harman/kardon

AVR 3650

7 X 110W 7.1 CHANNEL A/V RECEIVER

SERVICE MANUAL

CONTENTS

harman/kardon, Inc.
8500 Balboa Blvd..
Northridge, CA. 91329

Released 2011
Discontinued XXXX

Rev0 6/2011

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.

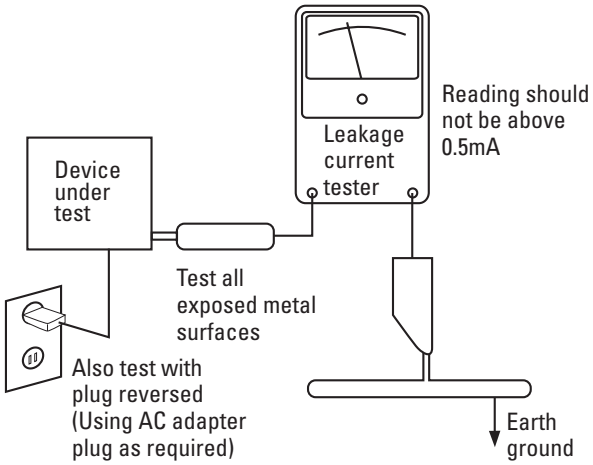
Components identified with the IEC symbol ⚠ in the parts list are special significance to safety. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings or resistance, wattage, or voltage that are designated in the parts list in this manual. 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.

SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed o.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

AVR

Specifications

Specifications

Audio Section

Stereo power:	AVR 3650/AVR 365: 110W per channel, two channels driven @ 8 ohms, 20Hz – 20kHz, <0.09% THD AVR 2650/AVR 265: 95W per channel, two channels driven @ 8 ohms, 20Hz – 20kHz, <0.09% THD
Multichannel power:	AVR 3650/AVR 365: 110W per channel, two channels driven @ 8 ohms, 20Hz – 20kHz, <0.09% THD AVR 2650/AVR 265: 95W per channel, two channels driven @ 8 ohms, 20Hz – 20kHz, <0.09% THD
Input sensitivity/impedance:	200mV/47k ohms
Signal-to-noise ratio (IHF-A):	100dB
Surround system adjacent channel separation:	Dolby Pro Logic/DPLII: 40dB Dolby Digital: 55dB DTS: 55dB
Frequency response (@ 1W):	10Hz – 130kHz (+0dB/–3dB)
High instantaneous current capability (HCC):	±35 amps
Transient intermodulation distortion (TIM):	Unmeasurable
Slew rate:	40V/µsec

FM Tuner Section

Frequency range:	87.5 – 108.0MHz
Usable sensitivity IHF:	1.3µV/13.2dBf
Signal-to-noise ratio (mono/stereo):	70dB/68dB
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:	520 – 1710kHz (AVR 3650/AVR 2650) 522 – 1620kHz (AVR 365/AVR 265)
Signal-to-noise ratio:	45dB
Usable sensitivity (loop):	500µV
Distortion (1kHz, 50% mod):	0.8%
Selectivity (±10kHz):	30dB

Video Section

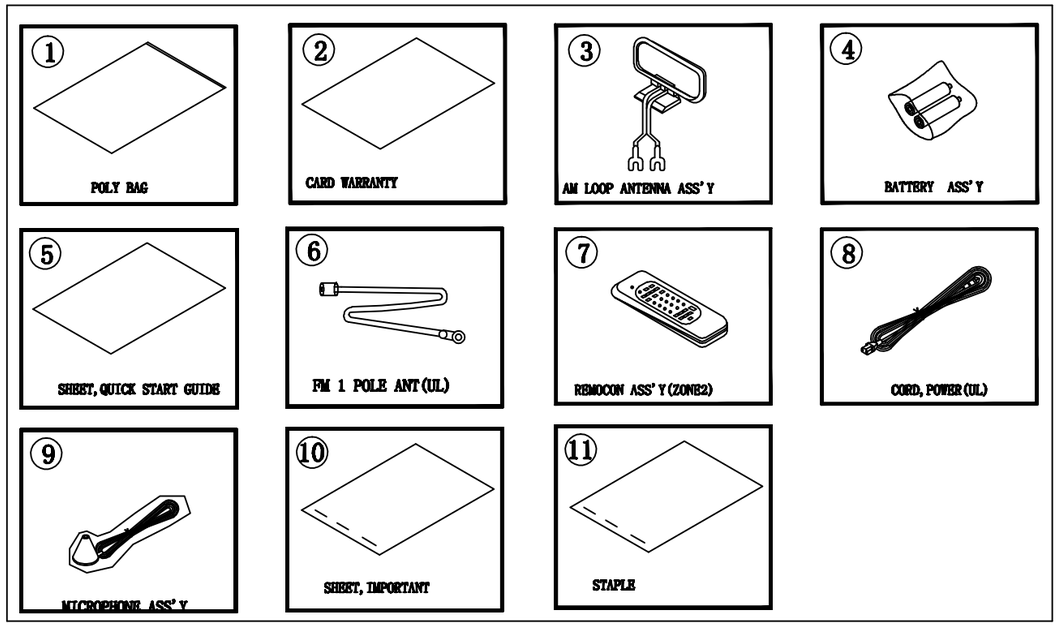
Television format:	NTSC (AVR 3650/AVR 2650); PAL (AVR 365/AVR 265)
Input level/impedance:	1Vp-p/75 ohms
Output level/impedance:	1Vp-p/75 ohms
Video frequency response (composite video):	10Hz – 8MHz (–3dB)
HDMI:	Version 1.4a with 12-bit Deep Color

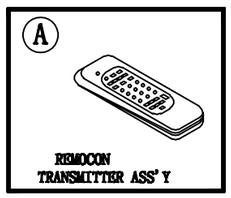
General Specifications

Power requirement:	120V AC/60Hz (AVR 3650/AVR 2650); 220V – 240V AC/50Hz – 60Hz (AVR 365/AVR 265)
Power consumption:	<0.5W (standby); 480W maximum (AVR 3650/AVR 365); 420W maximum (AVR 2650/AVR 265)
Dimensions (W x H x D):	17-5/16" x 6-1/2" x 17-1/8" (440mm x 165mm x 435mm)
Weight	(AVR 3650/AVR 365): 27.25 lb (12.4kg) (AVR 2650/AVR 265): 24.4 lb (11.1kg)

Depth measurement includes knobs, buttons and terminal connections.
Height measurement includes feet and chassis.

1. Instruction manual ass'y - Accessories

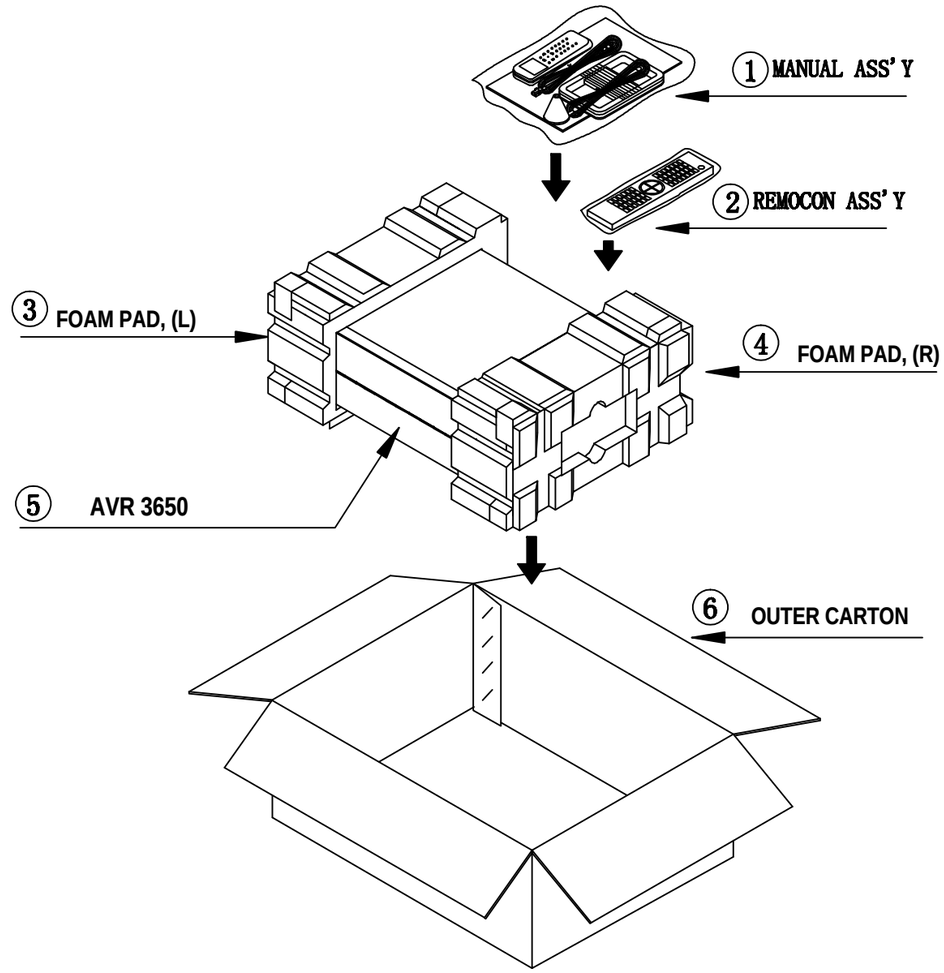




NO	DESCRIPTION	PARTS NO.	Q,ty
1	POLY BAG		1
2	CARD WARRANTY	CQE1A172X	1
3	ANT, AM LOOP	CSA1A032Z	1
4	BATTERY		2
5	SHEET,QUICK START GUIDE		1
6	FM 1 POL ANT(UL)	CSA1A019Z	1
7	REMOCON ASS'Y(ZONE2)	CARTZR65HKM	1
8	CORD,POWER(UL)	CJA2A070Z	1
9	MICROPHONE ASS'Y	CJXAVR365MICRO	1
10	SHEET,IMPORTANT		1
11	STAPLE		3
A	REMOCON ASS'Y	CARTAVR3650-HK	1

AVR3650

2. Package Drawing

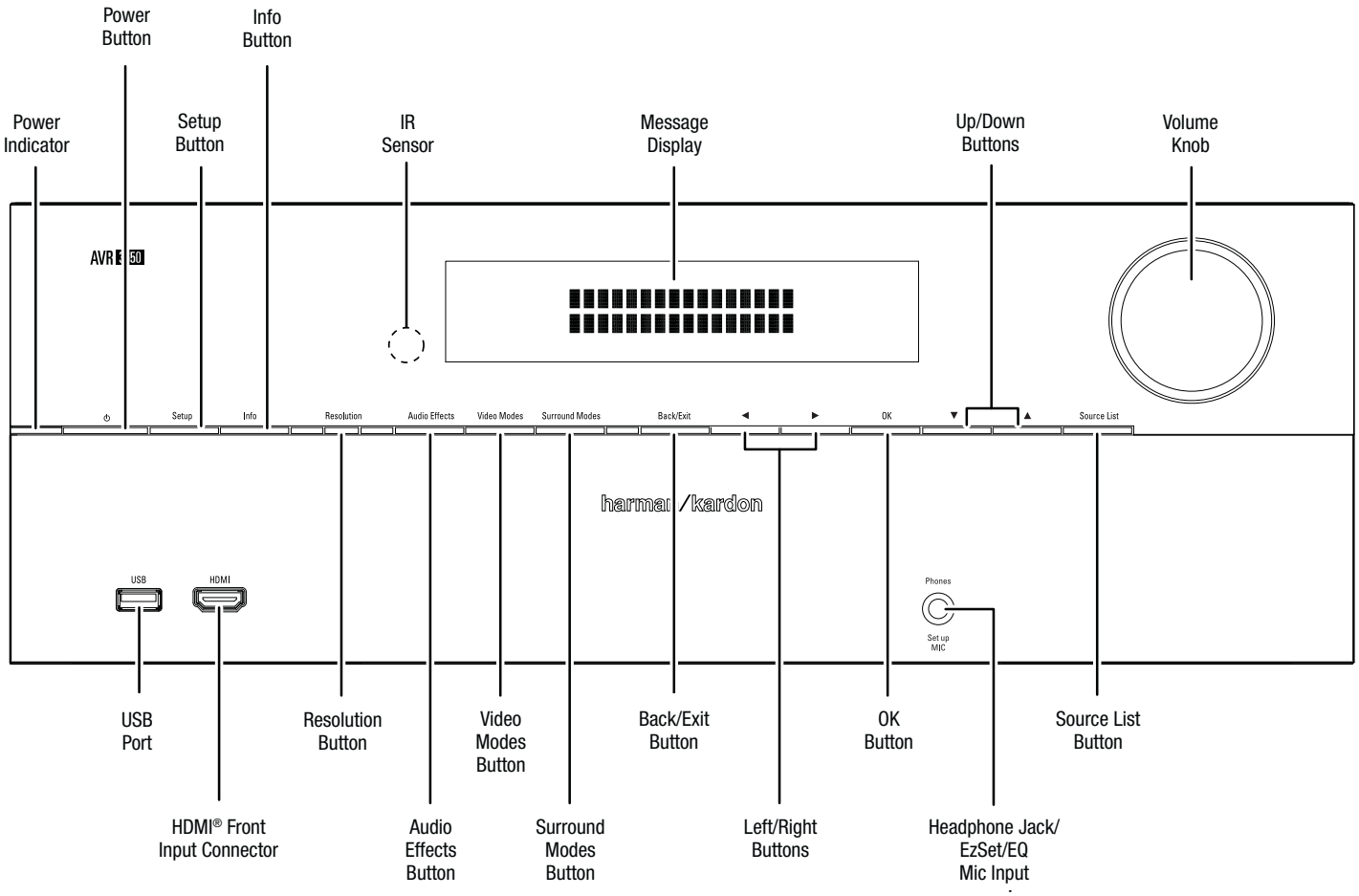


NO	DESCRIPTION	PART NO.	Qty
1	MANUAL ASS'Y		1
2	REMOCON ASS'Y	CARTAVR3650-HK	1
3	Foam Pad, (L)	CPS5A564Z	1
4	Foam Pad, (R)	CPS5A565Z	1
5	AVR 3650		1
6	Outer Carton	CPG1A937V	1

AVR

Front-Panel Controls

Front-Panel Controls



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AVR

Front-Panel Controls, continued

Power Indicator: This LED has three possible modes:

- LED is off: Indicates that the AVR is unplugged or the rear-panel Main Power switch is off.
- LED glows amber: Indicates that the AVR is in the Standby mode.
- LED glows white: Indicates that the AVR is turned on.

IMPORTANT NOTE: If the PROTECT message ever appears on the AVR's front-panel message display, turn off the AVR and unplug it from the AC outlet. Check all speaker wires for a possible short-circuit (the "+" and "–" conductors touching each other or both touching the same piece of metal). If a short-circuit is not found, bring the unit to an authorized Harman Kardon service center for inspection and repair before using it again.

Power button: Press this button to turn the receiver on or to place it in the Standby mode.

Setup button: Press this button to access the AVR's main menu.

Info button: Press this button to access the AVR's Source submenu, which contains the settings for the source currently playing. Use the Up/Down buttons to scroll through the different settings.

Message display: Various messages appear in this two-line display in response to commands and changes in the incoming signal. In normal operation, the current source name appears on the upper line, while the surround mode is displayed on the lower line. When the on-screen display menu system (OSD) is in use, the current menu settings appear.

IR sensor: This sensor receives infrared (IR) commands from the remote control. It is important to ensure that the sensor is not blocked. **AVR 3650/AVR 365 only:** If covering the IR sensor is unavoidable (such as when the receiver is installed inside of a cabinet), connect an optional infrared receiver to the Remote IR In connector on the AVR's rear panel.

Up/Down buttons: Use these buttons to navigate the AVR's menus.

Volume knob: Turn this knob to raise or lower the volume.

USB port: You can use this port to perform software upgrades that may be offered in the future. Do not connect a storage device, peripheral product or a PC here, unless you are instructed to do so as part of an upgrade procedure.

HDMI (High-Definition Multimedia Interface®) Front Input connector: Connect an HDMI-capable source component that will be used only temporarily, such as a camcorder or game console, here.

Resolution button: Press this button to access the AVR's video output resolution setting: 480i, 480p, 720p, 1080i, 1080p or 1080p/24Hz. Use the Up/Down and OK buttons to change the setting.

IMPORTANT NOTE: If you set the AVR's video output resolution higher than the capabilities of the actual connection between the AVR and your TV or video display, you will not see a picture. If you are using the composite video connection from the AVR to your TV (see *Connect Your TV or Video Display*, on page 17), press the Resolution button and use the Up/Down and OK buttons to change the resolution to 480i.

Audio Effects button: Press this button to access the Audio Effects submenu, which allows you to adjust the AVR's tone controls and other audio controls. See *Set Up Your Sources*, on page 26, for more information.

Video Modes button: Press this button for direct access to the Video Modes submenu, which contains settings you can use to improve the video picture. Use the OK button to scroll through the different modes, and use the Up/Down and Left/Right buttons to make adjustments within each mode. See *Set Up Your Sources*, on page 26, for more information.

Surround Modes button: Press this button to select a listening mode. The Surround Modes menu will appear on screen, and the menu line will appear in the front-panel display. Use the Up/Down buttons to change the surround-mode category and the Left/Right buttons to change the surround mode for that category. See *Set Up Your Sources*, on page 26, for more information.

Back/Exit button: Press this button to return to the previous menu or to exit the menu system.

Left/Right buttons: Use these buttons to navigate the AVR's menus.

OK button: Press this button to select the currently highlighted item.

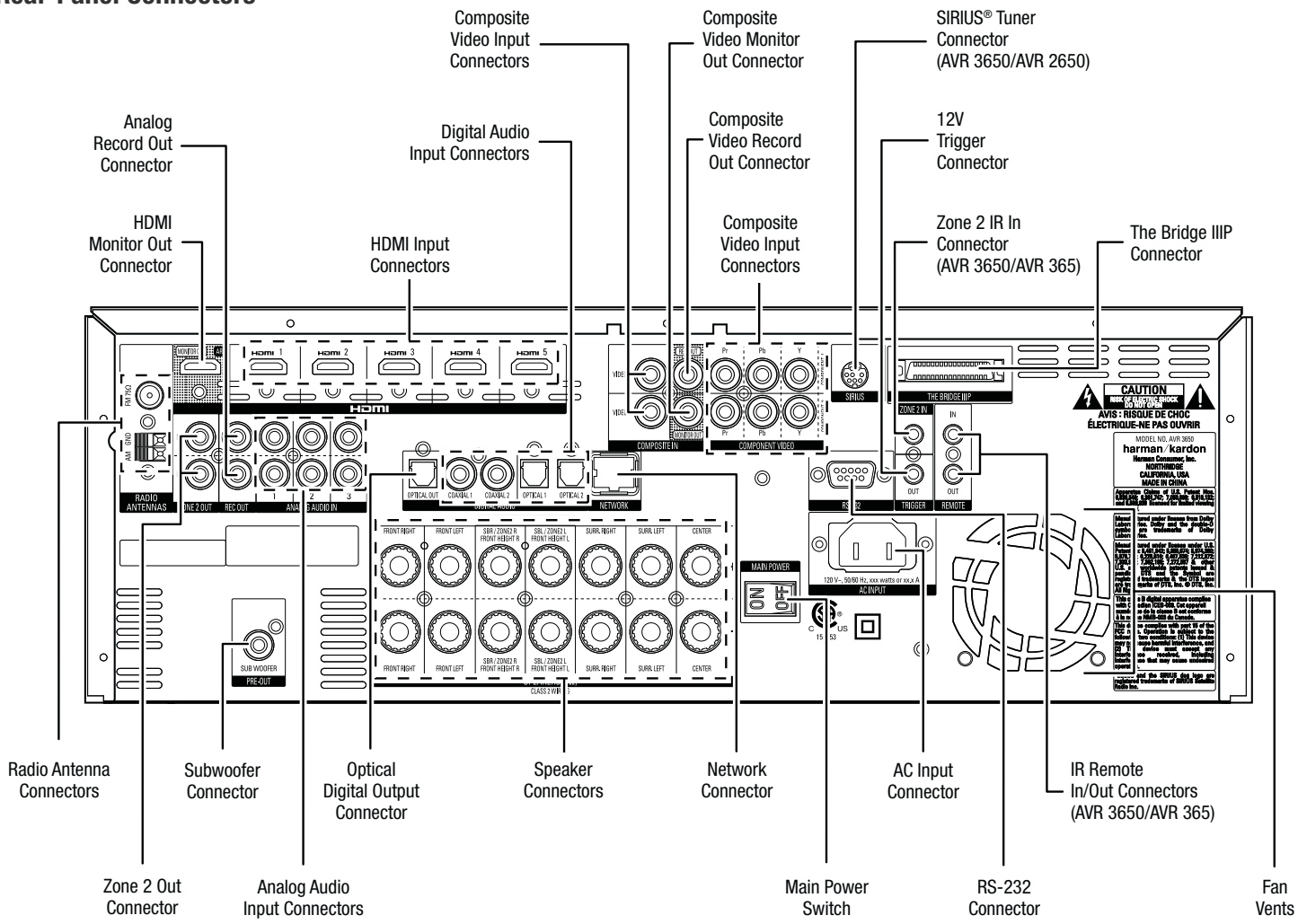
Headphone jack/EzSet/EQ Mic input: Connect a 1/4" stereo headphone plug to this jack for private listening. This jack is also used to connect the supplied microphone for the EzSet/EQ procedure described in *Configure the AVR For Your Speakers*, on page 25.

Source List button: Press this button to select a source device to watch/listen to. Use the Up/Down buttons to scroll through the source-device list, and press the OK button to select the source being displayed.

AVR

Rear-Panel Connectors

Rear-Panel Connectors



Rear-Panel Connectors (AVR 3650 shown)

Analog Record Out connector: Connect this analog audio output to the analog audio input of a recording device. A signal is available at this output whenever an analog audio source is playing.

HDMI Monitor Out connector: If your TV has an HDMI connector, use an HDMI cable (not included) to connect it to the AVR's HDMI Monitor Out connector. The AVR will automatically transcode component and composite video input signals to the HDMI format (upscaling to as high as 1080p), so you do not need to make any other connections to your TV from the AVR or from any of your video source devices.

Notes on using the HDMI Monitor Out connector:

- When connecting a DVI-equipped display to the HDMI Monitor Out connector, use an HDMI-to-DVI adapter and make a separate audio connection.
- Make sure the HDMI-equipped display is HDCP (High-bandwidth Digital Content Protection)-compliant. If it isn't, do not connect it via an HDMI connection; use an analog video connection instead and make a separate audio connection.

HDMI Input connectors: An HDMI connection transmits digital audio and video signals between devices. If your source devices have HDMI connectors, using them will provide the best possible video and audio performance quality. Since the HDMI cable carries both digital video and digital audio signals, you do not have to make any additional audio connections for devices you connect via the HDMI connection. See *Connect Your Audio and Video Source Devices*, on page 18, for more information.

Composite Video Input connectors: Use composite video connectors for video source devices that don't have HDMI or component video connectors. You will also need to make an audio connection from the source device to the AVR. See *Connect Your Audio and Video Source Devices*, on page 18, for more information.

Digital Audio Input connectors: If your non-HDMI source devices have digital outputs, connect them to the AVR's digital audio connectors. NOTE: Make only one type of digital connection (HDMI, optical or coaxial) from each device. See *Connect Your Audio and Video Source Devices*, on page 18, for more information.

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AVR

Rear-Panel Connectors, continued

Composite Video Monitor Out connector: If your TV or video display does not have an HDMI connector, use a composite video cable (not included) to connect the AVR's Composite Video Monitor Out connector to your TV's composite video input. **NOTE:** The HDMI connection to your TV is preferred. If you use the composite video connection to your TV, you will not be able to view the AVR's on-screen menus.

Composite Video Record Out connector: Connect an analog video recorder's video input connector to the AVR's Composite Video Rec Out connector. You can record any composite video input signal. **NOTE:** To record the audio and video from the source device, connect the AVR's Analog Record Output connectors to the analog video recorder's audio inputs.

Component Video Input connectors: If any of your video source devices have component video connectors (and do not have HDMI connectors), using the component video connectors will provide superior video performance. You will also need to make an audio connection from the device to the receiver. See *Connect Your Audio and Video Source Devices*, on page 18, for more information.

SIRIUS® Tuner connector: Connect a SIRIUSConnect™ satellite radio tuner module here. (Not included. Available at www.sirius.com.) See *Connect Your Audio and Video Source Devices*, on page 18, for more information.

12V Trigger connector: This connector provides 12V DC whenever the AVR is on. It can be used to turn on and off other devices such as a powered subwoofer.

Zone 2 IR Input connector (AVR 3650/AVR 365 only): Connect a remote IR receiver located in Zone 2 of a multizone system to this jack to control the AVR (and any source devices connected to the Remote IR Output connector) from the remote zone.

The Bridge IIIP connector: Connect an optional Harman Kardon The Bridge IIIP docking station to this input. Insert the plug until it snaps into place in the connector. **IMPORTANT:** Connect The Bridge IIIP only with the AVR's power turned off.

Radio Antenna connectors: Connect the included AM and FM antennas to their respective terminals for radio reception.

Zone 2 Out connectors: Connect these jacks to an external amplifier to power the speakers in the remote zone of a multizone system.

Subwoofer connector: Connect this jack to a powered subwoofer with a line-level input. See *Connect Your Subwoofer*, on page 17, for more information.

Analog Audio Input connectors: Use the AVR's Analog Audio Input connectors for source devices that don't have HDMI or digital audio connectors. See *Connect Your Audio and Video Source Devices*, on page 18, for more information.

Optical Digital Output connector: Connect a digital audio recorder's optical digital input to the AVR's Optical Digital Output connector. You can record both coaxial and optical digital audio signals.

Speaker connectors: Use two-conductor speaker wire to connect each set of terminals to the correct speaker. See *Connect Your Speakers*, on page 17, for more information.

NOTE: The speaker connectors, also called Assigned Amp speaker connectors- are used for the surround back channels in a 7.1- channel home theater, or you can reassign them to a remote room for multizone operation or to front height channels for Dolby Pro Logic® IIz operation. See *Place Your Speakers*, on page 13, for more information.

Network connector: Use a Cat. 5 or Cat. 5E cable (not supplied) to connect the AVR's Network connector to your home network to enjoy Internet radio and content from DLNA®-compatible devices that are connected to the network. See *Connect to Your Home Network*, on page 20, for more information.

Main Power switch: This mechanical switch turns the AVR's power supply on or off. It is usually left on, and it cannot be turned on or off using the remote control.

AC Input connector: After you have made all other connections, plug the supplied AC power cord into this receptacle and into an unswitched wall outlet.

RS-232 connector: This connector is used to connect to external control hardware. Consult a certified professional installer for more information.

I**R Remote In/Out connectors (AVR 3650/AVR 365 only):** When the IR sensor on the front panel is blocked (such as when the AVR is installed inside a cabinet), connect an optional IR receiver to the IR Remote In jack. The IR Remote Out jack may be connected to the IR input of a compatible product to enable remote control through the AVR.

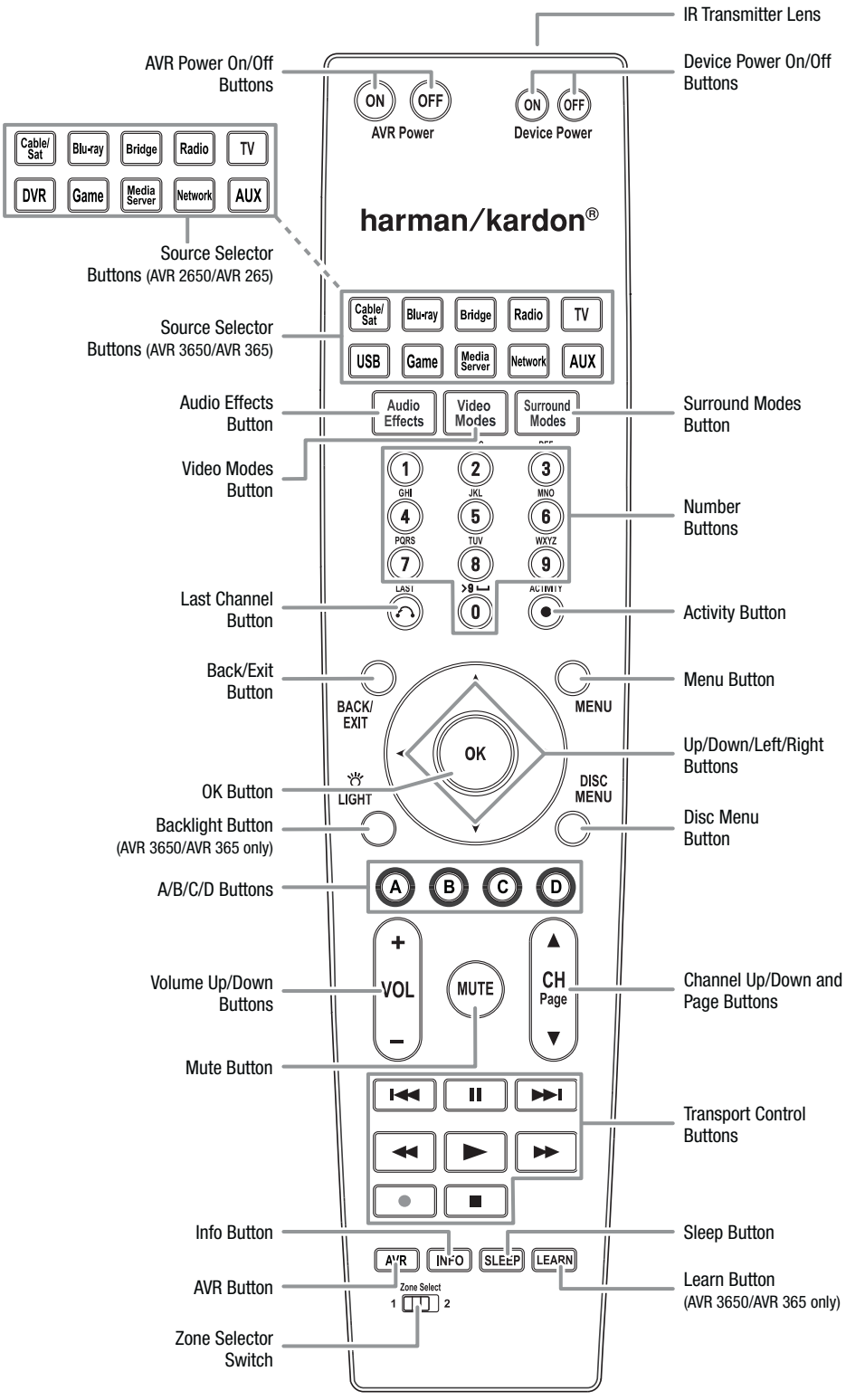
Fan Vents: These vents are used by the AVR's fan to cool the system. Maintain a clearance of at least three inches (75mm) from the nearest surface to avoid overheating the unit. It is normal for the fan to remain off at most normal volume levels. An automatic temperature sensor turns the fan on only when it is needed.

IMPORTANT NOTE: Never block the fan vents. Doing so could allow the AVR to overheat to dangerous levels.

AVR

System Remote Control Functions

System Remote Control Functions



AVR

System Remote Control Functions, continued

In addition to controlling the AVR, the AVR remote is capable of controlling eight other devices, including an iPod/iPhone device docked in a The Bridge IIIP docking station connected to the AVR. During the installation process, you may program the codes for each of your source components into the remote. (See *Program the Remote to Control Your Source Devices and TV*, on page 23, for programming information.) To operate a component, press its Source Selector button to change the remote's control mode.

A button's function depends on which component is being controlled. See Table A13 in the Appendix for listings of the functions for each type of component. Most of the buttons on the remote have dedicated functions, although the precise codes transmitted vary depending on the specific device being controlled. Due to the wide variety of functions for various source devices, we have included only a few of the most-often used functions on the remote: alphanumeric keys, transport controls, television-channel control, menu access and power on and off. Buttons dedicated to the AVR – AVR Power On/Off, Audio Effects, Video Modes, Surround Modes, Volume, Mute and Sleep Settings – are available at any time, even when the remote is controlling another device. To return the remote to the AVR control mode at any time, press the Setup button.

AVR Power On/Off buttons: Press these buttons to turn the AVR on and off. The Main Power switch on the AVR's rear panel must be on for this button to work.

IR Transmitter Lens: As buttons are pressed on the remote, infrared codes are emitted through this lens.

Device Power On/Off buttons: Press a device's Source Selector button, then press these buttons to turn the device on and off.

Source Selector buttons: Press one of these buttons to select a source device, e.g., Blu-ray, Cable/Sat, Radio, etc. This action will also turn on the AVR and switch the remote's control mode to operate the selected source device. **NOTE:** The first press of the Radio Source Selector button switches the AVR to the last-used tuner band (AM, FM or SIRIUS). Each successive press changes the band.

Audio Effects button: Press this button to access the Audio Effects submenu, which allows adjustment of the AVR's tone and other audio controls. See the *Set Up Your Sources* section, on page 26, for more information.

Video Modes button: Press this button for direct access to the Video Modes submenu, which contains picture adjustments you can use after you have adjusted the picture settings on your TV or video display. See the *Advanced Functions* section, on page 33, for more information.

Surround Modes button: Press this button to access the Surround Modes submenu. Select a surround-mode category: Auto Select, Virtual Surround, Stereo, Movie, Music or Game. When you select the category, it is highlighted and the surround mode changes.

To change the surround mode for the selected category, press the OK button when the menu line is highlighted and use the Up/Down buttons to select one of the available surround-mode options. Press the OK button; or press the Back/Exit button to exit the Surround Modes menu and display the next higher menu in the hierarchy. See the *Advanced Functions* section, on page 33, for more information.

Number buttons: Use these buttons to enter numbers for radio-station frequencies or to select station presets.

Last Channel button: When controlling a cable, satellite or HDTV set-top box or a TV, press this button to return to the previous television channel.

Activity button: With this button you can program the remote to store up to 11 different Macros (Activities). (A Macro is a series of commands that are transmitted by a single button press.) Execute a Macro by pressing this button, followed by the Number button (or the AVR Power On button) into which you programmed the Macro. See *Programming Macro (Activity) Commands*, on page 41, for more information.

Back/Exit button: Press this button to return to the previous menu or to exit the menu system.

Menu button: This button is used within the tuner menus (including SIRIUS Radio) and The Bridge IIIP control menu, and is also used to display the main menu on some source devices. To display the AVR's menu system, press the Setup button.

Up/Down/Left/Right buttons: These buttons are used to navigate the menu system and to operate the tuner.

OK button: This button is used to select items from the menu system.

Backlight button (AVR 3650/AVR 365 only): Press this button to illuminate the buttons on the remote. Press it again to turn the backlight off, or wait 5 seconds after the last button press for the light to turn off on its own.

Disc Menu button: To display the disc's menu while a DVD or Blu-ray Disc is playing, press the Blu-ray Source Selector button, then press this button.

A/B/C/D buttons: These buttons can be used as additional source buttons and can also operate certain functions when used with some source devices. See Table A13 in the Appendix for details. These buttons are also used with a Teletext®-capable television if your broadcast, cable or satellite provider offers Teletext service.

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

Channel Up/Down and Page buttons: When the tuner has been selected, press these buttons to select a preset radio station. While operating a cable, satellite or HDTV set-top box or a television, press these buttons to change channels.

Mute button: Press this button to mute the AVR's speaker-output connectors and headphone jack. To restore the sound, press this button or adjust the volume.

Transport Control buttons: These buttons are used to control source devices and The Bridge IIIP.

Info button: Press to display the AVR's Info Menu, which contains the settings for the current source.

Setup button: Press to display the AVR's Main Menu or to switch the remote to the AVR control mode.

Sleep button: Press this button to activate the sleep timer, which turns off the receiver after a programmed period of time. Each press increases the time by 10 minutes, up to 90 minutes – ending with the "Sleep Off" message.

Learn button (AVR 3650/AVR 365 only): The AVR 3650/AVR 365 remote is capable of "learning" individual IR codes from the original remote that came with a source device. See *Program the Remote to Control Your Source Devices and TV*, on page 23, for more information.

Zone Selector switch: Use this switch to select whether the AVR commands will affect the main listening area (Zone 1) or the remote zone of a multizone system (Zone 2). For normal operation, leave the switch in the Zone 1 position.

AVR

Types of Home Theater System Connections

Types of Home Theater System Connections

There are different types of audio and video connections used to connect the AVR to your speakers, your TV or video display, and your source devices. The Consumer Electronics Association has established the CEA® color-coding standard.

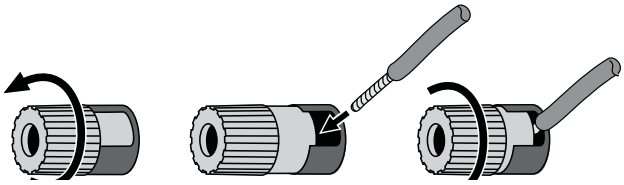
Analog Audio Connection	Color
Front Left/Right	White/Red
Center	Green
Surround Left/Right	Blue/Gray
Surround Back/Front Height Left/Right	Brown/Tan
Subwoofer	Purple
Digital Audio Connection	Color
Coaxial (input or output)	Orange
Optical Input	Black
Optical Record Output	Gray
Analog Video Connection	Color
Component Video	Red/Green/Blue
Composite Video	Yellow

Speaker Connections

Speaker cables carry an amplified signal from the AVR's speaker terminals to each loudspeaker. They contain two wire conductors, or leads, that are differentiated in some way, such as with colors or stripes.

The differentiation helps you maintain proper polarity, without which your system's low-frequency performance can suffer. Each speaker is connected to the AVR's speaker-output terminals using two wires, one positive (+) and one negative (–). Always connect the positive terminal on the speaker, which is usually colored red, to the positive terminal on the receiver, which is colored as indicated in the Connection Color Guide Table, above. The negative terminals on the speakers and the AVR are black.

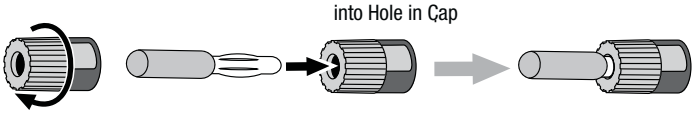
Your AVR uses binding-post speaker terminals that can accept bare-wire cables or banana plugs. Bare-wire cables are installed as shown below:



1. Unscrew Cap 2. Insert Bare Wire 3. Tighten Cap

Banana plugs are inserted into the hole in the middle of the terminal cap, as shown below:

A. Tighten Cap B. Insert Banana Connector into Hole in Cap

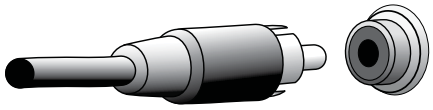


Always connect the colored (+) terminal on the AVR to the (+) terminal on the speaker (usually red), and the black (–) terminal on the AVR to the (–) terminal on the speaker (usually black).

IMPORTANT: Make sure the (+) and (–) bare wires do not touch each other or the other terminal. Touching wires can cause a short circuit that can damage your receiver or amplifier.

Subwoofer Connections

The subwoofer is a speaker dedicated to reproducing only the low (bass) frequencies, which require more power. To obtain the best results, most speaker manufacturers offer powered subwoofers that contain their own amplifiers. Use a single RCA audio cable to make a line-level (non-amplified) connection from the AVR's Subwoofer connector to a corresponding input jack on the subwoofer.



Although the AVR's purple subwoofer output looks similar to a full-range analog audio jack, it is filtered so that only the low frequencies pass through it. Don't connect this output to any device other than a subwoofer.

Source Device Connections

Audio and video signals originate in source devices (components where a playback signal originates) such as your Blu-ray Disc or DVD player, CD player, DVR (digital video recorder) or other recorder, tape deck, game console, cable or satellite television tuner, an iPod or iPhone (docked in an optional The Bridge IIIP docking station) or an MP3 player. The AVR's FM/AM tuner also counts as a source, even though no external connections are needed other than the FM and AM antennas and an optional SIRIUS tuner module. Separate connections are required for the audio and video portions of the source device's signal, except for digital HDMI connections. The types of connections you use will depend upon the capabilities of the source device and of your TV or video display.

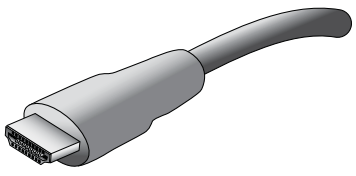
Digital Audio Connections – HDMI

There are two types of audio connections – digital and analog. Digital audio signals are required for listening to sources encoded with digital surround modes, such as Dolby Digital and DTS, or for uncompressed PCM digital audio. Your AVR has three types of digital audio connections: HDMI, coaxial and optical. Do not use more than one type of digital audio connection for each source device. However, it's okay to make both analog and digital audio connections to the same source.

Your AVR is equipped with five rear-panel HDMI input connectors, and one HDMI monitor output connector. (The AVR 3650 and AVR 365 also have a front-panel HDMI input connector.) HDMI technology enables digital audio and video information to be carried using a single cable, delivering the highest quality picture and sound. If your TV or video display device has an HDMI input connector, make a single HDMI connection from each source device to the AVR. Usually, a separate digital audio connection is not required.

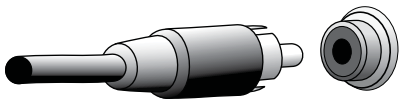
The AVR's HDMI monitor output connection contains an Audio Return Channel (ARC) that carries a digital audio signal from your TV or video display back to the AVR. It allows you to listen to HDMI devices that are connected directly to your TV (such as an Internet connection) without making an additional connection from the device to the AVR. The ARC signal is active when the TV source is selected. See *System Settings*, on page 39, for more information.

The HDMI connector is shaped for easy plug-in (see illustration, below), and HDMI cable runs are limited to about 10 feet (3m). If your video display has a DVI input and is HDCP-compliant, use an HDMI-to-DVI adapter (not included), and make a separate audio connection.



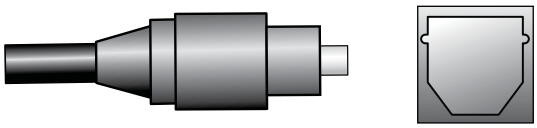
Digital Audio Connections – Coaxial

Coaxial digital audio jacks are usually color-coded in orange. Although they look like standard RCA-type analog jacks, you should not connect coaxial digital audio outputs to analog inputs or vice versa.



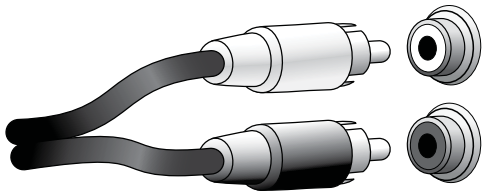
Digital Audio Connections – Optical

Optical digital audio connectors are normally covered by a shutter to protect them from dust. The shutter opens as the cable is inserted. Optical input connectors are color-coded using a black shutter, while optical outputs use a gray shutter.



Analog Audio Connections

Two-channel analog connections require a stereo audio cable, with one connector for the left channel (white) and one for the right channel (red). These two connectors are attached to each other.

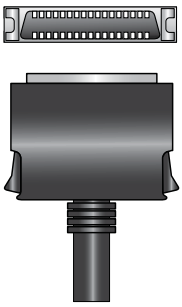


For source devices that have both digital and analog audio outputs, you may make both connections. If you are going to be setting up a multizone system, remember that Zone 2 is an audio-only zone (the AVR does not have a Zone 2 video output). Therefore, make analog connections for any audio source devices (such as a CD changer) that you will want available for listening in Zone 2 at all times.

The analog connections also feed the analog record outputs. You may record materials from Blu-ray Disc recordings, DVDs or other copy-protected sources using only analog connections. Remember to comply with all copyright laws if you choose to make a copy for your own personal use.

The Bridge IIIP Connection

Your AVR includes a proprietary, dedicated connector for an optional The Bridge IIIP docking station for the iPod or iPhone. The Bridge IIIP outputs analog audio to the AVR and is available as a source to Zone 2 in a multizone system.



Video Connections

Many source devices output both audio and video signals (e.g., Blu-ray Disc, DVD player, cable television box, HDTV tuner, satellite box, VCR, DVR). In addition to an audio connection as described above, make a video connection for each of these source devices. Make only one type of video connection for each device.

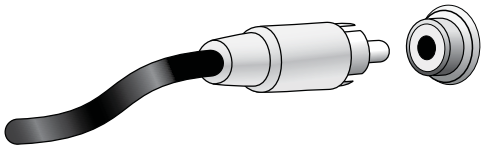
Digital Video Connections

If you have already connected a source device to one of the AVR's HDMI input connectors, you have automatically made a video connection for that device, since the HDMI cable carries both digital audio and digital video signals.

Analog Video Connections – Composite Video

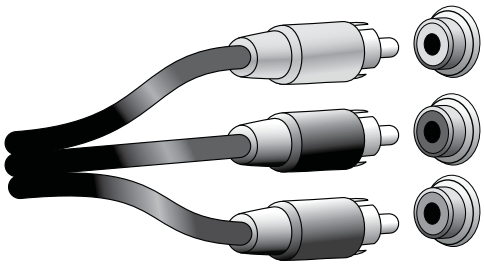
Your AVR uses two types of analog video connections: composite video and component video.

Composite video is the basic connection most commonly available. Both the chrominance (color) and luminance (intensity) components of the video signal are transmitted using a single cable. The jack is usually color-coded yellow and looks like an analog audio jack. Do not connect a composite video jack to an analog audio or coaxial digital audio jack, or vice versa.



Analog Video Connections – Component Video

Component video separates the video signal into three components – one luminance ("Y") and two sub-sampled color signals ("Pb" and "Pr") – that are transmitted using three separate cables that are color-coded green (Y), blue (Pb) and red (Pr). Component video cables that join three separate green, blue and red connectors into a single cable are sold separately.



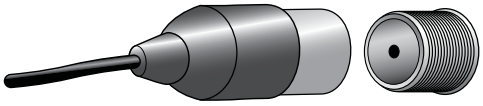
If your TV or video display has an HDMI connection, we recommend it as the best quality connection. Your AVR converts composite and component analog video input signals to the HDMI format, upscaling them to high-definition 1080p resolution.

AVR

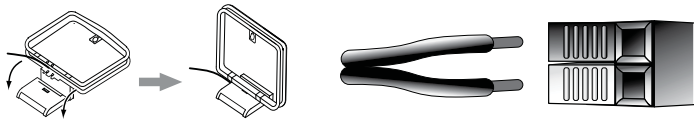
Types of Home Theater System Connections

Radio Connections

Your AVR uses separate terminals for the included FM and AM antennas. The FM antenna uses a 75-ohm F-connector.

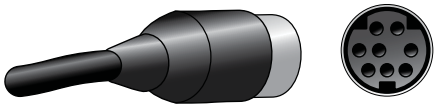


The AM antenna connector uses spring-clip terminals. After assembling the antenna as shown below, press the levers to open the connectors, insert the bare wires into the openings, and release the levers to secure the wires. The antenna wires are not polarized, so you can insert either wire into either connector.



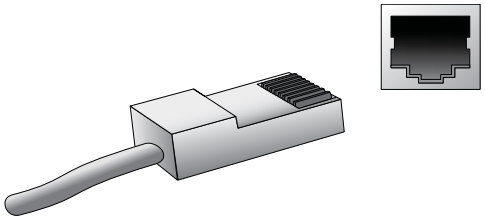
SIRIUS Satellite Radio

To enjoy SIRIUS satellite radio, purchase a SIRIUSConnect tuner module and a subscription to the SIRIUS service. Visit www.sirius.com for information on SIRIUSConnect tuner modules. The SiriusConnect modules include an eight-pin DIN cable for connection to the eight-pin jack on the AVR, allowing you to control the tuner module via the AVR. Although you may also use a "plug-and-play" tuner module equipped with standard audio connections, you will not be able to use the AVR to control the SIRIUS tuner.



Network Connector

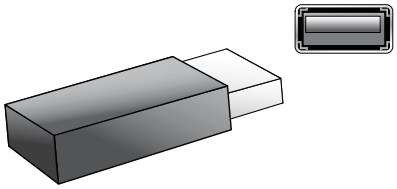
The AVR's Network connector allows you to enjoy Internet radio or content from other DLNA-compatible devices that are connected to the same network. Use a Cat. 5 or Cat. 5E cable to connect the AVR's RJ-45 connector to your home network.



USB Port

The USB port on your AVR is used for firmware upgrades. If an upgrade for the AVR's operating system is released in the future, you will be able to download it to the AVR using this port. Complete instructions will be provided at that time.

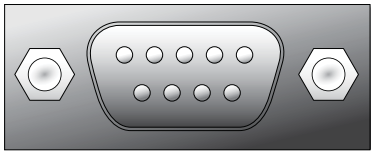
In addition to performing firmware upgrades, the AVR 3650/AVR 365 can play MP3 and WMA audio files from a USB device inserted into the USB port. Insert the device into the USB port with the device's plug oriented so it fits all the way into the port. You may insert or remove the device at any time – there is no installation or ejection procedure.



IMPORTANT: Do not connect a PC or other USB host/controller to the AVR's USB port, or you may damage both the AVR and the other device.

RS-232 Connector

Your AVR's RS-232 serial port may be connected to an external control system to allow it to transmit control commands to the AVR. The port is bidirectional so that the AVR can transmit status updates to the control device. Connecting and using the RS-232 port requires considerable technical knowledge and is best left to a professional custom installer.

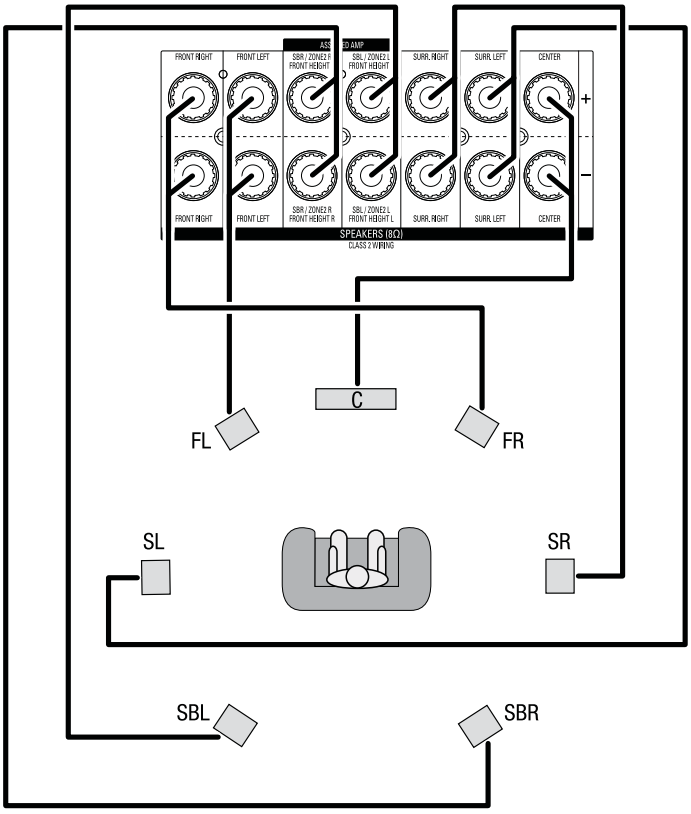


Making Connections

CAUTION: Before making any connections to the audio/video receiver, ensure that the AVR's AC cord is unplugged from the receiver and the AC outlet. Making connections with the receiver plugged in and turned on could damage the speakers.

Connect Your Speakers

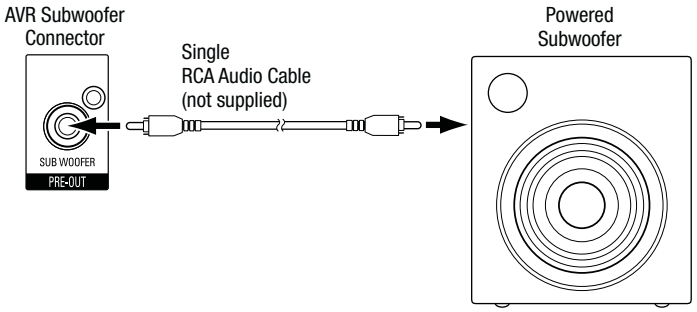
After you have placed your loudspeakers in the room as explained in *Place Your Speakers*, on page 13, connect each speaker to its color-coded terminal on the AVR as explained in *Speaker Connections*, on page 14. Connect the speakers as shown in the illustration.



NOTE: If you installed front height speakers, connect them as shown for the SBL and SBR speakers.

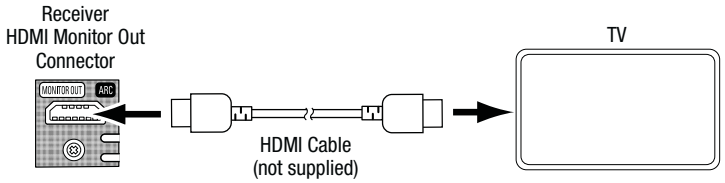
Connect Your Subwoofer

Use a single RCA audio cable to connect the AVR's Subwoofer connector to your subwoofer as explained in *Subwoofer Connections*, on page 14. Consult your subwoofer's user manual for specific information about making connections to it.

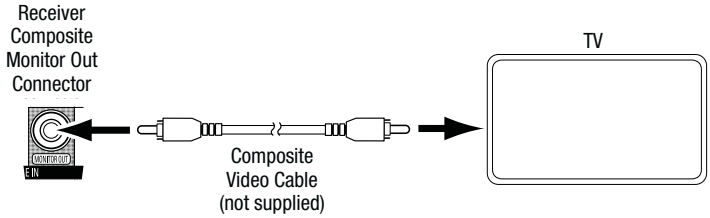


Connect Your TV or Video Display

If your TV has an HDMI connector: Use an HDMI cable (not included) to connect it to the AVR's HDMI Monitor Out connector. You do not need to make any other connections to your TV from the receiver or from any of your video source components.



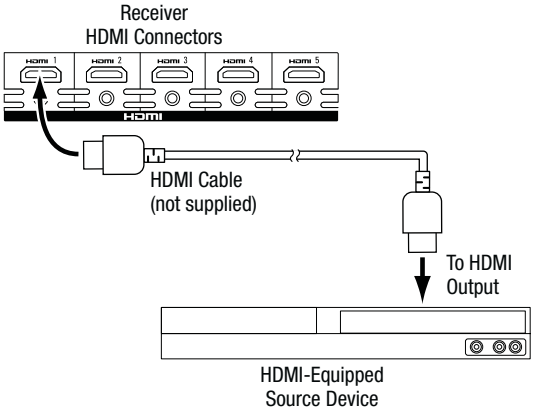
If your TV does not have an HDMI connector: Use a composite video cable (not included) to connect the AVR's Composite Monitor Out connector to your TV's composite video connector.



NOTE: The HDMI connection to your TV is preferred. If you use the composite video connection to your TV, you will not be able to view the AVR's on-screen menus.

Connect Your HDMI Devices

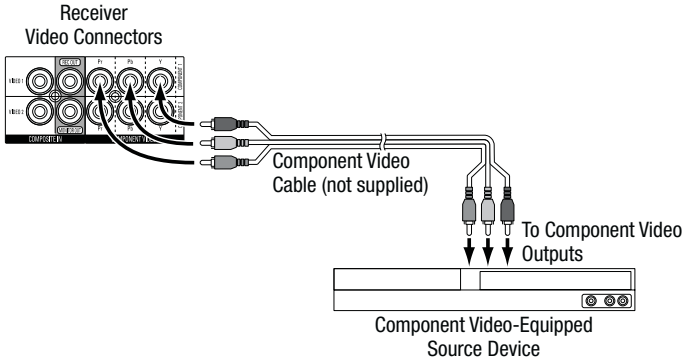
If any of your source devices have HDMI connectors, using them will provide the best possible video and audio performance quality. Since the HDMI cable carries both digital video and digital audio signals, you do not have to make any additional audio connections for devices you connect via an HDMI cable.



NOTE: If you have HDMI devices (such as an Internet connection) already connected directly to your TV, you can feed their sound to the AVR via the HDMI Monitor Out connector's Audio Return Channel, and they will not require additional connections to the AVR.

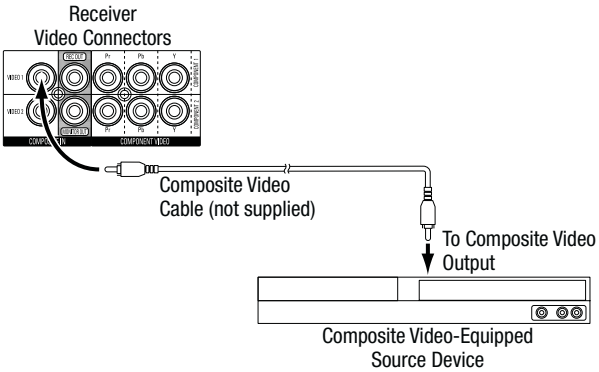
Connect Your Component Video Devices

If any of your video source devices have component video connectors (and do not have HDMI connectors), using the component video connectors will provide superior video performance. You will also need to make an audio connection from the device to the receiver.



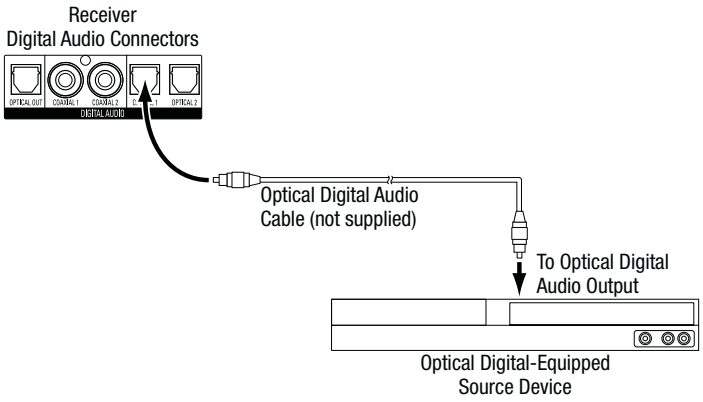
Connect Your Composite Video Devices

Use composite video connectors for video source devices that don't have HDMI or component video connectors. You will also need to make an audio connection from the source device to the receiver.



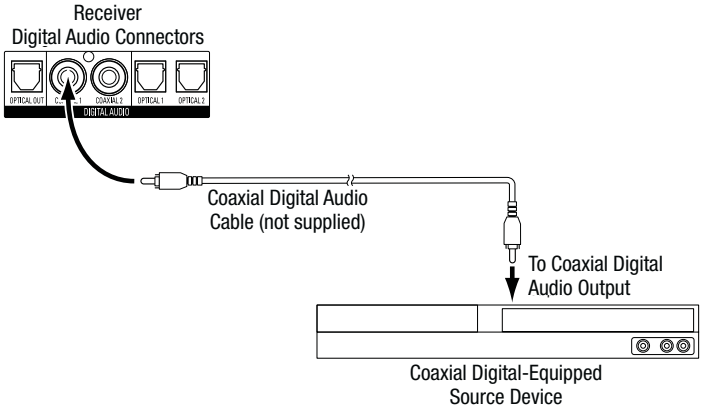
Connect Your Optical Digital Video Devices

If your non-HDMI source devices have optical digital outputs, connect them to the AVR's optical digital audio connectors. **NOTE:** Make only one type of digital connection (HDMI, optical or coaxial) from each device.



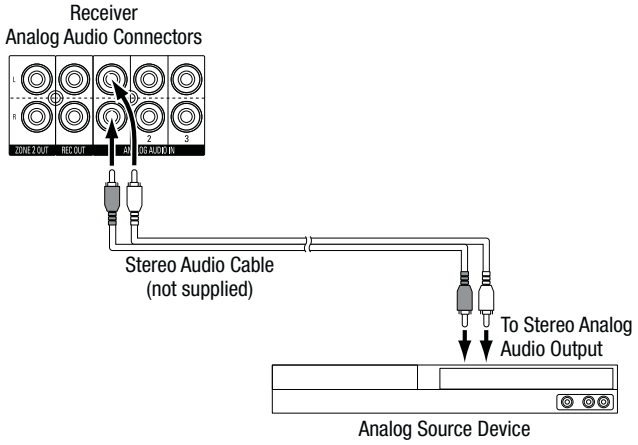
Connect Your Coaxial Digital Audio Devices

If your non-HDMI source devices have coaxial digital outputs, connect them to the AVR's coaxial digital audio connectors. **NOTE:** Make only one type of digital connection (HDMI, optical or coaxial) from each device.



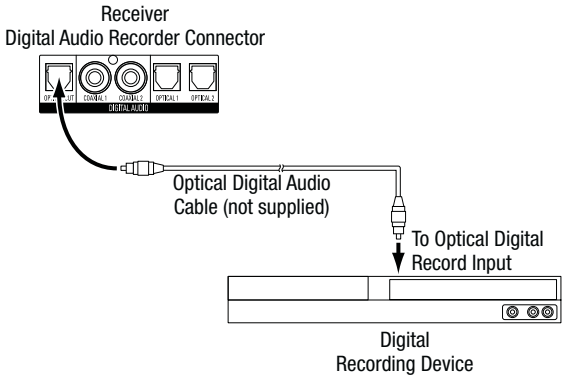
Connect Your Analog Audio Devices

Use the AVR's analog audio connectors for source devices that don't have HDMI or digital audio connectors. **NOTE:** If you're installing a multizone system, make analog audio connections for any source devices you want to be able to listen to in Zone 2. Only analog sources are available in Zone 2.

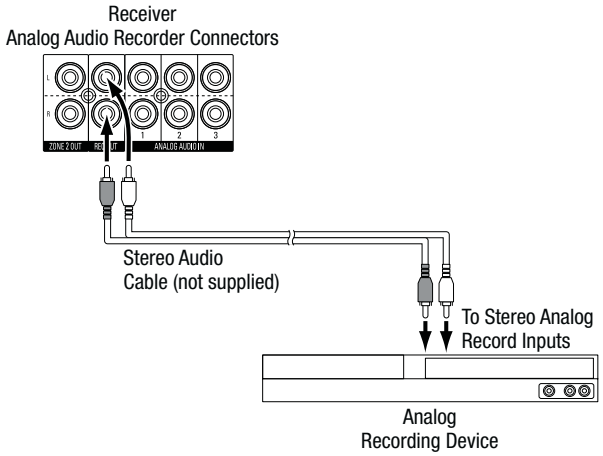


Connect Your Audio Recorders

Connect a digital audio recorder's optical digital input to the AVR's optical digital output. You can record both coaxial and optical digital audio input signals.

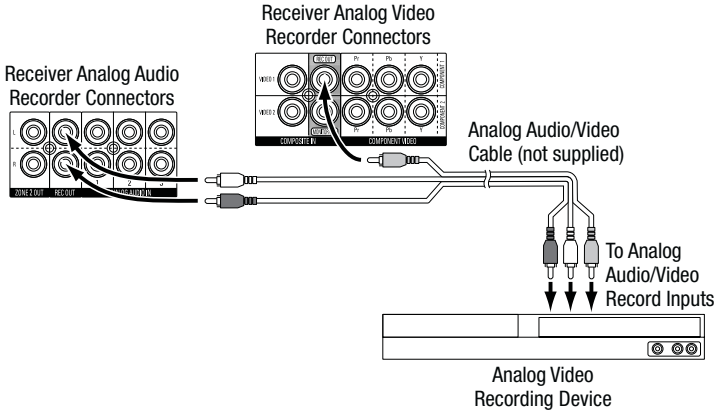


Connect an analog audio recorder's inputs to the AVR's analog audio Rec Out connectors. You can record any analog audio input signal.



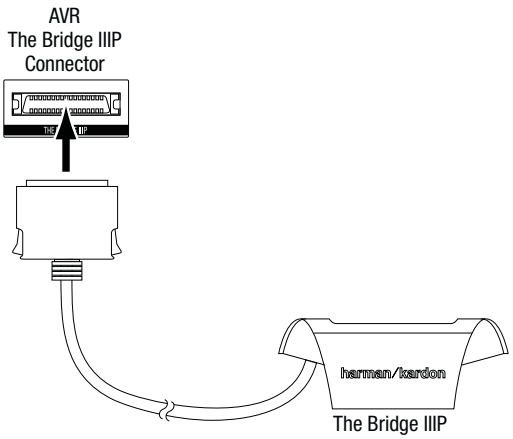
Connect Your Video Recorder

Connect an analog video recorder's video input connector to the AVR's Composite Video Rec Out connector. You can record any composite video signal. **NOTE:** To record the audio and video from the source device, connect the AVR's analog audio Rec Out connectors to the analog video recorder's audio inputs.



Connect The Bridge IIIP

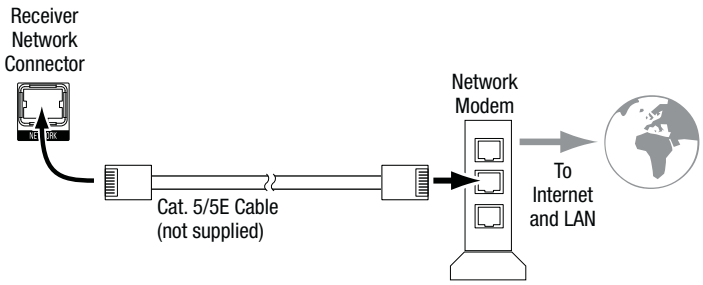
Connect an optional The Bridge IIIP to the AVR's The Bridge IIIP connector. Insert the plug until it snaps into place in the connector. **IMPORTANT: Connect The Bridge IIIP only with the AVR's power turned OFF.**



Dock your iPod or iPhone (not included) in The Bridge IIIP, and you may listen to its audio through your high-performance audio/video system. You may also view still images or video materials stored on a photo- or video-capable iPod or iPhone that supports video browsing. You can use the AVR remote to control the iPod, with navigation messages displayed on the AVR's front panel and on a video display connected to the AVR.

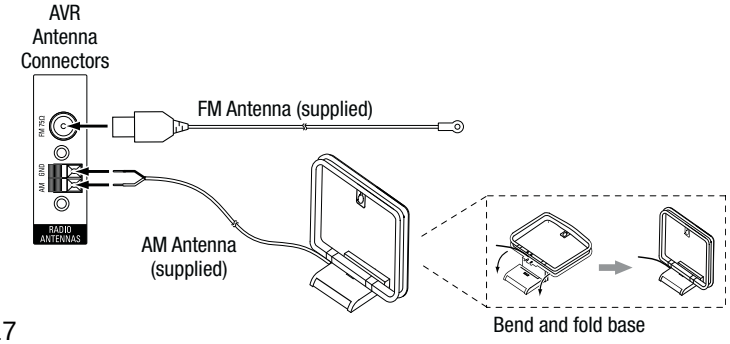
Connect to Your Home Network

Use a Cat. 5 or Cat. 5E cable (not supplied) to connect the AVR's Network connector to your home network to enjoy Internet radio and content from DLNA-compatible devices that are connected to the network.



Connect the Radio Antennas

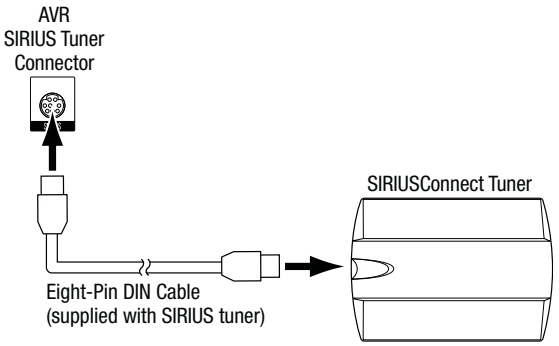
- Connect the supplied FM antenna to the AVR's FM 75Ω antenna connector. For the best reception, extend the FM antenna as far as possible.
- Bend and fold the base of the supplied AM antenna as shown and connect the antenna wires to the AVR's AM and Gnd connectors. (You can connect either wire to either connector.) Rotate the antenna as necessary to minimize background noise.



AVR

Connect a SIRIUSConnect Radio Tuner (AVR 3650 and AVR 2650 only)

Connect the multi-pin DIN cable supplied with the SIRIUSConnect tuner to the AVR's SIRIUS Tuner connector and to the corresponding connector on the SIRIUS module. The AVR will supply power to the SIRIUS module so you will not need to connect the power supply included with the module. You will need to purchase a SIRIUS radio subscription and activate the tuner module, following the instructions included with the SIRIUS module and from the SIRIUS Web site at www.sirius.com.



AVR

Operating Your AVR

Now that you have installed your components and completed a basic configuration, you are ready to begin enjoying your home theater system.

Controlling the Volume

Adjust the volume either by turning the front-panel Volume knob (clockwise to increase volume or counterclockwise to decrease volume) or by pressing the Volume Up/Down buttons on the remote. The volume is displayed as a negative number of decibels (dB) below the 0dB reference point (-90dB – +10dB).

0dB is the maximum recommended volume for your AVR. Although it's possible to turn the volume to a higher level, doing so may damage your hearing and your speakers. For certain more dynamic audio materials, even 0dB may be too high, allowing for damage to equipment. Use caution with regard to volume levels.

To change the volume level display from the default decibel scale to a 0-to-90 scale, adjust the Volume Units setting in the System Settings menu, as described in *System Settings*, on page 39.

Muting the Sound

To mute all speakers and the headphones, press the Mute button on the remote. Any recording in progress will not be affected. The MUTE message will appear in the display as a reminder. To restore the sound, press the Mute button again, or adjust the volume.

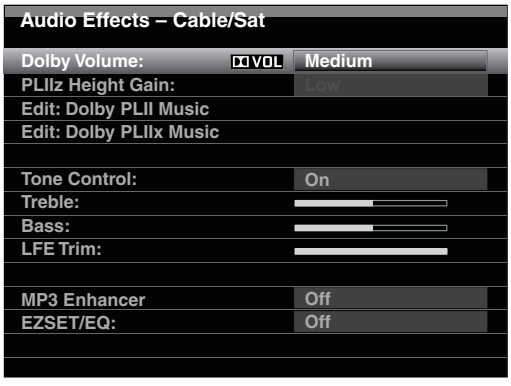
Dolby Volume

Your AVR implements Dolby Volume processing, which can improve the audio performance of the system by revealing subtle details in the sound, even at normal home-listening volumes.

One concern of the typical home theater listener is that volumes can vary widely for different programs played by a source (e.g., television commercial advertisements are often much louder than the main program). Another is that details heard in the recording studio at typically high reference volumes are lost at the lower volumes used by many listeners at home.

The AVR uses two Dolby Volume techniques to address these issues. The Leveler module maintains a consistent listening volume within a source (e.g., commercial television or different tracks on a USB drive or mix CD). The Modeler module endeavors to re-create the reference presentation that was heard in the recording studio without losing portions of the program at the typically lower volume levels often used in the home. When the Modeler module is active, you may notice details of the performance that were hidden when the program was played on other equipment.

To adjust the Dolby Volume setting, press the Audio Effects button. The Audio Effects submenu will appear.



After you highlight the Dolby Volume setting, each press of the OK button will switch to one of the options in the table below. The settings do not refer to the volume level, which is adjusted normally using the AVR's Volume Control, but rather to the amount of Dolby Volume processing desired.

Setting	Effect
Off	No Dolby Volume processing
Low	Only Dolby Volume Modeler module is active
Medium	Both Modeler and Leveler modules are active; Leveler module has a value of 3
Max	Both Modeler and Leveler modules are active; Leveler module has a value of 9

NOTE: Dolby Volume processing is compatible with sources recorded at a sampling rate of 48kHz. High-resolution sources, such as DTS 96/24 programs, will be decoded at 48kHz. DTS 96/24 programs will be played in DTS 5.1 mode. To hear DTS 96/24 materials in high resolution, turn off Dolby Volume processing.

Dolby Volume Calibration

Dolby Volume calibration allows you to adjust the operation of the Dolby Volume circuitry to match your particular speakers and listening environment. The Dolby Volume circuitry in your AVR is factory-calibrated with average speaker sensitivity in mind; however, different speakers may have different sensitivities, which will affect the overall performance of the Dolby Volume circuitry. Use Dolby Volume calibration to adjust the calibration of the circuitry according to the specific speakers you have.

The average home audio speaker sensitivity is 88dB SPL (1 watt/1 meter). Check the sensitivity specification for your loudspeakers, found in the owner's manual or on the manufacturer's Web site. If your speakers have a sensitivity rating greater than 88dB SPL, increase Dolby Volume calibration by the difference between your speakers' sensitivity and 88dB. If they have a sensitivity rating of less than 88dB SPL, decrease Dolby Volume calibration by the difference between your speakers' sensitivity and 88dB.

To adjust the Dolby Volume calibration, press the AVR button and select the "System" menu. Scroll to the Dolby Volume calibration line, which defaults to 0dB. Use the Left/Right buttons to adjust the setting within the range of –10dB to +10dB.

Listening Through Headphones

Plug the 1/4-inch stereo plug on a pair of headphones into the front-panel Phones jack for private listening. The default Headphone Bypass mode delivers a conventional two-channel signal to the headphones. Press the Surround Modes button on the front panel or the remote to switch to HARMAN headphone virtual surround processing, which emulates a 5.1-channel speaker system. No other surround modes are available for the headphones.

Selecting a Source

There are three different ways to select a source:

• Press the front-panel Source List button. Use the Up/Down buttons to scroll through the sources, and press the OK button to select the source being displayed.

• Using the on-screen menus, press the AVR button, highlight "Source Select" and press the OK button. Scroll to the desired source in the slide-in menu and press the OK button.

• You can directly select any source by pressing its Source Selector button on the remote.

The AVR selects the audio and video inputs assigned to the source, and any other settings you made during setup.

The source name, the audio and video inputs assigned to the source, and the surround mode will appear on the front panel. The source name and active surround mode will also briefly appear on the TV screen.

Video Troubleshooting Tips

If there is no picture:

- Check the source selection and video input assignment.
- Check all connections for a loose or incorrect connection.
- Check the video input selection on the TV/display device.
- Press the front-panel Resolution button and use the Up/Down buttons until the correct video output resolution is selected and a picture appears. The CANCEL message will also appear. Press the Down button to view the ACCEPT option, then press the OK button.

Additional Tips for Troubleshooting HDMI Connections

- Turn off all devices (including the TV, the AVR and any source components).
- Unplug the HDMI cables, starting with the cable between the AVR and the TV, and continuing with the cables between the AVR and each source device.
- Carefully reconnect the cables from the source devices to the AVR. Connect the cable from the AVR to the TV last.
- Turn on the devices in this order: TV, AVR, source devices.

NOTE: Depending upon the particular components involved, the complexity of the required communication between HDMI components may cause delays of up to a minute in the completion of some actions, such as input switching or switching between SD and HD channels.

Listening to FM and AM Radio

Select the Radio source. A screen similar to the one in the illustration below will appear. (Note: The SIRIUS band uses a different screen.)

Use the Up/Down buttons or the Remote's Channel buttons to tune a station (or channel for SIRIUS Radio), as displayed on the front panel and on-screen display.

The AVR defaults to automatic tuning, meaning each press of the Up/Down buttons scans up or down the frequency band until a station with acceptable signal strength is found. To switch to manual tuning, in which each press of the Up/Down buttons steps through a single tuning frequency increment, press the remote's Menu button. A slide-in menu will appear. Select "Mode," and press the OK button to toggle between automatic and manual tuning modes.

Once you have tuned an FM station, toggling the Mode setting also switches the radio between stereo and monaural reception. (Mono reception may improve reception of weaker stations.)

Preset Stations

You can store a total of 30 stations (AM and FM combined) as presets. When you want to save the currently tuned station as a preset, press the OK button, and two dashes will flash. Use the Number buttons to enter the desired preset number.

To tune to a preset station:

- Press the Left/Right buttons.
- Press the skip forward/skip backward Transport Control buttons.
- Press the Menu button and scroll to the desired preset, then press the OK button.
- Enter the preset number using the Number buttons. For presets 10 through 30, press 0 before the preset number. For example, to enter preset 21, press 0-2-1.

Listening to SIRIUS Satellite Radio

SIRIUS Satellite Radio delivers a variety of commercial-free music from categories including pop, rock, country, R&B, dance, jazz, classical and many more, plus coverage of all the top professional and college sports, including play-by-play games from select leagues and teams. Additional programming includes expert sports talk, uncensored entertainment, comedy, family programming, local traffic and weather, and news from your most trusted sources. SIRIUS Satellite Radio is available to residents of the U.S. (except Alaska and Hawaii) and Canada.

To listen to SIRIUS Satellite Radio, you'll need to connect a SIRIUS tuner module (sold separately) to the AVR's SIRIUS Tuner connector. SIRIUS tuner modules that will work with your AVR are available at www.sirius.com. Select a tuner module designated for SIRIUS-Ready® audio components (also called SIRIUSConnect). A SIRIUSConnect module is controlled by the AVR's internal tuner, including 40 preset SIRIUS station locations and remote control. Although you may also use a SIRIUS "plug-and-play" unit with standard analog audio connections, you will not be able to enjoy the AVR's ease of control.

Installing the SIRIUS tuner module

Once you've purchased a SIRIUS tuner, you'll need to install it, activate it and subscribe to begin enjoying the service:

1. Using the cable included with the SIRIUS tuner module, plug the module into the SIRIUS Tuner connector on the rear of the AVR.

2. Follow the instructions included with the SIRIUS tuner module to complete its installation. NOTE: Pay particular attention to the instructions for installing and orienting the SIRIUS antenna that is included with the SIRIUS tuner module.

3. Call 1-888-539-SIRI (7474) or visit sirius.com (U.S.) or siriuscanada.ca (Canada) to activate your SIRIUS tuner module and subscribe to the SIRIUS service.

To listen to SIRIUS radio

Select SIRIUS Radio as the source in one of these ways:

- Press the Source List button on the front panel. Use the Up/Down buttons to scroll to "SIRIUS Radio" and press the OK Button.
- Press the Radio Source Selector button on the remote repeatedly until SIRIUS Radio is selected.

There are four ways to tune a SIRIUS radio channel:

- Use the Up/Down buttons or the Channel Up/Down buttons to scan through the channel numbers.
- Use the Left/Right buttons to scan through any previously programmed preset stations.
- After you have programmed presets, directly enter the preset number (1 through 40) using the Number buttons. For two-digit positions, enter a "0" before the number.
- To search for a channel, press the Menu button, then use the Up/Down buttons to cycle through the following choices: Preset, Category, All Channels or Direct Entry. Press the OK button to select one, then use the Up/Down buttons to search for the channel (for Direct Entry, use the Number buttons to enter the channel number), then press the OK button.

The current channel number and preset location will appear in the lower line of the AVR's front-panel Message Display. The song title, artist, channel name, channel category, channel number, preset position (if programmed) and signal-strength bars will all appear on the screen when a video display is in use. For traffic and weather channels, the current city's name will appear instead of the channel name.

Preset SIRIUS channels

You can store a total of 40 channels as presets. When the desired channel has been tuned, press the OK button, and two dashes will flash on the AVR's front-panel Message Display. Use the Number buttons to enter the desired preset number.

To tune to a preset SIRIUS channel:

- Press the Left/Right buttons.
- Press the skip forward/skip backward Transport Control buttons.
- Press the Menu Button and scroll to the desired preset, then press the OK Button.
- Enter the preset number using the Number buttons. For presets 10 through 40, press 0 before the preset number. For example, to enter preset 21, press 0-2-1.

Listening to Media on a USB Device (AVR 3650/AVR 365)

Your AVR is compatible with MP3 and WMA media.

MP3 compatibility: Mono or stereo, contstant bit rates (CBR) from 8kbps to 320kbps, variable bit rates (VBR) from lowest to highest quality, with sample rates from 8kHz – 48kHz.

WMA compatibility: Ver. 9.2, stereo CBR with 32kHz – 48kHz sampling rate and 40kbps – 192kbps bit rate, mono CBR with 8kHz – 16kHz sampling rate and 5kbps – 16kbps bit rate, VBR Pass Encoding and Quality Encoding 10 – 98, 44kHz and 48kHz sampling rate.

No other types of media can be played.

Playing files on a USB device

1. Insert the USB drive into the AVR's front-panel USB port.

IMPORTANT: Do not connect a personal computer or peripheral to the USB port. USB hubs and multi-card readers are not supported.

2. Select the USB Source Selector button on the remote. "USB" will appear on the front-panel display, and the USB screen and the slide-in menu will appear.

3. Select "Browse USB." The AVR will list the folders located on the drive.

4. Select a folder and press the OK button. The AVR will list all compatible audio files.

5. Select a file to begin playback. The USB play screen will appear. Any ID3 information and album art will be displayed, along with the track's elapsed/current time and icons indicating the current playback status.

NOTES:

• To skip to the next track, press the Right button; to return to the previous track, press the Left button once.

• You can use the Transport Control buttons to control playback (skipping to the previous or next track, searching at high speed forward or backward within a track, playing a file, pausing playback or stopping playback).

• To repeat a file or folder, press the Menu Button and select the Repeat option. Each press of the OK Button will change the setting from Off (no repeat) to Repeat One (file) to Repeat All (files at the current directory level of the drive). Repeat All will always be activated when Random Music playback is turned on.

• To play the audio tracks in random order, press the Menu button and select the Random Music setting. Each press of the OK button turns the setting on or off. The AVR will automatically repeat the tracks until playback is stopped manually.

• To collapse a folder or return to the previous menu level, press the Back/Exit button or the Left button.

Listening to an iPod/iPhone Device

When The Bridge IIIP is connected to its proprietary input on the AVR and an iPod or iPhone is docked, you may play the audio, video and still-image materials on your iPod or iPhone through your high-quality audio/video system, operate the iPod or iPhone using the AVR remote or the AVR's front-panel controls, view navigation messages on the AVR's front panel or a connected video display and charge the iPod or iPhone.

As of this writing, your AVR supports audio, video and photo playback from the following Apple products: iPod classic, iPod nano 3G, iPod nano 4G, iPod nano 5G, iPod nano 6G, iPod touch, iPod touch 2G, iPod touch 3G, iPod touch 4G, iPhone, iPhone 3G, iPhone 3GS, iPhone 4G. For the latest compatibility information, please see our Web site: www.harmankardon.com.

When you select The Bridge Source Selector button on the remote, "Bridge" will appear on the front-panel display, a The Bridge screen will appear and the slide-in menu will automatically appear.

NOTE: If the AVR doesn't detect the iPod or iPhone, turn off the AVR, remove the iPod or iPhone from The Bridge IIIP and reset the iPod or iPhone. When the iPod or iPhone returns to its main menu, re-dock it and turn on the AVR.

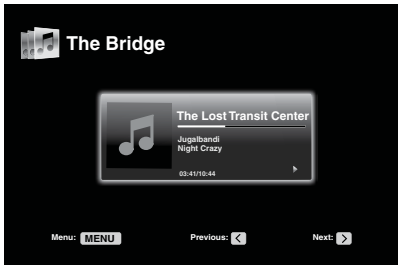
The table below summarizes the controls available during normal playback with The Bridge IIIP:

iPod or iPhone Function	Remote Control Key
Play	Play
Pause	Pause
Menu	Menu
Back/Exit	Back/Exit or Left Arrow
Select	OK or Right Arrow
Scroll Reverse	Up Arrow
Scroll Forward	Down Arrow
Forward Search	Forward Search
Reverse Search	Reverse Search
Next Track	Skip Forward or Right Arrow
Previous Track	Skip Backward or Left Arrow
Page Up/Down	Page Up/Down

While scrolling, hold the button to scroll faster. Use the Page Up/Down control on the remote to scroll a page at a time.

While a selection is playing, the album, artist, song title, track elapsed time, total track time and play mode icon will appear on the front-panel Message display.

If a video monitor is connected to the AVR and the system is not in iPod manual mode, a The Bridge screen will appear and display the play mode icon, song title, artist and album. A graphic bar indicates the current play position within the track. If random or repeat play has been programmed, an icon will appear in the upper right corner.



The screen may disappear from view, depending on the Setup and Slide-In Menus setting in the System Settings menu (described in *System Settings*, on page 39). You can restore the Now Playing screen to view by pressing either of the Left or Right buttons.

CAUTION: We strongly recommend that you use the screen saver built into your video display to avoid possible damage from "burn-in" that may occur with plasma and many CRT displays when a still image, such as a menu screen, remains on the display for an extended period of time.

Press the Menu button to view the slide-out menu:

Music: Select this to navigate the audio materials stored on the iPod or iPhone. Use the Page up/down buttons on the remote to scroll through the content a page at a time.

Photo/Manual: Select this to view still images stored on a photo-capable iPod or iPhone. The system will switch to iPod manual mode, and control will shift to the iPod. Use the screen and controls on the iPod. The AVR remote may also be used. To view photos on a video monitor connected to the AVR, select the photo and press the Play button on the iPod, or press the OK button on the remote three times.

Videos: Select this to view videos stored on an iPhone or an iPod that supports video browsing.

Notes on iPod/iPhone video playback:

• Before attempting to view photos or videos stored on your device, check the Video Settings menu on the device and make sure that the TV Out setting is set to On. The TV Signal setting should be set to match the capabilities of your video display (NTSC for the US; PAL for the EU). If your selection was playing and is paused, the iPod or iPhone requires you to reselect the video for the new TV Out setting to take effect.

• If you do not see the Videos line in the menu, and the iPod supports video browsing and has video content stored on it, you may need to turn off the AVR, remove the iPod from The Bridge IIIP, reset the iPod, turn the AVR back on and dock the iPod again. An iPhone may not need to be reset, as simply undocking and re-docking it may resolve the problem. This procedure may also help when a video program is selected but the Bridge screen appears instead of the video images.

To exit iPod manual mode, with the AVR remote in The Bridge mode, press the Menu button. To return to a previous menu level, press the Back/Exit Button or the Left button.

Repeat: Select this setting to repeat a track or all tracks in the current album or playlist. Each press of the OK button switches the setting: repeat Off, repeat One or repeat All.

Random: Select this setting for random playback, also known as "Shuffle Mode." Each press of the OK button switches the setting: shuffle by Song, shuffle by Album, or Off to end random playback.

NOTE: The iTunes application allows you to exempt some tracks from Shuffle mode. The AVR cannot override this setting.

The AVR supports audio playback from some applications available for the iPhone and the iPod touch. Place the system in iPod manual mode by pressing the Menu button and selecting "Photo/Manual." Then use the controls on the iPhone or iPod touch to run the application.

Due to the wide variety of applications and many factors affecting them, playback is not guaranteed.

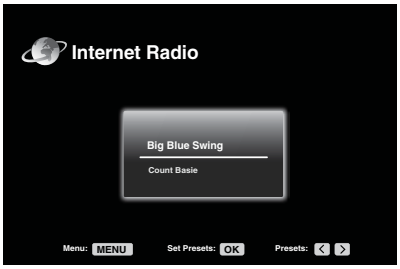
NOTES:

• The Play and Pause functions are not available unless content has been selected for playback.

• To search within a track, press and hold the forward or reverse Transport Control button. Press the previous track Transport Control button once to skip to the beginning of the current track; press the previous track Transport Control button twice to skip to the beginning of the previous track.

Listening to Internet Radio

Your AVR's Network connection brings you a world of MP3- and WMA-format streams via the Internet. After you have successfully connected to your home network as described in *Connect to Your Home Network*, on page 20, and set up the network as described in *Set Up the Network*, on page 27, press the Network Source Selector button on the remote. Each press toggles between the Network and Internet Radio screens.



With the Internet Radio screen (above) displayed, the AVR will automatically connect to the Internet via the www.radioharmankardon.com portal. To select a stream, press the Menu button, and use the Up/Down buttons to search by category: Presets, My Favourites, Local Stations, HDi, Stations, Podcasts or My Added Stations. **NOTE:** The categories displayed may vary by region.

To create a Favourites list, log onto www.radioharmankardon.com from your computer. Enter your AVR's ID # (to see the ID # with the Internet Radio screen displayed, press the Menu button, then select Help) and create an account. Favourites that you select on the Web site will be available on the AVR.

NOTE: While the Help screen is displayed, we recommend spending a few moments listening to the audio FAQs to get answers to common questions about Internet radio operation. The FAQs play in a continuous loop. To return to an Internet radio station while an FAQ is playing, press the Menu button, then the Back/Exit button, then the Back/Exit button again, and select an Internet radio station.

Navigation is similar to other slide-in menus. Scroll to the desired item and press the OK button or the Right button to select it. To return to the previous menu level (or to clear the top-level menu from view), press the Back/Exit button or the Left button.

If you know the URL (Web address) of a specific audio stream, select the Direct Station option from the menu. A live stream is required. The AVR is not able to connect to streams that require site registration or other interaction prior to playing the stream. If the AVR cannot connect to the stream, a "Station Not Live" message will appear briefly, and the Internet Radio screen will remain essentially blank. Not all URLs will be accessible.

Internet Radio Presets

You can program up to 30 Internet radio stations as presets. To set a preset, first tune the station. Press the OK button, and two dashes will flash. Enter the preset number (any number from 1 through 30) using the Number buttons. The connection to the station will momentarily stop, interrupting the program, and the AVR will reconnect to the station.

To connect to a station programmed as a preset, enter its preset number using the Number buttons, or use the Left/Right buttons to select it from the preset list.

Listening to Media via Your Home Network

Your AVR can play MP3 and WMA audio media that is stored on a PC when both the PC and the AVR are connected to your home network router.

MP3 compatibility: Mono or stereo, contstant bit rates (CBR) from 8kbps to 320kbps, variable bit rates (VBR) from lowest to highest quality, with sample rates from 8kHz – 48kHz.

WMA compatibility: Ver. 9.2, stereo CBR with 32kHz – 48kHz sampling rate and 40kbps – 192kbps bit rate, mono CBR with 8kHz – 16kHz sampling rate and 5kbps – 16kbps bit rate, VBR Pass Encoding and Quality Encoding 10 – 98, 44kHz and 48kHz sampling rate.

NOTES:

• A PC must be running Windows Media® Player version 11 or higher, Windows Media Center version 2.0 or 3.0, or Intel® Media Server. We recommend that any firewalls be turned off, although Windows Media Player may automatically make any necessary adjustments to the firewall settings to allow media sharing.

• An Apple Macintosh computer must be running DLNA (Digital Living Network Alliance)-compliant software. Examples of compatible software include the TwonkyServer™ program by PacketVideo, and EyeConnect software by Elgato Systems.

Before you can access files located on other devices via the network, each device must first give permission to share files with the AVR:

To share media on PCs:

1. Open Windows Media Player.

2. Open the Library menu and select Media Sharing. The Media Sharing window will appear.

3. Check the "Share My Media" box. An icon for the AVR will appear in the window.

4. Select the AVR icon, select "Allow," then select "OK."

The computer's WMA and MP3 media should now be available to the AVR.

To share media on other types of computers, operating systems or media software: Check the instructions for the computer, operating system or media player.

To listen to shared media, press the Network Source Selector button. (If Internet Radio appears as the source, press the button a second time to switch from the Internet Radio source to the Network source.) The Network screen will appear.

Press the Menu button, and the slide-in menu should list all devices that allow sharing by name. Use the slide-in menu to browse the content stored in the device's media player library. Scroll to the desired item and press the OK button or the Right button to select it. To return to the previous menu level (or to clear the menu from view from the top level), press the Back/Exit button or the Left button.

NOTES:

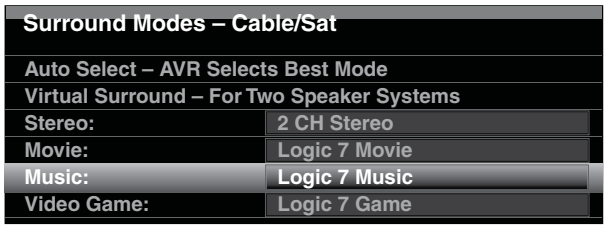
• The Repeat settings are global for Network playback and USB playback. Changing these settings for one of these sources will change the other source's settings as well.

• Although video content may appear in the menu, the AVR does not support video playback from the network connection.

Selecting a Surround Mode

Selecting a surround mode can be as simple or sophisticated as your individual system and tastes. Feel free to experiment, and you may find a few favorites for certain sources or program types. You can find more detailed information on surround modes in *Audio Processing and Surround Sound*, on page 33.

To select a surround mode, press the Surround Modes button (front panel or remote). The Surround Modes menu will appear.



Press the Up/Down buttons repeatedly until the desired surround-mode category appears: Auto Select, Virtual Surround, Stereo, Movie, Music or Video Game. Press the OK button to change the surround-mode category.

Auto Select: For digital programs, such as a movie recorded with a Dolby Digital or DTS soundtrack, the AVR will automatically use the soundtrack's native surround format. For two-channel analog and PCM programs, the AVR uses the Logic 7 Movie, Logic 7 Music or Logic 7 Game mode, depending on the source.

Virtual Surround: When only two main speakers are present in the system, you can use HARMAN Virtual Surround to create an enhanced soundfield that virtualizes the missing speakers. Select between Wide and Reference modes.

Stereo: When you want two-channel playback, select the number of speakers you want to use for playback:

• "2 CH Stereo" uses two speakers.

• "5 CH Stereo" plays the left-channel signal through the front left and surround left speakers, the right-channel signal through the front right and surround right speakers, and a summed mono signal through the center speaker.

• "7 CH Stereo" follows the same scheme as 5 CH Stereo but adds the surround back left and surround back right speakers. This mode is available only when the surround back speakers are present and have not been reassigned to multizone or front height operation. See *Audio Processing and Surround Sound*, on page 33, for more information.

Movie: Select from the following when you want a surround mode for movie playback: Logic 7 Movie, DTS Neo:6 Cinema or Dolby Pro Logic II (IIx or IIz when seven main speakers are present).

Music: Select from the following when you want a surround mode for music playback: Logic 7 Music, DTS Neo:6 Music or Dolby Pro Logic II (IIx or IIz when seven main speakers are present). The Dolby Pro Logic II/IIx/IIz Music mode allows access to a submenu with some additional settings. See A*udio Processing and Surround Sound*, on page 33, for more information.

Video Game: Select from the following when you want a surround mode for game playback: Logic 7 Game or Dolby Pro Logic II (IIx/IIz when seven main speakers are present) Game.

After you have made your selection, press the Back/Exit button.

See *Audio Processing and Surround Sound*, on page 33, for more information on surround modes.

Audio Effects

The Audio Effects buttons on the front panel and remote provide settings that let you adjust the Dolby Volume setting, tone controls, LFE trim, Equalization On/Off setting or MP3 Enhancement to improve performance. We recommended that you leave these settings at their default values until you are more familiar with your system. See *Audio Effects Button*, on page 34, for complete information.

Video Modes

The Video Modes buttons on the front panel and remote provide settings that let you use the AVR's video processor to fine-tune the picture, if necessary, after making all adjustments on the video display. We recommend that you leave the settings at their defaults until you are completely familiar with the video performance of your system. See *Video Processing*, on page 34, for complete information.

AVR

Troubleshooting

Symptom	Cause	Solution
Unit does not function when Main Power switch is turned on	• No AC power	• Ensure that the power cord is plugged into a live AC power outlet • Check if the AC outlet is switch-controlled
Front-panel Message display lights, but there's no sound or picture	• Intermittent input connection	• Dolby Digital EX • Dolby Digital 2/2/.0 or .1, 3/2/.0 or .1
No sound from any speaker; PROTECT message appears on Message display	• Amplifier is in protection mode due to possible short circuit	• Dolby Digital Plus via HDMI connection (source device decodes to Dolby Digital when a coaxial or optical connection is used)
No sound from center or surround speakers	• Incorrect surround mode • Program material is monophonic • Incorrect speaker configuration • Program material is stereo	• Select a surround mode other than stereo • Mono programs contain no surround information • Check the speaker configuration in the setup menu • The surround decoder may not create center- or surround-channel information from nonencoded programs
Unit does not respond to remote control commands	• Weak batteries in remote • AVR not selected • Remote sensor is obscured	• Change batteries in remote • Press the Setup/AVR button • Ensure that the AVR's front-panel remote sensor is in the line of sight of the remote
Intermittent buzzing in tuner	• Local interference	• Move the AVR or antenna away from computers, fluorescent lights, motors or other electrical appliances
(AVR 3650/AVR 365 only): Surround-back speaker settings cannot be accessed, and the test tone does not play through the surround back speakers	• Multi-zone operation has been selected/Assigned AMP channels have been assigned to Zone 2	• Use the Speaker Setup menu to reassign the Assigned AMP to the surround back left and right channels
(AVR 3650/AVR 2650 only): The SIRIUS Preview Channel (001) is silent	• SIRIUS tuner is not connected • SIRIUS antenna is in an improper location • SIRIUS signal requires a refresh	• Ensure that SIRIUS tuner is properly connected • Re-locate the SIRIUS antenna according to the recommendations in the SIRIUS tuner's instruction manual. For further help, visit www.siriusradio.com • Visit www.siriusradio.com
Unable to activate remote control Programming mode	• Source Selector button is not held for at least 3 seconds	• Be sure to hold the Source Selector button for at least 3 seconds
Remote buttons light, but AVR does not respond	• Remote is in Zone 2 mode	• Slide Zone Selector switch to the Zone 1 position.
Unable to establish network connection	• AVR network programming requires rebooting	• Cycle the AVR into the Standby mode, and then turn it on again

Additional information on troubleshooting possible problems with your AVR and installation-related issues may be found in the list of "Frequently Asked Questions," which is located in the Product Support section of our Web site: www.harmankardon.com

Resetting the Remote

To reset the remote to its factory-default condition, simultaneously press and hold any Source Selector button and the “0” Number button. When the Program Indicator LED flashes amber, enter the code “333.” When the green LED goes out, the remote control will be reset.

Processor Reset

If the AVR behaves erratically after a power surge, first turn off the rear-panel Main Power switch and unplug the AC power cord for at least 3 minutes. Plug the cord back in and turn the AVR on. If this procedure doesn’t help, reset the AVR’s processor as described below.

NOTE: A processor reset erases all user configurations, including video resolution, speaker and level settings, and tuner presets. After a reset, reenter all of these settings from your notes in the Appendix worksheets.

To reset the AVR’s processor:

1. Press the front-panel Standby/On switch to place the unit in the Standby mode (the Power Indicator LED will turn amber).
2. Press and hold the front-panel OK button for at least 5 seconds until the RESET message appears on the front-panel Message display.

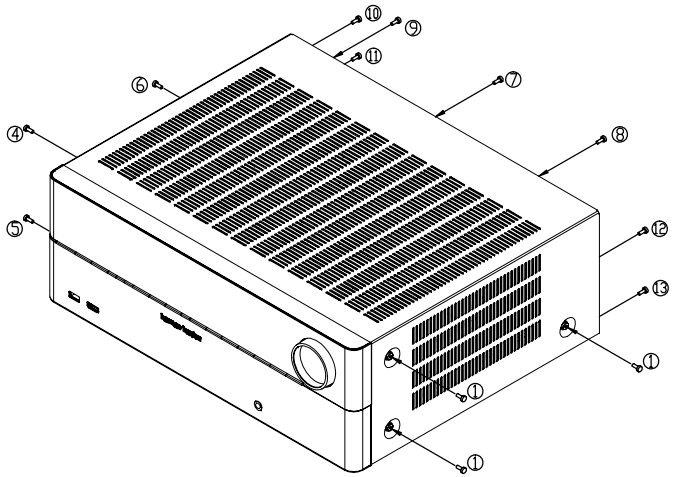
NOTE: After performing a processor reset, wait at least 1 minute before pressing any Source Selector buttons.

If the AVR does not function correctly after a processor reset, contact Harman/kardon at 1-800-422-8027

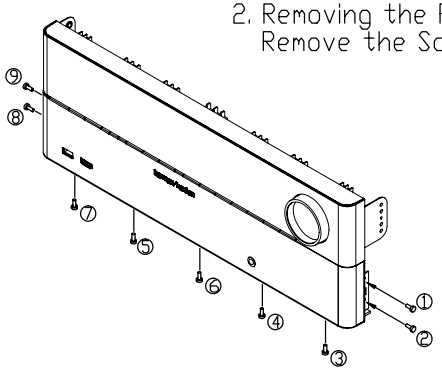
DISASSEMBLY

AVR3650

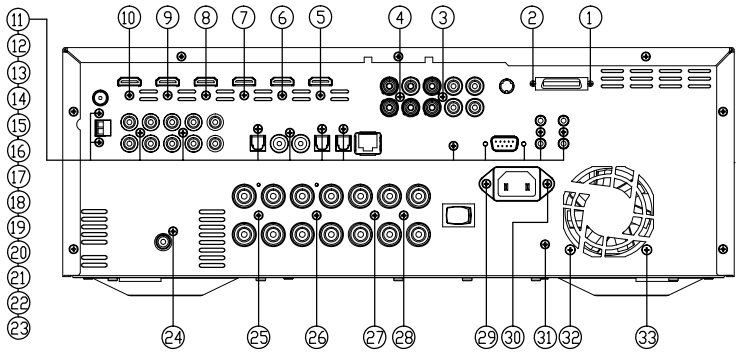
1. Removing the Top Cabinet
   Remove the Screws ①~⑬



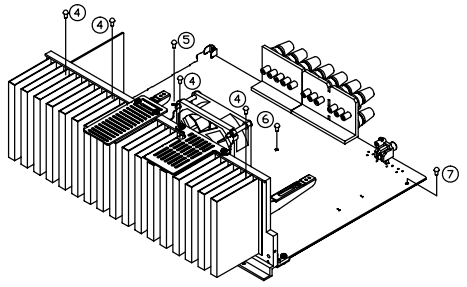
2. Removing the Front Panel
   Remove the Screws ①~⑨



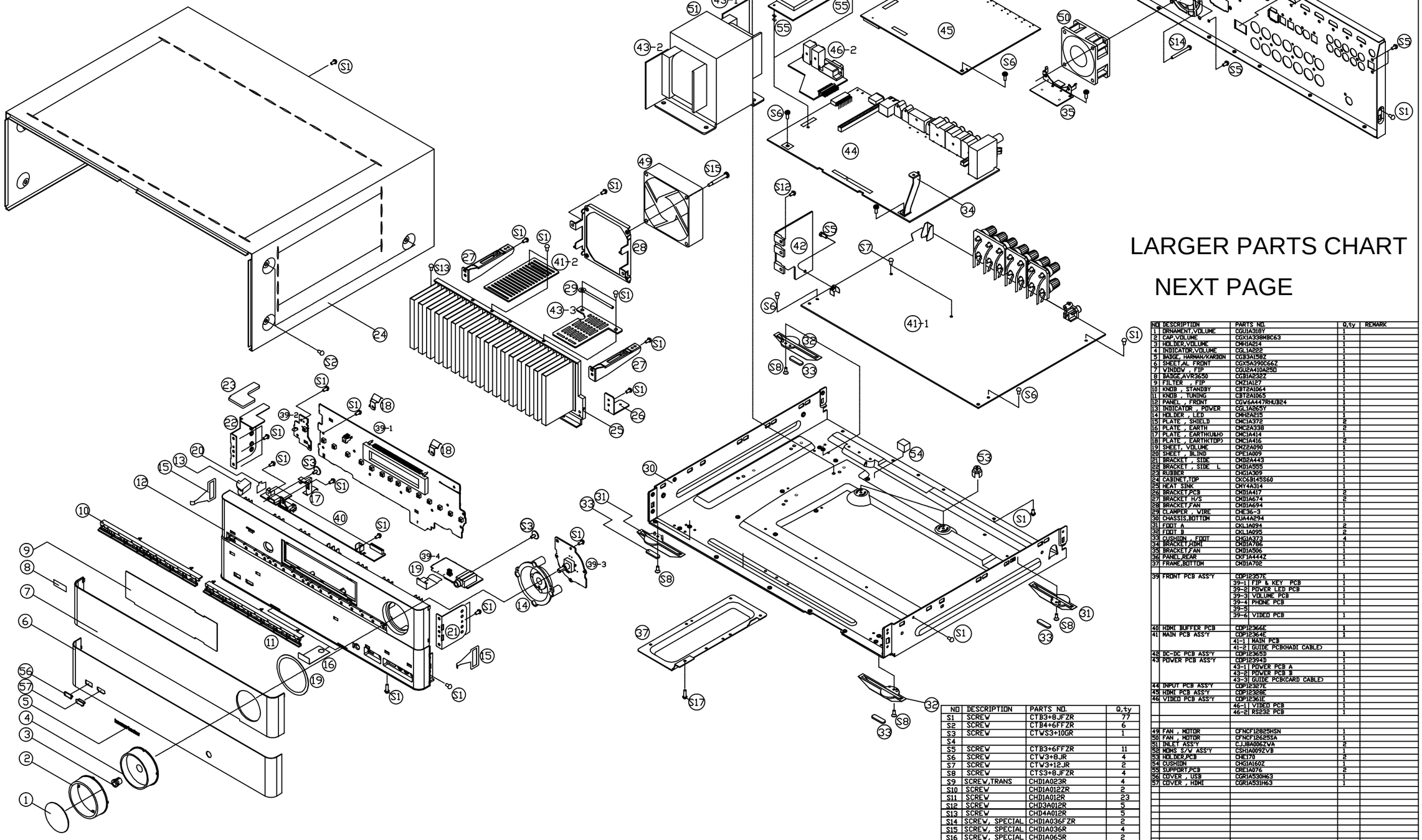
3. Removing the Rear Panel
   Remove the Screws ①~㉝



4. Removing the Main PCB
   Remove the Screws ①~⑦



EXPLODED VIEW



LARGER PARTS CHART

NEXT PAGE

NO	DESCRIPTION	PARTS NO.	Q,ty	REMARK
1	ORNAMENT,VOLUME	CGUIA318Y	1	
2	CAP,VOLUME	CGX1A338MBC63	1	
3	HOLDER,VOLUME	CMH1A214	1	
4	INDICATOR,VOLUME	CGL1A222	1	
5	BADGE, HARMAN/KARDON	CGB3A158Z	1	
6	SHEET,AL FRONT	CGX5A390C66Z	1	
7	WINDOW , FIP	CGU2A410A25D	1	
8	BADGE,AVR3650	CGB1A2382	1	
9	FILTER , FIP	CMZ1A127	1	
10	KNOB , STANDBY	CBT2A1064	1	
11	KNOB , TUNING	CBT2A1065	1	
12	PANEL, FRONT	CGV64447RHJB24	1	
13	INDICATOR , POWER	CGL1A265Y	1	
14	HOLDER , LED	CMH2A215	1	
15	PLATE , SHIELD	CMC1A372	2	
16	PLATE , EARTH	CMC2A338	2	
17	PLATE , EARTH(UHD	CMC1A414	1	
18	PLATE , EARTH(TOP)	CMC1A416	2	
19	SHEET, VOLUME	CMZ2A090	1	
20	SHEET , BLIND	CPE1A009	1	
21	BRACKET , SIDE	CMD2A443	1	
22	BRACKET , SIDE L	CMD1A555	1	
23	RUBBER	CHG1A309	1	
24	CABINET,TOP	CKC6B145S60	1	
25	HEAT SINK	CHY4A314	1	
26	BRACKET,PCB	CMD1A417	2	
27	BRACKET H/S	CMD1A674	2	
28	BRACKET,FAN	CMD1A694	1	
29	CLAMPER , WIRE	CHE36-3	1	
30	CHASSIS,BOTTOM	CUA4A294	1	
31	FOOT A	CKL1A094	2	
32	FOOT B	CKL1A095	2	
33	CUSHION , FOOT	CHG1A373	4	
34	BRACKET,HDMI	CMD1A786	1	
35	BRACKET,FAN	CMD1A506	1	
36	PANEL,REAR	CKF1A444Z	1	
37	FRAME,BOTTOM	CMD1A702	1	
39	FRONT PCB ASS'Y	CDP12357E	1	
		39-1 FIP & KEY PCB	1	
		39-2 POWER LED PCB	1	
		39-3 VOLUME PCB	1	
		39-4 PHONE PCB	1	
		39-5		
		39-6 VIDEO PCB	1	
40	HDMI BUFFER PCB	CDP12366E	1	
41	MAIN PCB ASS'Y	CDP12364E	1	
		41-1 MAIN PCB		
		41-2 GUIDE PCB(HADI CABLE)		
42	DC-DC PCB ASS'Y	CDP12365D	1	
43	POWER PCB ASS'Y	CDP12394D	1	
		43-1 POWER PCB A	1	
		43-2 POWER PCB B	1	
		43-3 GUIDE PCB(CARD CABLE)	1	
44	INPUT PCB ASS'Y	CDP12327E	1	
45	HDMI PCB ASS'Y	CDP12328E	1	
46	VIDEO PCB ASS'Y	CDP12361E	1	
		46-1 VIDEO PCB	1	
		46-2 RS232 PCB		
49	FAN , MOTOR	CFNCF12825HSN	1	
50	FAN , MOTOR	CFNCF12625SA	1	
51	INLET ASS'Y	CIJ8A006ZVA	2	
52	MAINS S'W ASS'Y	CSW1A009ZVB	1	
53	HOLDER,PCB	CME17A	2	
54	CUSHION	CHG1A160Z	1	
55	SUPPORT,PCB	CRE1A076	2	
56	COVER , USB	CGR1A330H63	1	
57	COVER , HDMI	CGR1A331H63	1	

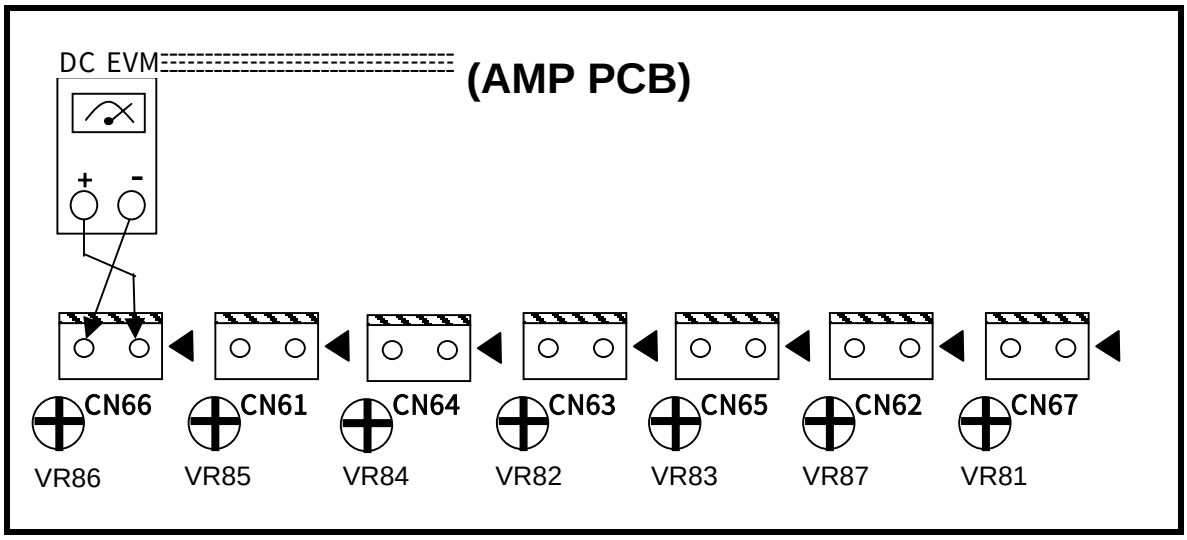
NO	DESCRIPTION	PARTS NO.	Q,ty
S1	SCREW	CTB3+8JFZR	77
S2	SCREW	CTB4+6FFZR	6
S3	SCREW	CTWS3+10GR	1
S4			
S5	SCREW	CTB3+6FFZR	11
S6	SCREW	CTW3+8JR	4
S7	SCREW	CTW3+12JR	2
S8	SCREW	CTS3+8JFZR	4
S9	SCREW,TRANS	CHD1A023R	4
S10	SCREW	CHD1A012ZR	2
S11	SCREW	CHD1A012R	23
S12	SCREW	CHD3A012R	5
S13	SCREW	CHD4A012R	5
S14	SCREW, SPECIAL	CHD1A036FZR	2
S15	SCREW, SPECIAL	CHD1A036R	4
S16	SCREW, SPECIAL	CHD1A065R	2
S17	SCREW	CTB3+8JR	7

NO	DESCRIPTION	PART NO.		Qty
1	ORNAMENT,VOLUME	CGU1A318Y		1
2	CAP,VOLUME	CGX1A338MBC63		1
3	HOLDER,VOLUME	CMH1A214		1
4	INDICATOR,VOLUME	CGL1A222		1
5	BADGE, HARMAN/KARDON	CGB3A158Z		1
6	SHEET,AL FRONT	CGX5A390C66Z		1
7	WINDOW , FIP	CGU2A410A25D		1
8	BADGE,AVR3650	CGB1A232Z		1
9	FILTER , FIP	CMZ1A127		1
10	KNOB , STANDBY	CBT2A1064		1
11	KNOB , TUNING	CBT2A1065		1
12	PANEL , FRONT	CGW6A447RHUB24		1
13	INDICATOR , POWER	CGL1A265Y		1
14	HOLDER , LED	CMH2A215		1
15	PLATE , SHIELD	CMC1A372		2
16	PLATE , EARTH	CMC2A338		2
17	PLATE , EARTH(U&H)	CMC1A414		1
18	PLATE , EARTH(TOP)	CMC1A416		2
19	SHEET, VOLUME	CMZ2A090		1
20	SHEET , BLIND	CPE1A009		1
21	BRACKET , SIDE	CMD2A443		1
22	BRACKET , SIDE L	CMD1A555		1
23	RUBBER	CHG1A309		1
24	CABINET,TOP	CKC6B145S60		1
25	HEAT SINK	CMY4A314		1
26	BRACKET,PCB	CMD1A417		2
27	BRACKET H/S	CMD1A674		2
28	BRACKET,FAN	CMD1A694		1
29	CLAMPER , WIRE	CHE36-3		1
30	CHASSIS,BOTTOM	CUA4A294		1
31	FOOT A	CKL1A094		2
32	FOOT B	CKL1A095		2
33	CUSHION , FOOT	CHG1A373		4
34	BRACKET,HDMI	CMD1A786		1
35	BRACKET,FAN	CMD1A506		1
36	PANEL,REAR	CKF1A444Z		1
37	FRAME,BOTTOM	CMD1A702		1
39	FRONT PCB ASS'Y			1
		39-1	FIP & KEY PCB	1
		39-2	POWER LED PCB	1
		39-3	VOLUME PCB	1
		39-4	PHONE PCB	1
		39-5		
		39-6	VIDEO PCB	1
40	HDMI BUFFER PCB			1
41	MAIN PCB ASS'Y			1
		41-1	MAIN PCB	
		41-2	GUIDE PCB(HADI CABLE)	
42	DC-DC PCB ASS'Y			1
43	POWER PCB ASS'Y			1
		43-1	POWER PCB A	1
		43-2	POWER PCB B	1
		43-3	GUIDE PCB(CARD CABLE)	1
44	INPUT PCB ASS'Y			1
45	HDMI PCB ASS'Y			1
46	VIDEO PCB ASS'Y			1
		46-1	VIDEO PCB	1
		46-2	RS232 PCB	1
49	FAN , MOTOR	CFNCF12825HSN		1
50	FAN , MOTOR	CFNCF12625SA		1
51	INLET ASS'Y	CJJ8A006ZWA		2
52	MOMS S/W ASS'Y	CSH1A009ZVB		1
53	HOLDER,PCB	CHE170		2
54	CUSHION	CHG1A160Z		1
55	SUPPORT,PCB	CRE1A076		2
56	COVER , USB	CGR1A530H63		1
57	COVER , HDMI	CGR1A531H63		1

AMPLIFIER SECTION BIAS ADJUSTMENT

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

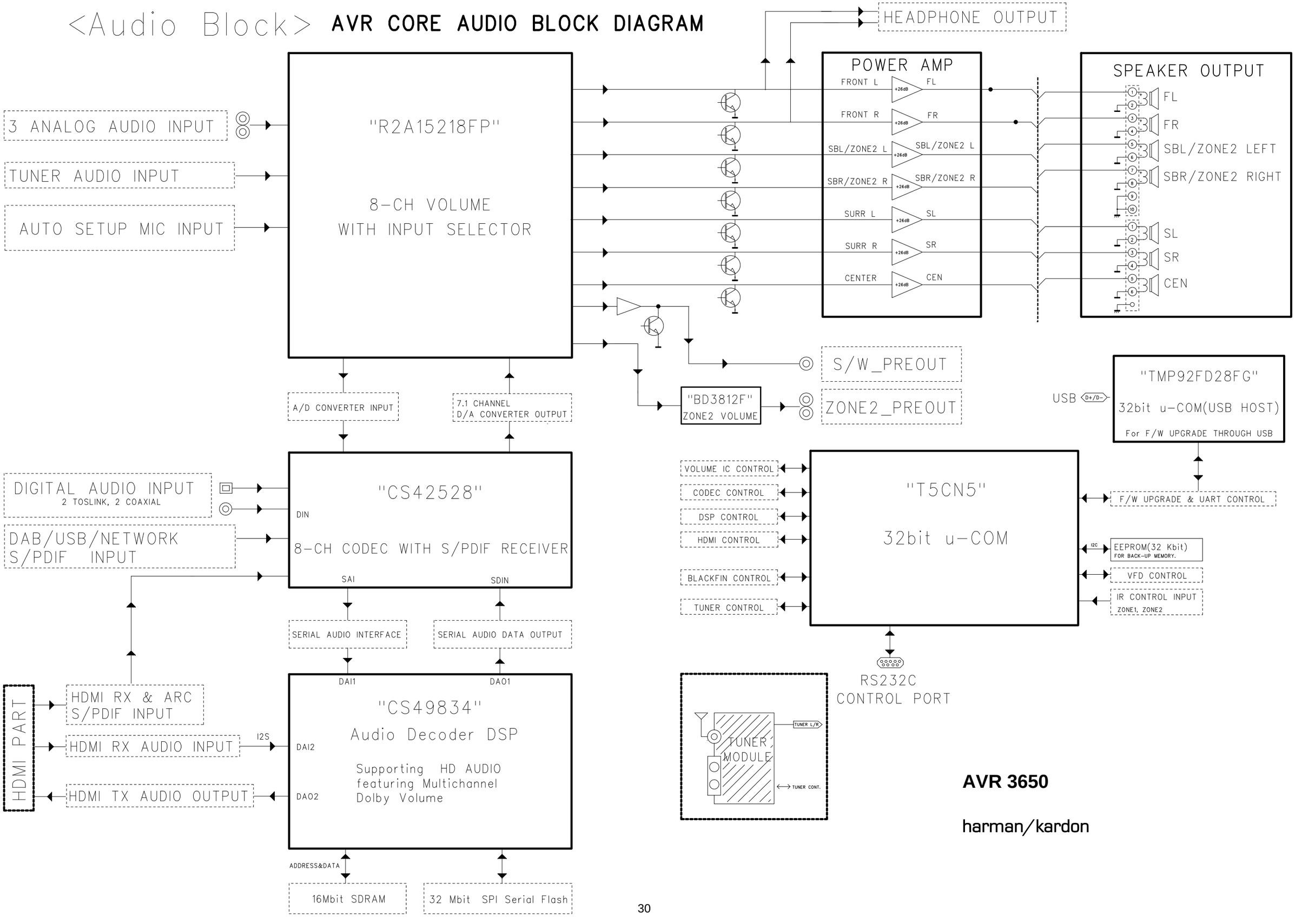
Standard value
.Ideal current = 48mA (± 5%)
.Ideal DC Voltage = 25.92mV (± 5%)



DC VOLTMETER ; Connect to
CN66(SL),CN61(CEN),CN64(SR),CN63(FL),CN65(SBLmp¨³zvl«·mp¨³z{l¸§·m

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

<Audio Block> AVR CORE AUDIO BLOCK DIAGRAM



AVR 3650

harman/kardon

AVR 3650

harman/kardon

AVR CORE VIDEO BLOCK DIAGRAM

DIR SPDIF

TO DSP Block

DIR_SPDIF

HDMI I2S AUDIO DATA

Venice 6.2 Digital AUDIO

DSP I2S AUDIO DATA

DOWNMIX AUDIO

HDMI_OUT
(Up to 1080p)

HDMI TX

TMDS 225MHz [MAX]

ARC_SPDIF

ADV7511

HDMI IN
(Up to 1080p)

TMDS Data

HDMI_IN1

HDMI_IN2

HDMI_IN3

HDMI_IN4

HDMI_IN5

HDMI_FRONT

HDMI BUFFER

HDMI S/W

ADV3014

AVR365/3650 ONLY

28.6363MHz *2EA

TMDS 225MHz [MAX]

DECODER&ADC
HDMI RX

ADV7844

DDR SDRAM
256M * 1EA

20Bit LINE DRIVER *2
HDMI BYPASS MODE

HDMI DIGITAL VIDEO

36bit Video Data

DIGITAL VIDEO DATA

30/36bit Video Data

SCALING BYPASS MODE
20Bit LINE DRIVER *2

HDMI DIGITAL VIDEO

Under 30bit Video Data

SCALING DIGITAL VIDEO

30bit Video Data

Analog Video Boad

CVBS IN

VIDEO1

VIDEO2

REC OUT

MONITOR OUT

CVBS

NJM2595

CONT

+6dB DRV

CVBS REC OUT

CVBS MON OUT

COMPONENT IN
(Up to 1080p)

COMPO INPUT2

COMPO INPUT1

Y

Cb

Cr

SW1

SW2

SW3

SW4

+6dB

NJM1321

19.668MHz

SCALER

1080p Up
Scaler

FIL30336

SCALING DIGITAL VIDEO

DDR SDRAM
256M * 2EA

FLASH MEMORY
32M

Venice Board

RJ-45
Ethernet

PULES
LAN8700

Ethernet
MAC&PHY

KSZ8851SNL
Micrel

USB

JTAG

DEBUG

USB2.0 ETH MAC

DAB

Venice6.2 (DAB/DAB+)

GPIO 00:43

GPIO I/F

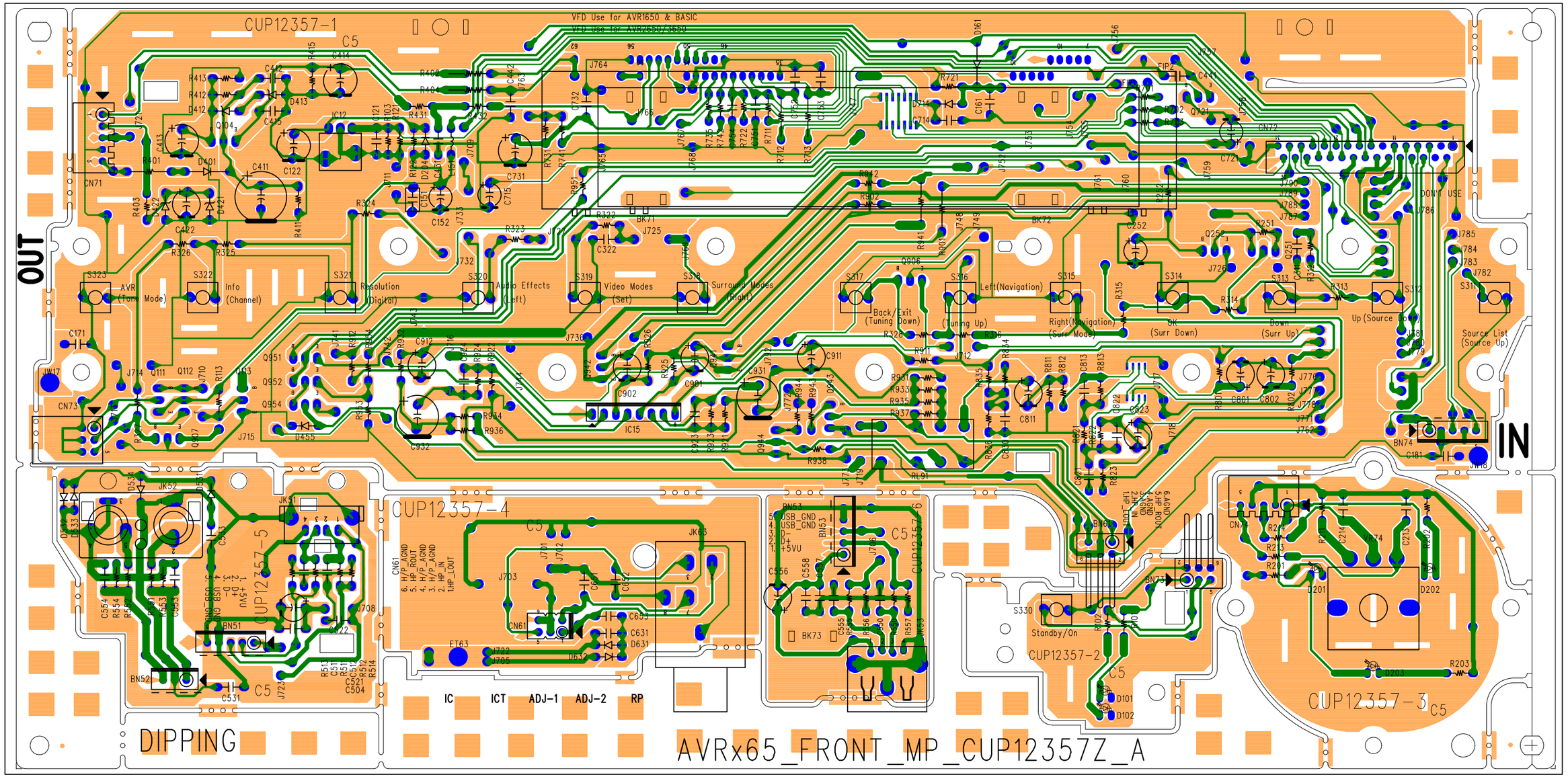
SCB UART

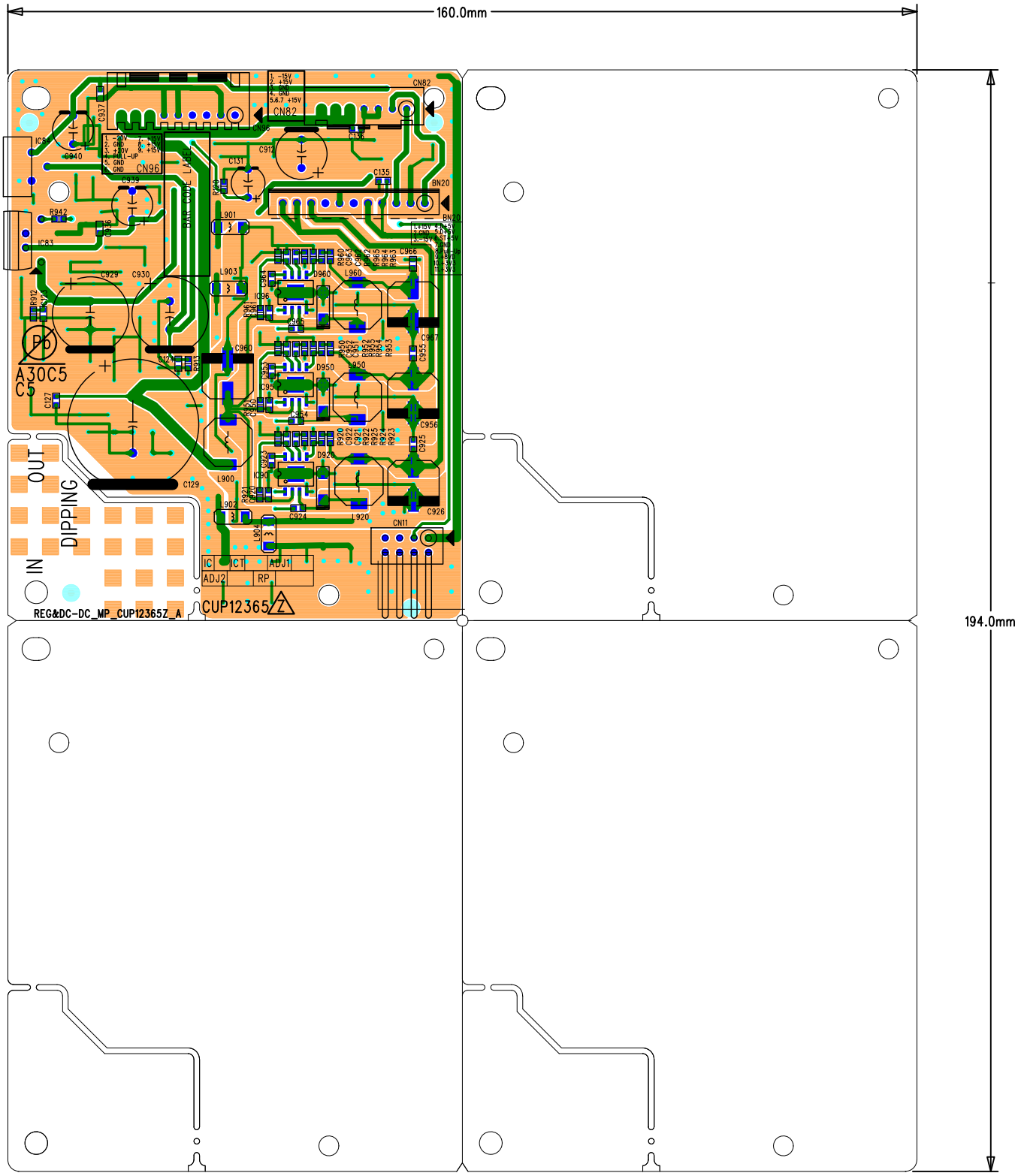
To Main MCU

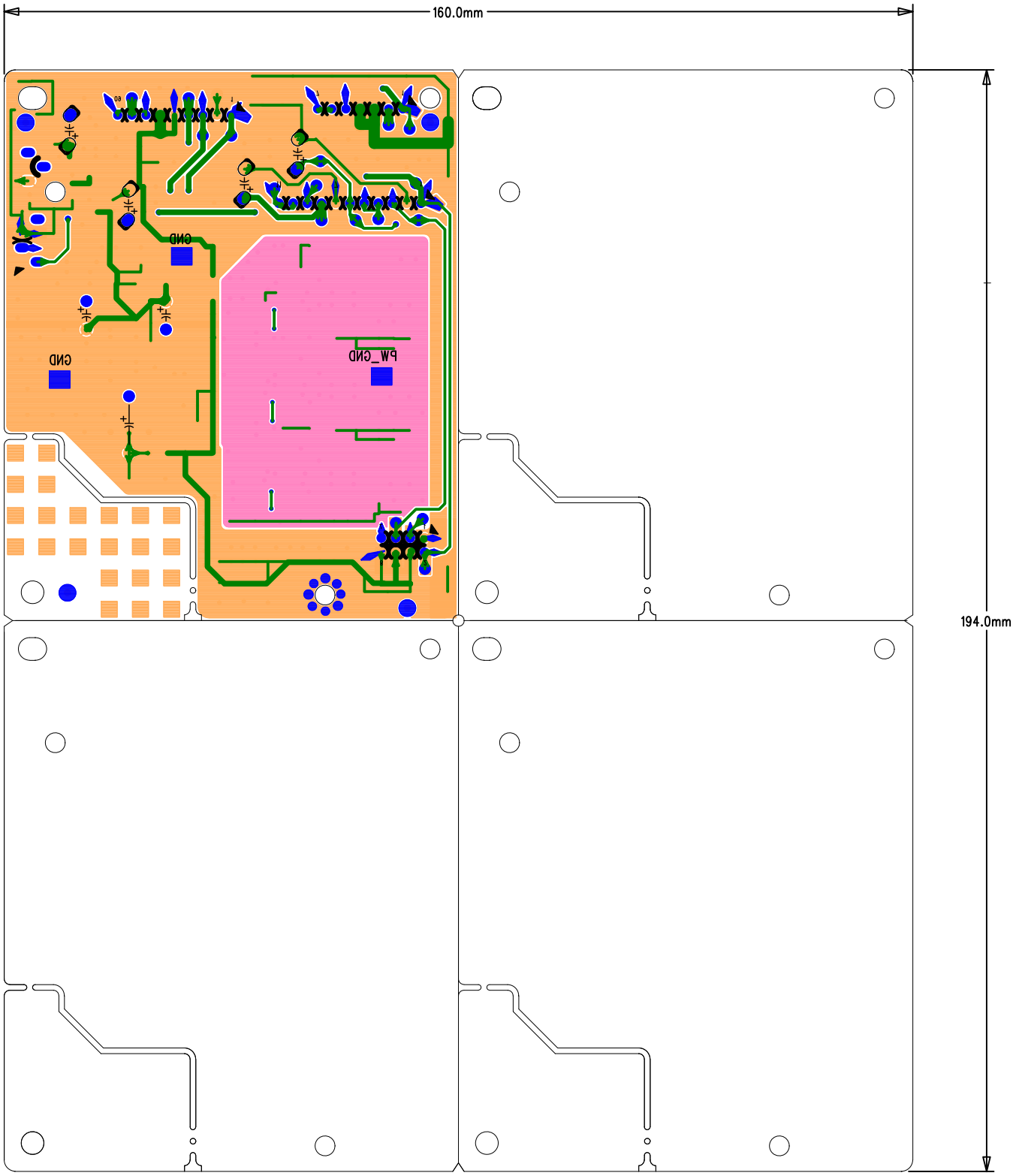
SPI I2S/SPDIF

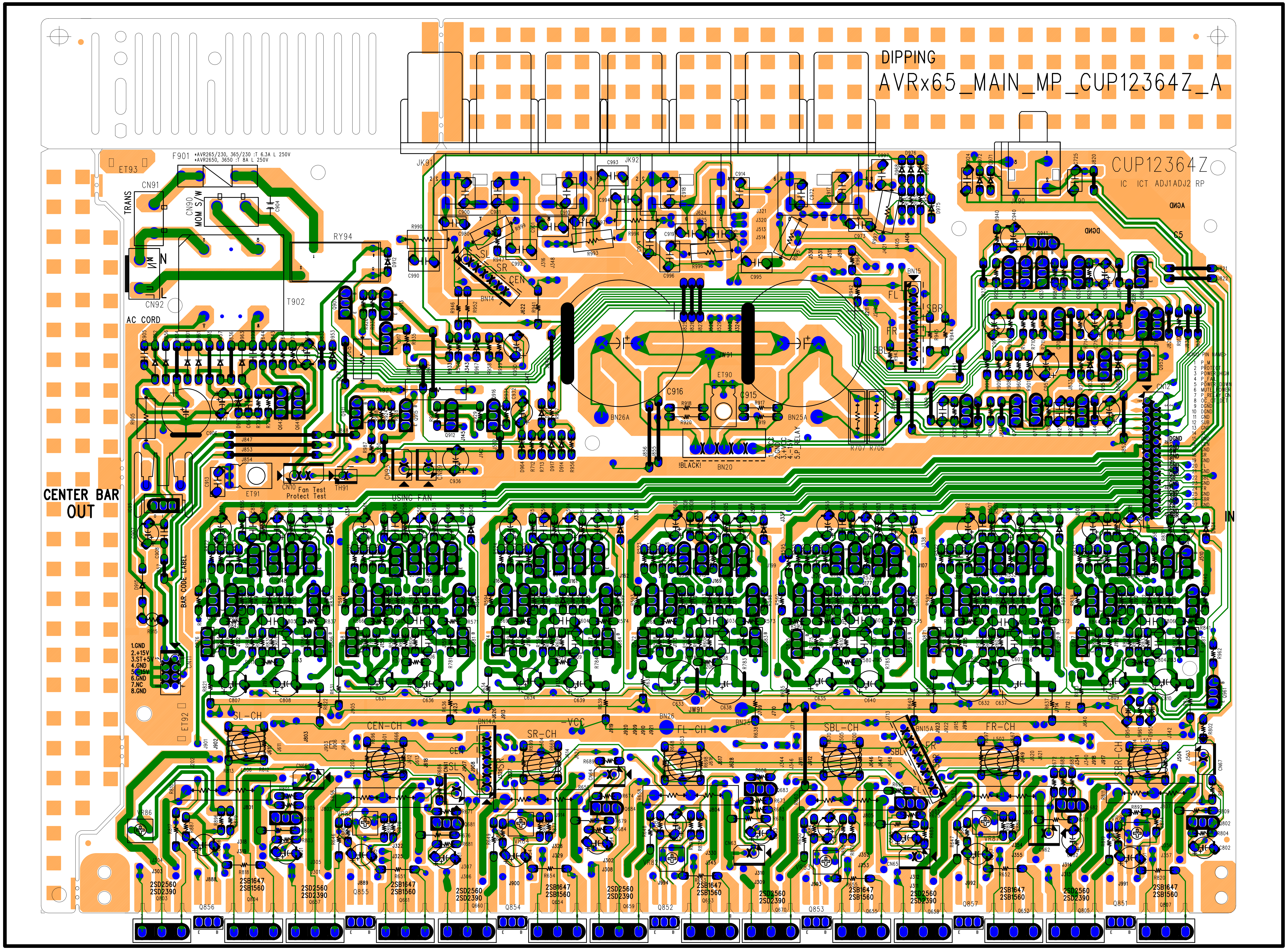
To DSP
Venice 6.2 AUDIO Output

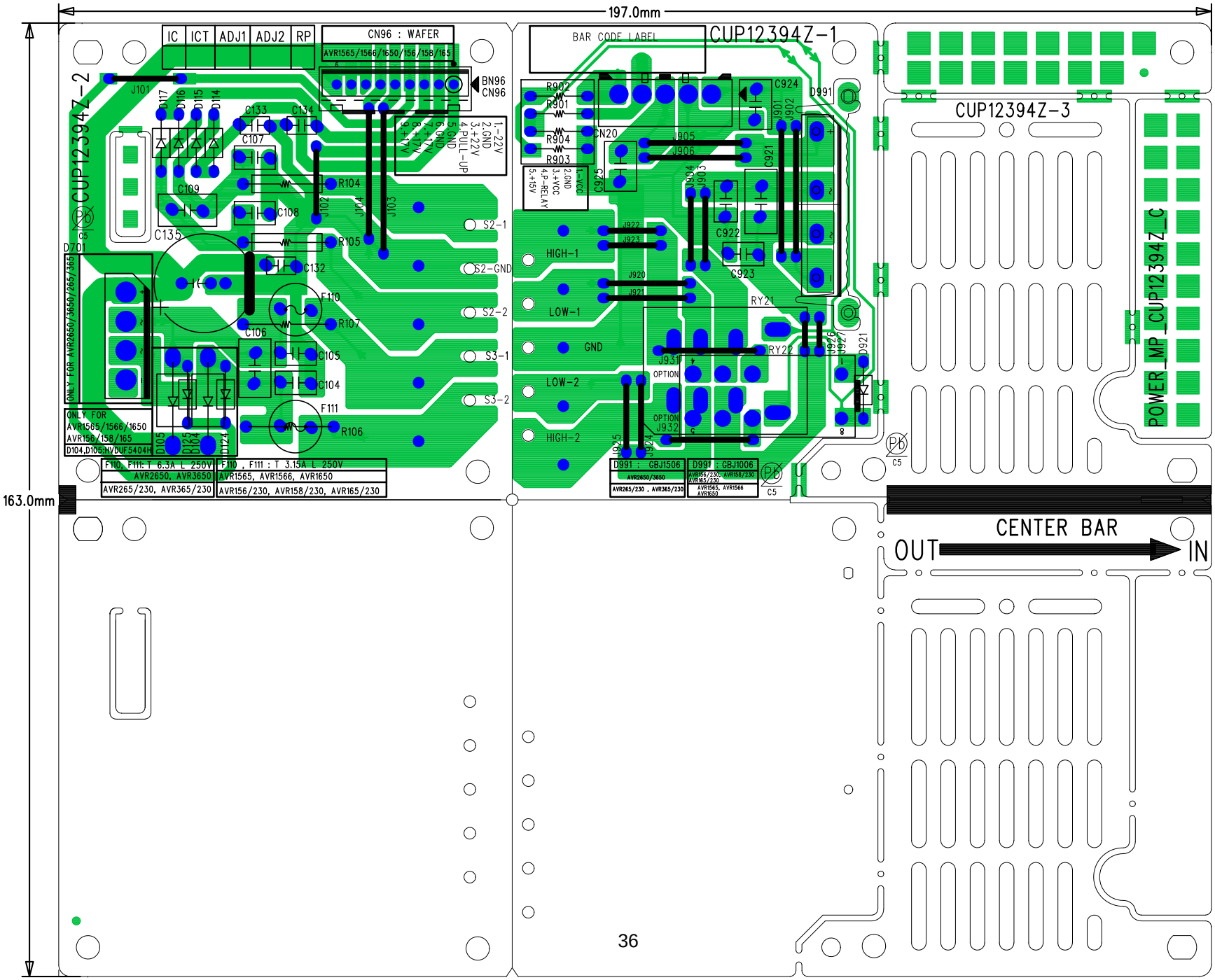
To Main MCU

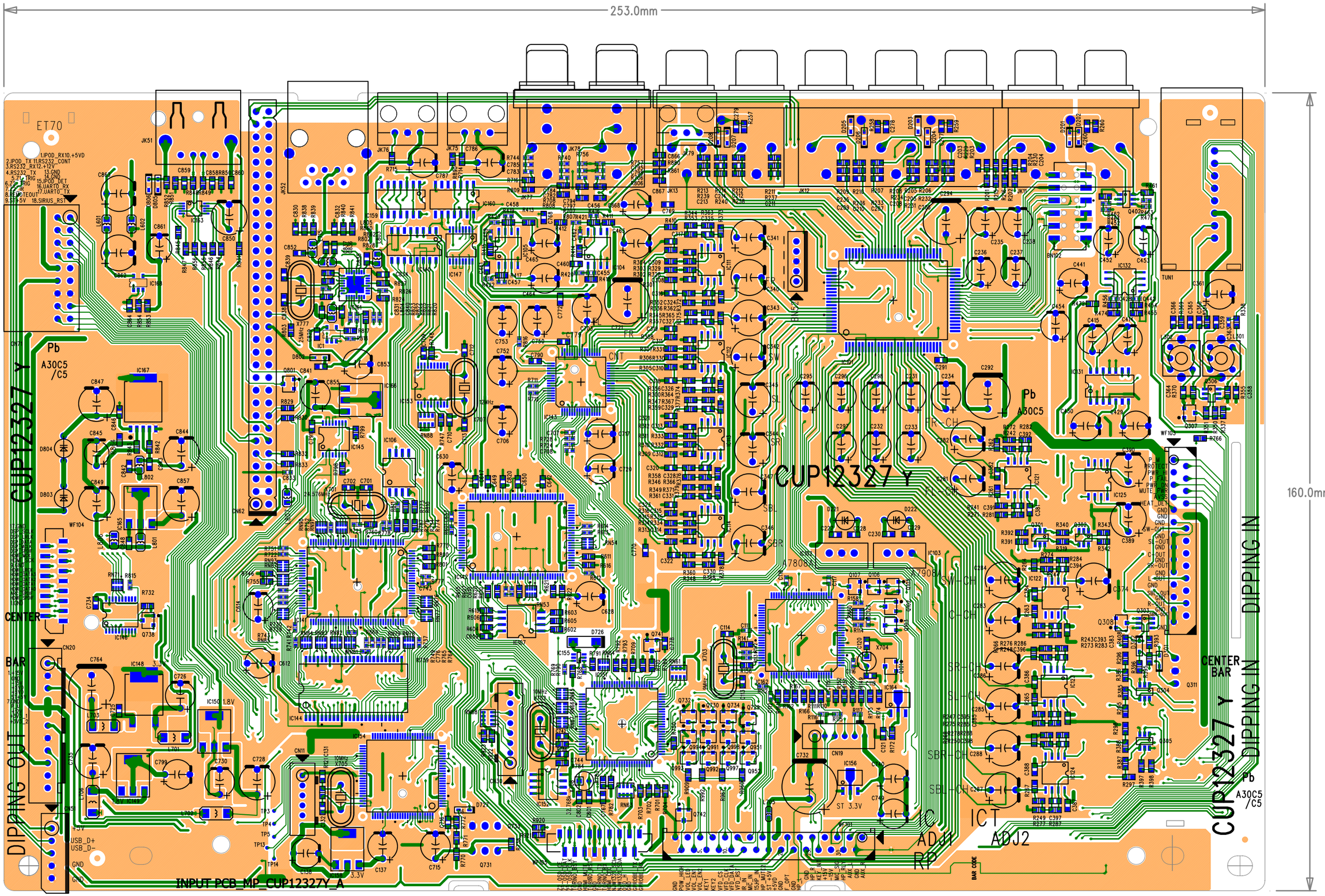

CUP12357-1
C5
VFD Use for AVR1650 & BASIC
VFD Use for AVR2650/3650
OUT
IN
AVR (Tone Mode)
Info (Channel)
Resolution (Digital)
Audio Effects (Left)
Video Modes (Set)
Surround Modes (Right)
Back/Exit (Tuning Down)
(Tuning Up)
Left(Navigation)
Right(Navigation) (Surr Mode)
OK (Surr Down)
Down (Surr Up)
Up (Source Down)
Source List (Source Up)
DON'T USE
CN71
CN72
CN73
CN74
BN51
BN52
BN53
BN74
JK51
JK52
JK53
JW17
JW18
CUP12357-4
CUP12357-5
CUP12357-6
CUP12357-2
CUP12357-3
Standby/On
IC
ICT
ADJ-1
ADJ-2
RP
DIPPING
AVRx65_FRONT_MP_CUP12357Z_A


160.0mm
194.0mm
REG&DC-DC_MP_CUP12365Z_A
CUP12365Z
A30C5
C5
OUT
DIPPING
IN

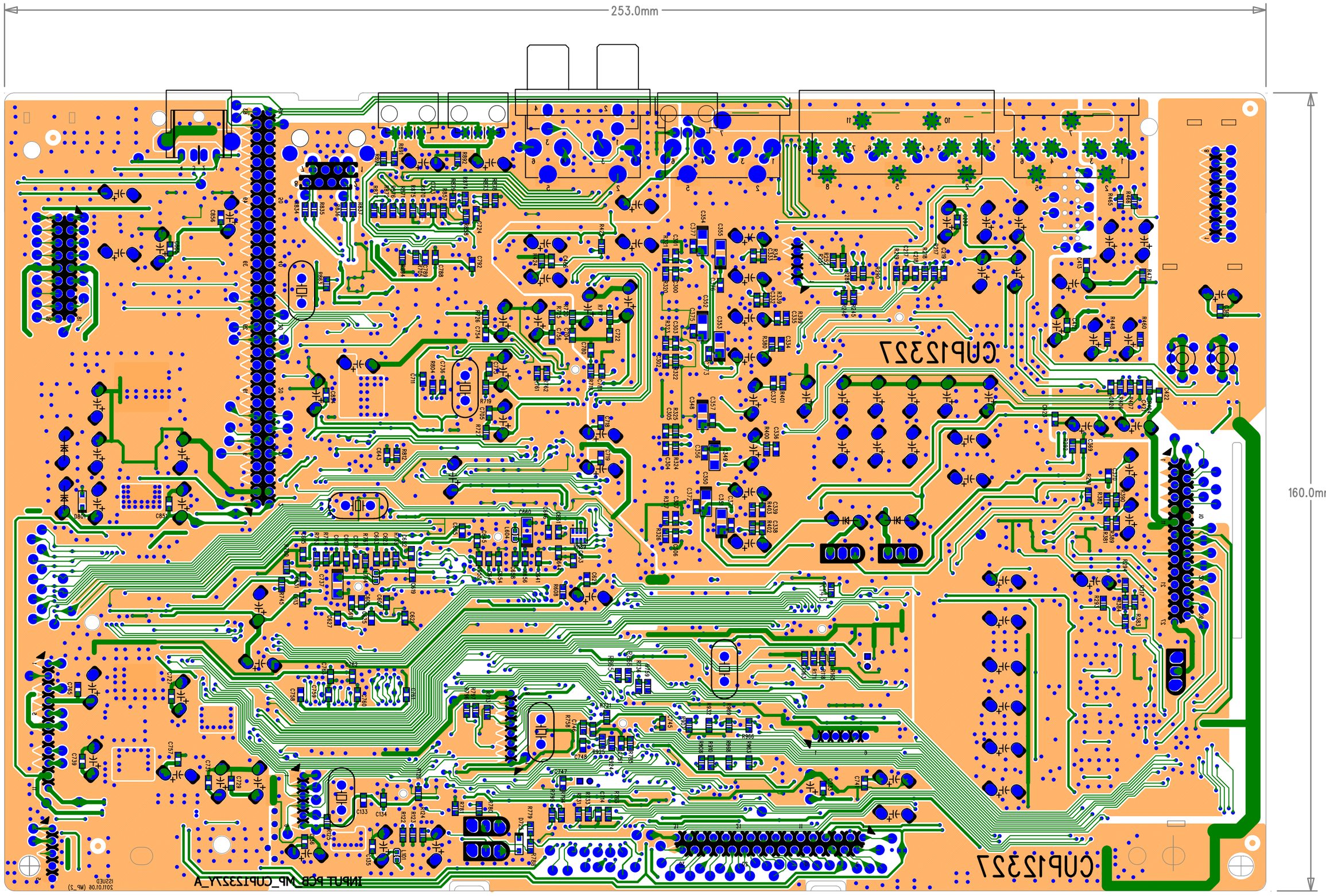

160.0mm
194.0mm
GND
GND
PM_GND


DIPPING
AVRx65_MAIN_MP_CUP12364Z_A
CUP12364Z
CENTER BAR OUT
AC CORD
TRANS
SL-CH
CEN-CH
SR-CH
FL-CH
SBL-CH
FR-CH
SBR-CH
IN
USING FAN
BAR CODE LABEL
1.GND
2.+15V
3.ST+5V
4.GND
5.-15V
6.GND
7.NC
8.GND

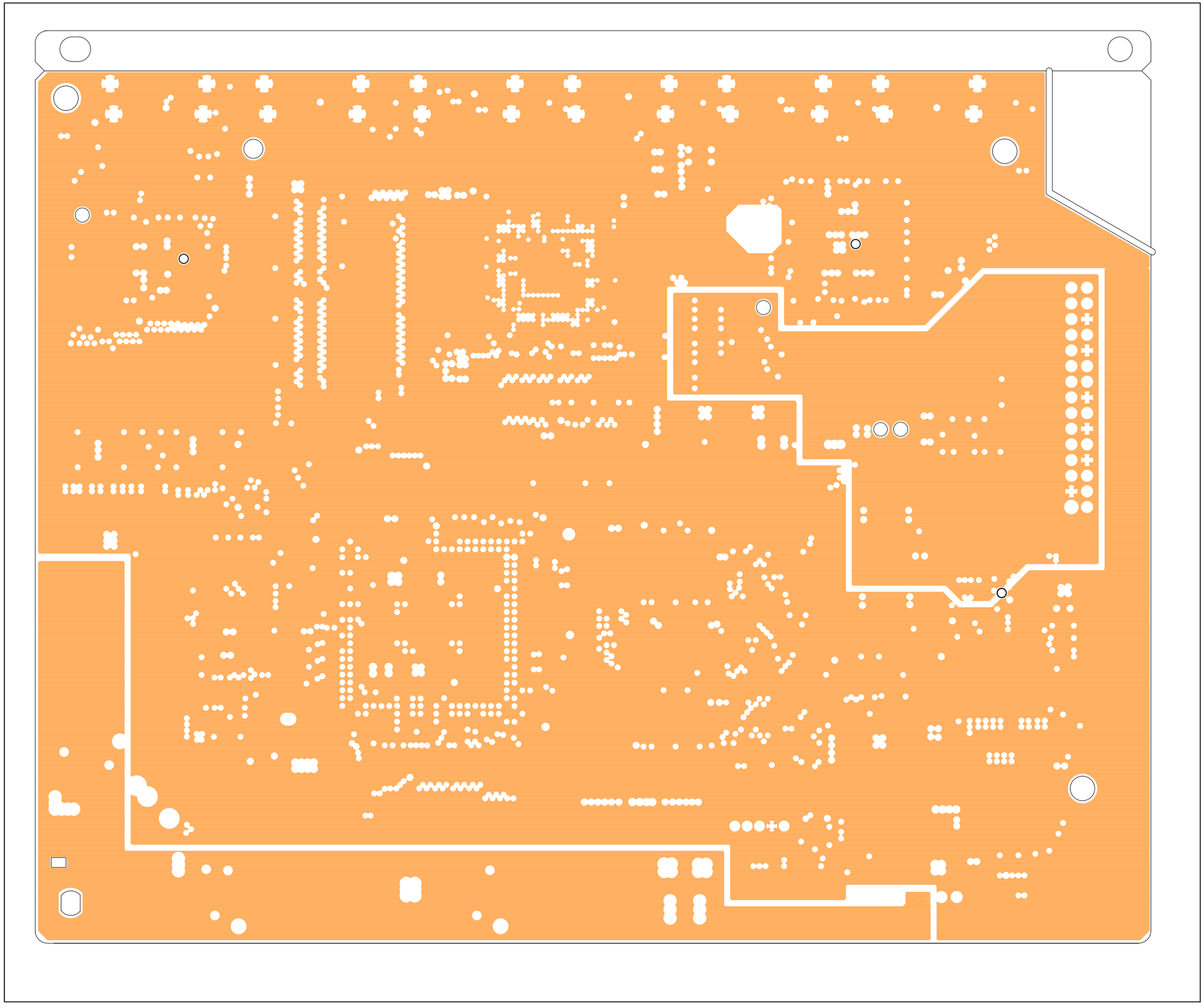

197.0mm
163.0mm
CUP12394Z-2
CUP12394Z-1
CUP12394Z-3
POWER_MP_CUP12394Z_C
IC
ICT
ADJ1
ADJ2
RP
CN96 : WAFER
BAR CODE LABEL
CENTER BAR
OUT
IN
36

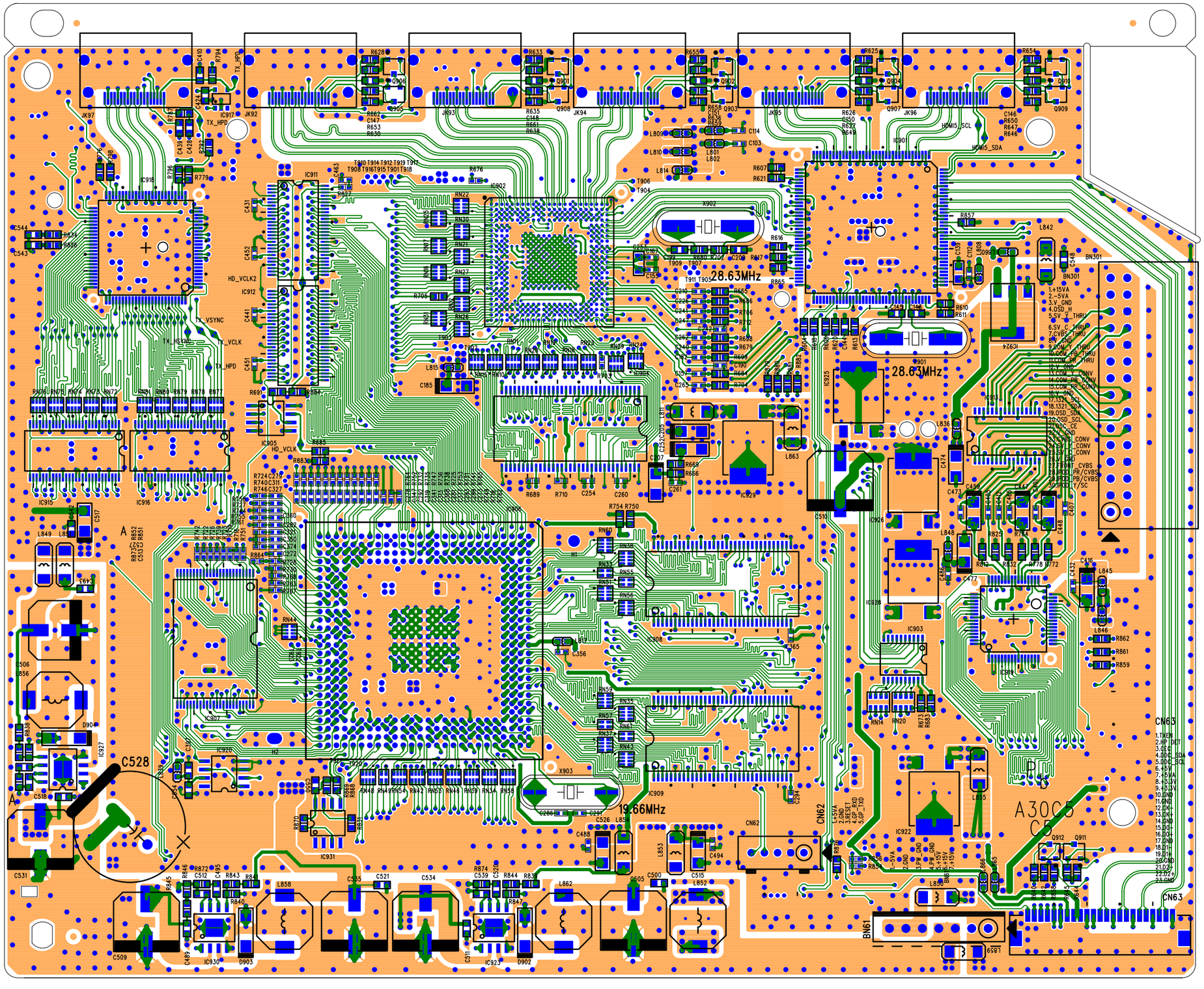


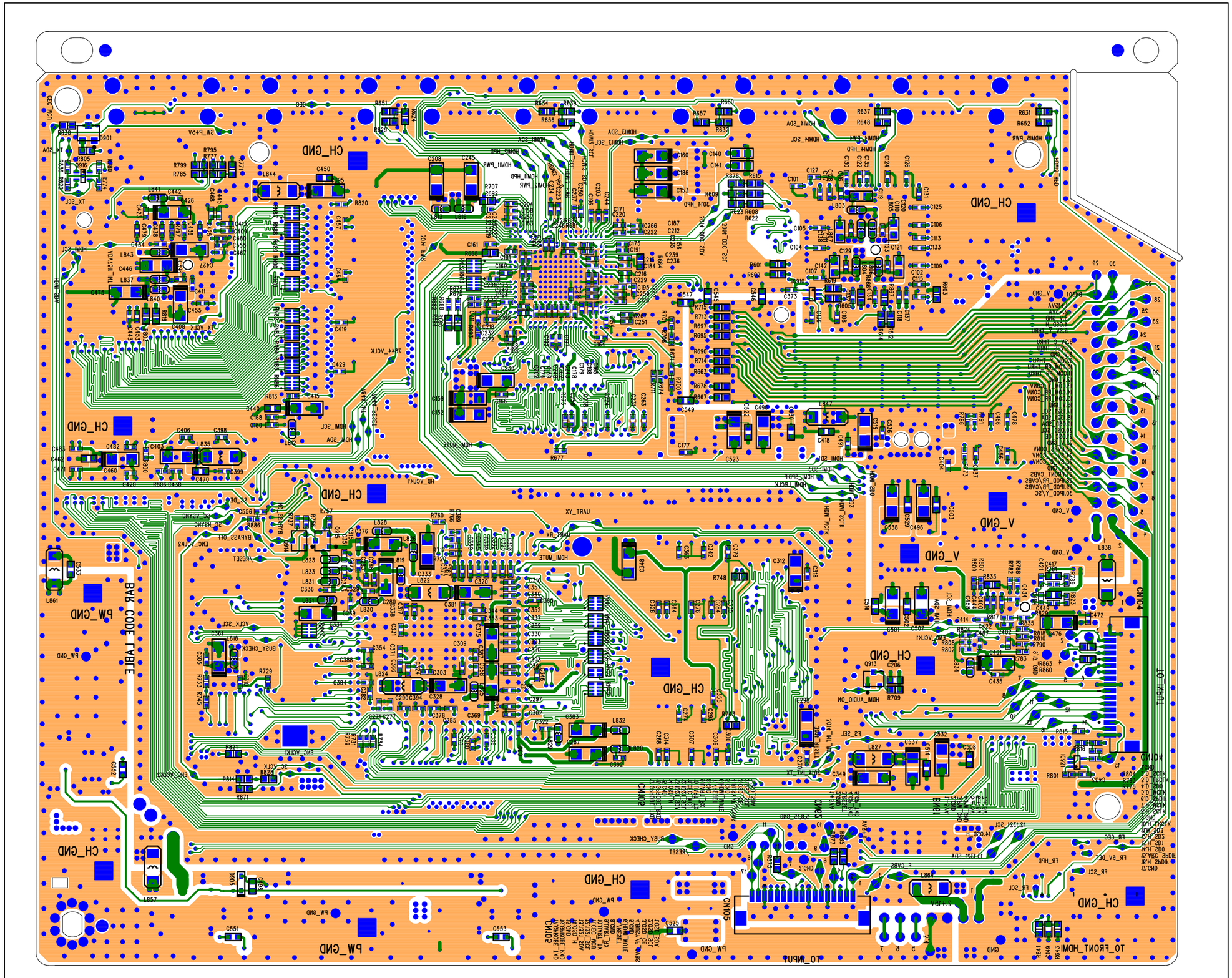
AVR400_INPUT_MP_CUP1232 - Tue May 17 11:28:56 2011

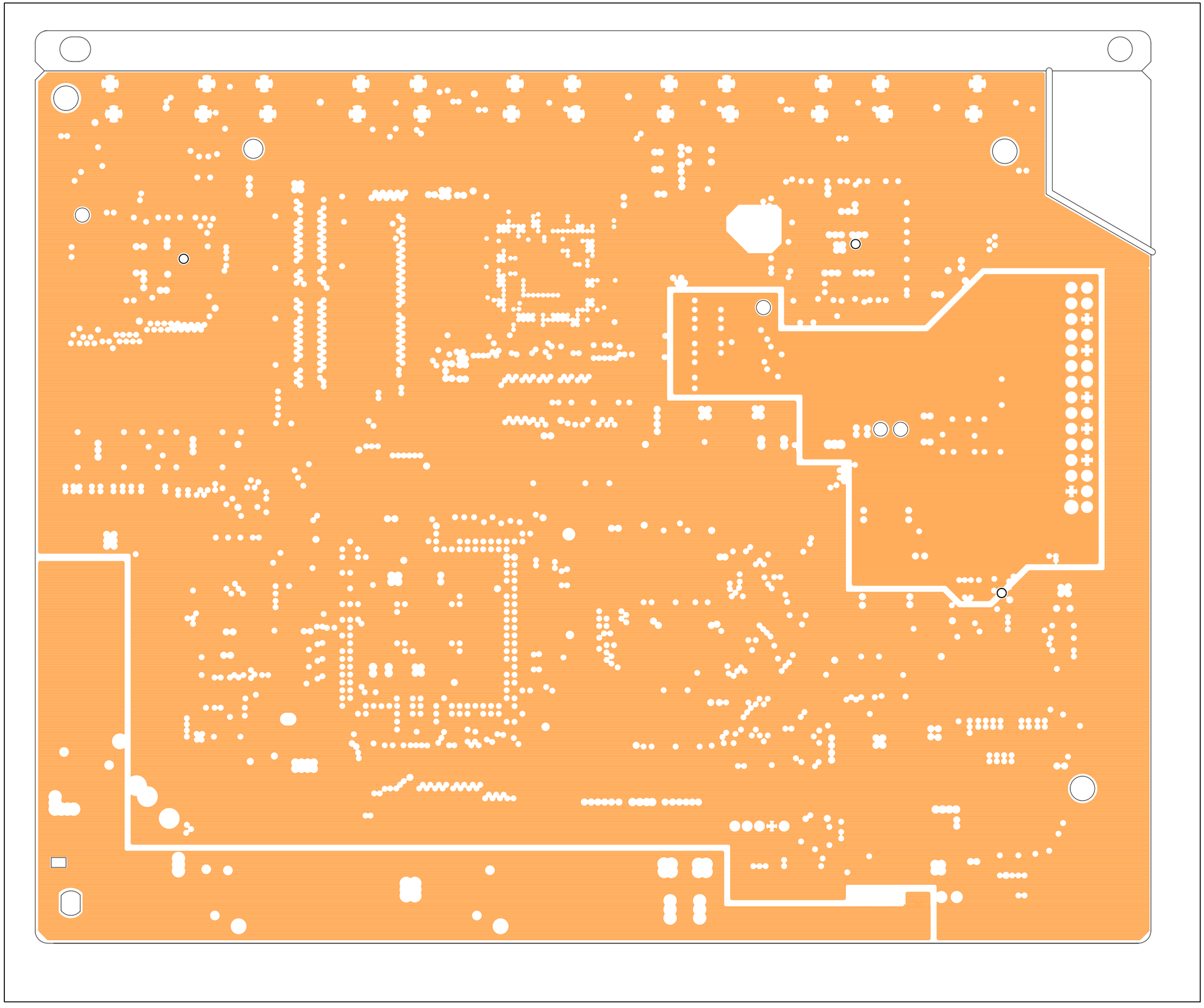


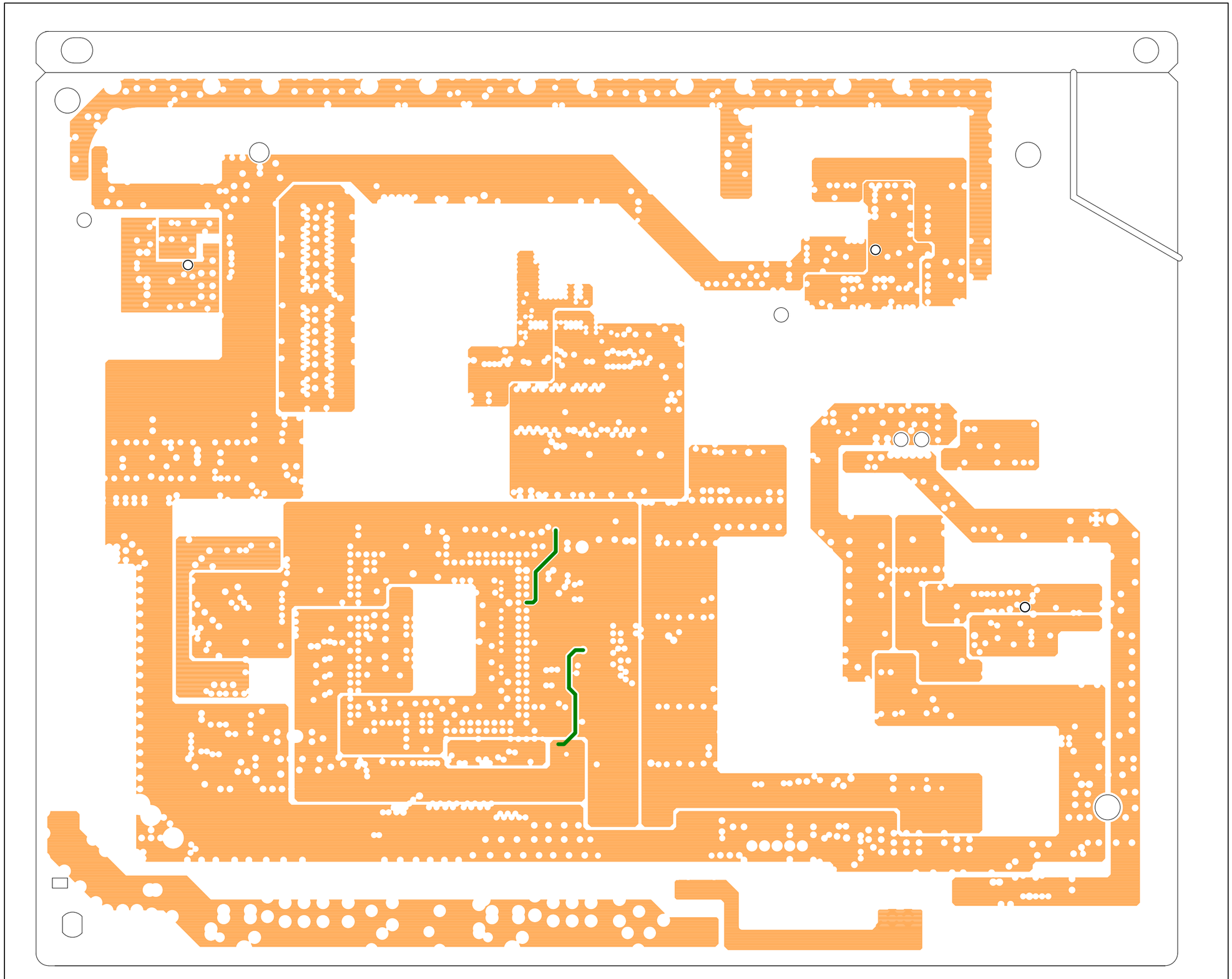
AVR400_INPUT_MP_CUP1232 - Tue May 17 11:42:53 2011

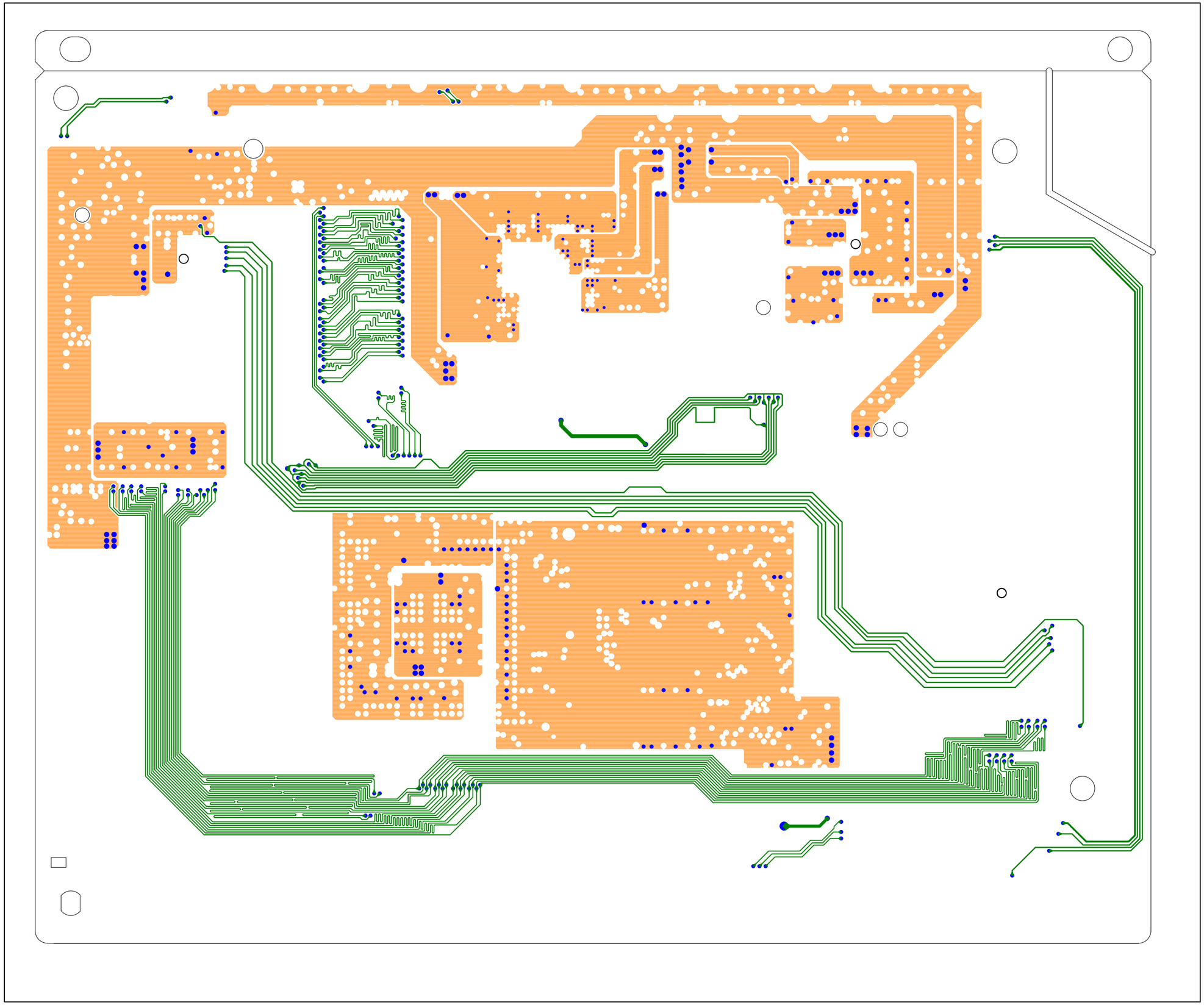


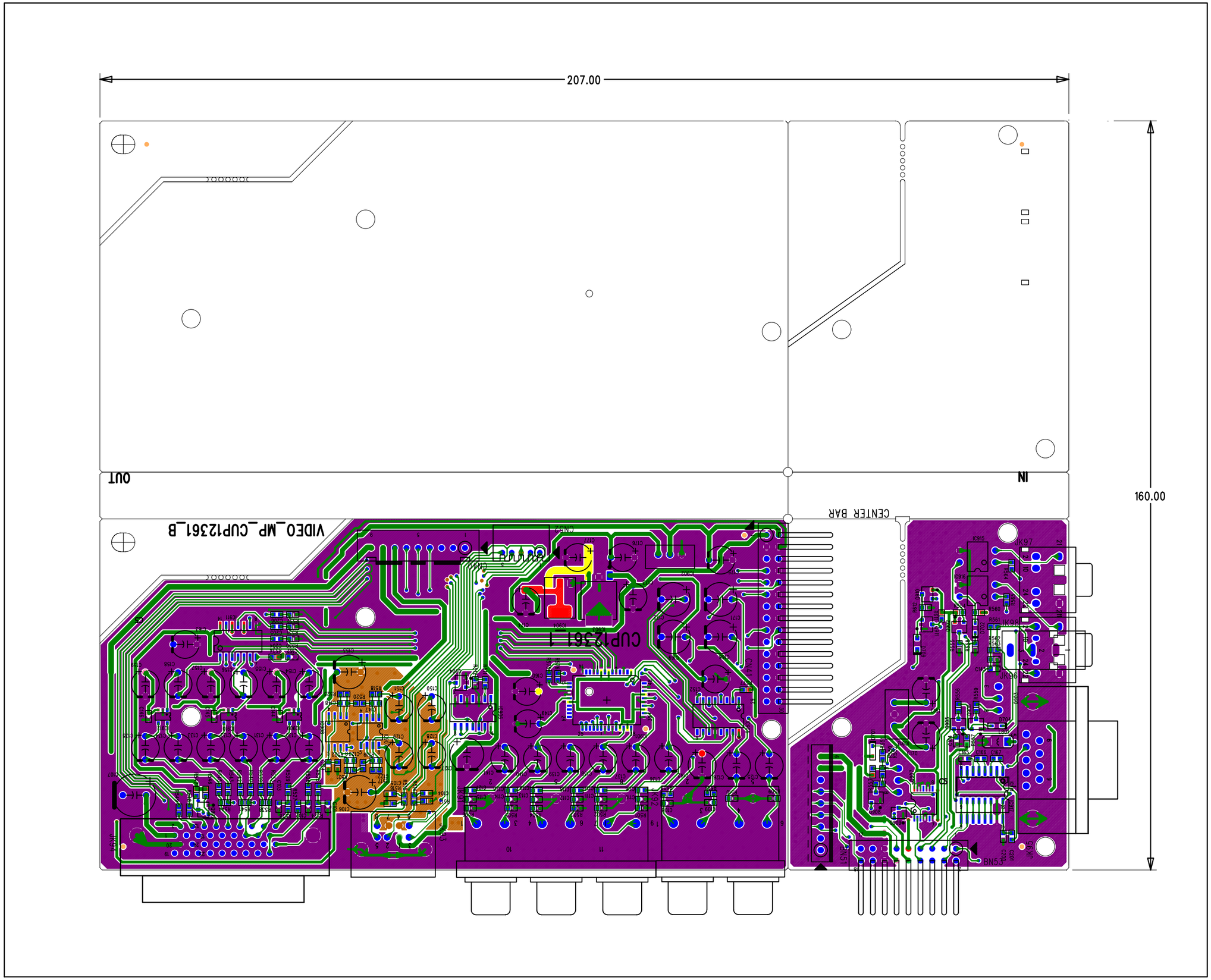

28.63MHz
28.63MHz
19.66MHz
C528
A30C5
C5
CN62
CN63
BN61
BN301
X902
X901
X903
IC909
IC911
IC912
IC915
IC916
IC917
IC918
IC920
IC922
IC923
IC927
IC929
IC930
IC931
IC902
IC903
IC905
IC907
IC908
IC925
IC926
IC928
IC930
HD_VCLK2
HD_VCLK
TX_VSYNC
TX_HSYNC
TX_VCLK
TX_HPD
HDMI5_SCL
HDMI5_SDA
1.+15VA
2.+5VA
3.V_GND
4.OSD_H
5.5V_THRU
6.SV_C_THRU
7.CVBS_THRU
8.V_GND
9.COM_Y_THRU
10.COM_PB_THRU
11.COM_PR_THRU
12.V_GND
13.COM_Y_CONV
14.COM_PB_CONV
15.COM_PR_CONV
16.V_GND
17.I2C_SCL
18.I2C_SDA
19.OSD_SDA
20.OSD_SCL
21.OSD_CE
22.V_GND
23.COM_CONV
24.V_GND
25.FRONT_CVBS
26.FRONT_PR/CVBS
27.FRONT_PB/CVBS
28.FRONT_Y/SC
1.MDIN
2.HP_DET
3.GND
4.DDC_SDA
5.DDC_SCL
6.+5V
7.+5VA
8.+15VA
9.+3.3V
10.GND
11.GND
12.TX+
13.TX-
14.GND
15.TC+
16.TC-
17.GND
18.D1+
19.D1-
20.GND
21.D2+
22.D2-
23.GND
1.+15VA
2.GND
3.RESET
4.+3.3V_STD
5.SP_TXD
6.SP_RXD
1.+15VA
2.GND
3.+5V
4.PW_GND
5.+15V
6.+15V
7.+15V

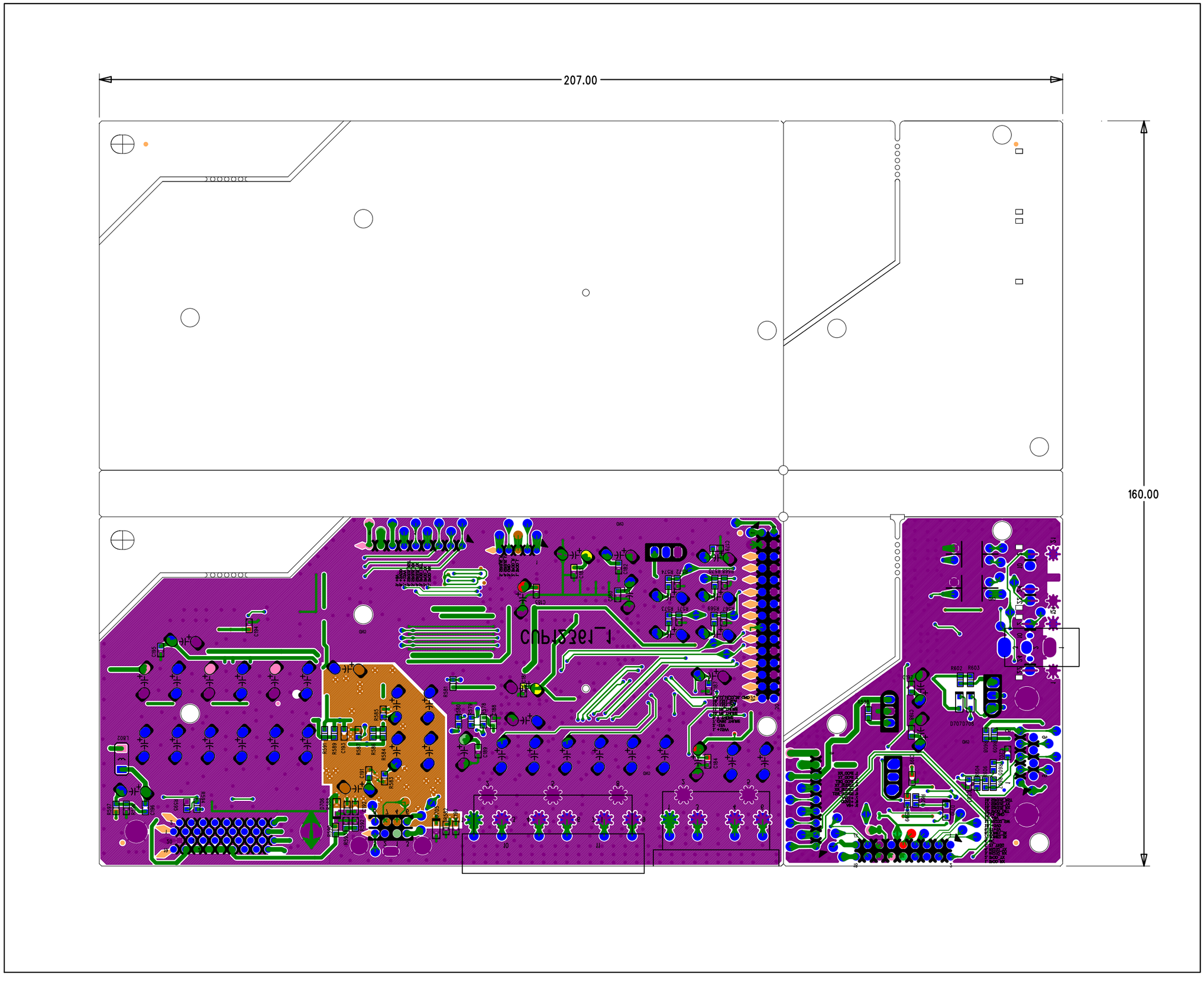

CH_GND
PM_GND
V_GND
BAR CODE TABLE
TO_FRONT_HDMI
TO_INPUT

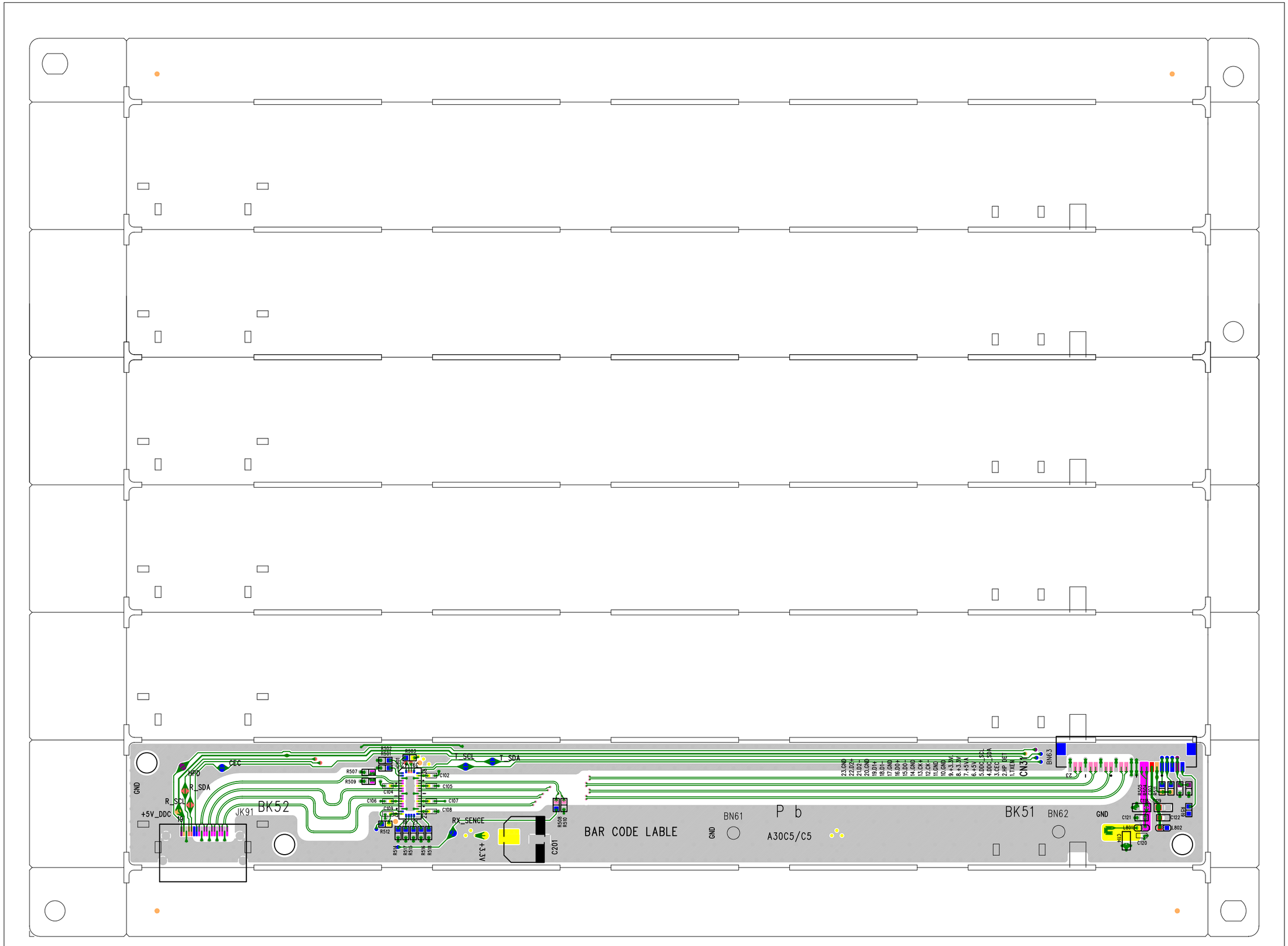


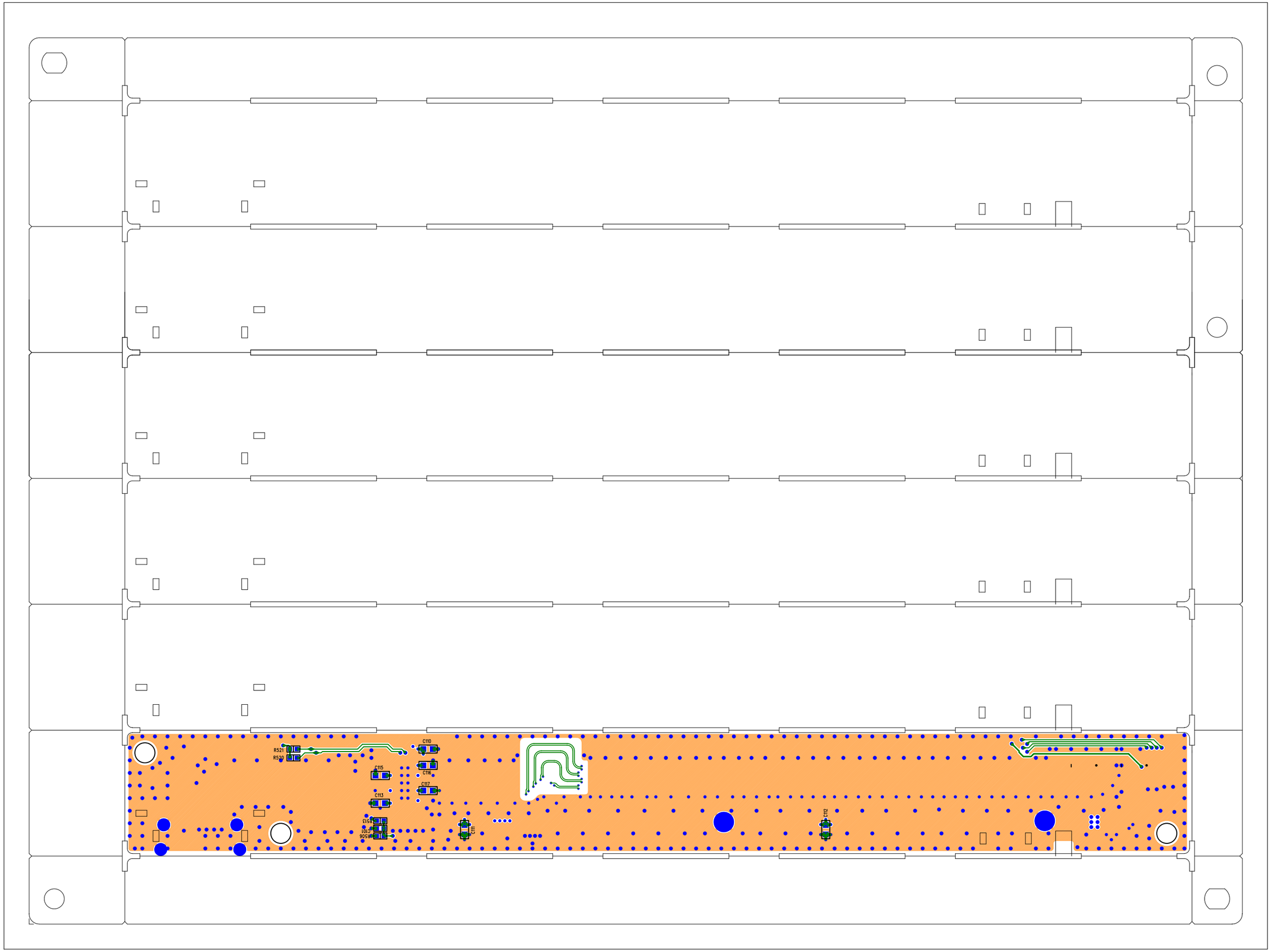


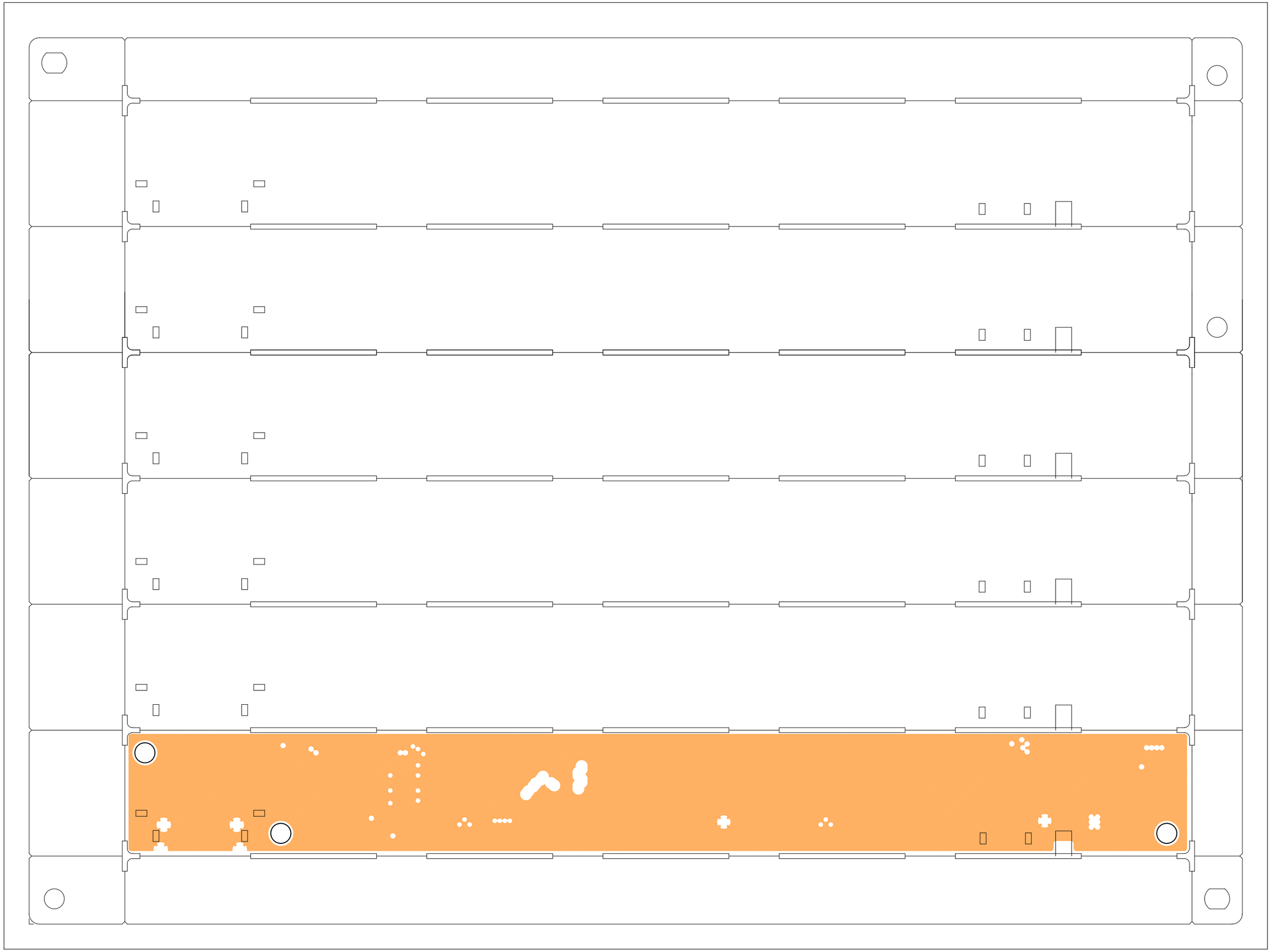


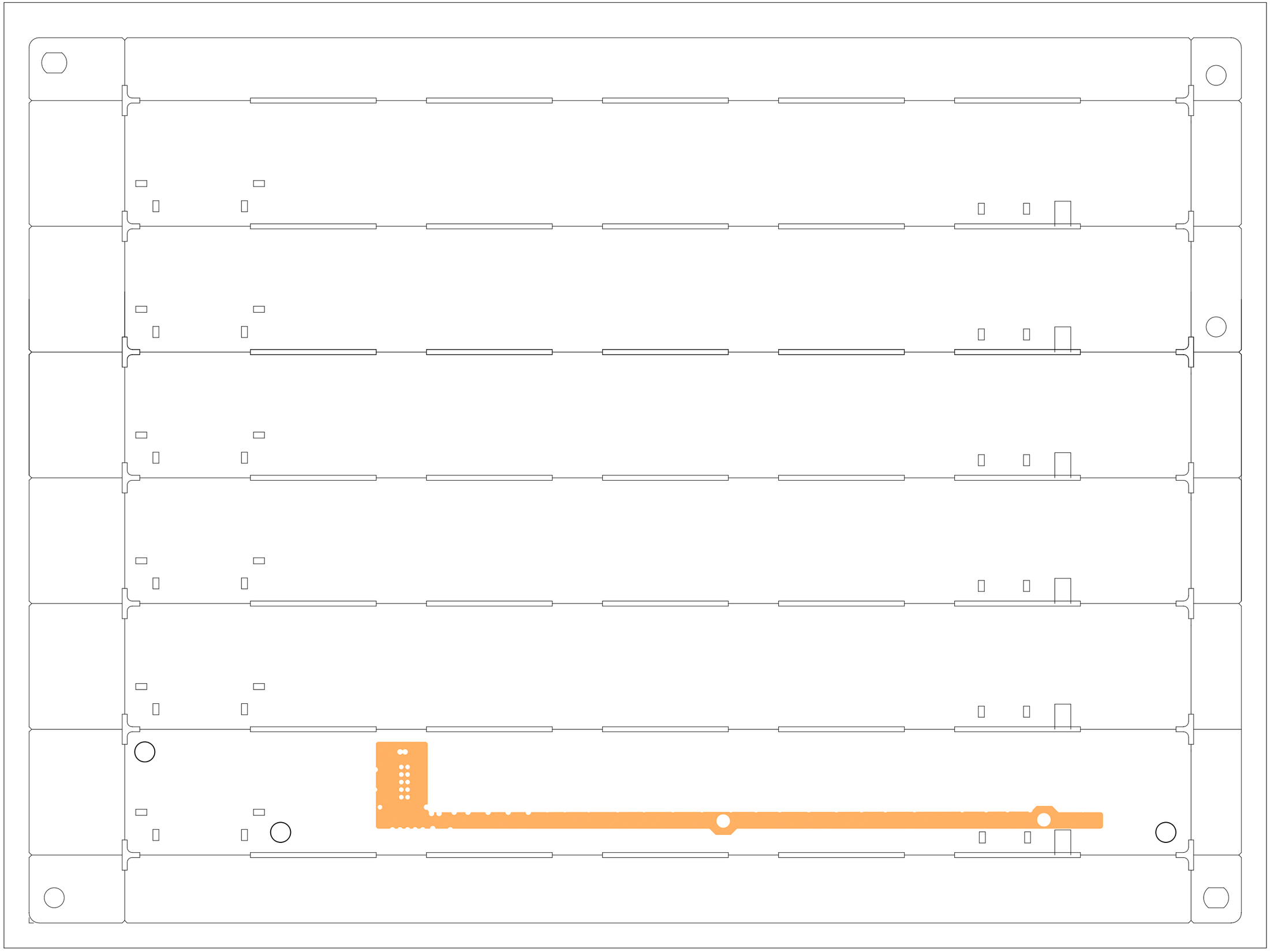

207.00
160.00
OUT
IN
CENTER BAR
VIDEO_MP_CUP12361_B
CUP12361_1


207.00
160.00


CEC
HPD
R_SDA
R_SCL
+5V_DDC
GND
JK91
BK52
T_SCL
T_SDA
RX_SENCE
+3.3V
C201
BAR CODE LABLE
BN61
GND
P b
A30C5/C5
BK51
BN62
GND
BN63
CN3
23.GND
22.D2+
21.D2-
20.GND
19.D1+
18.D1-
17.GND
16.D0+
15.D0-
14.GND
13.CK+
12.CK-
11.GND
10.GND
9.+3.3V
8.+3.3V
7.+5V
6.+5V
5.DDC_SCL
4.DDC_SDA
3.CEC
2.HPD
1.VEER


R521
R520
C110
C116
C115
C117
C113
C111
C112





AVR 3650 ELECTRICAL PARTS LIST

Quantity of all components with a designator = 1 unless otherwise noted

Reference Designator	Part Number	Description	
FRONT PCB ASS'Y	**COP12357E**		
C121	CCBS1H151KBT	CAP, CERAMIC(150PF/50V)	CH UP025 B151K-A-B Z
C122	CCEA1AH331T	CAP, ELECT(10V/330uF)	KR3-10V331MB(6.3*11L)
C151	CCFT1H473ZF	CAP, CERAMIC	0.047UF 50V Z
C152	CCEA1CKS100T	CAP, ELECT(16V/10uF)-S	KC3-16V100MA2(4*5L)
C161	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C171	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C181	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C213	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C214	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C252	CCEA1HKS2R2T	CAP, ELECT(50V/2.2uF)-S	KC3-50V2R2MA2(4*5L)
C311	CCBS1H102KBT	CAP, CERAMIC(1000PF/50V)	CH UP025 B102K-A-B Z
C322	CCBS1H102KBT	CAP, CERAMIC(1000PF/50V)	CH UP025 B102K-A-B Z
C412	CCBS1H103ZFT	CAP, CERAMIC	0.01UF 50V Z
C413	CCEA1JH470TS	CAP, ELECT	63V/47UF/105'C
C414	CCEA1JH470TS	CAP, ELECT	63V/47UF/105'C
C415	CCBS1H103ZFT	CAP, CERAMIC	0.01UF 50V Z
C422	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF)	KR3-50V4R7MA(5*11L)
C431	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C441	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C442	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C550	CCBS1H560JT	CAP, CERAMIC(56PF/50V)	CH UP025SL560J-A-B Z
C555	CCBS1H560JT	CAP, CERAMIC(56PF/50V)	CH UP025SL560J-A-B Z
C556	CCEA1AH101T	CAP, ELECT(10V/100uF)	KR3-10V101MA(5*11L)
C557	CCBS1H103ZFT	CAP, CERAMIC	0.01UF 50V Z
C558	CCBS1H103ZFT	CAP, CERAMIC	0.01UF 50V Z
C631	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C651	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C652	CCBS1H471KBT	CAP, CERAMIC(470PF/50V)	CH UP025 B471K-A-B Z
C653	CCBS1H471KBT	CAP, CERAMIC(470PF/50V)	CH UP025 B471K-A-B Z
C714	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C715	CCEA1CKS100T	CAP, ELECT(16V/10uF)-S	KC3-16V100MA2(4*5L)
C721	CCEA1HKS2R2T	CAP, ELECT(50V/2.2uF)-S	KC3-50V2R2MA2(4*5L)
C731	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C732	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C751	CCBS1C222MXT	CAP, CERAMIC(2200PF/16V)	CH EP025 B222M-A-B J
C752	CCBS1H102KBT	CAP, CERAMIC(1000PF/50V)	CH UP025 B102K-A-B Z
C753	CCBS1H102KBT	CAP, CERAMIC(1000PF/50V)	CH UP025 B102K-A-B Z
C754	CCBS1H104ZFT	CAP, CERAMIC	0.1UF 50V Z
C801	CCEA1EH470T	CAP, ELECT(25V/47uF)	KR3-25V470MA(5*11L)
C802	CCEA1EH470T	CAP, ELECT(25V/47uF)	KR3-25V470MA(5*11L)
C811	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C813	CCBS1H470JT	CAP, CERAMIC(47PF/50V)	CH UP025SL470J-A-B Z
C821	CCBS1H471KBT	CAP, CERAMIC(470PF/50V)	CH UP025 B471K-A-B Z
C822	CCBS1H151KBT	CAP, CERAMIC(150PF/50V)	CH UP025 B151K-A-B Z
C823	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C830	CCBS1H473ZFT	CAP, CERAMIC(47000PF/50V)	CH UP025 F473Z-A-B J
C901	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C902	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C911	CCEA1EH470T	CAP, ELECT(25V/47uF)	KR3-25V470MA(5*11L)
C912	CCEA1EH470T	CAP, ELECT(25V/47uF)	KR3-25V470MA(5*11L)

FRONT PCB ASS'Y COP12357E

Reference Designator	Part Number	Description	
C923	CCBS1H681KBT	CAP, CERAMIC(680PF/50V)	CH UP025 B681K-A-B Z
C924	CCBS1H681KBT	CAP, CERAMIC(680PF/50V)	CH UP025 B681K-A-B Z
C931	CCEA1CH331T	CAP, ELECT(16V/330uF)	KR3-16V331MC(8*11.5L)
C932	CCEA1CH331T	CAP, ELECT(16V/330uF)	KR3-16V331MC(8*11.5L)
D161	HVD1N5819T	DIODE , SCHOTTKY	1N5819
D401	CVD1N4003ST	DIODE , RECT	1N4003
D412	CVDZJ8.2BT	DIODE , ZENER 8.2V	ZJ8.2B 1/2W
D413	HVDMTZJ27BT	DIODE , ZENER	MTZJ27B 1/2W
D421	CVDZJ6.8BT	DIODE , ZENER 6.8V	ZJ6.8B 1/2W
D422	CVDZJ6.8BT	DIODE , ZENER 6.8V	ZJ6.8B 1/2W
D455	HVD1SS133MT	DIODE	1SS133T-77
D631	HVD1SS133MT	DIODE	1SS133T-77
D632	HVD1SS133MT	DIODE	1SS133T-77
D714	C3A206	WIRE , COPPER	SN95/PB5 , 0.6
L151	HLQ02C100KT	COIL , AXAIL (10UH)	
Q104	CVTKTC1027YT	TRANSISTOR ,	KTC1027Y/TO-92L/KEC
Q111	HVTKRA107MT	TRANSISTOR , TO-92M	KRA107M
Q112	HVTKRC107MT	TRANSISTOR , TO-92M	KRC107M
Q113	HVTKRC107MT	TRANSISTOR , TO-92M	KRC107M
Q251	HVTKTA1271YT	TRANSISTOR	KTA1271Y
Q252	HVTKRC107MT	TRANSISTOR , TO-92M	KRC107M
Q721	HVTKRC107MT	TRANSISTOR , TO-92M	KRC107M
Q906	HVTKRA107MT	TRANSISTOR , TO-92M	KRA107M
Q907	HVTKRA107MT	TRANSISTOR , TO-92M	KRA107M
Q941	HVTKTC2874BT	TRANSISTOR , MUTE	KTC2874B
Q942	HVTKTC2874BT	TRANSISTOR , MUTE	KTC2874B
Q943	HVTKTC2874BT	TRANSISTOR , MUTE	KTC2874B
Q944	HVTKTC2874BT	TRANSISTOR , MUTE	KTC2874B
Q951	HVTKRC107MT	TRANSISTOR , TO-92M	KRC107M
Q952	HVTKRA107MT	TRANSISTOR , TO-92M	KRA107M
Q954	HVTKRC107MT	TRANSISTOR , TO-92M	KRC107M
R101	CRD20TF2200T	RES , CARBON(220 OHM, 1%)	
R102	CRD20TF6800T	RES , CARBON(680 OHM, 1%)	
R113	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)	
R122	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
R201	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
R202	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
R203	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
R211	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
R213	CRD20TJ272T	RES, CARBON(1/5W,2.7Kohm,J)	
R214	CRD20TJ272T	RES, CARBON(1/5W,2.7Kohm,J)	
R251	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
R252	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
R312	CRD20TF1001T	RES , CARBON	1K /1/5W /F
R313	CRD20TF1501T	RES , CARBON	1.5K /1/5W /F
R314	CRD20TF1801T	RES , CARBON	1.8K /1/5W /F
R315	CRD20TF2701T	RES , CARBON	2.7K /1/5W/F
R316	CRD20TF3301T	RES , CARBON	3.3K /1/5W/F
R322	CRD20TF1001T	RES , CARBON	1K /1/5W /F
R323	CRD20TF1501T	RES , CARBON	1.5K /1/5W /F
R324	CRD20TF1801T	RES , CARBON	1.8K /1/5W /F
R325	CRD20TF2701T	RES , CARBON	2.7K /1/5W/F
R326	CRD20TF3301T	RES , CARBON	3.3K /1/5W/F
R327	CRD20TF5601T	RES , CARBON(5.6K/F)	

Reference Designator	Part Number	Description

FRONT PCB ASS'Y COP12357E

R328	CRD20TF5601T	RES , CARBON(5.6K/F)
R401	CRD25FJ3R3T	RES , CARBON 3.3 OHM 1/4W J
R402	CRD25TJ4R7T	RES, CARBON(1/4W,4.7ohm,J)
R403	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R404	CRD25TJ4R7T	RES, CARBON(1/4W,4.7ohm,J)
R411	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R412	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)
R413	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R415	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)
R431	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R432	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R550	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R555	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R556	CRD20TJ153T	RES, CARBON(1/5W,15Kohm,J)
R557	CRD20TJ153T	RES, CARBON(1/5W,15Kohm,J)
R701	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R702	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R703	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R711	CRD20TJ470T	RES, CARBON(1/5W,47ohm,J)
R712	CRD20TJ470T	RES, CARBON(1/5W,47ohm,J)
R713	CRD20TJ470T	RES, CARBON(1/5W,47ohm,J)
R721	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R722	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)
R731	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R735	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R741	CRD20TJ123T	RES, CARBON(1/5W,12Kohm,J)
R742	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R801	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)
R802	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)
R811	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R812	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R813	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R821	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R822	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R823	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R834	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)
R835	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R836	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R901	CRD25TJ101T	RES, CARBON(1/4W,100ohm,J)
R902	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)
R911	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)
R912	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)
R921	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R922	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R923	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R924	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R925	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R926	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R931	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R932	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R933	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R934	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R935	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R936	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)

Reference Designator	Part Number	Description

FRONT PCB ASS'Y COP12357E

R941	CRD25TJ432T	RES, CARBON(1/4W,4.3Kohm,J)
R942	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R943	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R944	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R951	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R953	CRD20TJ362T	RES, CARBON(1/5W,3.6Kohm,J)
R954	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
S311	CST1A024ZT	SW , TACT
S312	CST1A024ZT	SW , TACT
S313	CST1A024ZT	SW , TACT
S314	CST1A024ZT	SW , TACT
S315	CST1A024ZT	SW , TACT
S316	CST1A024ZT	SW , TACT
S317	CST1A024ZT	SW , TACT
S318	CST1A024ZT	SW , TACT
S319	CST1A024ZT	SW , TACT
S320	CST1A024ZT	SW , TACT
S321	CST1A024ZT	SW , TACT
S322	CST1A024ZT	SW , TACT
S323	CST1A024ZT	SW , TACT
S330	CST1A024ZT	SW , TACT
BK71	CMD1A572	BRACKET , FIP
BK72	CMD1A572	BRACKET , FIP
BK73	CMD1A629	BRACKET , PCB
BN53	CWB1C005350BM001	Shield Wire ass'y
BN61	CJP06GB142ZB	PIN HEADER(6P, 2.54mm)
BN73	CJP06GB142ZB	PIN HEADER(6P, 2.54mm)
BN74	CWB1C005100BM	WIRE ASS'Y(5P, 100MM)
CN61	CJP06GA221ZB	FEMALE HEADER (6P,2.54mm),STRAIGHT TYPE FAS2851
CN71	CJP05GB03ZY	WAFER,YMAW025(2.5mm,ANGLE)
CN72	CJP27GA285ZN	WAFER,FPC 1.25mm,stright 1.25-2-NP
CN73	CJP06GB143ZB	FEMALE HEADER(6P, 2.54mm)
CN74	CJP05GB03ZY	WAFER,YMAW025(2.5mm,ANGLE)
C411	CCEA1JH101E	CAP, ELECT 100UF 63V
D101	CVD1L0345W31BOCT201V	L.E.D , WHITE CVD1L0345W31BOCT201
D102	CVD30ASOGCAA-S7	L.E.D , ORANGE T0L-30ASOGCAA-S7
D201	CVD1L0345W31BOCT201V	L.E.D , WHITE CVD1L0345W31BOCT201
D202	CVD1L0345W31BOCT201V	L.E.D , WHITE CVD1L0345W31BOCT201
D203	CVD1L0345W31BOCT201V	L.E.D , WHITE CVD1L0345W31BOCT201
ET63	CMC2A325	PLATE , EARTH
FIP2	CFL162BD01GINK	V.F.D 162-BD-01GINK
IC12	CRVKSM603TE5B	SENSOR , REMOCON
IC13	CVISN74ACT04DR	I.C , HEX INVERTER(SOIC/D-14P)SN74ACT04DR TEXAS INST
IC14	HVINJM2068MDTE1	I.C , OP AMP (JRC) NJM2068MD-TE1
IC15	HVINJM4556AL	I.C , HEADPHONE (JRC) NJM4556AL
JK53	CJJ9X009Z	JACK, USB
JK63	CJJ2E026Z	JACK, PHONES(6.35mm,SILVER)PJ-612A-51/YUQIU
RL91	CSL4A016ZU	RELAY,BC3-12H,DC12V,2C2P BC3-12H/HANDOUK
VR74	CSR2A037Z	ENCODER

HDMI BUFFER PCB ASS'Y COP12366E

C110	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C111	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)

Reference Designator	Part Number	Description	
HDMI BUFFER PCB ASS'Y	**COP12366E**		
C112	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
C113	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
C115	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
C116	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
C117	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
R506	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	
R513	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
R520	CRJ10DJ202T	RES, CHIP(1608/5%/2Kohm)	
R521	CRJ10DJ202T	RES, CHIP(1608/5%/2Kohm)	
BN63	CJP23GB210ZY	WAFER,(CARD CABLE,ANGLE,SMT,1MM,10008HR-23L(BK))10008HR-23L	
C102	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C104	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C105	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C106	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C107	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C108	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C109	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C114	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
C118	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)	
C120	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)	
C121	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
IC901	CVIPI3HDMI101	I.C, 1:1 HDMI BUFFER (TQFN 42P)	
JK91	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY	
L801	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER	
R503	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
R504	CRJ10DJ202T	RES, CHIP(1608/5%/2Kohm)	
R505	CRJ10DJ202T	RES, CHIP(1608/5%/2Kohm)	
R507	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)	
R508	CRJ10DJ203T	RES, CHIP(1608/5%/20Kohm)	
R509	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	
R510	CRJ10DJ203T	RES, CHIP(1608/5%/20Kohm)	
R514	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
R516	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
R518	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
	CMD1A629	BRACKET , PCB	
	CMD1A787	BRACKET , HDMI	
	CPE1A009	SHEET , BLIND	
	CTB3+10JR	SCREW	27.000000
	CTWS3+10GR	SCREW	2.000000
CN31	CWC4F2A23A300B10	CARD CABLE (1mm, 23P, 300mm, B)	
CN72	CWC4C4A27B250B08	CARD , CABLE (27P/1.25mm,/250mm)	
INPUT PCB ASS'Y	**COP12327E**		
C133	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
C134	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
C135	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
C136	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
C217	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
C218	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
C219	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
C293	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
C300	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
C301	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	

Reference Designator	Part Number	Description

INPUT PCB ASS'Y COP12327E

C302	CCUS1H683KC	CAP, CHIP(1608, 50V/0.068uF)
C303	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C304	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C305	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C306	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C307	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C332	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C333	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C334	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C335	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C336	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C337	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C338	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C339	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C356	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C357	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C362	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C369	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C370	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C371	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C372	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C373	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C375	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C376	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C377	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C412	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C413	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C420	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)
C421	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)
C422	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C423	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C466	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C601	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C603	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C605	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C607	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C609	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C611	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C613	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C615	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C617	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C619	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C621	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C623	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C625	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C627	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C629	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C631	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C641	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C643	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C644	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C645	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C646	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C648	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)

INPUT PCB ASS'Y COP12327E

Reference Designator	Part Number	Description
C651	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C652	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C653	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C654	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C655	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C656	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C658	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C660	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C704	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C705	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C714	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C718	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C719	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C722	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C723	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C727	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C729	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C731	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C733	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C737	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C738	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C739	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C741	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C745	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C746	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C747	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C748	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C751	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C754	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C756	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C757	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C758	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C759	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C760	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C761	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C762	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C763	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C765	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C773	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C780	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C781	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C788	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C789	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C792	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C856	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C865	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
D725	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
L101	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L604	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L704	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
RN89	CRJ104DJ103T	RES , CHIP , 10K OHM, 5% , 1608 X 4 (1608)
R118	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R122	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R123	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)

Reference Designator	Part Number	Description

INPUT PCB ASS'Y COP12327E

R124	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R125	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R126	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R163	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R165	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R171	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R217	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R218	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R219	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R289	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R290	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R291	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R292	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R293	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R294	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R317	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R320	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R321	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R322	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R323	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R324	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R325	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R326	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R327	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R339	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R341	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R380	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R381	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R382	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R383	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R384	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R389	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R390	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R399	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R400	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R401	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R402	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R403	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R404	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)
R406	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R407	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R424	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R425	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R448	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R460	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R465	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R466	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R471	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R700	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R713	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R717	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R718	CRJ10DF1371T	RES, CHIP(1608/1%/1.37Kohm)
R719	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R720	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)

INPUT PCB ASS'Y COP12327E

Reference Designator	Part Number	Description
R721	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R725	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R726	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R727	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R733	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R735	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R745	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R753	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R754	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R759	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R761	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R762	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R763	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R767	CRJ10DF5101T	RES, CHIP(1608/1%/5.1Kohm)
R779	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R780	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R781	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R785	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R795	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R797	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R812	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R834	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R835	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R836	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R837	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R857	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R858	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R863	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R866	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R870	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R871	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R872	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R877	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R891	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R907	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R908	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R910	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R925	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R932	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R963	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R966	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R968	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R969	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
C111	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C112	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C113	CCUS1H180JA	CAP, CHIP(1608, 50V/18pF)
C114	CCUS1H180JA	CAP, CHIP(1608, 50V/18pF)
C115	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C116	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C117	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C118	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C121	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C123	CRJ06IJ183T	RES, CHIP(1005/5%/18Kohm)
C131	CCUS1H150JA	CAP, CHIP(1608, 50V/15pF)

Reference Designator	Part Number	Description

INPUT PCB ASS'Y COP12327E

C132	CCUS1H150JA	CAP, CHIP(1608, 50V/15pF)
C203	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C204	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C205	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C206	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C207	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C208	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C209	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C210	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C227	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C228	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C229	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C230	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C260	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C277	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C278	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C291	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C308	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C309	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C310	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)
C311	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C312	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C313	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C314	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C315	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C316	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C317	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C318	CCUS1H683KC	CAP, CHIP(1608, 50V/0.068uF)
C319	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C320	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C321	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C322	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C323	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C324	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C325	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C326	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)
C327	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C328	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C329	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C330	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C331	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)
C358	CCUS1H392KC	CAP, CHIP(1608, 50V/3900pF)
C359	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)
C363	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C364	CCUS1H392KC	CAP, CHIP(1608, 50V/3900pF)
C365	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)
C383	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C384	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C385	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C386	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C387	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C388	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C394	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C428	CCUI1H151JA	CAP, CHIP(1005, 50V/150pF)

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Reference Designator	Part Number	Description
C442	CCUI1H151JA	CAP, CHIP(1005, 50V/150pF)
C455	CCUI1H101JA	CAP, CHIP(1005, 50V/100pF)
C456	CCUI1H151JA	CAP, CHIP(1005, 50V/150pF)
C457	CCUI1H101JA	CAP, CHIP(1005, 50V/100pF)
C458	CCUI1H151JA	CAP, CHIP(1005, 50V/150pF)
C459	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C460	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C461	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)
C462	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C610	CCUI1H150JA	CAP, CHIP(1005, 50V/15pF)
C642	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C647	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C649	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C650	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C657	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C659	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C701	CCUS1H150JA	CAP, CHIP(1608, 50V/15pF)
C702	CCUS1H150JA	CAP, CHIP(1608, 50V/15pF)
C707	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)
C708	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C716	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)
C725	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C734	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C742	CCUS1H300JA	CAP, CHIP(1608, 50V/30pF)
C743	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C744	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C767	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)
C768	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C769	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C770	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C772	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C776	CCUI1H150JA	CAP, CHIP(1005, 50V/15pF)
C778	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C790	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C791	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C794	CCUI1H181JA	CAP, CHIP(1005, 50V/180pF)
C795	CCUI1H181JA	CAP, CHIP(1005, 50V/180pF)
C797	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C798	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C801	CCUS1H180JA	CAP, CHIP(1608, 50V/18pF)
C802	CCUS1H180JA	CAP, CHIP(1608, 50V/18pF)
C820	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C830	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C831	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C832	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C833	CCUI1H101JA	CAP, CHIP(1005, 50V/100pF)
C834	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C835	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C836	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C837	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C838	CCUS1H180JA	CAP, CHIP(1608, 50V/18pF)
C839	CCUS1H150JA	CAP, CHIP(1608, 50V/15pF)
C840	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C841	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)

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C842	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C843	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C846	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C860	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C864	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C866	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C867	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
D201	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D202	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D203	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D204	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D205	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D206	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D301	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D302	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D726	HVDRB160L60TE25	DIODE , SCHOTTKEY BARRIER HK RB160L-60TE25
D727	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D805	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D806	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
IC101	CVIR2A15218FP	I.C , INPUT WITH 8CH VOLUME(100P QFP) R2A15218FP
IC104	HVINJM2115MDTE1	IC, OP AMP NJM2115MDTE1
IC105	HVINJM2115MDTE1	IC, OP AMP NJM2115MDTE1
IC106	CVIANAM1620AV	I.C , DSP-ROM1(AVR265/365 , ST25VF080B504CS2F)
IC106	CVIST25VF080B504CS2F	I.C , 8 Mbit SPI Serial Flash SST25VF080B-50-4C-S2AF
IC107	CVIANAM1621AV	I.C , DSP-ROM2(AVR265/365 , ST25VF080B504CS2F)
IC107	CVIST25VF080B504CS2F	I.C , 8 Mbit SPI Serial Flash SST25VF080B-50-4C-S2AF
IC111	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC112	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC113	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC114	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC122	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC125	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC131	CVIBD3812F	I.C , VIDEO 2CH BD3812F
IC132	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC140	CVITC74HC151AFN	I.C, 8 CHANNEL MULTIPLEXER(SOL16-P-150-1.27)TC74HC151AFN
IC141	CVICS497024CVZ	I.C , DSP (CIRRUS LOGIC) CS497024CVZ
IC142	CVICS49DV8CCVZ	I.C , DSP (DOLBY VOLUME) CIRRUS LOGIC CS49DV8CCVZ
IC143	HVICS42528-CQ	I.C , CODEC + DIR (CIRRUS LOGIC) CS42528-CQ
IC144	CVIM12L16161A5TG	I.C , 16MB SDRAM (ESMT) M12L16161A5TG
IC145	HVITC74VHC157FT	I.C , 2-CHANNEL MUX (TOSHIBA) TC74VHC157FT
IC146	CVITC74VCX541FT	I,C , OCTAL BUS BUFFER (TOSHIBA) TC74VCX541FT
IC147	CVITC74VHC153FT	I.C DUAL 4-CH MUX TC74VHC153FT
IC148	HVINJM2391DL133	I.C , CHIP REGULATOR (+3.3V) JR NJM2391DL133C
IC149	HVILM1117S-1V8	I.C , REGULATOR (1.8V) LM1117-1V8
IC150	HVILM1117S-1V8	I.C , REGULATOR (1.8V) LM1117-1V8
IC151	CVIANAM1548AV	I,C , U-COM CVIT5CN5,
IC151	CVIT5CN5	I.C , U-COM (512KB/32KB, LQFP100P) TOSHIBA
IC152	CVIM24C32WMN6TP	I.C , EEPROM (32 Kbit) ST M24C32WMN6TP
IC154	CVIANAM1619AV	I.C , SUB U-COM TMPM330FWFG)
IC154	CVITMPM330FWFG	I.C , U-COM (TOSHIBA,128KB/8KB,LQFP-100P)TMPM330FWFG
IC155	CVTUPA672T	F.E.T (NEC) UPA672T
IC156	CVIKIC3201S-33	I.C , REGULATOR (3V3) KIC3201S-33(SOT-89)
IC158	HVILM1117S-3V3	I.C , REGULATOR (3.3V) 1117S-3.3V
IC159	HVI74HCU04AFNG	I.C , INVERTER (TOSHIBA) TC74HCU04AFNG(TOSHIBA)

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IC161	CVIKSZ8851SNLTR	I.C , ETHERNET PHY (10/100M,QFN-32P)) KSZ8851SNLTR
IC162	CVIANAM1549AV	IC, USB U-COM(CVITMP92FD28FG)
IC162	CVITMP92FD28FG	I.C , USB DECODER FLASH(100PIN,QFP) TOSH TMP92FD28DFG
IC163	CVIISL54220IUZ-T	I.C , USB2.0 Multiplexer(TQFN-10P ISL54220IUZ-T
IC164	CVIML61C282PR	I.C , RESET (2.8V , SOT-89) ML61C282PRG
IC167	CVIKIA78R000F	I.C , REGULATOR (ADJ, DPAK-5) KIA78R000F
IC168	CVIRT9702APB	IC , CURRENT LIMITER RT9702APB
L601	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L602	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L701	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMA
L702	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMA
L703	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMA
L705	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMA
L706	CLZ9Z014Z	FERRITE , CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMA
L715	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L802	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L803	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L804	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L805	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L806	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
L807	CLZ9R001Z	FERRITE , CHIP BEAD(60ohm, 2012) HCB2012KF-600T40
Q101	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q102	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q103	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q105	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q301	HVTKTC812TB	TRANSISTOR, CHIP(TS6) KTC812T-B-RTK
Q302	HVTKTC812TB	TRANSISTOR, CHIP(TS6) KTC812T-B-RTK
Q303	HVTKTC812TB	TRANSISTOR, CHIP(TS6) KTC812T-B-RTK
Q305	HVTKTC812TB	TRANSISTOR, CHIP(TS6) KTC812T-B-RTK
Q306	HVTKTC812TB	TRANSISTOR, CHIP(TS6) KTC812T-B-RTK
Q307	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q308	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q402	HVTKTC812TB	TRANSISTOR, CHIP(TS6) KTC812T-B-RTK
Q729	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q730	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q732	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q734	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q738	CVTKRC103S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q741	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q742	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q951	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q952	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q991	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q992	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q993	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q994	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
Q997	HVTKRA107S	TRANSISTOR, CHIP , SOT-23 KRA107S
Q998	HVTKRC107S	TRANSISTOR, CHIP , SOT-23 KRC107S
RN54	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN60	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN61	CRJ104DJ103T	RES , CHIP , 10K OHM, 5% , 1608 X 4
RN63	CRJ104DJ103T	RES , CHIP , 10K OHM, 5% , 1608 X 4
RN64	CRJ064IJ101T	RES, CHIP(1005/5%/100ohm*4)
RN65	CRJ064IJ101T	RES, CHIP(1005/5%/100ohm*4)

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Reference Designator	Part Number	Description
RN66	CRJ064IJ101T	RES, CHIP(1005/5%/100ohm*4)
RN67	CRJ064IJ101T	RES, CHIP(1005/5%/100ohm*4)
RN68	CRJ104DJ103T	RES , CHIP , 10K OHM, 5% , 1608 X 4
RN71	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN76	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN77	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN78	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN79	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN81	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN82	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN83	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN84	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN85	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN87	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN90	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN91	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN93	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
R110	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R111	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R112	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R113	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R114	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R115	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R116	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R117	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R121	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R141	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R142	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R149	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R150	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R151	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R152	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R156	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R158	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R161	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R162	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R166	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R167	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R172	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R173	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R174	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R201	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R202	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R203	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R204	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R205	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R206	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R207	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R208	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R209	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R210	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R229	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R230	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R231	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)

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R232	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R233	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R234	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R235	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R236	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R237	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R238	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R239	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R240	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R241	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R242	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R243	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R247	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R248	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R249	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R250	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R258	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R259	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R260	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R263	CRJ10DJ184T	RES, CHIP(1608/5%/180Kohm)
R264	CRJ10DJ184T	RES, CHIP(1608/5%/180Kohm)
R265	CRJ10DJ184T	RES, CHIP(1608/5%/180Kohm)
R266	CRJ10DJ184T	RES, CHIP(1608/5%/180Kohm)
R267	CRJ10DJ184T	RES, CHIP(1608/5%/180Kohm)
R268	CRJ10DJ184T	RES, CHIP(1608/5%/180Kohm)
R274	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R281	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R282	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R283	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R284	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R285	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R286	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R287	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R288	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R295	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R296	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R297	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R298	CRJ10DJ563T	RES, CHIP(1608/5%/56Kohm)
R300	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R301	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R302	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R303	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R304	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R305	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R306	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R307	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R308	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R309	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R310	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R311	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R312	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R313	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R314	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R315	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)

Reference Designator	Part Number	Description

INPUT PCB ASS'Y COP12327E

R316	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R319	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R328	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R329	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R330	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R331	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R332	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R333	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R334	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R335	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R336	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R337	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R338	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R340	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R342	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R343	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R344	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R345	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R346	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R347	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R348	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R349	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)
R350	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R351	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R352	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R353	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R354	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)
R355	CRJ10DJ273T	RES, CHIP(1608/5%/27Kohm)
R356	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R357	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R358	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R359	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R360	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R361	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)
R362	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R363	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R364	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R365	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R366	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R367	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R368	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R369	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)
R370	CRJ10DJ273T	RES, CHIP(1608/5%/27Kohm)
R371	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R372	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R373	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R374	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R375	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R376	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R377	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R378	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R379	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R385	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R386	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)

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Reference Designator	Part Number	Description
R387	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R388	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)
R391	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R392	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R393	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R395	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R396	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R397	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R398	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)
R408	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R410	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R411	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R412	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R413	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R414	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R415	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R416	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R417	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R418	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R419	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R420	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R421	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R422	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R423	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R452	CRJ06IJ563T	RES, CHIP(1005/5%/56Kohm)
R454	CRJ10DJ562T	RES, CHIP(1608/5%/5.6Kohm)
R455	CRJ10DJ122T	RES, CHIP(1608/5%/1.2Kohm)
R456	CRJ10DJ562T	RES, CHIP(1608/5%/5.6Kohm)
R461	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R462	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R463	CRJ06IJ561T	RES, CHIP(1005/5%/560ohm)
R464	CRJ06IJ561T	RES, CHIP(1005/5%/560ohm)
R472	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R473	CRJ06IJ563T	RES, CHIP(1005/5%/56Kohm)
R474	CRJ10DJ122T	RES, CHIP(1608/5%/1.2Kohm)
R601	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R602	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R603	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R604	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R605	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R606	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R607	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R610	CRJ10DF5101T	RES, CHIP(1608/1%/5.1Kohm)
R611	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R612	CRJ06IJ820T	RES, CHIP(1005/5%/82ohm)
R613	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R614	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R615	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R616	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R619	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R620	CRJ06IJ750T	RES, CHIP(1005/5%/75ohm)
R621	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R622	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R701	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)

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Reference Designator	Part Number	Description
R702	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R706	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)
R707	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)
R709	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R710	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R711	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R712	CRJ06IJ820T	RES, CHIP(1005/5%/82ohm)
R714	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R715	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R722	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R723	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R724	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R729	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R730	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R732	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R734	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R737	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R738	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R739	CRJ06IJ820T	RES, CHIP(1005/5%/82ohm)
R741	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R742	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R743	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R746	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R748	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R749	CRJ06IJ750T	RES, CHIP(1005/5%/75ohm)
R750	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R751	CRJ06IJ820T	RES, CHIP(1005/5%/82ohm)
R752	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R755	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R756	CRJ06IJ750T	RES, CHIP(1005/5%/75ohm)
R757	CRJ06IJ750T	RES, CHIP(1005/5%/75ohm)
R760	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)
R764	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R765	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R766	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R768	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R769	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R770	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R771	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R772	CRJ10DJ183T	RES, CHIP(1608/5%/18Kohm)
R773	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R774	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R775	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R776	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R777	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)
R778	CRJ06IJ221T	RES, CHIP(1005/5%/220ohm)
R782	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R783	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R784	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R786	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)
R787	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R789	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R790	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R791	CRJ10DJ273T	RES, CHIP(1608/5%/27Kohm)

Reference Designator	Part Number	Description

INPUT PCB ASS'Y COP12327E

R792	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R798	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R799	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R800	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R801	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R802	CRJ06IJ105T	RES, CHIP(1005/5%/1Mohm)
R803	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R806	CRJ10DJ474T	RES, CHIP(1608/5%/470Kohm)
R807	CRJ10DJ474T	RES, CHIP(1608/5%/470Kohm)
R810	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R811	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R815	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R816	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R820	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R821	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R822	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R823	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R824	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R825	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R826	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R827	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R828	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R832	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R833	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R838	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R839	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R840	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R841	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R842	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R843	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R844	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R845	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R846	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R847	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R848	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R849	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R852	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R853	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R854	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R860	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)
R861	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R862	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)
R864	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R869	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R880	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)
R890	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R909	CRJ10DJ153T	RES, CHIP(1608/5%/15Kohm)
R920	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R923	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R960	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R967	CRJ10DJ153T	RES, CHIP(1608/5%/15Kohm)
R992	CRJ10DJ153T	RES, CHIP(1608/5%/15Kohm)
WF104	CJP17GA193ZY	WAFER, CARD CABLE (SMD)
WF105	CJP17GA193ZY	WAFER, CARD CABLE (SMD)

INPUT PCB ASS'Y COP12327E

Reference Designator	Part Number	Description	
C137	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C138	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C231	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C232	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C233	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C234	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C235	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C236	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C237	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C238	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C281	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C282	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C283	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C284	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C285	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C286	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C287	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C288	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C292	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C294	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C295	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C296	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C297	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C298	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C340	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C341	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C342	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C343	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C344	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C345	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C346	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C347	CCEA1HH220T	CAP, ELECT(50V/22uF)	KR3-50V220MA(5*11L)
C361	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C374	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C389	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C390	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C414	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C415	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C429	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C430	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C441	CCEA1EH101T	CAP, ELECT(25V/100uF)	KR3-25V101MB(6.3*11L)
C452	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C453	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C454	CCEA1EH101T	CAP, ELECT(25V/100uF)	KR3-25V101MB(6.3*11L)
C463	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C464	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C465	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C612	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C614	CCEA1CKS101T	CAP, ELECT(16V/100uF)-S	KC3-16V101MA5(6.3*5L)
C628	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C630	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C703	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C706	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C715	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF)	KR3-50V4R7MA(5*11L)

INPUT PCB ASS'Y COP12327E

Reference Designator	Part Number	Description	
C717	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF)	KR3-50V4R7MA(5*11L)
C720	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C721	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C726	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C728	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C730	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C735	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C740	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C749	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C750	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C752	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C753	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C764	CCEA0JH102T	CAP, ELECT(1000uF/6.3V)	1000UF 6.3V
C786	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C787	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C799	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C844	CCEA1CKS101T	CAP, ELECT(16V/100uF)-S	KC3-16V101MA5(6.3*5L)
C845	CCEA1HKS1R0T	CAP, ELECT(50V/1uF)-S	KC3-50V010MA2(4*5L)
C847	CCEA1CKS101T	CAP, ELECT(16V/100uF)-S	KC3-16V101MA5(6.3*5L)
C857	CCEA1CKS101T	CAP, ELECT(16V/100uF)-S	KC3-16V101MA5(6.3*5L)
C861	CCEA1CKS100T	CAP, ELECT(16V/10uF)-S	KC3-16V100MA2(4*5L)
C862	CCEA1CKS101T	CAP, ELECT(16V/100uF)-S	KC3-16V101MA5(6.3*5L)
C863	CCEA1CKS101T	CAP, ELECT(16V/100uF)-S	KC3-16V101MA5(6.3*5L)
C868	CCEA1EH470T	CAP, ELECT(25V/47uF)	KR3-25V470MA(5*11L)
D221	CVD1N4003SRT	DIODE , RECT	1N4003
D222	CVD1N4003SRT	DIODE , RECT	1N4003
D803	CVD1N4003SRT	DIODE , RECT	1N4003
D804	CVD1N4003SRT	DIODE , RECT	1N4003
Q311	HVTKTC2874BT	TRANSISTOR , MUTE	KTC2874B
Q731	HVTKTA1267YT	TRANSISTOR	KTA1267Y
Q733	HVTKTC3199YT	TRANSISTOR ,	KTC3199Y/TO-92M
BN52	CWB1C005200EN	WIRE ASS'Y(5P, 200MM, 2.0MM)	
CN11	CJP06GA19ZY	WAFER,20017WS(2mm,STRAIGHT)	
CN19	CJP06GA19ZY	WAFER,20017WS(2mm,STRAIGHT)	
CN20	CJP11GI237ZW	LOCK-WAFER/STRAIGHT/2.5mm	JWT A2512WV0-NP
CN51	CJP05GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)	
CN62	CJP64GA221ZB	WAFER , 2.54MM 64PIN WAFER	
CN71	CJP18GB143ZB	FEMALE HEADER (18P, 2.54mm) , ANGLE TYPE	
C732	CCEA0JKR3222E	CAP, ELECT(2200uF/6.3V)	
ET70	CMD1A569	BRACKET , PCB	
IC102	HVIKIA7808API	I.C,REGULATOR(+8V,T0220IS)	KIA7808API (KEC)
IC103	CVIKIA7908PI	I.C,REGULATOR(-8V,T0220IS)	KIA7908PI (KEC)
JK11	CJJ4P019W	JACK , RCA	
JK12	CJJ4R020W	JACK , BOARD	
JK52	CJJ9L015Z	JACK , RJ-45(WITH FILTER)	TM00640
JK75	HJSTORX147L	MODULE , OPTICAL (RX,3.3V)	
JK76	HJSTORX147L	MODULE , OPTICAL (RX,3.3V)	
JK78	CJJ4N075Z	JACK , 2P(GOLD PLATE)	RCA-215AG-01
JK79	HJSTOTX177AL	MODULE , OPTICAL(TX)	
L301	CLM4B001Z	COIL , MPX(FM 19KHz FILTER)	
L302	CLM4B001Z	COIL , MPX(FM 19KHz FILTER)	
TUN1	CNVMW004MV1S63SA	TUNER(USA) FM(SCREW: F TYPE),AM(S/LAB)	KST-MW004MV1-S63SA
WF101	CJP27GA285ZN	WAFER,FPC 1.25mm,stright	1.25-2-NP
WF103	CJP27GA285ZN	WAFER,FPC 1.25mm,stright	1.25-2-NP

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INPUT PCB ASS'Y COP12327E

X701	HOX24576E150TF	CRYSTAL, 24.576MHz, HC-49/S, 15pF, 30PPM
X702	HOX10000E220TF	CRYSTAL, 10.000MHz, HC-49/S, 22pF, 30PPM CL-22P
X703	COX09000E150C	CRYSTAL, 09.000MHz, HC-49/S, 15pF, 30PPM
X705	HOX10000E220TF	CRYSTAL, 10.000MHz, HC-49/S, 22pF, 30PPM L-22P
X708	HOX00032K120I	CRYSTAL, 32.768KHz, TUNING FORK, 12pF, 20PPM
X777	COX25000E180C	CRYSTAL, 25.000MHz, HC-49/S, 18pF, 25PPM

HDMI PCB ASS'Y COP12328E

CN104	CJP17GB210ZY	WAFER,(CARD CABLE,ANGLE,SMT,1MM,10008HR-17L(P) 10008HR-17L
CN105	CJP17GB210ZY	WAFER,(CARD CABLE,ANGLE,SMT,1MM,10008HR-17L(P) 10008HR-17L
C101	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C102	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C104	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C105	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C106	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C107	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C108	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C109	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C110	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C111	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C113	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C115	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C116	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C117	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C118	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C119	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C120	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C121	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C122	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C123	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C124	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C125	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C126	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C127	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C128	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C129	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C130	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C131	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C132	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C133	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C134	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C135	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C136	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C137	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C138	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C140	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C141	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C142	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C149	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C152	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C153	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C154	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C156	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)

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C158	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C159	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C160	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C161	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C162	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C163	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C164	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C165	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C166	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C168	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C169	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C171	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C172	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C173	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C174	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C175	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C176	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C177	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C178	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C179	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C180	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C181	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C183	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C184	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C186	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C187	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C188	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C189	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C191	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C192	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C193	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C194	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C195	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C196	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C197	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C198	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C200	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C201	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C202	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C203	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C204	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C206	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C208	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C211	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C212	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C213	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C214	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C216	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C217	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C218	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C219	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C220	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C221	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C222	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)

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C223	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C224	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C225	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C227	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C229	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C230	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C231	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C232	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C233	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C234	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C235	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C236	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C237	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C238	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C239	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C243	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C244	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C245	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C246	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C248	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C249	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C250	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C251	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C255	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C256	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C257	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C258	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C259	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C263	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C264	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C266	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C267	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C268	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C269	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C270	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C271	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C274	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C275	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C276	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C277	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C280	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C283	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C284	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C285	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C287	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C288	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C289	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C290	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C295	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C296	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C297	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C298	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C300	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C301	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)

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C302	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C303	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C305	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C306	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C307	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C308	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C309	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C310	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C312	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C314	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C315	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C316	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C317	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C318	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C320	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C322	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C323	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C324	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C325	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C326	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C328	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C329	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C330	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C331	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C332	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C333	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C334	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C335	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C336	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C337	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C338	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C339	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C340	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C342	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C343	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C344	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C345	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C346	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C348	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C349	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C351	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C352	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C353	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C354	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C355	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C357	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C358	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C359	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C361	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C362	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C363	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C364	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C366	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C367	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)

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C369	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C370	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C371	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C372	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C373	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C375	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C376	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C378	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C379	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C380	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C381	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C382	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C383	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C384	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C385	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C386	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C387	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C388	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C390	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C391	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C392	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C393	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C394	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C395	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C396	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C398	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C399	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C403	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C406	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C408	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C409	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C411	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C413	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C415	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C418	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C419	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C420	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C423	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C425	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C426	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C427	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C429	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C430	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C436	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C438	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C440	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C442	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C443	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C445	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C446	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C450	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C453	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C454	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C455	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)

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C457	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C460	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C462	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C464	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C467	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C468	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C470	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C471	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C475	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C479	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C480	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C482	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C483	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C490	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C491	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C498	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C501	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C508	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C514	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C516	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C519	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C522	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C523	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C525	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C529	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C530	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C532	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C533	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C536	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C537	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C538	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C545	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C546	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C547	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C549	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C551	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C552	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C553	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C555	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
D905	HVDUDZS5.1BSR	DIODE , ZENER (CHIP,5.1V)
IC910	HVIKIC7SZ08FU	I.C ,INPUT AND GATE (USV PACKAGE) KIC7SZ08FU-RTK
L803	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L804	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L805	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L806	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L807	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L812	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L813	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L816	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L818	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L819	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L820	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L821	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMAS
L822	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516)HCB4516KF-600T60/COILMAS

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L823	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L824	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L825	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L826	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L827	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L828	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L829	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L830	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L831	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L832	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L833	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L835	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
L837	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L838	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
L840	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L841	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L843	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L844	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
L847	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
L857	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
L861	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
L864	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm, 4516) HCB4516KF-600T60/COILMASTER
Q913	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q914	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q915	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q916	CVTUPA672T	F.E.T (NEC) UPA672T
RN13	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN32	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN36	CRJ064IJ0R0T	RES, CHIP(1005/5%/0ohm*4)
RN40	CRJ064IJ0R0T	RES, CHIP(1005/5%/0ohm*4)
RN41	CRJ064IJ0R0T	RES, CHIP(1005/5%/0ohm*4)
RN45	CRJ064IJ0R0T	RES, CHIP(1005/5%/0ohm*4)
RN47	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)
RN50	CRJ064IJ0R0T	RES, CHIP(1005/5%/0ohm*4)
RN52	CRJ062IJ330T	RES, CHIP(1005/5%/33ohm*2)
RN82	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN83	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN84	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN85	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN86	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN87	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN88	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN89	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN90	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN91	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
R602	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R603	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R605	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R608	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R609	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R612	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R614	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R615	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R619	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)

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R622	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R623	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R624	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R629	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R631	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R634	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R637	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R639	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R641	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R643	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R648	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R652	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R656	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R657	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R660	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R663	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R664	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R667	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R668	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R670	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R672	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R674	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R675	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R677	CRJ06IJ271T	RES, CHIP(1005/5%/270ohm)
R678	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R681	CRJ06IJ102T	RES, CHIP(1005/5%/1Kohm)
R682	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R687	CRJ06IJ102T	RES, CHIP(1005/5%/1Kohm)
R688	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R690	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R692	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R693	CRJ06IJ102T	RES, CHIP(1005/5%/1Kohm)
R694	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R695	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R696	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R697	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R707	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)
R709	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R711	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R713	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R714	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R715	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)
R717	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R720	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R729	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R731	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R733	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R734	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R737	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R743	CRJ10DF2800T	RES, CHIP(1608/1%/280ohm) 1/10W, 280OHM, 1608, 1%
R745	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R748	CRJ10DF2800T	RES, CHIP(1608/1%/280ohm) 1/10W, 280OHM, 1608, 1%
R756	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R757	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)

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R760	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R771	CRJ10DF4R99T	RES, CHIP(1608/1%/4.99ohm)
R774	CRJ06IJ182T	RES, CHIP(1005/5%/1.8Kohm)
R777	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R780	CRJ06IJ182T	RES, CHIP(1005/5%/1.8Kohm)
R785	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R793	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R795	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R797	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R799	CRJ10DF49R9T	RES, CHIP(1608/1%/49.9ohm)
R804	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R822	CRJ06IJ182T	RES, CHIP(1005/5%/1.8Kohm)
R830	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R836	CRJ06IJ182T	RES, CHIP(1005/5%/1.8Kohm)
R860	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R863	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R866	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R867	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R871	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R875	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R878	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
CN63	CJP23GB210ZY	WAFER,(CARD CABLE,ANGLE,SMT,1MM,10008HR-23L(BK))10008HR-23L
C103	CCUI1E103KC	CAP, CHIP(1005, 25V/0.01uF)
C112	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C114	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C139	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C143	CCUS1H470JA	CAP, CHIP(1608, 50V/47pF)
C145	CCUS1H470JA	CAP, CHIP(1608, 50V/47pF)
C146	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C147	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C148	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C150	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C151	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C155	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C157	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C167	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C182	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C185	CCSNA0J220B	CAP, CHIP TANTAL(22uF/6.3V, NingXia XingRi)
C199	CCUS1H270JA	CAP, CHIP(1608, 50V/27pF)
C205	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C207	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C209	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)
C210	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C226	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C240	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C241	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C247	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C252	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C253	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF)
C254	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C260	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C261	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C262	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C265	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)

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C272	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C273	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C278	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C279	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C281	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C282	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C286	CCUI1H470JA	CAP, CHIP(1005, 50V/47pF)
C291	CCUI1H470JA	CAP, CHIP(1005, 50V/47pF)
C292	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C293	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C294	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C299	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C311	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C313	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C319	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C321	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C327	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C341	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C347	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C350	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C356	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C360	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C365	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C368	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C374	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C377	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C410	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C424	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C428	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)
C431	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C439	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)
C441	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C451	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C452	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C488	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C489	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C493	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C494	CCUI1C104KC	CAP, CHIP (1005, 16V/0.1uF)
C495	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C500	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C505	CCEC1CRV471T	CAP, SMD ELECT(16V/470uF) MANLEX RV, 10X10
C506	CCEC1ACEEX151TY	CAP, ELEC SMD (150uF/10V, 8X10.5, SANYO) 10CE150EX
C509	CCEC1ERV221T	CAP, SMD ELECT(MANLEX, RV, 25V/220, 8X10)
C510	CCEC1ERV221T	CAP, SMD ELECT(MANLEX, RV, 25V/220, 8X10)
C511	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C512	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C513	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C515	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C517	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C518	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C520	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C521	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C526	CCSNA1C100B	CAP, CHIP TANTAL(10uF/16V, NingXia XingRi)
C527	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)

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C531	CCEC1ERV221T	CAP, SMD ELECT(MANLEX, RV, 25V/220, 8X10)
C534	CCEC1ERV221T	CAP, SMD ELECT(MANLEX, RV, 25V/220, 8X10)
C535	CCEC1CRV471T	CAP, SMD ELECT(16V/470uF) MANLEX RV, 10X10
C539	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C542	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C548	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
D902	CVDSS34SR	DIODE , SCHOTTKY (40V,3A, DO-214AC) DELTA
D903	CVDSS34SR	DIODE , SCHOTTKY (40V,3A, DO-214AC) DELTA
D904	CVDSS34SR	DIODE , SCHOTTKY (40V,3A, DO-214AC) DELTA
IC901	CVIADV3014BSTZ	I.C, HDMI1.4 Repeater(LQFP-144P) ADV3014BSTZ
IC902	CVIADV7844KBCZ	I.C, HDMI RX/Decoder(BGA-425P) ADV7844KBCZ
IC903	CVITC74VCX541FT	I,C, OCTAL BUS BUFFER (TOSHIBA) TC74VCX541FT
IC904	CVIA3S56D40FTPG5	I.C, 256MB DDR SDRAM(TOSPII-66P)
IC905	CVI74FCT38072DCGI	I.C, CLOCK DRIVER (IDT) IDT74FCT38072DCGI, IDT
IC906	CVIFLI30336AC	I.C, VIDEO PROCESSOR (GENESIS) FLI30336
IC907	CVIANAM1550AV	I.C, FLASH(CVIMX29LV320DTTI-70G,
IC907	CVIMX29LV320DTTI-70G	I.C, FLASH MEMORY (32MBIT,TSOP-48P)
IC908	CVIA3S56D40FTPG5	I.C, 256MB DDR SDRAM(TOSPII-66P) A3S56D40FTPG5
IC909	CVIA3S56D40FTPG5	I.C, 256MB DDR SDRAM(TOSPII-66P) A3S56D40FTPG5
IC911	CVI74ALVCH16827DGG	I.C, BUFFER/DEIVER(TSSOP-56P)74ALVCH16827DGG,118/NX
IC912	CVI74ALVCH16827DGG	I.C, BUFFER/DEIVER(TSSOP-56P)74ALVCH16827DGG,118/NXP SEMI
IC915	CVI74ALVCH16827DGG	I.C, BUFFER/DEIVER(TSSOP-56P)74ALVCH16827DGG,118/NXP SEMI
IC916	CVI74ALVCH16827DGG	I.C, BUFFER/DEIVER(TSSOP-56P)74ALVCH16827DGG,118/NXP SEMI
IC917	CVINJU7754F05TE1	I.C, REGULATOR(SOT-23-5) NJU7754F05-TE1
IC918	CVIADV7511KSTZ	I.C, HDMI TX (LQFP-100P) ADV7511KSTZ
IC922	HVINJM2391DL125	I.C, CHIP REGULATOR (+2.5V) JRC NJM2391DL125
IC923	CVISI8005QTL	IC, DCDC Converter (3.5A, SOP8) SANKEN SI8005QTL
IC924	CVIKIA1117BS50	I.C , REGULATOR(SOT-223) KIA1117BS50
IC925	CVIKIA7809AF	IC , REGULATOR (+9V,DPAK) KIA7809AF
IC927	CVISI8005QTL	IC , DCDC Converter (3.5A, SOP8) SANKEN SI8005QTL
IC929	HVINJM2391DL125	I.C , CHIP REGULATOR (+2.5V) JRC NJM2391DL125
IC930	CVISI8005QTL	IC , DCDC Converter (3.5A, SOP8) SANKEN SI8005QTL
JK92	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY
JK93	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY
JK94	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY
JK95	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY
JK96	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY
JK97	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P) H050FS019G643BY
L801	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L802	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L808	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L809	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L810	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L811	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L814	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L815	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L817	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L842	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L849	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L851	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L852	CLQ12E100MRZ	COIL , SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L853	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L854	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L855	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER

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L856	CLQ12E100MRZ	COIL, SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L858	CLQ12E100MRZ	COIL, SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L859	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L860	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm) HCB1608KF-600T30/COILMASTER
L862	CLQ12E100MRZ	COIL , SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L863	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L865	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
L866	CLZ9R005Z	FERRITE CHIP BEAD(1608/60ohm)HCB1608KF-600T30/COILMASTER
Q901	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q902	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q903	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
Q904	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q905	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
Q906	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q907	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
Q908	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
Q909	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
Q910	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q911	CVTKRC103S	TRANSISTOR , CHIP , SOT-23 KRC103S
Q912	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
RN10	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN11	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN12	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN14	CRJ104DJ220T	RES , CHIP , 22 OHM, 5% , 1608 X 4 22X4/2012
RN15	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN16	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN17	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN18	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN19	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN20	CRJ104DJ220T	RES , CHIP , 22 OHM, 5% , 1608 X 4 22X4/2012
RN21	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN22	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN23	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN24	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN25	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN26	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN27	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN28	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN29	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN30	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN31	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN33	CRJ062IJ330T	RES, CHIP(1005/5%/33ohm*2)
RN34	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN35	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN37	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN38	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN39	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN42	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN43	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN44	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)
RN46	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN48	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN49	CRJ062IJ330T	RES, CHIP(1005/5%/33ohm*2)
RN51	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)

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RN53	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN54	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN55	CRJ062IJ330T	RES, CHIP(1005/5%/33ohm*2)
RN56	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN57	CRJ062IJ330T	RES, CHIP(1005/5%/33ohm*2)
RN58	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN59	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN60	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN61	CRJ062IJ330T	RES, CHIP(1005/5%/33ohm*2)
RN72	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN73	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN74	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN75	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN76	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN77	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN78	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN79	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN80	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
RN81	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)
R604	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R606	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R607	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)
R610	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)
R611	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)
R613	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R616	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R618	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R620	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R621	CRJ10DF8201T	RES, CHIP(1608/1%/8.2Kohm)
R625	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R626	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R627	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R628	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R630	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R635	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R636	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R638	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R640	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R642	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R644	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R645	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R646	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R647	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R649	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R650	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R653	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R654	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R655	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R658	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R659	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R661	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R662	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R666	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)
R669	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)

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R673	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R680	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R685	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R689	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R691	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R703	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)
R705	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R710	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R716	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R718	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R719	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R721	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R722	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R723	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)
R724	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R725	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R726	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R727	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R728	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R730	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R732	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R735	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R736	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R738	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R739	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R740	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R741	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R742	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R744	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R746	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R747	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R749	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R750	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)
R752	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R753	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R754	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)
R755	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R758	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R761	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R762	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R763	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R764	CRJ06IJ220T	RES, CHIP(1005/5%/22ohm)
R765	CRJ06IJ560T	RES, CHIP(1005/5%/56ohm)
R767	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R768	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)
R776	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R779	CRJ10DF8201T	RES, CHIP(1608/1%/8.2Kohm)
R787	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R792	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R796	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)
R826	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R834	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)
R838	CRJ10DJ123T	RES, CHIP(1608/5%/12Kohm)
R839	CRJ10DJ273T	RES, CHIP(1608/5%/27Kohm)

Reference Designator	Part Number	Description

HDMI PCB ASS'Y COP12328E

R840	CRJ10DJ512T	RES, CHIP(1608/5%/5.1Kohm)
R841	CRJ10DJ123T	RES, CHIP(1608/5%/12Kohm)
R843	CRJ10DJ202T	RES, CHIP(1608/5%/2Kohm)
R844	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R845	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R846	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R847	CRJ10DJ512T	RES, CHIP(1608/5%/5.1Kohm)
R851	CRJ10DJ512T	RES, CHIP(1608/5%/5.1Kohm)
R852	CRJ10DJ202T	RES, CHIP(1608/5%/2Kohm)
R854	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R856	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R858	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R859	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R861	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R862	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)
R864	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)
R865	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R872	CRJ10DJ623T	RES, CHIP(1608/5%/62Kohm)
R873	CRJ10DJ623T	RES, CHIP(1608/5%/62Kohm)
R874	CRJ10DJ623T	RES, CHIP(1608/5%/62Kohm)
R879	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R880	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R881	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R882	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R883	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R884	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
X901	COX28636E330S	CRYSTAL, 28.636MHz, HC-49/SMD, 33pF, 30PPM
X902	COX28636E330S	CRYSTAL, 28.636MHz, HC-49/SMD, 33pF, 30PPM
X903	COX19660E330S	CRYSTAL, 19.660MHz, HC-49/SMD, 33pF, 20PPM
	CMY1A297	HEAT SINK
BN301	CJP30GB143ZB	DIP, SOCKET(30PIN, 2.54mm,ANGLE)
BN61	CWB1D00718058	WIRE ASS'Y (2.5mm, 7p, 180mm)
C528	CCEA1EH222E	CAP, ELECT(25V/2200uF) 2200UF 25V

VIDEO PCB ASS'Y COP12361E

C179	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C180	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C181	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C182	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C183	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C184	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C185	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C187	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C188	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C189	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C190	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C191	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C192	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C193	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C194	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C195	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C196	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C197	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)

VIDEO PCB ASS'Y **COP12361E**

Reference Designator	Part Number	Description
C198	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C200	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C202	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)
C203	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)
D705	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D706	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D707	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D708	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D710	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
L802	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
R567	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R568	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R569	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R570	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R571	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R572	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R573	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R574	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R578	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R579	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R580	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R581	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R582	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R583	CRJ10DJ474T	RES, CHIP(1608/5%/470Kohm)
R584	CRJ10DJ220T	RES, CHIP(1608/5%/22ohm)
R585	CRJ10DJ474T	RES, CHIP(1608/5%/470Kohm)
R586	CRJ10DJ220T	RES, CHIP(1608/5%/22ohm)
R587	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R589	CRJ10DJ220T	RES, CHIP(1608/5%/22ohm)
R591	CRJ10DJ220T	RES, CHIP(1608/5%/22ohm)
R592	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R593	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R594	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)
R596	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R599	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)
R601	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R602	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R603	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)
R605	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R606	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R608	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R610	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
C101	CCUS1H472KC	CAP, CHIP(1608, 50V/4700pF)
C102	CCUS1H472KC	CAP, CHIP(1608, 50V/4700pF)
C103	CCUS1H472KC	CAP, CHIP(1608, 50V/4700pF)
C104	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C105	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C108	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C109	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)
C110	CCUS1H020CA	CAP, CHIP(1608, 50V/2pF)
C111	CCUS1H020CA	CAP, CHIP(1608, 50V/2pF)
C112	CCUS1H020CA	CAP, CHIP(1608, 50V/2pF)
C113	CCUS1H020CA	CAP, CHIP(1608, 50V/2pF)
C114	CCUS1H020CA	CAP, CHIP(1608, 50V/2pF)

VIDEO PCB ASS'Y **COP12361E**

Reference Designator	Part Number	Description
C115	CCUS1H020CA	CAP, CHIP(1608, 50V/2pF)
C116	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C117	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C118	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C119	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C120	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C121	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C122	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C123	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C124	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C143	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C144	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C145	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C146	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C147	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C148	CCUS1H330JA	CAP, CHIP(1608, 50V/33pF)
C162	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)
C164	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C165	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C166	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C204	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)
C205	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)
C206	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)
D704	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
D709	CVD1SS355T	DIODE, SMD, SWITCHING 1SS355/SOD-323
IC901	CVINJW1321FP1	I.C , VIDEO S/W (JRC) NJW1321FP1
IC903	CVIKIA7809AF	IC , REGULATOR (+9V,DPAK) KIA7809AF
IC904	CVIKIA1117BS50	I.C , REGULATOR(SOT-223) KIA1117BS50
IC905	CVINJM2595MTE1	I.C , VIDEO S/W (JRC) NJM2595MTE1
IC906	HVI74HCU04AFNG	I.C , INVERTER (TOSHIBA) TC74HCU04AFNG(TOSHIBA)
IC907	CVIAZ4580MTR-E1	I.C , OPAMP(DUAL LOW NOISE) AZ4580MTR-E1/SOIC8/BCD
IC908	CVITL072CDR	I.C , OP AMP/SOP/8P (TI)
IC909	CVINJM2505AFTE1	I.C, VIDEO AMP(4.5~9.0V,200MW,MTP5)JRC NJM2505AF-TE1, JRC
IC910	CVINJM2505AFTE1	I.C, VIDEO AMP(4.5~9.0V,200MW,MTP5)JRC NJM2505AF-TE1, JRC
IC911	HVINJM2581MTE1	I.C (JRC) NJM2581MTE1
IC912	CVINJM2505AFTE1	I.C, VIDEO AMP(4.5~9.0V,200MW,MTP5)JRC NJM2505AF-TE1, JRC
IC918	CVIILX3232DT	I.C, RS232 DRIVER(3.3V) ILX3232DT
L801	CLZ9Z014Z	FERRITE, CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
Q901	HVTKRC102S	TRANSISTOR , CHIP , SOT-23 KRC102S
Q902	HVTKRA107S	TRANSISTOR , CHIP , SOT-23 KRA107S
Q904	HVTKRC102S	TRANSISTOR , CHIP , SOT-23 KRC102S
Q905	HVTKRA102S	TRANSISTOR , CHIP , SOT-23 KRA102S
Q906	HVTKRC102S	TRANSISTOR , CHIP , SOT-23 KRC102S
Q908	HVTKRC107S	TRANSISTOR , CHIP , SOT-23 KRC102S
Q910	HVTKRA107S	TRANSISTOR , CHIP , SOT-23 KRA107S
Q911	HVTKRC107S	TRANSISTOR , CHIP , SOT-23 KRC107S
R501	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R502	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R503	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R504	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R505	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R506	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R507	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)
R508	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)

Reference Designator	Part Number	Description	
VIDEO PCB ASS'Y	**COP12361E**		
R509	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)	
R510	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)	
R511	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	
R512	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)	
R513	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	
R514	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	
R515	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	
R516	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	
R517	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
R518	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
R519	CRJ10DF5101T	RES, CHIP(1608/1%/5.1Kohm)	1608 SIZE
R520	CRJ10DF5101T	RES, CHIP(1608/1%/5.1Kohm)	1608 SIZE
R521	CRJ10DF4992T	RES, CHIP(1608/1%/49.9Kohm)	
R522	CRJ10DF4992T	RES, CHIP(1608/1%/49.9Kohm)	
R523	CRJ10DF4992T	RES, CHIP(1608/1%/49.9Kohm)	
R524	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	
R525	CRJ10DF4992T	RES, CHIP(1608/1%/49.9Kohm)	
R526	CRJ10DF4992T	RES, CHIP(1608/1%/49.9Kohm)	
R527	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	
R528	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	
R529	CRJ10DF4992T	RES, CHIP(1608/1%/49.9Kohm)	
R533	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	
R534	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R538	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)	
R539	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	
R540	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	
R541	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)	
R542	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	
R543	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	
R544	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)	
R545	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	
R546	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)	
R547	CRJ10DJ474T	RES, CHIP(1608/5%/470Kohm)	
R548	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	
R549	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	
R550	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
R552	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R553	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R554	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R555	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	
R556	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	
R557	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	
R559	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R560	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	
R561	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)	
R562	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)	
R563	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R564	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	
R565	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	
R575	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	
R576	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	
R577	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	
R611	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	
R612	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	

Reference Designator	Part Number	Description	
VIDEO PCB ASS'Y		**COP12361E**	
C106	CCEA1EH221T	CAP, ELECT(25V/220uF)	KR3-25V221MC(8*11.5L)
C107	CCEA1CH471T	CAP, ELECT(16V/470uF)	KR3-16V471MC(8*11.5L)
C125	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C126	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C127	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C128	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF)	KR3-50V4R7MA(5*11L)
C129	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C130	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C131	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C132	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C133	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C134	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C135	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C136	CCEA1HH1R0T	CAP, ELECT(50V/1uF)	KR3-50V010MA(5*11L)
C137	CCEA1HH1R0T	CAP, ELECT(50V/1uF)	KR3-50V010MA(5*11L)
C138	CCEA1HH1R0T	CAP, ELECT(50V/1uF)	KR3-50V010MA(5*11L)
C139	CCEA1HH1R0T	CAP, ELECT(50V/1uF)	KR3-50V010MA(5*11L)
C140	CCEA1HH1R0T	CAP, ELECT(50V/1uF)	KR3-50V010MA(5*11L)
C141	CCEA1HH1R0T	CAP, ELECT(50V/1uF)	KR3-50V010MA(5*11L)
C142	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C149	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C150	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF)	KR3-50V4R7MA(5*11L)
C151	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C152	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C153	CCEA1CH221T	CAP, ELECT(16V/220uF)	KR3-16V221MB(6.3*11L)
C154	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C155	CCEA1CH470T	CAP, ELECT(16V/47uF)	KR3-16V470MA(5*11L)
C156	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C157	CCEA1CH470T	CAP, ELECT(16V/47uF)	KR3-16V470MA(5*11L)
C158	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C159	CCEA1CH470T	CAP, ELECT(16V/47uF)	KR3-16V470MA(5*11L)
C160	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C161	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C163	CCEA1CH470T	CAP, ELECT(16V/47uF)	KR3-16V470MA(5*11L)
C168	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C169	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C170	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C171	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C172	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C173	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C174	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C175	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C176	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C177	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
Q903	HVTKTA1266YT	TRANSISTOR	TKTA1266YT
Q907	HVTKTA1266YT	TRANSISTOR	TKTA1266YT
BN51	CWB1D00910058	WIRE ASS'Y (9PIN, 2.5mm,100mm,STRAIGHT,#22)	
BN53	CJP18GB142ZB	PIN HEADER (18P, 2.54mm) , ANGLE TYPE	
CN40	CJP09GI237ZW	LOCK-WAFER/STRAIGHT/2.5mm	
CN41	CJP30GB142ZB	30PIN, 2.54MM PIN HEADER	
CN52	CJP05GB46ZY	WAFER,20017WR(2mm,ANGLE)	
IC902	CVIKIA7905PI	I.C,REGULATOR(-5V,T0220IS)	KIA7905PI (KEC)
IC913	HVIKIA7812API	I.C,REGULATOR(+12V,T0220IS)	KIA78XXAPI
IC915	BVIKP1010B	IC, PHOTO COUPLER (COSMO) KP1010B	

Reference Designator	Part Number	Description

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IC916	BVIKP1010B	IC, PHOTO COUPLER (COSMO) KP1010B
JK91	CJJ4R046Z	JACK , BOARD
JK92	CJJ4P074Z	JACK , RCA(4P, GOLD PLATE (Y/Y/Y/Y) 41100861
JK93	CJJ9N007Z	JACK , DIN SOCKET(8P) DIN-801
JK94	CJJ9L016Z	JACK , IPOD CONNECTOR (36PIN) SCSI36P
JK95	CJJ9W001Z	JACK, 9P D-SUB FEMALE(RS-232C) HDR-9PF-RSB/SEMCO
JK97	HJJ1D002Z	JACK , STEREO(2P 3.5PIE) SR7400
JK98	HJJ1D002Z	JACK , STEREO(2P 3.5PIE) SR7400

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C501	CCEA1HH100T	CAP, ELECT(50V/10uF) KR3-50V100MA(5*11L)
C502	CCEA1HH100T	CAP, ELECT(50V/10uF) KR3-50V100MA(5*11L)
C503	CCEA1HH100T	CAP, ELECT(50V/10uF) KR3-50V100MA(5*11L)
C504	CCEA1HH100T	CAP, ELECT(50V/10uF) KR3-50V100MA(5*11L)
C505	CCEA1HH100T	CAP, ELECT(50V/10uF) KR3-50V100MA(5*11L)
C506	CCKT1H331KB	CAP, CERAMIC(50V/330pF/K)
C507	CCBS1H331KBT	CAP, CERAMIC(330PF/50V) CH UP025 B331K-A-B Z
C508	CCBS1H331KBT	CAP, CERAMIC(330PF/50V) CH UP025 B331K-A-B Z
C509	CCKT1H331KB	CAP, CERAMIC(50V/330pF/K)
C510	CCBS1H331KBT	CAP, CERAMIC(330PF/50V) CH UP025 B331K-A-B Z
C561	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C562	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C563	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C564	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C565	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C566	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C567	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C568	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C569	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C570	CCEA1CH101T	CAP, ELECT(16V/100uF) KR3-16V101MA(5*11L)
C571	CCBS1H681KBT	CAP, CERAMIC(680PF/50V) CH UP025 B681K-A-B Z
C572	CCBS1H681KBT	CAP, CERAMIC(680PF/50V) CH UP025 B681K-A-B Z
C573	CCBS1H681KBT	CAP, CERAMIC(680PF/50V) CH UP025 B681K-A-B Z
C574	CCBS1H681KBT	CAP, CERAMIC(680PF/50V) CH UP025 B681K-A-B Z
C575	CCBS1H681KBT	CAP, CERAMIC(680PF/50V) CH UP025 B681K-A-B Z
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
C631	CCEA2AH470T	CAP, ELECT KR3-100V470MC
C634	CCEA2AH470T	CAP, ELECT KR3-100V470MC
C635	CCEA2AH470T	CAP, ELECT KR3-100V470MC
C636	CCEA2AH470T	CAP, ELECT KR3-100V470MC
C639	CCEA2AH470T	CAP, ELECT KR3-100V470MC
C640	CCEA2AH470T	CAP, ELECT KR3-100V470MC
C649	CCEA1HHR15T	CAP, ELECT(50V/0.15uF) 0.15UF 50V
C650	CCBS1H104ZFT	CAP, CERAMIC 0.1UF 50V Z

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Reference Designator	Part Number	Description	
C681	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C682	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C683	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C684	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C685	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C704	CCKT1H102KB	CAP, CERAMIC(50V/1000pF/K)	
C716	CCEA1CH220T	CAP, ELECT(16V/22uF)	KR3-16V220MA(5*11L)
C725	CCKT1H221KB	CAP, CERAMIC(50V/220pF/K)	
C801	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C802	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
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
C807	CCEA2AH470T	CAP, ELECT	KR3-100V470MC
C808	CCEA2AH470T	CAP, ELECT	KR3-100V470MC
C809	CCEA2AH470T	CAP, ELECT	KR3-100V470MC
C810	CCEA2AH470T	CAP, ELECT	KR3-100V470MC
C811	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C812	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C813	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C814	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C815	CCKT1H331KB	CAP, CERAMIC(50V/330pF/K)	
C816	CCBS1H331KBT	CAP, CERAMIC(330PF/50V)	CH UP025 B331K-A-B Z
C817	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C818	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C819	CCBS1H681KBT	CAP, CERAMIC(680PF/50V)	CH UP025 B681K-A-B Z
C820	CCBS1H681KBT	CAP, CERAMIC(680PF/50V)	CH UP025 B681K-A-B Z
C851	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C852	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C853	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C854	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C855	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C856	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C857	CCEA1HH100T	CAP, ELECT(50V/10uF)	KR3-50V100MA(5*11L)
C900	HCQI1H473JZT	CAP, MYLAR	0.047UF 50V J
C901	HCQI1H473JZT	CAP, MYLAR	0.047UF 50V J
C905	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C907	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C908	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
C910	HCQI1H473JZT	CAP, MYLAR	0.047UF 50V J
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	CCEA1HH2R2T	CAP, ELECT(50V/2.2uF)	KR3-50V2R2MA(5*11L)
C927	CCKT1H102KB	CAP, CERAMIC(50V/1000pF/K)	
C932	CCEA1CH101T	CAP, ELECT(16V/100uF)	KR3-16V101MA(5*11L)
C936	CCEA1CH221T	CAP, ELECT(16V/220uF)	KR3-16V221MB(6.3*11L)
C939	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF)	KR3-50V4R7MA(5*11L)
C940	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)
C950	CCEA1AH471T	CAP, ELECT(10V/470uF)	KR3-10V471MB(6.3*11L)

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Reference Designator	Part Number	Description	
C951	CCEA1HH470T	CAP, ELECT(50V/47uF)	KR3-50V470MB(6.3*11L)
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	CCEA1HH2R2T	CAP, ELECT(50V/2.2uF)	KR3-50V2R2MA(5*11L)
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(50V/1uF)	KR3-50V010MA(5*11L)
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	CCBS1H223ZFT	CAP, CERAMIC(22000PF/50V)	CH UP025 F223Z-A-B J
D501	CVD1SS133MT	DIODE , SWITCHING	1SS133
D502	CVD1SS133MT	DIODE , SWITCHING	1SS133
D503	CVD1SS133MT	DIODE , SWITCHING	1SS133
D504	CVD1SS133MT	DIODE , SWITCHING	1SS133
D505	CVD1SS133MT	DIODE , SWITCHING	1SS133
D581	CVD1SS133MT	DIODE , SWITCHING	1SS133
D582	CVD1SS133MT	DIODE , SWITCHING	1SS133
D583	CVD1SS133MT	DIODE , SWITCHING	1SS133
D584	CVD1SS133MT	DIODE , SWITCHING	1SS133
D585	CVD1SS133MT	DIODE , SWITCHING	1SS133
D701	CVD1SS133MT	DIODE , SWITCHING	1SS133
D801	CVD1SS133MT	DIODE , SWITCHING	1SS133
D802	CVD1SS133MT	DIODE , SWITCHING	1SS133
D803	CVD1SS133MT	DIODE , SWITCHING	1SS133
D804	CVD1SS133MT	DIODE , SWITCHING	1SS133
D901	CVD1N4003ST	DIODE , RECT	1N4003
D903	CVD1SS133MT	DIODE , SWITCHING	1SS133
D912	CVD1SS133MT	DIODE , SWITCHING	1SS133
D914	C3A206	WIRE , COPPER	SN95/PB5 , 0.6
D915	CVD1N4003ST	DIODE , RECT	1N4003
D917	CVD1SS133MT	DIODE , SWITCHING	1SS133
D950	CVD1SS133MT	DIODE , SWITCHING	1SS133
D953	CVD1SS133MT	DIODE , SWITCHING	1SS133
D954	CVD1N4003SRT	DIODE , RECT	1N4003
D955	CVD1N4003SRT	DIODE , RECT	1N4003
D956	CVD1N4003ST	DIODE , RECT	1N4003
D957	CVD1N4003ST	DIODE , RECT	1N4003
D961	CVD1N4003ST	DIODE , RECT	1N4003
D962	CVD1N4003ST	DIODE , RECT	1N4003
D963	CVD1N4003ST	DIODE , RECT	1N4003
D964	CVD1SS133MT	DIODE , SWITCHING	1SS133
D967	CVD1SS133MT	DIODE , SWITCHING	1SS133
D968	CVD1SS133MT	DIODE , SWITCHING	1SS133
D969	CVD1SS133MT	DIODE , SWITCHING	1SS133
D971	CVD1SS133MT	DIODE , SWITCHING	1SS133
D972	CVD1SS133MT	DIODE , SWITCHING	1SS133

Reference Designator	Part Number	Description	
MAIN PCB ASS'Y	**COP12364E**		
D975	CVD1SS133MT	DIODE , SWITCHING 1SS133	
D976	CVD1SS133MT	DIODE , SWITCHING 1SS133	
D979	CVDZJ4.3BT	DIODE , ZENER 4.3V ZJ4.3B 1/2W	
ET90	HJT1A025	PLATE , EARTH MET37-0002	
ET91	HJT1A025	PLATE , EARTH MET37-0002	
F901	KJCFC5S	HOLDER , FUSE	2.000000
Q501	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q502	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q503	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q504	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q505	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q511	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q512	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q513	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q514	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q515	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q516	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q517	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q518	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q519	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q520	CVT2SC2240BL	TRANSISTOR, 2SC2240BL (NPN, TO-92, LOW NOISE, TOS	
Q541	HVTKTC3198YT	TRANSISTOR KTC3198Y	
Q542	HVTKTC3198YT	TRANSISTOR KTC3198Y	
Q543	HVTKTC3198YT	TRANSISTOR KTC3198Y	
Q544	HVTKTC3198YT	TRANSISTOR KTC3198Y	
Q545	HVTKTC3198YT	TRANSISTOR KTC3198Y	
Q556	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q557	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q558	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q559	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q560	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q561	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q562	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q563	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q564	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q565	CVT2SC2240BL	TRANSISTOR , 2SC2240BL NPN, TO-92, LOW NOISE, TOS	
Q601	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q602	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q603	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q604	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q605	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q641	HVTKRC102MT	TRANSISTOR , TO-92M KRC102M	
Q642	HVTKTC3199YT	TRANSISTOR , KTC3199Y KTC3199Y/TO-92M	
Q681	HVTKTC3199YT	TRANSISTOR , KTC3199Y KTC3199Y/TO-92M	
Q682	HVTKTC3199YT	TRANSISTOR , KTC3199Y KTC3199Y/TO-92M	
Q683	HVTKTC3199YT	TRANSISTOR , KTC3199Y KTC3199Y/TO-92M	
Q684	HVTKTC3199YT	TRANSISTOR , KTC3199Y KTC3199Y/TO-92M	
Q685	HVTKTC3199YT	TRANSISTOR , KTC3199Y KTC3199Y/TO-92M	
Q701	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q702	HVTKTA1268GRT	TRANSISTOR KTA1268GR	
Q703	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M	
Q704	HVTKTA1267YT	TRANSISTOR KTA1267Y	
Q705	HVTKRC107MT	TRANSISTOR , TO-92M KRC107M	
Q716	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M	

Reference Designator	Part Number	Description

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Q801	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q802	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q812	HVTKTA1268GRT	TRANSISTOR KTA1268GR
Q813	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q814	HVTKTA1268GRT	TRANSISTOR
Q815	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q816	HVTKTA1268GRT	TRANSISTOR
Q817	HVTKTA1268GRT	TRANSISTOR
Q818	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q819	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q820	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q821	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q822	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q823	CVT2SC2240BL	TRANSISTOR , 2SC2240BL (NPN, TO-92, LOW NOISE, TOS
Q824	HVTKTC3198YT	TRANSISTOR KTC3198Y
Q825	HVTKTC3198YT	TRANSISTOR KTC3198Y
Q901	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q911	HVTKTA1271YT	TRANSISTOR KTA1271Y
Q912	HVTKTA1271YT	TRANSISTOR KTA1271Y
Q913	HVTKTA1271YT	TRANSISTOR KTA1271Y
Q915	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q916	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q917	HVTKRC102MT	TRANSISTOR , KRC102M
Q938	HVTKRA107MT	TRANSISTOR , KRA107M
Q939	HVTKRA107MT	TRANSISTOR , KRA107M
Q941	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q942	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q943	HVTKTC3199YT	TRANSISTOR , KTC3199Y/TO-92M
Q950	HVTKTA1267YT	TRANSISTOR KTA1267Y
Q951	HVTKTC3198YT	TRANSISTOR KTC3198Y
Q952	HVTKTC3198YT	TRANSISTOR KTC3198Y
Q960	HVTKRC107MT	TRANSISTOR , TO-92M KRC107M
Q961	HVTKTA1024YT	TRANSISTOR , KTA1024Y KTA1024Y/TO-92L
R500	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R501	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R502	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R503	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R504	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R505	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R506	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R507	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R508	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R509	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R510	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R511	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R512	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R513	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R514	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R515	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R516	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R517	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R518	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R519	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R520	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)

Reference Designator	Part Number	Description

MAIN PCB ASS'Y COP12364E

R521	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R522	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R523	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R524	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R525	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R531	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R532	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R533	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R534	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R535	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R536	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R537	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R538	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R539	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R540	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R541	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R542	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R543	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R544	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R545	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R556	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R557	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R558	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R559	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R560	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R561	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R562	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R563	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R564	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R565	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R566	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R567	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R568	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R569	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R570	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R571	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R572	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R573	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R574	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R575	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R576	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R577	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R578	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R579	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R580	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R581	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R582	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R583	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R584	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R585	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R586	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R587	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R588	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R589	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)

Reference Designator	Part Number	Description

MAIN PCB ASS'Y COP12364E

R590	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R591	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R592	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R593	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R594	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R595	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R596	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R597	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R598	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R599	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R600	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R601	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R602	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R603	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R604	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R605	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R606	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R607	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R608	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R609	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R610	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R611	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R612	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)
R631	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R632	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R633	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R634	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R635	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R636	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R637	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R638	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R639	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R640	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R643	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R644	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R645	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,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(1/4W,47ohm,J)
R667	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R668	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R669	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R670	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R671	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R672	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R673	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)

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R674	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R675	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R676	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R677	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R678	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R679	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R680	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R681	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R682	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R683	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R684	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R685	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R686	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R687	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R688	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R689	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R690	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R696	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R697	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R698	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R699	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R700	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R701	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R702	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R703	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R704	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R705	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R708	CRD20TJ564T	RES, CARBON(1/5W,560Kohm,J)
R709	C3A206	WIRE , COPPER
R710	CRD20TJ1R0T	RES, CARBON(1/5W,1ohm,J)
R711	CRD20TJ272T	RES, CARBON(1/5W,2.7Kohm,J)
R712	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)
R713	CRD20TJ563T	RES, CARBON(1/5W,56Kohm,J)
R714	C3A206	WIRE , COPPER
R715	CRD20TJ153T	RES, CARBON(1/5W,15Kohm,J)
R716	CRD20TJ392T	RES, CARBON(1/5W,3.9Kohm,J)
R717	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)
R771	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R772	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R773	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R774	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R775	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R776	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R777	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R781	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R782	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R783	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R784	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R785	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R786	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R787	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)
R801	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R802	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R803	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)

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Reference Designator	Part Number	Description
R804	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R805	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R807	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)
R808	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R809	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)
R812	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R813	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R814	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)
R815	CRD25TJ470T	RES, CARBON(1/4W,47ohm,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) NONFLAMMABLE
R822	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R823	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R824	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE
R830	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R831	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R832	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R833	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R834	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R835	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R836	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R837	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R838	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R839	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R840	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R841	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R842	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R843	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R844	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R845	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R848	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R849	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R850	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R851	CRD20TJ132T	RES, CARBON(1/5W,1.3Kohm,J)
R852	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R853	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R854	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R855	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)
R856	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R857	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R858	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R859	CRD20TJ221T	RES, CARBON(1/5W,220ohm,J)
R860	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R861	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)
R862	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R863	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R870	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R871	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)
R872	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R873	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)
R874	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)

MAIN PCB ASS'Y COP12364E

Reference Designator	Part Number	Description	
R875	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
R876	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
R877	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
R878	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
R879	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
R880	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
R882	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R883	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R884	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R885	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R886	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R887	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R888	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
R891	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R892	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R893	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R894	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R895	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R896	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R897	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
R901	CRD20TJ272T	RES, CARBON(1/5W,2.7Kohm,J)	
R908	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)	
R909	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)	
R912	CRD20TJ332T	RES, CARBON(1/5W,3.3Kohm,J)	
R915	KRG1SANJ101RT	RES, METAL(OXIDE)FILM,5%	100/1W(RADIAL)
R917	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
R918	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
R919	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
R920	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
R924	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)	
R925	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)	
R926	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)	
R927	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)	
R928	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
R929	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
R930	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
R933	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
R934	CRD20TJ153T	RES, CARBON(1/5W,15Kohm,J)	
R935	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
R939	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
R940	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
R941	CRD25TJ223T	RES, CARBON(1/4W,22Kohm,J)	
R942	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
R943	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
R944	CRD25TJ223T	RES, CARBON(1/4W,22Kohm,J)	
R945	CRD25TJ223T	RES, CARBON(1/4W,22Kohm,J)	
R946	CRD25TJ223T	RES, CARBON(1/4W,22Kohm,J)	
R947	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
R952	CRD25TJ223T	RES, CARBON(1/4W,22Kohm,J)	
R953	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
R954	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
R955	CRD20TJ563T	RES, CARBON(1/5W,56Kohm,J)	
R956	CRD20TJ274T	RES, CARBON(1/5W,270Kohm,J)	
R957	CRD20TJ153T	RES, CARBON(1/5W,15Kohm,J)	

MAIN PCB ASS'Y COP12364E

Reference Designator	Part Number	Description
R958	CRD20TJ563T	RES, CARBON(1/5W,56Kohm,J)
R959	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)
R960	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
R961	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)
R962	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)
R964	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R965	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)
R986	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)
R987	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)
R988	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)
R989	CRD20TJ302T	RES, CARBON(1/5W,3Kohm,J)
R991	CRD20TJ822T	RES, CARBON(1/5W,8.2Kohm,J)
R998	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)
VR81	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
VR82	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
VR83	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
VR84	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
VR85	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
VR86	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
VR87	CVN12A221B03T	RES , SEMI FIXED (220 OHM) NVZ6TLTAB221 / HOKURIKU
	CMYAVR3650	HEAT SINK ASS'Y
	CFNRDH8025S	MOTOR , FAN (80X80X25) 12V, 0.17A
	CHD1A012R	SCREW , SPECIAL 14.000000
	CHD1A036R	SCREW , SPECIAL 4.000000
	CHD3A012R	SCREW , SPECIAL 7.000000
	CMD1A417	BRACKET , PCB AG-D8900 2.000000
	CMD1A674	BRACKET , H/S 2.000000
	CMD1A694	BRACKET , FAN 1.000000
	CMY4A314	HEAT SINK AVR3650 1.000000
	CTB3+8JR	SCREW 6.000000
	CTW3+8JR	SCREW 2.000000
Q652	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q653	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q654	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q655	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q657	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q658	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q659	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q660	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q661	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q670	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q803	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q804	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q805	CVT2SD2560P43M	TRANSISTOR Power, 2SD2560, MT-100(TO3P) w MICA M43
Q807	CVT2SB1647P43M	TRANSISTOR Power, 2SB1647, MT-100(TO3P) w MICA M43
Q851	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
Q852	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
Q853	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
Q854	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
Q855	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
Q856	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
Q857	HVTKTD600KGR	TRANSISTOR , BIAS KTD600KGR
BN14	CWB1D00718088	WIRE ASS'Y (2.5MM, 180MM, 7PIN, DUAL-DIPPING TYPE)
BN15	CWB1D00915088	WIRE ASS'Y (2.5mm, 150mm, 9pin, Dual-dipping type)

Reference Designator	Part Number	Description

MAIN PCB ASS'Y COP12364E

BN20	CWB3F905300UZ	WIRE ASS'Y (3.96mm, 300mm, 5pin)
BN25	CWE8112120VV	WIRE ASS'Y (1PIN,120mm,LUG,#18,RED)
BN26	CWE8112120VV	WIRE ASS'Y (1PIN,120mm,LUG,#18,RED)
CN10	CJP03GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN11	CJP08GA221ZB	FEMALE HEADER (08P,2.54mm),STRAIGHT TYPE
CN12	CJP27GA285ZN	WAFER,FPC 1.25mm,stright 1.25-2-NP
CN61	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN62	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN63	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN64	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN65	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN66	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN67	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN89	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
CN90	CJP02GA89ZY	WAFER, YW396-NNAB(7.92mm)
CN91	CJP02GA89ZY	WAFER, YW396-NNAB(7.92mm)
CN92	CJP02KA060ZY	WAFER
CN93	CJP02GA01ZY	WAFER,YMW025(2.5mm,STRAIGHT)
C632	CCEA2AH221E	CAP, ELECT KR3-100V221MG
C633	CCEA2AH221E	CAP, ELECT KR3-100V221MG
C637	CCEA2AH221E	CAP, ELECT KR3-100V221MG
C638	CCEA2AH221E	CAP, ELECT KR3-100V221MG
C904	KCKDKS472ME	CAP, CERAMIC(X1/Y2/SC) 0.0047UF/2.5KV
C906	CCEA1VH102E	CAP, ELECT(35V/1000uF) KR3-35V102MG(12.5*20L)
C915	CCET63VKL5123NK	CAP, ELECT 12000/63V (35*45)
C916	CCET63VKL5123NK	CAP, ELECT 12000/63V (35*45)
ET92	CMD1A569	BRACKET , PCB
ET93	CMD1A387	BRACKET , PCB
IC95	CVINJU7223F50	I.C , REGULATOR(5V, TO-220F) NJU7223F50
JK90	CJJ4M070Z	JACK , 1P(PURPLE) , GOLD PLATE RCA-107BAG-01
JK91	CJJ5R006Z	TERMINAL , SPEAKER
JK92	CJJ5Q012Z	TERMINAL , SPEAKER
JW91	CWE8112120VV	WIRE ASS'Y (1PIN,120mm,LUG,#18,RED)
L501	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
L502	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
L503	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
L504	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
L505	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
L506	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
L507	CLEY0R5KAK	COIL , SPEAKER(0.5uH) SPRING COIL 8TS/KSE
Q858	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q871	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q872	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q874	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q875	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q876	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q877	HVTKTA1360Y	TRANSISTOR, PRE DRIVE KTA1360Y
Q881	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y
Q882	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y
Q883	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y
Q884	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y
Q885	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y
Q886	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y
Q887	HVTKTC3423Y	TRANSISTOR, PRE DRIVE KTC3423Y

Reference Designator	Part Number	Description

MAIN PCB ASS'Y COP12364E

RY94	CSL1C005ZE	RELAY (DC 5V, 1C1P) HL3-1A-5SH
R656	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R657	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R658	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R659	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R660	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R706	CRF5EKR10HS	RES , CEMENT (SMALL SIZE)
R707	CRF5EKR10HS	RES , CEMENT (SMALL SIZE)
R810	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R811	CRF5EKR27HX2K	RES , CEMENT (0.27 OHM)
R905	CRG1ANJ1R0H	RES , METAL OXIDE FILM 1 OHM 1W J
R922	CRG2ANJ470H	RES , METAL OXIDE FILM 47 OHM 2W J
R923	CRG1ANJ220H	RES , METAL OXIDE FILM 22 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	CLT5I025ZU	TRANS , SUB (AVR156X/1650/2650/3650)

DC-DC PCB ASS'Y COP12365D

C123	CCUS1H473KC	CAP, CHIP(1608, 50V/0.047uF)
C124	CCUS1H473KC	CAP, CHIP(1608, 50V/0.047uF)
C127	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C135	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C136	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C920	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C921	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C922	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C923	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C924	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C925	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C926	CCEC1ACEEX151TY	CAP, ELEC SMD (150uF/10V, 8X10.5, SANYO) 10CE150EX
C936	CCUS1H473KC	CAP, CHIP(1608, 50V/0.047uF)
C937	CCUS1H473KC	CAP, CHIP(1608, 50V/0.047uF)
C950	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C951	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C952	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C953	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C954	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C955	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C956	CCEC1ACEEX151TY	CAP, ELEC SMD (150uF/10V,8X10.5, SANYO) 10CE150EX
C960	CCEC1EHVH151TY	CAP, ELEC SMD (150uF/25V, 8X10.5, SANYO) 25HVH150M
C961	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C962	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)
C963	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C964	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C965	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)
C966	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)
C967	CCEC1ACEEX151TY	CAP, ELEC SMD (150uF/10V, 8X10.5, SANYO) 10CE150EX

Reference Designator	Part Number	Description

DC-DC PCB ASS'Y COP12365D

D920	CVDSS34SR	DIODE , SCHOTTKY (40V,3A, DO-214AC) DELTA
D950	CVDSS34SR	DIODE , SCHOTTKY (40V,3A, DO-214AC) DELTA
D960	CVDSS34SR	DIODE , SCHOTTKY (40V,3A, DO-214AC) DELTA
IC90	CVISI8005QTL	IC , DCDC Converter (3.5A, SOP8) SANKEN SI8005QTL
IC95	CVISI8005QTL	IC , DCDC Converter (3.5A, SOP8) SANKEN SI8005QTL
IC96	CVISI8005QTL	IC , DCDC Converter (3.5A, SOP8) SANKEN SI8005QTL
L900	CLQ12E100MRZ	COIL , SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L901	CLZ9Z014Z	FERRITE,CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L902	CLZ9Z014Z	FERRITE,CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L903	CLZ9Z014Z	FERRITE,CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L904	CLZ9Z014Z	FERRITE,CHIP BEAD(60ohm,4516)HCB4516KF-600T60/COILMASTER
L920	CLQ12E100MRZ	COIL , SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L950	CLQ12E100MRZ	COIL , SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
L960	CLQ12E100MRZ	COIL , SMD POWER (10UH/3A) CMI-SPC9H45F-SERIES
PCB	CUP12365Z	PCB , DC-DC (194 X 160, FR-4/2 , 4ARRAY) 194X160
R120	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R912	CRJ10DJ153T	RES, CHIP(1608/5%/15Kohm)
R913	CRJ10DJ153T	RES, CHIP(1608/5%/15Kohm)
R920	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R921	CRJ10DJ683T	RES, CHIP(1608/5%/68Kohm)
R922	CRJ10DJ623T	RES, CHIP(1608/5%/62Kohm)
R923	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)
R924	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)
R925	CRJ10DJ512T	RES, CHIP(1608/5%/5.1Kohm)
R942	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)
R950	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R951	CRJ10DJ683T	RES, CHIP(1608/5%/68Kohm)
R952	CRJ10DJ623T	RES, CHIP(1608/5%/62Kohm)
R953	CRJ10DJ753T	RES, CHIP(1608/5%/75Kohm)
R954	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)
R955	CRJ10DJ512T	RES, CHIP(1608/5%/5.1Kohm)
R960	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)
R961	CRJ10DJ683T	RES, CHIP(1608/5%/68Kohm)
R962	CRJ10DJ623T	RES, CHIP(1608/5%/62Kohm)
R963	CRJ10DJ273T	RES, CHIP(1608/5%/27Kohm)
R964	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)
R965	CRJ10DJ512T	RES, CHIP(1608/5%/5.1Kohm)
C131	CCEA1HH4R7T	CAP, ELECT(50V/4.7uF) KR3-50V4R7MA(5*11L)
C912	CCEA0JH102T	CAP, ELECT(1000uF/6.3V) 1000UF 6.3V
C939	CCEA1EH101T	CAP, ELECT(25V/100uF) KR3-25V101MB(6.3*11L)
C940	CCEA1EH101T	CAP, ELECT(25V/100uF) KR3-25V101MB(6.3*11L)
BN20	CWB1D01110058	WIRE ASS'Y
CN11	CJP08GB142ZB	PIN HEADER (08P, 2.54mm) , ANGLE TYPE
CN82	CJP07GI237ZW	LOCK-WAFER/STRAIGHT/2.5mm
CN96	CJP09GJ243ZW	LOCK-WAFER/ANGLE/2.5mm
C129	CCEA1EH103E	CAP, ELECT(25V/10000uF)22x30 KR3-025V103MM300
C929	CCEA1VH222EZ	CAP, ELECT (2200UF/35V, 12.5X31) KR3-35V222MH1-L/C4.0
C930	CCEA1VH222EZ	CAP, ELECT (2200UF/35V, 12.5X31) KR3-35V222MH1-L/C4.0
IC83	CVIKIA278R15PI	I.C , REGULATOR(15V OUTPUT LOW DROP) KIA278R15PI
IC84	CVIKIA7915PI	I.C , REGULATOR(15V, TO-220AB) KIA7915PI

POWER PCB ASS'Y COP12394D

C104	HCQI1H103JZT	CAP, MYLAR 0.01UF 50V

Reference Designator	Part Number	Description

POWER PCB ASS'Y COP12394D

C105	HCQI1H103JZT	CAP, MYLAR 0.01UF 50V
C106	HCQI1H104JZT	CAP, MYLAR 0.1UF 50V
C107	HCQI1H103JZT	CAP, MYLAR 0.01UF 50V
C108	HCQI1H103JZT	CAP, MYLAR 0.01UF 50V
C109	HCQI1H104JZT	CAP, MYLAR 0.1UF 50V
C132	CCFT1H473ZF	CAP, CERAMIC 0.047UF 50V
C133	CCFT1H473ZF	CAP, CERAMIC 0.047UF 50V
C134	CCFT1H473ZF	CAP, CERAMIC 0.047UF 50V
C921	KCME2E104JP04T	CAP, M-FILM(250V/0.1uF)
C922	CCME2A104JXT	CAP,METAL-FILM(100V/0.1uF) HMFS104J2AP050T
C923	CCME2A104JXT	CAP,METAL-FILM(100V/0.1uF) HMFS104J2AP050T
C924	HCQI1H473JZT	CAP, MYLAR 0.047UF 50V
C925	HCQI1H473JZT	CAP, MYLAR 0.047UF 50V
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
D921	CVD1N4003ST	DIODE , RECT 1N4003
F110	KBA2D6300A2EYT	FUSE(382 Series, 250V, 6.3A)
F111	KBA2D6300A2EYT	FUSE(382 Series, 250V, 6.3A)
R901	C3A206	WIRE , COPPER SN95/PB5 , 0.6
R902	C3A206	WIRE , COPPER SN95/PB5 , 0.6
BN96	CWB1D00912058	WIRE ASS'Y (LOCKING TYPE, 2.5MM, 9PIN, 120MM)
CN20	CJP05GA90ZY	WAFER , 5P(DIP, 3.96PITCH)
C135	CCEA1EH472E	CAP, ELECT(25V/4700uF) KR3-25V472MR(16*31.5L)
D701	CVDKBU804FMA	BRIDGE DIODE ASS'Y KBU804F
	CMY1A219	HEAT SINK (BRIDGE DIODE)
	CTB3+12JR	SCREW
	HVDKBU804F	DIODE , BRIDGE
D991	CVDGBJ1506BIA	DIODE HEAT SINK ASS'Y (CMY2A138)
	CMY2A138	HEAT SINK
	CTB3+8JR	SCREW
	HVDGBJ1506	DIODE , BRIDGE(15A/600V) GBJ1506
RY21	CSL4B019ZU	RELAY GB-2C-D24P
R104	CRQ1AJR47H	RES , FUSE
R105	CRQ1AJR47H	RES , FUSE
	CRE1A076	SUPPORT , PCB 2.000000
	CTB3+6FFZR	SCREW 11.000000
	CTB3+8JFZR	SCREW 21.000000
	CTS3+8JFZR	SCREW 4.000000
	CTW3+12JR	SCREW 2.000000
	CTW3+8JR	SCREW 3.000000
	CUA4A294	CHASSIS , BOTTOM SECC 1.2T
BN90	CSH1A015ZA	SWITCH , MOMS WIRE ASS'Y (2P, 80MM, RED)
	CSH1A015Z	SWITCH , MOMS(OR-L-11G-BB) OR-L-11G-BB
	CWB4F202080UK	WIRE ASS'Y (3.96MM, 80MM, 2P, RED)
BN92	CWZPM5003TW91A	2P WIRE ASS'Y(100MM)
RT01	CJJ8A006ZW	RECEPTACLE , AC(15A/250V,R-301,B21) R-301(B21)
TW91	CWZPM5003TW91	2P WIRE ASS'Y(100MM)
CN12	CWC4C4A27B100B10	CARD , CABLE (27p,1.25mm Pitch,100mm Length,Protec
F901	KBA2C8000TLEY	FUSE(218 Series, 250V, 8A)
T901	CLT5W044ZU	TRANS , POWER(AVR3650)

Reference Designator	Part Number	Description	
POWER PCB ASS'Y	**COP12394D**		
WF104	CWC4F2A17A100A10	CARD CABLE (1.0mm , A type , 17pin , 100mm)	
WF105	CWC4F2A17A080A10	CARD , CABLE (17P/1.00mm/80mm , A TYPE)	
EMI	KMC1A186	SHIELD, CUSHION	2.000000
	CHE154	CLAMPER , ARM	
MISCELLANEOUS/MECHANICAL			
	CGX1A338MBC63	CAP, VOLUME	
	CGX5A390C66Z	SHEET , AL FRONT AVR3650	
	CKC6B145S60	CABINET , TOP AVR350	
	CMH1A214	HOLDER , VOLUME	
	CMZ2A090	SHEET , VOLUME	
	CTB3+8JFZR	SCREW	17.000000
	CTB4+6FFZR	SCREW	6.000000
	CUAAVR3650	BOTTOM CHASSIS ASS'Y	
	CFNRDM6025S	MOTOR , FAN (60X60X25) 12V, 0.1A	
	CHD1A012ZR	SCREW , SPECIAL	2.000000
	CHD1A023R	SCREW , SPECIAL	4.000000
	CHD1A036FZR	SCREW , SPECIAL	2.000000
	CHD1A065R	SCREW , FLAT(2.6X4)	2.000000
	CHD4A012R	SCREW , SPECIAL	4.000000
	CHE170	HOLDER , PCB	2.000000
	CHE36-3	CLAMPER , WIRE	
	CHG1A104	CUSHION , EVA	
	CHG1A113	RUBBER	3.000000
	CHG1A160Z	CUSHION , RUBBER	
	CHG1A373	CUSHION , FOOT AVR350	4.000000
	CHR301	CLAMPER	2.000000
	CKF1A444Z	PANEL , REAR AVR3650	
	CKL1A094	FOOT , A AVR350	2.000000
	CKL1A095	FOOT , B AVR350	2.000000
	CMD1A506	BRACKET , FAN	
	CMD1A702	FRAME , BOTTOM	
	CMD1A786	BRACKET , HDMI	
	CNVFS2026-020021	MODULE,VENICE6.2 (NO DAB, NO WIFI)	
	CGB1A232Z	BADGE , AVR3650	
	CGL1A222	INDICATOR , VOLUME	
	CGR1A530H63	COVER , USB	
	CGR1A531H63	COVER , HDMI	
	CGU1A318Y	ORNAMENT , VOLUME	
	CGU2A410A25O	WINDOW , FIP	
	CGWAVR3650	FRONT PANEL ASS'Y	
	CBT2A1064	KNOB , STANDBY	
	CBT2A1065	KNOB , BACK	
	CGB3A158Z	BADGE , HARMAN/KARDON (FRONT)	
	CGL1A265Y	INDICATOR , POWER	
	CGW6A447RHUB24	PANEL , FRONT AVR3650	
	CHG1A309	RUBBER	
	CMC1A372	PLATE , SHIELD	
	CMC1A414	PLTE , EARTH USB & HDMI	
	CMC1A416	PLATE , EARTH TOP	
	CMC3A338	PLATE , EARTH	
	CMD1A555	BRACKET , SIDE (L)	

Reference Designator	Part Number	Description

MISCELLANEOUS/MECHANICAL

	CMD2A443	BRACKET , SIDE
	CMH2A215	HOLDER , LED
	CMZ1A127	FILTER , FIP

TECHNICAL DATA

Interface Transceiver of RS-232 Standard with One Supply Voltage

ILX3232

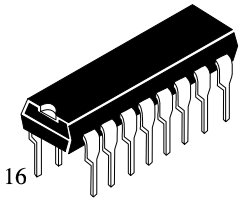
DESCRIPTION

The ILX3232 is a 3V powered EIA/TIA-232 and V.28/V.24 communication interface with low power requirements, high data-rate capabilities. ILX3232 has a proprietary low dropout transmitter output stage providing true RS-232 performance from 3 to 5.5V supplies. The device requires only four small 0.1 µF standard external capacitors for operations from 3V supply.

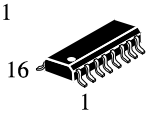
The ILX3232 has two receivers and two drivers. The device is guaranteed to run at data rates of 250Kbps while maintaining RS-232 output levels. Typical applications are Notebook, Subnotebook and Palmtop Computers, Battery Powered Equipment, Hand-Held Equipment, Peripherals and Printers.

FEATURES

- 300 µA SUPPLY CURRENT
- 120Kbps MINIMUM GUARENTEED DATA RATE
- 3V/µs MINIMUM GUARANTEED SLEW RATE
- ENHANCED ESD SPECIFICATIONS:
  ±15kV IEC1000-4-2 Air Discharge
- AVAILABLE IN DIP-16, SO-16,TSSOP16 AND SOP16L(W)



N SUFFIX
PLASTIC



D SUFFIX
SOIC

TSSOP 16

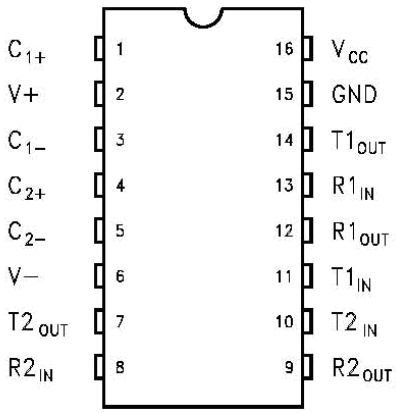
SOP16L(W)

Ordering Information

ILX3232N	Plastic DIP
ILX3232D	SOIC
ILX3232TSD	TSSOP
ILX3232DW	SOP(W)

T_A= from -40 to 85 °C
for all packages

PIN CONFIGURATION



ILX3232

PIN DESCRIPTION

PIN N°	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 RATING

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	-0.3 to 6	V
V+	Doubled Voltage Terminal	(V_{CC} - 0.3) to 7	V
V-	Inverted Voltage Terminal	0.3 to -7	V
V+ +|V-|		13	V
T_{IN}	Transmitter Input Voltage Range	-0.3 to 6	V
R_{IN}	Receiver Input Voltage Range	± 25	V
T_{OUT}	Transmitter Output Voltage Range	± 13.2	V
R_{OUT}	Receiver Output Voltage Range	-0.3 to (V_{CC} + 0.3)	V
t_{SHORT}	Transmitter Output Short to GND Time	Continuous	

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied. V+ and V-can have a maximum magnitude of +7V, but their absolute addition can not exceed 13 V.

IDT74FCT38074
3.3V CMOS 1-TO-4 CLOCK DRIVER
INDUSTRIAL TEMPERATURE RANGE

3.3V CMOS 1-TO-4 CLOCK DRIVER

IDT74FCT38074

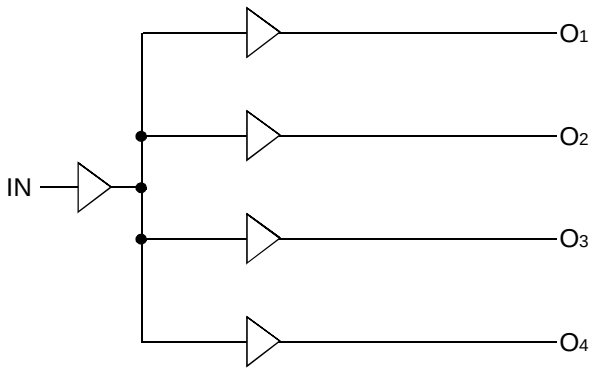
FEATURES:

- **Advanced CMOS Technology**
- **Guaranteed low skew < 100ps (max.)**
- **Very low duty cycle distortion< 250ps (max.)**
- **High speed propagation delay< 3ns (max.)**
- **Very low CMOS power levels**
- **TTL compatible inputs and outputs**
- **1:4 fanout**
- **Maximum output rise and fall time < 1.5ns (max.)**
- **Low input capacitance: 3pF typical**
- **Vcc = 3.3V ± 0.3V**
- **Inputs can be driven from 3.3V or 5V components**
- **Operating frequency up to 166MHz**
- **Available in SOIC package**

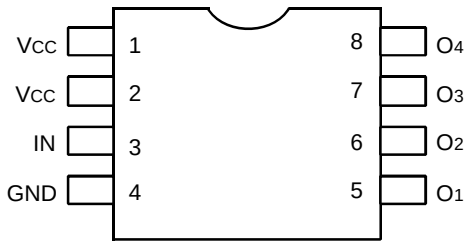
DESCRIPTION:

The FCT38074 is a 3.3V clock driver built using advanced CMOS technology. This low skew clock driver offers 1:4 fanout. The large fanout from a single input reduces loading on the preceding driver and provides an efficient clock distribution network. Multiple power and grounds reduce noise. Typical applications are clock and signal distribution.

FUNCTIONAL BLOCK DIAGRAM



PIN CONFIGURATION



SOIC
TOP VIEW

JRC **NJM2581**

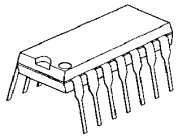
DUAL SUPPLY WIDE BAND 3ch VIDEO AMPLIFIER

■ GENERAL DESCRIPTION

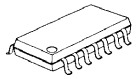
The **NJM2581** is a dual supply voltage wide band 3ch video amplifier. It is suitable for Y, Pb, and Pr signal because frequency range is 50MHz.

The **NJM2581** is suitable for Set Top Box, AV amplifier, and other high quality AV systems.

■ PACKAGE OUTLINE



NJM2581D

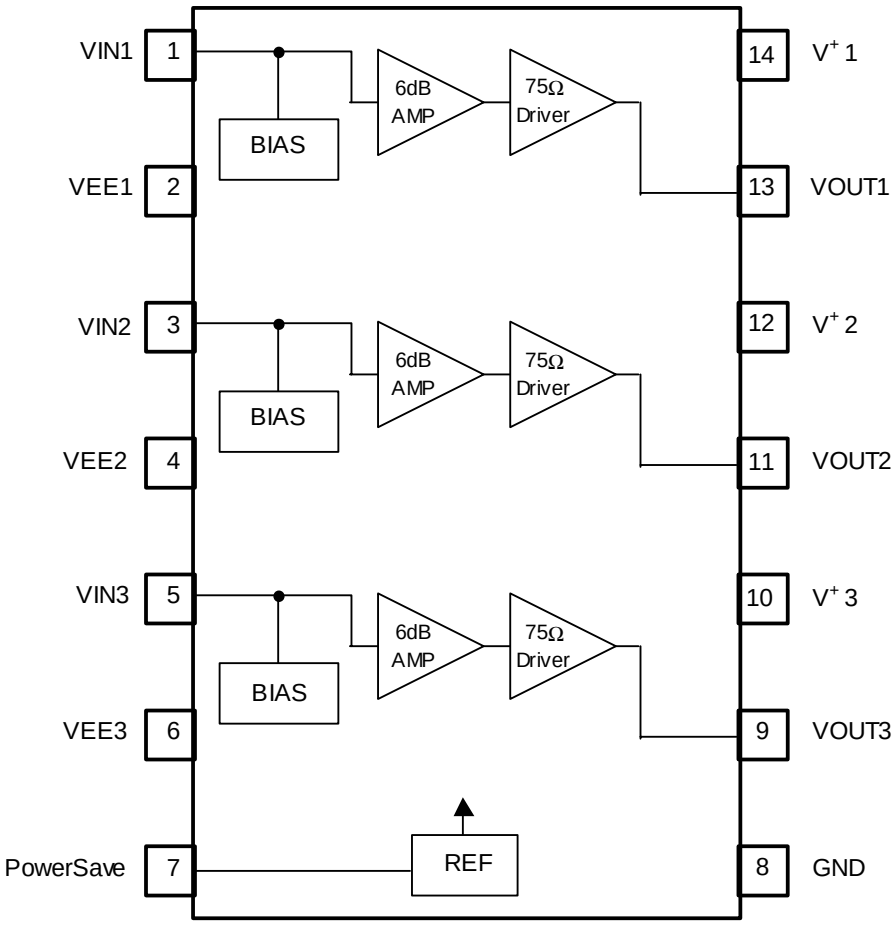


NJM2581M

■ FEATURES

- Operating Voltage ±4.5 to ±5.5V
- Wide frequency range 50MHz at 0dB typ.
- Internal 6dB Amplifier
- Internal 75ΩDriver Circuit (2-system drive)
- Power Save Circuit
- Bipolar Technology
- Package Outline DIP14, DMP14

■ BLOCK DIAGRAM



JRC

NJM2505A

SINGLE ISOLATION AMPLIFIER

■ GENERAL DESCRIPTION

NJM2505A is the single isolation amplifier developed by the video signal. It can remove the noise of a signal with isolation amplifier and carries in the small package (MTP5), it is suitable for the interface of the video signal of a car AV system.

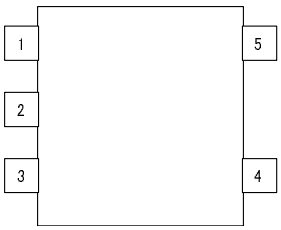
■ PACKAGE OUTLINE

NJM2505AF

■ FEATURES

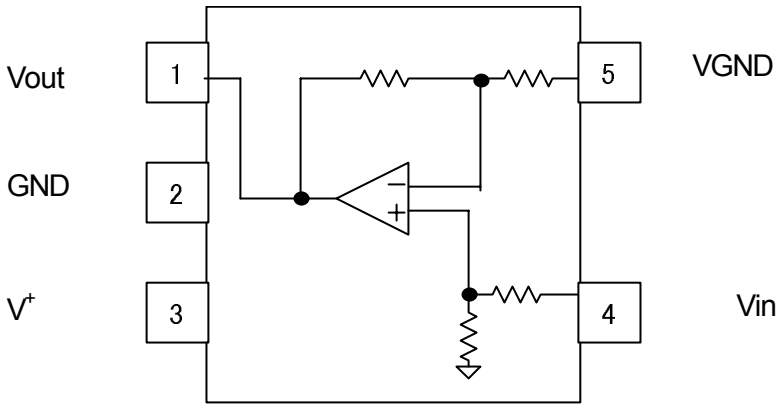
- Operating Voltage 4.5 to 9.0V
- Input: Sync-tip Clamp
- Common Mode Noise Rejection Ratio –55dBtyp.
- Voltage Gain 0dBtyp.
- Frequency Characteristics 0dBtyp.at 10MHz
- Bipolar Technology
- Package MTP5

■ PIN CONFIGURATION



1: Vout
2: GND
3: V+
4: Vin
5: VGND

■ BLOCK DIAGRAM



JRC **NJM2595**

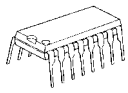
5-INPUT 3-OUTPUT VIDEO SWITCH

■ GENERAL DESCRIPTION

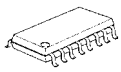
The **NJM2595** is a 5-input 3-output video switch. Its switches select one from five signals received from VTR,TV,DVD, TV-GAME and others.

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

■ PACKAGE OUTLINE



NJM2595D

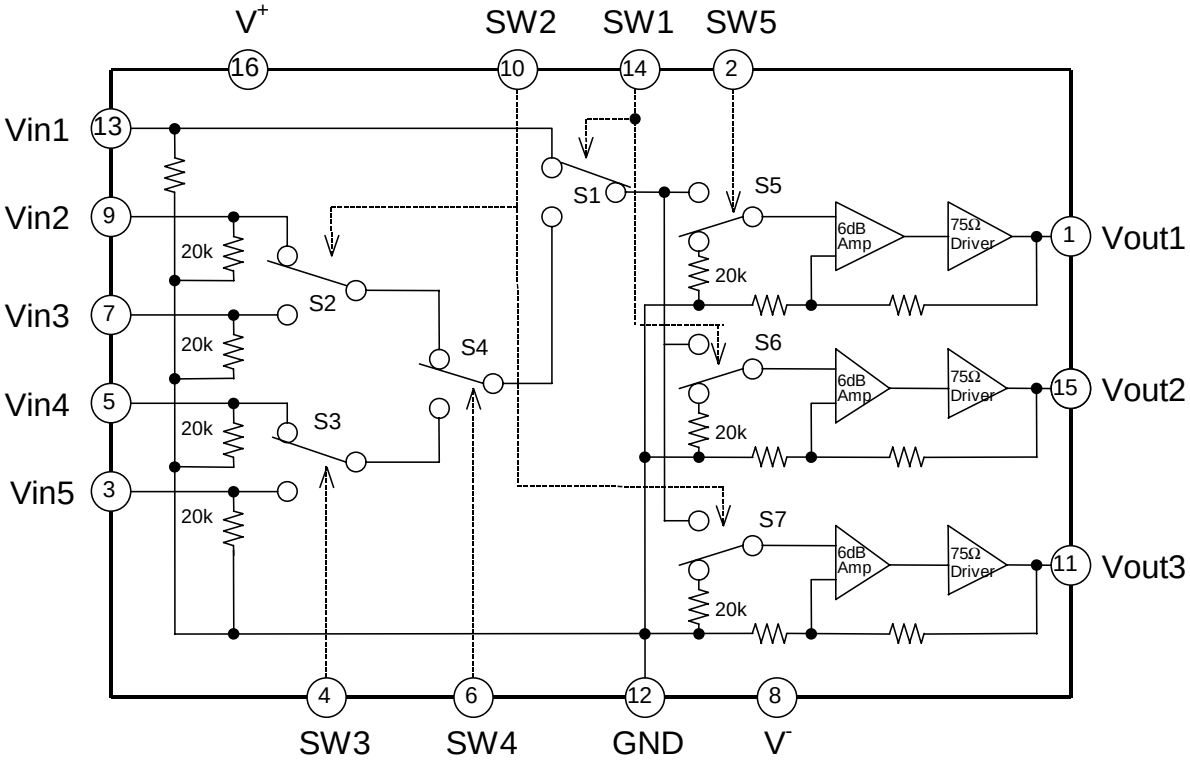


NJM2595M

■ 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 **NJW1321**

WIDE BAND VIDEO SWITCH WITH I²C BUS

■ GENERAL DESCRIPTION

The NJW1321 is a Wide Band Video Switch with I²C BUS.

The NJW1321 includes switch of 4-input 2-output and 6dB amplifier. It is suitable for RGB or Y, Pb, and Pr signal because frequency range is 100MHz.

The NJW1321 includes external logic control terminals and external logic discernment terminals.

The NJW1321 is suitable for PTV, DTV, PDP and other high quality AV systems.

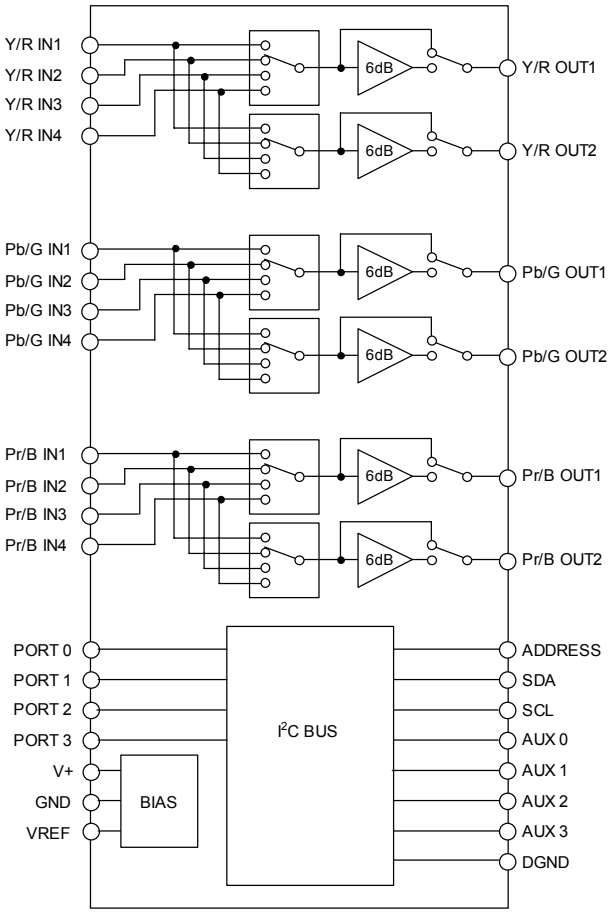
■ PACKAGE OUTLINE

NJW1321FP1

■ FEATURES

- Operating Voltage +9.0V
- I²C BUS Interface
- 4-input 2-output 3-Circuits
- Wide frequency range 0dB at 100MHz typ.
  -3dB at 300MHz typ.
- Internal 6dB amplifier (Selectable Bypass or 6dB)
- External logic discernment terminal
- External logic control terminal
- Selectable slave address
- Power Save Circuit
- Bi-CMOS Technology
- Package Outline QFP48

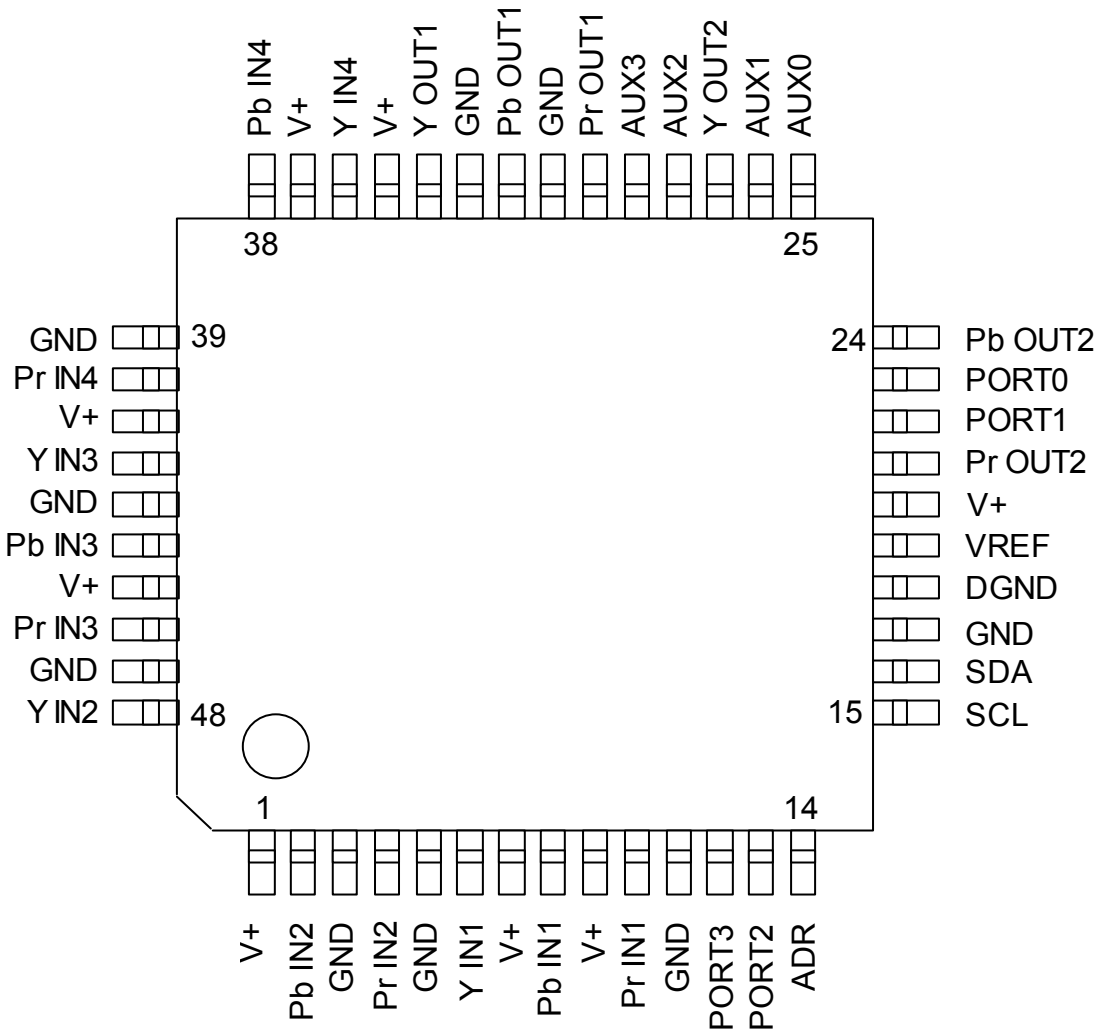
■ BLOCK DIAGRAM



Ver.3

NJW1321

■PIN CONFIGURATION



1. V+	13. PORT2	25. AUX0	37. V+
2. Pb IN2	14. ADR	26. AUX1	38. Pb IN4
3. GND	15. SCL	27. Y OUT2	39. GND
4. Pr IN2	16. SDA	28. AUX2	40. Pr IN4
5. GND	17. GND	29. AUX3	41. V+
6. Y IN1	18. DGND	30. Pr OUT1	42. Y IN3
7. V+	19. VREG	31. GND	43. GND
8. Pb IN1	20. V+	32. Pb OUT1	44. Pb IN3
9. V+	21. Pr OUT2	33. GND	45. V+
10. Pr IN1	22. PORT1	34. Y OUT1	46. Pr IN3
11. GND	23. PORT 0	35. V+	47. GND
12. PORT3	24. Pb OUT2	36. Y IN4	48. Y IN2

MicroSystems, Inc.

SI-8005Q

Step-Down Switching Regulator with Current-Mode Control

Features and Benefits

- Current-mode control system employed
- Excellent line regulation (60 mV maximum)
- 165 mΩ maximum on-resistance of built-in MOSFET
- Output current 3.5 A
- Wide range of input voltages (4.75 to 28 V), supports 24 V direct drive
- Output voltage 0.5 to 24 V, compatible with various IC power supply voltages, through low V_{REF} of 0.5 V.
- High efficiency, 94% maximum at V_{IN} = 8 V, V_O = 5 V, and I_O = 0.5 A
- Operating frequency 500 kHz, supports downsizing of smoothing choke coil
- Soft start and output on/off functions built-in
- Built-in protection:
  - Drooping overcurrent protection
  - Overtemperature protection
  - Undervoltage lockout (UVLO)

Package: HSOP8 surface mount with exposed thermal pad

Not to scale

Description

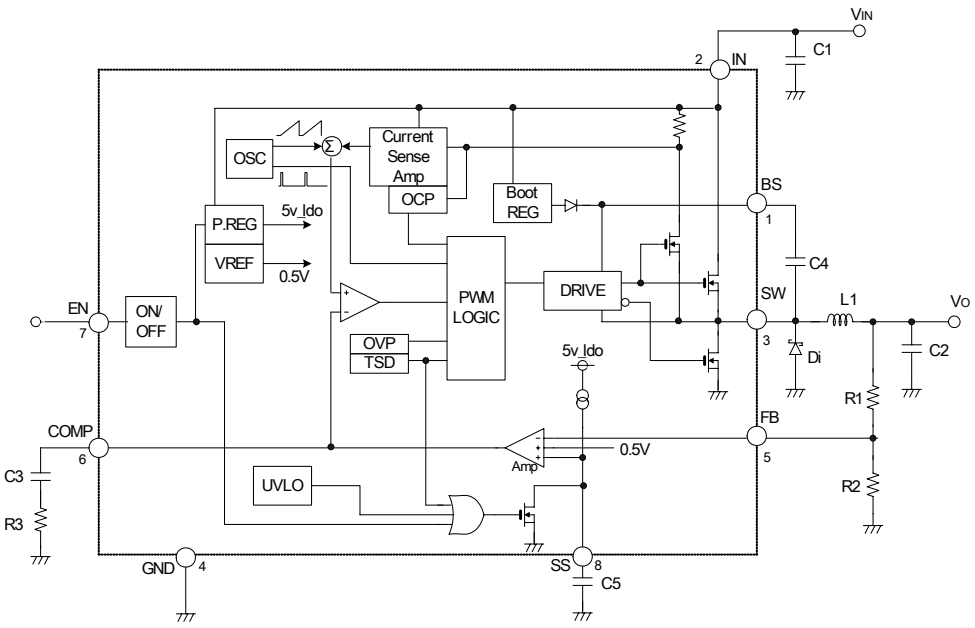
The SI-8005Q is a step-down switching regulator IC, designed as an output voltage regulator at the secondary stage of switch mode power supplies. The current-mode control system permits small ceramic capacitors to be used as output capacitors. Together with the compact HSOP8 package, this allows reduction of regulator circuitry area on the PCB by approximately 50% in comparison with conventional topologies.

Designed to save power, losses in the SI-8005Q are reduced by controlling the maximum on-resistance of a built-in output MOSFET to as low as 165 mΩ. Furthermore, die miniaturization has been accomplished through a proprietary BCD process.

The SI-8005Q supplies an output current of 3.5 A and an output voltage that is variable from 0.5 to 24 V, which is easily set to a voltage compatible with the diverse reduced power supply voltages required by signal processing ICs. Accepting a wide input voltage range, from 4.75 to 28 V, the SI-8005Q can be driven directly by a 24 V power supply.

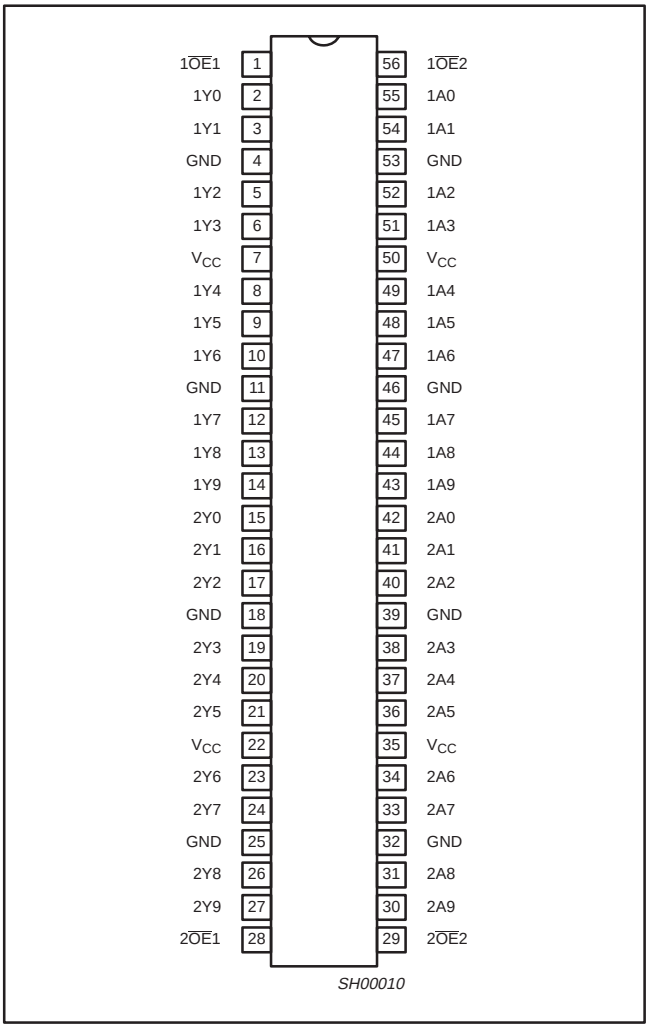
Applications include power supplies for signal processing ICs for memories and microcomputers used in plasma display panel (PDP) TVs, liquid crystal display (LCD) TVs, computer hard drives, and DVD recorders.

Functional Block Diagram

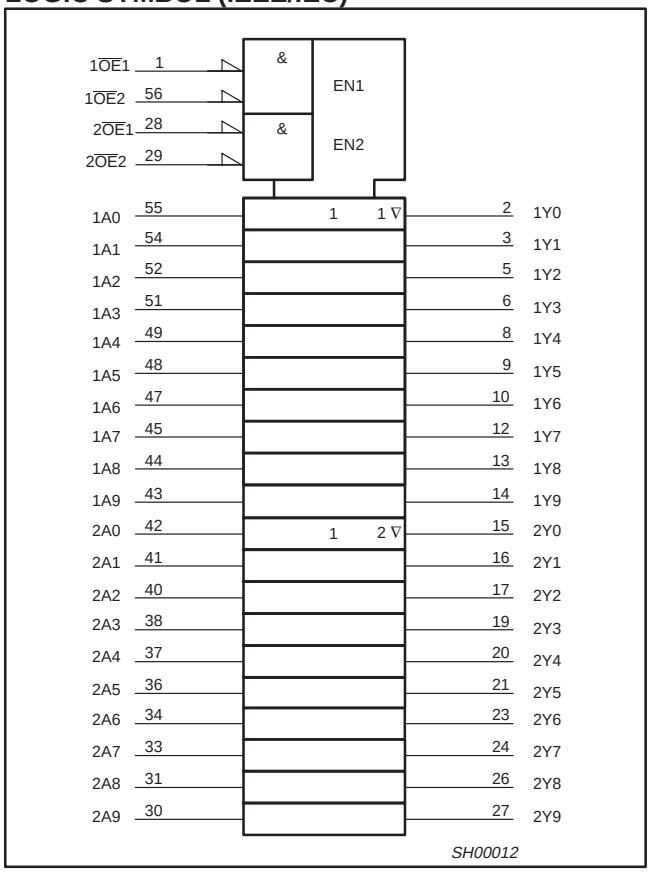


20-bit buffer/line driver, non-inverting (3-State) 74ALVCH16827

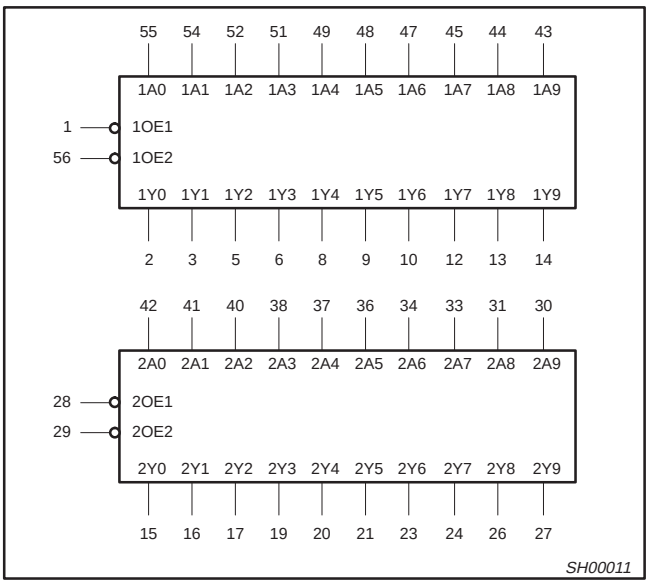
PIN CONFIGURATION



LOGIC SYMBOL (IEEE/IEC)



LOGIC SYMBOL

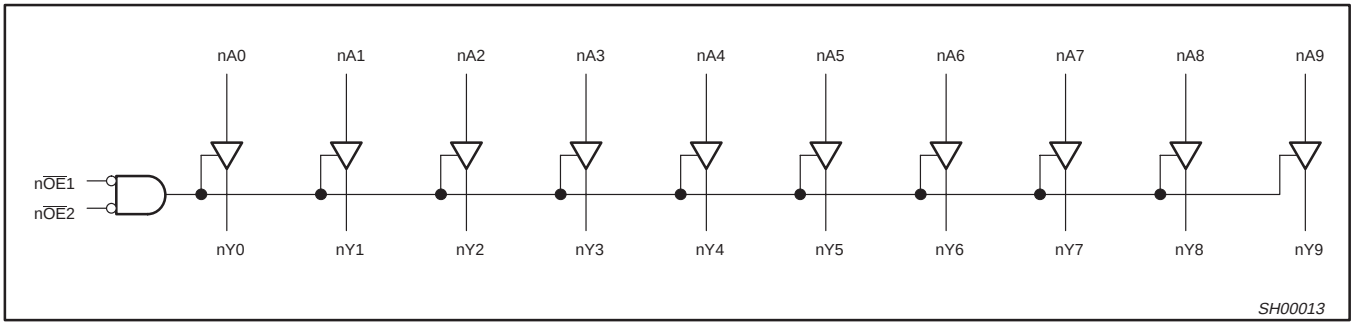


FUNCTION TABLE

INPUTS			OUTPUTS
n$\overline{OE}$1	n$\overline{OE}$2	A	Y
L	L	L	L
L	L	H	H
H	H	X	Z
X	H	X	Z

H = High voltage level
L = Low voltage level
X = Don't care
Z = High impedance "off" state

LOGIC DIAGRAM



RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{CC}	DC supply voltage 2.5V range (for max. speed performance @ 30 pF output load)		2.3	2.7	V
	DC supply voltage 3.3V range (for max. speed performance @ 50 pF output load)		3.0	3.6	
V_I	DC Input voltage range		0	V_{CC}	V
V_O	DC output voltage range		0	V_{CC}	V
T_{amb}	Operating free-air temperature range		–40	+85	°C
t_r, t_f	Input rise and fall times	V_{CC} = 2.3 to 3.0V V_{CC} = 3.0 to 3.6V	0 0	20 10	ns/V

ABSOLUTE MAXIMUM RATINGS[1]

In accordance with the Absolute Maximum Rating System (IEC 134)
Voltages are referenced to GND (ground = 0V)

SYMBOL	PARAMETER	CONDITIONS	RATING	UNIT
V_{CC}	DC supply voltage		–0.5 to +4.6	V
I_{IK}	DC input diode current	$V_I < 0$	–50	mA
V_I	DC input voltage	For control pins[2]	–0.5 to +4.6	V
		For data inputs[2]	–0.5 to V_{CC} +0.5	
I_{OK}	DC output diode current	$V_O > V_{CC}$ or $V_O < 0$	± 50	mA
V_O	DC output voltage	Note 2	–0.5 to V_{CC} +0.5	V
I_O	DC output source or sink current	V_O = 0 to V_{CC}	± 50	mA
I_{GND}, I_{CC}	DC V_{CC} or GND current		± 100	mA
T_{stg}	Storage temperature range		–65 to +150	°C
P_{TOT}	Power dissipation per package –plastic medium-shrink (SSOP) –plastic thin-medium-shrink (TSSOP)	For temperature range: –40 to +125 °C above +55°C derate linearly with 11.3 mW/K above +55°C derate linearly with 8 mW/K	 850 600	mW

NOTE:

1. Stresses beyond those listed may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

MACRONIX INTERNATIONAL CO., LTD.

MX29LV320D T/B

32M-BIT [4M x 8 / 2M x 16] 3V SUPPLY FLASH MEMORY

FEATURES

GENERAL FEATURES

- Byte/Word switchable
  - 4,194,304 x 8 / 2,097,152 x 16
- Sector Structure
  - 8K-Byte x 8 and 64K-Byte x 63
- Extra 64K-Byte sector for security
  - Features factory locked and identifiable, and customer lockable
- Twenty-Four Sector Groups
  - Provides sector group protect function to prevent program or erase operation in the protected sector group
  - Provides chip unprotect function to allow code changing
  - Provides temporary sector group unprotect function for code changing in previously protected sector groups
- Power Supply Operation
  - Vcc 2.7 to 3.6 volt for read, erase, and program operations
- Latch-up protected to 100mA from -1V to 1.5 x Vcc
- Low Vcc write inhibit : Vcc <= Vlko
- Compatible with JEDEC standard
  - Pinout and software compatible to single power supply Flash
- **Functional compatible with MX29LV320C T/B device**

PERFORMANCE

- High Performance
  - Fast access time: 70ns
  - Fast program time: 11us/word typical utilizing accelerate function
  - Fast erase time: 0.7s/sector, 35s/chip (typical)
- Low Power Consumption
  - Low active read current: 10mA (typical) at 5MHz
  - Low standby current: 5uA (typical)
- Typical 100,000 erase/program cycle
- 10 years data retention

SOFTWARE FEATURES

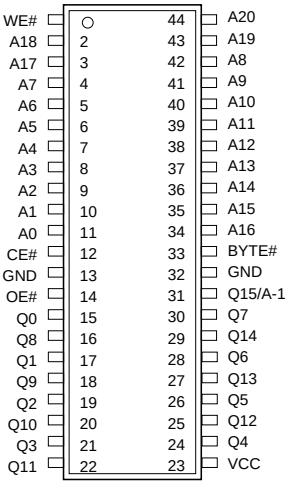
- Erase Suspend/ Erase Resume
  - Suspends sector erase operation to read data from or program data to another sector which is not being erased
- Status Reply
  - Data# Polling & Toggle bits provide detection of program and erase operation completion
- Support Common Flash Interface (CFI)

HARDWARE FEATURES

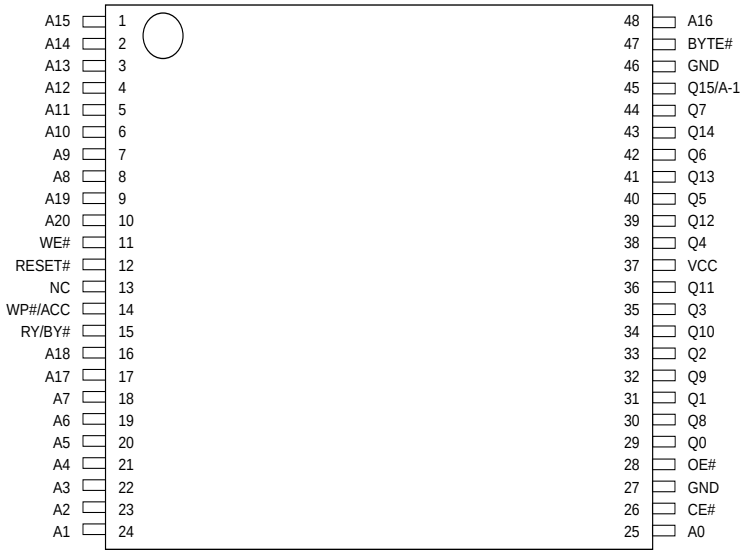
- Ready/Busy# (RY/BY#) Output
  - Provides a hardware method of detecting program and erase operation completion
- Hardware Reset (RESET#) Input
  - Provides a hardware method to reset the internal state machine to read mode
- WP#/ACC input pin
  - Provides accelerated program capability

PIN CONFIGURATION

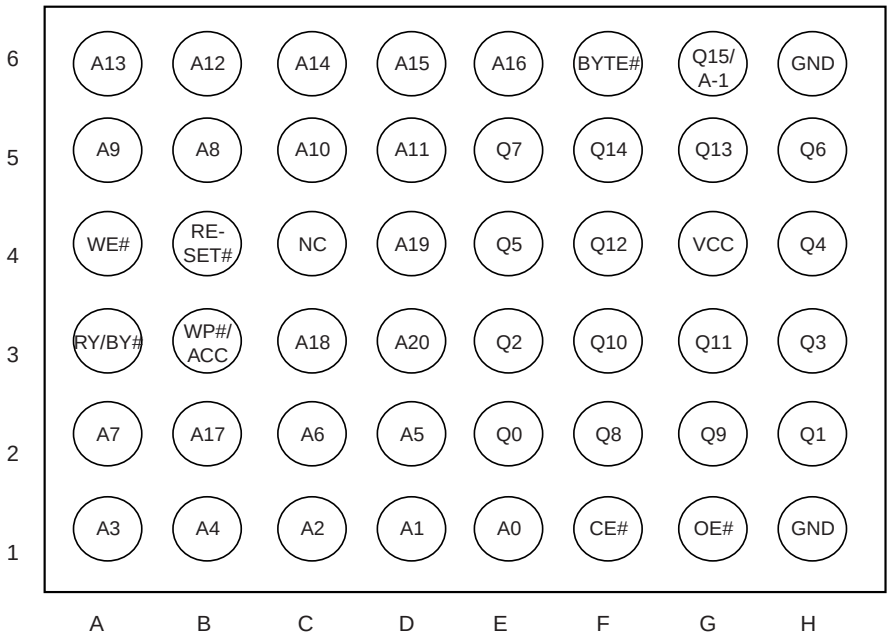
44 SOP



48 TSOP



48-Ball TFBGA/LFBGA (6mm x 8mm, Top View, Balls Facing Down)

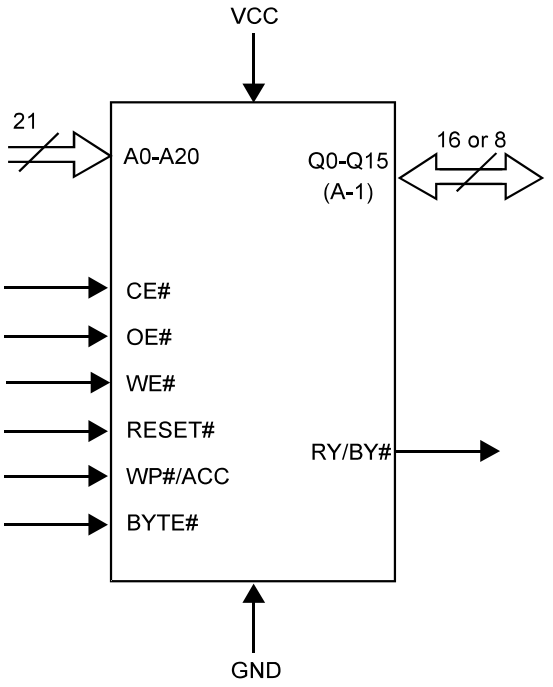


PIN DESCRIPTION

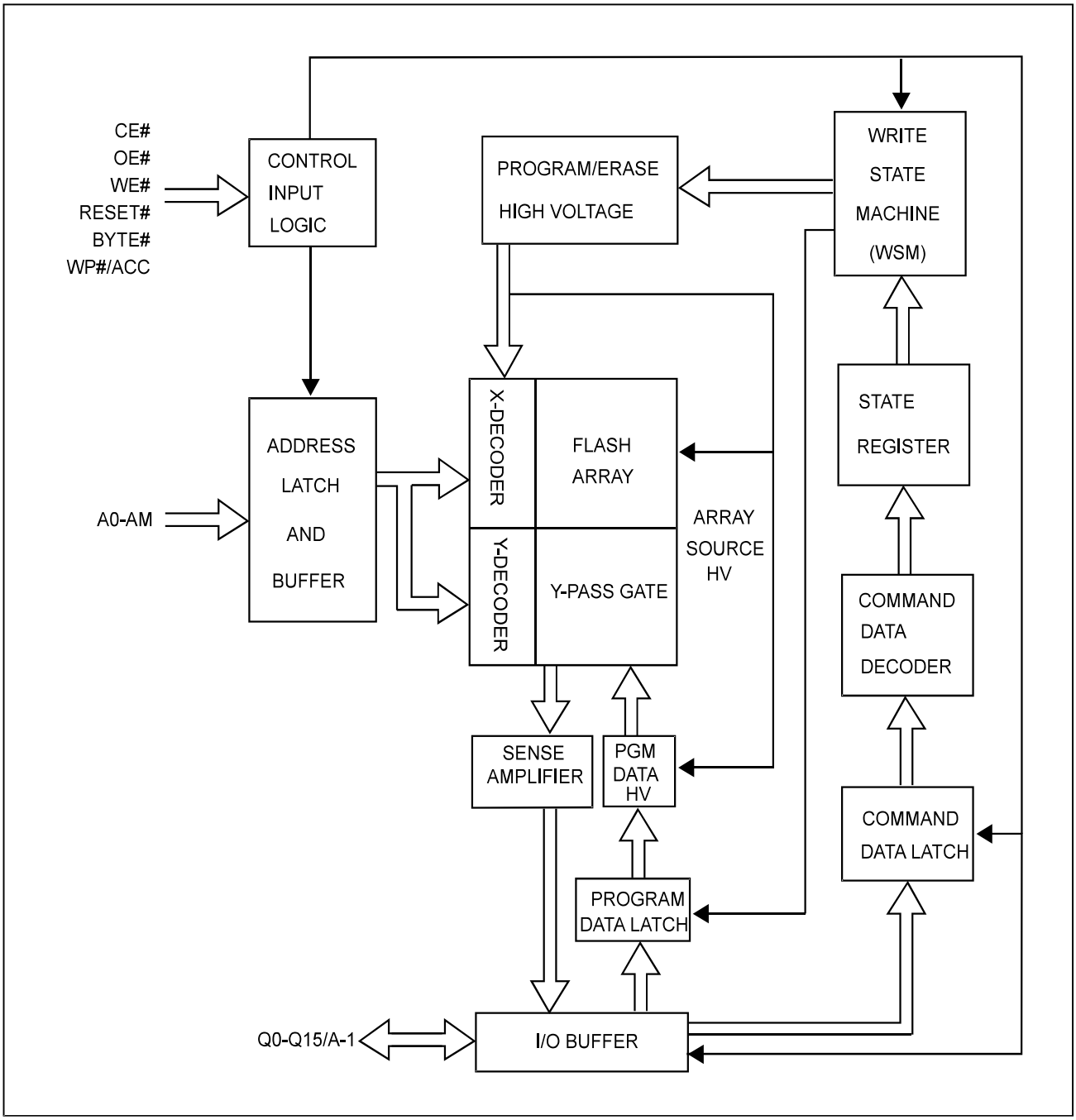
SYMBOL	PIN NAME
A0~A20	Address Input
Q0~Q14	15 Data Inputs/Outputs
Q15/A-1	Q15(Data Input/Output, word mode); A-1(LSB Address Input, byte mode)
CE#	Chip Enable Input
WE#	Write Enable Input
OE#	Output Enable Input
BYTE#	Word/Byte Selection Input
RESET#	Hardware Reset Pin, Active Low
RY/BY#	Ready/Busy Output
Vcc	3.0 volt-only single power supply
WP#/ACC	Hardware Write Protect/Acceleration Pin
GND	Device Ground
NC	Pin Not Connected Internally

Note: If customers do not need WP#/ACC feature, please connect WP#/ACC pin to VCC or let it floating. The WP#/ACC has an internal pull-up when unconnected WP#/ACC is at Vih.

LOGIC SYMBOL



BLOCK DIAGRAM



FLI30336

Single-chip enhanced LCD TV controller

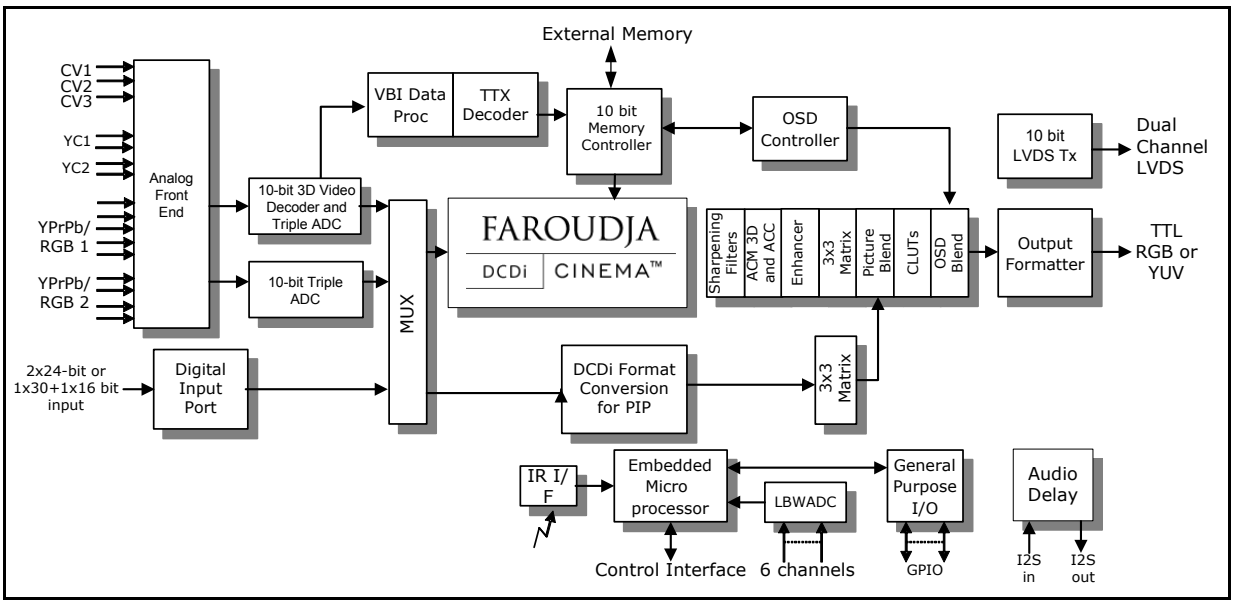
Data Brief

Features

- Integrated 3D video decoder
- Flexible digital capture up to 165 MHz and analog capture up to 162 MHz
- VBI signal processing including WST version 2.5 support
- Flexible DDR memory interface
- Faroudja® TrueLife™ video enhancer
- Advanced Picture-in-Picture (PIP) features
- Advanced Color Management (ACM-3D) and Adaptive Contrast Control (ACC)
- On-chip microprocessor
- Advanced bitmapped OSD controller
- LCD overdrive
- Embedded 10-bit dual-channel LVDS for 1080p and WUXGA panel support
- Package: 416 PBGA

Applications

- LCD and PDP TV
- DLP®, LCD, and LCOS front and rear projection



1 Description

The FLI30336 offers high integration for advanced applications of Picture-in-Picture (PIP) and Picture-by-Picture (PBP) with an integrated video decoder and a 3D comb filter. The FLI30336 can power up to 1080p/WUXGA displays with the proven Faroudja DCDi Cinema branded technology.

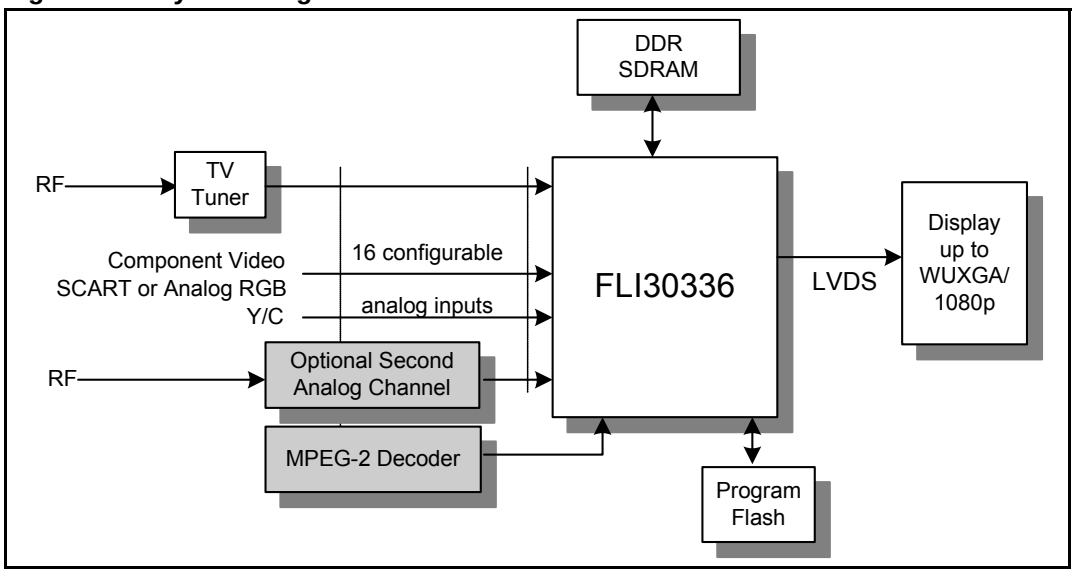
Special performance features such as the Faroudja DCDi Cinema video format converter, 10-bit performance in the device, and the Advanced Color Management (ACM-3D) provide exceptional video quality. This exclusive level of video quality technology only seen on Faroudja Home Theater Systems is now available in a single-chip solution.

The FLI30336 also comprises an integrated Analog Front-End (AFE) that includes triple ADCs and an integrated cross-point switch. The flexible AFE ensures simple PCB design with direct connections to TV tuners and input video connectors. In essence, the FLI30336 is the only device needed for a single LCD TV chassis supporting worldwide standards. For regional variations, only connector and firmware changes are required.

The integrated VBI dataslicer and decoder remove the need for external components resulting in significant cost reduction. The FLI30336 supports many worldwide VBI standards for applications of Teletext, Closed Captioning, V-Chip, and other VBI services.

The FLI30336 can be used in digital TV solutions requiring Faroudja DCDi Cinema video performance levels. An embedded microprocessor and a versatile OSD in a single device will facilitate rapid development of a reliable and attractive product. The FLI30336 utilizes the common Cortez family firmware for easy and effortless migration across different hardware platforms within this family.

Figure 1. System diagram

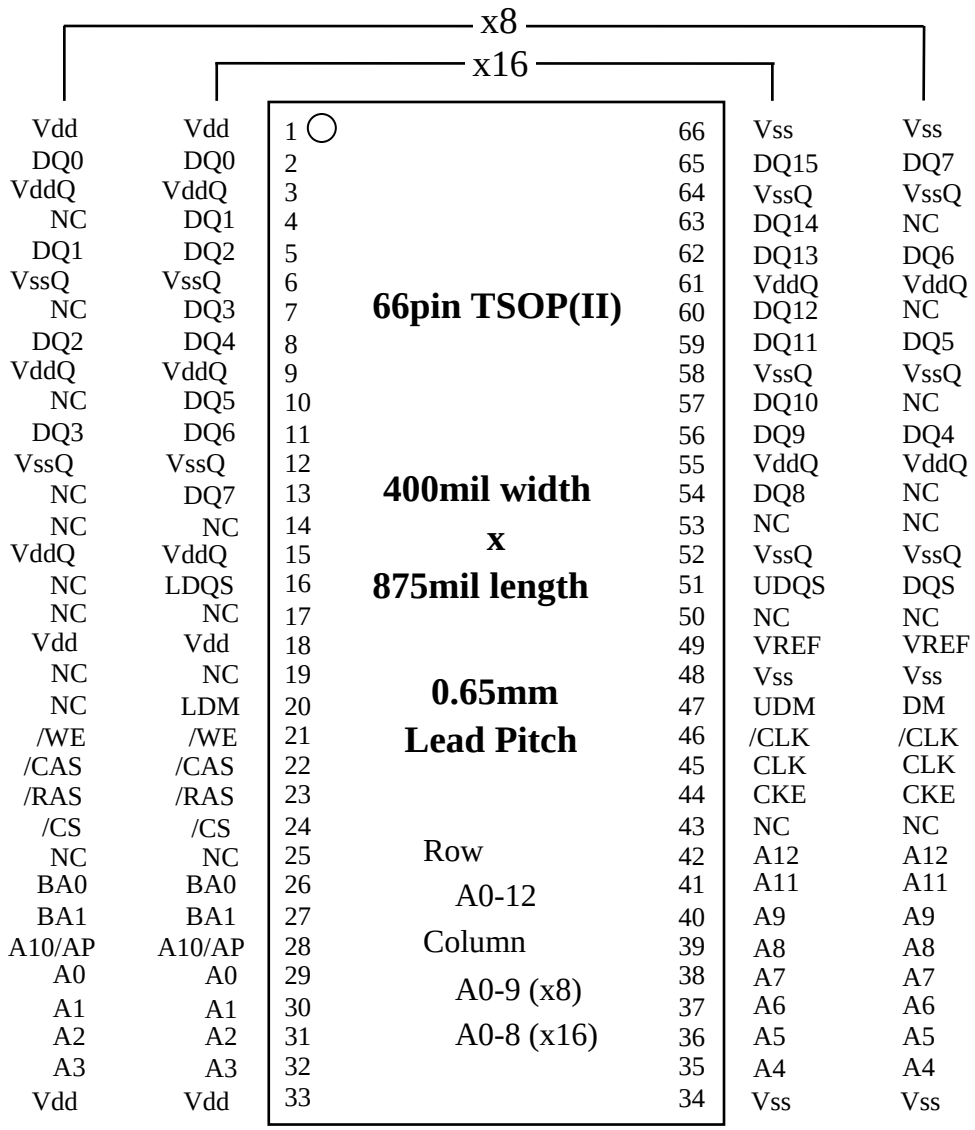


Zentel

A3S56D30FTP
A3S56D40FTP

256M Double Data Rate Synchronous DRAM

Pin Assignment (Top View) 66-pin TSOP



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)**	**VREF**	**: SSTL_2 reference voltage**
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 Power Down and Self Refresh. Taking CKE LOW provides Precharge Power Down or Self Refresh (all banks idle), or Active Power Down (row active in any bank). Taking CKE HIGH provides Power Down exit or Self Refresh exit. After Self Refresh is started, CKE becomes asynchronous input. Power Down and 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 Active, Precharge, 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 DQ, DQS buffers.
VREF	Input	SSTL_2 reference voltage.

12-Bit, 170 MHz Video and Graphics Digitizer with 3D Comb Filter Decoder and Quad HDMI 1.4 Fast Switching Receiver

PRELIMINARY

ADV7844

FEATURES

Quad HDMI 1.4 Fast Switching Receiver
170 MHz Video and Graphics Digitizer
3D Comb Filter Video Decoder
SCART Fast Blank Support
Adaptive HDMI Equaliser
Integrated CEC Controller
HDMI Repeater Support
Advanced VBI data slicer

Video and Graphics Digitizer
- **Four 170 MHz, 12-bit ADCs,**
- **12-channel analog input mux**
- **525i-/625i-component analog input**
- **525p-/625p-component progressive scan support**
- **720p-/1080i-/1080p-component HDTV support**
- **Low refresh rates (24/25/30 Hz) support for 720p/1080p**
- **Digitizes RGB graphics up to 1600 × 1200 at 60 Hz (UXGA)**

3D Video Decoder
- **NTSC/PAL/SECAM color standards support**
- **NTSC/PAL 2D/3D motion detecting comb filter**
- **Advanced time-base correction (TBC) with frame synchronization**
- **Interlaced-to-progressive conversion for 525i and 625i**
- **IF compensation filters**
- **Vertical peaking and horizontal peaking filters**
- **Robust synchronization extraction for poor video source**

4:1 HDMI 1.4 225 MHz Receiver
- ***Fast-Switching* of HDMI ports**
- **2:2 HEAC muxing support**
  - **2 HEAC channel support**
  - **2 Ethernet Interfaces for HEC Support**
  - **SPDIF interface for ARC support.**
- **3D Video format support including frame packing 1080p 24Hz, 720p 50 Hz, 720p 60Hz**
- **Full colorimetry support including sYCC601, Adobe RGB, Adobe YCC 601**
- **36-/30-bit Deep Color and 24-bit color support**
- **HDCP 1.3 support with internal HDCP Keys**
- **+5V Detect and Hot plug assert for each HDMI port**
- **Full HDMI Audio Support including HBR, DSD, DST**
- **Advanced Audio mute feature**
- **Flexible digital audio output interfaces**
- **Supports up to 5 SPDIF outputs,**
- **Supports up to 4 I2S outputs**

General
- **Highly flexible 36-bit pixel output interface**
- **Internal EDID RAM for HDMI and graphics**
- **Dual STDI (standard identification) function support**
- **Any-to-any, 3 × 3 color space conversion (CSC) matrix**
- **2 programmable interrupt request output pins**
- **Simultaneous analog processing and HDMI monitoring**

APPLICATIONS

Advanced TVs
- **PDP HDTVs**
- **LCD TVs (HDTV ready)**
- **LCD/DLP® rear projection HDTVs**
- **CRT HDTVs**
- **LCoS™ HDTVs**

AVR video receivers
LCD/DLP front projectors
HDTV STBs with PVR
Projectors

FUNCTIONAL BLOCK DIAGRAM

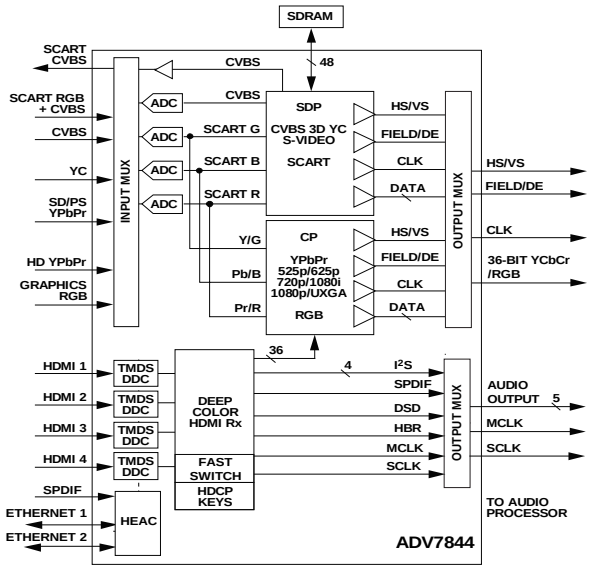


Figure 1.

Advantiv® Advanced Television Solutions by Analog Devices | NSV® Precision Video by Analog Devices

ADV7844

PRELIMINARY

DETAILED FUNCTIONAL BLOCK DIAGRAM

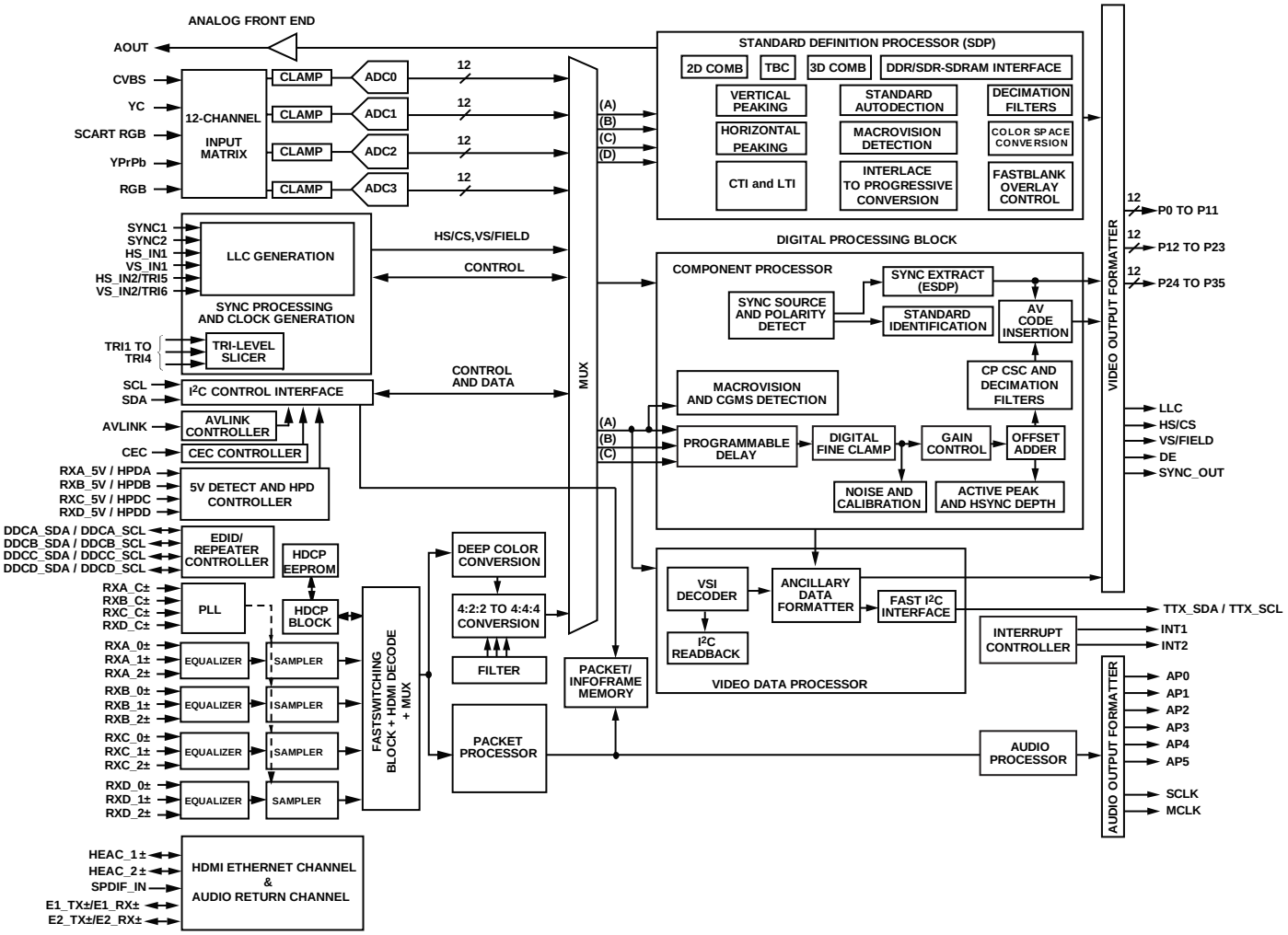


Figure 2. Detailed Functional Block Diagram

ADV7844

PRELIMINARY

PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
A	GND	VS/FIELD	E2_TX+	E2_RX+	TVDD	RXD_2-	RXD_1-	RXD_0-	RXD_C-	HEAC_2-	TVDD	RXC_2-	RXC_1-	RXC_0-	RXC_C-	NC	TVDD	RXB_2-	RXB_1-	RXB_0-	RXB_C-	HEAC_1-	GND	A
B	HS/CS	FIELD/DE	E2_TX-	E2_RX-	TVDD	RXD_2+	RXD_1+	RXD_0+	RXD_C+	HEAC_2+	TVDD	RXC_2+	RXC_1+	RXC_0+	RXC_C+	NC	TVDD	RXB_2+	RXB_1+	RXB_0+	RXB_C+	HEAC_1+	GND	B
C	P0	P1	E1_TX+	E1_RX+	TVDD	PWRDN1	PWRDN2	HPA_D	RXD_5V	RXC_5V	TVDD	GND	GND	GND	GND	GND	GND	TVDD	TVDD	TVDD	TVDD	TVDD	TVDD	C
D	P2	P3	E1_TX-	E1_RX-	TVDD	SYNC_OUT	CEC	HPA_C	RXB_5V	HPA_B	TVDD	RXA_5V	HPA_A	DDCD_SDA	DDCD_SCL	DDCC_SDA	DDCC_SCL	RTERM	DDCB_SDA	DDCB_SCL	TVDD	RXA_2+	RXA_2-	D
E	DVDDIO	DVDDIO	GND	GND																DDCA_SDA	CVDD	RXA_1+	RXA_1-	E
F	P5	P4	EP_MISO	EP_MOSI																DDCA_SCL	CVDD	RXA_0+	RXA_0-	F
G	P7	P6	EP_CS	EP_SCK			GND	GND	GND	GND	TEST1	TEST2	GND	GND	CVDD	CVDD	CVDD			VGA_SCL	CVDD	RXA_C+	RXA_C-	G
H	P9	P8	TTX_SDA	TTX_SCL			GND	GND	GND	GND	GND	GND	GND	GND	CVDD	CVDD	CVDD			VGA_SDA	CVDD	NC	NC	H
J	P11	P10	MCLK	AP0			GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			PVDD	TEST3	GND	GND	J
K	P13	P12	AP5	SCLK			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			PVDD	GND	XTALN	XTALP	K
L	DVDDIO	DVDDIO	GND	GND			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			GND	GND	GND	GND	L
M	P15	P14	AP4	AP3			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			GND	GND	REFN	REFP	M
N	P17	P16	AP2	AP1			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			AVDD	AVDD	AVDD	AVDD	N
P	P18	P19	SCL	SDA			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			AVDD	AVDD	AIN11	AIN12	P
R	P20	P21	TEST4	INT1			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			HS_IN2/TRI7	VS_IN2/TRI8	SYNC4	AIN10	R
T	P22	P23	TEST5	INT2			VDD	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND			GND	GND	GND	GND	T
U	DVDDIO	DVDDIO	DVDDIO	DVDDIO			VDD	VDD	VDD	VDD	VDD	VDD	VDD	VDD	GND	GND	GND			TRI4	TRI3	AIN9	AIN8	U
V	LLC	P24	RESET	AVLINK																TRI1	TRI2	SYNC3	AIN7	V
W	P25	P26	NC	SPDIF_IN																AVDD	AVDD	AVDD	AVDD	W
Y	P27	P28	GND	GND	GND	VDD_SDRAM	SDRAM_A11	SDRAM_A6	SDRAM_A2	SDRAM_CS	SDRAM_LDQS	GND	SDRAM_DQ6	SDRAM_DQ2	SDRAM_DQ15	SDRAM_DQ11	SDRAM_CKE	VDD_SDRAM	GND	AOUT	NC	AIN5	AIN6	Y
AA	P29	P30	GND	GND	GND	VDD_SDRAM	SDRAM_A9	SDRAM_A5	SDRAM_A1	SDRAM_RAS	SDRAM_DQ7	GND	SDRAM_DQ5	SDRAM_DQ1	SDRAM_DQ12	SDRAM_DQ8	SDRAM_CK	VDD_SDRAM	GND	NC	NC	SYNC2	AIN4	AA
AB	P31	P32	P34	NC	GND	DVDDIO	SDRAM_A8	SDRAM_A4	SDRAM_A0	SDRAM_BA1	SDRAM_CAS	VDD_SDRAM	SDRAM_DQ4	SDRAM_DQ0	SDRAM_DQ13	SDRAM_DQ9	SDRAM_CKN	VDD_SDRAM	GND	SYNC1	HS_IN1/TRI5	VS_IN1/TRI6	GND	AB
AC	GND	P33	P35	NC	GND	DVDDIO	SDRAM_A7	SDRAM_A3	SDRAM_A10	SDRAM_BA0	SDRAM_WE	VDD_SDRAM	SDRAM_DQ3	SDRAM_VREF	SDRAM_DQ14	SDRAM_DQ10	SDRAM_UDQS	VDD_SDRAM	GND	AIN1	AIN2	AIN3	GND	AC
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	

Figure 7. Pin Configuration

Table 6. Function Descriptions

Pin No.	Mnemonic	Type	Description
A1	GND	Ground	Ground
A2	VS/FIELD	Digital video output	VS is a vertical synchronization output signal. FIELD is a field synchronization output signal in all interlaced video modes. VS or FIELD can be configured for this pin.
A3	E2_TX+	Digital output	Digital Output Channel 2 True of Ethernet Interface
A4	E2_RX+	Digital input	Digital Input Channel 2 True of Ethernet Interface
A5	TVDD	Power	Terminator Supply Voltage (3.3 V).
A6	RXD_2-	HDMI input	Digital Input Channel 2 Complement of Port D in the HDMI Interface.
A7	RXD_1-	HDMI input	Digital Input Channel 1 Complement of Port D in the HDMI Interface.
A8	RXD_0-	HDMI input	Digital Input Channel 0 Complement of Port D in the HDMI Interface.
A9	RXD_C-	HDMI input	Digital Input Clock Complement of Port D in the HDMI Interface.
A10	HEAC_2-	HDMI input/output	HDMI Ethernet and Audio Return Channel (HEAC) Complement Channel 2 in HDMI Interface
A11	TVDD	Power	Terminator Supply Voltage (3.3 V).
A12	RXC_2-	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.
A13	RXC_1-	HDMI input	Digital Input Channel 1 Complement of Port C in the HDMI Interface.
A14	RXC_0-	HDMI input	Digital Input Channel 0 Complement of Port C in the HDMI Interface.
A15	RXC_C-	HDMI input	Digital Input Clock Complement of Port C in the HDMI Interface.
A16	NC	No connect	No Connect.
A17	TVDD	Power	Terminator Supply Voltage (3.3 V).
A18	RXB_2-	HDMI input	Digital Input Channel 2 Complement of Port B in the HDMI Interface.
A19	RXB_1-	HDMI input	Digital Input Channel 1 Complement of Port B in the HDMI Interface.
A20	RXB_0-	HDMI input	Digital Input Channel 0 Complement of Port B in the HDMI Interface.
A21	RXB_C-	HDMI input	Digital Input Clock Complement of Port B in the HDMI Interface.
A22	HEAC_1-	HDMI input/output	HDMI Ethernet and Audio Return Channel (HEAC) Complement Channel 1 in HDMI Interface
A23	GND	Ground	Ground
B1	HS/CS	Digital video output	HS is a horizontal synchronization output signal. CS (composite synchronization) signal is a single signal containing both horizontal and vertical synchronization pulses.
B2	FIELD/DE	Miscellaneous digital	DE (data enable) is a signal that indicates active pixel data. FIELD is a field synchronization output signal in all interlaced video modes. DE or FIELD can be configured for this pin.
B3	E2_TX-	Digital output	Digital Output Channel 2 Complimentary of Ethernet Interface
B4	E2_RX-	Digital input	Digital Input Channel 2 Complimentary of Ethernet Interface
B5	TVDD	Power	Terminator Supply Voltage (3.3 V).
B6	RXD_2+	HDMI input	Digital Input Channel 2 True of Port D in the HDMI Interface.
B7	RXD_1+	HDMI input	Digital Input Channel 1 True of Port D in the HDMI Interface.
B8	RXD_0+	HDMI input	Digital Input Channel 0 True of Port D in the HDMI Interface.
B9	RXD_C+	HDMI input	Digital Input Clock True of Port D in the HDMI Interface.
B10	HEAC_2+	HDMI input/output	HDMI Ethernet and Audio Return Channel (HEAC) True Channel 2 in HDMI Interface
B11	TVDD	Power	Terminator Supply Voltage (3.3 V).
B12	RXC_2+	HDMI input	Digital Input Channel 2 True Of Port C in the HDMI Interface.
B13	RXC_1+	HDMI input	Digital Input Channel 1 True Of Port C in the HDMI Interface.
B14	RXC_0+	HDMI input	Digital Input Channel 0 True Of Port C in the HDMI Interface.
B15	RXC_C+	HDMI input	Digital Input Clock True Of Port C in the HDMI Interface.
B16	NC	No Connect	No Connect.
B17	TVDD	Power	Terminator Supply Voltage (3.3 V).
B18	RXB_2+	HDMI input	Digital Input Channel 2 True of Port B in the HDMI Interface.
B19	RXB_1+	HDMI input	Digital Input Channel 1 True of Port B in the HDMI Interface.
B20	RXB_0+	HDMI input	Digital Input Channel 0 True of Port B in the HDMI Interface.
B21	RXB_C+	HDMI input	Digital Input Clock True of Port B in the HDMI Interface.

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Pin No.	Mnemonic	Type	Description
B22	HEAC_1+	HDMI input/output	HDMI Ethernet and Audio Return Channel (HEAC) True Channel 1 in HDMI Interface
B23	GND	Ground	Ground
C1	P0	Digital video output	Video Pixel Output Port.
C2	P1	Digital video output	Video Pixel Output Port.
C3	E1_TX+	Digital output	Digital Output Channel 1 True of Ethernet Interface
C4	E1_RX+	Digital input	Digital Input Channel 1 True of Ethernet Interface
C5	TVDD	Power	Terminator Supply Voltage (3.3 V).
C6	$\overline{\text{PWRDN1}}$	Miscellaneous digital	Controls the Power-Up of the ADV7844. Should be connected to a digital 3.3 V I/O supply to power up the ADV7844.
C7	$\overline{\text{PWRDN2}}$	Test pin	This pin should be connected to the ground.
C8	HPA_D	Miscellaneous digital	Hot Plug Assert signal output for HDMI port D.
C9	RXD_5V	HDMI input	5 V Detect Pin for Port D in the HDMI Interface.
C10	RXC_5V	HDMI input	5 V Detect Pin for Port C in the HDMI Interface.
C11	TVDD	Power	Terminator Supply Voltage (3.3 V).
C12	GND	Ground	Ground
C13	GND	Ground	Ground
C14	GND	Ground	Ground
C15	GND	Ground	Ground
C16	GND	Ground	Ground
C17	GND	Ground	Ground
C18	TVDD	Power	Terminator Supply Voltage (3.3 V).
C19	TVDD	Power	Terminator Supply Voltage (3.3 V).
C20	TVDD	Power	Terminator Supply Voltage (3.3 V).
C21	TVDD	Power	Terminator Supply Voltage (3.3 V).
C22	TVDD	Power	Terminator Supply Voltage (3.3 V).
C23	TVDD	Power	Terminator Supply Voltage (3.3 V).
D1	P2	Digital video output	Video Pixel Output Port.
D2	P3	Digital video output	Video Pixel Output Port.
D3	E1_TX-	Digital output	Digital Output Channel 1 Complimentary of Ethernet Interface
D4	E1_RX-	Digital input	Digital Input Channel 1 Complimentary of Ethernet Interface
D5	TVDD	Power	Terminator Supply Voltage (3.3 V).
D6	SYNC_OUT	Miscellaneous digital	Sliced synchronization output.
D7	CEC	Digital input/output	Consumer Electronic Control Channel.
D8	HPA_C	Miscellaneous digital	Hot Plug Assert signal output for HDMI port C.
D9	RXB_5V	HDMI input	5 V Detect Pin for Port B in the HDMI Interface.
D10	HPA_B	Miscellaneous digital	Hot Plug Assert signal output for HDMI port B.
D11	TVDD	Power	Terminator Supply Voltage (3.3 V).
D12	RXA_5V	HDMI input	5 V Detect Pin for Port A in the HDMI Interface.
D13	HPA_A	Miscellaneous digital	Hot Plug Assert signal output for HDMI port A.
D14	DDCD_SDA	HDMI input	HDCP Slave Serial Data Port D. DDCD_SDA is a 3.3 V input that is 5 V tolerant.
D15	DDCD_SCL	HDMI input	HDCP Slave Serial Clock Port D. DDCD_SCL is a 3.3 V input that is 5 V tolerant.
D16	DDCC_SDA	HDMI input	HDCP Slave Serial Data Port C. DDCC_SDA is a 3.3 V input that is 5 V tolerant.
D17	DDCC_SCL	HDMI input	HDCP Slave Serial Clock Port C. DDCC_SCL is a 3.3 V input that is 5 V tolerant.
D18	RTERM	Miscellaneous	Sets Internal Termination Resistance. A 500 Ω resistor between this pin and

Pin No.	Mnemonic	Type	Description
		analog	GND should be used.
D19	DDCB_SDA	HDMI input	HDCP Slave Serial Data Port B. DDCB_SDA is a 3.3 V input that is 5 V tolerant.
D20	DDCB_SCL	HDMI input	HDCP Slave Serial Clock Port B. DDCB_SCL is a 3.3 V input that is 5 V tolerant.
D21	TVDD	Power	Terminator Supply Voltage (3.3 V).
D22	RXA_2+	HDMI input	Digital Input Channel 2 True of Port A in the HDMI Interface.
D23	RXA_2-	HDMI input	Digital Input Channel 2 Complement of Port A in the HDMI Interface.
E1	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
E2	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
E3	GND	Ground	Ground
E4	GND	Ground	Ground
E20	DDCA_SDA	HDMI input	HDCP Slave Serial Data Port A. DDCA_SDA is a 3.3 V input that is 5 V tolerant.
E21	CVDD	Power	Comparator Supply Voltage (1.8 V).
E22	RXA_1+	HDMI input	Digital Input Channel 1 True of Port A in the HDMI Interface.
E23	RXA_1-	HDMI input	Digital Input Channel 1 Complement of Port A in the HDMI Interface.
F1	P5	Digital video output	Video Pixel Output Port.
F2	P4	Digital video output	Video Pixel Output Port.
F3	EP_MISO	Digital output	SPI Master In/Slave Out for External EDID Interface.
F4	EP_MOSI	Digital input	SPI Master Out/Slave In for External EDID Interface.
F20	DDCA_SCL	HDMI input	HDCP Slave Serial Clock Port A. DDCA_SCL is a 3.3 V input that is 5 V tolerant.
F21	CVDD	Power	Comparator Supply Voltage (1.8 V).
F22	RXA_0+	HDMI input	Digital Input Channel 0 True of Port A in the HDMI Interface.
F23	RXA_0-	HDMI input	Digital Input Channel 0 Complement of Port A in the HDMI Interface.
G1	P7	Digital video output	Video Pixel Output Port.
G2	P6	Digital video output	Video Pixel Output Port.
G3	$\overline{\text{EP\_CS}}$	Digital output	SPI Chip Select for External EDID Interface.
G4	EP_SCK	Digital output	SPI Clock for External EDID Interface.
G7	GND	Ground	Ground
G8	GND	Ground	Ground
G9	GND	Ground	Ground
G10	GND	Ground	Ground
G11	TEST1	Test	Do Not Connect.
G12	TEST2	Test	Do Not Connect.
G13	GND	Ground	Ground
G14	GND	Ground	Ground
G15	CVDD	Power	Comparator Supply Voltage (1.8 V).
G16	CVDD	Power	Comparator Supply Voltage (1.8 V).
G17	CVDD	Power	Comparator Supply Voltage (1.8 V).
G20	VGA_SCL	Miscellaneous digital	DDC Port Serial Clock Input for VGA
G21	CVDD	Power	Comparator Supply Voltage (1.8 V).
G22	RXA_C+	HDMI input	Digital Input Clock True of Port A in the HDMI Interface.
G23	RXA_C-	HDMI input	Digital Input Clock Complement of Port A in the HDMI Interface.
H1	P9	Digital video output	Video Pixel Output Port.
H2	P8	Digital video output	Video Pixel Output Port.
H3	TTX_SDA	Miscellaneous digital	I2C Port Serial Data Input/Output Pin. SDA is the data line for the teletext port.
H4	TTX_SCL	Miscellaneous digital	I2C Port Serial Clock Input. SCL is the clock line for the teletext port.

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Pin No.	Mnemonic	Type	Description
H7	GND	Ground	Ground
H8	GND	Ground	Ground
H9	GND	Ground	Ground
H10	GND	Ground	Ground
H11	GND	Ground	Ground
H12	GND	Ground	Ground
H13	GND	Ground	Ground
H14	GND	Ground	Ground
H15	CVDD	Power	Comparator Supply Voltage (1.8 V).
H16	CVDD	Power	Comparator Supply Voltage (1.8 V).
H17	CVDD	Power	Comparator Supply Voltage (1.8 V).
H20	VGA_SDA	Miscellaneous digital	DDC Port Data Clock Input for VGA
H21	CVDD	Power	Comparator Supply Voltage (1.8 V).
H22	NC	No Connect	No Connect
H23	NC	No Connect	No Connect
J1	P11	Digital video output	Video Pixel Output Port.
J2	P10	Digital video output	Video Pixel Output Port.
J3	MCLK	Miscellaneous	Audio Master Clock Output.
J4	AP0	Miscellaneous	Audio Output Pin. Pins AP0-AP5 can be configured to output SPDIF Digital Audio Output (SPDIF), High Bit Rate (HBR), Direct Stream Digital (DSD), Direct Stream Transfer (DST) or I2S.
J7	GND	Ground	Ground
J8	GND	Ground	Ground
J9	GND	Ground	Ground
J10	GND	Ground	Ground
J11	GND	Ground	Ground
J12	GND	Ground	Ground
J13	GND	Ground	Ground
J14	GND	Ground	Ground
J15	GND	Ground	Ground
J16	GND	Ground	Ground
J17	GND	Ground	Ground
J20	PVDD	Power	PLL Supply Voltage (1.8 V).
J21	TEST3	Test	Do Not Connect.
J22	GND	Ground	Ground
J23	GND	Ground	Ground
K1	P13	Digital video output	Video Pixel Output Port.
K2	P12	Digital video output	Video Pixel Output Port.
K3	AP5	Miscellaneous	Audio Output Pin. Pins AP0-AP5 can be configured to output SPDIF Digital Audio Output (SPDIF), High Bit Rate (HBR), Direct Stream Digital (DSD), Direct Stream Transfer (DST) or I2S.
K4	SCLK	Miscellaneous digital	Audio Serial Clock Output.
K7	VDD	Power	Digital Core Supply Voltage (1.8 V).
K8	GND	Ground	Ground
K9	GND	Ground	Ground
K10	GND	Ground	Ground
K11	GND	Ground	Ground
K12	GND	Ground	Ground

Pin No.	Mnemonic	Type	Description
K13	GND	Ground	Ground
K14	GND	Ground	Ground
K15	GND	Ground	Ground
K16	GND	Ground	Ground
K17	GND	Ground	Ground
K20	PVDD	Power	PLL Supply Voltage (1.8 V).
K21	GND	Ground	Ground
K22	XTALN	Miscellaneous analog	Input Pin for 28.63636 MHz Crystal.
K23	XTALP	Miscellaneous analog	Crystal Input. Input pin for 28.63636 MHz Crystal or an External 1.8 V, 28.63636 MHz Clock Oscillator Source to Clock the ADV7844.
L1	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
L2	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
L3	GND	Ground	Ground
L4	GND	Ground	Ground
L7	VDD	Power	Digital Core Supply Voltage (1.8 V).
L8	GND	Ground	Ground
L9	GND	Ground	Ground
L10	GND	Ground	Ground
L11	GND	Ground	Ground
L12	GND	Ground	Ground
L13	GND	Ground	Ground
L14	GND	Ground	Ground
L15	GND	Ground	Ground
L16	GND	Ground	Ground
L17	GND	Ground	Ground
L20	GND	Ground	Ground
L21	GND	Ground	Ground
L22	GND	Ground	Ground
L23	GND	Ground	Ground
M1	P15	Digital video output	Video Pixel Output Port.
M2	P14	Digital video output	Video Pixel Output Port.
M3	AP4	Miscellaneous	Audio Output Pin. Pins AP0-AP5 can be configured to output SPDIF Digital Audio Output (SPDIF), High Bit Rate (HBR), Direct Stream Digital (DSD), Direct Stream Transfer (DST) or I2S.
M4	AP3	Miscellaneous	Audio Output Pin. Pins AP0-AP5 can be configured to output SPDIF Digital Audio Output (SPDIF), High Bit Rate (HBR), Direct Stream Digital (DSD), Direct Stream Transfer (DST) or I2S.
M7	VDD	Power	Digital Core Supply Voltage (1.8 V).
M8	GND	Ground	Ground
M9	GND	Ground	Ground
M10	GND	Ground	Ground
M11	GND	Ground	Ground
M12	GND	Ground	Ground
M13	GND	Ground	Ground
M14	GND	Ground	Ground
M15	GND	Ground	Ground
M16	GND	Ground	Ground
M17	GND	Ground	Ground
M20	GND	Ground	Ground
M21	GND	Ground	Ground
M22	REFN	Miscellaneous	Internal Voltage Reference Output.

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Pin No.	Mnemonic	Type	Description
		analog	
M23	REFP	Miscellaneous analog	Internal Voltage Reference Output.
N1	P17	Digital video output	Video Pixel Output Port.
N2	P16	Digital video output	Video Pixel Output Port.
N3	AP2	Miscellaneous	Audio Output Pin. Pins AP0-AP5 can be configured to output SPDIF Digital Audio Output (SPDIF), High Bit Rate (HBR), Direct Stream Digital (DSD), Direct Stream Transfer (DST) or I2S.
N4	AP1	Miscellaneous	Audio Output Pin. Pins AP0-AP5 can be configured to output SPDIF Digital Audio Output (SPDIF), High Bit Rate (HBR), Direct Stream Digital (DSD), Direct Stream Transfer (DST) or I2S.
N7	VDD	Power	Digital Core Supply Voltage (1.8 V).
N8	GND	Ground	Ground
N9	GND	Ground	Ground
N10	GND	Ground	Ground
N11	GND	Ground	Ground
N12	GND	Ground	Ground
N13	GND	Ground	Ground
N14	GND	Ground	Ground
N15	GND	Ground	Ground
N16	GND	Ground	Ground
N17	GND	Ground	Ground
N20	AVDD	Power	Analog Supply Voltage (1.8 V).
N21	AVDD	Power	Analog Supply Voltage (1.8 V).
N22	AVDD	Power	Analog Supply Voltage (1.8 V).
N23	AVDD	Power	Analog Supply Voltage (1.8 V).
P1	P18	Digital video output	Video Pixel Output Port.
P2	P19	Digital video output	Video Pixel Output Port.
P3	SCL	Miscellaneous digital	I^2C Port Serial Clock Input. SCL is the clock line for the control port.
P4	SDA	Miscellaneous digital	I^2C Port Serial Data Input/Output Pin. SDA is the data line for the control port.
P7	VDD	Power	Digital Core Supply Voltage (1.8 V).
P8	GND	Ground	Ground
P9	GND	Ground	Ground
P10	GND	Ground	Ground
P11	GND	Ground	Ground
P12	GND	Ground	Ground
P13	GND	Ground	Ground
P14	GND	Ground	Ground
P15	GND	Ground	Ground
P16	GND	Ground	Ground
P17	GND	Ground	Ground
P20	AVDD	Power	Analog Supply Voltage (1.8 V).
P21	AVDD	Power	Analog Supply Voltage (1.8 V).
P22	AIN11	Analog video input	Analog Video Input Channel.
P23	AIN12	Analog video input	Analog Video Input Channel.
R1	P20	Digital video output	Video Pixel Output Port.
R2	P21	Digital video output	Video Pixel Output Port.
R3	TEST4	Test	Do Not Connect.

Pin No.	Mnemonic	Type	Description
R4	INT1	Miscellaneous digital	Interrupt. This pin can be active low or active high. When status bits change, this pin is triggered. The events that trigger an interrupt are under user control.
R7	VDD	Power	Digital Core Supply Voltage (1.8 V).
R8	GND	Ground	Ground
R9	GND	Ground	Ground
R10	GND	Ground	Ground
R11	GND	Ground	Ground
R12	GND	Ground	Ground
R13	GND	Ground	Ground
R14	GND	Ground	Ground
R15	GND	Ground	Ground
R16	GND	Ground	Ground
R17	GND	Ground	Ground
R20	HS_IN2/TRI7	Miscellaneous analog	HS on Graphics Port 2. The HS input signal is used for 5-wire timing mode. This pin can also be used as a trilevel/bilevel input on the SCART or D-terminal connector. Result available via I^2C.
R21	VS_IN2/TRI8	Miscellaneous analog	VS on Graphics Port 2. The VS input signal is used for 5-wire timing mode. This pin can also be used as a trilevel/bilevel input on the SCART or D-terminal connector. Result available via I^2C.
R22	SYNC4	Miscellaneous analog	This is a synchronization on green or luma input (SOG/SOY) used in embedded synchronization mode. User configurable.
R23	AIN10	Analog video input	Analog Video Input Channel.
T1	P22	Digital video output	Video Pixel Output Port.
T2	P23	Digital video output	Video Pixel Output Port.
T3	TEST5	Test	Do Not Connect.
T4	INT2	Miscellaneous digital	Interrupt. This pin can be active low or active high. When status bits change, this pin is triggered. The events that trigger an interrupt are under user control.
T7	VDD	Power	Digital Core Supply Voltage (1.8 V).
T8	GND	Ground	Ground
T9	GND	Ground	Ground
T10	GND	Ground	Ground
T11	GND	Ground	Ground
T12	GND	Ground	Ground
T13	GND	Ground	Ground
T14	GND	Ground	Ground
T15	GND	Ground	Ground
T16	GND	Ground	Ground
T17	GND	Ground	Ground
T20	GND	Ground	Ground
T21	GND	Ground	Ground
T22	GND	Ground	Ground
T23	GND	Ground	Ground
U1	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
U2	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
U3	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
U4	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
U7	VDD	Power	Digital Core Supply Voltage (1.8 V).
U8	VDD	Power	Digital Core Supply Voltage (1.8 V).
U9	VDD	Power	Digital Core Supply Voltage (1.8 V).
U10	VDD	Power	Digital Core Supply Voltage (1.8 V).

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Pin No.	Mnemonic	Type	Description
U11	VDD	Power	Digital Core Supply Voltage (1.8 V).
U12	VDD	Power	Digital Core Supply Voltage (1.8 V).
U13	VDD	Power	Digital Core Supply Voltage (1.8 V).
U14	VDD	Power	Digital Core Supply Voltage (1.8 V).
U15	GND	Ground	Ground
U16	GND	Ground	Ground
U17	GND	Ground	Ground
U20	TRI4	Miscellaneous analog	Trilevel/Bilevel Input on the SCART or D-Terminal Connector. Result available via I2C.
U21	TRI3	Miscellaneous analog	Trilevel/Bilevel Input on the SCART or D-Terminal Connector. Result available via I2C.
U22	AIN9	Analog video input	Analog Video Input Channel.
U23	AIN8	Analog video input	Analog Video Input Channel.
V1	LLC	Digital video output	Line-Locked Output Clock for the Pixel Data (Range is 13.5 MHz to 170 MHz).
V2	P24	Digital video output	Video Pixel Output Port.
V3	$\overline{\text{RESET}}$	Miscellaneous digital	System Reset Input. Active low. A minimum low reset pulse width of 5 ms is required to reset the ADV7844 circuitry.
V4	AVLINK	Digital input/output	Digital SCART Control Channel.
V20	TRI1	Miscellaneous analog	Trilevel/Bilevel Input on the SCART or D-Terminal Connector. Result available via I2C.
V21	TRI2	Miscellaneous analog	Trilevel/Bilevel Input on the SCART or D-Terminal Connector. Result available via I2C.
V22	SYNC3	Miscellaneous analog	This is a synchronization on green or luma input (SOG/SOY) used in embedded synchronization mode. User configurable.
V23	AIN7	Analog video input	Analog Video Input Channel.
W1	P25	Digital video output	Video Pixel Output Port.
W2	P26	Digital video output	Video Pixel Output Port.
W3	NC	No connect	No Connect.
W4	SPDIF_IN	Miscellaneous digital	Audio Clock Input Pin for SPDIF
W20	AVDD	Power	Analog Supply Voltage (1.8 V).
W21	AVDD	Power	Analog Supply Voltage (1.8 V).
W22	AVDD	Power	Analog Supply Voltage (1.8 V).
W23	AVDD	Power	Analog Supply Voltage (1.8 V).
Y1	P27	Digital video output	Video Pixel Output Port.
Y2	P28	Digital video output	Video Pixel Output Port.
Y3	GND	Ground	Ground
Y4	GND	Ground	Ground
Y5	GND	Ground	Ground
Y6	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
Y7	SDRAM_A11	SDRAM interface	Address Output. Interface to external RAM address lines.
Y8	SDRAM_A6	SDRAM interface	Address Output. Interface to external RAM address lines.
Y9	SDRAM_A2	SDRAM interface	Address Output. Interface to external RAM address lines.
Y10	$\overline{\text{SDRAM\_CS}}$	SDRAM interface	Chip Select. $\overline{\text{SDRAM\_CS}}$ enables and disables the command decoder on the RAM. One of four command signals to the external SDRAM.
Y11	SDRAM_LDQS	SDRAM interface	Lower Data Strobe Pin. Data strobe pins are used for the RAM interface. This is an output with read data and an input with write data. It is edge aligned with write data and centered in read data. SDRAM_ LDQS corresponds to the data on SDRAM_DQ0 to SDRAM_
Y12	GND	Ground	Ground

Pin No.	Mnemonic	Type	Description
Y13	SDRAM_DQ6	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
Y14	SDRAM_DQ2	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
Y15	SDRAM_DQ15	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
Y16	SDRAM_DQ11	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
Y17	SDRAM_CKE	SDRAM interface	Clock Enable. This pin acts as an enable to the clock signals of the external RAM.
Y18	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
Y19	GND	Ground	Ground
Y20	AOUT	Analog monitor output	Analog Monitor Output.
Y21	NC	No connect	No Connect.
Y22	AIN5	Analog video input	Analog Video Input Channel.
Y23	AIN6	Analog video input	Analog Video Input Channel.
AA1	P29	Digital video output	Video Pixel Output Port.
AA2	P30	Digital video output	Video Pixel Output Port.
AA3	GND	Ground	Ground
AA4	GND	Ground	Ground
AA5	GND	Ground	Ground
AA6	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
AA7	SDRAM_A9	SDRAM interface	Address Output. Interface to external RAM address lines.
AA8	SDRAM_A5	SDRAM interface	Address Output. Interface to external RAM address lines.
AA9	SDRAM_A1	SDRAM interface	Address Output. Interface to external RAM address lines.
AA10	$\overline{\text{SDRAM\_RAS}}$	SDRAM interface	Row Address Select Command Signal. One of four command signals to the external SDRAM.
AA11	SDRAM_DQ7	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AA12	GND	Ground	Ground
AA13	SDRAM_DQ5	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AA14	SDRAM_DQ1	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AA15	SDRAM_DQ12	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AA16	SDRAM_DQ8	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AA17	SDRAM_CK	SDRAM interface	Differential Clock Output. All address and control output signals to the RAM should be sampled on the positive edge of SDRAM_CK and on the negative edge of $\overline{\text{SDRAM\_CK}}$.
AA18	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
AA19	GND	Ground	Ground
AA20	NC	No connect	No Connect.
AA21	NC	No connect	No Connect.
AA22	SYNC2	Miscellaneous analog	This is a synchronization on green or luma input (SOG/SOY) used in embedded synchronization mode. User configurable.
AA23	AIN4	Analog video input	Analog Video Input Channel.
AB1	P31	Digital video output	Video Pixel Output Port.
AB2	P32	Digital video output	Video Pixel Output Port.
AB3	P34	Digital video output	Video Pixel Output Port.
AB4	NC	No connect	No Connect.
AB5	GND	Ground	Ground
AB6	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
AB7	SDRAM_A8	SDRAM interface	Address Output. Interface to external RAM address lines.
AB8	SDRAM_A4	SDRAM interface	Address Output. Interface to external RAM address lines.

Pin No.	Mnemonic	Type	Description
AB9	SDRAM_A0	SDRAM interface	Address Output. Interface to external RAM address lines.
AB10	SDRAM_BA1	SDRAM interface	Bank Address Output. Interface to external RAM bank address lines.
AB11	SDRAM_CAS	SDRAM interface	Column Address Select Command Signal. One of four command signals to the external SDRAM.
AB12	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
AB13	SDRAM_DQ4	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AB14	SDRAM_DQ0	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AB15	SDRAM_DQ13	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AB16	SDRAM_DQ9	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AB17	SDRAM_CK	SDRAM interface	Differential Clock Output. All address and control output signals to the RAM should be sampled on the positive edge of SDRAM_CK and on the negative edge of SDRAM_CK.
AB18	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
AB19	GND	Ground	Ground
AB20	SYNC1	Miscellaneous analog	This is a synchronization on green or luma input (SOG/SOY) used in embedded synchronization mode. User configurable.
AB21	HS_IN1/TRI5	Miscellaneous analog	HS on Graphics Port 1. The HS input signal is used for 5-wire timing mode. HS_IN1/TRI5 is a 3.3 V input that is 5 V tolerant.
AB22	VS_IN1/TRI6	Miscellaneous analog	Vertical Synchronization Input Signal. Used for 5-wire timing mode.
AB23	GND	Ground	Ground
AC1	GND	Ground	Ground
AC2	P33	Digital video output	Video Pixel Output Port.
AC3	P35	Digital video output	Video Pixel Output Port.
AC4	NC	No connect	No Connect.
AC5	GND	Ground	Ground
AC6	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
AC7	SDRAM_A7	SDRAM interface	Address Output. Interface to external RAM address lines.
AC8	SDRAM_A3	SDRAM interface	Address Output. Interface to external RAM address lines.
AC9	SDRAM_A10	SDRAM interface	Address Output. Interface to external RAM address lines.
AC10	SDRAM_BA0	SDRAM interface	Bank Address Output. Interface to external RAM bank address lines.
AC11	SDRAM_WE	SDRAM interface	Write Enable Output Command Signal. One of four command signals to the external SDRAM.
AC12	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
AC13	SDRAM_DQ3	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AC14	SDRAM_VREF	SDRAM interface	1.25 V Reference for DDR SDRAM Interface or 1.65 V for SDR.
AC15	SDRAM_DQ14	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AC16	SDRAM_DQ10	SDRAM interface	Data Bus. Interface to external RAM 16-bit data bus.
AC17	SDRAM_UDQS	SDRAM interface	Upper Data Strobe Pin. Data strobe pins for the RAM interface. This is an output with read data and an input with write data. It is edge aligned with write data and centered in read data. UDQS corresponds to the data on DQ8 to DQ16.
AC18	VDD_SDRAM	Power	External Memory Interface Digital Input/Output Supply (DDR 2.5 V or SDR 3.3 V).
AC19	GND	Ground	Ground
AC20	AIN1	Analog video input	Analog Video Input Channel.
AC21	AIN2	Analog video input	Analog Video Input Channel.
AC22	AIN3	Analog video input	Analog Video Input Channel.
AC23	GND	Ground	Ground

HDMI 1.4 Mux with Xpressview Fast Switching

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ADV3014

FEATURES

4-input, 1-output HDMI mux
HDMI 1.4a support: 3D TV formats, content type bits, CEC 1.4-compatible
Xpressview fast switching on all HDMI input ports
High-bandwidth digital content protection (HDCP 1.4a)
HDCP repeater support
225 MHz HDMI Rx and Tx support 36-/30-/24-bit Deep Color
Ultralow jitter digital PLL (100% deskew)
Quad HDMI Rx input
- **Adaptive equalizer for cable lengths up to 30 meters**
- **Internal extended display identification data (EDID) RAM**
- **EDID replication (512 bytes per port)**
- **EDID with HDMI cable 5 V power support**
- **5 V detect inputs**
- **Hot plug assertion control pins**

Single HDMI Tx output: EDID data extraction and hot plug detect (HPD) input
HDMI 1.4a audio pass-through support
- **I²S, DSD, and HBR, including Dolby TrueHD and DTS-HD master audio**

General
- **Interrupt controller with 3 interrupt outputs**
- **Software libraries, driver, and application available**
- **2-layer PCB design supported**
- **144-lead, 20 mm × 20 mm LQFP package**

APPLICATIONS

Port expansion for Analog Devices HDMI decoders
Audio video receivers (AVRs)
Home theater in a box (HTiB)
Sound bar with HDMI repeater support
Flat panel TVs
Other repeater applications

GENERAL DESCRIPTION

The ADV3014 is a high performance, four-input, one-output, High-Definition Multimedia Interface (HDMI™) switch that integrates HDMI 1.4a receiver and transmitter functions onto one chip. It supports all HDCP repeater functions through fully tested Analog Devices, Inc., repeater software libraries and drivers. The ADV3014 incorporates Xpressview™ fast switching on all

FUNCTIONAL BLOCK DIAGRAM

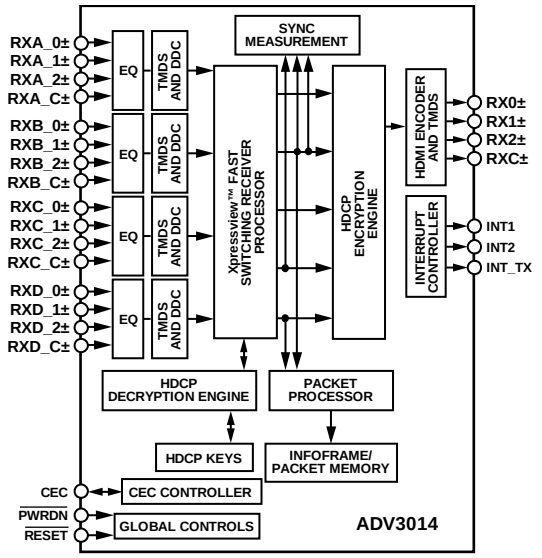

Figure 1.

input HDMI ports. Using the Analog Devices hardware-based HDCP engine that minimizes software overhead, Xpressview technology allows fast switching between any HDMI input ports in less than 1 second.

The ADV3014 supports all mandatory HDMI 1.4a 3D TV formats in addition to all HD TV formats up to 1080p 36-bit Deep Color. The ADV3014 also features an integrated HDMI 1.4 CEC controller, which supports capability discovery and control (CDC).

The HDMI receiver supports programmable/adaptive equalization that ensures robust operation of the interface at cable lengths of up to 30 meters.

The ADV3014 offers integrated control of hot plug circuits, sensing of 5 V input signals and on-board EDID controls with EDID replication and power-down mode EDID.

The ADV3014 supports pass-through of all HDMI 1.4a audio formats including I²S, DSD, and HBR formats such as Dolby® TrueHD and DTS-HD® master audio.

Fabricated in an advanced CMOS process, the ADV3014 is provided in a space-saving, 144-lead, 20 mm × 20 mm LQFP surface-mount, Pb-free package. It is specified over the 0°C to 70°C temperature range.

Advantiv® Advanced Television Solutions by Analog Devices | NSV® Precision Video by Analog Devices

DETAILED FUNCTIONAL BLOCK DIAGRAM

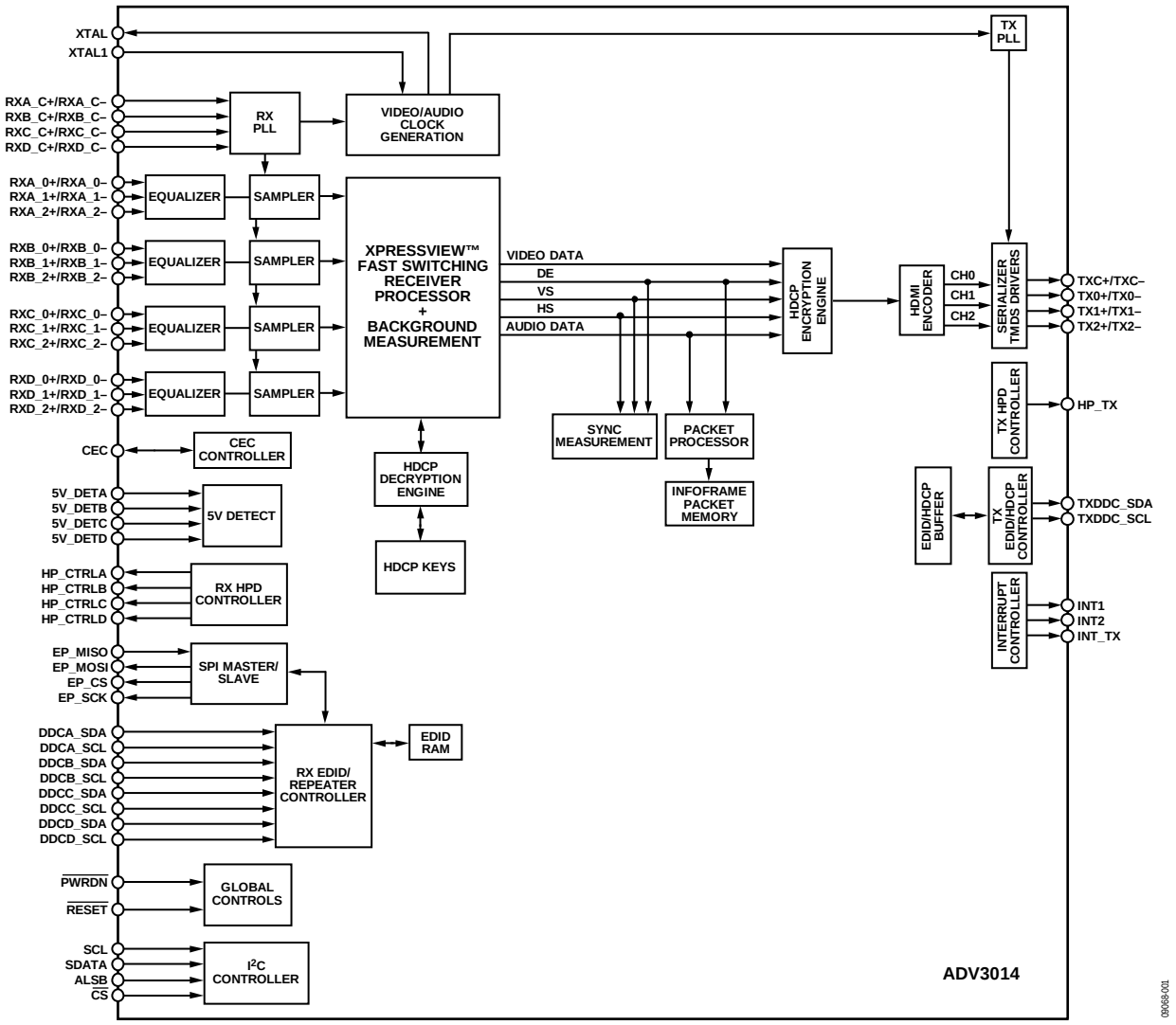

Figure 2. Detailed Functional Block Diagram

PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

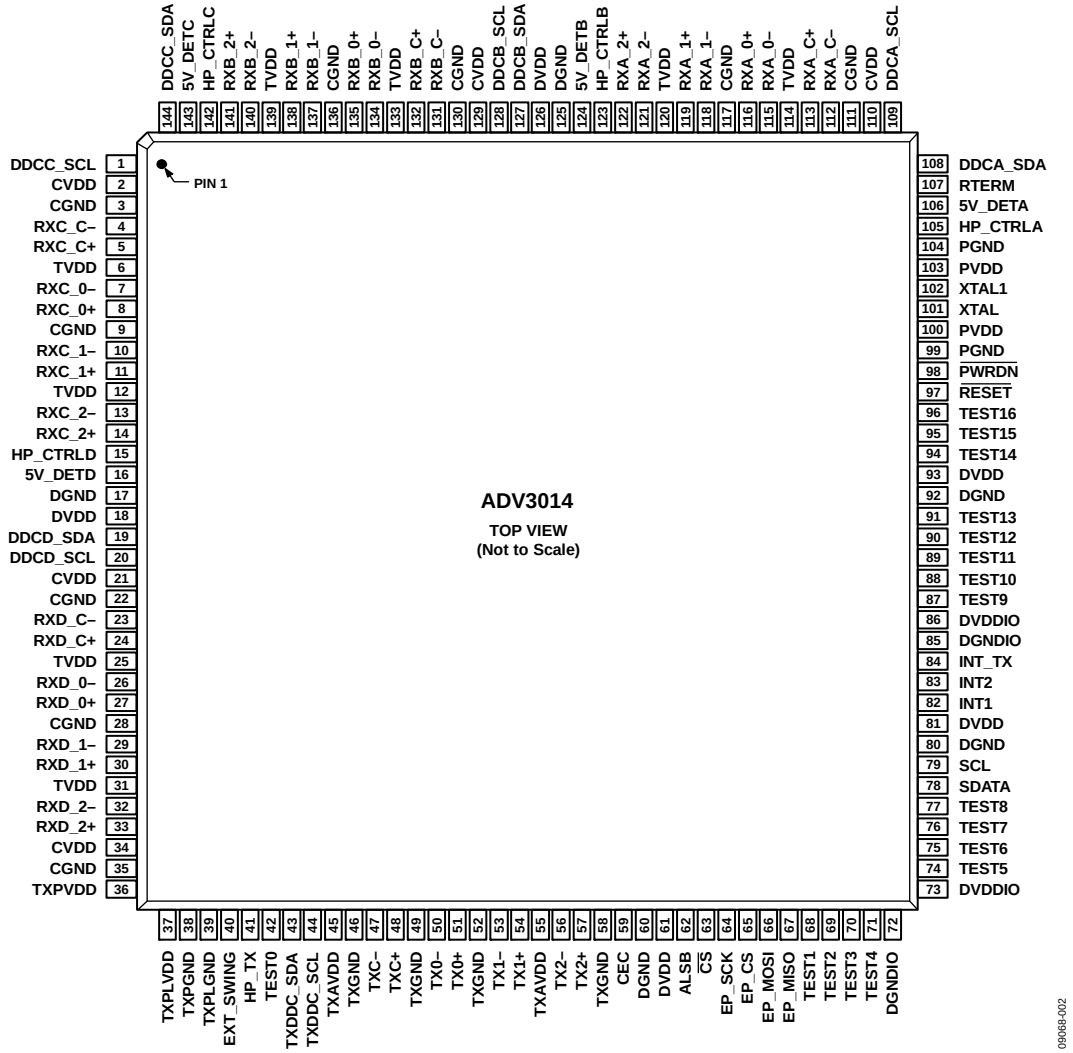

Figure 4. Pin Configuration

Table 5: Pin Function Descriptions

Pin No.	Mnemonic	Type	Description
1	DDCC_SCL	Digital input	HDCP Slave Serial Clock Port C. DDCC_SCL is a 3.3 V input that is 5 V tolerant.
2	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
3	CGND	Ground	TVDD and CVDD Ground.
4	RXC_C–	HDMI input	Digital Input Clock Complement of Port C in the HDMI Interface.
5	RXC_C+	HDMI input	Digital Input Clock True of Port C in the HDMI Interface.
6	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
7	RXC_0–	HDMI input	Digital Input Channel 0 Complement of Port C in the HDMI Interface.
8	RXC_0+	HDMI input	Digital Input Channel 0 True of Port C in the HDMI Interface.
9	CGND	Ground	TVDD and CVDD Ground.
10	RXC_1–	HDMI input	Digital Input Channel 1 Complement of Port C in the HDMI Interface.
11	RXC_1+	HDMI input	Digital Input Channel 1 True of Port C in the HDMI Interface.
12	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
13	RXC_2–	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.

ADI Confidential **ADV3014**

Pin No.	Mnemonic	Type	Description
14	RXC_2+	HDMI input	Digital Input Channel 2 True of Port C in the HDMI Interface.
15	HP_CTRLD	Digital output	Hot Plug Control Output for Port D. This pin is 5 V tolerant.
16	5V_DETD	HDMI input	5 V Detect Pin for Port D in the HDMI Interface. This pin is 5 V tolerant.
17	DGND	Ground	DVDD Ground.
18	DVDD	Power	Digital Supply Voltage (1.8 V).
19	DDCD_SDA	Digital I/O	HDCP Slave Serial Data Port D. DDCD_SDA is a 3.3 V input that is 5 V tolerant.
20	DDCD_SCL	Digital Input	HDCP Slave Serial Clock Port D. DDCD_SCL is a 3.3 V input that is 5 V tolerant.
21	CVDD	Power	Comparator Supply Voltage (1.8 V).
22	CGND	Ground	TVDD and CVDD Ground.
23	RXD_C−	HDMI input	Digital Input Clock Complement of Port D in the HDMI Interface.
24	RXD_C+	HDMI input	Digital Input Clock True of Port D in the HDMI Interface.
25	TVDD	Power	Terminator Supply Voltage (3.3 V).
26	RXD_0-	HDMI input	Digital Input Channel 0 Complement of Port D in the HDMI Interface.
27	RXD_0+	HDMI input	Digital Input Channel 0 True of Port D in the HDMI Interface.
28	CGND	Ground	TVDD and CVDD Ground.
29	RXD_1−	HDMI input	Digital Input Channel 1 Complement of Port D in the HDMI Interface.
30	RXD_1+	HDMI input	Digital Input Channel 1 True of Port D in the HDMI Interface.
31	TVDD	Power	Terminator Supply Voltage (3.3 V).
32	RXD_2−	HDMI input	Digital Input Channel 2 Complement of Port D in the HDMI Interface.
33	RXD_2+	HDMI input	Digital Input Channel 2 True of Port D in the HDMI Interface.
34	CVDD	Power	Comparator Supply Voltage (1.8 V).
35	CGND	Ground	TVDD and CVDD Ground.
36	TXPVDD	Power	1.8 V PLL Power Supply. These pins provide power to the digital portion of the clock PLL. The designer should provide quiet, noise-free power to these pins.
37	TXPLVDD	Power	1.8 V power supply
38	TXPGND	Ground	TXPVDD Ground.
39	TXPLGND	Ground	TXPLVDD Ground
40	EXT_SWING	Analog input	Sets Internal Reference Currents. Place an 887Ω resistor (1% tolerance) between this pin and ground.
41	HP_TX	Analog input	Hot Plug Detect Signal. This pin indicates to the interface whether the receiver is connected. This pin is 5 V tolerant.
42	TEST0	Test pin	Connect to ground.
43	TXDDC_SDA	Digital I/O	Serial Port Data I/O to Receiver. This pin serves as the master to the DDC bus. This pin is 5 V tolerant.
44	TXDDC_SCL	Digital output	Serial Port Data Clock to Receiver. This pin serves as the master clock for the DDC bus. This pin is 5 V tolerant.
45	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.
46	TXGND	Ground	TXAVDD Ground.
47	TXC−	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
48	TXC+	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
49	TXGND	Ground	TXAVDD Ground.
50	TX0−	HDMI output	Differential Output Channel 0 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
51	TX0+	HDMI output	Differential Output Channel 0 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
52	TXGND	Ground	TXAVDD Ground.
53	TX1−	HDMI output	Differential Output Channel 1 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
54	TX1+	HDMI output	Differential Output Channel 1 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
55	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.
56	TX2−	HDMI output	Differential Output Channel 2 Complement. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.

ADV3014

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Pin No.	Mnemonic	Type	Description
57	TX2+	HDMI output	Differential Output Channel 2 True. Differential output of the red data at 10× the pixel clock rate; supports TMDS logic level.
58	TXGND	Ground	TXAVDD Ground.
59	CEC	Digital I/O	Consumer Electronics Control Channel. This pin is 5 V tolerant.
60	DGND	Ground	DVDD Ground.
61	DVDD	Power	Digital Supply Voltage (1.8 V).
62	ALSB	Digital input	This pin is used to set the I^2C address of the Rx IO and the Tx main maps.
63	$\overline{CS}$	Digital input	Chip Select Pin. This pin must be set low or left floating for the chip to process I2C messages that are destined for the ADV3014. The ADV3014 ignores I2C messages that it receives if this pin is high.
64	EP_SCK	Digital output	SPI Clock Interface for the EDID.
65	EP_CS	Digital output	SPI Chip Selected Interface for the EDID.
66	EP_MOSI	Digital output	SPI Master Out/Slave In for the EDID.
67	EP_MISO	Digital input	SPI Master In/Slave Out for the EDID.
68	TEST1	Test pin	Connect to ground.
69	TEST2	Test pin	Connect to ground.
70	TEST3	Test pin	Connect to ground.
71	TEST4	Test pin	Connect to ground.
72	DGNDIO	Ground	DVDDIO Ground.
73	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
74	TEST5	Test pin	Connect to ground.
75	TEST6	Test pin	Connect to ground.
76	TEST7	Test pin	Connect to ground.
77	TEST8	Test pin	Connect to ground.
78	SDATA	Digital I/O	I^2C Port Serial Data Input/Output Pin. SDATA is the data line for the control port.
79	SCL	Digital input	I^2C Port Serial Clock Input. SCL is the clock line for the control port.
80	DGND	Ground	DVDD Ground.
81	DVDD	Power	Digital Supply Voltage (1.8 V).
82	INT1	Digital output	Interrupt Pin. This pin can be active low or active high. When status bits change, this pin is triggered. The events that trigger an interrupt are under user control.
83	INT2	Digital output	Interrupt Pin. This pin can be active low or active high. When status bits change, this pin is triggered. The events that trigger an interrupt are under user control.
84	INT_TX	Digital output	Interrupt; Open Drain. A 2 kΩ pull-up resistor to the microcontroller I/O supply is recommended.
85	DGNDIO	Ground	DVDDIO Ground.
86	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
87	TEST9	Test pin	Leave floating.
88	TEST10	Test pin	Leave floating.
89	TEST11	Test pin	Leave floating.
90	TEST12	Test pin	Leave floating.
91	TEST13	Test pin	Leave floating.
92	DGND	Ground	DVDD Ground.
93	DVDD	Power	Digital Supply Voltage (1.8 V).
94	TEST14	Test pin	Leave floating.
95	TEST15	Test pin	Leave floating.
96	TEST16	Test pin	Leave floating.
97	$\overline{RESET}$	Digital input	System Reset Input. Active low. A minimum low reset pulse width of 5 ms is required to reset the ADV3014 circuitry.
98	$\overline{PWRDN}$	Digital input	Active-Low Power-Down Pin. If used, this pin should be pulled high to power up the ADV3014. This pin can also be used as an in-system power detect where an internal EDID can be powered from a 5 V signal of the HDMI port when it is connected to active equipment. This pin is 5 V tolerant.
99	PGND	Ground	PVDD Ground.
100	PVDD	Power	PLL Supply Voltage (1.8 V).
101	XTAL	Miscellaneous analog	Input Pin for 28.63636 MHz Crystal or an External 1.8 V 28.63636 MHz Clock Oscillator Source to Clock the ADV3014.

Pin No.	Mnemonic	Type	Description
102	XTAL1	Miscellaneous analog	Crystal Output Pin. This pin should be left floating if a clock oscillator is used.
103	PVDD	Power	PLL Supply Voltage (1.8 V).
104	PGND	Ground	PVDD Ground.
105	HP_CTRLA	Digital output	Hot Plug Control Output for Port A. This pin is 5 V tolerant.
106	5V_DETA	Digital input	5 V Detect Pin for Port A in the HDMI Interface. This pin is 5 V tolerant.
107	RTERM	Miscellaneous analog	This pin sets the internal termination resistance. A 500 Ω resistor between this pin and ground should be used.
108	DDCA_SDA	Digital I/O	HDCP Slave Serial Data Port A. DDCA_SDA is a 3.3 V input/output that is 5 V tolerant.
109	DDCA_SCL	Digital input	HDCP Slave Serial Clock Port A. DDCA_SCL is a 3.3 V input that is 5 V tolerant.
110	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
111	CGND	Ground	TVDD and CVDD Ground.
112	RXA_C−	HDMI input	Digital Input Clock Complement of Port A in the HDMI Interface.
113	RXA_C+	HDMI input	Digital Input Clock True of Port A in the HDMI Interface.
114	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
115	RXA_0−	HDMI input	Digital Input Channel 0 Complement of Port A in the HDMI Interface.
116	RXA_0+	HDMI input	Digital Input Channel 0 True of Port A in the HDMI Interface.
117	CGND	Ground	TVDD and CVDD Ground.
118	RXA_1−	HDMI input	Digital Input Channel 1 Complement of Port A in the HDMI Interface.
119	RXA_1+	HDMI input	Digital Input Channel 1 True of Port A in the HDMI Interface.
120	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
121	RXA_2−	HDMI input	Digital Input Channel 2 Complement of Port A in the HDMI Interface.
122	RXA_2+	HDMI input	Digital Input Channel 2 True of Port A in the HDMI Interface.
123	HP_CTRLB	Digital output	Hot Plug Control Output for Port B. This pin is 5 V tolerant.
124	5V_DETB	Digital input	5 V Detect Pin for Port B in the HDMI Interface. This pin is 5 V tolerant.
125	DGND	Ground	DVDD Ground.
126	DVDD	Power	Digital Supply Voltage (1.8 V).
127	DDCB_SDA	Digital I/O	HDCP Slave Serial Data Port B. DDCB_SDA is a 3.3 V input/output that is 5 V tolerant.
128	DDCB_SCL	Digital input	HDCP Slave Serial Clock Port B. DDCB_SCL is a 3.3 V input that is 5 V tolerant.
129	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
130	CGND	Ground	TVDD and CVDD Ground.
131	RXB_C−	HDMI input	Digital Input Clock Complement of Port B in the HDMI Interface.
132	RXB_C+	HDMI input	Digital Input Clock True of Port B in the HDMI Interface.
133	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
134	RXB_0−	HDMI input	Digital Input Channel 0 Complement of Port B in the HDMI Interface.
135	RXB_0+	HDMI input	Digital Input Channel 0 True of Port B in the HDMI Interface.
136	CGND	Ground	TVDD and CVDD Ground.
137	RXB_1−	HDMI input	Digital Input Channel 1 Complement of Port B in the HDMI Interface.
138	RXB_1+	HDMI input	Digital Input Channel 1 True of Port B in the HDMI Interface.
139	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
140	RXB_2−	HDMI input	Digital Input Channel 2 Complement of Port B in the HDMI Interface.
141	RXB_2+	HDMI input	Digital Input Channel 2 True of Port B in the HDMI Interface.
142	HP_CTRLC	Digital output	Hot Plug Control Output for Port C. This pin is 5 V tolerant.
143	5V_DETC	Digital input	5 V Detect Pin for Port C in the HDMI Interface. This pin is 5 V tolerant.
144	DDCC_SDA	Digital I/O	HDCP Slave Serial Data Port C. DDCC_SDA is a 3.3 V input/output that is 5 V tolerant.

KEC

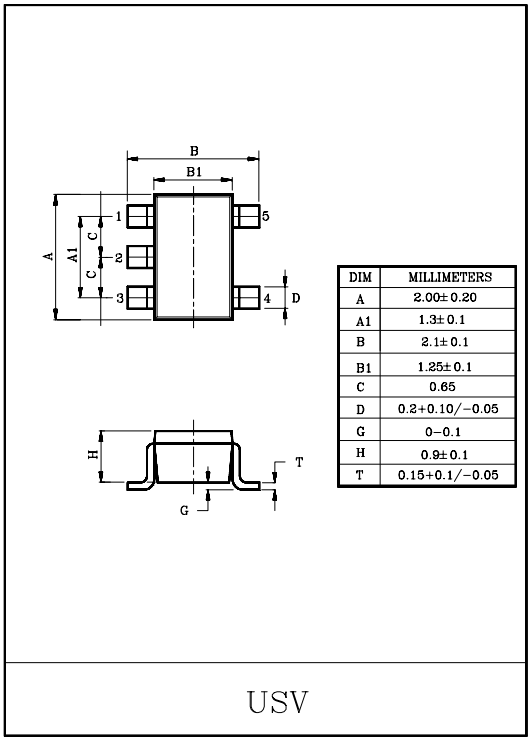
SEMICONDUCTOR
TECHNICAL DATA

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



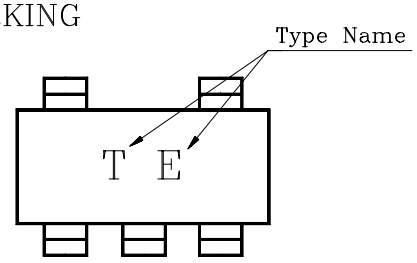
DIM	MILLIMETERS
A	2.00±0.20
A1	1.3±0.1
B	2.1±0.1
B1	1.25±0.1
C	0.65
D	0.2+0.10/−0.05
G	0~0.1
H	0.9±0.1
T	0.15+0.1/−0.05

USV

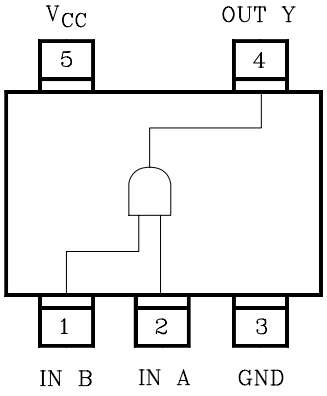
MAXIMUM RATINGS

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	℃

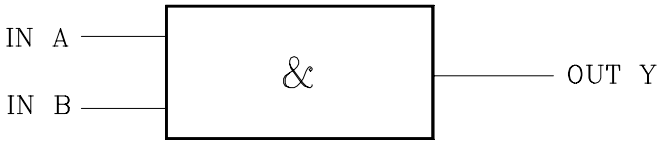
MARKING



PIN CONNECTION(TOP VIEW)



LOGIC DIAGRAM



CMOS 32-Bit Microcontrollers

TMP92CD28FG / TMP92CD28DFG

1. Outline and Device Characteristics

The TMP92CD28 is a high-speed advanced 32-bit Microcontroller developed for controlling equipment which processes mass data.

The TMP92CD28 has a high-performance CPU (900/H1 CPU) and various built-in I/Os.

The TMP92CD28FG and TMP92CD28DFG are housed in a 100-pin flat package.

Device characteristics are as follows:

(1) CPU: 32-bit CPU (900/H1 CPU)
- Compatible with 900/L1 instruction code
- 16 Mbytes of linear address space
- General-purpose register and register banks
- Micro DMA: 8 channels (250 ns/4 bytes at f_{SYS} = 20 MHz, best case)

(2) Minimum instruction execution time: 50 ns (at f_{SYS} = 20 MHz)

(3) Internal memory
- Internal RAM: 32-Kbytes
- Internal ROM: 512-Kbytes

(4) External memory expansion
- Expandable up to 16 Mbytes (Shared program/data area)
- Can simultaneously support 8- or 16-bit width external data bus
  ···Dynamic data bus sizing
- Separate bus system

(5) Memory controller
- Chip select output: 3 channels

(6) 8-bit timers: 6 channels

(7) 16-bit timers: 2 channels

(8) General-purpose serial interface: 2 channels
- UART/synchronous mode: 2 channels (channel 0 , and 1)
- IrDA ver.1.0 (115 kbps) mode selectable: 2 channels (channel 0 and 1)

(9) Serial bus interface: 2 channels
- I^2C bus mode
- Clock synchronous mode (only channel 1)

(10) SPI controller : 1 channel
- Supported up to SPI mode of SD card and MMC card
- Built-in FIFO buffer of 32 bytes to each Input/Output

(11) High Speed serial interface : 1 channel
- Built-in FIFO buffer of 32 bytes to each Input/Output

(12) USB Host Controller : 1chanel
- Universal Serial Bus Specification Rev2.0
- Open HCI for USB Release 1.0a
- 12Mbps – Full speed support. (Isochronous Transfer is not supported.)

(13) Watchdog timer

(14) Timer for real-time clock (RTC)

(15) Key-on wake up (only for HALT release):4 channels

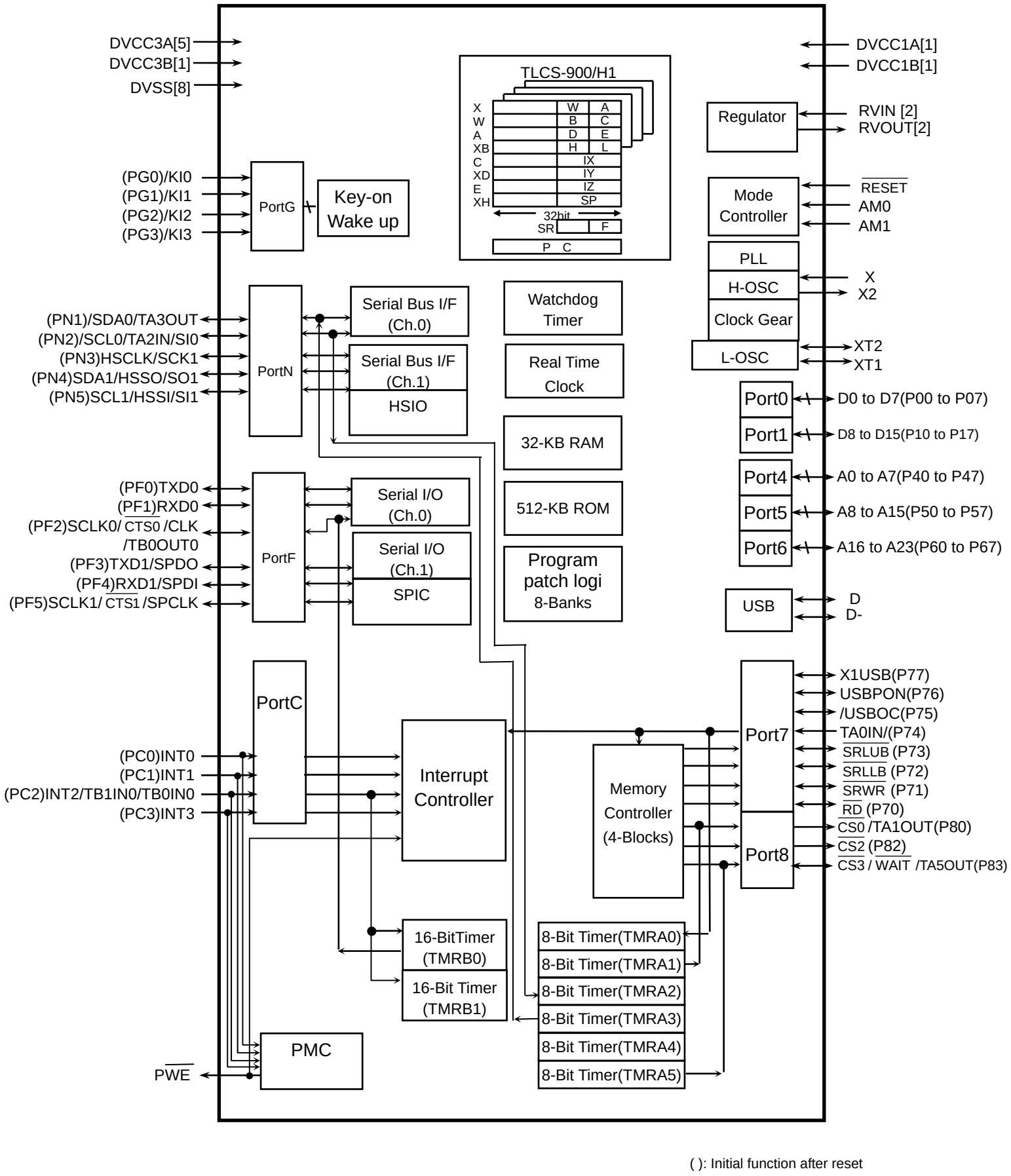
(16) Program patch logic: 8 banks

(17) Interrupts: 47interrupts
- 9 CPU interrupts: Software interrupt instruction and illegal instruction
- 34 internal interrupts: Seven selectable priority levels
- 4 external interrupts (INT0 to INT3): Seven selectable priority levels
  (INT0 to INT3 selectable edge or level interrupt)

(18) Input/output ports: 70pins

(19) Standby function
- Three HALT modes: IDLE2 (Programmable), IDLE1, STOP
- Power cut mode (Built-in power supply management circuits (PMC) for leak current provision.)

(20) Clock controller
- Built-in two blocks of clock doubler (PLL). PLL supplies 48 MHz for USB and 36 MHz for CPU from 9MHz
- Clock gear function: Select high-frequency clock fc to fc/16
- Special timer for CLOCK (fs = 32.768 kHz)



( ): Initial function after reset

Figure 1.1 TMP92CD28 Block Diagram

2. Pin Assignment and Functions

The assignment of input/output pins for the TMP92CD28, their names and functions are as follows:

2.1 Pin Assignment Diagram

Figure 2.1.1 shows the pin assignment of the TMP92CD28FG.

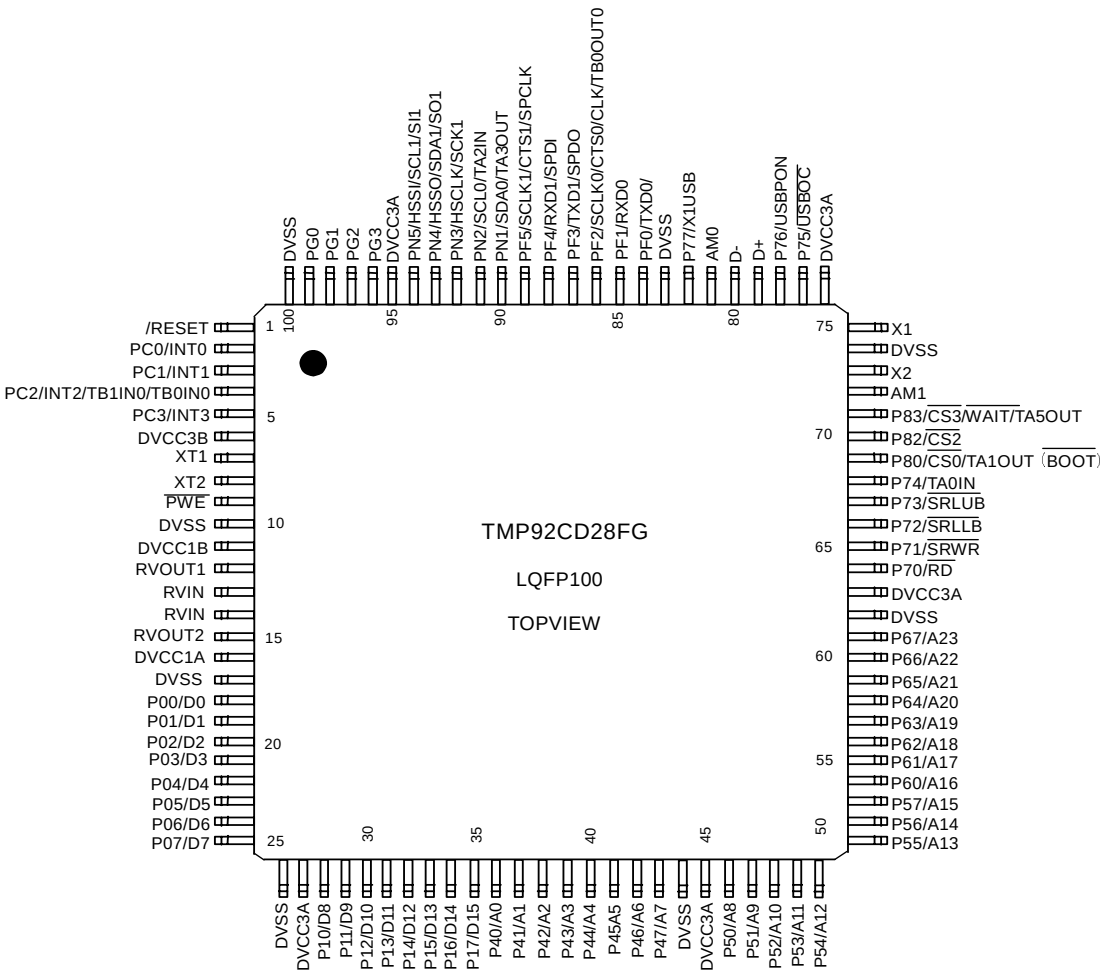


Figure 2.1.1 Pin Assignment Diagram (100-pin LQFP)

Figure 2.1.2 shows the pin assignment of the TMP92CD28DFG.

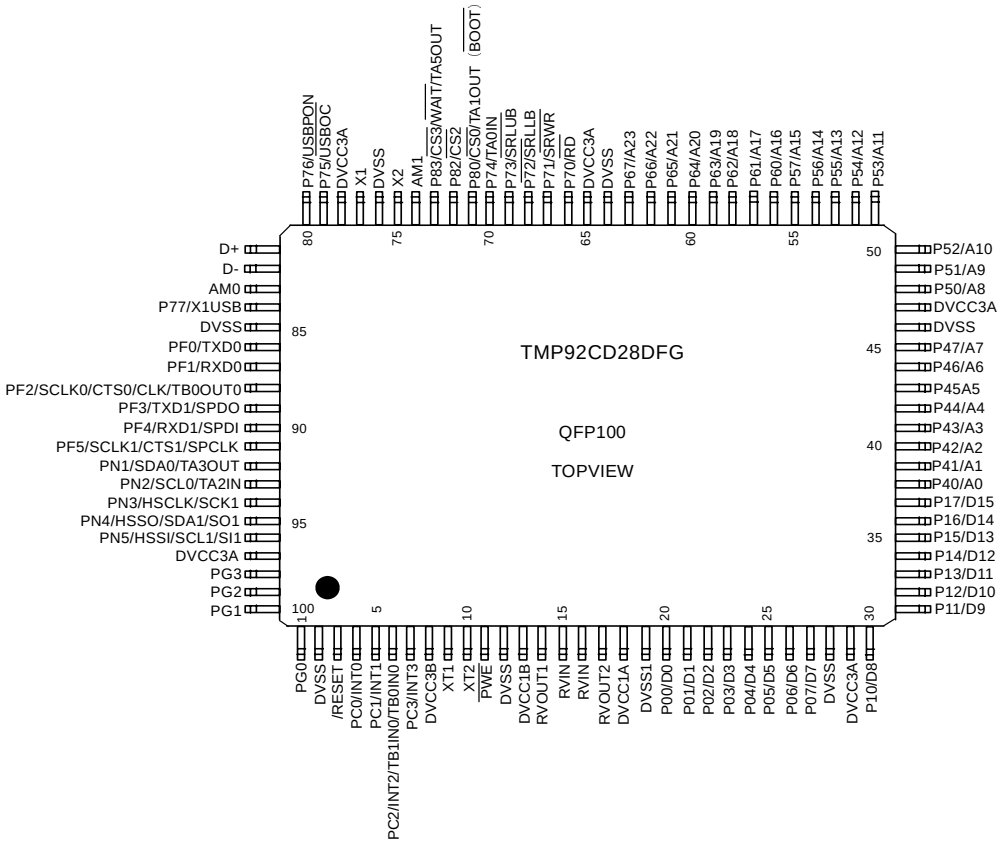


Figure 2.1.2 Pin Assignment Diagram (100-pin QFP)

2.2 Pin Names and Functions

The following table shows the names and functions of the input/output pins

Table 2.2.1 Pin Names and Functions (1/3)

Pin name	Number of Pin	I/O	Function
P00 to P07 D0 to D7	8	I/O I/O	Port 0: I/O port Input or output specifiable in units of bits Data: Data bus 0 to 7
P10 to P17 D8 to D15	8	I/O I/O	Port 1: I/O port Input or output specifiable in units of bits Data: Data bus 8 to 15
P40 to P47 A0 to A7	8	I/O Output	Port 4: I/O port Input or output specifiable in units of bits Address: Address bus 0 to 7
P50 to P57 A8 to A15	8	I/O Output	Port 5: I/O port Input or output specifiable in units of bits Address: Address bus 8 to 15
P60 to P67 A16 to A23	8	I/O Output	Port 6: I/O port Input or output specifiable in units of bits Address: Address bus 16 to 23
P70 $\overline{RD}$	1	I/O Output	Port 70: I/O port (Schmitt input, with pull-up register) Read: Outputs strobe signal for read external memory.
P71 $\overline{SRWR}$	1	I/O Output	Port 71: I/O port (Schmitt input, with pull-up register) Write enable for SRAM: Strobe signal for wiritng data.
P72 $\overline{SRLLB}$	1	I/O Output	Port 72: I/O port (Schmitt input, with pull-up register) Data enable for SRAM on pins D0 to D7
P73 $\overline{SRLUB}$	1	I/O Output	Port 73: I/O port (Schmitt input, with pull-up register) Data enable for SRAM on pins D8 to D15
P74 TA0IN	1	Input Input	Port 74: Input port (Schmitt input) 8-bit timer 0 input: Input pin of 8-bit timer TMRA0
P75 USBOC	1	I/O Input	Port 75: I/O port (Schmitt input) USBOC Input
P76 USBPON	1	I/O Output	Port 76: I/O port (Schmitt input) USBPON Output
P77 X1USB	1	I/O Input	Port 77: I/O port 48MHz Clock Input for USB Host Controller
P80 $\overline{CS0}$ TA1OUT ($\overline{BOOT}$ Note)	1	Output Output Output Input	Port 80: Output port Chip select 0: Outputs “Low” when address is within specified address area 8-bit timer 1 Output: Output pin of 8-bit timer TMRA0 or TMRA1 This pin sets single boot mode (only during reset). (Note) The function of TMP92FD28
P82 $\overline{CS2}$	1	Output Output	Port 82: Output port Chip select 2: Outputs “Low” when address is within specified address area
P83 $\overline{CS3}$ TA5OUT $\overline{WAIT}$	1	I/O Output Output Input	Port 83: I/O port Chip select 3: Outputs “Low” when address is within specified address area 8-bit timer 5 Output: Output pin of 8-bit timer TMRA4 or TMRA5 Wait: Signal used to request CPU bus wait
PC0 INT0	1	Input Input	Port C0: Input port (Schmitt input) Interrupt request pin0 : Interrupt request pin with programmable level/rising/falling edge
PC1 INT1	1	Input Input	Port C1: Input port (Schmitt input) Interrupt request pin 1 : Interrupt request pin with programmable level/rising/falling edge
PC2 INT2 TB0IN0 TB1IN0	1	Input Input Input Input	Port C2: Input port (Schmitt input) Interrupt request pin 2 : Interrupt request pin with programmable level/rising/falling edge 16-bit timer 0 input 0: Input of count/capture trigger in 16-bit timer TMRB0 16-bit timer 1 input 0: Input of count/capture trigger in 16-bit timer TMRB1
PC3 INT3	1	Input Input	Port C3: Input port (Schmitt input) Interrupt request pin 3 : Interrupt request pin with programmable level/rising/falling edge

Table 2.2.2 Pin Names and Functions (2/3)

Pin name	Number of Pin	I/O	Function
PF0	1	I/O	Port F0: I/O port (Schmitt input)
TXD0		Output	Serial 0 send data: Open drain output programmable
PF1	1	I/O	Port F1: I/O port (Schmitt input)
RXD0		Input	Serial 0 receive data
PF2	1	I/O	Port F2: I/O port (Schmitt input)
SCLK0		I/O	Serial 0 clock I/O
$\overline{\text{CTS0}}$		Input	Serial 0 data send enable (Clear to send)
CLK		Output	Clock: System Clock output
TB0OUT0		Output	16-bit timer 0 output 0: Output pin of 16-bit timer TMRB0
PF3	1	I/O	Port F3: I/O port (Schmitt input)
TXD1		Output	Serial 1 send data: Open drain output programmable
SPDO		Output	SPI Data output
PF4	1	I/O	Port F4: I/O port (Schmitt input)
RXD1		Input	Serial 1 receive data
SPDI		Input	SPI Data input
PF5	1	I/O	Port F5: I/O port (Schmitt input)
SCLK1		I/O	Serial 1 clock I/O
$\overline{\text{CTS1}}$		Input	Serial 1 data send enable (Clear to send)
SPCLK		Output	SPI Clock output
PG0 to PG3	4	Input	Port G: Input port (Schmitt input)
KI0 to KI3			Key input 0 to 7: Pin used of key-on wakeup 0 to 7

Table 2.2.3 Pin Names and Functions (3/3)

Pin name	Number of Pin	I/O	Function
PN1 SDA0 TA3OUT	1	I/O I/O Output	Port N1: I/O port (Schmitt input, Open drain output) Serial bus interface 0 send/receive data at I^2C mode 8-bit timer 3 Output: Output pin of 8-bit timer TMRA2 or TMRA3
PN2 SCL0 TA2IN	1	I/O I/O Input	Port N2: I/O port (Schmitt input, Open drain output) Serial bus interface 0 clock I/O data at I^2C mode 8-bit timer 2 input: Input pin of 8-bit timer TMRA2
PN3 SCK1 HSCLK	1	I/O I/O Output	Port N3: I/O port (Schmitt input) Serial bus interface 1 clock I/O data at SIO mode HSIO Clock output
PN4 SO1 SDA1 HSSO	1	I/O Output I/O Output	Port N4: I/O port (Schmitt input, Open drain output) Serial bus interface 1 send data at SIO mode Serial bus interface 1 send/receive data at I^2C mode HSIO Data output
PN5 SI1 SCL1 HSSI	1	I/O Input I/O Input	Port N5: I/O port (Schmitt input, Open drain output) Serial bus interface 1 receive data at SIO mode Serial bus interface 1 clock I/O data at I^2C mode HSIO Data input
AM0, AM1	2	Input	Operation mode: Fixed to AM1 = "1" and AM0 = "1"
X1 / X2	2	I/O	High-frequency oscillator connection I/O pins
XT1/XT2	2	I/O	Low-frequency oscillator circuit connection pin.
$\overline{\text{RESET}}$	1	Input	Reset: Intializes TMP92CD28 (Schmitt input, with pull-up register)
$\overline{\text{PWE}}$	1	Output	External power supply control output: Pin to control ON/OFF of external power supply. In stand-by mode, outputs "L" level. In other than stand-by mode, outputs "H" level.
D+, D-	2	I/O	Data pin connected to USB. In case USB is not used, connect both pins to pull-up(DVCC3A) or pull-down resistor for protect current flows it.
RVIN	2	Input	Power supply pin for Internal Regulator
RVOUT1, RVOUT2	2	Output	1.5V output from Internal Regulator (Only Mask ROM Version)
DVCC3A	5	–	Power supply pin for peripheral I/O-A (Connect all DVCC3A pins to power supply pin.)
DVCC3B	1	–	Power supply pin for peripheral I/O-B (Connect all DVCC3B pins to power supply pin.)
DVCC1A	1	–	Power supply pin for internal logic-A.
DVCC1B	1	–	Power supply pin for internal logic-B.
DVSS	8	–	GND pins (0 V) (All DVSS pins shold be connected with GND(0V))

KSZ8851SNL/SNLI

Single-Port Ethernet Controller with SPI Interface

Rev. 2.0

General Description

The KSZ8851SNL is a single-chip Fast Ethernet controller consisting of a 10/100 physical layer transceiver (PHY), a MAC, and a Serial Peripheral Interface (SPI). The KSZ8851SNL is designed to enable an Ethernet network connectivity with any host micro-controller equipped with SPI interface. The KSZ8851SNL offers the most cost-effective solution for adding high-throughput Ethernet link to traditional embedded systems with SPI interface.

The KSZ8851SNL is a single chip, mixed analog/digital device offering Wake-on-LAN technology for effectively addressing Fast Ethernet applications. It consists of a Fast Ethernet MAC controller, SPI interface and incorporates a unique dynamic memory pointer with 4-byte buffer boundary and a fully utilizable 18KB for both TX (allocated 6KB) and RX (allocated 12KB) directions in host buffer interface.

The KSZ8851SNL is designed to be fully compliant with the appropriate IEEE 802.3 standards. An industrial temperature-grade version of the KSZ8851SNL, the KSZ8851SNLI is also available (see “Ordering Information” section).

LinkMD®

Physical signal transmission and reception are enhanced through the use of analog circuitry, making the design more efficient and allowing for lower-power consumption. The KSZ8851SNL is designed using a low-power CMOS process that features a single 3.3V power supply with options for 1.8V, 2.5V or 3.3V VDD I/O. The device includes an extensive feature set that offers management information base (MIB) counters and a fast SPI interface with clock speed up to 40MHz.

The KSZ8851SNL includes unique cable diagnostics feature called LinkMD®. This feature determines the length of the cabling plant and also ascertains if there is an open or short condition in the cable. Accompanying software enables the cable length and cable conditions to be conveniently displayed. In addition, the KSZ8851SNL supports Hewlett Packard (HP) Auto-MDIX thereby eliminating the need to differentiate between straight or crossover cables in applications.

Functional Diagram

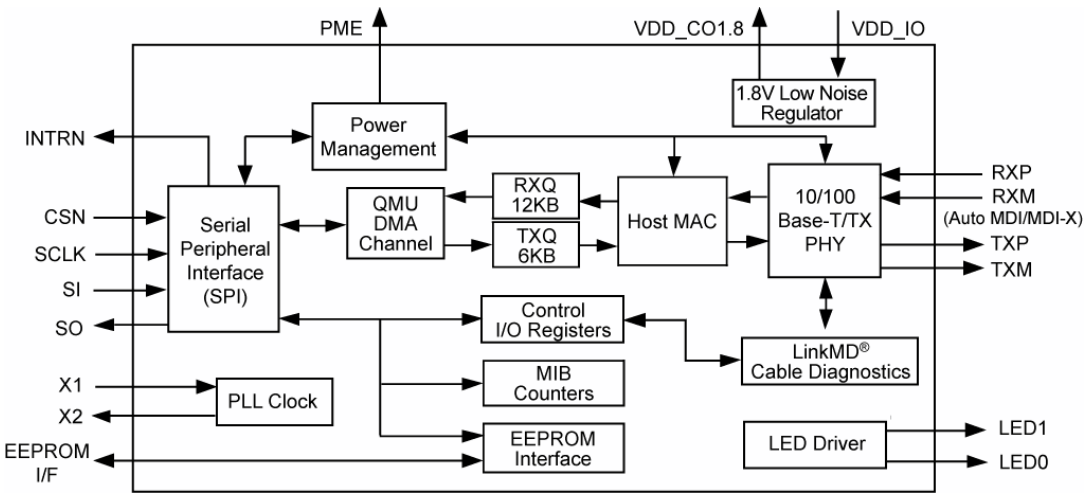


Figure 1. KSZ8851SNL/SNLI Functional Diagram

Features

- Integrated MAC and PHY Ethernet Controller fully compliant with IEEE 802.3/802.3u standards
- SPI Interface with clock speeds up to 40MHz for high throughput applications
- Supports 10BASE-T/100BASE-TX
- Supports IEEE 802.3x full-duplex flow control and half-duplex backpressure collision flow control
- Supports RXQ and TXQ FIFO DMA for fast data read and write transfers
- Supports IP Header (IPv4)/TCP/UDP/ICMP checksum generation and checking
- Supports IPv6 TCP/UDP/ICMP checksum generation and checking
- Automatic 32-bit CRC generation and checking
- Supports simple command and data phases in SPI cycle for RXQ/TXQ FIFO and registers read/write
- Supports multiple data frames for TXQ FIFO and RXQ FIFO without additional command phase
- Supports flexible Byte (8-bit), Word (16-bit) and Double word (32-bit) read/write access to internal registers
- Larger internal memory with 12K Bytes for RX FIFO and 6K Bytes for TX FIFO. Programmable low, high and overrun watermark for flow control in RX FIFO
- Efficient architecture design with configurable host interrupt schemes to minimize host CPU overhead and utilization
- Powerful and flexible address filtering scheme
- Optional to use external serial EEPROM configuration for MAC address
- Single 25MHz reference clock for both PHY and MAC
- HBM ESD Rating 6kV

Power Modes, Power Supplies, and Packaging

- Single 3.3V power supply with options for 1.8V, 2.5V and 3.3V VDD I/O
- Built-in integrated 3.3V or 2.5V to 1.8V low noise regulator (LDO) for core and analog blocks
- Enhanced power management feature with energy detect mode and soft power-down mode to ensure low-power dissipation during device idle periods
- Comprehensive LED indicator support for link, activity and 10/100 speed (2 LEDs)
  – User programmable
- Low-power CMOS design
- Commercial Temperature Range: 0°C to +70°C
- Industrial Temperature Range: –40°C to +85°C
- Available in 32-pin (5mm x 5mm) MLF® package

Additional Features

In addition to offering all of the features of a Layer 2 controller, the KSZ8851SNL offers:

- Supports to add two-byte before frame header in order for IP frame content with double word boundary
- Micrel LinkMD® cable diagnostic capabilities to determine cable length, diagnose faulty cables, and determine distance to fault
- Wake-on-LAN functionality
  – Incorporates Magic Packet™, wake-up frame, network link state, and detection of energy signal technology
- HP Auto MDI-X™ crossover with disable/enable option
- Ability to transmit and receive frames up to 2000 bytes

Network Features

- 10BASE-T and 100BASE-TX physical layer support
- Auto-negotiation: 10/100 Mbps full and half duplex
- Adaptive equalizer
- Baseline wander correction

Applications

- Video/Audio Distribution Systems
- Voice over IP (VoIP) and Analog Telephone Adapters (ATA)
- Building Automation
- Home Base Control with Ethernet Connection
- Industrial Control Sensor Devices (Temperature, Pressure, Levels, and Valves)
- Security, Motion Control and Surveillance Cameras

Markets

- Fast Ethernet
- Embedded Ethernet
- Industrial Ethernet
- Embedded Systems

Pin Configuration

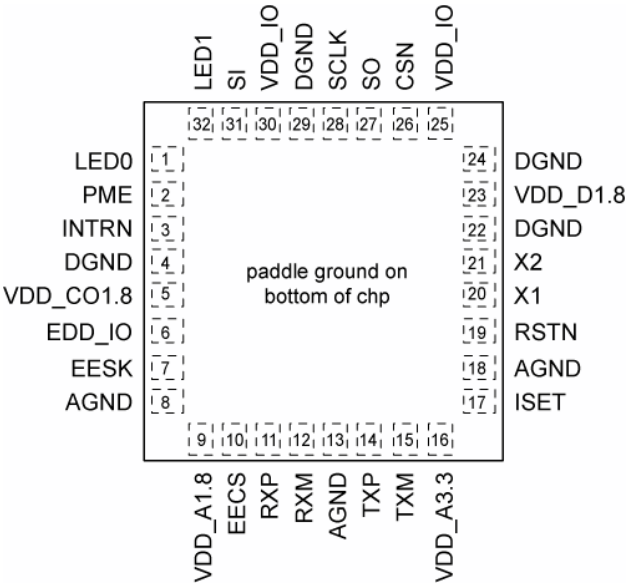


Figure 2. 32-Pin (5mm x 5mm) MLF®

Pin Description

Pin Number	Pin Name	Type	Pin Function
1	LED0	Opu	Programmable LED output to indicate PHY activity/status. LED is ON when output is LOW; LED is OFF when output is HIGH. LED indicators[1] defined as follows: Chip Global Control Register: CGCR bit [9] / 0 (Default) / 1 LED1 (pin 32) / 100BT / ACT LED0 (pin 1) / LINK/ACT / LINK Link (up) = LED On; Activity = LED Blink; Link/Act = LED On/Blink; Speed = LED On (100BASE-T); LED Off (10BASE-T)
2	PME	Opu	Power Management Event (default active low) It is asserted (low or high depends on polarity set in PMECR register) when one of the wake-on-LAN events is detected by KSZ8851SNL. The KSZ8851SNL is requesting the system to wake up from low power mode.
3	INTRN	Opu	Interrupt Not An active low signal to host CPU to indicate an interrupt status bit is set. This pin needs an external 4.7K pull-up resistor.
4	DGND	Gnd	Digital IO ground.
5	VDD_CO1.8	P	1.8V regulator output . This 1.8V output pin provides power to pins 9 (VDD_A1.8) and 23 (VDD_D1.8) for core VDD supply. If VDD_IO is set for 1.8V then this pin should be left floating, pins 9 (VDDA_1.8) and 23 (VDD_D1.8) will be sourced by the external 1.8V supply that is tied to pins 25 and 30 (VDD_IO) with appropriate filtering.
6	EED_IO	Ipd/O	In/Out Data from/to external EEPROM Config Mode: The pull-up/pull-down value is latched as with/without EEPROM during power-up / reset. See “Strapping Options” section for details.
7	EESK	Opd	EEPROM Serial Clock A 4μs (OBCR[1:0]=11 on-chip bus speed @ 25MHz) or 800ns (OBCR[1:0]=00 on-chip bus speed @ 125 MHz) serial output clock to load configuration data from the serial EEPROM.
8	AGND	Gnd	Analog ground.
9	VDD_A1.8	P	1.8V analog power supply from VDD_CO1.8 (pin 5) with appropriate filtering. If VDD_IO is 1.8V, this pin must be supplied power from the same source as pins 25 and 30 (VDD_IO) with appropriate filtering.
10	EECS	Opd	EEPROM Chip Select This signal is used to select an external EEPROM device.
11	RXP	I/O	Physical receive (MDI) or transmit (MDIX) signal (+ differential).
12	RXM	I/O	Physical receive (MDI) or transmit (MDIX) signal (– differential).
13	AGND	Gnd	Analog ground.
14	TXP	I/O	Physical transmit (MDI) or receive (MDIX) signal (+ differential).
15	TXM	I/O	Physical transmit (MDI) or receive (MDIX) signal (– differential).
16	VDD_A3.3	P	3.3V analog V_{DD} input power supply with well decoupling capacitors.
17	ISET	O	Set physical transmits output current. Pull-down this pin with a 3.01K 1% resistor to ground.
18	AGND	Gnd	Analog ground.
19	RSTN	Ipu	Reset Not.

Pin Number	Pin Name	Type	Pin Function
			Hardware reset pin (active Low). This reset input must be held low for a minimum of 10ms after stable supply voltage 3.3V.
20	X1	I	25MHz crystal or oscillator clock connection. Pins (X1, X2) connect to a crystal. If an oscillator is used, X1 connects to a 3.3V tolerant oscillator and X2 is a no connect. Note: Clock requirement is +/- 50ppm for either crystal or oscillator.
21	X2	O	
22	DGND	Gnd	Digital IO ground
23	VDD_D1.8	P	1.8V digital power supply from VDD_CO1.8 (pin 5) with appropriate filtering. If VDD_IO is 1.8V, this pin must be supplied power from the same source as pins 25 and 30 (VDD_IO) with appropriate filtering.
24	DGND	Gnd	Digital IO ground
25	VDD_IO	P	3.3V, 2.5V or 1.8V digital V_{DD} input power supply for IO with well decoupling capacitors.
26	CSN	Ipu	SPI slave mode: Chip Select Not Active low input pin for SPI interface.
27	SO	O	SPI slave mode: Serial data out for SPI interface. This SO is tri-stated output when CSN is negated and this pin must have external 4.7K pull-up to keep the SO line high while the driver is tri-stated.
28	SCLK	I	SPI slave mode: Serial clock input for SPI interface. This clock speed can run up to 40MHz.
29	DGND	Gnd	Digital IO ground
30	VDD_IO	P	3.3V, 2.5V or 1.8V digital V_{DD} input power supply for IO with well decoupling capacitors.
31	SI	Ipd	SPI slave mode: Serial data in for SPI interface.
32	LED1	Opu	Programmable LED1 output to indicate PHY activity/status (see LED0 description at pin1)

Legend:

P = Power supply Gnd = Ground

I/O = Bi-directional I = Input O = Output.

Ipd = Input with internal pull-down (58K +/-30%).

Ipu = Input with internal pull-up (58K +/-30%).

Opd = Output with internal pull-down (58K +/-30%).

Opu = Output with internal pull-up (58K +/-30%).

Ipu/O = Input with internal pull-up (58K +/-30%) during power-up/reset; output pin otherwise.

Ipd/O = Input with internal pull-down (58K +/-30%) during power-up/reset; output pin otherwise.

Strapping Options

Pin Number	Pin Name	Type	Pin Function
6	EED_IO	Ipd/O	EEPROM select: Pull-up = EEPROM present Floating (NC) or Pull-down = EEPROM not present (default) During power-up / reset, this pin value is latched into register CCR, bit 9

Note: Ipd/O = Input with internal pull-down (58K +/-30%) during power-up/reset; output pin otherwise.
Pin strap-ins are latched during power-up or reset.

TOSHIBA TC74HCU04AP/AF/AFN

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74HCU04AP, TC74HCU04AF, TC74HCU04AFN

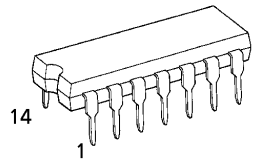
HEX INVERTER

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

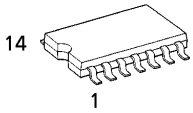
The TC74HCU04A is a high speed CMOS INVERTER fabricated with silicon gate C²MOS technology.
It achieves the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation.
Since the internal circit is composed of a single stage inverter, it can be used in analog applications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

FEATURES :

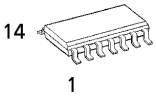
- High Speed ····· t_{pd} = 4ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ····· I_{CC} = 1μA(Max.) at Ta = 25°C
- High Noise Immunity ····· V_{NIH} = V_{NIH} = 10% V_{CC} (Min.)
- Output Drive Capability ····· 10 LSTTL Loads
- Symmetrical Output Impedance ··· $|I_{OH}|$ = I_{OL} = 4mA(Min.)
- Balanced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



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

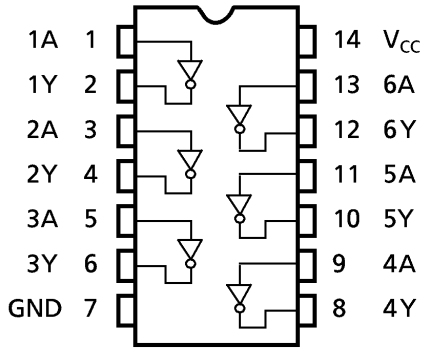


F (SOP14-P-300-1.27)
Weight : 0.18g (Typ.)



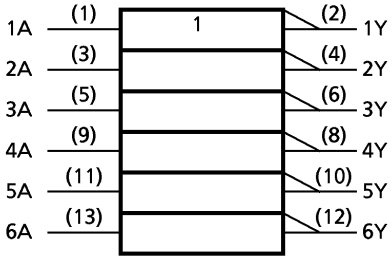
FN (SOL14-P-150-1.27)
Weight : 0.12g (Typ.)

PIN ASSIGNMENT



(TOP VIEW)

IEC LOGIC SYMBOL



TRUTH TABLE

A	Y
L	H
H	L

961001EBA2

32-bit RISC Microcontroller – TX03 Series

TMPM333FDFG
TMPM333FYFG
TMPM333FWFG

1. Overview and Features

The TX03 series is a 32-bit RISC microcontroller series with an ARM Cortex™-M3 microcontroller core.

Features of the TMPM333FDFG/FYFG/FWFG are as follows:

1.1 Features

(1) ARM Cortex-M3 microcontroller core

1) Improved code efficiency has been realized through the use of Thumb®-2 instruction

- New 16-bit Thumb instructions for improved program flow
- New 32-bit Thumb instructions for improved performance
- Auto-switching between 32-bit instruction and 16-bit instruction is executed by compiler.

2) Both high performance and low power consumption have been achieved.

-High performance

- A 32-bit multiplication (32×32=32 bit) can be executed with one clock.
- Division takes between 2 and 12 cycles depending on dividend and devisor

-Low power consumption

- Optimized design using a low power consumption library
- Standby function that stops the operation of the microcontroller core

3) High-speed interrupt response suitable for real-time control

- An interruptible long instruction.
- Stack push automatically handled by hardware.

(2) On Chip program memory and data memory

Product name	On chip Flash ROM	On chip RAM
TMPM333FDFG	512Kbyte	32Kbyte
TMPM333FYFG	256Kbyte	16Kbyte
TMPM333FWFG	128Kbyte	8Kbyte

(3) 16-bit timer : 10 channels
- 16-bit interval timer mode
- 16-bit event counter mode
- 16-bit PPG output
- Input capture function

(4) Real time clock (RTC) : 1 channel
- Clock (hour, minute and second)
- Calendar (Month, week, date and leap year)
- Time correction + or − 30 seconds (by software)
- Alarm (Alarm output)
- Alarm interrupt

(5) Watchdog timer : 1 channel
- 26 cycles of binary counter
- Watchdog timer out

(6) General-purpose serial interface : 3 channels
- Either UART mode or synchronous mode can be selected (4byte FIFO equipped)

(7) Serial bus interface : 3 channels
- Either I^2C bus mode or synchronous mode can be selected.

(8) 10-bit A/D converter : 12 channels
- Start by an internal or external timer trigger
- Fixed channel/scan mode
- Single/repeat mode
- AD monitoring 2ch
- Conversion speed 1.15usec(@fsys = 40MHz)

(9) Interrupt source
- Internal: 38 factors…The order of precedence can be set over 7 levels (except the watchdog timer interrupt).
- External: 8 factors…The order of precedence can be set over 7 levels.

(10) Input/ output ports
- 79 pins

(11) Standby mode

- Standby modes :IDLE, SLOW, SLEEP, STOP
- Sub clock operation(32.768kHz) :SLOW, SLEEP

(12) Clock generator

- On-chip PLL (quadrupled)
- Clock gear function: The high-speed clock can be divided into 1/1, 1/2, 1/4 or 1/8.

(13) Endian

- Little endian

(14) Maximum operating frequency

- 40MHz

(15) Operating voltage range

- 2.7V~3.6V (with on-chip regulator)

(16) Temperature range

- -20~85 degrees (except during Flash writing/ erasing)
- 0~70 degrees (during Flash writing/ erasing)

(17) Package

- LQFP100-P-1414-0.5H (14mm × 14mm, 0.5mm pitch)

1.2 Block Diagram

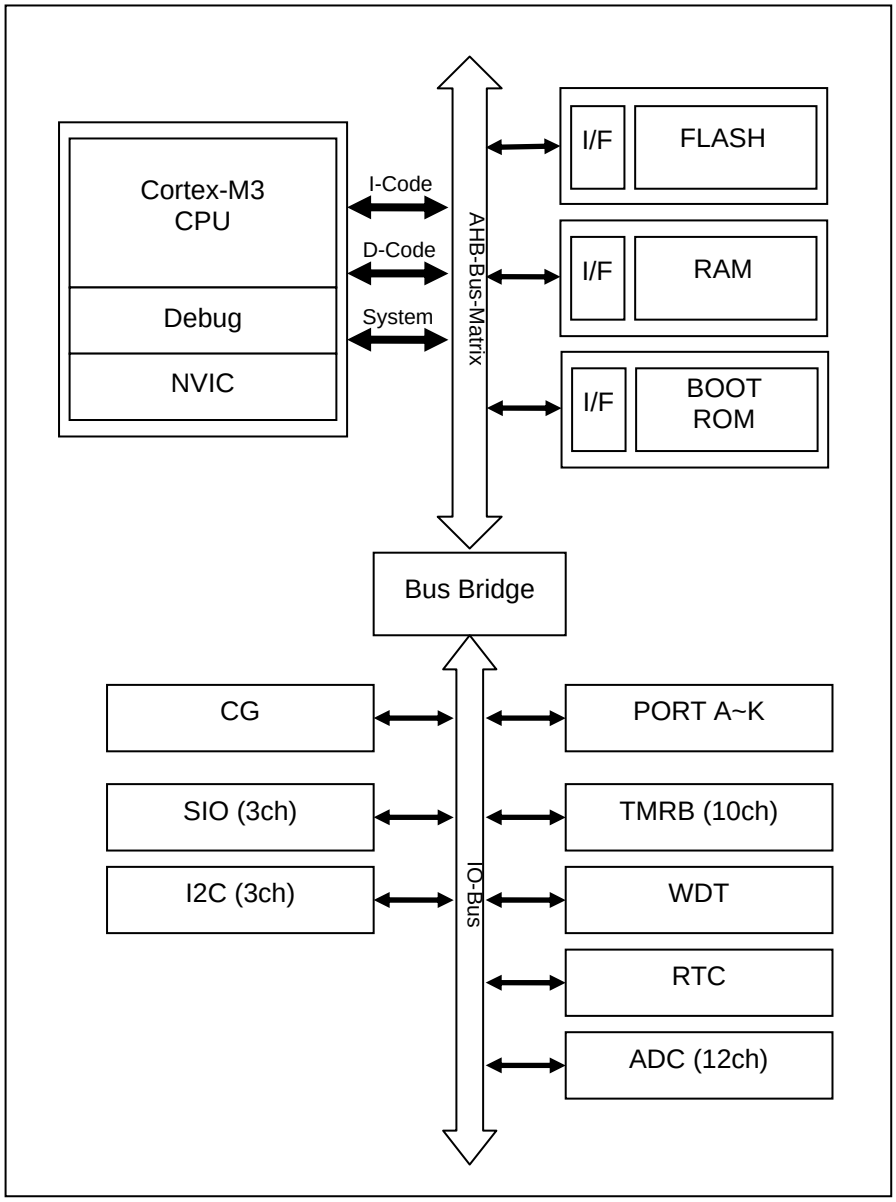


Fig. 1-1 TMPM333 FDFG/FYFG/FWFG Block Diagram

2 Pin Layout and Pin Functions

This chapter describes the pin layout, pin names and pin functions of TMPM333FDFG/ TMPM333FYFG/ TMPM333FWFG.

2.1 Pin Layout (Top view)

Fig.2-1 shows the pin layout of TMPM333FDFG/TMPM333FYFG/TMPM333FWF.

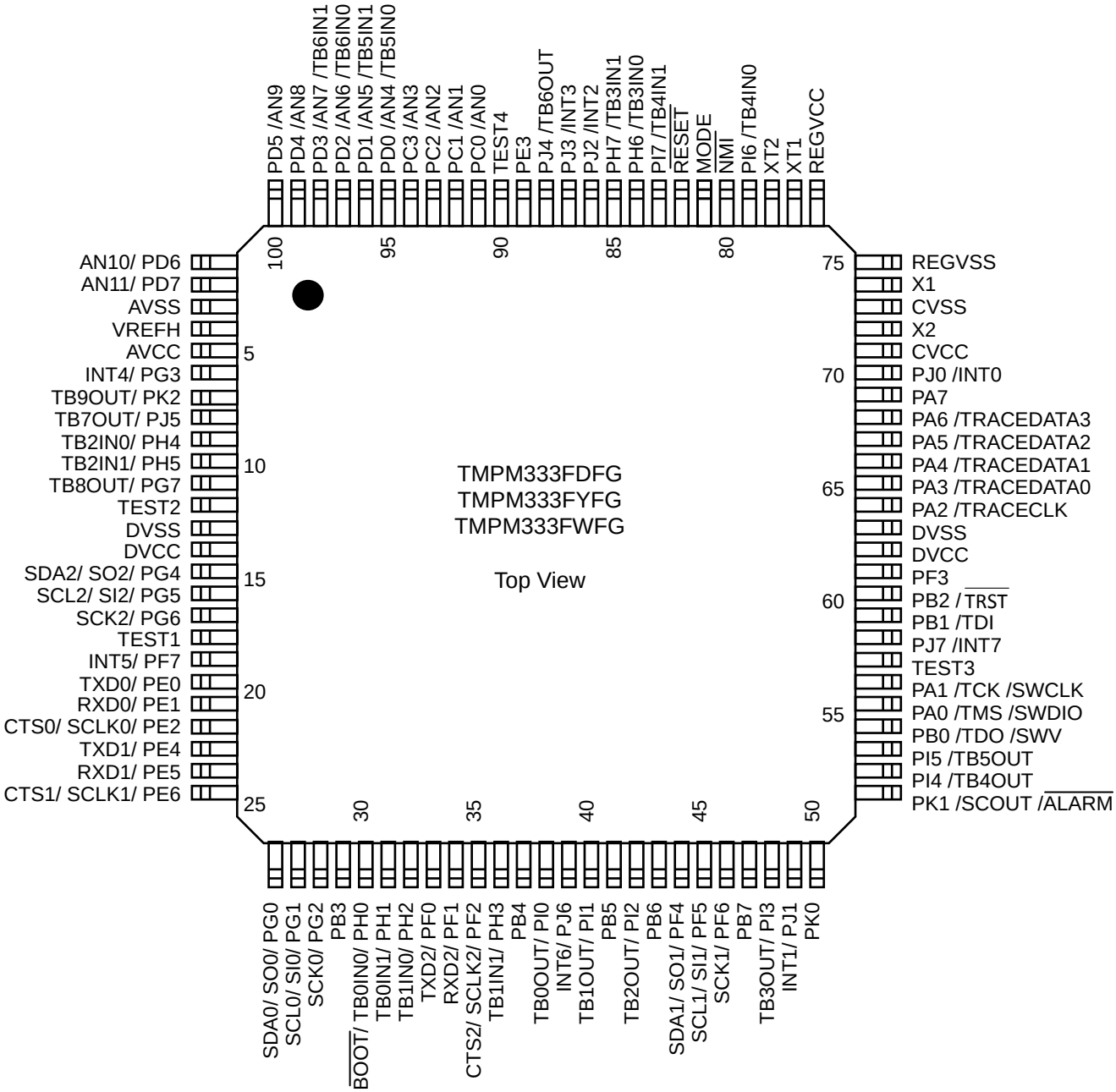


Fig.2-1 Pin Layout (LQFP100)

Table2-1 Pin Numbers and Names (1/2)

Pin No.	Pin name	Pin No.	Pin name
1	PD6, AN10	26	PG0, SO0, SDA0
2	PD7, AN11	27	PG1, SI0, SCL0
3	AVSS	28	PG2, SCK0
4	VREFH	29	PB3
5	AVCC	30	PH0, TB0IN0, $\overline{\text{BOOT}}$
6	PG3, INT4	31	PH1, TB0IN1
7	PK2, TB9OUT	32	PH2, TB1IN0
8	PJ5, TB7OUT	33	PF0, TXD2
9	PH4, TB2IN0	34	PF1, RXD2
10	PH5, TB2IN1	35	PF2, SCLK2, CTS2
11	PG7, TB8OUT	36	PH3, TB1IN1
12	TEST2	37	PB4
13	DVSS	38	PI0, TB0OUT
14	DVCC	39	PJ6, INT6
15	PG4, SO2, SDA2	40	PI1, TB1OUT
16	PG5, SI2, SCL2	41	PB5
17	PG6, SCK2	42	PI2, TB2OUT
18	TEST1	43	PB6
19	PF7, INT5	44	PF4, SO1, SDA1
20	PE0, TXD0	45	PF5, SI1, SCL1
21	PE1, RXD0	46	PF6, SCK1
22	PE2, SCLK0, CTS0	47	PB7
23	PE4, TXD1	48	PI3, TB3OUT
24	PE5, RXD1	49	PJ1, INT1
25	PE6, SCLK1, CTS1	50	PK0,

2 **Pin Layout and Pin Functions**

Table2-1 Pin Numbers and Names (2/2)

Pin No.	Pin name	Pin No.	Pin name
51	PK1, SCOUT, $\overline{\text{ALARM}}$	76	REGVCC
52	PI4, TB4OUT	77	XT1
53	PI5, TB5OUT	78	XT2
54	PB0, TDO, SWV	79	PI6, TB4IN0
55	PA0, TMS, SWDIO	80	$\overline{\text{NMI}}$
56	PA1, TCK, SWCLK	81	MODE
57	TEST3	82	$\overline{\text{RESET}}$
58	PJ7, INT7	83	PI7, TB4IN1
59	PB1, TDI	84	PH6, TB3IN0
60	PB2, $\overline{\text{TRST}}$	85	PH7, TB3IN1
61	PF3	86	PJ2, INT2
62	DVCC	87	PJ3, INT3
63	DVSS	88	PJ4, TB6OUT
64	PA2, TRACECLK	89	PE3
65	PA3, TRACEDATA0	90	TEST4
66	PA4, TRACEDATA1	91	PC0, AN0
67	PA5, TRACEDATA2	92	PC1, AN1
68	PA6, TRACEDATA3	93	PC2, AN2
69	PA7	94	PC3, AN3
70	PJ0, INT0	95	PD0, AN4, TB5IN0
71	CVCC	96	PD1, AN5, TB5IN1
72	X2	97	PD2, AN6, TB6IN0
73	CVSS	98	PD3, AN7, TB6IN1
74	X1	99	PD4, AN8
75	REGVSS	100	PD5, AN9

2.2 Pin names and Functions

Table2-2 and Table2-3 sort the input and output pins of the TMPM333FDFG/ TMPM333FYFG/ TMPM333FWFG by pin or port. Each table includes alternate pin names and functions for multi-function pins.

2.2.1 Sorted by Pin

Table2-2 Pin Names and Functions Sorted by Pin (1/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	1	PD6 AN10	I I	Input port Analog input	Pull up	-	-
	2	PD7 AN11	I I	Input port Analog input	Pull up	-	-
PS	3	AVSS	I	A/D converter: GND pin (0V) Tie AVSS to power supply even if the A/D converter is not used.	-	-	-
	4	VREFH	I	Supplying the A/D converter with a reference power supply. Tie VREFH to power supply even if the A/D converter is not used.	-	-	-
	5	AVCC	I	Supplying the A/D converter with a power supply. Tie AVCC to power supply even if the A/D converter is not used.	-	-	-
Function	6	PG3 INT4	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	7	PK2 TB9OUT	I/O O	I/O port Timer B output	Pull up	-	-
	8	PJ5 TB7OUT	I/O I	I/O port Timer B output	Pull up	-	-
	9	PH4 TB2IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	10	PH5 TB2IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	11	PG7 TB8OUT	I/O O	I/O port Timer B output	Pull up	-	○
Test	12	TEST2	-	TEST pin: Not connected.	-	-	-
PS	13	DVSS	-	GND pin	-	-	-
	14	DVCC	-	Power supply pin	-	-	-
Function	15	PG4 SDA2/ SO2	I/O I/O O	I/O port If the serial bus interface operates -in the I2C mode : data pin -in the SIO mode: data pin	Pull up	○	○
	16	PG5 SCL2/ SI2	I/O I/O I	I/O port If the serial bus interface operates -in the I2C mode : clock pin -in the SIO mode: data pin	Pull up	○	○
	17	PG6 SCK2	I/O I/O	I/O port Inputting and outputting a clock if the serial bus interface operates in the SIO mode.	Pull up	○	○
Test	18	TEST1	-	TEST pin: Not connected.	-	-	-
Function	19	PF7 INT5	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○

2 **Pin Layout and Pin Functions**

Table2-2 Pin Names and Functions Sorted by Pin (2/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	20	PE0 TXD0	I/O O	I/O port Sending serial data	Pull up	-	○
	21	PE1 RXD0	I/O I	I/O port Receiving serial data	Pull up	○	○
	22	PE2 SCLK0 CTS0	I/O I I	I/O port Serial clock input/ output Handshake input pin	Pull up	○	○
	23	PE4 TXD1	I/O O	I/O port Sending serial data	Pull up	-	○
	24	PE5 RXD1	I/O I	I/O port Receiving serial data	Pull up	○	○
	25	PE6 SCLK1 CTS1	I/O I I	I/O port Serial clock input/ output Handshake input pin	Pull up	○	○
	26	PG0 SDA0/ SO0	I/O I/O O	I/O port If the serial bus interface operates -in the I2C mode : data pin -in the SIO mode: data pin	Pull up	○	○
	27	PG1 SCL0/ SI0	I/O I/O I	I/O port If the serial bus interface operates -in the I2C mode : clock pin -in the SIO mode: data pin	Pull up	○	○
	28	PG2 SCK0	I/O I/O	I/O port Inputting and outputting a clock if the serial bus interface operates in the SIO mode.	Pull up	○	○
	29	PB3	I/O	I/O port	Pull up	-	-
Function/ Control	30	PH0 TB0IN0 $\overline{\text{BOOT}}$	I/O I I	I/O port Inputting the timer B capture trigger Setting a single boot mode: This pin goes into single boot mode by sampling "L" at the rise of a reset signal.	Pull up	○	-
Function	31	PH1 TB0IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	32	PH2 TB1IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	33	PF0 TXD2	I/O O	I/O port Sending serial data	Pull up	-	○
	34	PF1 RXD2	I/O I	I/O port Receiving serial data	Pull up	○	○
	35	PF2 SCLK2 CTS2	I/O I I	I/O port Serial clock input/ output Handshake input pin	Pull up	○	○
	36	PH3 TB1IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	37	PB4	I/O	I/O port	Pull up	-	-
	38	PI0 TB0OUT	I/O O	I/O port Timer B output	Pull up	-	-
	39	PJ6 INT6	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○

Table2-2 Pin Names and Functions Sorted by Pin (3/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	40	PI1 TB1OUT	I/O O	I/O port Timer B output	Pull up	-	-
	41	PB5	I/O	I/O port	Pull up	-	-
	42	PI2 TB2OUT	I/O O	I/O port Timer B output	Pull up	-	-
	43	PB6	I/O	I/O port	Pull up	-	-
	44	PF4 SDA1/ SO1	I/O I/O O	I/O port If the serial bus interface operates -in the I2C mode : data pin -in the SIO mode: data pin	Pull up	○	○
	45	PF5 SCL1/ SI1	I/O I/O I	I/O port If the serial bus interface operates -in the I2C mode : clock pin -in the SIO mode: data pin	Pull up	○	○
	46	PF6 SCK1	I/O I/O	I/O port Inputting and outputting a clock if the serial bus interface operates in the SIO mode.	Pull up	○	○
	47	PB7	I/O	I/O port	Pull up	-	-
	48	PI3 TB3OUT	I/O O	I/O port Timer B output	Pull up	-	-
	49	PJ1 INT1	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	50	PK0	I/O	I/O port	-	○	● (Note 4)
	51	PK1 SCOUT $\overline{\text{ALARM}}$	I/O O O	I/O port System clock output Alarm output	Pull up	-	-
	52	PI4 TB4OUT	I/O O	I/O port Timer B output	Pull up	-	-
	53	PI5 TB5OUT	I/O O	I/O port Timer B output	Pull up	-	-
Function/ Debug	54	PB0 TDO/SWV	I/O O	I/O port Debug pin	Pull up	-	-
	55	PA0 TMS/SWDIO	I/O I/O	I/O port Debug pin	Pull up	○	-
	56	PA1 TCK/ SWCLK	I/O I	I/O port Debug pin	Pull up	-	-
Test	57	TEST3	-	TEST pin: Not connected.	-	-	-
Function	58	PJ7 INT7	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
Function/ Debug	59	PB1 TDI	I/O I	I/O port Debug pin	Pull up	-	-
	60	PB2 $\overline{\text{TRST}}$	I/O I	I/O port Debug pin	Pull up	○	-
Function	61	PF3	I/O	I/O port	Pull up	○	○
PS	62	DVCC	-	Power supply pin	-	-	-
	63	DVSS	-	GND pin	-	-	-

2 **Pin Layout and Pin Functions**

Table2-2 Pin Names and Functions Sorted by Pin (4/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function/ Debug	64	PA2 TRACECLK	I/O O	I/O port Debug pin	Pull up	-	-
	65	PA3 TRACEDATA0	I/O O	I/O port Debug pin	Pull up	-	-
	66	PA4 TRACEDATA1	I/O O	I/O port Debug pin	Pull up	-	-
	67	PA5 TRACEDATA2	I/O O	I/O port Debug pin	Pull up	-	-
	68	PA6 TRACEDATA3	I/O O	I/O port Debug pin	Pull up	-	-
Function	69	PA7	I/O	I/O port	Pull up		
	70	PJ0 INT0	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
PS	71	CVCC	-	Power supply pin	-	-	-
Clock	72	X2	O	Connected to a high-speed oscillator.	-	-	-
PS	73	CVSS	-	GND pin	-	-	-
Clock	74	X1	I	Connected to a high-speed oscillator.	-	○	-
PS	75	REGVSS	-	GND pin	-	-	-
	76	REGVCC	-	Power supply pin	-	-	-
Clock	77	XT1	I	Connected to a low-speed oscillator.	-	○	-
	78	XT2	O	Connected to a low-speed oscillator.	-	-	-
Function	79	PI6 TB4IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	80	$\overline{\text{NMI}}$	I	Non-maskable interrupt	-	○ w/ noise filter	-
Control	81	MODE	I	Mode pin: Tied to GND pin	-	○	-
Function	82	$\overline{\text{RESET}}$	I	Reset input pin	Tied to Pull up	○ w/ noise filter	-
	83	PI7 TB4IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	84	PH6 TB3IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	85	PH7 TB3IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	86	PJ2 INT2	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	87	PJ3 INT3	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	88	PJ4 TB6OUT	I/O O	I/O port Timer B output	Pull up	-	-
	89	PE3	I/O	I/O port	Pull up	○	○
Test	90	TEST4	-	TEST pin: Not connected.	-	-	-

Table2-2 Pin Names and Functions Sorted by Pin (5/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	91	PC0 AN0	I I	Input port Analog input	Pull up	-	-
	92	PC1 AN1	I I	Input port Analog input	Pull up	-	-
	93	PC2 AN2	I I	Input port Analog input	Pull up	-	-
	94	PC3 AN3	I I	Input port Analog input	Pull up	-	-
	95	PD0 AN4 TB5IN0	I I I	Input port Analog input Inputting the timer B capture trigger	Pull up	-	-
	96	PD1 AN5 TB5IN1	I I I	Input port Analog input Inputting the timer B capture trigger	Pull up	-	-
	97	PD2 AN6 TB6IN0	I I I	Input port Analog input Inputting the timer B capture trigger	Pull up	-	-
	98	PD3 AN7 TB6IN1	I I I	Input port Analog input Inputting the timer B capture trigger of	Pull up	-	-
	99	PD4 AN8	I I	Input port Analog input	Pull up	-	-
	100	PD5 AN9	I I	Input port Analog input	Pull up	-	-

(Note 1) TEST1 through 4 must be left unconnected.
(Note 2) Be sure to tie MODE to GND.
(Note 3) Tie VREFH/ AVCC to power supply and AVSS to GND even if the A/D converter is not used.
(Note 4) Nch open drain port.
(Note 5) The noise elimination width of the noise filter is approximately 30 ns under typical conditions.

TOSHIBA TC74VHC153F/FN/FT/FK

TOSHIBA CMOS Digital Integrated Circuit Silicon Monolithic

TC74VHC153F,TC74VHC153FN,TC74VHC153FT,TC74VHC153FK

Dual 4-Channel Multiplexer

The TC74VHC153 is an advanced high speed CMOS DUAL 4-CHANNEL MULTIPLEXERs 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.

Each of these data (1C0-1C3, 2C0-2C3) is selected by the two address inputs A and B.

Separate strobe inputs ($1\overline{G}$, $2\overline{G}$) are provided for each of the two four-line sections.

The strobe input ($\overline{G}$) can be used to inhibit the data output; the output is fixed in low level while the strobe input is held high.

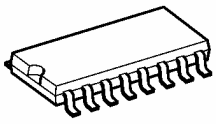
An input protection circuit ensures that 0 to 5.5 V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5 V to 3 V systems and two supply systems such as battery back up. This circuit prevents device destruction due to mismatched supply and input voltages.

Features

- High speed: t_{pd} = 5.0 ns (typ.) at V_{CC} = 5 V
- Low power dissipation: I_{CC} = 4 μA (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: $V_{CC\ (opr)}$ = 2 to 5.5 V
- Pin and function compatible with 74ALS153

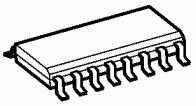
Note: xxxFN (JEDEC SOP) is not available in Japan.

TC74VHC153F



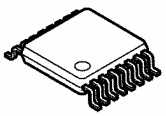
SOP16-P-300-1.27A

TC74VHC153FN



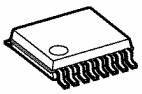
SOL16-P-150-1.27

TC74VHC153FT



TSSOP16-P-0044-0.65A

TC74VHC153FK



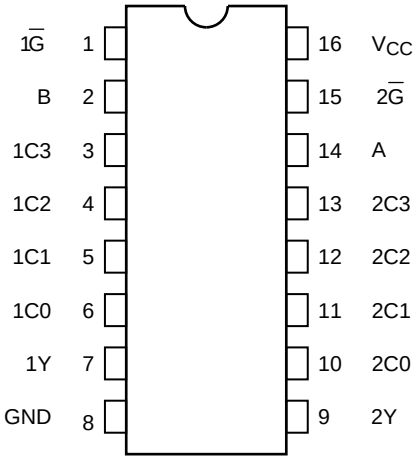
VSSOP16-P-0030-0.50

Weight

SOP16-P-300-1.27A	: 0.18 g (typ.)
SOL16-P-150-1.27	: 0.13 g (typ.)
TSSOP16-P-0044-0.65A	: 0.06 g (typ.)
VSSOP16-P-0030-0.50	: 0.02 g (typ.)

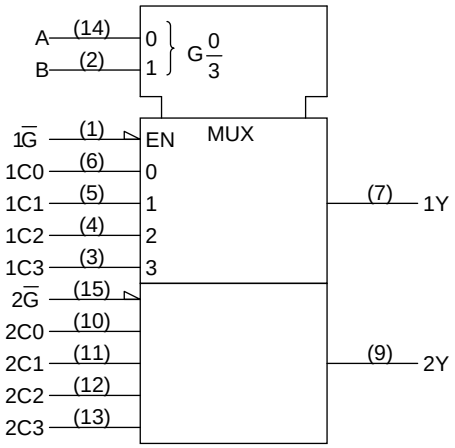
TOSHIBA TC74VHC153F/FN/FT/FK

Pin Assignment



(top view)

IEC Logic Symbol

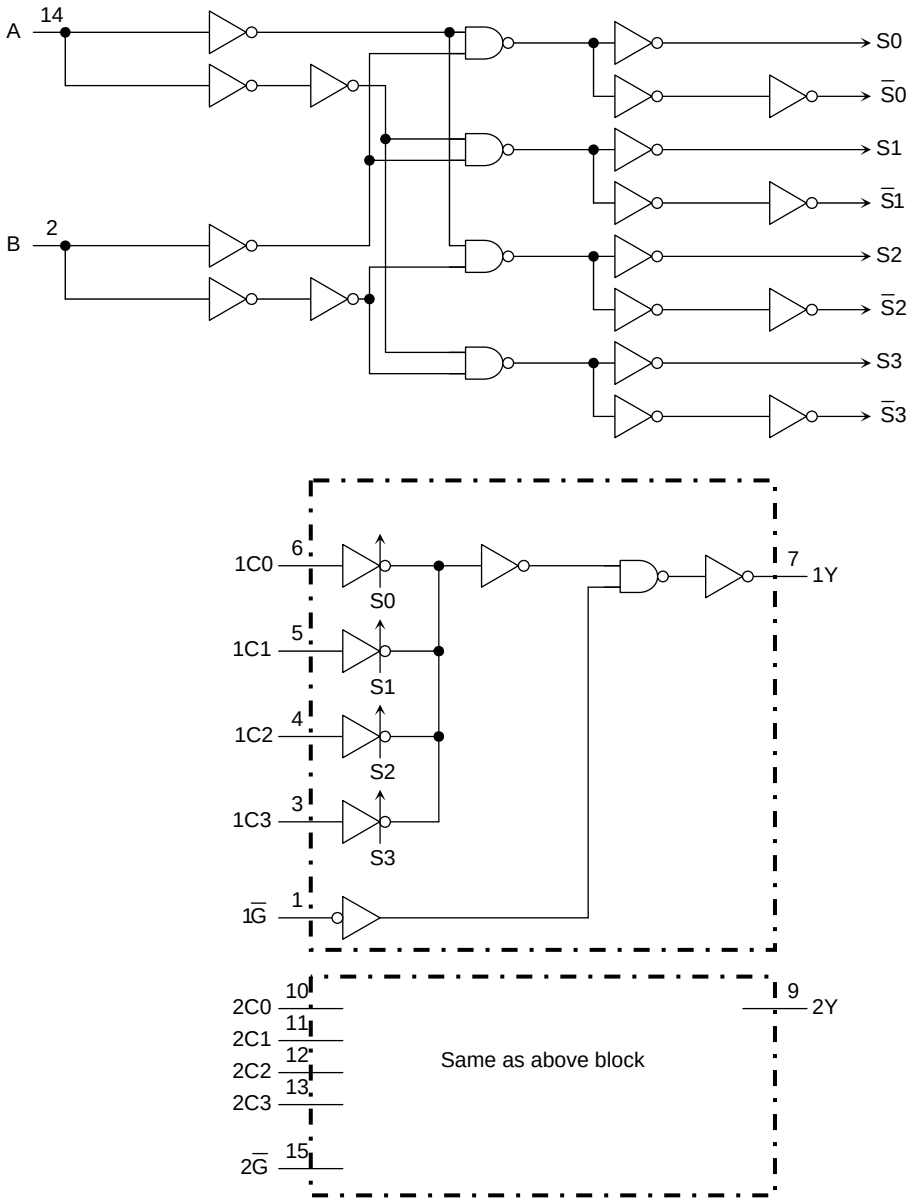


Truth Table

Select Inputs		Data Inputs				Strobe	Output
B	A	C0	C1	C2	C3	$\overline{G}$	Y
X	X	X	X	X	X	H	L
L	L	L	X	X	X	L	L
L	L	H	X	X	X	L	H
L	H	X	L	X	X	L	L
L	H	X	H	X	X	L	H
H	L	X	X	L	X	L	L
H	L	X	X	H	X	L	H
H	H	X	X	X	L	L	L
H	H	X	X	X	H	L	H

X: Don't care

System Diagram



CS49DV8C Data Sheet

FEATURES

- 32-bit Post-Processor Audio DSP supports Multichannel Dolby® Volume
- Programmable through DSP Composer™
- CS49DV8, supports up to 7.1 Channels of Dolby Volume processing at 48 kHz, 44.1 kHz or 32 kHz.
  - Input Configurable for all input/output digital audio types (I^2S, LJ/RJ, and TDM)
  - 32-bit data path delivers uncompromised dynamic range
  - 192 kHz capable integrated S/PDIF transmitter
  - DAO can operate in master or slave mode (SCLK & LRCLK)
- Integrated Clock Manager/PLL
  - Capable of operating from a wide variety of external crystals or external oscillators
- Input Fs Auto Detection, Reporting and Handling
- Sample rate conversion.
- Master & Slave Host Boot Capability via Serial Interface
- SPI interface capable of running up to 25 MHz during run time
- 1.8V Core and a 3.3V I/O that is tolerant to 5V input

32-bit Dual Audio DSP Engine featuring Multichannel Dolby® Volume

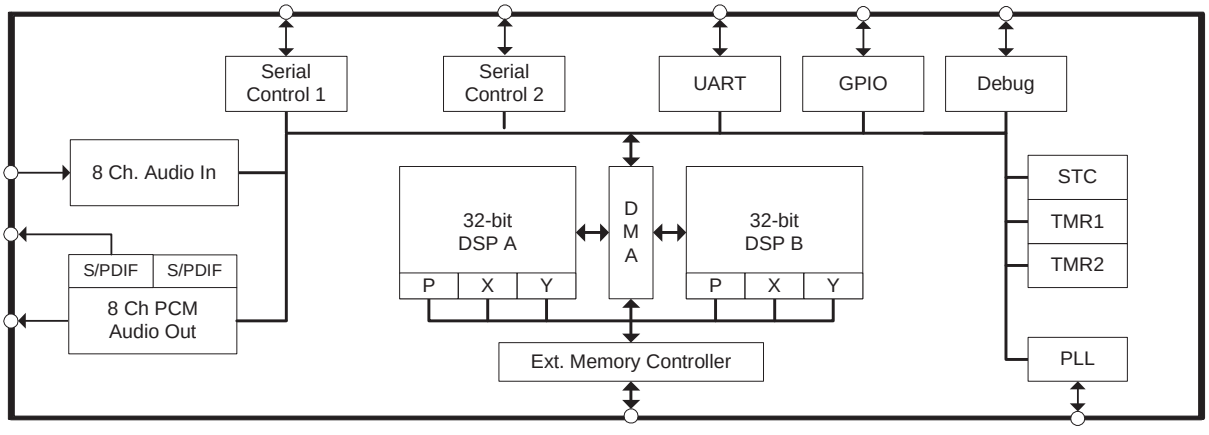
The new CS49DV8C is the fastest time-to-market, mass-production ready Multichannel Dolby Volume solution available. The target applications for the CS49DV8C DSP are:

- Soundbars
- DTVs with Integrated Soundbars
- HDTV Stands/Furniture with Integrated Soundbars
- Automotive Head Units
- Automotive Outboard Amplifiers
- Blu-ray Disc® & DVD Receivers / HTiBs

All of these applications and many more that use volume control and are subject to playback from sources that do not have consistent volume levels will benefit from the CS49DV8C Dolby Volume solution.

Ordering Information

See page 27 for ordering information.



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

8. Device Pin-Out Diagram

8.1 128-Pin LQFP Pin-Out Diagram

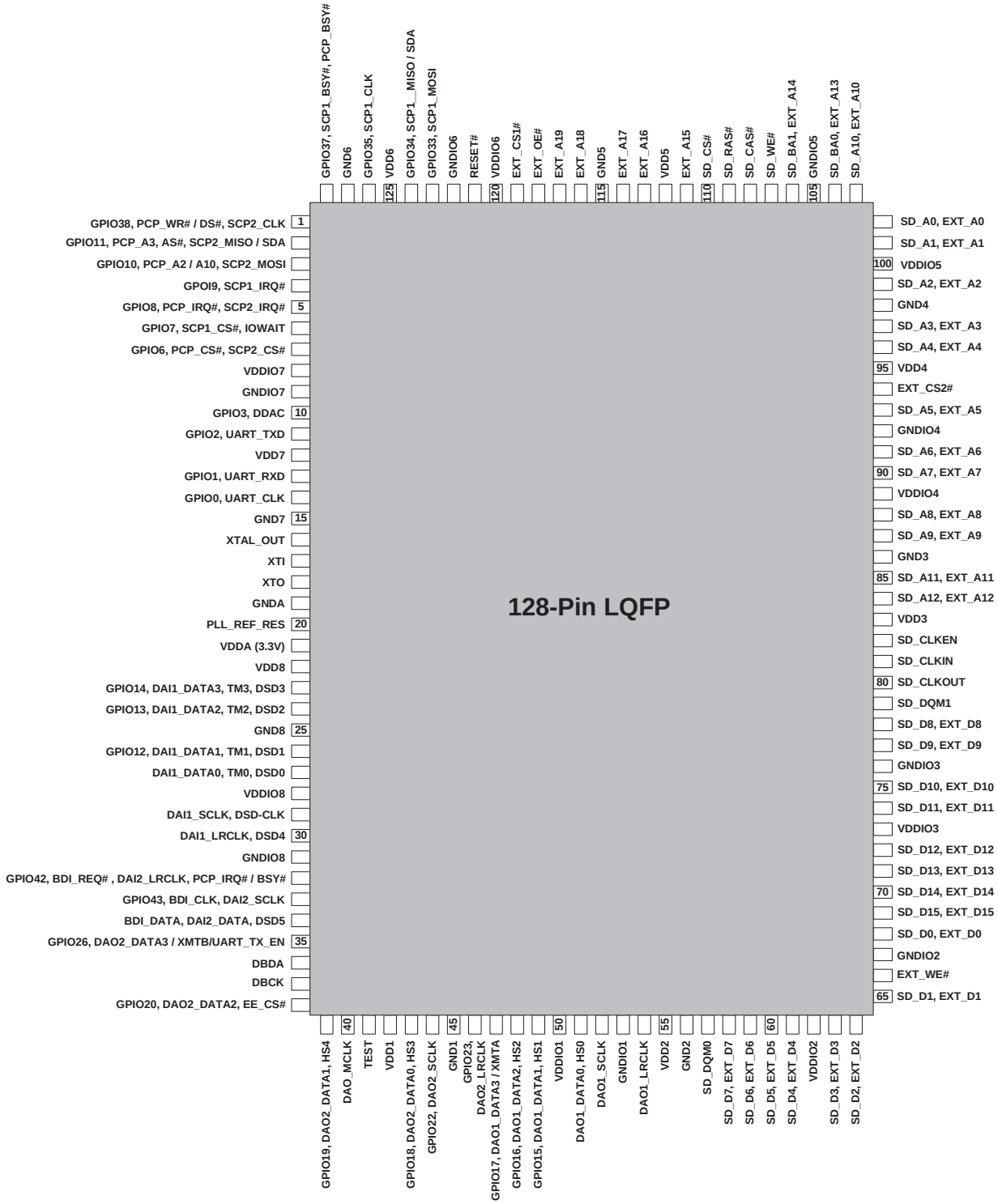


Figure 15. 128-Pin LQFP Pin-Out

TOSHIBA TC74HC151AP/AF/AFN

TOSHIBA CMOS Digital Integrated Circuit Silicon Monolithic

TC74HC151AP,TC74HC151AF,TC74HC151AFN

8-Channel Multiplexer

Note: xxxFN (JEDEC SOP) is not available in Japan.

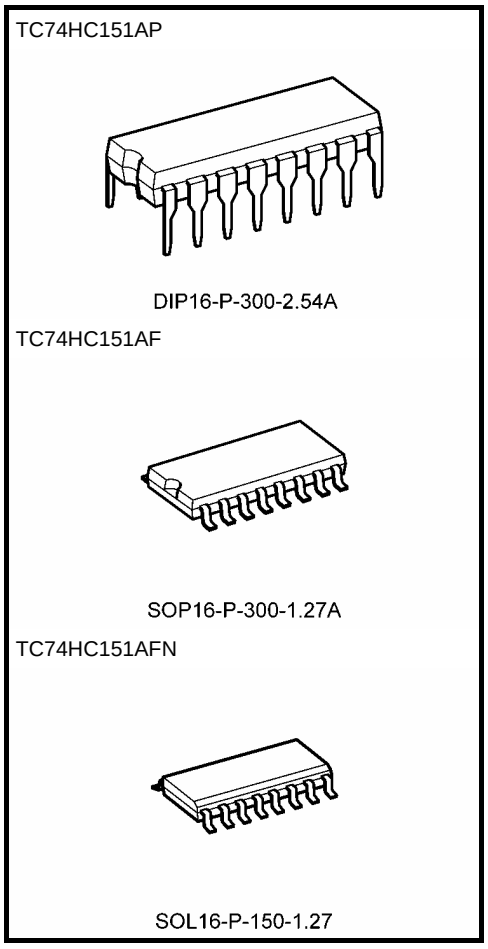
The TC74HC151A is a high speed CMOS 8-CHANNEL MULTIPLEXER fabricated with silicon gate C2MOS technology.

It achieves the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation.

One of eight date input signals (D0-D7) is selected by decoding of the three-bit address input (A, B, C). The selected data appears on two outputs: non-inverting (Y) and inverting (W).

The strobe input provides two output conditions; a low level on the strobe input transfers the selected data to the outputs. A high level on the strobe input sets the Y output low and the W output high without regard to the data or select input conditions.

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



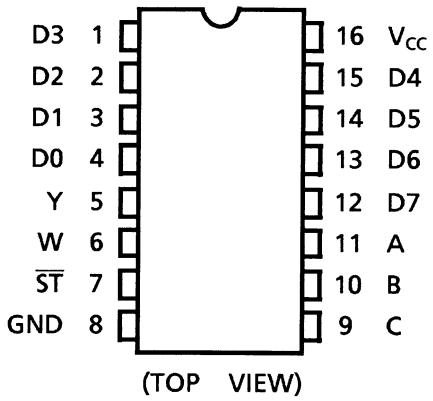
Weight

DIP16-P-300-2.54A	: 1.00 g (typ.)
SOP16-P-300-1.27A	: 0.18 g (typ.)
SOL16-P-150-1.27	: 0.13 g (typ.)

Features

- High speed: t_{pd} = 15 ns (typ.) at V_{CC} = 5 V
- Low power dissipation: I_{CC} = 4 μA (max) at Ta = 25°C
- High noise immunity: $V_{NIH} = V_{NIL}$ = 28% V_{CC} (min)
- Output drive capability: 10 LSTTL loads
- Symmetrical output impedance: $|I_{OH}| = I_{OL}$ = 4 mA (min)
- Balanced propagation delays: $t_{pLH} \simeq t_{pHL}$
- Wide operating voltage range: V_{CC} (opr) = 2 to 6 V
- Pin and function compatible with 74LS151

Pin Assignment



Technical Note

Sound Processors for Home Theater Systems

2ch Electronic Volume

BD3812F

No.10081EAT03

●Description

BD3812F is an electronic volume having volume, gain amplifier functions necessary for applications in AV receivers, home theatre systems, min-component systems and so forth. Having a chip select terminal, it can be controlled until 4 chips with common bus line.

●Features

1) Residual noise : 1.2μVrms {dynamic range : 131dB (IHF-A)}
2) 2ch independent volume (0 to -103dB, MUTE 1dB/step)
3) 8ch at maximum available in combination of any of BD3811K1, BD3813KS, BD3814FV, BD3815KS (6ch volume) in common bus line
4) It can be controlled until 4 chips with common bus line at the same time
5) Maximum output voltage : 4.2Vrms (Vcc=7, VEE=-7V, RL=10kΩ)
6) 2-line serial control (for both 3.3V and 5V)
7) Built-in Output gain amplifier for adjustment of output signal voltage (0, 6 to 18dB, 2dB/step)
8) Output mute controllable by serial data and external control terminal

●Applications

AV receivers, home theater systems, mini-component systems, etc.

●Absolute maximum ratings (Ta=25℃)

Parameter	Symbol	Ratings	Unit
Powewr supply voltage	VCC	7.5 *1	V
	VEE	-7.5	
Input signal voltage	VIN	VCC+0.3 to VEE-0.3	V
Power dissipation	Pd	450 *2	mW
Operating temperature range	Topr	−20 to +75	℃
Storage temperature range	Tastg	−55 to +125	℃

*1 Even in the specified range of Power Supply Voltage, applying voltage only to the VCC side may cause an excessive current to give a permanent damage to the IC.
When starting up power supplies, VEE and VCC should be powered on simultaneously or VEE first; then followed by VCC.

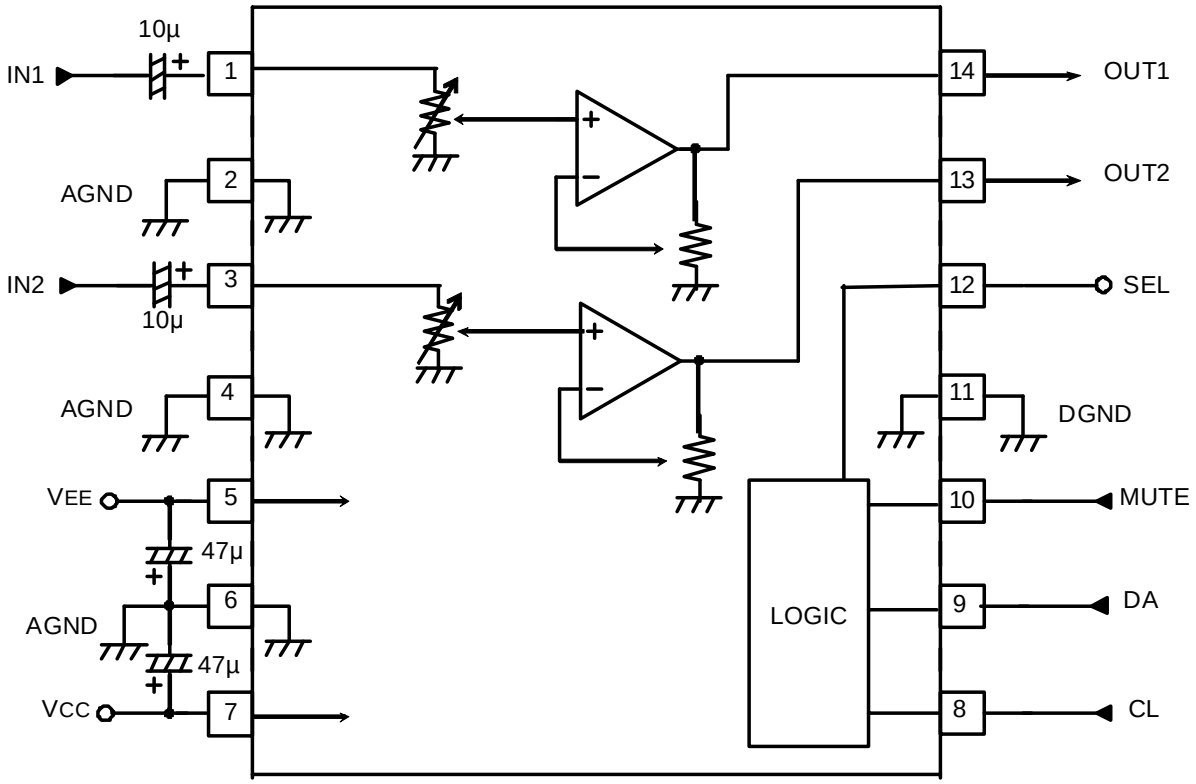
*2 Over Ta=25°C, reduce at the rate of 4.5mW/°C. When installed on the standard board (size: 70x70x1.6mm).

●Operating conditions

It must function normally at Ta=25°C.

Parameter	Symbol	Ratings			Unit
		Min.	Typ.	Max.	
Operating source voltage	VCC	5	7	7.3	V
	VEE	-7.3	-7	-5	

●Application circuit BD3812F



UNIT
RESISTOR :Ω
CAPACITOR : F

Fig.2

●Reference data

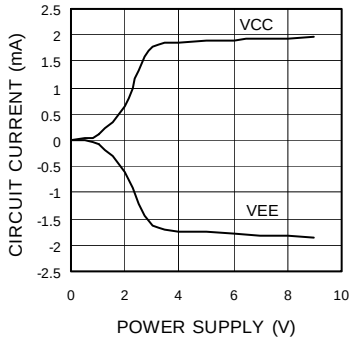


Fig.3 Circuit current - Power supply

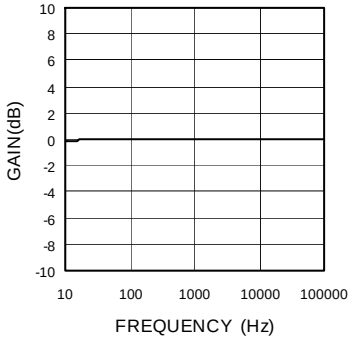


Fig.4 Voltage gain - Frequency

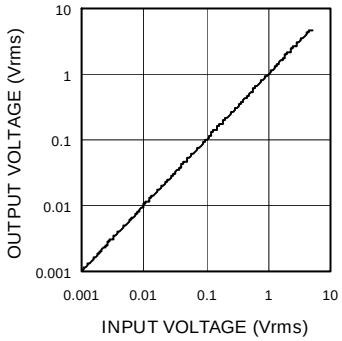


Fig.5 Output voltage - Input voltage

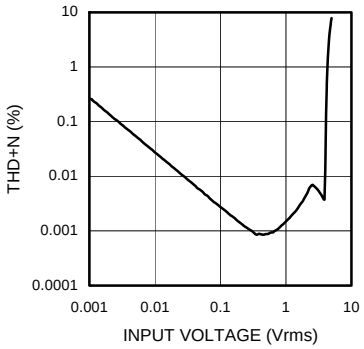


Fig.6 THD+N - Input voltage

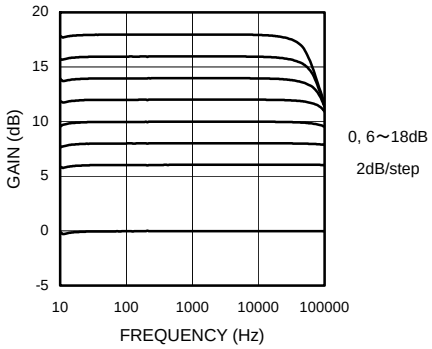


Fig.7 Output gain - Frequency

32-bit RISC Microcontroller – TX03 Series

T5CN5

1. Overview and Features

The TX03 series is a 32-bit RISC microcontroller series with an ARM Cortex™-M3 microcontroller core.

Features of the T5CN5 is as follows:

1.1 Features

(1) ARM Cortex-M3 microcontroller core

1) Improved code efficiency has been realized through the use of Thumb2 instruction

- New 16-bit Thumb instructions for improved program flow
- New 32-bit Thumb instructions for improved performance
- Auto-switching between 32-bit instruction and 16-bit instruction is executed by compiler.

2) Both high performance and low power consumption have been achieved.

-High performance

- A 32-bit multiplication (32×32=32 bit) can be executed with one clock.
- Division takes between 2 and 12 cycles depending on dividend and devisor

-Low power consumption

- Optimized design using a low power consumption library
- Standby function that stops the operation of the microcontroller core

3) High-speed interrupt response suitable for real-time control

- An interruptible long instruction.
- Stack push automatically handled by hardware.

(2) On Chip program memory and data memory

Product name	On chip Flash ROM	On chip RAM
T5CN5	512Kbyte	32Kbyte

(3) 16-bit timer : 10 channels
- 16-bit interval timer mode
- 16-bit event counter mode
- 16-bit PPG output
- Input capture function

(4) Real time clock (RTC) : 1 channel
- Clock (hour, minute and second)
- Calendar (Month, week, date and leap year)
- Time correction + or − 30 seconds (by software)
- Alarm (Alarm output)
- Alarm interrupt

(5) Watchdog timer : 1 channel
- 26 cycles of binary counter
- Watchdog timer out

(6) General-purpose serial interface : 3 channels
- Either UART mode or synchronous mode can be selected (4byte FIFO equipped)

(7) Serial bus interface : 3 channels
- Either I^2C bus mode or synchronous mode can be selected.

(8) CEC : 1 channel
- Transmission and reception per 1 byte.

(9) Remote control signal preprocessor : 2 channels
- Can receive up to 72bit data at a time

(10) 10-bit A/D converter : 12 channels
- Start by an internal or external timer trigger
- Fixed channel/scan mode
- Single/repeat mode
- AD monitoring 2ch
- Conversion speed 1.15usec(@fsys = 40MHz)

(11) Interrupt source
- Internal: 42 factors…The order of precedence can be set over 7 levels (except the watchdog timer interrupt).
- External: 8 factors…The order of precedence can be set over 7 levels.

(12) Input/ output ports
- 79 pins

(13) Standby mode

- Standby modes :IDLE, SLOW, SLEEP, STOP
- Sub clock operation(32.768kHz) :SLOW, SLEEP

(14) Clock generator

- On-chip PLL (quadrupled)
- Clock gear function: The high-speed clock can be divided into 1/1, 1/2, 1/4 or 1/8.

(15) Endian

- Little endian

(16) Maximum operating frequency

- 40MHz

(17) Operating voltage range

- 2.7V~3.6V (with on-chip regulator)

(18) Temperature range

- -20~85 degrees (except during Flash writing/ erasing)
- 0~70 degrees (during Flash writing/ erasing)

(19) Package

- LQFP100-P-1414-0.5H (14mm × 14mm, 0.5mm pitch)

1.2 Block Diagram

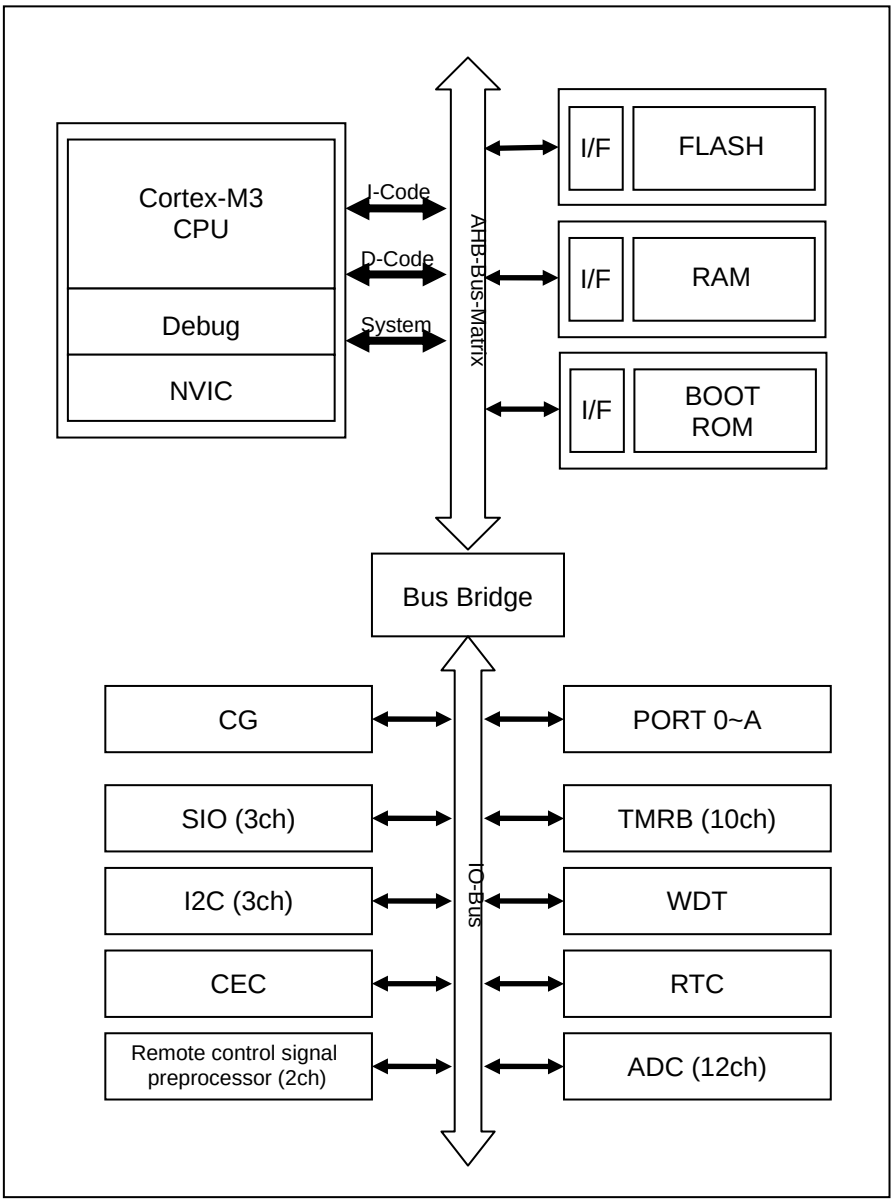


Fig. 1.1 T5CN5 Block Diagram

2. Pin Layout and Pin Functions

This chapter describes the pin layout, pin names and pin functions of T5CN5.

2.1 Pin Layout (Top view)

Fig. 2-1 shows the pin layout of T5CN5.

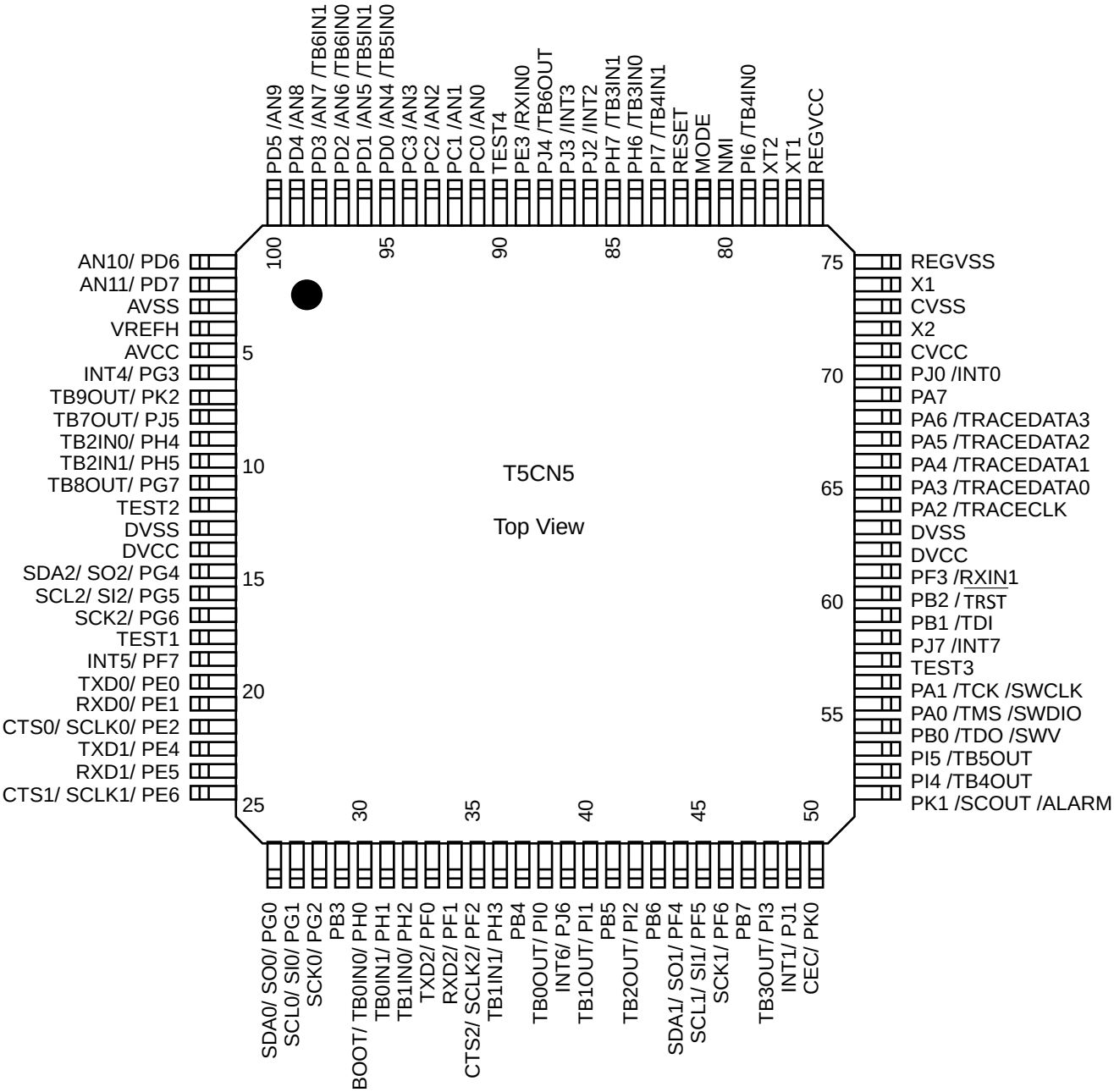


Fig. 2.1 Pin Layout (LQFP100)

Table 2.1 Pin Numbers and Names (1/2)

Pin No.	Pin name	Pin No.	Pin name
1	PD6, AN10	26	PG0, SO0, SDA0
2	PD7, AN11	27	PG1, SI0, SCL0
3	AVSS	28	PG2, SCK0
4	VREFH	29	PB3
5	AVCC	30	PH0, TB0IN0, $\overline{\text{BOOT}}$
6	PG3, INT4	31	PH1, TB0IN1
7	PK2, TB9OUT	32	PH2, TB1IN0
8	PJ5, TB7OUT	33	PF0, TXD2
9	PH4, TB2IN0	34	PF1, RXD2
10	PH5, TB2IN1	35	PF2, SCLK2, CTS2
11	PG7, TB8OUT	36	PH3, TB1IN1
12	TEST2	37	PB4
13	DVSS	38	PI0, TB0OUT
14	DVCC	39	PJ6, INT6
15	PG4, SO2, SDA2	40	PI1, TB1OUT
16	PG5, SI2, SCL2	41	PB5
17	PG6, SCK2	42	PI2, TB2OUT
18	TEST1	43	PB6
19	PF7, INT5	44	PF4, SO1, SDA1
20	PE0, TXD0	45	PF5, SI1, SCL1
21	PE1, RXD0	46	PF6, SCK1
22	PE2, SCLK0, CTS0	47	PB7
23	PE4, TXD1	48	PI3, TB3OUT
24	PE5, RXD1	49	PJ1, INT1
25	PE6, SCLK1, CTS1	50	PK0, CEC

Table 2.1 Pin Numbers and Names (2/2)

Pin No.	Pin name	Pin No.	Pin name
51	PK1, SCOUT, $\overline{\text{ALARM}}$	76	REGVCC
52	PI4, TB4OUT	77	XT1
53	PI5, TB5OUT	78	XT2
54	PB0, TDO, SWV	79	PI6, TB4IN0
55	PA0, TMS, SWDIO	80	$\overline{\text{NMI}}$
56	PA1, TCK, SWCLK	81	MODE
57	TEST3	82	$\overline{\text{RESET}}$
58	PJ7, INT7	83	PI7, TB4IN1
59	PB1, TDI	84	PH6, TB3IN0
60	PB2, $\overline{\text{TRST}}$	85	PH7, TB3IN1
61	PF3, RXIN1	86	PJ2, INT2
62	DVCC	87	PJ3, INT3
63	DVSS	88	PJ4, TB6OUT
64	PA2, TRACECLK	89	PE3, RXIN0
65	PA3, TRACEDATA0	90	TEST4
66	PA4, TRACEDATA1	91	PC0, AN0
67	PA5, TRACEDATA2	92	PC1, AN1
68	PA6, TRACEDATA3	93	PC2, AN2
69	PA7	94	PC3, AN3
70	PJ0, INT0	95	PD0, AN4, TB5IN0
71	CVCC	96	PD1, AN5, TB5IN1
72	X2	97	PD2, AN6, TB6IN0
73	CVSS	98	PD3, AN7, TB6IN1
74	X1	99	PD4, AN8
75	REGVSS	100	PD5, AN9

2.2 Pin names and Functions

Table 2.2 and Table 2.3 sort the input and output pins of the T5CN5 by pin or port. Each table includes alternate pin names and functions for multi-function pins.

3.1.1 Sorted by Pin

Table 2.2 Pin Names and Functions Sorted by Pin (1/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	1	PD6 AN10	I I	Input port Analog input	Pull up	-	-
	2	PD7 AN11	I I	Input port Analog input	Pull up	-	-
PS	3	AVSS	I	A/D converter: GND pin (0V) Tie AVSS to power supply even if the A/D converter is not used.	-	-	-
	4	VREFH	I	Supplying the A/D converter with a reference power supply. Tie VREFH to power supply even if the A/D converter is not used.	-	-	-
	5	AVCC	I	Supplying the A/D converter with a power supply. Tie AVCC to power supply even if the A/D converter is not used.	-	-	-
Function	6	PG3 INT4	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	7	PK2 TB9OUT	I/O O	I/O port Timer B output	Pull up	-	-
	8	PJ5 TB7OUT	I/O I	I/O port Timer B output	Pull up	-	-
	9	PH4 TB2IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	10	PH5 TB2IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	11	PG7 TB8OUT	I/O O	I/O port Timer B output	Pull up	-	○
Test	12	TEST2	-	TEST pin: Not connected.	-	-	-
PS	13	DVSS	-	GND pin	-	-	-
	14	DVCC	-	Power supply pin	-	-	-
Function	15	PG4 SDA2/ SO2	I/O I/O O	I/O port If the serial bus interface operates -in the I2C mode : data pin -in the SIO mode: data pin	Pull up	○	○
	16	PG5 SCL2/ SI2	I/O I/O I	I/O port If the serial bus interface operates -in the I2C mode : clock pin -in the SIO mode: data pin	Pull up	○	○
	17	PG6 SCK2	I/O I/O	I/O port Inputting and outputting a clock if the serial bus interface operates in the SIO mode.	Pull up	○	○
Test	18	TEST1	-	TEST pin: Not connected.	-	-	-
Function	19	PF7 INT5	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○

Table 2.2 Pin Names and Functions Sorted by Pin (2/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	20	PE0 TXD0	I/O O	I/O port Sending serial data	Pull up	-	○
	21	PE1 RXD0	I/O I	I/O port Receiving serial data	Pull up	○	○
	22	PE2 SCLK0 CTS0	I/O I I	I/O port Serial clock input/ output Handshake input pin	Pull up	○	○
	23	PE4 TXD1	I/O O	I/O port Sending serial data	Pull up	-	○
	24	PE5 RXD1	I/O I	I/O port Receiving serial data	Pull up	○	○
	25	PE6 SCLK1 CTS1	I/O I I	I/O port Serial clock input/ output Handshake input pin	Pull up	○	○
	26	PG0 SDA0/ SO0	I/O I/O O	I/O port If the serial bus interface operates -in the I2C mode : data pin -in the SIO mode: data pin	Pull up	○	○
	27	PG1 SCL0/ SI0	I/O I/O I	I/O port If the serial bus interface operates -in the I2C mode : clock pin -in the SIO mode: data pin	Pull up	○	○
	28	PG2 SCK0	I/O I/O	I/O port Inputting and outputting a clock if the serial bus interface operates in the SIO mode.	Pull up	○	○
	29	PB3	I/O	I/O port	Pull up	-	-
Function/ Control	30	PH0 TB0IN0 $\overline{\text{BOOT}}$	I/O I I	I/O port Inputting the timer B capture trigger Setting a single boot mode: This pin goes into single boot mode by sampling "L" at the rise of a reset signal.	Pull up	○	-
Function	31	PH1 TB0IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	32	PH2 TB1IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	33	PF0 TXD2	I/O O	I/O port Sending serial data	Pull up	-	○
	34	PF1 RXD2	I/O I	I/O port Receiving serial data	Pull up	○	○
	35	PF2 SCLK2 CTS2	I/O I I	I/O port Serial clock input/ output Handshake input pin	Pull up	○	○
	36	PH3 TB1IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	37	PB4	I/O	I/O port	Pull up	-	-
	38	PI0 TB0OUT	I/O O	I/O port Timer B output	Pull up	-	-
	39	PJ6 INT6	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○

Table 2.2 Pin Names and Functions Sorted by Pin (3/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	40	PI1 TB1OUT	I/O O	I/O port Timer B output	Pull up	-	-
	41	PB5	I/O	I/O port	Pull up	-	-
	42	PI2 TB2OUT	I/O O	I/O port Timer B output	Pull up	-	-
	43	PB6	I/O	I/O port	Pull up	-	-
	44	PF4 SDA1/ SO1	I/O I/O O	I/O port If the serial bus interface operates -in the I2C mode : data pin -in the SIO mode: data pin	Pull up	○	○
	45	PF5 SCL1/ SI1	I/O I/O I	I/O port If the serial bus interface operates -in the I2C mode : clock pin -in the SIO mode: data pin	Pull up	○	○
	46	PF6 SCK1	I/O I/O	I/O port Inputting and outputting a clock if the serial bus interface operates in the SIO mode.	Pull up	○	○
	47	PB7	I/O	I/O port	Pull up	-	-
	48	PI3 TB3OUT	I/O O	I/O port Timer B output	Pull up	-	-
	49	PJ1 INT1	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	50	PK0 CEC	I/O I/O	I/O port CEC pin	-	○	● (Note 4)
	51	PK1 SCOUT $\overline{\text{ALARM}}$	I/O O O	I/O port System clock output Alarm output	Pull up	-	-
	52	PI4 TB4OUT	I/O O	I/O port Timer B output	Pull up	-	-
	53	PI5 TB5OUT	I/O O	I/O port Timer B output	Pull up	-	-
Function/ Debug	54	PB0 TDO/SWV	I/O O	I/O port Debug pin	Pull up	-	-
	55	PA0 TMS/SWDIO	I/O I/O	I/O port Debug pin	Pull up	○	-
	56	PA1 TCK/ SWCLK	I/O I	I/O port Debug pin	Pull up	-	-
Test	57	TEST3	-	TEST pin: Not connected.	-	-	-
Function	58	PJ7 INT7	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
Function/ Debug	59	PB1 TDI	I/O I	I/O port Debug pin	Pull up	-	-
	60	PB2 $\overline{\text{TRST}}$	I/O I	I/O port Debug pin	Pull up	○	-
Function	61	PF3 RXIN1	I/O I	I/O port Inputting signal to remote controller	Pull up	○	○
PS	62	DVCC	-	Power supply pin	-	-	-
	63	DVSS	-	GND pin	-	-	-

Table 2.2 Pin Names and Functions Sorted by Pin (4/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function/ Debug	64	PA2 TRACECLK	I/O O	I/O port Debug pin	Pull up	-	-
	65	PA3 TRACEDATA0	I/O O	I/O port Debug pin	Pull up	-	-
	66	PA4 TRACEDATA1	I/O O	I/O port Debug pin	Pull up	-	-
	67	PA5 TRACEDATA2	I/O O	I/O port Debug pin	Pull up	-	-
	68	PA6 TRACEDATA3	I/O O	I/O port Debug pin	Pull up	-	-
Function	69	PA7	I/O	I/O port	Pull up		
	70	PJ0 INT0	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
PS	71	CVCC	-	Power supply pin	-	-	-
Clock	72	X2	O	Connected to a high-speed oscillator.	-	-	-
PS	73	CVSS	-	GND pin	-	-	-
Clock	74	X1	I	Connected to a high-speed oscillator.	-	○	-
PS	75	REGVSS	-	GND pin	-	-	-
	76	REGVCC	-	Power supply pin	-	-	-
Clock	77	XT1	I	Connected to a low-speed oscillator.	-	○	-
	78	XT2	O	Connected to a low-speed oscillator.	-	-	-
Function	79	PI6 TB4IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	80	$\overline{\text{NMI}}$	I	Non-maskable interrupt	-	○ w/ noise filter	-
Control	81	MODE	I	Mode pin: Tied to GND pin	-	○	-
Function	82	$\overline{\text{RESET}}$	I	Reset input pin	Tied to Pull up	○ w/ noise filter	-
	83	PI7 TB4IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	84	PH6 TB3IN0	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	85	PH7 TB3IN1	I/O I	I/O port Inputting the timer B capture trigger	Pull up	○	-
	86	PJ2 INT2	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	87	PJ3 INT3	I/O I	I/O port Interrupt request pin	Pull up	○ w/ noise filter	○
	88	PJ4 TB6OUT	I/O O	I/O port Timer B output	Pull up	-	-
	89	PE3 RXIN0	I/O I	I/O port Inputting signal to remote controller	Pull up	○	○
Test	90	TEST4	-	TEST pin: Not connected.	-	-	-

Table 2.2 Pin Names and Functions Sorted by Pin (5/5)

Type	# of Pins	Pin Name	Input/ Output	Function	Programmable Pull-up/ Pull down	Schmitt trigger	Programmable Open Drain Output
Function	91	PC0 AN0	I I	Input port Analog input	Pull up	-	-
	92	PC1 AN1	I I	Input port Analog input	Pull up	-	-
	93	PC2 AN2	I I	Input port Analog input	Pull up	-	-
	94	PC3 AN3	I I	Input port Analog input	Pull up	-	-
	95	PD0 AN4 TB5IN0	I I I	Input port Analog input Inputting the timer B capture trigger	Pull up	-	-
	96	PD1 AN5 TB5IN1	I I I	Input port Analog input Inputting the timer B capture trigger	Pull up	-	-
	97	PD2 AN6 TB6IN0	I I I	Input port Analog input Inputting the timer B capture trigger	Pull up	-	-
	98	PD3 AN7 TB6IN1	I I I	Input port Analog input Inputting the timer B capture trigger of	Pull up	-	-
	99	PD4 AN8	I I	Input port Analog input	Pull up	-	-
	100	PD5 AN9	I I	Input port Analog input	Pull up	-	-

(Note 1) TEST1 through 4 must be left unconnected.
(Note 2) Be sure to tie MODE to GND.
(Note 3) Tie VREFH/ AVCC to power supply and AVSS to GND even if the A/D converter is not used.
(Note 4) Nch open drain port.

2.3 Pin Names and Power Supply Pins

Table 2.4 Pin Names and Power Supplies

Pin name	Power supply
PA	DVCC
PB	DVCC
PC	AVCC
PD	AVCC
PE	DVCC
PF	DVCC
PG	DVCC
PH	DVCC
PI	DVCC
PJ	DVCC
PK	DVCC
X1, X2	CVCC
XT1, XT2	DVCC
$\overline{\text{RESET}}$	DVCC
$\overline{\text{NMI}}$	DVCC
MODE	DVCC

2.4 Pin Numbers and Power Supply Pins

Table 2.5 Pin Numbers and Power Supplies

Power supply	Pin number	Voltage range
DVCC	14, 62	2.7V~3.6V
AVCC	5	
REGVCC	76	
CVCC	71	

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)

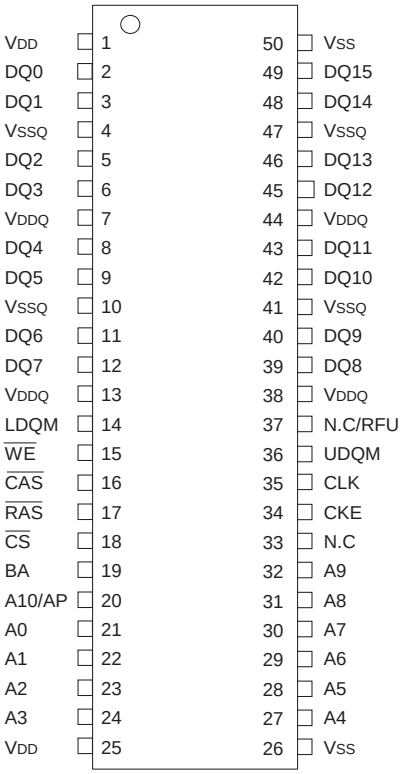
GENERAL DESCRIPTION

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.

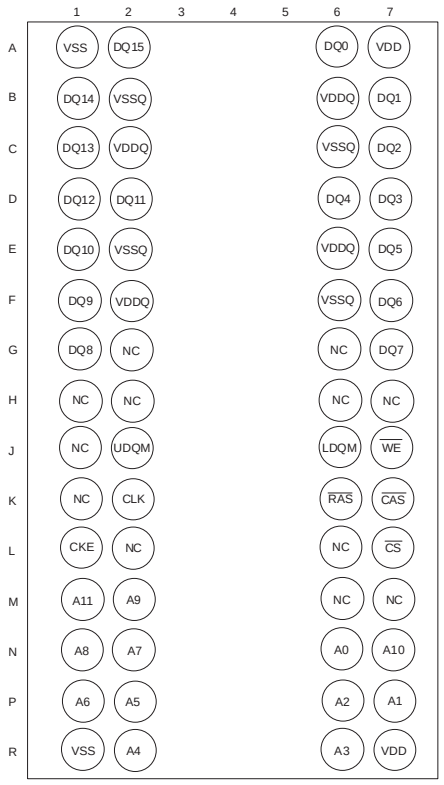
ORDERING INFORMATION

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)

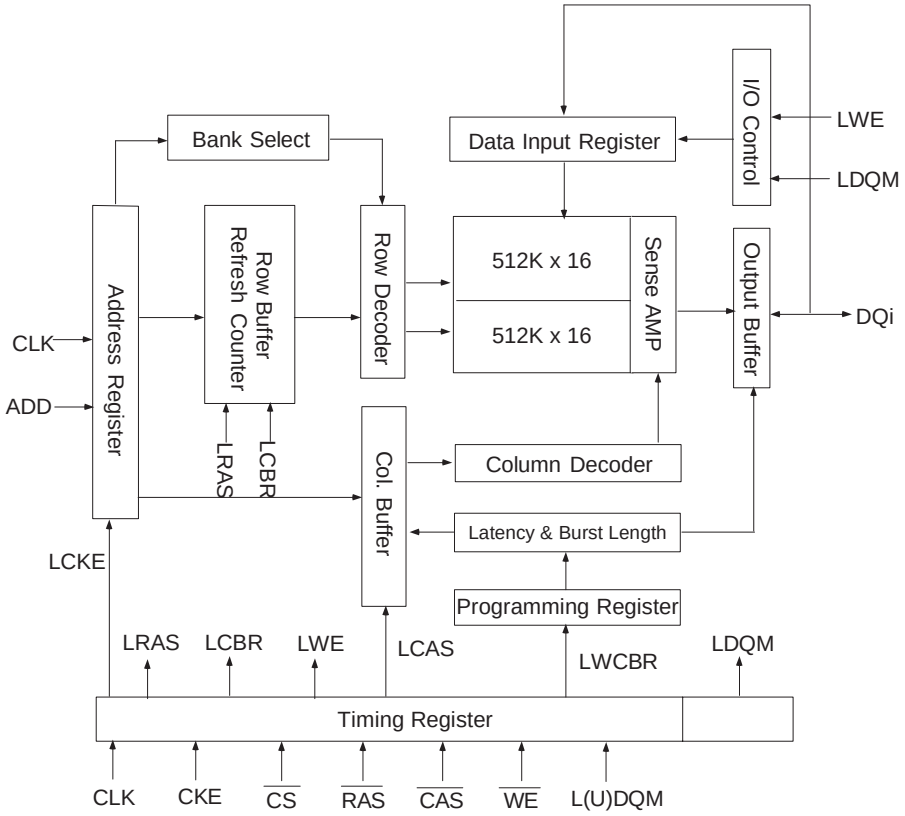


50PIN TSOP(II)
(400mil x 825mil)
(0.8 mm PIN PITCH)



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

FUNCTIONAL BLOCK DIAGRAM



PIN FUNCTION DESCRIPTION

Pin	Name	Input Function
CLK	*System Clock*	Active on the positive going edge to sample all inputs.
$\overline{CS}$	*Chip Select*	Disables or enables device operation by masking or enabling all inputs except CLK, CKE and L(U)DQM.
CKE	*Clock Enable*	Masks system clock to freeze operation from the next clock cycle. CKE should be enabled at least one cycle prior to new command. Disable input buffers for power down in standby.
A0 ~ A10/AP	*Address*	Row / column addresses are multiplexed on the same pins. Row address : RA0 ~ RA10, column address : CA0 ~ CA7
BA	*Bank Select Address*	Selects bank to be activated during row address latch time. Selects bank for read/write during column address latch time.
$\overline{RAS}$	*Row Address Strobe*	Latches row addresses on the positive going edge of the CLK with $\overline{RAS}$ low. Enables row access & precharge.
$\overline{CAS}$	*Column Address Strobe*	Latches column addresses on the positive going edge of the CLK with $\overline{CAS}$ low. Enables column access.
$\overline{WE}$	*Write Enable*	Enables write operation and row precharge. Latches data in starting from $\overline{CAS}$, $\overline{WE}$ active.
L(U)DQM	*Data Input / Output Mask*	Makes data output Hi-Z, tSHZ after the clock and masks the output. Blocks data input when L(U)DQM active.

M24128
M24C64 M24C32

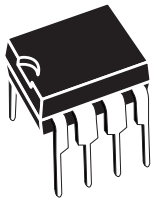
128 Kbit, 64 Kbit and 32 Kbit serial I²C bus EEPROM

Features

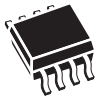
- Two-wire I²C serial interface supports 400 kHz protocol
- Single supply voltages (see *Table 1* for root part numbers):
  - 2.5 V to 5.5 V
  - 1.8 V to 5.5 V
  - 1.7 V to 5.5 V
- Write Control input
- Byte and Page Write
- Random and Sequential Read modes
- Self-timed programming cycle
- Automatic address incrementing
- Enhanced ESD/latch-up protection
- More than 1 Million write cycles
- More than 40-year data retention
- Packages
  - ECOPACK® (RoHS compliant)

Table 1. Device summary

Reference	Part number	Supply voltage
M24128	M24128-BW	2.5 V to 5.5V
	M24128-BR	1.8 V to 5.5V
	M24128-BF	1.7 V to 5.5V
M24C64	M24C64-W	2.5 V to 5.5V
	M24C64-R	1.8 V to 5.5V
	M24C64-F	1.7 V to 5.5V
M24C32	M24C32-W	2.5 V to 5.5V
	M24C32-R	1.8 V to 5.5V
	M24C32-F	1.7 V to 5.5V



PDIP8 (BN)



SO8 (MN)
150 mil width

TSSOP8 (DW)
169 mil width

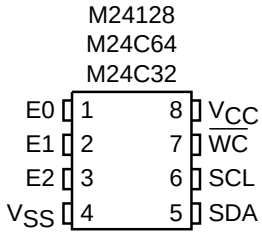
UFDFPN8 (MB)
2 × 3 mm (MLP)

WLCSP (CS)

Table 2. Signal names

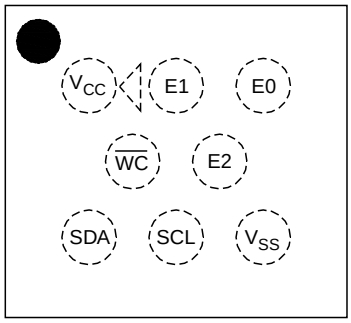
Signal name	Function	Direction
E0, E1, E2	Chip Enable	Input
SDA	Serial Data	I/O
SCL	Serial Clock	Input
WC	Write Control	Input
V_{CC}	Supply voltage	
V_{SS}	Ground	

Figure 2. DIP, SO, TSSOP and UFDFPN connections



1. See *Package mechanical data* section for package dimensions, and how to identify pin-1.

Figure 3. M24128 WLCSP connections (top view, marking side, with balls on the underside)



Minilogic Device Corporation ML61

ML61 Series Positive Voltage Detector

❖ *Application*

- *Memory Battery Back-up Circuits*
- *Microprocessor Reset Circuitry*
- *Power Failure Detection*
- *Power-on Reset Circuit*
- *System Battery Life and Charge Voltage Monitor*

❖ *Features*

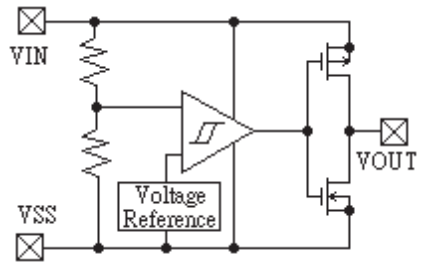
- CMOS Low Power Consumption : Typical 1.0uA at Vin=2.0V
- Selectable Detect Voltage : 1.1V to 6.0V in 0.1V increments
- Highly Accurate : Detect Voltage 1.1V to 1.9V ± 3%
  Detect Voltage 2.0V to 6.0V ± 2%
- Operating Voltage : 0.8V to 10.0V
- Package Available : SOT23 (150mW), SOT89 (500mW) & TO92 (300mW)

❖ *General Description*

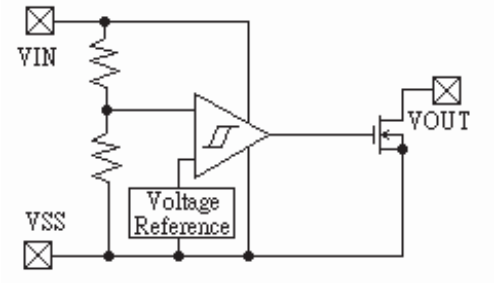
The ML61 is a group of high-precision and low-power voltage detectors.
The ML61 consists of a highly-accurate and low-power reference voltage source, a comparator, a hysteresis circuit, and an output driver. Detect voltage is very accurate and stable with N-channel open drain and CMOS, are available.

❖ *Block Diagram*

(1) CMOS Output

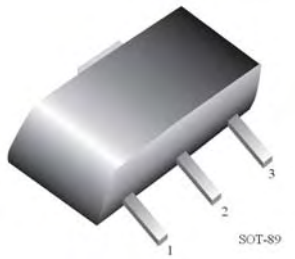


(2) N-Channel Open Drain Output



❖

SOT-89



❖ *Pin Configuration*

Pin Number	*Pin Name*	*Description*
1	*VOUT*	*Supply Voltage Output*
2	*VIN*	*Supply Voltage Input*
3	*VSS*	*Ground*

JRC

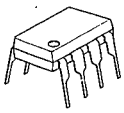
NJM2068

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

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

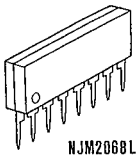
■ PACKAGE OUTLINE



NJM2068D

NJM2068M

NJM2068V



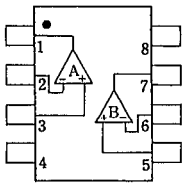
NJM2068L

■ FEATURES

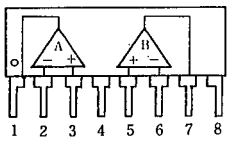
- Operating Voltage (±4V~±18V)
- Low Total Harmonic Distortion (0.001% typ.)
- Low Noise Voltage (FLAT+JISA, 0.56 μV typ.)
- High Slew Rate (6V/μs typ.)
- Unity Gain Bandwidth (27MHz @f=10kHz)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

4

■ PIN CONFIGURATION



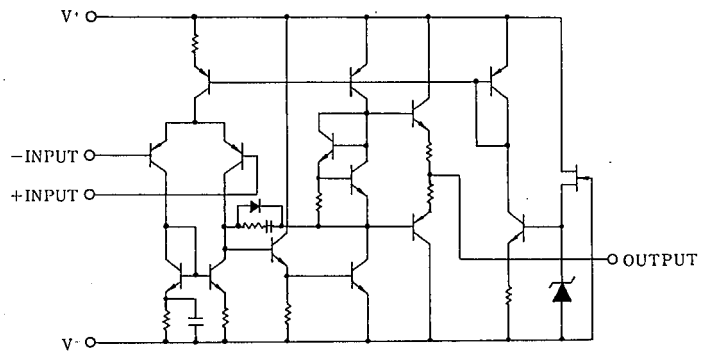
NJM2068D
NJM2068M
NJM2068V



NJM2068L

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

■ EQUIVALENT CIRCUIT (1/2 Shown)



JRC

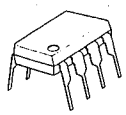
NJM2115

DUAL OPERATIONAL AMPLIFIER

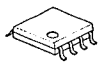
■ GENERAL DESCRIPTION

NJM 2115 is a low operating Voltage (±1.0 V min.) and low saturation output voltage (±2.0 V p-p at supply voltage ±2.5V) operational amplifier. It is applicable to HANDY TYPE CD, RADIO CASSETE CD, and PORTABLE DAT, that are digital audio apparatus which require the 5V single supply operation and high output voltage. The NJM2115 is improved version of the NJM2100 about BIAS-CIRCUIT. So, NJM2115 is low saturation compared to the NJM2100 under the condition of low supply voltage (< ±2.5V). The NJM2115 is stable about the oscillation compared to the NJM2100 under the condition of $V^+/V^- > 2.5V$.

■ PACKAGE OUTLINE

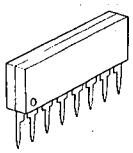


NJM2115D



NJM2115M

NJM2115V

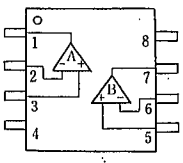


NJM2115L

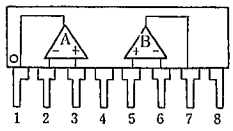
■ FEATURES

- Operating Voltage (±1V～±7V)
- Low Saturation Output Voltage ($\pm 2.0V_{P\text{-}P}$ @$V^+ = \pm 2.5V$)
- Slew Rate (4V/μs typ.)
- Unity Gain Bandwidth (12MHz typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PIN CONFIGURATION



NJM2115D
NJM2115M
NJM2115V

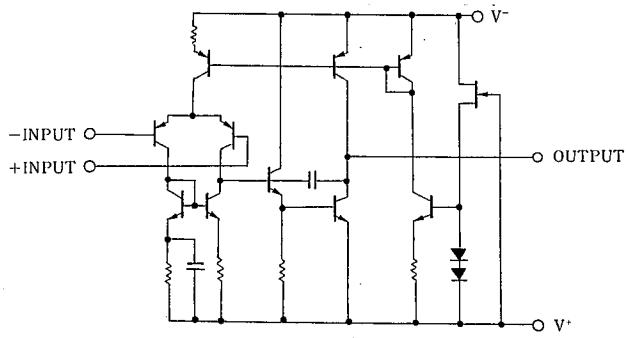


NJM2115L

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)



JRC

NJM4556A

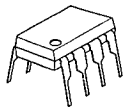
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ 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~).

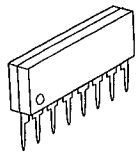
The NJM4556A combines many of the fetures of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ PACKAGE OUTLINE

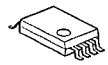


NJM4556AD

NJM4556AM



NJM4556AL

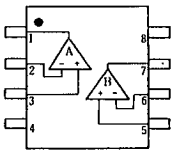


NJM4556AV

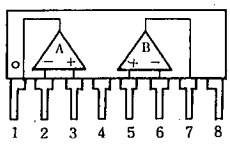
■ FEATURES

- 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



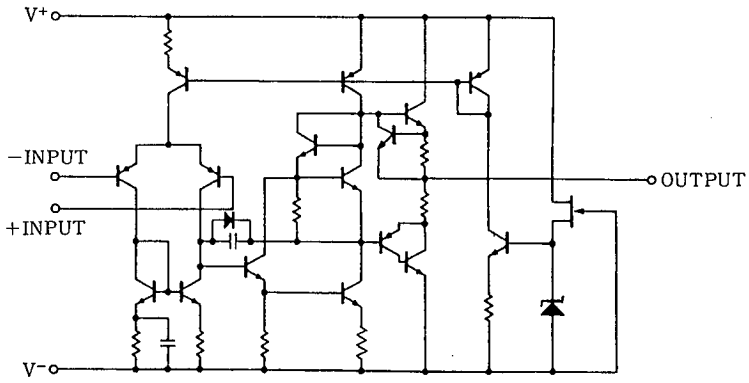
NJM4556AD
NJM4556AM
NJM4556AV



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)



JRC **NJU7223**

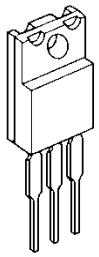
500mA Low Dropout Voltage Regulator

■ GENERAL DESCRIPTION

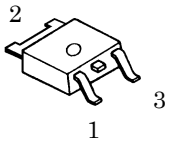
The NJU7223 series is a high precision output voltage, low drop output, low current consumption and high output current 3-terminal positive voltage regulator with a over current protection and a thermal shutdown.

Low dropout voltage is realized at high current output.

■ PACKAGE OUTLINE



NJM7223F



NJU7223DL1

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

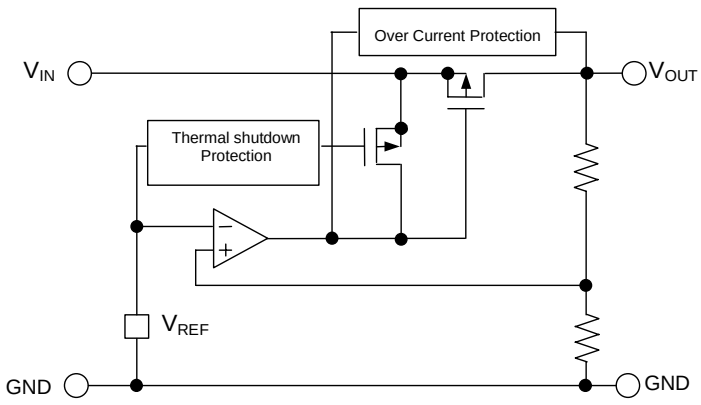
■ FEATURES

- ●High Precision Output Voltage ±2%
- ●High Output Current Io(max.)=500mA
- ●Low Current Consumption 30μA
- ●Low Dropout Voltage ΔV_{IO}=0.4V typ. (Io=0.5A,Vo=5V)
- ●Internal Over Current Protection
- ●Internal Thermal Shutdown Protection
- ●Package Outline TO-220F, TO-252
- ●C-MOS Technology

■ OUTPUT VOLTAGE LINE-UP

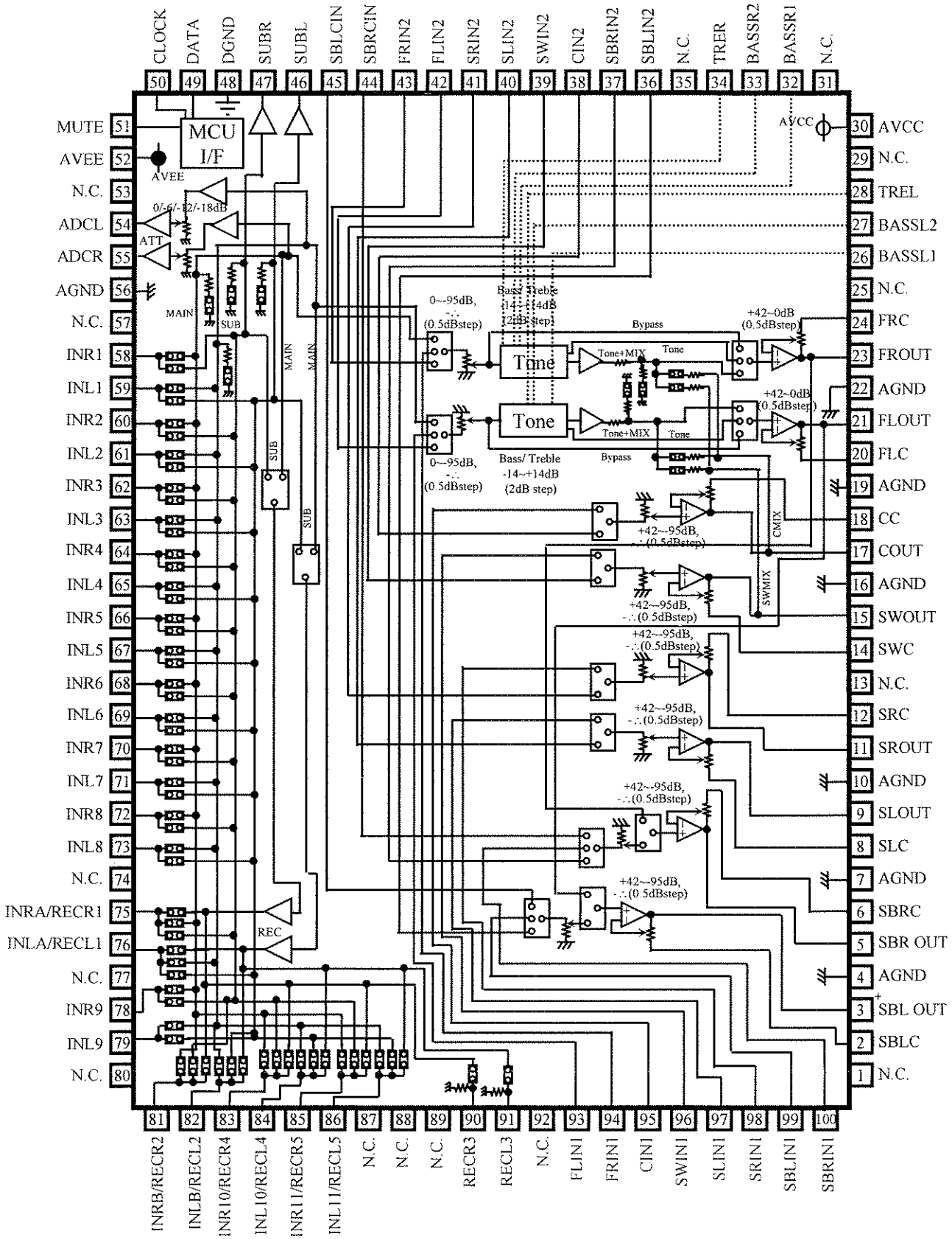
V_{OUT}	TO-220F	TO-252
+1.8V	NJU7223F18	NJU7223DL1-18
+2.5V	NJU7223F25	NJU7223DL1-25
+3.0V	NJU7223F30	NJU7223DL1-30
+3.3V	NJU7223F33	NJU7223DL1-33
+5.0V	NJU7223F50	NJU7223DL1-50

■ EQUIVALENT CIRCUIT



C.S	Integrated Circuit (R2A15218FP)

Fig 1. BLOCKDIAGRAM AND PIN CONFIGURATION(TOP VIEW)



C.S	Integrated Circuit (R2A15218FP)

Fig 2. PIN DESCRIPTION

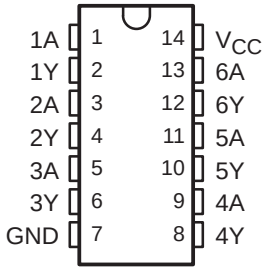
PIN No.	Name	Function
23,21, 17,15, 11,9, 5,3	FROUT,FLOUT, COUT,SWOUT, SROUT, SLOUT, SBROUT,SBLOUT	Output pin of FL/FR/C/SW/SL/SR/SBL/SBR channel
24,20, 18,14, 12,8, 6,2	FRC,FLC, CC,SWC, SRC,SLC, SBRC,SBLC	Connects capacitor for reducing click noise of L/R/C/SW/SL/SR/SBL/SBR channel volume
4,7,10,16, 19,22,56	AGND	Analog ground of internal circuit
28,34	TREL, TRER	Frequency characteristic setting pin of L/R channel tone control (Treble)
26,27, 32,33	BASSL1,BASSL2 BASSR1,BASSR2	Frequency characteristic setting pin of L/R channel tone control (Bass)
30	AVCC	Positive power supply to internal circuit
43,42, 41,40, 39,38, 37,36	FRIN2, FLIN2, SRN2,SLIN2, SWIN2,CIN2, SBRIN2,SBLIN2	Input pin of L/R/C/SW/SL/SR/SBL/SBR channel (Multi IN 1/2)
93,94, 95,96, 97,98, 99,100	FLIN1, FRIN1, CIN1,SWIN1, SLIN1,SRIN1, SBLIN1,SBRIN1	
48	DGND	Digital ground of internal circuit
49	DATA	Input pin of control data
50	CLOCK	Input pin of control clock
52	AVEE	Negative power supply to internal circuit
59,61,63, 65,67,69, 71,73,79	INL1,INL2, INL3, INL4,INL5,INL6, INL7,INL8,INL9	Input pin of L/R channel (Input Selector)
58,60,62, 64,66,68, 70,72,78	INR1,INR2, INR3, INR4,INR5,INR6, INR7,INR8,INR9	
51	MUTE	Outside Mute Control PIN
44,45	SBRCIN,SBLCIN	Input pin for SBL/SBR channel Volume
46,47	SUBL,SUBR	Output pin for L/R channel SUB Output
54,55	ADCL, ADCR	Output pin for L/R channel ADC
90,91	RECR3,RECL3	Output pin for L/R channel REC Output
75,76, 81,82, 83,84, 85,86	INRA/RECR1,INLA/RECL1, INRB/RECR2,INLB/RECL2, INR10/RECR4,INL10/RECL4, INR11/RECR5,INL11/RECL5	Input pin of L/R channel (Input Selector)/ Output pin for L/R channel REC Output
1,13,25,29,31, 35,53, 57,74,77,80, 87,88,89,92	N.C.	No Connected PIN

SN54ACT04, SN74ACT04
HEX INVERTERS

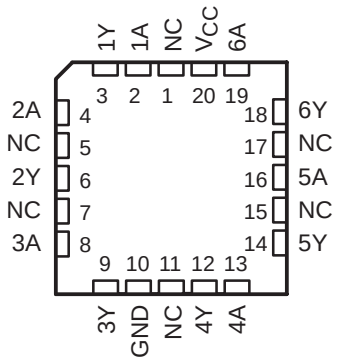
SCAS518C − JULY 1995 − REVISED OCTOBER 2003

- **4.5-V to 5.5-V V_{CC} Operation**
- **Inputs Accept Voltages to 5.5 V**
- **Max t_{pd} of 8.5 ns at 5 V**
- **Inputs Are TTL-Voltage Compatible**

SN54ACT04 . . . J OR W PACKAGE
SN74ACT04 . . . D, DB, N, NS, OR PW PACKAGE
(TOP VIEW)



SN54ACT04 . . . FK PACKAGE
(TOP VIEW)



NC − No internal connection

description/ordering information

The ‘ACT04 devices contain six independent inverters. The devices perform the Boolean function $Y = \overline{A}$.

ORDERING INFORMATION

T_A	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
−40°C to 85°C	PDIP − N	Tube	SN74ACT04N	SN74ACT0N
	SOIC − D	Tube	SN74ACT04D	ACT04
		Tape and reel	SN74ACT04DR	
	SOP − NS	Tape and reel	SN74ACT04NSR	ACT04
	SSOP − DB	Tape and reel	SN74ACT04DBR	AD04
	TSSOP − PW	Tube	SN74ACT04PW	AD04
		Tape and reel	SN74ACT04PWR	
−55°C to 125°C	CDIP − J	Tube	SNJ54ACT04J	SNJ54ACT04J
	CFP − W	Tube	SNJ54ACT04W	SNJ54ACT04W
	LCCC − FK	Tube	SNJ54ACT04FK	SNJ54ACT04FK

† Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/sc/package.

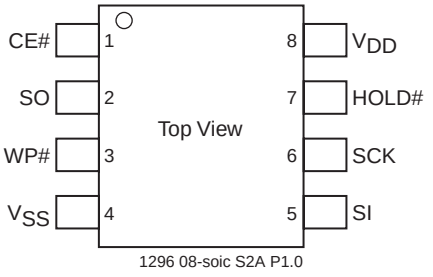
FUNCTION TABLE
(each inverter)

INPUT A	OUTPUT Y
H	L
L	H

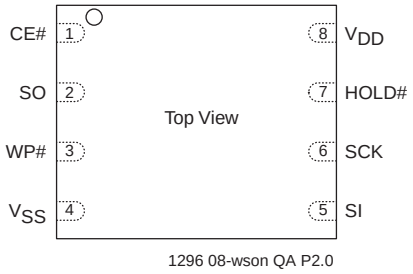
8 Mbit SPI Serial Flash
SST25VF080B

Data Sheet

PIN DESCRIPTION



8-LEAD SOIC



8-CONTACT WSON

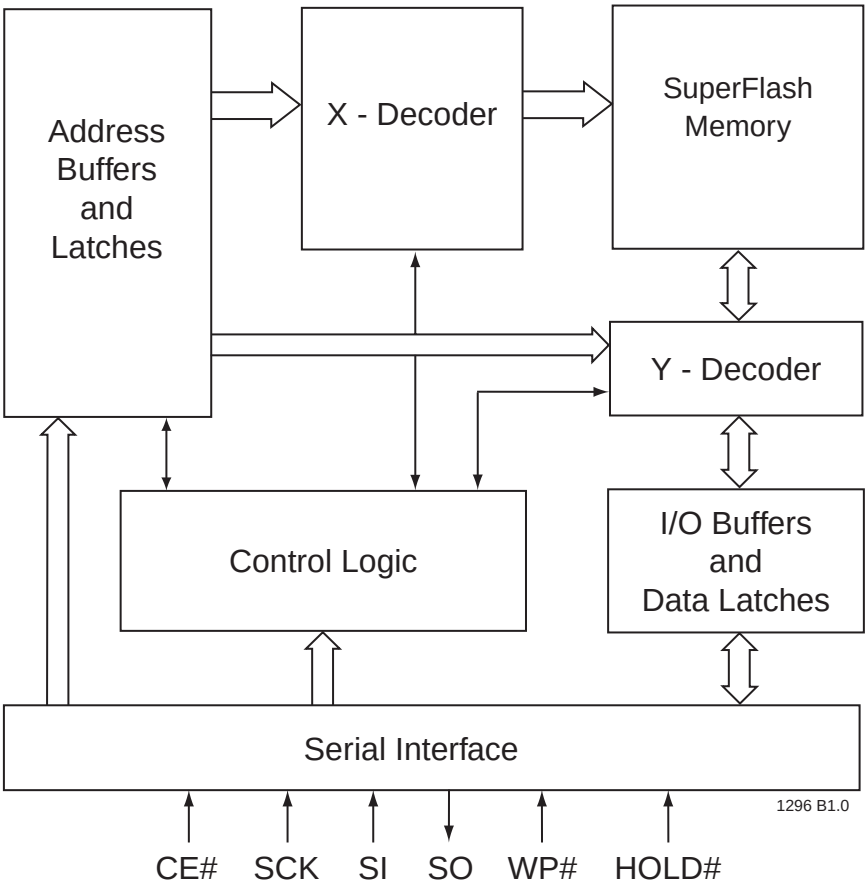
FIGURE 1: PIN ASSIGNMENTS

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

FUNCTIONAL BLOCK DIAGRAM



TOSHIBA TC74VCX541FT/FK/FTG

TOSHIBA CMOS Digital Integrated Circuit Silicon Monolithic

TC74VCX541FT, TC74VCX541FK, TC74VCX541FTG

Low-Voltage Octal Bus Buffer with 3.6 V Tolerant Inputs and Outputs

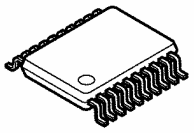
The TC74VCX541 is a high performance CMOS octal bus buffer which is guaranteed to operate from 1.2-V to 3.6-V. Designed for use in 1.5V, 1.8 V, 2.5 V or 3.3 V systems, it achieves high speed operation while maintaing the CMOS low power dissipation.

It is also designed with over voltage tolerant inputs and outputs up to 3.6 V.

The device is a non-inverting 3-state buffer having two active-low output enables. When either $\overline{OE}1$ or $\overline{OE}2$ are high, the terminal outputs are in the high-impedance state. This device is designed to be used with 3-state memory address drivers, etc.

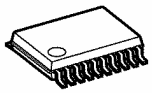
All inputs are equipped with protection circuits against static discharge.

TC74VCX541FT



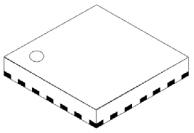
TSSOP20-P-0044-0.65A

TC74VCX541FK



VSSOP20-P-0030-0.50

TC74VCX541FTG



VQON20-0404-0.50

Weight

TSSOP20-P-0044-0.65A : 0.08 g (typ.)
VSSOP20-P-0030-0.50 : 0.03 g (typ.)
VQON20-P-0404-0.50 : 0.0145g (typ.)

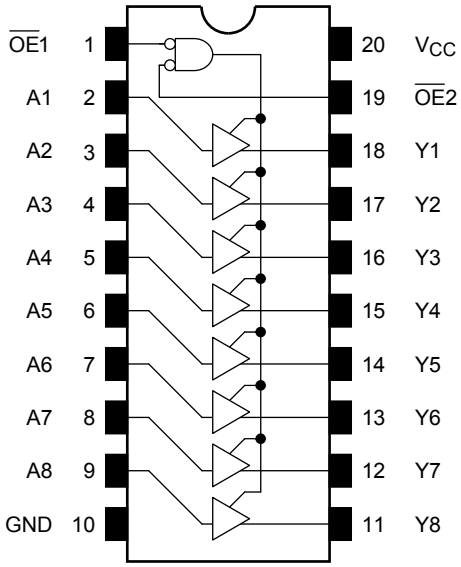
Features (Note 1)

- Low voltage operation: V_{CC} = 1.2~3.6 V
- High speed operation: t_{pd} = 3.5 ns (max) (V_{CC} = 3.0~3.6 V)
  t_{pd} = 4.2 ns (max) (V_{CC} = 2.3~2.7 V)
  t_{pd} = 8.4 ns (max) (V_{CC} = 1.65~1.95 V)
  t_{pd} = 16.8 ns (max) (V_{CC} = 1.4~1.6 V)
  t_{pd} = 42.0 ns (max) (V_{CC} = 1.2 V)
- 3.6 V tolerant inputs and outputs.
- Output current: I_{OH}/I_{OL} = ±24 mA (min) (V_{CC} = 3.0 V)
  I_{OH}/I_{OL} = ±18 mA (min) (V_{CC} = 2.3 V)
  I_{OH}/I_{OL} = ±6 mA (min) (V_{CC} = 1.65 V)
  I_{OH}/I_{OL} = ±2 mA (min) (V_{CC} = 1.4 V)
- Latch-up performance: −300 mA
- ESD performance: Machine model ≥ ±200 V
  Human body model ≥ ±2000 V
- Package: TSSOP
  VSSOP (US)
  VQON
- Power down protection is provided on all inputs and outputs.

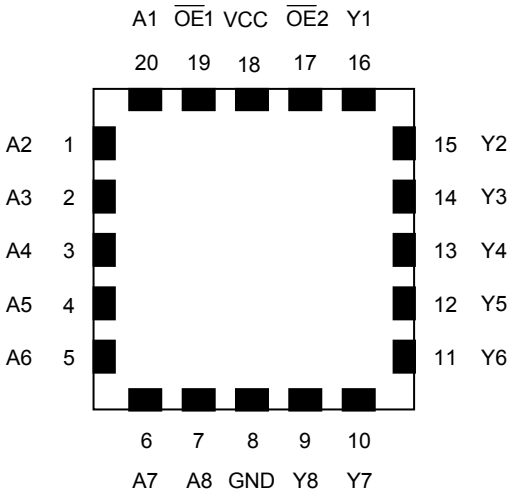
Note 1: When mounting VQON package, the type of recommended flux is RA or RMA.

Pin Assignment (top view)

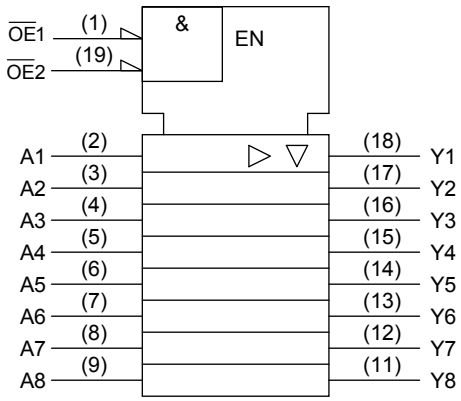
FT(TSSOP20-P-0044-0.65)
FK(VSSOP20-P-0030-0.50)



FTG(VQON20-P-0404-0.50)



IEC Logic Level



Truth Table

Inputs			Outputs
$\overline{OE}1$	$\overline{OE}2$	A_n	
H	X	X	Z
X	H	X	Z
L	L	H	H
L	L	L	L

X: Don't care

Z: High impedance

TOSHIBA TC74VHC157F/FN/FT

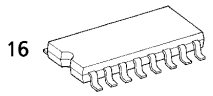
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74VHC157F, TC74VHC157FN, TC74VHC157FT

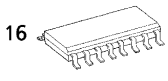
QUAD 2 - CHANNEL MULTIPLEXER

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

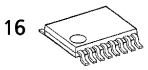
The TC74VHC157 is an advanced high speed CMOS QUAD 2 - CHANNEL MULTIPLEXER fabricated with silicon gate C^2MOS technology.
It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.
It consists of four 2 - input digital multiplexers 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.



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



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

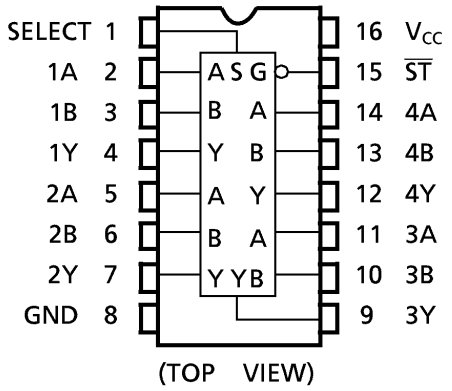


FT (TSSOP16-P-0044-0.65)
Weight : 0.06g (Typ.)

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

PIN ASSIGNMENT



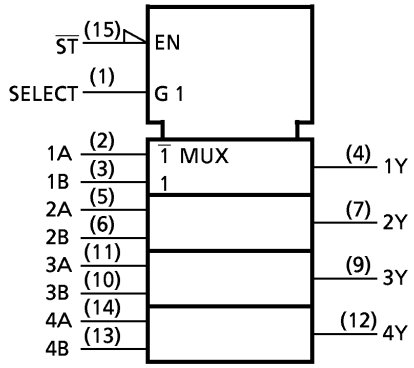
(TOP VIEW)

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

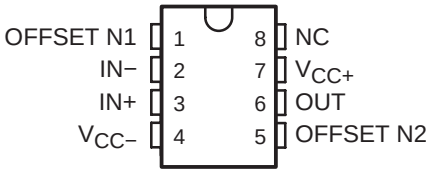


980910EBA2

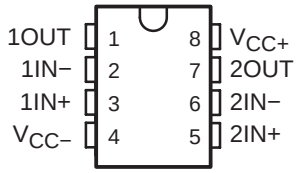
TL071, TL071A, TL071B, TL072
TL072A, TL072B, TL074, TL074A, TL074B
LOW-NOISE JFET-INPUT OPERATIONAL AMPLIFIERS

SLOS080J − SEPTEMBER 1978 − REVISED MARCH 2005

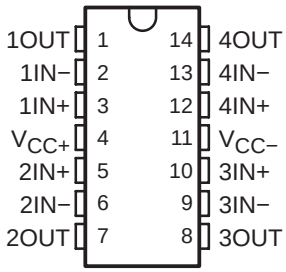
TL071, TL071A, TL071B
D, P, OR PS PACKAGE
(TOP VIEW)



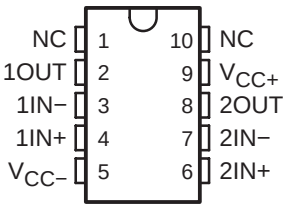
TL072, TL072A, TL072B
D, JG, P, PS, OR PW PACKAGE
(TOP VIEW)



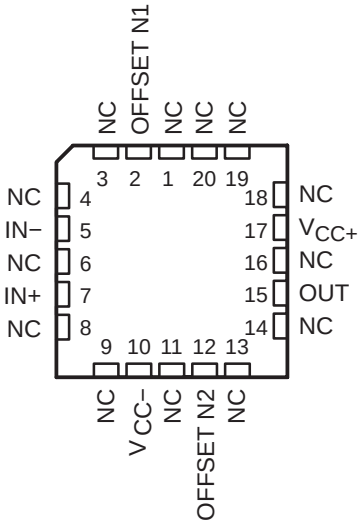
TL074A, TL074B
D, J, N, NS, OR PW PACKAGE
TL074 . . . D, J, N, NS, PW,
OR W PACKAGE
(TOP VIEW)



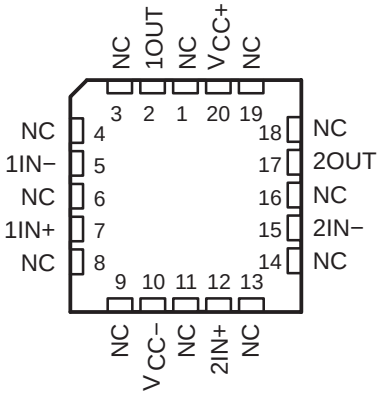
TL072
U PACKAGE
(TOP VIEW)



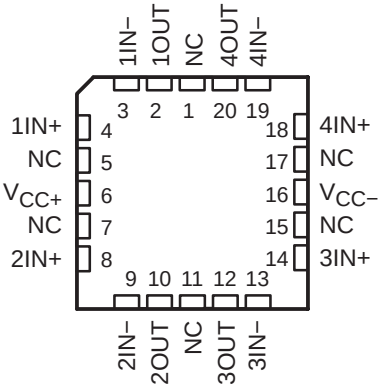
TL071
FK PACKAGE
(TOP VIEW)



TL072
FK PACKAGE
(TOP VIEW)



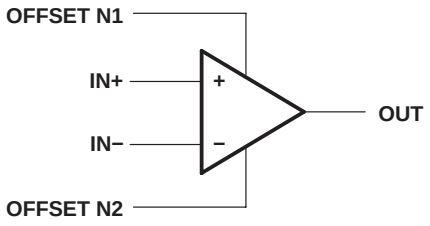
TL074
FK PACKAGE
(TOP VIEW)



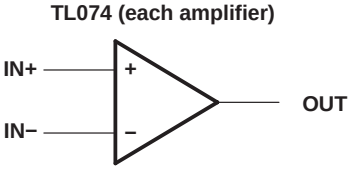
NC − No internal connection

symbols

TL071



TL072 (each amplifier)
TL074 (each amplifier)



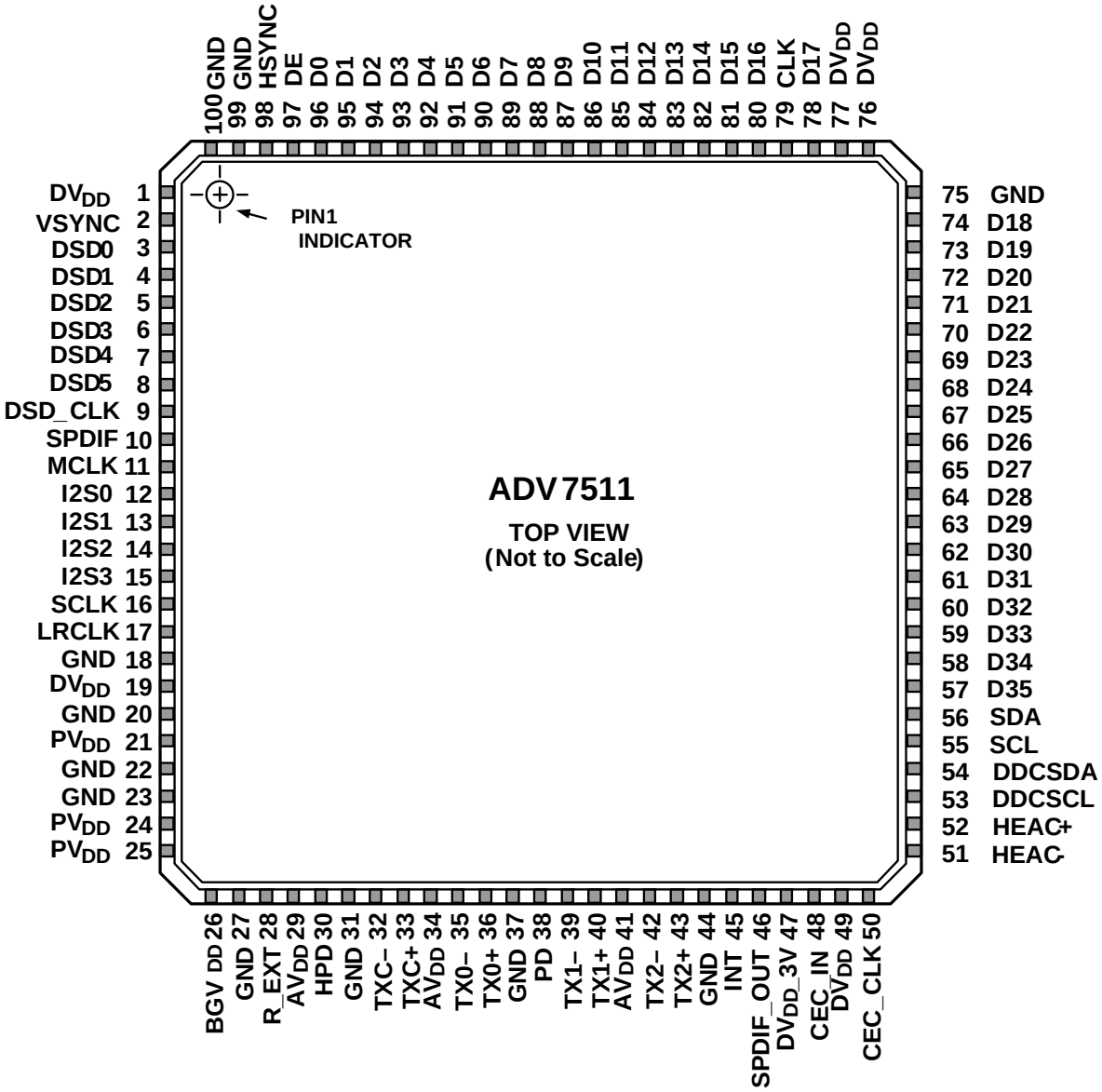
ADV7511 ADI Confidential

Rev. PrB

SECTION 5: PIN AND PACKAGE INFORMATION

This section shows the pinout of the ADV7511 100-lead LQFP package. This section also contains a brief description of the different pins as well as the mechanical drawings

Figure 6 100-lead LQFP configuration (top view - not to scale)



ADV7511 ADI Confidential

Rev. PrB

Table 3 Complete Pinout List ADV7511

Pin No.	Mnemonic	Type[1]	Description
57-74, 78, 80-96	D[35:0]	I	Video Data Input. Digital input in RGB or YCbCr format. Supports typical CMOS logic levels from1.8V up to 3.3V. See ►Figure 2 for timing details.
79	CLK	I	Video Clock Input. Supports typical CMOS logic levels from 1.8V up to 3.3V.
97	DE	I	Data Enable signal input for Digital Video. Supports typical CMOS logic levels from 1.8V up to 3.3V.
98	HSYNC	I	Horizontal Sync Input. Supports typical CMOS logic levels from 1.8V up to 3.3V.
2	VSYNC	I	Vertical Sync Input. Supports typical CMOS logic levels from 1.8V up to 3.3V.
28	R_EXT	I	Sets internal reference currents. Place 887 Ω resistor (1% tolerance) between this pin and ground.
51	HEAC-	I	HEAC- is one of a pair of differential lines for the ARC (Audio Return Channel)
52	HEAC+	I	HEAC+ is one of a pair of differential lines for the ARC (Audio Return Channel)
30	HPD	I	Hot Plug Detect signal input. This indicates to the interface whether the sink is connected. 1.8V to 5.0 V CMOS logic level.
10	S/PDIF	I	S/PDIF (Sony/Philips Digital Interface) Audio Input. This pin is typically used as the audio input from a Sony/Philips digital interface. Supports typical CMOS logic levels from 1.8V up to 3.3V. See ► Figure 4 for timing details.
46	S/PDIF_OUT	O	S/PDIF Audio Output from ARC receiver.
11	MCLK	I	Audio Reference Clock input. 128 × N × f_S with N = 1, 2, 3, or 4. Set to 128 × sampling frequency (f_S), 256 × f_S, 384 × f_S, or 512 × f_S. Supports typical CMOS logic levels from 1.8V up to 3.3V.
15-12	I^2S[3:0]	I	I^2S Audio Data Inputs. These represent the eight channels of audio (two per input) available through I^2S. Supports typical CMOS logic levels from 1.8V up to 3.3V. See **Figure** 3 for timing details.
16	SCLK	I	I^2S Audio Clock input. Supports typical CMOS logic levels from 1.8V up to 3.3V.
17	LRCLK	I	Left/Right Channel signal input. Supports typical CMOS logic levels from1.8V up to 3.3V.
8-3	DSD[5:0]	I	DSD audio data inputs. See ▶ Figure 5 for timing details.
9	DSD_CLK	I	DSD Clock input. This is a 2.8224MHz clock for the DSD audio inputs.
38	PD/AD	I	Power-Down Control and I^2C Address Selection. The I^2C address and the PD polarity are set by the PD/AD pin state when the supplies are applied to the ADV7511. Supports typical CMOS logic levels from 1.8V up to 3.3V.
32, 33	TxC−/TxC+	O	Differential TMDS Clock Output. Differential clock output at pixel clock rate; TMDS logic level.
42, 43	Tx2−/Tx2+	O	Differential TMDS Output Channel 2. Differential output of the red data at 10× the pixel clock rate; TMDS logic level.
39, 40	Tx1−/Tx1+	O	Differential TMDS Output Channel 1. Differential output of the green data at 10× the pixel clock rate; TMDS logic level.
35, 36	Tx0−/Tx0+	O	Differential TMDS Output Channel 0. Differential output of the blue data at 10× the pixel clock rate; TMDS logic level.
45	INT	O	Interrupt signal output. CMOS logic level. A 2 kΩ pull-up resistor (10%) to interrupt the microcontroller IO supply is recommended.
29, 34, 41	AVDD	P	1.8V Power Supply for TMDS Outputs.
1, 19, 49, 76, 77	DVDD	P	1.8V Power Supply for Digital and I/O Power Supply. These pins supply power to the digital logic and I/Os. They should be filtered and as quiet as possible.
24, 25	PVDD	P	1.8V PLL Power Supply. These pins provide power to the digital portion of the clock PLL. The designer should provide quiet, noise-free power to these pins.
21	PLVDD	P	1.8V PLL Power Supply. The most sensitive portion of the ADV7511 is the clock generation circuitry. These pins provide power to the analog portion of the clock PLL (VCO). The designer should provide quiet, noise-free power to these pins.
26	BGVDD	P	Band Gap Vdd.

47	MVDD	P	3.3V Power Supply.
18, 20, 22, 23, 27, 31, 37, 44, 46, 51, 75, 99, 100	GND	P	Ground. The ground return for all circuitry on-chip. It is recommended that the ADV7511 be assembled on a single, solid ground plane with careful attention given to ground current paths.
56	SDA	C	Serial Port Data I/O. This pin serves as the serial port data I/O slave for register access. Supports CMOS logic levels from 1.8V to 3.3V.
55	SCL	C	Serial Port Data Clock input. This pin serves as the serial port data clock slave for register access. Supports CMOS logic levels from 1.8V to 3.3V.
54	DDCSDA	C	Serial Port Data I/O to Sink. This pin serves as the master to the DDC bus. Tolerant of 5 V CMOS logic levels.
53	DDCSCL	C	Serial Port Data Clock to Sink. This pin serves as the master clock for the DDC bus. Tolerant of 5 V CMOS logic levels.
50	CEC_CLK	I	CEC clock. From 1MHz to 100Mhz. Supports CMOS logic levels from 1.8V to 5V.
48	CEC_IO	I/O	CEC data signal. Supports CMOS logic levels from 1.8V to 5V.

1. I = input, O = output, P = power supply, C = control

Advanced Analog Circuits

Data Sheet

DUAL LOW NOISE OPERATIONAL AMPLIFIERS AZ4580

Pin Configuration

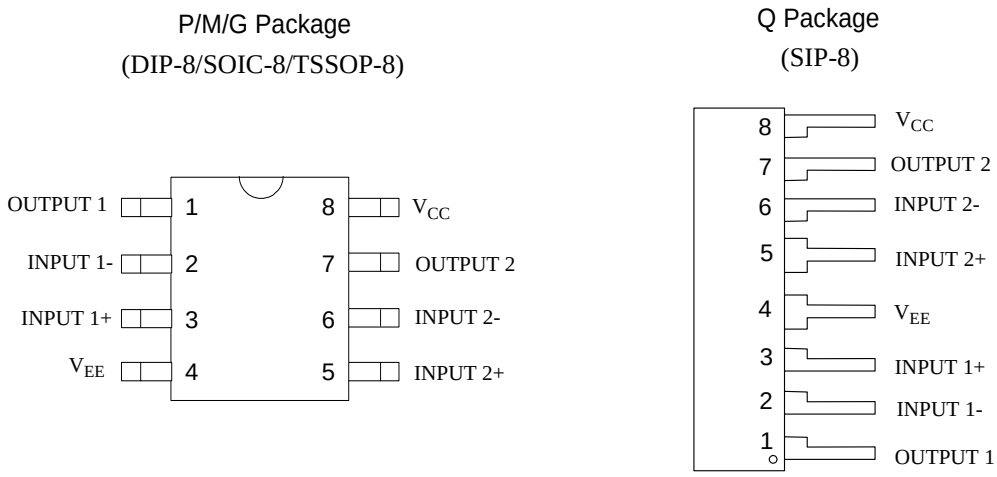


Figure 2. Pin Configuration of AZ4580 (Top View)

Pin Description

Pin No.	Function	Pin No.	Function	Pin No.	Function	Pin No.	Function
1	OUTPUT 1	2	INPUT 1-	3	INPUT 1+	4	V_{EE}
5	INPUT 2+	6	INPUT 2-	7	OUTPUT 2	8	V_{CC}

CS42528

114 dB, 192 kHz 8-Ch Codec with S/PDIF Receiver

Features

- Eight 24-bit D/A, two 24-bit A/D Converters
- 114 dB DAC / 114 dB ADC Dynamic Range
- -100 dB THD+N
- System Sampling Rates up to 192 kHz
- S/PDIF Receiver Compatible with EIAJ CP1201 and IEC-60958
- Recovered S/PDIF Clock or System Clock Selection
- 8:2 S/PDIF Input MUX
- ADC High-pass Filter for DC Offset Calibration
- Expandable ADC Channels and One-line Mode Support
- Digital Output Volume Control with Soft Ramp
- Digital +/-15dB Input Gain Adjust for ADC
- Differential Analog Architecture
- Supports logic levels between 5 V and 1.8 V.

General Description

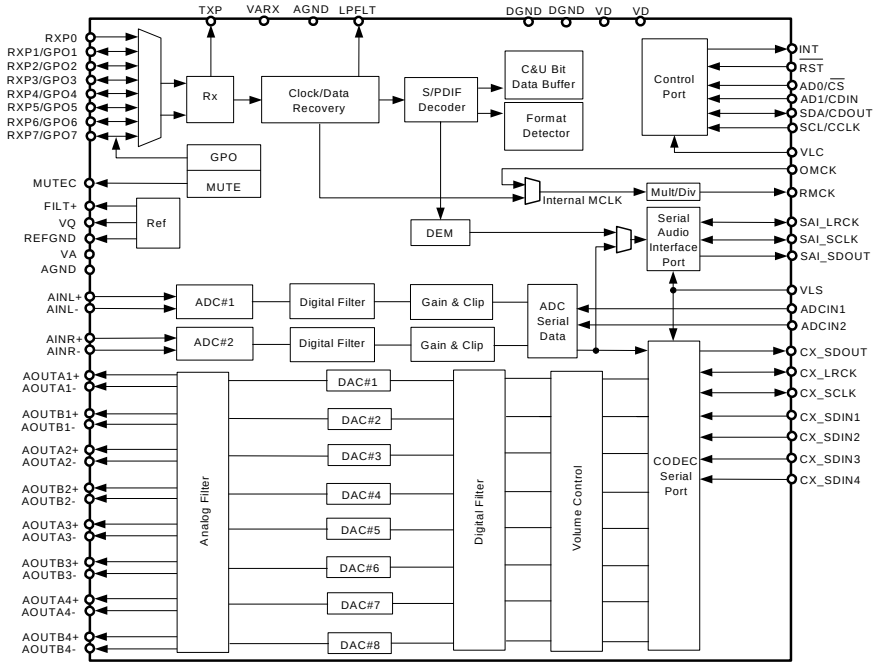
The CS42528 codec provides two analog-to-digital and eight digital-to-analog delta-sigma converters, as well as an integrated S/PDIF receiver, in a 64-pin LQFP package.

The CS42528 integrated S/PDIF receiver supports up to eight inputs, clock recovery circuitry and format auto-detection. The internal stereo ADC is capable of independent channel gain control for single-ended or differential analog inputs. All eight channels of DAC provide digital volume control and differential analog outputs. The general purpose outputs may be driven high or low, or mapped to a variety of DAC mute controls or ADC overflow indicators.

The CS42528 is ideal for audio systems requiring wide dynamic range, negligible distortion and low noise, such as A/V receivers, DVD receivers, digital speaker and automotive audio systems.

ORDERING INFORMATION

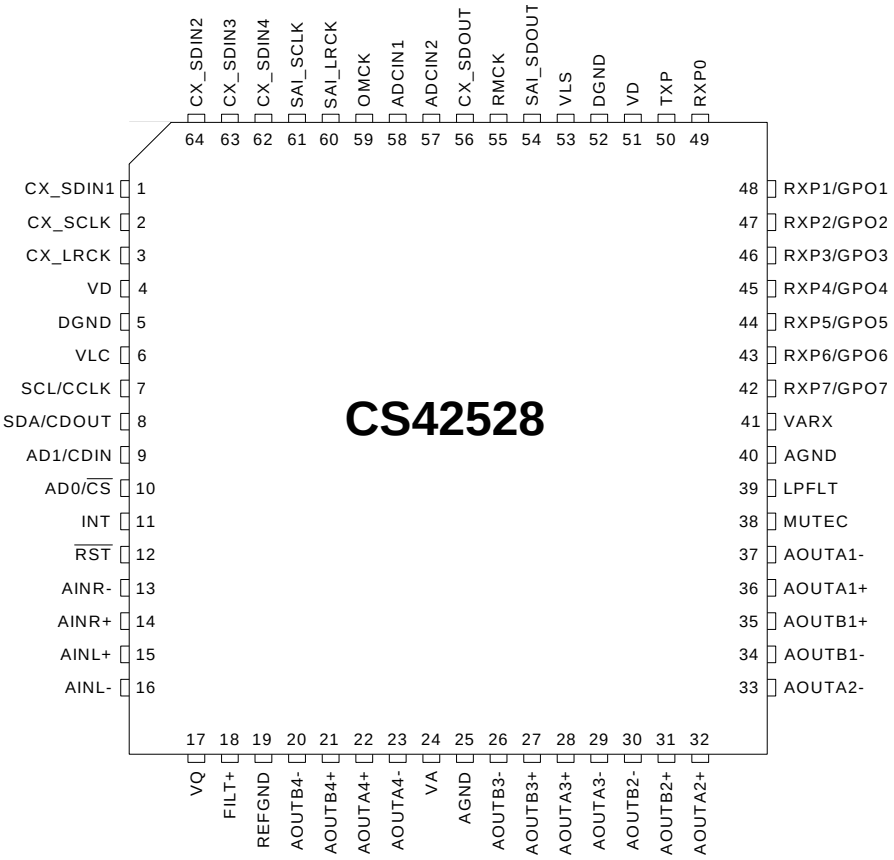
CS42528-CQZ	-10° to 70° C	64-pin LQFP	Lead Free
CS42528-DQZ	-40° to 85° C	64-pin LQFP	Lead Free
CDB42528	Evaluation Board		



Preliminary Product Information

Cirrus Logic, Inc.
http://www.cirrus.com

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	**$\overline{Reset}$** (*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.

CIRRUS LOGIC

CS4970x4 Data Sheet

FEATURES

- Multi-standard 32-bit High Definition Audio Decoding plus Post-Processing
- Supports high-definition audio formats including:
  - Dolby Digital® Plus
  - Dolby® TrueHD
  - DTS-HD® High Resolution Audio
  - DTS-HD® Master Audio
  - DTS Express™
- Additional Applications Library
  - Dolby Digital® EX, Dolby® Pro Logic® IIz, Dolby Headphone 2®, Dolby® Virtual Speaker 2®, Audistry®
  - DTS-ES 96/24™ Discrete 7.1, DTS-ES™ Discrete 7.1, DTS-ES™ Matrix 6.1, DTS Neo:6®, DTS Neural Surround™
  - DSD®
  - MPEG-2 AAC™ LC 5.1
  - SRS® CS2®, SRS TruVolume™, SRS® TruSurround HD4™, WOW HD™,
  - THX® Ultra2™, THX® ReEQ™
  - Thomson MP3 Surround
  - Audyssey 2EQ™ Module
- Cirrus Logic's Applications Library
  - Cirrus Original Multi-Channel Surround 2 (COMS2), Cirrus Band Xpander™, Cirrus Virtualization Technology, Cirrus Intelligent Room Calibration 2 (IRC2)
  - Crossbar Mixer, Signal Generator
  - Advanced Post-Processors including: 7.1 Bass Manager, Tone Control, 11- Band Parametric EQ, Delay, 2:1/4:1 Decimator, 1:2/1:4 Upsampler

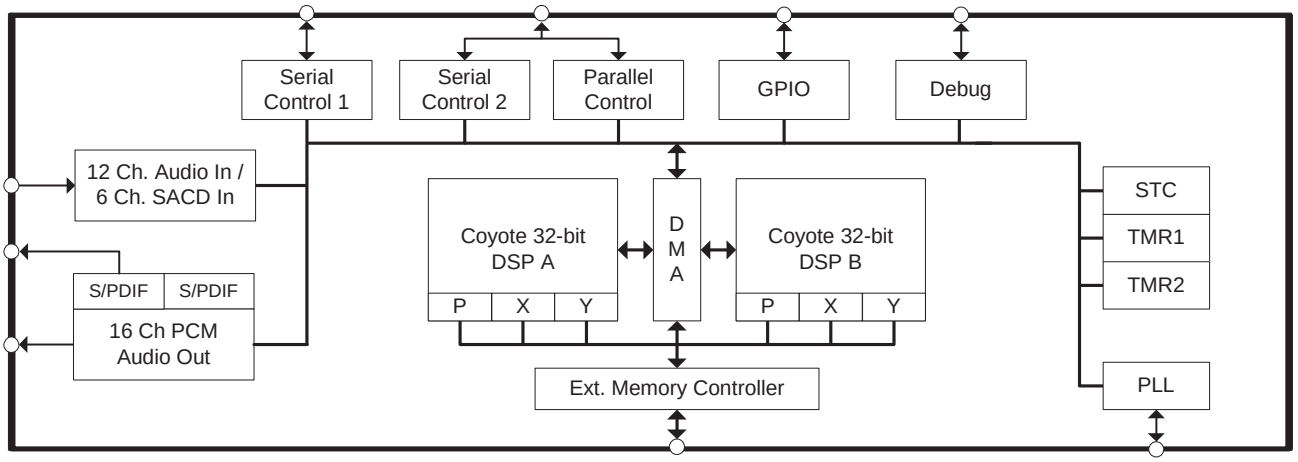
High Definition Audio Decoder DSP Family with Dual 32-bit DSP Engine Technology

- Up to 12 Channels of 32-bit Serial Audio Input
- Customer Software Security Keys
- 16 Ch x 32-bit PCM Out with Dual 192 kHz SPDIF Tx
- Two SPI™/I²C™ ports
- One Parallel Port (144-pin LQFP package only)
- Large On-chip X, Y, and Program RAM & ROM
- SDRAM and Serial Flash Memory Support

The CS4970x4 DSP family is an enhanced version of the CS4953x DSP family with higher overall performance. In addition to all the mainstream audio processing codes in on-chip ROM that the CS4953x DSP offers, the CS4970x4 device family also supports the decoding of major high-definition audio formats. Additionally, the CS4970x4, a dual-core device, performs the high-definition audio decoding on the first core, leaving the second core available for audio post-processing and audio enhancement. The CS4970x4 device supports the most demanding audio post processing requirements. It provides an easy upgrade path to systems currently using the CS495xx or CS4953x device with minor hardware and software changes.

Ordering Information

See page 28 for ordering information.



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

Nov '09
DS752PP8

8. Device Pin-Out Diagram

8.1 128-Pin LQFP Pin-Out Diagram

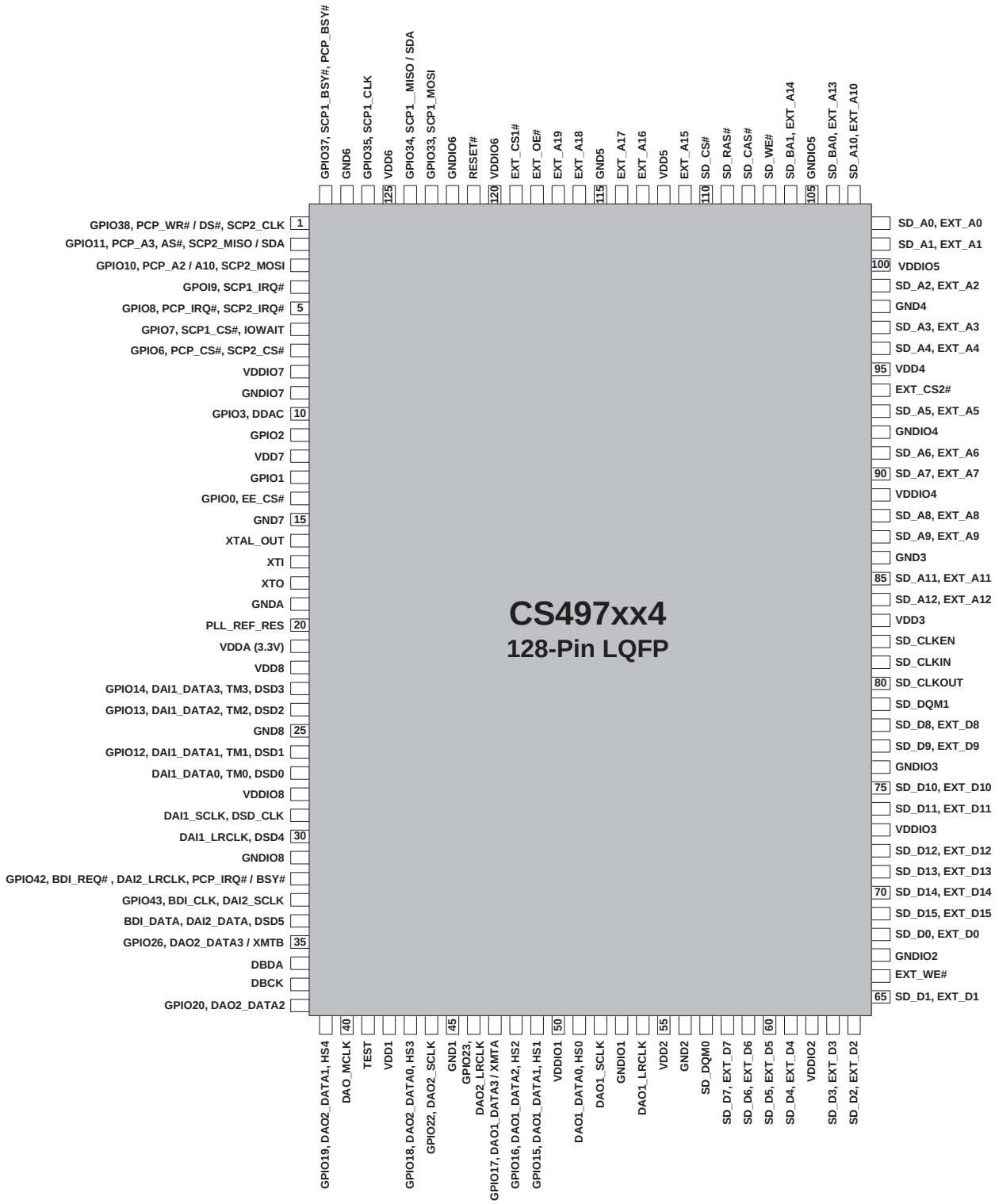


Figure 19. 128-Pin LQFP Pin-Out Diagram

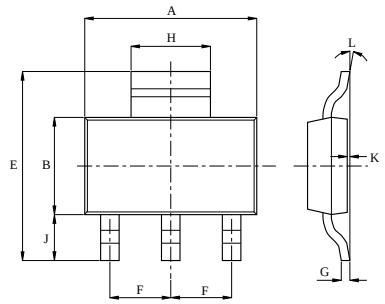
KEC

SEMICONDUCTOR
TECHNICAL DATA

KIA1117BS/BF00~ KIA1117BS/BF50
BIPOLAR LINEAR INTEGRATED CIRCUIT

LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATOR

The KIA1117BS/BF × × Series are a Low Drop Voltage Regulator able to provide up to 1A of output current, available even in adjustable version (Vref=1.25V)



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

1. GND (Adj.)
2. OUTPUT
3. INPUT

Heat Sink is common to ② (Output)

SOT-223

FEATURES

· Low Dropout Voltage : 1.1V/Typ. (Iout=1.0A)
· Very Low Quiescent Current : 2.5㎃/Typ.
· Output Current up to 1A
· Fixed Output Voltage of 1.2V, 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 5.0V
· Adjustable Version Availability : Vref=1.25V
· Internal Current and Thermal Limit
· A Minimum of 10㎌ for stability
· Suitable for MLCC, Tantalum and Low ESR Electrolytic Capacitors
· ESR Range for stability : 1mΩ~200Ω
· Available in ±2%(at 25℃)
· High Ripple Rejection : 80dB/Typ
· Temperature Range : -40℃~150℃

LINE UP

ITEM	OUTPUT VOLTAGE (V)	PACKAGE
KIA1117BS/BF00	Adjustable (1.25~8V)	S : SOT-223 F : DPAK
KIA1117BS/BF12	1.2	
KIA1117BS/BF15	1.5	
KIA1117BS/BF18	1.8	
KIA1117BS/BF25	2.5	
KIA1117BS/BF28	2.85	
KIA1117BS/BF33	3.3	
KIA1117BS/BF50	5.0	

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage		V_{IN}	10	V
Output Current		I_{OUT}	1.0	A
Power Dissipation 1 (No Heatsink)	S (Note)	P_{D1}	1.0	W
	F		1.3	
Power Dissipation 2 (Infinite Heatsink)	S	P_{D2}	8.3	W
	F		13	
Maximum Junction Temperature		$T_{j(max)}$	150	℃
Operating Junction Temperature		T_{opr}	-40~150	℃
Storage Temperature		T_{stg}	-55~150	℃

Note) Package Mounted on FR-4 PCB 36 ×18 ×1.5㎜

㎠

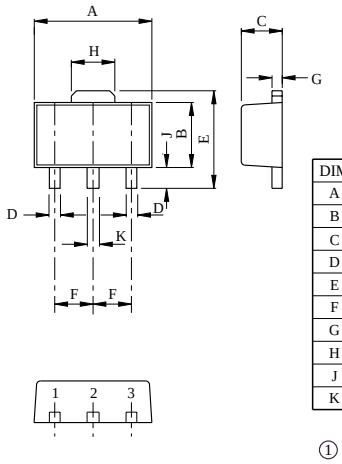
KEC

SEMICONDUCTOR
TECHNICAL DATA

KIC3201S/T-12 ~ KIC3201S/T-60
CMOS Linear Integrated Circuit

Large Current Positive Voltage Regulator

The KIC3201S/T series are highly precise, low power consumption, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The KIC3201S/T consists of a driver transistor, a precision reference voltage and an error amplifier. Output voltage is selectable in 0.05V steps between a voltage of 1.2V and 6.0V.



DIM	MILLIMETERS
A	4.70 MAX
B	2.50±0.20
C	1.70 MAX
D	0.45+0.15/-0.10
E	4.25 MAX
F	1.50±0.10
G	0.40 TYP
H	1.75 MAX
J	0.75 MIN
K	0.5+0.10/-0.05

① GND
② V_{IN}
③ V_{OUT}

• Heat Sink is common to ② (V_{IN})

SOT-89

Features

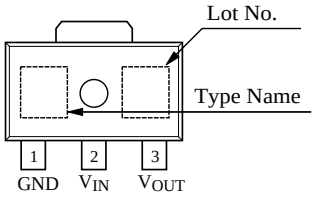
· Maximum Output Current : 400mA
· Dropout Voltage : 150mV @100mA, 300mV @200mA for V_{OUT}=3.0V
· Maximum Operating Voltage : 10V
· Output Voltage Range :
1.2V ~ 6.0V (selectable in 0.05V steps)
· Highly Accurate : ±2%
· Low Power Consumption : Typ. 8.0uA
· Operational Temperature Range : -40℃ ~ 85℃
· Low ESR Capacitor : Ceramic compatible or Tantalum

Applications

· Battery Powered Equipment
· Reference Voltage Sources
· Digital Cameras, Camcoders
· Palmtop Computers
· Portable Audio Video Equipment

Pin Configuration

KIC3201S-XX



SOT-89
(TOP VIEW)

No.	Symbol	Description
1	GND	Ground
2	V_{IN}	Power input
3	V_{OUT}	Output

• Heat Sink is common to ② (V_{IN})

KEC

SEMICONDUCTOR
TECHNICAL DATA

KTC812T
EPITAXIAL PLANAR NPN TRANSISTOR

FOR MUTING AND SWITCHING APPLICATION.

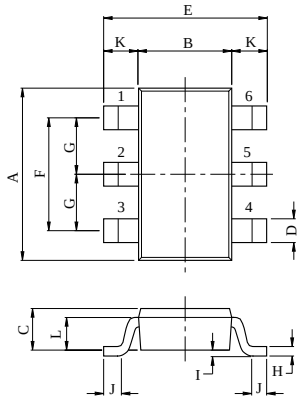
FEATURES

· High Emitter-Base Voltage : V_{EBO}=25V(Min.)

· High Reverse h_{FE}

: Reverse h_{FE}=150(Typ.) (V_{CE}=-2V, I_C=-4mA)

· Low on Resistance : R_{ON}=1Ω(Typ.), (I_B=5mA)



DIM	MILLIMETERS
A	2.9±0.2
B	1.6+0.2/-0.1
C	0.70±0.05
D	0.4±0.1
E	2.8+0.2/-0.3
F	1.9±0.2
G	0.95
H	0.16±0.05
I	0.00-0.10
J	0.25+0.25/-0.15
K	0.60
L	0.55

1. Q_1 EMITTER
2. Q_1 BASE
3. Q_2 COLLECTOR
4. Q_2 EMITTER
5. Q_2 BASE
6. Q_1 COLLECTOR

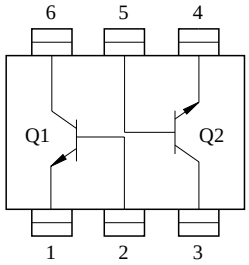
TS6

MAXIMUM RATING (Ta=25℃)

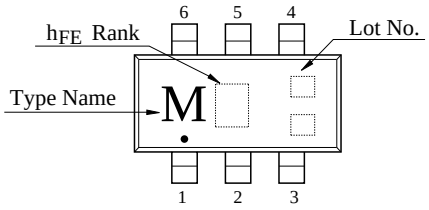
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	25	V
Collector Current	I_C	300	mA
Base Current	I_B	60	mA
Collector Power Dissipation	P_C *	0.9	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55 ~150	℃

* Package mounted on a ceramic board (600㎟×0.8㎜)

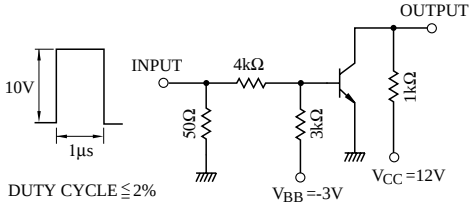
EQUIVALENT CIRCUIT (TOP VIEW)



Marking



ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB}=50V, I_E=0	-	-	0.1	μA
Emitter Cut-off Current		I_{EBO}	V_{EB}=25V, I_C=0	-	-	0.1	μA
DC Current Gain		h_{FE}	V_{CE}=2V, I_C=4mA	350	-	1200	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=30mA, I_B=3mA	-	0.042	0.3	V
Base-Emitter Voltage		V_{BE}	V_{CE}=2V, I_C=4mA	-	0.61	-	V
Transition Frequency		f_T	V_{CE}=6V, I_C=4mA	-	30	-	MHz
Collector Output Capacitance		C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	4.8	7	pF
Switching Time	Turn-on Time	t_{on}		-	160	-	nS
	Storage Time	t_{stg}		-	500	-	
	Fall Time	t_f		-	130	-	

Note : h_{FE} Classification B: 350 ~1200

JRC **NJU7751/54**

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DISCRIPTION

NJU7751/54 is a low dropout voltage regulator with ON/OFF control and Output shunt switch.

Advanced CMOS technology achieves high ripple rejection and ultra low quiescent current.

It is suitable for reset small micro controller and other logic chips.

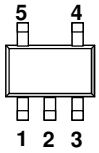
■ PACKAGE OUTLINE

NJU7751/54F

■ FEATURES

- Ultra Low quiescent Current Iq=20μA typ.(I_O=0mA)
- Output capacitor with 1.0uF ceramic capacitor
- Output Current I_O(max.)=100mA
- High Precision Output V_O±1.0%
- Low Dropout Voltage 0.15V typ. (I_O=60mA, V_O=3V)
- With ON/OFF Control (Active High)
- With Output Shunt Switch
- Internal Short Circuit Current Limit
- CMOS Technology
- Package Outline SOT-23-5

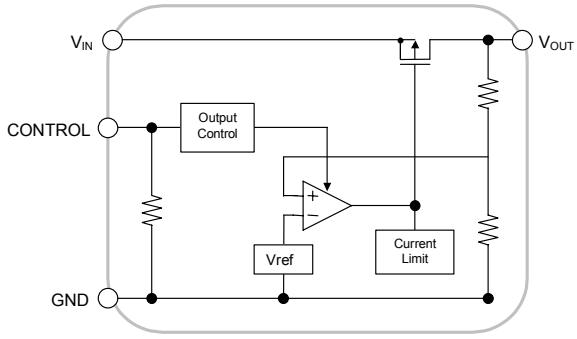
■ PIN CONFIGURATION



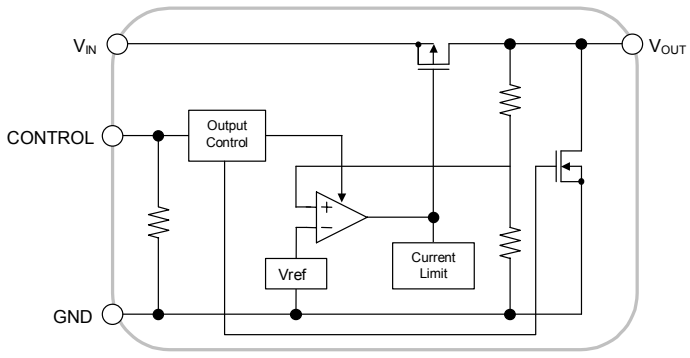
NJU7751/54F

PIN FUNCTION
1.CONTROL
2.GND
3.N.C.
4.V_{OUT}
5.V_{IN}

■ EQUIVALENT CIRCUIT



NJU7751



NJU7754

■ OUTPUT VOLTAGE RANK LIST

DEVICE NAME	V_{OUT}
NJU775*F21	2.1V
NJU775*F25	2.5V
NJU775*F03	3.0V
NJU775*F33	3.3V
NJU775*F05	5.0V

PERICOM®

PI3HDMI101

1:1 Active HDMI™ Redriver with Optimized Equalization & I²C Buffer

Features

- Supply voltage, V_{DD} = 3.3V ±5%
- Support for both DVI and HDMI™ signals
- Supports both AC-coupled and DC-coupled inputs
- Supports Deep Color™
- High Performance, up to 2.5 Gbps per channel
- 5V Tolerance on I²C path
- Integrated 50-ohm (±10%) termination resistors at each high speed signal input
- Rx Sense Support, CLK-off channel is switched to 250K-Ohm pull-up vs. 50-Ohm pull-up
- Configurable output swing control (400mV, 500mV, 600mV, 750mV, 1000mV)
- Configurable Pre-Emphasis levels (0dB, 1.5dB, 3.5dB, & 6.0dB, 9.0dB)
- Configurable De-Emphasis (0dB, -3.5dB, -6.0dB, -9.5dB)
- Optimized Equalization

  Single default setting will support all cable lengths
- 8kV Contact ESD protection on all high speed input data channels per IEC 61000-4-2
- Hot insertion support on output high speed pins & SCL/SDA pins only
- Propagation delay ≤ 1ns
- High Impedance Outputs when disabled
- Packaging (Pb-free & Green): 42-contact TQFN (ZH42)

Description

Pericom Semiconductor's PI3HDMI101 1:1 active redriver circuit is targeted for high-resolution video networks that are based on DVI/HDMI™ standards and TMDS signal processing. The PI3HDMI101 is an active redriver with Hi-Z outputs. The device receives differential signals from selected video components and drives the video display unit. This solution also provides a unique advanced pre-emphasis technique to increase rise and fall times which are reduced during transmission across long distances.

Each complete HDMI™/DVI channel also has slower speed, side band signals, that are required to be switched. Pericom's solution provides a complete solution by integrating the side band buffer together with the high speed buffer in a single solution. Using Equalization at the input of each of the high speed channels, Pericom can successfully eliminate deterministic jitter caused by long cables from the source to the sink. The elimination of the deterministic jitter allows the user to use much longer cables (up to 25 meters).

The maximum DVI/HDMI™ Bandwidth of 2.5 Gbps provides 36-bit deep color™ support, which is offered by HDMI™ revision 1.3. The PI3HDMI101 also provides enhanced robust ESD/EOS protection of 8kV, which is required by many consumer video networks today.

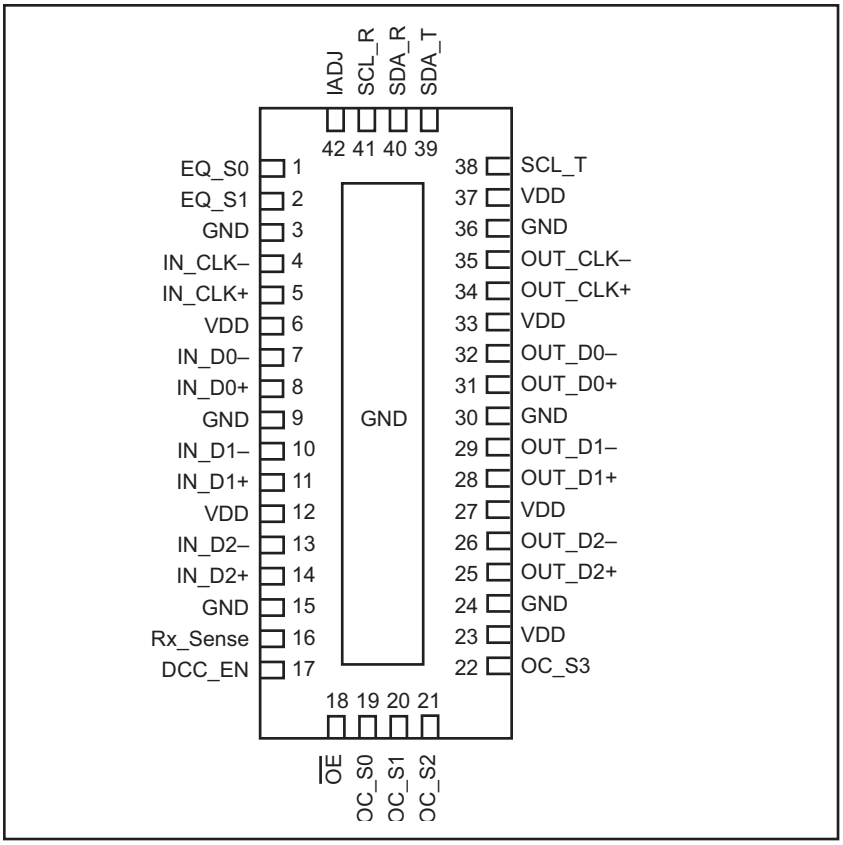
The Optimized Equalization provides the user a single optimal setting that can provide HDMI™ compliance for all cable lengths: 1meter to 20meters and color depths of 8bit/ch, or 12bit/ch.

Pericom also offers the ability to fine tune the equalization settings in situations where cable length is known. For example, if 25meter cable length is required, Pericom's solution can be adjusted to 16dB EQ to accept 25meter cable length.

PERICOM®

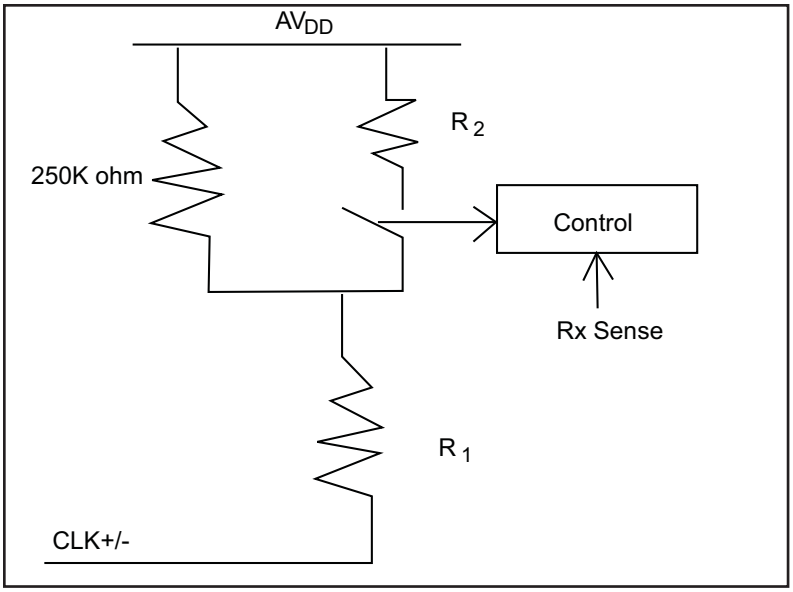
PI3HDMI101
1:1 Active HDMI™ Redriver with
Optimized Equalization & I²C Buffer

Pin Configuration



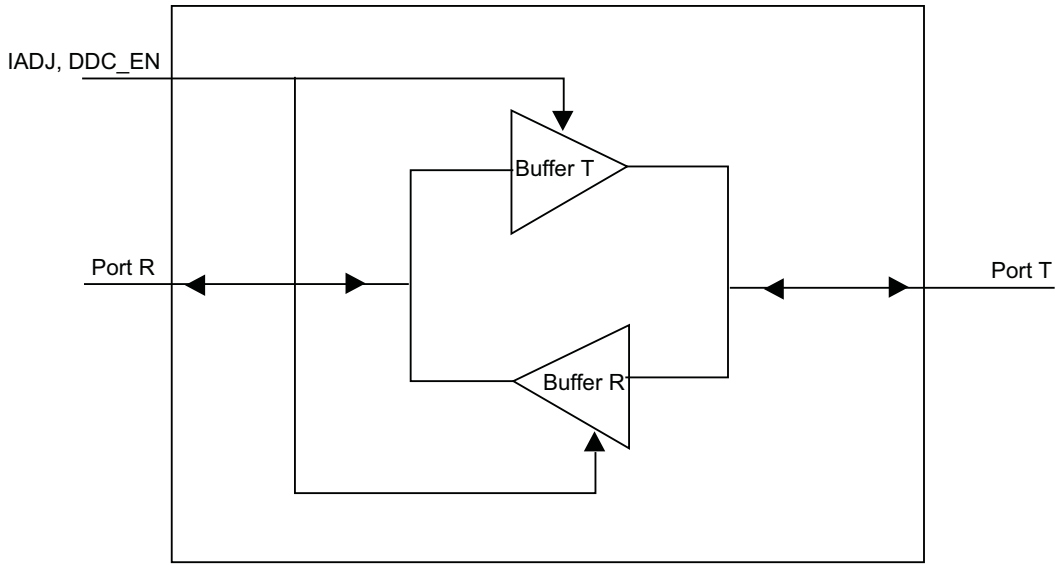
TMDS Receiver Block

Each high speed data and clock input has integrated equalization that can eliminate deterministic jitter caused by input cables. All activity can be configured using pin strapping. The Rx block is designed to receive all relevant signals directly from the HDMI™ connector without any additional circuitry, 3 High speed TMDS data, 1 pixel clock, and DDC signals. Pixel clock channel has following temination scheme for Rx Sense support.



Rx Sense	
L	R_2 switch is open, CLK+/- termination is 250kΩ
H	R_2 switch is closed, CLK+/- termination is 50Ω

I²C Buffer



The VOL of the Buffer R is around 0.2V.
The VOL of the Buffer T is around 0.7V.

Functional Truth Tables

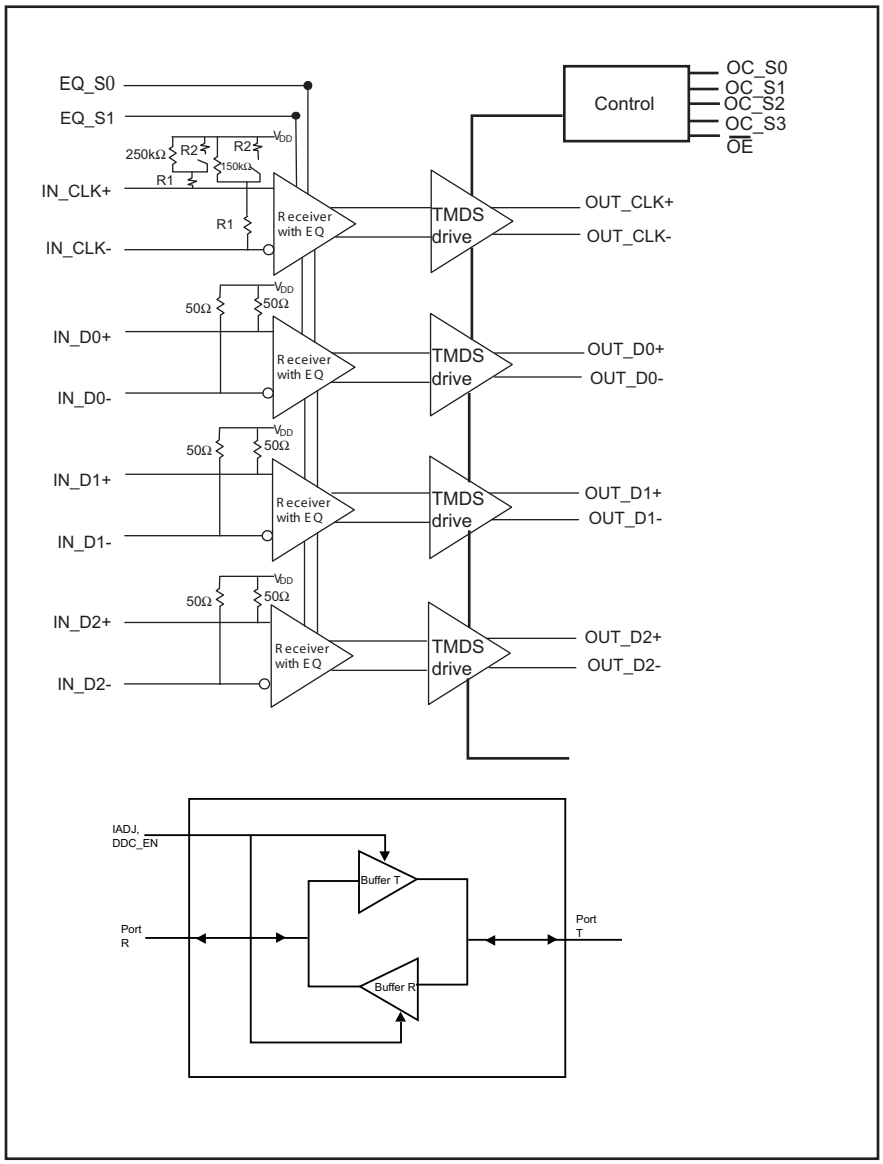
IADJ	External Pull-Up Range
H	1KΩ to 2KΩ (HDMI spec)
L	> 3KΩ (4.7KΩ typically)

DDC_EN	Port T / Port R (if no external pull-up resistor
L	Hi-Z (I2C buffer disable)
H	(I2C buffer enable)

Pin Description

Pin #	Pin Name	I/O	Description
5, 8, 11, 14	IN_CLK+, IN_D0+, IN_D1+, IN_D2+	I	TMDS Positive inputs
4, 7, 10, 13	IN_CLK-, IN_D0-, IN_D1-, IN_D2-	I	TMDS Negative inputs
3, 9, 15, 24, 30, 36	GND	P	Ground
18	$\overline{OE}$	I	Output Enable, Active LOW
41	SCL_R	I/O	DDC Clock , Source Side
40	SDA_R	I/O	DDC Data, Source Side
6, 12, 23, 27, 33, 37	V_{DD}	P	3.3V Power Supply
34, 31, 28, 25	OUT_CLK+, OUT_D0+, OUT_D1+, OUT_D2+	O	TMDS positive outputs
35, 32, 29, 26	OUT_CLK-, OUT_D0-, OUT_ D1-, OUT_D2-	O	TMDS negative outputs
1, 2	EQ_S0, EQ_S1	I	Equalizer controls, both pins with internal pull-ups
19, 20, 21, 22	OC_S0, OC_S1, OC_S2, OC_S3	I	Output buffer controls Note: All 4 pins have internal pull-ups
17	DDC_EN	I	I2C path enable
38	SCL_T	I/O	DDC Clock, Sink side
39	SDA_T	I/O	DDC Data, Sink side
16	Rx_Sense	I	Rx_Sense control
42	IADJ	I	High/Low Voltage Selection, depends on I2C external pull-up range

Complete high speed input Rx block is as follows:



Truth Table

$\overline{OE}$	Function
0	Active
1	All TMDS outputs are Hi-Z

Truth Table 1

OC_S3(2)	OC_S2(2)	OC_S1(2)	OC_S0(2)	Vswing (mV)	Pre/De-emphasis
0	0	0	0	500	0
0	0	0	1	600	0
0	0	1	0	750	0
0	0	1	1	1000	0
0	1	0	0	500	0
0	1	0	1	500	1.5dB
0	1	1	0	500	3.5dB
0	1	1	1	500	6dB
1	0	0	0	400	0
1	0	0	1	400	3.5dB
1	0	1	0	400	6dB
1	0	1	1	400	9dB
1	1	0	0	1000	0
1	1	0	1	660	-3.5dB
1	1	1	0	500	-6dB
1	1	1	1	330	-9dB

EQ Setting Value Logic Table

EQ_S1(2)	**EQ_S0(2)**	**Setting Value @ 825MHz**
0	0	3dB on all high speed inputs
0	1	8dB on all high speed inputs
1	0	12dB on all high speed inputs
1	1	16dB on all high speed inputs

Notes:
1. External pull-ups are required along SCL/SDA path
2. Internal 100Kohm pull-ups

RICHTEK RT9702/A

80mΩ, 500mA/1.1A High-Side Power Switches with Flag

General Description

The RT9702 and RT9702A are cost-effective, low voltage, single N-Channel MOSFET high-side power switches, optimized for self-powered and bus- powered Universal Serial Bus (USB) applications. The RT9702/A equipped with a charge pump circuitry to drive the internal MOSFET switch; the switch's low $R_{DS(ON)}$, 80mΩ, meets USB voltage drop requirements; and a flag output is available to indicate fault conditions to the local USB controller.

Additional features include soft-start to limit inrush current during plug-in, thermal shutdown to prevent catastrophic switch failure from high-current loads, under-voltage lockout (UVLO) to ensure that the device remains off unless there is a valid input voltage present, fault current is limited to typically 800mA for RT9702 in single port and 1.5A for RT9702A in dual ports in accordance with the USB power requirements, lower quiescent current as 25μA making this device ideal for portable battery-operated equipment.

The RT9702/A is available in SOT-23-5 and TSOT-23-5 packages requiring minimum board space and smallest components.

Ordering Information

RT9702/A □ □

- Package Type
  - B : SOT-23-5
  - J5 : TSOT-23-5
- Operating Temperature Range
  - P : Pb Free with Commercial Standard
  - G : Green (Halogen Free with Commercial Standard)
- 1.1A Output Current
- 500mA Output Current

Note :

RichTek Pb-free and Green products are :

- RoHS compliant and compatible with the current requirements of IPC/JEDEC J-STD-020.
- Suitable for use in SnPb or Pb-free soldering processes.
- 100% matte tin (Sn) plating.

Features

- **Compliant to USB Specifications**
- **Built-In (Typically 80mΩ) N-Channel MOSFET**
- **Output Can Be Forced Higher Than Input (Off-State)**
- **Low Supply Current :**
  25μA Typical at Switch On State
  1μA Typical at Switch Off State
- **Guaranteed 500mA/RT9702 and 1.1A/RT9702A Continuous Load Current**
- **Wide Input Voltage Ranges : 2V to 5.5V**
- **Open-Drain Fault Flag Output**
- **Hot Plug-In Application (Soft-Start)**
- **1.7V Typical Under-Voltage Lockout (UVLO)**
- **Current Limiting Protection**
- **Thermal Shutdown Protection**
- **Reverse Current Flow Blocking (no body diode)**
- **Smallest SOT-23-5 and TSOT-23-5 Packages Minimizes Board Space**
- **UL Approved–E219878**
- **TUV *IEC60950-1 : 2005* Certified**
- **RoHS Compliant and 100% Lead (Pb)-Free**

Applications

- USB Bus/Self Powered Hubs
- USB Peripherals
- ACPI Power Distribution
- PC Card Hot Swap
- Notebook, Motherboard PCs
- Battery-Powered Equipment
- Hot-Plug Power Supplies
- Battery-Charger Circuits

Marking Information

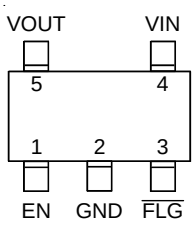
For marking information, contact our sales representative directly or through a RichTek distributor located in your area, otherwise visit our website for detail.

RT9702/A

RICHTEK

Pin Configurations

(TOP VIEW)

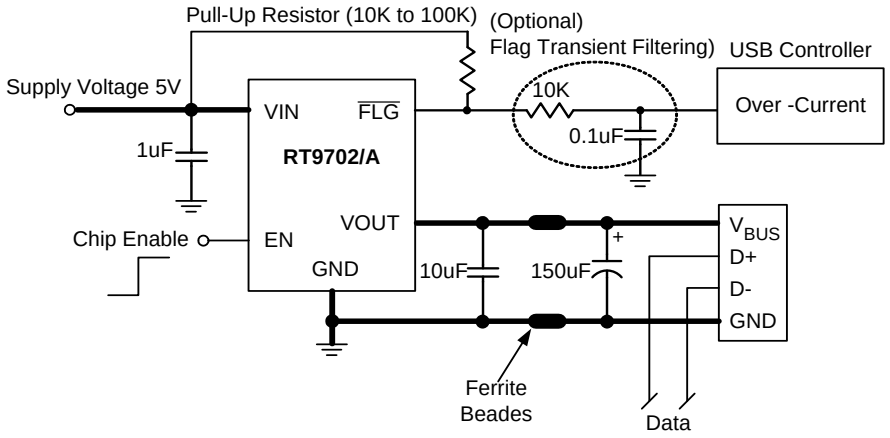


SOT-23-5/TSOT-23-5

Functional Pin Description

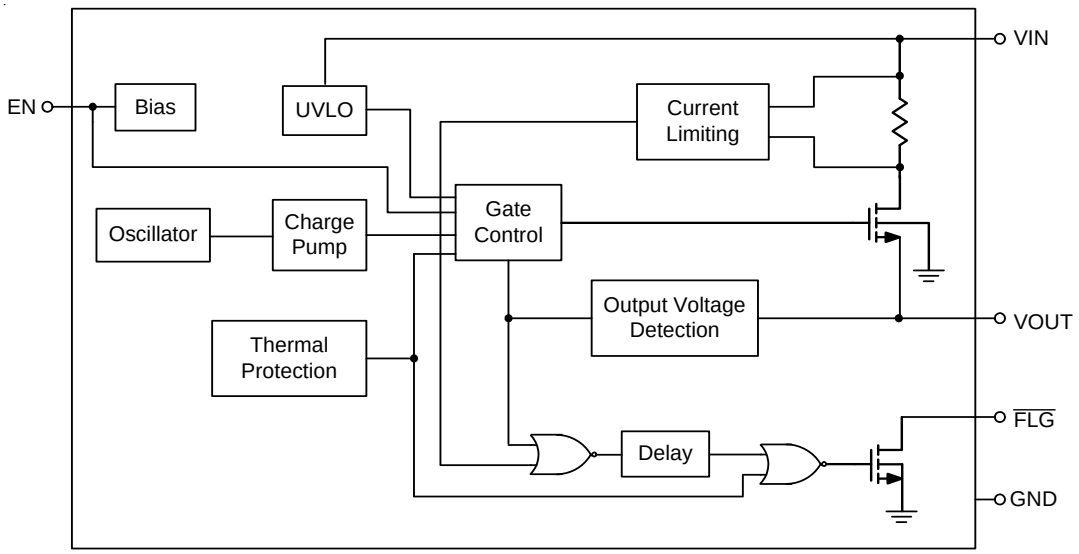
Pin Name	Pin Function
VIN	Power-Input Voltage
VOUT	Output Voltage
GND	Ground
EN	Chip Enable (Active High)
$\overline{FLG}$	Open-Drain Fault Flag Output

Typical Application Circuit



Note: A low-ESR 150µF aluminum electrolytic or tantalum between V_{OUT} and GND is strongly recommended to meet the 330mV maximum droop requirement in the hub V_{BUS}. (see Application Information Section for further details)

Function Block Diagram



High-Speed USB 2.0 (480Mbps) Multiplexer

ISL54220

The Intersil ISL54220 is a single supply dual 2:1 multiplexer that can operate from a single 2.7V to 5.5V supply. It contains two SPDT (Single Pole/Double Throw) switches configured as a DPDT. The part was designed for switching or routing of USB High-Speed signals and/or USB Full-speed signals in portable battery powered products.

The 6Ω switches can swing rail-to-rail and were specifically designed to pass USB full speed data signals that range from 0V to 3.3V and USB high speed data signals that range from 0V to 400mV. They have high bandwidth and low capacitance to pass USB high-speed data signals with minimal distortion.

The digital logic inputs are 1.8V logic compatible when operated with a 2.7V to 3.6V supply. The ISL54220 has an output enable pin to open all the switches.

The ISL54220 is available in 10 Ld 1.8mmx1.4mm µTQFN, 10 Ld TDFN and 10 Ld MSOP packages. It operates over a temperature range of -40 to +85°C.

Related Literature

- Technical Brief TB363 “Guidelines for Handling and Processing Moisture Sensitive Surface Mount Devices (SMDs)”
- Application Note AN1449 “ISL54220IRUEVAL1Z Evaluation Board User’s Manual”

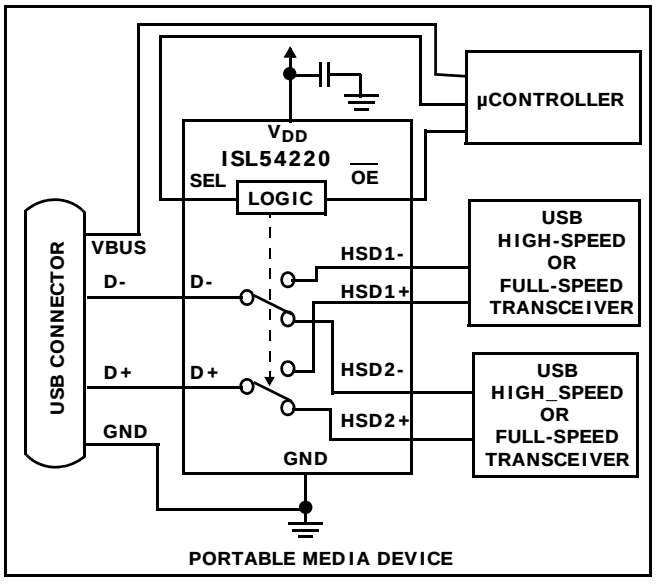
Features

- High-Speed (480Mbps) and Full-Speed (12Mbps) Signaling Capability per USB 2.0
- 1.8V Logic Compatible (2.7V to +3.6V supply)
- Enable Pin to Open all Switches
- Power OFF Protection
- D-/D+ Pins Overvoltage Tolerant to 5.5V
- -3dB Frequency 742MHz
- Low ON Capacitance @ 240MHz 4.2pF
- Low ON-Resistance @ VDD = 5.5V 4.5Ω
- Low ON-Resistance @ VDD = 3.3V 6.0Ω
- Single Supply Operation (V_{DD}) . . . . . 2.7V to 5.5V
- Available in µTQFN, TDFN, and MSOP Packages
- Pb-Free (RoHS Compliant)
- Compliant with USB 2.0 Short Circuit and Overvoltage Requirements Without Additional External Components

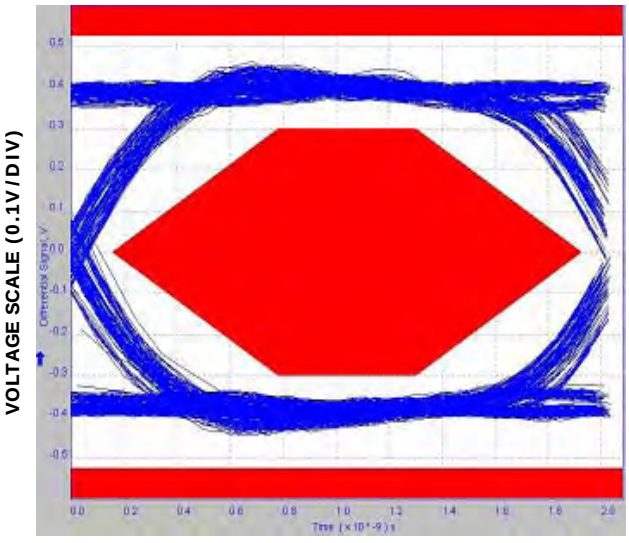
Applications* (see page 15)

- MP3 and other Personal Media Players
- Cellular/Mobile Phones
- PDA’s
- Digital Cameras and Camcorders
- USB Switching

Application Block Diagram



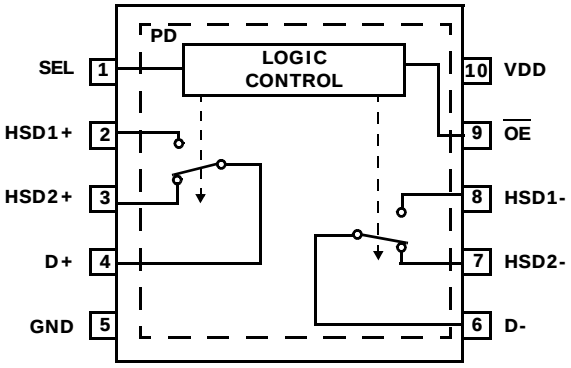
USB 2.0 HS Eye Pattern With Switches In The Signal Path



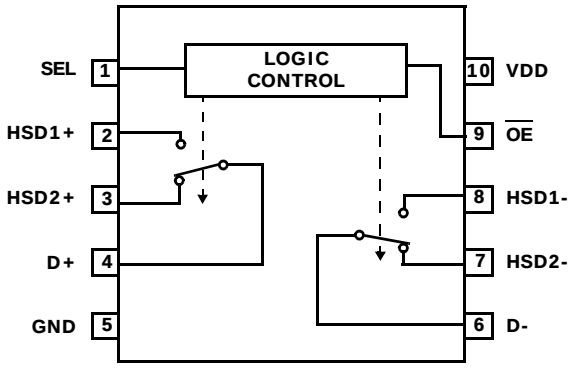
ISL54220

Pin Configurations

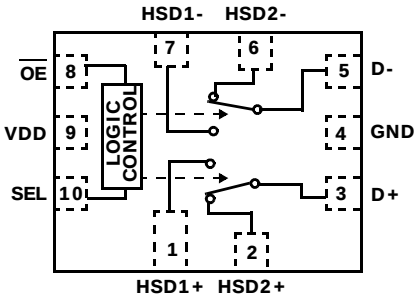
ISL54220
(10 LD 3.0X3.0 TDFN)
TOP VIEW



ISL54220
(10 LD MSOP)
TOP VIEW



ISL54220
(10 LD 1.8X1.4 µTQFN)
TOP VIEW



NOTE:

1. Switches Shown for SEL = Logic "1" and $\overline{OE}$ = Logic "0".

Truth Table

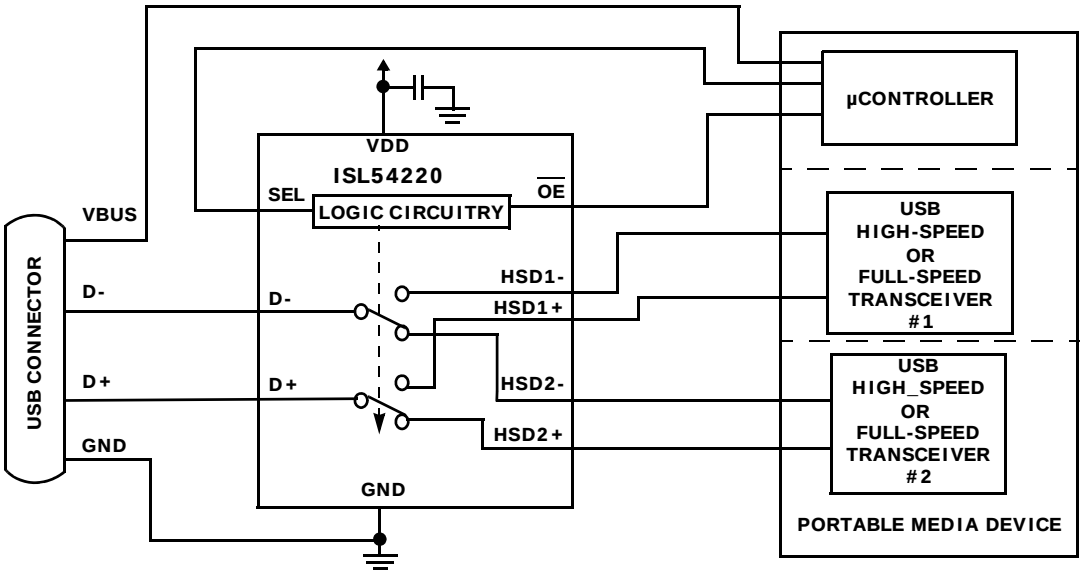
$\overline{OE}$	SEL	HSD1-, HSD1+	HSD2-, HSD2+
0	0	ON	OFF
0	1	OFF	ON
1	X	OFF	OFF

Logic "0" when ≤ 0.5V, Logic "1" when ≥ 1.4V with a 2.7V to 3.6V Supply.

Pin Descriptions

TDFN	MSOP	µTQFN	NAME	FUNCTION
10	10	9	VDD	Power Supply (2.7V to 5.5V)
1	1	10	SEL	Select Logic Control Input
2	2	1	HSD1+	USB Data Port (Channel 1 Positive Input)
3	3	2	HSD2+	USB Data Port (Channel 2 Positive Input)
4	4	3	D+	USB Data Common Positive Port
5	5	4	GND	Ground Connection
6	6	5	D-	USB Data Common Negative Port
7	7	6	HSD2-	USB Data Port (Channel 2 Negative Input)
8	8	7	HSD1-	USB Data Port (Channel 1 Negative Input)
9	9	8	$\overline{OE}$	Bus Switch Enable
PD	-	-	PD	Thermal Pad. Tie to Ground or Float

Application Block Diagram ISL54220



Detailed Description

The ISL54220 device is a dual single pole/double throw (SPDT) analog switch configured as a DPDT that operates from a single DC power supply in the range of 2.7V to 5.5V.

It was designed to function as a dual 2-to-1 multiplexer to select between two USB high-speed differential data signals in portable battery powered products. It is offered in a TDFN, MSOP, and a small µTQFN packages for use in MP3 players, cameras, PDAs, cell phones, and other personal media players. The device has an enable pin to open all switches.

The part consists of four 6Ω high speed (HSx) switches. These switches have high bandwidth and low capacitance to pass USB high-speed (480Mbps) differential data signals with minimal edge and phase distortion. They can also swing from 0V to V_{DD} to pass USB full speed (12Mbps) differential data signals with minimal distortion.

The ISL54220 was designed for MP3 players, cameras, cell phones, and other personal media player applications that have multiple high-speed or full-speed transceivers sections and need to multiplex between these USB sources to a single USB host (computer). A typical application block diagram of this is shown on page 9.

A detailed description of the HS switches is provided in the following section.

High-Speed (HSx) Switches

The HSx switches (HSD1-, HSD1+, HSD2-, HSD2+) are bi-directional switches that can pass rail-to-rail signals. When powered with a 3.3V supply, these switches have a nominal r_{ON} of 6Ω over the signal range of 0V to 400mV with a r_{ON} flatness of 0.94Ω. The r_{ON} matching between the HSD1 and HSD2 switches over this signal range is only 0.12Ω, ensuring minimal impact by the switches to USB high speed signal transitions. As the signal level increases, the r_{ON} switch resistance increases. At signal level of 3.3V, the switch resistance is nominally 129Ω. See Figures 7, 8, 9, 10 in the “Typical Performance Curves” beginning on page 11.

The HSx switches were specifically designed to pass USB 2.0 high-speed (480Mbps) differential signals in the range of 0V to 400mV. They have low capacitance and high bandwidth to pass the USB high-speed signals with minimum edge and phase distortion to meet USB 2.0 high speed signal quality specifications. See Figure 11 in the “Typical Performance Curves” on page 12 for USB High-speed Eye Pattern taken with switch in the signal path.

The HSx switches can also pass USB full-speed signals (12Mbps) with minimal distortion and meet all the USB requirements for USB 2.0 full-speed signaling. See Figure 12 in the “Typical Performance Curves” on page 13 for USB Full-speed Eye Pattern taken with switch in the signal path.

The maximum normal operating signal range for the HSx switches is from 0V to V_{DD}. The signal voltage should not be allow to exceed the V_{DD} voltage rail or go below ground by more than -0.3V for normal operation.

However, in the event that the USB 5.25V V_{BUS} voltage gets shorted to one or both of the D-/D+ pins, the ISL54220 has special fault protection circuitry to prevent damage to the ISL54220 part. The fault circuitry allows the signal pins (D-, D+, HS1D-, HS1D+, HS2D-, HS2D+) to be driven up to 5.5V while the V_{DD} supply voltage is in the range of 0V to 5.5V. In this condition the part draws < 500µA of current and causes no stress to the IC. In addition when V_{DD} is at 0V (ground) all switches are OFF

and the fault voltage is isolated from the other side of the switch. When V_{DD} is in the range of 2.7V to 5.5V the fault voltage will pass through to the output of an active switch channel.

The HS1 channel switches are active (turned ON) whenever the SEL voltage is logic “0” (Low) and the $\overline{OE}$ voltage is logic “0” (Low).

The HS2 channel switches are active (turned ON) whenever the SEL voltage is logic “1” (High) and the $\overline{OE}$ voltage is logic “0” (Low).

ISL54220 Operation

The following will discuss using the ISL54220 shown in the “Application Block Diagram” on page 9.

POWER

The power supply connected at the VDD pin provides the DC bias voltage required by the ISL54220 part for proper operation. The ISL54220 can be operated with a VDD voltage in the range of 2.7V to 5.5V. When used in a USB application, the VDD voltage should be kept in the range of 3.0V to 5.5V to ensure you get the proper signal levels for good signal quality.

A 0.01µF or 0.1µF decoupling capacitor should be connected from the VDD pin to ground to filter out any power supply noise from entering the part. The capacitor should be located as close to the VDD pin as possible.

In a typical application, V_{DD} will be in the range of 2.8V to 4.3V and will be connected to the battery or LDO of the portable media device.

LOGIC CONTROL

The state of the ISL54220 device is determined by the voltage at the SEL pin and the $\overline{OE}$ pin. SEL is only active when the $\overline{OE}$ pin is logic “0” (Low). Refer to “Truth Table” on page 2.

The ISL54220 logic pins are designed to minimize current consumption when the logic control voltage is lower than the V_{DD} supply voltage. With V_{DD} = 3.6V and logic pins at 1.4V the part typically draws only 6.6µA. With V_{DD} = 4.3V and logic pins at 2.6V, the part typically draws only 0.2µA. Driving the logic pins to the V_{DD} supply rail minimizes power consumption.

The logic pins must be held High or Low and must not float.

Logic Control Voltage Levels

With V_{DD} supply voltage in the range of 2.7V to 3.6V the logic levels are:

$\overline{OE}$ = Logic “0” (Low) when $V_{\overline{OE}} \leq 0.5V$
$\overline{OE}$ = Logic “1” (High) when $V_{\overline{OE}} \geq 1.4V$
SEL = Logic “0” (Low) when $V_{SEL} \leq 0.5V$
SEL = Logic “1” (High) when $V_{SEL} \geq 1.4V$

With V_{DD} supply voltage in the range of 4.3V to 5.5V the logic levels are:

$\overline{OE}$ = Logic “0” (Low) when $V_{\overline{OE}} \leq 0.8V$
$\overline{OE}$ = Logic “1” (High) when $V_{\overline{OE}} \geq 2.0V$
SEL = Logic “0” (Low) when $V_{SEL} \leq 0.8V$
SEL = Logic “1” (High) when $V_{SEL} \geq 2.0V$

HSD1 USB Channel

If the SEL pin = Logic “0” and the $\overline{OE}$ pin = Logic “0”, high-speed Channel 1 will be ON. The HSD1- and HSD1+ switches are ON and the HSD2- and HSD2+ switches are OFF (high impedance).

When a computer or USB hub is plugged into the common USB connector and channel one is active, a link will be established between the USB 1 driver section of the media player and the computer. The device will be able to transmit and receive data from the computer at a data rate of 480Mbps.

HSD2 USB Channel

If the SEL pin = Logic “1” and the $\overline{OE}$ pin = Logic “0”, high-speed Channel 2 will be ON. The HSD2- and HSD2+ switches are ON and the HSD1- and HSD1+ switches are OFF (high impedance).

When a USB cable from a computer or USB hub is connected at the common USB connector and the part has Channel 2 active, a link will be established between the USB 2 driver section of the media player and the computer. The device will be able to transmit and receive data from the computer at a data rate of 480Mbps.

All Switches OFF Mode

If the SEL pin = Logic “0” or Logic “1” and the $\overline{OE}$ pin = Logic “1”, all of the switches will turn OFF (high impedance).

The all OFF state can be used to switch between the two USB sections of the media player. When disconnecting from one USB device to the other USB device, you can momentarily put the ISL54220 switch in the “all off” state in order to get the computer to disconnect from the one device so it can properly connect to the other USB device when that channel is turned ON.

USB 2.0 V_{BUS} Short Requirements

The USB specification in section 7.1.1 states a USB device must be able to withstand a V_{BUS} short to the D+ or D- signal lines when the device is either powered off or powered on for at least 24 hours. The ISL54220 part has special fault protection circuitry to meet these short circuit requirements.

The fault protection circuitry allows the signal pins (D-, D+, HS1D-, HS1D+, HS2D-, HS2D+) to be driven up to 5.5V while the V_{DD} supply voltage is in the range of 0V to 5.5V. In this overvoltage condition the part draws <500µA of current and causes no stress/damage to the IC.

KEC

SEMICONDUCTOR TECHNICAL DATA

KIA278R05PI~KIA278R15PI

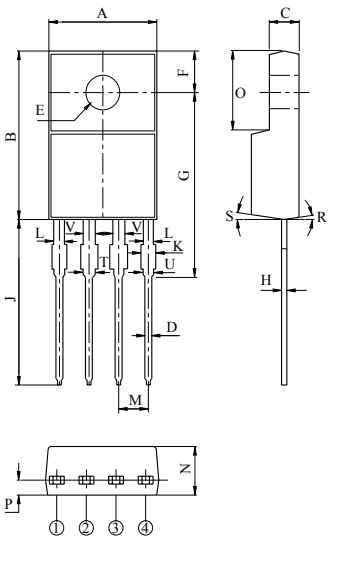
BIPOLAR LINEAR INTEGRATED CIRCUIT

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

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
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

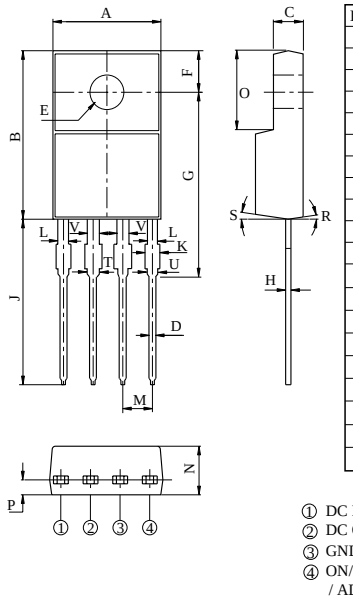
KIA78R000F/PI~ KIA78R050F/PI
BIPOLAR LINEAR INTEGRATED CIRCUIT

4 ,5 TERMINAL LOW DROP VOLTAGE REGULATOR
[Low Quiescent Current-Type]

The KIA78R × × ×F/PI Series are Low Dropout Voltage Regulator suitable for various electronic equipments.
The Regulator has multi function such as over current protection, overheat protection.

FEATURES

· 1.0A Output Low Drop Voltage Regulator.
· Built in ON/OFF Control Terminal. (Active High)
· Built in Over Current Protection, Over Heat Protection Function.
· Low Quiescent Current (Output OFF mode) : 0.5㎂(Typ.)
· Low Standby Current : 800㎂(Typ.)

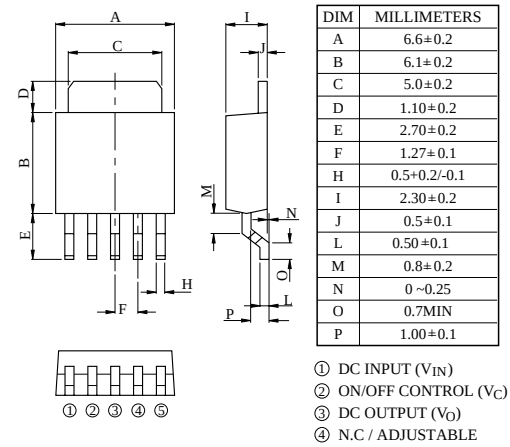


DIM	MILLIMETERS
A	10.00±0.20
B	15.00±0.20
C	2.70±0.20
D	0.60±0.10
E	Φ3.20±0.20
F	3.50±0.10
G	15.70±0.20
H	0.40±0.10
J	14.3+0.2/-0.1
K	1.45±0.10
L	1.00±0.10
M	2.54
N	4.50±0.20
O	7.5±0.1
P	1.50±0.10
R	5°
S	8°
T	1.30±0.1
U	3-1.00±0.1
V	1.30±0.1

TO-220IS-4

LINE UP

ITEM	OUTPUT VOLTAGE (V)	PACKAGE
KIA78R000F/PI	Adjustable (1.25~15V)	F : DPAK-5 PI : TO-220IS-4
KIA78R015F/PI	1.5	
KIA78R018F/PI	1.8	
KIA78R020F/PI	2.0	
KIA78R025F/PI	2.5	
KIA78R030F/PI	3.0	
KIA78R033F/PI	3.3	
KIA78R050F/PI	5.0	



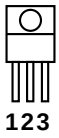
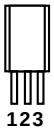
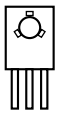
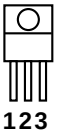
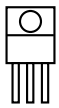
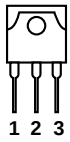
DIM	MILLIMETERS
A	6.6±0.2
B	6.1±0.2
C	5.0±0.2
D	1.10±0.2
E	2.70±0.2
F	1.27±0.1
H	0.5+0.2/-0.1
I	2.30±0.2
J	0.5±0.1
L	0.50±0.1
M	0.8±0.2
N	0 ~0.25
O	0.7MIN
P	1.00±0.1

DPAK-5

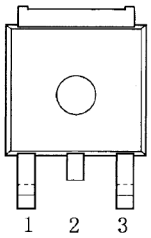
MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage		V_{IN}	16	V
ON/OFF Control Voltage		V_C	16	V
Output Current		I_{OUT}	1	A
Power Dissipation 1 (No heatsink)	F	P_{D1}	1.3	W
	PI		1.5	
Power Dissipation 2 (Without heatsink)	F	P_{D2}	13	W
	PI		15	
Junction Temperature		T_j	150	℃
Operating Temperature		T_{opr}	-20～80	℃
Storage Temperature		T_{stg}	-30～150	℃
Soldering Temperature		T_{sol}	260	℃

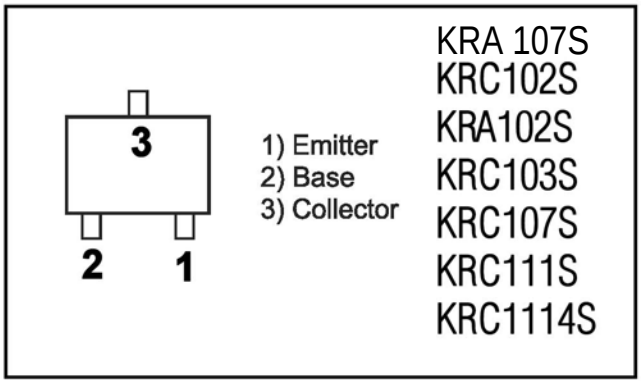
TRANSISTOR, REGULATOR IC BLOCK DIAGRAM

TO-92M  123 1. Emitter 2. Collector 3. Base KTC2874B KSC2785Y KRA107M KRC107M KRA104MT KRC104M KTA1267 KTC 1027	TO-92  123 1. Emitter 2. Collector 3. Base KTD1302T KTA1268GR KTC3200GR KTC3198Y KTA1271Y KSA1175YT KTC 3199 KTA1266YT 2SC2240BL KRC102M	TO-220  123 1. GND 2. INPUT 3. OUTPUT MCNJM7905 MC7915C NJM7908 L7905 KIA 7908 L7915 KIA 7905 KIA7915	TO-92L  123 1. Emitter 2. Collector 3. Base KTA1024Y KSC2316Y
TO-126  123 1. Emitter 2. Collector 3. Base KTD600KG KTA 1360 KTC 3423	TO-92  123 1. Emitter 2. Base 3. Collector KSA733CYT	TO-220  123 1. INPUT 2. GND 3. OUTPUT KIA 7809 KIA7815 MC7815C MC7805C MC7809 L7805 NJM7824 L7815 L7812 KIA 7808 L7808 KIA7812	TO-3P  1 2 3 1. Base 2. Collector 3. Emitter 2SB1560 2SC3423O 2SD2390 2SB1559 2SA1360 2SD2389 2SB1647 2SD2560

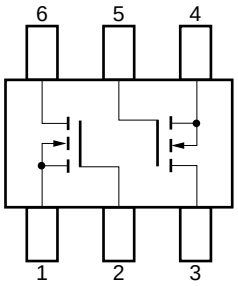
NJM2391DL1-25 NJM2391DL1-33
LOW DROPOUT VOLTAGE REGULATOR



PIN FUNCTION
1. IN
2. GND
3. OUT



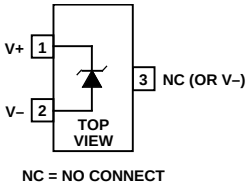
N-CHANNEL MOS FET ARRAY
μPA672T



1. Source 1 (S1)
2. Gate 1 (G1)
3. Drain 2 (D2)
4. Source 2 (S2)
5. Gate 2 (G2)
6. Drain 1 (D1)

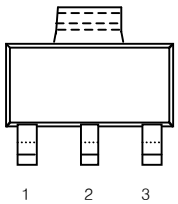
Marking: MA

PIN CONFIGURATION
SOT-23 Package
AD1580



NC = NO CONNECT

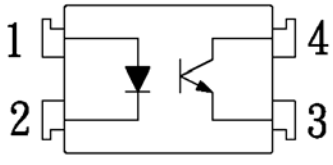
SOT–223 PKG (FRONT VIEW)



LM1117
REGULATOR

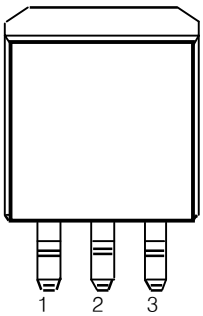
PIN FUNCTION
1. Adj/Gnd
2. Vout
3. Vin

KP1010 photocoupler



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

TO–263 (D2 PKG, FRONT VIEW)



PIN FUNCTION
1. Adj/Gnd
2. Vout
3. Vin

AVR265/365 AMP Schematic Diagram

SR-CH

C-CH

BL-CH

FR-CH

SL-CH

FL-CH

BR-CH

ONLY FAN USING

DC PROTECTOR

THERMAL PROTECTOR

OVERLOAD DETECTION

FOR USING FAN

FAN,PROTECT TEST (SHORT)

70°C : FAN1 operate
80°C : FAN2 operate
88°C : TAP CHANGE(H-->L)

70°C Operation

80°C Operation

85°C Operation

FAN1

FAN2

JK91
CENTER
SL
SR

JK92
SBL
SBR
FL
FR

GAIN	R561, R562, R563, R564, R565, R850, R851
AVR265/2650	1.3K
AVR365/3650	1.3K

C915/C916		
AVR2650 / 265 : 10000uF/63V	CCET63VKL5103NK
AVR3650 / 365 : 12000uF/63V	CCET63VKL5123NK

JW90,JW91 : ALL MODELS

FOR ESD

FROM REGULATOR B'D

TO TRANS B'D

FROM INPUT B'D

FROM TRANS

AC IN

MOMS S/W

Library X

* MAIN TRANS LIST *

AVR3650	CLTS0044ZU
AVR2650	CLTSV058ZU
AVR365	CLTS0044ZE
AVR265	CLTSV058ZE

* SUB TRANS LIST *

AVR3650/2650	CLTS0252U
AVR365/265	CLTS0252E

F901 : 8A (KBA2CB0007LEY) USA
AVR2650 / 3650
F901 : 6.3A (KBA2CB3007LEY) EUR
AVR265 / 365

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

ISSUE
2011.05.17

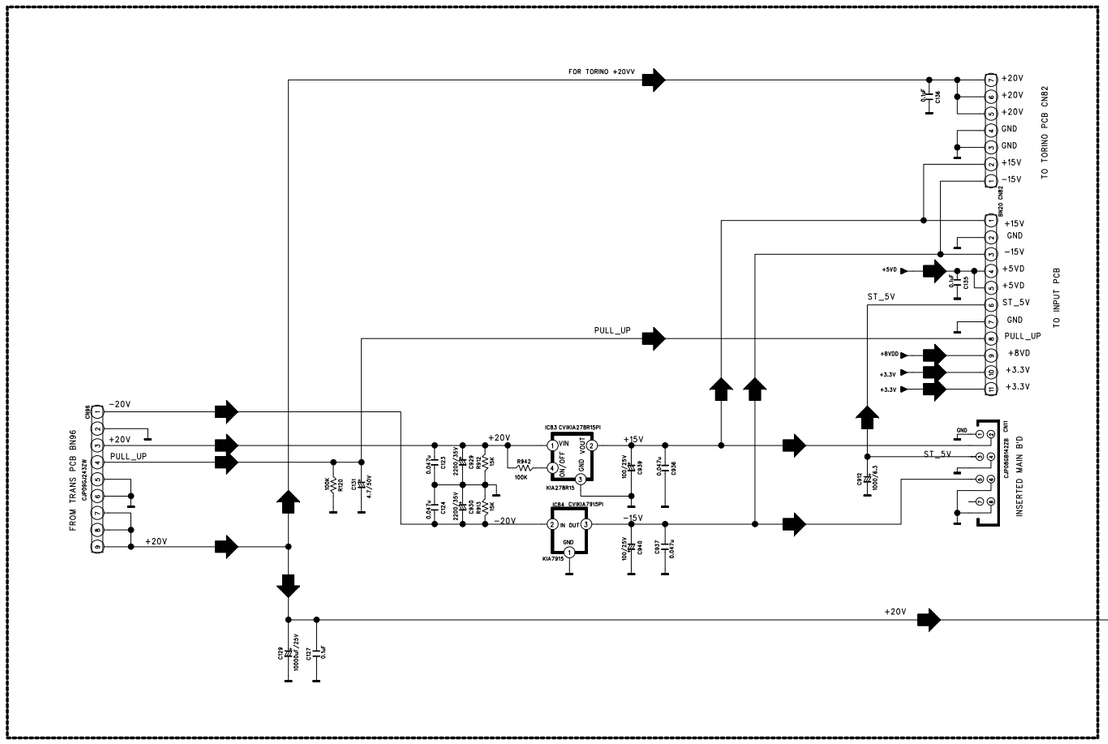
MP

AVR 3650

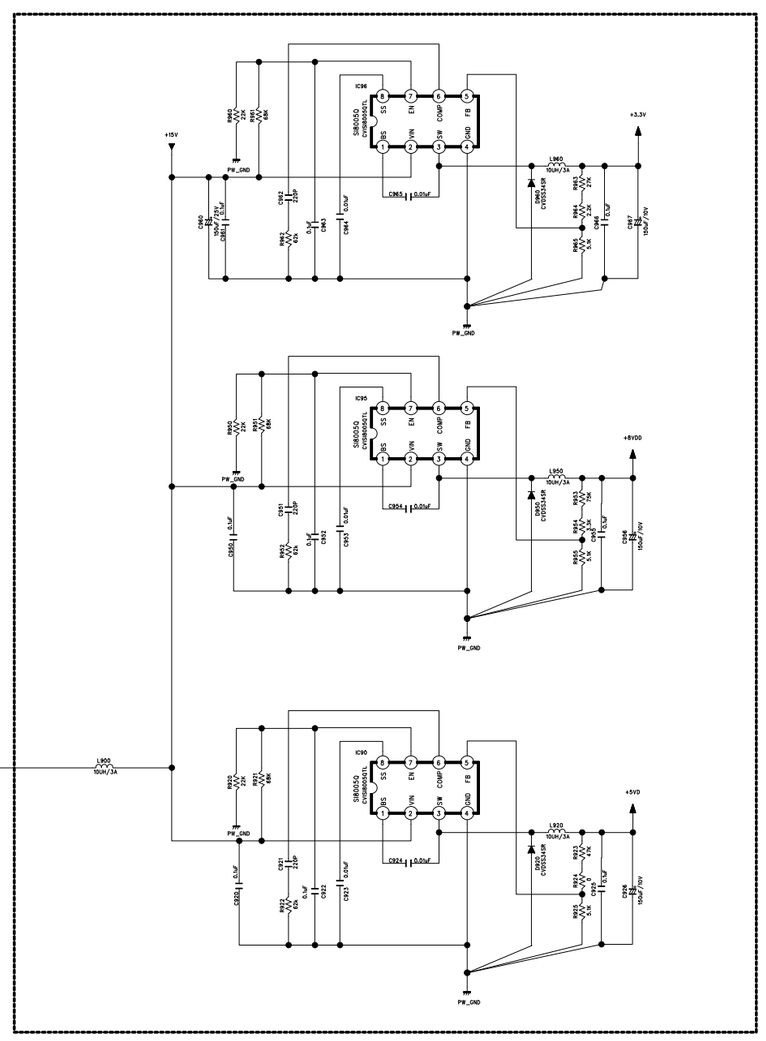
harman/kardon

REVISION	1	2	3
SCHEMATIC DIAGRAM			SHEET 2/7
MODEL	AVR CORE		
DESIGN	CHECK	APPROVE	DRAWING NO
W.J.JUNG	W.Y.YANG	H.S.SEOL	12364SCMZ (AMP) 1/1
2011.05.17	2011.05.17	2011.05.17	

< Analog Regulator Part >



< DC-DC Regulator Part >

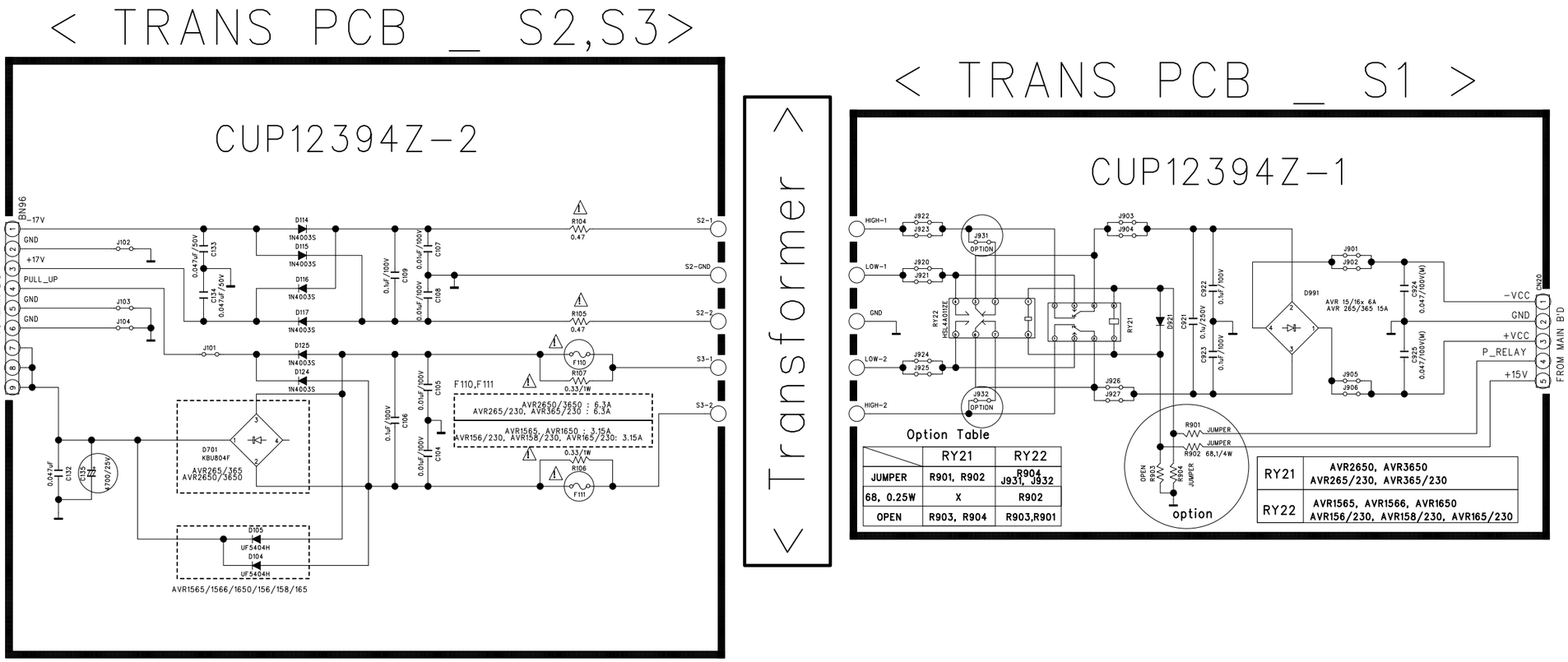


MP

ISSUE
2011.05.17

REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR 2650/3650		1/1
DESIGN	CHECK	APPROVE	DRAWING NO
K.B.C	Y.Y.W	K.S.W	CUP12365Z
2011.05.17	2011.05.17	2011.05.17	(REG& DC-DC) 1/1

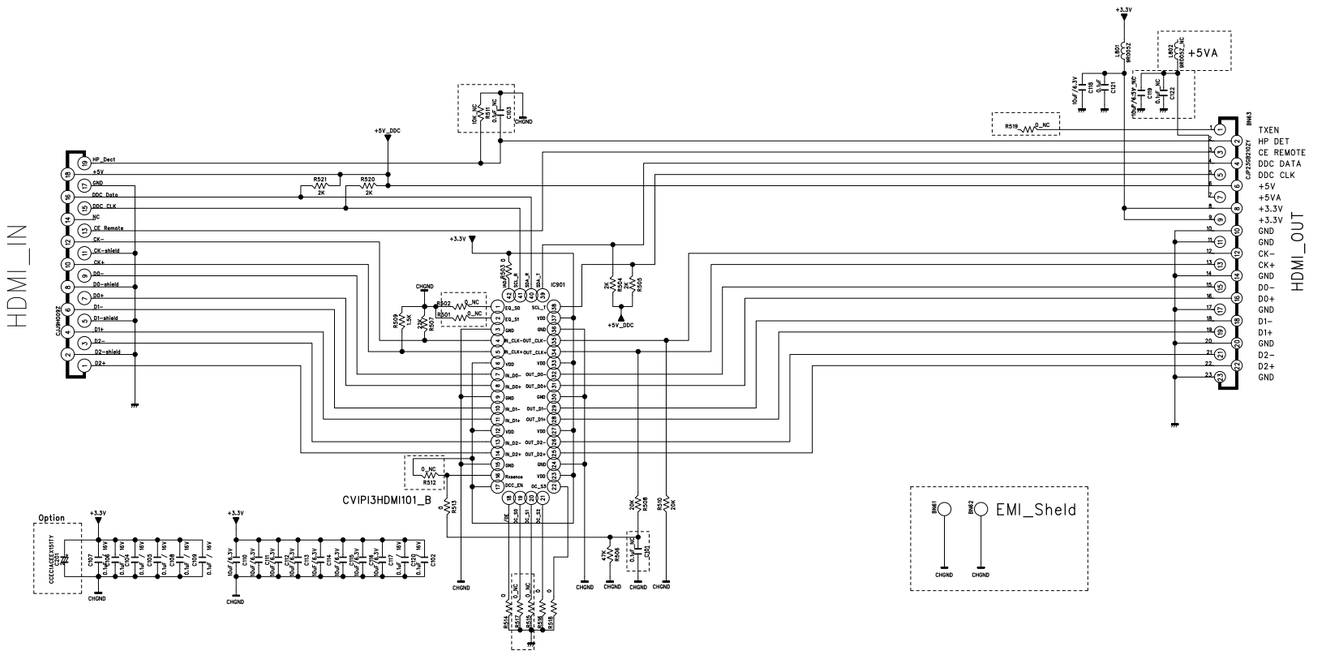


MP

ISSUE
2011.05.17

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM			SHEET 1/3
MODEL	AVR 165/265/365		
DESIGN	CHECK	APPROVE	DRAWING NO
K.B.C	K.M.S	Y.K.Y	CUP12394Z (POWER) 1/1
11.05.17	11.05.17	11.05.17	



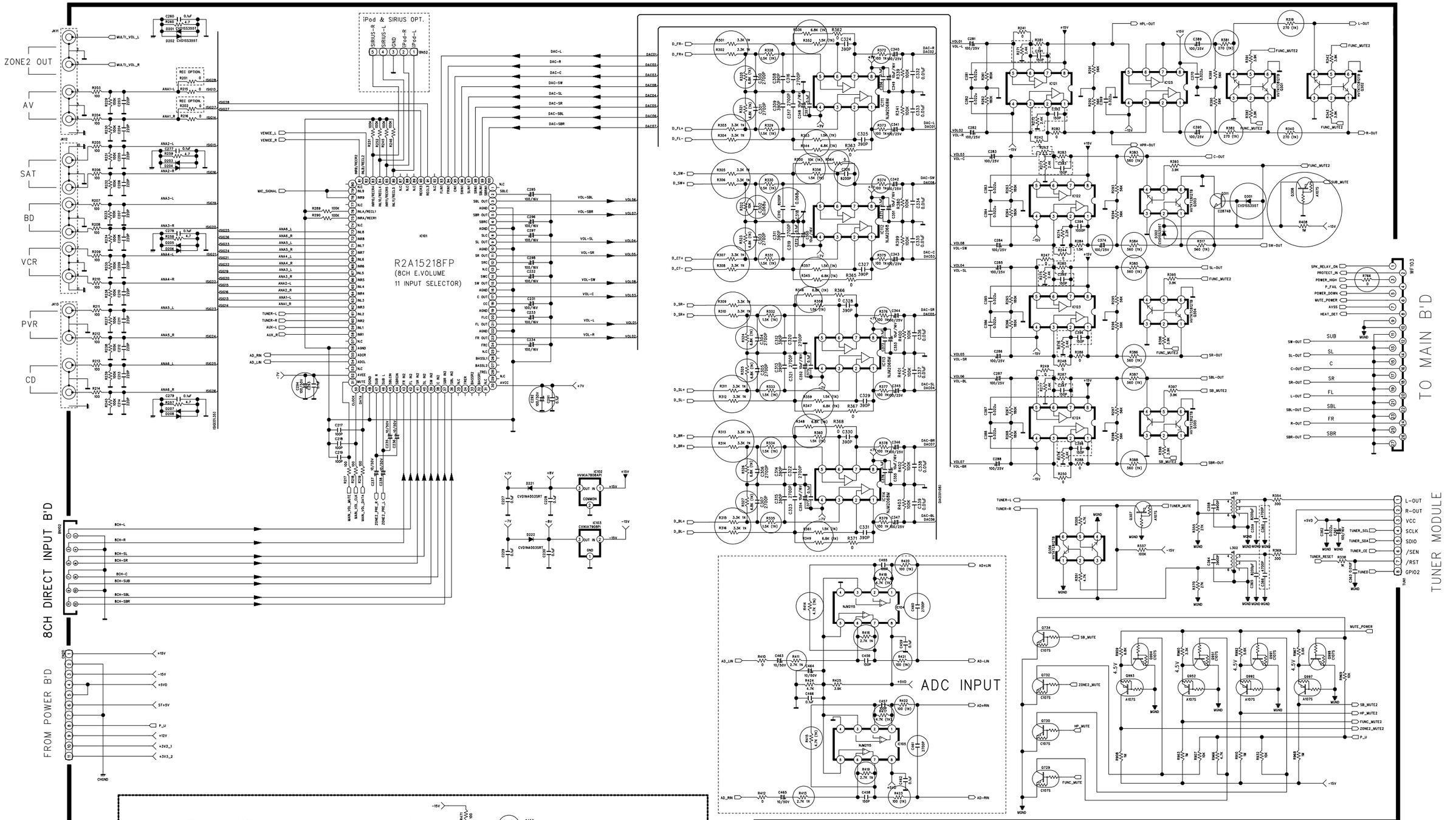
**IMPORTANT SAFETY NOTICE.
COMPONENTS IDENTIFIED BY▲ MARK HAVE SPECIAL CHARACTERISTICS.
IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS.
USE ONLY MANUFACTUREY'S SPECIFIED PARTS.
**THE UNIT OF RESISTANCE IS OHM.
K=1000 OHM, M=1000 KOHM
**THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
pF=10^6 uF
**THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE
IMPROVEMENT OF PERFORMANCE

ISSUE
1
2010.05.17

MP

REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET 1 1
MODEL	AVR356x_Front HDMI		
DESIGN	CHECK	APPROVE	DRAWING NO
S. KIM	W.Y.YANG	G.S.WEY	HDMI 1 1
11.05.17	11.05.17	11.05.17	



** 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.

M/P

ISSUE
2011.05.17

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET 1/4

MODEL: AVR CORE

DESIGN	CHECK	APPROVE	DRAWING NO
C.B.LEE	W.Y.YANG	G.S.WEY	2327SCMZ (INPUT) 1/1
11.05.17	11.05.17	11.05.17	

AVR 3650

CUP12327*

harman/kardon

*VHC151 OPTION

SELECT INPUT	A	B	C
OPT1 AV D0	L	L	L
OPT2 SAT D1	H	L	L
D2	L	H	L
AUX F_OPT D3	H	H	L
HDMI_SPDIF D4	L	L	H
ARC_SPDIF D5	H	L	H
VENICE_SPDIF D6	L	H	H
VHC153 D7	H	H	H

*VHC153 OPTION

SELECT INPUT	A	B	G
VCR COAX2 C3	H	H	L
BD COAX1 C2	L	H	L
CD COAX4 C1	H	L	L
PVR COAX3 C0	L	L	L

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

Do not use

Do not use

*OPTION : EMC COUNTERMEASUER

<=> HDMI BOARD

246

REVISION	2		4		6	
1		3		5		7

ISSUE 2011.05.17

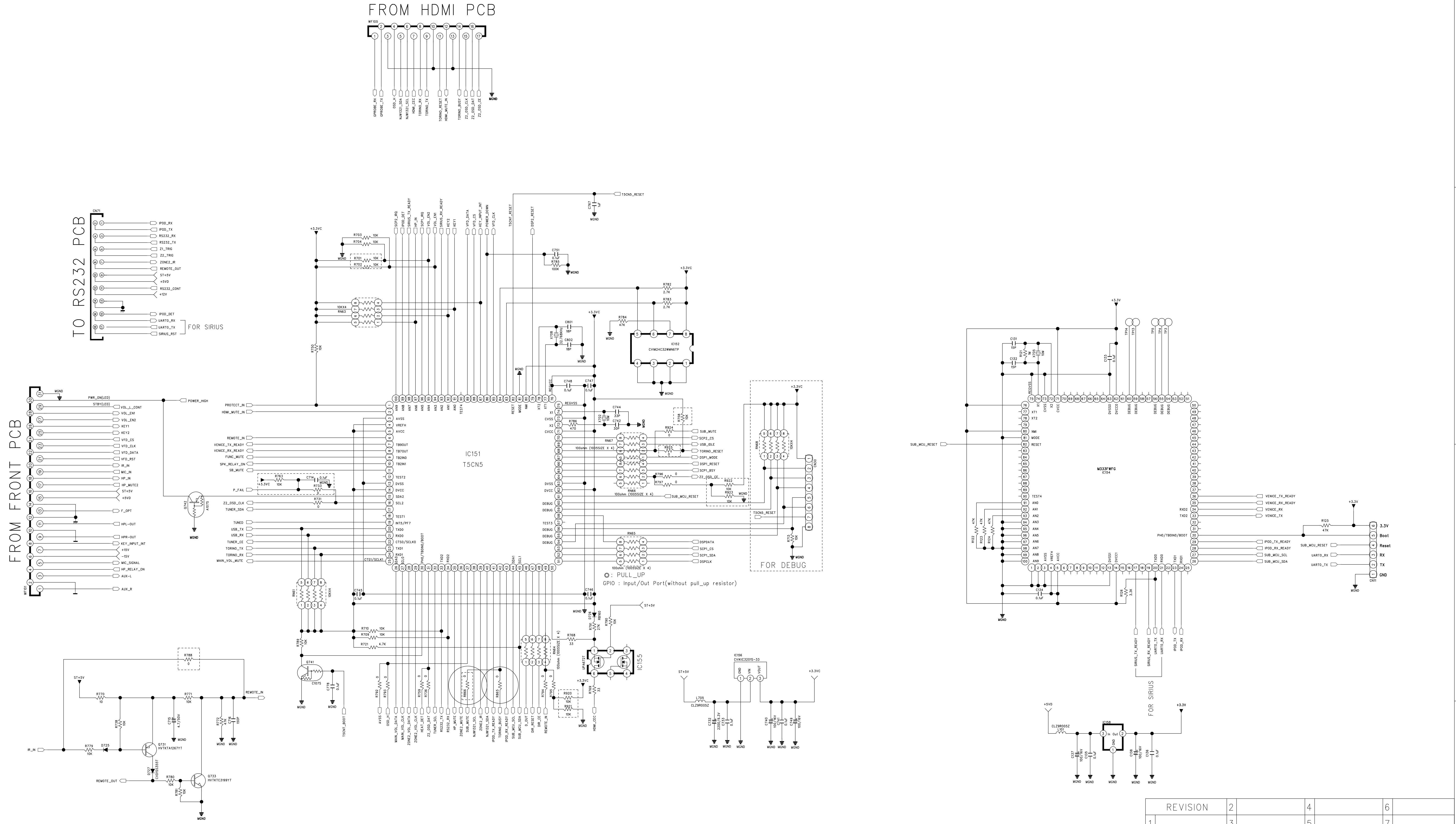
M/P

SCHEMATIC DIAGRAM — SHEET 2/4

MODEL	AVR CORE	
DESIGN	CHECK	APPROVE
C.B.LEE	W.Y.YANG	G.S.WEY
11.05.17	11.05.17	11.05.17

DRAWING NO: 2327SCMZ (DSP) 1/1

CUP12327*



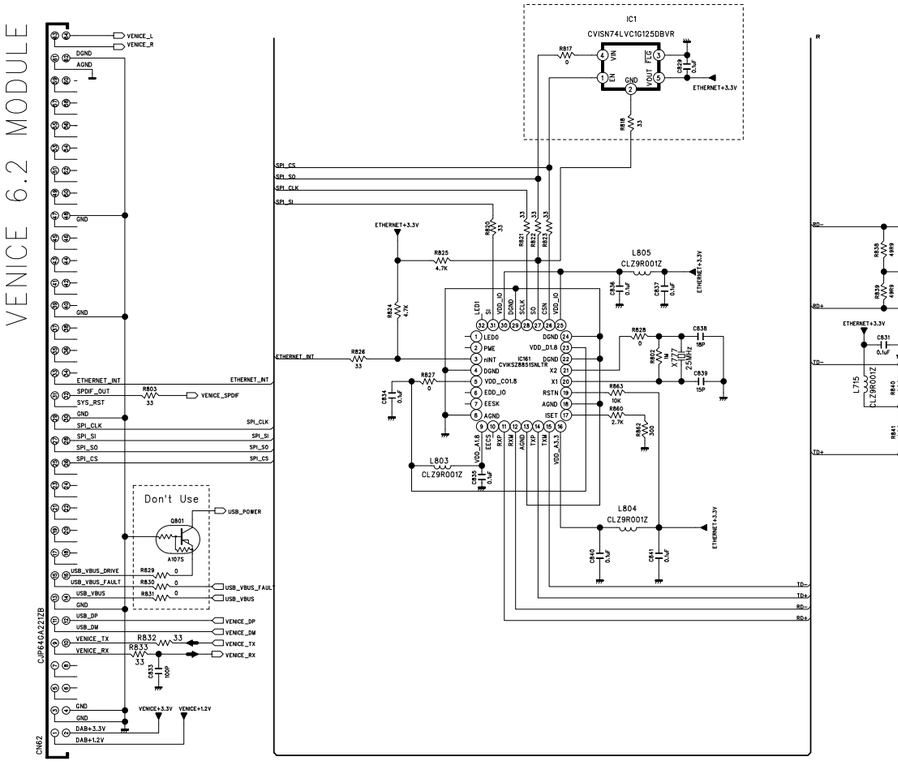
ISSUE 2011.05.17

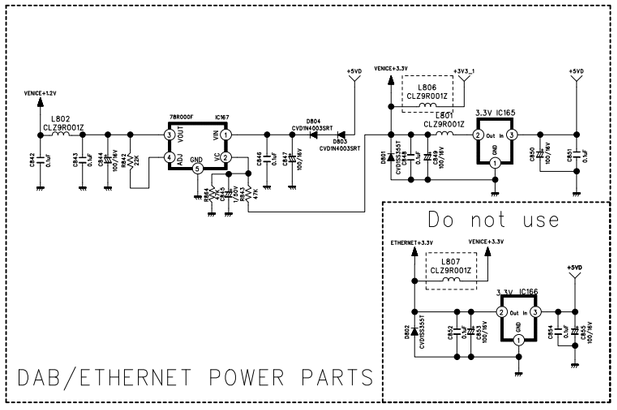
M/P

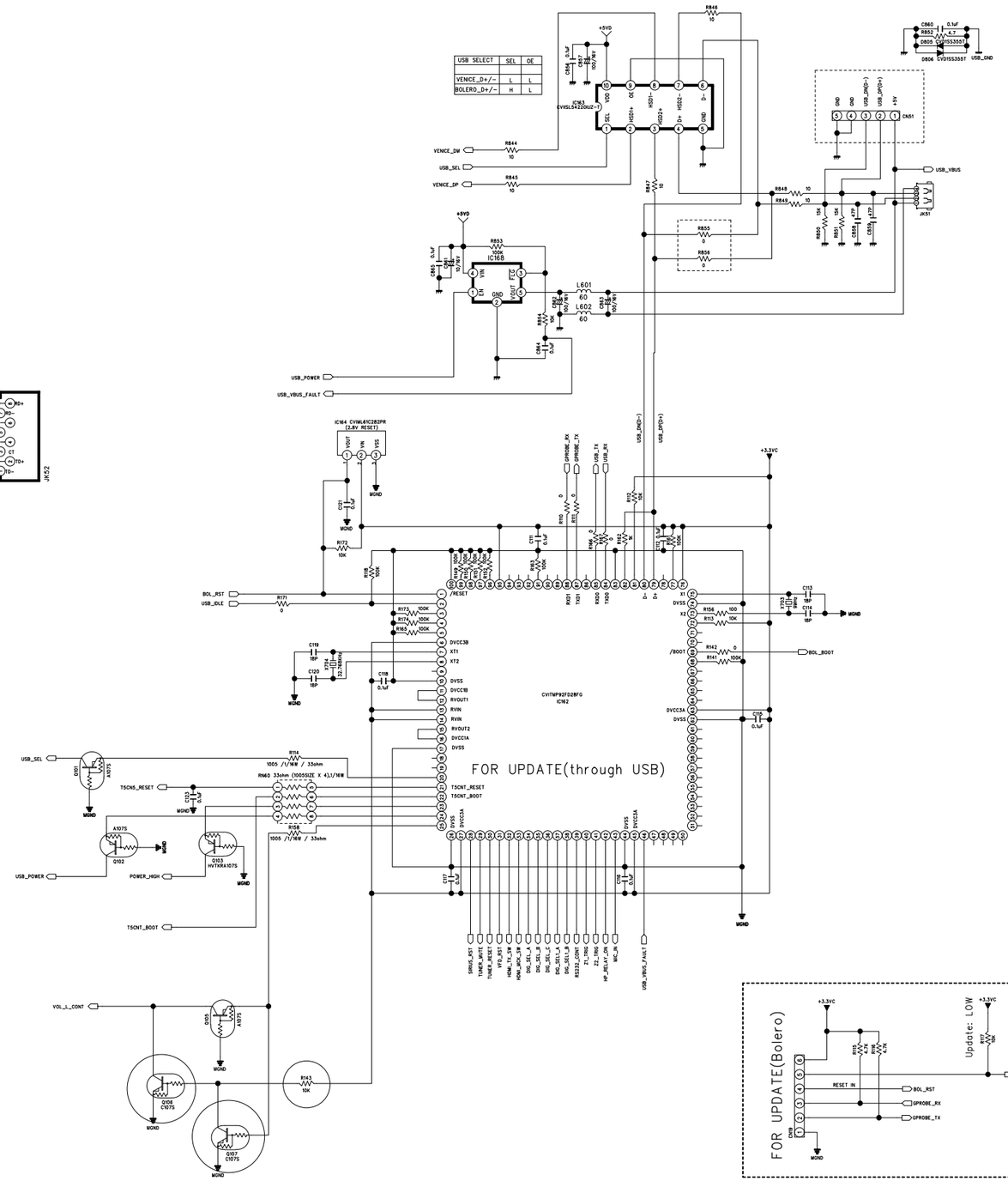
REVISION	2		4		6	
1		3		5		7

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR CORE		3/4
DESIGN	CHECK	APPROVE	DRAWING NO
C.B.LEE	W.Y.YANG	G.S.WEY	2327SCMZ (CPU)
11.05.17	11.05.17	11.05.17	1/1

to VENICE 6.2	
1	DAB+1.2V
2	DAB+3.3V
3	GND
4	GND
9	VENICE_RX
10	VENICE_TX
11	USB_DM
12	USB_DP
13	GND
14	USB_VBUS
15	USB_VBUS_FAULT
16	USB_VBUS_DRIVE
26	SPI_CS
27	SPI_MISO
28	SPI_MOSI
29	SPI_SCLK
30	GND
32	SPDIF_OUT
33	ETHERNET_INT
39	GND
48	GND
61	AGND
62	AGND







REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR CORE		4 / 4
DESIGN	CHECK	APPROVE	DRAWING NO
C.B.LEE	W.Y.YANG	G.S.WEY	2327SCMZ (VENICE_USB) 1 / 1
11.05.17	11.05.17	11.05.17	

M/P

ISSUE 2011.05.17

CUP12328Z

ADV3014 Decoupling Capacitor

ADV7844 Worst Measured Currents

1.8V Total : 904.33mA

3.3V Total : 240.3mA

IC901

CVIADV3014BSTZ

R857 : Front HDMI don`t used

#12: Added Pull-down 500 ohm

#21: HPD Part

#7: Added pull-up

Option : Front HDMI Input port

To - ADV7844 HDMI Input port

M/P

REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR CORE		1 / 4
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	HDMI INPUT
11.05.17	11.05.17	11.05.17	1 / 1

ISSUE 11.05.17

CUP12328Z

11.05.17

ADV7844 Worst Measured Currents

1.8V Total : 1340mA(20%: 1608mA

2.5V Total : 100mA(20%: 120mA)

3.3V Total : 450mA(20%: 540mA)

ADV7844

HDMI Processor & ADC & Decoder

SD to I/P Converter

M/P

ISSUE

11.05.17

250

In case of PCM	
I2S0	FL/FR
I2S1	SUB/CEN
I2S2	SL/SR
I2S3	SBL/SBR

REVISION	2		4		6	
1		3		5		7

SCHEMATIC DIAGRAM				SHEET
MODEL	AVR CORE			1 / 4
DESIGN	CHECK	APPROVE	DRAWING NO	
S.K	W.Y.YANG	G.S.WEY	HDMI RX & Decoder	1 / 1
11.05.17	11.05.17	11.05.17		

FLI30336 Worst Measured Currents

1.8V Total : 1923mA(Max: 2012mA)

2.5V Total : 385mA(Max: 412mA)

3.3V Total : 166.3mA(2Max: 202.1mA)

11.05.17

ADC1
Worst Measured Currents
35mA(Max:36mA)

ADC2
Worst Measured Currents
27mA(Max:28mA)

TORINO<-->DDR

DDR

RGB 10BIT INPUT

88IT RGB INPUT

TTL OUTPUT

FLASH_MEMORY

#FLASH MEMORY

*GPROBE

GPROBE_UPGRADE

Option

*EEPROM

2007.10.05
Connect pin1 to CHGND

2010.09.27
Change Value : 33ohm-->0ohm

HEATSINK_HOLE

M/P

ISSUE
11.05.17

AVR 3650

harman/kardon

CUP12328Z

REVISION	2		4		6	
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SCHEMATIC DIAGRAM			SHEET
MODEL	AVR CORE		1 / 4
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	SCALER 1 / 1
11.05.17	11.05.17	11.05.17	

CUP12328Z

AVR 3650

harman/kardon

11.05.17

HDMI By Pass Mode Interface

INPUT			OUTPUT
$\overline{OE1}$	$\overline{OE2}$	A	Y
L	L	L	L
L	L	H	H
H	X	X	Z
X	H	X	Z

Scaling Mode Interface

Analog Video Option

HD(30MHZ) MODE : HIGH
SD(13.5MHZ) MODE : LOW

CLOCK DOUBLER
(13.5M*2=27M)

	CLK1
S1:HIGH	ICLK
S1:LOW	2*ICLK

TO DSP PCB

M/P

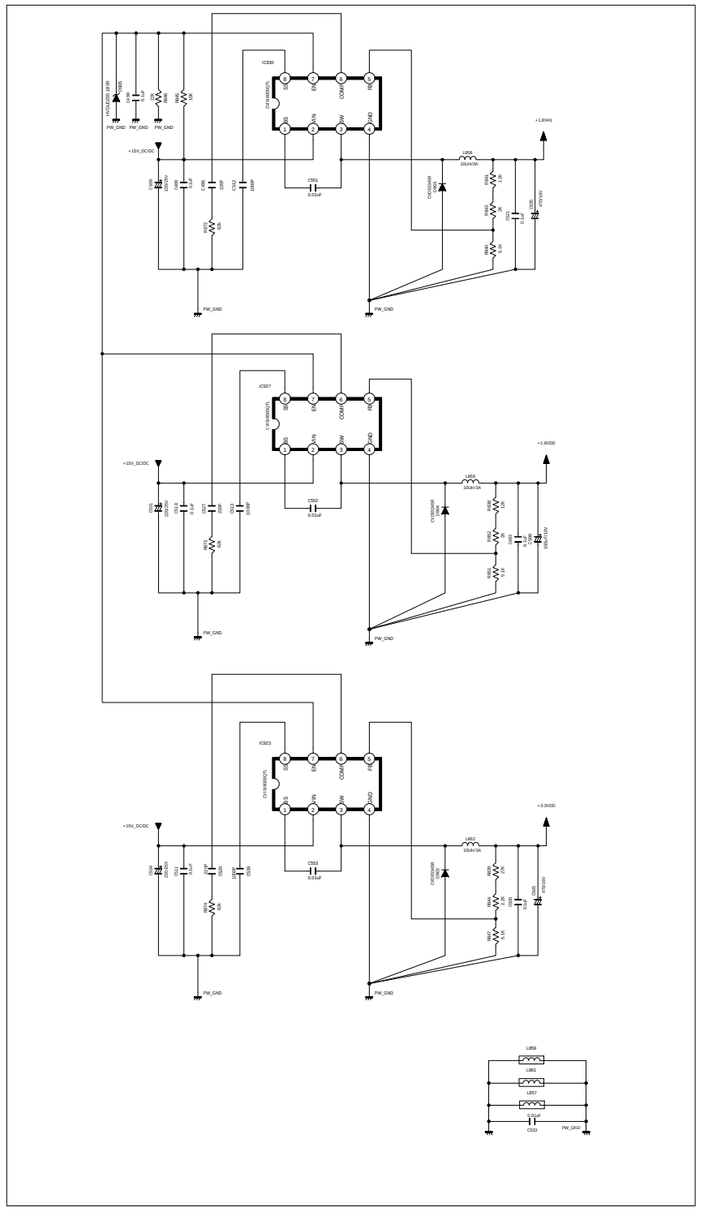
REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM — SHEET

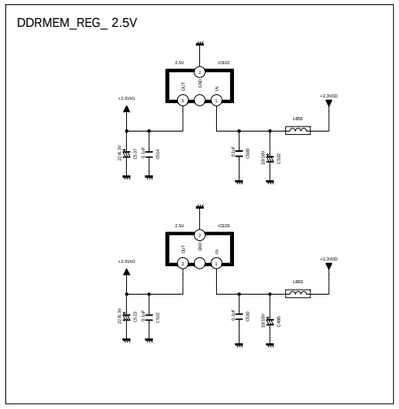
MODEL	AVR CORE		1 / 4
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	HDMI TX & Encoder 1 / 1
11.05.17	11.05.17	11.05.17	

ISSUE 11.05.17

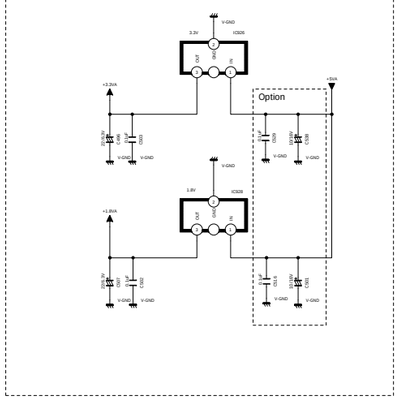
DC/DC REGUALTOR



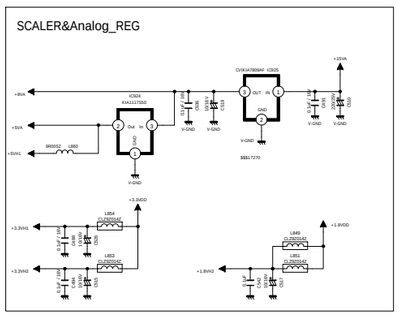
DDRMEM_REG_ 2.5V



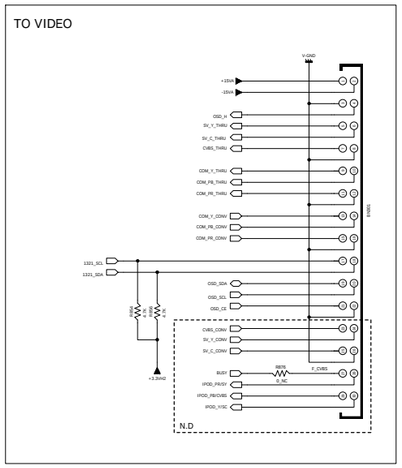
ADC_REG_ 1.8/3.3V



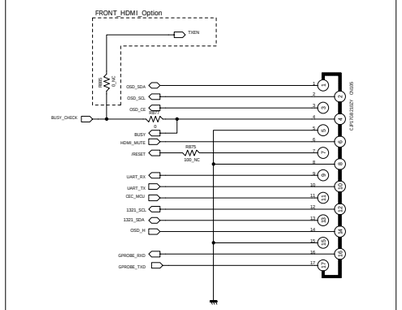
SCALER&Analog_REG



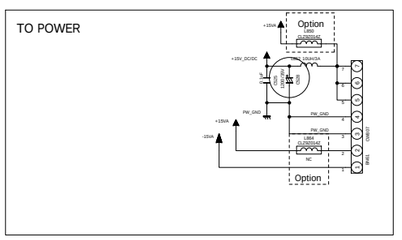
TO VIDEO



TO INPUT



TO POWER



M/P

ISSUE

11.05.17

REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR CORE		1 / 4
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	POWER&CONNECTOR 1 / 1
11.05.17	11.05.17	11.05.17	

CUP12357Z

CUP12357-1 FIP PCB

CUP12357-3 [VOLUME PCB]

CUP12357-2 [STAND BY PCB]

REMOCON SENSOR

OPTIONS ARE USED FOR BASIC MODEL & 265/2650

R122 IS USED FOR AVR165/365

SN74ACT04DR (HEX INVERTER)

FIP1 CFL1625D19GNK FOR AVR165/BASIC MODEL

FIP2 CFL1628D01GNK FOR AVR265/365

BASIC MODEL DON'T USE THIS CIRCUIT

IC15 NJM4556AL

IC14 NJM2068M

R937,R938 ARE USED FOR BASIC MODEL

CUP12357-6 USB JACK PCB
USE AVR2650/3650

CUP12357-4 HEAD PHONE JACK PCB

CUP12357-5 USB & INPUT(ANALOG) JACK PCB
USE AVR1650 / 165 & BASIC MODEL

* OPTION *

* ESD *

FROM INPUT ASS'Y(CPU)

TO VR JACK PCB

FROM FIP PCB

TO HEAD PHONE JACK PCB

FROM MAIN TRANSFORMER

TO INPUT PCB ASS'Y(INPUT)

AVR 3650

harman/kardon

REVISION	2	4	6	
1	3	5	7	

SCHEMATIC DIAGRAM — SHEET 1/7

MODEL	AVRX65 SERIES	
DESIGN	CHECK	APPROVED	DRAWING NO
J.I.H	K.M.S	Y.Y.W	2357SCMZ (FRONT) 1/1
11.05.17	11.05.17	11.05.17	

MP — ISSUE 2011.05.17

VIDEO MUX PART

* DEFINITION OF I2C REGISTER (NJW1321)

I2C BUS FORMAT

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

SLAVE ADDRESS

MSB	Slave Address(6BIT)						MSB	lex
1	0	0	0	0	0	ADR(1BIT)	R/NOT W(1BIT)	-

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

<READ MODE>

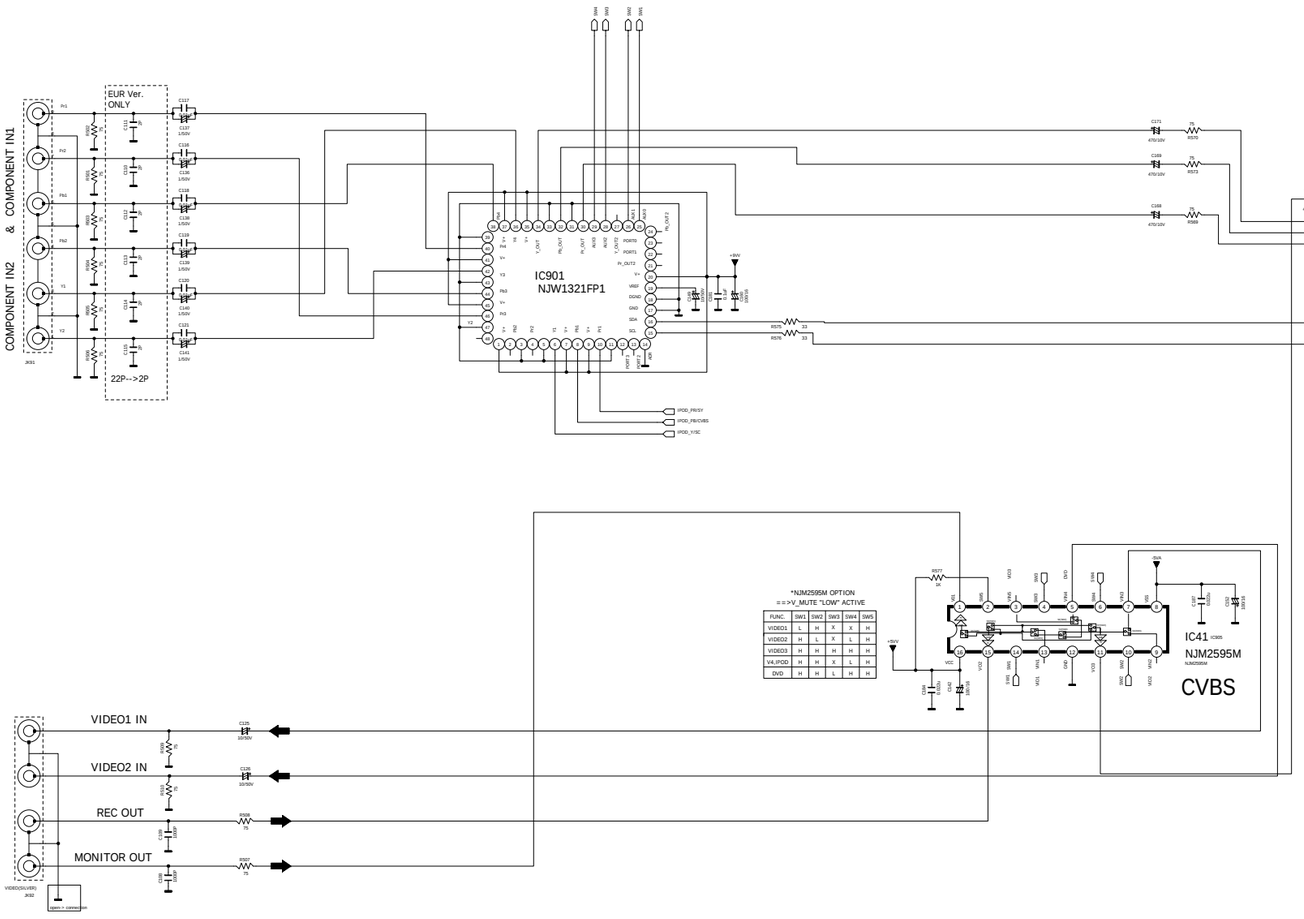
NO.	BIT							
	D7	D6	D5	D4	D3	D2	D1	D0
DATA	PORT0		PORT1			PORT2		PORT3

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

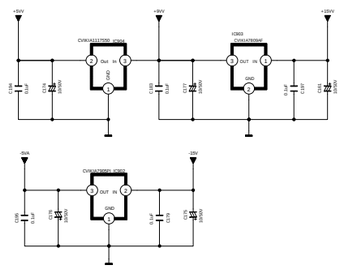
R/NOT W : Set the Write Mode or Read Mode.
ADR : Set the Slave Address by " ADR" terminal.
R/NOT W = 0 : WRITE MODE, ADR = 0/1 ; ADR=0 Hex 84(h), ADR=1 Hex 86(h)
R/NOT W = 0 : READ MODE, ADR = 0/1 ; ADR=0 Hex 85(h), ADR=1 Hex 87(H)

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

PORT : INPUT



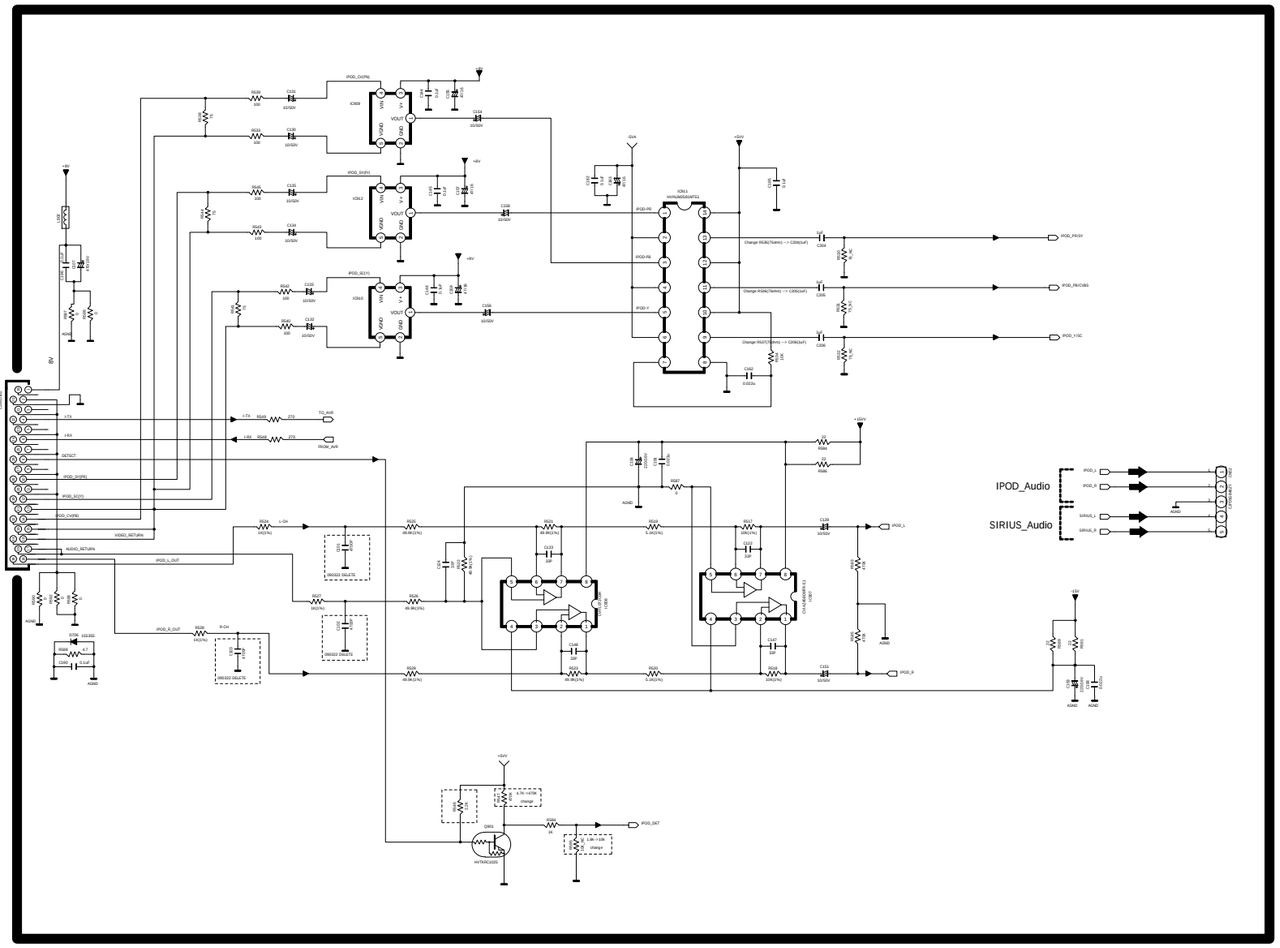
FUNC.	SW1	SW2	SW3	SW4	SW5
VIDEO1	L	H	X	X	H
VIDEO2	H	L	X	L	H
VIDEO3	H	H	H	H	H
V4.IPOD	H	H	X	L	H
DVD	H	H	L	H	H



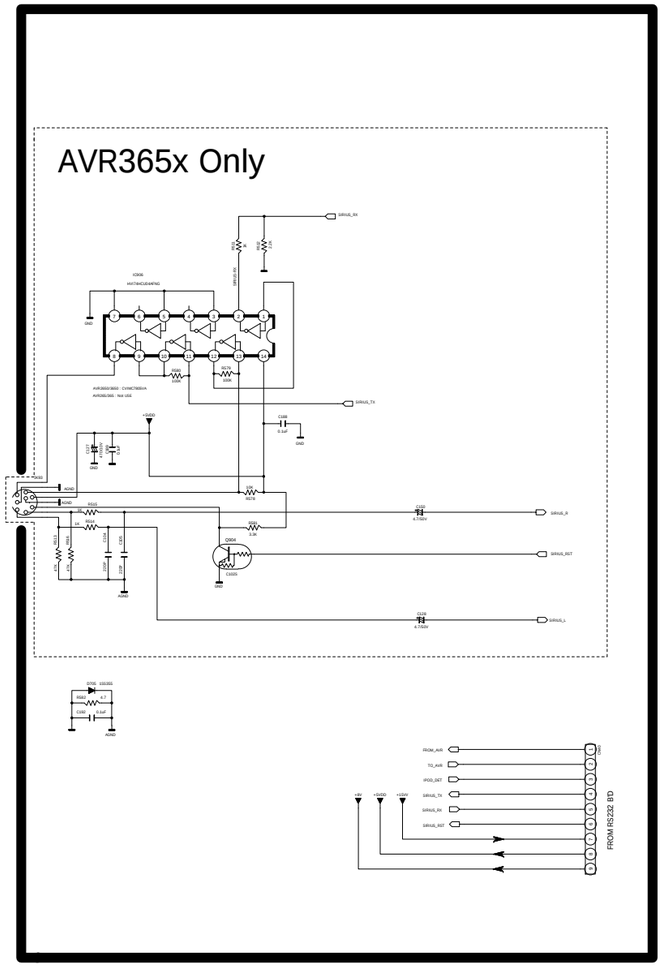
REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR CORE		1 / 3
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	12361SEMZ (VIDEO) 1 / 1
11.05.17	11.05.17	11.05.17	

I-POD PART



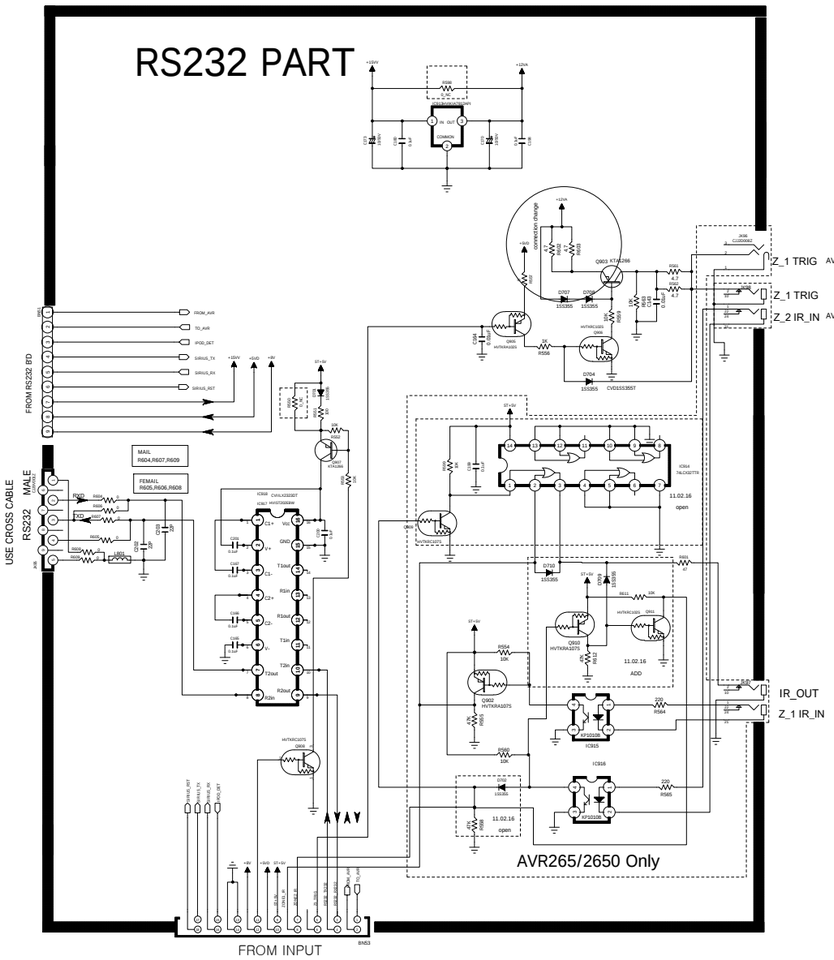
SIRIUS PART

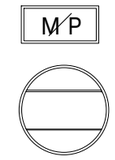


REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM			SHEET
MODEL	ARV CORE		2 / 3
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	12361SEMZ
11.05.17	11.05.17	11.05.17	(IPOD&SIRIUS) 1 / 1

(IPOD&SIRIUS)





REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM			SHEET
MODEL	ARV CORE		3 / 3
DESIGN	CHECK	APPROVE	DRAWING NO
S.K	W.Y.YANG	G.S.WEY	12361SEMZ (RS232) 1 / 1
11.05.17	11.05.17	11.05.17	

AVR 3650

harman/kardon

POWER1

P_FAIL

S1

CN20

5P WIRE

MAIN TRANS

POWER2

D15V

P_UP

-20

+20

BN96

5P WIRE

7P WIRE

13P WIRE

11P WIRE

DCDC

+5V

+3.3_1

+3.3_2

DC15V

8P CN12

CN96

CN82

+15V

-15V

DC15V

BN20

+15V

ST5V

CN11 8P CN11

CN61

HDMI

+15V/DC15V

-15V

CN105

CN104

DC15V

+15V

-15V

17 P C/C

17 P C/C

WF105

WF104

BN52

IPOD SIRIUS

+3.3V

+3.3V

+15V

-15V

+5V

ST5V

P-U

CN20

+12V?

MUTE PO

WF103

WF101

9P WIRE

27P C/C

P-FAIL

S1

AC

BN20

CN91

TRANS

CN1

R904 삭제

AMP

BN14

BN15

7P WIRE

9P WIRE

BN14-1

BN15-1

FAN

CN93

CN89

CN10

FAN TEST

CN90

MOMS

CN92

AC CORD

+9V +8V

+5V

-5V

VIDEO

IPOD SIRIUS

+15

-15

BN301

30P

CN301

BN52

CN20

AUDIO

5P WIRE

9P WIRE

DATA

+15V

ST5V

+5VD

+15V

CN71

18P

BN71

RS232

BN20

CN51

+5V

USB5V

ST5V

-15V

+15V

+5VD

31 P C/C

5P WIRE

BN53

AVR265 USB

H/P

BN61

6P

CN61

S/T PCB

CN73

6P

BN73

CN71

AC45V VFD AC

FRONT

CN72

BN74

5P WIRE

V/R PCB

CN74

5P WIRE

258

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET 1 1

MODEL	AR CORE	
DESIGN	CHECK	APPROVE	DRAWING NO
K.M.S	L.J.H	Y.W.Y	Wiring
11.05.17	11.05.17	11.05.17	1 1