harman/kardon Service Manual

AVR 155/230

5 x 40W 5.1 CHANNEL A/V RECEIVER

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Released EU2008

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Rev 0, 07/2008

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.

Technical Specifications

Audio Section

Stereo Mode

Continuous Average Power (FTC)

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

5 Channel Surround Modes
Power Per Individual Channel, all channels driven simultaneously

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

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

Surround channels:
40 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)	100dB
Surround System Adjacent Channel Separation	
Analog Decoding (Pro Logic, etc.)	40dB
Dolby Digital (AC-3)	55dB
DTS	55dB
Frequency Response	
@ 1W (+0dB, –3dB)	10Hz–130kHz
High Instantaneous Current Capability (HCC)	±25 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 (DIN)
Distortion	Mono/Stereo: 0.2/0.3%
Stereo Separation	40dB @ 1kHz
Selectivity	±400kHz: 70dB
Image Rejection	80dB
IF Rejection	90dB

AM Tuner Section

Frequency Range	522–1620kHz
Signal-to-Noise Ratio	45dB
Usable Sensitivity	Loop: 500µV
Distortion	1kHz, 50% Mod: 0.8%
Selectivity	±10kHz: 30dB

Video Section

Video Format	PAL/NTSC
Input Level/Impedance	1Vp-p/75 ohms
Output Level/Impedance	1Vp-p/75 ohms
Video Frequency Response (Composite and S-Video)	10Hz–8MHz (-3dB)
Video Frequency Response (Component)	10Hz–100MHz (-3dB)
HDMI™	Switching

General

Power Requirement	AC 220–240V/50Hz
Power Consumption	65W idle, 540W maximum (5 channels driven)
Dimensions (Max)	
Width	440mm
Height	165mm
Depth	382mm
Weight	9.7kg

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

**Without input anti slewing and output isolation networks.

Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not function when **Main Power Switch** 2 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 39 • Turn up volume control
The Main Information Display shows the word "PROTECT", and there is no sound.	• 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 mono • Incorrect configuration • Stereo or Mono program material	• Select a mode other than Stereo • There is no surround information from mono sources (except with Theater and Hall surround modes) • Check speaker mode configuration • Some surround modes may not create rear-channel information from nonencoded programs
Unit does not respond to remote commands	• Weak batteries in remote • Wrong device selected • **Remote sensor** 24 is obscured	• Change remote batteries • Press the **AVR Selector** 6 • 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** 14 and Digital Audio stops	• Digital audio feed paused	• Resume play for DVD • Check that Digital Signal is fed to the Digital Input selected

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'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 button** 8 for five seconds, then release the button.

The unit will turn on automatically. 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.

Erase a macro as follows:
1. Simultaneously press and hold the Mute Button and the Macro Button containing the macro until the LED flashes.
2. Press the Surround Button to erase the macro.

Resetting the Remote
To reset the remote to its factory defaults, simultaneously press and hold any Input Selector and the “0” Numeric Key. When the Program LED flashes in amber, enter the code “333”. When the green LED goes out, the remote will have been fully reset.

Processor Reset
There may be instances when you wish to fully reset the AVR 154 to its factory defaults, or the unit may behave erratically after a power surge. To correct erratic behavior, first try turning the Master Power Switch off and unplugging the AC power cord for at least three minutes. Plug the cord back in and turn the receiver back on. If this doesn’t help, try a system reset.

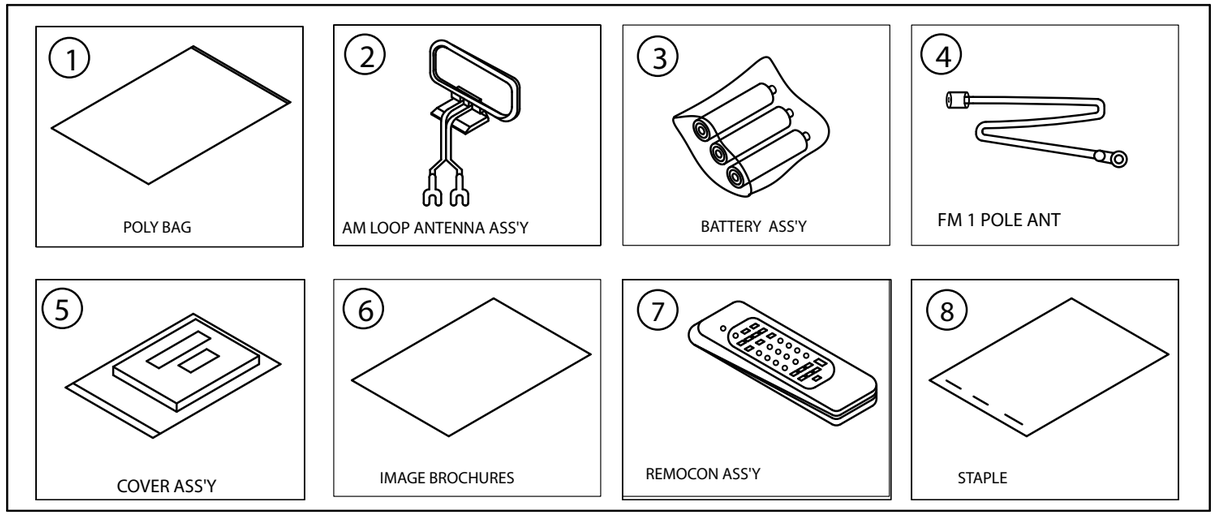
NOTES:
- A system reset erases all user configurations, including video resolution, speaker and level settings, and tuner presets. After a reset, you will need to reenter all of these settings.

To reset the AVR 154, place the receiver in Standby mode (press the front-panel Standby/On Switch so that the Power Indicator turns amber).
Press and hold the front-panel Surround Mode Button for 5 to 10 seconds until the RESET message appears in the display.

Follow the directions in the owner’s manual on page 32 to restore the picture if necessary.

Memory
If the AVR 154 is unplugged or experiences a power outage, it will retain user settings for up to four weeks.

1. Instruction manual ass'y - Accessories



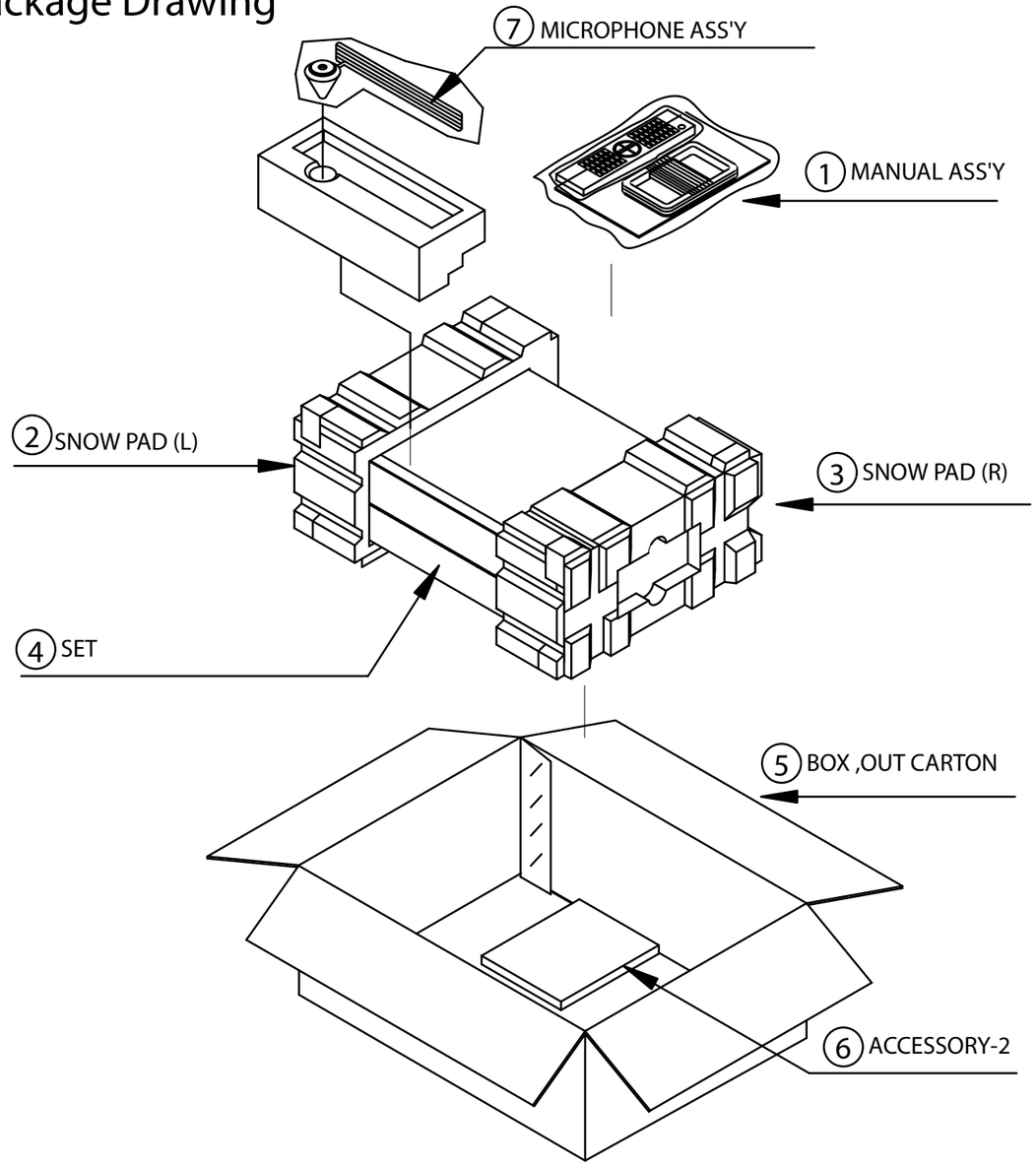
ACCESSORY-1				
NO		DESCRIPTION	PARTS NO.	Q,ty
1		POLY BAG	CPB1061W	1
2		AM LOOP ANTENNA ASS'Y	CSA1A027Z	1
3		BATTERY	CABR03P3	3
4		FM 1 POL ANT	CSA1A020Z	1
5		COVER ASS'Y	CGRAV350/230ZA	1
	1	COVER A	CGR2A436	1
	2	COVER B	CGR2A437	1
	3	ORNAMENT , AL A	CGX1A391C66	1
	4	ORNAMENT , AL B	CGX1A392C66	1
	5	SHEET,FRONT COVER	CQE1A220Z	1
	6	PAD , COVER	CPS1A676	1
	7	BAG , POLY	CPB1A176Z	1
6		IMAGE BROCHURES	HQE1A273Z	1
7		REMOCON ASS'Y	CARTAVR155/230	1
8		STAPLE	CPL0905	3

ACCESSORY-2			
NO	DESCRIPTION	PARTS NO.	Q,ty
9	POLY BAG	CPB1061W	1
10	BOOKLET,INFORMATION	CQE1A180Z	1
11	MANUAL,INSTRUCTION	CQX1A1317Z	1
12	MANUAL ,SETUP GUIDE	CQX1A1320Z	1
13	STAPLE	CPL0905	3

A	MICROPHONE ASS'T	CJXAVR340MICRO	1

2. Package Drawing

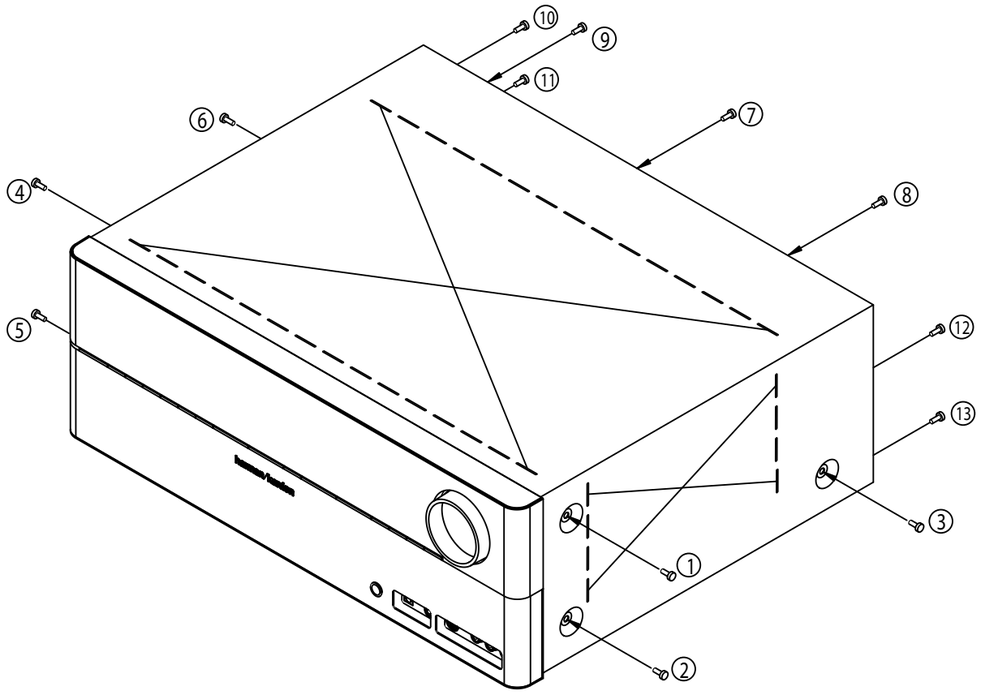
AVR155/230



NO	DESCRIPTION	PARTS NO.	Q,ty
1	ACCESSORY-1	CQXAVR155/230	1
2	SNOW,PAD(L)	CPS5A564	1
3	SNOW,PAD(R)	CPS5A565	1
4	SET	AVR155/230SET	1
5	BOX,OUT CARTON	CPG1A855W	1
6	ACCESSORY-2	CQXAVR155/230	1
7	MICROPHONE ASS'Y	CJXAVR340MICRO	1

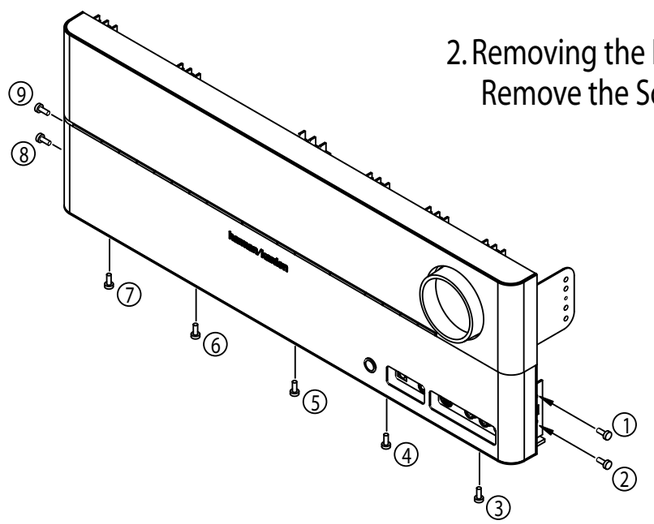
1. Removing the Top Cabinet

Remove the Screws ① ~ ⑬



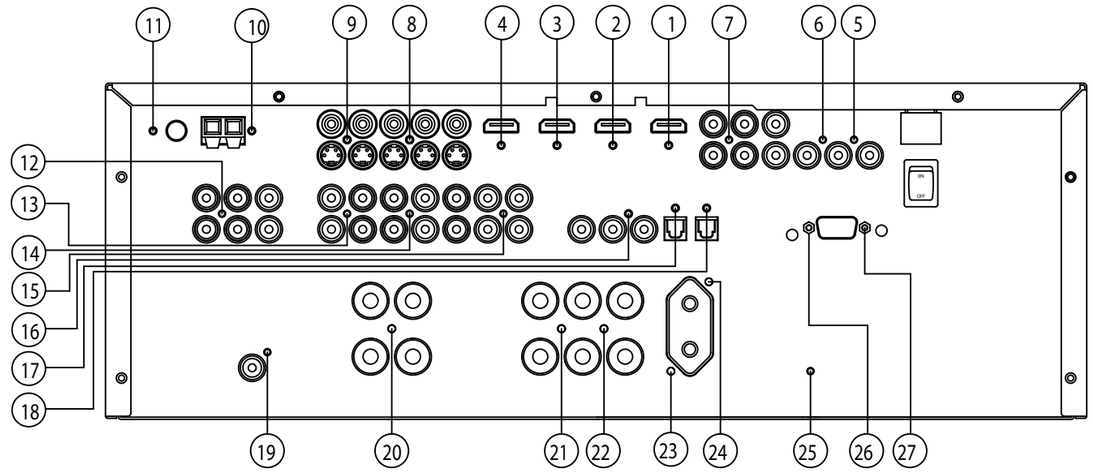
2. Removing the Front Panel

Remove the Screws ① ~ ⑨



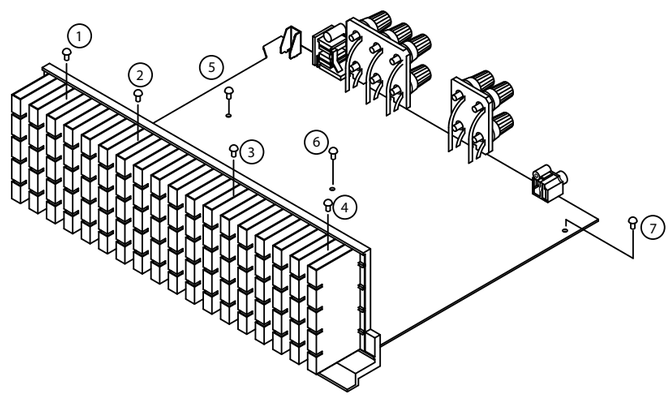
3. Removing the Rear Panel

Remove the Screws ① ~ ㉗

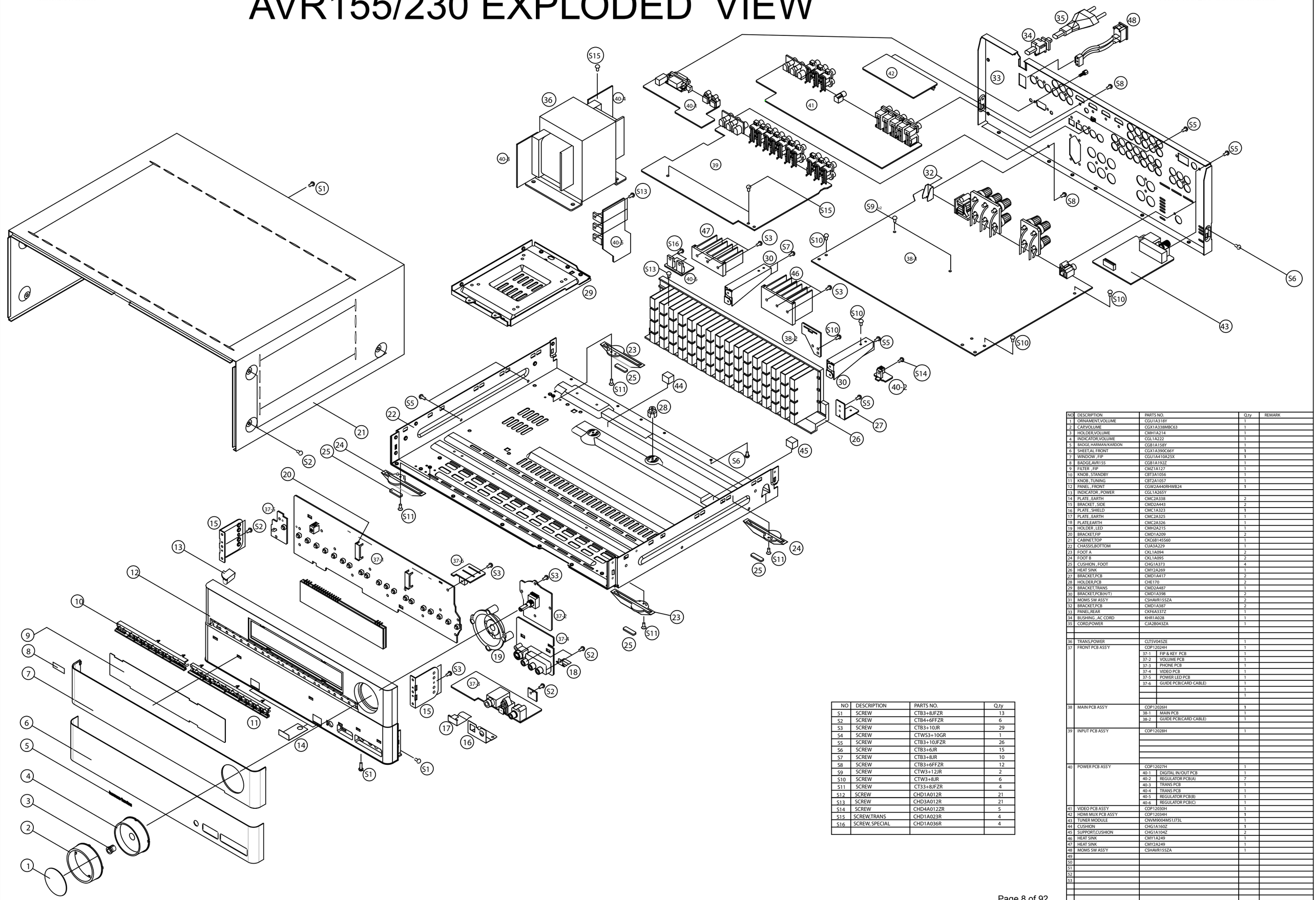


4. Removing the Main PCB

Remove the Screws ① ~ ⑦



AVR155/230 EXPLODED VIEW



NO	DESCRIPTION	PARTS NO.	Q,ty
S1	SCREW	CTB3+8JFZR	13
S2	SCREW	CTB4+6FFZR	6
S3	SCREW	CTB3+10JR	29
S4	SCREW	CTWS3+10GR	1
S5	SCREW	CTB3+10JFZR	26
S6	SCREW	CTB3+6JR	15
S7	SCREW	CTB3+8JR	10
S8	SCREW	CTB3+6FFZR	12
S9	SCREW	CTW3+12JR	2
S10	SCREW	CTW3+8JR	6
S11	SCREW	CT33+8JFZR	4
S12	SCREW	CHD1A012R	21
S13	SCREW	CHD3A012R	21
S14	SCREW	CHD4A012ZR	5
S15	SCREW,TRANS	CHD1A023R	4
S16	SCREW, SPECIAL	CHD1A036R	4

NO	DESCRIPTION	PARTS NO.		Q,ty	REMARK
1	ORNAMENT,VOLUME	CGU1A318Y		1	
2	CAP,VOLUME	CGX1A338MBC63		1	
3	HOLDER,VOLUME	CMH1A214		1	
4	INDICATOR,VOLUME	CGL1A222		1	
5	BADGE,HARMAN/KARDON	CGB1A158Y		1	
6	SHEET,AL FRONT	CGX1A390C66Y		1	
7	WINDOW , FIP	CGU1A410A25X		1	
8	BADGE,AVR155	CGB1A192Z		1	
9	FILTER , FIP	CMZ1A127		1	
10	KNOB , STANDBY	CBT3A1056		1	
11	KNOB , TUNING	CBT2A1057		1	
12	PANEL , FRONT	CGW2A440RHWB24		1	
13	INDICATOR , POWER	CGL1A265Y			
14	PLATE , EARTH	CMC2A338		2	
15	BRACKET , SIDE	CMD2A443		2	
16	PLATE , SHIELD	CMC1A323		1	
17	PLATE , EARTH	CMC2A325		1	
18	PLATE,EARTH	CMC2A326		1	
19	HOLDER , LED	CMH2A215		1	
20	BRACKET,FIP	CMD1A209		2	
21	CABINET,TOP	CKC6B145S60		1	
22	CHASSIS,BOTTOM	CUA3A229		1	
23	FOOT A	CKL1A094		2	
24	FOOT B	CKL1A095		2	
25	CUSHION , FOOT	CHG1A373		4	
26	HEAT SINK	CMY2A269		1	
27	BRACKET,PCB	CMD1A417		2	
28	HOLDER,PCB	CHE170		2	
29	BRACKET,TRANS	CMD2A487		1	
30	BRACKET,PCB(H/T)	CMD1A398		2	
31	MOMS SW ASS'Y	CSHAVR155ZA		2	
32	BRACKET,PCB	CMD1A387		2	
33	PANEL,REAR	CKF6A337Z		1	
34	BUSHING , AC CORD	KHR1A028		1	
35	CORD,POWER	CJA2B043ZA		1	
36	TRANS,POWER	CLT5V045ZE		1	
37	FRONT PCB ASS'Y	COP12024H		1	
		37-1	FIP & KEY PCB	1	
		37-2	VOLUME PCB	1	
		37-3	PHONE PCB	1	
		37-4	VIDEO PCB	1	
		37-5	POWER LED PCB	1	
		37-6	GUIDE PCB(CARD CABLE)	1	
				1	
38	MAIN PCB ASS'Y	COP12026H		1	
		38-1	MAIN PCB	1	
		38-2	GUIDE PCB(CARD CABLE)	1	
39	INPUT PCB ASS'Y	COP12028H		1	
40	POWER PCB ASS'Y	COP12027H		1	
		40-1	DIGITAL IN/OUT PCB	1	
		40-2	REGULATOR PCB(A)	7	
		40-3	TRANS PCB	1	
		40-4	TRANS PCB	1	
		40-5	REGULATOR PCB(B)	1	
		40-6	REGULATOR PCB(C)	1	
41	VIDEO PCB ASS'Y	COP12030H		1	
42	HDMI MUX PCB ASS'Y	COP12034H		1	
43	TUNER MODULE	CNVM9004MS1J73L		1	
44	CUSHION	CHG1A160Z		1	
45	SUPPORT,CUSHION	CHG1A104Z		2	
46	HEAT SINK	CMY1A249		1	
47	HEAT SINK	CMY2A249		1	
48	MOMS SW ASS'Y	CSHAVR155ZA		1	
49					
50					
51					
52					
53					

AVR155/230 Electrical Parts List			
Ref. #	**Part Number**	**Description**	**Value**
	CGB1A192Z	BADGE , AVR155	BADGE
	CGL1A222	INDICATOR , VOLUME	INDICATOR
	CGU1A318Y	ORNAMENT , VOLUME AVR255	ORNAMENT
	CGU1A410A25T	WINDOW , FIP	WINDOW
	CGX1A338MBC63	CAP , VOLUME	CAP
	CGX1A390C66Y	SHEET , AL FRONT AVR155	SHEET
	CHE36-3	CLAMPER , WIRE	CLAMPER
	CKC6B145S60	CABINET , TOP AVR350	CABINET
	CMH1A214	HOLDER , VOLUME	HOLDER
	CMZ1A127	FILTER , FIP AVR255	FILTER
	CMZ2A090	SHEET , VOLUME	SHEET
	CQB1A549Y	LABEL , ATTENTION DVD48	LABEL
	CQB1A551Z	LABEL , BAR CODE	LABEL
	CQB1A622	LABEL , SERIAL NO	LABEL
	CTB3+8JFZR	SCREW	SCREW
	CTB4+6FFZR	SCREW	SCREW
	CHE154	CLAMPER , ARM	CLAMPER
	CJXAVR340MICRO	MICRO PHONE ASS'Y	ASS'Y
	CPG1A855W	BOX , OUT CARTON AVR155/230	BOX
	CQB1A551Z	LABEL , BAR CODE	LABEL
	CQB1A876Z	LABEL , COUNTRY DVD29/230	LABEL
	CQS1A001	RIBON , BAR CODE	SONY(TR-4070)
	CQXAVR155/230	INSTRUCTION MANUAL ASS'Y	ASS'Y
	CARTAVR155/230	REMOCON TRANSMITTER ASS'Y	REMOCON
	CGRAVR350/230ZA	COVER ASS'Y	COVER ASS'Y
	CGR2A436	COVER , A AVR350	COVER A
	CGR2A437	COVER , B AVR350	COVER B
	CGX1A391C66	ORNAMENT , AL A AVR350	ORNAMENT
	CGX1A392C66	ORNAMENT , AL B AVR350	ORNAMENT
	CQX1A1317Y	MANUAL , INSTRUCTION AVR155/230	MANULAL
	CQX1A1320Z	MANUAL , SETUP AVR155/230	MANULAL
	CSA1A018Z	FM 1 POLE ANT	FM ANT
	CSA1A020Z	ANT , AM LOOP	AM ANT
FRONT PANEL ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	CGWAVR155/230	FRONT PANEL ASS'Y	ASS'Y
	CBT2A1057	KNOB , TUNING AVR350	KNOB
	CBT3A1056	KNOB , STANDBY AVR155	KNOB
	CGB1A158Y	BADGE , FRONT HARMAN/KARDON	BADGE
	CGL1A265Y	INDICATOR , POWER AVR155	INDICATOR
	CGW2A440RHWB24	PANEL , FRONT AVR350/230	PANEL
	CHR301	CLAMPER	CLAMPER
	CHS1A032	TAPE , HEMELON	TAPE
	CHS1A165	TAPE , HEMELON	TAPE
	CMC1A323	PLATE , SHIELD AVR350	PLATE
	CMC2A326	PLATE , EARTH AVR350	PLATE
	CMC2A338	PLATE , EARTH AVR350	PLATE
	CMD2A443	BRACKET , SIDE	BRACKET
	CMH2A215	HOLDER , LED AVR350	HOLDER
	CPE1A009	SHEET , BLIND	SHEET
	CTB3+10JR	SCREW	SCREW
	CTWS3+10GR	SCREW	SCREW
CB72	CWC4F2A17A250B	CABLE , CARD(17P, 1MM, 250MM)	CRAD CABLE
BOTTOM CHASSIS ASS'Y			
Ref. #	**Part Number**	**Description**	**Value**
	CUAAVR155/230	BOTTOM CHAASIS ASS'Y	ASS'Y
	CHD1A012ZR	SCREW , SPECIAL	SCREW
	CHD1A023R	SCREW , SPECIAL	SCREW
	CHD4A012R	SCREW , SPECIAL	SCREW
	CHE170	HOLDER , PCB	HOLDER
	CHE36-3	CLAMPER , WIRE	CLAMPER
	CHG1A104Z	CUSHION , RUBBER	CUSHION
	CHG1A160Z	CUSHION , RUBBER	CUSHION
	CHG1A373	CUSHION , FOOT AVR350	CUSHION
	CHS1A032	TAPE , HEMELON	TAPE
	CJA2B043WA	CORD , POWER CRX-E320/G(1.8M, FERRITE)	H03VVH2-F 2X0.75MM2 BK
	CKF6A337Y	PANEL , REAR AVR155/230	PANEL

BOTTOM CHASSIS ASS'Y			
Ref. #	**Part Number**	**Description**	**Value**
	CKF6A337Z	PANEL , REAR AVR155/230	PANEL
	CKL1A094	FOOT , A AVR350	FOOT
	CKL1A095	FOOT , B AVR350	FOOT
	CMD2A487	BRACKET , TRANS	BRACKET
	CNVM9004MS1J73L	TUNER , EUR MODULE	TUNER MODULE
	CTB3+10JFZR	SCREW	SCREW
	CTB3+6FFZR	SCREW	SCREW
	CTB3+6JR	SCREW	SCREW
	CTB3+8JR	SCREW	SCREW
	CTS3+8JFZR	SCREW	SCREW
	CTW3+12JR	SCREW	SCREW
	CTW3+8JR	SCREW	SCREW
	CUA3A229	CHASSIS , BOTTOM AVR350/230	CHASSIS
	KHR1A028	BUSHING , AC CORD	BUSHING
BN90	CSHAVR155ZA	MOMS SW ASS'Y	SW ASS'Y
	CSH1A009ZV	SWITCH , MOMS	SWITCH
	CWZAVR255ZA	WIRE , ASS'Y(2P,150mm)	WIRE
CB11	CWC4F2A13A100B	CABLE , CARD(13P, 100mm)	CARD CABLE
CB12	CWC1C4A21B110B	CABLE , CARD	CARD CABLE
CB13	CWC4C4A13B100B	CABLE , CARD	CARD CABLE
CB14	CWC4F2A13A100B	CABLE , CARD(13P, 100mm)	CARD CABLE
CB19	CWC4F2A07A080B	CABLE , CARD(7P, 80mm, B TYPE)	CARD CABLE
CB45	CWC4F2A07A080B	CABLE , CARD(7P, 80mm, B TYPE)	CARD CABLE
CB47	CWC4F2A07A120B	CABLE , CARD (7P, 120MM, 1MM)	CARD CABLE
F901	KBA2C4000TLEZ	FUSE(233TYPE, 4A,250V)	LITTEL FUSE
T901	CLT5V045ZE	TRANS , POWER MAIN(AVR145/230)	AVR145/230
FRONT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	CUP12024Z	PCB , FRONT AVR155(330X163, FR-1)	PCB
C714	CCBS1H151KBT	CAP , CERAMIC(150PF/50V)	150UF 50V K
C716	CCEA1AH331T	CAP , ELECT	330UF 10V
C719	CCBS1H102KBT	CAP , CERAMIC(1000PF/50V)	1000PF 50V K
C720	CCBS1H102KBT	CAP , CERAMIC(1000PF/50V)	1000PF 50V K
C721	CCBS1H102KBT	CAP , CERAMIC(1000PF/50V)	1000PF 50V K
C723	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C728	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C729	CCBS1H473ZFT	CAP , CERAMIC(47000PF/50V)	0.047UF 50V Z
C735	CCEA1CKS100T	CAP , ELECT	10UF 16V
C742	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	2200PF 16V
C793	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C794	CCBS1C222MXT	CAP , CERAMIC(2200PF/16V)	2200PF 16V
C795	CCBS1H102KBT	CAP , CERAMIC(1000PF/50V)	1000PF 50V K
C796	CCBS1H102KBT	CAP , CERAMIC(1000PF/50V)	1000PF 50V K
C805	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V Z
C806	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V Z
C807	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C808	CCBS1H181KBT	CAP , CERAMIC(180PF/50V)	180PF 50V
C809	CCEA1AH471T	CAP , ELECT	470UF 10V
C812	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C817	CCBS1H100JCT	CAP , CERAMIC(10PF/50V)	10PF 50V
C820	CCEA1HH100T	CAP , ELECT	10UF 50V
C821	CCEA1EH470T	CAP , ELECT	47UF 25V
C822	CCEA1EH470T	CAP , ELECT	47UF 25V
C823	CCEA1HH100T	CAP , ELECT	10UF 50V
C824	CCBS1H471KBT	CAP , CERAMIC(470PF/50V)	470PF 50V
C825	CCBS1H151KBT	CAP , CERAMIC(150PF/50V)	150PF 50V
C828	CCBS1H470JT	CAP , CERAMIC(47PF/50V)	47PF 50V
C830	CCBS1H473ZFT	CAP , CERAMIC(47000PF/50V)	0.047F 50V
C841	CCEA1HH100T	CAP , ELECT	10UF 50V
C842	CCEA1HH100T	CAP , ELECT	10UF 50V
C843	CCEA1HH100T	CAP , ELECT	10UF 50V
C850	CCBS1H471KBT	CAP , CERAMIC(470PF/50V)	470PF 50V
C851	CCBS1H471KBT	CAP , CERAMIC(470PF/50V)	470PF 50V
C852	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C855	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V K
C856	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V K
C857	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C862	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V K
C863	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V K

FRONT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
C866	CCEA1HH100T	CAP , ELECT	10UF 50V
C867	CCEA1HH100T	CAP , ELECT	10UF 50V
C868	CCEA1EH470T	CAP , ELECT	47UF 25V
C869	CCEA1EH470T	CAP , ELECT	47UF 25V
C870	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V K
C871	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V K
C872	CCEA1CH331T	CAP , ELECT	330UF 16V
C873	CCEA1CH331T	CAP , ELECT	330UF 16V
C874	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V K
C882	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C888	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C889	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C891	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V Z
C892	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V Z
C893	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V Z
C894	CCEA1CKS100T	CAP , ELECT	10UF 16V
C896	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C897	CCEA1AH471T	CAP , ELECT	470UF 10V
C903	CCEA1HKS2R2T	CAP , ELECT	2.2UF 50V SMALL SIZE
C905	CCEA1HKS2R2T	CAP , ELECT	2.2UF 50V SMALL SIZE
D455	CVD1SS133MT	DIODE	1SS133
D774	CVD1SS133MT	DIODE	1SS133
D775	CVD1SS133MT	DIODE	1SS133
D784	CVD1SS133MT	DIODE	1SS133
D785	CVD1SS133MT	DIODE	1SS133
L702	HLQ02C100KT	COIL , AXAIL	10uH
Q451	HVTKRC107MT	T.R	KRC107M
Q452	HVTKRA107MT	T.R	KRA107M
Q454	HVTKRC107MT	T.R	KRC107M
Q701	HVTKRC107MT	T.R	KRC107M
Q722	HVTKRA107MT	T.R	KRA107M
Q724	HVTKRC107MT	T.R	KRC107M
Q725	HVTKRC107MT	T.R	KRC107M
Q734	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q735	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q736	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q737	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q738	HVTKRC107MT	T.R	KRC107M
Q739	HVTKTA1271YT	T.R	KTA1271Y
Q740	HVTKTC3200GRT	T.R	KTC3200GR
R452	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R453	CRD20TJ362T	RES , CARBON	3.6K OHM 1/5W J
R454	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R701	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R704	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R705	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R706	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R708	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R709	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R710	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R711	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R718	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R721	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R722	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R723	CRD20TJ393T	RES , CARBON	39K OHM 1/5W J
R724	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R725	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R727	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R737	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R747	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R753	CRD20TF1001T	RES , CARBON	1K /1/5W /F
R754	CRD20TF1501T	RES , CARBON	1.5K /1/5W /F
R755	CRD20TF1801T	RES , CARBON	1.8K /1/5W /F
R756	CRD20TF2701T	RES , CARBON	2.7K /1/5W/F
R757	CRD20TF3301T	RES , CARBON	3.3K /1/5W/F
R758	CRD20TF5601T	RES , CARBON(5.6K/F)	5.6K /1/5W/F
R759	CRD20TF1001T	RES , CARBON	1K /1/5W /F
R760	CRD20TF1501T	RES , CARBON	1.5K /1/5W /F
R761	CRD20TF1801T	RES , CARBON	1.8K /1/5W /F
R762	CRD20TF2701T	RES , CARBON	2.7K /1/5W/F

FRONT PCB ASSY			
Ref. #	Part Number	Description	Value
R763	CRD20TF3301T	RES , CARBON	3.3K /1/5W/F
R764	CRD20TF5601T	RES , CARBON(5.6K/F)	5.6K /1/5W/F
R765	CRD20TF7501T	RES , CARBON (7.5K/F)	7.5K /1/5W/F
R766	CRD20TF1001T	RES , CARBON	1K /1/5W /F
R767	CRD20TF1501T	RES , CARBON	1.5K /1/5W /F
R768	CRD20TF1801T	RES , CARBON	1.8K /1/5W /F
R769	CRD20TF2701T	RES , CARBON	2.7K /1/5W/F
R781	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R782	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R783	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R784	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R786	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R787	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R791	CRD20TJ123T	RES , CARBON	12K OHM 1/5W J
R805	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R806	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R824	CRD20TF2200T	RES , CARBON(220 OHM, 1%)	220 OHM /1/5W /F
R825	CRD20TF6800T	RES , CARBON(680 OHM, 1%)	680 OHM /1/5W /F
R864	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R865	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R866	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R869	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R871	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R872	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R873	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R874	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R875	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R876	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R877	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R878	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R892	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R893	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R895	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R896	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R897	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R898	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R899	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R900	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R901	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R902	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R903	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R904	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R905	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R906	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R907	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R908	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R909	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R910	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R911	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R912	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R913	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R915	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R918	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R919	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R920	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R921	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R922	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R923	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R924	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R926	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R934	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R935	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R936	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R937	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
S701	HST1A020ZT	SW , TACT	TACT SWITCH
S702	HST1A020ZT	SW , TACT	TACT SWITCH
S703	HST1A020ZT	SW , TACT	TACT SWITCH
S704	HST1A020ZT	SW , TACT	TACT SWITCH
S705	HST1A020ZT	SW , TACT	TACT SWITCH
S706	HST1A020ZT	SW , TACT	TACT SWITCH

FRONT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
S707	HST1A020ZT	SW , TACT	TACT SWITCH
S708	HST1A020ZT	SW , TACT	TACT SWITCH
S709	HST1A020ZT	SW , TACT	TACT SWITCH
S710	HST1A020ZT	SW , TACT	TACT SWITCH
S711	HST1A020ZT	SW , TACT	TACT SWITCH
S712	HST1A020ZT	SW , TACT	TACT SWITCH
S713	HST1A020ZT	SW , TACT	TACT SWITCH
S714	HST1A020ZT	SW , TACT	TACT SWITCH
S715	HST1A020ZT	SW , TACT	TACT SWITCH
S716	HST1A020ZT	SW , TACT	TACT SWITCH
S717	HST1A020ZT	SW , TACT	TACT SWITCH
S718	HST1A020ZT	SW , TACT	TACT SWITCH
S719	HST1A020ZT	SW , TACT	TACT SWITCH
S720	HST1A020ZT	SW , TACT	TACT SWITCH
	CMC2A325	PLATE , EARTH AVR155	PLATE
BK71	CMD1A209	BRACKET , FLT	BRACKET
BK72	CMD1A209	BRACKET , FLT	BRACKET
BN10	CWZAVR155BN10	SHIELD WIRE ASS'Y(5P, 2MM, 350MM)	WIRE
BN18	CWZAVR155BN18	SHIELD WIRE ASS'Y (5P, 350MM, 2MM PITCH)	WIRE
BN22	CWZAVR155BN22	WIRE ASS'Y(7P, 2MM, 500MM)	WIRE
BN41	CWZAVR155BN41	SHIELD WIRE ASS'Y(7P, 2MM, 500MM)	WIRE
BN81	CWB1C907200BM	WIRE ASS'Y	WIRE
BN84	CWB2B905080EN	WIRE ASS'Y	WIRE
BN85	CWB2B903100EN	WIRE ASS'Y	WIRE
BN88	CWB2B905050EN	WIRE ASS'Y	WIRE
BN92	CWB2B905100EN	WIRE ASS'Y	WIRE
CN72	CJP17GA117ZY	WAFER	WAFER
CN84	CJP05GB46ZY	WAFER	WAFER
CN85	CJP03GA19ZY	WAFER , STRAIGHT(3PIN)	WAFER
CN88	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN92	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
D701	CVD1L0345W31BOCT20	L.E.D , WHITE	CVD1L0345W31BOCT201
D703	CVD1L0345W31BOCT20	L.E.D , WHITE	CVD1L0345W31BOCT201
D705	CVD1L0345W31BOCT20	L.E.D , WHITE	CVD1L0345W31BOCT201
D723	CVD30ASOGCAA-S7	L.E.D , ORANGE	T0L-30ASOGCAA-S7
D727	CVD1L0345W31BOCT20	L.E.D , WHITE	CVD1L0345W31BOCT201
D778	HVD1N5819T	DIODE , SCHOTTKY	1N5819
ET03	CMD1A629	BRACKET , PCB	BRACKET
FIP1	CFL17BT031GINK	F.I.P , AVR355	FIP(FUTABA,17BT031GINK)
IC73	HRVNJL34H380A	SENSOR , REMOCON	SENSOR
IC75	HVI74ACT04MTR	I.C , HEX	JRC(74ACT04MTR)
IC76	HVI74HCU04AFNG	I.C , INVERTER	FAIRCHILD(74HCU04AFNG)
IC86	HVINJM4556AL	I.C , HEADPHONE	JRC(NJM4556AL)
IC87	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068MTE1)
JK81	CJJ4M041Y	JACK , BOARD (COAX)	JACK
JK82	HJSTORX177L	MODULE , OPTICAL(RX)	OPT JACK
JK83	CJJ2E026Z	JACK , HEADPHONE(SILVER PLATE)	JACK
JK85	CJJ9M004Y	JACK , S-VHS (SILVER)	JACK
JK86	CJJ4S028Y	JACK , BOARD (3P SILVER)	JACK
JW83	CWE8202150RV	WIRE ASS'Y	WIRE
JW84	CWE8202150RV	WIRE ASS'Y	WIRE
JW88	CWE8202150RV	WIRE ASS'Y	WIRE
RL45	CSL4A016ZU	RELAY , 12V 2C2P	RELAY
VR74	CSR2A037Z	ENCODER	ENCODER
MAIN PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	CHD3A012R	SCREW , SPECIAL	ASS'Y
	CUP12026Y	PCB , MAIN AVR245(330X247, FR/1)	PCB
C501	CCEA1HH100T	CAP , ELECT	10UF 50V
C502	CCEA1HH100T	CAP , ELECT	10UF 50V
C503	CCEA1HH100T	CAP , ELECT	10UF 50V
C504	CCEA1HH100T	CAP , ELECT	10UF 50V
C505	CCEA1HH100T	CAP , ELECT	10UF 50V
C506	CCKT1H331KB	CAP , CERAMIC	330PF 50V K
C507	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	330PF 50V
C508	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	330PF 50V
C509	CCKT1H331KB	CAP , CERAMIC	330PF 50V K
C510	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	330PF 50V
C561	CCEA1CH101T	CAP , ELECT	100UF 16V

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
C562	CCEA1CH101T	CAP , ELECT	100UF 16V
C564	CCEA1CH101T	CAP , ELECT	100UF 16V
C565	CCEA1CH101T	CAP , ELECT	100UF 16V
C566	CCEA1CH101T	CAP , ELECT	100UF 16V
C567	CCEA1CH101T	CAP , ELECT	100UF 16V
C568	CCEA1CH101T	CAP , ELECT	100UF 16V
C569	CCEA1CH101T	CAP , ELECT	100UF 16V
C570	CCEA1CH101T	CAP , ELECT	100UF 16V
C571	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V
C572	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V
C573	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V
C574	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V
C575	CCBS1H681KBT	CAP , CERAMIC(680PF/50V)	680PF 50V
C601	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C602	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C603	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C604	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C605	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C606	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C607	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C608	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C609	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C610	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C681	CCEA1HH100T	CAP , ELECT	10UF 50V
C682	CCEA1HH100T	CAP , ELECT	10UF 50V
C683	CCEA1HH100T	CAP , ELECT	10UF 50V
C684	CCEA1HH100T	CAP , ELECT	10UF 50V
C685	CCEA1HH100T	CAP , ELECT	10UF 50V
C726	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C900	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C901	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C905	CCFT1H223ZF	CAP , CERAMIC	0.022UF 50V Z
C907	CCEA1CH101T	CAP , ELECT	100UF 16V
C908	CCFT1H223ZF	CAP , CERAMIC	0.022UF 50V Z
C910	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C911	CCEA1CH471T	CAP , ELECT	470UF 16V
C912	CCEA1EH221T	CAP , ELECT	220UF 25V
C913	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C914	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C917	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C924	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C939	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C940	CCEA1AH471T	CAP , ELECT	470UF 10V
C948	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C971	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C972	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C973	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C977	CCEA1HH3R3T	CAP , ELECT	3.3UF 50V
C980	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C981	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C990	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C991	CCEA1HH1R0T	CAP , ELECT	1UF 50V
C992	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C993	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C995	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C997	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C999	CCFT1H223ZF	CAP , CERAMIC	0.022UF 50V Z
D501	CVD1SS133MT	DIODE	1SS133
D502	CVD1SS133MT	DIODE	1SS133
D503	CVD1SS133MT	DIODE	1SS133
D504	CVD1SS133MT	DIODE	1SS133
D505	CVD1SS133MT	DIODE	1SS133
D581	CVD1SS133MT	DIODE	1SS133
D582	CVD1SS133MT	DIODE	1SS133
D583	CVD1SS133MT	DIODE	1SS133
D584	CVD1SS133MT	DIODE	1SS133
D585	CVD1SS133MT	DIODE	1SS133
D901	CVD1N4003SRT	DIODE , RECT	1N4003
D902	CVD1SS133MT	DIODE	1SS133
D911	CVD1SS133MT	DIODE	1SS133

MAIN PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
D912	CVD1SS133MT	DIODE	1SS133
D914	CVD1SS133MT	DIODE	1SS133
D917	CVD1SS133MT	DIODE	1SS133
D953	CVD1SS133MT	DIODE	1SS133
D954	CVD1N4003SRT	DIODE , RECT	1N4003
D955	CVD1N4003SRT	DIODE , RECT	1N4003
D956	CVD1N4003SRT	DIODE , RECT	1N4003
D957	CVD1N4003SRT	DIODE , RECT	1N4003
D961	CVD1N4003ST	DIODE , RECT	1N4003
D962	CVD1N4003SRT	DIODE , RECT	1N4003
D963	CVD1N4003SRT	DIODE , RECT	1N4003
D973	CVD1SS133MT	DIODE	1SS133
D974	CVD1SS133MT	DIODE	1SS133
D979	CVDZJ5.1BT	DIODE , ZENER	ZJ5.1B 1/2W
ET90	HJT1A025	PALTE , EARTH	MET37-0002
ET91	HJT1A025	PALTE , EARTH	MET37-0002
F901	KJCFC5S	HOLDER , FUSE	HOLDER
F902	KBA2D2500TLET	FUSE(SR-5,2.5A,250V)	SAVE FUSETECH
IC97	HVIRE5VT28CATZ	I.C , RESET	RICOH(RE5VT28CATZ)
Q501	HVTKTA1268GRT	T.R	KTA1268GR
Q502	HVTKTA1268GRT	T.R	KTA1268GR
Q503	HVTKTA1268GRT	T.R	KTA1268GR
Q504	HVTKTA1268GRT	T.R	KTA1268GR
Q505	HVTKTA1268GRT	T.R	KTA1268GR
Q511	HVTKTC3200GRT	T.R	KTC3200GR
Q512	HVTKTC3200GRT	T.R	KTC3200GR
Q513	HVTKTC3200GRT	T.R	KTC3200GR
Q514	HVTKTC3200GRT	T.R	KTC3200GR
Q515	HVTKTC3200GRT	T.R	KTC3200GR
Q516	HVTKTC3200GRT	T.R	KTC3200GR
Q517	HVTKTC3200GRT	T.R	KTC3200GR
Q518	HVTKTC3200GRT	T.R	KTC3200GR
Q519	HVTKTC3200GRT	T.R	KTC3200GR
Q520	HVTKTC3200GRT	T.R	KTC3200GR
Q541	HVTKTC3198YT	T.R	KTC3198Y
Q542	HVTKTC3198YT	T.R	KTC3198Y
Q543	HVTKTC3198YT	T.R	KTC3198Y
Q544	HVTKTC3198YT	T.R	KTC3198Y
Q545	HVTKTC3198YT	T.R	KTC3198Y
Q556	HVTKTC3200GRT	T.R	KTC3200GR
Q557	HVTKTC3200GRT	T.R	KTC3200GR
Q558	HVTKTC3200GRT	T.R	KTC3200GR
Q559	HVTKTC3200GRT	T.R	KTC3200GR
Q560	HVTKTC3200GRT	T.R	KTC3200GR
Q561	HVTKTC3200GRT	T.R	KTC3200GR
Q562	HVTKTC3200GRT	T.R	KTC3200GR
Q563	HVTKTC3200GRT	T.R	KTC3200GR
Q564	HVTKTC3200GRT	T.R	KTC3200GR
Q565	HVTKTC3200GRT	T.R	KTC3200GR
Q601	HVTKTA1268GRT	T.R	KTA1268GR
Q602	HVTKTA1268GRT	T.R	KTA1268GR
Q603	HVTKTA1268GRT	T.R	KTA1268GR
Q604	HVTKTA1268GRT	T.R	KTA1268GR
Q605	HVTKTA1268GRT	T.R	KTA1268GR
Q681	HVTKSC2785YT	T.R	KSC2785Y
Q682	HVTKSC2785YT	T.R	KSC2785Y
Q683	HVTKSC2785YT	T.R	KSC2785Y
Q684	HVTKSC2785YT	T.R	KSC2785Y
Q685	HVTKSC2785YT	T.R	KSC2785Y
Q901	HVTKSC2785YT	T.R	KSC2785Y
Q938	HVTKRA107MT	T.R	KRA107M
Q939	HVTKRA107MT	T.R	KRA107M
Q941	HVTKSC2785YT	T.R	KSC2785Y
Q942	HVTKSC2785YT	T.R	KSC2785Y
Q943	HVTKSC2785YT	T.R	KSC2785Y
Q951	HVTKRC107MT	T.R	KRC107M
Q952	HVTKRA107MT	T.R	KRA107M
Q960	HVTKRC107MT	T.R	KRC107M
Q961	HVTKTA1024YT	T.R	A1024Y
Q991	HVTKRC107MT	T.R	KRC107M

MAIN PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
Q992	HVTKRA107MT	T.R	KRA107M
R501	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R502	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R503	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R504	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R505	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R506	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R507	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R508	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R509	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R510	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R511	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R512	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R513	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R514	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R515	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R516	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R517	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R518	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R519	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R520	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R521	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R522	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R523	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R524	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R525	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R531	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R532	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R533	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R534	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R535	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R536	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R537	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R538	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R539	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R540	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R541	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R542	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R543	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R544	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R545	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R556	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R557	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R558	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R559	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R560	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R561	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R562	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R563	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R564	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R565	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R566	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R567	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R568	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R569	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R570	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R571	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R572	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R573	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R574	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R575	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R576	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R577	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R578	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R579	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R580	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R581	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R582	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R583	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R584	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
R585	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R586	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R587	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R588	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R589	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R590	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R591	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R592	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R593	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R594	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R595	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R596	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R597	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R598	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R599	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R600	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R601	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R602	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R603	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R604	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R605	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R606	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R607	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R608	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R609	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R610	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R631	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R632	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R633	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R634	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R635	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R636	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R637	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R638	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R639	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R640	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R646	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R647	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R648	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R649	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R650	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R651	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R652	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R653	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R654	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R655	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R666	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R667	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R668	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R669	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R670	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R671	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R672	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R673	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R674	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R675	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R676	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R677	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R678	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R679	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R680	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R681	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R682	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R683	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R684	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R685	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R686	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R687	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R688	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R689	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J

MAIN PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R690	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R696	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R697	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R698	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R699	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R700	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R771	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R772	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R773	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R774	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R775	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R781	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R782	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R783	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R784	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R785	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R900	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R901	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R902	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R903	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R906	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R907	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R910	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R912	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R917	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R918	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R919	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R920	CRD25TJ393T	RES , CARBON	39K OHM 1/5W J
R932	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R939	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R940	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R941	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R942	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R944	CRD25TJ223T	RES , CARBON	22K OHM 1/4W J
R946	CRD25TJ223T	RES , CARBON	22K OHM 1/4W J
R947	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R948	CRD25TJ153T	RES , CARBON	15K OHM 1/4W J
R955	CRD20TJ203T	RES , CARBON	20K OHM 1/5W J
R956	CRD20TJ394T	RES , CARBON	390K OHM 1/5W J
R957	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R960	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R961	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R962	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R963	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R966	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R986	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R987	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R988	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R989	CRD20TJ302T	RES , CARBON	3K OHM 1/5W J
R991	CRD20TJ822T	RES , CARBON	8.2K OHM 1/5W J
R992	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R998	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
	CMYAVR155	HEAT SINK ASS'Y	ASS'Y
	CHD1A012R	SCREW , SPECIAL	SCREW
	CHD3A012R	SCREW , SPECIAL	SCREW
	CMD1A398	BRACKET , PCB	BRACKET
	CMD1A417	BRACKET , PCB	BRACKET
	CMY1A249	HEAT SINK	HEAT SINK
	CMY2A249	HEAT SINK	HEAT SINK
	CMY3A269	HEAT SINK	HEAT SINK
	CTB3+10JR	SCREW	SCREW
	CTB3+8JR	SCREW	SCREW
	K8AYG6260	COMPOUND , SILICONE	SILICONE
Q652	HVT2SB1560-OKM	T.R , POWER	TR
Q653	HVT2SB1560-OKM	T.R , POWER	TR
Q654	HVT2SB1560-OKM	T.R , POWER	TR
Q655	HVT2SB1560-OKM	T.R , POWER	TR
Q657	HVT2SD2390-OKM	T.R , POWER	TR
Q658	HVT2SD2390-OKM	T.R , POWER	TR
Q659	HVT2SD2390-OKM	T.R , POWER	TR

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
Q660	HVT2SD2390-OKM	T.R , POWER	TR
Q661	HVT2SB1560-OKM	T.R , POWER	TR
Q670	HVT2SD2390-OKM	T.R , POWER	TR
	CTW3+8JR	SCREW	SCREW
	CWE8202150AA	WIRE ASS'Y	WIRE
BN19	CWB3FE03250UP	WIRE ASS'Y	WIRE
BN20	CWB3FC04280UP	WIRE ASS'Y	WIRE
BN82	CWB1C902050EN	WIRE ASS'Y	WIRE
BN83	CWB1C902050EN	WIRE ASS'Y	WIRE
BN84	CWB1C902050EN	WIRE ASS'Y	WIRE
BN85	CWB1C902050EN	WIRE ASS'Y	WIRE
BN86	CWB1C902050EN	WIRE ASS'Y	WIRE
BN98	HJP08GA130ZK	WAFER	WAFER
BN99	CWB1C902250BM	WIRE ASS'Y	WIRE
CN11	CJP13GA117ZY	WAFER , CARD CABLE	WAFER
CN12	CJP21GA115ZY	WAFER , CARD CABLE	WAFER
CN61	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN62	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN63	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN64	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN65	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN90	CJP02GA89ZY	WAFER	WAFER
CN91	CJP02GA89ZY	WAFER	WAFER
CN92	CJP02KA060ZY	WAFER	WAFER
C563	CCEA1CH101T	CAP , ELECT	100UF 16V
C631	CCEA1JH101E	CAP , ELECT	100UF 63V
C632	CCEA1JH101E	CAP , ELECT	100UF 63V
C633	CCEA1JH101E	CAP , ELECT	100UF 63V
C634	CCEA1JH101E	CAP , ELECT	100UF 63V
C635	CCEA1JH101E	CAP , ELECT	100UF 63V
C636	CCEA1JH101E	CAP , ELECT	100UF 63V
C637	CCEA1JH101E	CAP , ELECT	100UF 63V
C638	CCEA1JH101E	CAP , ELECT	100UF 63V
C639	CCEA1JH101E	CAP , ELECT	100UF 63V
C640	CCEA1JH101E	CAP , ELECT	100UF 63V
C902	CCET50VKL4682NK	CAP , ELECT	6800UF/50V
C904	KCKDKS472ME	CAP , CERAMIC(X1/Y2/SC)	0.0047UF/2.5KV
C906	CCEA1EH102E	CAP , ELECT	1000UF 25V
C909	CCET50VKL4682NK	CAP , ELECT	6800UF/50V
C915	CCET50VKL4682NK	CAP , ELECT	6800UF/50V
C916	CCET50VKL4682NK	CAP , ELECT	6800UF/50V
ET01	CMD1A387	BRACKET , PCB	BRACKET
JK90	CJJ4M040Z	JACK , BOARD (SW)	JACK
JK91	CJJ5R006Z	TERMINAL , SPEAKER	TERMINAL
JK92	CJJ5P020Z	TERMINAL , SPEAKER	TERMINAL
JW90	CWE8212120VV	WIRE , RED	WIRE
JW91	CWE8212180VV	WIRE ASS'Y	WIRE
JW92	CWEE212080VV	WIRE ASS'Y	WIRE
JW93	CWEE202110VV	WIRE (BLACK)	WIRE
L501	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L502	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L503	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L504	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L505	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
OL91	KJJ7A022Z	OUTLET , AC(EUR/1P)	A302D0061P
Q858	HVT2SA1360O	T.R	2SA1360O
Q871	HVT2SA1360O	T.R	2SA1360O
Q872	HVT2SA1360O	T.R	2SA1360O
Q874	HVT2SA1360O	T.R	2SA1360O
Q875	HVT2SA1360O	T.R	2SA1360O
Q881	HVT2SC3423O	T.R	2SC3423O
Q882	HVT2SC3423O	T.R	2SC3423O
Q883	HVT2SC3423O	T.R	2SC3423O
Q884	HVT2SC3423O	T.R	2SC3423O
Q885	HVT2SC3423O	T.R	2SC3423O
RY94	CSL1E002ZE	RELAY , POWER	G5PA-1 (DC 6V)
R656	CRF5EKR27HX2K	RES , CEMENT	0.5UH K
R657	CRF5EKR27HX2K	RES , CEMENT	0.5UH K
R658	CRF5EKR27HX2K	RES , CEMENT	0.5UH K
R659	CRF5EKR27HX2K	RES , CEMENT	0.5UH K

MAIN PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R660	CRF5EKR27HX2K	RES , CEMENT	0.5UH K
R905	CRG1ANJ1R0H	RES , METAL OXIDE FILM	1 OHM 1W J
R911	CRG1ANJ271H	RES , METAL OXIDE(270/1W)	270 OHM 1W J
R990	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R993	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R995	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R997	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R999	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
TH91	KRTP42T7D330B	THERMAL SENSOR , POSISTOR	P42T7D330BW20
T902	CLT5I009ZE	TRANS , SUB CD6002/N	TRANS
POWER PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12027H	AVR155/230 POWER PCB ASS'Y	ASS'Y
C104	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01UF 25V
C105	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01UF 25V
C106	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C107	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01UF 25V
C108	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01UF 25V
C109	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C117	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C118	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01UF 25V
C119	CCEA1JH470TS	CAP , ELECT	47UF 63V
C120	CCEA1JH470TS	CAP , ELECT	47UF 63V
C121	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01UF 25V
C131	CCEA1HH3R3T	CAP , ELECT	3.3UF 50V
C750	CCEA1CH101T	CAP , ELECT	100UF 16V
C751	CCEA1CH101T	CAP , ELECT	100UF 16V
C852	CCEA1HH100T	CAP , ELECT	10UF 50V
C853	CCEA1HH100T	CAP , ELECT	10UF 50V
C854	CCEA1HH100T	CAP , ELECT	10UF 50V
C855	CCEA1HH100T	CAP , ELECT	10UF 50V
C856	CCEA1HH100T	CAP , ELECT	10UF 50V
C902	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C903	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C906	CCEA1CH101T	CAP , ELECT	100UF 16V
C907	CCEA1CH101T	CAP , ELECT	100UF 16V
C912	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C919	CCKT1H102KB	CAP , CERAMIC	1000PF 50V K
C920	CCEA1HH470T	CAP , ELECT	47UF 50V
C921	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C922	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C923	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C924	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C925	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C926	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C927	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C928	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C931	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C932	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C933	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C934	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C935	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C936	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C937	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C938	CCEA1CH101T	CAP , ELECT	100UF 16V
C939	CCEA1EH101T	CAP , ELECT	100UF 25V
C940	CCEA1EH101T	CAP , ELECT	100UF 25V
C953	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C954	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C957	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
D101	CVDZJ15BT	DIODE , ZENER	ZJ15B 1/2W
D102	HVDMTZJ27BT	DIODE , ZENER	MTZJ27B 1/2W
D104	CVD1N4003ST	DIODE , RECT	1N4003
D105	CVD1N4003ST	DIODE , RECT	1N4003
D108	CVD1N4003ST	DIODE , RECT	1N4003
D109	CVDZJ8.2BT	DIODE , ZENER	ZJ8.2B 1/2W
D111	CVDZJ8.2BT	DIODE , ZENER	ZJ8.2B 1/2W
D114	CVD1N4003ST	DIODE , RECT	1N4003
D115	CVD1N4003ST	DIODE , RECT	1N4003

POWER PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
D116	CVD1N4003ST	DIODE , RECT	1N4003
D117	CVD1N4003ST	DIODE , RECT	1N4003
D124	CVD1N4003ST	DIODE , RECT	1N4003
D125	CVD1N4003ST	DIODE , RECT	1N4003
D201	CVDZJ3.3BT	DIODE , ZENER	ZJ3.3B 1/2W
D801	CVD1SS133MT	DIODE	1SS133
D802	CVD1SS133MT	DIODE	1SS133
Q104	HVTKSC2316YT	T.R	KSC2316Y
Q911	HVTKTA1267YT	T.R	KTA1267Y
Q912	HVTKTC3198YT	T.R	KTC3198Y
Q913	HVTKTC3198YT	T.R	KTC3198Y
R101	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R108	CRD20TJ8R2T	RES , CARBON	8.2 OHM 1/5W J
R109	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R110	CRD20TJ8R2T	RES , CARBON	8.2 OHM 1/5W J
R112	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R113	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R120	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R121	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R122	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R750	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R751	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R875	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R876	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R877	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R878	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R879	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R883	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R884	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R885	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R886	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R887	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R891	CRD20TJ391T	RES , CARBON	390 OHM 1/5W J
R893	CRD20TJ391T	RES , CARBON	390 OHM 1/5W J
R894	CRD20TJ391T	RES , CARBON	390 OHM 1/5W J
R895	CRD20TJ391T	RES , CARBON	390 OHM 1/5W J
R896	CRD20TJ391T	RES , CARBON	390 OHM 1/5W J
R901	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R912	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R913	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R917	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R918	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R919	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R920	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R921	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R922	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R923	CRD25TJ153T	RES , CARBON	15K OHM 1/4W J
R924	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R925	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R926	CRD25TJ103T	RES , CARBON	10K OHM 1/4W J
R927	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R928	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R941	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R942	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R956	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R957	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
VR82	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
VR83	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
VR84	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
VR85	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
VR86	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
BN17	CJP06GB143ZB	FEMALE HEADER(6P, 2.54mm)	HEADER
BN20	CWB1C905120BM	WIRE ASS'Y	WIRE
BN43	CWB1C903200BM	WIRE ASS'Y	WIRE
BN96	CWB1C909180EN	WIRE ASS'Y(9P, 2MM, 180MM)	WIRE
BN97	CWB1C905120EN	WIRE ASS'Y	WIRE
CN13	CJP05GA01ZY	WAFER(YMW025-05R)	WAFER
CN19	CJP03GA90ZY	WAFER	WAFER
CN20	CJP04GA90ZM	WAFER	WAFER
CN32	CJP02GA19ZY	WAFER , 2PIN	WAFER

POWER PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
CN33	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN34	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN35	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN36	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN47	CJP07GA117ZY	WAFER	WAFER
CN81	CJP07GA01ZY	WAFER , STRAIGHT(7PIN)	WAFER
CN89	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN96	CJP09GA19ZY	WAFER, STRAIGHT, 9PIN	WAFER
CN97	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN98	HJP08GB131ZK	WAFER	WAFER
C122	CCEA1JH101E	CAP , ELECT	100UF 63V
C929	CCEA1VH222EZ	CAP , ELECT (2200UF/35V, 12.5X31)	2200UF 35V
C930	CCEA1VH222EZ	CAP , ELECT (2200UF/35V, 12.5X31)	2200UF 35V
C941	CCEA1EH682E	CAP , ELECT(KR3, 25V/6800, 18X35.5)	6800UF 24V
D991	CVDKBU804FMA	BRIDGE DIODE ASS'Y	ASS'Y
	CMY1A219	HEAT SINK (BRIDGE DIODE)	HEAT SINK
	CTB3+12JR	SCREW	SCREW
	HVDKBU804F	DIODE , BRIDGE	DIODE
	K8AYG6260	COMPOUND , SILICONE	SILICONE
D992	CVDKBU804FMA	BRIDGE DIODE ASS'Y	ASS'Y
	CMY1A219	HEAT SINK (BRIDGE DIODE)	HEAT SINK
	CTB3+12JR	SCREW	SCREW
	HVDKBU804F	DIODE , BRIDGE	DIODE
	K8AYG6260	COMPOUND , SILICONE	SILICONE
IC81	CVIST232CDR	IC , RS232C(SO-16TYPE)	ST(ST232CDR)
IC89	HVIKIA278R05PI	REGULATOR (5V OUTPUT LOW DROP)	KEC(KIA278R05PI)
IC90	CVIKIA278R15PI	I.C , REGULATOR(15V OUTPUT LOW DROP)	KEC(KIA278R15PI)
IC91	CVIKIA7915PI	I.C , REGULATOR(15V, TO-220AB)	KEC(KIA7915PI)
IC93	CVIKIA7905PI	I.C , REGULATOR(-5V)	KEC(KIA7815PI)
IC94	HVIKIA7809API	I.C , REGULATOR +9V	KEC(KIA7909API)
JK75	HJSTORX177L	MODULE , OPTICAL(RX)	TORX177L
JK76	HJSTORX177L	MODULE , OPTICAL(RX)	TORX177L
JK97	CJJ9W001Z	JACK , 9P D-SUB FEMALE(RS-232C, SEMCO)	JACK
Q852	HVTKTD600KGR	T.R , BIAS	KTD600KGR
Q853	HVTKTD600KGR	T.R , BIAS	KTD600KGR
Q854	HVTKTD600KGR	T.R , BIAS	KTD600KGR
Q855	HVTKTD600KGR	T.R , BIAS	KTD600KGR
Q856	HVTKTD600KGR	T.R , BIAS	KTD600KGR
R104	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R105	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R106	CRQ1AJR33H	RES , FUSE	0.33 OHM 1W J
R107	CRQ1AJR33H	RES , FUSE	0.33 OHM 1W J
SW95	CST1A010Z	SW , TACT	TACT SWITCH
SW98	HSH2B018Z	SW , PUSH	SPUJ19XSM011
INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12028H	AVR155/230 INPUT PCB ASS'Y	ASS'Y
C201	CCUS1H221JA	CAP , CHIP	220PF 50V J
C202	CCUS1H221JA	CAP , CHIP	220PF 50V J
C203	CCUS1H221JA	CAP , CHIP	220PF 50V J
C204	CCUS1H221JA	CAP , CHIP	220PF 50V J
C205	CCUS1H221JA	CAP , CHIP	220PF 50V J
C206	CCUS1H221JA	CAP , CHIP	220PF 50V J
C209	CCUS1H221JA	CAP , CHIP	220PF 50V J
C210	CCUS1H221JA	CAP , CHIP	220PF 50V J
C211	CCUS1H221JA	CAP , CHIP	220PF 50V J
C212	CCUS1H221JA	CAP , CHIP	220PF 50V J
C213	CCUS1H221JA	CAP , CHIP	220PF 50V J
C214	CCUS1H221JA	CAP , CHIP	220PF 50V J
C215	CCUS1H221JA	CAP , CHIP	220PF 50V J
C216	CCUS1H221JA	CAP , CHIP	220PF 50V J
C219	CCUS1H221JA	CAP , CHIP	220PF 50V J
C220	CCUS1H221JA	CAP , CHIP	220PF 50V J
C221	CCUS1H221JA	CAP , CHIP	220PF 50V J
C222	CCUS1H221JA	CAP , CHIP	220PF 50V J
C223	CCUS1H221JA	CAP , CHIP	220PF 50V J
C224	CCUS1H221JA	CAP , CHIP	220PF 50V J
C260	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C269	CCUS1A105KC	CAP , CHIP	1UF 10V K

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
C274	CCUS1A105KC	CAP , CHIP	1UF 10V K
C277	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C279	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C280	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C289	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C290	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C291	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C293	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C301	CCUS1H471JA	CAP , CHIP	470PF 50V J
C302	CCUS1H471JA	CAP , CHIP	470PF 50V J
C303	CCUS1H471JA	CAP , CHIP	470PF 50V J
C304	CCUS1H471JA	CAP , CHIP	470PF 50V J
C305	CCUS1H471JA	CAP , CHIP	470PF 50V J
C306	CCUS1H471JA	CAP , CHIP	470PF 50V J
C309	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C310	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C311	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C312	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C313	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C314	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C317	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C318	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C319	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C321	CCUS1H561JA	CAP , CHIP	560PF 50V J
C322	CCUS1H561JA	CAP , CHIP	560PF 50V J
C323	CCUS1H561JA	CAP , CHIP	560PF 50V J
C324	CCUS1H561JA	CAP , CHIP	560PF 50V J
C325	CCUS1H561JA	CAP , CHIP	560PF 50V J
C326	CCUS1H561JA	CAP , CHIP	560PF 50V J
C327	CCUS1H561JA	CAP , CHIP	560PF 50V J
C328	CCUS1H561JA	CAP , CHIP	560PF 50V J
C329	CCUS1H561JA	CAP , CHIP	560PF 50V J
C330	CCUS1H561JA	CAP , CHIP	560PF 50V J
C331	CCUS1H561JA	CAP , CHIP	560PF 50V J
C332	CCUS1H561JA	CAP , CHIP	560PF 50V J
C337	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C338	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C339	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C350	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C351	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C352	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C353	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C354	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C355	CCUS1H332KC	CAP , CHIP	3300PF 50V K
C369	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C370	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C381	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C382	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C383	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C384	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C385	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C386	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C391	CCUS1H151JA	CAP , CHIP	150PF 50V J
C392	CCUS1H151JA	CAP , CHIP	150PF 50V J
C393	CCUS1H151JA	CAP , CHIP	150PF 50V J
C394	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C395	CCUS1H151JA	CAP , CHIP	150PF 50V J
C396	CCUS1H151JA	CAP , CHIP	150PF 50V J
C601	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C603	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C605	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C607	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C609	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C611	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C613	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C615	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C617	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C619	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C621	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C623	CCUS1H104KC	CAP , CHIP	0.1UF 50V K

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
C625	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C627	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C629	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C631	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C701	CCUS1H150JA	CAP , CHIP	15PF 50V J
C702	CCUS1H150JA	CAP , CHIP	15PF 50V J
C704	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C705	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C707	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C708	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C709	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C711	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C712	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C713	CCUS1H390JA	CAP , CHIP	39PF 50V J
C714	CCUS1H390JA	CAP , CHIP	39PF 50V J
C718	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C719	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C722	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C723	CCUS1H473KC	CAP , CHIP	0.047UF 50V K
C725	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C727	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C729	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C731	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C733	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C734	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C735	CCUS1H470JA	CAP , CHIP	47PF 50V J
C738	CCUS1A105KC	CAP , CHIP	1UF 10V K
C739	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C741	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C742	CCUS1H180JA	CAP , CHIP	18PF 50V J
C743	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C744	CCUS1H180JA	CAP , CHIP	18PF 50V J
C745	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C746	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C747	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C748	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C751	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C755	CCUS1H561JA	CAP , CHIP	560PF 50V J
C757	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C758	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C759	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C760	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C761	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C762	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C763	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C765	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C768	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C769	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C770	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C771	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C772	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C773	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C775	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C776	CCUS1H473KC	CAP , CHIP	0.047UF 50V K
C793	CCUS1H101JA	CAP , CHIP	100PF 50V J
C794	CCUS1H181JA	CAP , CHIP	180PF 50V J
C795	CCUS1H181JA	CAP , CHIP	180PF 50V J
C796	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C797	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C798	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
D201	CVD1SS355T	DIODE , CHIP	1SS355T
D202	CVD1SS355T	DIODE , CHIP	1SS355T
D203	CVD1SS355T	DIODE , CHIP	1SS355T
D204	CVD1SS355T	DIODE , CHIP	1SS355T
D207	CVD1SS355T	DIODE , CHIP	1SS355T
D208	CVD1SS355T	DIODE , CHIP	1SS355T
D209	CVD1SS355T	DIODE , CHIP	1SS355T
D210	CVD1SS355T	DIODE , CHIP	1SS355T
D211	CVD1SS355T	DIODE , CHIP	1SS355T
D212	CVD1SS355T	DIODE , CHIP	1SS355T

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
D213	CVD1SS355T	DIODE , CHIP	1SS355T
D214	CVD1SS355T	DIODE , CHIP	1SS355T
IC20	CVINJW1197CFC2	I.C , VOL WITH INPUT SELECTOR	JRC(NJW1197CFC2)
IC21	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC22	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC23	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC25	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC31	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC32	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC33	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC71	HVI74HCU04AFNG	I.C , INVERTER	TOSHIBA(TC74HCU04AFNG)
IC72	HVI74HCU04AFNG	I.C , INVERTER	TOSHIBA(TC74HCU04AFNG)
IC73	HVIAK4589VQ-T	I.C , CODEC + DIR	ATMEL(AK4589VQ)
IC74	HVILC72723M	IC , PLL (RDS)	SANYO(LC72723M)
IC75	CVICS49510-CQ	I.C , DSP	CIRRUS LOGIC(CS49510CQ)
IC76	CVIES29LV800ET70TG	IC , FLASH MEMORY (8Mbit)	EXCEL SEMI(ES29LV800ET-70TG)
IC77	HVI57V161610ET7	SDRAM 16M 7NS	HYNIX(HY57V161610ET-7)
IC78	HVINJM2391DL133	I.C , CHIP REGULATOR (+3.3V)	JRC(NJM2391DL1-13)
IC79	CVIKIA1117S18	I.C , REGULATOR(SOT-223)	KEC(KIA1117S/F18)
IC88	CVIKIA1117S33	I.C , REGULATOR(SOT-223)	KEC(KIA1117S/F33)
IC89	CVIM24C32WMN6TP	I.C , EEPROM (32 Kbit)	ST(M24C32WMN6TP)
IC90	CVIT5CC1	I.C , FLASH U-COM	TOSHIBA(T5CC1)
IC91	HVI74ACT04MTR	I.C , HEX	ST(74ACT04MTR)
IC94	CVIKIA1117S50	I.C , REGULATOR(SOT-223)	KEC(KIA1117S50-RTK/P)
L701	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L702	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L703	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L704	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L705	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
Q729	HVTKRC107S	T.R , CHIP	KRC107S
Q730	HVTKRC107S	T.R , CHIP	KRC107S
RN61	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN62	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN63	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN64	CRJ104DJ101T	RES , 4ARRAY (1608*4)	100 OHM/1608*4
RN65	CRJ104DJ101T	RES , 4ARRAY (1608*4)	100 OHM/1608*4
RN66	CRJ104DJ101T	RES , 4ARRAY (1608*4)	100 OHM/1608*4
RN71	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN72	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN73	CRJ104DJ103T	RES , 4ARRAY (1608*4)	
RN74	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN75	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN76	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN77	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN78	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN79	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN80	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN81	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN82	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN83	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN84	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN85	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN86	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN87	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN88	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN89	CRJ104DJ103T	RES , 4ARRAY (1608*4)	10K OHM/1608*4
RN90	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN91	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 OHM/1608*4
RN92	CRJ104DJ101T	RES , 4ARRAY (1608*4)	100 OHM/1608*4
R201	CRJ10DJ101T	RES , CHIP	100 OHM
R202	CRJ10DJ101T	RES , CHIP	100 OHM
R203	CRJ10DJ101T	RES , CHIP	100 OHM
R204	CRJ10DJ101T	RES , CHIP	100 OHM
R205	CRJ10DJ101T	RES , CHIP	100 OHM
R206	CRJ10DJ101T	RES , CHIP	100 OHM
R209	CRJ10DJ101T	RES , CHIP	100 OHM
R210	CRJ10DJ101T	RES , CHIP	100 OHM
R211	CRJ10DJ101T	RES , CHIP	100 OHM
R212	CRJ10DJ471T	RES , CHIP	470 OHM
R213	CRJ10DJ101T	RES , CHIP	100 OHM

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R214	CRJ10DJ101T	RES , CHIP	100 OHM
R215	CRJ10DJ101T	RES , CHIP	100 OHM
R216	CRJ10DJ101T	RES , CHIP	100 OHM
R219	CRJ10DJ101T	RES , CHIP	100 OHM
R220	CRJ10DJ101T	RES , CHIP	100 OHM
R221	CRJ10DJ101T	RES , CHIP	100 OHM
R222	CRJ10DJ101T	RES , CHIP	100 OHM
R223	CRJ10DJ101T	RES , CHIP	100 OHM
R224	CRJ10DJ272T	RES , CHIP	2.7K OHM
R227	CRJ10DJ474T	RES , CHIP	470K OHM
R228	CRJ10DJ474T	RES , CHIP	470K OHM
R229	CRJ10DJ474T	RES , CHIP	470K OHM
R230	CRJ10DJ474T	RES , CHIP	470K OHM
R231	CRJ10DJ474T	RES , CHIP	470K OHM
R232	CRJ10DJ474T	RES , CHIP	470K OHM
R235	CRJ10DJ474T	RES , CHIP	470K OHM
R236	CRJ10DJ474T	RES , CHIP	470K OHM
R237	CRJ10DJ474T	RES , CHIP	470K OHM
R238	CRJ10DJ474T	RES , CHIP	470K OHM
R239	CRJ10DJ474T	RES , CHIP	470K OHM
R240	CRJ10DJ474T	RES , CHIP	470K OHM
R241	CRJ10DJ474T	RES , CHIP	470K OHM
R242	CRJ10DJ474T	RES , CHIP	470K OHM
R245	CRJ10DJ474T	RES , CHIP	470K OHM
R246	CRJ10DJ474T	RES , CHIP	470K OHM
R247	CRJ10DJ474T	RES , CHIP	470K OHM
R248	CRJ10DJ474T	RES , CHIP	470K OHM
R249	CRJ10DJ474T	RES , CHIP	470K OHM
R250	CRJ10DJ103T	RES , CHIP	10K OHM
R253	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R254	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R256	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R257	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R258	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R259	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R261	CRJ10DJ184T	RES , CHIP	184K OHM
R262	CRJ10DJ184T	RES , CHIP	184K OHM
R263	CRJ10DJ184T	RES , CHIP	184K OHM
R264	CRJ10DJ184T	RES , CHIP	184K OHM
R265	CRJ10DJ184T	RES , CHIP	184K OHM
R266	CRJ10DJ184T	RES , CHIP	184K OHM
R271	CRJ10DJ242T	RES , CHIP	2.4K OHM
R272	CRJ10DJ242T	RES , CHIP	2.4K OHM
R273	CRJ10DJ242T	RES , CHIP	2.4K OHM
R274	CRJ10DJ242T	RES , CHIP	2.2K OHM
R275	CRJ10DJ242T	RES , CHIP	2.4K OHM
R276	CRJ10DJ242T	RES , CHIP	2.4K OHM
R281	CRJ10DJ512T	RES , CHIP	5.1K OHM
R282	CRJ10DJ512T	RES , CHIP	5.1K OHM
R283	CRJ10DJ512T	RES , CHIP	5.1K OHM
R284	CRJ10DJ912T	RES , CHIP	9.1K OHM
R285	CRJ10DJ512T	RES , CHIP	5.1K OHM
R286	CRJ10DJ512T	RES , CHIP	5.1K OHM
R291	CRJ10DJ184T	RES , CHIP	180K OHM
R292	CRJ10DJ184T	RES , CHIP	180K OHM
R293	CRJ10DJ184T	RES , CHIP	180K OHM
R294	CRJ10DJ184T	RES , CHIP	180K OHM
R295	CRJ10DJ184T	RES , CHIP	180K OHM
R296	CRJ10DJ184T	RES , CHIP	180K OHM
R301	CRJ10DJ332T	RES , CHIP	3.3K OHM
R302	CRJ10DJ332T	RES , CHIP	3.3K OHM
R303	CRJ10DJ332T	RES , CHIP	3.3K OHM
R304	CRJ10DJ332T	RES , CHIP	3.3K OHM
R305	CRJ10DJ332T	RES , CHIP	3.3K OHM
R306	CRJ10DJ332T	RES , CHIP	3.3K OHM
R307	CRJ10DJ332T	RES , CHIP	3.3K OHM
R308	CRJ10DJ332T	RES , CHIP	3.3K OHM
R309	CRJ10DJ332T	RES , CHIP	3.3K OHM
R310	CRJ10DJ332T	RES , CHIP	3.3K OHM
R311	CRJ10DJ332T	RES , CHIP	3.3K OHM

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R312	CRJ10DJ332T	RES , CHIP	3.3K OHM
R317	CRJ10DJ561T	RES , CHIP	560 OHM
R318	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R321	CRJ10DJ512T	RES , CHIP	5.1K OHM
R322	CRJ10DJ122T	RES , CHIP	1.2K OHM
R323	CRJ10DJ122T	RES , CHIP	1.2K OHM
R324	CRJ10DJ512T	RES , CHIP	5.1K OHM
R325	CRJ10DJ512T	RES , CHIP	5.1K OHM
R326	CRJ10DJ122T	RES , CHIP	1.2K OHM
R327	CRJ10DJ122T	RES , CHIP	1.2K OHM
R328	CRJ10DJ103T	RES , CHIP	10K OHM
R329	CRJ10DJ512T	RES , CHIP	5.1K OHM
R330	CRJ10DJ122T	RES , CHIP	1.2K OHM
R331	CRJ10DJ122T	RES , CHIP	1.2K OHM
R332	CRJ10DJ512T	RES , CHIP	5.1K OHM
R341	CRJ10DJ122T	RES , CHIP	1.2K OHM
R344	CRJ10DJ122T	RES , CHIP	1.2K OHM
R345	CRJ10DJ122T	RES , CHIP	1.2K OHM
R348	CRJ10DJ122T	RES , CHIP	1.2K OHM
R349	CRJ10DJ122T	RES , CHIP	1.2K OHM
R352	CRJ10DJ122T	RES , CHIP	1.2K OHM
R361	CRJ10DJ104T	RES , CHIP	100K OHM
R362	CRJ10DJ104T	RES , CHIP	100K OHM
R363	CRJ10DJ104T	RES , CHIP	100K OHM
R364	CRJ10DJ104T	RES , CHIP	100K OHM
R365	CRJ10DJ104T	RES , CHIP	100K OHM
R366	CRJ10DJ104T	RES , CHIP	100K OHM
R371	CRJ10DJ512T	RES , CHIP	5.1K OHM
R372	CRJ10DJ512T	RES , CHIP	5.1K OHM
R373	CRJ10DJ512T	RES , CHIP	5.1K OHM
R374	CRJ10DJ103T	RES , CHIP	10K OHM
R375	CRJ10DJ512T	RES , CHIP	5.1K OHM
R376	CRJ10DJ512T	RES , CHIP	5.1K OHM
R381	CRJ10DJ561T	RES , CHIP	5.6K OHM
R382	CRJ10DJ561T	RES , CHIP	5.6K OHM
R383	CRJ10DJ561T	RES , CHIP	5.6K OHM
R384	CRJ10DJ561T	RES , CHIP	5.6K OHM
R385	CRJ10DJ561T	RES , CHIP	5.6K OHM
R386	CRJ10DJ561T	RES , CHIP	5.6K OHM
R389	CRJ10DJ184T	RES , CHIP	180K OHM
R390	CRJ10DJ184T	RES , CHIP	180K OHM
R391	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R392	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R393	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R394	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R395	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R396	CRJ10DF3920T	RES. CHIP (392R 1%)	3.9K OHM 1%
R701	CRJ10DJ103T	RES , CHIP	10K OHM
R702	CRJ10DJ103T	RES , CHIP	10K OHM
R703	CRJ10DJ103T	RES , CHIP	10K OHM
R706	CRJ10DJ222T	RES , CHIP	2.2K OHM
R707	CRJ10DJ222T	RES , CHIP	2.2K OHM
R708	CRJ10DJ101T	RES , CHIP	100 OHM
R709	CRJ10DJ103T	RES , CHIP	10K OHM
R710	CRJ10DJ103T	RES , CHIP	10K OHM
R711	CRJ10DJ103T	RES , CHIP	10K OHM
R714	CRJ10DJ104T	RES , CHIP	100K OHM
R715	CRJ10DJ104T	RES , CHIP	100K OHM
R716	CRJ10DJ472T	RES , CHIP	4.7K OHM
R717	CRJ10DJ3R3T	RES , CHIP	3.3 OHM
R718	CRJ10DJ123T	RES , CHIP	12K OHM
R719	CRJ10DJ473T	RES , CHIP	47K OHM
R720	CRJ10DJ473T	RES , CHIP	47K OHM
R721	CRJ10DJ330T	RES , CHIP	33 OHM
R723	CRJ10DJ2R7T	RES , CHIP	2.7 OHM
R724	CRJ10DJ101T	RES , CHIP	100 OHM
R725	CRJ10DJ473T	RES , CHIP	47K OHM
R726	CRJ10DJ473T	RES , CHIP	47K OHM
R727	CRJ10DJ473T	RES , CHIP	47K OHM
R728	CRJ10DJ102T	RES , CHIP	1K OHM

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R729	CRJ10DJ123T	RES , CHIP	12K OHM
R730	CRJ10DJ123T	RES , CHIP	12K OHM
R733	CRJ10DJ100T	RES , CHIP	10 OHM
R736	CRJ10DJ241T	RES , CHIP	240 OHM
R737	CRJ10DJ330T	RES , CHIP	33 OHM
R739	CRJ10DJ1R0T	RES , CHIP	1 OHM
R740	CRJ10DJ820T	RES , CHIP	82 OHM
R741	CRJ10DJ330T	RES , CHIP	33 OHM
R742	CRJ10DJ330T	RES , CHIP	33 OHM
R743	CRJ10DJ330T	RES , CHIP	33 OHM
R744	CRJ10DJ0R0T	RES , CHIP	0 OHM
R746	CRJ10DJ0R0T	RES , CHIP	0 OHM
R747	CRJ10DJ330T	RES , CHIP	33 OHM
R748	CRJ10DJ330T	RES , CHIP	33 OHM
R751	CRJ10DJ330T	RES , CHIP	33 OHM
R752	CRJ10DJ330T	RES , CHIP	33 OHM
R753	CRJ10DJ103T	RES , CHIP	10K OHM
R754	CRJ10DJ103T	RES , CHIP	10K OHM
R755	CRJ10DJ750T	RES , CHIP	75 OHM
R756	CRJ10DJ103T	RES , CHIP	10K OHM
R757	CRJ10DJ750T	RES , CHIP	75 OHM
R759	CRJ10DJ330T	RES , CHIP	33 OHM
R760	CRJ10DJ105T	RES , CHIP	1M OHM
R761	CRJ10DJ104T	RES , CHIP	100K OHM
R762	CRJ10DJ104T	RES , CHIP	100K OHM
R763	CRJ10DJ472T	RES , CHIP	4.7K OHM
R764	CRJ10DJ472T	RES , CHIP	4.7K OHM
R765	CRJ10DJ103T	RES , CHIP	10K OHM
R766	CRJ10DJ103T	RES , CHIP	10K OHM
R767	CRJ10DJ301T	RES , CHIP	300 OHM
R768	CRJ10DJ562T	RES , CHIP	5.6K OHM
R771	CRJ10DJ0R0T	RES , CHIP	0 OHM
R773	CRJ10DJ332T	RES , CHIP	3.3K OHM
R774	CRJ10DJ332T	RES , CHIP	3.3K OHM
R775	CRJ10DJ332T	RES , CHIP	3.3K OHM
R776	CRJ10DJ332T	RES , CHIP	3.3K OHM
R777	CRJ10DJ102T	RES , CHIP	1K OHM
R778	CRJ10DJ103T	RES , CHIP	10K OHM
R779	CRJ10DJ102T	RES , CHIP	1K OHM
R780	CRJ10DJ102T	RES , CHIP	1K OHM
R781	CRJ10DJ750T	RES , CHIP	75 OHM
R782	CRJ10DJ272T	RES , CHIP	2.7K OHM
R783	CRJ10DJ272T	RES , CHIP	2.7K OHM
R784	CRJ10DJ473T	RES , CHIP	47K OHM
R785	CRJ10DJ104T	RES , CHIP	100K OHM
R786	CRJ10DJ471T	RES , CHIP	470 OHM
R787	CRJ10DJ103T	RES , CHIP	10K OHM
R788	CRJ10DJ103T	RES , CHIP	10K OHM
R789	CRJ10DJ103T	RES , CHIP	10K OHM
R791	CRJ10DJ103T	RES , CHIP	10K OHM
R793	CRJ10DJ103T	RES , CHIP	10K OHM
R794	CRJ10DJ102T	RES , CHIP	1K OHM
R795	CRJ10DJ102T	RES , CHIP	1K OHM
R796	CRJ10DJ102T	RES , CHIP	1K OHM
R799	CRJ10DJ103T	RES , CHIP	10K OHM
X702	HOX27000E180S	CRYSTAL , CHIP(27MHZ,SMD)	27MHz
C261	CCEA1EH470T	CAP , ELECT	47UF 25V
C262	CCEA1EH470T	CAP , ELECT	47UF 25V
C263	CCEA1EH470T	CAP , ELECT	47UF 25V
C264	CCEA1EH470T	CAP , ELECT	47UF 25V
C265	CCEA1EH470T	CAP , ELECT	47UF 25V
C266	CCEA1EH470T	CAP , ELECT	47UF 25V
C267	CCEA1EH470T	CAP , ELECT	47UF 25V
C268	CCEA1EH470T	CAP , ELECT	47UF 25V
C272	CCEA1HH100T	CAP , ELECT	10UF 50V
C273	CCEA1HH100T	CAP , ELECT	10UF 50V
C275	CCEA1HH100T	CAP , ELECT	10UF 50V
C276	CCEA1HH100T	CAP , ELECT	10UF 50V
C281	CCEA1HH100T	CAP , ELECT	10UF 50V
C282	CCEA1HH100T	CAP , ELECT	10UF 50V

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
C283	CCEA1HH100T	CAP , ELECT	10UF 50V
C284	CCEA1HH100T	CAP , ELECT	10UF 50V
C285	CCEA1HH100T	CAP , ELECT	10UF 50V
C286	CCEA1HH100T	CAP , ELECT	10UF 50V
C292	CCEA1CH101T	CAP , ELECT	100UF 16V
C294	CCEA1CH101T	CAP , ELECT	100UF 16V
C341	CCEA1HH100T	CAP , ELECT	10UF 50V
C342	CCEA1HH100T	CAP , ELECT	10UF 50V
C343	CCEA1HH100T	CAP , ELECT	10UF 50V
C344	CCEA1HH100T	CAP , ELECT	10UF 50V
C345	CCEA1HH100T	CAP , ELECT	10UF 50V
C346	CCEA1HH100T	CAP , ELECT	10UF 50V
C349	CCEA1CH101T	CAP , ELECT	100UF 16V
C358	CCEA1CH101T	CAP , ELECT	100UF 16V
C359	CCEA1CH101T	CAP , ELECT	100UF 16V
C360	CCEA1CH101T	CAP , ELECT	100UF 16V
C371	CCEA1HH100T	CAP , ELECT	10UF 50V
C372	CCEA1HH100T	CAP , ELECT	10UF 50V
C373	CCEA1HH100T	CAP , ELECT	10UF 50V
C374	CCEA1HH100T	CAP , ELECT	10UF 50V
C375	CCEA1HH100T	CAP , ELECT	10UF 50V
C376	CCEA1HH100T	CAP , ELECT	10UF 50V
C389	CCEA1HH100T	CAP , ELECT	10UF 50V
C390	CCEA1HH100T	CAP , ELECT	10UF 50V
C600	CCEA1CH101T	CAP , ELECT	100UF 16V
C602	CCEA1CH101T	CAP , ELECT	100UF 16V
C604	CCEA1CH101T	CAP , ELECT	100UF 16V
C606	CCEA1CH101T	CAP , ELECT	100UF 16V
C608	CCEA1CH101T	CAP , ELECT	100UF 16V
C610	CCEA1CH101T	CAP , ELECT	100UF 16V
C612	CCEA1CH101T	CAP , ELECT	100UF 16V
C614	CCEA1CH101T	CAP , ELECT	100UF 16V
C616	CCEA1CH101T	CAP , ELECT	100UF 16V
C618	CCEA1CH101T	CAP , ELECT	100UF 16V
C620	CCEA1CH101T	CAP , ELECT	100UF 16V
C622	CCEA1CH101T	CAP , ELECT	100UF 16V
C624	CCEA1CH101T	CAP , ELECT	100UF 16V
C626	CCEA1CH101T	CAP , ELECT	100UF 16V
C628	CCEA1CH101T	CAP , ELECT	100UF 16V
C630	CCEA1CH101T	CAP , ELECT	100UF 16V
C703	CCEA1CH101T	CAP , ELECT	100UF 16V
C706	CCEA1CH101T	CAP , ELECT	100UF 16V
C717	CCEA1CH101T	CAP , ELECT	100UF 16V
C720	CCEA1AH471T	CAP , ELECT	470UF 10V
C721	CCEA1AH471T	CAP , ELECT	470UF 10V
C724	CCEA1AH471T	CAP , ELECT	470UF 10V
C726	CCEA1CH101T	CAP , ELECT	100UF 16V
C728	CCEA1AH471T	CAP , ELECT	470UF 10V
C730	CCEA1CH101T	CAP , ELECT	100UF 16V
C736	CCEA1HH2R2T	CAP , ELECT	2.2UF 50V
C737	CCEA1CH101T	CAP , ELECT	100UF 16V
C740	CCEA1CH101T	CAP , ELECT	100UF 16V
C749	CCEA1CH101T	CAP , ELECT	100UF 16V
C764	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C766	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C767	CCEA1CKS100T	CAP , ELECT	10UF 16V
C774	CCEA1CKS101T	CAP , ELECT	100UF 16V
C777	CCEA1CH101T	CAP , ELECT	100UF 16V
D221	CVD1N4003ST	DIODE , RECT	1N4003
D222	CVD1N4003ST	DIODE , RECT	1N4003
D703	CVD1N4003ST	DIODE , RECT	1N4003
D704	CVD1N4003SRT	DIODE , RECT	1N4003
IC87	HVIRE5VT28CATZ	I.C , RESET	
Q301	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q302	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q303	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q304	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q305	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q306	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q311	HVTKTC2874BT	T.R , MUTE	KTC2874B

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
BN46	CWZAVR154BN46	SHIELD WIRE ASS'Y	WIRE
BN49	CWB2B905080EN	WIRE ASS'Y	WIRE
CN10	CJP05GB46ZY	WAFER	WAFER
CN11	CJP13GA117ZY	WAFER , CARD CABLE	WAFER
CN12	CJP21GA115ZY	WAFER , CARD CABLE	WAFER
CN13	CJP13GA115ZY	WAFER , CARD CABLE	WAFER
CN14	CJP13GA117ZY	WAFER , CARD CABLE	WAFER
CN17	CJP06GB142ZB	PIN HEADER(6P, 2.54mm)	HEADER
CN18	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN19	CJP07GA117ZY	WAFER	WAFER
CN20	CJP05GA01ZY	WAFER(YMW025-05R)	WAFER
CN22	CJP07GA19ZY	WAFER , STRAIGHT(7PIN)	WAFER
CN49	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN72	CJP17GA117ZY	WAFER	WAFER
C732	CCEA0JKR3222E	CAP , ELECT	3300UF 6.3V
IC36	HVIKIA7808API	I.C , REGULATOR +8V	KEC(KIA7808API)
IC37	CVIKIA7908PI	I.C , REGULATOR(TO-220IS)	KEC(KIA7908PI)
JK11	CJJ4R019W	TERMINAL , IN/OUT	JACK
JK12	CJJ4P014W	JACK , IN/OUT	JACK
JK13	CJJ4R019W	TERMINAL , IN/OUT	JACK
JK14	CJJ4P043W	JACK IN/OUT	JACK
JK78	CJJ4S022Z	JACK , BOARD	JACK
X701	HOX24576E150TF	CRYSTAL	24.576MHz
X703	HOX04332E200C	CRYSTAL	4.332MHz
VIDEO PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12030H	VIDEO PCB ASS'Y	ASS'Y
IC41	CVINJM2595MTE1	I.C , VIDEO S/W	JRC(NJM2595MTE1)
IC42	CVINJM2595MTE1	I.C , VIDEO S/W	JRC(NJM2595MTE1)
IC43	CVINJM2595MTE1	I.C , VIDEO S/W	JRC(NJM2595MTE1)
IC51	HVIHCF4053M013T	I.C, ANALOG MULTIPLEXER	ST(HCF4053M013T)
IC52	HVIHCF4053M013T	I.C, ANALOG MULTIPLEXER	ST(HCF4053M013T)
IC53	CVINJM2587V	I.C , NJM2587V(TE2)	JRC(NJM2587VTE2)
IC54	HVIMM1511XNRE	IC, Y/C-MIX	MITSUMI(MM1511XNRE)
IC61	CVINJW1321FP1	I.C , VIDEO S/W	JRC(NJW1321FP1)
IC71	HVILC74763M	I.C , OSD	SANYO(LC74763M)
IC72	HVI74ACT04MTR	I.C , HEX	FARICHILD(74ACT04MTR)
C401	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C402	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C403	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C406	CCEA1HKS1R0T	CAP , ELECT	1UF 50V SMALL SIZE
C407	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C411	CCEA1HH100T	CAP , ELECT	10UF 50V
C412	CCEA1HH100T	CAP , ELECT	10UF 50V
C413	CCEA1HH100T	CAP , ELECT	10UF 50V
C421	CCEA1HH100T	CAP , ELECT	10UF 50V
C422	CCEA1HH100T	CAP , ELECT	10UF 50V
C423	CCEA1HH100T	CAP , ELECT	10UF 50V
C451	CCEA1HH100T	CAP , ELECT	10UF 50V
C452	CCEA1HH100T	CAP , ELECT	10UF 50V
C453	CCEA1HH100T	CAP , ELECT	10UF 50V
C461	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C462	CCEA1CH101T	CAP , ELECT	100UF 16V
C463	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C464	CCEA1CH101T	CAP , ELECT	100UF 16V
C466	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C467	CCEA1CH101T	CAP , ELECT	100UF 16V
C468	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C469	CCEA1CH101T	CAP , ELECT	100UF 16V
C471	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C472	CCEA1CH101T	CAP , ELECT	100UF 16V
C473	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C474	CCEA1CH101T	CAP , ELECT	100UF 16V
C481	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C483	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C491	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C492	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C493	CCBS1H101KBT	CAP , CERAMIC(100PF/50V)	100PF 50V
C500	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z

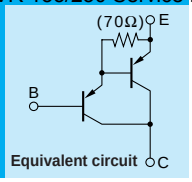
VIDEO PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
C501	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01F 50V
C503	CCEA1HH100T	CAP , ELECT	10UF 50V
C504	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C505	CCEA1HH100T	CAP , ELECT	10UF 50V
C511	CCBS1E103ZFT	CAP , CERAMIC(10000PF/25V)	0.01F 50V
C513	CCEA1HKS1R0T	CAP , ELECT	1UF 50V SMALL SIZE
C514	CCEA1HH100T	CAP , ELECT	10UF 50V
C515	CCEA1HH100T	CAP , ELECT	10UF 50V
C521	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C522	CCEA1CH101T	CAP , ELECT	100UF 16V
C524	CCEA1CH101T	CAP , ELECT	100UF 16V
C525	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C531	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C532	CCEA1CH101T	CAP , ELECT	100UF 16V
C533	CCEA1CH101T	CAP , ELECT	100UF 16V
C534	CCEA1CH101T	CAP , ELECT	100UF 16V
C535	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C536	CCEA1AH471T	CAP , ELECT	470UF 10V
C537	CCEA1CH101T	CAP , ELECT	100UF 16V
C538	CCEA1CH101T	CAP , ELECT	100UF 16V
C539	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C543	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C544	CCEA1CH101T	CAP , ELECT	100UF 16V
C548	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C549	CCEA1CH101T	CAP , ELECT	100UF 16V
C552	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C553	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C554	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C555	CCBS1C272MXT	CAP , CERAMIC(2700PF/16V)	2700PF 16V
C559	CCEA1HH1R0T	CAP , ELECT	1UF 50V
C601	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C602	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C603	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C604	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C605	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C606	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C611	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C612	CCEA1HH100T	CAP , ELECT	10UF 50V
C613	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C614	CCEA1HH100T	CAP , ELECT	10UF 50V
C615	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C616	CCEA1HH100T	CAP , ELECT	10UF 50V
C621	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C622	CCEA1HH100T	CAP , ELECT	10UF 50V
C623	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C624	CCEA1HH100T	CAP , ELECT	10UF 50V
C625	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22 PF 50V
C626	CCEA1HH100T	CAP , ELECT	10UF 50V
C671	CCEA1CH101T	CAP , ELECT	100UF 16V
C672	CCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C673	CCEA1HH100T	CAP , ELECT	10UF 50V
C701	CCBS1H270JT	CAP , CERAMIC(27PF/50V)	27 PF 50V
C702	CCBS1H270JT	CAP , CERAMIC(27PF/50V)	27 PF 50V
C703	CCBS1H330JT	CAP , CERAMIC(33PF/50V)	33 PF 50V
C704	CCBS1H330JT	CAP , CERAMIC(33PF/50V)	33 PF 50V
C705	CCBS1H181KBT	CAP , CERAMIC(180PF/50V)	180PF 50V
C708	CCEA1HHR47T	CAP , ELECT	0.47UF 50V
C711	CCEA1AH471T	CAP , ELECT	470UF 10V
C717	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22PF 50V
C721	CCBS1H560JT	CAP , CERAMIC(56PF/50V)	56PF 50V
C722	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22PF 50V
C723	CCEA1HH0R1T	CAP , ELECT	0.1UF 50V
C725	HCQI1H682JZT	CAP , MYLAR	6800PF 50V J
C726	CCEA1HKS1R0T	CAP , ELECT	1UF 50V SMALL SIZE
C731	CCBS1H220JCT	CAP , CERAMIC(22PF/50V)	22PF 50V
C732	CCBS1H330JT	CAP , CERAMIC(33PF/50V)	33PF 50V
C733	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C734	CCEA1HH1R0T	CAP , ELECT	1UF 50V
C736	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C737	CCEA1CH101T	CAP , ELECT	100UF 16V

VIDEO PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
C741	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
D500	CVD1SS133MT	DIODE	1SS133
D501	CVD1SS133MT	DIODE	1SS133
D502	CVD1SS133MT	DIODE	1SS133
D505	CVD1SS133MT	DIODE	1SS133
D512	CVD1SS133MT	DIODE	1SS133
D514	CVD1SS133MT	DIODE	1SS133
D741	CVD1SS133MT	DIODE	1SS133
L731	KLQ5R6J405T	COIL, PEAKING(RADIAL)	5.6UH J 4X5
L736	HLQ02C101JT	COIL , AXAIL	100UH,J
Q501	HVTKSA733CYT	T.R	KSA733CYT
Q504	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q505	HVTKRA107MT	T.R	KRA107M
Q507	HVTKRC107MT	T.R	KRC107M
Q511	HVTKSA733CYT	T.R	KSA733CYT
Q512	HVTKRC107MT	T.R	KRC107M
Q515	HVTKRA107MT	T.R	KRA107M
Q516	HVTKRC107MT	T.R	KRC107M
Q517	HVTKRC107MT	T.R	KRC107M
Q518	HVTKRC107MT	T.R	KRC107M
Q536	HVTKSA1175YT	T.R	KSA1175Y
Q551	HVTKTD1302T	T.R	KTD1302
Q552	HVTKRA104MT	T.R	KRA104M
Q555	HVTKTD1302T	T.R	KTD1302
Q556	HVTKRA104MT	T.R	KRA104M
Q712	HVTKSA1175YT	T.R	KSA1175Y
Q716	HVTKSC2785YT	T.R	KSC2785Y
R401	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R402	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R403	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R404	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R405	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R411	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R412	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R413	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R421	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R422	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R423	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R451	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R452	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R453	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R461	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R466	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R471	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R491	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R492	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R493	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R500	CRD20TJ4R7T	RES , CARBON	4.7 OHM 1/5W J
R501	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R502	CRD20TJ680T	RES , CARBON	68 OHM 1/5W J
R503	CRD20TJ123T	RES , CARBON	12K OHM 1/5W J
R504	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R505	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R506	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R507	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R511	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R512	CRD20TJ680T	RES , CARBON	68 OHM 1/5W J
R513	CRD20TJ123T	RES , CARBON	12K OHM 1/5W J
R514	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R515	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R516	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R517	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R518	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R521	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R523	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R531	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R533	CRD20TJ2R2T	RES , CARBON	2.2 OHM 1/5W J
R534	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R536	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R537	CRD20TJ183T	RES , CARBON	18K OHM 1/5W J

VIDEO PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R539	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J
R540	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R541	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J
R542	CRD20TJ392T	RES , CARBON	3.9K OHM 1/5W J
R543	CRD20TJ1R8T	RES , CARBON	1.8 OHM 1/5W J
R545	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J
R546	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J
R547	CRD20TJ183T	RES , CARBON	18K OHM 1/5W J
R548	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R551	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R552	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R553	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R555	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R556	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R558	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R581	CRD20TJ4R7T	RES , CARBON	4.7 OHM 1/5W J
R582	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R583	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R584	CRD20TJ474T	RES , CARBON	470K OHM 1/5W J
R585	CRD20TJ474T	RES , CARBON	470K OHM 1/5W J
R601	CRD20TJ680T	RES , CARBON	68 OHM 1/5W J
R603	CRD20TJ560T	RES , CARBON	56 OHM 1/5W J
R605	CRD20TJ620T	RES , CARBON	1/5W 62 OHM
R611	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R613	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R615	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R621	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R623	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R625	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R674	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R675	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R705	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R706	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R707	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R711	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R712	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R713	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R714	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R715	CRD20TJ822T	RES , CARBON	8.2K OHM 1/5W J
R716	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R717	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R721	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R724	CRD20TJ393T	RES , CARBON	39K OHM 1/5W J
R725	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R726	CRD20TJ682T	RES , CARBON	6.8K OHM 1/5W J
R727	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R728	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R735	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R737	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R742	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R743	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R744	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R746	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R747	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
	CWZAVR155JW97	WIRE , ASS'Y	WIRE
BN14	CJP13GA117ZY	WAFER , CARD CABLE	WAFER
BN19	CJP07GA117ZY	WAFER	WAFER
CN41	CJP07GA19ZY	WAFER , STRAIGHT(7PIN)	WAFER
CN43	CJP03GA01ZY	WAFER	WAFER
CN45	CJP07GA117ZY	WAFER	WAFER
CN46	CJP03GA19ZY	WAFER , STRAIGHT(3PIN)	WAFER
CN47	CJP07GA117ZY	WAFER	WAFER
C712	CCEA0JKR3222E	CAP , ELECT	2200UF 6.3V
JK40	CJJ9P003Z	JACK , S-VIDEO+CVBS	JACK
JK41	CJJ9R001Z	JACK , S-VIDEO+CVBS	JACK
JK43	CJJ2D008Z	JACK , STEREO	JACK
JK62	CJJ4R045Z	JACK , BOARD	JACK
JK69	CJJ4S030Z	JACK , BOARD	JACK
X701	HOX17734E220C	CRYSTAL	17.734Mhz
X703	HOX14318E220C	CRYSTAL	14.318Mhz

HDMI PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12034H	AVR155/230 HDMI MUX PCB ASS`Y	ASS'Y
CN45	CJP07GA193ZY	WAFER , CARD CABLE SMD	WAFER
C802	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C803	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C807	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C808	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C809	HCEC1CRV2220T	CAP , CHIP ELECT	22UF/16V
C810	HCEC1CRV2220T	CAP , CHIP ELECT	22UF/16V
C811	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C812	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C813	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C814	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C815	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C816	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C817	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C818	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C819	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C820	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C821	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C822	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C823	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C824	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C825	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C826	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C827	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C828	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C829	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C830	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C831	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
D801	HVDRB160L60TE25	DIODE , SCHOTTKEY BARRIER HK	RB160L-60TE25
IC81	CVIISL54100CQZ	I.C, TMDS REGENERATOR	INTERSIL(ISL54100CQZ)
IC82	CVIKIA1117S50	I.C , REGULATOR(SOT-223)	KEC(KIA1117S50-RTK/P)
IC83	CVIKIA1117S33	I.C , REGULATOR(SOT-223)	KEC(KIA1117S/F33, SOT-223)
IC96	CVITC7MZ4052FK	I.C , 4CH MUX	TOSHIBA(TC7MZ4052FK)
IC97	CVITC7MZ4052FK	I.C , 4CH MUX	TOSHIBA(TC7MZ4052FK)
JK81	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
JK82	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
JK83	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
JK84	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
Q802	HVTKRC107S	T.R , CHIP	KRC107S
Q803	HVTKRC107S	T.R , CHIP	KRC107S
Q804	HVTKRC107S	T.R , CHIP	KRC107S
Q805	HVTKRC107S	T.R , CHIP	KRC107S
Q806	HVTKRA111ST	T.R , CHIP	KRA111S
Q807	HVTKRA111ST	T.R , CHIP	KRA111S
Q808	HVTKRA111ST	T.R , CHIP	KRA111S
Q909	CVTUPA672T	F.E.T	UPA672T
R801	CRJ10DJ102T	RES , CHIP	1K OHM
R802	CRJ10DJ102T	RES , CHIP	1K OHM
R806	CRJ10DJ102T	RES , CHIP	1K OHM
R808	CRJ10DJ103T	RES , CHIP	10K OHM
R809	CRJ10DJ103T	RES , CHIP	10K OHM
R810	CRJ10DJ103T	RES , CHIP	10K OHM
R811	CRJ10DJ103T	RES , CHIP	10K OHM
R812	CRJ10DJ103T	RES , CHIP	10K OHM
R813	CRJ10DF3161T	RES , CHIP(3.16 Kohm, 1608, 1%)	3.16K OHM 1%
R814	CRJ10DF1001T	RES , CHIP 1%	1K OHM
R815	CRJ10DJ103T	RES , CHIP	10K OHM
R817	CRJ10DJ0R0T	RES , CHIP	0 OHM
R819	CRJ10DJ103T	RES , CHIP	10K OHM
R820	CRJ10DJ103T	RES , CHIP	10K OHM
R821	CRJ10DJ103T	RES , CHIP	10K OHM
R822	CRJ10DJ103T	RES , CHIP	10K OHM
R823	CRJ10DJ102T	RES , CHIP	1K OHM

Darlington 2SB1560



Silicon PNP Epitaxial Planar Transistor (Complement to type 2SD2390)

Application : Audio, Series Regulator and General Purpose

Absolute maximum ratings (Ta=25°C)

Symbol	2SB1560	Unit
V_{CBO}	–160	V
V_{CEO}	–150	V
V_{EBO}	–5	V
I_C	–10	A
I_B	–1	A
P_C	100(Tc=25°C)	W
Tj	150	°C
Tstg	–55 to +150	°C

Electrical Characteristics (Ta=25°C)

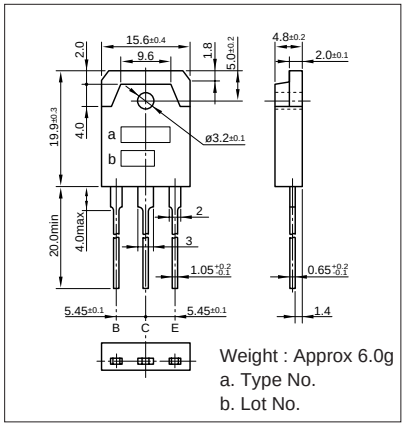
Symbol	Conditions	2SB1560	Unit
I_{CBO}	V_{CB}=–160V	–100max	μA
I_{EBO}	V_{EB}=–5V	–100max	μA
$V_{(BR)CEO}$	I_C=–30mA	–150min	V
h_{FE}	V_{CE}=–4V, I_C=–7A	5000min*	
$V_{CE(sat)}$	I_C=–7A, I_B=–7mA	–2.5max	V
$V_{BE(sat)}$	I_C=–7A, I_B=–7mA	–3.0max	V
fr	V_{CE}=–12V, I_E=2A	50typ	MHz
C_{OB}	V_{CB}=–10V, f=1MHz	230typ	pF

*h_{FE} Rank O(5000 to 12000), P(6500 to 20000), Y(15000 to 30000)

Typical Switching Characteristics (Common Emitter)

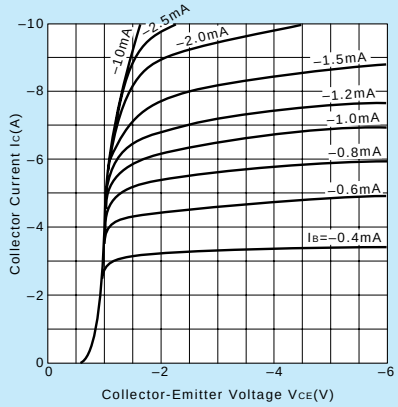
V_{CC} (V)	R_L (Ω)	I_C (A)	V_{BB1} (V)	V_{BB2} (V)	I_{B1} (mA)	I_{B2} (mA)	ton (μs)	tstg (μs)	tf (μs)
–70	10	–7	–10	5	–7	7	0.8typ	3.0typ	1.2typ

External Dimensions MT-100(TO3P)

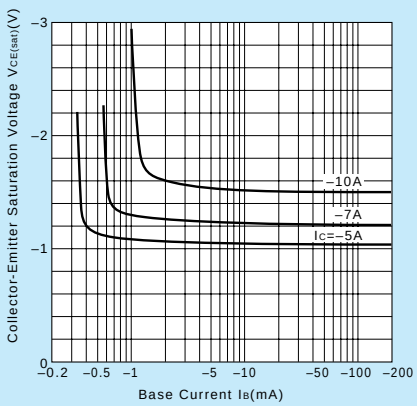


Weight : Approx 6.0g
a. Type No.
b. Lot No.

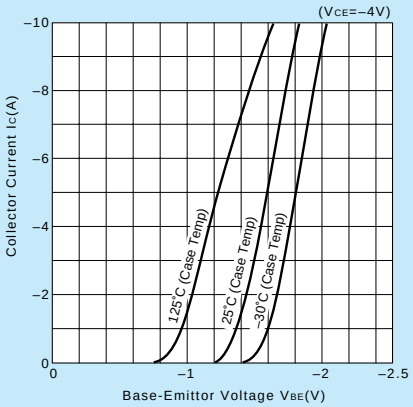
I_C–V_{CE} Characteristics (Typical)



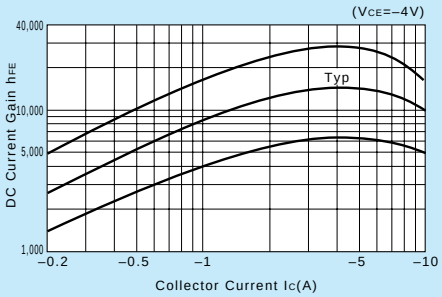
$V_{CE(sat)}$–I_B Characteristics (Typical)



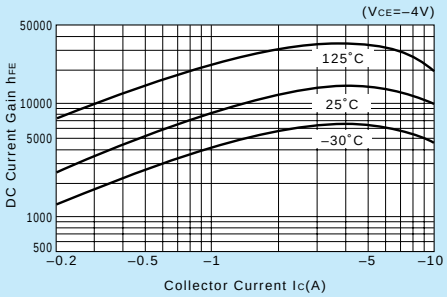
I_C–V_{BE} Temperature Characteristics (Typical)



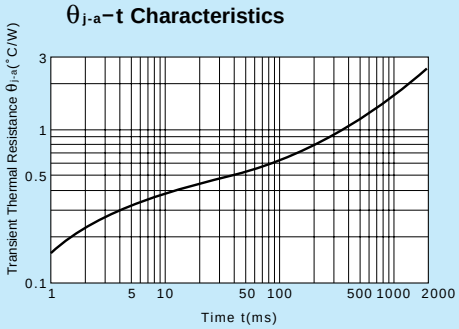
h_{FE}–I_C Characteristics (Typical)



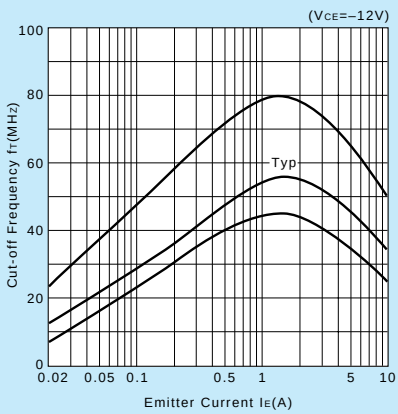
h_{FE}–I_C Temperature Characteristics (Typical)



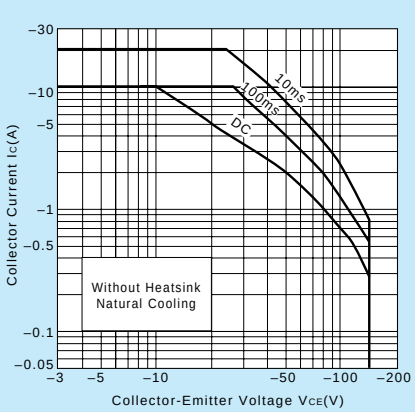
$\theta_{j\text{-}a}$–t Characteristics



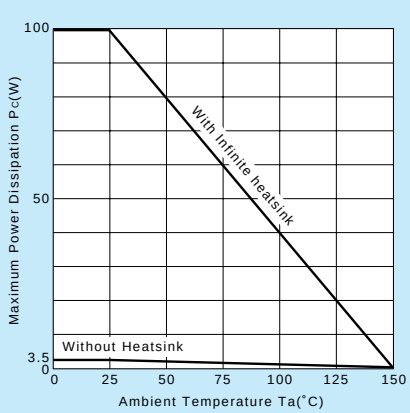
f_T–I_E Characteristics (Typical)



Safe Operating Area (Single Pulse)

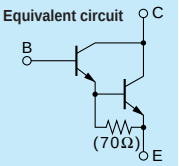


P_C–Ta Derating



Darlington 2SD2390

Equivalent circuit



Silicon NPN Triple Diffused Planar Transistor (Complement to type 2SB1560)

Application : Audio, Series Regulator and General Purpose

Absolute maximum ratings (Ta=25°C)

Symbol	2SD2390	Unit
V_{CBO}	160	V
V_{CEO}	150	V
V_{EBO}	5	V
I_C	10	A
I_B	1	A
P_C	100(Tc=25°C)	W
Tj	150	°C
Tstg	–55 to +150	°C

Electrical Characteristics (Ta=25°C)

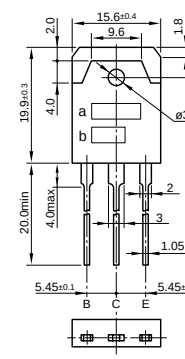
Symbol	Conditions	2SD2390	Unit
I_{CBO}	V_{CB}=160V	100max	μA
I_{EBO}	V_{EB}=5V	100max	μA
$V_{(BR)CEO}$	I_C=30mA	150min	V
h_{FE}	V_{CE}=4V, I_C=7A	5000min*	
V_{CE}(sat)	I_C=7A, I_B=7mA	2.5max	V
V_{BE}(sat)	I_C=7A, I_B=7mA	3.0max	V
f_T	V_{CE}=12V, I_E=–2A	55typ	MHz
C_{OB}	V_{CB}=10V, f=1MHz	95typ	pF

*h_{FE} Rank O(5000 to 12000), P(6500 to 20000), Y(15000 to 30000)

Typical Switching Characteristics (Common Emitter)

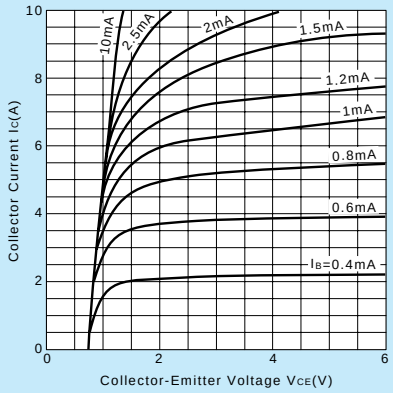
V_{CC} (V)	R_L (Ω)	I_C (A)	V_{BB1} (V)	V_{BB2} (V)	I_{B1} (mA)	I_{B2} (mA)	ton (μs)	tstg (μs)	tf (μs)
70	10	7	10	–5	7	–7	0.5typ	10.0typ	1.1typ

External Dimensions MT-100(TO3P)

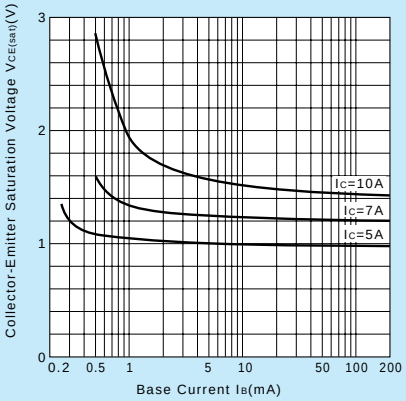


Weight : Approx 2.0g
a. Type No.
b. Lot No.

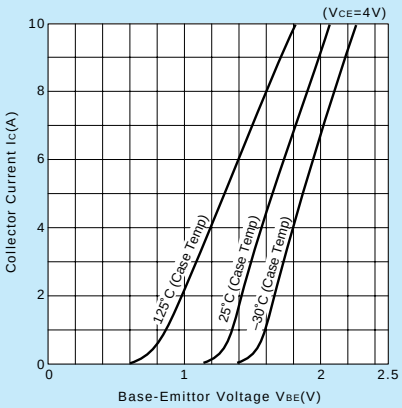
I_C–V_{CE} Characteristics (Typical)



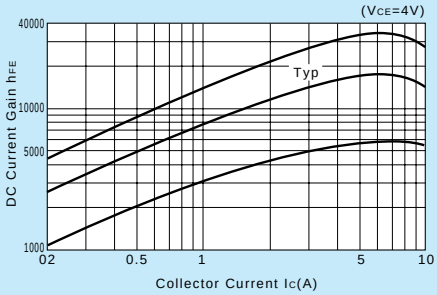
V_{CE}(sat)–I_B Characteristics (Typical)



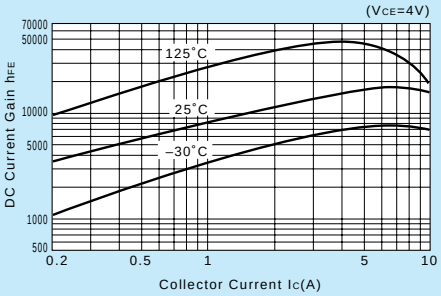
I_C–V_{BE} Temperature Characteristics (Typical)



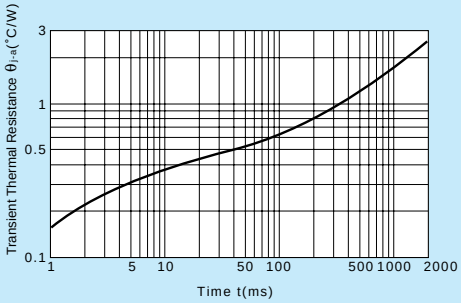
h_{FE}–I_C Characteristics (Typical)



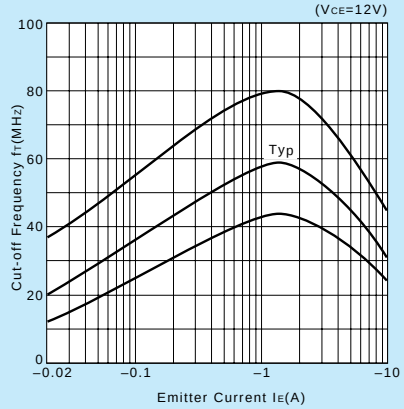
h_{FE}–I_C Temperature Characteristics (Typical)



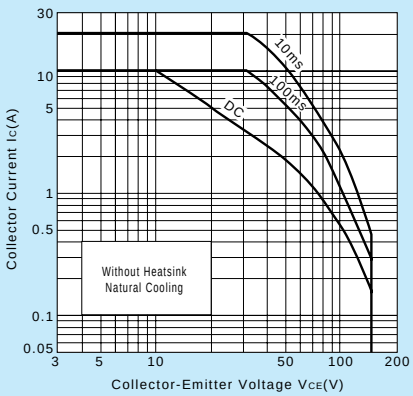
$\theta_{j\text{-}a}$–t Characteristics



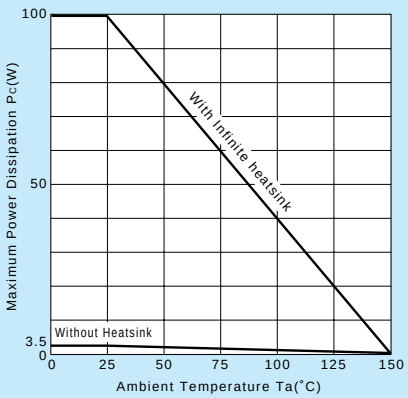
f_T–I_E Characteristics (Typical)

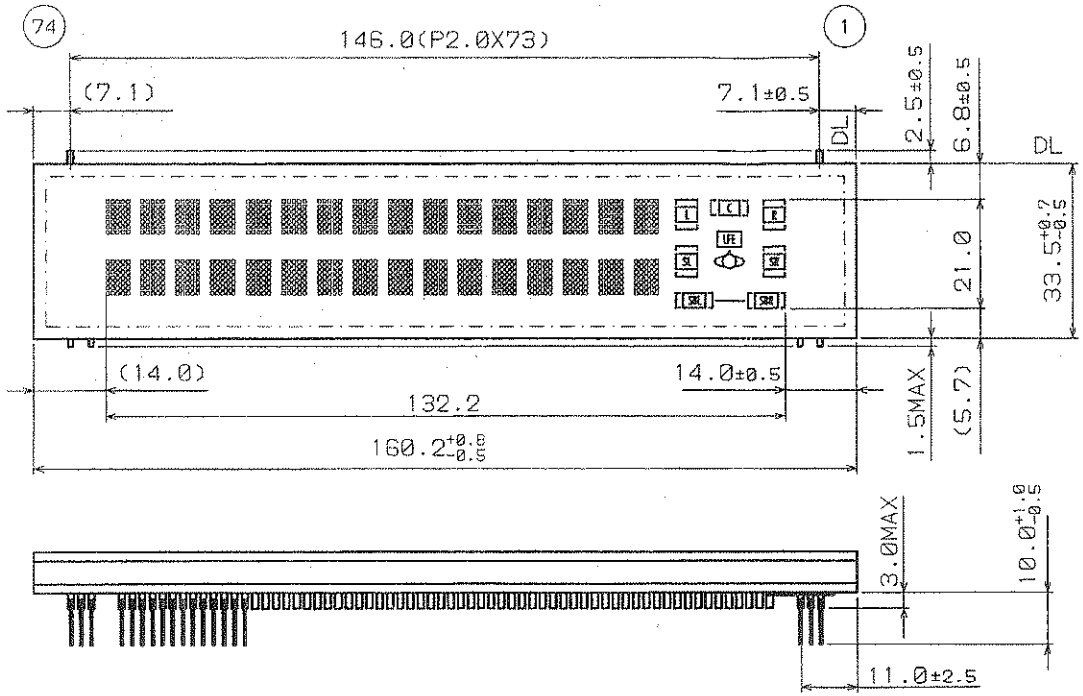


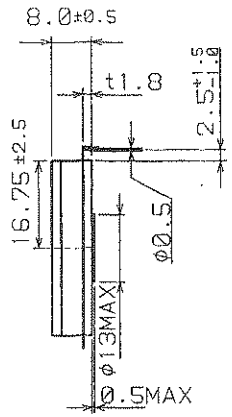
Safe Operating Area (Single Pulse)

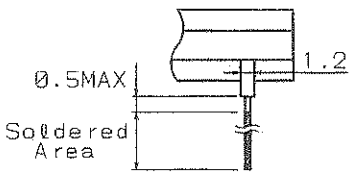


Pc–Ta Derating









LEAD DETAILS

LEAD FREE SOLDER

PIN CONNECTION

PIN NO.	74	73	72	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	~	6	5	4	3	2	1
CONNECTION	F2	F2	F2	NP	NP	LGND	PGND	VDD	VOSC	VH	IRES-ETS	CP	DA	TSA	TSB	Q117G	17G		NX			NP	NP	F1	F1	F1

NOTE
1) F1,F2 --- Filament
2) NP ------ No pin
3) DL ------ Datum Line
4) LGND ---- Logic GND pin
5) PGND ---- Power GND pin
6) VH ------ High Voltage Supply pin
7) VDD ----- Logic Voltage Supply pin
8) CP ------ Shift Register Clock
9) DA ------ Serial Data Input
10) TSA,B --- Test pin
11) $\overline{CS}$ ------ Chip Select Input pin
12) $\overline{RESET}$ --- Reset Input
13) OSC ----- Pin for self-oscillation
14) Solder composition is Sn-3Ag-0.5Cu.
15) Field of vision is a minimum of 21.7° from the upper side, 8.4° from the lower side.
16) NX ------ No extend pin
17) 17G --- Grid
18) Q17G --- Driver Output Port

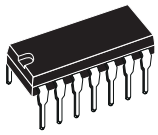
(unit in mm)

17-BT-31GINK
OUTER DIMENSION

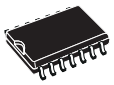
74ACT04

HEX INVERTER

- HIGH SPEED: t_{PD} = 5.0ns (TYP.) at V_{CC} = 5V
- LOW POWER DISSIPATION: I_{CC} = 2µA(MAX.) at T_A=25°C
- COMPATIBLE WITH TTL OUTPUTS V_{IH} = 2V (MIN.), V_{IL} = 0.8V (MAX.)
- 50Ω TRANSMISSION LINE DRIVING CAPABILITY
- SYMMETRICAL OUTPUT IMPEDANCE: $|I_{OH}| = I_{OL}$ = 24mA (MIN)
- BALANCED PROPAGATION DELAYS: $t_{PLH} \cong t_{PHL}$
- OPERATING VOLTAGE RANGE: V_{CC} (OPR) = 4.5V to 5.5V
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 04
- IMPROVED LATCH-UP IMMUNITY



DIP



SOP

TSSOP

ORDER CODES

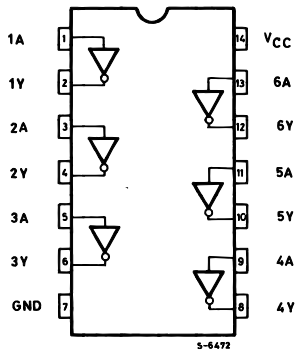
PACKAGE	TUBE	T & R
DIP	74ACT04B	
SOP	74ACT04M	74ACT04MTR
TSSOP		74ACT04TTR

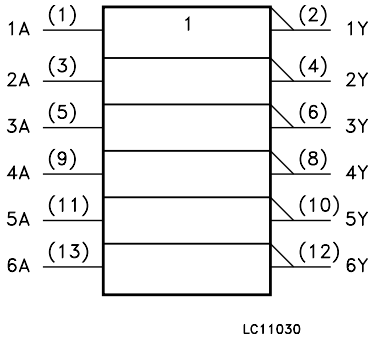
DESCRIPTION

The 74ACT04 is an advanced high-speed CMOS HEX INVERTER fabricated with sub-micron silicon gate and double-layer metal wiring C^2MOS technology.
The internal circuit is composed of 3 stages including buffer output, which enables high noise immunity and stable output.

The device is designed to interface directly High Speed CMOS systems with TTL, NMOS and CMOS output voltage levels.
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

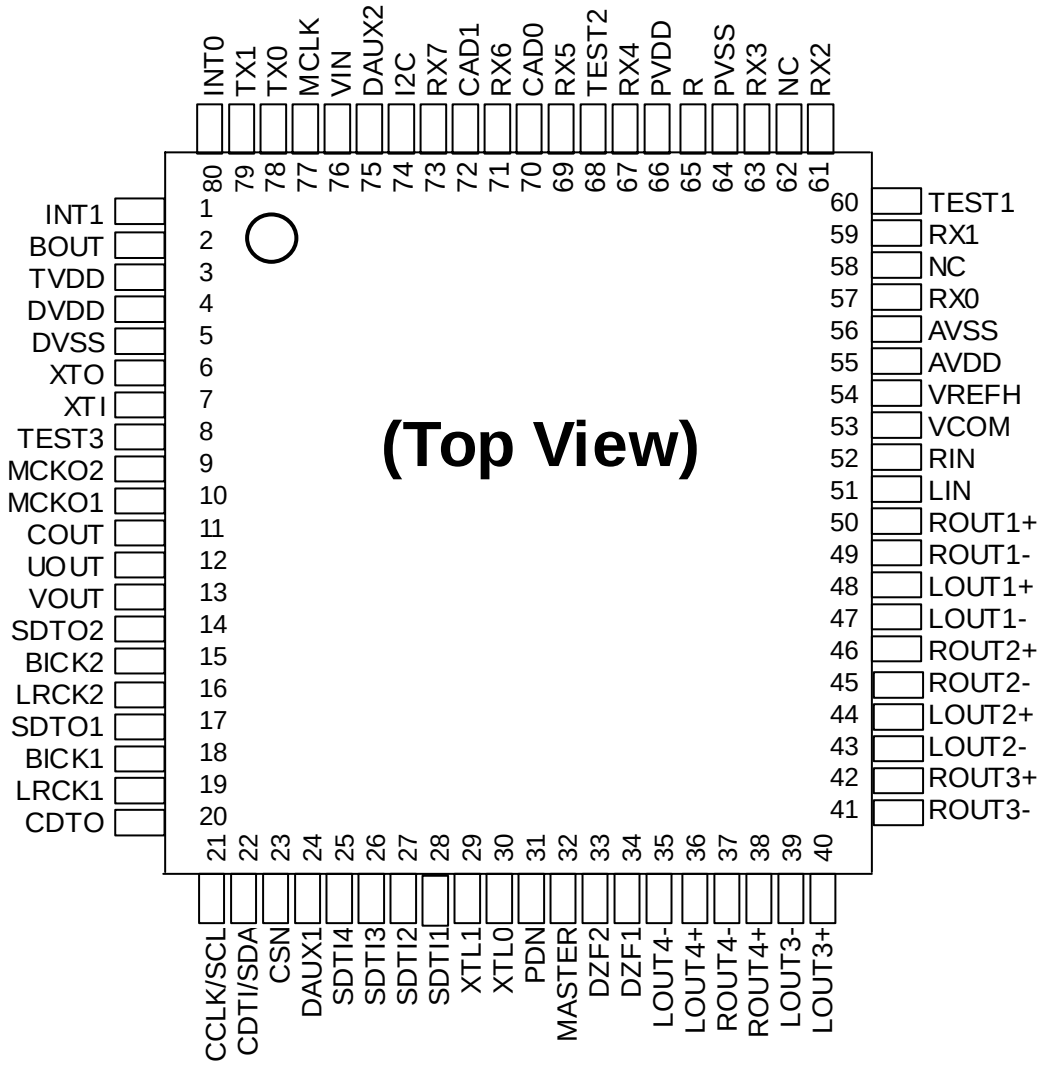




■ オーダリングガイド

AK4589VQ	-10 ~ +70°C	80pin LQFP(0.5mm pitch)
AKD4589	評価ボード	

■ ピン配置



7. Package Pinout, 144-Pin QFP/LQFP

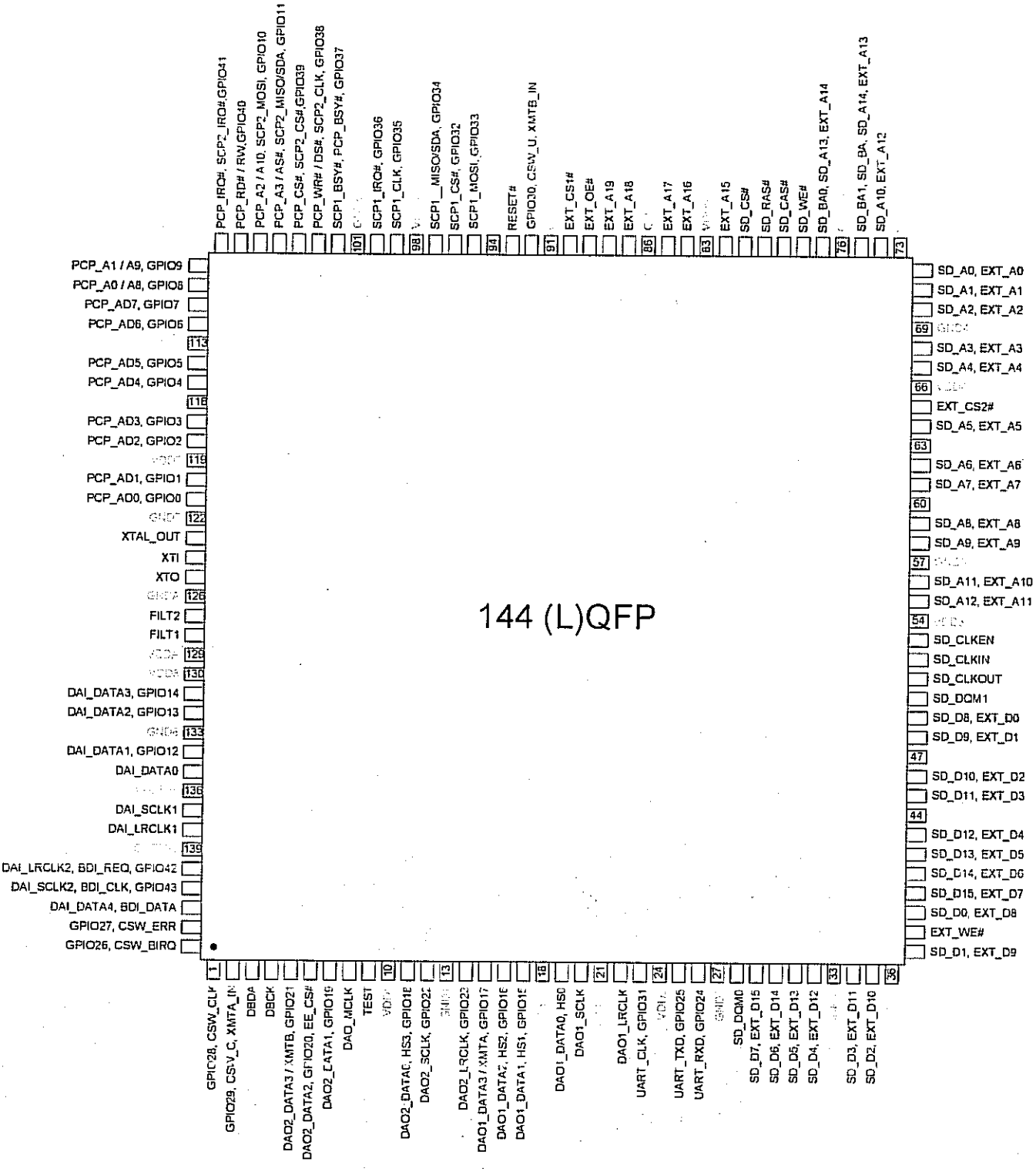
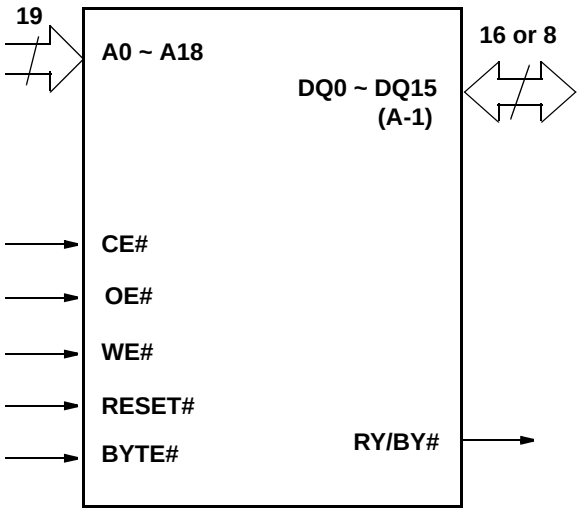


Figure 23. 144-Pin (L)QFP Package Pinout

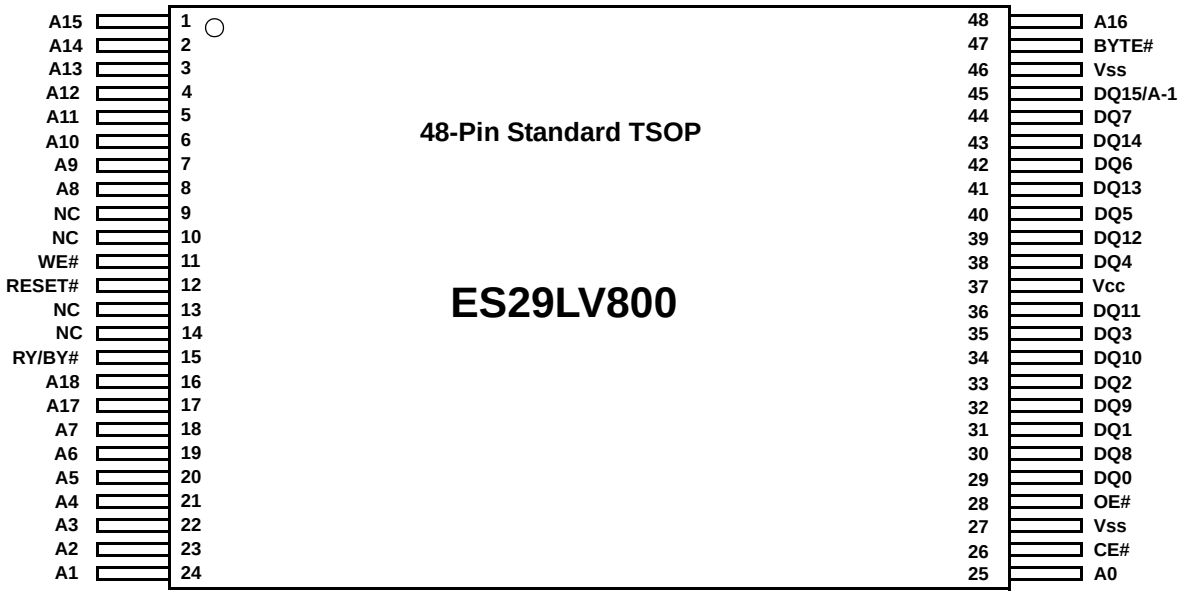
PIN DESCRIPTION

Pin	Description
A0-A18	19 Addresses
DQ0-DQ14	15 Data Inputs/Outputs
DQ15/A-1	DQ15 (Data Input/Output, Word Mode) A-1 (LSB Address Input, Byte Mode)
CE#	Chip Enable
OE#	Output Enable
WE#	Write Enable
RESET#	Hardware Reset Pin, Active Low
BYTE#	Selects 8-bit or 16-bit mode
RY/BY#	Ready/Busy Output
Vcc	3.0 volt-only single power supply (see Product Selector Guide for speed options and voltage supply tolerances)
Vss	Device Ground
NC	Pin Not Connected Internally

LOGIC SYMBOL

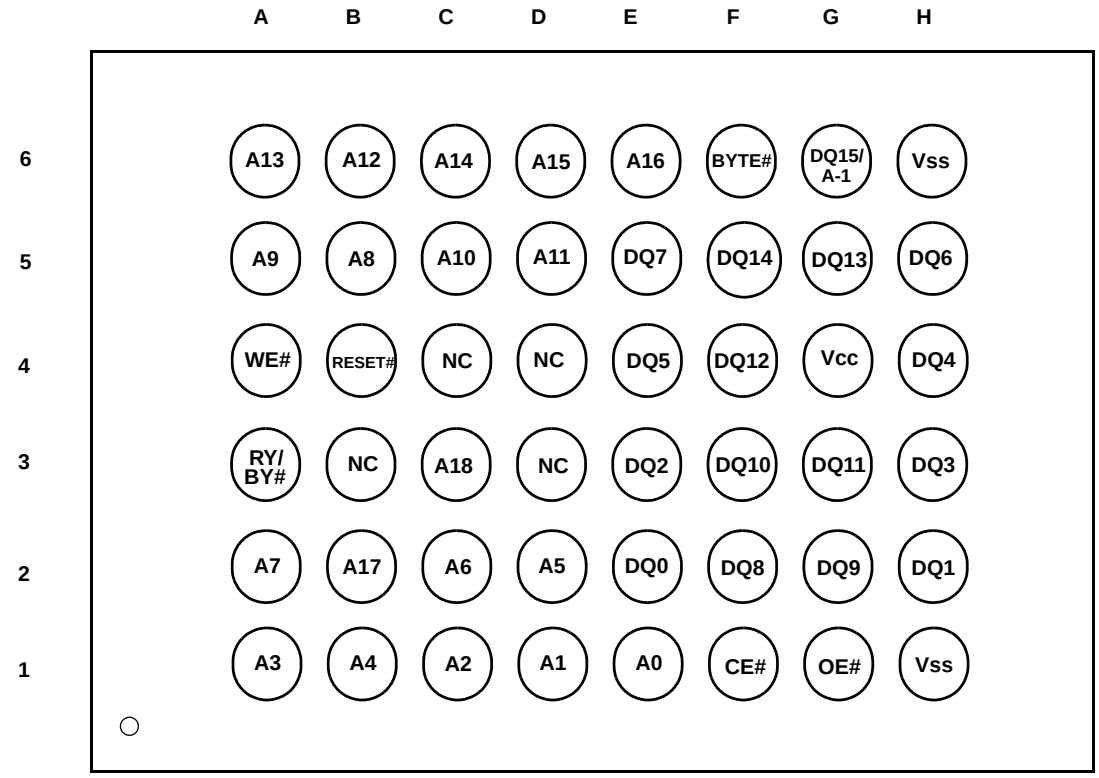


CONNECTION DIAGRAM



48-Ball FBGA (6 x 8 mm)

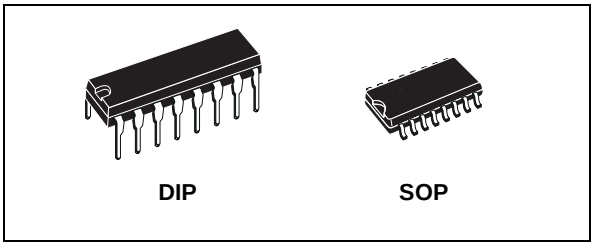
(Top View, Balls Facing Down)



HCF4053B

TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER

- LOW "ON" RESISTANCE : 125Ω (Typ.) OVER 15V p.p SIGNAL-INPUT RANGE FOR V_{DD} - V_{EE} = 15V
- HIGH "OFF" RESISTANCE : CHANNEL LEAKAGE ± 100pA (Typ.) at V_{DD} - V_{EE} = 18V
- BINARY ADDRESS DECODING ON CHIP
- HIGH DEGREE OF LINEARITY : < 0.5% DISTORTION TYP. at f_{IS} = 1KHz, V_{IS} = 5 V_{pp}, V_{DD} - V_{SS} ≥ 10V, RL = 10KΩ
- VERY LOW QUIESCENT POWER DISSIPATION UNDER ALL DIGITAL CONTROL INPUT AND SUPPLY CONDITIONS : 0.2 μW (Typ.) at V_{DD} - V_{SS} = V_{DD} - V_{EE} =10V
- MATCHED SWITCH CHARACTERISTICS : R_{ON} = 5Ω (Typ.) FOR V_{DD} - V_{EE} = 15V
- WIDE RANGE OF DIGITAL AND ANALOG SIGNAL LEVELS : DIGITAL 3 to 20, ANALOG TO 20V p.p.
- QUIESCENT CURRENT SPECIF. UP TO 20V
- 5V, 10V AND 15V PARAMETRIC RATINGS
- INPUT LEAKAGE CURRENT I_I = 100nA (MAX) AT V_{DD} = 18V T_A = 25°C
- 100% TESTED FOR QUIESCENT CURRENT
- MEETS ALL REQUIREMENTS OF JEDEC JESD13B " STANDARD SPECIFICATIONS FOR DESCRIPTION OF B SERIES CMOS DEVICES"



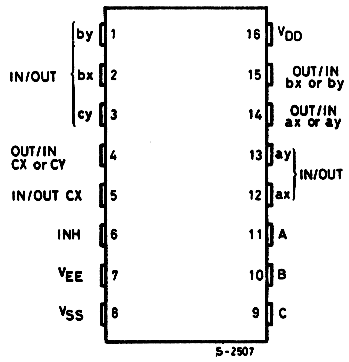
ORDER CODES

PACKAGE	TUBE	T & R
DIP	HCF4053BEY	
SOP	HCF4053BM1	HCF4053M013TR

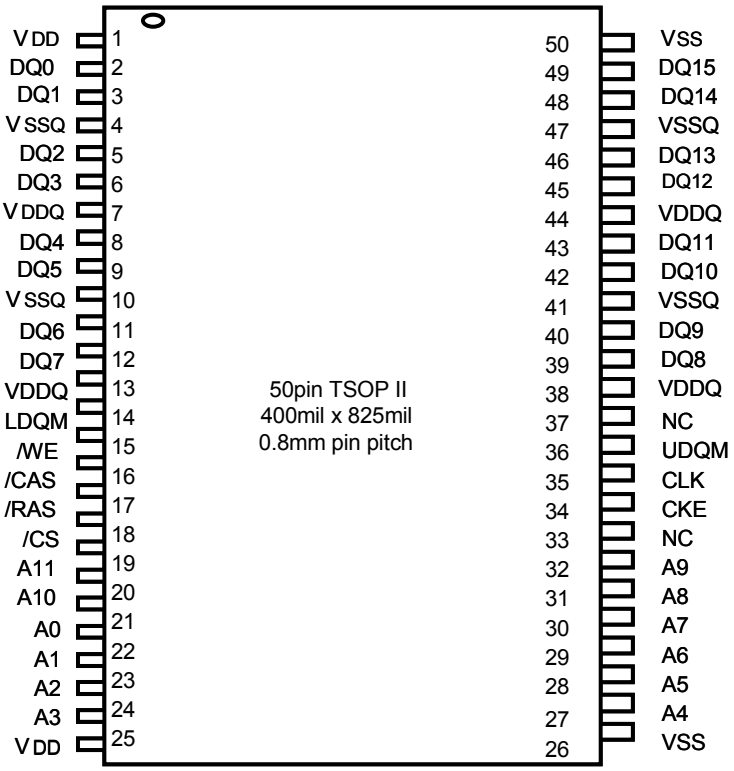
DESCRIPTION

The HCF4053B is a monolithic integrated circuit fabricated in Metal Oxide Semiconductor technology available in DIP and SOP packages.
The HCF4053B analog multiplexer/demultiplexer is a digitally controlled analog switch having low ON impedance and very low OFF leakage current. This multiplexer circuit dissipate extremely low quiescent power over the full V_{DD} - V_{SS} and V_{DD} - V_{EE} supply voltage range, independent of the logic state of the control signals.
When a logic "1" is present at the inhibit input terminal all channel are off. This device is a triple 2-channel multiplexer having three separate digital control inputs, A, B, and C, and an inhibit input. Each control input selects one of a pair of channels which are connected in a single pole double-throw configuration.

PIN CONNECTION



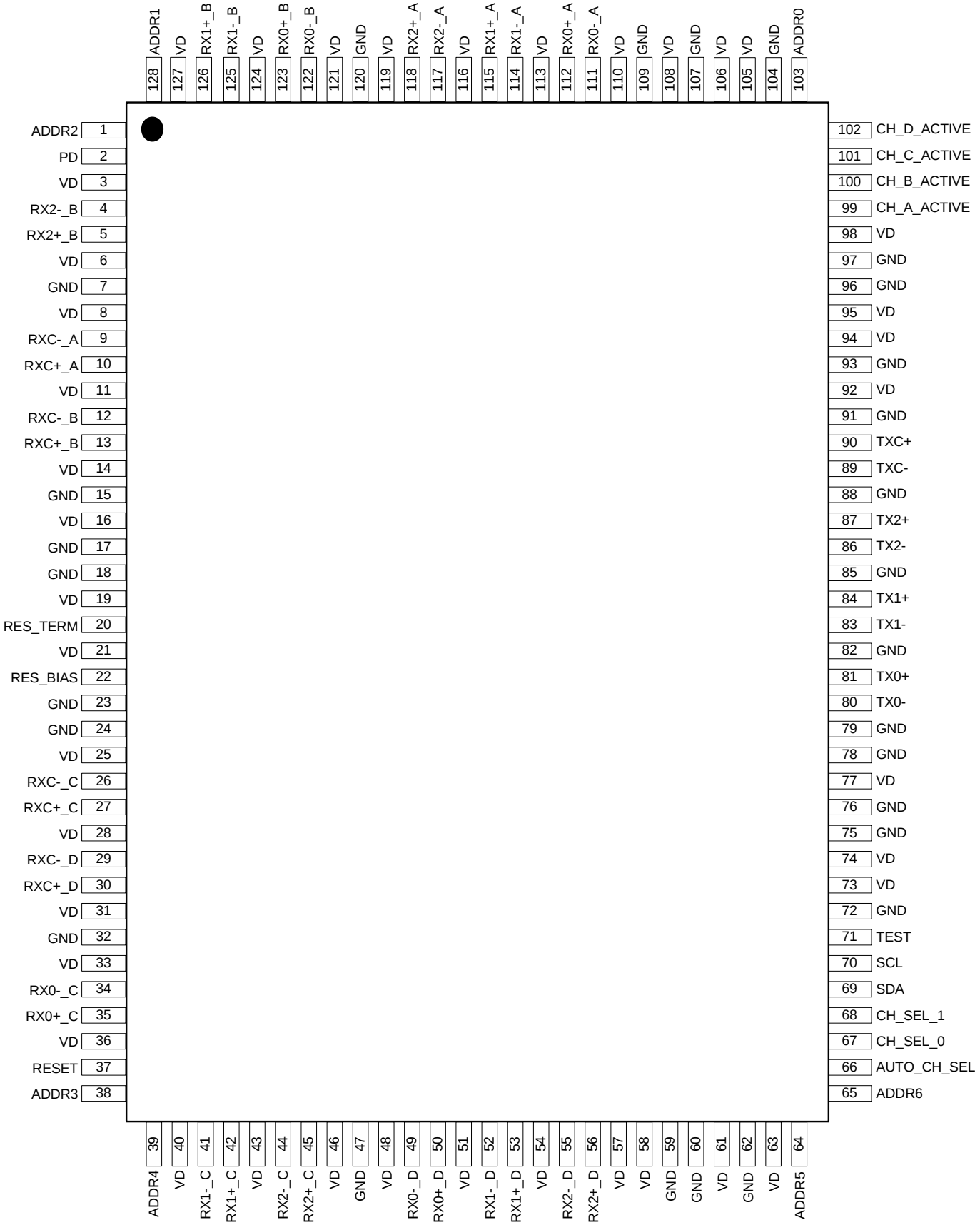
PIN CONFIGURATION



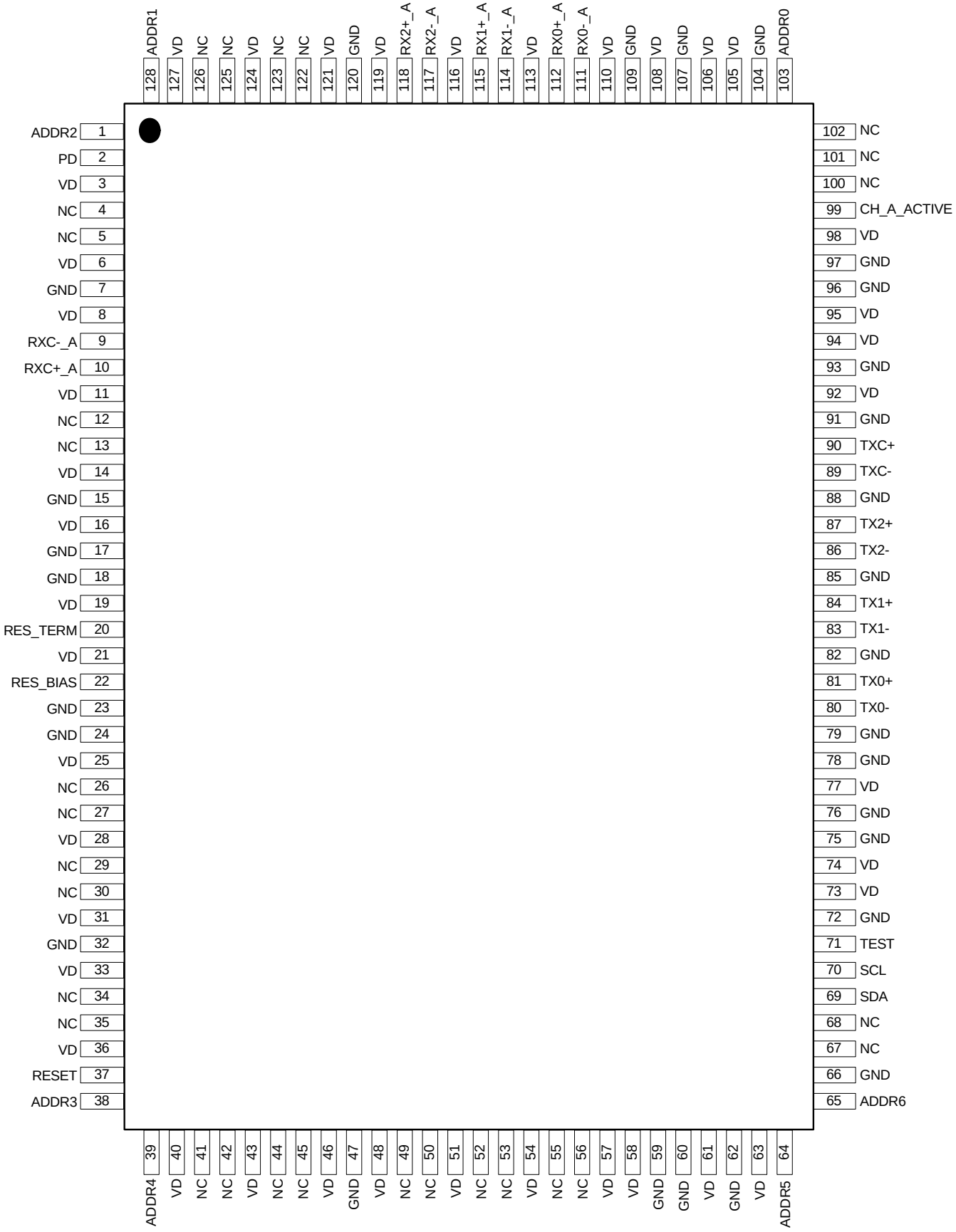
PIN DESCRIPTION

PIN	PIN NAME	DESCRIPTION
CLK	Clock	The system clock input. All other inputs are referenced to the SDRAM on the rising edge of CLK.
CKE	Clock Enable	Controls internal clock signal and when deactivated, the SDRAM will be one of the states among power down, suspend or self refresh.
$\overline{CS}$	Chip Select	Command input enable or mask except CLK, CKE and DQM
BA	Bank Address	Select either one of banks during both $\overline{RAS}$ and $\overline{CAS}$ activity.
A0 ~ A10	Address	Row Address : RA0 ~ RA10, Column Address : CA0 ~ CA7 Auto-precharge flag : A10
$\overline{RAS}$, $\overline{CAS}$, $\overline{WE}$	Row Address Strobe, Column Address Strobe, Write Enable	$\overline{RAS}$, $\overline{CAS}$ and $\overline{WE}$ define the operation. Refer function truth table for details
LDQM, UDQM	Data Input/Output Mask	DQM control output buffer in read mode and mask input data in write mode
DQ0 ~ DQ15	Data Input/Output	Multiplexed data input / output pin
VDD/VSS	Power Supply/Ground	Power supply for internal circuit and input buffer
VDDQ/VSSQ	Data Output Power/Ground	Power supply for DQ
NC	No Connection	No connection

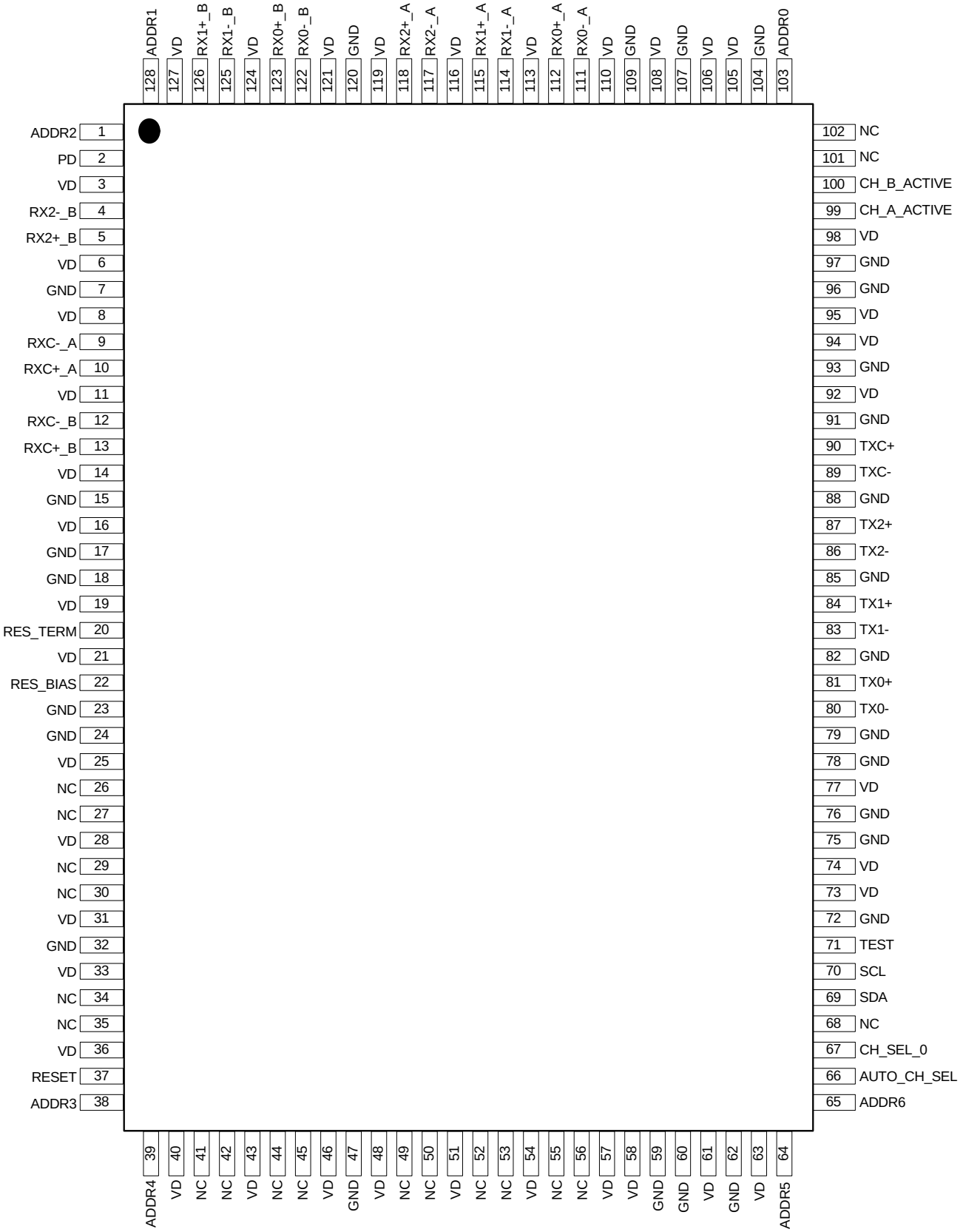
ISL54100 Pin Configuration



ISL54101 Pin Configuration



ISL54102 Pin Configuration



JGD

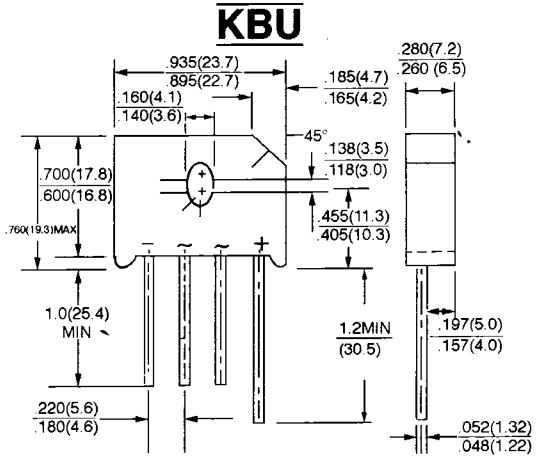
KBU800G THRU KBU810G

SINGLE PHASE 8.0 AMPS. GLASS PASSIVATED BRIDGE RECTIFIERS

FEATURES

* Ideal for printed circuit board
* Reliable low cost construction
* Plastic material has Underwriters Laboratory flammability classification 94V.O
* Surge overloab rating to 200 Amperes peak.

VOLTAGE RANGE
50 to 1000 Volts
CURRENT
8.0 Amperes



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25℃ ambient temperature unless otherwise specified.
Single phase, half wave, 60 Hz, resistive or inductive load.
For capacitive load, derate current by 20%

TYPE NUMBER	SYMBOLS	KBU 800G	KBU 801G	KBU 802G	KBU 804G	KBU 806G	KBU 808G	KBU 810G	UNITS
Maximum Recurrent Peak Reverse Voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS Bridge Input Voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum D.C Blocking Voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum Average Forward Rectified Current @ $T_C = 90℃^{(1)(3)}$ $T_A = 45℃^{(2)}$	$I_{F(AV)}$	8.0							A
Peak Forward Surge Current, 8.3 ms single half sine-wave superimposed on rated load(JEDEC method)	I_{FSM}	175							A
Maximum Forward Voltage Drop per element @ 4.0A	V_F	1.10							V
Maximum Reverse Current at Rated @ $T_A = 25℃$ D.C.Blocking Voltage per element @ $T_A = 100℃$	I_R	10 500							μA μA
Typical thermal resistance per leg (NOTE 2) (NOTE 3)	$R_{\theta JA}$ $R_{\theta JC}$	18 3.0							℃/W
Operating Temperature Range	T_J	−55 to +150							℃
Storage Temperature Range	T_{STG}	−55 to +150							℃

NOTE:
(1) Recommended mounted position is to bolt down on heatsink with silicone thermal compound for maximum heat transfer with #6 screw
(2) Units mounted in free air, no heatsink, P.C.B. 0.375"(9.5mm) lead length with 0.5×0.5" (12×12mm) copper pads
(3) Units mounted on a 3.0×3.0×0.11" (7.5×7.5×0.3cm) Cu. Plate heatsink

KEC SEMICONDUCTOR TECHNICAL DATA

KIA1117S/F00~ KIA1117S/F50

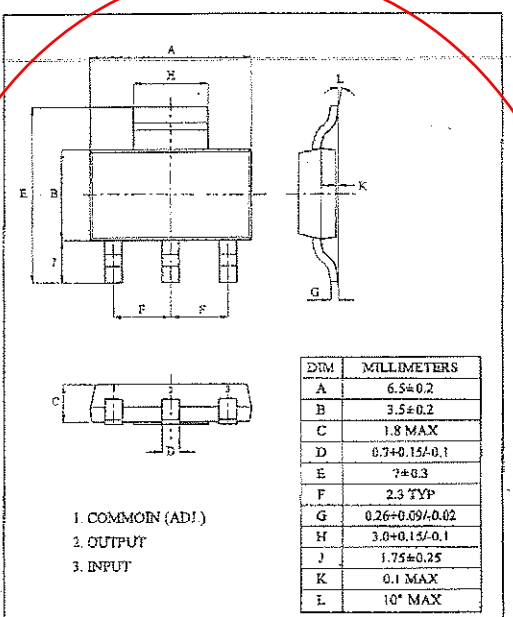
BIPOLAR LINEAR INTEGRATED CIRCUIT

LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATOR

The KIA1117S/F × × is a Low Drop Voltage Regulator able to provide up to 1A of output current, available even in adjustable version (Vref=1.25V)

FEATURES

- Low Dropout Voltage : 1.1V/Typ. (Iout=1.0A)
- Very Low Quiescent Current : 4.2㎃/Typ.
- Output Current up to 1A
- Fixed Output Voltage of 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5.0V
- Adjustable Version Availability : Vref=1.25V
- Internal Current and Thermal Limit
- Only 10㎌ for stability
- Available in ±2%(at 25 ℃) and 4% in full Temperature range
- High Ripple Rejection : 80dB/Typ
- Temperature Range : 0 ℃ ~ 125 ℃

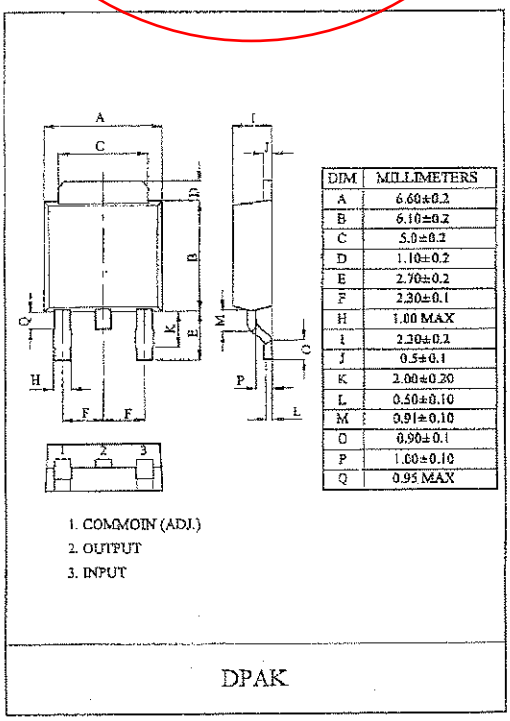


DIM	MILLIMETERS
A	6.5±0.2
B	3.5±0.2
C	1.8 MAX
D	0.7+0.15/-0.1
E	7±0.3
F	2.3 TYP
G	0.26+0.09/-0.02
H	3.0+0.15/-0.1
J	1.75±0.25
K	0.1 MAX
L	10° MAX

SOT-223

LINE UP

ITEM	OUTPUT VOLTAGE (V)	PACKAGE
KIA1117S/F00	Adjustable (1.25~10V)	S : SOT-223 F : DPAK
KIA1117S/F15	1.5	
KIA1117S/F18	1.8	
KIA1117S/F25	2.5	
KIA1117S/F28	2.85	
KIA1117S/F33	3.3	
KIA1117S/F50	5.0	



DIM	MILLIMETERS
A	6.60±0.2
B	6.10±0.2
C	5.0±0.2
D	1.10±0.2
E	2.70±0.2
F	2.30±0.1
H	1.00 MAX
I	2.30±0.2
J	0.5±0.1
K	2.00±0.20
L	0.50±0.10
M	0.91±0.10
O	0.90±0.1
P	1.60±0.10
Q	0.95 MAX

DPAK

MAXIMUM RATINGS (Ta=25 ℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage		V_{IN}	10	V
Output Current	S/F	I_{OUT}	1.0	A
Power Dissipation 1 (No heatsink)	S (Note)	P_{D1}	1.0	W
	F		1.3	
Power Dissipation 2 (Without heatsink)	S	P_{D2}	8.3	W
	F		13	
Operating Temperature		T_{opr}	0 ~ 125	℃
Storage Temperature		T_{stg}	-55 ~ 150	℃

Note) Package Mounted on FR-4 PCB 36 × 18 × 1.5㎜.
: mounting pad for the GND Lead min. 6㎠

KEC

SEMICONDUCTOR
TECHNICAL DATA

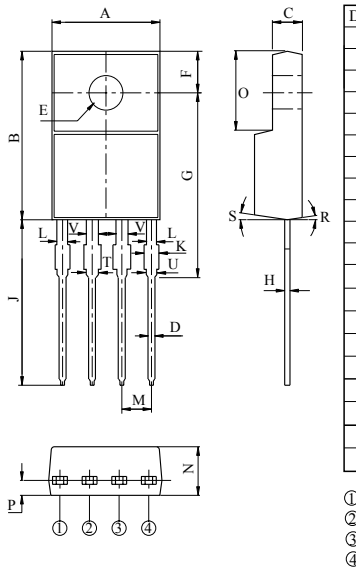
KIA278R05PI~KIA278R15PI
BIPOLAR LINEAR INTEGRATED CIRCUIT

4 TERMINAL 2A OUTPUT LOW DROP
VOLTAGE REGULATOR

The KIA278R×× Series are Low Drop Voltage Regulator suitable for various electronic equipments.
It provides constant voltage power source with TO-220 4 terminal lead full molded PKG. The Regulator has multi function such as over current protection, overheat protection and ON/OFF control.

FEATURES

- 2.0A Output Low Drop Voltage Regulator.
- Built in ON/OFF Control Terminal.
- Built in Over Current Protection, Over Heat Protection Function.



DIM	MILLIMETERS
A	10.00±0.20
B	15.00±0.20
C	2.70±0.20
D	0.60±0.10
E	Φ3.20±0.20
F	3.50±0.10
G	15.70±0.20
H	0.40±0.10
J	14.3+0.2/-0.1
K	1.45±0.10
L	1.00±0.10
M	2.54
N	4.50±0.20
O	7.5± 0.1
P	1.50±0.10
R	5°
S	8°
T	1.30±0.1
U	3-1.00±0.1
V	1.30±0.1

TO-220IS-4

LINE UP

ITEM	OUTPUT VOLTAGE (Typ.)	UNIT
KIA278R05PI	5	V
KIA278R06PI	6	
KIA278R08PI	8	
KIA278R09PI	9	
KIA278R10PI	10	
KIA278R12PI	12	
* KIA278R15PI	15	

* Note) * : Under Development.

MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT	Remark
Input Voltage	V_{IN}	35	V	-
ON/OFF Control Voltage	V_C	35	V	-
Output Current	I_O	2	A	-
Power Dissipation 1	P_{d1}	1.5	W	No heatsink
Power Dissipation 2	P_{d2}	15	W	with heatsink
Junction Temperature	T_j	125	℃	-
Operating Temperature	T_{opr}	-20～80	℃	-
Storage Temperature	T_{stg}	-30～125	℃	-
Soldering Temperature (10sec)	T_{sol}	260	℃	-

KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KIA7805AP/API~ KIA7824AP/API
BIPOLAR LINEAR INTEGRATED CIRCUIT

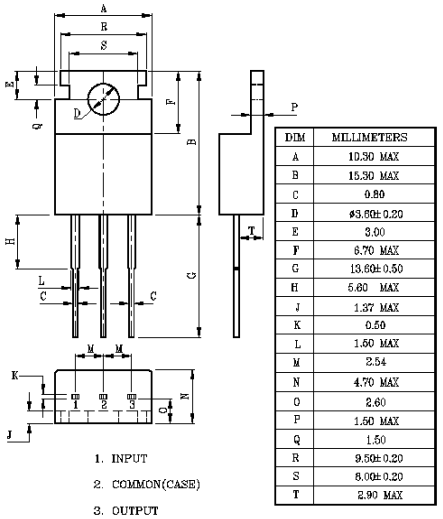
THREE TERMINAL POSITIVE VOLTAGE REGULATORS
5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 20V, 24V.

FEATURES

- Suitable for C-MOS, TTL, the Other Digital IC's Power Supply.
- Internal Thermal Overload Protection.
- Internal Short Circuit Current Limiting.
- Output Current in Excess of 1A.
- Satisfies IEC-65 Specification. (International Electronical Commission).

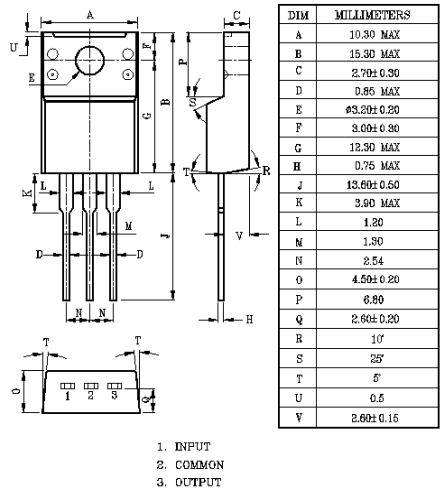
MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	KIA7805AP/API~ KIA7815AP/API	V_{IN}	35	V
	KIA7818AP/API~ KIA7824AP/API		40	
Power Dissipation (Tc=25℃)		P_D	20.8	W
Power Dissipation (Without Heatsink)	KIA7805API~ KIA7824API	P_D	2.0	W
Operating Junction Temperature		T_j	-30~150	℃
Storage Temperature		T_{stg}	-55~150	℃



DIM	MILLIMETERS
A	10.30 MAX
B	15.30 MAX
C	9.80
D	ø3.60±0.20
E	3.00
F	6.70 MAX
G	13.60±0.50
H	5.60 MAX
J	1.37 MAX
K	0.50
L	1.50 MAX
M	2.54
N	4.70 MAX
O	2.60
P	1.50 MAX
Q	1.50
R	9.50±0.20
S	8.00±0.20
T	2.90 MAX

TO-220AB



DIM	MILLIMETERS
A	10.30 MAX
B	15.30 MAX
C	2.70±0.30
D	0.85 MAX
E	ø3.20±0.20
F	3.00±0.30
G	12.30 MAX
H	0.75 MAX
J	13.60±0.50
K	3.90 MAX
L	1.20
M	1.30
N	2.54
O	4.50±0.20
P	6.80
Q	2.60±0.20
R	10°
S	25°
T	5°
U	0.5
V	2.60±0.15

TO-220IS

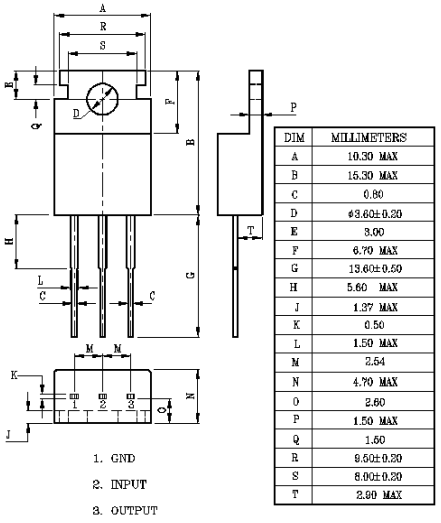
KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KIA7905P/PI~ KIA7924P/PI
BIPOLAR LINEAR INTEGRATED CIRCUIT

1A THREE TERMINAL NEGATIVE VOLTAGE REGULATORS
-5V, -6V, -8V, -9V, -10V, -12V, -15V, -18V, -20V, -24V

FEATURES:
- Suitable for C-MOS, TTL, and the other digital IC power supply.
- Internal thermal overload protecting.
- Internal short circuit current limiting.
- Output current in excess of 1.0A.

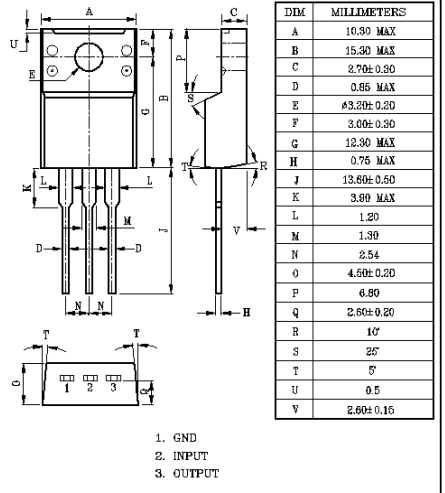


DIM	MILLIMETERS
A	10.30 MAX
B	15.30 MAX
C	0.80
D	φ3.60±0.20
E	3.00
F	6.70 MAX
G	13.60±0.50
H	5.60 MAX
J	1.37 MAX
K	0.50
L	1.50 MAX
M	2.54
N	4.70 MAX
O	2.60
P	1.50 MAX
Q	1.60
R	9.50±0.20
S	8.90±0.20
T	2.80 MAX

TO-220AB

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	KIA7905P/PI~ KIA7915P/PI	V_{IN}	-35	V
	KIA7918P/PI~ KIA7924P/PI		-40	
Power Dissipation (Tc=25℃)		P_D	20.8	W
Operating Junction Temperature		T_j	-30~150	℃
Operating Temperature		T_{opr}	-30~75	℃
Storage Temperature		T_{stg}	-55~150	℃



DIM	MILLIMETERS
A	10.30 MAX
B	15.30 MAX
C	2.70±0.30
D	0.85 MAX
E	φ3.20±0.20
F	3.00±0.30
G	12.30 MAX
H	0.75 MAX
J	13.60±0.50
K	3.80 MAX
L	1.20
M	1.30
N	2.54
O	4.50±0.20
P	6.80
Q	2.50±0.20
R	10°
S	25°
T	5°
U	0.5
V	2.60±0.15

TO-220IS

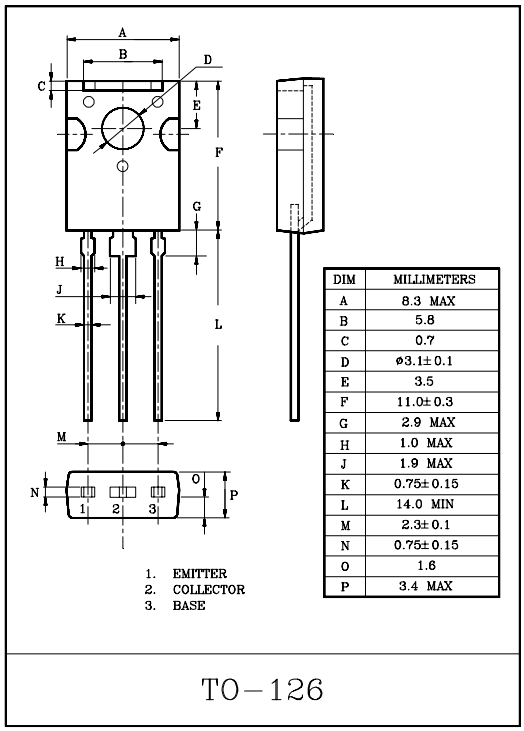
KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KTD600K
EPITAXIAL PLANAR NPN TRANSISTOR

LOW FREQUENCY POWER AMP,
MEDIUM SPEED SWITCHING APPLICATIONS

FEATURES
- High breakdown voltage V_{CEO} 120V, high current 1A.
- Low saturation voltage and good linearity of h_{FE}.



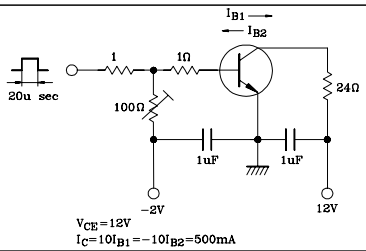
DIM	MILLIMETERS
A	8.3 MAX
B	5.8
C	0.7
D	ø3.1±0.1
E	3.5
F	11.0±0.3
G	2.9 MAX
H	1.0 MAX
J	1.9 MAX
K	0.75±0.15
L	14.0 MIN
M	2.3±0.1
N	0.75±0.15
O	1.6
P	3.4 MAX

TO-126

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	120	V
Collector-Emitter Voltage		V_{CEO}	120	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	1	A
		I_{CP}	2	
Collector Power Dissipation	Ta=25℃	P_C	1.5	W
	Tc=25℃		8	
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55~150	℃

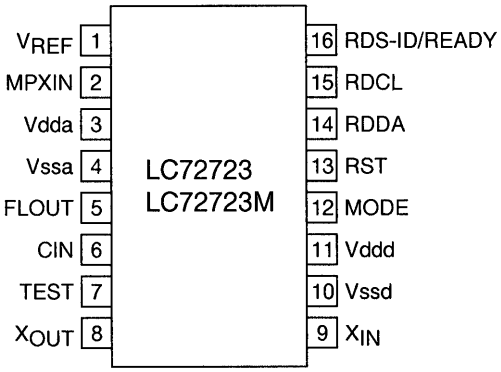
ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut of Current		I_{CBO}	V_{CB}=50V, I_E=0	-	-	1	μA
Emitter Cut of Current		I_{EBO}	V_{EB}=4V, I_C=0	-	-	1	μA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	I_C=10μA	120	-	-	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C=1mA	120	-	-	V
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	I_E=10μA	5	-	-	V
DC Current Gain		h_{FE}(1)Note	V_{CE}=5V, I_C=50mA	100	-	320	
		h_{FE}(2)	V_{CE}=5V, I_C=500mA	20	-	-	
Gain Bandwidth Product		f_T	V_{CE}=10V, I_C=50mA	-	130	-	MHz
Output Capacitance		C_{ob}	V_{CB}=10V, f=1MHz	-	20	-	pF
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=500mA, I_B=50mA	-	0.15	0.4	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C=500mA, I_B=50mA	-	0.85	1.2	V
Switching Time	Turn-on Time	t_{on}		-	100	-	nS
	Turn-off Time	t_{off}		-	500	-	
	Storage Time	t_{stg}		-	700	-	

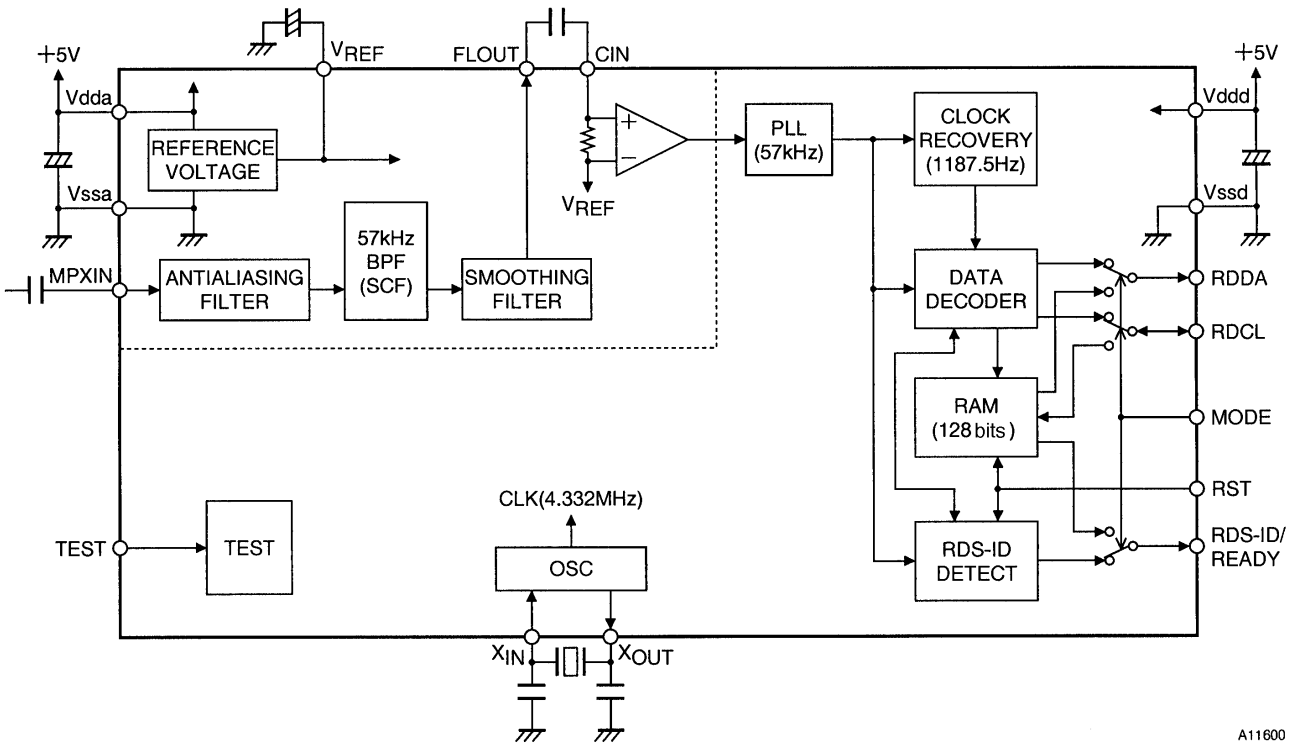
(Note) : h_{FE}(1) Classification Y:100~200, GR:160~320

LC72723, LC72723M

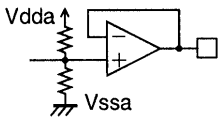
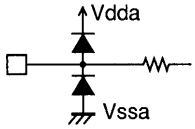
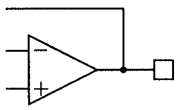
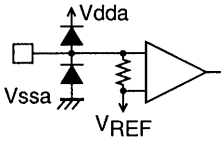
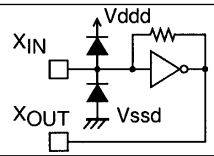
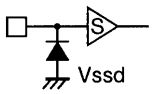
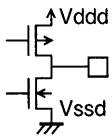
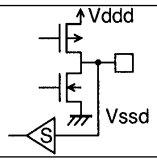
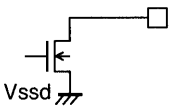
Pin Assignment (DIP16/MFP16)



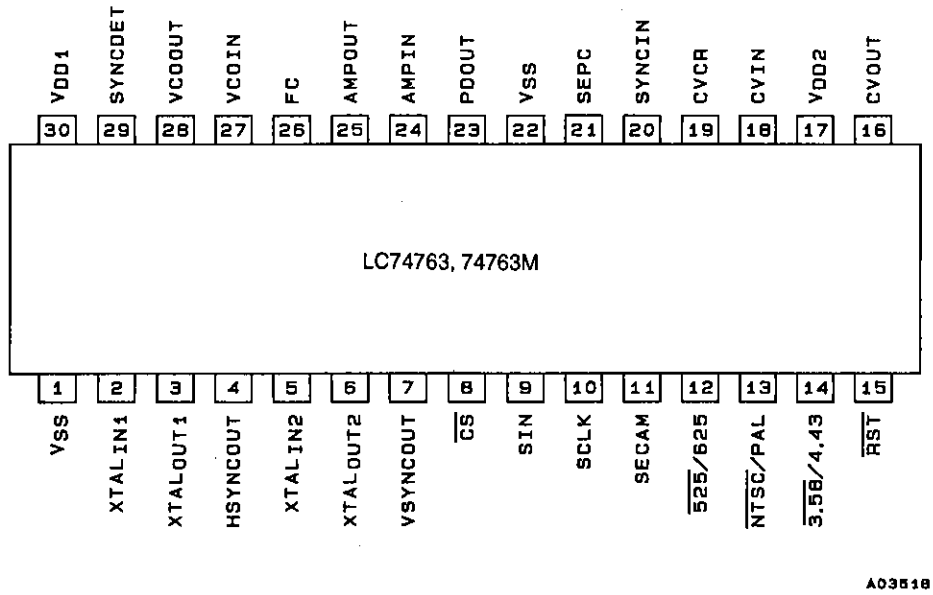
Block Diagram



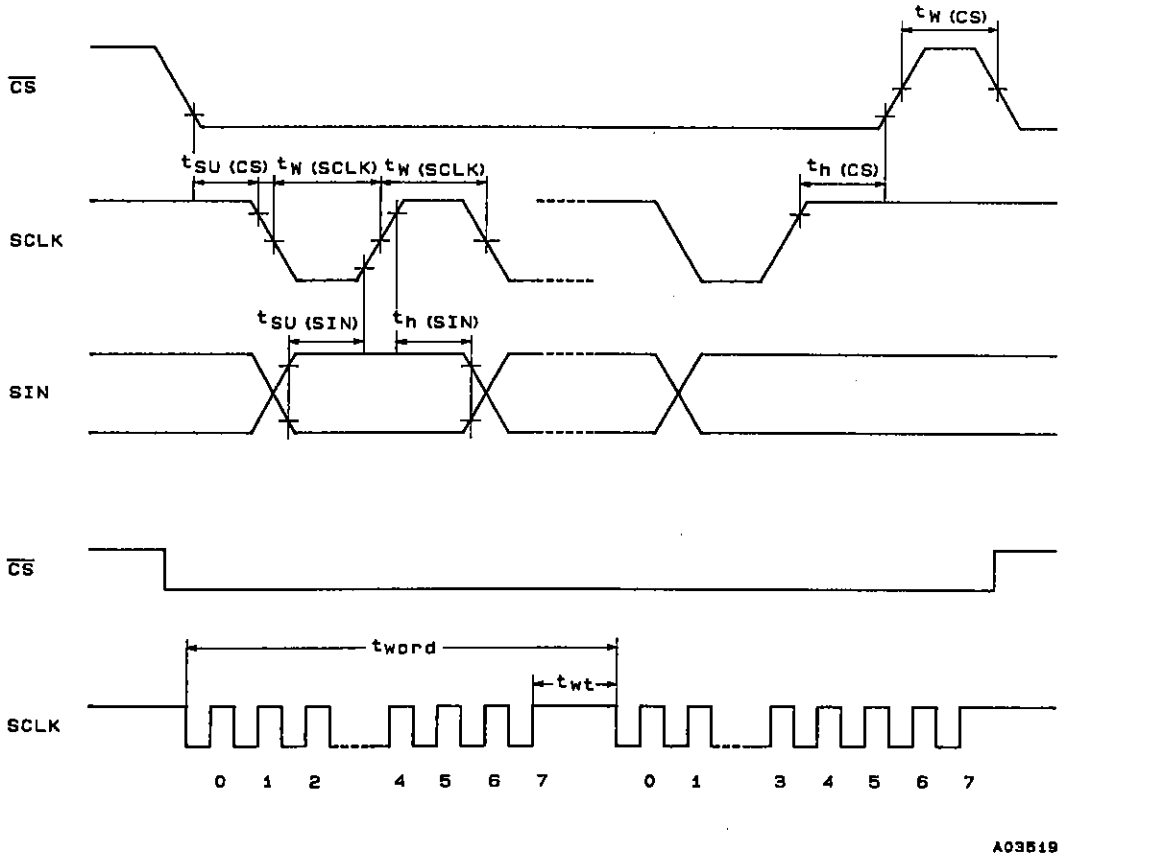
Pin Descriptions

Pin No.	Pin	Function	I/O	Pin circuit type
1	VREF	Reference voltage output (Vdda/2)	Output	
2	MPXIN	Base band (multiplex) signal input	Input	
5	FLOUT	Subcarrier output (filter output)	Output	
6	CIN	Subcarrier input (comparator input)	Input	
3	Vdda	Analog system power supply (+5 V)	—	—
4	Vssa	Analog system ground	—	—
8	XOUT	Crystal element output (4.332 MHz)	Output	
9	XIN	Crystal element input (or external reference signal input)	Input	
7	TEST	Test input		
12	MODE	Readout mode setting (0: master, 1: slave)		
13	RST	RDS ID and RAM reset (Active high logic)		
14	RDDA	RDS data output	Output	
15	RDCL	RDS clock output (master mode) RDS clock input (slave mode)	I/O	
16	RDS-ID/READY	RDS ID/ready output (Active low)	Output	
11	Vddd	Digital system power supply (+5 V)	—	—
10	Vssd	Digital system ground	—	—

Pin Assignment



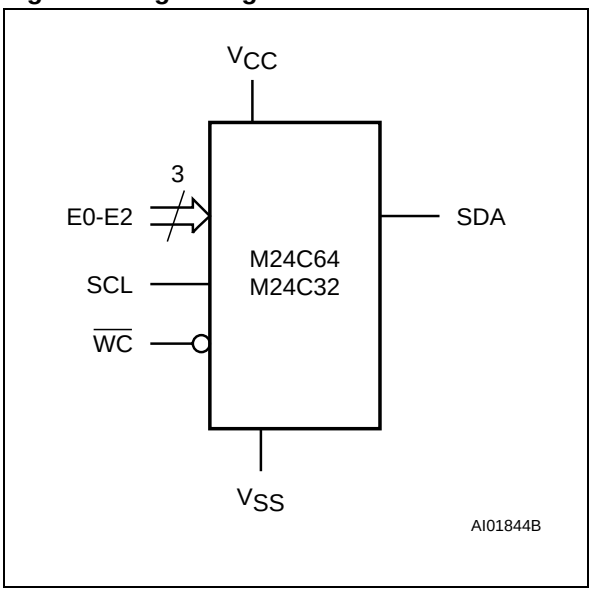
Serial Data Input Timing



SUMMARY DESCRIPTION

These I^2C-compatible electrically erasable programmable memory (EEPROM) devices are organized as 8192 x 8 bits (M24C64) and 4096 x 8 bits (M24C32).

Figure 2. Logic Diagram



I^2C uses a two-wire serial interface, comprising a bi-directional data line and a clock line. The devices carry a built-in 4-bit Device Type Identifier code (1010) in accordance with the I^2C bus definition.

The device behaves as a slave in the I^2C protocol, with all memory operations synchronized by the serial clock. Read and Write operations are initiated by a Start condition, generated by the bus master. The Start condition is followed by a Device Select Code and Read/Write bit (RW) (as described in Table 3.), terminated by an acknowledge bit.

When writing data to the memory, the device inserts an acknowledge bit during the 9th bit time, following the bus master's 8-bit transmission. When data is read by the bus master, the bus master acknowledges the receipt of the data byte in the same way. Data transfers are terminated by a Stop condition after an Ack for Write, and after a NoAck for Read.

Table 2. Signal Names

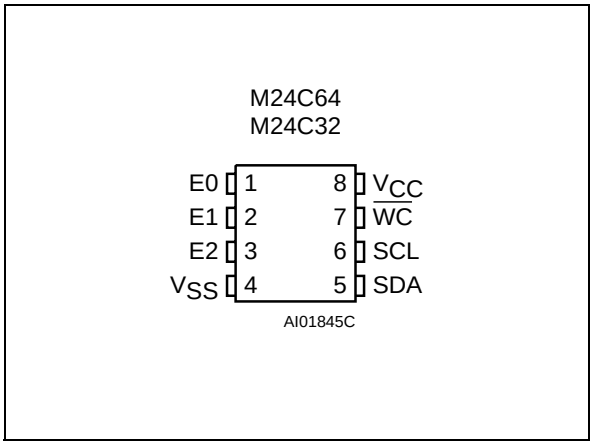
E0, E1, E2	Chip Enable
SDA	Serial Data
SCL	Serial Clock
$\overline{WC}$	Write Control
V_{CC}	Supply Voltage
V_{SS}	Ground

Power On Reset: V_{CC} Lock-Out Write Protect

In order to prevent data corruption and inadvertent Write operations during Power-up, a Power On Reset (POR) circuit is included. At Power-up, the internal reset is held active until V_{CC} has reached the Power On Reset (POR) threshold voltage, and all operations are disabled – the device will not respond to any command. In the same way, when V_{CC} drops from the operating voltage, below the Power On Reset (POR) threshold voltage, all operations are disabled and the device will not respond to any command.

A stable and valid V_{CC} (as defined in Table 9. and Table 10.) must be applied before applying any logic signal.

Figure 3. DIP, SO, TSSOP and UFDFPN Connections



Note: See PACKAGE MECHANICAL section for package dimensions, and how to identify pin-1.

DEVICE OPERATION

The device supports the I^2C protocol. This is summarized in Figure 5.. Any device that sends data on to the bus is defined to be a transmitter, and any device that reads the data to be a receiver. The device that controls the data transfer is known as the bus master, and the other as the slave device. A data transfer can only be initiated by the bus master, which will also provide the serial clock for synchronization. The M24Cxx device is always a slave in all communication.

Start Condition

Start is identified by a falling edge of Serial Data (SDA) while Serial Clock (SCL) is stable in the High state. A Start condition must precede any data transfer command. The device continuously monitors (except during a Write cycle) Serial Data (SDA) and Serial Clock (SCL) for a Start condition, and will not respond unless one is given.

Stop Condition

Stop is identified by a rising edge of Serial Data (SDA) while Serial Clock (SCL) is stable and driven High. A Stop condition terminates communication between the device and the bus master. A Read command that is followed by NoAck can be followed by a Stop condition to force the device into the Stand-by mode. A Stop condition at the end of a Write command triggers the internal Write cycle.

Acknowledge Bit (ACK)

The acknowledge bit is used to indicate a successful byte transfer. The bus transmitter, whether it be bus master or slave device, releases Serial Data (SDA) after sending eight bits of data. During the 9^{th} clock pulse period, the receiver pulls Serial Data (SDA) Low to acknowledge the receipt of the eight data bits.

Data Input

During data input, the device samples Serial Data (SDA) on the rising edge of Serial Clock (SCL). For correct device operation, Serial Data (SDA) must be stable during the rising edge of Serial Clock (SCL), and the Serial Data (SDA) signal must change *only* when Serial Clock (SCL) is driven Low.

Memory Addressing

To start communication between the bus master and the slave device, the bus master must initiate a Start condition. Following this, the bus master sends the Device Select Code, shown in Table 3. (on Serial Data (SDA), most significant bit first).

The Device Select Code consists of a 4-bit Device Type Identifier, and a 3-bit Chip Enable “Address” (E2, E1, E0). To address the memory array, the 4-bit Device Type Identifier is 1010b.

Up to eight memory devices can be connected on a single I^2C bus. Each one is given a unique 3-bit code on the Chip Enable (E0, E1, E2) inputs. When the Device Select Code is received, the device only responds if the Chip Enable Address is the same as the value on the Chip Enable (E0, E1, E2) inputs.

The 8^{th} bit is the Read/$\overline{\text{Write}}$ bit ($\overline{\text{RW}}$). This bit is set to 1 for Read and 0 for Write operations.

If a match occurs on the Device Select code, the corresponding device gives an acknowledgment on Serial Data (SDA) during the 9^{th} bit time. If the device does not match the Device Select code, it deselects itself from the bus, and goes into Stand-by mode.

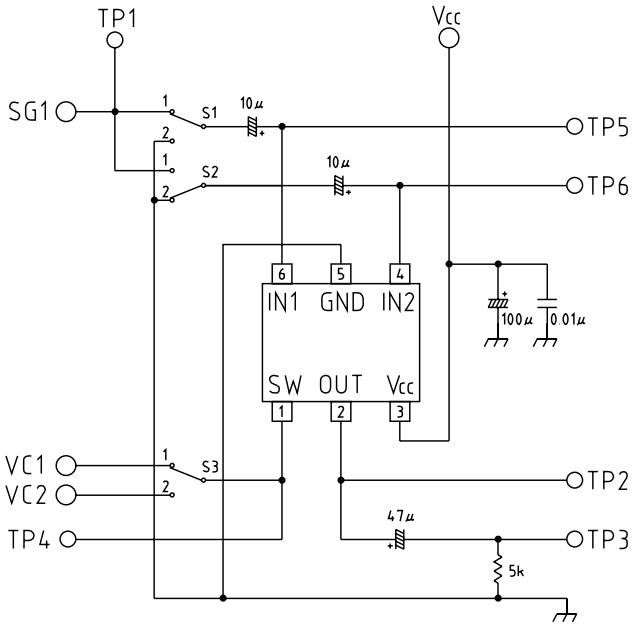
Table 6. Operating Modes

Mode	$\overline{\text{RW}}$ bit	$\overline{\text{WC}}$ [1]	Bytes	Initial Sequence
Current Address Read	1	X	1	START, Device Select, $\overline{\text{RW}}$ = 1
Random Address Read	0	X	1	START, Device Select, $\overline{\text{RW}}$ = 0, Address
	1	X		reSTART, Device Select, $\overline{\text{RW}}$ = 1
Sequential Read	1	X	≥ 1	Similar to Current or Random Address Read
Byte Write	0	V_{IL}	1	START, Device Select, $\overline{\text{RW}}$ = 0
Page Write	0	V_{IL}	≤ 32	START, Device Select, $\overline{\text{RW}}$ = 0

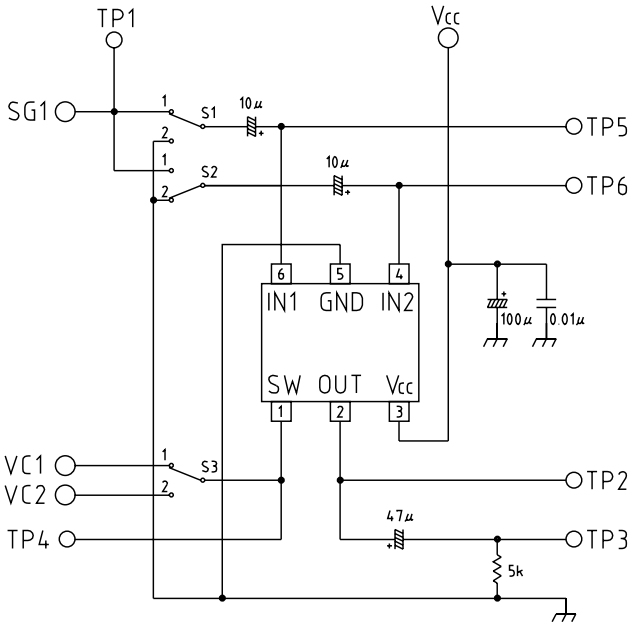
Note: 1. X = V_{IH} or V_{IL}.

Measuring Circuit

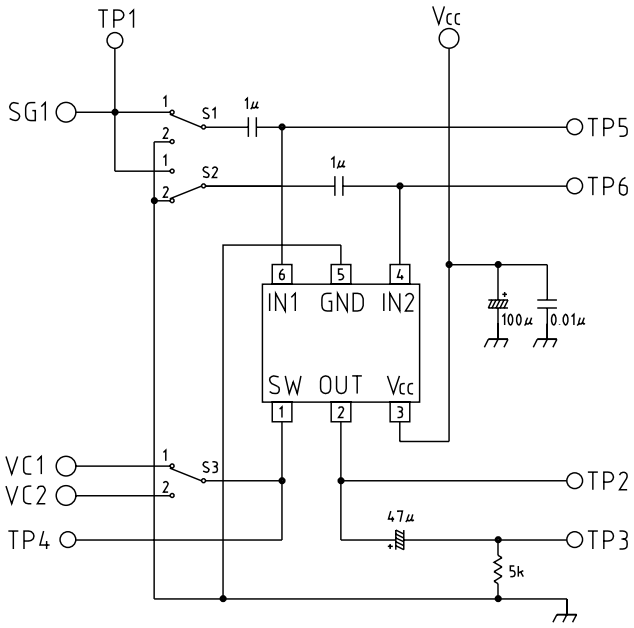
MM1501



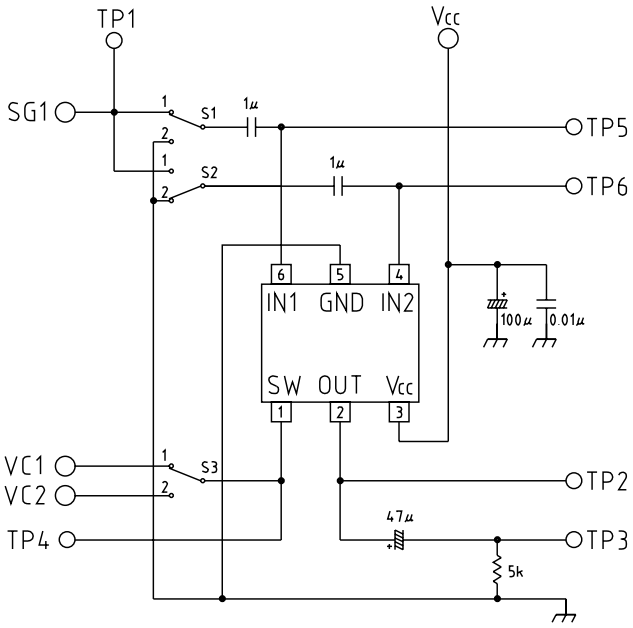
MM1502



MM1503



MM1504



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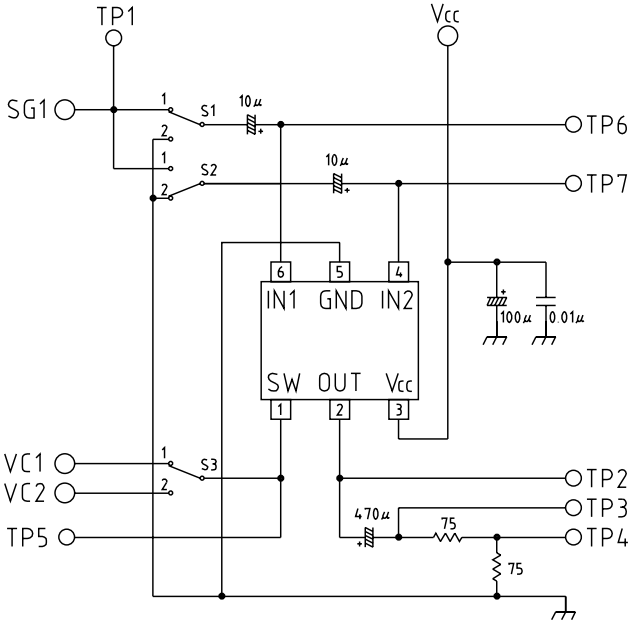
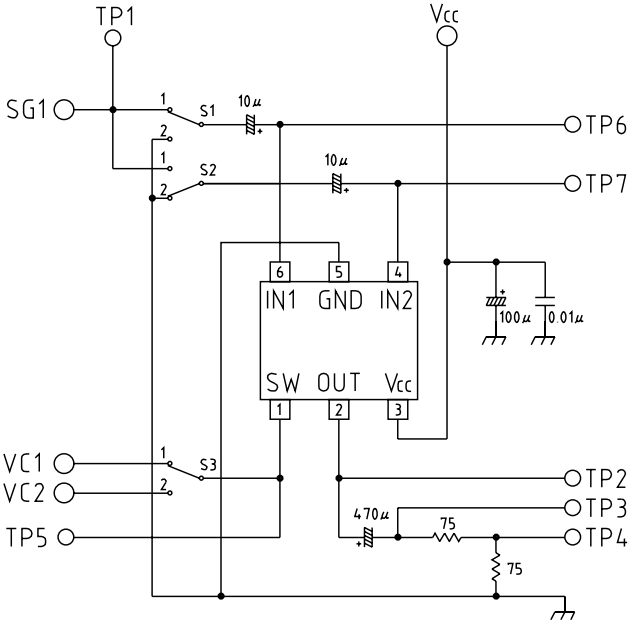


MM1506



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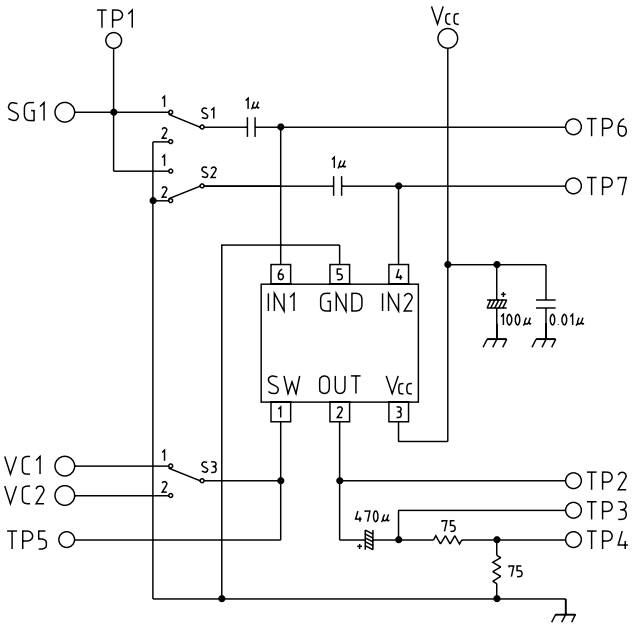
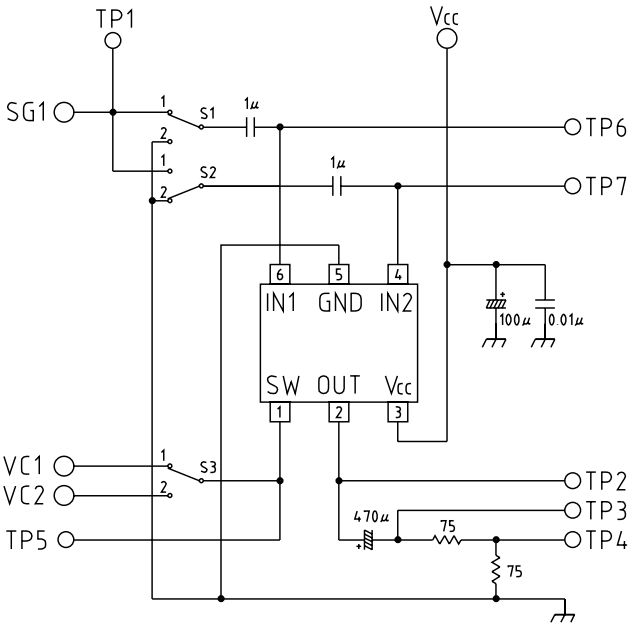
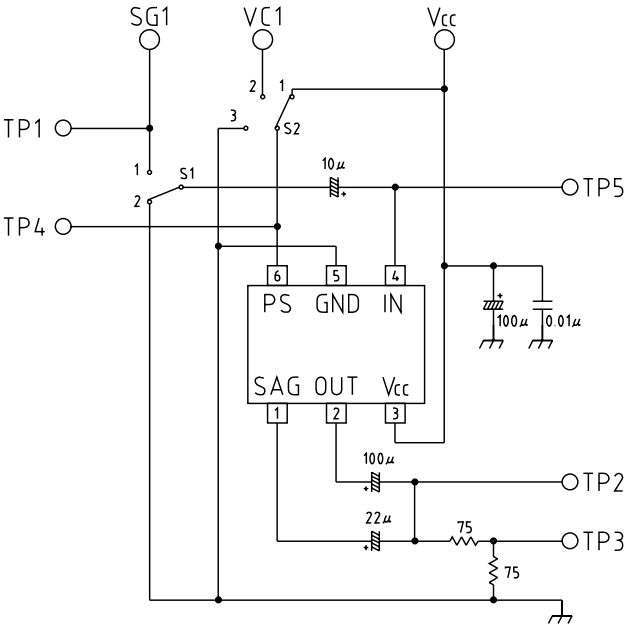


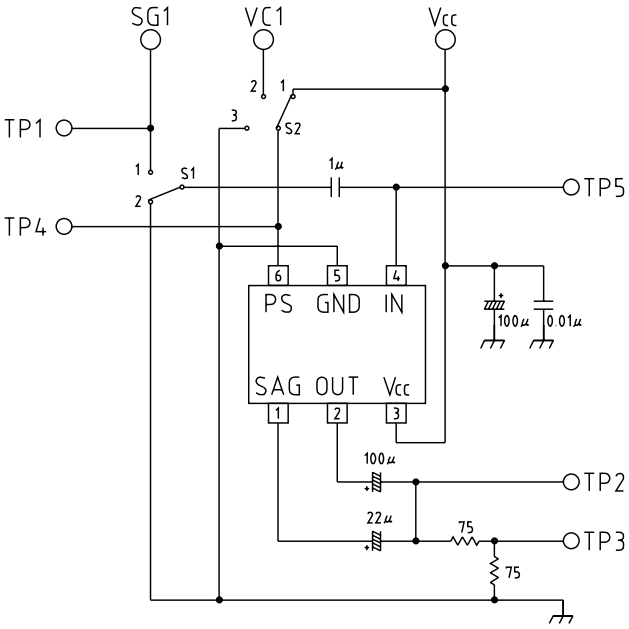
MM1508



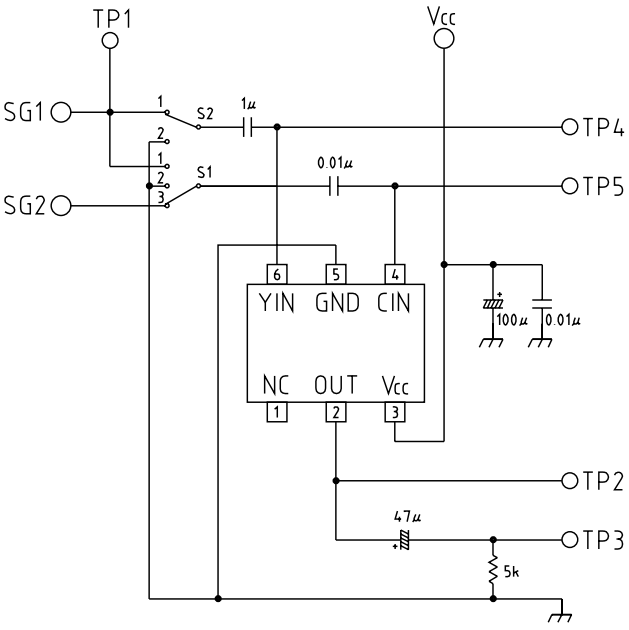
MM1509



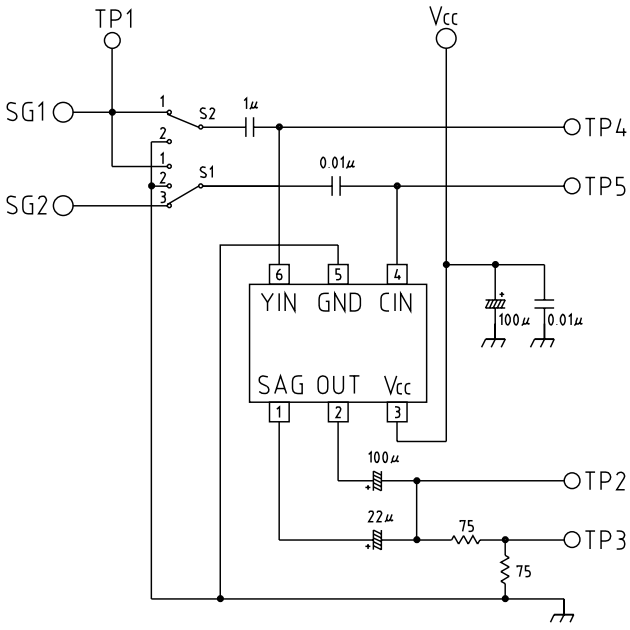
MM1510



MM1511



MM1512



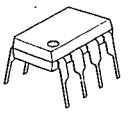
JRC **NJM2068**

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

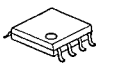
■ GENERAL DESCRIPTION

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.

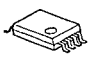
■ PACKAGE OUTLINE



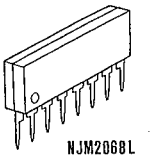
NJM2068D



NJM2068M



NJM2068V



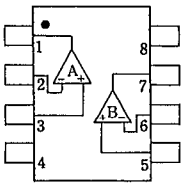
NJM2068L

■ FEATURES

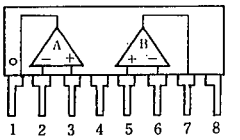
- Operating Voltage (±4V~±18V)
- Low Total Harmonic Distortion (0.001% typ.)
- Low Noise Voltage (FLAT+JISA, 0.56 μV typ.)
- High Slew Rate (6V/μs typ.)
- Unity Gain Bandwidth (27MHz @f=10kHz)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

4

■ PIN CONFIGURATION



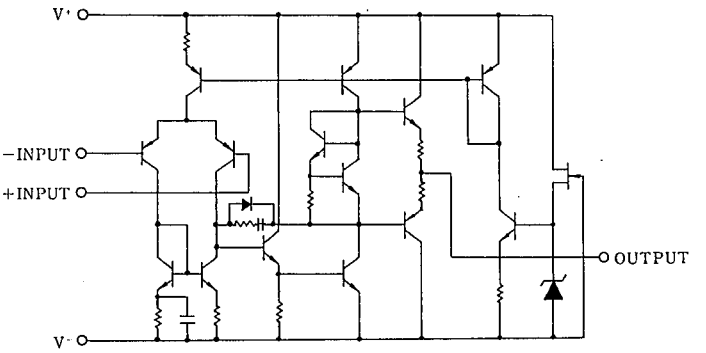
NJM2068D
NJM2068M
NJM2068V



NJM2068L

PIN FUNCITON
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)



JRC **NJM2391**

LOW DROPOUT VOLTAGE REGULATOR

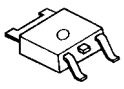
■ GENERAL DESCRIPTION

The NJM2391 is low dropout voltage regulators featuring high precision voltage.

It is suitable for Notebook PCs, PC cards and hard disks where 3.3V need to be generated from 5V supply.

A small TO-252 package is adopted for the space saving.

■ PACKAGE OUTLINE

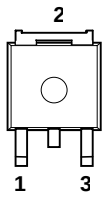


NJM2391DL1

■ FEATURES

- ●Output Current Io(max.)=1A
- ●High Precision Output Voltage Vo±1%
- ●Low Dropout Voltage ΔV_{I-O} =1.1V typ. At Io=1A
- ●Internal Excessive Voltage Protection Circuit
- ●Internal Short Circuit Current Limit
- ●Internal Thermal Overload Protection
- ●Bipolar Technology
- ●Package Outline TO-252

■ PIN CONFIGURATION



PIN FUNCTION
1.V_{IN}
2.GND
3.V_{OUT}

NJM2391DL1

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V^+	+10	V
Power Dissipation	P_D	TO-252 8 (Tc=25°C) 0.8(Ta≤25°C)	W
Operating Temperature	Topr	–40 ~ +85	°C
Storage Temperature	Tstg	–50 ~ +125	°C

■ OUTPUT VOLTAGE RANK LIST

Device Name	V_{OUT}
NJM2391DL1-25	2.5V
NJM2391DL1-26	2.6V
NJM2391DL1-28	2.85V
NJM2391DL1-03	3.0V
NJM2391DL1-33	3.3V
NJM2391DL1-35	3.5V
NJM2391DL1-05	5.0V

JRC **NJM2595**

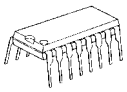
5-INPUT 3-OUTPUT VIDEO SWITCH

■ GENERAL DESCRIPTION

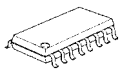
The **NJM2595** is a 5-input 3-output video switch. Its switches select one from five signals received from VTR,TV,DVD, TV-GAME and others.

The NJM2595 is designed for audio items, such as AV amplifier and others.

■ PACKAGE OUTLINE



NJM2595D

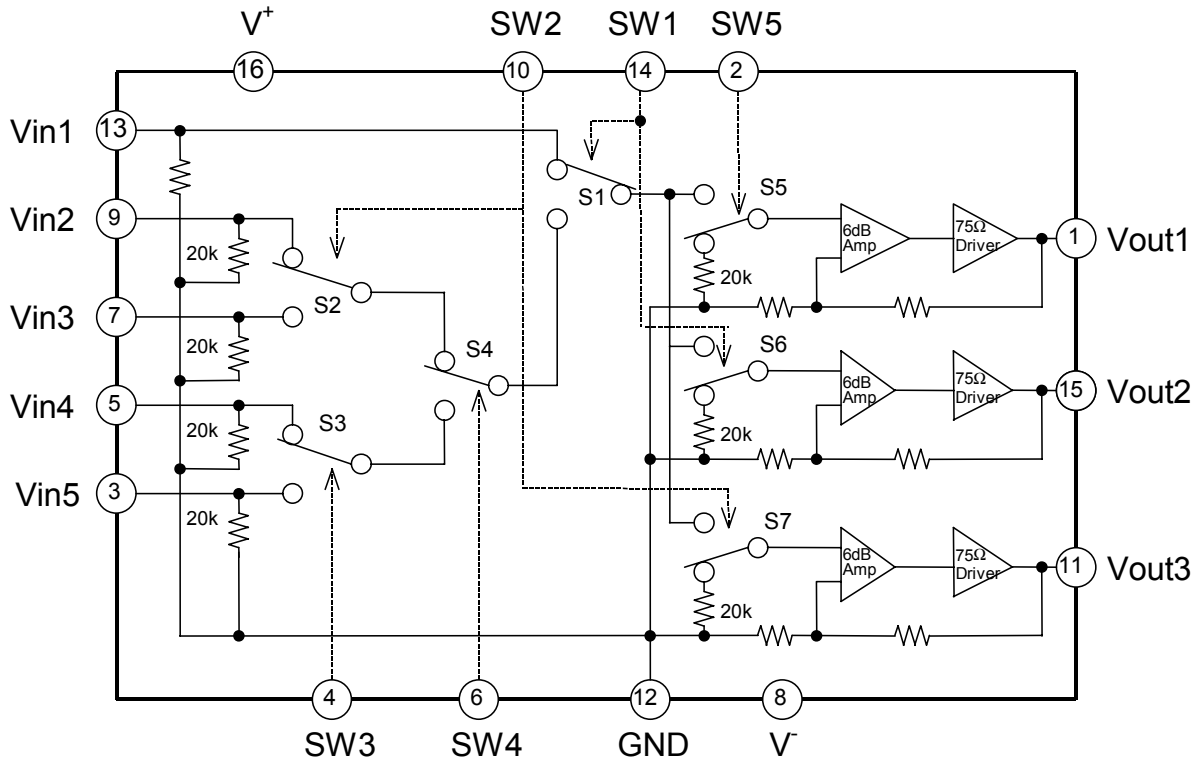


NJM2595M

■ FEATURES

- 5-input 3-output
- Operating Voltage ±4.0 to ±6.5V
- Operating current ±15mAtyp. at Vcc=±5V
- Crosstalk -65dBtyp.
- Internal 6dB Amplifier
- Internal 75Ω Driver
- Bipolar Technology
- Package Outline DIP16,DMP16

■ PIN CONFIGURATION and BLOCK DIAGRAM



JRC **NJM4556A**

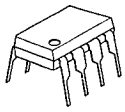
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM4556A integrated circuit is a high-gain, high output current dual operational amplifier capable of driving ±70mA into 150 Ω loads (±10.5V output voltage), and operating low supply voltage (V^+/V^-=±2V~).

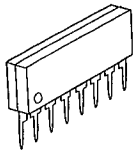
The NJM4556A combines many of the fetures of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ PACKAGE OUTLINE

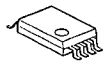


NJM4556AD

NJM4556AM



NJM4556AL

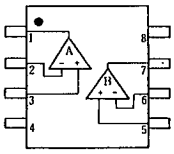


NJM4556AV

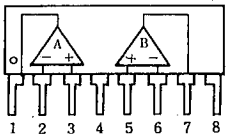
■ FEATURES

- Operating Voltage (±2V~±18V)
- High Output Current (Io=70mA)
- Slew Rate (3V/μs typ.)
- Gain Band Width Product (8MHz typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



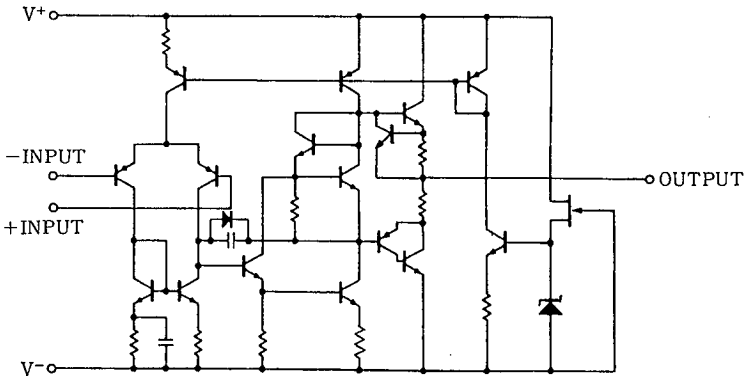
NJM4556AD
NJM4556AM
NJM4556AV



NJM4556AL

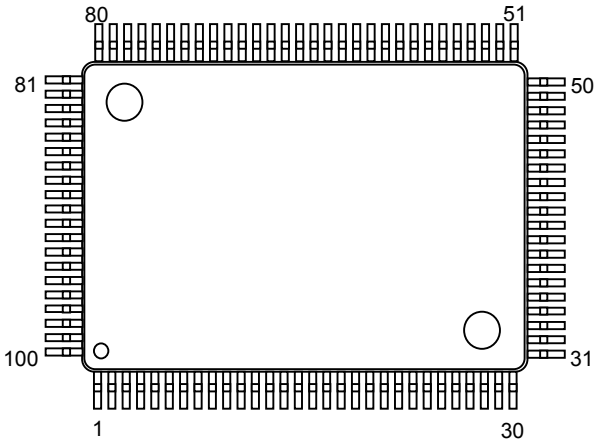
PIN FUNCTION
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

■ EQUIVALENT CIRCUIT (1/2 Shown)



NJW1197C

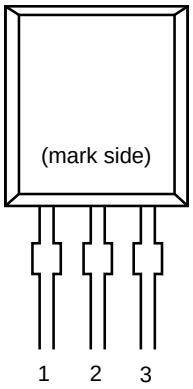
■ PIN FUNCTION



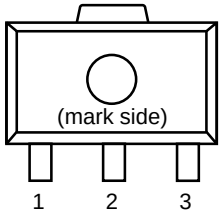
No.	SYMBOL	FUNCTION	No.	SYMBOL	FUNCTION
1	ROUT	Rch output	51	DCR_IN	“Multi-channel selector” Rch input
2	COUT	Cch output	52	DCR_OUT	“Input selector” Rch output
3	LSOUT	LSch output	53	GND	Ground
4	RSOUT	RSch output	54	DCL_IN	“Multi-channel selector” Lch input
5	LBOUT	LBch output	55	DCL_OUT	“Input selector” Lch output
6	RBOUT	RBch output	56	GND	Ground
7	SWOUT	SWch output	57	REC_B1R	“Input selector” Rch REC output B1
8	GND	Ground	58	REC_B1L	“Input selector” Lch REC output B1
9	FIL_BL2	Lch Bass filter terminal 2	59	REC_A4R	“Input selector” Rch REC output A4
10	FIL_BL1	Lch Bass filter terminal 1	60	REC_A4L	“Input selector” Lch REC output A4
11	FIL_TL	Lch Treble filter terminal	61	REC_A3R	“Input selector” Rch REC output A3
12	TCAP	Switching noise rejection capacitor	62	REC_A3L	“Input selector” Lch REC output A3
13	FIL_BR2	Rch Bass filter terminal 2	63	REC_A2R	“Input selector” Rch REC output A2
14	FIL_BR1	Rch Bass filter terminal 1	64	REC_A2L	“Input selector” Lch REC output A2
15	FIL_TR	Rch Treble filter terminal	65	REC_A1R	“Input selector” Rch REC output A1
16	V+	+ Power supply voltage input	66	REC_A1L	“Input selector” Lch REC output A1
17	ADR	Chip address select input	67	VDDOUT	Internal Digital +Power Supply Output
18	V-	- Power supply voltage input	68	DATA	Control data signal input
19	L1IN	“Input selector” Lch input 1	69	CLOCK	Clock signal input
20	DCCAP_SW	Switching noise rejection capacitor	70	LATCH	Latch signal input
21	R1IN	“Input selector” Rch input 1	71	MUTE	External mute control
22	DCCAP_RB	Switching noise rejection capacitor	72	FL+	“Input selector gain control” Lch no-inverted output
23	L2IN	“Input selector” Lch input 2	73	FL-	“Input selector gain control” Lch inverted output
24	DCCAP_LB	Switching noise rejection capacitor	74	FR+	“Input selector gain control” Rch no-inverted output
25	R2IN	“Input selector” Rch input 2	75	FR-	“Input selector gain control” Rch inverted output
26	DCCAP_RS	Switching noise rejection capacitor	76	GND	Ground
27	L3IN	“Input selector” Lch input 3	77	LSCIN	Multi-channel LSch input C
28	DCCAP_LS	Switching noise rejection capacitor	78	RSCIN	Multi-channel RSch input C
29	R3IN	“Input selector” Rch input 3	79	LBCIN	Multi-channel LBch input C
30	DCCAP_C	Switching noise rejection capacitor	80	RBCIN	Multi-channel RBch input C
31	L4IN	“Input selector” Lch input 4	81	GND	Ground
32	DCCAP_R	Switching noise rejection capacitor	82	LAIN	Multi-channel Lch input A
33	R4IN	“Input selector” Rch input 4	83	RAIN	Multi-channel Rch input A
34	DCCAP_L	Switching noise rejection capacitor	84	CAIN	Multi-channel Cch input A
35	L5IN	“Input selector” Lch input 5	85	LSAIN	Multi-channel LSch input A
36	GND	Ground	86	RSAIN	Multi-channel RSch input A
37	R5IN	“Input selector” Rch input 5	87	LBAIN	Multi-channel LBch input A
38	GND	Ground	88	RBAIN	Multi-channel RBch input A
39	L6IN	“Input selector” Lch input 6	89	SWAIN	Multi-channel SWch input A
40	L9IN	“Input selector” Lch input 9	90	GND	Ground
41	R6IN	“Input selector” Rch input 6	91	LBIN	Multi-channel Lch input B
42	R9IN	“Input selector” Rch input 9	92	RBIN	Multi-channel Rch input B
43	L7IN	“Input selector” Lch input 7	93	CBIN	Multi-channel Cch input B
44	L10IN	“Input selector” Lch input 10	94	LSBIN	Multi-channel LSch input B
45	R7IN	“Input selector” Rch input 7	95	RSBIN	Multi-channel RSch input B
46	R10IN	“Input selector” Rch input 10	96	LBBIN	Multi-channel LBch input B
47	L8IN	“Input selector” Lch input 8	97	RBBIN	Multi-channel RBch input B
48	L11IN	“Input selector” Lch input 11	98	SWBIN	Multi-channel SWch input B
49	R8IN	“Input selector” Rch input 8	99	GND	Ground
50	R11IN	“Input selector” Rch input 11	100	LOUT	Lch output

PIN CONFIGURATION

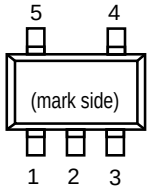
• TO-92



• SOT-89



• SOT-23-5



PIN DESCRIPTION

• TO-92

Pin No.	Symbol
1	OUT
2	V_{DD}
3	GND

• SOT-89

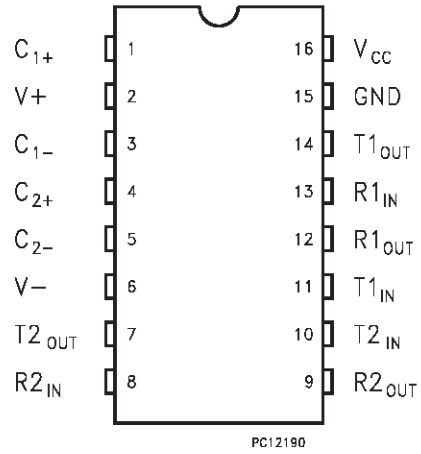
Pin No.	Symbol
1	OUT
2	V_{DD}
3	GND

• SOT-23-5

Pin No.	Symbol
1	OUT
2	V_{DD}
3	GND
4	NC
5	NC

ST232

PIN CONFIGURATION



PIN DESCRIPTION

PIN No	SYMBOL	NAME AND FUNCTION
1	C_1+	Positive Terminal for the first Charge Pump Capacitor
2	V+	Doubled Voltage Terminal
3	C_1-	Negative Terminal for the first Charge Pump Capacitor
4	C_2+	Positive Terminal for the second Charge Pump Capacitor
5	C_2-	Negative Terminal for the second Charge Pump Capacitor
6	V-	Inverted Voltage Terminal
7	$T2_{OUT}$	Second Transmitter Output Voltage
8	$R2_{IN}$	Second Receiver Input Voltage
9	$R2_{OUT}$	Second Receiver Output Voltage
10	$T2_{IN}$	Second Transmitter Input Voltage
11	$T1_{IN}$	First Transmitter Input Voltage
12	$R1_{OUT}$	First Receiver Output Voltage
13	$R1_{IN}$	First Receiver Input Voltage
14	$T1_{OUT}$	First Transmitter Output Voltage
15	GND	Ground
16	V_{CC}	Supply Voltage

ABSOLUTE MAXIMUM RATINGS (Note 1)

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.3 to 6	V
T_{IN}	Transmitter Input Voltage Range	-0.3 to (V_{CC} + 0.3)	V
R_{IN}	Receiver Input Voltage Range	±30	V
T_{OUT}	Transmitter Output Voltage Range	(V+ + 0.3) to (V- - 0.3)	V
R_{OUT}	Receiver Output Voltage Range	-0.3 to (V_{CC} + 0.3)	V
T_{SCTOUT}	Short Circuit Duration on T_{OUT}	infinite	
T_{stg}	Storage Temperature Range	-65 to +150	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.
Note1: No external supply can be applied to V+ terminal and V- terminal.

2. Pin Assignment and Pin Functions

The assignment of input/output pins for the T5CC1, their names and functions are as follows:

2.1 Pin Assignment Diagram

Figure 2.1.1 shows the pin assignment of the T5CC1.

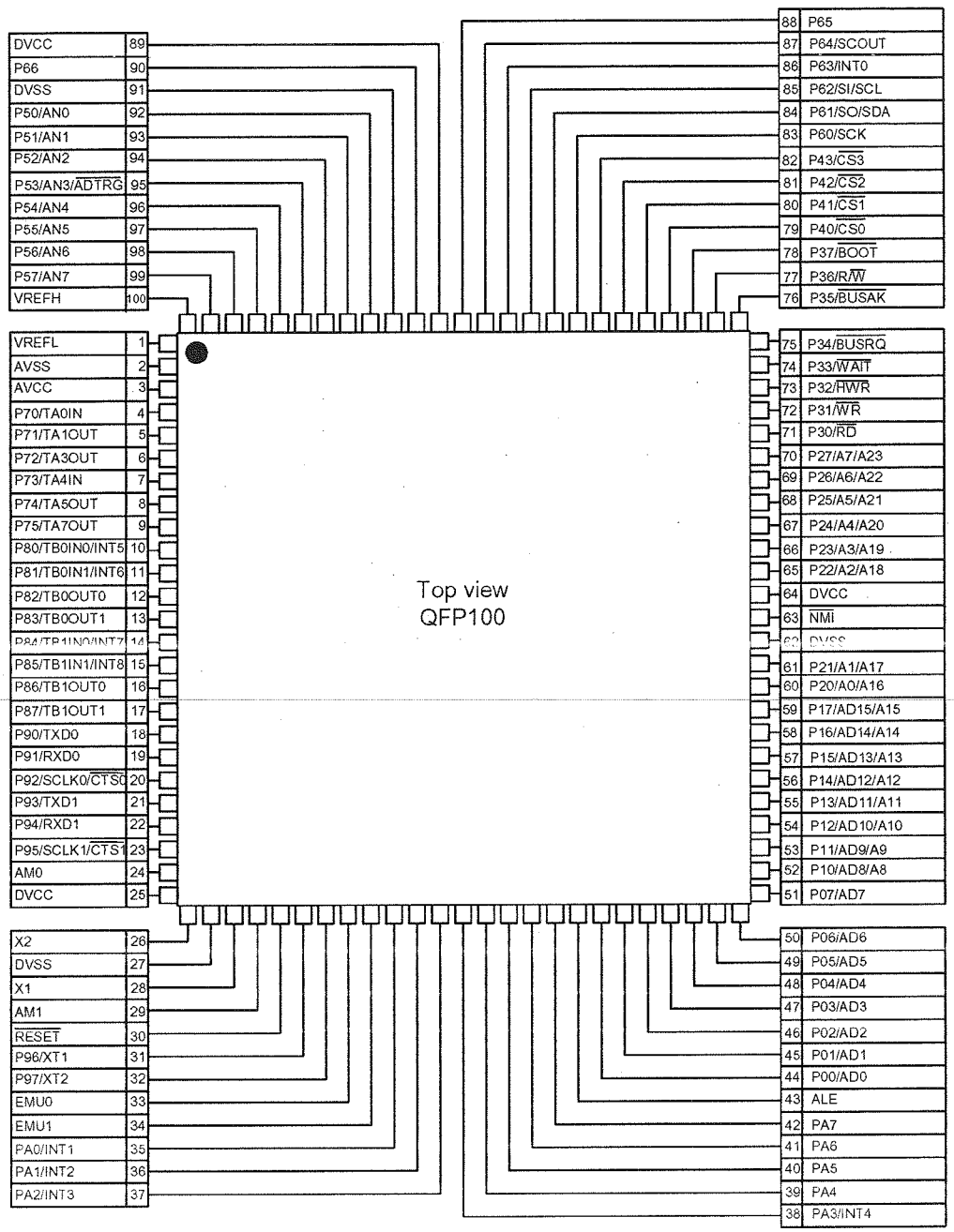


Figure 2.1.1 Pin assignment diagram (100-pin LQFP)

2.2 Pin Names and Functions

The names of the input/output pins and their functions are described below.
Table 2.2.1 Pin names and functions.

Table 2.2.1 Pin names and functions (1/3)

Pin Name	Number of Pins	I/O	Functions
P00~P07 AD0~AD7	8	I/O I/O	Port 0: I/O port that allows I/O to be selected at the bit level Address and data (lower): Bits 0 to 7 of address and data bus
P10~P17 AD8~AD15 A8~A15	8	I/O I/O Output	Port 1: I/O port that allows I/O to be selected at the bit level Address and data (upper): Bits 8 to 15 for address and data bus Address: Bits 8 to 15 of address bus
P20~P27 A0~A7 A16~A23	8	I/O Output Output	Port 2: I/O port that allows I/O to be selected at the bit level Address: Bits 0 to 7 of address bus Address: Bits 16 to 23 of address bus
P30 $\overline{RD}$	1	Output Output	Port 30: Output port Read: Strobe signal for reading external memory This port output RD signal also case of reading internal-area by setting P3 <P30> = 0 and P3FC <P30F> = 1.
P31 $\overline{WR}$	1	Output Output	Port 31: Output port Write: Strobe signal for writing data to pins AD0 to AD7
P32 $\overline{HWR}$	1	I/O Output	Port 32: I/O port (with pull-up resistor) High Write: Strobe signal for writing data to pins AD8 to AD15
P33 $\overline{WAIT}$	1	I/O Input	Port 33: I/O port (with pull-up resistor) Wait: Pin used to request CPU bus wait ((1+N) WAIT mode)
P34 BUSRQ	1	I/O Input	Port 34: I/O port (with pull-up resistor) Bus Request: Signal used to request Bus Release
P35 $\overline{BUSAK}$	1	I/O Output	Port 35: I/O port (with pull-up resistor) Bus Acknowledge: Signal used to acknowledge Bus Release
P36 R/$\overline{W}$	1	I/O Output	Port 36: I/O port (with pull-up resistor) Read/Write: 1 represents Read or Dummy cycle; 0 represents Write cycle.
P37 $\overline{BOOT}$	1	I/O Input	Port 36: I/O port (with pull-up resistor) This pin sets single boot mode. When released reset, Single boot mode is started at P37=Low level.
P40 $\overline{CS0}$	1	I/O Output	Port 40: I/O port (with pull-up resistor) Chip Select 0: Outputs 0 when address is within specified address area
P41 $\overline{CS1}$	1	I/O Output	Port 41: I/O port (with pull-up resistor) Chip Select 1: Outputs 0 if address is within specified address area
P42 $\overline{CS2}$	1	I/O Output	Port 42: I/O port (with pull-up resistor) Chip Select 2: Outputs 0 if address is within specified address area
P43 $\overline{CS3}$	1	I/O Output	Port 43: I/O port (with pull-up resistor) Chip Select 3: Outputs 0 if address is within specified address area
P50~P57 AN0~AN7 $\overline{ADTRG}$	8	Input Input Input	Port 5: Pin used to input port Analog input: Pin used to input to AD converter AD Trigger: Signal used to request start of AD converter (Shared with53 pin)

Table 2.2.1 Pin names and functions (2/3)

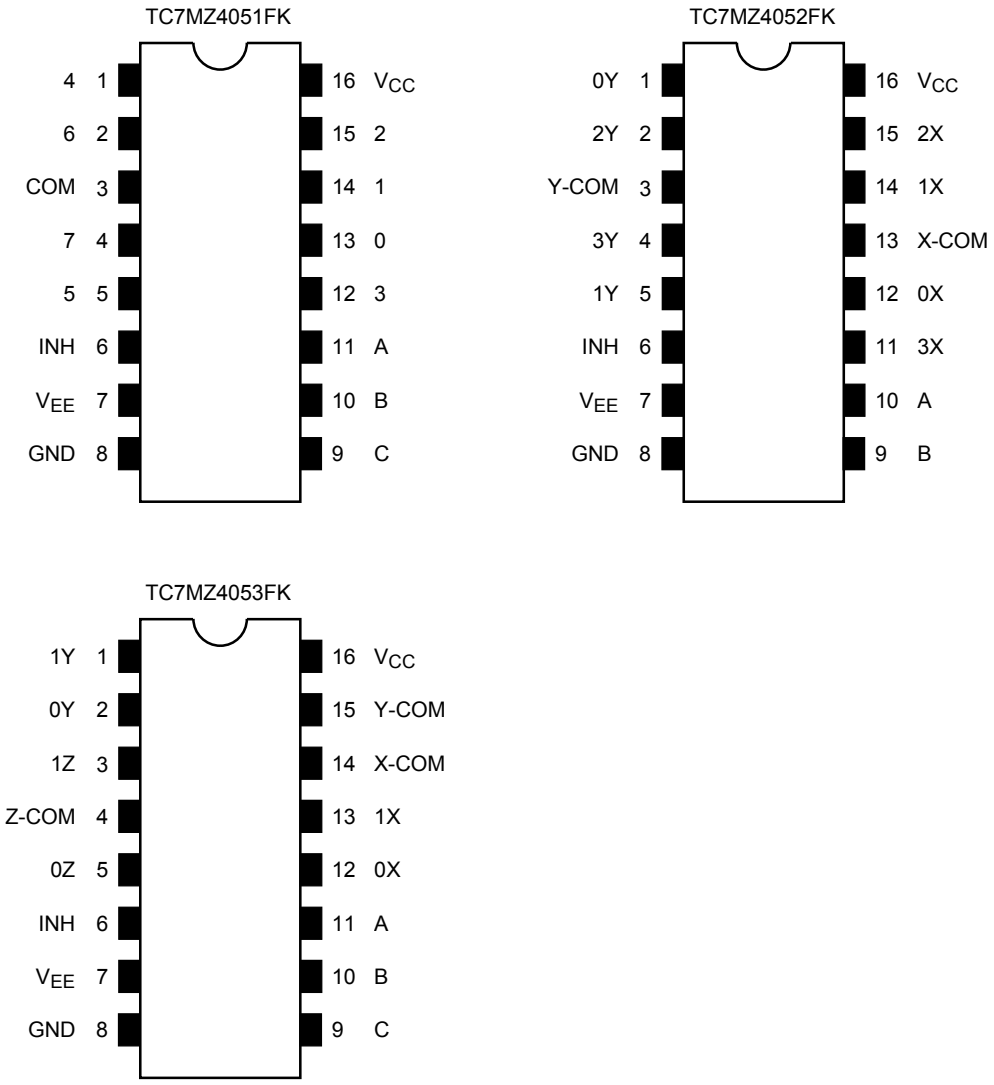
Pin Name	Number of Pins	I/O	Functions
P60 SCK	1	I/O I/O	Port 60: I/O port Serial bus interface clock in SIO Mode
P61 SO SDA	1	I/O Output I/O	Port 61: I/O port Serial bus interface send data at SIO mode Serial bus interface send/recive data at I^2C bus mode Open-drain output mode by programmable
P62 SI SCL	1	I/O Input I/O	Port 62: I/O port Serial bus interface recive data at SIO mode Serial bus interface clock I/O data at I^2C bus mode Open-drain output mode by programmable
P63 INT0	1	I/O Input	Port 63: I/O port Interrupt Request Pin 0: Interrupt request pin with programmable level / rising edge / falling edge
P64 SCOUT	1	I/O Output	Port 64: I/O port System Clock Output: Outputs f_{FPH} or fs clock.
P65	1	I/O	Port 65 I/O port
P66	1	I/O	Port 66 I/O port
P70 TA0IN	1	I/O Input	Port 70I/O port 8bitt timer 0 input:: Timer 0 input
P71 TA1OUT	1	I/O Output	Port 71I/O port 8-bit timer 1 output: Timer 0 or Timer 1 output
P72 TA3OUT	1	I/O Output	Port 72I/O port 8bit 8-bit timer 3 output: Timer 2 or Timer 3 output
P73 TA4IN	1	I/O Input	Port 73: I/O port 8-bit timer 4 input: Timer 4 input
P74 TA5OUT	1	I/O Output	Port 74: I/O port 8-bit timer 5 output: Timer 4 or Timer 5 output
P75 TA7OUT	1	I/O Output	Port 75: I/O port 88-bit timer 7 output: Timer 6 or Timer 7 output
P80 TB0IN0 INT5	1	I/O Input Input	Port 80: I/O port 16bit timer 0 input 0: 16bit Timer 0 count / capture trigger input Interrupt Request Pin 5: Interrupt request pin with programmable rising edge / falling edge.
P81 TB0IN1 INT6	1	I/O Input Input	Port 81: I/O port 16bit timer 0 input 1: 16bit Timer 0 count / capture trigger input Interrupt Request Pin 6: Interrupt request on rising edge
P82 TB0OUT0	1	I/O Output	Port 82: I/O port 16bit timer 0 output 0: 16bit Timer 0 output
P83 TB0OUT1	1	I/O Output	Port 83: I/O port 16bit timer 0 output 1: 16bit Timer 0 output
P84 TB1IN0 INT7	1	I/O Input Input	Port 84: I/O port 16bit timer 1 input 0: 16bit Timer 1 count / capture trigger input Interrupt Request Pin 7: Interrupt request pin with programmable rising edge / falling edge.
P85 TB1IN1 INT8	1	I/O Input Input	Port 85: I/O port 16bit timer 1 input 1: 16bit Timer 1 count / capture trigger input Interrupt Request Pin 8: Interrupt request on rising edge
P86 TB1OUT0	1	I/O Output	Port 86: I/O port 16bit timer 1 output 0: 16bit Timer 1 output 16bit
P87 TB1OUT1	1	I/O Output	Port 87: I/O port 16bit timer 1 output 1: 16bit Timer 1 output 16bit 16bit

Table 2.2.1 Pin names and functions (3/3)

Pin Name	Number of Pins	I/O	Functions
P90 TXD0	1	I/O Output	Port 90: I/O port Serial Send Data 0 (programmable open-drain)
P91 RXD0	1	I/O Input	Port 91: I/O port Serial Receive Data 0
P92 SCLK0 $\overline{CTS0}$	1	I/O I/O Input	Port 92: I/O port Serial Clock I/O 0 Serial Data Send Enable 0 (Clear to Send)
P93 TXD1	1	I/O Output	Port 93: I/O port Serial Send Data 1 (programmable open-drain)
P94 RXD1	1	I/O Input	Port 94: I/O port (with pull-up resistor) Serial Receive Data 1
P95 SCLK1 $\overline{CTS1}$	1	I/O I/O Input	Port 95: I/O port (with pull-up resistor) Serial Clock I/O 1 Serial Data Send Enable 1 (Clear to Send)
P96 XT1	1	I/O Input	Port 96: I/O port (open-drain output) Low-frequency oscillator connection pin
P97 XT2	1	I/O Output	Port 97: I/O port (open-drain output) Low-frequency oscillator connection pin
PA0~PA3 INT1~INT4	4	I/O Input	Ports A0 to A3: I/O ports Interrupt Request Pins 1 to 4: Interrupt request pins with programmable rising edge / falling edge.
PA4~PA7	4	I/O	Ports A4 to A7: I/O ports
ALE	1	Output	Address Latch Enable Can be disabled to reduce noise.
$\overline{NMI}$	1	Input	Non-Maskable Interrupt Request Pin: Interrupt request pin with programmable falling edge or both edge.
AM0~1	2	Input	Operation mode: Fixed to AM1 = 1, AM0 = 1
EMU0	1	Output	Open pin
EMU1	1	Output	Open pin
$\overline{RESET}$	1	Input	Reset: initializes T5CC1. (With pull-up resistor)
VREFH	1	Input	Pin for reference voltage input to AD converter (H)
VREFL	1	Input	Pin for reference voltage input to AD converter (L)
AVCC	1		Power supply pin for AD converter
AVSS	1		GND pin for AD converter (0 V)
X1/X2	2	I/O	High-frequency oscillator connection pins
DVCC	3		Power supply pins (All DVCC pins should be connected with the power supply pin.)
DVSS	3		GND pins (0 V) (All DVSS pins should be connected with the power supply pin.)

Note: An external DMA controller cannot access the device's built-in memory or built-in I/O devices using the $\overline{BUSRQ}$ and $\overline{BUSAK}$ signal.

Pin Assignment (top view)



Truth Table

Control Inputs				"ON" Channel		
Inhibit	C*	B	A	MZ4051FK	MZ4052FK	MZ4053FK
L	L	L	L	0	0X, 0Y	0X, 0Y, 0Z
L	L	L	H	1	1X, 1Y	1X, 0Y, 0Z
L	L	H	L	2	2X, 2Y	0X, 1Y, 0Z
L	L	H	H	3	3X, 3Y	1X, 1Y, 0Z
L	H	L	L	4	—	0X, 0Y, 1Z
L	H	L	H	5	—	1X, 0Y, 1Z
L	H	H	L	6	—	0X, 1Y, 1Z
L	H	H	H	7	—	1X, 1Y, 1Z
H	X	X	X	None	None	None

X: Don't care, *: Except MZ4052FK

TOSHIBA TC74HCU04AP/AF/AFN

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74HCU04AP, TC74HCU04AF, TC74HCU04AFN

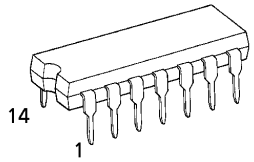
HEX INVERTER

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

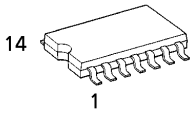
The TC74HCU04A is a high speed CMOS INVERTER fabricated with silicon gate C^2MOS technology.
It achieves the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation.
Since the internal circit is composed of a single stage inverter, it can be used in analog applications such as crystal oscllators.
All inputs are equipped with protection circuits against static discharge or transient excess voltage.

FEATURES :

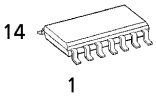
- High Speed ····· t_{pd} = 4ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ····· I_{CC} = 1 μA(Max.) at Ta = 25°C
- High Noise Immunity ····· $V_{NIH} = V_{NIH}$ = 10% V_{CC} (Min.)
- Output Drive Capability ····· 10 LSTTL Loads
- Symmetrical Output Impedance ··· $|I_{OH}| = I_{OL}$ = 4mA(Min.)
- Balanced Propagation Delays ····· $t_{pLH} \simeq t_{pHL}$
- Wide Operating Voltage Range ·· V_{CC}(opr.) = 2V ~ 6V
- Pin and Function Compatible with 74LS04



P (DIP14-P-300-2.54)
Weight : 0.96g (Typ.)

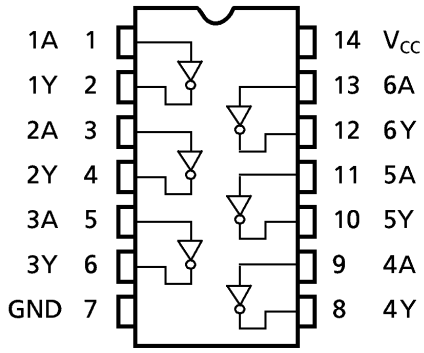


F (SOP14-P-300-1.27)
Weight : 0.18g (Typ.)



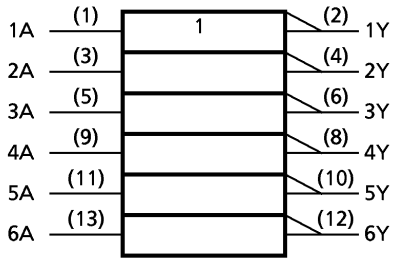
FN (SOL14-P-150-1.27)
Weight : 0.12g (Typ.)

PIN ASSIGNMENT



(TOP VIEW)

IEC LOGIC SYMBOL



TRUTH TABLE

A	Y
L	H
H	L

961001EBA2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

TOSHIBA TC74VHC157F/FN/FT

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74VHC157F, TC74VHC157FN, TC74VHC157FT

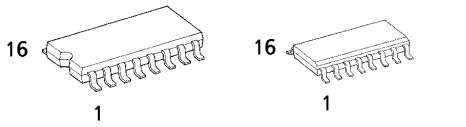
QUAD 2 - CHANNEL MULTIPLEXER

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

The TC74VHC157 is an advanced high speed CMOS QUAD 2 - CHANNEL MULTIPLEXER fabricated with silicon gate C^2MOS technology.
It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.
It consists of four 2 - input digital multiplexers with common select and strobe inputs.
When the $\overline{STROBE}$ input is held "H" level, selection of data is inhibited and all the outputs become "L" level.
The SELECT decoding determines whether the A or B inputs get routed to their corresponding Y outputs.
An Input protection circuit ensures that 0 to 5.5V 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 on two supply systems such as battery back up. This circuit prevents device destruction due to mismatched supply and input voltages.

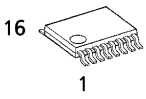
FEATURES :

- High Speed ····· t_{pd} = 4.1ns(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} = 0.8V (Max.)
- Pin and Function Compatible with 74ALS157



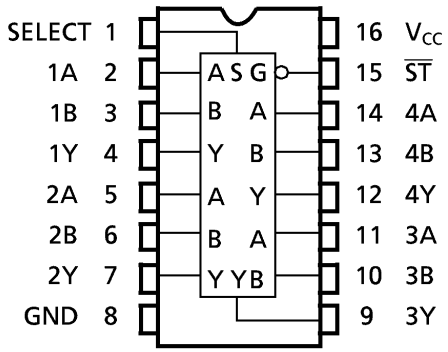
F (SOP16-P-300-1.27)
Weight : 0.18g (Typ.)

FN (SOL16-P-150-1.27)
Weight : 0.13g (Typ.)



FT (TSSOP16-P-0044-0.65)
Weight : 0.06g (Typ.)

PIN ASSIGNMENT



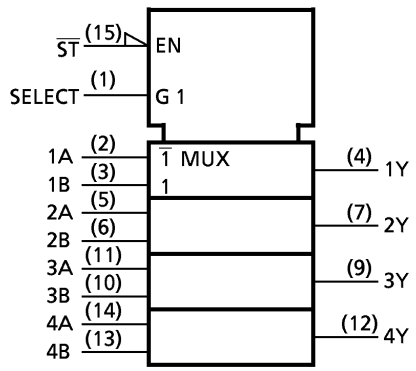
(TOP VIEW)

TRUTH TABLE

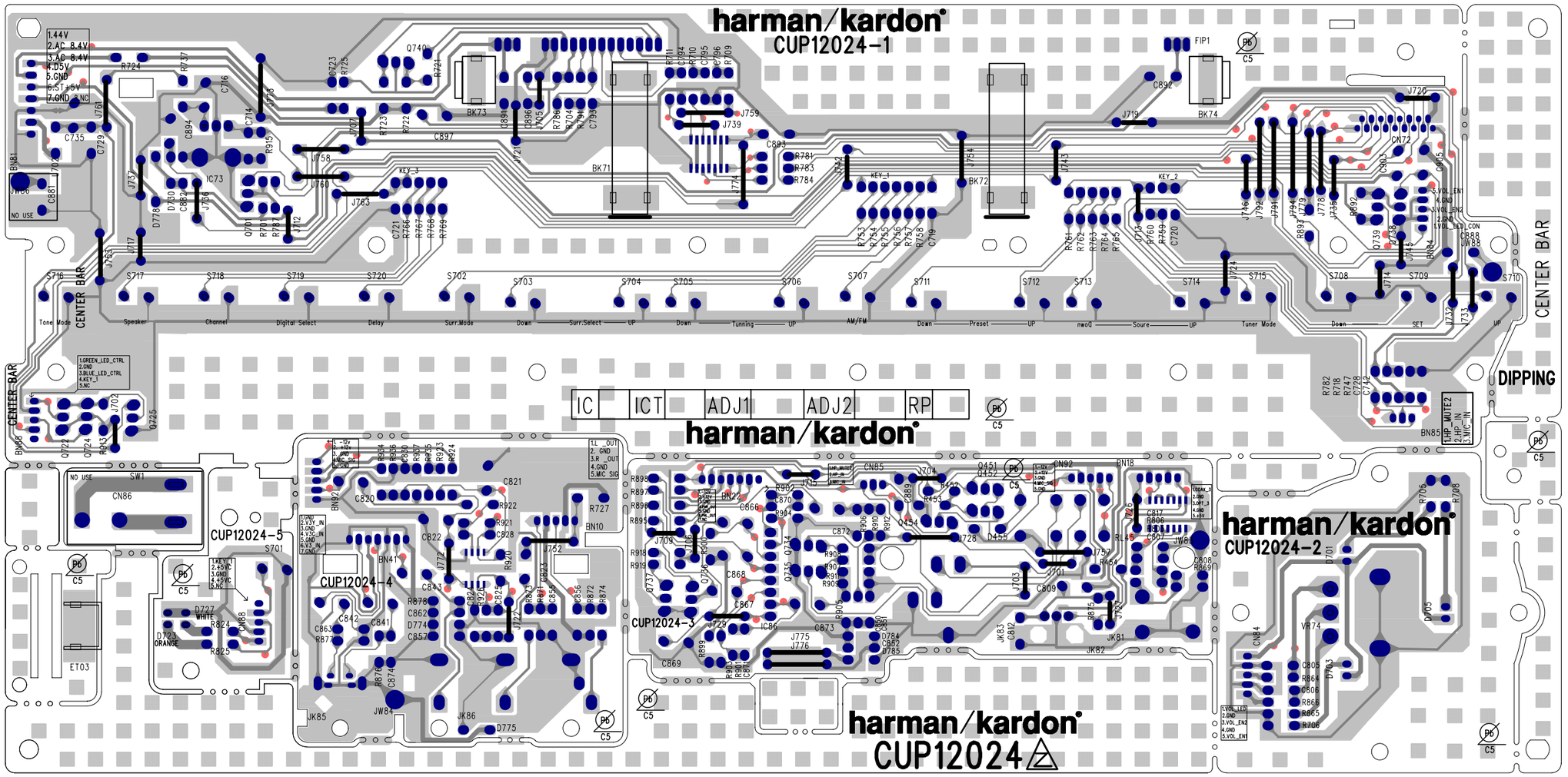
INPUTS				OUTPUT
$\overline{ST}$	SELECT	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

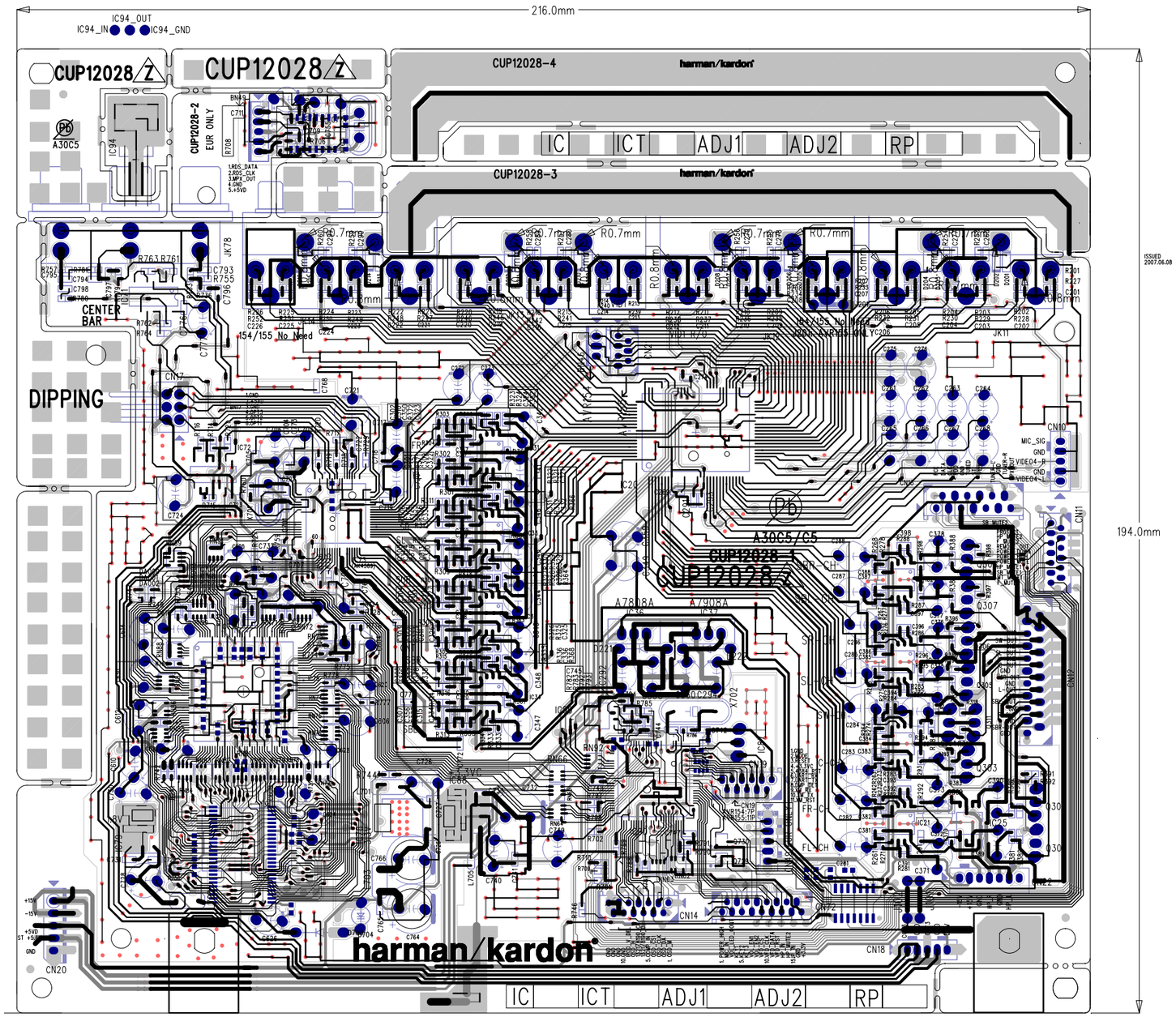
X : Don't Care

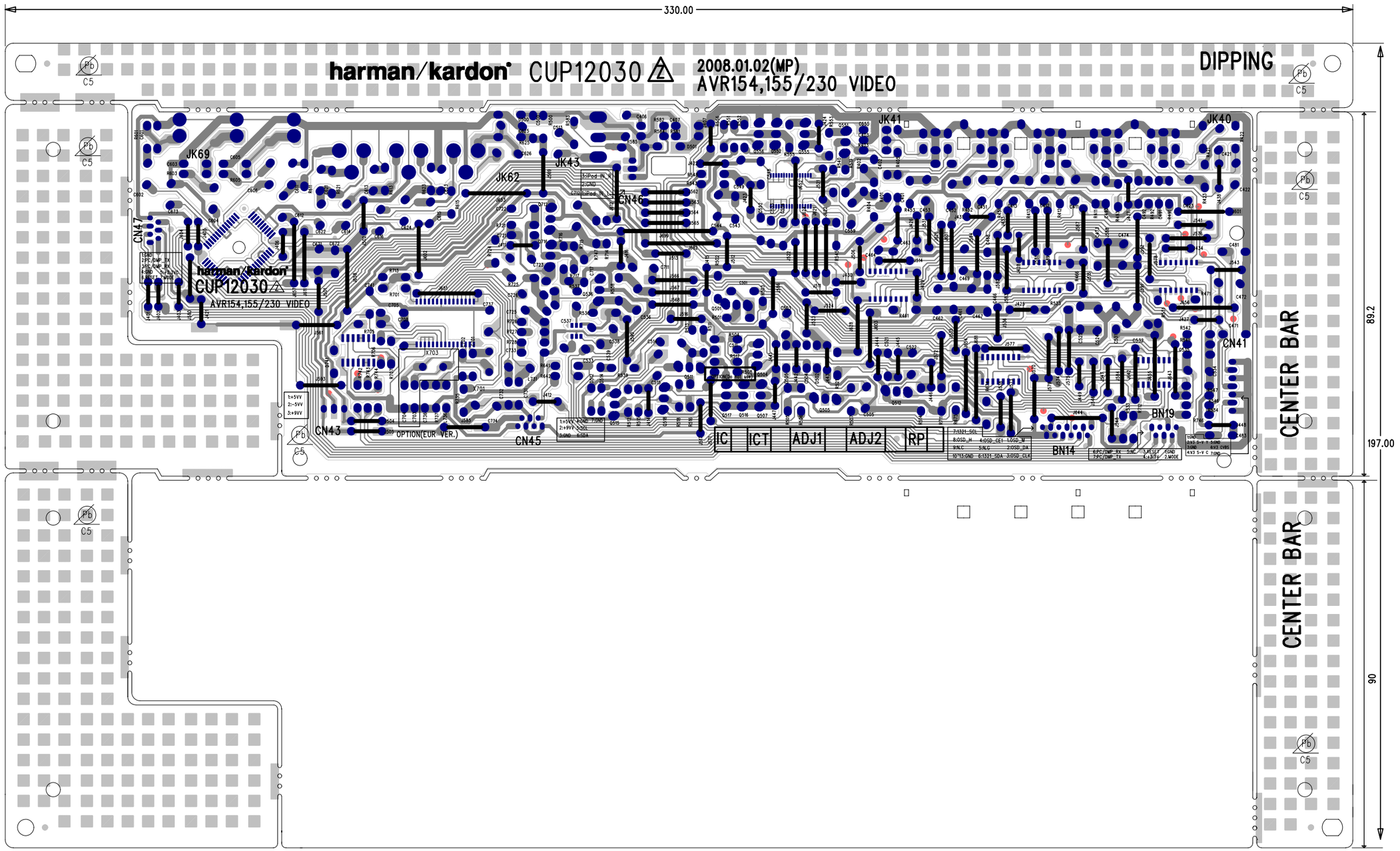
IEC LOGIC SYMBOL

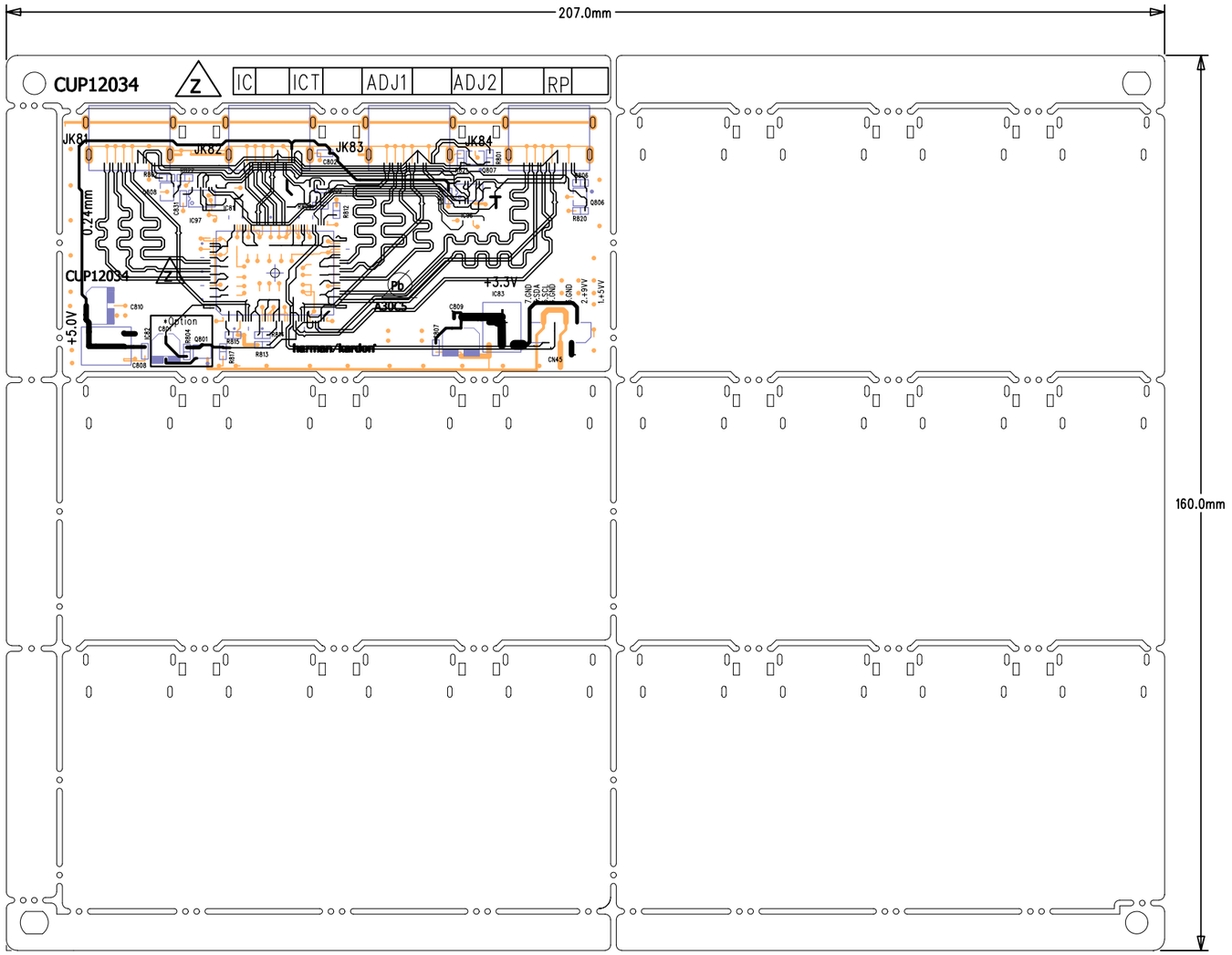


980910EBA2

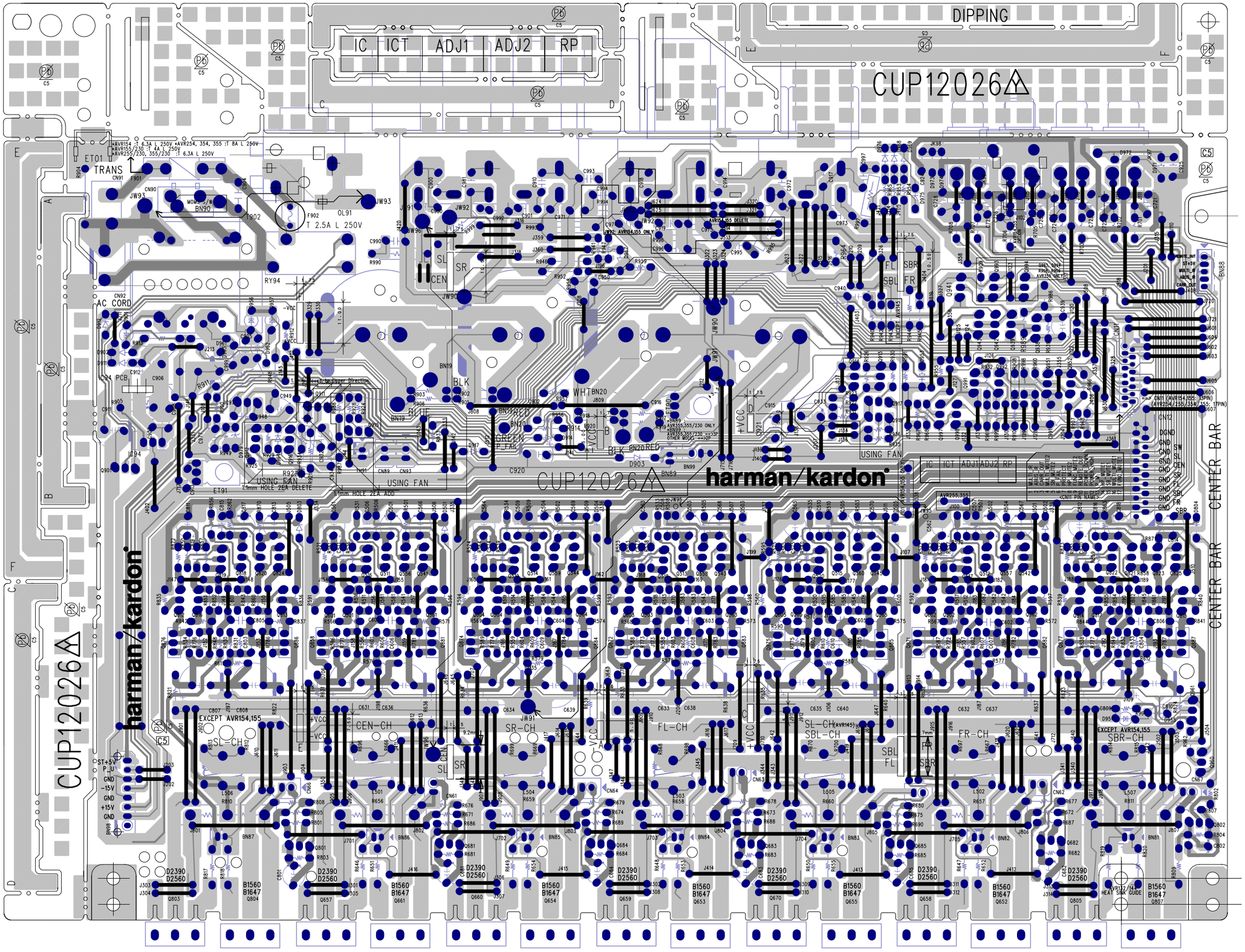

harman/kardon
CUP12024-1
CENTER BAR
DIPPING
CUP12024-5
CUP12024-4
CUP12024-3
CUP12024-2
CUP12024
IC ICT ADJ1 ADJ2 RP
Tone Mode
Speaker
Channel
Digital Select
Delay
Surr.Mode
Surr.Select
Tunning
AM/FM
Preset
Soure
Tuner Mode
SET

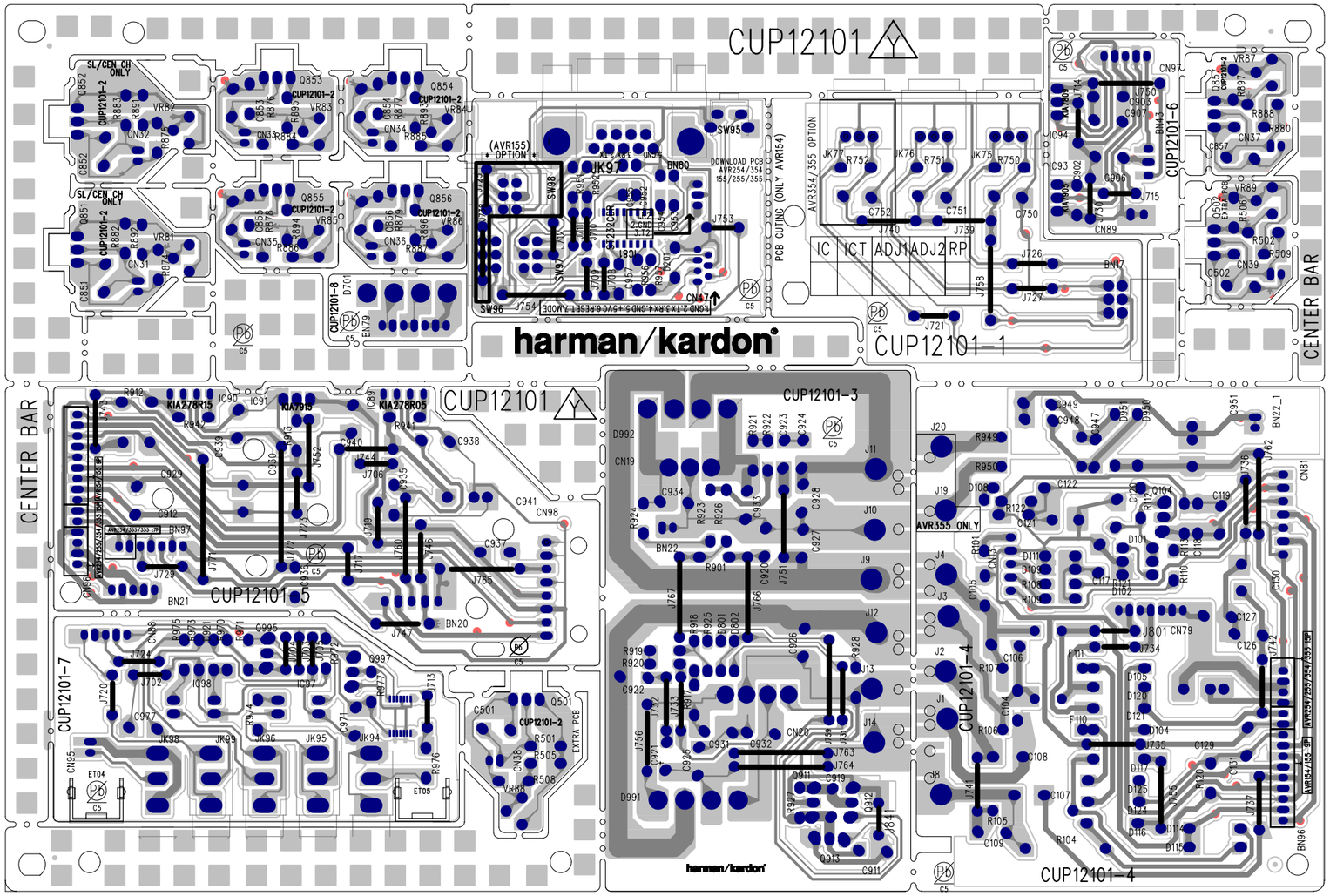

216.0mm
194.0mm
ISSUED
2007.06.08
IC94_OUT
IC94_IN
IC94_GND
CUP12028/Z
CUP12028-4
CUP12028-3
CUP12028-2
EUR ONLY
harman/kardon
IC
ICT
ADJ1
ADJ2
RP
DIPPING
CENTER
BAR
154/155 No Need
A30C5
A30C5/C5
A7808A
A7908A
CN10
CN11
CN12
CN14
CN18
CN20
JK78
JK11
MIC_SIG
GND
VIDEO4_R
VIDEO4_L


330.00
harman/kardon CUP12030
2008.01.02(MP)
AVR154,155/230 VIDEO
DIPPING
CENTER BAR
89.2
197.00
90
JK69
JK62
JK43
JK41
JK40
CN46
CN47
CN43
CN45
CN41
BN19
BN14
IC
ICT
ADJ1
ADJ2
RP
OPTION(EUR VER.)
C5

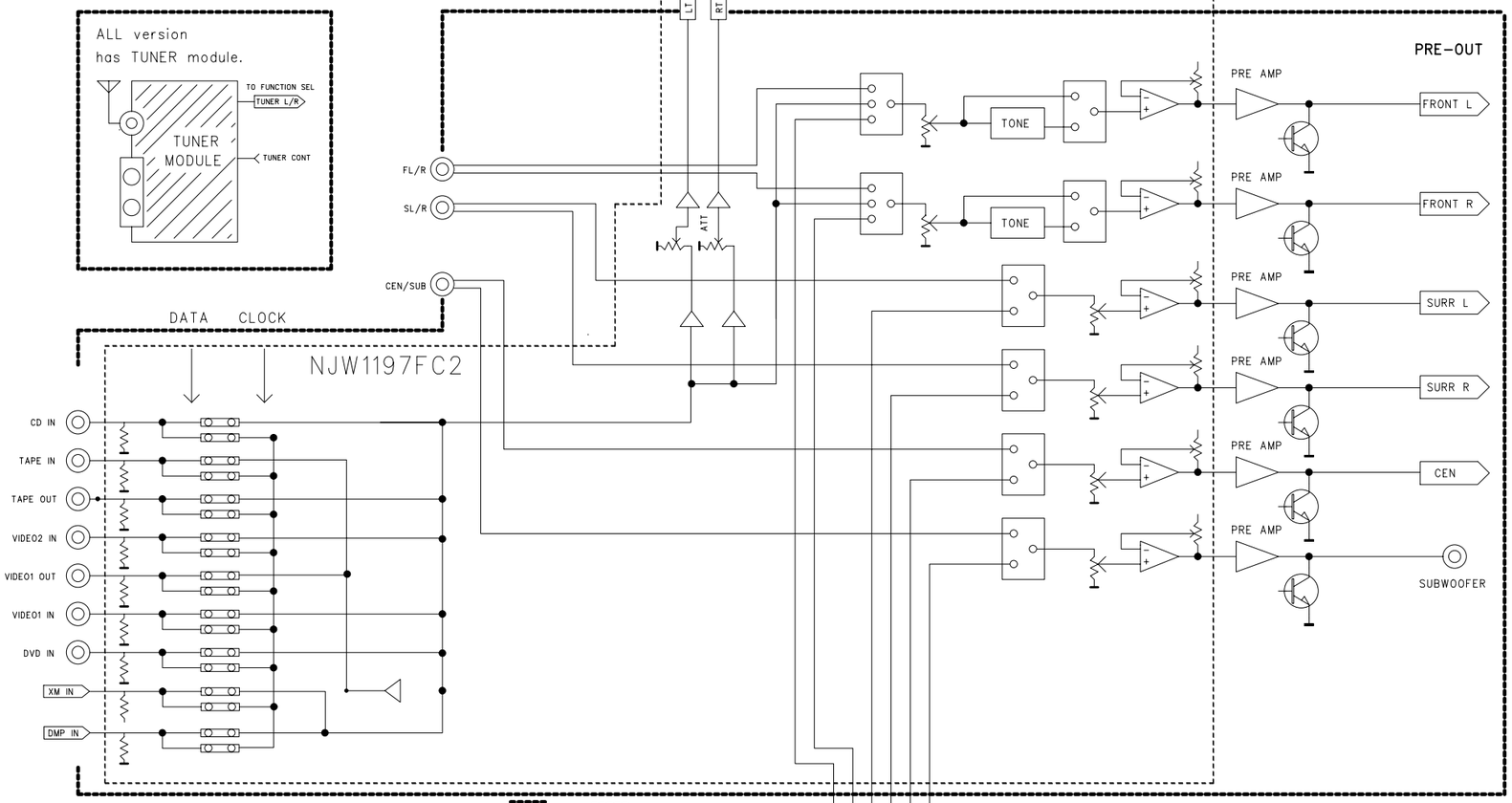

207.0mm
160.0mm
CUP12034
IC
ICT
ADJ1
ADJ2
RP
JK81
JK82
JK83
JK84
0.24mm
CUP12034
+5.0V
+3.3V
Pb
A30C5
harman/kardon

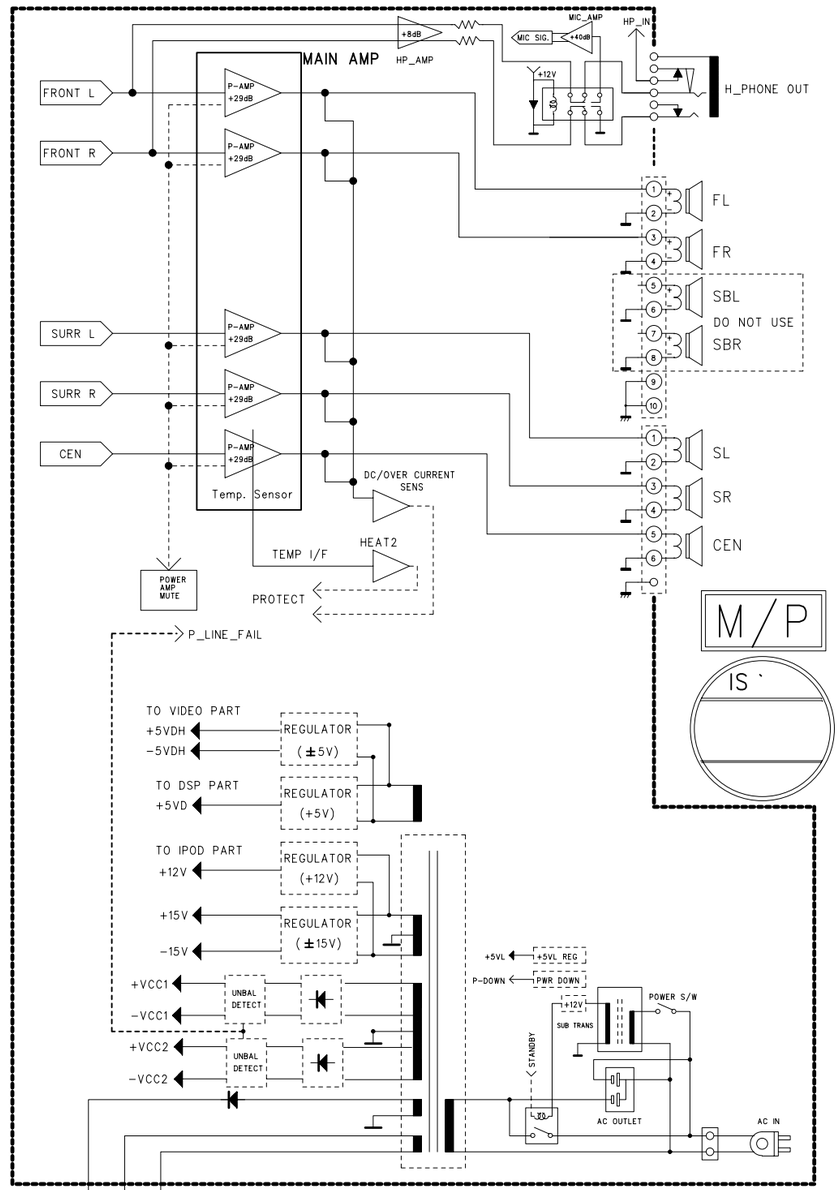
CUP12026⚠

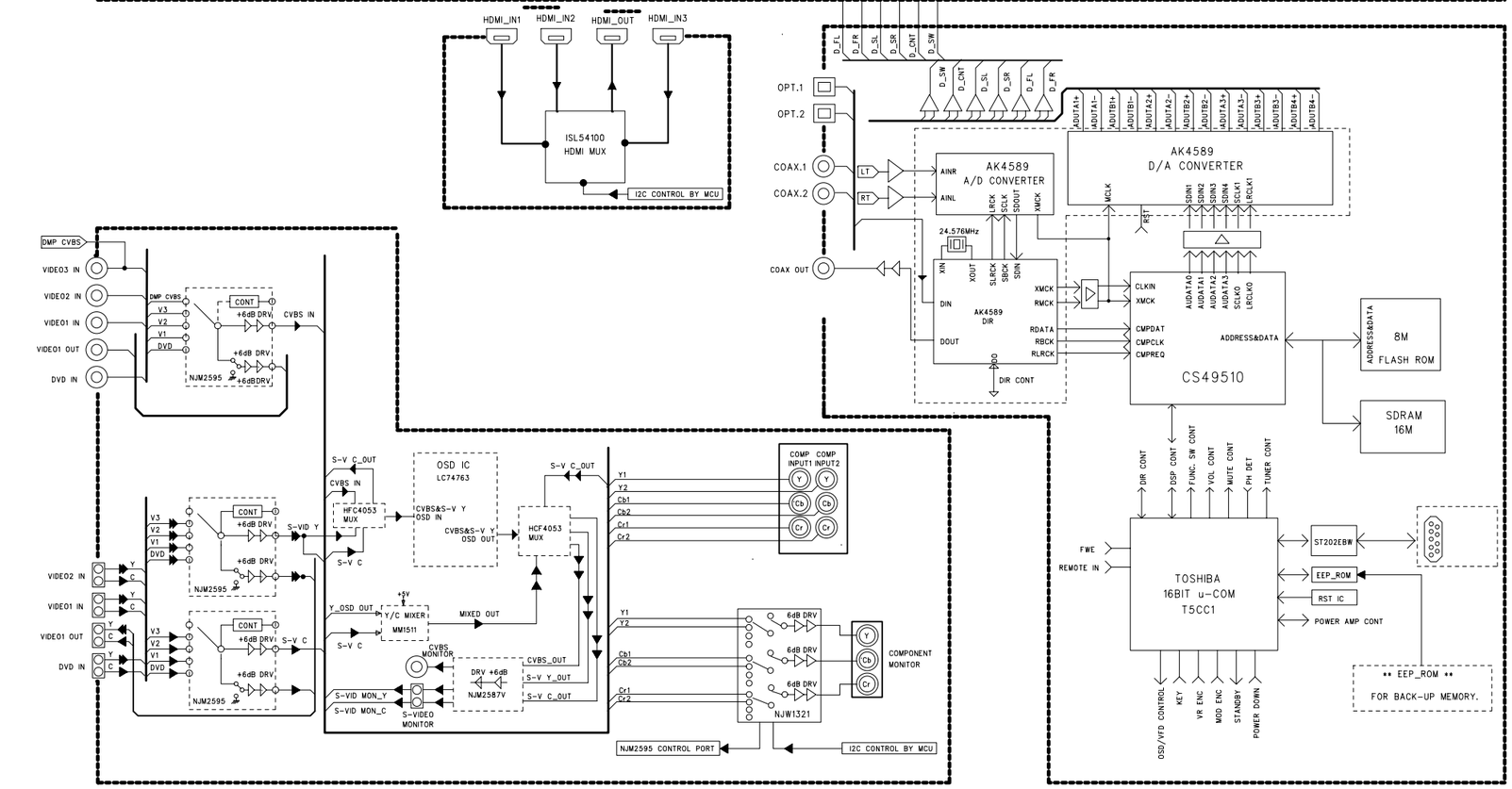

CUP12026⚠
DIPPING
IC ICT ADJ1 ADJ2 RP
TRANS
AC CORD
CUP12026⚠
harman/kardon
CUP12026⚠
harman/kardon
CENTER BAR
USING FAN
EXCEPT AVR154,155
SL-CH
CEN-CH
SR-CH
FL-CH
SBL-CH
FR-CH
SBR-CH

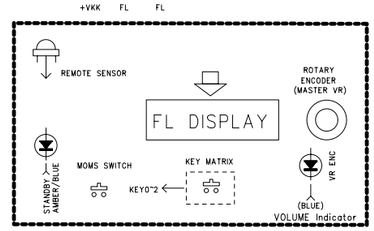

CUP12101
CUP12101-1
CUP12101-2
CUP12101-3
CUP12101-4
CUP12101-5
CUP12101-6
CUP12101-7
CENTER BAR
harman/kardon
SL/CEN CH ONLY
(AVR155) + OPTION +
AVR354/355 OPTION
PCB CUTING (ONLY AVR154)
DOWNLOAD PCB AVR254/354 155/255/355
IC ICT ADJ1ADJ2RP
AVR355 ONLY
EXTRA PCB
AVR154/155 3PIN
AVR254/255/354/355 5PIN

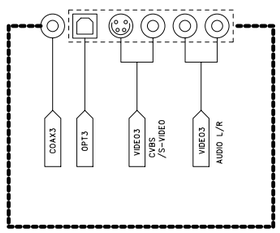
AVR155 BLOCK DIAGRAM

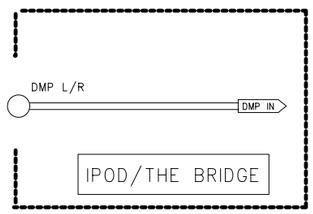










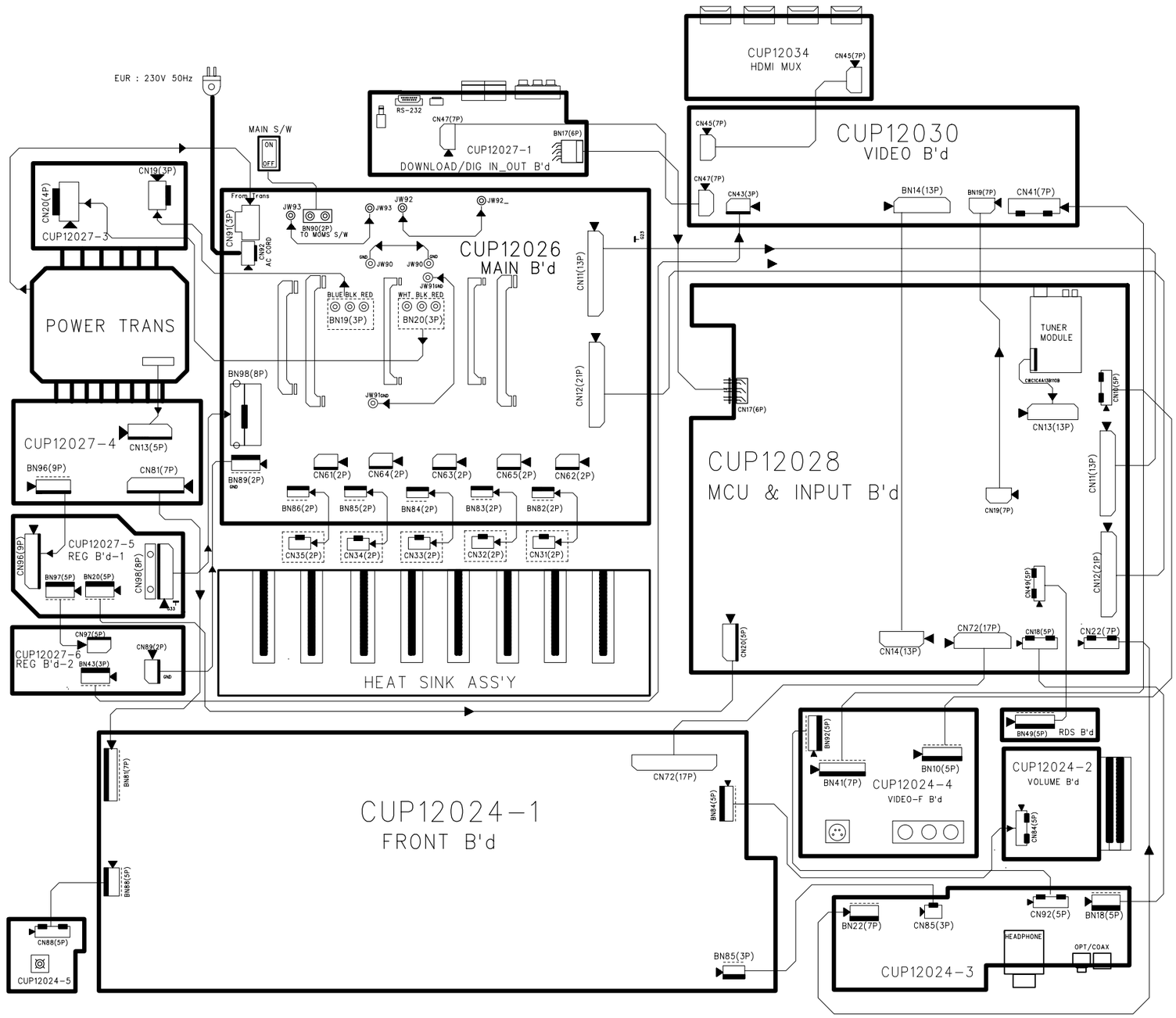


REVISION	2		4		6	
1		3		5		7

BLOCK DIAGRAM — SHEET 1/1

MODEL	AVR155		
DESIGN	CHECK	APPROVE	DRAWING NO
J.T.BAEK	W.Y.Yang	K.S.WEY	BLOCK DIAGRAM
08.03.11	08.03.11	08.03.11	1/1

AVR155/230 WIRING DIAGRAM



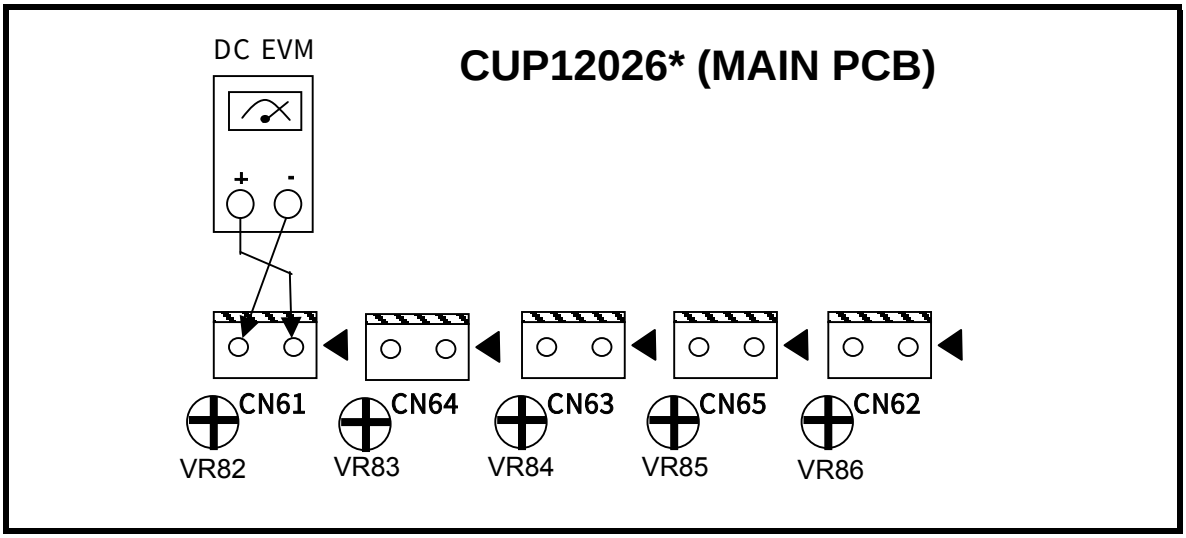
REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR155/230		1/1
DESIGN	CHECK	APPROVE	DRAWING NO
J.T.B	W.Y.Y	K.S.W	WIRING DIAGRAM
08.03.11	08.03.11	08.03.11	1190SCDZ 1/1

AMPLIFIER SECTION BIAS ADJUSTMENT

Measurement condition
.No input signal or volume position is minimum.

Standard value
.Ideal current = 48mA (± 5%)
.Ideal DC Voltage = 25.92mV (± 5%)



DC VOLTMETER ; Connect to
CN61(CEN),CN64(SR),CN63(FL),CN65(SBL/SL(AVR154, 155)),CN62(FR)

NO.	Channel	Adjust for	Adjustment
1	Front Left	25.92mV (± 5%)	CN63
2	Front Right	25.92mV (± 5%)	CN62
3	Center	25.92mV (± 5%)	CN61
4	Surround Left	25.92mV (± 5%)	CN65
5	Surround Right	25.92mV (± 5%)	CN64

CUP12025Z

CUP12025-1 [FIP PCB]

[STAND BY PCB] CUP12025-3

[KEY PCB] CUP12025-2

FIP1 CFL17BT03GNK

TO VR JACK PCB BN84

TO PHONE JACK PCB BN85

FROM INPUT ASS'Y(MCU) CN72

BN81 TO POWER ASS'Y

CUP12025-5 [PHONE JACK PCB]

[PHONE/VID3(DIGITAL)]

IC86 NJM4556AL

IC76 74HCU04AFN

IC87 NJM2068M

TO INPUT ASS'Y BN18

BN22 TO INPUT ASS'Y

CN92 TO VR JACK PCB

CN85 FROM FIP PCB

CUP12025-6 [VR JACK PCB] [VR/HEAD PHONE&(MIC)/VID3(ANLOG)]

FROM PHONE JACK PCB CN84

VR74 CSR2A037Z ENCODER

JK85 JK86

BN10 TO INPUT ASS'Y

BN41 TO VIDEO ASS'Y

CUP12025-8 [BLACKET JACK PCB FOR CARD CABLE]

CUP12025-9 [BLACKET JACK PCB FOR PHONE JACK]

JW86 CME8202508V(Do not use)

[PWR.(MOMS)SW PCB] CUP12025-4

FROM MAIN ASS'Y CN86

REVISION	2		4		6	
1		3		5		7

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR154/254/354		1/7
DESIGN	CHECK	APPROVE	DRAWING NO
S.H.YANG	W.Y.YANG	G.S.WEY	2025SCDZ (FRONT)
07.12.07	07.12.07	07.12.07	1/1

LPP

	A	B	CH-SEL0	CH-SEL1	INPUT
0	L	L	H	H	HDMI2(CH-D)
1	L	H	H	L	NO USE
2	H	L	L	H	HDMI1(CH-C)
3	H	H	L	L	HDMI3(CH-A)

	INH	A	B	CH-SEL0	CH-SEL1	INPUT
0	L	L	L	H	H	HDMI2(CH-D)
1	L	L	H	H	L	NO USE
2	L	H	L	L	H	HDMI1(CH-C)
3	L	H	H	L	L	HDMI3(CH-A)
4	H	X	X	X	X	Z_NONE

HDMI_HPD_SELECT_BLOCK

HDMI_HPD_IN	HPD_DET	INH_LINE
L	L	H
H	H	L

RX	SEL1	SEL0
RX-A	LOW	LOW
RX-B	LOW	HIGH
RX-C	HIGH	LOW
RX-D	HIGH	HIGH

ADDRESS 0(pin103) : LOW
ADDRESS 1(pin128) : HIGH
ADDRESS 2(pin1) : LOW
ADDRESS 3(pin38) : LOW
ADDRESS 4(pin39) : HIGH
ADDRESS 5(pin64) : HIGH
ADDRESS 6(pin65) : LOW

Do not use

FROM VIDEO

REVISION	2		4		6	
1		3		5		7

A

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR154/155		1/2
DESIGN	CHECK	APPROVE	DRAWING NO
M.S.K	W.Y.Y	K.S.W	2034SCDZ
07.03.29	07.03.29	07.03.29	(HDMI) 1/1

SR-CH

BL-CH

SL-CH

EXCEPT AVR154/155

BR-CH

C-CH

FR-CH

FL-CH

GAIN	R561, R562, R563, R564, R565, R850 R851
AVR154/155	1.8K
AVR255/354	1.6K

ONLY FAN USING

DC PROTECTOR

THERMAL PROTECTOR

OVERLOAD DETECTION

JW92: AVR154/155 ONLY

JK91

JK92

BN19

BN20

EXCEPT AVR154/155

FOR USING FAN

ONLY AVR154/155

AVR354/355 ONLY

JW90,JW91 : ALL MODELS

AVR254/255/354/355 PART

TO REMOTE IN/OUT B'D

FROM TRANS

AC IN

JW93, OL91, F902 : EXCEPT AVR154

TO REG B'D

FROM INPUT B'D

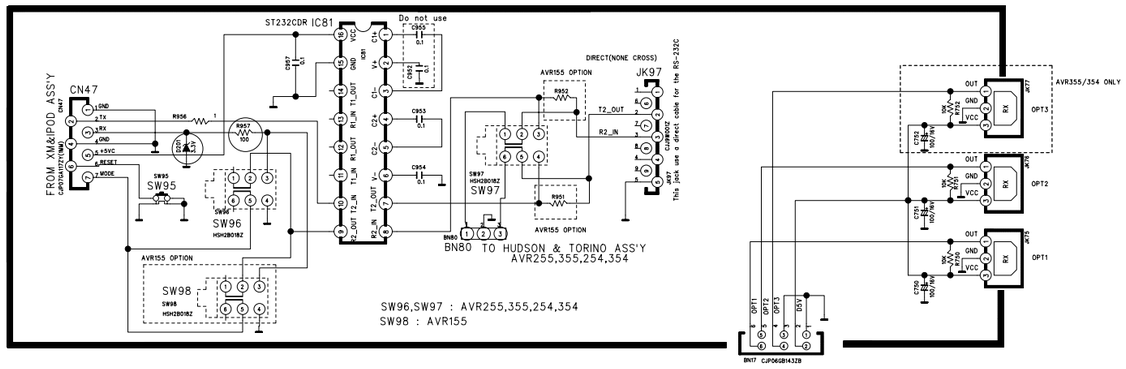
FROM TRANS B'D

AVR254/255/354/355 OPTION

** IMPORTNAT SAFETY NOTICE.
INPORTANT FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS
USE ONLY MANUFACTURE'S SPECIFIED PARTS.
** THE UNIT OF RESISTANCE IS OHM.
K=1000 OHM, M=1000 KOHM.
** THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
pF = 10^-6 uF
** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WIHE THE
IMPROVEMENT OF PERFORMANCE

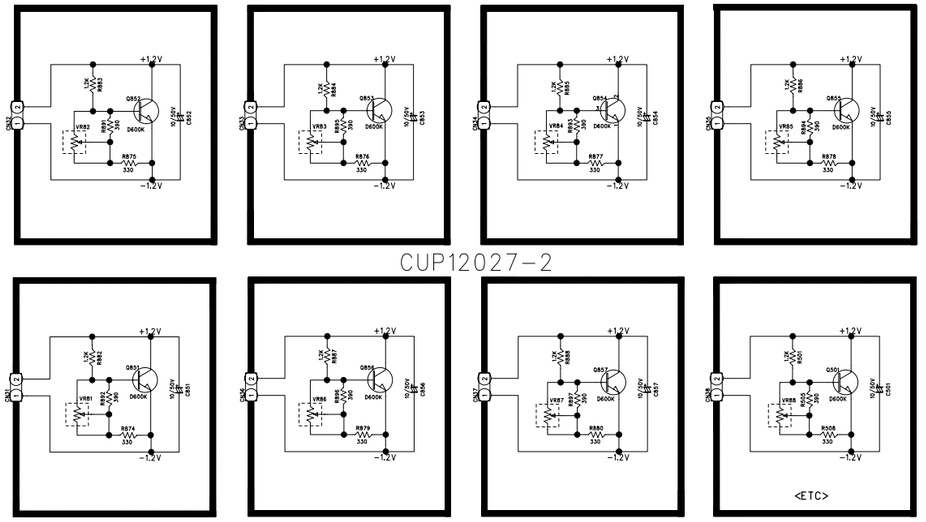
REVISION	1	2	3	SHEET
SCHEMATIC DIAGRAM				
MODEL	AVR154/155/254/255/354/355			2 / 7
DESIGN	CHECK	APPROVE	DRAWING NO	
C.B.LEE	W.Y.YANG	G.S.WEY	2026SCLZ (MAIN)	1/1
07.08.23				

CUP12027-1

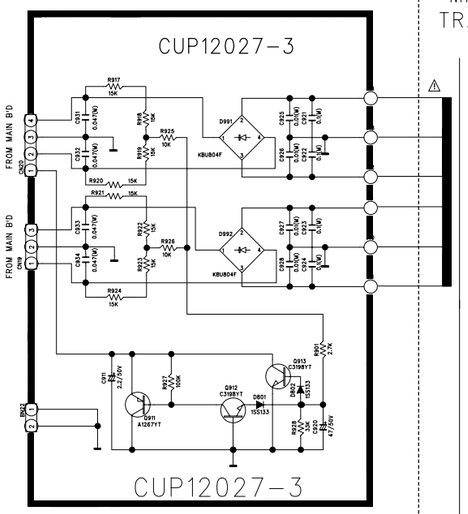


< OPTICAL IN & RS-232 PCB >

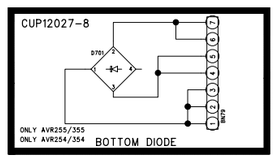
< BIAS T.R PCB >



CUP12027-3

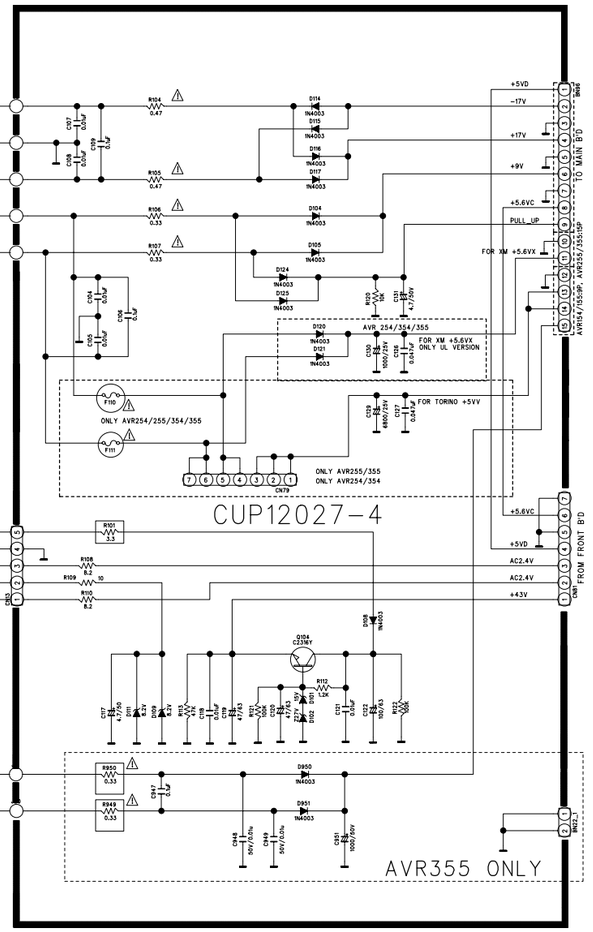


CUP12027-8



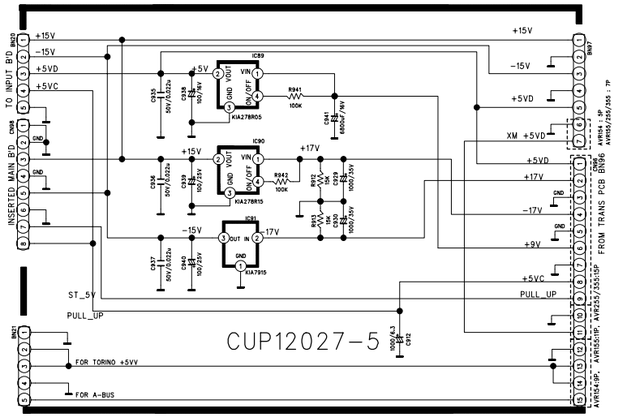
USA : AC120V 60Hz
EUR : AC230V 50Hz

MAIN TRANS

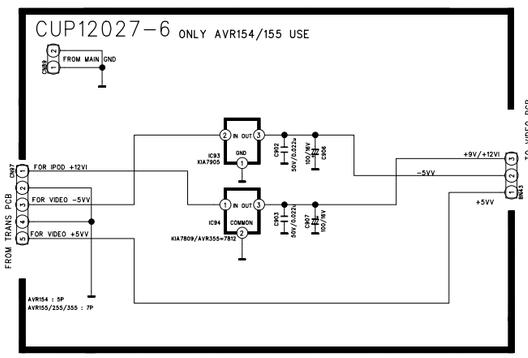


CUP12027-4

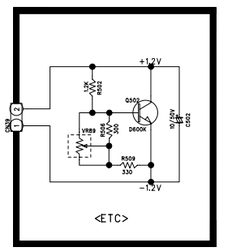
< TRANS PCB >

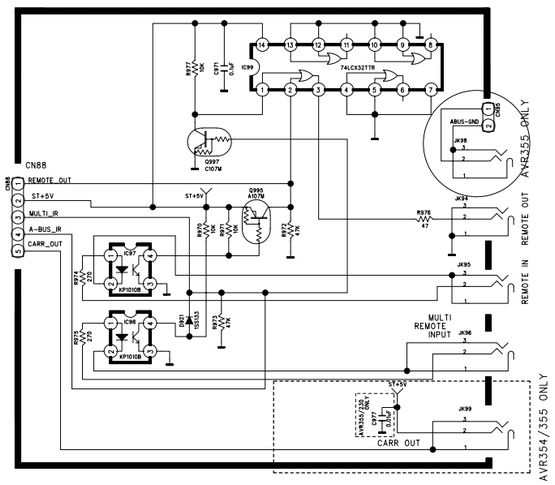


CUP12027-6 ONLY AVR154/155 USE



< REGULATOR PCB >





AVR254/255/354/355 ONLY CUP12027-7

< REMOTE IN/OUT PCB >

M P

SUE

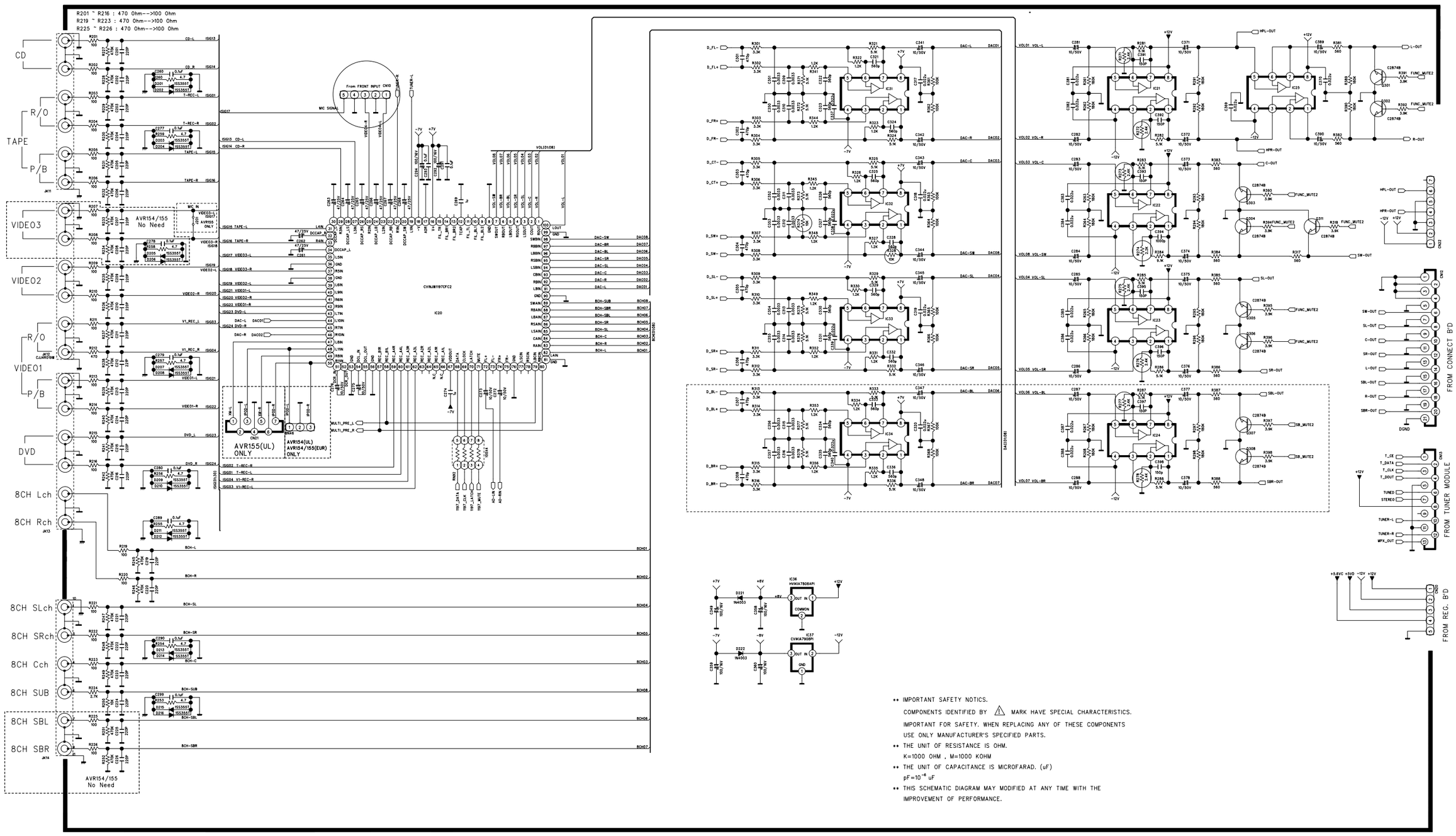
2008.01.2

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET

MODEL	AVR x54/x55	1/1

DESIGN	CHECK	APPROVE	DRAWING NO
J.T.B	Y.Y.W	K.S.W	CUP12027Z (POWER) 1/1
08.01.22			



REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR154/155		1/3
DESIGN	CHECK	APPROVE	DRAWING NO
C.B.LEE	W.Y.YANG	G.S.WEY	2028SCLZ (INPUT) 1/1
07.05.28			

CUP12028Z

CS495** VDDIO + 8EA

CS495** VDD + 8EA

*OPTION : EMC COUNTERMEASUER

ADC MODE : DSP MASTER
DIR MODE : DIR MASTER

CRJ10DJ1R0T

CRJ10DJ301T

HVIAK4589VQ-T

CD49500/10

pin 25 <--> pin28

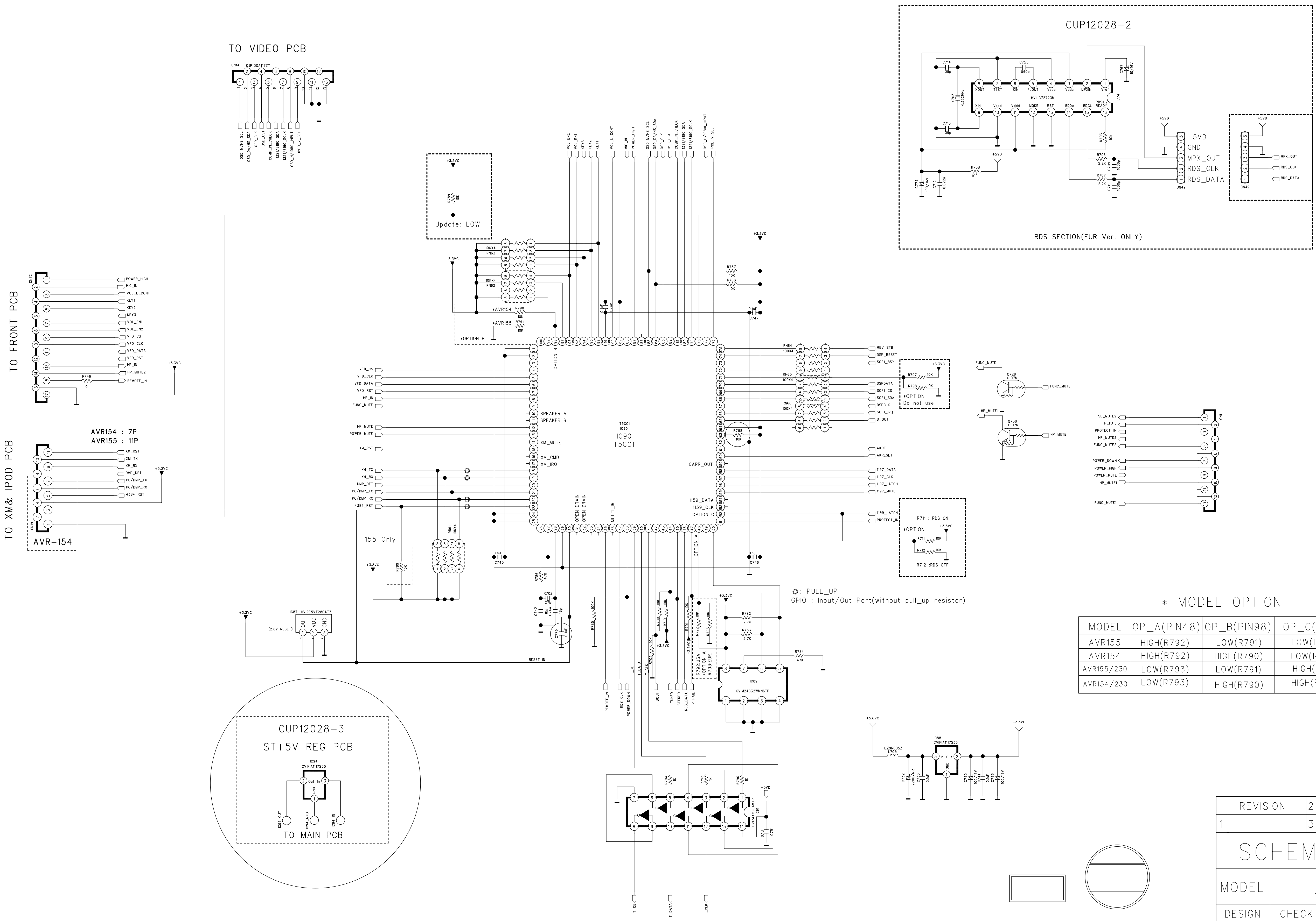
DIGITAL AUDIO OUT DATA

DATA	CS495**	Flash	SDRAM
EXT_D15/SD_D7	29	44	12
EXT_D14/SD_D6	30	42	11
EXT_D13/SD_D5	31	40	9
EXT_D12/SD_D4	32	38	8
EXT_D11/SD_D3	34	35	6
EXT_D10/SD_D2	35	33	5
EXT_D9/SD_D1	37	31	3
EXT_D8/SD_D0	39	29	2
EXT_D7/SD_D15	40	45	49
EXT_D6/SD_D14	41	43	48
EXT_D5/SD_D13	42	41	46
EXT_D4/SD_D12	43	39	45
EXT_D3/SD_D11	45	36	43
EXT_D2/SD_D10	46	34	42
EXT_D1/SD_D9	48	32	40
EXT_D0/SD_D8	49	30	39

Address	CS495**	Flash	SDRAM
EXT_A19	88	9	
EXT_A18	87	16	
EXT_A17	85	17	
EXT_A16	84	48	
EXT_A15	82	1	
EXT_A14/SD_A13	77	3	
EXT_A13/SD_A14	75	2	
EXT_A12/SD_A10	74	6	20
EXT_A11/SD_A12	55	4	
EXT_A10/SD_A11	56	5	19
EXT_A9/SD_A9	58	7	32
EXT_A8/SD_A8	59	8	31
EXT_A7/SD_A7	61	18	30
EXT_A6/SD_A6	62	19	29
EXT_A5/SD_A5	64	20	28
EXT_A4/SD_A4	67	21	27
EXT_A3/SD_A3	68	22	24
EXT_A2/SD_A2	70	23	23
EXT_A1/SD_A1	71	24	22
EXT_A0/SD_A0	72	25	21

REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR154/155		2/3
DESIGN	CHECK	APPROVE	DRAWING NO
C.B.LEE	W.Y.YANG	G.S.WEY	2028SCLZ
07.05.28			(DSP) 1/1



* MODEL OPTION

MODEL	OP_A(PIN48)	OP_B(PIN98)	OP_C(PIN52)
AVR155	HIGH(R792)	LOW(R791)	LOW(R712)
AVR154	HIGH(R792)	HIGH(R790)	LOW(R712)
AVR155/230	LOW(R793)	LOW(R791)	HIGH(R711)
AVR154/230	LOW(R793)	HIGH(R790)	HIGH(R711)

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM				SHEET
MODEL	AVR154/155			1/3
DESIGN	CHECK	APPROVE	DRAWING NO	
C.B.LEE	W.Y.YANG	G.S.WEY	2028SCLZ (CPU)	1/1
07.05.28				

CUP12030Z

JK43(= JK42 + JK43 + JK49)	AVR-145	CJJ9R001Z
JK43(= JK42 + JK49)	AVR-245	CJJ9P003Z
JK40(= JK40 + JK41 + JK45)	AVR-145 & AVR-245	CJJ9R001Z

*HCF4053M013TR OPTION

INPUT				*ON CHANNELS		
INH	C	B	A	C	B	A
H	X	X	X	NONE	NONE	NONE
L	L	L	L	CX	BX	AX
L	L	L	H	CX	BX	AY
L	L	H	L	CX	BY	AX
L	L	H	H	CX	BY	AY
L	H	L	L	CY	BX	AX
L	H	L	H	CY	BX	AY
L	H	H	L	CY	BY	AX
L	H	H	H	CY	BY	AY

HCF4053M013TR Connection Diagram

INPUT				"ON" CHANNELS		
INH	C	B	A	C	B	A
H	X	X	X	None	None	None
L	L	L	L	CX	BX	AX
L	L	L	H	CX	BX	AY
L	L	H	L	CX	BY	AX
L	L	H	H	CX	BY	AY
L	H	L	L	CY	BX	AX
L	H	L	H	CY	BX	AY
L	H	H	L	CY	BY	AX
L	H	H	H	CY	BY	AY

* LC74763M OPTION TABLE

	C701	C702	X701
PAL	27P	27P	17.734
NTSC	33P	33P	14.318

*NJM2595M OPTION
==>V_MUTE "LOW" ACTIVE

FUNC.	SW1	SW2	SW3	SW4	SW5
VIDEO1	L	H	X	X	H
VIDEO2	H	L	X	L	H
VIDEO3	H	H	H	H	H
V-AUDIO	H	H	X	L	H
DVD	H	H	L	H	H

* DEFINITION OF I2C REGISTER (NJW1321)

I2C BUS FORMAT

MSB			LSB	MSB			LSB	MSB			LSB	
S(1BIT)	SLAVE ADDRESS(7BIT)			A(1BIT)	DATA(8BIT)			A(1BIT)	DATA(8BIT)			A(1BIT) P(1BIT)

S : Starting Term
A : Acknowledge Bit
P : Ending Term

SLAVE ADDRESS

MSB			Slave Address(7BIT)					MSB	Hex
1	0	0	0	0	0	ADR(1BIT)	R/NOT W(1BIT)		--

R/NOT W : Set the Write Mode or Read Mode.
ADR : Set the Slave Address by " ADR" terminal.
R/NOT W = 0 : WRITE MODE, ADR = 0/1 ; ADR=0 Hex:84(h), ADR=1 Hex:86(h)
R/NOT W = 0 : READ MODE, ADR = 0/1 ; ADR=0 Hex:85(h), ADR=1 Hex:87(h)

CONTROL REGISTER TABLE
<WRITE MODE>

NO.	BIT							
	D7	D6	D5	D4	D3	D2	D1	D0
DATA 1	PS1	PS2	OUT1				OUT2	
DATA 2	AUX0		AUX1		AUX2		AUX3	

PS : POWER SAVE
=> PS = 1 ; POWER SAVE ON (MUTE), PS = 0 ; POWER SAVE OFF (OUT ON)
OUT : OUTPUT
AUX : AUXILIARY (CONTROL SIGNAL OUTPUT)

<READ MODE>

NO.	BIT							
	D7	D6	D5	D4	D3	D2	D1	D0
DATA	PORT0		PORT1		PORT2		PORT3	

PORT : INPUT

REVISION					
1	2	3	4	5	6	7

SCHEMATIC DIAGRAM — SHEET 5/6

MODEL: AVR154, AVR155/230

DESIGN	CHECK	APPROVE	DRAWING NO
S.H.Y	W.Y.Y	K.S.W	2030SCPZ (VIDEO) 1/1
07.12.30	07.12.30	07.12.30	