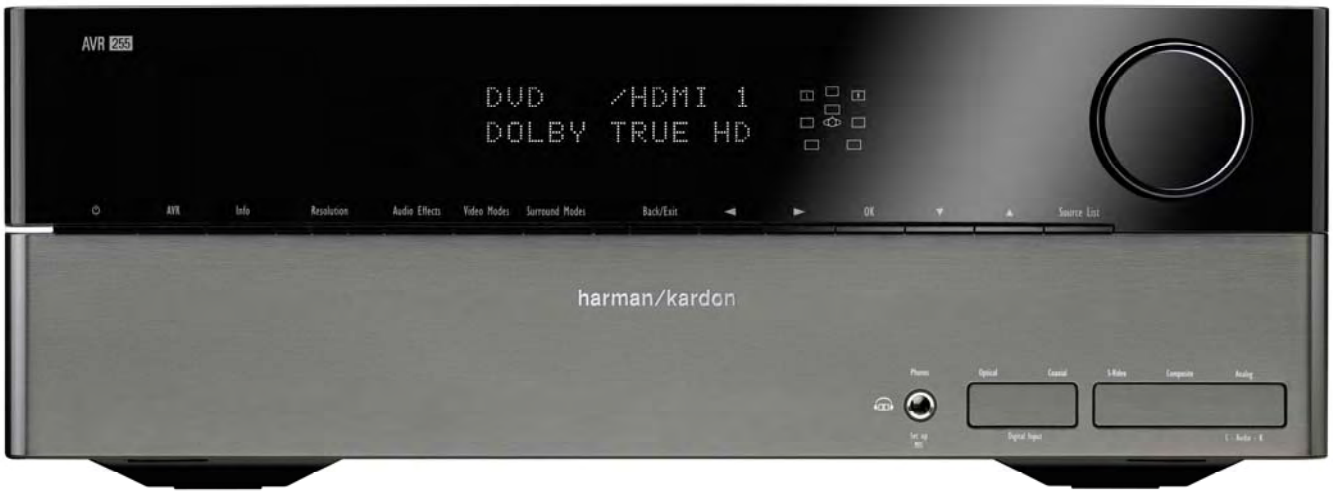
harman/kardon Service Manual

AVR 255/230

7 x 50W 7.1 CHANNEL A/V RECEIVER



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ELECTROSTATICALLY SENSITIVE (ES) DEVICES

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

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

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

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

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing.

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

Audio Section

Stereo Mode

Continuous Average Power (FTC)

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

7 Channel Surround Modes

Power Per Individual Channel, all channels driven simultaneously:

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

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

Surround (L & R Side, Back) channels:
50 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)	±35 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™	Audio and video processing

General

Power Requirement	AC 220–240V/50Hz
Power Consumption	65W idle, 540W maximum (7 channels driven)
Dimensions (Max)	
Width	440mm
Height	165mm
Depth	382mm
Weight	13.6 kg

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

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**Without input anti slewing and output isolation networks.

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Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not function when **Main Power Switch** 1 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 G • Turn up volume control
No sound from any speaker; Protect Warning in Display	• 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** 20 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
No picture or on-screen information on the TV screen.	• AVR Resolution to Display is not correct, too high or too low.	• Select correct Resolution as described on page 21 "Resolution To Display"

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 **OK button** 6 for five seconds.

The unit will turn on automatically and show the word RESET in the Display for a few seconds. Then it reverts to normal ON status. 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.

Programming the Remote

Notes on Using the AVR Remote With Other Devices.

• Manufacturers may use different code sets for the same product category. For that reason, it is important that you check to see if the code set you have entered operates as many controls as possible. If it appears that only a few functions operate, check to see if another code set will work with more buttons.

• Depending on the brand and product type used the functions listed in the Function List tables may not correspond with the function the unit reacts on the command. In these cases it's a good idea to edit the reaction of the unit into the corresponding line of the table or to set up a separate list.

• When a button is pressed on the AVR remote, the red light under the **Input Selector** C Y for the product being operated should flash briefly. If the Device Control Selector flashes for some but not all buttons for a particular product, it does NOT indicate a problem with the remote, but rather that no function is programmed for the button being pushed.

Punch-Through Programming

The AVR 355/AVR 255 remote's punch-through feature allows you to select one component for the remote to operate, while simultaneously setting certain groups of controls to operate another component. For example, while using the AVR to control surround modes and other audio functions, you may operate the transport controls of your DVD player. Or while using the remote to control video functions on your TV, you may use your cable box to change channels.

To program punch-through control while operating any device:

1. Press and hold the Source Selector (or AVR selector) for the main device the remote will be operating. The Source Selector will light, go dark and then light up again, indicating the remote is in Program mode and that you may release the button.
2. Select the type of punch-through programming.
   a) To program channel control punch-through, press the Channel Up Button.
   b) To program transport control punch-through, press the Play Button.
3. Press the Source Selector for the device whose channel or transport controls you would like to be active while operating the device you selected in the first step. The Source Selector will flash to confirm the programming.

For example, if you wish to watch your TV while changing channels using your cable box, first press the TV Button until it lights. Then press the Channel Up Button, followed by the CBL/SAT Button.

To undo punch-through programming, follow the same steps as above, but press the same Source Selector in Steps 1 and 3.

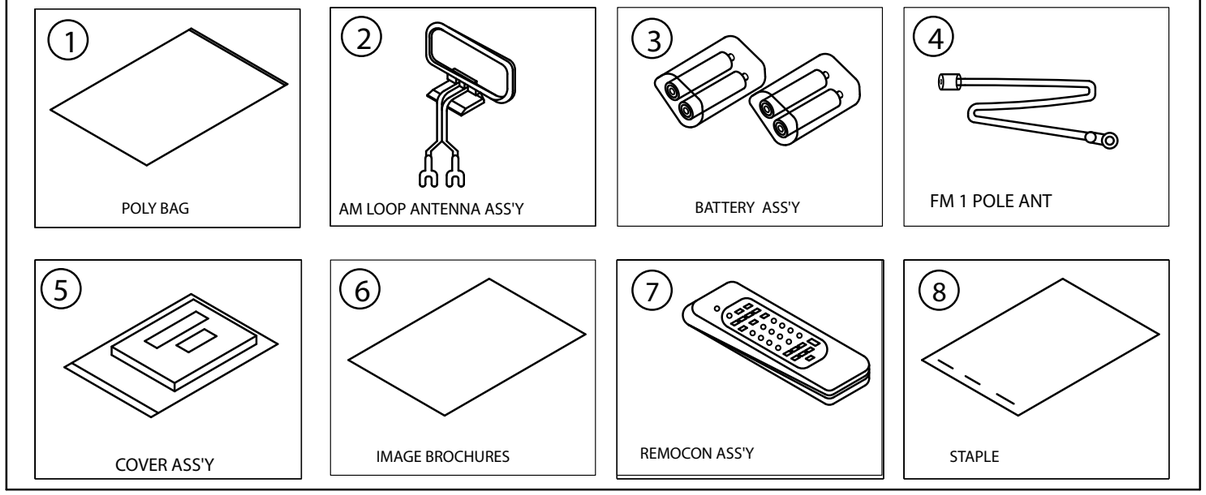
NOTE: The remote always allows volume-control punchthrough, since the Volume and Mute controls are dedicated to the AVR.

Resetting the Remote Memory

As you add components to your home-theater system, occasionally you may wish to totally reprogram the remote control without the confusion of any commands, activities or "Punch-Through" programming that you may have done. To do this, it is possible to reset the remote to the original factory defaults and command codes by following these steps. Note, however, that once the remote is reset, all commands or codes that you have entered will be erased and will need to be re-entered:

1. Press the TV Device Button C and the "**0**" number Button K simultaneously. The TV button lights up.
2. Press the **"3"** button K three times.
3. After a number of seconds, depending on the number of commands that are programmed and need erasing, all the Device Buttons C as well as the AVR Button Y blink 3 times to indicate that the remote has been reset to the factory settings.

1. Instruction manual ass'y - Accessories



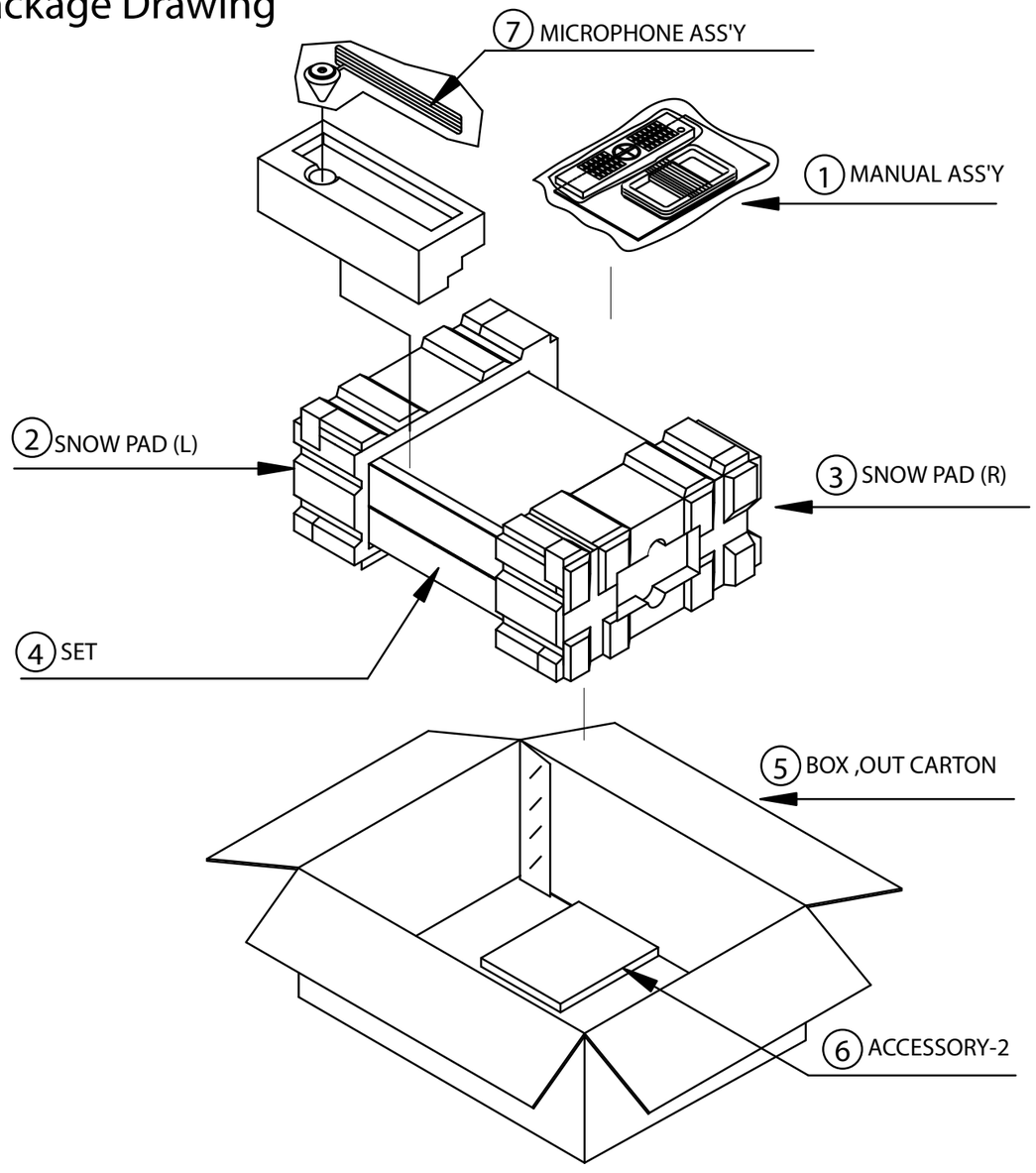
ACCESSORY-1				
NO		DESCRIPTION	PARTS NO.	Q,ty
1		POLY BAG	CPB1061W	1
2		AM LOOP ANTENNA ASS'Y	CSA1A027Z	1
3		BATTERY	CABR03P	4
4		FM 1 POL ANT	CSA1A020Z	1
5		COVER ASS'Y	CGRAVR350/230ZA	1
	1	COVER A	CGR2A436	1
	2	COVER B	CGR2A437	1
	3	ORNAMENT , AL A	CGX1A391C66	1
	4	ORNAMENT , AL B	CGX1A392C66	1
	5	SHEET,FRONT COVER	CQE1A220Z	1
	6	PAD , COVER	CPS1A676	1
	7	BAG , POLY	CPB1A176Z	1
6		IMAGE BROCHURES	HQE1A273Z	1
7		REMOCON ASS'Y	CARTAVR255/230	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	CQX1A1318Z	1
12	MANUAL ,SETUP GUIDE	CQX1A1320Z	1
13	STAPLE	CPL0905	3

A	MICROPHONE ASS'T	CJXAVR340MICRO	1

2. Package Drawing

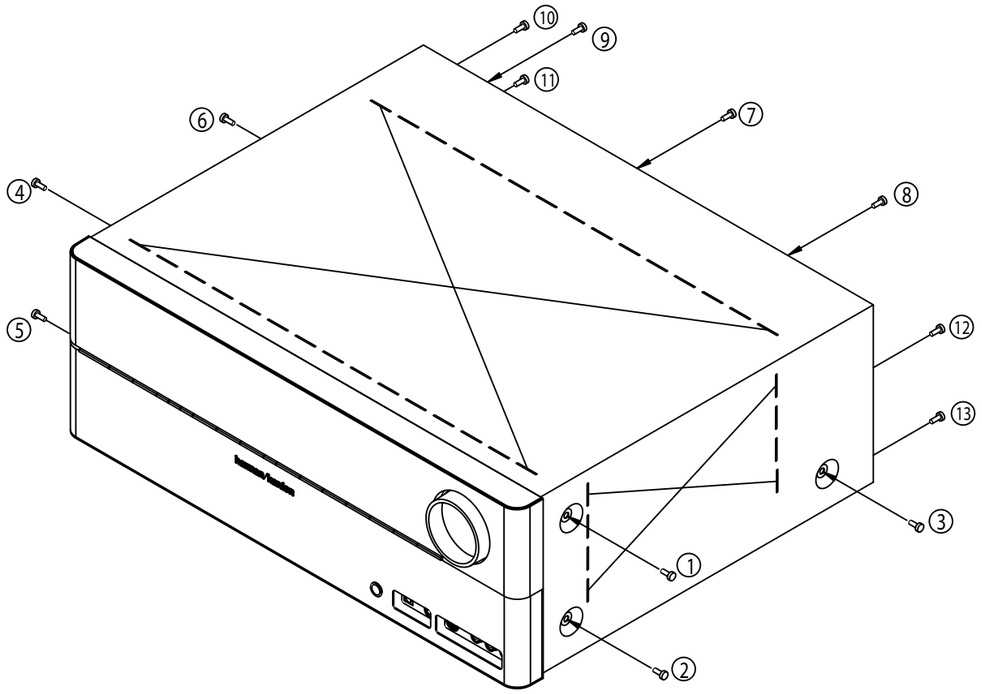
AVR255/230



NO	DESCRIPTION	PARTS NO.	Q,ty
1	ACCESSORY-1	CQXAVR255/230	1
2	SNOW,PAD(L)	CPS6A564	1
3	SNOW,PAD(R)	CPS6A565	1
4	SET	AVR255/230SET	1
5	BOX,OUT CARTON	CPG1A855V	1
6	ACCESSORY-2	CQXAVR255/230	1
7	MICROPHONE ASS'Y	CJXAVR340MICRO	1

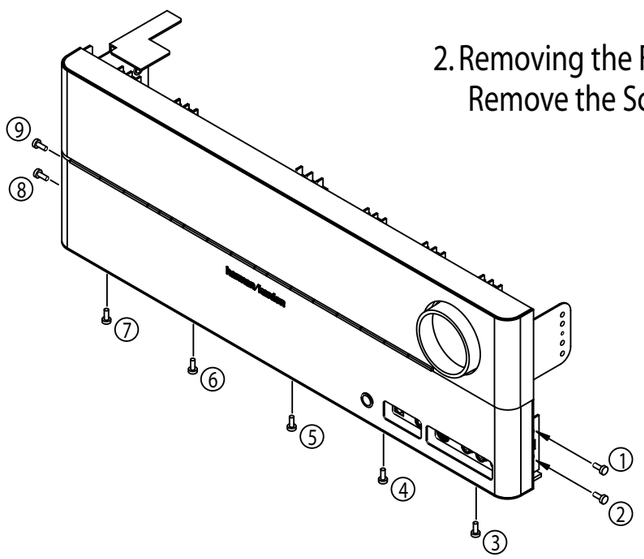
1. Removing the Top Cabinet

Remove the Screws ① ~ ⑬



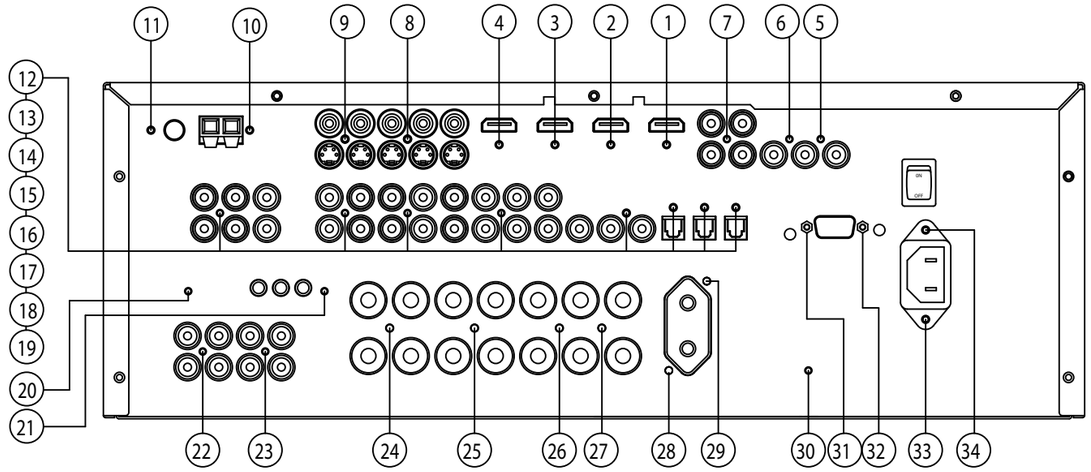
2. Removing the Front Panel

Remove the Screws ① ~ ⑨



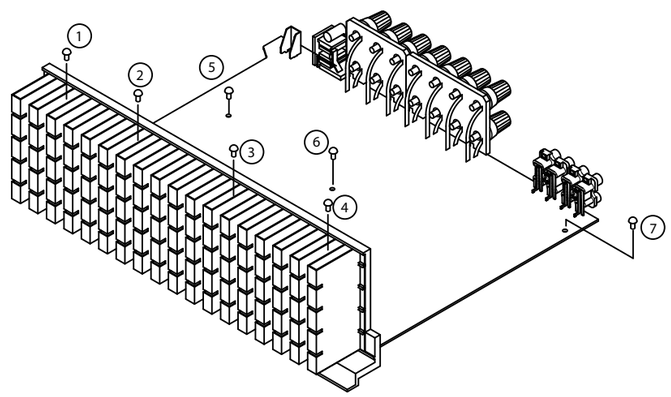
3. Removing the Rear Panel

Remove the Screws ① ~ ㉞

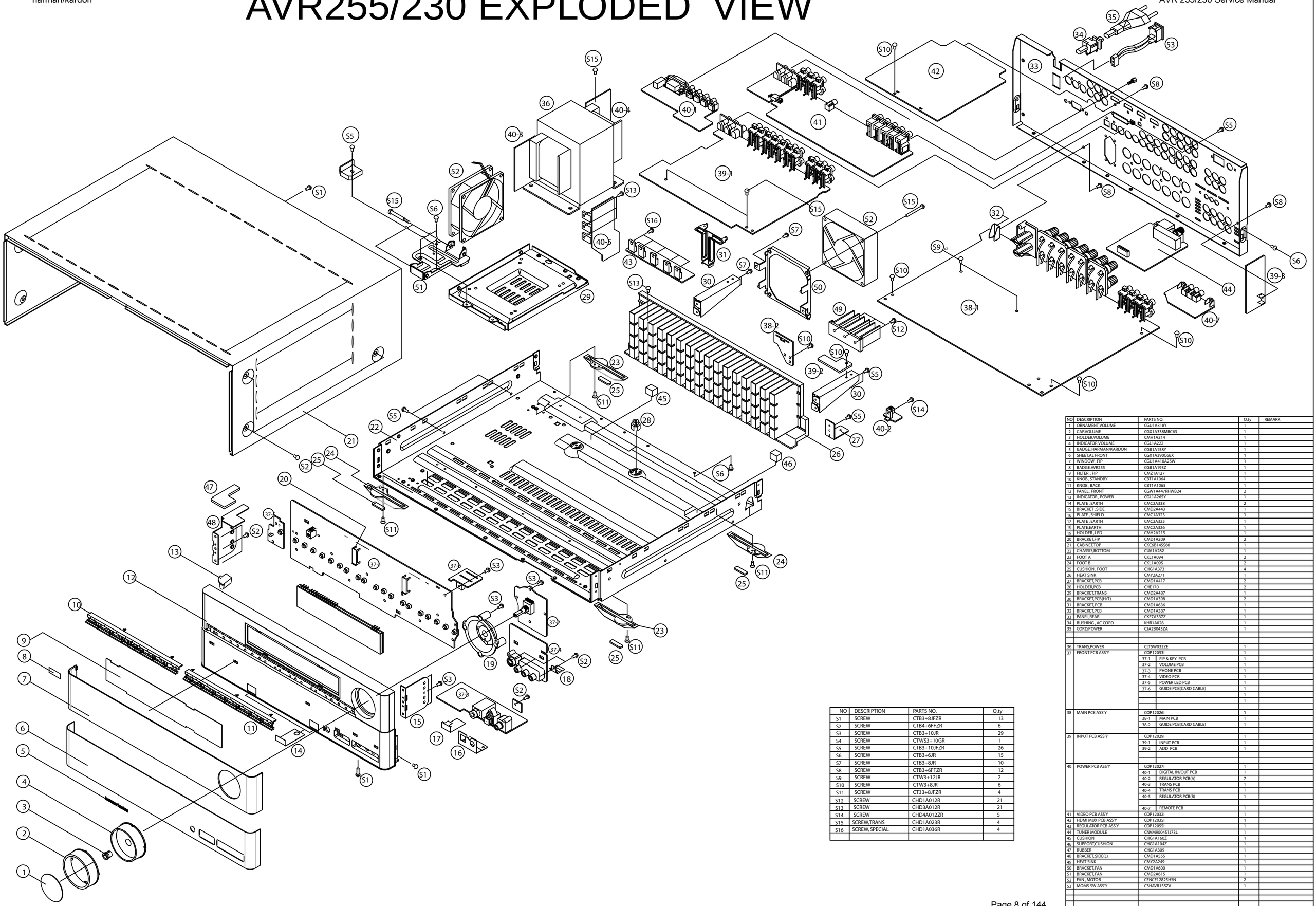


4. Removing the Main PCB

Remove the Screws ① ~ ⑦



AVR255/230 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	CGX1A390C66X		1	
7	WINDOW , FIP	CGU1A410A25W		1	
8	BADGE,AVR255	CGB1A193Z		1	
9	FILTER , FIP	CMZ1A127		1	
10	KNOB , STANDBY	CBT1A1064		1	
11	KNOB , BACK	CBT1A1065		1	
12	PANEL , FRONT	CGW1A447RHWB24		2	
13	INDICATOR , POWER	CGL1A265Y		1	
14	PLATE , EARTH	CMC2A338		2	
15	BRACKET , SIDE	CMD2A443		1	
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	CUA1A282		1	
23	FOOT A	CKL1A094		2	
24	FOOT B	CKL1A095		2	
25	CUSHION , FOOT	CHG1A373		4	
26	HEAT SINK	CMY2A271		1	
27	BRACKET,PCB	CMD1A417		2	
28	HOLDER,PCB	CHE170		2	
29	BRACKET,TRANS	CMD2A487		1	
30	BRACKET,PCB(H/T)	CMD1A398		2	
31	BRACKET, PCB	CMD1A636		1	
32	BRACKET,PCB	CMD1A387		1	
33	PANEL,REAR	CKF7A337Z		1	
34	BUSHING , AC CORD	KHR1A028		1	
35	CORD,POWER	CJA2B043ZA		1	
36	TRANS,POWER	CLT5W032ZE		1	
37	FRONT PCB ASS'Y	COP12053I		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	
				1	
38	MAIN PCB ASS'Y	COP12026I		1	
		38-1	MAIN PCB	1	
		38-2	GUIDE PCB(CARD CABLE)	1	
39	INPUT PCB ASS'Y	COP12029I		1	
		39-1	INPUT PCB	1	
		39-2	ADD PCB	1	
40	POWER PCB ASS'Y	COP12027I		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	
		40-7	REMOTE PCB	1	
41	VIDEO PCB ASS'Y	COP12032I		1	
42	HDMI MUX PCB ASS'Y	COP12035I		1	
43	REGULATOR PCB ASS'Y	COP12055I		1	
44	TUNER MODULE	CNVM90045J173L		1	
45	CUSHION	CHG1A160Z		1	
46	SUPPORT,CUSHION	CHG1A104Z		1	
47	RUBBER	CHG1A309		1	
48	BRACKET, SIDE(L)	CMD1A555		1	
49	HEAT SINK	CMY2A249		1	
50	BRACKET, FAN	CMD1A600		1	
51	BRACKET,FAN	CMD2A615		1	
52	FAN , MOTOR	CFNCF12825H5N		2	
53	MOM5 SW ASS'Y	CSHAVR155ZA		1	

AVR255/230 Electrical Parts List			
Ref. #	**Part Number**	**Description**	**Value**
	CGB1A193Z	BADGE , AVR255	BADGE
	CGL1A222	INDICATOR , VOLUME	INDICATOR
	CGU1A318Y	ORNAMENT , VOLUME AVR255	ORNAMENT
	CGU1A410A25W	WINDOW , FIP	WINDOW
	CGX1A338MBC63	CAP , VOLUME	VOLUME CAP
	CGX1A390C66X	SHEET , AL FRONT AVR255	SHEET
	CKC6B145S60	CABINET , TOP AVR350	CABINET
	CMH1A214	HOLDER , VOLUME	HOLDER
	CMZ1A127	FILTER , FIP AVR255	FILTER
	CMZ2A090	SHEET , VOLUME	SHEET
	CTB3+8JFZR	SCREW	SCREW
	CTB4+6FFZR	SCREW	SCREW
	C4B120122	TUBE , UL	TUBE
	CHE154	CLAMPER , ARM	CLAMPER
	CJXAVR340MICRO	MICRO PHONE ASS'Y	ASS'Y
	CPG1A855V	BOX , OUT CARTON AVR255/230	BOX
	CARTAVR255/230	REMOCON TRANSMITTER ASS'Y	REMOTE
	CGRAVR350/230ZA	COVER ASS'Y	COVER
	CGR2A436	COVER , A AVR350	COVER
	CGR2A437	COVER , B AVR350	COVER
	CGX1A391C66	ORNAMENT , AL A AVR350	ORNAMENT
	CGX1A392C66	ORNAMENT , AL B AVR350	ORNAMENT
	CQX1A1318Z	MANUAL , INSRTUCTION	MANUAL
	CQX1A1320Z	MANUAL , SETUP AVR155/230	MANUAL
	CSA1A018Z	FM 1 POLE ANT	FM ANT
	CSA1A020Z	ANT , AM LOOP	AM ANT
	HQE1A273Z	HARMAN IMAGE BROCHURES	BROCHURES
	CRE1A037	LOCKER	LOCKER
FRONT PANEL ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	CGWAVR255/230	FRONT PANEL ASS'Y	ASS'Y
	CBT1A1064	KNOB , STANDBY AVR355	KNOB
	CBT1A1065	KNOB , BACK AVR355	KNOB
	CGB1A158Y	BADGE , FRONT HARMAN/KARDON	BADGE
	CGL1A265Y	INDICATOR , POWER AVR155	INDICATOR
	CGW1A447RHWB24	PANEL , FRONT AVR255/230	PANEL
	CHG1A309	RUBBER	RUBBER
	CHR301	CLAMPER	CLAMPER
	CLZ9Z028Z	FERRITE CORE(21.2X6.4X12.7)	FERRITE CORE
	CMC1A323	PLATE , SHIELD AVR350	PLATE
	CMC2A326	PLATE , EARTH AVR350	PLATE
	CMC2A338	PLATE , EARTH AVR350	PLATE
	CMD1A555	BRACKET , SIDE (L)	BRACKET
	CMD2A443	BRACKET , SIDE	BRACKET
	CMH2A215	HOLDER , LED AVR350	HOLDER
	CPE1A009	SHEET , BLIND	SHEET
	CTB3+10JR	SCREW	SCREW
	CTWS3+10GR	SCREW	SCREW
CB72	CWC4F2A17A280B	CABLE , CARD(17P, 280mm)	CARD CABLE
BOTTOM CHASSIS ASS'Y			
Ref. #	**Part Number**	**Description**	**Value**
	CUAAVR255/230	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
	CJA2B044ZA	CORD , POWER	POWER CORD

BOTTOM CHASSIS ASS'Y			
Ref. #	**Part Number**	**Description**	**Value**
	CKF7A337Z	PANEL , REAR AVR255/230	PANEL
	CKL1A094	FOOT , A AVR350	FOOT
	CKL1A095	FOOT , B AVR350	FOOT
	CLZ9W003Z	FERRITE , RING	FERRITE RING
	CMD1A636	BRACKET , PCB	BRACKET
	CMD2A487	BRACKET , TRANS	BRACKET
	CNVM9004MS1J73L	TUNER , EUR MODULE	TUNER
	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
	CUA1A282	CHASSIS , BOTTOM AVR255	CHASSIS
	KHR1A028	BUSHING , AC CORD	BUSHING
BN90	CSHAVR155ZA	MOMS SW ASS'Y	ASS'Y
	CSH1A009ZV	SWITCH , MOMS	SWITCH
	CWZAVR255ZA	WIRE , ASS'Y(2P,150mm)	WIRE
CB11	CWC4F2A17A100B	CABLE , CARD(17P, 100MM, 1MM, B-TYPE)	CARD CABLE
CB12	CWC1C4A21B110B	CABLE , CARD	CARD CABLE
CB13	CWC4C4A13B100B	CABLE , CARD	CARD CABLE
CB14	CWC4F2A13A100B	CABLE , CARD(13P, 100mm)	CARD CABLE
CB15	CWC4F2A17A120B	CABLE , CARD(17P, 120mm)	CARD CABLE
CB19	CWC4F2A07A080B	CABLE , CARD(7P, 80mm, B TYPE)	CARD CABLE
CB47	CWC4F2A07A100B	CABLE , CARD(7P, 1MM, 100MM)	CARD CABLE
F901	KBA2C6300TLEZ	FUSE(233TYPE, 6.3A,250V)	LITTEL FUSE
T901	CLT5W032ZE	TRANS , POWER AVR255/230	MAIN TRANS
FRONT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12053I	AVR255/230 FRONT PCB ASS'Y	ASS'Y
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)	0.022UF 50V Z
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

FRONT PCB ASSY			
Ref. #	Part Number	Description	Value
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
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

FRONT PCB ASSY			
Ref. #	Part Number	Description	Value
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
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
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

FRONT PCB ASSY			
Ref. #	Part Number	Description	Value
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
S707	HST1A020ZT	SW , TACT	TACT SWITCH
S708	HST1A020ZT	SW , TACT	TACT SWITCH
S709	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
	CMC2A325	PLATE , EARTH AVR155	Plate, earth
	C8E534	FLUX	FLUX
BK71	CMD1A209	BRACKET , FLT	BRACKET
BK72	CMD1A209	BRACKET , FLT	BRACKET
BN10	CWZAVR155BN10	SHIELD WIRE ASS'Y(5P, 2MM, 350MM)	WIRE
BN18	CWZAVR355BN18	SHIELD WIRE ASS'Y (5P, 500MM)	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	LED
D703	CVD1L0345W31BOCT20	L.E.D , WHITE	LED
D705	CVD1L0345W31BOCT20	L.E.D , WHITE	LED
D723	CVD30ASOGCAA-S7	L.E.D , ORANGE	LED
D727	CVD1L0345W31BOCT20	L.E.D , WHITE	LED
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)	HEADPHONE JACK
JK85	CJJ9M004Y	JACK , S-VHS (SILVER)	S-VHS 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

FRONT PCB ASSY			
Ref. #	Part Number	Description	Value
VR74	CSR2A037Z	ENCODER	ENCODER
MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
	COP12026I	AVR255/230 MAIN PCB ASS'Y	ASS'Y
	CHD3A012R	SCREW , SPECIAL	SCREW
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
C507	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	330PF 50V
C508	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	330PF 50V
C509	CCKT1H331KB	CAP , CERAMIC	330PF 50V
C510	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	330PF 50V
C561	CCEA1CH101T	CAP , ELECT	100UF 16V
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
C721	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C722	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C723	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C724	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C725	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C726	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C727	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C728	CCKT1H221KB	CAP , CERAMIC	220PF 50V K
C801	CCEA1HH100T	CAP , ELECT	10UF 50V
C802	CCEA1HH100T	CAP , ELECT	10UF 50V
C803	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C804	CCCT1H330JC	CAP , CERAMIC	33PF 50V J
C805	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C806	CCCT1H120JC	CAP , CERAMIC	12PF 50V J
C811	CCEA1CH101T	CAP , ELECT	100UF 16V
C812	CCEA1CH101T	CAP , ELECT	100UF 16V
C813	CCEA1CH101T	CAP , ELECT	100UF 16V
C814	CCEA1CH101T	CAP , ELECT	100UF 16V
C815	CCKT1H331KB	CAP , CERAMIC	330PF 50V

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
C816	CCBS1H331KBT	CAP , CERAMIC	330PF 50V
C817	CCEA1HH100T	CAP , ELECT	10UF 50V
C818	CCEA1HH100T	CAP , ELECT	10UF 50V
C819	CCBS1H681KBT	CAP , CERAMIC	680PF 50V
C820	CCBS1H681KBT	CAP , CERAMIC	680PF 50V
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
C918	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C919	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C924	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C925	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C932	CCEA1CH101T	CAP , ELECT	100UF 16V
C933	CCEA1CH221T	CAP , ELECT	220UF 16V
C934	CCFT1H223ZF	CAP , CERAMIC	0.022UF 50V Z
C939	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C940	CCEA1AH471T	CAP , ELECT	470UF 10V
C948	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V Z
C950	CCEA1AH471T	CAP , ELECT	470UF 10V
C971	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C972	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C973	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C974	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C975	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
C994	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C995	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C996	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
D801	CVD1SS133MT	DIODE	1SS133
D802	CVD1SS133MT	DIODE	1SS133
D803	CVD1SS133MT	DIODE	1SS133
D804	CVD1SS133MT	DIODE	1SS133
D901	CVD1N4003SRT	DIODE , RECT	1N4003
D902	CVD1SS133MT	DIODE	1SS133
D911	CVD1SS133MT	DIODE	1SS133
D912	CVD1SS133MT	DIODE	1SS133
D914	CVD1SS133MT	DIODE	1SS133
D917	CVD1SS133MT	DIODE	1SS133

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
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
D964	CVD1SS133MT	DIODE	1SS133
D967	CVD1SS133MT	DIODE	1SS133
D968	CVD1SS133MT	DIODE	1SS133
D969	CVD1SS133MT	DIODE	1SS133
D971	CVD1SS133MT	DIODE	1SS133
D972	CVD1SS133MT	DIODE	1SS133
D973	CVD1SS133MT	DIODE	1SS133
D974	CVD1SS133MT	DIODE	1SS133
D975	CVD1SS133MT	DIODE	1SS133
D976	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	RESET
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

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
Q801	HVTKSC2785YT	T.R	KSC2785Y
Q802	HVTKSC2785YT	T.R	KSC2785Y
Q812	HVTKTA1268GRT	T.R	KTA1268GR
Q813	HVTKTC3200GRT	T.R	KTC3200GR
Q814	HVTKTA1268GRT	T.R	KTA1268GR
Q815	HVTKTC3200GRT	T.R	KTC3200GR
Q816	HVTKTA1268GRT	T.R	KTA1268GR
Q817	HVTKTA1268GRT	T.R	KTA1268GR
Q818	HVTKTC3200GRT	T.R	KTC3200GR
Q819	HVTKTC3200GRT	T.R	KTC3200GR
Q820	HVTKTC3200GRT	T.R	KTC3200GR
Q821	HVTKTC3200GRT	T.R	KTC3200GR
Q822	HVTKTC3200GRT	T.R	KTC3200GR
Q823	HVTKTC3200GRT	T.R	KTC3200GR
Q824	HVTKTC3198YT	T.R	KTC3198Y
Q825	HVTKTC3198YT	T.R	KTC3198Y
Q901	HVTKSC2785YT	T.R	KSC2785Y
Q911	HVTKTA1271YT	T.R	KTA1271Y
Q912	HVTKTA1271YT	T.R	KTA1271Y
Q913	HVTKTA1271YT	T.R	KTA1271Y
Q914	HVTKTA1271YT	T.R	KTA1271Y
Q915	HVTKSC2785YT	T.R	KSC2785Y
Q916	HVTKSC2785YT	T.R	KSC2785Y
Q917	HVTKSC2785YT	T.R	KSC2785Y
Q918	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
Q992	HVTKRA107MT	T.R	KRA107M
Q997	HVTKRA107MT	T.R	KRA107M
Q998	HVTKRC107MT	T.R	KRC107M
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

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
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	CRD20TJ162T	RES , CARBON	1.6K OHM 1/5W J
R562	CRD20TJ162T	RES , CARBON	1.6K OHM 1/5W J
R563	CRD20TJ162T	RES , CARBON	1.6K OHM 1/5W J
R564	CRD20TJ162T	RES , CARBON	1.6K OHM 1/5W J
R565	CRD20TJ162T	RES , CARBON	1.6K 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
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

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
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
R611	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R612	CRD20TJ100T	RES , CARBON	10 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
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
R776	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R777	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
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
R786	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R787	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R801	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R802	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R803	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R804	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R805	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R807	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R808	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R809	CRD25TJ182T	RES , CARBON	1.8K OHM 1/5W J
R812	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R813	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R814	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R815	CRD25TJ470T	RES , CARBON	47 OHM 1/5W J
R817	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R818	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R819	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R820	CRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W J
R821	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R822	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R823	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R824	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R830	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R831	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R832	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R833	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R834	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R835	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R836	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R837	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R838	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R839	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R840	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R841	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R842	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R843	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R844	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R845	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R848	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R849	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R850	CRD20TJ162T	RES , CARBON	1.6K OHM 1/5W J
R851	CRD20TJ162T	RES , CARBON	1.6K OHM 1/5W J
R852	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R853	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R854	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R855	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R856	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R857	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R858	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R859	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R860	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R861	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R862	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R863	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R870	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R871	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R872	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R873	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R900	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
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
R908	CRD20TJ105T	RES , CARBON	1M 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
R921	CRD25FJ180T	RES , CARBON	18 OHM 1/5W J
R923	CRD20TJ220T	RES , CARBON	22 OHM 1/5W J
R924	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R925	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R926	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R927	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R928	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R929	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R930	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R931	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R932	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R933	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R934	CRD20TJ823T	RES , CARBON	82K OHM 1/5W J
R935	CRD20TJ154T	RES , CARBON	150K OHM 1/5W J
R936	CRD20TJ184T	RES , CARBON	180K 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
R943	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R944	CRD25TJ223T	RES , CARBON	22K OHM 1/4W J
R945	CRD20TJ223T	RES , CARBON	22K OHM 1/5W 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
R952	CRD25TJ223T	RES , CARBON	22K OHM 1/4W J
R953	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R954	CRD20TJ223T	RES , CARBON	22K OHM 1/5W 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
R958	CRD20TJ563T	RES , CARBON	56K OHM 1/5W J
R959	CRD20TJ104T	RES , CARBON	100K 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
R964	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R965	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R966	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R967	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R968	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R969	CRD20TJ103T	RES , CARBON	10K 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
	CMYAVR255	HEAT SINK ASS'Y	ASS'Y
	CFNCF12825HSN	FAN , MOTOR	FAN

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
	CHD1A012R	SCREW , SPECIAL	SCREW
	CHD1A036R	SCREW , SPECIAL	SCREW
	CHD3A012R	SCREW , SPECIAL	SCREW
	CHG1A412	CUSHION	CUSHION
	CMD1A398	BRACKET , PCB	BRACKET
	CMD1A417	BRACKET , PCB	BRACKET
	CMD1A600	BRACKET , FAN	BRACKET
	CMD2A615	BRACKET , FAN	BRACKET
	CMY1A307	HEAT SINK	HEAT SINK
	CMY2A249	HEAT SINK	HEAT SINK
	CTB3+10JR	SCREW	SCREW
	CTB3+8JR	SCREW	SCREW
	CTW3+8JR	SCREW	SCREW
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
Q660	HVT2SD2390-OKM	T.R , POWER	TR
Q661	HVT2SB1560-OKM	T.R , POWER	TR
Q670	HVT2SD2390-OKM	T.R , POWER	TR
Q803	HVT2SD2390-OKM	T.R , POWER	TR
Q804	HVT2SB1560-OKM	T.R , POWER	TR
Q805	HVT2SD2390-OKM	T.R , POWER	TR
Q807	HVT2SB1560-OKM	T.R , POWER	TR
	CTW3+8JR	SCREW	SCREW
	CWE8202150AA	WIRE ASS'Y	ASS'Y
	C8AGB288	BOND (MAX)	BOND
BN19	CWB3FE03250UP	WIRE ASS'Y	WIRE
BN20	CWB3FC04280UP	WIRE ASS'Y	WIRE
BN81	CWB1C902050EN	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
BN87	CWB1C902050EN	WIRE ASS'Y	WIRE
BN88	CWB2B905080EN	WIRE ASS'Y	WIRE
BN98	HJP08GA130ZK	WAFER	WIRE
BN99	CWB1C902250BM	WIRE ASS'Y	WIRE
CN11	CJP17GA117ZY	WAFER	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
CN66	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN67	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN89	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
CN90	CJP02GA89ZY	WAFER	WAFER
CN91	CJP02GA89ZY	WAFER	WAFER
CN92	CJP02KA060ZY	WAFER	WAFER
CN93	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	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

MAIN PCB ASSY			
Ref. #	Part Number	Description	Value
C638	CCEA1JH101E	CAP , ELECT	100UF 63V
C639	CCEA1JH101E	CAP , ELECT	100UF 63V
C640	CCEA1JH101E	CAP , ELECT	100UF 63V
C807	CCEA1JH101E	CAP , ELECT	100UF 63V
C808	CCEA1JH101E	CAP , ELECT	100UF 63V
C809	CCEA1JH101E	CAP , ELECT	100UF 63V
C810	CCEA1JH101E	CAP , ELECT	100UF 63V
C902	CCET50VKL4822NK	CAP , ELECT	8200UF/50V
C904	KCKDKS472ME	CAP , CERAMIC(X1/Y2/SC)	0.0047UF/2.5KV
C906	CCEA1EH102E	CAP , ELECT	1000UF 25V
C909	CCET50VKL4822NK	CAP , ELECT	8200UF/50V
C915	CCET50VKL4103NK	CAP , ELECT	10000UF/50V
C916	CCET50VKL4103NK	CAP , ELECT	10000UF/50V
ET01	CMD1A387	BRACKET , PCB	PCB
JK91	CJJ5R006Z	TERMINAL , SPEAKER	TERMINAL
JK92	CJJ5Q012Z	TERMINAL , SPEAKER	TERMINAL
JK97	CJJ4P041W	JACK IN/OUT	JACK
JK98	CJJ4P042W	JACK IN/OUT	JACK
JW90	CWE8212120VV	WIRE , RED	WIRE
JW91	CWE8212180VV	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
L506	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L507	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
Q876	HVT2SA1360O	T.R	2SA1360O
Q877	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
Q886	HVT2SC3423O	T.R	2SC3423O
Q887	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
R660	CRF5EKR27HX2K	RES , CEMENT	0.5UH K
R810	CRF5EKR27HX2K	RES , CEMENT	0.5UH K
R811	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
R922	CRG1ANJ680H	RES , METAL OXIDE FILM	68 OHM 1W J
R990	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R993	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R994	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R995	CRG1ANJ100H	RES , METAL OXIDE FILM	10 OHM 1W J
R996	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
	COP12027I	AVR255/230 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
C127	CCFT1H473ZF	CAP , CERAMIC	0.047UF 50V Z
C131	CCEA1HH3R3T	CAP , ELECT	3.3UF 50V
C750	CCEA1CH101T	CAP , ELECT	100UF 16V
C751	CCEA1CH101T	CAP , ELECT	100UF 16V
C851	CCEA1HH100T	CAP , ELECT	10UF 50V
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
C857	CCEA1HH100T	CAP , ELECT	10UF 50V
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
C971	CCFT1H104ZF	CAP , SEMICONDUCTOR	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
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

POWER PCB ASSY			
Ref. #	Part Number	Description	Value
D921	CVD1SS133MT	DIODE	1SS133
F110	KBA2D2500TLET	FUSE(SR-5,2.5A,250V)	SAVE FUSETECH
F111	KBA2D2500TLET	FUSE(SR-5,2.5A,250V)	SAVE FUSETECH
Q104	HVTKSC2316YT	T.R	KSC2316Y
Q911	HVTKTA1267YT	T.R	KTA1267Y
Q912	HVTKTC3198YT	T.R	KTC3198Y
Q913	HVTKTC3198YT	T.R	KTC3198Y
Q995	HVTKRA107MT	T.R	KRA107M
Q997	HVTKRC107MT	T.R	KRC107M
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
R874	CRD20TJ331T	RES , CARBON	330 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
R880	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R882	CRD20TJ122T	RES , CARBON	1.2K 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
R888	CRD20TJ122T	7	1.2K OHM 1/5W J
R891	CRD20TJ391T	RES , CARBON	390 OHM 1/5W J
R892	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
R897	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	15K 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
R970	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R971	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R972	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R973	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J

POWER PCB ASSY			
Ref. #	Part Number	Description	Value
R974	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R975	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R976	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R977	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
VR81	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
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
VR87	CVN1RA221B02T	RES , SEMI FIXED (220, B CURVE)	KVSF637AVC
	CMD1A618	BRACKET , RESET	BRACKET
BN17	CJP06GB143ZB	FEMALE HEADER(6P, 2.54mm)	HEADER
BN20	CWB1C905180BM	WIRE ASS'Y	WIRE
BN21	CWB1C905120EN	WIRE ASS'Y	WIRE
BN79	CWB1C907120EN	WIRE ASS'Y(7P, 2MM, 120MM)	WIRE
BN80	CWB2B903180EN	WIRE ASS'Y	WIRE
BN96	CWB1C915180EN	WIRE ASS'Y(15P, 2MM, 180MM)	WIRE
BN97	CWB1C905120EN	WIRE ASS'Y	WIRE
CN13	CJP05GA01ZY	WAFER(YMW025-05R)	WAFER
CN19	CJP03GA90ZY	WAFER	WAFER
CN20	CJP04GA90ZM	WAFER	WAFER
CN31	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN32	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN33	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN34	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN35	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN36	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN37	CJP02GA19ZY	WAFER , 2PIN	WAFER
CN47	CJP07GA117ZY	WAFER	WAFER
CN79	CJP07GA19ZY	WAFER , STRAIGHT(7PIN)	WAFER
CN81	CJP07GA01ZY	WAFER , STRAIGHT(7PIN)	WAFER
CN88	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN96	CJP15GA19ZY	WAFER	WAFER
CN98	HJP08GB131ZK	WAFER	WAFER
C122	CCEA1JH101E	CAP , ELECT	100UF 63V
C129	CCEA1EH822E	CAP , ELECT(KR3, 8200UF/25V, 18X30)	8200UF 25V
C911	CCEA1HKS2R2T	CAP , ELECT	2.2UF 50V SMALL SIZE
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
D701	HVDKBU804F	DIODE , BRIDGE	DIODE
D991	CVDKBU804FMA	BRIDGE DIODE ASS'Y	ASS'Y
	CMY1A219	HEAT SINK (BRIDGE DIODE)	HEAT SINK
	CTB3+12JR	SCREW	SCREW
	HVDKBU804F	DIODE , BRIDGE	DIODE
D992	CVDKBU804FMA	BRIDGE DIODE ASS'Y	ASS'Y
	CMY1A219	HEAT SINK (BRIDGE DIODE)	HEAT SINK
	CTB3+12JR	SCREW	SCREW
	HVDKBU804F	DIODE , BRIDGE	DIODE
ET04	CMD1A569	BRACKET , PCB	BRACKET
ET05	CMD1A569	BRACKET , PCB	BRACKET
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)
IC97	BVIKP1010B	IC, PHOTO COUPLER	COSMO(KP1010B)
IC98	BVIKP1010B	IC, PHOTO COUPLER	COSMO(KP1010B)
IC99	HVI74LCX32TTR	I.C , OR-GATE	ST(74LCX32TTR)
JK75	HJSTORX177L	MODULE , OPTICAL(RX)	TORX177L
JK76	HJSTORX177L	MODULE , OPTICAL(RX)	TORX177L
JK94	CJJ2D008Z	JACK , STEREO	JACK
JK95	CJJ2D008Z	JACK , STEREO	JACK
JK96	CJJ2D008Z	JACK , STEREO	JACK

POWER PCB ASSY			
Ref. #	Part Number	Description	Value
JK97	CJJ9W001Z	JACK , 9P D-SUB FEMALE(RS-232C, SEMCO)	JACK
Q851	HVTKTD600KGR	T.R , BIAS	KTD600KGR
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
Q857	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
SW96	HSH2B018Z	SW , PUSH	SPUJ19XSM011
SW97	HSH2B018Z	SW , PUSH	SPUJ19XSM011
INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
	COP12029I	AVR255/230 INPUT PCB ASS'Y	ASS'Y
CN11	CJP17GA193ZY	WAFER, CARD CABLE (SMD)	WAFER
CN15	CJP17GA193ZY	WAFER, CARD CABLE (SMD)	WAFER
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
C225	CCUS1H221JA	CAP , CHIP	220PF 50V J
C226	CCUS1H221JA	CAP , CHIP	220PF 50V J
C260	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C269	CCUS1A105KC	CAP , CHIP	1UF 10V K
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
C295	CCUS1H272KC	CAP , CHIP	2700PF 50V K
C296	CCUS1H272KC	CAP , CHIP	2700PF 50V K
C299	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C301	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C302	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C303	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C304	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C305	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C306	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C307	CCUS1H152KC	CAP , CHIP	1500PF 50V K
C308	CCUS1H152KC	CAP , CHIP	1500PF 50V K

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
C309	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C310	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C311	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C312	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C313	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C314	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C315	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C316	CCUS1H102KC	CAP , CHIP	1000PF 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
C320	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C321	CCUS1H271JA	CAP , CHIP	270PF 50V J
C322	CCUS1H271JA	CAP , CHIP	270PF 50V J
C323	CCUS1H271JA	CAP , CHIP	270PF 50V J
C324	CCUS1H271JA	CAP , CHIP	270PF 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
C333	CCUS1H561JA	CAP , CHIP	560PF 50V J
C334	CCUS1H561JA	CAP , CHIP	560PF 50V J
C335	CCUS1H561JA	CAP , CHIP	560PF 50V J
C336	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
C340	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C350	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C351	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C352	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C353	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C354	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C355	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C356	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C357	CCUS1H102KC	CAP , CHIP	1000PF 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
C387	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C388	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
C397	CCUS1H151JA	CAP , CHIP	150PF 50V J
C398	CCUS1H151JA	CAP , CHIP	150PF 50V J
C532	CCUS1H182KC	CAP , CHIP	1800PF 50V K
C534	CCUS1H182KC	CAP , CHIP	1800PF 50V K
C535	CCUS1H182KC	CAP , CHIP	1800PF 50V K
C536	CCUS1H182KC	CAP , CHIP	1800PF 50V K
C537	CCUS1H182KC	CAP , CHIP	1800PF 50V K
C538	CCUS1H182KC	CAP , CHIP	1800PF 50V K

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
C539	CCUS1H182KC	CAP , CHIP	1800PF 50V K
C540	CCUS1H182KC	CAP , CHIP	1800PF 50V K
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
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
C716	CCUS1H151JA	CAP , CHIP	150PF 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	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
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
C754	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C755	CCUS1H561JA	CAP , CHIP	560PF 50V J
C756	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

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
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
C780	CCUS1H102KC	CAP , CHIP	1000PF 50V K
C781	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C782	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C783	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C784	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C787	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C789	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C790	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C791	CCUS1H104KC	CAP , CHIP	0.1UF 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
C820	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
D201	CVD1SS355T	DIODE , CHIP	1SS355T
D203	CVD1SS355T	DIODE , CHIP	1SS355T
D204	CVD1SS355T	DIODE , CHIP	1SS355T
D206	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
D213	CVD1SS355T	DIODE , CHIP	1SS355T
D214	CVD1SS355T	DIODE , CHIP	1SS355T
D215	CVD1SS355T	DIODE , CHIP	1SS355T
D216	CVD1SS355T	DIODE , CHIP	1SS355T
D725	CVD1SS355T	DIODE , CHIP	1SS355T
D727	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)
IC24	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)
IC34	HVINJM2068MTE1	I.C , OP AMP	JRC(NJM2068M-TE1)
IC70	HVITC74VHC157FT	I.C , 2-CHANNEL MUX	ST(TC74VHC157FT)
IC71	CVIST25VF080B504CS	I.C , 8 Mbit SPI Serial Flash	SST(SST25VF080B-50-4C-S2AF)
IC72	HVITC74HCU04AFN	IC , INVERTER	TC74HCU04AFN
IC73	HVICS42528-CQ	I.C , CODEC + DIR	CIRRUS LOGIC(CS42528-CQ)
IC74	HVILC72723M	IC , PLL (RDS)	SANYO(LC72723M)
IC75	CVICS497004CQZ	I.C , DSP	CIRRUS LOGIC(CS497004CQZ)
IC77	CVIM12L16161A5TG	I.C, 16MB SDRAM	ESMT(M12L16161A5TG)
IC78	HVINJM2391DL133	I.C , CHIP REGULATOR (+3.3V)	JRC(NJM2391DL1-3.3)
IC79	CVIKIA1117S18	I.C , REGULATOR(SOT-223)	KEC(KIA1117S)
IC80	CVITC74VCX541FT	I,C , OCTAL BUS BUFFER	TOSHIBA(TC74VCX841FT)
IC88	CVIKIA1117S33	I.C , REGULATOR(SOT-223)	KEC(KIA1117S)
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

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
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
Q732	HVTKRC107S	T.R , CHIP	KRC107S
Q734	HVTKRC107S	T.R , CHIP	KRC107S
Q738	CVTKRC103S	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)	10K 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
RN93	CRJ104DJ330T	RES , 4ARRAY (1608*4)	33 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	CRJ10DJ101T	RES , CHIP	100 OHM
R213	CRJ10DJ101T	RES , CHIP	100 OHM
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
R225	CRJ10DJ101T	RES , CHIP	100 OHM
R226	CRJ10DJ101T	RES , CHIP	100 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

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
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
R251	CRJ10DJ474T	RES , CHIP	470K OHM
R252	CRJ10DJ474T	RES , CHIP	470K 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
R260	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
R267	CRJ10DJ184T	RES , CHIP	184K OHM
R268	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	CRJ10DJ222T	RES , CHIP	2.2K OHM
R275	CRJ10DJ242T	RES , CHIP	2.4K OHM
R276	CRJ10DJ242T	RES , CHIP	2.4K OHM
R277	CRJ10DJ242T	RES , CHIP	2.4K OHM
R278	CRJ10DJ242T	RES , CHIP	2.4K OHM
R279	CRJ10DJ101T	RES , CHIP	100 OHM
R280	CRJ10DJ101T	RES , CHIP	100 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
R287	CRJ10DJ512T	RES , CHIP	5.1K OHM
R288	CRJ10DJ512T	RES , CHIP	5.1K OHM
R289	CRJ10DJ101T	RES , CHIP	100 OHM
R290	CRJ10DJ101T	RES , CHIP	100 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
R297	CRJ10DJ184T	RES , CHIP	180K OHM
R298	CRJ10DJ184T	RES , CHIP	180K OHM
R301	CRJ10DJ122T	RES , CHIP	1.2K OHM
R302	CRJ10DJ122T	RES , CHIP	1.2K OHM
R303	CRJ10DJ122T	RES , CHIP	1.2K OHM
R304	CRJ10DJ122T	RES , CHIP	1.2K OHM
R305	CRJ10DJ272T	RES , CHIP	2.7K OHM
R306	CRJ10DJ272T	RES , CHIP	2.7K OHM
R307	CRJ10DJ272T	RES , CHIP	2.7K OHM

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
R308	CRJ10DJ272T	RES , CHIP	2.7K OHM
R309	CRJ10DJ272T	RES , CHIP	2.7K OHM
R310	CRJ10DJ272T	RES , CHIP	2.7K OHM
R311	CRJ10DJ272T	RES , CHIP	2.7K OHM
R312	CRJ10DJ272T	RES , CHIP	2.7K OHM
R313	CRJ10DJ272T	RES , CHIP	2.7K OHM
R314	CRJ10DJ272T	RES , CHIP	2.7K OHM
R315	CRJ10DJ272T	RES , CHIP	2.7K OHM
R316	CRJ10DJ272T	RES , CHIP	2.7K OHM
R317	CRJ10DJ561T	RES , CHIP	560 OHM
R318	CRJ10DJ392T	RES . CHIP	3.9K OHM
R321	CRJ10DJ512T	RES , CHIP	5.1 OHM
R322	CRJ10DJ122T	RES , CHIP	1.2 OHM
R323	CRJ10DJ122T	RES , CHIP	1.2 OHM
R324	CRJ10DJ512T	RES , CHIP	5.1 OHM
R325	CRJ10DJ512T	RES , CHIP	5.1 OHM
R326	CRJ10DJ122T	RES , CHIP	1.2 OHM
R327	CRJ10DJ122T	RES , CHIP	1.2 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
R333	CRJ10DJ512T	RES , CHIP	5.1K OHM
R334	CRJ10DJ122T	RES , CHIP	1.2K OHM
R335	CRJ10DJ122T	RES , CHIP	1.2K OHM
R336	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
R353	CRJ10DJ122T	RES , CHIP	1.2K OHM
R356	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
R367	CRJ10DJ104T	RES , CHIP	100K OHM
R368	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
R377	CRJ10DJ512T	RES , CHIP	5.1K OHM
R378	CRJ10DJ512T	RES , CHIP	5.1K OHM
R381	CRJ10DJ561T	RES , CHIP	560 OHM
R382	CRJ10DJ561T	RES , CHIP	560 OHM
R383	CRJ10DJ561T	RES , CHIP	560 OHM
R384	CRJ10DJ561T	RES , CHIP	560 OHM
R385	CRJ10DJ561T	RES , CHIP	560 OHM
R386	CRJ10DJ561T	RES , CHIP	560 OHM
R387	CRJ10DJ561T	RES , CHIP	560 OHM
R388	CRJ10DJ561T	RES , CHIP	560 OHM
R389	CRJ10DJ184T	RES , CHIP	180K OHM
R390	CRJ10DJ184T	RES , CHIP	180K OHM
R391	CRJ10DJ392T	RES . CHIP	3.9K OHM
R392	CRJ10DJ392T	RES . CHIP	3.9K OHM
R393	CRJ10DJ392T	RES . CHIP	3.9K OHM

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
R394	CRJ10DJ392T	RES . CHIP	3.9K OHM
R395	CRJ10DJ392T	RES . CHIP	3.9K OHM
R396	CRJ10DJ392T	RES . CHIP	3.9K OHM
R397	CRJ10DJ392T	RES . CHIP	3.9K OHM
R398	CRJ10DJ392T	RES . CHIP	3.9K OHM
R531	CRJ10DJ152T	RES , CHIP	1.5K OHM
R532	CRJ10DJ152T	RES , CHIP	1.5K OHM
R533	CRJ10DJ152T	RES , CHIP	1.5K OHM
R534	CRJ10DJ152T	RES , CHIP	1.5K OHM
R700	CRJ10DJ330T	RES , CHIP	33 OHM
R701	CRJ10DJ103T	RES , CHIP	10K OHM
R702	CRJ10DJ103T	RES , CHIP	10K OHM
R703	CRJ10DJ103T	RES , CHIP	10K OHM
R704	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	CRJ10DJ560T	RES , CHIP	56 OHM
R712	CRJ10DJ820T	RES , CHIP	82 OHM
R713	CRJ10DJ101T	RES , CHIP	100 OHM
R714	CRJ10DJ104T	RES , CHIP	100K OHM
R715	CRJ10DJ104T	RES , CHIP	100K OHM
R716	CRJ10DJ472T	RES , CHIP	4.7K OHM
R717	CRJ10DJ0R0T	RES , CHIP	0 OHM
R718	CRJ10DJ332T	RES , CHIP	3.3K OHM
R719	CRJ10DJ0R0T	RES , CHIP	0 OHM
R720	CRJ10DJ0R0T	RES , CHIP	0 OHM
R721	CRJ10DJ330T	RES , CHIP	33 OHM
R724	CRJ10DJ101T	RES , CHIP	100 OHM
R725	CRJ10DJ0R0T	RES , CHIP	0 OHM
R726	CRJ10DJ100T	RES , CHIP	10 OHM
R727	CRJ10DJ0R0T	RES , CHIP	0 OHM
R728	CRJ10DJ102T	RES , CHIP	1K OHM
R729	CRJ10DJ102T	RES , CHIP	1K OHM
R730	CRJ10DJ102T	RES , CHIP	1K OHM
R731	CRJ10DJ102T	RES , CHIP	1K OHM
R732	CRJ10DJ103T	RES , CHIP	10K OHM
R733	CRJ10DJ100T	RES , CHIP	10 OHM
R736	CRJ10DJ241T	RES , CHIP	240 OHM
R737	CRJ10DJ330T	RES , CHIP	33 OHM
R738	CRJ10DJ103T	RES , CHIP	10K OHM
R739	CRJ10DJ0R0T	RES , CHIP	0 OHM
R740	CRJ10DJ330T	RES , CHIP	33 OHM
R741	CRJ10DJ330T	RES , CHIP	33 OHM
R742	CRJ10DJ330T	RES , CHIP	33 OHM
R743	CRJ10DJ330T	RES , CHIP	33 OHM
R747	CRJ10DJ330T	RES , CHIP	33 OHM
R748	CRJ10DJ330T	RES , CHIP	33 OHM
R749	CRJ10DJ750T	RES , CHIP	75 OHM
R751	CRJ10DJ820T	RES , CHIP	82 OHM
R752	CRJ10DJ330T	RES , CHIP	33 OHM
R753	CRJ10DJ103T	RES , CHIP	100K OHM
R754	CRJ10DJ103T	RES , CHIP	100K OHM
R755	CRJ10DJ750T	RES , CHIP	75 OHM
R756	CRJ10DJ750T	RES , CHIP	75 OHM
R757	CRJ10DJ750T	RES , CHIP	75 OHM
R758	CRJ10DJ103T	RES , CHIP	100K OHM
R759	CRJ10DJ820T	RES , CHIP	82 OHM
R760	CRJ10DJ105T	RES , CHIP	1M OHM
R761	CRJ10DJ102T	RES , CHIP	1K OHM
R762	CRJ10DJ102T	RES , CHIP	1K OHM
R763	CRJ10DJ472T	RES , CHIP	4.7K OHM

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
R765	CRJ10DJ103T	RES , CHIP	100K OHM
R766	CRJ10DJ103T	RES , CHIP	100K OHM
R767	CRJ10DF5101T	RES. CHIP (5.1K 1%)	5.1K OHM 1%
R768	CRJ10DJ0R0T	RES , CHIP	0 OHM
R770	CRJ10DJ100T	RES , CHIP	10 OHM
R771	CRJ10DJ103T	RES , CHIP	10K OHM
R772	CRJ10DJ473T	RES , CHIP	47K 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	CRJ10DJ101T	RES , CHIP	100 OHM
R778	CRJ10DJ103T	RES , CHIP	10K OHM
R779	CRJ10DJ103T	RES , CHIP	10K OHM
R780	CRJ10DJ103T	RES , CHIP	10K OHM
R781	CRJ10DJ103T	RES , CHIP	10K 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
R790	CRJ10DJ103T	RES , CHIP	10K OHM
R793	CRJ10DJ103T	RES , CHIP	10K OHM
R799	CRJ10DJ103T	RES , CHIP	10K OHM
R800	CRJ10DJ332T	RES , CHIP	3.3K OHM
R801	CRJ10DJ332T	RES , CHIP	3.3K OHM
R802	CRJ10DJ103T	RES , CHIP	10K OHM
R810	CRJ10DJ103T	RES , CHIP	10K OHM
R811	CRJ10DJ103T	RES , CHIP	10K OHM
R812	CRJ10DJ103T	RES , CHIP	10K OHM
R813	CRJ10DJ330T	RES , CHIP	33 OHM
R814	CRJ10DJ330T	RES , CHIP	33 OHM
R815	CRJ10DJ330T	RES , CHIP	33 OHM
R816	CRJ10DJ330T	RES , CHIP	33 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
C270	CCEA1HH100T	CAP , ELECT	10UF 50V
C271	CCEA1HH100T	CAP , ELECT	10UF 50V
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
C283	CCEA1HH100T	CAP , ELECT	10UF 50V
C284	CCEA1HH100T	CAP , ELECT	10UF 50V
C285	CCEA1HH100T	CAP , ELECT	10UF 50V
C286	CCEA1HH100T	CAP , ELECT	10UF 50V
C287	CCEA1HH100T	CAP , ELECT	10UF 50V
C288	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

INPUT PCB ASSY			
Ref. #	Part Number	Description	Value
C343	CCEA1HH100T	CAP , ELECT	10UF 50V
C344	CCEA1HH100T	CAP , ELECT	10UF 50V
C345	CCEA1HH100T	CAP , ELECT	10UF 50V
C346	CCEA1HH100T	CAP , ELECT	10UF 50V
C347	CCEA1HH100T	CAP , ELECT	10UF 50V
C348	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
C377	CCEA1HH100T	CAP , ELECT	10UF 50V
C378	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
C715	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C717	CCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C720	CCEA1CH101T	CAP , ELECT	100UF 16V
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
C737	CCEA1CH101T	CAP , ELECT	100UF 16V
C740	CCEA1CH101T	CAP , ELECT	100UF 16V
C749	CCEA1CH101T	CAP , ELECT	100UF 16V
C750	CCEA1CH101T	CAP , ELECT	100UF 16V
C752	CCEA1CH101T	CAP , ELECT	100UF 16V
C753	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
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	RESET
Q301	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q302	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q303	HVTKTC2874BT	T.R , MUTE	KTC2874B

INPUT PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
Q304	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q305	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q306	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q307	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q308	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q311	HVTKTC2874BT	T.R , MUTE	KTC2874B
Q731	HVTKSA1175YT	T.R	KSA1175Y(DEAD)
Q733	HVTKSC2785YT	T.R	KSC2785Y
BN11	CWZAVR154BN46	SHIELD WIRE ASS'Y	WIRE
BN49	CWB2B905080EN	WIRE ASS'Y	WIRE
CN10	CJP05GB46ZY	WAFER	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	CJJ4R037W	JACK , BOARD	JACK
JK78	CJJ4S022Z	JACK , BOARD	JACK
X701	HOX24576E150TF	CRYSTAL	24.576MHz
X703	HOX04332E200C	CRYSTAL	4.332MHz
VIDEO PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12032I	AVR255/230 VIDEO PCB ASS'Y	ASS'Y
C461	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C463	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C465	CCUS1H470JA	CAP , CHIP	47PF 50V J
C466	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C468	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C470	CCUS1H470JA	CAP , CHIP	47PF 50V J
C471	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C473	CCUS1H223KC	CAP , CHIP	0.022UF 50V K
C475	CCUS1H470JA	CAP , CHIP	47PF 50V J
C491	CCUS1H101JA	CAP , CHIP	100PF 50V J
C492	CCUS1H101JA	CAP , CHIP	100PF 50V J
C493	CCUS1H101JA	CAP , CHIP	100PF 50V J
C500	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C501	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C601	CCUS1H020CA	CAP , CHIP	2PF 50V C
C603	CCUS1H020CA	CAP , CHIP	2PF 50V C
C605	CCUS1H020CA	CAP , CHIP	2PF 50V C
C611	CCUS1H220JA	CAP , CHIP	22PF 50V J
C613	CCUS1H220JA	CAP , CHIP	22PF 50V J
C615	CCUS1H220JA	CAP , CHIP	22PF 50V J
C621	CCUS1H220JA	CAP , CHIP	22PF 50V J
C623	CCUS1H220JA	CAP , CHIP	22PF 50V J
C625	CCUS1H220JA	CAP , CHIP	22PF 50V J
D500	CVD1SS355T	DIODE , CHIP	1SS355T
D501	CVD1SS355T	DIODE , CHIP	1SS355T
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)
R401	CRJ10DJ0R0T	RES , CHIP	0 OHM

VIDEO PCB ASSY			
Ref. #	Part Number	Description	Value
R402	CRJ10DJ0R0T	RES , CHIP	0 OHM
R403	CRJ10DJ0R0T	RES , CHIP	0 OHM
R411	CRJ10DJ750T	RES , CHIP	75 OHM
R412	CRJ10DJ750T	RES , CHIP	75 OHM
R413	CRJ10DJ750T	RES , CHIP	75 OHM
R415	CRJ10DJ0R0T	RES , CHIP	0 OHM
R416	CRJ10DJ0R0T	RES , CHIP	0 OHM
R417	CRJ10DJ0R0T	RES , CHIP	0 OHM
R418	CRJ10DJ0R0T	RES , CHIP	0 OHM
R419	CRJ10DJ0R0T	RES , CHIP	0 OHM
R420	CRJ10DJ0R0T	RES , CHIP	0 OHM
R421	CRJ10DJ750T	RES , CHIP	75 OHM
R422	CRJ10DJ750T	RES , CHIP	75 OHM
R423	CRJ10DJ750T	RES , CHIP	75 OHM
R451	CRJ10DJ750T	RES , CHIP	75 OHM
R452	CRJ10DJ750T	RES , CHIP	75 OHM
R453	CRJ10DJ750T	RES , CHIP	75 OHM
R462	CRJ10DJ750T	RES , CHIP	75 OHM
R463	CRJ10DJ750T	RES , CHIP	75 OHM
R467	CRJ10DJ750T	RES , CHIP	75 OHM
R468	CRJ10DJ750T	RES , CHIP	75 OHM
R472	CRJ10DJ750T	RES , CHIP	75 OHM
R473	CRJ10DJ750T	RES , CHIP	75 OHM
R491	CRJ10DJ750T	RES , CHIP	75 OHM
R492	CRJ10DJ750T	RES , CHIP	75 OHM
R493	CRJ10DJ750T	RES , CHIP	75 OHM
R500	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R504	CRJ10DJ4R7T	RES , CHIP	4.7 OHM
R581	CRJ10DJ101T	RES , CHIP	100 OHM
R582	CRJ10DJ101T	RES , CHIP	100 OHM
R583	CRJ10DJ474T	RES , CHIP	470K OHM
R584	CRJ10DJ474T	RES , CHIP	470K OHM
R601	CRJ10DJ0R0T	RES , CHIP	0 OHM
R603	CRJ10DJ0R0T	RES , CHIP	0 OHM
R605	CRJ10DJ0R0T	RES , CHIP	0 OHM
R611	CRJ10DJ750T	RES , CHIP	75 OHM
R612	CRJ10DJ750T	RES , CHIP	75 OHM
R613	CRJ10DJ750T	RES , CHIP	75 OHM
R621	CRJ10DJ750T	RES , CHIP	75 OHM
R622	CRJ10DJ750T	RES , CHIP	75 OHM
R623	CRJ10DJ750T	RES , CHIP	75 OHM
C404	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C405	CCEA1HH100T	CAP , ELECT	10UF 50V
C406	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
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
C462	CCEA1CH101T	CAP , ELECT	100UF 16V
C464	CCEA1CH101T	CAP , ELECT	100UF 16V
C467	CCEA1CH101T	CAP , ELECT	100UF 16V
C469	CCEA1CH101T	CAP , ELECT	100UF 16V
C472	CCEA1CH101T	CAP , ELECT	100UF 16V
C474	CCEA1CH101T	CAP , ELECT	100UF 16V
C521	CCEA1HH1R0T	CAP , ELECT	1UF 50V
C522	CCEA1HH1R0T	CAP , ELECT	1UF 50V
C602	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C604	CCEA0JH102T	CAP , ELECT	1000UF 6.3V
C606	CCEA0JH102T	CAP , ELECT	1000UF 6.3V

VIDEO PCB ASSY			
Ref. #	Part Number	Description	Value
BN14	CJP13GA117ZY	WAFER , CARD CABLE	WAFER
BN19	CJP07GA117ZY	WAFER	WAFER
BN42	CJP06GB142ZB	PIN HEADER(6P, 2.54mm)	PIN HEADER
BN81	CJP34TT215ZB	PIN HEADER , DUAL ROW(34P, 2.0MM, H=19)	PIN HEADER
CN41	CJP07GA19ZY	WAFER , STRAIGHT(7PIN)	WAFER
CN42	CJP06GB143ZB	FEMALE HEADER(6P, 2.54mm)	PIN HEADER
CN43	CJP03GA01ZY	WAFER	WAFER
CN47	CJP07GA117ZY	WAFER	WAFER
CN48	CJP03GA19ZY	WAFER , STRAIGHT(3PIN)	WAFER
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
HDMI TORINO PCB ASSY			
Ref. #	Part Number	Description	Value
	COP12035I	AVR255/230 HDMI TORINO PCB ASS`Y	ASS'Y
CN81	CJP34HA213ZB	PIN SOCKET , FEMALE(34P, 2.0MM)	PIN SOCKET
CN91	CJP17GA193ZY	WAFER, CARD CABLE (SMD)	WAFER
C601	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C602	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C603	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C604	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C605	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C606	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C607	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C610	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C611	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C612	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C613	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C614	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C615	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C616	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C617	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C618	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C619	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C620	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C621	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C622	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C623	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C624	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C625	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C626	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C627	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C628	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C629	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C634	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C635	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C636	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C637	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C638	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C639	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C640	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C641	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C642	CCUS1H123KC	CAP , CHIP(1608, 50V/12NF)	0.012UF 50V
C643	CCUS1C154KC	CAP , CHIP	0.15UF 16V K
C644	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C645	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C646	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C647	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C648	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C649	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C652	CCUS1H103KC	CAP , CHIP	0.01UF 50V K

HDMI TORINO PCB ASSY			
Ref. #	Part Number	Description	Value
C653	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C654	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C655	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C656	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C701	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C702	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C703	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C704	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C707	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C708	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C709	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C710	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C721	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C722	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C723	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C724	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C725	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C726	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C727	CCUS1A105KC	CAP , CHIP	1UF 10V K
C728	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C729	CCUS1A105KC	CAP , CHIP	1UF 10V K
C730	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C731	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C732	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C733	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C734	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C735	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C736	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C737	CCUS1H222KC	CAP , CHIP	2200PF 50V K
C738	CCUS1H222KC	CAP , CHIP	2200PF 50V K
C739	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C740	CCUS1H123KC	CAP , CHIP(1608, 50V/12NF)	0.012UF 50V
C741	CCUS1C154KC	CAP , CHIP	0.15UF 16V K
C743	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C744	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C745	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C746	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C747	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C748	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C749	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C750	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C751	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C752	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C753	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C754	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C755	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C756	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C757	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C758	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C759	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C760	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C761	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C762	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C763	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C764	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C765	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C766	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C767	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C768	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C769	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C770	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C771	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C772	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C773	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V

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Ref. #	Part Number	Description	Value
C774	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C775	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C780	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C801	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C802	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C803	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C804	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C805	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C806	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C807	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C808	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C809	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C810	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C811	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C812	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C813	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C814	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C815	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C816	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C817	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C818	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C819	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C820	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C821	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C822	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C823	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C824	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C825	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C826	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C827	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C828	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C829	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C830	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C831	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C832	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C833	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C834	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C835	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C836	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C837	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C838	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C839	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C840	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C841	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C842	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C843	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C844	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C845	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C846	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C847	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C848	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C849	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C850	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C851	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C852	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C853	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C854	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C855	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C856	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C857	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C858	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C859	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C860	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C861	CCUS1H103KC	CAP , CHIP	0.01UF 50V K

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Ref. #	Part Number	Description	Value
C862	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C863	CCUS1H103KC	CAP , CHIP	0.01UF 50V K
C864	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C865	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C866	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C867	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C868	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C869	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C870	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C871	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C872	CCUI1C104KC	CAP , CHIP(1005, 16V/0.1UF)	0.1UF 16V
C873	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C874	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C875	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C876	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C877	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C878	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C879	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C880	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C881	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C882	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C883	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C884	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C885	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C886	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C887	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C888	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C889	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C890	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C891	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C892	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C893	CCUS1H470JA	CAP , CHIP	47PF 50V J
C894	CCUS1H470JA	CAP , CHIP	47PF 50V J
C895	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C897	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C898	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C901	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C902	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C903	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C904	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C905	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C906	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C907	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C908	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C909	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C910	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C911	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C912	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C913	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C914	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C915	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C916	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C917	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C918	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C919	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C920	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C921	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C922	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C923	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C924	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C927	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C928	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C929	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C930	CCUS1H104KC	CAP , CHIP	0.1UF 50V K

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Ref. #	Part Number	Description	Value
C931	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C932	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C933	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C934	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C935	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C936	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C937	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C938	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C939	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C940	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C941	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C942	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C943	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C944	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C945	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C946	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C947	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C948	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C949	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C950	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C951	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C952	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C953	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C954	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C956	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C957	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C958	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C959	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C960	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C961	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C962	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C963	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C964	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C965	CCUS1H180JA	CAP , CHIP(18PF/50V)	18PF 50V J
C966	CCUS1H180JA	CAP , CHIP(18PF/50V)	18PF 50V J
C967	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C968	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C969	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C970	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C971	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C972	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C973	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C974	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C975	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C976	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C977	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C978	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C979	CCSJA1C100B	CAP , CHIP TANTAL(A TYPE, 10uF/16V, ELNA)	10UF 16V
C980	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C981	CCUS1H104KC	CAP , CHIP	0.1UF 50V K
C982	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C983	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
C984	CCSJA0J220B	CAP , CHIP TANTAL(A TYPE, 22uF/6.3V, ELNA)	22UF 6.3V
D941	HVD1SR159-200	DIODE , SCHOTTKEY BARRIER	DIODE
IC61	CVINJM2845DL118	IC, NJM2845DL1-18(TE1)	JRC(NJM2845DL1-18)
IC62	HVINJM2391DL133	I.C , CHIP REGULATOR (+3.3V)	JRC(NJM2391DL1-33)
IC63	CVIKIA1117S50	I.C , REGULATOR(SOT-223)	KEC(KIA1117S50-RTK/P)
IC64	CVIKIA1117S50	I.C , REGULATOR(SOT-223)	KEC(KIA1117S50-RTK/P)
IC65	CVINJM2845DL118	IC, NJM2845DL1-18(TE1)	JRC(NJM2845DL1-18)
IC71	CVINJM2566V	I.C , NJM2566AV(TE1)	JRC(NJM2566AV)
IC72	CVIADV7342BSTZ	I.C , VIDEO ENCODER	ANLOG DEVICE(ADV7342BSTZ)
IC73	CVIMK2302S01T	I.C , BUFFER	IDT(MK23020S-01T)
IC74	CVINJM2845DL133	I.C , REGULATOR(3.3V, TO-252-3)	JRC(NJM2845DL1-13)
IC75	CVIA3S56D40ETPG5	I.C, 256MB DDR SDRAM	ZENTEL(A3S56D40ETPG5)

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Ref. #	Part Number	Description	Value
IC76	CVIA3S56D40ETPG5	I.C, 256MB DDR SDRAM	ZENTEL(A3S56D40ETPG5)
IC77	CVIES29LV320ET70TG	I.C , FLASH ROM 32Mbit IC (TOP BOOST)	EXCEL SEMI(ES29LV320ET70TG)
IC81	CVIFLI30336AC	I.C , VIDEO PROCESSOR	GENESIS(FLI30336)
IC82	CVIST232CDR	IC , RS232C(SO-16TYPE)	ST(ST232CDR)
IC84	HVIKIC7SZ08FU	I.C ,INPUT AND GATE (USV PACKAGE)	KEC(KIC7SZ08FU-RTK)
IC87	HVINJM2391DL125	I.C , CHIP REGULATOR (+2.5V)	JRC(NJM2391DL1-25)
IC89	HVINJM2391DL133	I.C , CHIP REGULATOR (+3.3V)	JRC(NJM2391DL1-13)
IC91	CVITC74VHCT14AFT	I.C , HEX SCHMITT INVERTER(14PIN, TSSOP)	TOSHIBA(TC74VHC14AFT)
IC92	CVISII9185CTU	IC , HDMI SW(80PIN, TQFP)	SILICON IMAGE(SII9185CTU)
IC93	CVISII9135CTU	IC , HDMI RX(144PIN, TQFP)	SILICON IMAGE(SII9135CTU)
IC94	CVISII9134CTU	IC , HDMI TX(100PIN, TQFP)	SILICON IMAGE(SII9134CTU)
IC95	HVIKIC7SZ08FU	I.C ,INPUT AND GATE (USV PACKAGE)	KEC(KIC7SZ08FU-RTK)
IC96	CVITC74VCX541FT	I,C , OCTAL BUS BUFFER	TOSHIBA(TC74VCX541FT)
JK91	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
JK92	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
JK93	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
JK94	HJJ9H003Z	JACK , HDMI(JALCO)	YKF45-7009
L801	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L802	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L803	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L804	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L805	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L806	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L807	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L808	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L809	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L810	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L811	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L812	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L813	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L814	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L815	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L816	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L817	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L818	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L819	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L820	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L821	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L822	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L823	CLZ9R009Z	CHOKE COIL, CHIP (FOR HDMI)	CMM21T-900M-3H
L824	CLZ9R009Z	CHOKE COIL, CHIP (FOR HDMI)	CMM21T-900M-3H
L825	CLZ9R009Z	CHOKE COIL, CHIP (FOR HDMI)	CMM21T-900M-3H
L826	CLZ9R009Z	CHOKE COIL, CHIP (FOR HDMI)	CMM21T-900M-3H
L901	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L902	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L903	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L904	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L906	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L907	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L908	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L909	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L910	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L911	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L912	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L913	CLZ9R005Z	FERRITE , CHIP BEAD(60ohm, 1608)	HCB1608KF-600T30
L914	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L915	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L916	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
L917	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516)	HCB4516KF-600T60
Q801	HVTKRC114S	T.R , CHIP	KRC114S
Q901	HVTKRA102S	T.R , CHIP	KRA102S
Q902	CVTKRC103S	T.R , CHIP	KRC103S
Q903	CVTUPA672T	F.E.T	UPA672T
Q904	HVTKRA102S	T.R , CHIP	KRA102S

HDMI TORINO PCB ASSY			
Ref. #	Part Number	Description	Value
Q905	CVTKRC103S	T.R , CHIP	KRC103S
Q906	CVTUPA672T	F.E.T	UPA672T
Q907	HVTKRA102S	T.R , CHIP	KRA102S
Q908	CVTKRC103S	T.R , CHIP	KRC103S
Q909	HVTKRC111S	TR , CHIP	KRC111S
Q910	CVTUPA672T	F.E.T	UPA672T
Q911	CVTKRC103S	T.R , CHIP	KRC103S
Q912	CVTUPA672T	F.E.T	UPA672T
RN31	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN32	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN33	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN34	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN35	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN36	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN37	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN38	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN39	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN40	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN41	CRJ104DJ220T	RES,4ARRAY	22 OHM/1608*4
RN42	CRJ104DJ220T	RES,4ARRAY	22 OHM/1608*4
RN43	CRJ104DJ220T	RES,4ARRAY	22 OHM/1608*4
RN44	CRJ104DJ220T	RES,4ARRAY	22 OHM/1608*4
RN45	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN46	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN47	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN48	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN49	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN50	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN51	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN52	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN54	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN55	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN56	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN61	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	MNR04M0APJ330
RN62	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN63	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN64	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN65	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN66	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN67	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN68	CRJ104DJ100T	RES, ARRAY, 10R (1608)	10 OHM/1608*4
RN69	CRJ104DJ103T	RES, ARRAY, 10K (1608)	10K OHM/1608*4
RN70	CRJ104DJ103T	RES, ARRAY, 10K (1608)	10K OHM/1608*4
RN71	CRJ062IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X2)	33 OHM 1/16W
RN72	CRJ062IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X2)	33 OHM 1/16W
RN73	CRJ062IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X2)	33 OHM 1/16W
RN74	CRJ062IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X2)	33 OHM 1/16W
RN75	CRJ062IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X2)	33 OHM 1/16W
RN81	CRJ104DJ103T	RES, ARRAY, 10K (1608)	10K OHM/1608*4
RN82	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN83	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN84	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN85	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN86	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN87	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN88	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN89	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN90	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN91	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN92	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN93	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
RN94	CRJ064IJ330T	RES , CHIP NETWORK(1/16W, 33ohm, 1005X4)	33 OHM 1/16W
R801	CRJ10DJ470T	RES , CHIP	47 OHM
R802	CRJ10DJ470T	RES , CHIP	47 OHM

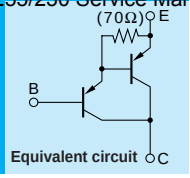
HDMI TORINO PCB ASSY			
Ref. #	Part Number	Description	Value
R803	CRJ10DJ470T	RES , CHIP	47 OHM
R804	CRJ10DJ820T	RES , CHIP	82 OHM
R805	CRJ10DJ820T	RES , CHIP	82 OHM
R806	CRJ10DJ820T	RES , CHIP	82 OHM
R807	CRJ10DJ820T	RES , CHIP	82 OHM
R808	CRJ10DJ470T	RES , CHIP	47 OHM
R809	CRJ10DJ820T	RES , CHIP	82 OHM
R810	CRJ10DJ470T	RES , CHIP	47 OHM
R811	CRJ10DJ820T	RES , CHIP	82 OHM
R812	CRJ10DJ470T	RES , CHIP	47 OHM
R813	CRJ10DJ470T	RES , CHIP	47 OHM
R814	CRJ10DJ820T	RES , CHIP	82 OHM
R815	CRJ10DJ820T	RES , CHIP	82 OHM
R816	CRJ10DJ820T	RES , CHIP	82 OHM
R817	CRJ10DJ470T	RES , CHIP	47 OHM
R818	CRJ10DJ470T	RES , CHIP	47 OHM
R819	CRJ10DJ470T	RES , CHIP	47 OHM
R820	CRJ10DJ820T	RES , CHIP	82 OHM
R821	CRJ10DJ103T	RES , CHIP	10K OHM
R822	CRJ10DJ103T	RES , CHIP	10K OHM
R823	CRJ10DJ103T	RES , CHIP	10K OHM
R824	CRJ10DJ0R0T	RES , CHIP	0 OHM
R825	CRJ10DJ103T	RES , CHIP	10K OHM
R826	CRJ10DJ103T	RES , CHIP	10K OHM
R827	CRJ10DJ103T	RES , CHIP	10K OHM
R832	CRJ10DJ103T	RES , CHIP	10K OHM
R838	CRJ10DJ750T	RES , CHIP	75 OHM
R839	CRJ10DJ750T	RES , CHIP	75 OHM
R840	CRJ10DJ750T	RES , CHIP	75 OHM
R841	CRJ10DJ750T	RES , CHIP	75 OHM
R842	CRJ10DJ750T	RES , CHIP	75 OHM
R843	CRJ10DJ750T	RES , CHIP	75 OHM
R844	CRJ10DJ103T	RES , CHIP	10K OHM
R845	CRJ10DJ103T	RES , CHIP	10K OHM
R846	CRJ10DJ103T	RES , CHIP	10K OHM
R847	CRJ10DJ103T	RES , CHIP	10K OHM
R848	CRJ10DJ301T	RES , CHIP	300 OHM
R849	CRJ10DJ301T	RES , CHIP	300 OHM
R850	CRJ10DJ301T	RES , CHIP	300 OHM
R851	CRJ10DJ301T	RES , CHIP	300 OHM
R852	CRJ10DJ301T	RES , CHIP	300 OHM
R853	CRJ10DJ301T	RES , CHIP	300 OHM
R854	CRJ10DF6801T	RES, CHIP 6.8KOHM/1608/1%	6.8K OHM 1%
R855	CRJ10DF4301T	RES , CHIP	4.3K OHM 1%
R856	CRJ10DJ221T	RES , CHIP	220 OHM
R857	CRJ10DJ392T	RES . CHIP	3.9K OHM
R858	CRJ10DJ151T	RES , CHIP	150 OHM
R860	CRJ10DJ100T	RES , CHIP	10 OHM
R861	CRJ10DJ100T	RES , CHIP	10 OHM
R863	CRJ10DJ472T	RES , CHIP	4.7K OHM
R864	CRJ10DF2800T	RES , CHIP(1/10W, 280ohm, 1608, 1%)	280 OHM 1%
R865	CRJ10DF2800T	RES , CHIP(1/10W, 280ohm, 1608, 1%)	280 OHM 1%
R867	CRJ10DF1002T	RES , CHIP 1%	10K /1/10W/F
R868	CRJ10DF1002T	RES , CHIP 1%	10K /1/10W/F
R869	CRJ10DJ103T	RES , CHIP	10K OHM
R870	CRJ10DJ103T	RES , CHIP	10K OHM
R871	CRJ10DJ103T	RES , CHIP	10K OHM
R873	CRJ10DJ103T	RES , CHIP	10K OHM
R874	CRJ10DJ103T	RES , CHIP	10K OHM
R875	CRJ10DJ103T	RES , CHIP	10K OHM
R876	CRJ10DJ103T	RES , CHIP	10K OHM
R877	CRJ10DJ151T	RES , CHIP	150 OHM
R878	CRJ10DJ0R0T	RES , CHIP	0 OHM
R879	CRJ10DJ103T	RES , CHIP	10K OHM

HDMI TORINO PCB ASSY			
Ref. #	Part Number	Description	Value
R880	CRJ10DJ103T	RES , CHIP	10K OHM
R881	CRJ10DJ103T	RES , CHIP	10K OHM
R882	CRJ10DJ103T	RES , CHIP	10K OHM
R883	CRJ10DJ103T	RES , CHIP	10K OHM
R884	CRJ10DJ103T	RES , CHIP	10K OHM
R887	CRJ10DJ103T	RES , CHIP	10K OHM
R892	CRJ10DJ103T	RES , CHIP	10K OHM
R893	CRJ10DJ472T	RES , CHIP	4.7K OHM
R894	CRJ10DJ472T	RES , CHIP	4.7K OHM
R897	CRJ10DJ200T	RES , CHIP(1/10W, 20OHM,1608)	20 OHM
R898	CRJ10DJ200T	RES , CHIP(1/10W, 20OHM,1608)	20 OHM
R899	CRJ10DJ221T	RES , CHIP	220 OHM
R900	CRJ10DJ392T	RES . CHIP	3.9K OHM
R901	CRJ10DJ102T	RES , CHIP	1K OHM
R902	CRJ10DJ223T	RES , CHIP	22K OHM
R903	CRJ10DJ101T	RES , CHIP	100 OHM
R904	CRJ10DJ473T	RES , CHIP	47K OHM
R905	CRJ10DJ470T	RES , CHIP	47 OHM
R906	CRJ10DJ470T	RES , CHIP	47 OHM
R907	CRJ10DJ473T	RES , CHIP	47K OHM
R908	CRJ10DJ103T	RES , CHIP	10K OHM
R909	CRJ10DJ103T	RES , CHIP	10K OHM
R910	CRJ10DJ473T	RES , CHIP	47K OHM
R911	CRJ10DJ102T	RES , CHIP	1K OHM
R912	CRJ10DJ223T	RES , CHIP	22K OHM
R913	CRJ10DJ101T	RES , CHIP	100 OHM
R914	CRJ10DJ473T	RES , CHIP	47K OHM
R915	CRJ10DJ470T	RES , CHIP	47 OHM
R916	CRJ10DJ470T	RES , CHIP	47 OHM
R917	CRJ10DJ473T	RES , CHIP	47K OHM
R918	CRJ10DJ103T	RES , CHIP	10K OHM
R919	CRJ10DJ103T	RES , CHIP	10K OHM
R920	CRJ10DJ473T	RES , CHIP	47K OHM
R921	CRJ10DJ102T	RES , CHIP	1K OHM
R922	CRJ10DJ223T	RES , CHIP	22K OHM
R923	CRJ10DJ101T	RES , CHIP	100 OHM
R924	CRJ10DJ473T	RES , CHIP	47K OHM
R925	CRJ10DJ470T	RES , CHIP	47 OHM
R926	CRJ10DJ470T	RES , CHIP	47 OHM
R927	CRJ10DJ473T	RES , CHIP	47K OHM
R928	CRJ10DJ103T	RES , CHIP	10K OHM
R929	CRJ10DJ103T	RES , CHIP	10K OHM
R930	CRJ10DJ473T	RES , CHIP	47K OHM
R931	CRJ10DJ0R0T	RES , CHIP	0 OHM
R932	CRJ10DJ0R0T	RES , CHIP	0 OHM
R933	CRJ10DJ102T	RES , CHIP	1K OHM
R934	CRJ10DJ102T	RES , CHIP	1K OHM
R935	CRJ10DJ102T	RES , CHIP	1K OHM
R936	CRJ10DJ103T	RES , CHIP	10K OHM
R937	CRJ10DJ103T	RES , CHIP	10K OHM
R938	CRJ10DJ101T	RES , CHIP	100 OHM
R939	CRJ10DJ101T	RES , CHIP	100 OHM
R940	CRJ10DJ103T	RES , CHIP	10K OHM
R941	CRJ10DJ101T	RES , CHIP	100 OHM
R942	CRJ10DJ101T	RES , CHIP	100 OHM
R943	CRJ10DJ473T	RES , CHIP	47K OHM
R944	CRJ10DJ472T	RES , CHIP	4.7K OHM
R945	CRJ10DJ473T	RES , CHIP	47K OHM
R947	CRJ10DJ473T	RES , CHIP	47K OHM
R948	CRJ10DJ473T	RES , CHIP	47K OHM
R949	CRJ10DJ101T	RES , CHIP	100 OHM
R950	CRJ10DJ101T	RES , CHIP	100 OHM
R951	CRJ10DJ102T	RES , CHIP	1K OHM
R952	CRJ10DJ105T	RES , CHIP	1M OHM

HDMI TORINO PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
R953	CRJ10DJ0R0T	RES , CHIP	0 OHM
R954	CRJ10DJ103T	RES , CHIP	10K OHM
R955	CRJ10DJ220T	RES , CHIP	22 OHM
R956	CRJ10DJ101T	RES , CHIP	100 OHM
R958	CRJ10DJ472T	RES , CHIP	4.7K OHM
R960	CRJ10DJ101T	RES , CHIP	100 OHM
R961	CRJ10DJ101T	RES , CHIP	100 OHM
R962	CRJ10DJ103T	RES , CHIP	10K OHM
R963	CRJ10DJ473T	RES , CHIP	47K OHM
R964	CRJ10DJ101T	RES , CHIP	100 OHM
R969	CRJ10DJ102T	RES , CHIP	1K OHM
R970	CRJ10DJ222T	RES , CHIP	2.2K OHM
R971	CRJ10DJ182T	RES , CHIP	1.8K OHM
R972	CRJ10DJ103T	RES , CHIP	10K OHM
R973	CRJ10DJ103T	RES , CHIP	10K OHM
R974	CRJ10DJ182T	RES , CHIP	1.8K OHM
R975	CRJ10DJ0R0T	RES , CHIP	0 OHM
R976	CRJ10DJ101T	RES , CHIP	100 OHM
R977	CRJ10DJ102T	RES , CHIP	1K OHM
R980	CRJ10DJ0R0T	RES , CHIP	0 OHM
R981	CRJ10DJ0R0T	RES , CHIP	0 OHM
X901	HOX27000E180S	CRYSTAL , CHIP(27MHZ,SMD)	27MHz
X902	COX19660E330S	X-TAL, CHIP, 19.6608 MHz (33P)	19.6608MHz
	CMY1A297	HEAT SINK	HEAT SINK
CN80	CJP03GA19ZY	WAFER , STRAIGHT(3PIN)	WAFER
CN82	CJP05GA01ZY	WAFER(YMW025-05R)	WAFER
C634	CCFT1H104ZF	CAP , SEMICONDUCTOR	WAFER
C651	CCEA0JKR3222E	CAP , ELECT	2200UF 6.3V
C657	CCEA0JKR3222E	CAP , ELECT	2200UF 6.3V
REGULATOR PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
	COP12055I	AVR255/230 REGULATOR PCB ASS'Y	ASS'Y
C201	CCEA1EH101T	CAP , ELECT	100UF 25V
C204	CCEA1CH101T	CAP , ELECT	100UF 16V
C206	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C211	CCEA1CH101T	CAP , ELECT	100UF 16V
C212	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C213	CCEA1CH101T	CAP , ELECT	100UF 16V
C301	CCEA1EH101T	CAP , ELECT	100UF 25V
C302	CCEA1EH101T	CAP , ELECT	100UF 25V
C303	CCEA1CH101T	CAP , ELECT	100UF 16V
C304	CCEA1CH101T	CAP , ELECT	100UF 16V
C311	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 50V
C312	CCBS1H223ZFT	CAP , CERAMIC(22000PF/50V)	0.022UF 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
R201	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R203	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R211	CRD20TF4700T	RES , CARBON	470 OHM 1%
R212	CRD20TF2000T	RES , CARBON	200 OHM 1%
R301	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R302	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R303	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
BN31	CWB1C905100EN	WIRE ASS'Y	WIRE
BN43	CWB1C903150BM	WIRE ASS'Y(3P, 150MM, 2.5MM, #24)	WIRE
BN82	CWB1C905100BM	WIRE ASS'Y (5P, 2.5P, 150mm)	WIRE
CN21	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN31	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN97	CJP05GA19ZY	WAFER , STRAIGHT	WAFER
CN99	CJP02GA01ZY	WAFER , STRAIGHT, 2PIN	WAFER
D956	HVD2A04H	DIODE , RECT(2A)	DIODE

REGULATOR PCB ASSY			
Ref. #	**Part Number**	**Description**	**Value**
IC21	CVIKIA278R00PI	I.C , REGULATOR(TO-220IS-4)	KEC(KIA278R00PI)
IC23	HVIKIA378R05PI	REGULATOR(5V OUPUT LOW DROP) KIA378R05PI	KEC(KIA378R05PI)
IC31	CVIKIA278R00PI	I.C , REGULATOR(TO-220IS-4)	KEC(KIA278R00PI)
IC32	CVIKIA378R09PI	I.C , REGULATOR(+9V, 3A, TO-220IS-4)	KEC(KIA378R09PI)
IC93	CVIKIA7905PI	I.C , REGULATOR(-5V)	KEC(KIA7905PI)
IC94	HVIKIA7809API	I.C , REGULATOR +9V	KEC(KIA7809API)

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)

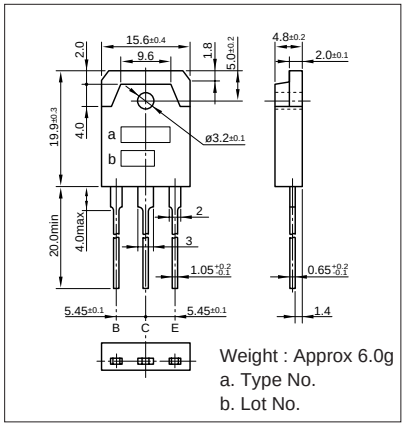
Symbol	Conditions	2SB1560	Unit
I_{CBO}	V_{CB}=–160V	–100max	μA
I_{EBO}	V_{EB}=–5V	–100max	μA
$V_{(BR)CEO}$	I_C=–30mA	–150min	V
h_{FE}	V_{CE}=–4V, I_C=–7A	5000min*	
$V_{CE(sat)}$	I_C=–7A, I_B=–7mA	–2.5max	V
$V_{BE(sat)}$	I_C=–7A, I_B=–7mA	–3.0max	V
fr	V_{CE}=–12V, I_E=2A	50typ	MHz
C_{OB}	V_{CB}=–10V,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

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

Typical Switching Characteristics (Common Emitter)

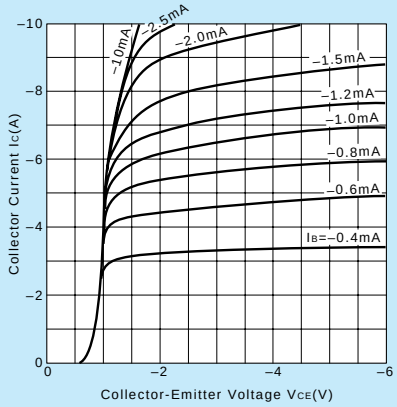
V_{CC} (V)	R_L (Ω)	I_C (A)	V_{BB1} (V)	V_{BB2} (V)	I_{B1} (mA)	I_{B2} (mA)	ton (μs)	tstg (μs)	tf (μs)
–70	10	–7	–10	5	–7	7	0.8typ	3.0typ	1.2typ

External Dimensions MT-100(TO3P)

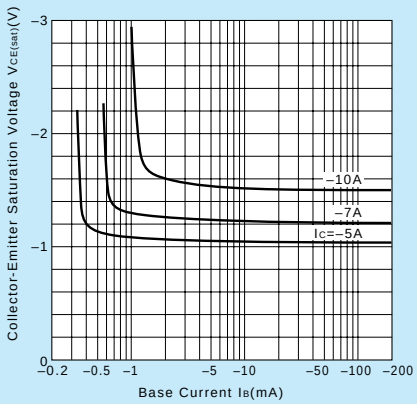


Weight : Approx 6.0g
a. Type No.
b. Lot No.

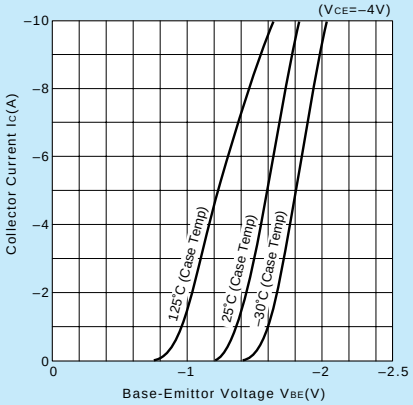
I_C–V_{CE} Characteristics (Typical)



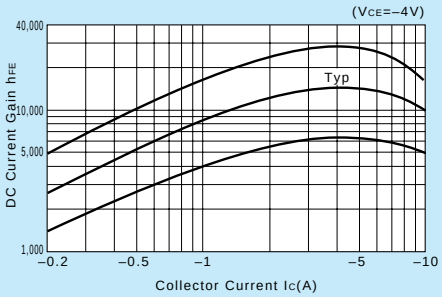
$V_{CE(sat)}$–I_B Characteristics (Typical)



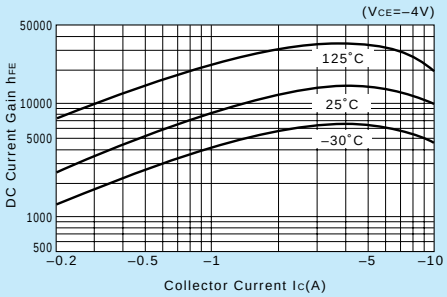
I_C–V_{BE} Temperature Characteristics (Typical)



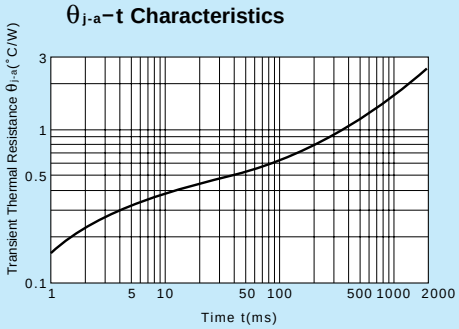
h_{FE}–I_C Characteristics (Typical)



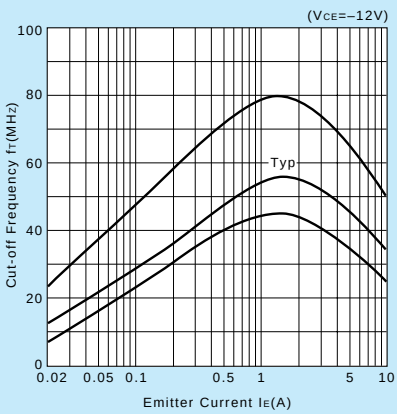
h_{FE}–I_C Temperature Characteristics (Typical)



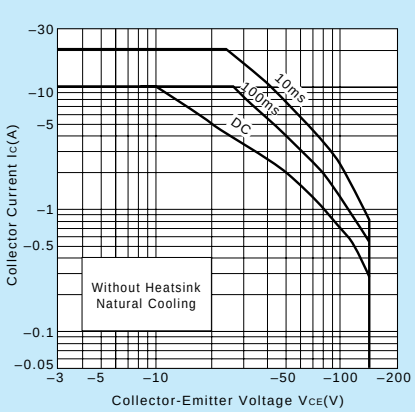
$\theta_{j\text{-}a}$–t Characteristics



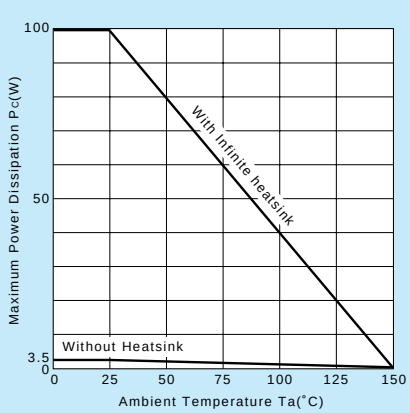
f_T–I_E Characteristics (Typical)



Safe Operating Area (Single Pulse)

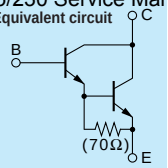


Pc–Ta Derating



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)

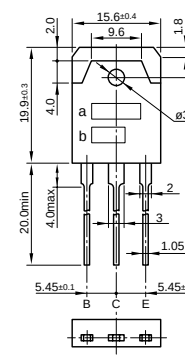
Symbol	Conditions	2SD2390	Unit
I_{CBO}	V_{CB}=160V	100max	μA
I_{EBO}	V_{EB}=5V	100max	μA
$V_{(BR)CEO}$	I_C=30mA	150min	V
h_{FE}	V_{CE}=4V, I_C=7A	5000min*	
$V_{CE(sat)}$	I_C=7A, I_B=7mA	2.5max	V
$V_{BE(sat)}$	I_C=7A, I_B=7mA	3.0max	V
f_T	V_{CE}=12V, I_E=–2A	55typ	MHz
C_{OB}	V_{CB}=10V, f=1MHz	95typ	pF

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

Typical Switching Characteristics (Common Emitter)

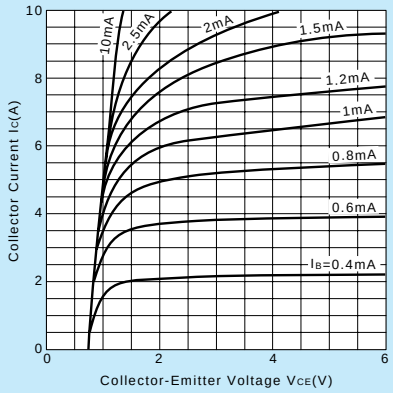
V_{CC} (V)	R_L (Ω)	I_C (A)	V_{BB1} (V)	V_{BB2} (V)	I_{B1} (mA)	I_{B2} (mA)	ton (μs)	tstg (μs)	tf (μs)
70	10	7	10	–5	7	–7	0.5typ	10.0typ	1.1typ

External Dimensions MT-100(TO3P)

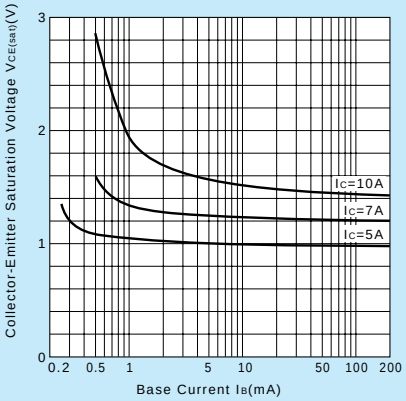


Weight : Approx 2.0g
a. Type No.
b. Lot No.

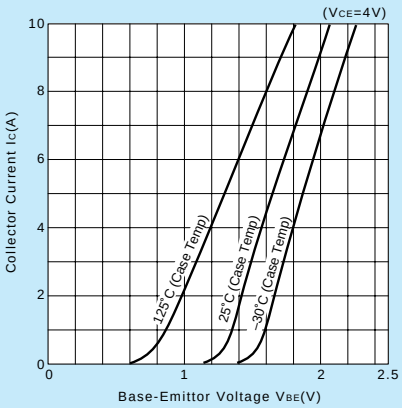
I_C–V_{CE} Characteristics (Typical)



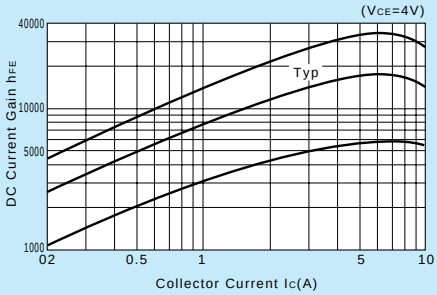
$V_{CE(sat)}$–I_B Characteristics (Typical)



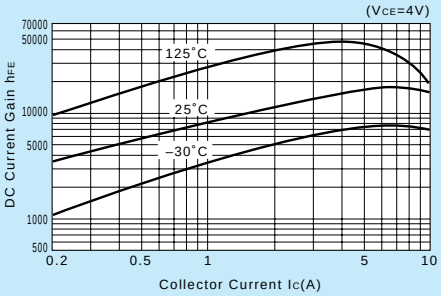
I_C–V_{BE} Temperature Characteristics (Typical)



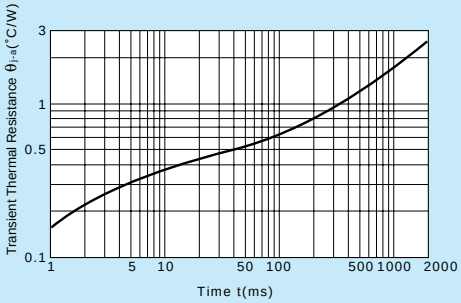
h_{FE}–I_C Characteristics (Typical)



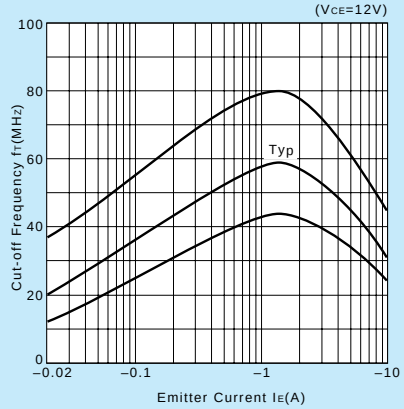
h_{FE}–I_C Temperature Characteristics (Typical)



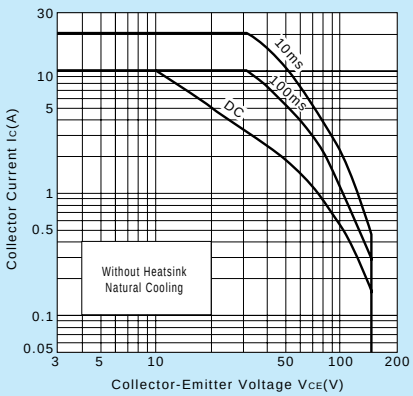
$\theta_{j\text{-}a}$–t Characteristics



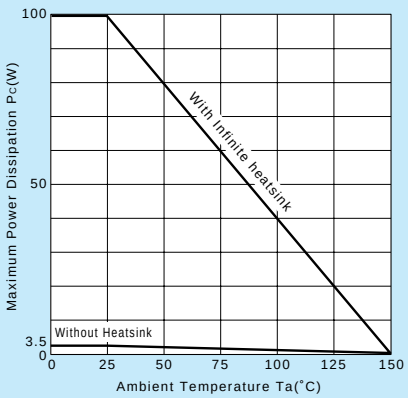
f_T–I_E Characteristics (Typical)

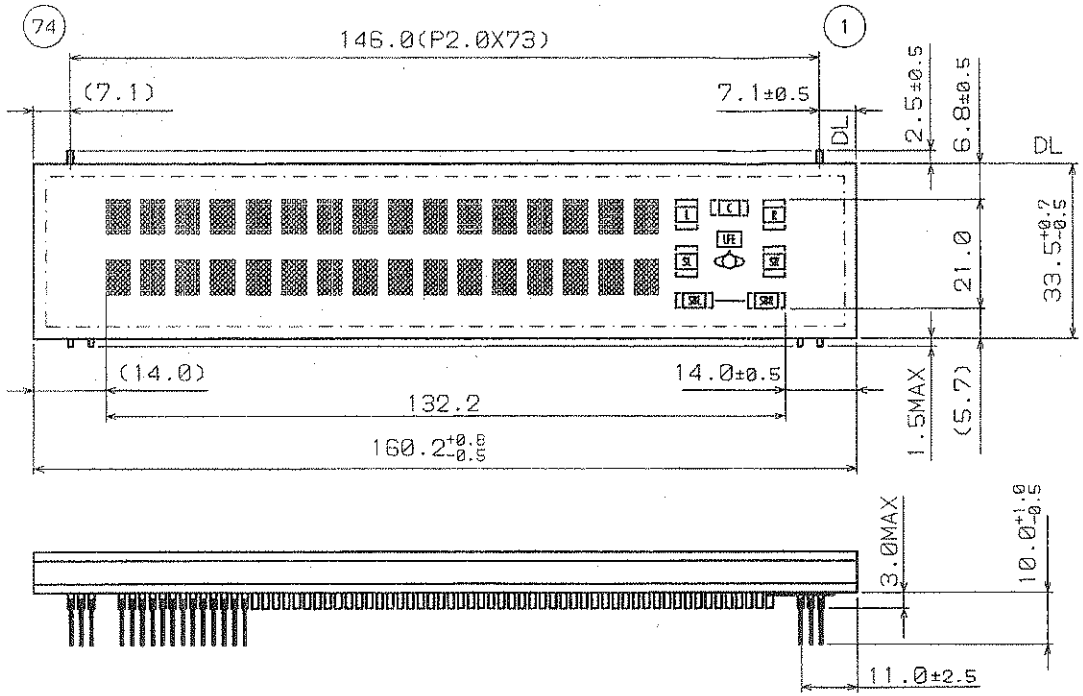


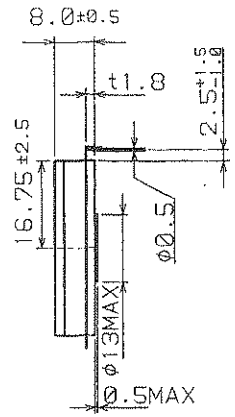
Safe Operating Area (Single Pulse)

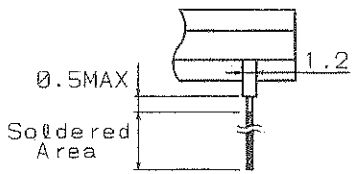


Pc–Ta Derating









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	VDD	VOSC	VOSC	IRES-TS	CP	CP	DA	TSA	TSB	Q11 7G	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

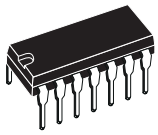
(unit in mm)

17-BT-31GINK
OUTER DIMENSION

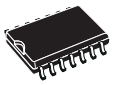
74ACT04

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

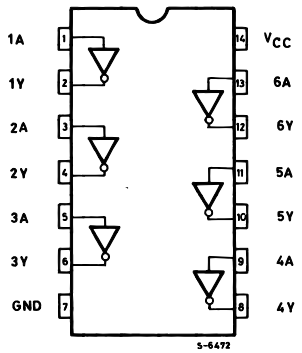
PACKAGE	TUBE	T & R
DIP	74ACT04B	
SOP	74ACT04M	74ACT04MTR
TSSOP		74ACT04TTR

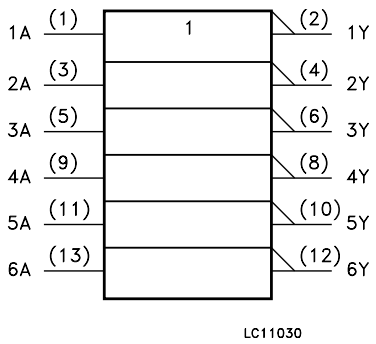
DESCRIPTION

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.

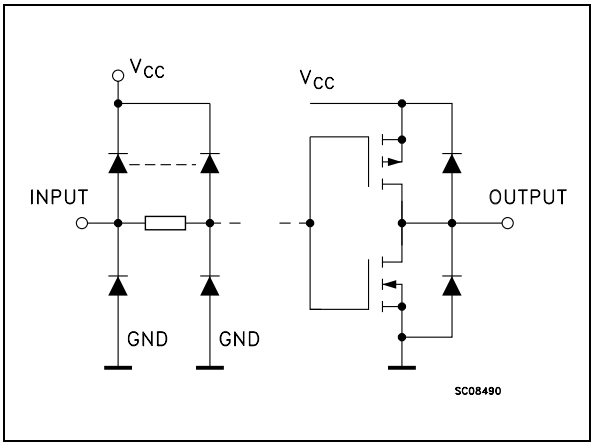
PIN CONNECTION AND IEC LOGIC SYMBOLS





74ACT04

INPUT AND OUTPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

PIN No	SYMBOL	NAME AND FUNCTION
1, 3, 5, 9, 11, 13	1A to 6A	Data Inputs
2, 4, 6, 8, 10, 12	1Y to 6Y	Data Outputs
7	GND	Ground (0V)
14	V_{CC}	Positive Supply Voltage

TRUTH TABLE

A	Y
L	H
H	L

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.5 to +7	V
V_I	DC Input Voltage	-0.5 to V_{CC} + 0.5	V
V_O	DC Output Voltage	-0.5 to V_{CC} + 0.5	V
I_{IK}	DC Input Diode Current	± 20	mA
I_{OK}	DC Output Diode Current	± 20	mA
I_O	DC Output Current	± 50	mA
I_{CC} or I_{GND}	DC V_{CC} or Ground Current	± 200	mA
T_{stg}	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature (10 sec)	300	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied.

RECOMMENDED OPERATING CONDITIONS

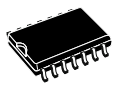
Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	4.5 to 5.5	V
V_I	Input Voltage	0 to V_{CC}	V
V_O	Output Voltage	0 to V_{CC}	V
T_{op}	Operating Temperature	-55 to 125	°C
dt/dv	Input Rise and Fall Time V_{CC} = 4.5 to 5.5V (note 1)	8	ns/V

1) V_{IN} from 0.8V to 2.0V

74LCX32

LOW VOLTAGE CMOS QUAD 2-INPUT OR GATE WITH 5V TOLERANT INPUTS

- 5V TOLERANT INPUTS
- HIGH SPEED:
  t_{PD} = 5.2ns (MAX.) at V_{CC} = 3V
- POWER DOWN PROTECTION ON INPUTS AND OUTPUTS
- SYMMETRICAL OUTPUT IMPEDANCE:
  $|I_{OH}| = I_{OL}$ = 24mA (MIN) at V_{CC} = 3V
- PCI BUS LEVELS GUARANTEED AT 24 mA
- BALANCED PROPAGATION DELAYS:
  $t_{PLH} \cong t_{PHL}$
- OPERATING VOLTAGE RANGE:
  V_{CC}(OPR) = 2.0V to 3.6V (1.5V Data Retention)
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 32
- LATCH-UP PERFORMANCE EXCEEDS 500mA (JESD 17)
- ESD PERFORMANCE:
  HBM > 2000V (MIL STD 883 method 3015);
  MM > 200V



SOP

TSSOP

Table 1: Order Codes

PACKAGE	T & R
SOP	74LCX32MTR
TSSOP	74LCX32TTR

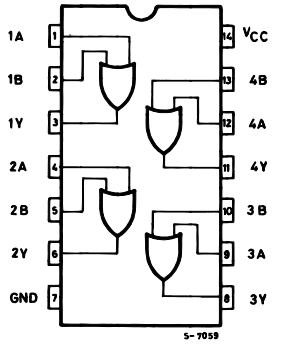
DESCRIPTION

The 74LCX32 is a low voltage CMOS QUAD 2-INPUT OR GATE fabricated with sub-micron silicon gate and double-layer metal wiring C^2MOS technology. It is ideal for low power and high speed 3.3V applications; it can be interfaced to 5V signal environment for inputs.

It has same speed performance at 3.3V than 5V AC/ACT family, combined with a lower power consumption.

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

Figure 1: Pin Connection And IEC Logic Symbols



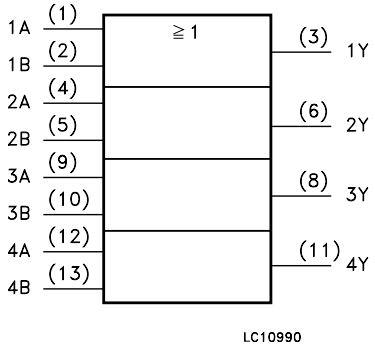


Figure 2: Input And Output Equivalent Circuit

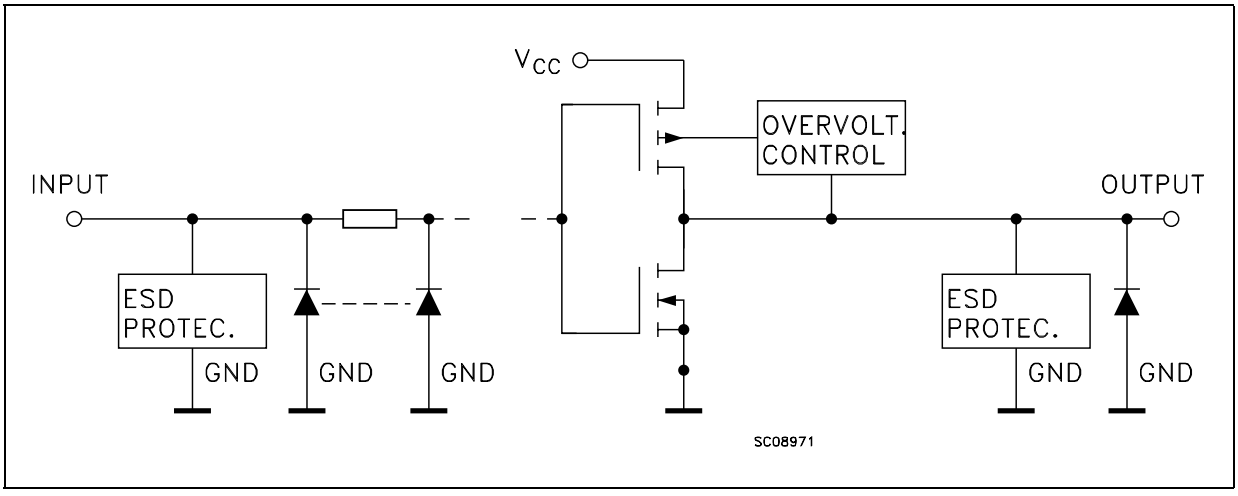


Table 2: Pin Description

PIN N°	SYMBOL	NAME AND FUNCTION
1, 4, 9, 12	1A to 4A	Data Inputs
2, 5, 10, 13	1B to 4B	Data Inputs
3, 6, 8, 11	1Y to 4Y	Data Outputs
7	GND	Ground (0V)
14	V_{CC}	Positive Supply Voltage

Table 3: Truth Table

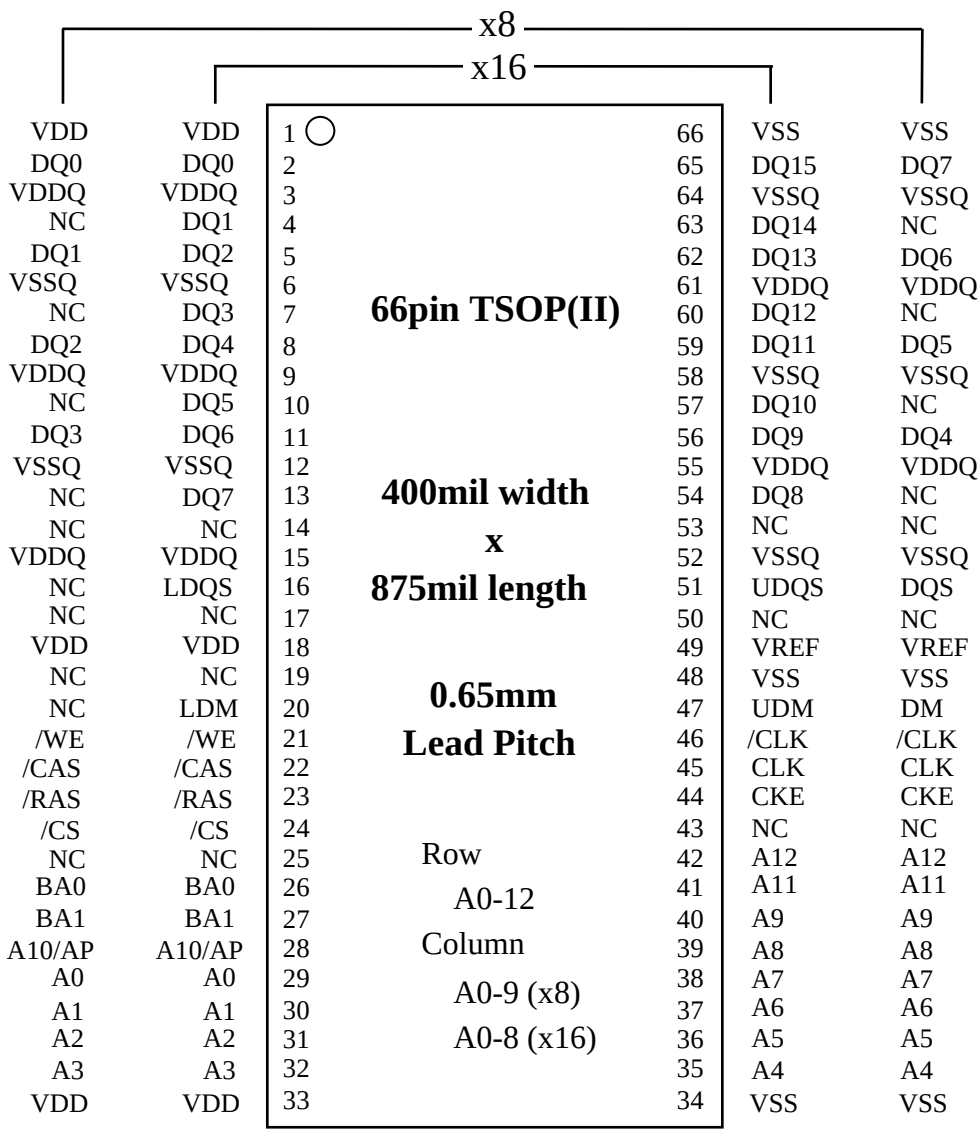
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

Table 4: Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.5 to +7.0	V
V_I	DC Input Voltage	-0.5 to +7.0	V
V_O	DC Output Voltage (V_{CC} = 0V)	-0.5 to +7.0	V
V_O	DC Output Voltage (High or Low State) (note 1)	-0.5 to V_{CC} + 0.5	V
I_{IK}	DC Input Diode Current	- 50	mA
I_{OK}	DC Output Diode Current (note 2)	- 50	mA
I_O	DC Output Current	± 50	mA
I_{CC}	DC Supply Current per Supply Pin	± 100	mA
I_{GND}	DC Ground Current per Supply Pin	± 100	mA
T_{stg}	Storage Temperature	-65 to +150	°C
T_L	Lead Temperature (10 sec)	300	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these conditions is not implied
1) I_O absolute maximum rating must be observed
2) V_O < GND

Pin Assignment (Top View) 66-pin TSOP



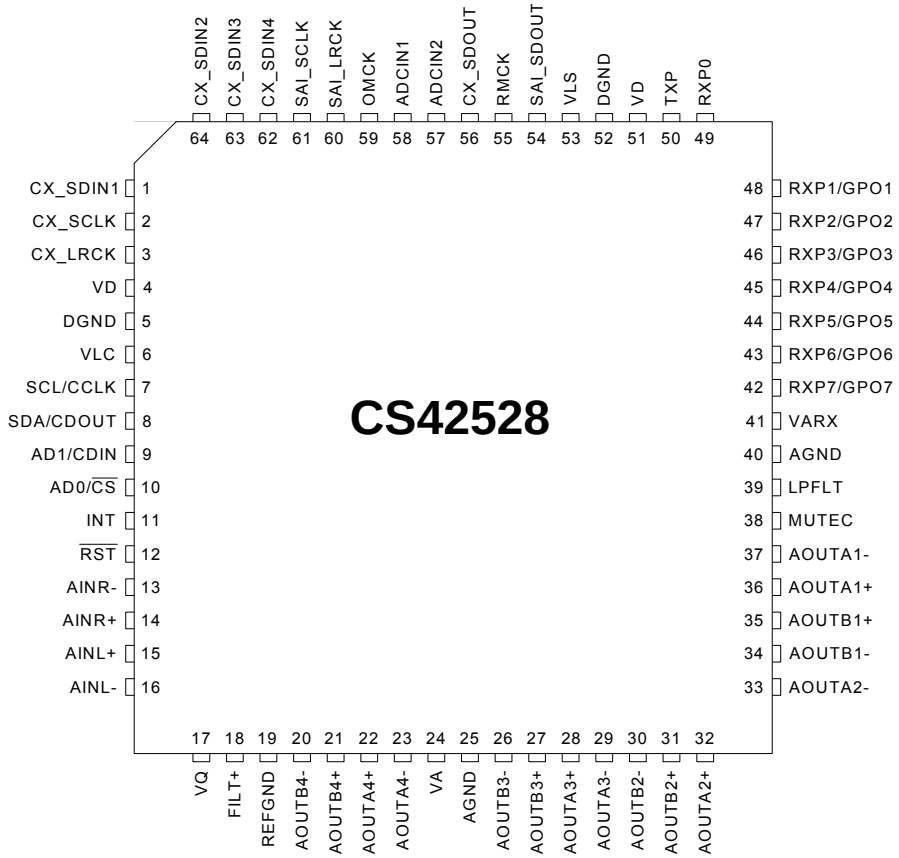
VDD	VDD	1	66	VSS	VSS
DQ0	DQ0	2	65	DQ15	DQ7
VDDQ	VDDQ	3	64	VSSQ	VSSQ
NC	DQ1	4	63	DQ14	NC
DQ1	DQ2	5	62	DQ13	DQ6
VSSQ	VSSQ	6	61	VDDQ	VDDQ
NC	DQ3	7	60	DQ12	NC
DQ2	DQ4	8	59	DQ11	DQ5
VDDQ	VDDQ	9	58	VSSQ	VSSQ
NC	DQ5	10	57	DQ10	NC
DQ3	DQ6	11	56	DQ9	DQ4
VSSQ	VSSQ	12	55	VDDQ	VDDQ
NC	DQ7	13	54	DQ8	NC
NC	NC	14	53	NC	NC
VDDQ	VDDQ	15	52	VSSQ	VSSQ
NC	LDQS	16	51	UDQS	DQS
NC	NC	17	50	NC	NC
VDD	VDD	18	49	VREF	VREF
NC	NC	19	48	VSS	VSS
NC	LDM	20	47	UDM	DM
/WE	/WE	21	46	/CLK	/CLK
/CAS	/CAS	22	45	CLK	CLK
/RAS	/RAS	23	44	CKE	CKE
/CS	/CS	24	43	NC	NC
NC	NC	25	42	A12	A12
BA0	BA0	26	41	A11	A11
BA1	BA1	27	40	A9	A9
A10/AP	A10/AP	28	39	A8	A8
A0	A0	29	38	A7	A7
A1	A1	30	37	A6	A6
A2	A2	31	36	A5	A5
A3	A3	32	35	A4	A4
VDD	VDD	33	34	VSS	VSS

CLK, /CLK	**: Master Clock**	**A0-12**	**: Address Input**
CKE	**: Clock Enable**	**BA0,1**	**: Bank Address Input**
/CS	**: Chip Select**	**Vdd**	**: Power Supply**
/RAS	**: Row Address Strobe**	**VddQ**	**: Power Supply for Output**
/CAS	**: Column Address Strobe**	**Vss**	**: Ground**
/WE	**: Write Enable**	**VssQ**	**: Ground for Output**
DQ0-15	**: Data I/O (x16)**		
DQ0-7	**: Data I/O (x8)**		
UDM, LDM	**: Write Mask (x16)**		
DM	**: Write Mask (x8)**		
UDQS, LDQS	**: Data Strobe (x16)**		
DQS	**: Data Strobe (x8)**		

PIN FUNCTION

SYMBOL	TYPE	DESCRIPTION
CLK, /CLK	Input	Clock: CLK and /CLK are differential clock inputs. All address and control input signals are sampled on the crossing of the positive edge of CLK and negative edge of /CLK. Output (read) data is referenced to the crossings of CLK and /CLK (both directions of crossing).
CKE	Input	Clock Enable: CKE controls internal clock. When CKE is low, internal clock for the following cycle is ceased. CKE is also used to select auto / self refresh. After self refresh mode is started, CKE becomes asynchronous input. Self refresh is maintained as long as CKE is low.
/CS	Input	Chip Select: When /CS is high, any command means No Operation.
/RAS, /CAS, /WE	Input	Combination of /RAS, /CAS, /WE defines basic commands.
A0-12	Input	A0-12 specify the Row / Column Address in conjunction with BA0,1. The Row Address is specified by A0-12. The Column Address is specified by A0-9(x8) and A0-8(x16). A10 is also used to indicate precharge option. When A10 is high at a read / write command, an auto precharge is performed. When A10 is high at a precharge command, all banks are precharged.
BA0,1	Input	Bank Address: BA0,1 specifies one of four banks to which a command is applied. BA0,1 must be set with ACT, PRE, READ, WRITE commands.
DQ0-7 (x8), DQ0-15 (x16),	Input / Output	Data Input/Output: Data bus
DQS (x8) UDQS, LDQS (x16)	Input / Output	Data Strobe: Output with read data, input with write data. Edge-aligned with read data, centered in write data. Used to capture write data. For the x16, LDQS corresponds to the data on DQ0-DQ7; UDQS correspond to the data on DQ8-DQ15
DM (x8) UDM, LDM (x16)	Input	Input Data Mask: DM is an input mask signal for write data. Input data is masked when DM is sampled HIGH along with that input data during a WRITE access. DM is sampled on both edges of DQS. Although DM pins are input only, the DM loading matches the DQ and DQS loading. For the x16, LDM corresponds to the data on DQ0-DQ7; UDM corresponds to the data on DQ8-DQ15.
Vdd, Vss	Power Supply	Power Supply for the memory array and peripheral circuitry.
VddQ, VssQ	Power Supply	VddQ and VssQ are supplied to the Output Buffers only.
Vref	Input	SSTL_2 reference voltage.

2. PIN DESCRIPTIONS



Pin Name	#	Pin Description
CX_SDIN1 **CX_SDIN2** **CX_SDIN3** **CX_SDIN4**	1 64 63 62	**Codec Serial Audio Data Input** (*Input*) - Input for two's complement serial audio data.
CX_SCLK	2	**CODEC Serial Clock** *(Input/Output)* - Serial clock for the CODEC serial audio interface.
CX_LRCK	3	**CODEC Left Right Clock** (*Input*/*Output*) - Determines which channel, Left or Right, is currently active on the CODEC serial audio data line.
VD	4 51	**Digital Power** (*Input*) - Positive power supply for the digital section.
DGND	5 52	**Digital Ground** (*Input*) - Ground reference. Should be connected to digital ground.
VLC	6	**Control Port Power** (*Input*) **-** Determines the required signal level for the control port.
SCL/CCLK	7	**Serial Control Port Clock** (*Input*) - Serial clock for the serial control port. Requires an external pull-up resistor to the logic interface voltage in I^2C mode as shown in the Typical Connection Diagram.
SDA/CDOUT	8	**Serial Control Data** (*Input/Output*) **-** SDA is a data I/O line in I^2C mode and requires an external pull-up resistor to the logic interface voltage, as shown in the Typical Connection Diagram. CDOUT is the output data line for the control port interface in SPI mode.
AD1/CDIN	9	**Address Bit 1 (I^2C)/Serial Control Data (SPI)** (*Input*) - AD1 is a chip address pin in I^2C mode; CDIN is the input data line for the control port interface in SPI mode.

AD0/$\overline{CS}$	10	**Address Bit 0 (I^2C)/Control Port Chip Select (SPI)** *(Input)* **-** AD0 is a chip address pin in I^2C mode; $\overline{CS}$ is the chip select signal in SPI mode.
INT	11	**Interrupt** *(Output)* - The CS42528 will generate an interrupt condition as per the Interrupt Mask register. See “Interrupts” on page 40 for more details.
$\overline{RST}$	12	**Reset** (*Input*) - The device enters a low power mode and all internal registers are reset to their default settings when low.
AINR- **AINR+**	13 14	**Differential Right Channel Analog Input** (*Input*) - Signals are presented differentially to the delta-sigma modulators via the AINR+/- pins.
AINL+ **AINL-**	15 16	**Differential Left Channel Analog Input** (*Input*) - Signals are presented differentially to the delta-sigma modulators via the AINL+/- pins.
VQ	17	**Quiescent Voltage** (*Output*) **-** Filter connection for internal quiescent reference voltage.
FILT+	18	**Positive Voltage Reference** (*Output*) - Positive reference voltage for the internal sampling circuits.
REFGND	19	**Reference Ground** (*Input*) - Ground reference for the internal sampling circuits.
AOUTA1 +,- **AOUTB1 +,-** **AOUTA2 +,-** **AOUTB2 +,-** **AOUTA3 +,-** **AOUTB3 +,-** **AOUTA4 +,-** **AOUTB4 +,-**	36,37 35,34 32,33 31,30 28,29 27,26 22,23 21,20	**Differential Analog Output** (*Output*) - The full-scale differential analog output level is specified in the Analog Characteristics specification table.
VA **VARX**	24 41	**Analog Power** (*Input*) - Positive power supply for the analog section.
AGND	25 40	**Analog Ground** (*Input*) - Ground reference. Should be connected to analog ground.
MUTEC	38	**Mute Control** (*Output*) - The Mute Control pin outputs high impedance following an initial power-on condition or whenever the PDN bit is set to a ‘1’, forcing the codec into power-down mode. The signal will remain in a high impedance state as long as the part is in power-down mode. The Mute Control pin goes to the selected “active” state during reset, muting, or if the master clock to left/right clock frequency ratio is incorrect. This pin is intended to be used as a control for external mute circuits to prevent the clicks and pops that can occur in any single supply system. The use of external mute circuits are not mandatory but may be desired for designs requiring the absolute minimum in extraneous clicks and pops.
LPFLT	39	**PLL Loop Filter** (*Output*) - An RC network should be connected between this pin and ground.
RXP7/GPO7 **RXP6/GPO6** **RXP5/GPO5** **RXP4/GPO4** **RXP3/GPO3** **RXP2/GPO2** **RXP1/GPO1**	42 43 44 45 46 47 48	**S/PDIF Receiver Input/ General Purpose Output** (*Input/Output*) - Receiver inputs for S/PDIF encoded data. The CS42528 has an internal 8:2 multiplexer to select the active receiver port, according to the Receiver Mode Control 2 register. These pins can also be configured as general purpose output pins, ADC Overflow indicators or Mute Control outputs according to the RXP/General Purpose Pin Control registers.
RXP0	49	**S/PDIF Receiver Input** (*Input*) - Dedicated receiver input for S/PDIF encoded data.
TXP	50	**S/PDIF Transmitter Output** (*Output*) - S/PDIF encoded data output, mapped directly from one of the receiver inputs as indicated by the Receiver Mode Control 2 register.
VLS	53	**Serial Port Interface Power** (*Input*) - Determines the required signal level for the serial port interfaces.
SAI_SDOUT	54	**Serial Audio Interface Serial Data Output** (*Output*) - Output for two’s complement serial audio PCM data from the S/PDIF incoming stream. This pin can also be configured to transmit the output of the internal and external ADCs.
RMCK	55	**Recovered Master Clock** (*Output*) - Recovered master clock output from the External Clock Reference (OMCK, pin 59) or the PLL which is locked to the incoming S/PDIF stream or CX_LRCK.

CX_SDOUT	56	**CODEC Serial Data Output** (*Output*) - Output for two's complement serial audio data from the internal and external ADCs.
ADCIN1 **ADCIN2**	58 57	**External ADC Serial Input** (*Input*) - The CS42528 provides for up to two external stereo analog to digital converter inputs to provide a maximum of six channels on one serial data output line when the CS42528 is placed in One Line mode.
OMCK	59	**External Reference Clock** (*Input*) - External clock reference that must be within the ranges specified in the register "OMCK Frequency (OMCK Freqx)" on page 54.
SAI_LRCK	60	**Serial Audio Interface Left/Right Clock** (*Input*/*Output*) - Determines which channel, Left or Right, is currently active on the serial audio data line.
SAI_SCLK	61	**Serial Audio Interface Serial Clock** *(Input/Output)* - Serial clock for the Serial Audio Interface.

8. Device Pin-Out Diagram

8.1 144-pin LQFP Pin-Out Diagram

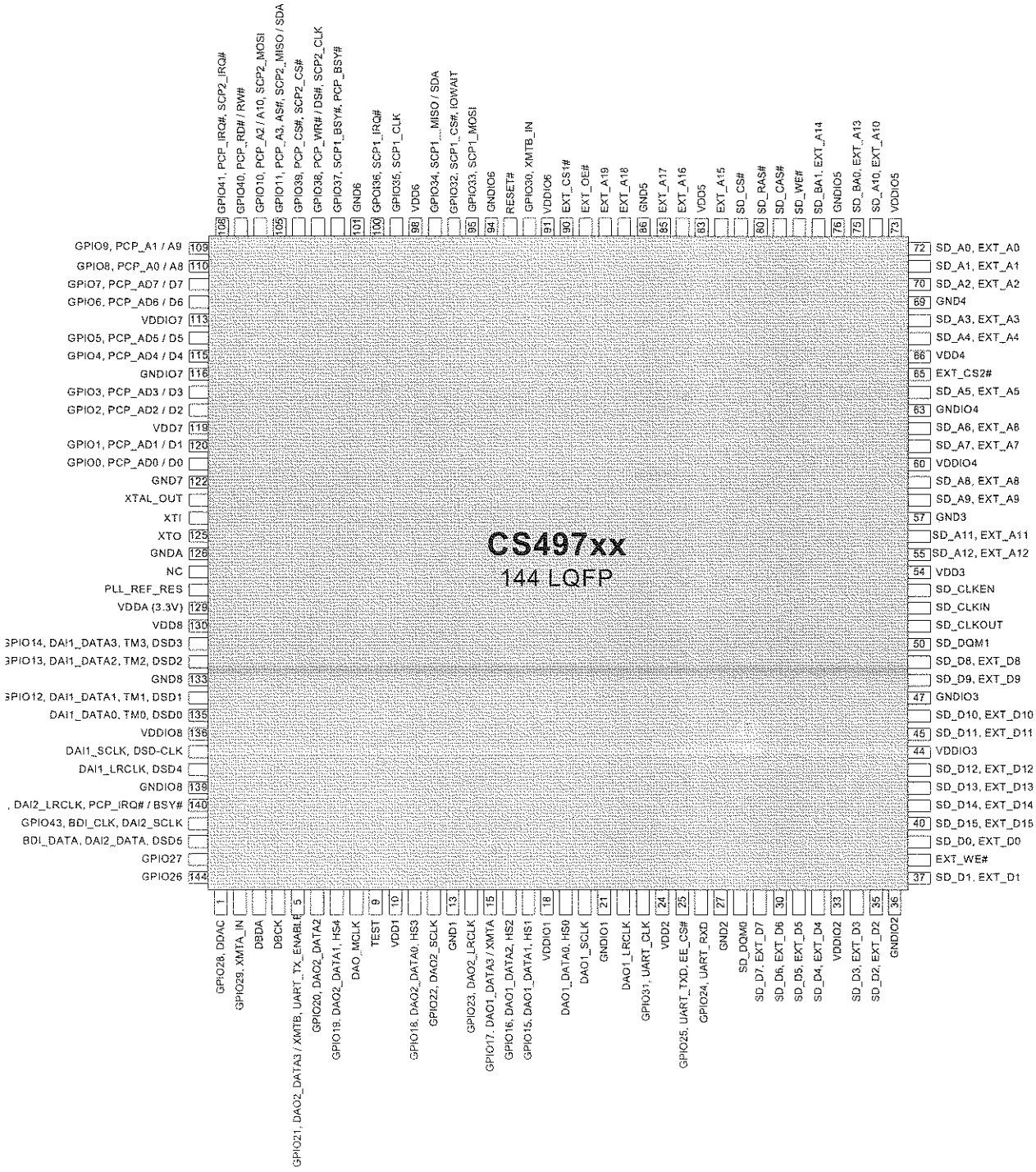


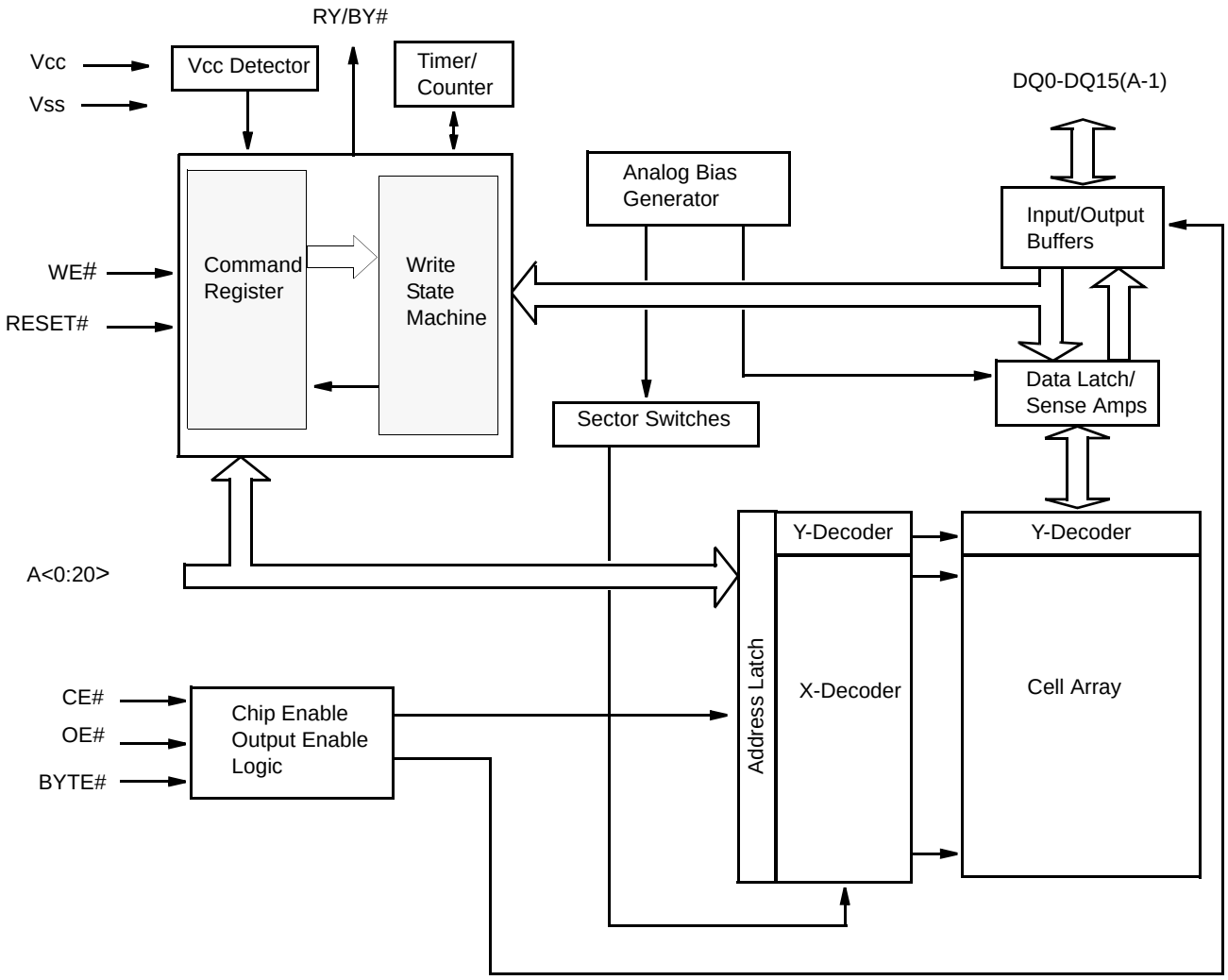
Figure 23. 144-Pin LQFP Pin-Out Diagram

Excel Semiconductor inc.

PRODUCT SELECTOR GUIDE

Family Part Number	ES29LV320E	
Voltage Range	2.7V ~ 3.6 V	
Speed Option	**70**	**90**
Max Access Time (ns)	70	90
CE# Access (ns)	70	90
OE# Access (ns)	30	40

FUNCTION BLOCK DIAGRAM

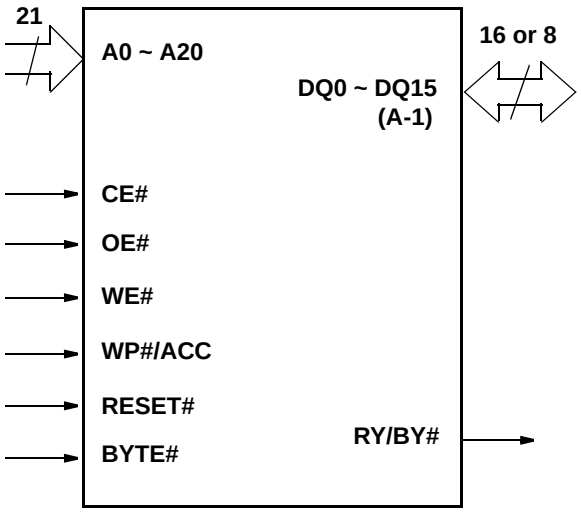


Excel Semiconductor inc.

PIN DESCRIPTION

Pin	Description
A0-A20	21 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
WP#/ACC	Hardware Write Protect/Acceleration Pin
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



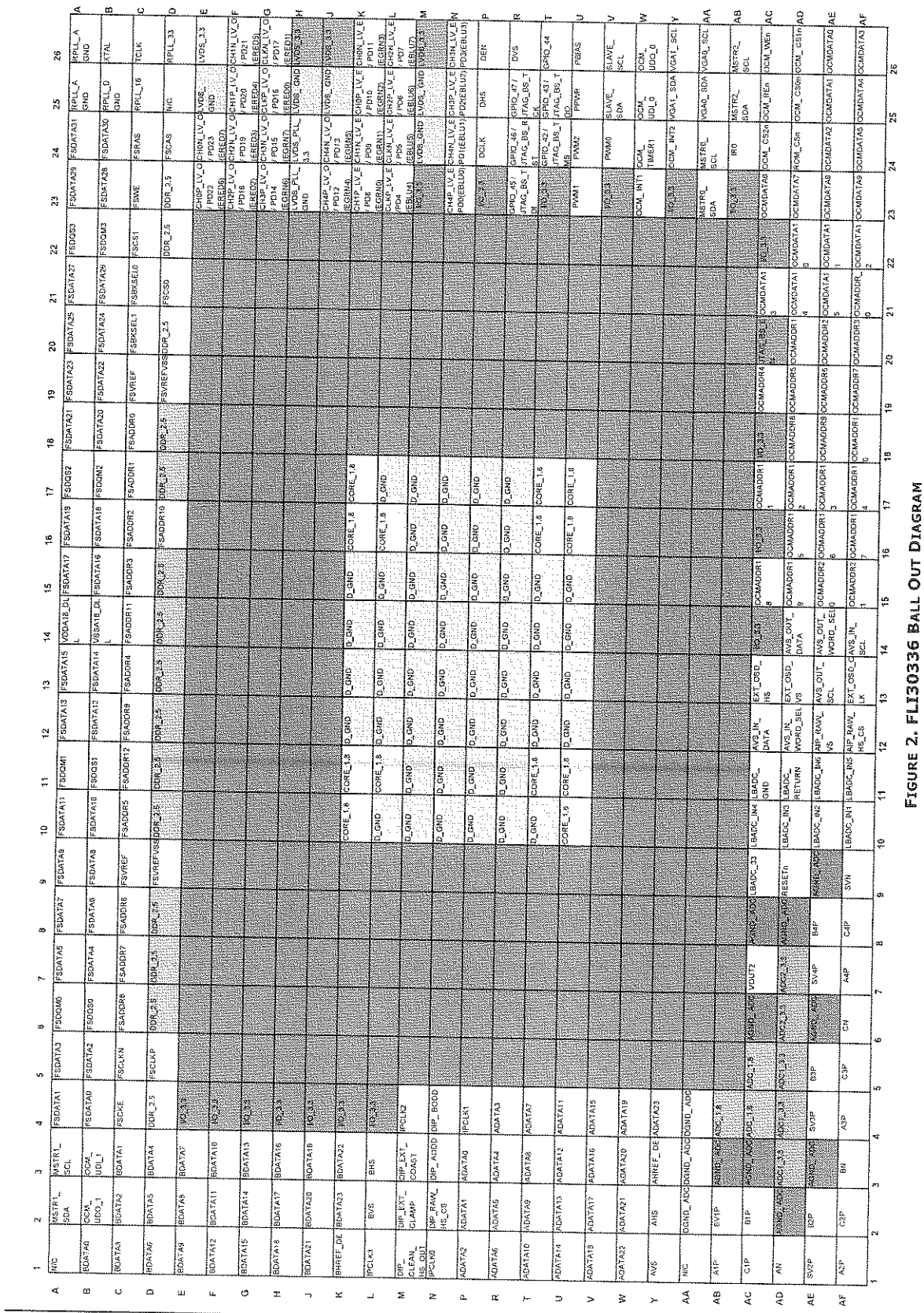


FIGURE 2. FLI30336 BALL OUT DIAGRAM

3 FLI30336 BALL LIST

I/O Legend: **A** = Analog, **I** = Input, **O** = Output, **P** = Power, **G**= Ground

Note: Each ball can have multiple functionalities which are configured under register control. The alternate ball functionality for each ball is listed under the Ball Name column in parenthesis.

ALTERNATE FUNCTION	INFORMATION AVAILABLE IN THE FOLLOWING:
TTL Double Wide	Table 3, Table 11
LVDS Single Wide	Table 11

Note: The full GPIO table can be found in the Board User Guide.

TABLE 1. DIGITAL INPUT PORT CLOCKS

BALL NAME	I/O	BALL #	DESCRIPTION
IPCLK0 (MEDIA_CARD_CLK)	I/O	N1	Digital input port Clock 0. May also be configured as output to drive the Media Card Clock.
IPCLK1	I/O	P4	Digital input port Clock 1.
IPCLK2 (GPIO_14)	I/O	M4	Digital input port Clock 2. May also be configured as GPIO_14.
IPCLK3 (GPIO_15)	I/O	L1	Digital input port Clock 3. May also be configured as GPIO_15.

TABLE 2. DIGITAL A INPUT PORT

BALL NAME	I/O	BALL #	DESCRIPTION
AVS (GPIO_16) (MEDIA_CARD_VS)	I/O	Y1	Digital input port A VSync. May also be configured as GPIO_16. May also be configured as output to drive Media Card Vertical Sync.
AHS (GPIO_17) (MEDIA_CARD_HS)	I/O	Y2	Digital input port A HSync. May also be configured as GPIO_17. May also be configured as output to drive Media Card Horizontal Sync.
AHREF_DE (GPIO_18)	I/O	Y3	Digital input port A Data Enable - optionally used to indicate active pixel data. May also be configured as GPIO_18.
DIP_AODD (GPIO_26) (MEDIA_CARD_ODD)	I/O	N3	Digital input port 8?channel odd input. May be configured as GPIO_26. May also be configured as output to drive Media Card ODD.
DIP_RAW_HS_CS	I	N2	Digital input port HSync or CSync input. May be used with external ADC/PLL.
DIP_EXT_CLAMP (GPIO_23)	I/O	M2	Digital input port clamp output. May be used with external ADC. May be configured as GPIO_23. Note: Power-on-reset defaults this ball to be GPI_23 function.
DIP_EXT_COAST (GPIO_24)	I/O	M3	Digital input port coast output. May be used with external ADC/PLL. May be configured as GPIO_24. Note: Power-on-reset defaults this ball to be GPI_24 function.
DIP_CLEAN_HS_OUT (GPIO_22) (FAST_BLANK)	I/O	M1	Digital input port HSync out. May be used with external ADC/PLL. May be configured as GPIO_22. Note: Power-on-reset defaults this ball to be GPI_22 function. May be configured as SCART port Fast Blank input.
ADATA23 (GPIO_2[7])	I/O	Y4	Digital input port A bit 23. May also be configured as GPIO_GROUP_2_BIT7.

TABLE 2. DIGITAL A INPUT PORT

BALL NAME	I/O	BALL #	DESCRIPTION
ADATA22 (GPIO_2[6])	I/O	W1	Digital input port A bit 22. May also be configured as GPIO_GROUP_2_BIT6.
ADATA21 (GPIO_2[5])	I/O	W2	Digital input port A bit 21. May also be configured as GPIO_GROUP_2_BIT5.
ADATA20 (GPIO_2[4])	I/O	W3	Digital input port A bit 20. May also be configured as GPIO_GROUP_2_BIT4.
ADATA19 (GPIO_2[3])	I/O	W4	Digital input port A bit 19. May also be configured as GPIO_GROUP_2_BIT3.
ADATA18 (GPIO_2[2])	I/O	V1	Digital input port A bit 18. May also be configured as GPIO_GROUP_2_BIT2.
ADATA17 (GPIO_2[1])	I/O	V2	Digital input port A bit 17. May also be configured as GPIO_GROUP_2_BIT1.
ADATA16 (GPIO_2[0])	I/O	V3	Digital input port A bit 16. May also be configured as GPIO_GROUP_2_BIT0.
ADATA15 (GPIO_1[7])	I/O	V4	Digital input port A bit 15. May also be configured as GPIO_GROUP_1_BIT7.
ADATA14 (GPIO_1[6])	I/O	U1	Digital input port A bit 14. May also be configured as GPIO_GROUP_1_BIT6.
ADATA13 (GPIO_1[5])	I/O	U2	Digital input port A bit 13. May also be configured as GPIO_GROUP_1_BIT5.
ADATA12 (GPIO_1[4])	I/O	U3	Digital input port A bit 12. May also be configured as GPIO_GROUP_1_BIT4.
ADATA11 (GPIO_1[3])	I/O	U4	Digital input port A bit 11. May also be configured as GPIO_GROUP_1_BIT3.
ADATA10 (GPIO_1[2])	I/O	T1	Digital input port A bit 10. May also be configured as GPIO_GROUP_1_BIT2.
ADATA9 (GPIO_1[1])	I/O	T2	Digital input port A bit 9. May also be configured as GPIO_GROUP_1_BIT1.
ADATA8 (GPIO_1[0])	I/O	T3	Digital input port A bit 8. May also be configured as GPIO_GROUP_1_BIT0.
ADATA7 (GPIO_0[7]) (MEDIA_CARD_D7)	I/O	T4	Digital input port A bit 7. May also be configured as GPIO_GROUP_0_BIT7. May also be configured as output to drive Media Card Data bit 7.
ADATA6 (GPIO_0[6]) (MEDIA_CARD_D6)	I/O	R1	Digital input port A bit 6. May also be configured as GPIO_GROUP_0_BIT6. May also be configured as output to drive Media Card Data bit 6.
ADATA5 (GPIO_0[5]) (MEDIA_CARD_D5)	I/O	R2	Digital input port A bit 5. May also be configured as GPIO_GROUP_0_BIT5. May also be configured as output to drive Media Card Data bit 5.
ADATA4 (GPIO_0[4]) (MEDIA_CARD_D4)	I/O	R3	Digital input port A bit 4. May also be configured as GPIO_GROUP_0_BIT4. May also be configured as output to drive Media Card Data bit 4.
ADATA3 (GPIO_0[3]) (MEDIA_CARD_D3)	I/O	R4	Digital input port A bit 3. May also be configured as GPIO_GROUP_0_BIT3. May also be configured as output to drive Media Card Data bit 3.
ADATA2 (GPIO_0[2]) (MEDIA_CARD_D2)	I/O	P1	Digital input port A bit 2. May also be configured as GPIO_GROUP_0_BIT2. May also be configured as output to drive Media Card Data bit 2.
ADATA1 (GPIO_0[1]) (MEDIA_CARD_D1)	I/O	P2	Digital input port A bit 1. May also be configured as GPIO_GROUP_0_BIT1. May also be configured as output to drive Media Card Data bit 1.
ADATA0 (GPIO_0[0]) (MEDIA_CARD_D0)	I/O	P3	Digital input port A bit 0. May also be configured as GPIO_GROUP_0_BIT0. May also be configured as output to drive Media Card Data bit 0.

TABLE 3. DIGITAL B INPUT PORT

BALL NAME	I/O	BALL #	DESCRIPTION
BVS (GPIO_19)	I/O	L2	Digital input port B VSync. May also be configured as GPIO_19.
BHS (GPIO_20)	I/O	L3	Digital input port B HSync. May also be configured as GPIO_20.
BHREF_DE (GPIO_21)	I/O	K1	Digital input port B Data Enable - optionally used to indicate active pixel data. May also be configured as GPIO_21.
DIP_BODD (GPIO_27)	I/O	N4	Digital input port 뮔?channel odd input. May be configured as GPIO_27.
BDATA23 (GPIO_5[7]) (PD47)	I/O	K2	Digital input port B bit 23. May also be configured as GPIO_GROUP_5_BIT7. When display format is TTL double wide, this is PD47 (ORED7 ? default).
BDATA22 (GPIO_5[6]) (PD46)	I/O	K3	Digital input port B bit 22. May also be configured as GPIO_GROUP_5_BIT6. When display format is TTL double wide, this is PD46 (ORED6 ? default).
BDATA21 (GPIO_5[5]) (PD45)	I/O	J1	Digital input port B bit 21. May also be configured as GPIO_GROUP_5_BIT5. When display format is TTL double wide, this is PD45 (ORED5 ? default).
BDATA20 (GPIO_5[4]) (PD44)	I/O	J2	Digital input port B bit 20. May also be configured as GPIO_GROUP_5_BIT4. When display format is TTL double wide, this is PD44 (ORED4 ? default).
BDATA19 (GPIO_5[3]) (PD43)	I/O	J3	Digital input port B bit 19. May also be configured as GPIO_GROUP_5_BIT3. When display format is TTL double wide, this is PD43 (ORED3 ? default).
BDATA18 (GPIO_5[2]) (PD42)	I/O	H1	Digital input port B bit 18. May also be configured as GPIO_GROUP_5_BIT2. When display format is TTL double wide, this is PD42 (ORED2 ? default).
BDATA17 (GPIO_5[1]) (PD41)	I/O	H2	Digital input port B bit 17. May also be configured as GPIO_GROUP_5_BIT1. When display format is TTL double wide, this is PD41 (ORED1 ? default).
BDATA16 (GPIO_5[0]) (PD40)	I/O	H3	Digital input port B bit 16. May also be configured as GPIO_GROUP_5_BIT0. When display format is TTL double wide, this is PD40 (ORED0 ? default).
BDATA15 (GPIO_4[7]) (PD39)	I/O	G1	Digital input port B bit 15. May also be configured as GPIO_GROUP_4_BIT7. When display format is TTL double wide, this is PD39 (OGRN7 ? default).
BDATA14 (GPIO_4[6]) (PD38)	I/O	G2	Digital input port B bit 14. May also be configured as GPIO_GROUP_4_BIT6. When display format is TTL double wide, this is PD38 (OGRN6 ? default).
BDATA13 (GPIO_4[5]) (PD37)	I/O	G3	Digital input port B bit 13. May also be configured as GPIO_GROUP_4_BIT5. When display format is TTL double wide, this is PD37 (OGRN5 ? default).
BDATA12 (GPIO_4[4]) (PD36)	I/O	F1	Digital input port B bit 12. May also be configured as GPIO_GROUP_4_BIT4. When display format is TTL double wide, this is PD36 (OGRN4 ? default).

TABLE 3. DIGITAL B INPUT PORT

BALL NAME	I/O	BALL #	DESCRIPTION
BDATA11 (GPIO_4[3]) (PD35)	I/O	F2	Digital input port B bit 11. May also be configured as GPIO_GROUP_4_BIT3. When display format is TTL double wide, this is PD35 (OGRN3 ? default).
BDATA10 (GPIO_4[2]) (PD34)	I/O	F3	Digital input port B bit 10. May also be configured as GPIO_GROUP_4_BIT2. When display format is TTL double wide, this is PD34 (OGRN2 ? default).
BDATA9 (GPIO_4[1]) (PD33)	I/O	E1	Digital input port B bit 9. May also be configured as GPIO_GROUP_4_BIT1. When display format is TTL double wide, this is PD33 (OGRN1 ? default).
BDATA8 (GPIO_4[0]) (PD32)	I/O	E2	Digital input port B bit 8. May also be configured as GPIO_GROUP_4_BIT0. When display format is TTL double wide, this is PD32 (OGRN0 ? default).
BDATA7 (GPIO_3[7]) (PD31)	I/O	E3	Digital input port B bit 7. May also be configured as GPIO_GROUP_3_BIT7. When display format is TTL double wide, this is PD31 (OBLU7 ? default).
BDATA6 (GPIO_3[6]) (PD30)	I/O	D1	Digital input port B bit 6. May also be configured as GPIO_GROUP_3_BIT6. When display format is TTL double wide, this is PD30 (OBLU6 ? default).
BDATA5 (GPIO_3[5]) (PD29)	I/O	D2	Digital input port B bit 5. May also be configured as GPIO_GROUP_3_BIT5. When display format is TTL double wide, this is PD29 (OBLU5 ? default).
BDATA4 (GPIO_3[4]) (PD28)	I/O	D3	Digital input port B bit 4. May also be configured as GPIO_GROUP_3_BIT4. When display format is TTL double wide, this is PD28 (OBLU4 ? default).
BDATA3 (GPIO_3[3]) (PD27)	I/O	C1	Digital input port B bit 3. May also be configured as GPIO_GROUP_3_BIT3. When display format is TTL double wide, this is PD27 (OBLU3 ? default).
BDATA2 (GPIO_3[2]) (PD26)	I/O	C2	Digital input port B bit 2. May also be configured as GPIO_GROUP_3_BIT2. When display format is TTL double wide, this is PD26 (OBLU2 ? default).
BDATA1 (GPIO_3[1]) (PD25)	I/O	C3	Digital input port B bit 1. May also be configured as GPIO_GROUP_3_BIT1. When display format is TTL double wide, this is PD25 (OBLU1 ? default).
BDATA0 (GPIO_3[0]) (PD24)	I/O	B1	Digital input port B bit 0. May also be configured as GPIO_GROUP_3_BIT0. When display format is TTL double wide, this is PD24 (OBLU0 ? default).

Note: When BDATA[23:0] are used as TTL panel data outputs (PD[47:24]), the mapping of the RGB color data is programmable. Options are: swap RGB to be BGR, swap bits 7:0 of each color component to be 0:7, swap ports so PD[47:24] are the even pixels and PD[23:0] are the odd pixels. This flexibility allows optimized PCB routing. The table above shows default TTL out mapping.

TABLE 4. ANALOG FRONT END

BALL NAME	I/O	BALL #	DESCRIPTION
ADC_1.8	AP	AB4, AC4, AC5	Analog front end analog power (1.8V). (3 balls)
DGND_ADC	AG	AA2, AA3, AA4	Analog front end digital ground. (3 balls)
ADC1_3.3	AP	AD3	Analog front end analog power for 1st set of ADCs (3.3V).
ADC1_3.3	AP	AD4	Analog front end analog power for 1st set of ADCs (3.3V).
ADC1_3.3	AP	AD5	Analog front end analog power for 1st set of ADCs (3.3V).
ADC2_3.3	AP	AD6	Analog front end analog power for 2nd set of ADCs (3.3V).
ADC2_3.3	AP	AD7	Analog front end analog power for 2nd set of ADCs (3.3V).
AGND_ADC	AG	AB3, AC3, AD2, AC6, AC8, AD8, AE3, AE6, AE9	Analog front end analog ground. (9 balls)
AIP_RAW_HS_CS	I	AF12	Analog Front End HSync or CSync input.
AIP_RAW_VS	I	AE12	Analog Front End VSync input.
N/C	AO	AA1	No connect.
SV1P	AI	AB2	Positive analog input or sync input for channel 1.
A1P	AI	AB1	Positive analog input 믫?for channel 1.
B1P	AI	AC2	Positive analog input 뮚?for channel 1.
C1P	AI	AC1	Positive analog input 뮜?for channel 1.
SV2P	AI	AE1	Positive analog input or sync input for channel 2.
A2P	AI	AF1	Positive analog input 믫?for channel 2.
B2P	AI	AE2	Positive analog input 뮚?for channel 2.
C2P	AI	AF2	Positive analog input 뮜?for channel 2.
SV3P	AI	AE4	Positive analog input or sync input for channel 3.
A3P	AI	AF4	Positive analog input 믫?for channel 3.
B3P	AI	AE5	Positive analog input 뮚?for channel 3.
C3P	AI	AF5	Positive analog input 뮜?for channel 3.
SV4P	AI	AE7	Positive analog input or sync input for channel 4.
AN	AI	AD1	Negative analog input 믫?for channels 1 through 3 for 1st set of ADCs
BN	AI	AF3	Negative analog input 뮚?for channels 1 through 3 for 1st set of ADCs
CN	AI	AF6	Negative analog input 뮜?for channels 1 through 3 for 1st set of ADCs
SVN	AI	AF9	Negative analog input or sync input for channels 1 through 4.
A4P	AI	AF7	Positive analog input 믫?for channel 4.
B4P	AI	AE8	Positive analog input 뮚?for channel 4.
C4P	AI	AF8	Positive analog input 뮜?for channel 4.
VOUT2	AO	AC7	Analog VOUT signal.

TABLE 5. ANALOG FRONT END

BALL NAME	I/O	BALL #	DESCRIPTION
OCMADDR21 (GPIO_1)	I/O	AF15	Address output for external ROM/SRAM interface. No Connects in 20-bit OCM addressing mode. May be configured as GPIO_1.
OCMADDR20 (GPIO_0)	I/O	AE15	Address output for external ROM/SRAM interface. No Connects in 20-bit OCM addressing mode. May be configured as GPIO_0.
OCMADDR19 (GPIO_13)	I/O	AD15	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table. May be configured as GPIO_13.

TABLE 5. ANALOG FRONT END

BALL NAME	I/O	BALL #	DESCRIPTION
OCMADDR18	I/O	AC15	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR17	I/O	AF16	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR16	I/O	AE16	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR15	I/O	AD16	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR14	I/O	AF17	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR13	I/O	AE17	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR12	I/O	AD17	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR11	I/O	AC17	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR10	I/O	AF18	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR9	I/O	AE18	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR8	I/O	AD18	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR7	I/O	AF19	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR6	I/O	AE19	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR5	I/O	AD19	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR4	I/O	AC19	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR3	I/O	AF20	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR2	I/O	AE20	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR1	I/O	AD20	Address output for external ROM/SRAM interface. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.
OCMADDR0	I/O	AF21	Address output for external ROM/SRAM interface. No Connects in 16-bit OCM data-width mode. Also used to specify system configuration at Power-on-reset ? see Bootstrap Table.

Note: OCMADDR_[19:0] are used as bootstrap inputs to specify system configuration. These balls have internal 50K pull-down resistors enabled during power-on-reset to establish a default 強w?bootstrap value. Board-level

pull-down resistors are therefore not required. If a bootstrap ?igh?is required, populate a 10K resistor to 3.3V.

Note: In 20-bit OCM address mode, when OCMADDR_20 or OCMADDR_21 are not configured as GPIOs, the internal 50K pull-down resistors are enabled. These balls can therefore be left floating.

TABLE 6. OCM DATA BUS

BALL NAME	I/O	BALL #	DESCRIPTION
OCMDATA15 (GPIO_6[7])	I/O	AE21	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT7.
OCMDATA14 (GPIO_6[6])	I/O	AD21	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT6.
OCMDATA13 (GPIO_6[5])	I/O	AC21	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT5.
OCMDATA12 (GPIO_6[4])	I/O	AF22	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT4.
OCMDATA11 (GPIO_6[3])	I/O	AE22	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT3.
OCMDATA10 (GPIO_6[2])	I/O	AD22	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT2.
OCMDATA9 (GPIO_6[1])	I/O	AF23	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT1.
OCMDATA8 (GPIO_6[0])	I/O	AE23	Data bus for external ROM/SRAM interface. Not used in 8-bit OCM data mode. May be configured as GPIO_GROUP_6_BIT0.
OCMDATA7	I/O	AD23	Data bus for external ROM/SRAM interface.
OCMDATA6	I/O	AC23	Data bus for external ROM/SRAM interface.
OCMDATA5	I/O	AF24	Data bus for external ROM/SRAM interface.
OCMDATA4	I/O	AF25	Data bus for external ROM/SRAM interface.
OCMDATA3	I/O	AF26	Data bus for external ROM/SRAM interface.
OCMDATA2	I/O	AE24	Data bus for external ROM/SRAM interface.
OCMDATA1	I/O	AE25	Data bus for external ROM/SRAM interface.
OCMDATA0	I/O	AE26	Data bus for external ROM/SRAM interface.

Note: In 16-bit OCM data mode, when GPIO_GROUP_6 is not enabled, the internal 50K pull-down resistors are enabled on OCMDATA[15:8]. These balls can therefore be left floating.

TABLE 7. OCM EXTERNAL ROM/SRAM CONTROL SIGNALS

BALL NAME	I/O	BALL #	DESCRIPTION
ROM_CSn	O	AD24	Chip select output signal to external ROM. Active low.
OCM_CS0n (XROM_STATUS) (GPIO_2)	I/O	AD25	Chip select output signal to external peripheral. Can be used to access larger address space for optional external ram. Active low. If BOOTSTRAP[9] is a ? ? this ball indicates the status of the XROM signature and CRC check. May be configured as GPIO_2.
OCM_CS1n (GPIO_3)	I/O	AD26	Chip select output signal to external peripheral. Active low. May be configured as GPIO_3.
OCM_CS2n (GPIO_4)	I/O	AC24	Chip select output signal to external peripheral. Active low. May be configured as GPIO_4.
OCM_REn	O	AC25	Read enable output signal to enable external device to drive data balls. Active low.

TABLE 7. OCM EXTERNAL ROM/SRAM CONTROL SIGNALS

BALL NAME	I/O	BALL #	DESCRIPTION
OCM_WEn	O	AC26	Write enable output signal to enable writing to external devices. Active low.

Note: If extra chip selects are required in a system, use OCM_CS2n first, then OCM_CS1n, and lastly OCM_CS0n.

TABLE 8. OCM PERIPHERALS

BALL NAME	I/O	BALL #	DESCRIPTION
OCM_INT1 (GPIO_6)	I/O	W23	Interrupt #1 input for generating system interrupt to OCM. Level sensitive. May be configured as GPIO_6.
OCM_INT2 (GPIO_5) (OCM_IRQ_INT_REQ)	I/O	Y24	Interrupt #2 input for generating system interrupt to OCM. Edge sensitive. May be configured as GPIO_5. May be configured as a status output indicating an internal IRQ request has been made.
OCM_UDO_0 (GPIO_7)	I/O	W26	OCM UART ? ?data output. May be configured as GPIO_7.
OCM_UDI_0 (GPIO_8)	I/O	W25	OCM UART ? ?data input. May be configured as GPIO_8.
OCM_UDO_1 (GPIO_10)	I/O	B2	OCM UART ? ?data output. May be configured as GPIO_10.
OCM_UDI_1 (GPIO_11)	I/O	B3	OCM UART ? ?data input. May be configured as GPIO_11.
IR0 (GPIO_28)	I/O	AB24	Input to IR decoder. May be configured as GPIO_28.
PWM0 (GPIO_29)	I/O	V24	Pulse width modulator ? ?output. May be configured as GPIO_29.
PWM1 (GPIO_30)	I/O	U23	Pulse width modulator ? ?output. May be configured as GPIO_30.
PWM2 (GPIO_31)	I/O	U24	Pulse width modulator ? ?output. May be configured as GPIO_31.
OCM_TIMER1 (PWM3) (GPIO_9)	I/O	W24	Timer In: used as clock or clock enable input to OCMTIMER1 May be configured as pulse width modulator ? ?output. May be configured as GPIO_9.
MSTR0_SDA (GPIO_32)	I/O	AA23	Two wire serial master ? Bus ? ?data. May be configured as GPIO_32.
MSTR0_SCL (GPIO_33)	I/O	AA24	Two wire serial master ? Bus ? ?clock. May be configured as GPIO_33.
MSTR1_SDA (GPIO_34)	I/O	A2	Two wire serial master ? Bus ? ?data. May be configured as GPIO_34.
MSTR1_SCL (GPIO_35)	I/O	A3	Two wire serial master ? Bus ? ?clock. May be configured as GPIO_35.
MSTR2_SDA (GPIO_36)	I/O	AB25	Two wire serial master ? Bus ? ?data. May be configured as GPIO_36.
MSTR2_SCL (GPIO_37)	I/O	AB26	Two wire serial master ? Bus ? ?clock. May be configured as GPIO_37.
VGA0_SDA (GPIO_38)	I/O	AA25	Can be configured as data for two-wire Serial In-Circuit JTAG debugger. May be simultaneously configured as data for two-wire Serial DDC2bi Slave. May be configured as GPIO_38.
VGA0_SCL (GPIO_39)	I/O	AA26	Can be configured as clock for two-wire Serial In-Circuit JTAG debugger. May be simultaneously configured as clock for two-wire Serial DDC2bi Slave. May be configured as GPIO_39.

TABLE 8. OCM PERIPHERALS

BALL NAME	I/O	BALL #	DESCRIPTION
VGA1_SDA (GPIO_40)	I/O	Y25	Can be configured as data for two-wire Serial In-Circuit JTAG debugger. May be simultaneously configured as data for two-wire Serial DDC2bi Slave. May be configured as GPIO_40.
VGA1_SCL (GPIO_41)	I/O	Y26	Can be configured as clock for two-wire Serial In-Circuit JTAG debugger. May be simultaneously configured as clock for two-wire Serial DDC2bi Slave. May be configured as GPIO_41.
SLAVE_SDA (GPIO_25)	I/O	V25	Two-wire slave serial data (may be driven by an external master for external control). May be configured as GPIO_25.
SLAVE_SCL (GPIO_12)	I/O	V26	Two-wire slave serial clock (may be driven by an external master for external control). May be configured as GPIO_12.

TABLE 9. SYSTEM

BALL NAME	I/O	BALL #	DESCRIPTION
RESETn	I/O	AD9	Hard Reset active low input. Once reset is released, this ball will stay low for 150 ms and may be used to drive other IC active low reset input. RESETn will also be pulled low if the 3.3V power supply drops below 2.7V. Internally pulled up. System is reset during the 150ms period (until the ball goes high)
N/C	I/O	A1	No connect.

TABLE 10. POWER PANEL CONTROLS

BALL NAME	I/O	BALL #	DESCRIPTION
PPWR	O	U25	Panel Power Control output controlled by Panel Power On Sequencer.
PBIAS	O	U26	Panel Bias Control (Backlight Enable) controlled by Panel Power On Sequencer.

TABLE 11. LVDS AND TTL DISPLAY PORT

BALL NAME	I/O	BALL #	DESCRIPTION
CH4P_LV_E/PD0 (EBLU0) TTL	I/O	N23	When display drive type is TTL, this is PD0 (EBLU0 by default). When display drive type is LVDS, this is CH4P_LV_E (channel 4 positive even by default).
CH4N_LV_E/PD1 (EBLU1) TTL	I/O	N24	When display drive type is TTL, this is PD1 (EBLU1 by default). When display drive type is LVDS, this is CH4N_LV_E (channel 4 negative even by default).
CH3P_LV_E/PD2 (EBLU2) TTL	I/O	N25	When display drive type is TTL, this is PD2 (EBLU2 by default). When display drive type is LVDS, this is CH3P_LV_E (channel 3 positive even by default).
CH3N_LV_E/PD3 (EBLU3) TTL	I/O	N26	When display drive type is TTL, this is PD3 (EBLU3 by default). When display drive type is LVDS, this is CH3N_LV_E (channel 3 negative even by default).
CLKP_LV_E/PD4 (EBLU4) TTL	I/O	L23	When display drive type is TTL, this is PD4 (EBLU4 by default). When display drive type is LVDS, this is CLKP_LV_E (clock positive even by default).
CLKN_LV_E/PD5 (EBLU5) TTL	I/O	L24	When display drive type is TTL, this is PD5 (EBLU5 by default). When display drive type is LVDS, this is CLKN_LV_E (clock negative even by default).
CH2P_LV_E/PD6 (EBLU6) TTL	I/O	L25	When display drive type is TTL, this is PD6 (EBLU6 by default). When display drive type is LVDS, this is CH2P_LV_E (channel 2 positive even by default).

TABLE 11. LVDS AND TTL DISPLAY PORT

BALL NAME	I/O	BALL #	DESCRIPTION
CH2N_LV_E/PD7 (EBLU7) TTL	I/O	L26	When display drive type is TTL, this is PD7 (EBLU7 by default). When display drive type is LVDS, this is CH2N_LV_E (channel 2 negative even by default).
CH1P_LV_E/PD8 (EGRN0) TTL	I/O	K23	When display drive type is TTL, this is PD8 (EGRN0 by default). When display drive type is LVDS, this is CH1P_LV_E (channel 1 positive even by default).
CH1N_LV_E/PD9 (EGRN1) TTL	I/O	K24	When display drive type is TTL, this is PD9 (EGRN1 by default). When display drive type is LVDS, this is CH1N_LV_E (channel 1 negative even by default).
CH0P_LV_E/PD10 (EGRN2) TTL	I/O	K25	When display drive type is TTL, this is PD10 (EGRN2 by default). When display drive type is LVDS, this is CH0P_LV_E (channel 0 positive even by default).
CH0N_LV_E/PD11 (EGRN3) TTL	I/O	K26	When display drive type is TTL, this is PD11 (EGRN3 by default). When display drive type is LVDS, this is CH0N_LV_E (channel 0 negative even by default).
CH4P_LV_O/PD12 (EGRN4) TTL	I/O	J23	When display drive type is TTL, this is PD12 (EGRN4 by default). When display drive type is double wide LVDS, this is CH4P_LV_O (channel 4 positive odd by default).
CH4N_LV_O/PD13 (EGRN5) TTL	I/O	J24	When display drive type is TTL, this is PD13 (EGRN5 by default). When display drive type is double wide LVDS, this is CH4N_LV_O (channel 4 negative odd by default).
CH3P_LV_O/PD14 (EGRN6) TTL	I/O	G23	When display drive type is TTL, this is PD14 (EGRN6 by default). When display drive type is double wide LVDS, this is CH3P_LV_O (channel 3 positive odd by default).
CH3N_LV_O/PD15 (EGRN7) TTL	I/O	G24	When display drive type is TTL, this is PD15 (EGRN7 by default). When display drive type is double wide LVDS, this is CH3N_LV_O (channel 3 negative odd by default).
CLKP_LV_O/PD16 (ERED0) TTL	I/O	G25	When display drive type is TTL, this is PD16 (ERED0 by default). When display drive type is double wide LVDS, this is CLKP_LV_O (clock positive odd by default).
CLKN_LV_O/PD17 (ERED1) TTL	I/O	G26	When display drive type is TTL, this is PD17 (ERED1 by default). When display drive type is double wide LVDS, this is CLKN_LV_O (clock negative odd by default).
CH2P_LV_O/PD18 (ERED2) TTL	I/O	F23	When display drive type is TTL, this is PD18 (ERED2 by default). When display drive type is double wide LVDS, this is CH2P_LV_O (channel 2 positive odd by default).
CH2N_LV_O/PD19 (ERED3) TTL	I/O	F24	When display drive type is TTL, this is PD19 (ERED3 by default). When display drive type is double wide LVDS, this is CH2N_LV_O (channel 2 negative odd by default).
CH1P_LV_O/PD20 (ERED4) TTL	I/O	F25	When display drive type is TTL, this is PD20 (ERED4 by default). When display drive type is double wide LVDS, this is CH1P_LV_O (channel 1 positive odd by default).
CH1N_LV_O/PD21 (ERED5) TTL	I/O	F26	When display drive type is TTL, this is PD21 (ERED5 by default). When display drive type is double wide LVDS, this is CH1N_LV_O (channel 1 negative odd by default).
CH0P_LV_O/PD22 (ERED6) TTL	I/O	E23	When display drive type is TTL, this is PD22 (ERED6 by default). When display drive type is double wide LVDS, this is CH0P_LV_O (channel O positive odd by default).
CH0N_LV_O/PD23 (ERED7) TTL	I/O	E24	When display drive type is TTL, this is PD23 (ERED7 by default). When display drive type is double wide LVDS, this is CH0N_LV_O (channel O negative odd by default).

Note: When panel drive type is TTL, the panel data outputs (PD[23:0]) and the mapping of the RGB color data is programmable. Options are: swap RGB to be BGR or swap bits 7:0 of each color component to be 0:7. This flexibility allows optimized PCB routing. The table above shows default TTL out mapping. See also Table 3, 휣igital B Input Port? for other PD pins.

Note: When designing the PCB, the LVDS channel bits can be selected depending on whether compatibility with FLI8532 is desired. PCB design completion does not restrict mapping changes; this can be done with the following registers:

LVDS_MISC_CTRL[12:11]:
Columns 1 and 3 are active when LVDS_SW_COMP_MODE[12] = '0' and LVDS_DW_COMP_EN[11] = '1' (compatible with FLI30336)
Columns 2 and 4 are active when LVDS_SW_COMP_MODE[12] = '0' and LVDS_DW_COMP_EN[11] = '0'
Column 6 is active when LVDS_SW_COMP_MODE[12] = '1' and LVDS_DW_COMP_EN[11] = '0'
Columns 1 & 3, along with 2 & 4 are actually the same. The difference is whether 30-bit LVDS vs. 24-bit LVDS.

TABLE 12. LVDS CONNECTIONS

1	2	3	4		6
LVDS Double Wide (2 choices 24-bit, 2 choices 30-bit)					
n/a	n/a	4E_pos	4E_pos		n/a
n/a	n/a	4E_neg	4E_neg		n/a
n/a	3E_pos	4O_pos	3E_pos		n/a
n/a	3E_neg	4O_neg	3E_neg		n/a
3E_pos	CE_pos	3E_pos	CE_pos		3E_pos
3E_neg	CE_neg	3E_neg	CE_neg		3E_neg
CE_pos	2E_pos	CE_pos	2E_pos		CE_pos
CE_neg	2E_neg	CE_neg	2E_neg		CE_neg
2E_pos	1E_pos	2E_pos	1E_pos		2E_pos
2E_neg	1E_neg	2E_neg	1E_neg		2E_neg
1E_pos	0E_pos	1E_pos	0E_pos		1E_pos
1E_neg	0E_neg	1E_neg	0E_neg		1E_neg
0E_pos	n/a	0E_pos	4O_pos		0E_pos
0E_neg	n/a	0E_neg	4O_neg		0E_neg
3O_pos	3O_pos	3O_pos	3O_pos		4E_pos
3O_neg	3O_neg	3O_neg	3O_neg		4E_neg
CO_pos	CO_pos	CO_pos	CO_pos		n/a
CO_neg	CO_neg	CO_neg	CO_neg		n/a
2O_pos	2O_pos	2O_pos	2O_pos		n/a
2O_neg	2O_neg	2O_neg	2O_neg		n/a
1O_pos	1O_pos	1O_pos	1O_pos		n/a
1O_neg	1O_neg	1O_neg	1O_neg		n/a
0O_pos	0O_pos	0O_pos	0O_pos		n/a
0O_neg	0O_neg	0O_neg	0O_neg		n/a

TABLE 13. DSYNC AND CLK

BALL NAME	I/O	BALL #	DESCRIPTION
DCLK (GPIO_9[4])	I/O	P24	When display drive type is TTL, this is panel output pixel clock. Clock rate matches the pixel rate for single wide output mode and pixel rate divided by 2 for double wide output mode. When display drive type is LVDS, may be configured as GPIO_GROUP_9_BIT4. When display drive type is LVDS, may be configured as DCLK for diagnostic purposes.

TABLE 13. DSYNC AND CLK

BALL NAME	I/O	BALL #	DESCRIPTION
DVS (GPIO_9[5])	I/O	R26	When display drive type is TTL, this is panel output V-sync. When display drive type is LVDS, may be configured as GPIO_GROUP_9_BIT5. When display drive type is LVDS, may be configured as DVS for diagnostic purposes.
DHS (GPIO_9[6])	I/O	P25	When display drive type is TTL, this is panel output H-sync. When display drive type is LVDS, may be configured as GPIO_GROUP_9_BIT6. When display drive type is LVDS, may be configured as DHS for diagnostic purposes.
DEN (GPIO_9[7])	I/O	P26	When display drive type is TTL, this is panel output data enable. When display drive type is LVDS, may be configured as GPIO_GROUP_9_BIT7. When display drive type is LVDS, may be configured as DEN for diagnostic purposes.

Note: If the display drive type is LVDS, GPIO_GROUP_9 may be enabled providing eight system GPIO뭘

TABLE 14. DISPLAY PORT POWER

BALL NAME	I/O	BALL #	DESCRIPTION
LVDS_3.3	P	E26, H26, J26, M26	LVDS power (3.3V) (4 balls)
LVDS_GND	G	E25, H25, J25, M24 M25	LVDS Ground (4 balls)
LVDS_PLL_3.3	AP	H24	LVDS analog power (3.3V)
LVDS_PLL_GND	AG	H23	LVDS PLL ground

TABLE 15. AUDIO/VIDEO SYNC

BALL NAME	I/O	BALL #	DESCRIPTION
AVS_IN_WORD_SEL (GPIO_7[5]) (JTAG_OCM_MODE)	I/O	AD12	Audio/video synchronizer input word select. May be configured as GPIO_GROUP_7_BIT5. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_7_BIT5 function. May be configured as 5-wire JTAG_OCM_MODE input.
AVS_IN_SCL (GPIO_7[4]) (JTAG_OCM_CLK)	I/O	AF14	Audio/video synchronizer input clock. May be configured as GPIO_GROUP_7_BIT4. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_7_BIT4 function. May be configured as 5-wire JTAG_OCM_CLK input.
AVS_IN_DATA (GPIO_7[3]) (JTAG_OCM_TDI)	I/O	AC12	Audio/video synchronizer input data. May be configured as GPIO_GROUP_7_BIT3. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_7_BIT3 function. May be configured as 5-wire JTAG_OCM_TDI input.
AVS_OUT_WORLD_SEL (GPIO_7[2]) (JTAG_OCM_RESET)	I/O	AE14	Audio/video synchronizer output word select. May be configured as GPIO_GROUP_7_BIT2. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_7_BIT1 function. May be configured as 5-wire JTAG_OCM_RESET input.
AVS_OUT_SCL (GPIO_7[1]) (JTAG_OCM_TDO)	I/O	AE13	Audio/video synchronizer output clock. May be configured as GPIO_GROUP_7_BIT1. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_7_BIT1 function. May be configured as 5-wire JTAG_OCM_TDO output. May be optionally open drain.

TABLE 15. AUDIO/VIDEO SYNC

BALL NAME	I/O	BALL #	DESCRIPTION
AVS_OUT_DATA (GPIO_7[0])	I/O	AD14	Audio/video synchronizer output data. May be configured as GPIO_GROUP_7_BIT0. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_7_BIT0 function.

Note: Disable GPIO_GROUP_7 to use the Audio/Video Sync function.

TABLE 16. EXTERNAL OSD

BALL NAME	I/O	BALL #	DESCRIPTION
EXT_OSD_CLK (GPIO_8[2]	I/O	AF13	External OSD clock. May be configured as GPIO_GROUP_8_BIT2. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_8_BIT2 function.
EXT_OSD_HS (GPIO_8[1]	I/O	AC13	External OSD HSync. May be configured as GPIO_GROUP_8_BIT1. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_8_BIT1 function.
EXT_OSD_VS (GPIO_8[0]	I/O	AD13	External OSD VSync. May be configured as GPIO_GROUP_8_BIT0. NOTE: Power-on-reset defaults this ball to be GPI_GROUP_8_BIT0 function.

Note: Disable GPIO_GROUP_8 to use the external OSD function.

TABLE 17. DEDICATED GPIO

BALL NAME	I/O	BALL #	DESCRIPTION
GPIO_42 (PD_10BIT_ERED0) (EXT_OSD_ODD)	I/O	T24	General purpose I/O 42. When display drive type is TTL 30-bit, this is panel data RED_0. May be configured as EXT_OSD_ODD output.
GPIO_43 (PD_10BIT_ERED1)	I/O	T25	General purpose I/O 43. When display drive type is TTL 30-bit, this is panel data RED_1.
GPIO_44 (PD_10BIT_EGRN0) (DOVL_EVEN)	I/O	T26	General purpose I/O 44. When display drive type is TTL 30-bit, this is panel data GRN_0. May be configured as DOVL_EVEN output. Display overlay marker even.
GPIO_45 (PD_10BIT_EGRN1)	I/O	R23	General purpose I/O 45. When display drive type is TTL 30-bit, this is panel data GRN_1.
GPIO_46 (PD_10BIT_EBLU0) (DOVL_ODD)	I/O	R24	General purpose I/O 46. When display drive type is TTL 30-bit, this is panel data BLU_0. May be configured as DOVL_ODD output. Display overlay marker odd.
GPIO_47 (PD_10BIT_EBLU1) (CS0)	I/O	R25	General purpose I/O 47. When display drive type is TTL 30-bit, this is panel data BLU_1. May be configured as chip select output signal to external peripheral.

Note: Dedicated GPIO is only valid when ball AC20 (JTAG_BS_ENn) is high.

TABLE 18. IEEE 1149.1 JTAG BOUNDARY SCAN

BALL NAME	I/O	BALL #	DESCRIPTION
JTAG_BS_TMS	I	T24	JTAG Boundary Scan TMS signal. This is a progdrive_io pad that does not have internal pullup. External pullup is required for JTAG compliance.
JTAG_BS _TDO	O	T25	JTAG Boundary Scan TDO signal

TABLE 18. IEEE 1149.1 JTAG BOUNDARY SCAN

BALL NAME	I/O	BALL #	DESCRIPTION
GPIO_44 (DOVL_EVEN)	I/O	T26	General purpose I/O 44. May be configured as DOVL_EVEN output. Display overlay marker is even.
JTAG_BS _TDI	I	R23	JTAG Boundary Scan TDI signal. This is a progdrive_io pad that does not have internal pullup. External pullup is required for JTAG compliance.
JTAG_BS _RST	I	R24	JTAG Boundary Scan RST signal. This is a progdrive_io pad that does not have internal pullup. External pullup is required for JTAG compliance.
JTAG_BS _TCK	I	R25	JTAG Boundary Scan TCK signal.
JTAG_BS_EN	I	AC20	JTAG Boundary Scan Enable signal. A low on this ball enables the Boundary scan function on the five balls listed above.

TABLE 19. FRAME STORE DDR INTERFACE

BALL NAME	I/O	BALL #	DESCRIPTION
FSCLKp	O	D5	Differential frame store clock output (positive signal). SSTL2
FSCLKn	O	C5	Differential frame store clock output (negative signal). SSTL2
FSRAS	O	C24	Row address strobe output. SSTL2
FSCAS	O	D24	Column address strobe output. SSTL2
FSWE	O	C23	Write enable. SSTL2
FSCKE	O	C4	Clock enable. SSTL2
FSVREF	AP	C9, C19	Reference voltage for SSTL2 inputs. (2 balls)
FSVREFVSS	AG	D9, D19	Reference voltage return (ground) for SSTL2 inputs. (2 balls)
FSDQS3	I/O	A22	Data strobe. Data I/O FSDATA[31:24] and FSDQM3 are synchronized with both edges of FSDQS3. SSTL2
FSDQS2	I/O	A17	Data strobe. Data I/O FSDATA[23:16] and FSDQM2 are synchronized with both edges of FSDQS2. SSTL2
FSDQS1	I/O	B11	Data strobe. Data I/O FSDATA[15:8] and FSDQM1 are synchronized with both edges of FSDQS1. SSTL2
FSDQS0	I/O	B6	Data strobe. Data I/O FSDATA[7:0] and FSDQM0 are synchronized with both edges of FSDQS0. SSTL2
FSDATA31	I/O	A24	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA30	I/O	B24	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA29	I/O	A23	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA28	I/O	B23	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA27	I/O	A21	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA26	I/O	B21	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA25	I/O	A20	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA24	I/O	B20	Data input/output. Synchronized with FSDQS3. SSTL2
FSDATA23	I/O	A19	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA22	I/O	B19	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA21	I/O	A18	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA20	I/O	B18	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA19	I/O	A16	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA18	I/O	B16	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA17	I/O	A15	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA16	I/O	B15	Data input/output. Synchronized with FSDQS2. SSTL2
FSDATA15	I/O	A13	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA14	I/O	B13	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA13	I/O	A12	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA12	I/O	B12	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA11	I/O	A10	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA10	I/O	B10	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA9	I/O	A9	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA8	I/O	B9	Data input/output. Synchronized with FSDQS1. SSTL2
FSDATA7	I/O	A8	Data input/output. Synchronized with FSDQS0. SSTL2
FSDATA6	I/O	B8	Data input/output. Synchronized with FSDQS0. SSTL2

TABLE 19. FRAME STORE DDR INTERFACE

BALL NAME	I/O	BALL #	DESCRIPTION
FSDATA5	I/O	A7	Data input/output. Synchronized with FSDQS0. SSTL2
FSDATA4	I/O	B7	Data input/output. Synchronized with FSDQS0. SSTL2
FSDATA3	I/O	A5	Data input/output. Synchronized with FSDQS0. SSTL2
FSDATA2	I/O	B5	Data input/output. Synchronized with FSDQS0. SSTL2
FSDATA1	I/O	A4	Data input/output. Synchronized with FSDQS0. SSTL2
FSDATA0	I/O	B4	Data input/output. Synchronized with FSDQS0. SSTL2
FSDQM3	O	B22	Data out mask. Only used during write cycles. A logic ? ?indicates to external DDR memory that data on FSDATA[31:24] is not to be over-written. Synchronized with FSDQS3. SSTL2
FSDQM2	O	B17	Data out mask. Only used during write cycles. A logic ? ?indicates to external DDR memory that data on FSDATA[23:16] is not to be over-written. Synchronized with FSDQS2. SSTL2
FSDQM1	O	A11	Data out mask. Only used during write cycles. A logic ? ?indicates to external DDR memory that data on FSDATA[15:8] is not to be over-written. Synchronized with FSDQS1. SSTL2
FSDQM0	O	A6	Data out mask. Only used during write cycles. A logic ? ?indicates to external DDR memory that data on FSDATA[7:0] is not to be over-written. Synchronized with FSDQS0. SSTL2
FSBKSEL1	O	C20	Bank select address. Together with FSBKSEL0 selects which of the 4 banks is to be active. SSTL2
FSBKSEL0	O	C21	Bank select address. Together with FSBKSEL1 selects which of the 4 banks is to be active. SSTL2
FSADDR12	O	C11	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR11	O	C14	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR10	O	D16	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR9	O	C12	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR8	O	C6	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR7	O	C7	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR6	O	C8	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR5	O	C10	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR4	O	C13	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR3	O	C15	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR2	O	C16	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR1	O	C17	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSADDR0	O	C18	Row/Column addresses outputs multiplexed onto the same balls. SSTL2
FSCS0	O	D21	Chip select 0 ball. SSTL2
FSCS1	O	C22	Chip select 1 ball. SSTL2
VDDA18_DLL	AP	A14	1.8V power supply for on chip DLL for DDR interface timing control.
VSSA18_DLL	AG	B14	Power supply return for on chip DLL.
DDR_2.5	P	D4, D6, D7, D8, D10, D11, D12, D13, D14, D15, D17, D18, D20, D22, D23	2.5V power supply for DDR SSTL2 I/O휠. (15 balls)

TABLE 20. CLOCK SYNTHESIS

BALL NAME	I/O	BALL #	DESCRIPTION
RPLL_18	AP	C25	RPLL power supply (1.8V).
RPLL_AGND	AG	A26, A25	RPLL Analog ground. (2 balls)
RPLL_33	AP	D26	RPLL power supply (3.3V).
RPLL_DGND	AG	B25	RPLL Digital ground
XTAL	AO	B26	Output to external crystal. Connect crystal between TCLK ball and XTAL ball.
TCLK	AI	C26	Reference clock input for external crystal connection (19.6609 MHz) or can be driven by external oscillator. See Bootstrap Table for selecting source for TCLK ? external crystal or external oscillator.
N/C	O	D25	No connect.

TABLE 21. LOW BANDWIDTH ADC

BALL NAME	I/O	BALL #	DESCRIPTION
LBADC_3.3	AP	AC9	Low bandwidth ADC analog VDD (3.3V).
LBADC_GND	AG	AC11	Low bandwidth ADC ground.
LBADC_IN1	I	AF10	Analog input channel 1 for low bandwidth ADC.
LBADC_IN2	I	AE10	Analog input channel 2 for low bandwidth ADC.
LBADC_IN3	I	AD10	Analog input channel 3 for low bandwidth ADC.
LBADC_IN4	I	AC10	Analog input channel 4 for low bandwidth ADC.
LBADC_IN5	I	AF11	Analog input channel 5 for low bandwidth ADC.
LBADC_IN6	I	AE11	Analog input channel 6 for low bandwidth ADC.
LBADC_RETURN	I	AD11	Signal return path for channels 1, 2, 3, 4, 5, or 6 of low bandwidth ADC. Treat as negative differential input for LBADC.

TABLE 22. DIGITAL POWER SUPPLY

BALL NAME	I/O	BALL #	DESCRIPTION
CORE_1.8	P	K10, K11, K16, K17, L11, L16, T11, T16, T17, U10, U11, U16, U17	1.8V VDD for core supply. (13 balls)
IO_3.3	P	E4, F4, G4, H4, J4, K4, L4, AC14, AC16, AC18, AC22, AB23, Y23, V23, T23, P23, M23	3.3V VDD for I/O. (18 balls)
D_GND	G	L10, M10, N10, P10, R10, T10, M11, N11, P11, R11, K12, L12, M12, N12, P12, R12, T12, U12, K13, L13, M13, N13, P13, R13, T13, U13, K14, L14, M14, N14, P14, R14, T14, U14, K15, L15, M15, N15, P15, R15, T15, U15, M16, N16, P16, R16, L17, M17, N17, P17, R17	Ground for Core 1.8V, SSTL2 2.5V, and I/O 3.3V power supplies. (51 balls)

Note: The number in the VDD ball names corresponds to the voltage level of its power supply: for example, _3.3 signifies 3.3 V power supply.

Note: 읽P? indicates a power supply that is analog in nature and does not have large switching currents. These should be isolated from other digital supplies that do have large switching currents.

Note: All digital input/outputs, GPIO웗, and shared functionality GPIO웗 are up to 5 V tolerant.

4 BOOTSTRAP CONFIGURATION

During hardware reset, the external ROM address pins OCM_ADDR[19:0] are configured as inputs. On the negating edge of RESETn, the value on these pins is latched and stored. This value is readable by the on-chip microcontroller to provide system configuration information. This process is called 塵oot-strapping? All bootstrap pins have internal 50K pull-down resistors to reduce the need for any external pull-down resistors that may be required.

TABLE 23. BOOTSTRAP SIGNALS

SIGNAL NAME	I/O	SHARED WITH	DESCRIPTION
I2C_JTAG_ADDR[7:1]	I	OCM_ADDR[6:0]	This determines the device address of the I2C to JTAG Bridge. These bits are also readable by the OCM and may be used for general purpose boot-straps if not used to specify the I2C to JTAG bridge address.
USER_BITS[2:0]	I	OCM_ADDR[9:7]	These settings are available for reading from a status register but are otherwise unused by the IC. Used to allow the OCM to access configuration settings
RESERVED_BITS[2:0]	I	OCM_ADDR[12:10]	Leave floating.
OCM_MODE[2:0]	I	OCM_ADDR[15:13]	OCM Operating Mode: selects the addressing mode and external data path width for the OCM. 000 = OCM runs in 20-bit address mode, 8-bit external i/f. 001 = OCM runs in 24-bit address mode, 8-bit external i/f. 010 = OCM runs in 20-bit address mode, 16-bit external i/f. 011 = OCM runs in 24-bit address mode, 16-bit external i/f. 1XX = OCM disabled, external parallel control bus (testbench mode).
OCM_BOOT_XROM	I	OCM_ADDR[16]	Selects the initial state of internal OCM ROM 0 = Internal ROM on, and mapped to top 32K of OCM address range. OCM boot will be from internal ROM code. 1 = Internal ROM off. This is a debug mode with the external ROM mapped to include the address range normally reserved for the internal ROM. OCM boot will be from external ROM code.
ICD_MODE[1:0]	I	OCM_ADDR[18:17]	Selects the status and ball mapping for the In Circuit Debugger 00 = I2C to JTAG Bridge is disabled. 01 = ICD_SDA on VGA0_SDA, ICD_SCL on VGA0_SCL. 10 = ICD_SDA on VGA1_SDA, ICD_SCL on VGA1_SCL. 11 = I2C to JTAG bridge disabled. Five JTAG signals are mapped to Audio/Video Sync (AVS) pins ? JTAG TDO is open drain. AVS function unavailable in this mode.
OSC_SEL	I	OCM_ADDR[19]	Selection of TCLK source 0 = TTL oscillator (input on TCLK ball) 1 = Xtal and internal oscillator

JGD

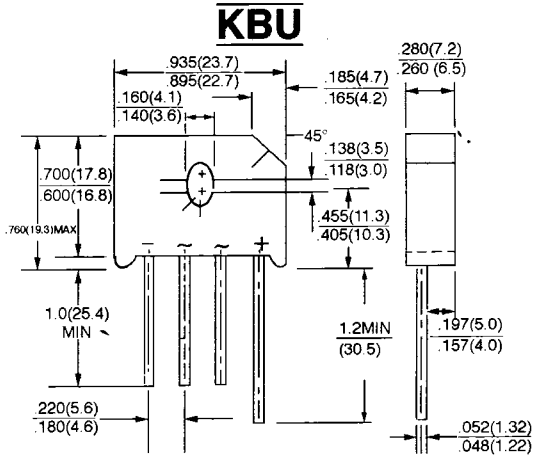
KBU800G THRU KBU810G

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

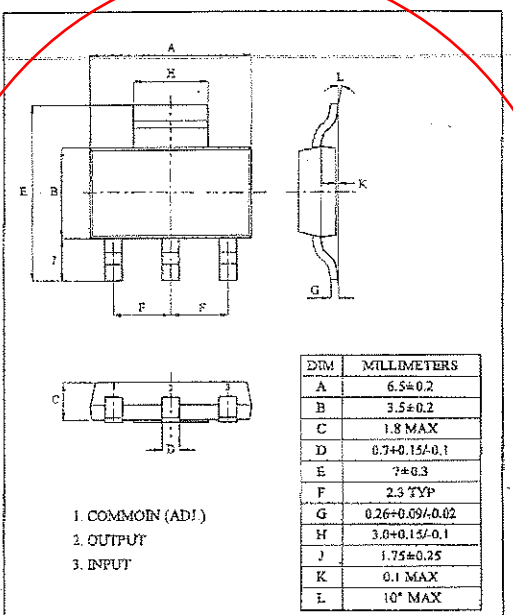
BIPOLAR LINEAR INTEGRATED CIRCUIT

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 ℃

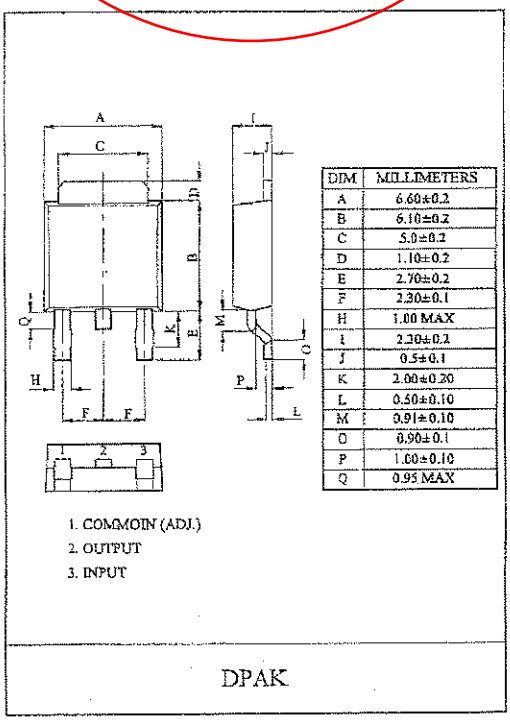


DIM	MILLIMETERS
A	6.5±0.2
B	3.5±0.2
C	1.8 MAX
D	0.7+0.15/-0.1
E	7±0.3
F	2.3 TYP
G	0.26+0.09/-0.02
H	3.0+0.15/-0.1
J	1.75±0.25
K	0.1 MAX
L	10° MAX

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㎠

KIA1117S/F00~KIA1117S/F50

Fig.1 Application Circuit-1 (Fixed-Type)

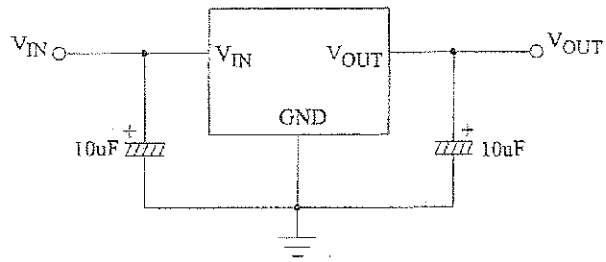
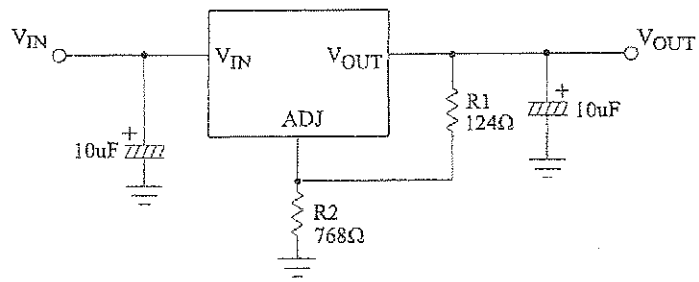


Fig.2 Application Circuit-2 (Adjustable-Type)



$$V_{OUT}=V_{REF}(1+R2/R1)+I_{ADJ}\cdot R2$$

ELECTRICAL CHARACTERISTICS

KIA1117S/F00 (Unless otherwise specified, Tj=0~125℃)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_{OUT1}	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$, Tj=25℃	1.225	1.25	1.275	V
	V_{OUT2}	$10mA \le I_{OUT} \le 1A$, $V_{OUT}+1.5V \le V_{IN} \le 10V$	1.20	1.25	1.30	
Line Regulation	Reg Line	$V_{OUT}+1.5V \le V_{IN} \le 10V$, $I_{OUT}=10mA$	-	1	10	mV
Load Regulation	Reg Load	$10mA \le I_{OUT} \le 1A$, $V_{IN}=V_{OUT}+2.0V$	-	15	30	mV
Quiescent Current	I_{B1}	$V_{IN}=V_{OUT}+1.25V$, $I_{OUT}=0A$	-	4.2	10	mA
	I_{B2}	$V_{IN}=10V$, $I_{OUT}=0A$	-	4.2	10	
Adjustable Pin Current	I_{ADJ}	$V_{IN}=V_{OUT}+1.5V$	-	35	-	μA
Minimum Load Current	I_{MIN}	$V_{IN}=V_{OUT}+1.5V$	10	-	-	mA
Output Noise Voltage	V_{NO}	$V_{IN}=V_{OUT}+1.25V$, $I_{OUT}=40mA$, $10Hz \le f \le 10kHz$	-	100	-	μVrms
Sort Circuit Current Limit	I_{SC}	$V_{IN}=V_{OUT}+2.0V$	1.1	-	-	A
Ripple Rejection	R · R	$I_{OUT}=40mA$, f=120Hz, Vripple=1Vp-p $V_{IN}=V_{OUT}+3V$	60	80	-	dB
Dropout Voltage	V_D	$I_{OUT}=1A$, $V_{IN}=0.95V_{OUT}$	-	1.1	1.2	V
Temperature Stability	TCV_O	$V_{IN}=V_{OUT}+1.5V$, $I_{OUT}=10mA$	-	0.5	-	%

KEC

SEMICONDUCTOR
TECHNICAL DATA

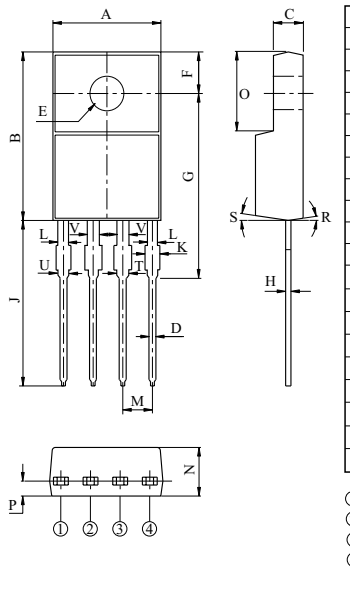
KIA278R00PI
BIPOLAR LINEAR INTEGRATED CIRCUIT

2A ADJUSTABLE LOW DROP VOLTAGE REGULATOR

The KIA278R00PI is a 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.

FEATURES

· Adjustable Output Voltage (Range : 1.5~30V)
· 1.0A Output Low Drop Voltage Regulator.
· 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

① DC INPUT (V_{IN})
② DC OUTPUT (V_O)
③ GND
④ ADJUSTABLE TERMINAL (V_{ADJ})

TO-220IS-4

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT	Remark
Input Voltage	V_{IN}	35	V	-
Output Current	I_{OUT}	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	150	℃	-
Operating Temperature	T_{opr}	-20～80	℃	-
Storage Temperature	T_{stg}	-30～150	℃	-
Soldering Temperature (10sec)	T_{sol}	260	℃	-

KEC

SEMICONDUCTOR
TECHNICAL DATA

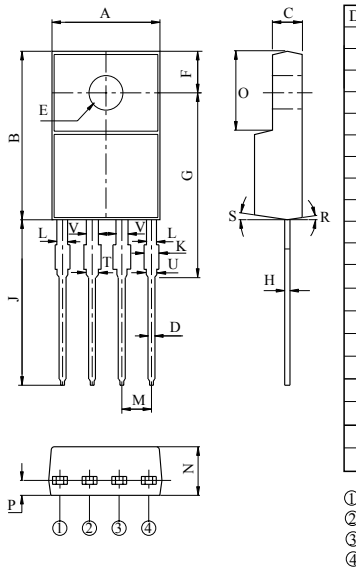
KIA278R05PI~KIA278R15PI
BIPOLAR LINEAR INTEGRATED CIRCUIT

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	℃	-

KEC

SEMICONDUCTOR
TECHNICAL DATA

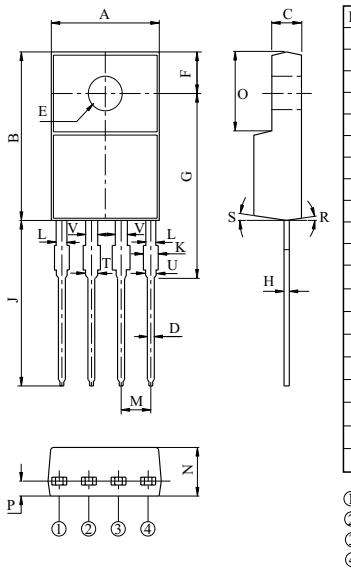
KIA378R05PI~KIA378R15PI
BIPOLAR LINEAR INTEGRATED CIRCUIT

4 TERMINAL 3A OUTPUT LOW DROP
VOLTAGE REGULATOR

The KIA378R × × Series are Low Drop Voltage Regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220IS-4 terminal lead full molded PKG. The Regulator has multi-function such as over current protection, overheat protection and ON/OFF control.

FEATURES

- 3.0A 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

① DC INPUT (V_{IN})
② DC OUTPUT (V_O)
③ GND
④ ON/OFF CONTROL

TO-220IS-4

LINE UP

ITEM	OUTPUT VOLTAGE (Typ.)	UNIT
KIA378R05PI	5	V
KIA378R06PI	6	
KIA378R08PI	8	
KIA378R09PI	9	
KIA378R10PI	10	
KIA378R12PI	12	
KIA378R15PI	15	

MAXIMUM RATINGS (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	3	A	-
Power Dissipation 1	P_{d1}	1.5	W	No heatsink
Power Dissipation 2	P_{d2}	15	W	with heatsink
Junction Temperature	T_j	-40～150	℃	-
Operating Temperature	T_{opr}	-30～85	℃	-
Storage Temperature	T_{stg}	-40～150	℃	-
Soldering Temperature (10sec)	T_{sol}	260	℃	-

KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KIA7805AP/API~ KIA7824AP/API
BIPOLAR LINEAR INTEGRATED CIRCUIT

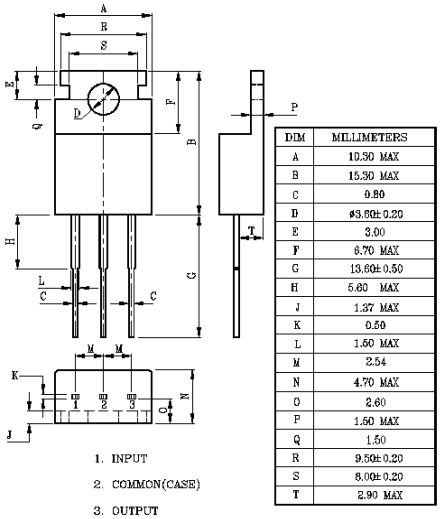
THREE TERMINAL POSITIVE VOLTAGE REGULATORS
5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 20V, 24V.

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).

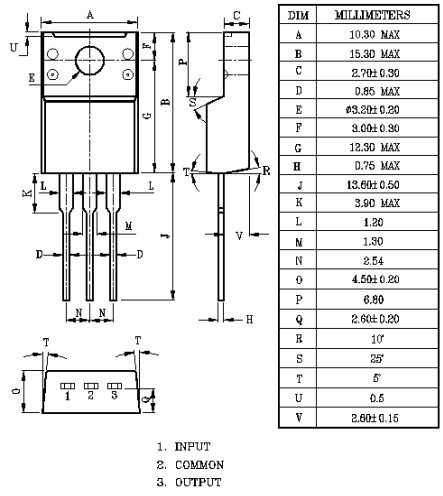
MAXIMUM RATINGS (Ta=25℃)

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

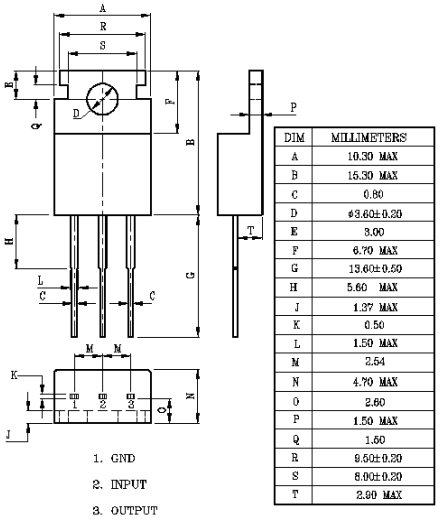
KOREA ELECTRONICS CO.,LTD.

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.

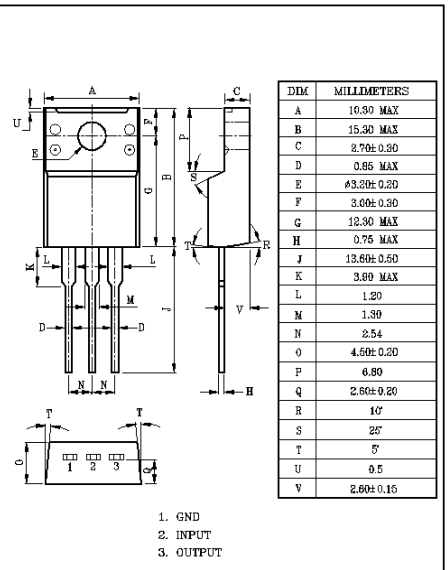


DIM	MILLIMETERS
A	10.30 MAX
B	15.30 MAX
C	0.80
D	φ3.60±0.20
E	3.00
F	6.70 MAX
G	13.60±0.50
H	5.60 MAX
J	1.37 MAX
K	0.50
L	1.50 MAX
M	2.54
N	4.70 MAX
O	2.60
P	1.50 MAX
Q	1.60
R	9.50±0.20
S	8.90±0.20
T	2.80 MAX

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

KEC

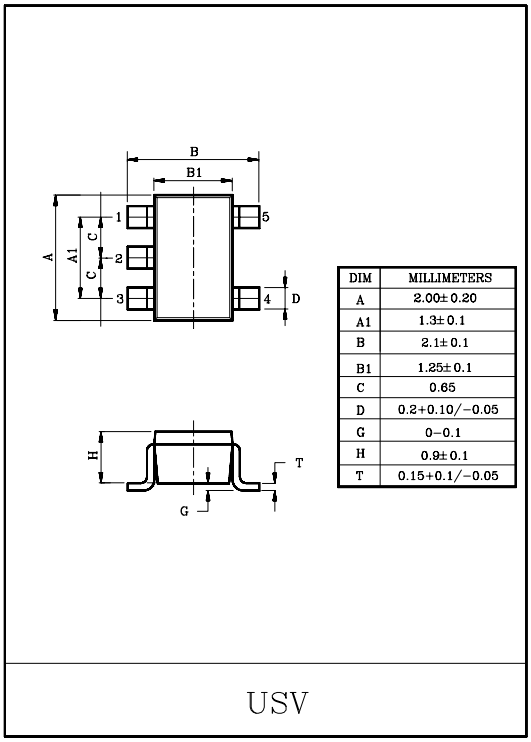
SEMICONDUCTOR
TECHNICAL DATA

KIC7SZ08FU
SILICON MONOLITHIC CMOS
DIGITAL INTEGRATED CIRCUIT

2 INPUT AND GATE

FEATURES

- High Output Drive : ±24mA (Typ.)
  @V_{CC}=3V
- Super High Speed Operation : t_{PD}=2.7ns(Typ.)
  @V_{CC}=5V, 50pF
- Operation Voltage Range : $V_{CC(opr)}$=1.8~5.5V.
- Supply Voltage Data Retention : V_{CC}=1.5~5.5V.
- 5V Tolerant Function



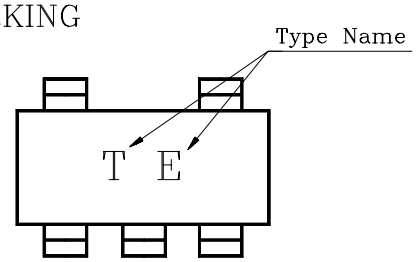
DIM	MILLIMETERS
A	2.00± 0.20
A1	1.3± 0.1
B	2.1± 0.1
B1	1.25± 0.1
C	0.65
D	0.2+0.10/−0.05
G	0~0.1
H	0.9± 0.1
T	0.15+0.1/−0.05

USV

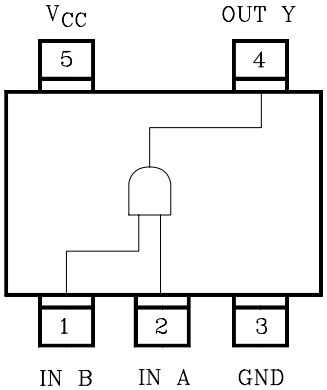
MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	V_{CC}	-0.5~6	V
DC Input Voltage	V_{IN}	-0.5~6	V
DC Output Voltage	V_{OUT}	-0.5~6	V
Input Diode Current	I_{IK}	±20	mA
Output Diode Current	I_{OK}	±20	mA
DC Output Current	I_{OUT}	±50	mA
DC V_{CC}/Ground Current	I_{CC}	±50	mA
Power Dissipation	P_D	200	mW
Storage Temperature	T_{stg}	-65~150	℃
Lead Temperature (10s)	T_L	260	℃

MARKING



PIN CONNECTION(TOP VIEW)



cosmo

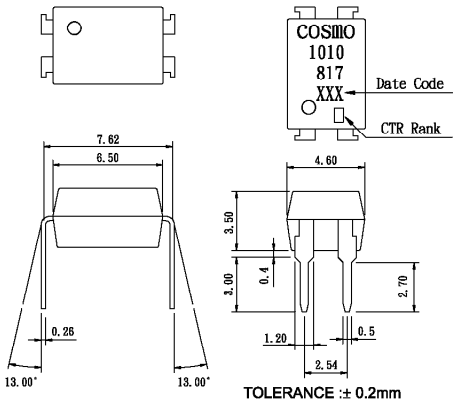
High Reliability Photo Coupler K1010

UL 1577 (File No.E169586) VDE 0884 / 0860 / 0805 (File No.101347)

Features

1. Current transfer ratio
   (CTR:MIN.50% at IF=5mA Vce=5V)
2. High isolation voltage between input and output
   (Viso:5000Vrms).
3. Compact dual-in-line package.
4. Available package : DIP/ SMD/ H.

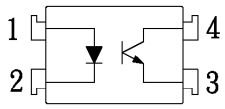
Outside Dimension : Unit (mm)



Applications

1. Registers, copiers, automatic vending machines.
2. System appliances, measuring instruments.
3. Computer terminals, programmable controllers.
4. Communications, telephone, etc.
5. Electric home appliances, such as oil fan heaters, Microwave oven, Washer, Refrigerator, Air conditioner, etc.
6. Medical instruments, physical and chemical equipment.
7. Signal transmission between circuits of different potentials and impedances.
8. Facsimile equipment, Audio, Video.
9. Switching power supply, Laser beam printer.

Schematic : Top View



1. Anode
2. Cathode
3. Emitter
4. Collector

Absolute Maximum Ratings

(Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	IF	50	mA
	Peak forward current	IFM	1	A
	Reverse voltage	VR	6	V
	Power dissipation	PD	70	mW
Output	Collector-emitter voltage	VCEO	60	V
	Emitter-collector voltage	VECO	6	V
	Collector current	IC	50	mA
	Collector power dissipation	PC	150	mW
	Total power dissipation	Ptot	200	mW
	Isolation voltage 1 minute	Viso	5000	Vrms
	Operating temperature	Topr	-30 to +100	°C
	Storage temperature	Tstg	-55 to +125	°C
	Soldering temperature 10 second	Tsol	260	°C

Electro-optical Characteristics

(Ta=25°C)

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	VF	IF =20mA	—	1.2	1.4	V
	Peak forward voltage	VFM	IFM =0.5A	—	—	3.0	V
	Reverse current	IR	VR =4V	—	—	10	uA
	Terminal capacitance	Ct	V=0, f=1kHz	—	30	—	pF
Output	Collector dark current	ICEO	VCE =20V	—	—	0.1	uA
Transfer charac-teristics	Current transfer ratio	CTR	IF=5mA, VCE =5V	50	—	600	%
	Collector-emitter saturation voltage	VCE(sat)	IF=20mA, IC=1mA	—	0.1	0.2	V
	Isolation resistance	Riso	DC500V	$5X10^{10}$	10^{11}	—	ohm
	Floating capacitance	Cf	V=0, f=1MHz	—	0.6	1.0	pF
	Cut-off frequency	fc	VCC=5V, IC=2mA, RL=100ohm	—	80	—	kHz
	Response time(Rise)	tr	VCE=2V, IC=2mA, RL=100ohm	—	4	18	us
	Response time(Fall)	tf		—	3	18	us

KEC KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR TECHNICAL DATA

KTD600K

EPITAXIAL PLANAR NPN TRANSISTOR

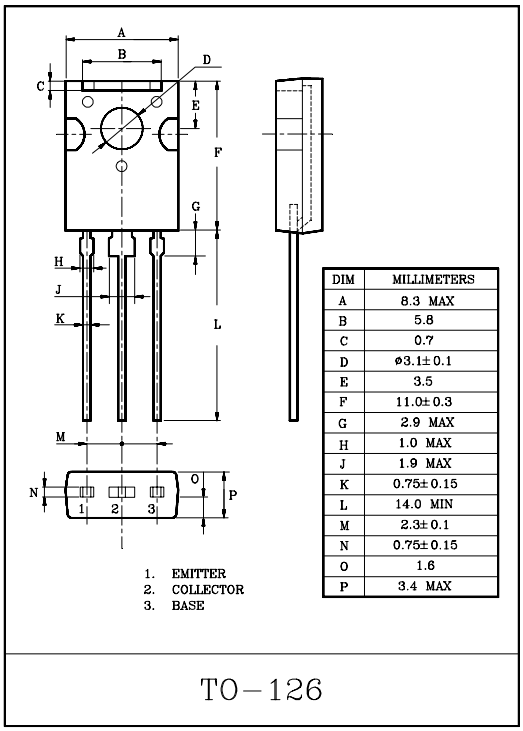
LOW FREQUENCY POWER AMP,
MEDIUM SPEED SWITCHING APPLICATIONS

FEATURES

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

MAXIMUM RATINGS (Ta=25℃)

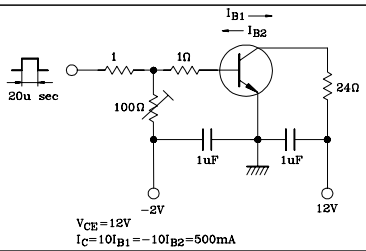
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	120	V
Collector-Emitter Voltage		V_{CEO}	120	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	1	A
		I_{CP}	2	
Collector Power Dissipation	Ta=25℃	P_C	1.5	W
	Tc=25℃		8	
Junction Temperature		T_j	150	℃
Storage Temperature Range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



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

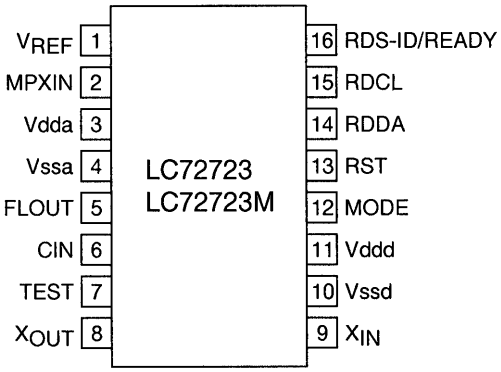
ELECTRICAL CHARACTERISTICS (Ta=25℃)

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	-	

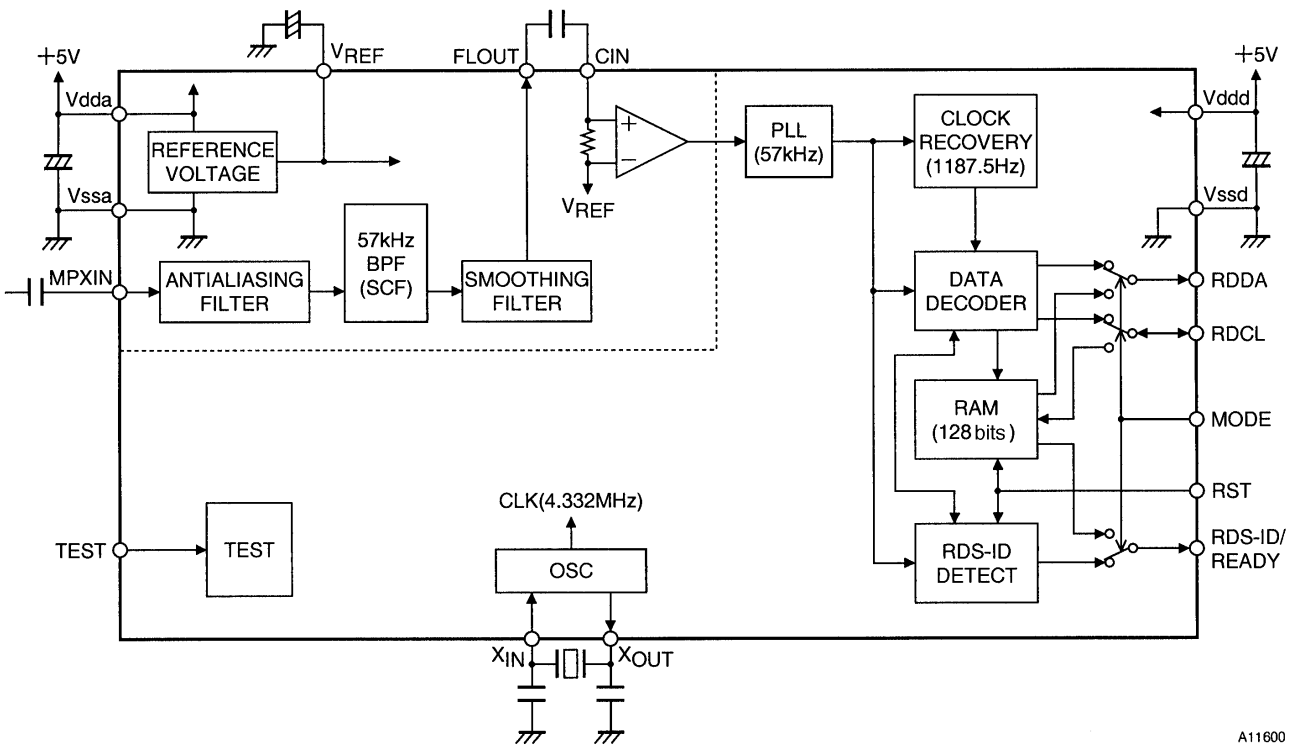
(Note) : h_{FE}(1) Classification Y:100~200, GR:160~320

LC72723, LC72723M

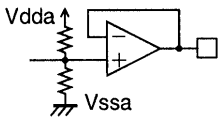
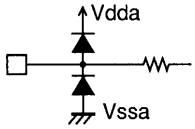
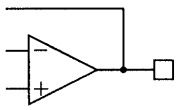
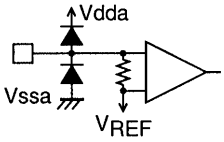
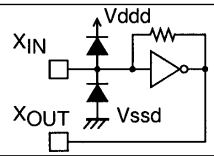
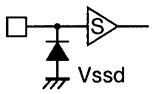
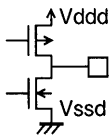
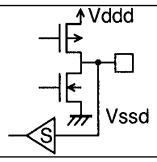
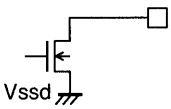
Pin Assignment (DIP16/MFP16)



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	—	—

ESMT M12L16161A

SDRAM 512K x 16Bit x 2Banks Synchronous DRAM

FEATURES

- JEDEC standard 3.3V power supply
- LVTTL compatible with multiplexed address
- Dual banks operation
- MRS cycle with address key programs
  - CAS Latency (2 & 3)
  - Burst Length (1, 2, 4, 8 & full page)
  - Burst Type (Sequential & Interleave)
- All inputs are sampled at the positive going edge of the system clock
- Burst Read Single-bit Write operation
- DQM for masking
- Auto & self refresh
- 32ms refresh period (2K cycle)

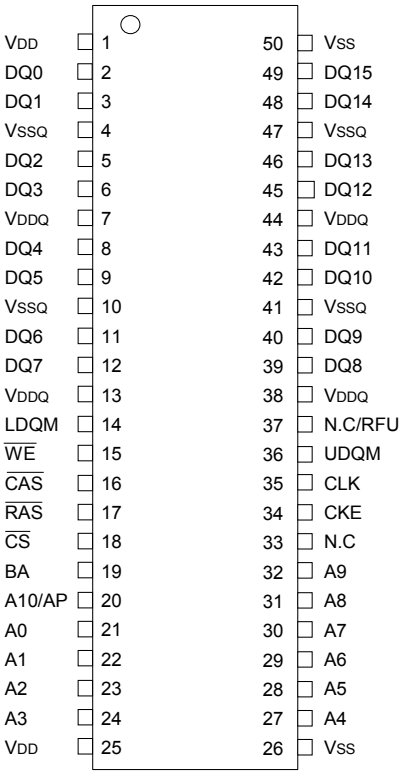
GENERAL DESCRIPTION

The M12L16161A is 16,777,216 bits synchronous high data rate Dynamic RAM organized as 2 x 524,288 words by 16 bits, fabricated with high performance CMOS technology. Synchronous design allows precise cycle control with the use of system clock I/O transactions are possible on every clock cycle. Range of operating frequencies, programmable burst length and programmable latencies allow the same device to be useful for a variety of high bandwidth, high performance memory system applications.

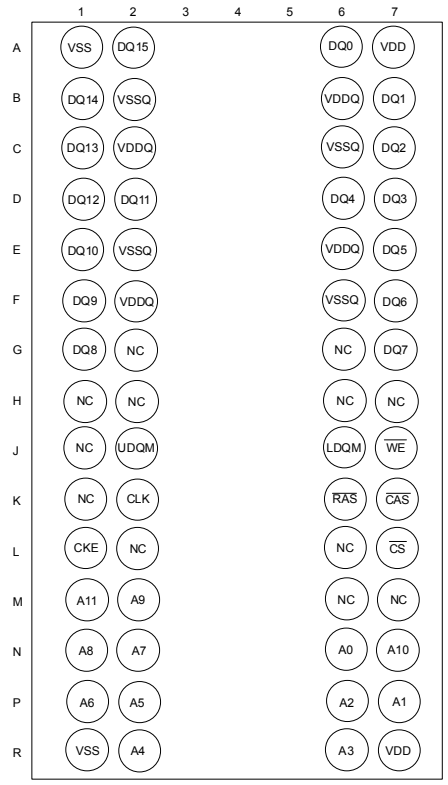
ORDERING INFORMATION

Part NO.	MAX Freq.	PACKAGE	COMMENTS
M12L16161A-5TG	200MHz	TSOP(II)	Pb-free
M12L16161A-7TG	143MHz	TSOP(II)	Pb-free
M12L16161A-7BG	143MHz	VFBGA	Pb-free

PIN CONFIGURATION (TOP VIEW)



50PIN TSOP(II)
(400mil x 825mil)
(0.8 mm PIN PITCH)



60 Ball VFBGA
(6.4x10.1mm)
(0.65mm ball pitch)

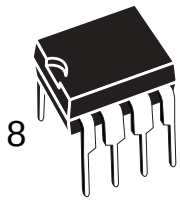
M24C64
M24C32

64Kbit and 32Kbit Serial I²C Bus EEPROM

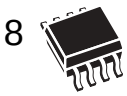
FEATURES SUMMARY

- Two-Wire I^2C Serial Interface
  Supports 400kHz Protocol
- Single Supply Voltage:
  - 4.5 to 5.5V for M24Cxx
  - 2.5 to 5.5V for M24Cxx-W
  - 1.8 to 5.5V for M24Cxx-R
- Write Control Input
- BYTE and PAGE WRITE (up to 32 Bytes)
- RANDOM and SEQUENTIAL READ Modes
- Self-Timed Programming Cycle
- Automatic Address Incrementing
- Enhanced ESD/Latch-Up Protection
- More than 1 Million Erase/Write Cycles
- More than 40-Year Data Retention

Figure 1. Packages



PDIP8 (BN)



SO8 (MN)
150 mil width

TSSOP8 (DW)
169 mil width

UFDFPN8 (MB)
2x3mm² (MLP)

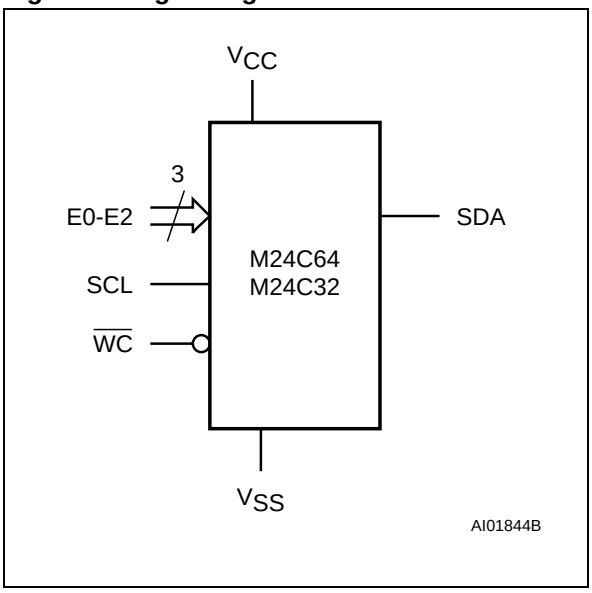
Table 1. Product List

Reference	Part Number
M24C64	M24C64
	M24C64-W
	M24C64-R
M24C32	M24C32
	M24C32-W
	M24C32-R

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

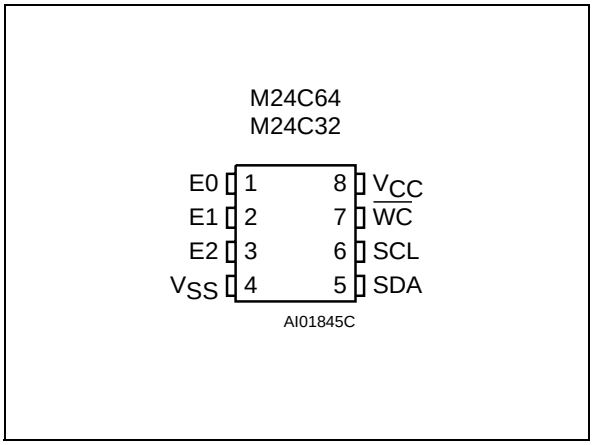
E0, E1, E2	Chip Enable
SDA	Serial Data
SCL	Serial Clock
$\overline{WC}$	Write Control
V_{CC}	Supply Voltage
V_{SS}	Ground

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.

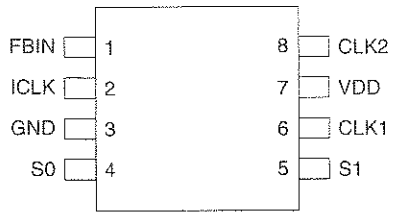
A stable and valid V_{CC} (as defined in Table 9. and Table 10.) must be applied before applying any logic signal.

Figure 3. DIP, SO, TSSOP and UFDFPN Connections



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

Pin Assignment



8 pin (150 mil) SOIC

Clock Multiplier Decoding Table 1

(Multiplies Input clock by shown amount)

FBIN	S1	S0	CLK1	CLK2
CLK1	0	0	2 X ICLK	ICLK
CLK1	0	1	4 X ICLK	2 X ICLK
CLK1	1	0	ICLK	ICLK/2
CLK1	1	1	8 X ICLK	4 X ICLK
CLK2	0	0	4 X ICLK	2 X ICLK
CLK2	0	1	8 X ICLK	4 X ICLK
CLK2	1	0	2 X ICLK	ICLK
CLK2	1	1	16 X ICLK	8 XICLK

Pin Descriptions

Pin Number	Pin Name	Pin Type	Pin Description
1	FBIN	Input	Feedback clock input.
2	ICLK	Input	Reference clock input.
3	GND	Power	Connect to ground.
4	S0	Input	Select 0 for output clock per decoding table above. Pull-up.
5	S1	Input	Select 1 for output clock per decoding table above. Pull up.
6	CLK1	Output	Clock output per table above.
7	VDD	Power	Connect to +3.3 V or +5.0 V.
8	CLK2	Output	Clock output per table above. Low skew divide by two of pin 6 clock.

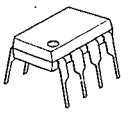
JRC **NJM2068**

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

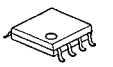
■ GENERAL DESCRIPTION

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.

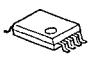
■ PACKAGE OUTLINE



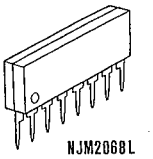
NJM2068D



NJM2068M



NJM2068V

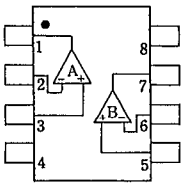


NJM2068L

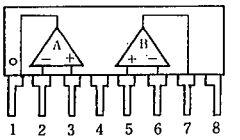
■ FEATURES

- 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

■ PIN CONFIGURATION



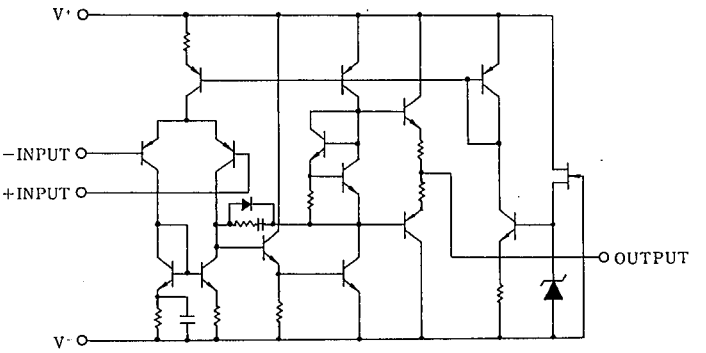
NJM2068D
NJM2068M
NJM2068V



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

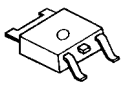
■ GENERAL DESCRIPTION

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

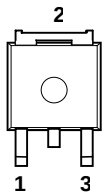


NJM2391DL1

■ 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**

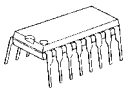
5-INPUT 3-OUTPUT VIDEO SWITCH

■ GENERAL DESCRIPTION

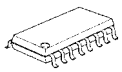
The **NJM2595** is a 5-input 3-output video switch. Its switches select one from five signals received from VTR,TV,DVD, TV-GAME and others.

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

■ PACKAGE OUTLINE



NJM2595D

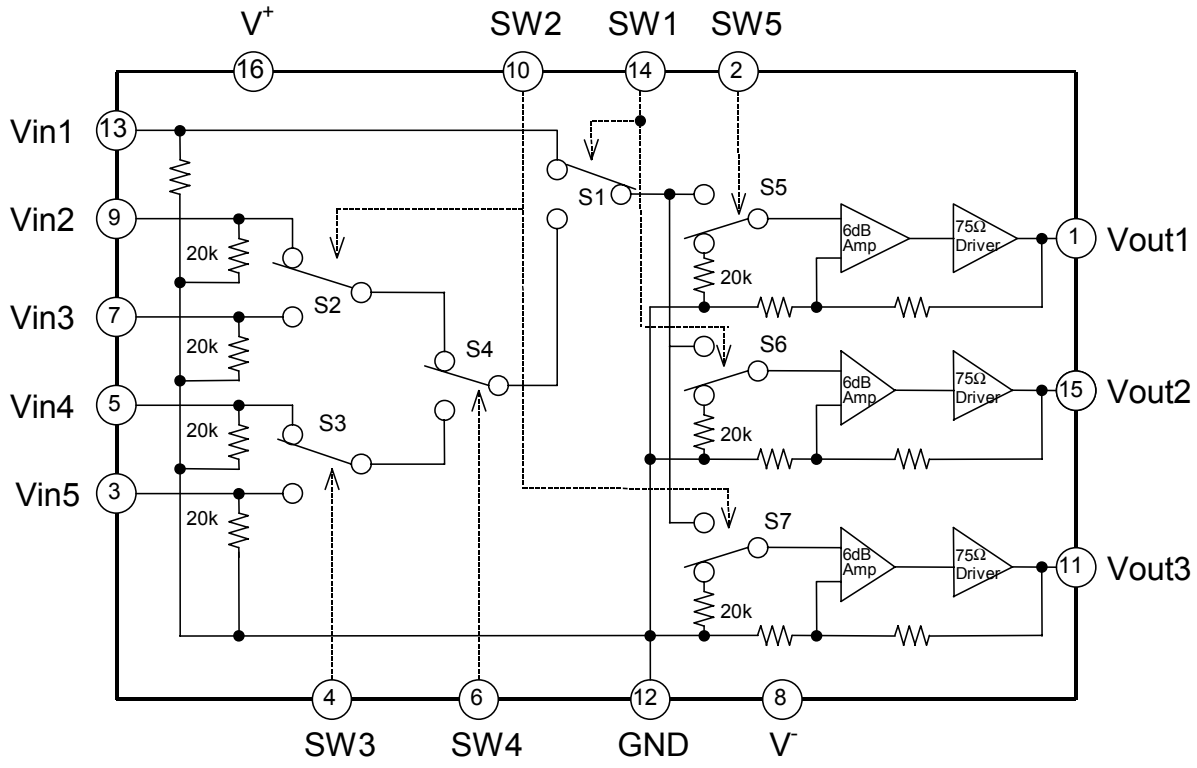


NJM2595M

■ 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 **NJM2845/46**

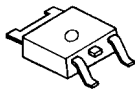
LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

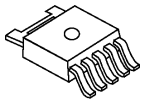
The NJM2845 is low dropout voltage regulator. Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

NJM2845 is 3 terminal type and NJM2846 is ON/OFF control built in type. These product can be selected according to the applications.

■ PACKAGE OUTLINE



NJM2845DL1

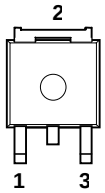


NJM2846DL3

■ FEATURES

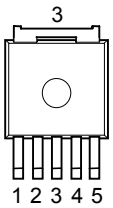
- ● High Ripple Rejection 75dB typ. (f=1kHz,3V Version)
- ● Output Noise Voltage Vno=45μVrms typ. (Vo=3V Version)
- ● Output capacitor with 2.2μF ceramic capacitor (Vo≥2.6V)
- ● Output Current Io(max.)=800mA
- ● High Precision Output Vo ±1.0%
- ● Low Dropout Voltage 0.18V typ. (Io=500mA)
- ● ON/OFF Control (NJM2846)
- ● Internal Short Circuit Current Limit
- ● Internal Thermal Overload Protection
- ● Bipolar Technology
- ● Package Outline TO-252-3 (NJM2845DL1), TO-252-5 (NJM2846DL3)

■ PIN CONFIGURATION



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

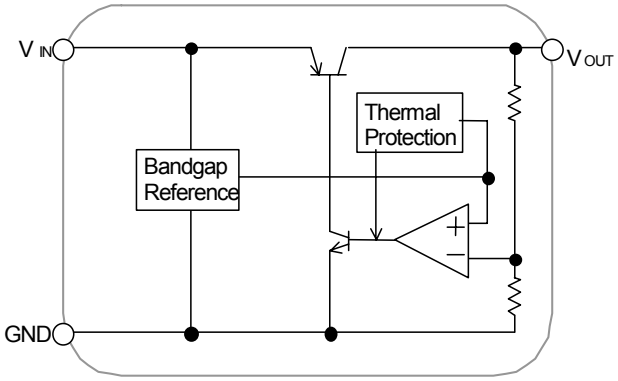
NJM2845DL1



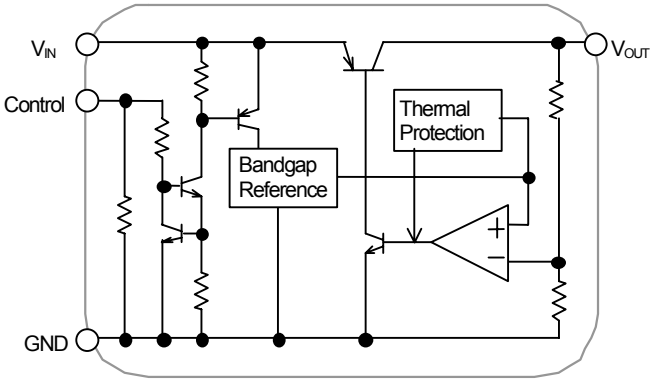
1.CONTROL
2.V_{IN}
3.GND
4.Vo
5.NC

NJM2846DL3

■ EQUIVALENT CIRCUIT



NJM2845DL1



NJM2846DL3

JRC **NJM4556A**

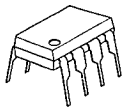
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ 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~).

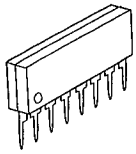
The NJM4556A combines many of the fetures of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ PACKAGE OUTLINE

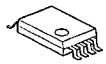


NJM4556AD

NJM4556AM



NJM4556AL

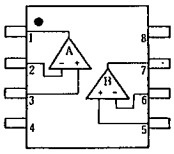


NJM4556AV

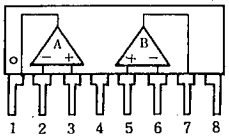
■ FEATURES

- 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



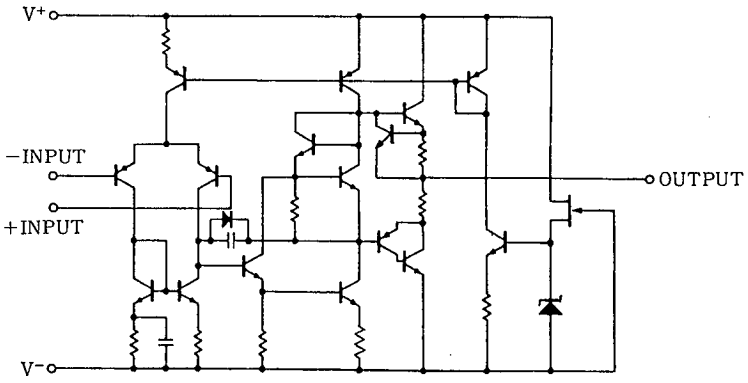
NJM4556AD
NJM4556AM
NJM4556AV



NJM4556AL

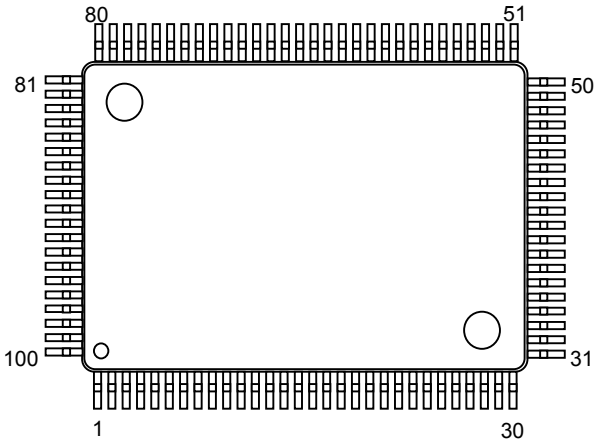
PIN FUNCTION
1. A OUTPUT
2. A−INPUT
3. A+INPUT
4. V⁻
5. B+INPUT
6. B−INPUT
7. B OUTPUT
8. V⁺

■ EQUIVALENT CIRCUIT (1/2 Shown)



NJW1197C

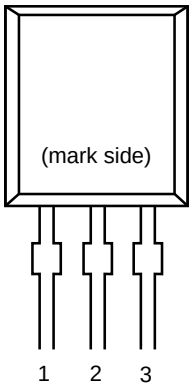
■ PIN FUNCTION



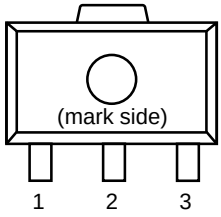
No.	SYMBOL	FUNCTION	No.	SYMBOL	FUNCTION
1	ROUT	Rch output	51	DCR_IN	“Multi-channel selector” Rch input
2	COUT	Cch output	52	DCR_OUT	“Input selector” Rch output
3	LSOUT	LSch output	53	GND	Ground
4	RSOUT	RSch output	54	DCL_IN	“Multi-channel selector” Lch input
5	LBOUT	LBch output	55	DCL_OUT	“Input selector” 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

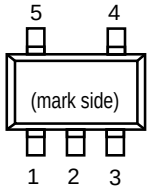
• TO-92



• 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

PIN DESCRIPTION

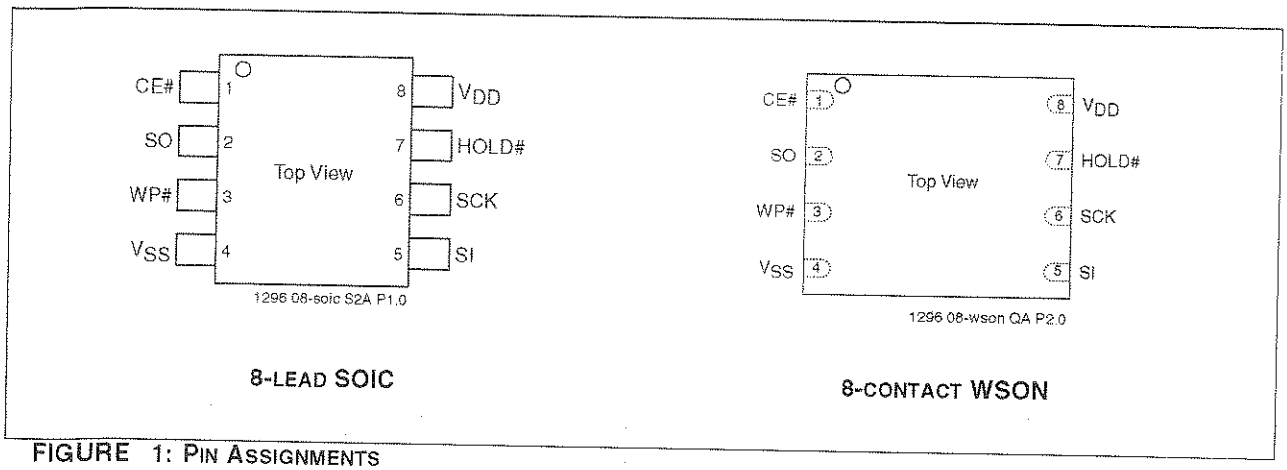


FIGURE 1: PIN ASSIGNMENTS

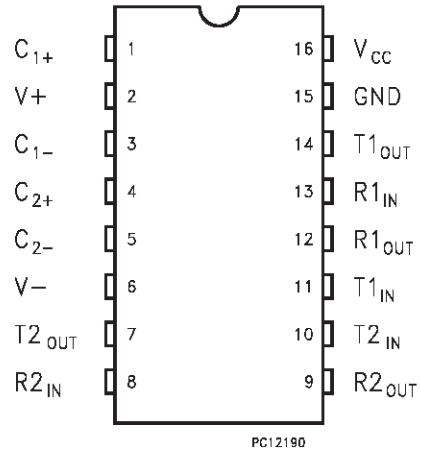
TABLE 1: PIN DESCRIPTION

Symbol	Pin Name	Functions
SCK	Serial Clock	To provide the timing of the serial interface. Commands, addresses, or input data are latched on the rising edge of the clock input, while output data is shifted out on the falling edge of the clock input.
SI	Serial Data Input	To transfer commands, addresses, or data serially into the device. Inputs are latched on the rising edge of the serial clock.
SO	Serial Data Output	To transfer data serially out of the device. Data is shifted out on the falling edge of the serial clock. Outputs Flash busy status during AAI Programming when reconfigured as RY/BY# pin. See "Hardware End-of-Write Detection" on page 12 for details.
CE#	Chip Enable	The device is enabled by a high to low transition on CE#. CE# must remain low for the duration of any command sequence.
WP#	Write Protect	The Write Protect (WP#) pin is used to enable/disable BPL bit in the status register.
HOLD#	Hold	To temporarily stop serial communication with SPI flash memory without resetting the device.
V_{DD}	Power Supply	To provide power supply voltage: 2.7-3.6V for SST25VF080B
V_{SS}	Ground	

T1.0 1296

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.

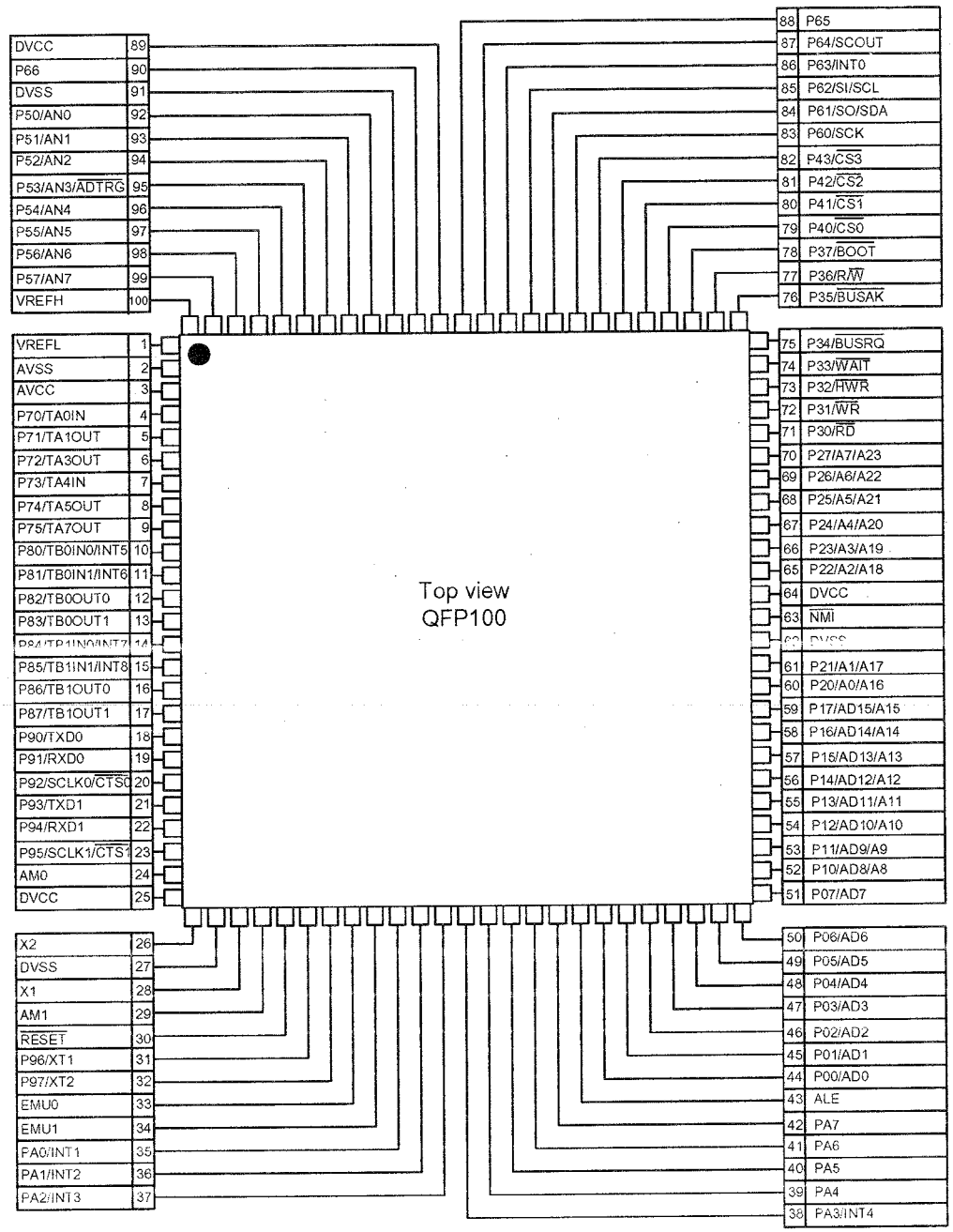


Figure 2.1.1 Pin assignment diagram (100-pin LQFP)

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 $\overline{\text{CTS0}}$	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 $\overline{\text{CTS1}}$	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.
$\overline{\text{NMI}}$	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
$\overline{\text{RESET}}$	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 $\overline{\text{BUSRQ}}$ and $\overline{\text{BUSAK}}$ signal.

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.

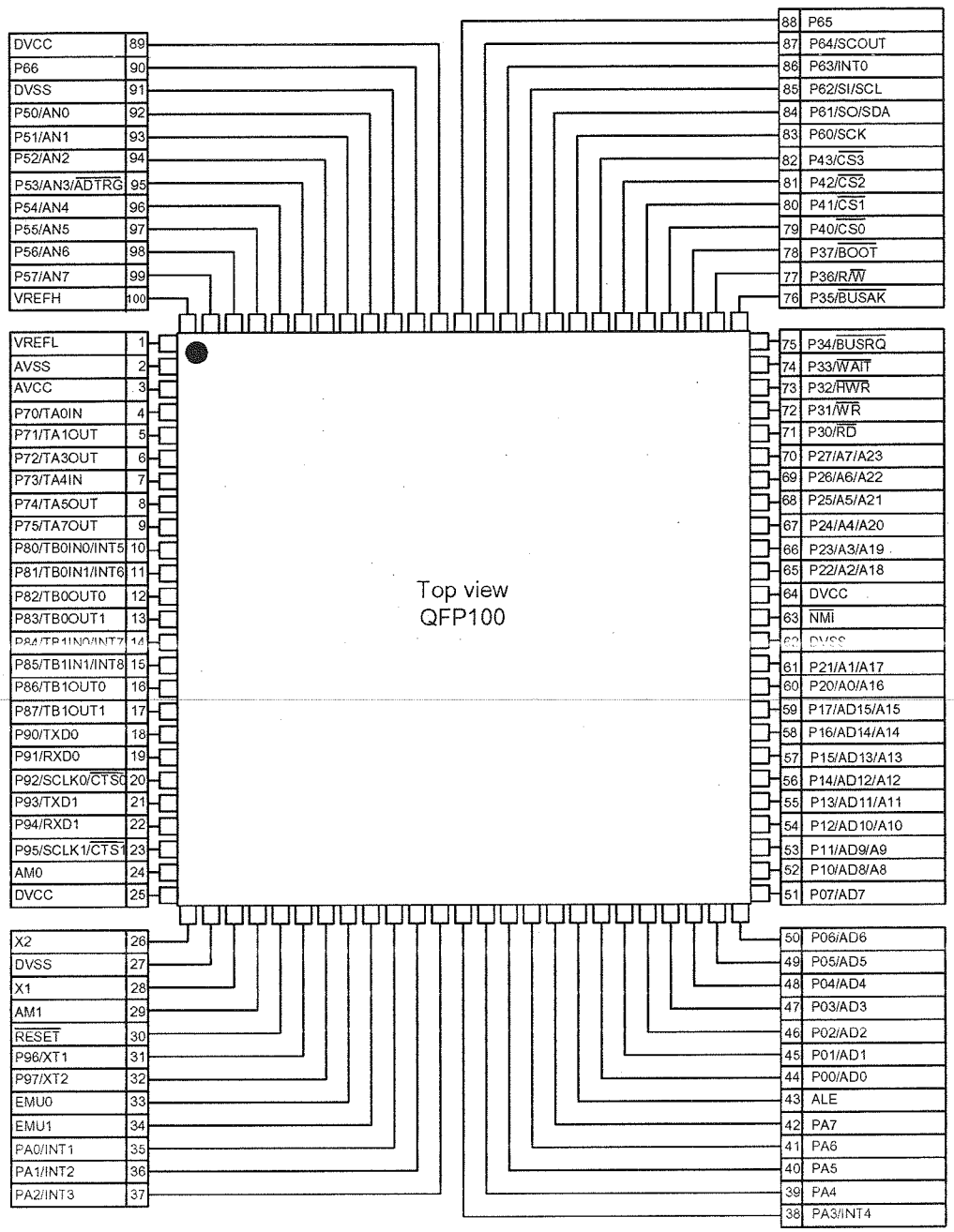


Figure 2.1.1 Pin assignment diagram (100-pin LQFP)

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.

TOSHIBA TC74HCU04AP/AF/AFN

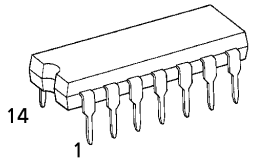
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74HCU04AP, TC74HCU04AF, TC74HCU04AFN

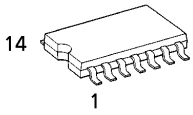
HEX INVERTER

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

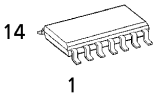
The TC74HCU04A is a high speed CMOS INVERTER fabricated with silicon gate C²MOS technology.
It achieves the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation.
Since the internal circit is composed of a single stage inverter, it can be used in analog applications such as crystal oscllators.
All inputs are equipped with protection circuits against static discharge or transient excess voltage.



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



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

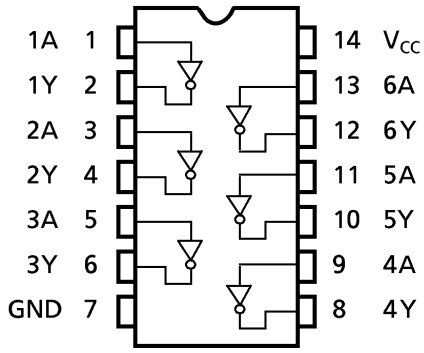


FN (SOL14-P-150-1.27)
Weight : 0.12g (Typ.)

FEATURES :

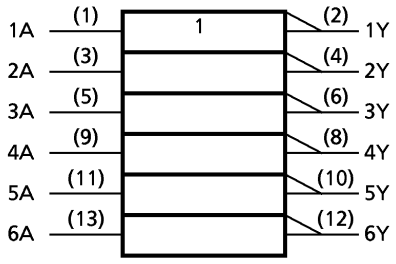
- High Speed ..... t_{pd} = 4ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ..... I_{CC} = 1 μA(Max.) at Ta = 25°C
- High Noise Immunity ..... V_{NIH} = V_{NIH} = 10% V_{CC} (Min.)
- Output Drive Capability ..... 10 LSTTL Loads
- Symmetrical Output Impedance ... $|I_{OH}|$ = I_{OL} = 4mA(Min.)
- Balanced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

PIN ASSIGNMENT



(TOP VIEW)

IEC LOGIC SYMBOL

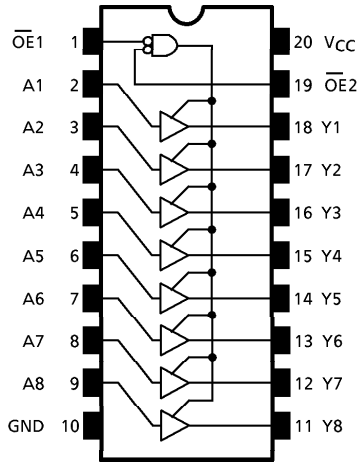


TRUTH TABLE

A	Y
L	H
H	L

961001EBA2

PIN ASSIGNMENT



(TOP VIEW)

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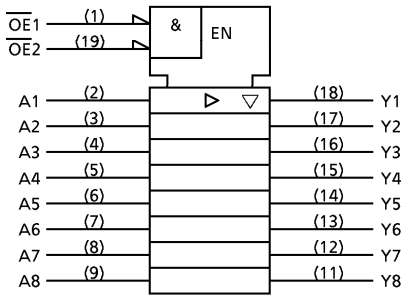


TRUTH TABLE

INPUTS			OUTPUTS
$\overline{OE}1$	$\overline{OE}2$	An	
H	X	X	Z
X	H	X	Z
L	L	H	H
L	L	L	L

X : Don't Care
Z : High Impedance

MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage Range	V_{CC}	−0.5~7.0	V
DC Input Voltage	V_{IN}	−0.5~7.0	V
DC Output Voltage	V_{OUT}	−0.5~7.0 (Note 1)	V
		−0.5~V_{CC}+0.5 (Note 2)	
Input Diode Current	I_{IK}	−50	mA
Output Diode Current	I_{OK}	±50 (Note 3)	mA
DC Output Current	I_{OUT}	±50	mA
Power Dissipation	P_D	180	mW
DC V_{CC}/Ground Current	I_{CC} / I_{GND}	±100	mA
Storage Temperature	T_{stg}	−65~150	°C

(Note 1) Output in Off-State
(Note 2) High or Low State. I_{OUT} absolute maximum rating must be observed.
(Note 3) V_{OUT}<GND, V_{OUT}>V_{CC}

961001EBA2'

TOSHIBA TC74VHC157F/FN/FT

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74VHC157F, TC74VHC157FN, TC74VHC157FT

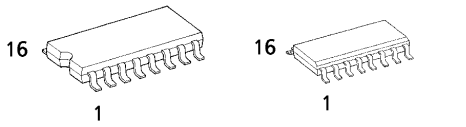
QUAD 2 - CHANNEL MULTIPLEXER

(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.

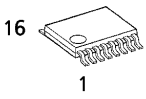
FEATURES :

- 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



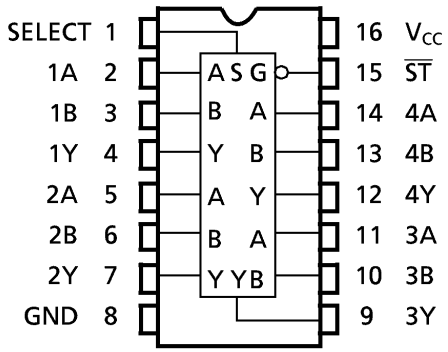
F (SOP16-P-300-1.27)
Weight : 0.18g (Typ.)

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



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

PIN ASSIGNMENT



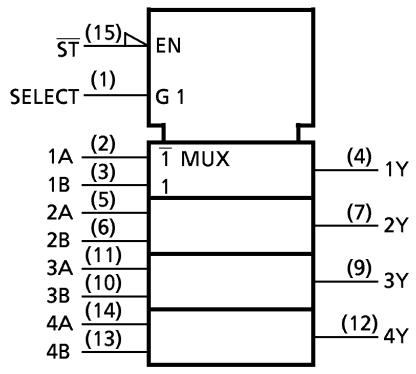
(TOP VIEW)

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

TOSHIBA TC74VHCT14AF/AFN/AFT

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

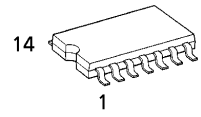
TC74VHCT14AF, TC74VHCT14AFN, TC74VHCT14AFT

HEX SCHMITT INVERTER

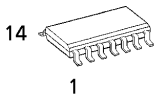
The TC74VHCT14A is an advanced high speed CMOS SCHMITT INVERTER fabricated with silicon gate C2MOS technology.
It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.
Pin configuration and function are the same as the TC74VHC04 but the inputs have hysteresis and with its schmitt trigger function, the TC74VHC14 can be used as a line receivers which will receive slow input signals.
The input voltage are compatible with TTL output voltage.
This device may be used as a level converter for interfacing 3.3V to 5V system.
Input protection and output circuit ensure that 0 to 5.5V can be applied to the input and output*1 pins without regard to the supply voltage. These structure prevents device destruction due to mismatched supply and input / output voltages such as battery back up, hot board insertion, etc.
*1: Vcc = 0V

FEATURES:
- High Speed ..... t_{pd} = 5.0ns (typ.) at V_{CC} = 5V
- Low Power Dissipation ..... I_{CC} = 2μA(Max.) at Ta = 25°C
- Compatible with TTL outputs .... V_{IL} = 0.8V (Max.), V_{IH} = 2.0V (Min.)
- Power Down Protection is provided on all inputs and outputs.
- Balanced Propagation Delays ..... $t_{pLH} \simeq t_{pHL}$
- Low Noise ..... V_{OLP} = 0.8V (Max.)
- Pin and Function Compatible with the 74 series (74AC / HC / F / ALS / LS etc.) 14 type.

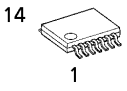
(Note) The JEDEC SOP (FN) is not available in Japan.



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

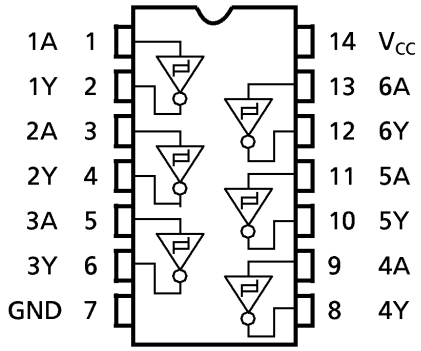


FN (SOL14-P-150-1.27)
Weight : 0.12g (Typ.)

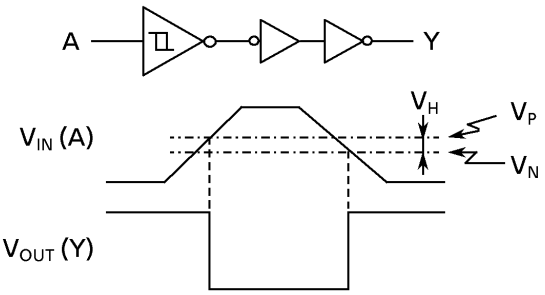


FT (TSSOP14-P-0044-0.65)
Weight : 0.06g (Typ.)

PIN ASSIGNMENT



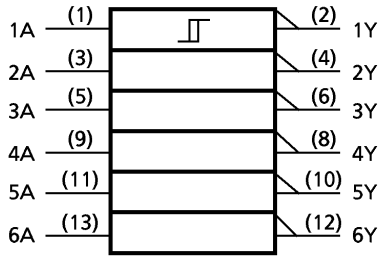
SYSTEM DIAGRAM, WAVEFORM



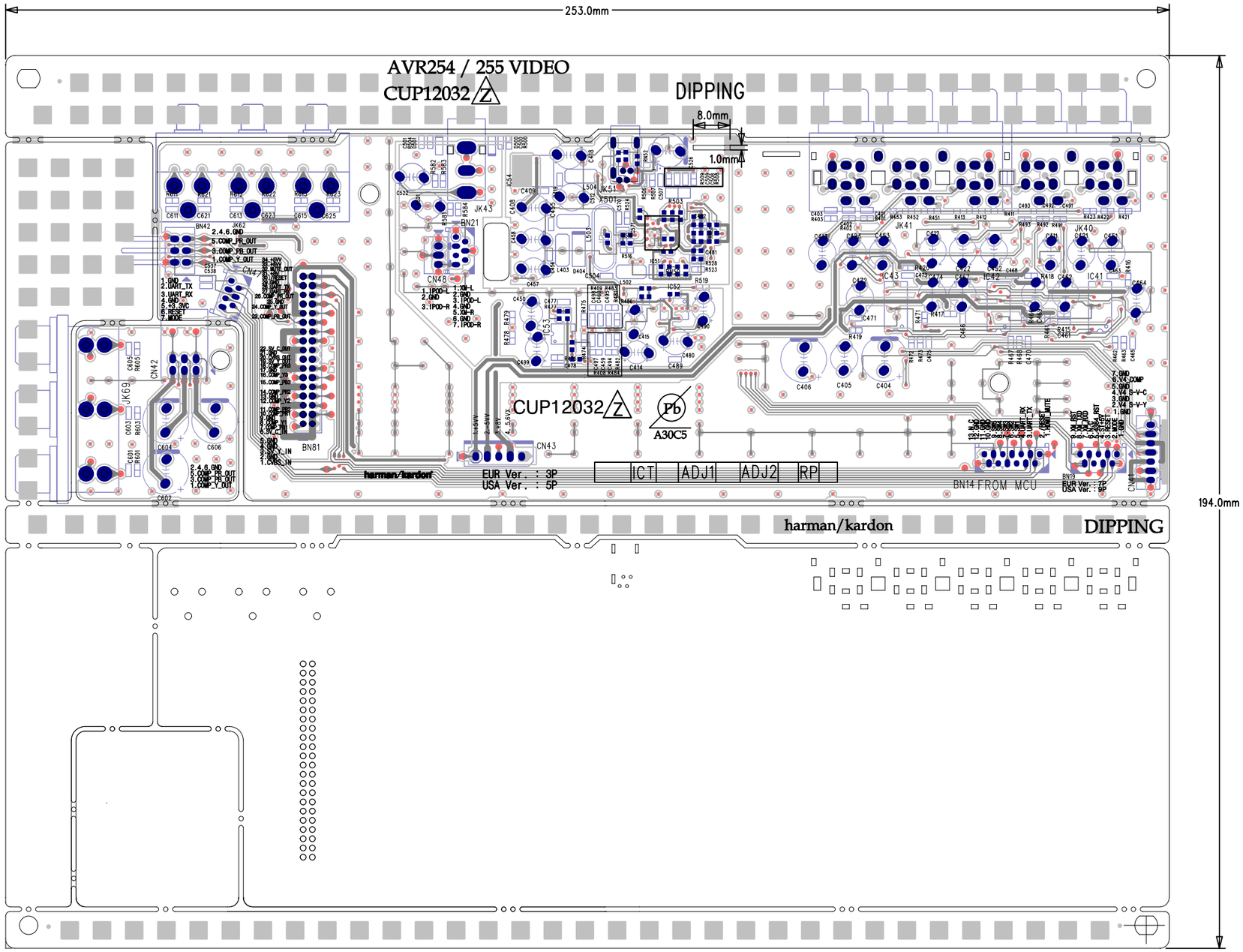
TRUTH TABLE

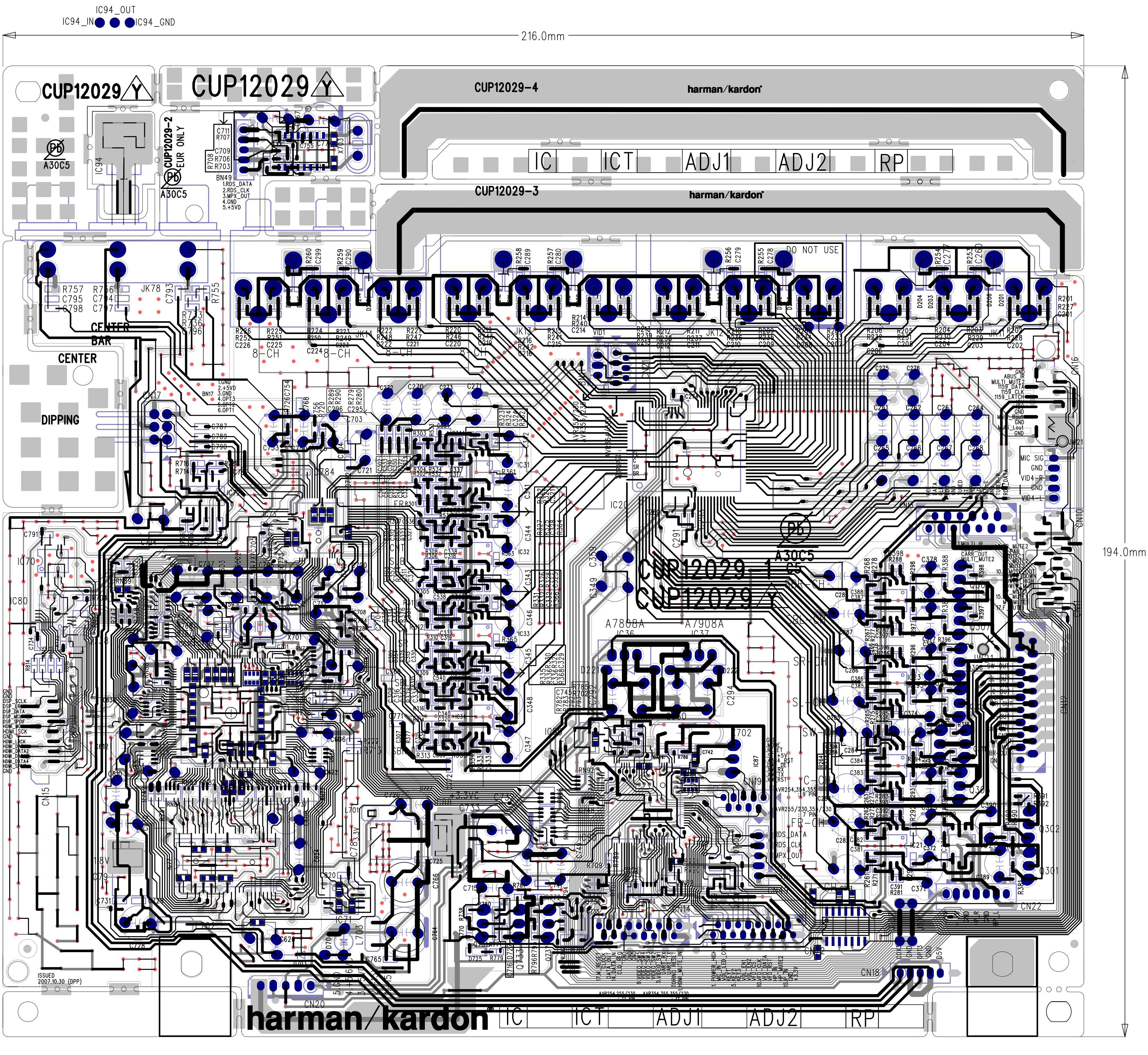
A	Y
L	H
H	L

IEC LOGIC SYMBOL

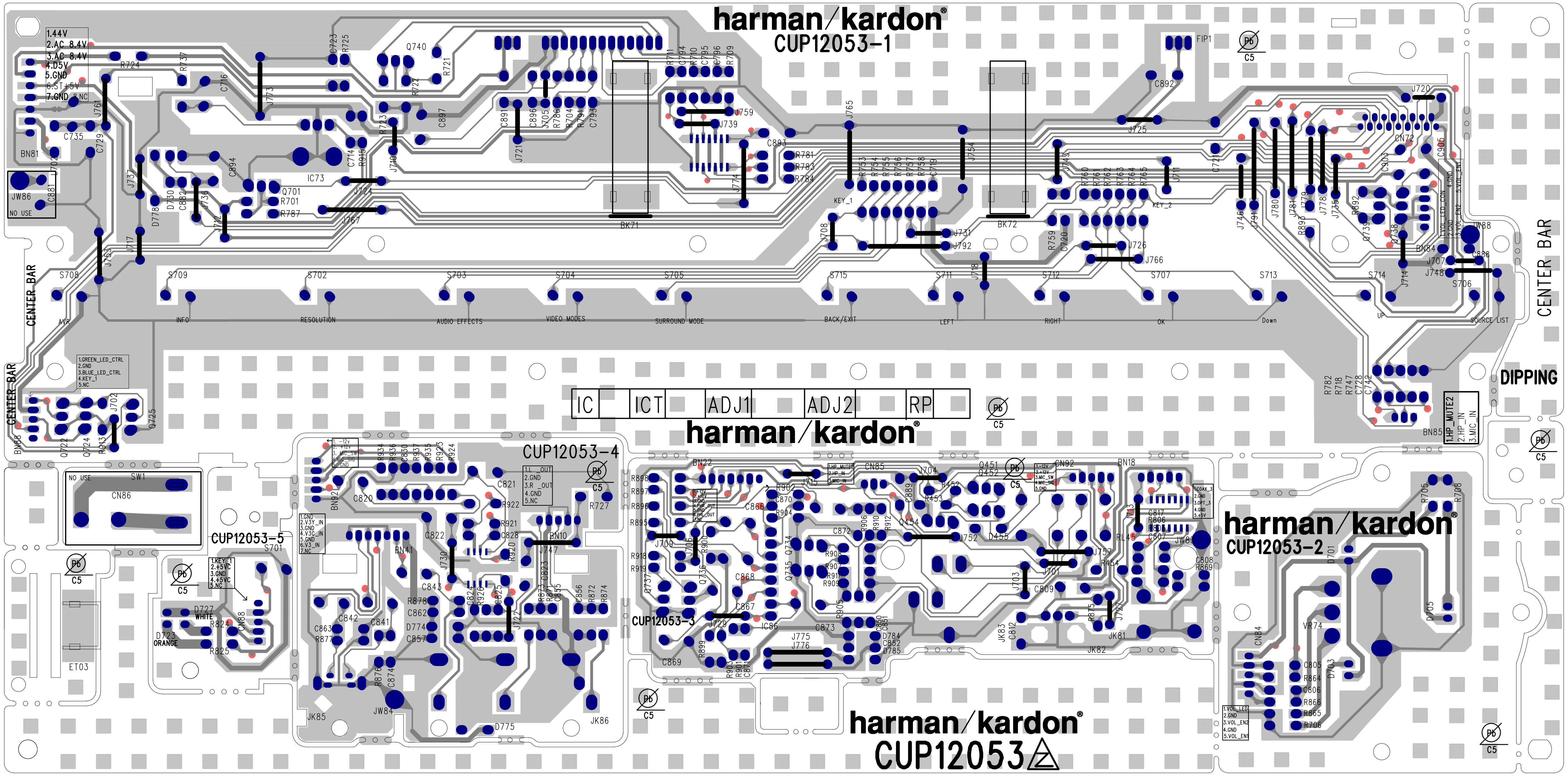


980910EBA2

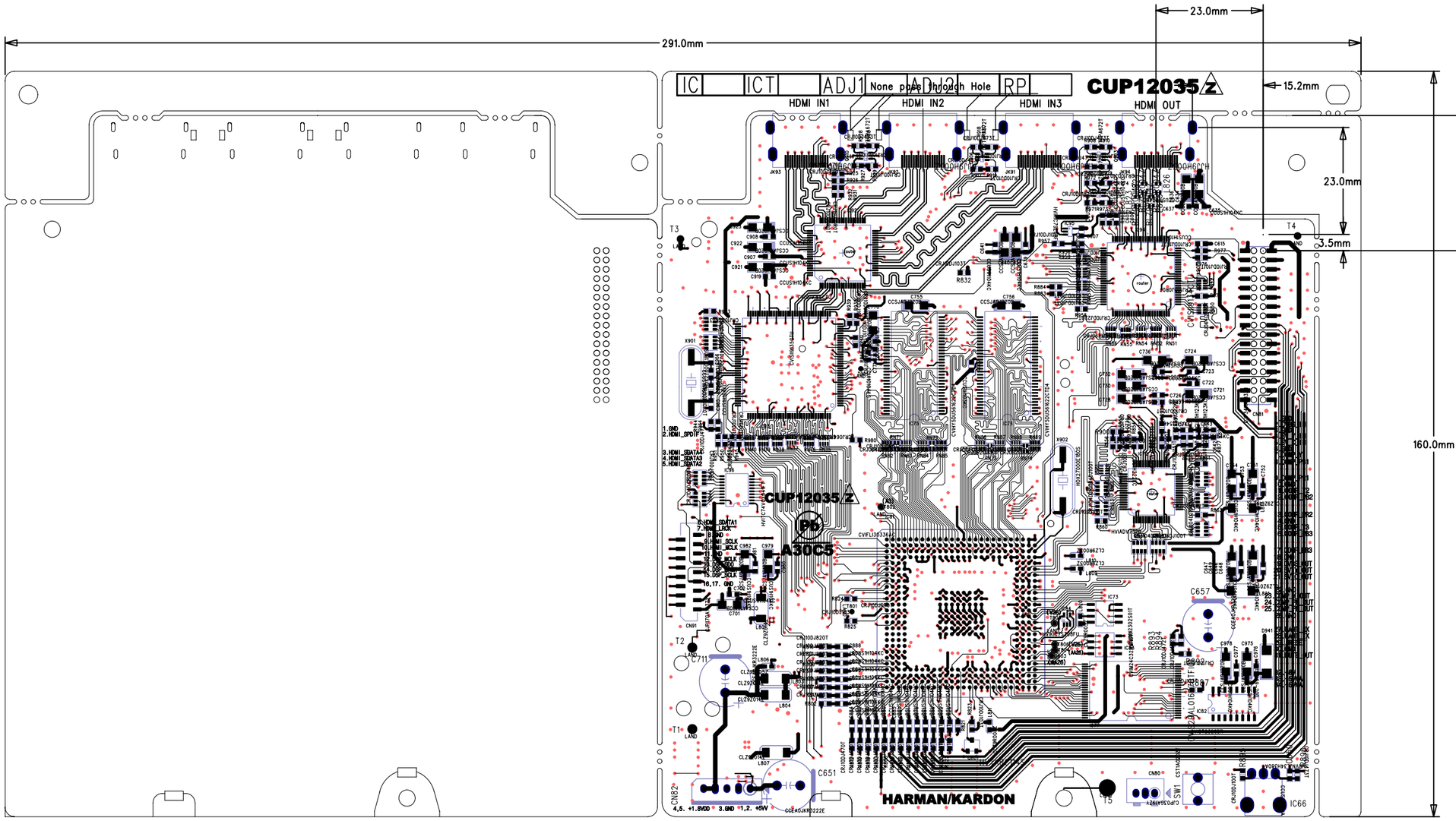

253.0mm
AVR254 / 255 VIDEO
CUP12032/Z
DIPPING
8.0mm
1.0mm
CUP12032/Z
Pb
A30C5
EUR Ver. : 3P
USA Ver. : 5P
ICT
ADJ1
ADJ2
RP
BN14 FROM MCU
harman/kardon
DIPPING
194.0mm


IC94_OUT
IC94_IN
IC94_GND
216.0mm
194.0mm
CUP12029
CUP12029-2
EUR ONLY
A30C5
CUP12029-4
CUP12029-3
harman/kardon
IC
ICT
ADJ1
ADJ2
RP
DO NOT USE
CENTER BAR
CENTER
DIPPING
8-CH
BN49
1.RDS_DATA
2.RDS_CLK
3.MPX_OUT
4.GND
5.+5VD
BN17
1.GND
2.+5VD
3.GND
4.OPT3
5.OPT2
6.OPT1
MIC SIG
GND
VID4-R
GND
VID4-L
CUP12029-1
A7808A
A7908A
SBR-CH
SBL-CH
SR-CH
SL-CH
SW-CH
C-CH
FR-CH
FL-CH
RDS_DATA
RDS_CLK
MPX_OUT
AVR254,354,355 : 9 PIN
AVR255/230,355/230 : 7 PIN
CN20
CN18
CN22
ISSUED 2007.10.30 (DPP)

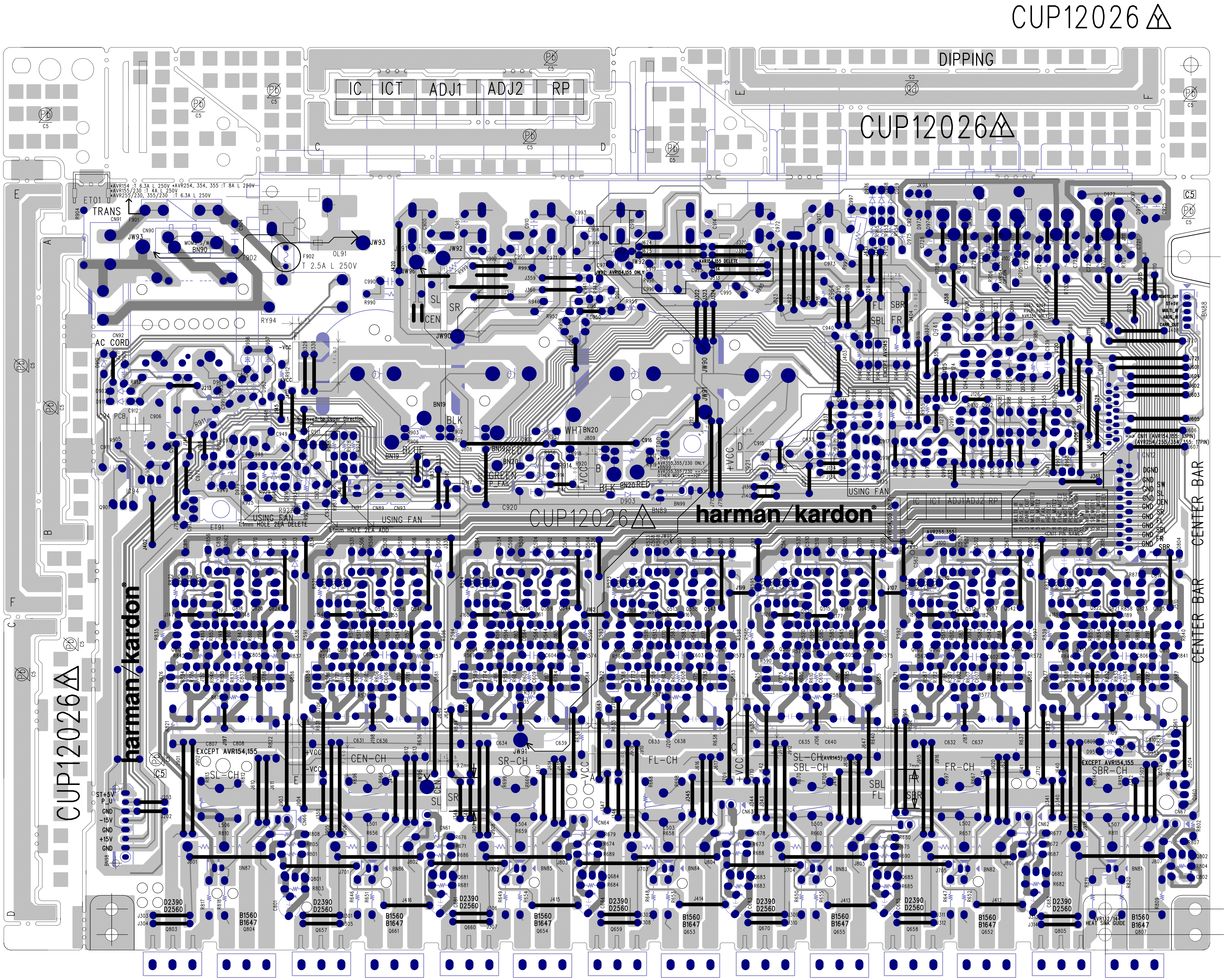
AVR355 INPUT_0212.pcb - Tue Mar 11 17:17:48 2008



080119_AVR255_355 FRONT - Tue Mar 11 16:35:36 2008



355HDMI0116_GPIO.pcb – Tue Mar 11 16:19:20 2008



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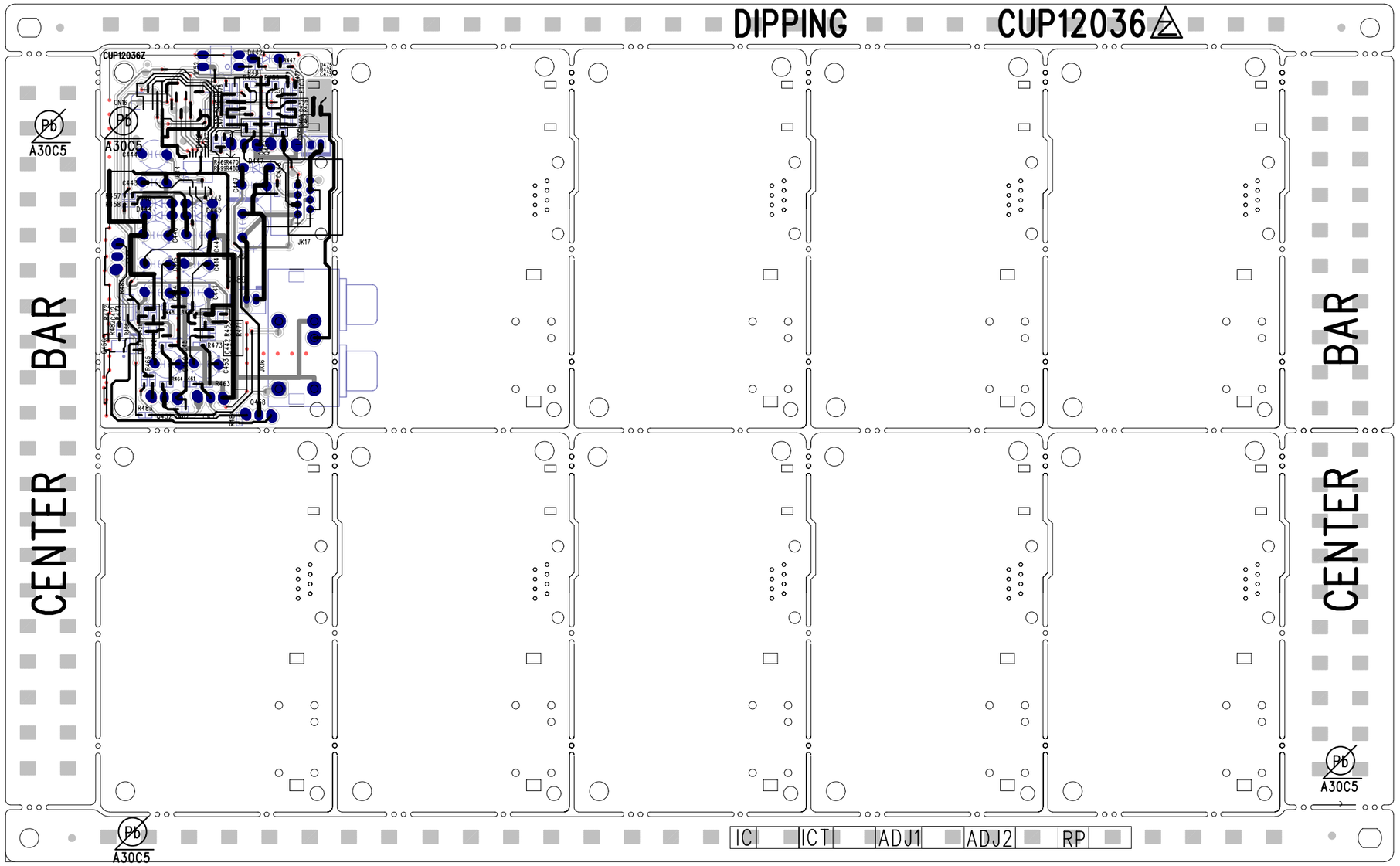
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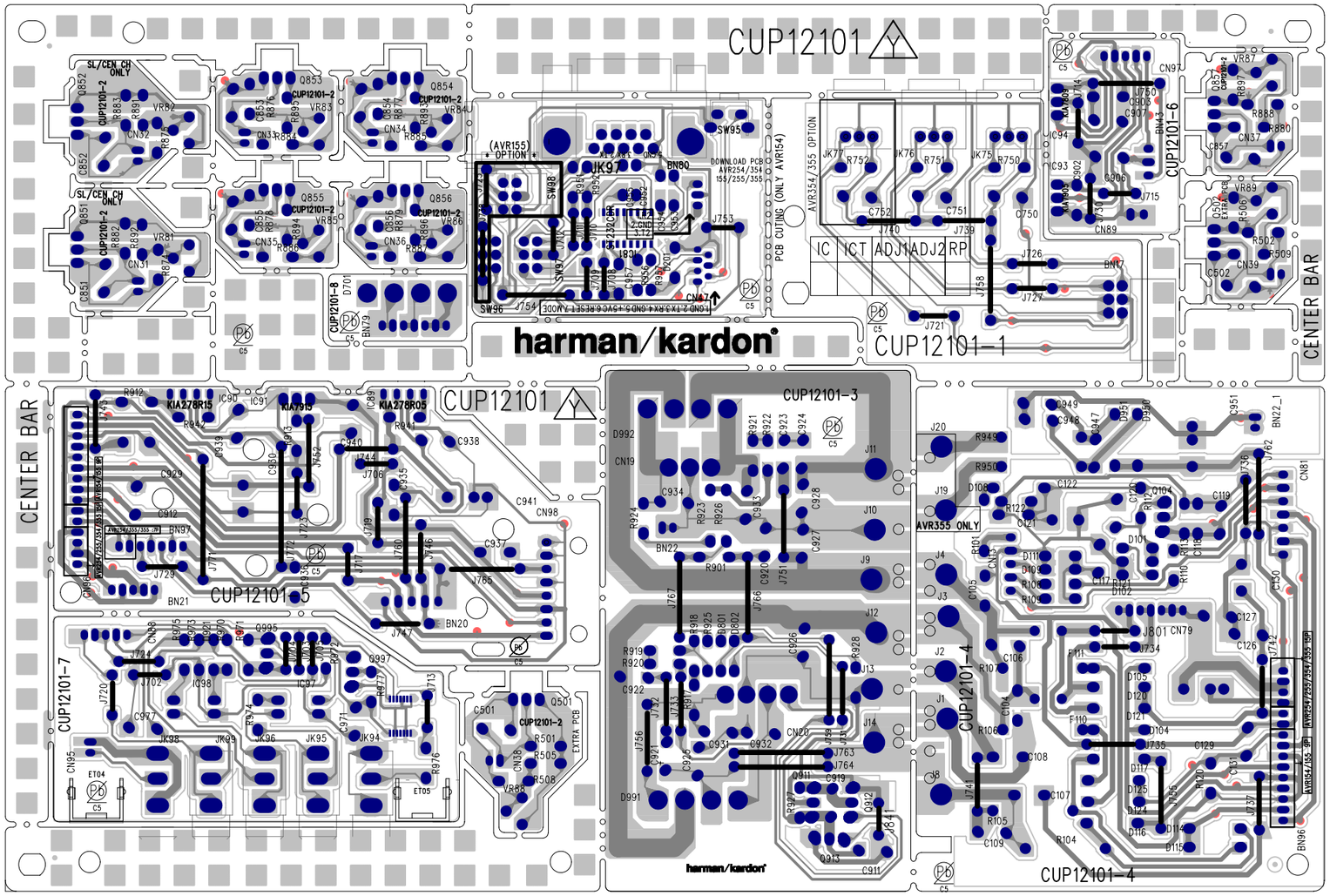
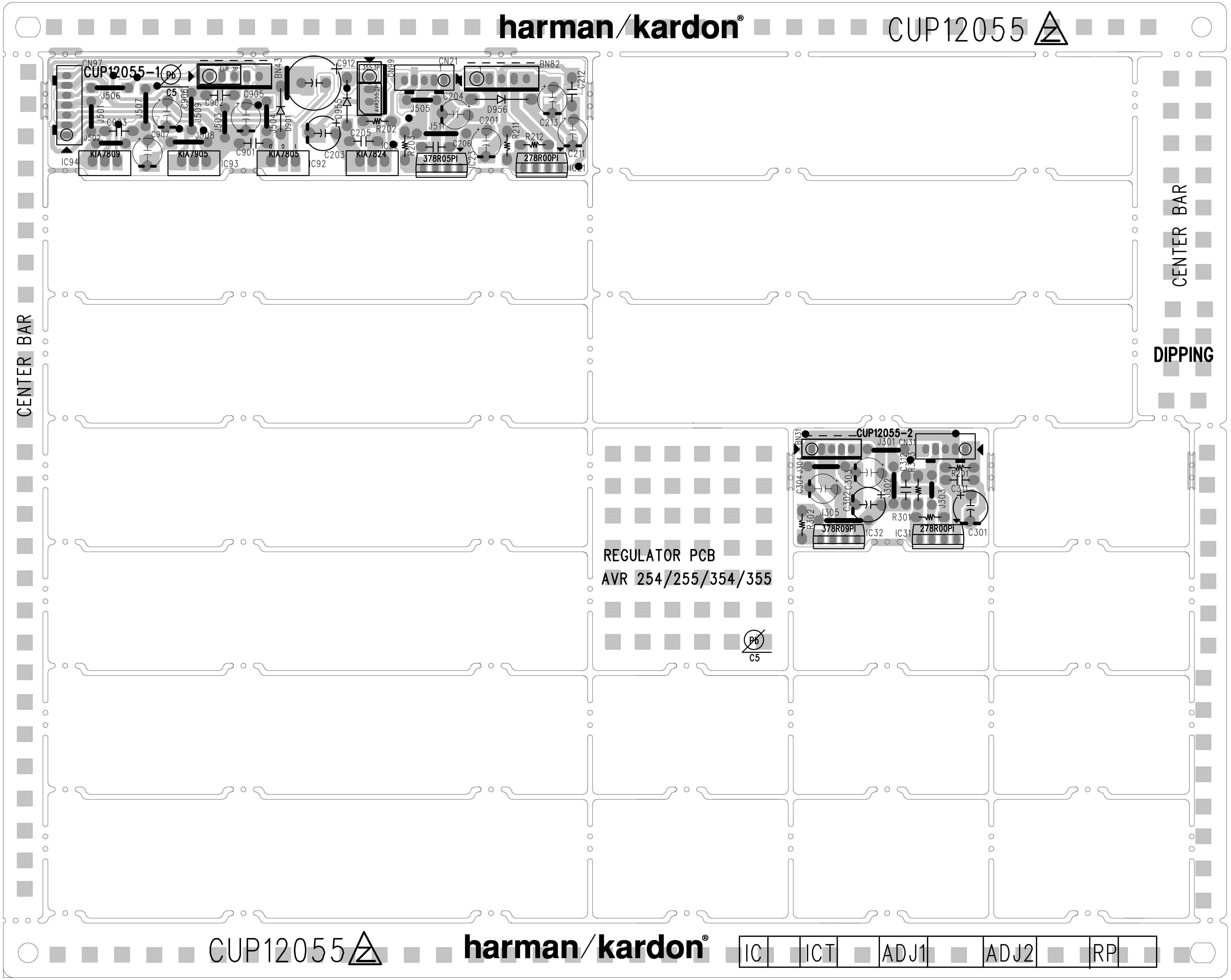
CENTER
IC
ICT
ADJ1
ADJ2
RP


CUP12101
CUP12101-1
CUP12101-2
CUP12101-3
CUP12101-4
CUP12101-5
CUP12101-6
CUP12101-7
CUP12101-8
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 ADJ1 ADJ2 RP
AVR355 ONLY
EXTRA PCB
KIA278R15
KIA7915
KIA278R05


harman/kardon
CUP12055
CENTER BAR
CENTER BAR
DIPPING
CUP12055-1
CUP12055-2
KIA7809
KIA7905
KIA7805
KIA7824
378R05PI
278R00PI
378R09PI
REGULATOR PCB
AVR 254/255/354/355
C5
CUP12055
harman/kardon
IC
ICT
ADJ1
ADJ2
RP

AVR254/255/354/355 BLOCK DIAGRAM

ALL version
has TUNER module.

TUNER MODULE

TO FUNCTION SEL

TUNER L/R

TUNER CONT

A-BUS OUT
AVR355 OPTION

MULTI_OUT
AVR354&355 OPTION

NJW1159

2CH VOL

6dB AMP

MULTI_MUTE * 2EA

6/8 CHANNEL INPUT

FL/R

SL/R

SBL/R

CEN/SUB

LT

RT

ATT

TONE

PRE-OUT

PRE AMP

FRONT L

FRONT R

SURR L

SURR R

CEN

SUBWOOFER

SBL/MULTI L

SBR/MULTI R

DATA

CLOCK

NJW1197FC2

ANALOG AUDIO

ANALOG 5 IN

ANALOG 4 IN

ANALOG 4 OUT

ANALOG 3 IN

ANALOG 2 IN

ANALOG 2 OUT

ANALOG 1 IN

ANALOG FRONT IN

XM IN

USA VER. ONLY

iPod IN

STEREO or iPod IN

MAIN AMP

HP_AMP

+8dB

MIC SIG

MIC_AMP

+40dB

HP_IN

+12V

H_PHONE OUT
or MIC_INPUT

P-AMP
+29dB

FRONT L

FRONT R

SBL/MULTI L

SBR/MULTI R

SURR L

SURR R

CEN

Temp. Sensor

DC/OVER CURRENT

SENS

POWER AMP MUTE

TEMP I/F

HEAT2

PROTECT

P_LINE_FAIL

FL

FR

SBL/ZONE2 LEFT

SBR/ZONE2 RIGHT

SL

SR

CEN

TO XM PART
(TO VIDEO PART)
+5.3V

REGULATOR
(+5V)

TO TORINO PART
+5V
+1.8V

REGULATOR
(+5V)
(+1.8V)

+9VDH

REGULATOR
(+9V)
(+1.8V)

TO DSP PART
+5VD

TO VIDEO PART
+5V

REGULATOR
(+5V)

+12V

REGULATOR
(+12V)

TO VIDEO PART
(TO IPOD PART)
+9V

TO DSP PART
+15V

REGULATOR
(+9V)
(-5V)

TO VIDEO PART
-9V

-15V

REGULATOR
(±5V)

TO A-BUS PART
+24V

REGULATOR
(±4V)

+VCC1

-VCC1

+VCC2

-VCC2

UNBAL DETECT

+5VL

+5VL REG

P-DOWN

PWR DOWN

+12V

POWER S/W

SUB TRANS

STANDBY

AC OUTLET

AC IN

+VSK

FL

FL

XM_RADIO MODULE

XM_DAT

XM_LRCK

XM_BICK

XM_MCK

XM_DT

AMCOM 2CH DAC

XM_L

XM_R

USA VER. ONLY

iPod L/R

THE BRIDGE II (iPod)

iPod TX

iPod RX

TMP86F409NG
(8BIT u-COM for iPod)

iPod IN

iPod CONT

iPod CVBS

iPod CVBS

AVR354 & 355 OPTION

HDMI_IN1

HDMI_IN2

HDMI_IN3

HDMI_OUT

HDMI MCLK

HDMI SCLK

HDMI LRCK

HDMI SD

SII9185
(SW IC)

SII9134
(HDMI TX)

SII9135
(HDMI RX)

I2C & GPIO CONTROL

I2S/DSP_SPDIF

I2S

I2C & GPIO CONTROL

ST232CDR

RS232C

FLI30336
TORINO
(SCALER)

DIGITAL VIDEO
MAX : 1080p

ADV7342
(DAC)

CONTROL BY I2C

SDRAM
32M

DDR SDRAM
256M * 2EA

CVBS_TORINO IN
S-VID Y_TORINO IN
S-VID C_TORINO IN
Y1/2/3_ TORINO IN
Cb1/2/3_ TORINO IN
Cr1/2/3_TORINO IN

NJM2566
6dB

6CH VIDEO OUT

CVBS_OUT
S-VID Y_OUT
S-VID C_OUT
Y_OUT
Cb_OUT
Cr_OUT

COAX&OPT. FRONT

OPT.1

OPT.2

OPT.3

COAX.1

COAX.2

COAX OUT

A-BUS IR IN

CARR. OUT

ZONE2 IN

REMOTE IN

REMOTE OUT

D_FR

D_SL

D_SR

D_CNT

D_SW

D_SBR

D_SBL

ADUCT1A+

ADUCT1A-

ADUCT1B+

ADUCT1B-

ADUCT2+

ADUCT2-

ADUCT3+

ADUCT3-

ADUCT4+

ADUCT4-

24.576MHz

XIN

XOUT

CS42528
A/D, D/A CONVERTER WITH DIR

AINR

AINL

DIN

DOUT

MCLK

SDIN1

SDIN2

SDIN3

SDIN4

SCLK1

LRCLK1

RST

HDMI SCLK

HDMI LRCK

HDMI SD

XMCK

RMCK

RDATA

RBCK

RLRCK

OMCK

CLKIN

XMCK

CMPDAT

CMPCLK

CMPREQ

DAOMCLK

AUDATA0

AUDATA1

AUDATA2

AUDATA3

SCLK0

LRCLK0

ADDRESS&DATA

CS497004
DSP

SPI Serial Flash
8 Mbit

M12L16161A
16M SDRAM

I2S/DSP_SPDIF

DIR CONT

I2S

I2S

DSP MCLK

HDMI MCLK

DIR MCLK

HDMI MCLK

74VHC157
2CH MUX

DIR CONT

DSP CONT

FUNC_SW CONT

VOL CONT

MUTE CONT

PH DET

TUNER CONT

RDS CONT

XM CONT

TOSHIBA
16BIT u-COM

REMOTE IN

CARR. OUT

MULTI_IR IN

A-BUS_IR OUT

EEPROM (32 Kbit)

RST IC

POWER AMP CONT

iPod Buffer IC CONT

VIDEO SWITCHING CONT

** EEP_ROM **
FOR BACK-UP MEMORY.

LYDCONTROL

KEY

VR_ENC.

REMOTE ENC.

STANDBY

POWER DOWN

ST232CDR

RS232C

REMOTE SENSOR

FL DISPLAY

ROTARY ENCODER (MASTER VR)

STANDBY /MODE BLUE

MOMS SWITCH

KEY MATRIX

KEY0~2

VR ENC

(BLUE) VOLUME Indicator

COAX FRONT

OPT FRONT

S-VIDEO FRONT

COMPOSITE FRONT

ANALOG FRONT

THE BRIDGE II IN (iPod CVBS)

FROM THE BRIDGE II (iPod)

COMPOSITE FRONT IN

FROM FRONT

AVR354 & 355 OPTION

COMPOSITE 3 IN

COMPOSITE 2 IN

COMPOSITE 2 OUT

COMPOSITE 1 IN

FRONT VIDEO

V3

V2

V1

CONT

+6dB

DRV

CVBS

FLI30336 ANALOG INPUT

NJM2595

S-VIDEO FRONT IN

FROM FRONT

S-VID Y

S-VID C

S-VIDEO 3 IN

S-VIDEO 2 IN

S-VIDEO 2 OUT

S-VIDEO 1 IN

Y

C

VIDEO SWITCHING CONTROL BY MCU

NJM2566 ANALOG OUTPUT

COMPOSITE MONITOR OUT

S-VIDEO MONITOR OUT

FLI30336 ANALOG INPUT

COMPO INPUT1

COMPO INPUT2

COMPO INPUT3

AVR354 & 355 OPTION

NJM2566 ANALOG OUTPUT

COMP_Y_OUTPUT

COMP_Cb_OUTPUT

COMP_Cr_OUTPUT

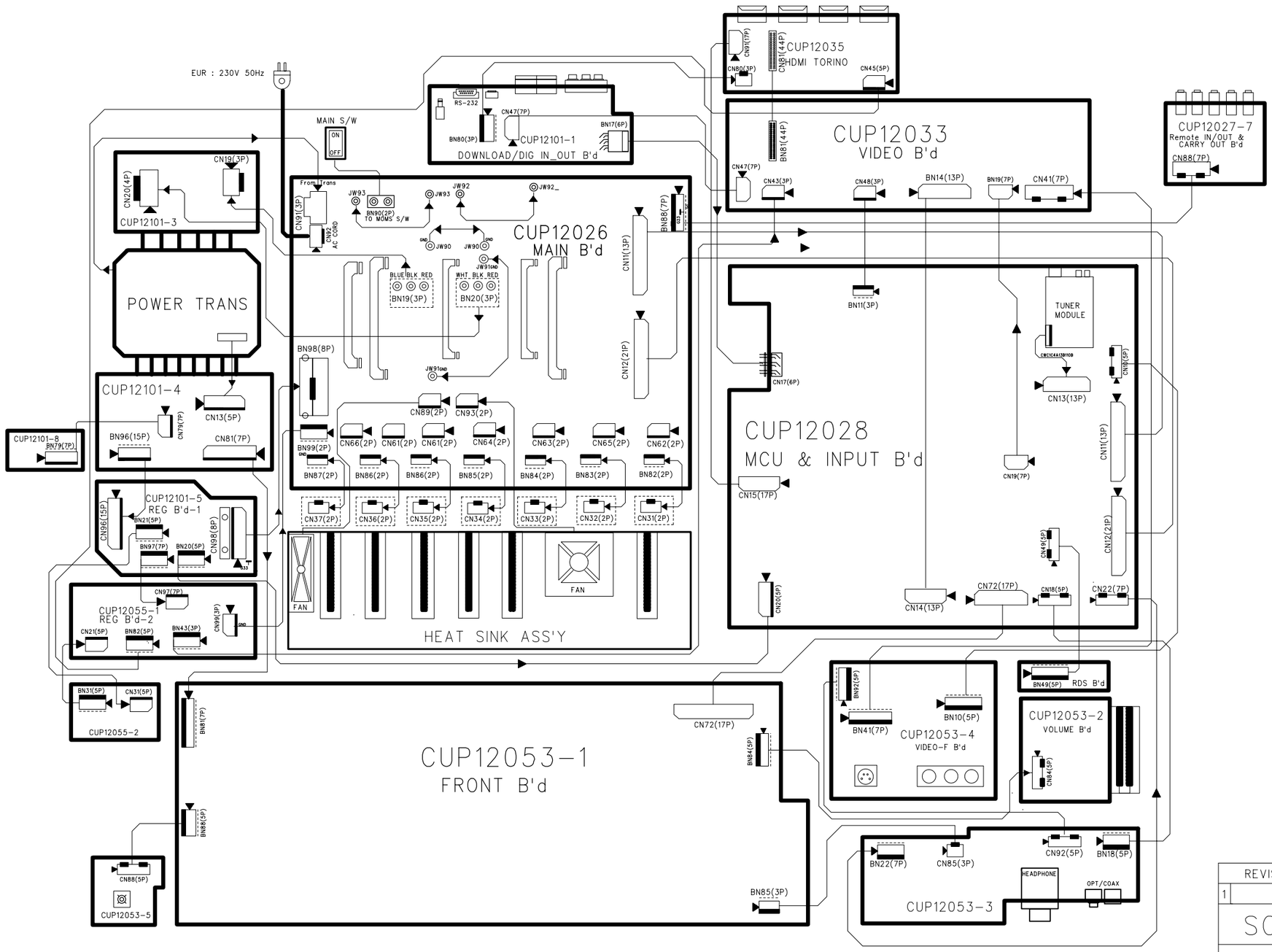
COMPONENT MONITOR OUT

COMMUNICATION BETWEEN TORINO & TOSHIBA MCU
UART RX/TX

REVISION	2		4		6	
1		3		5		7

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR254/255/354/355		1/1
DESIGN	CHECK	APPROVE	DRAWING NO
			BLOCK DIAGRAM 2024BLDZ 1/1

AVR255/230 WIRING DIAGRAM



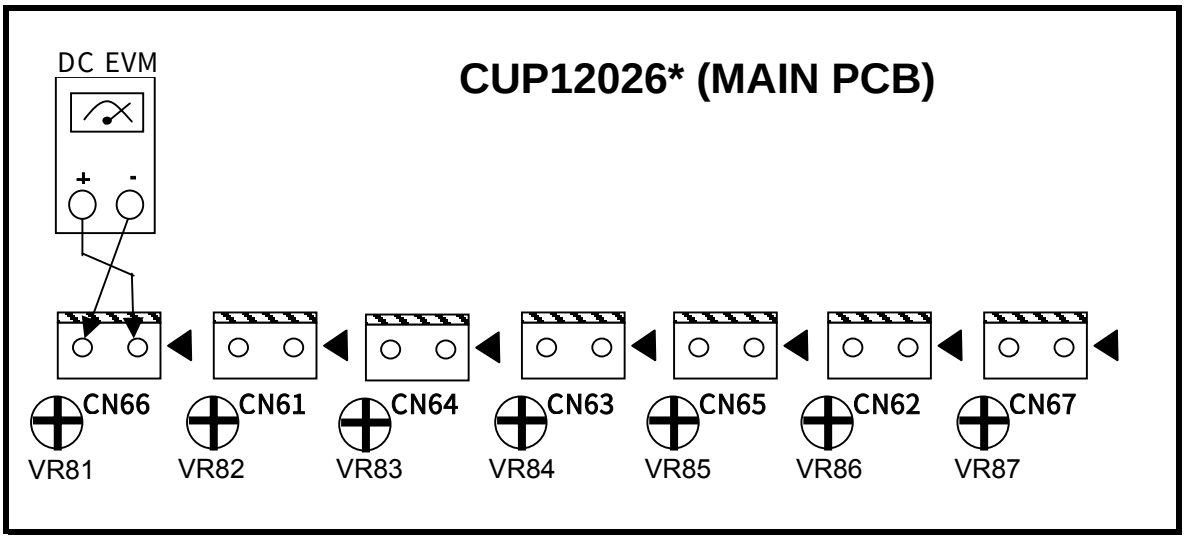
REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM			SHEET 1/1
MODEL	AVR255/230		
DESIGN	CHECK	APPROVE	DRAWING NO
			WIRING DIAGRAM 1190SCDZ 1/1

AMPLIFIER SECTION BIAS ADJUSTMENT

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

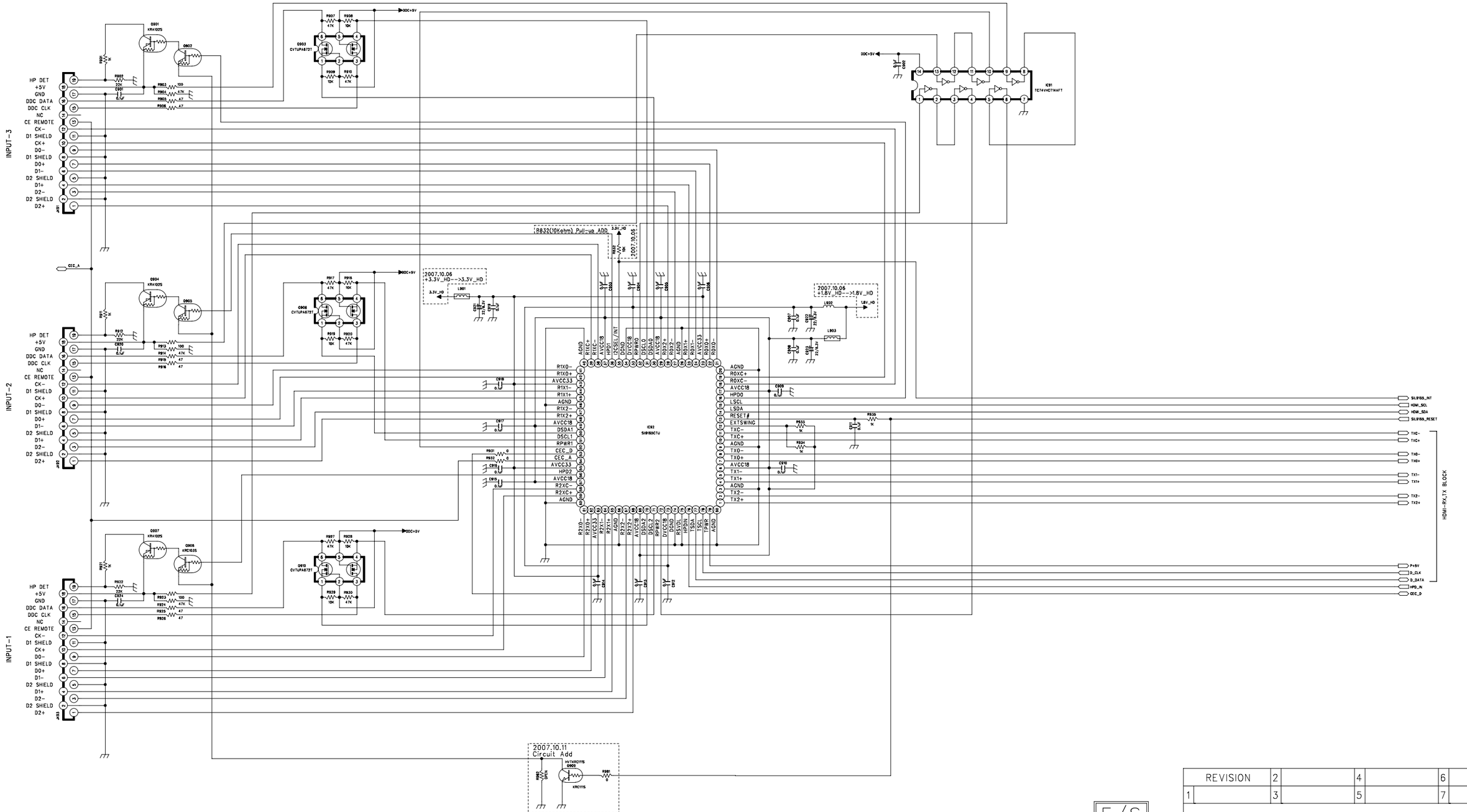
Standard value
.Ideal current = 48mA (± 5%)
.Ideal DC Voltage = 25.92mV (± 5%)



DC VOLTMETER ; Connect to
CN66(SL),CN61(CEN),CN64(SR),CN63(FL),CN65(SBL(AVR254,255,354,355)),CN62(FR),CN67(SBR)

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%)	CN66
5	Surround Right	25.92mV (± 5%)	CN64
6	Surround Back Left	25.92mV (± 5%)	CN65
7	Surround Back Right	25.92mV (± 5%)	CN67

CUP12035Z



REVISION	2	4	6
1	3	5	7

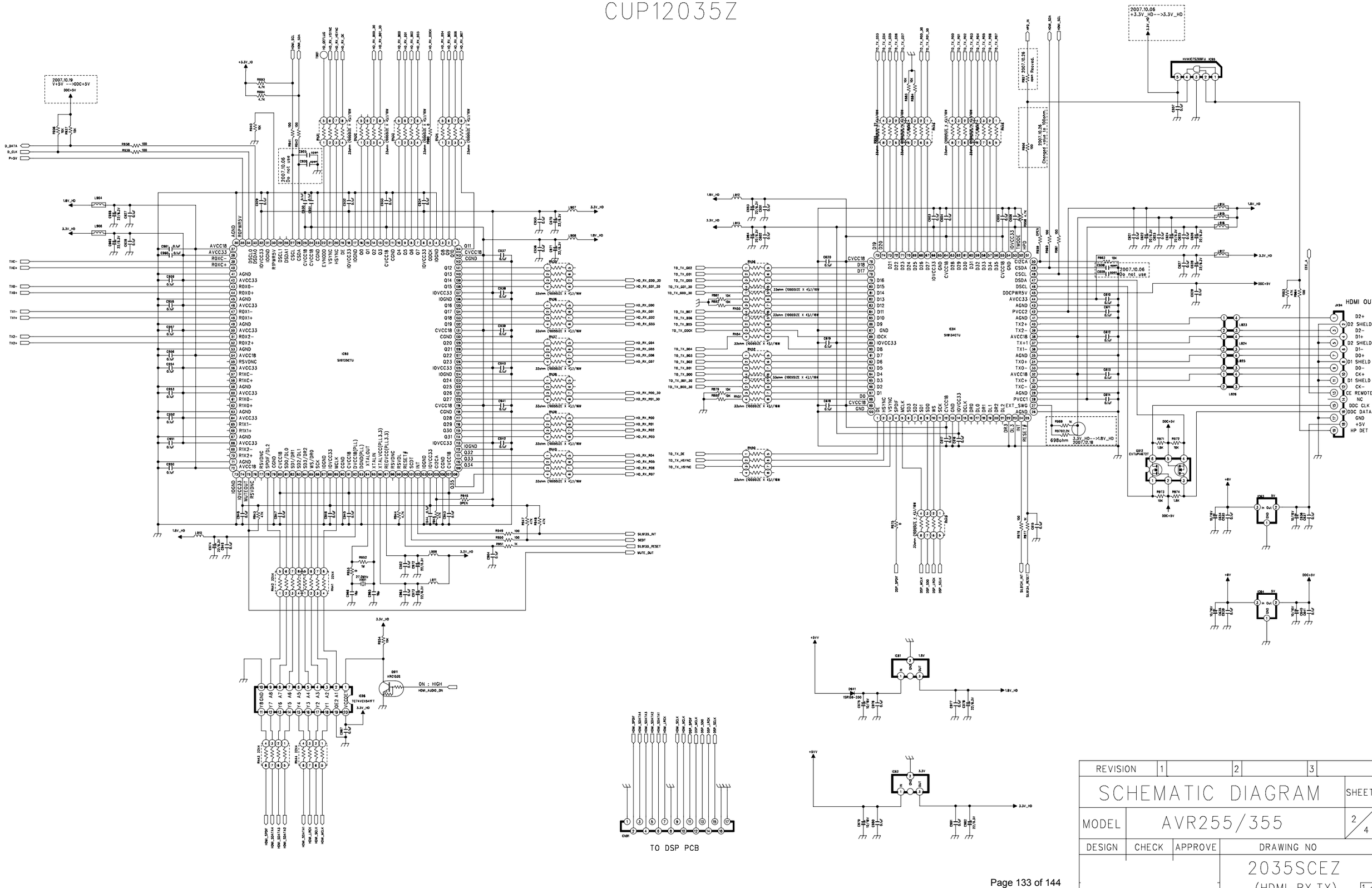
SCHEMATIC DIAGRAM — SHEET 1/4

MODEL: AVR255/355

DESIGN	CHECK	APPROVE	DRAWING NO
			2035SCEZ (HDMI-INPUT) 1/1

E/S

CUP12035Z



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REVISION	1	2	3
SCHEMATIC DIAGRAM			SHEET
MODEL	AVR255/355		2/4
DESIGN	CHECK	APPROVE	DRAWING NO
			2035SCEZ (HDMI-RX,TX) 1/1

CUP12035Z

ANALOG VIDEO INPUT PORT

COMPONENT IN : 3EA
COMPOSITE IN : 1EA
S_VIDEO IN : 1EA

RGB 10BIT INPUT

B 8BIT INPUT
G 8BIT INPUT
R 8BIT INPUT

*OPTION(Do not use)
*IR_IN/NO USE
*GPROBE
*COMMUNICATION WITH MCU
*CONTROL ROM/VIDEO ENCODER
*EEPROM
*Add 08.01.16 Reserved GPIOs.
2007.10.06 Connect pin3 to CHGND

*DDR MEMORY INTERFACE
*FLASH MEMORY INTERFACE

B 8BIT OUTPUT
G 8BIT OUTPUT
R 8BIT OUTPUT
TTL OUTPUT
RGB 10BIT OUTPUT
TTL OUTPUT

* Need to change 2A

REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM — SHEET 3/4

MODEL: AVR 255/355

DESIGN | CHECK | APPROVE | DRAWING NO: 2035SCEZ (TORINO) 1/1

CUP12035Z

DO NOT MOVE.

FLI30336
ANALOG INPUT

ADV7342
ANALOG OUTPUT

TO MCU

*OPTION(Do not use)

#VIDEO ENCORDER PART

44	DAC A	Y
43	DAC B	Pb
42	DAC C	Pr
39	DAC D	CVBS
38	DAC E	S-Y
37	DAC F	S-C

R854: 3.9kohm---->6.8kohm
R855: 6.8kohm---->4.3kohm
2007.11.03

Red DATA Input

Blue DATA Input

Green DATA Input

CLOCK DOUBLER(13.5MHz * 2 = 27MHz)

	CLK1
S1:HIGH	iCLK
S1:LOW	2*iCLK

#DDR SDRAM *2EA

DRAWING NO

#FLASH MEMORY

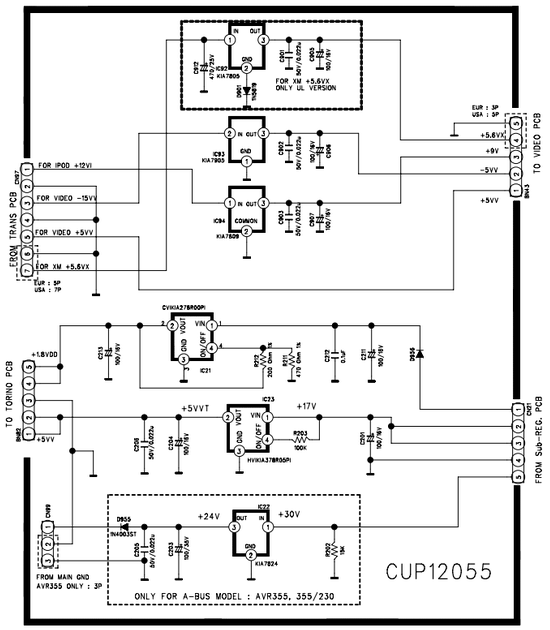
REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET 1/4

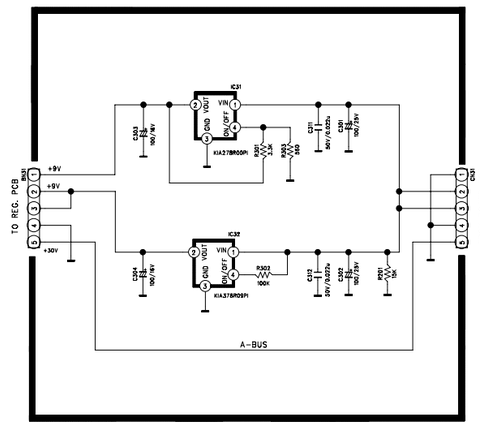
MODEL: AVR255/355

DESIGN | CHECK | APPROVE | DRAWING NO: 2035SCEZ (ADV7342+MEM.) 1/1

< REGULATOR PCB >



< Sub-REGULATOR PCB >



LPP

ISSUE

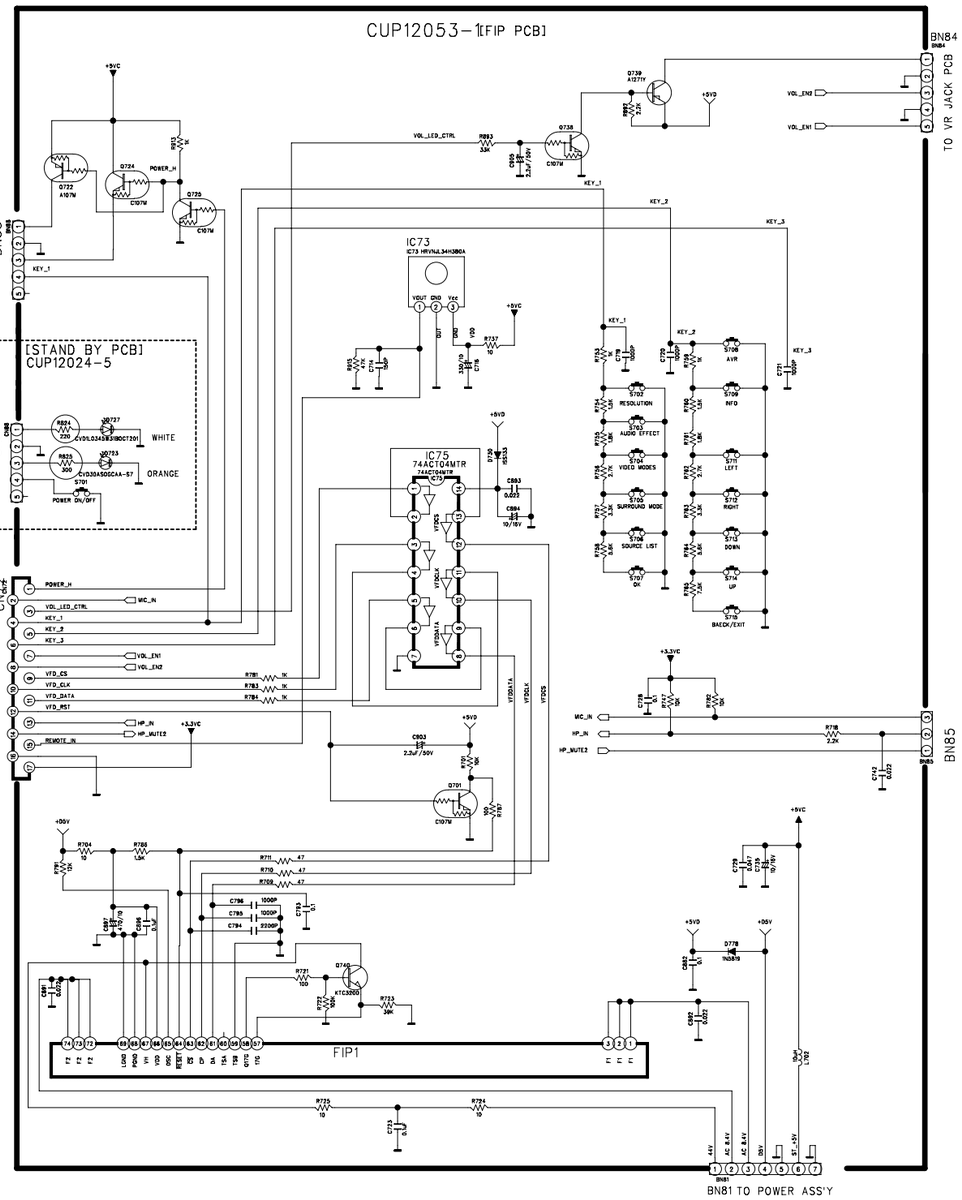
REVISION	2	4	6	
1	3	5	7	

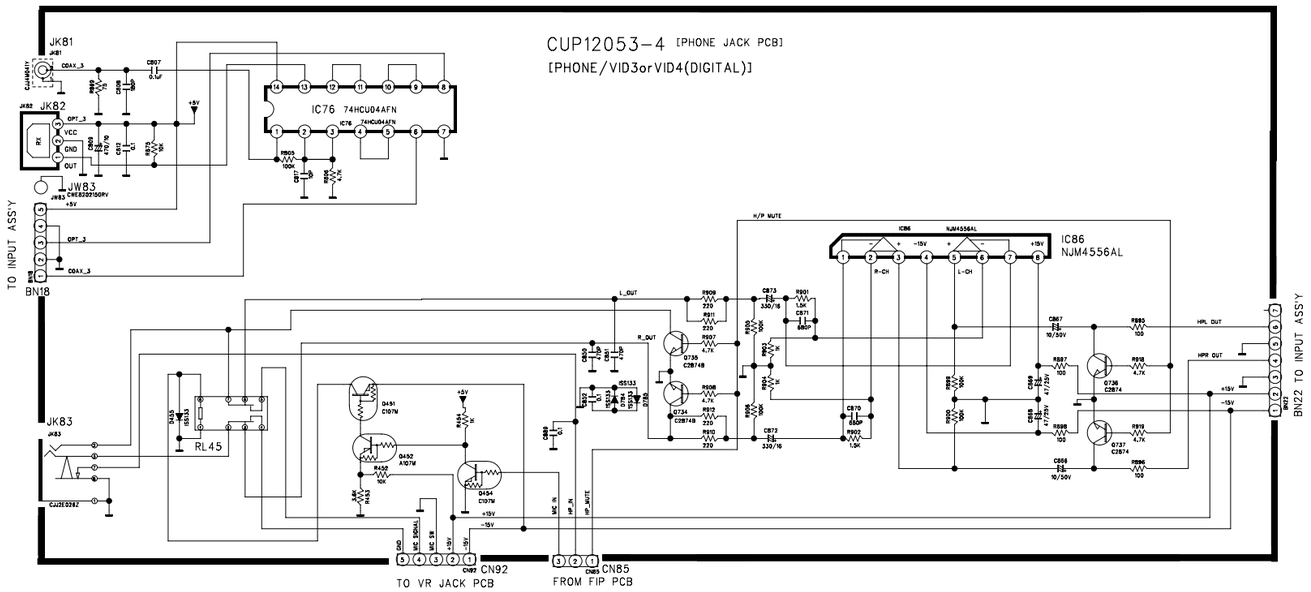
SCHEMATIC DIAGRAM — SHEET 1/1

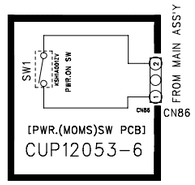
MODEL: AVR 254/255/354/355

DESIGN	CHECK	APPROVE	DRAWING NO
			CUP12055Z (REGULATOR) 1/1

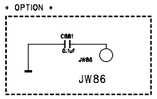
AVR 255/355 FRONT (CUP12053Z)

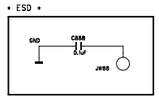


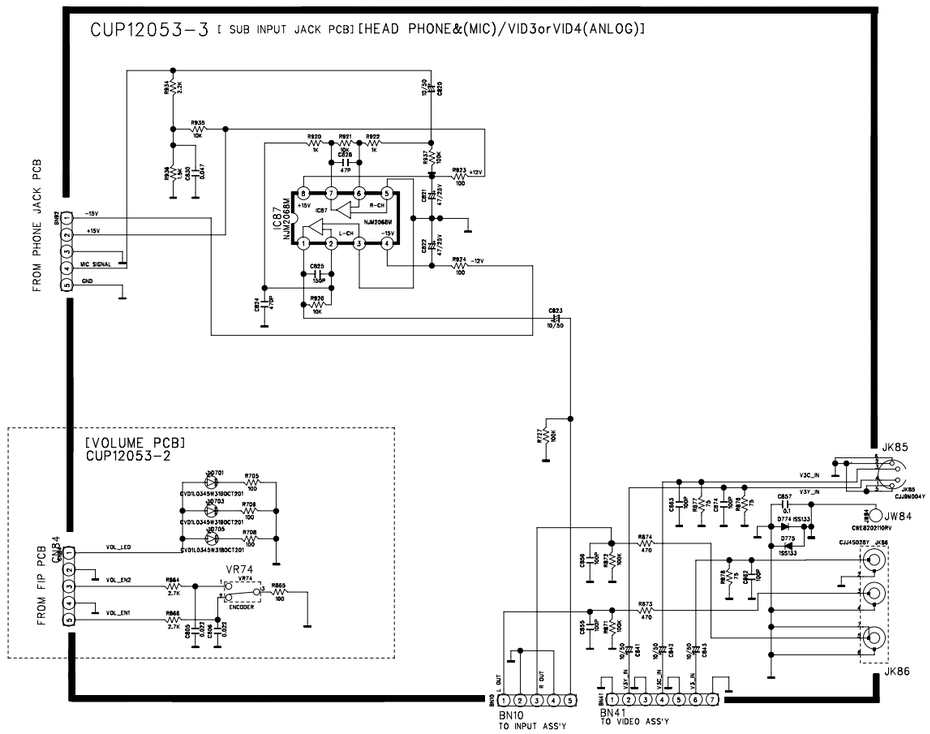




AVR255/355 NO USE







REVISION	2		4		6	
1		3		5		7

SCHEMATIC DIAGRAM				SHEET
MODEL	AVR255/355			1/7
DESIGN	CHECK	APPROVE	DRAWING NO	
J.T.B	W.Y.Y	K.S.W	CUP12053Z (FRONT)	1/1
08.01.15				

R201 ~ R216 : 470ohm --> 100ohm
R219 ~ R223 : 470ohm --> 100ohm
R225 ~ R226 : 470ohm --> 100ohm

CD
TAPE R/O P/B
VIDEO3
VIDEO2
VIDEO1 R/O P/B
DVD
8CH Lch
8CH Rch
8CH SLch
8CH SRch
8CH Cch
8CH SUB
8CH SBL
8CH SBR

AVR345(UL) ONLY
AVR345 (EUR) ONLY

CVJN81197CFC2
IC20

MIC SIGNAL
From FRONT INPUT

FROM CONNECT B'D
FROM TUNER MODULE
FROM REG. B'D

** IMPORTANT SAFETY NOTICS.
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.
IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS
USE ONLY MANUFACTURER'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 WITH THE
IMPROVEMENT OF PERFORMANCE.

DPP

`UE
MI
2007.10.18

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET

MODEL	AVR254/255/354/355	1/3

DESIGN	CHECK	APPROVE	DRAWING NO
		G.`	2029SCLZ (INPUT) 1/1

CUP12029

HDMI SPDIF MODE : DIR MASTER
HDMI I2S MODE : HDMI MASTER
ADC MODE : DSP MASTER
DIR MODE : DIR MASTER

CRJ10DJ1R0T

*OPTION : EMC COUNTERMEASUER

<=> HDMI BOARD

DATA	CS49700	SDRAM
EXT_D15/SD_D7	29	12
EXT_D14/SD_D6	30	11
EXT_D13/SD_D5	31	9
EXT_D12/SD_D4	32	8
EXT_D11/SD_D3	34	6
EXT_D10/SD_D2	35	5
EXT_D9/SD_D1	37	3
EXT_D8/SD_D0	39	2
EXT_D7/SD_D15	40	49
EXT_D6/SD_D14	41	48
EXT_D5/SD_D13	42	46
EXT_D4/SD_D12	43	45
EXT_D3/SD_D11	45	43
EXT_D2/SD_D10	46	42
EXT_D1/SD_D9	48	40
EXT_D0/SD_D8	49	39

Address	CS49700	SDRAM
EXT_A19	88	
EXT_A18	87	
EXT_A17	85	
EXT_A16	84	
EXT_A15	82	
EXT_A14/SD_A13	77	
EXT_A13/SD_A14	75	19
EXT_A12/SD_A10	74	20
EXT_A11/SD_A12	55	
EXT_A10/SD_A11	56	
EXT_A9/SD_A9	58	32
EXT_A8/SD_A8	59	31
EXT_A7/SD_A7	61	30
EXT_A6/SD_A6	62	29
EXT_A5/SD_A5	64	28
EXT_A4/SD_A4	67	27
EXT_A3/SD_A3	68	24
EXT_A2/SD_A2	70	23
EXT_A1/SD_A1	71	22
EXT_A0/SD_A0	72	21

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET 2/3

MODEL: AVR254/255/354/355

DESIGN	CHECK	APPROVE	DRAWING NO
			2029SCLZ (DSP) 1/1
18			

DPP

CUP12029-2

RDS SECTION(EUR Ver. ONLY)

TO VIDEO PCB

AVR354/355
iPod Buffer

U-COM	AVR255	AVR355	AVR155
PIN 97	HDMI_MUTE_IN	HDMI_MUTE_IN	N.A
PIN 86	TORINO_RESET	TORINO_RESET	N.C
PIN 21	UART_TX(TORNO&PC)	UART_TX(TORNO&PC)	UART_TX(PC)
PIN 22	UART_RX(TORNO&PC)	UART_RX(TORNO&PC)	UART_RX(PC)
PIN 81	VIDEO_SW1	VIDEO_SW1	N.A
PIN 82	VIDEO_SW2	VIDEO_SW2	OSD_CS1
PIN 83	VIDEO_SW3	VIDEO_SW3	OSD_CLK
PIN 84	VIDEO_SW4	VIDEO_SW4	OSD_DA
PIN 85	VIDEO_SW5	VIDEO_SW5	OSD_M
PIN 80		CLOCK	HDMI MUX_SDA
PIN 79		DATA_OUT	HDMI MUX_SCLK
PIN 77		DATA_IN	OSD_H
PIN 76		CLK-REQ	

CUP12029-3
ST+5V REG PCB
TO MAIN PCB

TO FRONT PCB

TO XM& IPOD PCB
EUR : 7 PIN
USA : 9 PIN

Update: LOW

AVR255
AVR355
*OP_B

*OP_A
USA
EUR

O : PULL_UP
GPIO : Input/Out Port(without pull_up resistor)

* MODEL OPTION *

MODEL	OP_A(PIN48)	OP_B(PIN98)
AVR355	HIGH(R792)	LOW(R791)
AVR354	HIGH(R792)	LOW(R791)
AVR254	HIGH(R792)	HIGH(R790)
AVR355/230	LOW(R793)	LOW(R791)
AVR255/230	LOW(R793)	HIGH(R790)

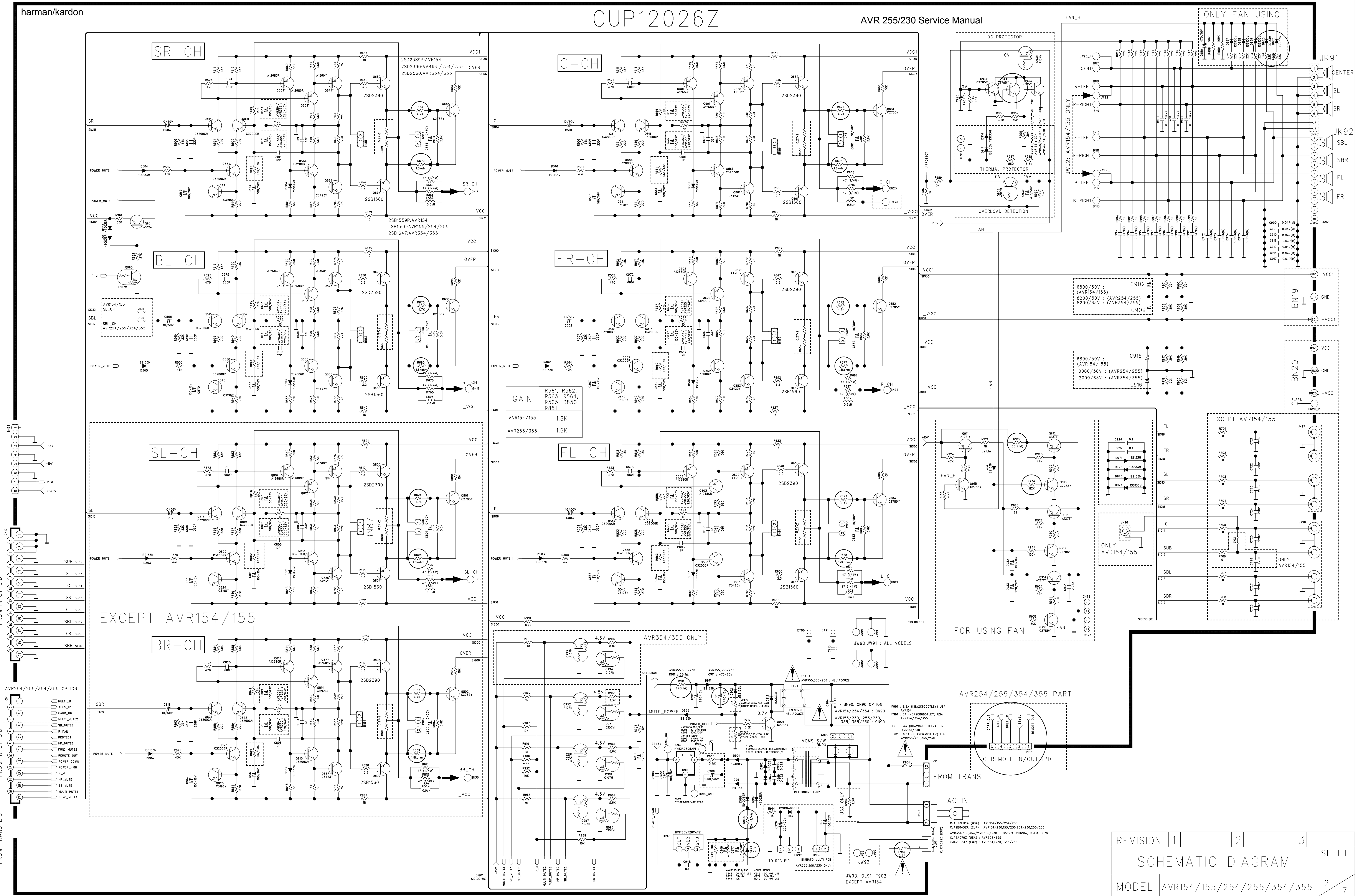
AVR355 ONLY

REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM — SHEET 3/3

MODEL	AVR254/255/354/355	
DESIGN	CHECK	APPROVE: G.S
DRAWING NO	2029SCLZ (CPU)	1/1

CUP12026Z



REVISION 1 2 3

SCHEMATIC DIAGRAM

SHEET 2/7

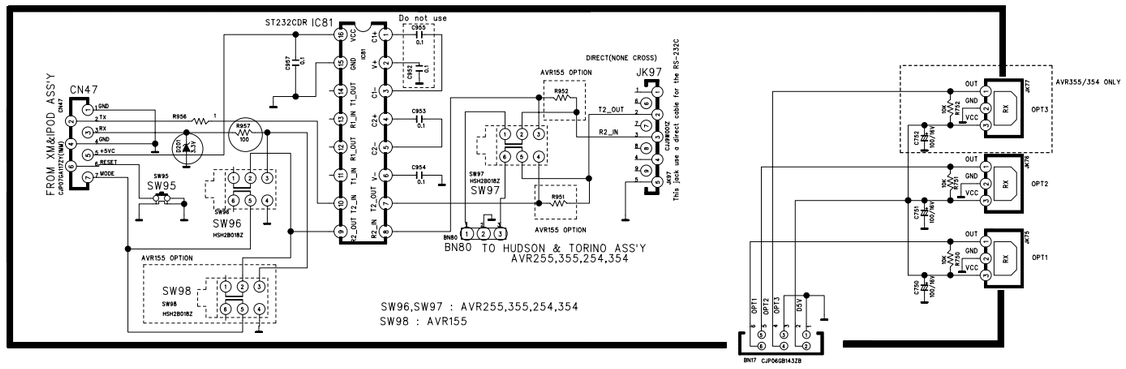
MODEL AVR154/155/254/255/354/355

DESIGN	CHECK	APPROVE	DRAWING NO
C.Γ			2026SCLZ (MAIN)

23

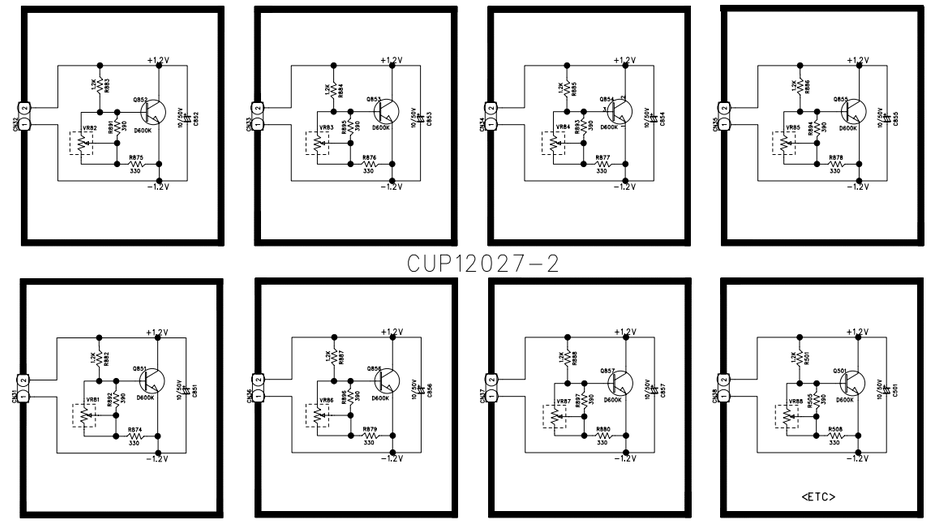
** IMPORTNAT SAFETY NOTICE.
IMPORTANT FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY MANUFACTURE'S SPECIFIED PARTS.
** THE UNIT OF RESISTANCE IS OHM.
K=1000 OHM, M=1000 KOHM.
** THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
pF = 10⁻⁶ uF
** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WIHE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

CUP12027-1

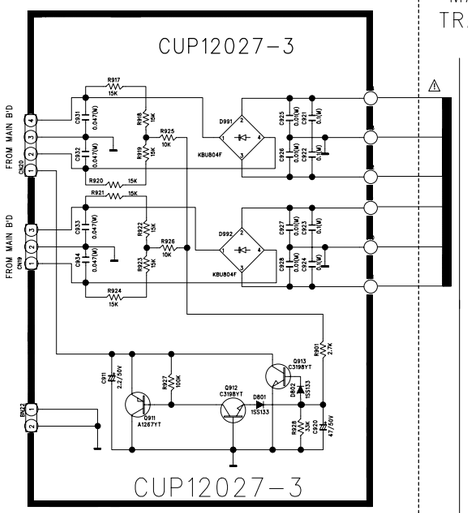


< OPTICAL IN & RS-232 PCB >

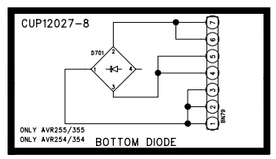
< BIAS T.R PCB >



CUP12027-3

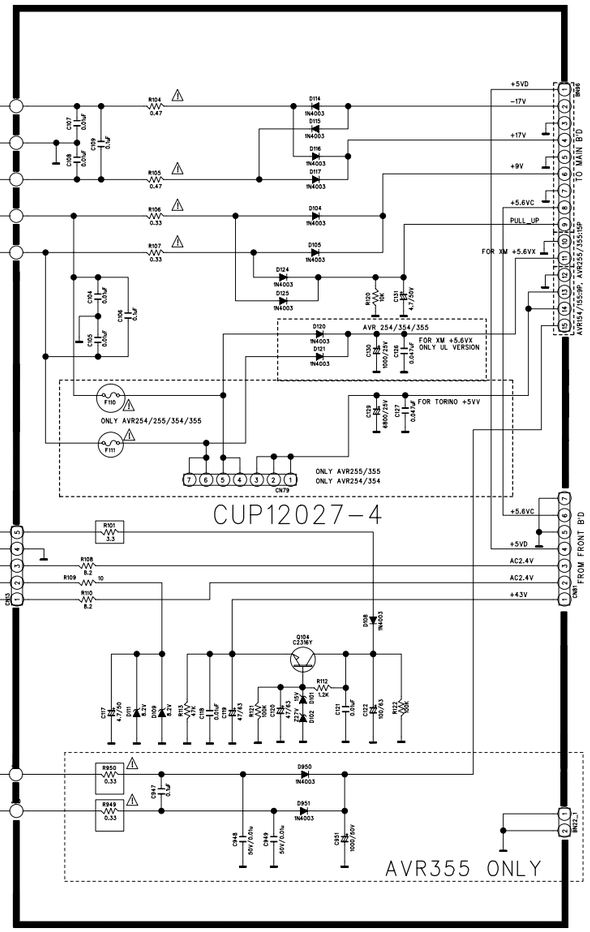


CUP12027-8

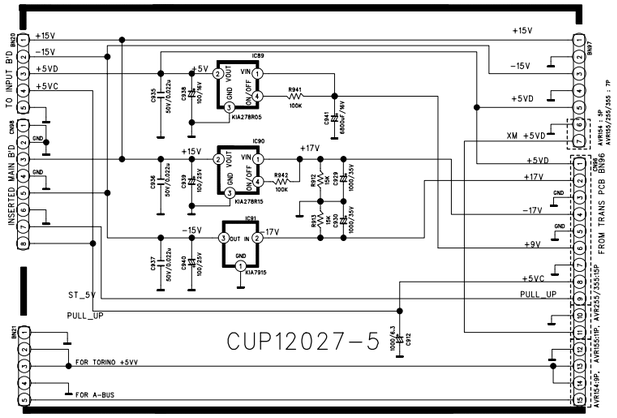


USA : AC120V 60Hz
EUR : AC230V 50Hz

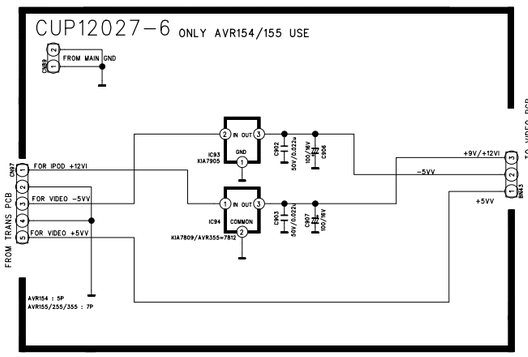
MAIN TRANS



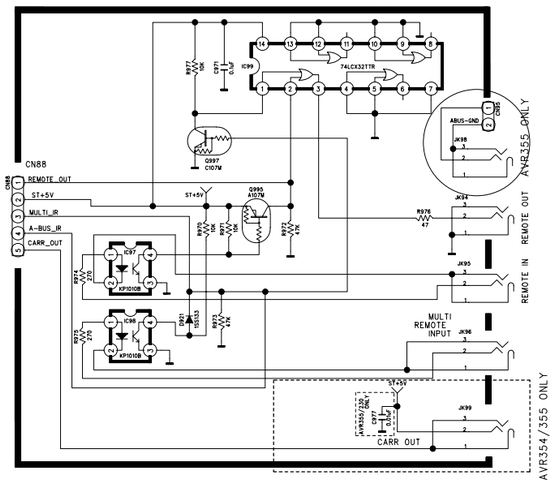
< TRANS PCB >



CUP12027-6 ONLY AVR154/155 USE

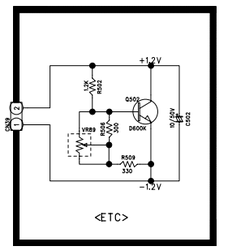


< REGULATOR PCB >



AVR254/255/354/355 ONLY CUP12027-7

< REMOTE IN/OUT PCB >



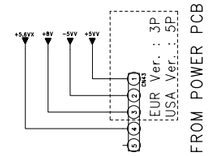
M P

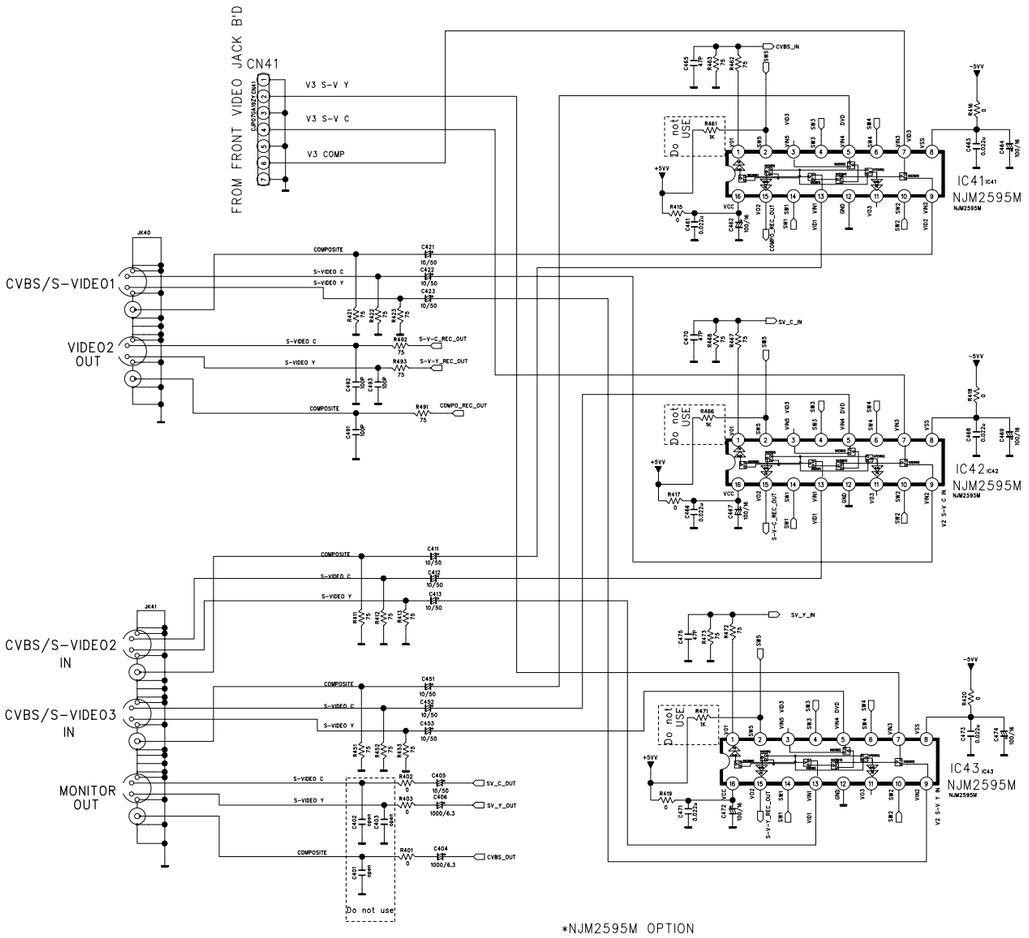
SUE

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.W		CUP12027Z (POWER) 1/1

CUP12032Z





* 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(8BIT)							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 Hex94(h), ADR=1 Hex96(h)
R/NOT W = 0 : READ MODE, ADR = 0/1 ; ADR=0 Hex95(h), ADR=1 Hex97(h)

CONTROL REGISTER TABLE
<WRITE MODE>

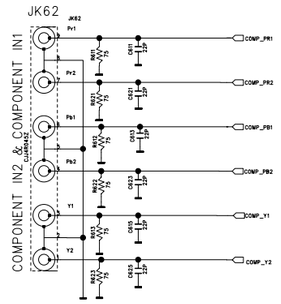
NO.	BIT							
	D7	D6	D5	D4	D3	D2	D1	D0
DATA 1	PS1	PS2	OUT1			OUT2		
DATA 2	AUX0		AUX1		AUX2		AUX3	

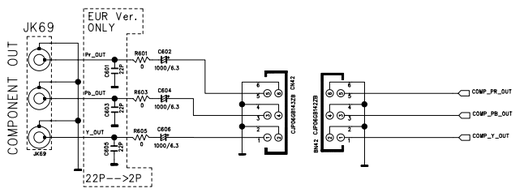
PS : POWER SAVE
=> PS = 1 ; POWER SAVE ON (MUTE), PS = 0 ; POWER SAVE OFF (OUT ON)
OUT : OUTPUT
AUX : AUXILIARY (CONTROL SIGNAL OUTPUT)

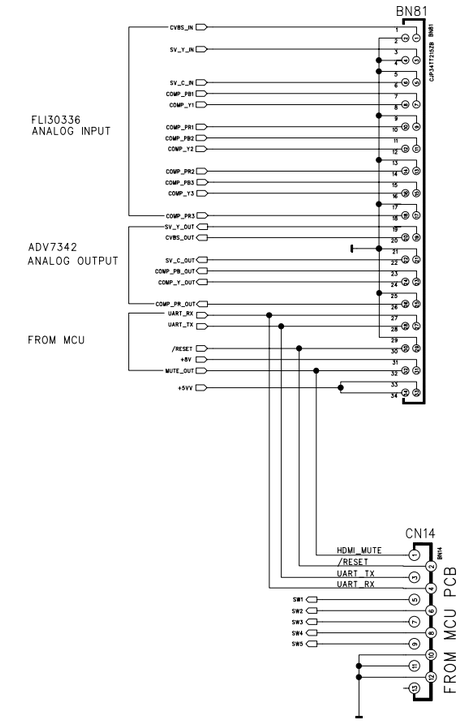
<READ MODE>

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

PORT : INPUT







*NJM2595M OPTION
==>V_MUTE "LOW" ACTIVE

FUNC.	SW1	SW2	SW3	SW4	SW5
CVBS/S-V1	H	L	L	L	H
CVBS/S-V2	L	H	L	L	H
CVBS/S-V3	H	L	L	H	H
FRONT CVBS/S-V	H	H	L	L	H
IPOD	H	L	H	H	H

DPP

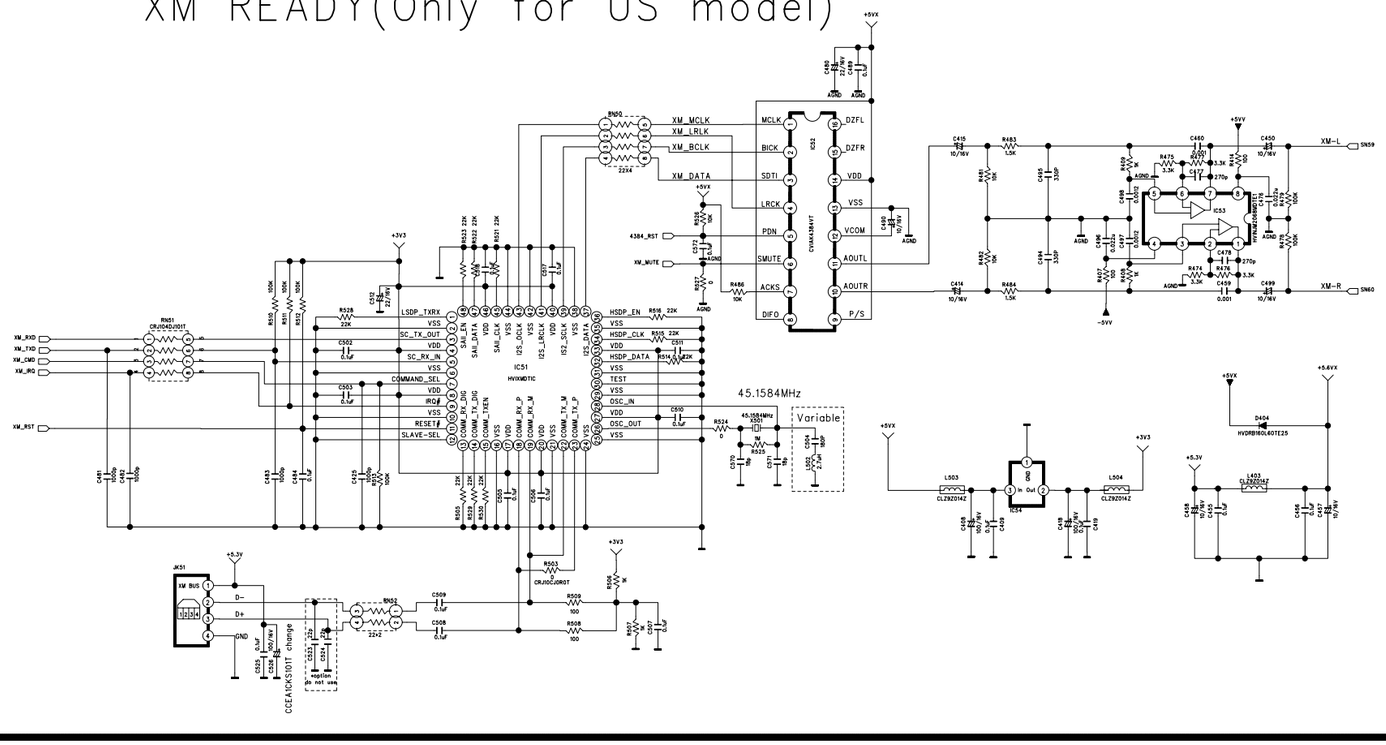
* AVR345
*NO.4

REVISION	2		4		6	
1		3		5		7

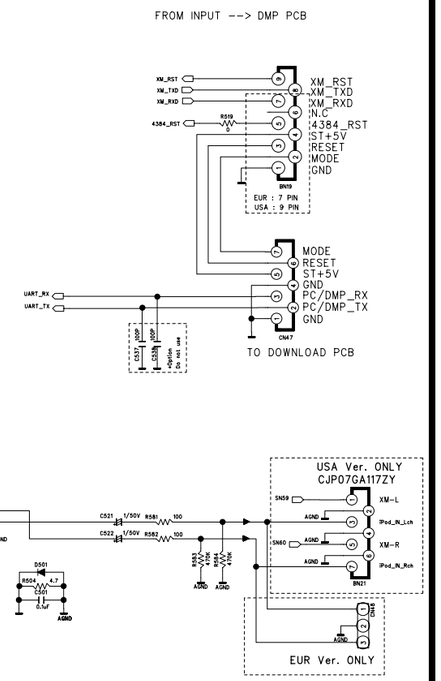
SCHEMATIC DIAGRAM				SHEET
MODEL	AVR254 /255			1/2
DESIGN	CHECK	APPROVE	DRAWING NO	
M.S.K	W.Y.Y	K.S.W	2032SCEZ	
06.08.23	06.	06.	(VIDEO)	1/1

CUP12032Z

XM READY(Only for US model)



I-POD



REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR254 / 255		1/4
DESIGN	CHECK	APPROVE	DRAWING NO
M.S.K	W.Y.Y	K.S.W	2032SCEZ (AMP)
05.00.00	05.00.00	05.00.00	1/1