	2-91/5	9H78FM	"	2-93/26
9H53PC	"	2-91/5	9H78PC	"	2-93/26
9H54DC	"	2-91/6			
9H54DM	"	2-91/6	9LS00DC	"	2-88/6
			9LS00DM	"	2-88/6
9H54FM	"	2-91/6	9LS00FC	"	2-88/6
9H54PC	"	2-91/6			
9H55DC	"	2-91/10	9LS00FM	"	2-88/6
9H55PC	"	2-91/10	9LS00PC	"	2-88/6
9H60DC	"	2-91/13	9LS02DC	"	2-88/8
			9LS02DM	"	2-88/8
9H60DM	"	2-91/13	9LS02FC	"	2-88/8
9H60PC	"	2-91/13			
9H61DC	"	2-91/12	9LS02FM	"	2-88/8
9H61DM	"	2-91/12	9LS02PC	"	2-88/8
9H61FM	"	2-91/12	9LS03DC	"	2-88/7
			9LS03DM	"	2-88/7
9H61PC	"	2-91/12	9LS03FC	"	2-88/7
9H62DC	"	2-91/14			
9H62PC	"	2-91/14	9LS03FM	"	2-88/7
9H71DC	"	2-92/3	9LS03PC	"	2-88/7
9H71DM	"	2-92/3	9LS04DC	"	2-88/1
			9LS04DM	"	2-88/1
			9LS04FC	"	2-88/1

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
9LS04FM	Digital TTL	2-88/1
9LS04PC	"	2-88/1
9LS05DC	"	2-88/2
9LS05DM	"	2-88/2
9LS05FC	"	2-88/2
9LS05FM	"	2-88/2
9LS05PC	"	2-88/2
9LS08DC	"	2-90/3
9LS08DM	"	2-90/3
9LS08FC	"	2-90/3
9LS08FM	"	2-90/3
9LS08PC	"	2-90/3
9LS09DC	"	2-90/4
9LS09DM	"	2-90/4
9LS09FC	"	2-90/4
9LS09FM	"	2-90/4
9LS09PC	"	2-90/4
9LS10DC	"	2-88/14
9LS10DM	"	2-88/14
9LS10FC	"	2-88/14
9LS10FM	"	2-88/14
9LS10PC	"	2-88/14
9LS109DC	"	2-93/9
9LS109DM	"	2-93/9
9LS109FC	"	2-93/9
9LS109FM	"	2-93/9
9LS109PC	"	2-93/9
9LS11DC	"	2-90/6
9LS11DM	"	2-90/6
9LS11FC	"	2-90/6
9LS11FM	"	2-90/6
9LS11PC	"	2-90/6
9LS112DC	"	2-93/2
9LS112DM	"	2-93/2
9LS112FC	"	2-93/2
9LS112FM	"	2-93/2
9LS112PC	"	2-93/2
9LS113DC	"	2-92/20
9LS113DM	"	2-92/20
9LS113FC	"	2-92/20

Device No.	Family	Page/Item
9LS113FM	Digital TTL	2-92/20
9LS113PC	"	2-92/20
9LS114DC	"	2-93/6
9LS114DM	"	2-93/6
9LS114FC	"	2-93/6
9LS114FM	"	2-93/6
9LS114PC	"	2-93/6
9LS132DC	"	2-88/3
9LS132DM	"	2-88/3
9LS132FC	"	2-88/3
9LS132FM	"	2-88/3
9LS132PC	"	2-88/3
9LS133DC	"	2-89/6
9LS133DM	"	2-89/6
9LS133FC	"	2-89/6
9LS133FM	"	2-89/6
9LS133PC	"	2-89/6
9LS136DC	"	2-90/11
9LS136DM	"	2-90/11
9LS136FC	"	2-90/11
9LS136FM	"	2-90/11
9LS136PC	"	2-90/11
9LS138DC	"	2-100/1
9LS138DM	"	2-100/1
9LS138FC	"	2-100/1
9LS138FM	"	2-100/1
9LS138PC	"	2-100/1
9LS139DC	"	2-99/3
9LS139DM	"	2-99/3
9LS139FC	"	2-99/3
9LS139FM	"	2-99/3
9LS139PC	"	2-99/3
9LS14DC	"	2-88/5
9LS14DM	"	2-88/5
9LS14FC	"	2-88/5
9LS14FM	"	2-88/5
9LS14PC	"	2-88/5
9LS15DC	"	2-90/7
9LS15DM	"	2-90/7
9LS15FC	"	2-90/7

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PACKAGE CODES			TEMPERATURE RANGE CODES			
C D E F H J	Dual In-Line Dual In-Line Cylindrical, Plastic Flat Cylindrical, Metal Cylindrical, Metal	K P T U W	Cylindrical, Metal Dual In-Line Dual In-Line (Mini-DIP) Cylindrical, Plastic Epoxy TO-92	C C C C L L M	(MOS, DTL, C <sub>u</sub> L, LIC, most TTL) (7400 TTL) (CMOS) (CCD) (MOS) (LIC)	0°C to +75°C 0°C to +70°C -40°C to +85°C Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item	Device No.	Family	Page/Item
9LS15FM	Digital, TTL	2-90/7	9LS160PC	Digital, TTL	2-106/2
9LS15PC	"	2-90/7	9LS161DC	"	2-106/4
9LS151DC	"	2-98/9	9LS161DM	"	2-106/4
9LS151DM	"	2-98/9	9LS161FC	"	2-106/4
9LS151FC	"	2-98/9			
9LS151FM	"	2-98/9	9LS161FM	"	2-106/4
9LS151PC	"	2-98/9	9LS161PC	"	2-106/4
9LS152DC	"	2-98/14	9LS162DC	"	2-106/6
9LS152DM	"	2-98/14	9LS162DM	"	2-106/6
9LS152FC	"	2-98/14	9LS162FC	"	2-106/6
9LS152FM	"	2-98/14	9LS162FM	"	2-106/6
9LS152PC	"	2-98/14	9LS162PC	"	2-106/6
9LS153DC	"	2-97/17	9LS163DC	"	2-106/8
9LS153DM	"	2-97/17	9LS163DM	"	2-106/8
9LS153FC	"	2-97/17	9LS163FC	"	2-106/8
9LS153FM	"	2-97/17	9LS163FM	"	2-106/8
9LS153PC	"	2-97/17	9LS163PC	"	2-106/8
9LS155DC	"	2-99/6	9LS164DC	"	2-103/6
9LS155DM	"	2-99/6	9LS164DM	"	2-103/6
9LS155FC	"	2-99/6	9LS164FC	"	2-103/6
9LS155FM	"	2-99/6	9LS164FM	"	2-103/6
9LS155PC	"	2-99/6	9LS164PC	"	2-103/6
9LS156DC	"	2-99/8	9LS170DC	"	2-93/9
9LS156DM	"	2-99/8	9LS170DM	"	2-93/9
9LS156FC	"	2-99/8	9LS170FC	"	2-93/9
9LS156FM	"	2-99/8	9LS170FM	"	2-96/1
9LS156PC	"	2-99/8	9LS170PC	"	2-96/1
9LS157DC	"	2-97/4			
9LS157DM	"	2-97/4	9LS174DC	"	2-95/8
9LS157DM	"	2-97/4	9LS174DM	"	2-103/9
9LS157FC	"	2-97/4	9LS174DM	"	2-95/8
9LS157FM	"	2-97/4	9LS174FC	"	2-103/9
9LS157PC	"	2-97/4	9LS174FC	"	2-95/8
9LS158DC	"	2-97/6			
9LS158DM	"	2-97/6	9LS174FM	"	2-103/9
9LS158FC	"	2-97/6	9LS174PC	"	2-95/8
9LS158FM	"	2-97/6	9LS174PC	"	2-103/9
9LS158PC	"	2-97/6	9LS175DC	"	2-94/15
9LS160DC	"	2-106/2			
9LS160DM	"	2-106/2			
9LS160FC	"	2-106/2			
9LS160FM	"	2-106/2			



# PRODUCT INDEX

**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
9LS175DM	Digital, TTL	2-94/15
	"	2-103/12
9LS175FC	"	2-94/15
	"	2-103/12
9LS175FM	"	2-94/15
	"	2-103/12
9LS175PC	"	2-94/15
	"	2-103/12
9LS181DC	"	2-108/7
9LS181DM	"	2-108/7
9LS181FC	"	2-108/7
9LS181FM	"	2-108/7
9LS181PC	"	2-108/7
9LS190DC	"	2-106/14
9LS190DM	"	2-106/14
9LS190FC	"	2-106/14
9LS190FM	"	2-106/14
9LS190PC	"	2-106/14
9LS191DC	"	2-106/16
9LS191DM	"	2-106/16
9LS191FC	"	2-106/16
9LS191FM	"	2-106/16
9LS191PC	"	2-106/16
9LS192DC	"	2-106/10
9LS192DM	"	2-106/10
9LS192FC	"	2-106/10
9LS192FM	"	2-106/10
9LS192PC	"	2-106/10
9LS193DC	"	2-106/12
9LS193DM	"	2-106/12
9LS193FC	"	2-106/12
9LS193FM	"	2-106/12
9LS193PC	"	2-106/12
9LS194DC	"	2-103/3
9LS194DM	"	2-103/3
9LS194FC	"	2-103/3
9LS194FM	"	2-103/3
9LS194PC	"	2-103/3
9LS195FM	"	2-102/3
9LS195PC	"	2-102/3
9LS195DC	"	2-102/3
9LS195DM	"	2-102/3
9LS195FC	"	2-102/3

Device No.	Family	Page / Item
9LS196DC	Digital TTL	2-94/10
	"	2-105/11
9LS196DM	"	2-94/10
	"	2-105/11
9LS196FC	"	2-94/10
	"	2-105/11
9LS196FM	"	2-94/10
	"	2-105/11
9LS196PC	"	2-94/10
	"	2-105/11
9LS197DC	"	2-94/12
	"	2-105/13
9LS197DM	"	2-94/12
	"	2-105/13
9LS197FC	"	2-94/12
	"	2-105/13
9LS197FM	"	2-94/12
	"	2-105/13
9LS197PC	"	2-94/12
	"	2-105/13
9LS20DC	"	2-88/16
9LS20DM	"	2-88/16
9LS20FC	"	2-88/16
9LS20FM	"	2-88/16
9LS20PC	"	2-88/16
9LS21DC	"	2-90/8
9LS21DM	"	2-90/8
9LS21FC	"	2-90/8
9LS21FM	"	2-90/8
9LS21PC	"	2-90/8
9LS22DC	"	2-89/1
9LS22DM	"	2-89/1
9LS22FC	"	2-89/1
9LS22FM	"	2-89/1
9LS22PC	"	2-89/1
9LS251DC	"	2-98/11
9LS251DM	"	2-98/11
9LS251FC	"	2-98/11
9LS251FM	"	2-98/11
9LS251PC	"	2-98/11
9LS253DC	"	2-98/2
9LS253DM	"	2-98/2
9LS253FC	"	2-98/2

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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line	K Cylindrical, Metal	C (MOS, DTL, C <sub>p</sub> L, LIC, most TTL)	0°C to +75°C		
D Dual In-Line	P Dual In-Line	C (7400 TTL)	0°C to +70°C		
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)	C (CMOS)	-40°C to +85°C		
F Flat	U Cylindrical, Plastic	C (CCD)	Consult Field Salesperson or Representative		
H Cylindrical, Metal	W Epoxy TO-92	L (MOS)	-55°C to +85°C		
J Cylindrical, Metal		L (LIC)	-20°C to +85°C		
		M	-55°C to +125°C		

Device No.	Family	Page / Item	Device No.	Family	Page / Item
9LS253FM	Digital TTL	2-98/2	9LS283FM	Digital TTL	2-108/3
9LS253PC	"	2-98/2	9LS283PC	"	2-108/3
9LS257DC	"	2-97/8	9LS295DC	"	2-102/15
9LS257DM	"	2-97/8	9LS295DM	"	2-102/15
9LS257FC	"	2-97/8	9LS295FC	"	2-102/15
9LS257FM	"	2-97/8	9LS295FM	"	2-102/15
9LS257PC	"	2-97/8	9LS295PC	"	2-102/15
9LS258DC	"	2-97/10	9LS298DC	"	2-95/2
9LS258DM	"	2-97/10		"	2-97/13
9LS258FC	"	2-97/10		"	2-103/14
9LS258FM	"	2-97/10	9LS298DM	"	2-95/2
9LS258PC	"	2-97/10		"	2-97/13
9LS259DC	"	2-95/11		"	2-103/14
	"	2-99/14	9LS298FC	"	2-95/2
9LS259DM	"	2-95/11		"	2-97/13
	"	2-99/14		"	2-103/14
9LS259FC	"	2-95/11	9LS298FM	"	2-95/2
	"	2-99/14		"	2-97/13
9LS259FM	"	2-95/11		"	2-103/14
	"	2-99/14	9LS298PC	"	2-95/2
9LS259PC	"	2-95/11		"	2-97/13
	"	2-99/14		"	2-103/14
9LS266DC	"	2-90/14	9LS30DC	"	2-89/5
9LS266DM	"	2-90/14	9LS30DM	"	2-89/5
9LS266FC	"	2-90/14	9LS30FC	"	2-89/5
9LS266FM	"	2-90/14	9LS30FM	"	2-89/5
9LS266PC	"	2-90/14	9LS30PC	"	2-89/5
9LS27DC	"	2-89/10	9LS32DC	"	2-90/9
9LS27DM	"	2-89/10	9LS32DM	"	2-90/9
9LS27FC	"	2-89/10	9LS32FC	"	2-90/9
9LS27FM	"	2-89/10	9LS32FM	"	2-90/9
9LS27PC	"	2-89/10	9LS32PC	"	2-90/9
9LS279DC	"	2-94/4	9LS37DC	"	2-88/10
9LS279DM	"	2-94/4	9LS37DM	"	2-88/10
9LS279FC	"	2-94/4	9LS37FC	"	2-88/10
9LS279FM	"	2-94/4	9LS37FM	"	2-88/10
9LS279PC	"	2-94/4	9LS37PC	"	2-88/10
9LS283DC	"	2-108/3	9LS38DC	"	2-88/11
9LS283DM	"	2-108/3	9LS38DM	"	2-88/11
9LS283FC	"	2-108/3	9LS38FC	"	2-88/11
			9LS38FM	"	2-88/11
			9LS38PC	"	2-88/11
			9LS40DC	"	2-89/2
			9LS40DM	"	2-89/2

# PRODUCT INDEX

**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
9LS40FC	Digital TTL	2-89/2
9LS40FM	"	2-89/2
9LS40PC	"	2-89/2
9LS42DC	"	2-90/10
9LS42DM	"	2-99/17
9LS42FC	"	2-90/10
9LS42FM	"	2-99/17
9LS42PC	"	2-90/10
9LS42PC	"	2-99/17
9LS51DC	"	2-91/4
9LS51DM	"	2-91/4
9LS51FC	"	2-91/4
9LS51FM	"	2-91/4
9LS51PC	"	2-91/4
9LS54DC	"	2-91/7
9LS54DM	"	2-91/7
9LS54FC	"	2-91/7
9LS54FM	"	2-91/7
9LS54PC	"	2-91/7
9LS55DC	"	2-91/11
9LS55DM	"	2-91/11
9LS55FC	"	2-91/11
9LS55FM	"	2-91/11
9LS55PC	"	2-91/11
9LS670DC	"	2-96/2
9LS670DM	"	2-104/10
9LS670FC	"	2-96/2
9LS670FM	"	2-104/10
9LS670PC	"	2-96/2
9LS73DC	"	2-104/10
9LS73DM	"	2-92/15
9LS73FC	"	2-92/15
9LS73FM	"	2-92/15
9LS73PC	"	2-92/15

Device No.	Family	Page / Item
9LS74DC	Digital TTL	2-92/12
9LS74DM	"	2-92/12
9LS74FC	"	2-92/12
9LS74FM	"	2-92/12
9LS74PC	"	2-92/12
9LS83DC	"	2-108/1
9LS83DM	"	2-108/1
9LS83FC	"	2-108/1
9LS83FM	"	2-108/1
9LS83PC	"	2-108/1
9LS86DC	"	2-90/10
9LS86DM	"	2-90/10
9LS86FC	"	2-90/10
9LS86FM	"	2-90/10
9LS86PC	"	2-90/10
9LS90DC	"	2-105/3
9LS90DM	"	2-105/3
9LS90FC	"	2-105/3
9LS90FM	"	2-105/3
9LS90PC	"	2-105/3
9LS92DC	"	2-105/4
9LS92DM	"	2-105/4
9LS92FC	"	2-105/4
9LS92FM	"	2-105/4
9LS92PC	"	2-105/4
9LS93DC	"	2-105/7
9LS93DM	"	2-105/7
9LS93FC	"	2-105/7
9LS93FM	"	2-105/7
9LS93PC	"	2-105/7
9LS95DC	"	2-102/8
9LS95DM	"	2-102/8
9LS95FC	"	2-102/8
9LS95FM	"	2-102/8
9LS95PC	"	2-102/8
9N00DC	"	2-88/6
9N00DM	"	2-88/6
9N00FM	"	2-88/6
9N00PC	"	2-88/6
9N01DC	"	2-88/8

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item	Device No.	Family	Page/Item
9N01DM	Digital, TTL	2-88/8	9N107PC	Digital, TTL	2-92/16
9N01FM	"	2-88/8	9N11DC	"	2-90/6
9N01PC	"	2-88/8	9N11DM	"	2-90/6
9N02DC	"	2-89/8	9N11FM	"	2-90/6
9N02DM	"	2-89/8	9N11PC	"	2-90/6
9N02FM	"	2-89/8	9N12DC	"	2-88/15
9N02PC	"	2-89/8	9N12DM	"	2-88/15
9N03DC	"	2-88/7	9N12PC	"	2-88/15
9N03DM	"	2-88/7	9N122DC	"	2-105/7
9N03PC	"	2-88/7	9N122DM	"	2-105/7
9N04DC	"	2-88/1	9N122PC	"	2-105/7
9N04DM	"	2-88/1	9N123DC	"	2-105/8
9N04FM	"	2-88/1	9N123DM	"	2-105/8
9N04PC	"	2-88/1	9N123PC	"	2-105/8
9N05DC	"	2-88/2	9N132DC	"	2-88/13
9N05DM	"	2-88/2	9N132DM	"	2-88/13
9N05FM	"	2-88/2	9N132PC	"	2-88/13
9N05PC	"	2-88/2	9N14DC	"	2-88/5
9N06DC	"	2-88/4	9N14DM	"	2-88/5
9N06DM	"	2-88/4	9N14PC	"	2-88/5
9N06FM	"	2-88/4	9N16DC	"	2-88/3
9N06PC	"	2-88/4	9N16DM	"	2-88/3
9N07DC	"	2-90/2	9N16FM	"	2-88/3
9N07DM	"	2-90/2	9N16PC	"	2-88/3
9N07FM	"	2-90/2	9N17DC	"	2-90/1
9N07PC	"	2-90/2	9N17DM	"	2-90/1
9N08DC	"	2-90/3	9N17FM	"	2-90/1
9N08DM	"	2-90/3	9N17PC	"	2-90/1
9N08FM	"	2-90/3	9N20DC	"	2-88/16
9N08PC	"	2-90/3	9N20DM	"	2-88/16
9N09DC	"	2-90/4	9N20FM	"	2-88/16
9N09DM	"	2-90/4	9N20PC	"	2-88/16
9N09FM	"	2-90/4	9N21DM	"	2-90/8
9N09PC	"	2-90/4	9N23DC	"	2-89/12
9N10DC	"	2-88/14	9N23DM	"	2-89/12
9N10DM	"	2-88/14	9N23PC	"	2-89/12
9N10FM	"	2-88/14	9N25DC	"	2-89/11
9N10PC	"	2-88/14			
9N107DC	"	2-92/16			
9N107DM	"	2-92/16			

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
9N25DM	Digital, TTL	2-89/11
9N25PC	"	2-89/11
9N26DC	"	2-88/9
9N26DM	"	2-88/9
9N26PC	"	2-88/9
9N27DC	"	2-89/10
9N27DM	"	2-89/10
9N27PC	"	2-89/10
9N279	"	2-94/3
9N30DC	"	2-89/5
9N30DM	"	2-89/5
9N30FM	"	2-89/5
9N30PC	"	2-89/5
9N32DC	"	2-90/9
9N32DM	"	2-90/9
9N32PC	"	2-90/9
9N37DC	"	2-88/10
	"	2-111/1
	Interface	2-74/2
	"	2-74/Note
9N37DM	Digital, TTL	2-88/10
	"	2-111/1
9N37FM	"	2-88/10
	"	2-111/1
9N37PC	"	2-88/10
	"	2-111/1
9N38DC	"	2-88/11
	"	2-111/2
	Interface	2-74/3
	"	2-74/Note
9N38DM	Digital, TTL	2-88/11
	"	2-111/2
9N38FM	"	2-88/11
	"	2-111/2
9N38PC	"	2-88/11
	"	2-111/2
9N39DC	"	2-88/12
9N39DM	"	2-88/12
9N40DC	"	2-89/2
	"	2-111/5
	Interface	2-74/4
	"	2-74/Note

Device No.	Family	Page/Item
9N40DM	Digital, TTL	2-89/2
	"	2-111/5
9N40FC	"	2-89/2
	"	2-111/5
9N40FM	"	2-89/2
	"	2-111/5
9N40PC	"	2-89/2
	"	2-111/5
9N50DC	"	2-91/3
9N50DM	"	2-91/3
9N50FM	"	2-91/3
9N50PC	"	2-91/3
9N51DC	"	2-91/4
9N51DM	"	2-91/4
9N51FM	"	2-91/4
9N51PC	"	2-91/4
9N53DC	"	2-91/5
9N53DM	"	2-91/5
9N53FM	"	2-91/5
9N53PC	"	2-91/5
9N54DC	"	2-91/6
9N54DM	"	2-91/6
9N54FM	"	2-91/6
9N54PC	"	2-91/6
9N60DC	"	2-91/13
9N60DM	"	2-91/13
9N60FM	"	2-91/13
9N60PC	"	2-91/13
9N70DC	"	2-92/8
9N70DM	"	2-92/8
9N70FM	"	2-92/8
9N70PC	"	2-92/8
9N72DC	"	2-92/5
9N72DM	"	2-92/5
9N72FM	"	2-92/5
9N72PC	"	2-92/5
9N73DC	"	2-92/15
9N73DM	"	2-92/15
9N73FM	"	2-92/15
9N73PC	"	2-92/15
9N74DC	"	2-92/9

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**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)		0°C to +75°C
C	(7400 TTL)		0°C to +70°C
C	(CMOS)		-40°C to +85°C
C	(CCD)		Consult Field Salesperson or Representative
L	(MOS)		-55°C to +85°C
L	(LIC)		-20°C to +85°C
M			-55°C to +125°C

Device No.	Family	Page / Item
9N74DM	Digital TTL	2-92/9
9N74FM	"	2-92/9
9N74PC	"	2-92/9
9N76DC	"	2-92/21
9N76DM	"	2-92/21
9N76PC	"	2-92/21
9N86DC	"	2-92/10
9N86DM	"	2-92/10
9N86FM	"	2-92/10
9N86PC	"	2-92/10
9S00DC	"	2-88/6
9S00DM	"	2-88/6
9S00PC	"	2-88/6
9S02DC	"	2-89/8
9S02FC	"	2-89/8
9S02PC	"	2-89/8
9S02DM	"	2-89/8
9S02FM	"	2-89/8
9S03DC	"	2-88/7
9S03PC	"	2-88/7
9S04DC	"	2-88/1
9S04DM	"	2-88/1
9S04PC	"	2-88/1
9S04ADC	"	2-88/1
9S04ADM	"	2-88/1
9S04APC	"	2-88/1
9S05DC	"	2-88/2
9S05PC	"	2-88/2
9S05ADC	"	2-88/2
9S05APC	"	2-88/2
9S08DC	"	2-90/3
9S08FC	"	2-90/3
9S08PC	"	2-90/3
9S08DM	"	2-90/3
9S08FM	"	2-90/3
9S09DC	"	2-90/4
9S09FC	"	2-90/4
9S09PC	"	2-90/4
9S09DM	"	2-90/4
9S09FM	"	2-90/4
9S10DC	"	2-88/14

Device No.	Family	Page / Item
9S10PC	Digital, TTL	2-88/14
9S109DC	"	2-93/4
9S109PC	"	2-93/4
9S11DC	"	2-90/6
9S11PC	"	2-90/6
9S112DC	"	2-93/24
9S112PC	"	2-93/24
9S113DC	"	2-92/19
9S113PC	"	2-92/19
9S114DC	"	2-93/1
9S114PC	"	2-93/1
9S132DC	"	2-88/13
9S132FC	"	2-88/13
9S132PC	"	2-88/13
9S132DM	"	2-88/13
9S132FM	"	2-88/13
9S133DC	"	2-89/6
9S133PC	"	2-89/6
9S134DC	"	2-89/7
9S134PC	"	2-89/7
9S135DC	"	2-90/13
9S135PC	"	2-90/13
9S140DC	"	2-109/7
9S140PC	"	2-89/3
9S140DM	"	2-111/8
9S140PC	"	2-89/3
9S15DC	"	2-111/8
9S15DC	"	2-90/7
9S15PC	"	2-90/7
9S20DC	"	2-88/16
9S20DM	"	2-88/16
9S20PC	"	2-88/16
9S22DC	"	2-89/1
9S22PC	"	2-89/1
9S30DC	"	2-89/5
9S30FC	"	2-89/5
9S30PC	"	2-89/5
9S30DM	"	2-89/5
9S30FM	"	2-89/5
9S32DC	"	2-80/9
9S32FC	"	2-80/9

# PRODUCT INDEX

**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
9S32PC	Digital, TTL	2-80/9
9S32DM	"	2-80/9
9S32FM	"	2-80/9
9S40DC	"	2-89/2
	"	2-111/7
	Interface	2-74/5
	"	2-74/Note
9S40DM	Digital, TTL	2-89/2
	"	2-111/7
9S40PC	"	2-89/2
	"	2-111/7
9S41DC	"	2-90/5
9S41DM	"	2-90/5
9S41PC	"	2-90/5
9S42DC	"	2-91/1
9S42DM	"	2-91/1
9S42PC	"	2-91/1
9S51DC	"	2-91/4
9S51FC	"	2-91/4
9S51PC	"	2-91/4
9S51DM	"	2-91/4
9S51FM	"	2-91/4
9S64DC	"	2-91/8
9S64DM	"	2-91/8
9S64PC	"	2-91/8
9S65DC	"	2-91/9
9S65PC	"	2-91/9
9S74DC	"	2-92/11
9S74PC	"	2-92/11
9S86DC	"	2-90/10
9S86DM	"	2-90/10
9S86PC	"	2-90/10
900FM	Digital, RTL	2-228/1
900HC	"	2-228/1
900HM	"	2-228/1
9000DC	Digital, TTL,	2-92/1
9000DM	"	2-92/1
9000FC	"	2-92/1
9001DC	"	2-92/2
9001DM	"	2-92/2
9001FC	"	2-92/2

Device No.	Family	Page/Item
9001FM	Digital TTL	2-92/2
9002DC	"	2-88/6
9002DM	"	2-88/6
9002FC	"	2-88/6
9002FM	"	2-88/6
9003DC	"	2-88/14
9003DM	"	2-88/14
9003FC	"	2-88/14
9003FM	"	2-88/14
9004DC	"	2-88/16
9004DM	"	2-88/16
9004FC	"	2-88/16
9004FM	"	2-88/16
9005DC	"	2-91/3
9005DM	"	2-91/3
9005FC	"	2-91/3
9005FM	"	2-91/3
9006DC	"	2-91/13
9006DM	"	2-91/13
9006FC	"	2-91/13
9006FM	"	2-91/13
9007DC	"	2-89/4
9007DM	"	2-89/4
9007FC	"	2-89/4
9007FM	"	2-89/4
9008DC	"	2-91/5
9008DM	"	2-91/5
9008FC	"	2-91/5
9008FM	"	2-91/5
9009DC	"	2-89/2
	"	2-111/4
	Interface	2-74/6
9009DM	"	2-89/2
	"	2-111/4
9009FC	"	2-89/2
	"	2-111/4
9009FM	"	2-89/2
	"	2-111/4
901FM	Digital, RTL	2-228/2
901HM	"	2-228/2
9012DC	Digital, TTL	2-88/7
9012DM	"	2-88/7

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**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
9012FC	Digital, TTL	2-88/7
9012FM	"	2-88/7
9014DC	"	2-90/12
9014DM	"	2-90/12
9014FC	"	2-90/12
9014FM	"	2-90/12
9015DC	"	2-89/9
9015DM	"	2-89/9
9015FC	"	2-89/9
9015FM	"	2-89/9
9016DC	"	2-88/1
9016DM	"	2-88/1
9016FC	"	2-88/1
9016FM	"	2-88/1
9017DC	"	2-88/2
9017DM	"	2-88/2
9017FC	"	2-88/2
9017FM	"	2-88/2
902FM	Digital, RTL	2-228/3
902HC	"	2-228/3
902HM	"	2-228/3
9020DC	Digital, TTL	2-90/13
9020DM	"	2-90/13
9020FC	"	2-90/13
9020FM	"	2-90/13
9022DC	"	2-90/14
9022DM	"	2-90/14
9022FC	"	2-90/14
9022FM	"	2-90/14
9024DC	"	2-93/3
9024DM	"	2-93/3
9024FC	"	2-93/3
9024FM	"	2-93/3
903FM	Digital, RTL	2-228/4
903HC	"	2-228/4
903HM	"	2-228/4
904FM	"	2-228/5
904HC	"	2-228/5
904HM	"	2-228/5
905FM	"	2-228/6

Device No.	Family	Page / Item
905HC	Digital, RTL	2-228/6
905HM	"	2-228/6
906FM	"	2-228/7
906HC	"	2-228/7
906HM	"	2-228/7
907FM	"	2-228/8
907HC	"	2-228/8
907HM	"	2-228/8
908FM	"	2-228/9
908HC	"	2-228/9
908HM	"	2-228/9
909FM	"	2-228/10
909HC	"	2-228/10
909HM	"	2-228/10
9093DC	Digital, DTL	2-130/16
9093DM	"	2-130/16
9093FC	"	2-130/16
9093FM	"	2-130/16
9093PC	"	2-130/16
9094DC	"	2-130/17
9094DM	"	2-130/17
9094FC	"	2-130/17
9094FM	"	2-130/17
9094PC	"	2-130/17
9097DC	"	2-130/18
9097DM	"	2-130/18
9097FC	"	2-130/18
9097FM	"	2-130/18
9097PC	"	2-130/18
9099DC	"	2-130/19
9099DM	"	2-130/19
9099FC	"	2-130/19
9099FM	"	2-130/19
9099PC	"	2-130/19
910FM	Digital, RTL	2-228/11
910HC	"	2-228/11
910HM	"	2-228/11
9109DC	Interface	2-78/1
	Digital TTL	2-114/1
	"	2-130/20



# PRODUCT INDEX

**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, C <sub>u</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
9109DM	Interface	2-78/1
	"	2-114/1
	"	2-130/20
911FM	Digital, RTL	2-228/12
911HM	"	2-228/12
9110DC	Digital, DTL	2-78/2
	"	2-130/21
9110DM	"	2-78/2
	"	2-130/21
9111DC	"	2-130/22
9111DM	"	2-130/22
9111FC	"	2-130/22
9111FM	"	2-130/22
912FM	Digital, RTL	2-228/13
912HC	"	2-228/13
912HM	"	2-228/13
9112DC	Interface & DTL	2-114/2
	"	2-130/23
9112DM	"	2-114/2
	"	2-130/23
913FM	Digital, RTL	2-228/14
913HC	"	2-228/14
913HM	"	2-228/14
9135DC	Digital, DTL	2-130/24
9135FM	"	2-130/24
9135PC	"	2-130/24
914FM	Digital, RTL	2-228/15
914HC	"	2-228/15
914HM	"	2-228/15
915FM	"	2-228/16
915HC	"	2-228/16
915HM	"	2-228/16
9157DC	Digital, DTL	2-130/25
9157FM	"	2-130/25
9157PC	"	2-130/25
9158DC	"	2-130/26
9158PC	"	2-130/26
921FM	Digital, RTL	2-228/17
921HC	"	2-228/17
921HM	"	2-228/17
923HC	"	2-228/18
926FM	"	2-228/19

Device No.	Family	Page / Item
926HC	Digital, RTL	2-228/19
926HM	"	2-228/19
927FM	"	2-228/20
927HC	"	2-228/20
927HM	"	2-228/20
93H00DC	Digital, TTL	2-102/2
93H00DM	"	2-102/2
93H00FM	"	2-102/2
93H72DC	"	2-102/5
93H72DM	"	2-102/5
93H87DC	"	2-109/6
93H183DC	"	2-107/11
93H183DM	"	2-107/11
93L00DC	"	2-102/3
93L00DM	"	2-102/3
93L00FC	"	2-102/3
93L00FM	"	2-102/3
93L00PC	"	2-102/3
93L01DC	"	2-89/10
	"	2-100/6
93L01DM	"	2-89/10
	"	2-100/6
93L01FC	"	2-89/10
	"	2-100/6
93L01FM	"	2-89/10
	"	2-100/6
93L01PC	"	2-89/10
	"	2-100/6
93L08DC	"	2-95/4
93L08DM	"	2-95/4
93L08FC	"	2-95/4
93L08FM	"	2-95/4
93L08PC	"	2-95/4
93L09DC	"	2-97/15
93L09DM	"	2-97/15
93L09FC	"	2-97/15
93L09FM	"	2-97/15
93L09PC	"	2-97/15
93L10DC	"	2-105/17
93L10DM	"	2-105/17
93L10FC	"	2-105/17
93L10FM	"	2-105/17
93L10PC	"	2-105/17

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
93L11DC	Digital, TTL	2-100/15
93L11DM	"	2-100/15
93L11FC	"	2-100/15
93L11FM	"	2-100/15
93L11PC	"	2-100/15
93L12DC	"	2-98/5
93L12DM	"	2-98/5
93L12FC	"	2-98/5
93L12FM	"	2-98/5
93L12PC	"	2-98/5
93L14DC	"	2-84/2
	"	2-94/2
	"	2-94/6
93L14DM	"	2-84/2
	"	2-94/2
	"	2-94/6
	"	2-84/2
	"	2-94/2
	"	2-94/6
93L14FC	"	2-84/2
	"	2-94/2
	"	2-94/6
93L14FM	"	2-84/2
	"	2-94/2
	"	2-94/6
93L14PC	"	2-84/2
	"	2-94/2
	"	2-94/6
93L16DC	"	2-105/20
93L16DM	"	2-105/20
93L16FC	"	2-105/20
93L16FM	"	2-105/20
93L16PC	"	2-105/20
93L18DC	"	2-108/21
93L18DM	"	2-108/21
93L18FC	"	2-108/21
93L18FM	"	2-108/21
93L18PC	"	2-108/21
93L21DC	"	2-89/2
93L21DM	"	2-89/2
93L21FC	"	2-89/2
93L21FM	"	2-89/2
93L21PC	"	2-89/2
93L22DC	Digital, TTL	2-87/2
93L22DM	"	2-87/2
93L22FC	"	2-87/2

Device No.	Family	Page / Item
93L22FM	"	2-87/2
93L22PC	"	2-87/2
93L24DC	"	2-108/16
93L24DM	"	2-108/16
93L24FC	"	2-108/16
93L24FM	"	2-108/16
93L24PC	"	2-108/16
93L28DC	"	2-104/4
93L28DM	"	2-104/4
93L28FC	"	2-104/4
93L28FM	"	2-104/4
93L28PC	"	2-104/4
93L34DC	"	2-95/10
	"	2-99/13
93L34PC	"	2-95/10
	"	2-99/13
93L38DC	"	2-95/13
	"	2-104/7
93L38PC	"	2-95/13
	"	2-104/7
93L41DC	"	2-108/6
93L41PC	"	2-108/6
93L415DC	Bipolar Memory	2-133/12
93L415PC	"	2-133/12
93L420DC	"	2-133/1
93L420DM	"	2-133/2
93L420FM	"	2-133/2
93L421DC	"	2-132/22
93L421DM	"	2-132/23
93L421FM	"	2-132/23
93L421PC	"	2-132/22
93L425DC	"	2-133/24
93S00DC	Digital, TTL	2-102/4
93S00DM	"	2-102/4
93S05DC	"	2-105/15
93S10DC	"	2-105/18
93S10DM	"	2-105/18
93S12DC	"	2-98/6
93S12DM	"	2-98/6
93S137DC	"	2-100/4
93S137DM	"	2-100/4
93S138DC	"	2-100/2
93S138DM	"	2-100/2
93S139DC	"	2-99/4
93S139DM	"	2-99/4
93S151DC	"	2-98/10
93S151DM	"	2-98/10

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**PACKAGE CODES**

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

**TEMPERATURE RANGE CODES**

C	(MOS, DTL, CμL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
93S153DC	Digital, TTL	2-98/1
93S153DM	"	2-98/1
93S157DC	"	2-97/5
93S157DM	"	2-97/5
93S158DC	"	2-97/7
93S158DM	"	2-97/7
93S16DC	"	2-105/21
93S16DM	"	2-105/21
93S174DC	"	2-95/7
93S174DM	"	2-95/7
93S175DC	"	2-94/15
	"	2-103/11
93S175FC	"	2-94/15
	"	2-103/11
93S175PC	"	2-94/15
	"	2-103/11
93S175DM	"	2-94/15
	"	2-103/11
93S175FM	"	2-94/15
	"	2-103/11
93S194DC	"	2-103/2
93S194DM	"	2-103/2
93S251DC	"	2-98/12
93S251DM	"	2-98/12
93S253DC	"	2-98/3
93S253DM	"	2-98/3
93S257DC	"	2-97/9
93S257DM	"	2-97/9
93S258DC	"	2-97/11
93S258DM	"	2-97/11
93S41DC	"	2-108/8
93S41DM	"	2-108/8
93S41PC	"	2-108/8
93S42DC	"	2-108/12
93S42DM	"	2-108/12
93S43DC	"	2-109/2
93S43DM	"	2-109/2

Device No.	Family	Page / Item
93S46DC	Digital, TTL	2-108/17
93S46DM	"	2-108/17
93S47DC	"	2-108/18
93S47DM	"	2-108/18
93S62DC	"	2-109/4
93S62DM	"	2-109/4
930DC	Digital, DTL	2-129/1
930DM	"	2-129/1
930FC	"	2-129/1
930FM	"	2-129/1
930HC	"	2-129/1
930HM	"	2-129/1
930PC	"	2-129/1
9300DC	Digital, TTL	2-102/1
9300DM	"	2-102/1
9300FC	"	2-102/1
9300FM	"	2-102/1
9300PC	"	2-102/1
9301DC	"	2-99/9
	"	2-100/5
9301DM	"	2-99/9
	"	2-100/5
9301FC	"	2-99/9
	"	2-100/5
9301FM	"	2-99/9
	"	2-100/5
9301PC	"	2-99/9
	"	2-100/5
9302DC	"	2-99/10
	"	2-99/11
	"	2-100/7
9302DM	"	2-99/10
	"	2-99/11
	"	2-100/7
9302PC	"	2-99/10
	"	2-99/11
	"	2-100/7

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page / Item
9305PC	Digital TTL	2-105/14
9307DC	Interface	2-77/1
	Digital TTL	2-110/2
9307DM	Interface	2-77/Note
	Digital TTL	2-110/2
9307FC	Interface	2-77/1
	Digital TTL	2-110/2
9307FM	Interface	2-77/Note
	Digital TTL	2-110/2
9307PC	Interface	2-77/1
	Digital TTL	2-110/2
9308DC	"	2-95/3
9308DM	"	2-95/3
9308FC	"	2-95/3
9308FM	"	2-95/3
9308PC	"	2-95/3
9309DC	"	2-97/14
9309DM	"	2-97/14
9309FC	"	2-97/14
9309FM	"	2-97/14
93009PC	"	2-97/14
9310DC	"	2-105/16
9310DM	"	2-105/16
9310FC	"	2-105/16
9310FM	"	2-105/16
9310PC	"	2-105/16
9311DC	"	2-100/14
9311DM	"	2-100/14
9311FC	"	2-100/14
9311FM	"	2-100/14
9311PC	"	2-100/14
93116DC	"	2-95/5
93116DM	"	2-95/5
93116PC	"	2-95/5
9312DC	"	2-98/4
	"	2-105/4
9312DM	"	2-98/4
	"	2-105/4
9312FC	"	2-98/4
	"	2-105/4
9312FM	"	2-98/4
	"	2-105/4

Device No.	Family	Page / Item
9312PC	Digital TTL	2-98/4
	"	2-105/4
9313DC	"	2-98/7
9313DM	"	2-98/7
9313FC	"	2-98/7
9313FM	"	2-98/7
9313PC	"	2-98/7
9314DC	"	2-94/1
	"	2-94/5
9314DM	"	2-94/1
	"	2-94/5
9314FC	"	2-94/1
	"	2-94/5
9314FM	"	2-94/1
	"	2-94/5
9314PC	"	2-94/1
	"	2-94/5
93141DC	Interface	2-77/12
	Digital TTL	2-101/8
93141PC	Interface	2-77/12
	Digital TTL	2-101/8
93145DC	"	2-100/3
	"	2-100/13
	"	2-101/1
93145DM	"	2-100/3
	"	2-100/13
	"	2-101/1
93145PC	"	2-100/3
	"	2-100/13
	"	2-101/1
9315DC	Interface	2-77/2
	Digital TTL	2-109/8
9315DM	Interface	2-77/Note
	Digital TTL	2-109/8
9315FC	Interface	2-77/2
	Digital TTL	2-109/8
9315FM	Interface	2-77/Note
	Digital TTL	2-109/8
9315PC	Interface	2-77/2
	Digital TTL	2-109/8
93150DC	"	2-98/15
93150DM	"	2-98/15
93150PC	"	2-98/15
93151DC	"	2-98/8

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, $\mu$ L, LIC, most TTL)		0°C to +75°C
C	(7400 TTL)		0°C to +70°C
C	(CMOS)		-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative	
L	(MOS)		-55°C to +85°C
L	(LIC)		-20°C to +85°C
M			-55°C to +125°C

Device No.	Family	Page / Item
93150DM	"	2-98/15
93150PC	"	2-98/15
93151DC	"	2-98/8
93151DM	Digital, TTL	2-98/8
93151PC	"	2-98/8
93152DC	"	2-98/13
93152DM	"	2-98/13
93152FM	"	2-98/13
93152PC	"	2-98/13
93153DC	"	2-97/16
	"	2-100/16
93153DM	"	2-97/16
	"	2-100/16
93153PC	"	2-97/16
	"	2-100/16
93155DC	"	2-99/5
93155DM	"	2-99/5
93155PC	"	2-99/5
93156DC	"	2-99/7
93156DM	"	2-99/7
93156PC	"	2-99/7
93157DC	"	2-97/3
93157DM	"	2-97/3
93157PC	"	2-97/3
9316DC	"	2-105/19
9316DM	"	2-105/19
9316FC	"	2-105/19
9316FM	"	2-105/19
9316PC	"	2-105/19
93160DC	"	2-106/1
93160FC	"	2-106/1
93160PC	"	2-106/1
93160DM	"	2-106/1
93160FM	"	2-106/1
93161DC	"	2-106/3
93161FC	"	2-106/3
93161PC	"	2-106/3
93161DM	"	2-106/3
93161FM	"	2-106/3
93162DC	"	2-106/5
93162FC	"	2-106/5
93162PC	"	2-106/5
93162DM	"	2-106/5
93162FM	"	2-106/5

Device No.	Family	Page / Item
93163DC	"	2-106/7
93163DM	"	2-106/7
93163FM	Digital, TTL	2-106/7
93163PC	"	2-106/7
93164DC	"	2-103/5
93164DM	"	2-103/5
93164PC	"	2-103/5
93165DC	"	2-104/1
93165DM	"	2-104/1
93165PC	"	2-104/1
93166DC	"	2-104/2
93166DM	"	2-104/2
93166PC	"	2-104/2
9317BDC	Interface Digital TTL	2-77/3 2-110/5
9317BDM	Interface Digital TTL	2-77/note 2-110/5
9317BFM	Interface Digital TTL	2-77/note 2-110/5
9317BPC	Interface Digital TTL	2-77/3 2-110/5
9317CDC	Digital TTL	2-110/6
9317CDM	"	2-110/6
9317CFM	"	2-110/6
9317CPC	"	2-110/6
93170DC	"	2-95/14 2-104/8
93170DM	"	2-95/14 2-104/8
93170PC	"	2-95/14 2-104/8
93174DC	"	2-95/6 2-103/7
93174DM	Digital TTL	2-95/6 2-103/7
93174PC	"	2-95/6 2-103/7

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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line	K Cylindrical, Metal	C (MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)			0°C to +75°C
D Dual In-Line	P Dual In-Line	C (7400 TTL)			0°C to +70°C
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)	C (CMOS)			-40°C to +85°C
F Flat	U Cylindrical, Plastic	C (CCD)			Consult Field Salesperson or Representative
H Cylindrical, Metal	W Epoxy TO-92	L (MOS)			-55°C to +85°C
J Cylindrical, Metal		L (LIC)			-20°C to +85°C
		M			-55°C to +125°C

Device No.	Family	Page / Item	Device No.	Family	Page / Item
93175DC	Digital TTL	2-94/13 2-103/10	93196DC	Digital TTL	2-94/9 2-105/10
93175DM	"	2-94/13 2-103/10	93196DM	"	2-94/9 2-105/10
93175PC	"	2-94/13 2-103/10	93196PC	"	2-94/9 2-105/10
93176DC	"	2-105/8	93197DC	"	2-94/11 2-105/12
93176DM	"	2-105/8	93197DM	"	2-94/11 2-105/12
93176PC	"	2-105/8	93197PC	"	2-94/11 2-105/12
993177DC	"	2-105/9	93198DC	"	2-103/4
93177DM	"	2-105/9	93198DM	"	2-103/4
93177PC	"	2-105/9	93198PC	"	2-103/4
93178DC	"	2-102/10	93199DC	"	2-102/14
93178DM	"	2-102/10	93199DM	"	2-102/14
93178PC	"	2-102/10	93199PC	"	2-102/14
93179DC	"	2-102/11	932DC	"	2-129/2
93179DM	"	2-102/11	932DM	"	2-129/2
93179PC	"	2-102/11	932FC	"	2-129/2
9318DC	"	2-108/20	932FM	"	2-129/2
9318DM	"	2-108/20	932HC	"	2-129/2
9318FC	"	2-108/20	932HM	"	2-129/2
9318FM	"	2-108/20	932PC	"	2-129/2
9318PC	"	2-108/20	932ODC	"	2-101/2
93180DC	"	2-109/3	9320FC	"	2-101/2
93180DM	"	2-109/3	9320PC	"	2-101/2
93180PC	"	2-109/3	9320DM	"	2-101/2
9319DC	"	2-101/1	9320FM	"	2-101/2
9319FC	"	2-101/1	9321DC	"	2-99/1
9319PC	"	2-101/1	9321DM	"	2-99/1
9319DM	"	2-101/1	9321FC	"	2-99/1
9319FM	"	2-101/1	9321FM	"	2-99/1
93190DC	"	2-106/13	9321PC	"	2-99/1
93190DM	"	2-106/13	9322DC	"	2-97/1
93190PC	"	2-106/13	9322DM	"	2-97/1
93191DC	"	2-106/15	9322FC	"	2-97/1
93191DM	"	2-106/15			
93191PC	"	2-106/15			
93194DM	"	2-103/1			
93195DM	"	2-102/2			

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## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CuL, LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page / Item
9322FM	Digital TTL	2-97/1
9322PC	"	2-97/1
9324DC	"	2-108/15
9324DM	"	2-108/15
9324FC	"	2-108/15
9324FM	"	2-108/15
9324PC	"	2-108/15
9328DC	"	2-104/3
9328DM	"	2-104/3
9328FC	"	2-104/3
9328FM	"	2-104/3
9328PC	"	2-104/3
93283DC	"	2-108/2
93283FC	"	2-108/2
93283PC	"	2-108/2
93283DM	"	2-108/2
93283FM	"	2-108/2
93298DC	"	2-95/1 2-97/12 2-103/13
93298FC	"	2-95/1 2-97/12 2-103/13
93298PC	"	2-95/1 2-97/12 2-103/13
93298DM	"	2-95/1 2-97/12 2-103/13
93298FM	"	2-95/1 2-97/12 2-103/13
933DC	"	2-129/3
933DM	"	2-129/3
933FC	"	2-129/3
933FM	"	2-129/3
933HC	"	2-129/3
933HM	"	2-129/3
933PC	"	2-129/3
9334DC	"	2-99/12

Device No.	Family	Page / Item
9334DM	Digital TTL	2--95/9 2-99/12
9334FC	"	2-95/9 2-99/12
9334FM	"	2-95/9 2-99/12
9334PC	"	2-95/9 2-99/12
9338DC	"	2-95/12 2-104/6
9338DM	"	2-95/12
9338FC	"	2-95/12 2-104/6
9338FM	"	2-95/12 2-104/6
9338PC	"	2-95/12 2-104/6
9340DC	"	2-104/6 2-108/4
9340DM	"	2-104/6 2-108/4
9340FC	"	2-104/6 2-108/4
9340FM	"	2-104/6 2-108/4
9340PC	"	2-104/6 2-108/4
93403DC	Dig. TTL Mem.	2-115/3 2-132/7
93403FC	"	2-115/3 2-132/7
93404DC	"	2-115/4 2-132/8

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PACKAGE CODES		TEMPERATURE RANGE CODES	
C Dual In-Line D Dual In-Line E Cylindrical, Plastic F Flat H Cylindrical, Metal J Cylindrical, Metal	K Cylindrical, Metal P Dual In-Line T Dual In-Line (Mini-DIP) U Cylindrical, Plastic W Epoxy TO-92	C (MOS, DTL, C <sub>μ</sub> L, LIC, most TTL) C (7400 TTL) C (CMOS) C (CCD) L (MOS) L (LIC) M	0°C to +75°C 0°C to +70°C -40°C to +85°C Consult Field Salesperson or Representative -55°C to +85°C -20°C to +85°C -55°C to +125°C

Device No.	Family	Page/Item
93404DM	Digital TTL Memory	2-115/4 2-132/9
93404FC	"	2-115/4 2-132/8
93404FM	"	2-115/4 2-132/9
93404PC	"	2-115/4 2-132/8
93405DC	"	2-115/5 2-132/10
93405DM	"	2-115/5 2-132/11
93405FC	"	2-115/5 2-132/10
93405FM	"	2-115/5 2-132/11
93405PC	"	2-115/5 2-132/10
93406DC	Bipolar Memory	2-134/3
93406PC	"	2-134/3
93407ADC	Dig. TTL Mem.	2-115/1 2-132/1
93407AFC	"	2-115/1 2-132/1
93407BDC	"	2-115/1 2-132/2
93407BDM	"	2-115/1 2-132/3
93407BFC	"	2-115/1 2-132/2
93407BFM	"	2-115/1 2-132/3
9341DC	"	2-1085 2-132/3

Device No.	Family	Page/Item
9341DM	Dig. TTL Mem.	2-108/5 2-132/3
9341FC	"	2-108/5 2-132/3
9341FM	"	2-108/5 2-132/3
9341PC	"	2-108/5 2-132/3
9341ODC	Bipolar Memory	2-132/14
9341ODM	"	2-132/15
9341OFM	"	2-132/15
9341OPC	"	2-132/14
9341OADC	"	2-132/13
9341OAPC	"	2-132/13
93411DC	"	2-132/17
93411DM	"	2-132/18
93411FM	"	2-132/18
93411PC	"	2-132/17
93411ADC	"	2-132/16
93411APC	"	2-132/16
93412DC	"	2-133/3
93415DC	"	2-133/7
93415DM	"	2-133/8
93415FM	"	2-133/8
93415PC	"	2-133/7
93415ADC	"	2-133/6
93415APC	"	2-133/6
93416DC	"	2-135/1
93416DM	"	2-135/2
93417DC	"	2-135/3
93417DM	"	2-135/4
93419DC	"	2-133/2
9342DC	Digital TTL	2-108/11
9342DM	"	2-108/11
9342FC	"	2-108/11
9342FM	"	2-108/11
9342PC	"	2-108/11
93421DC	Bipolar Memory	2-132/19
93421DM	"	2-132/20
93421FM	"	2-132/20
93421PC	"	2-132/19



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PACKAGE CODES			TEMPERATURE RANGE CODES			
C	Dual In-Line	K	Cylindrical, Metal	C	(MOS,-DTL, CuL, LIC, most TTL)	0°C to +75°C
D	Dual In-Line	P	Dual In-Line	C	(7400 TTL)	0°C to +70°C
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)	C	(CMOS)	-40°C to +85°C
F	Flat	U	Cylindrical, Plastic	C	(CCD)	Consult Field Salesperson or Representative
H	Cylindrical, Metal	W	Epoxy TO-92	L	(MOS)	-55°C to +85°C
J	Cylindrical, Metal			L	(LIC)	-20°C to +85°C
				M		-55°C to +125°C

Device No.	Family	Page/Item
93421ADC	Bipolar Memory	2-132/21
93421APC	"	2-132/21
93422DC	"	2-133/5
93425DC	"	2-133/10
93425DM	"	2-133/11
93425FM	"	2-133/11
93425PC	"	2-133/10
93425ADC	"	2-133/9
93425APC	"	2-133/9
93426DC	"	2-135/5
93426DM	"	2-135/6
93427DC	"	2-135/7
93427DM	"	2-135/8
93431DC	"	2-134/4
93432DC	"	2-134/6
93433ADC	"	2-132/4 2-115/2
93433AFC	"	2-132/4 2-115/2
93433BDC	"	2-132/5 2-115/2
93433BDM	"	2-132/6 2-115/2
93433BFC	"	2-132/5 2-115/2
93433BFM	"	2-132/6 2-115/2
93434DC	"	2-134/1
93434DM	"	2-134/2
93436DC	"	2-135/9
93436DM	"	2-135/10
93438DC	"	2-135/13
93438DM	"	2-135/14
9344DC	Digital TTL	2-109/1
9344DM	"	2-109/1
9344FC	"	2-109/1
9344FM	"	2-109/1
93441DC	Bipolar Memory	2-134/5
93442DC	"	2-134/7
93446DC	"	2-135/11
93446DM	"	2-135/12

Device No.	Family	Page/Item
93448DC	Bipolar Memory	2-135/15
93448DM	"	2-135/16
9345DC	Digital TTL	2-99/15 2-100/8 2-109/11
9345DM	"	2-99/15 2-100/8 2-109/11
9345PC	"	2-99/15 2-100/8 2-109/11
93454DC	Bipolar Memory	2-134/8
93464DC	"	2-134/9
9348DC	Digital TTL	2-109/5
9348DM	"	2-109/5
9348FC	"	2-109/5
9348FM	"	2-109/5
9348PC	"	2-109/5
935DC	Digital DTL	2-129/4
935DM	"	2-129/4
935FC	"	2-129/4
935FM	"	2-129/4
935PC	"	2-129/4
9350DC	Digital TTL	2-105/1
9350DM	"	2-105/1
9350PC	"	2-105/1
9352DC	"	2-99/16 2-100/9
9352DM	"	2-99/16 2-100/9
9352PC	"	2-99/16 2-100/9
9353DC	"	2-100/11
9353DM	"	2-100/11
9353PC	"	2-100/11
9354DC	"	2-100/12
9354DM	"	2-100/12
9354PC	"	2-100/12
9356DC	"	2-105/5
9356DM	"	2-105-5

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PACKAGE CODES			TEMPERATURE RANGE CODES		
C Dual In-Line	K Cylindrical, Metal	C (MOS, DTL, C <sub>μ</sub> L, LIC, most TTL)			
D Dual In-Line	P Dual In-Line	C (7400 TTL)			0°C to +75°C
E Cylindrical, Plastic	T Dual In-Line (Mini-DIP)	C (CMOS)			0°C to +70°C
F Flat	U Cylindrical, Plastic	C (CCD)			-40°C to +85°C
H Cylindrical, Metal	W Epoxy TO-92	L (MOS)			Consult Field Salesperson or Representative
J Cylindrical, Metal		L (LIC)			-55°C to +85°C
		M			-20°C to +85°C
					-55°C to +125°C

Device No.	Family	Page / Item	Device No.	Family	Page / Item
9356PC	Digital TTL	2-105/5	937DC	Digital DTL	2-129/6
9357ADC	Interface	2-77/4	937DM	"	2-129/6
	Digital TTL	2-110/7	937FC	"	2-129/6
9357ADM	Interface	2-77/note	937FM	"	2-129/6
	Digital TTL	2-110/7	927PC	"	2-129/6
9357APC	Interface	2-77/4	9370DC	Interface	2-77/7
	Digital TTL	2-110/7		Digital TTL	2-100/10
9357BDC	Interface	2-77/4	9370PC	Interface	2-77/7
	Digital TTL	2-110/8		Digital TTL	2-100/10
9357BDM	Interface	2-77/note	9374DC	Interface	2-77/8
	Digital TTL	2-110/8		Digital TTL	2-100/11
9357BPC	Interface	2-77/4	9374PC	Interface	2-77/8
	Digital TTL	2-110/8		Digital TTL	2-100/11
9358DC	Interface	2-77/5	9375DC	Digital TTL	2-94/7
	Digital TTL	2-110/3	9375DM	"	2-94/7
9358DM	Interface	2-77/5	9375PC	"	2-94/7
	Digital TTL	2-110/3	9377FM	"	2-94/8
9358FM	Interface	2-77/note	9380DC	"	2-107/9
	Digital TTL	2-110/3	9380DM	"	2-107/9
9358FC	Interface	2-77/5	9380FM	"	2-107/9
	Digital TTL	2-110/3	9380PC	"	2-107/9
9359FM	Interface	2-77/note	9382DC	"	2-107/12
	Digital TTL	2-110/4	9382DM	"	2-107/12
936DC	Digital DTL	2-129/5	9382FM	"	2-107/12
936DM	"	2-129/5	9382PC	"	2-107/12
936FC	"	2-129/5	9383DC	"	2-107/13
936FM	"	2-129/5	9383DM	"	2-107/13
936PC	"	22-129/5	9383FM	"	2-107/13
9360PC	Digital TTL	2-106/9	9383PC	"	2-107/13
9366DC	"	2-106/11	9385DM	"	2-108/14
9366DM	"	2-106/11	9385PC	"	2-108/14
9368DC	Interface	2-77/6	9386DC	"	2-90/14
	Digital TTL	2-110/9		"	2-108/13
9368PC	Interface	2-77/6	9386DM	"	2-90/14
	Digital TTL	2-110/9		"	2-108/13
			9386PC	"	2-90/14
				"	2-108/13

# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, CμL, LIC, most TTL)	0°C to +75°C
CC	(7400 TTL)	0°C to +70°C
CC	(CMOS)	-40°C to +85°C
CC	(CCD)	Consult Field Salesperson or Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Device No.	Family	Page/Item
9389DC	Dig. TTL Mem.	2-115/6 2-132/12
9389FC	"	2-115/6 2-132/12
9389PC	"	2-115/6 2-132/12
9390DC	Digital TTL	2-105/2
9390DM	"	2-105/2
9390FM	"	2-105/2
9390PC	"	2-105/2
9391DC	"	2-104/5
9391DM	"	2-104/5
9391FM	"	2-104/5
9391PC	"	2-104/5
9392DC	"	2-105/4
9392DM	"	2-105/4
9392FM	"	2-105/4
9392PC	"	2-105/4
9393DC	"	2-104/6
9393DM	"	2-104/6
9393FM	"	2-104/6
9393PC	"	2-104/6
9394DC	"	2-102/6
9394DM	"	2-103/5
9394PC	"	2-103/5
9395DC	"	2-102/7
9395DM	"	2-102/7
9395FM	"	2-102/7
9395PC	"	2-102/7
9396DC	"	2-102/9
9396DM	"	2-102/9
9396PC	"	2-102/9
9401DC	"	2-108/19
9401DM	"	2-108/19
9401PC	"	2-108/19
9403DC	"	2-115/9
9403PC	"	2-115/9
9404DC	"	2-108/10
9404DM	"	2-108/10
9404PC	"	2-108/10
9405DC	"	2-108/9

Device No.	Family	Page/Item
9405DM	Digital TTL	2-108/9
9405PC	"	2-108/9
9406DC	"	2-115/7
9406DM	"	2-115/7
9406PC	"	2-115/7
941DC	Digital DTL	2-129/7
941DM	"	2-129/7
941FC	"	2-129/7
941FM	"	2-129/7
9410DC	Digital TTL	2-115/8
9410DM	"	2-115/8
9410PC	"	2-115/8
944DC	Digital DTL	2-129/8
944DM	"	2-129/8
944FC	"	2-129/8
944FM	"	2-129/8
944HC	"	2-129/8
944HM	"	2-129/8
944PC	"	2-129/8
945DC	"	2-129/9
945DM	"	2-129/9
945FC	"	2-129/9
945FM	"	2-129/9
945HC	"	2-129/9
945HM	"	2-129/9
945PC	"	2-129/9
946DC	"	2-129/10
946DM	"	2-129/10
946FC	"	2-129/10
946FM	"	2-129/10
946HC	"	2-129/10
946HM	"	2-129/10
946PC	"	2-129/10
948DC	"	2-129/11
948DM	"	2-129/11
948FC	"	2-129/11
948FM	"	2-129/11
948HC	"	2-129/11
948HM	"	2-129/11
948PC	"	2-129/11
949DC	"	2-129/12

# PRODUCT INDEX

## PACKAGE CODES

C	Dual In-Line	K	Cylindrical, Metal
D	Dual In-Line	P	Dual In-Line
E	Cylindrical, Plastic	T	Dual In-Line (Mini-DIP)
F	Flat	U	Cylindrical, Plastic
H	Cylindrical, Metal	W	Epoxy TO-92
J	Cylindrical, Metal		

## TEMPERATURE RANGE CODES

C	(MOS, DTL, C <sub>PL</sub> , LIC, most TTL)	0°C to +75°C
C	(7400 TTL)	0°C to +70°C
C	(CMOS)	-40°C to +85°C
C	(CCD)	Representative
L	(MOS)	-55°C to +85°C
L	(LIC)	-20°C to +85°C
M		-55°C to +125°C

Consult Field Salesperson or Representative

Device No.	Family	Page/Item
949DM	Digital, DTL	2-129/12
949FC	"	2-129/12
949FM	"	2-129/12
949HC	"	2-129/12
949HM	"	2-129/12
949PC	"	2-129/12
95H00DC	Digital ECL	2-122/7
95H02DC	"	2-118/21
95H03DC	"	2-119/4
95H04DC	"	2-118/14
95H16DC	"	2-123/1
95H22DC	"	2-118/22
95H23DC	"	2-119/5
95H24DC	"	2-118/15
95H28DC	"	2-120/3
95H29DC	"	2-120/12
95H55DC	"	2-126/5
95H84DC	"	2-126/1
95H90DC	"	2-123/11
95H90DM	"	2-123/11
95H91DC	"	2-123/9
95L22DC	"	2-118/23
95L23DC	"	2-119/7
95L24DC	"	2-118/16
950DC	Digital DTL	2-129/13
950DM	"	2-129/13
950FC	"	2-129/13
950FM	"	2-129/13
950HC	"	2-129/13
950HM	"	2-129/13
950PC	"	2-129/13
95000DC	Digital ECL	2-122/8
95002DC	"	2-118/24
95003DC	"	2-119/7
95004DC	"	2-118/17
95010DC	"	2-123/5
95016DC	"	2-123/2
9502DC	"	2-118/20
95029DC	"	2-120/13
9503DC	"	2-119/3
9504DC	"	2-118/13

Device No.	Family	Page/Item
9505DC	"	2-119/18
9507DC	"	2-119/24
951DC	Digital DTL	2-129/14
951DM	"	2-129/14
951FC	"	2-129/14
951FM	"	2-129/14
951HC	"	2-129/14
951HM	"	2-129/14
951PC	"	2-129/14
95101DC	Digital ECL	2-119/13
95102DC	"	2-118/18
95103DC	"	2-118/4
95105DC	"	2-119/8
95106DC	"	2-118/11
95107DC	"	2-119/11
95109DC	"	2-118/25
95110DC	"	2-118/1
95111DC	"	2-118/8
95115DC	Interface Digital ECL	2-76/7 2-124/7
95116DC	Interface Digital ECL	2-76/8 2-124/4
95124DC	Interface Digital ECL	2-78/9 2-120/5 2-125/8
95130DC	Digital ECL	2-120/15
95231DC	"	2-120/4
9528DC	"	2-120/2
9534DC	"	2-120/18
9538DC	"	2-122/1
95400DC	Digital ECL Memory	2-127/2 2-133/13
95401DC	Digital ECL Memory	2-127/1 2-133/12
95410DC	Digital ECL Memory	2-127/8 2-133/19
95415DC	Digital ECL Memory	2-127/9 2-133/20

# PRODUCT INDEX

<p><b>PACKAGE CODES</b></p> <p>C Dual In-Line  D Dual In-Line  E Cylindrical, Plastic  F Flat  H Cylindrical, Metal  J Cylindrical, Metal</p>	<p><b>TEMPERATURE RANGE CODES</b></p> <p>C (MOS, DTL, C<sub>u</sub>L, LIC, most TTL)  C (7400 TTL)  C (CMOS)  C (CCD)  L (MOS)  L (LIC)  M</p>	<p>0°C to +75°C  0°C to +70°C  -40°C to +85°C  Consult Field Salesperson or Representative  -55°C to +85°C  -20°C to +85°C  -55°C to +125°C</p>
<p>K Cylindrical, Metal  P Dual In-Line  T Dual In-Line (Mini-DIP)  U Cylindrical, Plastic  W Epoxy TO-92</p>		

Device No.	Family	Page/Item
9578DC	Digital ECL	2-126/4
9579DC	"	2-121/8
958DC	Digital CuL	2-228/21
958HC	"	2-228/21
9580DC	Digital ECL	2-121/7
9581DC	"	2-121/9
9582DC	Interface Digital ECL	2-76/1 2-124/3
9595DC	Interface Digital ECL	2-78/3 2-125/4
959DC	Digital CuL	2-228/2
96L02DC	Digital TTL Interface	2-107/4 2-84/4
96L02DM	" Interface	2-107/4 2-84/4
96L02PC	" Interface	2-107/4 2-84/4
96S02DC	Digital TTL	2-107/5
96S02PC	"	2-107/5
960DC	Digital CuL	2-228/23
9600DC	Interface	2-107/1 2-84/1
9600DM	"	2-107/1 2-84/1
9600FC	"	2-107/1 2-84/1
9600FM	"	2-107/1 2-84/1
9601DC	"	2-107/2 2-84/2
9601DM	"	2-107/2 2-84/2
9601FC	"	2-107/2 2-84/2
9601FM	"	2-107/2 2-84/2

Device No.	Family	Page/Item
9601PC	Interface	2-107/2 2-84/2
9602DC	"	2-107/3 2-84/3
9602DM	"	2-107/3 2-84/3
9602FC	"	2-107/3 2-84/3
9602FM	"	2-107/3 2-84/3
9602PC	"	2-107/3 2-84/3
9603DC	"	2-107/6 2-84/5
9603DM	"	2-107/6 2-84/5
9603FM	"	2-107/6 2-84/5
9603PC	"	2-107/6 2-84/5
9607DC	"	2-114/3 2-78/4 2-81/1
962DC	Digital DTL	2-129/15
961DM	"	2-129/15
961FC	"	2-129/15
961FM	"	2-129/15
961HC	"	2-129/15
961HM	"	2-129/15
961PC	"	2-129/15
96101DC	Interface Digital TTL	2-74/8 2-78/12 2-111/3
96101PC	Interface Digital TTL	2-74/8 2-78/12 2-111/3



# CONDENSED PRODUCT DATA

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
DTL · TRANSISTORS · ZENERS · FLIP-FLO  
PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
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# DISCRETES

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
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NERATORS · IMAGE SENSORS · SCHOTTKY

**Diode**  
**Transistor**  
**Opto**



# INTRODUCTION

## DIODES AND TRANSISTORS

The arrangement of this section makes it more than a simple short form listing of Fairchild's Discrete Diodes and Transistors.

Each major division is an application category and each subdivision is a secondary categorization of a key parameter.

For example: If you are looking for a metal can, small signal general purpose npn transistor with 40 V  $V_{CEO}$  and high gain at 150 mA collector current, then look under:

Transistor  
Small Signal  
NPN  
General Purpose Amplifier and Switching

Listing is

1. By ascending  $V_{CEO}$
2. By dc current gain at a collector current

Go down the first column ( $V_{CEO}$ ) to 40 V, pick from second column those devices which have  $h_{FE}$  of 100-300 @ 150 mA. Under Package choose either TO-39 or TO-18 (Metal) package—you select either 2N2219A or 2N2222A.

To aid you in locating the device type you need, a short definition of each division and subdivision is listed below.

### DIODES — Computer Diodes

High Voltage Switching Diodes  
Low Leakage Diodes  
General Purpose Diodes  
Military Qualified Diodes  
Hot Carrier Diodes  
Voltage Variable Capacitor Diodes  
Zener Diodes  
Matched Diode Assemblies  
Monolithic Diode Arrays  
Unencapsulated (Dice) Diodes

### RECTIFIERS — General Purpose Rectifiers

### TRANSISTORS — Small Signal

NPN High Speed Saturated Switching Transistor  
PNP High Speed Saturated Switching Transistor  
NPN General Purpose Amplifier and Switching Transistor  
PNP General Purpose Amplifier and Switching Transistor  
NPN Low-Level — Low Noise Amplifier Transistor  
PNP Low-Level — Low Noise Amplifier Transistor  
NPN High Voltage Transistor  
PNP High Voltage Transistor  
NPN RF-IF Amplifier and Oscillator  
NPN Microwave Transistor  
NPN Microwave FET (GaAs)

### TRANSISTORS — Power

NPN TO-39  
PNP TO-39  
NPN TO-66  
PNP TO-66  
NPN TO-220 Plastic  
PNP TO-220 Plastic  
NPN TO-3  
PNP TO-3

### TRANSISTORS — Field Effect Transistor

### TRANSISTORS — Small Signal

NPN Dual Transistor  
PNP Dual Transistor  
NPN Unmatched Quad Transistor  
PNP Unmatched Quad Transistor  
NPN Darlington Transistor  
Unencapsulated (Dice) Transistor

A complete device listing can be found in the front of this book.

**FAIRCHILD DISCRETE PRODUCTS**  
**DIODES**  
**Computer Diodes (By Ascending  $t_{rr}$ )**  
**Glass Package**

Item	DEVICE NO.	$t_{rr}$ ns MAX	$B_V$ V MIN	$I_R$ nA MAX	@	$V_R$ V	$V_F$ V MAX	@	$I_F$ mA	C pF MAX	Package No.
1	FD700	0.70	30	50	@	15	1.1	@	50	75	DO-7
2	BAY82	0.75	12	100	@	12	1.0	@	20	1.3	DO-7
3	1N4376	0.75	20	100	@	10	1.1	@	50	1.0	DO-7
4	FD777	0.75	15	100	@	8.0	1.0	@	20	1.3	DO-7
5	1N5282	2.0	80	100	@	55	1.3	@	500	2.5	DO-35
6	1N4153	2.0	75	50	@	50	0.88	@	20	2.0	DO-35
7	1N4152	2.0	40	50	@	30	0.88	@	20	2.0	DO-35
8	1N3600	3.0	75	100	@	50	1.0	@	200	2.5	DO-7
9	BAX13	4.0	50	200	@	50	1.0	@	20	3.0	DO-35
10	BAY71	4.0	50	100	@	35	1.0	@	20	2.0	DO-35
11	BAY74	4.0	50	100	@	35	1.1	@	300	3.0	DO-35
12	1N914	4.0	100	25	@	20	1.0	@	10	4.0	DO-35
13	1N914A	4.0	75	25	@	20	1.0	@	20	4.0	DO-35
14	1N914B	4.0	100	25	@	20	1.0	@	100	4.0	DO-35
15	1N916	4.0	100	25	@	20	1.0	@	10	2.0	DO-35
16	1N916A	4.0	100	25	@	20	1.0	@	20	2.0	DO-35
17	1N916B	4.0	100	25	@	20	1.0	@	30	2.0	DO-35
18	1N4148	4.0	100	25	@	20	1.0	@	10	4.0	DO-35
19	1N4149	4.0	100	25	@	20	1.0	@	10	2.0	DO-35
20	1N4446	4.0	100	25	@	20	1.0	@	20	4.0	DO-35
21	1N4447	4.0	100	25	@	20	1.0	@	20	2.0	DO-35
22	1N4448	4.0	100	25	@	20	1.0	@	100	4.0	DO-35
23	1N3604	4.0	75	50	@	50	1.0	@	50	2.0	DO-7
24	1N4151	4.0	75	50	@	50	1.0	@	50	2.0	DO-35
25	FD600	4.0	75	100	@	50	1.0	@	200	2.5	DO-7
26	FDH600	4.0	75	100	@	50	1.0	@	200	2.5	DO-35
27	1N3064	4.0	75	100	@	50	1.0	@	10	2.0	DO-7
28	1N4150	4.0	75	100	@	50	1.0	@	200	2.5	DO-35
29	1N4305	4.0	75	100	@	50	0.85	@	10	2.0	DO-35

**FAIRCHILD DISCRETE PRODUCTS**

**DIODES**

**Computer Diodes (By Ascending  $t_{rr}$ )**

**Glass Package (Cont'd)**

Item	DEVICE NO.	$t_{rr}$ ns Max	$B_V$ V Min	$I_R$ nA Max	@	$V_R$ V	$V_F$ V Max	@	$I_F$ mA	C pF Max	Package No.
1	1N4454	4.0	75	100	@	50	1.0	@	10	2.0	DO-35
2	FDH666	4.0	40	100	@	25	1.0	@	100	3.5	DO-35
3	1N4450	4.0	40	50	@	30	1.0	@	200	4.0	DO-35
4	1N4009	4.0	35	100	@	25	1.0	@	30	4.0	DO-35
5	1N4154	4.0	35	100	@	25	1.0	@	30	4.0	DO-35
6	FD6666	5.0	75	100	@	55	1.0	@	200	5.0	DO-7
7	1N659	6.0	60	5	@	50	1.0	@	6		DO-7/DO-35

**FAIRCHILD DISCRETE PRODUCTS**

**DIODES**

**High Voltage Switching Diodes (By Descending  $B_V$ )**

**Glass Package**

Item	DEVICE NO.	$B_V$ V Min	$I_R$ nA Max	@	$V_R$ V	$V_F$ V Max	@	$I_F$ mA	C pF Max	$t_{rr}$ ns Max	Package No.
8	FD400	200	100	@	150	1.0	@	400	2.0	50	DO-7/DO-35
9	FDH400	200	100	@	150	1.0	@	400	2.0	50	DO-35
10	1N629	200	1000	@	175	1.5	@	4.0		50	DO-7/DO-35
11	1N643	200	25	@	10	1.0	@	10	3.0	50	DO-7/DO-35
12	1N842	200	100	@	160	1.0	@	150		300	DO-7/DO-35
13	1N3070	200	100	@	175	1.0	@	100	5.0	40	DO-7/DO-35
14	FDH444	150	50	@	100	1.0	@	300	2.5	60	DO-35
15	1N628	150	1000	@	125	1.5	@	4.0		50	DO-7/DO-35
16	BAY72	125	100	@	100	1.0	@	100	5.0	50	DO-35
17	1N658	120	50	@	50	1.0	@	100		300	DO-7/DO-35
18	1N660	120	5000	@	100	1.0	@	7.0		300	DO-7/DO-35
19	1N627	100	1000	@	75	1.5	@	4.0		50	DO-7/DO-35
20	1N662	100	100	@	50	1.0	@	10	3.0	50	DO-7/DO-35
21	1N662A	100	1000	@	10	1.0	@	100		300	DO-7/DO-35
22	1N663	100	5000	@	75	1.0	@	100		500	DO-7/DO-35
23	1N626	50	1000	@	35	1.5	@	4.0		50	DO-7/DO-35
24	1N625	30	1000	@	20	1.5	@	4.0		4	DO-7/DO-35

**FAIRCHILD DISCRETE PRODUCTS**  
**DIODES**  
**General Purpose Diodes (Numeric Listing)**  
**Glass Package**

Item	DEVICE NO.	$B_V$ V Min	$I_R$ nA Max	@	$V_R$ V V	$V_F$ V Max	@	$I_F$ mA	C pF Max	$t_{rr}$ ns Max	Package No.
1	1N461A	30	500	@	25	1.0	@	100			DO-7
2	1N462	70	500	@	60	1.0	@	5.0	8.0		DO-7
3	1N462A	70	500	@	60	1.0	@	100			DO-7
4	1N463	200	500	@	175	1.0	@	1.0			DO-7
5	1N463A	200	500	@	175	1.0	@	100			DO-7
6	1N661	240	350	@	200	1.0	@	7.0			DO-7/DO-35
7	1N816	6	100	@	4	1.0	@	100			DO-7
8	1S44	40	50	@	10	1.15	@	10	6.0		DO-35
9	1S920	50	100	@	50	1.2	@	200			DO-35
10	1S921	100	100	@	100	1.2	@	200			DO-35
11	1S922	150	100	@	150	1.2	@	200			DO-35
12	1S923	200	100	@	200	1.2	@	200			DO-35
13	BA128	75	100	@	50	1.0	@	50	5.0		DO-35
14	BA129	200	10	@	180	1.0	@	10	6.0		DO-35
15	BA130	30	500	@	25	1.0	@	15	2.0		DO-35
16	BA217	30	50	@	10	1.0	@	10	5.0		DO-35
17	BA219	100	200	@	50	0.85	@	10	5.0		DO-35
18	BAX16	150	100	@	150	1.0	@	1.0	10	120	DO-35
19	FDH900	50	100	@	30	1.0	@	100	3.0	4.0	DO-35
20	FDH999	30	1000	@	20	1.0	@	10	5.0	5.0	DO-35

**FAIRCHILD DISCRETE PRODUCTS**  
**DIODES**  
**Low Leakage Diodes (By Descending  $B_V$ )**  
**Glass Package**

Item	DEVICE NO.	$B_V$ V MIN	$I_R$ nA MAX	@	$V_R$ V	$V_F$ V MAX	@	$I_F$ mA	C pF MAX	$t_{rr}$ ns MAX	Package No.
1	1N486B	250	50	@	225	1.0	@	100			DO-7
2	1N459	200	25	@	175	1.0	@	3.0			DO-7
3	1N459A	200	25	@	175	1.0	@	100			DO-7
4	1N485A	200	25	@	175	1.0	@	100			DO-7
5	1N485B	200	25	@	175	1.0	@	100			DO-7
6	FD300	150	1.0	@	125	1.0	@	200	6.0		DO-7
7	FD333	150	3.0	@	125	1.0	@	200	10		DO-7
8	FDH300	150	1.0	@	125	1.0	@	200	6.0		DO-35
9	FDH333	150	3.0	@	125	1.0	@	200	10		DO-35
10	1N458	150	25	@	125	1.0	@	7.0			DO-7
11	1N458A	150	5.0	@	125	1.0	@	100			DO-7
12	1N484A	150	25	@	125	1.0	@	100			DO-7
13	1N3595	150	1.0	@	125	1.0	@	200	8.0		DO-7
14	BAY73	125	5.0	@	100	1.0	@	200	8.0		DO-7
15	1N483B	80	25	@	60	1.0	@	100			DO-7
16	1N457	70	25	@	60	1.0	@	20	8.0		DO-7
17	1N457A	70	25	@	60	1.0	@	100	5.0		DO-7
18	1N482B	40	25	@	30	1.0	@	100			DO-7
19	FJT1100	35	0.01	@	15	1.0	@	10	1.3		DO-7
20	1N456	30	25	@	25	1.0	@	40	6.0		DO-7
21	1N456A	30	25	@	25	1.0	@	100	5.0		DO-7

**FAIRCHILD DISCRETE PRODUCTS**  
**DIODES**  
**Military Qualified Diodes (Numeric Listing)**  
**Glass Package**

Item	DEVICE NO.	B <sub>V</sub> V MIN	I <sub>R</sub> nA MAX	@	V <sub>R</sub> V	V <sub>F</sub> V MAX	@	I <sub>F</sub> mA	C pF MAX	t <sub>rr</sub> ns MAX	Package No.
1	1N457JAN	70	25	@	60	1.0	@	20	6.0		DO-7
2	1N458JAN	150	25	@	125	1.0	@	7	60		DO-7
3	1N459JAN	200	25	@	175	1.0	@	3	6.0		DO-7
4	1N483BJAN	80	25	@	70	1.0	@	100			DO-7
5	1N483BJANTX	80	25	@	70	1.0	@	100			DO-7
6	1N485BJAN	200	25	@	180	1.0	@	100			DO-7
7	1N485BJANTX	200	25	@	180	1.0	@	100			DO-7
8	1N486BJAN	250	25	@	225	1.0	@	100			DO-7
9	1N486BJANTX	250	25	@	225	1.0	@	100			DO-7
10	1N643JAN	200	25	@	10	1.0	@	10		300	DO-7
11	1N658JAN	120	50	@	50	1.0	@	100		300	DO-7
12	1N662JAN	100	100	@	50	1.0	@	10		500	DO-7
13	1N663JAN	100	5000	@	75	1.0	@	100		500	DO-7
14	1N914JAN	100	25	@	20	1.0	@	10	4.0	4	DO-7
15	1N914JANTX	100	25	@	20	1.0	@	10	4.0	4	DO-7
16	1N3064JAN	75	100	@	50	1.0	@	10	2.0	4	DO-7
17	1N3064JANTX	75	100	@	50	1.0	@	10	2.0	4	DO-7
18	1N3070JAN	200	100	@	175	1.0	@	100	5.0	40	DO-7
19	1N3070JANTX	200	100	@	175	1.0	@	100	5.0	40	DO-7
20	1N3595JAN	150	1	@	125	1.0	@	200	8.0	3000	DO-7
21	1N3595JANTX	150	1	@	125	1.0	@	200	8.0	3000	DO-7
22	1N3595JANTXV	150	1	@	125	1.0	@	200	8.0	3000	DO-7
23	1N3600JAN	75	100	@	50	1.0	@	200	2.5	3	DO-7
24	1N3600JANTX	75	100	@	50	1.0	@	200	2.5	3	DO-7
25	1N3600JANTXV	75	100	@	50	1.0	@	200	2.5	3	DO-7
26	1N4148JAN	100	25	@	20	1.0	@	10	4.0	4	DO-35
27	1N4148JANTX	100	25	@	20	1.0	@	10	4.0	4	DO-35
28	1N4148JANTXV	100	25	@	20	1.0	@	10	4.0	4	DO-35
29	1N4306JAN	75	50	@	50	1.0	@	50	2.0	4	TO308-1
30	1N4306JANTX	75	50	@	50	1.0	@	50	2.0	4	TO308-1



**FAIRCHILD DISCRETE PRODUCTS**

**DIODES**

**Military Qualified Diodes (Numeric Listing)**

**Glass Package (Cont'd)**

Item	DEVICE NO.	B <sub>V</sub> V MIN	I <sub>R</sub> nA MAX	@	V <sub>R</sub> V	V <sub>F</sub> V MAX	@	I <sub>F</sub> mA	C pF MAX	t <sub>rr</sub> ns MAX	Package No.
1	1N4307JAN	75	50	@	50	1.0	@	50	2.0	4	TO310
2	1N4307JANTX	75	50	@	50	1.0	@	50	2.0	4	TO310
3	1N4307JANTXV	75	50	@	50	1.0	@	50	2.0	4	TO310
4	1N4376JAN	20	100	@	10	1.1	@	50	1.0	.75	DO-7
5	1N4376JANTX	20	100	@	10	1.1	@	50	1.0	.75	DO-7
6	1N4454JAN	75	100	@	50	1.0	@	10	2.0	4	DO-7
7	1N4454JANTX	75	100	@	50	1.0	@	10	2.0	4	DO-7
8	1N4454JANTXV	75	100	@	50	1.0	@	10	2.0	4	DO-7

**FAIRCHILD DISCRETE PRODUCTS**

**DIODES**

**Hot Carrier Diodes**

**Glass Package**

Item	DEVICE NO.	B <sub>V</sub> V Min	I <sub>R</sub> nA Max.	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	NF dB Max	Package No.
9	FH1100	5.0	50	@	1.0	0.55	@	10	1.0	10	DO-7

**FAIRCHILD DISCRETE PRODUCTS**

**DIODES**

**Voltage Variable Capacitor Diodes**

**Glass Package**

Item	DEVICE NO.	B <sub>V</sub> V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	C pF Max	Figure Of Merit (Q) Min	C <sub>1</sub> /C <sub>4</sub> V <sub>R1</sub> =0.1V V <sub>R2</sub> =4.0V	C <sub>3</sub> /C <sub>20</sub> V <sub>R3</sub> =3V V <sub>R20</sub> =20V	Package No.
10	RF400	35	30	@	30	10	350	2.0	2.0	DO-35
11	RF401	35	30	@	30	7.0	350	2.0	2.0	DO-35

# FAIRCHILD DISCRETE PRODUCTS

## DIODES

### Zener Diodes (By Ascending $V_Z$ ) Glass Package

Item	DEVICE NO.	$V_Z$ @ $I_Z$ V	Tol.* $\pm V_Z$ @ %	$I_Z$ mA	$Z_Z$ @ $I_Z$ $\Omega$ Max	$I_R$ @ $V_R$ $\mu A$ Max	$V_R$ Test V	T.C. %/°C	$P_D$ $T_A$ 25°C W	Package No.
1	1N5221B	2.4	5 @	20	30	100	1.0	-0.85	0.5	DO35
2	1N5222B	2.5	5 @	20	30	100	1.0	-0.85	0.5	DO35
3	1N5223B	2.7	5 @	20	30	75	1.0	-0.80	0.5	DO35
4	1N5224B	2.8	5 @	20	30	75	1.0	-0.80	0.5	DO35
5	1N5225B	3.0	5 @	20	29	50	1.0	-0.75	0.5	DO35
6	1N746A	3.3	5 @	20	28	10	1.0	-0.70	0.4	DO35
7	1N5226B	3.3	5 @	20	28	25	1.0	-0.70	0.5	DO35
8	1N4728A	3.3	5 @	76	10	100	1.0	-	1.0	DO41
9	1N747A	3.6	5 @	20	24	10	1.0	-0.65	0.4	DO35
10	1N5227B	3.6	5 @	20	24	15	1.0	-0.65	0.5	DO35
11	1N4729A	3.6	5 @	69	10	100	1.0	-	1.0	DO41
12	1N748A	3.9	5 @	20	23	10	1.0	-0.60	0.4	DO35
13	1N5228B	3.9	5 @	20	23	10	1.0	-0.60	0.5	DO35
14	1N4730A	3.9	5 @	64	9.0	50	1.0	-	1.0	DO41
15	1N749A	4.3	5 @	20	22	2.0	1.0	-0.55	0.4	DO35
16	1N5229B	4.3	5 @	20	22	5.0	1.0	$\pm 0.55$	0.5	DO35
17	1N4731A	4.3	5 @	58	9.0	10	1.0	-	1.0	DO41
18	1N750A	4.7	5 @	20	19	2.0	1.0	$\pm 0.43$	0.4	DO35
19	1N5230B	4.7	5 @	20	19	5.0	2.0	$\pm 0.30$	0.5	DO35
20	1N4732A	4.7	5 @	53	8.0	10	1.0	-	1.0	DO41
21	1N751A	5.1	5 @	20	17	1.0	1.0	$\pm 0.30$	0.4	DO35
22	1N5231B	5.1	5 @	20	17	5.0	2.0	$\pm 0.30$	0.5	DO35
23	1N4733A	5.1	5 @	49	7.0	10	1.0	-	1.0	DO41
24	1N752A	5.6	5 @	20	11	1.0	1.0	$\pm 0.28$	0.4	DO35
25	1N5232B	5.6	5 @	20	11	5.0	3.0	+0.38	0.5	DO35
26	1N4734A	5.6	5 @	45	5.0	10	2.0	-	1.0	DO41
27	1N5233B	6.0	5 @	20	7.0	5.0	3.5	+0.38	0.5	DO35
28	1N753A	6.2	5 @	20	7.0	0.1	1.0	+0.45	0.4	DO35
29	1N5234B	6.2	5 @	20	7.0	5.0	4.0	+0.45	0.5	DO35
30	1N4735A	6.2	5 @	41	2.0	10	3.0	-	1.0	DO41
31	1N754A	6.8	5 @	20	5.0	0.1	1.0	+0.50	0.4	DO35

\*10% Tolerance available upon request.

# FAIRCHILD DISCRETE PRODUCTS

## DIODES

Zener Diodes (By Ascending  $V_Z$ )  
Glass Package (Cont'd)

Item	DEVICE NO.	$V_Z$ @ $I_Z$ V	Tol.* $\pm V_Z$ %	@	$I_Z$ Test mA	$Z_Z$ @ $I_Z$ $\Omega$ Max	$I_R$ @ $V_R$ $\mu A$ Max	$V_R$ Test V	T.C. %/°C	$P_D$ $T_A 25^\circ C$ W	Package No.
1	1N957B	6.8	5	@	20	5.0	0.1	1.0	+050	0.4	DO35
2	1N5235B	6.8	5	@	20	5.0	3.0	5.0	+050	0.5	DO35
3	1N4736A	6.8	5	@	37	3.5	10	4.0	-	1.0	DO41
4	1N755A	7.5	5	@	20	6.0	0.1	1.0	+058	0.4	DO35
5	1N958B	7.5	5	@	16.5	5.5	10	5.7	+058	0.4	DO35
6	1N5236B	7.5	5	@	20	6.0	3.0	6.0	+058	0.5	DO35
7	1N4737A	7.5	5	@	34	4.0	10	5.0	-	1.0	DO41
8	1N756A	8.2	5	@	20	8.0	0.1	1.0	+068	0.4	DO35
9	1N959B	8.2	5	@	15	6.5	5.0	6.2	+062	0.4	DO35
10	1N5237B	8.2	5	@	20	8.0	3.0	6.5	+062	0.5	DO35
11	1N4738A	8.2	5	@	31	4.5	10	6.0	-	1.0	DO41
12	1N5238B	8.7	5	@	20	8.0	3.0	6.5	+065	0.5	DO35
13	1N757A	9.1	5	@	20	16	0.1	1.0	+068	0.4	DO35
14	1N960B	9.1	5	@	14	7.5	1.0	6.9	+068	0.4	DO35
15	1N5239B	9.1	5	@	20	10	3.0	7.0	+068	0.5	DO35
16	1N4739A	9.1	5	@	28	5.0	10	7.0	-	1.0	DO41
17	1N758A	10	5	@	20	17	0.1	1.0	+075	0.4	DO35
18	1N961B	10	5	@	12.5	8.5	1.0	7.6	+072	0.4	DO35
19	1N5240B	10	5	@	20	17	3.0	8.0	+075	0.5	DO35
20	1N4740A	10	5	@	25	7.0	10	7.6	-	1.0	DO41
21	1N962B	11	5	@	11.5	9.5	1.0	8.4	+073	0.4	DO35
22	1N5241B	11	5	@	20	22	2.0	8.4	+076	0.5	DO35
23	1N4741A	11	5	@	23	8.0	5.0	8.4	-	1.0	DO41
24	1N759A	12	5	@	20	50	0.1	1.0	+077	0.4	DO35
25	1N963B	12	5	@	10.5	11.5	1.0	9.1	+076	0.4	DO35
26	1N5242B	12	5	@	20	30	1.0	9.1	+077	0.5	DO35
27	1N4742A	12	5	@	22	9.0	5.0	9.1	-	1.0	DO41
28	1N964B	13	5	@	9.5	13	0.1	9.9	+079	0.4	DO35
29	1N5243B	13	5	@	9.5	13	0.5	9.9	+079	0.5	DO35
30	1N4743A	13	5	@	19	10	5.0	9.9	-	1.0	DO41
31	1N5244B	14	5	@	9.0	15	0.1	10	+082	0.5	DO35

\*10% Tolerance available upon request.

FAIRCHILD DISCRETE PRODUCTS

DIODES

Zener Diodes (By Ascending  $V_Z$ )  
Glass Package (Cont'd)

Item	DEVICE NO.	$V_Z$ @ $I_Z$ V	Tol.* $\pm V_Z$ %	$I_Z$ Test mA	$Z_Z$ @ $I_Z$ $\Omega$ Max	$I_R$ @ $V_R$ $\mu A$ Max	$V_R$ Test V	T.C. %/°C	$P_D$ $T_A^{25^\circ C}$ W	Package No.
1	1N965B	15	5 @	8.5	16	0.1	11.4	+082	0.4	DO35
2	1N5245B	15	5 @	8.5	16	0.1	11	+082	0.5	DO35
3	1N4744A	15	5 @	17	14	5.0	11.4	-	1.0	DO41
4	1N966B	16	5 @	7.8	17	0.1	12.2	+083	0.4	DO35
5	1N5246B	16	5 @	7.8	17	0.1	12	+083	0.5	DO35
6	1N4745A	16	5 @	15.5	16	5.0	12.2	-	1.0	DO41
7	1N5247B	17	5 @	7.4	19	0.1	13	+084	0.5	DO35
8	1N967B	18	5 @	7.0	21	0.1	13.7	+085	0.4	DO35
9	1N5248B	18	5 @	7.0	21	0.1	14	+085	0.5	DO35
10	1N4746A	18	5 @	14.0	20	5.0	13.7	-	1.0	DO41
11	1N5249B	19	5 @	6.6	23	0.1	14	+086	0.5	DO35
12	1N968B	20	5 @	6.2	25	0.1	15.2	+086	0.4	DO35
13	1N5250B	20	5 @	6.2	25	0.1	15	+086	0.5	DO35
14	1N4747A	20	5 @	12.5	22	5.0	15.2	-	1.0	DO41
15	1N969B	22	5 @	5.6	29	0.1	16.7	+087	0.4	DO35
16	1N5251B	22	5 @	5.6	29	0.1	17	+081	0.5	DO35
17	1N4748A	22	5 @	11.5	23	5.0	16.7	-	1.0	DO41
18	1N970B	24	5 @	5.2	33	0.1	18.2	+088	0.4	DO35
19	1N5252B	24	5 @	5.2	33	0.1	18	+088	0.5	DO35
20	1N4749A	24	5 @	10.5	25	5.0	18.2	-	1.0	DO41
21	1N5253B	25	5 @	5.0	35	0.1	19	+089	0.5	DO35
22	1N971B	27	5 @	4.6	41	0.1	20.6	+090	0.4	DO35
23	1N5254B	27	5 @	4.6	41	0.1	21	+090	0.5	DO35
24	1N4750A	27	5 @	9.5	35	5.0	20.6	-	1.0	DO41
25	1N5255B	28	5 @	4.5	44	0.1	21	+091	0.5	DO35
26	1N972B	30	5 @	4.2	49	0.1	22.8	+091	0.4	DO35
27	1N5256B	30	5 @	4.2	49	0.1	23	+091	0.5	DO35
28	1N4751A	30	5 @	8.5	40	5.0	22.8	-	1.0	DO41
29	1N973B	33	5 @	3.8	58	.05	25.1	+092	0.4	DO35
30	1N5257B	33	5 @	3.8	58	0.1	27	+092	0.5	DO35
31	1N4752A	33	5 @	7.5	45	5.0	25.1	-	1.0	DO41

\* 10% Tolerance available upon request.

**FAIRCHILD DISCRETE PRODUCTS**  
**DIODES**  
**Matched Diode Assemblies (Numeric Listing)**  
**Glass and Plastic**

Number of Diodes Configuration Package	2 Pair (308)	2 Pair DO-7 or DO-35	4 Quad (310)	4 Quad DO-7 or DO-35	4 Bridge (309)			
<b>V<sub>F</sub> Matching (-55°C to +100°C)</b>								
Item	Basic Diode Specification	I <sub>F</sub> Range mA	ΔV <sub>F</sub> mV	DEVICE NO.	DEVICE NO.	DEVICE NO.	DEVICE NO.	DEVICE NO.
1	1N914	0.01- 1.0	3.0	FA2310E	FA2310U	FA4310E	FA4310U	FA3310
2	1N3070	0.01- 1.0	3.0	FA2320E	FA2320U	FA4320E	FA4320U	FA3320
3	1N3595	0.01- 1.0	10	FA2330E	FA2330U	FA4330E	FA4330U	FA3330
4	1N4306	0.1-10	10	1N4306	—	—	—	—
5	1N4307	0.1-10	10	—	—	1N4307	—	—

**FAIRCHILD DISCRETE PRODUCTS**  
**DIODES**  
**Monolithic Diode Arrays (By Descending Number of Junctions)**  
**Plastic—Metal—Ceramic Packages**

Circuit	Item	DEVICE NO.	B <sub>V</sub> V Min	I <sub>R</sub> nA @ V <sub>R</sub> Max V	V <sub>F</sub> V @ I <sub>F</sub> Max mA	C pF Max	t <sub>rr</sub> ns Max	Package No.
	6	FSA2500M	60	100 @ 50	1.5 @ 500	7.0	50	TO-85
	7	FSA2501M	60	100 @ 50	1.5 @ 500	7.0	50	TO-116-2
	8	FSA2510M	60	100 @ 40	1.3 @ 500	5.0	50	TO-116-2
	9	FSA2503M	60	100 @ 50	1.5 @ 500	7.0	50	TO-116-2
	10	FSA2504M	60	100 @ 50	1.5 @ 500	7.0	50	TO-86
	11	FSA2619M	100	5.0 μA @ 75	1.0 @ 10	4.0	5.0	TO-116-3
	12	FSA2719M	75	100 @ 50	1.0 @ 10	3.0	6.0	TO-116-3
	13	FSA2620M	100	5.0 μA @ 75	1.0 @ 10	4.0	5.0	TO-116-2
	14	FSA2720M	75	100 @ 50	1.0 @ 10	3.0	4.0	TO-116-2
	15	FSA2621M	100	5.0 μA @ 75	1.0 @ 10	4.0	4.0	TO-86
	16	FSA2721M	75	100 @ 50	1.0 @ 10	3.0	4.0	TO-86

# FAIRCHILD DISCRETE PRODUCTS DIODES/RECTIFIERS

Diode Dice  
(By Descending  $B_V$ )

Item	DEVICE NO.	Basic Standard Device	$B_V$ V Min	$I_R$ nA @ $V_R$ Max	$V_F$ V @ $I_F$ Max	$t_{rr}$ ns @ $I_f = I_r$ Max	C pF Max	Chip Size Mils	Basic Application
1	FDC3070	1N3070	200	100 @ 175	1.0 @ 100	50 @ 10	2.5	15 x15	High Voltage Switching
2	FDC485B	1N485B	200	25 @ 175	1.0 @ 100	500 @ 10	5.0	17.5x17.5	High Voltage Low Leakage
3	FDC3600	1N3600	75	100 @ 50	1.0 @ 100	4.0 @ 10	2.5	10 x10	General Purpose Switching
4	FDC4376	1N4376	20	100 @ 10	1.1 @ 50	0.8 @ 10	1.2	17.5x17.5	Ultra High Speed Switching

# FAIRCHILD DISCRETE PRODUCTS RECTIFIERS

General Purpose Rectifiers (By Ascending  $V_R$ )  
Glass Package

Item	DEVICE NO.	$V_R$ V Min	$I_R$ @ $V_R$ $\mu$ A Max	$V_F$ V @ $I_F$ Max	$V_{FM}$ V @ $I_O$ A	Package No.
5	1N4001	50	10	1.1 @ 1.0	1.6 @ 1.0	DO-41
6	1N4002	100	10	1.1 @ 1.0	1.6 @ 1.0	DO-41
7	1N4003	200	10	1.1 @ 1.0	1.6 @ 1.0	DO-41
8	1N4004	400	10	1.1 @ 1.0	1.6 @ 1.0	DO-41

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**

**NPN High Speed Saturated Switching Transistors**

**(By Ascending  $V_{CE0}$ )**

**(For Medium Speed — See General Purpose Section)**

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ )	$t_s$ ( $t_{off}$ )	$h_{FE}$	$V_{CE}$ (sat)	$f_T$	$C_{ob}$	$P_D$		Package No.	PNP Complement
		V Min	ns @ $I_C$ Max	$h_{FE}$ @ $I_C$ Min-Max mA	V @ $I_C$ Max mA	MHz Min	pF Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	2N5134	10	18 @ 10	20-150 @ 10	0.25 @ 10	250	4.0	200	0.5	TO-106	2N3639
2	2N4274	12	13 @ 10	35-120 @ 10	0.20 @ 10	400	4.0	280	0.83	TO-106	2N4258
3	2N5224	12	(60) @ 10	40-400 @ 10	0.35 @ 10	250	4.0	625	1.0	TO-92	—
4	2N4275	15	13 @ 10	35-120 @ 10	0.20 @ 10	400	4.0	280	0.83	TO-106	2N5771
5	2N2369	15	13 @ 10	40-120 @ 10	0.25 @ 10	500	4.0	360	1.2	TO-18	2N4209
6	PN2369	15	13 @ 10	40-120 @ 10	0.25 @ 10	500	4.0	625	1.0	TO-92	2N5771
7	2N2369A	15	13 @ 10	40-120 @ 10	0.20 @ 10	500	4.0	360	1.2	TO-18	2N4209
8	2N5769	15	13 @ 10	40-120 @ 10	0.20 @ 10	500	4.0	625	1.0	TO-92	2N5771
9	BSX26	15	13 @ 10	40-120 @ 10	0.25 @ 10	500	4.0	360	1.2	TO-18	—
10	2N3009	15	18 @ 10	30-120 @ 30	0.18 @ 30	350	5.0	360	1.2	TO-52	—
11	2N3013	15	18 @ 10	30-120 @ 30	0.18 @ 30	350	5.0	360	1.2	TO-52	—
12	2N3646	15	18 @ 10	30-120 @ 30	0.20 @ 30	350	5.0	200	0.5	TO-106	2N4258A
13	MPS3646	15	18 @ 10	30-120 @ 30	0.20 @ 30	350	5.0	625	1.0	TO-92	2N5771
14	2N5772	15	18 @ 10	30-120 @ 30	0.20 @ 30	350	5.0	625	1.0	TO-92	2N5771
15	BSX20	15	18 @ 10	30-120 @ 30	0.18 @ 30	350	5.0	360	1.2	TO-18	BSX29
16	2N914	15	20 @ 20	30-120 @ 10	0.25 @ 20	300	6.0	360	1.2	TO-18	—
17	2N708	15	25 @ 10	30-120 @ 10	0.40 @ 10	300	6.0	360	1.2	TO-18	2N4209
18	2N3014	20	18 @ 10	30-120 @ 30	0.18 @ 30	350	5.0	360	1.2	TO-52	—
19	BSX39	20	18 @ 10	40-120 @ 30	0.18 @ 30	350	6.0	360	1.2	TO-18	2N3209
20	2N3724	30	(60) @ 500	60-150 @ 100	0.20 @ 100	300	12	800	3.5	TO-39	2N5023
21	2N4013	30	(60) @ 500	60-150 @ 100	0.20 @ 100	300	12	360	1.2	TO-18	—
22	BSX32	40	(60) @ 500	60-150 @ 100	0.25 @ 100	300	10	800	3.5	TO-39	2N5022
23	2N3253	40	(70) @ 500	25 @ 150	0.35 @ 150	175	12	1000	5.0	TO-39	2N5022
24	2N4047	50	(60) @ 500	40-150 @ 100	0.26 @ 100	250	10	800	3.5	TO-39	2N5022
25	2N3725	50	(60) @ 500	60-150 @ 100	0.26 @ 100	300	10	800	3.5	TO-39	2N5022
26	2N4014	50	(60) @ 500	60-150 @ 100	0.26 @ 100	300	10	360	1.2	TO-18	—
27	2N3444	50	(70) @ 500	20- 60 @ 500	0.60 @ 500	150	12	1000	5.0	TO-39	2N5022

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**

**PNP High Speed Switching Transistors**

**(By Ascending  $V_{CE0}$ )**

(For Medium Speed — See General Purpose Section)

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ )	$t_s$ ( $t_{off}$ )	$h_{FE}$		$V_{CE}$ (sat)		$f_T$	$C_{ob}$	$P_D$		Package No.	NPN Complement
		V Min	ns @ $I_C$ Max mA	$h_{FE}$ @ $I_C$ Min-Max mA	V @ $I_C$ Max mA	MHz Min	pF Max	$T_A$ 25°C mW	$T_C$ 25°C W				
1	2N5228	5	(140) @ 10	30	@ 10	0.40 @ 10	300	5.0	625	1.0	TO-92	2N5224	
2	2N4257	6	15 @ 10	30-120	@ 10	0.15 @ 10	500	3.0	200	0.5	TO-106	2N5134	
3	PN3639	6	(25) @ 50	30-120	@ 10	0.16 @ 10	500	3.5	625	1.0	TO-92	MPS2369	
4	2N3639	6	30 @ 10	30-120	@ 10	0.16 @ 10	500	3.5	200	0.5	TO-106	2N4274	
5	2N4258A	12	15 @ 10	30-120	@ 10	0.15 @ 10	700	3.0	200	0.5	TO-106	2N4274	
6	2N4208	12	20 @ 10	30-120	@ 10	0.15 @ 10	700	3.0	350	0.7	TO-18	2N2369A	
7	2N4258	12	20 @ 10	30-120	@ 10	0.15 @ 10	700	3.0	200	0.5	TO-106	2N4274	
8	PN4258	12	20 @ 10	30-120	@ 10	0.15 @ 10	700	3.0	625	1.0	TO-92	2N5769	
9	2N4313	12	20 @ 10	30-120	@ 30	0.19 @ 30	700	4.5	200	0.5	TO-106	2N4274	
10	PN3640	12	(35) @ 50	30-120	@ 10	0.20 @ 10	500	3.5	625	1.0	TO-92	2N5772	
11	2N3640	12	50 @ 10	30-120	@ 10	0.20 @ 10	500	3.5	200	0.5	TO-106	2N4274	
12	2N2894	12	(90) @ 30	30-150	@ 30	0.20 @ 30	400	6.0	360	1.2	TO-18	2N2369A	
13	BSX29	12	(90) @ 30	30-120	@ 30	0.20 @ 30	400	6.0	360	1.2	TO-18	BSX20	
14	2N4209	15	20 @ 10	50-120	@ 10	0.18 @ 10	850	3.0	350	0.7	TO-18	2N2369A	
15	2N5771	15	20 @ 10	50-120	@ 10	0.15 @ 10	850	3.0	625	1.0	TO-92	2N5772	
16	2N5910	20	20 @ 10	30-120	@ 10	0.15 @ 10	700	3.0	200	0.5	TO-106	EN3014	
17	2N3209	20	(90) @ 30	30-120	@ 30	0.20 @ 30	400	5.0	360	1.2	TO-18	-	
18	2N5023	30	(90) @ 500	40-100	@ 500	0.35 @ 500	200	25.0	1000	4.0	TO-39	2N3724	
19	2N3467	40	(90) @ 500	40-120	@ 500	0.50 @ 500	175	25.0	1000	5.0	TO-39	2N3725	
20	2N5022	50	(90) @ 500	25-100	@ 500	0.40 @ 500	170	25.0	1000	4.0	TO-39	2N3725	
21	2N3468	50	(90) @ 500	25- 75	@ 500	0.60 @ 500	150	25.0	1000	5.0	TO-39	2N3725	



**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ )**  
(Also See Low Level and High Voltage Section)

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ ) V	$h_{FE}$ ( $h_{fe}$ ) $h_{FE}$ @ $I_C$	$V_{CE(sat)}$ V @ $I_C$	$C_{ob}$ pF	$f_T$ MHz	$t_{off}$ ns	$P_D$		Package No.	PNP Complement
		Min	Min-Max	Max	Max	Min	Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	2N5128	12	35-350 @ 50	0.25 @ 150	10	200	—	300	0.7	TO-105	2N5142
2	PE8052	15	40-250 @ 100	1.0 @ 1000	45	100	—	1120	3.4	TO-92	PE8552
3	2N5223	20	50-800 @ 2.0	0.70 @ 2.0	4.0	150	—	625	—	TO-92	2N5227
4	2N5136	20	20-400 @ 150	0.25 @ 150	35	40	—	220	0.6	TO-105	2N5142
5	BFY52	20	60 @ 150	0.35 @ 150	12	200	—	800	2.86	TO-39	—
6	MPS6561	20	50-200 @ 350	0.50 @ 150	30	60	—	625	1.0	TO-92	MPS6563
7	MPS6515	25	250-500 @ 2.0	0.50 @ 2.0	3.5	—	—	625	1.0	TO-92	MPS6519
8	MPS2925	25	(235-470) @ 2.0	—	12	—	—	625	1.0	TO-92	2N4126
9	MPS3392	25	150-300 @ 2.0	—	3.5	—	—	625	1.0	TO-92	2N4126
10	MPS6514	25	150-300 @ 2.0	0.50 @ 2.0	3.5	—	—	625	1.0	TO-92	MPS6519
11	MPS2924	25	(150-300) @ 2.0	—	12	—	—	625	1.0	TO-92	2N4126
12	2N4124	25	120-360 @ 2.0	0.30 @ 2.0	4.0	300	—	625	—	TO-92	2N4126
13	MPS3393	25	90-180 @ 2.0	—	3.5	—	—	625	1.0	TO-92	2N4126
14	EN5172	25	100-500 @ 10	0.25 @ 10	12	—	—	200	0.5	TO-106	—
15	MPS5172	25	100-500 @ 10	0.25 @ 10	12	—	—	625	1.0	TO-92	2N4126
16	2N5135	25	50-600 @ 10	1.00 @ 100	25	40	—	300	0.8	TO-105	2N5142
17	2N5225	25	30-600 @ 50	0.80 @ 50	20	50	—	625	—	TO-92	2N5226
18	BC738	25	40-250 @ 100	0.5 @ 1000	45	100	—	1120	3.4	TO-92	BC728
19	BC738-6	25	40-100 @ 100	0.5 @ 1000	45	100	—	1120	3.4	TO-92	BC728-6
20	BC738-10	25	63-163 @ 100	0.5 @ 1000	45	100	—	1120	3.4	TO-92	BC728-10
21	PE8050	25	65-200 @ 100	0.5 @ 1000	45	100	—	1120	3.4	TO-92	PE8550
22	BC738-16	25	100-250 @ 100	0.5 @ 1000	45	100	—	1120	3.4	TO-92	BC728-16
23	MPS6560	25	50-200 @ 500	0.50 @ 500	30	60	—	625	1.0	TO-92	MPS6562
24	2N718	28	40-120 @ 150	1.50 @ 150	35	50	—	400	1.5	TO-18	2N2907
25	2N4123	30	50-150 @ 2.0	0.30 @ 2.0	4.0	250	—	625	—	TO-92	2N4125
26	2N3566	30	50-160 @ 10	1.00 @ 100	25	40	—	300	0.8	TO-105	2N3638A
27	MPS3704	30	100-300 @ 50	0.60 @ 50	12	100	—	625	1.0	TO-92	2N4403
28	BFY51	30	40 @ 150	0.35 @ 150	12	50	—	800	2.86	TO-39	—
29	BC119	30	40-120 @ 150	0.35 @ 150	25	40	—	800	5.0	TO-39	BC160-6
30	2N2218	30	40-120 @ 150	0.40 @ 150	8.0	250	—	800	3.0	TO-39	2N2904

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**  
**(Also See Low Level and High Voltage Section)**

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ )	$h_{FE}$ ( $h_{fe}$ )	$V_{CE(sat)}$	$C_{ob}$	$f_T$	$t_{off}$	$P_D$		Pkg. No.	PNP Complement
		V Min	$h_{FE}$ @ $I_C$ Min-Max mA	V @ $I_C$ Max mA	pF Max	MHz Min	ns Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	2N2221	30	40-120 @ 150	0.40 @ 150	8.0	250		500	1.8	TO-18	2N2906
2	2N3641	30	40-120 @ 150	0.22 @ 150	8.0	250		350	0.7	TO-105	2N3638
3	2N3300	30	100-300 @ 150	0.22 @ 150	8.0	250	150	800	3.0	TO-39	2N2905
4	2N3302	30	100-300 @ 150	0.22 @ 150	8.0	250	150	360	1.8	TO-18	2N2907
5	2N2219	30	100-300 @ 150	0.40 @ 150	8.0	250		800	3.0	TO-39	2N2905
6	2N2222	30	100-300 @ 150	0.40 @ 150	8.0	250		500	1.8	TO-18	2N2907
7	2N3643	30	100-300 @ 150	0.22 @ 150	8.0	250		350	0.7	TO-105	2N3638A
8	PN3643	30	100-300 @ 150	0.22 @ 150	8.0	250		625	1.0	TO-92	MPS3638A
9	PE8051	35	40-180 @ 100	.75 @ 1000	45	100		1120	3.4	TO-92	PE8551
10	BC737	35	40-250 @ 100	.75 @ 1000	45	100		1120	3.4	TO-92	BC727
11	BC737-6	35	40-100 @ 100	.75 @ 1000	45	100		1120	3.4	TO-92	BC726-6
12	BC737-10	35	63-160 @ 100	.75 @ 1000	45	100		1120	3.4	TO-92	BC726-10
13	BC737-16	35	100-250 @ 100	.75 @ 1000	45	100		1120	3.4	TO-92	BC726-16
14	BFY50	35	30 @ 150	0.20 @ 150	12	50		800	2.86	TO-5	—
15	MPSA10	40	40-400 @ 5.0		4.0	50		625	1.0	TO-92	2N3905
16	MPSA20	40	40-400 @ 5.0	0.25 @ 5.0	4.0	125		625	1.0	TO-92	MPSA70
17	2N3903	40	50-150 @ 10	0.20 @ 10	4.0	250	225	625		TO-92	2N3905
18	2N3904	40	100-300 @ 10	0.20 @ 10	4.0	300	225	625		TO-92	2N3906
19	2N3947	40	100-300 @ 10	0.20 @ 10	4.0	300	450	360	1.2	TO-18	2N3250
20	BC140	40	40-400 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC160
21	BC140-6	40	40-100 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC160-6
22	MPS6530	40	40-120 @ 100	0.50 @ 100	5.0			625	1.0	TO-92	MPS6531
23	BC140-10	40	63-160 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC160-10
24	MPS6531	40	90-270 @ 100	0.30 @ 100	5.0			625	1.0	TO-92	MPS6534M
25	BC140-16	40	100-250 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC160-16
26	BC140-25	40	160-400 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC160-25
27	2N3567	40	40-120 @ 150	0.25 @ 150	20	60		300	0.8	TO-105	2N4354
28	PN3567	40	40-120 @ 150	0.25 @ 150	20	60		625	1.0	TO-92	2N4402
29	2N2218A	40	40-120 @ 150	0.30 @ 150	8.0	250	285	800	3.0	TO-39	2N2904
30	2N2221A	40	40-120 @ 150	0.30 @ 150	8.0	250	285	500	1.8	TO-18	2N2906

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**  
**(Also See Low Level and High Voltage Section)**

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ )	$h_{FE}$ ( $h_{fe}$ )	$V_{CE(sat)}$	$C_{ob}$	$f_T$	$t_{off}$	$P_D$		Package No.	PNP Complement
		V Min	$h_{FE}$ @ $I_C$ Min-Max mA	V @ $I_C$ Max mA	pF Max	MHz Min	ns Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	2N4400	40	50-150 @ 150	0.40 @ 150	6.5	200	255	625		TO-92	2N4402
2	2N697	(40)	40-120 @ 150	1.50 @ 150	35	50		600	2.0	TO-39	2N2904
3	2N3569	40	100-300 @ 150	0.25 @ 150	20	60		300	0.8	TO-105	2N4355
4	2N2219A	40	100-300 @ 150	0.30 @ 150	8.0	300	285	800	3.0	TO-39	2N2905A
5	PN2219A	40	100-300 @ 150	0.30 @ 150	8.0	300	285	625	1.0	TO-92	PN2905A
6	2N2222A	40	100-300 @ 150	0.30 @ 150	8.0	300	285	500	1.8	TO-18	2N2970A
7	PN2222A	40	100-300 @ 150	0.30 @ 150	8.0	300	285	625	1.0	TO-92	PN2907A
8	2N4401	40	100-300 @ 150	0.40 @ 150	6.5	250	225	625		TO-92	2N4403
9	PN3693	45	40-160 @ 10		3.5	200		625	1.0	TO-92	2N3905
10	PN3694	45	100-400 @ 10		3.5	200		625	1.0	TO-92	2N3906
11	BFY56	45	30-150 @ 150	0.30 @ 150	2.5	40	625	800	5.0	TO-39	BFX39
12	2N3642	45	40-120 @ 150	0.22 @ 150	8.0	250		350	0.7	TO-105	2N3644
13	PN3642	45	40-120 @ 150	0.22 @ 150	8.0	250		625	1.0	TO-92	PN3644
14	2N2270	45	50-200 @ 150	0.90 @ 150	15	100		1000	5.0	TO-39	2N2904A
15	2N4409	50	60-400 @ 1.0	0.2 @ 1.0	12	60		625		TO-92	MPSA55
16	2N915	50	50-200 @ 10	1.00 @ 10	3.5	250		360	1.2	TO-18	2N3250A
17	2N718A	(50)	40-120 @ 150	1.50 @ 150	25	60		500	1.8	TO-18	2N2907
18	2N1613	(50)	40-120 @ 150	1.50 @ 150	25	80		800	3.0	TO-38	2N2905A
19	2N3053	(50)	50-250 @ 150	1.40 @ 150	15	100			5.0	TO-39	2N2905
20	2N1711	(50)	100-300 @ 150	1.50 @ 150	25	70		800	3.0	TO-39	2N2905
21	BC537	60	40-400 @ 100	0.5 @ 1000	15	100		625	1.0	TO-92	BC527
22	BC537-6	60	40-100 @ 100	0.5 @ 1000	15	100		625	1.0	TO-92	BC527-6
23	BC141	60	40-400 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC161
24	BC141-6	60	40-100 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC161-6
25	MPSA05	60	50 @ 100	0.25 @ 100		50		625	1.0	TO-92	MPSA55
26	BC537-10	60	63-160 @ 100	0.5 @ 1000	15	100		625	1.0	TO-92	BC527-10
27	BC141-10	60	63-160 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC161-10
28	BC537-16	60	100-250 @ 100	0.5 @ 1000	15	100		625	1.0	TO-92	BC527-16
29	BC141-16	60	100-250 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC161-16
30	BC537-25	60	160-400 @ 100	0.5 @ 1000	15	100		625	1.0	TO-92	BC527-25

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CEO}$ ) (Cont'd)**  
**(Also See Low Level and High Voltage Section)**

Item	DEVICE NO.	$V_{CEO}$ ( $V_{CER}$ ) V	$h_{FE}$ ( $h_{fe}$ ) $h_{FE}$ @ $I_C$	$V_{CE(sat)}$ V @ $I_C$	$C_{ob}$ pF	$f_T$ MHz	$t_{off}$ ns	$P_D$		Package No.	PNP Complement
		Min	Min-Max	Max	Max	Max	Max	Max	$T_A$ 25°C		
1	BC141-25	60	160-400 @ 100	1.4 @ 1000	25	50		800	5.0	TO-39	BC161-25
2	2N3568	60	40-120 @ 150	0.25 @ 150	20	60	—	300	0.8	TO-105	2N4354
3	PN3568	60	100-300 @ 150	0.18 @ 150	15	250	—	625	1.0	TO-92	PN4355
4	PE6020	60	100-300 @ 150	0.18 @ 150	15	250	—	625	1.0	TO-92	PN3645
5	SE6020	60	100-300 @ 150	0.18 @ 150	15	250	1000	300	0.8	TO-105	2N3645
6	BC142	60	20 @ 200	0.4 @ 200	—	—	—	800	5.0	TO-39	BC143
7	BC286	60	20-180 @ 500	0.40 @ 500	12(Typ)	100(Typ)	—	800	4.0	TO-39	BC287
8	2N4410	80	60-400 @ 10	0.2 @ 1.0	12	60	—	625	—	TO-92	MPSA56
9	BC538	80	40-400 @ 100	0.5 @ 1000	15	100	—	625	1.0	TO-92	BC528
10	BC538-6	80	40-100 @ 100	0.5 @ 1000	15	100	—	625	1.0	TO-92	BC528-6
11	MPSA06	80	50 @ 100	0.25 @ 100	—	50	—	625	1.0	TO-92	MPSA56
12	BC538-10	80	63-160 @ 100	0.5 @ 1000	15	100	—	625	1.0	TO-92	BC528-10
13	BC538-16	80	100-250 @ 100	0.5 @ 1000	15	100	—	625	1.0	TO-92	BC528-16
14	BC538-25	80	160-400 @ 100	0.5 @ 1000	15	100	—	625	1.0	TO-92	BC528-25
15	2N3020	80	40-120 @ 150	0.20 @ 150	12	80	—	800	5.0	TO-39	—
16	2N1893	80	40-120 @ 150	5.00 @ 150	15	50	—	800	3.0	TO-39	—
17	PE6021	80	100-300 @ 150	0.18 @ 150	15	250	1000	625	1.0	TO-92	—
18	SE6021	80	100-300 @ 150	0.18 @ 150	15	250	1000	300	0.8	TO-105	2N4356
19	2N3019	80	100-300 @ 150	0.20 @ 150	12	100	—	800	5.0	TO-39	2N4033
20	2N2405	90	60-200 @ 150	0.50 @ 150	15	200	—	800	2.4	TO-39	—

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ )**  
(Also see Low Level and High Voltage Section)

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ )	$h_{FE}$ ( $h_{fe}$ )	$V_{CE(sat)}$	$C_{ob}$	$f_T$	$t_{off}$	$P_D$		Package No.	NPN Complement
		V Min	$h_{FE}$ @ $I_C$ Min-Max mA	V @ $I_C$ Max mA	pF Max	MHz Min	ns Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	PE8552	15	40-250 @ 100	1.0 @1000	45	100	--	1230	4.17	TO-92	PE8052
2	PN5139	20	30 @ 10	0.20 @ 10	5.0	300	--	625	1.0	TO-92	
3	2N5142	20	30 @ 50	0.50 @ 50	30	100	200	300	0.7	TO-105	2N5136
4	MPS6563	20	50-200 @ 350	0.50 @ 350	30	60	--	625	1.0	TO-92	MPS6561
5	MPS6519	25	250-500 @ 2.0	0.50 @ 2.0	4.0	--	--	625	1.0	TO-92	MPS6515
6	2N4126	25	120-360 @ 2.0	0.40 @ 2.0	4.5	250	--	625	--	TO-92	2N4124
7	PN6076	25	100-500 @ 10	0.25 @ 10	15	--	--	721	1.47	TO-92	MPS5172
8	BCY72	25	50 @ 10	0.25 @ 10	6.0	200	--	360	1.2	TO-18	
9	2N3638	25	30 @ 50	0.25 @ 50	20	100	170	300	0.7	TO-105	2N3641
10	2N5226	25	30-600 @ 50	0.80 @ 50	20	50	--	625	--	TO-92	2N5225
11	BC728-6	25	40-100 @ 100	0.5 @1000	45	100	--	1230	4.17	TO-92	BC738-6
12	BC728	25	40-250 @ 100	0.5 @1000	45	100	--	1230	4.17	TO-92	BC738
13	BC728-10	25	63-160 @ 100	0.5 @1000	45	100	--	1230	4.17	TO-92	BC738-10
14	PE8550	25	65-200 @ 100	0.5 @1000	45	100	--	1230	4.17	TO-92	PE8050
15	BC728-16	25	100-250 @ 100	0.5 @1000	45	100	--	1230	4.17	TO-92	BC738-16
16	MPS3702	25	60-300 @ 50	0.25 @ 50	12	100	--	625	1.0	TO-92	2N5225
17	2N3638A	25	100 @ 50	0.25 @ 50	10	150	170	300	0.7	TO-105	2N3643
18	MPS3638A	25	100 @ 50	0.25 @ 50	10	150	170	625	1.0	TO-92	2N4401
19	MPS6562	25	50-200 @ 500	0.50 @ 500	30	60	--	625	1.0	TO-92	MPS6560
20	2N4125	30	50-150 @ 2.0	0.40 @ 2.0	4.5	200	--	625		TO-92	2N4123
21	2N5227	30	50-700 @ 2.0	0.40 @ 2.0	5.0	100	--	625		TO-92	2N4123
22	PN4916	30	70-200 @ 10	0.14 @ 10	4.5	400	150	625	1.0	TO-92	--
23	PN4917	30	150-300 @ 10	0.14 @ 10	4.5	200	150	625	1.0	TO-92	--
24	MPS3703	30	30-150 @ 50	0.25 @ 50	12	100	--	625	1.0	TO-92	2N4123
25	BC126	30	30-120 @ 150	0.50 @ 150	--	--	--	300	0.8	TO-105	BC119
26	BC727-6	35	40-100 @ 100	0.75 @1000	45	100	--	1230	4.17	TO-92	BC737-6
27	PE8551	35	40-180 @ 100	0.5 @1000	45	100	--	1230	4.17	TO-92	PE8051
28	BC727	35	40-250 @ 100	0.75 @1000	45	100	--	1230	4.17	TO-92	BC737
29	BC727-10	35	63-160 @ 100	0.75 @1000	45	100	--	1230	4.17	TO-92	BC737-10
30	BC727-16	35	100-200 @ 100	0.75 @1000	45	100	--	1230	4.17	TO-92	BC737-16

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**  
(Also see Low Level and High Voltage Section)

Item	DEVICE NO.	$V_{CE0}$	$h_{FE}$		$V_{CE(sat)}$		$C_{ob}$	$f_T$	$t_{off}$	$P_D$		Package No.	NPN Complement
		$(V_{CER})$ V Min	$h_{FE}$ ( $h_{fe}$ ) Min-Max	@ $I_C$ mA	V @ $I_C$ Max	mA	pF Max	MHz Min	ns Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	2N1132	35	30- 90	@ 150	1.5	@ 150	45	60	—	600	2.0	TO-39	2N1613
2	MPS6516	40	50-100	@ 2.0	0.50	@ 2.0	4.0	—	—	625	1.0	TO-92	
3	MPSA70	40	40-400	@ 5.0	0.25	@ 5.0	4.0	125	—	625	1.0	TO-92	MPSA20
4	BCY70	40	50	@ 10	0.25	@ 10	6.0	200	—	360	1.2	TO-18	
5	2N3250	40	50-150	@ 10	0.25	@ 10	6.0	250	225	360	1.2	TO-18	
6	2N3905	40	50-150	@ 10	0.25	@ 10	4.5	200	260	625		TO-92	2N3903
7	BFY64	40	80	@ 10	0.3	@ 50	10	200	120	700	3.0	TO-39	
8	2N3251	40	100-300	@ 10	0.25	@ 10	6.0	300	250	360	1.2	TO-18	2N3947
9	PN3251	40	100-300	@ 10	0.25	@ 10	6.0	250	225	625	1.0	TO-92	2N3903
10	2N3906	40	100-300	@ 10	0.25	@ 10	4.5	250	300	625		TO-92	2N3904
11	BC160	40	40-400	@ 100	1.4	@1000	25	50	—	800	5.0	TO-39	BC140
12	BC160-6	40	40-100	@ 100	1.4	@1000	25	50	—	800	5.0	TO-39	BC140-6
13	BC160-10	40	63-160	@ 100	1.4	@1000	25	50	—	800	5.0	TO-39	BC140-10
14	MPS6534M	40	90-270	@ 100	0.30	@ 100	8.0	—	—	625	1.0	TO-92	MPS6531
15	BC160-16	40	100-250	@ 100	1.4	@1000	25	50	—	800	5.0	TO-39	BC140-16
16	BC160-25	40	160-400	@ 100	1.4	@1000	25	50	—	800	5.0	TO-39	BC140-25
17	2N2904	40	40-120	@ 150	0.4	@ 150	8.0	200	110	600	3.0	TO-39	2N2218A
18	PN2906	40	40-120	@ 150	0.40	@ 150	8.0	200	110	625	1.0	TO-92	PN2221
19	2N4402	40	50-150	@ 150	0.40	@ 150	8.5	150	255	625		TO-92	2N4400
20	2N4037	40	50-250	@ 150	1.4	@ 150	—	60	—	1000		TO-39	2N2270
21	BC116A	40	80-240	@ 150	0.40	@ 150	8.0	130	—	300	0.8	TO-5	2N3569
22	2N2905	40	100-300	@ 150	0.4	@ 150	8.0	200	110	600	3.0	TO-39	2N2218A
23	2N2907	40	100-300	@ 150	0.4	@ 150	8.0	200	110	400	1.8	TO-18	2N2222A
24	2N4403	40	100-300	@ 150	0.40	@ 150	8.5	200	255	625		TO-92	2N4401
25	BCY71	45	100-600	@ 10	0.25	@ 10	6.0	200	—	360	1.2	TO-18	
26	2N3502	45	115-300	@ 50	0.25	@ 50	8.0	200	100	700	3.0	TO-39	2N2219A
27	2N3504	45	115-300	@ 50	0.25	@ 50	8.0	200	100	400	1.3	TO-18	2N2222A
28	2N3644	45	115-300	@ 50	0.25	@ 50	8.0	200	100	300	0.7	TO-105	2N3569
29	PN3644	45	115-300	@ 50	0.25	@ 50	8.0	200	100	625	1.0	TO-92	PN2222A
30	BFX39	55	40	@ 100	0.5	@ 500	20	100	400	800	4.0	TO-39	BFY56

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**  
**(Also see Low Level and High Voltage Section)**

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ )	$h_{FE}$ ( $h_{fe}$ )	$V_{CE(sat)}$	$C_{ob}$	$f_T$	$t_{off}$	$P_D$		Package No.	NPN Complement
		V Min	$h_{FE}$ @ $I_C$ Min-Max mA	V @ $I_C$ Max mA	pF Max	MHz Min	ns Max	$T_A$ 25°C mW	$T_C$ 25°C W		
1	2N4354	60	50-500 @ 10	0.15 @ 150	30	100	—	350	0.8	TO-105	SE6020
2	2N3250A	60	50-150 @ 10	0.25 @ 10	6.0	250	225	360	1.2	TO-18	
3	2N3251A	60	100-300 @ 10	0.25 @ 10	6.0	300	250	360	1.2	TO-18	
4	2N4355	60	100-400 @ 10	0.15 @ 150	30	100	—	350	0.8	TO-105	2N3568
5	PN4355	60	100-400 @ 10	0.15 @ 150	30	100	—	625	1.0	TO-92	
6	2N3503	60	115-300 @ 50	0.25 @ 50	8.0	200	100	700	3.0	TO-39	
7	2N3505	60	115-300 @ 50	0.25 @ 50	8.0	200	100	400	1.3	TO-18	
8	2N3645	60	115-300 @ 50	0.25 @ 50	8.0	200	100	300	0.7	TO-105	SE6020
9	PN3645	60	115-300 @ 50	0.25 @ 50	8.0	200	100	300	0.7	TO-105	SE6020
10	BC527-6	60	40-100 @ 100	0.50 @ 1000	15	100	—	625	1.0	TO-92	BC537-6
11	2N4030	60	40-120 @ 100	0.15 @ 150	20	100	—	800	4.0	TO-39	
12	BC161-6	60	40-100 @ 100	1.4 @ 1000	25	50	—	800	5.0	TO-39	BC141-6
13	BC527	60	40-400 @ 100	0.50 @ 1000	15	100	—	625	1.0	TO-92	BC537
14	BC161	60	40-400 @ 100	1.4 @ 1000	25	50	—	800	5.0	TO-39	BC141
15	MPSA55	60	50 @ 100	0.25 @ 100	—	50	—	625	1.0	TO-92	MPSA05
16	BC527-10	60	63-160 @ 100	0.50 @ 1000	15	100	—	625	1.0	TO-92	BC537-10
17	BC161-10	60	63-160 @ 100	1.4 @ 1000	25	50	—	800	5.0	TO-39	BC141-10
18	BC527-16	60	100-250 @ 100	0.50 @ 1000	15	100	—	625	1.0	TO-92	BC537-16
19	BC161-16	60	100-250 @ 100	1.4 @ 1000	25	50	—	800	5.0	TO-39	BC141-16
20	2N4032	60	100-300 @ 100	0.15 @ 150	20	150	—	800	4.0	TO-39	
21	BC161-25	60	150-400 @ 100	1.4 @ 1000	25	50	—	800	5.0	TO-39	BC141-25
22	BC527-25	60	160-400 @ 100	0.50 @ 1000	15	100	—	625	1.0	TO-92	BC537-25
23	2N2904A	60	40-120 @ 150	0.4 @ 150	8.0	200	110	600	3.0	TO-39	
24	2N2906A	60	40-120 @ 150	0.4 @ 150	8.0	200	110	400	1.8	TO-18	
25	2N2905A	60	100-300 @ 150	0.4 @ 150	8.0	200	110	600	3.0	TO-39	
26	PN2905A	60	100-300 @ 150	0.40 @ 150	8.0	150	110	625	1.0	TO-92	PN2219A
27	2N2907A	60	100-300 @ 150	0.4 @ 150	8.0	200	110	400	1.8	TO-18	
28	PN2907A	60	100-300 @ 150	0.40 @ 150	8.0	150	110	625	1.0	TO-92	PN2222A
29	BC143	60	20 @ 200	0.6 @ 200	—	—	—	700	3.0	TO-39	BC142
30	BC287	60	20-200 @ 500	0.45 @ 500	13(Typ)	200(Typ)	—	800	4.0	TO-39	BC286

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP General Purpose Amplifier and Switching Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**  
(Also see Low Level and High Voltage Section)

Item	DEVICE NO.	$V_{CE0}$ ( $V_{CER}$ ) V	$h_{FE}$ ( $h_{fe}$ ) $h_{FE}$ @ $I_C$		$V_{CE(sat)}$ V @ $I_C$	$C_{ob}$ pF	$f_T$ MHz	$t_{off}$ ns	$P_D$		Package No.	NPN Complement
		Min	Min-Max	mA	Max	mA	Max	Min	Max	$T_A$ 25°C mW		
1	2N4036	65	20-200 @ 150		0.65 @ 150	—	60	700		7.0	TO-39	
2	BFX41	75	40	@ 100	0.5 @ 500	20	100	400	800	4.0	TO-39	
3	BFX40	75	60	@ 500	0.5 @ 500	20	150	—	800	4.0	TO-39	
4	2N4356	80	50-250 @ 10		0.15 @ 150	30	100	—	350	0.8	TO-105	SE6021
5	BC528-6	80	40-100 @ 100		0.50 @ 1000	15	100	—	625	1.0	TO-92	BC538-6
6	BC528	80	40-400 @ 100		0.50 @ 1000	15	100	—	625	1.0	TO-92	BC538
7	MPSA56	80	50	@ 100	0.25 @ 100	—	50	—	625	1.0	TO-92	MPSA06
8	BC528-10	80	63-160 @ 100		0.50 @ 1000	15	100	—	625	1.0	TO-92	BC538-10
9	2N4033	80	100-300 @ 100		0.15 @ 150	20	150	—	800	4.0	TO-39	2N3020
10	BC528-16	80	100-250 @ 100		0.50 @ 1000	15	100	—	625	1.0	TO-92	BC538-16
11	BC528-25	80	160-400 @ 100		0.50 @ 1000	15	100	—	625	1.0	TO-92	BC538-25



**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN Low Level, Low Noise Amplifier Transistors**  
**(By Ascending  $V_{CE0}$ )**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$		$h_{FE}$		NF		NF		Package No.
			$h_{FE}$ Min-Max	@ $I_C$ mA	$h_{FE}$ Min-Max	@ $I_C$ mA	dB @ f Max kHz	dB @ f Max kHz	dB @ f Max kHz	dB @ f Max kHz	
1	2N5133	18	60-1000	@ 1.0	—	—	—	—	—	—	TO-106
2	BC208	20	90-(Typ)	@ 0.01	110-800	@ 2.0	10	@ 1.0	—	—	TO-106
3	BC208A	20	90 (Typ)	@ 0.01	110-220	@ 2.0	10	@ 1.0	—	—	TO-106
4	BC208B	20	150 (Typ)	@ 0.01	200-450	@ 2.0	10	@ 1.0	—	—	TO-106
5	BC208C	20	270 (Typ)	@ 0.01	420-800	@ 2.0	10	@ 1.0	—	—	TO-106
6	BC209	20	150 ((Typ)	@ 0.01	200-800	@ 2.0	4.0	@ 1.0	4.0@WIDE BAND	—	TO-106
7	BC209B	20	150 (Typ)	@ 0.01	200-450	@ 2.0	4.0	@ 1.0	4.0@WIDE BAND	—	TO-106
8	BC209C	20	270 (Typ)	@ 0.01	420-450	@ 2.0	4.0	@ 1.0	4.0@WIDE BAND	—	TO-106
9	BC319	20	150 (Typ)	@ 0.01	200-800	@ 2.0	4.0	@ 1.0	4.0@WIDE BAND	—	TO-92
10	BC319B	20	150 (Typ)	@ 0.01	200-450	@ 2.0	4.0	@ 1.0	4.0@WIDE BAND	—	TO-92
11	BC319C	20	270 (Typ)	@ 0.01	420-800	@ 2.0	4.0	@ 1.0	4.0@WIDE BAND	—	TO-92
12	BC522	20		@ 0.01	400-2000	@ 2.0	3.0	@ 1.0	3.0@WIDE BAND	—	TO-92
13	BC522C	20		@ 0.01	400-800	@ 2.0	3.0	@ 1.0	3.0@WIDE BAND	—	TO-92
14	BC522D	20		@ 0.01	750-1550	@ 2.0	3.0	@ 1.0	3.0@WIDE BAND	—	TO-92
15	BC522E	20		@ 0.01	1200-2200	@ 2.0	3.0	@ 1.0	3.0@WIDE BAND	—	TO-92
16	BC113	20	120	@ 0.1	200	@ 1.0	2.5 (Typ)	@ 1.0	—	—	TO-106
17	BC114	25	120	@ 0.1	200	@ 10	3.0	@ 1.0	—	—	TO-106
18	2N5089	25	400-1200	@ 0.1	400	@ 10	—	—	2.0@WIDE BAND	—	TO-92
19	2N3565	25	.70	@0.1	150-600	@ 1.0	—	—	—	—	TO-106
20	PN3565	25	.70	@ 0.1	150-600	@ 1.0	—	—	—	—	TO-92
21	SE4010	25	200-1000	@ 1.0	—	—	3.0	@ 1.0	—	—	TO-106
22	SE4002	25	200-1000	@ 1.0	—	—	—	—	—	—	TO-106
23	SE4001	25	60-300	@ 1.0	—	—	—	—	—	—	TO-106
24	BC115	30	50	@ 1.0	50	@ 100	—	—	—	—	TO-105
25	BC318	30	90 (Typ)	@ 0.01	110-800	@ 2.0	6.0	@ 1.0	—	—	TO-92
26	BC318A	30	90 (Typ)	@ 0.01	110-220	@ 2.0	6.0	@ 1.0	—	—	TO-92
27	BC318B	30	150 (Typ)	@ 0.01	200-450	@ 2.0	6.0	@ 1.0	—	—	TO-92
28	BC318C	30	270 (Typ)	@ 0.01	420-800	@ 2.0	6.0	@ 1.0	—	—	TO-92

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN Low Level, Low Noise Amplifier Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**

Item	DEVICE NO.	$V_{CE0}$	$h_{FE}$		$h_{FE}$		NF		NF		Package No.
		V Min	$h_{FE}$ Min-Max	@ $I_C$ mA	$h_{FE}$ Min-Max	@ $I_C$ mA	dB @ f Max kHz	dB @ f Max kHz	dB @ f Max kHz		
1	2N5088	30	300-900	@ 0.1	300	@ 10	—		3.0@WIDE BAND	TO-92	
2	BC207	45	90 (Typ)	@ 0.01	110-450	@ 2.0	10 @ 1.0	—		TO-106	
3	BC207A	45	90 (Typ)	@ 0.01	110-220	@ 2.0	10 @ 1.0	—		TO-106	
4	BC207B	45	150 (Typ)	@ 0.01	200-450	@ 2.0	10 @ 1.0	—		TO-106	
5	BC317	45	90 (Typ)	@ 0.01	110-450	@ 2.0	6.0 @ 1.0	—		TO-92	
6	BC317A	45	90 (Typ)	@ 0.01	110-220	@ 2.0	6.0 @ 1.0	—		TO-92	
7	BC317B	45	150 (Typ)	@ 0.01	200-450	@ 2.0	6.0 @ 1.0	—		TO-92	
8	2N930	45	100-300	@ 0.01	600	@ 10	—		3.0@WIDE BAND	TO-18	
9	2N5962	45	450	@ 0.01	600-1400	@ 10	3.0 @ 1.0		3.0@WIDE BAND	TO-92	
10	SE4021	45	450	@ 0.01	600-1400	@ 10	3.0 @ 1.0		3.0@WIDE BAND	TO-106	

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN Low Level, Low Noise Amplifier Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$			$h_{FE}$			NF		NF		Package No.
			$h_{FE}$ Min-Max	@	$I_C$ mA	$h_{FE}$ Min-Max	@	$I_C$ mA	dB @ f Max kHz		dB @ f Max kHz		
1	BC523	45	180-800	@	2.0	100	@	0.01					TO-92
2	BC523B	45	180-400	@	2.0	100	@	0.01					TO-92
3	BC523C	45	380-800	@	2.0	100	@	0.01					TO-92
4	BC521	45	600-1400	@	10	350	@	0.01	3.0 @	1.0			TO-92
5	BC521C	45	380-800	@	2.0	350	@	0.01	3.0 @	1.0	3.0 @	WIDE BAND	TO-92
6	BC521D	45	750-1500	@	2.0	350	@	0.01	3.0 @	1.0	3.0 @	WIDE BAND	TO-92
7	2N5210	50	200-600	@	0.1	250	@	10	3.0 @	1.0	2.0 @	WIDE BAND	TO-92
8	2N5209	50	100-300	@	0.1	150	@	10	4.0 @	1.0	3.0 @	WIDE BAND	TO-92
9	2N5961	60	100	@	0.01	150-950	@	10	6.0 @	1.0			TO-92
10	SE4020	60	100	@	0.01	150-950	@	10	6.0 @	1.0			TO-106
11	2N2484	60	100-500	@	0.01	250	@	1.0	2.0 @	10	3.0 @	WIDE BAND	TO-18
12	EN2484	60	100-500	@	0.01	250	@	1.0	2.0 @	10	3.0 @	WIDE BAND	TO-106
13	PN2484	60	100-500	@	0.01	250	@	1.0	2.0 @	10	3.0 @	WIDE BAND	TO-92
14	BC520	60	150-700	@	10	100	@	0.01	3.0 @	1.0	3.0 @	WIDE BAND	TO-92
15	BC520B	60	180-460	@	2.0	100	@	0.01	3.0 @	1.0	3.0 @	WIDE BAND	TO-92
16	BC520C	60	380-800	@	2.0	100	@	0.01	3.0 @	1.0	3.0 @	WIDE BAND	TO-92
17	2N3117	60	250-500	@	0.01	400	@	1.0	1.0 @	1.0	1.0 @	10	TO-18

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP Low Level, Low Noise Amplifier Transistors**  
**(By Ascending  $V_{CE0}$ )**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$		$h_{FE}$		NF		NF		Package No.
			$h_{FE}$ Min-Max	@ $I_C$ mA	$h_{FE}$ Min-Max	@ $I_C$ mA	dB @ f Max kHz		dB @ f Max kHz		
1	BC205	20	80 (Typ) @ 0.01		110-500 @ 2.0		10 @ 1.0		—	TO-106	
2	BC205A	20	80 (Typ) @ 0.01		110-220 @ 2.0		10 @ 1.0		—	TO-106	
3	BC205B	20	150 (Typ) @ 0.01		200-450 @ 2.0		10 @ 1.0		—	TO-106	
4	BC205C	20	80 (Typ) @ 0.01		400-800 @ 2.0		10 @ 1.0		—	—	
5	BC322	20	150 (Typ) @ 0.01		200-800 @ 2.0		4.0 @ 1.0	4.0@WIDE BAND		TO-92	
6	BC322B	20	150 (Typ) @ 0.01		200-450 @ 2.0		4.0 @ 1.0	4.0@WIDEBAND		TO-92	
7	BC322C	20	150 (Typ) @ 0.01		400-800 @ 2.0		4.0 @ 1.0	4.0@WIDE BAND		—	
8	BC179	20	120-460 @ 2.0		—		4.0 @ 1.0	4.0@WIDE BAND		TO-18	
9	BC179A	20	120-220 @ 2.0		—		4.0 @ 1.0	4.0@WIDE BAND		TO-18	
10	BC179B	20	180-460 @ 2.0		—		4.0 @ 1.0	4.0@WIDE BAND		TO-18	
11	BC178	25	70-460 @ 2.0		—		10 @ 1.0	—		TO-18	
12	BC178VI	25	70-140 @ 2.0		—		10 @ 1.0	—		TO-18	
13	BC178A	25	120-220 @ 2.0		—		10 @ 1.0	—		TO-18	
14	BC178B	25	180-460 @ 2.0		—		10 @ 1.0	—		TO-18	
15	BC321	30	80 (Typ) @ 0.01		110-800 @ 2.0		6.0 @ 1.0	—		TO-92	
16	BC321A	30	80 (Typ) @ 0.01		110-220 @ 2.0		6.0 @ 1.0	—		TO-92	
17	BC321B	30	150 (Typ) @ 0.01		200-450 @ 2.0		6.0 @ 1.0	—		TO-92	
18	BC321C	30	80 (Typ) @ 0.01		400-800 @ 2.0		6.0 @ 1.0	—		—	
19	2N5138	30	50-800 @ 0.10		50 @ 1.0		—	—		TO-106	
20	PN5138	30	50-800 @ 0.10		50 @ 1.0		—	—		TO-92	
21	BC153	40	50 @ 0.10		50 @ 10		1.0 @ 1.0	—		TO-106	
22	BC154	40	160 @ 0.10		160 @ 10		2.5 @ 1.0	—		TO-106	
23	2N4250	40	250-700 @ 0.10		250 @ 1.0		2.0 @ 1.0	2.0@WIDE BAND		TO-106	
24	PN4250	40	250-700 @ 0.10		250 @ 1.0		2.0 @ 1.0	2.0@WIDE BAND		TO-92	
25	2N4248	40	50 @ 0.10		50 @ 1.0		—	—		TO-106	
26	PN4248	40	50 @ 0.10		50 @ 1.0		—	—		TO-92	
27	BC204	45	80 (Typ) @ 0.01		50-450 @ 2.0		10 @ 1.0	—		TO-106	
28	BC204VI	45	80 (Typ) @ 0.01		50-120 @ 2.0		10 @ 1.0	—		—	
29	BC204A	45	80 (Typ) @ 0.01		110-220 @ 2.0		10 @ 1.0	—		TO-106	

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP Low Level, Low Noise Amplifier Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$ @ $I_C$		$h_{FE}$ @ $I_C$		NF		NF		Package No.
			Min-Max	mA	Min-Max	mA	dB @ f Max kHz	dB @ f Max kHz	dB @ f Max kHz	dB @ f Max kHz	
1	BC204B	45	150 (Typ)	@ 0.01	200-450	@ 2.0	10	@ 1.0	—		TO-106
2	BC320	45	80 (Typ)	@ 0.01	110-450	@ 2.0	6.0	@ 1.0	—		TO-92
3	BC320A	45	80 (Typ)	@ 0.01	110-220	@ 2.0	6.0	@ 1.0	—		TO-92
4	BC320B	45	150 (Typ)	@ 0.01	200-450	@ 2.0	6.0	@ 1.0	—		TO-92
5	BC177	45	70-220	@ 2.0	—		10	@ 1.0	—		TO-18
6	BC177VI	45	70-140	@ 2.0	—		10	@ 1.0	—		TO-18
7	BC177A	45	120-220	@ 2.0	—		10	@ 1.0	—		TO-18
8	BC177B	45	180-460	@ 2.0	—		10	@ 1.0	—		TO-18
9	2N3964	45	180	@ 0.001	250-500	@ 0.01	2.0	@ 1.0	4.0 @ 0.1		TO-18
10	2N5087	50	250-800	@ 0.10	250	@ 10	2.0	@ 1.0	2.0 @ WIDE BAND		TO-92
11	2N5086	50	150-500	@ 0.10	150	@ 10	3.0	@ 1.0	3.0 @ WIDE BAND		TO-92
12	BC526	50	40	@ 0.01	(100-600)	@ 2.0	—		—		TO-92
13	BC526A	50	40	@ 0.01	(100-300)	@ 2.0	—		10 @ WIDE BAND		TO-92
14	EN3962	60	60	@ 0.001	100-300	@ 0.01	3.0	@ 1.0	10.0 @ 0.1		TO-106
15	2N4250A	60	250-700	@ 0.10	250	@ 1.0	2.0	@ 1.0	2.0 @ WIDE BAND		TO-106
16	2N4249	60	100-300	@ 0.10	100	@ 1.0	3.0	@ 1.0	3.0 @ WIDE BAND		TO-106
17	PN4249	60	100-300	@ 0.10	100	@ 1.0	3.0	@ 1.0	3.0 @ WIDE BAND		TO-92
18	2N3965	60	180	@ 0.001	250-500	@ 0.01	2.0	@ 1.0	4.0 @ 0.1		TO-18
19	BFX37	60	70-300	@ 0.01	100	@ 1.0	3.0	@ 1.0	3.0 @ WIDE BAND		TO-18
20	2N3962	60	60	@ 0.001	100-300	@ 0.01	3.0	@ 1.0	10 @ 0.1		TO-18

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**

**NPN High Voltage Amplifier Transistors**

**(By Ascending  $V_{CE0}$ )**

(Also see TO-5 Power Section)

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$		$f_T$ MHz Min	$C_{ob}$ ( $C_{cb}$ ) pF Max	$P_D$		Package No.
			$h_{FE}$ @ $I_C$ Min-Max	mA			$T_A$ 25°C mW	$T_C$ 25°C W	
1	MPSL01	120	50-300 @ 10		60	8.0	814	1.79	TO-92
2	2N5830	120	80-500 @ 25		100	40	814	1.79	TO-92
3	BFY57	125	30-150 @ 30		40	12	800	5.0	TO-39
4	BC532	140	60-250 @ 10		100	6.0	814	1.79	TO-92
5	2N5550	140	60-250 @ 10		100	6.0	814	1.79	TO-92
6	2N3114	150	30-120 @ 30		40	9.0	800	5.0	TO-39
7	BF257	160	40-150 @ 10		40	3.5	1000	7.0	TO-39
8	BC533	160	80-250 @ 10		100	6.0	814	1.79	TO-92
9	MPS5551M	160	80-250 @ 10		100	6.0	814	1.79	TO-92
10	2N5831	160	80-250 @ 10		100	4.0	814	1.79	TO-92
11	2N5832	160	175-500 @ 10		100	4.0	814	1.79	TO-92
12	2N5833	180	50-250 @ 10		100	4.0	814	1.79	TO-92
13	BF336	180	20	@ 30	80	(3.5)	800		TO-39
14	BD115	180	22	@ 50		3.5		6.0	TO-39
15	BF337	200	20	@ 30	80	(3.5)	800		TO-39
16	2N4926	200	20-200 @ 30		30	(6.0)	1000	7.0	TO-39
17	MPSA43	200	50-200 @ 30		50	4.0	878	2.08	TO-92
18	SE7055	220	40-150 @ 10		40	(3.5)	1000	7.0	TO-39
19	PE7058	220	40-220 @ 30		40	4.0	1230	4.17	TO-92
20	SE7056	300	40-100 @ 10		40	(3.0)	1000	7.0	TO-39
21	BF338	225	20	@ 30	80	(3.5)	800		TO-39
22	BF258	250	40-150 @ 10		40	3.5	1000	7.0	TO-39
23	2N4927	250	20-200 @ 30		30	(6.0)	1000	7.0	TO-39
24	2N5059	250	30-150 @ 30		30	10	1000	5.0	TO-39
25	2N5058	300	35-150 @ 30		30	10	1000	5.0	TO-39
26	MPSA42	300	40-200 @ 30		50	3.0	878	2.08	TO-92
27	PE7059	300	40-200 @ 30		40	4.0	1230	4.17	TO-92
28	BF259	300	25	@ 30	90 (Typ)	4.2	1000	7.0	TO-39

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP High Voltage Amplifier Transistors**  
**(By Ascending  $V_{CEO}$ )**

Item	DEVICE NO.	$V_{CEO}$ V Min	$h_{FE}$		$f_T$ MHz Min	$C_{ob}$ pF Max	$P_D$		Package No.
			$h_{FE}$ @ $I_C$ Min-Max mA				$T_A$ 25°C mW	$T_C$ 25°C W	
1	MPSL51	100	40-250 @ 50		60	8.0	625	1.0	TO-92
2	BC530	120	40-180 @ 10		100	6.0	625	1.0	TO-92
3	2N5400	120	40-180 @ 10		100	6.0	625	1.0	TO-92
4	BC531	150	60-240 @ 10		100	6.0	625	1.0	TO-92
5	PN4888	150	40-400 @ 10		30	4.0	625	1.0	TO-92
6	2N5401	150	60-240 @ 10		100	6.0	625	1.0	TO-92
7	PN4889	150	80-300 @ 10		40	4.0	625	1.0	TO-92
8	MPSA93	200	30-150 @ 30		50	8.0	625	1.0	TO-92
9	MPSA92	300	25 @ 30		50	6.0	625	1.0	TO-92

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN RF-IF Amplifier and Oscillator Transistors**  
**(By Ascending Frequency)**

Item	DEVICE NO.	PG (OSC. Po) dB @ f		V <sub>CEO</sub> V Min	f <sub>T</sub> MHz Min	C <sub>ob</sub> (C <sub>cb</sub> ) pF		NF dB @ f		P <sub>D</sub> T <sub>A</sub> 25°C mW	Package No.
		Min	MHz			Max	Max	MHz			
1	PE3100	—		30	400	(0.8)		—		425(65°C)	TO-92
2	BF160	—		12	400	20		—		310	TO-106
3	BF152	28	@ 10.7	12	600	1.7		—		310	TO-106
4	BF159	22	@ 40	20	600	1.2	3.5 (Typ) @	60		310	TO-106
5	BF163	22	@ 40	40	400	0.8 (Typ)	3.0 (Typ) @	40		310	TO-106
6	PE5025	25	@ 45	30	300	(1.0)		—		425(65°C)	TO-92
7	BF167	27	@ 45	30	300	0.22	5.0 @	45		175	TO-72
8	PE5029	28	@ 45	30	500	(0.4)		6.0 @	45	425(65°C)	TO-92
9	PE5030B	28	@ 45	40	600	(0.4)		—		425(65°C)	TO-92
10	BF222	20 (Typ) @ 100		30	400	0.4 (Typ)	5.0 @	0.1		310	TO-72
11	2N918	15.0 @ 200		15	600	1.7	6.0 @	60		200	TO-72
12	BF162	15	@ 200	40	200	1.2	5.5 @	200		310	TO106
13	2N3563	14	@ 200	12	600	1.7		—		200	TO-106
14	PN3690	15	@ 200	40	400	1.6	5.5 @	200		200	TO-92
15	PN918	15	@ 200	15	600	1.7	6.0 @	60		625	TO-92
16	2N5130	17	@ 200	12	450	(1.7)		—		200	TO-106
17	PE5031	19	@ 200	30	500	0.4	4.5 @	200		425(65°C)	TO-92
18	2N5770	15	@ 500	15	900	(1.7)		6.0 @	60	625	TO-92
19	2N5770	(30)	@ 500	15	900	1.7	6.0 @	60		625	TO-92
20	PN3563	(30)	@ 500	12	600	1.7	6.0 @	60		625	TO-92
21	PN918	(30)	@ 500	15	600	1.7	6.0 @	60		625	TO-92
22	SE3002	(3.0)	@ 930	12	600	1.7		—		200	TO-106



**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
 Microwave FETS (Numeric Listing)  
 GaAs

Item	DEVICE NO.	$f_T$ GHz Min	Max Available Gain (GMA)				Noise Figure				Package No.	
			dB Min	@	$V_{CC}$ V	$I_C$ mA	dB Typ	@	$V_{CC}$ V	$I_C$ mA		f GHz
1	FMT940		8.0	@	5.0	25.0	6.0	@	5.0	10.0	8.0	NT
2	FMT941		8.0	@	5.0	25.0	5.0	@	5.0	10.0	8.0	NT
3	FMT980		7.5	@	5.0	25.0	5.5	@	5.0	10.0	8.0	CE-FET
4	FMT981		7.5	@	5.0	25.0	4.0	@	5.0	10.0	8.0	CE-FET

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**  
 NPN (By Ascending  $V_{CEO}$ )  
 TO-39 Package

Item	DEVICE NO.	$V_{CEO}$ V Min	$I_C$ A Max	$h_{FE}$ @ $I_C$		$V_{CE}$ @ $I_C$		$P_D$ $T_C=25^\circ C$ W	$f_T$ MHz Min	PNP Complement
				Min-Max	A	Max	A			
5	2N4237	40	3	30-150 @	0.25	0.6 @	1.00	5	1	2N4234
6	2N5321	50	2	40-250 @	0.50	0.8 @	0.50	10	50	2N5323
7	BC323	60	5	50-250 @	0.50	0.15 @	0.5	7	—	—
8	BFX34	60	5	40-150 @	2.00	1.0 @	0.5	5	70	—
9	2N5334	60	3	30-150 @	1.00	0.7 @	2.00	6	40	—
10	2N4238	60	3	30-150 @	0.25	0.6 @	1.00	5	1	2N4235
11	2N4895	60	5	40-120 @	2.00	1.0 @	5.00	7	50	—
12	2N4896	60	5	100-300 @	2.00	1.0 @	5.00	7	80	—
13	2N5320	75	2	30-130 @	0.50	0.5 @	0.50	10	50	2N5322
14	2N4239	80	3	30-150 @	0.25	0.6 @	1.00	5	1	2N4236
15	2N5335	80	3	30-150 @	1.00	0.7 @	2.00	6	40	—
16	2N4897	80	5	40-120 @	2.00	1.0 @	5.00	7	50	—
17	2N5336	80	5	30-120 @	2.00	0.7 @	2.00	6	30	—
18	2N5337	80	5	60-240 @	2.00	0.7 @	2.00	6	30	—
19	2N5681	100	1	40-150 @	0.25	1.0 @	0.50	10	30	2N5679
20	2N5338	100	5	30-120 @	2.00	0.7 @	2.00	6	30	—
21	2N5339	100	5	60-240 @	2.00	0.7 @	2.00	6	30	—
22	2N5682	120	1	40-150 @	0.25	1.0 @	0.50	10	30	2N5680

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**  
**PNP (By Ascending  $V_{CE0}$ )**  
**TO-39 Package**

Item	DEVICE NO.	$V_{CE0}$ V Min	$I_C$ A Max	$h_{FE}$ @ Min-Max	$I_C$ A	$V_{CE}$ @ V Max	$I_C$ A	$P_D$ $T_C=25^\circ C$ W	$f_T$ MHz Min	PNP Complement
1	2N3440	250	1	40-160 @	0.02	0.5 @	0.05	10	15	FT5415
2	2N3439	350	1	40-160 @	0.02	0.5 @	0.05	10	15	FT5416
3	2N4234	40	3	30-150 @	0.25	0.6 @	1.00	6	3	2N4237
4	2N5323	50	2	40-250 @	0.50	1.2 @	0.50	10	50	2N5321
5	2N4235	60	3	30-150 @	0.25	0.6 @	1.00	6	3	2N4238
6	2N5322	75	2	30-130 @	0.50	0.7 @	0.50	10	50	2N5320
7	2N4236	80	3	30-150 @	0.25	0.5 @	1.00	6	3	2N4239
8	2N5679	100	1	40-150 @	0.25	1.0 @	0.50	10	30	2N5681
9	2N5680	120	1	40-150 @	0.25	1.0 @	0.50	10	30	2N5682
10	FT5415	200	1	30-150 @	0.05	2.5 @	0.05	10	15	2N3440
11	FT5416	300	1	30-120 @	0.05	2.0 @	0.05	10	15	2N3439

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**  
**NPN (By Ascending  $V_{CE0}$ )**  
**TO-66 Package**

Item	DEVICE NO.	$V_{CE0}$ V Min	$I_C$ A Max	$h_{FE}$ @ Min-Max	$I_C$ A	$V_{CE}$ @ V Max	$I_C$ A	$P_D$ $T_C=25^\circ C$ W	$f_T$ MHz Min	PNP Complement
12	2N4910	40	1	20-100 @	0.50	0.6 @	1.00	25	3	2N4898
13	2N4231	40	4	25-100 @	1.50	0.7 @	1.50	35	4	—
14	2N3054	55	4	25-100 @	0.50	1.0 @	0.50	25	1	—
15	2N4911	60	1	20-100 @	0.50	0.5 @	1.00	25	3	2N4899
16	2N3766	60	3	40-160 @	0.50	1.0 @	0.50	20	10	—
17	2N4232	60	4	25-100 @	1.50	0.7 @	1.50	35	4	—
18	2N4912	80	1	20-100 @	0.50	0.6 @	1.00	25	3	2N4900
19	2N3767	80	3	40-100 @	0.50	1.0 @	0.50	20	10	—
20	2N4233	80	4	25-100 @	1.50	0.7 @	1.50	35	4	—
21	SE9331	300	1	30-250 @	0.10	2.5 @	0.10	20	10	—

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**

**PNP (By Ascending  $V_{CE0}$ )**  
**TO-66 Package**

Item	DEVICE NO.	$V_{CE0}$	$I_C$	$h_{FE}$ @ $I_C$	$V_{CE}$ @ $I_C$		$P_D$ $T_C=25^\circ C$ W	$f_T$ MHz Min	NPN Complement
		V Min	A Max	Min-Max	A	Max			
1	2N4898	40	1	20-100 @ 0.50	0.6 @ 1.0		25	3	2N4910
2	2N4899	50	1	20-100 @ 0.50	0.6 @ 1.0		25	3	2N4911
3	2N3740	60	1	30-100 @ 0.25	0.6 @ 1.0		25	4	—
4	2N4900	80	1	20-100 @ 0.50	0.6 @ 1.0		25	3	2N4912
5	2N3741	80	1	30-100 @ 0.25	0.6 @ 1.0		25	4	—

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**

**NPN (By Ascending  $V_{CE0}$ )**  
**TO-220 Package**

Item	DEVICE NO.	$V_{CE0}$	$I_C$	$h_{FE}$ @ $I_C$	$V_{CE}$ @ $I_C$		$P_D$ $T_C=25^\circ C$ W	$f_T$ MHz Min	NPN Complement
		V Min	A Max	Min-Max	A	Max			
6	TIP29	40	3	15-75 @ 1.0	0.7 @ 1.0		30	3.0	TIP30
7	BD221	40	4	30-120 @ 1.0	1.0 @ 1.0		36	0.8	BD224
8	TIP31	40	5	10-50 @ 3.0	1.2 @ 3.0		40	3.0	TIP32
9	2N6129	40	7	20-100 @ 2.5	1.4 @ 7.0		50	2.5	2N6132
10	2N6121	45	4	25-100 @ 1.5	0.6 @ 1.5		40	2.5	2N6124
11	TIP29A	60	3	15-75 @ 1.0	0.7 @ 1.0		30	3.0	TIP30A
12	BD222	60	4	20-80 @ 1.5	1.0 @ 1.5		36	0.8	BD225
13	2N6122	60	4	25-100 @ 1.5	0.6 @ 1.5		40	2.5	2N6125
14	TIP31A	60	5	10-50 @ 3.0	1.2 @ 3.0		40	3.0	TIP32A
15	2N6130	60	7	20-100 @ 2.5	1.4 @ 7.0		50	2.5	2N6133
16	SE9300	60	10	750 @ 1.0	2.5 @ 7.5		70	1.0	—
17	FT3055	60	15	20-70 @ 4.0	1.1 @ 4.0		70	—	FT2955
18	BD220	70	4	30-120 @ 0.5	1.0 @ 0.5		36	0.8	BD223
19	TIP29B	80	3	15-75 @ 1.0	0.7 @ 1.0		30	3.0	TIP30B
20	2N6123	80	4	20-80 @ 1.5	0.6 @ 1.5		40	2.5	2N6126
21	TIP31B	80	5	10-50 @ 3.0	1.2 @ 3.0		40	3.0	TIP32B
22	2N6131	80	7	20-100 @ 2.5	2.0 @ 7.0		50	2.5	2N6134
23	SE9301	80	10	1000 @ 4.0	2.5 @ 7.5		70	1.0	—
24	SE9302	100	10	100 @ 7.5	2.5 @ 7.5		70	1.0	—

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**  
**PNP (By Ascending  $V_{CE0}$ )**  
**TO-220 Package**

Item	DEVICE NO.	$V_{CE0}$	$I_C$	$h_{FE}$	@	$I_C$	$V_{CE}$ @ $I_C$		$P_D$	$f_T$	NPN Complement
		V	A	Min	Max	Min-Max	A	Max	A	$T_C=25^\circ C$ W	
1	TIP30	40	3	15-75	@	1.0	0.7@	1.0	30	3.0	TIP29
2	BD224	40	4	30-120	@	1.0	1.0@	1.0	36	0.8	BD221
3	TIP32	40	5	10-50	@	3.0	1.2@	3.0	40	3.0	TIP31
4	2N6132	40	7	20-100	@	2.5	1.4@	7.0	50	2.5	2N6129
5	2N6124	45	4	25-100	@	1.5	0.6@	1.5	40	2.5	2N6121
6	TIP30A	60	3	15-75	@	1.0	0.7@	1.0	30	3.0	TIP29A
7	BD225	60	4	20-80	@	1.5	1.0@	1.5	36	0.8	BD222
8	2N6125	60	4	25-100	@	1.5	0.6@	1.5	40	2.5	2N6122
9	TIP32A	60	5	10-50	@	3.0	1.2@	3.0	40	3.0	TIP31A
10	2N6133	60	7	20-100	@	2.5	1.4@	7.0	50	2.5	2N6130
11	FT2955	60	15	20-70	@	4.0	1.1@	4.0	70	2.0	FT3055
12	BD223	70	4	30-120	@	0.5	1.0@	0.5	36	0.8	BD220
13	TIP30B	80	3	15-75	@	1.0	0.7@	1.0	30	3.0	TIP29B
14	2N6126	80	4	20-80	@	1.5	0.6@	1.5	40	2.5	2N6123
15	TIP32B	80	5	10-50	@	3.0	1.2@	3.0	40	3.0	TIP31B
16	2N6134	80	7	20-100	@	2.5	1.8@	7.0	50	2.5	2N6131

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**  
**NPN (By Ascending  $V_{CE0}$ )**  
**TO-3 Package**

Item	DEVICE NO.	$V_{CE0}$ V Min	$I_C$ A Max	$h_{FE}$ @ Min-Max	$I_C$ A	$V_{CE}$ @ V Max	$I_C$ A	$P_D$ $T_C=25^\circ\text{C}$ W	$f_T$ MHz Min	PNP Complement
1	2N5067	40	5.0	20-80 @	1.0	1.5 @	5.0	87.5	4.0	2N4901
2	2N4913	40	5.0	25-100@	2.5	1.5 @	5.0	87.5	4.0	2N4904
3	2N3771	40	30.0	15-60 @	15.0	2.0 @	15.0	150.0	0.2	—
4	2N5301	40	30.0	15-60 @	15.0	2.0 @	20.0	200.0	2.0	2N4398
5	2N5068	60	5.0	20-80 @	1.0	1.5 @	5.0	87.5	4.0	2N4902
6	2N4914	60	5.0	25-100@	2.5	1.5 @	5.0	87.5	4.0	2N4905
7	2N5873	60	7.0	20-100@	2.5	1.0 @	4.0	115.0	4.0	2N5871
8	2N5877	60	8.0	20-100@	4.0	1.0 @	5.0	150.0	4.0	2N5875
9	2N3713	60	10.0	25-90 @	1.0	1.0 @	5.0	150.0	2.5	2N3789
10	2N3715	60	10.0	50-150@	1.0	0.8 @	5.0	150.0	2.5	2N3791
11	2N5881	60	12.0	20-100@	6.0	1.0 @	7.0	160.0	4.0	2N5879
12	SE9303	60	10.0	1000 @	4.0	2.0 @	4.0	100.0	1.0	—
13	2N3055	60	15.0	20-70 @	4.0	1.1 @	4.0	117.0	0.8	—
14	2N3772	60	20.0	15-60 @	10.0	1.4 @	10.0	150.0	0.2	—
15	2N5885	60	20.0	20-100@	10.0	1.0 @	15.0	200.0	4.0	2N5883
16	2N5302	60	30.0	15-60 @	15.0	2.0 @	20.0	200.0	2.0	2N4399
17	2N5069	80	5.0	20-80 @	1.0	1.5 @	5.0	87.5	4.0	2N4903
18	2N4915	80	5.0	25-100@	2.5	1.5 @	5.0	87.5	4.0	2N4906
19	2N5874	80	7.0	20-100@	2.5	1.0 @	4.0	115.0	4.0	2N5872
20	2N5878	80	8.0	20-100@	4.0	1.0 @	5.0	150.0	4.0	2N5876
21	2N3714	80	10.0	25-90 @	1.0	1.0 @	5.0	150.0	2.5	2N3790
22	2N3716	80	10.0	50-150@	1.0	0.8 @	5.0	150.0	2.5	2N3792
23	SE9304	80	10.0	1000 @	4.0	2.0 @	4.0	100.0	1.0	—
24	2N5882	80	12.0	20-100@	6.0	1.0 @	7.0	160.0	4.0	2N5880
25	2N5886	80	20.0	20-100@	10.0	1.5 @	15.0	200.0	4.0	2N5884
26	2N5303	80	30.0	15-60 @	10.0	2.0 @	20.0	200.0	2.0	—
27	SE9305	100	10.0	1000 @	4.0	2.0 @	4.0	100.0	1.0	—
28	FT410	200	7.5	30-90 @	1.0	0.8 @	1.0	100.0	5.0	—
29	FT401	300	2.0	20-100@	0.5	0.8 @	0.5	100.0	2.0	—
30	FT411	300	7.5	30-90 @	1.0	0.8 @	1.0	100.0	5.0	—

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**

NPN (By Ascending  $V_{CE0}$ ) (Cont'd)  
 TO-3 Package

Item	DEVICE NO.	$V_{CE0}$ V Min	$I_C$ A Max	$h_{FE}$ @ Min-Max	$I_C$ A	$V_{CE}$ @ V Max	$I_C$ A	$P_D$ $T_C=25^\circ\text{C}$ W	$f_T$ MHz Min	PNP Complement
1	FT430	300	10.5	15-45 @	2.5	0.9 @	2.5	125.0	5.0	—
2	FT402	325	3.5	20-100 @	0.5	2.0 @	3.0	100.0	2.0	—
3	FT413	325	7.5	20-80 @	0.5	0.8 @	0.5	100.0	5.0	—
4	FT423	325	7.5	30-90 @	1.0	0.8 @	1.0	100.0	5.0	—
5	FT431	325	10.0	15-35 @	2.5	0.7 @	2.5	125.0	5.0	—

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — POWER**  
 PNP (By Ascending  $V_{CE0}$ )  
 TO-3 Package

Item	DEVICE NO.	$V_{CE0}$	$I_C$	$h_{FE}$	@	$I_C$	$V_{CE}$	@	$I_C$	$P_D$ $T_C=25^\circ C$ W	$f_T$ MHz Min	NPN Complement
		V Min	A Max	Min-Max	A	V Max	A					
1	2N4901	40	5.0	20-80	@	1.0	1.5	@	5.0	87.5	4.0	2N5067
2	2N4904	40	5.0	25-100	@	2.5	1.5	@	5.0	87.5	4.0	2N4913
3	2N4907	40	10.0	20-80	@	4.0	2.0	@	10.0	150.0	4.0	—
4	2N4398	40	30.0	15-60	@	15.0	2.0	@	20.0	200.0	4.0	2N5301
5	2N4902	60	5.0	20-80	@	1.0	1.5	@	5.0	87.5	4.0	2N5068
6	2N4905	60	5.0	25-100	@	2.5	1.5	@	5.0	87.5	4.0	2N4914
7	2N5871	60	7.0	20-100	@	2.5	1.0	@	4.0	115.0	4.0	2N5873
8	2N5875	60	8.0	20-100	@	4.0	1.0	@	5.0	150.0	4.0	2N5877
9	2N3789	60	10.0	15	@	3.0	1.0	@	4.0	150.0	4.0	2N3713
10	2N4908	60	10.0	20-80	@	4.0	2.0	@	10.0	150.0	4.0	—
11	2N3791	60	10.0	50-150	@	1.0	1.0	@	5.0	150.0	4.0	2N3715
12	2N5879	60	12.0	20-100	@	6.0	1.0	@	7.0	160.0	4.0	2N5881
13	2N5883	60	20.0	20-100	@	10.0	1.0	@	15.0	200.0	4.0	2N5885
14	2N4399	60	30.0	10-60	@	15.0	2.0	@	20.0	200.0	4.0	2N5302
15	2N4903	80	5.0	20-80	@	1.0	1.5	@	3.0	87.5	4.0	2N5069
16	2N4906	80	5.0	25-100	@	2.5	1.5	@	5.0	87.5	4.0	2N4915
17	2N5872	80	7.0	20-100	@	2.5	1.0	@	4.0	115.0	4.0	2N5874
18	2N5876	80	8.0	20-100	@	4.0	1.0	@	5.0	150.0	4.0	2N5878
19	2N3790	80	10.0	25-90	@	1.0	1.0	@	5.0	150.0	4.0	2N3714
20	2N4909	80	10.0	20-80	@	1.0	2.0	@	10.0	150.0	4.0	—
21	2N3792	80	10.0	30	@	3.0	1.0	@	5.0	150.0	4.0	2N3716
22	2N5880	80	12.0	20-100	@	6.0	1.0	@	7.0	160.0	4.0	2N5882
23	2N5884	80	20.0	20-100	@	10.0	1.0	@	15.0	200.0	4.0	2N5886

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — FIELD EFFECT**  
 N-Channel RF Dual Gate MOS Field Effect Transistor

Item	DEVICE NO.	$V_{GSS}$	$I_{GSS}$	$I_{DSX}$	$V_{GS(OFF)}$	$Y_{fs}$	$C_{ISS}$	$G_{ps}$	NF	Package No.
		V Min	nA Max	mA Min-Max	V Max	$\mu mho$ TYP	pF Max	dB @ f Min MHz	dB Max	
24	FT0601	6.0	20	5.0-30	4.0	13000	10	16 @ 200	4.0	TO-72

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**NPN Dual Transistors**  
**(By Ascending  $V_{CE0}$ )**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$		Matching		Package No.
			Min-Max	@ $I_C$ mA	$h_{FE}$ %	$V_{BE}$ mV	
1	MD2369A	15	40-120	@ 10	10	5.0	TO-78
2	MD2369B	15	40-120	@ 10	20	10	TO-78
3	MD918A	15	50-	@ 1.0	10	5.0	TO-78
4	MD918B	15	50-	@ 1.0	20	5.0	TO-78
5	MD2218A	40	40-120	@ 150	-	-	TO-78
6	MD2219A	40	100-300	@ 150	-	-	TO-78
7	2N2913	45	60-240	@ .01	-	-	TO-78
8	2N2917	45	60-240	@ .01	20	10	TO-78
9	2N2915	45	60-240	@ .01	10	3.0	TO-78
10	2N2914	45	150-300	@ .01	-	-	TO-78
11	2N2918	45	150-300	@ .01	20	5.0	TO-78
12	2N2920	60	150-300	@ .01	10	3.0	TO-78
13	2N2920A	60	150-300	@ .01	10	1.5	TO-78

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**PNP Dual Transistors**  
**(By Ascending  $V_{CE0}$ )**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$		Matching		Package No.
			Min-Max	@ $I_C$ mA	$h_{FE}$ %	$V_{BE}$ mV	
14	2N4020	45	250-600	@ .01	20	5.0	TO-78
15	2N4023	45	250-600	@ 0.1	10	3.0	TO-78
16	2N3800	60	150-450	@ 0.1	-	-	TO-71
17	2N3806	60	150-450	@ 0.1	-	-	TO-78
18	2N3802	60	150-450	@ 0.1	20	8.0	TO-71
19	2N3808	60	150-450	@ 0.1	20	8.0	TO-78
20	2N3804	60	150-450	@ 0.1	10	5.0	TO-71
21	2N3810	60	150-450	@ 0.1	10	5.0	TO-78



**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**

**PNP Dual Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$		Matching		Package No.
			Min-Max	@ $I_C$ mA	$h_{FE}$ %	$V_{BE}$ mV	
1	2N4025	60	250-600	@ 0.1	10	3.0	TO-78
2	2N3805	60	300-900	@ 0.1	10	5.0	TO-71
3	2N3811	60	300-900	@ 0.1	10	5.0	TO-78
4	2N4017	80	100-350	@ .01	—	—	TO-78

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**

**NPN Unmatched Quad Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$ Min-Max	$h_{FE}$ @	$I_C$ mA	$V_{CE}$ (sat)		Package No.
						V @ $I_C$ Max	mA	
5	FPQ3724	40	30	@	500	0.5 @ 500		TO-116
6	FQ3724	40	30	@	500	0.5 @ 500		TO-86
7	FPQ3725	50	20	@	500	0.5 @ 500		TO-116
8	FQ3725	50	20	@	500	0.5 @ 500		TO-86

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**

**PNP Unmatched Quad Transistors**  
**(By Ascending  $V_{CE0}$ ) (Cont'd)**

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$ Min-Max	$h_{FE}$ @	$I_C$ mA	$V_{CE}$ (sat)		Package No.
						V @ $I_C$ Max	mA	
9	FPQ3467	40	30	@	500	0.5 @ 500		TO-116
10	FQ3467	40	30	@	500	0.5 @ 500		TO-86
11	FPQ3468	50	20	@	500	0.5 @ 500		TO-116
12	FQ3468	50	20	@	500	0.5 @ 500		TO-86

**FAIRCHILD DISCRETE PRODUCTS**  
**TRANSISTORS — SMALL SIGNAL**  
**Microwave (Numeric Listing)**

Item	DEVICE NO.	$f_T$ GHz		Max Available Gain (GMA)				Noise Figure				f GHz	Package No.	
		Min	Typ	dB	@	$V_{CC}$ V	$I_C$ mA	dB	@	$V_{CC}$ V	$I_C$ mA			
1	2N2857	1.0		12.5	@	6.0	1.5	4.5	@	6.0	1.5	0.45	TO-72	
2	2N3570	1.5						7.0	@	6.0	2.0	1.00	TO-72	
3	2N3571	1.2						4.0	@	6.0	2.0	0.45	TO-72	
4	2N3572	1.0						6.0	@	6.0	2.0	0.45	TO-72	
5	2N3683	1.0		17.0	@	10.0	8.0	4.0	@	10.0	2.0	0.20	TO-72	
6	2N3839	1.0		12.5	@	6.0	1.5	3.4	@	6.0	1.5	0.45	TO-72	
7	2N3880	1.2		14.0	@	6.0	1.5	3.5	@	6.0	1.5	0.45	TO-72	
8	2N5031	1.0		14.0	@	6.0	1.0	2.5	@	6.0	1.0	0.45	TO-72	
9	2N5179	0.9		15.0	@	6.0	5.0	4.5	@	6.0	2.0	0.20	TO-72	
10	2N5761	3.7		11.0	@	10.0	10.0	4.0	@	10.0	3.0	2.0	NH	
11	FMT1060	1.0						5.0	@	10.0	1.5	0.50	TO-46	
12	FMT1060A	1.3						4.0	@	10.0	1.5	0.50	TO-46	
13	FMT1061	1.0		12.5	@	10.0	1.5	3.5	@	10.0	1.5	0.45	TO-72	
14	FMT1061A	1.3		15.0	@	10.0	1.5	3.0	@	10.0	1.5	0.45	TO-72	
15	FMT1090		1.4	7.5	@	10.0	20.0	4.0	@	10.0	3.0	0.45	TO-92	
16	FMT1091		1.4	18.5	@	10.0	20.0	3.5	@	10.0	3.0	0.45	TO-92	
17	FMT1190		1.4		10.0	@	10.0	20.0	5.0	@	10.0	3.0	0.45	TO-92
18	FMT2060	1.0		12.5	@	10.0	1.5	3.5	@	10.0	1.5	0.45	TO-120	
19	FMT4000		7.0		8.0	@	10.0	5.0	4.5	@	10.0	3.0	4.0	NH
20	FMT4005		7.0		13.0	@	10.0	5.0	2.5	@	10.0	3.0	2.00	NP
21	FMT4013		3.0											CE
22	FMT4014		3.0											CE
23	FMT4015		3.5											CE
24	FMT4016		3.5											CE
25	FMT4215		6.0		6.0	@	10.0	15.0	4.3	@	10.0	5.0	2.00	NP
26	FMT4020		7.0		9.0	@	10.0	10.0	4.5	@	10.0	5.0	4.0	NT
27	FMT4021		7.0		9.0	@	10.0	10.0	4.5	@	10.0	5.0	4.0	NT
28	FMT4225		6.0		6.0	@	10.0	15.0	4.3	@	10.0	5.0	2.00	NP
29	FMT4575		7.0		3.0	@	10.0	10.0	5.5	@	10.0	5.0	4.00	NP
30	FMT4578		7.0		12	@	10.0	10.0	3.5	@	10.0	5.0	2.0	NH
31	FMS002													Kit of 1 FMT4005, 4 FMT4575 and 2 FMT4225

# FAIRCHILD DISCRETE PRODUCTS TRANSISTORS — SMALL SIGNAL

NPN Darlington Transistors  
(By Ascending  $V_{CE0}$ )

Item	DEVICE NO.	$V_{CE0}$ V Min	$h_{FE}$ Min-Max	$h_{FE}$ @	$I_C$ mA	$V_{CE}$ (sat) V @ $I_C$ Max mA	Package No.
1	MPSA12	20	20000	@	10	1.0 @ 10	TO-92
2	MPSA13	30	5000	@	10	1.5 @ 100	TO-92
3	MPSA14	30	10000	@	10	1.5 @ 100	TO-92
4	2N997	40	7000-70000	@	100	1.6 @ 100	TO-18
5	2N2725	45	2000-10000	@	10	1.0 @ 10	TO-72

## FAIRCHILD DISCRETE PRODUCTS TRANSISTOR — DICE

NPN and PNP  
(By Application)

Item	DEVICE NO.	Pol.	Basic Standard Device	$V_{CE0}$ V Min	$I_{CBO}$ nA @ $V_{CB}$ V Max	$h_{FE}$ $h_{FE}$ @ $I_C$ Min-Max mA	$h_{FE}$ @	$I_C$ mA	Chip Size Mils	Basic Application
6	DN2484	NPN	2N2484	60	20 @ 45	250	@	1	17.5x17.5	Low level, Low Noise Amplifier
7	DN3962	PNP	2N3962	60	20 @ 50	100-450	@	1	13 x26	Low Level, Low Noise Amplifier
8	DN918	NPN	2N918	15	20 @ 15	20	@	3	10 x15	R.F. Amplifier
9	DN3904	NPN	2N3904	40	50 @ 30	100-300	@	10	10 x15	General Purpose Amplifier
10	DN3906	PNP	2N3906	40	50 @ 30	100-300	@	10	11 x18	General Purpose Amplifier
11	DN2222A	NPN	2N2222A	40	20 @ 60	100-300	@	100	20 x20	G.P. Amplifier and Switch
12	DN2907	PNP	2N2907	40	20 @ 50	100-300	@	100	22.5x22.5	G.P. Amplifier and Switch
13	DN3019	NPN	2N3019	80	20 @ 90	100-300	@	100	20 x20	G.P. Amplifier and Switch
14	DN4033	PNP	2N4033	80	50 @ 60	100-300	@	100	27 x33	G.P. Amplifier and Switch
15	DN3930	PNP	2N3930	180	20 @ 100	80-300	@	10	22.5x22.5	High Voltage Amp. and Switch
16	DN2369A	NPN	2N2369A	15	400 @ 20	40-120	@	10	10 x15	High Speed Saturated Switch
17	DN4209	PNP	2N4209	15	20 @ 8	35	@	1	12 x17	High Speed Saturated Switch
18	DN3014	NPN	2N3014	20	300 @ 20	30-120	@	30	15 x15	High Speed Saturated Switch
19	DN3725	NPN	2N3725	50	1700 @ 60	60-150	@	100	30 x30	High Speed Core Driver
20	DN3468	PNP	2N3468	50	100 @ 30	25	@	100	27 x33	High Speed Core Driver

# INTRODUCTION

## OPTOELECTRONICS

The arrangement of this section is by major product. The devices within each division are listed alphanumerically. Significant data is displayed for your easy selection.

A short list of the major divisions is shown below.

- LED Lamp Selection Guide
- LED Lamp Mounting Hardware
- LED Visible Lamps
- LED Single Character Digits
- Optically Coupled Isolators
- Source/Sensor Arrays
- Sensor Arrays
- Reflective Sensors
- Infrared Emitters
- Phototransistor Selection Guide
- Phototransistors
- Optoelectronic Dice

A complete device listing can be found in the front of this book.

# FAIRCHILD DISCRETE PRODUCTS OPTO

## LED Lamp Selection Guide

Item	Lamp Size		T-1 3/4		T-1 3/4		T-1 3/4		T-1 3/4		T-1 3/4	
1	Lens Diameter		.200		.200		.200		.200		.200	
2	Construction		Lead Frame		Lead Frame		Lead Frame		Lead Frame		Lead Frame	
3	Lens Height		.350		.230		.285		.340		.340	
4	Color	Mat'l.	Diff.	Clr.	Diff.	Clr.	Diff.	Clr.	Diff.	Clr.	Diff.	Clr.
5	Red	GaAsP	FLV104	FLV103 FLV140	FLV141	FLV110 FLV112 FLV117 FLV119	FLV111	FLV118	FLV150	FLV152 FLV151	FLV160	FLV162 FLV161
6	Green	GaP		FLV340	FLV341 FLV346	FLV310 FLV315			FLV350 FLV355	FLV352 FLV351 FLV356	FLV360 FLV365	
7	Yellow	GaP		FLV440 FLV445		FLV410			FLV450 FLV455		FLV460 FLV465	
8	Red	GaP		FLV240		FLV210			FLV250	FLV252 FLV251	FLV260	

## LED Lamp Mounting Hardware

Item	DEVICE No.	Panel Thickness	Panel Hole	Description	Package No.
9	FLS010	.060 to .250	.265 ±.002	Single Part Construction (Flat Black Finish)	Opto-1
10	FLS011	.187	.250	Three Piece Construction: Hex Nut, Threaded Barrel and Bezel (Bezel in Silver Finish)	Opto-2
11	FLS012	.187	±.003	Three Piece Construction: Hex Nut, Threaded Barrel and Bezel (Bezel in Black Finish)	Opto-2

**FAIRCHILD DISCRETE PRODUCTS**  
**OPTO**  
**LED Visible Lamps**

Item	DEVICE NO.	Lens Characteristic	$I_F$ mA	Luminous Intensity Typ mcd	$V_F$ Typ V	Package No.
1	FLV103	Clear Diffused	20	2.5	1.7	Opto-4
2	FLV104	Clear	100	$I_F = 100$ mA 40 mW/sr	$I_F = 100$ mA 2.0	Opto-3
3	FLV110	Red Diffused	20	2.0	1.7	Opto-5
4	FLV111	Clear	20	2.0	1.7	Opto-5
5	FLV112	Clear Diffused	20	2.0	1.7	Opto-5
6	FLV117	Red Diffused	50	1.0	1.9	Opto-5
7	FLV118	Clear	50	1.0	1.9	Opto-5
8	FLV119	Clear Diffused	50	1.0	1.9	Opto-5
9	FLV140	Red Diffused	20	2.0	1.7	Opto-4
10	FLV141	Red Clear	20	2.0	1.7	Opto-4
11	FLV150	Red Diffused	20	2.0	1.7	Opto-6
12	FLV151	Red Clear	20	2.0	1.7	Opto-6
13	FLV152	Red Clear	20	3.0	1.7	Opto-6
14	FLV160	Red Diffused	20	2.0	1.7	Opto-7
15	FLV161	Red Clear	20	2.0	1.7	Opto-7
16	FLV162	Red Clear	20	3.0	1.7	Opto-7
17	FLV210	Red Diffused	10	3.0	2.1	Opto-5
18	FLV240	Red Diffused	10	3.0	2.1	Opto-4
19	FLV250	Red Diffused	10	3.0	2.1	Opto-6
20	FLV251	Red Clear	10	5.0	2.1	Opto-6
21	FLV252	Red Clear	10	8.0	2.1	Opto-6
22	FLV260	Red Diffused	10	3.0	2.1	Opto-7
23	FLV340	Green Diffused	20	3.2	2.3	Opto-4
24	FLV341	Green Clear	20	3.2	2.3	Opto-4
25	FLV346	Green Clear	20	3.2	3.0	Opto-4
26	FLV310	Green Diffused	20	3.2	2.3	Opto-5
27	FLV315	Green Diffused	20	2.5	3.0	Opto-5
28	FLV350	Green Diffused	20	3.2	2.3	Opto-6
29	FLV351	Green Clear	20	3.2	2.3	Opto-6

# FAIRCHILD DISCRETE PRODUCTS

## OPTO

### LED Visible Lamps (Continued)

Item	DEVICE NO.	Lens Characteristic	$I_F$ mA	Luminous Intensity Typ mcd	$V_F$ Typ V	Package No.
1	FLV352	Green Clear	20	7.0	2.3	Opto-6
2	FLV355	Green Diffused	20	2.5	3.0	Opto-6
3	FLV356	Green Clear	20	3.2	3.0	Opto-6
4	FLV360	Green Diffused	20	3.2	2.3	Opto-7
5	FLV365	Green Diffused	20	2.5	3.0	Opto-7
6	FLV410	Yellow Diffused	20	3.2	2.3	Opto-5
7	FLV440	Yellow Diffused	20	3.2	2.3	Opto-4
8	FLV445	Yellow Diffused	20	2.5	3.0	Opto-4
9	FLV450	Yellow Diffused	20	3.2	2.3	Opto-6
10	FLV455	Yellow Diffused	20	2.5	3.0	Opto-6
11	FLV460	Yellow Diffused	20	3.2	2.3	Opto-7
12	FLV465	Yellow Diffused	20	2.5	3.0	Opto-7

### Single Character Digits

Item	DEVICE NO.	Description	Peak Current/ Segment mA	$V_F$ $I_F = 20$ mA/ Segment V	Luminous Intensity $I_F = 20$ mA Typ mcd	Package No.
13	FND70	1/4" Character Height; Common Cathode	250	1.7	.30	Opto-17
14	FND71	1/4" Character Height; Common Cathode ±1 Digit	250	1.7	.30	Opto-17
15	FND357	3/8" Character Height; Common Cathode	200	1.7	.60	Opto-18
16	FND358	3/8" Character Height; Common Cathode ±1 Digit	200	1.7	.60	Opto-18
17	FND500	1/2" Character Height; Common Cathode	200	1.7	.60	Opto-19
18	FND501	1/2" Character Height; Common Cathode ±1 Digit	200	1.7	.60	Opto-19
19	FND507	1/2" Character Height; Common Anode	200	1.7	.60	Opto-19
20	FND508	1/2" Character Height; Common Anode ±1 Digit	200	1.7	.60	Opto-19

# FAIRCHILD DISCRETE PRODUCTS

## OPTO

### Optically Coupled Isolators

Item	DEVICE NO.	Description	Current Transfer Ratio		Input to Output Isolation Voltage Vdc	BV <sub>CEO</sub> I <sub>E</sub> = 100μA, I <sub>F</sub> = 0 Min V	Package No.
			I <sub>F</sub> = 10 mA Min %	V <sub>CE</sub> (V)			
1	FCD802	6-Pin DIP Isolator	2	10	1500	20	Opto-20
2	FCD806	6-Pin DIP Isolator	6	10	1500	20	Opto-20
3	FCD810	6-Pin DIP Isolator	10	10	1500	20	Opto-20
4	FCD820	6-Pin DIP Isolator	20	0.4	2160	30	Opto-20
5	FCD820A	6-Pin DIP Isolator	20	10	1500	30	Opto-20
6	FCD820B	6-Pin DIP Isolator	20	10	2500	30	Opto-20

### Source/Sensor Arrays

Item	DEVICE NO.	Description	Source	Sensor	Combined		I <sub>out</sub> Min	Package No.
			I <sub>F</sub> Max mA/cell	V <sub>F</sub> I <sub>F</sub> = 50 mA V	I <sub>CE(L)</sub> H = 1.0 mW/cm <sup>2</sup> V <sub>CE</sub> = 5.0V mA	V <sub>CE(sat)</sub> H = 1.0 mW/cm <sup>2</sup> (Ga As) I <sub>CE</sub> = 4 mA V		
7	FPA100	9 Element Source/ Sensor Array – .100" Centers	75	1.25 (typ)	4.5	0.4	0.5 0.65 I <sub>IN</sub> = 50 mA, d = .050"	Opto-8 2 pcs
8	FPA101	12 Element Source/ Sensor Array – .250" Centers	75	1.25 (typ)	4.5	0.4	0.5 0.65 I <sub>IN</sub> = 50 mA, d = .050"	Opto-9 2 pcs
9	FPA102	10 Element Source/ Sensor Array – .087" Centers	75	1.25 (typ)	4.5	0.4	0.5 0.65 I <sub>IN</sub> = 50 mA, d = .050"	Opto-10 2 pcs



**FAIRCHILD DISCRETE PRODUCTS**  
**OPTO**  
**Sensor Arrays**

Item	DEVICE NO.	Description	$I_{CE}$ Max mA	$V_{CEO}$ Max $I_C = 1$ mA V	$I_{CE(L)}$ H = 10 mW/cm <sup>2</sup> Tung. @ 2854°K mA	$V_{CE(sat)}$ H = 20 mW/cm <sup>2</sup> $I_C = 500$ μA V	Matching Factor		Package No.
							$I_{CE(L)}$ Min	$I_{CE(L)}$ Max H = 5 mW/cm <sup>2</sup> Typ	
1	FPA700	9-Element Sensor Array – .100" Centers	25	20	1.75	0.16	0.5	0.65	Opto-8
2	FPA700A	9-Element Sensor Array – .100" Centers	25	20	1.75	0.16	0.75	0.85	Opto-8
3	FPA710	12-Element Sensor Array – .250" Centers	25	20	1.75	0.16	0.5	0.65	Opto-9
4	FPA710A	12-Element Sensor Array – .250" Centers	25	20	1.75	0.16	0.75	0.85	Opto-9
5	FPA720	10-Element Sensor Array – .087" Centers	25	20	1.75	0.16	0.5	0.65	Opto-10
6	FPA720A	10-Element Sensor Array – .087" Centers	25	20	1.75	0.16	0.75	0.85	Opto-10

**Reflective Sensors**

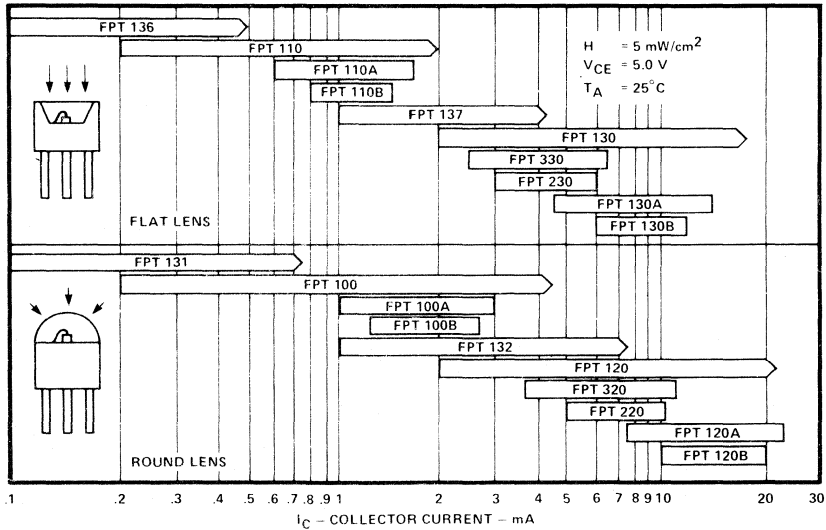
Item	DEVICE NO.	Description	$I_F$ Max mA	Diode $V_F$ Typ $I_F = 20$ mA V	Photo- Transistor $BV_{CEO}$ $I_{CE} = 1.0$ mA V	Combined $I_{out}$ $I_F = 50$ mA, d = .40" $V_{CE} = 5$ V		Package No.
						Min	Max	
7	FPA103	Light Reflective Transducer	75	1.25	12	20	–	Opto-11
8	FPA104	Light Reflective Transducer	75	1.25	12	60	180	Opto-11
9	FPA105	Light Reflective Transducer	75	1.25	12	80	160	Opto-11

# FAIRCHILD DISCRETE PRODUCTS OPTO

## Infrared Emitters

Item	DEVICE NO.	Description	$I_F$ Max mA	$V_F$ Typ $I_F = 100$ mA V	Typical Wavelength at Peak Emission nM	Power Out $I_F = 100$ mA mW/sr	Package No.
1	FPE100	Metal Header Pkg. Wide Beam	100	1.35	890	0.3	Opto-13
2	FPE104	Lead Frame Narrow Beam	100	1.35	890	10	Opto-3
3	FPE106	Miniature .085" x .150" x 0.95" Tall Flat Lens	100	1.35	890	0.4	Opto-12

## PHOTOTRANSISTOR SELECTION GUIDE



# FAIRCHILD DISCRETE PRODUCTS

## OPTO

### Phototransistors

Item	DEVICE NO.	Description	$BV_{CEO}$ $I_C = 1.0 \text{ mA}$ V		$I_{CE(L)}$ $V_{CE} = 5.0 \text{ V}$ mA			$V_{CE(sat)}$ H = 20 mW/cm <sup>2</sup> V			$t_r$	$t_f$	Package No.
			Min	Typ	Min	Typ	Max	Min	Typ	Max	$\mu\text{s}$	Typ	
1	FPT100	Plastic, Round Lens General Purpose	30	50	H = 5.0 mW/cm <sup>2</sup> 0.2 1.4 -			$I_C = 500 \mu\text{A}$ - 0.16 0.3			2.8	2.8	Opto-14
2	FPT100A	Plastic, Round Lens 1:3 Sensitivity	30	50	H = 5.0 mW/cm <sup>2</sup> 1.0 1.4 3.0			$I_C = 500 \mu\text{A}$ - 0.16 0.3			2.8	2.8	Opto-14
3	FPT100B	Plastic, Round Lens 1:2 Sensitivity	30	50	H = 5.0 mW/cm <sup>2</sup> 1.3 1.4 2.6			$I_C = 500 \mu\text{A}$ - 0.16 0.3			2.8	2.8	Opto-14
4	FPT101	Miniature, .080" Dia. Hermetic Package	$I_C = 0.1 \text{ mA}$ 30	$H \leq 0.1 \mu\text{W/cm}^2$ 60	H = 20 mW/cm <sup>2</sup> 0.8 3.5 -			$I_C = 0.4 \text{ mA}$ - 0.25 0.3			2.8	2.8	Opto-16
5	FPT102	Photodiode Hermetic Package	$I_R = 5.0 \mu\text{A}$ 50	$H \leq 0.1 \mu\text{W/cm}^2$ 120	$V_R = -10.0 \text{ V}$ , $H \leq 0.1 \mu\text{W/cm}^2$ - 0.1 nA 25 nA			$V_R = -10.0 \text{ V}$ 12 $\mu\text{A}$ 20 $\mu\text{A}$ -			0.2	0.2	Opto-16
6	FPT110	Plastic, Flat Lens General Purpose	30	50	H = 5.0 mW/cm <sup>2</sup> 0.2 .88 -			$I_C = 500 \mu\text{A}$ - 0.16 0.33			2.8	2.8	Opto-15
7	FPT110A	Plastic, Flat Lens 1:3 Sensitivity	30	50	H = 5.0 mW/cm <sup>2</sup> 0.6 .88 1.8			$I_C = 500 \mu\text{A}$ - 0.16 0.33			2.8	2.8	Opto-15
8	FPT110B	Plastic, Flat Lens 1:2 Sensitivity	30	50	H = 5.0 mW/cm <sup>2</sup> 0.8 .88 1.6			$I_C = 500 \mu\text{A}$ - 0.16 0.33			2.8	2.8	Opto-15
9	FPT120	Plastic, Round Lens High Sensitivity	20	50	H = 1.0 mW/cm <sup>2</sup> 0.4 1.5 -			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-14
10	FPT120A	Plastic, Round Lens 1:3 Sensitivity	15	30	H = 1.0 mW/cm <sup>2</sup> 1.5 2.4 4.5			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-14
11	FPT120B	Plastic, Round Lens 1:2 Sensitivity	15	30	H = 1.0 mW/cm <sup>2</sup> 2.0 2.4 4.0			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-14
12	FPT130	Plastic, Flat Lens High Sensitivity	20	50	H = 1.0 mW/cm <sup>2</sup> 0.4 0.9 -			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-15
13	FPT130A	Plastic, Flat Lens 1:3 Sensitivity	15	30	H = 1.0 mW/cm <sup>2</sup> 0.9 1.5 2.7			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-15
14	FPT130B	Plastic, Flat Lens 1:2 Sensitivity	15	30	H = 1.0 mW/cm <sup>2</sup> 1.2 1.5 2.4			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-15
15	FPT131	Plastic, Round Lens	15	50	H = 5.0 mW/cm <sup>2</sup> 0.1 1.4 -			$I_C = 500 \mu\text{A}$ - 0.16 0.7			2.8	2.8	Opto-14
16	FPT132	Plastic, Round Lens	10	30	H = 1.0 mW/cm <sup>2</sup> 0.2 1.5 -			$I_C = 1 \text{ mA}$ - 0.15 0.7			18.0	18.0	Opto-14

# FAIRCHILD DISCRETE PRODUCTS OPTO

## Phototransistors (Cont'd)

Item	DEVICE		$BV_{CEO}$ $I_C = 1.0 \text{ mA}$ V		$I_{CE(L)}$ $V_{CE} = 5.0 \text{ V}$ mA			$V_{CE(sat)}$ $H = 20 \text{ mW/cm}^2$ V			$t_r$	$t_f$	Package No.
	NO.	Description	Min	Typ	Min	Typ	Max	Min	Typ	Max	$\mu\text{s}$ Typ		
1	FPT136	Plastic, Flat Lens	15	50	H = 5.0 mW/cm <sup>2</sup> 0.1 .88 -			$I_C = 500 \mu\text{A}$ - 0.16 0.7			2.8	2.8	Opto-15
2	FPT137	Plastic, Flat Lens	10	30	H = 1.0 mW/cm <sup>2</sup> 0.2 0.9 -			$I_C = 1 \text{ mA}$ - 0.15 0.7			18.0	18.0	Opto-15
3	FPT220	Plastic, Round Lens 1:2 Sensitivity	20	50	H = 1.0 mW/cm <sup>2</sup> 1.0 1.5 2.0			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-14
4	FPT230	Plastic, Flat Lens 1:2 Sensitivity	20	50	H = 1.0 mW/cm <sup>2</sup> 0.6 0.9 1.2			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-15
5	FPT320	Plastic, Round Lens 1:3 Sensitivity	20	50	H = 1.0 mW/cm <sup>2</sup> 0.75 1.5 2.25			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-14
6	FPT330	Plastic, Flat Lens 1:3 Sensitivity	20	50	H = 1.0 mW/cm <sup>2</sup> 0.45 0.9 1.35			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-15
7	FPT610	Miniature, 0.85" x .150"	30	50	H = 5.0 mW/cm <sup>2</sup> 0.2 1.4 -			$I_C = 500 \mu\text{A}$ - 0.16 0.3			2.8	2.8	Opto-12
8	FPT630	x .095" Tall Flat Lens	20	50	H = 1.0 mW/cm <sup>2</sup> 0.4 0.9 -			$I_C = 1 \text{ mA}$ - 0.25 0.55			18.0	18.0	Opto-12

# FAIRCHILD DISCRETE PRODUCTS

## OPTO

### Dice

Item	Dice	Die Size	Description
1	FLX2110	.016 x .016 inch	A high-efficiency, long life red GaAsP LED. Typical luminous intensity = 2 mcd @ $V_F = 1.7$ V and $I_F = 20$ mA.
2	FNX8004	.110 x .007 inch	A GaAsP monolithic 7-segment display die with integral decimal point. It features 0.100" characters at a 5° slant for greater readability.
3	FNX8213	.067 x .060 inch	An npn eight-transistor emitter follower array for segment drive of FNX8004 display. Features built-in collector resistors designed to operate @ $I_C = 9$ mA with $V_{CC} = 3$ V and $I_B = 100$ $\mu$ A.
4	FNX8209	.050 x .063 inch	A current sinking digit driver for common cathode LED displays. The monolithic chip contains four independent npn transistors, each capable of sinking 63 mA with $I_B = 1$ mA.
5	FPX110 (formerly FPX1010)	.040 x .040 inch	An npn Planar* phototransistor. $h_{fe} = 110$ min; $BV_{CEO} = 30$ V min; $BV_{CBO} = 50$ V min; $I_{CE(L)} = 0.9$ mA @ $H = 5$ mW/cm <sup>2</sup> (tungsten @ 2854°K); typical $t_r$ and $t_f = 3$ $\mu$ s @ $I_{CE} = 4$ mA and $R_L = 100\Omega$ ; $V_{CE(sat)} = 0.4$ V max @ $I_C = 500$ $\mu$ A.
6	FPX111 (formerly FPX1011)	.040 x .040 inch	An npn Planar* phototransistor with high illumination sensitivity. $h_{fe} = 600$ min; $BV_{CEO} = 20$ V min $BV_{CBO} = 50$ V min; $I_{CE(L)} = 0.9$ mA @ $H = 1$ mW/cm <sup>2</sup> (tungsten @ 2854°K), typical $t_r$ and $t_f = 18$ $\mu$ s @ $I_{CE} = 4$ mA and $R_L = 100\Omega$ ; $V_{CE(sat)} = 0.5$ V max @ $I_C = 500$ $\mu$ A.

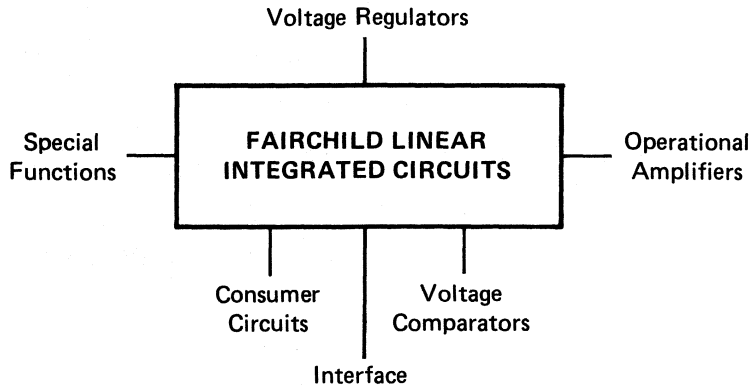
\*Planar is a patented Fairchild process.



# LINEAR

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BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY

# LINEAR



Since the introduction of the first linear circuit, the  $\mu A709$ , Fairchild has continued to broaden its family of circuits and to enhance its position as the industry leader. From the initial operational amplifier product, other lines such as interface products, voltage regulators, radio/audio circuits and TV circuits have been added.

A single operational amplifier in one package has progressed to a quad device. Interface circuits are now developed to perform an even broader range of applications such as data transmission, display drivers, memory sensing and D/A and A/D conversion. Perhaps the greatest progress has been made with the voltage regulator product line. The flexible, but limited,  $\mu A723$  regulator has since been complemented with a family of fixed regulators (78XX/79XX) and a more versatile family of variable regulators, the 78MG/79MG and 78G/79G.

Further progress will certainly continue and other product developments are to come in all product lines. New process techniques such as ion implantation and isoplanar are being applied to these new circuits. Fairchild is committed to continue its leadership position with linear circuits and looks forward to the opportunity to serve each customer in the future.

This condensed catalog is intended to offer a brief review of our product line and its performance capabilities. For more detail, please request our Linear Data Book or specific data sheets from your local sales office. Please note that our consumer products are not summarized in this book. Consumer products, because of their unique nature are reviewed in a separate consumer pamphlet and in the Linear Data Book. If there is interest in any of our Radio, Audio, TV, Quadraphonic and other specialty circuits, please call your local sales people.



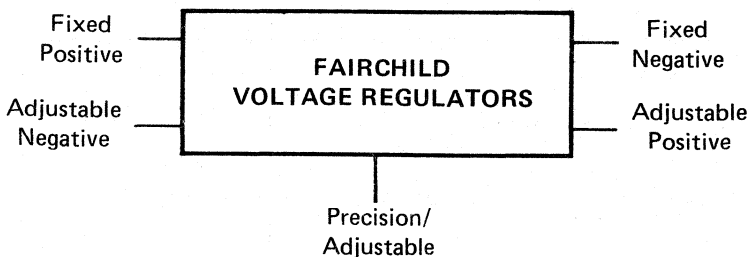
# INTRODUCTION

## VOLTAGE REGULATORS

Fairchild Semiconductor produces the most comprehensive line of voltage regulators available. This line includes fixed output, three-terminal regulators for a range of output voltages from 2.6 to 30 V. Both positive and negative three-terminal voltage regulators are available, with rated output currents from 0.1 A to 5.0 A.

For requirements not covered by the fixed output devices Fairchild offers a line of adjustable regulators for all applications, including positive, negative, tracking, and switching.

Below is a summary of the basic types of regulators. Then follows a product listing with key parameters.



## FAIRCHILD VOLTAGE REGULATORS

### Fixed 3-Terminal Positive Voltage Regulators

109/209/309

$\mu$ A7805/C

$\mu$ A7806/C

$\mu$ A7808/C

$\mu$ A7812/C

$\mu$ A7815/C

$\mu$ A7818/C

$\mu$ A7824/C

78H05/C

$\mu$ A78L02/C/AC

$\mu$ A78L05/C/AC

$\mu$ A78L06/C/AC

$\mu$ A78L12/C/AC

$\mu$ A78L15/C/AC

$\mu$ A78M05/C

$\mu$ A78M06/C

$\mu$ A78M08/C

$\mu$ A78M12/C

$\mu$ A78M15/C

$\mu$ A78M20/C

$\mu$ A78M24/C

SH0323

### Adjustable Positive Voltage Regulators

$\mu$ A723/C Precision VR

$\mu$ A78MG/C Adjustable VR

$\mu$ A78G/C Adjustable VR

105/305/305A/376 Adjustable Positive VRs

### Adjustable Negative Voltage Regulators

$\mu$ A723/C Precision VR

$\mu$ A79MG Adjustable Negative VR

$\mu$ A79G/C Adjustable Negative VR

104/304 Negative Series

### Fixed 3-Terminal Negative Voltage Regulators

$\mu$ A7905/C

$\mu$ A7906/C

$\mu$ A7908/C

$\mu$ A7912/C

$\mu$ A7915/C

$\mu$ A7918/C

$\mu$ A7924/C

$\mu$ A79M05

$\mu$ A79M06

$\mu$ A79M08

$\mu$ A79M12

$\mu$ A79M15

$\mu$ A79M20

$\mu$ A79M24

### Precision/Adjustable

$\mu$ A723 Precision VR

104/304 Negative VR Series

105/305/305A/376 Positive VR Series

# FAIRCHILD INTEGRATED CIRCUITS LINEAR

## Voltage Regulators (Note)

Item	DEVICE NO.	Function	Input Voltage Range (V)	Output Voltage Range(V)	Output Current (A) Max	Output Current Peak (A)	Line Regulation %	Load Regulation %	Quiescent Current (mA)	Ripple Rejection (dB) MIN	Dropout Voltage (V)	Output Voltage Drift (typ) mV/°C	Logic/Connection Diagram	Package(s)
1	μA723	Prec. VR	9.5-40	2.0-37	.125	.150	.1	.6	2.3	74	3.0	.015 %/°C	L-VR-6	TO-100 9A, 6A
2	μA7805	3-Term. Pos. VR	7.0-35	4.8 5.2	1.0	2.2	2.0	2.0	4.2	62	2.0	-1.1	L-VR-1, 2	TO-220 TO-3
3	μA7806	3-Term. Pos. VR	8.0-35	5.75 6.25	1.0	2.2	2.0	2.0	4.3	59	2.0	-0.8	L-VR-1, 2	TO-220 TO-3
4	μA7808	3-Term. Pos. VR	10-35	7.7 8.3	1.0	2.2	2.0	2.0	4.3	56	2.0	-0.8	L-VR-1, 2	TO-220 TO-3
5	μA7812	3-Term. Pos. VR	14-35	11.5 12.5	1.0	2.2	2.0	2.0	4.3	55	2.0	-1.0	L-VR-1, 2	TO-220 TO-3
6	μA7815	3-Term. Pos. VR	17-35	14.4 15.6	1.0	2.2	2.0	2.0	4.4	54	2.0	1.0	L-VR-1, 2	TO-220 TO-3
7	μA7818	3-Term. Pos. VR	20-35	17.3 18.7	1.0	2.2	2.0	2.0	4.5	53	2.0	-1.0	L-VR-1, 2	TO-220 TO-3
8	μA7824	3-Term. Pos. VR	26-40	23 25	1.0	2.2	2.0	2.0	4.6	50	2.0	-1.5	L-VR-1, 2	TO-220 TO-3
9	78H05	5A, VR	8.5 20	4.8 5.5	5	7	1.0	1.0	10	60	3.5	-	L-VR-1	TO-3
10	78L02	3-Term. Pos. VR	4.3 30	2.5 2.7	.100	-	2.0	1.0	3.6	51	1.7	-	L-VR-3, 4	TO-39 TO-92
11	78L05	3-Term. Pos. VR	6.7 30	4.8 5.2	.100	-	2.0	1.0	3.8	49	1.7	-	L-VR-3, 4	TO-39 TO-92
12	78L06	3-Term. Pos. VR	7.7 30	5.95 6.45	.100	-	2.0	1.0	3.9	46	1.7	-	L-VR-3, 4	TO-39 TO-92
13	78L12	3-Term. Pos. VR	13.7 35	11.5 12.5	.100	-	2.0	1.0	4.2	42	1.7	-	L-VR-3, 4	TO-39 TO-92
14	78L15	3-Term. Pos. VR	16.7 35	14.4 15.6	.100	-	2.0	1.0	4.4	39	1.7	-	L-VR-3, 4	TO-39 TO-92

Note: Only commercial part numbers are listed. Military, automotive and industrial temperature range devices are available. Please request data sheets.

# FAIRCHILD INTEGRATED CIRCUITS LINEAR

## Voltage Regulators

Note: Only commercial part numbers are listed. Military, automotive and industrial temperature range devices are available. Please request data sheets.

Item	DEVICE NO.	Function	Input Voltage Range (V)	Output Voltage Range(V)	Output Current Max (A)	Output Current Peak (A)	Line Regulation %	Load Regulation %	Quiescent Current (mA)	Ripple Rejection (dB)	Dropout Voltage (V)	Output Voltage Drift (typ) mV/°C	Logic/ Connection Diagram	Package(s)
1	$\mu$ A78MG	Adj. Pos. VR	7.0-40	5.0 30	.5	.8	.75	1.0	2.8	78	2.5	-0.5	L-VR-5	9V TO-39
2	$\mu$ A78M05	3-Term. Pos. VR	7.0-30	4.8-5.2	.5	.75	1.0	1.0	4.2	78	2.0	-1.0	L-VR-2, 3	TO-220 TO-39
3	$\mu$ A78M06	3-Term. Pos. VR	8.0-30	5.75 6.25	.5	.75	1.0	1.0	4.3	75	2.0	-0.5	L-VR-2, 3	TO-220 TO-39
4	$\mu$ A78M08	3-Term. Pos. VR	10-30	7.7 8.3	.5	.75	1.0	1.0	4.3	72	2.0	-0.5	L-VR-2, 3	TO-220 TO-39
5	$\mu$ A78M12	3-Term. Pos. VR	14-35	11.5 12.5	.5	.75	1.0	1.0	4.3	71	2.0	-1.0	L-VR-2, 3	TO-220 TO-39
6	$\mu$ A78M15	3-Term. Pos. VR	17-35	14.4 15.6	.5	.75	1.0	1.0	4.4	70	2.0	-1.0	L-VR-2, 3	TO-220 TO-39
7	$\mu$ A78M20	3-Term. Pos. VR	22-40	19.0 21.0	.5	.75	1.0	1.0	4.5	69	2.0	-1.1	L-VR-2, 3	TO-220 TO-39
8	$\mu$ A78M24	3-Term. Pos. VR	26-40	23, 25	.5	.75	1.0	1.0	4.6	66	2.0	-1.2	L-VR-2, 3	TO-220 TO-39
9	$\mu$ A79MG	Adj. Neg. VR	-3.3 -40	-2.2 -30	.5	.65	.75	1.0	.5	60	2.3	-0.4	L-VR-9	9V TO-39
10	$\mu$ A79M05	Fixed Neg. VR	-6.1 -35	-5.2 -4.8	.5	.65	1.0	1.0	1.0	60	1.1	-0.4	L-VR-10, 11	TO-220 TO-39
11	$\mu$ A79M06	Fixed Neg. VR	-7.1 -35	-6.25 -5.75	.5	.65	1.0	1.0	1.0	60	1.1	-0.4	L-VR-10, 11	TO-220 TO-39
12	$\mu$ A79M08	Fixed Neg. VR	-9.1 -35	-8.3 -7.7	.5	.65	1.0	1.0	1.0	60	1.1	-0.6	L-VR-10, 11	TO-220 TO-39
13	$\mu$ A79M12	Fixed Neg. VR	-13.1 -35	-12.5 -11.5	.5	.65	1.0	1.0	1.5	60	1.1	-0.8	L-VR-10, 11	TO-220 TO-39
14	$\mu$ A79M15	Fixed Neg. VR	-16.1 -35	-15.6 -14.4	.5	.65	1.0	1.0	1.5	59	1.1	-1.0	L-VR-10, 11	TO-220 TO-39
15	$\mu$ A79M20	Fixed Neg. VR	-21.1 -40	19.0 21.0	.5	.65	1.0	1.0	1.5	58	1.1	-1.0	L-VR-10, 11	TO-220 TO-39

# FAIRCHILD INTEGRATED CIRCUITS LINEAR

## Voltage Regulators (Note)

Item	DEVICE NO.	Function	Input Voltage Range (V)	Output Voltage Range(V)	Output Current (A) (Max)	Output Current Peak (A)	Line Regulation %	Load Regulation %	Quiescent Current (mA)	Ripple Rejection (dB)	Dropout Voltage (V)	Output Voltage Drift (typ) mV/°C	Logic/ Connection Diagram	Package(s)
1	$\mu$ A79M24	Fixed Neg. VR	-25.1 -40	23 25	.500	.650	1.0	1.0	1.5	58	1.1	-1.0	L-VR-10, 11	TO-220 TO-39
2	SH0323	3-Term. Pos. VR	8, 20	5	3	5	1.0	1.0	10	60	3.0	-	L-VR-1	TO-3
3	305	VR	8.0-40	4.5 30	.020	-	.060	.050	2.0	60	3.0	1.0 %/°C	L-VR-8	TO-99
4	304	Neg. VR	-40 -9.5	-30 0	.020	-	.1	.2	5.0	60	3.0	1.0 %/°C	L-VR-7	TO-100
5	309	3-Term. 5V Reg	7.0-35	4.8 5.2	1	2.2	2.0	2.0	5.0	-	2.0	-0.8		TO-220 TO-39
6	376	VR	9.0 40	5.0 37	.025	-	.050	.2	2.5	-	3.0	-	-	9T

Note: Only Commercial part numbers are listed. Military, automotive and industrial temperature range devices are available. Please request data sheets.

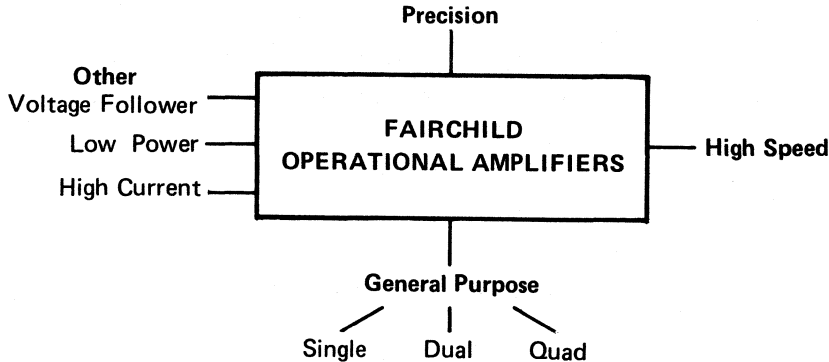
# INTRODUCTION

## OP AMPS

Fairchild has pioneered the development of monolithic operational amplifiers and has remained the industry leader.

Whatever the application, there is a Fairchild operational amplifier designed to perform it — precisely, economically and reliably.

Below is a performance category listing of the operational amplifiers. Then follows a product listing with key parameters.



### General Purpose

Single  $\mu$ A702/C  
Single  $\mu$ A709/A/C  
Single  $\mu$ A730/C  
Single  $\mu$ A741/A/C/E  
Single  $\mu$ A748/C  
Single  $\mu$ A776/C  
Single  $\mu$ A777/C  
Single 101/201  
Single 101A/201A/301A  
Single 102/302  
Single 107/207/307  
Single 110/310  
Dual  $\mu$ A739C  
Dual  $\mu$ A747/A/C/E  
Dual  $\mu$ A749/C  
Dual 1558/1458/1458C  
Quad 3301/3401  
Quad 3303/3403/3503

Wideband DC Amplifier  
High Performance Operational Amplifier  
Differential Amplifier  
Frequency Compensated Operational Amplifier  
High Performance Operational Amplifier  
Multi-Purpose Programmable Operational Amplifier  
Precision Operational Amplifier  
General Purpose Operational Amplifier  
General Purpose Operational Amplifier  
Voltage Follower  
General Purpose Operational Amplifier  
Voltage Follower  
Dual Low Noise Audio Preamplifier  
Dual Frequency Compensated Operational Amplifier  
Dual Audio Preamplifier  
Internally Compensated, High Performance Dual Monolithic Operational Amplifier  
Quad Norton Amplifier  
Quad Operational Amplifier

# FAIRCHILD INTEGRATED CIRCUITS

## LINEAR

### Linear—Operational Amplifiers—Commercial (Continued)

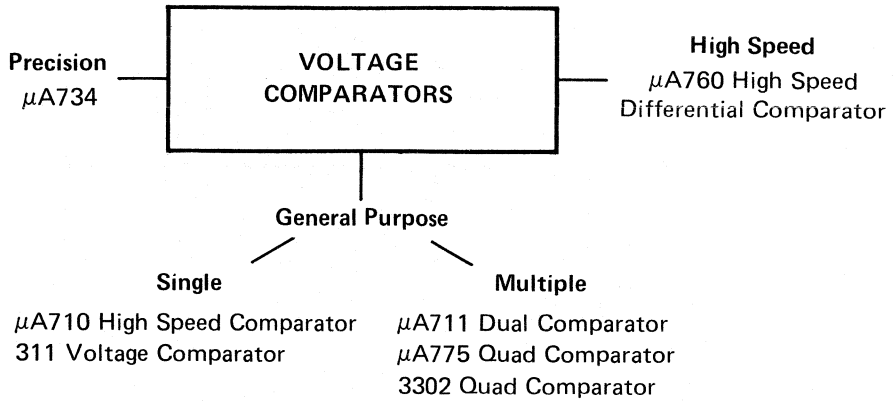
(Note)

Diff Input Volt (V)	Volt Gain (V/V)	Bandwidth $A_V = 1$ (MHz)	Output Current (mA) (Max)	Slew Rate $A_V = 1$ (V/ $\mu$ s)	Supply Voltage		Supply Current (mA) (Max)	Logic / Connection Diag	Compensation Components	Mil Grade Avail	Package(s)
					Min (V) (Typ)	Max (V) (Typ)					
$\pm 5$	2K	30.0	3.5	3.5	+6-3	+14-7	6.7	L-0A-1	2	X	TO-99,6A,3F
$\pm 5$	15K	1.0	5.0	0.3	$\pm 9$	$\pm 18$	2.9	L-0A-2	0	X	TO-99,6A,9A,3F
$\pm 15$	10K	65.0	5.0	100	$\pm 6$	$\pm 18$	10	L-0A-3	3	X	TO-100,6A
$\pm 22$	250K	1.0	5.0	—	$\pm 3$	$\pm 22$	3	L-0A-4	4	X	TO-99
$\pm 22$	1000K	1.0	5.0	—	$\pm 3$	$\pm 22$	3	L-0A-4	4	X	TO-99
$\pm 15$	0.06K	1.0	.001	—	$\pm 9$	$\pm 18$	5.7	L-0A-5	2	X	TO-100
$\pm 5$	0.1K	1.5	—	—	+6	+14	13	L-0A-6	0	X	TO-99
$\pm 30$	25K	3.0	5.0	6.0	$\pm 5$	$\pm 22$	8	L-0A-7	0	X	TO-99
$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	2.8	L-0A-7	0	X	TO-99,6A,9A,3F,9T
$\pm 30$	50K	1.0	5.0	0.7	$\pm 5$	$\pm 22$	3.75	L-0A-7	0	X	TO-99,6A,9A,3F
$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	5.6	L-0A-8	0	X	TO-100,6A
$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	4.25	L-0A-8	0	X	TO-100,6A
$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	2.8	L-0A-9	1	X	TO-99,6A,3F,9T
$\pm 30$	50K	1.0	2.0	0.8	$\pm 1.2$	$\pm 18$	0.19	L-0A-10	1	X	TO-99,6A,9T
$\pm 30$	50K	0.2	0.12	0.1	$\pm 1.2$	$\pm 18$	0.03	L-0A-10	1	X	TO-99,6A,9T
$\pm 30$	25K	1.0	5.0	0.5	$\pm 5$	$\pm 20$	2.8	L-0A-9	1	X	TO-99,6A,3F,9T
$\pm 30$	20K	1.0	1080.0	0.5	$\pm 5$	$\pm 18$	25	L-0A-11	4		Mul-L TO-3,9W,5H
$\pm 30$	25K	1.0	5.0	0.5	$\pm 3$	$\pm 18$	3	L-0A-9	1	X	TO-99,6A,9T
$\pm 30$	25K	1.0	5.0	0.5	$\pm 3$	$\pm 18$	3	L-0A-12	0	X	TO-99,9T
$\pm 0.5$	15K	1.0	1.0	0.3	$\pm 5$	$\pm 18$	0.8	L-0A-13	1	X	TO-99,6A
$\pm 0.5$	80K	1.0	1.0	0.3	$\pm 2$	$\pm 20$	0.8	L-0A-13	1	X	TO-99,6A
—	0.9985	10.0	1.0	10	$\pm 12$	$\pm 18$	5.5	L-0A-14	0	X	TO-99
—	0.999	20.0	1.0	30	$\pm 5$	$\pm 18$	5.5	L-0A-14	0	X	TO-99
$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	2.9	L-0A-15	0	X	TO-99,9T
—	1K	5.0	10.0	0.6	$\pm 2(4)$	$\pm 9(18)$	10	L-0A-17	0		9A
$\pm 30$	25K	1.0	5.0	0.6	+1.5(3)	+18(36)	7	L-0A-18	0	X	9A,6A

# INTRODUCTION

## COMPARATORS

Comparators are shown below by functional category. Then follows a product listing with key parameters which will aid in your selection of the best comparator for your application.



# FAIRCHILD INTEGRATED CIRCUITS

## LINEAR

### Linear – Comparators (Commercial) (Note 7)

Item	DEVICE NO.	Function	Input Offset Voltage (mV Max)	Temperature Coefficient of Input Offset Voltage (mV/°C)	Input Bias Current (μA) (Max)	Input Offset Current (μA) (Max)	Supply Voltage (V)	Response Time (ns)	Input Voltage Range (V)
		<b>Notes</b>	(2)	(4)	(2)	(2)	(2)	(1)	(2)
1	μA710	High Speed Comp.	5.0	5.0	40	7.5	+12, -6.0	40	±5.0(3)
2	μA711	Dual Comp.	5.0	5.0	150	25	+12, -6.0	40	±5.0(3)
3	μA734	Precision Comp.	7.5	3.5	0.15	.045	±5.0 to ±15	200	±5.0
4	μA760	High Speed Diff. Comp.	6.0	3.0	60	7.5	±4.5 to ±6.5	16	±4.0
5	μA775	Quad Comp.	9	10	0.3	.07	+2 to +36	1300	±Vs
6	311	Voltage Comp.	10	6.0	0.3	.07	0, +5.0 to ±15	200	±14
7	3302	Quad Comp.	40(6)	12	1.0(6)	.03(1)	+2 to +28(6)	2000	±Vs(6)

**Notes:**

1. Typical values at 25°C unless otherwise specified.
2. Minimum or maximum value for 0°C ≤ T<sub>A</sub> ≤ 70°C unless otherwise specified.
3. V<sub>-</sub> = -7.0 V.
4. Typical.
5. T<sub>A</sub> = +25°C.
6. Automotive temp. range -40°C to +85°C.
7. Military versions available. Please request specific information.



# FAIRCHILD INTEGRATED CIRCUITS

## LINEAR

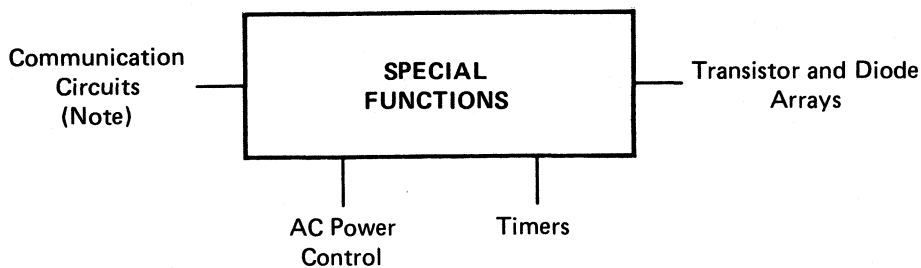
### Linear – Comparators (Commercial) (Note 7)

	Output Voltage Swing (V)	Voltage Gain (V/mV) (Min)	Power Consumption (mW) (Max)	TTL Fanout	Diff. Input Voltage Range(V)	Package(s)	Military, Full Temp. Availability	Logic/ Connection Diagram
	(2)	(5)	(5)	(1)	(2)			
	-0.5 to +3.2	0.8	150	1	±5.0	TO-99,TO-91,6A,9A	Yes	L-C-1
	-0.5 to +3.2	0.5	230(5)	1	±5.0	TO-91,TO-100,6A,9A	Yes	L-C-2
	0 to +8.0	25	145	2	±10	TO-100,6A	Yes	L-C-3
	0 to ±3.0	5.0(4)	325	2	±5.0	TO-99,6A	Yes	L-C-4
	0 to N.A.	25	12.5	4	±VS	6A,9A	Yes	L-C-5
	N/A	200(4)	205	5.0(Min)	±16	TO-99,9T	Yes	L-C-6
	0 to N.A.	2	22.5	1	±VS	9A	Note (6)	L-C-5

# INTRODUCTION

## SPECIAL FUNCTIONS

Fairchild offers Communication, AC Power Control, Timer, Counter and matched Transistor/Diode Array circuits to satisfy unique applications. Below is a summary of Special Function circuits by functional category, device number and device title. Then follows a product listing with key parameters which will aid in your selection of the best circuit for your application.



### Communications Circuits

$\mu$ A703	RF/IF Amplifier
$\mu$ A753	FM Gain Block
$\mu$ A757	Gain Cont. IF Amplifier
$\mu$ A796	Double Balanced Modulator-Demodulator
2136	FM/IF Amplifier Detector
3075	FM/IF Limiter-Detector and Audio Preamplifier
3089	FM/IF Subsystem

### AC Power Control

$\mu$ A742	Zero Crossing AC Trigger — Trigac
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### Timers

2240	Prog. Timer/Counter
555	Single Timer
556	Dual Timer

### Transistor and Diode Arrays

$\mu$ A726	Temp Controlled Differential Pair Transistor Array
3018/A	Darlington Connected Pair Transistor Array
3019	Diode Array
3026	Dual Independent Differential Transistor Array
3036	Dual Darlington Connected Transistor Array
3039	Quad Plus Two Diode Array
3045	Differential Connected Pair Transistor Array
3046	Differential Connected Pair Transistor Array
3054	Dual Independent Differential Transistor Array
3086	Differential Connected Pair Transistor Array

#### NOTE:

Communication Circuits are not included in this condensed catalog. Please request specific data sheets.

# FAIRCHILD INTEGRATED CIRCUITS LINEAR

## Special Functions – Arrays

Item	DEVICE NO.	Function	Balanced Input	Balanced Output	Low Noise	AGC Capability	Multiple Unit	Wide Band Switching Application	BVCBO(V)	BVCEO(V)	BVEBO(V)	I <sub>C</sub> (mA)	Diode Matching (mV)	Reverse (ns) Recovery Time	Package(s)	Operating Temperature Range
1	Note 1 μA726C	Temp. Controlled Diff. Pair Trans.	●	●	●				40	30	5	5			5U	0°C Note 2 To 85°C
2	3018	Darlington Conn. Pair Plus Two Ind. Trans.	●	●		●	●	●	20	15	5	50			5G	-55°C To +125°C
3	3018A	Darlington Conn. Pair Plus Two Ind. Trans.	●	●		●	●	●	20	15	5	50			5G	-55°C To +125°C
4	3019	Ind. Diode											1		5E	-55°C To +125°C
5	3026	Dual Independent Diff. Trans.							20	15	5	50			5G	0°C To 85°C
6	3036	Dual Darlington Conn. Trans.	●	●	●		●		30	15	5	50			5E	-55°C To +125°C
7	3039	Quad Plus Two Diodes											1	1	5G	-55°C To +125°C
8	3045	Diff. Conn. Pair Plus Three Ind. Trans.	●	●			●	●	20	15	5	50			6A	-55°C To +125°C
9	3046	Diff. Conn. Pair Plus Three Ind. Trans.	●	●			●	●	20	15	5	50			6A	0°C To +85°C
10	3054	Dual Independent Diff. Trans.					●		20	15	5	50			6A	-55°C To +125°C
11	3086	Diff. Conn. Pair Plus Three Ind. Trans.	●	●			●	●	20	15	5	50	1		6A	-40°C To +85°C

Note: <sup>1</sup>Military grade available.

<sup>2</sup>See Logic/Connection Diagram L-FB-1.

## FAIRCHILD INTEGRATED CIRCUITS LINEAR

### Special Functions – Timers and Counters

Item	DEVICE NO.	Function	Time Delay	Free Running Frequency (Hz)	Output Compatibility	Output Current (mA)	Maximum Supply Voltage (V)	Timers Error	Logic/ Connection Diagram	Package(s)
1	*2240	Programmable Timer/Counter	120 Hrs	–	TTL	5	18	.5%	L-I-27	7B, 9B
2	555	Single Timer	60 min.	100K	TTL	200	18	1.0%	L-I-28	9T, 5B
3	556	Dual Timer	60 min.	100K	TTL	200	18	1.0%	L-I-29	7B, 9B

\*To be announced

### Special Functions – AC Power Control – $\mu$ A742 Zero Crossing AC Trigger Trigac

Item	DEVICE NO.	Temperature Range	Package	Logic/ Connection Diagram
4	$\mu$ A742	0°C TO 70°C	6A	L-FB-2

#### Features

- DESIGNED FOR APPLICATIONS IN 60Hz AND 400Hz AC POWER CONTROL SYSTEMS HAVING RESISTIVE OR INDUCTIVE LOADS
- OPERATES DIRECTLY FROM AN AC LINE OR FROM A DC SUPPLY
- INPUT COMPATIBLE WITH A WIDE RANGE OF SENSOR IMPEDANCES
- BRIDGE SENSING WITH ADJUSTABLE HYSTERESIS SET POINTS
- PROVISIONS FOR TIME PROPORTIONING OPERATION
- PROVIDES ZERO CROSSING THYRISTOR TRIGGERING FOR MINIMUM RFI
- EVEN NUMBER OF CONSECUTIVE HALF-CYCLE TRIGGERINGS FOR TRIACS AND INVERSE PARALLEL SCR's IN MOST APPLICATIONS

# INTERFACE

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
DTL · TRANSISTORS · ZENERS · FLIP-FLO  
PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY



# INTERFACE INTRODUCTION

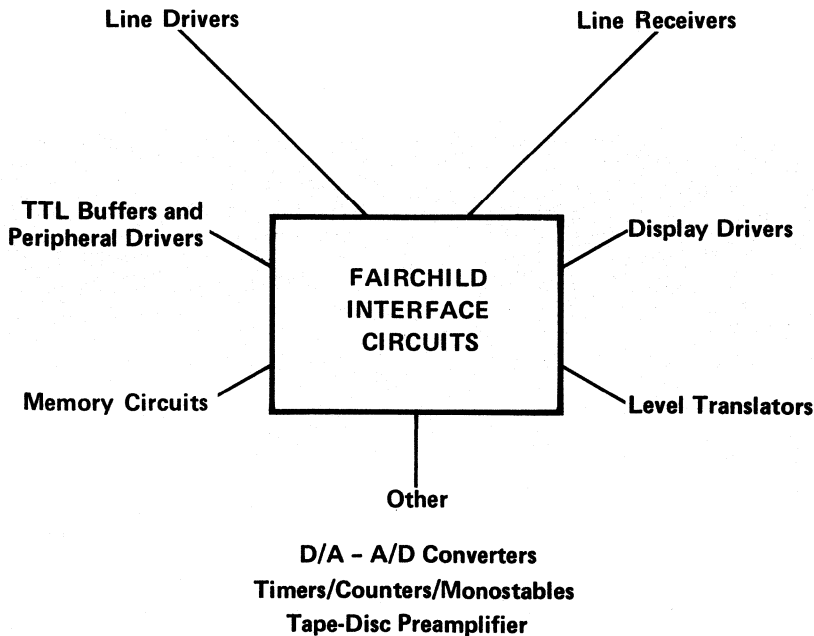
Fairchild interface circuits service a myriad of applications. Some functional categories are:

- Data Transmission**
- Display Driving**
- Memory Driving and Sensing**
- D/A and A/D Conversion**
- Tape and Disc File Amplification and**
- General Purpose Driving**
- Level Translation**

Design consideration was given to specific requirements in each of these categories. The result is a Fairchild interface line consisting of drivers and receivers varying in configuration, function, complexity and cost.

This section of the Fairchild condensed catalog lists interface devices with important parameter information. The objective is to aid in your selection of the correct Fairchild interface circuit to satisfy your needs.

Below is a summary of Fairchild's interface circuits by application, device number and device title.



## INTERFACE CIRCUITS LINE DRIVERS AND RECEIVERS

### DRIVERS

#### GENERAL PURPOSE

##### TTL Compatible

9612	Dual Differential Line Driver
9614	Dual Differential Line Driver
9621	Dual Line Driver
9H40/74H40	Dual 2-NAND Driver
9N37/7437	Quad 2-NAND Driver
9N38/7438	Quad 2-NAND Driver
9N40/7440	Dual 2-NAND Driver
9S40/74S40	Dual 2-NAND Driver
9S140/74S140	Dual 2-NAND 50Ω Driver
9009	Dual 2-NAND Driver
55/75109	Dual Line Driver
55/75110	Dual Line Driver
75121	Dual Line Driver
96101	Quad 2-NAND Driver
8T13	Dual Line Driver

##### ECL Compatible

10123	Triple Bus Driver
100123	Hex Bus Driver

#### IBM-370 INTERFACE

75123	Dual IBM-370 Line Driver
8T23	Dual IBM-370 Line Driver

#### RS-232-C/MIL-STD-188C

9616	Triple EIA RS-232-C/ Mil. Std. 188C Line Driver
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### RECEIVERS

#### GENERAL PURPOSE

##### TTL Compatible

9613	Dual Differential Line Receiver
9615	Dual Differential Line Receiver
9620	Dual Differential Line Receiver
9622	Dual Line Receiver
96106	Quad 2-NOR Bus Receiver
55/75107	Dual Line Receiver
55/75108	Dual Line Receiver
55/75122	Triple Line Receiver
75207	Dual Line Receiver
75208	Dual Line Receiver
8T14	Triple Line Receiver

##### ECL Compatible

9582	Triple Line Receiver
95115	Quad Line Receiver
95116	Triple Line Receiver
10014	Active Terminator
10114	Triple Line Receiver
10115	Quad Line Receiver
10116	Triple Line Receiver
100114	Quint Line Receiver

#### IBM-370 INTERFACE

75124	Triple IBM-370 Line Receiver
8T24	Triple IBM-370 Line Receiver

#### RS-232-C/MIL-STD-188C

9617	Triple RS-232-C Line Receiver
9627	Dual RS-232-C/Mil. Std. 188 Line Receiver

## DISPLAY DRIVERS

### LED

#### Segment Drivers

75491	Quad MOS-LED Driver
9307	7-Segment Decoder
9317	7-Segment Decoder/Driver
9368	7-Segment Decoder/Driver/Latch
9370	7-Segment Decoder/Driver/Latch
9374	7-Segment Decoder/Driver/Latch
9357	7-Segment Decoder/Driver

#### Digit Drivers

9664	Hex MOS-LED Driver
75492	Hex MOS-LED Driver

### INCANDESCENT

9317	7-Segment Decoder/Driver
9357	7-Segment Decoder/Driver
9370	7-Segment Decoder/Driver/Latch

### GAS DISCHARGE

9315	1 of 10 Decoder/Drivers
93141	1 of 10 Decoder/Drivers
9307	7-Segment Decoder
9358	7-Segment Decoder



## LEVEL TRANSLATORS

<p>TTL - MOS 9607 9624</p>	<p>Quad Clock Driver Dual TTL-MOS Interface Element</p>	<p>TTL - ECL 95124 10124</p>	<p>Quad TTL to ECL Quad TTL to ECL</p>
<p>MOS - TTL 9625</p>	<p>Dual MOS-TTL Interface Element</p>	<p>DTL - TTL 9109</p>	<p>Hex HL DTL to TTL</p>
<p>ECL - TTL 9595 10125</p>	<p>Dual ECL to TTL Quad ECL to TTL</p>	<p>TTL - DTC 9112</p>	<p>Hex TTL to HL DTL</p>

## TTL BUFFERS AND PERIPHERAL DRIVERS

### HIGH SPEED

55/75450B	Dual Peripheral Driver
55/75451B	Dual Peripheral Driver
55/75452B	Dual Peripheral Driver
55/75453B	Dual Peripheral Driver
55/75454B	Dual Peripheral Driver

### HIGH CURRENT, HIGH VOLTAGE

55/75450	Dual Peripheral Driver
55/75460	Dual High Voltage Peripheral Driver
55/75461	Dual High Voltage Peripheral Driver
55/75462	Dual High Voltage Peripheral Driver
55/75463	Dual High Voltage Peripheral Driver
55/75464	Dual High Voltage Peripheral Driver
75491	Quad Driver
75492	Hex Driver
9664	Hex Driver
SH2001	Peripheral Driver
SH2002	Peripheral Driver
SH2200	Peripheral Driver

## MEMORY DRIVERS AND SENSE AMPLIFIERS

### CORE

Driver - 55/75325 Core Drivers	
Sense Amplifiers	
7524/25	Dual Core Sense Amplifiers
7528/29	Dual Core Sense Amplifiers
7534/35	Dual Core Sense Amplifiers
75234/235	Dual Core Sense Amplifiers

### MOS - 1103 MEMORY

Driver - 9607 Quad Clock Driver	
Sense Amplifiers	
75207	Dual Sense Amplifier
75208	Dual Sense Amplifier

## OTHER

### D/A - A/D CONVERSION

9650	4-Bit Current Source
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### TAPE-DISC PREAMPLIFIER

$\mu$ A733	Differential Vidio Amplifier
$\mu$ A739	Dual Low Noise Preamplifier

### TIMERS/COUNTERS/MONOSTABLES (ONE SHOTS)

555	Single Timer
556	Dual Timer
2240	Programmable Timer/Counter
9600	Single Retriggerable
9601	Single Retriggerable
9602	Dual Retriggerable
96L02	Dual Retriggerable
96S02	Dual Retriggerable
9603/74121	Single Non-Triggerable
9N122/74122	Single Retriggerable
9N123/74123	Dual Retriggerable

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Line Drivers – Differential and Single-Ended Output

Item	DEVICE NO.	Function	Companion Receiver	Type Output	Output Configuration	Output Current (mA)	Input Compatibility	Power Dissipation (mW) (Typ)	Number Drivers per Package	Supply Voltage (V)	Maximum Data Rate Line Length, etc.	tpd (ns)	Logic Symbol/Connection Diagram	Package(s)
1	9612	Dual Diff. Driver	9613	Volt.	Diff.	50	TTL	150	2.0	+5		14	L-I-23	9T
2	9614	Dual Diff. Line Driver	9615	Volt.	Diff. or Single-Ended	40	TTL	170	2.0	+5		16	L-I-2	4L, 6B
3	9616	Triple RS 232 Line Driver	9627 9617	Volt.	Single Ended	17	TTL	250	3.0	+12; -12		300	L-I-4	6A
4	9621	Dual Line Driver	9622	Volt.	Diff. or Single Ended	20	TTL	100	2.0	+5; +15		10	L-I-7	6A
5	55/75109	Dual Line Driver	75107 75108	Curr.	Diff.	6	TTL	180	2.0	+5; -5		9	L-I-14	6A, 9A
6	55/75110	Dual Line Driver	75107 75108	Curr.	Diff.	12	TTL	285	2.0	+5; -5		9	L-I-14	6A, 9A
7	* 55/75121	Dual Line Driver	75122	Volt.	Single Ended	250 Fold-back Lim.	TTL	280	2.0	+5		20	L-I-21	6B, 9B
8	* 75123	Dual IBM-370 Driver	75124	Volt.	Single Ended	250 Fold-back Lim.	TTL	280	2.0	+5		20	L-I-21	6B, 9B
9	8T13	Dual Line Driver	8T14	Volt.	Single Ended	250 Fold-back Lim.	TTL	280	2.0	+5		20	L-I-21	6B, 9B
10	8T23	Dual IBM-370 Line Driver	8T24	Volt.	Single Ended	250 Fold-back Lim.	TTL	280	2.0	+5		20	L-I-21	6B, 9B
11	10123	Triple BUS Driver	All 10k (ECL)	Volt.	Single Ended	20	ECL	312	3.0	-5.2		3	E-78	6B
12	* 100123	Hex Bus Driver	All 95k and 100k (ECL)	Volt.	Single Ended	20	ECL	730	6.0	-4.5		1.8	E-14	4Q

\*To be announced

NOTE:  
\*To be announced  
In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Line Drivers – Differential or Single-Ended Output

Item	DEVICE NO.	Function	Companion Receiver	Type Output	Output Configuration	Output Current (mA)	Input Compatibility	Supply Voltage (V)	Power Dissipation (mW) (Typ)	Drivers per Package	Line Length Operating Frequency	tpd (ns) (Typ)	Logic Symbol/Connection Diagram	Package(s)
1	9H40 74H40	Dual 2-NAND Driver	Any TTL	Volt.	Single Ended	48	TTL	+5V	88	2.0	See Fairchild TTL Application Handbook	7	D-5	TO-86 6A, 9A
2	9N37/ 7437	Quad 2-NAND Driver	Any TTL	Volt.	Single Ended	48	TTL	+5V	108	4.0		10	D-2	TO-86 6A, 9A
3	9N38/ 7438	Quad 2-NAND Driver	96106	Volt.	Single Ended	48	TTL	+5V	98	4.0		13	D-2	TO-86 6A, 9A
4	9N40/ 7440	Dual 2-NAND Driver	Any TTL	Volt.	Single Ended	48	TTL	+5V	52	2.0		11	D-5	TO-86 6A, 9A
5	9S40/ 74S40	Dual 2-NAND Driver	Any TTL	Volt.	Single Ended	48	TTL	+5V	88	2.0		4.0	D-5	TO-86 6A, 9A
6	9009	Dual 2-NAND Driver	Any TTL	Volt.	Single Ended	48	TTL	+5V	54	2.0		10	D-5	TO-86 6A, 9A
7	74S140	Dual 2-NAND 50ΩDriver	Any TTL	Volt.	Single Ended	40	TTL	+5	88	2.0		4.0	D-5	TO-86 6A, 9A
8	96101	Quad 2-NAND Driver	96106	Volt.	Single Ended	48	TTL	+5V	98	4.0		13	D-3	TO-86 6A, 9A

**NOTE:**

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# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Line Receivers

Item	DEVICE NO.	Function	Companion Driver	Input Threshold Sensitivity $V_{TH}$ (mV)	Common Mode (V)	Hysteresis Capability	Output Compatibility	Power Supply Voltage (V)	Power Dissipation (mW) (Typ)	tpd (ns) (Typ)	Number of Receivers per Package	Logic Symbol/ Connection Diagram	Package(s)
1	9613	Dual Diff. Line Receiver	9612	$\pm 500$	$\pm 15$	No	TTL	+5	143	25	2.0	L-I-24	9T
2	9615	Dual Diff. Line Receiver	9614	$\pm 1000$	$\pm 15$	No	TTL	+5	150	30	2.0	L-I-3	4L, 6B
3	9617	Triple RS 232 Line Receiver	9616	+1.5	$\pm 25$	Yes	TTL	+5	60	60	3.0	L-I-5	6A
4	9620	Dual Diff. Line Receiver	9621	$\pm 500$	$\pm 15$	No	TTL	+5 -12	110	35	2.0	L-I-6	6A
5	9622	Dual Line Receiver	9621	+1.5	$\pm 10$	No	TTL	+5, -12	140	38	2.0	L-I-8	6A
6	55/75107	Dual Line Receiver	75109 75110	$\pm 25$	$\pm 3$	No	TTL	$\pm 5$	130	17	2.0	L-I-13	6A, 9A
7	55/75108	Dual Line Receiver	75109 75110	$\pm 25$	$\pm 3$	No	TTL	$\pm 5$	130	19	2.0	L-I-13	6A, 9A
8	75207	Dual Line Receiver	75109 75110	$\pm 10$	$\pm 3$	No	TTL	$\pm 5$	130	17	2.0	L-I-13	6A, 9A
9	75208	Dual Line Receiver	75109 75110	$\pm 10$	$\pm 3$	No	TTL	$\pm 5$	130	19	2.0	L-I-13	6A, 9A
10	* 55/75122	Triple Line Receiver	75121	-	+5	Yes	TTL	+5	315	20	3.0	L-I-22	6B, 9B
11	75124	Triple IBM-370 Line Receiver	75123	-	+5	Yes	TTL	+5	315	20	3.0	L-I-22	6B, 9B
12	8T14	Triple Line Receiver	8T13	-	+5	Yes	TTL	+5	315	20	3.0	L-I-22	6B, 9B
13	8T24	Triple IBM-370 Line Receiver	8T23	-	+5	Yes	TTL	+5	315	20	3.0	L-I-22	6B, 9B

NOTE:  
In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

## FAIRCHILD INTEGRATED CIRCUITS INTERFACE

### Line Receivers

Item	DEVICE NO.	Function	Companion Driver	Input Threshold Sensitivity $V_{TH}$ (V)	Common Mode (V)	Hysteresis Capability	Output Compatibility	Power Supply Voltage (V)	Power Dissipation (mW) (Typ)	tpd (ns) (Typ)	Number of Receivers per Package	Logic Symbol/ Connection Diagram	Package(s)
1	9582	Triple Line Receiver	All ECL Logic	$V_{REF}$	$\pm 1$	No	ECL	-5.2	250	2.2	3	E-22	6B
2	9627	Dual RS232/ mil. std. 188 Line Receiver	9616	.45	$\pm 25$	No	TTL	$\pm 12$	234	70	2	L-I-11	6B
3	10014	Active Termination	All ECL Logic	$V_{REF}$	NA	No	ECL	-5.2	65	NA	14	E-18	6B, 9B
4	10114	Triple Line Receiver	All ECL Logic	$V_{REF}$	$\pm 1$	No	ECL	-5.2	145	2.2	3	E-24	6B, 9B
5	10115	Quad Line Receiver	All ECL Logic	$V_{REF}$	2	No	ECL	-5.2	95	1.9	4	E-23	6B, 9B
6	10116	Triple Line Receiver	All ECL Logic	$V_{REF}$	2	No	ECL	-5.2	75	1.9	3	E-24	6B, 9B
7	95115	Quad Line Receiver	All ECL Logic	$V_{REF}$	2	No	ECL	-5.2	95	1.9	4	E-23	6B
8	95116	Triple Line Receiver	All ECL Logic	$V_{REF}$	2	No	ECL	-5.2	75	1.9	3	E-24	6B
9	96106	Quad 2-NOR Bus Receiver	96101	1.5	-	No	TTL	5.0	90	20	4	D-39	TO-86 6A, 9A
10	100114	Quint Line Receiver	All ECL Logic	$V_{REF}$	$\pm 1.0$	No	ECL	-4.5	380	1.2	5	E-25	4Q

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Display Drivers

Item	DEVICE NO.	Function	Input Compatibility	BCD Decoder	Ripple Blanking	Blanking Above BCD 9 Input	Output Current (mA)	Maximum Output Standoff Voltage (V)	Active HIGH/LOW	Display Type	Standby Power Dissipation (mW)	Logic Symbol/ Connection Diagram	Package(s)
1	9307	7-Segment Decoder	TTL	Yes	Yes	No	11	5.5	H	LED Com. Cathode	165	D-141	4L 7B, 9B
2	9315	1 of 10 Cold Cathode	TTL	Yes	No	No	7	55	L	Gas Discharge	145	D-140	4L 6B, 9B
3	9317	7-Segment Decoder/Driver	TTL	Yes	Yes	Yes	"B"-40mA "C"-20mA	"B"-20 "C"-30	L	Common Anode LED	220	D-143	4L, 7B, 9B
4	9357	7-Segment Decoder/Driver	TTL	Yes	Yes	No	40	"A"-30 "B"-15	L	Common Anode LED	320	D-143	4L, 7B, 9B
5	9358	7-Segment Decoder	TTL	Yes	Yes	No	8	5.5	H	Logic	265	D-141	4L 7B, 9B
6	9368	7-Segment LED Driver	TTL	Yes	Yes	No	20	5.5	H	LED Com. Cathode	75mA 225	D-144	4L 6B, 9B
7	9370	7-Segment LED Driver	TTL	Yes	Yes	No	25	5.5	L	Com. Anode LED	350	D-145	4L, 6B, 9B
8	9374	7-Segment LED Driver	TTL- CMOS	Yes	Yes	No	15	10	L	Com. Anode LED	175	D-145	4L, 6B, 9B
9	9664	Hex Digit Driver	MOS-TTL- CMOS	No	No	No	150	20	L	LED	Neg.	L-I-26	9A
10	75491	Quad Digit Seg. Driver	MOS-TTL- CMOS	No	No	No	50	20	L	LED	Neg.	L-I-25	9A
11	75492	Hex Digit Driver	MOS-TTL- CMOS	No	No	No	250	20	L	LED	Neg.	L-I-26	9A
12	93141	1 of 10 Cold Cathode	TTL	Yes	No	No	7	55	L	Gas Discharge	80	D-140	4L, 7B, 9B

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Level Translators

Item	DEVICE NO.	Function	Supply Voltage $V_+$	Supply Voltage $V_-$	$V_{OH}$ (V)	$V_{OL}$ (V)	$t_{pd}$ (ns)	Power Dissipation (mW)	Logic Symbol/ Connection Diagram	Package(s)
1	9109	HLDTL-TTL Hex	12 to 20	0.0	O.C.	0.4	120	380	D-1	TO-86 6A, 9A
2	9112	TTL-HLDTL Hex	12 to 20	0.0	(+V)-2.0	0.4	90	440	D-1	TO-86 6A, 9A
3	9595	Dual ECL-TTL Translator	+5.0	-5.2	2.4	0.4	6.0	375	E-15	6B
4	(3207A) 9607	TTL-MOS Quad Clock Driver	15 to 21	0.0	(+V)-0.2	0.2	25	300	D-38	4L, 6B, 9B
5	9624	TTL-MOS Translator	+5.0	0.0 to -30	$V_{TAP}-1.0$	(-V)+2.0	120	40	L-I-9	6A
6	9625	MOS-TTL Dual Level Translator	+5.0	0.0 to -30	3.2	0.4	70	60	L-I-10	6A
7	10124	TTL-ECL Quad Diff. Driver	+5.0	-5.2	-0.885	-1.750	3.0	150	E-16	6B, 9B
8	10125	ECL-TTL Quad Buffer	+5.0	-5.2	2.5	0.5	3.0	300	E-17	6B, 9B
9	95124	TTL-ECL Quad Diff. Driver	+5.0	-5.2	-0.965	-1.705	3.0	160	E-16	6B

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.



# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## High Speed TTL Buffers and Peripheral Drivers

Item	DEVICE NO.	Function	Switching Speed tpd (ns)	Output current C. 7V-mA	Gate Function	Circuit Function	Transistor Connection Mode	Input Compatibility	Output Voltage (V)	Min. Latchup Voltage (V)	Number of Drivers	Logic Symbol/ Connection Diagram	Package(s)
1	55/75450	Dual Peripheral Drivers	30	300	NAND	—	External	TTL	30	13.5	2	L-I-16	6A, 9A
2	55/75451	Dual Peripheral Drivers	25	300	NAND	AND	Internal	TTL	30	13.5	2	L-I-17	9T, 5B
3	55/75452	Dual Peripheral Drivers	35	300	AND	NAND	Internal	TTL	30	13.5	2	L-I-18	9T, 5B
4	55/75453	Dual Peripheral Drivers	25	300	NOR	OR	Internal	TTL	30	13.5	2	L-I-19	9T, 5B
5	55/75454	Dual Peripheral Drivers	35	300	OR	NOR	Internal	TTL	30	13.5	2	L-I-20	9T, 5B

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## High Current, High Voltage TTL Buffers and Peripheral Drivers

Item	DEVICE NO.	Function	Maximum Output Current (mA)	Output Standoff Voltage (V)	Minimum Latch-up Voltage (mV)	Input Compatibility	Gate Function	Logic Function	Switching Speed (ns)	Drivers Per Package	Logic Symbol/Connection Diagram	Package(s)
1	9664	HEX Drivers	150 @ 1.2V	20	—	MOS, TTL CMOS	—	—	600	6	L-I-26	9A
2	75491	Quad Drivers	50 @ 1.2V	20	—	MOS, TTL CMOS	—	—	600	4	L-I-25	9A
3	75492	Hex Drivers	250 @ 1.2V	20	—	MOS, TTL CMOS	—	—	600	6	L-I-26	9A
4	55/75450	Dual Drivers	300 @ .7V	30	$V_S - 6.5$	TTL	NAND	—	30	2	L-I-16	6A, 9A
5	55/75451	Dual Drivers	300 @ .7V	30	$V_S - 6.5$	TTL	NAND	AND	30	2	L-I-17	9T, TO-99
6	55/75492	Dual Drivers	300 @ .7V	30	$V_S - 6.5$	TTL	AND	NAND	30	2	L-I-18	9T, TO-99
7	55/75453	Dual Drivers	300 @ .7V	30	$V_S - 6.5$	TTL	NOR	OR	30	2	L-I-19	9T, TO-99
8	55/75454	Dual Drivers	300 @ .7V	30	$V_S - 6.5$	TTL	OR	NOR	30	2	L-I-20	9T, TO-99
9	*55/75460	Dual Drivers	300 @ .7V	35	$V_S - 10$	TTL	NAND	—	35	2	L-I-16	6A, 9A
10	*55/75461	Dual Drivers	300 @ .7V	35	$V_S - 10$	TTL	NAND	AND	35	2	L-I-17	9T, TO-99
11	*55/75462	Dual Drivers	300 @ .7V	35	$V_S - 10$	TTL	AND	NAND	35	2	L-I-18	9T, TO-99
12	*55/75463	Dual Drivers	300 @ .7V	35	$V_S - 10$	TTL	NOR	OR	35	2	L-I-19	9T, TO-99
13	*55/75464	Dual Drivers	300 @ .7V	35	$V_S - 10$	TTL	OR	NOR	35	2	L-I-20	9T, TO-99
14	SH2001	High Volt. High Curr. Driver	250	50	—	DTL, TTL	—	NAND	70	1	—	5E
15	SH2002	High Volt. High Curr. Driver	150	40	—	DTL, TTL	—	NAND	70	1	—	5E
16	SH2200	High Volt. High Curr. Driver	500	50	—	DTL, TTL	—	NAND	80	1	—	5E

\*To be announced

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

## FAIRCHILD INTEGRATED CIRCUITS INTERFACE

### MOS and Core Memory Driver

Item	DEVICE NO.	Function	Supply Voltage (V)	Input Compatibility	Output Current Capability (mA)	Propagation Delay (ns)	Logical Symbol/ Connection Diagram	Package(s)
1	9607 (3207A)	Quad MOS Driver	15 to 21	TTL	250	9	D-38	6B, 9B
2	55/75325	Core Driver	+5, +24	TTL	600	25	L-I-15	4L, 7B, 9B

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

### MOS and Core Sense Amplifiers

Item	DEVICE NO.	Function	Differential Threshold Voltage (mV)	Common Mode Range (V)	Gate Function	Output Configuration	t <sub>pd</sub> (ns) (Typ)	Logic Symbol/ Connection Diagram	Package(s)
3	7524	Dual Sense Amp.	11 Min to 19 Max $V_{REF}=15mV$	±2.5	AND	Com. Collector	25	L-I-30	6B, 9B
4	7525	Dual Sense Amp.	8 Min to 22 Max $V_{REF}=15mV$	±2.5	AND	Com. Collector	25	L-I-30	6B, 9B
5	7528	Dual Sense Amp.	11 Min to 19 Max $V_{REF}=15mV$	±2.5	AND	Com. Collector	25	L-I-31	6B, 9B
6	7529	Dual Sense Amp.	8 Min to 22 Max $V_{TH}=15mV$	±2.5	AND	Com. Collector	25	L-I-31	6B, 9B

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## MOS and Core Sense Amplifiers (Cont'd)

Item	DEVICE NO.	Function	Differential Threshold Voltage (mV)	Common Mode Range (V)	Gate Function	Output Configuration	tpd (ns) (Typ)	Logic Symbol/ Connection Diagram	Package(s)
1	7534	Dual Sense Amp.	11 Min to 19 Max $V_{REF}=15mV$	$\pm 2.5$	NAND	Uncom. Collector	25	L-I-32	6B, 9B
2	7535	Dual Sense Amp.	8 Min to 22 Max $V_{REF}=15mV$	$\pm 2.5$	NAND	Uncom. Collector	25	L-I-32	6B, 9B
3	55/75107	Dual Sense Amp.	$\pm 25$	$\pm 3$	NAND	Com. Collector	17	L-I-13	6A, 9A
4	55/75108	Dual Sense Amp.	$\pm 25$	$\pm 3$	NAND	Uncom. Collector	19	L-I-13	6A, 9A
5	75207	Dual Sense Amp.	$\pm 10$	$\pm 3$	NAND	Com. Collector	17	L-I-13	6A, 9A
6	75208	Dual Sense Amp.	$\pm 10$	$\pm 3$	NAND	Uncom. Collector	19	L-I-13	6A, 9B
7	75234	Dual Sense Amp.	11 Min to 19 Max $V_{REF}=15mV$	$\pm 2.5$	NAND	Com. Collector	25	L-I-32	6B, 9B
8	75235	Dual Sense Amp.	11 Min to 19 Max $V_{REF}=15mV$	$\pm 2.5$	NAND	Com. Collector	25	L-I-32	6B, 9B

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

## D/A-A/D Conversion

Item	DEVICE NO.	Function	Linearity (% Full Scale Max)	Full Scale Output Current Error (% Max)	Output Current Capability (mA) (MSB) (MAX)	Input Compatibility	Logic Symbol/ Connection Diagram	Package(s)
9	9650	4-Bit Curr. Source	$\pm 0.01$	$\pm 1$	+2.0	TTL	L-I-12	6B

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Tape-Disc Preamplifiers

Item	DEVICE NO.	Function	Voltage Amplification	Bandwidth (-3dB) (Typ) (Hz)	Bandwidth Unity Gain (Typ) (Hz)	Input Offset Current ( $\mu$ A) (Typ)	Input Offset Voltage (mV) (Typ.)	Output Voltage Swing (V) (Typ)	Logical Symbol/ Connection Diagram	Package(s)
1	$\mu$ A733	Diff. Video Amp.	10- 400 Adj.	200MHz Gain 10	400MHz	0.4	1.5 (Gain 400)	4.7	L-I-1	TO-91 5B, 6A
2	$\mu$ A739	Dual Low Noise Preamp.	6.5K	300K	1M	.05	1.0	+2.8- -4.0	L-O-6	9A, 9A
3	SH3733	Triple Video Preamp.	400	10MHz	400MHz	0.4	1.5	4.7	-	9F

## Timers and Counters

Item	DEVICE NO.	Function	Time Delay	Free Running Frequency Hz	Output Compatibility	Output Current (mA)	Max. Supply Voltage (V)	Timing Error	Logic Symbol/ Connection Diagram	Package(s)
4	555	Single Timer	60 min.	100K	TTL	200	18	1.0%	L-I-28	9T, 5B
5	556	Dual Timer	60 min.	100K	TTL	200	18	1.0%	L-I-29	7B, 9B
6	*2240	Programmable Timer-Counter	120 Hrs.	-	TTL	5.0	18	.5%	L-I-27	7B, 9B

\*To be announced

NOTE:  
In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTEGRATED CIRCUITS INTERFACE

## Monostables (One Shots)

Item	DEVICE NO.	Function	Pulse Width Variation (%)		Number of Inputs		Resettable	Min Output ( $t_{W}$ ) (ns)	Power Dissipation (mW) (typ)	Logic Symbol	Package(s)
			Temp	vs. $V_{CC}$	Positive	Negative					
1	9600	Single Retriggerable	$\pm 1.5\%$	$\pm 1.5\%$	3.0	2.0	X	75	125	D-40	TO-86, 6A
2	9601	Single Retriggerable	$\pm 2.7\%$	$\pm 1.0\%$	2.0	2.0	-	50	125	D-41	TO-86, 6A, 9A
3	9602	Dual Retriggerable	$\pm 1.5\%$	$\pm 1.5\%$	1.0	1.0	X	72	250	D-42	4L, 6B, 9B
4	96L02	Dual Retriggerable	$\pm 0.4\%$	$\pm 0.5\%$	1.0	1.0	X	110	50	D-42	4L, 6B, 9B
5	9603/ 74121	Single Non-Retriggerable	$\pm 0.2\%$	$\pm 0.15\%$	1.0	2.0	-	40	90	D-43	TO-86 6A, 9A
6	96S02	Dual Retriggerable	$\pm 0.2\%$	$\pm 0.2\%$	1.0	1.0	X	7	250	D-42	4L, 6B, 9B
7	9N122/ 74122	Single Retriggerable	$\pm 2.7\%$	$\pm 1.0\%$	2.0	2.0	X	45	115	D-44	TO-86, 6A, 9A
8	9N123/ 74123	Dual Retriggerable	$\pm 2.7\%$	$\pm 1.0\%$	1.0	1.0	X	45	230	D-45	4L, 6B, 9B

**NOTE:**

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

## Analog Switch

Item	DEVICE NO.	Function	Switching Speed (ns)	Channel Resistance ( $\Omega$ ) (Max)	Supply Voltage (V)	Input Logic	Package(s)
9	SH3002	SPDT Analog Switch	75	200	$\pm 12$	TTL	5E

# DIGITAL

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
DTL · TRANSISTORS · ZENERS · FLIP-FLO  
PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY

TTL  
ECL  
RTL  
DTL  
C $\mu$ L

# TTL

Fairchild offers one of the broadest and most complete lines of TTL products in the industry. Five basic process and circuit configurations are offered. The most popular TTL functions are available in pin compatible versions from four of the five groups. All Fairchild TTL products are logic and supply voltage compatible so that circuit families may be mixed within a system for optimum speed, power, and economy. These products are available in plastic and ceramic DIP packages and ceramic flatpaks. Most TTL products are available in both Military ( $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ ) and Commercial ( $0^{\circ}\text{C}$  to  $70^{\circ}/75^{\circ}\text{C}$ ) temperature ranges.

- **STANDARD TTL 9000, 9N(54/74)SSI, 9300(54/74)MSI**

Description—The Standard TTL devices are medium speed, small and medium scale integrated circuits useful for a wide variety of digital system applications. This family is the oldest, most widely sourced and duplicated of the TTL families. Standard TTL features good noise immunity, high fan-out, and good capacitive drive capability.

- **HIGH SPEED TTL 9H(54H/74H)SSI, 93H00MSI**

Description—The 9H(54H/74H) series is a line of high speed gates, flip-flops, and fast 4-bit registers which are pin and function identical to the corresponding 9N(54/74) and 9300 devices. These devices are used primarily to speed up critical path delay times in standard TTL systems and enhance the overall system speeds.

- **LOW POWER TTL 93L00**

Description—The 93L00 series of Low Power TTL offers a speed/power trade-off well suited to both industrial and military applications. The 93L00 series is the *easiest to use* of all the TTL families. The low power and slow edge rates remove or relax most TTL layout, board density, and heat removal restrictions. Any system operating at frequencies less than 5 MHz should be using 93L00 LPTTL.

- **HIGH SPEED SCHOTTKY TTL 9S(54S/74S)SSI, 93S(54S/74S)MSI**

Description—The 9S00 and 93S00 comprise a family of super high speed devices featuring Schottky-barrier diode clamping on all normally saturated devices. The result is an overall improvement in propagation delays and greatly reduced sensitivity of delay times to temperature variation. The Schottky TTL family offers the fastest available TTL speeds, but requires the most restrictive wiring rules and noise decoupling.

- **LOW POWER SCHOTTKY TTL 9LS(54LS/74LS)SSI and MSI**

Description—The 9LS(54LS/74LS) series of Low Power Schottky TTL combines the advantages of Low Power TTL with the speed of Schottky clamp transistors to achieve the optimum TTL family. Systems designed with LSTTL will have *less heat, less noise* and *lower cost* than any other TTL System. LSTTL also offers the best MOS or CMOS interface of all TTL logic families.

## Supply Voltage and Temperature Range

The nominal supply voltage ( $V_{CC}$ ) for all TTL circuits is  $+5.0\text{ V}$ . Commercial grade parts are guaranteed to perform with a  $\pm 5\%$  supply tolerance ( $\pm 250\text{ mV}$ ) over an ambient temperature range of  $0^{\circ}\text{C}$  to  $75^{\circ}\text{C}$ . MIL-grade parts are guaranteed to perform with a  $\pm 10\%$  supply tolerance ( $\pm 500\text{ mV}$ ) over an ambient temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .

TTL families may be mixed for optimum system design. The following tables specify the worst case noise immunity in mixed systems:



# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### TTL Speed / Power Comparison

Item	Symbol	Fairchild TTL Families	Typical Gate Delays	Typical Power Per Gate
1	TTL	Standard	5 ns to 10 ns	10 mW
2	HTTL	High Speed	6 ns	22 mW
3	LPTTL	Low Power	10 ns to 20 ns	2 mW
4	STTL	Schottky	3 ns	19 mW
5	LSTTL	Low Power Schottky	5 ns	2 mW

### Worst Case TTL DC Noise Immunity / Noise Margins

#### Electrical Characteristics

Item	Symbol	Fairchild TTL Families	Military (-55 to +125°C)				Commercial (0 to 75°C)				Units
			V <sub>IL</sub>	V <sub>IH</sub>	V <sub>OL</sub>	V <sub>OH</sub>	V <sub>IL</sub>	V <sub>IH</sub>	V <sub>OL</sub>	V <sub>OH</sub>	
6	TTL	Standard TTL 9000, 9N (54/74)	0.8	2.0	0.4	2.4	0.8	2.0	0.4	2.4	V
7	HTTL	High Speed TTL 9H (54H/74H)	0.8	2.0	0.4	2.4	0.8	2.0	0.4	2.4	V
8	LPTTL	Low Power TTL, 93L00 (MSI)	0.7	2.0	0.3	2.4	0.8	2.0	0.3	2.4	V
9	STTL	Schottky TTL 9S (54S/74S), 93S00	0.8	2.0	0.5	2.5	0.8	2.0	0.5	2.7	V
10	LSTTL	Low Power Schottky TTL 9LS (54LS/74LS)	0.7	2.0	0.4	2.5	0.8	2.0	0.5	2.7	V

V<sub>OL</sub> and V<sub>OH</sub> are the voltages generated at the output. V<sub>IL</sub> and V<sub>IH</sub> are the voltage required at the input to generate the appropriate output levels. The numbers given above are guaranteed worst-case values.

#### LOW Level Noise Margins (Military)

From \ To	TTL	HTTL	LPTTL	STTL	LPSTTL	Units
TTL	400	400	300	400	300	mV
HTTL	400	400	300	400	300	mV
LPTTL	500	500	400	500	400	mV
STTL	300	300	200	300	200	mV
LSTTL	400	400	300	400	300	mV

From "V<sub>OL</sub>" to "V<sub>IL</sub>"

#### HIGH Level Noise Margins (Military)

From \ To	TTL	HTTL	LPTTL	STTL	LPSTTL	Units
TTL	400	400	400	400	400	mV
HTTL	400	400	400	400	400	mV
LPTTL	400	400	400	400	400	mV
STTL	500	500	500	500	500	mV
LSTTL	500	500	500	500	500	mV

From "V<sub>OH</sub>" to "V<sub>IH</sub>"

#### LOW Level Noise Margins (Commercial)

From \ To	TTL	HTTL	LPTTL	STTL	LPSTTL	Units
TTL	400	400	400	400	400	mV
HTTL	400	400	400	400	400	mV
LPTTL	500	500	500	500	500	mV
STTL	300	300	300	300	300	mV
LSTTL	300	300	300	300	300	mV

From "V<sub>OL</sub>" to "V<sub>IL</sub>"

#### HIGH Level Noise Margins (Commercial)

From \ To	TTL	HTTL	LPTTL	STTL	LPSTTL	Units
TTL	400	400	400	400	400	mV
HTTL	400	400	400	400	400	mV
LPTTL	400	400	400	400	400	mV
STTL	700	700	700	700	700	mV
LSTTL	700	700	700	700	700	mV

From "V<sub>OH</sub>" to "V<sub>IH</sub>"

#### NOTES:

- In general, all TTL devices can be made available in any of the listed packages. However, for specific availability or delivery information on a given package and Temperature Grade, consult the Fairchild O.E.M. Price List or call the local sales representative or distributor.
- The logic symbols will be located in the logic symbol Section. The pins shown are for the DIP version of the device. Flat-packs on some devices have different pin-outs, and should be checked in the applicable data sheet.

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

Item	Function	9000 Series 8 ns/10 mW	Low Power Schottky 5 ns/2 mW	Std. TTL 9N(54/74)	High Speed 9H(54/74H)	High Speed Schottky 3 ns/19 mW	Logic Symbol (Note b)	Packages (Note a)
<b>NAND Gates</b>								
1	Hex Inverters	9016	9LS04 (54/74LS04)	9N04 (54/7404)	9H04 (54/74H04)	9S04 (54/74S04) 9S04A	D-1	3I, 6A, 9A
2	Hex Inverts (O. C.)	9017	9LS05 (54/74LS05)	9N05 (54/7405)	9H05 (54/74H05)	9S05 (54/74S05) 9S05A	D-1	3I, 6A, 9A
3	Hex Inverter (15 V)			9N16 (54/7416)			D-1	3I, 6A, 9A
4	Hex Inverter (30 V)			9N06 (54/7406)			D-1	3I, 6A, 9A
5	Hex Schmitt Trigger		*9LS14 (54/74LS14)	9N14 (54/7414)			D-1	3I, 6A, 9A
6	Quad 2-Input	9002	9LS00 (54/74LS00)	9N00 (54/7400)	9H00 (54/74H00)	9S00 (54/74S00)	D-2	3I, 6A, 9A
7	Quad 2-Input (O. C.)	9012	9LS03 (54/74LS03)	9N03 (54/7403)	9H01 (54/74H01)	9S03 (54/74S03)	D-2	3I, 6A, 9A
8	Quad 2-Input (O. C.)			9N01 (54/7401)			D-3	3I, 6A, 9A
9	Quad 2-Input (12 V)			9N26 (7426)			D-2	3I, 6A, 9A
10	Quad 2-Input (48 mA)		*9LS37 (54/74LS37)	9N37 (54/7437)			D-2	3I, 6A, 9A
11	Quad 2-Input (O. C./48 mA)		*9LS38 (54/74LS138)	9N38 (54/7438)			D-2	3I, 6A, 9A
12	Quad 2-Input Line Dvr	96101		9N39 (54/7439)			D-3	3I, 6A, 9A
13	Quad 2-Input Schmitt		*9LS132 (54/74LS132)	9N132 (54/74132)		9S132 (54/74S132)	D-2	3I, 6A, 9A
14	Triple 3-Input	9003	9LS10 (54/74LS10)	9N10 (54/7410)	9H10 (54/74H10)	9S10 (54/74S10)	D-4	3I, 6A, 9A
15	Triple 3-Input (O. C.)			9N12 (54/7412)			D-4	3I, 6A, 9A
16	Dual 4-Input	9004	9LS20 (54/74LS20)	9N20 (54/7420)	9H20 (54/74H20)	9S20 (54/74S20)	D-5	3I, 6A, 9A

O. C. = Open Collector

3-S = 3-State

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

Item	Function	9000 Series 8 ns/10 mW	Low Power Schottky 5 ns/2 mW	Std. TTL 9N(54/74) 10 ns/10 mW	High Speed 9H(54/74H) 6 ns/22 mW	High Speed Schottky 3 ns/19 mW	Logic Symbol (Note b)	Packages (Note a)
<b>NAND Gates</b>								
1	Dual 4-Input (O. C.)		9LS22 (54/74LS22)	9N22 (54/7422)	9H22 (54/74H22)	9S22 (54/74S22)	D-5	3I, 6A, 9A
2	Dual 4-Input Buffer	9009	*9LS40 (54/74LS40)	9N40 (54/7440)	9H40 (54/74H40)	9S40 (54/74S40)	D-5	3I, 6A, 9A
3	Dual 4-Input Line Dvr					9S140 (54/74S140)	D-5	3I, 6A, 9A
4	8-Input	9007					D-6	3I, 6A
5	8-Input		9LS30 (54/74LS30)	9N30 (54/7430)	9H30 (54/74H30)	9S30 (54/74S30)	D-7	3I, 6A, 9A
6	13-Input					9S133 (54/74S133)	D-8	4L, 6B, 9B
7	12-Input (3-S)					9S134 (54/74S134)	D-9	4L, 6B, 9B
<b>NOR Gates</b>								
8	Quad 2-Input		9LS02 (54/74LS02)	9N02 (54/7402)		*9S02 (54/74S02)	D-10	3I, 6A, 9A
9	Quad 2-Input	9015					D-11	4L, 6B
10	Triple 3-Input			9N27 (54/7427)			D-12	3I, 6A, 9A
11	Dual 4-Input w/Strobe			9N25 (54/7425)			D-13	3I, 6A, 9A
12	Dual 4-Input (Exp.)			9N23 (54/7423)			D-14	4L, 6B, 9B

O. C. = Open Collector

3-S = 3-State

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

Item	Function	9000 Series 8 ns/10 mW	Low Power Schottky 5 ns/2 mW	Std. TTL 9N(54/74) 10 ns/10 mW	High Speed 9H(54/74H) 6 ns/22 mW	High Speed Schottky 3 ns/19 mW	Logic Symbol (Note b)	Packages (Note a)
<b>AND Gates</b>								
1	Hex Buffer (O. C./15 V)			9N17 (54/7417)			D-15	3I, 6A, 9A
2	Hex Buffer (O. C./30 V)			9N07 (54/7407)			D-15	3I, 6A, 9A
3	Quad 2-Input		9LS08 (54/74LS08)	9N08 (54/7408)	9H08 (54/74H08)	9S08 (54/74S08)	D-16	3I, 6A, 9A
4	Quad 2-Input (O. C.)		9LS09 (54/74LS09)	9N09 (54/7409)	9H09 (54/74H09)	9S09 (54/74S09)	D-16	3I, 6A, 9A
5	Quad 2,2,3,3 Input					9S41	D-17	4L, 6B, 9B
6	Triple 3-Input		9LS11 (54/74LS11)	9N11 (54/7411)	9H11 (54/74H11)	9S11 (54/74S11)	D-18	3I, 6A, 9A
7	Triple 3-Input (O. C.)		9LS15 (54/74LS15)		9H15 (54/74H15)	9S15 (54/74S15)	D-18	3I, 6A, 9A
8	Dual 4-Input		9LS21 (54/74LS21)	9N21 (54/7421)	9H21 (54/74H21)		D-19	3I, 6A, 9A
<b>OR Gates</b>								
9	Quad 2-Input		9LS32 (54/74LS32)	9N32 (54/7432)		9S32 (54/74S32)	D-20	3I, 6A, 9A
<b>Exclusive OR Gate</b>								
10	Quad 2-Input		9LS86 (54/74LS86)	9N86 (54/7486)		9S86 (54/74S86)	D-21	3I, 6A, 9A
11	Quad 2-Input (O. C.)		9LS136 (54/74LS136)				D-21	3I, 6A, 9A
12	Quad 2-Input OR/NOR	9014					D-22	4L, 6B
13	Quad 2-Input OR/NOR					9S135 (54/74S135)	D-23	4L, 6B, 9B
<b>Exclusive NOR Gate</b>								
14	Quad 2-Input (O. C.)		9LS266 (54/74LS266)	9386 (8242)			D-24	3I, 6A, 9A

O. C. = Open Collector

3-S = 3-State

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

Item	Function	9000 Series 8 ns/10 mW	Low Power Schottky 5 ns/2 mW	Std. TTL 9N(54/74) 10 ns/10mW	High Speed 9H(54/74H) 6 ns/22 mW	High Speed Schottky 3 ns/19 mW	Logic Symbol (Note b)	Packages (Note a)
<b>AND-OR Gates</b>								
1	Dual 4-2 Input					9S42	D-25	4L, 6B, 9B
2	2-2-2-3 Input (Exp.)				9H52 (54/74H52)		D-26	3I, 6A, 9A
<b>AND-OR-INVERT Gates</b>								
3	Dual 2-2 Input (Exp.)	9005		9N50 (54/7450)	9H50 (54/74H50)		D-27	3I, 6A, 9A
4	Dual 2-2 Input		9LS51 (54/74LS51)	9N51 (54/7451)	9H51 (54/74H51)	9S51 (54/74S51)	D-28	3I, 6A, 9A
5	2-2-2-3 Input (Exp.)	9008		9N53 (54/7453)	9H53 (54/74H53)		D-29	3I, 6A, 9A
6	2-2-2-3 Input			9N54 (54/7454)	9H54 (54/74H54)		D-30	3I, 6A, 9A
7	2-2-3-3 Input		9LS54 (54/74LS54)				D-31	3I, 6A, 9A
8	2-2-3-4 Input					9S64 (54/74S64)	D-32	3I, 6A, 9A
9	2-2-3-4 Input (O. C.)					9S65 (54/74S65)	D-32	3I, 6A, 9A
10	4-4 Input (Exp.)				9H55 (54/74H55)		D-33	3I, 6A, 9A
11	4-4 Input		9LS55 (54/74LS55)				D-34	3I, 6A, 9A
<b>Gate Expanders</b>								
12	Triple 3-Input				9H61 (54/74H61)		D-35	3I, 6A, 9A
13	Dual 4-Input	9006		9N60 (54/7460)	9H60 (54/74H60)		D-36	3I, 6A, 9A
14	2-2-3-3 AND-OR				9H62 (54/74H62)		D-37	3I, 6A, 9A

O. C. = Open Collector

3-S = 3-State

# FAIRCHILD INTEGRATED CIRCUITS

## TTL










### TTL Single and Dual Flip-Flops

Item	Function	DEVICE NO.	Inputs	Clock Edge	Direct Set	Direct Clear	Clock Frequency MHz (typ)	Clock to Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Single JK	9000	3J, 3K, JK		X	X	20	16	100	D-50	3I, 6A
2	Single JK	9001	2J, 2K, J, K, JK		X	X	50	16	115	D-51	3I, 6A
3	Single JK	9H71/74H71	(AOI) (2+2)J, (2+2)K		X		30	22	95	D-52	3I, 6A, 9A
4	Single JK	9H101/74H101	(AOI) (2+2)J, (2+2)K		X		50	16	100	D-52	3I, 6A, 9A
5	Single JK	9N72/7472	3J, 3K		X	X	20	25	50	D-53	3I, 6A, 9A
6	Single JK	9H72/74H72	3J, 3K		X	X	30	22	80	D-53	3I, 6A, 9A
7	Single JK	9H102/74H102	3J, 3K		X	X	50	16	100	D-53	3I, 6A, 9A
8	Single JK	9N70/7470	2J, 2K, $\bar{J}$ , $\bar{K}$		X	X	35	27	65	D-54	3I, 6A, 9A
9	Dual D	9N74/7474	D		X	X	25	20	85	D-61	3I, 6A, 9A
10	Dual D	9H74/74H74	D		X	X	43	13	150	D-61	3I, 6A, 9A
11	Dual D	9S74/74S74	D		X	X	100	7	150	D-61	3I, 6A, 9A
12	Dual D	9LS74/74LS74	D		X	X	50	15	20	D-61	3I, 6A, 9A
13	Dual JK	9020	J, K, $\bar{J}$ , $\bar{K}$ , JK			X	50	16	210	D-55	4L, 6B
14	Dual JK	9022	J, $\bar{K}$ , JK		X	X	15	16	210	D-56	4L, 6B
15	Dual JK	9N73/7473	J, K			X	20	25	100	D-57	3I, 6A, 9A
16	Dual JK	9N107/74107	J, K			X	20	25	100	D-57	3I, 6A, 9A
17	Dual JK	9H73/74H73	J, K			X	30	22	160	D-57	3I, 6A, 9A
18	Dual JK	9H103/74H103	J, K			X	50	16	200	D-57	3I, 6A, 9A
19	Dual JK	9S113/74S113	J, K		X		125	5	150	D-63	3I, 6A, 9A
20	Dual JK	9LS113/74LS113	J, K		X		60	12	20	D-63	3I, 6A, 9A
21	Dual JK	9N76/7476	J, K		X	X	20	25	100	D-58	4L, 6B, 9B
22	Dual JK	9H76/74H76	J, K		X	X	30	22	150	D-58	4L, 6B, 9B
23	Dual JK	9H106/74H106	J, K		X	X	50	16	200	D-58	4L, 6B, 9B

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### TTL Single and Dual Flip-Flops

Item	Function	DEVICE NO.	Inputs	Clock Edge	Direct Set	Direct Clear	Clock Frequency MHz (typ)	Clock to Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Dual JK	9S112/74S112	J, K		X	X	125	5	150	D-62	4L, 6B, 9B
2	Dual JK	9LS112/74LS112	J, K		X	X	60	12	20	D-62	4L, 6B, 9B
3	Dual JK	9H78/74H78	J, K		X	X	30	22	160	D-59	3I, 6A, 9A
4	Dual JK	9H108/74H108	J, K		X	X	50	16	200	D-59	3I, 6A, 9A
5	Dual JK	9S114/74S114	J, K		X	X	125	5	150	D-64	3I, 6A, 9A
6	Dual JK	9LS114/74LS114	J, K		X	X	60	12	20	D-64	3I, 6A, 9A
7	Dual JK	9024/74109	J, K		X	X	25	22	90	D-60	4L, 6B, 9B
8	Dual JK	9S109/74S109	J, K		X	X	100	7	160	D-60	4L, 6B, 9B
9	Dual JK	9LS109/74LS109	J, K		X	X	50	15	20	D-60	4L, 6B, 9B

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Latches / Flip-Flops

Item	Function	DEVICE NO.	Data Inputs	Common Clear	Enable / Clock Inputs (Level)	Required Enable / Clock Pulse Width ns (typ)	Enable / Clock to Q Delay ns (typ)	Data to Q Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	4-Bit R-S Latch	9314	4x( $\bar{R}_1\bar{S}_1$ )	L	1(L)	12	18	18	175	D-146	4L, 7B, 9B
2	4-Bit R-S Latch	93L14	4x( $\bar{R}_1\bar{S}_1$ )	L	1(L)	30	51	45	50	D-146	4L, 7B, 9B
3	4-Bit R-S Latch	9N279 / 74279	4x( $\bar{R}\bar{S}$ )	-	-	-	-	14	90	D-147	4L, 6B, 9B
4	*4-Bit R-S Latch	9LS279 / 74LS279	4x( $\bar{R}\bar{S}$ )	-	-	-	-	14	19	D-147	4L, 6B, 9B
5	4-Bit D Latch	9314	4xD	L	1(L)	12	18	18	175	D-146	4L, 7B, 9B
6	4-Bit D Latch	93L14	4xD	L	1(L)	30	51	45	50	D-146	4L, 7B, 9B
7	4-Bit D Latch	9375 / 7475	4xD	-	2(H)	20	16	16	160	D-148	4L, 6B, 9B
8	4-Bit D Latch	9377 / 7477	4xD	-	2(H)	20	16	16	160	D-149	3I
9	4-Bit D Latch	93196 / 74196	4xD	L	1(L)	20	23	20	240	D-125	3I, 6A, 9A
10	4-Bit D Latch	9LS196 / 74LS197	4xD	L	1(L)	20	28	24	60	D-125	3I, 6A, 9A
11	4-Bit D Latch	93197 / 74197	4xD	L	1(L)	20	23	20	240	D-125	3I, 6A, 9A
12	4-Bit D Latch	9LS197 / 74LS197	4xD	L	1(L)	20	28	24	60	D-125	3I, 6A, 9A
13	4-Bit D Flip-Flop	93175 / 74175	4xD	L	1( $\downarrow$ )	20	20	-	150	D-150	4L, 6B, 9B
14	4-Bit D Flip-Flop	9LS175 / 74LS175	4xD	L	1( $\downarrow$ )	20	21	-	55	D-150	4L, 6B, 9B
15	4-Bit D Flip-Flop	93S175 / 74S175	4xD	L	1( $\downarrow$ )	7	10	-	300	D-150	4L, 6B, 9B

\*To Be Announced



# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Latches / Flip-Flops

Item	Function	DEVICE NO.	Data Inputs	Common Clear	Enable / Clock Inputs (Level)	Required Enable / Clock Pulse Width ns (typ)	Enable / Clock to Q Delay ns (typ)	Data to Q Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	4-Bit D Flip-Flop	93298 / 74298	4x2	–	1(L)	20	20	–	195	D-156	4L, 6B, 9B
2	4-Bit D Flip-Flop	9LS298 / 74LS298	4x2	–	1(L)	20	20	–	65	D-156	4L, 6B, 9B
3	Dual 4-Bit D Latch	9308	8xD	2xL	2x2 AND	15	19	12	300	D-151	4M, 6N, 9N
4	Dual 4-Bit D Latch	93L08	8xD	2xL	2x2 AND	30	32	32	100	D-151	4M, 6N, 9N
5	Dual 4-Bit D Latch	93116 / 74116	8xD	2xL	2x2 AND	15	19	12	300	D-151	4M, 6N, 9N
6	6-Bit D Flip-Flop	93174 / 74174	6	L	1(L)	20	20	–	225	D-152	4L, 6B, 9B
7	6-Bit D Flip-Flop	93S174 / 74S174	6	L	1(L)	7	10	–	450	D-152	4L, 6B, 9B
8	6-Bit D Flip-Flop	9LS174 / 74LS174	6	L	1(L)	20	21	–	80	D-152	4L, 6B, 9B
9	8-Bit Add. Latch	9334	1xD	L	1(L) 3 add. bits	11	18	28	280	D-134	4L, 7B, 9B
10	8-Bit Add. Latch	93L34	1xD	L	1(L) 3 add. bits	18	30	37	70	D-134	4L, 6B, 9B
11	*8-Bit Add. Latch	9LS259 / 74LS259	1xD	L	1(L) 3 add. bits	11	18	28	70	D-134	4L, 6B, 9B
12	8-Bit Multi Port Reg.	9338	1xD	–	1(L) 9 add. bits	7	24	35	425	D-153	4L, 7B, 9B
13	8-Bit Multi Port Reg.	93L38	1xD	–	1(L) 9 add. bits	19	38	52	105	D-153	4L, 7B, 9B
14	4x4 Register File	93170 / 74170	4xD	–	2	25	–	25	635	D-154	4L, 7B, 9B

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Latches / Flip-Flops

Item	Function	DEVICE NO.	Data Inputs	Common Clear	Enable / Clock Inputs (Level)	Required Enable / Clock Pulse Width ns (typ)	Enable / Clock to Q Delay ns (typ)	Data to Q Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	*4x4 Register File	9LS170/ 74LS170	4xD	—	2	25	—	26	125	D-154	4L, 7B, 9B
2	*4x4 Register File (3-state)	9LS670/ 74LS670	4xD	—	2	25	—	24	150	D-154	4L, 7B, 9B

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Multiplexers

Unit Load (UL) = 40 $\mu$ A HIGH / 1.6mA LOW

Item	Function	DEVICE NO.	Enable Inputs	True Output	Complement Output	Select Delay	Enable Delay	Data Delay	Power Dissipation mW (typ)	Fan-Out (UL)	Logic Symbol	Package(s)
						ns (typ)	ns (typ)	ns (typ)				
1	Quad 2-Input	9322	1	X		18	14	9	150	10	D-157	4L, 7B, 9B
2	Quad 2-Input	93L22	1	X		23	20	14	45	5	D-157	4L, 7B, 9B
3	Quad 2-Input	93157 / 74157	1	X		18	14	9	150	10	D-157	4L, 7B, 9B
4	Quad 2-Input	9LS157 / 74LS157	1	X		18	14	9	49	5	D-157	4L, 6B, 9B
5	Quad 2-Input	93S157 / 74S157	1	X		10	8	5	250	12.5	D-157	4L, 6B, 9B
6	Quad 2-Input	9LS158 / 74LS158	1		X	16	12	7	24	5	D-157	4L, 6B, 9B
7	Quad 2-Input	93S158 / 74S158	1		X	8	7	4	195	12.5	D-157	4L, 6B, 9B
8	Quad 2-Input	9LS257 / 74LS257	1	3-State		14	16	12	50	5	D-157	4L, 6B, 9B
9	Quad 2-Input	93S257 / 74S257	1	3-State		10	13	5	320	12.5	D-157	4L, 6B, 9B
10	Quad 2-Input	9LS258 / 74LS258	1		3-State	12	16	10	35	5	D-157	4L, 6B, 9B
11	Quad 2-Input	93S258 / 74S258	1		3-State	8	13	4	280	12.5	D-157	4L, 6B, 9B
12	Quad 2-Input	93298 / 74298	Clocked (edge-trigger)	X Latched		—	20	—	195	10	D-156	4L, 7B, 9B
13	Quad 2-Input	9LS298 / 74LS298	Clocked (edge-trigger)	X Latched			20	—	65	5	D-156	4L, 6B, 9B
14	Dual 4-Input	9309		X	X	15	—	10	150	10	D-155	4L, 6B, 9B
15	Dual 4-Input	93L09		X	X	45	—	30	38	5	D-155	4L, 6B, 9B
16	Dual 4-Input	93153 / 74153	2	X		22	19	15	180	10	D-158	4L, 6B, 9B
17	Dual 4-Input	9LS153 / 74LS153	2	X		18	16	10	31	5	D-158	4L, 6B, 9B

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Multiplexers

Unit Load (UL) = 40 $\mu$ A HIGH / 1.6mA LOW

Item	Function	DEVICE NO.	Enable Inputs	True Output	Complement Output	Select Delay ns (typ)	Enable Delay ns (typ)	Data Delay ns (typ)	Power Dissipation mW (typ)	Fan-Out (UL)	Logic Symbol	Package(s)
1	Dual 4-Input	93S153/ 74S153	2	X		12	10	6	225	12.5	D-158	4L, 6B, 9B
2	Dual 4-Input	9LS253/ 74LS253	2	3-State		18	16	10	43	5	D-158	4L, 6B, 9B
3	Dual 4-Input	93S253/ 74S253	2	3-State		12	13	6	325	12.5	D-158	4L, 6B, 9B
4	8-Input	9312	1	X	X	18	15	10	135	10	D-159	4L, 7B, 9B
5	8-Input	93L12	1	X	X	54	45	30	36	5	D-159	4L, 7B, 9B
6	8-Input	93S12	1	X	X	12	10	7	190	12.5	D-159	4L, 7B, 9B
7	8-Input	9313	1	X	O.C.	25	22	18	135	10	D-159	4L, 7B, 9B
8	8-Input	93151 / 74151A	1	X	X	25	21	16	145	10	D-160	4L, 7B, 9B
9	*8-Input	9LS151 / 74LS151	1	X	X	28	25	18	30	5	D-160	4L, 6B, 9B
10	8-Input	93S151 / 74S151	1	X	X	12	11	8	225	12.5	D-160	4L, 6B, 9B
11	*8-Input	9LS251 / 74LS251	1	3-State	3-State	29	21	18	33	5	D-160	4L, 6B, 9B
12	8-Input	93S251 / 74S251	1	3-State	3-State	12	12	8	275	12.5	D-160	4L, 6B, 9B
13	8-Input	93152 / 74152A	1		X	18	—	8	130	10	D-161	3I, 7A, 9A
14	*8-Input	9LS152 / 74LS152			X	22	—	11	28	5	D-161	4L, 6B, 9B
15	16-Input	93150 / 74150	1		X	22	21	13	200	10	D-162	4M, 6N, 9N

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Decoders / Demultiplexers

Unit Load (UL) = 40 $\mu$ A HIGH / 1.6mA LOW

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Active LOW Outputs	Open Collector Output Voltage	Address Delay ns (typ)	Enable Delay ns (typ)	Power Dissipation mW (typ)	Fan-out (UL)	Logic Symbol	Package(s)
1	Dual 1-of-4	9321	2+2	1+1	4+4		14	12	150	10	D-131	4L,6B,9B
2	Dual 1-of-4	93L21	2+2	1+1	4+4		43	34	45	5	D-131	4L,6B,9B
3	Dual 1-of-4	9LS139/ 74LS139	2+2	1+1	4+4		22	19	34	5	D-131	4L,6B,9B
4	Dual 1-of-4	93S139/ 74S139	2+2	1+1	4+4		7.5	6	300	12.5	D-131	4L,6B,9B
5	Dual 1-of-4	93155/ 74155	2	2+2	4+4		21	18	125	10	D-132	4L,6B,9B
6	Dual 1-of-4	9LS155/ 74LS155	2	2+2	4+4		18	15	30	5	D-132	4L,6B,9B
7	Dual 1-of-4	93156/ 74156	2	2+2	4+4	5.5V	23	20	125	10	D-132	4L,6B,9B
8	Dual 1-of-4	9LS156/ 74LS156	2	2+2	4+4	5.5V	33	26	31	5	D-132	4L,6B,9B
9	1-of-8	9301	3	1	8		22	22	145	10	D-133	4L,6B,9B
10	1-of-8	93L01	3	1	8		36	36	45	5	D-133	4L,6B,9B
11	1-of-8	9302	3	1	8	5.5V	30	30	145	10	D-133	4L,6B,9B
12	1-of-8	9334	3	1	8		30	19	280	6	D-134	4L,7B,9B
13	1-of-8	93L34	3	1	8		46	30	70	5	D-134	4L,7B,9B
14	* 1-of-8	9LS259/ 74LS259	3	1	8		30	19	60	5	D-134	4L,6B,9B
15	1-of-8	9345/ 7445	3	1	8	30V	40	40	215	80mA	D-135	4L,7B,9B
16	1-of-8	9352/ 7442	3	1	8		26	26	140	10	D-135	4L,6B,9B
17	*1-of-8	9LS42/ 74LS42	3	1	8		17	17	35	5	D-135	4L,6B,9B

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Decoders / Demultiplexers

Unit Load (UL) = 40 $\mu$ A HIGH / 1.6mA LOW



Item	Function	DEVICE NO.	Address Inputs	Active LOW/Enable	Active LOW Outputs	Open Collector Output Voltage	Address Delay ns (typ)	Enable Delay ns (typ)	Power Dissipation mW (typ)	Fan-out (UL)	Logic Symbol	Package(s)
1	1-of-8	9LS138/ 74LS138	3	3	8		22	21	34	5	D-136	4L,6B,9B
2	1-of-8	93S138/ 74S138	3	3	8		8	7	225	12.5	D-136	4L,6B,9B
3	1-of-8	93145/ 74145	3	1	8	15V	40	40	215	80mA	D-135	4L,7B,9B
4	1-of-8 w/ input latches	93S137	3	2	8		14	8	310	12.5	D-137	4L,6B,9B
5	1-of-10	9301	4 (BCD)		10		22		145	10	D-133	4L,7B,9B
6	1-of-10	93L01	4 (BCD)		10		36		45	5	D-133	4L,7B,9B
7	1-of-10	9302	4 (BCD)		10	5.5V	30		145	10	D-133	4L,7B,9B
8	1-of-10	9345/ 7445	4 (BCD)		10	30V	40		215	80mA	D-135	4L,7B,9B
9	1-of-10	9352/ 7442	4 (BCD)		10		26		140	10	D-135	4L,6B,9B
10	*1-of-10	9LS42/ 74LS42	4 (BCD)		10		17		35	5	D-135	4L,6B,9B
11	1-of-10	9353/ 7443	4 Excess-3		10		26		140	10	D-135	4L,6B,9B
12	1-of-10	9354/ 7444	4 Excess-3 (Gray)		10		26		140	10	D-135	4L,6B,9B
13	1-of-10	93145/ 74145	4 (BCD)		10	15V	40		215	80mA	D-135	4L,7B,9B
14	1-of-16	9311	4	2	16		21	17	175	10	D-138	4M,6N,9N
15	1-of-16	93L11	4	2	16		70	48	58	5	D-138	4M,6N,9N
16	1-of-16	93154/ 74154	4	2	16		22	19	180	10	D-138	4M,6N,9N

\*To Be Announced

**FAIRCHILD INTEGRATED CIRCUITS**  
**TTL**

**Decoders / Demultiplexers**

Unit Load (UL) = 40 $\mu$ A HIGH / 1.6mA LOW

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Active LOW Outputs	Open Collector Output Voltage	Address Delay ns (typ)	Enable Delay ns (typ)	Power Dissipation mW (typ)	Fan-out (UL)	Logic Symbol	Package(s)
1	Sequential 1-of-10 (Decade Sequencer)	9319		Clock 	10			25	300	10	D-139	4L,7B,9B
2	Sequential 1-of-10 (Decade Sequencer)	9320		Clock 	10	3K Pull-up		25	310	10	D-139	4L,7B,9B

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Registers

A=Asynchronous    S=Synchronous

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. Of Bits	Clock Edge	Max Clock Freq MHz (typ)	Clock To Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Parallel-in / Parallel-out Shift Right	9300	4	J, $\bar{K}$	4S		38	16	300	D-163	4L, 7B, 9B
2	Parallel-in / Parallel-out Shift Right	93H00	4	J, $\bar{K}$	4S		55	12	325	D-163	4L, 7B, 9B
3	Parallel-in / Parallel-out Shift Right	93L00	4	J, $\bar{K}$	4S		17	28	75	D-163	4L, 7B, 9B
4	Parallel-in / Parallel-out Shift Right	93S00	4	J, $\bar{K}$	4S		105	10	350	D-163	4L, 7B, 9B
5	Parallel-in / Parallel-out Shift Right	93H72	4	D	4S		60	12	475	D-164	4L, 7B, 9B
6	Parallel-in / Parallel-out Shift Right	9394 / 7494	4	D	4S		20	25	175	D-165	4L, 7B, 9B
7	Parallel-in / Parallel-out Shift Right	9395 / 7495	4	D	4S		36	20	195	D-166	3I, 7A, 9A
8	Parallel-in / Parallel-out Shift Right	9LS95 / 74LS95	4	D	4S		36	20	65	D-166	3I, 6A, 9A
9	Parallel-in / Parallel-out Shift Right	9396 / 7496	5	D	5A		10	25	240	D-167	4L, 7B, 9B
10	Parallel-In / Parallel-out Shift Right	93178 / 74178	4	D	4A		39	23	230	D-168	3I, 7A, 9A
11	Parallel-in / Parallel-out Shift Right	93179 / 74179	4	D	4A		39	23	230	D-169	4L, 7B, 9B
12	Parallel-in / Parallel-out Shift Right	93195 / 74195	4	J, $\bar{K}$	4S		39	17	195	D-163	4L, 7B, 9B
13	Parallel-in / Parallel-out Shift Right	9LS195 / 74LS195	4	J, $\bar{K}$	4S		39	17	70	D-163	4L, 6B, 9B
14	Parallel-in / Parallel-out Shift Right	93199 / 74199	8	J, $\bar{K}$	8S		35	20	360	D-170	4M, 6N, 9N
15	Parallel-in / Parallel-out Shift Right	9LS295 / 74LS295	4	D	4S		28	40	75	D-171	3I, 6A, 9A



# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Registers

A=Asynchronous    S=Synchronous

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. Of Bits	Clock Edge	Max Clock Freq MHz (typ)	Clock To Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Parallel-in / Parallel-out Bi-Directional	93194 / 74194	4	DR, DL	4S		36	16	195	D-172	4L, 7B, 9B
2	Parallel-in / Parallel-out Bi-Directional	93S194 / 74S194	4	DR, DL	4S		105	10	425	D-172	4L, 7B, 9B
3	Parallel-in / Parallel-out Bi-Directional	9LS194 / 74LS194	4	DR, DL	4S		36	16	75	D-172	4L, 6B, 9B
4	Parallel-in / Parallel-out Bi-Directional	93198 / 74198	8	DR, DL	8S		35	19	360	D-173	4M, 6N, 9N
5	Serial-in / Parallel-out	93164 / 74164	8	2D	—		36	19	185	D-174	3I, 7A, 9A
6	*Serial-in / Parallel-out	9LS164 / 74LS164	8	2D	—		18	50	95	D-174	3I, 6A, 9A
7	Parallel-in / Parallel-out	93174 / 74174	6	—	6S		35	21	230	D-152	4L, 7B, 9B
8	Parallel-in / Parallel-out	93S174 / 74S174	6	—	6S		110	11	450	D-152	4L, 7B, 9B
9	Parallel-in / Parallel-out	9LS174 / 74LS174	6	—	6S		40	21	65	D-152	4L, 6B, 9B
10	Parallel-in / Parallel-out	93175 / 74175	4	—	4S		35	21	150	D-150	4L, 7B, 9B
11	Parallel-in / Parallel-out	93S175 / 74S175	4	—	4S		110	11	300	D-150	4L, 7B, 9B
12	Parallel-in / Parallel-out	9LS175 / 74LS175	4	—	4S		40	21	45	D-150	4L, 6B, 9B
13	Parallel-in / Parallel-out	93298 / 74298	4	—	2D MUX		30	21	195	D-156	4L, 7B, 9B
14	Parallel-in / Parallel-out	9LS298 / 74LS298	4	—	2D MUX		30	21	65	D-156	4L, 6B, 9B
15	Parallel-in / Serial-out	9394 / 7494	4	D	4S		10	25	175	D-165	4L, 7B, 9B

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Registers

A=Asynchronous S=Synchronous

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. Of Bits	Clock Edge	Max Clock Freq MHz (typ)	Clock To Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Parallel-in / Serial-out	93165/ 74165	8	D	8A		26	19	210	D-175	4L, 7B, 9B
2	Parallel-in / Serial-out	93166/ 74166	8	D	8S		35	20	360	D-176	4L, 7B, 9B
3	Serial-in / Serial-out	9328	16	2x2D MUX	-		30	17	300	D-177	4L, 7B, 9B
4	Serial-in / Serial-out	93L28	16	2x2D MUX	-		15	42	80	D-177	4L, 7B, 9B
5	Serial-in / Serial-out	9391	8	2D	-		18	25	175	D-178	3I, 7A, 9A
6	Multiport Registers	9338	8	D	-		25	23	425	D-153	4L, 7B, 9B
7	Multiport Registers	93L38	8	D	-		20	38	105	D-153	4L, 7B, 9B
8	Multiport Registers	93170/ 74170	16	-	4A		-	25	635	D-154	4L, 7B, 9B
9	*Multiport Registers	9LS170/ 74LS170	16	-	4A		-	25	125	D-154	4L, 7B, 9B
10	*Multiport Registers	9LS670/ 74LS670	16	-	4A		-	30	150	D-154	4L, 7B, 9B






















\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Counters

A=Asynchronous    S=Synchronous

Item	Function	DEVICE NO.	Modulo	Parallel Load	Clock Transition	Max Clock Rate MHz (typ)	Clock to Q. Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Asynchronous	9350 / 74290	2x5			40	33	160	D-120	3I, 6A, 9A
2	Asynchronous	9390 / 7490A	2x5			40	33	160	D-121	3I, 6A, 9A
3	*Asynchronous	9LS90 / 74LS90	2x5			50	33	45	D-121	3I, 6A, 9A
4	Asynchronous	9392 / 7492	2x6			40	33	160	D-122	3I, 6A, 9A
5	Asynchronous	9356 / 74293	2x8			40	46	160	D-123	3I, 6A, 9A
6	Asynchronous	9393 / 7493A	2x8			40	46	160	D-124	3I, 6A, 9A
7	*Asynchronous	9LS93 / 74LS93	2x8			50	46	45	D-124	3I, 6A, 9A
8	Asynchronous	93176 / 74176	2x5	A		50	34	150	D-125	3I, 6A, 9A
9	Asynchronous	93177 / 74177	2x8	A		50	50	150	D-125	3I, 6A, 9A
10	Asynchronous	93196 / 74196	2x5	A		70	38	240	D-125	3I, 6A, 9A
11	Asynchronous	9LS196 / 74LS196	2x5	A		60	48	60	D-125	3I, 6A, 9A
12	Asynchronous	93197 / 74197	2x8	A		70	52	240	D-125	3I, 6A, 9A
13	Asynchronous	9LS197 / 74LS197	2x8	A		70	60	60	D-125	3I, 6A, 9A
14	Variable Modulo	9305	2x5, 6, 7, 8			26	44	210	D-126	3I, 7A, 9A
15	Variable Modulo	93S05	2x5, 6, 7, 8			100	20	300	D-126	3I, 7A, 9A
16	Synchronous	9310	10 Presettable	S		45	15	325	D-127	4L, 7B, 9B
17	Synchronous	93L10	10 Presettable	S		23	26	85	D-127	4L, 7B, 9B
18	Synchronous	93S10	10 Presettable	S		90	9	410	D-127	4L, 7B, 9B
19	Synchronous	9316	16 Presettable	S		45	15	325	D-127	4L, 7B, 9B
20	Synchronous	93L16	16 Presettable	S		23	26	85	D-127	4L, 7B, 9B
21	Synchronous	93S16	16 Presettable	S		90	9	410	D-127	4L, 7B, 9B

















\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Counters

A=Asynchronous    S=Synchronous

Item	Function	DEVICE NO.	Modulo	Parallel Load	Clock Transition	Max Clock Rate MHz (typ)	Clock to Q Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Synchronous	93160 / 74160	10 Presettable	S		32	17	315	D-127	4L, 7B, 9B
2	Synchronous	9LS160 / 74LS160	10 Presettable	S		45	15	95	D-127	4L, 7B, 9B
3	Synchronous	93161 / 74161	16 Presettable	S		32	17	315	D-127	4L, 7B, 9B
4	Synchronous	9LS161 / 74LS161	16 Presettable	S		45	15	95	D-127	4L, 7B, 9B
5	Synchronous	93162 / 74162	10 Presettable	S		32	17	315	D-128	4L, 7B, 9B
6	Synchronous	9LS162 / 74LS162	10 Presettable	S		45	15	95	D-128	4L, 7B, 9B
7	Synchronous	93163 / 74163	16 Presettable	S		32	17	315	D-128	4L, 7B, 9B
8	Synchronous	9LS163 / 74LS163	16 Presettable	S		45	15	95	D-128	4L, 7B, 9B
9	Up / Down	9360 / 74192	10	A		30	30	325	D-129	4L, 7B, 9B
10	Up / Down	9LS192 / 74LS192	10	A		40	30	85	D-129	4L, 7B, 9B
11	Up / Down	9366 / 74193	16	A		30	30	325	D-129	4L, 7B, 9B
12	Up / Down	9LS193 / 74LS193	16	A		40	30	85	D-129	4L, 7B, 9B
13	Up / Down	93190 / 74190	10	A		25	20	325	D-130	4L, 7B, 9B
14	* Up / Down	9LS190 / 74LS190	10	A		40	20	90	D-130	4L, 7B, 9B
15	Up / Down	93191 / 74191	16	A		25	20	325	D-130	4L, 7B, 9B
16	* Up / Down	9LS191 / 74LS191	16	A		40	20	90	D-130	4L, 7B, 9B

\*To Be Announced

**FAIRCHILD INTEGRATED CIRCUITS**  
**TTL**

**Monostables (One-Shots)**

Item	Function	DEVICE NO.	Pulse Width Variation (%)		No. of Inputs		Resettable	Min Output ( $t_W$ ) ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
			vs. Temp	vs. VCC	Positive	Negative					
1	Single Retriggerable	9600	±1.5%	±1.5%	3	2	×	75	125	D-40	3I, 6A
2	Single Retriggerable	9601	±2.7%	±1.0%	2	2		50	125	D-41	3I, 6A, 9A
3	Dual Retriggerable	9602	±1.5%	±1.5%	1	1	×	72	250	D-42	4L, 6B, 9B
4	Dual Retriggerable	96L02	±0.4%	±1.5%	1	1	×	110	50	D-42	4L, 6B, 9B
5	Dual Retriggerable	96S02	±0.2%	±0.2%	1	1	×	27	250	D-42	4L, 6B, 9B
6	Single Non-Retriggerable	9603 / 74121	±0.2%	±0.15%	1	2		40	90	D-43	3I, 6A, 9A
7	Single Retriggerable	9N122 / 74122	±2.7%	±1.0%	2	2	×	45	115	D-44	3I, 6A, 9A
8	Dual Retriggerable	9N123 / 74123	±2.7%	±1.0%	1	1	×	45	230	D-45	4L, 6B, 9B

**Arithmetic Operators**

Item	Function	DEVICE NO.	Description	No. of Bits	$t_{pd}$ ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
10	Adder	9304	Dual 1-Bit with Carry	2	26	150	D-101	3I, 6A, 9A
11	Adder	93H183 / 74H183	Dual 1-Bit with Carry	2	12	250	D-102	3I, 6A, 9A
12	Adder	9382 / 7482	Full 2-Bit with Carry	2	38	176	D-103	3I, 6A, 9A
13	Adder	9383 / 7483A	Full Binary 4-Bit w / Carry	4	16	330	D-104	4L, 6B, 9B

## FAIRCHILD INTEGRATED CIRCUITS TTL

### Arithmetic Operators (CLA = Carry Lookahead)

Item	Function	DEVICE NO.	Description	No. of Bits	$t_{pd}$ ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	*Adder	9LS83/74LS83	Full Binary 4-Bit w / Carry	4	15	95	D-104	4L, 6B, 9B
2	Adder	93283 / 74283	Full Binary 4-Bit w / Carry	4	16	330	D-105	4L, 6B, 9B
3	*Adder	9LS283 / 74LS283	Full Binary 4-Bit w / Carry	4	15	95	D-105	4L, 6B, 9B
4	Arithmetic Logic Unit	9340	ALU with Internal CLA	4	24	400	D-106	4M, 6N, 9N
5	Arithmetic Logic Unit	9341 / 74181	ALU with External CLA	4	27	450	D-107	4M, 6N, 9N
6	Arithmetic Logic Unit	93L41	ALU with External CLA	4	35	120	D-107	4M, 6N, 9N
7	*Arithmetic Logic Unit	9LS181 / 74LS181	ALU with External CLA	4	20	105	D-107	4M, 6N, 9N
8	Arithmetic Logic Unit	93S41 / 74S181	ALU with External CLA	4	12	500	D-107	4M, 6N, 9N
9	*Arith. Logic Reg. Stack	9405	4-Bit ALU, 4-Bit Registers, Ext. CLA	4	70	475	D-183	6Q, 9U
10	*Data Path Switch	9404	Mut. Arith. / Logic Oper.	4	30	350	D-182	6Q, 9U
11	Carry Lookahead	9342 / 74182	CLA generator for 9341	-	12	180	D-108	4L, 6B, 9B
12	Carry Lookahead	93S42 / 74S182	CLA generator for 93S41 / 9405	-	7	260	D-108	4L, 6B, 9B
13	Comparator	9386 (8242)	4-Bit Ident. Excl. - NOR	4	18	170	D-24	3I, 6A, 9A
14	Comparator	9385 / 7485	4-Bit Magnitude Expand.	4	21	275	D-109	4L, 7B, 9B
15	Comparator	9324	5-Bit Magnitude	5	20	210	D-110	4L, 7B, 9B
16	Comparator	93L24	5-Bit Magnitude	5	55	55	D-110	4L, 7B, 9B
17	Comparator	93S46	6-Bit Identity, Expand.	6	9	225	D-111	4L, 6B, 9B
18	Comparator	93S47	6-Bit Identity, (O.C.)	6	10	175	D-112	4L, 6B, 9B
19	Cyclic Redundancy Chk.	9401	CRC Generator Checker	16	30	350	D-180	7A, 9A
20	Encoder	9318	Priority 8-Bit Expand.	8	13	250	D-113	4L, 6B, 9B
21	Encoder	93L18	Priority 8-Bit Expand.	8	24	75	D-113	4L, 6B, 9B

\*To Be Announced

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### Arithmetic Operators

Item	Function	DEVICE NO.	Description	No. of Bits	$t_{pd}$ ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Multiplier	9344	Binary 4x2-Bit	4x2	30	550	D-114	4M, 6N, 9N
2	Multiplier	93S43	2s Complement	4x2	20	490	D-115	4M, 6N, 9N
3	Parity Generator / Check.	93180 / 74180	8-Bit Parity Gen. / Check.	8	40	170	D-116	3I, 6A, 9A
4	Parity Generator / Check.	93S62	9-Bit Parity Gen. / Check.	9	20	225	D-117	3I, 6A, 9A
5	Parity Generator / Check.	9348	12-Bit Parity Gen. / Check.	12	40	235	D-118	4L, 6B, 9B
6	True / Complement	93H87 / 74H87	4-Bit True / Complement Zero / One Element	4	14	270	D-119	3I, 6A, 9A
7	True / Complement	9S135 / 74S135	Dual 2-Bit Exclusive OR / NOR	4	9	325	D-23	4L, 6B, 9B

### Display Decoder / Drivers

Item	Function	DEVICE NO.	Output Current mA	Output Voltage V	Active High/Low	Ripple Blanking	Blanking Above BCD 9-Input	Power Dissipation mW (typ)	Logic Symbol	Package(s)
8	1-of-10 Cold Cathode	9315 / 7441	7	55	L			145	D-140	4L, 6B, 9B
9	1-of-10 Cold Cathode	93141 / 74141	7	55	L		×	80	D-140	4L, 7B, 9B
10	1-of-10 OC Driver	9302	16	5.5	L		×	145	D-133	4L, 6B, 9B
11	1-of-10 OC Driver	9345 / 7445	80	30	L		×	215	D-135	4L, 7B, 9B

**FAIRCHILD INTEGRATED CIRCUITS**  
**TTL**

**Display Decoder / Drivers**

Item	Function	DEVICE NO.	Output Current mA	Output Voltage V	Active HIGH/LOW	Ripple Blanking	Blanking Above BCD 9-Input	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	1-of-10 OC Driver	93145 / 74145	80	15	L		×	215	D-135	4L, 7B, 9B
2	7-Segment Decoder	9307	11	5.5	H	×		165	D-141	4L, 7B, 9B
3	7-Segment Decoder	9358 / 7448	8	5.5	H	×		265	D-141	4L, 7B, 9B
4	7-Segment Decoder	9359 / 7449	9.6	5.5	H	×		165	D-142	3I
5	7-Segment Decoder / Driver	9317B	40	20	L	×	×	220	D-143	4L, 7B, 9B
6	7-Segment Decoder / Driver	9317C	20	30	L	×	×	220	D-143	4L, 7B, 9B
7	7-Segment Decoder / Driver	9357A / 7446A	40	30	L	×		320	D-143	4L, 7B, 9B
8	7-Segment Decoder / Driver	9357B / 7447A	40	15	L	×		320	D-143	4L, 7B, 9B
9	7-Seg. LED DVR Common Cathode	9368	20	1.7	H	×		225	D-144	4L, 6B, 9B
10	7-Seg. LED DVR Common Anode (OC)	9370	25	5.5	L	×		350	D-145	4L, 6B, 9B
11	7-Seg. LED DVR Common Anode	9374	15	10	L	×		175	D-145	4L, 6B, 9B



# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### TTL Line and Bus Drivers

Item	Function	DEVICE NO.	Companion Receiver	Supply Voltages V	$V_{OH}$ V	$V_{OL}$ V	$t_{pd}$ ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Quad 2-NAND Dvr	9N37/ 7437	Any TTL	5.0	2.4	0.4	10	108	D-2	3I, 6A, 9A
2	Quad 2-NAND Dvr	9N38/ 7438	96106	5.0	5.5	0.4	13	98	D-2	3I, 6A, 9A
3	Quad 2-NAND Dvr (OC)	96101	96106	5.0	5.5	0.6	13	98	D-3	3I, 6A, 9A
4	Dual 2-NAND Dvr	9009	Any TTL	5.0	2.4	0.4	10	54	D-5	3I, 6A, 9A
5	Dual 2-NAND Dvr	9N40/ 7440	Any TTL	5.0	2.4	0.4	11	52	D-5	3I, 6A, 9A
6	Dual 2-NAND Dvr	9H40/ 74H40	Any TTL	5.0	2.4	0.4	7.0	88	D-5	3I, 6A, 9A

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### TTL Line and Bus Drivers

Item	Function	DEVICE NO.	Companion Receiver	Supply Voltages V	V <sub>OH</sub> V	V <sub>OL</sub> V	t <sub>pd</sub> ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Dual 2-NAND Dvr	9S40/ 74S40	Any TTL	5.0	2.7	0.5	4.0	88	D-5	3I, 6A, 9A
2	Dual 2-NAND 50Ω Dvr	9S140/ 74S140	Any TTL	5.0	2.0	0.5	4.0	88	D-5	3I, 6A, 9A
3	Single Ended 50Ω Dvr	8T13/ 75121	8T14	5.0	3.2	—	20	160	LI-21	6B, 9B
4	Single Ended IBM-360 Dvr	8T23/ 75123	8T24	5.0	3.2	0.1	20	160	LI-21	6B, 9B
5	RS-232-C MIL-STD-188 Dvr	9616	9617 9627	+12, -12	+6.0	-6.0	300	166	LI-4	6A
6	Dual Diff. Dvr	75109	75107	+5.0, -5.0	—	—	9.0	180	LI-14	6A, 9A
7	Dual Diff. Dvr	75110	75108	+5.0, -5.0	—	—	9.0	300	LI-14	6A, 9A
8	Dual Diff. Dvr	9612	9613	+5.0	3.2	0.2	16	175	LI-24	9T
9	Dual Diff. Dvr	9614	9615	+5.0	3.2	0.2	16	175	LI-2	4L, 6B
10	Dual Diff. Dvr	9621	9622	+5.0, +12	4.3	0.2	10	120	LI-7	6A

**FAIRCHILD INTEGRATED CIRCUITS**  
**TTL**

**TTL Compatible Line Receivers**

Item	Function	DEVICE NO.	Companion Driver	Supply Voltages V	$V_{TH}$ V	$V_{CM}$ V	Output Enable	Differential Inputs	$t_{pd}$ ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Triple Line Receiver	8T14/ 75122	8T13	+5.0	+1.5	-	-	-	20	315	LI-22	6B, 9B
2	Triple IBM-360 Receiver	8T24/ 75124	8T23	+5.0	+1.5	-	-	-	20	315	LI-22	6B, 9B
3	RS-232-C MIL-STD-188 Receiver	9617	9616	+5.0	+1.5	$\pm 25$	-	-	50	100	LI-5	6A
4	RS-232-C MIL-STD-188 Receiver	9627	9616	+12, -12	$\pm 0.6$ $\pm 2.4$	$\pm 25$	X	X	72	234	LI-11	6B
5	Dual Diff. Receiver	9613	9612	+5.0	$\pm 0.5$	$\pm 15$	-	X	28	175	LI-24	9T
6	Dual Diff. Receiver	9615	9614	+5.0	$\pm 0.5$	$\pm 15$	X	X	28	175	LI-3	4L, 6B
7	Dual Diff. Receiver	9620	9614	+5.0, +12	$\pm 0.5$	$\pm 15$	-	X	30	110	LI-6	6A
8	Dual Diff. Receiver	9622	9621	+5.0, -10	$\pm 1.5$	$\pm 10$	X	X	35	140	LI-8	6A
9	Dual Diff. Receiver	75107	75109	+5.0, -5.0	$\pm 0.025$	$\pm 3.0$	X	X	14	130	LI-13	6A, 9A
10	Dual Diff. Receiver	75108	75110	+5.0, -5.0	$\pm 0.025$	$\pm 3.0$	X	X	14	130	LI-13	6A, 9A
11	Quad 2-NOR Bus Receivers	96106	96101	+5.0	+1.5	-	-	-	20	90	D-39	3I, 6A, 9A

# FAIRCHILD INTEGRATED CIRCUITS

## TTL

### TTL Compatible Level Translators

Item	Function	DEVICE NO.	Supply Voltages		$V_{OH}$ V	$V_{OL}$ V	$t_{pd}$ ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
			+V	-V						
1	HLDTL-TTL Hex Inverter	9109	12 to 20	0.0	O.C.	0.4	120	380	D-1	3I, 6A, 9A
2	TTL-HLDTL Hex Inverter	9112	12 to 20	0.0	(+V)-2.0	0.4	90	440	D-1	3I, 6A, 9A
3	TTL-MOS Quad Clock Dvr	9607 (3207A)	15 to 21	0.0	(+V)-0.2	0.2	25	300	D-38	4L, 6B, 9B
4	TTL-MOS Dual 2-Input NAND	9624	+5.0	0.0 to -30	$V_{TAP}-1.0$	(-V)+2.0	120	40	LI-9	3I, 6A
5	MOS-TTL Dual Level Trans.	9625	+5.0	0.0 to -30	3.2	0.4	70	60	LI-10	3I, 6A
6	TTL-ECL Quad Diff. Dvr	10124	+5.0	-5.2	-0.885	-1.750	3.0	150	E-16	6B, 9B
7	ECL-TTL Quad Buffer	10125	+5.0	-5.2	2.5	0.5	3.0	300	E-17	6B, 9B
8	TTL-ECL Quad Diff. Dvr	95124	+5.0	-5.2	-0.965	-1.705	3.0	160	E-16	6B

**FAIRCHILD INTEGRATED CIRCUITS**  
**TTL**

**Small Memories**  
**(For Complete TTL Memory Listings See Memory Section)**

Item	Function	Device No.	Size Words x Bits	Address Access Time ns (typ)	Chip Select Access Time ns (typ)	Max Write Cycle ns	Max Read Cycle ns	Power Dissipation mW (typ)	Technology	Logic Symbol	Package(s)
1	16x1 Coincident Select Memory	93407	16x1	20	–	45	30	240	TTL	R-1	3I, 6A
2	16x1 Coincident Select Memory	93433	16x1	20	–	45	30	240	TTL	R-1	3I, 6A
3	64-Bit RAM (OC)	93403	16x4	45	40	55	60	405	TTL	R-2	4L, 7B
4	64-Bit RAM (OC)	93404	16x4	20	13	35	35	405	STTL	R-2	4L, 7B, 9B
5	64-Bit RAM (3-State)	93405	16x4	20	28	40	40	420	STTL	R-2	4L, 7B, 9B
6	64-Bit RAM (OC)	9389 / 7489	16x4	35	30	55	60	405	TTL	R-2	4L, 7B, 9B
7	64-Bit LIFO P-Stack	9406	16x4	40	–	70	70	420	STTL	D-184	6Q, 9U
8	*64-Bit RAM W / Output Register	9410	16x4	–	25	50	50	400	STTL	D-186	7D, 9M
9	64-Bit FIFO	9403	16x4	–	25	75	75	475	STTL	D-181	6Q, 9U

\*To Be Announced

# ECL 95K AND 10K

**GENERAL DESCRIPTION** — Fairchild F95K and F10K Series Emitter Coupled Logic (ECL) circuits are high speed, low power logic families intended for use in high speed systems such as central processors, memory controllers, peripheral equipment, instrumentation and digital communication systems.

Both series employ Emitter Coupled Logic to achieve typical gate delays of 2 ns at typical power levels of 25 mW/gate. The nominal power supply is specified as  $V_{EE}$  equal to  $-5.2$  V. All devices, however, may be operated over  $V_{EE}$  ranges of  $-4.7$  to  $-6.2$  V with negligible loss of noise immunity. Some SSI gates may be operated over a  $V_{EE}$  range of  $-3.5$  to  $-6.2$  V, again with a negligible loss of noise immunity, due to the built-in voltage regulator.

The F10K elements are voltage compensated, ensuring compatibility in existing 10,000 systems. The F95K and F10K series elements have the same pin assignments and logic functions as their 10,000 series counterparts, allowing either selective substitution of F95K elements to eliminate problems in thermal hot-spots, or total substitution to upgrade overall systems performance.

The fully compensated F95K logic elements employ unique compensation networks which ensure that significant parameters such as logic levels, noise margin and propagation delay remain constant over a wide range of temperature and power supply variations.

## **FEATURES (F95K and F10K)**

**Very high speed . . . typically 2 ns per gate**

**Low power dissipation . . . typically 25 mW per gate**

**Voltage Compensated . . . Noise margin insensitive to power supply variations and transients, permits low supply cost**

**Internal 50 k $\Omega$  (nominal) input pull down resistors . . . unused inputs may be left open**

**Open emitter-follower outputs drive terminated lines**

**Separate  $V_{CC}$  pins eliminate noise coupling**

**Single  $V_{EE}$  power supply . . .  $-4.7$  to  $-6.2$  V**

**Wired-OR capability**

**Complementary, simultaneous outputs**

## **FEATURES UNIQUE TO 95K**

**Temperature compensated — logic levels, noise margins and propagation delays remain constant over a wide range of temperature variations and gradients**

**Simplified customer and vendor specification and testing . . . air flow and warm-up not required to guarantee proper logic levels.**

**Lowered cooling cost . . . wide temperature gradients between devices does not affect logic levels and noise margin**

## **9500**

9500 ECL incorporates unique design features, including temperature compensation and on chip terminating resistors to eliminate many of the application problems (low noise margin and instability) associated with earlier forms of ECL. In addition the basic gate characteristics have been chosen to allow the use of more relaxed wiring rules and therefore lower cost interconnection methods than any logic family in the same speed range.

## **FEATURES**

**High input/LOW output impedance**

**Complementary outputs/Wired-OR capability**

**Higher noise margin relative to logic swing. Lower edge speed relative to delay**

**Constant supply current drain**

# ECL 100K

**GENERAL DESCRIPTION** — Fairchild F100K Series Ultra High Speed Emitter Coupled Logic (ECL) circuits are intended for use in systems such as processors, instrumentation and digital communication systems — where maximum possible data rates are required. All F100K logic devices employ unique compensation networks which ensure that logic levels, noise margin and propagation delay remain constant over a wide range of temperature and power supply variations.

The nominal power supply is specified as  $V_{EE}$  equal to  $-4.5$  V for reduced power dissipation. All devices, however, may be operated with  $V_{EE}$  equal to  $-5.2$  V  $\pm 10\%$  with negligible loss of noise immunity. Devices are packaged in 24 pin ceramic flat package for maximum system density. All devices are fabricated with Isoplanar II technology for best performance and smallest chip size.

## FEATURES

**Very high speed** — typically 700 ps per gate

**Low speed power product** — typically 28 pJ per gate

**Fully compensated** — logic levels, noise margins and propagation delays remain constant over a wide range of temperature and voltage variations and gradients

**Open emitter-follower outputs** — drive terminated lines and may be OR-tied

**Internal 50 k $\Omega$  (nominal) input pull down resistors** — unused inputs may be left open

**Complementary, simultaneous outputs** — simplifies design, minimizes crosstalk

**24-pin package** — increased logic capability per device, reduces package count

**Isoplanar II Technology** — maximum performance, minimum chip size

# FAIRCHILD INTEGRATED CIRCUITS

## ECL

Item	Function	DEVICE NO.	tpD (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
<b>OR Gates</b>						
1	Dual 3/3 OR	95110	2.5	145	E81	6B
2	Dual 3/3 OR	10110	2.4	145	E81	6B
3	Dual 3/3 OR	10210	1.5	160	E81	6B
4	Quad OR	95103	2.0	100	E76	6B
5	Quad OR	10103	2.0	100	E76	6B
6	Quad EXC OR	10113	3.0	170	E84	6B
<b>Quad AND Gates</b>						
7	Quad AND	10104	2.4	145	E83	6B
<b>NOR Gates</b>						
8	Dual 3/3 NOR	95111	2.5	145	E82	6B
9	Dual 3/3 NOR	10111	2.4	145	E82	6B
10	*Dual 3/3 NOR	10211	1.5	160	E82	6B
11	Triple NOR	95106	2.0	75	E78	6B
12	Triple NOR	10106	2.0	75	E78	6B
13	Quad NOR	9504	2.3	280	E68	6B
14	Quad NOR	95H04	1.6	250	E68	6B
15	Quad NOR	95H24	1.6	210	E68	6B
16	Quad NOR	95L24	2.0	80	E68	6B
17	Quad NOR	95004	2.0	90	E73	6B
18	Quad NOR	95102	2.0	100	E75	6B
19	Quad NOR	10102	2.0	100	E75	6B
<b>OR/NOR Gates</b>						
20	Dual OR/NOR	9502	2.3	180	E66	6B
21	Dual OR/NOR	95H02	1.6	170	E66	6B
22	Dual OR/NOR	95H22	1.6	130	E66	6A
23	Dual OR/NOR	95L22	2.0	55	E66	6B
24	Dual OR/NOR	95002	2.0	50	E71	6B
25	Dual OR/NOR	95109	2.0	50	E80	6B

\*To be announced

















**FAIRCHILD INTEGRATED CIRCUITS**  
**ECL**

Item	Function	DEVICE NO.	tpD (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
<b>OR / NOR Gates Cont.</b>						
1	Dual OR / NOR	10109	2.0	50	E80	6B
2	Dual OR / NOR	11C01	0.7	125	E94	4L
3	Triple OR / NOR	9503	2.3	250	E67	6B
4	Triple OR / NOR	95H03	1.6	225	E67	6B
5	Triple OR / NOR	95H23	1.6	165	E67	6B
6	Triple OR / NOR	95L23	2.0	65	E67	6B
7	Triple OR / NOR	95003	2.0	75	E72	6B
8	Triple OR / NOR	95105	2.0	75	E77	6B
9	Triple OR / NOR	10105	2.0	75	E77	6B
10	Triple OR / NOR	100101	0.7	120	F89	4Q
11	Triple EXC OR / NOR	95107	2.4	115	E79	6B
12	Triple EXC OR / NOR	10107	2.4	115	E79	6B
13	Quad OR / NOR	95101	2.0	100	E74	6B
14	Quad OR / NOR	10101	2.0	100	E74	6B
15	Quint OR / NOR	100102	0.7	230	E90	4Q
16	Quint EXC OR / NOR	100107	0.7	300	E91	4Q
<b>OR / AND Gates</b>						
17	2-Wide OA	10118	2.3	105	E86	6B
18	4-Wide OA	9505	2.6	315	E69	6B
19	4-Wide OA	10119	2.3	105	E87	6B
<b>OR / AND / Invert Gates</b>						
20	Triple 2-Wide OA / OAI	100117	0.7	240	E92	4Q
21	5-Wide OA / OAI	100118	0.7	175	E93	4Q
22	Dual 2-W OAI	10117	2.3	105	E85	6B
23	4-Wide OAI	10121	2.3	105	E88	6B
<b>AND / NAND Gates</b>						
24	Quad AND / NAND	9507	3.2	315	E70	6B

# FAIRCHILD INTEGRATED CIRCUITS

## ECL

### Latches/Flip Flops

Item	Function	Device No.	Data Inputs	Direct Set/Clear or Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width ns (typ)	Enable/Clock to Q Delay ns (typ)	Data to Q Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	750 MHz D Flip-Flop	11C06	2	No		.7	1.0	1.0	210	E43	6B, 9B
2	Dual "D" Flip-Flop	9528	2	Yes		3.0	3.6	3.6	330	E26	6B
3	Dual "D" Flip-Flop	95H28	2	Yes		2.0	3.0	3.0	330	E26	6B
4	Dual "D" Flip-Flop	95231	2	Yes		2.5	2.8	2.8	245	E31	6B
5	Dual "D" Flip-Flop	10131	2	Yes		3.0	3.0	2.2	235	E31	6B, 9B
6	Dual "D" Flip-Flop	10231	2	Yes		2.5	2.8	2.8	245	E31	6B, 9B
7	*Triple "D" Flip-Flop	100131	3	Yes		1.0	1.3	.85	475	E46	4Q
8	Hex "D" Flip-Flop	10176	6	No		3.0	3.0	5.0	455	E40	6B, 9B
9	Hex "D" Flip-Flop	10186	6	Yes		3.0	3.0	5.0	455	E41	6B, 9B
10	Hex "D" Flip-Flop	100151	6	Yes		1.4	1.1	.75	550	E48	4Q
11	Master/Slave "D" Flip-Flop	11C70	1	Yes		.7	1.0	1.0	210	E44	6B, 9B
12	J-K Flip-Flop	95H29	1	Yes		2.0	3.0	3.0	180	E27	6B
13	J-K Flip-Flop	95029	3	Yes		2.0	2.8	2.8	185	E29	6B
14	Dual JK Flip-Flop	10135	2	No		2.5	3.0	3.0	235	E35	6B, 9B
15	Dual "D" Latch	95130	2	Yes	H	2.5	2.7	2.5	135	E30	6B
16	Dual "D" Latch	10130	2	Yes	H	2.5	2.7	2.5	135	E30	6B, 9B
17	*Triple "D" Latch	100130	3	Yes	H	1.0	1.3	.85	400	E45	4Q
18	Quad Latch	9534	4	Yes	L	2.2	5.6	4.3	415	E28	6B
19	Quad Latch	10133	4	No	L	4.0	4.0	4.0	310	E33	6B, 9B
20	Quad Latch	10153	4	No	H	4.0	4.0	4.0	310	E36	6B, 9B
21	Quad Latch	10168	4	No	L	4.0	4.0	4.0	310	E37	6B, 9B
22	Quint Latch	10175	5	Yes	H	3.3	3.3	2.5	405	E39	6B, 9B
23	Hex "D" Latch	100150	6	Yes	H	1.4	1.1	.75	420	E47	4Q

\*To be announced

# FAIRCHILD INTEGRATED CIRCUITS

## ECL

### Latches/Flip Flops

Item	Function	Device No.	Data Inputs	Direct Set/Clear or Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width ns (typ)	Enable/Clock to Q Delay ns (typ)	Data to Q Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Dual Mux/Latch	10132	4	Yes	H	4.5	4.5	3.5	230	E32	6B, 9B
2	Dual Mux/Latch	10134	4	No	H	4.6	4.5	3.0	230	E34	6B, 9B
3	Quad Mux/Latch	10173	8	No	H	4.5	4.5	2.5	310	E38	6B, 9B
4	*Quad Mux/Latch	100155	4+4	Yes	H	1.2	1.2	.85	430	E49	4Q

### Multiplexers

Item	Function	Device No.	Enable Inputs	True Output	Complement Output	Select Delay ns (typ)	Enable Delay ns (typ)	Data Delay ns (typ)	Power Dissipation mW (typ)	Fan-Out	Logic Symbol	Package(s)
5	Dual Multiplexer	10174	1	2	0	4.0	2.0	3.0	210	50 $\Omega$ Line	E54	6B, 9B
6	*Triple Multiplexer	100171	1	3	3	1.7	2.0	0.8	360	50 $\Omega$ Line	E55	4Q
7	Triple Multiplexer	9580	1	3	0	3.2	3.2	2.6	300	50 $\Omega$ Line	E51	6B
8	Quad Multiplexer	9579	0	4	0	4.0	NA	2.6	260	50 $\Omega$ Line	E50	6B
9	8- to 1-Multiplexer	9581	1	1	0	5.5	3.5	3.2	260	50 $\Omega$ Line	E52	6B
10	8- to 1-Multiplexer	10164	1	1	0	4.0	2.0	3.0	285	50 $\Omega$ Line	E53	6B, 9B

\*To be announced

# FAIRCHILD INTEGRATED CIRCUITS

## ECL

### Decoders/Demultiplexers

Item	Function	Device No.	Address Inputs		Active LOW Outputs	Active HIGH Outputs	Select Delay ns (typ)	Enable Delay ns (typ)	Power Dissipation mW (typ)	Fan-Out	Logic Symbol	Package(s)
			Active LOW Enable									
1	1-of-8 Decoder	9538	3	2	8	0	3.0	5.0	275	50 Ω Line	E7	6B
2	1-of-8 Demux/Decoder	10161	3	2	8	0	4.0	4.0	285	50 Ω Line	E8	6B, 9B
3	1-of-8 Demux/Decoder	10162	3	2	0	8	4.0	4.0	285	50 Ω Line	E9	6B, 9B
4	Dual 1-of-4 Demux/Decoder	10171	2	2+1	4+4	0	4.0	4.0	320	50 Ω Line	E10	6B, 9B
5	Dual 1-of-4 Demux/Decoder	10172	2	2+1	0	4+4	4.0	4.0	320	50 Ω Line	E11	6B, 9B
6	*Multipurpose Demux/Decoder	100170	5	2+2	4 or 8	4 or 8	1.7	1.2	565	50 Ω Line	E12	4Q

\*To be announced

### Registers

Item	Function	Device No.	No. of Bits	Serial Entry	Parallel Entry No. of Bits	Clock Edge	Max Clock Freq MHz (typ)	Clock To Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
8	4-Bit Shift Register	95000	4	D	4S		200	3.2	345	E64	6B, 9B
9	4-Bit Shift Register	10000	4	D	4S		200	3.2	345	E64	6B, 9B
10	4-Bit Left/Right Shift Register	10141	4	D <sub>L</sub> , D <sub>R</sub>	4S		350	2.2	400	E65	6B, 9B

**FAIRCHILD INTEGRATED CIRCUITS**  
**ECL**

**Counters**

Item	Function	Device No.	Modulo	Parallel Load	Clock Transition	Max Clock Rate MHz (typ)	Clock to Q Output Delay ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Binary Counter	95H16	2, 4, 8 or 16	4		200	3.6	470	E1	6B
2	Binary Counter	95O16	2, 4, 8 or 16	4		200	3.6	415	E3	6B
3	Binary Counter	10016	2, 4, 8 or 16	4		200	3.6	415	E3	6B, 9B
4	*Binary Counter	10136	2, 4, 8 or 16	4		200	—	520	E4	7B
5	Decade Counter	95O10	10	4		200	3.6	415	E3	6B
6	Decade Counter	10010	10	4		200	3.6	415	E3	7B, 9B
7	*Decade Counter	10137	10	4		200	—	520	E4	7B
8	÷ 4 Counter	11C05	4	—		1100	—	340	E5	6B
9	÷ 5/6 Prescaler	95H91	5 or 6	MS		320	5.1	390	E2	6B
10	÷ 5/6 Prescaler	11C91	5 or 6	MS		600	—	300	E6	6B
11	÷ 10/11 Prescaler	95H90	10 or 11	MS		320	5.1	440	E2	6B
12	÷ 10/11 Prescaler	11C90	10 or 11	MS		600	—	300	E6	6B

\*To be announced

# FAIRCHILD INTEGRATED CIRCUITS

## ECL

### Interface—Drivers

Item	Function	Device No.	Companion Receiver	Supply Voltages V	V <sub>OH</sub> V	V <sub>OL</sub> V	t <sub>pd</sub> ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	*Triple BUS Driver	10123	All 10K	-5.2	-.960	-2.030	3.0	312	E78	6B
2	*HEX BUS Driver	100123	All 95K/100K	-4.5	-1.025	-2.030	1.8	730	E14	4Q

\*To be announced

### Interface—Receivers

Item	Function	Device No.	Companion Driver	Supply Voltages V	V <sub>TH</sub> V	V <sub>CM</sub> V	Enable Output	Differential Inputs	t <sub>pd</sub> ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
3	Triple Line Receiver	9582	All Logic Elements	-5.2	V <sub>REF</sub>	±1	H	3	2.2	250	E22	6B
4	Triple Line Receiver	95116	All Logic Elements	-5.2	V <sub>REF</sub>	2	H	3	2.0	75	E24	6B
5	Triple Line Receiver	10114	All Logic Elements	-5.2	V <sub>REF</sub>	±1	H	3	2.2	145	E24	6B, 9B
6	Triple Line Receiver	10116	All Logic Elements	-5.2	V <sub>REF</sub>	2	H	3	1.9	75	E24	6B, 9B
7	Quad Line Receiver	95115	All Logic Elements	-5.2	V <sub>REF</sub>	2	H	4	2.0	95	E23	6B

# FAIRCHILD INTEGRATED CIRCUITS

## ECL

### Interface—Receivers

Item	Function	Device No.	Companion Driver	Supply Voltages V	$V_{TH}$ V	$V_{CM}$ V	Enable Output	Differential Inputs	$t_{pd}$ ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Quad Line Receiver	10115	All Logic Elements	-5.2	$V_{REF}$	2	H	4	1.9	95	E23	6B, 9B
2	Quint Line Receiver	100114	All Logic Elements	-4.5	$V_{REF}$	$\pm 1$	H	5	1.2	330	E25	4Q
3	Active Terminator	10014	All Logic Elements	-5.2	NA	NA	NA	NA	NA	65	E18	6B, 9B

### Interface—Level Translators

Item	Function	Device No.	Supply Voltages		$V_{OH}$ V	$V_{OL}$ V	$t_{pd}$ ns	Power Dissipation mW (typ)	Logic Symbol	Package(s)
			+V	-V						
4	Dual ECL to TTL	9595	5.0	5.2	2.4	0.4	6	375	E15	6B
5	Quad TTL to ECL	95124	5.0	5.2	-1.050	-1.595	3	295	E16	9B, 6B
6	Quad TTL to ECL	10124	5.0	5.2	-.960	-1.650	3	265	E16	6B, 9B
7	Quad ECL to TTL	10125	5.0	5.2	2.5	0.5	3	410	E17	6B, 9B
8	ECL VCM**	11C58	5.0	5.2	-.960	-1.620	—	260	E21	6B
9	Dual TTL VCM**	11C24	5.0	NA	2.5	0.5	30	160	E19	6A
10	Phase-Freq. Detector	11C44	5.0	NA	2.5	0.5	—	165	E20	6A

\*\*Voltage-Controlled Multivibrator

## FAIRCHILD INTEGRATED CIRCUITS ECL

### Operators—Adders, ALUS, Comparators, Multiplexers, Encoders

Item	Function	Device No.	No. of Input Bits	$t_{pd}$ ns (typ)	Power Dissipation mW (typ)	Logic Symbol	Package(s)
1	Adder / Subtractor	95H84	2x2	4.6	485	E58	6B
2	Dual Adder / Subtractor	10180	2x2	2.2	340	E62	6B, 9B
3	Carry Lookahead	10179	4x2	3.0	305	E61	6B, 9B
4	4-Bit Comparator	9578	4x2	3.2	275	E57	6B
5	5-Bit Comparator	95H55	5x2	6.0	440	E56	6B
6	*5-Bit Comparator	10166	5x2	5.5	312	E42	6B, 9B
7	8-Input Priority Encoder	10165	8	6.0	520	E13	6B
8	11-Bit Parity Generator	10170	11	4.0	275	E60	6B, 9B
9	12-Bit Parity Generator	10160	12	4.0	240	E59	6B, 9B
10	*4-Bit ALU	10181	4x2	6.0	600	E95	6N

\*To be announced



# FAIRCHILD INTEGRATED CIRCUITS

## ECL

### Memories

Item	Function	Device No.	Size Words x Bits	Address Access Time ns (typ)	Chip Select Access Time ns (typ)	MAX Write Cycle ns	MAX Read Cycle ns	Power Dissipation mW (typ)	Technology	Logic Symbol	Package(s)
1	16-Bit Scratchpad Memory	95401	4x4	6	–	10	10	415	ECL	R17	6B
2	64-Bit RAM	95400	16x4	14	6.5	25.5	17.5	435	ECL	R18	6B
3	64-Bit RAM	10145A	16x4	7	4.5	10	9.0	520	ECL Iso II	R19	6B
4	128-Bit RAM	10405	128x1	11	5	15	15	470	ECL Iso.	R8	6E, 6B
5	256-Bit RAM	10410	256x1	18	7	30	30	470	ECL Iso.	R9	6E, 4B
6	1024-Bit RAM	10415A	1024x1	25	7	35	35	470	ECL Iso.	R10	6E, 4B
7	1024-Bit RAM	10415	1024x1	35	15	60	60	470	ECL Iso.	R10	6E, 4B
8	256-Bit RAM	95410	256x1	25	7	40	40	470	ECL Iso.	R9	6E
9	1024-Bit RAM	95415	1024x1	45	15	75	75	470	ECL Iso.	R10	6E
10	*1024-Bit RAM	100415	1024x1	20	<20	30	30	500	ECL Iso.	R11	4Q
11	256-Bit RAM	10411*	256x1	20	7	35	35	360	ECL Iso.	R9	6E, 4B

\*To be announced

# RT $\mu$ L

## Fairchild RT $\mu$ L Micrologic and C $\mu$ L Counter Micrologic Elements

GENERAL DESCRIPTION—The Fairchild Industrial Resistor-Transistor Micrologic (RT $\mu$ L) integrated circuit family consists of a number of medium and low power compatible integrated circuits made up of resistor-transistor logic and capable of performing logic functions for use in digital electronic equipment.

The Counter Micrologic elements consist of a Decade Counter (958), a 4-Bit Latch (959), and a high voltage Decoder/Driver (960) which are used to convert BCD data into a 1-of-10 input to a gas filled cold cathode indicator tube (NIXIE).

Some of the important features of the RT $\mu$ L integrated circuit family are the following:

- **GUARANTEED OPERATION OVER THE SPECIFIED TEMPERATURE RANGE.**  
     **XM = -55°C TO +125°C.**  
     **XC = 0°C TO +70°C.**
- **SYSTEM OPERATES WITH ONE POWER SUPPLY (3.6 V  $\pm$  10%).**
- **TRADE-OFF BETWEEN FAN-OUT AND TEMPERATURE PERMITTED.**
- **RTL USES POSITIVE NOR OR NEGATIVE NAND LOGIC.**
- **HIGH NOISE IMMUNITY - 300 mV.**
- **VERY LOW PROPAGATION DELAYS - TYPICAL 12 ns FOR MEDIUM POWER GATE AND 40 ns FOR LOW POWER GATE.**
- **POWER DISSIPATION TYPICALLY 2 mW PER GATE FOR THE LOW POWER ELEMENTS.**
- **MIXING MEDIUM AND LOW POWER ELEMENTS OPTIMIZES FAN-OUT AND POWER DISSIPATION.**

DEVICE					DEVICE				
Item	NO.	Description	Package(s)	Logic Symbol	Item	NO.	Description	Package(s)	Logic Symbol
1	900	Buffer	3F, 5B	F-8	14	913	D Flip-Flop	3F, 5B	F-6
2	901	Counter Adapter	3F, 5B	F-18	15	914	Dual 2-NOR	3F, 5B	F-13
3	902	Flip-Flop	3F, 5B	F-19	16	915	Dual 3-NOR	3F, 5F	F-14
4	903	3-Input NOR	3F, 5B	F-9	17	921	Dual 2-Expander	3F, 5B	F-7
5	904	Half Adder	3F, 5B	F-10	18	923	JK Flip-Flop	3F, 5B	F-15
6	905	Half Shift	3F, 5B	F-11	19	926	JK Flip-Flop	3F, 5F	F-16
7	906	Half Shift	3F, 5B	F-20	20	927	Quad Inverter	3F, 5F	F-17
8	907	4-Input NOR	3F, 5B	F-12	21	958	Decade Counter	6A, 5B	F-21
9	908	Adder	3F, 5B	F-1	22	959	4-Bit Latch	6B	F-22
10	909	Buffer	3F, 5B	F-2	23	960	BCD Decod./Driv.	6B	F-23
11	910	Dual 2-NOR	3F, 5B	F-3	24	974	JK Flip-Flop	5B	F-15
12	911	4-Input NOR	3F, 5B	F-4	25	989	Binary Counter	6A, 5B	F-21
13	912	Half Adder	3F, 5B	F-5					

# FAIRCHILD DTL MICROLOGIC

**GENERAL DESCRIPTION** — The Fairchild 930 series of Diode Transistor Micrologic is a member of the Fairchild Digital Integrated Circuits family designed for use in systems where good noise immunity, medium speed, medium power, and good fan-out are required. DTL is available in CERPAK, hermetically sealed Ceramic Dual In-Line and Plastic Dual In-Line packages over both the 0°C to 75°C and -55°C to 125°C temperature range. Basic members of the family are active LOW level output AND gates commonly called NAND gates.

Noise immunity is typically 1 V. Worst case noise immunity over the temperature range is 500 mV. Power dissipation is typically 8.5 mW per gate function at a 50% duty cycle. The average propagation delay is 30 ns per gate function.

A variety of gate combinations is available which provides the system designer the utmost in logic flexibility and helps to reduce package requirements to a minimum. Gate outputs may be tied together to perform the wired-OR function. Some gates are provided with 2 k pull-up resistors which offer improved propagation delay times. An extender is provided to increase the fan-in for some of the gates.

The binary products are direct coupled master /slave flip-flops making operation independent of the clock pulse rise and fall times. The binary products also incorporate direct clear and direct set.

The  $V_{CC}$  and ground terminals of all devices are located on diagonal corners of the package.

Item	DEVICE NO.	Description	Package(s)	Logic Symbol
1	930	Dual 4-Input Extendable NAND Gate	3I, 5F, 6A, 9A	G-1
2	932	Dual 4-Input Extendable NAND Buffer Gate	3I, 5F, 6A, 9A	G-1
3	933	Extender	3I, 5F, 6A, 9A	G-9
4	935	Extendable Hex Inverter	3I, 6A, 9A	G-12
5	936	Hex Inverter	3I, 6A, 9A	G-12
6	937	Hex Inverter	3I, 6A, 9A	G-12
7	941	Monostable Multivibrator	3I, 5F, 6A, 9A	G-17
8	944	Dual 4-Input Extendable NAND Buffer Gate (Open Collector)	3I, 5F, 6A, 9A	G-1
9	945	RS Flip-Flop	3I, 5F, 6A, 9A	G-18
10	946	Quad 2-Input NAND Gate	3I, 5F, 6A, 9A	G-10
11	948	RS Flip-Flop	3I, 5F, 6A, 9A	G-18
12	949	Quad 2-Input NAND Gate	3I, 5F, 6A, 9A	G-10
13	950	A-C Coupled RS Flip-Flop	3I, 5F, 6A, 9A	G-19
14	951	Monostable Multivibrator	3I, 5F, 6A, 9A	G-17
15	961	Dual 4-Input Extendable NAND Gate	3I, 5F, 6A, 9A	G-1
16	962	Triple 3-Input NAND Gate	3I, 5F, 6A, 9A	G-11
17	963	Triple 3-Input NAND Gate	3I, 5F, 6A, 9A	G-11

# FAIRCHILD DTL

Item	DEVICE NO.	Description	Package(s)	Logic Symbol
1	1800	Dual 5-Input NAND Gate	9A	G-1
2	1801	Dual 5-Input NAND Gate	9A	G-1
3	1802	Single 8-Input NAND Gate	9A	G-2
4	1803	Single 8-Input NAND Gate	9A	G-2
5	1804	Single 10-Input NAND Gate	9A	G-3
6	1805	Single 10-Input NAND Gate	9A	G-3
7	1806	Quad 2-Input AND Gate	9A	G-4
8	1807	Quad 2-Input AND Gate	9A	G-4
9	1808	Quad 2-Input OR Gate	9A	G-5
10	1809	Quad 2-Input OR Gate	9A	G-5
11	1810	Quad 2-Input NOR Gate	9A	G-6
12	1811	Quad 2-Input NOR Gate	9A	G-6
13	1812	Quad 2-Input Exclusive OR Gate	9A	G-7
14	1813	Quad Latch	9B	G-13
15	1814	Quad Latch	9A	G-14
16	9093	Dual JK Flip-Flop	3I, 6A, 9A	G-15
17	9094	Dual JK Flip-Flop	3I, 6A, 9A	G-15
18	9097	Dual JK Flip-Flop	3I, 6A, 9A	G-16
19	9099	Dual JK Flip-Flop	3I, 6A, 9A	G-16
20	9109	High Voltage Hex Inverter	6A	G-12
21	9110	High Voltage Hex Inverter	6A	G-12
22	9111	RS Flip-Flop	3I, 6A	G-20
23	9112	High Voltage Hex Inverter	6A	G-12
24	9135	Hex Inverter (Open Collector)	3I, 6A, 9A	G-12
25	9157	Quad 2-Input Buffered NAND Gate	3I, 6A, 9A	G-8
26	9158	Quad 2-Input Power NAND Gate	6A, 9A	G-8

# **BIPOLAR MEMORY**

**CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
DTL · TRANSISTORS · ZENERS · FLIP-FLO  
PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY**



# INTRODUCTION BIPOLAR MEMORIES

Today's equipment designs are unique in their increasing utilization of complex MSI and LSI functions. With the introduction of the Isoplanar\* transistor in 1971 followed by its application to 1024-bit random access memories in 1972, Fairchild has provided technical leadership products to its bipolar memory customers. The tables below offer a well rounded line of bipolar RAMs, PROMs and ROMs from density levels of 16 bits to 8192 bits. These products cover the full range of speed, power, density and function requirements of today's next generation designs. They are functionally and electrically compatible with industry standard TTL and ECL logic products, and in most cases are second and third-sourced. More complete Memory Products data is available in individual Fairchild data sheets.

\*Patent applied for.

# FAIRCHILD INTEGRATED CIRCUITS BIPOLAR MEMORIES

## RAMs Random Access Memories

Item	Function**	DEVICE NO.	Size Words x Bits	Address Access Time ns (typ)	Chip Select Access Time ns (typ)	Max Write Cycle ns	Max Read Cycle ns	Power Dissipation mW (typ)	Technology	Logic Symbol	Package(s)
1	Coincident Select 16-Bit RAM-OC	93407AXC	16 x 1	20	NA	45	30	240	TTL	R1	3I, 6A
2	Coincident Select 16-Bit RAM-V	93407BXC	16 x 1	25	NA	50	30	240	TTL	R1	3I, 6A
3	Coincident Select 16-Bit RAM-OC	93407BXM	16 x 1	22	NA	47	35	250	TTL	R1	3I, 6A
4	Coincident Select 16-Bit RAM-OC	93433AXC	16 x 1	20	NA	45	30	240	TTL	R1	3I, 6A
5	Coincident Select 16-Bit RAM-OC	93433BXC	16 x 1	22	NA	47	30	240	TTL	R1	3I, 6A
6	Coincident Select 16-Bit RAM-OC	93433BXM	16 x 1	25	NA	50	35	250	TTL	R1	3I, 6A
7	64-Bit RAM-OC	93403XC	16 x 4	45	45	55	60	405	TTL	R2	7B, 4L
8	64-Bit RAM-OC	93404XC	16 x 4	20	13	35	35	385	TTL Schot.	R2	7B, 9B, 4L
9	64-Bit RAM-OC	93404XM	16 x 4	20	13	50	50	405	TTL Schot.	R2	7B, 4L
10	64-Bit RAM-3S	93405XC	16 x 4	20	20	35	35	405	TTL Schot.	R2	7B, 9B, 4L
11	64-Bit RAM-3S	93405XM	16 x 4	20	28	40	40	420	TTL Schot.	R2	7B, 4L
12	*64-Bit RAM-OC	9389/7489	16 x 4	30	30	55	60	405	TTL	R2	7B, 9B, 4L
13	256-Bit RAM-OC	93410AXC	256 x 1	35	20	45	45	450	TTL Iso.	R3	6E
14	256-Bit RAM-OC	93410XC	256 x 1	45	25	45	60	450	TTL Iso.	R3	6E, 9B
15	256-Bit RAM-OC	93410XM	256 x 1	45	25	55	70	450	TTL Iso.	R3	6E, 4B
16	256-Bit RAM-OC	93411AXC	256 x 1	40	25	45	45	475	TTL Iso.	R4	6F
17	256-Bit RAM-OC	93411XC	256 x 1	45	25	45	55	475	TTL Iso.	R4	6F, 9B
18	256-Bit RAM-OC	93411XM	256 x 1	45	25	55	75	475	TTL Iso.	R4	6F, 4B
19	256-Bit RAM-3-S	93421XC	256 x 1	35	20	35	50	475	TTL Iso.	R4	6F, 9B
20	256-Bit RAM-3-S	93421XM	256 x 1	35	25	45	60	475	TTL Iso.	R4	6F, 4B
21	256-Bit RAM-3-S	93421AXC	256 x 1	30	20	35	40	475	TTL Iso.	R4	6F
22	256-Bit RAM-3-S	93L421XC	256 x 1	45	30	90	90	250	TTL Iso.	R4	6F, 9B
23	256-Bit RAM-3-S	93L421XM	256 x 1	45	30	100	100	250	TTL Iso.	R4	6F, 4B

\*To Be Announced

\*\*3-S = 3-State OC = Open Collector

X = Part of Package Code



# FAIRCHILD INTEGRATED CIRCUITS BIPOLAR MEMORIES

## RAMs Random Access Memories

Item	Function**	DEVICE NO.	Size Words x Bits	Address Access Time ns (typ)	Chip Select Access Time ns (typ)	Max Write Cycle ns	Max Read Cycle ns	Power Dissipation mW (typ)	Technology	Logic Symbol	Package(s)
1	256-Bit RAM-3-S	93L420XC	256 x 1	40	20	45	45	250	TTL Iso.	R4	6F, 6E
2	256-Bit RAM-3-S	93L420XM	256 x 1	40	20	55	55	250	TTL Iso.	R4	6F, 6E, 4B
3	64 x 9 Bit RAM-OC	93419XC	64 x 9	30	<30	50	50	750	TTL Iso.	R5	7Y
4	*1024-Bit RAM-OC	93412XC	256 x 4	40	<40	60	60	250	TTL Iso.	R6	8T, 4Q
5	*1024-Bit RAM-3-S	93422XC	256 x 4	40	<40	60	60	250	TTL Iso.	R6	8T, 4Q
6	1024-Bit RAM-OC	93415AXC	1024 x 1	30	15	45	45	475	TTL Iso.	R7	6E, 9B
7	1024-Bit RAM-OC	93415 XC	1024 x 1	40	15	70	70	475	TTL Iso.	R7	6E, 9B
8	1024-Bit RAM-OC	93415XM	1024 x 1	40	15	75	75	475	TTL Iso.	R7	6E, 4B
9	1024-Bit RAM-3-S	93425AXC	1024 x 1	30	15	45	45	475	TTL Iso.	R7	6E, 9B
10	1024-Bit RAM-3-S	93425XC	1024 x 1	40	15	70	70	475	TTL Iso.	R7	6E, 9B
11	1024-Bit RAM-3-S	93425XM	1024 x 1	40	15	75	75	475	TTL Iso.	R7	6E, 4B
12	1024-Bit RAM-OC	93L415XC	1024 x 1	75	45	95	95	175	TTL Iso.	R7	6E, 9B
13	16-Bit Scratch Pad Memory	95401XC	4 x 4	6	—	10	10	415	ECL	R17	6B
14	64-Bit RAM	95400XC	16 x 4	14	6.5	25.5	17.5	435	ECL	R18	6B
15	64-Bit RAM	10145AXC	16 x 4	7	4.5	10	9.0	520	ECL	R19	6B
16	128-Bit RAM	10405XC	128 x 1	11	5	15	15	470	ECL Iso.	R8	6E
17	256-Bit RAM	10410XC	256 x 1	18	7	30	35	470	ECL Iso.	R9	6E
18	1024-Bit RAM	10415AXC	1024 x 1	25	7	35	35	470	ECL Iso.	R10	6E
19	1024-Bit RAM	10415XC	1024 x 1	35	15	60	60	470	ECL Iso.	R10	6E
20	256-Bit RAM	95410XC	256 x 1	25	7	40	40	470	ECL Iso.	R9	6E
21	1024-Bit RAM	95415XC	1024 x 1	45	15	75	75	470	ECL Iso.	R10	6E
22	*1024-Bit RAM	100415	1024 x 1	20	<20	30	30	500	ECL Iso.	R11	4Q
23	*256-Bit RAM	10411XC	256x1	20	7	35	45	360	ECL Iso.	R9	6E
24	*1024-Bit RAM	93L425XC	1024 x 1	75	45	95	95	175	TTL Iso.	R7	6E, 9B

\*To be announced

X = Part of Package Code

\*\*3-S = 3-State

OC = Open Collector

# FAIRCHILD INTEGRATED CIRCUITS BIPOLAR MEMORIES

## ROMs Read Only Memory

Item	Function**	DEVICE NO.	Size Words x Bits	Address Access Time ns (typ)	Chip Select Access Time ns (typ)	Max Read Cycle ns	Power Dissipation mW (typ)	Technology	Logic Symbol	Package(s)
1	256-Bit ROM-OC	93434XC	32 x 8	50	30	50***	400	TTL Planar	R12	7B
2	256-Bit ROM-OC	93434XM	32 x 8	50	30	50***	400	TTL Planar	R12	7B
3	1024-Bit ROM-OC	93406XC	256 x 4	30	30	50	570	TTL Planar	R13	6E
4	*2048-Bit ROM-OC	93431XC	512 x 4	30	15	50	425	Iso. Schot.	R14	6E
5	*2048-Bit ROM-3-S	93441XC	512 x 4	30	15	50	425	Iso. Schot.	R14	6E
6	*4096-Bit ROM-OC	93432XC	512 x 8	35	15	55	650	Iso. Schot.	R15	6M
7	*4096-Bit ROM-3-S	93442XC	512 x 8	35	15	55	650	Iso. Schot.	R15	6M
8	*8192-Bit ROM-OC	93454XC	1024 x 8	60	< 60	90	650	Iso. Schot.	R16	6M
9	*8192-Bit ROM-3-S	93464XC	1024 x 8	60	< 60	90	650	Iso. Schot.	R16	6M

\*To be announced

X = Part of Package Code

\*\*\*Typical

\*\*3-S = 3-State

OC = Open Collector

# FAIRCHILD INTEGRATED CIRCUITS BIPOLAR MEMORIES

## PROMs Programmable Read Only Memory

Item	Function**	DEVICE NO.	Size Words x Bits	Address Access Time ns (typ)	Chip Select Access Time ns (typ)	Max Read Cycle ns	Power Dissipation mW (typ)	Technology	Logic Symbol	Package(s)
1	1024-Bit PROM-OC	93416XC	256 x 4	45	25	70	450	TTL Planar	R13	6E, 6J
2	1024-Bit PROM-OC	93416XM	256 x 4	45	25	80	450	TTL Planar	R13	6E, 6J
3	1024-Bit PROM-OC	93417XC	256 x 4	30	12	*	250	Iso. Schot.	R13	6E, 6J
4	1024-Bit PROM-OC	93417XM	256 x 4	30	12	*	250	Iso. Schot.	R13	6E, 6J
5	1024-Bit PROM-3-S	93426XC	256 x 4	45	25	70	450	TTL Planar	R13	6E, 6J
6	1024-Bit PROM-3-S	93426XM	256 x 4	45	25	80	450	TTL Planar	R13	6E, 6J
7	1024-Bit PROM-3-S	93427XC	256 x 4	30	12	*	250	Iso. Schot.	R13	6E, 6J
8	1024-Bit PROM-3-S	93427XM	256 x 4	30	12	*	250	Iso. Schot.	R13	6E, 6J
9	2048-Bit PROM-OC	93436XC	512 x 4	30	15	50	475	Iso. Schot.	R14	6E, 6J
10	2048-Bit PROM-OC	93436XM	512 x 4	30	15	60	475	Iso. Schot.	R14	6E, 6J
11	2048-Bit PROM-3-S	93446XC	512 x 4	30	15	50	475	Iso. Schot.	R14	6E, 6J
12	2048-Bit PROM-3-S	93446XM	512 x 4	30	15	60	475	Iso. Schot.	R14	6E, 6J
13	4096-Bit PROM-OC	93438XC	512 x 8	35	15	55	650	Iso. Schot.	R15	6M
14	4096-Bit PROM-OC	93438XM	512 x 8	35	15	70	650	Iso. Schot.	R15	6M
15	4096-Bit PROM-3-S	93448XC	512 x 8	35	15	55	650	Iso. Schot.	R15	6M
16	4096-Bit PROM-3-S	93448XM	512 x 8	35	15	70	650	Iso. Schot.	R15	6M



# MOS AND CMOS

CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
DTL · TRANSISTORS · ZENERS · FLIP-FLO  
PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY

# INTRODUCTION MOS

The major MOS product emphasis is in the Memory Marketplace. The MOS memory productline consists of a complete line of RAMs, Shift Registers, ROMs, Character Generators and FIFOs. Heavy emphasis is on multi-sourced items using Fairchild's Isoplanar process for cost reductions and improvements in performance.

# FAIRCHILD INTEGRATED CIRCUITS MOS

## RANDOM ACCESS MEMORIES

Item	Function	DEVICE NO.	Technology	Access Time ns	Temperature	Logic Symbol	Package(s)	No. of Pins
1	1024 x 1 Dynamic RAM	1103	ISO P	300	C	M1	7D	18
2	1024 x 1 Dynamic RAM	1103S	ISO P	220	C	M1	7D	18
3	1024 x 1 Dynamic RAM	11031	ISO P	150	C	M1	7D	18
4	1024 x 1 Static RAM	2102	ISO N	1000	C	M2	6D	16
5	1024 x 1 Static RAM	21022	ISO N	650	M, L, C	M2	6D	16
6	1024 x 1 Static RAM	21021	ISO N	450	M, L, C	M2	6D	16
7	1024 x 1 Static RAM	2102F	ISO N	350	M, L, C	M2	6D	16
8	1024 x 1 Static RAM	2102F2	ISO N	250	C	M2	6D	16
9	256 x 4 Static RAM	35382	ISO N	650	M, L, C	M3	7I	22
10	256 x 4 Static RAM	35381	ISO N	450	M, L, C	M3	7I	22
11	256 x 4 Static RAM	3538F	ISO N	350	M, L, C	M3	7I	22
12	4096 x 1 Dynamic RAM	4096	ISO N	250	C	M4	6D	16

## READ ONLY MEMORIES AND CHARACTER GENERATORS

Item	Function	DEVICE NO.	Technology	Access Time ns	Temperature	Logic Symbol	Package(s)	No. of Pins
13	64 x 5 x 7 Char Gen	3257	Si G P	1000	C	M5	7M	24
14	64 x 7 x 5 Char Gen	3258	Si G P	800	C	M6	6D, 9R	16
15	64 x 7 x 5 Char Gen	32582	Si G P	625	C	M6	6D, 9R	16
16	64 x 7 x 5 Char Gen	32581	Si G P	550	C	M6	6D, 9R	16
17	64 x 9 x 7 Char Gen	3260	Si G P	1000	C	M7	7M	24
18	512 x 8 ROM	3514	Si G P	1000	C	M8	7M	24
19	512 x 8 ROM	3515	ISO P	600	C	M8	7M	24
20	512 x 8 ROM	35151	ISO P	500	C	M8	7M	24

**FAIRCHILD INTEGRATED CIRCUITS**  
**MOS**

**SHIFT REGISTERS**

Item	Function	DEVICE NO.	Technology	Frequency MHz	Temperature	Logic Symbol	Package(s)	No. of Pins
1	Single 1024-Bit Static	2533	ISO P	1.5	C	M11	8C, 9L	8
2	Single 1024-Bit Static	3355	ISO P	4.0	C	M11	8C, 9L	8
3	Quad 64-Bit Static	3342	Si G P	2.0	C	M12	6D, 9R	16
4	Quad 80-Bit Static	3347	Si G P	2.0	C	M12	6D, 9R	16
5	Hex 32-Bit Static	3348	Si G P	1.0	C	M13A	7M	24
6	Hex 32-Bit Static	3349	Si G P	1.0	C	M13B	6D, 9R	16
7	Quad 256-Bit	33562	ISO P	1.5	C	M14	6D	16
8	Quad 256-Bit	33561	ISO P	4.0	C	M14	6D	16
9	Quad 80-Bit	33572	ISO P	1.5	C	M12	6D	16
10	Quad 80-Bit	33571	ISO P	4.0	C	M12	6D	16
11	Nine 1024-Bit Dynamic	CCD 450	ISO N, CCD	1.0	C	R	7T	18

**FIRST-IN FIRST-OUT MEMORIES - FIFOs**

Item	Function	DEVICE NO.	Technology	Frequency MHz	Temperature	Logic Symbol	Packages	No. of Pins
12	64 x 4 F1F0	3341	Si G P	0.7	M, L, C	M9	6D, 9R	16
13	64 x 4 F1F0	3341A	Si G P	1.0	M, L, C	M9	6D, 9R	16
14	40 x 9 F1F0	33512	ISO P	2.0	M, L, C	M10	7Y	28
15	40 x 9 F1F0	33511	ISO P	4.0	M, L, C	M10	7Y	28



**FAIRCHILD INTEGRATED CIRCUITS**  
**MOS**

**MISCELLANEOUS**

Item	Function	DEVICE NO.	Technology	Temperature	Logic Symbol	Package(s)	No. of Pins
1	TV Sync Gen	3262	ISO P	C	M15	6D	16
2	8-Channel Multiplex Switch	3705/ 3708	Si G P	C, L, M	M16	6D	16
3	4-1/2-Decade Digital Voltmeter	3814	Si G P	C	M17	7M	24
4	5-Decade Counter	3815	Si G P	C	M18	7M	24
5	Programmable Counter 3 thru 262,145	3816	Si G P	C	M19	6D, 9R	16
6	Digital Clock	3817	ISO P	C	M20	6I/7Y	40/28
7	*Digital Wristwatch Circuit	3819	ISO C	C			

# INTRODUCTION

## CMOS

### 34000 CMOS Series

General Description—The Fairchild CMOS 34000 series logic combines the popular 4000A and 4000B series functions with the advanced Isoplanar C process. The result is a logic family with a superior combination of noise immunity and standardized drive characteristics. Under static conditions these devices dissipate very low power, typically 10 nW per gate. Low power combined with a wide recommended operating supply voltage (3 to 15V) greatly minimizes power supply costs. The 34000 CMOS Family is designed with standardized output drive characteristics which, combined with relative insensitivity to output capacitive loading, simplify system design.

- **LOW POWER—TYPICALLY 10 nW PER GATE STATIC.**
- **WIDE OPERATING POWER SUPPLY VOLTAGE RANGE**  
**3 TO 15 V RECOMMENDED**  
**18 V ABSOLUTE MAXIMUM.**
- **HIGH NOISE IMMUNITY.**
- **BUFFERED OUTPUTS STANDARDIZE OUTPUT DRIVE AND REDUCE VARIATION OF PROPAGATION DELAY WITH OUTPUT CAPACITANCE.**
- **WIDE OPERATING TEMPERATURE RANGE**  
**COMMERCIAL –40°C TO +85°C.**  
**MILITARY –55°C TO +125°C.**
- **HIGH DC FAN-OUT—GREATER THAN 50.**

#### **Isoplanar C.**

The Fairchild CMOS Logic Family uses Isoplanar C for higher performance. This technology combines local oxidation isolation techniques with silicon gate technology to achieve an approximate 35% savings in area. Conventional channel stops are eliminated. Operating speeds are increased due to self-alignment of the silicon gate and reduced side-wall capacitance.

#### **Fully Buffered Outputs.**

Fairchild 34000 CMOS is designed with the system user in mind. Output buffering is used on all devices to achieve higher performance, standardized output drive, highest noise immunity, and decreased ac sensitivity to output loading. Fairchild CMOS uses small geometry logic transistors (to generate the required function) which drive standard low impedance output buffers. This technique reduces chip-size, since only two large output transistors are required per output and rise and fall times are less dependent on input pattern. Buffered outputs also increase system speeds and make propagation delay less sensitive to output capacitance (see Figure 1).

Another advantage of the Fairchild approach is improved noise immunity. Because of the increased voltage gain, nearly ideal transfer characteristics are realized (see Figure 2). The high gain (greater than 10,000) also provides significant pulse shaping (see Figure 3).

# FAIRCHILD INTEGRATED CIRCUITS CMOS

Figure 1

COMPARISON OF PROPAGATION  
DELAY VS LOAD CAPACITANCE FOR  
CONVENTIONAL AND FULLY  
BUFFERED NAND GATES

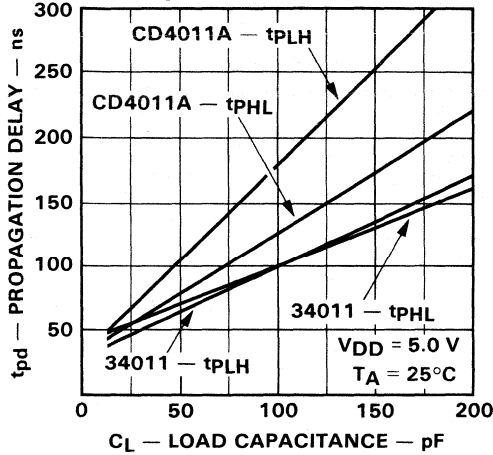


Figure 2

TYPICAL VOLTAGE TRANSFER  
CHARACTERISTICS FOR  
CONVENTIONAL AND FULLY  
BUFFERED DEVICES

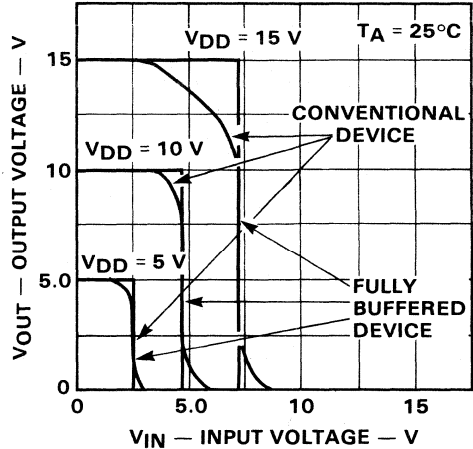
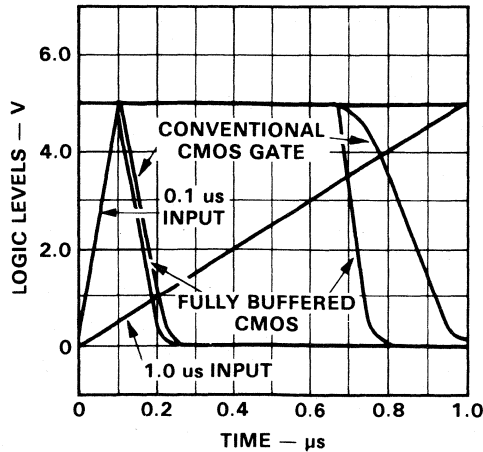


Figure 3

POSITIVE-GOING INPUT RAMPS OF  
 $0.1\ \mu\text{s}$  AND  $1.0\ \mu\text{s}$  APPLIED TO  
CONVENTIONAL AND FULLY  
BUFFERED GATES



# FAIRCHILD INTEGRATED CIRCUITS CMOS

## Gates, Buffers, Inverters

Item	Function	DEVICE NO.	Logic Symbol	Package(s)
<b>NAND Gates</b>				
1	Quad 2-Input NAND	34011	C-01	3I, 6A, 9A
2	Triple 3-Input NAND	34023	C-02	3I, 6A, 9A
3	Dual 4-Input NAND	34012	C-03	3I, 6A, 9A
4	8-Input NAND	34068	C-04	3I, 6A, 9A
<b>NOR Gates</b>				
5	Quad 2-Input NOR	34001	C-05	3I, 6A, 9A
6	Triple 3-Input NOR	34025	C-06	3I, 6A, 9A
7	Dual 4-Input NOR	34002	C-07	3I, 6A, 9A
8	8-Input NOR	34078	C-08	3I, 6A, 9A
<b>AND Gates</b>				
9	Quad 2-Input AND	34081	C-09	3I, 6A, 9A
<b>OR Gates</b>				
10	Quad 2-Input OR	34071	C-10	3I, 6A, 9A
<b>Inverters and Buffers</b>				
11	Hex Inverter	34069	C-11	3I, 6A, 9A
12	Hex Inverting Buffer	34049	C-12	4L, 6B, 9B
13	Hex Non-Inverting Buffer	34050	C-13	4L, 6B, 9B
14	3-State Hex Inverting Buffer	340098	C-14	4L, 6B, 9B
15	3-State Hex Non-Inverting Buffer	340097	C-15	4L, 6B, 9B
<b>Complex Gates</b>				
16	Quad Exclusive-OR	34030	C-16	3I, 6A, 9A
17	Quad Exclusive-OR	34070	C-16	3I, 6A, 9A
18	Quad Exclusive-NOR	34077	C-17	3I, 6A, 9A
19	Dual 2-Wide, 2-Input AND-OR-Invert	34085	C-18	3I, 6A, 9A
20	4-Wide, 2-Input AND-OR-Invert	34086	C-19	3I, 6A, 9A
21	Dual Complementary Pair Plus Inverter	34007	C-20	3I, 6A, 9A

# FAIRCHILD INTEGRATED CIRCUITS

## CMOS

### Latches/Flip-Flops

Item	Function	DEVICE NO.	Data Inputs	Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width ns (typ) VDD=10V	Enable/Clock to Q Delay ns (typ) VDD=10V	Data to Q Delay ns (typ) VDD=10V	Quiescent Power Dissipation mW VDD=10V	Logic Symbol	Package(s)
1	Dual JK Flip-Flop	34027	J-K	R-S	H	35	35	80	0.28	C-21	4L, 6B, 9B
2	Dual D Flip-Flop	34013	D	R-S	H	30	35	45	0.28	C-22	3I, 6A, 9A
3	Quad D Flip-Flop	340175	D	X	H	10	25	30	0.40	C-23	4L, 6B, 9B
4	Hex D Flip-Flop	340174	D	X	H	10	25	30	0.40	C-24	4L, 6B, 9B
5	4-Bit Latch	34042	D	-	H	16	55	36	0.28	C-25	4L, 6B, 9B
6	*4-Bit Latch	34043	R-S	-	H	20	40	40	0.20	C-26	4L, 6B, 9B
7	*4-Bit Latch	34044	R-S	-	H	20	40	40	0.20	C-27	4L, 6B, 9B
8	Dual 4-Bit Address Latch	34723	D	X	L	20	40	35	0.20	C-28	4L, 6B, 9B
9	8-Bit Address Latch	34099	D	X	L	20	40	35	0.20	C-29	4L, 6B, 9B

### Multiplexers

Item	Function	DEVICE NO.	Enable Inputs	True Output	Select Delay, ns (typ) VDD=10V	Enable Delay ns (typ) VDD=10V	Data Delay ns (typ) VDD=10V	Quiescent Power Dissipation mW VDD=10V	Fan-Out	Logic Symbol	Package(s)
10	*Quad 2-Input	34019	-	X	25	-	25	1.2	50	C-30	4L, 6B, 9B
11	*Quad 2-Input	34519	-	X	25	-	25	1.2	50	C-31	4L, 6B, 9B
12	Dual 4-Input	34539	X	X	78	42	61	1.2	50	C-32	4L, 6B, 9B
13	Single 8-Input	34512	X	3-State	75	35	65	1.2	50	C-33	4L, 6B, 9B

\*To be announced

# FAIRCHILD INTEGRATED CIRCUITS CMOS

## Registers

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. of Bits	Clock Edge	Max Clock Freq. MHz (typ) $V_{DD}=10V$	Clock To Output Delay ns (typ) $V_{DD}=10V$	Quiescent Power Dissipation mW $V_{DD}=10V$	Logic Symbol	Package(s)
1	Parallel-In/Parallel-Out	34035	4	J- $\bar{K}$	4	L→H	12	80	1.0	C-39	4L, 6B, 9B
2	Parallel-In/Parallel Out Bidirectional	340194	4	D	4	L→H	14	35	1.0	C-40	4L, 6B, 9B
3	Parallel-In/Parallel-Out	340195	4	J- $\bar{K}$	4	L→H	14	35	1.0	C-41	4L, 6B, 9B
4	Serial-In/Parallel-Out	34015	8	D	—	L→H	14	75	0.2	C-42	4L, 6B, 9B
5	Parallel-In/Serial-Out	34014	8	D	8	L→H	14.7	57	1.2	C-43	4L, 6B, 9B
6	Parallel-In/Serial-Out	34021	8	D	8	L→H	18.1	64	1.2	C-44	4L, 6B, 9B
7	*Serial-In/Serial-Out	34006	18	D	—	H→L	12	80	1.0	C-45	3I, 6A, 9A
8	Serial-In/Serial-Out	34731	256	D	—	H→L	4	175	0.5	C-46	3I, 6A, 9A

## Decoders/Demultiplexers

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Active LOW Outputs	Output Configuration	Select Delay ns (typ) $V_{DD}=10V$	Enable Delay ns (typ) $V_{DD}=10V$	Quiescent Power Dissipation mW $V_{DD}=10V$	Fan-Out	Logic Symbol	Package(s)
9	Dual 1-of-4 Decoder	34555	2 x 2	2	—	H	54	51	0.4	50	C-34	4L, 6B, 9B
10	Dual 1-of-4 Decoder	34556	2 x 2	2	X	L	54	51	0.4	50	C-35	4L, 6B, 9B
11	1-of-10 Decoder	34028	4	—	—	H	60	—	1.2	50	C-36	4L, 6B, 9B
12	*1-of-16 Decoder	34514	4	1	—	H	60	60	1.2	50	C-37	4M, 6N, 9N, 9U
13	*1-of-16 Decoder	34515	4	1	X	L	60	60	1.2	50	C-38	4M, 6N, 9N, 9U
14	Dual 4-Channel Demultiplexer	34052	2	1	—	H	120	100	0.14	50	C-64	4L, 6B, 9B
15	8-Channel Demultiplexer	34051	3	1	—	H	120	100	0.14	50	C-65	4L, 6B, 9B

\*To be announced

# FAIRCHILD INTEGRATED CIRCUITS CMOS

## Counters

Item	Function	DEVICE NO.	Modulo	Parallel Load**	Clock Transition	Max Clock Rate MHz (typ) $V_{DD} = 10V$	Clock to Q Output Delay ns (typ) $V_{DD} = 10V$	Quiescent Power Dissipation mW $V_{DD} = 10V$	Logic Symbol	Package (s)
1	4-Bit Sync. Count Up	340160	Decade	S	L→H	12	50	1.4	C-47	4L, 6B, 9B
2	4-Bit Sync. Count Up	340161	Binary	S	L→H	12	50	1.4	C-47	4L, 6B, 9B
3	4-Bit Sync. Count Up	340162	Decade	S	L→H	12	50	1.4	C-48	4L, 6B, 9B
4	4-Bit Sync. Count Up	340163	Binary	S	L→H	12	50	1.4	C-48	4L, 6B, 9B
5	*4-Bit Sync. Count Down	34522	Decade	A	L→H or H→L	12	50	1.4	C-49	4L, 6B, 9B
6	*4-Bit Sync. Count Down	34526	Binary	A	L→H or H→L	12	50	1.4	C-49	4L, 6B, 9B
7	*4-Bit Sync. Count Up/Down	34510	Decade	A	L→H	12	50	1.4	C-50	4L, 6B, 9B
8	*4-Bit Sync. Count Up/Down	34516	Binary	A	L→H	12	50	1.4	C-50	4L, 6B, 9B
9	4-Bit Sync. Count Up/Down	340192	Decade	A	L→H	8	95	1.4	C-51	4L, 6B, 9B
10	4-Bit Sync. Count Up/Down	340193	Binary	A	L→H	8	95	1.4	C-51	4L, 6B, 9B
11	4-Bit Sync. Count Up/Down	34029	Decade or Binary	A	L→H	12	54	1.4	C-52	4L, 6B, 9B
12	Dual 4-Bit Sync. Count Up	34518	Decade	NA	L→H or H→L	10	85	1.4	C-53	4L, 6B, 9B

\*To be announced

\*\*A = Asynchronous, S = Synchronous, NA = Not applicable

# FAIRCHILD INTEGRATED CIRCUITS

## CMOS

### Counters (Cont'd)

Item	Function	DEVICE NO.	Modulo	Parallel Load **	Clock Transition	Max Clock Rate MHz (typ) $V_{DD} = 10V$	Clock to Q Output Delay ns (typ) $V_{DD} = 10V$	Quiescent Power Dissipation, mW, $V_{DD} = 10V$	Logic Symbol	Package (s)
1	Dual 4-Bit Synchronous Count up	34520	Binary	NA	L→H or H→L	10	85	1.4	C-53	4L, 6B, 9B
2	7-Bit Ripple Count up	34024	Binary	NA	H→L	30	37	1.4	C-54	3I, 6A, 9A
3	12-Bit Ripple Count up	34040	Binary	NA	H→L	25	45	1.4	C-55	4L, 6B, 9B
4	14-Bit Ripple Count up	34020	Binary	NA	H→L	25	45	1.4	C-56	4L, 6B, 9B
5	*4-Bit Johnson Counter	34022	1-of-8 Johnson Counter	NA	L→H or H→L	13.8	104	1.4	C-57	4L, 6B, 9B
6	5-Bit Johnson Counter	34017	1-of-10 Johnson Counter	NA	L→H or H→L	13.8	104	1.4	C-58	4L, 6B, 9B
7	*5-Bit Johnson Counter	34018	Johnson Counter	A	L→H	13.8	104	1.4	C-59	4L, 6B, 9B
8	Bit Rate Generator	34702	14-Bit Rates	NA	L→H	6.5	40	1.2	C-60	4L, 6B, 9B

\*To be announced

\*\*A = Asynchronous, NA = Not applicable



# FAIRCHILD INTEGRATED CIRCUITS

## CMOS

### Monostables

Item	Function	DEVICE NO.	Typical Pulse Width Variation (%)	No. of Inputs		Resettable	Min Output (tpw) ns VDD = 5V	Quiescent Power Dissipation mW, VDD = 10V	Logic Symbol	Package(s)
				Positive	Negative					
1	Dual Retriggerable Resettable Monostable Multivibrator	34528	±4.2%	1	1		200	0.28	C-61	4L, 6B, 9B

### Interface—Level Translators

Item	Function	DEVICE NO.	Supply Voltages		VOH Volts VDD Out = 10V VDD In = 5V	VOL Volts VDD Out = 10V VDD In = 5V	t <sub>pd</sub> ns (Typ) VDD In = 5V, VDD Out = 10V	Quiescent Power Dissipation mW VDD In = 10V, VDD Out = 10V	Logic Symbol	Package (s)
			+VDD In	+VDD Out						
2	TTL To High Level CMOS	34104	3-15	3-15	9.95	0.05	75	1.4	C-62	4L, 6B, 9B

## FAIRCHILD INTEGRATED CIRCUITS CMOS

### Analog Devices—CMOS Only

Item	Function	DEVICE NO.	Enable Input	Max ON Resistance ( $\Omega$ ) $V_{DD} = V_{IS} = 10V$	Max Off State Leakage Current nA $V_{DD} = 10V$	Signal Capability V	Quiescent Power Dissipation mW, $V_{DD} = 10V$	Logic Symbol	Package(s)
1	Quad Bilateral Switch	34016	×	840	125	0-15 $\pm 7.5$	0.03	C-63	3I, 6A, 9A
2	Quad Bilateral Switch	34066	×	520	100	0-15 $\pm 7.5$	0.03	C-63	3I, 6A, 9A
3	Dual 4-Channel Multiplexer / Demultiplexer	34052	×	200	100	0-15 $\pm 7.5$	1.4	C-64	4L, 6B, 9B
4	8-Channel Multiplexer / Demultiplexer	34051	×	200	100	0-15 $\pm 7.5$	1.4	C-65	4L, 6B, 9B

### Operators—Adders, ALUs, Comparators, Encoders

Item	Function	DEVICE NO.	Description	No. of Bits	Quiescent Power Dissipation mW, $V_{DD} = 10V$	Logic Symbol	Package(s)
5	*Adder	34008	Binary Adder	4	1.4	C-66	4L, 6B, 9B
6	Adder	340283	Binary Adder	4	—	C-67	4L, 6B, 9B
7	Carry Lookahead	34582	Carry Lookahead Block	4	0.3	C-68	4L, 6B, 9B
8	Comparator	340085	Magnitude Comparator	4	1.4	C-69	4L, 6B, 9B
9	*Data Path Switch	34704	Data Path Switch	4	—	C-70	4M, 6Q, 9U
10	*Arithmetic Logic Register Stack	34705	Arith. Logic Register Stack	4	—	C-71	4M, 6Q, 9U
11	*Data Access Register	34707	Data Access Register	4	—	C-72	4M, 6Q, 9U

\*To be announced

## FAIRCHILD INTEGRATED CIRCUITS CMOS

### Memories

Item	Function	DEVICE NO.	Organization	Address Access Time ns (typ) $V_{DD} = 10V$	Quiescent Power Dissipation mW, $V_{DD} = 10V$	Logic Symbol	Package(s)
1	*64-Bit RAM	34725	16x4	70	0.3	C-73	4L, 6B, 9B
2	*64-Bit RAM with Output Register	34710	16x4	-	-	C-74	7D, 9M
3	256-Bit RAM	34720	256x1	70	0.3	C-75	4L, 6B, 9B
4	*64-Bit FIFO	34703	16x4	-	-	C-76	4M, 6Q, 9U
5	*64-Bit LIFO	34706	16x4	-	-	C-77	4M, 6Q, 9U

\*To be announced



# **MICROPROCESSOR**

**CMOS · MOS · MACROLOGIC · MICROPROC  
ESSORS · MEMORY · OPTOELECTRONICS ·  
CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
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PS · INTERFACE · ROMS · RAMS · POWER  
VOLTAGE REGULATORS · COMPARATORS  
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POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLXERS · DECODERS · DEMULTIPLX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
BUFFERS · FIFOS · LIFOS · CHARACTER GE  
NERATORS · IMAGE SENSORS · SCHOTTKY**

# FAIRCHILD INTEGRATED CIRCUITS

## F8 MICROPROCESSOR

The F8 system of microprocessor components enables the user to design a complete system using only two chips and without any additional integrated circuits. Features included in the two circuit system are:

- **64 BYTES (64x8) RAM SCRATCHPAD MEMORY**
- **1024 BYTES (1024x8) ROM PROGRAM STORAGE**
- **32 INPUT / OUTPUT CONNECTIONS (TTL COMPATIBLE)**
- **PROGRAMMABLE ELAPSED TIME COUNTER**
- **EXTERNAL INTERRUPT**
- **INTERNAL CLOCK GENERATOR**
- **INTERNAL POWER-ON-RESET CIRCUIT**
- **70 INSTRUCTIONS**
- **2  $\mu$ s MIN INSTRUCTION CYCLE TIME**

The F8 basic 2-chip system includes the following two devices:

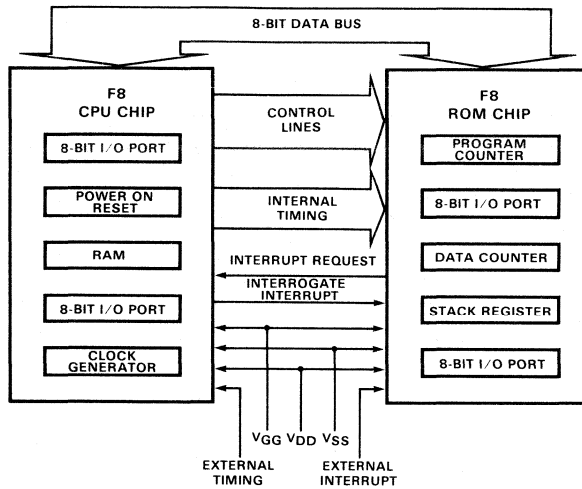
- 3850 CPU (Central Processing Unit)—generates all timing and control, and executes approximately 70 instructions. Contains 64 bytes of scratchpads, 16 input/output connections, clock circuits, power-on-reset circuit.
- 3851 ROM—contains 1024x8 storage for program and constants, local priority determined interrupt circuit, 16 input/output connections, programmable internal timer, address registers for total addressable memory space of 65,536 bytes of memory.

Memory expansion and increased complexity is achieved with the addition of all or part of the following three devices:

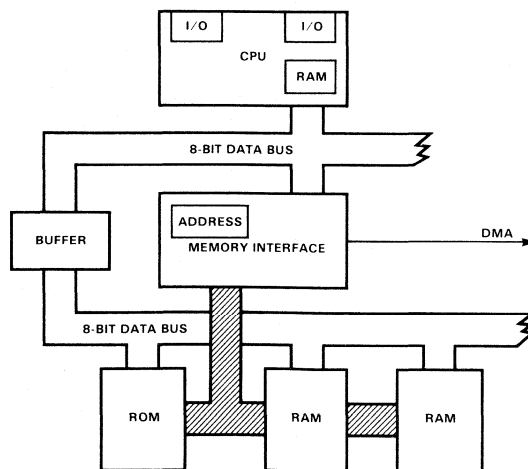
- 3852 DMI (Dynamic Memory Interface)—contains all the logic circuits to support the Fairchild 4096-bit dynamic circuits. Control signals for a direct memory access channel are included.
- 3853 SMI (Static Memory Interface)—allows the use of any standard static memory product with the F8 system. A local interrupt circuit is contained in the 3853 memory interface circuit.
- 3854 DMA (Direct Memory Access)—contains all of the control registers and signals that allow a high data rate transfer channel to be connected directly to memory. The DMA circuit is used in multiple processor systems for synchronizing the operation of several processors with a common main memory.

# FAIRCHILD INTEGRATED CIRCUITS F8 MICROPROCESSOR

## F8 2-CHIP MICROPROCESSOR



## F8 MEMORY INTENSIVE SYSTEM







# CHARGE - COUPLED DEVICES

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CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
AMPLIFIERS · ISOPLANAR · TTL · LINEAR  
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# CCD

## Charge Coupled Devices

Charge coupled devices (CCD) are a new class of monolithic integrated circuits based on the principle of discrete charge-packet transfer. Although they share the same technological base with transistors, they are functional devices which manipulate information in charge-packets rather than devices which modulate electrical currents. More specifically, charge coupling is the collective transfer of all the mobile electric charge stored within a semiconductor storage element, called a cell, to a similar adjacent storage element. This transfer is accomplished by the external manipulation of voltages. The quantity of the stored charge in this "mobile packet" is determined by the input signal, the applied voltage and the capacitance of the storage cell. The amount of electric charge can represent information.

The basic CCD structure is a near ideal analog shift register. The length of the register is the same as the number of cells in a line of the CCD structure. Charge packets, representing information, are shifted from one cell location to the adjacent cell location by moving potential wells created in the silicon channel by a series of closely spaced voltage-clocked gate electrodes. The frequency of the clocks determines the shift rate.

The input charge information to a CCD device can come from two sources depending on the intended circuit application. A memory or register device receives information from a diode at the input and an image sensor's information is supplied from hole-electron pairs created by light energy incident on one or more of the sensor cells.

As a finite size charge packet representing information is introduced into and moved thru the CCD register, it must neither gain or lose significant charge or the information it represents will be changed and not truly represent the input signal. The index of charge retention in moving from one cell to the next is called transfer efficiency which, in high-quality and high performance devices, is 99.99 + %. All Fairchild CCD products utilize an ion-implanted "buried channel" structure to provide high transfer efficiency. The closeness of the gate electrodes combined with the buried channel not only contributes to high transfer efficiency but permits high frequency operation. The Isoplanar structure further enhances overall performance.

The chip input and output from a complex CCD structure requires TTL and MOS level compatibility in order to provide for efficient system application. Fairchild CCD uses Isoplanar, silicon gate and NMOS on-chip circuitry to perform these functions.

Fairchild's CCD line includes Linear and Area Image Sensors, CCD Digital Memory, and CCD Analog Shift Registers.

### CCD Image Sensors

Fairchild CCD Image Sensors feature high dynamic range, high sensitivity, on-chip preamplifiers with low output impedance, two-phase clocking, Isoplanar-N buried channel structures, low voltage and power requirements, and standard DIP packaging. Applications include optical character recognition, facsimile, metrology and TV.

Definitions of Image Sensor performance terms used in the following characteristics table:

<b>DYNAMIC RANGE:</b>	The saturation exposure divided by the noise equivalent exposure.
<b>NOISE EQUIVALENT EXPOSURE:</b>	The exposure level which gives an output signal equal to the dark RMS noise level at the output.
<b>SATURATION OUTPUT VOLTAGE:</b>	The maximum signal output voltage.
<b>RESPONSIVITY:</b>	The output signal voltage per unit exposure for a specified spectral type of radiation. Responsivity equals saturation output voltage divided by saturation exposure.
<b>SPECTRAL RANGE:</b>	The spectral band in which the response per unit of radiant power is more than 10% of the peak response.
<b>SATURATION EXPOSURE:</b>	The minimum exposure level that will produce a saturated output signal. Saturation exposure is equal to the light intensity times the photosite integration time.

# CCD

## Image Sensors (Cont'd)

PHOTO-RESPONSE  
NON-UNIFORMITY:

One half of the difference between the responses of the most and the least sensitive elements under uniform illumination, divided by the average of these two values and expressed as a percentage.

AVERAGE

The output signal level in the dark averaged over all elements and measured relative to the base line output voltage established by the reset clock. It is a linear function of integration time and strongly dependent on temperature.

DARK SIGNAL:

Item	DEVICE NO.	Element Configuration	Clock Phases	Output Clock Frequency Max MHz	Dynamic Range Typ	Saturation Output Voltage mV	Responsivity V/ $\mu$ J/cm <sup>2</sup>	Spectral Range nm Typ	Saturation Exposure J/cm <sup>2</sup> Typ	Photoresponse Nonuniformity %	Average Dark Signal mV	Power Dissipation mW	Temperature Range °C	Block Diagram Symbol	Package(s)	Availability	
																Low Vol. **	High Vol.
1	Linear: CCD101	500x1	3	1	500	500		500-1000	$7.5 \times 10^{-7}$	$\pm 15$	1.0	50	0 to 75	S-1	7E1	STOCK	STOCK
2	CCD110	256x1	2	5	500	400		400-1100	$4.5 \times 10^{-7}$	$\pm 10$	0.5	100	-25 to 65	S-2	7E2	STOCK	STOCK
3	CCD121	1728x1	2	1	200	200	0.4	450-1050	$5 \times 10^{-7}$	$\pm 10$	2.0	100	-25 to 65	S-3	7E4	NOW	3Q75
4	Area: CCD201	100x100	2V 2H	4	200	75	0.47	480-1100	$1.6 \times 10^{-7}$	$\pm 15$	5.0	50	-25 to 65	S-4	7E3	NOW	3Q75
5	*CCD211	244x190	2V 2H	10	200	20	0.13	480-1100	$1.6 \times 10^{-7}$	$\pm 15$	5.0	100	-25 to 65			2Q75	1Q76

\*To be announced

\*\*Sample

# CCD

## Memory

Fairchild CCD Digital Memories feature very low power dissipation, high data rates, 3-state outputs, TTL compatibility, 2-phase clocking, low drive capacitance, Isoplanar-N silicon gate buried channel structure, and standard DIP packaging. Different chip organizations are offered to provide application flexibility.

Applications include terminal buffers, smart terminals, display refresh, swapping store, cache, bulk store.

Item	DEVICE NO.	Organization	Clock Phases	Modes of Operation	Max Clock Frequency MHz	Min Clock Frequency MHz	Read Access Time ns	Average Random Access Time $\mu$ s (Typ)	Max Power Dissipation mW	Standby Power Dissipation mW	Clock Load pF (ea)	Max Data Rate M bit/second	Data TTL Compatible	3-State Output	Logic Symbol and Block Diagram	Package(s)	Availability	
																	Low Vol. **	High Vol.
1	CCD450	1024x9	2	4	3	.05	130	170	250	50	400	27	✓	✓	S-5	7E5	NOW	4Q75
2	CCD460	128x32x4	2	5	5	1.0	120	12.8	200	50	15 100	20	✓	✓	S-6		2Q75	1Q76

\*\*Sample

## Analog Shift Registers / Delay Lines

Fairchild CCD Analog Shift Registers/Delay Lines feature high dynamic range, wide operating frequency range, on-chip preamplifiers, 2-phase clocking, Isoplanar-N, silicon gate buried channel structure and standard DIP packaging.

Applications include variable and fixed analog delay lines and time-base correction in video systems.

Item	DEVICE NO.	Element Configuration	Clock Phases	Gain mV/V	Linearity (% of Sat. Output Voltage)	Total Harmonic Dist. (% of Sat. Output Voltage)	Average Dark Signal (% of Sat. Output Voltage)	Dark Signal Non-Uniformity (% of Sat. Output Voltage)	Signal to Noise Ratio dB	Sample Rate MHz (Typ)	Temperature Range (°C)	Block Diagram	Package(s)	Availability	
														Low Vol. **	High Vol.
3	CCD311	130/260x1	2	50	5	5	1	2	50	10	-25 to 65	S-7	7E2	NOW	4Q75

\*\*Sample

# LOGIC SYMBOLS PACKAGE OUTLINES

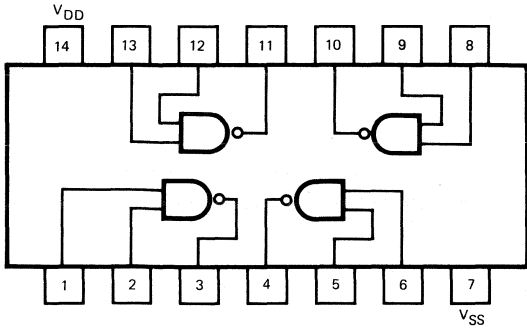
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CCD · SCHOTTKY · HYBRIDS · LAMPS · RE  
GISTERS · ANALOG · COUNTERS · GATES ·  
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ECL · DIODES · SSI · DIGITAL · LEDS · RTL  
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VOLTAGE REGULATORS · COMPARATORS  
OP AMPS · PROMS · LOW POWER TTL · LOW  
POWER SCHOTTKY · GATES · LATCHES · MU  
LTIPLEXERS · DECODERS · DEMULTIPLEX  
ERS · MONOSTABLES · ARITHMETIC OPER  
ATORS · DISPLAY DRIVERS · INVERTERS  
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NERATORS · IMAGE SENSORS · SCHOTTKY



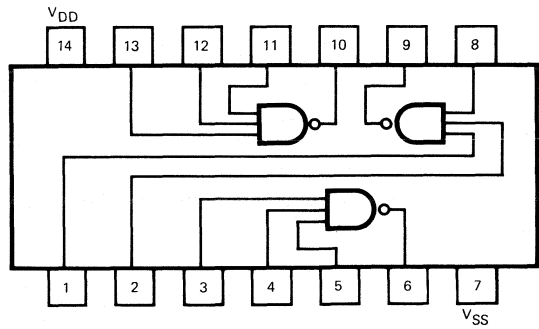
# CMOS

## LOGIC AND CONNECTION DIAGRAMS

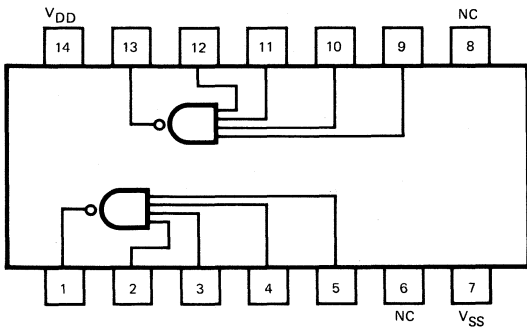
**C-01**  
**34011**



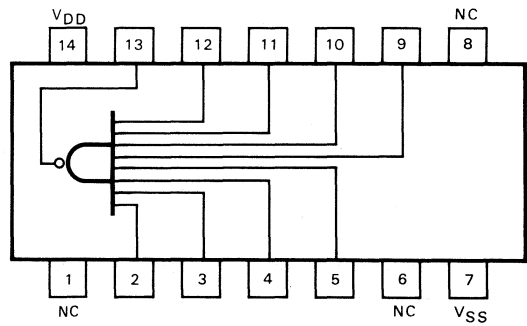
**C-02**  
**34023**



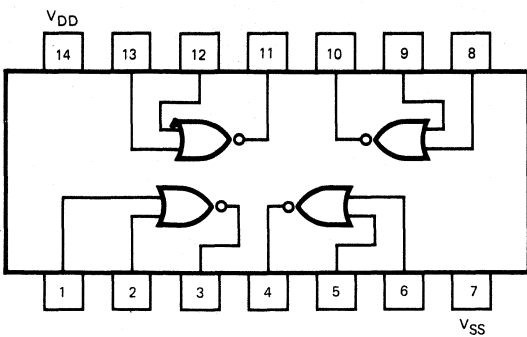
**C-03**  
**34012**



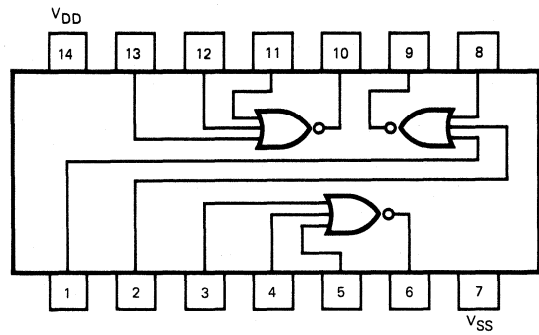
**C-04**  
**34068**



**C-05**  
**34001**



**C-06**  
**34025**

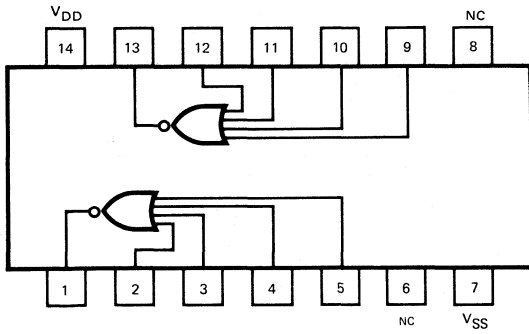


NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

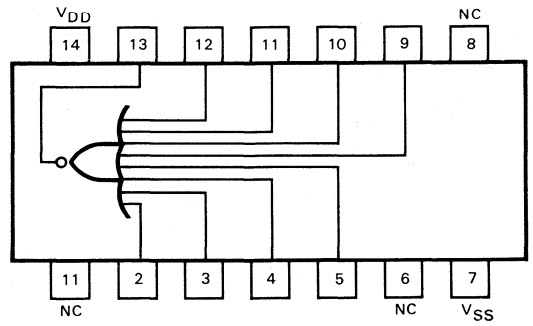
# CMOS

## LOGIC AND CONNECTION DIAGRAMS

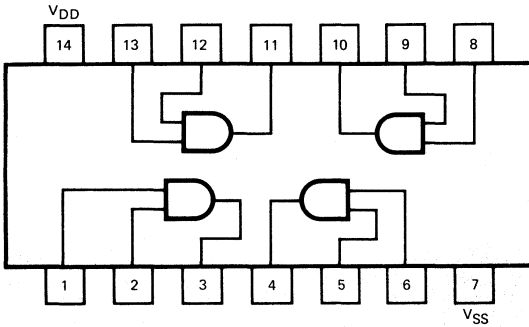
**C-07  
34002**



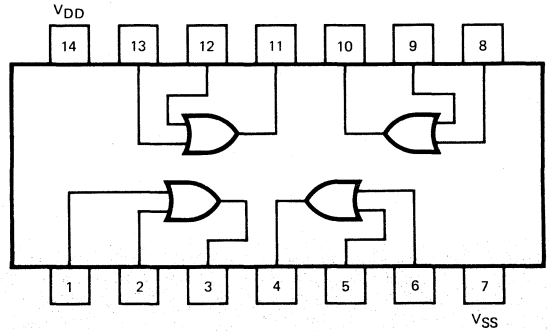
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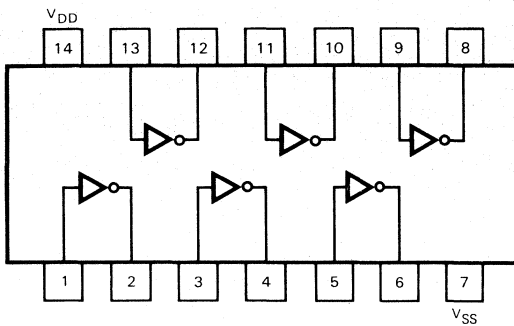
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34081**



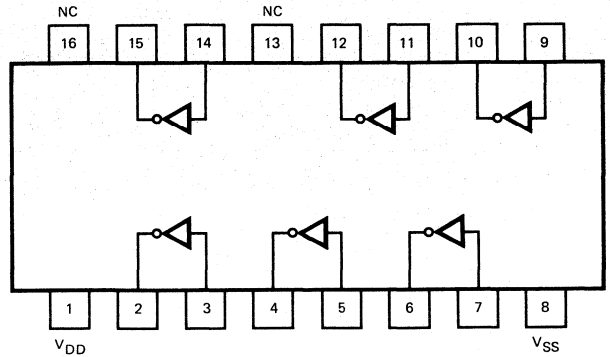
**C-10  
34071**



**C-11  
34069**



**C-12  
34049**



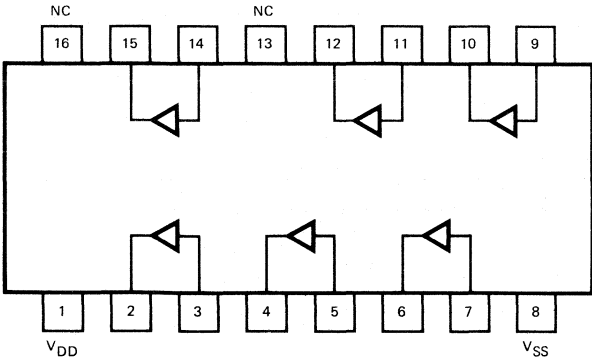
NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.



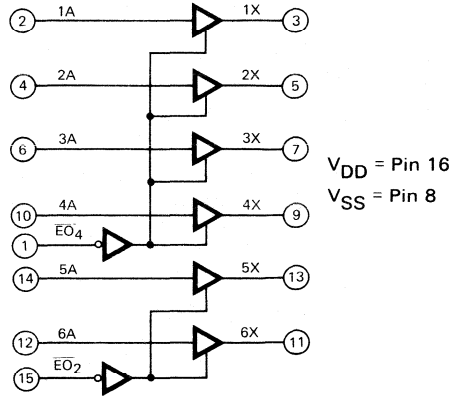
# CMOS

## LOGIC AND CONNECTION DIAGRAMS

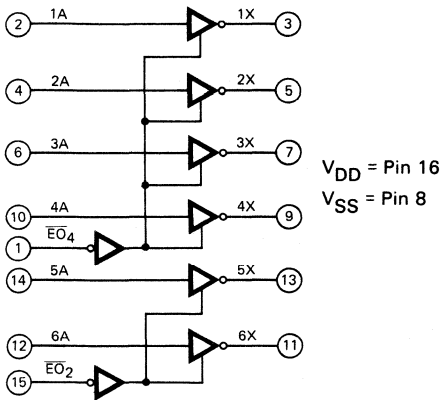
**C-13  
34050**



**C-15  
34097**

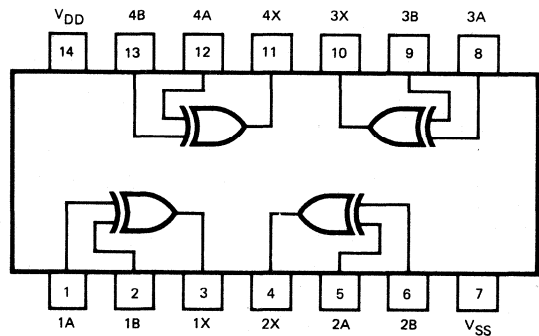


**C-14  
34098**



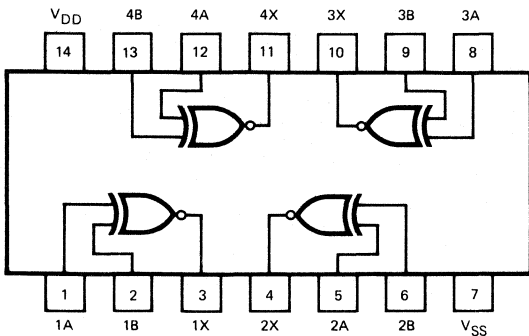
**C-16  
34030/34070**

$$X = \bar{A}B + A\bar{B}$$



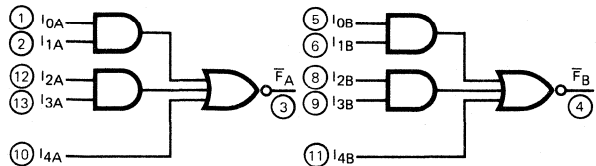
**C-17  
34077**

$$X = AB + \bar{A}\bar{B}$$



**C-18  
34085**

$$\bar{F} = \overline{I_0 \cdot I_1 + I_2 \cdot I_3 + I_4}$$



$V_{DD} = \text{Pin } 14$

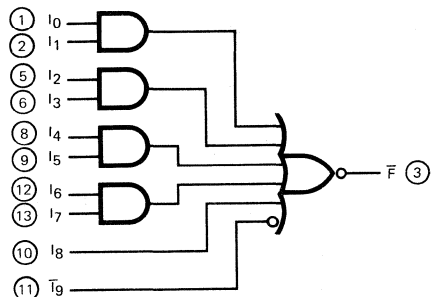
$V_{SS} = \text{Pin } 7$

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

## LOGIC SYMBOLS

**C-19**  
**34086**



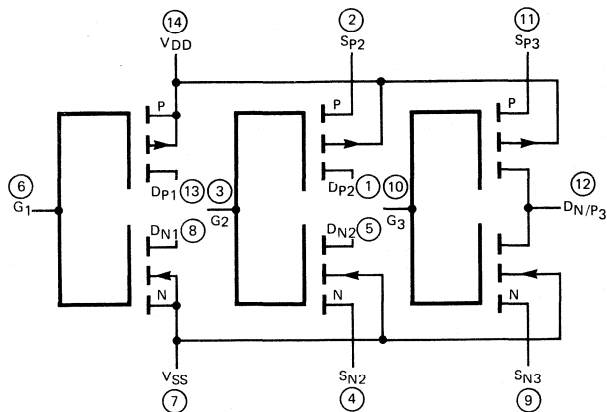
$$\bar{F} = I_0 \cdot I_1 + I_2 \cdot I_3 + I_4 \cdot I_5 + I_6 \cdot I_7 + I_8 + I_9$$

NOTE:

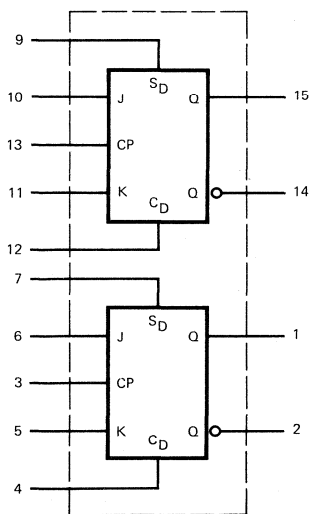
A HIGH on  $I_8$  or a LOW on  $I_9$  forces the output ( $\bar{F}$ ) LOW.

$V_{DD}$  = Pin 14       $V_{SS}$  = Pin 7      NC = Pin 4

**C-20**  
**34007**

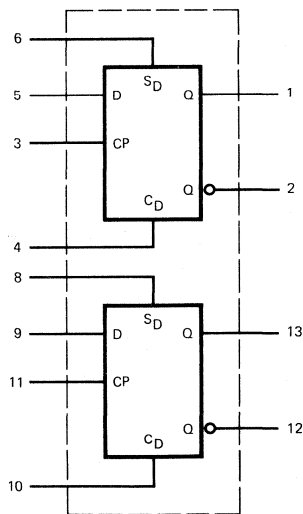


**C-21**  
**34027**



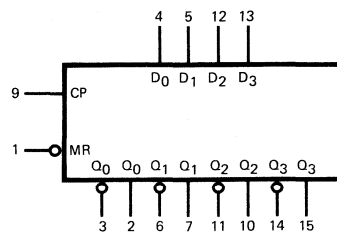
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-22**  
**34013**



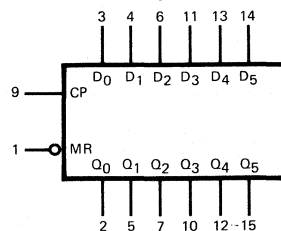
$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7

**C-23**  
**340175**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-24**  
**340174**

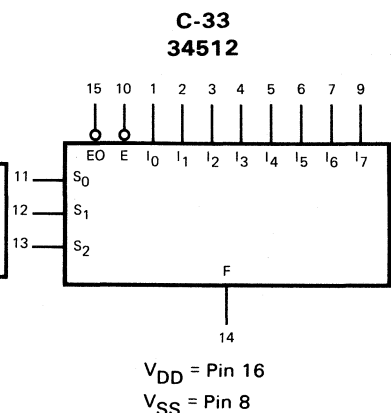
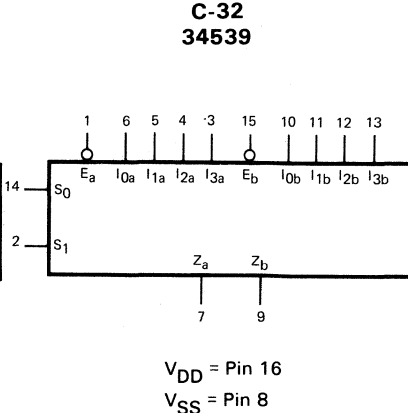
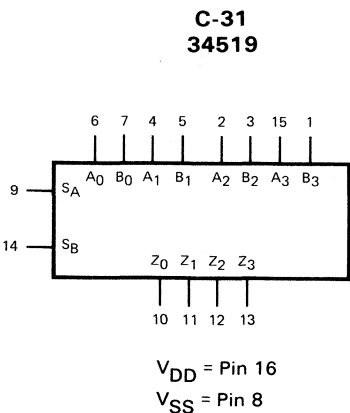
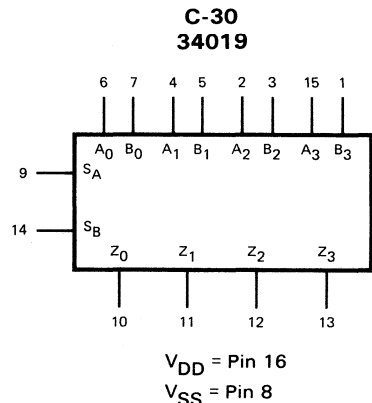
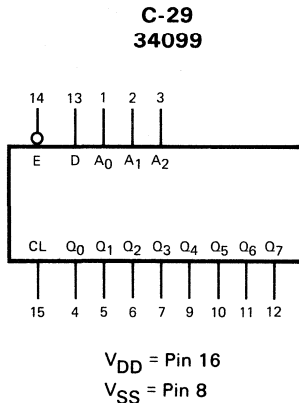
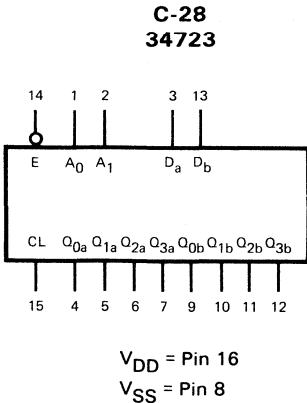
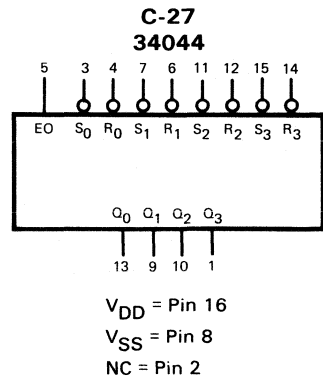
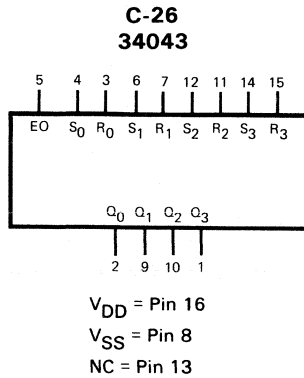
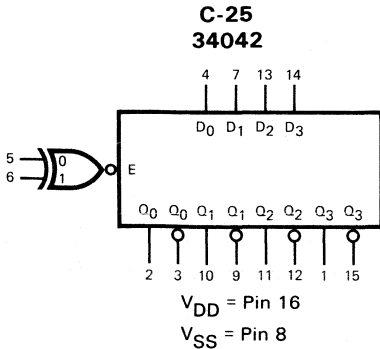


$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

## LOGIC SYMBOLS

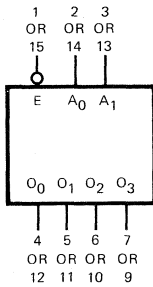


NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

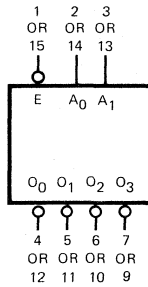
## LOGIC SYMBOLS

**C-34**  
**34555**



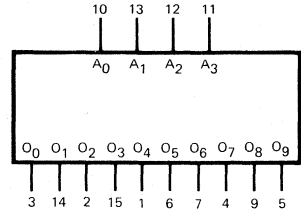
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-35**  
**34556**



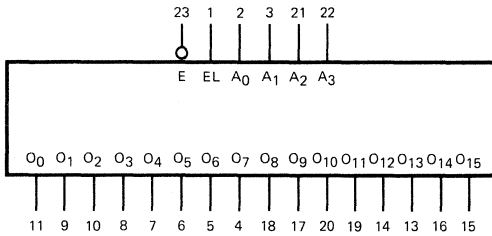
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-36**  
**34028**



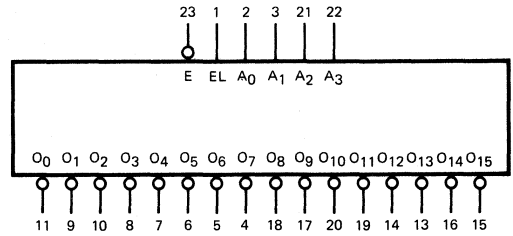
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-37**  
**34514**



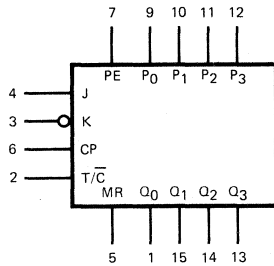
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C-38**  
**34515**



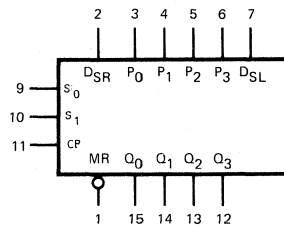
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C-39**  
**34035**



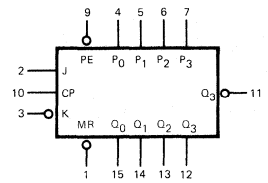
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-40**  
**340194**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-41**  
**340195**



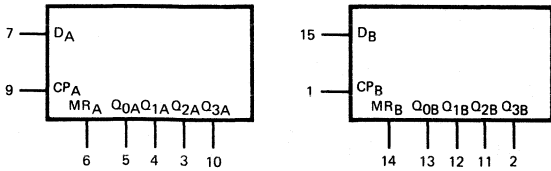
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

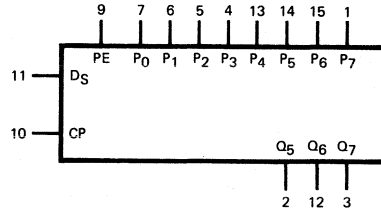
## LOGIC SYMBOLS

**C-42**  
**34015**



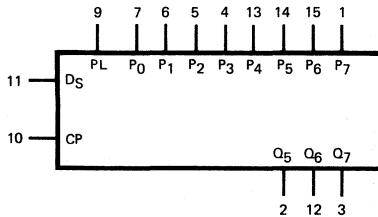
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-43**  
**34014**



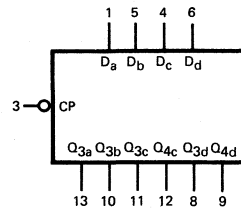
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-44**  
**34021**



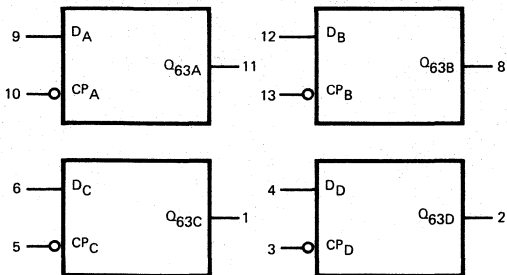
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-45**  
**34006**



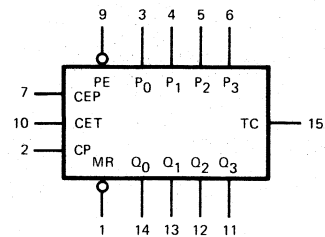
$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7  
NC = Pin 2

**C-46**  
**34731**



$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7

**C-47**  
**340160/340161**

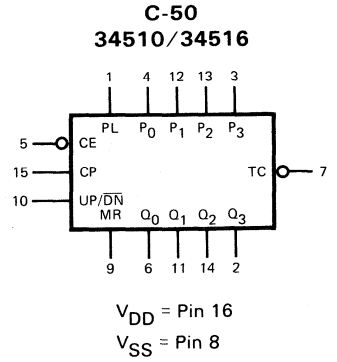
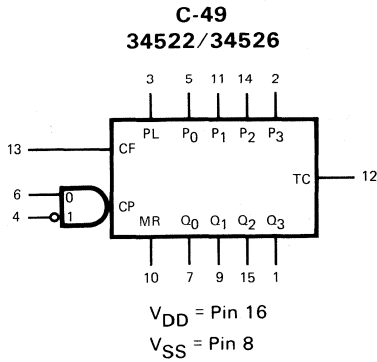
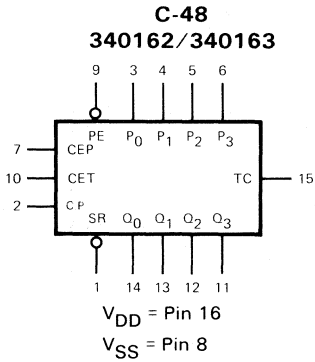


$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

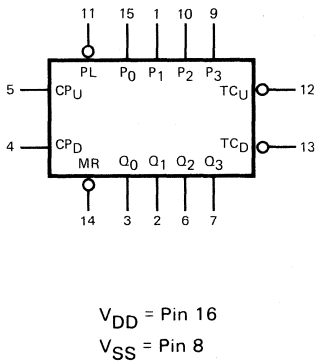
NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

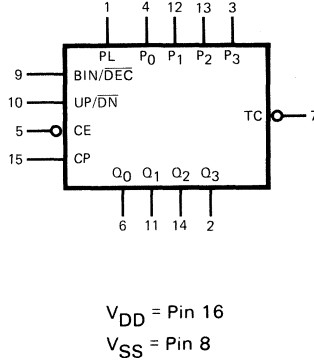
## LOGIC SYMBOLS



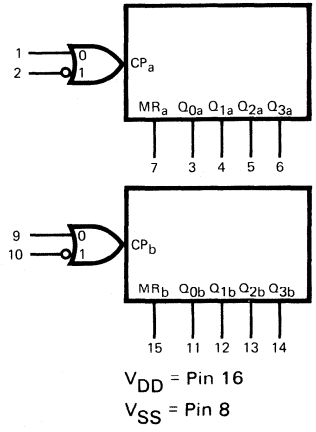
**C-51**  
**340192/340193**



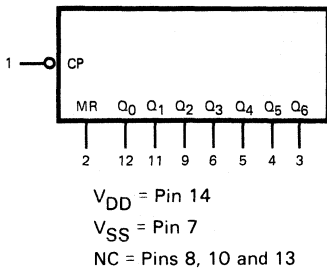
**C-52**  
**34029**



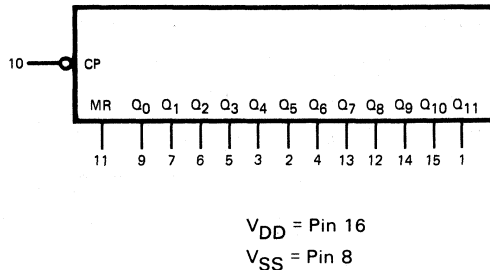
**C-53**  
**34518/34520**



**C-54**  
**34024**



**C-55**  
**34040**

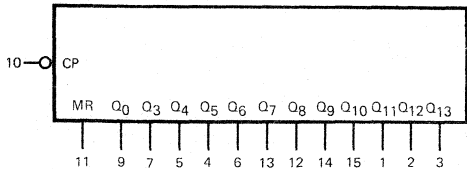


NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

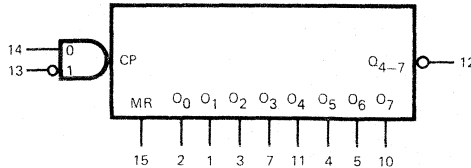
## LOGIC SYMBOLS

**C-56**  
**34020**



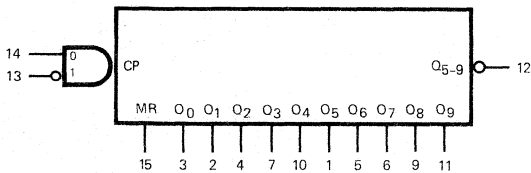
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-57**  
**34022**



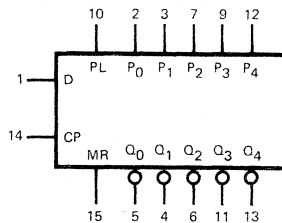
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
NC = Pin 6, 9

**C-58**  
**34017**



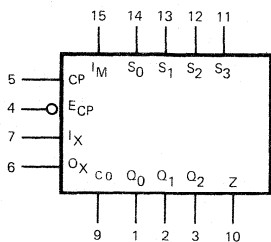
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-59**  
**34018**



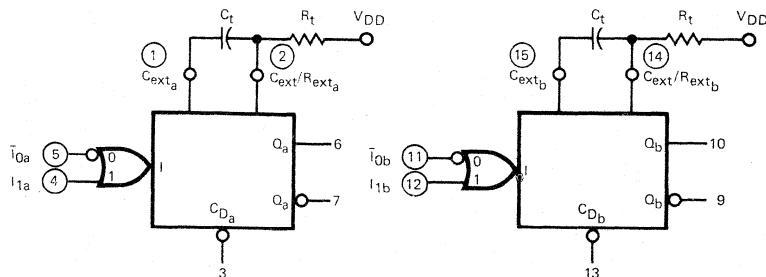
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-60**  
**34702**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-61**  
**34528**

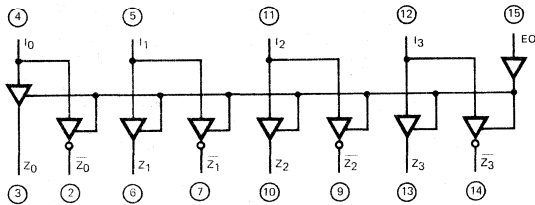


$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

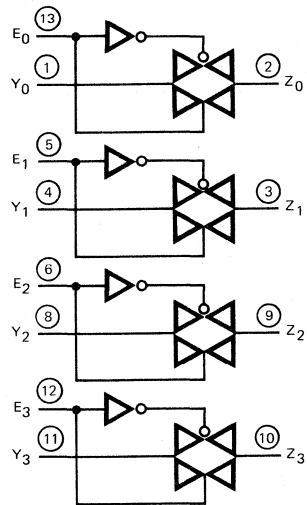
# CMOS LOGIC SYMBOLS

**C-62  
34104**



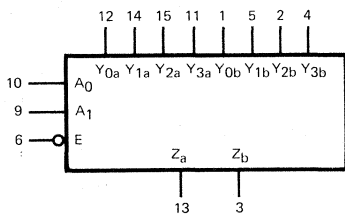
$V_{DD0}$  = Pin 1  
 $V_{DD1}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-63  
34016/34066**



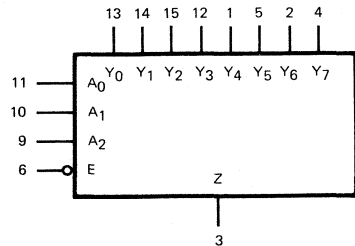
$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7

**C-64  
34052**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
 $V_{EE}$  = Pin 7

**C-65  
34051**



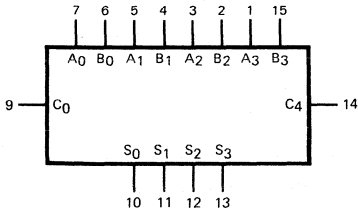
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
 $V_{EE}$  = Pin 7

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.



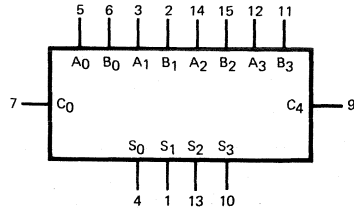
# CMOS LOGIC SYMBOLS

**C-66  
34008**



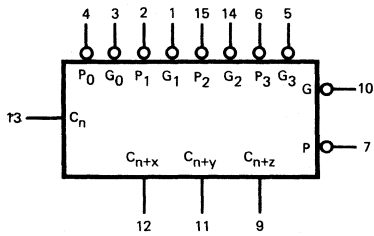
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-67  
340283**



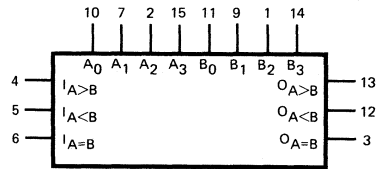
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-68  
34582**



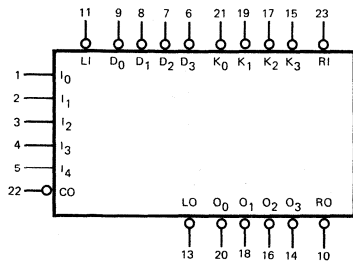
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-69  
340085**



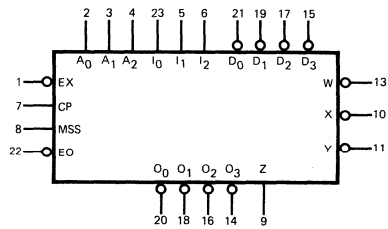
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-70  
34704**



$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C-71  
34705**



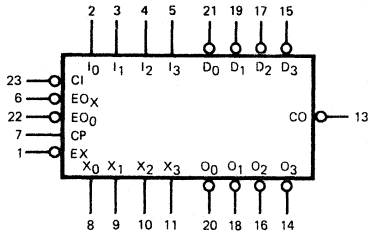
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CMOS

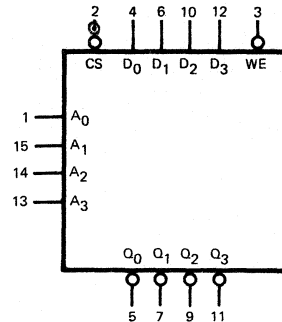
## LOGIC SYMBOLS

**C-72**  
**34707**



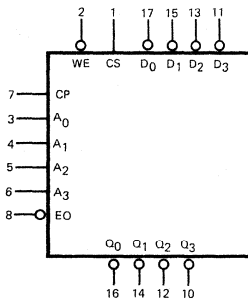
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C-73**  
**34725**



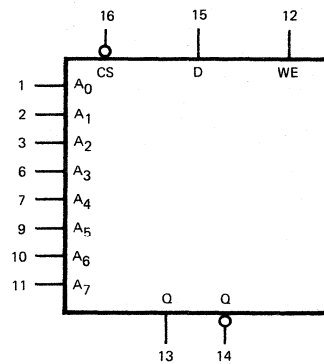
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C-74**  
**34710**



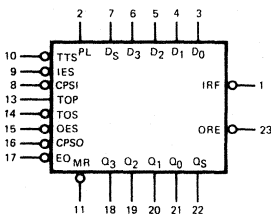
$V_{DD}$  = Pin 18  
 $V_{SS}$  = Pin 9

**C-75**  
**34720**



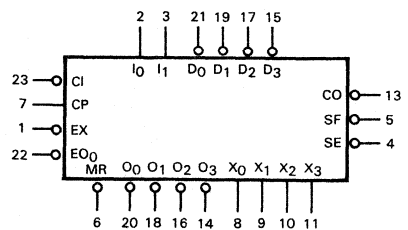
$V_{DD}$  = Pin 5  
 $V_{SS}$  = Pin 8  
NC = Pin 4

**C-76**  
**34703**



$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C-77**  
**34706**



$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

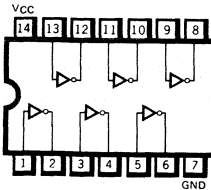
NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# TTL

## CONNECTION DIAGRAMS

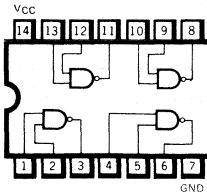
**D-1**

9016, 9H04, 9LS04, 9N04  
9S04, 9S04A, 9017, 9H05,  
9LS05, 9N05, 9S05, 9S05A,  
9N06, 9N16, 9LS14, 9N14



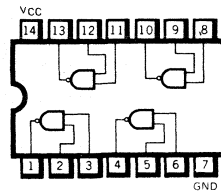
**D-2**

9002, 9012, 9H00, 9H01,  
9LS00, 9LS03, 9N00, 9N03,  
9S00, 9S03, 9N26, 9LS37,  
9LS38, 9N37, 9N38, 9LS132,  
9N132, 9S132



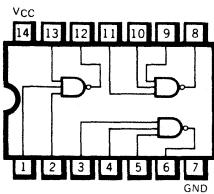
**D-3**

9N01, 9N39, 96101



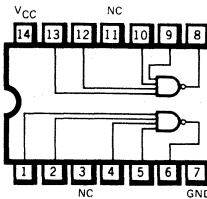
**D-4**

9003, 9H10, 9LS10,  
9N10, 9N12, 9S10

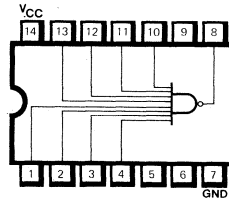


**D-5**

9004, 9H20, 9H22, 9LS20,  
9LS22, 9N20, 9N22, 9S20,  
9S22, 9009, 9H40, 9LS40,  
9N40, 9S40, 9S140



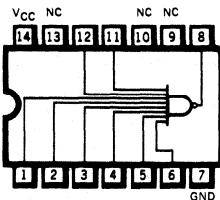
**D-6**  
9007



NC — No internal connection.

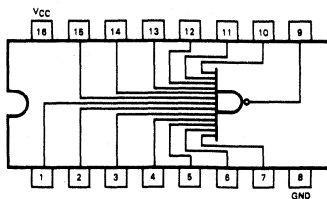
**D-7**

9H30, 9LS30, 9N30, 9S30



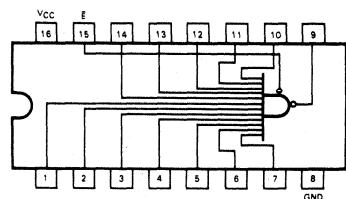
**D-8**

9S133



**D-9**

9S134

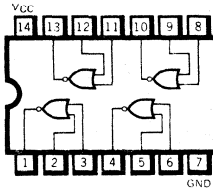


NC — No internal connection.

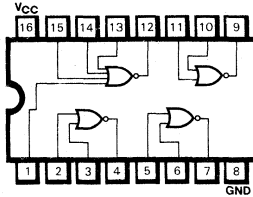
# TTL

## CONNECTION DIAGRAMS

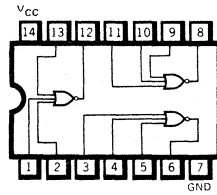
**D-10**  
9LS02, 9N02, 9S02



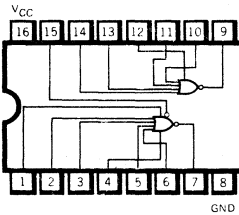
**D-11**  
9015



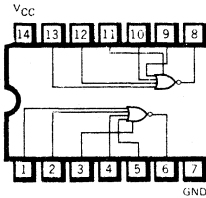
**D-12**  
9N27



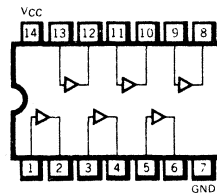
**D-13**  
9N25



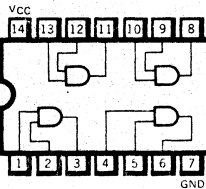
**D-14**  
9N23



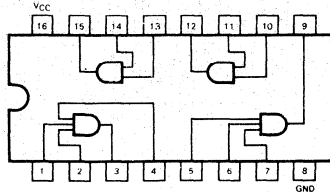
**D-15**  
9N07, 9N17



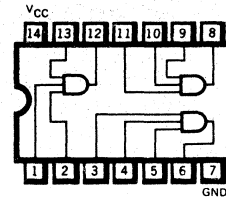
**D-16**  
9H08, 9H09, 9LS08, 9LS09,  
9N08, 9N09, 9S08, 9S09



**D-17**  
9S41



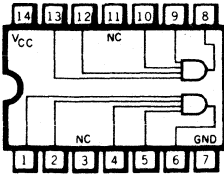
**D-18**  
9H11, 9H15, 9LS11, 9LS15,  
9N11, 9S11, 9S15



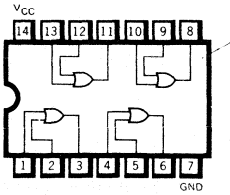
# TTL

## CONNECTION DIAGRAMS

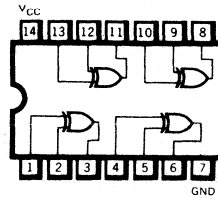
**D-19**  
9H21, 9LS21, 9N21



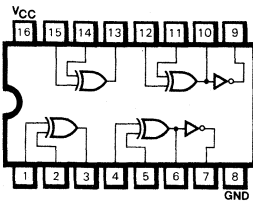
**D-20**  
9LS32, 9N32, 9S32



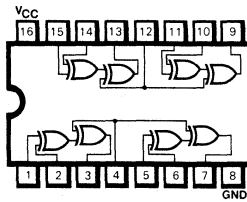
**D-21**  
9LS86, 9LS136  
9N86, 9S86



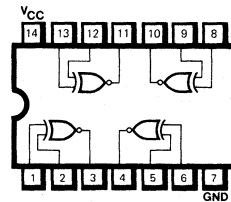
**D-22**  
9014



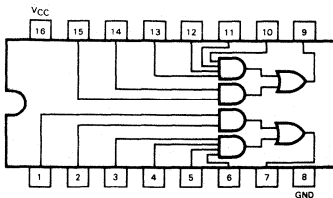
**D-23**  
9S135



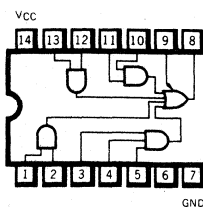
**D-24**  
9LS266, 9386



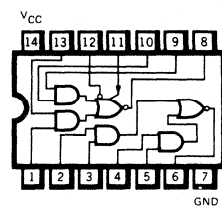
**D-25**  
9S42



**D-26**  
9H52



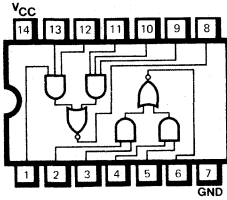
**D-27**  
9005, 9H50, 9N50



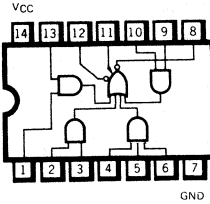
# TTL

## CONNECTION DIAGRAMS

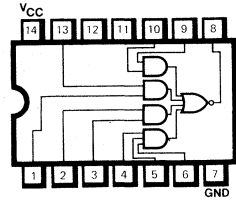
**D-28**  
9H51, 9LS51,  
9N51, 9S51



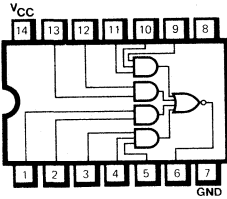
**D-29**  
9008, 9H53, 9N53



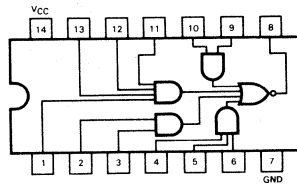
**D-30**  
9H54, 9N54



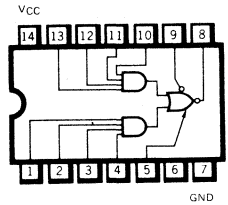
**D-31**  
9LS54



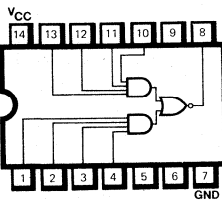
**D-32**  
9S64, 9S65



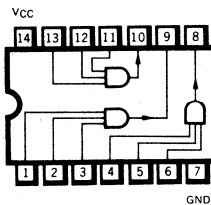
**D-33**  
9H55



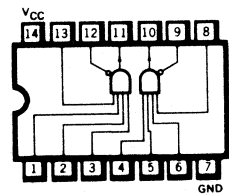
**D-34**  
9LS55



**D-35**  
9H61



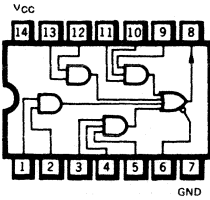
**D-36**  
9006, 9H60, 9N60



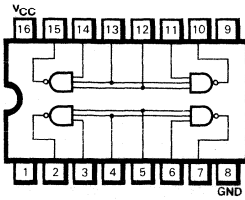
# TTL

## CONNECTION DIAGRAMS

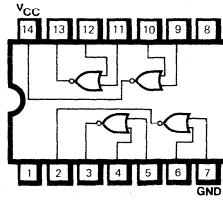
**D-37**  
**9H62**



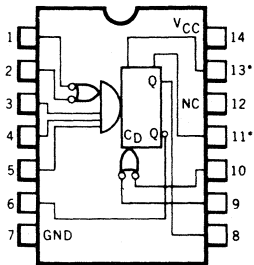
**D-38**  
**9607**



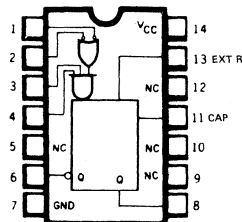
**D-39**  
**96106**



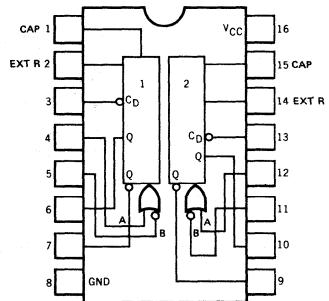
**D-40**  
**9600**



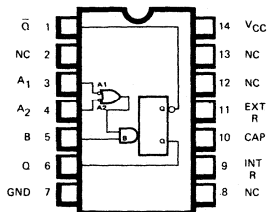
**D-41**  
**9601**



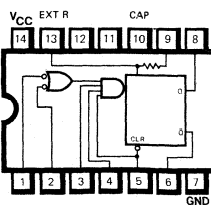
**D-42**  
**9602, 96L02**



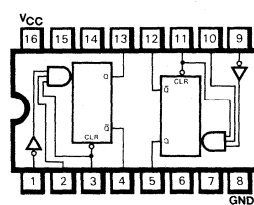
**D-43**  
**9603 (74121)**



**D-44**  
**9N122**

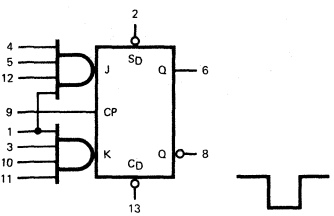
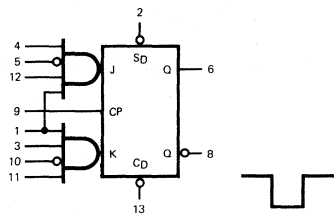
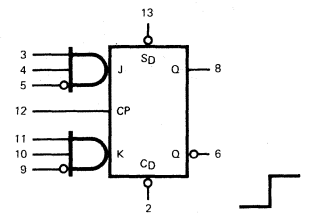
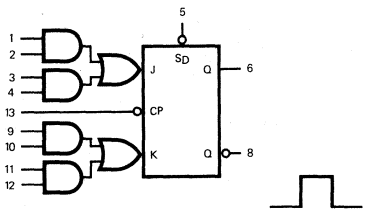
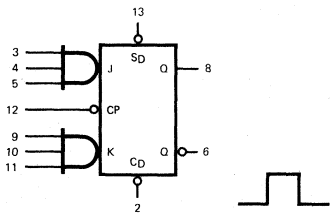
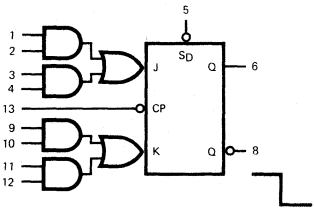
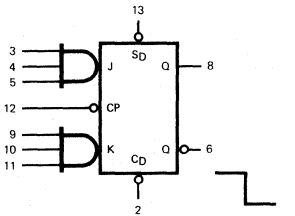


**D-45**  
**9N123**



# TTL

## SINGLE

	MASTER/SLAVE	EDGE-TRIGGERED
OUTPUT CHANGES ON POSITIVE GOING EDGE	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>D-50</b> <b>9000 (74104)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p> </div> <div style="text-align: center;"> <p><b>D-51</b> <b>9001 (74105)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p> </div> </div>	<p><b>D-54</b> <b>9N70 (7470)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p>
OUTPUT CHANGES ON NEGATIVE GOING EDGE	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><b>D-52</b> <b>9H71 (74H71)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p><b>D-53</b> <b>9N72 (7472)</b> <b>9H72 (74H72)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p> </div> </div>	<div style="text-align: center;"> <p><b>D-52</b> <b>9H101 (74H101)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="text-align: center;"> <p><b>D-53</b> <b>9H102 (74H102)</b></p>  <p><math>V_{CC}</math> = Pin 14 GND = Pin 7</p> </div> </div>

MASTER/SLAVE (or "ONES CATCHING" MASTER/SLAVE) — The master is sensitive to input conditions during the active portion of the clock pulse.  
EDGE-TRIGGERED — Only sensitive to input conditions immediately prior to active clock edge.



# TTL

## DUAL

	MASTER/SLAVE	EDGE-TRIGGERED
OUTPUT CHANGES ON POSITIVE GOING EDGE	<p><b>D-55</b> <b>9020</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 16</math> <math>GND = \text{Pin } 8</math></p>	<p><b>D-60</b> <b>9024 (74109), 9S109 (74S109)</b> <b>9LS109 (74LS109)</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 16</math> <math>GND = \text{Pin } 8</math></p>
	<p><b>D-56</b> <b>9022</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 16</math> <math>GND = \text{Pin } 8</math></p>	<p><b>D-61</b> <b>9N74 (7474), 9S74 (74S74)</b> <b>9H74 (74H74), 9LS74 (74LS74)</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 14</math> <math>GND = \text{Pin } 7</math></p>
OUTPUT CHANGES ON NEGATIVE GOING EDGE	<p><b>D-57</b> <b>9H73 (74H73), 9N73 (7473), *9N107 (74107)</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 4</math> <math>GND = \text{Pin } 11</math></p> <p>*9N107 is rotated: <math>V_{CC} = \text{Pin } 14</math>, <math>GND = \text{Pin } 7</math></p>	<p><b>D-57</b> <b>9H103 (74H103)</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 4</math> <math>GND = \text{Pin } 11</math></p>
	<p><b>D-58</b> <b>9N76 (7476), 9H76 (74H76)</b></p> <p style="text-align: center;"><math>V_{CC} = \text{Pin } 5</math> <math>GND = \text{Pin } 13</math></p>	<p><math>V_{CC} = \text{Pin } 4</math> <math>GND = \text{Pin } 11</math></p>

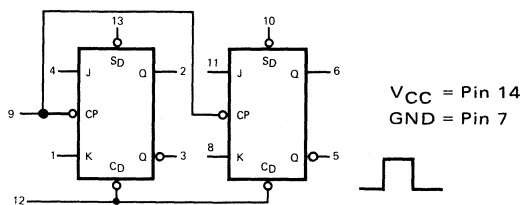
MASTER/SLAVE (or "ONES CATCHING" MASTER/SLAVE) — The master is sensitive to input conditions during the active portion of the clock pulse.  
 EDGE-TRIGGERED — Only sensitive to input conditions immediately prior to active clock edge.

# TTL

## DUAL

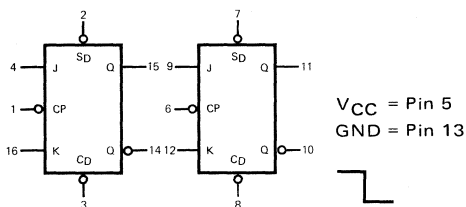
### MASTER/SLAVE

**D-59**  
**9H78 (74H78)**

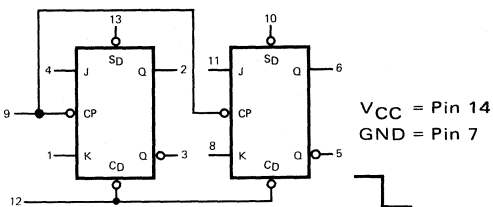


### EDGE-TRIGGERED

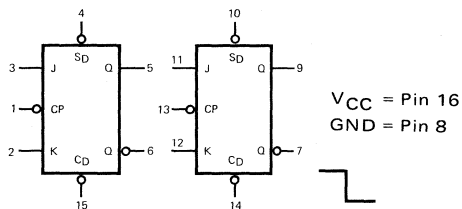
**D-58**  
**9H106 (74H106)**



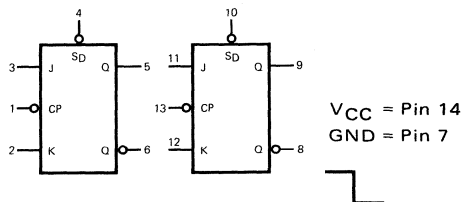
**D-59**  
**9H108 (74H108)**



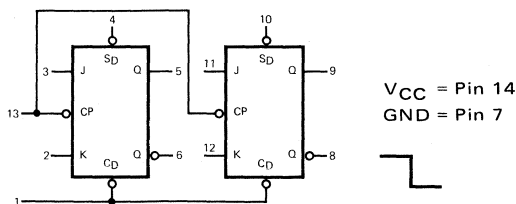
**D-62**  
**9S112 (74S112), 9LS112 (74LS112)**



**D-63**  
**9S113 (74S113), 9LS113 (74LS113)**



**D-64**  
**9S114 (74S114), 9LS114 (74LS114)**



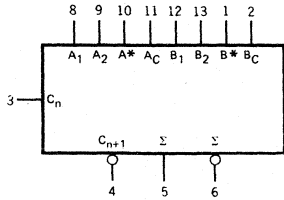
OUTPUT CHANGES ON NEGATIVE GOING EDGE

MASTER/SLAVE (or "ONES CATCHING" MASTER/SLAVE) — The master is sensitive to input conditions during the active portion of the clock pulse.  
EDGE-TRIGGERED — Only sensitive to input conditions immediately prior to active clock edge.

# TTL

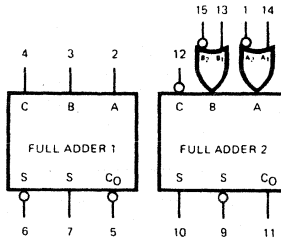
## LOGIC SYMBOLS

**D-100**  
**9380**



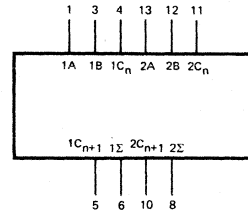
$V_{CC}$  = Pin 14  
GND = Pin 7

**D-101**  
**9304**



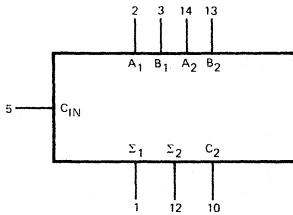
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-102**  
**93H183**



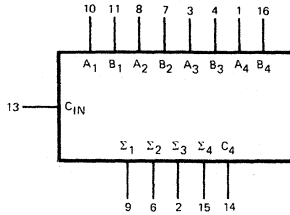
$V_{CC}$  = Pin 14  
GND = Pin 7

**D-103**  
**9382**



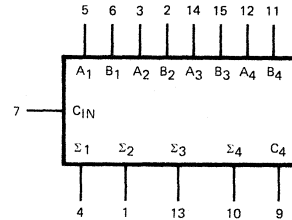
$V_{CC}$  = Pin 4  
GND = Pin 11  
NC = Pin 6, 7, 8, 9

**D-104**  
**9383, 9LS83**



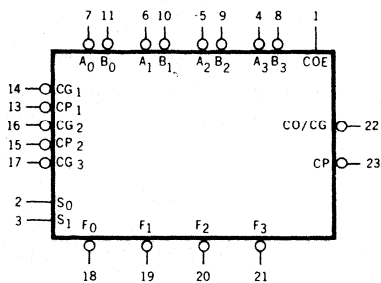
$V_{CC}$  = Pin 5  
GND = Pin 12

**D-105**  
**93283, 9LS283**



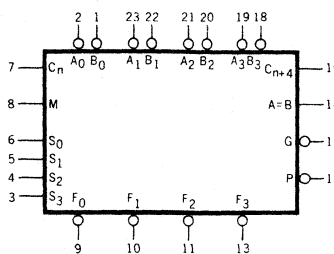
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-106**  
**9340**



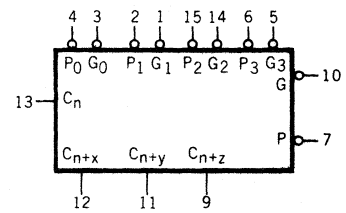
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-107**  
**9341, 93L41,**  
**93S41, 9LS181**



$V_{CC}$  = Pin 24  
GND = Pin 12

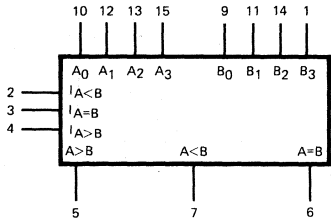
**D-108**  
**9342, 93S42**



$V_{CC}$  = Pin 16  
GND = Pin 8

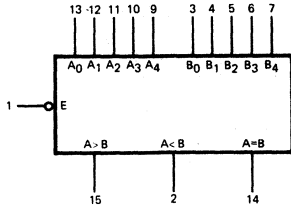
# TTL LOGIC SYMBOLS

**D-109  
9385**



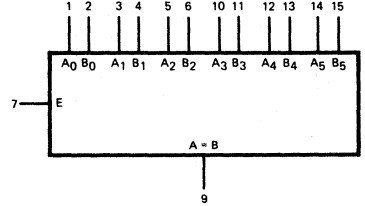
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-110  
9324, 93L24**



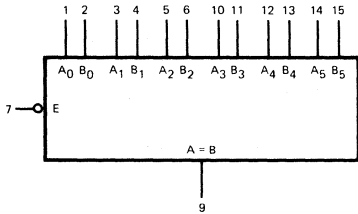
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-111  
93S46**



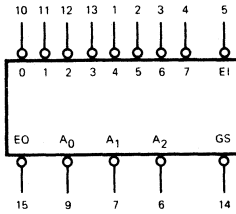
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-112  
93S47**



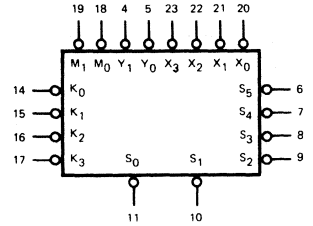
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-113  
9318**



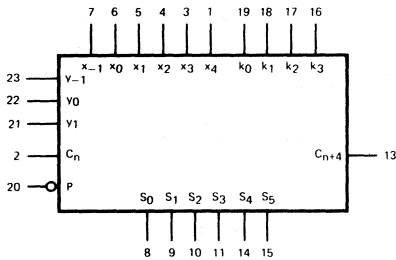
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-114  
9344**



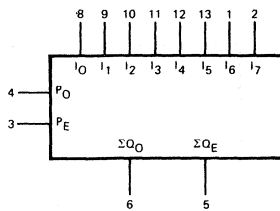
$V_{CC}$  = PIN 24  
GND = PIN 12  
NC = PIN 1, 2, 3, 13

**D-115  
93S43**



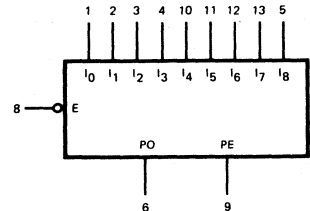
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-116  
93180**



$V_{CC}$  = Pin 14  
GND = Pin 7

**D-117  
93S62**

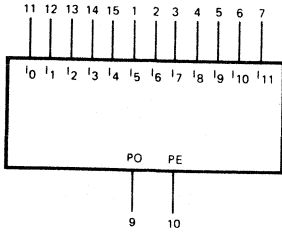


$V_{CC}$  = Pin 14  
GND = Pin 7

# TTL

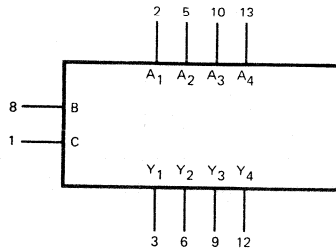
## LOGIC SYMBOLS

**D-118**  
**9348**



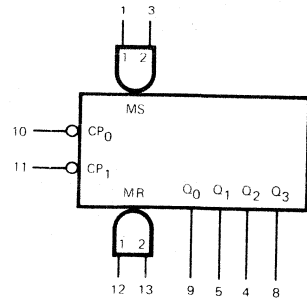
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-119**  
**93H87**



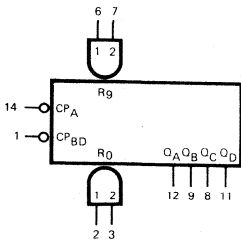
$V_{CC}$  = Pin 14  
GND = Pin 7

**D-120**  
**9350, 9LS290**



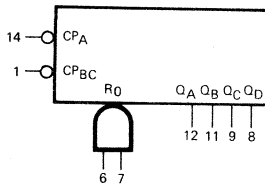
$V_{CC}$  = Pin 14  
GND = Pin 7  
NC = Pins 2, 6

**D-121**  
**9390, 9LS90**



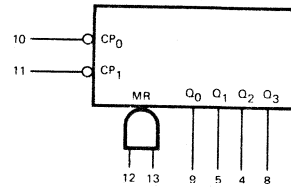
$V_{CC}$  = Pin 5  
GND = Pin 10  
NC = Pin 4, 13

**D-122**  
**9392**



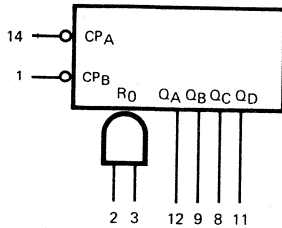
$V_{CC}$  = Pin 5  
GND = Pin 10  
N.C. = Pins 2, 3, 4, 13

**D-123**  
**9356, 9LS293**



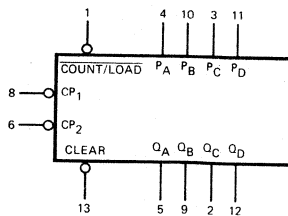
$V_{CC}$  = Pin 14  
Gnd = Pin 7  
NC = Pins 1, 2, 3, 6

**D-124**  
**9393, 9LS93**



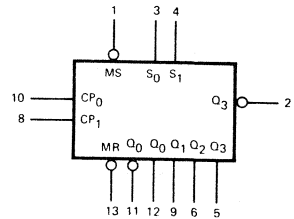
$V_{CC}$  = Pin 5  
GND = Pin 10  
N.C. = Pins 4, 6, 7, 13

**D-125**  
**93176, 93177, 93196,**  
**93197, 9LS196, 9LS197**



$V_{CC}$  = Pin 14  
Gnd = Pin 7

**D-126**  
**9305, 93S05**

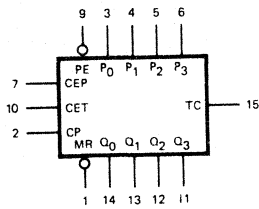


$V_{CC}$  = Pin 14  
GND = Pin 7

# TTL

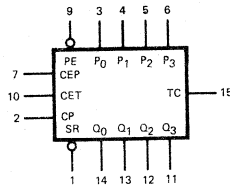
## LOGIC SYMBOLS

**D-127**  
**9310, 9316, 93L10,**  
**93L16, 93160, 93161,**  
**9LS160, 9LS161**



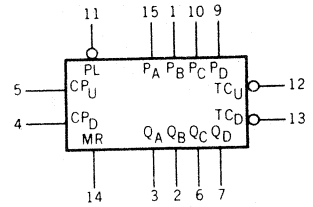
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-128**  
**93162, 93163,**  
**9LS162, 9LS163**



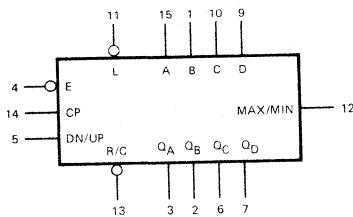
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-129**  
**9360, 9366,**  
**9LS192, 9LS193**



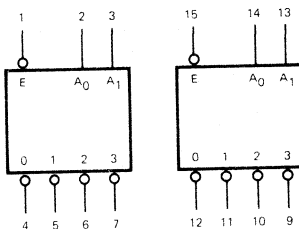
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-130**  
**93190, 93191**  
**9LS190, 9LS191**



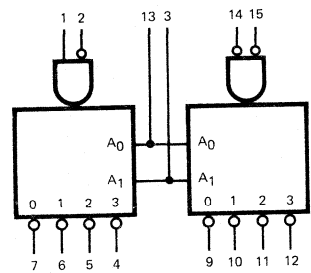
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-131**  
**9321, 93L21,**  
**93S139, 9LS139**



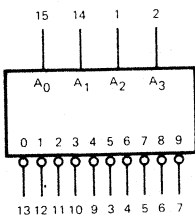
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-132**  
**93155, 93156,**  
**9LS155, 9LS156**



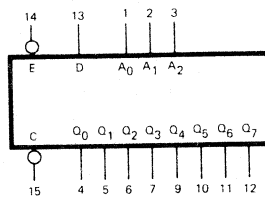
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-133**  
**9301, 9302, 93L01**



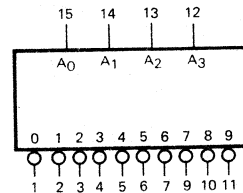
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-134**  
**9334, 93L34, 9LS259**



$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**D-135**  
**9345, 9352, 9353,**  
**9354, 93145**

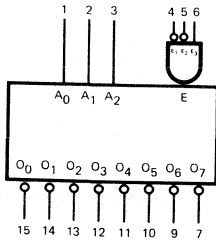


$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

# TTL

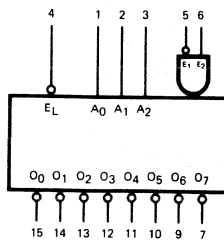
## LOGIC SYMBOLS

**D-136**  
**93S138, 9LS138**



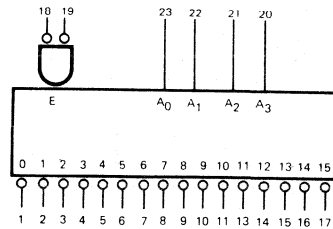
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-137**  
**93S137**



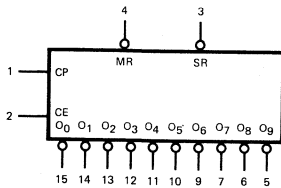
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-138**  
**9311, 93154, 93L11**



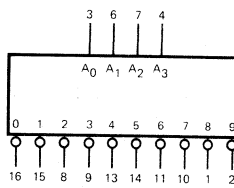
$V_{CC}$  = PIN 24  
GND = PIN 12

**D-139**  
**9319, 9320**



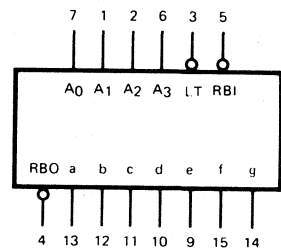
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-140**  
**9315, 93141**



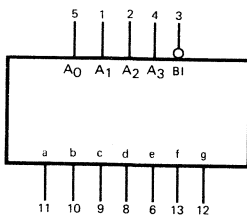
$V_{CC}$  = PIN 5  
GND = PIN 12

**D-141**  
**9307, 9358**



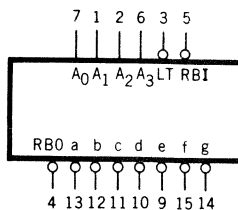
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-142**  
**9359**



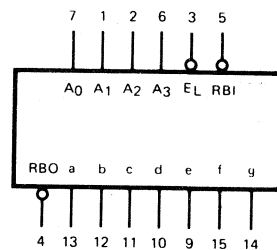
$V_{CC}$  = Pin 14  
GND = Pin 7

**D-143**  
**9317, 9357A, 9357B**



$V_{CC}$  = Pin 16  
GND = Pin 8

**D-144**  
**9368**

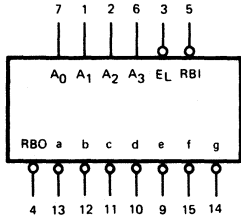


$V_{CC}$  = PIN 16  
GND = Pin 8

# TTL

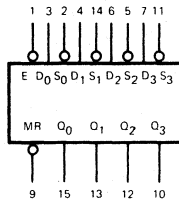
## LOGIC SYMBOLS AND CONNECTION DIAGRAMS

**D-145**  
**9370, 9374**



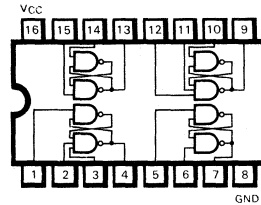
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-146**  
**9314, 93L14**

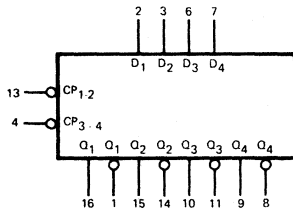


$V_{CC}$  = Pin 16  
GND = Pin 8

**D-147**  
**9N279, 9LS279**

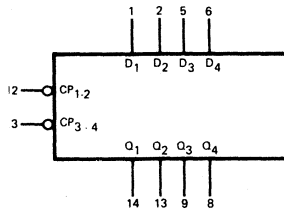


**D-148**  
**9375**



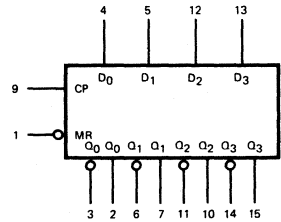
$V_{CC}$  = Pin 5  
GND = Pin 12

**D-149**  
**9377**



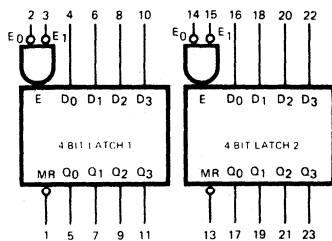
$V_{CC}$  = Pin 4  
GND = Pin 11  
NC = Pin 7, 10

**D-150**  
**93175, 93S175, 9LS175**



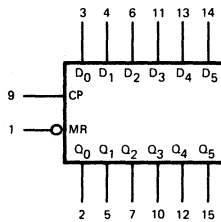
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-151**  
**9308, 93116, 93L08**



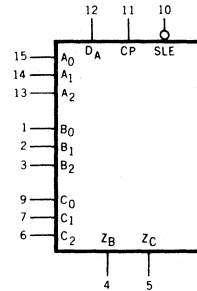
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-152**  
**93174, 93S174, 9LS174**



$V_{CC}$  = Pin 16  
GND = Pin 8

**D-153**  
**9338, 93L38**



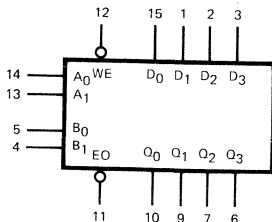
$V_{CC}$  = Pin 16  
GND = Pin 8



# TTL

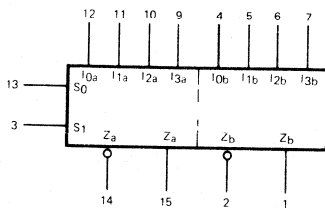
## LOGIC SYMBOLS

**D-154**  
93170, 9LS170, 9LS670



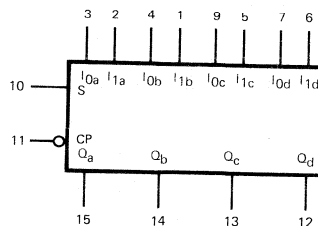
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-155**  
9309, 93L09



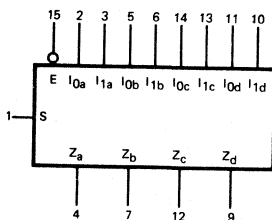
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-156**  
93298, 9LS298



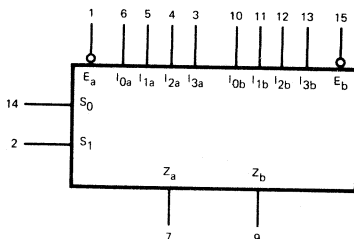
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-157**  
9322, 93157, 93L22,  
93S157, 93S158, 93S257,  
93S258, 9LS157, 9LS158,  
9LS257, 9LS258



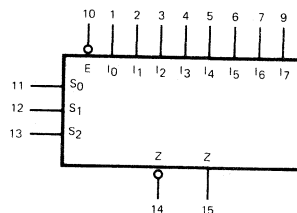
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-158**  
93153, 93S153,  
93S253, 9LS153, 9LS253



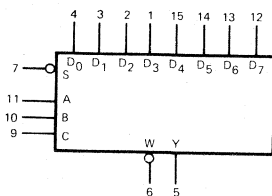
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-159**  
9312, 9313,  
93L12, 93S12



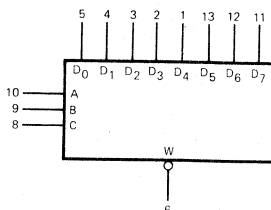
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-160**  
93151, 93S151,  
93S251, 9LS151, 9LS251



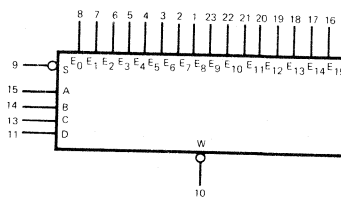
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-161**  
93152, 9LS152



$V_{CC}$  = PIN 14  
GND = PIN 7

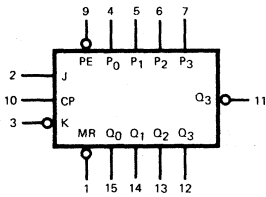
**D-162**  
93150



$V_{CC}$  = PIN 24  
GND = PIN 12

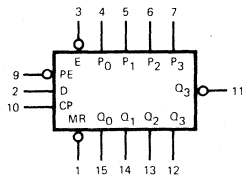
# TTL LOGIC SYMBOLS

**D-163**  
9300, 93195, 93H00,  
93L00, 93S00, 9LS195



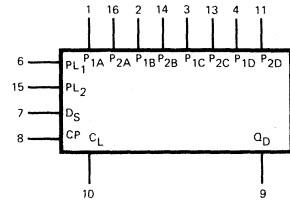
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D-164**  
93H72



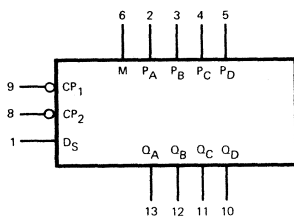
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D-165**  
9394



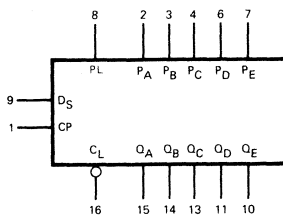
V<sub>CC</sub> = Pin 5  
GND = Pin 12

**D-166**  
9395, 9LS95



V<sub>CC</sub> = Pin 14  
GND = Pin 7

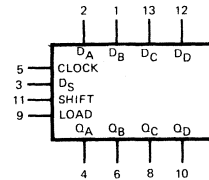
**D-167**  
9396



V<sub>CC</sub> = Pin 5  
GND = Pin 12

**D-168**  
93178

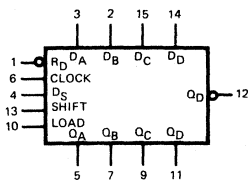
Pin numbers are shown for DIP only.



V<sub>CC</sub> = Pin 14  
GND = Pin 7

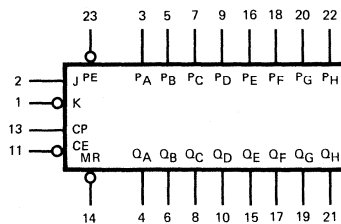
**D-169**  
93179

Pin numbers are shown for DIP only.



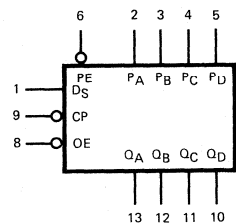
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D-170**  
93199



V<sub>CC</sub> = Pin 24  
GND = Pin 12

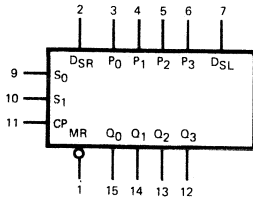
**D-171**  
9LS295



V<sub>CC</sub> = Pin 14  
GND = Pin 7

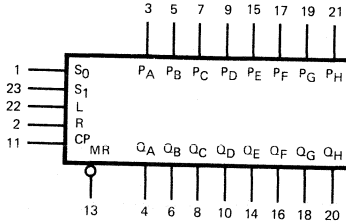
# TTL LOGIC SYMBOLS

**D-172**  
**93194, 93S194, 9LS194**



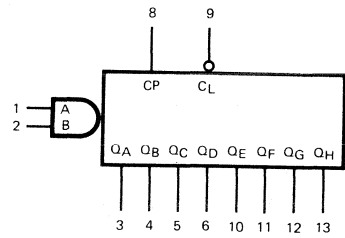
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-173**  
**93198**



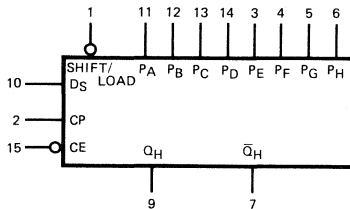
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-174**  
**93164**



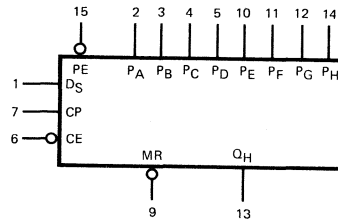
$V_{CC}$  = Pin 14  
GND = Pin 7

**D-175**  
**93165**



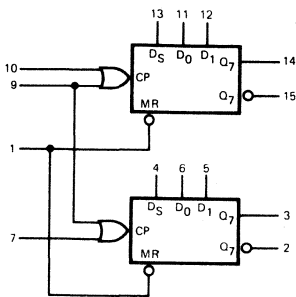
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-176**  
**93166**



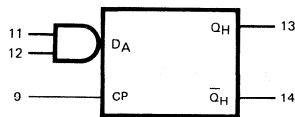
$V_{CC}$  = Pin 16  
GND = Pin 8

**D-177**  
**9328, 93L28**



$V_{CC}$  = Pin 16  
GND = Pin 8

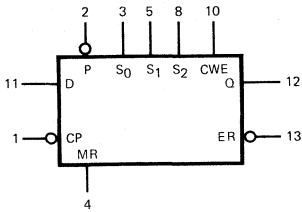
**D-178**  
**9391**



$V_{CC}$  = Pin 5  
GND = Pin 10

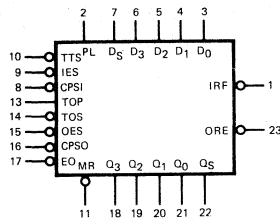
# TTL LOGIC SYMBOLS

**D-180  
9401**



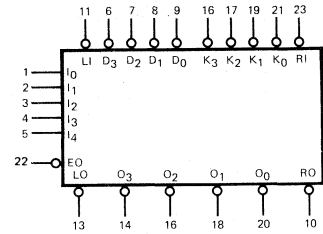
$V_{CC}$  = Pin 14  
GND = Pin 7

**D-181  
9403**



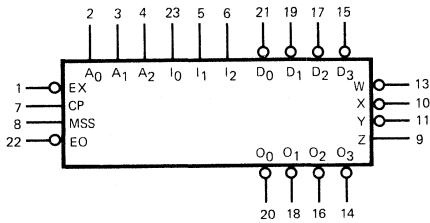
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-182  
9404**



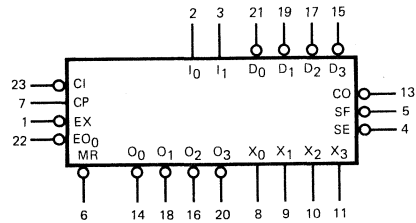
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-183  
9405**



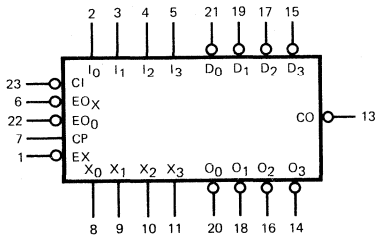
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-184  
9406**



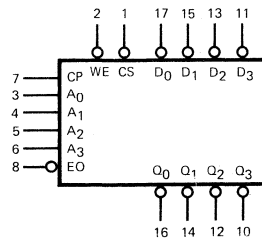
$V_{CC}$  = Pin 24  
GND = Pin 12

**D-185  
9407**



$V_{CC}$  = Pin 24  
GND = Pin 12

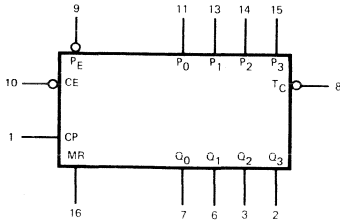
**D-186  
9410**



$V_{CC}$  = Pin 18  
GND = Pin 9

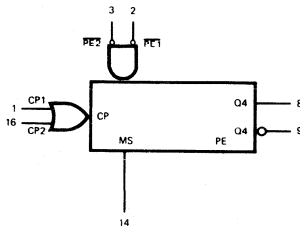
# ECL LOGIC SYMBOLS

**E-1  
95H16**



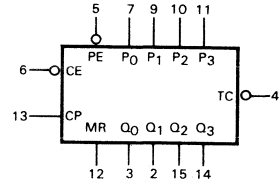
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-2  
95H90/95H91**



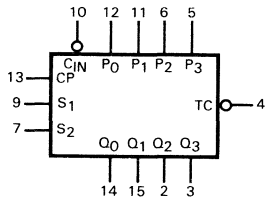
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-3  
95010/95016/10010/10016**



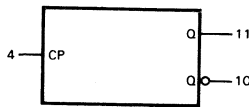
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-4  
10136/10137**



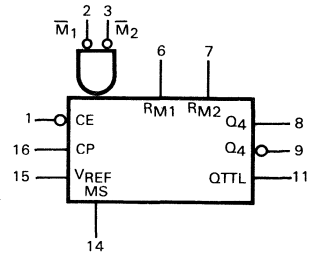
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-5  
11C05**



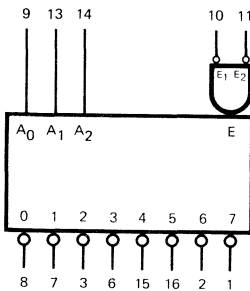
$V_{CC}$  = Pin 14  
 $V_{EE}$  = Pin 7  
 Bias Filter = Pin 6

**E-6  
11C90**



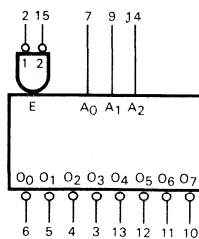
$V_{CC}$  = Pin 4,  $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12,  $V_{EE}$  = Pin 13 (TTL)

**E-7  
9538**



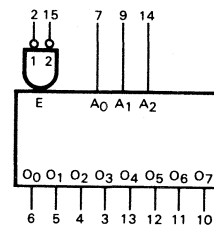
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-8  
10161**



$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-9  
10162**

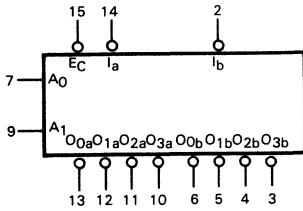


$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

# ECL

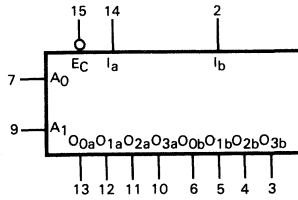
## LOGIC SYMBOLS

**E-10**  
**10171**



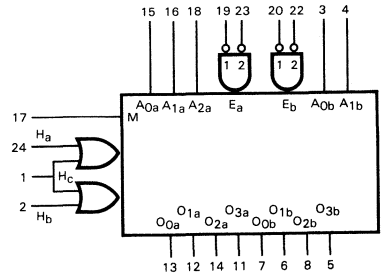
V<sub>CC1</sub> = Pin 1  
V<sub>CC2</sub> = Pin 16  
V<sub>EE</sub> = Pin 8

**E-11**  
**10172**



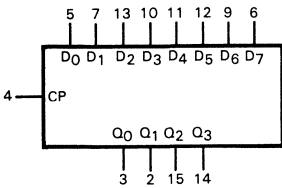
V<sub>CC1</sub> = Pin 1  
V<sub>CC2</sub> = Pin 16  
V<sub>EE</sub> = Pin 8

**E-12**  
**100170**



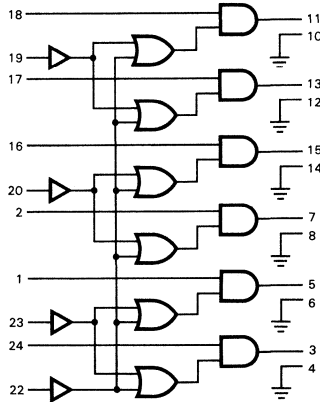
V<sub>CC</sub> = Pin 9  
V<sub>CCA</sub> = Pin 10  
V<sub>EE</sub> = Pin 21

**E-13**  
**10165**



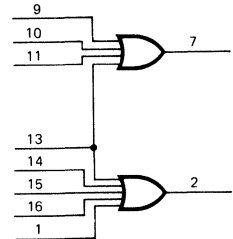
V<sub>CC1</sub> = Pin 1  
V<sub>CC2</sub> = Pin 16  
V<sub>EE</sub> = Pin 8

**E-14**  
**F100123**



V<sub>CC</sub> = Pin 9  
V<sub>EE</sub> = Pin 21

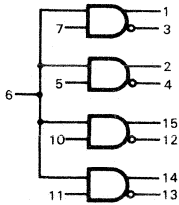
**E-15**  
**9595**



V<sub>CC</sub> = Pin 5  
V<sub>CCA</sub> = Pin 6  
V<sub>EE</sub> = Pin 12  
GND = Pin 4

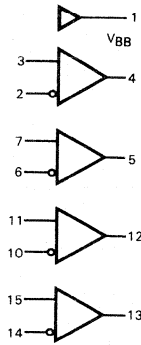
# ECL LOGIC SYMBOLS

**E-16**  
**95124/10124**



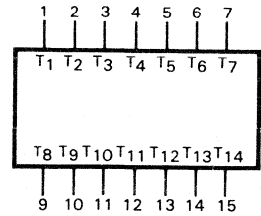
$V_{CC}$  = Pin 9  
 $V_{EE}$  = Pin 8  
 GND = Pin 16

**E-17**  
**10125**



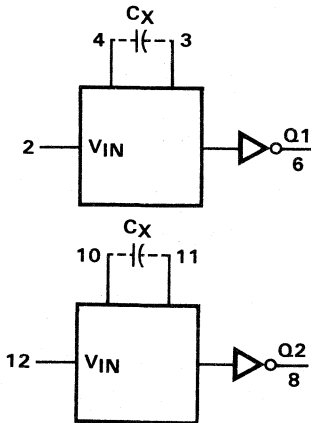
$V_{CC}$  = Pin 9  
 $V_{EE}$  = Pin 8  
 GND = Pin 16

**E-18**  
**10014**



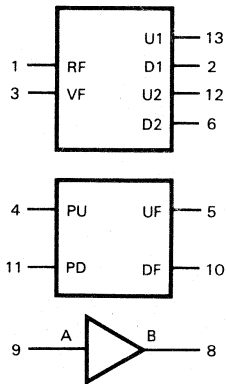
$V_{EE}$  = Pin 8  
 $V_{CC}$  = Pin 16

**E-19**  
**11C24**



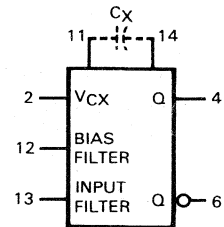
$V_{CC}$  (VCM) = Pins 1, 13  
 $V_{CC}$  (Buffer) = Pin 14  
 GND (VCM) = Pins 5, 9  
 GND (BUFFER) = Pin 7

**E-20**  
**11C44**



$V_{CC}$  = Pin 14  
 GND = Pin 7

**E-21**  
**11C58**

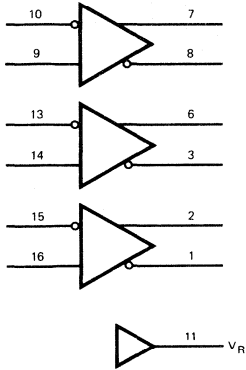


$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 5  
 $V_{EE}$  = Pin 8

# ECL

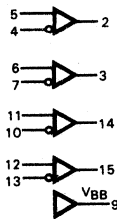
## LOGIC SYMBOLS

**E-22**  
**9582**



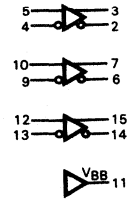
$V_{CC1}$  = Pin 4  
 $V_{CC2}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-23**  
**95115/10115**



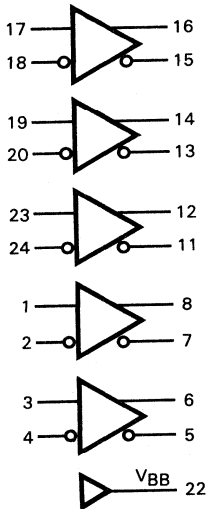
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-24**  
**95116/10114/10116**



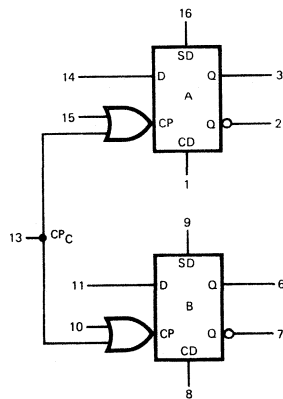
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-25**  
**100114**



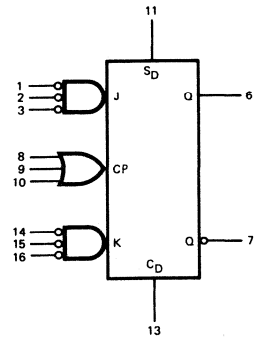
$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-26**  
**9528/95H28**



$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-27**  
**95H29**



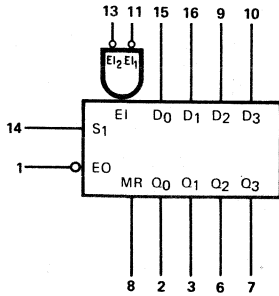
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12



# ECL

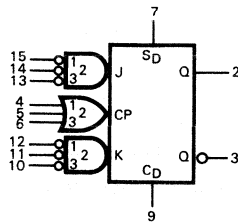
## LOGIC SYMBOLS

**E-28**  
**9534**



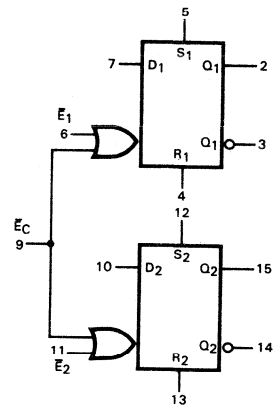
$V_{CC} = \text{Pin } 4$   
 $V_{CCA} = \text{Pin } 5$   
 $V_{EE} = \text{Pin } 12$

**E-29**  
**95029**



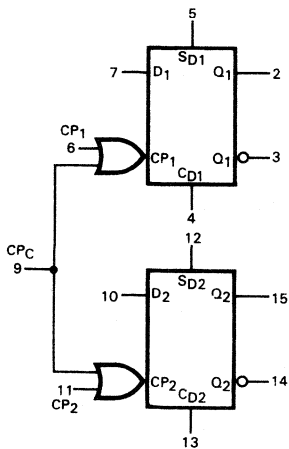
$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

**E-30**  
**95130/10130**



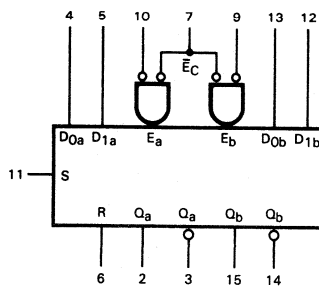
$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

**E-31**  
**95231/10231/10131**



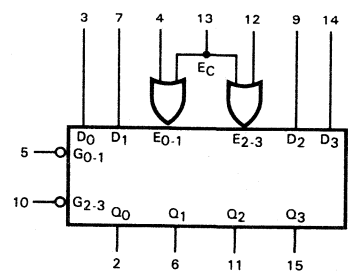
$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

**E-32**  
**10132**



$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

**E-33**  
**10133**

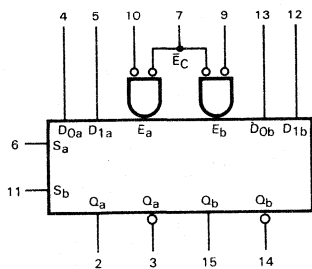


$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

# ECL

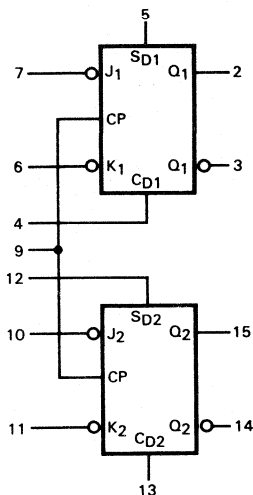
## LOGIC SYMBOLS

**E-34**  
**10134**



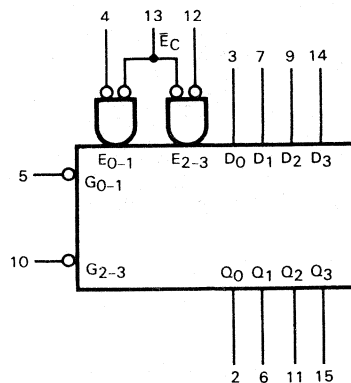
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-35**  
**10135**



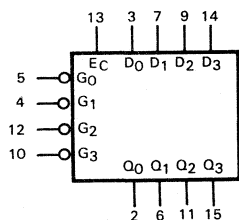
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-36**  
**10153**



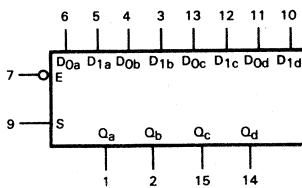
$V_{CC}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-37**  
**10168**



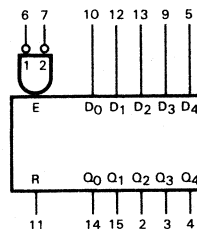
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-38**  
**10173**



$V_{CC}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-39**  
**10175**

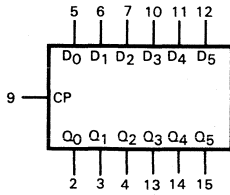


$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

# ECL

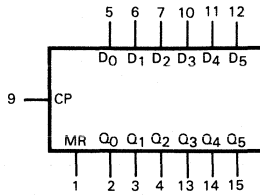
## LOGIC SYMBOLS

**E-40**  
**10176**



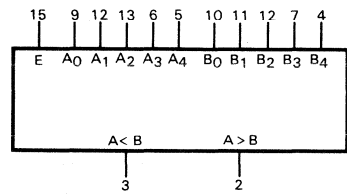
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-41**  
**10186**



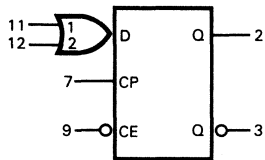
$V_{CC}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-42**  
**10166**



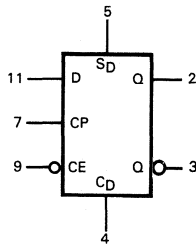
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-43**  
**11C06**



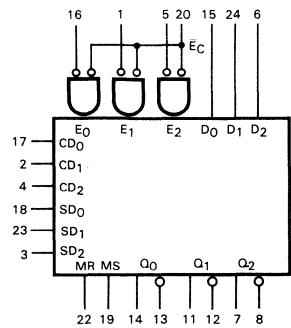
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-44**  
**11C70**



$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-45**  
**100130**

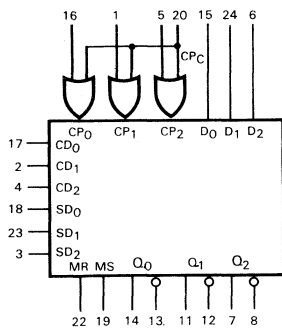


$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

# ECL

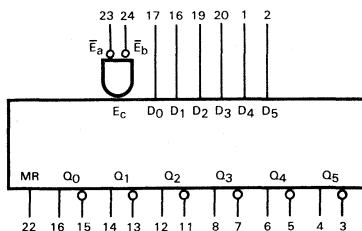
## LOGIC SYMBOLS

**E-46**  
**100131**



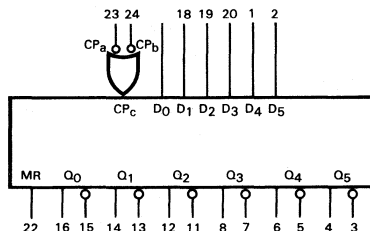
$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-47**  
**100150**



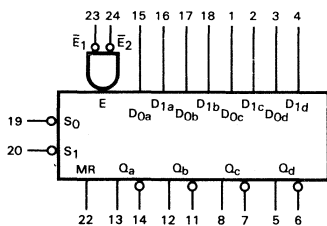
$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-48**  
**100151**



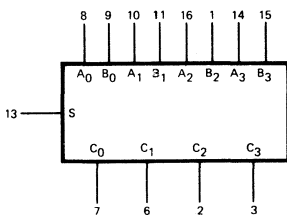
$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-49**  
**100155**



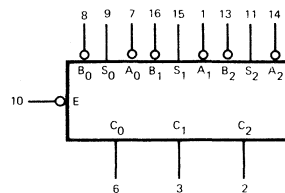
$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-50**  
**9579**



$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

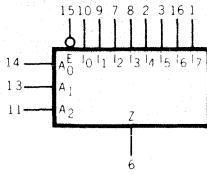
**E-51**  
**9580**



$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

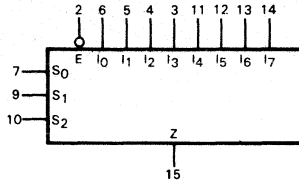
# ECL LOGIC SYMBOLS

**E-52  
9581**



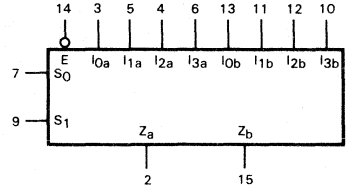
$V_{CC} = \text{Pin } 4$   
 $V_{CCA} = \text{Pin } 5$   
 $V_{EE} = \text{Pin } 12$

**E-53  
10164**



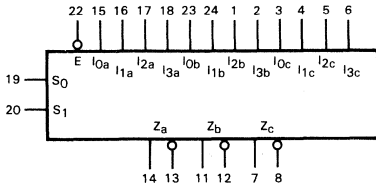
$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 5$   
 $V_{EE} = \text{Pin } 8$

**E-54  
10174**



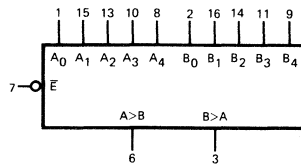
$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

**E-55  
100171**



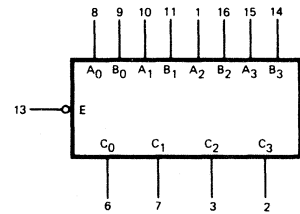
$V_{CC} = \text{Pin } 9$   
 $V_{CCA} = \text{Pin } 10$   
 $V_{EE} = \text{Pin } 21$

**E-56  
95H55**



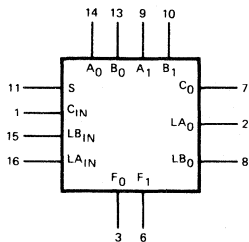
$V_{CC} = \text{Pin } 4$   
 $V_{CCA} = \text{Pin } 5$   
 $V_{EE} = \text{Pin } 12$

**E-57  
9578**



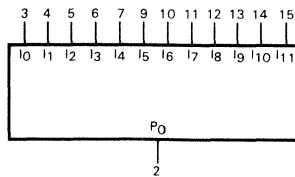
$V_{CC} = \text{Pin } 4$   
 $V_{CCA} = \text{Pin } 5$   
 $V_{EE} = \text{Pin } 12$

**E-58  
95H84**



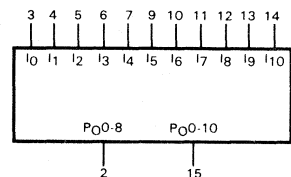
$V_{CC} = \text{GND} = \text{Pins } 4, 5$   
 $V_{EE} = \text{Pin } 12$

**E-59  
10160**



$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 5$   
 $V_{EE} = \text{Pin } 8$

**E-60  
10170**

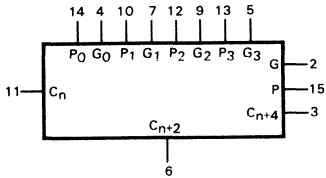


$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

# ECL

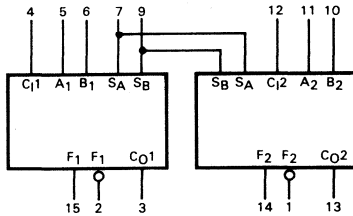
## LOGIC SYMBOLS

**E-61**  
**10179**



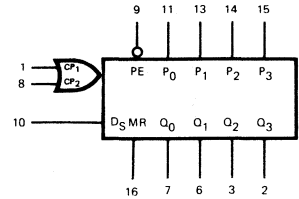
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-62**  
**10180**



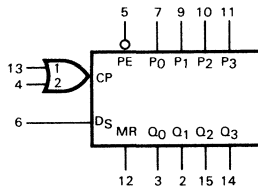
$V_{CC}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-63**  
**95H00**



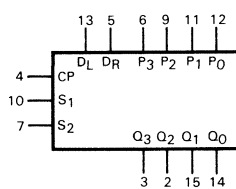
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-64**  
**95000/10000**



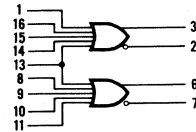
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-65**  
**10141**



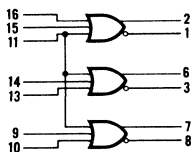
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-66**  
**9502/95H02/  
95H22/95L22**



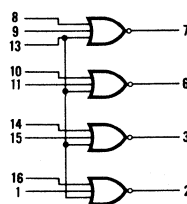
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-67**  
**9503/95H03/  
95H23/95L23**



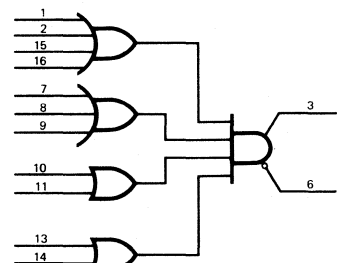
$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-68**  
**9504/95H04/  
95H24/95L24**



$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

**E-69**  
**9505**

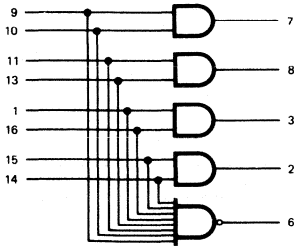


$V_{CC}$  = Pin 4  
 $V_{CCA}$  = Pin 5  
 $V_{EE}$  = Pin 12

# ECL

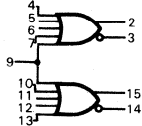
## LOGIC SYMBOLS

**E-70**  
**9507**



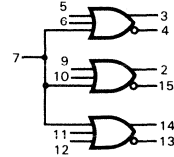
$V_{CC} = \text{Pin 4}$   
 $V_{CCA} = \text{Pin 5}$   
 $V_{EE} = \text{Pin 12}$

**E-71**  
**95002**



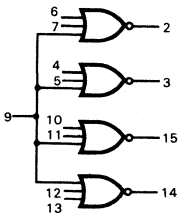
$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-72**  
**95003**



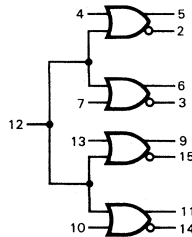
$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-73**  
**95004**



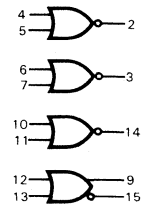
$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-74**  
**95101/10101**



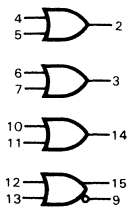
$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-75**  
**95102/10102**



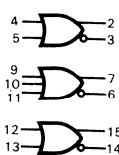
$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-76**  
**95103/10103**



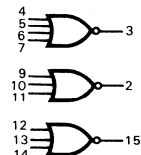
$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-77**  
**95105/10105**



$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

**E-78**  
**95106/10106**

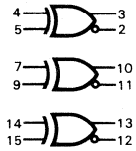


$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

# ECL

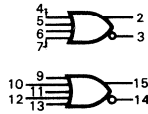
## LOGIC SYMBOLS

**E-79**  
**95107/10107**



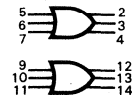
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-80**  
**95109/10109**



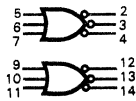
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-81**  
**95110/10110/10210**



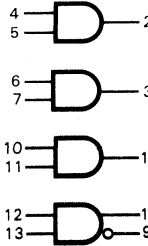
$V_{CC1}$  = Pins 1, 15  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-82**  
**95111/10111/10211**



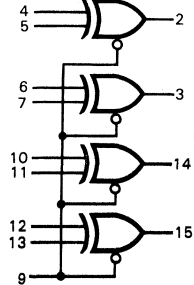
$V_{CC1}$  = Pins 1, 15  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-83**  
**10104**



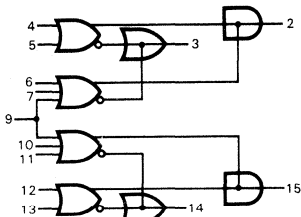
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-84**  
**10113**



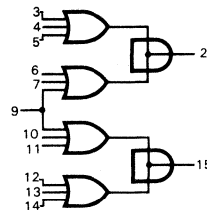
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-85**  
**10117**



$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-86**  
**10118**



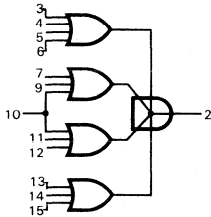
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8



# ECL

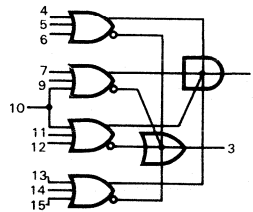
## LOGIC SYMBOLS

**E-87**  
**10119**



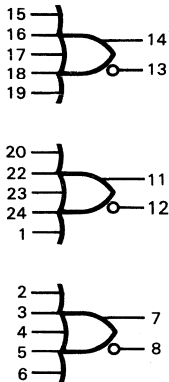
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-88**  
**10121**



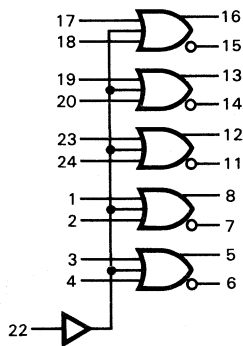
$V_{CC1}$  = Pin 1  
 $V_{CC2}$  = Pin 16  
 $V_{EE}$  = Pin 8

**E-89**  
**100101**



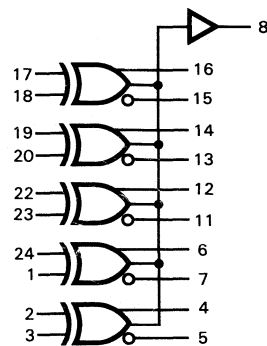
$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-90**  
**100102**



$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

**E-91**  
**100107**

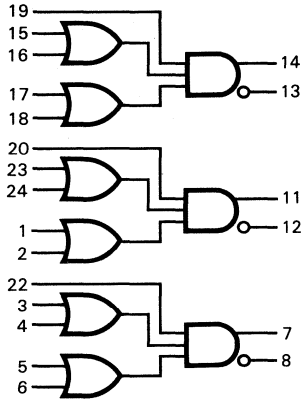


$V_{CC}$  = Pin 9  
 $V_{CCA}$  = Pin 10  
 $V_{EE}$  = Pin 21

# ECL

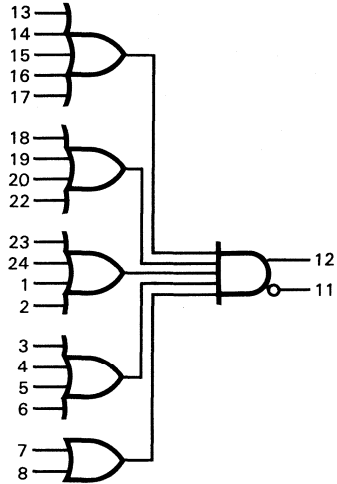
## LOGIC SYMBOLS

**E-92**  
**100117**



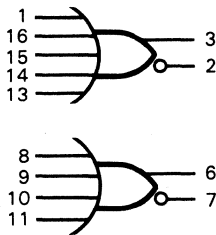
$V_{CC} = \text{Pin } 9$   
 $V_{CCA} = \text{Pin } 10$   
 $V_{EE} = \text{Pin } 21$

**E-93**  
**100118**



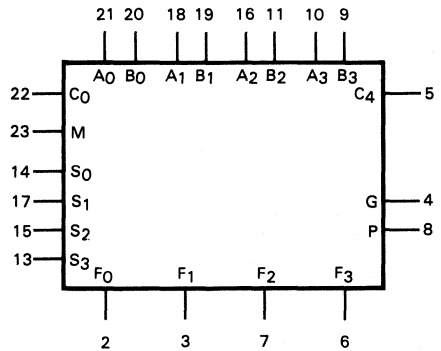
$V_{CC} = \text{Pin } 9$   
 $V_{CCA} = \text{Pin } 10$   
 $V_{EE} = \text{Pin } 21$

**E-94**  
**11C01**



$V_{CC1} = \text{Pin } 5$   
 $V_{CC2} = \text{Pin } 4$   
 $V_{EE} = \text{Pin } 12$

**E-95**  
**10181**



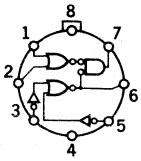
$V_{CC1} = \text{Pin } 1$   
 $V_{CC2} = \text{Pin } 16$   
 $V_{EE} = \text{Pin } 8$

# RT $\mu$ L

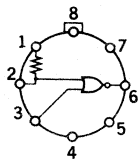
## LOGIC SYMBOLS AND CONNECTION DIAGRAMS

### LOW POWER ELEMENTS:

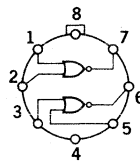
**F-1**  
**908**



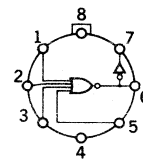
**F-2**  
**909**



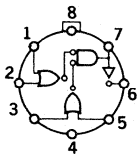
**F-3**  
**910**



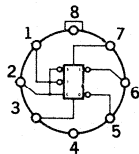
**F-4**  
**911**



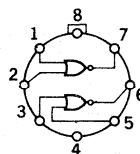
**F-5**  
**912**



**F-6**  
**913**

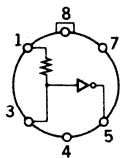


**F-7**  
**921**

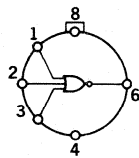


### MEDIUM POWER ELEMENTS:

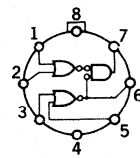
**F-8**  
**900**



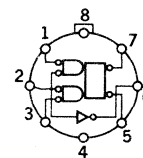
**F-9**  
**903**



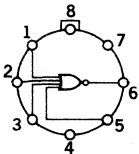
**F-10**  
**904**



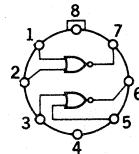
**F-11**  
**905**



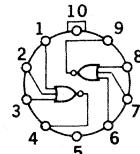
**F-12**  
**907**



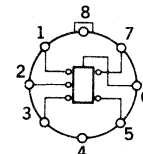
**F-13**  
**914**



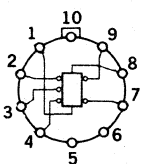
**F-14**  
**915**



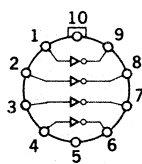
**F-15**  
**923, 974**



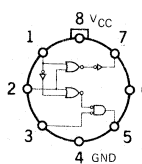
**F-16**  
**926**



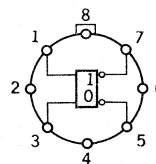
**F-17**  
**927**



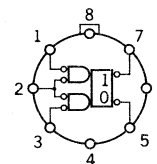
**F-18**  
**901**



**F-19**  
**902**



**F-20**  
**906**

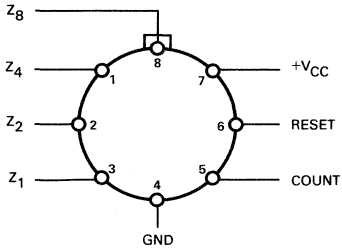


# RT $\mu$ L

## CONNECTION DIAGRAMS

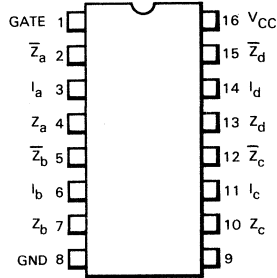
### Counter Micrologic

**F-21**  
958, 959



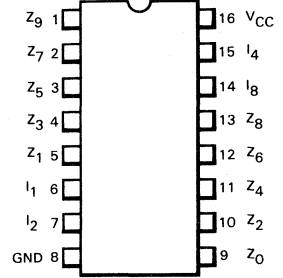
C $\mu$ L 958 Decade Counter  
C $\mu$ L 959 4-Bit Binary Counter

**F-22**  
959



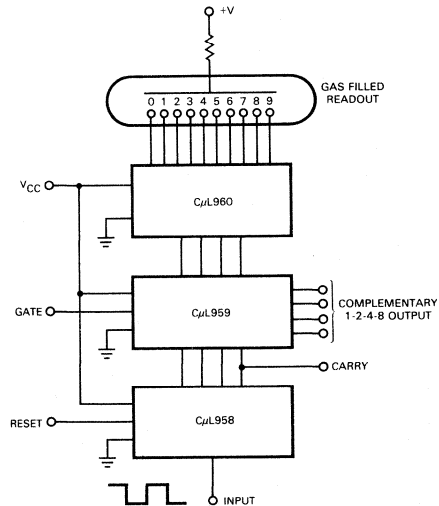
4-Bit Latch  
C $\mu$ L 959

**F-23**  
960



Decimal Decoder (NIXIE) Driver  
C $\mu$ L 960

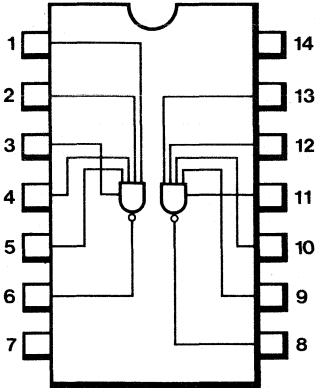
### Typical Application



# DTL

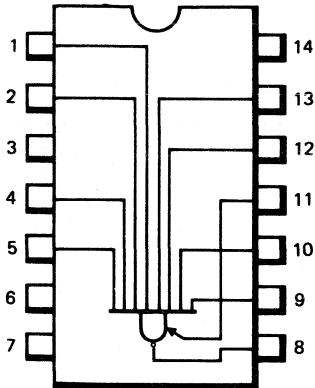
## CONNECTION DIAGRAMS

**G-1**  
**930, 932**  
**944, 961**  
**1800, 1801**



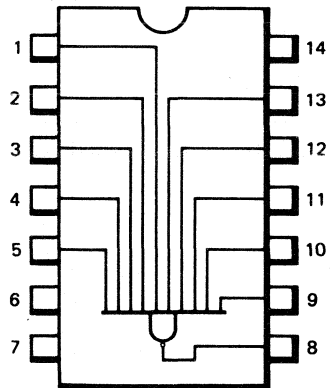
VCC = Pin 14  
 GND = Pin 7

**G-2**  
**1802, 1803**



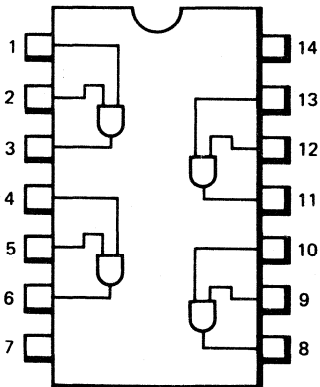
VCC = Pin 14  
 GND = Pin 7

**G-3**  
**1804, 1805**



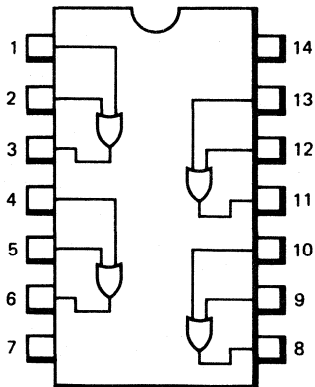
VCC = Pin 14  
 GND = Pin 7

**G-4**  
**1806, 1807**



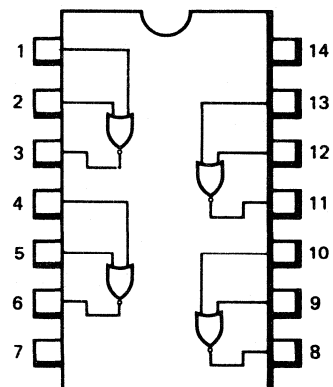
VCC = Pin 14  
 GND = Pin 7

**G-5**  
**1808, 1809**



VCC = Pin 14  
 GND = Pin 7

**G-6**  
**1810, 1811**

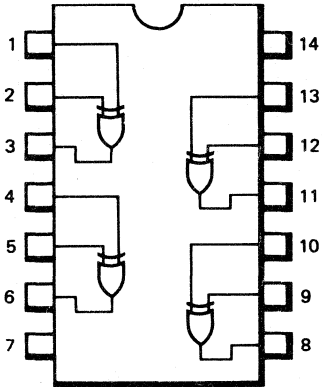


VCC = Pin 14  
 GND = Pin 7

# DTL

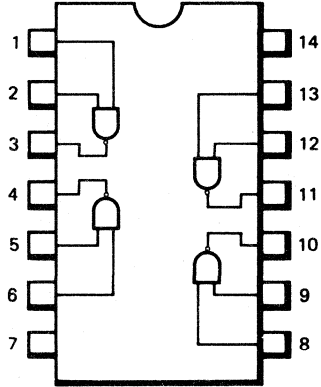
## CONNECTION DIAGRAMS

**G-7**  
**1812**



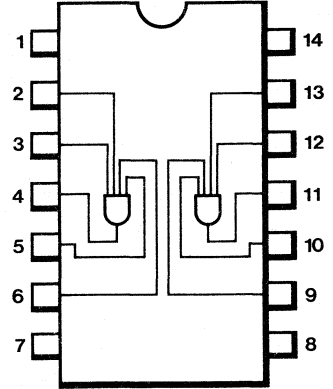
VCC = Pin 14  
GND = Pin 7

**G-8**  
**9157, 9158**



VCC = Pin 14  
GND = Pin 7

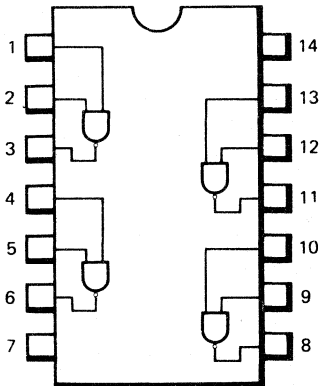
**G-9**  
**933**



No connection required to VCC (Pin 14).

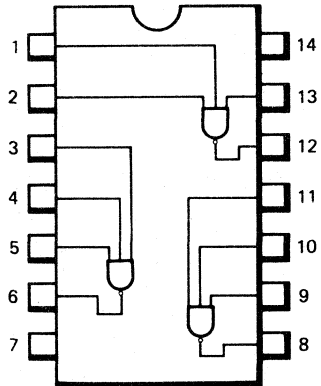
VCC = Pin 14  
GND = Pin 7

**G-10**  
**946, 949**



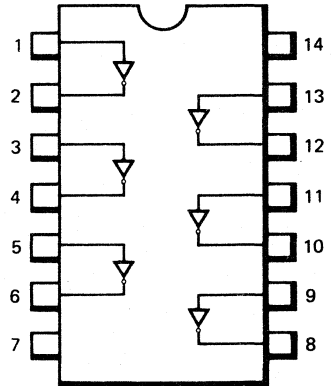
VCC = Pin 14  
GND = Pin 7

**G-11**  
**962, 963**



VCC = Pin 14  
GND = Pin 7

**G-12**  
**9109, 9110, 9112**  
**9135, 935, 936**  
**937**

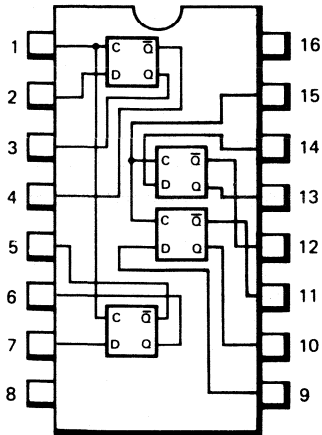


VCC = Pin 14  
GND = Pin 7

# DTL

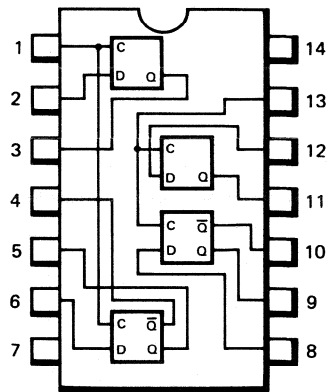
## CONNECTION DIAGRAMS

**G-13**  
**1813**



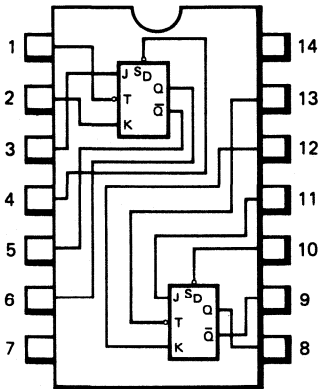
$V_{CC}$  = Pin 16  
GND = Pin 8

**G-14**  
**1814**



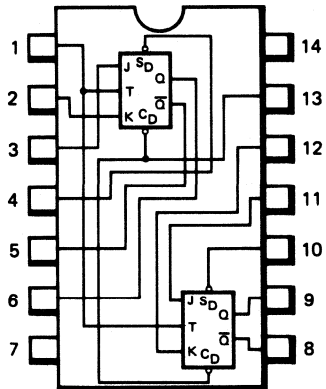
$V_{CC}$  = Pin 14  
GND = Pin 7

**G-15**  
**9093, 9094**



$V_{CC}$  = Pin 14  
GND = Pin 7

**G-16**  
**9097, 9099**

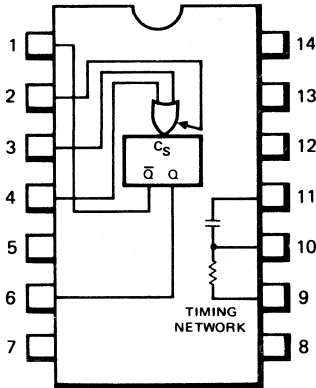


$V_{CC}$  = Pin 14  
GND = Pin 7

# DTL

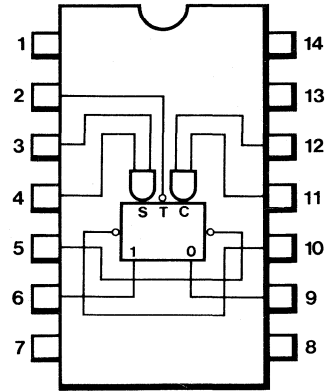
## CONNECTION DIAGRAMS

**G-17**  
941, 951



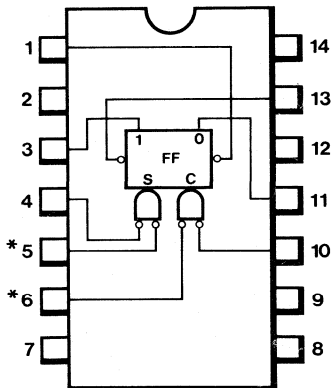
VCC = Pin 14  
GND = Pin 7

**G-18**  
945, 948



VCC = Pin 14  
GND = Pin 7

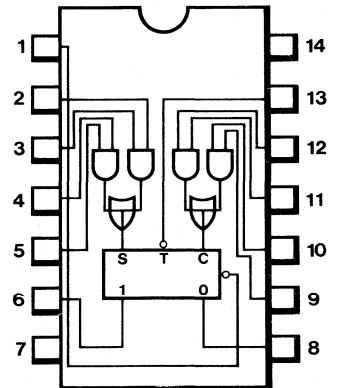
**G-19**  
950



\*These inputs are capacitively coupled.

VCC = Pin 14  
GND = Pin 7

**G-20**  
9111



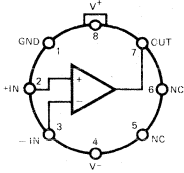
VCC = Pin 14  
GND = Pin 7



# LINEAR

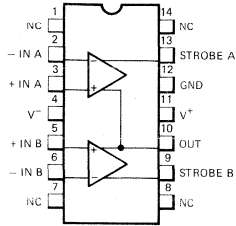
## CONNECTION DIAGRAMS

**L-C-1**

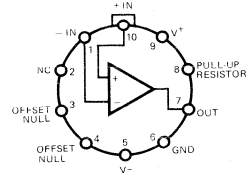


NOTE: Pin 4 connected to case.

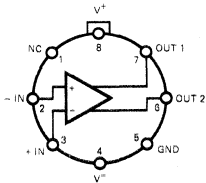
**L-C-2**



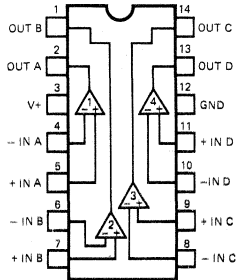
**L-C-3**



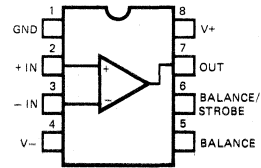
**L-C-4**



**L-C-5**

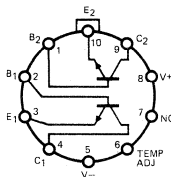


**L-C-6**

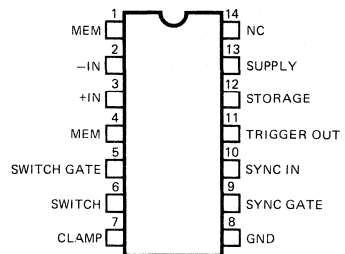


Metal Can and Mini-Dip connection shown

**L-FB-1**



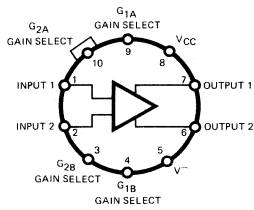
**L-FB-2**



# LINEAR

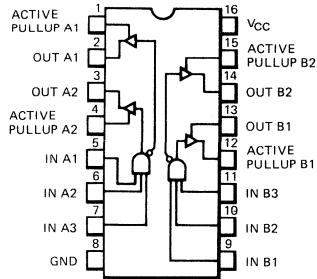
## LOGIC AND CONNECTION DIAGRAMS

**L-I-1**

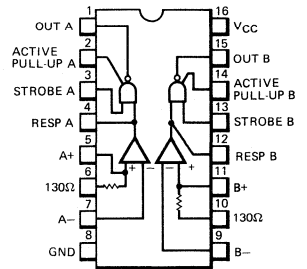


Metal can outline is shown

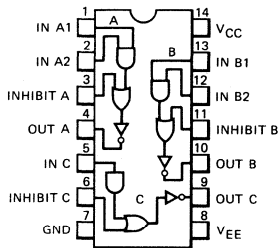
**L-I-2**



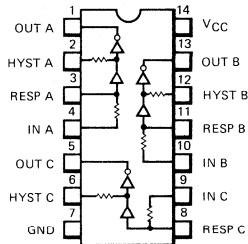
**L-I-3**



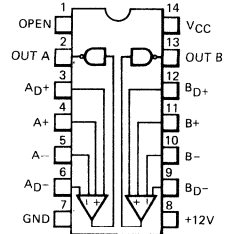
**L-I-4**



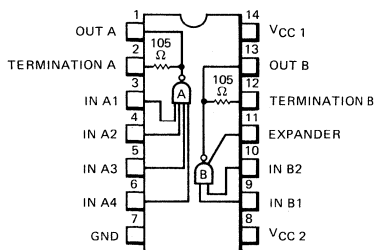
**L-I-5**



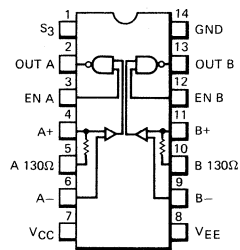
**L-I-6**



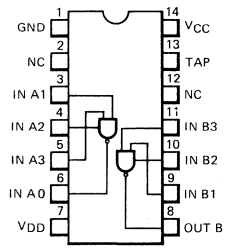
**L-I-7**



**L-I-8**



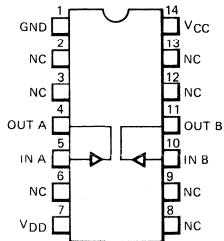
**L-I-9**



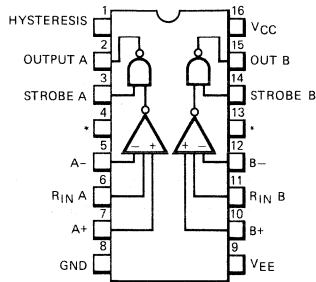
# LINEAR

## LOGIC AND CONNECTION DIAGRAMS

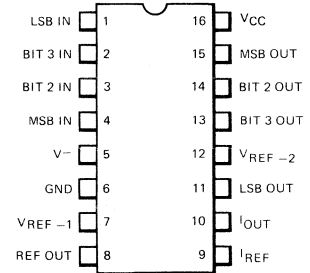
**L-I-10**



**L-I-11**

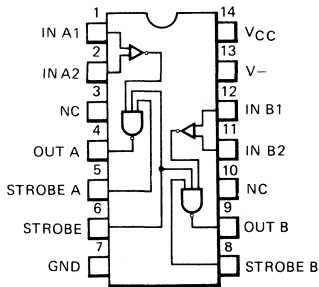


**L-I-12**

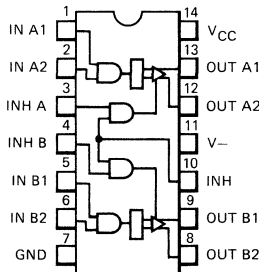


\* Internal Connection

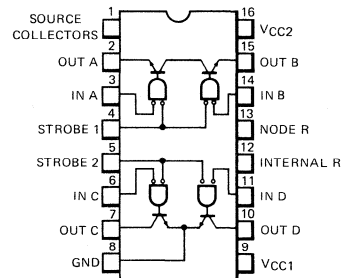
**L-I-13**



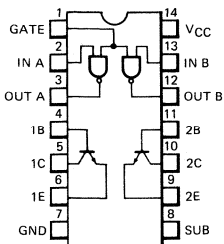
**L-I-14**



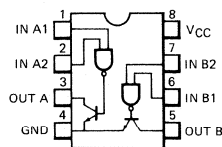
**L-I-15**



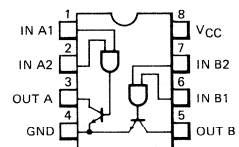
**L-I-16**



**L-I-17**



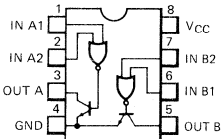
**L-I-18**



# LINEAR

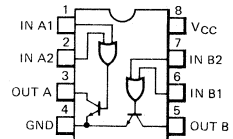
## LOGIC AND CONNECTION DIAGRAMS

**L-I-19**



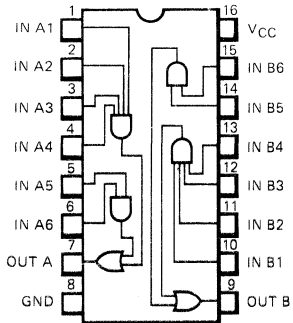
Mini-dip package outline is shown

**L-I-20**

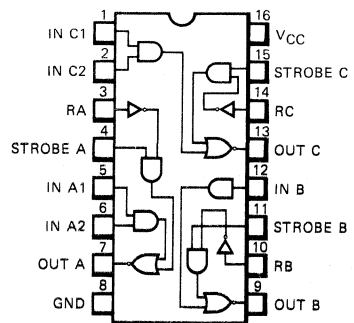


Mini-dip package outline is shown

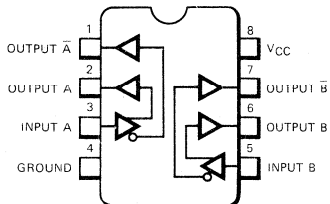
**L-I-21**



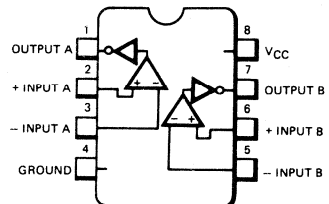
**L-I-22**



**L-I-23**



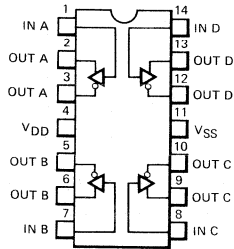
**L-I-24**



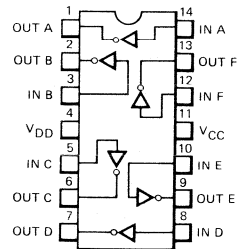
# LINEAR

## LOGIC AND CONNECTION DIAGRAMS

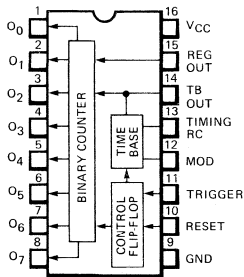
**L-I-25**



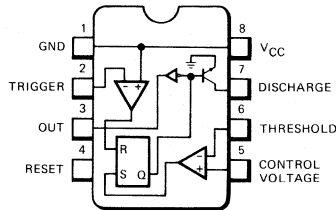
**L-I-26**



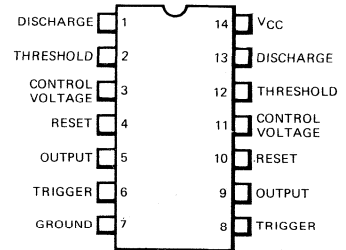
**L-I-27**



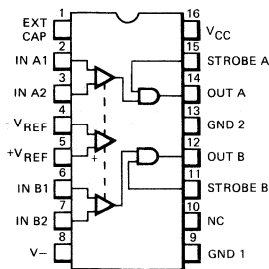
**L-I-28**



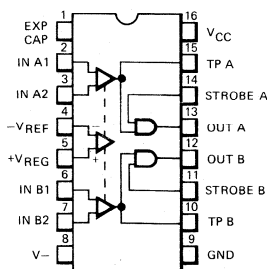
**L-I-29**



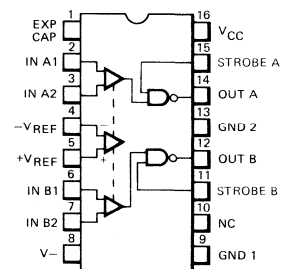
**L-I-30**



**L-I-31**



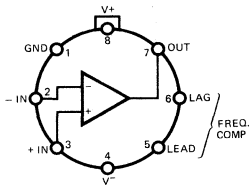
**L-I-32**



# LINEAR

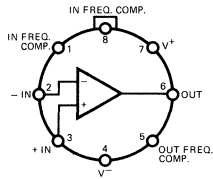
## CONNECTION DIAGRAMS

**L-OA-1**



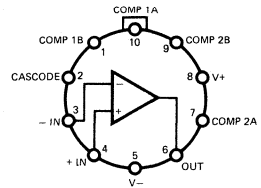
**NOTE:** Pin 4 connected to case.  
Metal Can connection shown

**L-OA-2**



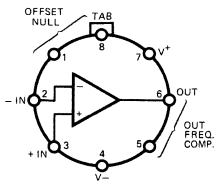
**NOTE:** Pin 4 connected to case.  
Metal Can and Mini-Dip connection shown

**L-OA-3**



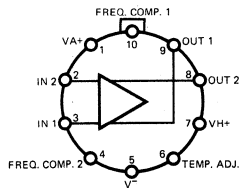
Metal Can connection shown

**L-OA-4**

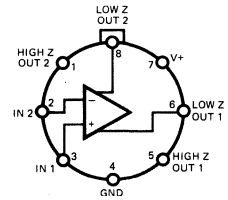


Metal Can connection shown

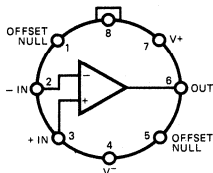
**L-OA-5**



**L-OA-6**

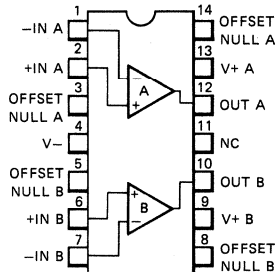


**L-OA-7**

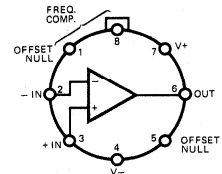


Metal Can and Mini-Dip connection shown

**L-OA-8**



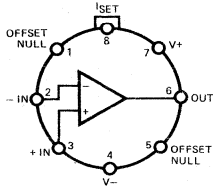
**L-OA-9**



Metal Can and Mini-Dip connection shown

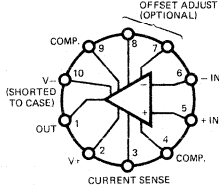
# LINEAR CONNECTION DIAGRAMS

**L-OA-10**

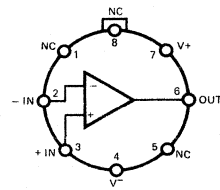


Connection shown for Mini-Dip and Metal Can

**L-OA-11**

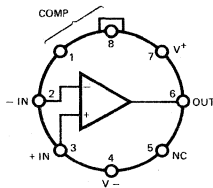


**L-OA-12**



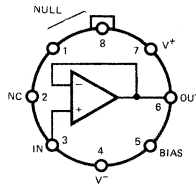
Connection shown for Mini-Dip and Metal Can

**L-OA-13**

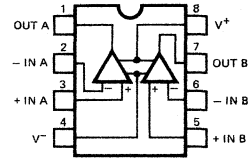


Connection shown for Mini-Dip and Metal Can

**L-OA-14**

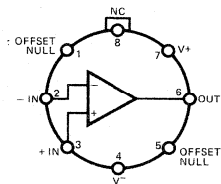


**L-OA-15**

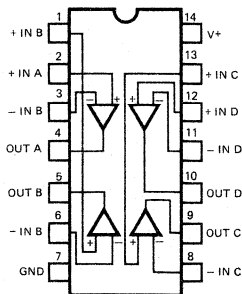


Connection shown for Mini-Dip and Metal Can

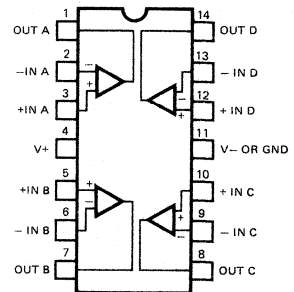
**L-OA-16**



**L-OA-17**

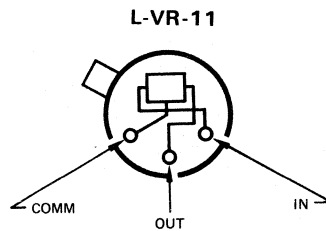
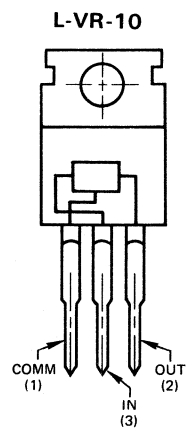
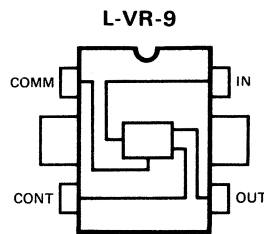
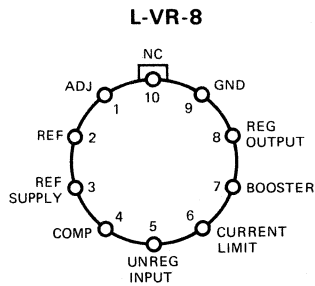
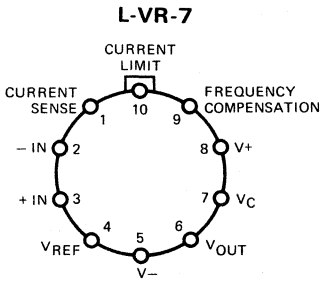
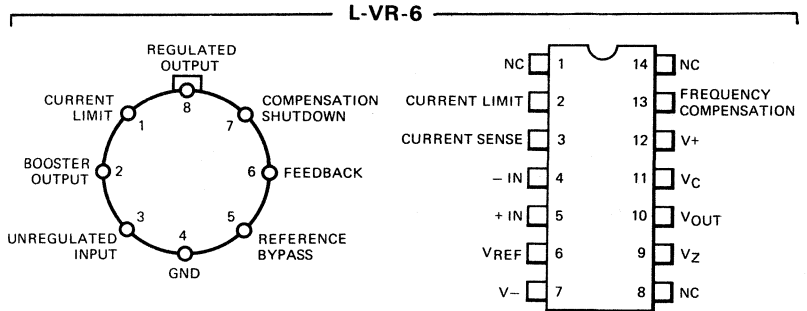
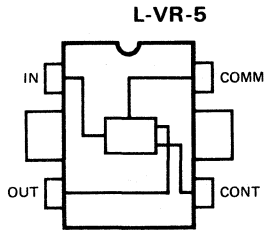
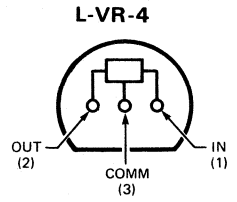
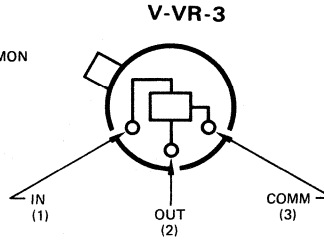
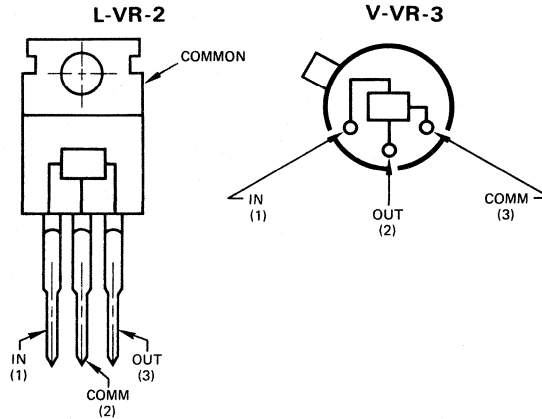
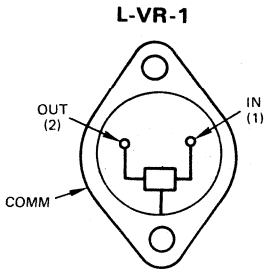


**L-OA-18**



# LINEAR

## LOGIC SYMBOLS AND CONNECTION DIAGRAMS

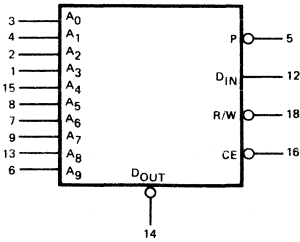




# MOS

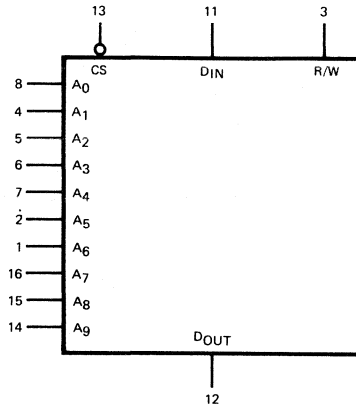
## LOGIC SYMBOLS

**M-1  
1103**



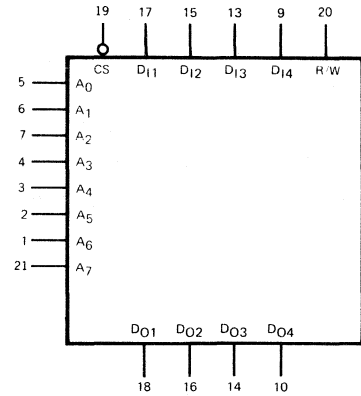
$V_{BB}$  = Pin 10  
 $V_{SS}$  = Pin 17  
 $V_{DD}$  = Pin 11

**M-2  
2102**



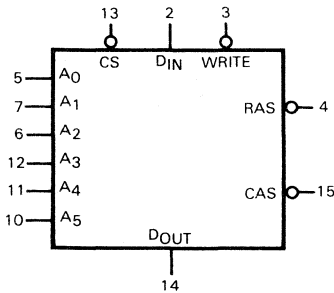
$V_{SS}$  = Pin 9  
 $V_{DD}$  = Pin 10

**M-3  
3538**



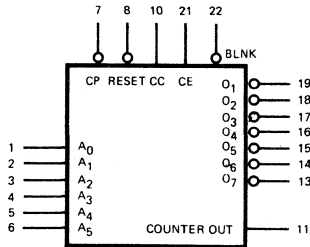
$V_{SS}$  = Pin 8  
 $V_{DD}$  = Pin 22

**M-4  
4096**



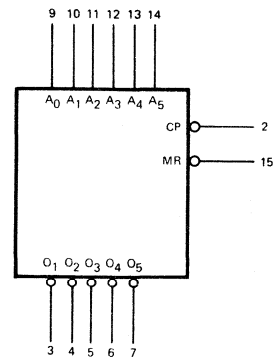
$V_{BB}$  = Pin 1  
 $V_{SS}$  = Pin 16  
 $V_{DD}$  = Pin 9  
 $V_{GG}$  = Pin 8

**M-5  
3257**



$V_{SS}$  = Pin 24  
 $V_{GG}$  = Pin 23  
 $V_{DD}$  = Pin 12

**M-6  
3258**

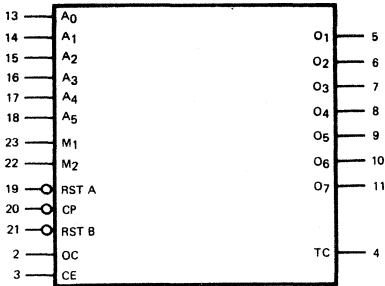


$V_{SS}$  = Pin 16  
 $V_{DD}$  = Pin 8  
 $V_{GG}$  = Pin 1

# MOS

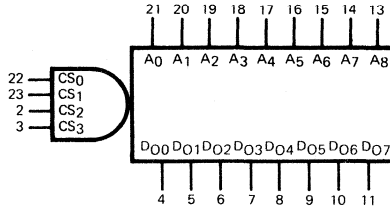
## LOGIC SYMBOLS

**M-7  
3260**



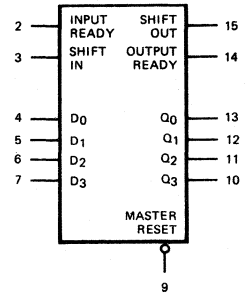
$V_{SS}$  = Pin 24  
 $V_{GG}$  = Pin 1  
 $V_{DD}$  = Pin 12

**M-8  
3514**



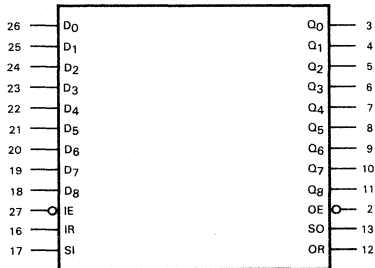
$V_{SS}$  = Pin 24  
 $V_{DD}$  = Pin 12  
 $V_{GG}$  = Pin 1

**M-9  
3341**



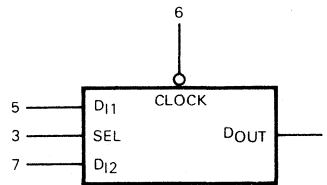
$V_{SS}$  = Pin 16  
 $V_{DD}$  = Pin 8  
 $V_{GG}$  = Pin 1

**M-10  
3351**



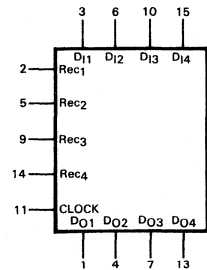
$V_{SS}$  = Pin 28  
 $V_{DD}$  = Pin 14  
 $V_{GG}$  = Pin 1

**M-11  
3355/2533**



$V_{SS}$  = Pin 8  
 $V_{DD}$  = Pin 4  
 $V_{GG}$  = Pin 2

**M-12  
3342/3347**

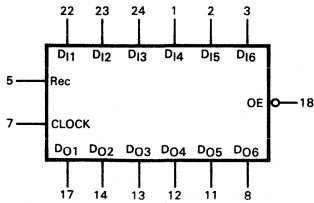


$V_{SS}$  = Pin 16  
 $V_{GG}$  = Pin 12  
 $V_{DD}$  = Pin 8

# MOS

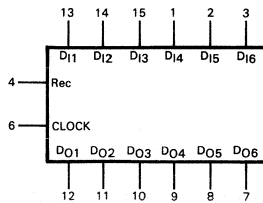
## LOGIC SYMBOLS

**M-13A**  
**3348**



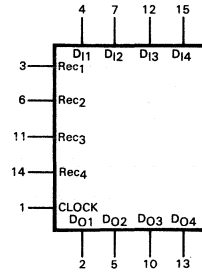
$V_{SS}$  = Pin 20  
 $V_{GG}$  = Pin 6

**M-13B**  
**3349**



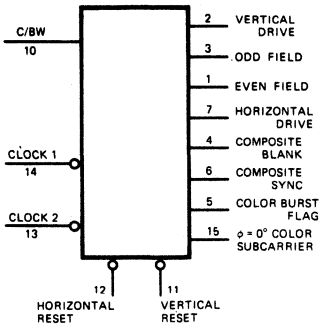
$V_{SS}$  = Pin 16  
 $V_{GG}$  = Pin 5

**M-14**  
**3356**

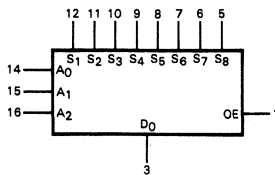


$V_{SS}$  = Pin 16  
 $V_{GG}$  = Pin 9  
 $V_{DD}$  = Pin 8

**M-15**  
**3262**

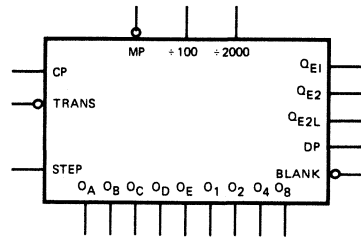


**M-16**  
**3705/08**



$V_{SS}$  = Pins 2,4  
 $V_{DD}$  = Pin 13

**M-17**  
**3814**

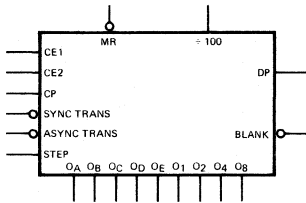


$V_{SS}$  = Pin 24  
 $V_{GG}$  = Pin 15  
 $V_{DD}$  = Pin 13

# MOS

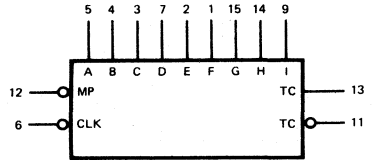
## LOGIC SYMBOLS

**M-18**  
**3815**



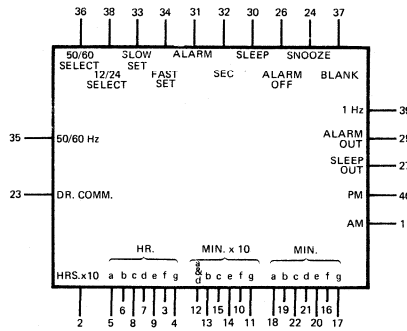
$V_{SS}$  = Pin 24  
 $V_{DD}$  = Pin 13  
 $V_{GG}$  = Pin 15

**M-19**  
**3816**



$V_{SS}$  = Pin 16  
 $V_{GG}$  = Pin 10  
 $V_{DD}$  = Pin 8

**M-20**  
**3817**

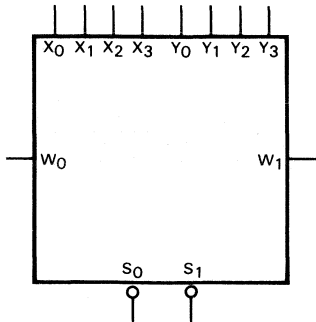


$V_{SS}$  = Pin 28  
 $V_{DD}$  = Pin 29

# BIPOLAR AND ECL MEMORIES

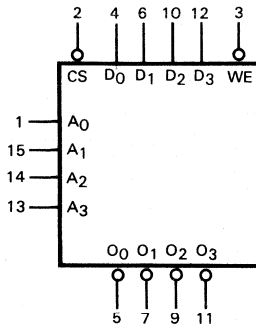
## LOGIC SYMBOLS

**R-1**  
93407/93433



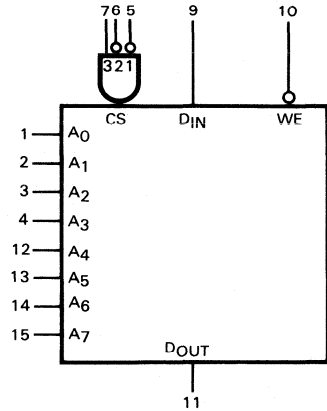
93407  
 $V_{CC}$  = Pin 4  
 GND = Pin 10  
 93433  
 $V_{CC}$  = Pin 14  
 GND = Pin 7

**R-2**  
93403/93404/  
93405/9389/7489



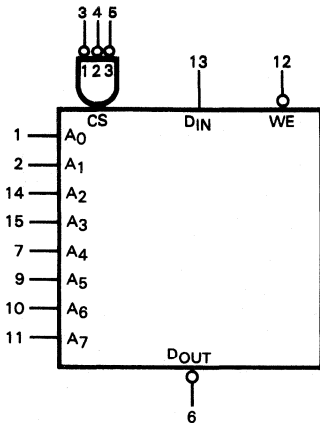
$V_{CC}$  = Pin 16  
 GND = Pin 8

**R-3**  
93410



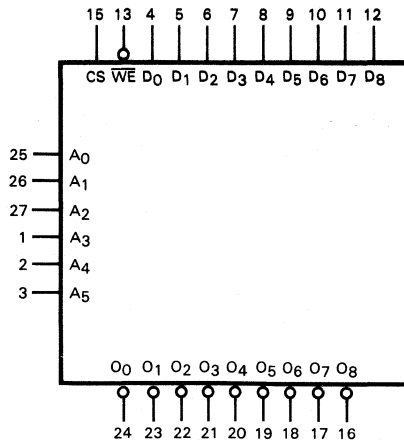
$V_{CC}$  = Pin 16  
 GND = Pin 8

**R-4**  
93411/93421



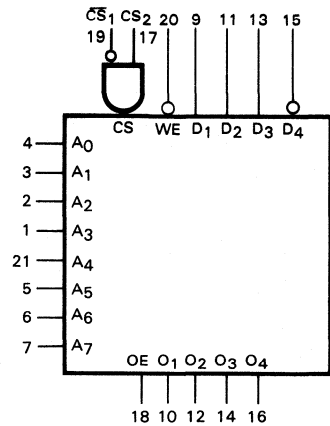
$V_{CC}$  = Pin 16  
 GND = Pin 8

**R-5**  
93419



$V_{CC}$  = Pin 28  
 GND = Pin 14

**R-6**  
93412/93422



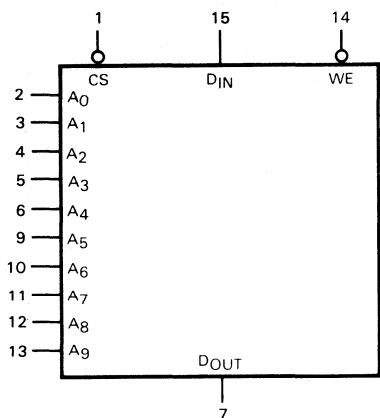
$V_{CC}$  = Pin 22  
 GND = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# BIPOLAR AND ECL MEMORIES

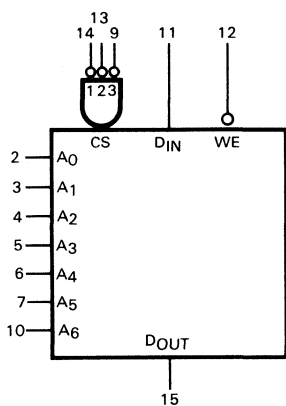
## LOGIC SYMBOLS

**R-7**  
**93415/93415A/**  
**93425/93425A**  
**93L415**



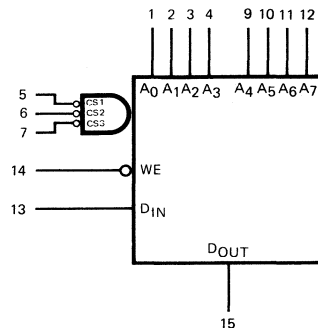
$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

**R-8**  
**10405**



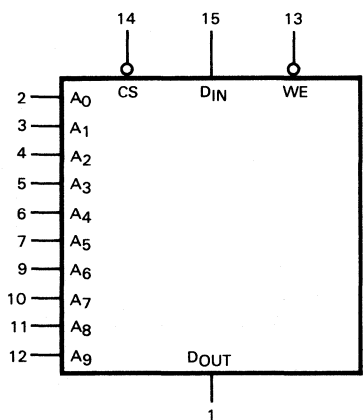
$V_{CC}$  =  $GND$  = Pins 1 and 16  
 $V_{EE}$  = Pin 8

**R-9**  
**10410/95410**



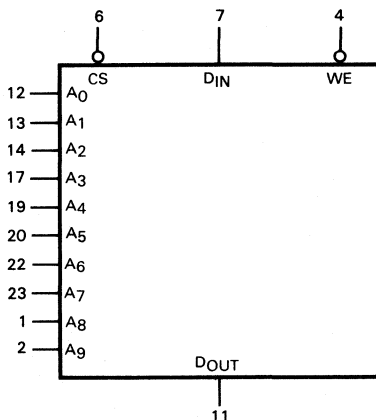
$V_{CC}$  = Pin 16  
 $V_{EE}$  = Pin 8

**R-10**  
**10415/10415A/**  
**95415**



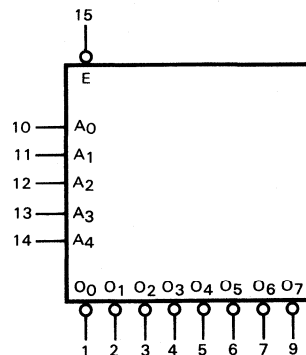
$V_{CC}$  = Pin 16  
 $V_{EE}$  = Pin 8

**R-11**  
**100415**



$V_{CC}$  = Pin 9  
 $V_{EE}$  = Pin 21

**R-12**  
**93434**

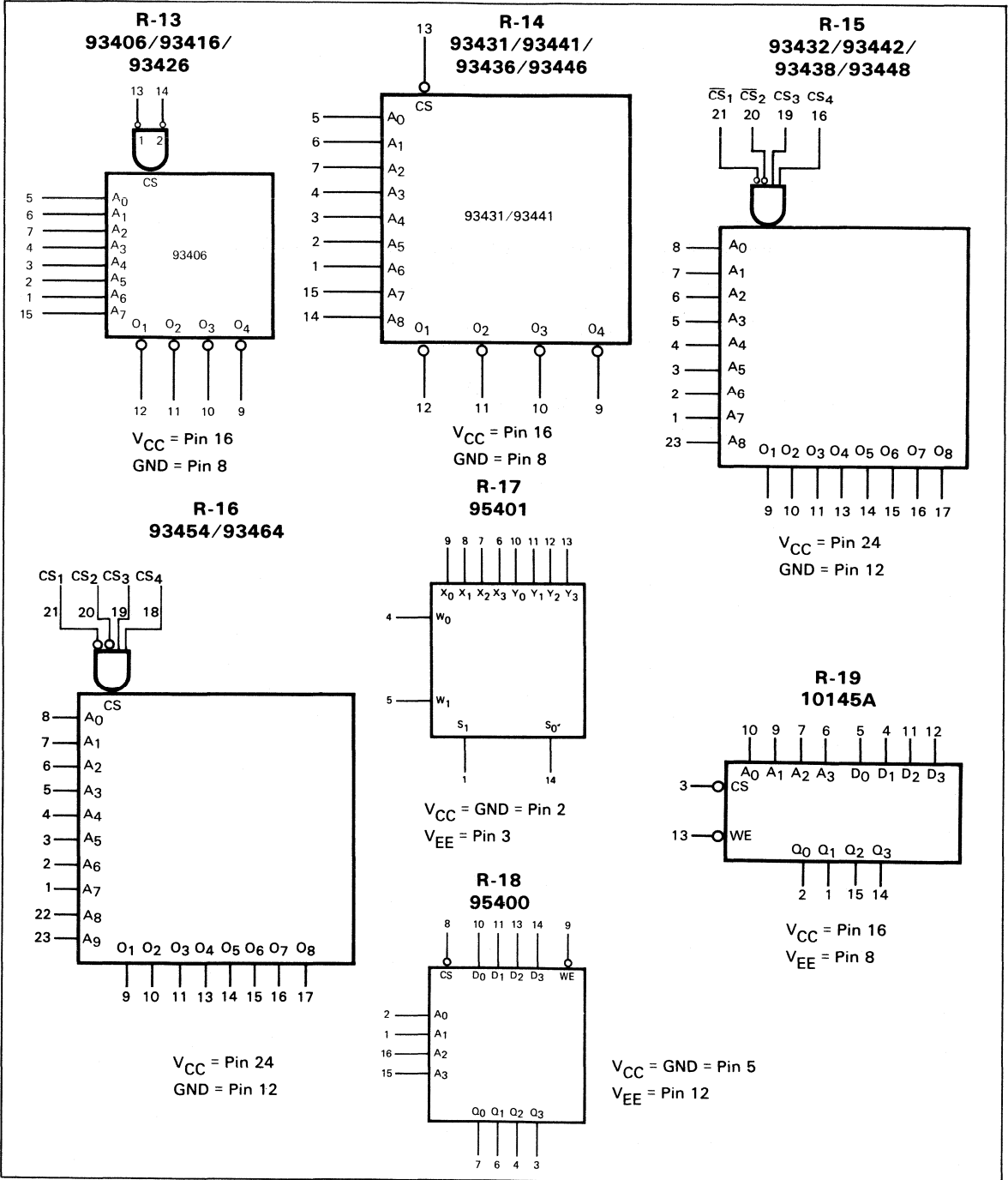


$V_{CC}$  = Pin 16  
 $GND$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# BIPOLAR AND ECL MEMORIES

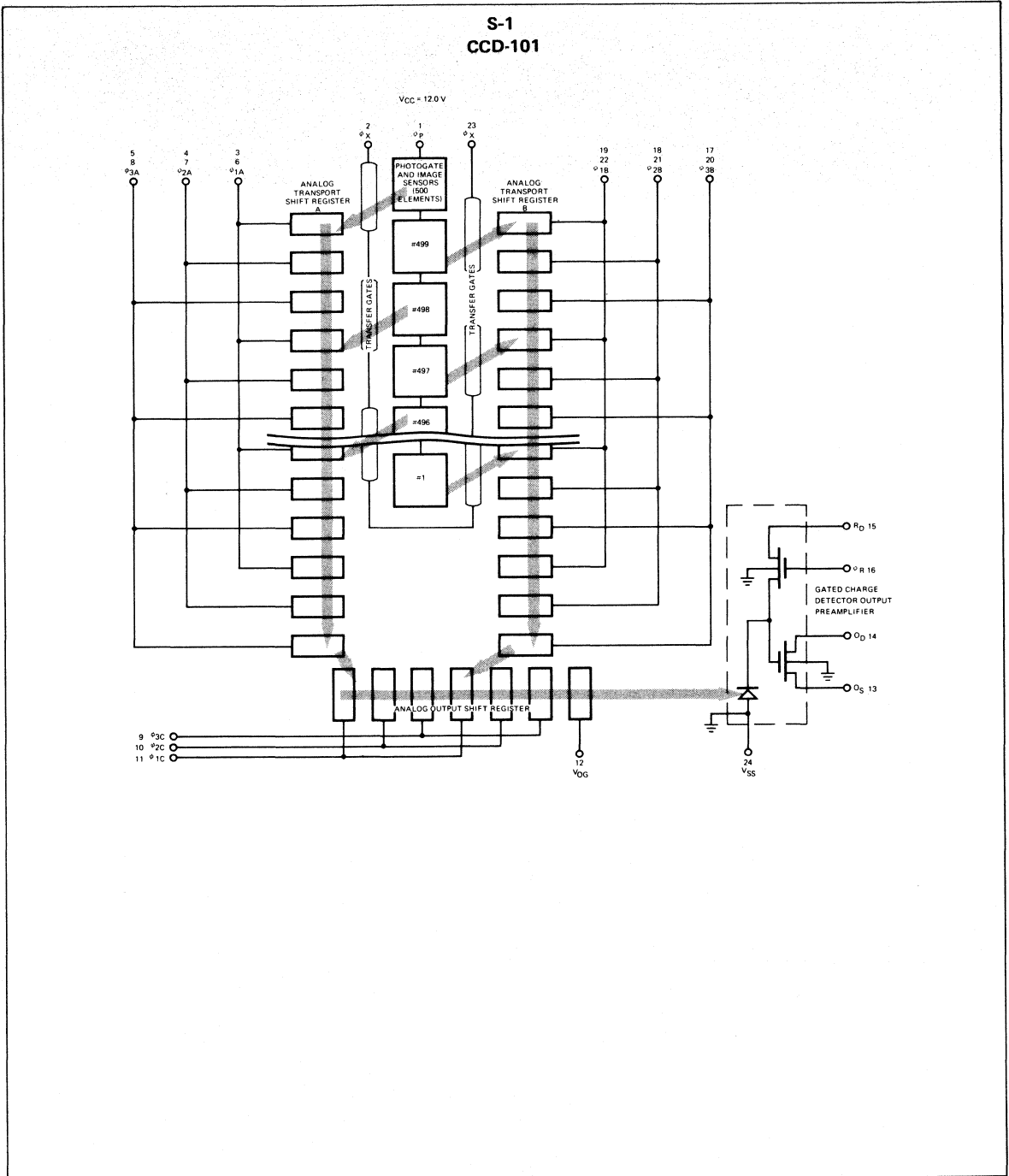
## LOGIC SYMBOLS



NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# CCD

## BLOCK DIAGRAM

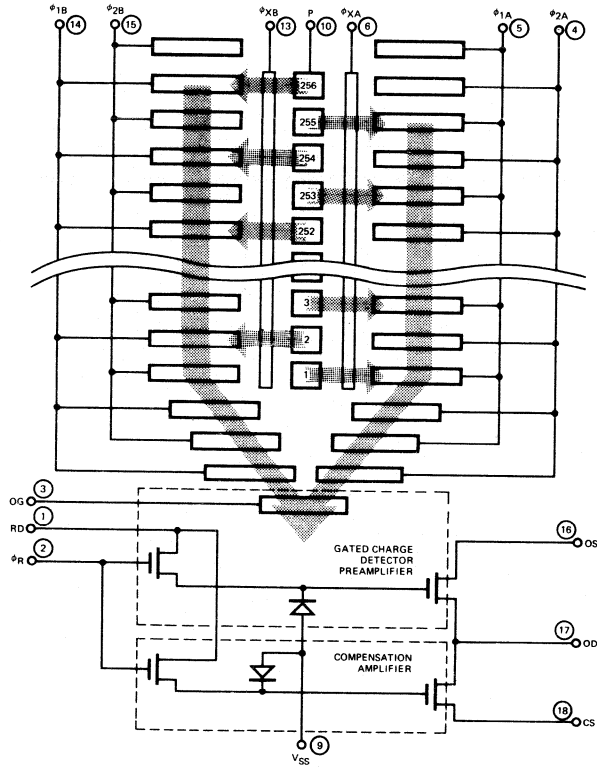




# CCD

## BLOCK DIAGRAM

S-2  
CCD-110

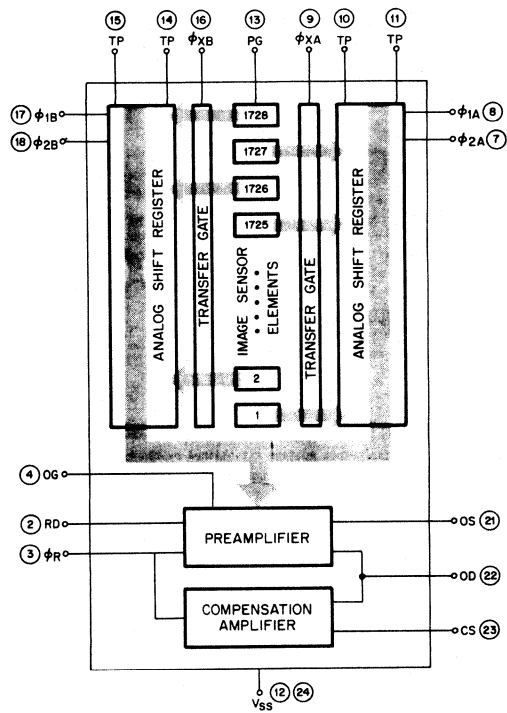


○ = LEAD PINS

# CCD

## BLOCK DIAGRAM

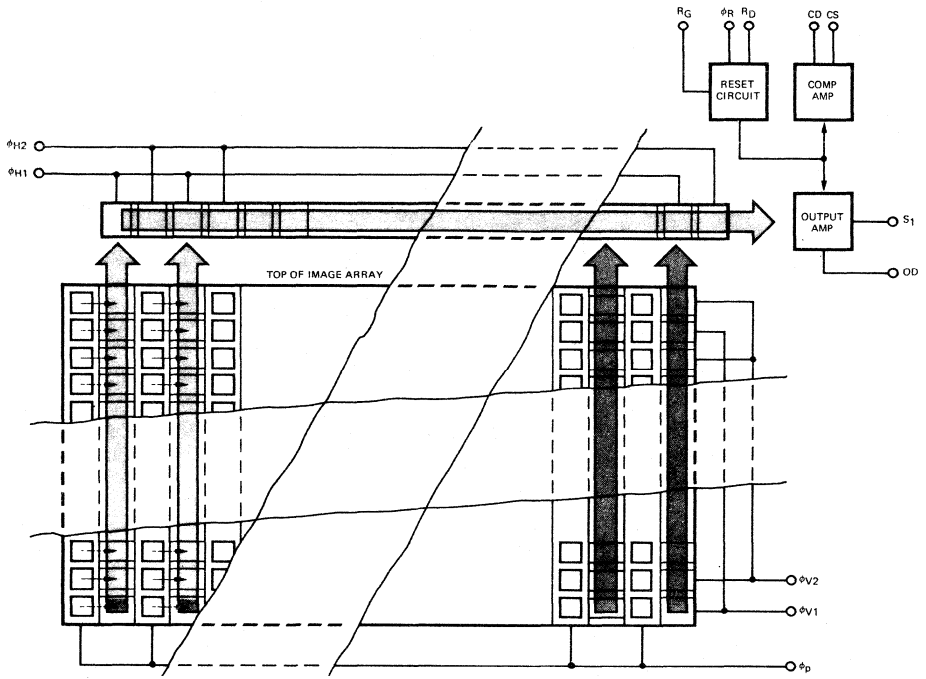
S-3  
CCD-121



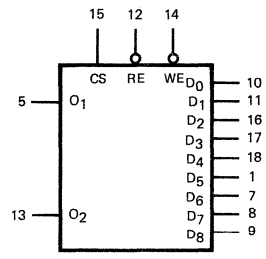
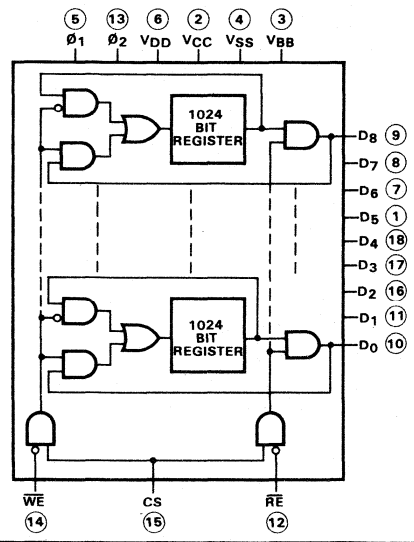
# CCD

## BLOCK DIAGRAM

**S-4**  
**CCD-201**



**S-5**  
**CCD-450**

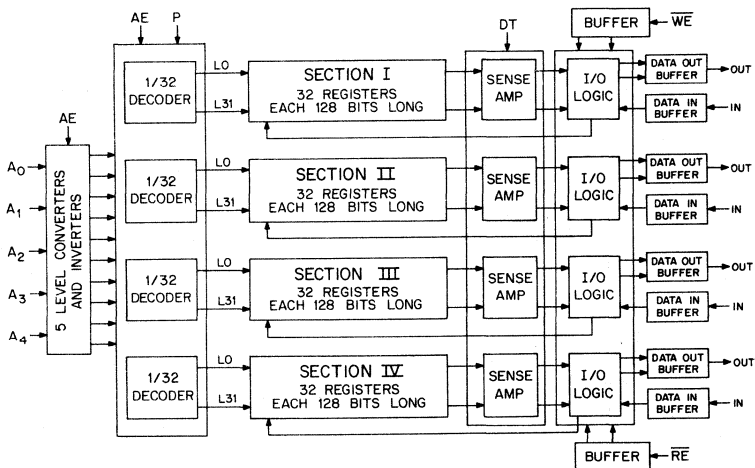
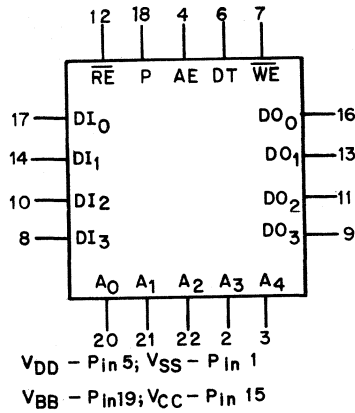


$V_{BB}$  = Pin 3  
 $V_{CC}$  = Pin 2  
 $V_{DD}$  = Pin 6  
 $V_{SS}$  = Pin 4

# CCD

## LOGIC SYMBOL AND BLOCK DIAGRAMS

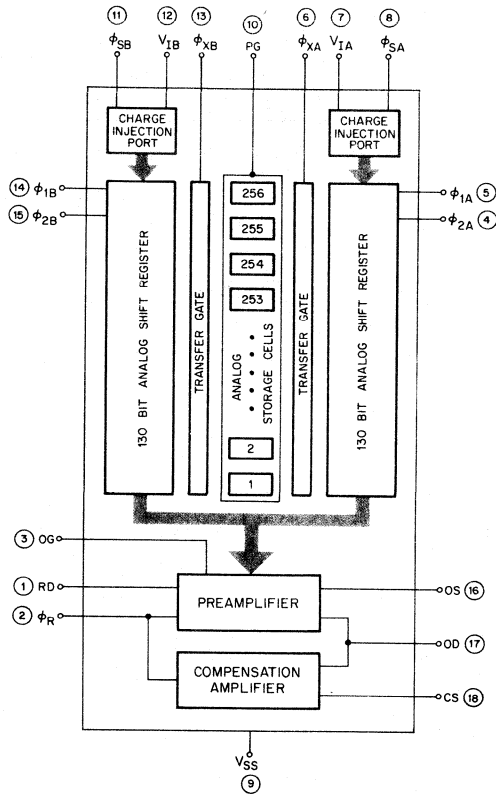
S-6  
CCD460



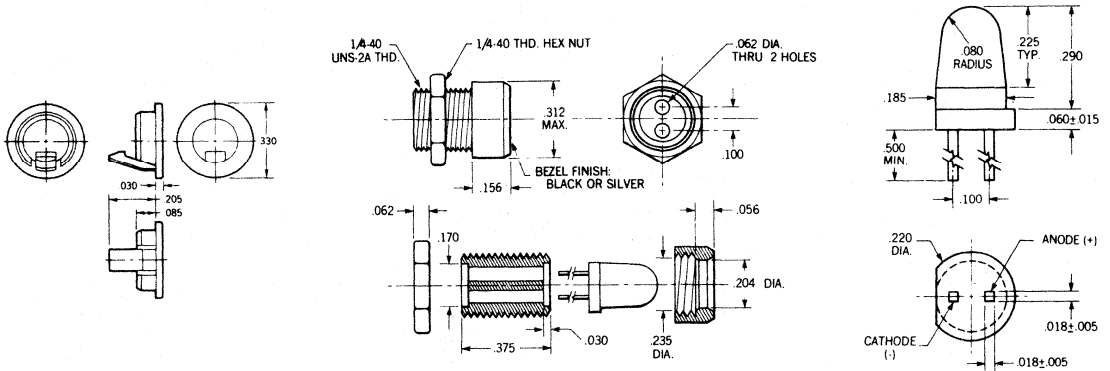
# CCD

## BLOCK DIAGRAM

**S-7**  
**CCD311**



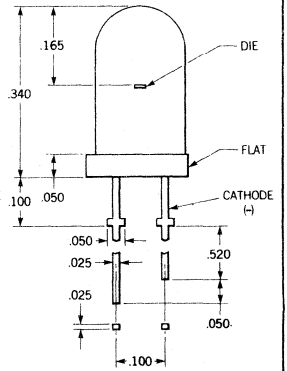
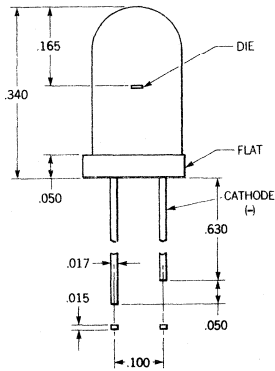
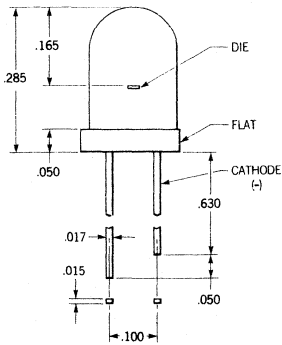
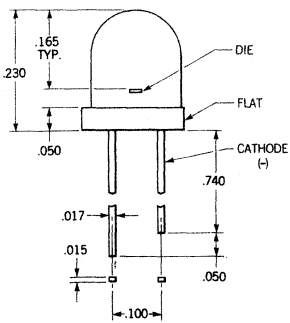
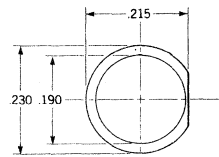
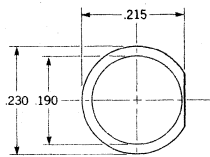
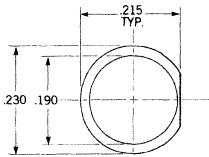
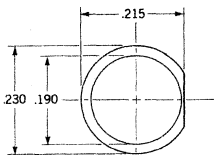
# PACKAGE OUTLINES



**Opto-1**

**Opto-2**

**Opto-3**



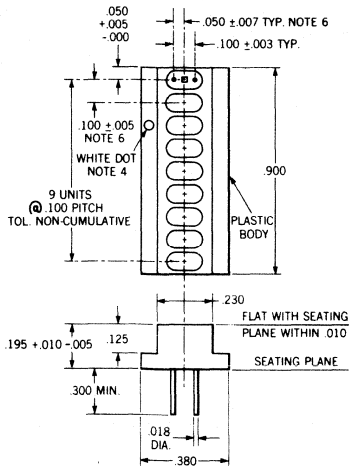
**Opto-4**

**Opto-5**

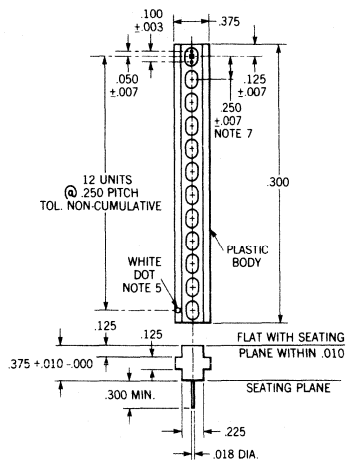
**Opto-6**

**Opto-7**

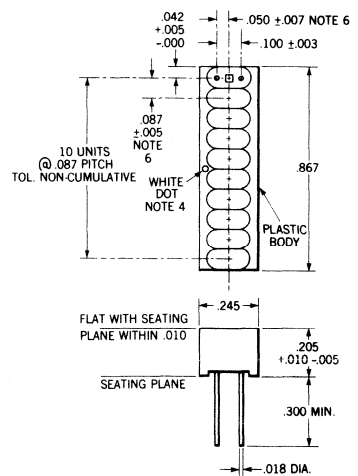
# PACKAGE OUTLINES



**Opto-8**



**Opto-9**

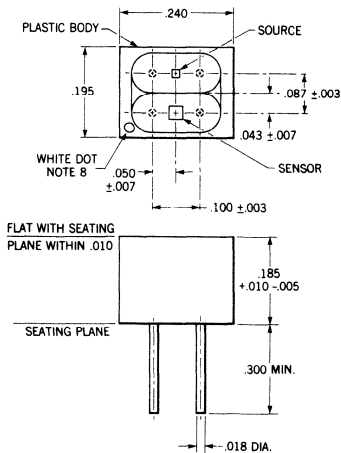


**Opto-10**

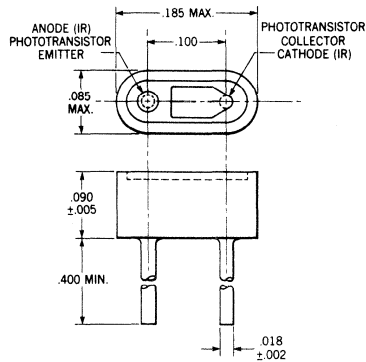
**Notes:**

1. All dimensions in inches  $\pm .010$  unless otherwise specified.
2. Leads to be straight within  $.005''$  from seating plane.
3. Each sensor is  $.035'' \times .035''$  (sensitive area); each source is  $.010''$  diameter (emitting area).
4. Emitter terminal side of phototransistor (sensor array) or anode terminal side of diode (source array) defined by white dot.
5. Leads alternate from emitter to collector (sensor) or anode to cathode (source),

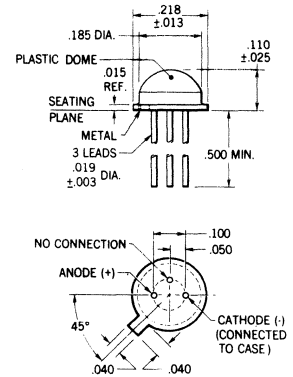
- beginning from this end of the package.
6. The center of each element is aligned to  $\pm .010''$  along the length and  $\pm .005''$  across the width.
7. The center of each element is aligned to  $\pm .010''$  across the width and  $\pm .005''$  along the length.
8. White dot defines collector of phototransistor. Read pinout clockwise, top view: collector, source cathode, source anode, emitter.
9. Sensor array labeled "Sensor"; source array labeled "source". Install with white dots on same side.



**Opto-11**



**Opto-12**

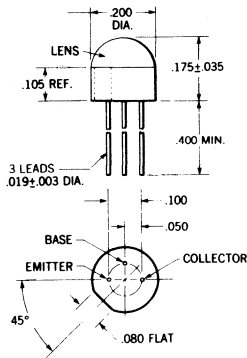


**Opto-13**

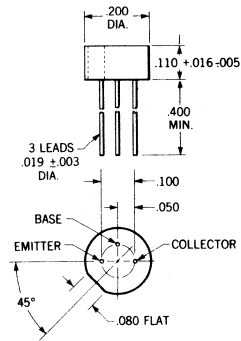
**Notes:**

1. All dimensions in inches  $\pm .010$  unless otherwise specified.
2. Polarities shown for Forward Bias ("ON" State).
3. Package has metal header with transparent acrylic lens.

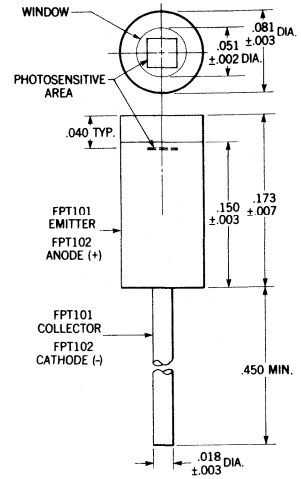
# PACKAGE OUTLINES



**Opto-14**

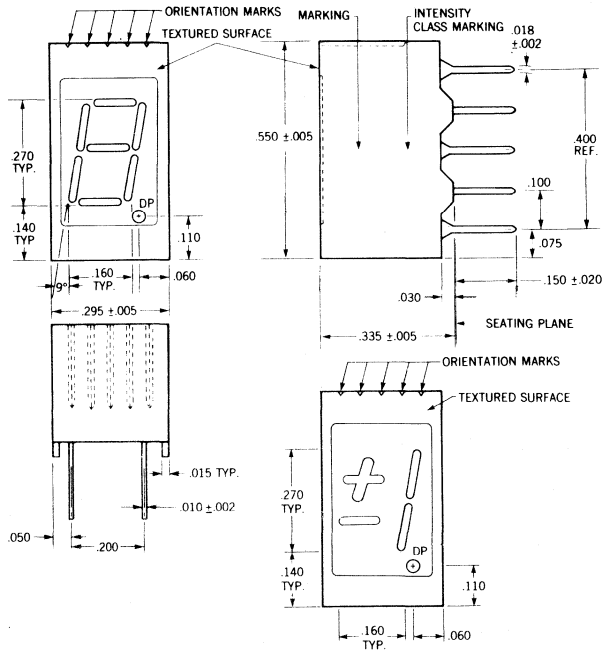


**Opto-15**



**Opto-16**

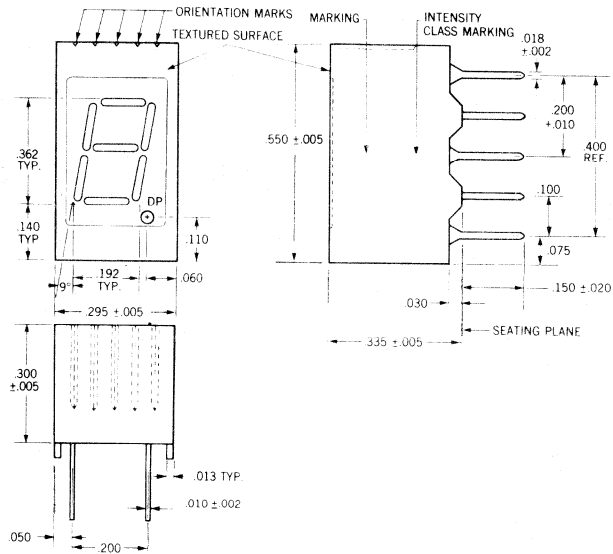
Note: All dimensions in inches ±.010 unless otherwise specified.



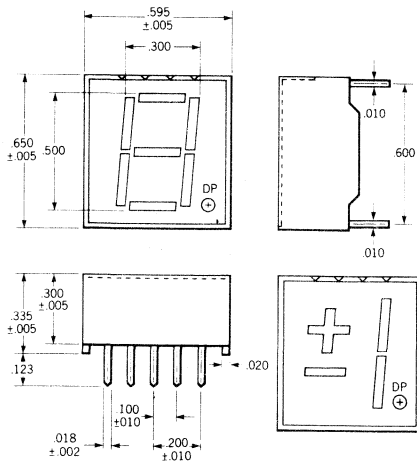
**Opto-17**



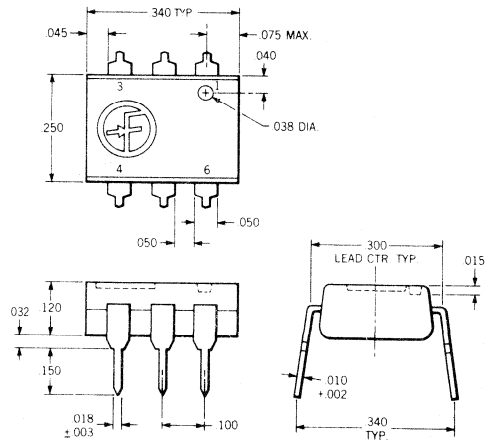
# PACKAGE OUTLINES



**Opto-18**



**Opto-19**

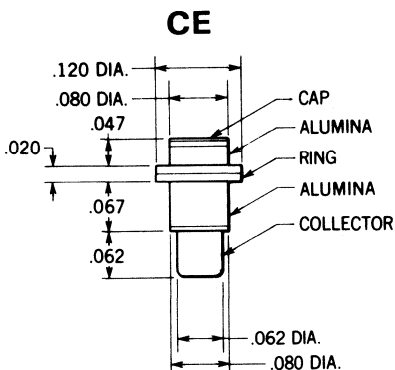


**Opto-20**

Note: All dimensions in inches  $\pm .010$  unless otherwise specified.

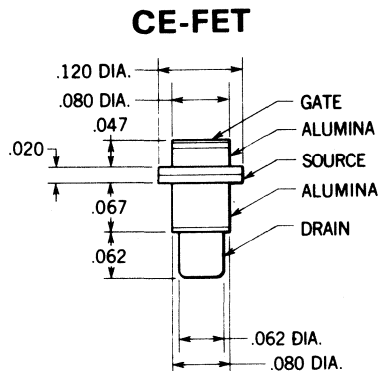
# PACKAGE OUTLINES

## Miniature Coaxial Microwave Transistor Packages



**NOTES:**

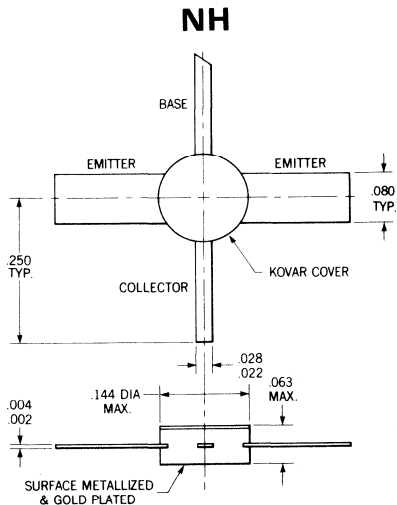
1. FMT4013 Emitter connected to cap  
to cap
  - FMT4014
  - FMT4015 Base connected to ring
- All dimensions in inches  
All dimensions are nominal  
Collector is internally connected to copper stud  
Package weight is 0.12 gram



**NOTES:**

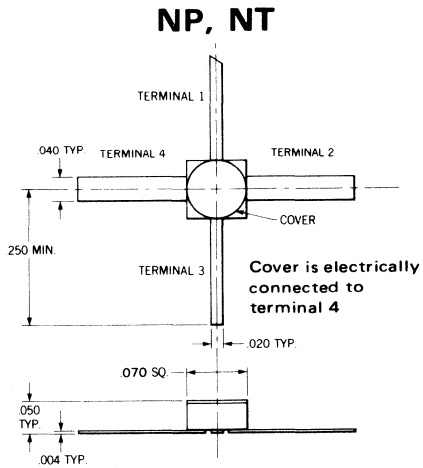
1. All dimensions in inches
2. All dimensions are nominal
3. Gate and Source connections are gold-plated kovar
4. Drain is internally connected to copper stud
5. Package weight is 0.12 gram

## Hermetic Micro-Stripline Packages



**NOTES:**

- All dimensions in inches  
End of leads may be slightly rounded  
Terminals are gold-plated, package is ceramic



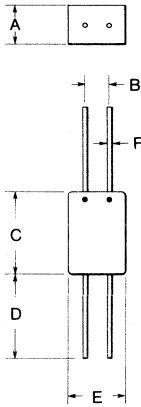
**NOTES:**

- All dimensions in inches  
End of leads may be slightly rounded

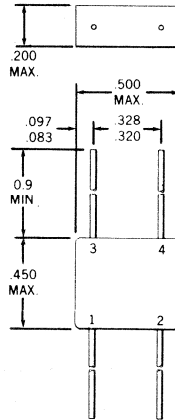
Terminal No.	Pkg. Code	
	NP	NT
Terminal 1	Base	Gate
Terminals 2,4	Emitter	Source
Terminal 3	Collector	Drain

# PACKAGE OUTLINES

## 308

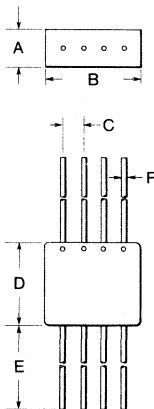


## 309

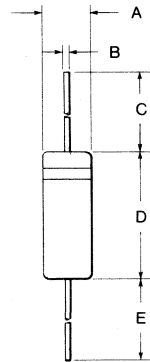


DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.162		.182	4.11		4.62
B	.104		.112	2.64		2.84
C	.435		.455	10.05		10.56
D	1.00			25.40		
E	.280		.300	7.11		7.62
F	.019		.021	.483		.533

## 310



## JEDEC DO-7 Outline Glass Diode



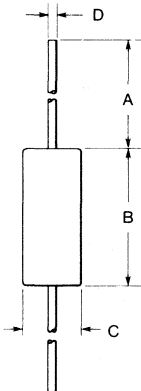
DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.162		.182	4.11		4.62
B	.480		.500	10.12		12.70
C	.104		.112	2.64		2.84
D	.435		.455	10.05		10.56
E	1.0			25.40		
F	.019		.021	.483		.533

DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		0.105				2.67
B		0.02			0.508	
C	1.0			25.40		
D		0.300				7.62
E	1.0			25.40		

NOTES: See table for dimensions in inches and millimeters  
 .020 diameter dumet leads, tinned or gold-plated  
 Hermetically sealed glass  
 Package weight is 0.25 grams

# PACKAGE OUTLINES

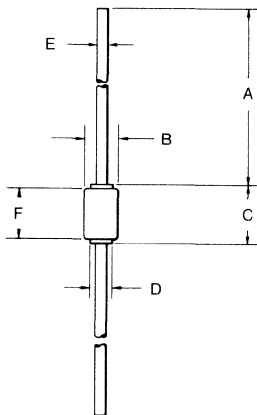
## JEDEC DO-35 Outline Glass Diode



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.0			25.40		
B			.180			4.57
C			.075			1.91
D		.020			0.508	

NOTES: See table for dimensions in inches and millimeters  
.020 diameter domet leads, tinned or gold-plated  
Hermetically sealed glass  
Package weight is 0.14 grams

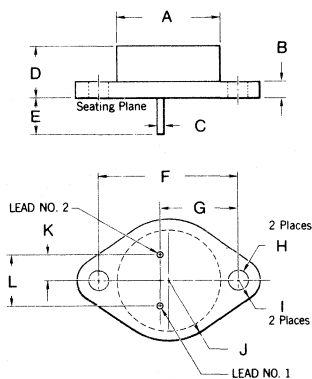
## JEDEC DO-41 Outline



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.10		1.20	27.9		30.5
B	.090		.100	2.29		2.54
C	.165		.175	4.19		4.45
D	.055		.057	1.40		1.45
E	.029		.031	.737		.787
F	.145		.155	3.68		3.94

NOTES: See table for dimensions in inches and millimeters  
Hermetically sealed glass  
Package weight is 0.14 grams

## JEDEC TO-3 Outline

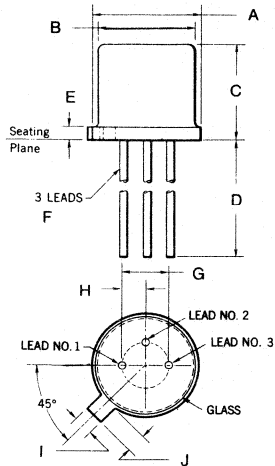


DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.805		.835	20.45		31.21
B			.135			3.43
C	.038		.048	0.965		1.12
D	.205		.225	5.20		5.71
E	.312			7.92		
F	1.177		1.197	29.90		30.40
G	.655		.675	16.64		17.15
H	.151		.161	3.79		3.84
I			.188			4.78
J			.525			13.34
K	.205		.225	5.20		5.71
L	.420		.440	9.67		10.08

NOTES: See table for dimensions in inches and millimeters  
Leads 1 and 2 electrically isolated from case  
Case is third electrical connection  
Package weight is 7.4 grams

# PACKAGE OUTLINES

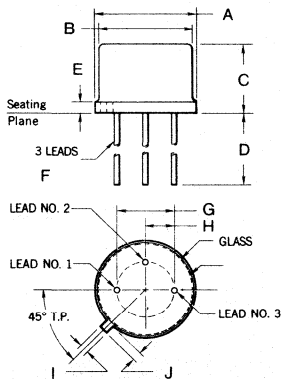
## JEDEC TO-18 Outline



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.209		.230	5.31		5.84
B	.178		.195	4.52		4.95
C	.170		.210	4.32		5.33
D	.500			12.70		
E			.030			0.762
F	.016		.019	0.406		0.483
G		.100			2.54	
H		.050			1.27	
I	.036		.046	0.914		1.17
J	.028		.048	0.711		1.22

NOTES: See table for dimensions in inches and millimeters  
Lead No. 3 connected to case  
Package weight is 0.44 grams

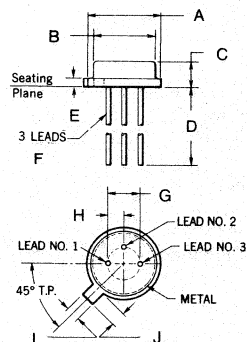
## JEDEC TO-39 Outline



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.350		.370	8.51		9.39
B	.315		.335	8.00		8.51
C	.240		.260	6.10		6.60
D	.500			12.70		
E			.030			0.762
F	.016		.019	0.406		0.483
G		.200			5.08	
H		.100			2.54	
I	.028		.034	0.711		0.864
J	.029		.040	0.737		1.02

NOTES: See table for dimensions in inches and millimeters  
Lead No. 3 connected to case  
Package weight is 1.11 grams

## JEDEC TO-46 Outline

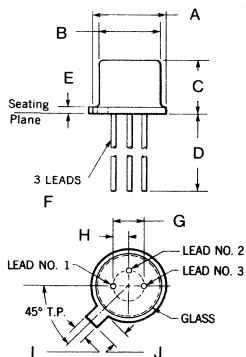


DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.209		.230	5.31		5.84
B	.178		.195	4.52		4.94
C	.065		.085	1.65		2.16
D	.500			12.70		
E			.030			0.762
F	.012		.019	0.305		0.483
G		.100			2.54	
H		.050			1.27	
I	.036		.046	0.914		1.17
J	.028		.048	0.711		1.22

See table for dimensions in inches and millimeters  
Lead No. 3 connected to case  
Package weight is 0.35 grams

# PACKAGE OUTLINES

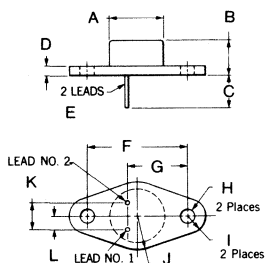
## JEDEC TO-52 Outline



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.209	.230		5.31		5.84
B	.178	.195		4.52		4.95
C	.115	.150		2.95		3.81
D	.500			12.70		
E			.030			0.762
F	.016		.019	0.406		0.483
G		.100			2.54	
H		.050			1.27	
I	.036		.046	0.914		1.17
J	.028		.048	0.711		1.22

NOTES: See table for dimensions in inches and millimeters  
Lead No. 3 connected to case  
Package weight is 0.31 grams

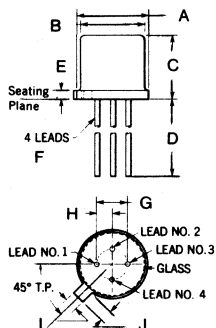
## JEDEC TO-66 Outline



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.470	.500		11.94		12.70
B	.250	.340		6.35		8.64
C	.360			9.14		
D	.050	.075		1.27		1.91
E	.028	.034		0.710		0.864
F	.958	.962		24.33		24.43
G	.570	.590		14.48		14.99
H	.142	.152		3.61		3.86
I		.145				3.68
J		.350				8.89
K	.190	.210		4.83		5.33
L	.093	.107		2.36		2.72

NOTES: See table for dimensions in inches and millimeters  
Leads 1 and 2 electrically isolated from case  
Case is third electrical connection  
Package weight is 6.5 grams

## JEDEC TO-72 Outline

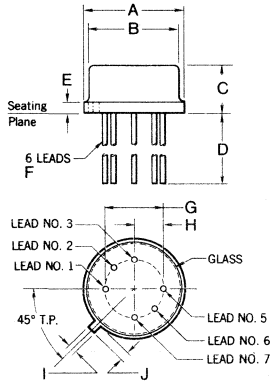


DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.209	.230		5.31		5.84
B	.178	.195		4.52		4.95
C	.170	.210		4.32		5.33
D	.500			12.70		
E			.030			0.762
F	.016		.019	0.406		0.483
G		.100			2.54	
H		.050			1.27	
I	.036		.046	0.914		1.70
J	.028		.048	0.711		1.22

NOTES: See table for dimensions in inches and millimeters  
Lead No. 4 connected to case  
Collector electrically isolated from case  
Package weight is 0.36 grams

# PACKAGE OUTLINES

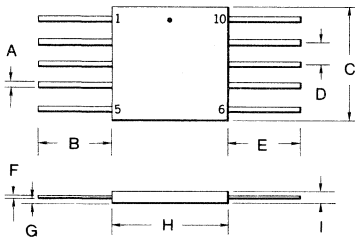
## JEDEC TO-78 Outline Adjacent Two Island Package



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.335		.370	8.51		9.39
B	.305		.335	7.75		8.51
C	.165		.185	4.19		4.69
D	.500			12.70		
E			.040			0.916
F	.016		.019	0.406		0.483
G		.200			5.08	
H		.100			2.54	
I	.028		.034	0.711		0.864
J	.029		.045	0.737		1.14

NOTES: See table for dimensions in inches and millimeters  
Leads 4 and 8 omitted  
Lead No. 1 internally connected to one island  
Lead No. 2 internally connected to other island  
Kovar island thickness = 15 mils  
Package weight is 1.08 grams

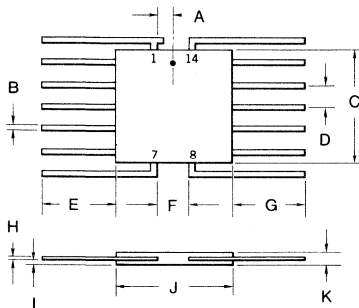
## Similar\* to JEDEC TO-85 Outline 10-Lead Cerpak



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.015		.019	.381		.483
B	.250		.370	6.35		9.39
C	.240		.260	6.10		6.60
D		.050			1.27	
E	.250		.370	6.35		9.39
F	.004		.006	.092		.152
G		.035			.889	
H	.240		.260	6.10		6.60
I	.067		.090	1.70		2.28

NOTES: See table for dimensions in inches and millimeters  
Alternate marking of dot in upper left hand corner is also acceptable  
Package weight is 0.26 grams  
\*Dimensions similar to JEDEC TO-91 except for package thickness

## Similar\* to JEDEC TO-86 Outline 14-Lead Cerpak

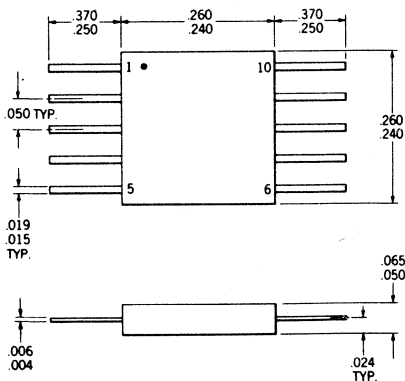


DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		.016		.406		
B	.015		.019	.381		.483
C	.240		.260	6.10		6.60
D		.050			1.27	
E	.250		.370	6.35		9.39
F	.045		.055	1.04		1.40
G	.250		.370	6.35		9.39
H	.004		.006	.092		.152
I		.035			.889	
J	.240		.260	6.10		6.60
K	.067		.090	1.70		2.28

NOTES: See table for dimensions in inches and millimeters  
Alternate marking of dot in upper left hand corner is also acceptable  
Package weight is 0.26 grams  
\*Dimensions similar to JEDEC TO-86 except for package thickness

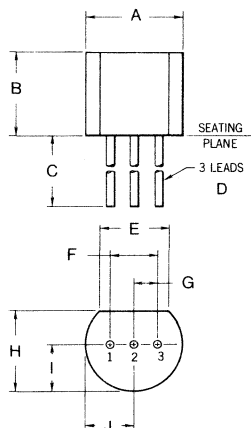
# PACKAGE OUTLINES

## JEDEC TO-91 Outline 10-Lead Cerpak



**NOTES**  
All dimensions in inches  
Leads are gold-plated kovar  
Package weight is 0.26 gram

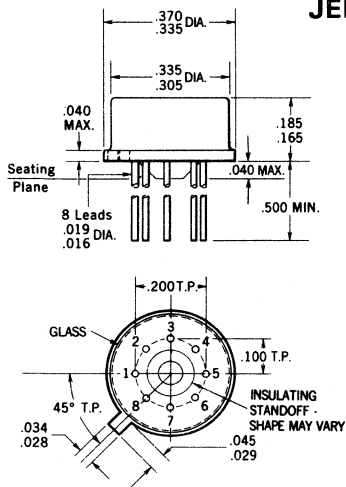
## JEDEC TO-92 Outline Plastic Package



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.175		.205	4.45		5.20
B	.170		.210	4.32		5.33
C	.500			12.70		
D	.016		.019	0.406		0.483
E	.135			.343		
F		.100			2.54	
G		.050			1.27	
H	.125		.165	3.18		4.19
I	.080		.105	2.03		2.67
J	.080		.105	2.03		2.67

**NOTES:** See table for dimensions in inches and millimeters  
Package material is transfer molded thermosetting plastic  
Package weight is 0.25 grams

## JEDEC TO-99 Outline

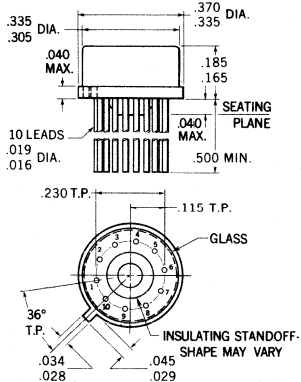


**NOTES**  
All dimensions in inches  
Leads are gold-plated kovar  
Package weight is 1.22 gram  
Seven leads through, lead No. 4 connected to case  
15 mil kovar header



# PACKAGE OUTLINES

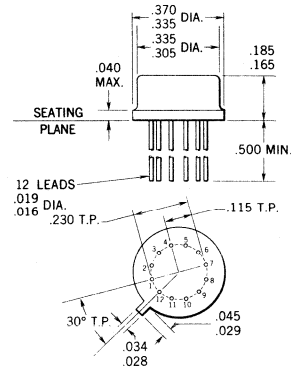
## JEDEC TO-100 Outline



### NOTES

All dimensions in inches  
 Leads are gold-plated kovar  
 Similar to JEDEC TO-101 except for no  
 standoff  
 Package weight is 1.03 gram

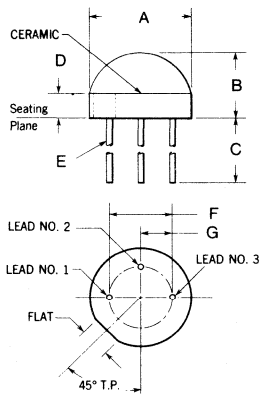
## Similar to JEDEC TO-101 Outline



### NOTES

All dimensions in inches  
 Leads are gold-plated kovar  
 Similar to JEDEC TO-101 except for no  
 standoff  
 Package weight is 1.03 gram

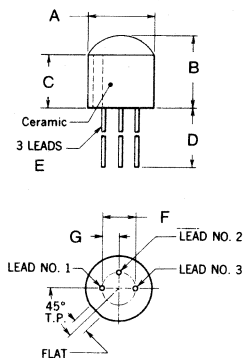
## JEDEC TO-105 Outline Plastic Package



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.305	.325		7.75	8.25	
B		.220				5.58
C	.500			12.70		
D		.080			2.032	
E	.016	.019		0.406		0.483
F		.200			5.08	
G		.100			2.54	
H		.080			2.032	

NOTES: See table for dimensions in inches and millimeters  
 Leads 1 and 2 are gold-plated nickel  
 Package weight is 0.5 grams

## JEDEC TO-106 Outline Plastic Package



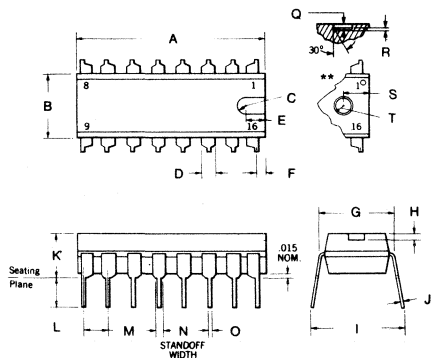
DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.192	.222		4.88	5.64	
B		.240			5.90	
C	.100	.120		2.54	3.05	
D	.500			12.40		
E	.016	.019		0.406		0.483
F		.100			2.54	
G		.050			1.27	

See table for dimensions in inches and millimeters  
 Leads 4 and 8 omitted  
 Packaged weight is 0.31 grams



# PACKAGE OUTLINES

## TO116-3 Plastic 16-Lead Dip



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.740	.760		18.96		19.30
B	.240	.260		6.10		6.60
C	.035	.045		.889		1.04
D	.045	.065		1.04		1.65
E	.075	.085		1.91		2.16
F		.025			.635	
G		.300			7.62	
H	.10	.020		.254		.508
I		.375			9.52	
J	.009	.011		.229		.279
K		.200			5.08	
L	.100	.150		2.54		3.81
M	.090	.110		2.29	2.79	
N	.025	.037		.686		.940
O	.016	.020		.406		.508
P		.015			.381	

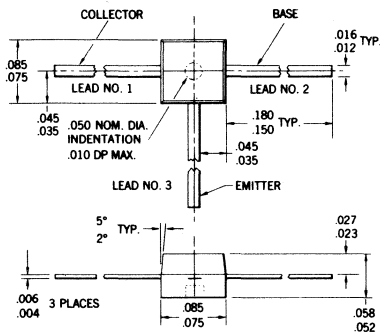
NOTES: See table for dimensions in inches and millimeters  
Leads are intended for insertion in hole rows on .300" centers  
They are purposely shipped with "positive" misalignment to facilitate insertion

Board drilling dimensions should equal your practice for a .020" diameter lead

Package weight is 0.9 grams

\*The .037/.027 dimension does not apply to the corner leads

## JEDEC TO-120 Outline



NOTES:

All dimensions in inches

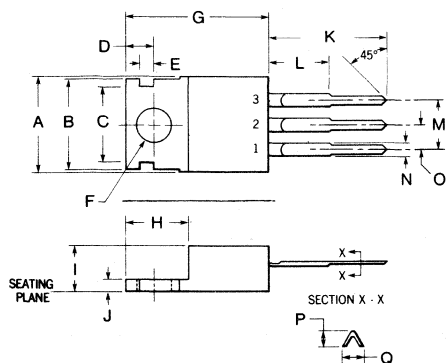
Leads are gold-plated nickel alloy

Package material is plastic

Package weight 0.015 gram

## JEDEC TO-220 Outline

\*Plastic Power Package



DIM.	INCHES			MILLIMETERS		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	.395		.410	10.03		10.41
B	.365		.385	9.27		9.77
C	.300		.320	7.62		8.13
D	.100		.120	2.54		3.05
E	.040		.060	1.02		1.52
F	.141		.145	3.58		3.68
G	.575		.600	14.6		15.24
H	.235		.265	5.97		6.73
I	.160		.190	4.06		4.83
J	.020		.055	.508		1.40
K	.500			12.70		
L			.250			6.35
M	.190		.210	4.83		5.33
N	.045		.055	1.05		1.40
O	.095		.105	2.41		2.66
P	.015		.030	.381		.762
Q	.020		.045	.508		1.43

NOTES: See table for dimensions in inches and millimeters  
Center lead is electrical contact with the mounting tab

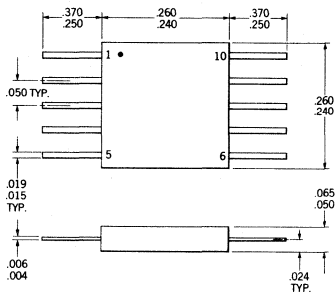
Package weight is 2.1 grams

\*Mechanically interchangeable with TO66

# PACKAGE OUTLINES

## JEDEC TO-91 Outline 10-Lead Cerpak

3F

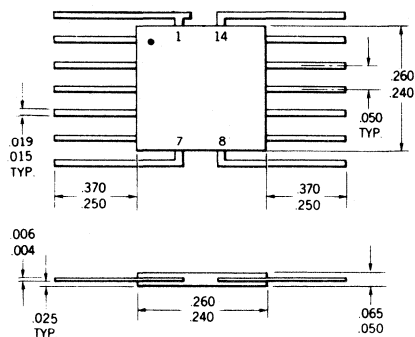


### NOTES

All dimensions in inches  
Leads are gold-plated kovar  
Package weight is 0.26 gram

## JEDEC TO-86 Outline 14-Lead Cerpak

3I

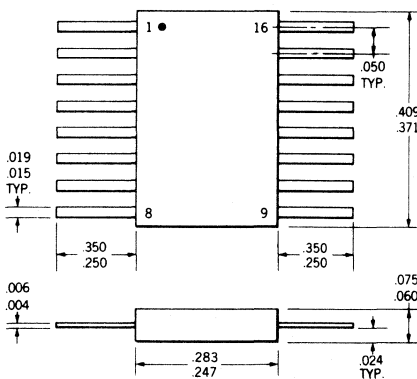


### NOTES

All dimensions in inches  
Leads are gold-plated kovar  
Package weight is 0.26 gram  
Lead 1 orientation may be either tab or dot

## 16-Lead BeO Cerpak

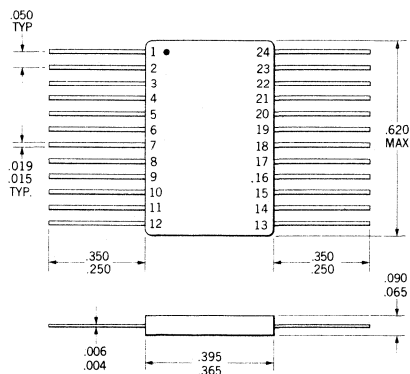
4B, 4L



NOTES: All dimensions in inches  
Leads are gold-plated kovar  
Cap and base are alumina  
Package weight is 0.4 gram

## 24-Lead BeO Cerpak

4M

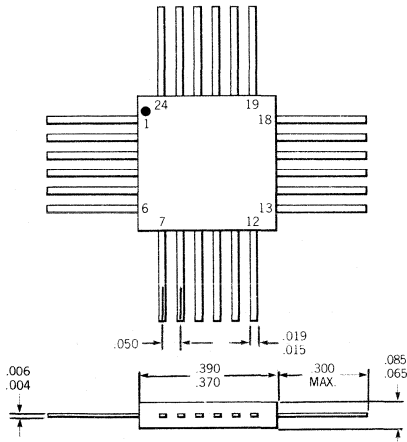


NOTES: All dimensions in inches  
Leads are gold-plated kovar  
Cap material is alumina  
Base material is beryllia  
Package weight is 0.8 gram

# PACKAGE OUTLINES

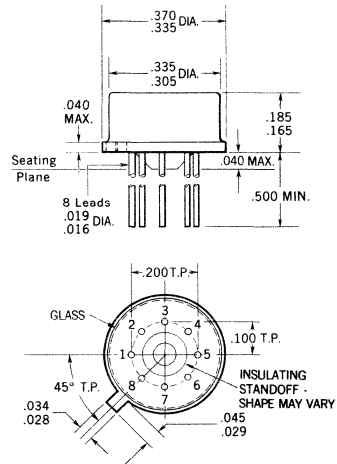
## 24-Lead Flatpak

### 4Q



## JEDEC TO-99 Outline

### 5B



#### NOTES

All dimensions in inches

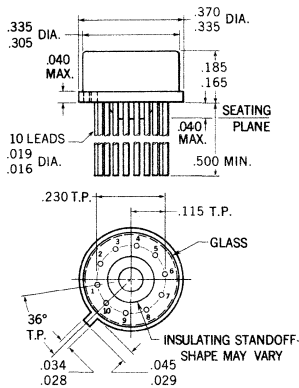
Leads are gold-plated kovar

Package weight is 1.22 gram

Seven leads through, lead No. 4 connected to case  
15 mil kovar header

## JEDEC TO-100 Outline

### 5E



#### NOTES

All dimensions in inches

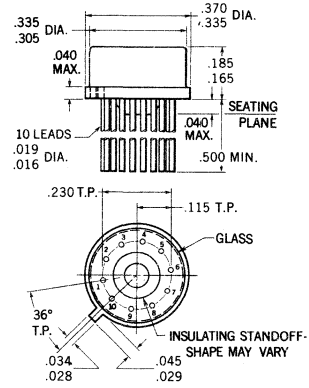
Leads are gold-plated kovar

Package weight is 1.32 gram

Ten leads through

## JEDEC TO-100 Outline

### 5F



#### NOTES

All dimensions in inches

Leads are gold-plated kovar

Package weight is 1.32 gram

Nine leads through, lead No. 5 is connected  
to case

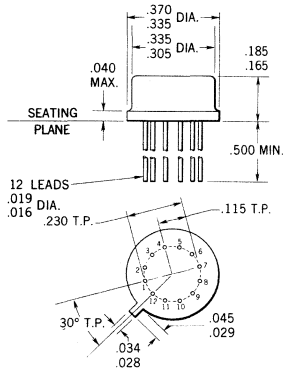
# PACKAGE OUTLINES

Similar\* to  
JEDEC TO-101 Outline

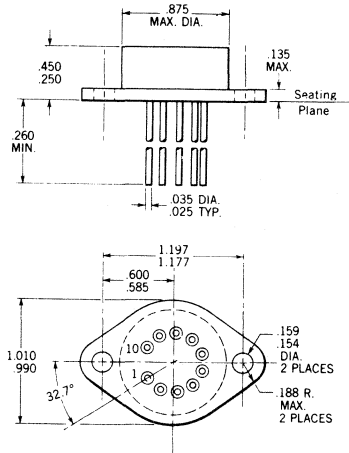
5G

JEDEC TO-3 Outline

5H



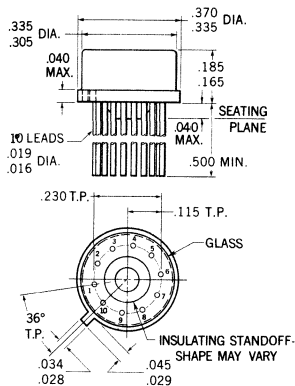
**NOTES**  
All dimensions in inches  
Leads are gold-plated kovar  
Similar to JEDEC TO-101 except for no  
standoff  
Package weight is 1.03 gram



**NOTES**  
All dimensions in inches  
Similar to JEDEC TO-3 except for 10 pins  
on 11 pin circle

JEDEC TO-100 Outline

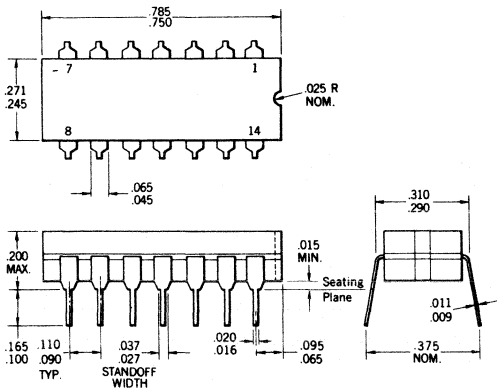
5U



**NOTES**  
All dimensions in inches  
Leads are gold-plated kovar  
Package weight is 1.32 gram  
High RTH package  
Ten leads through

# PACKAGE OUTLINES

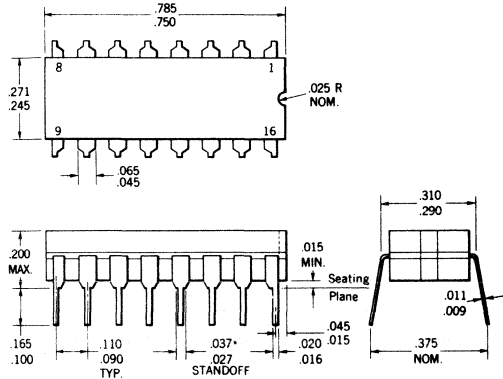
## JEDEC (TO-116) 14-Lead Hermetic Dual In-line



### NOTES

- All dimensions in inches
- Leads are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter lead
- Leads are tin-plated kovar
- Package weight is 2.0 grams

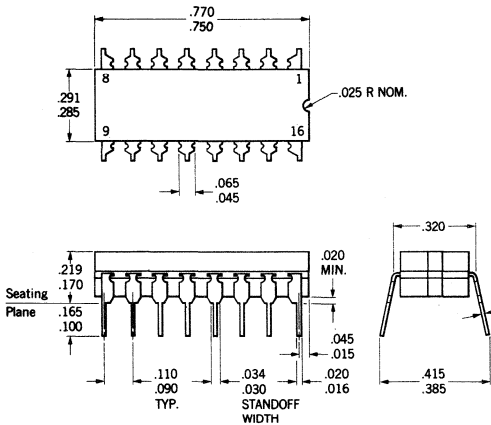
## 4A 16-Lead Hermetic Dual In-line 6B, 6F



### NOTES

- All dimensions in inches
- Leads are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter lead
- Leads are tin-plated kovar
- Package weight is 2.0 grams
- \*The .027/.037 dimension does not apply to the corner leads

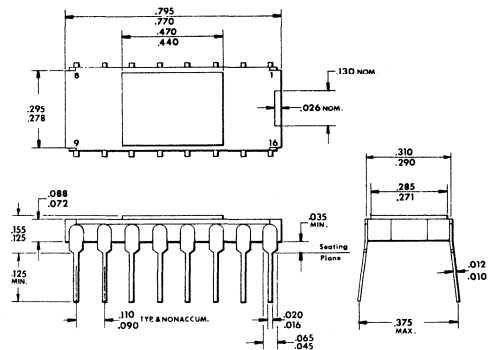
## 16-Lead Ceramic Dual In-Line



### NOTES:

- All dimensions in inches
- Leads are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter lead

## 16-Lead Dual In-Line (Metal Cap)



### NOTES:

- All dimensions in inches
- Leads are intended for insertion in hole rows on .300" centers. They are purposely shipped with "positive" misalignment to facilitate insertion.
- Board-drilling dimensions should equal your practice for .020 inch diameter lead
- Leads are tin-plated kovar

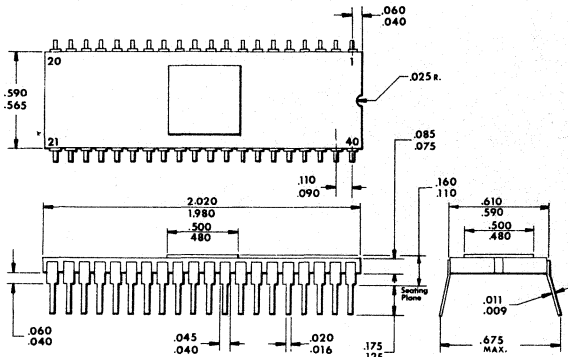
## 6D

## 6E

# PACKAGE OUTLINES

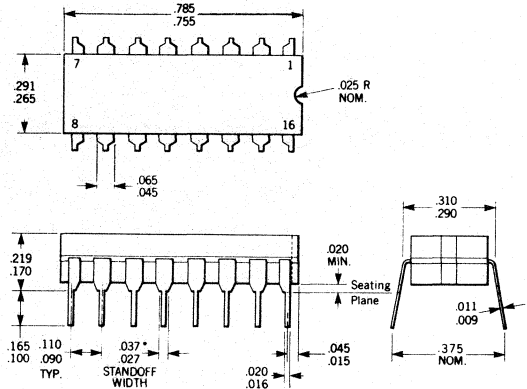
6I

## 40-Lead Dual In-Line Side-Brazed Package (Large Cavity)



6J

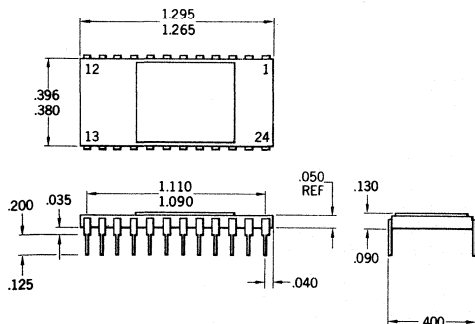
## 16-Lead Dual In-Line



NOTES: All dimensions in inches  
 Leads are intended for insertion in hole rows on .300" centers.  
 They are purposely shipped with "positive" misalignment to facilitate insertion  
 Board-drilling dimensions should equal your practice for .020 inch diameter lead  
 Lead No. 4 is internally grounded

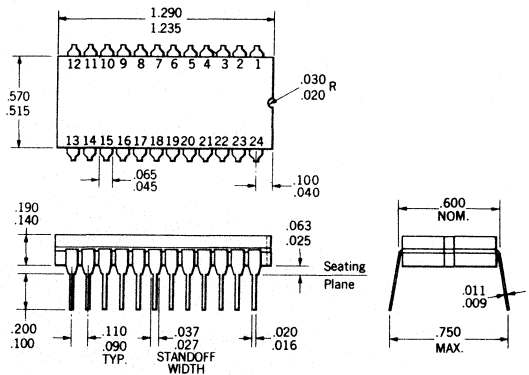
6M

## 24-Lead Dual In-Line (Metal Cap)



6N, 7M

## 24 Lead MSI Dual In-Line



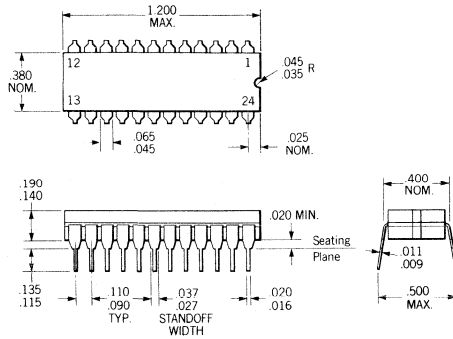
NOTES: All dimensions in inches  
 Leads are tin-plated kovar  
 Package material is alumina  
 Leads are intended for insertion in hole rows on .600 centers  
 They are purposely shipped with "positive" misalignment to facilitate insertion  
 Package weight is 6.5 grams



# PACKAGE OUTLINES

## 24-Lead Plastic Dual In-Line

6Q

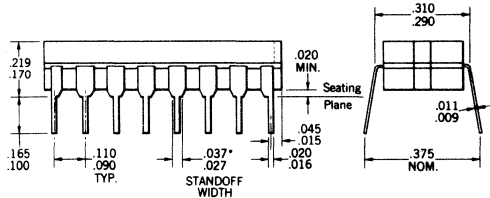
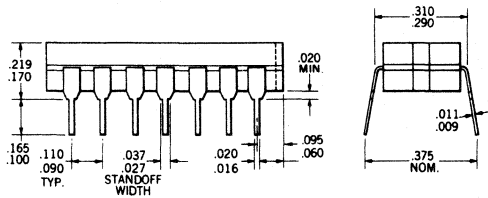
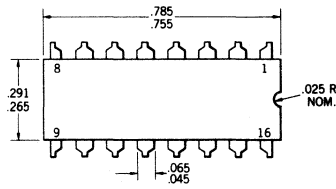
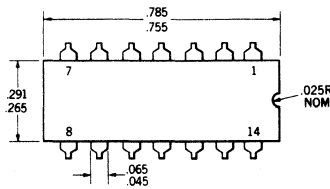


7A

7B

## Similar\* to JEDEC TO-116 Outline

## 16-Lead MSI Dual In-Line



### NOTES

- All dimensions in inches
- Leads are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for a conventional .020 inch diameter lead
- Leads are tin-plated kovar
- Package weight is 2.2 grams

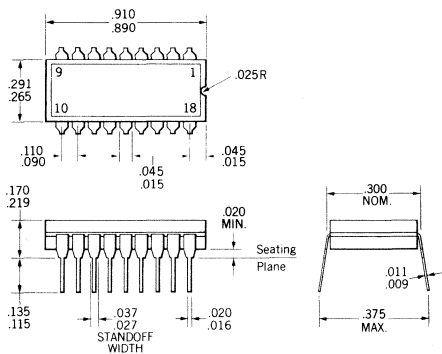
\* JEDEC TO-116 except for package width

### NOTES

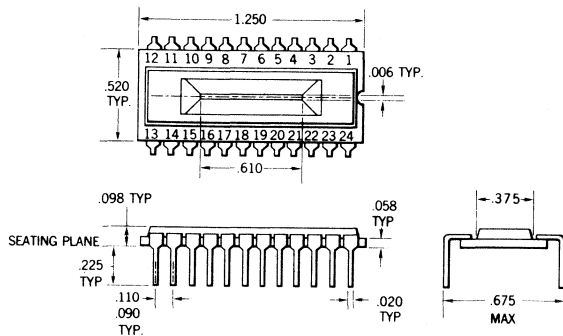
- All dimensions in inches
- Leads are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter lead
- Leads are tin-plated kovar
- Package weight is 2.2 grams
- The .037/.027 dimension does not apply to the corner leads

# PACKAGE OUTLINES

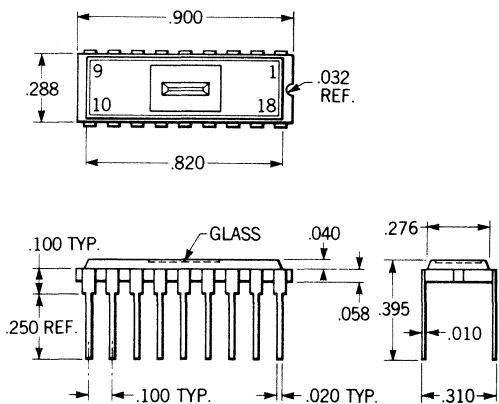
**18-Lead Ceramic Dual In-Line 7D**



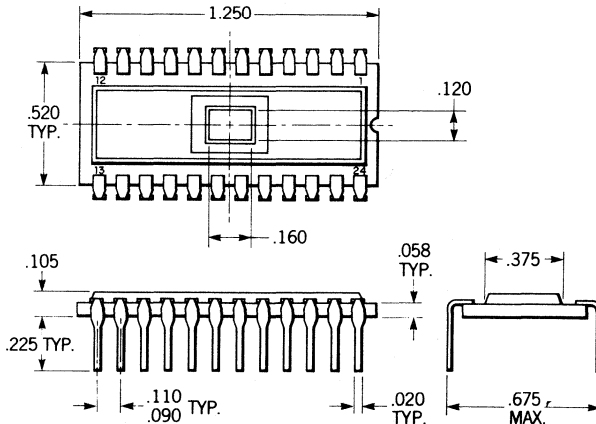
**24-Lead Dual In-Line Seated Glass Optical Window 7E1**



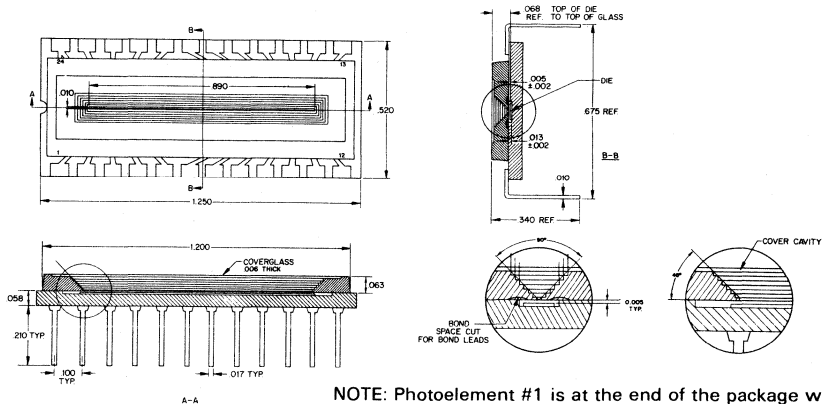
**18-Lead Dual In-Line Seated Glass Optical Window 7E2**



**24-Lead Dual In-Line Seated Glass Optical Window 7E3**



**24-Lead Dual In-Line Seated Glass Optical Window 7E4**



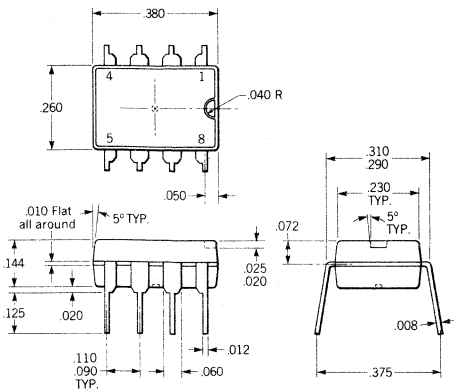
NOTE: Photoelement #1 is at the end of the package with the notch.



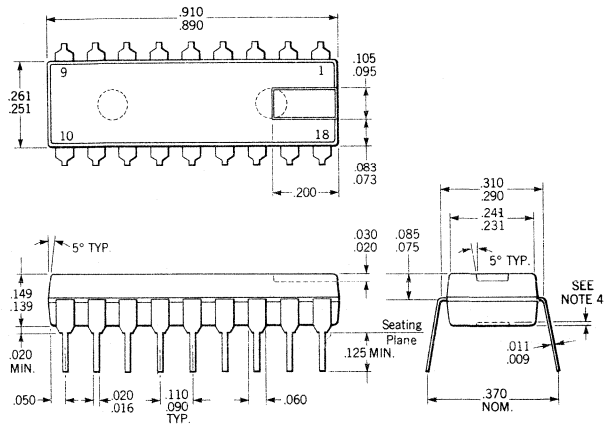


# PACKAGE OUTLINES

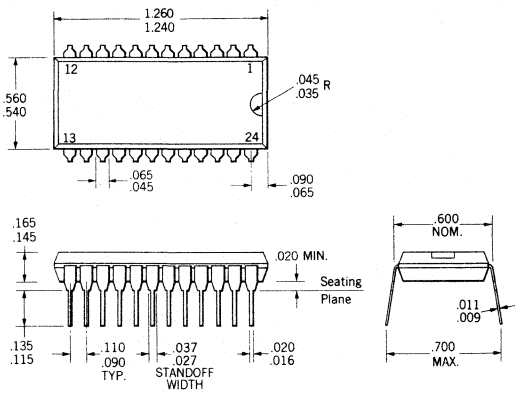
## 8-Lead Plastic Dual In-Line 9L



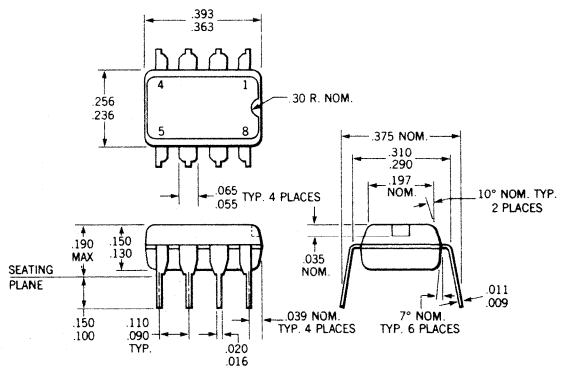
## 18-Lead Plastic Dual In-Line 9M



## 24-Lead Plastic Dual In-Line 9N



## 8-Lead Plastic Dual In-Line 9T



### NOTES:

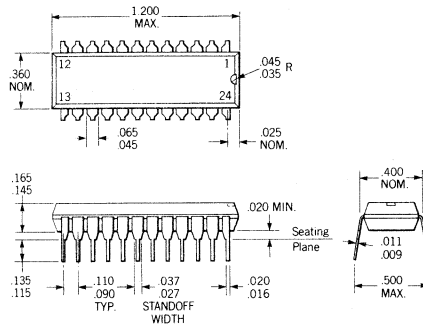
- All dimensions in inches
- Leads are tin or gold-plated kovar
- Package material is plastic
- Leads are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020" diameter lead
- Package weight is 0.6 gram

\*9Q

# PACKAGE OUTLINES

## 24-Lead Plastic Dual In-Line

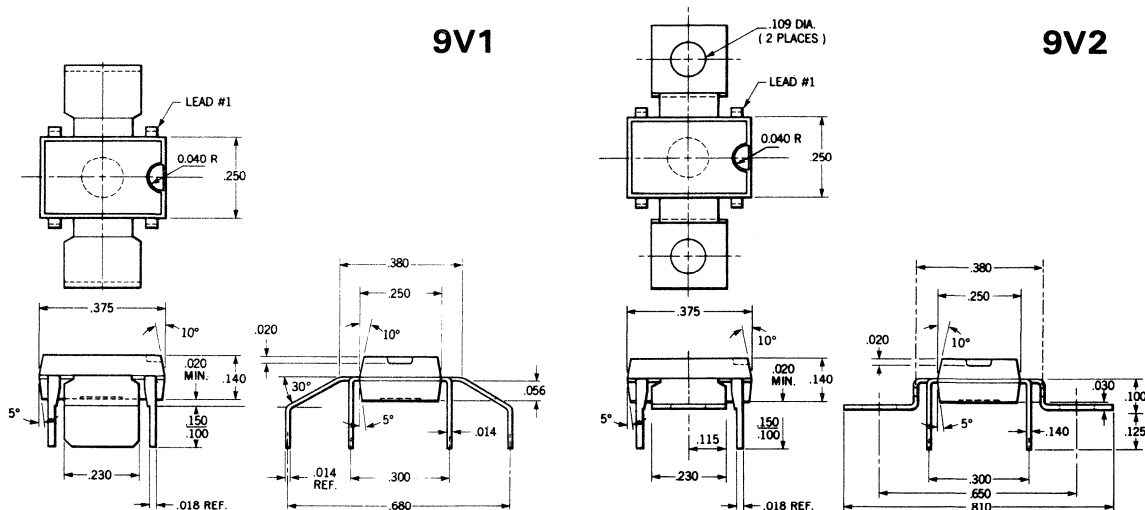
9U



## Mini Power DIP

9V1

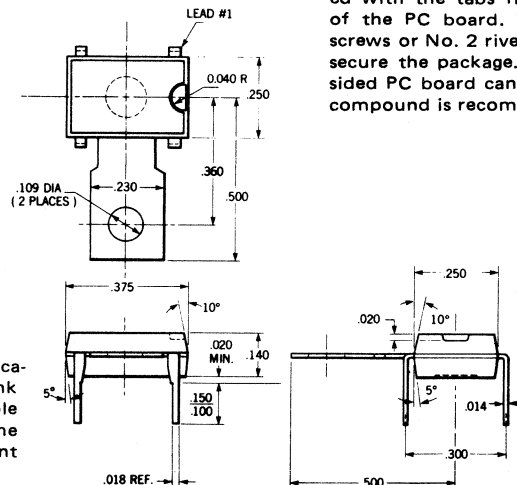
9V2



9V1 package can be soldered to the PC board through 0.230" x 0.020" slots. Double or single sided board may be used.

9V2 package is intended to be mounted with the tabs flush with the top of the PC board. Either No. 2-56 screws or No. 2 rivets may be used to secure the package. Single or double sided PC board can be used. Thermal compound is recommended.

9V3



9V3 package is intended for applications in which an external heat sink is to be used. A No. 2 mounting hole is provided for ease of mounting. The tab may be bent to any convenient angle.

\*9W



**FAIRCHILD**  
SEMICONDUCTOR