harman/kardon

AVR7000

A/V DOLBY DIGITAL RECEIVER

SERVICE MANUAL

CONTENTS

harman/kardon, Inc.
250 Crossways Park Dr.
Woodbury, New York 11797

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ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field effect transistors and semiconductor "chip" components.

The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge build-up or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical change sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material.)
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together or your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES devices.

PRODUCT SAFETY NOTICE

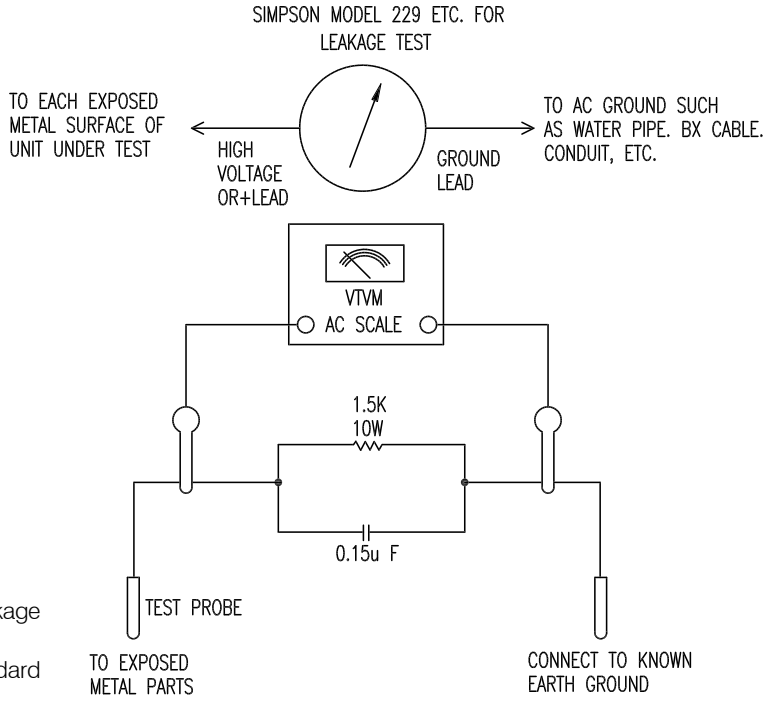
Each precaution in this manual should be followed during servicing.

Components identified with the IEC symbol ⚠ in the parts list are special significance to safety. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings or resistance, wattage, or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before retuming the product to the customer.

LEAKAGE TEST(FOR SERVICE ENGINEERS IN THE U.S.A)

Before returning the unit to the user, perform the following safety checks :

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fish-papers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. Which were removed for the servicing are properly re-installed.
3. Be sure that no shock hazard exists ; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows : Plug the power cord directly Into a 120 volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 ohms, 10watt Resistor paralleled by a 0.15uF capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (See diagram) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.



Technical Specifications

Audio Section

Stereo Mode
Continuous Average Power (FTC)

110 Watts per channel, 20Hz–20kHz,
@ < 0.07% THD, both channels driven into 8 ohms

Five-Channel Surround Modes
Power Per Individual Channel

Front L&R channels:
100 Watts per channel,
@ < 0.07% THD, 20Hz–20kHz into 8 ohms

Center channel:
100 Watts, @ < 0.07% THD, 20Hz–20kHz into 8 ohms

Surround channels:
100 Watts per channel,
@ < 0.07% THD, 20Hz–20kHz into 8 ohms

Input Sensitivity/Impedance	
Linear (High Level)	200mV/47kohms
Signal-to-Noise Ratio (IHF-A)	95dB
Surround System Adjacent Channel Separation	
Analog Decoding (Pro Logic, etc.)	40dB
Dolby Digital (AC-3)	55dB
DTS	55dB
Frequency Response	
@ 1W (+0dB, –3dB)	10Hz–100kHz
High Instantaneous Current Capability (HCC)	±75 Amps
Transient Intermodulation Distortion (TIM)	Unmeasurable
Rise Time	16 µsec
Slew Rate	40V/µsec

FM Tuner Section

Frequency Range	87.5–108MHz
Usable Sensitivity	IHF 1.3 µV/13.2dBf
Signal-to-Noise Ratio	Mono/Stereo 70/68dB
Distortion	Mono/Stereo 0.2/0.3%
Stereo Separation	40dB @ 1kHz
Selectivity	±400kHz, 65dB
Image Rejection	80dB
IF Rejection	90dB
Tuner Output Level	1kHz, ±75kHz Dev 500mV

AM Tuner Section

Frequency Range	520–1720kHz
Signal-to-Noise Ratio	45dB
Usable Sensitivity	Loop 500µV
Distortion	1kHz, 50% Mod 0.8%
Selectivity	±10kHz, 30dB

Video Section

Video Format	NTSC
Input Level/Impedance	1Vp-p/75 ohms
Output Level/Impedance	1Vp-p/75 ohms
Video Frequency Response	5Hz–10MHz (–3dB)

General

Power Requirement	AC 120V/60Hz
Power Consumption	125W idle, 1100W maximum (2 channels driven)
Dimensions (Max)	
Width	17.3 inches (440mm)
Height	7.62 inches (193mm)
Depth	20.43 inches (519mm)
Weight	49 lb (22.3 kg)

Depth measurement includes knobs, buttons and terminal connections.
Height measurement includes feet and chassis.
All features and specifications are subject to change without notice.

DETAILED SPECIFICATION FOR RECEIVER AVR7000 (120V)

PARAMETERS

Measuring methods are based on IHF and IEC standard 268-3

Measurement conditions,unless otherwise noted :

Output resistive load = (8) ohms / All channels loaded.

Tone Off or Tone(Bass,Treble), Balance, EQ control : Center Position , Other SW's : OFF, Volume:Max

Nominal input level : 200mV for general purpose inputs

Power figures should be kept minimum 10min., between 15 and 35°C.

Terminator : 1kohm for general purpose inputs

All Voltage Measurements are made with RMS detector, unless otherwise specified.

Filter : IHF-A filter

R/O = Rated Output, which is 100 W into 8 ohm resistive load, for both Stereo and 6 CH DIRECT inputs.

UUT= Unit Under Test.

Power supply : 120 V , 60 Hz

FRONT AMP SECTION

SUB-WOOFER SPKR:NO *SPKR LEVEL:ALL 0dB

NO	DESCRIPTION	Y/N	INPUT	FREQ.	REMARK	UNIT	LIMIT	NOMINAL		
1	INPUT SENSITIVITY	Y	CD	1kHz	To obtain rated Power	mV	200+/-30	**200+/-20**		
		Y	6 CH DIRECT	1kHz	To obtain rated Power	mV				
2	CHANNEL BALANCE	Y	6 CH DIRECT	1kHz	Vin=100mV, Vol at Max TO -40dB	dB	+/-3	+/-2		
		Y		1kHz	Vin=100mV, Volt at -40 TO -60dB	dB	+/-6	+/-4		
3	DAMPING FACTOR	Y	6 CH DIRECT	1kHz	Zout at a current level equivalent to 10 dB below rated Power current level. 20-20kHz, 8 ohm load		>100			
4	HICC	Y	6 CH DIRECT	10 KHz	10 KHz single cycle sine impulse. 1 impulse/sec. Using 0.1 ohm, 1%, 250 W, non inductive load	A	>60	**>65**		
5	RESIDUAL NOISE	Y	Should be met by all Stereo Inputs	1kHz	VOL at min. 10Hz-22KHz BW, peak detector, all inputs terminated w/ 1 Kohm	mVpk	<1.2mV	**<1.0mV**		
		Y	Should be met by all Stereo Inputs	1kHz	VOL at max. 10Hz-22KHz BW, peak detector, all inputs terminated w/ 1 Kohm	mVpk	<3mVrms	**<1.5mVrms**		
		Y	Should be met by all Stereo Inputs	1kHz	VOL at max. 10Hz-22KHz BW, RMS , non-weighted, all inputs terminated w/ 1 Kohm	mVrms	<1mVrms	**<0.75mVrms**		
		Y	Should be met by all Stereo Inputs	1kHz	VOL at max. 10Hz-22KHz BW, RMS , 'A Weighted', all inputs terminated w/ 1 Kohm	mVrms	<0.7mVrms	**<0.5mVrms**		
		Y	Should be met by all Stereo Inputs	1kHz	VOL at max. 10Hz-22KHz BW, RMS , 'A Weighted', all inputs left un-terminated	mVrms	<0.7mVrms	**<0.5mVrms**		
	RESIDUAL NOISE	Y	6 CH DIRECT	1kHz	VOL at min. 10Hz-22KHz BW, peak detector, all inputs terminated w/ 1 Kohm	mVpk	<1.2mVrms	**<1.0mVrms**		
		Y	6 CH DIRECT	1kHz	VOL at max. 10Hz-22KHz BW, peak detector, all inputs terminated w/ 1 Kohm	mVpk	<3mVrms	**<1.5mVrms**		
		Y	6 CH DIRECT	1kHz	VOL at max. 10Hz-22KHz BW, RMS, non-weighted, all inputs terminated w/ 1 Kohm	mVrms	<1mVrms	**<0.75mVrms**		
		Y	6 CH DIRECT	1kHz	VOL at max. 10Hz-22KHz BW, RMS, 'A Weighted', all inputs terminated w/ 1 Kohm	mVrms	<0.7mVrms	**<0.5mVrms**		
		Y	6 CH DIRECT	1kHz	VOL at max. 10Hz-22KHz BW, RMS, 'A Weighted', all inputs left un-terminated	mVrms	<0.7mVrms	**<0.5mVrms**		
6	TOTAL HARMONIC DISTORTION	Y	Should be met by all Stereo Inputs	20Hz-20 KHz, Power out =Rated Power - 1 dB	Vol at Max, 10 Hz-80KHz Meas BW.	%	<0.08	**<0.05**		
	TOTAL HARMONIC DISTORTION	Y	6 CH DIRECT	20Hz-20 KHz, Power out =Rated Power - 1 dB	Vol at Max, 10 Hz-80KHz Meas BW.	%	<0.08	**<0.05**		
	TOTAL HARMONIC DISTORTION	Y	Should be met by all Stereo Inputs	20Hz-10 KHz, Power out =1 W	Vol at Max, 10 Hz-22 KHz Meas BW.	%	<0.08	**<0.05**		
	TOTAL HARMONIC DISTORTION	Y	6 CH DIRECT	20Hz-10 KHz, Power out =1 W	Vol at Max, 10 Hz-22 KHz Meas BW.	%	<0.08	**<0.05**		
7	CONTINUOUS AVERAGE POWER: A) Stereo, 8 Ohm load, Fl and FR driven.	Y	CD	20 Hz	at 0.1% THD, 10 Hz-80 KHz measurement BW. Volume at Max.	W	>110	**>115**		
		Y	CD	1kHz	at 0.1% THD, 10 Hz-80 KHz measurement BW. Volume at Max.	W	>110	**>115**		

		Y	CD	20 KHz	at 0.1% THD, 10 Hz-80 KHz measurement BW.Volume at Max.	W	>110	**>115**		
	CONTINUOUS AVERAGE POWER: B) All 5 Channels Driven, 8 ohms	Y	6 CH DIRECT	20 Hz	at 0.1% THD, 10 Hz-80 KHz measurement BW.Volume at Max.	W	>100	**>105**		
		Y	6 CH DIRECT	1kHz	at 0.1% THD, 10 Hz-80 KHz measurement BW.Volume at Max.	W	>100	**>105**		
		Y	6 CH DIRECT	20 KHz	at 0.1% THD, 10 Hz-80 KHz measurement BW.Volume at Max.	W	>100	**>105**		
8	IMD(SMPTE)	Y	6 CH DIRECT	Sine wave # 1 f =60Hz. Ampl=4, sine wave # 2 f= 7 KHz. Ampl=1	30 step Sweep of Gen to Drive to Pk-Pk value of sine rated power	%	< 0.15	< 0.09		
9	DIM	Y	6 CH DIRECT	Square wave f =3.15KHz. Ampl=4, sine f=15 KHz. Ampl=1	30 step Sweep of Gen to Drive to Pk-Pk value of sine rated power	%	< 0.15	< 0.09		
10	S/N RATIO,IHF-A FILTER	Y	All Stereo Inputs	1kHz	Referred to Rated Output Power, Vol at max, all inputs terminated w/ 1 Kohm.	dB	>92	**>95**		
		Y	All Stereo Inputs	1kHz	Referred to 1W Out. Vol at max, all inputs terminated w/ 1 Kohm.	dB	>72	**>75**		
		Y	All Stereo Inputs	1kHz	Referred to Rated Output Power, Vol at max, all inputs left un-terminated	dB	>92	**>95**		
		Y	6 CH DIRECT	1kHz	Referred to Rated Output Power, Vol at max, all inputs terminated w/ 1 Kohm.	dB	>92	**>95**		
		Y	6 CH DIRECT	1kHz	Referred to Rated Output Power, Vol at max, all inputs left un-terminated.	dB	>92	**>95**		
		Y	6 CH DIRECT	1kHz	Referred to 1W Out. Vol at max, all inputs terminated w/ 1 Kohm.	dB	>74	**>77**		
11	CHANNEL SEPARATION: Zterm = 1KW/1000pF	Y	CD	100Hz	Vol at Max, Gen amplitude adjusted to obtain R/O-3dB, measured w/ AP's Xtalk mode. Driving every channel individually. Undriven channels should be terminated w/ 1 kOhm.	dB	>65	**>70**		
		Y		1kHz	Vol at Max, Gen amplitude adjusted to obtain R/O-3dB, measured w/ AP's Xtalk mode. Driving every channel individually. Undriven channels should be terminated w/ 1 kOhm.	dB	>65	**>70**		
		Y		10kHz	Vol at Max, Gen amplitude adjusted to obtain R/O-3dB, , measured w/ AP's Xtalk mode. Driving every channel individually. Undriven channels should be terminated w/ 1 kOhm.	dB	>55	**>65**		
	CHANNEL SEPARATION: Zterm = 1KW/1000pF	Y	6 CH DIRECT	100Hz	Vol at Max, Gen amplitude adjusted to obtain R/O-3dB, measured w/ AP's Xtalk mode. Driving every channel individually. Undriven channels should be terminated w/ 1 kOhm.	dB	>65	**>70**		
		Y		1kHz	Vol at Max, R/O-3dB, measured w/ AP's Xtalk mode. Driving every channel individually. Undriven channels should be terminated w/ 1 kOhm.	dB	>65	**>70**		
		Y		10kHz	Vol at Max, Gen amplitude adjusted to obtain R/O-3dB, , measured w/ AP's Xtalk mode. Driving every channel individually. Undriven channels should be terminated w/ 1 kOhm.	dB	>55	**>65**		
12	FUNCTION CROSSTALK, (Measured on all Channels)	Y	All Analog Stereo and 6 CH DIRECT Inputs	1 kHz	Volume at Max. Apply Sinewave Signal Gen amplitude to the tested input, to obtain R/O-3dB at the speaker outputs. Record the output level as the reference output. Then, scroll thru the other possible stereo inputs, and measure the output level. Compute t	dB	>70	**>75**		

		Y	All Analog Stereo and 6 CH DIRECT Inputs	10 kHz	Volume at Max. Apply Sinewave Signal Gen amplitude to the tested input, to obtain R/O-3dB at the speaker outputs. Record the FL and FR speaker output level as the reference output. Scroll thru other stereo inputs, and measure the output level. Compute th	dB	> 55	**>75**		
		Y	AM/FM Tuner Input	1 KHz	Apply an FM Stereo RF input thru a 50->75 ohm dummy antenna (98 MHz carrier, 75 KHz modulation, 1 KHz tone, 72 dBuV level). Then set UUT to FM Stereo , 98 MHz. Set Volume control to 10 dB below Max. Record the FL and FR speaker output level as the refere					
			Full scale Digital Input		TBD					
19	FTC POWER 20Hz~20kHz, 0.08 % THD, 8 ohm load	Y	CD	20 Hz-20 KHz	1 hour preconditioning by driving all channels to 1/3 rated power. 25 oC. 10 Hz-80KHz Meas BW. ACV=117VRMS, 60 Hz	W	>100	**>105**		
21	DYNAMIC POWER OUTPUT	Y	CD	1kHz	20 cycle burst- 480 msec off. Sweep ampl to reach clipping point.	W	>130	**> 135**		
22	FREQUENCY RESPONSE (-3dB)	Y	All Analog Stereo and 6 CH DIRECT Inputs		Ref to 1W, 1KHz	Hz	10 Hz-100 KHz	**5 Hz-150 KHz**		
23	POWER BANDWIDTH - 3dB	Y	CD		THD 0.08%	Hz~kHz	20-60Khz			
24	SLEW RATE	Y	CD	20 KHz Square Wave	Drive unit to 40 Vpp. Mesure delta amplitude and delta time. Compute V/usec	V/usec	>12	**>13**		
25	SLEW-FACTOR	Y	6 CH DIRECT/ALL STEREO INPUTS	1 KHz reference	Volume at Max. Drive channel to R/O. Then sweep frequency until finding 1 % THD+N reading. Record frequency. Ratio of freq @ 1 % THD+N / 20 KHz is the Slew Factor		>5	**>5.5**		
26	INPUT IMPEDANCE	Y	6 CH DIRECT/ALL STEREO INPUTS	1kHz		kohm	47 Kohm			
27	HEADPHONE OUTPUT	Y	CD	1kHz	Volume at Max	mV	1.2 +/- 0.4	1.2 +/- 0.2		
	H/P = 32ohms		(200)mV	1kHz		mV				

3	S/N RATIO		VCR1(1Vp-p)	1MHz		dB	40	**45**		
	COMPONENT VIDEO									
1	OUTPUT LEVEL at 75ohms									
	"Y" LEVEL(GREEN)		VCR1(1Vp-p)			Vp-p	1 +/- 20mV	**1 +/- 10mV**		
	"Cb" LEVE(BLUE)		VCR1(0.678Vp-p)				0.678+/-10mV	0.678+/-5mV		
	"Cr" LEVE(RED)		VCR1(0.678Vp-p)				0.678+/-10mV	0.678+/-5mV		

TUNER SECTION

Measuring methods in confirmity with IEC standard 315
Measurements condition FM : Radio frequency = 98.1MHz, Audio frequency = 1kHz
Reference level = 1mV on (75ohms , 300ohms)
Deviation : MONO = ?5kHz, Stereo = ?7.5kHz?.5kHz
MONO = ?0kHz, Stereo = ?0kHz?.5kHz
Test Point : TP 1 = 90.1MHz, TP 2 = 98.1MHz, TP 3 = 106.1MHz
Filter = B.P.F at STEREO

FM SECTION

NO	DESCRIPTION		UNIT	LIMIT L/R	NOMINAL L/R	MEAS.	NEEDED
* 1	TUNING RANGE	LOW ~ HIGH	MHz	**87.5~107.9M**			
	STEP	AUTO/Man.	kHz	**100**			
* 2	USABLE SENSITIVITY	TP 1	dBf	> 17.2	**> 14.2**		
	S/N = (26,30)dB	TP 2	dBf	> 17.2	**> 14.2**		
		TP 3	dBf	> 17.2	**> 14.2**		
3	FULL LIMITING SENSE	OUTPUT = -3dB	dBf	> 15.2	**> 12.2**		
* 4	AUTO STOP LEVEL		dBf	33.2 +/- 6	**33.2 +/- 5**		
* 5	AUTO SCAN ERROR		kHz	+/- 15/20	**+/- 20/25**		
* 6	S/N RATIO	MONO	dB	> 65	**> 70**		
	IHF-A FILTER	STEREO	dB	> 63	**> 68**		
* 7	TOTAL HARMONIC DISTORTION	MONO	%	> 0.5	**> 0.3**		
		STEREO	%	> 0.8	**> 0.5**		
8	(50,46)dB QUIETING SENS.	MONO	dBf	> 23.2	**> 20.2**		
		STEREO	dBf	> 48.3	**> 45.3**		
* 9	CHANNEL SEPARATION	100Hz	dB	> 35	**> 40**		
		1kHz	dB	> 40	**> 45**		
		10kHz	dB	> 30	**> 35**		
10	FREQUENCY RESPONSE AT ?1,-3dB		Hz	20~15K	**10~15.3K**		
11	SPURIOUS RESPONSE		dB	> 80	**> 90**		
12	IF REJECTION	TP 1	dB	> 70	**> 80**		
13	IMAGE REJECTION	TP 3	dB	> 65	**> 70**		
14	AM REJECTION RATIO		dB	> 50	**> 55**		
15	RF INTERMODULATION		dB				
16	CAPTURE RATIO		dB	> 25.	**> 2**		
17	ALTERNATIVE CH SELECTIVITY	?(400)kHz	dB	> 65	**> 70**		
* 19	OUPUT LEVEL MONO		mV	500 +/- 150	**500 +/- 100**		

AM SECTION

Measuring methods in confirmity with IEC standard 315
Measurements condition AM - MW : Radio frequency = 1000/999kHz, Audio frequency = 400Hz
LW : Radio frequency = 207kHz, Audio frequency = 400Hz
Reference level = 5mV/m,10mV/m on 50ohms
Modulation = 30%
Test Point : MW TP1 = (600)kHz TP2 = (1000)kHz TP3 = (1400)kHz
LW TP1 = 162kHz, TP2 = 207kHz, TP3 = 252kHz

NO	DESCRIPTION		UNIT	LIMIT L/R	NOMINAL L/R		
* 1	TUNING COVER RANGE	LOW ~ HIGH MW	kHz	**520~1710**			
		LW	kHz				
	STEP	AUTO/Man.	kHz	**10**			
* 2	USABLE SENSITIVITY	MW TP 1	uV/m	> 800	**> 500**		
		TP 2	uV/m	> 800	**> 500**		
	S/N = 20dB	TP 3	uV/m	> 800	**> 500**		
		LW TP 1	uV/m				
		TP 2	uV/m				
		TP 3	uV/m				

3	S/N RATIO	MW	dB	> 40	**> 45**		
	INPUT=10mV/m	LW	dB				
4	TOTAL HARMONIC DISTORTION		%	> 1.5	**> 0.8**		
5	OVER LOAD DISTORTION 5mV 80% MOD		%	> 10	**> 5**		
6	FREQUENCY RESPONSE at -6dB	MW	Hz	100~2K	**80~2.3K**		
		LW	Hz				
7	SELECTIVITY 10kHz/9kHz	MW	dB	> 20	**> 25**		
		LW	dB				
8	AGC FIGURE OF MERIT	INPUT 100mV	dB	> 50	**> 55**		
9	IMAGE REJECTION	MW = TP 3	dB	> 30	**> 35**		
		LW = TP 3	dB				
10	WHISTLE MODULATION	2IF	%	> 15	**> 10**		
	INPUT = 1mV/m	3IF	%	> 15	**> 10**		
11	AUTO STOP LEVEL	MW	uV/m	800 (+/- 6dB)	**800 (+/- 5dB)**		
		LW	uV/m				
* 12	TUNED LEVEL	MW	uV/m	800 (+/- 6dB)	**800 (+/- 5dB)**		
		LW	uV/m				
* 13	OUTPUT LEVEL		mV	120 +/- 40	**120 +/- 30**		

Measurements conditions,unless otherwise noted : Input Function : DVD
Digital Input Mode : OPTICAL1
Speker Mode : Front/Center/Surround:LARGE, Sub-Woofer:YES
Main Vol Position : 1 Vrms Output Position
Trim Vol Position : All "0 dB"
Test Point : Pre-Out
Test disc : DOLBY TEST DVD VERSION 1.0
Center, Rear delay : 0 ms

AC-3 SECTION

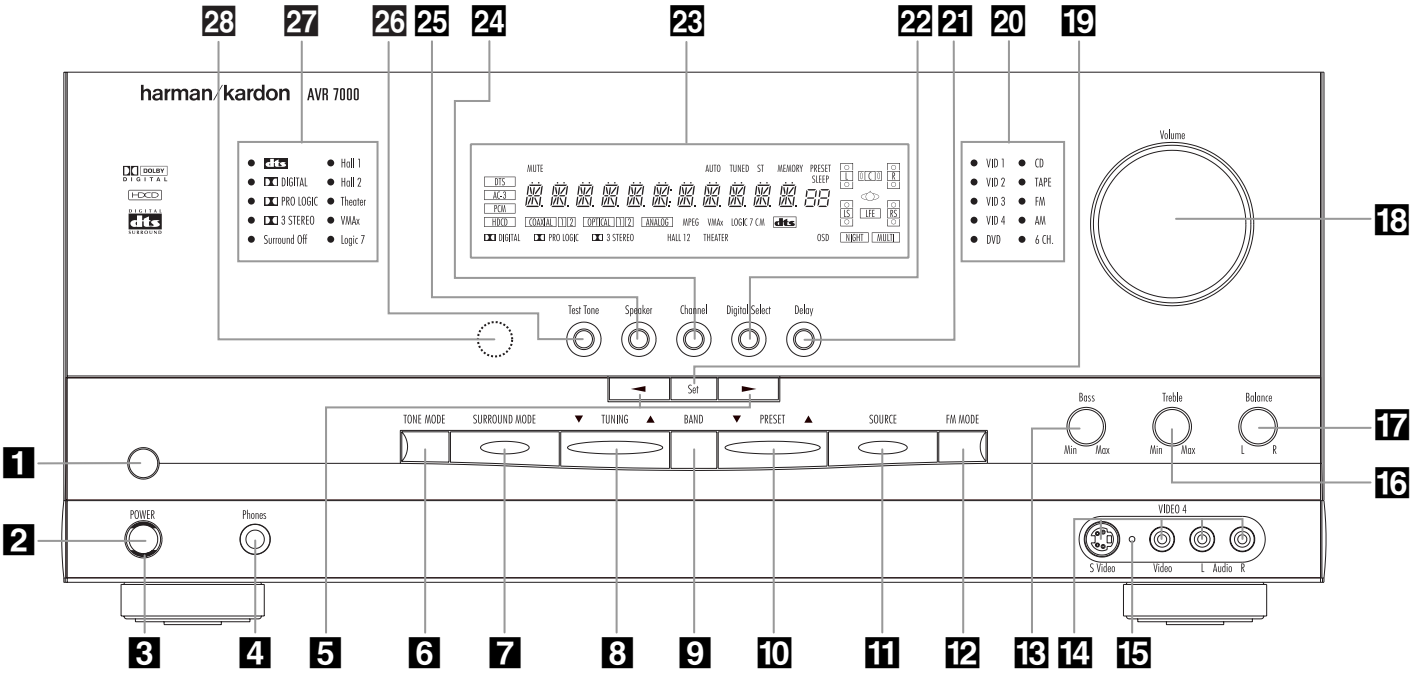
NO		DESCRIPTION			SIGNAL	INPUT	CHAPTER	UNIT	LIMIT	NOMINAL	MEASUREMENT L	C	R	LS	RS	SW
*	1	Output Level			1kHz	0dB	65/6/7/8/9	V	1.09 +/- 0.3	1.0 +/- 0.2						
		Main Vol Level : "60"Position			30Hz	0dB	70	V	3.3 +/- 0.5	3.3 +/- 0.3						
*	2	Output Level			1kHz	0dB	65/6/7/8/9	mV	> 0.2	> 0.15						
		at MIN.VOL.			30Hz	0dB	70	mV	> 0.2	> 0.15						
*	3	S/N Ratio	PRE-OUT : 100mV "A"Weighted		1kHz	-20dB	33,34,35	dB	60	65						
			PRE-OUT : 1V Unweighted		30Hz	0dB	32	dB	> 60	> 65						
*	4	T.H.D	PRE-OUT : 100mV		1kHz	-20dB	6	%	> 0.5	> 0.3						
			PRE-OUT : 1V		30Hz	0dB	18	%	> 0.3	> 0.2						
*	5	Channel Separation	L		1kHz	0dB	65	dB	Other Channel							
			C		1kHz	0dB	66	dB	> 60	> 65						
			R		1kHz	0dB	67	dB	L <--> R							
			LS		1kHz	0dB	68	dB	> 50	> 55						
			RS		1kHz	0dB	69	dB	ALL <--> Sub-Woofer							
			SW		30Hz	0dB	70	dB	> 30	> 35						
*	6	Frequency Response	Sub-woofer:YES		30Hz (1kHz)	0dB	71(65/6/7/8/9:ref)	dB	< - 15	< - 20						
		at M-Vol Level:"60"	nt/Center/Rear:SMALL		1kHz (30Hz)	0dB	60 (71 :ref)	dB	< - 30	< - 35						
			Sub-woofer:NO "		30Hz (1kHz)	0dB	72 (60 :ref)	dB	5.5 +/- 1.5	5.5 +/- 1						
*	7	Dialog Normalization			1kHz	0dB	62	dB	Decrease 1dB each							
		Main Vol Level : "60"Position			100Hz	0dB	62	dB	two secend							

NO		DESCRIPTION			SIGNAL	INPUT	CHAPTER	UNIT	LIMIT	NOMINAL	L	C	R	LS	RS	SW
*	8	2CH Down Mix level	AC-3 mode													
		Main Vol Level :	Center/Surround :no		1kHz	0dB	38	dB	-3.0 +/- 0.5	-3.0 +/- 0.3						
		"60"Position	Sub-woofer : NO													
*	9	Channel across level	C-> L, R Center 0dB		1kHz	0dB	66	dB	-3 +/- 1	-3 +/- 0.5						
		Main Vol level	Ls-> L Ls 0dB Setting		1kHz	0dB	68	dB	-3 +/- 1	-3 +/- 0.5						
		"60" Position	Rs-> R Rs 0dB Setting		1kHz	0dB	69	dB	-3 +/- 1	-3 +/- 0.5						
			SubWoofer -> L, R		30Hz	0dB	70	dB	-4.5 +/- 2	-4.5 +/- 1						
*	10	LFE Signal across level	L/C/R/Ls/Rs -> Sub Out		30Hz	0dB	71	V	6 +/- 1.5	6 +/- 1.0						
		Main Vol level	L/C/R/Ls/Rs -> Sub Out		30Hz	0dB	71	dB	2.5 +/- 1	2.5 +/- 0.5						
		"60" Position	C/Ls/Rs -> L, R L:0dB C:No S:No		30Hz	0dB	71	dB	-3 +/- 1	-3 +/- 0.5						
*	11	LFE Signal across level	L/C/R/Ls/Rs/LFE-> Sub Out (1)		30Hz	0dB	72	V	2.5 <+/- 0.8	2.5 <+/- 0.5						

DIGITAL(AC3) Section

		Main Vol level	L/C/R/Ls/Rs/LFE ->Sub Out		30Hz	0dB	72	dB	**15 < +/- 2**	**15 < +/- 1**						
		"60" Position	C/Ls/Rs/LFE -> L, R :Sub: No		30Hz	0dB	72	dB	**-6.5 < +/- 3**	**-6.5 < +/- 2**						
*	12	Dynamic Range	Main Vol Level : "50" Position		1KHz	0dB	60	dB	**-22 < +/- 2**	**-22 < +/- 1**						
			Sub-woofer : Yes		30Hz	0dB	70	dB	**+/- 1**	**+/- 0.5**						

Front Panel Controls



1 Main Power Switch
2 System Power Control
3 Power Indicator
4 Headphone Jack
5 Selector Buttons
6 Tone Mode
7 Surround Mode Selector
8 Tuning Selector
9 Tuner Band Selector
10 Preset Stations Selector
11 Input Source Selector
12 FM Mode Selector
13 Bass Control
14 Video 4 Input Jacks
15 Video 4 Status Indicator
16 Treble Control
17 Balance Control
18 Volume Control
19 Set Button
20 Input Indicators
21 Delay
22 Digital Input Selector
23 Information Display
24 Channel Select Button
25 Speaker Select Button
26 Test Tone Selector
27 Surround Mode Indicators
28 Remote Sensor Window

1 Main Power Switch: Press this button to apply power to the AVR 7000. When the switch is pressed in, the unit is placed in a Standby mode, as indicated by the amber LED **3** surrounding the **System Power Control 2**. This button MUST be pressed in to operate the unit. To turn the unit off and prevent the use of the remote control, this switch should be pressed until it pops out from the front panel so that the word "OFF" may be read at the top of the switch.

NOTE: In normal operation this switch is left in the "ON" position.

2 System Power Control: When the **Main Power Switch 1** is "ON," press this button to turn on the AVR 7000; press it again to turn the unit off. Note that the **Power Indicator** surrounding the switch **3** will turn green when the unit is on.

3 Power Indicator: This LED will illuminate in amber when the unit is in the Standby mode to signal that the unit is ready to be turned on. When the unit is in operation, the indicator will turn green.

4 Headphone Jack: This jack may be used to listen to the AVR 7000's output through a pair of headphones. Be certain that the headphones have a standard 1/4" stereo phone plug. Note that the main room speakers will automatically be turned off when the headphone jack is in use.

5 Selector Buttons: When you are establishing the AVR 7000's configuration settings, use these buttons to select from the choices available, as shown in the **Information Display 23**.

6 Tone Mode: Pressing this button enables or disables the Bass and Treble tone controls. When the button is pressed so that the words TONE IN appear in the Main Information Display **23**, the settings of the Bass **13** and Treble **16** controls will affect the output signals. When the button is pressed so that the words TONE OUT appear in the Main Information Display **23**, the output signal will be "flat," without any bass or treble alteration.

Front Panel Controls

7 Surround Mode Selector: Press this button to change the surround mode by scrolling through the list of available modes. Note that depending on the type of input, some modes are not always available. (See page 25 for more information about surround modes.)

8 Tuning Selector: Press the left side of the button to tune lower frequency stations and the right side of the button to tune higher frequency stations. When a station with a strong signal is reached, the **TUNED** indicator **U** will illuminate in the **Information Display 23** .

To tune manually, tap the button lightly and note that the tuner will step up one frequency increment per button press. When the button is held for a few seconds you will note that the unit will quickly search the frequency band. Release it once the fast tuning starts and the tuner will automatically scan for the next station with an acceptable signal and then stop.

9 Tuner Band Selector: Pressing this button will automatically switch the AVR to the Tuner mode. Pressing it again will switch between the AM and FM frequency bands. (See page 29 for more information on the tuner.)

10 Preset Stations Selector: Press this button to select stations that have been entered into the preset memory. (See page 29 for more information on tuner programming.)

11 Input Source Selector: Press this button to change the input by scrolling through the list of input sources.

12 FM Mode Selector: Press this button to select Auto or Manual tuning. When the button is pressed so that the **AUTO** Indicator **V** lights, the tuner will search for the next station with an acceptable signal when the **Tuning Selector 8 24 E** is pressed. When the button is pressed so that the **AUTO** Indicator **V** is not lit, each press of the **Tuning Selector 8 24 E** will increase the frequency. (See page 29 for more information on using the tuner.)

13 Bass Control: Turn this control to modify the low frequency output of the left/right channels by as much as ±10dB. Set this control to a suitable position for your taste or room acoustics.

14 Video 4 Input Jacks: These audio/video jacks may be used for temporary connection to video games or portable audio/video products such as camcorders and portable audio players. In normal use, they are an input that may be selected by pressing the **Input Source Selector 11** on the front panel, or the **Video 4 Selector** on either remote **13 C**. These jacks may also be configured as an audio/video output, that will make a dub of the currently selected source when connected to an external recorder or camcorder. To change the jacks from their default setting as an input to an output, use the Advanced Menu in the OSD system. (See page 31 for more information on using the Video 4 jacks as a record output.)

15 Video 4 Status Indicator: This indicator will normally be green to show that the Video 4 jacks are operating as an input source. When the jacks have been configured as an output, the indicator will turn red to show that they are being used for recording. (See page 31 for more information on using the Video 4 jacks.)

16 Treble Control: Turn this control to modify the high frequency output of the left/right channels by as much as ±10dB. Set this control to a suitable position for your taste or room acoustics.

17 Balance Control: Turn this control to change the relative volume for the front left/right channels.

NOTE: For proper operation of the surround modes this control should be at the midpoint or "12 o'clock" position.

18 Volume Control: Turn this knob clockwise to increase the volume, counterclockwise to decrease the volume. If the AVR is muted, adjusting volume control will automatically release the unit from the silenced condition.

19 Set Button: When making choices during the setup and configuration process, press this button to enter the desired setting as shown in the **Information Display 23** into the AVR 7000's memory. The set button may also be used to change the display brightness. (See page 31.)

20 Input indicators: A green LED will light in front of the input that is currently being used as the source for the AVR 7000.

21 Delay: Press this button to begin the sequence of steps required to enter delay time settings. (See pages 20–21 for more information on delay times.)

22 Digital Input Selector: When playing a source that has a digital output, press this button to select between the **Optical 19** and **Coaxial 18 Digital** inputs. (See pages 27–29 for more information on digital audio.)

23 Information Display: This display delivers messages and status indications to help you operate the receiver. (See pages 7–8 for a complete explanation of the Information Display.)

24 Channel Select Button: Press this button to begin the process of trimming the channel output levels using an external audio source. (For more information on output level trim adjustment, see page 29.)

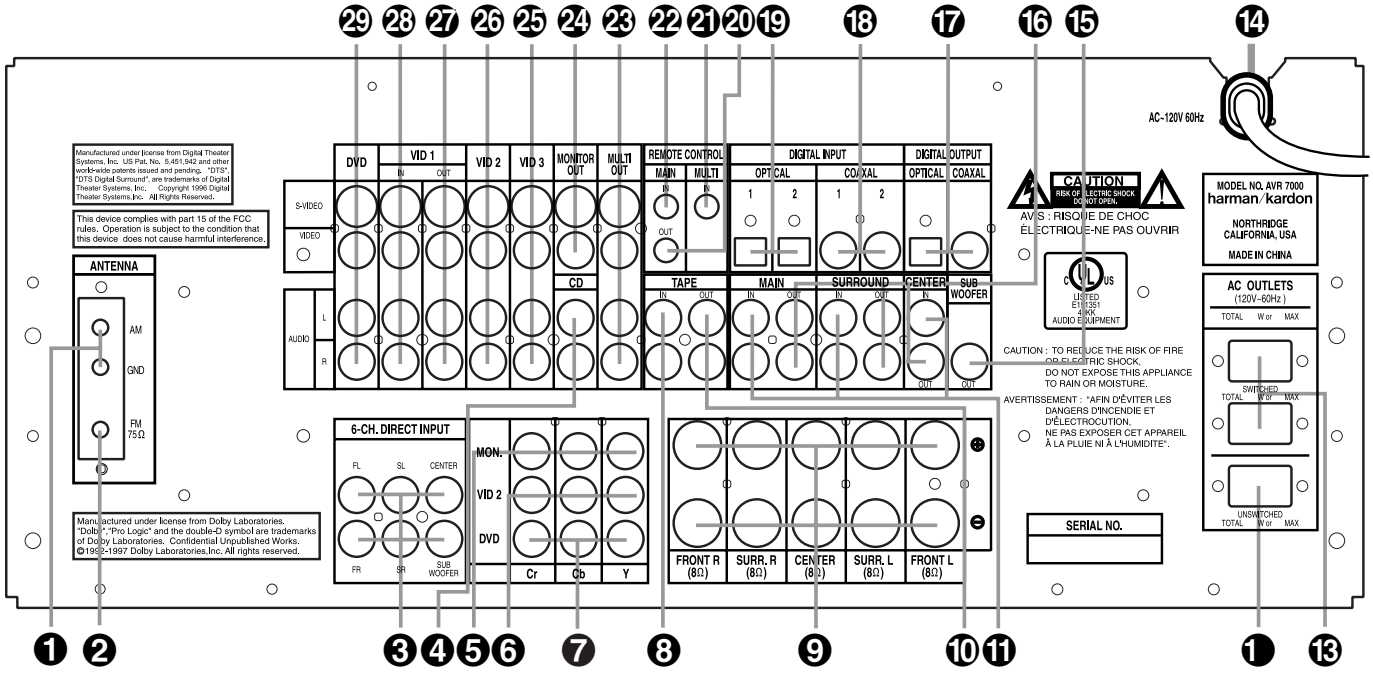
25 Speaker Select Button: Press this button to begin the process of selecting the speaker positions that are used in your listening room. (See page 22 for more information on setup and configuration.)

26 Test Tone Selector: Press this button to begin the process of adjusting the channel output levels using the internal test tone as a reference. (For more information on output level adjustment, see page 23.)

27 Surround Mode Indicators: A green LED will light in front of the surround mode that is currently in use.

28 Remote Sensor Window: The sensor behind this window receives infrared signals from the remote control. Aim the remote at this area and do not block or cover it unless an external remote sensor is installed.

Rear Panel Connections



❶ AM Antenna
❷ FM Antenna
❸ 6-Channel Direct Inputs
❹ CD Inputs
❺ Component Video Outputs
❻ Video 2 Component Video Inputs
❼ DVD Component Video Inputs
❽ Tape Inputs
❾ Speaker Outputs
❿ Tape Outputs
⓫ Amplifier Inputs
⓬ Unswitched AC Accessory Outlet
⓭ Switched AC Accessory Outlets
⓮ AC Power Cord
⓯ Subwoofer Output
⓰ Preamp Outputs
⓱ Digital Audio Outputs
⓲ Coaxial Digital Inputs
⓳ Optical Digital Inputs
⓴ Remote IR Output
㉑ Multiroom IR Input
㉒ Remote IR Input
㉓ Multiroom Outputs
㉔ Video Monitor Outputs
㉕ Video 3 Inputs
㉖ Video 2 Inputs
㉗ Video 1 Outputs
㉘ Video 1 Inputs
㉙ DVD Inputs

NOTE: For all video inputs and outputs ㉕ ㉖ ㉗ ㉘ ㉙, the same number is used to indicate the audio, composite-video and S-Video connections related to that input. This accounts for the same number appearing in more than one place on the rear-panel drawing.

Rear Panel Connections

❶ **AM Antenna:** Connect the AM loop antenna supplied with the receiver to these terminals. If an external AM antenna is used, make connections to the **AM** and **GND** terminals in accordance with the instructions supplied with the antenna.

❷ **FM Antenna:** Connect the supplied indoor or the optional external FM antenna to this terminal.

❸ **6-Channel Direct Inputs:** If an external digital audio decoder is used, connect the outputs of that decoder to these jacks.

❹ **CD Inputs:** Connect these jacks to the output of a compact disc player or CD changer.

❺ **Component Video Outputs:** Connect these outputs to the component video inputs of a video projector or monitor. When a source connected to one of the two **Component Video Inputs ❻❼** is selected the signal will be sent to these jacks.

❻ **Video 2 Component Video Inputs:** Connect the Y/Cr/Cb component video outputs of a set top converter box or other video product to these jacks.

❼ **DVD Component Video Inputs:** Connect the Y/Cr/Cb component video outputs of a DVD player to these jacks.

❽ **Tape Inputs:** Connect these jacks to the **PLAY/OUT** jacks of an audio recorder.

❾ **Speaker Outputs:** Connect the these jacks to the matching + or – terminals on your speakers. When making speaker connections, always make certain to maintain correct polarity by connecting the red (+) terminals on the AVR to the red terminals on the speaker and the black (–) terminals on the AVR to the black terminals on the speakers. (See page 15 for more information on speaker polarity.)

❿ **Tape Outputs:** Connect these jacks to the **RECORD/INPUT** jacks of an audio recorder.

⓫ **Amplifier Inputs:** When the jumper pins that link the **Preamp Outputs ⓰** with these inputs are removed, these jacks may be used to connect an external source or the AVR7000's multiroom system to the internal amplifiers. (See page 17 for more information on using these connections.)

⓬ **Unswitched AC Accessory Outlet:** This outlet may be used to power any AC device. The power will remain on at this outlet regardless of whether the AVR 7000 is on or off.

⓭ **Switched AC Accessory Outlets:** These outlets may be used to power any device that you wish to have turn on when the unit is turned on with the **System Power Control** switch **2**.

⓮ **AC Power Cord:** Connect the AC plug to an unswitched AC wall output.

⓯ **Subwoofer Output:** Connect this jack to the line-level input of a powered subwoofer. If an external subwoofer amplifier is used, connect this jack to the subwoofer amplifier input.

⓰ **Preamp Outputs:** When the jumper pins that link the **Amplifier Inputs ⓫** with these outputs are removed, these jacks may be connected to an external power amplifier.

⓱ **Digital Audio Outputs:** Connect these jacks to the matching digital input connector on a digital recorder such as a CD-R or MiniDisc recorder.

⓲ **Coaxial Digital Inputs:** Connect the coax digital output from a DVD player, HDTV receiver, LD player or CD player to these jacks. The signal may be either a Dolby Digital signal, DTS signal or a standard PCM digital source.

⓳ **Optical Digital Inputs:** Connect the optical digital output from a DVD player, HDTV receiver, LD player or CD player to these jacks. The signal may be either a Dolby Digital signal, a DTS signal or a standard PCM digital source.

⓴ **Remote IR Output:** This connection permits the IR sensor in the receiver to serve other remote controlled devices. Connect this jack to the "IR IN" jack on Harman Kardon or other compatible equipment.

㉑ **Multiroom IR Input:** Connect the output of an IR sensor in a remote room to this jack to operate the AVR 7000's multiroom control system.

㉒ **Remote IR Input:** If the AVR 7000's front-panel IR sensor is blocked due to cabinet doors or other obstructions, an external IR sensor may be used. Connect the output of the sensor to this jack.

㉓ **Multiroom Outputs:** Connect these jacks to the optional audio power amplifiers or video display devices to view and listen to the source selected by the mulitroom system in a remote room.

㉔ **Video Monitor Outputs:** Connect this jack to the composite or S-Video input of a TV monitor or video projector to view the on-screen menus and the output of any standard video source selected by the receiver's video switcher.

㉕ **Video 3 Inputs:** Connect these jacks to the audio and video outputs of a TV tuner, Cable TV converter box, satellite receiver or another audio/video source.

㉖ **Video 2 Inputs:** Connect these jacks to the audio and video outputs of a TV Tuner, Cable TV converter box, satellite receiver or any other audio/video source.

㉗ **Video 1 Outputs:** Connect these jacks to the audio and video **RECORD/INPUT** jacks of a VCR.

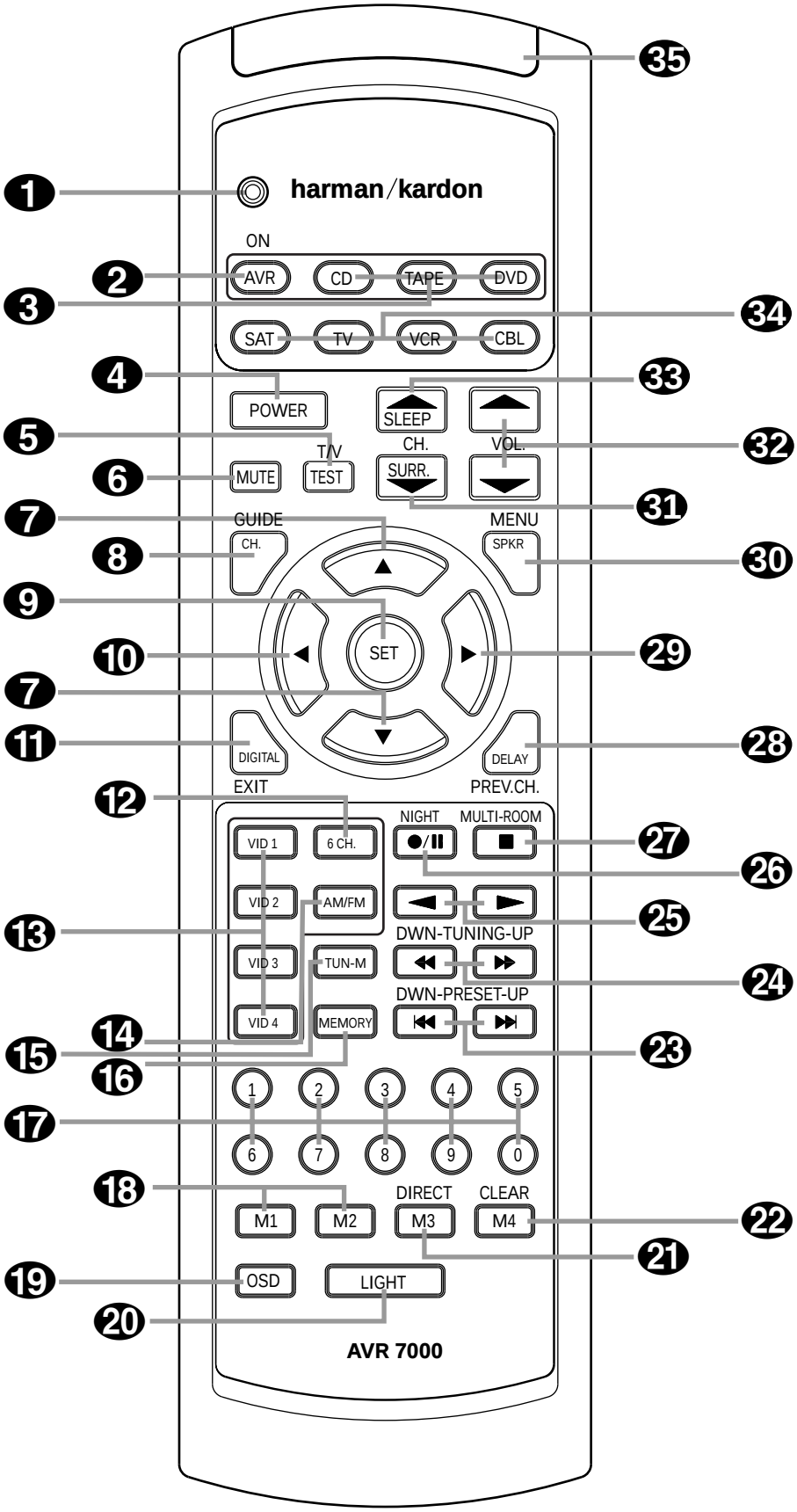
㉘ **Video 1 Inputs:** Connect these jacks to the audio and video **PLAY/OUT** jacks of a VCR.

㉙ **DVD Inputs:** Connect the analog audio outputs and composite video output of a DVD or LD player to these jacks.

Main Remote Control Functions

1. Program Indicator
2. AVR Selector
3. CD/Tape/DVD Input Selectors
4. Power Off Button
5. Test Tone
6. Mute
7. ▲/▼ Buttons
8. Channel Select Button
9. Set Button
10. ◄ Button
11. Digital Select
12. 6-Ch. Direct Input
13. Video Input Selectors
14. AM/FM Tuner Select
15. Tuner Mode
16. Memory Button
17. Numeric Keys
18. Macro 1/2 Buttons
19. OSD Button
20. Light Button
21. Direct/Macro 3 Button
22. Clear/Macro 4 Button
23. Preset Up/Down
24. Tuning Up/Down
25. Forward/Reverse Transport Buttons
26. Night Mode
27. Multi-Room
28. Delay/Prev. Ch.
29. ► Button
30. Speaker Select
31. Surround Mode Selector
32. Volume Up/Down
33. Sleep Button
34. Video Remote Selectors
35. IR Transmitter Window

NOTE: The function names shown here are each button's feature when used with the AVR. Most buttons have additional functions when used with other devices. See page 38 for a list of these functions.



Main Remote Control Functions

IMPORTANT NOTE: The AVR 7000's remote may be programmed to control up to eight devices, including the AVR 7000. Before using the remote, it is important to remember to press the **Device Control Selector** button ❷ ❸ that corresponds to the unit you wish to operate. In addition, the AVR 7000's remote is shipped from the factory to operate the AVR 7000 and most Harman Kardon CD or DVD players and cassette decks. The remote is also capable of operating a wide variety of other products using the control codes that are part of the remote. Before using the remote with other products, follow the instructions on pages 34–45 to program the proper codes for the products in your system.

It is also important to remember that many of the buttons on the remote take on different functions, depending on the product selected using the Device Control Selectors. The descriptions shown here primarily detail the functions of the remote when it is used to operate the AVR 7000. (See page 38 for information about alternate functions for the remote's buttons.)

❶ **Program Indicator:** This three-color indicator is used to guide you through the process of learning commands from a remote into the AVR's remote code memory. (See page 35 for information on learning IR codes.)

❷ **AVR Selector:** Pressing this button will switch the remote so that it will operate the AVR's functions. If the AVR is in the Standby mode, it will also turn the AVR on.

❸ **CD/Tape/DVD Input Selectors:** Pressing one of these buttons will perform three actions at the same time. First, if the AVR is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR. Finally, it will change the remote control so that it controls the device selected. After pressing one of these buttons you must press the **AVR Selector** button ❷ again to operate the AVR's functions with the remote.

❹ **Power Off Button:** Press this button to place the unit in the Standby mode. Note that this will turn off the main room functions, but if the Multiroom system is activated, it will continue to function.

❺ **Test Tone:** Press this button to begin the sequence used to calibrate the AVR 7000's output levels. (See page 23 for more information on calibrating the AVR 7000.)

❻ **Mute:** Press this button to momentarily silence the AVR 7000 or TV set being controlled, depending on which device has been selected.

When the AVR 7000 remote is being programmed to operate another device, this button is pressed with the **Device Control Selector** button ❷ ㉞ to begin the programming process. (See page 34 for more information on programming the remote.)

❼ ▲/▼ **Buttons:** These are multi-purpose buttons. They will be used most frequently to select a surround mode. To change the surround mode, first press the **SURR/CH** ▼ button ㉛. Next press these buttons to scroll up or down through the list of surround modes that appear in the **Information Display** 23. These buttons are also used to increase or decrease output levels when configuring the unit with either the internal test tone or an external source. They are also used to enter delay time settings after the **Delay** button ㉘ has been pressed.

❽ **Channel Select Button:** This button is used to start the process of setting the AVR 7000's output levels to an external source. Once this button is pressed, use the ▲/▼ buttons ❼ to select the channel being adjusted, then press the **Set** button ❾, followed by the ▲/▼ buttons again, to change the level setting. (See page 23 for more information.)

❾ **Set Button:** This button is used to enter settings into the AVR 7000's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

❿ ◀ **Button:** This button is used to change the menu selection or setting during some of the setup procedures for the AVR.

⓫ **Digital Select:** Press this button to assign one of the digital inputs ⓲ ⓳ to a source. (See page 27 for more information on using digital inputs.)

⓬ **6-Ch. Direct Input:** Press this button to select the component connected to the 6-Ch. direct Input ❸ as the source

⓭ **Video Input Selector:** Press one of these buttons to select a video input as the listening and viewing source.

⓮ **AM/FM Tuner Select:** Press this button to select the AVR's tuner as the listening choice. Pressing this button when a tuner is in use will select between the AM and FM bands.

⓯ **Tuner Mode:** Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so that the **AUTO** indicator V goes out, pressing the **Tuning** buttons ㉔ 8 E will move the frequency up or down in single-step increments. When the FM band is in use, pressing this button when a station's signal is weak will change to monaural reception. (See page 29 for more information.)

⓰ **Memory Button:** Press this button to enter a radio station into the AVR 7000's preset memory. After pressing the button the **MEMORY** indicator S will flash; you then have five seconds to enter a preset memory location using the **Numeric Keys** ⓱. (See page 29 for more information.)

⓱ **Numeric Keys:** These buttons serve as a ten-button numeric keypad to enter tuner preset positions. They are also used to select channel numbers when **TV** has been selected on the remote, or to select track numbers on a CD, DVD or LD player, depending on how the remote has been programmed.

⓲ **Macro 1/2 Buttons:** These buttons are used to recall or enter the programming sequence for a preprogrammed Macro sequence. (See page 36 for more information on programming and using Macros.)

⓳ **OSD Button:** Press this button to activate the On Screen Display (OSD) system used to set up or adjust the AVR 7000's parameters.

⓴ **Light Button:** Press this button to activate the remote's built-in backlight for better legibility of the buttons in a darkened room.

㉑ **Direct/Macro 3 Button:** This button has two functions. Pressing it when the tuner is in use will start the sequence for direct entry of a station's frequency. After pressing the button simply press the proper **Numeric Keys** ⓱ to select a station. This button may also be used to store or recall a macro sequence. (See page 29 for more information on the tuner, and page 36 for more information on programming and using Macros.).

㉒ **Clear/Macro 4 Button:** This button may be used to store and recall a macro; it may also be programmed for use with other devices. (See page 36 for nore information on macros.)

Main Remote Control Functions

㉓ **Preset Up/Down:** When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR 7000's memory. When some source devices, such as CD players, VCRs and cassette decks, are selected using the **Device Control Selectors** ③Ⓒ, these buttons may function as chapter step or track advance.

㉔ **Tuning Up/Down:** When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the **Tuner Mode** button ⑮⑫ has been pressed so that the **AUTO** indicator Ⓥ is illuminated, pressing and holding either of the buttons for three seconds will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the **AUTO** indicator Ⓥ is NOT illuminated, pressing these buttons will tune stations in single-step increments. (See page 29 for more information.)

㉕ **Forward/Reverse Transport Buttons:** These buttons do not have any functions for the AVR, but they may be programmed for the forward/reverse play operation of a wide variety of CD or DVD players, and audio or video-cassette recorders. (See page 34 for more information on programming the remote.)

㉖ **Night Mode:** Press this button to activate the Night mode. This mode is available in specially encoded digital sources, and it preserves dialog (center channel) intelligibilty at low volume levels.

㉗ **Multi-Room:** Press this button to activate the Multiroom system or to begin the process of changing the input or volume level for the second zone. (See page 33 for more information on the Multiroom system.)

㉘ **Delay/Prev Ch.:** Press this button to begin the process for setting the delay times used by the AVR 7000 when processing surround sound. After pressing this button, the delay times are entered by pressing the **Set** button ⑨ and then using the ▲/▼ buttons ⑦ to change the setting. Press the Set button again to complete the process. (See page 20 for more information.)

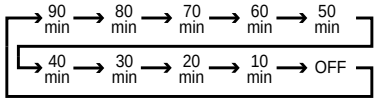
㉙ ▶ **Button:** Press this button to change a setting or selection when configuring many of the AVR's settings.

㉚ **Speaker Select:** Press this button to begin the process of configuring the AVR 7000's Bass Management System for use with the type of speakers used in your system. Once the button has been pressed, use the ▲/▼ buttons ⑦ to select the channel you wish to set up. Press the **Set** button ⑨ and then select another channel to configure. When all adjustments have been completed, press the Set button twice to exit the settings and return to normal operation. (See page 22 for more information.)

㉛ **Surround Mode Selector:** Press this button to begin the process of changing the surround mode. After the button has been pressed, use the ▲/▼ buttons ⑦ to select the desired surround mode. (See page 25 for more information.) Note that this button is also used to tune channels when the TV is selected using the **Device Control Selector** ㉞. When the AVR 7000 remote is being programmed for the codes of another device, this button is also used in the "Auto Search" process. (See page 34 for more information on programming the remote.)

㉜ **Volume Up/Down:** Press these buttons to raise or lower the system volume.

㉝ **Sleep Button:** Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 7000 will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



Note that this button is also used to change channels on your TV when the TV is selected using the **Video Remote Selectors** ㉞.

When the AVR 7000 remote is being programmed for the codes of another device, this button is also used in the "Auto Search" process. (See page 34 for more information on programming the remote.)

㉞ **Video Remote Selectors:** Press one of these buttons to use the remote to control the functions of the device shown on the button. (For more information on programming the remote to operate these devices, see pages 34–35.)

NOTE: As any of these buttons is pressed, it will briefly flash red to confirm your selection.

㉟ **IR Transmitter Window:** Point this window towards the AVR 7000 when pressing buttons on the remote to make certain that infrared commands are properly received.

harman/kardon Service Bulletin

Service bulletin # H/K2000-03 Rev1 June 2000 Warranty labor rate: MINOR repair

To: All harman/kardon Service Centers

Models: AVR7000

Subject: Video Signal, Color Shift

In the event you receive an AVR7000 receiver with the complaint "when the video signal is routed through my AVR7000, there is a noticeable color shift with certain program material", perform the following modification:

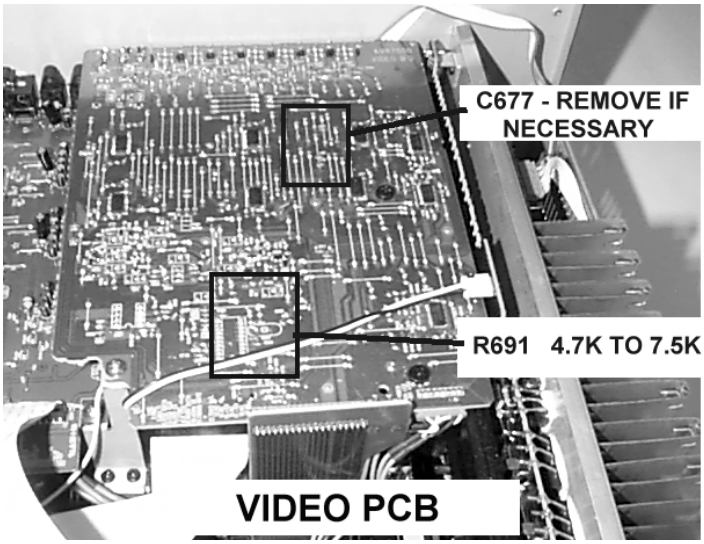
1. CHANGE R691 ON THE VIDEO BOARD

CAUTION: THE AVR7000 CIRCUITS ARE ELECTROSTATICALLY SENSITIVE.
TO PREVENT DAMAGE TO THE RECEIVER, FOLLOW PROPER STATIC CONTROL PROCEDURES.

a) Remove the top cover, (16 Black Phillips screws).
b) Locate the Video PC Board; it is the uppermost PCB and located at the rear corner of the receiver. See illustration.
c) Remove **R691** and replace with 7.5kΩ 1/10W (h/k part# 260-7.5).

2. REMOVE C677

If the part is present, locate and remove C677 SMD capacitor on the same (video) PCB. See illustration. Test all major functions and confirm the color shift or original problem when the same program is played is no longer occurring; replace top cover.



NOTE: In early AVR7000 schematics, R691 was erroneously marked as 47 kΩ.

Model	R691 Modification Serial Number 120V	C677 Removal Serial Number 120V	STATUS	ACTION
AVR7000	TH0003-01000 To TH0003-05222	TH0003-01000 To TH0003-03213	Color shift in TV picture when using Video inputs and outputs.	Change R691 From 4.7kΩ to 7.5kΩ; Remove C677 if necessary
AVR7000	TH0003-05223 Or higher	TH0003-03214 Or higher	Modified by factory	NONE REQUIRED

harman/kardon Service Bulletin

Service bulletin # H/K2000-04 Rev1 February 2003

Warranty labor rate:	
AVR500	MAJOR repair
AVR7000	MINOR repair

To: All harman/kardon Service Centers

Models: AVR500/AVR7000

Subject: Noise in Logic 7 Mode

In the event you receive an AVR500 or AVR7000 receiver with the complaint "There is crackling, noise, or distortion coming from my loudspeakers when my receiver is in the Logic 7 mode with certain program material playing", perform the following procedure:

AVR500 ONLY: REMOVAL AND MODIFICATION OF THE DSP BOARD (replace IC709 TRAD ROM-0001)

WARNING: FOLLOW PROPER STATIC CONTROL PROCEDURES and use caution during the removal of the DSP board, and during installation of new IC709 to prevent damage.

1) Remove the top cover, (14) Black Phillips screws at the sides and rear of the unit.
2) Locate the DSP PC Board; Figure 1. Remove the two metal braces at the top of the unit. If necessary, cut the cable ties attached to the braces to move any wires away from the area.
3) Pull the white 22 conductor ribbon cable at the rear of the DSP PC Board straight out of its receptacle.
4) Unplug the white 5 conductor molex cable at the top of the DSP PC Board.
5) Remove the (33) plated Phillips screws on the left side of the rear backplate; see Figure 2. Do not remove any additional screws on the right side. If using a power tool, use care and minimum effort to avoid damaging the various plastic receptacles.
6) Remove all three black plastic plugs that cover the optical inputs at the rear of the DSP PC Board.
7) Pull on the left side of the rear backplate, away from the receiver chassis; you should be able to pull it away enough to allow the DSP PC Board to be pulled straight up and out of the receiver.
8) Unsolder IC709 TRAD ROM-0001 and replace with hk part# J21310030011. See illustration on following page for location on PCB.

FIGURE 1

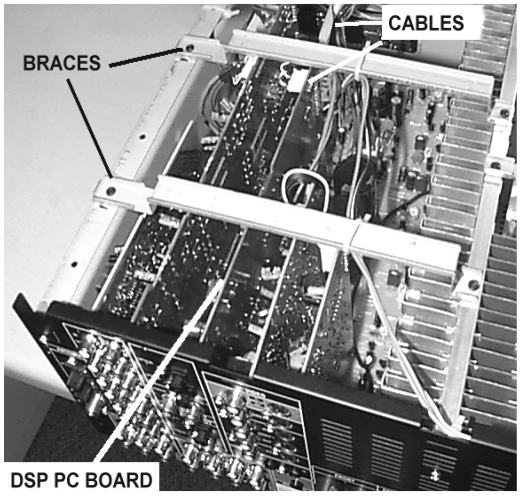
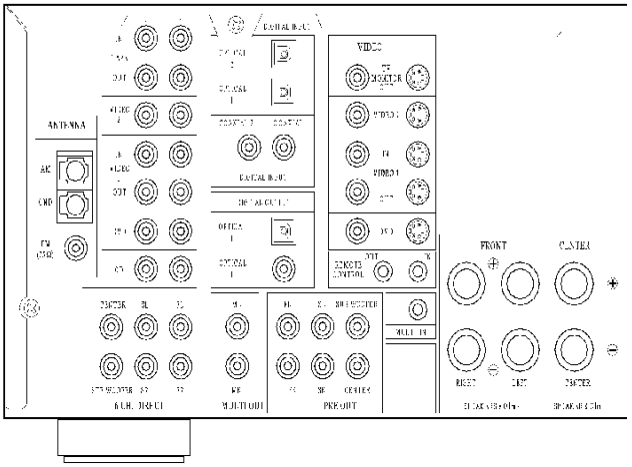
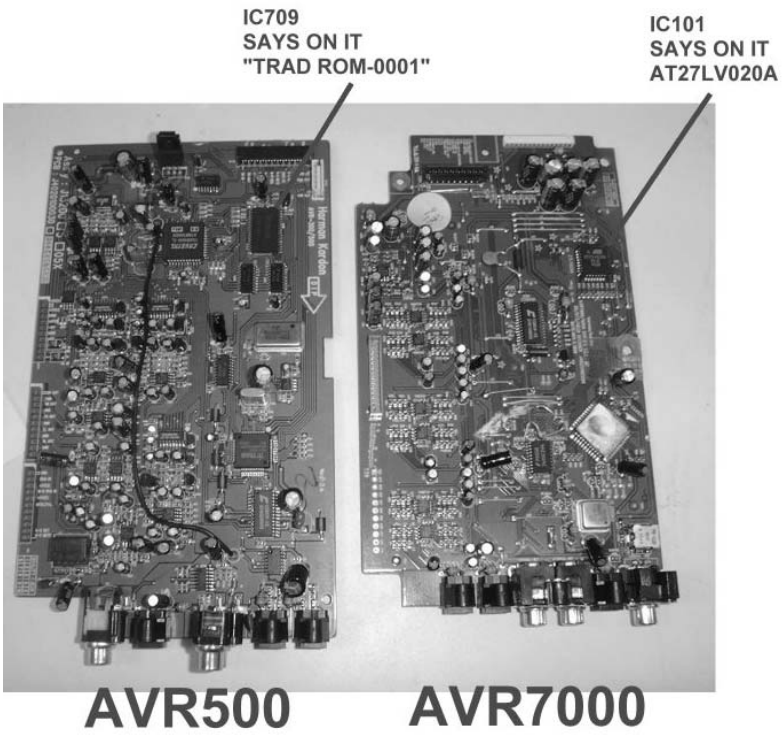


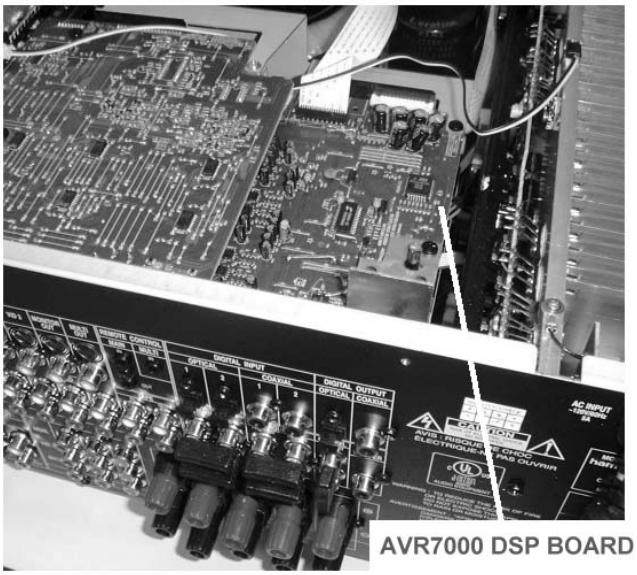
FIGURE 2
REMOVE ALL PHILIPS SCREWS ON THIS SIDE OF THE RECEIVER



Model	Serial Number 120V	Serial Number 230V RDS	STATUS	ACTION
AVR500	TH0002-01000 To TH0002-14977	TH0006-01000 To TH0006-05105	Noise in Logic 7 Mode	Replace IC709 TRAD ROM-0001
AVR500	TH0002-14978 or higher	TH0006-05106 or higher	Modified by factory	NONE REQUIRED

Location of IC upgrade for the AVR500/AVR7000:





9) Replace DSP PC Board back into its (3) receptacle plugs atop the MAIN PCB.
10) Replace all screws, braces, and any cable ties that were cut during disassembly. Before tightening the screws, make sure all PCB's and their RCA jacks are firmly seated in their respective holes in the rear backplate. If using a power tool, use care and minimum effort to avoid damaging the various plastic receptacles.
11) Plug both the 22 conductor ribbon cable and the 5 conductor molex cable back into their receptacles.
12) Replace the top cover and optical plugs.
13) Test unit by powering up the receiver and playing a music source in the Logic 7 mode.

AVR7000 ONLY: MODIFICATION OF THE DSP BOARD (replace IC101 AT27LV020A)

WARNING: FOLLOW PROPER STATIC CONTROL PROCEDURES and use caution during the installation of new IC101 to prevent damage.

1) Remove the top cover, (16) Black Phillips screws at the sides and rear of the unit.
2) Locate the DSP PC Board and IC101 with the illustrations above.
3) Unsolder IC101 AT27LV020A and replace with hk part# 55172540AVR7000. See illustration above for location on PCB.
4) Replace top cover and all Phillips screws.
5) Test unit by powering up the receiver and playing a music source in the Logic 7 mode.

Model	Serial Number 120V	Serial Number 230V RDS	STATUS	ACTION
AVR7000	TH0003-01000 To TH0003-05222	Modified by factory	Noise in Logic 7 Mode	Replace IC101 AT27LV020A
AVR7000	TH0003-05223 Or higher	Modified by factory	Modified by factory	NONE REQUIRED

harman/kardon Service Bulletin

Service bulletin # H/K2000-06 April 2000 Warranty labor rate: MINOR repair

To: All harman/kardon Service Centers

Models: AVR7000

Subject: Switched AC Accessory Outlet Dead

The Switched AC Accessory Outlets on the AVR7000 are used to power up any low-wattage device when the AVR7000 is switched on with the System Power Control. Ordinarily this means CD players, DVD players, Tape Decks, etc. or any device not exceeding 100 watts per outlet. These accessory outlets are not intended to be used with higher-power devices such as television sets, power amplifiers or powered subwoofers.
However, under some circumstances, even the use of a recommended device connected to the AVR7000's Switched AC Accessory Outlets may briefly exceed the current rating of the internal 1A AC accessory fuse, and blow the fuse.

In the event you receive an AVR7000 with the complaint "The switched AC accessory outlet at the rear of my receiver is dead", perform the following procedure:

1) Remove the top cover, (16 Black Phillips screws).
2) Locate F451, a 1A GMC (5 x 20mm) fuse at the rear corner of the unit, where the AC power cord enters the rear cover. Remove it and replace with a 3.15A GMC (5 x 20mm) Slo-Blo fuse, h/k part# 5508302735 . Original fuse can be extracted with a pair of long-nosed pliers.
3) Replace the top cover.
4) Test the Switched AC Accessory Outlets by connecting a low power device, such as a CD player, DVD player, or Tape Deck and assure the unit powers up normally when the AVR7000 System Power Control is switched on.

Model	Serial Number 120V	STATUS	ACTION
AVR7000	TH0003-01000 To TH0003-07963	Switched AC Accessory Outlet Dead	Change F451 From 1A to 3.15A
AVR7000	TH0003-07964 Or higher	Modified by factory	NONE REQUIRED

harman/kardon Service Bulletin

Service bulletin # H/K2002-06 October 2002 Warranty labor rate: MINOR repair

To: All harman/kardon Service Centers

Model: AVR7000

Subject: Low or No Output from Subwoofer Output Jack

In the event you receive an AVR7000 receiver with the complaint "There is little or no output from the subwoofer output jack, to drive my powered subwoofer", follow the instructions below:

1) **Check to make sure the AVR7000 is configured correctly for Subwoofer Output:**
   a) You will need a Video display (monitor or TV set, composite connection) connected to one of the "Monitor Out" jacks at the rear of the AVR7000, to view the on-screen menu for these steps.
   b) You will need a source, in this case a CD player, connected with RCA cables (Analog) to the CD input jacks at the rear of the AVR7000. A Compact Disc with ample bass information should be inserted in the CD player.
   c) Connect a powered subwoofer to the Subwoofer Output Jack on the AVR7000.
   d) With the AVR7000 turned ON, select input: Press the CD button on the remote control. The words CD Player should appear in the display panel, as well as being indicated in the front panel Input Indicators, by the green LED next to "CD" on the right-hand side of the panel.
   e) Select Dolby Pro Logic: Press the OSD button on the remote control to bring up the AUDIO SET UP menu. Press the ▼ button until the cursor is next to the SURROUND SETUP menu. Press the Set button so that the SURROUND SETUP menu is on-screen. Since the factory default for all inputs is Stereo, the words SURR OFF should initially appear. To change, press the ▶ buttons until DOLBY PRO LOGIC appears. A green LED will also light next to the DOLBY PRO LOGIC in the Surround Mode Indicators on the left side of the front panel.
   f) Press the ▼ button until the cursor is next to RETURN TO MENU; press the Set button. You should be back to the AUDIO SET UP menu. Move the cursor with the ▼ button until it's on the SPEAKER SETUP line, then press the Set button to bring up the SPEAKER SETUP menu. For the first three lines on the menu, the word SMALL should appear on the right side. If the word LARGE appears in any of the lines, press the ▼ button on the remote until it's next to any line you need to change, and then press the ▶ button until SMALL appears. (When SMALL is selected, low frequency sounds will be sent only to the subwoofer output.)
   g) Make sure for the line SUBWOOFER, the word YES appears. If NO is there, press the ▼ button on the remote until it's next to the SUBWOOFER line; press the ▶ button until the word YES appears.
   h) Press the OSD button on the remote control again, if desired, to turn off the On-Screen Display.
   i) Turn on the CD player and play the CD, with the AVR7000 volume at a reasonable level, with the powered subwoofer turned ON, with its volume control also turned up to a reasonable level. Has this solved the problem ? If NO, proceed to step #2.

2) Check for sufficient solder on pin 5 of IC121. IC121 is an Op Amp (NJM5532M) on the DSP PCB.

CAUTION: THE AVR7000 CIRCUITS ARE ELECTROSTATICALLY SENSITIVE.
TO PREVENT DAMAGE TO THE RECEIVER, FOLLOW PROPER STATIC CONTROL PROCEDURES.

a) Remove the top cover, (16 Black Phillips screws). You should be working at the rear of the receiver.
b) Unplug the white ribbon cable from the rear of the DSP PCB (see figure 1)
c) Remove (13) black screws from the rear of the AVR7000 holding the Video and DSP PCB's (see figure 2).
d) On the top of the Video PCB, remove the (3) remaining screws (2 black and 1 plated) holding the Video PCB to the chassis; remove the single black screw holding the bracket support to the DSP PCB.
e) Unplug the small, white, 2-pin molex connector snaking across the top of the Video PCB.
f) Loosen (do not remove) the 2 remaining bracket support screws at the bottom of the bracket, at the bottom of the AVR7000 chassis; you should now be able to push the bracket back far enough to be able to remove both the Video and DSP PCB's when necessary.

g) Disengage the Video PCB from its rear connector (CP601) by pushing back on the rear PCB; lift the Video PCB up and out of the unit. It should still have an amber-colored 8 pin connector attached. Set the PCB aside and out of the way.
h) Remove the (2) remaining screws (1 plated, 1 black) holding the DSP PCB to the chassis. The black screw will loosen a small aluminum heatsink (for IC100); remove it.
i) Disengage the DSP PCB from its rear connector (CP401) by pushing back on the rear PCB; lift the DSP PCB up and out of the unit; turn it upside down. It should still have an amber-colored 15 pin connector attached.
j) Locate IC121 (see figure 3) and resolder if needed.
k) Replace parts in reverse order; remember to re-tighten the bottom bracket screws and replace the heatsink. CAUTION: At the rear screws, if using a power tool, use care and minimum effort to avoid damaging the various plastic receptacles.
l) Test the unit by following steps (a – i) in section 1.

FIGURE 1

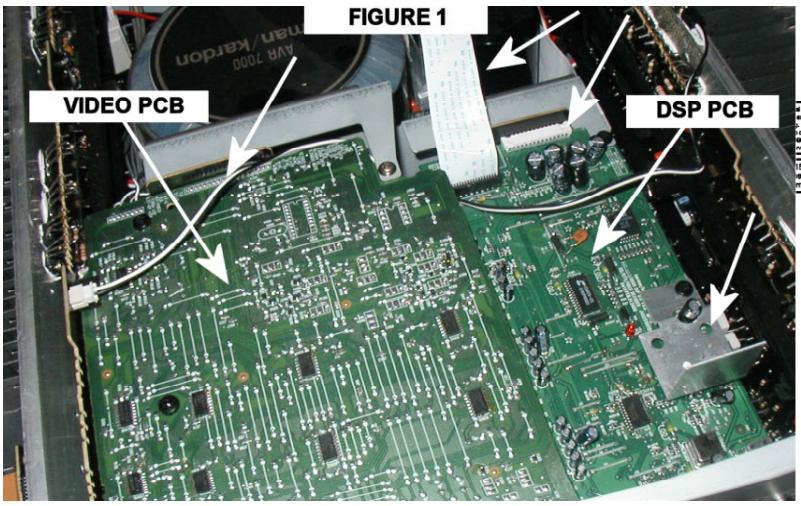


FIGURE 2

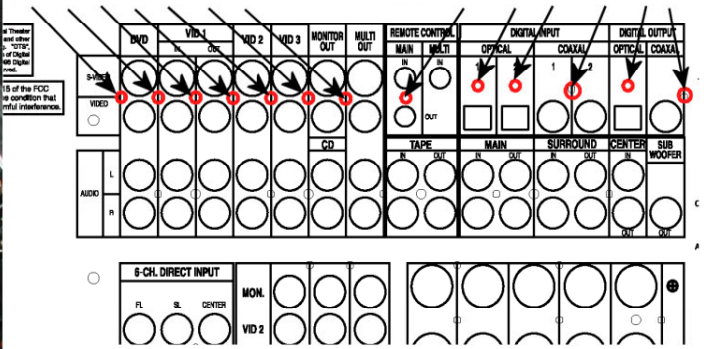
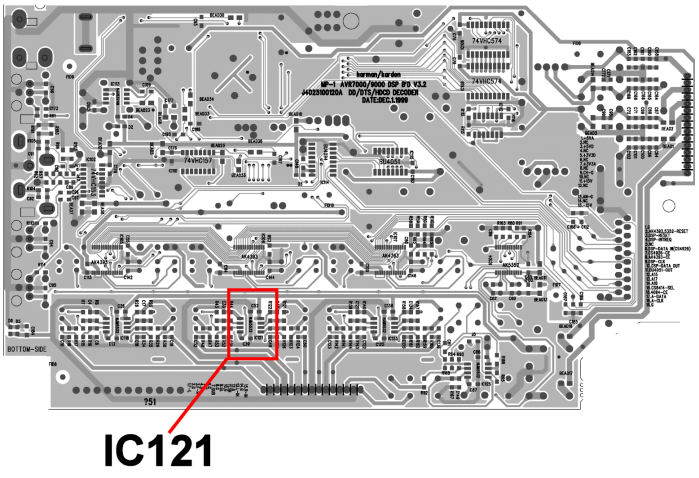


FIGURE 3



MODEL	SERIAL NUMBER 120V	SERIAL NUMBER 230V	STATUS	ACTION
AVR7000	TH0003-01000 to TH0003-12085	TH0012-01000 to TH0012-12386	IC121 may need re-soldering	Check for sufficient solder on pin 5 of IC121
AVR7000	TH0003-12086 and above	TH0012-12387 and above		NONE REQUIRED

harman/kardon TECH TIPS

Troubleshooting tips and solutions to common service problems

For models: AVR7000 **TIP# HKTT2000-01**

Complaint:

The Remote Control has stopped working for the AVR7000.

First Check:

1. Make sure the batteries in the remote are installed correctly. (Plus and minus to correct terminals)
2. Make sure the area between the remote control and receiver is not blocked by some object, and the distance is no more than 15 feet at an angle no greater than 30 degrees from the front of the receiver.
3. Make sure strong lighting is not directed towards the IR sensor of the receiver.
4. Press each button on the remote and verify proper operation.

If these steps are taken and remote control still does not function properly –

Probable Cause:

Factory-supplied batteries.

Solution:

1. Remove the batteries from the remote. Leave batteries out of the remote for a minimum of three minutes. This ensures the internal capacitors discharge, allowing the CPU in the remote to re-boot.
2. Reinstall **new alkaline batteries** (major brand recommended).
3. Press the AVR button and the Mute button at the same time until the red light illuminates under AVR.
4. Enter the numbers **0-0-1** on the numerical keypad.
5. Press the AVR button again.

Test the remote control. It should be functioning properly once this is completed.

harman/kardon TECH TIPS

Troubleshooting tips and solutions to common service problems

For models: **TIP# HKTT2003-01 Rev5**

AVR7000/7200/7300/8000
AVR100/200/300/500
AVR110/210/310/510
AVR120/220/320/520
AVR125/225/325/525
AVR130/230/330/430/630
AVR135/235/335/435/635
AVR10
DPR1001
DPR1005
DPR2005
HK3370/3470/3375/3475
HK3250

Subject: Backup Memory on AVR/DPR/HK series receivers

In the event of the complaint: "the receiver is losing its memory (any programmed system settings) when the unit is turned off, or after the unit is unplugged (briefly*)":

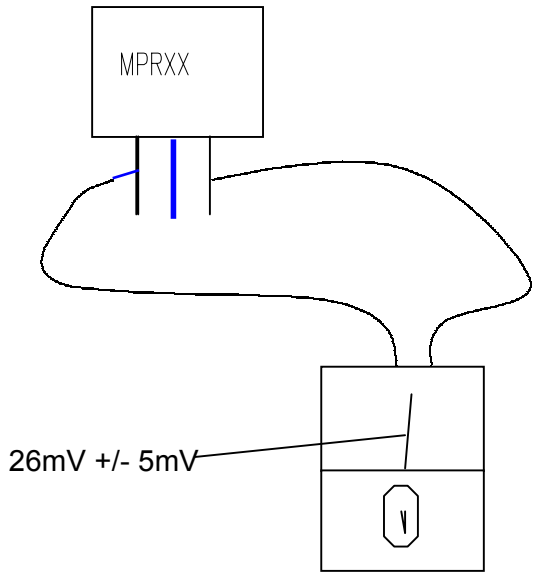
Check and replace:

Model	Designator	Location	Description	Part number
AVR10	C712 D709	Front PCB	0.047 Farad 5.5v capacitor and 1N4148 diode	#3439247315 #2058322101
AVR7000	C730	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND or # J3432147324X
AVR7200	C106	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND
AVR7300	C657	DSP PCB	0.047 Farad 5.5v capacitor	# H01-CEZXA0479MN-5
AVR8000	C726	Front PCB	0.047 Farad 5.5v capacitor	# 55230310NR or # P10790-ND
AVR100/200	C412	Front PCB	0.047 Farad 5.5v capacitor	# CEGT-B473J-0J0
AVR300	C906	Front PCB	0.1Farad 5.5v capacitor	# J4433210421X or # P10791-ND
AVR500	C906	Front PCB	0.1Farad 5.5v capacitor	# J4433210421X or # P10791-ND
AVR110/210/310/510 AVR120/220/320/520	C216	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND
AVR125/225	C734,C885	Front PCB	two 0.1F capacitors in parallel	# BCESOHD104
AVR325/525	C106	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND
AVR130/230/330	BAT1	Front PCB	3.6v Battery	# HABGP40BVH3A3H
AVR135/235/335	BAT1	Front PCB	3.6v Battery	# HGP15BNH3A3H
AVR430/630	C657	DSP PCB	0.047 Farad 5.5v capacitor	# CEZXA0479MN-5
AVR435/635	C557	DSP PCB	0.047 Farad 5.5v capacitor	# H03-CEZXA0479MN-0
DPR1001	BC601	Main PCB	0.1Farad 5.5v capacitor	# CEGT-B104J-0J0
DPR1005/2005	C437	Processor PCB	0.047 Farad 5.5v capacitor	# CEZXA0479MN-5
HK3370/3470	C301	Front PCB	0.1Farad 5.5v capacitor	# CEGT-B104J-0J0
HK3375/3475	C301	Front PCB	0.1Farad 5.5v capacitor	# CEGT-B104J-0J0
HK3250	C712 D709	Front PCB	0.047 Farad 5.5v capacitor and 1N4148 diode	#3439247315 #2058322101

* After approximately two weeks of being disconnected from AC supply, even a normally functioning receiver may lose any programmed settings and switch to default settings. (Four weeks for the DPR1005 & 2005)

AVR7000 IDLE CURRENT ADJUSTMENT

1) 2-CH AMP and 3-CH AMP sections should be adjusted when they are intact on the Heat-sink
2) Initial warm-up and test condition: 1Khz - Signal input, SPKR-OUT(8ohm load), 5CH All driven
3) Warm up 3 minutes in step 2, then remove input signal
4) Emitter resistors - connections across MPR901,904, MPR907,910,913 as follows:
   adjust voltage to 26mV ± 5mV connected across opposite ends of resistor leads.
5) Potentimeters to adjust are as follows:
   a) Front right channel (MPR901) - VR901
   b) Front left channel (MPR907) - VL901
   c) Center channel (MPR910) - VC901
   d) Rear left channel (MPR913) - VSL901
   e) Rear right channel (MPR904) - VSR901



AVR700 TUNER ALIGNMENT

• Europe Mono 40kHz Stereo 67.5kH

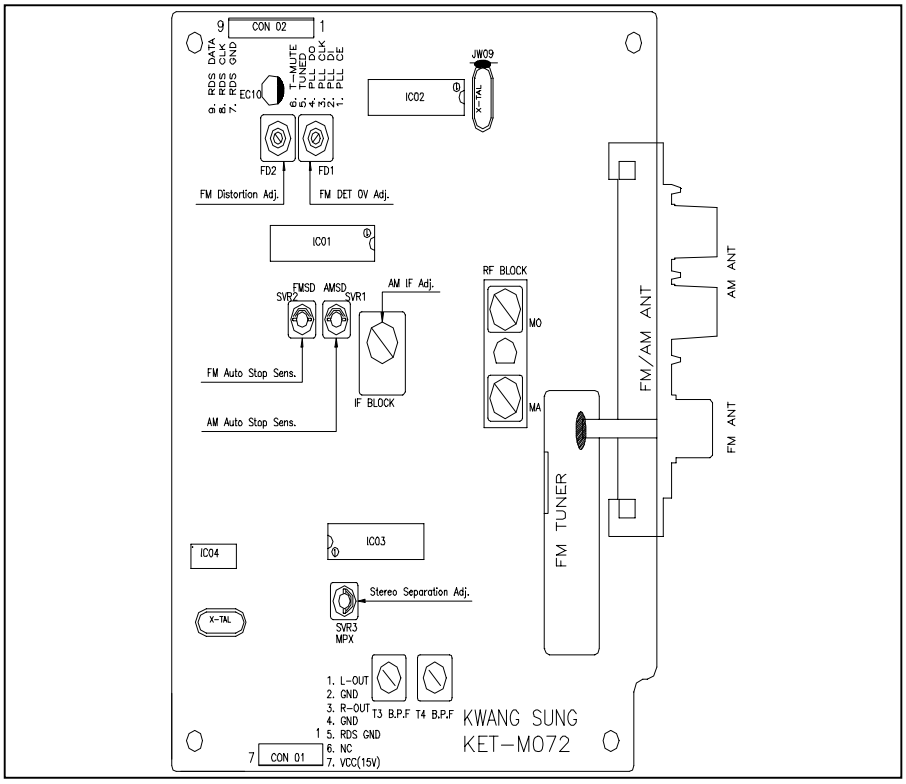
1.Electrical specificat • America Mono 75kHz Stereo 40kHz

NO.	ITEMS	SPECIFICATION	
		M W	F M
1-1	Local OSC	Above the receiving Frequency	
1-2	Frequency cover	•522 ~ 1620kHz •520 ~ 1720kHz	•87.5 ~ 108.0MHz •87.5 ~ 107.9MHz
1-3	Standard supply	15.0 (+/-1.5V)	
1-4	FM Antenna input	75 ohm	
1-5	AM Loop Antenna	18uH (50 ohm)	

2.Electrical Characteristics.

NO	TEST ITEMS	TEST CONDITION	T.P.	T.L. dBu	MOD. Hz,	ecificati	UNIT	djustmen
FM	AF Output L	47• Loa	•98.0	60	•40 •75	500±100	mV	on Adjus
	Auto Stop Sens.		•98.0	--	•40 •75	33.2 ±6	dBf	SVR2
	Stereo Sepa	1kHz	•98.0	60		40 min	dB	SVR3
MW	AF Output L	47• Loac	•999 •100	74	30	165±50	mV	on Adjus
	Auto Stop Sens.		•999 •1000	--	30	800±6	uV/m	SVR1

3.Adjustment Points



AVR700 TUNER ALIGNMENT (con't)

Europe Mono 40kHz Stereo 67.5kHz Pilot 7

1.Electrical spec:America Mono 75kHz Stereo 40kHz Pilot 7.5

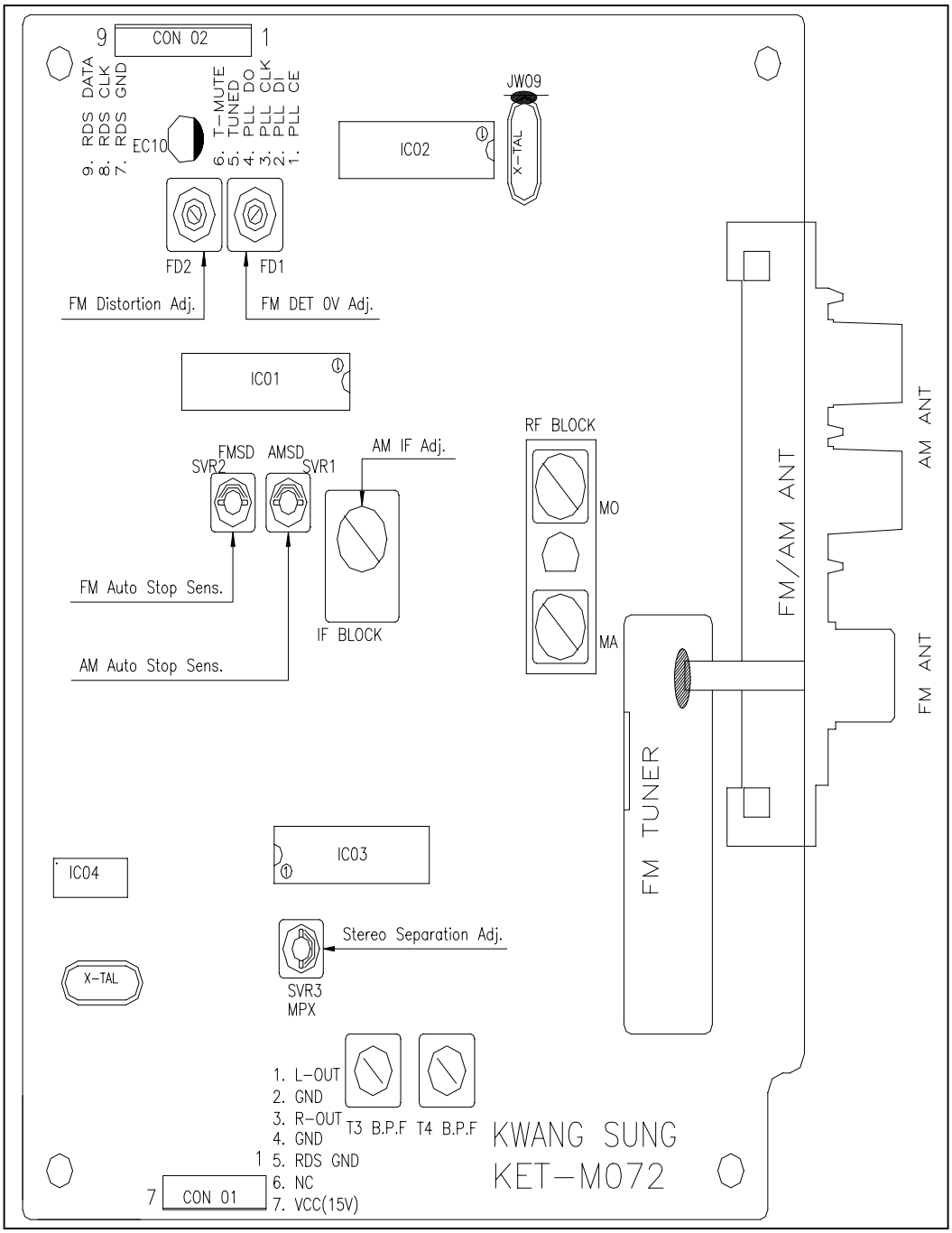
NO.	ITEMS	SPECIFICATION	
		M W	F M
1-1	Local OSC	Above the receiving Frequency	
1-2	Frequency cover ra	•522 ~ 1620kHz •520 ~ 1720kHz	•87.5 ~ 108.0MHz •87.5 ~ 107.9MHz
1-3	Standard supply vo	15.0 (+/-1.5V)	
1-4	FM Antenna input I	75 ohm	
1-5	AM Loop Antenna	18uH (50 ohm)	

2.Electrical Characteristics.

NO	TEST ITEMS	TEST CONDITION	T.P.	T.L. dBu	MOD. kHz,	ecificati	UNIT	djustmen
FM	AF Output Le	47• Loa	•98.0 •98.1	60	•40 •75	500±100	mV	on Adjus
	Auto Stop Sens.		•98.0 •98.1	--	•40 •75	33.2 ±6	dBf	SVR2
	Stereo Separ	1kHz	•98.0 •98.1	60		40 min	dB	SVR3
MW	AF Output Le	47• Loac	•999 •1000	74	30	165±50	mV	on Adjus
	Auto Stop Sens.		•999 •1000	--	30	800±6	uV/m	SVR1

AVR700 TUNER ALIGNMENT (con't)

3.Adjustment Points



Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not function when Main Power Switch is pushed	• No AC Power	• Make certain AC power cord is plugged into a live outlet • Check to see if outlet is switch-controlled
Display lights, but no sound or picture	• Intermittent input connections • **Mute** is on • Volume control is down	• Make certain that all input and speaker connections are secure • Press **Mute** button • Turn up volume control
Unit turns on, but Front-Panel Display does not light up	• Display brightness is turned off	• Follow the instructions in the Display Brightness section on page 31 so that the display is set to VFD FULL
No sound from any speaker; Light around power switch is red	• Amplifier is in protection mode due to possible short • Amplifier is in protection mode due to internal problems	• Check speaker wire connections for shorts at receiver and speaker ends • Contact your local Harman Kardon service depot
No sound from surround or center speakers	• Incorrect surround mode • Input is monaural • Incorrect configuration • Stereo or Mono program material	• Select a mode other than Stereo • There is no surround information from mono sources • Check speaker mode configuratioin • The surround decoder may not create center or rear channel information from nonencoded programs
Unit does not respond to remote commands	• Weak batteries in remote • Wrong device selected • Remote sensor is obscured	• Change remote batteries • Press the AVR selector • Make certain front panel sensor is visible to remote or connect remote sensor
Intermittent buzzing in tuner	• Local interference	• Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
Letters flash in the Channel Indicator Display and Digital Audio stops	• Digital audio feed paused	• Resume play for DVD • Check that Digital Input is selected
HDCD encoded disc does not trigger HDCD indicator	• Surround mode in use • Analog feed in use	• Select "Surround Off" mode • Connect and select digital connection to CD player

Processor Reset

In the rare case where the unit's operation or the displays seem abnormal, the cause may involve the erratic operation of the system's memory or microprocessor.

To correct this problem, first unplug the unit from the AC wall outlet and wait at least three minutes. After the pause, reconnect the AC power cord and check the unit's operation. If the system still malfunctions, a system reset may clear the problem.

To clear the AVR 7000's entire system memory including tuner presets, output level settings, delay times and speaker configuration data, first put the unit in Standby by pressing the **System Power Control** button 2. Next, press and hold the **Tone Mode** 6 and the **FM Mode Selector** 12 buttons for three seconds.

The unit will turn on automatically and display the RESET message in the **Main Information Display** W. Note that once you have cleared the memory in this manner, it is necessary to re-establish all system configuration settings and tuner presets.

NOTE: Resetting the processor will erase any configuration settings you have made for speakers, output levels, surround modes, digital input assignments as well as the tuner presets. After a reset the unit will be returned to the factory presets, and all settings for these items must be reentered.

If the system is still operating incorrectly, there may have been an electronic discharge or severe AC line interference that has corrupted the memory or microprocessor.

If these steps do not solve the problem, consult an authorized Harman Kardon service depot.

APPROVAL	CHECK	DRAWING	DESIGN	MODEL	AVR7000	PARTS NAME	EXPLODED VIEW
OLIVER		OLIVER		SCALE	TOLERANCE		
Chae Il Lee		Dong Il Choi		NONE SCALE	LESS1	PARTS NO.	
TTC TOTAL TECHNOLOGY COMPANY LIMITED				UNIT m/m	LESS6	DWG NO.	EXP-HK-AVR7000-US

AVR 7000 EXPLODED VIEW PART LIST

NO	PARTS CODE	PARTS NAME	Q'TY	MATERIAL & SPEC
1	J60100001000	COVER TOP	1	SECC+VCM
2	J46208000004	SW POWER,TV-8,12BA/250VAC	1	ESB91511A
3	J60300012000	BKT SW POWER	1	SECC 1.0t
4	J85810010000	GUIDE POWER SW	1	HIPS 94HB
5	J85200049000	BUTTON POWER	1	HIPS 94HB
6	J45600500002	SW TACT AUTO,LG	18	SKHV10910A
7	J85400019000	INDICATOR STANDBY	1	SAN
8	J85200052000	BTN STANDBY	1	HIPS 94HB
9	J85400021000	ENDCAP LEFT	1	HIPS 94HB
10	J85500004000	FILTER DISPLAY ACRYL 0.5t	1	R2117
11	J85940002000	DIFFUSER	2	PET 713F
12	J85810011000	GUIDE BTN 5 KEY	1	HIPS 94HB
13	J60550003000	BADGE harman/kardon	1	ELECTROFORMING
14	J85300011000	WINDOW DISPLAY ACRYL	1	MITHUBISHI 530
15	J60400000000	PANEL FRONT AL	1	AL 6063-T5
16	J60540000000	A'SSY KNOB MAIN	1	AL+HIPS 94HB
17	J85100009000	KNOB TONE	3	HIPS 94HB
18	J85000007000	BODY FRONT	1	HIPS 94HB
19	J85400022000	ENDCAP RIGHT	1	HIPS 94HB
20	J44329000102	JACK PHONE KUNMING	1	HTJ-064-07BC
21	J85200050000	BTN 7 KEY	1	HIPS 94HB
22	J85200051000	BTN 3 KEY	1	HIPS 94HB
23	J85300053000	BTN 5 KEY	1	HIPS 94HB
24	J2352220021X	VFD NORITAKE	1	CM19010
25	J44311000100	JACK S-VIDEO DAERYUNG	1	C40160261N
26	J44303000100	JACK RCA 3P YWR DAERYUNG	1	JK0300081G
27	J60600006000	SHIELD FENCE TONE	1	ET 0.5t
28	J32616100001	ENCODER J/ALPS	1	EC16B24204
29	J60020000300	CH FRONT	1	SECC 1.2t
30	J85940003000	REFLECTOR 3	3	HIPS 94HB
31	J85810009000	FL GUIDE	1	HIPS 94HB
32	J85940001000	REFLECTOR 1	1	HIPS 94HB
33	J5222000910X	BKT HEATSINK	13	SECC 1.0t
34	J60500003000	HEATSINK POWER 3CH	1	AL 6063-T5
35	J60300017000	BKT JUMPER LONG	4	ET
36	J60300016000	BKT JUMPER SHORT	2	ET
37	J60500004000	HEATSINK POWER 2CH	1	AL 6063-T5
38	J4433210120X	JACK 1P KUNMING	1	HTJ035-12EBT
39	J4433220130X	JACK 2P HOSIDEN	1	HSJ1002-01-1020-50
40	J44312000200	JACK RCA+S-VIDEO YB	7	C5016030--
41	J44301000300	JACK RCA 1P B	2	JE010003PN
42	J2123806001X	FIBER OPTICAL MODULE	1	TORX178A
43	J44302000700	JACK RCA 2P BB DAERYUNG	1	JC020009LN
44	J2123806002X	FIBER OPTICAL MODULE	2	TOTX178
45	J44304000300	JACK RCA 4P WBRB DR	1	JK040045KN
46	J44306000101	JACK RCA 6P WWWRRR JW	4	JW-4105RSS
47	J70800000100	STUD 34	2	BRASS
48	J60300013000	BKT SUPPORT	1	SECC 1.0t
49	J70800000400	STUD 62.6	2	BRASS
50	J60300015000	BKT PREAMP PCB	1	SECC 1.0t
51				
52	J44001200300	TERMINAL SCREW 2P DR	1	SH0210381P
53	J44001800200	TERMINAL SCREW 8P DR	1	SH0810361P
54	J44309000000	JACK RCA 9P RUGRUGRUG	1	JK090122LN
55	J70800000300	STUD 55	2	BRASS
56	J70800000200	STUD 54	2	BRASS
57	J2822110014X	A'SST POWER TRANS	1	
58	J60110001000	PANEL REAR	1	SECC 1.0t
59	J44900000000	AC OUTLET	1	A206D00549
60	60000004000	CH MAIN	1	SECC 1.2t
61	J85900501000	A'SSY FOOT	4	ABS+TPR
62	J43730100200	CORD AC POWER	1	
63	J60300002000	BKT PHONE	1	SECC 1.0t
64	J60510003100	HEATSINK BRIDGE	1	AL 6063-T5
65	J85400020000	INDICATOR VIDEO 4	1	SAN
66	J60530001000	HEATSINK 46X12X45H	4	AL 6063-T5
67	J60530003000	HEATSINK 17X15X45H	1	AL 6063-T5
68	J94100001000	JUMPER PLUG	5	
69	J5541003012X	CUSHION RUBBER 30X30X12H	2	
70	J94100002000	SHIELD FORM 71TSN 10-8-33	3	
71	J94100003000	SHIELD FORM 71TSN 40-2-40	1	
72	J65540000500	PLATE SPRING GND	3	C5212
73	J60300037000	BKT TOP	2	SECC 2.0t
74	J44306000001	JACK RCA 6P WWWRRR JW	1	JW-4105DR
75	J60510005000	HEATSINK IC(DSP)	1	AL PLATE 1.0t
76	J67200005000	INSULATION PC	1	PC PLATE 0.5t
77	J60300046000	BKT SIDE	2	SECC 1.2t
78	J60600013000	SHIELD BKT EMI	1	SECC 1.0t
79	J60600015000	SHIELD PLATE SMALL	5	G-11 0.3t
80	J60600016000	SHIELD PLATE LARGE	5	G-11 0.3t
81	J60600017000	SHIELD DSP	1	PAPER 0.18t AL 0.05t PE 0.1t
82	J60600018000	SHIELD PREAMP	1	

NO	PARTS CODE	PARTS NAME
W1	5541-001-020	WASHER FLAT P/W 3.3X8.0X0.5 MC
W2	5541-001-010	WASHER SPRING NO:2 M3 MC
W3	5541-001-030	WASHER SPRING NO:2 M4 MC
W4	5541-001-040	WASHER FLAT P/W 4.7X1.2X1 MC

NO	PARTS CODE	PARTS NAME
S1	J5636140010X	SCREW A123010002 BTTB 3X10B
S2	J5636140040X	SCREW A183008000 BTTN W3X8Y
S3	J5636140150X	SCREW A180400802 #2 WPT4X8B
S4	J81000300810	SCREW BM 3X6Y
S5	J81000400810	SCREW BM 4X8Y
S6	J5636140270X	SCREW A124010000 BTTB 4X10Y
S7	J5636140030X	SCREW A113016000,BTTB 3X16Y
S8	J5636140080X	SCREW A124008000,BTTB 4X10Y
SG	J5636140290X	SCREW 3X10B BLACK GND

BLOCK DIAGRAM

NO	DATE	POS.	CONTENTS	NO	DATE	POS.	CONTENTS

EUROPE : 230/50Hz
USA : 120/60Hz

MODEL: AVR7000 (US/RDS)

- VIDEO PARTS
- SUPPLY PART
- TUNER PARTS
- DD/DTS PARTS
- PRE PARTS
- MAIN AMP PARTS
- POWER SUPPLY PARTS

COMPONENT VIDEO — Pr Pb Y — BA7603 IC508 — DVD, VID2, MON — BA7660FS IC509 — 6dB 6dB 6dB

ANT — FM, AM — FM/AM TUNER MODULE — RDS DEMODUL

TUNER OUT

RDS DATA
RDS CLK
DATA IN
CLK
CE
DATA OUT
TUNED
MUTE
CPU

FL701 — MPEG DTS AC-3 PCM HDCD DIGITAL PRO LOGIC 3 STEREO — MUTE T.MON RDS PTY CT RT TA AUTO TUNED ST MEMORY PRESET SLEEP — COAXIAL 1 2 OPTICAL 1 2 ANALOG MPEG VMAx LOGIC 7 CM dts THX HALL 12 THEATER STADIUM CHURCH OSD NIGHT MULTI

KEY MATRIX — MULTI — RMC IN OUT — LTV817 LTV817 — RMC SENSOR — COMMANDER

RESORNATOR — C P U IC701 — 6V REGU. — ST-BY TRANS — -30V

PUSH S/W — AC-CORD — RELAY RELAY RELAY

FL AC 6V — +15V −15V — +5V(LED) — +5VV. −5VV. +5VA.+5VD — +3.3VA. +3.3VD.

REGULATOR
+15V. −15V.
+5V(LED)
+5VV. −5VV.
+5VA.+5VD
+3.3VA. +3.3VD.

MAIN POWER TRANS

3-CH AMP (POWER/DRIVER) — 2-CH AMP (POWER/DRIVER) — AMP POWER SUPPLY

US Version AC OUTLET — switched switched unswitched

RDS Version AC OUTLET — switched unswitched

AUDIO — VID4(IN/OUT) — TAPE I O — IC214 — MULTI-ROOM — IC213 — CD — VID3 — VID2 — VID1 I O — DVD — IC207

TC9273-007 IC201 — IC208 — IC209 — 2CH-VOLUME TC9459N IC219

TC9273-007 IC202(2/2) IC203(1/2)

TC9273-007 IC202(1/2) IC203(2/2)

6-CH DIRECT-IN — KTC9163 IC204 — FR FL S-L S-R CTR SW — IC507 IC512 IC513 — +15dB IC210

Summing Circuit — IC211 IC212

L-CH Same Block

KIC9163 IC205

(SAME AS LEFT CHANNEL) RIGHT CHANNEL

IC218 H/P AMP — DISCRETE BUFFER — MUTE — HEAD PHONE

KIC9163 IC205 — DISCRETE BUFFER — MUTE — PRE OUT — MAIN IN — DISCRETE MAIN AMP — PROTECTION — FRONT SPKR

C-VIDEO/S-VIDEO — NJM2296*6 IC601/602/603 IC604/605/607 — DVD — VID1 I O — VID2 — VID3 — MULTI — MONITOR — VID4 (IN/OUT) — 6dB

MC14053 IC608

IC126 FR — IC125 FL — ADC AK5352 IC104 — AK5352-RESET

ADC*3 AK4393 IC105,106,107 — AK4393-RESET AK4393-CE AK4393-CLK AK4393-DATA

BU4051-OUT — 8-CH MPX /DEMPX BU4051 IC115

CS8414-SEL — DIR CS8414 IC103

u17 u16 — EP-ROM 27LV020A IC101

DD/DTS DECODER HDCD/96Khz DECODER Logic-7 DECODER CS4926-04 IC100

NJU6324M fo/2 — 12.288MHz

shift register BU4094 IC114 — CLK DATA CE

DUAL 4-CH MPX 74VHC153FN IC102

D FLIP - FLOP 74VHC574M IC108 — D FLIP - FLOP 74VHC574M IC109

QUAD 2-CH MPX 74VHC157M IC110 — BUS BUFFER 74VHC244M IC111

DSP-CLK DSP-DA DATA RESET CS4926CE

M-TRANS

OPTI-1 OPTI-2 COAX-1 COAX-2 OPTI OUT COAX OUT

LPF FR — IC117/118-B — LPF FL — IC116/118-A — LPF S-L — IC122/123-A — LPF S-R — IC124/123-B — LPF CTR — IC119/121-A — LPF SW — IC120/121-B

FR FL SL SR CTR SW

MASTER VOLUME — TC9482N IC206

IC215 — IC220-B — IC705-B TONE — IC220-A — IC705-A TONE

IC216-B — IC216-A — IC217-B — IC217-A

MUTE — SURR L-CH OUT IN — DISCRETE S-L AMP — PROTECTION — S-L SPKR

MUTE — SURR R-CH OUT IN — DISCRETE S-R AMP — PROTECTION — S-R SPKR

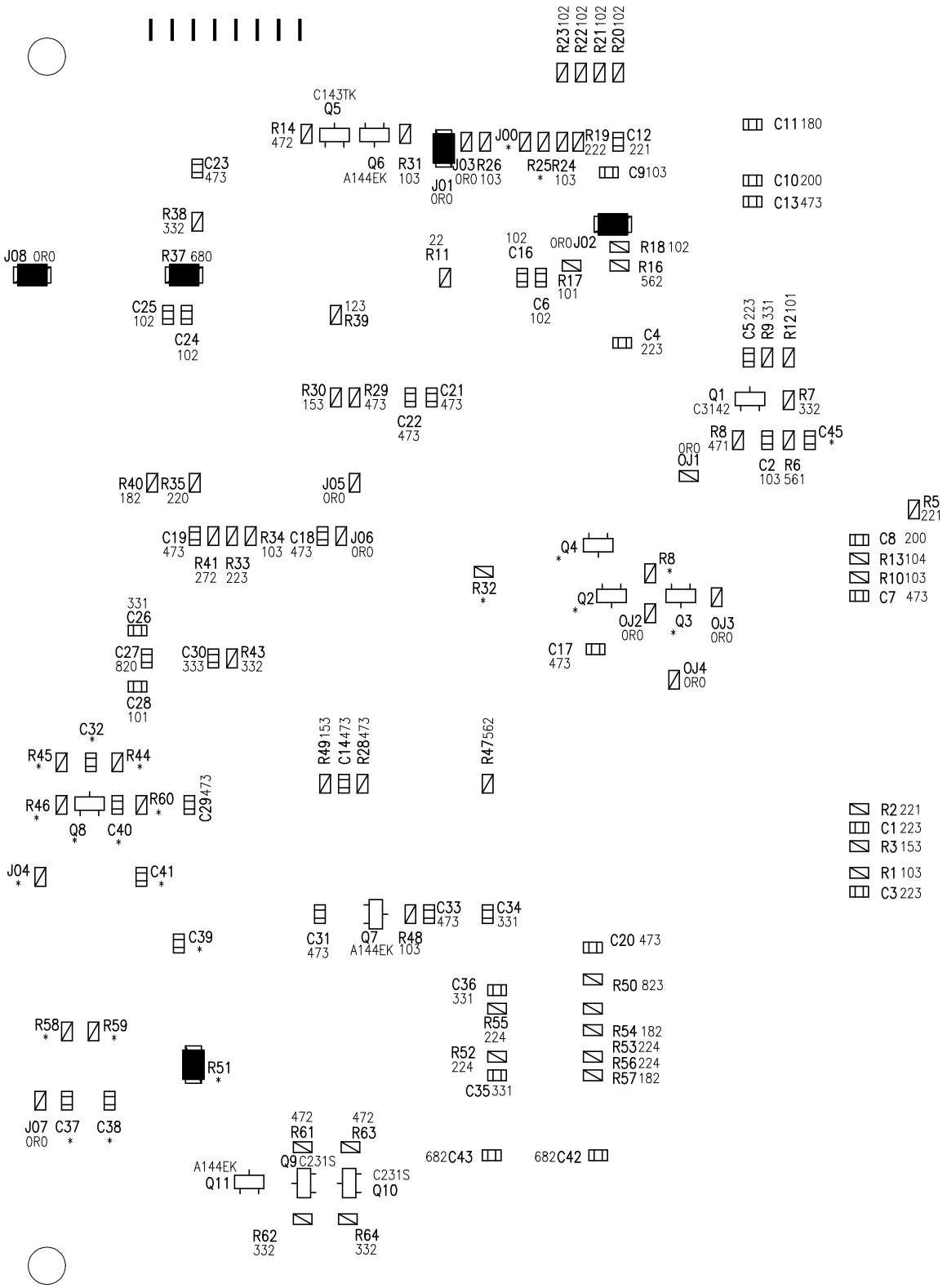
MUTE — CENTER OUT IN — DISCRETE CENTER AMP — PROTECTION — CENTER SPKR

MUTE — SUB WOOFER OUT

CONFIDENTIAL/CONTROL COPY

FILENAME	CODE NO.			SHEET
BLOCK				1 / 1
MODEL AVR7000	DESIGN	CHKD	CHKD	APPROVAL
DESIGN DATE MAR.02.2000	James LEE			

TTC CO.,LTD



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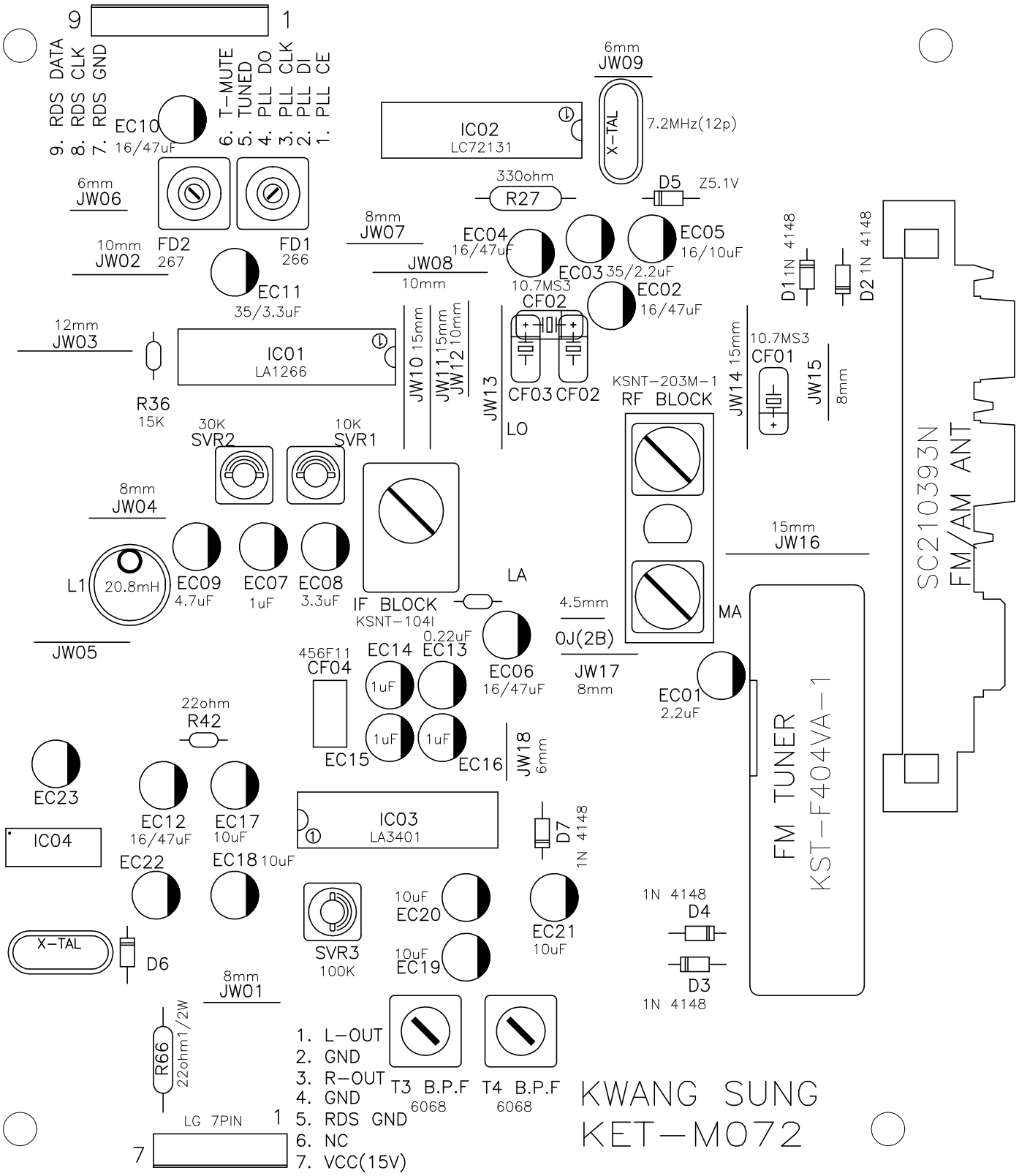
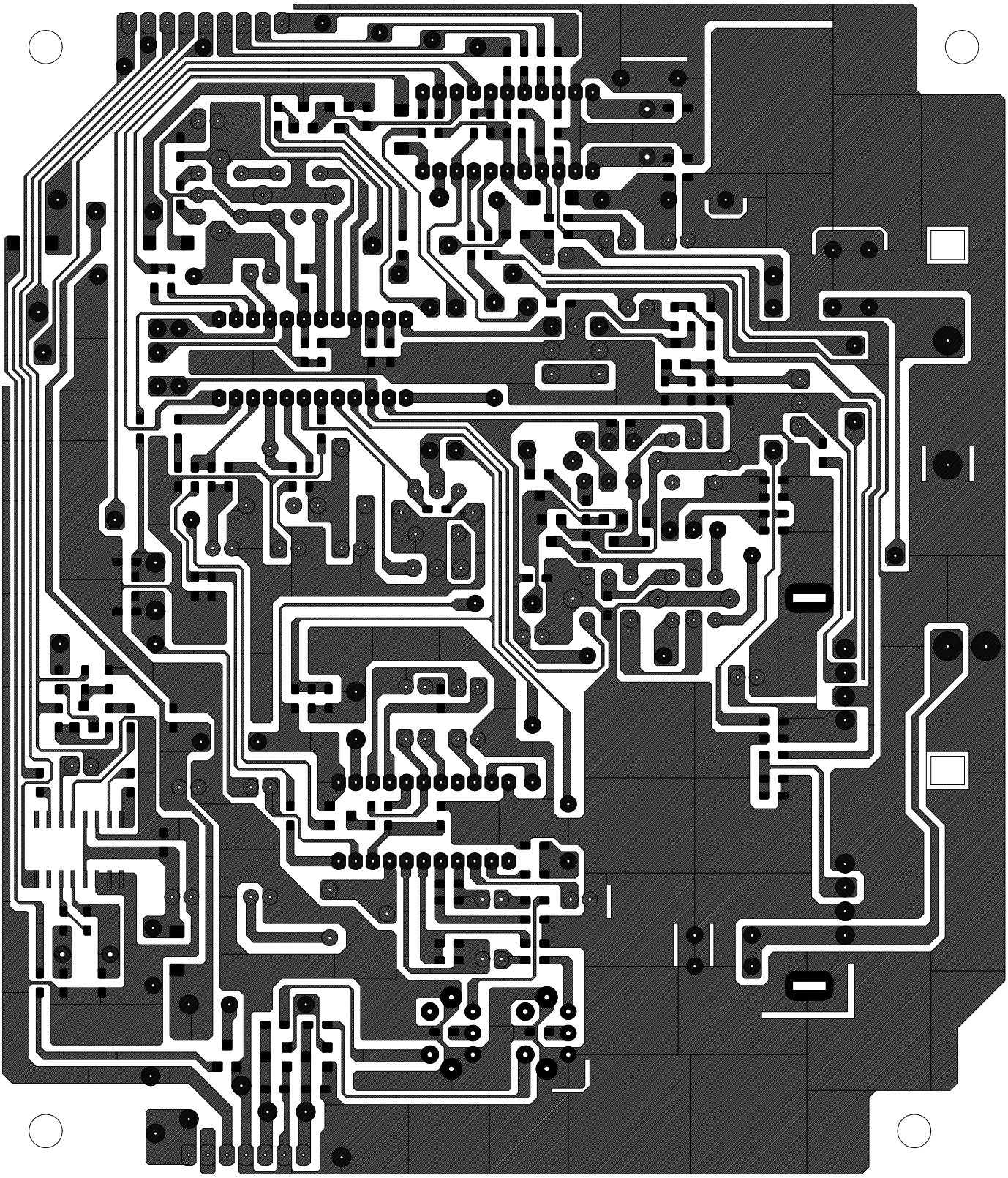


MODEL : KST-M7014MW0-1



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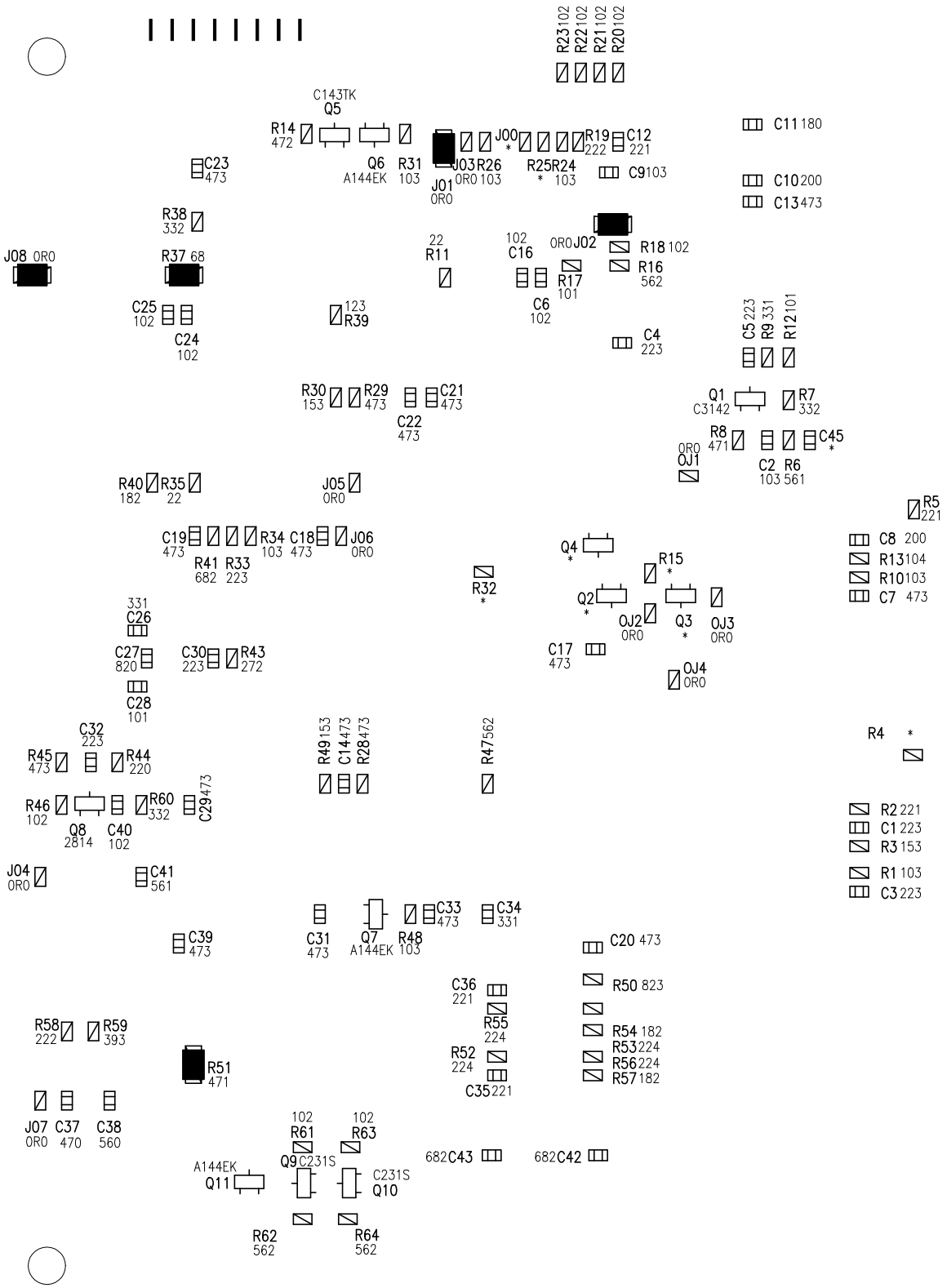

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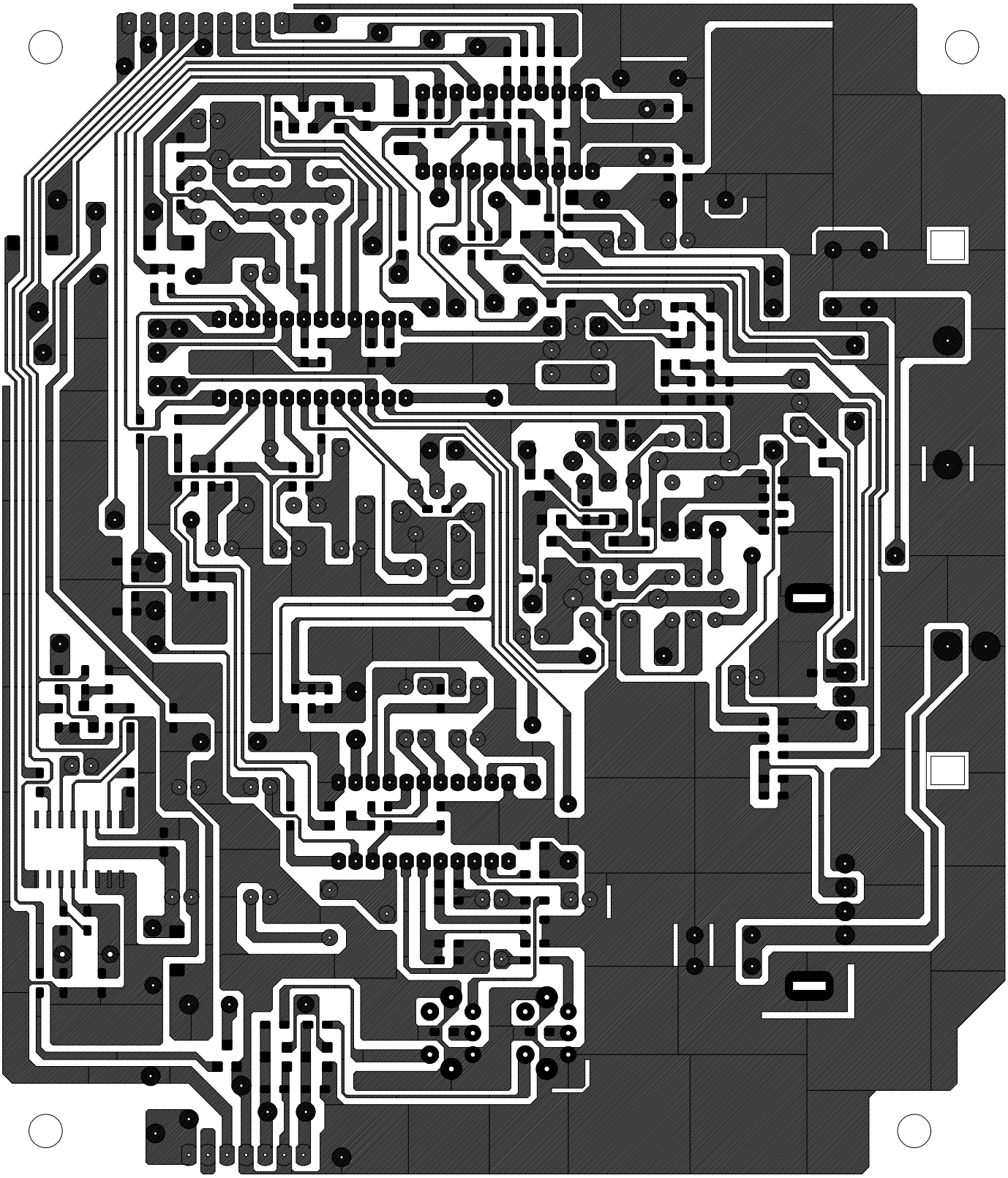
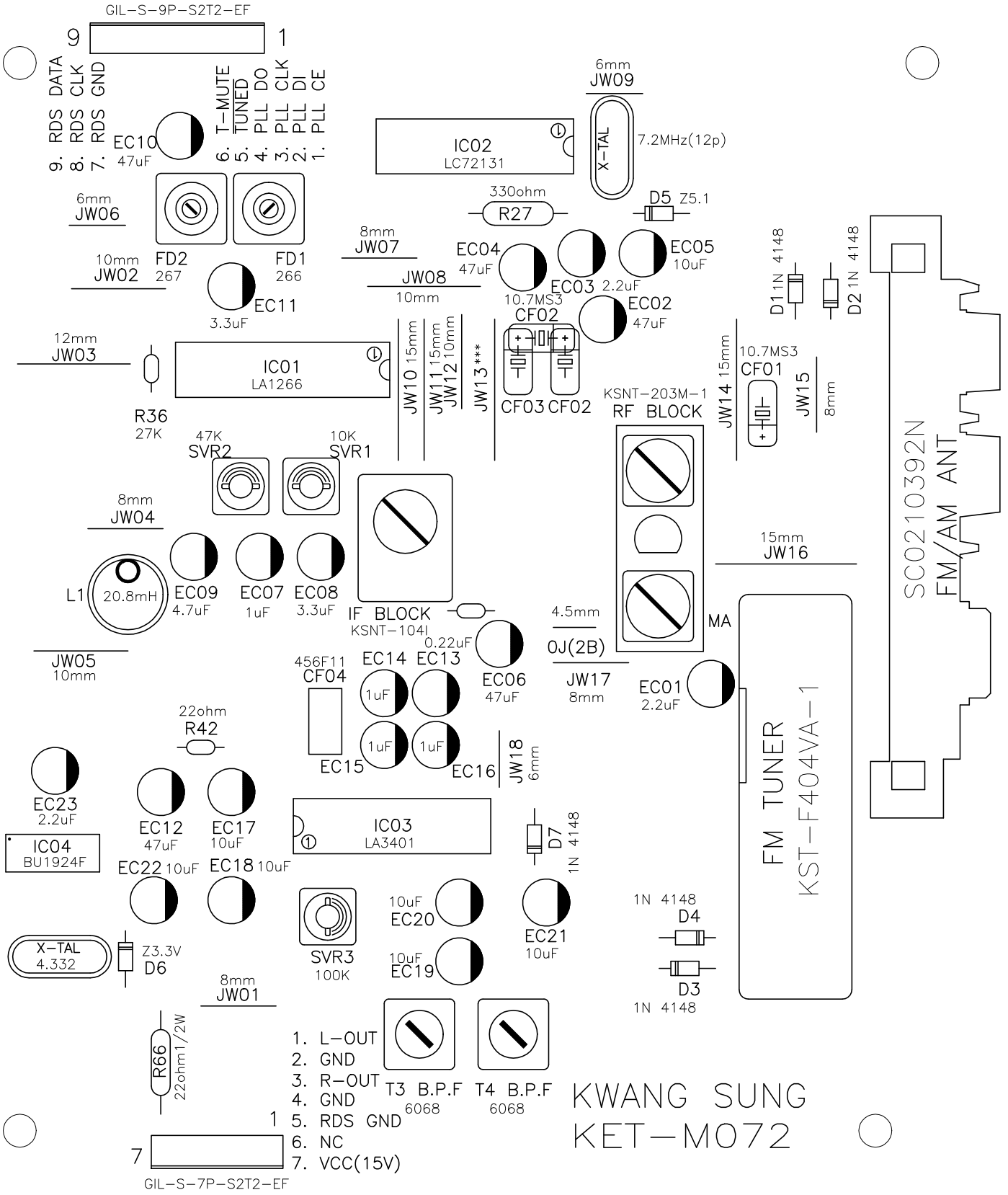
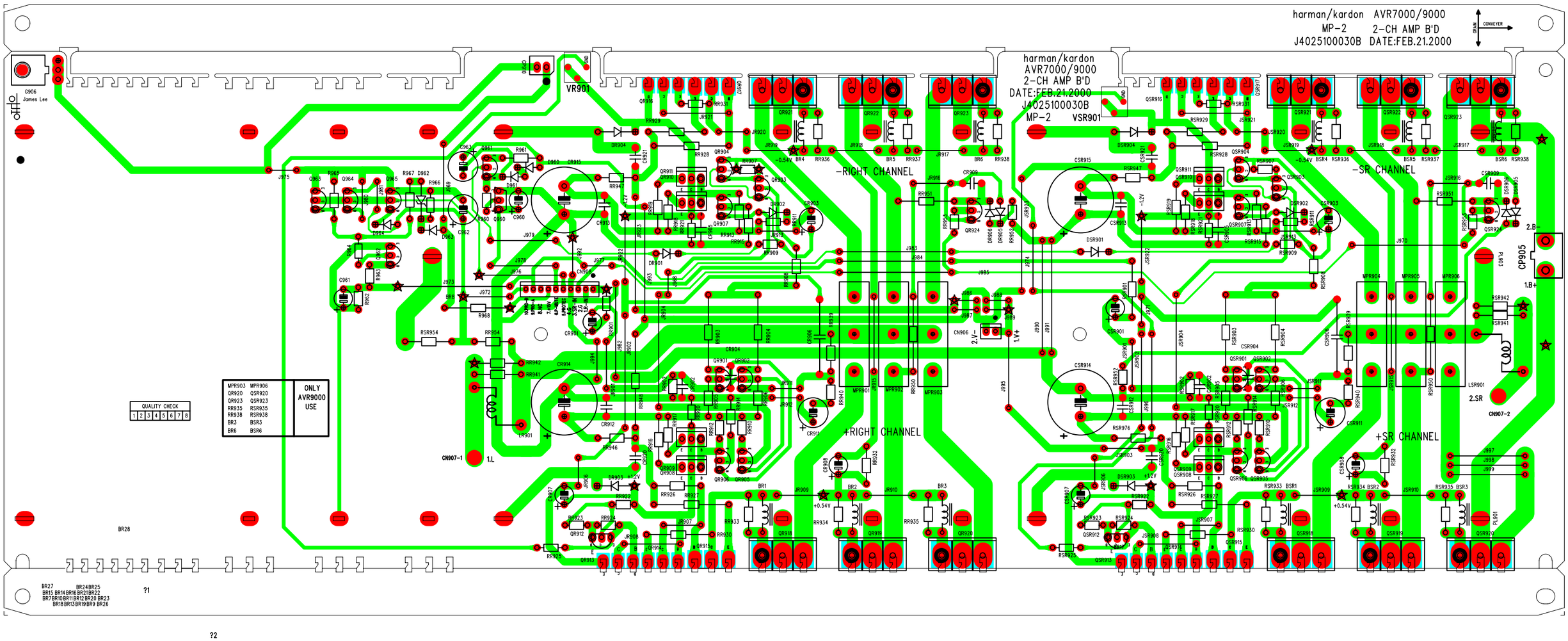


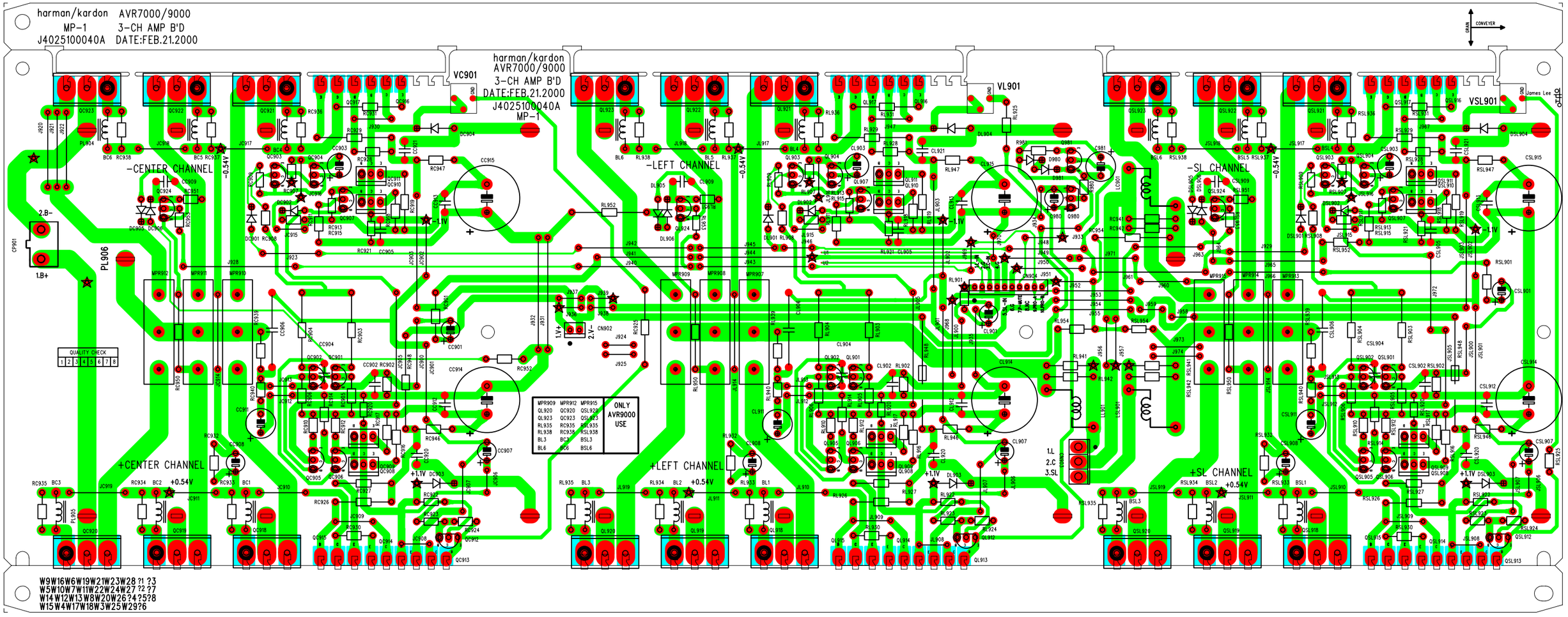
MODEL : KST-M7114MW1-1



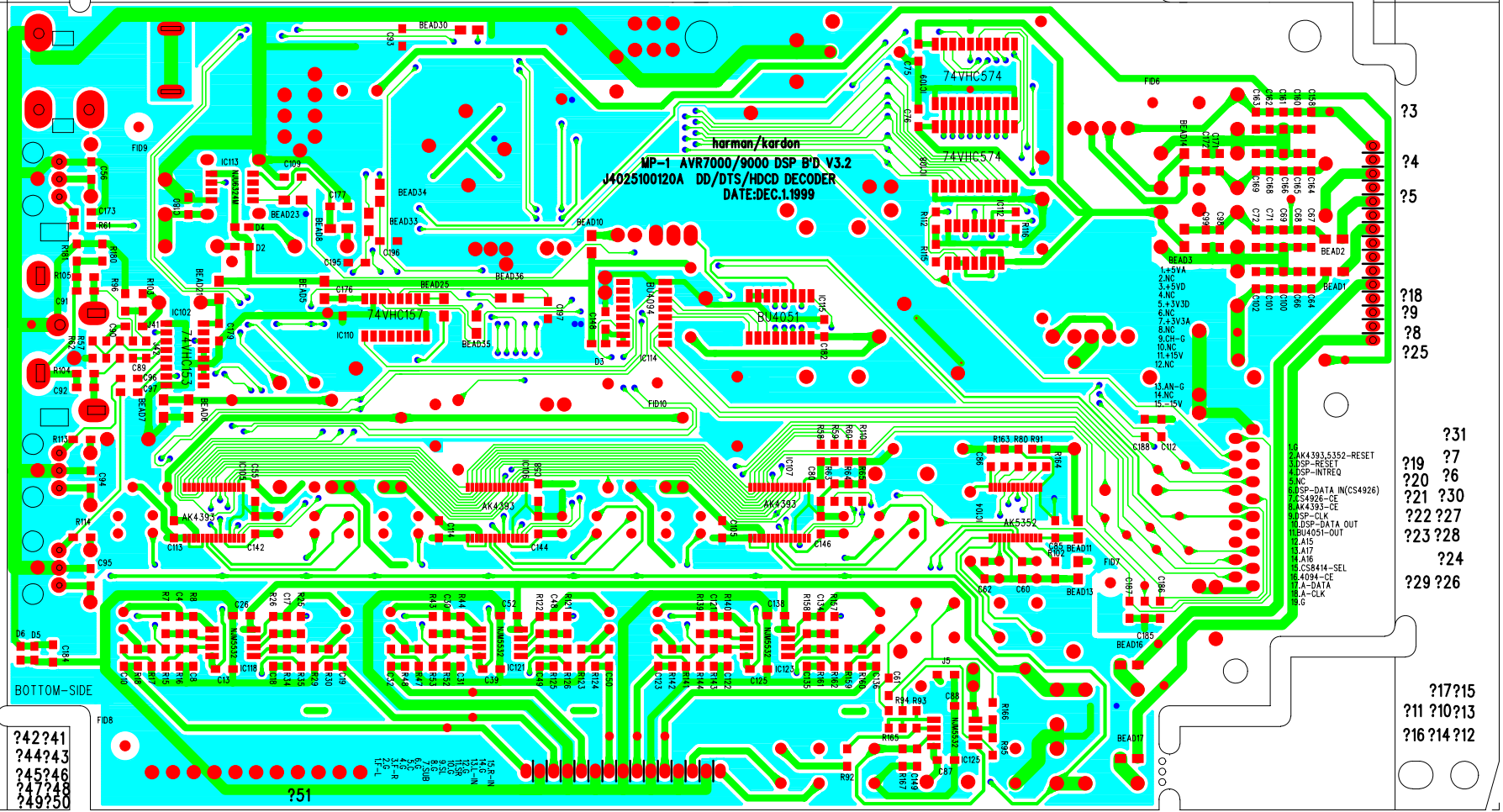
MODEL : KST-M7114MW1-1


harman/kardon AVR7000/9000
MP-2 2-CH AMP B'D
J4025100030B DATE:FEB.21.2000
CONVEYER
G906
James Lee
VR901
-RIGHT CHANNEL
-SR CHANNEL
+RIGHT CHANNEL
+SR CHANNEL
CP905
2.B-
1.B+
2.SR
CN907-2
CN907-1
1.L
QUALITY CHECK
1 2 3 4 5 6 7 8
MPR903 MPR906
QR920 QSR920
QR923 QSR923
RR935 RSR935
RR938 RSR938
BR3 BSR3
BR6 BSR6
ONLY AVR9000 USE
BR28
BR27 BR24 BR25
BR15 BR14 BR16 BR21 BR22
BR7 BR10 BR11 BR12 BR20 BR23
BR18 BR13 BR19 BR9 BR26
?1
?2

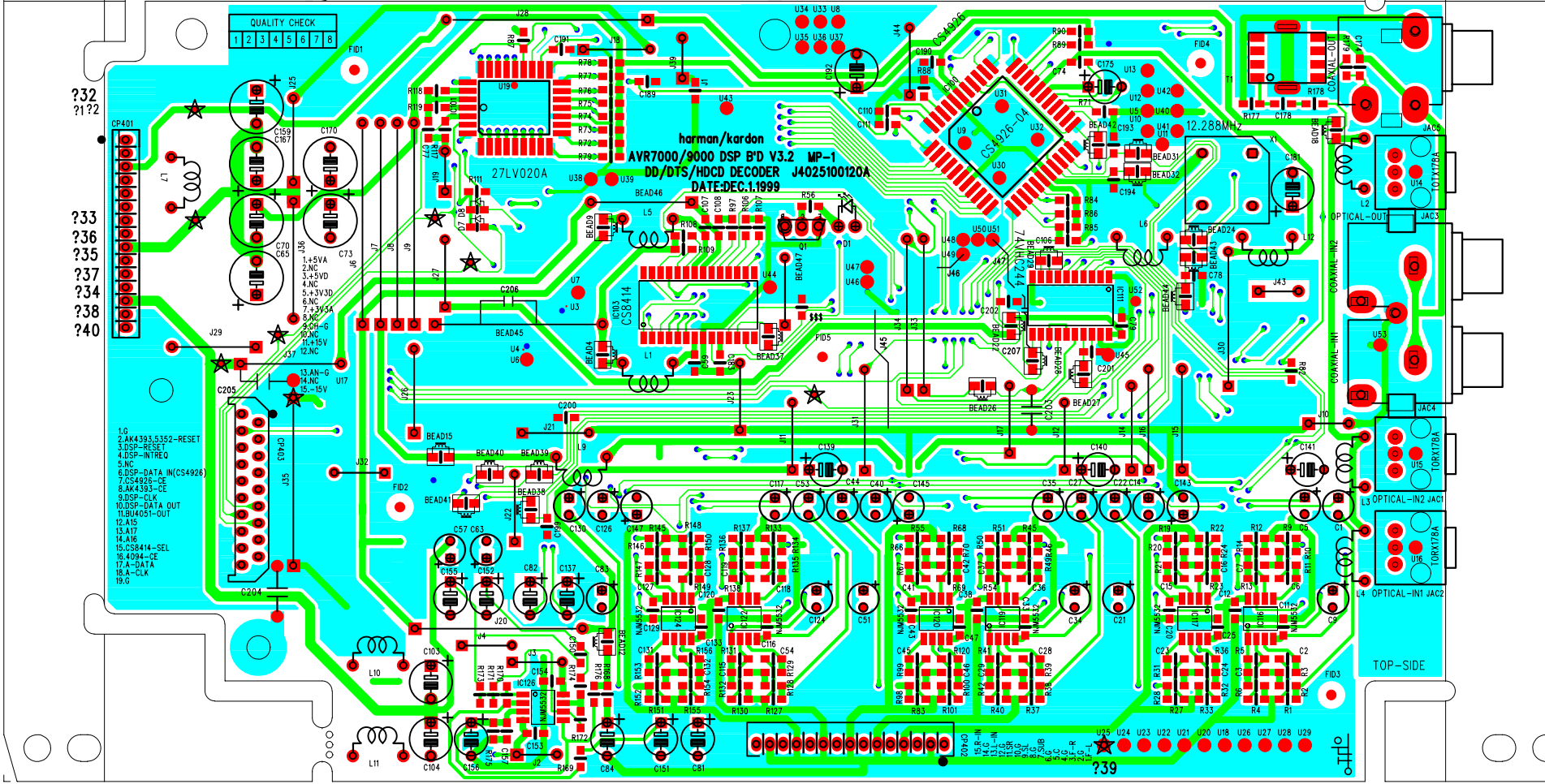
harman/kardon AVR7000/9000
MP-1 3-CH AMP B'D
J4025100040A DATE:FEB.21.2000

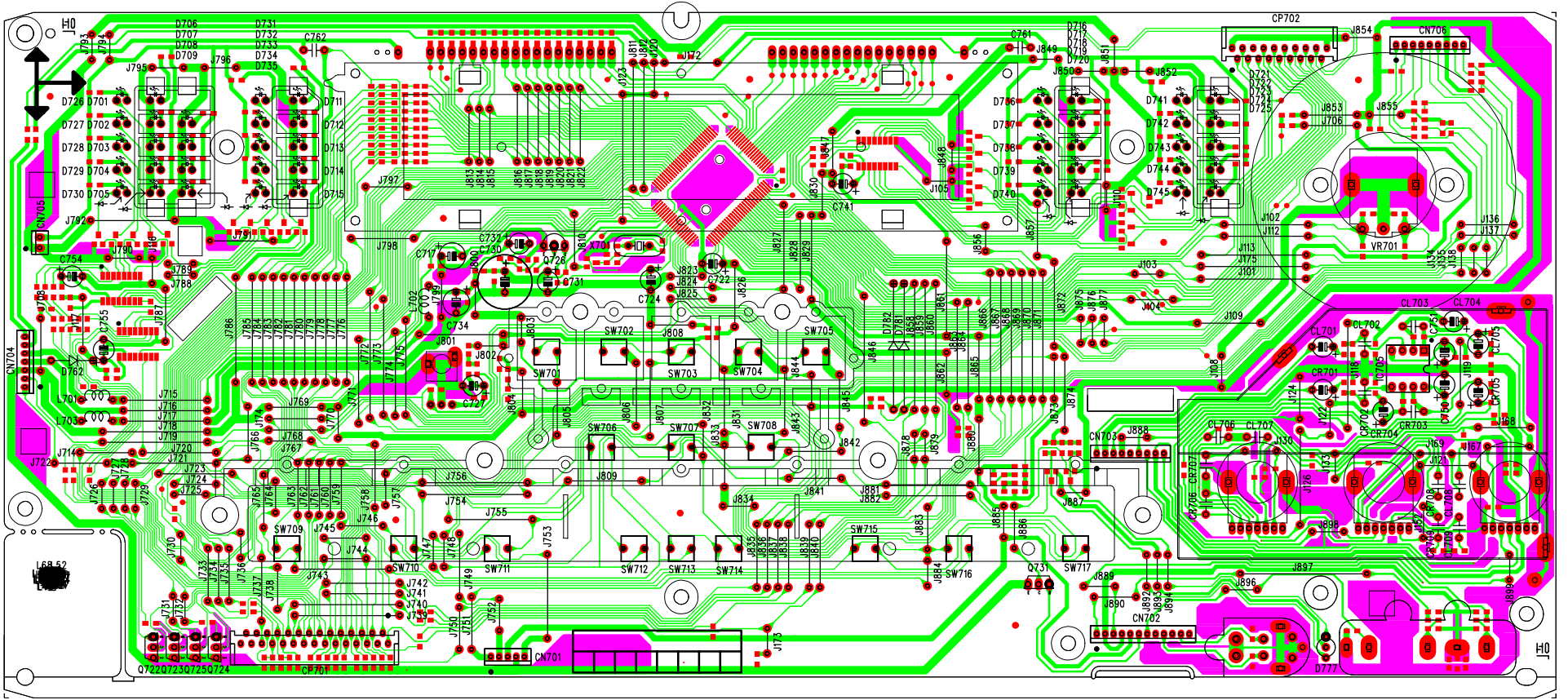


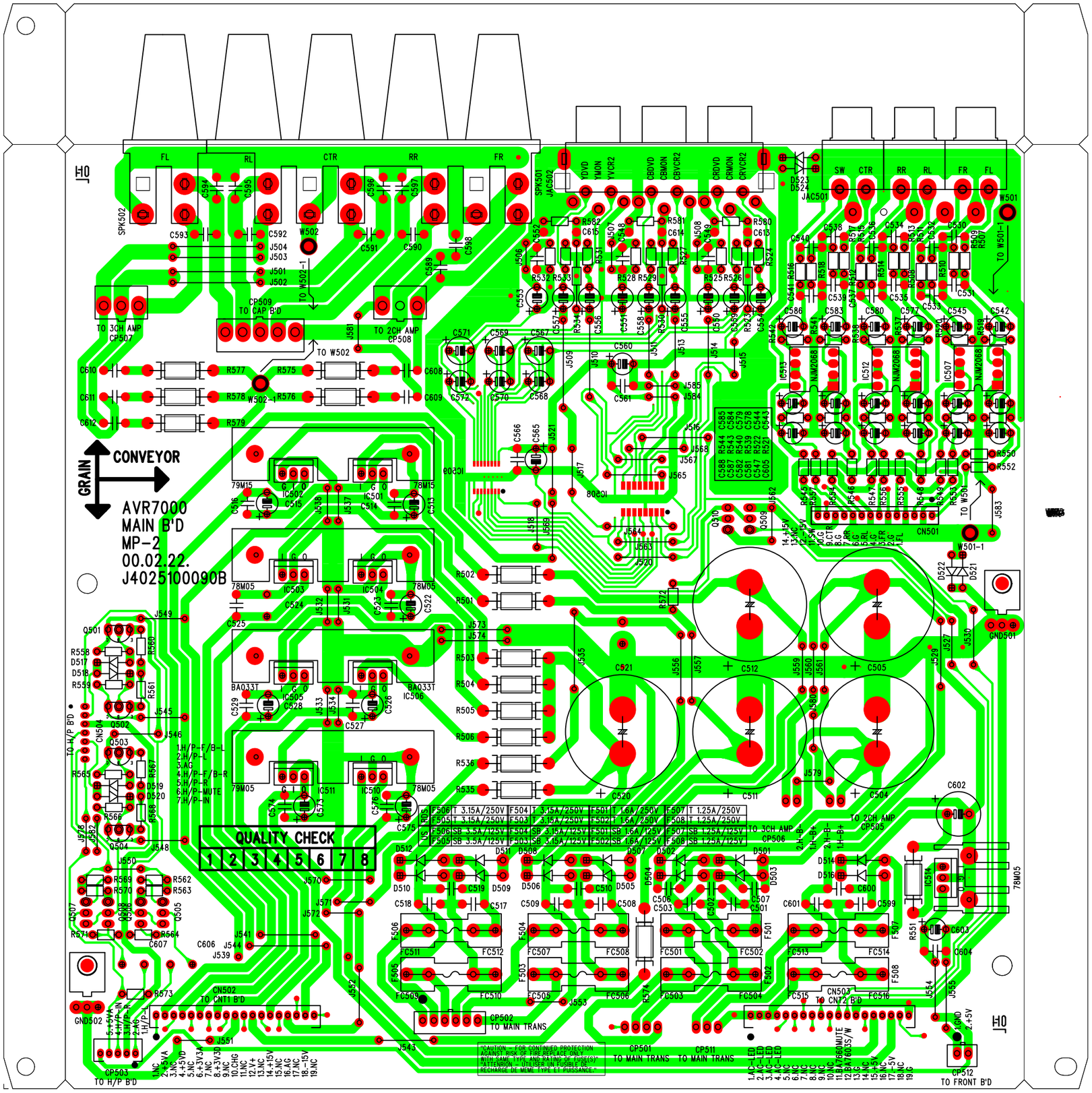
W9W16W6W19W21W23W28?1?3
W5W10W7W11W22W24W27?2?7
W14W12W13W8W20W26?4?5?8
W15W4W17W18W3W25W29?6

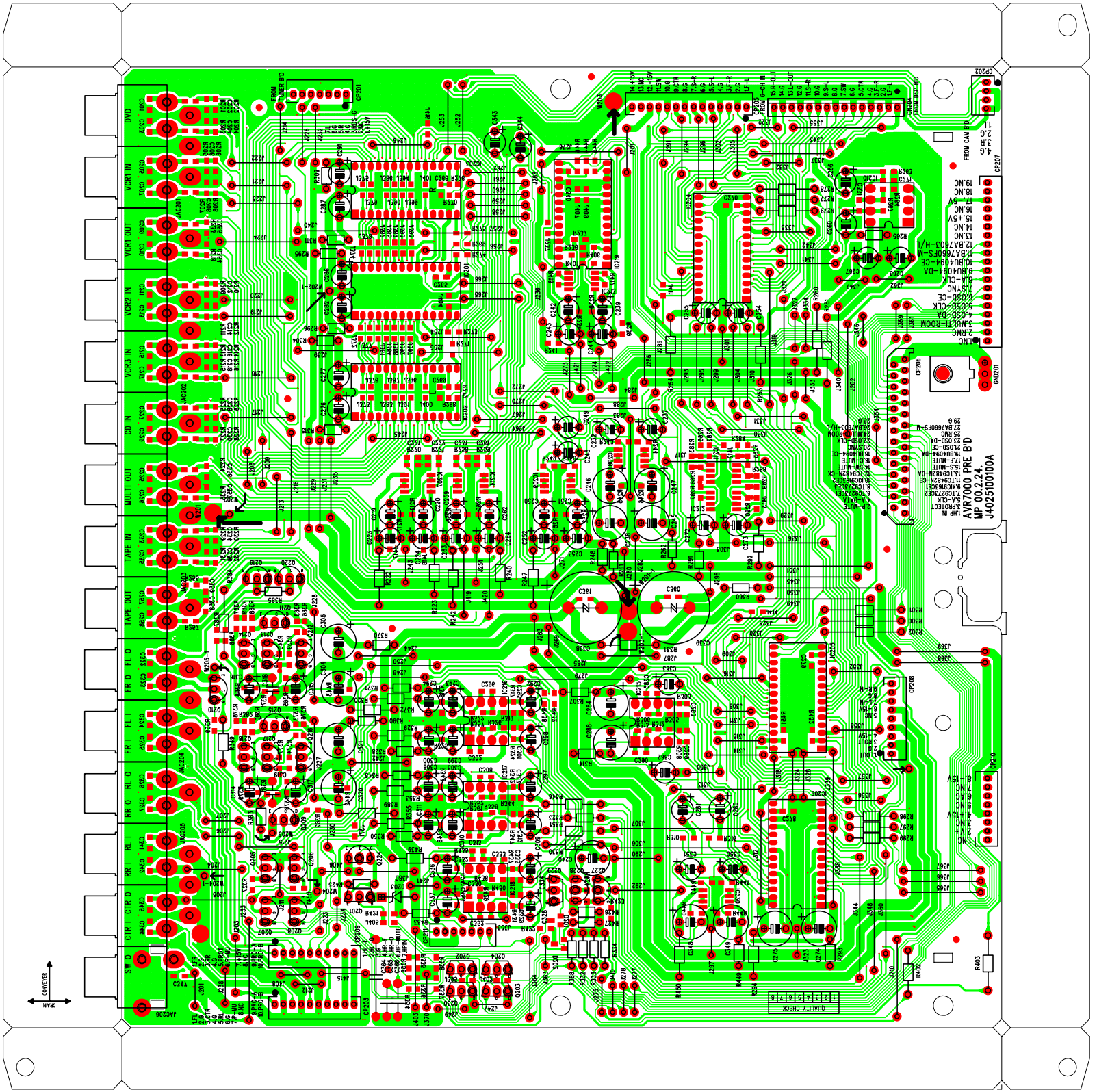

harman/kardon
MP-1 AVR7000/9000 DSP B'D V3.2
J4025100120A DD/DTS/HDCD DECODER
DATE:DEC.1.1999
74VHC574
74VHC574
74VHC157
74VHC157
BU4094
BU4051
AK4393
AK4393
AK4393
AK5352
BOTTOM-SIDE
?42?41
?44?43
?45?46
?47?48
?49?50
?51
?3
?4
?5
?18
?9
?8
?25
?31
?7
?19
?6
?20
?30
?21
?27
?22
?28
?23
?24
?29
?26
?17?15
?11
?10?13
?16?14?12

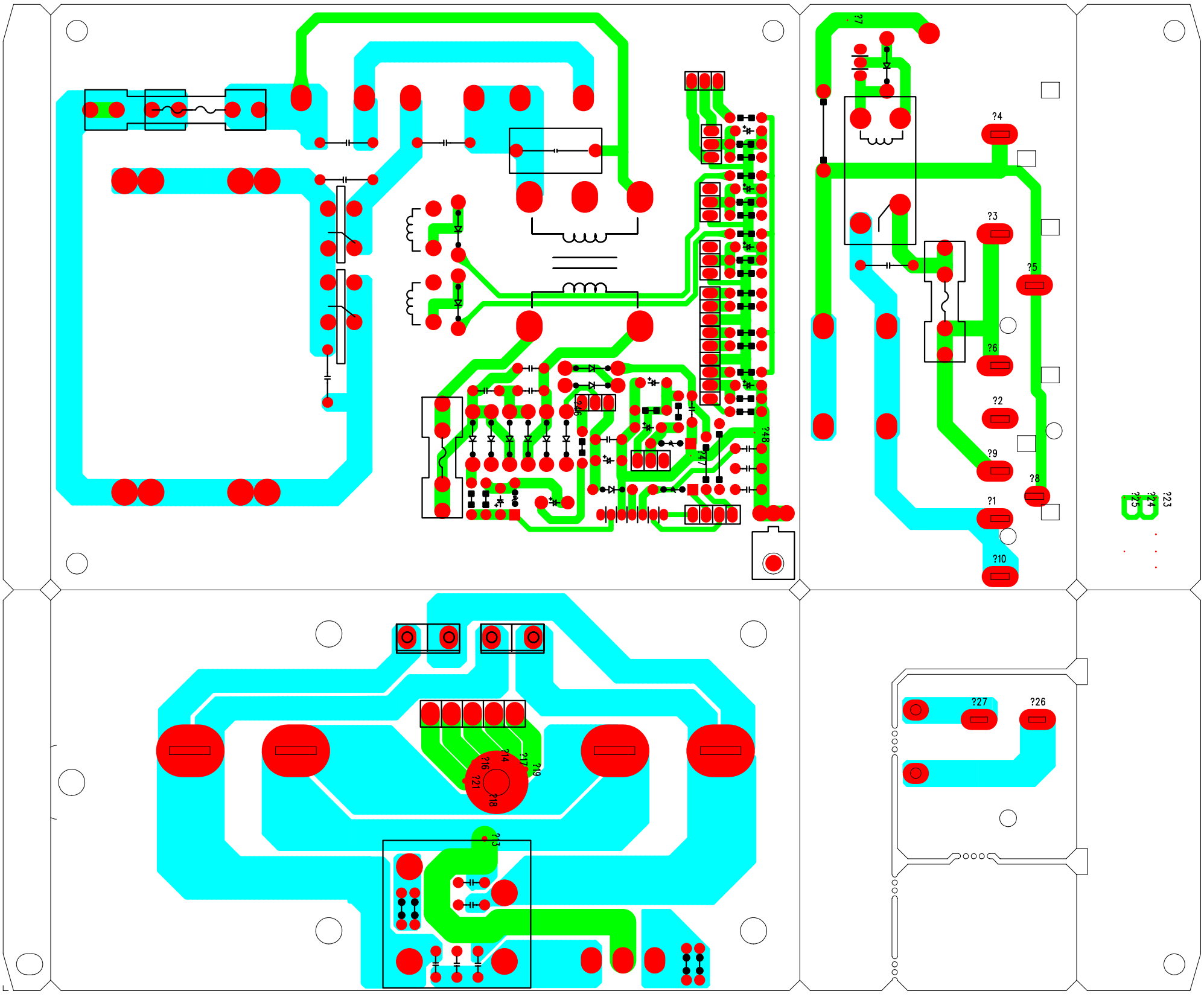
15:24:11 2000

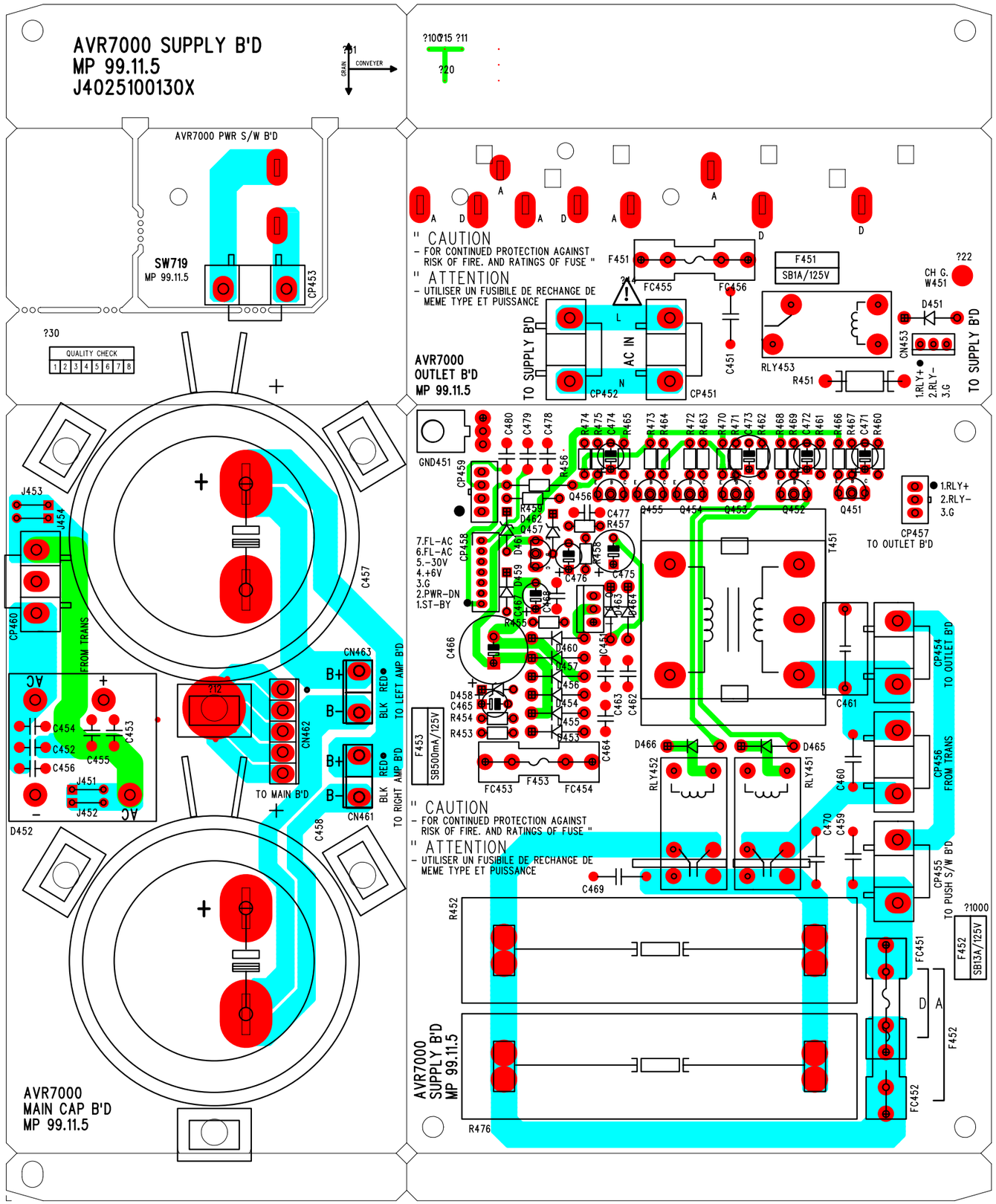

QUALITY CHECK
1 2 3 4 5 6 7 8
harman/kardon
AVR7000/9000 DSP B'D V3.2 MP-1
DD/DTS/HDCD DECODER J4025100120A
DATE:DEC.1.1999
27LV020A
12.288MHz
CS4926-04
CS8414
TOP-SIDE
OPTICAL-OUT
OPTICAL-IN2 JAC1
OPTICAL-IN1 JAC2
COAXIAL-OUT
COAXIAL-IN2
COAXIAL-IN1
?32
?33
?36
?35
?37
?34
?38
?40
?39

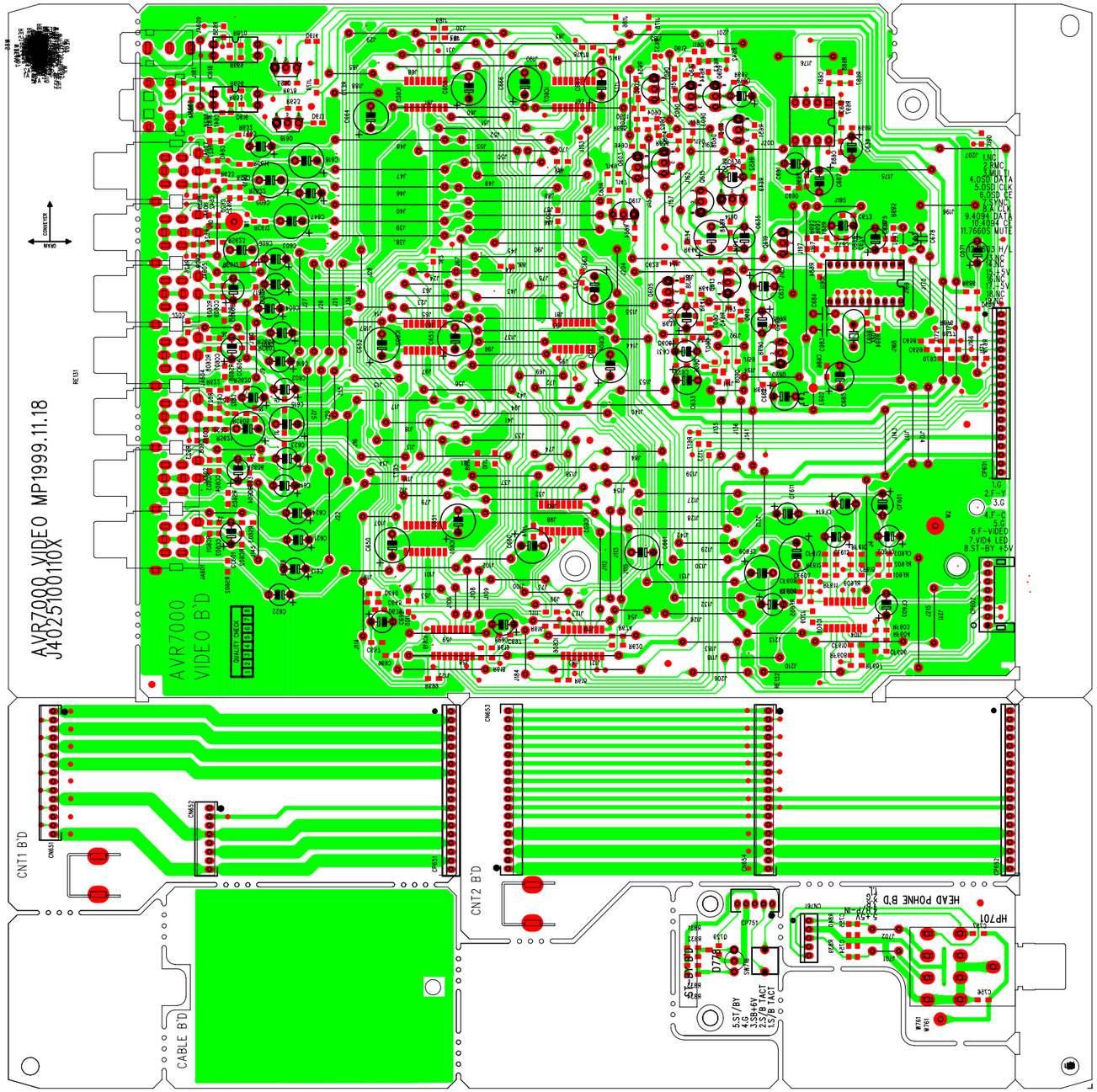



CONVEYOR
GRAIN
AVR7000
MAIN B'D
MP-2
00.02.22.
J4025100090B
QUALITY CHECK
1 2 3 4 5 6 7 8
TO 3CH AMP CP507
TO 2CH AMP CP508
CP509 TO CAP B'D
TO W502
TO W501-1
TO W504
CP502 TO MAIN TRANS
CN502 TO CNT1 B'D
CN503 TO CNT2 B'D
CP503 TO H/P B'D
CP501 TO MAIN TRANS
CP511 TO MAIN TRANS
CP512 TO FRONT B'D
TO 3CH AMP CP506
TO 2CH AMP CP505
"CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE,REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE(S)"
"ATTENTION - REMPLACER PAR FUSIBLE DE RECHANGE DE MEME TYPE ET PUISSANCE."


AVR7000 PRE B'D
WP 00.2.24.
J4025100100A




AVR7000 SUPPLY B'D
MP 99.11.5
J4025100130X
CONVEYER
AVR7000 PWR S/W B'D
SW719
MP 99.11.5
CP453
?30
QUALITY CHECK
1 2 3 4 5 6 7 8
" CAUTION
- FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. AND RATINGS OF FUSE "
" ATTENTION
- UTILISER UN FUSIBILE DE RECHANGE DE MEME TYPE ET PUISSANCE
F451
FC455
FC456
F451
SB1A/125V
?22
CH G.
W451
D451
CN453
RLY453
R451
1.RLY+
2.RLY-
3.G
TO SUPPLY B'D
AVR7000
OUTLET B'D
MP 99.11.5
AC IN
L
N
CP452
CP451
C451
GND451
CP459
CP458
7.FL-AC
6.FL-AC
5.-30V
4.+6V
3.G
2.PWR-DN
1.ST-BY
CP457
TO OUTLET B'D
T451
CP454
TO OUTLET B'D
CP456
FROM TRANS
CP455
TO PUSH S/W B'D
?1000
F452
SB13A/125V
FC451
FC452
F453
SB500mA/125V
FC453
FC454
RLY452
RLY451
D466
D465
J453
J454
CP460
FROM TRANS
AC
C454
C452
C456
C453
C455
J451
J452
D452
?12
TO MAIN B'D
CN462
CN463
CN461
B+
B-
RED
BLK
TO LEFT AMP B'D
TO RIGHT AMP B'D
C457
C458
C466
C461
C460
C470
C459
C469
R452
R476
AVR7000
MAIN CAP B'D
MP 99.11.5
AVR7000
SUPPLY B'D
MP 99.11.5


AVR7000 VIDEO MP1999.11.18
J4025100110X
AVR7000
VIDEO B'D
CNT1 B'D
CNT2 B'D
CABLE B'D
HEAD PHONE B'D
HP701

AVR7000 MECHANICAL PARTS LIST

JE99005307EA MNBD ASM 7000RDS 1
JE99005307UA MNBD ASM AVR7000 1
JE99005507EA FRBD ASM 7000RDS 1
JE99005507UA FRBD ASM AVR7000 1
JE99005907UA PREBD ASM AVR7000 1
JE99006307EA VIDBD ASM 7000RDS 1
JE99006307UA VIDBD ASM AVR7000 1
JE99006707UA DSPBD ASM AVR7000 1
JE99007107EA SUPBD ASM 7000RDS 1
JE99007107UA SUPBD ASM AVR7000 1
JE99007307UA 2CH AMPBD ASM 7000 1
JE99007507UA 3CH AMPBD ASM 7000 1
JAVR7000XXXX EXPLODED VIEW
B2822110014X TRABASFORM BOTTOM
T2822110014X TRABASFORM TOP
JHKEAVRC0001 AVR7000 SPEC
JHKE450001 PEC RELIA TEST
J6171140010X WIRE TIE NYLON6 1
J4099100070X TUMER MODULE US 1
J4099100090X TUNER MODULE RDS 1
J5541003012X CUSHION RUBBER 1
J60400000001 PANEL FRONT AL 1
J60400000002 PANEL FRONT AL 1
J60550003000 BADGE HARMAN/KARDO 1
J65040000000 KNOB MAIN HIPS 1
J85000007000 BODY FRONT HIPS 1
J85100009000 KNOB TONE HIPS 1
J85200050000 BUTTON 7KEY HIPS 1
J85200051000 BUTTON 3KEY HIPS 1
J85200053000 BUTTON 5KEY HIPS 1
J85300011000 WINDOW DISPLAY 1
J85400020000 INDICATOR VIDEO 4 1
J85400021000 ENDCAP LEFT HIPS 1
J85400022000 ENDCAP RIGHT HIPS 1
J85500004000 FILTER DISPLAY 1
J85810011000 GUIDE BUTTON 5KEY 1
J85940002000 DIFFUSER PLATE 1
J60300012000 BKT SW POWER 1
J85200049000 BUTTON POWER HIPS 1
J85810010000 GUIDE POWER SW 1
J85200052000 BUTTON STANDBY 1
J85400019000 INDICATOR STANDBY 1
J60300002000 BRACKET HEADPHONE 1
J60100000001 COVER TOP 1
J60100001100 COVER TOP 1
J60000004001 CH MAIN 1
J60020000301 CH FRONT 1
J85900501000 FOOT-ASS'Y 1
J85900503000 FOOT-RUBBER 1
J5222000910X BKT HEATSINK SECIT 1
J60500003000 HEATSINK POWER 3CH 1
J60500004000 HEATSINK POWER 2CH 1
J5541001010X WASHER SPRING 1
20372510XX WASHER 3.5MM 9.0MM 1
J5541001020X WASHER FLAT 1
J2822110014X*POWER TRANS 120/60 1
J2822410014X*POWER TRANS 230/50 1
J43730100200*CORD AC POWER 1
J43731100200*CORD AC POWER RDS 1
J43732100200*CORD AC POWER SG 1
J60110001000 PANEL REAR SECC 1
J60110001001 PANEL REAR 7000RDS 1
J60110001002 PANEL REAR 7000SG 1
J5636140010X SCREW 1
J5636140040X SCREW 1
J81000300810 SCREW BM3*6Y 1
J5636140150X SCREW 1
JAVR7000SCRW SCREW 3X12PT 1
J5636140080X SCREW A124008000 1
J5636140270X SCREW 1
J90720301080 SCREW 3*10 TEETH T 1
J5636130080X SCREW 1
J5541001030X WASHER SPRING 1
J5541001040X WASHERPLAT INNER 1
20290110XX LUBRICANT HYCHEM/T KG
J85810009000 FL GUIDE HIPS 94HB 1
J85940003000 REFRACTOR 3 1
J85940001000 REFRACTOR-1 1
J97100502000 LABEL-DATE 1
20181850XX CABLE-FIX WIRE-TIE 1
J70800000100 STUD 34 1
J70800000200 STUD 54 1
J70800000300 STUD 55 1
J70800000400 STUD 62.6 1
J60300013000 BKT SUPPORT SECC 1
J60300037000 BKT TOP 1
J60300015000 BKT PREAMP PCB 1
J60300046000 BKT SIDE SECC1.0T 1
J81000400810 SCREW D020400800 1
J97100501010 LABEL-SERIAL 7000S 1
J9710050900X LABEL-SERIAL NO PA 1
J97100509010 LABEL-SERIAL 1
J97100503000 LABEL RISK 1
20932870XX AC PRI LABEL QC CH 1
J94100002000 SHIELD FORM 71TSN 1
J94100003000 SHIELD FORM 71SN 1
J65540000500 PLLATE SPRING 1
J2632100025X EMI-CORD 1
J2632400015X FERRITE CORE CLAMP 1
J2632400025X FERRITE CORE CLAMP 1
J2632400035X CORD CLAMP 50W-1 1
J7001SYLINDR*TRANSFORMER CYLIND 1
J2831410014X*TRANS CHOKE EI 1
J60600013000 BKT SHIELD EMI SEC 1
J60600016000 SHIELD PLATE LARGE 1
J60600015000 SHIELD PLATE SMALL 1
J60600017000 SHIELD PLATE DSP 1
J60600018000 SHIELD PREAMP 1
J5131000007X KNOB CORK 1

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□□ 0110 J85000007000 BODY FRONT HIPS F4799
□13 01101 M85000007000 BODY FRONT HIPS RA 1.00000 M F5299 02 1
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□ 0120 J85100009000 KNOB TONE HIPS F4799

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□13 01201 M85100009000 KNOB TONE HIPS RAW     1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
□   0240  J85200049000 BUTTON POWER HIPS                   F4799
□13 02401 M85200049000 BUTTON POWER HIPS      1.00000 M  F5299 02    1
□   02406 20289980XX   DILUTION IPI-783 3 LI   .00001 B  F4799       1
□-------------------------------------------------------------------------------------------------
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□   0130  J85200050000 BUTTON 7KEY HIPS                   F4799
□13 01301 N85200050000 BUTTON 7KEY HIPS R     1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0140  J85200051000 BUTTON 3KEY HIPS                   F4799
□13 01401 M85200051000 BUTTON 3KEY HIPS R     1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0260  J85200052000 BUTTON STANDBY                     F4799
□13 02601 M85200052000 BUTTON STANDBY HIP     1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0150  J85200053000 BUTTON 5KEY HIPS                   F4799
□13 01501 M85200050300 BUTTON 5KEY HIPS R     1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
□   0270  J85400019000 INDICATOR STANDBY                  F4799
□   02701 55022170XX   GRANULES SAN TYRIL KG   .00200 B  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0170  J85400020000 INDICATOR VIDEO 4                  F4799
□-------------------------------------------------------------------------------------------------
□□   01701 55006550XX   GRANULES SAN SAN T KG   .00100 B  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0180  J85400021000 ENDCAP LEFT HIPS                   F4799
□13 01801 M85400021000 ENDCAP LEFT HIPS R     1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0190  J85400022000 ENDCAP RIGHT HIPS                  F4799
□13 01901 M85400022000 ENDCAP RIGHT HIPS      1.00000 M  F0200 03    1
□-------------------------------------------------------------------------------------------------
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□   0610  J85810009000 FL GUIDE HIPS 94HB                F4799
□   06101 20290570XX   GRANULES PS ATOCHE KG   .00940 B  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0250  J85810010000 GUIDE POWER SW                     F4799
□   02501 20290570XX   GRANULES PS ATOCHE KG   .00100 B  F4799       1
□-------------------------------------------------------------------------------------------------
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□   0210  J85810011000 GUIDE BUTTON 5KEY                  F4799
□13 02101 M85810011000 BUTTON 5KEY RAW        1.00000 M  F5299 02    1
□-------------------------------------------------------------------------------------------------
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□   0320  J85900501000 FOOT-ASS'Y                        F4799
□13 03201 J528003020M  FOOT-MOLD RAW          1.00000 M  F4799 01    1
□   03202 AP82447619AL STAMPING FOIL      FT   .00500 B  F4799       1
□-------------------------------------------------------------------------------------------------
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□   0630  J85940001000 REFRACTOR-1                       F5099 01
□   06301 55022780XX   GRANULES ABS TORAY KG   .00300 B  F2600 04    1
□-------------------------------------------------------------------------------------------------
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□   0620  J85940003000 REFRACTOR 3                       F4799
□   06201 55022780XX   GRANULES ABS TORAY KG   .00250 B  F2600 04    1
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□□   0320  J5283003020M FOOT-MOLD RAW                    F5299 01
□   03201 55010080XX   GRANULES ABS TORAY KG   .01396 B  F5299 01    1
□   03202 55015950XX   GRANULES PIGMENT K KG   .00014 B  F5299 01    1
□-------------------------------------------------------------------------------------------
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□   0110  M85000007000 BODY FRONT HIPS RA               F5299 01
□   01101 20290570XX   GRANULES PS ATOCHE KG   .32000 B  F5299 01    1
□-------------------------------------------------------------------------------------------
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□   0120  M85100009000 KNOB TONE HIPS RAW               F5299 01
□   01201 20290570XX   GRANULES PS ATOCHE KG   .01800 B  F5299 01    1
□-------------------------------------------------------------------------------------------
□   0240  M85200049000 BUTTON POWER HIPS                F5299 01
□   02401 20290570XX   GRANULES PS ATOCHE KG   .00100 B  F5299 01    1
□-------------------------------------------------------------------------------------------
□   0130  M85200050000 BUTTON 7KEY HIPS R               F5299 01
□C2 01301 JAVRC0000001 SHALLOW GREEN RAW  KG   .02900 M  F2600 02    1
□-------------------------------------------------------------------------------------------
□   0140  M85200051000 BUTTON 3KEY HIPS R               F5299 01
□C2 01401 JAVRC0000001 SHALLOW GREEN RAW  KG   .00800 M  F2600 02    1
□-------------------------------------------------------------------------------------------
□   0260  M85200052000 BUTTON STANDBY HIP               F5299 01
□   02601 20290570XX   GRANULES PS ATOCHE KG   .00220 B  F5299 01    1
□-------------------------------------------------------------------------------------------
□   0150  M85200053000 BUTTON 5KEY RAW                  F5299 01
□   01501 JAVRC0000001 SHALLOW GREEN RAW  KG   .00800 B  F5299 01    1
□-------------------------------------------------------------------------------------------
□   0180  M85400021000 ENDCAP LEFT HIPS R               F5299 01
□   01801 20290570XX   GRANULES PS ATOCHE KG   .01200 B  F5299 01    1
□-------------------------------------------------------------------------------------------
□   0190  M85400022000 ENDCAP RIGHT HIPS                F5299 01
□   01901 20290570XX   GRANULES PS ATOCHE KG   .01200 B  F5299 01    1
□-------------------------------------------------------------------------------------------
□   0210  M85810011000 BUTTON 5KEY RAW                  F5299 01
□   02101 20290570XX   GRANULES PS ATOCHE KG   .00320 B  F5299 01    1
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PACKAGING

J4482220011X	AM ANTENNAL LOOP	1
J4481250011X	FM ANT 75 WIRE ANT	1
J4481250021X	ANT FM 75OHM WIRE	1
J54000000100	ASS'Y REMOCON	1
J54000000110	ASS'Y REMOCON AVR7	1
J55100000100	BATTERY DRY 1.5 VA	1
J90300002000	CARD-WARRANTY	1
J97100507000	SAFETY LEAF	1
J97100506000	CARD-POST	1
J94100001000	JUMPER	1
J97000501000	POLY BAG PE T0.05	1
J97000501010	AC CORD POLY BAG	1
J97100000000	POLY SHEET PE-FOAM	1
J97200006000	PAD SIDE AVR7000	1
J97300001000	PAD UPPER AVR7000	1
J97300002000	PAD INNER AVR7000	1
J90200002000	MANUAL AVR-7000	1
J90200002001	MANUAL 7000RDS	1
J96000010001	BOX CARTON 7000RDS	1
J96000015000	BOX CARTON	1
J90300006000	HDCD CATALOGUE	1
J54000000200	REMOCON ZONW II	1
20194780XX	CABLE-FIX CABLE-TI	1

AVR7000 REVISIONS

NOTE SHADED CELLS INDICATE CHANGES ARE NOT RELECTED IN CURRENT PARTS LIST

Description of Change	Reason	Change Date	Cut-in S/N
Add TR KTC2874/NPN TO-92 KEC IN Q602,603,604,609,613,616 OF AVR7000 RDS H/K		13-Sep-00	TH0003-09303
Change IC CPU CXP82860-170Q QFP100 to CXP82860-196Q QFP100 SONY	CPU upgrade	7-Nov-00	N/A
Replace fuse SB 1A/125V with fuse SB 3.15A/125V IN AVR7000 US	AC outlet fuse burning issue	7-Nov-00	N/A
Change RSR947,976 AND RR946,947 to RES 12GS 39 1/2W 5%	For improve S/N ratio	7-Nov-00	TH0003-09303 TH0012-08616
Change RSR931,RR931 to RES CF 15 1/4W J	For improve S/N ratio	7-Nov-00	
Change (1/4w) RL948,RC948,RSL948 to RES CARBON/AX TAP 100HM 1/2W	For improve S/N ratio	15-Aug-00	TH0003-08901 TH0012-03840
Change (1/4w)RR948 to RES CARBON/AX 100HM 1/2W J	For improve S/N ratio	9-Aug-00	N/A
Change D517~524 to DIODE AX/TAP, SW IN4148		23-Feb-00	N/A
Add C364,365,366(CAP CERA/AX, TAP F 0.1UF 25V Z)		23-Feb-00	N/A
Add J38 (RES 0 HM 1/10W J)	For improve S/N ratio	17-Apr-00	N/A
QR905, QSR905 Location Change; TR PNP 2SA1145 Y TO -92MOD	Improvement for prevent S&R failure	2-Jan-01	TH0012-07531
QR906, QSR906 Add; TR RA/TAP, PNP KTA1268-BL	Improvement for prevent S&R failure	2-Jan-01	N/A
CR911, CSR911, C963 Location Change; CAP ELEC SG 470uF 10V M 8*11.5	Improvement for prevent S&R failure	2-Jan-01	N/A
C962 ADD CAP ELEC SG 1000uF 10V M 10*16		2-Jan-01	N/A
RR948 CHANGE RES CARBON/AX, TAP 10ohm 1/2W J TO RES OXIDE/TAP 10ohm 1W J	Solution for auto protect issue	2-Jan-01	N/A
RR927, 929, RSL927, 929 CHANGE RES CARBON/AX, TAP 2R2 ohm 1/2W J TO OXIDE/TAP 2R2 ohm 1W J	Solution for auto protect issue	2-Jan-01	N/A
RR954, RSR954 CHANGE RES CARBON/AX, TAP 22K ohm 1/8W J TO CARBON/AX, TAP 33K ohm 1/8W J	Solution for auto protect issue	2-Jan-01	N/A
QC905, QL905, QSL905 LOCATION CHANGE; TR PNP 2SA1145 Y TO-92MOD	Solution for auto protect issue	2-Jan-01	N/A
QC906, QL906, QSL906 ADD; TR RA/TAP, PNP KTA1268-BL	Solution for auto protect issue	2-Jan-01	N/A
RL948, RC948, RSL948 CHANGE RES CARBON/AX, TAP 10 ohm 1/2W J TO RES OXIDE/TAP 10 ohm 1W J	Solution for auto protect issue	2-Jan-01	N/A
RC927,929, RL927,929, RSL927,929 CHANGE RES CARBON/AX, TAP 2R2 10 ohm 1/2W J TO RES OXIDE/TAP 2R2 10 ohm 1W J	Solution for auto protect issue	2-Jan-01	N/A
RC954, RL954, RSL954 CHANGE RES CARBON/AX, TAP 22K ohm 1/8W J TO RES CARBON/AX, TAP 33K ohm 1/8W J	Solution for auto protect issue	2-Jan-01	N/A
QR905,906, QSR905,906 ALTERNATIVE PART CHANGE TR RA/TAP, PNP KTA1268-BL TO TR PNP 2SA1145 Y TO 92MOD	Countermeasure for auto power off	8-Dec-00	N/A
QC905,906, QL905,906, QSL905,906 ALTERNATIVE PART CHANGE TR RA/TAP, PNP KTA1268-BL TO PNP 2SA1145 Y TO 92MOD	Countermeasure for auto power off	8-Dec-00	N/A
R991 RE-WORK ADD RES OXIDE/TAP 12K ohm 1W J	Solution for auto protect issue	8-Nov-00	N/A
R992 RE-WORK ADD RES CARBON/AX, TAP 3K3 ohm 1/8W J	Solution for auto protect issue	8-Nov-00	N/A
QC905, QL905, QSL905 ALTERNATIVE ADD TR PNP 2SA1145 Y TO-92MOD	Alternative part use	8-Nov-00	N/A
R990 RE-WORK ADD REX OXIDE/TAP 12K ohm 1W J	Solution for auto protect issue	8-Nov-00	N/A
ADD D-ZENER/AX, TAP .5W 5.6W MTZ J 5.6B	Solution for auto protect issue	2-Aug-00	TH0012-04801
RR933,934,936,937, RSR933,934,936,937 CHANGE RES CARBON/AX, TAP 10 ohm 1/4W J	Solution for auto protect issue	2-Aug-00	TH0003-08901 TH0012-03840
RP948 CHANGE RES CARBON/AX, TAP 10 ohm 1/2W J	Solution for auto protect issue	2-Aug-00	N/A
Q602,603,604,609,613,616 ALTERNATIVE PART ADD TR KTC2874 A NPN TO-92 KEC	Alternative part use	13-Sep-00	N/A

AVR7000 ELECTRICAL PARTS LIST

MAIN PCB

Part#	Ref. Designator	Description	Qty
C506	J3640104350X	CP MET .1U 250V -M	1
C507	J3640104350X	CP MET .1U 250V -M	1
C508	J3600473330X	CP .047U 100V K	1
C509	J3600473330X	CP .047U 100V K	1
C513	J3470110971X	CE SG 1U 50V M	1
C514	J3523104540X	CAP C/D/T .1U 25V	1
C515	J3470110971X	CE SG 1U 50V M	1
C516	J3523104540X	CAP C/D/T .1U 25V	1
C517	J3600473330X	CP .047U 100V K	1
C518	J3600473330X	CP .047U 100V K	1
C522	J3470110971X	CE SG 1U 50V M	1
C523	J3523104540X	CAP C/D/T .1U 25V	1
C525	J3523104540X	CAP C/D/T .1U 25V	1
C526	J3470110971X	CE SG 1U 50V M	1
C527	J3523104540X	CAP C/D/T .1U 25V	1
C528	J3470110971X	CE SG 1U 50V M	1
C529	J3523104540X	CAP C/D/T .1U 25V	1
C530	J3513101270X	CC 100PF 50V	1
C531	J3513101270X	CC 100PF 50V	1
C532	J3513101270X	CC 100PF 50V	1
C533	J3513101270X	CC 100PF 50V	1
C534	J3513101270X	CC 100PF 50V	1
C535	J3513101270X	CC 100PF 50V	1
C536	J3513101270X	CC 100PF 50V	1
C537	J3513101270X	CC 100PF 50V	1
C538	J3513101270X	CC 100PF 50V	1
C539	J3513101270X	CC 100PF 50V	1
C540	J3513101270X	CC 100PF 50V	1
C541	J3513101270X	CC 100PF 50V	1
C542	J3470110071X	CE SG 10U 50V M	1
C543	J3470110071X	CE SG 10U 50V M	1
C544	J3470110071X	CE SG 10U 50V M	1
C545	J3470110071X	CE SG 10U 50V M	1
C547	J3470147031X	CE SG 47U 16V M	1
C548	J3523104540X	CAP C/D/T .1U 25V	1
C549	J3523104540X	CAP C/D/T .1U 25V	1
C550	J3470110071X	CE SG 10U 50V M	1
C551	J3470110071X	CE SG 10U 50V M	1
C552	J3523104540X	CAP C/D/T .1U 25V	1
C553	J3470110071X	CE SG 10U 50V M	1
C554	J3470110971X	CE SG 1U 50V M	1
C555	J3470110971X	CE SG 1U 50V M	1
C556	J3470110971X	CE SG 1U 50V M	1
C557	J3470110971X	CE SG 1U 50V M	1
C558	J3470110971X	CE SG 1U 50V M	1
C559	J3470110971X	CE SG 1U 50V M	1
C560	J3470147031X	CE SG 47U 16V M	1
C561	J3523104540X	CAP C/D/T .1U 25V	1
C565	J3470147031X	CE SG 47U 16V M	1
C566	J3523104540X	CAP C/D/T .1U 25V	1
C567	J3470110131X	CE SG 100U 16V M	1
C568	J3470122041X	CE 22U 25V 5*11	1
C569	J3470110131X	CE SG 100U 16V M	1
C570	J3470122041X	CE 22U 25V 5*11	1
C571	J3470110131X	CE SG 100U 16V M	1
C572	J3470122041X	CE 22U 25V 5*11	1
C573	J3470110971X	CE SG 1U 50V M	1
C574	J3523104540X	CAP C/D/T .1U 25V	1
C575	J3470110971X	CE SG 1U 50V M	1
C576	J3523104540X	CAP C/D/T .1U 25V	1
C577	J3470110071X	CE SG 10U 50V M	1
C578	J3470110071X	CE SG 10U 50V M	1
C579	J3470110071X	CE SG 10U 50V M	1
C580	J3470110071X	CE SG 10U 50V M	1
C581	J3470147031X	CE SG 47U 16V M	1
C582	J3470147031X	CE SG 47U 16V M	1
C583	J3470110071X	CE SG 10U 50V M	1
C584	J3470110071X	CE SG 10U 50V M	1
C585	J3470110071X	CE SG 10U 50V M	1
C586	J3470110071X	CE SG 10U 50V M	1
C587	J3470147031X	CE SG 47U 16V M	1
C588	J3470147031X	CE SG 47U 16V M	1
C589	J3600472330X	CP .0047U 100V K	1
C590	J3600472330X	CP .0047U 100V K	1
C591	J3600472330X	CP .0047U 100V K	1
C592	J3600472330X	CP .0047U 100V K	1
C593	J3600472330X	CP .0047U 100V K	1
C594	J3600472330X	CP .0047U 100V K	1
C595	J3600472330X	CP .0047U 100V K	1
C596	J3600472330X	CP .0047U 100V K	1
C597	J3600472330X	CP .0047U 100V K	1
C598	J3600472330X	CP .0047U 100V K	1
C599	J3600473330X	CP .047U 100V K	1
C601	J3600473330X	CP .047U 100V K	1
C603	J3470110971X	CE SG 1U 50V M	1
C604	J3523104540X	CAP C/D/T .1U 25V	1
C605	J3470147031X	CE SG 47U 16V M	1
C608	J3600473330X	CP .047U 100V K	1
C609	J3600473330X	CP .047U 100V K	1
C610	J3600473330X	CP .047U 100V K	1
C611	J3600473330X	CP .047U 100V K	1
C612	J3600473330X	CP .047U 100V K	1
C613	J3514101270X	CC 100P 50V K	1
C614	J3514101270X	CC 100P 50V K	1
C615	J3514101270X	CC 100P 50V K	1
D517	J2221010000X	DIODE SW IN4148	1
D518	J2221010000X	DIODE SW IN4148	1
D519	J2221010000X	DIODE SW IN4148	1
D520	J2221010000X	DIODE SW IN4148	1
D521	J2221010000X	DIODE SW IN4148	1
D522	J2221010000X	DIODE SW IN4148	1
D523	J2221010000X	DIODE SW IN4148	1
D524	J2221010000X	DIODE SW IN4148	1
FC501	J4210020001X	FUSE CLIP 0.3T	1
FC502	J4210020001X	FUSE CLIP 0.3T	1
FC503	J4210020001X	FUSE CLIP 0.3T	1
FC504	J4210020001X	FUSE CLIP 0.3T	1
FC505	J4210020001X	FUSE CLIP 0.3T	1
FC506	J4210020001X	FUSE CLIP 0.3T	1
FC507	J4210020001X	FUSE CLIP 0.3T	1
FC508	J4210020001X	FUSE CLIP 0.3T	1
FC509	J4210020001X	FUSE CLIP 0.3T	1
FC510	J4210020001X	FUSE CLIP 0.3T	1
FC511	J4210020001X	FUSE CLIP 0.3T	1
FC512	J4210020001X	FUSE CLIP 0.3T	1
FC513	J4210020001X	FUSE CLIP 0.3T	1
FC514	J4210020001X	FUSE CLIP 0.3T	1
FC515	J4210020001X	FUSE CLIP 0.3T	1
FC516	J4210020001X	FUSE CLIP 0.3T	1
Q501	J2021020801X	TR MPSA06 Y TO-92	1

Q502	J2021000601X	TR PNP MPSA56 Y	1
Q503	J2021020801X	TR MPSA06 Y TO-92	1
Q504	J2021000601X	TR PNP MPSA56 Y	1
Q505	J2021060001X	TR NPN KTD1302 B	1
Q506	J2021060001X	TR NPN KTD1302 B	1
Q507	J2021060001X	TR NPN KTD1302 B	1
Q508	J2021060001X	TR NPN KTD1302 B	1
Q509	J2021220102X	TR NPN DTC114YSA	1
Q510	J2021200002X	TR PNP DTA114YS	1
R507	J3003471220X	RES CF 470 1/8 J	1
R508	J3003471220X	RES CF 470 1/8 J	1
R509	J3003104220X	RES CF 100K 1/8 J	1
R510	J3003104220X	RES CF 100K 1/8 J	1
R511	J3003471220X	RES CF 470 1/8 J	1
R512	J3003471220X	RES CF 470 1/8 J	1
R513	J3003104220X	RES CF 100K 1/8	1
R514	J3003104220X	RES CF 100K 1/8 J	1
R515	J3003471220X	RES CF 470 1/8 J	1
R516	J3003471220X	RES CF 470 1/8 J	1
R517	J3003104220X	RES CF 100K 1/8 J	1
R518	J3003104220X	RES CF 100K 1/8 J	1
R519	J3003104220X	RES CF 100K 1/8 J	1
R520	J3003104220X	RES CF 100K 1/8 J	1
R521	J3003104220X	RES CF 100K 1/8 J	1
R522	J3003104220X	RES CF 100K 1/8 J	1
R523	J3003750220X	RES CF 75 1/8 J	1
R524	J3003750220X	RES CF 75 1/8 J	1
R525	J3003100220X	RES CF 10 1/8W J	1
R526	J3003750220X	RES CF 75 1/8 J	1
R527	J3003750220X	RES CF 75 1/8 J	1
R528	J3003100220X	RES CF 10 1/8W J	1
R529	J3003750220X	RES CF 75 1/8 J	1
R530	J3003750220X	RES CF 75 1/8 J	1
R531	J3003750220X	RES CF 75 1/8 J	1
R532	J3003100220X	RES CF 10 1/8W J	1
R533	J3003750220X	RES CF 75 1/8 J	1
R534	J3003750220X	RES CF 75 1/8 J	1
R537	J3003104220X	RES CF 100K 1/8 J	1
R538	J3003104220X	RES CF 100K 1/8 J	1
R539	J3003104220X	RES CF 100K 1/8 J	1
R540	J3003104220X	RES CF 100K 1/8 J	1
R541	J3003104220X	RES CF 100K 1/8 J	1
R542	J3003104220X	RES CF 100K 1/8 J	1
R543	J3003104220X	RES CF 100K 1/8 J	1
R544	J3003104220X	RES CF 100K 1/8 J	1
R545	J3003101220X	RES CF 100 1/8 J	1
R546	J3003101220X	RES CF 100 1/8 J	1
R547	J3003101220X	RES CF 100 1/8 J	1
R548	J3003101220X	RES CF 100 1/8 J	1
R549	J3003101220X	RES CF 100 1/8 J	1
R550	J3003101220X	RES CF 100 1/8 J	1
R552	J3003101220X	RES CF 100 1/8 J	1
R553	J3003101220X	RES CF 100 1/8 J	1
R554	J3003561220X	RES CF 560 1/8 J	1
R555	J3003561220X	RES CF 560 1/8 J	1
R556	J3003561220X	RES CF 560 1/8 J	1
R557	J3003561220X	RES CF 560 1/8 J	1
R558	J3003472220X	RES CF 4K7 1/8 J	1
R559	J3003472220X	RES CF 4K7 1/8 J	1
R560	J3003100220X	RES CF 10 1/8W J	1
R561	J3003100220X	RES CF 10 1/8W J	1
R562	J3003222220X	RES CF 2K2 1/8W J	1
R563	J3003222220X	RES CF 2K2 1/8W J	1
R564	J3003153220X	RES CF 15K 1/8W J	1
R565	J3003472220X	RES CF 4K7 1/8 J	1
R566	J3003472220X	RES CF 4K7 1/8 J	1
R567	J3003100220X	RES CF 10 1/8W J	1
R568	J3003100220X	RES CF 10 1/8W J	1
R569	J3003222220X	RES CF 2K2 1/8W J	1
R570	J3003222220X	RES CF 2K2 1/8W J	1
R571	J3003153220X	RES CF 15K 1/8W J	1
R572	J3003153220X	RES CF 15K 1/8W J	1
R573	J3003472220X	RES CF 4K7 1/8 J	1
R580	J3003103220X	RES CF 10K 1/8 J	1
R581	J3003103220X	RES CF 10K 1/8 J	1
'050	J60530001000	HEATSINK 46*12*45H	1
'060	J60530003000	HEATSINK 17*15*45H	1
'090	J5636140010X	SCREW	1
CN501	J4370009910X	CNT 14P 160MM 2.0	1
CN502	J4423231900X	CNT ST 35336-1910	1
CN503	J4423231900X	CNT ST 35336-1910	1
CN504	J4370009923X	CNT 7P 160#26 SL	1
CP501	J4420040440X	CNT PLUG 2.5 ST 4P	1
CP502	J4420040640X	CNT 2.5MM ST 6P	1
CP503	J4420030540X	CNT PLUG 2.0 ST 5P	1
CP505	J4420040200X	CNT ST 5267-02A	1
CP506	J4420040200X	CNT ST 5267-02A	1
CP507	J4420050300X	CNT ST 35313-0310	1
CP508	J4420060200X	CONNECTOR	1
CP509	J4420050500X	CONNECTOR	1
CP511	J4420040340X	CNT PLUG 2.5 ST 3P	1
CP512	J4420040240X	CNT GT250-2P-TS	1
C501	J3640104350X	CP MET .1U 250V -M	1
C502	J3640104350X	CP MET .1U 250V -M	1
C503	J3640104350X	CP MET .1U 250V -M	1
C504	J3402322286X	CE AHS 2200UF 100V	1
C505	J3402322286X	CE AHS 2200UF 100V	1
C510	J3600473330X	CP .047U 100V K	1
C511	J3402347246X	CE AHS 4700UF 35V	1
C512	J3402347246X	CE AHS 4700UF 35V	1
C519	J3600473330X	CP .047U 100V K	1
C520	J3420410326X	CE DL 10000UF 16V	1
C521	J3420633226X	CE SHL 3300U 16V	1
C524	J3470110211X	CE 1000UF 6.3V	1
C600	J3600473330X	CP .047U 100V K	1
C602	J3470110231X	CAP ELEC SG 1000UF	1
C606	J3470110211X	CE 1000UF 6.3V	1
C607	J3470110211X	CE 1000UF 6.3V	1
D501	J2221214000X	DIODE IN4003	1
D502	J2221214000X	DIODE IN4003	1
D503	J2221214000X	DIODE IN4003	1
D504	J2221214000X	DIODE IN4003	1
D505	J2221214000X	DIODE IN4003	1
D506	J2221214000X	DIODE IN4003	1
D507	J2221214000X	DIODE IN4003	1
D508	J2221214000X	DIODE IN4003	1
D509	J2221214000X	DIODE IN4003	1
D510	J2221214000X	DIODE IN4003	1
D511	J2221214000X	DIODE IN4003	1
D512	J2221214000X	DIODE IN4003	1
D514	J2221214000X	DIODE IN4003	1
D516	J2221214000X	DIODE IN4003	1
F501	J5502216320X	FUSE SB 1.6A/125V	1
F501	J5503316330X	FUSE T 250V/1.6A	1
F502	J5502216320X	FUSE SB 1.6A/125V	1
F502	J5503316330X	FUSE T 250V/1.6A	1
F503	J5502231320X	FUSE SB 3.15A/125V	1
F503	J5503331330X	FUSE 250V 3.15A	1
F504	J5502231320X	FUSE SB 3.15A/125V	1
F504	J5503331330X	FUSE 250V 3.15A	1
F505	J5502235320X	FUSE SB 3.5A/125V	1
F505	J5503331330X	FUSE 250V 3.15A	1
F506	J5502235320X	FUSE SB 3.5A/125V	1
F506	J5503331330X	FUSE 250V 3.15A	1
F507	J5502212320X	FUSE SB 1.25A/125V	1
F507	J5503312330X	FUSE T 1.25/250V	1
F508	J5502212320X	FUSE SB 1.25A/125V	1
F508	J5503312330X	FUSE T 1.25/250V	1

GND50	J4200020000X	GND PLATE	1
IC501	J2110505006X	IC KIA7815P	1
IC502	J2112505018X	IC KIA7915PI TO220	1
IC503	J2110505002X	IC KIA7805P	1
IC504	J2110505002X	IC KIA7805P	1
IC505	J2112504001X	IC BA033T	1
IC506	J2112504001X	IC BA033T	1
IC507	J2110212000X	IC OPAMP 2068DD	1
IC508	J2116004003X	IC BA7603F VIDEO	1
IC509	J2116004001X	IC BA7660FS 3-CH	1
IC510	J2110505002X	IC KIA7805P	1
IC511	J2112505014X	IC KIA7905PI	1
IC512	J2110212000X	IC OPAMP 2068DD	1
IC513	J2110212000X	IC OPAMP 2068DD	1
IC514	J2110505002X	IC KIA7805P	1
JAC50	J44306000001	JACK RCA 6P GND	1
JAC50	J44309000000	JACK RCA 9P GNDCAP	1
R501	J3030100720X	RES 10 OHM 2W J	1
R502	J3030100720X	RES 10 OHM 2W J	1
R503	J3030479720X	RES 4R7 OHM 2W J C	1
R504	J3030479720X	RES 4R7 OHM 2W J C	1
R505	J3030479720X	RES 4R7 OHM 2W J C	1
R506	J3030479720X	RES 4R7 OHM 2W J C	1
R535	J3030479720X	RES 4R7 OHM 2W J C	1
R536	J3030479720X	RES 4R7 OHM 2W J C	1
R551	J3030479720X	RES 4R7 OHM 2W J C	1
R574	J3010332620X	RES 3K3 OHM 1W J C	1
R575	J3030100720X	RES 10 OHM 2W J	1
R576	J3030100720X	RES 10 OHM 2W J	1
R577	J3030100720X	RES 10 OHM 2W J	1
R578	J3030100720X	RES 10 OHM 2W J	1
R579	J3030100720X	RES 10 OHM 2W J	1
SPK50	J44001800200	TER.SCREW 8P	1
SPK50	J44001200300	TER.SCREW 2P	1
W501	J4370009934X	1P AWG1007 90MM#18	1
W502	J4370009939X	WIRE 1P 50MM#18 PC	1

FRONT PCB

CL701	J3470810031X	CE AHS 10M 16V	1
CL702	J3513101270X	CC 100PF 50V	1
CL703	J3513220270X	CAP CH 22PF 5OV J	1
CL704	J3470810031X	CE AHS 10M 16V	1
CL705	J3470810031X	CE AHS 10M 16V	1
CL706	J3681183231X	CAP 0.018UF 100V J	1
CL707	J3681823231X	CAP 0.082UF 100V J	1
CL708	J3681332231X	CAP 0.0033UF 100V	1
CL709	J3681183231X	CAP 0.018UF 100V J	1
CR701	J3470810031X	CE AHS 10M 16V	1
CR702	J3513101270X	CC 100PF 50V	1
CR703	J3513220270X	CAP CH 22PF 5OV J	1
CR704	J3470810031X	CE AHS 10M 16V	1
CR705	J3470810031X	CE AHS 10M 16V	1
CR706	J3681183231X	CAP 0.018UF 100V J	1
CR707	J3681823231X	CAP 0.082UF 100V J	1
CR708	J3681332231X	CAP 0.0033UF 100V	1
CR709	J3681183231X	CAP 0.018UF 100V J	1
C717	J3470147071X	CE SG 47U 50V M	1
C722	J3470110071X	CE SG 10U 50V M	1
C724	J3470110871X	CE SG 0.1UF 50V M	1
C727	J3470147031X	CE SG 47U 16V M	1
C731	J3470147031X	CE SG 47U 16V M	1
C732	J3470110071X	CE SG 10U 50V M	1
C734	J3470147071X	CE SG 47U 50V M	1
C741	J3470147031X	CE SG 47U 16V M	1
C750	J3470147031X	CE SG 47U 16V M	1
C751	J3470147031X	CE SG 47U 16V M	1
C754	J3470147031X	CE SG 47U 16V M	1
C755	J3470147031X	CE SG 47U 16V M	1
C761	J3600473330X	CP .047U 100V K	1
C762	J3600473330X	CP .047U 100V K	1
Q722	J2021220102X	TR NPN DTC114YSA	1
Q723	J2021220102X	TR NPN DTC114YSA	1
Q724	J2021220102X	TR NPN DTC114YSA	1
Q725	J2021220102X	TR NPN DTC114YSA	1
Q726	J2021020801X	TR MPSA06 Y TO-92	1
Q731	J2021020201X	TR NPN KTC3198 BL	1
SW701	J46500500002	SW TACT	1
SW702	J46500500002	SW TACT	1
SW703	J46500500002	SW TACT	1
SW704	J46500500002	SW TACT	1
SW705	J46500500002	SW TACT	1
SW706	J46500500002	SW TACT	1
SW707	J46500500002	SW TACT	1
SW708	J46500500002	SW TACT	1
SW709	J46500500002	SW TACT	1
SW710	J46500500002	SW TACT	1
SW711	J46500500002	SW TACT	1
SW712	J46500500002	SW TACT	1
SW713	J46500500002	SW TACT	1
SW714	J46500500002	SW TACT	1
SW715	J46500500002	SW TACT	1
SW716	J46500500002	SW TACT	1
SW717	J46500500002	SW TACT	1
CL710	J3525472170X	CC/CHIP 4700PF 50V	1
CL711	J3515101270X	CC/CHIP 100P 50V J	1
CR710	J3525472170X	CC/CHIP 4700PF 50V	1
CR711	J3515101270X	CC/CHIP 100P 50V J	1
C712	J3515101270X	CC/CHIP 100P 50V J	1
C715	J3515101270X	CC/CHIP 100P 50V J	1
C716	J3515101270X	CC/CHIP 100P 50V J	1
C718	J3525104540X	CC/CHIP 0.1U 25V Z	1
C719	J3515330270X	CC/CHIP 33P 50V J	1
C720	J3515470270X	CC/CHIP 47P 50V	1
C721	J3515330270X	CC/CHIP 33P 50V J	1
C723	J3525104540X	CC/CHIP 0.1U 25V Z	1
C725	J3515821170X	CC/CHIP 820P 50V J	1
C726	J3515821170X	CC/CHIP 820P 50V J	1
C728	J3525104540X	CC/CHIP 0.1U 25V Z	1
C729	J3525104540X	CC/CHIP 0.1U 25V Z	1
C733	J3525104540X	CC/CHIP 0.1U 25V Z	1
C737	J3515101270X	CC/CHIP 100P 50V J	1
C738	J3515101270X	CC/CHIP 100P 50V J	1
C740	J3515101270X	CC/CHIP 100P 50V J	1
C745	J3515101270X	CC/CHIP 100P 50V J	1
C746	J3515101270X	CC/CHIP 100P 50V J	1
C747	J3515101270X	CC/CHIP 100P 50V J	1
C748	J3515101270X	CC/CHIP 100P 50V J	1
C749	J3515101270X	CC/CHIP 100P 50V J	1
C752	J3525104540X	CC/CHIP 0.1U 25V Z	1
C753	J3515101270X	CC/CHIP 100P 50V J	1
C763	J3515101270X	CC/CHIP 100P 50V J	1
C764	J3515101270X	CC/CHIP 100P 50V J	1
C765	J3515101270X	CC/CHIP 100P 50V J	1
C766	J3515101270X	CC/CHIP 100P 50V J	1
C767	J3515101270X	CC/CHIP 100P 50V J	1
C768	J3515101270X	CC/CHIP 100P 50V J	1
C769	J3515101270X	CC/CHIP 100P 50V J	1
C770	J3515101270X	CC/CHIP 100P 50V J	1
C771	J3515101270X	CC/CHIP 100P 50V J	1
D763	J2244010104X	DIODE CHIP 1SS355	1
D764	J2244010104X	DIODE CHIP 1SS355	1
D765	J2244010104X	DIODE CHIP 1SS355	1
D766	J2244010104X	DIODE CHIP 1SS355	1
D767	J2244010104X	DIODE CHIP 1SS355	1
D768	J2244010104X	DIODE CHIP 1SS355	1
D769	J2244010104X	DIODE CHIP 1SS355	1
D770	J2244010104X	DIODE CHIP 1SS355	1

D771	J2244010104X	DIODE CHIP 1SS355	1
D772	J2244010104X	DIODE CHIP 1SS355	1
D773	J2244010104X	DIODE CHIP 1SS355	1
D774	J2244010104X	DIODE CHIP 1SS355	1
D775	J2244010104X	DIODE CHIP 1SS355	1
D776	J2244010104X	DIODE CHIP 1SS355	1
D779	J2244010104X	DIODE CHIP 1SS355	1
D780	J2244010104X	DIODE CHIP 1SS355	1
IC702	J2141004002X	IC BU4094 SOP16	1
IC703	J2141004002X	IC BU4094 SOP16	1
IC704	J2141004002X	IC BU4094 SOP16	1
J107	J3024000120X	RES 0 OHM 1/10W J	1
J111	J3024000120X	RES 0 OHM 1/10W J	1
J114	J3024000120X	RES 0 OHM 1/10W J	1
J115	J3024000120X	RES 0 OHM 1/10W J	1
J127	J3024000120X	RES 0 OHM 1/10W J	1
J128	J3024000120X	RES 0 OHM 1/10W J	1
J129	J3024000120X	RES 0 OHM 1/10W J	1
J131	J3024000120X	RES 0 OHM 1/10W J	1
J139	J3024000120X	RES 0 OHM 1/10W J	1
J140	J3024000120X	RES 0 OHM 1/10W J	1
J142	J3024000120X	RES 0 OHM 1/10W J	1
J143	J3024000120X	RES 0 OHM 1/10W J	1
J144	J3024000120X	RES 0 OHM 1/10W J	1
J146	J3024000120X	RES 0 OHM 1/10W J	1
J149	J3024000120X	RES 0 OHM 1/10W J	1
J156	J3024000120X	RES 0 OHM 1/10W J	1
J157	J3024000120X	RES 0 OHM 1/10W J	1
J165	J3024000120X	RES 0 OHM 1/10W J	1
J166	J3024000120X	RES 0 OHM 1/10W J	1
J170	J3024000120X	RES 0 OHM 1/10W J	1
J171	J3024000120X	RES 0 OHM 1/10W J	1
J176	J3024000120X	RES 0 OHM 1/10W J	1
J177	J3024000120X	RES 0 OHM 1/10W J	1
J710	J3024000120X	RES 0 OHM 1/10W J	1
J711	J3024000120X	RES 0 OHM 1/10W J	1
J712	J3024000120X	RES 0 OHM 1/10W J	1
Q701	J2041220202X	TR DTC114TK SMT3	1
Q702	J2041220202X	TR DTC114TK SMT3	1
Q703	J2041220202X	TR DTC114TK SMT3	1
Q704	J2041220202X	TR DTC114TK SMT3	1
Q705	J2041220202X	TR DTC114TK SMT3	1
Q706	J2041220202X	TR DTC114TK SMT3	1
Q707	J2041220202X	TR DTC114TK SMT3	1
Q708	J2041220202X	TR DTC114TK SMT3	1
Q709	J2041220202X	TR DTC114TK SMT3	1
Q710	J2041220202X	TR DTC114TK SMT3	1
Q711	J2041220202X	TR DTC114TK SMT3	1
Q712	J2041220202X	TR DTC114TK SMT3	1
Q713	J2041220202X	TR DTC114TK SMT3	1
Q714	J2041220202X	TR DTC114TK SMT3	1
Q715	J2041220202X	TR DTC114TK SMT3	1
Q716	J2041220202X	TR DTC114TK SMT3	1
Q717	J2041220202X	TR DTC114TK SMT3	1
Q718	J2041220202X	TR DTC114TK SMT3	1
Q719	J2041220202X	TR DTC114TK SMT3	1
Q720	J2041220202X	TR DTC114TK SMT3	1
Q721	J2041220101X	TR KRC110S SOT23	1
Q727	J2041220102X	TR NPN DTC114YKA	1
Q728	J2041220102X	TR NPN DTC114YKA	1
RL701	J3024102120X	RES CHIP 1K 1/10W	1
RL702	J3024104120X	RES CHIP 100K 1/10	1
RL703	J3024105120X	RES CHIP 1M 1/10WJ	1
RL704	J3024473120X	RES CHIP 47K 1/10W	1
RL705	J3024471120X	RES CHIP 470 1/10W	1
RL706	J3024104120X	RES CHIP 100K 1/10	1
RL707	J3024681120X	RES CHIP 680 1/10W	1
RL708	J3024392120X	RES CHIP 3K9 1/10W	1
RL709	J3024223120X	RES CHIP 22K 1/10W	1
RL710	J3024222120X	RES CHIP 2K2 1/10W	1
RL711	J3024471120X	RES CHIP 470 1/10W	1
RR701	J3024102120X	RES CHIP 1K 1/10W	1
RR702	J3024104120X	RES CHIP 100K 1/10	1
RR703	J3024105120X	RES CHIP 1M 1/10WJ	1
RR704	J3024473120X	RES CHIP 47K 1/10W	1
RR705	J3024471120X	RES CHIP 470 1/10W	1
RR706	J3024104120X	RES CHIP 100K 1/10	1
RR707	J3024681120X	RES CHIP 680 1/10W	1
RR708	J3024392120X	RES CHIP 3K9 1/10W	1
RR709	J3024223120X	RES CHIP 22K 1/10W	1
RR710	J3024222120X	RES CHIP 2K2 1/10W	1
RR711	J3024471120X	RES CHIP 470 1/10W	1
R712	J3024151120X	RES CHIP 150 1/10W	1
R713	J3024151120X	RES CHIP 150 1/10W	1
R714	J3024151120X	RES CHIP 150 1/10W	1
R715	J3024151120X	RES CHIP 150 1/10W	1
R716	J3024151120X	RES CHIP 150 1/10W	1
R717	J3024151120X	RES CHIP 150 1/10W	1
R718	J3024151120X	RES CHIP 150 1/10W	1
R719	J3024151120X	RES CHIP 150 1/10W	1
R720	J3024151120X	RES CHIP 150 1/10W	1
R721	J3024151120X	RES CHIP 150 1/10W	1
R722	J3024151120X	RES CHIP 150 1/10W	1
R723	J3024151120X	RES CHIP 150 1/10W	1
R724	J3024151120X	RES CHIP 150 1/10W	1
R725	J3024151120X	RES CHIP 150 1/10W	1
R726	J3024151120X	RES CHIP 150 1/10W	1
R727	J3024151120X	RES CHIP 150 1/10W	1
R728	J3024151120X	RES CHIP 150 1/10W	1
R729	J3024151120X	RES CHIP 150 1/10W	1
R730	J3024151120X	RES CHIP 150 1/10W	1
R731	J3024151120X	RES CHIP 150 1/10W	1
R732	J3024151120X	RES CHIP 150 1/10W	1
R733	J3024151120X	RES CHIP 150 1/10W	1
R734	J3024151120X	RES CHIP 150 1/10W	1
R735	J3024151120X	RES CHIP 150 1/10W	1
R736	J3024151120X	RES CHIP 150 1/10W	1
R737	J3024151120X	RES CHIP 150 1/10W	1
R738	J3024151120X	RES CHIP 150 1/10W	1
R739	J3024151120X	RES CHIP 150 1/10W	1
R740	J3024151120X	RES CHIP 150 1/10W	1
R741	J3024151120X	RES CHIP 150 1/10W	1
R742	J3024151120X	RES CHIP 150 1/10W	1
R743	J3024151120X	RES CHIP 150 1/10W	1
R744	J3024151120X	RES CHIP 150 1/10W	1
R745	J3024151120X	RES CHIP 150 1/10W	1
R746	J3024471120X	RES CHIP 470 1/10W	1
R747	J3024101120X	RES CHIP 100 1/10W	1
R748	J3024102120X	RES CHIP 1K 1/10W	1
R749	J3024102120X	RES CHIP 1K 1/10W	1
R750	J3024102120X	RES CHIP 1K 1/10W	1
R751	J3024101120X	RES CHIP 100 1/10W	1
R752	J3024102120X	RES CHIP 1K 1/10W	1
R753	J3024102120X	RES CHIP 1K 1/10W	1
R754	J3024102120X	RES CHIP 1K 1/10W	1
R755	J3024102120X	RES CHIP 1K 1/10W	1
R756	J3024102120X	RES CHIP 1K 1/10W	1
R757	J3024102120X	RES CHIP 1K 1/10W	1
R758	J3024102120X	RES CHIP 1K 1/10W	1
R759	J3024473120X	RES CHIP 47K 1/10W	1
R760	J3024473120X	RES CHIP 47K 1/10W	1
R761	J3024102120X	RES CHIP 1K 1/10W	1
R762	J3024102120X	RES CHIP 1K 1/10W	1
R763	J3024102120X	RES CHIP 1K 1/10W	1
R764	J3024102120X	RES CHIP 1K 1/10W	1
R765	J3024102120X	RES CHIP 1K 1/10W	1
R766	J3024102120X	RES CHIP 1K 1/10W	1
R767	J3024102120X	RES CHIP 1K 1/10W	1

R768	J3024102120X	RES CHIP 1K 1/10W	1
R769	J3024102120X	RES CHIP 1K 1/10W	1
R770	J3024102120X	RES CHIP 1K 1/10W	1
R771	J3024104120X	RES CHIP 100K 1/10	1
R772	J3024102120X	RES CHIP 1K 1/10W	1
R773	J3024102120X	RES CHIP 1K 1/10W	1
R774	J3024102120X	RES CHIP 1K 1/10W	1
R775	J3024101120X	RES CHIP 100 1/10W	1
R776	J3024102120X	RES CHIP 1K 1/10W	1
R781	J3024472120X	RES CHIP 4K7 1/10W	1
R782	J3024472120X	RES CHIP 4K7 1/10W	1
R783	J3024472120X	RES CHIP 4K7 1/10W	1
R784	J3024472120X	RES CHIP 4K7 1/10W	1
R785	J3024472120X	RES CHIP 4K7 1/10W	1
R786	J3024242120X	RES CHIP 2K4 1/10	1
R787	J3024472120X	RES CHIP 4K7 1/10W	1
R788	J3024472120X	RES CHIP 4K7 1/10W	1
R789	J3024472120X	RES CHIP 4K7 1/10W	1
R790	J3024101120X	RES CHIP 100 1/10W	1
R791	J3024103120X	RES CHIP 10K 1/10W	1
R792	J3024103120X	RES CHIP 10K 1/10W	1
R793	J3024103120X	RES CHIP 10K 1/10W	1
R794	J3024472120X	RES CHIP 4K7 1/10W	1
R795	J3024472120X	RES CHIP 4K7 1/10W	1
R796	J3024103120X	RES CHIP 10K 1/10W	1
R797	J3024683120X	RES CHIP 68K 1/10W	1
R798	J3024683120X	RES CHIP 68K 1/10W	1
R799	J3024472120X	RES CHIP 4K7 1/10W	1
R800	J3024101120X	RES CHIP 100 1/10W	1
R801	J3024473120X	RES CHIP 47K 1/10W	1
R802	J3024104120X	RES CHIP 100K 1/10	1
R803	J3024822120X	R-CHIP 8K2 1/10W J	1
R804	J3024103120X	RES CHIP 10K 1/10W	1
R805	J3024471120X	RES CHIP 470 1/10W	1
R806	J3024471120X	RES CHIP 470 1/10W	1
R807	J3024391120X	R-CHIP 390 2012J	1
R808	J3024391120X	R-CHIP 390 2012J	1
R809	J3024339120X	RES CHIP 3R3 1/10	1
R810	J3024339120X	RES CHIP 3R3 1/10	1
R813	J3024472120X	RES CHIP 4K7 1/10W	1
R818	J3024103120X	RES CHIP 10K 1/10W	1
R823	J3024102120X	RES CHIP 1K 1/10W	1
R824	J3024102120X	RES CHIP 1K 1/10W	1
R825	J3024102120X	RES CHIP 1K 1/10W	1
R826	J3024102120X	RES CHIP 1K 1/10W	1
R827	J3024102120X	RES CHIP 1K 1/10W	1
R828	J3024472120X	RES CHIP 4K7 1/10W	1
R829	J3024472120X	RES CHIP 4K7 1/10W	1
R830	J3024472120X	RES CHIP 4K7 1/10W	1
R835	J3024221120X	R-CHIP 220 2012J	1
R836	J3024221120X	R-CHIP 220 2012J	1
R837	J3024103120X	RES CHIP 10K 1/10W	1
R841	J3024472120X	RES CHIP 4K7 1/10W	1
R851	J3024151120X	RES CHIP 150 1/10W	1
R852	J3024151120X	RES CHIP 150 1/10W	1
R853	J3024151120X	RES CHIP 150 1/10W	1
R854	J3024151120X	RES CHIP 150 1/10W	1
R855	J3024151120X	RES CHIP 150 1/10W	1
R856	J3024151120X	RES CHIP 150 1/10W	1
R857	J3024151120X	RES CHIP 150 1/10W	1
R858	J3024151120X	RES CHIP 150 1/10W	1
R859	J3024151120X	RES CHIP 150 1/10W	1
R860	J3024151120X	RES CHIP 150 1/10W	1
R861	J3024472120X	RES CHIP 4K7 1/10W	1
100	J60600006000	SHIELD FENCE TONE	1
CN701	J4370009901X	CNT 5P 160#26 SL	1
CN702	J4370009904X	12P S 350/400#28	1
CN703	J4370009945X	CNT 9P 420#28 SH	1
CN704	J4370009902X	CNT 7P 300#26 SL	1
CN705	J4370009905X	CNT 2P 600#20 SL	1
CN706	J4370009914X	CNT 9P 500#28 SL	1
CN707	J4112294701X	CABLE 1.25 29P 470	1
CN709	J4112194501X	CABLE 1.25 19P 450	1
CP701	J4422112920X	FPC ANG 1.25MM 29P	1
CP702	J4422111920X	FPC PLUG 19P 1.25M	1
C730	J3432147324X	CAP 0.047F 5.5V	1
D701	J2301213022X	LED GN LTL1CHGEC 3	1
D702	J2301213022X	LED GN LTL1CHGEC 3	1
D703	J2301213022X	LED GN LTL1CHGEC 3	1
D704	J2301213022X	LED GN LTL1CHGEC 3	1
D705	J2301213022X	LED GN LTL1CHGEC 3	1
D706	J2301213022X	LED GN LTL1CHGEC 3	1
D707	J2301213022X	LED GN LTL1CHGEC 3	1
D708	J2301213022X	LED GN LTL1CHGEC 3	1
D709	J2301213022X	LED GN LTL1CHGEC 3	1
D711	J2301213022X	LED GN LTL1CHGEC 3	1
D712	J2301213022X	LED GN LTL1CHGEC 3	1
D713	J2301213022X	LED GN LTL1CHGEC 3	1
D714	J2301213022X	LED GN LTL1CHGEC 3	1
D715	J2301213022X	LED GN LTL1CHGEC 3	1
D716	J2301213022X	LED GN LTL1CHGEC 3	1
D717	J2301213022X	LED GN LTL1CHGEC 3	1
D718	J2301213022X	LED GN LTL1CHGEC 3	1
D719	J2301213022X	LED GN LTL1CHGEC 3	1
D720	J2301213022X	LED GN LTL1CHGEC 3	1
D721	J2301213022X	LED GN LTL1CHGEC 3	1
D722	J2301213022X	LED GN LTL1CHGEC 3	1
D723	J2301213022X	LED GN LTL1CHGEC 3	1
D724	J2301213022X	LED GN LTL1CHGEC 3	1
D725	J2301213022X	LED GN LTL1CHGEC 3	1
D726	J2301213022X	LED GN LTL1CHGEC 3	1
D727	J2301213022X	LED GN LTL1CHGEC 3	1
D728	J2301213022X	LED GN LTL1CHGEC 3	1
D729	J2301213022X	LED GN LTL1CHGEC 3	1
D730	J2301213022X	LED GN LTL1CHGEC 3	1
D731	J2301213022X	LED GN LTL1CHGEC 3	1
D732	J2301213022X	LED GN LTL1CHGEC 3	1
D733	J2301213022X	LED GN LTL1CHGEC 3	1
D734	J2301213022X	LED GN LTL1CHGEC 3	1
D735	J2301213022X	LED GN LTL1CHGEC 3	1
D736	J2301213022X	LED GN LTL1CHGEC 3	1
D737	J2301213022X	LED GN LTL1CHGEC 3	1
D738	J2301213022X	LED GN LTL1CHGEC 3	1
D739	J2301213022X	LED GN LTL1CHGEC 3	1
D740	J2301213022X	LED GN LTL1CHGEC 3	1
D741	J2301213022X	LED GN LTL1CHGEC 3	1
D742	J2301213022X	LED GN LTL1CHGEC 3	1
D743	J2301213022X	LED GN LTL1CHGEC 3	1
D744	J2301213022X	LED GN LTL1CHGEC 3	1
D745	J2301213022X	LED GN LTL1CHGEC 3	1
D762	J2221010000X	DIODE SW IN4148	1
D777	J2302210012X	LED RED/GREEN 3F	1
D781	J2221010000X	DIODE SW IN4148	1
D782	J2221010000X	DIODE SW IN4148	1
FL701	J2352220021X	VFD CM19010	1
IC701	J2132314040X	IC CXP82860-196Q	1
IC705	J2110222001X	IC OPAMP OP275	1
JAC70	J44303000100	JACK RCA 3P	1
JAC70	J44311000100	JACK S-VIDEO 1P	1
L701	J2616247920X	COIL 4.7UH K	1
L702	J2616247920X	COIL 4.7UH K	1
L703	J2616247920X	COIL 4.7UH K	1
RMC70	J2411320014X	REM 38KHZ	1
VR701	J32616100001	ENCODER EC 16E	1
VR702	J32214000101	VR-ROTARY 14MM	1
VR703	J32214000201	VR-ROTARY 14MM	1
VR704	J32214000201	VR-ROTARY 14MM	1
X701	J3911030020X	RESONATOR ZTA10MTT	1

POWER SUPPLY BD

050	J44900000000*AC OUTLET UL		1
050	J44901000000*AC OUT 2.5A 250V R		1
080	J5636140030X SCREW		1
090	J60510003100 HEATSINK		1
110	J5541001020X WASHER FLAT		1
CN453	J4370009913X	CNT 3P 650#24 SL	1
CN454	J4370009919X	CNT 2P 650#16 DL	1
CN454	J4370009942X	CNT 2P 650#16 DL D	1
CN461	J4370009912X	CNT 2P 350MM 7.92	1
CN462	J4370009947X	CNT 5P 600#16 DL	1
CN463	J4370009916X	CNT 2P 160#16 SL	1
CN771	J4370009907X	CNT 12.0 2P 350MM	1
CN771	J4370009941X	CNT 2P 300#16 DL D	1
CP451	J4420080270X	CONNECTOR 2P	1
CP452	J4420080270X	CONNECTOR 2P	1
CP453	J4420080270X	CONNECTOR 2P	1
CP454	J4420080270X	CONNECTOR 2P	1
CP455	J4420080270X	CONNECTOR 2P	1
CP456	J4420080270X	CONNECTOR 2P	1
CP457	J4420040340X	CNT PLUG 2.5 ST 3P	1
CP458	J4420030740X	CNT PLUG 2.0ST 7P	1
CP459	J4420040440X	CNT PLUG 2.5 ST 4P	1
CP460	J4420070370X	CONNECTOR 03P	1
C451	J3531472412X	CAP AC250V 472-M	1
C452	J3640104350X	CP MET .1U 250V -M	1
C457	J3420922306X	CE AH 22000U 90V	1
C457	J3420922308X	CE 22000MF 90V	1
C458	J3420922306X	CE AH 22000U 90V	1
C458	J3420922308X	CE 22000MF 90V	1
C459	J3531472412X	CAP AC250V 472-M	1
C460	J3531472412X	CAP AC250V 472-M	1
C461	J3926100000X*	X-C .1U PCX2 335M	1
C463	J3600473330X	CP .047U 100V K	1
C466	J3470110241X	CE SG 1000U 25V M	1
C469	J3531472412X	CAP AC250V 472-M	1
C470	J3531472412X	CAP AC250V 472-M	1
D451	J2221214000X	DIODE IN4003	1
D452	J2204306002X	DIODE KBPC3504W	1
D453	J2221214000X	DIODE IN4003	1
D454	J2221214000X	DIODE IN4003	1
D455	J2221214000X	DIODE IN4003	1
D456	J2221214000X	DIODE IN4003	1
D457	J2221214000X	DIODE IN4003	1
D460	J2221214000X	DIODE IN4003	1
D463	J2221214000X	DIODE IN4003	1
D464	J2221214000X	DIODE IN4003	1
D465	J2221214000X	DIODE IN4003	1
D466	J2221214000X	DIODE IN4003	1
F451	J5502210320X	FUSE SB 1A/125V	1
F451	J5503312330X	FUSE T 1.25/250V	1
F452	J5502513420X	FUSE SB 13A/125V	1
F452	J5503463320X	FUSE T 6.3A/250V	1
F453	J5502250220X	FUSE SB 500MA/125V	1
F453	J5503350230X	FUSE T 500MMA/250V	1
GND45	J4200020000X	GND PLATE	1
IC451	J2110505004X	IC REG KIA7806P	1
RLY45	J5511300010X	RELAY 10A 12V	1
RLY45	J5512300010X	RELAY OSZ-SS-112DM	1
RLY45	J5511300010X	RELAY 10A 12V	1
RLY45	J5512300010X	RELAY OSZ-SS-112DM	1
RLY45	J5511300010X	RELAY 10A 12V	1
R451	J3091335033X	RES 3.3MOHM 1/2W	1
R452	J3091100921X	RES 10 OHM 30WAT	1
SW719	J46208000004	SW POWER	1
T451	J2812220023X	TRANS 120/60 ST-BY	1
T451	J2812420023X	TRANS 230/50 ST-BY	1
W451	J4370009928X	LUG WIRE 1P 50#24	1
R453	J3003472220X	RES CF 4K7 1/8 J	1
R454	J3003472220X	RES CF 4K7 1/8 J	1
R455	J3003150220X	RES CF 15 1/8W J	1
R456	J3003102220X	RES CF 1K 1/8 J	1
R457	J3003102220X	RES CF 1K 1/8 J	1
R458	J3003103220X	RES CF 10K 1/8 J	1
R459	J3003100220X	RES CF 10 1/8W J	1
R460	J3003330220X	RES CF 33 1/8W J	1
R461	J3003330220X	RES CF 33 1/8W J	1
R462	J3003330220X	RES CF 33 1/8W J	1
R463	J3003102220X	RES CF 1K 1/8 J	1
R464	J3003103220X	RES CF 10K 1/8 J	1
R465	J3003103220X	RES CF 10K 1/8 J	1
R466	J3003103220X	RES CF 10K 1/8 J	1
R467	J3003104220X	RES CF 100K 1/8 J	1
R468	J3003103220X	RES CF 10K 1/8 J	1
R469	J3003104220X	RES CF 100K 1/8 J	1
R470	J3003153220X	RES CF 15K 1/8W J	1
R471	J3003104220X	RES CF 100K 1/8 J	1
R472	J3003222220X	RES CF 2K2 1/8W J	1
R473	J3003103220X	RES CF 10K 1/8 J	1
R474	J3003104220X	RES CF 100K 1/8 J	1
R475	J3003104220X	RES CF 100K 1/8 J	1
C453	J3640104350X	CP MET .1U 250V -M	1
C454	J3640104350X	CP MET .1U 250V -M	1
C455	J3640104350X	CP MET .1U 250V -M	1
C456	J3640104350X	CP MET .1U 250V -M	1
C462	J3600473330X	CP .047U 100V K	1
C464	J3600473330X	CP .047U 100V K	1
C465	J3470156871X	CE SG .56U 50V M	1
C467	J3470110971X	CE SG 1U 50V M	1
C468	J3523104540X	CAP C/D/T .1U 25V	1
C471	J3470110971X	CE SG 1U 50V M	1
C472	J3470110971X	CE SG 1U 50V M	1
C473	J3470147121X	CE SG 470U 10V M	1
C474	J3470110971X	CE SG 1U 50V M	1
C475	J3470110171X	CE SG 100U 50V M	1
C476	J3470110071X	CE SG 10U 50V M	1
C477	J3640224320X	CP MET .22U 63V -K	1
C478	J3523104540X	CAP C/D/T .1U 25V	1
C479	J3523473540X	CC Y5V .047U 25V Z	1
C480	J3523473540X	CC Y5V .047U 25V Z	1
D458	J2221451534X	D-ZENER .5W 5V1 J	1
D459	J2221010000X	DIODE SW IN4148	1
D461	J2221491534X	D-ZENER .5W 9V1 J	1
D462	J2221430634X	D-ZENER .5W 30V J	1
FC451	J4210020001X	FUSE CLIP 0.3T	1
FC452	J4210020001X	FUSE CLIP 0.3T	1
FC453	J4210020001X	FUSE CLIP 0.3T	1
FC454	J4210020001X	FUSE CLIP 0.3T	1
FC455	J4210020001X	FUSE CLIP 0.3T	1
FC456	J4210020001X	FUSE CLIP 0.3T	1
Q451	J2021020801X	TR MPSA06 Y TO-92	1
Q452	J2021020801X	TR MPSA06 Y TO-92	1
Q453	J2021020801X	TR MPSA06 Y TO-92	1
Q454	J2021020801X	TR MPSA06 Y TO-92	1
Q455	J2021020801X	TR MPSA06 Y TO-92	1
Q456	J2021020801X	TR MPSA06 Y TO-92	1
Q457	J2021000601X	TR PNP MPSA56 Y	1

PREAMP BD

CN201	J4370009927X	CNT 7P 350MM 2.0	1
CN204	J4370009911X	CNT 15P 160MM 2.0	1
CP201	J4420030740X	CNT PLUG 2.0ST 7P	1
CP202	J4420030440X	CNT PLUG 4P 2.0MM	1
CP203	J4420031040X	CNT PLUG 2.0 10P	1

CP205	J4420031440X	CNT 2.0MM ST 14P	1
CP206	J4422012920X	FPC PLUG 1.25 29P	1
CP207	J4423331900X	CNT 2.0 35237-1910	1
CP208	J4420030940X	CNT PLUG 2.0 ST 9P	1
CP209	J4420031040X	CNT PLUG 2.0 10P	1
CP210	J4423330800X	CNT PLUG BD'BD 2.0	1
CP211	J4420030740X	CNT PLUG 2.0ST 7P	1
C223	J3470147031X	CE SG 47U 16V M	1
C224	J3470147031X	CE SG 47U 16V M	1
C238	J3470847031X	CE AH 47U 16V M	1
C243	J3470147031X	CE SG 47U 16V M	1
C244	J3470147031X	CE SG 47U 16V M	1
C245	J3470847031X	CE AH 47U 16V M	1
C246	J3470847031X	CE AH 47U 16V M	1
C247	J3470847031X	CE AH 47U 16V M	1
C252	J3470147031X	CE SG 47U 16V M	1
C253	J3470147031X	CE SG 47U 16V M	1
C263	J3470147031X	CE SG 47U 16V M	1
C264	J3470147031X	CE SG 47U 16V M	1
C274	J3470847031X	CE AH 47U 16V M	1
C275	J3470847031X	CE AH 47U 16V M	1
C284	J3470847031X	CE AH 47U 16V M	1
C288	J3470847031X	CE AH 47U 16V M	1
C304	J3470833131X	CE AHS 330M 16V	1
C305	J3470833131X	CE AHS 330M 16V	1
C320	J3470833131X	CE AHS 330M 16V	1
C321	J3470833131X	CE AHS 330M 16V	1
C338	J3402347226X	CAP AHS 4700UF16V	1
C339	J3402347226X	CAP AHS 4700UF16V	1
C348	J3470847031X	CE AH 47U 16V M	1
C349	J3470847031X	CE AH 47U 16V M	1
GND20	J4200020000X	GND PLATE	1
IC201	J2115206007X	IC TC9273S	1
IC202	J2115206007X	IC TC9273S	1
IC203	J2115206007X	IC TC9273S	1
IC204	J2121205002X	IC KIC9163AN	1
IC205	J2121205002X	IC KIC9163AN	1
IC206	J2115205004X	IC 6CH VOLKIC9482N	1
IC210	J2110212000X	IC OPAMP 2068DD	1
IC215	J2110222001X	IC OPAMP OP275	1
IC216	J2110212002X	IC OPAMP NJM5532	1
IC217	J2110212002X	IC OPAMP NJM5532	1
IC218	J2110212000X	IC OPAMP 2068DD	1
IC219	J2115205000X	IC KIC9459N DIP28	1
JAC20	J44306000101	JACK RCA 6P GND W/	1
JAC20	J44306000101	JACK RCA 6P GND W/	1
JAC20	J44306000101	JACK RCA 6P GND W/	1
JAC20	J44306000101	JACK RCA 6P GND W/	1
JAC20	J44304000300	JACK RCA 4P GNDCAP	1
JAC20	J44301000300	JACK RCA 1P BK GND	1
R403	J3003472529X	RES 4K7 1/2W J	1
W201	J4370009921X	1P AWG1007 120#18	1
W202	J4370009922X	WIRE 1P 80#24	1
W203	J4370009946X	WIRE 1P 500MM#18	1
C219	J3470110071X	CE SG 10U 50V M	1
C220	J3470110071X	CE SG 10U 50V M	1
C232	J3470810031X	CE AHS 10M 16V	1
C237	J3470810031X	CE AHS 10M 16V	1
C239	J3470110071X	CE SG 10U 50V M	1
C240	J3470147121X	CE SG 470U 10V M	1
C242	J3470110071X	CE SG 10U 50V M	1
C248	J3470110071X	CE SG 10U 50V M	1
C249	J3470110071X	CE SG 10U 50V M	1
C250	J3470110071X	CE SG 10U 50V M	1
C251	J3470110071X	CE SG 10U 50V M	1
C254	J3470147031X	CE SG 47U 16V M	1
C255	J3470147031X	CE SG 47U 16V M	1
C256	J3470147031X	CE SG 47U 16V M	1
C259	J3470110071X	CE SG 10U 50V M	1
C260	J3470147031X	CE SG 47U 16V M	1
C262	J3470110071X	CE SG 10U 50V M	1
C267	J3470147031X	CE SG 47U 16V M	1
C268	J3470147031X	CE SG 47U 16V M	1
C272	J3470147031X	CE SG 47U 16V M	1
C273	J3470147031X	CE SG 47U 16V M	1
C276	J3470147031X	CE SG 47U 16V M	1
C277	J3470147031X	CE SG 47U 16V M	1
C280	J3470810031X	CE AHS 10M 16V	1
C281	J3470810031X	CE AHS 10M 16V	1
C282	J3470147031X	CE SG 47U 16V M	1
C286	J3470147031X	CE SG 47U 16V M	1
C287	J3470147031X	CE SG 47U 16V M	1
C291	J3470147031X	CE SG 47U 16V M	1
C292	J3470110071X	CE SG 10U 50V M	1
C293	J3470110071X	CE SG 10U 50V M	1
C294	J3470147031X	CE SG 47U 16V M	1
C297	J3470110071X	CE SG 10U 50V M	1
C298	J3470110071X	CE SG 10U 50V M	1
C299	J3470110071X	CE SG 10U 50V M	1
C300	J3470147031X	CE SG 47U 16V M	1
C303	J3470110071X	CE SG 10U 50V M	1
C306	J3470147031X	CE SG 47U 16V M	1
C309	J3470147031X	CE SG 47U 16V M	1
C310	J3470147031X	CE SG 47U 16V M	1
C311	J3470147031X	CE SG 47U 16V M	1
C314	J3470810031X	CE AHS 10M 16V	1
C315	J3470810031X	CE AHS 10M 16V	1
C316	J3470810031X	CE AHS 10M 16V	1
C317	J3470810031X	CE AHS 10M 16V	1
C318	J3513101270X	CC 100PF 50V	1
C319	J3513101270X	CC 100PF 50V	1
C328	J3470110071X	CE SG 10U 50V M	1
C334	J3470110071X	CE SG 10U 50V M	1
C336	J3470147031X	CE SG 47U 16V M	1
C337	J3470147031X	CE SG 47U 16V M	1
C343	J3470110071X	CE SG 10U 50V M	1
C344	J3470110071X	CE SG 10U 50V M	1
C350	J3470810031X	CE AHS 10M 16V	1
C351	J3470810031X	CE AHS 10M 16V	1
C362	J3470810031X	CE AHS 10M 16V	1
C363	J3470810031X	CE AHS 10M 16V	1
C364	J3524104540X	CC 0.1UF 25V	1
C365	J3524104540X	CC 0.1UF 25V	1
C366	J3524104540X	CC 0.1UF 25V	1
D203	J2221451534X	D-ZENER .5W 5V1 J	1
Q201	J2021200002X	TR PNP DTA114YS	1
Q202	J2021200002X	TR PNP DTA114YS	1
Q203	J2021200002X	TR PNP DTA114YS	1
Q204	J2021200002X	TR PNP DTA114YS	1
Q205	J2021060001X	TR NPN KTD1302 B	1
Q206	J2021060001X	TR NPN KTD1302 B	1
Q207	J2021060001X	TR NPN KTD1302 B	1
Q208	J2021060001X	TR NPN KTD1302 B	1
Q209	J2021060001X	TR NPN KTD1302 B	1
Q210	J2021060001X	TR NPN KTD1302 B	1
Q211	J2021000001X	TR PNP KTA1023 Y	1
Q212	J2021020701X	TR NPN KTC3200 BL	1
Q213	J2021020701X	TR NPN KTC3200 BL	1
Q214	J2021020101X	TR NPN KTC1027 Y	1
Q215	J2021000001X	TR PNP KTA1023 Y	1
Q216	J2021020701X	TR NPN KTC3200 BL	1
Q217	J2021020701X	TR NPN KTC3200 BL	1
Q218	J2021020101X	TR NPN KTC1027 Y	1
Q219	J2021060001X	TR NPN KTD1302 B	1
Q22O	J2021060001X	TR NPN KTD1302 B	1
Q224	J2021020801X	TR MPSA06 Y TO-92	1
Q227	J2021020801X	TR MPSA06 Y TO-92	1
Q228	J2021020801X	TR MPSA06 Y TO-92	1

Q229	J2021200002X	TR PNP DTA114YS	1
Q230	J2021200002X	TR PNP DTA114YS	1
R222	J3003101220X	RES CF 100 1/8 J	1
R223	J3003101220X	RES CF 100 1/8 J	1
R240	J3003101220X	RES CF 100 1/8 J	1
R242	J3003101220X	RES CF 100 1/8 J	1
R247	J3003101220X	RES CF 100 1/8 J	1
R248	J3003101220X	RES CF 100 1/8 J	1
R253	J3003101220X	RES CF 100 1/8 J	1
R254	J3003101220X	RES CF 100 1/8 J	1
R261	J3003101220X	RES CF 100 1/8 J	1
R262	J3003101220X	RES CF 100 1/8 J	1
R265	J3003104220X	RES CF 100K 1/8 J	1
R277	J3003102220X	RES CF 1K 1/8 J	1
R278	J3003102220X	RES CF 1K 1/8 J	1
R279	J3003102220X	RES CF 1K 1/8 J	1
R280	J3003101220X	RES CF 100 1/8 J	1
R281	J3003101220X	RES CF 100 1/8 J	1
R291	J3003101220X	RES CF 100 1/8 J	1
R292	J3003101220X	RES CF 100 1/8 J	1
R293	J3003101220X	RES CF 100 1/8 J	1
R294	J3003101220X	RES CF 100 1/8 J	1
R295	J3003101220X	RES CF 100 1/8 J	1
R296	J3003101220X	RES CF 100 1/8 J	1
R297	J3003102220X	RES CF 1K 1/8 J	1
R298	J3003102220X	RES CF 1K 1/8 J	1
R299	J3003102220X	RES CF 1K 1/8 J	1
R300	J3003102220X	RES CF 1K 1/8 J	1
R301	J3003102220X	RES CF 1K 1/8 J	1
R302	J3003102220X	RES CF 1K 1/8 J	1
R304	J3003101220X	RES CF 100 1/8 J	1
R307	J3003101220X	RES CF 100 1/8 J	1
R309	J3003101220X	RES CF 100 1/8 J	1
R311	J3003101220X	RES CF 100 1/8 J	1
R314	J3003101220X	RES CF 100 1/8 J	1
R315	J3003101220X	RES CF 100 1/8 J	1
R320	J3003102220X	RES CF 1K 1/8 J	1
R321	J3003101220X	RES CF 100 1/8 J	1
R323	J3003102220X	RES CF 1K 1/8 J	1
R328	J3003101220X	RES CF 100 1/8 J	1
R329	J3003102220X	RES CF 1K 1/8 J	1
R330	J3003102220X	RES CF 1K 1/8 J	1
R331	J3003109220X	RES CF 1 OHM 1/8 J	1
R332	J3003223220X	RES CF 22K 1/8 J	1
R333	J3003223220X	RES CF 22K 1/8 J	1
R334	J3003223220X	RES CF 22K 1/8 J	1
R345	J3003101220X	RES CF 100 1/8 J	1
R346	J3003102220X	RES CF 1K 1/8 J	1
R349	J3003330220X	RES CF 33 1/8W J	1
R350	J3003101220X	RES CF 100 1/8 J	1
R351	J3003102220X	RES CF 1K 1/8 J	1
R353	J3003102220X	RES CF 1K 1/8 J	1
R355	J3003102220X	RES CF 1K 1/8 J	1
R360	J3003109220X	RES CF 1 OHM 1/8 J	1
R370	J3003220220X	RES CF 22 1/8 J	1
R372	J3003220220X	RES CF 22 1/8 J	1
R383	J3003101220X	RES CF 100 1/8 J	1
R384	J3003101220X	RES CF 100 1/8 J	1
R385	J3003330220X	RES CF 33 1/8W J	1
R388	J3003223220X	RES CF 22K 1/8 J	1
R389	J3003220220X	RES CF 22 1/8 J	1
R390	J3003220220X	RES CF 22 1/8 J	1
R402	J3003102220X	RES CF 1K 1/8 J	1
R425	J3003102220X	RES CF 1K 1/8 J	1
R426	J3003223220X	RES CF 22K 1/8 J	1
R427	J3003223220X	RES CF 22K 1/8 J	1
R433	J3003101220X	RES CF 100 1/8 J	1
R439	J3003101220X	RES CF 100 1/8 J	1
R449	J3003101220X	RES CF 100 1/8 J	1
R450	J3003101220X	RES CF 100 1/8 J	1
C201	J3515101270X	CC/CHIP 100P 50V J	1
C202	J3515101270X	CC/CHIP 100P 50V J	1
C203	J3515101270X	CC/CHIP 100P 50V J	1
C204	J3515101270X	CC/CHIP 100P 50V J	1
C205	J3515101270X	CC/CHIP 100P 50V J	1
C206	J3515101270X	CC/CHIP 100P 50V J	1
C207	J3515101270X	CC/CHIP 100P 50V J	1
C208	J3515101270X	CC/CHIP 100P 50V J	1
C209	J3515472170X	CC/CHIP 4700PF 50V	1
C210	J3515472170X	CC/CHIP 4700PF 50V	1
C211	J3515101270X	CC/CHIP 100P 50V J	1
C212	J3515101270X	CC/CHIP 100P 50V J	1
C213	J3515101270X	CC/CHIP 100P 50V J	1
C214	J3515101270X	CC/CHIP 100P 50V J	1
C215	J3515101270X	CC/CHIP 100P 50V J	1
C216	J3515101270X	CC/CHIP 100P 50V J	1
C217	J3515101270X	CC/CHIP 100P 50V J	1
C218	J3515101270X	CC/CHIP 100P 50V J	1
C221	J3515101270X	CC/CHIP 100P 50V J	1
C222	J3515101270X	CC/CHIP 100P 50V J	1
C225	J3515472170X	CC/CHIP 4700PF 50V	1
C226	J3515472170X	CC/CHIP 4700PF 50V	1
C227	J3515101270X	CC/CHIP 100P 50V J	1
C228	J3515101270X	CC/CHIP 100P 50V J	1
C229	J3515101270X	CC/CHIP 100P 50V J	1
C230	J3515101270X	CC/CHIP 100P 50V J	1
C231	J3515101270X	CC/CHIP 100P 50V J	1
C233	J3515101270X	CC/CHIP 100P 50V J	1
C234	J3515101270X	CC/CHIP 100P 50V J	1
C235	J3515101270X	CC/CHIP 100P 50V J	1
C236	J3515101270X	CC/CHIP 100P 50V J	1
C241	J3525104570X	CC/CHIP .1U 50V 8	1
C257	J3515472170X	CC/CHIP 4700PF 50V	1
C258	J3515472170X	CC/CHIP 4700PF 50V	1
C261	J3515101270X	CC/CHIP 100P 50V J	1
C265	J3515101270X	CC/CHIP 100P 50V J	1
C266	J3515101270X	CC/CHIP 100P 50V J	1
C269	J3515101270X	CC/CHIP 100P 50V J	1
C270	J3515101270X	CC/CHIP 100P 50V J	1
C271	J3525104570X	CC/CHIP .1U 50V 8	1
C278	J3515101270X	CC/CHIP 100P 50V J	1
C279	J3515101270X	CC/CHIP 100P 50V J	1
C283	J3515330270X	CC/CHIP 33P 50V J	1
C285	J3515330270X	CC/CHIP 33P 50V J	1
C289	J3515330270X	CC/CHIP 33P 50V J	1
C290	J3515330270X	CC/CHIP 33P 50V J	1
C295	J3515330270X	CC/CHIP 33P 50V J	1
C296	J3515330270X	CC/CHIP 33P 50V J	1
C301	J3515330270X	CC/CHIP 33P 50V J	1
C302	J3515330270X	CC/CHIP 33P 50V J	1
C307	J3515330270X	CC/CHIP 33P 50V J	1
C308	J3515330270X	CC/CHIP 33P 50V J	1
C312	J3515330270X	CC/CHIP 33P 50V J	1
C313	J3515330270X	CC/CHIP 33P 50V J	1
C322	J3515101270X	CC/CHIP 100P 50V J	1
C323	J3515101270X	CC/CHIP 100P 50V J	1
C324	J3515101270X	CC/CHIP 100P 50V J	1
C325	J3515101270X	CC/CHIP 100P 50V J	1
C326	J3515101270X	CC/CHIP 100P 50V J	1
C327	J3515101270X	CC/CHIP 100P 50V J	1
C329	J3515330270X	CC/CHIP 33P 50V J	1
C330	J3515101270X	CC/CHIP 100P 50V J	1
C331	J3525104570X	CC/CHIP .1U 50V 8	1
C332	J3515101270X	CC/CHIP 100P 50V J	1
C335	J3515330270X	CC/CHIP 33P 50V J	1
C340	J3515101270X	CC/CHIP 100P 50V J	1
C341	J3515101270X	CC/CHIP 100P 50V J	1
C342	J3515101270X	CC/CHIP 100P 50V J	1

C345	J3515101270X	CC/CHIP 100P 50V J	1
C346	J3515101270X	CC/CHIP 100P 50V J	1
C347	J3515101270X	CC/CHIP 100P 50V J	1
C353	J3525104570X	CC/CHIP .1U 50V 8	1
C354	J3515101270X	CC/CHIP 100P 50V J	1
C355	J3515101270X	CC/CHIP 100P 50V J	1
C356	J3515101270X	CC/CHIP 100P 50V J	1
C357	J3515101270X	CC/CHIP 100P 50V J	1
C358	J3515101270X	CC/CHIP 100P 50V J	1
C359	J3515101270X	CC/CHIP 100P 50V J	1
C360	J3525104570X	CC/CHIP .1U 50V 8	1
C361	J3525104570X	CC/CHIP .1U 50V 8	1
D201	J2242010101X	DIODE CHIP KDS184	1
D202	J2242010101X	DIODE CHIP KDS184	1
IC207	J2110012001X	IC OP-AMP NJM4558M	1
IC208	J2110012003X	IC OP AMP NJM5532M	1
IC209	J2110012001X	IC OP-AMP NJM4558M	1
IC211	J2110012004X	IC OPAMP NJM2068	1
IC212	J2110012004X	IC OPAMP NJM2068	1
IC213	J2110012001X	IC OP-AMP NJM4558M	1
IC214	J2110012001X	IC OP-AMP NJM4558M	1
IC220	J2110012004X	IC OPAMP NJM2068	1
J237	J3024000120X	RES 0 OHM 1/10W J	1
J371	J3024000120X	RES 0 OHM 1/10W J	1
J372	J3024000120X	RES 0 OHM 1/10W J	1
J373	J3024000120X	RES 0 OHM 1/10W J	1
J374	J3024000120X	RES 0 OHM 1/10W J	1
J375	J3024000120X	RES 0 OHM 1/10W J	1
J376	J3024000120X	RES 0 OHM 1/10W J	1
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J378	J3024000120X	RES 0 OHM 1/10W J	1
J379	J3024000120X	RES 0 OHM 1/10W J	1
J381	J3024000120X	RES 0 OHM 1/10W J	1
J382	J3024000120X	RES 0 OHM 1/10W J	1
J383	J3024000120X	RES 0 OHM 1/10W J	1
J384	J3024000120X	RES 0 OHM 1/10W J	1
J385	J3024000120X	RES 0 OHM 1/10W J	1
J386	J3024000120X	RES 0 OHM 1/10W J	1
J387	J3024000120X	RES 0 OHM 1/10W J	1
J388	J3024000120X	RES 0 OHM 1/10W J	1
J389	J3024000120X	RES 0 OHM 1/10W J	1
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J392	J3024000120X	RES 0 OHM 1/10W J	1
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J396	J3024000120X	RES 0 OHM 1/10W J	1
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J398	J3024000120X	RES 0 OHM 1/10W J	1
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J400	J3024000120X	RES 0 OHM 1/10W J	1
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J405	J3024000120X	RES 0 OHM 1/10W J	1
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J414	J3024000120X	RES 0 OHM 1/10W J	1
J416	J3024000120X	RES 0 OHM 1/10W J	1
J417	J3024000120X	RES 0 OHM 1/10W J	1
J418	J3024000120X	RES 0 OHM 1/10W J	1
R201	J3024471120X	RES CHIP 470 1/10W	1
R202	J3024104120X	RES CHIP 100K 1/10	1
R203	J3024471120X	RES CHIP 470 1/10W	1
R204	J3024104120X	RES CHIP 100K 1/10	1
R205	J3024471120X	RES CHIP 470 1/10W	1
R206	J3024104120X	RES CHIP 100K 1/10	1
R207	J3024471120X	RES CHIP 470 1/10W	1
R208	J3024104120X	RES CHIP 100K 1/10	1
R209	J3024471120X	RES CHIP 470 1/10W	1
R210	J3024104120X	RES CHIP 100K 1/10	1
R211	J3024471120X	RES CHIP 470 1/10W	1
R212	J3024104120X	RES CHIP 100K 1/10	1
R213	J3024471120X	RES CHIP 470 1/10W	1
R214	J3024104120X	RES CHIP 100K 1/10	1
R215	J3024471120X	RES CHIP 470 1/10W	1
R216	J3024104120X	RES CHIP 100K 1/10	1
R217	J3024104120X	RES CHIP 100K 1/10	1
R218	J3024561120X	RES CHIP 560 1/10W	1
R219	J3024104120X	RES CHIP 100K 1/10	1
R220	J3024104120X	RES CHIP 100K 1/10	1
R221	J3024104120X	RES CHIP 100K 1/10	1
R224	J3024561120X	RES CHIP 560 1/10W	1
R225	J3024471120X	RES CHIP 470 1/10W	1
R226	J3024104120X	RES CHIP 100K 1/10	1
R227	J3024471120X	RES CHIP 470 1/10W	1
R228	J3024104120X	RES CHIP 100K 1/10	1
R229	J3024471120X	RES CHIP 470 1/10W	1
R230	J3024104120X	RES CHIP 100K 1/10	1
R231	J3024471120X	RES CHIP 470 1/10W	1
R232	J3024104120X	RES CHIP 100K 1/10	1
R233	J3024561120X	RES CHIP 560 1/10W	1
R234	J3024104120X	RES CHIP 100K 1/10	1
R235	J3024561120X	RES CHIP 560 1/10W	1
R236	J3024104120X	RES CHIP 100K 1/10	1
R237	J3024104120X	RES CHIP 100K 1/10	1
R238	J3024104120X	RES CHIP 100K 1/10	1
R239	J3024101120X	RES CHIP 100 1/10W	1
R241	J3024101120X	RES CHIP 100 1/10W	1
R243	J3024473120X	RES CHIP 47K 1/10W	1
R244	J3024473120X	RES CHIP 47K 1/10W	1
R245	J3024104120X	RES CHIP 100K 1/10	1
R246	J3024104120X	RES CHIP 100K 1/10	1
R249	J3024473120X	RES CHIP 47K 1/10W	1
R250	J3024473120X	RES CHIP 47K 1/10W	1
R251	J3024104120X	RES CHIP 100K 1/10	1
R252	J3024104120X	RES CHIP 100K 1/10	1
R255	J3024561120X	RES CHIP 560 1/10W	1
R256	J3024104120X	RES CHIP 100K 1/10	1
R257	J3024561120X	RES CHIP 560 1/10W	1
R258	J3024104120X	RES CHIP 100K 1/10	1
R259	J3024104120X	RES CHIP 100K 1/10	1
R260	J3024104120X	RES CHIP 100K 1/10	1
R263	J3024104120X	RES CHIP 100K 1/10	1
R264	J3024102120X	RES CHIP 1K 1/10W	1
R266	J3024123120X	RES CHIP 12K 1/10W	1
R267	J3024472120X	RES CHIP 4K7 1/10W	1
R268	J3024102120X	RES CHIP 1K 1/10W	1
R269	J3024102120X	RES CHIP 1K 1/10W	1
R270	J3024102120X	RES CHIP 1K 1/10W	1
R271	J3024102120X	RES CHIP 1K 1/10W	1
R272	J3024102120X	RES CHIP 1K 1/10W	1
R273	J3024102120X	RES CHIP 1K 1/10W	1
R274	J3024102120X	RES CHIP 1K 1/10W	1
R275	J3024102120X	RES CHIP 1K 1/10W	1
R276	J3024102120X	RES CHIP 1K 1/10W	1
R282	J3024203120X	RES CHIP 20K 1/10W	1
R283	J3024123120X	RES CHIP 12K 1/10W	1
R284	J3024203120X	RES CHIP 20K 1/10W	1
R285	J3024123120X	RES CHIP 12K 1/10W	1
R286	J3024332120X	RES CHIP 3K3 1/10W	1
R287	J3024332120X	RES CHIP 3K3 1/10W	1
R288	J3024123120X	RES CHIP 12K 1/10W	1
R289	J3024332120X	RES CHIP 3K3 1/10W	1

R290	J3024332120X	RES CHIP 3K3 1/10W	1
R303	J3024184120X	R-CHIP 180K 2012J	1
R305	J3024102120X	RES CHIP 1K 1/10W	1
R306	J3024512120X	RES 5K1 1/10 J	1
R308	J3024184120X	R-CHIP 180K 2012J	1
R310	J3024102120X	RES CHIP 1K 1/10W	1
R312	J3024102120X	RES CHIP 1K 1/10W	1
R313	J3024512120X	RES 5K1 1/10 J	1
R316	J3024102120X	RES CHIP 1K 1/10W	1
R317	J3024104120X	RES CHIP 100K 1/10	1
R318	J3024104120X	RES CHIP 100K 1/10	1
R319	J3024102120X	RES CHIP 1K 1/10W	1
R322	J3024512120X	RES 5K1 1/10 J	1
R324	J3024104120X	RES CHIP 100K 1/10	1
R325	J3024104120X	RES CHIP 100K 1/10	1
R326	J3024102120X	RES CHIP 1K 1/10W	1
R327	J3024222120X	RES CHIP 2K2 1/10W	1
R335	J3024105120X	RES CHIP 1M 1/10WJ	1
R336	J3024105120X	RES CHIP 1M 1/10WJ	1
R337	J3024105120X	RES CHIP 1M 1/10WJ	1
R338	J3024105120X	RES CHIP 1M 1/10WJ	1
R339	J3024182120X	RES CHIP 1K8 1/10W	1
R340	J3024182120X	RES CHIP 1K8 1/10W	1
R341	J3024222120X	RES CHIP 2K2 1/10W	1
R342	J3024104120X	RES CHIP 100K 1/10	1
R343	J3024104120X	RES CHIP 100K 1/10	1
R344	J3024102120X	RES CHIP 1K 1/10W	1
R347	J3024104120X	RES CHIP 100K 1/10	1
R348	J3024104120X	RES CHIP 100K 1/10	1
R352	J3024512120X	RES 5K1 1/10 J	1
R354	J3024222120X	RES CHIP 2K2 1/10W	1
R356	J3024222120X	RES CHIP 2K2 1/10W	1
R357	J3024512120X	RES 5K1 1/10 J	1
R358	J3024102120X	RES CHIP 1K 1/10W	1
R359	J3024222120X	RES CHIP 2K2 1/10W	1
R361	J3024472120X	RES CHIP 4K7 1/10W	1
R362	J3024222120X	RES CHIP 2K2 1/10W	1
R363	J3024152120X	RES CHIP 1K5 1/10W	1
R364	J3024682120X	RES CHIP 6K8 1/10W	1
R365	J3024473120X	RES CHIP 47K 1/10W	1
R366	J3024152120X	RES CHIP 1K5 1/10W	1
R367	J3024751120X	R-CHIP 750 2012J	1
R368	J3024181120X	RES CHIP 180 1/10W	1
R369	J3024181120X	RES CHIP 180 1/10W	1
R371	J3024104120X	RES CHIP 100K 1/10	1
R373	J3024152120X	RES CHIP 1K5 1/10W	1
R374	J3024182120X	RES CHIP 1K8 1/10W	1
R375	J3024473120X	RES CHIP 47K 1/10W	1
R376	J3024152120X	RES CHIP 1K5 1/10W	1
R377	J3024182120X	RES CHIP 1K8 1/10W	1
R378	J3024751120X	R-CHIP 750 2012J	1
R379	J3024682120X	RES CHIP 6K8 1/10W	1
R380	J3024181120X	RES CHIP 180 1/10W	1
R381	J3024104120X	RES CHIP 100K 1/10	1
R382	J3024181120X	RES CHIP 180 1/10W	1
R386	J3024222120X	RES CHIP 2K2 1/10W	1
R387	J3024222120X	RES CHIP 2K2 1/10W	1
R401	J3024122120X	RES CHIP 1K2 1/10W	1
R406	J3024122120X	RES CHIP 1K2 1/10W	1
R417	J3024562120X	RES CHIP 5K6 1/10W	1
R418	J3024562120X	RES CHIP 5K6 1/10W	1
R421	J3024104120X	RES CHIP 100K 1/10	1
R422	J3024222120X	RES CHIP 2K2 1/10W	1
R423	J3024222120X	RES CHIP 2K2 1/10W	1
R424	J3024222120X	RES CHIP 2K2 1/10W	1
R429	J3024271120X	R-CHIP 270 1/10W J	1
R430	J3024102120X	RES CHIP 1K 1/10W	1
R431	J3024473120X	RES CHIP 47K 1/10W	1
R432	J3024102120X	RES CHIP 1K 1/10W	1
R435	J3024271120X	R-CHIP 270 1/10W J	1
R436	J3024102120X	RES CHIP 1K 1/10W	1
R437	J3024473120X	RES CHIP 47K 1/10W	1
R438	J3024102120X	RES CHIP 1K 1/10W	1
R440	J3024104120X	RES CHIP 100K 1/10	1
R441	J3024184120X	R-CHIP 180K 2012J	1
R442	J3024102120X	RES CHIP 1K 1/10W	1
R443	J3024102120X	RES CHIP 1K 1/10W	1
R444	J3024102120X	RES CHIP 1K 1/10W	1
R445	J3024102120X	RES CHIP 1K 1/10W	1
R446	J3024102120X	RES CHIP 1K 1/10W	1
R447	J3024184120X	R-CHIP 180K 2012J	1
R448	J3024104120X	RES CHIP 100K 1/10	1
R451	J3024473120X	RES CHIP 47K 1/10W	1
R452	J3024473120X	RES CHIP 47K 1/10W	1

VIDEO BD

CN651	J4423231500X	CNT 2.0 35336-1510	1
CN652	J4423230800X	CONNECTOR	1
CN653	J4423231900X	CNT ST 35336-1910	1
CN654	J4423231900X	CNT ST 35336-1910	1
CN761	J4370009906X	CNT 5P 550#26 SL	1
CP601	J4423331900X	CNT 2.0 35237-1910	1
CP602	J4420130840X	CNT GIL-S-8P-S2L2	1
CP651	J4423331900X	CNT 2.0 35237-1910	1
CP652	J4423331900X	CNT 2.0 35237-1910	1
CP751	J4420030540X	CNT PLUG 2.0 ST 5P	1
C603	J3470110031X	CE 10UF 16V	1
C604	J3470110031X	CE 10UF 16V	1
C623	J3470110031X	CE 10UF 16V	1
D778	J2302310012X	LED RED/GREEN 5	1
HP701	J44329000102	JACK MIC 9P GOLD	1
IC611	J2116209002X	IC OSD M35013	1
IC612	J2116204001X	IC VIDEO BA7046	1
IC616	J2123233001X	IC LTV817	1
IC618	J2123233001X	IC LTV817	1
JA601	J44312000100	JACK RCA+S GNDCAP	1
JA602	J44312000100	JACK RCA+S GNDCAP	1
JA603	J44312000100	JACK RCA+S GNDCAP	1
JA604	J44312000100	JACK RCA+S GNDCAP	1
JA605	J44312000100	JACK RCA+S GNDCAP	1
JA606	J44312000100	JACK RCA+S GNDCAP	1
JA607	J44312000100	JACK RCA+S GNDCAP	1
JA608	J4433220130X	JACK 2P	1
JA609	J4433210120X	JACK 1P	1
L601	J2616522020X	COIL 22UH K	1
L602	J2616522020X	COIL 22UH K	1
W1-2	J4370009932X	1P AWG1007 220#18	1
W761	J4370009929X	LUG WIRE 1P 250#24	1
X601	J3913010026X	CRYSTAL 14.31818	1
X601	J3914010076X	CRYS 17.734475MHZ	1
CC601	J3470110061X	CE SG 10UF 35V	1
CC603	J3470110061X	CE SG 10UF 35V	1
CC606	J3470110061X	CE SG 10UF 35V	1
CC608	J3470110061X	CE SG 10UF 35V	1
CF601	J3470110031X	CE 10UF 16V	1
CF602	J3470110071X	CE SG 10U 50V M	1
CF604	J3470110031X	CE 10UF 16V	1
CF605	J3470110071X	CE SG 10U 50V M	1
CF607	J3470147121X	CE SG 470U 10V M	1
CF609	J3470147121X	CE SG 470U 10V M	1
CF611	J3470110031X	CE 10UF 16V	1
CF612	J3470110061X	CE SG 10UF 35V	1
CF614	J3470110031X	CE 10UF 16V	1
C601	J3470110031X	CE 10UF 16V	1
C602	J3470110031X	CE 10UF 16V	1
C605	J3470110031X	CE 10UF 16V	1

C606	J3470147121X	CE SG 470U 10V M	1
C613	J3470110031X	CE 10UF 16V	1
C614	J3470110031X	CE 10UF 16V	1
C615	J3470147121X	CE SG 470U 10V M	1
C616	J3470110031X	CE 10UF 16V	1
C617	J3470110031X	CE 10UF 16V	1
C618	J3470147121X	CE SG 470U 10V M	1
C621	J3470110031X	CE 10UF 16V	1
C622	J3470110031X	CE 10UF 16V	1
C624	J3470110031X	CE 10UF 16V	1
C625	J3470110031X	CE 10UF 16V	1
C626	J3470147121X	CE SG 470U 10V M	1
C627	J3470110031X	CE 10UF 16V	1
C628	J3470147121X	CE SG 470U 10V M	1
C630	J3470122971X	CE SG 2U2 50V M	1
C631	J3470110071X	CE SG 10U 50V M	1
C633	J3470110121X	CE SG 100U 10V M	1
C634	J3470147121X	CE SG 470U 10V M	1
C635	J3470122971X	CE SG 2U2 50V M	1
C636	J3470147031X	CE SG 47U 16V M	1
C637	J3470110121X	CE SG 100U 10V M	1
C639	J3470110971X	CE SG 1U 50V M	1
C647	J3470147121X	CE SG 470U 10V M	1
C650	J3470147121X	CE SG 470U 10V M	1
C651	J3470147121X	CE SG 470U 10V M	1
C652	J3470147121X	CE SG 470U 10V M	1
C653	J3470147121X	CE SG 470U 10V M	1
C660	J3470147121X	CE SG 470U 10V M	1
C661	J3470147121X	CE SG 470U 10V M	1
C662	J3470147121X	CE SG 470U 10V M	1
C663	J3470147121X	CE SG 470U 10V M	1
C664	J3470147121X	CE SG 470U 10V M	1
C665	J3470147121X	CE SG 470U 10V M	1
C666	J3470147121X	CE SG 470U 10V M	1
C667	J3470147121X	CE SG 470U 10V M	1
C671	J3470133871X	CE SG 0.33UF 50V	1
C672	J3470110121X	CE SG 100U 10V M	1
C675	J3470110971X	CE SG 1U 50V M	1
C678	J3513180270X	CC/DISC 18P 50V J	1
C679	J3470110061X	CE SG 10UF 35V	1
C680	J3470147031X	CE SG 47U 16V M	1
C682	J3470110121X	CE SG 100U 10V M	1
C684	J3513220270X	CAP CH 22PF 5OV J	1
C685	J3470110121X	CE SG 100U 10V M	1
C687	J3470110121X	CE SG 100U 10V M	1
C691	J3470110971X	CE SG 1U 50V M	1
C698	J3470147031X	CE SG 47U 16V M	1
C699	J3470147031X	CE SG 47U 16V M	1
C983	J3513220270X	CAP CH 22PF 5OV J	1
Q602	J2021021101X	TR NPN KTC2878	1
Q603	J2021021101X	TR NPN KTC2878	1
Q604	J2021021101X	TR NPN KTC2878	1
Q605	J2021000102X	TR PNP 2SA933S	1
Q609	J2021021101X	TR NPN KTC2878	1
Q610	J2021060001X	TR NPN KTD1302 B	1
Q613	J2021021101X	TR NPN KTC2878	1
Q614	J2021220002X	TR NPN 2SC1740S	1
Q615	J2021220002X	TR NPN 2SC1740S	1
Q616	J2021021101X	TR NPN KTC2878	1
Q618	J2021200501X	TR PNP KRA107M	1
Q619	J2021220002X	TR NPN 2SC1740S	1
Q620	J2021000102X	TR PNP 2SA933S	1
Q623	J2021200501X	TR PNP KRA107M	1
SW718	J46500500002	SW TACT	1
CC602	J3525104570X	CC/CHIP .1U 50V 8	1
CC604	J3525104570X	CC/CHIP .1U 50V 8	1
CC607	J3525104570X	CC/CHIP .1U 50V 8	1
CC609	J3525104570X	CC/CHIP .1U 50V 8	1
CF603	J3525104570X	CC/CHIP .1U 50V 8	1
CF606	J3525104570X	CC/CHIP .1U 50V 8	1
CF608	J3515101270X	CC/CHIP 100P 50V J	1
CF610	J3515101270X	CC/CHIP 100P 50V J	1
CF613	J3525104570X	CC/CHIP .1U 50V 8	1
CF615	J3515101270X	CC/CHIP 100P 50V J	1
C608	J3515101270X	CC/CHIP 100P 50V J	1
C609	J3515101270X	CC/CHIP 100P 50V J	1
C611	J3515101270X	CC/CHIP 100P 50V J	1
C612	J3515101270X	CC/CHIP 100P 50V J	1
C619	J3515101270X	CC/CHIP 100P 50V J	1
C620	J3515101270X	CC/CHIP 100P 50V J	1
C629	J3525103170X	CC/CHIP .01U 50V K	1
C632	J3525103170X	CC/CHIP .01U 50V K	1
C640	J3515101270X	CC/CHIP 100P 50V J	1
C641	J3515101270X	CC/CHIP 100P 50V J	1
C642	J3515101270X	CC/CHIP 100P 50V J	1
C645	J3525104570X	CC/CHIP .1U 50V 8	1
C646	J3515102170X	CC/CHIP 1000P 50V	1
C657	J3525104570X	CC/CHIP .1U 50V 8	1
C659	J3515101270X	CC/CHIP 100P 50V J	1
C670	J3515101270X	CC/CHIP 100P 50V J	1
C673	J3525103170X	CC/CHIP .01U 50V K	1
C674	J3515470270X	CC/CHIP 47P 50V	1
C676	J3515330270X	CC/CHIP 33P 50V J	1
C681	J3515101270X	CC/CHIP 100P 50V J	1
C686	J3525103170X	CC/CHIP .01U 50V K	1
C688	J3515222170X	CC/CHIP 2200P 50V	1
C690	J3515102170X	CC/CHIP 1000P 50V	1
C696	J3515101270X	CC/CHIP 100P 50V J	1
C697	J3525104570X	CC/CHIP .1U 50V 8	1
C754	J3525104570X	CC/CHIP .1U 50V 8	1
C755	J3525104570X	CC/CHIP .1U 50V 8	1
C756	J3525104540X	CC/CHIP 0.1U 25V Z	1
C757	J3525104540X	CC/CHIP 0.1U 25V Z	1
D601	J2244010104X	DIODE CHIP 1SS355	1
D602	J2244010104X	DIODE CHIP 1SS355	1
D603	J2244010104X	DIODE CHIP 1SS355	1
D604	J2244010104X	DIODE CHIP 1SS355	1
D605	J2244010104X	DIODE CHIP 1SS355	1
D606	J2244010104X	DIODE CHIP 1SS355	1
D607	J2244010104X	DIODE CHIP 1SS355	1
D608	J2244010104X	DIODE CHIP 1SS355	1
D609	J2244010104X	DIODE CHIP 1SS355	1
D613	J2244010104X	DIODE CHIP 1SS355	1
D614	J2244010104X	DIODE CHIP 1SS355	1
D615	J2244010104X	DIODE CHIP 1SS355	1
D616	J2244010104X	DIODE CHIP 1SS355	1
D639	J2244010104X	DIODE CHIP 1SS355	1
D640	J2244010104X	DIODE CHIP 1SS355	1
IC601	J2116012001X	IC VIDEO NJM2296	1
IC602	J2116012001X	IC VIDEO NJM2296	1
IC603	J2116012001X	IC VIDEO NJM2296	1
IC604	J2116012001X	IC VIDEO NJM2296	1
IC605	J2116012001X	IC VIDEO NJM2296	1
IC606	J2141004002X	IC BU4094 SOP16	1
IC607	J2116012001X	IC VIDEO NJM2296	1
IC608	J2141004003X	IC BU4053	1
IC619	J2141004002X	IC BU4094 SOP16	1
J001	J3024000120X	RES 0 OHM 1/10W J	1
J005	J3024000120X	RES 0 OHM 1/10W J	1
J008	J3024000120X	RES 0 OHM 1/10W J	1
J057	J3024000120X	RES 0 OHM 1/10W J	1
J062	J3024000120X	RES 0 OHM 1/10W J	1
J066	J3024000120X	RES 0 OHM 1/10W J	1
J071	J3024000120X	RES 0 OHM 1/10W J	1
J077	J3024000120X	RES 0 OHM 1/10W J	1
J078	J3024000120X	RES 0 OHM 1/10W J	1
J105	J3024000120X	RES 0 OHM 1/10W J	1
J110	J3024000120X	RES 0 OHM 1/10W J	1

J111	J3024000120X	RES 0 OHM 1/10W J	1
J133	J3024000120X	RES 0 OHM 1/10W J	1
J146	J3024000120X	RES 0 OHM 1/10W J	1
J147	J3024000120X	RES 0 OHM 1/10W J	1
J149	J3024000120X	RES 0 OHM 1/10W J	1
J150	J3024000120X	RES 0 OHM 1/10W J	1
J159	J3024000120X	RES 0 OHM 1/10W J	1
J174	J3024000120X	RES 0 OHM 1/10W J	1
J177	J3024000120X	RES 0 OHM 1/10W J	1
J178	J3024000120X	RES 0 OHM 1/10W J	1
J179	J3024000120X	RES 0 OHM 1/10W J	1
J180	J3024000120X	RES 0 OHM 1/10W J	1
J186	J3024000120X	RES 0 OHM 1/10W J	1
J189	J3024000120X	RES 0 OHM 1/10W J	1
J198	J3024000120X	RES 0 OHM 1/10W J	1
J203	J3024000120X	RES 0 OHM 1/10W J	1
J205	J3024000120X	RES 0 OHM 1/10W J	1
J209	J3024000120X	RES 0 OHM 1/10W J	1
Q601	J2041220102X	TR NPN DTC114YKA	1
Q606	J2041200102X	TR PNP DTA114YKA	1
Q607	J2041220102X	TR NPN DTC114YKA	1
Q608	J2041200102X	TR PNP DTA114YKA	1
Q611	J2041220102X	TR NPN DTC114YKA	1
Q612	J2041220102X	TR NPN DTC114YKA	1
Q729	J2041220102X	TR NPN DTC114YKA	1
RC601	J3024100120X	R-CHIP 10 2012J	1
RC602	J3024820120X	RES CHIP 82OHM	1
RC603	J3024100120X	R-CHIP 10 2012J	1
RC604	J3024820120X	RES CHIP 82OHM	1
RC606	J3024750120X	RES CHIP 75 1/10W	1
RC607	J3024820120X	RES CHIP 82OHM	1
RC608	J3024100120X	R-CHIP 10 2012J	1
RC609	J3024100120X	R-CHIP 10 2012J	1
RC610	J3024820120X	RES CHIP 82OHM	1
RC612	J3024750120X	RES CHIP 75 1/10W	1
RC614	J3024750120X	RES CHIP 75 1/10W	1
RF601	J3024181120X	RES CHIP 180 1/10W	1
RF602	J3024100120X	R-CHIP 10 2012J	1
RF603	J3024181120X	RES CHIP 180 1/10W	1
RF604	J3024100120X	R-CHIP 10 2012J	1
RF605	J3024000120X	RES 0 OHM 1/10W J	1
RF606	J3024103120X	RES CHIP 10K 1/10W	1
RF607	J3024000120X	RES 0 OHM 1/10W J	1
RF608	J3024103120X	RES CHIP 10K 1/10W	1
RF609	J3024000120X	RES 0 OHM 1/10W J	1
RF610	J3024103120X	RES CHIP 10K 1/10W	1
RF611	J3024181120X	RES CHIP 180 1/10W	1
RF612	J3024100120X	R-CHIP 10 2012J	1
RS602	J3024820120X	RES CHIP 82OHM	1
RS603	J3024820120X	RES CHIP 82OHM	1
RS605	J3024820120X	RES CHIP 82OHM	1
RS606	J3024820120X	RES CHIP 82OHM	1
RS608	J3024820120X	RES CHIP 82OHM	1
RS609	J3024820120X	RES CHIP 82OHM	1
RS611	J3024820120X	RES CHIP 82OHM	1
RS612	J3024820120X	RES CHIP 82OHM	1
RS620	J3024820120X	RES CHIP 82OHM	1
RS621	J3024820120X	RES CHIP 82OHM	1
RS622	J3024750120X	RES CHIP 75 1/10W	1
RS623	J3024750120X	RES CHIP 75 1/10W	1
R615	J3024123120X	RES CHIP 12K 1/10W	1
R616	J3024102120X	RES CHIP 1K 1/10W	1
R617	J3024102120X	RES CHIP 1K 1/10W	1
R618	J3024102120X	RES CHIP 1K 1/10W	1
R619	J3024102120X	RES CHIP 1K 1/10W	1
R620	J3024102120X	RES CHIP 1K 1/10W	1
R621	J3024103120X	RES CHIP 10K 1/10W	1
R622	J3024103120X	RES CHIP 10K 1/10W	1
R623	J3024103120X	RES CHIP 10K 1/10W	1
R624	J3024103120X	RES CHIP 10K 1/10W	1
R625	J3024103120X	RES CHIP 10K 1/10W	1
R626	J3024103120X	RES CHIP 10K 1/10W	1
R627	J3024103120X	RES CHIP 10K 1/10W	1
R628	J3024103120X	RES CHIP 10K 1/10W	1
R629	J3024103120X	RES CHIP 10K 1/10W	1
R632	J3024750120X	RES CHIP 75 1/10W	1
R633	J3024750120X	RES CHIP 75 1/10W	1
R634	J3024104120X	RES CHIP 100K 1/10	1
R635	J3024102120X	RES CHIP 1K 1/10W	1
R636	J3024102120X	RES CHIP 1K 1/10W	1
R637	J3024102120X	RES CHIP 1K 1/10W	1
R638	J3024333120X	RES CHIP 33K 1/10W	1
R639	J3024680120X	R-CHIP 68 1/10W J	1
R640	J3024222120X	RES CHIP 2K2 1/10W	1
R641	J3024104120X	RES CHIP 100K 1/10	1
R642	J3024102120X	RES CHIP 1K 1/10W	1
R643	J3024103120X	RES CHIP 10K 1/10W	1
R644	J3024102120X	RES CHIP 1K 1/10W	1
R645	J3024102120X	RES CHIP 1K 1/10W	1
R646	J3024471120X	RES CHIP 470 1/10W	1
R647	J3024471120X	RES CHIP 470 1/10W	1
R648	J3024561120X	RES CHIP 560 1/10W	1
R649	J3024221120X	R-CHIP 220 2012J	1
R650	J3024563120X	RES CHIP 56K 1/10W	1
R651	J3024102120X	RES CHIP 1K 1/10W	1
R652	J3024680120X	R-CHIP 68 1/10W J	1
R653	J3024103120X	RES CHIP 10K 1/10W	1
R654	J3024271120X	R-CHIP 270 1/10W J	1
R655	J3024470120X	RES CHIP 47 1/10W	1
R656	J3024473120X	RES CHIP 47K 1/10W	1
R658	J3024471120X	RES CHIP 470 1/10W	1
R669	J3024473120X	RES CHIP 47K 1/10W	1
R670	J3024470120X	RES CHIP 47 1/10W	1
R674	J3024102120X	RES CHIP 1K 1/10W	1
R676	J3024000120X	RES 0 OHM 1/10W J	1
R677	J3024102120X	RES CHIP 1K 1/10W	1
R678	J3024392120X	RES CHIP 3K9 1/10W	1
R679	J3024102120X	RES CHIP 1K 1/10W	1
R680	J3024682120X	RES CHIP 6K8 1/10W	1
R681	J3024222120X	RES CHIP 2K2 1/10W	1
R682	J3024103120X	RES CHIP 10K 1/10W	1
R683	J3024822120X	R-CHIP 8K2 1/10W J	1
R684	J3024683120X	RES CHIP 68K 1/10W	1
R685	J3024101120X	RES CHIP 100 1/10W	1
R686	J3024124120X	RES CHIP 120K 1/10	1
R687	J3024154120X	RES CHIP 150K 1/10	1
R688	J3024105120X	RES CHIP 1M 1/10WJ	1
R690	J3024680120X	R-CHIP 68 1/10W J	1
R691	J3024752120X	R-CHIP 7K5 1/10W J	1
R692	J3024332120X	RES CHIP 3K3 1/10W	1
R693	J3024471120X	RES CHIP 470 1/10W	1
R694	J3024105120X	RES CHIP 1M 1/10WJ	1
R695	J3024331120X	CHIP 680 1/10W	1
R696	J3024474120X	RES CHIP 470K 1/10 PC	1
R697	J3024474120X	RES CHIP 470K 1/10 PC	1
R698	J3024103120X	RES CHIP 10K 1/10W PC	1
R699	J3024123120X	RES CHIP 12K 1/10W PC	1
R831	J3024181120X	RES CHIP 180 1/10W PC	1
R832	J3024181120X	RES CHIP 180 1/10W PC	1
R833	J3024681120X	RES CHIP 680 1/10W PC	1
R834	J3024681120X	RES CHIP 680 1/10W PC	1
C001	J3471610031X	CE 10UF 16V M	1
C005	J3471610031X	CE 10UF 16V M	1
C009	J3471610031X	CE 10UF 16V M	1
C014	J3471610031X	CE 10UF 16V M	1

DSP BD

'060	J60510005000	HEATSINK IC (DSP)	1
'070	J67200005000	INSULATION H/SINK	1
BEAD4	J2631200022X	BEAD AX 80.5 OHM	1
BEAD4	J2631200022X	BEAD AX 80.5 OHM	1
BEAD4	J2631200022X	BEAD AX 80.5 OHM	1
CP401	J4423331500X	CNT 2.O 35237-1510	1
CP402	J4420031540X	CNT PLUG ST 2.0MM	1
CP403	J4422011920X	FPC ST PLUG 19P 1.	1
C065	J3470110211X	CE 1000UF 6.3V	1
C070	J3470110211X	CE 1000UF 6.3V	1
C073	J3470110211X	CE 1000UF 6.3V	1
C139	J3470147031X	CE SG 47U 16V M	1
C140	J3470147031X	CE SG 47U 16V M	1
C159	J3470110211X	CE 1000UF 6.3V	1
C167	J3470110211X	CE 1000UF 6.3V	1
C170	J3470110211X	CE 1000UF 6.3V	1
C203	J3524101170X	CC 100P 50V	1
C204	J3524222730X	CC/AX X 2200P16V M	1
C205	J3524104540X	CC 0.1UF 25V	1
C206	J3523104540X	CAP C/D/T .1U 25V	1
C207	J3514470270X	CC AX CH 47P 50V K	1
D001	J2305211022X	LED LTL-1CHIP 3RED	1
JAC1	J2123806001X	FIBER TORX178B	1
JAC2	J2123806001X	FIBER TORX178B	1
JAC3	J2123806002X	FIBER OPT TRANS	1
JAC4	J44302000700	JACK RCA 2P GNDCAP	1
JAC5	J44301000300	JACK RCA 1P BK GND	1
L001	J2616247020X	COIL 47UH	1
L002	J2616247020X	COIL 47UH	1
L003	J2616247020X	COIL 47UH	1
L004	J2616247020X	COIL 47UH	1
L005	J2616247020X	COIL 47UH	1
L006	J2616247020X	COIL 47UH	1
L007	J2616247020X	COIL 47UH	1
L009	J2616247020X	COIL 47UH	1
L010	J2616247020X	COIL 47UH	1
L011	J2616247020X	COIL 47UH	1
L012	J2616247020X	COIL 47UH	1
T001	J2831000013X*	TRANS YK-110	1
X001	J3914010016X	OSC 12.288MH	1
C021	J3471610031X	CE 10UF 16V M	1
C022	J3471610031X	CE 10UF 16V M	1
C027	J3471610031X	CE 10UF 16V M	1
C034	J3471610031X	CE 10UF 16V M	1
C035	J3471610031X	CE 10UF 16V M	1
C040	J3471610031X	CE 10UF 16V M	1
C044	J3471610031X	CE 10UF 16V M	1
C051	J3471610031X	CE 10UF 16V M	1
C053	J3471610031X	CE 10UF 16V M	1
C057	J3471610031X	CE 10UF 16V M	1
C063	J3471610031X	CE 10UF 16V M	1
C081	J3470110031X	CE 10UF 16V	1
C082	J3470110031X	CE 10UF 16V	1
C083	J3471610031X	CE 10UF 16V M	1
C084	J3470110031X	CE 10UF 16V	1
C103	J3470110131X	CE SG 100U 16V M	1
C104	J3470110131X	CE SG 100U 16V M	1
C117	J3471610031X	CE 10UF 16V M	1
C124	J3471610031X	CE 10UF 16V M	1
C126	J3471610031X	CE 10UF 16V M	1
C130	J3471610031X	CE 10UF 16V M	1
C137	J3470110031X	CE 10UF 16V	1
C141	J3470147031X	CE SG 47U 16V M	1
C143	J3471610031X	CE 10UF 16V M	1
C145	J3471610031X	CE 10UF 16V M	1
C147	J3471610031X	CE 10UF 16V M	1
C151	J3470110031X	CE 10UF 16V	1
C152	J3470110031X	CE 10UF 16V	1
C155	J3470110031X	CE 10UF 16V	1
C156	J3470110031X	CE 10UF 16V	1
C175	J3470122971X	CE SG 2U2 50V M	1
C181	J3470110121X	CE SG 100U 10V M	1
C192	J3470122121X	CE SG 220U 10V M	1
Q001	J2021220001X	TR NPN KRC107M	1
BEAD1	J2631300224X	BEAD CHIP/TAP,HH-1	1
BEAD1	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD1	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD1	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD1	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD1	J2631300224X	BEAD CHIP/TAP,HH-1	1
BEAD1	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD1	J2631300224X	BEAD CHIP/TAP,HH-1	1
BEAD1	J2631300224X	BEAD CHIP/TAP,HH-1	1
BEAD1	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD2	J2631300224X	BEAD CHIP/TAP,HH-1	1
BEAD2	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD2	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD2	J2631300194X	BEAD CHIP 1K OHM	1
BEAD2	J2631300174X	BEAD CHIP 600OHM	1
BEAD2	J2631300164X	BEAD CHIP 300OHM	1
BEAD2	J2631300164X	BEAD CHIP 300OHM	1
BEAD2	J2631300164X	BEAD CHIP 300OHM	1
BEAD2	J2631300164X	BEAD CHIP 300OHM	1
BEAD2	J2631300174X	BEAD CHIP 600OHM	1
BEAD3	J2631300224X	BEAD CHIP/TAP,HH-1	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300194X	BEAD CHIP 1K OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD3	J2631300164X	BEAD CHIP 300OHM	1
BEAD4	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD4	J2631300164X	BEAD CHIP 300OHM	1
BEAD4	J2631300164X	BEAD CHIP 300OHM	1
BEAD4	J2631300164X	BEAD CHIP 300OHM	1
BEAD4	J2631300194X	BEAD CHIP 1K OHM	1
BEAD4	J2631300174X	BEAD CHIP 600OHM	1
BEAD5	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD6	J2631300164X	BEAD CHIP 300OHM	1
BEAD7	J2631300164X	BEAD CHIP 300OHM	1
BEAD8	J2631300204X	BEAD CHIP/TAP HB-1	1
BEAD9	J2631300204X	BEAD CHIP/TAP HB-1	1
C002	J3525472170X	CC/CHIP 4700PF 50V	1
C003	J3525472170X	CC/CHIP 4700PF 50V	1
C004	J3525472170X	CC/CHIP 4700PF 50V	1
C006	J3525472170X	CC/CHIP 4700PF 50V	1
C007	J3525472170X	CC/CHIP 4700PF 50V	1
C008	J3525472170X	CC/CHIP 4700PF 50V	1
C010	3525222170X	CC CHIP 2200P 50V	1
C011	J3525104570X	CC/CHIP .1U 50V 8	1
C012	J3525104570X	CC/CHIP .1U 50V 8	1
C013	J3525104570X	CC/CHIP .1U 50V 8	1
C015	J3525472170X	CC/CHIP 4700PF 50V	1
C016	J3525472170X	CC/CHIP 4700PF 50V	1
C017	J3525472170X	CC/CHIP 4700PF 50V	1
C018	J3525472170X	CC/CHIP 4700PF 50V	1
C019	J3525222170X	CC CHIP 2200P 50V	1
C020	J3525104570X	CC/CHIP .1U 50V 8	1
C023	J3525472170X	CC/CHIP 4700PF 50V	1
C024	J3525472170X	CC/CHIP 4700PF 50V	1
C025	J3525104570X	CC/CHIP .1U 50V 8	1
C026	J3525104570X	CC/CHIP .1U 50V 8	1

C028	J3525472170X	CC/CHIP 4700PF 50V	1
C029	J3525472170X	CC/CHIP 4700PF 50V	1
C030	J3525472170X	CC/CHIP 4700PF 50V	1
C031	J3525472170X	CC/CHIP 4700PF 50V	1
C032	J3525222170X	CC CHIP 2200P 50V	1
C033	J3525104570X	CC/CHIP .1U 50V 8	1
C036	J3525472170X	CC/CHIP 4700PF 50V	1
C037	J3525472170X	CC/CHIP 4700PF 50V	1
C038	J3525104570X	CC/CHIP .1U 50V 8	1
C039	J3525104570X	CC/CHIP .1U 50V 8	1
C041	J3525472170X	CC/CHIP 4700PF 50V	1
C042	J3525472170X	CC/CHIP 4700PF 50V	1
C043	J3525104570X	CC/CHIP .1U 50V 8	1
C045	J3525472170X	CC/CHIP 4700PF 50V	1
C046	J3525472170X	CC/CHIP 4700PF 50V	1
C047	J3525104570X	CC/CHIP .1U 50V 8	1
C048	J3525472170X	CC/CHIP 4700PF 50V	1
C049	J3525472170X	CC/CHIP 4700PF 50V	1
C050	J3525474570X	CC CHIP 0.47U 50V	1
C052	J3525104570X	CC/CHIP .1U 50V 8	1
C054	J3525472170X	CC/CHIP 4700PF 50V	1
C055	J3525104570X	CC/CHIP .1U 50V 8	1
C056	J3525104570X	CC/CHIP .1U 50V 8	1
C058	J3525104570X	CC/CHIP .1U 50V 8	1
C059	J3525104570X	CC/CHIP .1U 50V 8	1
C060	J3525104570X	CC/CHIP .1U 50V 8	1
C061	J3515472170X	CC/CHIP 4700PF 50V	1
C062	J3525104570X	CC/CHIP .1U 50V 8	1
C064	J3525104570X	CC/CHIP .1U 50V 8	1
C066	J3525104570X	CC/CHIP .1U 50V 8	1
C067	J3525104570X	CC/CHIP .1U 50V 8	1
C068	J3525104570X	CC/CHIP .1U 50V 8	1
C069	J3525104570X	CC/CHIP .1U 50V 8	1
C071	J3525104570X	CC/CHIP .1U 50V 8	1
C072	J3525104570X	CC/CHIP .1U 50V 8	1
C074	J3525224570X	C-CHIP 2012F .22U	1
C075	J3525104570X	CC/CHIP .1U 50V 8	1
C076	J3525104570X	CC/CHIP .1U 50V 8	1
C077	J3525104570X	CC/CHIP .1U 50V 8	1
C078	J3515680270X	CC/CHIP 68P 2012	1
C079	J3525104570X	CC/CHIP .1U 50V 8	1
C080	J3525104570X	CC/CHIP .1U 50V 8	1
C085	J3525104570X	CC/CHIP .1U 50V 8	1
C086	J3525104570X	CC/CHIP .1U 50V 8	1
C087	J3525104570X	CC/CHIP .1U 50V 8	1
C088	J3525104570X	CC/CHIP .1U 50V 8	1
C089	J3525103170X	CC/CHIP .01U 50V K	1
C090	J3525103170X	CC/CHIP .01U 50V K	1
C091	J3515470270X	CC/CHIP 47P 50V	1
C092	J3515470270X	CC/CHIP 47P 50V	1
C093	J3515101270X	CC/CHIP 100P 50V J	1
C094	J3525104570X	CC/CHIP .1U 50V 8	1
C095	J3525104570X	CC/CHIP .1U 50V 8	1
C096	J3525103170X	CC/CHIP .01U 50V K	1
C097	J3525103170X	CC/CHIP .01U 50V K	1
C098	J3525104570X	CC/CHIP .1U 50V 8	1
C099	J3525104570X	CC/CHIP .1U 50V 8	1
C100	J3525104570X	CC/CHIP .1U 50V 8	1
C101	J3525104570X	CC/CHIP .1U 50V 8	1
C102	J3525104570X	CC/CHIP .1U 50V 8	1
C105	J3525104570X	CC/CHIP .1U 50V 8	1
C106	J3515150270X	CC/CHIP 15P 50V	1
C107	J3525104570X	CC/CHIP .1U 50V 8	1
C108	J3525683540X	CC CHIP 0.068U 25V	1
C109	J3515470270X	CC/CHIP 47P 50V	1
C110	J3515150270X	CC/CHIP 15P 50V	1
C111	J3515221270X	CC/CHIP 220P 50V J	1
C112	J3515101270X	CC/CHIP 100P 50V J	1
C113	J3525104570X	CC/CHIP .1U 50V 8	1
C114	J3525104570X	CC/CHIP .1U 50V 8	1
C115	J3525472170X	CC/CHIP 4700PF 50V	1
C116	J3525104570X	CC/CHIP .1U 50V 8	1
C118	J3525472170X	CC/CHIP 4700PF 50V	1
C119	J3525472170X	CC/CHIP 4700PF 50V	1
C120	J3525104570X	CC/CHIP .1U 50V 8	1
C121	J3525472170X	CC/CHIP 4700PF 50V	1
C122	J3525472170X	CC/CHIP 4700PF 50V	1
C123	J3525222170X	CC CHIP 2200P 50V	1
C125	J3525104570X	CC/CHIP .1U 50V 8	1
C127	J3525472170X	CC/CHIP 4700PF 50V	1
C128	J3525472170X	CC/CHIP 4700PF 50V	1
C129	J3525104570X	CC/CHIP .1U 50V 8	1
C131	J3525472170X	CC/CHIP 4700PF 50V	1
C132	J3525472170X	CC/CHIP 4700PF 50V	1
C133	J3525104570X	CC/CHIP .1U 50V 8	1
C134	J3525472170X	CC/CHIP 4700PF 50V	1
C135	J3525472170X	CC/CHIP 4700PF 50V	1
C136	J3525222170X	CC CHIP 2200P 50V	1
C138	J3525104570X	CC/CHIP .1U 50V 8	1
C142	J3525104570X	CC/CHIP .1U 50V 8	1
C144	J3525104570X	CC/CHIP .1U 50V 8	1
C146	J3525104570X	CC/CHIP .1U 50V 8	1
C148	J3525104570X	CC/CHIP .1U 50V 8	1
C149	J3525104570X	CC/CHIP .1U 50V 8	1
C150	J3515472170X	CC/CHIP 4700PF 50V	1
C153	J3525104570X	CC/CHIP .1U 50V 8	1
C154	J3525104570X	CC/CHIP .1U 50V 8	1
C157	J3525104570X	CC/CHIP .1U 50V 8	1
C158	J3525104570X	CC/CHIP .1U 50V 8	1
C160	J3525104570X	CC/CHIP .1U 50V 8	1
C161	J3525104570X	CC/CHIP .1U 50V 8	1
C162	J3525104570X	CC/CHIP .1U 50V 8	1
C163	J3525104570X	CC/CHIP .1U 50V 8	1
C164	J3525104570X	CC/CHIP .1U 50V 8	1
C165	J3525104570X	CC/CHIP .1U 50V 8	1
C166	J3525104570X	CC/CHIP .1U 50V 8	1
C168	J3525104570X	CC/CHIP .1U 50V 8	1
C169	J3525104570X	CC/CHIP .1U 50V 8	1
C171	J3525104570X	CC/CHIP .1U 50V 8	1
C172	J3525104570X	CC/CHIP .1U 50V 8	1
C173	J3515470270X	CC/CHIP 47P 50V	1
C174	J3515470270X	CC/CHIP 47P 50V	1
C176	J3525104570X	CC/CHIP .1U 50V 8	1
C177	J3525104570X	CC/CHIP .1U 50V 8	1
C178	J3525104570X	CC/CHIP .1U 50V 8	1
C179	J3525104570X	CC/CHIP .1U 50V 8	1
C180	J3525104570X	CC/CHIP .1U 50V 8	1
C182	J3525104570X	CC/CHIP .1U 50V 8	1
C183	J3525103170X	CC/CHIP .01U 50V K	1
C184	J3525104570X	CC/CHIP .1U 50V 8	1
C185	J3515220270X	CC/CHIP 22P 50V	1
C186	J3515101270X	CC/CHIP 100P 50V J	1
C187	J3525104570X	CC/CHIP .1U 50V 8	1
C188	J3525104570X	CC/CHIP .1U 50V 8	1
C189	J3515220270X	CC/CHIP 22P 50V	1
C190	J3525104570X	CC/CHIP .1U 50V 8	1
C191	J3515220270X	CC/CHIP 22P 50V	1
C193	J3515470270X	CC/CHIP 47P 50V	1
C194	J3515470270X	CC/CHIP 47P 50V	1
C195	J3515101270X	CC/CHIP 100P 50V J	1
C196	J3515101270X	CC/CHIP 100P 50V J	1
C197	J3515100270X	CC CHIP 10PF 50V D	1
C199	J3515101270X	CC/CHIP 100P 50V J	1
C200	J3515470270X	CC/CHIP 47P 50V	1
C201	J3515220270X	CC/CHIP 22P 50V	1
C202	J3515101270X	CC/CHIP 100P 50V J	1
C208	J3525104570X	CC/CHIP .1U 50V 8	1
D002	J2242010001X	DIODE CHIP KDS160	1

D003	J2242010001X	DIODE CHIP KDS160	1
D004	J2242010001X	DIODE CHIP KDS160	1
D005	J2242010001X	DIODE CHIP KDS160	1
D006	J2242010001X	DIODE CHIP KDS160	1
D007	J2242010001X	DIODE CHIP KDS160	1
D008	J2110012003X	IC OP AMP NJM5532M	1
IC100	J2135326003X	IC DECODER CS49260	1
IC101	J2131328001X	IC AT27LV020A	1
IC102	J2142032005X	IC 74VHC153MX	1
IC103	J2136926001X	IC DIR CS8414-CS	1
IC104	J2133031002X	IC 96KHZ AK5352	1
IC105	J2133031001X	IC AK4393 AUDIO	1
IC106	J2133031001X	IC AK4393 AUDIO	1
IC107	J2133031001X	IC AK4393 AUDIO	1
IC108	J2142032001X	IC F/F 74VHC574MX	1
IC109	J2142032001X	IC F/F 74VHC574MX	1
IC110	J2142032006X	IC 74VHC157MX	1
IC111	J2142032002X	IC TC74VHC244MX	1
IC113	J2129012002X	IC NJU6324M	1
IC114	J2141004002X	IC BU4094 SOP16	1
IC115	J2141004001X	IC BU4051 SOP16	1
IC116	J2110012003X	IC OP AMP NJM5532M	1
IC117	J2110012003X	IC OP AMP NJM5532M	1
IC118	J2110012003X	IC OP AMP NJM5532M	1
IC119	J2110012003X	IC OP AMP NJM5532M	1
IC120	J2110012003X	IC OP AMP NJM5532M	1
IC121	J2110012003X	IC OP AMP NJM5532M	1
IC122	J2110012003X	IC OP AMP NJM5532M	1
IC123	J2110012003X	IC OP AMP NJM5532M	1
IC124	J2110012003X	IC OP AMP NJM5532M	1
IC125	J2110012003X	IC OP AMP NJM5532M	1
IC126	J2110012003X	IC OP AMP NJM5532M	1
IC127	J2116007001X	IC 74HCU04M1R HEX	1
J001	J3024000120X	RES 0 OHM 1/10W J	1
J005	J3024000120X	RES 0 OHM 1/10W J	1
J038	J3024000120X	RES 0 OHM 1/10W J	1
J041	J3024000120X	RES 0 OHM 1/10W J	1
J042	J3024000120X	RES 0 OHM 1/10W J	1
R001	J3024103120X	RES CHIP 10K 1/10W	1
R002	J3024331120X	R-CHIP 330 2012J	1
R003	J3024331120X	R-CHIP 330 2012J	1
R004	J3024331120X	R-CHIP 330 2012J	1
R005	J3024271120X	R-CHIP 270 1/10W J	1
R006	J3024102120X	RES CHIP 1K 1/10W	1
R007	J3024681120X	RES CHIP 680 1/10W	1
R008	J3024471120X	RES CHIP 470 1/10W	1
R009	J3024103120X	RES CHIP 10K 1/10W	1
R010	J3024331120X	R-CHIP 330 2012J	1
R011	J3024331120X	R-CHIP 330 2012J	1
R012	J3024331120X	R-CHIP 330 2012J	1
R021	J3024331120X	R-CHIP 330 2012J	1
R022	J3024331120X	R-CHIP 330 2012J	1
R023	J3024271120X	R-CHIP 270 1/10W J	1
R024	J3024102120X	RES CHIP 1K 1/10W	1
R025	J3024681120X	RES CHIP 680 1/10W	1
R026	J3024471120X	RES CHIP 470 1/10W	1
R027	J3024103120X	RES CHIP 10K 1/10W	1
R028	J3024331120X	R-CHIP 330 2012J	1
R029	J3024104120X	RES CHIP 100K 1/10	1
R030	J3024331120X	R-CHIP 330 2012J	1
R031	J3024331120X	R-CHIP 330 2012J	1
R032	J3024102120X	RES CHIP 1K 1/10W	1
R033	J3024331120X	R-CHIP 330 2012J	1
R034	J3024471120X	RES CHIP 470 1/10W	1
R035	J3024681120X	RES CHIP 680 1/10W	1
R036	J3024271120X	R-CHIP 270 1/10W J	1
R037	J3024103120X	RES CHIP 10K 1/10W	1
R038	J3024331120X	R-CHIP 330 2012J	1
R039	J3024331120X	R-CHIP 330 2012J	1
R040	J3024331120X	R-CHIP 330 2012J	1
R041	J3024271120X	R-CHIP 270 1/10W J	1
R042	J3024102120X	RES CHIP 1K 1/10W	1
R043	J3024681120X	RES CHIP 680 1/10W	1
R044	J3024471120X	RES CHIP 470 1/10W	1
R045	J3024103120X	RES CHIP 10K 1/10W	1
R046	J3024331120X	R-CHIP 330 2012J	1
R047	J3024104120X	RES CHIP 100K 1/10	1
R048	J3024102120X	RES CHIP 1K 1/10W	1
R049	J3024331120X	R-CHIP 330 2012J	1
R050	J3024102120X	RES CHIP 1K 1/10W	1
R051	J3024331120X	R-CHIP 330 2012J	1
R052	J3024471120X	RES CHIP 470 1/10W	1
R053	J3024681120X	RES CHIP 680 1/10W	1
R054	J3024271120X	R-CHIP 270 1/10W J	1
R055	J3024103120X	RES CHIP 10K 1/10W	1
R056	J3024471120X	RES CHIP 470 1/10W	1
R057	J3024222120X	RES CHIP 2K2 1/10W	1
R058	J3024473120X	RES CHIP 47K 1/10W	1
R059	J3024473120X	RES CHIP 47K 1/10W	1
R060	J3024473120X	RES CHIP 47K 1/10W	1
R061	J3024101120X	RES CHIP 100 1/10W	1
R062	J3024473120X	RES CHIP 47K 1/10W	1
R063	J3024473120X	RES CHIP 47K 1/10W	1
R064	J3024473120X	RES CHIP 47K 1/10W	1
R065	J3024473120X	RES CHIP 47K 1/10W	1
R066	J3024331120X	R-CHIP 330 2012J	1
R067	J3024331120X	R-CHIP 330 2012J	1
R068	J3024331120X	R-CHIP 330 2012J	1
R069	J3024271120X	R-CHIP 270 1/10W J	1
R070	J3024102120X	RES CHIP 1K 1/10W	1
R071	J3024103120X	RES CHIP 10K 1/10W	1
R072	J3024103120X	RES CHIP 10K 1/10W	1
R073	J3024103120X	RES CHIP 10K 1/10W	1
R074	J3024103120X	RES CHIP 10K 1/10W	1
R075	J3024103120X	RES CHIP 10K 1/10W	1
R076	J3024103120X	RES CHIP 10K 1/10W	1
R077	J3024103120X	RES CHIP 10K 1/10W	1
R078	J3024103120X	RES CHIP 10K 1/10W	1
R079	J3024103120X	RES CHIP 10K 1/10W	1
R080	J3024103120X	RES CHIP 10K 1/10W	1
R081	J3024222120X	RES CHIP 2K2 1/10W	1
R082	J3024681120X	RES CHIP 680 1/10W	1
R083	J3024103120X	RES CHIP 10K 1/10W	1
R084	J3024103120X	RES CHIP 10K 1/10W	1
R085	J3024472120X	RES CHIP 4K7 1/10W	1
R086	J3024472120X	RES CHIP 4K7 1/10W	1
R087	J3024103120X	RES CHIP 10K 1/10W	1
R088	J3024103120X	RES CHIP 10K 1/10W	1
R089	J3024472120X	RES CHIP 4K7 1/10W	1
R090	J3024103120X	RES CHIP 10K 1/10W	1
R091	J3024103120X	RES CHIP 10K 1/10W	1
R092	J3024203120X	RES CHIP 20K 1/10W	1
R093	J3024103120X	RES CHIP 10K 1/10W	1
R094	J3024103120X	RES CHIP 10K 1/10W	1
R095	J3024103120X	RES CHIP 10K 1/10W	1
R096	J3024104120X	RES CHIP 100K 1/10	1
R097	J3024471120X	RES CHIP 470 1/10W	1
R098	J3024331120X	R-CHIP 330 2012J	1
R099	J3024331120X	R-CHIP 330 2012J	1
R100	J3024102120X	RES CHIP 1K 1/10W	1
R101	J3024331120X	R-CHIP 330 2012J	1
R102	J3024103120X	RES CHIP 10K 1/10W	1
R103	J3024222120X	RES CHIP 2K2 1/10W	1
R104	J3024750120X	RES CHIP 75 1/10W	1
R105	J3024750120X	RES CHIP 75 1/10W	1
R106	J3024103120X	RES CHIP 10K 1/10W	1
R107	J3024103120X	RES CHIP 10K 1/10W	1
R108	J3024103120X	RES CHIP 10K 1/10W	1

R109	J3024103120X	RES CHIP 10K 1/10W	1
R110	J3024473120X	RES CHIP 47K 1/10W	1
R111	J3024472120X	RES CHIP 4K7 1/10W	1
R115	J3024103120X	RES CHIP 10K 1/10W	1
R116	J3024103120X	RES CHIP 10K 1/10W	1
R117	J3024103120X	RES CHIP 10K 1/10W	1
R118	J3024103120X	RES CHIP 10K 1/10W	1
R119	J3024103120X	RES CHIP 10K 1/10W	1
R120	J3024271120X	R-CHIP 270 1/10W J	1
R121	J3024681120X	RES CHIP 680 1/10W	1
R122	J3024511120X	RES CHIP 510 1/10W	1
R123	J3024104120X	RES CHIP 100K 1/10	1
R124	J3024102120X	RES CHIP 1K 1/10W	1
R125	J3024511120X	RES CHIP 510 1/10W	1
R126	J3024681120X	RES CHIP 680 1/10W	1
R127	J3024103120X	RES CHIP 10K 1/10W	1
R128	J3024331120X	R-CHIP 330 2012J	1
R129	J3024331120X	R-CHIP 330 2012J	1
R130	J3024331120X	R-CHIP 330 2012J	1
R131	J3024271120X	R-CHIP 270 1/10W J	1
R132	J3024102120X	RES CHIP 1K 1/10W	1
R133	J3024103120X	RES CHIP 10K 1/10W	1
R134	J3024331120X	R-CHIP 330 2012J	1
R135	J3024331120X	R-CHIP 330 2012J	1
R136	J3024102120X	RES CHIP 1K 1/10W	1
R137	J3024331120X	R-CHIP 330 2012J	1
R138	J3024271120X	R-CHIP 270 1/10W J	1
R139	J3024681120X	RES CHIP 680 1/10W	1
R140	J3024471120X	RES CHIP 470 1/10W	1
R141	J3024104120X	RES CHIP 100K 1/10	1
R142	J3024102120X	RES CHIP 1K 1/10W	1
R143	J3024471120X	RES CHIP 470 1/10W	1
R144	J3024681120X	RES CHIP 680 1/10W	1
R145	J3024103120X	RES CHIP 10K 1/10W	1
R146	J3024331120X	R-CHIP 330 2012J	1
R147	J3024331120X	R-CHIP 330 2012J	1
R148	J3024331120X	R-CHIP 330 2012J	1
R149	J3024271120X	R-CHIP 270 1/10W J	1
R150	J3024102120X	RES CHIP 1K 1/10W	1
R151	J3024103120X	RES CHIP 10K 1/10W	1
R152	J3024331120X	R-CHIP 330 2012J	1
R153	J3024331120X	R-CHIP 330 2012J	1
R154	J3024102120X	RES CHIP 1K 1/10W	1
R155	J3024331120X	R-CHIP 330 2012J	1
R156	J3024271120X	R-CHIP 270 1/10W J	1
R157	J3024681120X	RES CHIP 680 1/10W	1
R158	J3024471120X	RES CHIP 470 1/10W	1
R159	J3024104120X	RES CHIP 100K 1/10	1
R160	J3024102120X	RES CHIP 1K 1/10W	1
R161	J3024471120X	RES CHIP 470 1/10W	1
R162	J3024681120X	RES CHIP 680 1/10W	1
R163	J3024103120X	RES CHIP 10K 1/10W	1
R164	J3024103120X	RES CHIP 10K 1/10W	1
R165	J3024331120X	R-CHIP 330 2012J	1
R166	J3024331120X	R-CHIP 330 2012J	1
R167	J3024472120X	RES CHIP 4K7 1/10W	1
R168	J3024472120X	RES CHIP 4K7 1/10W	1
R169	J3024203120X	RES CHIP 20K 1/10W	1
R170	J3024103120X	RES CHIP 10K 1/10W	1
R171	J3024103120X	RES CHIP 10K 1/10W	1
R172	J3024103120X	RES CHIP 10K 1/10W	1
R173	J3024331120X	R-CHIP 330 2012J	1
R174	J3024331120X	R-CHIP 330 2012J	1
R175	J3024472120X	RES CHIP 4K7 1/10W	1
R176	J3024472120X	RES CHIP 4K7 1/10W	1
R177	J3024750120X	RES CHIP 75 1/10W	1
R178	J3024101120X	RES CHIP 100 1/10W	1
R179	J3024750120X	RES CHIP 75 1/10W	1
R180	J3024109120X	RES CHIP 1 1/10W	1
R181	J3024109120X	RES CHIP 1 1/10W	1
R182	J3024473120X	RES CHIP 47K 1/10W	1
R183	J3024473120X	RES CHIP 47K 1/10W	1
R184	J3024681120X	RES CHIP 680 1/10W	1
R185	J3024104120X	RES CHIP 100K 1/10	1
R186	J3024681120X	RES CHIP 680 1/10W	1
R187	J3024681120X	RES CHIP 680 1/10W	1

2CH AMPBD

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'080	J2431400082X	POSISTOR 2P 400MM	1
BR01	J2631200012X	BEAD AXIAL 6MM	1
BR02	J2631200012X	BEAD AXIAL 6MM	1
BR04	J2631200012X	BEAD AXIAL 6MM	1
BR05	J2631200012X	BEAD AXIAL 6MM	1
BSR1	J2631200012X	BEAD AXIAL 6MM	1
BSR2	J2631200012X	BEAD AXIAL 6MM	1
BSR4	J2631200012X	BEAD AXIAL 6MM	1
BSR5	J2631200012X	BEAD AXIAL 6MM	1
CN906	J4370009909X	CNT 2P 350#20 SL	1
CN907	J4370009948X	CNT 2P 800+600#16	1
CN908	J4370009908X	CNT 10P 300MM 2.0	1
CP905	J4420060200X	CONNECTOR	1
CP910	J4420040200X	CNT ST 5267-02A	1
CR914	J3470822191X	CE AHS 220M 100V	1
CR915	J3470822191X	CE AHS 220M 100V	1
CSR91	J3470822191X	CE AHS 220M 100V	1
CSR91	J3470822191X	CE AHS 220M 100V	1
G906	J4200020000X	GND PLATE	1
LR901	J1451000030X	COIL-AF CHOKE .7UH	1
LSR90	J1451000030X	COIL-AF CHOKE .7UH	1
MPR90	J3076278421X	RES MPR 0.27 5W J	1
MPR90	J3076278421X	RES MPR 0.27 5W J	1
MPR90	J3076278421X	RES MPR 0.27 5W J	1
MPR90	J3076278421X	RES MPR 0.27 5W J	1
QR908	J2021500103X	TR PNP 2SA1360Y	1
QR909	J2021500103X	TR PNP 2SA1360Y	1
QR910	J2021520103X	TR NPN 2SC3423Y	1
QR911	J2021520103X	TR NPN 2SC3423Y	1
QR913	J2021520202X	TR NPN 2SC4137V	1
QR914	J2021520103X	TR NPN 2SC3423Y	1
QR915	J2021500102X	TR PNP 2SA1859A	1
QR916	J2021500103X	TR PNP 2SA1360Y	1
QR917	J2021520302X	TR NPN 2SC4883A	1
QR918	J2002520003X	TR NPN C5200 O(AC)	1
QR919	J2002520003X	TR NPN C5200 O(AC)	1
QR921	J2002500003X	TR PNP A1943 O(AC)	1
QR922	J2002500003X	TR PNP A1943 O(AC)	1
QSR90	J2021500103X	TR PNP 2SA1360Y	1
QSR90	J2021500103X	TR PNP 2SA1360Y	1
QSR91	J2021520103X	TR NPN 2SC3423Y	1
QSR91	J2021520103X	TR NPN 2SC3423Y	1
QSR91	J2021520202X	TR NPN 2SC4137V	1
QSR91	J2021520103X	TR NPN 2SC3423Y	1
QSR91	J2021500102X	TR PNP 2SA1859A	1
QSR91	J2021500103X	TR PNP 2SA1360Y	1
QSR91	J2021520302X	TR NPN 2SC4883A	1
QSR91	J2002520003X	TR NPN C5200 O(AC)	1
QSR91	J2002520003X	TR NPN C5200 O(AC)	1
QSR92	J2002500003X	TR PNP A1943 O(AC)	1
QSR92	J2002500003X	TR PNP A1943 O(AC)	1
RR927	J3003229520X	RES CF 2R2 1/2 J	1
RR929	J3003229520X	RES CF 2R2 1/2 J	1
RR948	J3003100420X	RES CF 10 1/4W J	1
RSR92	J3003229520X	RES CF 2R2 1/2 J	1
RSR92	J3003229520X	RES CF 2R2 1/2 J	1
VR901	J3211320110X	RES SEMI 200 1/10	1
VSR90	J3211320110X	RES SEMI 200 1/10	1

CR901	J3470810031X	CE AHS 10M 16V	1
CR902	J3514680270X	CC TAP CH 68P 50V	1
CR903	J3470110141X	CE SG 100U 25V M	1
CR904	J3524821170X	CC 820PF 50V K	1
CR905	J3514101270X	CC 100P 50V K	1
CR906	J3514220270X	CC 22PF 50V J	1
CR907	J3470810071X	CE AHS 10M 50V	1
CR908	J3470810071X	CE AHS 10M 50V	1
CR909	J3640683220X	CMP 0.068U 63V J	1
CR911	J3470147121X	CE SG 470U 10V M	1
CR912	J3640104350X	CP MET .1U 250V -M	1
CR913	J3640104350X	CP MET .1U 250V -M	1
CR920	J3600103330X	CP .01U 100V-K	1
CR921	J3600103330X	CP .01U 100V-K	1
CSR90	J3470810031X	CE AHS 10M 16V	1
CSR90	J3514680270X	CC TAP CH 68P 50V	1
CSR90	J3470110141X	CE SG 100U 25V M	1
CSR90	J3524821170X	CC 820PF 50V K	1
CSR90	J3514101270X	CC 100P 50V K	1
CSR90	J3514220270X	CC 22PF 50V J	1
CSR90	J3470810071X	CE AHS 10M 50V	1
CSR90	J3470810071X	CE AHS 10M 50V	1
CSR90	J3640683220X	CMP 0.068U 63V J PC	1
CSR91	J3470147121X	CE SG 470U 10V M	1
CSR91	J3640104350X	CP MET .1U 250V -M	1
CSR91	J3640104350X	CP MET .1U 250V -M	1
CSR92	J3600103330X	CP .01U 100V-K	1
CSR92	J3600103330X	CP .01U 100V-K	1
C960	J3470110971X	CE SG 1U 50V M	1
C961	J3470122071X	CE SG 22U 50V M	1
C962	J3470147121X	CE SG 470U 10V M	1
C963	J3470147121X	CE SG 470U 10V M	1
DR901	J2221010000X	DIODE SW IN4148	1
DR902	J2221010000X	DIODE SW IN4148	1
DR903	J2221010104X	DIODE SW 1SS244	1
DR904	J2221010104X	DIODE SW 1SS244	1
DR905	J2221010000X	DIODE SW IN4148	1
DR906	J2221010000X	DIODE SW IN4148	1
DSR90	J2221010000X	DIODE SW IN4148	1
DSR90	J2221010000X	DIODE SW IN4148	1
DSR90	J2221010104X	DIODE SW 1SS244	1
DSR90	J2221010104X	DIODE SW 1SS244	1
DSR90	J2221010000X	DIODE SW IN4148	1
DSR90	J2221010000X	DIODE SW IN4148	1
D910	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D911	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D912	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D913	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D960	J2221010000X	DIODE SW IN4148	1
D961	J2221010000X	DIODE SW IN4148	1
D962	J2221491534X	D-ZENER .5W 9V1 J	1
D963	J2221010000X	DIODE SW IN4148	1
D964	J2221010000X	DIODE SW IN4148	1
QR901	J2021020701X	TR NPN KTC3200 BL	1
QR902	J2021020701X	TR NPN KTC3200 BL	1
QR903	J2021020701X	TR NPN KTC3200 BL	1
QR904	J2021020201X	TR NPN KTC3198 BL	1
QR905	J2021005101X	TR PNP KTA1268 BL	1
QR906	J2021005101X	TR PNP KTA1268 BL	1
QR907	J2021020701X	TR NPN KTC3200 BL	1
QR912	J2021020701X	TR NPN KTC3200 BL	1
QR924	J2021020701X	TR NPN KTC3200 BL	1
QSR90	J2021020701X	TR NPN KTC3200 BL	1
QSR90	J2021020701X	TR NPN KTC3200 BL	1
QSR90	J2021020701X	TR NPN KTC3200 BL	1
QSR90	J2021020201X	TR NPN KTC3198 BL	1
QSR90	J2021005101X	TR PNP KTA1268 BL	1
QSR90	J2021005101X	TR PNP KTA1268 BL	1
QSR90	J2021020701X	TR NPN KTC3200 BL	1
QSR91	J2021020701X	TR NPN KTC3200 BL	1
QSR92	J2021020701X	TR NPN KTC3200 BL	1
Q960	J2021220102X	TR NPN DTC114YSA	1
Q961	J2021000101X	TR PNP KTA1024	1
Q962	J2021000201X	TR PNP KTA1266 Y	1
Q963	J2021220002X	TR NPN 2SC1740S	1
Q964	J2021220002X	TR NPN 2SC1740S	1
Q965	J2021220002X	TR NPN 2SC1740S	1
RR901	J3003102220X	RES CF 1K 1/8 J	1
RR902	J3003333274X	RES MR 33K 1/8W F	1
RR903	J3003150220X	RES CF 15 1/8W J	1
RR904	J3003150220X	RES CF 15 1/8W J	1
RR905	J3003152220X	RES CF 1K5 1/8 J	1
RR906	J3003152220X	RES CF 1K5 1/8 J	1
RR907	J3003271220X	RES CF 270 1/8 J	1
RR908	J3003101220X	RES CF 100 1/8 J	1
RR909	J3003433220X	RES CF 43K 1/8 J	1
RR910	J3003561220X	RES CF 560 1/8 J	1
RR911	J3003561220X	RES CF 560 1/8 J	1
RR912	J3003561220X	RES CF 560 1/8 J	1
RR913	J3003561220X	RES CF 560 1/8 J	1
RR914	J3003561220X	RES CF 560 1/8 J	1
RR915	J3003561220X	RES CF 560 1/8 J	1
RR916	J3003151420X	RES CF 150 1/4W J	1
RR917	J3003151420X	RES CF 150 1/4W J	1
RR918	J3003151420X	RES CF 150 1/4W J	1
RR919	J3003151420X	RES CF 150 1/4W J	1
RR920	J3003153220X	RES CF 15K 1/8W J	1
RR921	J3003153220X	RES CF 15K 1/8W J	1
RR922	J3003102220X	RES CF 1K 1/8 J	1
RR923	J3003472220X	RES CF 4K7 1/8 J	1
RR924	J3003562220X	RES CF 5K6 1/8 J	1
RR925	J3003561220X	RES CF 560 1/8 J	1
RR926	J3003101420X	RES CF 100 1/4 J	1
RR928	J3003101420X	RES CF 100 1/4 J	1
RR930	J3003150420X	RES CF 15 1/4 J	1
RR931	J3003150420X	RES CF 15 1/4 J	1
RR932	J3003820420X	RES CF 82 1/4W J	1
RR933	J3003100420X	RES CF 10 1/4W J	1
RR934	J3003100420X	RES CF 10 1/4W J	1
RR936	J3003100420X	RES CF 10 1/4W J	1
RR937	J3003100420X	RES CF 10 1/4W J	1
RR939	J3003333274X	RES MR 33K 1/8W F	1
RR940	J3003122274X	RES MR 1K2 1/8W F	1
RR941	J3003390220X	RES CF 39 1/8 J	1
RR942	J3003390220X	RES CF 39 1/8 J	1
RR946	J3019390526X	RES 12GS 39 1/2 5%	1
RR947	J3019390526X	RES 12GS 39 1/2 5%	1
RR950	J3003152220X	RES CF 1K5 1/8 J	1
RR951	J3003152220X	RES CF 1K5 1/8 J	1
RR952	J3003153220X	RES CF 15K 1/8W J	1
RR953	J3003682220X	RES CF 6K8 1/8 J	1
RR954	J3003223220X	RES CF 22K 1/8 J	1
RSR90	J3003102220X	RES CF 1K 1/8 J	1
RSR90	J3003333274X	RES MR 33K 1/8W F	1
RSR90	J3003150220X	RES CF 15 1/8W J	1
RSR90	J3003150220X	RES CF 15 1/8W J	1
RSR90	J3003152220X	RES CF 1K5 1/8 J	1
RSR90	J3003152220X	RES CF 1K5 1/8 J	1
RSR90	J3003271220X	RES CF 270 1/8 J	1
RSR90	J3003101220X	RES CF 100 1/8 J	1
RSR90	J3003433220X	RES CF 43K 1/8 J	1
RSR91	J3003561220X	RES CF 560 1/8 J	1
RSR91	J3003561220X	RES CF 560 1/8 J	1
RSR91	J3003561220X	RES CF 560 1/8 J	1
RSR91	J3003561220X	RES CF 560 1/8 J	1
RSR91	J3003561220X	RES CF 560 1/8 J	1
RSR91	J3003561220X	RES CF 560 1/8 J	1
RSR91	J3003151420X	RES CF 150 1/4W J	1

RSR91	J3003151420X	RES CF 150 1/4W J	1
RSR91	J3003151420X	RES CF 150 1/4W J	1
RSR91	J3003151420X	RES CF 150 1/4W J	1
RSR92	J3003153220X	RES CF 15K 1/8W J	1
RSR92	J3003153220X	RES CF 15K 1/8W J	1
RSR92	J3003102220X	RES CF 1K 1/8 J	1
RSR92	J3003472220X	RES CF 4K7 1/8 J	1
RSR92	J3003562220X	RES CF 5K6 1/8 J	1
RSR92	J3003561220X	RES CF 560 1/8 J	1
RSR92	J3003101420X	RES CF 100 1/4 J	1
RSR92	J3003101420X	RES CF 100 1/4 J	1
RSR93	J3003150420X	RES CF 15 1/4 J	1
RSR93	J3003150420X	RES CF 15 1/4 J	1
RSR93	J3003820420X	RES CF 82 1/4W J	1
RSR93	J3003100420X	RES CF 10 1/4W J	1
RSR93	J3003100420X	RES CF 10 1/4W J	1
RSR93	J3003100420X	RES CF 10 1/4W J	1
RSR93	J3003100420X	RES CF 10 1/4W J	1
RSR93	J3003333274X	RES MR 33K 1/8W F	1
RSR94	J3003122274X	RES MR 1K2 1/8W F	1
RSR94	J3003390220X	RES CF 39 1/8 J	1
RSR94	J3003390220X	RES CF 39 1/8 J	1
RSR94	J3019390526X	RES 12GS 39 1/2 5%	1
RSR95	J3003152220X	RES CF 1K5 1/8 J	1
RSR95	J3003152220X	RES CF 1K5 1/8 J	1
RSR95	J3003153220X	RES CF 15K 1/8W J	1
RSR95	J3003682220X	RES CF 6K8 1/8 J	1
RSR95	J3003223220X	RES CF 22K 1/8 J	1
RSR97	J3019390526X	RES 12GS 39 1/2 5%	1
R960	J3003273220X	RES CRA 27K 1/8 J	1
R961	J3003271220X	RES CF 270 1/8 J	1
R962	J3003104220X	RES CF 100K 1/8 J	1
R963	J3003683220X	RES CF 68K 1/8 J	1
R964	J3003103220X	RES CF 10K 1/8 J	1
R965	J3003562220X	RES CF 5K6 1/8 J	1
R966	J3003104220X	RES CF 100K 1/8 J	1
R967	J3003102220X	RES CF 1K 1/8 J	1
R968	J3003472220X	RES CF 4K7 1/8 J	1

3CH AMPBD

□----------

BC01	J2631200012X	BEAD AXIAL 6MM	1
BC02	J2631200012X	BEAD AXIAL 6MM	1
BC04	J2631200012X	BEAD AXIAL 6MM	1
BC05	J2631200012X	BEAD AXIAL 6MM	1
BL01	J2631200012X	BEAD AXIAL 6MM	1
BL02	J2631200012X	BEAD AXIAL 6MM	1
BL04	J2631200012X	BEAD AXIAL 6MM	1
BL05	J2631200012X	BEAD AXIAL 6MM	1
BSL1	J2631200012X	BEAD AXIAL 6MM	1
BSL2	J2631200012X	BEAD AXIAL 6MM	1
BSL4	J2631200012X	BEAD AXIAL 6MM	1
BSL5	J2631200012X	BEAD AXIAL 6MM	1
CC914	J3470822191X	CE AHS 220M 100V	1
CC915	J3470822191X	CE AHS 220M 100V	1
CL914	J3470822191X	CE AHS 220M 100V	1
CL915	J3470822191X	CE AHS 220M 100V	1
CN902	J4370009909X	CNT 2P 350#20 SL	1
CN903	J4370009938X	CNT 3P 750#16 SL	1
CN904	J4370009915X	CNT 10P 15OMM 2.0	1
CP901	J4420060200X	CONNECTOR	1
CSL91	J3470822191X	CE AHS 220M 100V	1
CSL91	J3470822191X	CE AHS 220M 100V	1
2 LC901	J1451000030X	COIL-AF CHOKE .7UH	1
2 LL901	J1451000030X	COIL-AF CHOKE .7UH	1
2 LSL90	J1451000030X	COIL-AF CHOKE .7UH	1
MPR90	J3076278421X	RES MPR 0.27 5W J	1
MPR90	J3076278421X	RES MPR 0.27 5W J	1
MPR91	J3076278421X	RES MPR 0.27 5W J	1
MPR91	J3076278421X	RES MPR 0.27 5W J	1
MPR91	J3076278421X	RES MPR 0.27 5W J	1
QC908	J2021500103X	TR PNP 2SA1360Y	1
QC909	J2021500103X	TR PNP 2SA1360Y	1
QC910	J2021520103X	TR NPN 2SC3423Y	1
QC911	J2021520103X	TR NPN 2SC3423Y	1
QC913	J2021520202X	TR NPN 2SC4137V	1
QC914	J2021520103X	TR NPN 2SC3423Y	1
QC915	J2021500102X	TR PNP 2SA1859A	1
QC916	J2021500103X	TR PNP 2SA1360Y	1
QC917	J2021520302X	TR NPN 2SC4883A	1
QC918	J2002520003X	TR NPN C5200 O(AC)	1
QC919	J2002520003X	TR NPN C5200 O(AC)	1
QC921	J2002500003X	TR PNP A1943 O(AC)	1
QC922	J2002500003X	TR PNP A1943 O(AC)	1
QL908	J2021500103X	TR PNP 2SA1360Y	1
QL909	J2021500103X	TR PNP 2SA1360Y	1
QL910	J2021520103X	TR NPN 2SC3423Y	1
QL911	J2021520103X	TR NPN 2SC3423Y	1
QL913	J2021520202X	TR NPN 2SC4137V	1
QL914	J2021520103X	TR NPN 2SC3423Y	1
QL915	J2021500102X	TR PNP 2SA1859A	1
QL916	J2021500103X	TR PNP 2SA1360Y	1
QL917	J2021520302X	TR NPN 2SC4883A	1
QL918	J2002520003X	TR NPN C5200 O(AC)	1
QL919	J2002520003X	TR NPN C5200 O(AC)	1
QL921	J2002500003X	TR PNP A1943 O(AC)	1
QL922	J2002500003X	TR PNP A1943 O(AC)	1
QSL90	J2021500103X	TR PNP 2SA1360Y	1
QSL90	J2021500103X	TR PNP 2SA1360Y	1
QSL91	J2021520103X	TR NPN 2SC3423Y	1
QSL91	J2021520103X	TR NPN 2SC3423Y	1
QSL91	J2021520202X	TR NPN 2SC4137V	1
QSL91	J2021520103X	TR NPN 2SC3423Y	1
QSL91	J2021500102X	TR PNP 2SA1859A	1
QSL91	J2021500103X	TR PNP 2SA1360Y	1
QSL91	J2021520302X	TR NPN 2SC4883A	1
QSL91	J2002520003X	TR NPN C5200 O(AC)	1
QSL91	J2002520003X	TR NPN C5200 O(AC)	1
QSL92	J2002500003X	TR PNP A1943 O(AC)	1
QSL92	J2002500003X	TR PNP A1943 O(AC)	1
RC927	J3003229520X	RES CF 2R2 1/2 J	1
RC929	J3003229520X	RES CF 2R2 1/2 J	1
RC948	J3003100420X	RES CF 10 1/4W J	1
RL927	J3003229520X	RES CF 2R2 1/2 J	1
RL929	J3003229520X	RES CF 2R2 1/2 J	1
RL948	J3003100420X	RES CF 10 1/4W J	1
RSL92	J3003229520X	RES CF 2R2 1/2 J	1
RSL92	J3003229520X	RES CF 2R2 1/2 J	1
RSL94	J3003100420X	RES CF 10 1/4W J	1
VC901	J3211320110X	RES SEMI 200 1/10	1
VL901	J3211320110X	RES SEMI 200 1/10	1
VSL90	J3211320110X	RES SEMI 200 1/10	1
CC901	J3470810031X	CE AHS 10M 16V	1
CC902	J3514680270X	CC TAP CH 68P 50V	1
CC903	J3470110141X	CE SG 100U 25V M	1
CC904	J3524821170X	CC 820PF 50V K	1
CC905	J3514101270X	CC 100P 50V K	1
CC906	J3514220270X	CC 22PF 50V J	1
CC907	J3470810071X	CE AHS 10M 50V	1
CC908	J3470810071X	CE AHS 10M 50V	1
CC909	J3640683220X	CMP 0.068U 63V J	1
CC911	J3470147121X	CE SG 470U 10V M	1
CC912	J3640104350X	CP MET .1U 250V -M	1
CC913	J3640104350X	CP MET .1U 250V -M	1
CC920	J3600103330X	CP .01U 100V-K	1

CC921	J3600103330X	CP .01U 100V-K	1
CL901	J3470810031X	CE AHS 10M 16V	1
CL902	J3514680270X	CC TAP CH 68P 50V	1
CL903	J3470110141X	CE SG 100U 25V M	1
CL904	J3524821170X	CC 820PF 50V K	1
CL905	J3514101270X	CC 100P 50V K	1
CL906	J3514220270X	CC 22PF 50V J	1
CL907	J3470810071X	CE AHS 10M 50V	1
CL908	J3470810071X	CE AHS 10M 50V	1
CL909	J3640683220X	CMP 0.068U 63V J	1
CL911	J3470147121X	CE SG 470U 10V M	1
CL912	J3640104350X	CP MET .1U 250V -M	1
CL913	J3640104350X	CP MET .1U 250V -M	1
CL920	J3600103330X	CP .01U 100V-K	1
CL921	J3600103330X	CP .01U 100V-K	1
CSL90	J3470810031X	CE AHS 10M 16V	1
CSL90	J3514680270X	CC TAP CH 68P 50V	1
CSL90	J3470110141X	CE SG 100U 25V M	1
CSL90	J3524821170X	CC 820PF 50V K	1
CSL90	J3514101270X	CC 100P 50V K	1
CSL90	J3514220270X	CC 22PF 50V J	1
CSL90	J3470810071X	CE AHS 10M 50V	1
CSL90	J3470810071X	CE AHS 10M 50V	1
CSL90	J3640683220X	CMP 0.068U 63V J	1
CSL91	J3470147121X	CE SG 470U 10V M	1
CSL91	J3640104350X	CP MET .1U 250V -M	1
CSL91	J3640104350X	CP MET .1U 250V -M	1
CSL92	J3600103330X	CP .01U 100V-K	1
CSL92	J3600103330X	CP .01U 100V-K	1
C980	J3470110971X	CE SG 1U 50V M	1
C981	J3470147121X	CE SG 470U 10V M	1
DC901	J2221010000X	DIODE SW IN4148	1
DC902	J2221010000X	DIODE SW IN4148	1
DC903	J2221010104X	DIODE SW 1SS244	1
DC904	J2221010104X	DIODE SW 1SS244	1
DC905	J2221010000X	DIODE SW IN4148	1
DC906	J2221010000X	DIODE SW IN4148	1
DL901	J2221010000X	DIODE SW IN4148	1
DL902	J2221010000X	DIODE SW IN4148	1
DL903	J2221010104X	DIODE SW 1SS244	1
DL904	J2221010104X	DIODE SW 1SS244	1
DL905	J2221010000X	DIODE SW IN4148	1
DL906	J2221010000X	DIODE SW IN4148	1
DSL90	J2221010000X	DIODE SW IN4148	1
DSL90	J2221010000X	DIODE SW IN4148	1
DSL90	J2221010104X	DIODE SW 1SS244	1
DSL90	J2221010104X	DIODE SW 1SS244	1
DSL90	J2221010000X	DIODE SW IN4148	1
DSL90	J2221010000X	DIODE SW IN4148	1
D914	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D915	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D916	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D917	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D918	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D919	1254-5R6-009	ZENER DIODE 5W 5.6V	1
D980	J2221010000X	DIODE SW IN4148	1
D981	J2221010000X	DIODE SW IN4148	1
QC901	J2021020701X	TR NPN KTC3200 BL	1
QC902	J2021020701X	TR NPN KTC3200 BL	1
QC903	J2021020701X	TR NPN KTC3200 BL	1
QC904	J2021020201X	TR NPN KTC3198 BL	1
QC905	J2021005101X	TR PNP KTA1268 BL	1
QC906	J2021005101X	TR PNP KTA1268 BL	1
QC907	J2021020701X	TR NPN KTC3200 BL	1
QC912	J2021020701X	TR NPN KTC3200 BL	1
QC924	J2021020701X	TR NPN KTC3200 BL	1
QL901	J2021020701X	TR NPN KTC3200 BL	1
QL902	J2021020701X	TR NPN KTC3200 BL	1
QL903	J2021020701X	TR NPN KTC3200 BL	1
QL904	J2021020201X	TR NPN KTC3198 BL	1
QL905	J2021005101X	TR PNP KTA1268 BL	1
QL906	J2021005101X	TR PNP KTA1268 BL	1
QL907	J2021020701X	TR NPN KTC3200 BL	1
QL912	J2021020701X	TR NPN KTC3200 BL	1
QL924	J2021020701X	TR NPN KTC3200 BL	1
QSL90	J2021020701X	TR NPN KTC3200 BL	1
QSL90	J2021020701X	TR NPN KTC3200 BL	1
QSL90	J2021020701X	TR NPN KTC3200 BL	1
QSL90	J2021020201X	TR NPN KTC3198 BL	1
QSL90	J2021005101X	TR PNP KTA1268 BL	1
QSL90	J2021005101X	TR PNP KTA1268 BL	1
QSL90	J2021020701X	TR NPN KTC3200 BL	1
QSL91	J2021020701X	TR NPN KTC3200 BL	1
QSL92	J2021020701X	TR NPN KTC3200 BL	1
Q980	J2021220102X	TR NPN DTC114YSA	1
Q981	J2021000101X	TR PNP KTA1024	1
RC901	J3003102220X	RES CF 1K 1/8 J	1
RC902	J3003333274X	RES MR 33K 1/8W F	1
RC903	J3003150220X	RES CF 15 1/8W J	1
RC904	J3003150220X	RES CF 15 1/8W J	1
RC905	J3003152220X	RES CF 1K5 1/8 J	1
RC906	J3003152220X	RES CF 1K5 1/8 J	1
RC907	J3003271220X	RES CF 270 1/8 J	1
RC908	J3003101220X	RES CF 100 1/8 J	1
RC909	J3003433220X	RES CF 43K 1/8 J	1
RC910	J3003561220X	RES CF 560 1/8 J	1
RC911	J3003561220X	RES CF 560 1/8 J	1
RC912	J3003561220X	RES CF 560 1/8 J	1
RC913	J3003561220X	RES CF 560 1/8 J	1
RC914	J3003561220X	RES CF 560 1/8 J	1
RC915	J3003561220X	RES CF 560 1/8 J	1
RC916	J3003151420X	RES CF 150 1/4W J	1
RC917	J3003151420X	RES CF 150 1/4W J	1
RC918	J3003151420X	RES CF 150 1/4W J	1
RC919	J3003151420X	RES CF 150 1/4W J	1
RC920	J3003153220X	RES CF 15K 1/8W J	1
RC921	J3003153220X	RES CF 15K 1/8W J	1
RC922	J3003102220X	RES CF 1K 1/8 J	1
RC923	J3003472220X	RES CF 4K7 1/8 J	1
RC924	J3003562220X	RES CF 5K6 1/8 J	1
RC925	J3003561220X	RES CF 560 1/8 J	1
RC926	J3003101420X	RES CF 100 1/4 J	1
RC928	J3003101420X	RES CF 100 1/4 J	1
RC930	J3003150420X	RES CF 15 1/4 J	1
RC931	J3003150420X	RES CF 15 1/4 J	1
RC932	J3003820420X	RES CF 82 1/4W J	1
RC933	J3003100420X	RES CF 10 1/4W J	1
RC934	J3003100420X	RES CF 10 1/4W J	1
RC936	J3003100420X	RES CF 10 1/4W J	1
RC937	J3003100420X	RES CF 10 1/4W J	1
RC939	J3003333274X	RES MR 33K 1/8W F	1
RC940	J3003122274X	RES MR 1K2 1/8W F	1
RC941	J3003390220X	RES CF 39 1/8 J	1
RC942	J3003390220X	RES CF 39 1/8 J	1
RC946	J3019390526X	RES 12GS 39 1/2 5%	1
RC947	J3019390526X	RES 12GS 39 1/2 5%	1
RC950	J3003152220X	RES CF 1K5 1/8 J	1
RC951	J3003152220X	RES CF 1K5 1/8 J	1
RC952	J3003153220X	RES CF 15K 1/8W J	1
RC953	J3003682220X	RES CF 6K8 1/8 J	1
RC954	J3003223220X	RES CF 22K 1/8 J	1
RL901	J3003102220X	RES CF 1K 1/8 J	1
RL902	J3003333274X	RES MR 33K 1/8W F	1
RL903	J3003150220X	RES CF 15 1/8W J	1
RL904	J3003150220X	RES CF 15 1/8W J	1
RL905	J3003152220X	RES CF 1K5 1/8 J	1
RL906	J3003152220X	RES CF 1K5 1/8 J	1
RL907	J3003271220X	RES CF 270 1/8 J	1

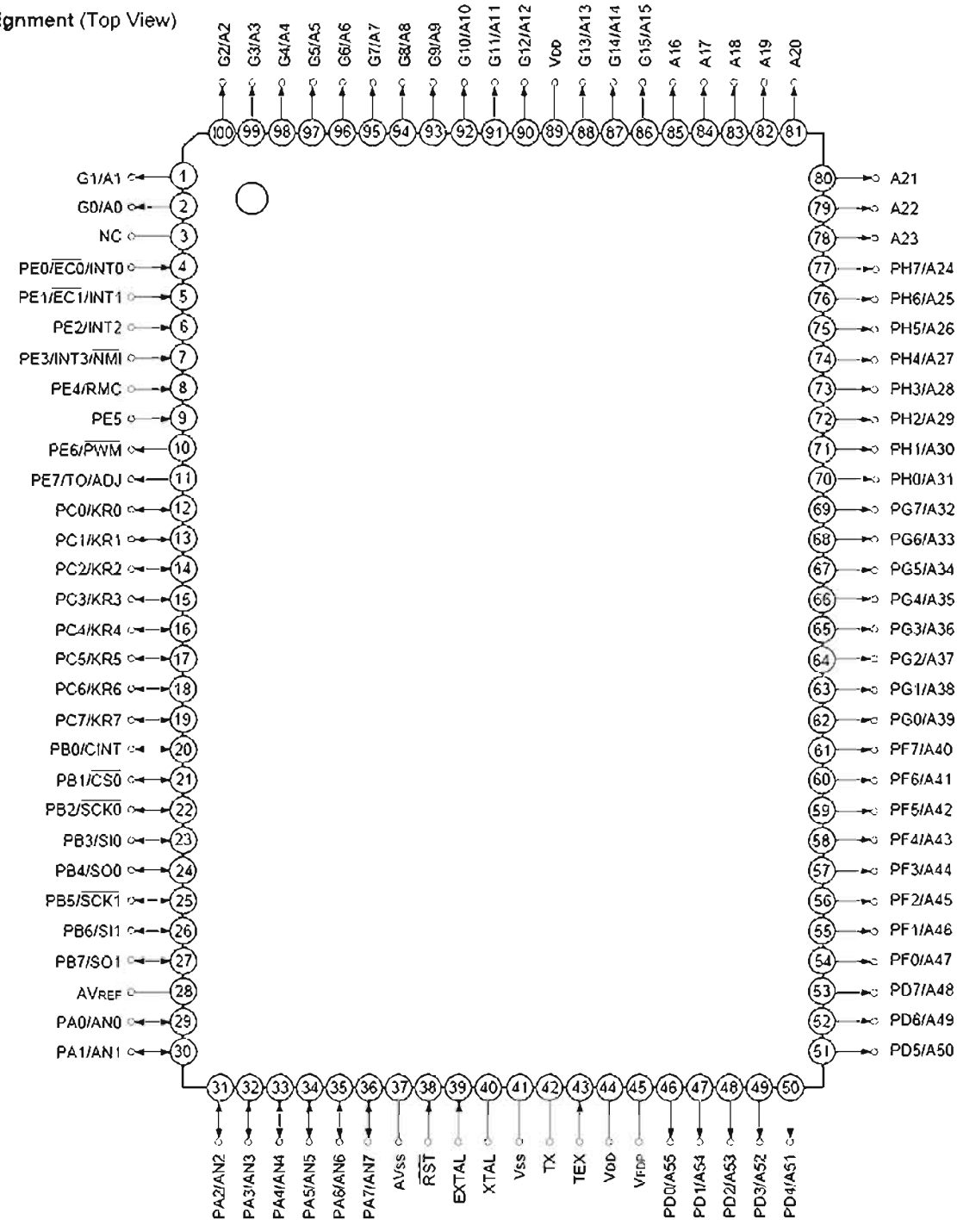
RL908	J3003101220X	RES CF 100 1/8 J	1
RL909	J3003433220X	RES CF 43K 1/8 J	1
RL910	J3003561220X	RES CF 560 1/8 J	1
RL911	J3003561220X	RES CF 560 1/8 J	1
RL912	J3003561220X	RES CF 560 1/8 J	1
RL913	J3003561220X	RES CF 560 1/8 J	1
RL914	J3003561220X	RES CF 560 1/8 J	1
RL915	J3003561220X	RES CF 560 1/8 J	1
RL916	J3003151420X	RES CF 150 1/4W J	1
RL917	J3003151420X	RES CF 150 1/4W J	1
RL918	J3003151420X	RES CF 150 1/4W J	1
RL919	J3003151420X	RES CF 150 1/4W J	1
RL920	J3003153220X	RES CF 15K 1/8W J	1
RL921	J3003153220X	RES CF 15K 1/8W J	1
RL922	J3003102220X	RES CF 1K 1/8 J	1
RL923	J3003472220X	RES CF 4K7 1/8 J	1
RL924	J3003562220X	RES CF 5K6 1/8 J	1
RL925	J3003561220X	RES CF 560 1/8 J	1
RL926	J3003101420X	RES CF 100 1/4 J	1
RL928	J3003101420X	RES CF 100 1/4 J	1
RL930	J3003150420X	RES CF 15 1/4 J	1
RL931	J3003150420X	RES CF 15 1/4 J	1
RL932	J3003820420X	RES CF 82 1/4W J	1
RL933	J3003100420X	RES CF 10 1/4W J	1
RL934	J3003100420X	RES CF 10 1/4W J	1
RL936	J3003100420X	RES CF 10 1/4W J	1
RL937	J3003100420X	RES CF 10 1/4W J	1
RL939	J3003333274X	RES MR 33K 1/8W F	1
RL940	J3003122274X	RES MR 1K2 1/8W F	1
RL941	J3003390220X	RES CF 39 1/8 J	1
RL942	J3003390220X	RES CF 39 1/8 J	1
RL946	J3019390526X	RES 12GS 39 1/2 5%	1
RL947	J3019390526X	RES 12GS 39 1/2 5%	1
RL950	J3003152220X	RES CF 1K5 1/8 J	1
RL951	J3003152220X	RES CF 1K5 1/8 J	1
RL952	J3003153220X	RES CF 15K 1/8W J	1
RL953	J3003682220X	RES CF 6K8 1/8 J	1
RL954	J3003223220X	RES CF 22K 1/8 J	1
RSL90	J3003102220X	RES CF 1K 1/8 J	1
RSL90	J3003333274X	RES MR 33K 1/8W F	1
RSL90	J3003150220X	RES CF 15 1/8W J	1
RSL90	J3003150220X	RES CF 15 1/8W J	1
RSL90	J3003152220X	RES CF 1K5 1/8 J	1
RSL90	J3003152220X	RES CF 1K5 1/8 J	1
RSL90	J3003271220X	RES CF 270 1/8 J	1
RSL90	J3003101220X	RES CF 100 1/8 J	1
RSL90	J3003433220X	RES CF 43K 1/8 J	1
RSL91	J3003561220X	RES CF 560 1/8 J	1
RSL91	J3003561220X	RES CF 560 1/8 J	1
RSL91	J3003561220X	RES CF 560 1/8 J	1
RSL91	J3003561220X	RES CF 560 1/8 J	1
RSL91	J3003561220X	RES CF 560 1/8 J	1
RSL91	J3003561220X	RES CF 560 1/8 J	1
RSL91	J3003151420X	RES CF 150 1/4W J	1
RSL91	J3003151420X	RES CF 150 1/4W J	1
RSL91	J3003151420X	RES CF 150 1/4W J	1
RSL91	J3003151420X	RES CF 150 1/4W J	1
RSL92	J3003153220X	RES CF 15K 1/8W J	1
RSL92	J3003153220X	RES CF 15K 1/8W J	1
RSL92	J3003102220X	RES CF 1K 1/8 J	1
RSL92	J3003472220X	RES CF 4K7 1/8 J	1
RSL92	J3003562220X	RES CF 5K6 1/8 J	1
RSL92	J3003561220X	RES CF 560 1/8 J	1
RSL92	J3003101420X	RES CF 100 1/4 J	1
RSL92	J3003101420X	RES CF 100 1/4 J	1
RSL93	J3003150420X	RES CF 15 1/4 J	1
RSL93	J3003150420X	RES CF 15 1/4 J	1
RSL93	J3003820420X	RES CF 82 1/4W J	1
RSL93	J3003100420X	RES CF 10 1/4W J	1
RSL93	J3003100420X	RES CF 10 1/4W J	1
RSL93	J3003100420X	RES CF 10 1/4W J	1
RSL93	J3003333274X	RES MR 33K 1/8W F	1
RSL94	J3003122274X	RES MR 1K2 1/8W F	1
RSL94	J3003390220X	RES CF 39 1/8 J	1
RSL94	J3003390220X	RES CF 39 1/8 J	1
RSL94	J3019390526X	RES 12GS 39 1/2 5%	1
RSL94	J3019390526X	RES 12GS 39 1/2 5%	1
RSL95	J3003152220X	RES CF 1K5 1/8 J	1
RSL95	J3003152220X	RES CF 1K5 1/8 J	1
RSL95	J3003153220X	RES CF 15K 1/8W J	1
RSL95	J3003682220X	RES CF 6K8 1/8 J	1
RSL95	J3003223220X	RES CF 22K 1/8 J	1
R980	J3003273220X	RES CRA 27K 1/8 J	1
R981	J3003181220X	RES CF 180 1/8 J	1

CMOS 8-Bit Single Chip Microcomputer IC

CXP82860

SONY

Pin Assignment (Top View)



Note) 1. NC (Pin 3) must be connected to VDD.
2. VDD (Pins 44 and 89) must be connected to VDD.

Pin code	I/O	Functions	
PA0/AN0 to PA7/AN7	I/O/ Analog input	(Port A) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of the pull-up resistor can be set through the software in a unit of 4 bits. (8pins)	Analog inputs to A/D converter. (8 pins)
PB0/CINT	I/O/Input	(Port B) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of the pull-up resistor can be set through the software in a unit of 4 bits. (8 pins)	Capture input to 16-bit timer/counter.
PB1/$\overline{CS0}$	I/O/Input		Chip select input for serial interface (CH0).
PB2/$\overline{SCK0}$	I/O/I/O		Serial clock I/O (CH0).
PB3/SI0	I/O/Input		Serial data input (CH0).
PB4/SO0	I/O/Output		Serial data output (CH0).
PB5/$\overline{SCK1}$	I/O/I/O		Serial clock I/O (CH1).
PB6/SI1	I/O/Input		Serial data input (CH1).
PB7/SO1	I/O/Output		Serial data output (CH1).
PC0/KR0 to PC7/KR7	I/O/Input	(Port C) 8-bit I/O port. I/O can be set in a unit of single bits. Can drive 12mA sync current. Incorporation of the pull-up resistor can be set through the software in a unit of 4 bits. (8 pins)	Serves as key return inputs when operating key scan with fluorescent display panel (FDP) segment signal. (8 pins)
PD0/A55 to PD7/A48	Output/Output	(Port D) 8-bit output port. (8 pins)	FDP segment signal (anode connection) outputs.
$\overline{PE0}$/INT0/ $\overline{EC0}$	Input/Input/Input	(Port E) 8-bit port. Lower 6 bits are for inputs; upper 2 bits are for outputs. (8 pins)	Inputs for external interruption request. (4 pins) — External event inputs for timer/counter. (2 pins)
$\overline{PE1}$/INT1/ $\overline{EC1}$	Input/Input/Input		
PE2/INT2	Input/Input		Inputs for external interruption request. (4 pins)
$\overline{PE3}$/INT3/ $\overline{NMI}$	Input/Input/Input		Inputs for external interruption request. (4 pins) — Non-maskable interruption request input.
PE4/RMC	Input/Input		Remote control reception circuit input.
PE5	Input		
PE6/$\overline{PWM}$	Output/Output		14-bit PWM output.
PE7/TO/ADJ	Output/Output/ Output		Output for the 16-bit timer/counter rectangular waves, and 32kHz oscillation frequency division.
PF0/A47 to PF7/A40	Output/Output	(Port F) 8-bit output port. (8pins)	FDP segment signal (anode connection) outputs.

Pin code	I/O	Functions	
PG0/A39 to PG7/A32	Output/Output	(Port G) 8-bit output port. (8 pins)	FDP segment signal (anode connection) outputs. (8 pins)
PH0/A31 to PH7/A24	Output/Output	(Port H) 8-bit output port. (8 pins)	FDP segment signal (anode connection) outputs. (8 pins)
A16 to A23	Output	FDP segment signal (anode connection) outputs. (8 pins)	
G0/A0 to G15/A15	Output/Output	Outputs for FDP timing signals (grid connection)/segment signals (anode connection). (16 pins)	
V_{FDP}		FDP voltage supply when incorporated pull-down (PD) resistor is set by mask option.	
EXTAL	Input	Crystal connectors for system clock oscillation. When the clock is supplied externally, input to EXTAL; opposite phase clock should be input to XTAL.	
XTAL	Output		
TEX	Input	Crystal connectors for 32kHz timer/counter clock oscillation. For usage as event input, input to TEX, and open TX.	
TX	Output		
$\overline{RST}$	Input	Low-level active, system reset	
NC		NC. Under normal operation, connect to V_{DD}.	
AV_{REF}	Input	Reference voltage input for A/D converter.	
AV_{SS}		A/D converter GND.	
V_{DD}		Vcc supply.	
V_{SS}		GND.	

FAIRCHILD SEMICONDUCTOR TM

November 1992
Revised April 1999

74VHC244
Octal Buffer/Line Driver with 3-STATE Outputs

General Description

The VHC244 is an advanced high speed CMOS octal bus buffer fabricated with silicon gate CMOS technology. It achieves high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation. The VHC244 is a non-inverting 3-STATE buffer having two active-LOW output enables. These devices are designed to be used as 3-STATE memory address drivers, clock drivers, and bus oriented transmitter/receivers.

An input protection circuit ensures that 0V to 7V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5V to 3V systems and two supply systems such as battery back up. This circuit prevents device destruction due to mismatched supply and input voltages.

Features

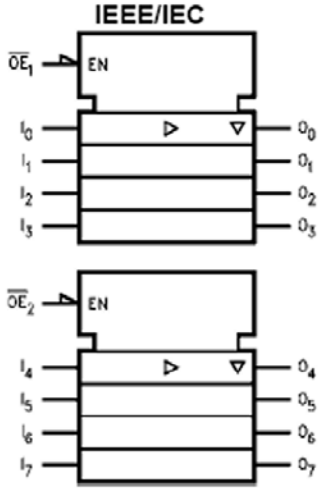
- High Speed: t_{PD} = 3.9ns (typ) at V_{CC} = 5V
- High noise immunity: $V_{NIH} = V_{NIL}$ = 28% V_{CC} (min)
- Power down protection is provided on all inputs
- Low noise: V_{OLP} = 0.6V (typ)
- Low power dissipation: I_{CC} = 4 µA (max) @ T_A = 25°C
- Pin and function compatible with 74HC244

Ordering Code:

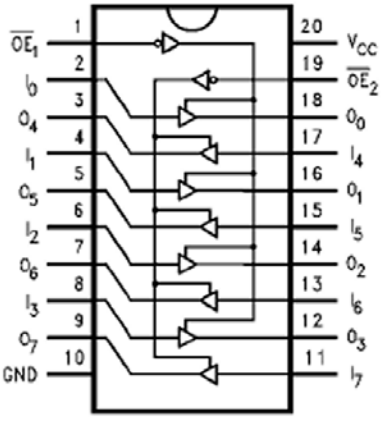
Order Number	Package Number	Package Description
74VHC244M	M20B	20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300" Wide
74VHC244SJ	M20D	20-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74VHC244MTC	MTC20	20-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide
74VHC244N	N20A	20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide

Surface mount packages are also available on Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Logic Symbol



Connection Diagram



Pin Descriptions

Pin Names	Description
$\overline{OE}_1$, $\overline{OE}_2$	3-STATE Output Enable Inputs
I_0–I_7	Inputs
O_0–O_7	3-STATE Outputs

74VHC244

Truth Tables

Inputs		Outputs
$\overline{OE}_1$	I_n	(Pins 12, 14, 16, 18)
L	L	L
L	H	H
H	X	Z

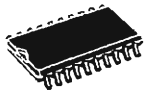
Inputs		Outputs
$\overline{OE}_2$	I_n	(Pins 3, 5, 7, 9)
L	L	L
L	H	H
H	X	Z

H = HIGH Voltage Level
L = LOW Voltage Level
I = Immaterial
Z = High Impedance

74VHC574

OCTAL D-TYPE FLIP FLOP WITH 3 STATE OUTPUTS NON INVERTING

- HIGH SPEED:
- f_{MAX} = 180 MHz (TYP.) at V_{CC} = 5V
- LOW POWER DISSIPATION:
  I_{CC} = 4 µA (MAX.) at T_A=25°C
- HIGH NOISE IMMUNITY:
  $V_{NIH} = V_{NIL}$ = 28% V_{CC} (MIN.)
- POWER DOWN PROTECTION ON INPUTS
- SYMMETRICAL OUTPUT IMPEDANCE:
  $|I_{OH}| = I_{OL}$ = 8 mA (MIN)
- BALANCED PROPAGATION DELAYS:
  $t_{PLH} \cong t_{PHL}$
- OPERATING VOLTAGE RANGE:
  V_{CC}(OPR) = 2V to 5.5V
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 574
- IMPROVED LATCH-UP IMMUNITY
- LOW NOISE: V_{OLP} = 0.9V (MAX.)



SOP

TSSOP

ORDER CODES

PACKAGE	TUBE	T & R
SOP	74VHC574M	74VHC574MTR
TSSOP		74VHC574TTR

DESCRIPTION

The 74VHC574 is an advanced high-speed CMOS OCTAL D-TYPE FLIP FLOP with 3 STATE OUTPUTS NON INVERTING fabricated with sub-micron silicon gate and double-layer metal wiring C^2MOS technology.

These 8 bit D-Type flip-flop is controlled by a clock input (CK) and an output enable input ($\overline{OE}$).

On the positive transition of the clock, the Q outputs will be set to the logic states that were setup at the D inputs.

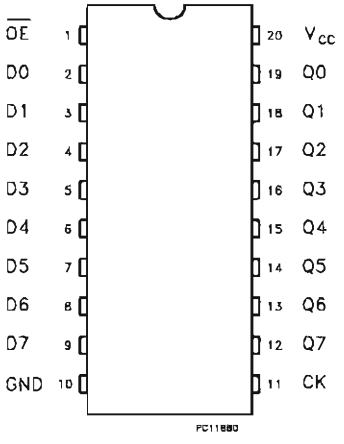
While the ($\overline{OE}$) input is low, the 8 outputs will be in a normal logic state (high or low logic level) and while high level the outputs will be in a high impedance state.

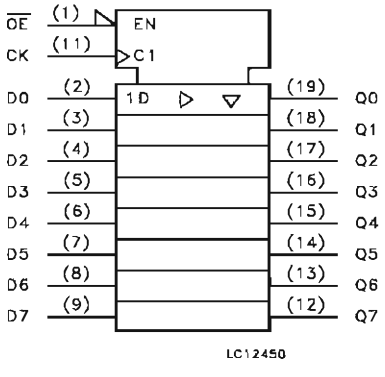
The Output control does not affect the internal operation of flip flop; that is, the old data can be retained or the new data can be entered even while the outputs are off.

Power down protection is provided on all inputs and 0 to 7V can be accepted on inputs with no regard to the supply voltage. This device can be used to interface 5V to 3V.

All inputs and outputs are equipped with protection circuits against static discharge, giving them 2KV ESD immunity and transient excess voltage.

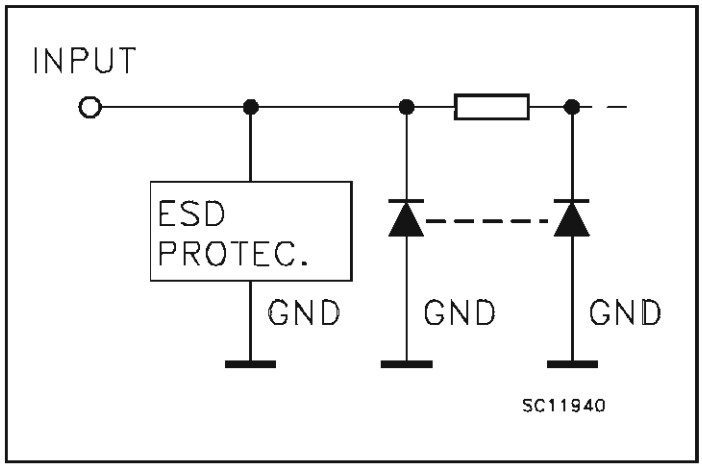
PIN CONNECTION AND IEC LOGIC SYMBOLS





74VHC574

INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

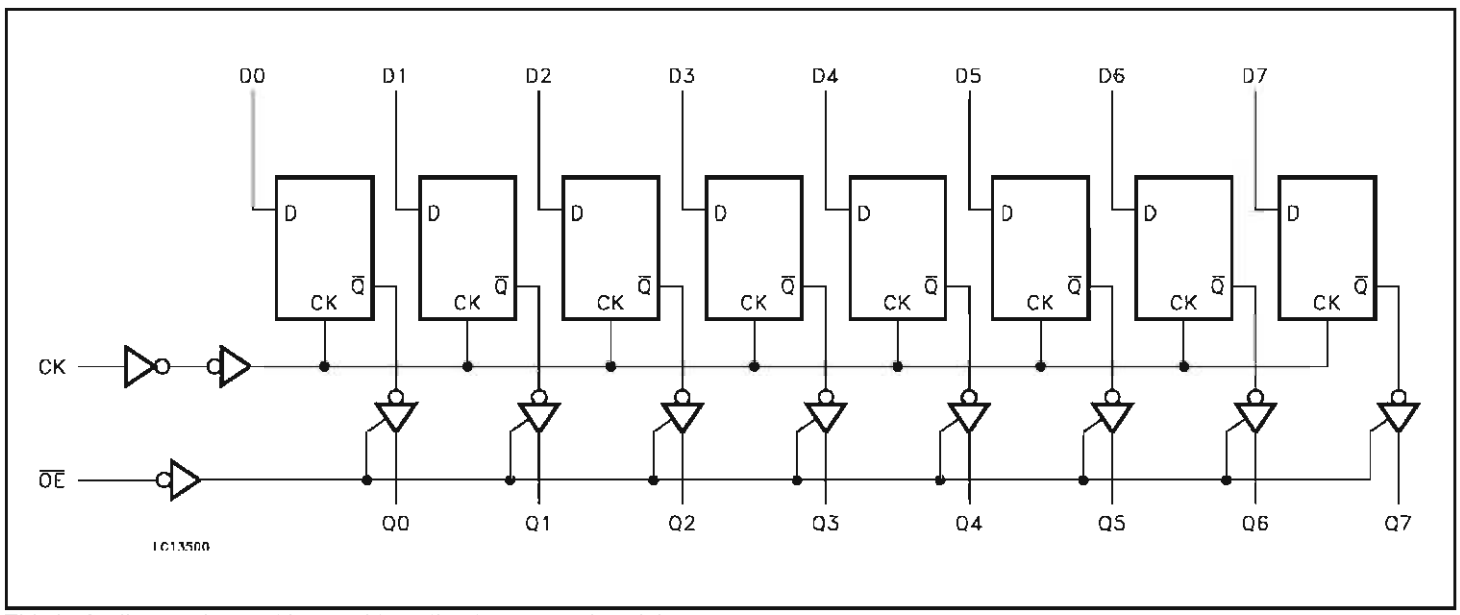
PIN No	SYMBOL	NAME AND FUNCTION
1	$\overline{OE}$	3-State Output Enable Input (Active LOW)
2, 3, 4, 5, 6, 7, 8, 9	D0 to D7	Data Inputs
12, 13, 14, 15, 16, 17, 18, 19	Q0 to Q7	3-State Outputs
11	CK	Clock Input (LOW-to-HIGH Edge Triggered)
10	GND	Ground (0V)
20	V_{CC}	Positive Supply Voltage

TRUTH TABLE

INPUTS			OUTPUT
$\overline{OE}$	CK	D	Q
H	X	X	Z
L	⊓	X	NO CHANGE
L	⊔	L	L
L	⊔	H	H

X : Don't Care
Z : High Impedance

LOGIC DIAGRAM



This logic diagram has not be used to estimate propagation delays

Features

- Fast Read Access Time – 120 ns, see AT27BV020 for Faster Speeds
- Dual Voltage Range Operation
  - Low Voltage Power Supply Range, 3.0V to 3.6V or Standard 5V ± 10% Supply Range
- Compatible with JEDEC Standard AT27C020
- Low Power CMOS Operation
  - 20 µA Max (Less than 1 µA Typical) Standby for V_{CC} = 3.6V
  - 29 mW Max Active at 5 MHz for V_{CC} = 3.6V
- JEDEC Standard Packages
  - 32-lead PLCC
  - 32-lead TSOP
  - 32-lead VSOP
- High Reliability CMOS Technology
  - 2,000V ESD Protection
  - 200 mA Latchup Immunity
- Rapid Programming Algorithm – 100 µs/Byte (Typical)
- Two-line Control
- CMOS and TTL Compatible Inputs and Outputs
  - JEDEC Standard for LVTTL
- Integrated Product Identification Code
- Industrial Temperature Range
- Green (Pb/Halide-free) Packaging Option

2-Megabit (256K x 8) Low Voltage OTP EPROM

AT27LV020A

1. Description

The AT27LV020A is a high-performance, low-power, low-voltage 2,097,152 bit one-time programmable read-only memory (OTP EPROM) organized as 256K by 8 bits. It requires only one supply in the range of 3.0 to 3.6V in normal read mode operation, making it ideal for fast, portable systems using battery power.

Atmel's innovative design techniques provide fast speeds that rival 5V parts while keeping the low power consumption of a 3V supply. At V_{CC} = 3.0V, any byte can be accessed in less than 120 ns. With a typical power dissipation of only 18 mW at 5 MHz and V_{CC} = 3.3V, the AT27LV020A consumes less than one fifth the power of a standard 5V EPROM. Standby mode supply current is typically less than 1 µA at 3.3V.

The AT27LV020A is available in industry-standard JEDEC approved one-time programmable (OTP) plastic PLCC, TSOP, and VSOP. All devices feature two-line control ($\overline{CE}$, $\overline{OE}$) to give designers the flexibility to prevent bus contention.

The AT27LV020A operating with V_{CC} at 3.0V produces TTL level outputs that are compatible with standard TTL logic devices operating at V_{CC} = 5.0V. The device is also capable of standard 5-volt operation making it ideally suited for dual supply range systems or card products that are pluggable in both 3-volt and 5-volt hosts.

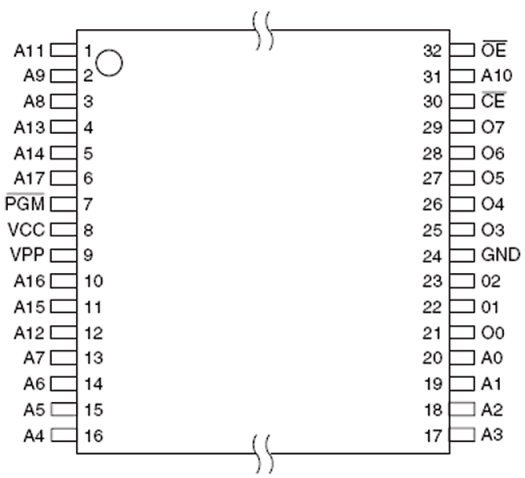
Atmel's AT27LV020A has additional features to ensure high quality and efficient production use. The Rapid Programming Algorithm reduces the time required to program the part and guarantees reliable programming. Programming time is typically only 100 µs/byte. The Integrated Product Identification Code electronically identifies the device and manufacturer. This feature is used by industry standard programming equipment to select the proper programming algorithms and voltages. The AT27LV020A programs exactly the same way as a standard 5V AT27C020 and uses the same programming equipment.

0549F–EPROM–05/05

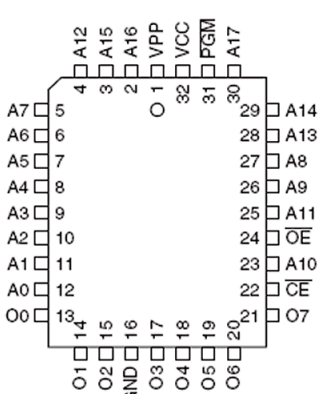
2. Pin Configurations

Pin Name	Function
A0 - A17	Addresses
O0 - O7	Outputs
$\overline{CE}$	Chip Enable
$\overline{OE}$	Output Enable
$\overline{PGM}$	Program Strobe
NC	No Connect

2.1 32-lead TSOP/VSOP (Type 1) Top View



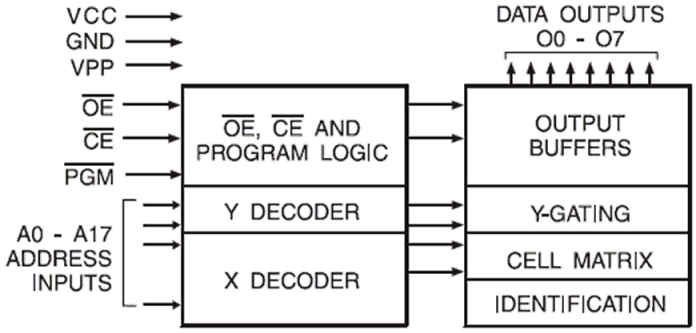
2.2 32-lead PLCC – Top View



3. System Considerations

Switching between active and standby conditions via the Chip Enable pin may produce transient voltage excursions. Unless accommodated by the system design, these transients may exceed datasheet limits, resulting in device non-conformance. At a minimum, a 0.1 µF high frequency, low inherent inductance, ceramic capacitor should be utilized for each device. This capacitor should be connected between the V_{CC} and Ground terminals of the device, as close to the device as possible. Additionally, to stabilize the supply voltage level on printed circuit boards with large EPROM arrays, a 4.7 µF bulk electrolytic capacitor should be utilized, again connected between the V_{CC} and Ground terminals. This capacitor should be positioned as close as possible to the point where the power supply is connected to the array.

4. Block Diagram



5. Absolute Maximum Ratings*

Temperature Under Bias	-40°C to +85°C
Storage Temperature	-65°C to +125°C
Voltage on any Pin with Respect to Ground	-2.0V to +7.0V(1)
Voltage on A9 with Respect to Ground	-2.0V to +14.0V(1)
V_{PP} Supply Voltage with Respect to Ground	-2.0V to +14.0V(1)

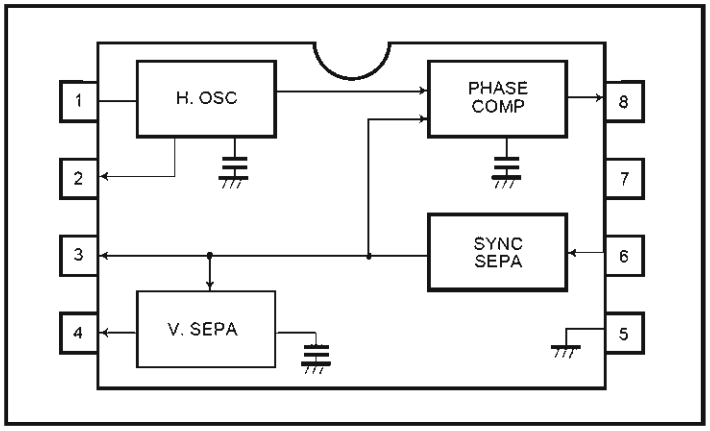
*NOTICE: Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Notes: 1. Minimum voltage is -0.6V DC which may undershoot to -2.0V for pulses of less than 20 ns. Maximum output pin voltage is V_{CC} + 0.75V DC which may be exceeded if certain precautions are observed (consult application notes) and which may overshoot to +7.0V for pulses of less than 20 ns.

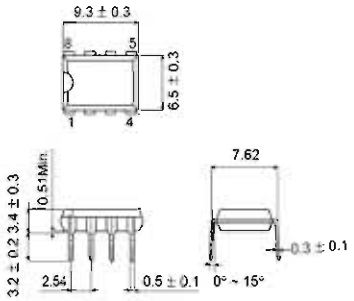
BA7046/BA7046F

SYNC Separator IC with AFC

● Block diagrams



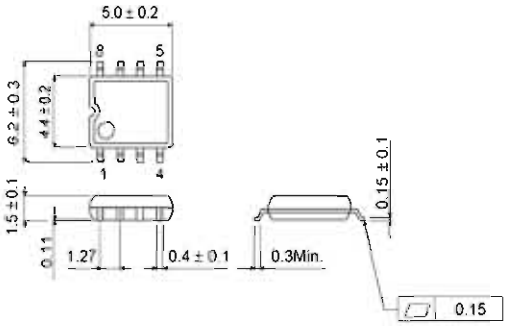
BA7046



● Pin descriptions

Pin No.	Function
1	Horizontal oscillator resistor
2	H_D output
3	SYNC output (open collector)
4	V_D output
5	GND
6	Video input
7	Power supply
8	Phase comparator output

BA7046F



● Input / output circuits

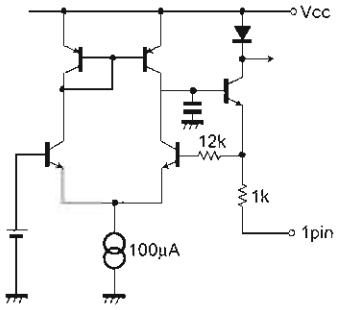


Fig. 1

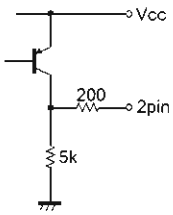


Fig. 2

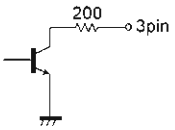


Fig. 3

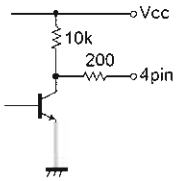


Fig. 4

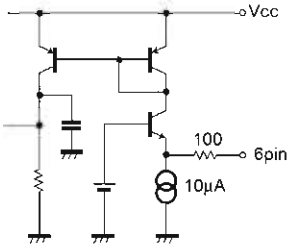


Fig. 5

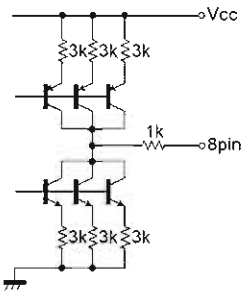


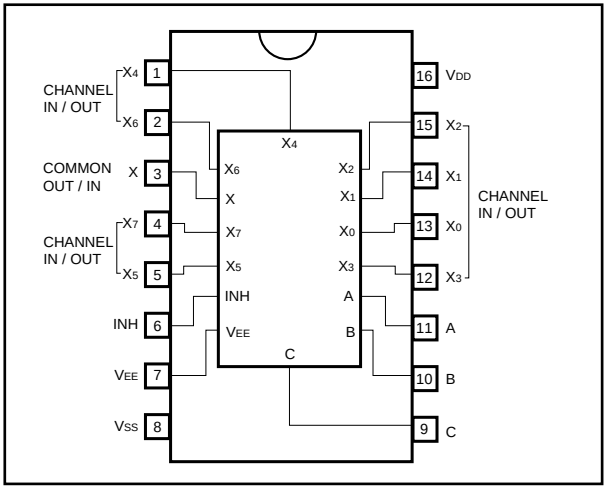
Fig. 6

8-channel analog multiplexer / demultiplexer

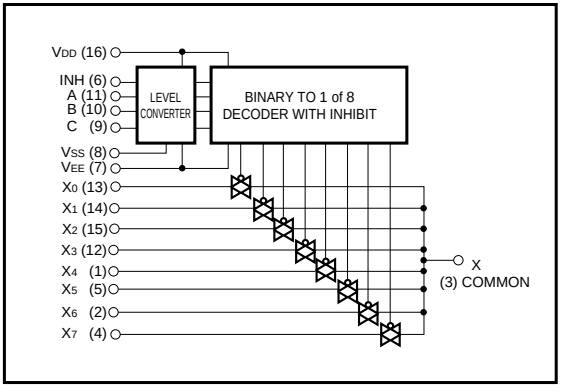
BU4051BC / BU4051BCF / BU4051BCFV

The BU4051BC, BU4051BCF and BU4051BCFV are analog multiplexers / demultiplexers which use three-input digital signals for control via an 8-channel analog switch.
These products feature high on / off output voltage ratio and low crosstalk between analog switches.

●Block diagram



●Logic circuit diagram



●Truth table

INH	A	B	C	ON SWITCH
L	L	L	L	X_0
L	H	L	L	X_1
L	L	H	L	X_2
L	H	H	L	X_3
L	L	L	H	X_4
L	H	L	H	X_5
L	L	H	H	X_6
L	H	H	H	X_7
H	X	X	X	NONE

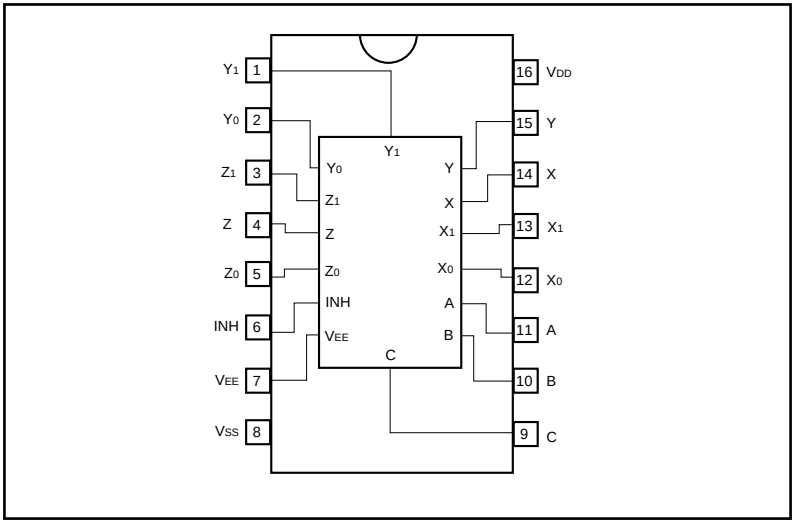
X: Irrelevant

Triple 2-channel analog multiplexer / demultiplexer

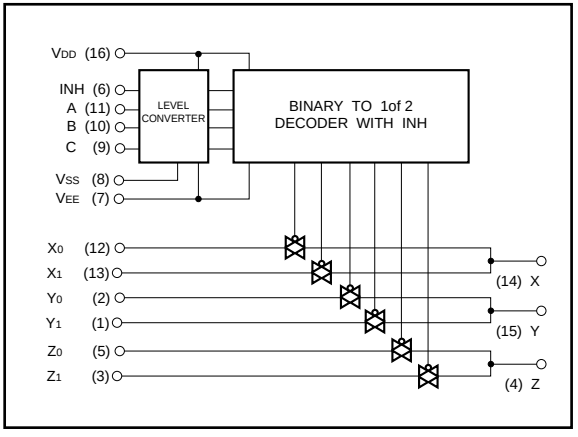
BU4053BC / BU4053BCF / BU4053BCFV

The BU4053BC, BU4053BCF, and BU4053BCFV are multiplexers / demultiplexers capable of selecting and combining analog signals and digital signals in a 2 ch × 3 configuration. Inhibit signals and control signals are used to turn on the switch corresponding to each of the channels. In addition, even if the logical amplitude (V_{DD}-V_{SS}) of the control signal is low, signals with a large amplitude (V_{DD}-V_{EE}) can be switched.
Also, as each switch has a low ON resistance, it can be connected to a low impedance circuit.

●Block diagram



●Logic circuit diagram



●Truth table

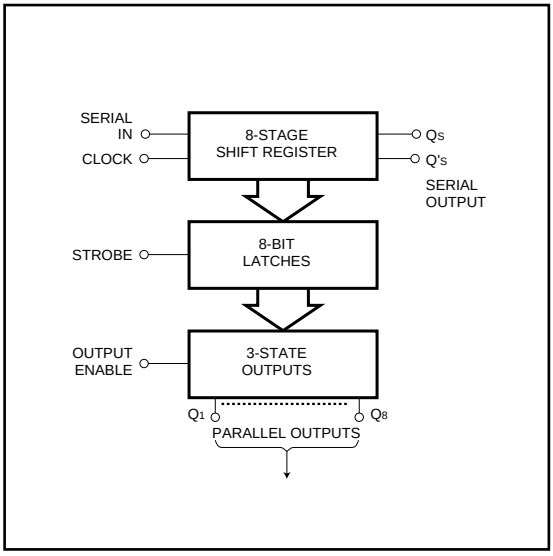
INH	A	B	C	ON SWITCH
L	L	L	L	X_0 Y_0 Z_0
L	H	L	L	X_1 Y_0 Z_0
L	L	H	L	X_0 Y_1 Z_0
L	H	H	L	X_1 Y_1 Z_0
L	L	L	H	X_0 Y_0 Z_1
L	H	L	H	X_1 Y_0 Z_1
L	L	H	H	X_0 Y_1 Z_1
L	H	H	H	X_1 Y_1 Z_1
H	X	X	X	NONE

X: Irrelevant

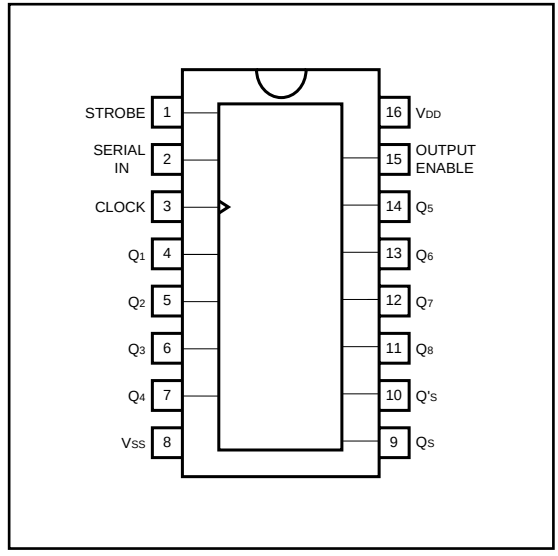
8-bit compatible shift / store register
BU4094BC / BU4094BCF / BU4094BCFV

The BU4094BC, BU4094BCF, and BU4094BCFV are shift / store registers, each consisting of an 8-bit register and an 8-bit latch.
As the data in the shift register can be latched by an asynchronous strobe input, it is possible to hold the output in the data transfer mode.
The tri-state parallel output can be connected directly with an 8-bit bus line.
These registers are suitable for in-line / parallel data conversion, data receivers and other similar applications.

●Logic circuit diagram



●Block diagram



●Truth table

CLOCK	OUTPUT ENABLE	STROBE	SERIAL IN	Parallel output		Serial output	
				Q_1	Q_n	Q_S	Q'_S
↑	H	H	L	L	Q_{n-1}	Q_7	NC
↑	H	H	H	H	Q_{n-1}	Q_7	NC
↑	H	L	X	NC	NC	Q_7	NC
↑	L	X	X	Z	Z	Q_7	NC
↓	H	X	X	NC	NC	NC	Q_S
↓	L	X	X	Z	Z	NC	Q_S

NC: No Change Z: High Impedance X: Irrelevant

MITSUBISHI MICROCOMPUTERS

M35012-XXXSP, M35013-XXXSP

SCREEN CHARACTER and PATTERN DISPLAY CONTROLLERS

DESCRIPTION

The M35012-XXXSP and M35013-XXXSP are TV screen display control IC which can be used to display information such as program schedules, the date and messages on the TV screen.

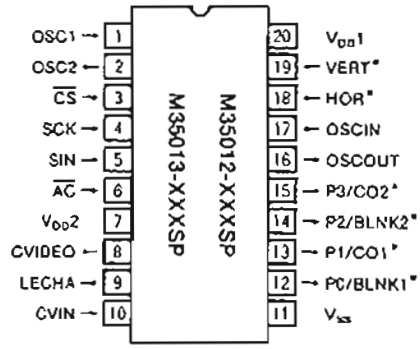
The differences among M35012-XXXSP and M35013-XXXSP are noted below.

The descriptions that follow describe the M35013-XXXSP unless otherwise noted.

Type name	M35012-XXXSP	M35013-XXXSP
Characters available	256	128
Data input	16 bits serial input	8 bits serial input
Exclusion function	Exclusion 1 and 2 function	Exclusion 1 function
CONT7F function	Normal/FF_{16} writing mode	Normal/$7F_{16}$ writing mode

For M35013-001SP and M35012-001SP that are standard ROM version of M35013-XXXSP and M35012-XXXSP respectively, the I/O polarity of pin and the character pattern are also mentioned.

PIN CONFIGURATION (TOP VIEW)



Outline 20P4B

Note : The pins remarked "*" are selectabled the input or output polarity when the character ROM masked.

FEATURES

- Screen composition ····· 24 columns × 10 lines
- Number of characters displayed ····· 240 (Max.)
- Character composition ····· 12 × 18 dot matrix
- Characters available
  - M35013-XXXSP ····· 128 characters
  - M35012-XXXSP ····· 256 characters
- Character sizes available ··· 4 (horizontal) × 4 (vertical)
- Display locations available
  - Horizontal direction ····· 62 locations
  - Vertical direction ····· 64 locations
- Blinking ····· Character units
  - Cycle : approximately 1 second, or approximately 0.5 seconds
  - Duty : 25%, 50%, or 75%
- Data input
  - M35013-XXXSP ····· By the 8-bit serial input function
  - M35012-XXXSP ····· By the 16-bit serial input function
- Coloring
  - Background coloring (composite video signal)
- Blanking
  - Total blanking (14 × 18 dots)
  - Border size blanking
  - Character size blanking
- Synchronization signal
  - Composite synchronization signal generation (PAL, NTSC, M-PAL)
- Synchronized separation circuit ····· Built-in
- 4 output ports (2 digital lines)
- Oscillation stop function
  - Be possible to stop the oscillation for display and for synchronized signal generation
- Exclusion function
  - M35013-XXXSP ····· 1
  - M35012-XXXSP ····· 2
- Reversed character display function

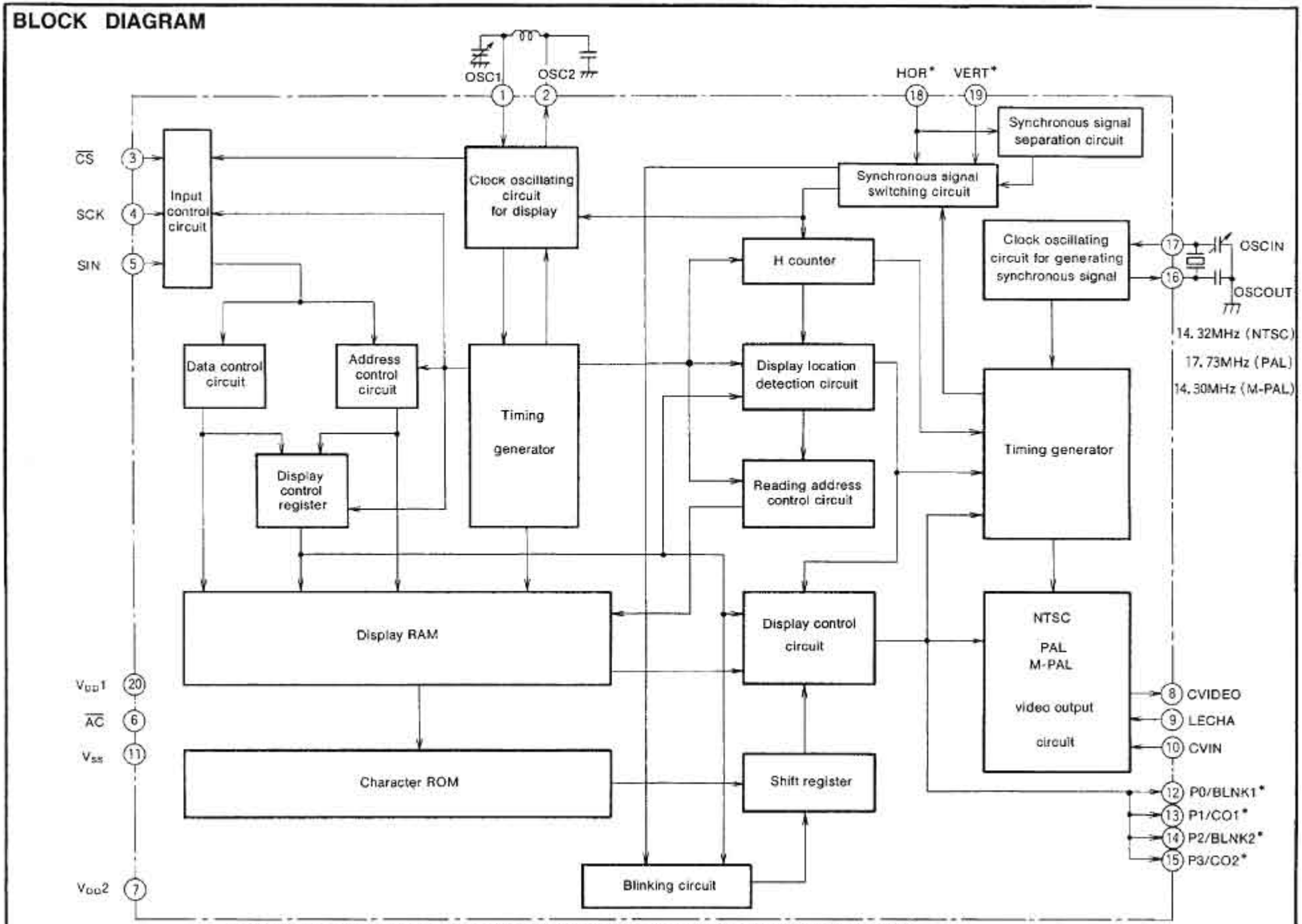
APPLICATION

TV, VCR, Camcorder

MITSUBISHI MICROCOMPUTERS **M35012-XXXSP,M35013-XXXSP**

SCREEN CHARACTER and PATTERN DISPLAY CONTROLLERS

BLOCK DIAGRAM



Note : The pins remarked "*" are selectabled the input or output polarity when the character ROM masked.

MITSUBISHI MICROCOMPUTERS

M35012-XXXSP,M35013-XXXSP

SCREEN CHARACTER and PATTERN DISPLAY CONTROLLERS

PIN DESCRIPTION

Pin Number	Symbol	Pin name	Input /Output	Function
1	OSC1	Pins for attachment of external oscillator circuit	Input	There are the pins for attaching an external display oscillator circuit. The standard oscillation frequency is approximately 7MHz. This oscillation frequency determines the horizontal position of the display on the TV screen and the width of the characters.
2	OSC2		Output	
3	$\overline{CS}$	Chip select input	Input	This is the chip select pin, and when serial data transmission is being carried out, it goes to "L". Hysteresis input. Includes built-in pull-up resistor.
4	SCK	Serial clock input	Input	When $\overline{CS}$ pin is "L", SIN serial data is taken in when SCK rises. Hysteresis input. Built-in pull-up resistor is included.
5	SIN	Serial data input	Input	This is the pin for serial input of data and addresses for the display control register and the display data memory. Hysteresis input. Includes built-in pull-up resistor.
6	$\overline{AC}$	Auto-clear input	Input	When "L", this pin resets the internal IC circuit. Hysteresis input. Includes built-in pull-up resistor.
7	$V_{DD}2$	Power pin	—	Please connect to +5V with the analog circuit power pin.
8	CVIDEO	Composite video signal output	Output	This is the output pin for composite video signals. It outputs $2V_{p-p}$ composite video signals. In superimpose mode, character output etc. is superimposed on the external composite video signals from CVIN.
9	LECHA	Character level input	Input	This is the input pin which determines the "white" character color level in the composite video signal.
10	CVIN	Composite video signal input	Input	This is the input pin for external composite video signals. In superimpose mode, character output etc. is superimposed on these external composite video signals.
11	V_{SS}	Earthing pin	—	Please connect to GND using circuit earthing pin.
12	P0	Port P0 output	Output	This pin can be toggled between port pin output and BLNK1* (character background) signal output. Polarity can be selected when the character ROM is masked.
13	P1	Port P1 output	Output	This pin can be toggled between port pin output and CO1* (character) signal output. Polarity can be selected when the character ROM is masked.
14	P2	Port P2 output	Output	This pin can be toggled between port pin output and BLNK2* (character background) signal output. Polarity can be selected when the character ROM is masked.
15	P3	Port P3 output	Output	This pin can be toggled between port pin output and CO2* (character) signal output. Polarity can be selected when the character ROM is masked.
16	OSCOUT	Pins for attachment of external oscillator circuit for synchronization signal generation	Output	These are the pins for attaching an external oscillator circuit for generating the synchronization signal. An oscillation of 14.32MHz is needed for NTSC, 17.73MHz is needed for PAL and 14.30MHz is needed for M-PAL.
17	OSCIN		Input	
18	HOR*	Horizontal synchronization signal input	Input	This pin inputs the horizontal synchronization signal. Hysteresis input. Polarity can be selected when the character ROM is masked.
19	VERT*	Vertical synchronization signal input	Input	This pin inputs the vertical synchronization signal. Hysteresis input. Polarity can be selected when the character ROM is masked.
20	$V_{DD}1$	Power pin	—	Please connect to +5V with the digital circuit power pin.

Note : The pins remarked "*" are selectabled the input or output polarity when the character ROM masked.

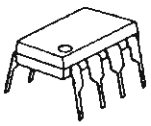
NJM2068

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2068 is a high performance, low noise dual operational amplifier. This amplifier features popular pin-out, superior noise performance, and superior total harmonic distortion. This amplifier also features guaranteed noise performance with substantially higher gain-bandwidth product and slew rate, which far exceeds that of the 4558 type amplifier. The specially designed low noise input transistors allow the NJM2068 to be used in very low noise signal processing applications such as audio preamplifiers and servo error amplifier.

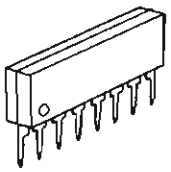
■ PACKAGE OUTLINE



NJM2068D

NJM2068M

NJM2068V

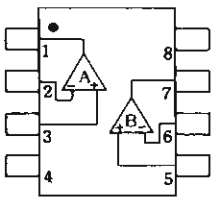


NJM2068L

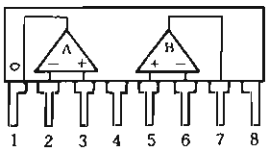
■ FEATURES

- Operating Voltage (±4V~±18V)
- Low Total Harmonic Distortion (0.001% typ.)
- Low Noise Voltage (FLAT+JISA,0.56μV typ.)
- High Slew Rate (6V/μs typ.)
- Unity Gain Bandwidth (27MHz @ f=10kHz)
- Package Outline DIP8,DMP8,SIP8,SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



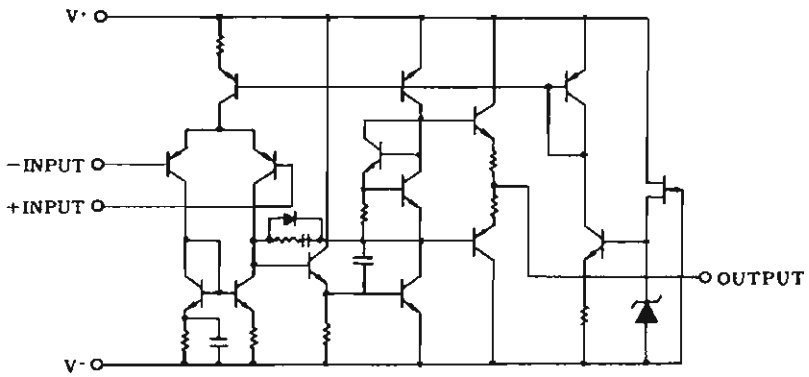
NJM2068D
NJM2068M
NJM2068V



NJM2068L

PIN FUNCTION
1.A OUTPUT
2.A –INPUT
3.A +INPUT
4.V⁻
5.B +INPUT
6.B –INPUT
7.B OUTPUT
8.V⁺

■ EQUIVALENT CIRCUIT (1/2 Shown)



NJM2296

5-INPUT 3PUTPUT VIDEO SW

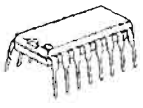
■GENERAL DESCRIPTION

The NJM2296 is a 5-input 3-output video switch.

Its switches select one from five signals received from VTR, TV, TV GAME and others.

This IC is designed for audio items, such as AV amplifier and receivers, and others

■PACKAGE OUTLINE



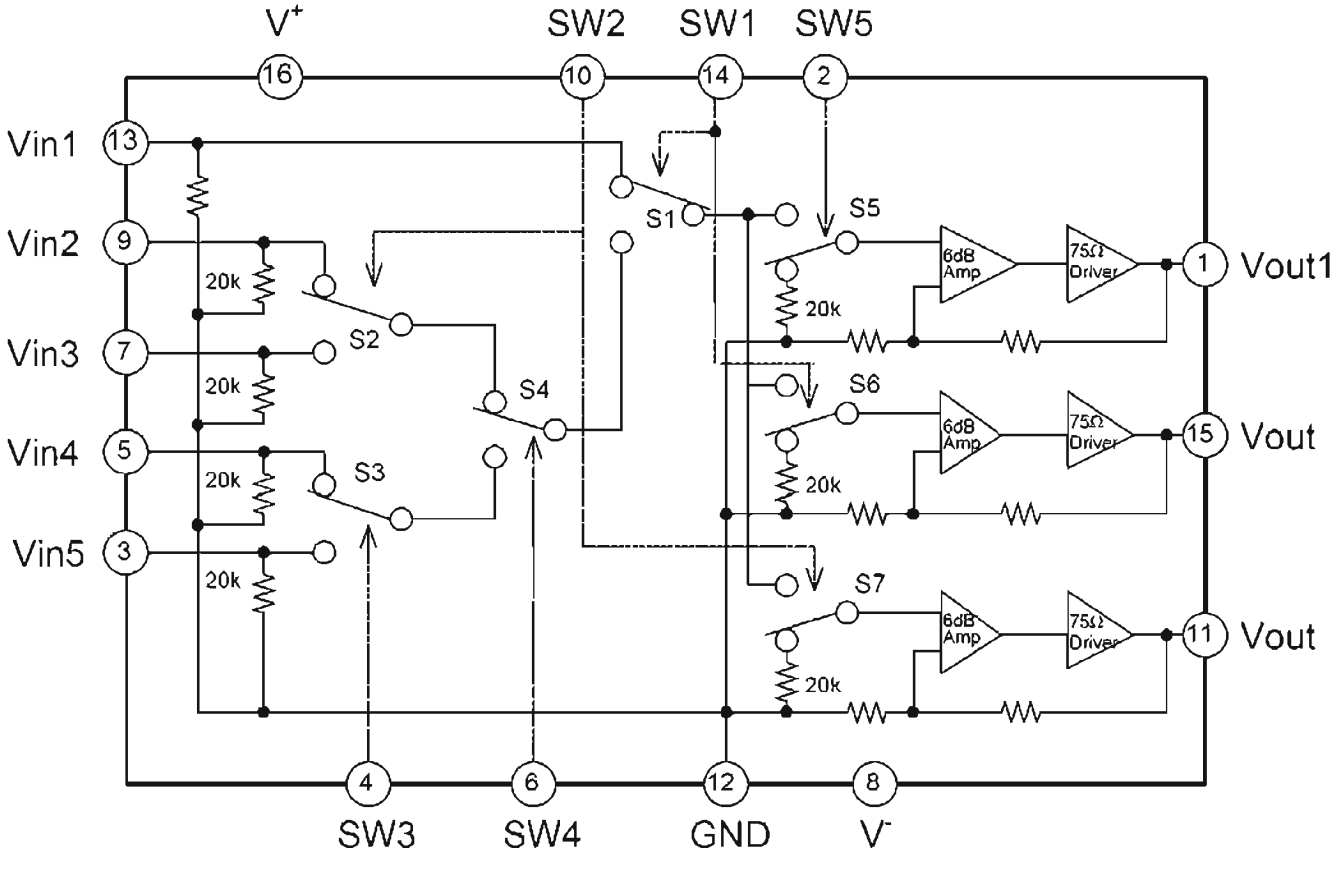
NJM2296D

NJM2296M

■FEATURES

- ●5-input 3-output
- ●Operating Voltage ±4.0 to ±6.5V
- ●Operating Current ±31mA typ. at Vcc=±5V
- ●Crosstalk -65dB typ.
- ●Internal 6dB Amplifier
- ●Internal 75Ω Driver
- ●Bipolar Technology
- ●Package Outline DIP16,DMP16

■BLOCK DIAGRAM



JRC

DUAL OPERATIONAL AMPLIFIER

NJM4558/4559

The NJM4558/4559 integrated circuit are a dual high-gain operational amplifier internally compensated and constru -cted on a single silicon chip using an advanced epitaxial process.

Combining the features of the NJM741 with the close parameter matching and tracking of a dual device on a mono -lithic chip results in unique performance characteristics. Excellent channel separation allow the use of the dual device in single NJM741 operational amplifier applications providing density. It is especially well suited for applications in di -fferential-in, differential-out as well as in potentiometric amplifiers and where gain and phase matched channels are ma -ndatory.

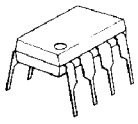
2

■ Absolute Maximum Ratings (Ta=25°C)

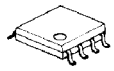
Supply Voltage	V^+/V^-	±18V
Differential Input Voltage	V_{ID}	±30V
Input Voltage (note)	V_I	±15V
Power Dissipation	P_D (D-Type)	500mW
	(M,E-Type)	300mW
	(L-Type)	800mw
Operating Temperature Range	T_{opr}	−20~+75°C
Storage Temperature Range	T_{stg}	−40~+125°C

(note) For supply voltage less than ±15V,the absolute maximum input voltage is equal to the supply voltage.

■ Package Outline

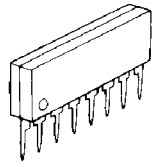


NJM4558D
NJM4559D



NJM4558M
NJM4559M

NJM4558E
NJM4559E

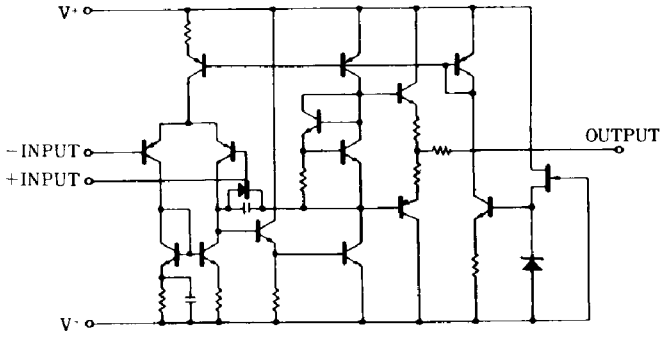


NJM4558L
NJM4559L

■ Electrical Characteristics (Ta=25°C, V^+/V^-=±15V)

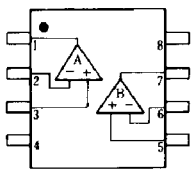
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Offset Voltage	V_{IO}	R_S≦10kΩ	—	0.5	6	mV
Input Offset Current	I_{IO}		—	5	200	nA
Input Bias Current	I_B		—	50	500	nA
Input Resistance	R_{IN}		0.3	5	—	MΩ
Large Signal Voltage Gain	A_V	R_L≧2kΩ, V_O=±10V	86	100	—	dB
Maximum Output Voltage Swing 1	V_{OM1}	R_L≧10kΩ	±12	±14	—	V
Maximum Output Voltage Swing 2	V_{OM2}	R_L≧2kΩ	±10	±13	—	V
Input Common Mode Voltage Range	V_{ICM}		±12	±14	—	V
Common Mode Rejection Ratio	CMR	R_S≦10kΩ	70	90	—	dB
Supply Voltage Rejection Ratio	SVR	R_S≦10kΩ	76.5	90	—	dB
Supply Current	I_{CC}		—	3.5	5.7	mA
Slew Rate						
NJM4558	SR		—	1	—	V/μs
NJM4559	SR		—	2	—	V/μs
Equivalent Input Noise Voltage	V_{NI}	RIAA, R_S=1kΩ, 30kHz LPF	—	1.4	—	μVrms

■ Equivalent Circuit (½ Shown)



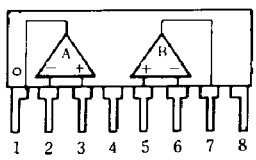
■ Connection Diagram

D,M,E-Type
(Top View)



PIN FUNCTION
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

L-Type



ANALOG DEVICES

Dual Bipolar/JFET, Audio Operational Amplifier

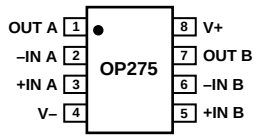
OP275*

FEATURES
Excellent Sonic Characteristics
Low Noise: 6 nV/√Hz
Low Distortion: 0.0006%
High Slew Rate: 22 V/μs
Wide Bandwidth: 9 MHz
Low Supply Current: 5 mA
Low Offset Voltage: 1 mV
Low Offset Current: 2 nA
Unity Gain Stable
SOIC-8 Package

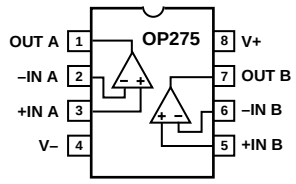
APPLICATIONS
High Performance Audio
Active Filters
Fast Amplifiers
Integrators

PIN CONNECTIONS

8-Lead Narrow-Body SO (S Suffix)



8-Lead Epoxy DIP (P Suffix)



GENERAL DESCRIPTION

The OP275 is the first amplifier to feature the Butler Amplifier front-end. This new front-end design combines both bipolar and JFET transistors to attain amplifiers with the accuracy and low noise performance of bipolar transistors, and the speed and sound quality of JFETs. Total Harmonic Distortion plus Noise equals that of previous audio amplifiers, but at much lower supply currents.

A very low l/f corner of below 6 Hz maintains a flat noise density response. Whether noise is measured at either 30 Hz or 1 kHz, it is only 6 nV/√Hz. The JFET portion of the input stage gives the OP275 its high slew rates to keep distortion low, even when large output swings are required, and the 22 V/μs slew rate of the OP275 is the fastest of any standard audio amplifier. Best of all, this low noise and high speed are accomplished using less than 5 mA of supply current, lower than any standard audio amplifier.

Improved dc performance is also provided with bias and offset currents greatly reduced over purely bipolar designs. Input offset voltage is guaranteed at 1 mV and is typically less than 200 μV. This allows the OP275 to be used in many dc coupled or summing applications without the need for special selections or the added noise of additional offset adjustment circuitry.

The output is capable of driving 600 Ω loads to 10 V rms while maintaining low distortion. THD + Noise at 3 V rms is a low 0.0006%.

The OP275 is specified over the extended industrial (–40°C to +85°C) temperature range. OP275s are available in both plastic DIP and SOIC-8 packages. SOIC-8 packages are available in 2500 piece reels. Many audio amplifiers are not offered in SOIC-8 surface mount packages for a variety of reasons; however, the OP275 was designed so that it would offer full performance in surface mount packaging.

***Protected by U.S. Patent No. 5,101,126.**

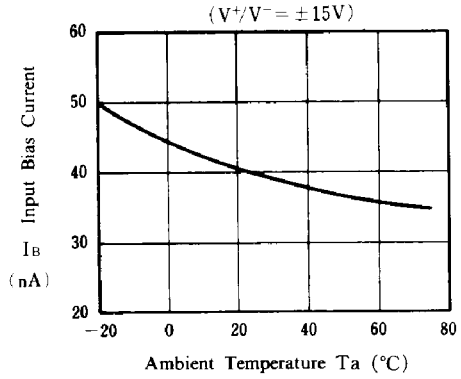
REV. A

One Technology Way, P.O. Box 9106, Norwood. MA 02062-9106, U.S.A.
Tel: 617/329-4700 Fax: 617/326-8703

■ Typical Characteristics

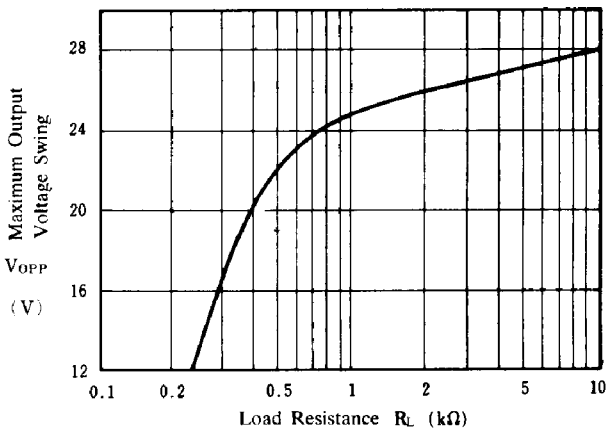
Input Bias Current vs. Ambient

($V^+/V^- = \pm 15V$)



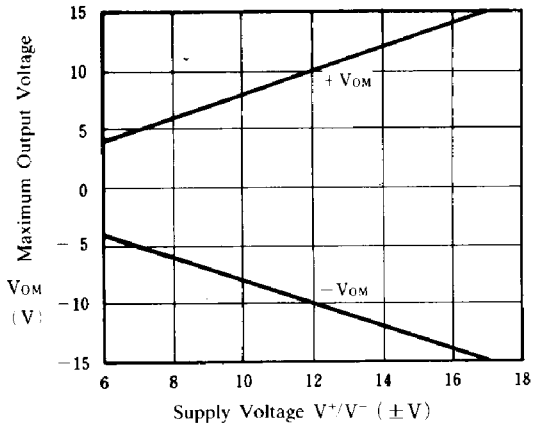
Maximum Output Voltage Swing vs. Load Resistance

($V^+/V^- = \pm 15V$, Ta = 25°C)



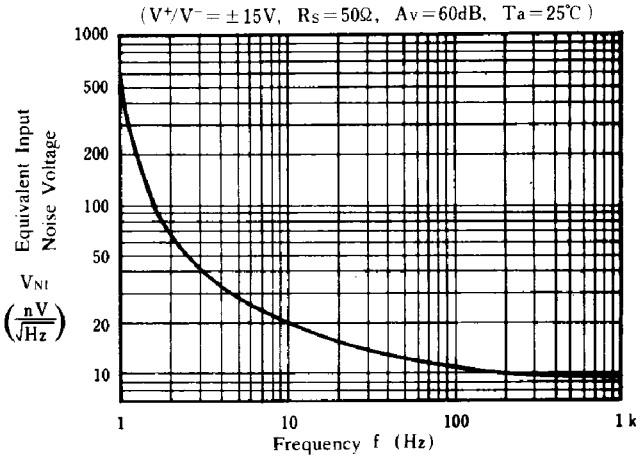
Maximum Output Voltage Swing vs. Supply Voltage

($R_L = 2k\Omega$, Ta = 25°C)



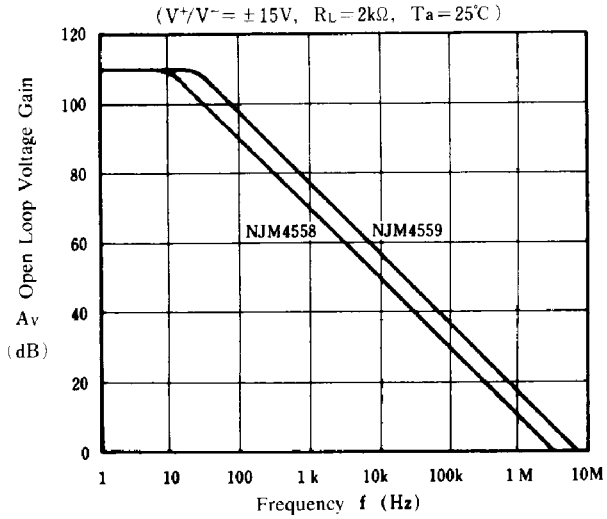
Equivalent Input Noise Voltage vs. Frequency

($V^+/V^- = \pm 15V$, $R_S = 50\Omega$, Av = 60dB, Ta = 25°C)



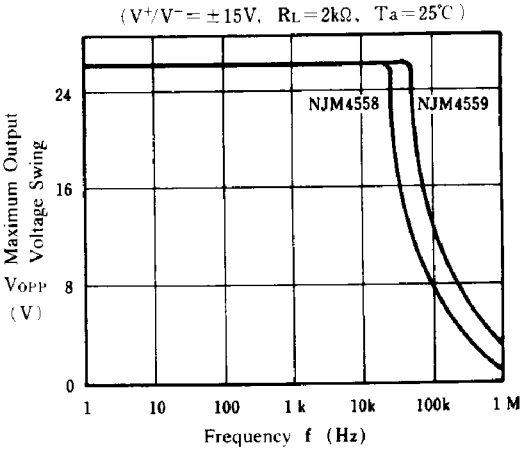
Open Loop Voltage Gain vs. Frequency

($V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, Ta = 25°C)



Maximum Output Voltage Swing vs. Frequency

($V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, Ta = 25°C)



JRC **NJM5532**

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

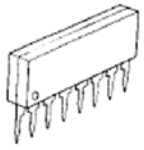
The NJM5532 is a high performance dual low noise operational amplifier. Compared to the standard dual operational amplifiers, such as the NJM1458,it shows better noise performance, improved output drive capability, and considerably higher small-signal and power bandwidths.

This makes the device especially suitable for application in high quality and professional audio equipment, instrumentation, control circuits, and telephone channel amplifiers. The op amp is internally compensated for gains equal to one if very low noise is of prime importance, version be used which has guaranteed NJM5532DD it is recommended that the noise specifications.

■ PACKAGE OUTLINE

NJM5532D

NJM5532M

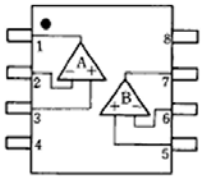


NJM5532L

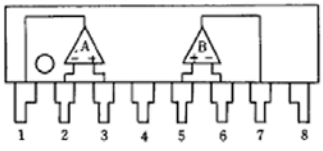
■ FEATURES

• Operating Voltage	(±3V~±20V)
• Small Signal Bandwidth	(10MHz typ.)
• Output Drive Capability	(600Ω,10Vrms typ.)
• Input Noise Voltage	(5nV/√Hz typ.)
• Power Bandwidth	(140kHz typ.)
• Slew Rate	(8V/μs typ.)
• Package Outline	DIP8,DMP8,SIP8
• Bipolar Technology	

■ PIN CONFIGURATION



NJM5532D
NJM5532M

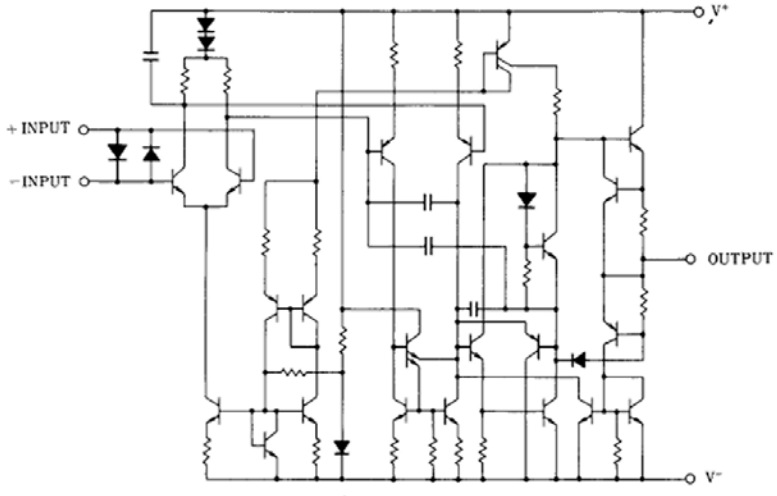


NJM5532L

PIN FUNCTION
1.A OUTPUT
2.A –INPUT
3.A +INPUT
4.V⁻
5.B +INPUT
6.B –INPUT
7.B OUTPUT
8.V⁺

■ EQUIVALENT CIRCUIT

(1/2 Shown)

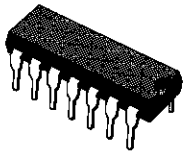


SGS-THOMSON MICROELECTRONICS

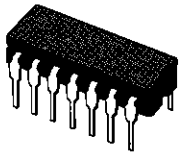
M54HCU04
M74HCU04

HEX INVERTER (SINGLE STAGE)

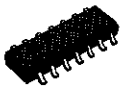
- HIGH SPEED
  t_{PD} = 5 ns (TYP.) AT V_{CC} = 5 V
- LOW POWER DISSIPATION
  I_{CC} = 1 µA (MAX.) AT T_A = 25 °C
- HIGH NOISE IMMUNITY
  $V_{NIH} = V_{NIL}$ = 10 % V_{CC} (MIN.)
- OUTPUT DRIVE CAPABILITY
  10 LSTTL LOADS
- SYMMETRICAL OUTPUT IMPEDANCE
  $|I_{OH}| = I_{OL}$ = 4 mA (MIN.)
- BALANCED PROPAGATION DELAYS
  $t_{PLH} = t_{PHL}$
- WIDE OPERATING VOLTAGE RANGE
  V_{CC} (OPR) = 2 V TO 6 V
- PIN AND FUNCTION COMPATIBLE WITH 54/74LS04



B1R
(Plastic Package)



F1R
(Ceramic Package)



M1R
(Micro Package)

C1R
(Chip Carrier)

ORDER CODES :

M54HCU04F1R M74HCU04M1R
M74HCU04B1R M74HCU04C1R

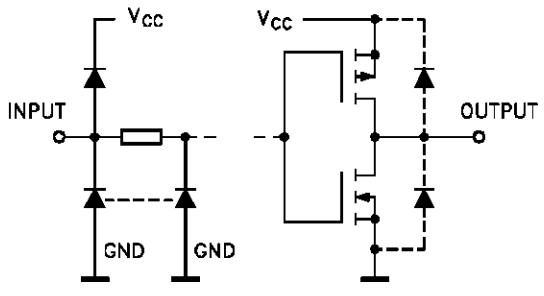
DESCRIPTION

The M54/74HCU04 is a high speed CMOS HEX INVERTER (SINGLE STAGE) fabricated in silicon gate C^2MOS technology. It has the same high speed performance of LSTTL combined with true CMOS low power consumption.

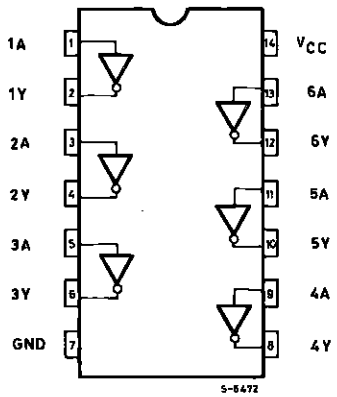
As the intrnal circuit is composed of a single stage inverter, it can be used in crystal oscillator.

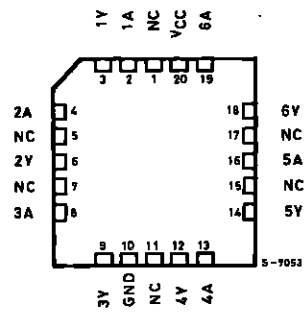
All inputs are equipped with circuits against static discharge and transient excess voltage.

INPUT AND OUTPUT EQUIVALENT CIRCUIT



PIN CONNECTIONS (top view)





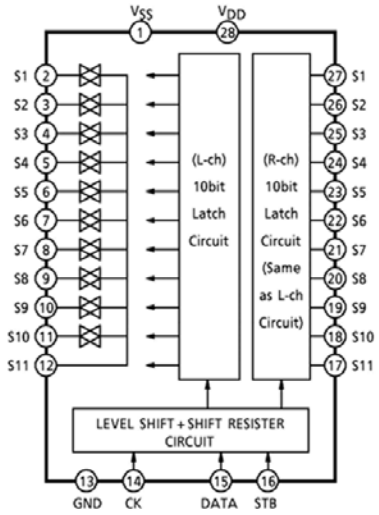
NC =
No Internal
Connection

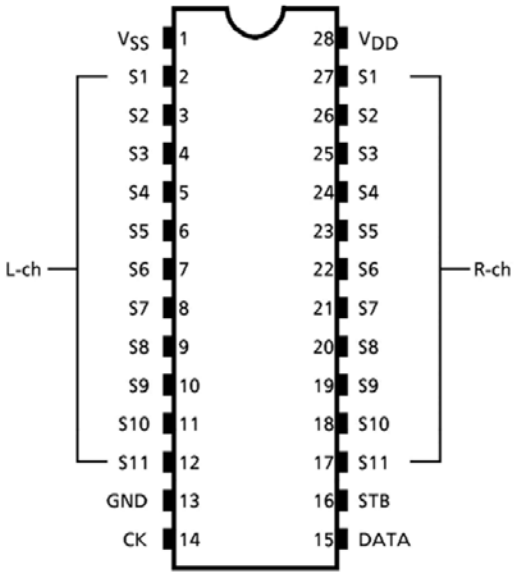
TC9273N

CMOS Digital IC

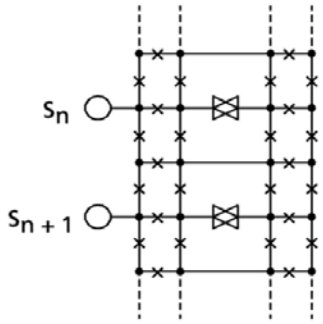
BLOCK DIAGRAM

TC9273N, TC9273F





PIN FUNCTION (Left channel / right channel)

PIN No.			SYMBOL	PIN NAME	FUNCTION AND OPERATION	NOTE
TC9273N / F	TC9274N	TC9274F				
1	1	40	V_{SS}	Negative power supply pin	Dual power supply: V_{DD} = 8.0~17V, GND = 0V, V_{SS} = −8.0~−17V	—
13	20	16	GND	Digital ground pin		
28	42	38	V_{DD}	Positive power supply pin	Single power supply: V_{DD} = 8.0~18V, V_{SS} = GND = 0V	
2 / 27	2 / 41	41 / 37	S1	Input / output pins	Analog switch input pins.  × : Aluminum mask switch. ● : Open or closed can be specified. Connection for right and left channels can be different.	—
3 / 26	3 / 40	42 / 36	S2			
4 / 25	4 / 39	43 / 35	S3			
5 / 24	5 / 38	44 / 34	S4			
6 / 23	6 / 37	1 / 33	S5			
7 / 22	7 / 36	2 / 32	S6			
8 / 21	8 / 35	3 / 31	S7			
9 / 20	9 / 34	4 / 30	S8			
10 / 19	10 / 33	5 / 29	S9			
11 / 18	11 / 32	6 / 28	S10			
12 / 17	12 / 31	7 / 27	S11			
—	13 / 30	8 / 26	S12			
—	14 / 29	9 / 25	S13			
—	15 / 28	10 / 24	S14			
—	16 / 27	11 / 23	S15			
—	17 / 26	12 / 22	S16			
—	18 / 25	13 / 21	S17			
—	19 / 24	14 / 20	S18			
—	—	17 / 39	NC	Not connected	—	—
14	21	16	CK	Clock input pin	Clock input for data transfer	Low threshold value input pins
15	22	18	DATA	Data input pin	Serial data input for setting switches	
16	23	19	STB	Strobe input pin	Strobe input for data writing	

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74VHC240F, TC74VHC240FW, TC74VHC240FT
TC74VHC244F, TC74VHC244FW, TC74VHC244FT

OCTAL BUS BUFFER

TC74VHC240F / FW / FT INVERTED, 3 - STATE OUTPUTS

TC74VHC244F / FW / FT NON - INVERTED, 3 - STATE OUTPUTS

(Note) The JEDEC SOP (FW) is not available in Japan.

The TC74VHC240 and 244 are advanced high speed CMOS OCTAL BUS BUFFERs fabricated with silicon gate C²MOS technology.

They achieve the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.

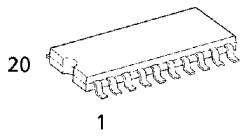
The 74VHC240 is an inverting 3 - state buffer having two active - low output enables. The TC74VHC244 is a non - inverting 3 - state buffer, and has two active - low output enables.

These devices are designed to be used with 3 - state memory address drivers, etc.

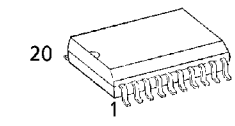
An input protection circuit ensures that 0 to 7V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5V to 3V systems and two supply systems such as battery back up. This circuit prevents device destruction due to mismatched supply and input voltages.

FEATURES :

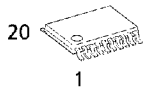
- High Speed ..... t_{pd} = 3.9ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ..... I_{CC} = 4μA(Max.) at Ta = 25°C
- High Noise Immunity ..... $V_{NIH} = V_{NIL}$ = 28% V_{CC} (Min.)
- Power Down Protection is provided on all inputs.
- Balanced Propagation Delays ..... $t_{pLH} \simeq t_{pHL}$
- Wide Operating Voltage Range ..... V_{CC} (opr) = 2V ~ 5.5V
- Low Noise ..... V_{OLP} = 0.9V (Max.)
- Pin and Function Compatible with 74ALS240/244



F (SOP20-P-300-1.27)
Weight : 0.22g (Typ.)



FW (SOL20-P-300-1.27)
Weight : 0.46g (Typ.)



FT (TSSOP20-P-0044-0.65)
Weight : 0.08g (Typ.)

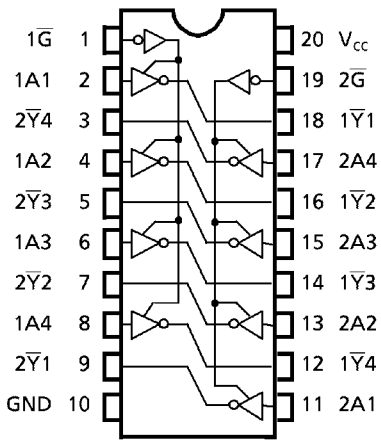
TRUTH TABLE

INPUTS		OUTPUTS	
$\overline{G}$	A_n	Y_n	$\overline{Y}_n$
L	L	L	H
L	H	H	L
H	X	Z	Z

X : Don't Care
Z : High Impedance
Y_n : TC74VHC244
$\overline{Y}_n$: TC74VHC240

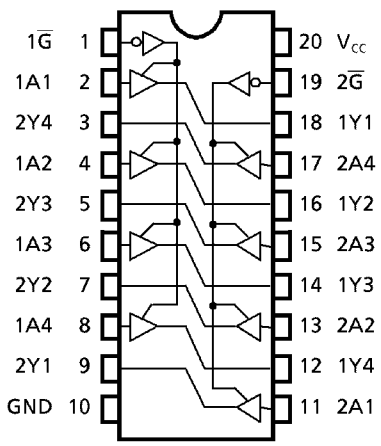
PIN ASSIGNMENT

TC74VHC240



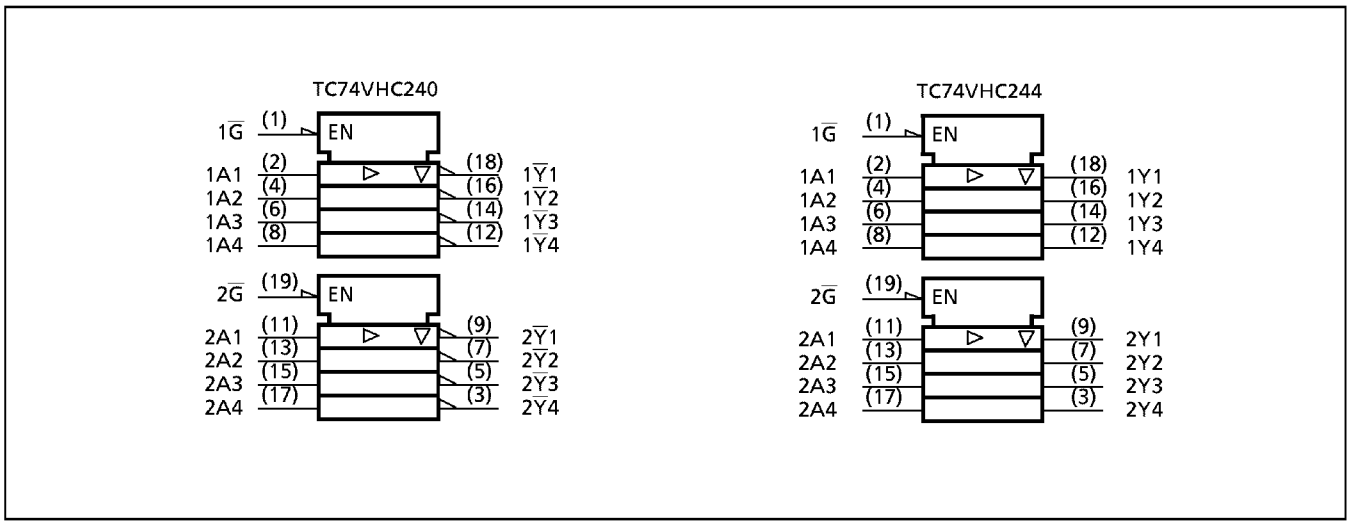
(TOP VIEW)

TC74VHC244



961001EBA2

IEC LOGIC SYMBOL



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V_{CC}	−0.5~7.0	V
DC Input Voltage	V_{IN}	−0.5~7.0	V
DC Output Voltage	V_{OUT}	−0.5~V_{CC}+0.5	V
Input Diode Current	I_{IK}	−20	mA
Output Diode Current	I_{OK}	±20	mA
DC Output Current	I_{OUT}	±25	mA
DC V_{CC}/Ground Current	I_{CC}	±75	mA
Power Dissipation	P_D	180	mW
Storage Temperature	T_{stg}	−65~150	°C

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	2.0~5.5	V
Input Voltage	V_{IN}	0~5.5	V
Output Voltage	V_{OUT}	0~V_{CC}	V
Operating Temperature	T_{opr}	−40~85	°C
Input Rise and Fall Time	dt / dv	0~100 (V_{CC} = 3.3 ± 0.3V) 0~20 (V_{CC} = 5 ± 0.5V)	ns / V

TOSHIBA TC9482N/F

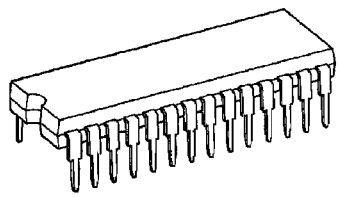
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC9482N, TC9482F

SYSTEM ELECTRONIC VOLUME CONTROL

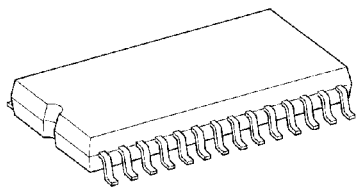
The TC9482N and TC9482F are six-channel electronic volume control ICs developed for Hi-Fi audio equipment. Since all six channels can be individually controlled, the devices are optimum for audio equipment with multiple outputs.

TC9482N



SDIP28-P-400-1.78

TC9482F



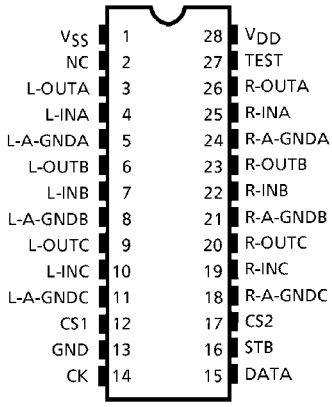
SOP28-P-450-1.27

Weight
SDIP28-P-400-1.78 : 2.2 g (Typ.)
SOP28-P-450-1.27 : 0.8 g (Typ.)

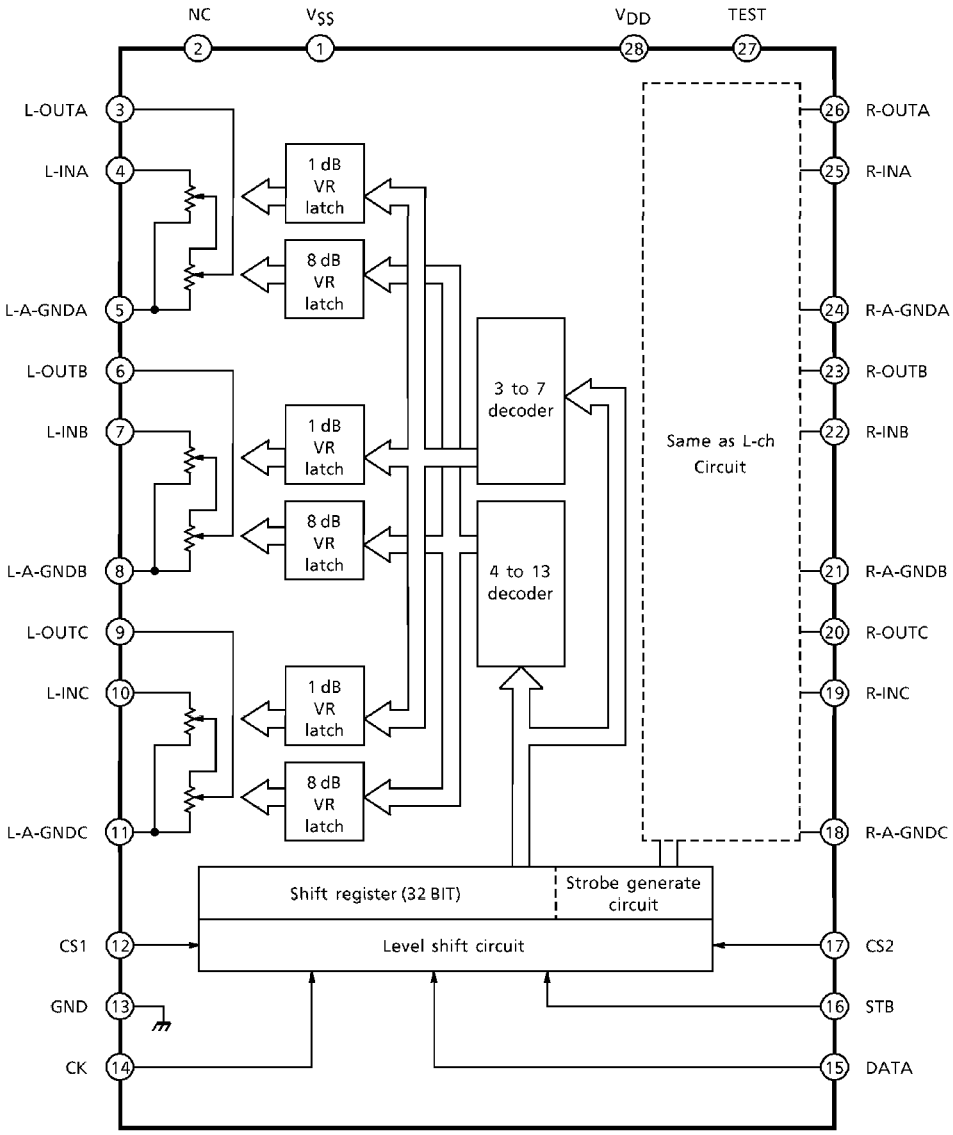
FEATURES

- Sound volume can be controlled in 97 steps from 0 to −95dB or up to an infinite level in 1dB increments.
- Incorporating six channels of volume control circuits, the device allows independent volume control.
- Can operate with a single or dual power supplies.
- Can control up to 4 chips on the same bus by using chip select input.
- Built-in interface for 5-V microcomputers.
- Thanks to its polysilicon resistor, the device allows you to configure a low-distortion, high-performance volume control system.
- Two packages supported: 28-pin shrink DIP and 28-pin flat package.

PIN CONNECTIONS



BLOCK DIAGRAM



TOSHIBA TC9459N/F

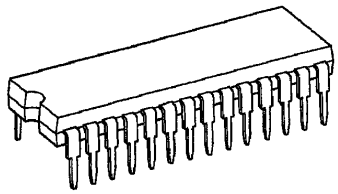
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC9459N, TC9459F

ELECTRONIC VOLUME CONTROL

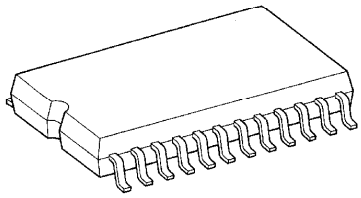
The TC9459N, TC9459F are electronic volume control ICs developed for use in home stereos and other audio equipment.
Using serial data input from external sources, it controls the sound volume, balance and loudness circuits.

TC9459N



SDIP28-P-400-1.78

TC9459F



SOP24-P-450-1.27A

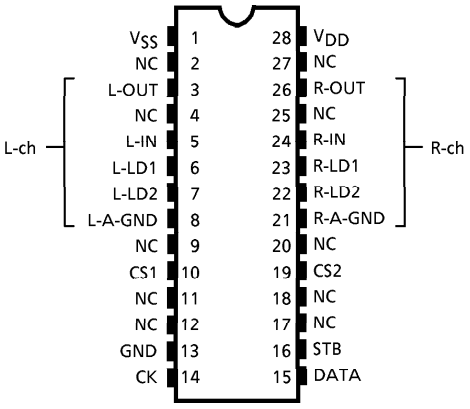
Weight
SDIP28-P-400-1.78 : 2.2g (Typ.)
SOP24-P-450-1.27A : 0.44g (Typ.)

FEATURES

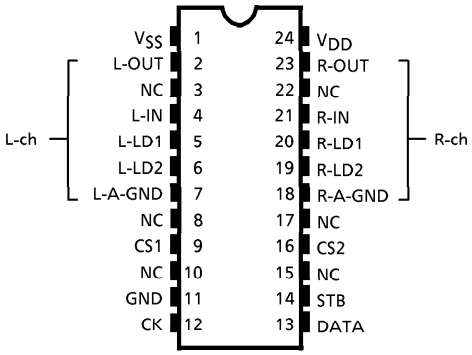
- Sound volume can be controlled in 91 steps from 0 to −89dB or up to an infinite level in 1dB increments.
- Incorporating two channels of volume control circuits, the device allows independent volume control : therefore, it also provides the balancing function.
- A loudness circuit (20dB tap) is built in.
- Can operate with a single or dual power supplies.
- Can control up to 4 chips on the same bus by using chip select input.
- Thanks to its polysilicon resistor, the device allows you to configure a low-distortion, high-performance volume control system.

PIN CONNECTIONS

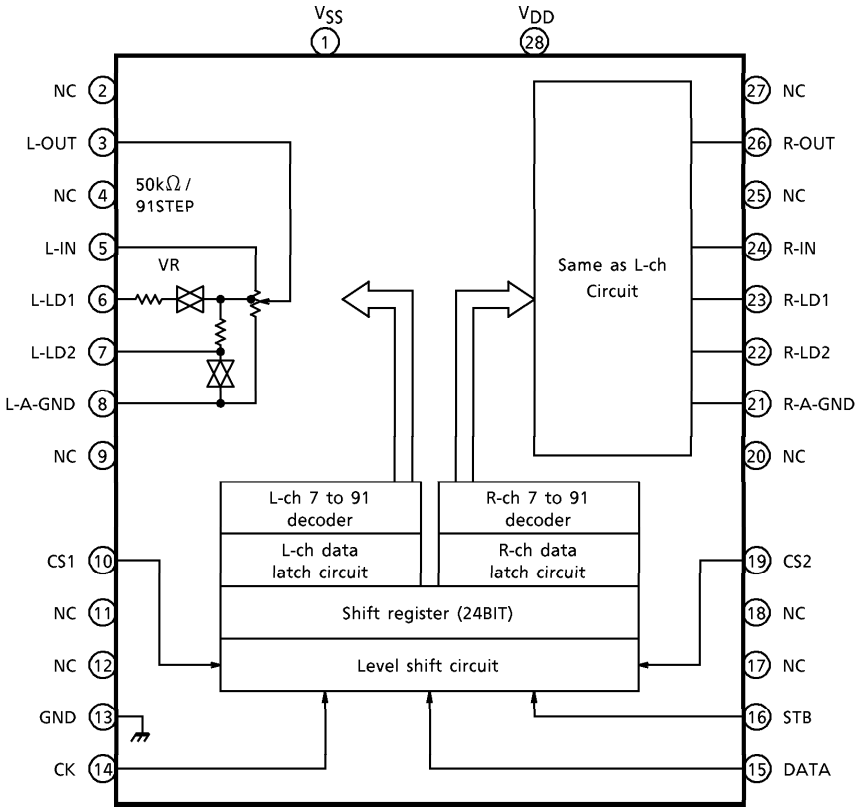
TC9459N



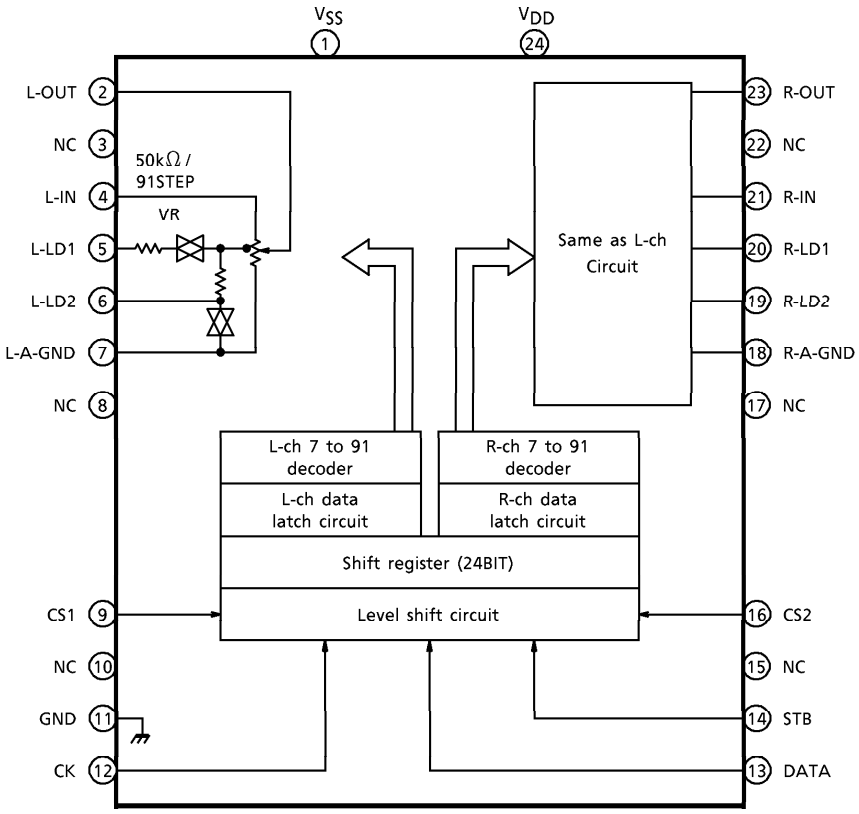
TC9459F



BLOCK DIAGRAM (TC9459N)

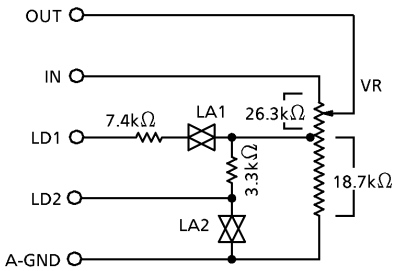


BLOCK DIAGRAM (TC9459F)



PIN DESCRIPTION

Numeral in ( ) means the pin No. of TC9459F.

<table>
<tr><th>PIN No.</th><th>SYMBOL</th><th>PIN NAME</th><th>FUNCTION</th><th>REMARK</th></tr>
<tr><td>1 (1)</td><td>V_{SS}</td><td>Negative power supply pin</td><td rowspan="3">When using dual power supplies
V_{DD} = 6.0~17V
GND = 0V
V_{SS} = – 6.0~ – 17V
When using a single power supply
V_{DD} = 6.0~18V
GND = V_{SS} = 0V</td><td rowspan="3">—</td></tr>
<tr><td>28 (24)</td><td>V_{DD}</td><td>Positive power supply pin</td></tr>
<tr><td>13 (11)</td><td>GND</td><td>Digital GND pin</td></tr>
<tr><td>3 (2)</td><td>L-OUT</td><td rowspan="2">Volume output pin</td><td rowspan="12">• Volume circuit
 

<table>
<tr><th></th><th>LA1</th><th>LA2</th></tr>
<tr><td>LOUDNESS "ON"</td><td>ON</td><td>OFF</td></tr>
<tr><td>LOUDNESS "OFF"</td><td>OFF</td><td>ON</td></tr>
</table></td><td rowspan="12">—</td></tr>
<tr><td>26 (23)</td><td>R-OUT</td></tr>
<tr><td>5 (4)</td><td>L-IN</td><td rowspan="2">Volume input pin</td></tr>
<tr><td>24 (21)</td><td>R-IN</td></tr>
<tr><td>6 (5)</td><td>L-LD1</td><td rowspan="4">Loudness tap output pin</td></tr>
<tr><td>23 (20)</td><td>R-LD1</td></tr>
<tr><td>7 (6)</td><td>L-LD2</td></tr>
<tr><td>22 (19)</td><td>R-LD2</td></tr>
<tr><td>8 (7)</td><td>L-A-GND</td><td rowspan="2">Analog GND pin</td></tr>
<tr><td>21 (18)</td><td>R-A-GND</td></tr>
<tr><td>10 (9)</td><td>CS1</td><td rowspan="2">Chip select input pin</td><td rowspan="2">Up to 4 chips on the same bus can be used by switching over chip select code.</td><td rowspan="2">—</td></tr>
<tr><td>19 (16)</td><td>CS2</td></tr>
<tr><td>14 (12)</td><td>CK</td><td>Clock input pin</td><td>Data transfer clock input</td><td rowspan="3">Low threshold value input pin</td></tr>
<tr><td>15 (13)</td><td>DATA</td><td>Data input pin</td><td>Volume setup serial data input</td></tr>
<tr><td>16 (14)</td><td>STB</td><td>Strobe input pin</td><td>Data write strobe input</td></tr>
<tr><td>2 (3)
27 (22)
4
25
9 (8)
20 (17)
11
18
12 (10)
17 (15)</td><td>NC</td><td>No connection</td><td>—</td><td>—</td></tr>
</table>

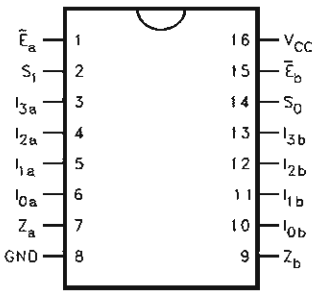
74VHC153MX

Dual 4-Input Multiplexer

Pin Descriptions

Pin Names	Description
I_{0a}–I_{3a}	Side A Data Inputs
I_{0b}–I_{3b}	Side B Data Inputs
S_0, S_1	Common Select Inputs
$\overline{E}_a$	Side A Enable Input
$\overline{E}_b$	Side B Enable Input
Z_a	Side A Output
Z_b	Side B Output

Connection Diagram



Functional Description

The VHC153 is a dual 4-input multiplexer. It can select two bits of data from up to four sources under the control of the common Select inputs (S_0, S_1). The two 4-input multiplexer circuits have individual active-LOW Enables ($\overline{E}_a$, $\overline{E}_b$) which can be used to strobe the outputs independently. When the Enables ($\overline{E}_a$, $\overline{E}_b$) are HIGH, the corresponding outputs (Z_a, Z_b) are forced LOW. The VHC153 is the logic implementation of a 2-pole, 4-position switch, where the position of the switch is determined by the logic levels supplied to the Select inputs. The logic equations for the outputs are shown below.

$$Z_a = \overline{E}_a \cdot (I_{0a} \cdot \overline{S}_1 \cdot \overline{S}_0 + I_{1a} \cdot \overline{S}_1 \cdot S_0 + I_{2a} \cdot S_1 \cdot S_0 + I_{3a} \cdot S_1 \cdot S_0)$$

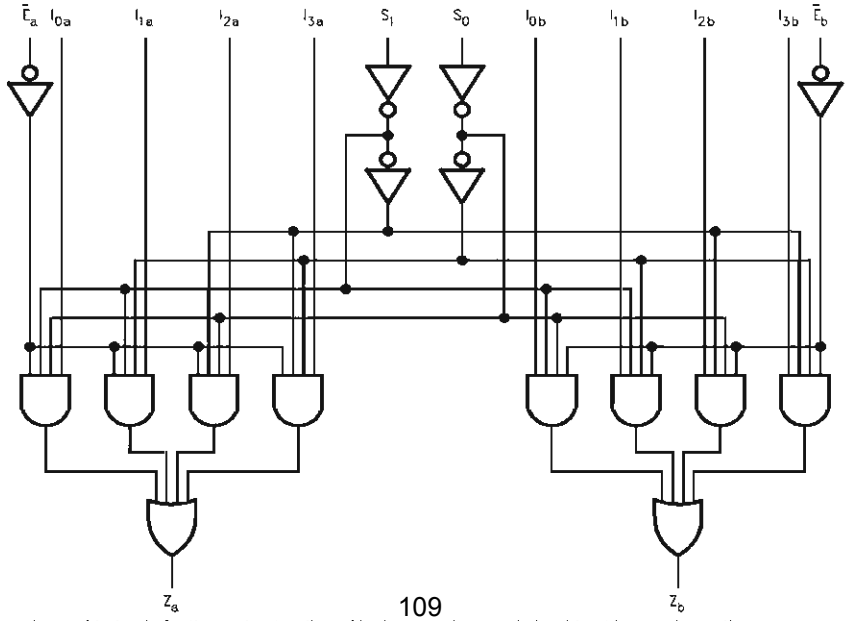
$$Z_b = \overline{E}_b \cdot (I_{0b} \cdot \overline{S}_1 \cdot \overline{S}_0 + I_{1b} \cdot \overline{S}_1 \cdot S_0 + I_{2b} \cdot S_1 \cdot S_0 + I_{3b} \cdot S_1 \cdot S_0)$$

Truth Table

Select Inputs		Inputs (a or b)					Output
S_0	S_1	$\overline{E}$	I_0	I_1	I_2	I_3	Z
X	X	H	X	X	X	X	L
L	L	L	L	X	X	X	L
L	L	L	H	X	X	X	H
H	L	L	X	L	X	X	L
H	L	L	X	H	X	X	H
L	H	L	X	X	L	X	L
L	H	L	X	X	H	X	H
H	H	L	X	X	X	L	L
H	H	L	X	X	X	H	H

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

Logic Diagram



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

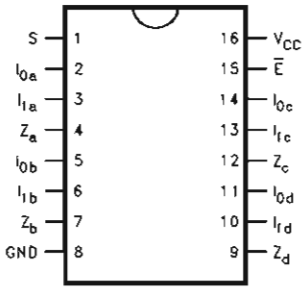
74VHC157MX

Quad 2-Input Multiplexer

Pin Configuration

Pin Names	Description
I_{0a}–I_{0d}	Source 0 Data Inputs
I_{1a}–I_{1d}	Source 1 Data Inputs
$\overline{E}$	Enable Input
S	Select Input
Z_a–Z_d	Outputs

Connection Diagram



Truth Table

Inputs				Outputs
$\overline{E}$	S	I_0	I_1	Z
H	X	X	X	L
L	H	X	L	L
L	H	X	H	H
L	L	L	X	L
L	L	H	X	H

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

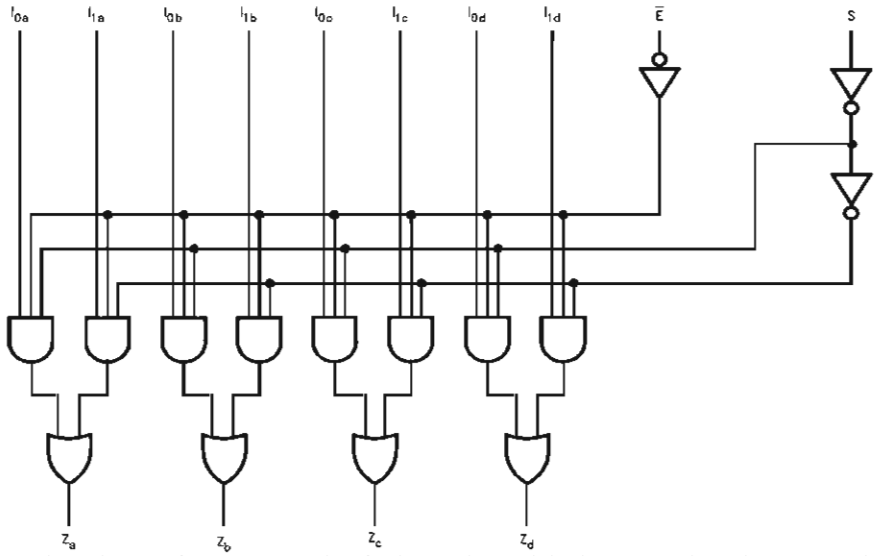
Functional Description

The VHC157 is a quad 2-input multiplexer. It selects four bits of data from two sources under the control of a common Select input (S). The Enable input ($\overline{E}$) is active-LOW. When $\overline{E}$ is HIGH, all of the outputs (Z) are forced LOW regardless of all other inputs. The VHC157 is the logic implementation of a 4-pole, 2-position switch where the position of the switch is determined by the logic levels supplied to the Select input. The logic equations for the outputs are shown below:

$$Z_a = \overline{E} \cdot (I_{1a} \cdot S + I_{0a} \cdot \overline{S})$$
$$Z_b = \overline{E} \cdot (I_{1b} \cdot S + I_{0b} \cdot \overline{S})$$
$$Z_c = \overline{E} \cdot (I_{1c} \cdot S + I_{0c} \cdot \overline{S})$$
$$Z_d = \overline{E} \cdot (I_{1d} \cdot S + I_{0d} \cdot \overline{S})$$

A common use of the VHC157 is the moving of data from two groups of registers to four common output busses. The particular register from which the data comes is determined by the state of the Select input. A less obvious use is as a function generator. The VHC157 can generate any four of the sixteen different functions of two variables with one variable common. This is useful for implementing gating functions.

Logic Diagram



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

TOSHIBA TC9162~64AN/AF

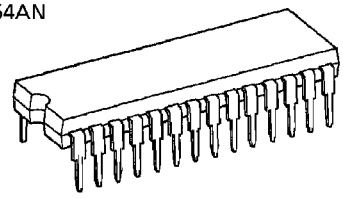
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC9162AN, TC9163AN, TC9164AN
TC9162AF, TC9163AF, TC9164AF

HIGH VOLTAGE ANALOG FUNCTION SWITCH ARRAY

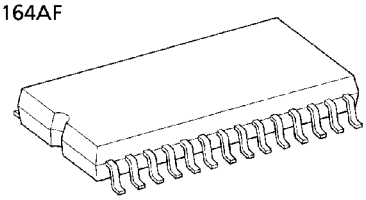
TC9162AN / AF, TC9163AN / AF and TC9164AN / AF are analog switch arrays for high voltage application. By inputting the specified serial data, the analog switches are controlled. As each analog switch is independently controllable, switch of wide use is available.

TC9162AN
TC9163AN
TC9164AN



SDIP28-P-400-1.78

TC9162AF
TC9163AF
TC9164AF



SOP28-P-450-1.27

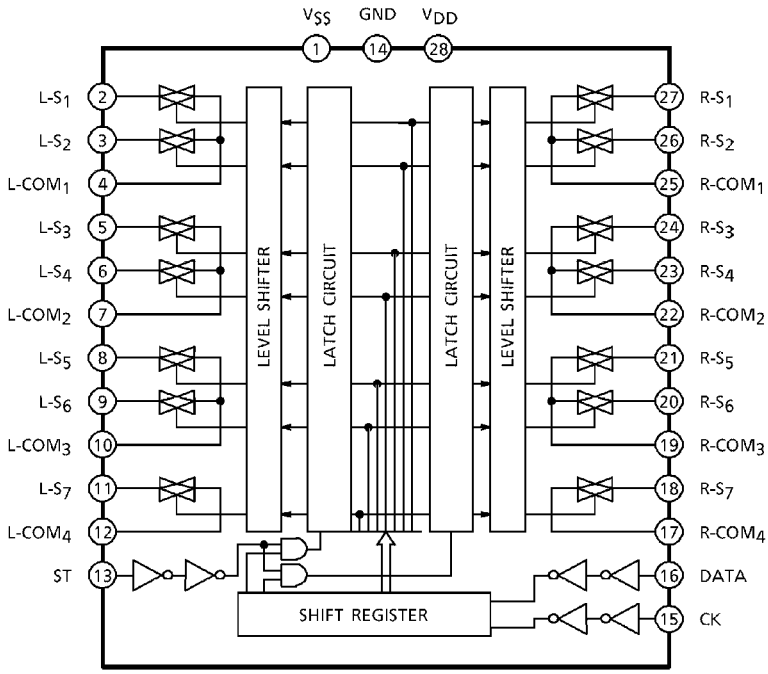
Weight
SDIP28-P-400-1.78 : 2.2g (Typ.)
SOP28-P-450-1.27 : 0.8g (Typ.)

FEATURES

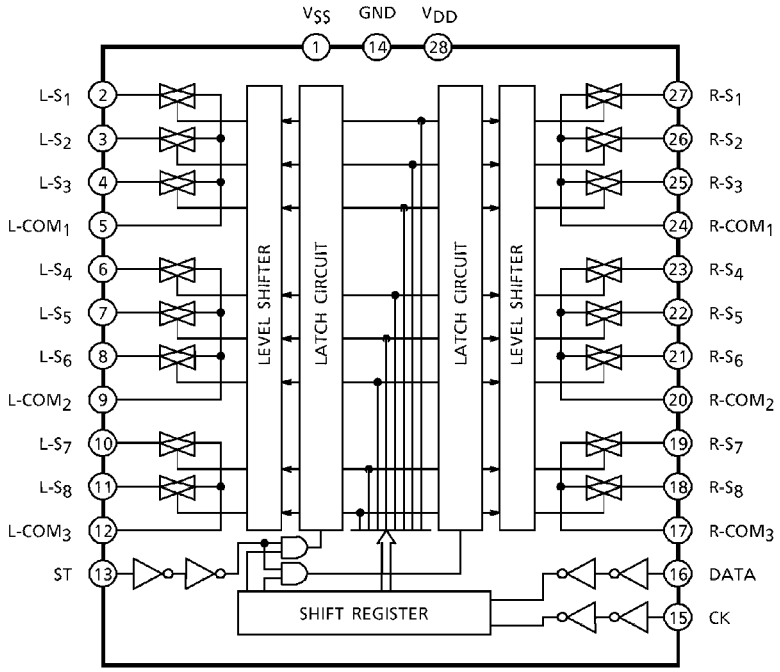
- Analog switches of 16 circuits are built in, allowing to provide three types according to internal connections.
- Dual power supply of (+) and (−) can be used. In this case the switch select data is operated in a single power supply by the built-in level shifter. As the threshold level of the input inverter is designed low, interface with CMOS microcomputer is easily available.
- As the analog switches are high-voltage (30V) use and have superior linearity of on-resistance, extra low distortion and wide dynamic range can be realized.
- Owing to CMOS structure current consumption is low.
- Package is shrinked DIP 28 PIN.

BLOCK DIAGRAM

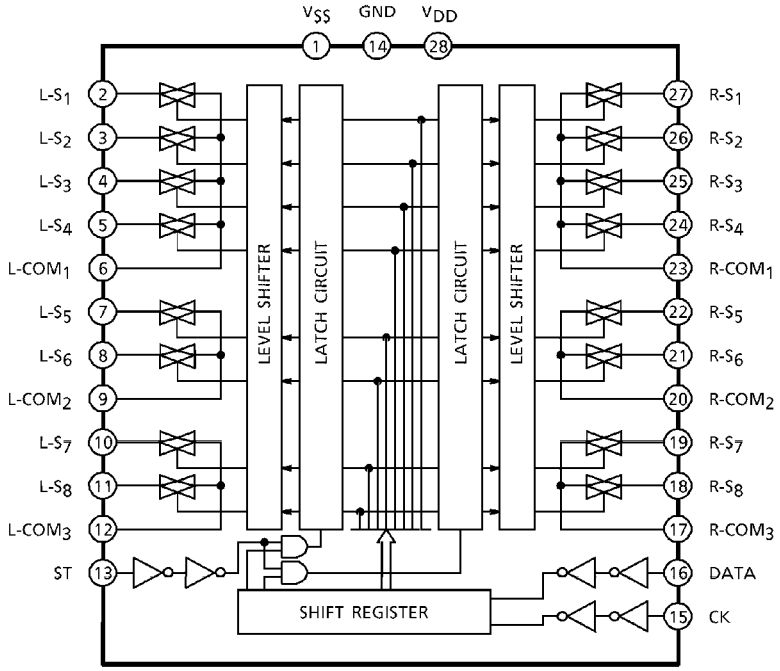
TC9162AN / AF



TC9163AN / AF

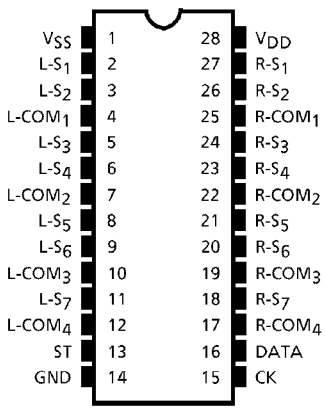


TC9164AN / AF

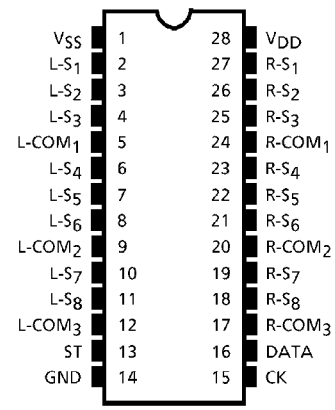


PIN CONNECTION (TOP VIEW)

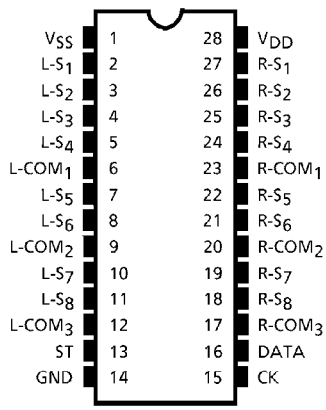
TC9162AN / AF



TC9163AN / AF



TC9164AN / AF



AK4393

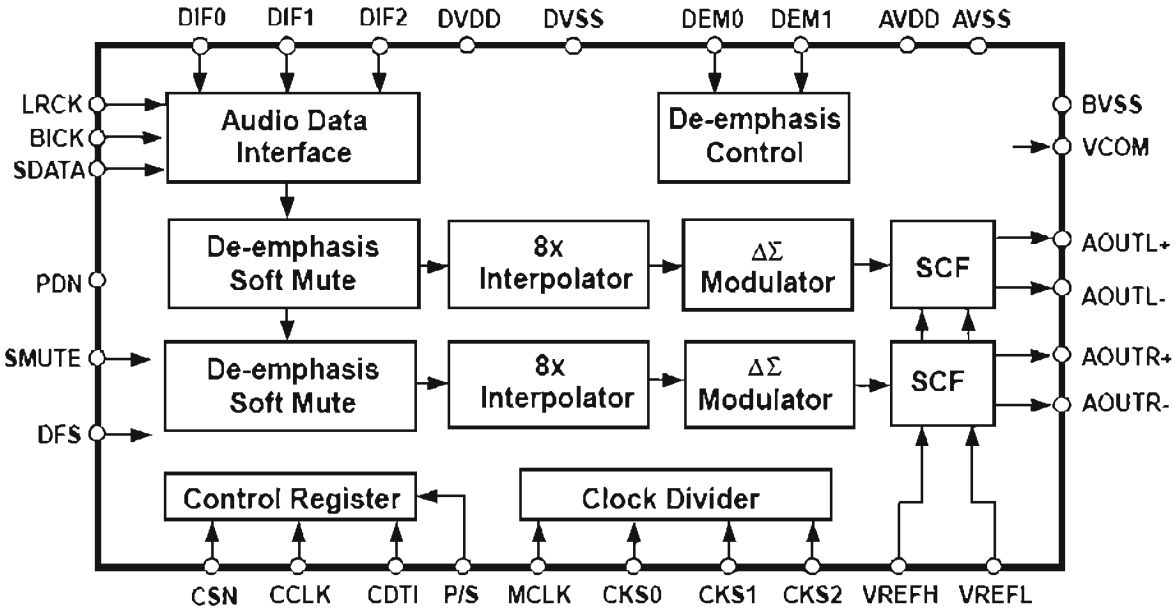
Advanced Multi-Bit 96kHz 24-Bit ΔΣ DAC

GENERAL DESCRIPTION

The AK4393 is a high performance stereo DAC for the 96kHz sampling mode of DAT, DVD including a 24bit digital filter. The AK4393 introduces the advanced multi-bit system for ΔΣ modulator. This new architecture achieves the wider dynamic range, while keeping much the same superior distortion characteristics as conventional Single-Bit way. In the AK4393, the analog outputs are filtered in the analog domain by switched-capacitor filter (SCF) with high tolerance to clock jitter. The analog outputs are full differential output, so the device is suitable for hi-end applications. The operating voltages support analog 5V and digital 3.3V, so it is easy to I/F with 3.3V logic IC.

FEATURES

- 128x Oversampling
- Sampling Rate up to 108kHz
- 24Bit 8x Digital Filter
  Ripple: ±0.005dB, Attenuation: 75dB
- High Tolerance to Clock Jitter
- Low Distortion Differential Output
- Digital de-emphasis for 32, 44.1, 48 & 96kHz sampling
- Soft Mute
- THD+N: -100dB
- DR, S/N: 120dB
- I/F format : MSB Justified, 16/20/24bit LSB Justified, I²S
- Master Clock: Normal Speed: 256fs, 384fs, 512fs or 768fs
  Double Speed: 128fs, 192fs, 256fs or 384fs
- Power Supply: 4.75 to 5.25V (Analog), 3 to 5.25V (Digital)
- Small Package: 28pin VSOP

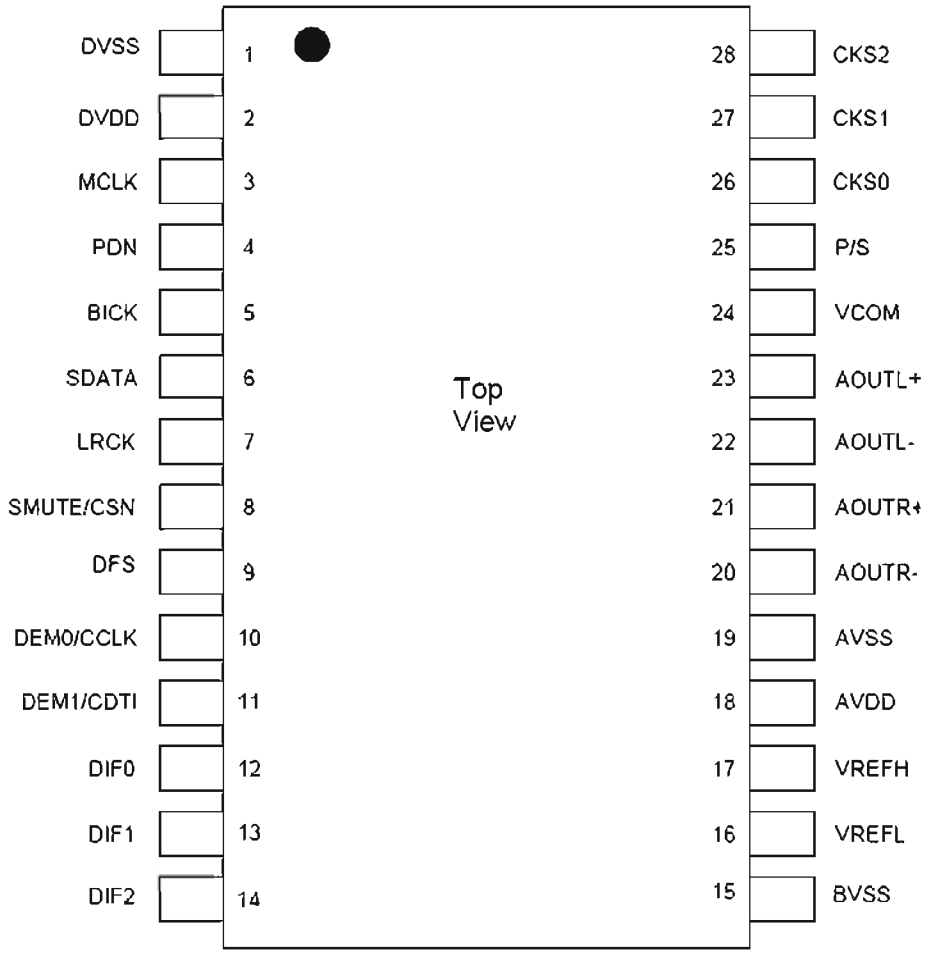


AK4393

■ Ordering Guide

AK4393VF	-40 ~ +85 °C	28pin VSOP (0.65mm pitch)
AKD4393	Evaluation Board	

■ Pin Layout



AK4393

PIN/FUNCTION

No.	Pin Name	I/O	Function
1	DVSS	-	Digital Ground Pin
2	DVDD	-	Digital Power Supply Pin, 3.3V or 5.0V
3	MCLK	I	Master Clock Input Pin
4	PDN	I	Power-Down Mode Pin When at "L", the AK4393 is in power-down mode and is held in reset. The AK4393 should always be reset upon power-up.
5	BICK	I	Audio Serial Data Clock Pin The clock of 64fs or more than is recommended to be input on this pin.
6	SDATA	I	Audio Serial Data Input Pin 2's complement MSB-first data is input on this pin.
7	LRCK	I	L/R Clock Pin
8	SMUTE	I	Soft Mute Pin in parallel mode When this pin goes "H", soft mute cycle is initiated. When returning "L", the output mute releases.
	CSN	I	Chip Select Pin in serial mode
9	DFS	I	Double Speed Sampling Mode Pin (Internal pull-down pin) "L": Normal Speed , "H": Double Speed
10	DEM0	I	De-emphasis Enable Pin in parallel mode
	CCLK	I	Control Data Clock Pin in serial mode
11	DEM1	I	De-emphasis Enable Pin in parallel mode
	CDTI	I	Control Data Input Pin in serial mode
12	DIF0	I	Digital Input Format Pin
13	DIF1	I	Digital Input Format Pin
14	DIF2	I	Digital Input Format Pin
15	BVSS	-	Substrate Ground Pin, 0V
16	VREFL	I	Low Level Voltage Reference Input Pin
17	VREFH	I	High Level Voltage Reference Input Pin
18	AVDD	-	Analog Power Supply Pin, 5.0V
19	AVSS	-	Analog Ground Pin, 0V
20	AOUTR-	O	Rch Negative analog output Pin
21	AOUTR+	O	Rch Positive analog output Pin
22	AOUTL-	O	Lch Negative analog output Pin
23	AOUTL+	O	Lch Positive analog output Pin
24	VCOM	O	Common Voltage Output Pin, 2.6V
25	P/S	I	Parallel/Serial Select Pin (Internal pull-up pin) "L": Serial control mode, "H": Parallel control mode
26	CKS0	I	Master Clock Select Pin
27	CKS1	I	Master Clock Select Pin
28	CKS2	I	Master Clock Select Pin

Note: All input pins except internal pull-up/down pins should not be left floating.

AK5352

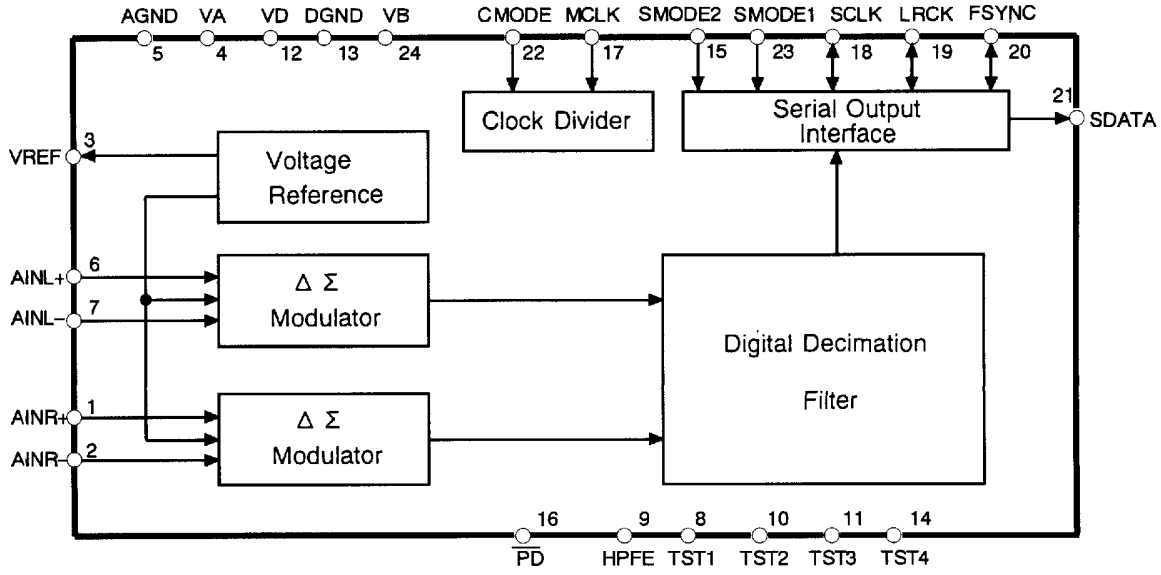
96kHz Sampling ΔΣ 20bit ADC

GENERAL DESCRIPTION

The AK5352 is a 20-bit, 96kHz sampling rate for DAT and DVD, 64x oversampling rate(64fs), 2-channel A/D converter for stereo digital systems. The ΔΣ modulator in the AK5352 uses the new developed Enhanced Dual bit architecture. This new architecture achieves the wider dynamic range, while keeping much the same superior distortion characteristics as the conventional Single bit way.
The AK5352 is available in a small 24pin VSOP package which will reduce your system space.

FEATURES

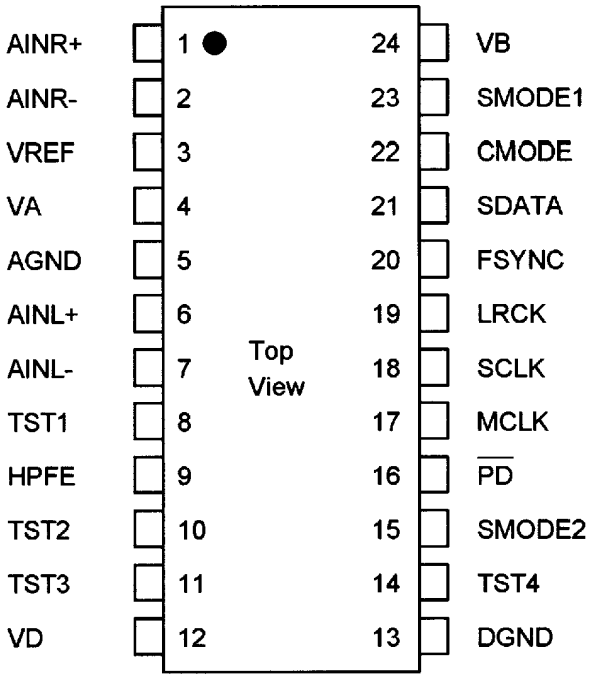
- ☐ Sampling Rate up to 96kHz
- ☐ Full-differential inputs
- ☐ S/(N+D): 97dB
- ☐ DR, S/N: 104dB
- ☐ Linear phase digital filter
  - • Pass band: 0 ~ 22kHz(@fs=48kHz)
  - • Pass band ripple: ±0.005dB
  - • Stop band attenuation: 80dB
- ☐ Digital HPF for DC-offset cancel
- ☐ Master clock: 256fs/384fs
- ☐ Power supply: 5V±5%
- ☐ Small package: 24pinVSOP



■ **Ordering Guide**

AK5352-VF	-10~70°C	24pin VSOP
AKD5351/2	Evaluation Board	

■ **Pin Layout**



■ **Replacement from AK5350 to AK5352**

	AK5350	AK5352
Package	28VSOP	24VSOP
fc of HPF(@fs=48kHz)	7Hz	*)Interchangeable with AK5352 1Hz

[AK5352]

PIN/FUNCTION

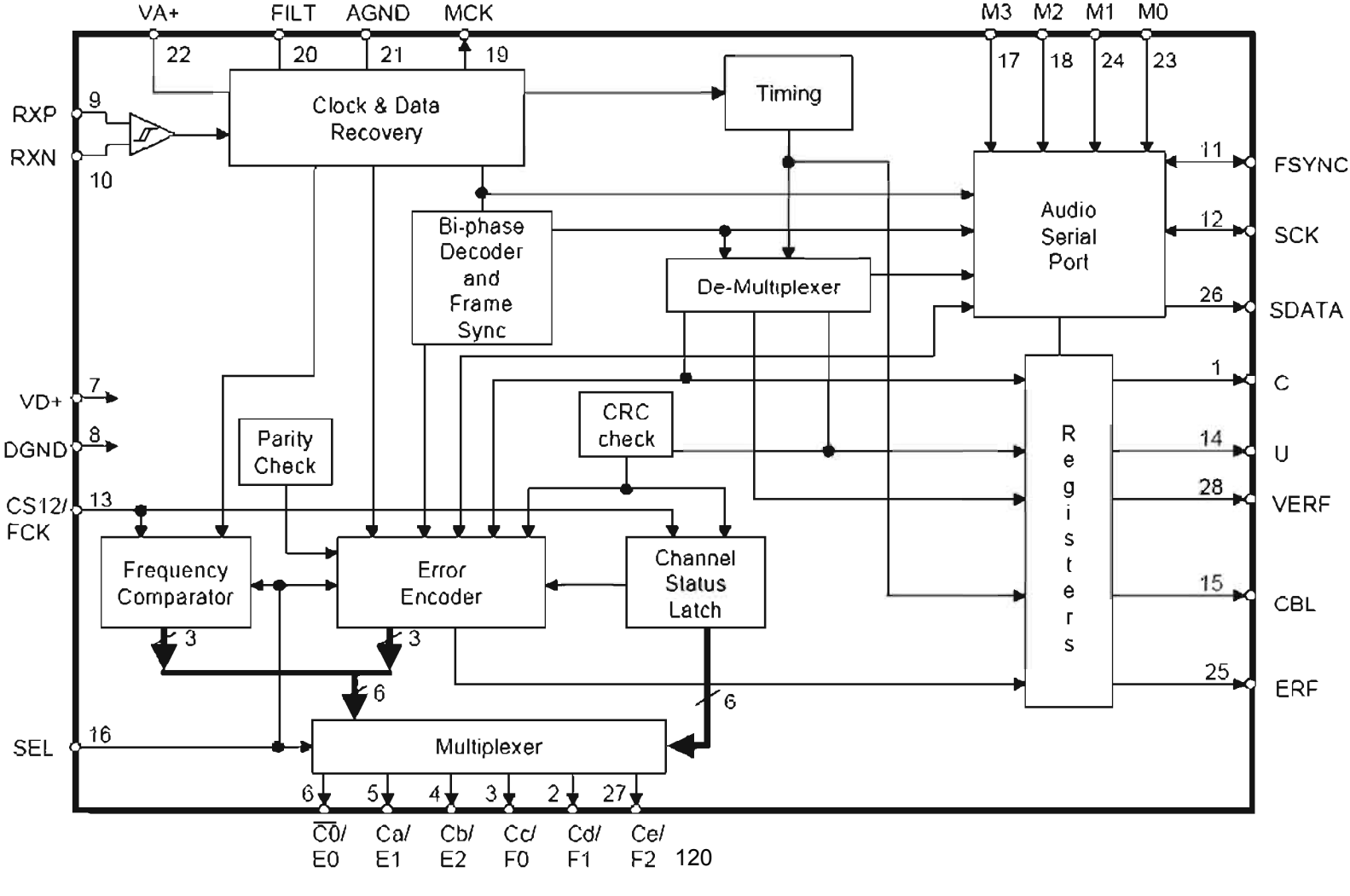
No.	Pin Name	I/O	FUNCTION
1	AINR+	I	Right channel analog positive input pin
2	AINR-	I	Right channel analog negative input pin
3	VREF	O	Voltage Reference output pin (VA-2.6V) Normally connected to VA with a 0.1uF ceramic capacitor in parallel with a 10uF electrolytic capacitor.
4	VA	-	Analog section Analog Power Supply, +5V
5	AGND	-	Analog section Analog Ground
6	AINL+	I	Left channel analog positive input pin
7	AINL-	I	Left channel analog negative input pin
8 10 11 14	TST1 TST2 TST3 TST4		Test pin (Pull-down pin) Should be left floating.
9	HPFE	I	High Pass Filter Enable pin (Pull-up pin) "H": ON "L": OFF
12	VD	-	Digital section Digital Power Supply pin, +5V
13	DGND	-	Digital section Digital Ground pin
16	$\overline{PD}$	I	Power Down pin "L" brings the device into power-down mode. Must be done once after power-on.
17	MCLK	I	Master Clock input pin CMODE="H" : 384fs CMODE="L" : 256fs
18	SCLK	I/O	Serial Data Clock pin Data is clocked out at the falling edge of SCLK. Slave mode: 64fs clock is input usually. Master mode: SCLK outputs a 64fs clock. SCLK stays low during the power-down mode($\overline{PD}$="L").
19	LRCK	I/O	L/R Channel Clock Select pin Slave mode: An fs clock is fed to this LRCK pin. Master mode: LRCK output an fs clock. LRCK goes "H" at SMODE2="L" and "L" at SMODE2="H" during reset when SMODE1 "H".
20	FSYNC	I/O	Frame Synchronization Signal pin Slave mode: When "H", data bits are clocked out on SDATA. As I^2S slave mode ignores FSYNC, it should hold "L" or "H". Master mode: FSYNC outputs 2fs clock. Stay low during the power-down mode($\overline{PD}$="L").

21	SDATA	O	Serial Data Output pin Data are output with MSB first, in 2's complement format. After 20 bits are output it turns to "L". It also remains "L" at a power-down mode($\overline{PD}$="L").
22	CMODE	I	Master Clock Selection pin "L": MCLK=256fs "H": MCLK=384fs
23 15	SMODE1 SMODE2	I I	Serial Interface Mode Select pin Defines the directions of LRCK, SCLK and FSYNC pins and Output Data Format. SMODE2 is pull-down pin. SMODE1 SMODE2 MODE LRCK L L Slave mode: MSB justified : H/L H L Master mode: Similar to I^2S : H/L L H Slave mode: I^2S : L/H H H Master mode: I^2S : L/H
24	VB	-	Substrate Power Supply, +5V

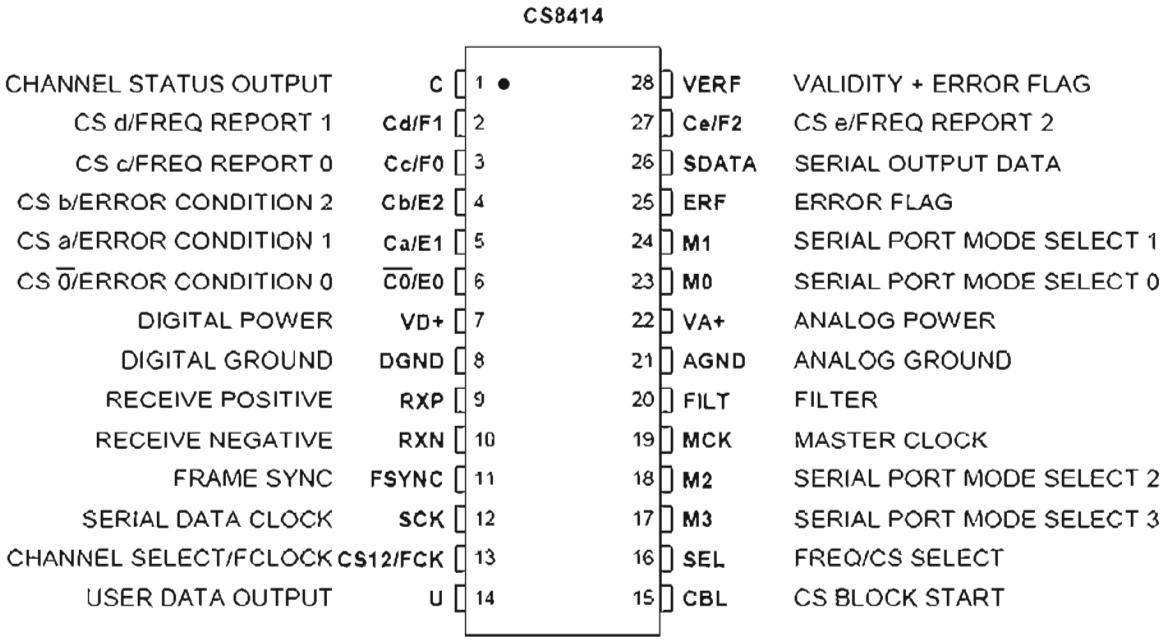
CS8414

96 kHz Digital Audio Receiver

CHANNEL STATUS OUTPUT	C	1	28	VERF	VALIDITY + ERROR FLAG
CS d/FREQ REPORT 1	Cd/F1	2	27	Ce/F2	CS e/FREQ REPORT 2
CS c/FREQ REPORT 0	Cc/F0	3	26	SDATA	SERIAL OUTPUT DATA
CS b/ERROR CONDITION 2	Cb/E2	4	25	ERF	ERROR FLAG
CS a/ERROR CONDITION 1	Ca/E1	5	24	M1	SERIAL PORT MODE SELECT 1
CS $\overline{0}$/ERROR CONDITION 0	$\overline{C0}$/E0	6	23	M0	SERIAL PORT MODE SELECT 0
DIGITAL POWER	VD+	7	22	VA+	ANALOG POWER
DIGITAL GROUND	DGND	8	21	AGND	ANALOG GROUND
RECEIVE POSITIVE	RXP	9	20	FILT	FILTER
RECEIVE NEGATIVE	RXN	10	19	MCK	MASTER CLOCK
FRAME SYNC	FSYNC	11	18	M2	SERIAL PORT MODE SELECT 2
SERIAL DATA CLOCK	SCK	12	17	M3	SERIAL PORT MODE SELECT 3
CHANNEL SELECT/FCLOCK	CS12/FCK	13	16	SEL	FREQ/CS SELECT
USER DATA OUTPUT	U	14	15	CBL	CS BLOCK START



PIN DESCRIPTIONS: CS8414



Power Supply Connections

VD+ - Positive Digital Power, PIN 7.

Positive supply for the digital section. Nominally +5 volts.

VA+ - Positive Analog Power, PIN 22.

Positive supply for the analog section. Nominally +5 volts.

DGND - Digital Ground, PIN 8.

Ground for the digital section. DGND should be connected to same ground as AGND.

AGND - Analog Ground, PIN 21.

Ground for the analog section. AGND should be connected to same ground as DGND.

Audio Output Interface

SCK - Serial Clock, PIN 12.

Serial clock for SDATA pin which can be configured (via the M0, M1, M2, and M3 pins) as an input or output, and can sample data on the rising or falling edge. As an output, SCK will generate 32 clocks for every audio sample. As an input, 32 SCK periods per audio sample must be provided in all normal modes.

FSYNC - Frame Sync, PIN 11.

Delineates the serial data and may indicate the particular channel, left or right, and may be an input or output. The format is based on M0, M1, M2, and M3 pins.

SDATA - Serial Data, PIN 26.

Audio data serial output pin.

M0, M1, M2, M3 - Serial Port Mode Select, PINS 23, 24, 18, 17.

Selects the format of FSYNC and the sample edge of SCK with respect to SDATA. M3 selects between eight normal modes (M3 = 0), and six special modes (M3 = 1).

Control Pins

VERF - Validity + Error Flag, PIN 28.

A logical OR'ing of the validity bit from the received data and the error flag. May be used by interpolation filters to interpolate through errors.

U - User Bit, PIN 14.

Received user bit serial output port. FSYNC may be used to latch this bit externally. (Except in I^2S modes when this pin is updated on the active edge of FSYNC.)

C - Channel Status Output, PIN 1.

Received channel status bit serial output port. FSYNC may be used to latch this bit externally. (Except in I^2S modes when this pin is updated on the active edge of FSYNC.)

CBL - Channel Status Block Start, PIN 15.

The channel status block output is high for the first four bytes of channel status and low for the last 20 bytes.

SEL - Select, PIN 16.

Control pin that selects either channel status information (SEL = 1) or error and frequency information (SEL = 0) to be displayed on six of the following pins.

$\overline{C0}$, Ca, Cb, Cc, Cd, Ce - Channel Status Output Bits. PINS 2-6, 27.

These pins are dual function with the 'C' bits selected when SEL is high. Channel status information is displayed for the channel selected by CS12. $\overline{C0}$, which is channel status bit 0, defines professional ($\overline{C0}$ = 0) or consumer ($\overline{C0}$ = 1) mode and further controls the definition of the Ca-Ce pins. These pins are updated with the rising edge of CBL.

CS12 - Channel Select, PIN 13.

This pin is also dual function and is selected by bringing SEL high. CS12 selects sub-frame 1 (when low) or sub-frame 2 (when high) to be displayed by channel status pins $\overline{C0}$ and Ca through Ce.

FCK - Frequency Clock, PIN 13.

Frequency Clock input that is enabled by bringing SEL low. FCK is compared to the received clock frequency with the value displayed on F2 through F0. Nominal input value is 6.144 MHz.

E0, E1, E2 - Error Condition, PINS 4-6.

Encoded error information that is enabled by bringing SEL low. The error codes are prioritized and latched so that the error code displayed is the highest level of error since the last clearing of the error pins. Clearing is accomplished by bring SEL high for more than 8 MCK cycles.

F0, F1, F2 - Frequency Reporting Bits, PINS 2-3, 27.

Encoded sample frequency information that is enabled by bringing SEL low. A proper clock on FCK must be input for at least two thirds of a channel status block for these pins to be valid. They are updated three times per block, starting at the block boundary. These pins are invalid when the PLL is out of lock.

ERF - Error Flag, PIN 25.

Signals that an error has occurred while receiving the audio sample currently being read from the serial port. Three errors cause ERF to go high: a parity or biphase coding violation during the current sample, or an out of lock PLL receiver.

Receiver Interface

RXP, RXN - Differential Line Receivers, PINS 9, 10.

RS422 compatible line receivers.

Phase Locked Loop

MCK - Master Clock, PIN 19.

Low jitter clock output of 256 times the received sample frequency.

FILT - Filter, PIN 20.

An external 470Ω resistor and 0.068µF capacitor is required from FILT pin to analog ground.

CS4923/4/5/6/7/8/9

Multi-Channel Digital Audio Decoders

- CS4923/4/5/6/7/8 features
  - Optional Virtual 3D Output
  - Simulated Surround and Programmable Effects
  - Real Time Autodetection of Dolby Digital®, DTS®, MPEG Multi-Channel and PCM
  - Flexible 6-channel master or slave output
- CS4923/4/5/6/7/8/9 features
  - IEC60958/61937 transmitter for compressed-data or linear-PCM output
  - Dedicated 8 kilobyte input buffer
  - DAC clock via analog phase-locked loop
  - Dedicated byte wide or serial host interface
  - Multiple compressed data input modes
  - PES layer decode for A/V synchronization
  - 96-kHz-capable PCM I/O, master or slave
  - Optional external memory and auto-boot
  - +3.3-V CMOS low-power, 44-pin package
- CS4923/4/5/6 features
  - Capable of Dolby Digital® Group A Performance
  - Dolby bass manager and crossover filters
  - Dolby Surround Pro Logic® Decoding
- CS4925/7: MPEG-2 Multi-Channel Decoder
- CS4926/8: DTS Multi-Channel Decoder
- CS4929: AAC 2-Channel (Low Complexity) and MPEG-2 Stereo Decoder

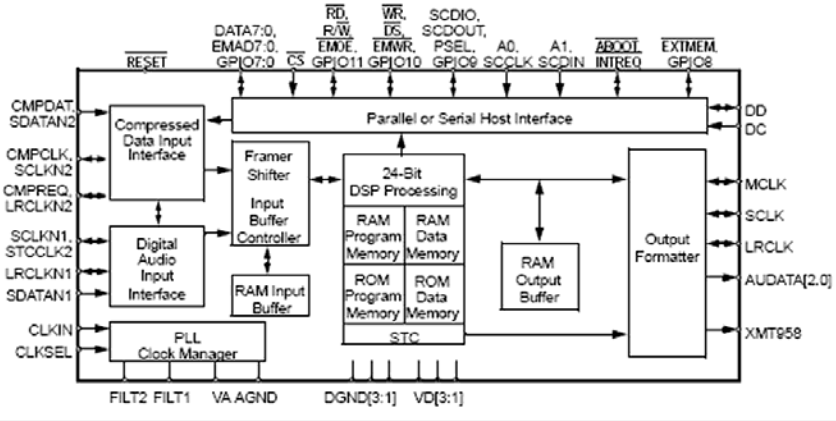
Description

The CS4923/4/5/6/7/8 is a family of multi-channel digital audio decoders, with the exception of the CS4929 as the only stereo digital audio decoder. The CS4923/4/5/6 are designed for Dolby Digital and MPEG-2 Stereo decoding. In addition the CS4925 adds MPEG-2 multi-channel decoding capability and the CS4926 provides DTS decoding. The CS4927 is an MPEG-2 multi-channel decoder and the CS4928 is a DTS multi-channel decoder. The CS4929 is an AAC 2-channel and MPEG-2 stereo decoder. Each one of the CS4923/4/5/6/7/8/9 provides a complete and flexible solution for multi-channel (or stereo in the case of the CS4929) audio decoding in home A/V receiver/amplifiers, DVD movie players, out-board decoders, laser-disc players, HDTV sets, head-end decoders, set-top boxes, and similar products.

Cirrus Logic's Crystal Audio Division provides a complete set of audio decoder and auxiliary audio DSP application programs for various applications. For all complementary analog and digital audio I/O, Crystal Audio also provides a complete set of high-quality audio peripherals including: multimedia CODECs, stereo A/D and D/A converters and IEC60958 interfaces. Of special note, the CS4226 is a complementary CODEC providing a digital receiver, stereo A/D converters, and six 20-bit DACs in one package.

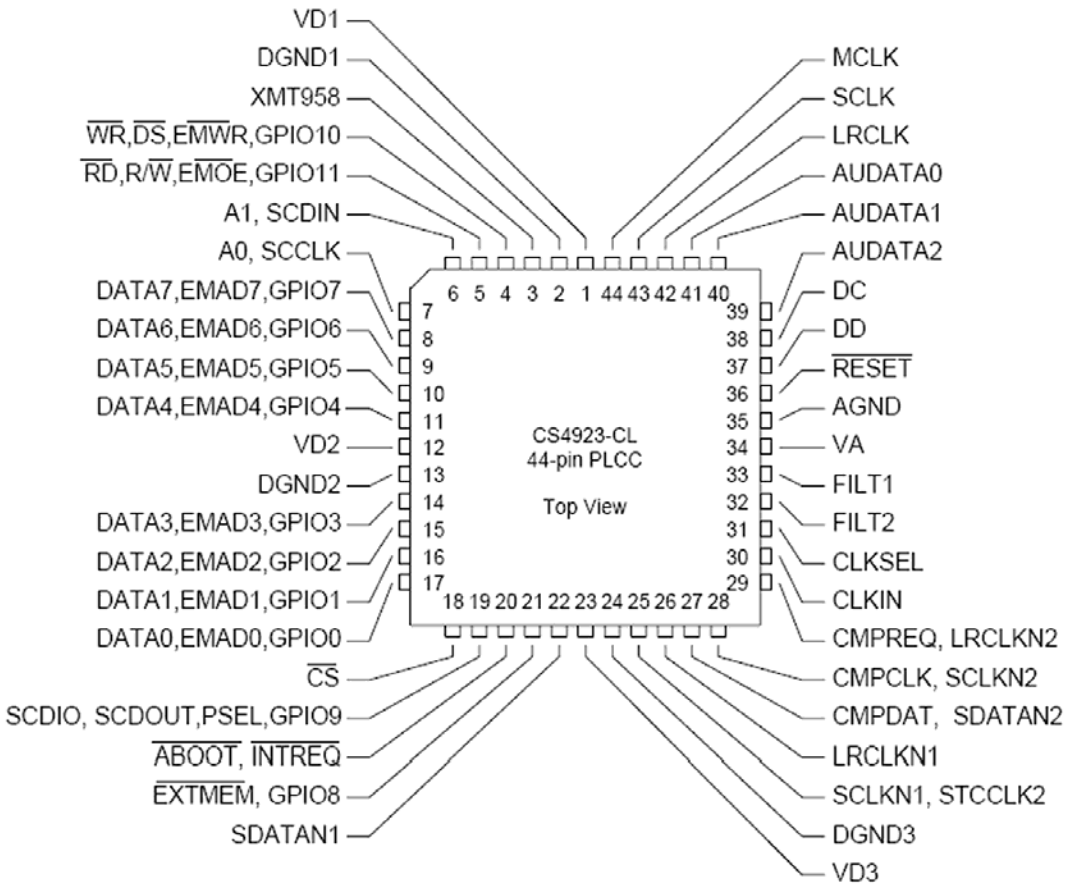
ORDERING INFORMATION

CS4923xx-CL	44-pin PLCC (xx = ROM revision)
CRD4923	Reference design with CS4226
CDB4923	Evaluation board



Preliminary Product Information | This document contains information for a new product. Cirrus Logic reserves the right to modify this product without notice.

8. PIN DESCRIPTIONS



VA—Analog Positive Supply: Pin 34

Analog positive supply for clock generator. Nominally +3.3 V.

AGND—Analog Supply Ground: Pin 35

Analog ground for clock generator PLL.

VD1, VD2, VD3—Digital Positive Supply: Pins 1, 12, 23

Digital positive supplies. Nominally +3.3 V.

DGND1, DGND2, DGND3—Digital Supply Ground: Pins 2, 13, 24

Digital ground.

FILT1—Phase-Locked Loop Filter: Pin 33

Connects to an external filter for the on-chip phase-locked loop. This pin does not meet Cirrus Logic's ESD tolerance of 2000 V using the human body model. This pin will tolerate ESD of 1000 V using the human body model.

FILT2—Phase Locked Loop Filter: Pin 32

Connects to an external filter for the on-chip phase-locked loop. This pin does not meet Cirrus Logic's ESD tolerance of 2000 V using the human body model. This pin will tolerate ESD of 1000 V using the human body model.

CLKIN—Master Clock Input: Pin 30

CS4923/4/5/6/7/8/9 clock input. When in internal clock mode (CLKSEL == DGND), this input is connected to the internal PLL from which all internal clocks are derived. When in external clock mode (CLKSEL == VD), this input is connected to the DSP clock. *INPUT*

CLKSEL—DSP Clock Select: Pin 31

This pin selects the clock mode of the CS4923/4/5/6/7/8/9. When CLKSEL is low, CLKIN is connected to the internal PLL from which all internal clocks are derived. When CLKSEL is high CLKIN is connected to the DSP clock. *INPUT*

DATA7, EMAD7, GPIO7—Pin 8
DATA6, EMAD6, GPIO6—Pin 9
DATA5, EMAD5, GPIO5—Pin 10
DATA4, EMAD4, GPIO4—Pin 11
DATA3, EMAD3, GPIO3—Pin 14
DATA2, EMAD2, GPIO2—Pin 15
DATA1, EMAD1, GPIO1—Pin 16
DATA0, EMAD0, GPIO0—Pin 17

In parallel host mode, these pins provide a bidirectional data bus. If a serial host mode is selected, these pins can provide a multiplexed address and data bus for connecting an 8-bit external memory. Otherwise, in serial host mode, these pins can act as general-purpose input or output pins that can be individually configured and controlled by the DSP.
BIDIRECTIONAL - Default: INPUT

A0, SCCLK—Host Parallel Address Bit Zero or Serial Control Port Clock: Pin 7

In parallel host mode, this pin serves as one of two address input pins used to select one of four parallel registers. In serial host mode, this pin serves as the serial control clock signal, specifically as the SPI clock input or the I^2C clock input. *INPUT*

A1, SCDIN—Host Parallel Address Bit One or SPI Serial Control Data Input: Pin 6

In parallel host mode, this pin serves as one of two address input pins used to select one of four parallel registers. In SPI serial host mode, this pin serves as the data input. *INPUT*

$\overline{RD}$, R/$\overline{W}$, $\overline{EMOE}$, GPIO11—Host Parallel Output Enable or Host Parallel R/$\overline{W}$ or External Memory Output Enable or General Purpose Input & Output Number 11: Pin 5

In Intel parallel host mode, this pin serves as the active-low data bus enable input. In Motorola parallel host mode, this pin serves as the read-high/write-low control input signal. In serial host mode, this pin can serve as the external memory active-low data-enable output signal. Also in serial host mode, this pin can serve as a general purpose input or output bit.
BIDIRECTIONAL - Default: INPUT

$\overline{WR}$, $\overline{DS}$, $\overline{EMWR}$, GPIO10—Host Write Strobe or Host Data Strobe or External Memory Write Enable or General Purpose Input & Output Number 10: Pin 4

In Intel parallel host mode, this pin serves as the active-low data-write-input strobe. In Motorola parallel host mode, this pin serves as the active-low data-strobe-input signal. In serial host mode, this pin can serve as the external-memory active-low write-enable output signal. Also in serial host mode, this pin can serve as a general purpose input or output bit. *BIDIRECTIONAL - Default: INPUT*

$\overline{CS}$—Host Parallel Chip Select, Host Serial SPI Chip Select: Pin 18

In parallel host mode, this pin serves as the active-low chip-select input signal. In serial host SPI mode, this pin is used as the active-low chip-select input signal. *INPUT*

$\overline{RESET}$—Master Reset Input: Pin 36

Asynchronous active-low master reset input. Reset should be low at power-up to initialize the CS4923/4/5/6/7/8/9 and to guarantee that the device is not active during initial power-on stabilization periods. At the rising edge of reset the host interface mode is selected contingent on the state of the $\overline{RD}$, $\overline{WR}$ and PSEL pins. Additionally, an autoboot sequence can be initiated if a serial control mode is selected and $\overline{ABOOT}$ is held low. If reset is low all bidirectional pins are high impedance inputs. *INPUT*

SCDIO, SCDOUT, PSEL, GPIO9—Serial Control Port Data Input and Output, Parallel Port Type Select: Pin 19

In I^2C mode, this pin serves as the open-drain bidirectional data pin. In SPI mode this pin serves as the data output pin. In parallel host mode, this pin is sampled at the rising edge of $\overline{RESET}$ to configure the parallel host mode as an Intel type bus or as a Motorola type bus. In parallel host mode, after the bus mode has been selected, the pin can function as a general-purpose input or output pin. *BIDIRECTIONAL - Default: INPUT*
In I^2C mode this pin is an OPEN DRAIN I/O and requires a 4.7k Pull-Up

$\overline{EXTMEM}$, GPIO8—External Memory Chip Select or General Purpose Input & Output Number 8: Pin 21

In serial control port mode, this pin can serve as an output to provide the chip-select for an external byte-wide ROM. In parallel and serial host mode, this pin can also function as a general-purpose input or output pin. *BIDIRECTIONAL - Default: INPUT*

$\overline{INTREQ}$, $\overline{ABOOT}$—Control Port Interrupt Request, Automatic Boot Enable: Pin 20

Open-drain interrupt-request output. This pin is driven low to indicate that the DSP has outgoing control data and should be serviced by the host. Also in serial host mode, this signal initiates an automatic boot cycle from external memory if it is held low through the rising edge of reset. *OPEN DRAIN I/O - Requires 4.7k Ohm Pull-Up*

AUDATA2—Digital Audio Output 2: Pin 39

PCM multi-format digital-audio data output, capable of two-channel 20-bit output. This PCM output defaults to DGND as output until enabled by the DSP software. *OUTPUT*

LRCLKN1—PCM Audio Input Sample Rate Clock: Pin 26

Bidirectional digital-audio frame clock that is an output in master mode and an input in slave mode. LRCLKN1 typically is run at the sampling frequency. In slave mode, LRCLKN1 operates asynchronously from all other CS492X clocks. In master mode, LRCLKN1 is derived from the CS492X internal clock generator. In either master or slave mode, the polarity of LRCLKN1 for a particular subframe can be programmed by the DSP.
BIDIRECTIONAL - Default: INPUT

SDATAN1—PCM Audio Data Input Number One: Pin 22

Digital-audio data input that can accept from one to six channels of compressed or PCM data. SDATAN1 can be sampled with either edge of SCLKN1, depending on how SCLKN1 has been configured. *INPUT*

CMPCLK, SCLKN2—PCM Audio Input Bit Clock: Pin 28

Bidirectional digital-audio bit clock that is an output in master mode and an input in slave mode. In slave mode, SCLKN2 operates asynchronously from all other CS492X clocks. In master mode, SCLKN2 is derived from the CS492X internal clock generator. In either master or slave mode, the active edge of SCLKN2 can be programmed by the DSP. If the CDI is configured for bursty delivery, CMPCLK is an input used to sample CMPDAT.
BIDIRECTIONAL - Default: INPUT

CMPREQ, LRCLKN2—PCM Audio Input Sample Rate Clock: Pin 29

When the CDI is configured as a digital audio input, this pin serves as a bidirectional digital-audio frame clock that is an output in master mode and an input in slave mode. LRCLKN2 typically is run at the sampling frequency. In slave mode, LRCLKN2 operates asynchronously from all other CS492X clocks. In master mode, LRCLKN2 is derived from the CS492X internal clock generator. In either master or slave mode, the polarity of LRCLKN2 for a particular subframe can be programmed by the DSP. When the CDI is configured for bursty delivery, or parallel audio data delivery is being used, CMPREQ is an output which serves as an internal FIFO monitor. CMPREQ is an active low signal that indicates when another block of data can be accepted. *BIDIRECTIONAL - Default: INPUT*

CMPDAT, SDATAN2—PCM Audio Data Input Number Two: Pin 27

Digital-audio data input that can accept from one to six channels of compressed or PCM data. SDATAN2 can be sampled with either edge of SCLKN2, depending on how SCLKN2 has been configured. Similarly CMPDAT is the compressed data input pin when the CDI is configured for bursty delivery. When in this mode, the CS4923/4/5/6/7/8/9 internal PLL is driven by the clock recovered from the incoming data stream. *INPUT*

DC—Reserved: Pin 38

This pin is reserved and should be pulled up with an external 4.7k resistor.

DD—Reserved: Pin 37

This pin is reserved and should be pulled up with an external 4.7k resistor.

AUDATA1—Digital Audio Output 1: Pin 40

PCM multi-format digital-audio data output, capable of two-channel 20-bit output. This PCM output defaults to DGND as output until enabled by the DSP software. *OUTPUT*

AUDATA0—Digital Audio Output 0: Pin 41

PCM multi-format digital-audio data output, capable of two-, four-, or six-channel 20-bit output. This PCM output defaults to DGND as output until enabled by the DSP software. *OUTPUT*

MCLK—Audio Master Clock: Pin 44

Bidirectional master audio clock. MCLK can be an output from the CS4923/4/5/6/7/8/9 that provides an oversampled audio-output clock at either 128 Fs, 256 Fs, or 512 Fs. MCLK can be an input at 128 Fs, 256 Fs, 384 Fs, or 512 Fs. MCLK is used to derive SCLK and LRCLK when SCLK and LRCLK are driven by the CS492X. *BIDIRECTIONAL - Default: INPUT*

SCLK—Audio Output Bit Clock: Pin 43

Bidirectional digital-audio output bit clock. SCLK can be an output that is derived from MCLK to provide 32 Fs, 64 Fs, 128 Fs, 256 Fs, or 512 Fs, depending on the MCLK rate and the digital-output configuration. SCLK can also be an input and must be at least 48Fs or greater. As an input, SCLK is independent of MCLK. *BIDIRECTIONAL - Default: INPUT*

LRCLK—Audio Output Sample Rate Clock: Pin 42

Bidirectional digital-audio output-sample-rate clock. LRCLK can be an output that is divided from MCLK to provide the output sample rate depending on the output configuration. LRCLK can also be an input. As an input LRCLK is independent of MCLK.
BIDIRECTIONAL - Default: INPUT

XMT958—SPDIF Transmitter Output: Pin 3

CMOS level output that contains a biphase-encoded clock for synchronously providing two channels of PCM digital audio or a IEC61937 compressed-data interface or both. This output typically connects to the input of an RS-422 transmitter or to the input of an optical transmitter. *OUTPUT*

SCLKN1, STCCLK2—PCM Audio Input Bit Clock: Pin 25

Bidirectional digital-audio bit clock that is an output in master mode and an input in slave mode. In slave mode, SCLKN1 operates asynchronously from all other CS492X clocks. In master mode, SCLKN1 is derived from the CS492X internal clock generator. In either master or slave mode, the active edge of SCLKN1 can be programmed by the DSP. For applications supporting PES layer synchronization this pin can be used as STCCLK2, which provides a path to the internal STC 33 bit counter. *BIDIRECTIONAL - Default: INPUT*

Video signal switcher

Multimedia ICs

BA7603 / BA7603F

The BA7603 and BA7603F are switching ICs developed for use in VCRs. Each contains three two-channel analog multi-plexers. The switches have sync-tip clamped inputs and are ideal for switching video signals.

●Applications

Video cassette recorders and televisions

●Features

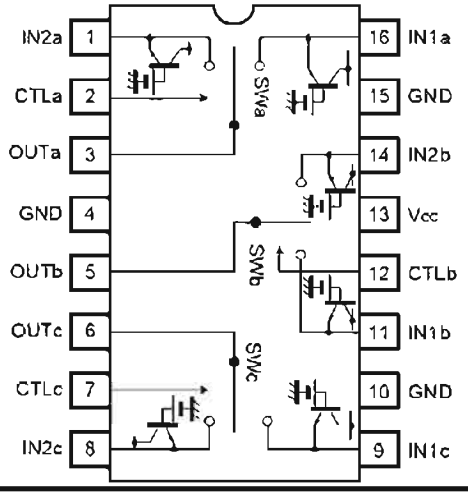
1) Three 2-input / 1-output switches.
2) Sync-tip clamped inputs.
3) 5V power supply.
4) Low power consumption (62.5mW Typ.).
5) Excellent frequency characteristics (10MHz, 0dB Typ.).
6) Wide dynamic range (2.9V_{P-P} Typ.).
7) Fast switching speed (50ns Typ.).

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	9	V
Power dissipation	Pd	500*	mW
Operating temperature	Topr	– 40 ~ + 85	°C
Storage temperature	Tstg	– 55 ~ + 125	°C

* Reduced by 5.0mW for each increase in Ta of 1°C over 25°C.

●Block diagram



CTL	Output
L	IN 2
H	IN 1

SW_a, SW_b, SW_c: pedestal-clamped input

●Reference data

Pin DC voltages (reference values)

Units: Vdc

Pin No.	DC voltage	Pin No.	DC voltage
1	2.05	9	2.05
2	4.91	10	0
3	0.65	11	2.05
4	0	12	4.91
5	0.65	13	5.00
6	0.85	14	2.05
7	4.91	15	0
8	2.05	16	2.05

Electrical characteristics

Parameter	Min.	Typ.	Max.	Unit
Sync tip clamp level	0.49	0.65	0.80	Vdc
Input impedance (with clamp)	—	1.7M	—	Ω
Output impedance	—	30	—	Ω

The input coupling capacitor values should be 0.1μF to 1μF

3-channel 75Ω driver
BA7660FS

The BA7660FS is a 75Ω driver with a 6dB amplifier and three internal circuits, and provides 75Ω drive of composite Y signals and C signals, as well as RGB signals. Each load is capable of driving two circuits, and a sag correction function reduces the capacitance of the output coupling capacitor.
The input voltage is within a range of 0V to 1.5V, enabling direct connection of ordinary D / A converter output. An internal power-saving circuit is also included which provides simultaneous muting on all three channels, and output pin shorting protection.

●Applications
DVDs, set top boxes and other digital video devices

●Features
1) Can be coupled directly to D / A converter output.
2) Operates at a low power consumption (115mW typ.).
3) Internal output muting circuit.
4) Internal power-saving circuit.
5) Internal output protection circuit.
6) An internal sag correction function makes it possible to reduce the capacitance of the output coupling capacitor.
7) Each load is capable of driving two circuits.
8) The compact 16-pin SSOP-A package is used.

●Absolute maximum ratings (Ta = 25°C)

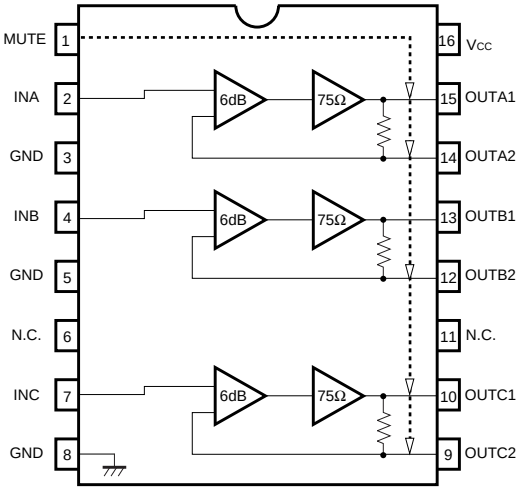
Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	8	V
Power dissipation	Pd	650	mW
Operating temperature	Topr	– 25 ~ + 75	°C
Storage temperature	Tstg	– 55 ~ + 125	°C

●Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating power supply voltage	Vcc	4.5	5.0	5.5	V

Multimedia ICs BA7660FS

●Block diagram

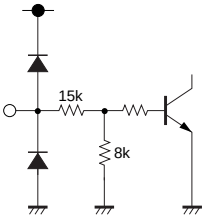
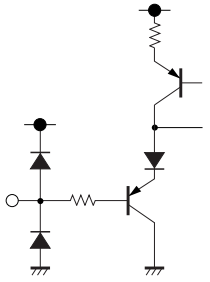
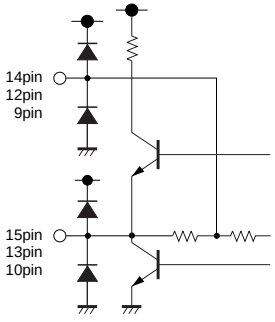
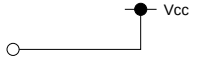


MUTE (1pin)

H	3ch MUTE
L	NORMAL

Multimedia ICs BA7660FS

●Pin descriptions and input / output circuits

Pin. No	Pin name	IN	OUT	Reference voltage	Equivalent circuit	Function
1	MUTE	○	—	—		Muting control If MUTE (pin 1) is set to HIGH, muting is carried out simultaneously on all three channels.
2 4 7	INA INB INC	○	—	—		Signal input Input signals consist of composite video signals, Y signals, C signals, RGB, and others. The input level is within a range of 0 to 1.3 (min.) to 1.5 (typ.).
3 5 8	GND	—	—	0V		Ground
14 12 9 15 13 10	OUTA2 OUTB2 OUTC2 OUTA1 OUTB1 OUTC1	—	○	0.9V 0.95V		Signal output The signal output level is (0.9 + 2 × input voltage [V]). Pins 9, 12, and 14 are the pins for sag correction. If pins 10, 13, and 15 are set to 0.2V or less, the protective circuit is triggered and the power-saving mode is accessed.
16	V_{CC}	—	—	5.0V		Power supply

QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6324 series is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier, 3-stage divider and 3-state output buffer.

The oscillation frequency is as wide as up to 50MHz and the symmetry of 45-55% is realized over full oscillation frequency range.

The oscillation amplifier incorporates feed-back resistance and oscillation capacitors(Cg, Cd), therefore, it requires no external component except quartz crystal.

The 3-stage divider generates f_o, $f_o/2$, $f_o/4$ and $f_o/8$ and only one frequency selected by internal circuits is output

The 3-state output buffer is C-MOS compatible and capable of 10 LSTTL driving.

■ FEATURES

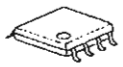
- Operating Voltage -- 3.0~6.0V
- Maximum Oscillation Frequency -- 50MHz
- Low Operating Current
- High Fan-out -- LSTTL 10
- 3-state Output Buffer
- Selected Frequency Output (mask option)
  Only one frequency out of f_o, $f_o/2$, $f_o/4$ and $f_o/8$ output
- Oscillation Capacitors Cg and Cd on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline -- CHIP/EMP 8
- C-MOS Technology

■ LINE-UP TABLE

Type No.	Output Frequency	Cg	Cd
NJU6324L	f_o	23pF	23pF
NJU6324M	$f_o/2$	23pF	23pF
NJU6324N	$f_o/4$	23pF	23pF
NJU6324U	$f_o/8$	23pF	23pF

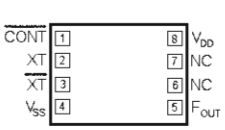
■ PACKAGE OUTLINE

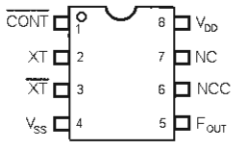
NJU6324XC



NJU6324XE

■ PIN CONFIGURATION/PAD LOCATION





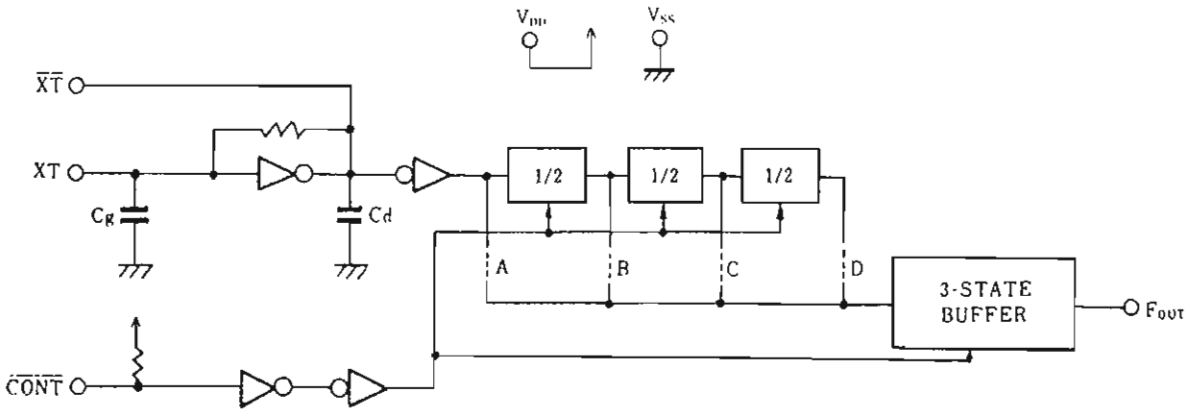
■ COORDINATES

Unit: μm

No.	PAD	X	Y
1	$\overline{CONT}$	170	649
2	XT	170	483
3	$\overline{XT}$	170	316
4	V_{SS}	170	143
5	F_{OUT}	1094	143
6	NC	-	-
7	NC	1094	462
8	V_{DD}	1094	649

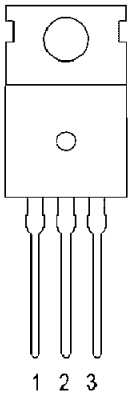
Chip Size : 1.24 X 0.8mm
Chip Thickness : 400μm±30μm
(Note) No. 6 and 7 terminals are only for package type information. There is No.7 PAD on the chip but no No.6.

■ BLOCK DIAGRAM



3-Terminal 1.5A Negative Adjustment Regulator IC

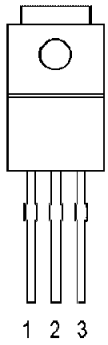
KA337



1) Adjustment
2) Input
3) Output

Low Saturation Voltage Type 3-Pin Regulator IC

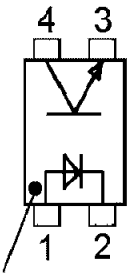
BA033T



1 Vcc
2 Ground
3 Out

Photocoupler IC

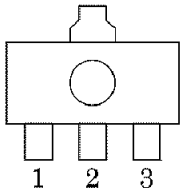
PC-17T1



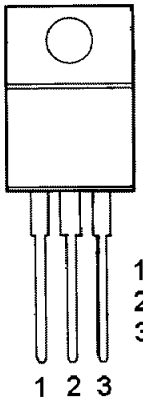
Anode Mark

POSITIVE REGULATORS VARIOUS STYLES 7805, 7806, 7812, 7815, 7824

SOT-89

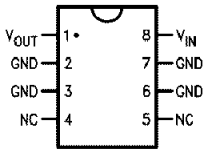


1.OUT
2.GND
3.IN



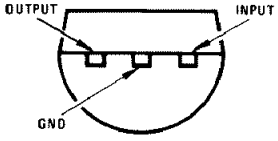
1. IN
2. GROUND
3. OUT

SO-8 Plastic (M) (Narrow Body)



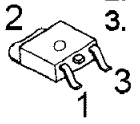
Top View

(TO-92) Plastic Package (Z)



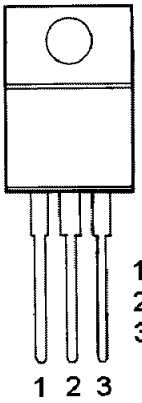
Bottom View

TO-252



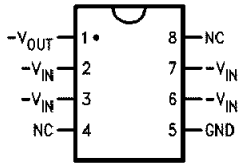
1. IN
2. GRD
3. OUT

NEGATIVE REGULATORS VARIOUS STYLES 7905, 7915



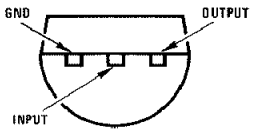
1. GROUND
2. IN
3. OUT

SO-8 Plastic (Narrow Body)



Top View

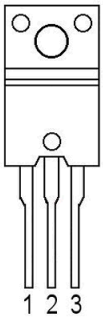
TO-92 Plastic Package (Z)



Bottom View

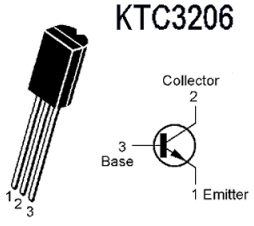
Silicon Transistor

2SA1859 PNP
2SC4883 NPN

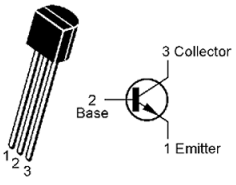


1 Base
2 Collector
3 Emitter

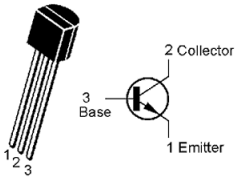
KTC1027
KTC3206



MPSA06



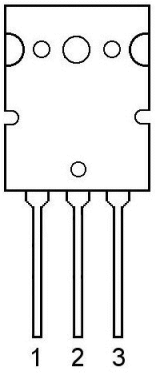
KTD1302



2SC4137

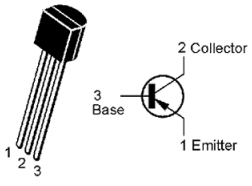
1. Emitter
2. Collector
3. Base

2SA1943
2SC5200

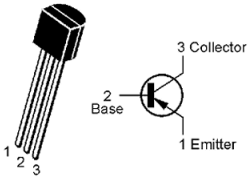


1 Base
2 Collector (Heat Sink)
3 Emitter

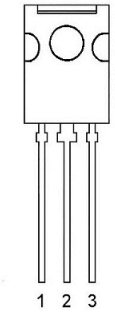
KRC107
KTA1268
KTA1266
KTA1023
KTA1024



MPSA56



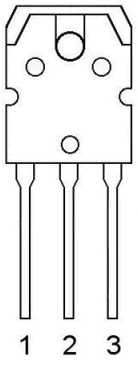
2SA1360
2SC3423



1. EMITTER
2. COLLECTOR
3. BASE

Silicon Transistor

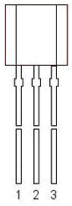
2SA1986, 2SA1941,2SB1560 PNP
2SC5198, 2SC5358,2SD2390 NPN



1 Base
2 Collector (Heat Sink)
3 Emitter

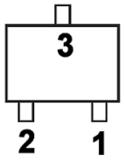
EPITAXIAL PLANAR TRANSISTOR

KTC3200
KTC2874
KTC3198
KRA107M PNP
2SA1145 PNP



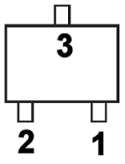
1 Emitter
2 Collector
3 Base

KRA107S PNP
KTD1304 NPN
KRC110S NPN
KRC111S NPN
DTC114TKA NPN
DTC114YKA NPN



1) Emitter
2) Base
3) Collector

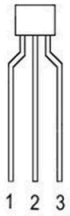
DTA114YKA



1) Ground
2) In
3) Out

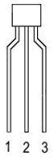
Silicon Transistor

2SA1740S
2SC1740S
DTA114TSA
2SA933AS



1 Emitter
2 Collector
3 Base

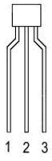
DTA114YSA
DTC114YSA NPN



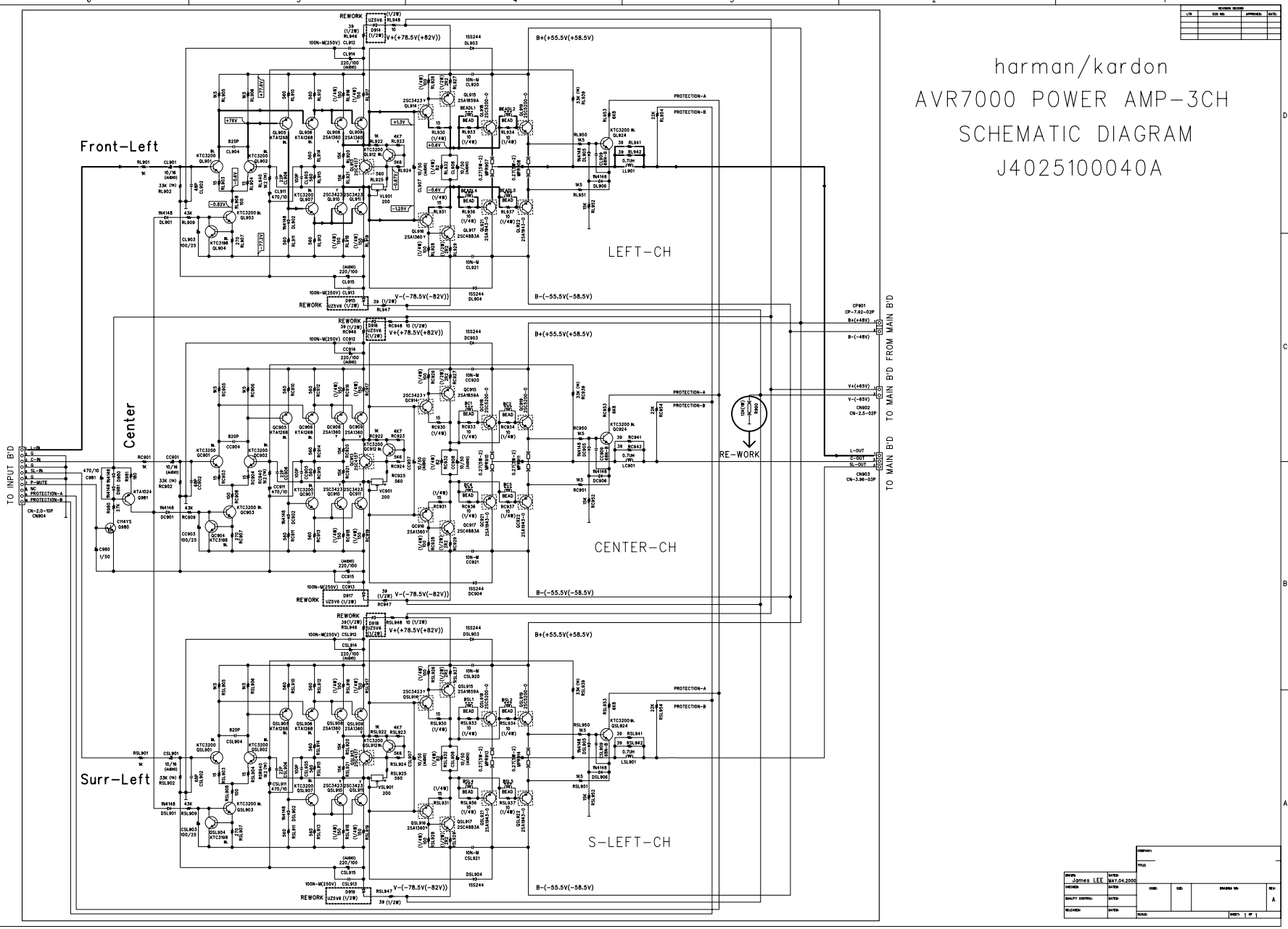
1) Ground
2) In
3) Out

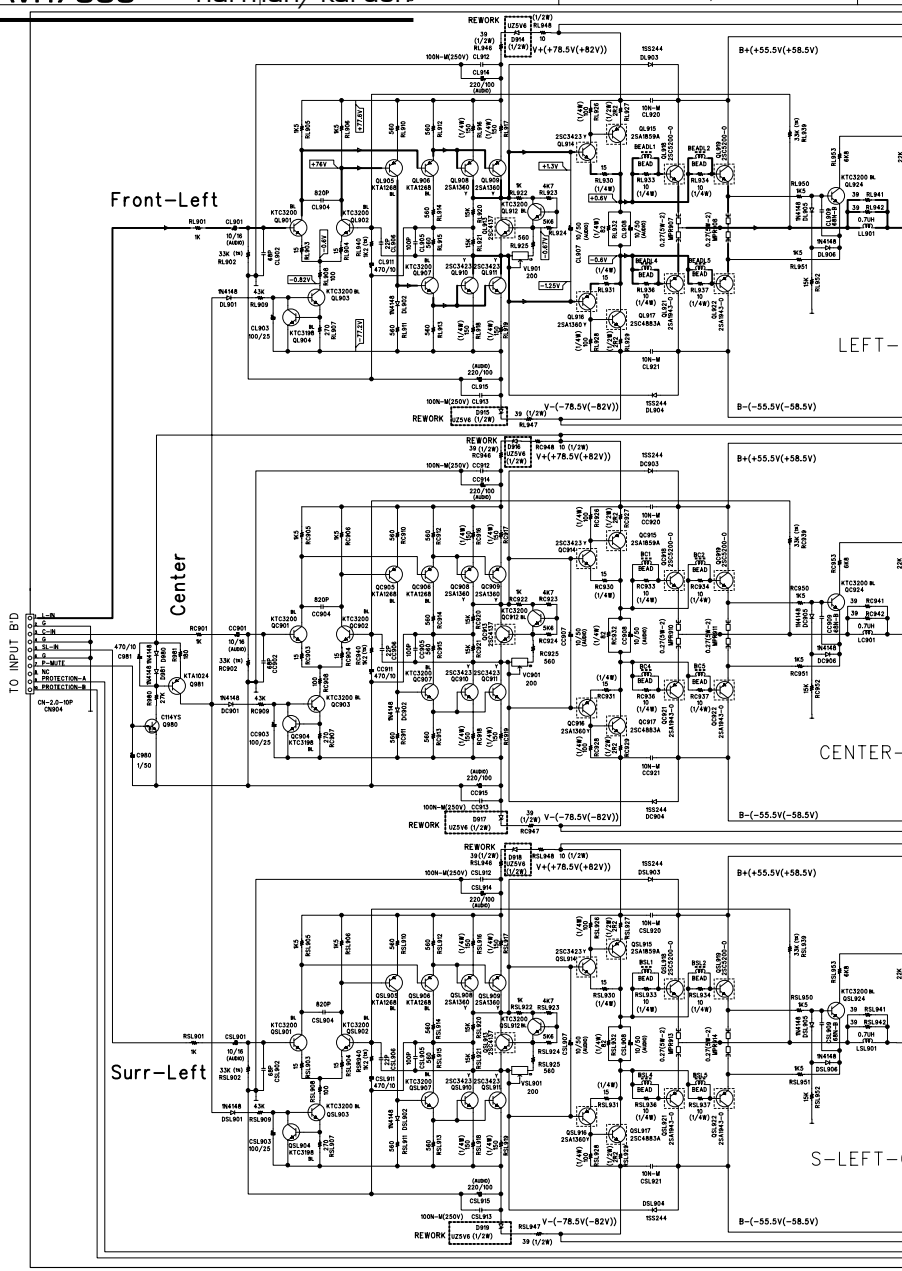
Silicon NPN Transistor

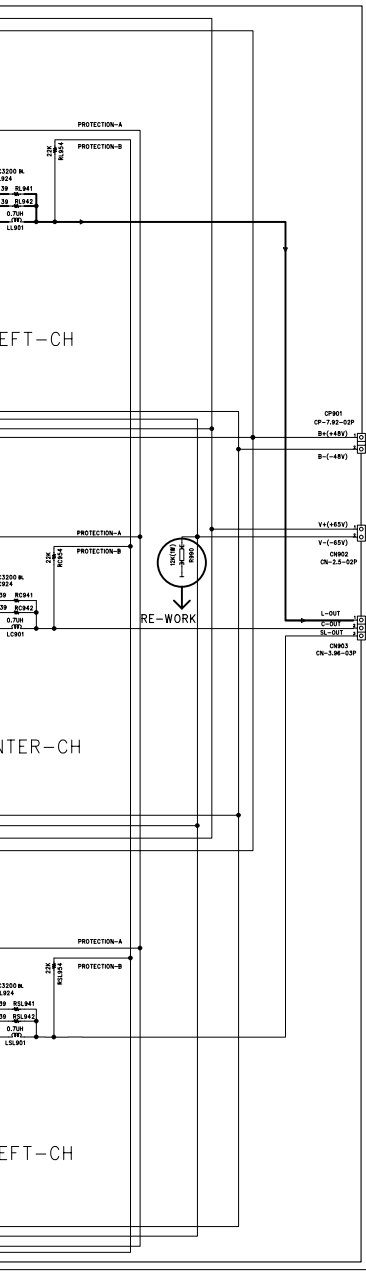
DTC114TSA



1 Emitter
2 Collector
3 Base


harman/kardon
AVR7000 POWER AMP-3CH
SCHEMATIC DIAGRAM
J4025100040A
Front-Left
Center
Surr-Left
LEFT-CH
CENTER-CH
S-LEFT-CH
RE-WORK
TO INPUT B/D
TO MAIN B/D
TO MAIN B/D FROM MAIN B/D
PROTECTION-A
PROTECTION-B
B+(+55.5V(+58.5V)
B-(-55.5V(-58.5V)
V+(+78.5V(+82V))
V-(-78.5V(-82V))
REWORK
DRAWN: James LEE
DATE: MAY.04.2000


Front-Left
Center
Surr-Left
TO INPUT B'D
L-IN
L G
L-IN
R G
SL-IN
R G
P-MUTE
NC
PROTECTION-A
PROTECTION-B
CN-2.0-10P
CN004
REWORK
B+(+55.5V(+58.5V)
B-(-55.5V(-58.5V)
V+(+78.5V(+82V))
V-(-78.5V(-82V))
100N-M(250V)
220/100
(AUDIO)
1SS244
10N-M
0.27OHM-2
MPRF03
2SC3423
2SA1586
2SC3200-O
2SA1360-O
KTC3200 BL
KTA1268 BL
KTA1024
KTC3198 BL
1N4148
C114YS
LEFT-
CENTER-
S-LEFT-

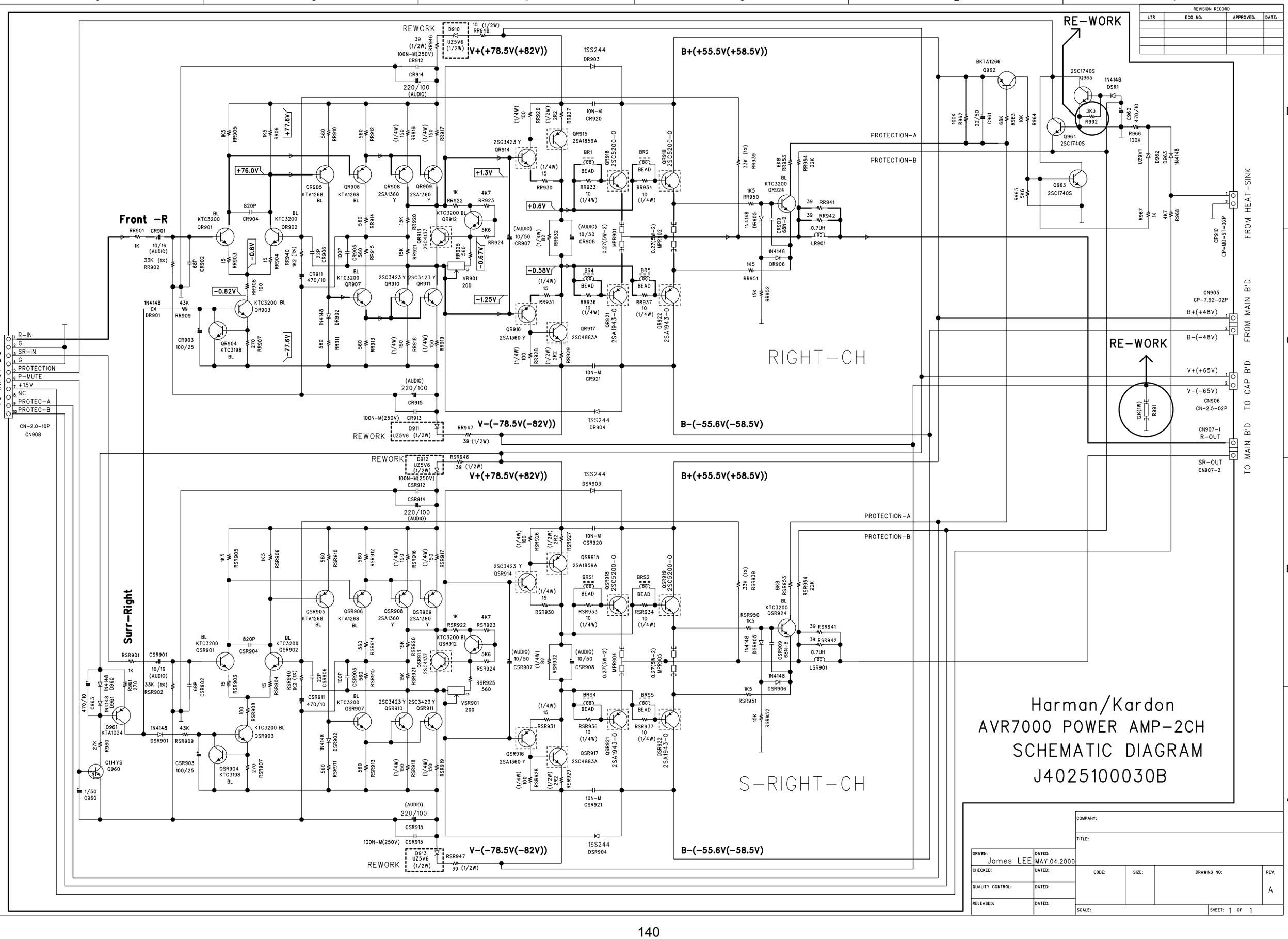


harman/kardon

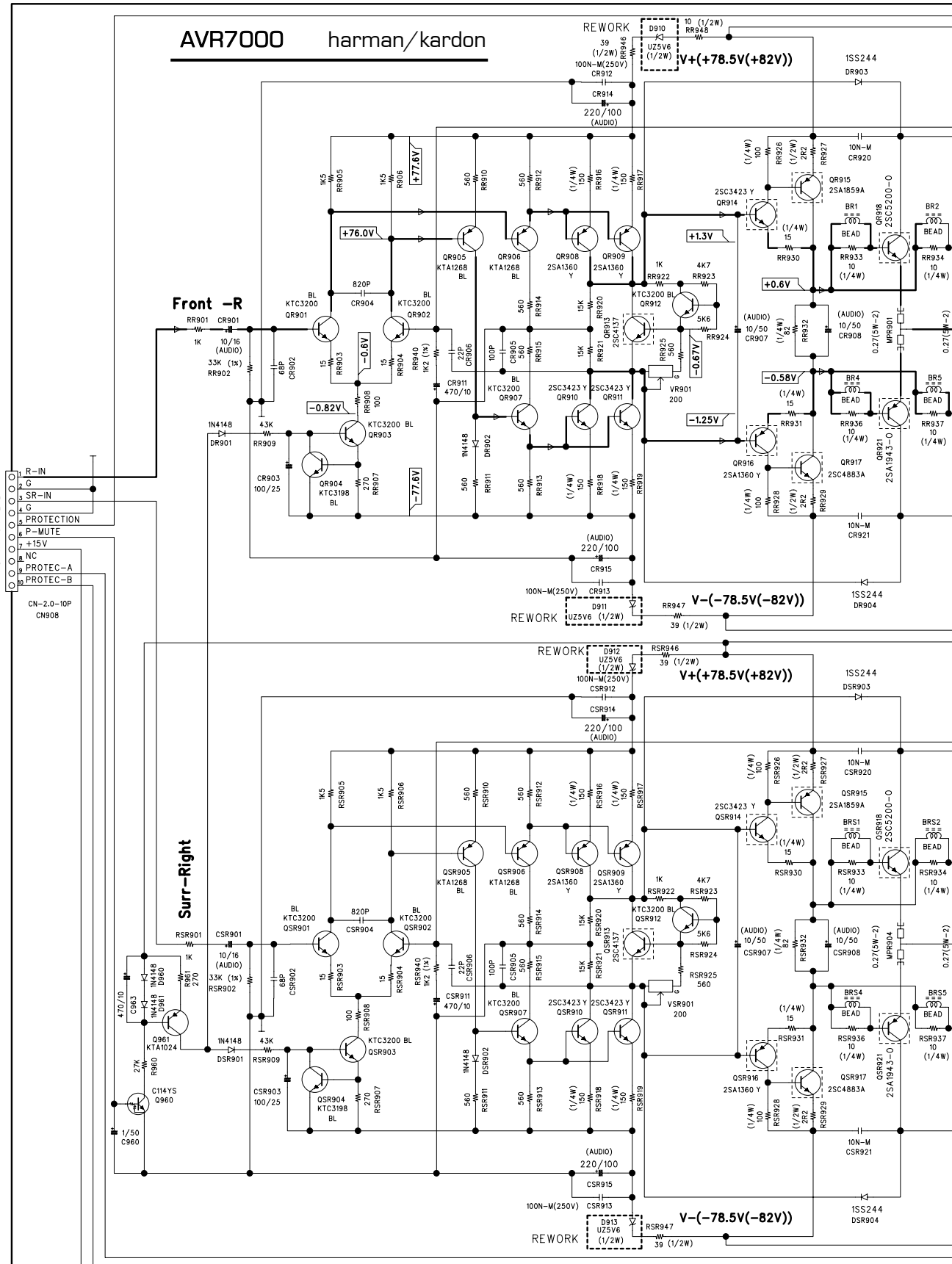
AVR7000 POWER AMP-3CH

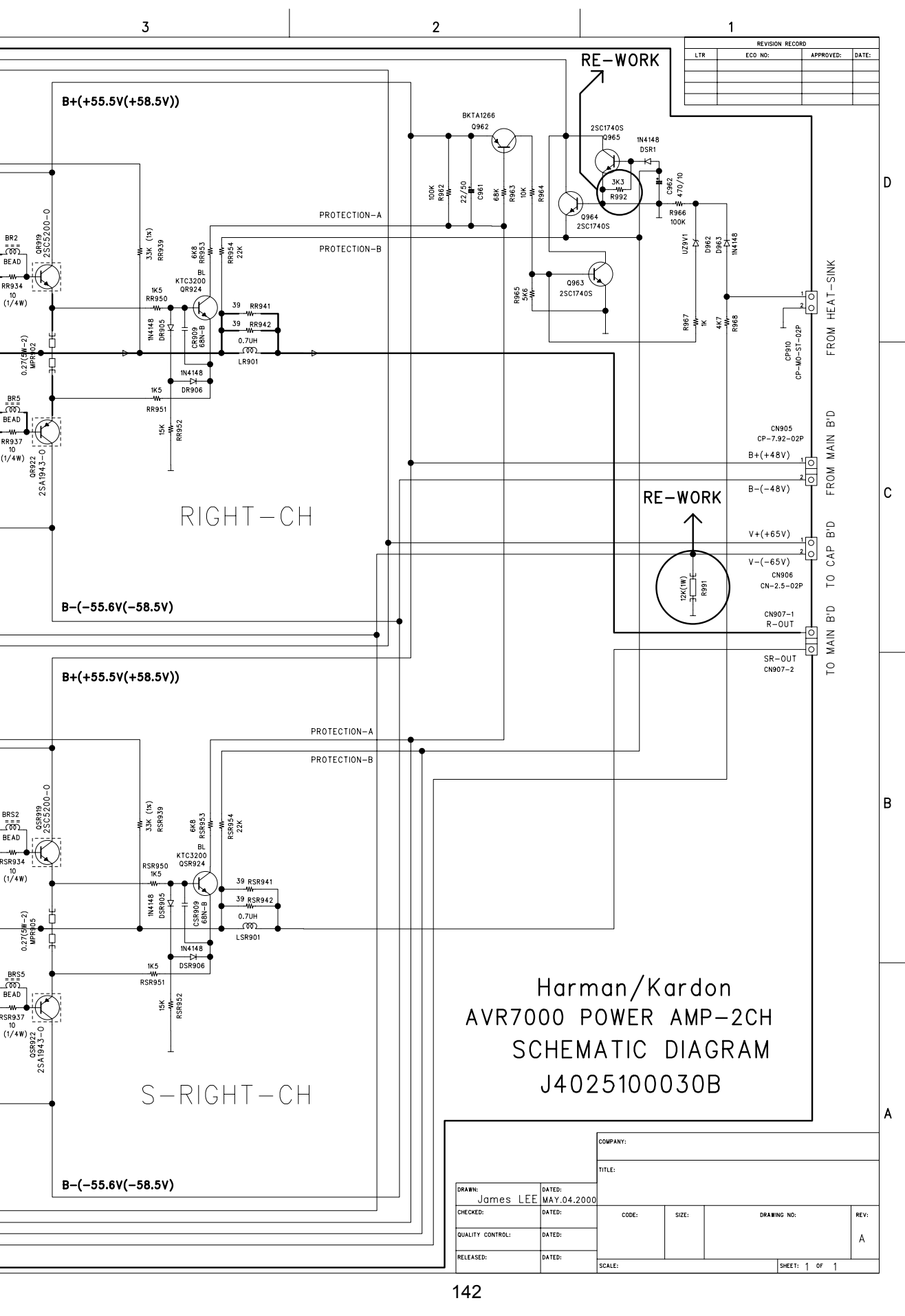
SCHEMATIC DIAGRAM

J4025100040A


REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
RE-WORK
RE-WORK
RE-WORK
REWORK
REWORK
REWORK
V+(+78.5V(+82V))
V-(-78.5V(-82V))
B+(+55.5V(+58.5V))
B-(-55.6V(-58.5V))
Front -R
Surr-Right
RIGHT-CH
S-RIGHT-CH
PROTECTION-A
PROTECTION-B
TO INPUT B'D
R-IN
G
SR-IN
G
PROTECTION
P-MUTE
+15V
NC
PROTEC-A
PROTEC-B
CN-2.0-10P
CN908
FROM HEAT-SINK
CP-MO-ST-02P
CN905
CP-7.92-02P
B+(+48V)
B-(-48V)
V+(+65V)
V-(-65V)
CN906
CN-2.5-02P
CN907-1
R-OUT
SR-OUT
CN907-2
TO MAIN B'D
TO CAP B'D
FROM MAIN B'D
Harman/Kardon
AVR7000 POWER AMP-2CH
SCHEMATIC DIAGRAM
J4025100030B
COMPANY:
TITLE:
DRAWN: James LEE
DATED: MAY.04.2000
CHECKED:
QUALITY CONTROL:
RELEASED:
CODE:
SIZE:
DRAWING NO:
REV: A
SCALE:
SHEET: 1 OF 1

AVR7000 harman/kardon

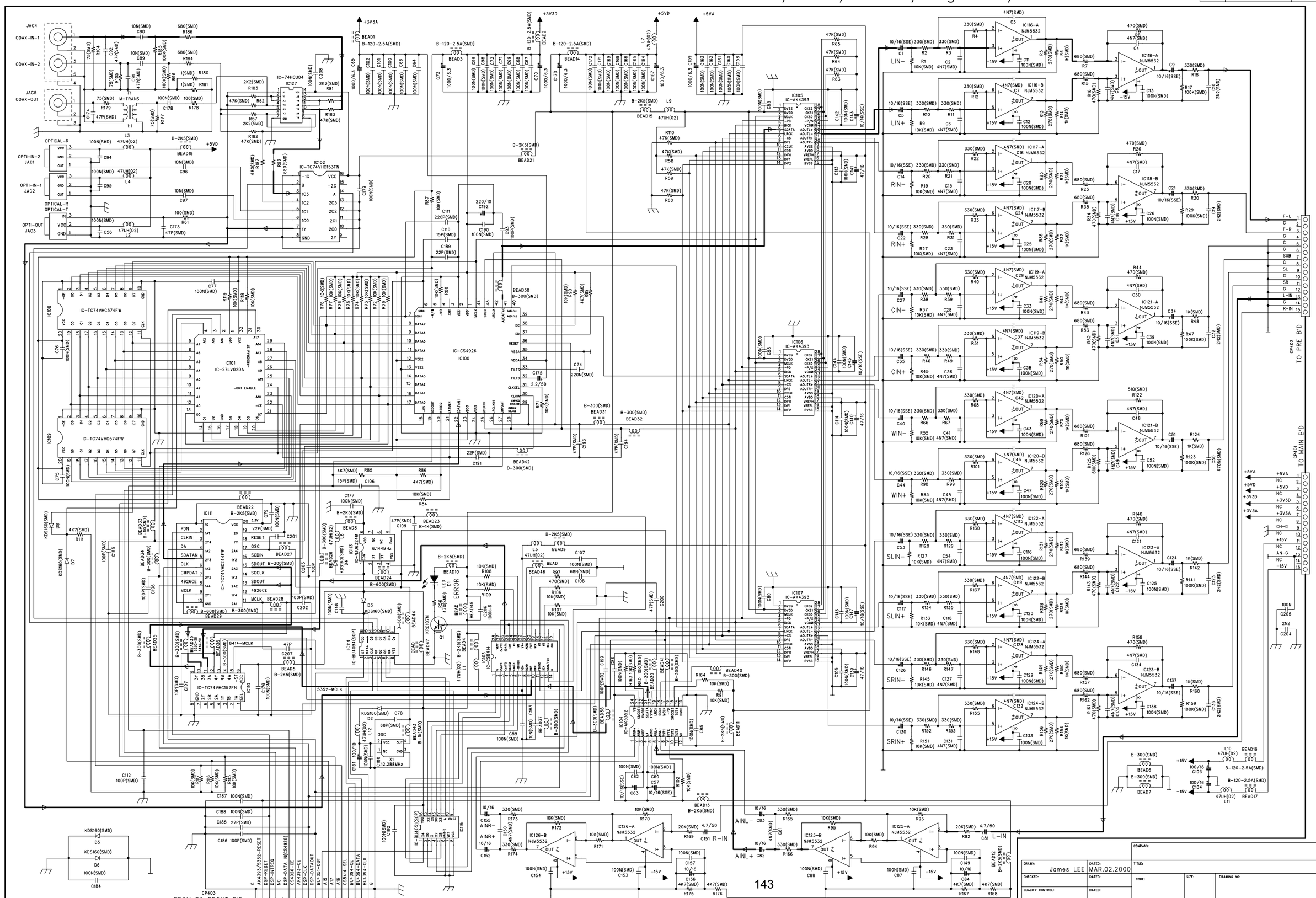



3
2
1
REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
RE-WORK
B+(+55.5V(+58.5V))
BKTA1266
Q962
2SC1740S
Q965
1N4148
DSR1
3K3
R992
C962
470/10
R966
100K
Q964
2SC1740S
100K
R962
22/50
C961
68K
R963
10K
R964
PROTECTION-A
PROTECTION-B
BR2
BEAD
QR919
2SC5200-O
RR934
10
(1/4W)
33K (1%)
RR939
6K8
RR953
RR954
22K
BL
KTC3200
QR924
1K5
RR950
39
RR941
39
RR942
0.7UH
LR901
1N4148
DR905
CR909
68N-B
0.27(5W-2)
MPR902
1N4148
DR906
1K5
RR951
15K
RR952
BR5
BEAD
RR937
10
(1/4W)
QR922
2SA1943-O
R965
5K6
Q963
2SC1740S
UZ9V1
D962
D963
1N4148
R967
1K
4K7
R968
CP910
CP-MO-ST-02P
FROM HEAT-SINK
CN905
CP-7.92-02P
B+(+48V)
B-(-48V)
FROM MAIN B'D
RE-WORK
V+(+65V)
V-(-65V)
12K(1W)
R991
CN906
CN-2.5-02P
TO CAP B'D
CN907-1
R-OUT
SR-OUT
CN907-2
TO MAIN B'D
RIGHT-CH
B-(-55.6V(-58.5V)
B+(+55.5V(+58.5V))
PROTECTION-A
PROTECTION-B
BRS2
BEAD
QSR919
2SC5200-O
RSR934
10
(1/4W)
33K (1%)
RSR939
6K8
RSR953
RSR954
22K
BL
KTC3200
QSR924
RSR950
1K5
39
RSR941
39
RSR942
0.7UH
LSR901
1N4148
DSR905
CSR909
68N-B
0.27(5W-2)
MPR905
1N4148
DSR906
1K5
RSR951
15K
RSR952
BRS5
BEAD
RSR937
10
(1/4W)
QSR922
2SA1943-O
S-RIGHT-CH
B-(-55.6V(-58.5V)
Harman/Kardon
AVR7000 POWER AMP-2CH
SCHEMATIC DIAGRAM
J4025100030B
COMPANY:
TITLE:
DRAWN:
James LEE
DATED:
MAY.04.2000
CHECKED:
DATED:
QUALITY CONTROL:
DATED:
RELEASED:
DATED:
CODE:
SIZE:
DRAWING NO:
REV:
A
SCALE:
SHEET: 1 OF 1

SCHEMATIC DIAGRAM

MP AVR7000 J4025100120B
DD/DTS/HDCD/logic-7/V-max B'D

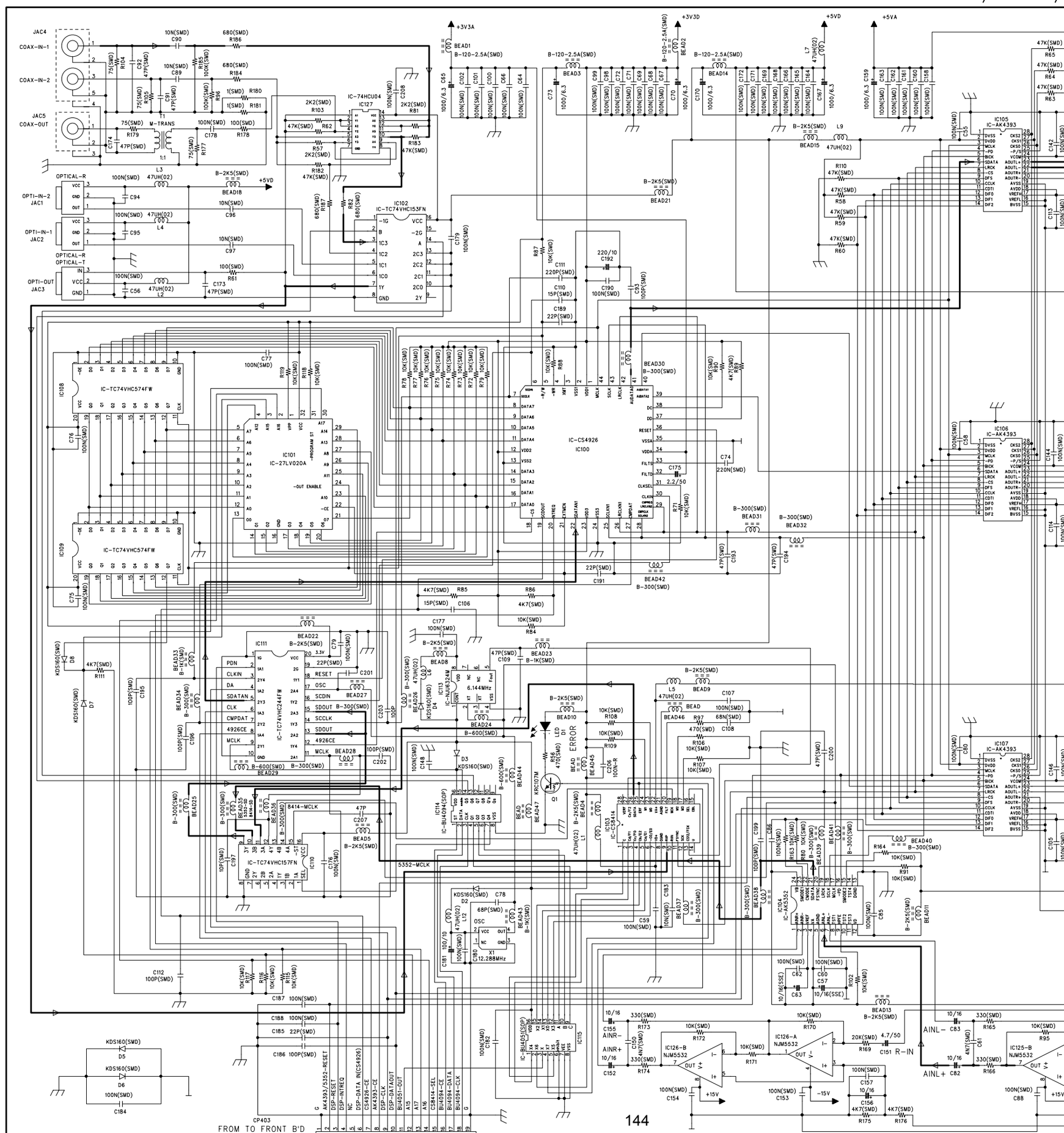
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

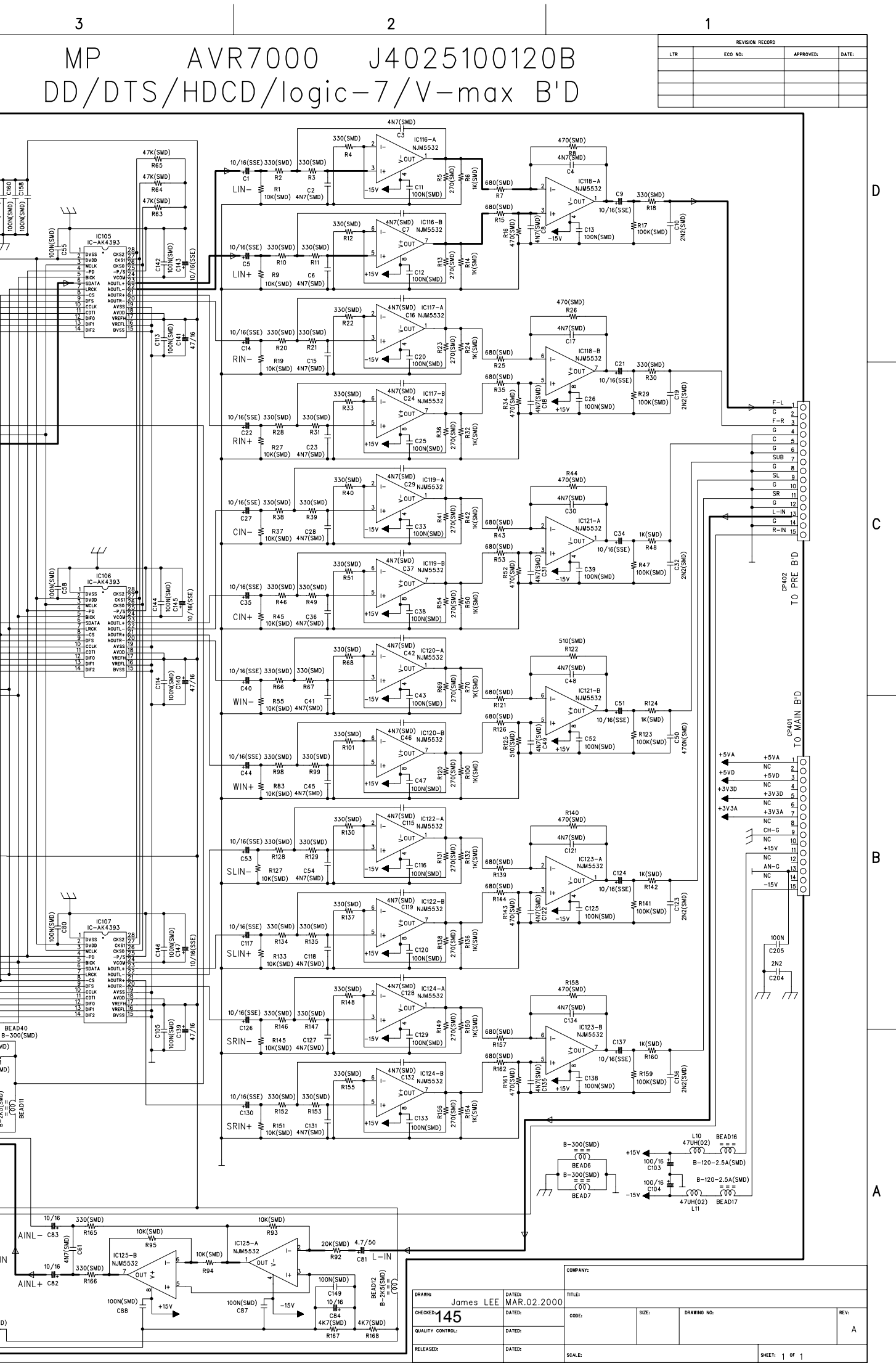


DRAWN: James LEE	DATED: MAR.02.2000	COMPANY:	
CHECKED:	DATED:	TITLE:	
QUALITY CONTROL:	DATED:	CODE:	SIZE: / DRAWING NO: / REV: A
RELEASED:	DATED:	SCALE:	SHEET: 1 OF 1

SCHEMATIC DIAGRAM

MP
DD/DTS/




3
2
1
MP AVR7000 J4025100120B
DD/DTS/HDCD/logic-7/V-max B'D
REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
D
C
B
A
LIN-
LIN+
RIN-
RIN+
CIN-
CIN+
WIN-
WIN+
SLIN-
SLIN+
SRIN-
SRIN+
AINL-
AINL+
L-IN
IC105 IC-AK4393
IC106 IC-AK4393
IC107 IC-AK4393
IC116-A NJM5532
IC116-B NJM5532
IC117-A NJM5532
IC117-B NJM5532
IC118-A NJM5532
IC118-B NJM5532
IC119-A NJM5532
IC119-B NJM5532
IC120-A NJM5532
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IC121-A NJM5532
IC121-B NJM5532
IC122-A NJM5532
IC122-B NJM5532
IC123-A NJM5532
IC123-B NJM5532
IC124-A NJM5532
IC124-B NJM5532
IC125-A NJM5532
IC125-B NJM5532
CP402
TO PRE B'D
CP401
TO MAIN B'D
F-L
F-R
SUB
SL
SR
L-IN
R-IN
+5VA
+5VD
+3V3D
+3V3A
CH-G
AN-G
+15V
-15V
COMPANY:
DRAWN: James LEE
DATED: MAR.02.2000
CHECKED: 145
QUALITY CONTROL:
RELEASED:
TITLE:
CODE:
SIZE:
DRAWING NO:
REV: A
SCALE:
SHEET: 1 OF 1

SCHEMATIC DIAGRAM

harman/kardon
AVR7000 FRONT B'D
J4026100010A

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

FL701

IC701 CXP82860-170Q
QFP100 SONY AVR7000

IC702 IC-MC14094(SOP)
IC703 IC-MC14094(SOP)
IC704 IC-MC14094(SOP)

IC705-A IC-OPAMP
IC705-B IC-OPAMP

CN701 CN702 CN703 CN704 CN705 CN706
CP701 CP702 CP751

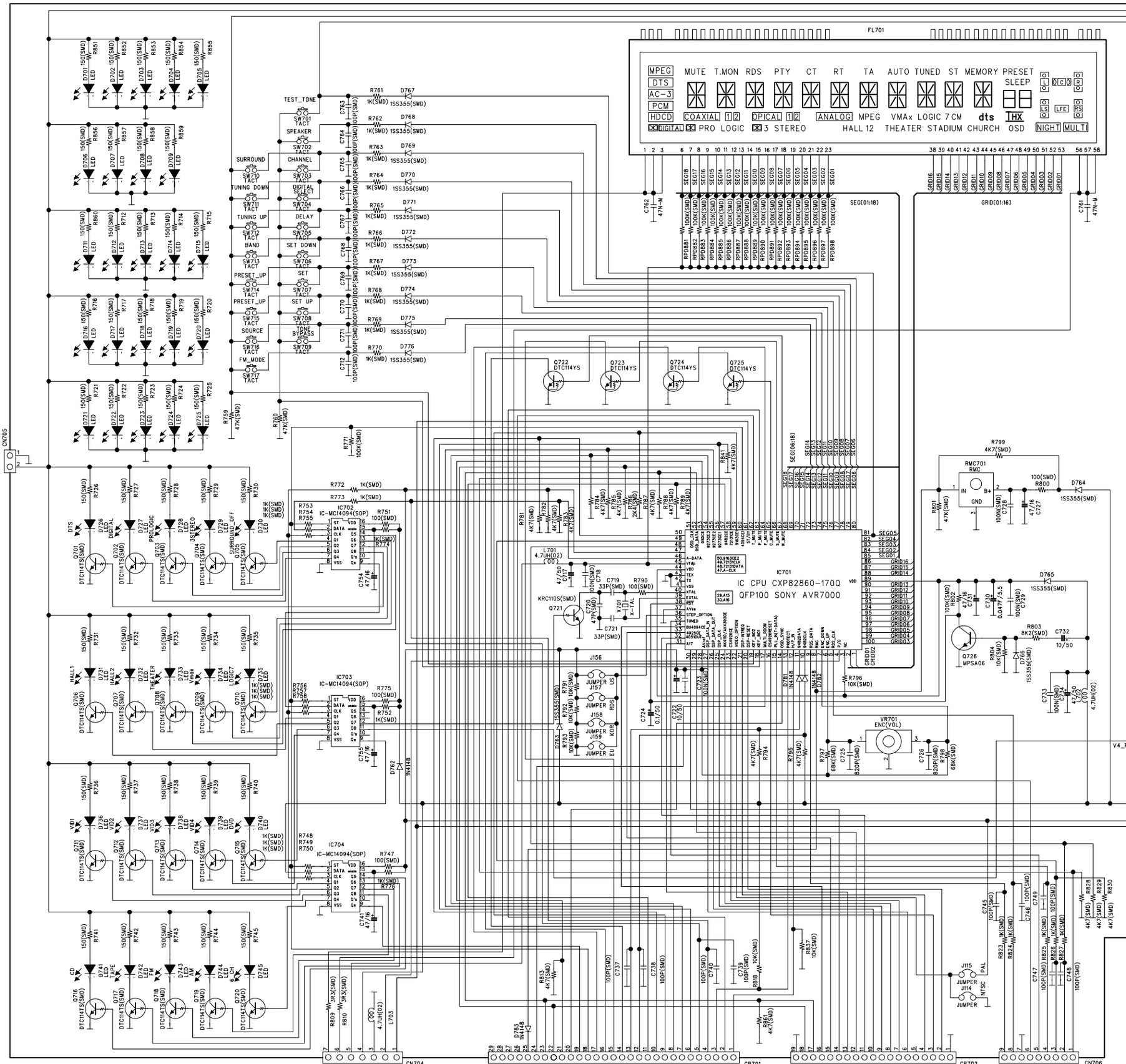
JAC701 JAC702

HP701 HEADPHONE

VR701 ENC(VOL)

DRAWN: W.S.SEO	DATED: MAR.02.2000	COMPANY:	
CHECKED:	DATED:	TITLE: AVR7000 FRONT	
QUALITY CONTROL:	DATED:	CODE:	SIZE: DRAWING NO: REV: A
RELEASED:	DATED:	SCALE:	SHEET: 1 OF 1

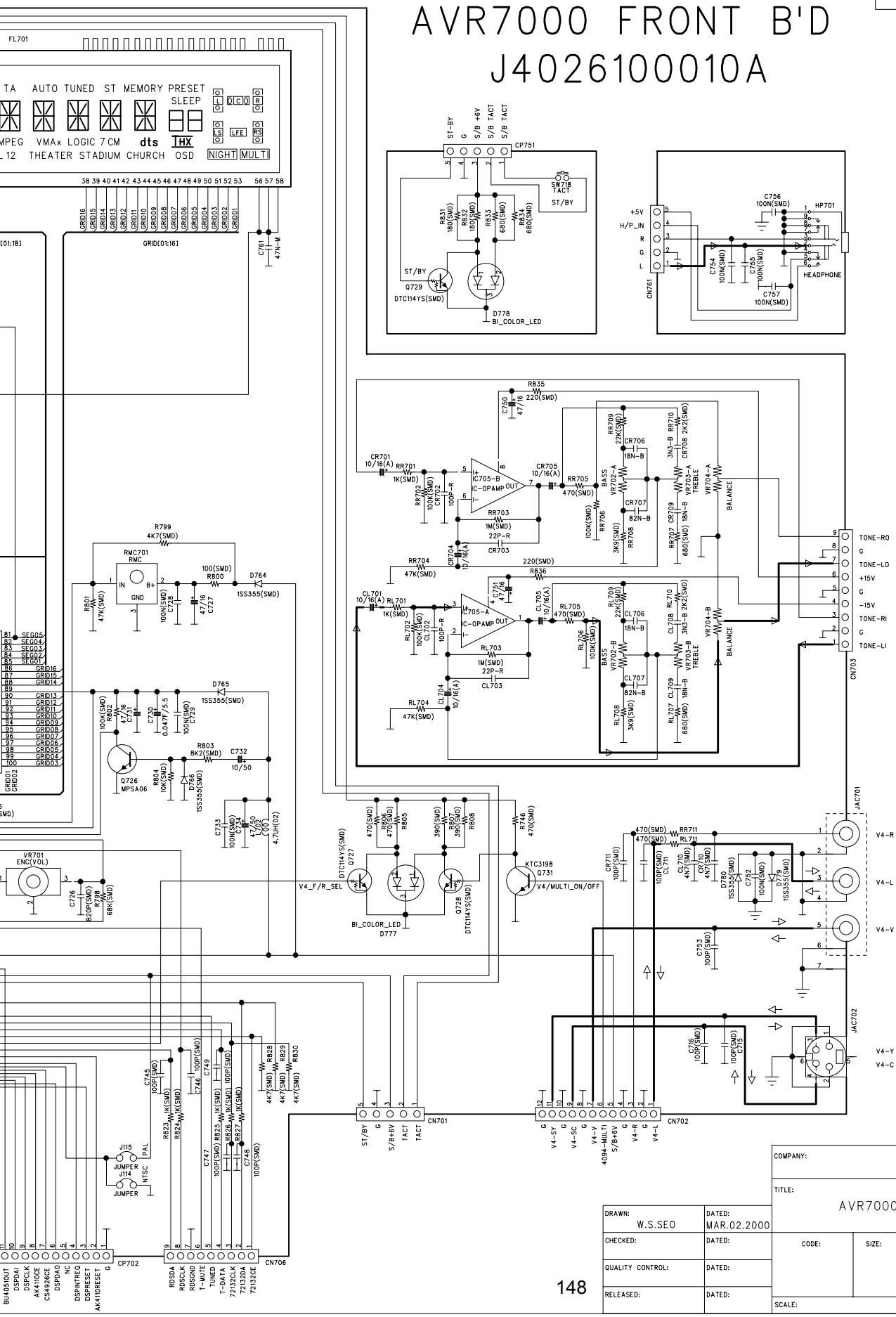
TTC KOREA LTD.


FL701
MPEG
DTS
AC-3
PCM
HDCD
MUTE T.MON RDS PTY CT RT TA AUTO TUNED ST MEMORY PRESET SLEEP
COAXIAL 1 2
OPICAL 1 2
ANALOG
MPEG
VMAx LOGIC 7 CM
dts
THX
DIGITAL PRO LOGIC 3 STEREO
HALL 12 THEATER STADIUM CHURCH OSD
NIGHT MULTI
IC701
IC CPU CXP82860-170Q
QFP100 SONY AVR7000
IC702
IC-MC14094(SOP)
IC703
IC-MC14094(SOP)
IC704
IC-MC14094(SOP)
CN705
CN704
CP701
CP702
CN706
TEST_TONE
SPEAKER
SURROUND CHANNEL
TUNING DOWN
DIGITAL SELECT
TUNING UP
DELAY
BAND
SET DOWN
PRESET_UP
SET
PRESET_DOWN
SET UP
TONE BYPASS
SOURCE
FM_MODE
VR701
ENC(VOL)
RMC701
RMC
J115
PAL
J114
NTSC

IC DIAGRAM

harman/kardon
AVR7000 FRONT B'D
J4026100010A

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



DRAWN:	W.S.SEO	DATED:	MAR.02.2000
CHECKED:		DATED:	
QUALITY CONTROL:		DATED:	
RELEASED:		DATED:	

COMPANY:

TITLE: AVR7000 FRONT

CODE:	SIZE:	DRAWING NO:	REV:
			A

SCALE: SHEET: 1 OF 1

TTC KOREA LTD.

SCHEMATIC DIAGRAM

harman/kardon
AVR7000 MAIN B'D
J4025100090B

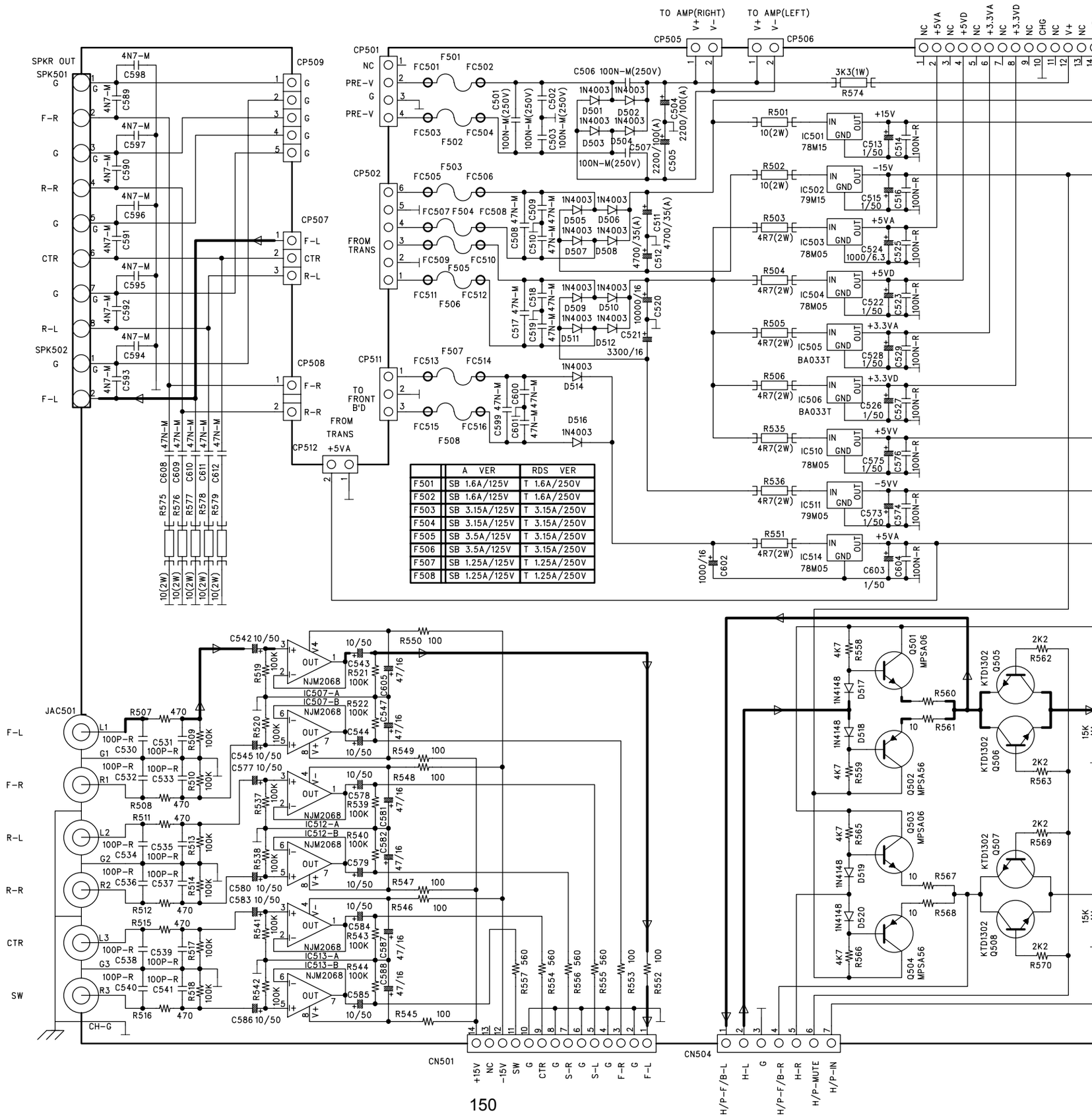
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

	A VER	RDS VER
F501	SB 1.6A/125V	T 1.6A/250V
F502	SB 1.6A/125V	T 1.6A/250V
F503	SB 3.15A/125V	T 3.15A/250V
F504	SB 3.15A/125V	T 3.15A/250V
F505	SB 3.5A/125V	T 3.15A/250V
F506	SB 3.5A/125V	T 3.15A/250V
F507	SB 1.25A/125V	T 1.25A/250V
F508	SB 1.25A/125V	T 1.25A/250V

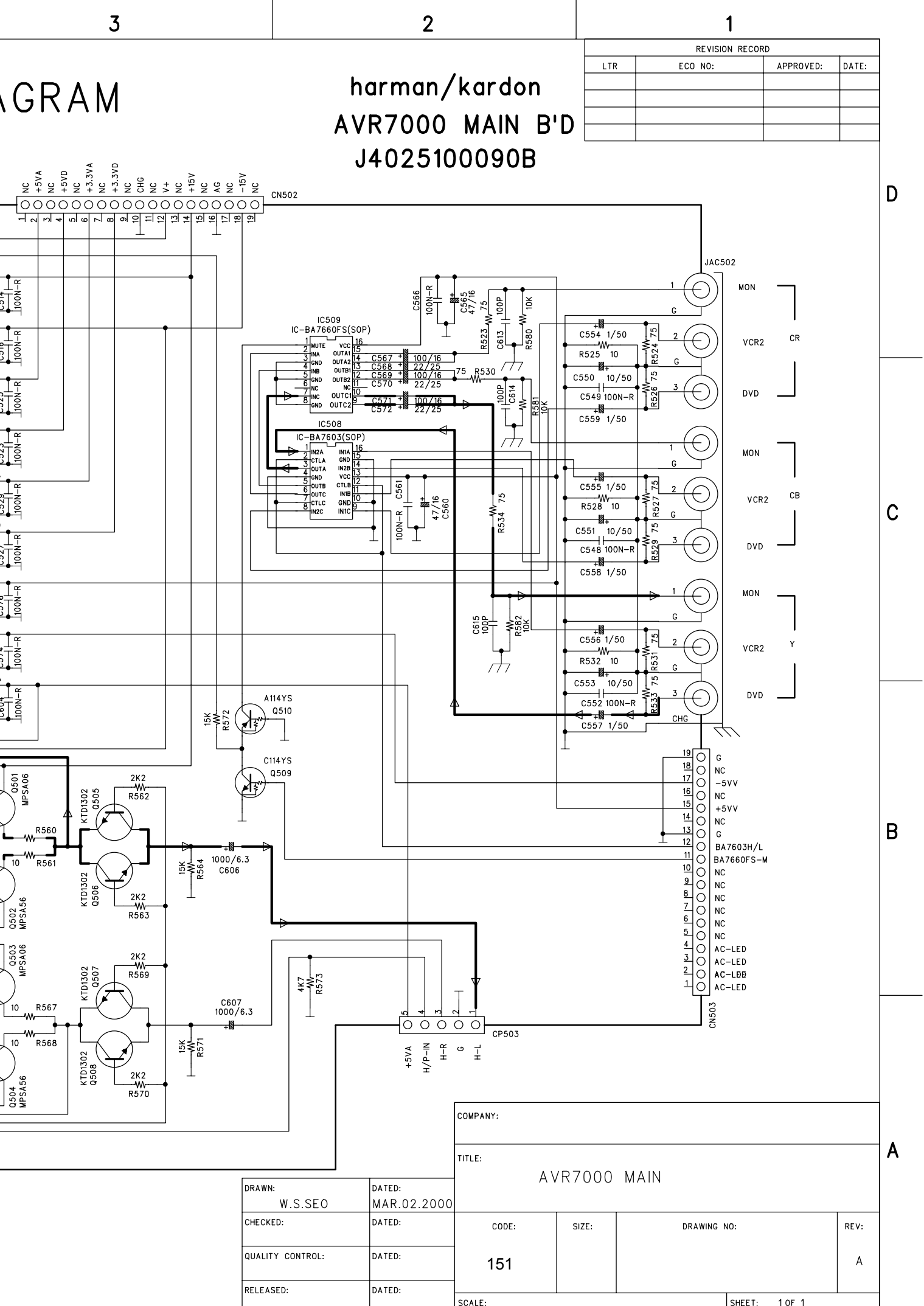
COMPANY:			
TITLE: AVR7000 MAIN			
DRAWN: W.S.SEO	DATED: MAR.02.2000	CODE:	SIZE: / DRAWING NO: / REV: A
CHECKED:	DATED:		
QUALITY CONTROL:	DATED:		
RELEASED:	DATED:	SCALE:	SHEET: 1 OF 1

TTC KOREA LTD.

SCHEMATIC DIAGRAM



	A VER	RDS VER
F501	SB 1.6A/125V	T 1.6A/250V
F502	SB 1.6A/125V	T 1.6A/250V
F503	SB 3.15A/125V	T 3.15A/250V
F504	SB 3.15A/125V	T 3.15A/250V
F505	SB 3.5A/125V	T 3.15A/250V
F506	SB 3.5A/125V	T 3.15A/250V
F507	SB 1.25A/125V	T 1.25A/250V
F508	SB 1.25A/125V	T 1.25A/250V


3
2
1
REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
AGRAM
harman/kardon
AVR7000 MAIN B'D
J4025100090B
D
C
B
A
CN502
NC
+5VA
NC
+5VD
NC
+3.3VA
NC
+3.3VD
NC
CHG
NC
V+
NC
+15V
NC
AG
NC
-15V
NC
JAC502
MON
VCR2
DVD
CR
CB
Y
IC509
IC-BA7660FS(SOP)
MUTE
INA
GND
INB
GND
NC
INC
GND
VCC
OUTA1
OUTA2
OUTB1
OUTB2
NC
OUTC1
OUTC2
IC508
IC-BA7603(SOP)
IN2A
CTLA
OUTA
GND
OUTB
OUTC
CTLC
IN2C
IN1A
GND
IN2B
VCC
CTLB
IN1B
GND
IN1C
A114YS
Q510
C114YS
Q509
KTD1302
Q505
Q506
Q507
Q508
MPSA06
Q501
Q503
MPSA56
Q502
Q504
CN503
G
NC
-5VV
NC
+5VV
NC
G
BA7603H/L
BA7660FS-M
NC
NC
NC
NC
NC
NC
AC-LED
AC-LED
AC-LED
AC-LED
CP503
+5VA
H/P-IN
H-R
G
H-L
COMPANY:
TITLE:
AVR7000 MAIN
DRAWN:
W.S.SEO
DATED:
MAR.02.2000
CHECKED:
DATED:
QUALITY CONTROL:
DATED:
RELEASED:
DATED:
CODE:
151
SIZE:
DRAWING NO:
REV:
A
SCALE:
SHEET:
1 OF 1

SCHEMATIC DIAGRAM

Harman/Kardon
AVR7000 PRE B'D
J4025100100A

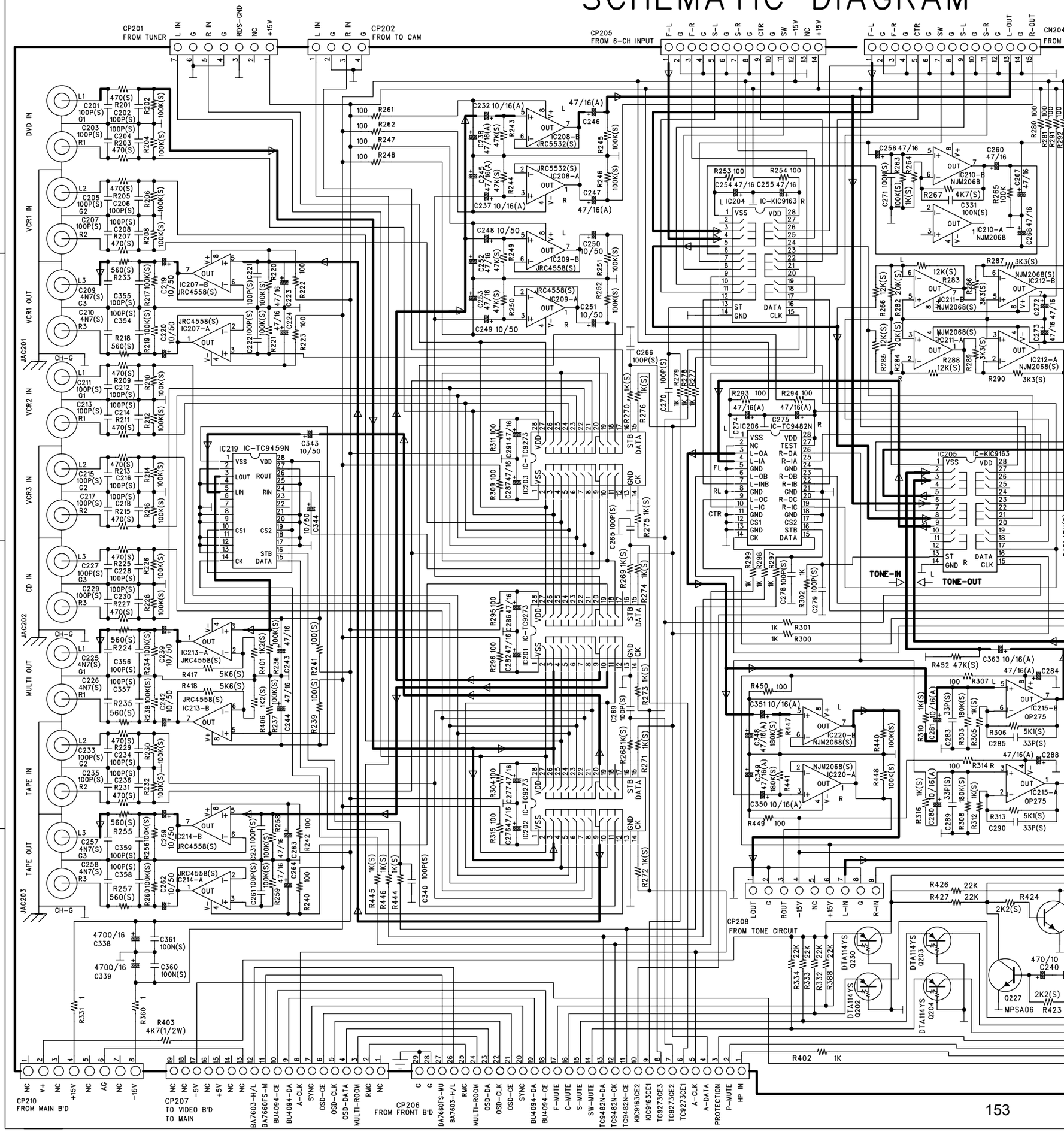
REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

AVR7000 PRE AMPLIFIER B'D (MP)

COMPANY:
TITLE:
CODE:
SIZE:
DRAWING NO:
REV: A
DRAWN:
DATED: MAR.02.2000
CHECKED:
DATED:
QUALITY CONTROL:
DATED:
RELEASED:
DATED:
SCALE:
SHEET: 1 OF 1

152

SCHEMATIC DIAGRAM



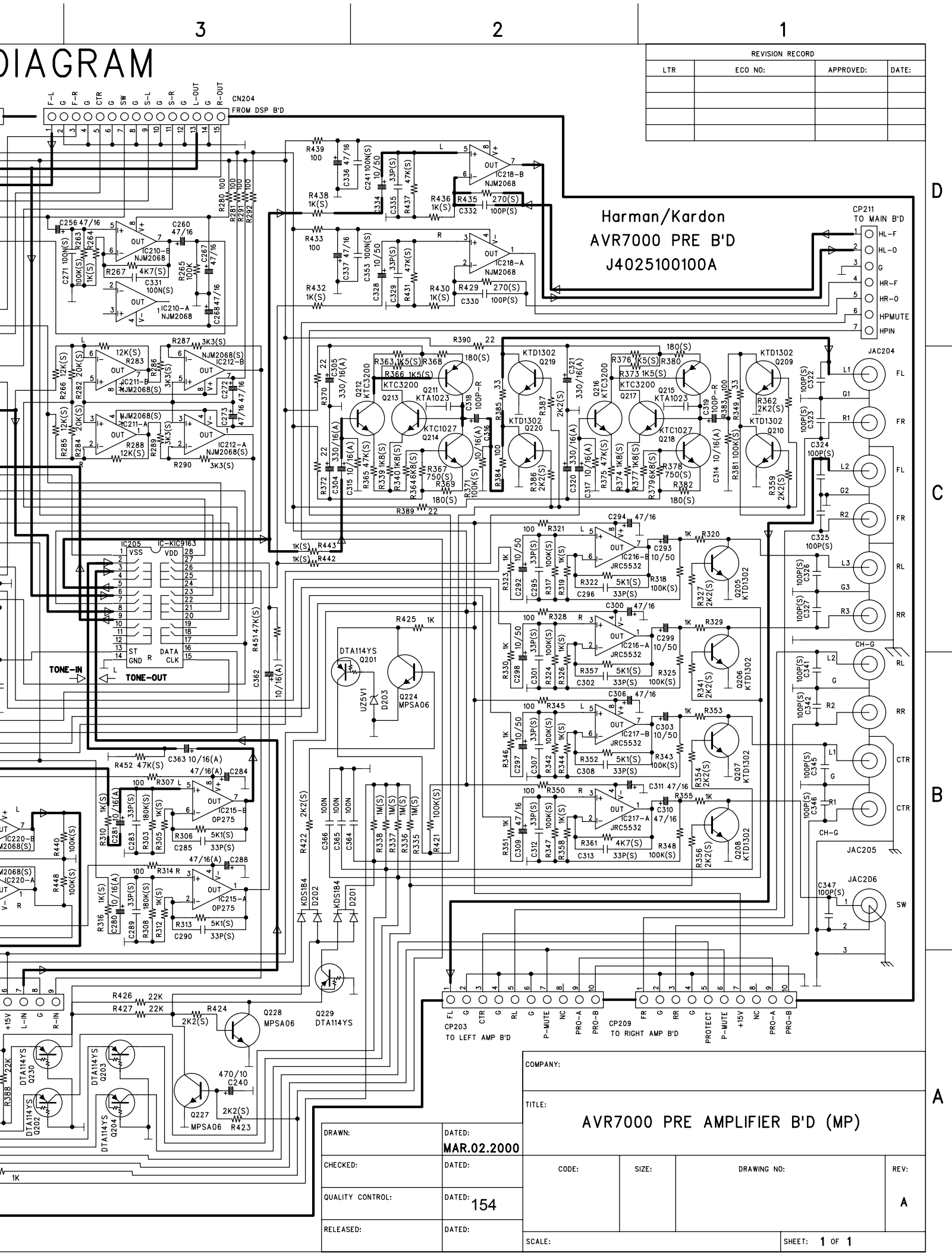
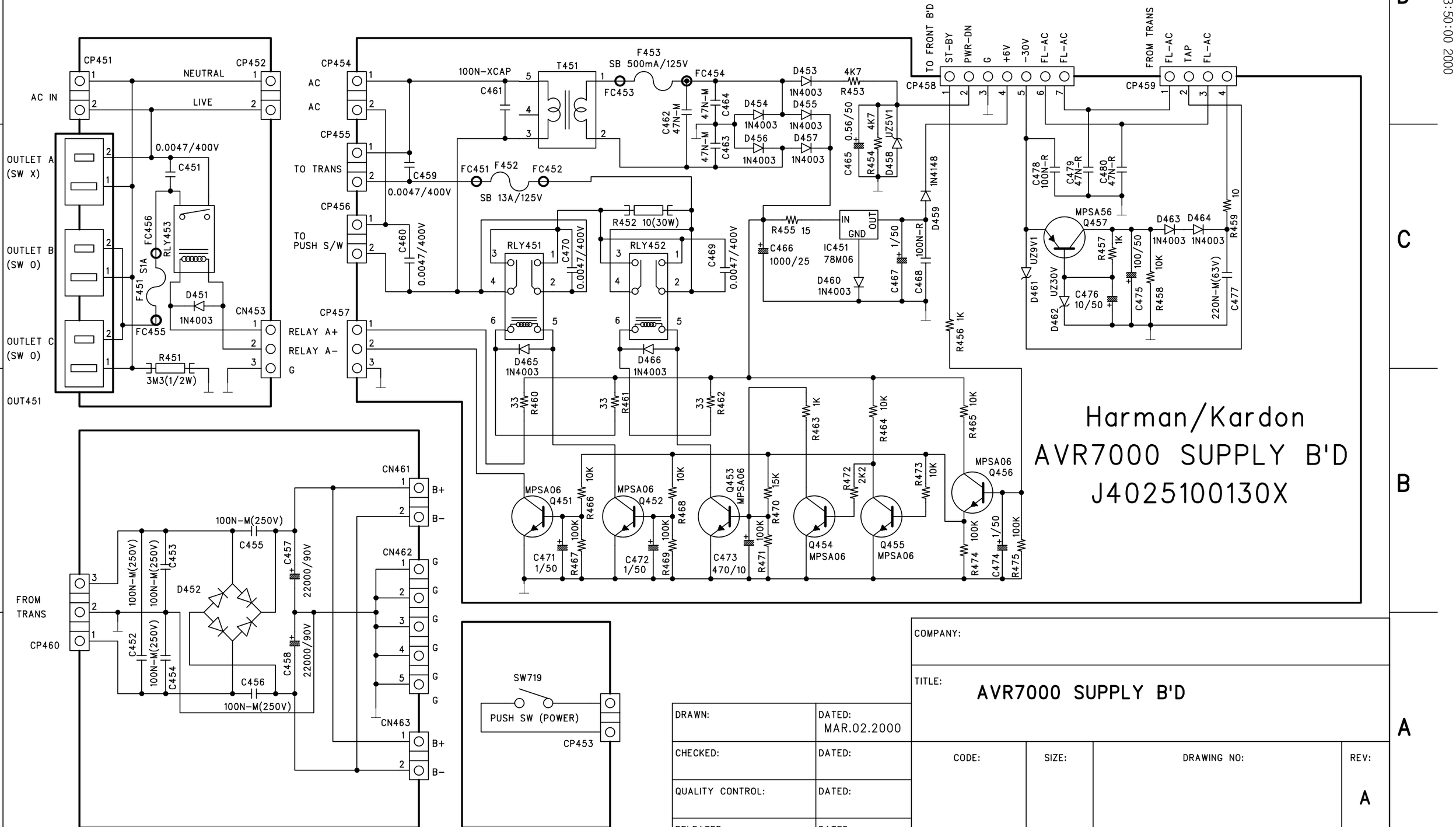


DIAGRAM
3
2
1
REVISION RECORD
LTR
ECO NO:
APPROVED:
DATE:
Harman/Kardon
AVR7000 PRE B'D
J4025100100A
CN204
FROM DSP B'D
CP211
TO MAIN B'D
HL-F
HL-O
G
HR-F
HR-O
HPMUTE
HPIN
JAC204
JAC205
JAC206
TONE-IN
TONE-OUT
CP203
TO LEFT AMP B'D
CP209
TO RIGHT AMP B'D
COMPANY:
TITLE:
AVR7000 PRE AMPLIFIER B'D (MP)
DRAWN:
DATED:
MAR.02.2000
CHECKED:
DATED:
QUALITY CONTROL:
DATED:
154
RELEASED:
DATED:
CODE:
SIZE:
DRAWING NO:
REV:
A
SCALE:
SHEET: 1 OF 1

SCHEMATIC DIAGRAM

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



Harman/Kardon

AVR7000 SUPPLY B'D

J4025100130X

DRAWN:	DATED: MAR.02.2000	COMPANY:	
CHECKED:	DATED:	TITLE: AVR7000 SUPPLY B'D	
QUALITY CONTROL:	DATED:	CODE:	SIZE: / DRAWING NO: / REV: A
RELEASED: 155	DATED:	SCALE:	SHEET: 1 OF 1

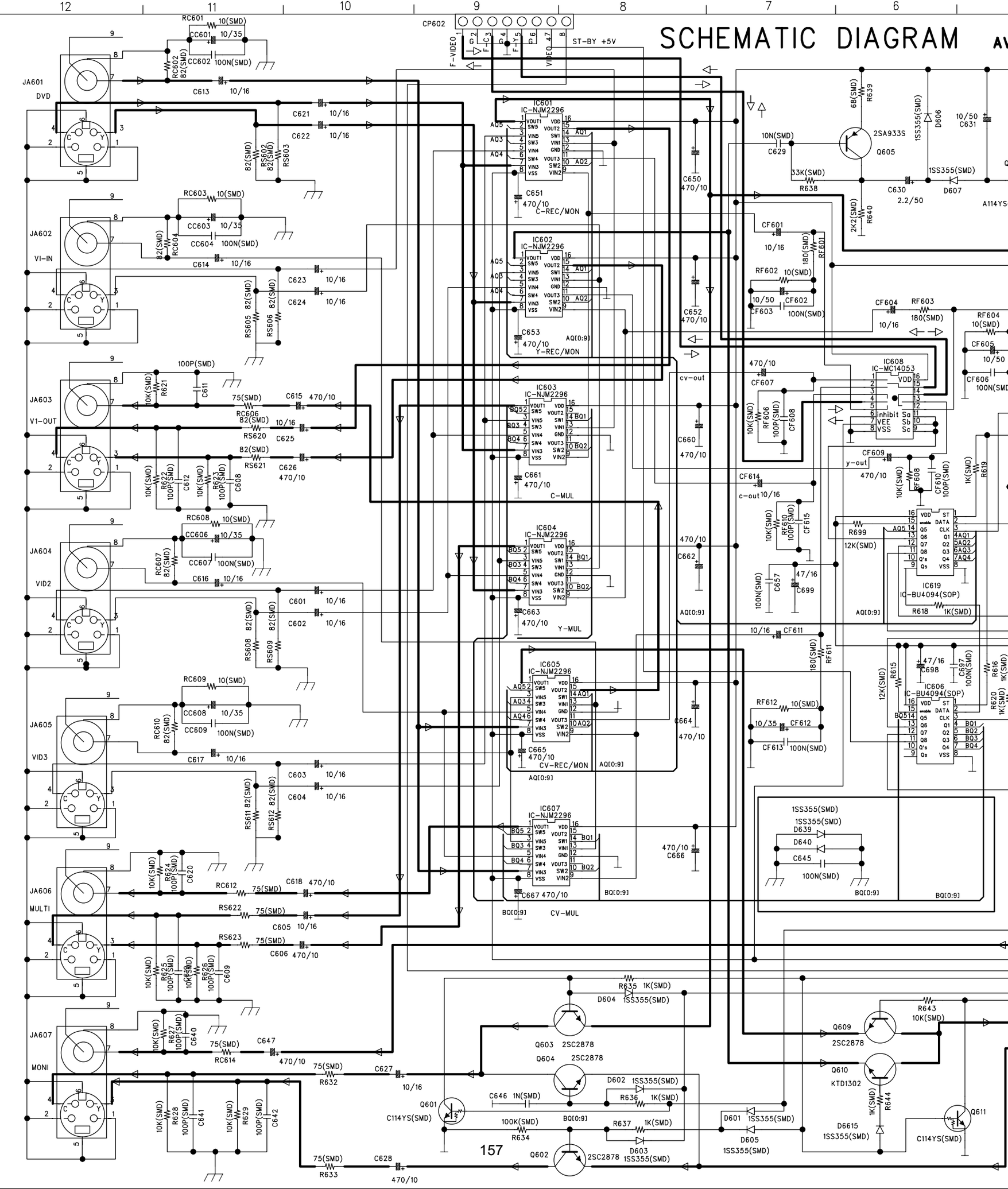
SCHEMATIC DIAGRAM

Harman/Kardon
AVR7000 VIDEO B'D
J4025100110A

NO	DATE	POS.	CONTENTS	NO	DATE	POS.	CONTENTS

JA601 DVD
JA602 VI-IN
JA603 V1-OUT
JA604 VID2
JA605 VID3
JA606 MULTI
JA607 MONI
JA608 IN
JA609 MULTI-
CP602
CP601 CP-19P
IC601 IC-NJM2296 C-REC/MON
IC602 IC-NJM2296 Y-REC/MON
IC603 IC-NJM2296 C-MUL
IC604 IC-NJM2296 Y-MUL
IC605 IC-NJM2296 CV-REC/MON
IC606 IC-BU4094(SOP)
IC607 IC-NJM2296 CV-MUL
IC608 IC-MC14053
IC611 IC-M35010
IC612 IC-BA7046
IC616 IC-LTV817
IC618 IC-LTV817
IC619 IC-BU4094(SOP)
X601 X-TAL US:14.318MHz RDS:17.734MHz
Q601 C114YS(SMD)
Q602 2SC2878
Q603 2SC2878
Q604 2SC2878
Q605 2SA933S
Q606 A114YS(SMD)
Q607 C114YS(SMD)
Q608 A114YS(SMD)
Q609 2SC2878
Q610 KTD1302
Q611 C114YS(SMD)
Q612 C114YS(SMD)
Q613 2SC2878
Q614 2SC1740S
Q615 2SC1740S
Q616 2SC2878
Q618 KRA107M
Q619 2SC1740S
Q620 2SA933S
Q623 KRA107M
D601 1SS355(SMD)
D602 1SS355(SMD)
D603 1SS355(SMD)
D604 1SS355(SMD)
D605 1SS355(SMD)
D606 1SS355(SMD)
D607 1SS355(SMD)
D608 1SS355(SMD)
D609 1SS355(SMD)
D613 1SS355(SMD)
D614 1SS355(SMD)
D615 1SS355(SMD)
D616 1SS355(SMD)
D639 1SS355(SMD)
D640 1SS355(SMD)
L601 100(SMD)
L602 100(SMD)
AQ[0:9]
BQ[0:9]
cv-out
y-out
c-out
Inhibit
VEE
VSS
Sb
Sc
Sa
ST
DATA
CLK
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q's
Qs
VDD
CVIN
LECHA
CVIDEO
VDD2
AC-
SIN
SCK
CS-
OSC2
OSC1
VSS
P0
P1
P2
P3
OSCOUT
OSCIN
HOR
VERT
VDD1
VD
SYNC
HD
GND
CVIN
VDD
HCOMP
HOSC
F-VIDEO
F-C
VIDEO
ST-BY +5V
RMC
MULTI-ROOM
OSD - DATA
OSD-CLK
OSD-CE
SYNC
A-CLK
BU4094-DATA
BU4094-CE
BA7660 S-MUTE
BA7603-H/L
NC +5V
NC -5V
NC
CONFIDENTIAL/CONTROL COPY

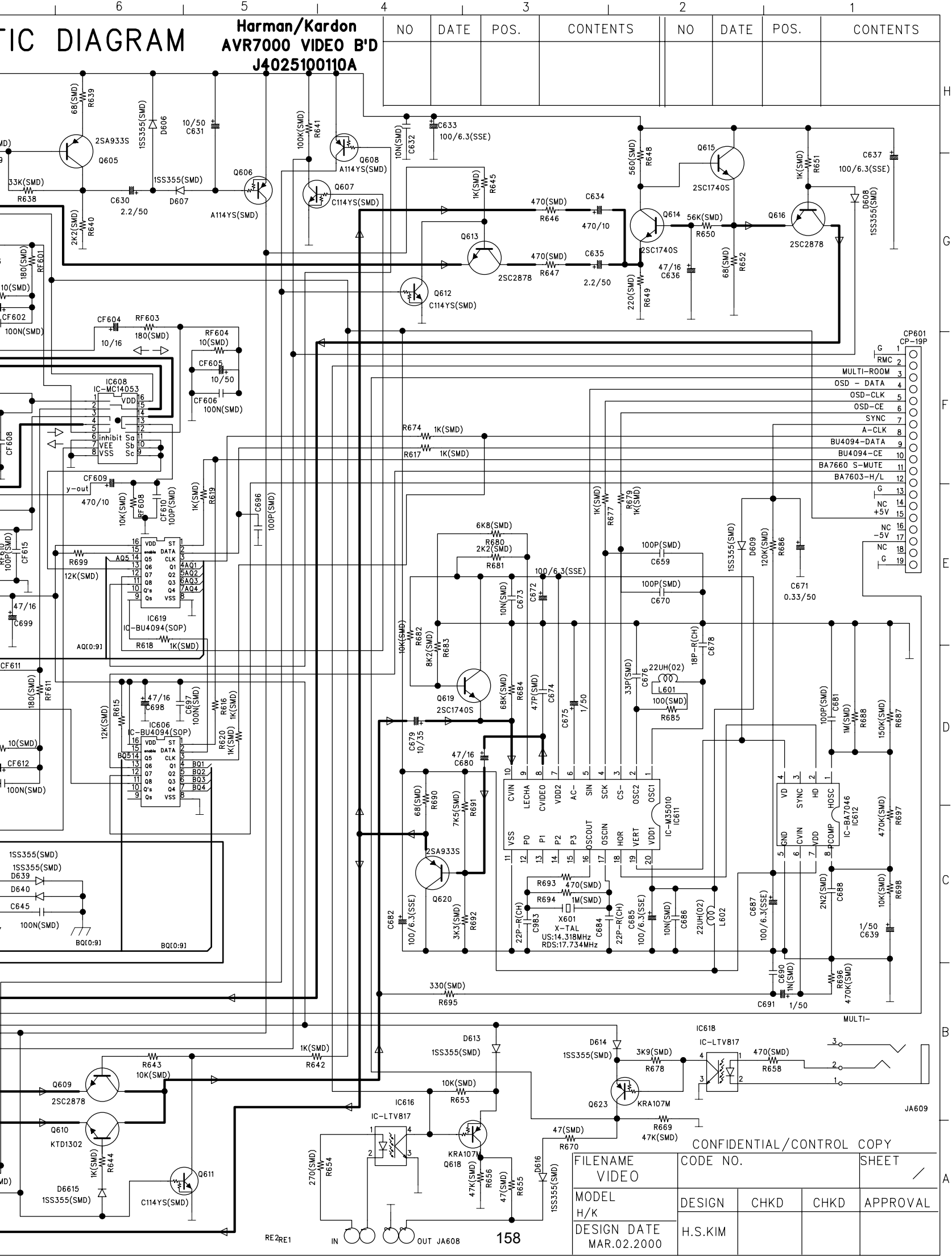
FILENAME	ODE NO.			SHEET
VIDEO				/
MODEL H/K	DESIGN	CHKD	CHKD	APPROVAL
DESI` MAR.02.2000	H.S.KIM			

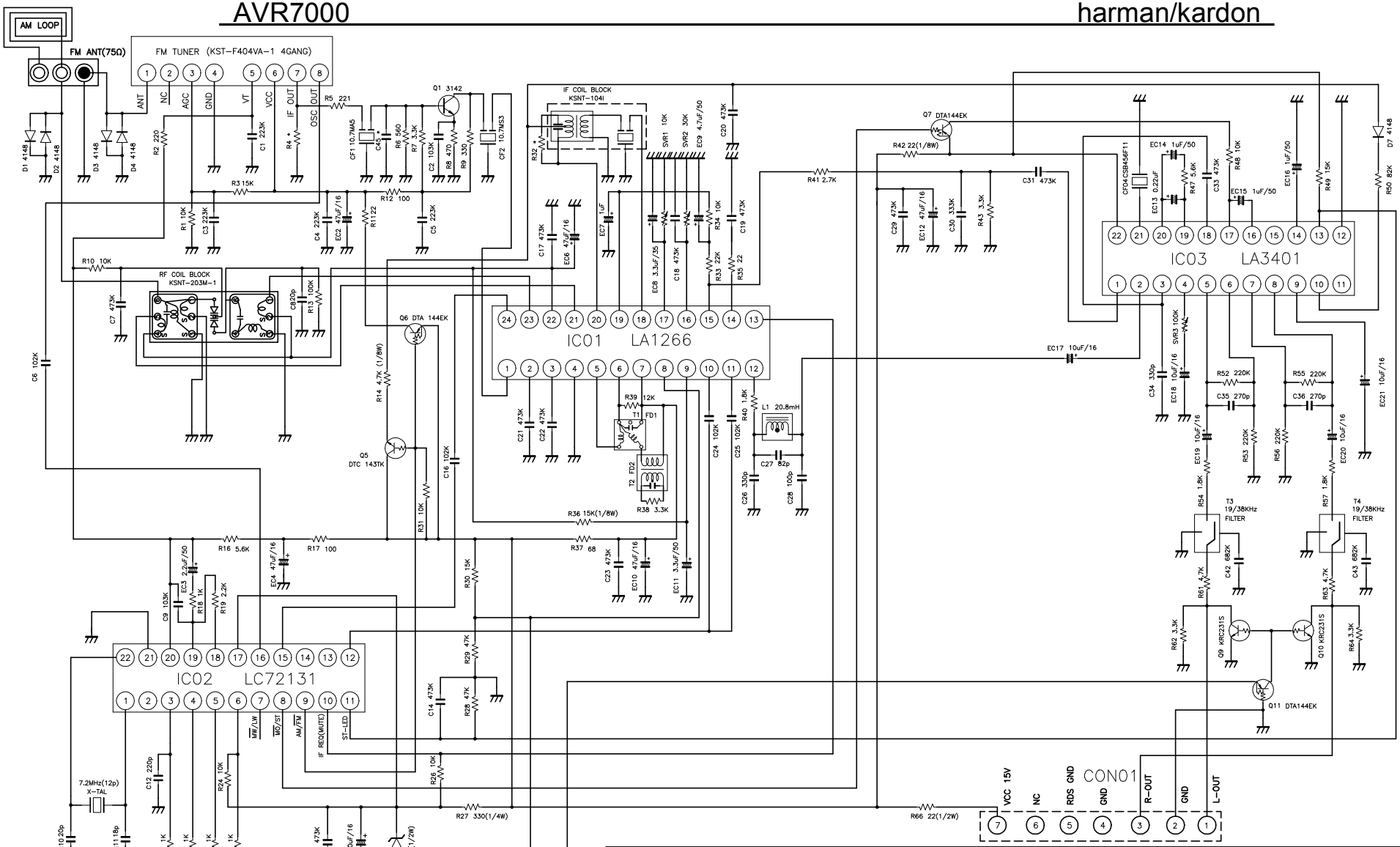

SCHEMATIC DIAGRAM
JA601
DVD
JA602
VI-IN
JA603
V1-OUT
JA604
VID2
JA605
VID3
JA606
MULTI
JA607
MONI
CP602
F-VIDEO
VIDEO
ST-BY +5V
IC601
IC602
IC603
IC604
IC605
IC606
IC607
IC608
IC619
IC-NJM2296
IC-MC14053
IC-BU4094(SOP)
C-REC/MON
Y-REC/MON
C-MUL
Y-MUL
CV-REC/MON
CV-MUL
cv-out
y-out
c-out
Q601
Q602
Q603
Q604
Q605
Q609
Q610
Q611
2SA933S
2SC2878
KTD1302
C114YS(SMD)
157

TIC DIAGRAM

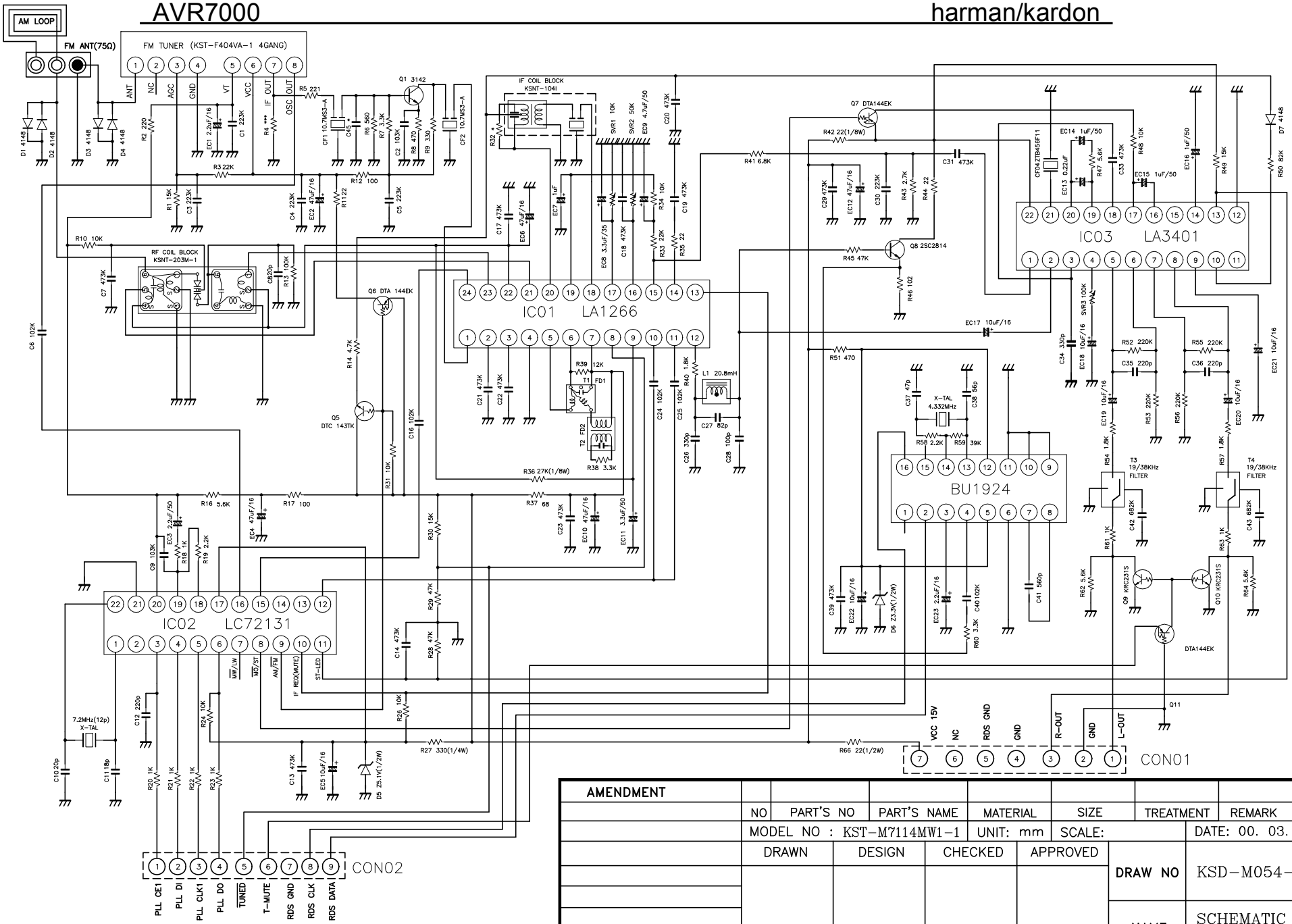
Harman/Kardon
AVR7000 VIDEO B'D
J4025100110A

NO	DATE	POS.	CONTENTS	NO	DATE	POS.	CONTENTS





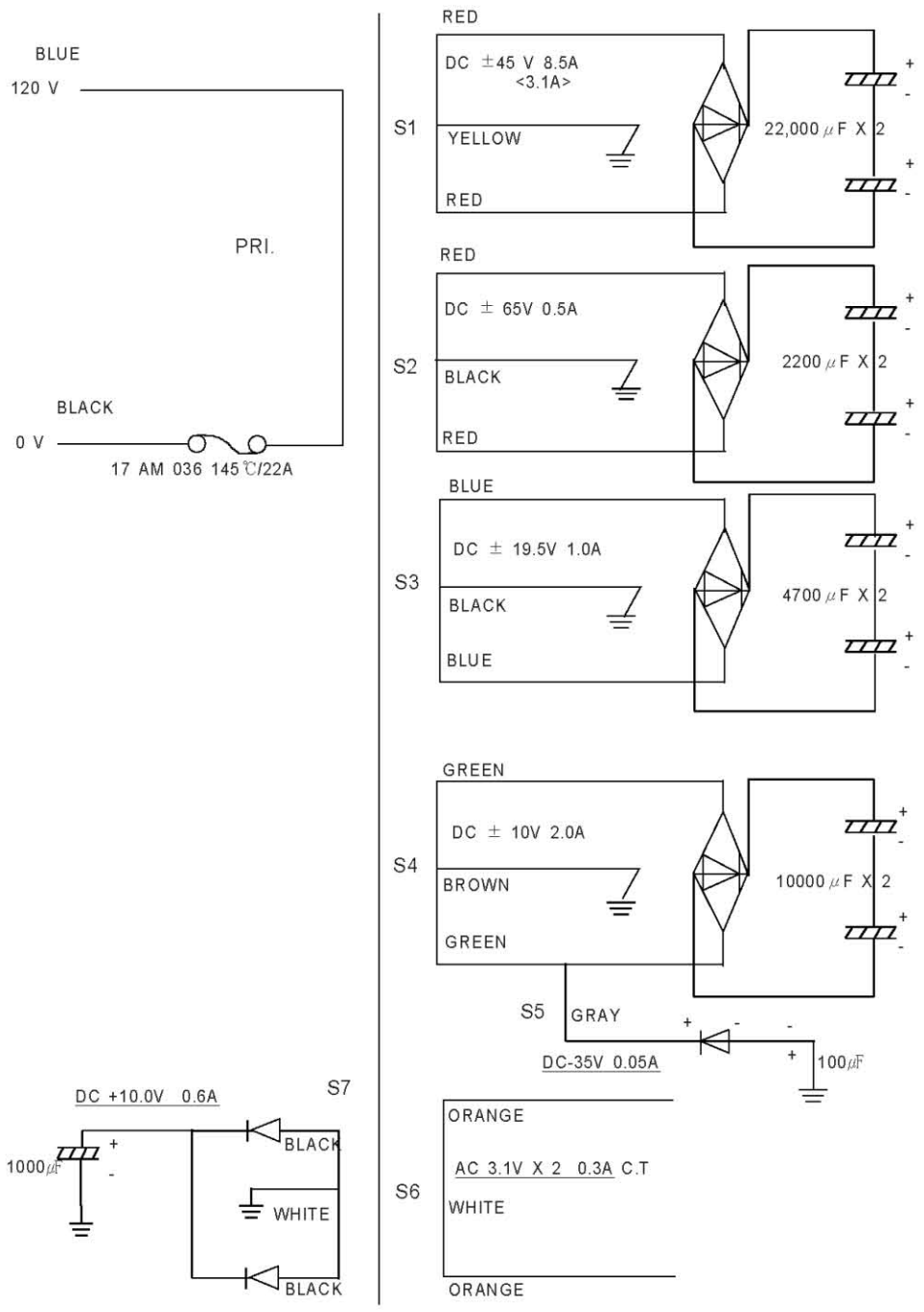
AMENDMENT	NO	PART'S NO	PART'S NAME	MATERIAL	SIZE	TREATMENT	REMARK
	MODEL NO : KST-M7014MW0-1			UNIT: mm	SCALE:		DATE: 99. 10. 13.
	DRAWN	DESIGN	CHECKED	APPROVED	DRAW NO	KSD-M054-1	
					NAME	SCHEMATIC DIAGRAM	



AMENDMENT	NO	PART'S NO	PART'S NAME	MATERIAL	SIZE	TREATMENT	REMARK
	MODEL NO : KST-M7114MW1-1			UNIT: mm	SCALE:		DATE: 00. 03. 09.
	DRAWN	DESIGN	CHECKED	APPROVED	DRAW NO	KSD-M054-3	
					NAME	SCHEMATIC DIAGRAM	

AVR7000 TRANSFORMER

2. CIRCUIT DIAGRAM



SECONDARY VOLTAGE AND CURRENT.

7-3. Voltage regulation: AC ±10 % Max.

Terminal NO. or Color	SEC. DC Load current	SEC. DC load voltage	DC No load voltage	AC load voltage	AC No load voltage	Remark
RED-YEL-RED	8.5 A	±45 V	±60.3 V	40.0V X 2	42.7V X 2	± 5 %
RED-BLK-RED	0.5 A	±65 V	±84.7 V	56.7V X 2	59.5V X 2	± 5 %
BLU-BLK-BLU	1.0 A	±19.5 V	±25.5 V	16.9V X 2	17.8V X 2	± 5 %
GRN-BRW-GRN	2.0 A	±10 V	±15.0 V	9.6V X 2	10.0V X 2	± 5 %
BRW-GRY	0.05A	-35 V	-44.0 V	27.0V X 2	27.9V X 2	± 5 %
ORG-WHT-ORG	AC 0.3A	----	----	3.1V X 2	3.35V X 2	± 0.3V
BLK-WHT-BLK	0.6 A	+10.0 V	+16.3 V	9.2V X 2	9.7V X 2	± 5 %
			161			

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

AC CORD
120V/60Hz (US)
230V/50Hz (RDS)

OUTLET B'D
CP451 6mm-2(3)P
CP452 6mm-2(3)P
CN453 2.5mm-3P
100mm W451
W451-1 (US ONLY)
CN902 2.5mm-2P
CP901 7.92mm-2P
CN903 3.96mm-3P

3CH-AMP B'D
CN924 2.0mm-10P
CN925 2.0mm-10P

DSP B'D
CP402 2.0mm-15P
CP403 1.25mm-19P
CP203
CP209
CP231 2.0mm-7P
CP208 2.0mm-9P
CN504 2.0mm-7P
CN503 2.0mm-5P
CP401 2.0mm-15P
CN651 2.0mm-15P
CP210 2.0mm-8P
CN652 2.0mm-8P

VIDEO B'D
W1 18# W2
CP206 1.25mm-29P
CP507 3.96mm-3P
CP509 3.96mm-5P
CP508 3.96mm-2(3)P

CNT1 B'D

CNT2 B'D
CP601 2.0mm-19P
CN653 2.0mm-19P
CP207 2.0mm-19P
CN654 2.0mm-19P
CP651 2.0mm-19P
CN502 2.0mm-19P
CP652 2.0mm-19P
CN503 2.0mm-19P

PRE B'D
CP201 2.0mm-7P
W201 18# W201-1
W202 24# W202-1
W203 18# W203-1
W204 24# W204-1
W205 24# W205-1
CP202 2.0mm-4P

MAIN B'D
W501 18#
W502 18#
CN501 2.0mm-14P
CP205 2.0mm-14P
CP602 2.0mm-8P
CP502 2.5mm-6P
CN204 2.0mm-15P
CP501 2.5mm-4P
CP503 2.5mm-3P
CP504 2.5mm-2P
CP505 2.5mm-2P
CP506 2.5mm-2P

2CH-AMP B'D
CN907 7.92mm-2P
CP910 2.5mm-2P
CN906 2.5mm-2P
CP905 7.92mm-2P
CN908 2.0mm-10P

ASS'Y TUNER B'D
2.0mm-7P
2.0mm-9P
POSISTOR

PUSH S/W B'D
CP453 6mm-2(3)P

H/P B'D
CN761 2.0mm-5P
300mm W761
W761-1

TACK S/W B'D
CP751 2.0mm-5P

MAIN-CAP B'D
CN463 7.92mm-2P
CN462 3.96mm-5P
CN461 7.92mm-2P
6mm-3P CP460

SUPPLY B'D
CN771
CP455 6.0mm-2(3)P
CN454
CP454 6.0mm-2(3)P
CP457 2.0mm-3P
CP456 6.0mm-2(3)P
CP459 2.0mm-4P
CP458 2.0mm-7P
CN708
CN705 2.5mm-2P
CN706 2.0mm-9P
CP702 1.25mm-19P
CN704 2.0mm-7P
CN703 2.0mm-9P

FRONT B'D
W701 250mm
W701-1
1.25mm-29P CP701
2.0mm-5P CN701
2.0mm-10P CN702
CN707

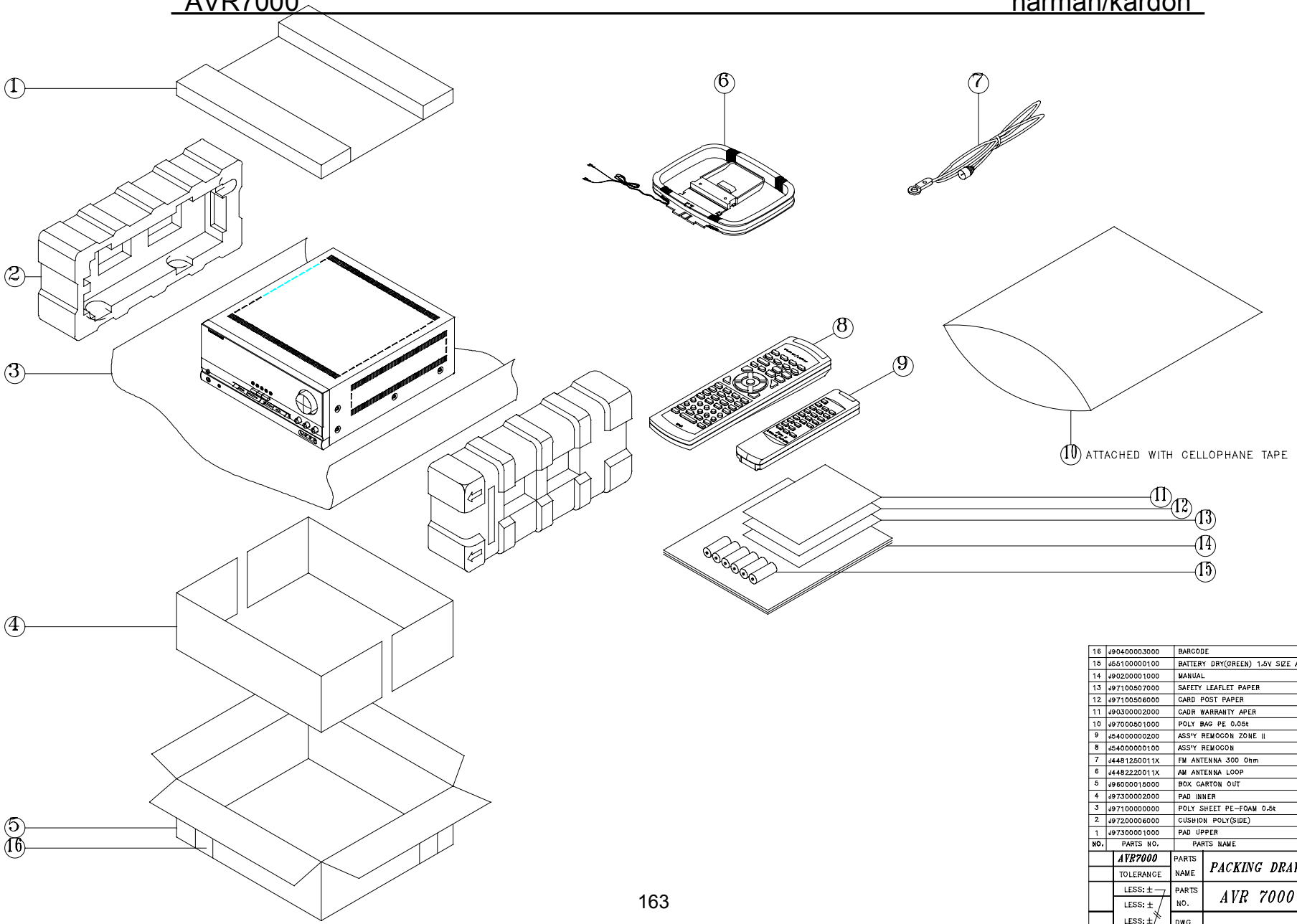
MAIN TRANS

CHOKE TRANS (RDS ONLY)

(US ONLY)

COMPAN'			
TITLE: AVR7000 WIRING DIAGRAM			
DRAWN:	DATED: MAR.02.2000		
CHECKED:	DATED:	CODE:	SIZE: DRAWING NO: REV: A
QUALITY CONTROL:	DATED:		
RELEASED:	DATED:	SCALE:	SHEET: 1 OF 1

AVR7000/RDS WIRING DIAGRAM



NO.	PARTS NO.	PARTS NAME	QTY
16	J90400003000	BARCODE	2
15	J65100000100	BATTERY DRY(GREEN) 1.5V SIZE AAA	6
14	J90200001000	MANUAL	1
13	J97100507000	SAFETY LEAFLET PAPER	1
12	J97100506000	CARD POST PAPER	1
11	J90300002000	CADR WARRANTY APER	1
10	J97000501000	POLY BAG PE 0.05t	1
9	J54000000200	ASS'Y REMOCON ZONE II	1
8	J54000000100	ASS'Y REMOCON	1
7	J4481250011X	FM ANTENNA 300 Ohm	1
6	J4482220011X	AM ANTENNA LOOP	1
5	J96000015000	BOX CARTON OUT	1
4	J97300002000	PAD INNER	2
3	J97100000000	POLY SHEET PE-FOAM 0.5t	1
2	J97200006000	CUSHION POLY(SIDE)	2
1	J97300001000	PAD UPPER	1

	AVR7000	PARTS NAME	PACKING DRAWING
	TOLERANCE		
	LESS: ±	PARTS NO.	AVR 7000 US
	LESS: ±		
	LESS: ±	DWG. NO.	
	LESS:		