

AVR 151/230

75W 5.1 CHANNEL A/V RECEIVER

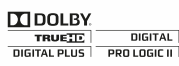


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AVR 1510, AVR 151, AVR 151/230C

Audio/video receiver

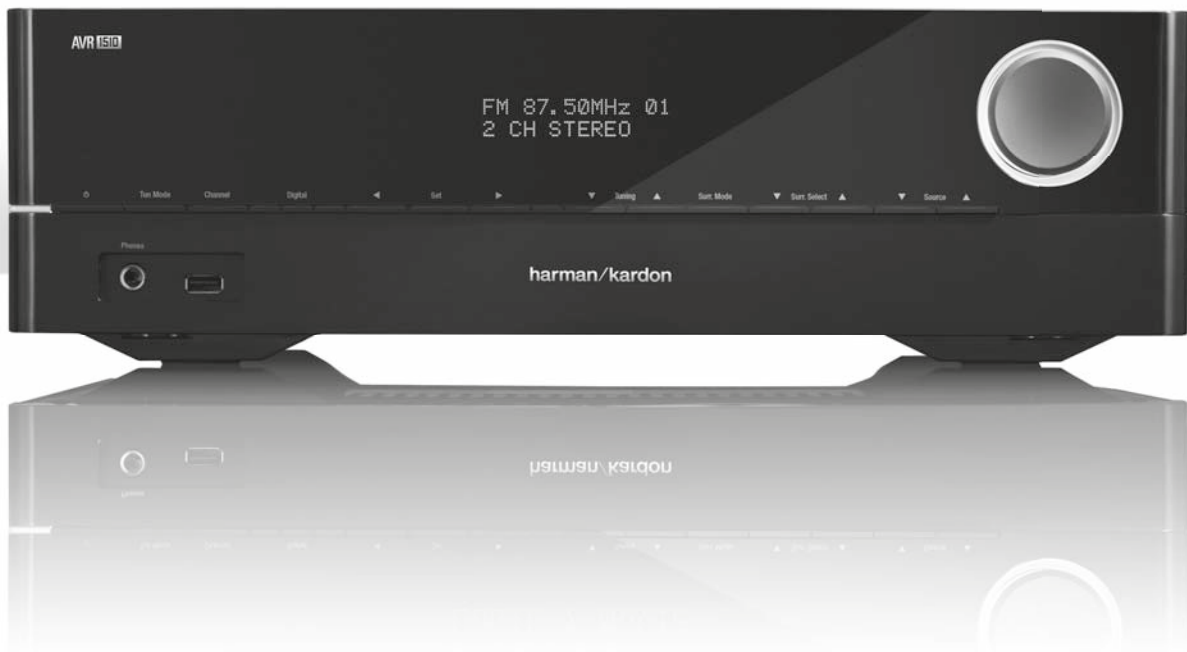


DTS Logo



DLNA Logo

Owner's Manual

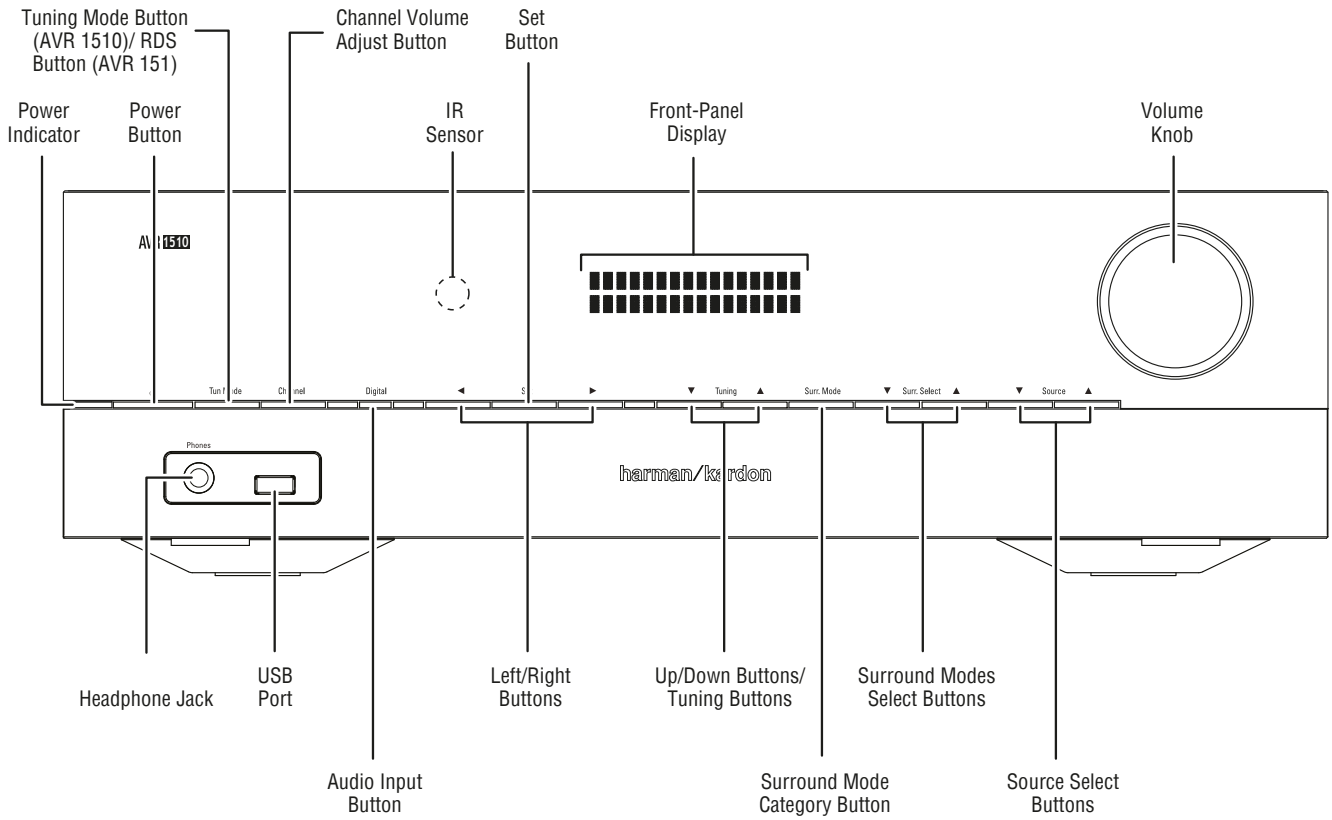


harman/kardon
by HARMAN



Front-Panel Controls

Front-Panel Controls





Front-Panel Controls, continued

Power indicator/Power button: The AVR has three different power modes:

- **Off** (Power indicator glows solid amber): The Off mode minimizes energy consumption when you're not using the AVR. When the AVR is off, it will not automatically turn on or play audio in response to a DLNA DMR stream from a networked device. When the AVR is off, pressing the Power button turns it on. To turn the AVR off when it is on, press the Power button for more than three seconds. The Front-Panel Display will indicate "Your device is switched off" for two seconds, then will switch off.

NOTE: You can use the System Setup menu to set the AVR to automatically enter the off mode after it has been in the Sleep mode for a certain period of time. See System Settings, on page 31.

- **Sleep** (Power indicator glows solid amber): The Sleep mode powers-down some of the AVR's circuitry, but allows the AVR to automatically turn on and play audio in response to a DMR stream from a networked device. When the AVR is in Sleep, pressing the Power button turns it on. To put the AVR into Sleep when it is on, press the Power button for less than three seconds. The message display will indicate "Device sleep" while the AVR is in the Sleep mode.

NOTE: The AVR will automatically enter the Sleep mode after 30 minutes of no audio signal or user control input, unless USB, iPod, Home Network, vTuner, AirPlay, or DLNA DMR is active. In these cases, the AVR will automatically enter the Sleep mode after the number of hours set in the Auto Power Off system setting. See System Settings, on page 31.

- **On** (Power indicator glows solid white): When the AVR is on it is fully operational.

Headphone jack: Connect a 1/4" stereo headphone plug to this jack for private listening.

Tuning Mode button (AVR 1510 only): Press this button to toggle the radio between the manual (one frequency step at a time) and automatic (seeks frequencies with acceptable signal strength) FM tuning mode. The button also toggles the radio between stereo and mono modes when an FM station is tuned in.

RDS Button (AVR 151 only): When listening to an FM radio station that broadcasts RDS information, this button activates the various RDS functions.

USB port: The USB port can be used to play audio files from an Apple iOS® device connected to the port, and can also be used to play MP3 and WMA audio files from a USB device inserted into the port. Insert the connector or device into the USB port oriented so it fits all the way into the port. You may insert or remove the connector or device at any time – there is no installation or ejection procedure.

You can also use the USB port to perform 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.

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

Channel Volume Adjust button: Press this button to activate the individual channel level adjustment. After pressing this button, use the Up/Down buttons/Tuning buttons to select the channel for adjustment and use the Left/Right buttons to adjust the channel's level.

Audio Input button: Press this button to change the audio input connection for the current source. Use the Left/Right buttons to cycle through the available input connections, and press the Set button to assign the currently-displayed connection to the source.

IR sensor: This sensor receives infrared (IR) commands from the remote control. Make sure that the sensor is not blocked.

Set button: Press this button to select the currently highlighted menu item.

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

Front-panel display: Various messages appear on 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 active surround mode is displayed on the lower line. When the on-screen display menu system (OSD) is in use, the current menu settings appear.

Up/Down buttons/Tuning buttons: Use these buttons to navigate the AVR's menus. When the radio is the active source, use these buttons to tune stations according to the setting of the Tuning Mode button (see above).

Surround Mode Category button: Press this button to select a surround-sound category. Each press changes the surround-mode category: Auto Select, Virtual Surround, Stereo, Movie, Music and Game. To change the specific surround-sound mode within the category, use the Surround Mode Select buttons. See Audio Processing and Surround Sound, on page 30, for more information about surround modes.

Surround Mode Select buttons: After you have selected the desired surround-mode category, press these buttons to select a specific mode within the category, such as to change from Dolby® Pro Logic® II Movie mode to DTS® NEO:6 Cinema mode. Surround mode availability depends on the nature of the source input signal, i.e., digital versus analog, and the number of channels encoded within the signal.

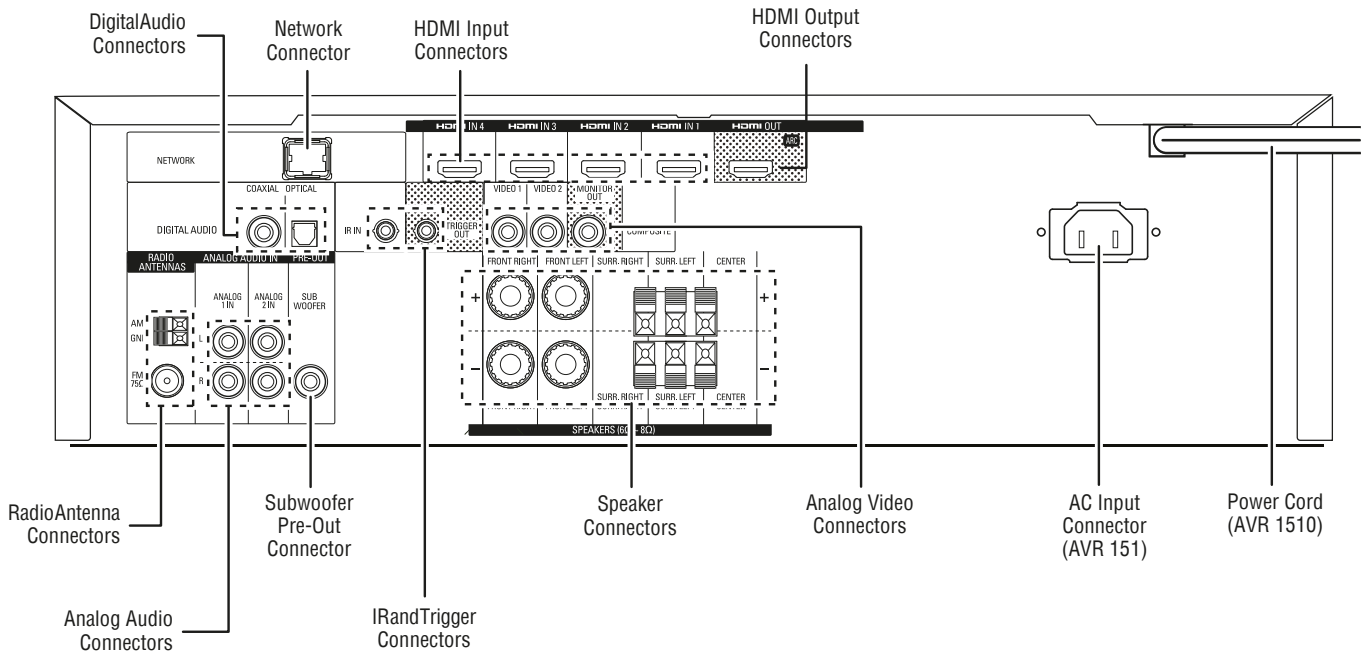
Source Select buttons: Press these buttons to select the active source.

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



Rear-Panel Connectors

Rear-Panel Connectors





Rear-Panel Connectors, continued

Digital Audio 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 16, for more information.

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

Analog Audio connectors: The following analog audio connectors are provided:

- **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 16, for more information.

Network connector: If your home network is wired, use a Cat. 5 or Cat. 5E Ethernet 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 18, for more information.

Subwoofer Pre-Out connector: Connect this jack to a powered subwoofer with a line-level input. See *Connect Your Subwoofer*, on page 15, for more information.

IR and Trigger connector: The following IR and trigger connectors are provided:

- **IR In connectors:** 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 In jack.
- **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.

HDMI Output connectors: If your TV has an HDMI connector and you are connecting HDMI source devices to the AVR, use an HDMI cable (not included) to connect it to the AVR's HDMI Out connector.

Notes on using the HDMI Output connector:

- When connecting a DVI-equipped display to the HDMI 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.

Speaker connectors: Use two-conductor speaker wire to connect each set of terminals to the correct speaker. See *Connect Your Speakers*, on page 14, for more information.

Analog Video connectors: The following Analog Video connectors are provided:

- **Composite Video Input connectors:** Use composite video connectors for video source devices that don't have HDMI 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 16, for more information.
- **Composite Video Monitor Out connector:** If your TV or video display does not have an HDMI connector, or if your TV does have an HDMI connector but you are connecting some source devices with only composite video connectors, use a composite video cable (not included) to connect the AVR's Composite Video Monitor Out connector to your TV's composite video input.

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 16, for more information.

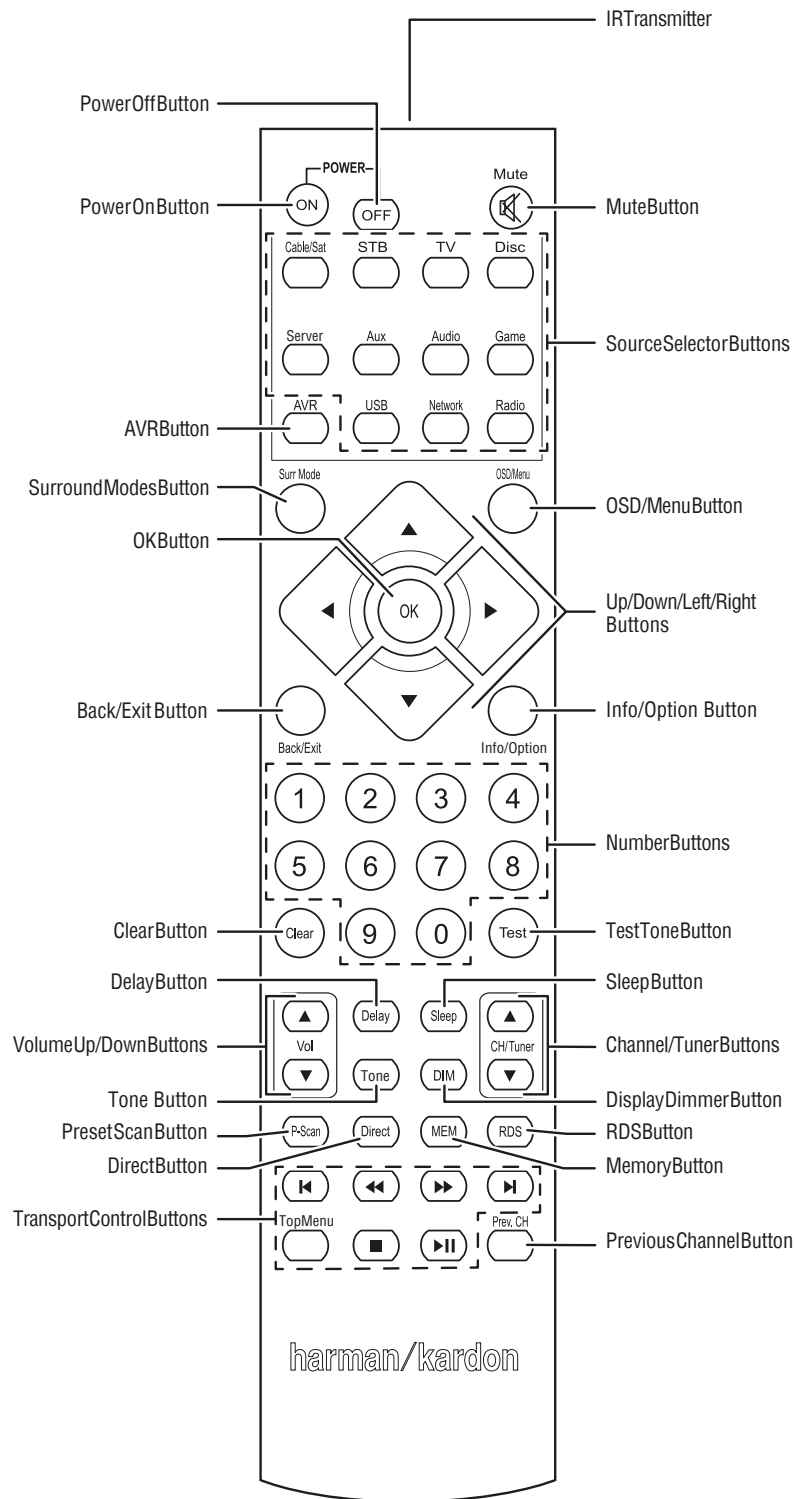
AC Input connector (AVR 151 only): After you have made and verified all other connections, plug the supplied AC power cord into this receptacle and into an unswitched wall outlet.

Power cord (AVR 151 only): After you have made and verified all other connections, plug the power cord into an unswitched wall outlet.



System Remote Control Functions

System Remote Control Functions





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 connected to the AVR's front-panel USB port. 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 20, 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: number buttons, transport controls, television-channel control, menu access and power on and off. Buttons dedicated to the AVR – AVR Power On/Off, Surround Modes, Volume, Mute, Delay and Sleep Settings – are available at any time, even when the remote is controlling another device.

Power On/Power Off buttons: Press these buttons to turn the AVR on and put it into Sleep or turn it off. See Power Indicator/Power Button, on page 5, for more information.

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

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.

Source Selector buttons: Press one of these buttons to select a source device, e.g., Disc, 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.

- The first press of the Radio button switches the AVR to the last-used tuner band (AM or FM). Each successive press changes the band.
- The first press of the USB button switches the AVR to the last-used source (USB or iPod). Each successive press cycles between the two sources.
- The first press of the Network button switches the AVR to the last-used source (Network or vTuner). Each successive press cycles between the two sources.

AVR button: Press to put the remote into the AVR control mode.

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 navigate to the Surround Mode menu in the AVR's on-screen display menu, select the desired category, and use the Left/Right buttons to select one of the available surround modes. See the Advanced Functions section, on page 30, for more information.

OSD/Menu button: When the remote is controlling the AVR, press this button to display the AVR's on-screen display (OSD) menu. This button is also used within the tuner menus and an iPod connected to the AVR's front-panel USB port, and is also used to display the main menu on some source devices.

OK button: This button is used to select items from the menu system. It is also used to toggle between the Manual and Automatic tuning modes for FM or AM radio. To toggle between these options, press and hold this button for more than 3 seconds.

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

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

Info/Option button: Press to display the available option settings for the current source.

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

Clear button: Press this button to clear a radio station frequency you have started to enter.

Test Tone button: Press this button to activate test noise that will circulate through each speaker, allowing you to adjust the individual speaker levels. Use the Up/Down buttons to switch the noise to a different speaker and use the Left/Right buttons to change the volume of the speaker the noise is playing through.

Delay Adjust button: Pressing this button lets you adjust two different types of delay settings (use the Up/Down buttons to cycle through the settings):

- **Lip Sync:** This setting lets you resynchronize the audio and video signals from a source to eliminate a "lip sync" problem. Lip-sync issues can occur when the video portion of a signal undergoes additional processing in either the source device or the video display. Use the Left/Right buttons to delay the audio by up to 180ms.
- **Distance:** These settings let you set the delay for each speaker to compensate for the different distances they may be from the listening position. Use the Up/Down buttons to cycle through each of the system's speakers, and use the Left/Right buttons to set the distance each speaker is from the listening position. See Configure the AVR for Your Speakers, on page 23, for more information.

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

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

Channel/Tuner buttons: When radio 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.

Tone button: Pressing this button lets you adjust the Tone settings for the current source. Use the Left/Right buttons to switch between On and Off, or to adjust the Bass or Treble from -10dB to +10dB. See Set Up Your Sources, on page 24, for more information.

Display Dimmer button: Press this button to dim the AVR's front-panel display partially or fully.

Preset Scan button: When Radio is the selected source, press this button to play each of your preset radio stations in order for five seconds. Pressing the button again to remain tuned to the current station.

Direct button: Press this button to directly tune to a radio station by using the Number buttons to enter its frequency.

Memory button: Press this button to save the current radio station as a preset.

RDS button: When listening to an FM radio station that broadcasts RDS information, this button activates the various RDS functions.

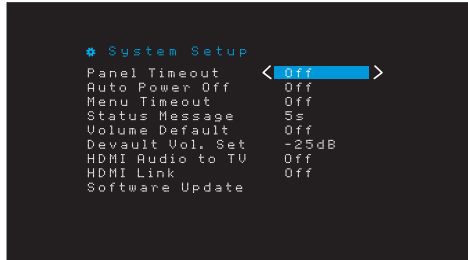
Transport Control buttons: These buttons are used to control source devices.

Previous Channel button: In AVR control mode, this button lets you adjust the output levels for each speaker individually. Use the Up/Down buttons to cycle through each speaker, and use the Left/Right buttons to set the level of that speaker. See Configure the AVR for Your Speakers, on page 23, for more information. When TV is the selected source, press this button to switch to the previously-tuned channel.



System Settings

The AVR's System Settings menu lets you customize in what way many of the AVR's features operate. Press the OSD/Menu button and navigate to the System line. Press the OK button to display the System Settings menu.



Panel Timeout: This setting allows you to set the AVR's front-panel display to automatically turn off after remaining on for a predetermined time (3 – 10 seconds) each time you use a control. Set this to "Off" to have the display remain on continually.

Auto Power Off: This setting allows you to set the AVR to automatically switch to the Off mode after being in the Sleep mode for a predetermined time (1 – 8 hours) and switch to the Sleep mode after this amount of time if a source with an analog audio input or internal source (FM, AM, USB, iPod, Home Network, vTuner or DMR) is active. See *Power Indicator/Power Button*, on page 5, for more information.

Menu Timeout: This setting allows you to set the amount of time (20 – 50 seconds) a menu screen will remain on after the last adjustment. Set this to "Off" to have the menus remain on continually until you press the OSD/Menu button.

Status Message: When the AVR is turned on, the volume is adjusted, the source is changed or a change in the input signal is detected, a status message will be displayed on the TV screen. Select how long the message remains visible, from 2 to 10 seconds, with a default of 3 seconds. Select "Off" if you do not wish to see the status messages on the TV screen (they will still appear on the AVR's front-panel message display).

Volume Default and Default Volume Setting: These two settings are used together to program the volume level when you turn on the AVR. Set Volume Default to On, and then set the Default Volume Setting to the desired turn-on volume. When Volume Default is set to Off, the AVR will turn on at the last-used volume setting from the previous listening session.

HDMI Audio to TV: This setting determines whether HDMI audio signals are passed through the HDMI Monitor Out connector to the video display. In normal operation, leave this setting at Off, as audio will be played through the AVR. To use the TV by itself, without the home theater system, turn this setting to On. In this case you will need to mute the TV's speakers (or switch the setting to Off) when using the AVR for audio.

HDMI Link: This setting allows the communication of control information among the HDMI devices in your system. Turn this setting to On to allow control communication between the HDMI devices; turn the setting to Off to forbid control communication. When this setting is set to Off, the TV source audio input is set to Optical. When this setting is set to On, the TV source audio input is set to HDMI ARC.

Software Update: If a software upgrade is released for your AVR, installation instructions will be available in the Product Support section of the Web site or from Harman Kardon customer service. At that time, you may use this submenu to install the upgrade software.

IMPORTANT: During a software upgrade, do not power off the AVR or use any of its controls. Doing so could permanently damage the AVR.

Sleep Timer

The sleep timer sets the AVR to play for up to 90 minutes and then turn off automatically.

Press the Sleep button on the remote, and the time until turn-off will be displayed. Each additional press of the Sleep button decreases the play time by 10 minutes, from 90 to 10 minutes. The SLEEP OFF setting disables the sleep timer.

When the sleep timer has been set, the front-panel display will automatically dim to half brightness.

If you press the Sleep button after the timer has been set, the remaining play time will be displayed. Press the Sleep button again to change the play time.

Processor Reset

If the AVR behaves erratically after a power surge, 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 speaker and level settings, and tuner presets. After a reset, reenter all of these settings from your entries in the Appendix worksheets.

To reset the AVR's processor:

1. Press the front-panel Standby/On switch for more than three seconds to turn the AVR off (the Power Indicator will turn amber).
2. Press and hold the front-panel Surround Modes 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 an authorized Harman Kardon service center for assistance. Authorized service centers may be located by visiting our Web site at www.harmankardon.com.



Symptom	Cause	Solution
Unit does not function	<ul style="list-style-type: none"> No AC power 	<ul style="list-style-type: none"> Ensure that the power cord is plugged into a live AC power outlet Check if the AC outlet is switch-controlled
Front-panel display lights, but there's no sound or picture	<ul style="list-style-type: none"> Intermittent input connection Mute is on Volume control is turned down 	<ul style="list-style-type: none"> Secure all input and speaker connections Press Mute button Turn up Volume control
No sound from any speaker	<ul style="list-style-type: none"> Amplifier is in protection mode due to possible short circuit Amplifier is in protection mode due to internal problems 	<ul style="list-style-type: none"> Check all speaker wires at speaker and AVR connections for crossed wires Contact your local Harman Kardon service center
No sound from center or surround speakers	<ul style="list-style-type: none"> Incorrect surround mode Program material is monophonic Incorrect speaker configuration Program material is stereo 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Weak batteries in remote Remote sensor is obscured 	<ul style="list-style-type: none"> Change batteries in remote Ensure that the AVR's front-panel remote sensor is in the line of sight of the remote
Intermittent buzzing in tuner	<ul style="list-style-type: none"> Local interference 	<ul style="list-style-type: none"> Move the AVR or antenna away from computers, fluorescent lights, motors or other electrical appliances
Unable to activate remote control Programming mode	<ul style="list-style-type: none"> Source Selector button is not held for at least 3 seconds 	<ul style="list-style-type: none"> Be sure to hold the Source Selector button for at least 3 seconds
Unable to establish network connection	<ul style="list-style-type: none"> AVR network programming requires rebooting 	<ul style="list-style-type: none"> Cycle the AVR into the Off 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



Specifications

Specifications

Audio Section

Stereo power:	75W per channel, two channels driven @ 6/8 ohms, 1kHz, <0.9% THD
Multichannel power:	75W per channel, two channels driven @ 6/8 ohms, 1kHz, <0.9% THD
Input sensitivity/impedance:	250mV/27k 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):	±28 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:	80dB

AM Tuner Section

Frequency range:	520 – 1710kHz (AVR 1510) 522 – 1620kHz (AVR 151)
Signal-to-noise ratio:	38dB
Usable sensitivity (loop):	500μV
Distortion (1kHz, 50% mod):	1.0%
Selectivity (±10kHz):	30dB

Video Section

Television format:	NTSC (AVR 1510); PAL (AVR 151)
Input level/impedance:	1Vp-p/75 ohms
Output level/impedance:	1Vp-p/75 ohms
Videofrequencyresponse(composite video):	10Hz – 8MHz (–3dB)
HDMI:	HDMI 1.4

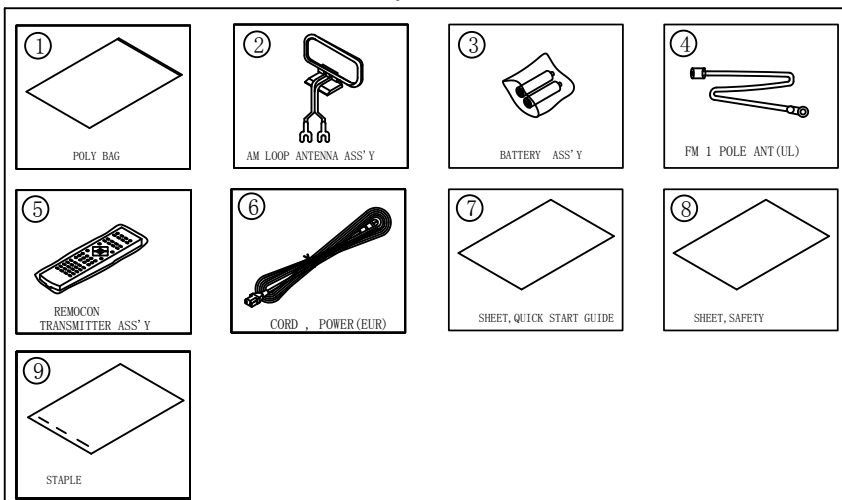
General Specifications

Power requirement:	120V AC/60Hz (AVR 1510); 220V – 240V AC/50Hz – 60Hz (AVR 151)
Power consumption:	<0.5W (standby); 410W maximum
Dimensions (W x H x D):	17-5/16" x 4-3/4" x 11-13/16" (440mm x 121mm x 300mm)
Weight	10 lb (4.6kg)

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

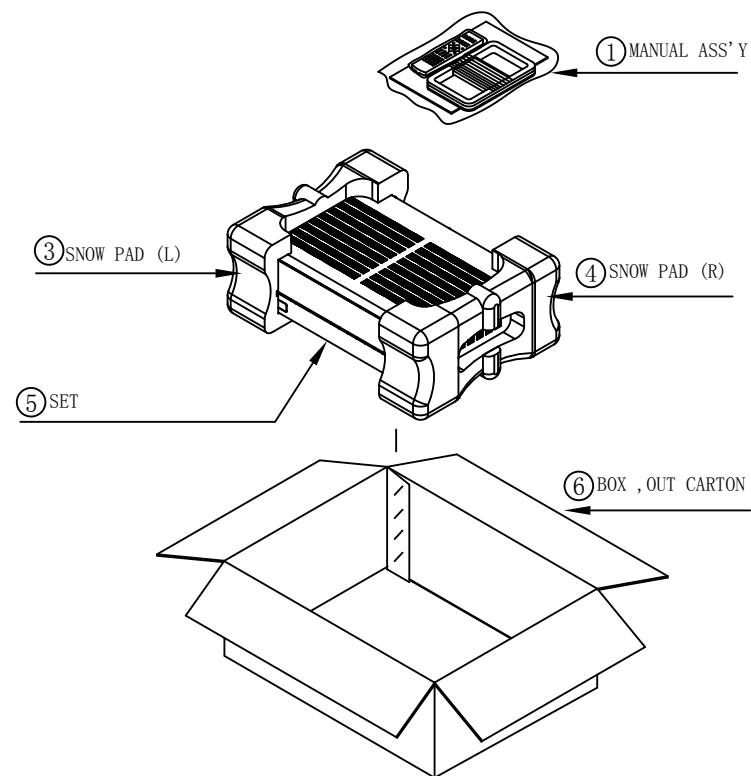
AVR151/230

1. Instruction manual ass'y - Accessories(CQXAVR151/230)



NO	DESCRIPTION	PARTS NO.	Q, ty
1	POLY BAG	CPB1A190Z	1
2	ANT, AM LOOP(9.5uH/5T)	CSA1A039Z	1
3	BATTERY	CABR03PPB	2
4	FM 1 POL ANT	CSA1A018Z	1
5	REMOCON ASS'Y	CARTAVR151-HK	1
6	CORD, POWER (PLUG+SOCKET)	CJA2B120Z	1
7	SHEET, QUICK START GUIDE	CQE1A570Z	1
8	SHEET, SAFETY	CQE1A601Z	1
9	STAPLE	CPL0905	3

2. Package Drawing

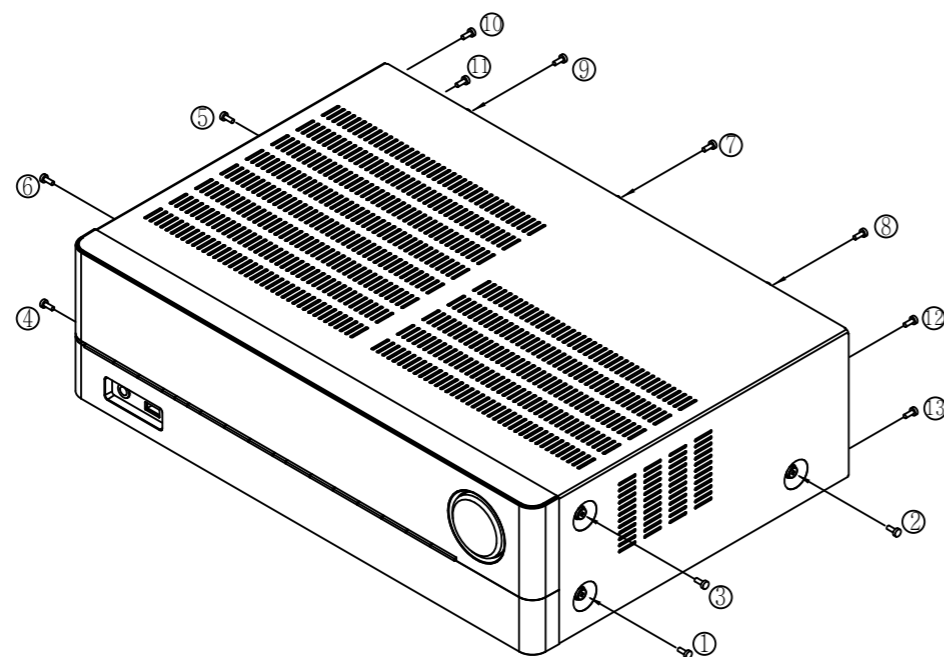


NO	DESCRIPTION	PARTS NO.	Q, ty
1	MANUAL ASS'Y	CQXAVR151/230	1
2	PAD, LEFT	CPS1A930	1
3	PAD, RIGHT	CPS1A931	1
4	SET	AVR151/230SET	1
5	BOX, OUT CARTON	CPGLA972W	1

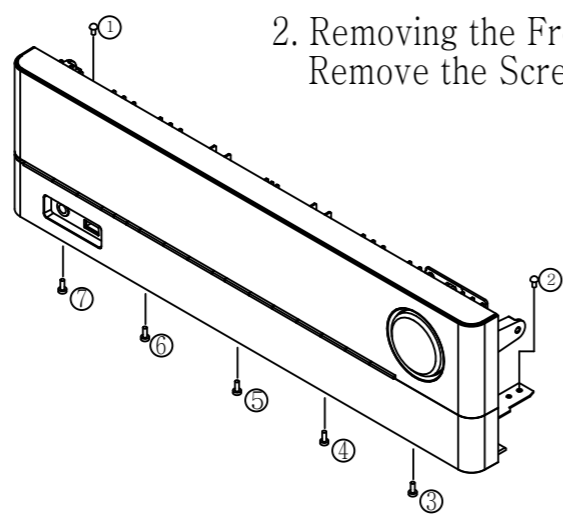
DISASSEMBLY

AVR151/230

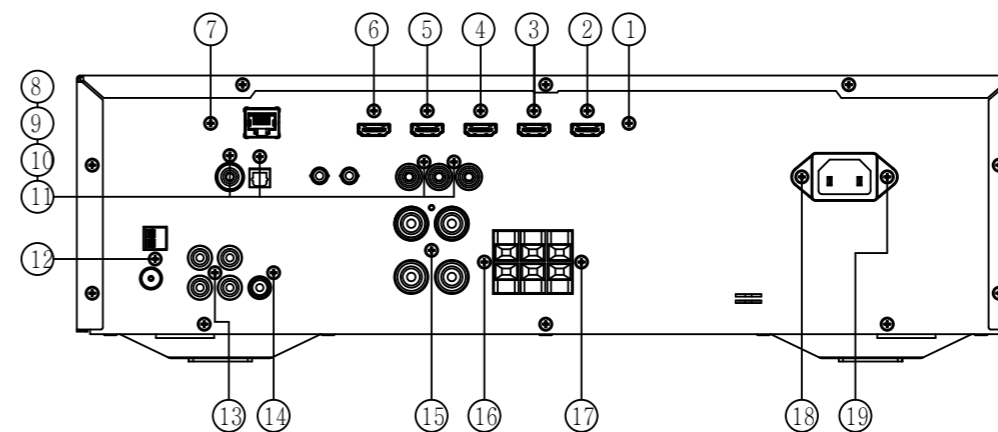
1. Removing the Top Cabinet
Remove the Screws ①-⑬



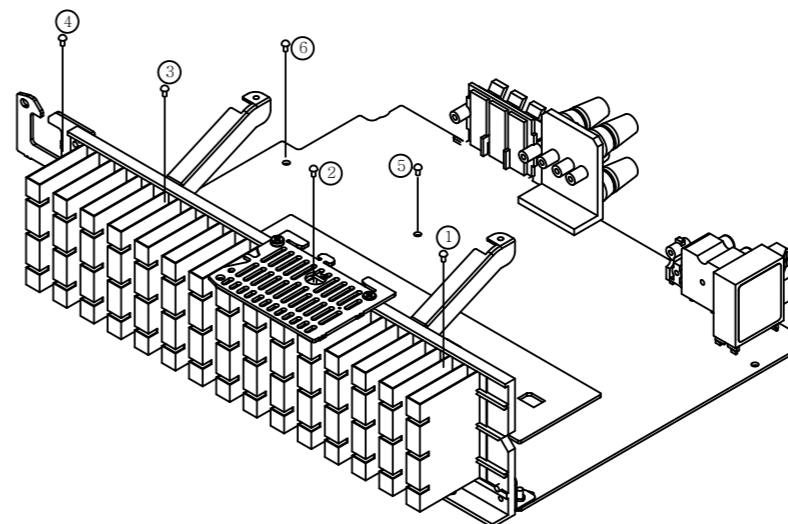
2. Removing the Front Panel
Remove the Screws ①-⑦



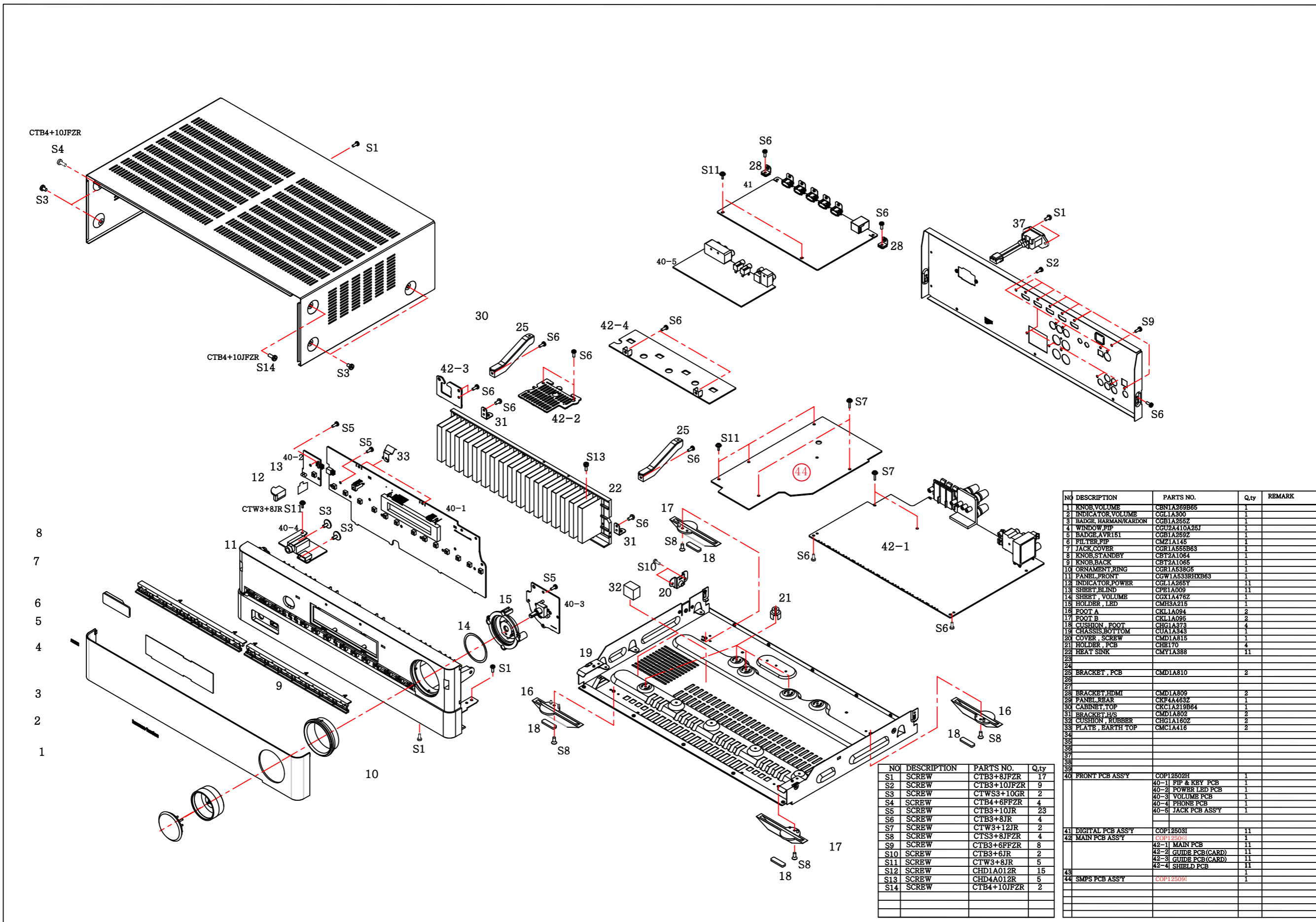
3. Removing the Rear Panel
Remove the Screws ①-⑱



4. Removing the Main PCB
Remove the Screws ①-⑥



AVR151/230 EXPLODED VIEW



NO	DESCRIPTION	PARTS NO.	Qty	REMARK
1	KNOB,VOLUME	CBN1A269B65	1	
2	INDICATOR,VOLUME	CGL1A300	1	
3	BADGE,HARMAN/KARDON	CGB1A265Z	1	
4	WINDOW,PIP	CGU2A410A25J	1	
5	BADGE,AVR151	COB1A255Z	1	
6	FILTER,PIP	CMZ1A145	1	
7	JACK COVER	CCR1A565B63	1	
8	KNOB,STANDBY	CBT2A1064	1	
9	KNOB,BACK	CBT2A1065	1	
10	ORNAMENT,RING	CGR1A5365	1	
11	PANEL,FRONT	CGW1A533RHXB63	1	
12	INDICATOR,POWER	CGL1A285Y	11	
13	SHBET,BLIND	CPB1A009	11	
14	SHBET,VOLUME	CGX1A476Z	1	
15	HOLDER,LED	CMH3A215	1	
16	FOOT,A	CKL1A084	2	
17	FOOT,B	CKL1A085	2	
18	CUSHION,FOOT	CHG1A373	4	
19	CHASSIS,BOTTOM	CUA1A343	1	
20	COVER,SCREW	CMD1A815	1	
21	HOLDER,PCB	CHB170	4	
22	HEAT SINK	CMY1A388	11	
23				
24				
25	BRACKET,PCB	CMD1A810	2	
26				
27				
28	BRACKET,HDMI	CMD1A809	2	
29	PANEL,REAR	CKF4A483Z	1	
30	CABINET,TOP	CKC1A219B64	1	
31	BRACKET,H/S	CMD1A802	2	
32	CUSHION,ROBBER	CHG1A160Z	2	
33	PLATE,EARTH TOP	CMC1A416	2	
34				
35				
36				
37				
38				
39				
40	FRONT PCB ASS'Y	COP12502H	1	
		40-1 PIP & KEY PCB	1	
		40-2 POWER LED PCB	1	
		40-3 VOLUME PCB	1	
		40-4 PHONE PCB	1	
		40-5 JACK PCB ASS'Y	1	
41	DIGITAL PCB ASS'Y	COP12503I	11	
42	MAIN PCB ASS'Y	COP12501H	11	
		42-1 MAIN PCB	11	
		42-2 GUIDE PCB(CARD)	11	
		42-3 GUIDE PCB(CARD)	11	
		42-4 SHIELD PCB	11	
43			1	
44	SMPS PCB ASS'Y	COP12509H	1	

NO	DESCRIPTION	PARTS NO.	Qty
S1	SCREW	CTB3+8JFZR	17
S2	SCREW	CTB3+10JFZR	9
S3	SCREW	CTWS3+10GR	2
S4	SCREW	CTB4+6PFZR	4
S5	SCREW	CTB3+10JR	23
S6	SCREW	CTB3+8JR	4
S7	SCREW	CTW3+12JR	2
S8	SCREW	CTS3+8JFZR	4
S9	SCREW	CTB3+6PFZR	8
S10	SCREW	CTB3+6JR	2
S11	SCREW	CTW3+8JR	5
S12	SCREW	CHD1A012R	15
S13	SCREW	CHD4A012R	5
S14	SCREW	CTB4+10JFZR	2

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-QTY
..2		CBN1A269B65	KNOB , VOLUME		1
..2		CGL1A300	INDICATOR , VOLUME		1
..2		CGR1A555B63	COVER , JACK AVR1510		1
..2		CGWAVR151/230	FRONT PANEL ASS'Y		1
...3		CBT2A1064	KNOB , STANDBY		1
...3		CBT2A1065	KNOB , BACK		1
...3		CGB1A255Z	BADGE , HARMAN/KARDON		1
...3		CGB1A259Z	BADGE , AVR151		1
...3		CGL1A265Y	INDICATOR , POWER AVR155		1
...3		CGR1A538G5	ORNAMENT , RING		1
...3		CGU2A410A25J	WINDOW , FIP AVR170/230		1
...3		CGW1A533RHXB63	PANEL , FRONT AVR1510		1
...3		CGX1A476Z	SHEET , VOLUME		1
...3		CMC1A416	PLATE , EARTH TOP		2
...3		CMH3A215	HOLDER , LED		1
...3		CMZ1A145	FILTER AVR1510		1
...3		COP12502H	AVR1510 FRONT PCB ASS'Y		1
.....6	C109	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C121	CCUS1H151JA	CAP , CHIP(1608, 50V/150pF)		1
.....6	C151	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C213	CCUS1H223KC	CAP , CHIP(1608, 50V/0.022uF)		1
.....6	C214	CCUS1H223KC	CAP , CHIP(1608, 50V/0.022uF)		1
.....6	C311	CCUS1H102KC	CAP , CHIP(1608, 50V/1000pF)		1
.....6	C322	CCUS1H102KC	CAP , CHIP(1608, 50V/1000pF)		1
.....6	C351	CCUS1H181JA	CAP , CHIP(1608, 50V/180pF)	1608 SIZE	1
.....6	C352	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C361	CCUS1H103KC	CAP , CHIP(1608, 50V/0.01uF)	1608 SIZE	1
.....6	C362	CCUS1H103KC	CAP , CHIP(1608, 50V/0.01uF)	1608 SIZE	1
.....6	C363	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C364	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C365	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C366	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C421	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C422	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C423	CCUS1H680JA	CAP , CHIP(1608, 50V/68pF)		1
.....6	C431	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C441	CCUS1H223KC	CAP , CHIP(1608, 50V/0.022uF)		1
.....6	C442	CCUS1H223KC	CAP , CHIP(1608, 50V/0.022uF)		1
.....6	C451	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C456	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C557	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C558	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C601	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C602	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C603	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C604	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C605	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C644	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C645	CCUS1H471JA	CAP , CHIP(1608, 50V/470pF)		1
.....6	C646	CCUS1H471JA	CAP , CHIP(1608, 50V/470pF)		1
.....6	C647	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C714	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C715	CCUS0J475KC	CAP , CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D	1
.....6	C732	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C751	CCUS1H222KC	CAP , CHIP(1608, 50V/2200pF)		1
.....6	C752	CCUS1H102KC	CAP , CHIP(1608, 50V/1000pF)		1
.....6	C753	CCUS1H102KC	CAP , CHIP(1608, 50V/1000pF)		1
.....6	C754	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C911	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C912	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C923	CCUS1H681JA	CAP , CHIP(1608, 50V/680pF)		1
.....6	C924	CCUS1H681JA	CAP , CHIP(1608, 50V/680pF)		1
.....6	C951	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	C952	CCUS1H104KC	CAP , CHIP(1608, 50V/0.1uF)		1
.....6	D1	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	D2	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	D361	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	D362	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	D363	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	D643	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	D644	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....6	IC13	CVISN74ACT04DR	I.C , HEX INVERTERS(SOIC/D-14P)	SN74ACT04DR	1
.....6	IC421	HVINJM2244MTE1	I.C , VIDEO SWITCH	QRW-6500	1
.....6	IC91	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	IC92	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	I451	HLZ92014Z	CHIP , BEAD	HU-1M4516-600JT	1
.....6	Q111	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....6	Q112	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....6	Q113	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....6	Q114	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....6	Q252	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....6	Q362	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C	1
.....6	Q363	CVTRT1P141C	T.R,RT1P141C(10K-10K)	RT1P141C-T112-1	1
.....6	Q373	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....6	Q721	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....6	Q906	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....6	Q907	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-QTY
...	3	COP12502H	AVR1510 FRONT PCB ASS'Y		1
...	6	R101	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
...	6	R102	CRJ10DJ681T	RES, CHIP(1608/5%/680ohm)	00200-0120
...	6	R104	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R108	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R109	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R110	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R111	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R112	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R113	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R114	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R122	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
...	6	R151	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R201	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R202	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R203	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R211	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R213	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
...	6	R214	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
...	6	R251	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)	00200-0142
...	6	R252	CRJ10DJ393T	RES, CHIP(1608/5%/39Kohm)	
...	6	R312	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	RM06FB1K
...	6	R313	CRJ10DF1501T	RES, CHIP(1608/1%/1.5Kohm)	1.5K /1/10W/F
...	6	R314	CRJ10DF1801T	RES, CHIP(1608/1%/1.8Kohm)	1.8K /1/10W/F
...	6	R315	CRJ10DF2701T	RES, CHIP(1608/1%/2.7Kohm)	RM06FB2K7
...	6	R316	CRJ10DF3301T	RES, CHIP(1608/1%/3.3Kohm)	
...	6	R322	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	RM06FB1K
...	6	R323	CRJ10DF1501T	RES, CHIP(1608/1%/1.5Kohm)	1.5K /1/10W/F
...	6	R324	CRJ10DF1801T	RES, CHIP(1608/1%/1.8Kohm)	1.8K /1/10W/F
...	6	R325	CRJ10DF2701T	RES, CHIP(1608/1%/2.7Kohm)	RM06FB2K7
...	6	R326	CRJ10DF3301T	RES, CHIP(1608/1%/3.3Kohm)	
...	6	R327	CRJ10DF5601T	RES, CHIP(1608/1%/5.6Kohm)	00200-0234
...	6	R328	CRJ10DF5601T	RES, CHIP(1608/1%/5.6Kohm)	00200-0234
...	6	R351	CRJ10DJ750T	RES, CHIP(1608/5%/75ohm)	1608 SIZE
...	6	R352	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R361	CRJ10DJ1R0T	RES, CHIP(1608/5%/1ohm)	1608 SIZE
...	6	R362	CRJ10DJ1R0T	RES, CHIP(1608/5%/1ohm)	1608 SIZE
...	6	R363	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R364	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)	00200-0099
...	6	R365	CRJ10DJ4R7T	RES, CHIP(1608/5%/4.7ohm)	00200-0099
...	6	R366	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R367	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R368	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
...	6	R375	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R376	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
...	6	R377	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
...	6	R402	CRJ14CJ4R7T	RES, CHIP(3216/5%/4.7ohm)	3216
...	6	R404	CRJ14CJ4R7T	RES, CHIP(3216/5%/4.7ohm)	3216
...	6	R413	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R421	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
...	6	R422	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
...	6	R423	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
...	6	R424	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R425	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R426	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R431	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
...	6	R432	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
...	6	R451	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
...	6	R452	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
...	6	R453	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
...	6	R454	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
...	6	R455	CRJ14CJ101T	RES, CHIP(3216/5%/100ohm)	3216
...	6	R456	CRJ14CJ101T	RES, CHIP(3216/5%/100ohm)	3216
...	6	R457	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R601	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R602	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R603	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R604	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R605	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R641	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R643	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R644	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
...	6	R701	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
...	6	R702	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
...	6	R703	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
...	6	R711	CRJ10DJ470T	RES, CHIP(1608/5%/47ohm)	00200-0098
...	6	R712	CRJ10DJ470T	RES, CHIP(1608/5%/47ohm)	00200-0098
...	6	R713	CRJ10DJ470T	RES, CHIP(1608/5%/47ohm)	00200-0098
...	6	R721	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
...	6	R722	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R731	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
...	6	R735	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
...	6	R741	CRJ10DJ123T	RES, CHIP(1608/5%/12Kohm)	1608 SIZE
...	6	R742	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
...	6	R901	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R902	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
...	6	R921	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
...	6	R922	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
...3		COP12502H	AVR1510 FRONT PCB ASS'Y		1
.....6	R923	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....6	R924	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....6	R925	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R926	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R931	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R932	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R933	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101	1
.....6	R934	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101	1
.....6	R935	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101	1
.....6	R936	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101	1
.....6	R941	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R942	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R943	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R944	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R951	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R952	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	ZD451	HVDUDZ55.6BSR	DIODE, ZENER(CHIP,5.6V)	UDZSTE-175.6B	1
.....6	ZD452	HVDUDZ55.6BSR	DIODE, ZENER(CHIP,5.6V)	UDZSTE-175.6B	1
.....6	ZD453	HVDUDZ55.6BSR	DIODE, ZENER(CHIP,5.6V)	UDZSTE-175.6B	1
.....5	C108	CCEA1AH471TC	CAP, ELECT(10V/470uF)		1
.....5	C122	CCEA1AKS331TC	CAP, ELECT(10V/330uF)-S		1
.....5	C152	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C251	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C252	CCEA1HKS2R2TC	CAP, ELECT(50V/2.2uF)-S		1
.....5	C401	CCEA1HH470TC	CAP, ELECT(50V/47uF)		1
.....5	C424	CCEA1AH471TC	CAP, ELECT(10V/470uF)		1
.....5	C425	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C426	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C452	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C453	CCEA1JH470TCS	CAP, ELECT(63V/47uF),105°C		1
.....5	C454	CCME2E273X14T	CAP, POLYESTER FILM(250V/0.027UF, 5%)		1
.....5	C455	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C556	CCEA1AKS331TC	CAP, ELECT(10V/330uF)-S		1
.....5	C559	CCEA1AKS331TC	CAP, ELECT(10V/330uF)-S		1
.....5	C721	CCEA1HKS2R2TC	CAP, ELECT(50V/2.2uF)-S		1
.....5	C731	CCEA1AH471TC	CAP, ELECT(10V/470uF)		1
.....5	C901	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C902	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C931	CCEA1CH331TC	CAP, ELECT(16V/330uF)		1
.....5	C932	CCEA1CH331TC	CAP, ELECT(16V/330uF)		1
.....5	C933	CCEA1VKS470TCS	CAP, ELECT(35V/47uF, 105°C)-S		1
.....5	C944	CCEA1VKS470TCS	CAP, ELECT(35V/47uF, 105°C)-S		1
.....5	ET90	CJT1A026	PLATE, EARTH(TRONIC ELECTRONICS)		1
.....5	L452	CLZ921122	COIL, CHOKE (220uH)		1
.....5	Q251	HVTKTA1271YT	T.R	KTA1271-Y-AT/P	1
.....5	Q361	HVTKTA1266YT	T.R	KTA1266-Y-AT/PJ	1
.....5	Q451	CVTKTC1027YT	T.R	KTC1027Y	1
.....5	Q452	CVTKTC1027YT	T.R	KTC1027Y	1
.....5	S311	CST1A0242T	SW, TACT		1
.....5	S312	CST1A0242T	SW, TACT		1
.....5	S313	CST1A0242T	SW, TACT		1
.....5	S314	CST1A0242T	SW, TACT		1
.....5	S315	CST1A0242T	SW, TACT		1
.....5	S316	CST1A0242T	SW, TACT		1
.....5	S317	CST1A0242T	SW, TACT		1
.....5	S318	CST1A0242T	SW, TACT		1
.....5	S319	CST1A0242T	SW, TACT		1
.....5	S320	CST1A0242T	SW, TACT		1
.....5	S321	CST1A0242T	SW, TACT		1
.....5	S322	CST1A0242T	SW, TACT		1
.....5	S323	CST1A0242T	SW, TACT		1
.....5	S330	CST1A0242T	SW, TACT		1
.....4	BK30	CMD1A775	BRACKET, SHIELD		1
.....4	BK71	CMD1A572-V1	BRACKET, FIP		1
.....4	BK72	CMD1A572-V1	BRACKET, FIP		1
.....4	BN71	CWB1B007150HC	WIRE ASS'Y Locking (YH) (7P,2MM,150MM,#26)		1
.....4	BN72	CWB1B005100HC	WIRE ASS'Y Locking (YH) (5P,2MM,100MM,26#)		1
.....4	BN73	CJP06GB1422B	PIN HEADER(6P, 2.54mm)		1
.....4	BN76	CWB1C207380H6001	WIRE ASS'Y (7P, 2.0mm,380mm,Shield_ANGLE)_usb		1
.....4	BN78	CWB1B005100HC	WIRE ASS'Y Locking (YH) (5P,2MM,100MM,26#)		1
.....4	CN72	CJP05GJ288ZY	LOCK-WAFER/ANGLE/2MM PITCH/SPIN		1
.....4	CN73	CJP06GB1432B	FEMALE HEADER(6P, 2.54mm)		1
.....4	CN78	CJP05GI236ZW	LOCKING TYPE , STRAIGHT WAFER , 2mm	A2008WV0-5P	1
.....4	D101	CVD1L0345W31BOCT201V	L.E.D , WHITE		1
.....4	D102	CVD30ASOGCAA-S7	L.E.D , ORANGE		1
.....4	D201	CVD1L0345W31BOCT201V	L.E.D , WHITE		1
.....4	D202	CVD1L0345W31BOCT201V	L.E.D , WHITE		1
.....4	D203	CVD1L0345W31BOCT201V	L.E.D , WHITE		1
.....4	FIP1	CFL162SD19GINK	V.F.D , (FUTABA, 162-SD-19GINK)	162SD19GINK	1
.....4	IC12	CRVKS603TE58	SENSOR, REMOCON		1
.....4	IC15	HVINJM4556AL	I.C , HEADPHONE (URC)	NJM4556AL	1
.....4	IC371	BVVKP1010B	IC, PHOTO COUPLER (COSMO)		1
.....4	JK351	CJ4M044X	JACK, RCA (1P,RCA-115A-04)	RCA-115A-04	1
.....4	JK352	CJ5JR1124	MODULE , OPTICAL(RX 16MHz)		1
.....4	JK401	CJ4S010Z	JACK , BOARD	RCA-325A-02	1
.....4	JK402	CJ2D008Z	JACK, STEREO (BLK MOLD)	PJ-308-02	1
.....4	JK403	CJ2D008Z	JACK, STEREO (BLK MOLD)	PJ-308-02	1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-Qty
...	3	COP12502H	AVR1510 FRONT PCB ASS'Y		1
...	4	JK53	CJ9X012Z JACK , USB (ANGLE TYPE)		1
...	4	JK64	CJ2E026Z JACK, PHONES(6.35mm,SILVER)	PJ-612A-51	1
...	4	JW19	CWE8202150RV WIRE ASS'Y	HTS-5000	1
...	4	JW20	CWE8202120RV WIRE ASS'Y	PM-4200	1
...	4	JW21	CWE5202080A WIRE ASS'Y (1P, 80MM,BLK,#22)		1
...	4	TF94	CLT9Z092ZE TRANS ,DC-AC (AVR1X1)		1
...	4	VR74	CSR2A037Z ENCODER		1
...	4	WF31	CJP11GA285ZN WAFER, FFC(11P-1.25mm, STRAIGHT)		1
...	4	WF70	CJP23GA285ZN WAFER,FFC 1.25mm,straight		1
...	3	CPE1A009	SHEET , BLIND		1
...	3	CTB3+10JR	SCREW		28
...	3	CTWS3+10GR	SCREW		2
...	3	CWCG64A23B220B10	CARD , CABLE (23P,1.25mm,220mm,B,10mm)		1
...	2	CKC1A219B64	CABINET, TOP AVR1510		1
...	2	CQB1A549Y	LABEL , ATTENTION DVD48		1
...	2	CQB1A622	LABEL , SERIAL NO	DVD-310	1
...	2	CTB3+8JFZR	SCREW		15
...	2	CTB4+10JFZR	SCREW		2
...	2	CTB4+6FFZR	SCREW		4
...	2	CUAAVR151/230	BOTTOM CHASSIS ASS'Y		1
...	3	CHD4A012R	SCREW , SPECIAL		4
...	3	CHE170	HOLDER , PCB	ALL MODEL	4
...	3	CHG1A373	CUSHION , FOOT AVR350		4
...	3	CHS1A032	TAPE , HEMELON		4
...	3	CKF4A463Z	PANEL , REAR AVR151		1
...	3	CKL1A094	FOOT , A AVR350		2
...	3	CKL1A095	FOOT , B AVR350		2
...	3	CMD1A809	BRACKET , HDMI		2
...	3	CMD1A815	COVER , SCREW		1
...	3	COP12503I	AVR151/230 DIGITAL PCB ASS'Y (EUR)		1
...	7	C1008	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1009	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1010	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1011	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1012	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1013	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1014	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1015	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1016	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1017	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1018	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1019	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1020	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1021	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1022	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1023	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1024	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1025	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1026	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1027	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1028	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1029	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1030	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1031	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1032	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1033	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1034	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1035	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1036	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1037	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1038	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1039	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1040	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1041	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1042	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1043	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1044	CCUI1E103KC CAP, CHIP(1005, 25V/0.01uF)	0402B103K250HI	1
...	7	C1045	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1046	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1047	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1048	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1049	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1053	CCUS1A105KC CAP, CHIP(1608, 10V/1uF)		1
...	7	C1054	CCUS1A105KC CAP, CHIP(1608, 10V/1uF)		1
...	7	C1101	CCUC1A226KC CAP, CHIP(2012, 10V/22uF)		1
...	7	C1102	CCUS1H103KC CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE	1
...	7	C1105	CCUI1C104KC CAP, CHIP(1005, 16V/0.1uF)		1
...	7	C1108	CCUS1H104KC CAP, CHIP(1608, 50V/0.1uF)		1
...	7	C1113	CCUS1H104KC CAP, CHIP(1608, 50V/0.1uF)		1
...	7	C1114	CCUS1H104KC CAP, CHIP(1608, 50V/0.1uF)		1
...	7	C1119	CCUC0J106KC CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
...	7	C1120	CCUS1H222KC CAP, CHIP(1608, 50V/2200pF)		1
...	7	C1121	CCUS1H222KC CAP, CHIP(1608, 50V/2200pF)		1
...	7	C1130	CCUS1H104KC CAP, CHIP(1608, 50V/0.1uF)		1
...	7	C1132	CCUP0J226KC CAP, CHIP(3216, 6.3V/22uF)		1
...	7	C1134	CCUS1H103KC CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE	1
...	7	C1137	CCUS1A105KC CAP, CHIP(1608, 10V/1uF)		1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-Qty
...	3	COP12502H	AVR1510 FRONT PCB ASS'Y		1
.....	7	C1140	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1144	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1146	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....	7	C1147	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1148	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....	7	C1149	CCUS1H680JA	CAP, CHIP(1608, 50V/68pF)	
.....	7	C1150	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1151	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1152	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1153	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1154	CCUS1H680JA	CAP, CHIP(1608, 50V/68pF)	
.....	7	C1155	CCUS1H100JA	CAP, CHIP(1608, 50V/10pF)	
.....	7	C1157	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1158	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....	7	C1159	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1165	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1166	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1167	CCUS1H680JA	CAP, CHIP(1608, 50V/68pF)	
.....	7	C1168	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1169	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1170	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1171	CCUS1H680JA	CAP, CHIP(1608, 50V/68pF)	
.....	7	C1172	CCUS0J225KC	CAP, CHIP(1608, 6.3V/2.2uF)	
.....	7	C1190	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1191	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1202	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1204	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1206	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1212	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1213	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1215	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1222	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1233	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1241	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1244	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1245	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1248	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1301	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
.....	7	C1302	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....	7	C1303	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1304	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....	7	C1307	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1308	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
.....	7	C1309	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....	7	C1310	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1311	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....	7	C1313	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1314	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....	7	C1317	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1318	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1319	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1322	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1323	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1324	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1325	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....	7	C1326	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)	
.....	7	C1327	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1328	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1329	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1330	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1331	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1333	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1350	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1351	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1354	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....	7	C1355	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1357	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1358	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1359	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1360	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1361	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1362	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1364	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1365	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1366	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1367	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1368	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1369	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1370	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1371	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1372	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1373	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1374	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1375	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1376	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1377	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....	7	C1378	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-QTY
...	3	COP12502H	AVR1510 FRONT PCB ASSY		1
.....	7	C1379	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1382	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1384	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1387	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1389	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1402	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	1
.....	7	C1403	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	1
.....	7	C1404	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	1
.....	7	C1405	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1406	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1409	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1410	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	1
.....	7	C1412	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	1
.....	7	C1413	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	1
.....	7	C1414	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1415	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1416	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	1
.....	7	C1417	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1418	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1419	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1420	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1421	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1422	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1423	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1424	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1425	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1426	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1427	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1430	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....	7	C1450	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	1
.....	7	C1451	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....	7	C1456	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1457	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	1
.....	7	C1505	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	1
.....	7	C1506	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	1
.....	7	C1508	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	1
.....	7	C1509	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	1
.....	7	C1513	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1514	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1519	CCUS1H683KC	CAP, CHIP(1608, 50V/0.068uF)	1
.....	7	C1520	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	1
.....	7	C1522	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)	1
.....	7	C1523	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	1
.....	7	C1527	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1528	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1533	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	1
.....	7	C1534	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	1
.....	7	C1536	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	1
.....	7	C1537	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	1
.....	7	C1541	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1542	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....	7	C1549	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	1
.....	7	C1550	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	1
.....	7	C1551	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	1
.....	7	C1554	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	1
.....	7	D1401	CVDBAR43C	DIODE, SCHOTTKY	BAR43CFILM
.....	7	D1402	CVD1S355T	DIODE, CHIP, SWITCHING	1S355(T/B)
.....	7	D1403	CVD1S355T	DIODE, CHIP, SWITCHING	1S355(T/B)
.....	7	D1501	CVD1S355T	DIODE, CHIP, SWITCHING	1S355(T/B)
.....	7	D1502	CVD1S355T	DIODE, CHIP, SWITCHING	1S355(T/B)
.....	7	D1507	HVDUDZ53.3B5R	DIODE, ZENER(CHIP,3.3V)	UDZSTE-173.3B
.....	7	F1301	CRTMINISMD200F	SW, POLY (RESETTING 2A 0.02 OHM 1W 4532)	MINISMD200F
.....	7	IC1102	CVIMF133753959-HK	IC, Apple iPod Authentication coprocessor 2.0c	MFI33753959
.....	7	IC1104	CVIPCM5100PWR	I.C., 2CH DAC(32BIT,384KHZ,TSSOP-20P)	
.....	7	IC1107	CVIANAM1786AV	I.C., SERIAL DATA FLASH(32M)	
.....	7	IC1306	HVINJM2115MDTE1	IC, OP AMP	NJM2115M
.....	7	IC1307	HVINJM2115MDTE1	IC, OP AMP	NJM2115M
.....	7	IC1404	CVICAT24C32WI-GT3	I.C, EEPROM, 32K	CAT24C32WI-GT3
.....	7	IC1406	CVICAT809RTBI-GT3	I.C., RESET IC (2.63V, SOT-23-3)	CAT809RTBI-GT3
.....	7	L1001	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1002	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1003	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1004	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1005	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1006	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1007	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1008	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1106	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....	7	L1108	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....	7	L1115	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....	7	L1116	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1117	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1118	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1120	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1121	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....	7	L1204	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....	7	L1205	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60

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Level	Ref#	Component	Description	Drawing No	REQ-Qty	
...	3	COP12502H	AVR1510 FRONT PCB ASS'Y		1	
.....	7	L1207	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....	7	L1214	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....	7	L1217	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....	7	L1304	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)		1
.....	7	L1501	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)		1
.....	7	Q1001	CVTRT1P141C	T.R,RT1P141C(10K-10K)	RT1P141C-T112-1	1
.....	7	Q1002	CVTRT1N241C	T.R,RT1N241C(22K-22K)	RT1N241C-T112-1	1
.....	7	Q1006	CVTRT1N241C	T.R,RT1N241C(22K-22K)	RT1N241C-T112-1	1
.....	7	Q1008	CVTRT1N241C	T.R,RT1N241C(22K-22K)	RT1N241C-T112-1	1
.....	7	Q1101	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1301	CVTRT1N241C	T.R,RT1N241C(22K-22K)	RT1N241C-T112-1	1
.....	7	Q1401	CVTINC2001AC1	T.R , MUTE	INC2001AC1	1
.....	7	Q1402	CVT25C3052	T.R,25C3052	25C3052	1
.....	7	Q1403	CVT25C3052	T.R,25C3052	25C3052	1
.....	7	Q1404	HVTKTA15045YRTK	T.R , CHIP , SOT-23	KTA15045-Y-RTK/P	1
.....	7	Q1405	HVTKTC38755YRTK	T.R , CHIP , SOT-23	KTC38755-Y-RTK/P	1
.....	7	Q1406	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1407	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1408	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1501	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....	7	Q1502	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....	7	Q1503	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1504	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1505	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....	7	Q1506	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....	7	Q1507	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....	7	Q1508	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....	7	Q1509	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1510	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1511	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1515	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1	1
.....	7	Q1516	CVTMMBT5401	High Voltage PNP Transistors(SOT-23)		1
.....	7	Q1517	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....	7	Q1518	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....	7	R1004	CRJ06J102T	RES, CHIP(1005/5%/1Kohm)	RM04JC1K	1
.....	7	R1017	CRJ06J102T	RES, CHIP(1005/5%/1Kohm)	RM04JC1K	1
.....	7	R1023	CRJ06J102T	RES, CHIP(1005/5%/1Kohm)	RM04JC1K	1
.....	7	R1025	CRJ06J103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K	1
.....	7	R1026	CRJ06J103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K	1
.....	7	R1028	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....	7	R1029	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....	7	R1030	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....	7	R1031	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....	7	R1041	CRJ06J472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC47K	1
.....	7	R1042	CRJ06J472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC47K	1
.....	7	R1043	CRJ06J472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC47K	1
.....	7	R1046	CRJ06J103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K	1
.....	7	R1047	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....	7	R1054	CRJ10DJ5R1T	RES, CHIP(1608/5%/5.1ohm)		1
.....	7	R1055	CRJ10DF51R0T	RES, CHIP(1608/1%/51ohm)		1
.....	7	R1056	CRJ10DF51R0T	RES, CHIP(1608/1%/51ohm)		1
.....	7	R1058	CRJ06J0R0T	RES, CHIP(1005/5%/0ohm)	RM04C0R	1
.....	7	R1059	CRJ06J473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K	1
.....	7	R1060	CRJ06J473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K	1
.....	7	R1067	CRJ06J222T	RES, CHIP(1005/5%/2.2Kohm)	RM04JC2K2	1
.....	7	R1068	CRJ06J222T	RES, CHIP(1005/5%/2.2Kohm)	RM04JC2K2	1
.....	7	R1109	CRJ06J100T	RES, CHIP(1005/5%/10ohm)	RM04JC10R	1
.....	7	R1124	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)	00200-0170	1
.....	7	R1130	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....	7	R1133	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)	00200-0088	1
.....	7	R1134	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)	00200-0088	1
.....	7	R1135	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....	7	R1136	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....	7	R1138	CRJ10DJ224T	RES, CHIP(1608/5%/220Kohm)		1
.....	7	R1140	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....	7	R1141	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....	7	R1142	CRJ06J0R0T	RES, CHIP(1005/5%/0ohm)	RM04C0R	1
.....	7	R1147	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....	7	R1149	CRJ10DF6041T	RES, CHIP(1608/1%/6.04Kohm)		1
.....	7	R1159	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F	1
.....	7	R1170	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....	7	R1203	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1204	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1205	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1207	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1209	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1210	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1212	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1213	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1214	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1217	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1218	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1219	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1221	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1236	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....	7	R1252	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....	7	R1253	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1

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Level	Ref#	Component	Description	Drawing No	REQ-QTY
...3		COP12502H	AVR1510 FRONT PCB ASS'Y		1
.....7	R1254	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1255	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1258	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1259	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1260	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1261	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1262	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1263	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1264	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1265	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1266	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1301	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1302	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1303	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)		1
.....7	R1305	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1306	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)		1
.....7	R1308	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....7	R1309	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1310	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1311	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1313	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)		1
.....7	R1314	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1315	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)		1
.....7	R1317	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1318	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1320	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1321	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1322	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1323	CRJ10DF1371T	RES, CHIP(1608/1%/1.37Kohm)		1
.....7	R1328	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1329	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094	1
.....7	R1330	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094	1
.....7	R1331	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1332	CRJ10DJ560T	RES, CHIP(1608/5%/56ohm)	00200-0226	1
.....7	R1334	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1335	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1336	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1337	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1339	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1340	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1341	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1342	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1347	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1348	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101	1
.....7	R1350	CRJ10DF5101T	RES, CHIP(1608/1%/5.1Kohm)		1
.....7	R1351	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1357	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1358	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1367	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1401	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1402	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1403	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1404	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1405	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....7	R1406	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1407	CRJ10DJ224T	RES, CHIP(1608/5%/220Kohm)		1
.....7	R1409	CRJ10DJ203T	RES, CHIP(1608/5%/20Kohm)	1608	1
.....7	R1411	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1412	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1413	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1426	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1427	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE	1
.....7	R1428	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1429	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1430	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....7	R1431	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1432	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1433	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1439	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....7	R1440	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)		1
.....7	R1441	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)		1
.....7	R1443	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1444	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1456	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1458	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1460	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1462	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1468	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1470	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1472	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1473	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1478	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1482	CRJ10DJ225T	RES, CHIP(1608/5%/2.2Mohm)		1
.....7	R1501	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1504	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1505	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1506	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
...3		COP12502H	AVR1510 FRONT PCB ASS'Y		1
.....7	R1511	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1512	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1513	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1514	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1515	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1516	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1517	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1518	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1519	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1522	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1523	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1524	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1529	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1530	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1531	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1532	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1533	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1534	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1535	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1536	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1537	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1540	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1541	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1542	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1547	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1548	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1549	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1550	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1551	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1552	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1553	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1554	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1555	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094	1
.....7	R1556	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1557	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1558	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1559	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1560	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1561	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1562	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1565	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094	1
.....7	R1566	CRJ10DJ302T	RES, CHIP(1608/5%/3Kohm)	1608	1
.....7	R1567	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1569	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1570	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F	1
.....7	R1571	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F	1
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Level	Ref#	Component	Description	Drawing No	REQ-Qty
...3		COP12502H	AVR1510 FRONT PCB ASS'Y		1
.....7	R1572	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6		CIP12503ITSM	AVR151/230 DIGITAL PCB TOP SMD ASS'Y (EUR)		1
.....7		CUP12503Z	PCB,AVR1510 DIGITAL (FR-4/4L/206X135)		1
.....7	BN1401	CJP03GA2082Y	WAFER , SMD (2MM PITCH)-3P		1
.....7	CN1001	CJP07GA1932Y	WAFER, FFC, SMD(07P-1mm, STRAIGHT)		1
.....7	CN1101	CJP07GA2082Y	WAFER, 2mm, SMD, Vertical, 07p		1
.....7	CN1201	CJP15GB2762Y	WAFER, 20037WR-NN Series, 2mm, SMD, ANGLE, 15P		1
.....7	CN1401	CJP03GA2082Y	WAFER , SMD (2MM PITCH)-3P		1
.....7	CN1402	CJP07GA1932Y	WAFER, FFC, SMD(07P-1mm, STRAIGHT)		1
.....7	CN1403	CJP09GA1932Y	WAFER, FFC, SMD(09-1mm, STRAIGHT)		1
.....7	C1001	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1002	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1003	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1004	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1005	CCUC0106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#	1
.....7	C1006	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1007	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1050	CCU1H120JA	CAP, CHIP(1608, 50V/12pF)		1
.....7	C1051	CCU1H120JA	CAP, CHIP(1608, 50V/12pF)		1
.....7	C1052	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1103	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1104	CCU1H102KC	CAP, CHIP(1608, 50V/1000pF)		1
.....7	C1106	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1107	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1109	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1110	CCU1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....7	C1111	CCU1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....7	C1112	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1115	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....7	C1116	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1117	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1118	CCU1C104KC	CAP, CHIP(1005, 16V/0.1uF)		1
.....7	C1122	CCU1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....7	C1123	CCU1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....7	C1124	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1126	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1127	CCU50J225KC	CAP, CHIP(1608, 6.3V/2.2uF)		1
.....7	C1128	CCU1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....7	C1129	CCUS0J225KC	CAP,CHIP(1608,6.3V/2.2uF)		1
.....7	C1131	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1133	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1135	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1136	CCUS1A105KC	CAP,CHIP(1608,10V/1uF)		1
.....7	C1138	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1139	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1141	CCUS1H070DA	CAP,CHIP(1608,50V/7pF)		1
.....7	C1142	CCUS1A105KC	CAP,CHIP(1608,10V/1uF)		1
.....7	C1143	CCUS1A105KC	CAP,CHIP(1608,10V/1uF)		1
.....7	C1145	CCUS1A105KC	CAP,CHIP(1608,10V/1uF)		1
.....7	C1156	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1160	CCUS1H220JA	CAP,CHIP(1608,50V/22pF)		1
.....7	C1161	CCUS1H220JA	CAP,CHIP(1608,50V/22pF)		1
.....7	C1162	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1163	CCUS1H100JA	CAP,CHIP(1608,50V/10pF)		1
.....7	C1164	CCUS1H100JA	CAP,CHIP(1608,50V/10pF)		1
.....7	C1173	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1201	CCEC0JMVG221T	CAP,ALUMINUM ELECTROLYTIC (6.3V/220uF)		1
.....7	C1203	CCEC1CMVG101T	CAP,ALUMINUM ELECTROLYTIC CAPACITORS(16V/100uF)		1
.....7	C1205	CCEC1CMVG101T	CAP,ALUMINUM ELECTROLYTIC CAPACITORS(16V/100uF)		1
.....7	C1207	CCEC1CMVG471T	CAP,ALUMINUM ELECTROLYTIC (16V/470uF)		1
.....7	C1208	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1209	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1210	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1211	CCEC0JMVG470T	CAP,ALUMINUM ELECTROLYTIC (6.3V/47uF)		1
.....7	C1214	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1216	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1217	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1218	CCUC1A225KC	CAP,CHIP(2012,10V/2.2uF)		1
.....7	C1219	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1220	CCUS1H153KC	CAP,CHIP(1608,50V/0.015uF)		1
.....7	C1221	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1223	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1224	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1225	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1226	CCUS0J475KC	CAP,CHIP(1608,6.3V/4.7uF,MURATA GRM18)	GRM188R60J475KE19D	1
.....7	C1227	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1228	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1229	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1230	CCUC1A225KC	CAP,CHIP(2012,10V/2.2uF)		1
.....7	C1231	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1232	CCUS1H153KC	CAP,CHIP(1608,50V/0.015uF)		1
.....7	C1235	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1236	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1237	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1238	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1239	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1240	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1242	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1243	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1246	CCUSSP1E106KC	CAP,CHIP(3216,25V/10uF)		1
.....7	C1247	CCUYAPOJ226KC	CAP,CHIP(3216,6.3V/22uF)		1
.....7	C1249	CCEC0JMVG470T	CAP,ALUMINUM ELECTROLYTIC (6.3V/47uF)		1
.....7	C1305	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/100uF)		1
.....7	C1306	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/100uF)		1
.....7	C1312	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/100uF)		1
.....7	C1315	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1316	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1320	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/100uF)		1
.....7	C1321	CCEC1CMVG101T	CAP,ALUMINUM ELECTROLYTIC CAPACITORS(16V/100uF)		1
.....7	C1332	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1334	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1335	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1336	CCUS1H103KC	CAP,CHIP(1608,50V/0.01uF)	1608 SIZE	1
.....7	C1337	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1338	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1339	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1340	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1341	CCUC1A226KC	CAP,CHIP(2012,10V/22uF)		1
.....7	C1342	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1344	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1345	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1347	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1348	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1349	CCUC0J106KC	CAP,CHIP(2012,6.3V/10uF,X7R)	LAO-63V103MS56PW#	1
.....7	C1352	CCUS1H120JA	CAP,CHIP(1608,50V/12pF)		1
.....7	C1353	CCUS1H120JA	CAP,CHIP(1608,50V/12pF)		1
.....7	C1356	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1363	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1380	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1381	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1383	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1385	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1386	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1388	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1
.....7	C1407	CCUS1H120JA	CAP,CHIP(1608,50V/12pF)		1
.....7	C1408	CCUS1H120JA	CAP,CHIP(1608,50V/12pF)		1
.....7	C1411	CCUS1H104KC	CAP,CHIP(1608,50V/0.1uF)		1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....7	C1428	CCUC1A226KC	CAP_CHIP(2012, 10V/22uF)		1
.....7	C1429	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1501	CCUS1H272KC	CAP_CHIP(1608, 50V/2700pF)		1
.....7	C1502	CCUS1H272KC	CAP_CHIP(1608, 50V/2700pF)		1
.....7	C1503	CCUS1H391JA	CAP_CHIP(1608, 50V/390pF)		1
.....7	C1504	CCUS1H391JA	CAP_CHIP(1608, 50V/390pF)		1
.....7	C1507	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1510	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1511	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1512	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1515	CCUS1H683KC	CAP_CHIP(1608, 50V/0.068uF)		1
.....7	C1516	CCUS1H272KC	CAP_CHIP(1608, 50V/2700pF)		1
.....7	C1517	CCUS1H822KC	CAP_CHIP(1608, 50V/8200pF)		1
.....7	C1518	CCUS1H391JA	CAP_CHIP(1608, 50V/390pF)		1
.....7	C1521	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1524	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1525	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1526	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1529	CCUS1H272KC	CAP_CHIP(1608, 50V/2700pF)		1
.....7	C1530	CCUS1H272KC	CAP_CHIP(1608, 50V/2700pF)		1
.....7	C1531	CCUS1H391JA	CAP_CHIP(1608, 50V/390pF)		1
.....7	C1532	CCUS1H391JA	CAP_CHIP(1608, 50V/390pF)		1
.....7	C1535	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1538	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1539	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1540	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1543	CCEC1CMVG471T	CAP ALUMINUM ELECTROLYTIC (16V/470uF)		1
.....7	C1544	CCEC1CMVG471T	CAP ALUMINUM ELECTROLYTIC (16V/470uF)		1
.....7	C1545	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1546	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1547	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1548	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	C1552	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1553	CCEC1CMVG100T	CAP ALUMINUM ELECTROLYTIC (16V/10uF)		1
.....7	C1555	CCEC1CMVG220T	CAP ALUMINUM ELECTROLYTIC (6.3V/22uF)		1
.....7	C1556	CCUS1H104KC	CAP_CHIP(1608, 50V/0.1uF)		1
.....7	D1105	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....7	D1106	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....7	D1404	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....7	D1503	CVD1SR159-200H	DIODE ,SCHOTTKY		1
.....7	D1504	CVD1SR159-200H	DIODE ,SCHOTTKY		1
.....7	D1505	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....7	D1506	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)	1
.....7	IC1001	CVIADV7623BSTZ_A	I.C , HDMI Transceiver (LQFP-144P)		1
.....7	IC1002	CVIMX25L8006EM2I-12G	I.C , SERIAL FLASH(8M)		1
.....7	IC1003	CVITC74VCX541FT	I.C , OCTAL BUS BUFFER (TOSHIBA)	TC74VCX541FT(EL,M)	1
.....7	IC1101	CVIISL54220UJZ-T	I.C , USB2.0 Multiplexer(TQFN-10P)	ISL54220UJZ-T	1
.....7	IC1103	CVIKS28851SNLTR	I.C , ETHERNET PHY (10/100M,QFN-32P)	KS28851SNL TR	1
.....7	IC1105	CVIFS1230A	I.C , CHORUS3(NETWORK PROCESSOR)	FS1230A	1
.....7	IC1106	CVIA3V28540FTP-G6	I.C , SDRAM(128MBIT,TSOP-54P)		1
.....7	IC1201	CVIAZ1117CH-5.0TRG1	LDO , low dropout three-terminal regulator	AZ1117CH-5.0TRG1	1
.....7	IC1202	CVIDB1230HETR	I.C , DC DC CONVERTER(3A,700KHZ,SOP-8P)	DB1230HETR	1
.....7	IC1203	CVIDB1514AHETR	I.C,REGULATOR(1.5A,ADJ,CONT,8-SOP-EP)		1
.....7	IC1204	CVIDB1230HETR	I.C , DC DC CONVERTER(3A,700KHZ,SOP-8P)	DB1230HETR	1
.....7	IC1205	CVIEM13418-00SE08GRR	I.C , DCDC CONVERTER(SOP-8FD)		1
.....7	IC1206	CVIAZ1117CH-1.2TRG1	LDO , low dropout three-terminal regulator	AZ1117CH-1.2TRG1	1
.....7	IC1301	HVICS42528-CQ	I.C , CODEC + DIR (CIRRUS LOGIC)	CS42528-CQZ	1
.....7	IC1302	CVICS497024CVZ	EOL Item I.C , DSP (CIRRUS LOGIC)	CS497024-CVZ	1
.....7	IC1303	HVITC74VHC157FT	I.C , QUAD 2-CHANNEL MUX(TSSOP-16)	TC74VHC157FT(EL,M)	1
.....7	IC1304	CVITC74VCX541FT	I.C , OCTAL BUS BUFFER (TOSHIBA)	TC74VCX541FT(EL,M)	1
.....7	IC1305	CVIMX25L8006EM2I-12G	I.C , SERIAL FLASH(8M)		1
.....7	IC1308	CVIM12L16161A5TG2Q	I.C , 16MB SDRAM(TSOP-50P)	M12L16161A5TG2Q	1
.....7	IC1309	CVINJM2845DL118	I.C , REGULATOR(1.8V/TO-252)	NJM2845DL-18-TEL(PB-F)	1
.....7	IC1401	CVIANAM1783AV6	I.C , FLASH MCU (32 BIT, 1MB, LQFP 144)		1
.....7	IC1403	CVIDB1510BT3TR33	I.C , REGULATOR(1.0A,3.3V,TO252-1J)	DB1510BT3TR33	1
.....7	IC1405	CVITLM94022BIMG	SENSOR , TEMPERATURE	LM94022BIMG	1
.....7	IC1501	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)		1
.....7	IC1502	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)		1
.....7	IC1503	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)		1
.....7	IC1504	CVILM7808RTRL	IC , REGULATOR(1A , 8V)	LM7808RTRL	1
.....7	IC1505	CVILM7908RTRL	IC , REGULATOR(1A , -8V)	LM7908RTRL	1
.....7	JK1001	CJ9H008Y	JACK , HDMI(TYPE-A, SMT-19P)		1
.....7	JK1002	CJ9H008Y	JACK , HDMI(TYPE-A, SMT-19P)		1
.....7	JK1003	CJ9H008Y	JACK , HDMI(TYPE-A, SMT-19P)		1
.....7	JK1004	CJ9H008Y	JACK , HDMI(TYPE-A, SMT-19P)		1
.....7	JK1005	CJ9H008Y	JACK , HDMI(TYPE-A, SMT-19P)		1
.....7	JK1101	CJ9L026Z	JACK , RJ-45 With TR (SMT)		1
.....7	L1009	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTH600)		1
.....7	L1101	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTH221)		1
.....7	L1102	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTH221)		1
.....7	L1103	CLZ92127Z	COIL , CHOKE CHIP(2012/180R)	DLW21SN181SQ2L	1
.....7	L1104	CLZ92128Z	COIL , CHOKE CHIP(2012/90R)	DLW21SN900SQ2L	1
.....7	L1105	CLZ92128Z	COIL , CHOKE CHIP(2012/90R)	DLW21SN900SQ2L	1
.....7	L1107	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1109	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1110	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1111	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1112	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1113	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1114	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1201	CLQ12E100MRZ	COIL , SMD POWER (10uH/3A)	CMI-SPC9H45F-SERIES	1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....7	L1202	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1203	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1206	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1208	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1209	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1210	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)		1
.....7	L1211	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)		1
.....7	L1212	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1213	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1215	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1216	CLQ18E1R5NRZ	COIL,SMD POWER(1.5uH/2A)	SWPA3015S1R5MT	1
.....7	L1219	CLQ20E3R3NRZ	COIL,SMD POWER(3.3uH/3.2A)		1
.....7	L1220	CLQ20E3R3NRZ	COIL,SMD POWER(3.3uH/3.2A)		1
.....7	L1301	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1302	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1303	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....7	L1401	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)		1
.....7	Q1003	CVTRT1P141C	T,R,RT1P141C(10K-10K)	RT1P141C-T112-1	1
.....7	Q1004	CVTRT1N241C	T,R,RT1N241C(22K-22K)	RT1N241C-T112-1	1
.....7	Q1005	CVTRT1P141C	T,R,RT1P141C(10K-10K)	RT1P141C-T112-1	1
.....7	Q1007	CVTRT1P141C	T,R,RT1P141C(10K-10K)	RT1P141C-T112-1	1
.....7	Q1010	CVTRT1N241C	T,R,RT1N241C(22K-22K)	RT1N241C-T112-1	1
.....7	Q1409	CVTRT1N141C	T,R,RT1N141C(10K-10K)	RT1N141C	1
.....7	Q1512	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....7	Q1513	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....7	Q1514	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....7	RN1001	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)		1
.....7	RN1002	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)		1
.....7	RN1003	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)		1
.....7	RN1004	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)		1
.....7	RN1005	CRJ104DJ220T	RES, CHIP(1608/5%/22ohm*4)	22X4/2012	1
.....7	RN1006	CRJ104DJ220T	RES, CHIP(1608/5%/22ohm*4)	22X4/2012	1
.....7	RN1101	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1301	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1302	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1303	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1304	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1305	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1306	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1307	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1308	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1309	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1310	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1311	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1312	CRJ064UJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM	1
.....7	RN1401	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)		1
.....7	RN1402	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)		1
.....7	RN1403	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)		1
.....7	RN1404	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)		1
.....7	RN1405	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)		1
.....7	RN1406	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)		1
.....7	R1001	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1002	CRJ064UJ102T	RES, CHIP(1005/5%/1Kohm)	RMO4JC1K	1
.....7	R1003	CRJ064UJ223T	RES, CHIP(1005/5%/22Kohm)	RMO4JC22K	1
.....7	R1005	CRJ064UJ101T	RES, CHIP(1005/5%/100ohm)	RMO4JC100R	1
.....7	R1006	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1007	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1008	CRJ064UJ102T	RES, CHIP(1005/5%/1Kohm)	RMO4JC1K	1
.....7	R1009	CRJ064UJ223T	RES, CHIP(1005/5%/22Kohm)	RMO4JC22K	1
.....7	R1010	CRJ064UJ102T	RES, CHIP(1005/5%/1Kohm)	RMO4JC1K	1
.....7	R1011	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1012	CRJ064UJ101T	RES, CHIP(1005/5%/100ohm)	RMO4JC100R	1
.....7	R1013	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1014	CRJ064UJ102T	RES, CHIP(1005/5%/1Kohm)	RMO4JC1K	1
.....7	R1015	CRJ064UJ223T	RES, CHIP(1005/5%/22Kohm)	RMO4JC22K	1
.....7	R1016	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1018	CRJ064UJ101T	RES, CHIP(1005/5%/100ohm)	RMO4JC100R	1
.....7	R1019	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1020	CRJ064UJ102T	RES, CHIP(1005/5%/1Kohm)	RMO4JC1K	1
.....7	R1021	CRJ064UJ223T	RES, CHIP(1005/5%/22Kohm)	RMO4JC22K	1
.....7	R1022	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1024	CRJ064UJ101T	RES, CHIP(1005/5%/100ohm)	RMO4JC100R	1
.....7	R1027	CRJ064UJ103T	RES, CHIP(1005/5%/10Kohm)	RMO4JC10K	1
.....7	R1032	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200	1
.....7	R1033	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200	1
.....7	R1034	CRJ064UJ473T	RES, CHIP(1005/5%/47Kohm)	RMO4JC47K	1
.....7	R1035	CRJ064UJ103T	RES, CHIP(1005/5%/10Kohm)	RMO4JC10K	1
.....7	R1037	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1038	CRJ064J0R0T	RES, CHIP(1005/5%/0ohm)	RMO4JC0R	1
.....7	R1039	CRJ064J0R0T	RES, CHIP(1005/5%/0ohm)	RMO4JC0R	1
.....7	R1040	CRJ064J0R0T	RES, CHIP(1005/5%/0ohm)	RMO4JC0R	1
.....7	R1048	CRJ064J0R0T	RES, CHIP(1005/5%/0ohm)	RMO4JC0R	1
.....7	R1049	CRJ10DJ394T	RES, CHIP(1608/5%/390Kohm)		1
.....7	R1050	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	RMO6FB1K	1
.....7	R1051	CRJ10DF1001T	RES, CHIP(1608/1%/1Kohm)	RMO6FB1K	1
.....7	R1052	CRJ10DF1601T	RES, CHIP(1608/1%/1.6Kohm)		1
.....7	R1053	CRJ10DF2001T	RES, CHIP(1608/1%/2Kohm)		1
.....7	R1061	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1062	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1063	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1064	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....7	R1065	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1066	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1101	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1102	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1105	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1106	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1107	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1108	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1110	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE	1
.....7	R1111	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE	1
.....7	R1112	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE	1
.....7	R1113	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE	1
.....7	R1115	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1116	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1117	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1118	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1119	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1120	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1121	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1122	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1123	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1125	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	00200-0097	1
.....7	R1126	CRJ06J105T	RES, CHIP(1005/5%/1Mohm)	RM04JC1M	1
.....7	R1127	CRJ06J103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K	1
.....7	R1128	CRJ06J103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K	1
.....7	R1129	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1131	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1132	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1139	CRJ06J330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R	1
.....7	R1143	CRJ06J101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R	1
.....7	R1144	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1145	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1146	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....7	R1148	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1150	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1152	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1153	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1155	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1201	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1202	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1206	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1208	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1211	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1215	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1216	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1220	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1222	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1223	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1224	CRJ10DF1502T	RES, CHIP(1608/1%/15Kohm)	00200-0096	1
.....7	R1225	CRJ10DF4702T	RES, CHIP(1608/1%/47Kohm)	00200-0096	1
.....7	R1226	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1227	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1228	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....7	R1229	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F	1
.....7	R1230	CRJ10DF2702T	RES, CHIP(1608/1%/27Kohm)	00200-0096	1
.....7	R1231	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1232	CRJ10DF3301T	RES, CHIP(1608/1%/3.3Kohm)	00200-0096	1
.....7	R1233	CRJ10DF1802T	RES, CHIP(1608/1%/18Kohm)	1/10W 1608 F 18K OHM	1
.....7	R1234	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1237	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1238	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F	1
.....7	R1239	CRJ10DF4702T	RES, CHIP(1608/1%/47Kohm)	00200-0096	1
.....7	R1250	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1251	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1270	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1271	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1272	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1304	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1307	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1312	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1316	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1319	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1324	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1325	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1326	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE	1
.....7	R1327	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1333	CRJ10DJ820T	RES, CHIP(1608/5%/82ohm)	1608 SIZE	1
.....7	R1338	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1343	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1344	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1345	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1346	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1349	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1352	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1353	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1354	CRJ10DJ820T	RES, CHIP(1608/5%/82ohm)	1608 SIZE	1
.....7	R1355	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1356	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1359	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1360	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1
.....7	R1361	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118	1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....7	R1362	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1363	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1364	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1365	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1366	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1368	CRJ06J330T	RES, CHIP(1005/5%/330ohm)	RM04JC33R	1
.....7	R1369	CRJ06J330T	RES, CHIP(1005/5%/330ohm)	RM04JC33R	1
.....7	R1370	CRJ06J330T	RES, CHIP(1005/5%/330ohm)	RM04JC33R	1
.....7	R1371	CRJ06J330T	RES, CHIP(1005/5%/330ohm)	RM04JC33R	1
.....7	R1372	CRJ06J330T	RES, CHIP(1005/5%/330ohm)	RM04JC33R	1
.....7	R1373	CRJ06J330T	RES, CHIP(1005/5%/330ohm)	RM04JC33R	1
.....7	R1374	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1375	CRJ06J820T	RES, CHIP(1005/5%/820ohm)	RM04JC82R	1
.....7	R1376	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1410	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095	1
.....7	R1415	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1416	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1417	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1418	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1419	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1420	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1422	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1423	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1424	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE	1
.....7	R1425	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE	1
.....7	R1434	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1435	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1436	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1437	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1438	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1442	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1445	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1446	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1447	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1448	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1452	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....7	R1453	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1454	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1455	CRJ10DJ330T	RES, CHIP(1608/5%/330ohm)	00200-0118	1
.....7	R1461	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1464	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1465	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1466	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1467	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1471	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1475	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1477	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1480	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....7	R1481	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....7	R1502	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1503	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1507	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1508	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1509	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1510	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1520	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1521	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1525	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....7	R1526	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1527	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1528	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1538	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1539	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1543	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1544	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE	1
.....7	R1545	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105	1
.....7	R1546	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	R1563	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1564	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....7	R1568	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119	1
.....7	WF1102	CJP15GA193ZY	WAFER, FFC, SMD(15P-1mm, STRAIGHT)		1
.....7	WF1401	CJP23GA299ZN	WAFER, FFC, SMD(23P-1.25mm, STRAIGHT)		1
.....7	WF1402	CJP11GA299ZN	WAFER, FFC, SMD(11P-1.25mm, STRAIGHT)		1
.....7	WF1501	CJP17GA299ZN	WAFER, FFC, SMD(17P-1.25mm, STRAIGHT)		1
.....7	WF1502	CJP27GA299ZN	WAFER, FFC, SMD(27P-1.25mm, STRAIGHT)		1
.....7	X1001	COX28636I120ST	X-TAL, SMD 3.2X2.5, 28.636MHz, 12PF	7V28600001	1
.....7	X1101	COX24576I120ST	X-TAL, SMD 3.2X2.5, 24.576MHz, 12PF	7V24500006	1
.....7	X1102	COX12000I100ST	X-TAL, SMD 3.2X2.5, 12.000MHz, 10PF	7V12000005	1
.....7	X1103	COX25000I120ST	X-TAL, SMD 3.2X2.5, 25.000MHz, 12PF	7V25000009	1
.....7	X1301	COX24576I120ST	X-TAL, SMD 3.2X2.5, 24.576MHz, 12PF	7V24500006	1
.....7	X1401	COX25000I120ST	X-TAL, SMD 3.2X2.5, 25.000MHz, 12PF	7V25000009	1
.....3		COP12506I	AVR151/230 MAIN PCB ASS'Y		1
.....6	C1700	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1701	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1702	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1703	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1704	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1705	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1706	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1707	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1708	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....6	C1709	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1710	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1711	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)		1
.....6	C1742	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....6	C1743	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....6	C1750	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)		1
.....6	C1751	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)		1
.....6	C1771	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)		1
.....6	C1773	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)		1
.....6	C303	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)		1
.....6	C304	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)		1
.....6	C305	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)		1
.....6	C306	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)		1
.....6	C312	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....6	C313	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....6	C322	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....6	C726	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)		1
.....6	C924	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)		1
.....6	D303	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D304	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D501	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D502	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D503	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D504	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D803	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D973	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	D974	CVD1S5355T	DIODE, CHIP, SWITCHING	1S5355(T/B)	1
.....6	IC1700	CVINUJ72340AFH3	I.C., INPUT WITH 8CH VOLUME(52P LQFP)		1
.....6	IC1704	CVINJM8080G	I.C., DUAL OPAMP(SOP-8P)		1
.....6	IC1706	HVTKTC812TB	T.R., CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	IC1707	HVTKTC812TB	T.R., CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	IC1709	HVTKTC812TB	T.R., CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	IC1710	HVTKTC812TB	T.R., CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	IC1712	HVTKTC812TB	T.R., CHIP(TS6)	KTC812T-B-RTK/P	1
.....6	Q541	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q542	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q543	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q544	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q610	CVTINC2001AC1	T.R., MUTE	INC2001AC1	1
.....6	Q612	CVTINC2001AC1	T.R., MUTE	INC2001AC1	1
.....6	Q613	CVTINC2001AC1	T.R., MUTE	INC2001AC1	1
.....6	Q681	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q682	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q683	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q684	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q801	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q824	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)		1
.....6	Q937	CVTMMBT5401	High Voltage PNP Transistors(SOT-23)		1
.....6	Q940	CVTMMBT5401	High Voltage PNP Transistors(SOT-23)		1
.....6	Q960	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C	1
.....6	R1702	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094	1
.....6	R1703	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094	1
.....6	R1704	CRJ10DJ090T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R1705	CRJ10DJ090T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R1708	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R1709	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R1710	CRJ10DJ183T	RES, CHIP(1608/5%/18Kohm)	1608 SIZE	1
.....6	R1711	CRJ10DJ183T	RES, CHIP(1608/5%/18Kohm)	1608 SIZE	1
.....6	R1712	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1713	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1786	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1787	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1788	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1789	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1790	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....6	R1791	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....6	R1792	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1793	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....6	R1794	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....6	R1795	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1796	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1797	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1798	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1799	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1800	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225	1
.....6	R1801	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225	1
.....6	R1802	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1803	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225	1
.....6	R1805	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1806	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1809	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225	1
.....6	R1811	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1812	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225	1
.....6	R1813	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)		1
.....6	R1815	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1816	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185	1
.....6	R1822	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R1823	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R1824	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1825	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1826	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....6	R1827	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1828	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1829	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R1836	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R1837	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R1839	CRJ10DJ393T	RES, CHIP(1608/5%/39Kohm)		1
.....6	R1840	CRJ10DJ393T	RES, CHIP(1608/5%/39Kohm)		1
.....6	R1845	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....6	R1848	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE	1
.....6	R305	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R306	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R307	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R308	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R311	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R312	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R313	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R314	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R319	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R321	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R322	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R323	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087	1
.....6	R324	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R325	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R326	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R327	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100	1
.....6	R328	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R329	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097	1
.....6	R686	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....6	R687	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....6	R688	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....6	R689	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....6	R706	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090	1
.....6	R731	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R732	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R733	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R734	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R735	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R736	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R737	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R738	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R801	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....6	R901	CRJ10DJ1753T	RES, CHIP(1608/5%/75Kohm)	1608 SYZE	1
.....6	R902	CRJ10DJ333T	RES, CHIP(1608/5%/33Kohm)	1608 SIZE	1
.....6	R917	CRJ14CJ473T	RES, CHIP(3216/5%/47Kohm)		1
.....6	R918	CRJ14CJ473T	RES, CHIP(3216/5%/47Kohm)		1
.....6	R919	CRJ14CJ473T	RES, CHIP(3216/5%/47Kohm)		1
.....6	R920	CRJ14CJ473T	RES, CHIP(3216/5%/47Kohm)		1
.....6	R925	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096	1
.....6	R928	CRJ10DJ333T	RES, CHIP(1608/5%/33Kohm)	1608 SIZE	1
.....5	C1740	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C1741	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C1744	CCEA1HH101TC	CAP, ELECT(50V/100uF)		1
.....5	C1745	CCEA1HH101TC	CAP, ELECT(50V/100uF)		1
.....5	C1747	CCEA1HH101TC	CAP, ELECT(50V/100uF)		1
.....5	C1749	CCEA1HH101TC	CAP, ELECT(50V/100uF)		1
.....5	C1752	CCEA1HH101TC	CAP, ELECT(50V/100uF)		1
.....5	C1753	CCEA1HH101TC	CAP, ELECT(50V/100uF)		1
.....5	C1767	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C1768	CCEA1HH100TC	CAP, ELECT(50V/10uF)		1
.....5	C1776	CCEA1HH220TC	CAP, ELECT(50V/22uF)		1
.....5	C321	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C501	CCEA2AH100T	CAP, ELECT(100V/10uF)		1
.....5	C502	CCEA2AH100T	CAP, ELECT(100V/10uF)		1
.....5	C503	CCEA2AH100T	CAP, ELECT(100V/10uF)		1
.....5	C504	CCEA2AH100T	CAP, ELECT(100V/10uF)		1
.....5	C506	CCCT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FKS	1
.....5	C507	CCCT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FKS	1
.....5	C508	CCCT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FKS	1
.....5	C509	CCCT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FKS	1
.....5	C561	CCEA1HH221T	CAP, ELECT(50V/220uF)		1
.....5	C562	CCEA1HH221T	CAP, ELECT(50V/220uF)		1
.....5	C563	CCEA1HH221T	CAP, ELECT(50V/220uF)		1
.....5	C564	CCEA1HH221T	CAP, ELECT(50V/220uF)		1
.....5	C566	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C567	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C568	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C569	CCEA1CH101TC	CAP, ELECT(16V/100uF)		1
.....5	C571	CCBS1H271KBT	CAP, CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z	1
.....5	C572	CCBS1H271KBT	CAP, CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z	1
.....5	C573	CCBS1H271KBT	CAP, CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z	1
.....5	C574	CCBS1H271KBT	CAP, CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z	1
.....5	C601	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FKS	1
.....5	C602	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FKS	1
.....5	C603	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FKS	1
.....5	C604	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FKS	1
.....5	C606	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FKS	1
.....5	C607	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FKS	1
.....5	C608	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FKS	1
.....5	C609	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FKS	1
.....5	C631	CCEA1HH470TC	CAP, ELECT (50V/47uF)		1
.....5	C632	CCEA1HH470TC	CAP, ELECT (50V/47uF)		1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....5	C633	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C634	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C636	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C637	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C638	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C639	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C681	CCEA1HH100TC	CAP , ELECT(50V/10uF)		1
.....5	C682	CCEA1HH100TC	CAP , ELECT(50V/10uF)		1
.....5	C683	CCEA1HH100TC	CAP , ELECT(50V/10uF)		1
.....5	C684	CCEA1HH100TC	CAP , ELECT(50V/10uF)		1
.....5	C716	CCEA1CH220TC	CAP , ELECT(16V/22uF)		1
.....5	C801	CCEA1HH100TC	CAP , ELECT(50V/10uF)		1
.....5	C803	CCCT1H330JC	CAP , CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FKS	1
.....5	C805	CCCT1H120JC	CAP , CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FKS	1
.....5	C807	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C808	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C811	CCEA1HH221T	CAP , ELECT(50V/220uF)		1
.....5	C813	CCEA1CH101TC	CAP , ELECT(16V/100uF)		1
.....5	C815	CCCT1H331KB	CAP , CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FKS	1
.....5	C817	CCEA2AH100T	CAP , ELECT(100V/10uF)		1
.....5	C819	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z	1
.....5	C852	CCEA1HH220T	CAP , ELECT(50V/22uF)	00107-1033	1
.....5	C854	CCEA1HH220T	CAP , ELECT(50V/22uF)	00107-1033	1
.....5	C855	CCEA1HH220T	CAP , ELECT(50V/22uF)	00107-1033	1
.....5	C856	CCEA1HH220T	CAP , ELECT(50V/22uF)	00107-1033	1
.....5	C857	CCEA1HH220T	CAP , ELECT(50V/22uF)	00107-1033	1
.....5	C900	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C901	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C910	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C917	CCEA1HH470TC	CAP , ELECT (50V/47uF)		1
.....5	C918	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C919	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C931	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C932	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C940	CCEA1AH471TC	CAP , ELECT(10V/470uF)		1
.....5	C971	HCQ1H562JZT	CAP , MYLAR(50V/5600pF/J)	HPE562J2AP050T	1
.....5	C972	HCQ1H562JZT	CAP , MYLAR(50V/5600pF/J)	HPE562J2AP050T	1
.....5	C973	HCQ1H562JZT	CAP , MYLAR(50V/5600pF/J)	HPE562J2AP050T	1
.....5	C980	HCQ1H562JZT	CAP , MYLAR(50V/5600pF/J)	HPE562J2AP050T	1
.....5	C981	HCQ1H562JZT	CAP , MYLAR(50V/5600pF/J)	HPE562J2AP050T	1
.....5	C990	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C992	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C993	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C995	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	C997	HCQ1H473JZT	CAP , MYLAR(50V/0.047uF/J)	HPE473J2AP050T	1
.....5	D581	CVD1S5133MT	DIODE , SWITCHING	ISS133(T/B)	1
.....5	D582	CVD1S5133MT	DIODE , SWITCHING	ISS133(T/B)	1
.....5	D583	CVD1S5133MT	DIODE , SWITCHING	ISS133(T/B)	1
.....5	D584	CVD1S5133MT	DIODE , SWITCHING	ISS133(T/B)	1
.....5	D801	CVD1S5133MT	DIODE , SWITCHING	ISS133(T/B)	1
.....5	D954	CVD1N4003SRT	DIODE , RECT	1N4003 SRT	1
.....5	D955	CVD1N4003SRT	DIODE , RECT	1N4003 SRT	1
.....5	G901	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)		1
.....5	G902	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)		1
.....5	Q501	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q502	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q503	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q504	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q511	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q512	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q513	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q514	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q516	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q517	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q518	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q519	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q556	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q557	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q558	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q559	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q561	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q562	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q563	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q564	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q601	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q602	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q603	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q604	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q812	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q813	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q816	CVTKSA992FTA	PNP , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD		1
.....5	Q818	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q819	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q820	CVTKSC1845FTA	NPN , TO-92 , LOW NOISE , HFE:300-600 , FAILCHILD	KSC1845FTA	1
.....5	Q961	HVTKTA1024YT	T.R	KTA1024-Y-AT/P	1
.....5	R501	CRD20TJ433T	RES , CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J	1
.....5	R502	CRD20TJ433T	RES , CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J	1
.....5	R504	CRD20TJ433T	RES , CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J	1
.....5	R505	CRD20TJ433T	RES , CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J	1
.....5	R506	CRD20TJ273T	RES , CARBON(1/5W,27Kohm,J)		1
.....5	R507	CRD20TJ273T	RES , CARBON(1/5W,27Kohm,J)		1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....5	R508	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
.....5	R509	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
.....5	R511	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R512	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R513	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R514	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R516	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R517	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R518	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R519	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R521	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)		1
.....5	R522	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)		1
.....5	R523	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)		1
.....5	R524	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)		1
.....5	R531	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R532	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R533	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R534	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R536	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R537	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R538	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R539	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R541	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)		1
.....5	R542	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)		1
.....5	R543	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)		1
.....5	R544	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)		1
.....5	R556	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
.....5	R557	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
.....5	R558	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
.....5	R559	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
.....5	R561	CRD20TJ242T	RES, CARBON(1/5W,2.4Kohm,J)		1
.....5	R562	CRD20TJ242T	RES, CARBON(1/5W,2.4Kohm,J)		1
.....5	R563	CRD20TJ242T	RES, CARBON(1/5W,2.4Kohm,J)		1
.....5	R564	CRD20TJ242T	RES, CARBON(1/5W,2.4Kohm,J)		1
.....5	R566	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R567	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R568	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R569	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R571	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R572	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R573	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R574	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R576	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)		1
.....5	R577	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)		1
.....5	R578	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)		1
.....5	R579	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)		1
.....5	R581	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R582	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R583	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R584	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R586	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R587	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R588	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R589	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R591	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R592	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R593	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R594	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R596	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R597	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R598	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R599	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R601	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R602	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R603	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R604	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R606	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R607	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R608	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R609	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R611	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)		1
.....5	R631	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R632	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R633	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R634	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R636	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R637	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R638	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R639	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R646	CRD25FJ3R3T	RES, CARBON		1
.....5	R647	CRD25FJ3R3T	RES, CARBON		1
.....5	R648	CRD25FJ3R3T	RES, CARBON		1
.....5	R649	CRD25FJ3R3T	RES, CARBON		1
.....5	R651	CRD25FJ3R3T	RES, CARBON		1
.....5	R652	CRD25FJ3R3T	RES, CARBON		1
.....5	R653	CRD25FJ3R3T	RES, CARBON		1
.....5	R654	CRD25FJ3R3T	RES, CARBON		1
.....5	R666	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R667	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R668	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R669	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....5	R671	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)		1
.....5	R672	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)		1
.....5	R673	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)		1
.....5	R674	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)		1
.....5	R676	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)		1
.....5	R677	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)		1
.....5	R678	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)		1
.....5	R679	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)		1
.....5	R681	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)		1
.....5	R682	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)		1
.....5	R683	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)		1
.....5	R684	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)		1
.....5	R696	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R697	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R698	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R699	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R711	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R712	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R713	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R714	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R715	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R716	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R717	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R718	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R719	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R720	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R721	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R722	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R723	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R724	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R725	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R726	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R727	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R728	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R729	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R730	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)		1
.....5	R771	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R772	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R773	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R774	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R776	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R781	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R782	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R783	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R784	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R786	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)		1
.....5	R803	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)		1
.....5	R805	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)		1
.....5	R808	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)		1
.....5	R812	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R813	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)		1
.....5	R817	CRD25FJ3R3T	RES, CARBON		1
.....5	R818	CRD25FJ3R3T	RES, CARBON		1
.....5	R821	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R822	CRD25FJ180T	RES, CARBON (18 OHM) NONFLAMMABLE		1
.....5	R830	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R831	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)		1
.....5	R834	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R835	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R836	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R837	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R842	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R843	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)		1
.....5	R848	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)		1
.....5	R850	CRD20TJ242T	RES, CARBON(1/5W,2.4Kohm,J)		1
.....5	R852	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R853	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)		1
.....5	R856	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R857	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)		1
.....5	R860	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)		1
.....5	R862	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)		1
.....5	R870	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J	1
.....5	R872	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)		1
.....5	R875	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J	1
.....5	R877	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J	1
.....5	R878	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J	1
.....5	R879	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J	1
.....5	R880	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J	1
.....5	R883	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)		1
.....5	R885	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)		1
.....5	R886	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)		1
.....5	R887	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)		1
.....5	R888	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)		1
.....5	R891	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)		1
.....5	R893	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)		1
.....5	R894	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)		1
.....5	R896	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)		1
.....5	R897	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)		1
.....5	R908	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)		1
.....5	R909	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)		1
.....5	R941	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)		1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
....5	R942	CRD20TJ103T	RES, CARBON(1/5W,10kohm,J)		1
....5	R944	CRD20TJ103T	RES, CARBON(1/5W,10kohm,J)		1
....5	R946	CRD20TJ103T	RES, CARBON(1/5W,10kohm,J)		1
....5	R947	CRD20TJ103T	RES, CARBON(1/5W,10kohm,J)		1
....5	R951	CRD20TJ1R0T	RES, CARBON(1/5W,1ohm,J)		1
....5	R954	CRD20TJ102T	RES, CARBON(1/5W,1kohm,J)		1
....5	R955	CRD20TJ564T	RES, CARBON(1/5W,560kohm,J)		1
....5	R961	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)		1
....5	R962	CRD20TJ273T	RES, CARBON(1/5W,27kohm,J)		1
....5	R990	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)		1
....5	R993	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)		1
....5	R995	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)		1
....5	R997	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)		1
....5	R999	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)		1
....5	VR82	CVN12A221B03T	RES, SEMI FIXED (220 OHM)	NVZ6TLTAB221	1
....5	VR84	CVN12A221B03T	RES, SEMI FIXED (220 OHM)	NVZ6TLTAB221	1
....5	VR85	CVN12A221B03T	RES, SEMI FIXED (220 OHM)	NVZ6TLTAB221	1
....5	VR86	CVN12A221B03T	RES, SEMI FIXED (220 OHM)	NVZ6TLTAB221	1
....5	VR87	CVN12A221B03T	RES, SEMI FIXED (220 OHM)	NVZ6TLTAB221	1
...4		CMYAVR1510	HEAT SINK ASS'Y		1
....5		CHD1A012R	SCREW, SPECIAL		15
....5		CHD4A012R	SCREW, SPECIAL		1
....5		CMD1A802	BRACKET,H/S PCB		2
....5		CMD1A810	BRACKET, PCB		2
....5		CMY1A388	HEAT SINK AVR1510		1
....5		CTB3+8JR	SCREW	00M51260308M0	8
....5	Q652	CVT2S81559P	T.R, POWER	2S81559P	1
....5	Q653	CVT2S81559P	T.R, POWER	2S81559P	1
....5	Q654	CVT2S81559P	T.R, POWER	2S81559P	1
....5	Q657	CVT2SD2389P	T.R, POWER	2SD2389P	1
....5	Q658	CVT2SD2389P	T.R, POWER	2SD2389P	1
....5	Q659	CVT2SD2389P	T.R, POWER	2SD2389P	1
....5	Q660	CVT2SD2389P	T.R, POWER	2SD2389P	1
....5	Q661	CVT2S81559P	T.R, POWER	2S81559P	1
....5	Q803	CVT2SD2389P	T.R, POWER	2SD2389P	1
....5	Q804	CVT2S81559P	T.R, POWER	2S81559P	1
....5	Q852	HVTKTD600KGR	T.R, BIAS	KTD600K-Y-U/PH	1
....5	Q854	HVTKTD600KGR	T.R, BIAS	KTD600K-Y-U/PH	1
....5	Q855	HVTKTD600KGR	T.R, BIAS	KTD600K-Y-U/PH	1
....5	Q856	HVTKTD600KGR	T.R, BIAS	KTD600K-Y-U/PH	1
....5	Q857	HVTKTD600KGR	T.R, BIAS	KTD600K-Y-U/PH	1
...4	BK90	CMD1A629	BRACKET, PCB		1
...4	BK91	CMD1A629	BRACKET, PCB		1
...4	BN60	CWB3FE03320UZ	WIRE ASS'Y (3P, 320mm)		1
...4	BN61	CWB1B0031507H	WIRE ASS'Y (3P, 2.0mm, 150mm)		1
...4	CN54	CJP17GA1152Y	WAFER, FFC(17P-1.25mm, STRAIGHT)	12511HS-17	1
...4	CN55	CJP27GA1152Y	WAFER, FFC(27P-1.25mm, STRAIGHT)	12511HS-27	1
...4	CN61	CJP02GA01ZY	WAFER/STRAIGHT(2.5mm)/2P	YMW025-02R	1
...4	CN62	CJP02GA01ZY	WAFER/STRAIGHT(2.5mm)/2P	YMW025-02R	1
...4	CN63	CJP02GA01ZY	WAFER/STRAIGHT(2.5mm)/2P	YMW025-02R	1
...4	CN64	CJP02GA01ZY	WAFER/STRAIGHT(2.5mm)/2P	YMW025-02R	1
...4	CN66	CJP02GA01ZY	WAFER/STRAIGHT(2.5mm)/2P	YMW025-02R	1
...4	C915	CCET50VLP222NC	CAP, ELECT (2200uF/50V, 85°C), 22X26		1
...4	C916	CCET50VLP222NC	CAP, ELECT (2200uF/50V, 85°C), 22X26		1
...4	ET01	CWES202080A	WIRE ASS'Y (1P, 80MM,BLK,#22)		1
...4	JK312	CJH4P014W	JACK, IN/OUT	RCA-401DA(II)-05	1
...4	JK90	CJH4M040Z	JACK, BOARD (SW)	RCA-107B-01	1
...4	JK91	CJH5R020Z	TERMINAL, SPEAKER (PUSH TYPE)		1
...4	JK92	CJH5P020Z	TERMINAL, SPEAKER	JB-405E-09	1
...4	L501	CLEYORSKAK	COIL, SPEAKER(0.5uH)	0.5UH K	1
...4	L502	CLEYORSKAK	COIL, SPEAKER(0.5uH)	0.5UH K	1
...4	L503	CLEYORSKAK	COIL, SPEAKER(0.5uH)	0.5UH K	1
...4	L504	CLEYORSKAK	COIL, SPEAKER(0.5uH)	0.5UH K	1
...4	L506	CLEYORSKAK	COIL, SPEAKER(0.5uH)	0.5UH K	1
...4	Q858	HVTKTA1360Y	T.R, PRE DRIVE	KTA1360-Y-U/PH	1
...4	Q871	HVTKTA1360Y	T.R, PRE DRIVE	KTA1360-Y-U/PH	1
...4	Q872	HVTKTA1360Y	T.R, PRE DRIVE	KTA1360-Y-U/PH	1
...4	Q874	HVTKTA1360Y	T.R, PRE DRIVE	KTA1360-Y-U/PH	1
...4	Q876	HVTKTA1360Y	T.R, PRE DRIVE	KTA1360-Y-U/PH	1
...4	Q881	HVTKTC3423Y	T.R, PRE DRIVE	KTC3423-Y-U/PH	1
...4	Q882	HVTKTC3423Y	T.R, PRE DRIVE	KTC3423-Y-U/PH	1
...4	Q883	HVTKTC3423Y	T.R, PRE DRIVE	KTC3423-Y-U/PH	1
...4	Q884	HVTKTC3423Y	T.R, PRE DRIVE	KTC3423-Y-U/PH	1
...4	Q886	HVTKTC3423Y	T.R, PRE DRIVE	KTC3423-Y-U/PH	1
...4	R937	CRF5EKR10HS	RES, CEMENT (SMALL SIZE)		1
...4	R938	CRF5EKR10HS	RES, CEMENT (SMALL SIZE)		1
...4	TUN1	CNVMMW104MV1R78	MODULE, TUNER (AM/FM WITH RDS)		1
...3		COP12509I	AVR151/230 SMPS PCB ASS'Y		1
....6	C903	CCUC1H474KC	CAP, CHIP(2012, 50V/0.47uF)		1
....6	C904	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)		1
....6	C905	CCUP3A102KC	CAP, CHIP(3216, 1KV/1000pF, X7R)		1
....6	C906	CCUC1H222KC	CAP, CHIP(2012, 50V/2200pF)		1
....6	C907	CCUC1H470JA	CAP, CHIP(2012, 50V/47pF)		1
....6	C908	CCUP3A221JA	CAP, CHIP(3216, 1KV/220pF, X7R)		1
....6	C909	CCUC1H821JA	CAP, CHIP(2012, 50V/820pF, NPO)		1
....6	C910	CCUP3A222KC	CAP, CHIP(3216, 1KV/2200pF, X7R)		1
....6	C912	CCUP3A470JA	CAP, CHIP(3216, 1KV/47pF, X7R)		1
....6	C913	CCUC1E225KC	CAP, CHIP(2012, 25V/2.2uF, X7R)		1
....6	C914	CCUC1H472KC	CAP, CHIP(2012, 50V/4700pF)		1
....6	C915	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)		1
....6	C917	CCUC1H472KC	CAP, CHIP(2012, 50V/4700pF)		1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
.....6	C919	CCUP3A470JA	CAP, CHIP(3216, 1KV/47pF, X7R)		1
.....6	C923	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C924	CCUC1H222KC	CAP, CHIP(2012, 50V/2200pF)		1
.....6	C925	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C926	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C927	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)		1
.....6	C934	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)		1
.....6	C945	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C956	CCUP3A102KC	CAP, CHIP(3216, 1KV/1000pF, X7R)		1
.....6	C957	CCUP3A102KC	CAP, CHIP(3216, 1KV/1000pF, X7R)		1
.....6	C958	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)		1
.....6	C959	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C960	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)		1
.....6	C961	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C962	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)		1
.....6	C963	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C964	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)		1
.....6	C967	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C968	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)		1
.....6	C969	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)		1
.....6	C970	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)		1
.....6	C971	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)		1
.....6	C972	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)		1
.....6	C973	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)		1
.....6	C974	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)		1
.....6	C975	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)		1
.....6	C976	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)		1
.....6	C977	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C978	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	C979	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)		1
.....6	D901	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)		1
.....6	D902	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)		1
.....6	D903	CVDUS1M	DIODE, ULTRA FAST RECTIFIER		1
.....6	D904	CVDUS1M	DIODE, ULTRA FAST RECTIFIER		1
.....6	D906	CVDUS1M	DIODE, ULTRA FAST RECTIFIER		1
.....6	D907	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D908	CVDMM1224H	DIODE, ZENER(24V/0.5W, SOD-123)		1
.....6	D909	CVDMM1220H	DIODE, ZENER(20V/0.5W, SOD-123)		1
.....6	D911	CVDUS1M	DIODE, ULTRA FAST RECTIFIER		1
.....6	D912	CVDMM1227H	DIODE, ZENER(27V/0.5W, SOD-123)		1
.....6	D913	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)		1
.....6	D914	CVDMM1218H	DIODE, ZENER(18V/0.5W, SOD-123)		1
.....6	D917	CVDMM1216H	DIODE, ZENER(16V/0.5W, SOD-123)		1
.....6	D918	CVDMM1216H	DIODE, ZENER(16V/0.5W, SOD-123)		1
.....6	D922	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D924	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D925	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D926	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D927	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D929	CVDMM1212H	DIODE, ZENER(12V/0.5W, SOD-123)		1
.....6	D932	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)		1
.....6	D935	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D936	CVD1N4448W	DIODE, FAST SWITCHING(0.5W, SOD-123)		1
.....6	D944	CVDUS1M	DIODE, ULTRA FAST RECTIFIER		1
.....6	D950	CVDMM1215H	DIODE, ZENER(15V/0.5W, SOD-123)		1
.....6	IC93	CVIICE2QS02G	I.C., PWM CONTROLLER(PG-DSO-8)		1
.....6	IC94	CVIKA431SAMF2	I.C., SHUNT REGULATOR(SOT-23F)		1
.....6	IC95	CVIKA431SAMF2	I.C., SHUNT REGULATOR(SOT-23F)		1
.....6	IC96	CVIKA431SAMF2	I.C., SHUNT REGULATOR(SOT-23F)		1
.....6	L922	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....6	L923	CLZ92014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60	1
.....6	Q909	CVTRT1N141C	T,R,RT1N141C(10K-10K)	RT1N141C	1
.....6	Q915	CVTRT1N141C	T,R,RT1N141C(10K-10K)	RT1N141C	1
.....6	Q916	CVTRT1N141C	T,R,RT1N141C(10K-10K)	RT1N141C	1
.....6	R901	CRJ18AJ392T	RES, CHIP(2012/5%/3.9Kohm)	0805 5%	1
.....6	R902	CRJ18AJ153T	RES, CHIP(2012/5%/15Kohm)	0805 5%	1
.....6	R904	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)		1
.....6	R906	CRJ18AJ390T	RES, CHIP(2012/5%/39ohm)		1
.....6	R907	CRJ01HU683T	RES, CHIP(6432/5%/68Kohm)		1
.....6	R910	CRJ18AJ330T	RES, CHIP(2012/5%/33ohm)		1
.....6	R911	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
.....6	R912	CRJ18AJ112T	RES, CHIP(2012/5%/1.1Kohm)		1
.....6	R915	CRJ18AJ683T	RES, CHIP(2012/5%/68Kohm)	0805 5%	1
.....6	R916	CRJ18AJ153T	RES, CHIP(2012/5%/15Kohm)	0805 5%	1
.....6	R918	CRJ18AJ203T	RES, CHIP(2012/5%/20Kohm)		1
.....6	R919	CRJ18AJ103T	RES, CHIP(2012/5%/10Kohm)	0805 5%	1
.....6	R921	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)		1
.....6	R922	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001	1
.....6	R923	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%	1
.....6	R924	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)		1
.....6	R925	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)		1
.....6	R926	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)		1
.....6	R927	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)		1
.....6	R928	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001	1
.....6	R929	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)		1
.....6	R930	CRJ18AF6802T	RES, CHIP(2012/1%/68Kohm)		1
.....6	R931	CRJ18AJ824T	RES, CHIP(2012/5%/820Kohm)		1
.....6	R932	CRJ14CJ4R7T	RES, CHIP(3216/5%/4.7ohm)	3216	1
.....6	R933	CRJ18AJ181T	RES, CHIP(2012/5%/180ohm)	0805 5%	1
.....6	R934	CRJ18AJ561T	RES, CHIP(2012/5%/56ohm)	0805 5%	1
.....6	R935	CRJ18AJ220T	RES, CHIP(2012/5%/22ohm)	0805 5%	1

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Level	Ref#	Component	Description	Drawing No	REQ-Qty
....6	R936	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%	1
....6	R937	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%	1
....6	R938	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%	1
....6	R939	CRJ18AJ470T	RES, CHIP(2012/5%/47ohm)	0805 5%	1
....6	R940	CRJ18AJ153T	RES, CHIP(2012/5%/15Kohm)	0805 5%	1
....6	R941	CRJ18AJ622T	RES, CHIP(2012/5%/6.2Kohm)		1
....6	R942	CRJ18AJ222T	RES, CHIP(2012/5%/2.2Kohm)	0805 5%	1
....6	R943	CRJ18AJ622T	RES, CHIP(2012/5%/6.2Kohm)		1
....6	R944	CRJ18AJ472T	RES, CHIP(2012/5%/4.7Kohm)	0805 5%	1
....6	R945	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%	1
....6	R946	CRJ18AF1002T	RES, CHIP(2012/1%/10Kohm)		1
....6	R947	CRJ18AF1002T	RES, CHIP(2012/1%/10Kohm)		1
....6	R948	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)		1
....6	R950	CRJ18AJ224T	RES, CHIP(2012/5%/220Kohm)		1
....6	R952	CRJ01HJ101T	RES, CHIP(6432/5%/100ohm)		1
....6	R953	CRJ18AF1502T	RES, CHIP(2012/1%/15Kohm)		1
....6	R954	CRJ18AJ472T	RES, CHIP(2012/5%/4.7Kohm)	0805 5%	1
....6	R955	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)		1
....6	R956	CRJ18AJ473T	RES, CHIP(2012/5%/47Kohm)	0805 5%	1
....6	R957	CRJ18AJ181T	RES, CHIP(2012/5%/180ohm)	0805 5%	1
....6	R958	CRJ18AF1002T	RES, CHIP(2012/1%/10Kohm)		1
....6	R959	CRJ18AF5601T	RES, CHIP(2012/1%/5.6Kohm)		1
....6	R960	CRJ01HJ752T	RES, CHIP(6432/5%/7.5Kohm)		1
....6	R961	CRJ18AJ103T	RES, CHIP(2012/5%/10Kohm)	0805 5%	1
....6	R962	CRJ18AF2002T	RES, CHIP(2012/1%/20Kohm)		1
....6	R963	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)		1
....6	R966	CRJ18AJ220T	RES, CHIP(2012/5%/22ohm)	0805 5%	1
....6	R967	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001	1
....6	R968	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
....6	R969	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
....6	R970	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001	1
....6	R971	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001	1
....6	R972	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001	1
....6	R973	CRJ01HJ221T	RES, CHIP(6432/5%/220ohm)		1
....6	R974	CRJ14CJ154T	RES, CHIP(3216/5%/150Kohm)		1
....6	R975	CRJ14CJ154T	RES, CHIP(3216/5%/150Kohm)		1
....6	R976	CRJ14CJ154T	RES, CHIP(3216/5%/150Kohm)		1
....6	R977	CRJ18AF1503T	RES, CHIP(2012/1%/150Kohm)		1
....6	R978	CRJ01HJ221T	RES, CHIP(6432/5%/220ohm)		1
....6	R979	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)		1
....6	R980	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)		1
....6	R981	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)		1
....6	R982	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)		1
....6	R984	CRJ18AJ470T	RES, CHIP(2012/5%/47ohm)	0805 5%	1
....6	R985	CRJ18AJ182T	RES, CHIP(2012/5%/1.8Kohm)		1
....6	R986	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%	1
....6	R988	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000	1
....6	R989	CRJ18AJ182T	RES, CHIP(2012/5%/1.8Kohm)		1
....6	R990	CRJ01HJ100T	RES, CHIP	2515 5% 100HM	1
....6	R991	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%	1
....6	R992	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)		1
....6	R993	CRJ01HJ752T	RES, CHIP(6432/5%/7.5Kohm)		1
....6	R994	CRJ01HJ361T	RES, CHIP(6432/5%/360ohm)		1
....6	R995	CRJ01HJ361T	RES, CHIP(6432/5%/360ohm)		1
....6	R996	CRJ18AJ470T	RES, CHIP(2012/5%/47ohm)	0805 5%	1
....6	R997	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)		1
....6	R999	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)		1
....5	C911	CCKT3A102KBL	CAP, CERAMIC(1kV/1000pF/K)	EKR3A102K05FK5	1
....5	C918	CCEA1HH100TCS	CAP, ELECT(50V/10uF),105°C		1
....5	C920	CCEA1HH470TCS	CAP, ELECT(50V/47uF),105°C		1
....5	C921	CCEA1HH220TCS	CAP, ELECT(50V/22uF),105°C		1
....5	C929	CCEA0JH471TCS	CAP, ELECT(6.3V/470uF),105°C		1
....5	C932	CCEA1HH470TCS	CAP, ELECT(50V/47uF),105°C		1
....5	C944	CCEA0JH102TCS	CAP, ELECT(6.3V/1000uF),105°C		1
....5	C949	CCEA2AH100TCS	CAP, ELECT(100V/10uF),105°C		1
....5	C953	CCEA1EH101TCS	CAP, ELECT(25V/100uF),105°C		1
....5	C955	CCEA1HH220TCS	CAP, ELECT(50V/22uF),105°C		1
....5	C984	CCEA0JH471TCS	CAP, ELECT(6.3V/470uF),105°C		1
....5	D910	HVDUF4007T	DIODE, SCHOTTKY	UF4007	1
....5	D916	CVDZJ20BT	DIODE, ZENER, 1/2W, 20V	ZJ20BT(26MM T/B)	1
....5	D919	HVD1N4007T	DIODE	1N4007T	1
....5	D920	HVDUF4004T	DIODE, SCHOTTKY	UF4004	1
....5	D921	HVD11EQ06T	DIODE, SCHOTTKY (60V/1A)	11EQ06	1
....5	D928	CVDZJ20BT	DIODE, ZENER, 1/2W, 20V	ZJ20BT(26MM T/B)	1
....5	D933	CVDSF26	DIODE, SUPER FAST RECTIFIER		1
....5	D937	CVDSF26	DIODE, SUPER FAST RECTIFIER		1
....5	D943	HVDUF4004T	DIODE, SCHOTTKY	UF4004	1
....5	ET91	CJT1A026	PLATE, EARTH(TRONIC ELECTRONICS)		1
....5	ET92	CJT1A026	PLATE, EARTH(TRONIC ELECTRONICS)		1
....5	ET93	CJT1A026	PLATE, EARTH(TRONIC ELECTRONICS)		1
....5	ET95	CJT1A026	PLATE, EARTH(TRONIC ELECTRONICS)		1
....5	FH91	KJCFCS5	HOLDER, FUSE		1
....5	FH92	KJCFCS5	HOLDER, FUSE		1
....5	IC99	CVIL78L24AB	IC, REGULATOR (24V, TO-92L)	L78L24ABZ-TR	1
....5	Q902	HVTKSA708YT	T.R	KSA708-YTA	1
....5	Q903	HVTKSA708YT	T.R	KSA708-YTA	1
....5	Q914	HVTKSA708YT	T.R	KSA708-YTA	1
....5	RX93	CRO50TJ155T	RES, SURGE (1.5M OHM, 5%, 1/2W, PRC TYPE)		1
....4		C4B120122	TUBE, UL		0.02
....4	BD91	CLZ9H002Z	BEAD, CORE(100MHz MIN 120ohm)		1
....4	BN65	CWB1C01525047	WIRE ASSY (LOCK, 15P, 250mm, 2.0mm)		1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-Qty
...4	CN20	CJP03GA90ZY	WAFER,YW396-03B(3.96mm)		1
...4	CN66	CJP07GI236ZW	LOCKING TYPE , STRAIGHT WAFER , 2MM	A2008WV0-7P	1
...4	CN90	CJP02KA060ZY	WAFER, 2P, 3.96mm		1
...4	CX91	CCQF2E224KZFS	CAP , X2(275VAC, 0.22uF, 12mm, SEORYONG)		1
...4	CX92	CCQF2E334KZES	CAP , X2(275VAC, 0.33uF, 15mm, SEORYONG)		1
...4	CY91	CCKDHS152ME	CAP , CERAMIC (400V Y-CAP)	SDE1152M10FF7	1
...4	CY92	CCKDHS152ME	CAP , CERAMIC (400V Y-CAP)	SDE1152M10FF7	1
...4	CY93	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	SDE102M10FF7	1
...4	CY94	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	SDE102M10FF7	1
...4	CY95	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	SDE102M10FF7	1
...4	CY96	CCKDHS152ME	CAP , CERAMIC (400V Y-CAP)	SDE1152M10FF7	1
...4	C902	CCET450VKM220NCS	CAP , ELECT(450V/220uF),105°C,13X20		1
...4	C928	CCEA1HGF222ECS	CAP , ELECT(50V/2200uF/105°C), 18X40		1
...4	C930	CCET450VK31121NKS	CAP , ELECT (120uF/450V , 105°C, 25X40, K3J)		1
...4	C933	CCEA1EH471ECS	CAP , ELECT(25V/470uF),105°C		1
...4	C936	CCEA1HGF222ECS	CAP , ELECT(50V/2200uF/105°C), 18X40		1
...4	C937	CCEA1HH221ECS	CAP , ELECT(50V/220uF),105°C		1
...4	C939	CCEA1HH221ECS	CAP , ELECT(50V/220uF),105°C		1
...4	C941	CCEA1AGF562ECS	CAP , ELECT(10V/5600uF/105°C), 13X30		1
...4	C943	CCEA1AH102ECS	CAP , ELECT(10V/1000uF),105°C		1
...4	D891	CVDRS1005M	DIODE , BRIDGE (600V/10A,RS-10M)		1
...4	D938	HVD31DQ06H	DIODE	31DQ06H	1
...4	D939	HVD31DQ06H	DIODE	31DQ06H	1
...4	HS91	CVTIPW65R280E6ZA	FET HEAT SINK ASS'Y (IPW65R280E6+CMY2A327ZA-V1)		1
...5		CMD1A720	BRACKET , THERMAL SENSOR		1
...5		CMX1A164	INSULATOR , SILICON	QRW-7500	1
...5		CMY2A327ZA-V2	HEAT SINK		1
...5		CRTST22110070WZA	PROTECTOR , THERMAL ASS'Y		1
...6		CRTST22110070W	PROTECTOR , THERMAL (110°C, 70mm)		1
...6		CRTST22110070WA	PROTECTOR , THERMAL ASS'Y (110°C, 70mm)		1
...5		CTB3+10JR	SCREW		1
...5		CVTIPW65R280E6	FET , IPW65R280E6, N-CH, PG-TO247, INFINEON		1
...4	HS92	CVDFCU20A40YA	DIODE HEAT SINK ASS'Y (CMY9A222)		1
...5		CMY9A222-V2	HEAT SINK		1
...5		CTB3+10JR	SCREW		1
...5		CVDFCU20A40	DIODE , FAST RECOVERY (400V/20A,TO-220)		1
...5		K8AYG6260	COMPOUND , SILICONE		0.2
...4	HS93	CVDFCU20A40YA	DIODE HEAT SINK ASS'Y (CMY9A222)		1
...5		CMY9A222-V2	HEAT SINK		1
...5		CTB3+10JR	SCREW		1
...5		CVDFCU20A40	DIODE , FAST RECOVERY (400V/20A,TO-220)		1
...5		K8AYG6260	COMPOUND , SILICONE		0.2
...4	HS94	CVINJM7812FAXA	HEAT SINK ASS'Y(HVINJM7812FA+CMY2A223)		1
...5		CMY2A223-V2	HEAT SINK		1
...5		CTB3+8JR	SCREW	00M51260308M0	1
...5		HVINJM7812FA	I.C , REGULATOR	NJM7812FA	1
...5		K8AYG6260	COMPOUND , SILICONE		0.2
...4	IC91	CVIOB2358LAP	I.C , PWM		1
...4	IC92	CVIIC2B265	IC , COOLSET	ICE2B265	1
...4	IC98	HVINJM7912FA	I.C , REGULATOR	NJM7912FA	1
...4	LF91	CLZ92135Z	FILTER , LINE (SQE2930, 8mH)		1
...4	LF92	CLZ92135Z	FILTER , LINE (SQE2930, 8mH)		1
...4	LF93	CLZ92121Z	LINE, FILTER (150uH, RING-616)		1
...4	L924	CLZ92090Z	COIL , CHOKE(7UH)		1
...4	L925	CLZ92090Z	COIL , CHOKE(7UH)		1
...4	L928	CLZ92090Z	COIL , CHOKE(7UH)		1
...4	PC91	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC92	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC93	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC94	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC95	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC96	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC97	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	PC98	CVIEL817B	I.C , PHOTO COUPLER	EL817B	1
...4	R903	CRG2ANJ470H	RES , METAL OXIDE FILM	47 OHM 2W J	1
...4	R908	CRW1PJ0R6V	RES , WIRE WOUND (1W/0.60HM)		1
...4	R913	CRW1PJ0R1V	RES , WIRE WOUND (1W/0.10HM)		1
...4	R914	CRW1PJ0R1V	RES , WIRE WOUND (1W/0.10HM)		1
...4	R920	CRG2ANJ683H	RES , METAL OXIDE FILM	68K OHM 2W J	1
...4	TF91	CLT92087ZE	TRANS , STBY (AVR1X1)		1
...4	TF92	CLT92088ZE	TRANS , SUB (AVR1X1)		1
...4	TF93	CLT92089ZE	TRANS , MAIN (AVR1X1)		1
...4	TH91	CRT2R5D20MSFC	NTC , THERMISTOR (10MM PITCH, 2.5D-20)		1
...4	TS92	CJP02GA01ZY	WAFER/STRAIGHT(2.5mm)/2P	YMW025-02R	1
...4	VT91	CRVSVCS61D14A	VARISTOR(560V, 14mm)		1
...4	VT92	CRVSVCS61D14A	VARISTOR(560V, 14mm)		1
...3		CTB3+10JFZR	SCREW		9
...3		CTB3+6FFZR	SCREW		8
...3		CTB3+6JR	SCREW		2
...3		CTB3+8JR	SCREW	00M51260308M0	2
...3		CTS3+8JFZR	SCREW		4
...3		CTW3+12JR	SCREW		4
...3		CTW3+8JR	SCREW		2
...3		CUA1A343	CHASSIS , BOTTOM AVR1510		1
...3		CWB1B003200HH	WIRE ASS'Y (3P, 2.0mm, 200mm)		1
...3		CWC4C4A11B150B10	CARD , CABLE (11P,1.25mm,150mm,B,10mm)		1
...3		CWZAVR2700CN90A	INLET WIRE ASS'Y		1
...4		CJ8A006ZW	RECEPTACLE , AC(15A/250V,R-301,B21)	R-301-(B21)	1
...4		CLZ9W003Z	FERRITE , RING	29X7.7X19	1
...4		CWZAVR1700CN90	WIRE ASS'Y		1
...3	F901	KBA2C6300TLEHY	FUSE(215Series, 250V/6.3)		1

AVR 151, 5.1CH RECEIVER, bill of materials					
Level	Ref#	Component	Description	Drawing No	REQ-Qty
..3	WF1501	CWC4C4A27B150B10	CARD, CABLE (27p, 1.25mm Pitch, 150mm)		1
..3	WF1502	CWC4C4A17B120B10	CABLE, CARD(17P, 120MM, 1.25MM)		1
.1		CHE154	CLAMPER, ARM		0.12
.1		CPB1A013X	BAG, POLY		1
.1		CPG1A972W	BOX, OUT CARTON AVR151		1
.1		CPL18A5M	STAPLE		8
.1		CPS1A930	PAD, LEFT		1
.1		CPS1A931	PAD, RIGHT		1
.1		CQB1A907Z	LABEL, BAR CODE AVR154		1
.1		CQB1A978	LABEL, BAR CODE(SET)		1
.1		CQS1A001	RIBON, BAR CODE	SONY(TR-4070)	0.12
.1		CQXAVR151/230	INSTRUCTION MANUAL ASS'Y		1
.2		CABR03PPB	BATTERY, AAA 2PCS IN PACK	00D3940012003	2
.2		CARTAVR151-HK	REMOTE CONTROLLER (AVR151)		1
.2		CJA2B120Z	CORD, POWER (PLUG+SOCKET) EUR		1
.2		CPB1A190Z	BAG, POLY(MANUAL260X365)		1
.2		CPL0905	STAPLE		3
.2		CQB1A971	LABEL, BAR CODE(MANUAL)		1
.2		CQE1A570Z	SHEET, QUICK START GUIDE AVR1510		1
.2		CSA1A018Z	FM 1 POLE ANT	T15011F-1	1
.2		CSA1A039Z	ANT, AM LOOP(9.5uH/5T)		1
.1		CRE1A037	LOCKER	SH08M790B0	4
.1		C4FC240CL	TAPE, P.P(24mm*50mm)		0.2
.1		C4FC500CL	TAPE, OPP		2.3

AMPLIFIER SECTION BIAS ADJUSTMENT

Measurement condition

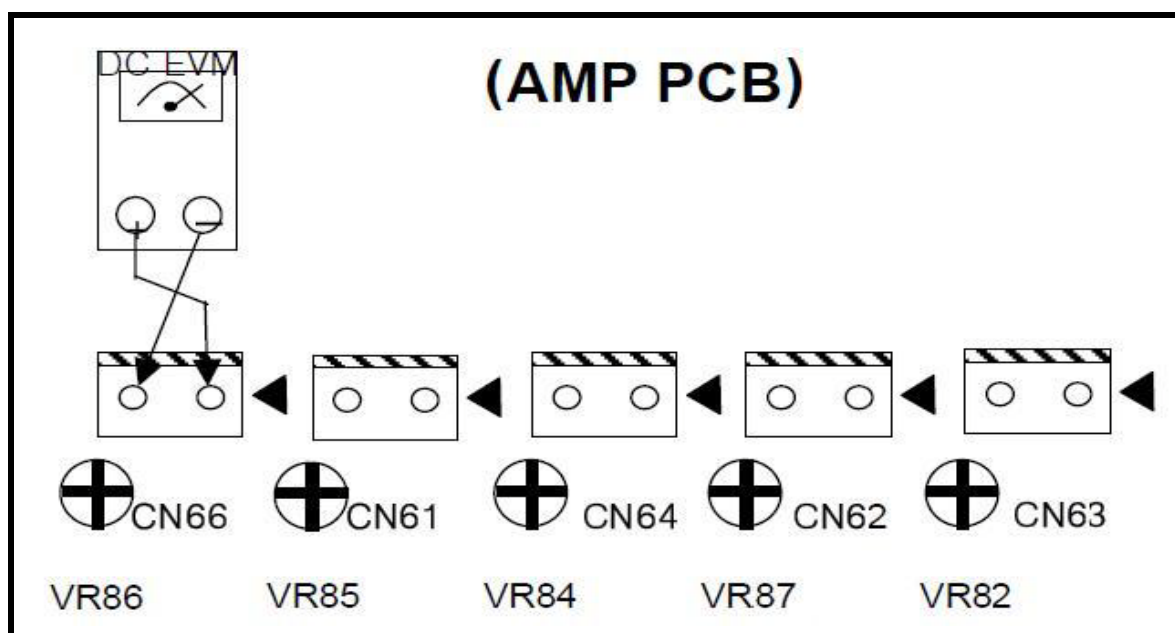
.No input signal or volume position is minium.

.Do not adjust at FM/AM

Standard value

.Ideal current = 48mA ($\pm 7\%$)

.Ideal DC Voltage = 22.5mA ($\pm 7\%$)



DC VOLTMETER ; Connect to

CN66(SL),CN61(CNT),CN64(SR),CN62(FR),CN63(FL)

No.	Channel	Adjust for	Adjust
1	Front Left	22.5mV ($\pm 7\%$)	CN63
2	Front Right	22.5mV ($\pm 7\%$)	CN62
3	Center	22.5mV ($\pm 7\%$)	CN61
4	Surround Left	22.5mV ($\pm 7\%$)	CN66
5	Surround Right	22.5mV ($\pm 7\%$)	CN64

RT1P144X SERIES

<Transistor>

Transistor With Resistor
For Switching Application
Silicon PNP Epitaxial Type

DESCRIPTION

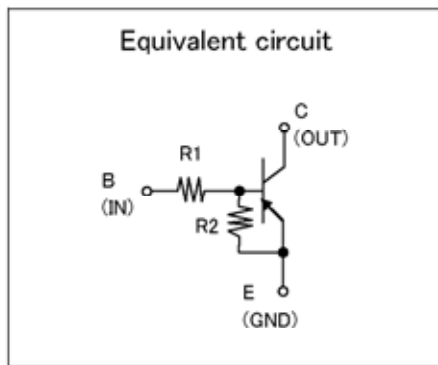
RT1P144X is a one chip transistor with built-in bias resistor, NPN type is RT1N144X.

FEATURE

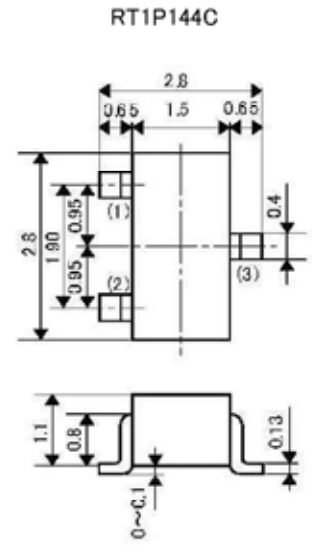
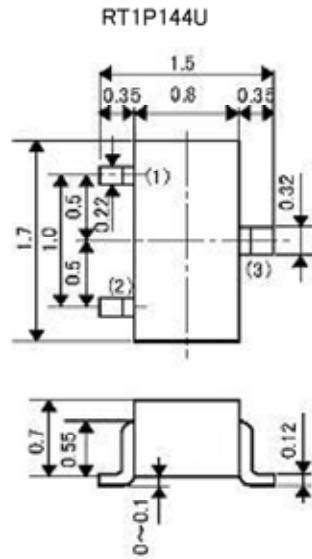
• Built-in bias resistor (R1=10kΩ, R2=47kΩ).

APPLICATION

Inverted circuit, switching circuit, interface circuit, driver circuit.



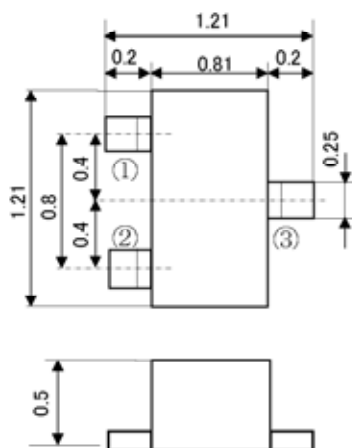
OUTLINE DRAWING UNIT : mm



JEITA: —
JEDEC: —
Terminal Connector
①: Base
②: Emitter
③: Collector

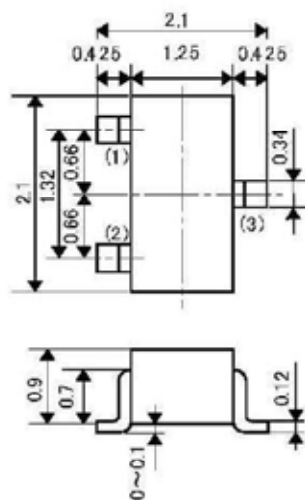
JEITA: SC-59
JEDEC: Similar to TO-236
Terminal Connector
①: Base
②: Emitter
③: Collector

RT1P144T2



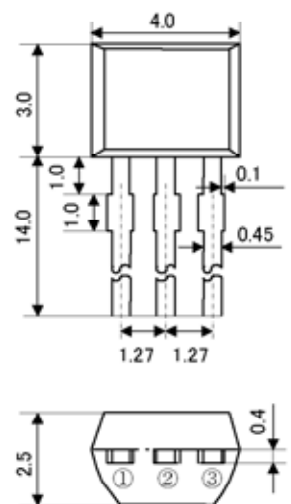
JEITA, JEDEC: —
ISAHAYA: T-USM
Terminal Connector
①: Base
②: Emitter
③: Collector

RT1P144M



JEITA: SC-70
JEDEC: —
Terminal Connector
①: Base
②: Emitter
③: Collector

RT1P144S



JEITA: —
JEDEC: —
Terminal Connector
①: Emitter
②: Collector
③: Base

RT1P141X SERIES

〈Transistor〉

Transistor With Resistor
For Switching Application
Silicon PNP Epitaxial Type

DESCRIPTION

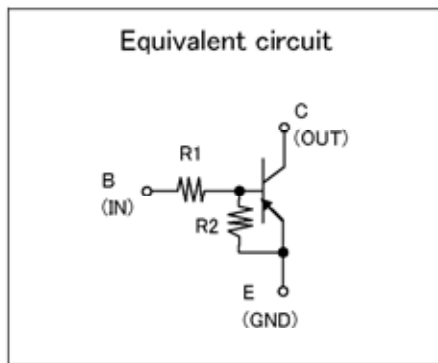
RT1P141X is a one chip transistor with built-in bias resistor, NPN type is RT1N141X.

FEATURE

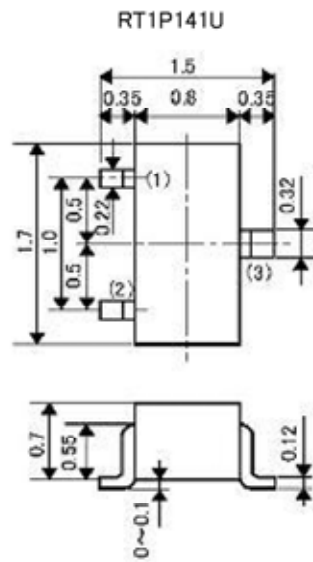
• Built-in bias resistor (R1=10kΩ, R2=10kΩ).

APPLICATION

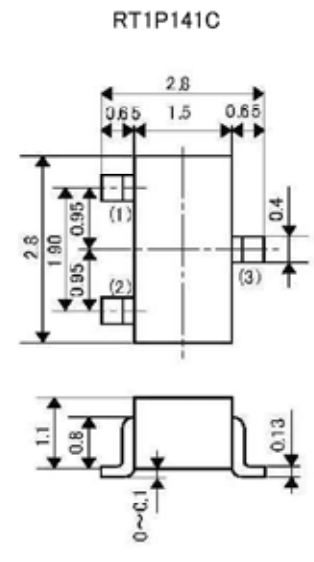
Inverted circuit, switching circuit, interface circuit, driver circuit.



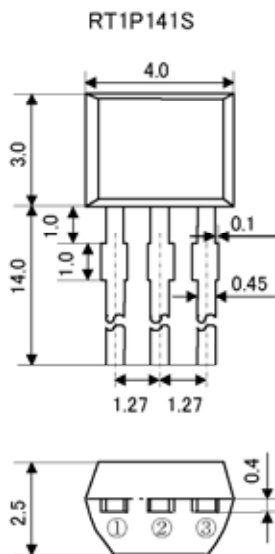
OUTLINE DRAWING UNIT : mm



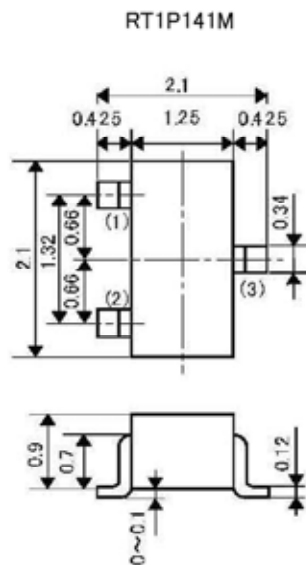
JEITA: —
JEDEC: —
Terminal Connector
①: Base
②: Emitter
③: Collector



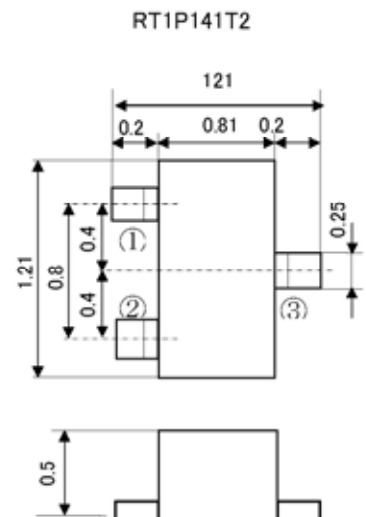
JEITA: SC-59
JEDEC: Similar to TO-236
Terminal Connector
①: Base
②: Emitter
③: Collector



JEITA: —
JEDEC: —
Terminal Connector
①: Emitter
②: Collector
③: Base



JEITA: SC-70
JEDEC: —
Terminal Connector
①: Base
②: Emitter
③: Collector



JEITA, JEDEC: —
ISAHAYA: T-USM
Terminal Connector
①: Base
②: Emitter
③: Collector

RT1N241X SERIES

〈Transistor〉

Transistor With Resistor

For Switching Application

Silicon NPN Epitaxial Type

DESCRIPTION

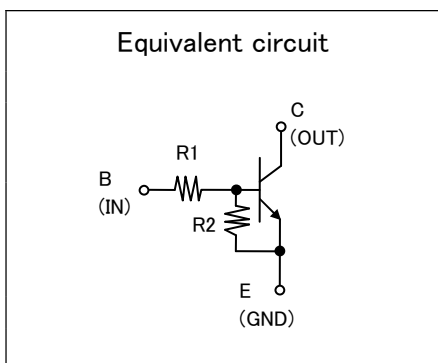
RT1N241X is a one chip transistor with built-in bias resistor, PNP type is RT1P241X.

FEATURE

- Built-in bias resistor (R1=22kΩ, R2=22kΩ).

APPLICATION

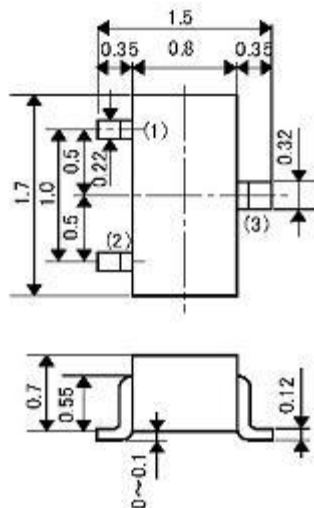
Inverted circuit, switching circuit, interface circuit, driver circuit.



OUTLINE DRAWING

UNIT : mm

RT1N241U



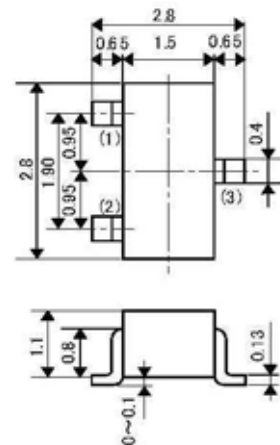
JEITA: —

JEDEC: —

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N241C



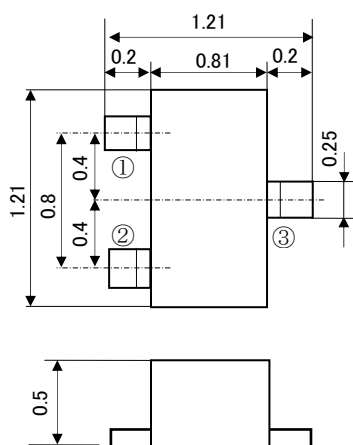
JEITA: SC-59

JEDEC: Similar to TO-236

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N241T2



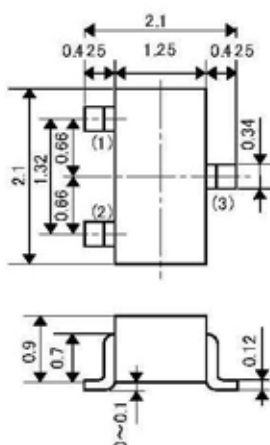
JEITA, JEDEC: —

ISAHAYA: T-USM

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N241M



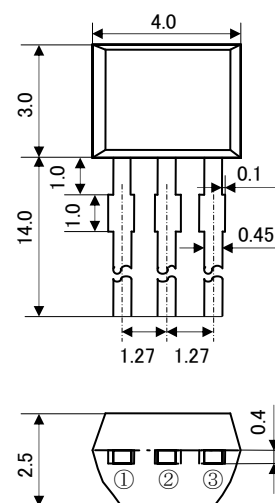
JEITA: SC-70

JEDEC: —

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N241S



JEITA: —

JEDEC: —

Terminal Connector

- ①: Emitter
- ②: Collector
- ③: Base

RT1N144X SERIES

Transistor

Transistor With Resistor

For Switching Application

Silicon NPN Epitaxial Type

DESCRIPTION

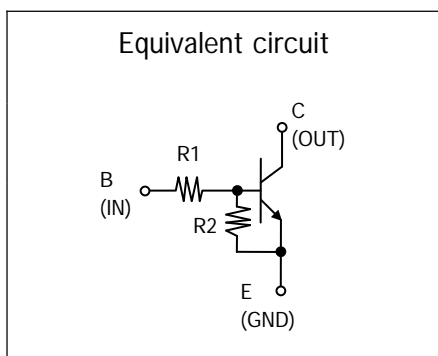
RT1N144X is a one chip transistor with built-in bias resistor, PNP type is RT1P144X.

FEATURE

Built-in bias resistor (R1=10kΩ, R2=47kΩ).

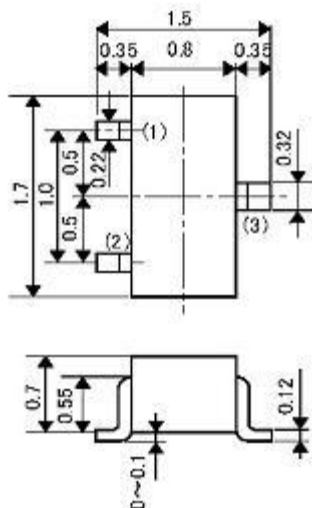
APPLICATION

Inverted circuit, switching circuit, interface circuit, driver circuit.



OUTLINE DRAWING UNIT :mm

RT1N144U



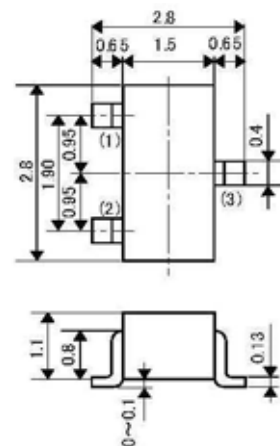
JEITA :-

JEDEC :-

Terminal Connector

- ① Base
- ② Emitter
- ③ Collector

RT1N144C



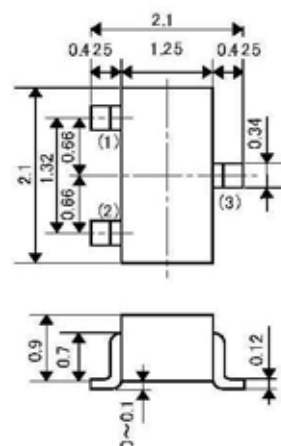
JEITA SC-59

JEDEC Similar to TO-236

Terminal Connector

- ① Base
- ② Emitter
- ③ Collector

RT1N144M



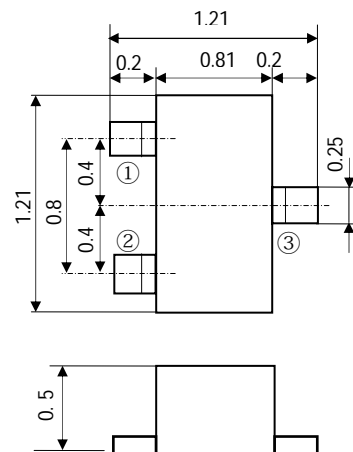
JEITA SC-70

JEDEC :-

Terminal Connector

- ① Base
- ② Emitter
- ③ Collector

RT1N144T2



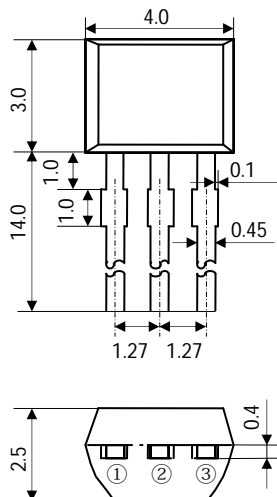
JEITA :-, JEDEC :-

ISAHAYA T-USM

Terminal Connector

- ① Base
- ② Emitter
- ③ Collector

RT1N144S



JEITA :-
JEDEC :-

Terminal Connector

- ① Emitter
- ② Collector
- ③ Base

RT1N144X SERIES

Transistor

Transistor With Resistor

For Switching Application

Silicon NPN Epitaxial Type

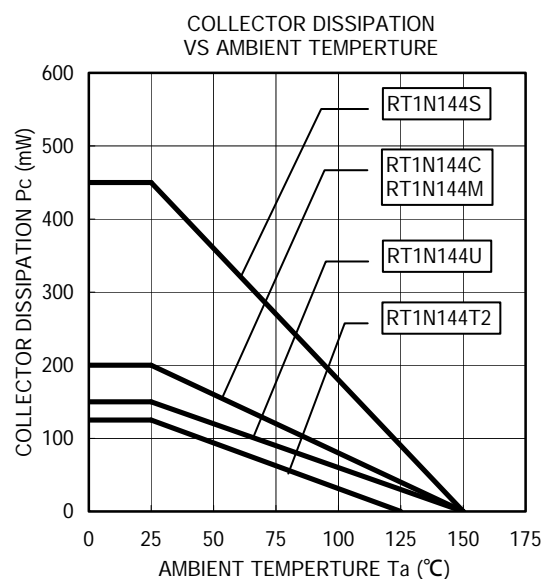
MAXIMUM RATING (Ta=25°C)

SYMBOL	PARAMETER	RATING					UNIT	
		RT1N144T2	RT1N144U	RT1N144M	RT1N144C	RT1N144S		
V_{CBO}	Collector to Base voltage	50					V	
V_{EBO}	Emitter to Base voltage	6					V	
V_{CEO}	Collector to Emitter voltage	50					V	
I_C	Collector current	100					mA	
I_{CM}	Peak Collector current	200					mA	
P_C	Collector dissipation(Ta=25°C)	125 ※)	150	200		450	mW	
T_j	Junction temperature	+125				+150	°C	
T_{stg}	Storage temperature	-55~+125					-55~+150	°C

※) package mounted on 9mm×19mm×1mm glass-epoxy substrate.

ELECTRICAL CHARACTERISTICS (Ta=25°C)

SYMBOL	PARAMETER	TEST CONDITION	LIMIT			UNIT
			MIN	TYP	MAX	
$V_{BR(CEO)}$	C to E break down voltage	$I_C=100\mu A, R_{BE}=\infty$	50			V
I_{CBO}	Collector cut off current	$V_{CB}=50V, I_E=0$			0.1	μA
h_{FE}	DC forward current gain	$V_{CE}=5V, I_C=5mA$	50			—
$V_{CE(sat)}$	C to E saturation voltage	$I_C=10mA, I_B=0.5mA$		0.1	0.3	V
$V_{I(ON)}$	Input on voltage	$V_{CE}=0.2V, I_C=5mA$		1.0	1.8	V
$V_{I(OFF)}$	Input off voltage	$V_{CE}=5V, I_C=100\mu A$	0.4	0.7		V
R_1	Input resistance		7.0	10	13	k Ω
R_2/R_1	Resistance ratio		4.2	4.7	5.1	
f_T	Gain band width product	$V_{CE}=6V, I_E=-10mA$		200		MHz

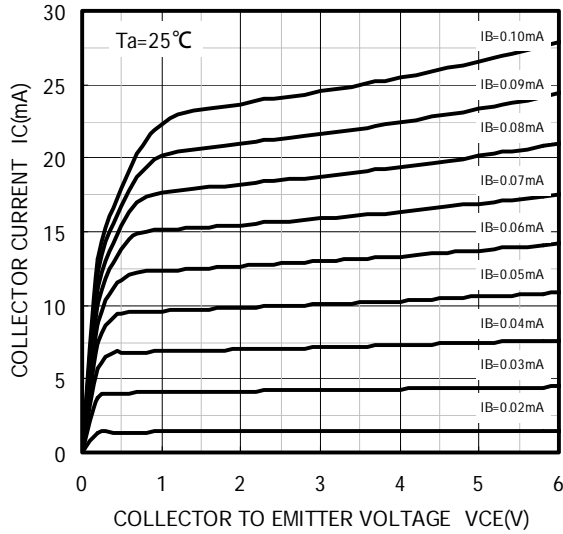


RT1N144X SERIES

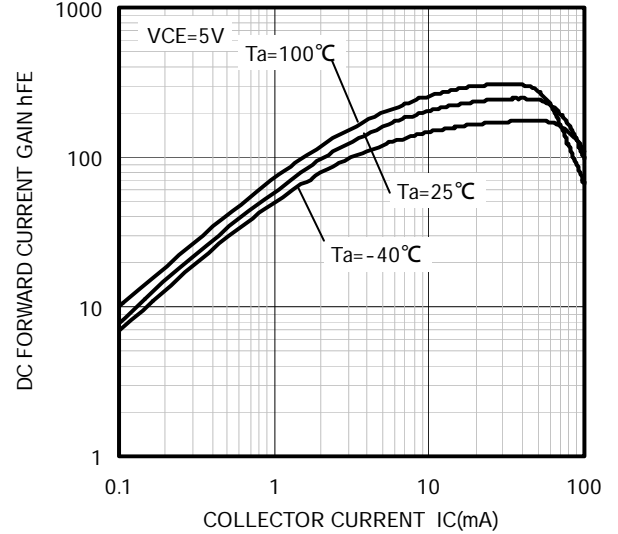
Transistor

Transistor With Resistor
For Switching Application
Silicon NPN Epitaxial Type

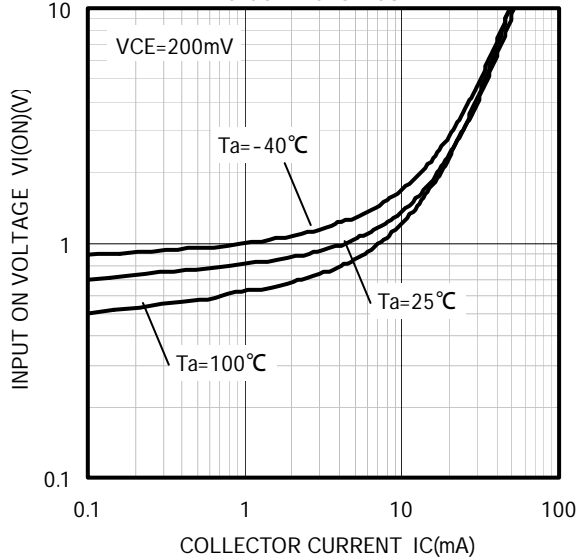
COMMON EMITTER OUTPUT



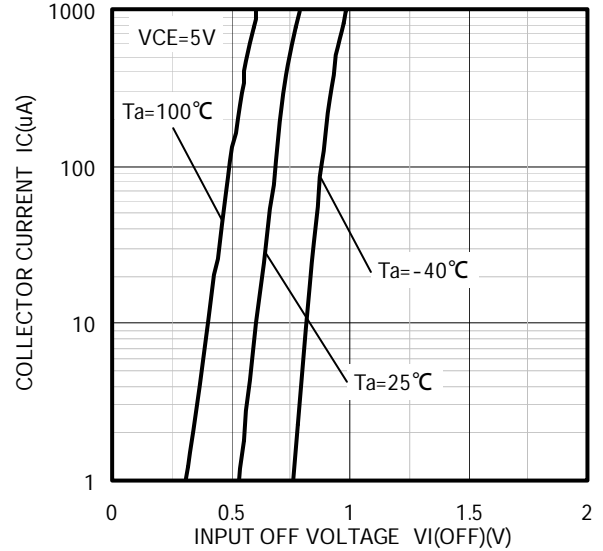
DC FORWARD CURRENT GAIN VS COLLECTOR CURRENT



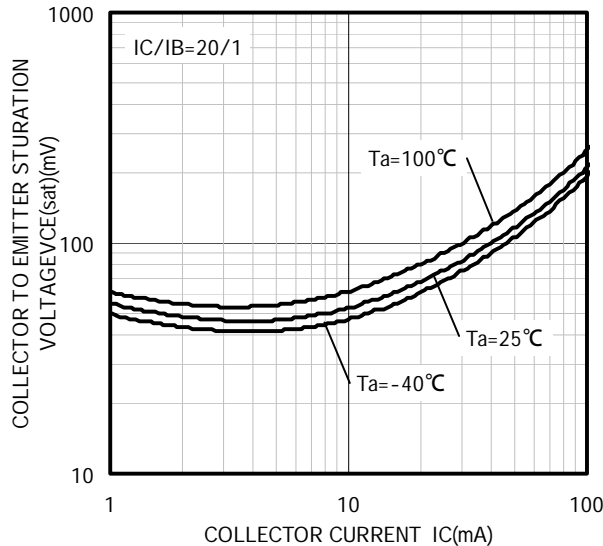
INPUT ON VOLTAGE VS COLLECTOR CURRENT



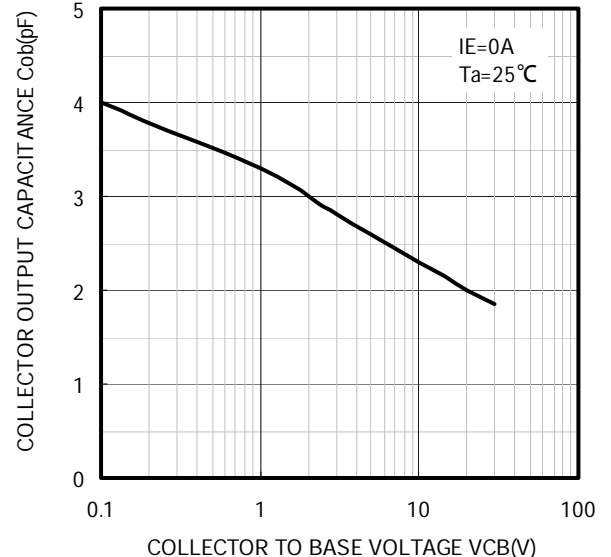
COLLECTOR CURRENT VS INPUT OFF VOLTAGE



COLLECTOR TO EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



RT1N141X SERIES

<Transistor>

Transistor With Resistor

For Switching Application

Silicon NPN Epitaxial Type

DESCRIPTION

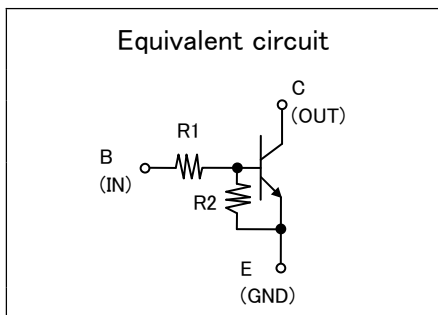
RT1N141X is a one chip transistor with built-in bias resistor, PNP type is RT1P141X.

FEATURE

- Built-in bias resistor (R1=10kΩ, R2=10kΩ).

APPLICATION

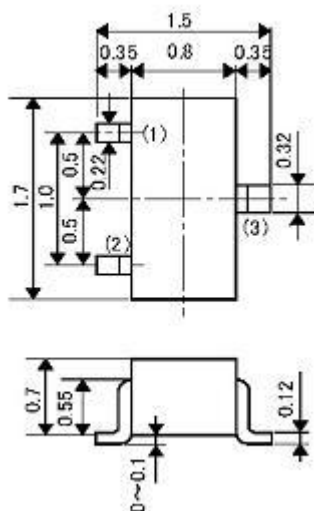
Inverted circuit, switching circuit, interface circuit, driver circuit.



OUTLINE DRAWING

UNIT : mm

RT1N141U



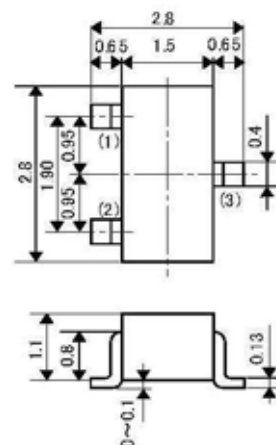
JEITA: —

JEDEC: —

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N141C



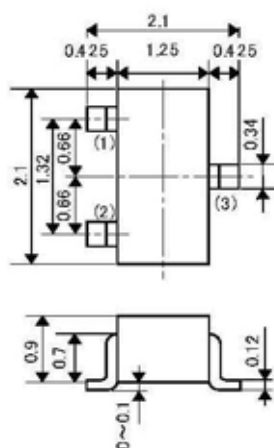
JEITA: SC-59

JEDEC: Similar to TO-236

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N141M



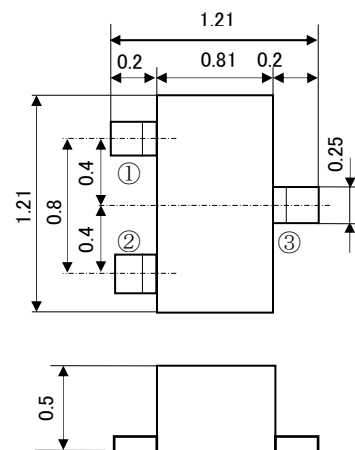
JEITA: SC-70

JEDEC: —

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N141T2



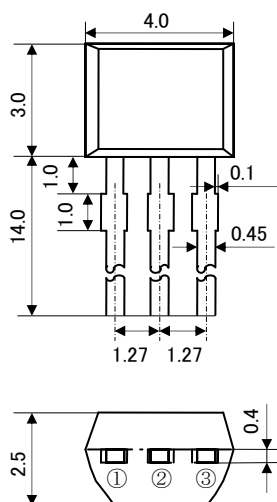
JEITA, JEDEC: —

ISAHAYA: T-USM

Terminal Connector

- ①: Base
- ②: Emitter
- ③: Collector

RT1N141S



JEITA: —

JEDEC: —

Terminal Connector

- ①: Emitter
- ②: Collector
- ③: Base

1. Overview

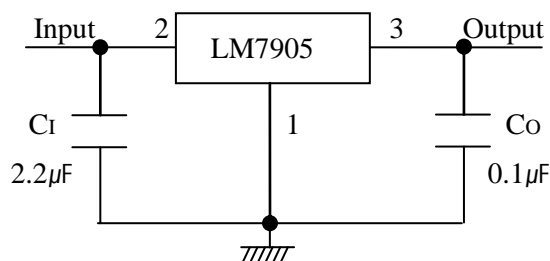
1.1 Description

LM7900 series of fixed output negative voltage regulators are intended as complement to LM7800 series devices. These negative regulators are available in the same even-voltage options as the LM7800 devices

1.2 Features

- No external components required
- Output voltages (5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 24V)
- Internal Thermal shutdown and SOA protection
- Output voltage offered in 4% Tolerance
- Pb-Free Packages are available
- High ESD Level (HBM>8,000V, MM>800V)

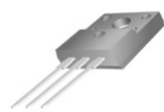
1.3 Standard Application



The input voltage must remain typically 2.0V below the output voltage even during the high point on the ripple voltage.

- C_1 is required if regulator is located an appreciable distance from power filter.
- C_o improves transient response. Values of $\leq 1.0 \mu\text{F}$ could cause instability.

1.4 Package Type



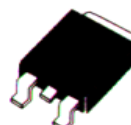
123

TO-220F



123

TO-220



1 2 3

D-PAK(TO-252)

1. GND
2. INPUT
3. OUTPUT

1. Overview

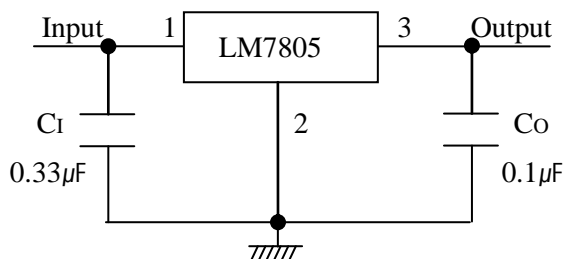
1.1 Description

The voltage regulators are designed as fixed-voltage regulator for a wide variety of applications including local, on-card regulation. Although designed primarily as a fixed voltage regulator, these devices can be used with external components to obtain adjustable voltages and currents

1.2 Features

- Output current in excess of 1.0A
- No external components required
- Output voltages (5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 24V)
- Internal Thermal shutdown and SOA protection
- Output voltage offered in 4% Tolerance
- Pb-Free Packages are available
- High ESD Level (HBM>8,000V, MM>800V)

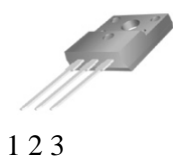
1.3 Standard Application



The input voltage must remain typically 2.0V above the output voltage even during the low point on the ripple voltage.

- C_i is required if regulator is located an appreciable distance from power filter.
- C_o improves transient response. Value of $\leq 0.1\mu F$ could cause instability.

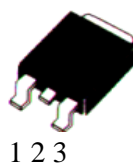
1.4 Package Type



TO-220F



TO-220



D-PAK (TO-252)

1. INPUT
2. GND
3. OUTPUT

Pin Configuration

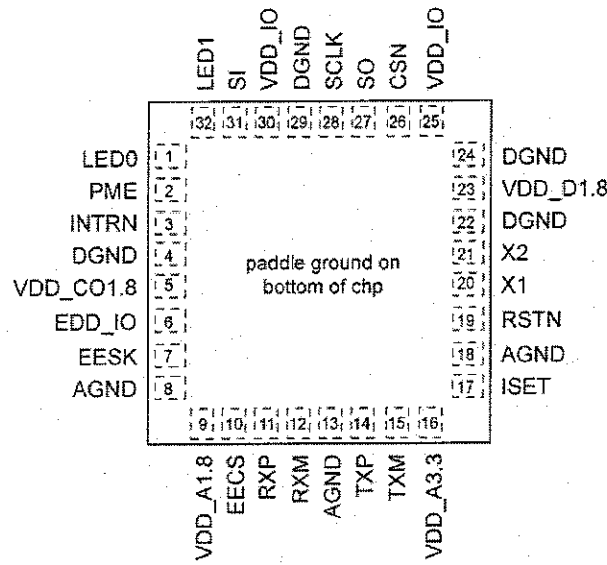


Figure 2. 32-Pin (5mm x 5mm) MLF®

Micrel, Inc.

KSZ8851SNL/SNLI

Pin Description

Pin Number	Pin Name	Type	Pin Function												
1	LED0	Opu	<p>Programmable LED output to indicate PHY activity/status. LED is ON when output is LOW; LED is OFF when output is HIGH. LED indicators¹ defined as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="3">Chip Global Control Register: CGCR bit [9]</th> </tr> <tr> <th></th> <th>0 (Default)</th> <th>1</th> </tr> </thead> <tbody> <tr> <td>LED1 (pin 32)</td> <td>100BT</td> <td>ACT</td> </tr> <tr> <td>LED0 (pin 1)</td> <td>LINK/ACT</td> <td>LINK</td> </tr> </tbody> </table> <p>Link (up) = LED On; Activity = LED Blink; Link/Act = LED On/Blink; Speed = LED On (100BASE-T); LED Off (10BASE-T)</p>	Chip Global Control Register: CGCR bit [9]				0 (Default)	1	LED1 (pin 32)	100BT	ACT	LED0 (pin 1)	LINK/ACT	LINK
Chip Global Control Register: CGCR bit [9]															
	0 (Default)	1													
LED1 (pin 32)	100BT	ACT													
LED0 (pin 1)	LINK/ACT	LINK													
2	PME	Opu	<p>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.</p>												
3	INTRN	Opu	<p>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.</p>												
4	DGND	Gnd	Digital IO ground.												
5	VDD_CO1.8	P	<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.</p>												
6	EED_IO	lpd/O	<p>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.</p>												
7	EESK	Opd	<p>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.</p>												
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	<p>EEPROM Chip Select This signal is used to select an external EEPROM device.</p>												
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	<p>Set physical transmits output current. Pull-down this pin with a 3.01K 1% resistor to ground.</p>												
18	AGND	Gnd	Analog ground.												
19	RSTN	lpu	Reset Not.												

Micrel, Inc.

KSZ8851SNL/SNLI

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

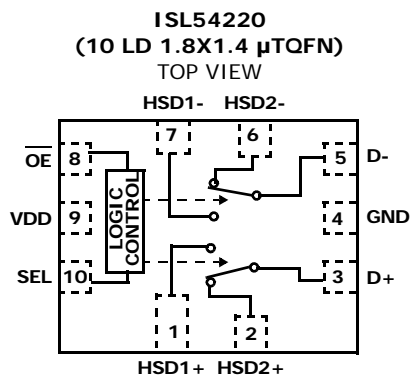
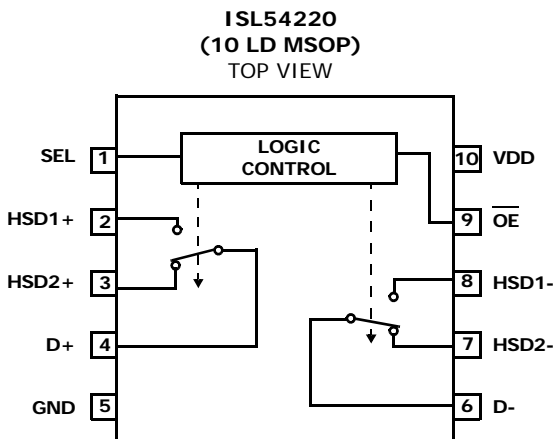
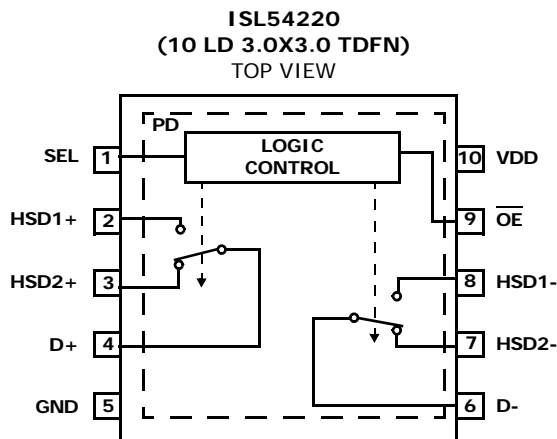
Pin Number	Pin Name	Type	Pin Function
6	EED_IO	Ipd/O	EEPROM select: Pull-up = EEPROM present Floating (NC) or Pull-down = EEPROM not present (default) During power-up / reset, this pin value is latched into register CCR, bit 9

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.

ISL54220

Pin Configurations



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 $\leq 0.5V$, Logic "1" when $\geq 1.4V$ 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

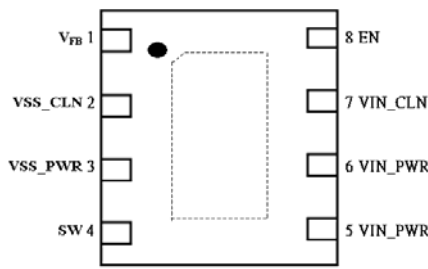
ESMT/EMP

EML3418

Connection Diagram

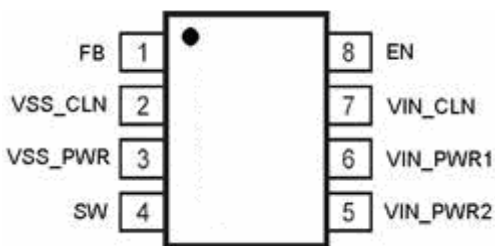
Order information

TDFN-8 Package



EML3418-00FF08NRR
 00 Adj Operation
 FF08 TDFN-8 Package
 NRR RoHS & Halogen Free
 Rating: -40 to 85°C
 Package in Tape & Reel

SOP-8FD Package



EML3418-00SE08GRR/NRR
 00 Adj Operation
 SE08 SOP-8FD package
 GRR RoHS (Pb Free)
 Rating: -40 to 85°C
 Package in Tape & Reel
 NRR RoHS & Halogen free (By Request)
 Rating: -40 to 85°C
 Package in Tape & Reel

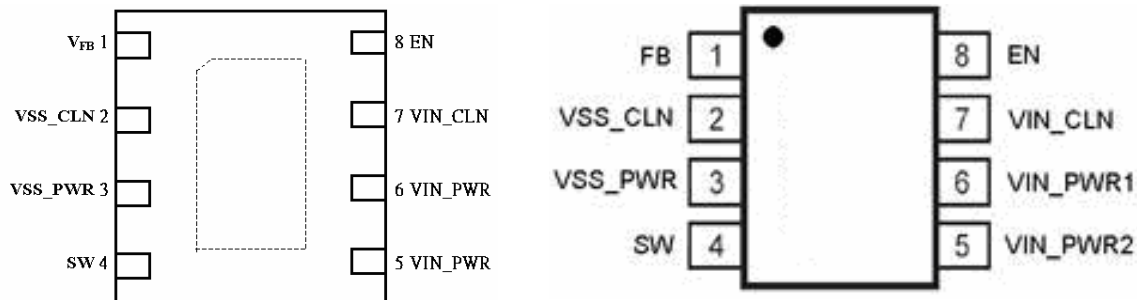
Order, Mark & Packing Information

Package	Vout	Product ID	Marking	Packing
TDFN-8	Adj	EML3418-00FF08NRR		5Kpcs Tape & Reel
SOP-8FD	Adj	EML3418-00SE08GRR		3Kpcs Tape & Reel

ESMT/EMP

EML3418

Package Configuration



Pin Func

FBP-8, Adjustable

Pin #	Pin Name	Function
1	V_{FB} (Adjustable)	Feedback Pin. Receives the feedback voltage from an external resistive divider across the output.
	V_{OUT} (Fixed voltage)	Output Voltage Pin. An internal resistive divider divides the output voltage down for comparison to the internal reference voltage.
2	VSS_CLN	Analog Ground Pin.
3	VSS_PWR	Power Ground Pin.
4	SW	Switch Pin. Must be connected to Inductor. This pin connects to the drains of the internal main and synchronous power MOSFET switches.
5, 6	V_{IN_PWR}	Power Input Pin. Must be closely decoupled to GND pin with a 4.7μF or greater ceramic capacitor.
7	V_{IN_CLN}	Analog Input Pin. Must be closely decoupled to GND pin with a 4.7μF or greater ceramic capacitor.
8	EN	Enable Pin. Minimum 1.2V to enable the device. Maximum 0.4V to shut down the device. Do not leave this pin floating and enable the chip after Vin is in the input voltage range.
Exposed pad		Connect to Ground.

1.5A, Low Dropout Regulator with Power Good**DESCRIPTION**

The DB1514A is a very low dropout voltage linear regulator which can operate from the input voltages as low as 2.5V and is capable of delivering the continuous output load current up to 1.5A.

It has a low dropout voltage (maximum 300mV at 1A), a very low quiescent current (typically 300uA at 0.1A) and very high PSRR up to 86dB at 1A load current.

The output voltage can be set from 0.5V to $(V_{IN} - V_{DRP})$ with an external resistor divider and it has $\pm 2\%$ accuracy through all temperature ranges include the line as well as load variations.

It is allowed to use a small 4.7 μ F MLCC input and output capacitor to deliver the current with the stable operation.

An internal Soft-Start function reduces the inrush current and the other features are include over current protection (OCP), short-circuit protection (SCP), and thermal shut down protection (TSD).

The DB1514A is available in 8-SOP-EP package with exposed pad for optimal power dissipation and 8-TDFN(3mmx3mm).

FEATURES

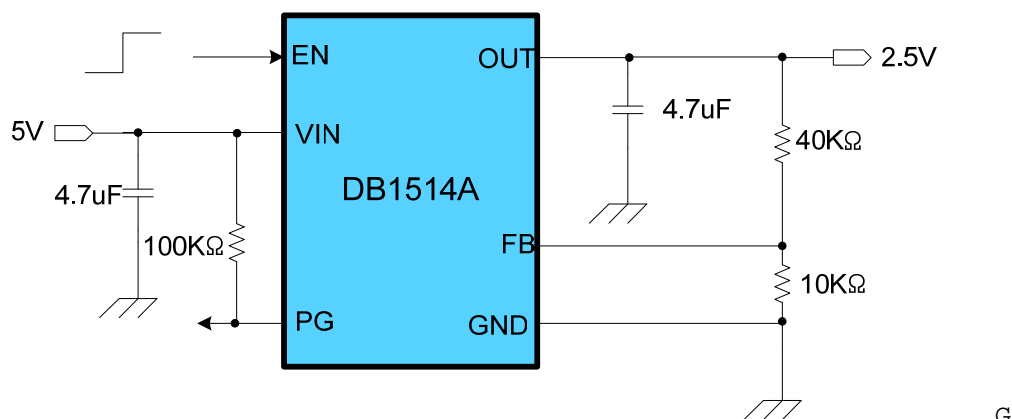
- **Input Voltage Range: 2.5V to 6.0V**
- **Low Quiescent Current: Typ. 300uA @**
- **Current limit : Min. 1.8A**
- **Adjustable Output from 0.5V**
- **DB1514A: Typ 0.4V Dropout @ $I_{OUT}=1.5A$
Max 0.28V Dropout @ $I_{OUT}=1A$
Max 0.2V Dropout @ $I_{OUT}=0.5A$**
- **Compatible with MLCC Capacitors**
- **Soft-Start Limits Inrush Current G**
- **Thermal Shutdown Protection**
- **Over Current & Short Circuit Protection**

APPLICATIONS

- TV & STB application
- Servers
- Networking
- Notebook
- Optical Modules
- Post Regulators

ORDERING INFORMATION

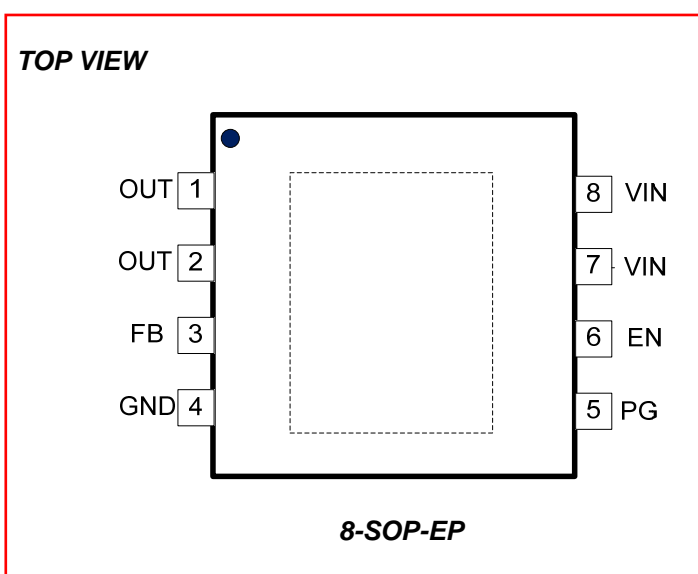
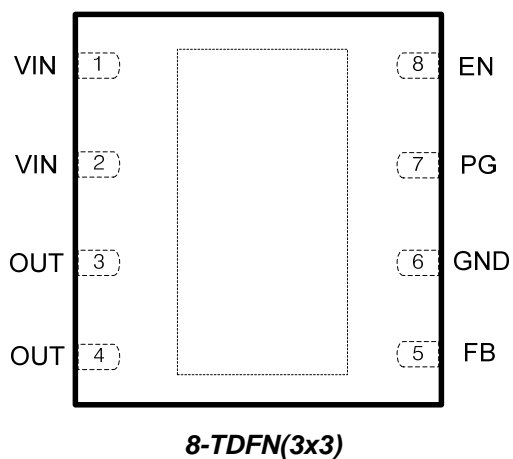
PART NUMBER	PACKAGE
DB1514AHETR	8-SOP-EP
DB1514ADLTR	8-TDFN(3x3)

TYPICAL APPLICATION

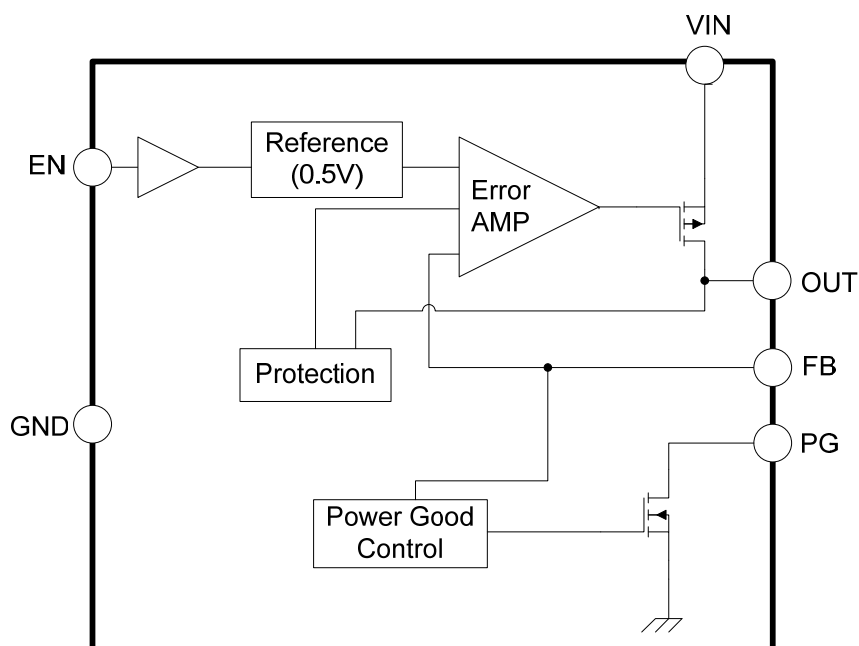
PIN DESCRIPTION

PIN NO		SYMBOL	DESCRIPTION
8-TDFN	8-SOP-EP		
7	5	PG	Open Drain Power-Good (PG) Output.
8	6	EN	Enable Input.
1,2	7,8	VIN	Input Supply Voltage Pin.
3,4	1,2	OUT	Output pin
5	3	FB	Feedback Pin. Connect to output through a voltage-divider to set the output. Recommended that the tolerance of feedback resistors is below 1%.
6	4	GND	Ground Pin
EP	EP	Exposed pad	Should be connected to GND for Heatsink.

PIN CONFIGURATION



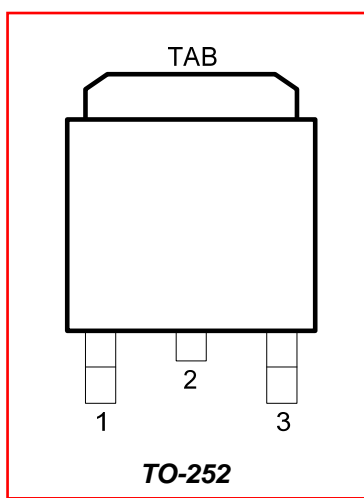
BLOCK DIAGRAM



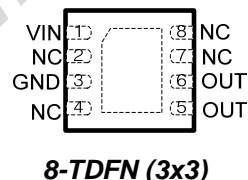
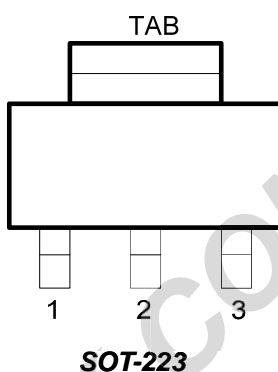
PIN DESCRIPTION

TO-252 (I) SOT-223 (I)	PIN NO		SYMBOL	DESCRIPTION
	TO-252 (II) SOT-223 (II)	8-TDFN		
1	3	1	VIN	Input Voltage
2, TAB	1	3	GND	Ground
3	2, TAB	5, 6	OUT	Output Voltage
-	-	2, 4, 7, 8	NC	No Connection

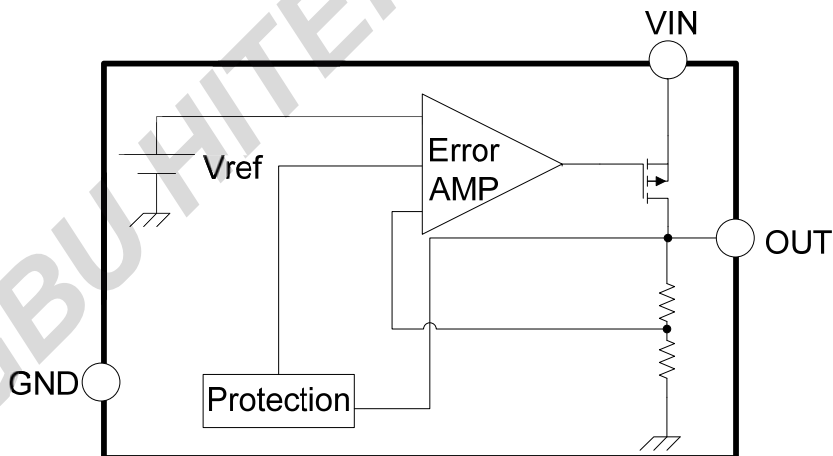
PIN CONFIGURATION



TOP VIEW



BLOCK DIAGRAM



3A, 700KHz, Synchronous Step-down Converter

DESCRIPTION

The DB1230 is a high frequency synchronous rectified step-down regulator which integrates an 110mΩ high-side power MOSFET and an 85mΩ low-side power MOSFET.

It provides easy & compact solution to implement 3A continuous output current over a wide range input from 4.5V to 16V with a good load and line regulation.

The current-mode control operation provides a good loop-stability under any system condition and fast transient response.

According to an internal compensation and a high frequency operation, the DB1230 requires a few number of external components mentioned in the basic dc-dc power system.

The built-in protections are allowed to have a simple design and a robust operation.

For a good thermal performance, the DB1230 uses an internal temperature independent voltage reference and the package that has low Θ_{JA} (<50°C/W)

It is available in 8-pin SOP-EP or 14-pin TSSOP package with an exposed pad.

FEATURES

- 4.5V to 16V operating input range.
- High-side 110 mΩ, low-side 85 mΩ Built-in power MOSFETs.
- Fixed PWM 700kHz switching frequency.
- Output voltage accuracy : $\pm 2\%$
- 3A continuous output current.
- Low reference voltage : 0.8V
- Programmable soft-start.
- Internal Compensation.
- Built-in SCP, OCP, TSD Protection.
- Thermally Enhanced 8-SOP-EP Package

APPLICATIONS

- Digital Set Top Boxes.
- Personal Video Recorder.
- Flat Panel TV & Monitor.
- Distributed Power Systems.

ORDERING INFORMATION

PART NUMBER	PACKAGE
DB1230HETR	8-SOP-EP
DB1230HPTR	14-TSSOP-EP

TYPICAL APPLICATION

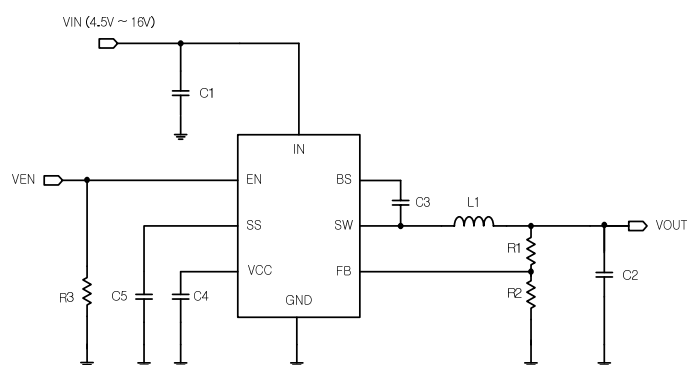


Fig.1 Normal application circuit

EFFICIENCY

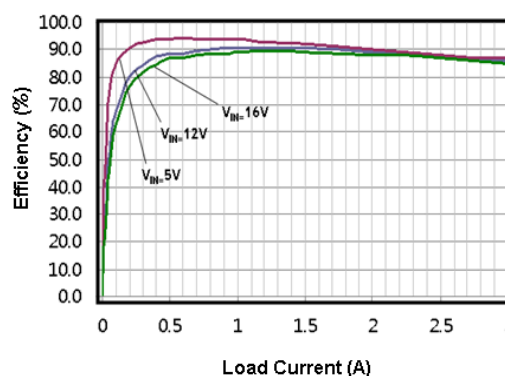


Fig.2 Efficiency (Vout=3.3V)

PIN DESCRIPTION

PIN NO.	SYMBOL	DESCRIPTION
1	EN	Enable pin. For automatic start-up, please leave it open and in case of on/off control, there should be pull-down resistor.(10K~100Kohm)
2	FB	Feedback pin. External resistors are connected between OUT and GND to set the regulated output voltage based on 0.8V reference.
3	VCC	Internal regulated output. A decoupling capacitor should be close to this pin as possible
4	SS	External soft-start program pin. An external capacitor should be connected to GND.
5	GND	Ground.
6	SW	Switching Node. An inductor, internal high-side and low-side power switches are connected
7	BS	Bootstrap pin. The bootstrap charge capacitor should be connected between BS and SW to provide a supply to gate driver of high-side power switch.
8	IN	Input power supply pin.
EP	Exposed Pad	Exposed pad. Connect the exposed pad to GND for heat sink. This pin combines thermal sink and power ground.

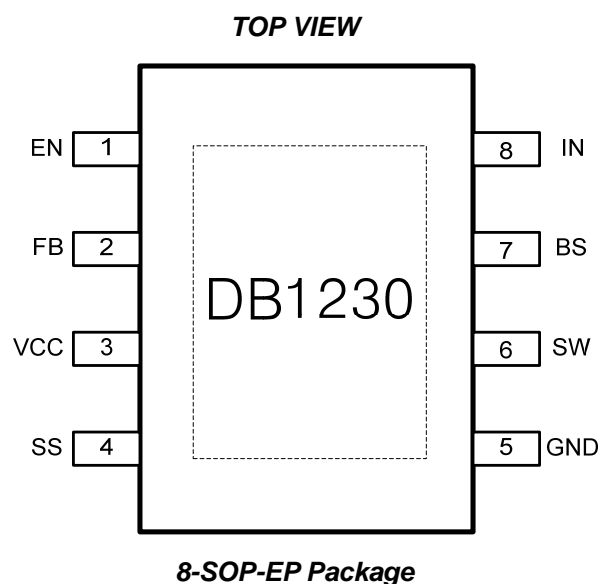
PIN CONFIGURATION

Fig.3 DB1230 PIN configuration

PIN DESCRIPTION

PIN NO.	SYMBOL	DESCRIPTION
1	NC	No Connection pin.
2	FB	Feedback pin. External resistors are connected between OUT and GND to set the regulated output voltage based on 0.8V reference.
3	VCC	Internal regulated output. A decoupling capacitor should be close to this pin as possible
4	SS	External soft-start program pin. An external capacitor should be connected to GND.
5	AGND	Analog Signal Ground.
6	NC	No Connection pin.
7	EN	Enable pin. For automatic start-up, please leave it open and in case of on/off control, there should be pull-down resistor.(10K~100Kohm)
8	PGND	Power Ground.
9	PGND	Power Ground.
10	SW	Switching Node. An inductor, internal high-side and low-side power switches are connected
11	SW	Switching Node. An inductor, internal high-side and low-side power switches are connected
12	BS	Bootstrap pin. The bootstrap charge capacitor should be connected between BS and SW to provide a supply to gate driver of high-side power switch.
13	IN	Input power supply pin.
14	NC	No Connection pin.

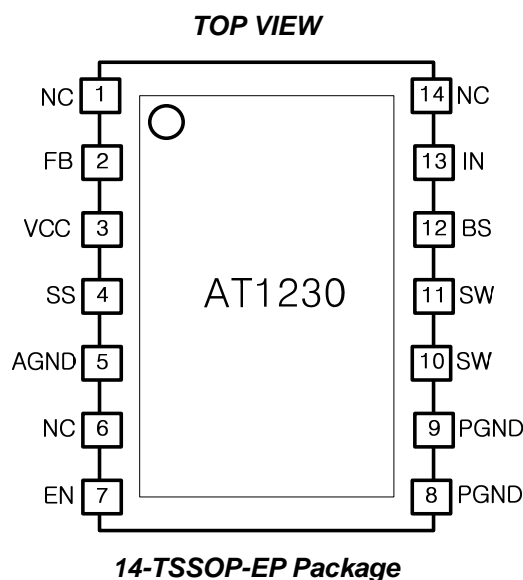
PIN CONFIGURATION

Fig.4 DB1230 PIN configuration



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 CLK 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.

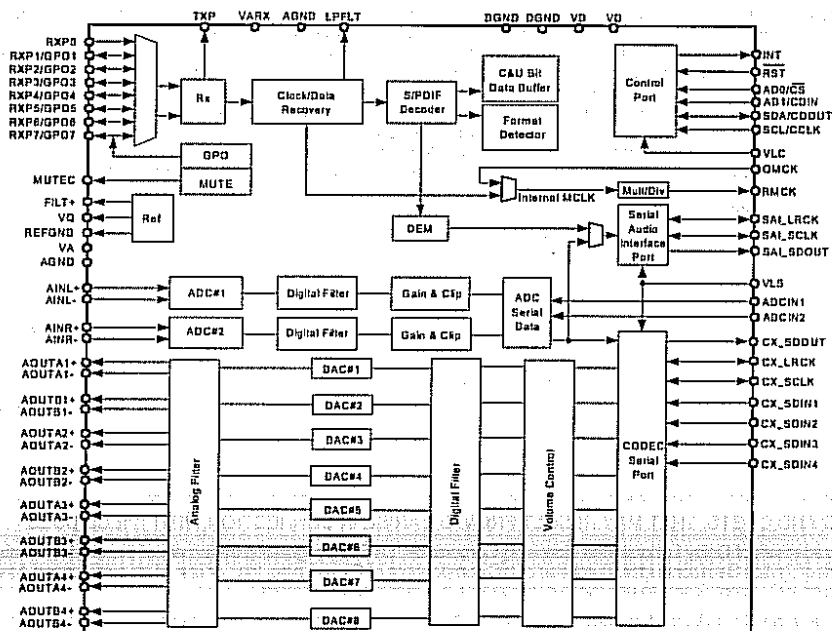
The CS42528 integrated S/PDIF receiver supports up to eight inputs, clock recovery circuitry and format auto-detection. The internal stereo ADC is capable of independent channel gain control for single-ended or differential analog inputs. All eight channels of DAC provide digital volume control and differential 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-CQ*	-10° to 70° C	64-pin LQFP
CS42528-DQ*	-40° to 85° C	64-pin LQFP
CDB42528	Evaluation Board	

*Also available in Lead-Free package



Preliminary Product Information

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

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CS42528

AD0/ $\overline{\text{CS}}$	10	Address Bit 0 (I^2C)/Control Port Chip Select (SPI) (<i>Input</i>) - AD0 is a chip address pin in I^2C mode; $\overline{\text{CS}}$ is the chip select signal in SPI mode.
INT	11	Interrupt (<i>Output</i>) - The CS42528 will generate an interrupt condition as per the Interrupt Mask register. See "Interrupts" on page 40 for more details.
$\overline{\text{RST}}$	12	Reset (<i>Input</i>) - 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 (<i>Input</i>) - Signals are presented differentially to the delta-sigma modulators via the AINR+/- pins.
AINL+ AINL-	15 16	Differential Left Channel Analog Input (<i>Input</i>) - Signals are presented differentially to the delta-sigma modulators via the AINL+/- pins.
VQ	17	Quiescent Voltage (<i>Output</i>) - Filter connection for internal quiescent reference voltage.
FILT+	18	Positive Voltage Reference (<i>Output</i>) - Positive reference voltage for the internal sampling circuits.
REFGND	19	Reference Ground (<i>Input</i>) - 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 (<i>Output</i>) - The full-scale differential analog output level is specified in the Analog Characteristics specification table.
VA VARX	24 41	Analog Power (<i>Input</i>) - Positive power supply for the analog section.
AGND	25 40	Analog Ground (<i>Input</i>) - Ground reference. Should be connected to analog ground.
MUTEC	38	Mute Control (<i>Output</i>) - 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 (<i>Output</i>) - 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 (<i>Input/Output</i>) - 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 (<i>Input</i>) - Dedicated receiver input for S/PDIF encoded data.
TXP	50	S/PDIF Transmitter Output (<i>Output</i>) - 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 (<i>Input</i>) - Determines the required signal level for the serial port interfaces.
SAI_SDOOUT	54	Serial Audio Interface Serial Data Output (<i>Output</i>) - 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 (<i>Output</i>) - 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.

CAT803, CAT809, CAT810

3-Pin Microprocessor Power Supply Supervisors

Description

The CAT803, CAT809, and CAT810 are supervisory circuits that monitor power supplies in digital systems. The CAT803, CAT809, and CAT810 are direct replacements for the MAX803, MAX809 and MAX810 in applications operating over the industrial temperature range.

These devices generate a reset signal, which is asserted while the power supply voltage is below a preset threshold level and for at least 140 ms after the power supply level has risen above that level. The underlying floating gate technology, AE² used by ON Semiconductor, makes it possible to offer any custom reset threshold value. Seven industry standard threshold levels are offered to support +5.0 V, +3.3 V, +3.0 V and +2.5 V systems.

The CAT803 has an open-drain RESET output (active LOW). The CAT803 requires a pull-up resistor on the reset output.

The CAT809 features a push-pull RESET output (active LOW) and the CAT810 features a push-pull RESET output (active HIGH).

Fast transients on the power supply are ignored and the output is guaranteed to be in the correct state at V_{CC} levels as low as 1.0 V.

The CAT803, CAT809, and CAT810 are available in both the compact 3-pin SOT-23 and SC-70 packages.

Features

- Precision Monitoring of
 - +5.0 V (-5%, -10%, -20%),
 - +3.3 V (-5%, -10%),
 - +3.0 V (-10%) and
 - +2.5 V (-5%) Power Supplies
- Offered in Three Output Configurations:
 - CAT803: Open-Drain Active LOW Reset
 - CAT809: Push-Pull Active LOW Reset
 - CAT810: Push-Pull Active HIGH Reset
- Direct Replacements for the MAX803, MAX809 and MAX810 in Applications Operating over the Industrial Temperature Range
- Reset Valid down to $V_{CC} = 1.0$ V
- 6 μ A Power Supply Current
- Power Supply Transient Immunity
- Industrial Temperature Range: -40°C to +85°C
- Available in SOT-23 and SC-70 Packages
- These Devices are Pb-Free and are RoHS Compliant

Applications

- Computers, Servers, Laptops, Cable Modems
- Wireless Communications
- Embedded Control Systems
- White Goods, Power Meters
- Intelligent Instruments
- PDAs and Handheld Equipment



ON Semiconductor®

<http://onsemi.com>

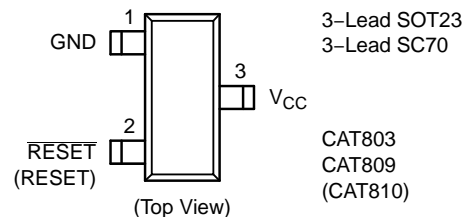


**SOT-23
TB SUFFIX
CASE 527AG**

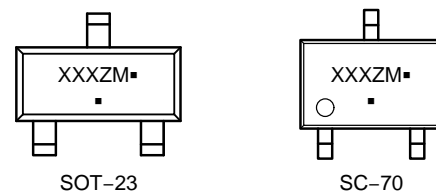


**SC-70
SD SUFFIX
CASE 419AB**

PIN CONFIGURATION



MARKING DIAGRAMS



XXX = Specific Device Code
Z = Assembly Lot Code
M = Month Code
▪ = Pb-Free Package

(*Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 8 of this data sheet.

CAT803, CAT809, CAT810**Table 1. THRESHOLD SUFFIX SELECTOR**

Nominal Threshold Voltage	Threshold Suffix Designation
4.63 V	L
4.55 V	H
4.38 V	M
4.00 V	J
3.08 V	T
2.93 V	S
2.63 V	R
2.32 V	Z
1.60 V	V

Table 2. PIN DESCRIPTIONS

Pin Number			Name	Description
CAT803	CAT809	CAT810		
1	1	1	GND	Ground
2	2	–	$\overline{\text{RESET}}$	Active LOW reset. $\overline{\text{RESET}}$ is asserted if V_{CC} falls below the reset threshold and remains low for at least 140 ms after V_{CC} rises above the reset threshold.
–	–	2	RESET	Active HIGH reset. RESET is asserted if V_{CC} falls below the reset threshold and remains high for at least 140 ms after V_{CC} rises above the reset threshold.
3	3	3	V_{CC}	Power supply voltage that is monitored.

Table 3. ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Any pin with respect to ground	–0.3 to +6.0	V
Input Current, V_{CC}	20	mA
Output Current, RESET, $\overline{\text{RESET}}$	20	mA
Rate of Rise, V_{CC}	100	V/ μs
Continuous Power Dissipation Derate 2.2 mW/ $^{\circ}\text{C}$ above 70 $^{\circ}\text{C}$ (SC70) Derate 4 mW/ $^{\circ}\text{C}$ above 70 $^{\circ}\text{C}$ (SOT23)	175 320	mW
Operating Temperature Range	–40 to +85	$^{\circ}\text{C}$
Storage Temperature Range	–65 to +105	$^{\circ}\text{C}$
Lead Soldering Temperature (10 sec)	300	$^{\circ}\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



LOW DROPOUT LINEAR REGULATOR

AZ1117C

General Description

The AZ1117C is a low dropout three-terminal regulator.

The AZ1117C has been optimized for low voltage where transient response and minimum input voltage are critical. It provides current limit and thermal shutdown. Its circuit includes a trimmed bandgap reference to assure output voltage accuracy to be within $\pm 1\%$. On-chip thermal shutdown provides protection against a combination of high current and ambient temperature that would create excessive junction temperature.

The AZ1117C is available in 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, 5.0V fixed output voltage versions and ADJ output voltage version. The fixed versions integrate the adjust resistors. It is also available in an adjustable version which can set the output voltage with two external resistors.

The AZ1117C is available in the industry-standard TO-252-2 (1), TO-252-2 (2), TO-252-2 (3), TO-252-2 (4), SOT-89 and SOT-223 power packages.

Features

- Current Limit: 1.0A (Typ.)
- Output Noise from 10Hz to 10KHz: 0.003% of V_{OUT}
- PSRR at $I_{OUT}=300mA$ and $f=120Hz$: 70dB
- Output Voltage Accuracy: $\pm 1\%$ (Except 1.2V version)
- On-chip Thermal Shutdown
- Maximum Quiescent Current: $I_{QMAX}=6mA$
- Compatible with Low ESR Ceramic Capacitor
- Operation Junction Temperature: -20 to $125^{\circ}C$

Applications

- USB Device
- Add-on Card
- DVD Player
- PC Motherboard

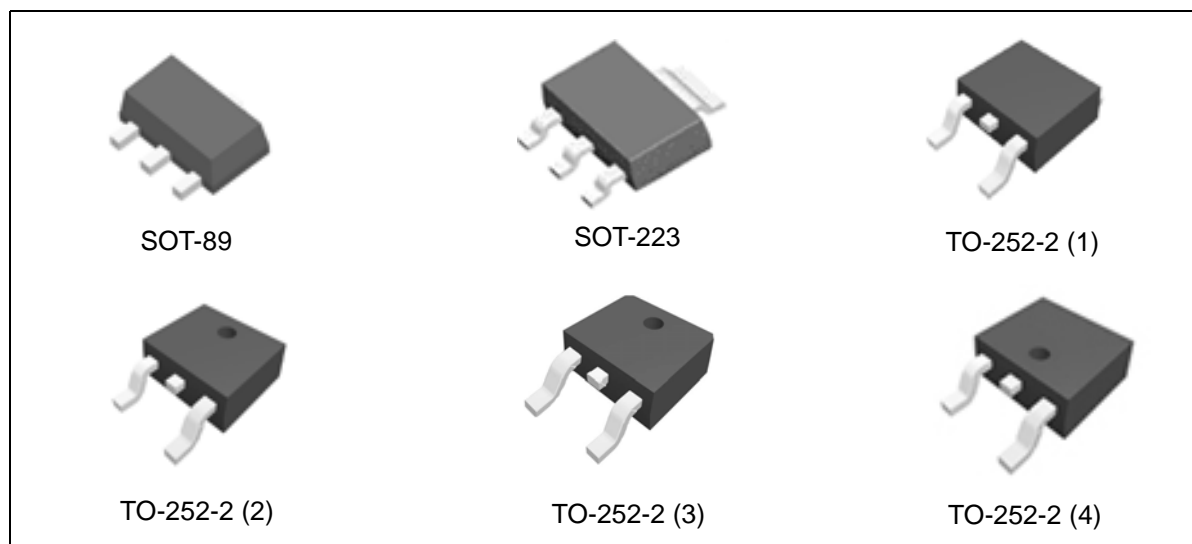


Figure 1. Package Types of AZ1117C



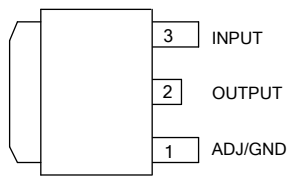
LOW DROPOUT LINEAR REGULATOR

AZ1117C

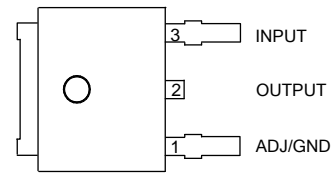
Pin Configuration

D Package

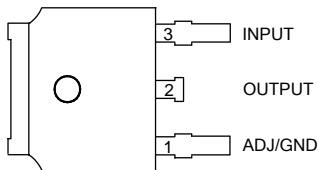
(TO-252-2 (1))



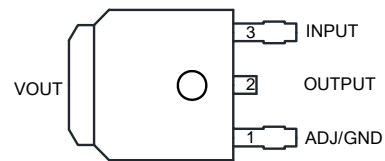
(TO-252-2 (2))



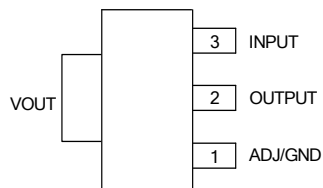
(TO-252-2 (3))



(TO-252-2 (4))



**H Package
(SOT-223)**



**R Package
(SOT-89)**

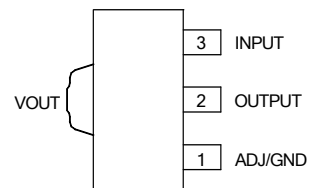


Figure 2. Pin Configuration of AZ1117C (Top View)



LOW DROPOUT LINEAR REGULATOR

AZ1117C

General Description

The AZ1117C is a low dropout three-terminal regulator.

The AZ1117C has been optimized for low voltage where transient response and minimum input voltage are critical. It provides current limit and thermal shutdown. Its circuit includes a trimmed bandgap reference to assure output voltage accuracy to be within $\pm 1\%$. On-chip thermal shutdown provides protection against a combination of high current and ambient temperature that would create excessive junction temperature.

The AZ1117C is available in 1.2V, 1.5V, 1.8V, 2.5V, 3.3V, 5.0V fixed output voltage versions and ADJ output voltage version. The fixed versions integrate the adjust resistors. It is also available in an adjustable version which can set the output voltage with two external resistors.

The AZ1117C is available in the industry-standard TO-252-2 (1), TO-252-2 (2), TO-252-2 (3), TO-252-2 (4), SOT-89 and SOT-223 power packages.

Features

- Current Limit: 1.0A (Typ.)
- Output Noise from 10Hz to 10KHz: 0.003% of V_{OUT}
- PSRR at $I_{OUT}=300mA$ and $f=120Hz$: 70dB
- Output Voltage Accuracy: $\pm 1\%$ (Except 1.2V version)
- On-chip Thermal Shutdown
- Maximum Quiescent Current: $I_{QMAX}=6mA$
- Compatible with Low ESR Ceramic Capacitor
- Operation Junction Temperature: -20 to $125^{\circ}C$

Applications

- USB Device
- Add-on Card
- DVD Player
- PC Motherboard

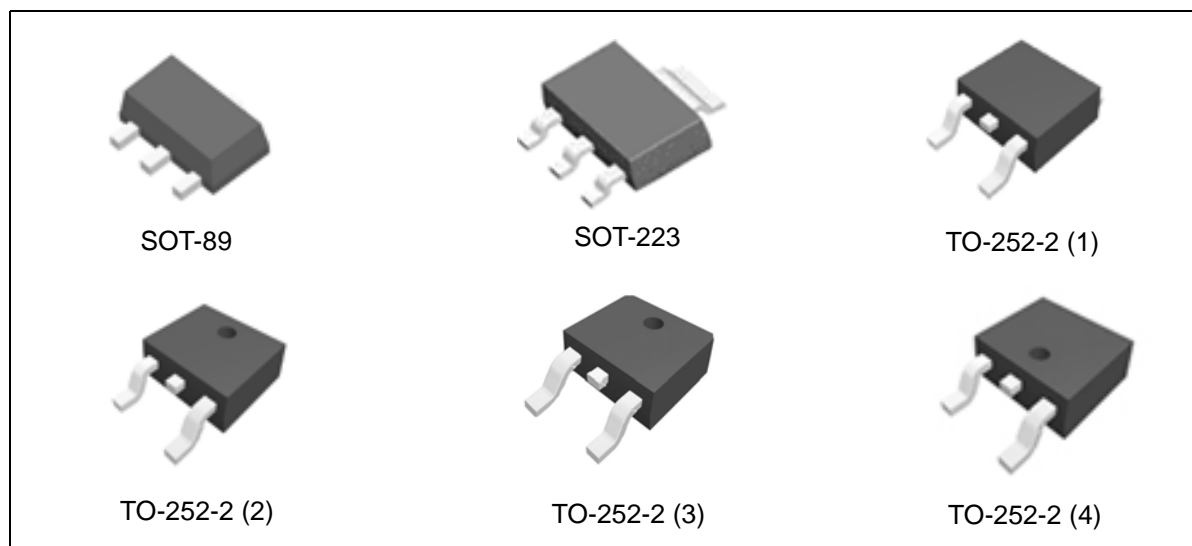


Figure 1. Package Types of AZ1117C



Data Sheet

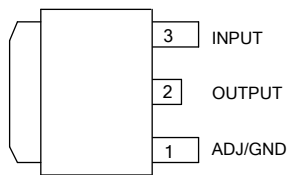
LOW DROPOUT LINEAR REGULATOR

AZ1117C

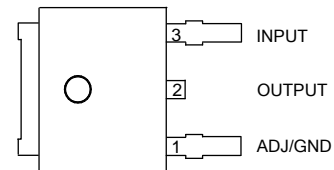
Pin Configuration

D Package

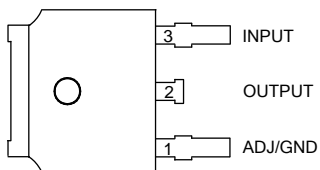
(TO-252-2 (1))



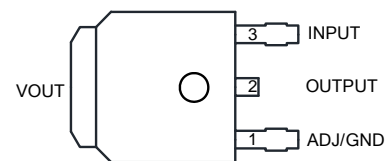
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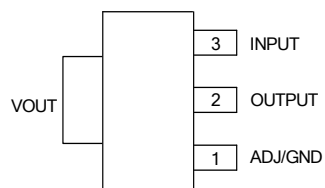
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(TO-252-2 (4))



H Package (SOT-223)



R Package (SOT-89)

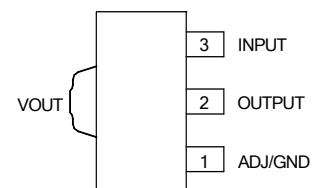


Figure 2. Pin Configuration of AZ1117C (Top View)

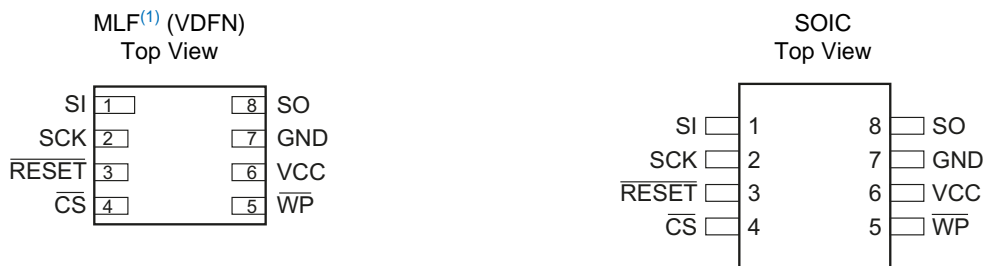
1. Description

The Atmel AT45DB321D is a 2.5V or 2.7V, serial interface, sequential access flash memory ideally suited for a wide variety of digital voice-, image-, program code-, and data-storage applications. The AT45DB321D supports the Atmel RapidS serial interface for applications requiring very high speed operations. The RapidS serial interface is SPI compatible for frequencies up to 66MHz. The 34,603,008-bits of memory are organized as 8,192 pages of 512 bytes or 528 bytes each. In addition to the main memory, the AT45DB321D also contains two SRAM buffers of 512/528 bytes each. These buffers allow the receiving of data while a page in the main memory is being reprogrammed, as well as the writing of a continuous data stream. EEPROM (electrically erasable and programmable read-only memory) emulation (bit or byte alterability) is easily handled with a self-contained, three-step read-modify-write operation. Unlike conventional flash memories, which are accessed randomly with multiple address lines and a parallel interface, Atmel DataFlash® devices use a RapidS serial interface to sequentially access its data. The simple sequential access dramatically reduces active pin count, facilitates hardware layout, increases system reliability, minimizes switching noise, and reduces package size. The device is optimized for use in many commercial and industrial applications where high density, low pin count, low voltage and low power are essential.

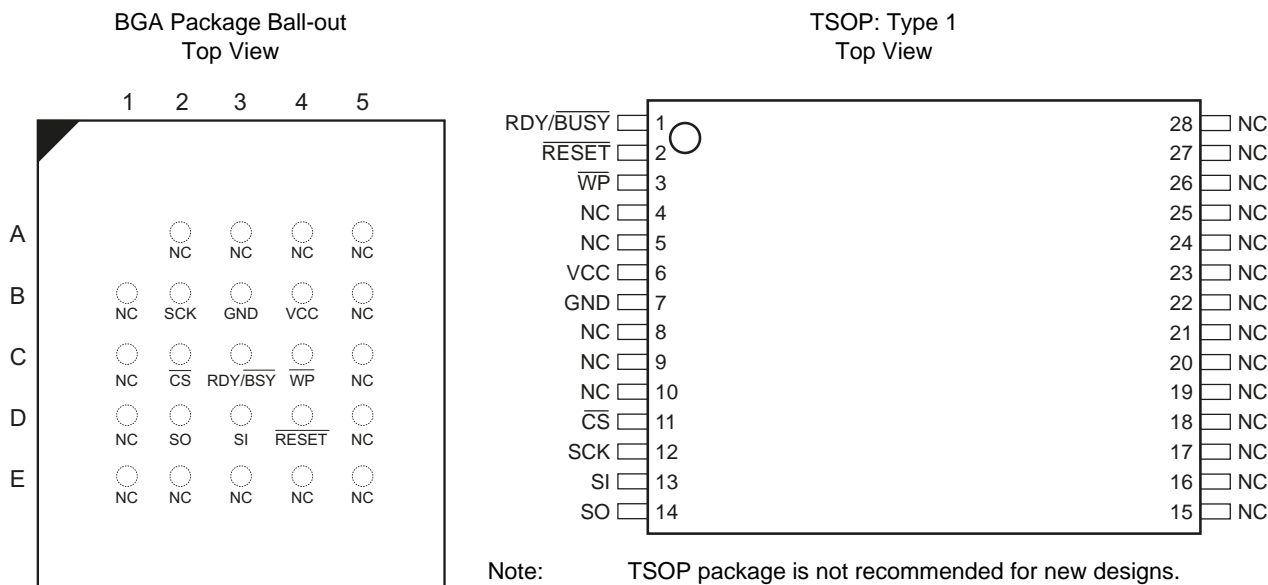
To allow for simple, in-system reprogrammability, the AT45DB321D does not require high input voltages for programming. The device operates from a single power supply, 2.7V to 3.6V, for both the program and read operations. The AT45DB321D is enabled through the chip select pin (\overline{CS}) and accessed via a three-wire interface consisting of the serial input (SI), serial output (SO), and serial clock (SCK) lines.

All programming and erase cycles are self timed.

Figure 1-1. Pin configurations and pinouts.



Note: 1. The metal pad on the bottom of the MLF package is floating. This pad can be a "No Connect" or connected to GND.



Note: TSOP package is not recommended for new designs. Future die shrinks will support 8-pin packages only.



Table 1-1. Pin Configurations

Symbol	Name and Function	Asserted State	Type
$\overline{\text{CS}}$	<p>Chip Select: Asserting the $\overline{\text{CS}}$ pin selects the device. When the $\overline{\text{CS}}$ pin is deasserted, the device will be deselected and normally be placed in the standby mode (not deep power-down mode), and the output pin (SO) will be in a high-impedance state. When the device is deselected, data will not be accepted on the input pin (SI).</p> <p>A high-to-low transition on the $\overline{\text{CS}}$ pin is required to start an operation, and a low-to-high transition is required to end an operation. When ending an internally self-timed operation such as a program or erase cycle, the device will not enter the standby mode until the completion of the operation.</p>	Low	Input
SCK	<p>Serial Clock: This pin is used to provide a clock to the device, and is used to control the flow of data to and from the device. Command, address, and input data present on the SI pin are always latched on the rising edge of SCK, while output data on the SO pin are always clocked out on the falling edge of SCK.</p>	–	Input
SI	<p>Serial Input: The SI pin is used to shift data into the device. The SI pin is used for all data input, including command and address sequences. Data on the SI pin are always latched on the rising edge of SCK.</p>	–	Input
SO	<p>Serial Output: The SO pin is used to shift data out from the device. Data on the SO pin are always clocked out on the falling edge of SCK.</p>	–	Output
$\overline{\text{WP}}$	<p>Write Protect: When the $\overline{\text{WP}}$ pin is asserted, all sectors specified for protection by the sector protection register will be protected against program and erase operations, regardless of whether the enable sector protection command has been issued or not. The $\overline{\text{WP}}$ pin functions independently of the software controlled protection method. After the $\overline{\text{WP}}$ pin goes low, the content of the sector protection register cannot be modified.</p> <p>If a program or erase command is issued to the device while the $\overline{\text{WP}}$ pin is asserted, the device will simply ignore the command and perform no operation. The device will return to the idle state once the $\overline{\text{CS}}$ pin has been deasserted. The enable sector protection command and sector lockdown command, however, will be recognized by the device when the $\overline{\text{WP}}$ pin is asserted.</p> <p>The $\overline{\text{WP}}$ pin is internally pulled high, and may be left floating if hardware controlled protection will not be used. However, it is recommended that the $\overline{\text{WP}}$ pin also be externally connected to V_{CC} whenever possible.</p>	Low	Input
RESET	<p>Reset: A low state on the reset pin ($\overline{\text{RESET}}$) will terminate the operation in progress and reset the internal state machine to an idle state. The device will remain in the reset condition as long as a low level is present on the $\overline{\text{RESET}}$ pin. Normal operation can resume once the $\overline{\text{RESET}}$ pin is brought back to a high level.</p> <p>The device incorporates an internal power-on reset circuit, and so there are no restrictions on the $\overline{\text{RESET}}$ pin during power-on sequences. If this pin and feature are not utilized, it is recommended that the $\overline{\text{RESET}}$ pin be driven high externally.</p>	Low	Input
RDY/ $\overline{\text{BUSY}}$	<p>Ready/Busy: This open drain output pin will be driven low when the device is busy in an internally self-timed operation. This pin, which is normally in a high state (through an external pull-up resistor), will be pulled low during programming/erase operations, compare operations, and page-to-buffer transfers.</p> <p>The busy status indicates that the flash memory array and one of the buffers cannot be accessed; read and write operations to the other buffer can still be performed.</p>	–	Output
V_{CC}	<p>Device Power Supply: The V_{CC} pin is used to supply the source voltage to the device. Operations at invalid V_{CC} voltages may produce spurious results and should not be attempted.</p>	–	Power
GND	<p>Ground: The ground reference for the power supply. GND should be connected to the system ground.</p>	–	Ground

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PIN CONFIGURATION AND FUNCTION DESCRIPTIONS

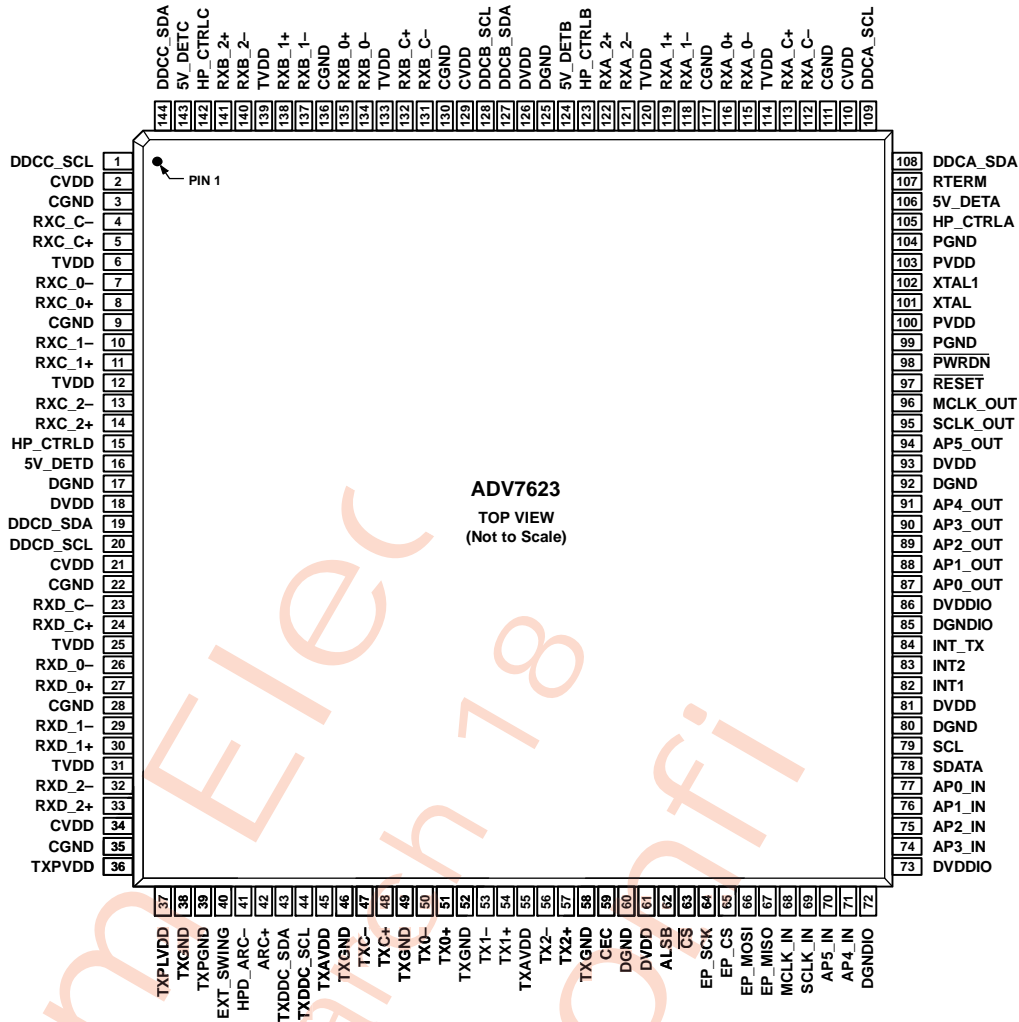


Figure 5. Pin Configuration

08302-2/05

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).

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Pin No.	Mnemonic	Type	Description
13	RXC_2-	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.
14	RXC_2+	HDMI input	Digital Input Channel 2 True of Port C in the HDMI Interface.
15	HP_CTRLD	Digital output	Hot Plug Detect for Port D.
16	5V_DETD	Digital input	5 V Detect Pin for Port D in the HDMI Interface.
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/output 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	Receiver 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	Receiver 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	Receiver 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	Receiver Comparator Supply Voltage (1.8 V).
35	CGND	Ground	TVDD and CVDD Ground.
36	TXPVDD	Power	1.8 V Power Supply for Digital and I/O Power Supply. This pin supplies power to the digital logic and I/Os. It should be filtered and as quiet as possible.
37	TXPLVDD	Power	1.8 V Power Supply.
38	TXGND	Ground	TXPVDD Ground.
39	TXPGND	Ground	TXPLVDD Ground.
40	EXT_SWING	Analog input	This pin sets the internal reference currents. Place an 887 Ω resistor (1% tolerance) between this pin and ground.
41	HPD_ARC-	Analog input	Hot Plug Detect Signal. This pin indicates to the interface whether the receiver is connected. It supports 1.8 V to 5 V CMOS logic levels.
42	ARC+	Analog input	Audio Return Channel Input (5 V Tolerant).
43	TXDDC_SDA	Digital I/O	Serial Port Data I/O to Receiver. This pin serves as the master to the DDC bus. It supports a 5 V CMOS logic level.
44	TXDDC_SCL	Digital output	Serial Port Data Clock to Receiver. This pin serves as the master clock for the DDC bus. It supports a 5 V CMOS logic level.
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 10x the pixel clock rate; supports TMDS logic level.
51	TX0+	HDMI output	Differential Output Channel 0 True. Differential output of the red data at 10x 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 10x the pixel clock rate; supports TMDS logic level.
54	TX1+	HDMI output	Differential Output Channel 1 True. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
55	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.

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Pin No.	Mnemonic	Type	Description
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.
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 (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 ² C address of the Rx IO and the Tx main map.
63	\overline{CS}	Digital input	Chip Select Pin. This pin must be set low or left floating for the chip to process I ² C messages that are destined for the ADV7623. The ADV7623 ignores I ² C messages that it receives if this pin is high.
64	EP_SCK	Digital output	SPI Clock Interface for the EDID/OSD.
65	EP_CS	Digital output	SPI Chip Selected Interface for the EDID/OSD.
66	EP_MOSI	Digital output	SPI Master Out/Slave In for the EDID/OSD.
67	EP_MISO	Digital input	SPI Master In/Slave Out for the EDID/OSD.
68	MCLK_IN	Digital input	Audio Reference Clock. $128 \times N \times f_s$ with $N = 1, 2, 3, \text{ or } 4$. Set to $128 \times$ sampling frequency (f_s), $256 \times f_s$, $384 \times f_s$, or $512 \times f_s$. It supports CMOS logic levels from 1.8 V to 3.3 V.
69	SCLK_IN	Digital input	I ² S Audio Clock. It supports CMOS logic levels from 1.8 V to 3.3 V.
70	AP5_IN	Digital input	Audio Input Port 5. It supports CMOS logic levels from 1.8 V to 3.3 V.
71	AP4_IN	Digital input	Audio Input Port 4. It supports CMOS logic levels from 1.8 V to 3.3 V.
72	DGNDIO	Ground	DVDDIO Ground.
73	DVDDIO	Power	Digital I/O Supply Voltage (3.3 V).
74	AP3_IN	Digital input	Audio Input Port 3. It supports CMOS logic levels from 1.8 V to 3.3 V.
75	AP2_IN	Digital input	Audio Input Port 2. It supports CMOS logic levels from 1.8 V to 3.3 V.
76	AP1_IN	Digital input	Audio Input Port 1. It supports CMOS logic levels from 1.8 V to 3.3 V.
77	AP0_IN	Digital input	Audio Input Port 0. It supports CMOS logic levels from 1.8 V to 3.3 V.
78	SDATA	Digital I/O	I ² C Port Serial Data Input/Output Pin. SDATA is the data line for the control port.
79	SCL	Digital input	I ² C 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 (AMUTE1)	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. This pin can also output an audio mute signal.
83	INT2 (AMUTE2)	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. This pin can also output an audio mute signal.
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	AP0_OUT	Digital output	Audio Output Port 0.
88	AP1_OUT	Digital output	Audio Output Port 1.
89	AP2_OUT	Digital output	Audio Output Port 2.
90	AP3_OUT	Digital output	Audio Output Port 3.
91	AP4_OUT	Digital output	Audio Output Port 4.
92	DGND	Ground	DVDD Ground.
93	DVDD	Power	Digital Supply Voltage (1.8 V).
94	AP5_OUT	Digital output	Audio Output Port 5.
95	SCLK_OUT	Digital output	Audio Serial Clock Output.
96	MCLK_OUT	Digital output	Audio Master Clock Output.
97	\overline{RESET}	Digital input	System Reset Input. Active low. A minimum low reset pulse width of 5 ms is required to reset the ADV7623 circuitry.
98	\overline{PWRDN}	Digital input	Active Low Power-Down Pin. If used, this pin should be pulled high to power up the ADV7623. This pin can also be used as an in system power detect where internal EDID can be powered from a 5 V signal of the HDMI port when it is connected to active equipment.

ADV7623

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Pin No.	Mnemonic	Type	Description
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 ADV7623.
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 Detect for Port A.
106	5V_DETA	Digital input	5 V Detect Pin for Port A in the HDMI Interface.
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 Detect for Port B.
124	5V_DETB	Digital input	5 V Detect Pin for Port B in the HDMI Interface.
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 Detect for Port C.
143	5V_DETC	Digital input	5 V Detect Pin for Port C in the HDMI Interface.
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.

TOSHIBA

TC74VHC157F/FN/FT

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74VHC157F, TC74VHC157FN, TC74VHC157FT

QUAD 2-CHANNEL MULTIPLEXER

The TC74VHC157 is an advanced high speed CMOS QUAD 2 - CHANNEL MULTIPLEXER fabricated with silicon gate C²MOS technology.

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

It consists of four 2 - input digital multiplexers with common select and strobe inputs.

When the STROBE input is held "H" level, selection of data is inhibited and all the outputs become "L" level.

The SELECT decoding determines whether the A or B inputs get routed to their corresponding Y outputs.

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

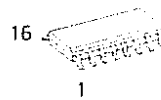
FEATURES :

- High Speed..... $t_{pd} = 4.1ns$ (typ.) at $V_{CC} = 5V$
- Low Power Dissipation..... $I_{CC} = 4\mu A$ (Max.) at $T_a = 25^{\circ}C$
- High Noise Immunity..... $V_{NIH} = V_{NIL} = 28\% V_{CC}$ (Min.)
- Power Down Protection is provided on all inputs.
- Balanced Propagation Delays..... $t_{pLH} \approx t_{pHL}$
- Wide Operating Voltage Range..... $V_{CC} (opr) = 2V \sim 5.5V$
- Low Noise $V_{OLP} = 0.8V$ (Max.)
- Pin and Function Compatible with 74ALS157

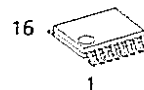
(Note) The JEDEC SOP (FN) is not available in Japan.



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

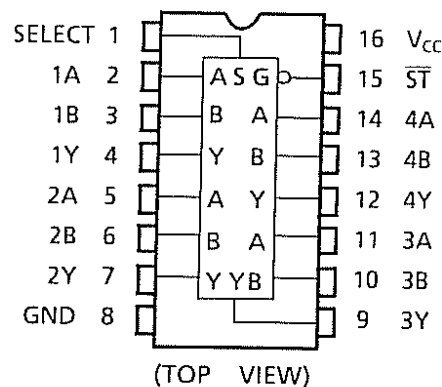


FN (SOL16-P-150-1.27)
Weight : 0.13g (Typ.)



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

PIN ASSIGNMENT

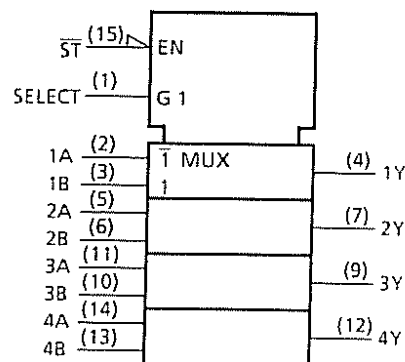


TRUTH TABLE

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

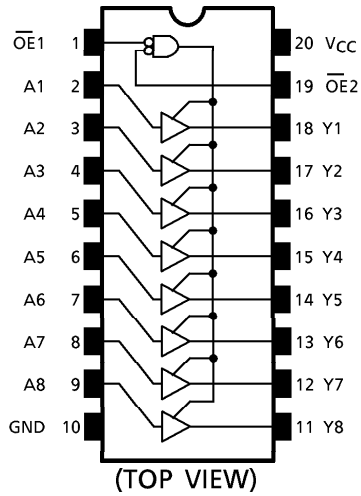
IEC LOGIC SYMBOL



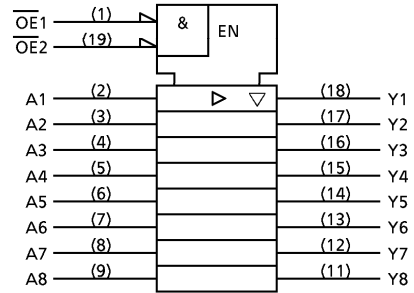
TOSHIBA

TC74LCX541F/FW/FT

PIN ASSIGNMENT



IEC LOGIC SYMBOL



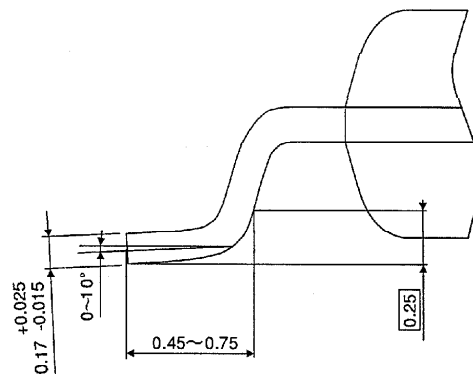
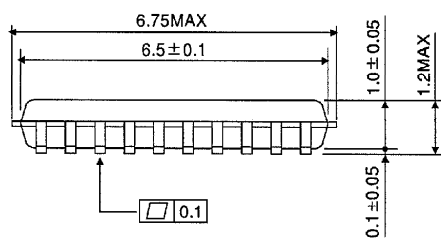
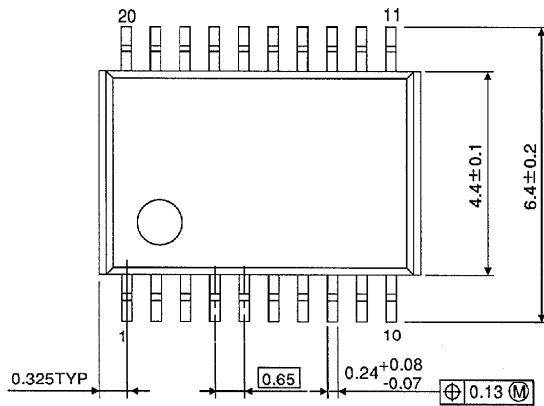
TRUTH TABLE

INPUTS			OUTPUTS
$\overline{OE1}$	$\overline{OE2}$	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

OUTLINE DRAWING

TSSOP20-P-0044-0.65

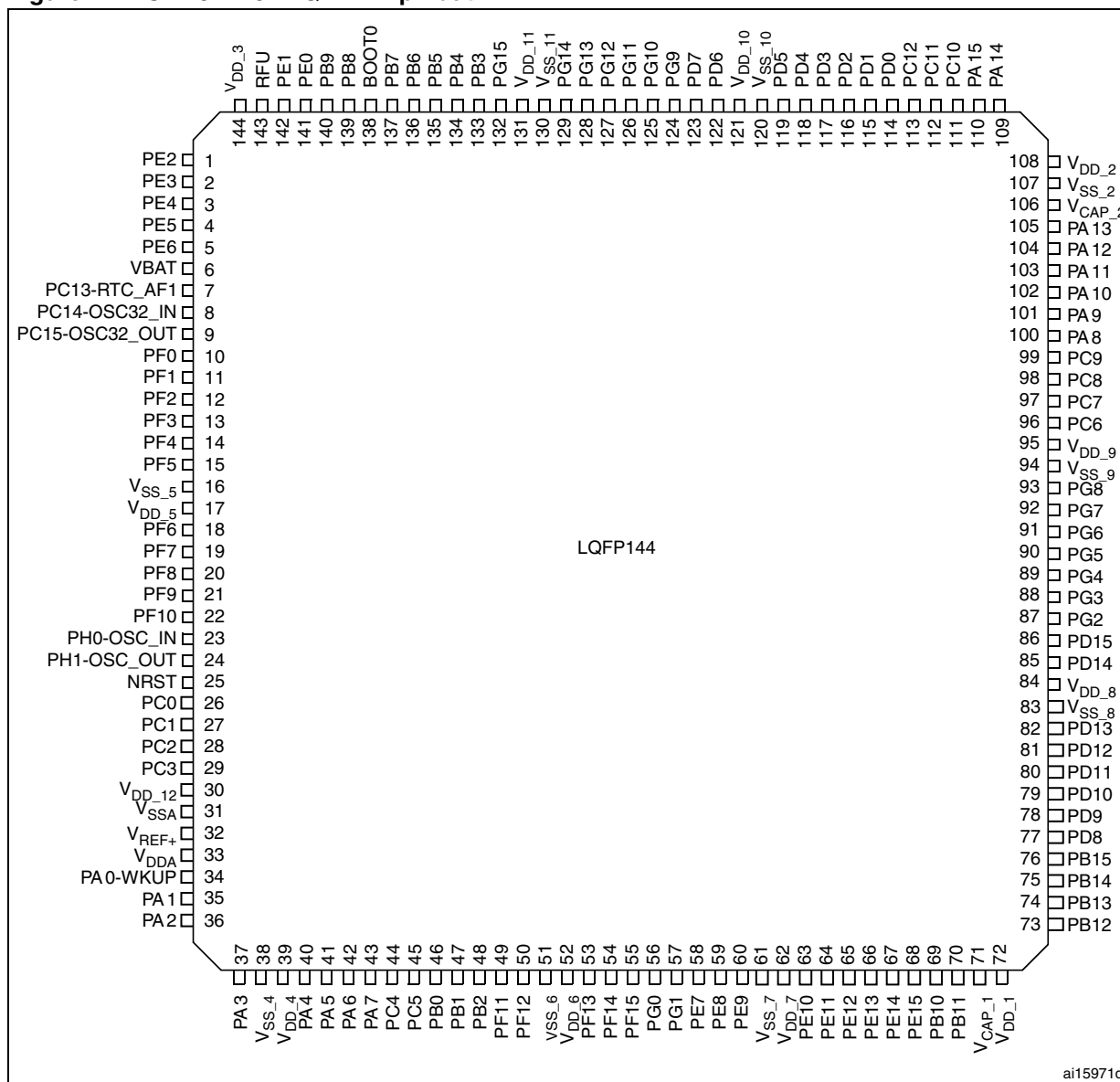


Weight : 0.08g (Typ.)

STM32F205xx, STM32F207xx

Pinouts and pin description

Figure 12. STM32F20x LQFP144 pinout



1. RFU means "reserved for future use".



Pinouts and pin description

STM32F205xx, STM32F207xx

Table 5. STM32F20x pin and ball definitions

Pins						Pin name	Type ⁽¹⁾	I / O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
-	-	1	1	1	A2	PE2	I/O	FT	PE2	TRACECLK/ FSMC_A23 / ETH_MII_TXD3	
-	-	2	2	2	A1	PE3	I/O	FT	PE3	TRACED0/FSMC_A19	
-	-	3	3	3	B1	PE4	I/O	FT	PE4	TRACED1/FSMC_A20 / DCMI_D4	
-	-	4	4	4	B2	PE5	I/O	FT	PE5	TRACED2 / FSMC_A21 / TIM9_CH1 / DCMI_D6	
-	-	5	5	5	B3	PE6	I/O	FT	PE6	TRACED3 / FSMC_A22 / TIM9_CH2 / DCMI_D7	
1	A9	6	6	6	C1	V _{BAT}	S		V _{BAT}		
-	-	-	-	7	D2	PI8 ⁽⁴⁾	I/O	FT	PI8 ⁽⁵⁾		RTC_AF2
2	B8	7	7	8	D1	PC13 ⁽⁴⁾	I/O	FT	PC13 ⁽⁵⁾		RTC_AF1
3	B9	8	8	9	E1	PC14 ⁽⁴⁾ -OSC32_IN ⁽⁶⁾	I/O	FT	PC14 ⁽⁵⁾		OSC32_IN
4	C9	9	9	10	F1	PC15 ⁽⁴⁾ -OSC32_OUT ⁽⁶⁾	I/O	FT	PC15 ⁽⁵⁾		OSC32_OUT
-	-	-	-	11	D3	PI9	I/O	FT	PI9	CAN1_RX	
-	-	-	-	12	E3	PI10	I/O	FT	PI10	ETH_MII_RX_ER	
-	-	-	-	13	E4	PI11	I/O	FT	PI11	OTG_HS_ULPI_DIR	
-	-	-	-	14	F2	V _{SS_13}	S		V _{SS_13}		
-	-	-	-	15	F3	V _{DD_13}	S		V _{DD_13}		
-	-	-	10	16	E2	PF0	I/O	FT	PF0	FSMC_A0 / I2C2_SDA	
-	-	-	11	17	H3	PF1	I/O	FT	PF1	FSMC_A1 / I2C2_SCL	
-	-	-	12	18	H2	PF2	I/O	FT	PF2	FSMC_A2 / I2C2_SMBA	
-	-	-	13	19	J2	PF3 ⁽⁶⁾	I/O	FT	PF3	FSMC_A3	ADC3_IN9
-	-	-	14	20	J3	PF4 ⁽⁶⁾	I/O	FT	PF4	FSMC_A4	ADC3_IN14
-	-	-	15	21	K3	PF5 ⁽⁶⁾	I/O	FT	PF5	FSMC_A5	ADC3_IN15
-	H9	10	16	22	G2	V _{SS_5}	S		V _{SS_5}		
-	-	11	17	23	G3	V _{DD_5}	S		V _{DD_5}		
-	-	-	18	24	K2	PF6 ⁽⁶⁾	I/O	FT	PF6	TIM10_CH1 / FSMC_NIORD	ADC3_IN4
-	-	-	19	25	K1	PF7 ⁽⁶⁾	I/O	FT	PF7	TIM11_CH1/FSMC_NREG	ADC3_IN5
-	-	-	20	26	L3	PF8 ⁽⁶⁾	I/O	FT	PF8	TIM13_CH1 / FSMC_NIOWR	ADC3_IN6
-	-	-	21	27	L2	PF9 ⁽⁶⁾	I/O	FT	PF9	TIM14_CH1 / FSMC_CD	ADC3_IN7

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Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
-	-	-	22	28	L1	PF10 ⁽⁶⁾	I/O	FT	PF10	FSMC_INTR	ADC3_IN8
5	E9	12	23	29	G1	PH0 ⁽⁶⁾ -OSC_IN	I/O	FT	PH0		OSC_IN
6	F9	13	24	30	H1	PH1 ⁽⁶⁾ -OSC_OUT	I/O	FT	PH1		OSC_OUT
7	E8	14	25	31	J1	NRST	I/O		NRST		
8	G9	15	26	32	M2	PC0 ⁽⁶⁾	I/O	FT	PC0	OTG_HS_ULPI_STP	ADC123_IN10
9	F8	16	27	33	M3	PC1 ⁽⁶⁾	I/O	FT	PC1	ETH_MDC	ADC123_IN11
10	D7	17	28	34	M4	PC2 ⁽⁶⁾	I/O	FT	PC2	SPI2_MISO / OTG_HS_ULPI_DIR / ETH_MII_TXD2	ADC123_IN12
11	G8	18	29	35	M5	PC3 ⁽⁶⁾	I/O	FT	PC3	SPI2_MOSI / I2S2_SD / OTG_HS_ULPI_NXT / ETH_MII_TX_CLK	ADC123_IN13
-	-	19	30	36	-	V _{DD_12}	S		V _{DD_12}		
12	-	20	31	37	M1	V _{SSA}	S		V _{SSA}		
-	-	-	-	-	N1	V _{REF-}	S		V _{REF-}		
-	F7	21	32	38	P1	V _{REF+}	S		V _{REF+}		
13	-	22	33	39	R1	V _{DDA}	S		V _{DDA}		
14	E7	23	34	40	N3	PA0 ⁽⁷⁾ -WKUP ⁽⁶⁾	I/O	FT	PA0-WKUP	USART2_CTS/ UART4_TX/ ETH_MII_CRD / TIM2_CH1_ETR/ TIM5_CH1 / TIM8_ETR	ADC123_CH0 /WKUP
15	H8	24	35	41	N2	PA1 ⁽⁶⁾	I/O	FT	PA1	USART2_RTS / UART4_RX/ ETH_RMII_REF_CLK / ETH_MII_RX_CLK / TIM5_CH2 / TIM2_CH2	ADC123_IN1
16	J9	25	36	42	P2	PA2 ⁽⁶⁾	I/O	FT	PA2	USART2_TX/TIM5_CH3 / TIM9_CH1 / TIM2_CH3 / ETH_MDIO	ADC123_IN2
-	-	-	-	43	F4	PH2	I/O	FT	PH2	ETH_MII_CRD	
-	-	-	-	44	G4	PH3	I/O	FT	PH3	ETH_MII_COL	
-	-	-	-	45	H4	PH4	I/O	FT	PH4	I2C2_SCL / OTG_HS_ULPI_NXT	
-	-	-	-	46	J4	PH5	I/O	FT	PH5	I2C2_SDA	

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Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
17	G7	26	37	47	R2	PA3 ⁽⁶⁾	I/O	FT	PA3	USART2_RX/TIM5_CH4 / TIM9_CH2 / TIM2_CH4 / OTG_HS_ULPI_D0 / ETH_MII_COL	ADC123_IN3
18	F1	27	38	48	-	V _{SS_4}	S		V _{SS_4}		
	H7				L4	REGOFF	I/O		REGOFF		
19	E1	28	39	49	K4	V _{DD_4}	S		V _{DD_4}		
20	J8	29	40	50	N4	PA4 ⁽⁶⁾	I/O		PA4	SPI1_NSS / SPI3_NSS / USART2_CK / DCMI_HSYNC / OTG_HS_SOF/ I2S3_WS	ADC12_IN4 /DAC1_OUT
21	H6	30	41	51	P4	PA5 ⁽⁶⁾	I/O		PA5	SPI1_SCK/ OTG_HS_ULPI_CK // TIM2_CH1_ETR/ TIM8_CHIN	ADC12_IN5 /DAC2_OUT
22	H5	31	42	52	P3	PA6 ⁽⁶⁾	I/O	FT	PA6	SPI1_MISO / TIM8_BKIN/TIM13_CH1 / DCMI_PIXCLK / TIM3_CH1 / TIM1_BKIN	ADC12_IN6
23	J7	32	43	53	R3	PA7 ⁽⁶⁾	I/O	FT	PA7	SPI1_MOSI/ TIM8_CH1N / TIM14_CH1 TIM3_CH2/ ETH_MII_RX_DV / TIM1_CH1N / RMII_CRS_DV	ADC12_IN7
24	H4	33	44	54	N5	PC4 ⁽⁶⁾	I/O	FT	PC4	ETH_RMII_RX_D0 / ETH_MII_RX_D0	ADC12_IN14
25	G3	34	45	55	P5	PC5 ⁽⁶⁾	I/O	FT	PC5	ETH_RMII_RX_D1 / ETH_MII_RX_D1	ADC12_IN15
26	J6	35	46	56	R5	PB0 ⁽⁶⁾	I/O	FT	PB0	TIM3_CH3 / TIM8_CH2N/ OTG_HS_ULPI_D1/ ETH_MII_RXD2 / TIM1_CH2N	ADC12_IN8
27	J5	36	47	57	R4	PB1 ⁽⁶⁾	I/O	FT	PB1	TIM3_CH4 / TIM8_CH3N/ OTG_HS_ULPI_D2/ ETH_MII_RXD3 / OTG_HS_INTN / TIM1_CH3N	ADC12_IN9
28	J4	37	48	58	M6	PB2	I/O	FT	PB2-BOOT1		
-	-	-	49	59	R6	PF11	I/O	FT	PF11	DCMI_12	
-	-	-	50	60	P6	PF12	I/O	FT	PF12	FSMC_A6	

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Pinouts and pin description

Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
-	-	-	51	61	M8	V _{SS_6}	S		V _{SS_6}		
-	-	-	52	62	N8	V _{DD_6}	S		V _{DD_6}		
-	-	-	53	63	N6	PF13	I/O	FT	PF13	FSMC_A7	
-	-	-	54	64	R7	PF14	I/O	FT	PF14	FSMC_A8	
-	-	-	55	65	P7	PF15	I/O	FT	PF15	FSMC_A9	
-	-	-	56	66	N7	PG0	I/O	FT	PG0	FSMC_A10	
-	-	-	57	67	M7	PG1	I/O	FT	PG1	FSMC_A11	
-	-	38	58	68	R8	PE7	I/O	FT	PE7	FSMC_D4/TIM1_ETR	
-	-	39	59	69	P8	PE8	I/O	FT	PE8	FSMC_D5/TIM1_CH1N	
-	-	40	60	70	P9	PE9	I/O	FT	PE9	FSMC_D6/TIM1_CH1	
-	-	-	61	71	M9	V _{SS_7}	S		V _{SS_7}		
-	-	-	62	72	N9	V _{DD_7}	S		V _{DD_7}		
-	-	41	63	73	R9	PE10	I/O	FT	PE10	FSMC_D7/TIM1_CH2N	
-	-	42	64	74	P10	PE11	I/O	FT	PE11	FSMC_D8/TIM1_CH2	
-	-	43	65	75	R10	PE12	I/O	FT	PE12	FSMC_D9/TIM1_CH3N	
-	-	44	66	76	N11	PE13	I/O	FT	PE13	FSMC_D10/TIM1_CH3	
-	-	45	67	77	P11	PE14	I/O	FT	PE14	FSMC_D11/TIM1_CH4	
-	-	46	68	78	R11	PE15	I/O	FT	PE15	FSMC_D12/TIM1_BKIN	
29	H3	47	69	79	R12	PB10	I/O	FT	PB10	SPI2_SCK/ I2S2_CK/ I2C2_SCL / USART3_TX / OTG_HS_ULPI_D3 / ETH_MII_RX_ER / OTG_HS_SCL / TIM2_CH3	
30	J2	48	70	80	R13	PB11	I/O	FT	PB11	I2C2_SDA/USART3_RX/ OTG_HS_ULPI_D4 / ETH_RMII_TX_EN/ ETH_MII_TX_EN / OTG_HS_SDA / TIM2_CH4	
31	J3	49	71	81	M10	V _{CAP_1}	S		V _{CAP_1}		
32	-	50	72	82	N10	V _{DD_1}	S		V _{DD_1}		
-	-	-	-	83	M11	PH6	I/O	FT	PH6	I2C2_SMBA / TIM12_CH1 / ETH_MII_RXD2	
-	-	-	-	84	N12	PH7	I/O	FT	PH7	I2C3_SCL / ETH_MII_RXD3	
-	-	-	-	85	M12	PH8	I/O	FT	PH8	I2C3_SDA / DCMI_HSYNC	

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Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
-	-	-	-	86	M13	PH9	I/O	FT	PH9	I2C3_SMBA / TIM12_CH2/ DCMI_D0	
-	-	-	-	87	L13	PH10	I/O	FT	PH10	TIM5_CH1_ETR / DCMI_D1	
-	-	-	-	88	L12	PH11	I/O	FT	PH11	TIM5_CH2 / DCMI_D2	
-	-	-	-	89	K12	PH12	I/O	FT	PH12	TIM5_CH3 / DCMI_D3	
-	-	-	-	90	H12	V _{SS_14}	S		V _{SS_14}		
-	-	-	-	91	J12	V _{DD_14}	S		V _{DD_14}		
33	J1	51	73	92	P12	PB12	I/O	FT	PB12	SPI2_NSS/I2S2_WS/ I2C2_SMBA/ USART3_CK/ TIM1_BKIN / CAN2_RX / OTG_HS_ULPI_D5/ ETH_RMII_TXD0 / ETH_MII_TXD0/ OTG_HS_ID	
34	H2	52	74	93	P13	PB13	I/O	FT	PB13	SPI2_SCK / I2S2_CK / USART3_CTS/ TIM1_CH1N /CAN2_TX / OTG_HS_ULPI_D6 / ETH_RMII_TXD1 / ETH_MII_TXD1	OTG_HS_VBUS
35	H1	53	75	94	R14	PB14	I/O	FT	PB14	SPI2_MISO/ TIM1_CH2N / TIM12_CH1 / OTG_HS_DM USART3_RTS/ TIM8_CH2N	
36	G1	54	76	95	R15	PB15	I/O	FT	PB15	SPI2_MOSI / I2S2_SD / TIM1_CH3N / TIM8_CH3N / TIM12_CH2 / OTG_HS_DP	
-	-	55	77	96	P15	PD8	I/O	FT	PD8	FSMC_D13 / USART3_TX	
-	-	56	78	97	P14	PD9	I/O	FT	PD9	FSMC_D14 / USART3_RX	
-	-	57	79	98	N15	PD10	I/O	FT	PD10	FSMC_D15 / USART3_CK	
-	-	58	80	99	N14	PD11	I/O	FT	PD11	FSMC_A16/USART3_CTS	
-	-	59	81	100	N13	PD12	I/O	FT	PD12	FSMC_A17/TIM4_CH1 / USART3_RTS	
-	-	60	82	101	M15	PD13	I/O	FT	PD13	FSMC_A18/TIM4_CH2	
-	-	-	83	102	-	V _{SS_8}	S		V _{SS_8}		
-	-	-	84	103	J13	V _{DD_8}	S		V _{DD_8}		

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Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
-	-	61	85	104	M14	PD14	I/O	FT	PD14	FSMC_D0/TIM4_CH3	
-	-	62	86	105	L14	PD15	I/O	FT	PD15	FSMC_D1/TIM4_CH4	
-	-	-	87	106	L15	PG2	I/O	FT	PG2	FSMC_A12	
-	-	-	88	107	K15	PG3	I/O	FT	PG3	FSMC_A13	
-	-	-	89	108	K14	PG4	I/O	FT	PG4	FSMC_A14	
-	-	-	90	109	K13	PG5	I/O	FT	PG5	FSMC_A15	
-	-	-	91	110	J15	PG6	I/O	FT	PG6	FSMC_INT2	
-	-	-	92	111	J14	PG7	I/O	FT	PG7	FSMC_INT3 /USART6_CK	
-	-	-	93	112	H14	PG8	I/O	FT	PG8	USART6_RTS / ETH_PPS_OUT	
-	-	-	94	113	G12	V _{SS_9}	S		V _{SS_9}		
-	-	-	95	114	H13	V _{DD_9}	S		V _{DD_9}		
37	G2	63	96	115	H15	PC6	I/O	FT	PC6	SPI2_MCK / TIM8_CH1/SDIO_D6 / USART6_TX / DCMI_D0/TIM3_CH1	
38	F2	64	97	116	G15	PC7	I/O	FT	PC7	SPI3_MCK / TIM8_CH2/SDIO_D7 / USART6_RX / DCMI_D1/TIM3_CH2	
39	F3	65	98	117	G14	PC8	I/O	FT	PC8	TIM8_CH3/SDIO_D0 /TIM3_CH3/ USART6_CK / DCMI_D2	
40	D1	66	99	118	F14	PC9	I/O	FT	PC9	I2S2_CKIN/ I2S3_CKIN/ MCO2 / TIM8_CH4/SDIO_D1 / /I2C3_SDA / DCMI_D3 / TIM3_CH4	
41	E2	67	100	119	F15	PA8	I/O	FT	PA8	MCO1 / USART1_CK/ TIM1_CH1/ I2C3_SCL/ OTG_FS_SOF	
42	E3	68	101	120	E15	PA9	I/O	FT	PA9	USART1_TX/ TIM1_CH2 / I2C3_SMBA / DCMI_D0	OTG_FS_ VBUS
43	D3	69	102	121	D15	PA10	I/O	FT	PA10	USART1_RX/ TIM1_CH3/ OTG_FS_ID/DCMI_D1	
44	D2	70	103	122	C15	PA11	I/O	FT	PA11	USART1_CTS /CAN1_RX/ TIM1_CH4 / OTG_FS_DM	

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Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
45	C1	71	104	123	B15	PA12	I/O	FT	PA12	USART1_RTS / CAN1_TX/ TIM1_ETR/ OTG_FS_DP	
46	B2	72	105	124	A15	PA13	I/O	FT	JTMS- SWDIO	JTMS-SWDIO	
47	C2	73	106	125	F13	V _{CAP_2}	S		V _{CAP_2}		
-	B1	74	107	126	F12	V _{SS_2}	S		V _{SS_2}		
48	A8	75	108	127	G13	V _{DD_2}	S		V _{DD_2}		
-	-	-	-	128	E12	PH13	I/O	FT	PH13	TIM8_CH1N / CAN1_TX	
-	-	-	-	129	E13	PH14	I/O	FT	PH14	TIM8_CH2N / DCMI_D4	
-	-	-	-	130	D13	PH15	I/O	FT	PH15	TIM8_CH3N / DCMI_D11	
-	-	-	-	131	E14	PI0	I/O	FT	PI0	TIM5_CH4 / SPI2_NSS / I2S2_WS / DCMI_D13	
-	-	-	-	132	D14	PI1	I/O	FT	PI1	SPI2_SCK / I2S2_CK / DCMI_D8	
-	-	-	-	133	C14	PI2	I/O	FT	PI2	TIM8_CH4 / SPI2_MISO / DCMI_D9	
-	-	-	-	134	C13	PI3	I/O	FT	PI3	TIM8_ETR / SPI2_MOSI / I2S2_SD / DCMI_D10	
-	-	-	-	135	D9	V _{SS_15}	S		V _{SS_15}		
-	-	-	-	136	C9	V _{DD_15}	S		V _{DD_15}		
49	A1	76	109	137	A14	PA14	I/O	FT	JTCK- SWCLK	JTCK-SWCLK	
50	A2	77	110	138	A13		I/O	FT	JTDI	JTDI/ SPI3_NSS/ I2S3_WS/TIM2_CH1_ETR / SPI1_NSS	
51	B3	78	111	139	B14	PC10	I/O	FT	PC10	SPI3_SCK / I2S3_CK / UART4_TX / SDIO_D2 / DCMI_D8 / USART3_TX	
52	C3	79	112	140	B13	PC11	I/O	FT	PC11	UART4_RX/ SPI3_MISO / SDIO_D3 / DCMI_D4/USART3_RX	
53	A3	80	113	141	A12	PC12	I/O	FT	PC12	UART5_TX/SDIO_CK / DCMI_D9 / SPI3_MOSI / I2S3_SD / USART3_CK	
-	-	81	114	142	B12	PD0	I/O	FT	PD0	FSMC_D2/CAN1_RX	
-	-	82	115	143	C12	PD1	I/O	FT	PD1	FSMC_D3 / CAN1_TX	

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Pinouts and pin description

Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
54	C7	83	116	144	D12	PD2	I/O	FT	PD2	TIM3_ETR/UART5_RX SDIO_CMD / DCMI_D11	
-	-	84	117	145	D11	PD3	I/O	FT	PD3	FSMC_CLK/USART2_CTS	
-	-	85	118	146	D10	PD4	I/O	FT	PD4	FSMC_NOE/USART2_RTS	
-	-	86	119	147	C11	PD5	I/O	FT	PD5	FSMC_NWE/USART2_TX	
-	-	-	120	148	D8	V _{SS_10}	S		V _{SS_10}		
-	-	-	121	149	C8	V _{DD_10}	S		V _{DD_10}		
-	-	87	122	150	B11	PD6	I/O	FT	PD6	FSMC_NWAIT/USART2_RX	
-	-	88	123	151	A11	PD7	I/O	FT	PD7	USART2_CK/FSMC_NE1/ FSMC_NCE2	
-	-	-	124	152	C10	PG9	I/O	FT	PG9	USART6_RX / FSMC_NE2/FSMC_NCE3	
-	-	-	125	153	B10	PG10	I/O	FT	PG10	FSMC_NCE4_1/ FSMC_NE3	
-	-	-	126	154	B9	PG11	I/O	FT	PG11	FSMC_NCE4_2 / ETH_MII_TX_EN	
-	-	-	127	155	B8	PG12	I/O	FT	PG12	FSMC_NE4 / USART6_RTS	
-	-	-	128	156	A8	PG13	I/O	FT	PG13	FSMC_A24 / USART6_CTS /ETH_MII_TXD0/ETH_RMII _TXD0	
-	-	-	129	157	A7	PG14	I/O	FT	PG14	FSMC_A25 / USART6_TX /ETH_MII_TXD1/ETH_RMII _TXD1	
-	-	-	130	158	D7	V _{SS_11}	S		V _{SS_11}		
-	-	-	131	159	C7	V _{DD_11}	S		V _{DD_11}		
-	-	-	132	160	B7	PG15	I/O	FT	PG15	USART6_CTS / DCMI_D13	
55	A4	89	133	161	A10	PB3	I/O	FT	JTDO/ TRACESWO	JTDO/ TRACESWO/ SPI3_SCK / I2S3_CK / TIM2_CH2 / SPI1_SCK	
56	B4	90	134	162	A9	PB4	I/O	FT	NJTRST	NJTRST/ SPI3_MISO / TIM3_CH1 / SPI1_MISO	

Pinouts and pin description

STM32F205xx, STM32F207xx

Table 5. STM32F20x pin and ball definitions (continued)

Pins						Pin name	Type ⁽¹⁾	I/O Level ⁽²⁾	Main function ⁽³⁾ (after reset)	Alternate functions	Other functions
LQFP64	WLCSP64+2	LQFP100	LQFP144	LQFP176	UFBGA176						
57	A5	91	135	163	A6	PB5	I/O	FT	PB5	I2C1_SMBA/ CAN2_RX / OTG_HS_ULPI_D7 / ETH_PPS_OUT/TIM3_CH2 / SPI1_MOSI/ SPI3_MOSI / DCMI_D10 / I2S3_SD	
58	B5	92	136	164	B6	PB6	I/O	FT	PB6	I2C1_SCL/ TIM4_CH1 / CAN2_TX /OTG_FS_INTN / DCMI_D5/USART1_TX	
59	A6	93	137	165	B5	PB7	I/O	FT	PB7	I2C1_SDA / FSMC_NL ⁽⁸⁾ / DCMI_VSYNC / USART1_RX/ TIM4_CH2	
60	B6	94	138	166	D6	BOOT0	I		BOOT0		V _{PP}
61	B7	95	139	167	A5	PB8	I/O	FT	PB8	TIM4_CH3/SDIO_D4/ TIM10_CH1 / DCMI_D6 / OTG_FS_SCL/ ETH_MII_TXD3 / I2C1_SCL/ CAN1_RX	
62	A7	96	140	168	B4	PB9	I/O	FT	PB9	SPI2_NSS/ I2S2_WS/ TIM4_CH4/ TIM11_CH1/ OTG_FS_SDA/ SDIO_D5 / DCMI_D7 / I2C1_SDA / CAN1_TX	
-	-	97	141	169	A4	PE0	I/O	FT	PE0	TIM4_ETR / FSMC_NBL0 / DCMI_D2	
-	-	98	142	170	A3	PE1	I/O	FT	PE1	FSMC_NBL1 / DCMI_D3	
	-				D5	V _{SS}	S		V _{SS}		
63	D8	-	-	-	-	V _{SS_3}	S		V _{SS_3}		
-	-	99	143	171	C6	RFU ⁽⁹⁾					
64	D9	100	144	172	C5	V _{DD_3}	S		V _{DD_3}		
-	-	-	-	173	D4	PI4	I/O	FT	PI4	TIM8_BKIN / DCMI_D5	
-	-	-	-	174	C4	PI5	I/O	FT	PI5	TIM8_CH1 / DCMI_VSYNC	
-	-	-	-	175	C3	PI6	I/O	FT	PI6	TIM8_CH2 / DCMI_D6	
-	-	-	-	176	C2	PI7	I/O	FT	PI7	TIM8_CH3 / DCMI_D7	
-	C8	-	-	-	-	IRROFF	I/O		IRROFF		

1. I = input, O = output, S = supply, HiZ = high impedance.

2. FT = 5 V tolerant.

3. Function availability depends on the chosen device.

PCM5100, PCM5101, PCM5102



SLAS764 –MAY 2011

www.ti.com

DEVICE INFORMATION

TERMINAL FUNCTIONS, PCM510x

PCM510X (top view)

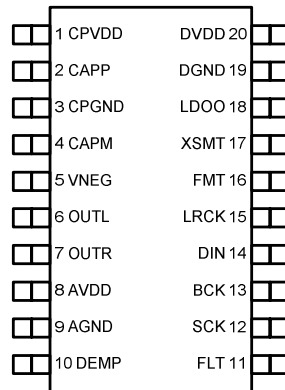


Table 2. TERMINAL FUNCTIONS, PCM510x

TERMINAL		I/O	DESCRIPTION
NAME	NO.		
CPVDD	1	-	Charge pump power supply, 3.3V
CAPP	2	O	Charge pump flying capacitor terminal for positive rail
CPGND	3	-	Charge pump ground
CAPM	4	O	Charge pump flying capacitor terminal for negative rail
VNEG	5	O	Negative charge pump rail terminal for decoupling, -3.3V
OUTL	6	O	Analog output from DAC left channel
OUTR	7	O	Analog output from DAC right channel
AVDD	8	-	Analog power supply, 3.3V
AGND	9	-	Analog ground
DEMP	10	I	De-emphasis control for 44.1kHz sampling rate ⁽¹⁾ : Off (Low) / On (High)
FLT	11	I	Filter select : Normal latency (Low) / Low latency (High)
SCK	12	I	System clock input
BCK	13	I	Audio data bit clock input
DIN	14	I	Audio data input
LRCK	15	I	Audio data word clock input
FMT	16	I	Audio format selection : I ² S (Low) / Left justified (High)
XSMT	17	I	Soft mute control : Soft mute (Low) / soft un-mute (High)
LDOO	18	-	Internal logic supply rail terminal for decoupling
DGND	19	-	Digital ground
DVDD	20	-	Digital power supply, 3.3V

(1) Failsafe LVCMOS Schmitt trigger input



tenative

NJM8080

DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

NJM8080 is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the low voltage source.

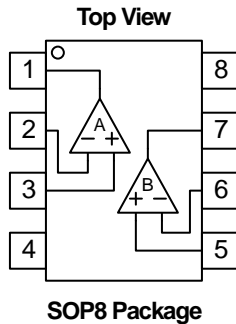
■ PACKAGE OUTLINE



■ FEATURES

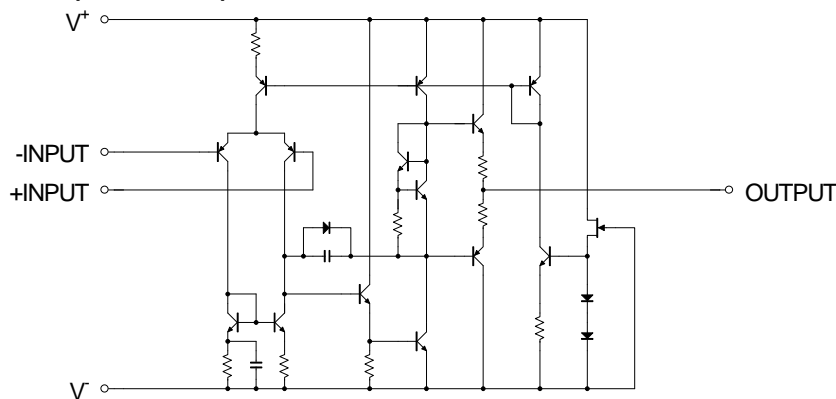
- Operating Voltage $\pm 2V \sim \pm 18V$
- Low Input Noise Voltage $0.8\mu V_{rms}$ typ. (RIAA)
- Wide GBW 15MHz typ.
- Low Distortion 0.0005% typ.
- Slew Rate $5V/\mu s$ typ.
- Bipolar Technology
- Package Outline SOP8

■ PIN CONFIGURATION



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

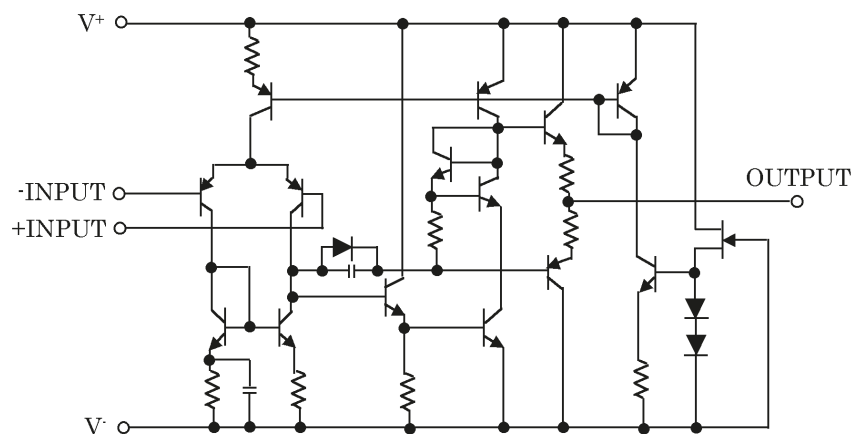
■ EQUIVALENT CIRCUIT (1/2 Shown)



New Japan Radio Co., Ltd.

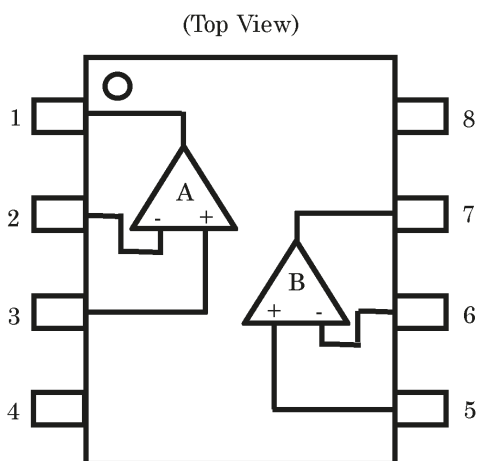
■ EQUIVALENT CIRCUIT(1/2 Shown)

BDE-07950-000-02



■ PIN CONFIGURATION

BEE-P0001-000-01

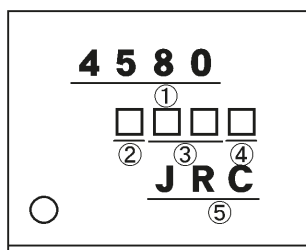


PIN FUNCTION

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

■ MARK SPECIFICATION

BKE-62233-B00-00



- ① Device No. (4580)
- ② Last Digit Year
- ③ Lot No.
- ④ Production Code
- ⑤ Manufacturer's Symbol (JRC)



NJM2845/46

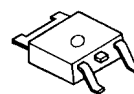
LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

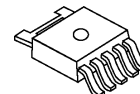
The NJM2845 is low dropout voltage regulator. Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

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

■ PACKAGE OUTLINE



NJM2845DL1

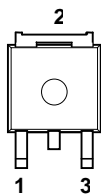


NJM2846DL3

■ FEATURES

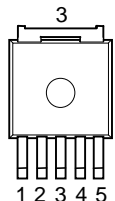
- High Ripple Rejection 75dB typ. (f=1kHz,3V Version)
- Output Noise Voltage V_{no}=45μV_{rms} typ. (V_o=3V Version)
- Output capacitor with 2.2μF ceramic capacitor (V_o≥2.6V)
- Output Current I_o(max.)=800mA
- High Precision Output V_o ±1.0%
- Low Dropout Voltage 0.18V typ. (I_o=500mA)
- ON/OFF Control (NJM2846)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-3 (NJM2845DL1), TO-252-5 (NJM2846DL3)

■ PIN CONFIGURATION



NJM2845DL1

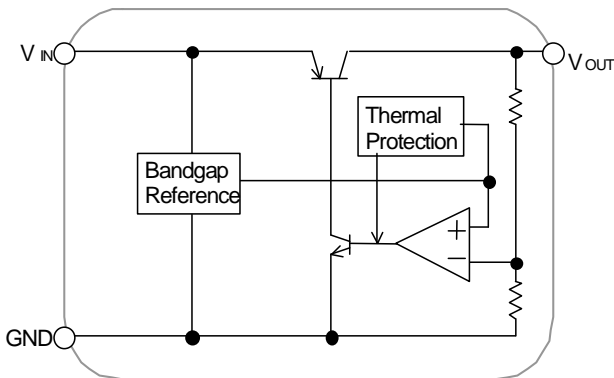
- 1.V_{IN}
- 2.GND
- 3.V_{OUT}



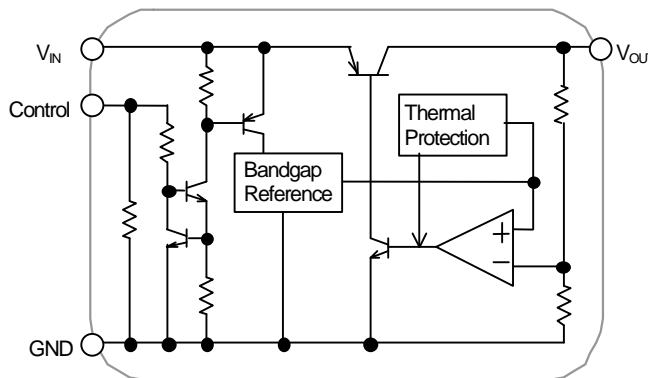
NJM2846DL3

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

■ EQUIVALENT CIRCUIT



NJM2845DL1

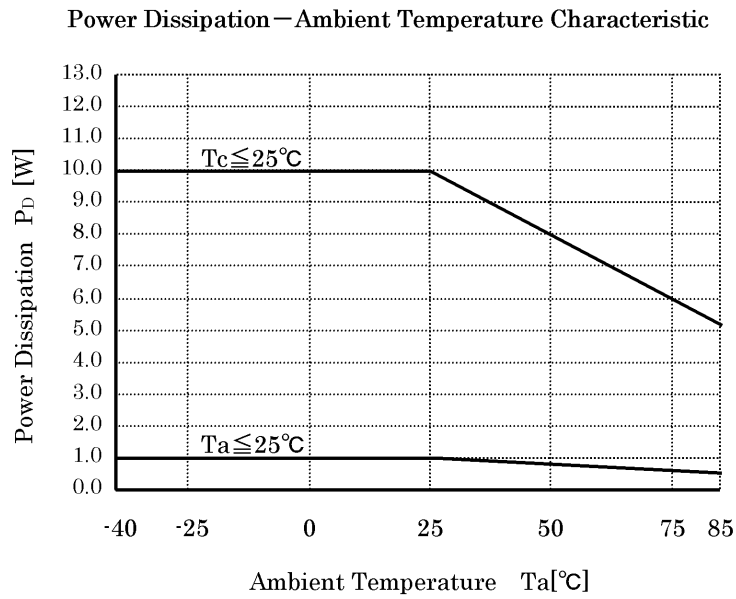


NJM2846DL3

POWER DISSIPATION VS.AMBIENT TEMPERATURE

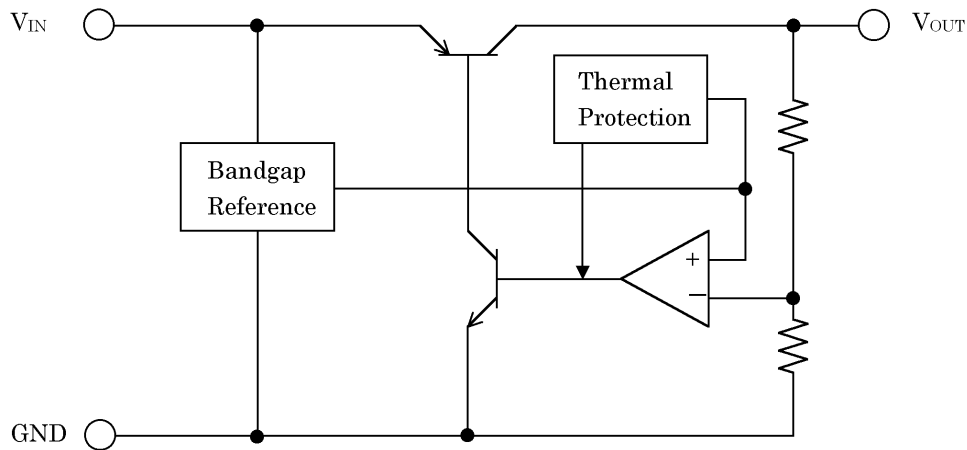
BCE-C0204-000-01

Please, refer to the following Power Dissipation and Ambient Temperature.
 (Please note the surface mount package has a small maximum rating of Power Dissipation [P_D],
 a special attention should be paid in designing of thermal radiation.)



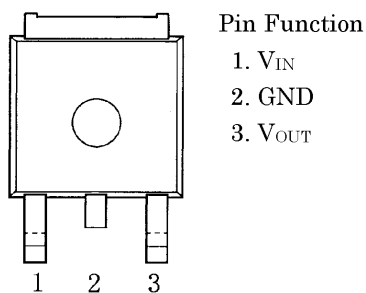
BLOCK DIAGRAM

BDE-35786-000-00



PIN CONFIGURATION

BEE-31122-000-00





NJM2115

DUAL OPERATIONAL AMPLIFIER

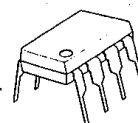
■ GENERAL DESCRIPTION

NJM 2115 is a low operating Voltage (± 1.0 V min.) and low saturation output voltage (± 2.0 V p-p at supply voltage ± 2.5 V) 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 ($< \pm 2.5$ V). The NJM2115 is stable about the oscillation compared to the NJM2100 under the condition of $V^+/V^- > 2.5$ V.

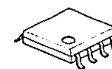
■ FEATURES

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

■ PACKAGE OUTLINE



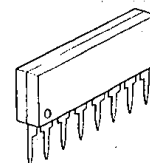
NJM2115D



NJM2115M

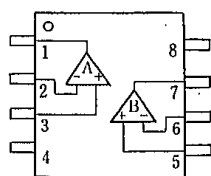


NJM2115V

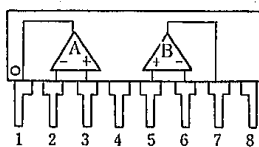


NJM2115L

■ PIN CONFIGURATION



NJM2115D
NJM2115M
NJM2115V

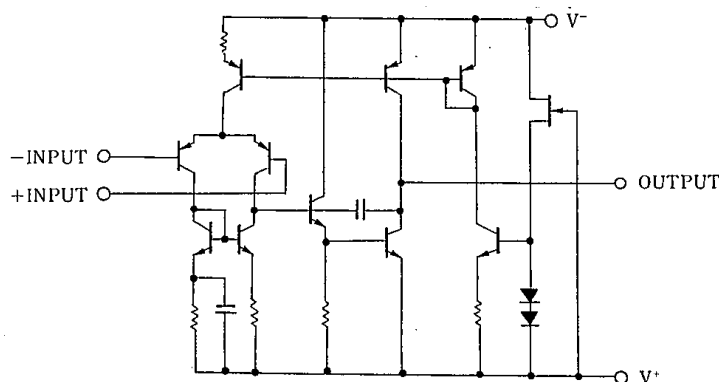


NJM2115L

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)





MACRONIX
INTERNATIONAL Co., LTD.

MX25L8005

- WP# pin
 - Hardware write protection
- HOLD# pin
 - pause the chip without deselecting the chip
- PACKAGE
 - 8-pin SOP (150mil)
 - 8-pin SOP (200mil)
 - 8-pin PDIP (300mil)
 - 8-land SON/WSON (6x5mm), 8-land SON is not recommended for new design
 - 8-land USON (4x4mm)
 - **All Pb-free devices are RoHS Compliant**

GENERAL DESCRIPTION

The MX25L8005 is a CMOS 8,388,608 bit serial Flash memory, which is configured as 1,048,576 x 8 internally. The MX25L8005 feature a serial peripheral interface and software protocol allowing operation on a simple 3-wire bus. The three bus signals are a clock input (SCLK), a serial data input (SI), and a serial data output (SO). SPI access to the device is enabled by CS# input.

The MX25L8005 provide sequential read operation on whole chip.

After program/erase command is issued, auto program/ erase algorithms which program/ erase and verify the specified page or byte/sector/block locations will be executed. Program command is executed on page (256 bytes) basis, and erase command is executes on chip or sector(4K-bytes) or block(64K-bytes).

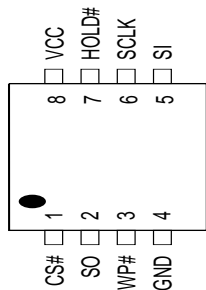
To provide user with ease of interface, a status register is included to indicate the status of the chip. The status read command can be issued to detect completion status of a program or erase operation via WIP bit.

When the device is not in operation and CS# is high, it is put in standby mode and draws less than 10uA DC current.

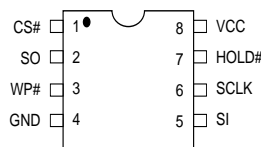
The MX25L8005 utilize MXIC's proprietary memory cell, which reliably stores memory contents even after 100,000 program and erase cycles.

PIN CONFIGURATIONS

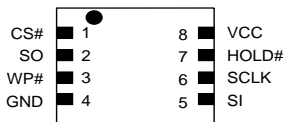
8-PIN SOP (150/200mil)



8-PIN PDIP (300mil)



* 8-LAND SON/WSON (6x5mm), USON (4x4mm)



PIN DESCRIPTION

SYMBOL	DESCRIPTION
CS#	Chip Select
SI	Serial Data Input
SO	Serial Data Output
SCLK	Clock Input
HOLD#	Hold, to pause the device without deselecting the device
WP#	Write Protection
VCC	+ 3.3V Power Supply
GND	Ground

Note: 8-land SON is not recommended for new design

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 $V_{in}=2.0V$
- Selectable Detect Voltage : 1.1V to 6.0V in 0.1V increments
- Highly Accurate : Detect Voltage 1.1V to 1.9V $\pm 3\%$
Detect Voltage 2.0V to 6.0V $\pm 2\%$
- Operating Voltage : 0.8V to 10.0V
- Package Available : SOT23 (150mW), SOT89 (500mW) & TO92 (300mW)

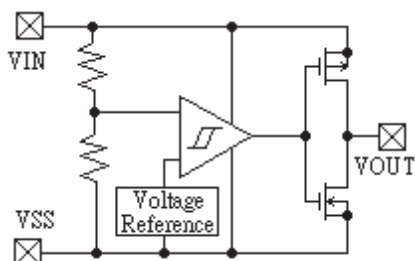
❖ General Description

The ML61 is a group of high-precision and low-power voltage detectors.

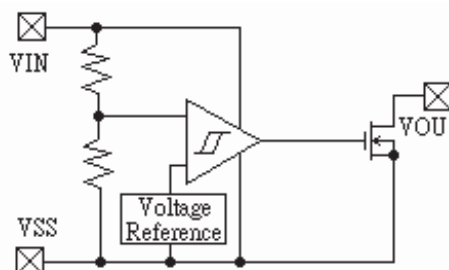
The ML61 consists of a highly-accurate and low-power reference voltage source, a comparator, a hysteresis circuit, and an output driver. Detect voltage is very accurate and stable with N-channel open drain and CMOS, are available.

❖ Block Diagram

(1) CMOS Output



(2) N-Channel Open Drain Output

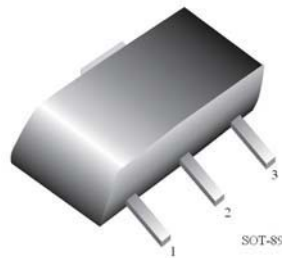


❖ Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Input Voltage	V_{IN}	10	V
Output Current	I_{OUT}	50	mA
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Continuous Total Power Dissipation	SOT-23	150	mW
	SOT-89	500	
	TO-92	300	
Operating Ambient Temperature	T_{opr}	-40 ~ +70	$^{\circ}C$
Storage Temperature	T_{stg}	-40 ~ +70	$^{\circ}C$

❖ Pin Configuration

SOT-89



<i>Pin Number</i>	<i>Pin Name</i>	<i>Description</i>
<i>1</i>	<i>VOUT</i>	<i>Supply Voltage Output</i>
<i>2</i>	<i>VIN</i>	<i>Supply Voltage Input</i>
<i>3</i>	<i>VSS</i>	<i>Ground</i>

❖ **Ordering Information**

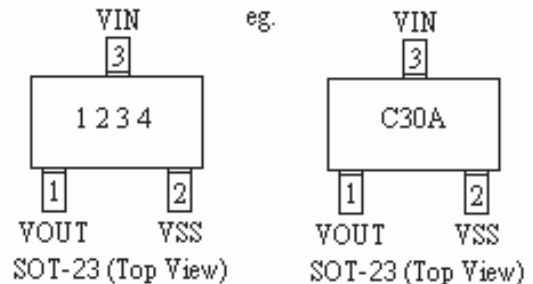
Designator	Description
a	Output Configuration C = CMOS Output N = N-Channel Output
b	Detect Voltage eg. 30=3.0V 50=5.0V
c	Detect Voltage Accuracy 2 = ±2.0% 3 = ±3.0%
d	Package Type M = SOT-23 P = SOT-89 T = TO-92
e	Device Orientation R = Embossed Tape (Orientation of Device : Right) L = Embossed Tape (Orientation of Device : Left) B = Bag (TO-92) H = Paper Tape (TO-92)

```
ML61xxxxxx
  ↑  ↑  ↑  ↑
  a b c d e
```

❖ **Marking**

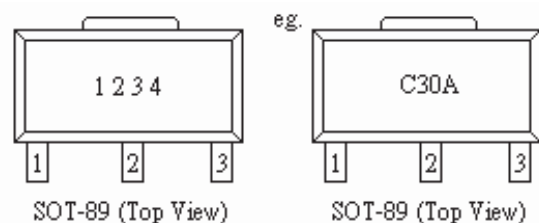
SOT-23 :

Designator	Description
1	Type C = Voltage Detector (CMOS Output) N = Voltage Detector (N-channel Output)
2,3	Output Voltage eg. 30 = 3.0V
4	Internal Code



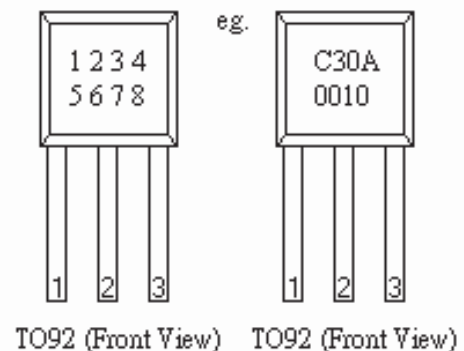
SOT-89 :

Designator	Description
1	Type C = Voltage Detector (CMOS Output) N = Voltage Detector (N-channel Output)
2,3	Output Voltage eg. 30 = 3.0V
4	Internal Code

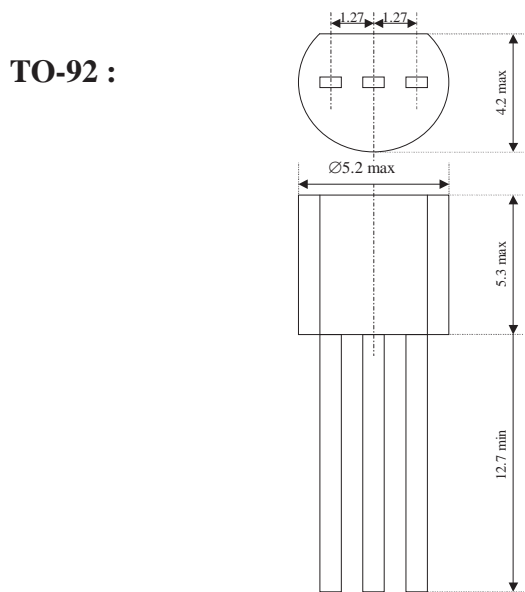
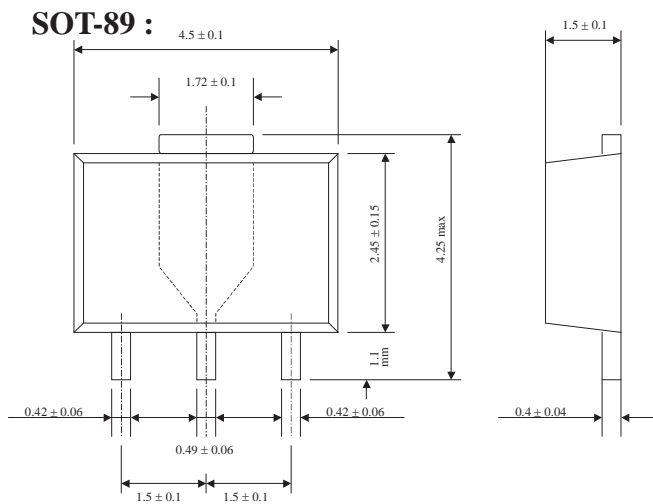
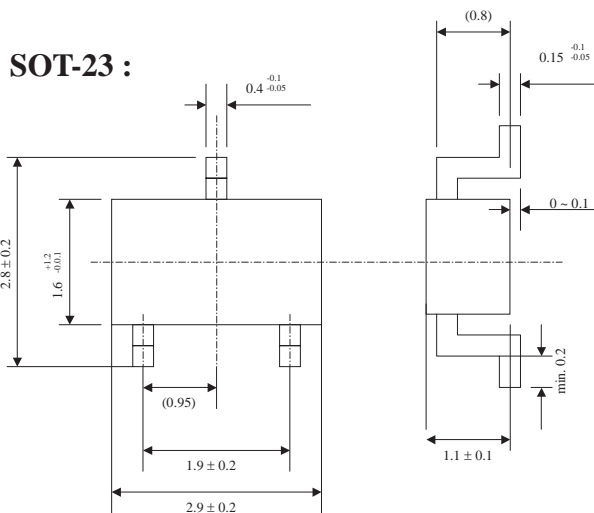


TO-92 :

Designator	Description
1	Type C = Voltage Detector (CMOS Output) N = Voltage Detector (N-channel Output)
2,3	Output Voltage eg. 30 = 3.0V
4	Internal code
5, 6	Year Code eg. 00 = Year 2000
7, 8	Week Code eg. 10 = Week 10



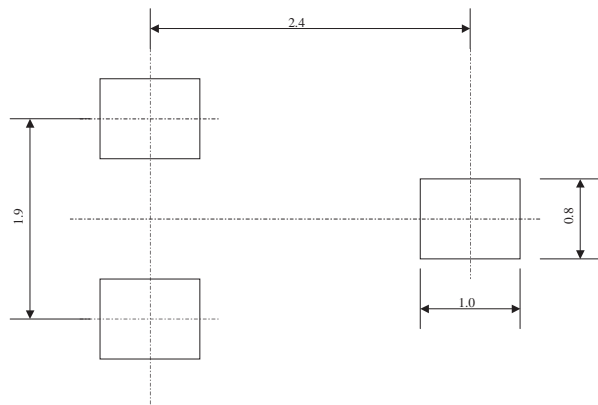
❖ **Packaging Information**



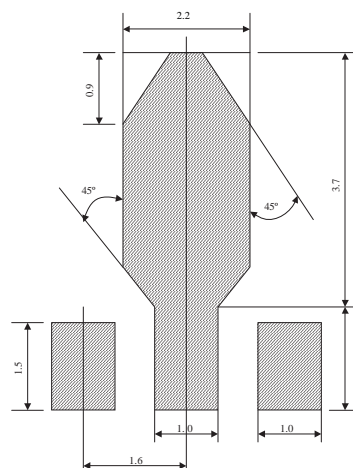
Units : mm

❖ **Recommended Pattern Layout**

SOT-23 :



SOT-89



P10/14

CHAPTER 2

Signal Descriptions and Reference Circuit

This chapter defines the pinouts, signals, and reference circuitry of the iPod Authentication Coprocessor 2.0C.

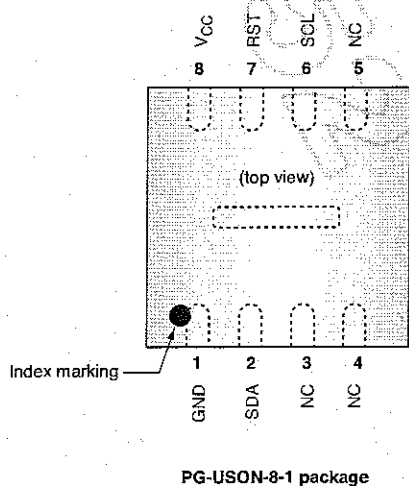
CP Signals and Pinouts

The 2.0C CP chip signal descriptions are given in Table 2-1 and its pinouts are shown in Figure 2-1.

Table 2-1 CP signals

Signal name	Pin	I/O	Description
GND	1		Supply voltage, negative terminal
SDA	2	I/O	I ² C data
NC	3-5		Must not be connected
SCL	6	I	I ² C clock
RST	7	I	At reset: selects I ² C slave address. During operation: CP warm reset.
V _{CC}	8		Supply voltage, positive terminal

Figure 2-1 CP chip pinouts, top view



The thermal pad on the bottom of the CP may be left unconnected or optionally connected to GND.

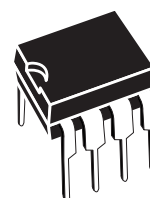


M24C64-W M24C64-R M24C64-F M24C32-W M24C32-R M24C32-F

64 Kbit and 32 Kbit Serial I²C bus EEPROM

Feature summary

- Two-Wire I²C serial interface
Supports 400kHz Protocol
- Single supply voltage:
 - 2.5 to 5.5V for M24Cxx-W
 - 1.8 to 5.5V for M24Cxx-R
 - 1.7 to 5.5V for M25Cxx-F
- Write Control Input
- Byte and Page Write (up to 32 Bytes)
- Random And Sequential Read modes
- Self-Timed programming cycle
- Automatic address incrementing
- Enhanced ESD/Latch-Up Protection
- More than 1 Million Write cycles
- More than 40-year data retention



PDIP8 (BN)



SO8 (MN)
150 mil width



TSSOP8 (DW)
169 mil width

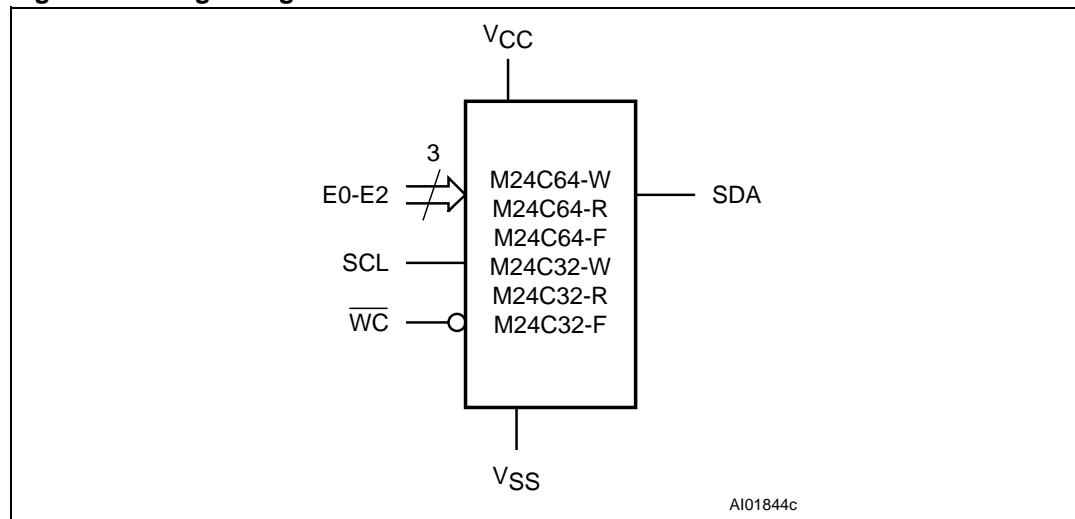


UFDFPN8 (MB)
2x3mm² (MLP)

1 Summary description

These I²C-compatible electrically erasable programmable memory (EEPROM) devices are organized as 8192 × 8 bits (M24C64-x) and 4096 × 8 bits (M24C32-x).

Figure 1. Logic diagram



I²C uses a two-wire serial interface, comprising a bi-directional data line and a clock line. The devices carry a built-in 4-bit Device Type Identifier code (1010) in accordance with the I²C bus definition.

The device behaves as a slave in the I²C protocol, with all memory operations synchronized by the serial clock. Read and Write operations are initiated by a Start condition, generated by the bus master. The Start condition is followed by a Device Select Code and Read/Write bit (\overline{RW}) (as described in [Table 2](#)), terminated by an acknowledge bit.

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

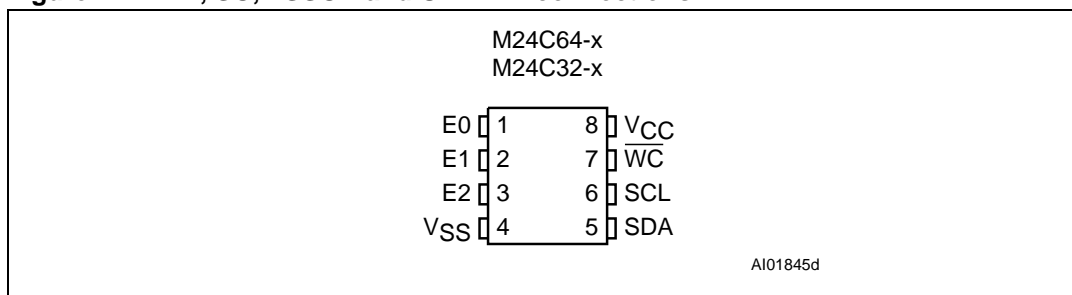
Table 1. Signal names

E0, E1, E2	Chip Enable
SDA	Serial Data
SCL	Serial Clock
WC	Write Control
V _{CC}	Supply Voltage
V _{SS}	Ground

M24Cxx-W, M24Cxx-R, M24Cxx-F

Summary description

Figure 2. DIP, SO, TSSOP and UDFPN connections



1. See [Package mechanical](#) section for package dimensions, and how to identify pin-1.

2 Signal description

2.0.1 Serial Clock (SCL)

This input signal is used to strobe all data in and out of the device. In applications where this signal is used by slave devices to synchronize the bus to a slower clock, the bus master must have an open drain output, and a pull-up resistor must be connected from Serial Clock (SCL) to V_{CC} . (Figure 4 indicates how the value of the pull-up resistor can be calculated). In most applications, though, this method of synchronization is not employed, and so the pull-up resistor is not necessary, provided that the bus master has a push-pull (rather than open drain) output.

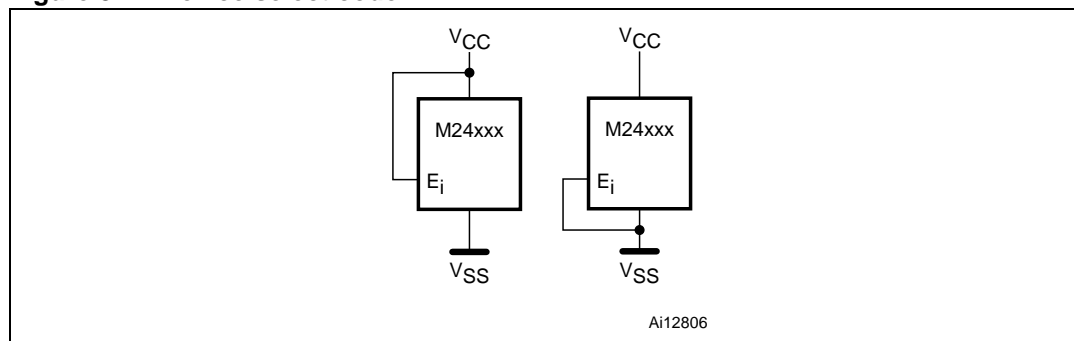
2.0.2 Serial Data (SDA)

This bi-directional signal is used to transfer data in or out of the device. It is an open drain output that may be wire-OR'ed with other open drain or open collector signals on the bus. A pull up resistor must be connected from Serial Data (SDA) to V_{CC} . (Figure 4 indicates how the value of the pull-up resistor can be calculated).

2.1 Chip Enable (E0, E1, E2)

These input signals are used to set the value that is to be looked for on the three least significant bits (b3, b2, b1) of the 7-bit Device Select Code. These inputs must be tied to V_{CC} or V_{SS} , to establish the Device Select Code as shown in Figure 3. When not connected (left floating), these inputs are read as Low (0,0,0).

Figure 3. Device select code



2.2 Write Control (\overline{WC})

This input signal is useful for protecting the entire contents of the memory from inadvertent write operations. Write operations are disabled to the entire memory array when Write Control (\overline{WC}) is driven High. When unconnected, the signal is internally read as V_{IL} , and Write operations are allowed.

When Write Control (\overline{WC}) is driven High, Device Select and Address bytes are acknowledged, Data bytes are not acknowledged.

2.3 Supply voltage (V_{CC})

2.3.1 Operating supply voltage V_{CC}

Prior to selecting the memory and issuing instructions to it, a valid and stable V_{CC} voltage within the specified [$V_{CC}(\min)$, $V_{CC}(\max)$] range must be applied (see [Table 8](#) and [Table 9](#)). In order to secure a stable DC supply voltage, it is recommended to decouple the V_{CC} line with a suitable capacitor (usually of the order of 10nF to 100nF) close to the V_{CC}/V_{SS} package pins.

This voltage must remain stable and valid until the end of the transmission of the instruction and, for a Write instruction, until the completion of the internal write cycle (t_W).

2.3.2 Internal device reset

In order to prevent inadvertent Write operations during Power-up, a Power On Reset (POR) circuit is included. At Power-up (continuous rise of V_{CC}), the device does not respond to any instruction until V_{CC} has reached the Power On Reset threshold voltage (this threshold is lower than the minimum V_{CC} operating voltage defined in [Table 8](#) and [Table 9](#)).

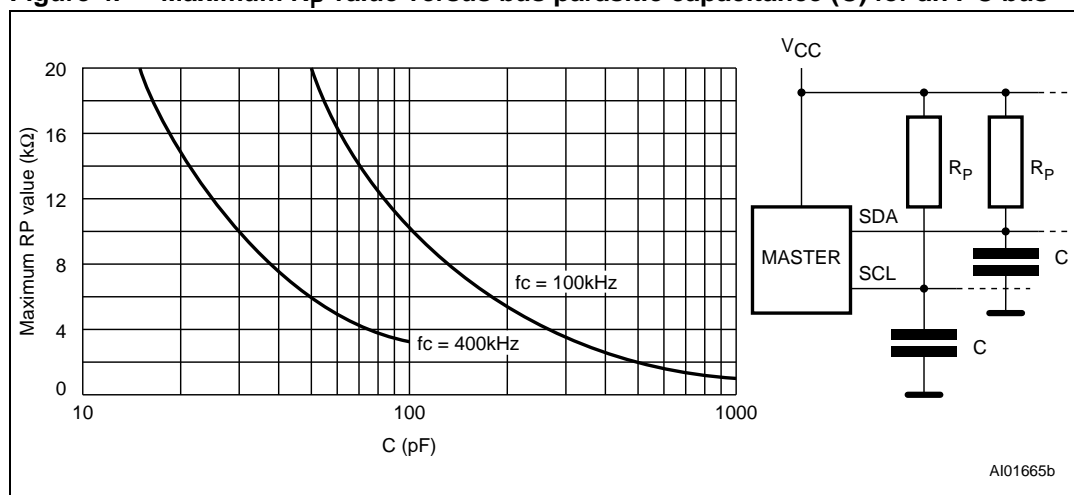
When V_{CC} has passed the POR threshold, the device is reset and is in Standby Power mode.

2.3.3 Power-down

At Power-down (continuous decrease of V_{CC}), as soon as V_{CC} drops from the normal operating voltage to below the Power On Reset threshold voltage, the device stops responding to any instruction sent to it.

During Power-down, the device must be deselected and in the Standby Power mode (that is there should be no internal Write cycle in progress).

Figure 4. Maximum R_P value versus bus parasitic capacitance (C) for an I²C bus



Signal description

M24Cxx-W, M24Cxx-R, M24Cxx-F

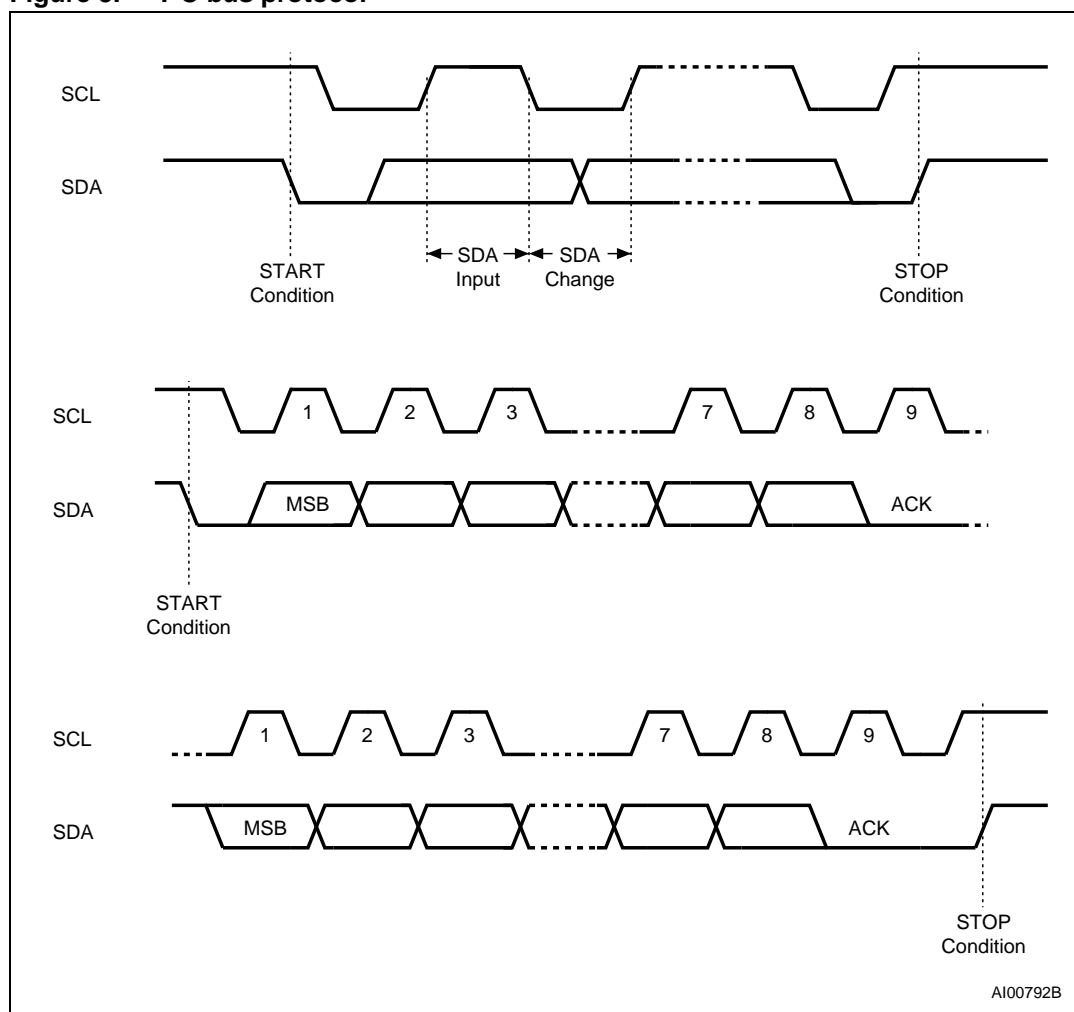
Figure 5. I²C bus protocol

Table 2. Device select code

	Device Type Identifier ⁽¹⁾				Chip Enable Address ⁽²⁾			R \bar{W}
	b7	b6	b5	b4	b3	b2	b1	b0
Device Select Code	1	0	1	0	E2	E1	E0	R \bar{W}

1. The most significant bit, b7, is sent first.

2. E0, E1 and E2 are compared against the respective external pins on the memory device.

Table 3. Address Most Significant Byte

b15	b14	b13	b12	b11	b10	b9	b8
-----	-----	-----	-----	-----	-----	----	----

Table 4. Address Least Significant Byte

b7	b6	b5	b4	b3	b2	b1	b0
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ESMT*(Preliminary)***M12L16161A (2Q)****SDRAM****512K x 16Bit x 2Banks****Synchronous DRAM****FEATURES**

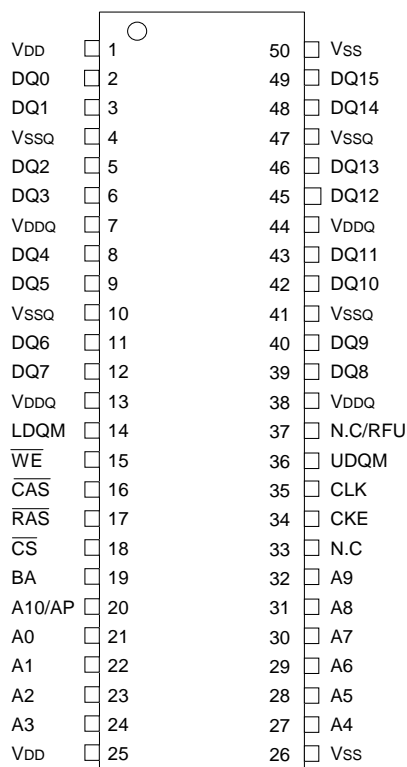
- JEDEC standard 3.3V power supply
- LVTTTL compatible with multiplexed address
- Dual banks operation
- MRS cycle with address key programs
 - CAS Latency (2 & 3)
 - Burst Length (1, 2, 4, 8 & full page)
 - Burst Type (Sequential & Interleave)
- All inputs are sampled at the positive going edge of the 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

Product ID	Max Freq.	Package	Comments
M12L16161A-5TG2Q	200MHz	TSOP(II)	Pb-free
M12L16161A-7TG2Q	143MHz	TSOP(II)	Pb-free

PIN CONFIGURATION (TOP VIEW)**(TSOPII 50L, 400milX825mil Body, 0.8mm Pin Pitch)**



December 6, 2007

LM94022/LM94022Q

1.5V, SC70, Multi-Gain Analog Temperature Sensor with Class-AB Output

General Description

The LM94022 is a precision analog output CMOS integrated-circuit temperature sensor that operates at a supply voltage as low as 1.5 Volts. A class-AB output structure gives the LM94022 strong output source and sink current capability for driving heavy loads. For example, it is well suited to source the input of a sample-and-hold analog-to-digital converter with its transient load requirements. While operating over the wide temperature range of -50°C to $+150^{\circ}\text{C}$, the LM94022 delivers an output voltage that is inversely proportional to measured temperature. The LM94022's low supply current makes it ideal for battery-powered systems as well as general temperature sensing applications.

Two logic inputs, Gain Select 1 (GS1) and Gain Select 0 (GS0), select the gain of the temperature-to-voltage output transfer function. Four slopes are selectable: $-5.5\text{ mV}/^{\circ}\text{C}$, $-8.2\text{ mV}/^{\circ}\text{C}$, $-10.9\text{ mV}/^{\circ}\text{C}$, and $-13.6\text{ mV}/^{\circ}\text{C}$. In the lowest gain configuration (GS1 and GS0 both tied low), the LM94022 can operate with a 1.5V supply while measuring temperature over the full -50°C to $+150^{\circ}\text{C}$ operating range. Tying both inputs high causes the transfer function to have the largest gain of $-13.6\text{ mV}/^{\circ}\text{C}$ for maximum temperature sensitivity. The gain-select inputs can be tied directly to V_{DD} or Ground without any pull-up or pull-down resistors, reducing component count and board area. These inputs can also be driven by logic signals allowing the system to optimize the gain during operation or system diagnostics.

Applications

- Cell phones
- Wireless Transceivers
- Battery Management
- Automotive

- Disk Drives
- Games
- Appliances

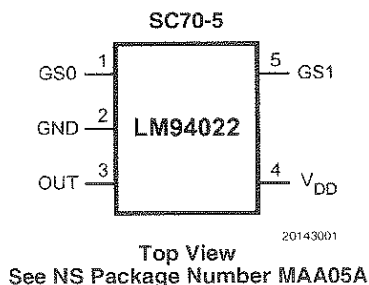
Features

- LM94022Q is AEC-Q100 Grade 0 qualified and is manufactured on an Automotive Grade Flow.
- Low 1.5V operation
- Push-pull output with $50\mu\text{A}$ source current capability
- Four selectable gains
- Very accurate over wide temperature range of -50°C to $+150^{\circ}\text{C}$
- Low quiescent current
- Output is short-circuit protected
- Extremely small SC70 package
- Footprint compatible with the industry-standard LM20 temperature sensor

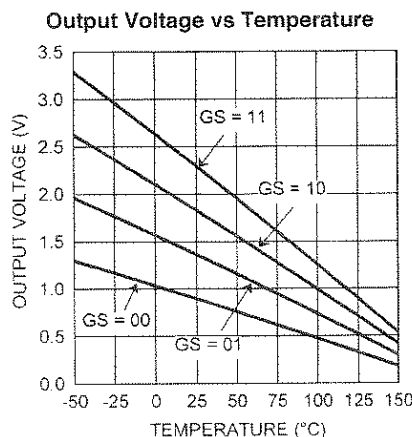
Key Specifications

■ Supply Voltage		1.5V to 5.5V
■ Supply Current		5.4 μA (typ)
■ Output Drive		$\pm 50\ \mu\text{A}$
■ Temperature Accuracy	20°C to 40°C	$\pm 1.5^{\circ}\text{C}$
	-50°C to 70°C	$\pm 1.8^{\circ}\text{C}$
	-50°C to 90°C	$\pm 2.1^{\circ}\text{C}$
	-50°C to 150°C	$\pm 2.7^{\circ}\text{C}$
■ Operating Temperature		-50°C to 150°C

Connection Diagram



Typical Transfer Characteristic

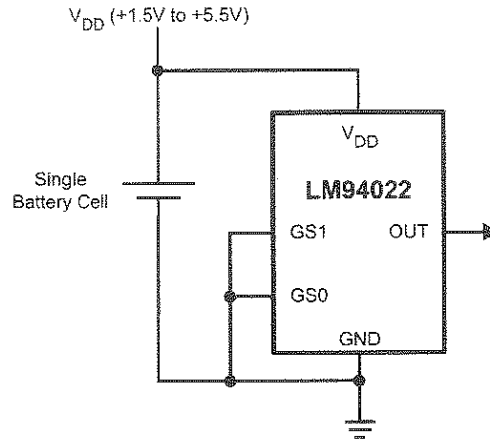


LM94022/LM94022Q 1.5V, SC70, Multi-Gain Analog Temperature Sensor with Class-AB Output

LM94022/LM94022Q

Typical Application

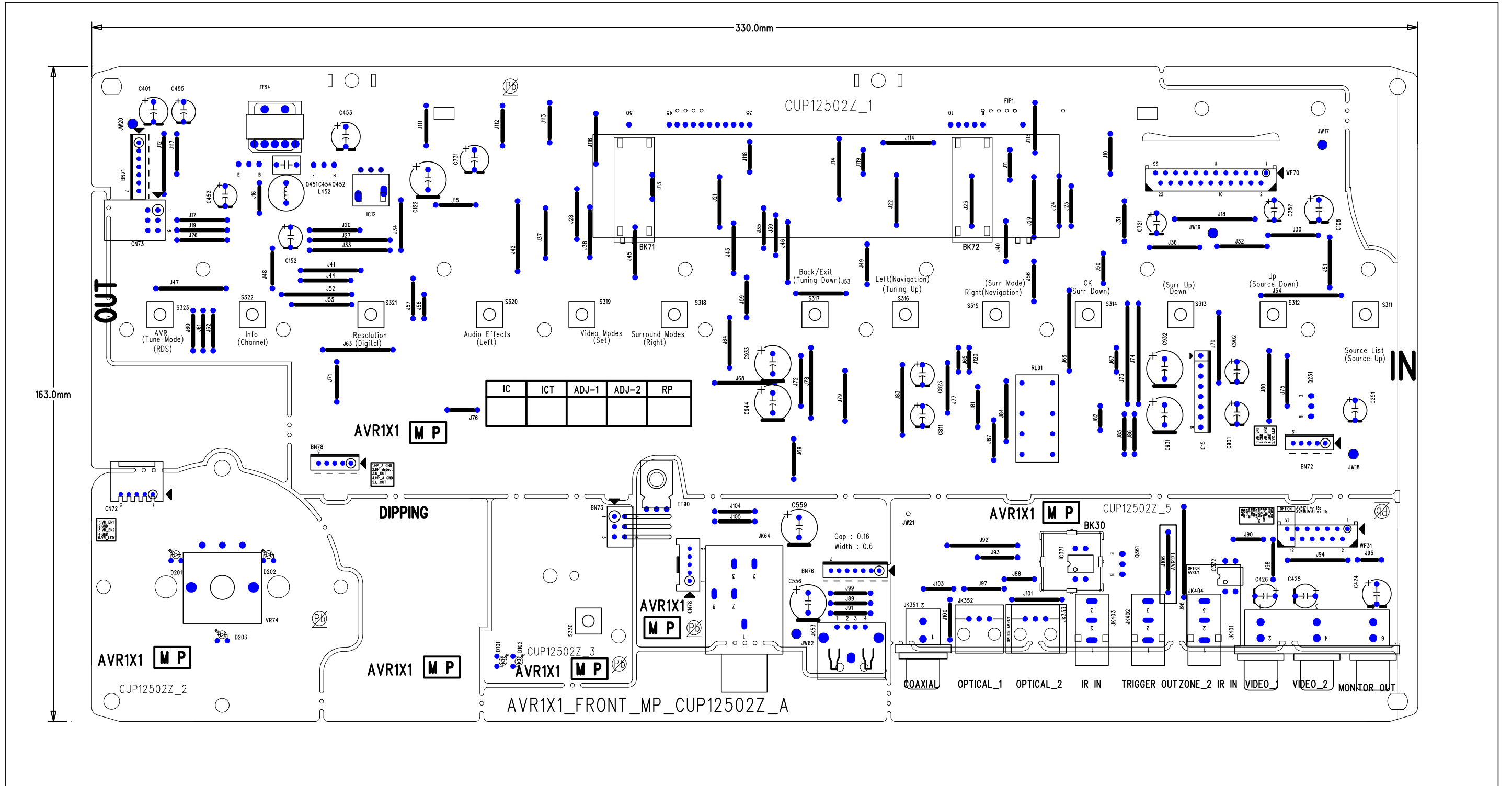
Full-Range Celsius Temperature Sensor (-50°C to +150°C)
Operating from a Single Battery Cell

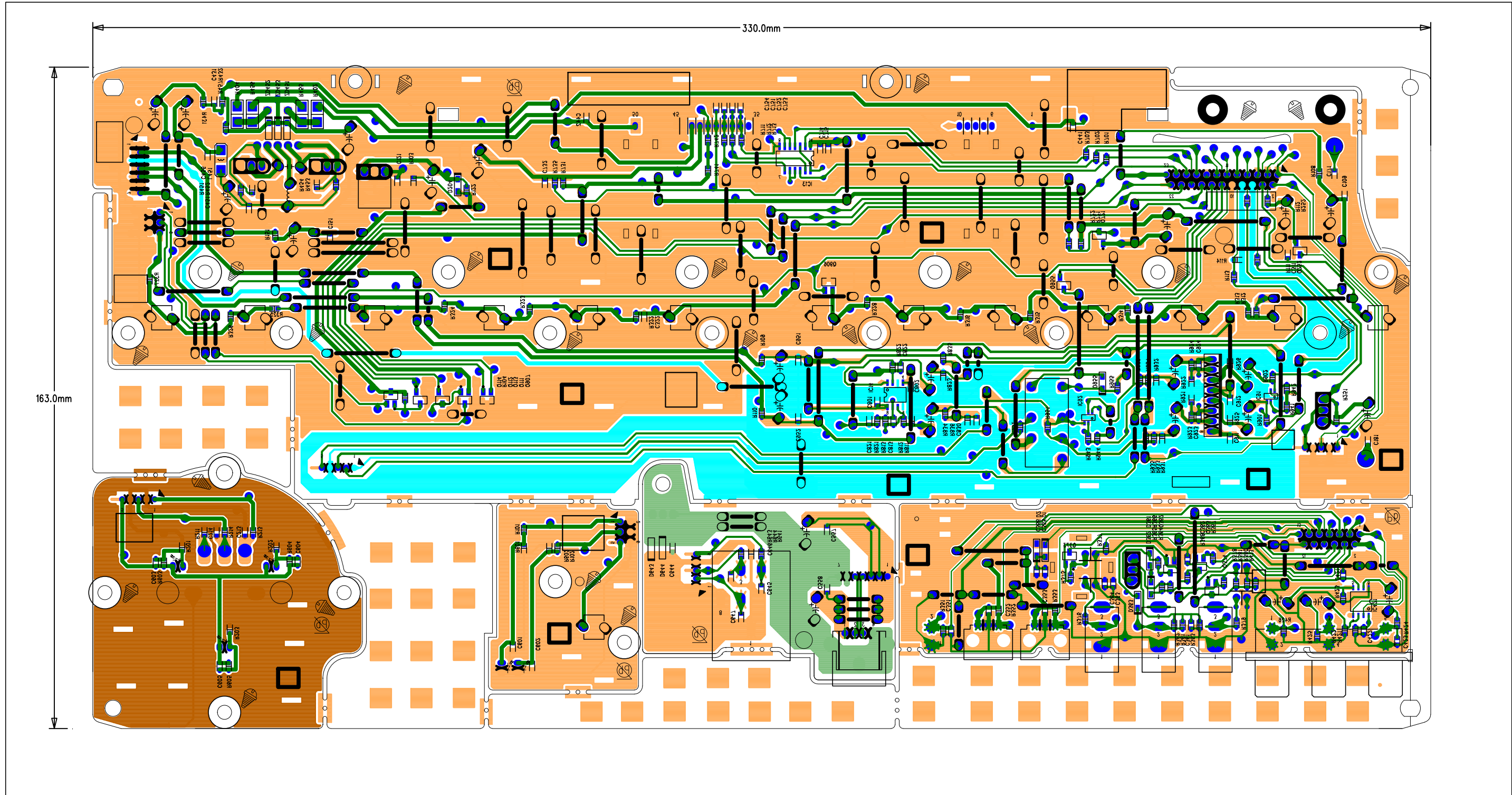


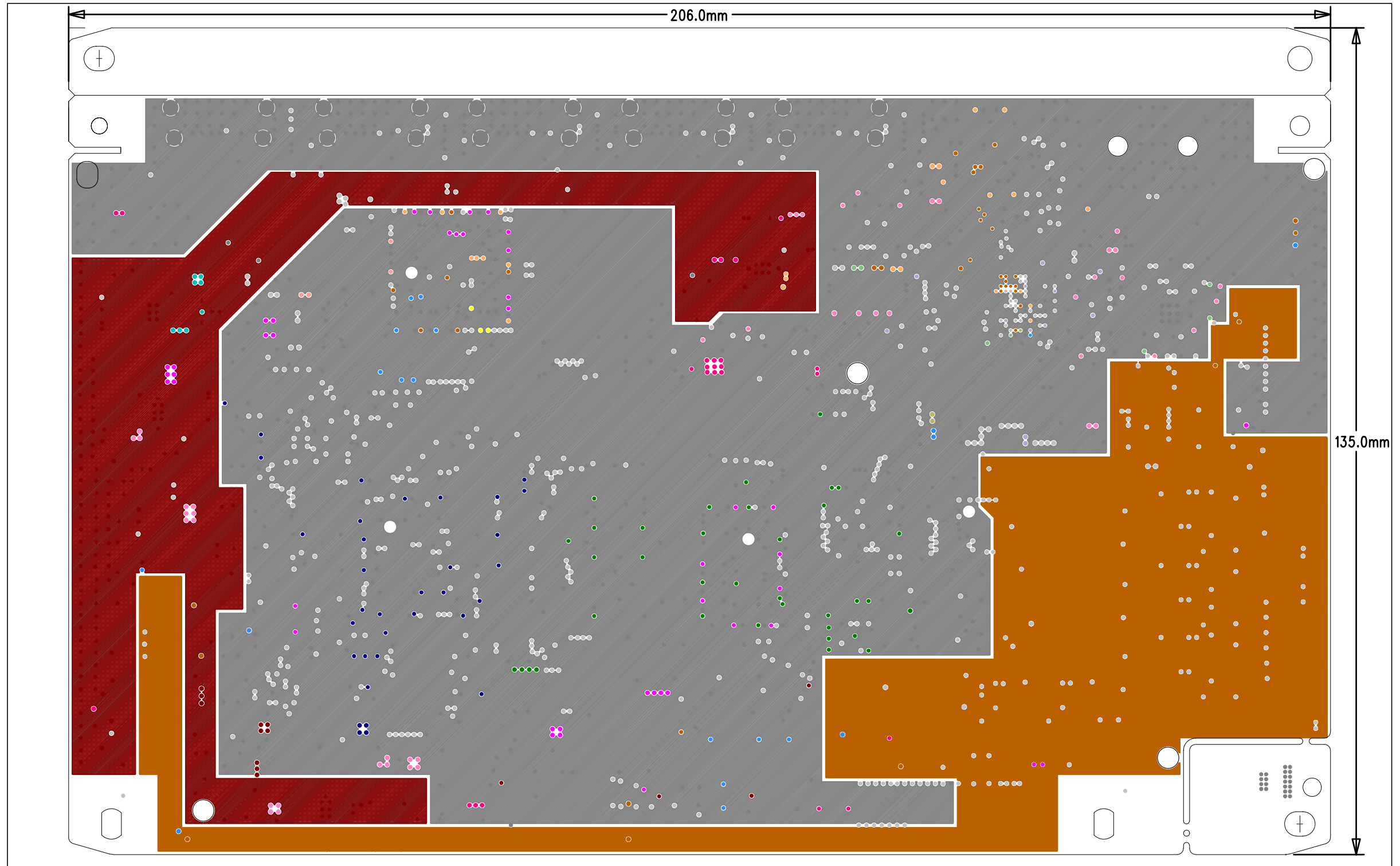
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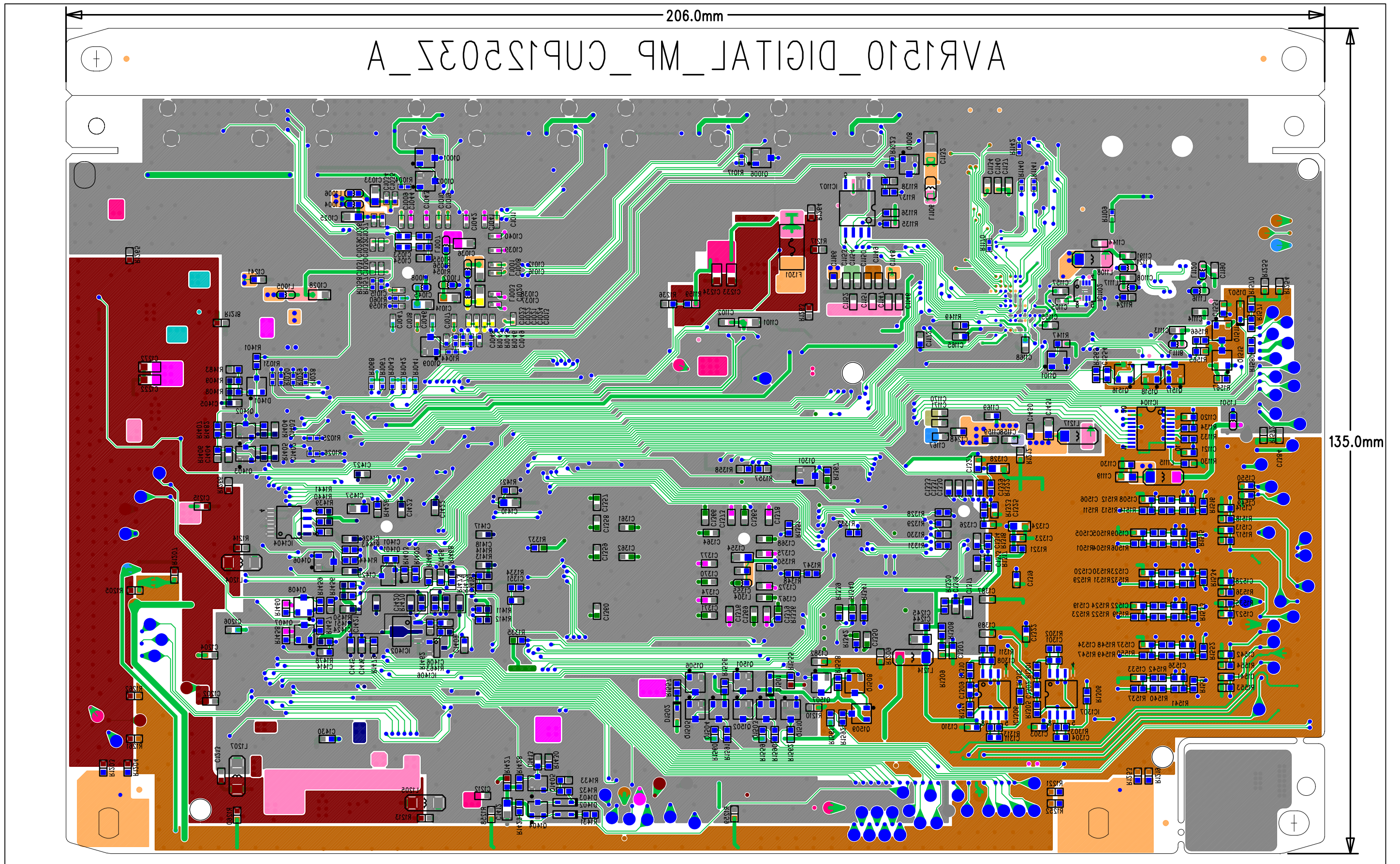
Ordering Information

Order Number	Temperature Accuracy	NS Package Number	Device Marking	Transport Media	Features
LM94022BIMG	±1.5°C to ±2.7°C	MAA05A	22B	3000 Units on Tape and Reel	
LM94022BIMGX	±1.5°C to ±2.7°C	MAA05A	22B	9000 Units on Tape and Reel	
LM94022QBIMG	±1.5°C to ±2.7°C	MAA05A	22Q	3000 Units on Tape and Reel	AEC-Q100 Grade 0 Qualified. Automotive-Grade Production Flow.
LM94022QBIMGX	±1.5°C to ±2.7°C	MAA05A	22Q	9000 Units on Tape and Reel	AEC-Q100 Grade 0 Qualified. Automotive-Grade Production Flow.





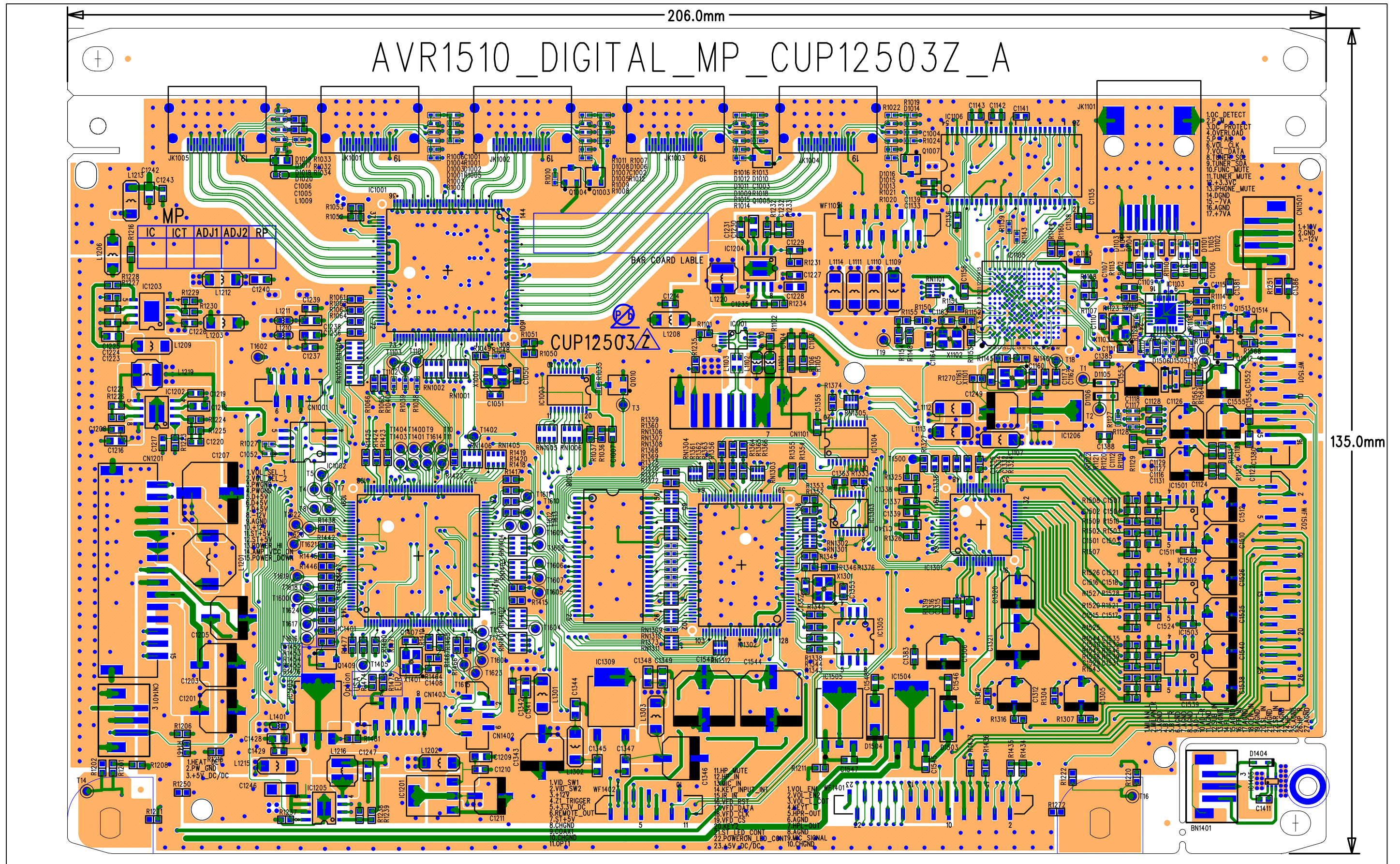


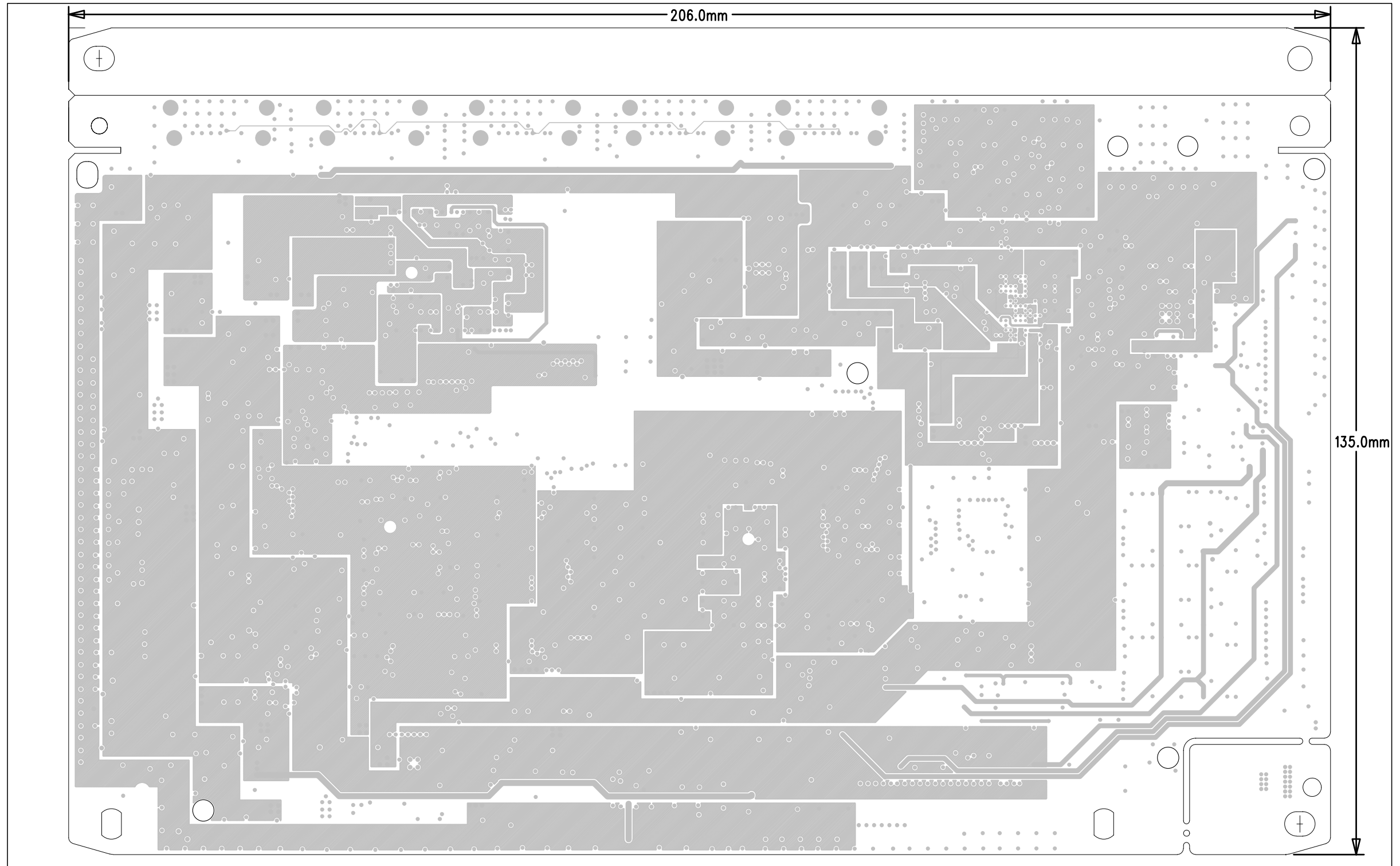


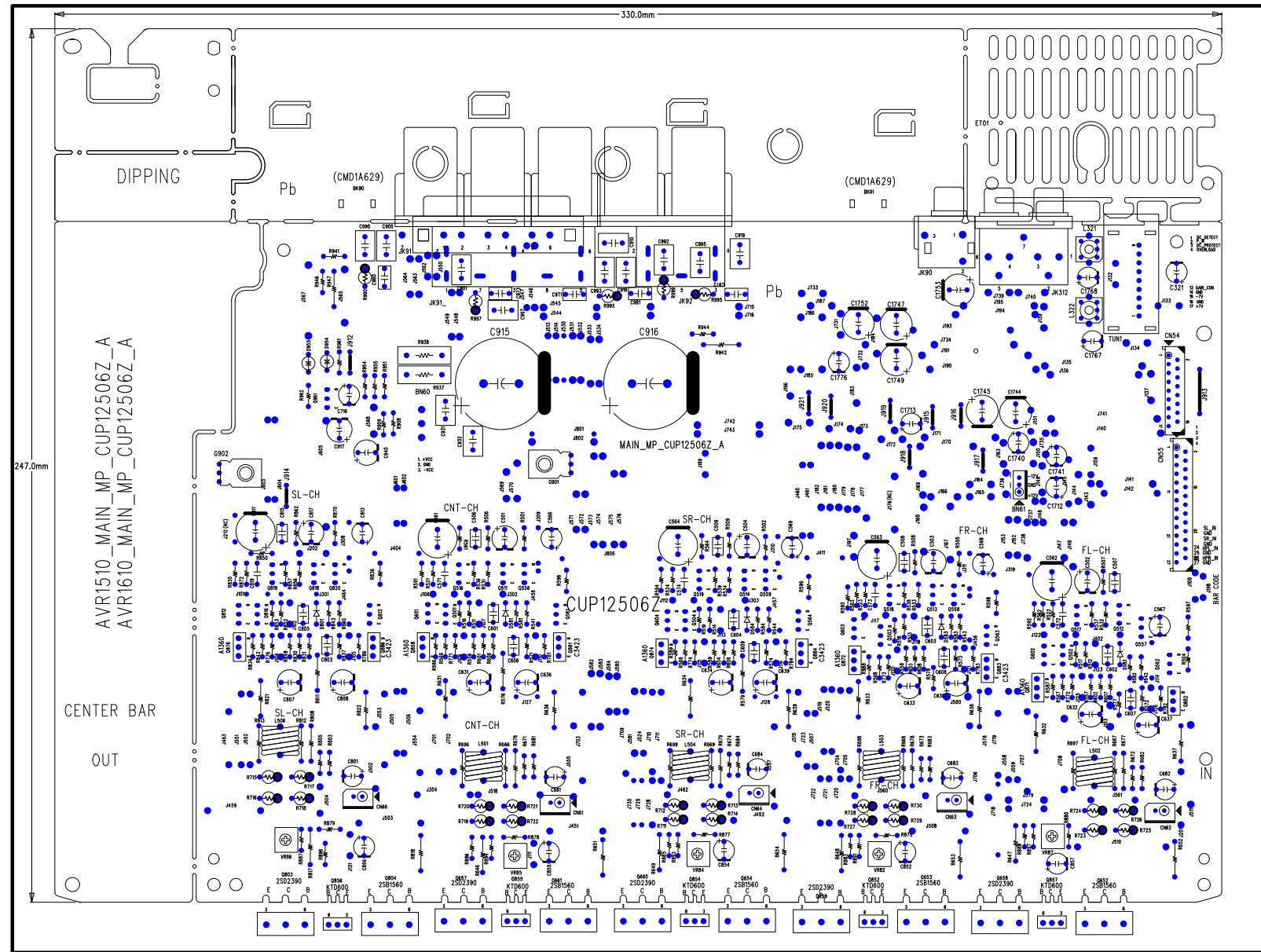
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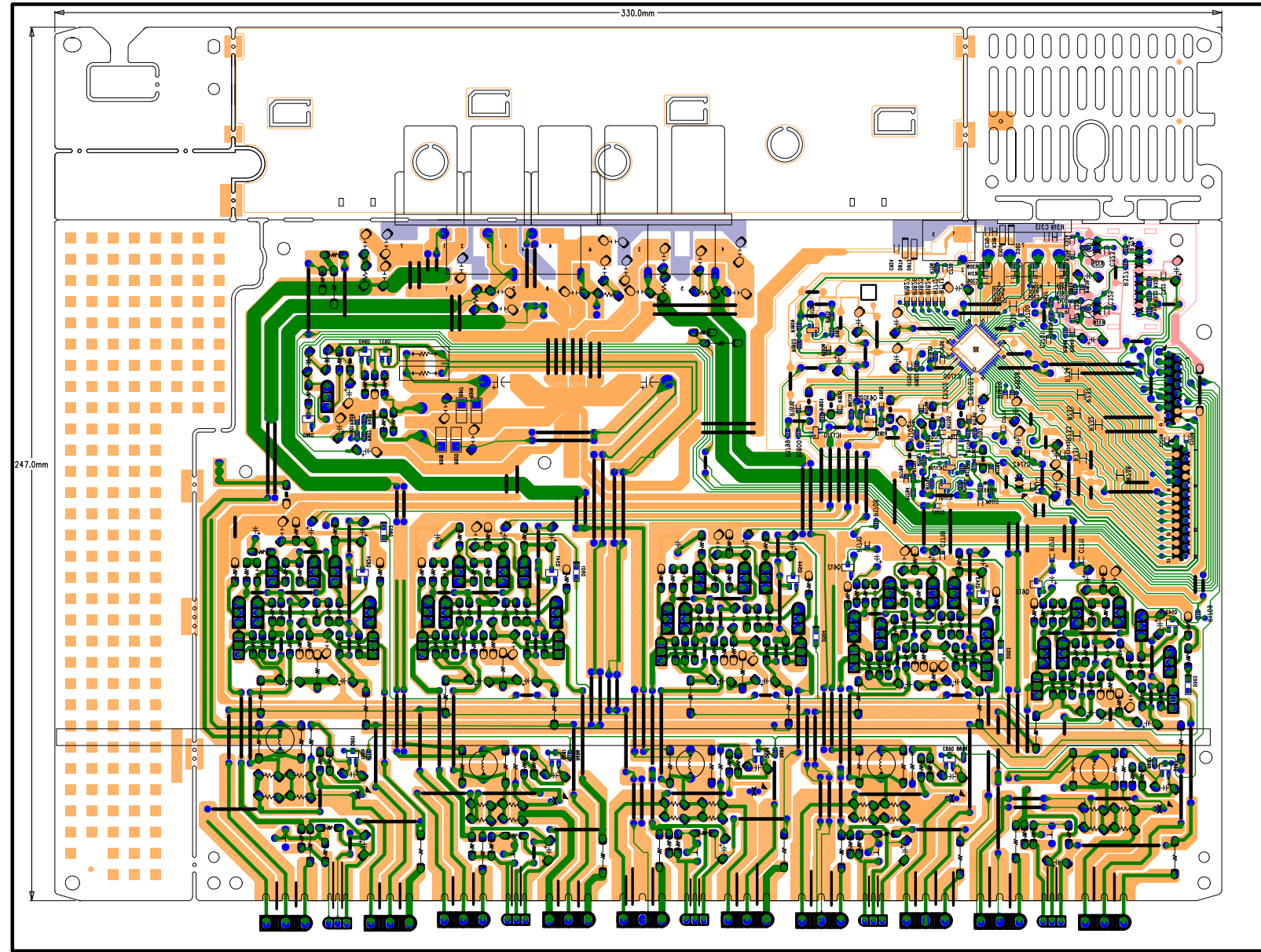
206.0mm

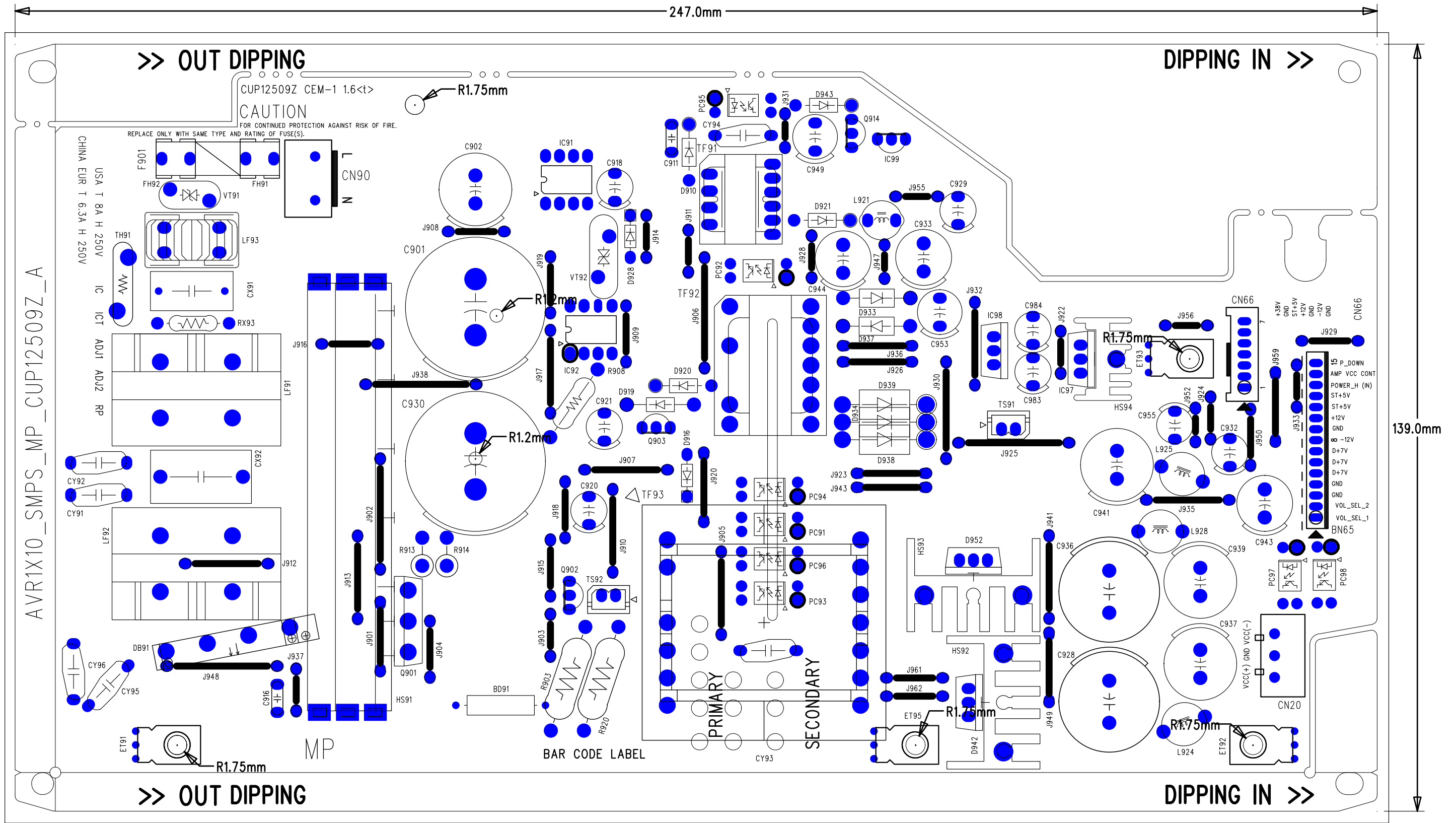
135.0mm

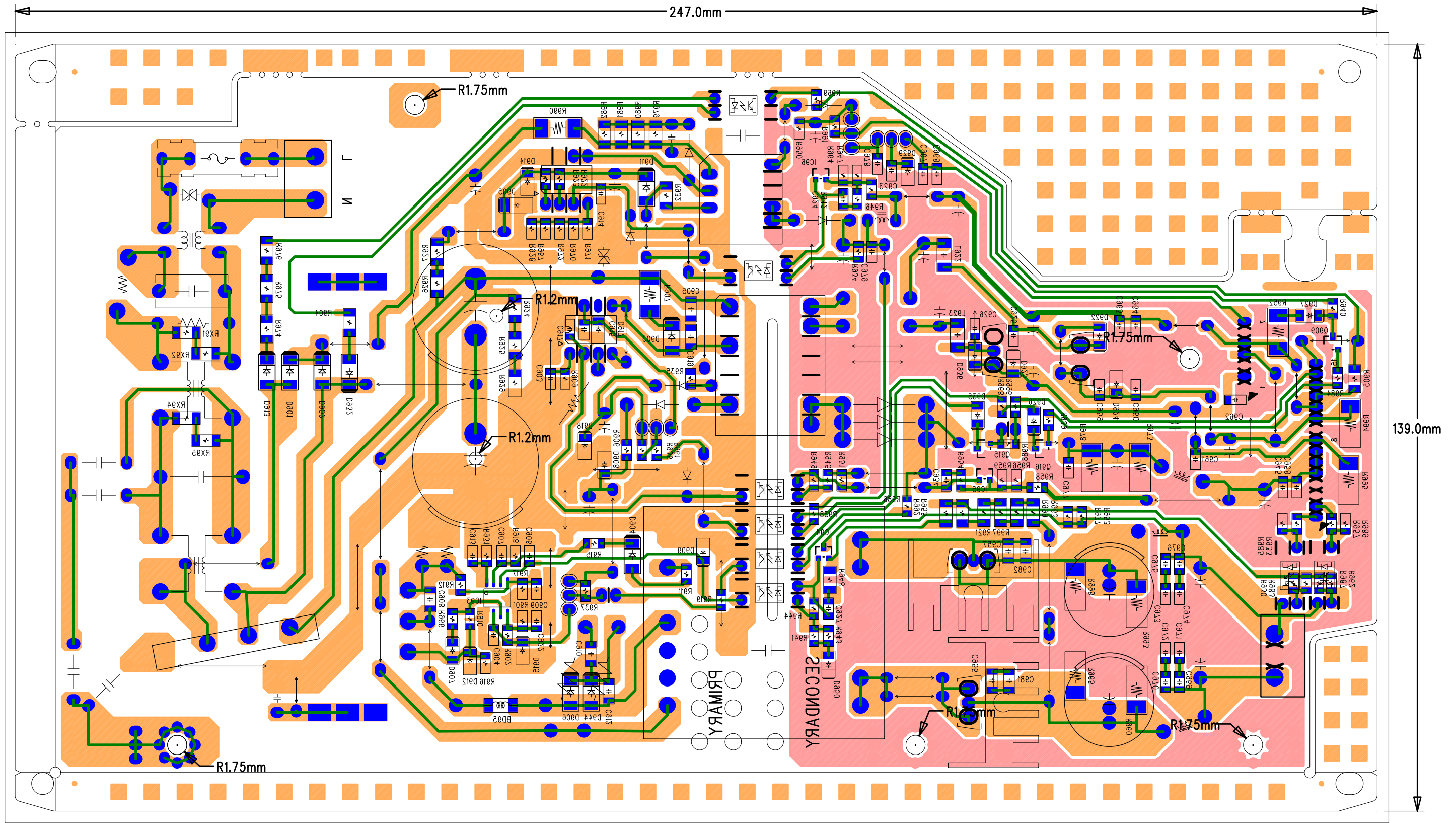




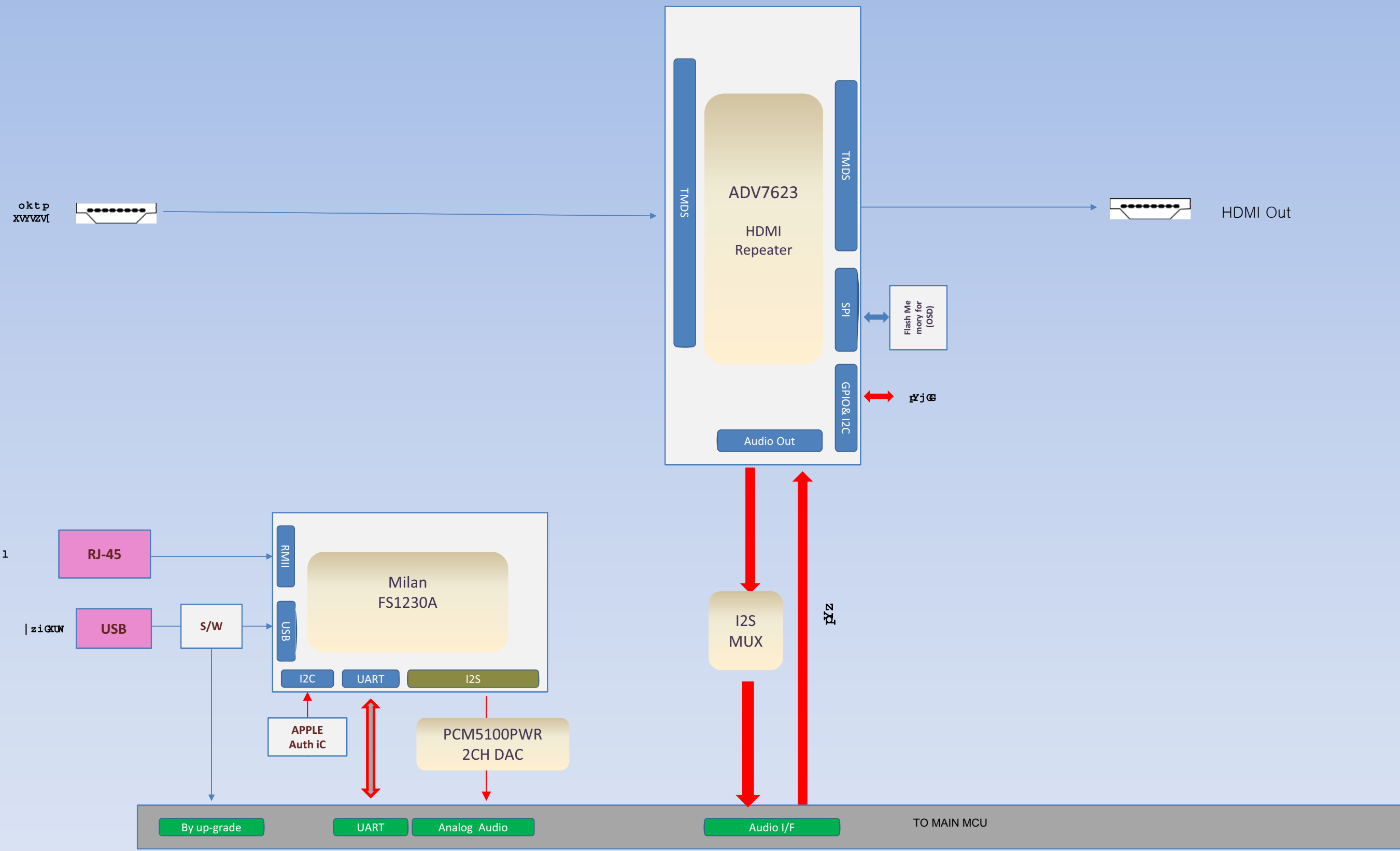




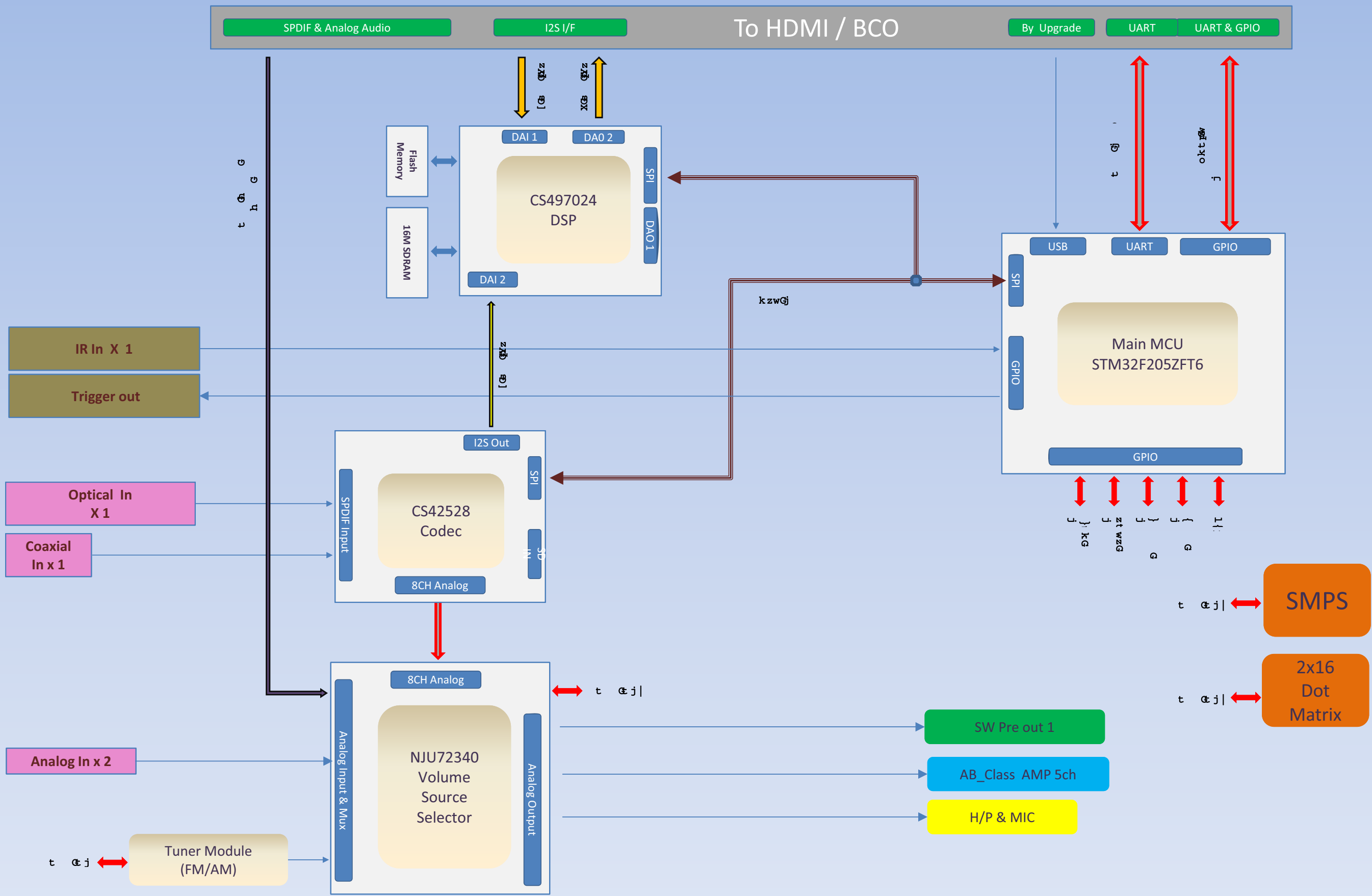




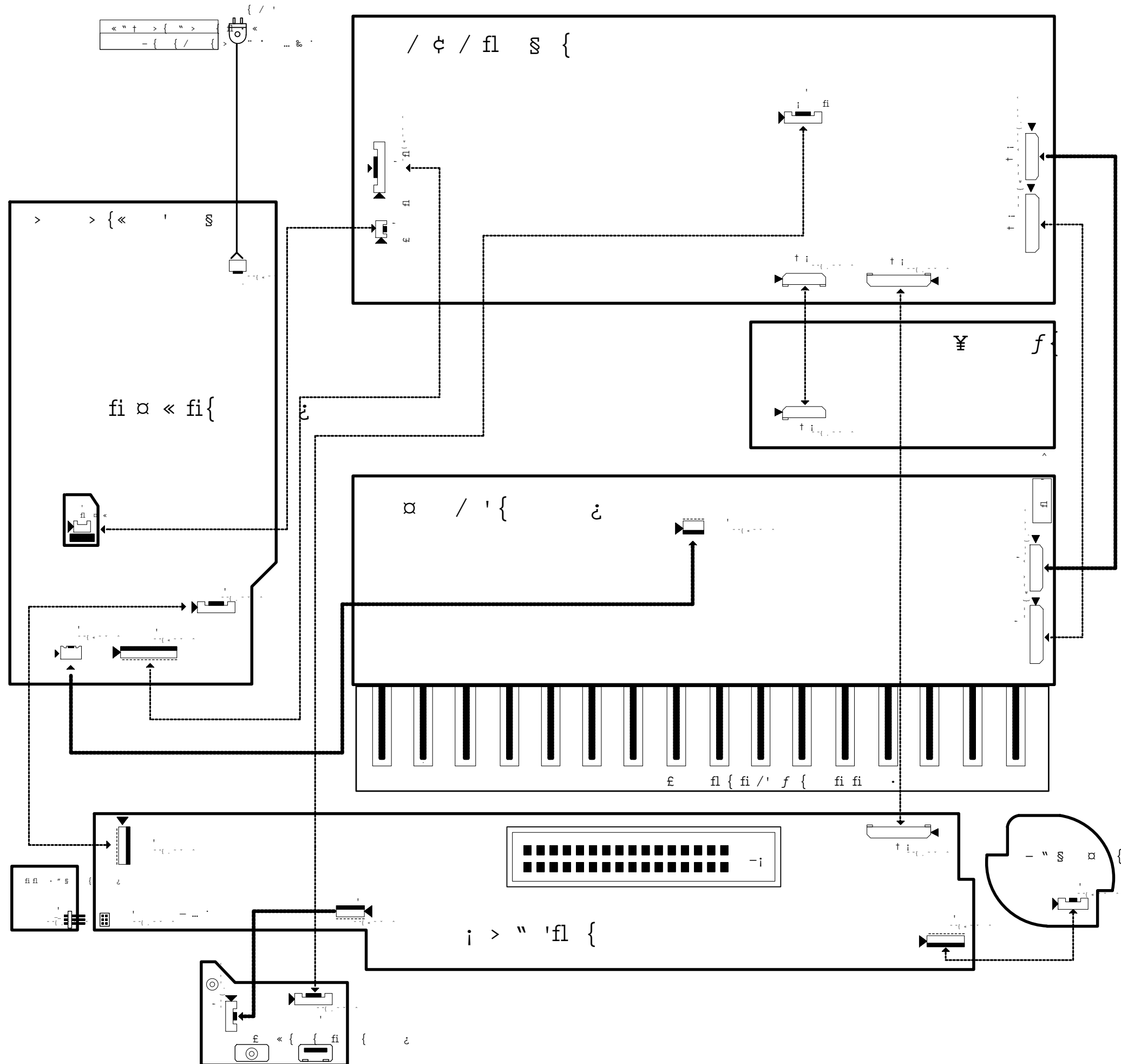
AVR151 Block Diagram



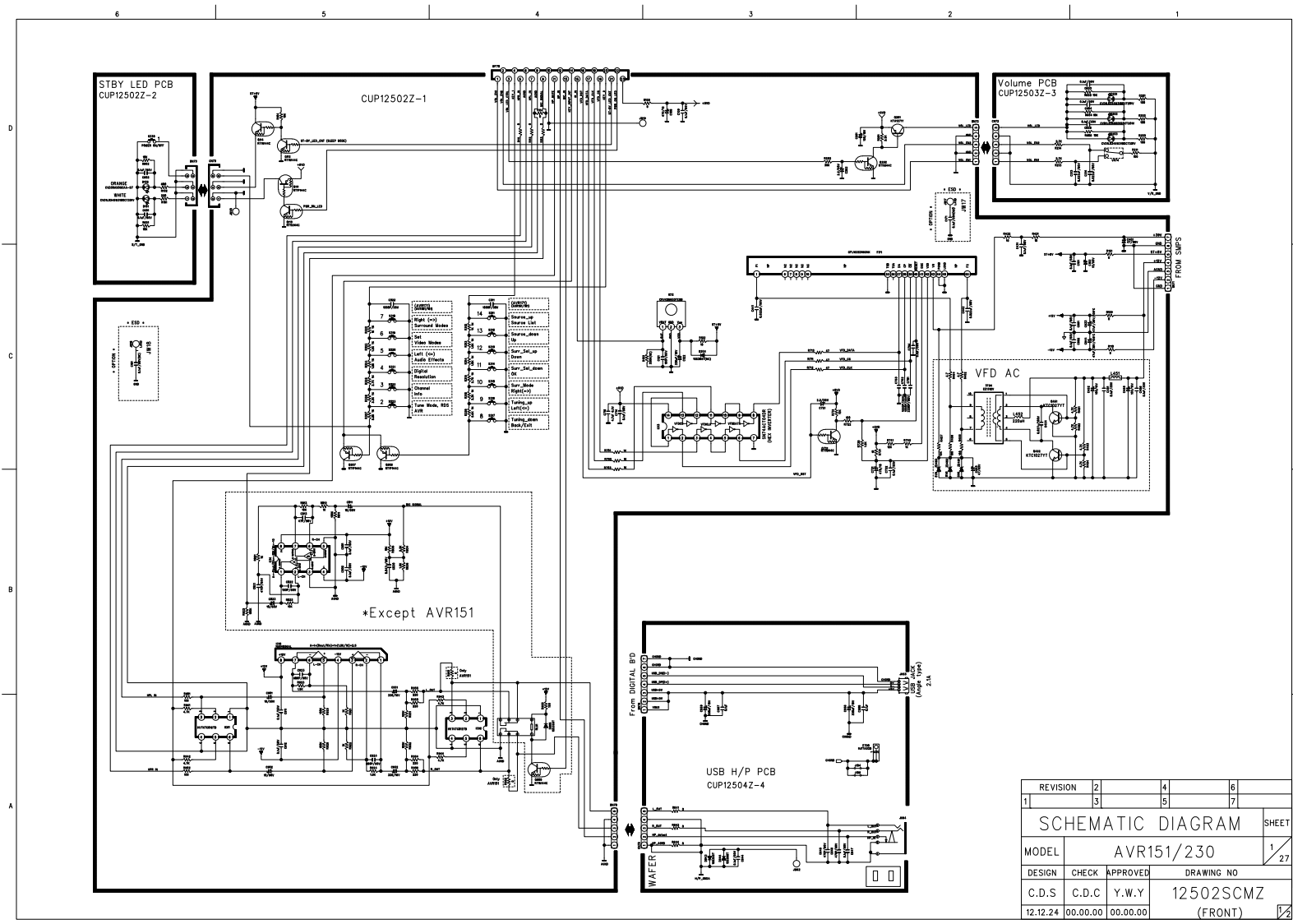
AVR151 Block Diagram



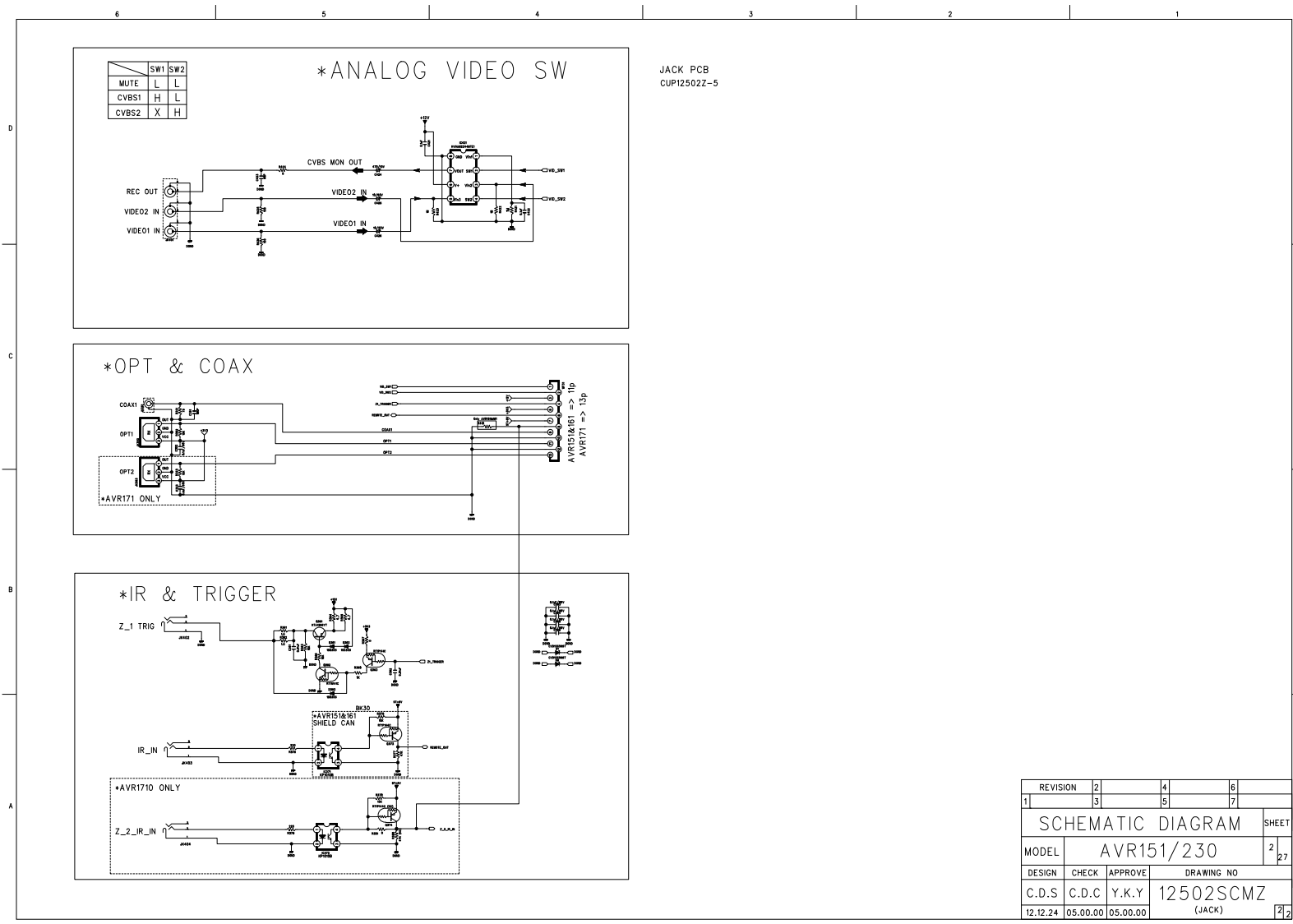
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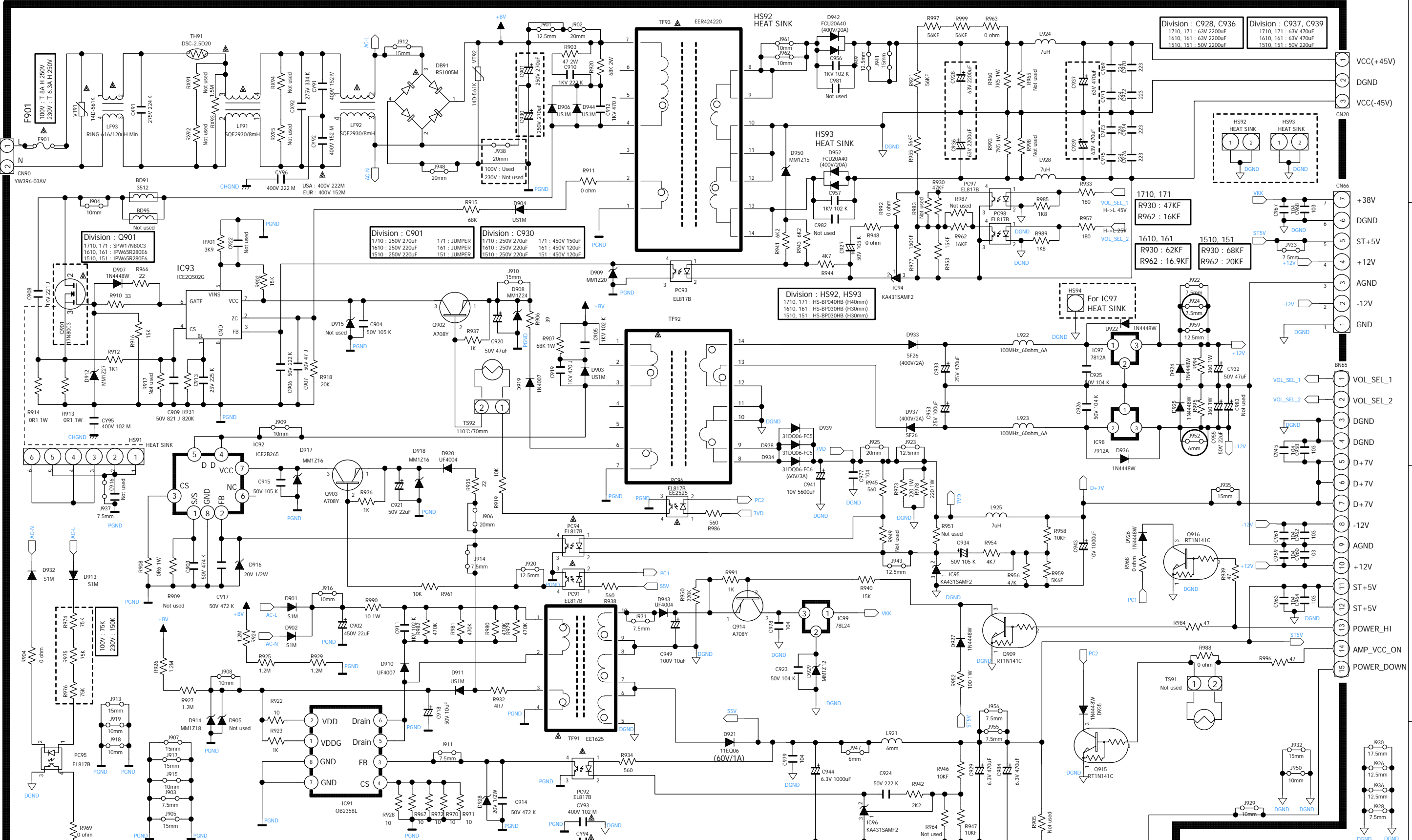
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REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		
DESIGN	CHECK	APPROVED	DRAWING NO
C.D.S	C.D.C	Y.W.Y	12502SCMZ
12.12.24	00.00.00	00.00.00	(FRONT)



AVR1X10/AVR1X1 SMPS SCHEMATIC DIAGRAM



Division : C928, C936
 1710, 171 : 63V 2200uF
 1610, 161 : 63V 2200uF
 1510, 151 : 50V 2200uF

Division : C901
 1710 : 250V 270uF
 1610 : 250V 220uF
 1510 : 250V 220uF

Division : HS92, HS93
 1710, 171 : HS-BP040HB (H40mm)
 1610, 161 : HS-BP030HB (H30mm)
 1510, 151 : HS-BP030HB (H30mm)

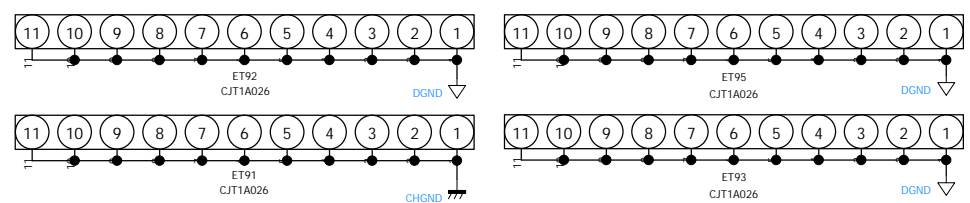
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 R930 : 47K
 R962 : 16K

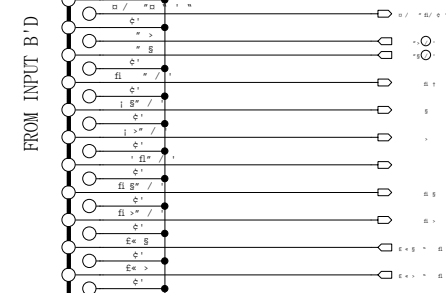
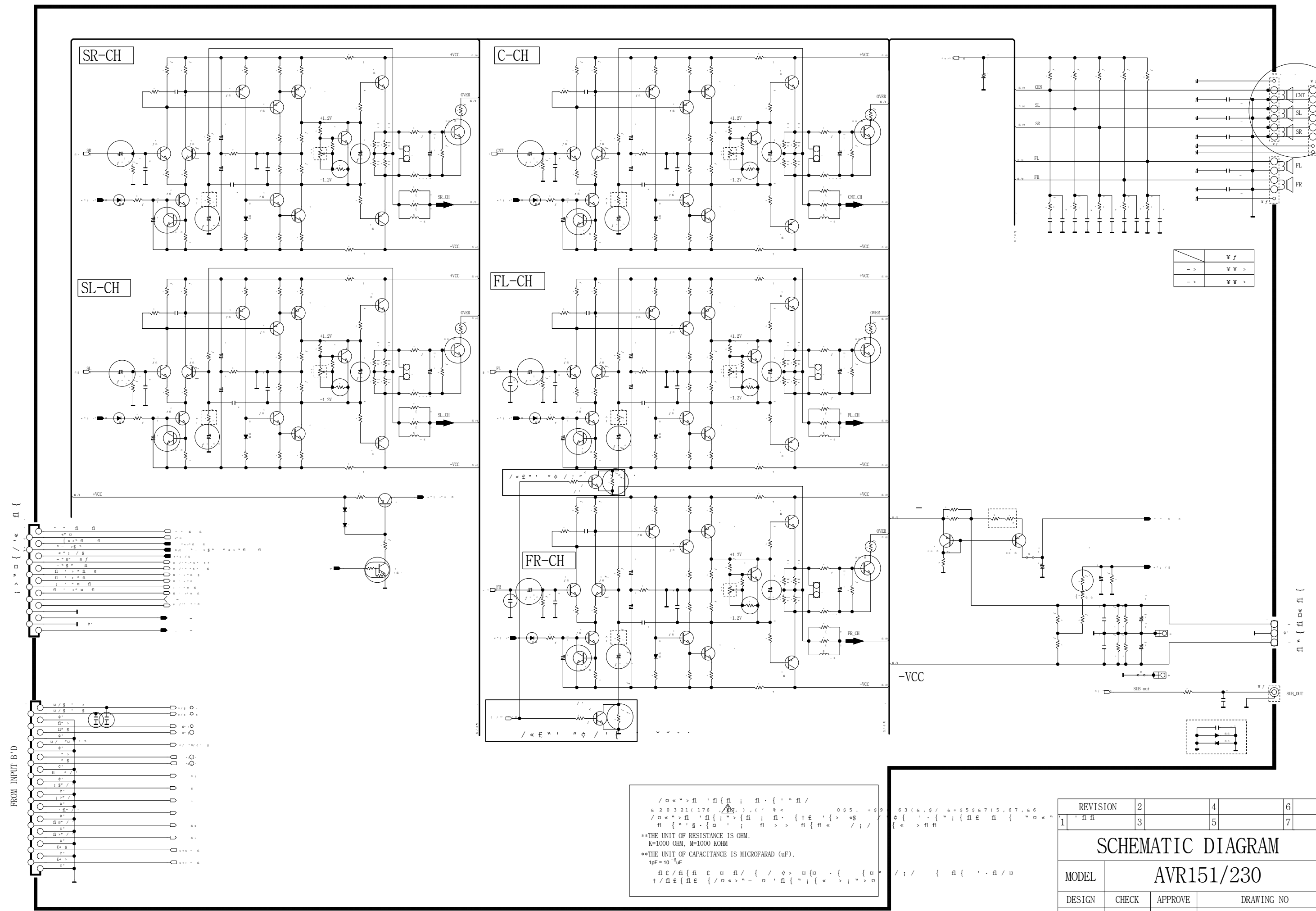
1610, 161
 R930 : 62K
 R962 : 16.9K

1510, 151
 R930 : 68K
 R962 : 20K

REVISION	2	4	6
	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		SHEET
			26
DESIGN	CHECK	APPROVE	DRAWING NO
C.S.K	C.D.C	Y.W.Y	12509SCMZ
12.12.24	12.12.24	12.12.24	(SMPS)

****IMPORTANT SAFETY NOTICE.**
 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=10⁰uF
 **THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE
 IMPROVEMENT OF PERFORMANCE



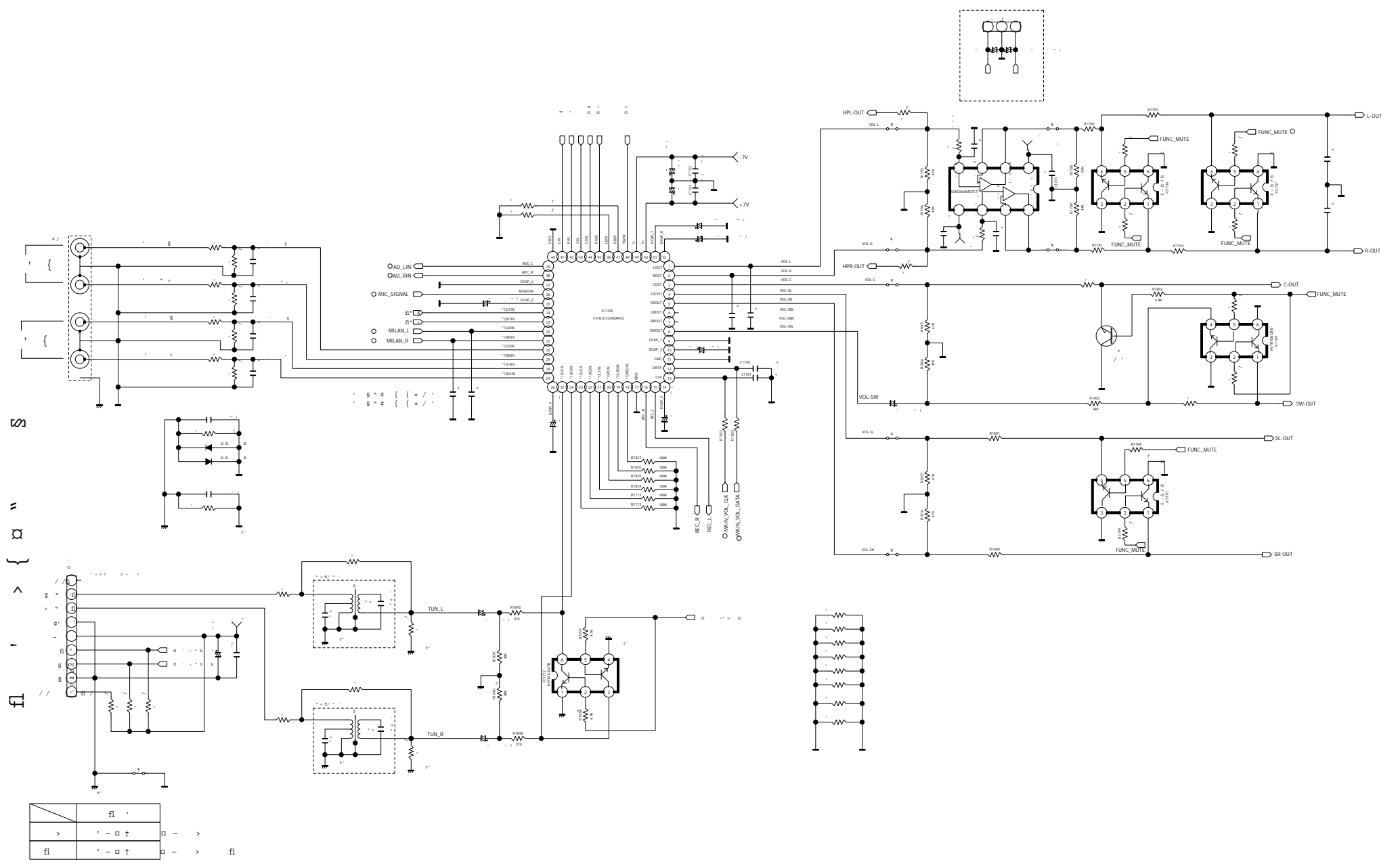


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 K=1000 OHM, M=1000 KOHM
 **THE UNIT OF CAPACITANCE IS MICROFARAD (uF).
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SCHEMATIC DIAGRAM			
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12.06.05			

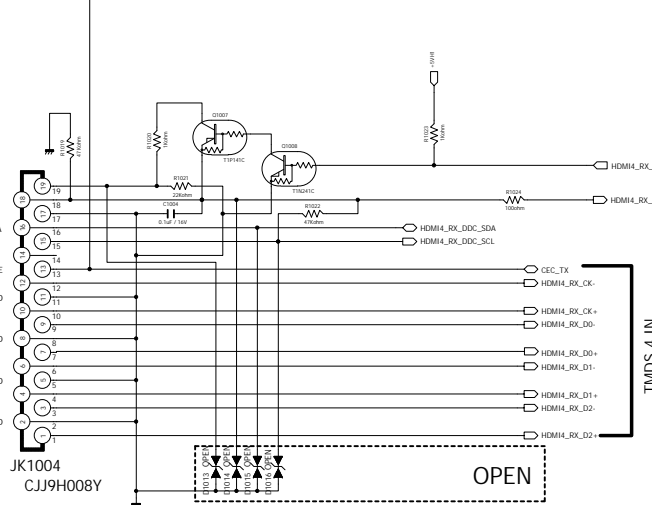
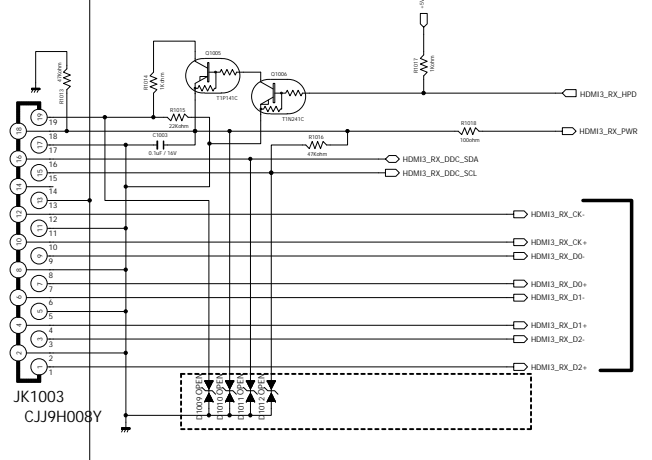
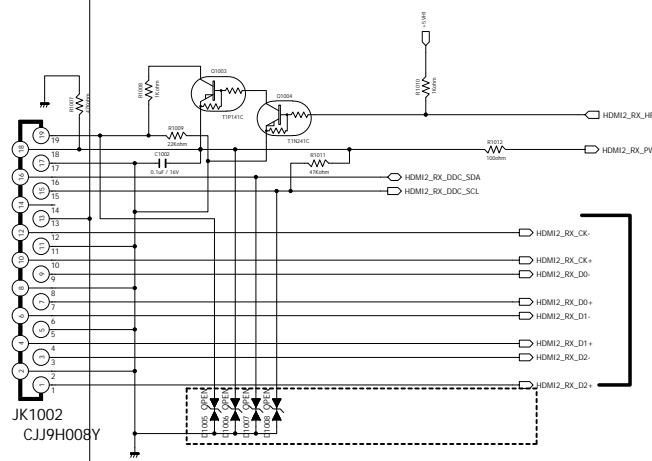
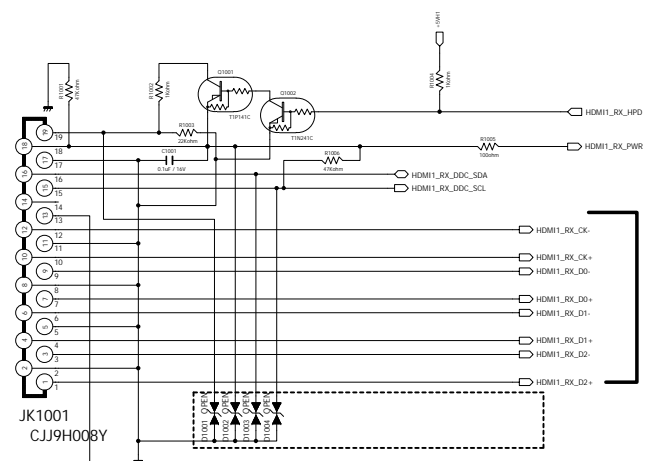
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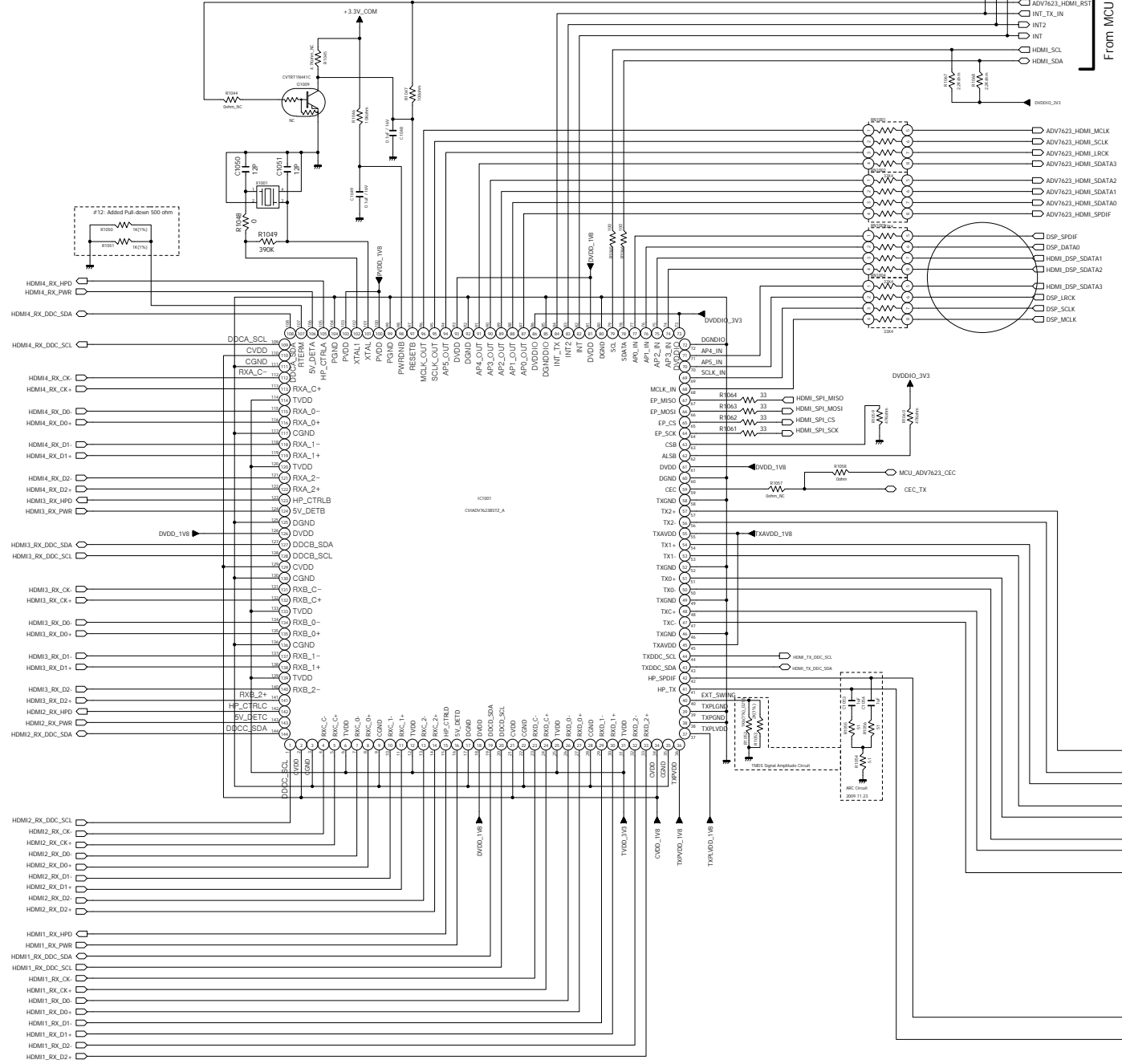
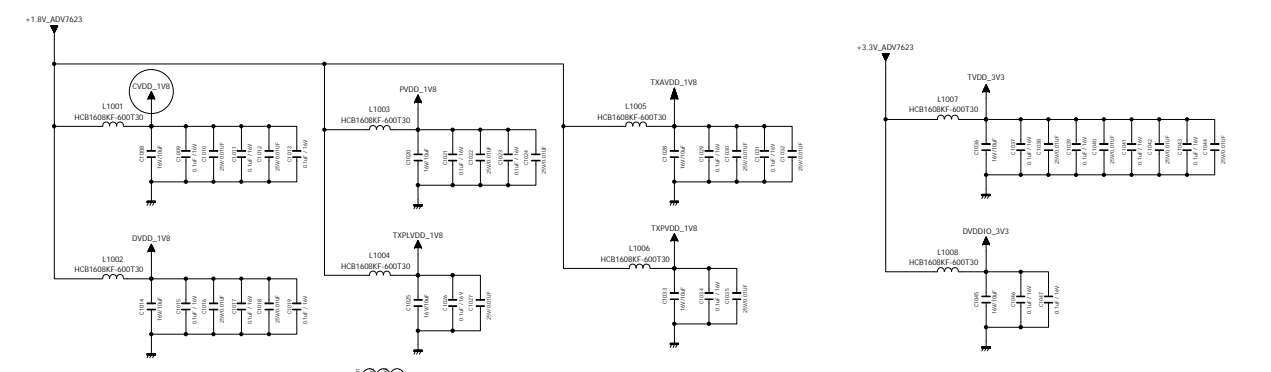
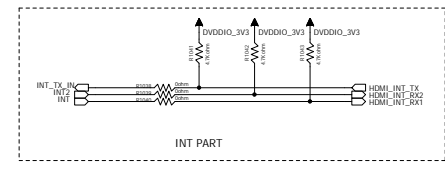
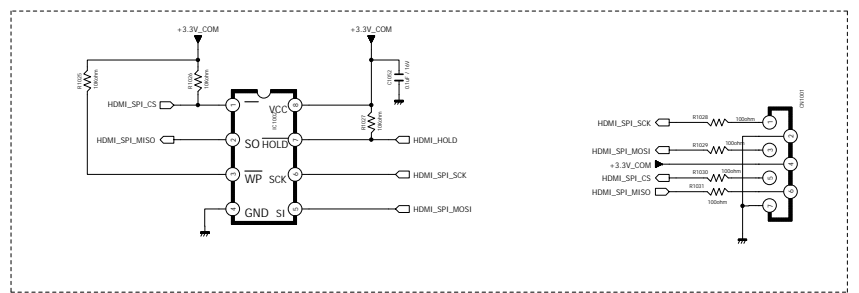
TMDS 4 IN

TMDS 3 IN

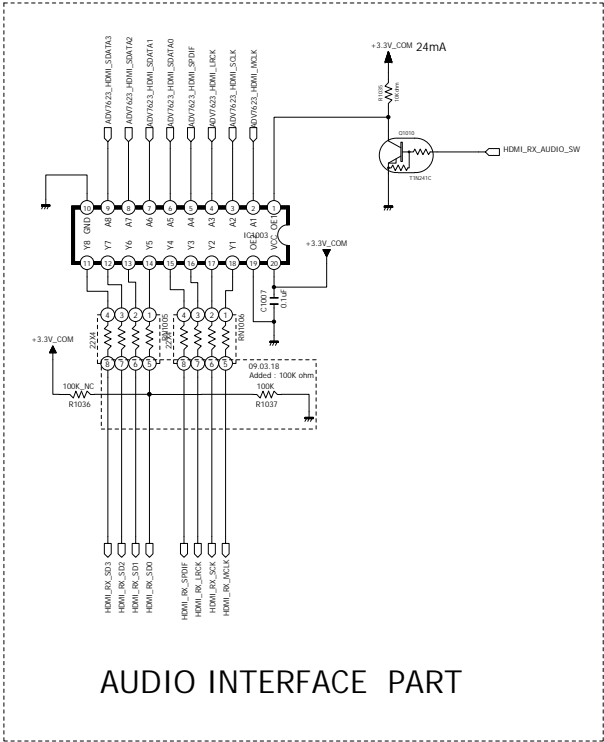
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TMDS 1 IN

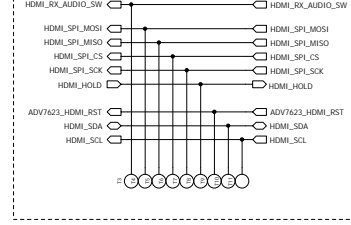
TMDS 4 IN



HDMI I2S
DSP I2S



HDMI_RX/TX_ADV7623 TO MCU



MP

REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	CUP12503CDZ
2012.11.08	00.00.00	00.00.00	(HDMI_REPEATER_ADV7623) of 131

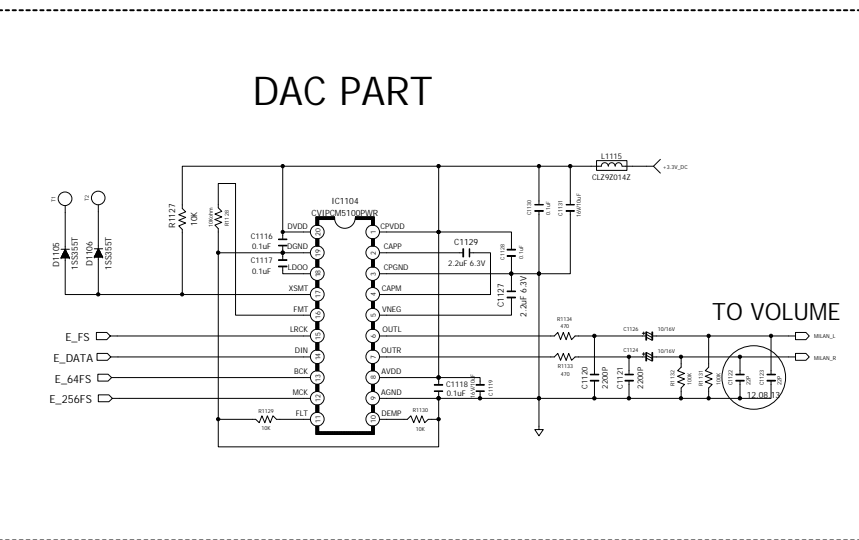
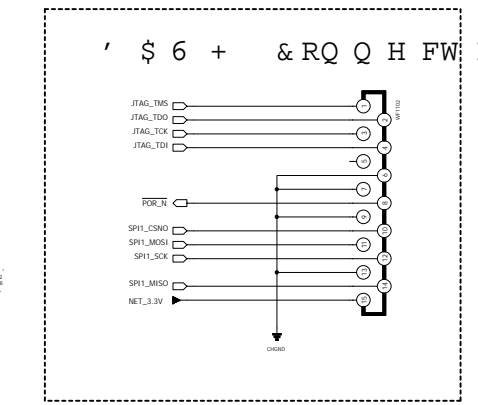
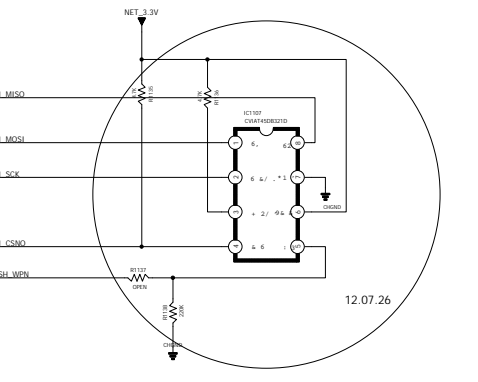
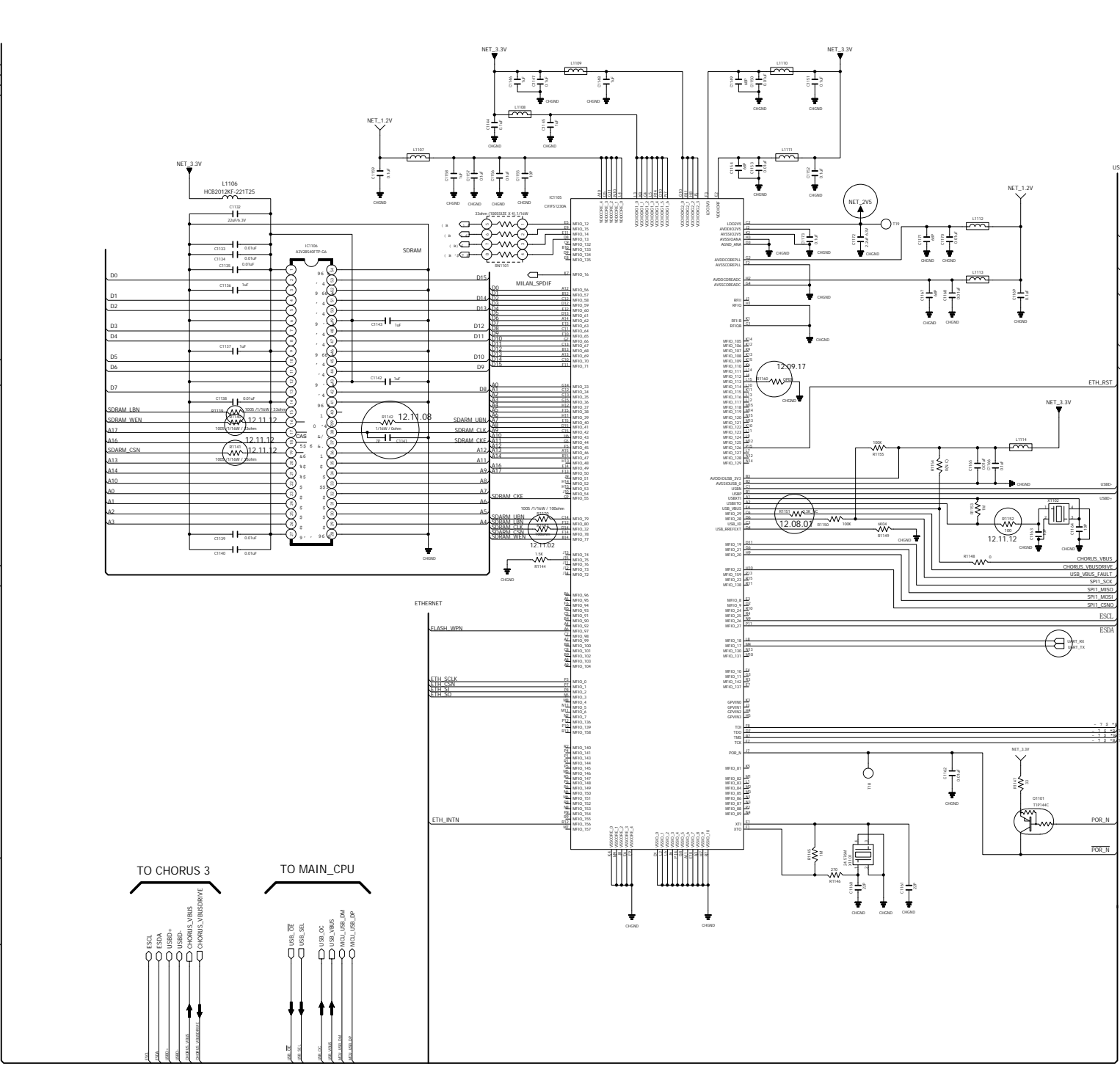
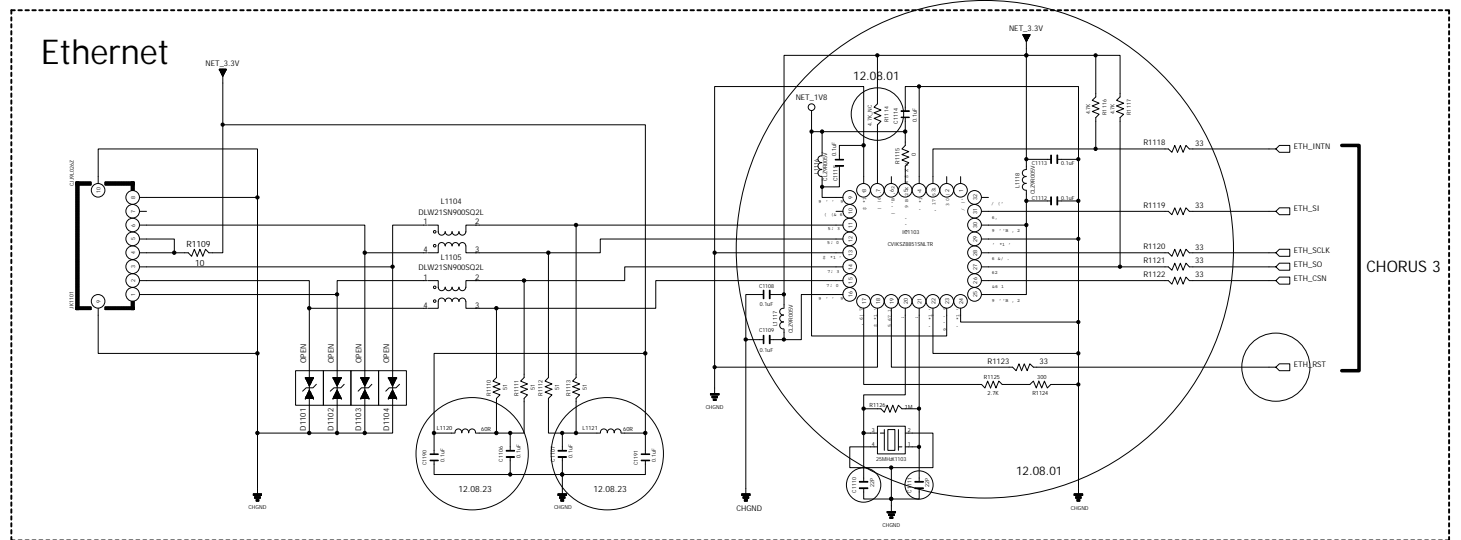
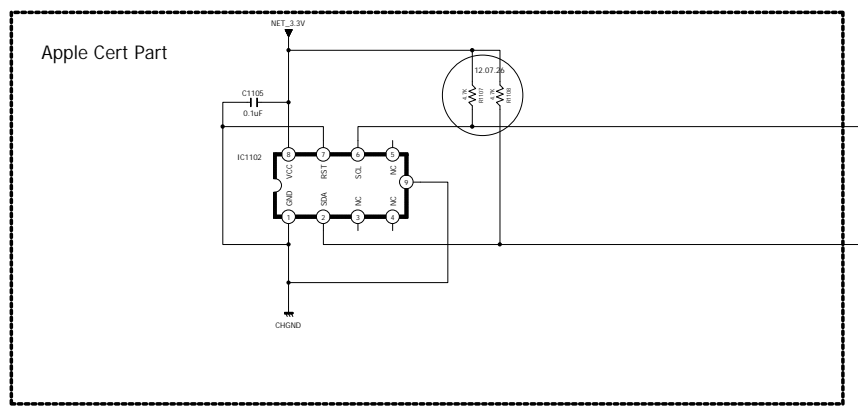
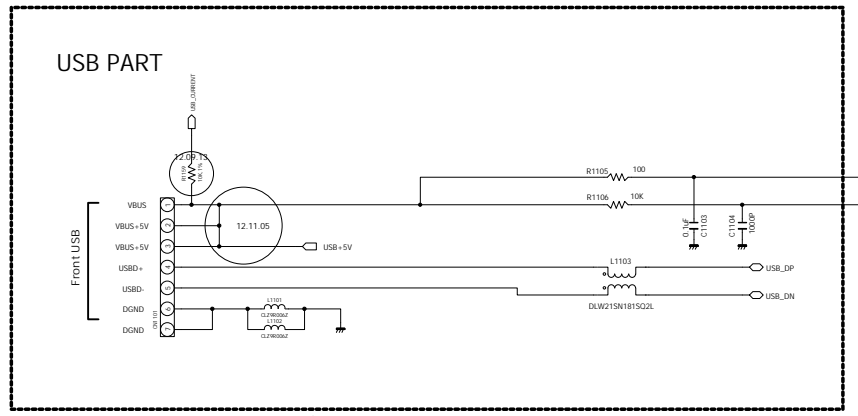
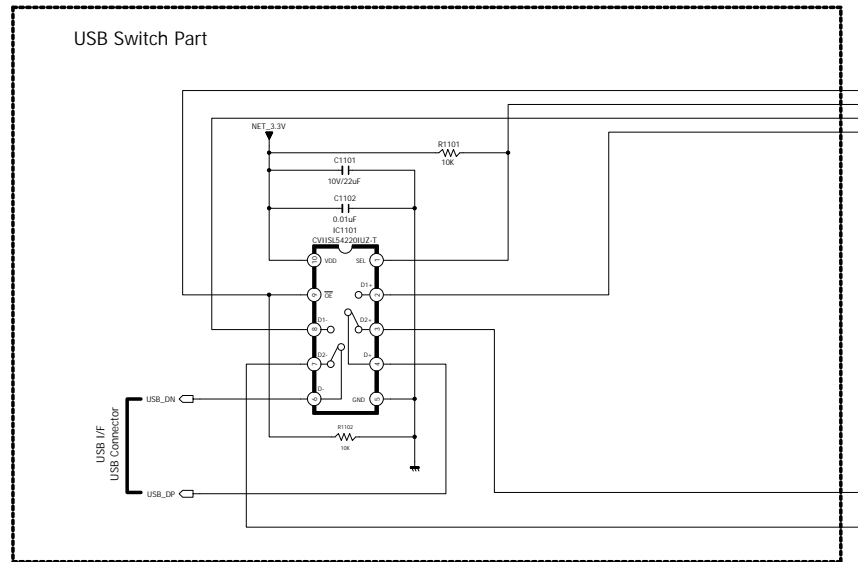
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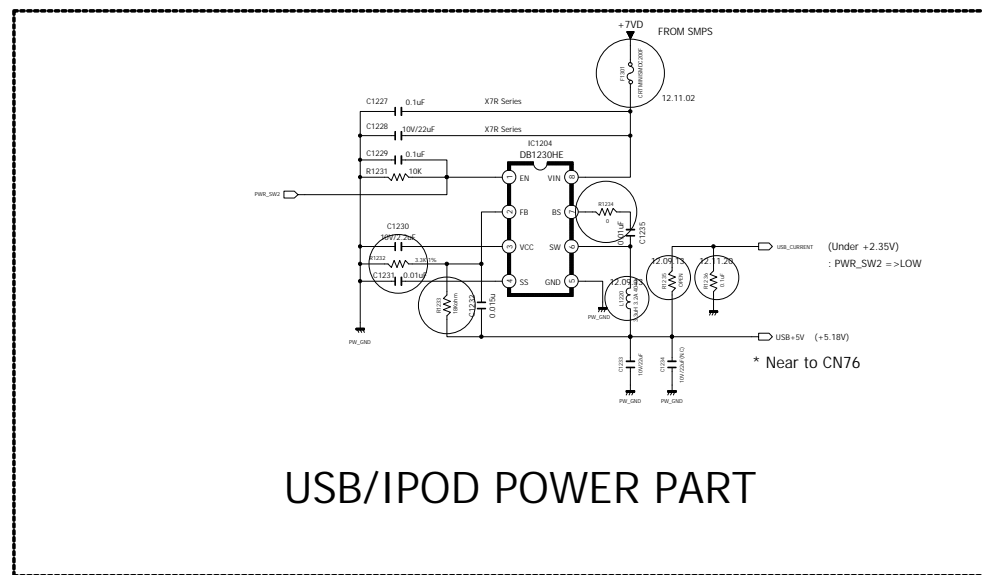
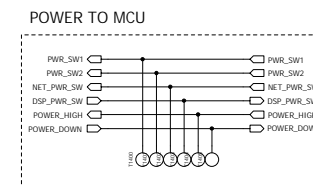
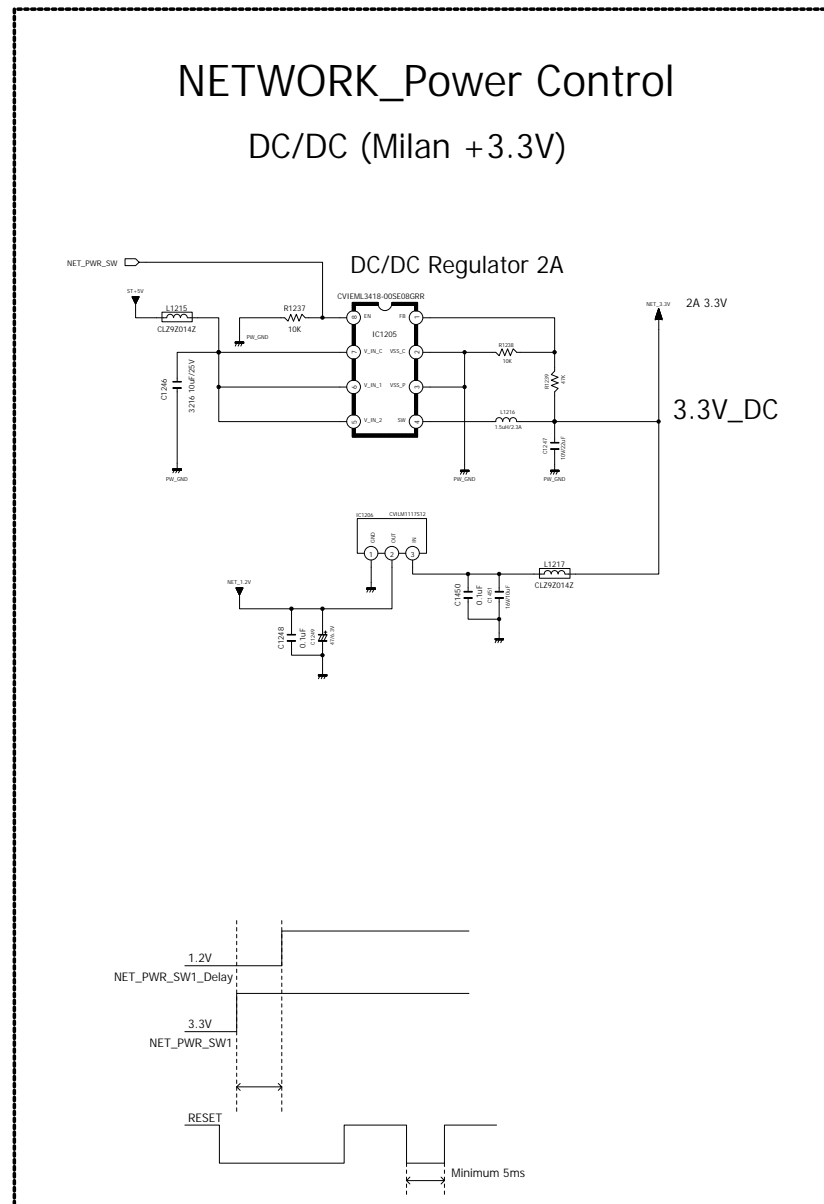
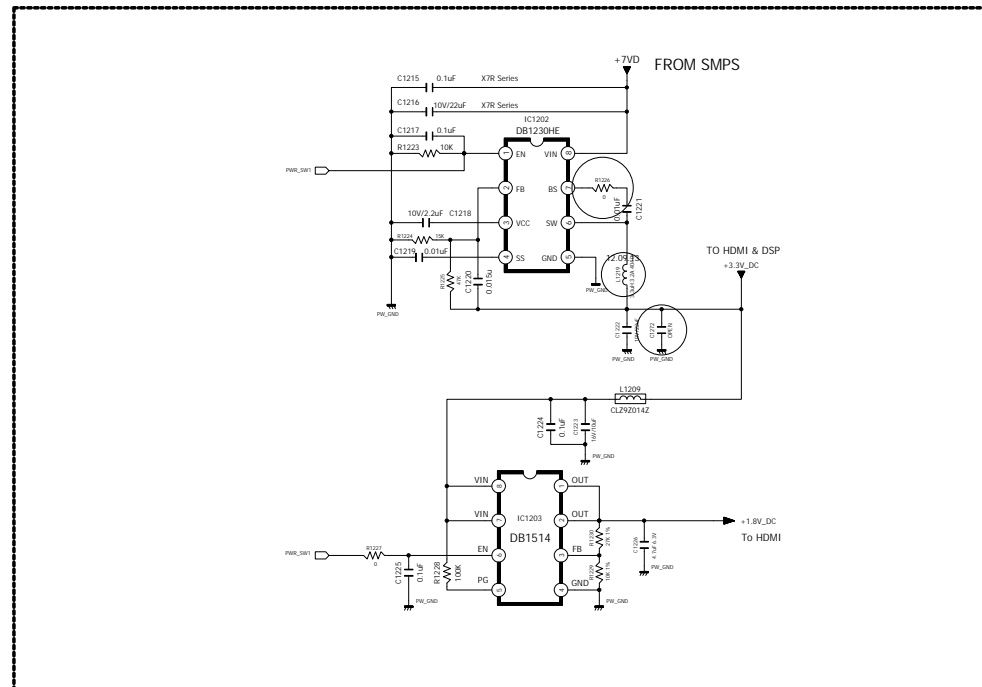
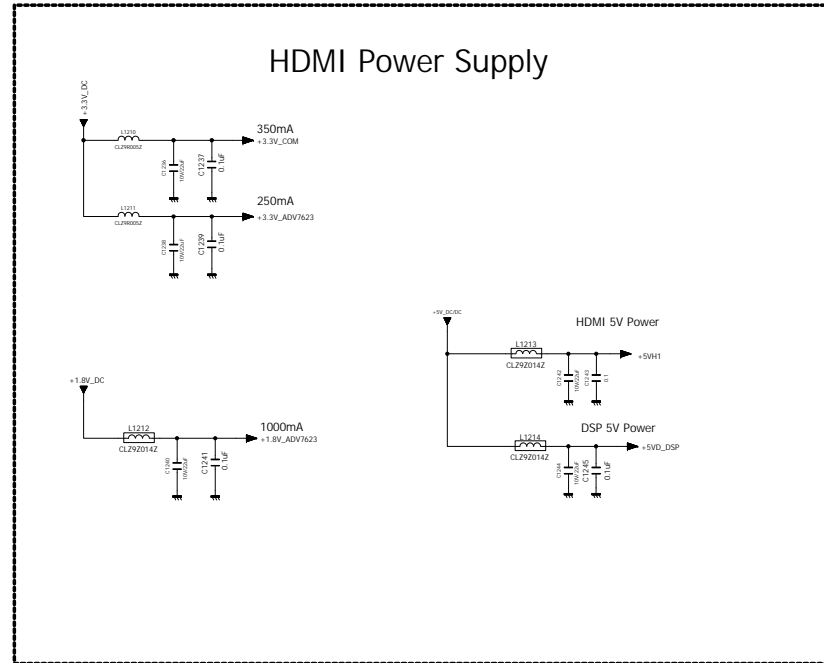
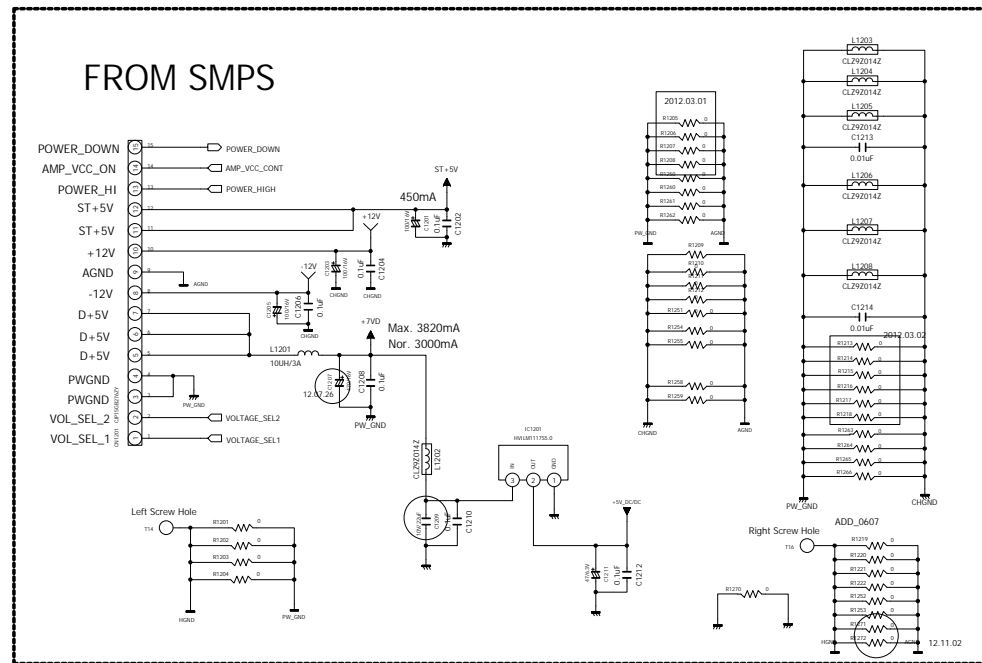
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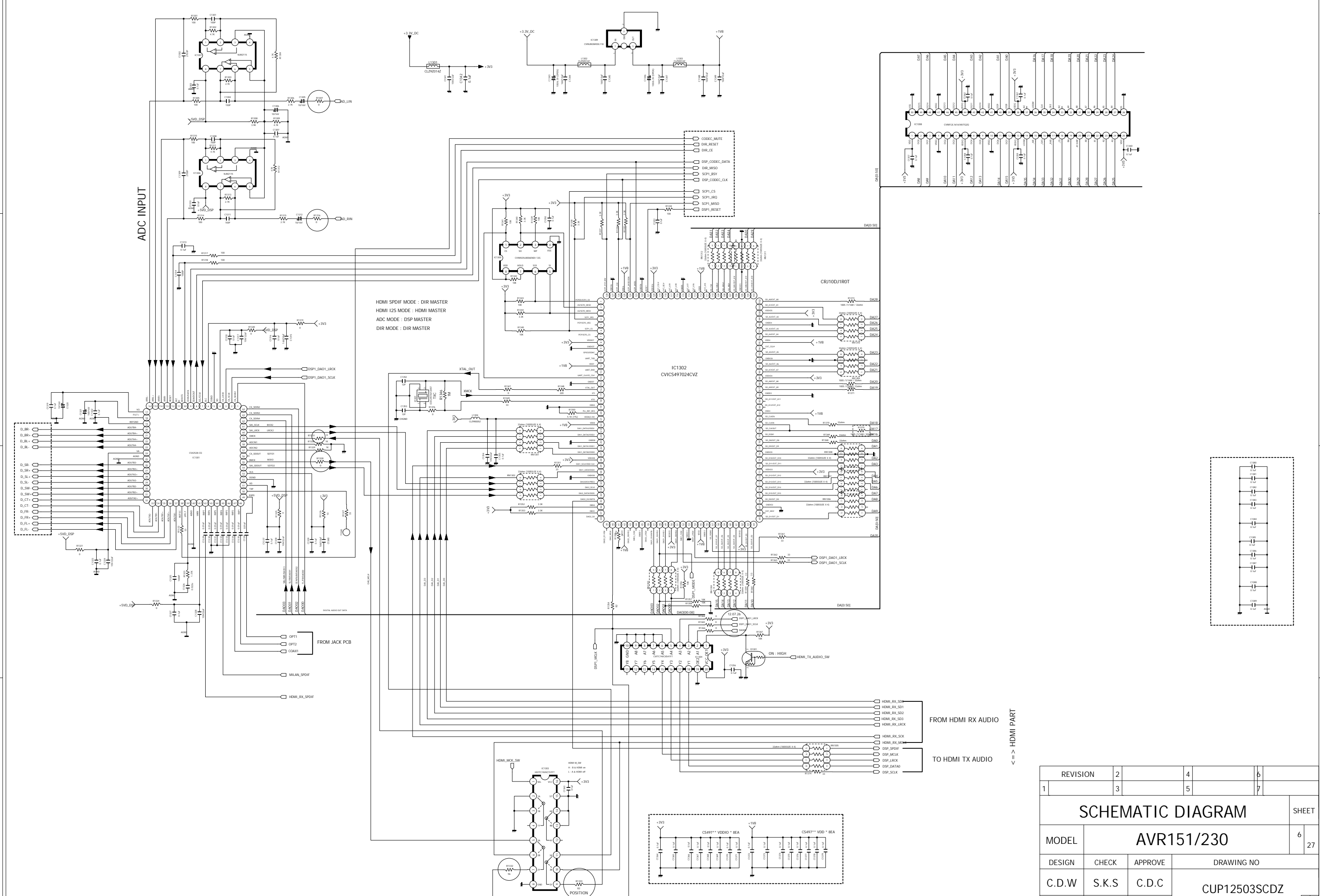
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REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		
DESIGN	CHECK	APPROVE	DRAWING NO
			CUP12503SCDZ
	00.00.00	00.00.00	Page 127 of 131



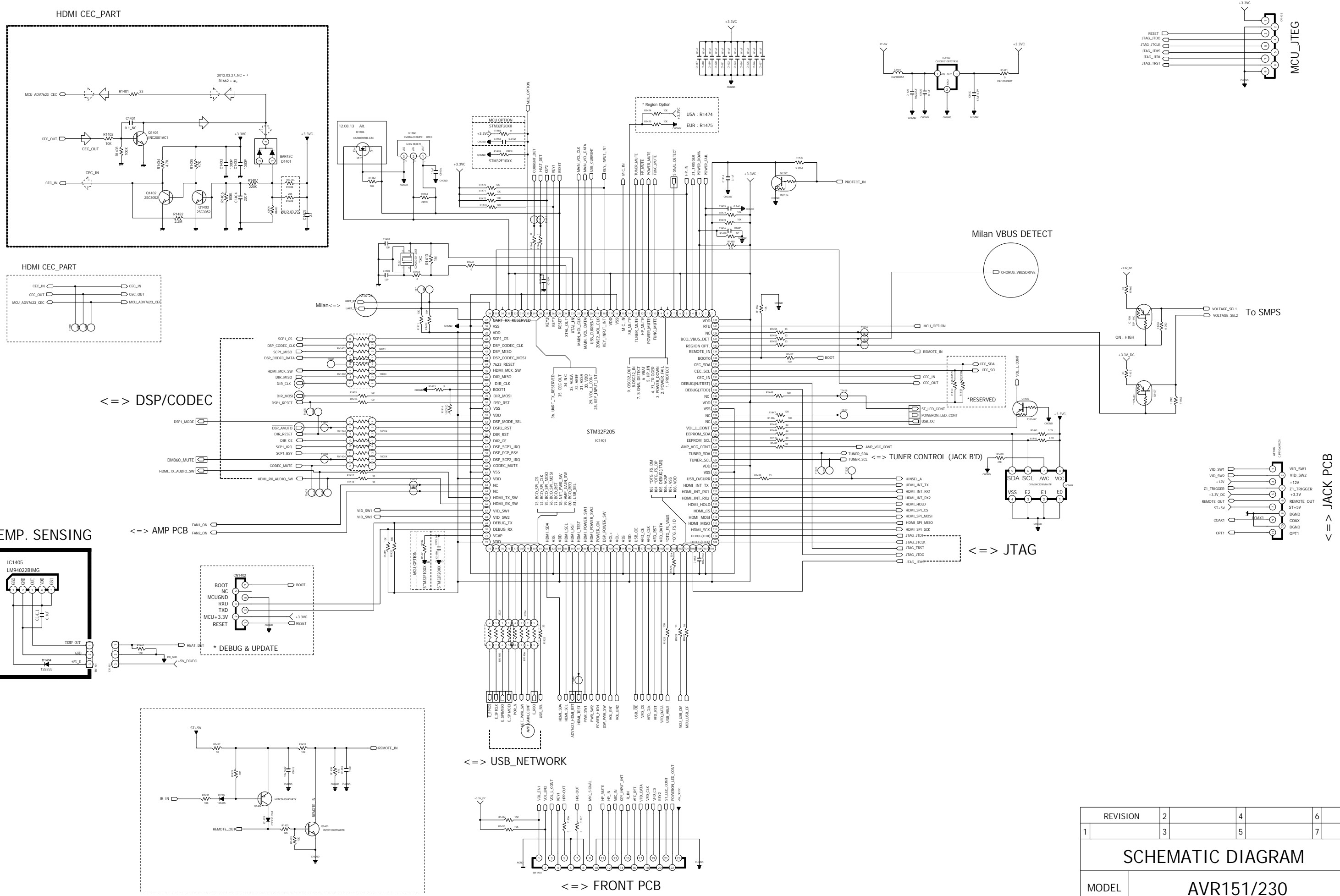
REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	CUP12503CDZ
2012.11.08	00.00.00	00.00.00	(DC_DC_POWER) 128 of 131



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

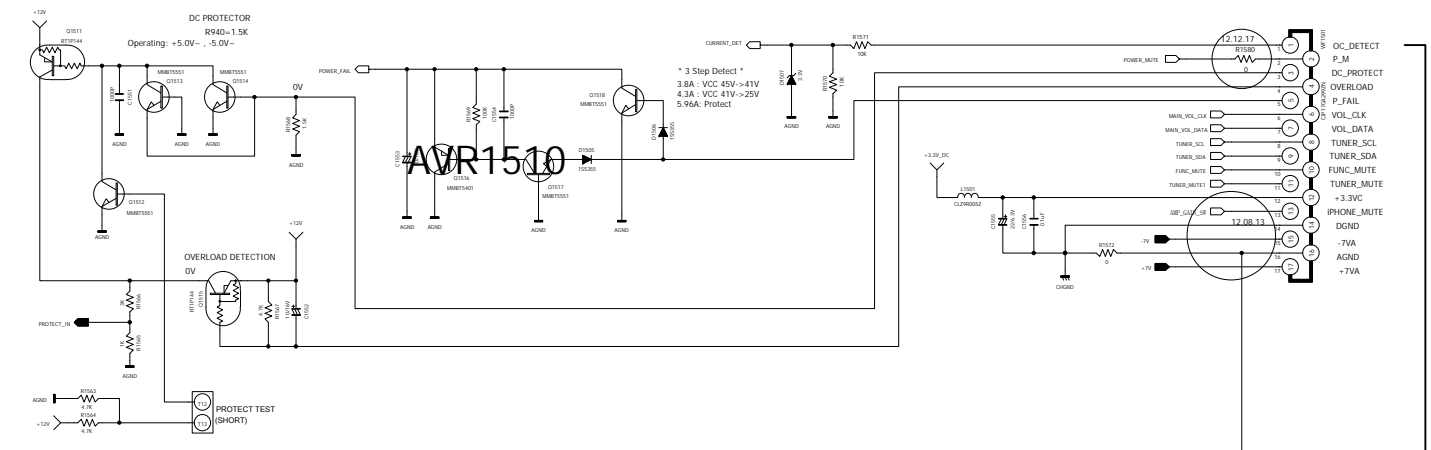
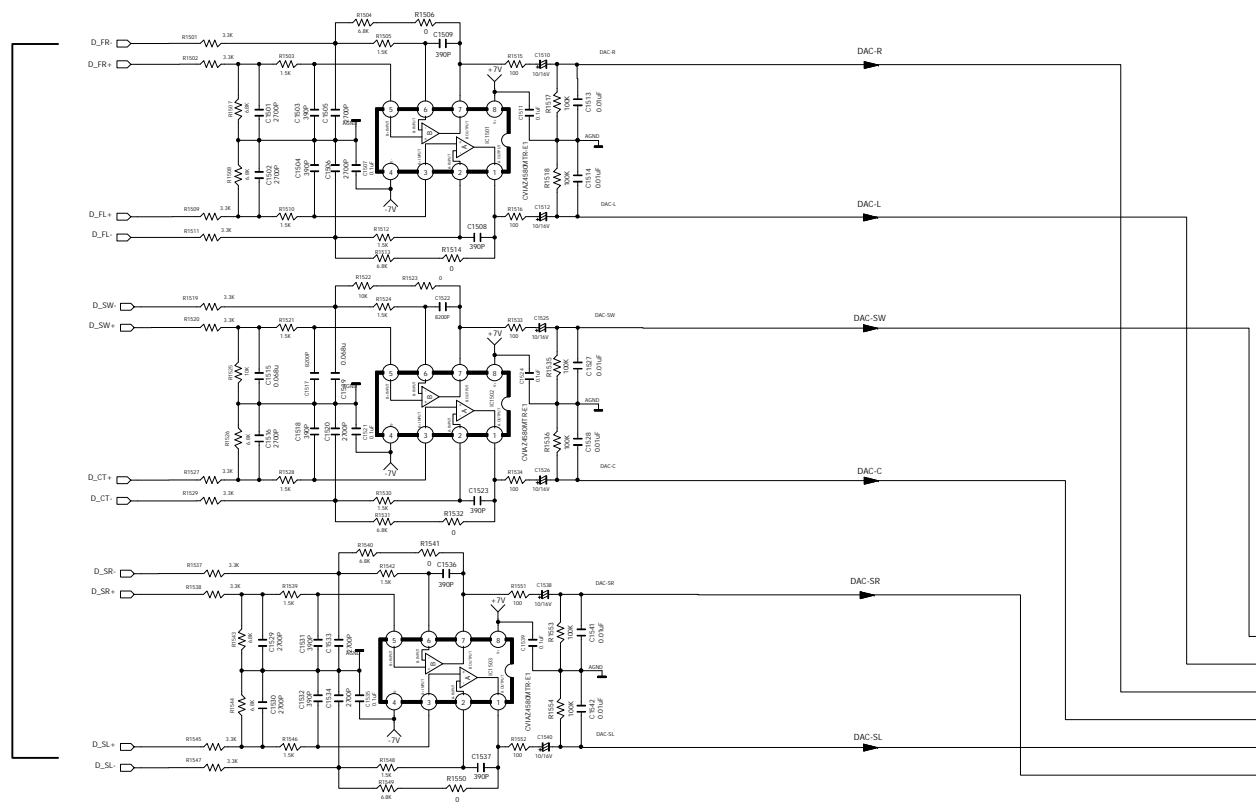
FROM HDMI RX AUDIO
TO HDMI TX AUDIO
<==> HDMI PART

REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
AVR151/230			
MODEL	SHEET		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	CUP12503SCDZ
2012.11.08	00.00.00	00.00.00	Page 129 of 131

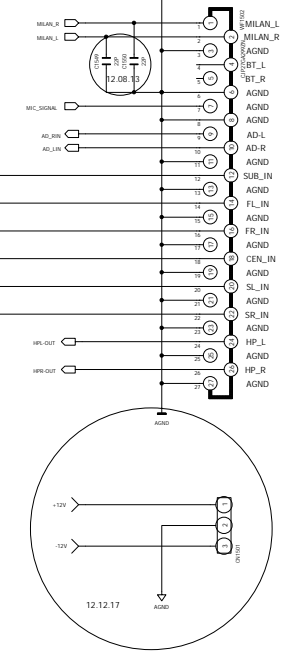


REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	CUP12503SCDZ
2012.11.08	00.00.00	00.00.00	(ST_MCU) Page 130 of 131

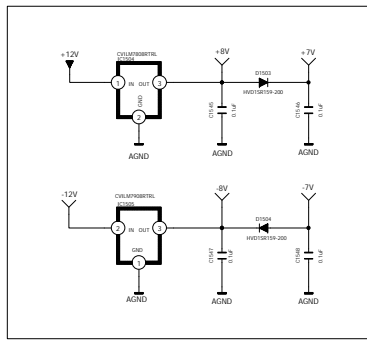
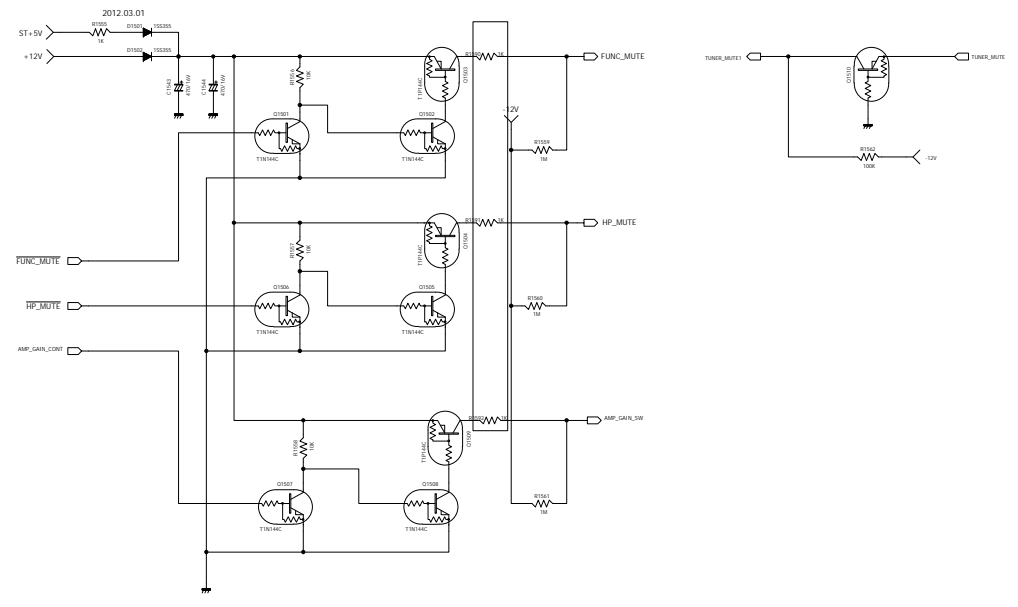
FROM CODEC



TO AMP B'D



MUTE CONTROL



REVISION	2	4	6
1	3	5	7
SCHEMATIC DIAGRAM			
MODEL	AVR151/230		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	CUP12503SCDZ
2012.11.08	00.00.00	00.00.00	(VOLUME_F Page) 31 of 131

SHEET

8 27