Harman Kardon Service Manual

AVR 171/230

7.2 CHANNEL 100 Watt per channel A/V RECEIVER

CONTENTS

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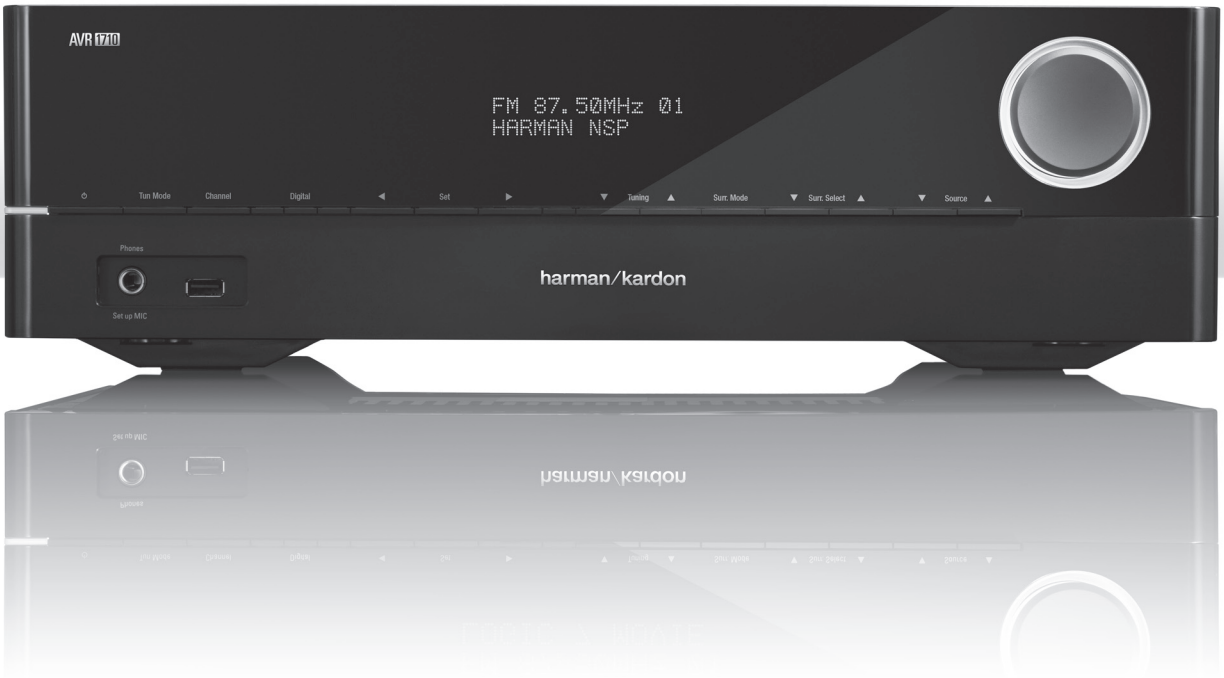
AVR 1710, AVR 171, AVR 171/230C
AVR 1610, AVR 161, AVR 161/230C

Audio/video receiver

HDMI
HIGH-DEFINITION MULTIMEDIA INTERFACE

Owner's Manual



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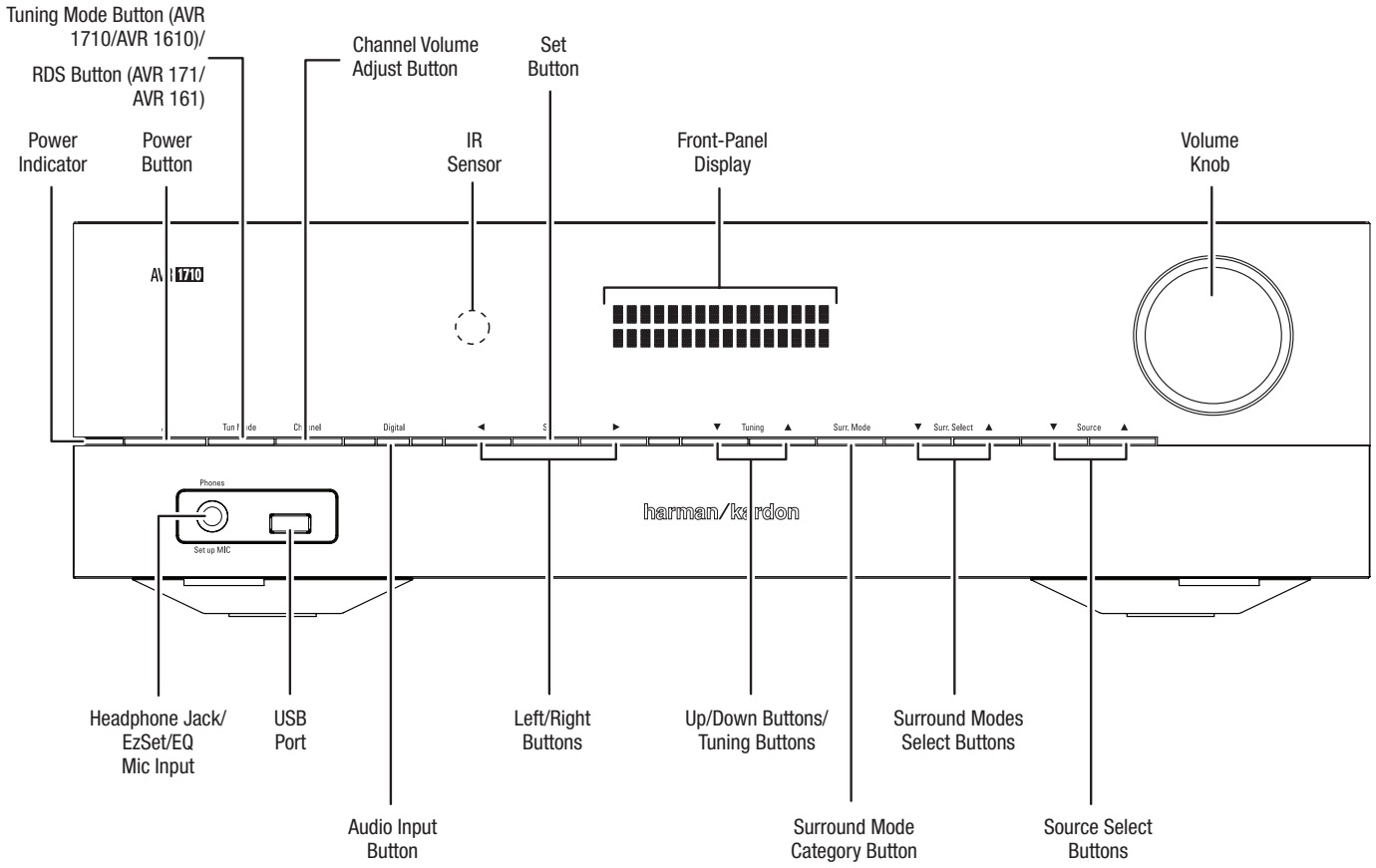
by HARMAN

AVR

Front-Panel Controls



AVR

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 an AirPlay stream from a networked device (AVR 1710/ AVR 171 only). 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 34.

- **Sleep** (Power indicator glows solid amber and front-panel display indicates "Device sleep"): 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 an AirPlay or DLNA DMR stream from a networked device (AVR 1710/AVR 171 only). 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 front-panel 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 34.

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

Headphone jack/EzSet/EQ Mic input: Connect a 1/4" stereo headphone plug to this jack for private listening. This jack is also used to connect the supplied microphone for the EzSet/EQ setup procedure described in *Configure the AVR For Your Speakers,* on page 22.

Tuning Mode button (AVR 1710/AVR 1610 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 171/AVR 161 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 theLeft/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, Stereo, HARMAN NSP, Movie, Music and Video 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 29, 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.

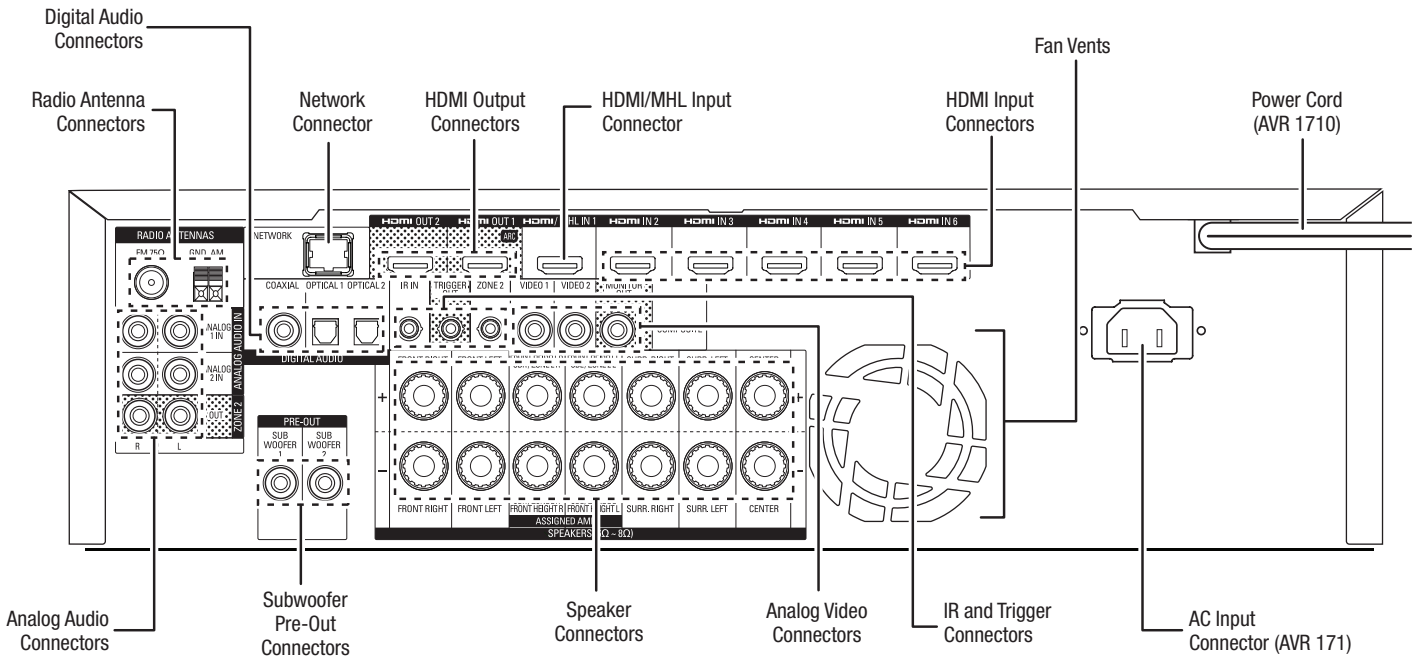
Source Select buttons: Press these buttons to select the active source.

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

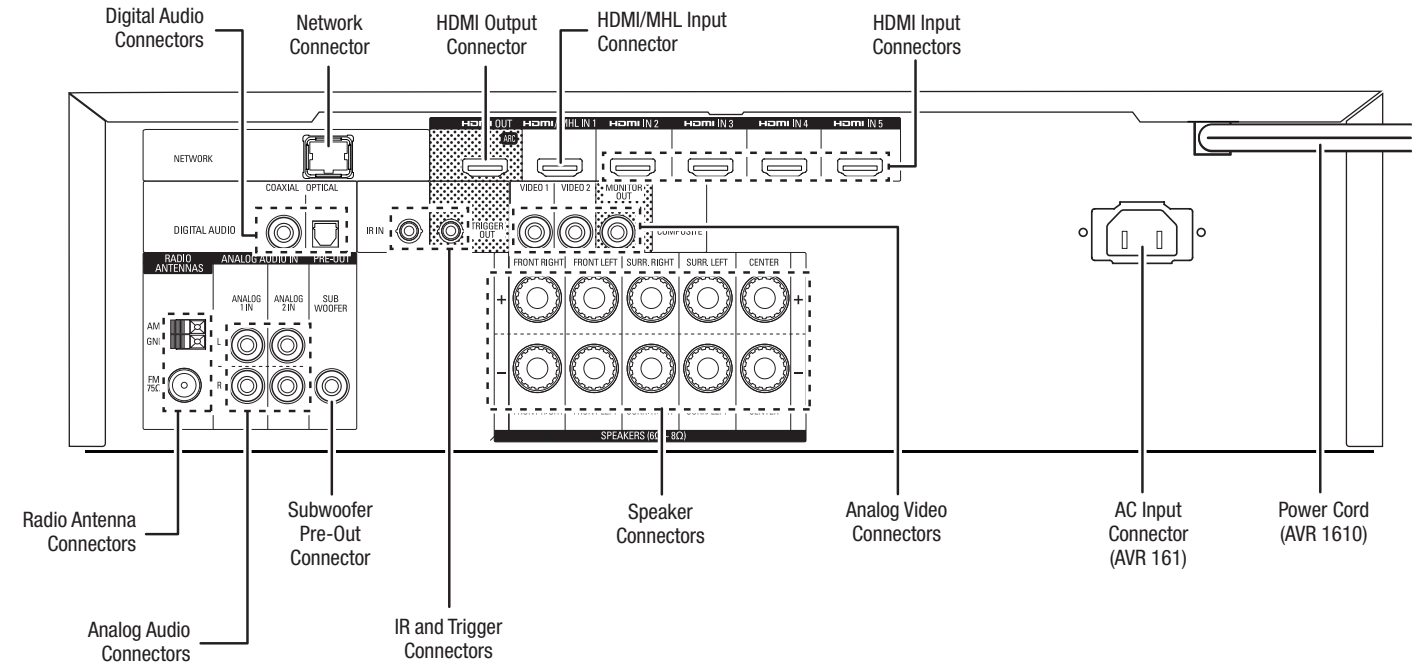
AVR

Rear-Panel Connectors

AVR 1710/AVR 171



AVR 1610/AVR 161



AVR

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.
- **Zone 2 Out connectors (AVR 1710/AVR 171 only):** Connect these jacks to an external amplifier to power the speakers in the remote zone of a multizone system.

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. NOTE: The AVR 1710 and AVR 171 have two subwoofer connectors.

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. **NOTE:** The AVR 1710 and AVR 171 have two HDMI Out connectors.

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.
- AVR 1710/AVR 171 only: If you have connected a 3D-capable TV to HDMI Out 1 and a 2D-capable TV to HDMI Out 2, the AVR will not allow 3D playback when both TVs are powered on. To watch 3D content, turn off the AVR and both TVs, then first turn on the 3D TV, then turn on the AVR, and finally turn on the 3D source device. Do NOT turn the 2D TV back on.

HDMI/MHL Input connector: If you have a Roku Streaming Stick or other MHL-capable device, connect it only to this HDMI/MHL In connector. If you do not have an MHL device you can use this connector for an HDMI-capable device.

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.

NOTE: The Assigned Amp speaker connectors (AVR 1710/AVR 171 only) are used for the surround back or Front Height channels in a 7.1- channel home theater, or you can reassign them to a remote room for multizone operation or to front height channels for Dolby® Pro Logic IIz operation. See *Place Your Speakers*, on page 11, 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.

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.
- **Zone 2 IR Input connector (AVR 1710/AVR 171 only):** Connect a remote IR receiver located in Zone 2 of a multizone system to this jack to control the AVR from the remote zone.

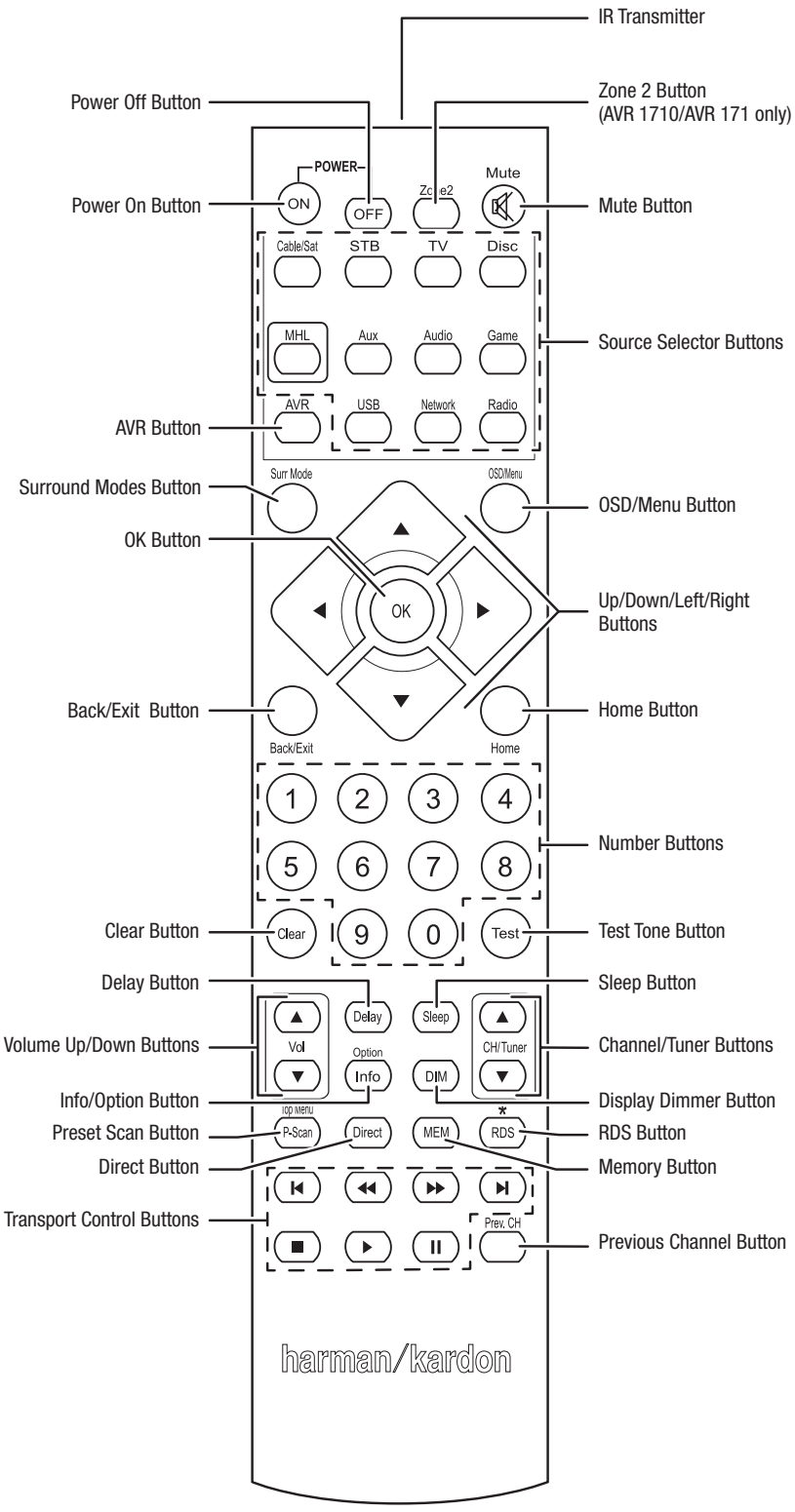
Fan Vents (AVR 1710/AVR 171 only): These vents are used by the AVR's fan to cool the system. Maintain a clearance of at least three inches (75mm) from the nearest surface to avoid overheating the unit. It is normal for the fan to remain off at most normal volume levels. An automatic temperature sensor turns the fan on only when it is needed.

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

AC Input connector (AVR 171/AVR 161 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 1710/AVR 1610 only): After you have made and verified all other connections, plug the power cord into an *unswitched* wall outlet.

System Remote Control Functions



AVR

System Remote Control Functions, continued

In addition to controlling the AVR, the AVR remote is capable of controlling eight other devices, including an iPod/iPhone device 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 21, 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 4, for more information.

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

Zone 2 button (AVR 1710/AVR 171 only): Use this button to select whether the AVR commands will affect the main listening area (Zone 1) or the remote zone of a multizone system (Zone 2). When the remote is in the Zone 2 control mode, the Zone 2 button will illuminate whenever you press a button.

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, HARMAN NSP, 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 29, 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.

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

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

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

Home button: Press this button to display the Home menu for a Roku Streaming Stick™ that is connected to the AVR's MHL/HDMI connector.

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 *Manual Speaker Setup,* on page 30, 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 increases the time by 10 minutes, up to 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.

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

Display Dimmer button: Press this button to dim the AVR's front-panel Message 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.

RDS button (AVR 171/AVR 161 only): When listening to an FM radio station that broadcasts RDS information, this button activates the various RDS functions.

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 or vTuner station as a preset.

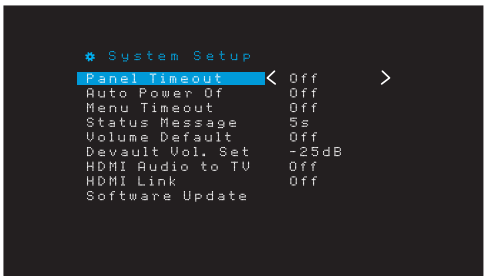
Transport Control buttons: These buttons are used to control source devices.

Previous Channel button: When TV is the selected source, press this button to switch to the previously-tuned channel.

AVR

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). See *Power Indicator/Power Button,* on page 4, for more information. It also allows the AVR to automatically switch to the Sleep mode after being on for the predetermined amount of time. Note that it will not transition to Sleep mode this way if the active source has one of the Digital Audio Connectors selected as the Audio Input. See Source Setup, on page 23, 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 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.

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.

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 increases the play time by 10 minutes, with a maximum of 90 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.

The front-panel display will count down during the final 10 seconds before going to Sleep mode. Pressing any button during this countdown will cancel the process and disable the Sleep timer.

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 Power Button for more than three seconds to turn the AVR off (the Power Indicator will turn amber).
2. Press and hold the front-panel Surround Mode Category button for at least 5 seconds until the RESET message appears on the front-panel 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.

AVR

Troubleshooting

Symptom	Cause	Solution
Unit does not function	• No AC power	• Ensure that the power cord is plugged into a live AC power outlet • Check if the AC outlet is switch-controlled
Front-panel display lights, but there's no sound or picture	• Intermittent input connection • Mute is on • Volume control is turned down	• Secure all input and speaker connections • Press Mute button • Turn up Volume control
No sound from any speaker	• Amplifier is in protection mode due to possible short circuit • Amplifier is in protection mode due to internal problems	• 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	• Incorrect surround mode • Program material is monophonic • Incorrect speaker configuration • Program material is stereo	• Select a surround mode other than stereo • Mono programs contain no surround information • Check the speaker configuration in the setup menu • The surround decoder may not create center- or surround-channel information from nonencoded programs
Unit does not respond to remote control commands	• Weak batteries in remote • Remote sensor is obscured	• 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	• Local interference	• Move the AVR or antenna away from computers, fluorescent lights, motors or other electrical appliances
(AVR 1710/AVR 171 only): Surround-back speaker settings cannot be accessed, and the test tone does not play through the surround back speakers	• Multi-zone operation has been selected/Assigned AMP channels have been assigned to Zone 2	• Use the Speaker Setup menu to reassign the Assigned AMP to the surround back left and right channels
Unable to activate remote control Programming mode	• Source Selector button is not held for at least 3 seconds	• Be sure to hold the Source Selector button for at least 3 seconds
Remote buttons light, but AVR does not respond	• Remote is in Zone 2 mode	• Press Zone 2 button (button will not illuminate when remote is in Zone 1 control mode).
Unable to establish network connection	• AVR network programming requires rebooting	• 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

AVR

Specifications

Specifications

Audio Section

Stereo power:	AVR 1710/AVR 171: 100W per channel, two channels driven @ 6/8 ohms, 1kHz, <0.9% THD AVR 1610/AVR 161: 85W per channel, two channels driven @ 6/8 ohms, 1kHz, <0.9% THD
Multichannel power:	AVR 1710/AVR 171: 100W per channel, two channels driven @ 6/8 ohms, 1kHz, <0.9% THD AVR 1610/AVR 161: 85W 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):	±40 amps (AVR 1710/AVR 171); ±29 amps (AVR 1610/AVR 161)
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 1710/AVR 1610) 522 – 1620kHz (AVR 170/AVR 160)
Signal-to-noise ratio:	38dB
Usable sensitivity (loop):	500µV
Distortion (1kHz, 50% mod):	1.0%
Selectivity (±10kHz):	30dB

Bluetooth Section

Frequency range:	2402MHz - 2480MHz
Transmitter power:	0-4dBm
Modulation:	GFSK, π/4-DQPSK, 8-DPSK
Functions:	Streaming audio play, supports Bluetooth 3.0, A2DP v1.2, AVRCP v1.4

Video Section

Television format:	NTSC (AVR 1710/AVR 1610); PAL (AVR 171/AVR 161)
Input level/impedance:	1Vp-p/75 ohms
Output level/impedance:	1Vp-p/75 ohms
Video frequency response (composite video):	10Hz – 8MHz (–3dB)
HDMI:	HDMI 1.4 with 4k x 2k bypass

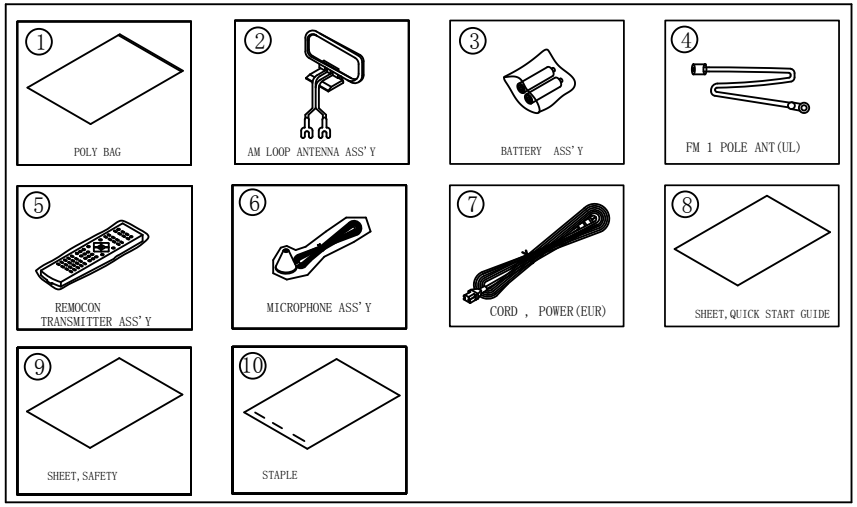
General Specifications

Power requirement:	120V AC/60Hz (AVR 1710/AVR 1610); 220V – 240V AC/50Hz – 60Hz (AVR 171/AVR 161)
Power consumption:	<0.5W (standby); 510W maximum (AVR 1710/AVR 171); 450W maximum (AVR 1610/AVR 161)
Dimensions (W x H x D):	17-5/16" x 4-3/4" x 11-3/16" (440mm x 121mm x 300mm)
Weight	(AVR 1710/AVR 171): 11 lb (5.1kg) (AVR 1610/AVR 161): 10 lb (4.6kg)

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

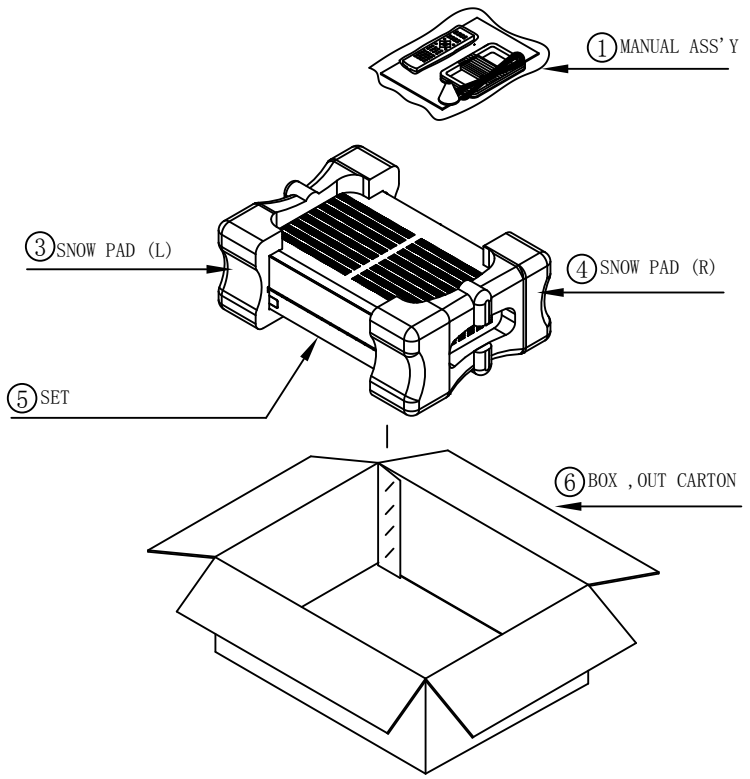
AVR171/230

1. Instruction manual ass'y - Accessories(CQXAVR171/230)



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	CARTAVR171-HK	1
6	MICROPHONE ASS'Y	CJXAVR365MICRO	1
7	CORD,POWER(PLUG+SOCKET)	CJA2B120Z	1
8	SHEET,QUICK START GUIDE	CQE1A570Z	1
9	SHEET,SAFETY	CQE1A601Z	1
10	STAPLE	CPL0905	3

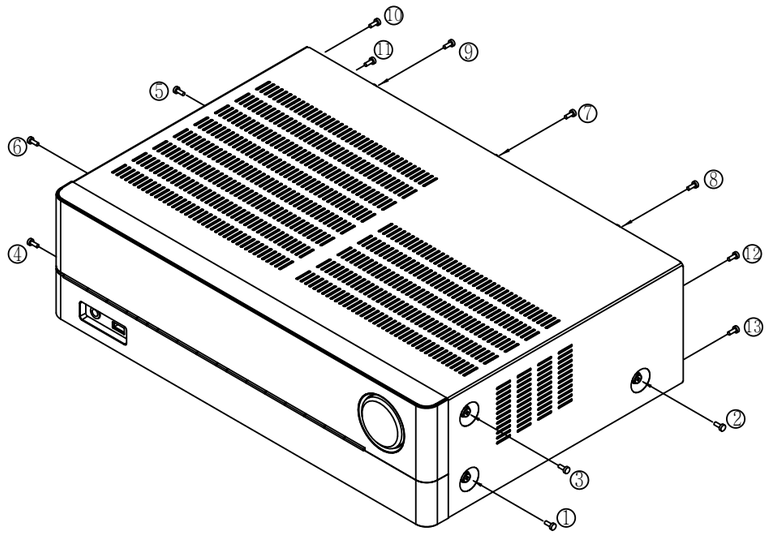
2. Package Drawing



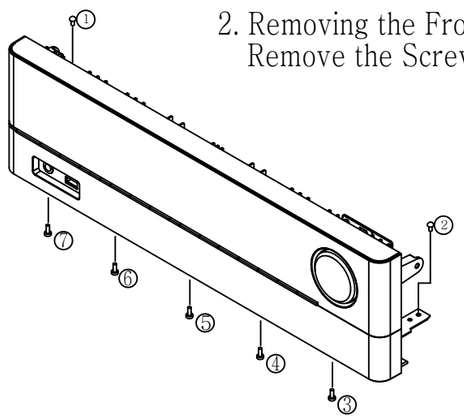
NO	DESCRIPTION	PARTS NO.	Q,ty
1	MANUAL ASS'Y	CQXAVR171/230	1
2	PAD,LEFT	CPS1A930	1
3	PAD,RIGHT	CPS1A931	1
4	SET	AVR1710SET	1
5	BOX,OUT CARTON	CPG1A972U	1

DISASSEMBLY

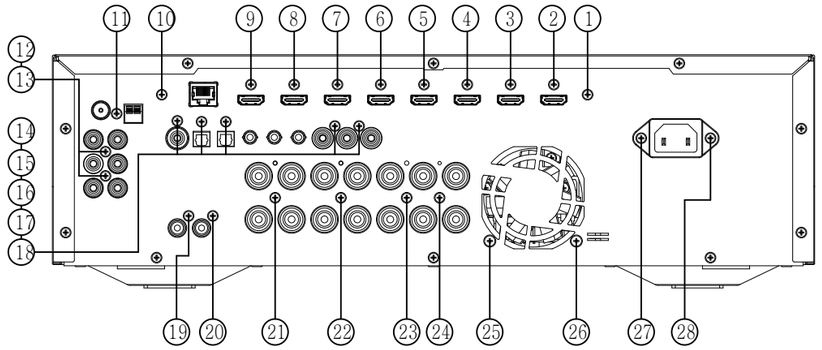
1. Removing the Top Cabinet
   Remove the Screws ①~⑬



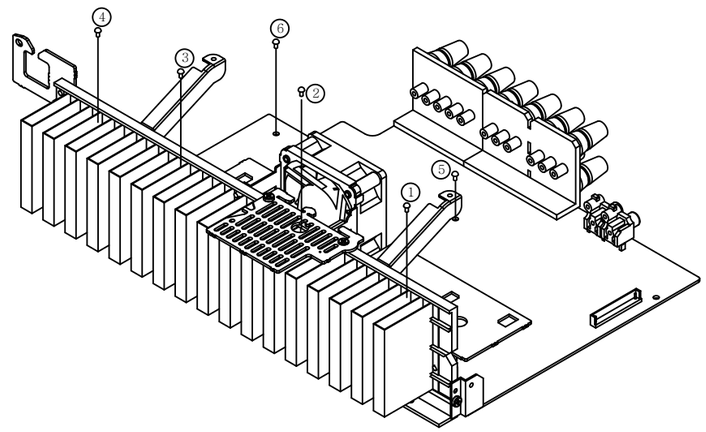
2. Removing the Front Panel
   Remove the Screws ①~⑦



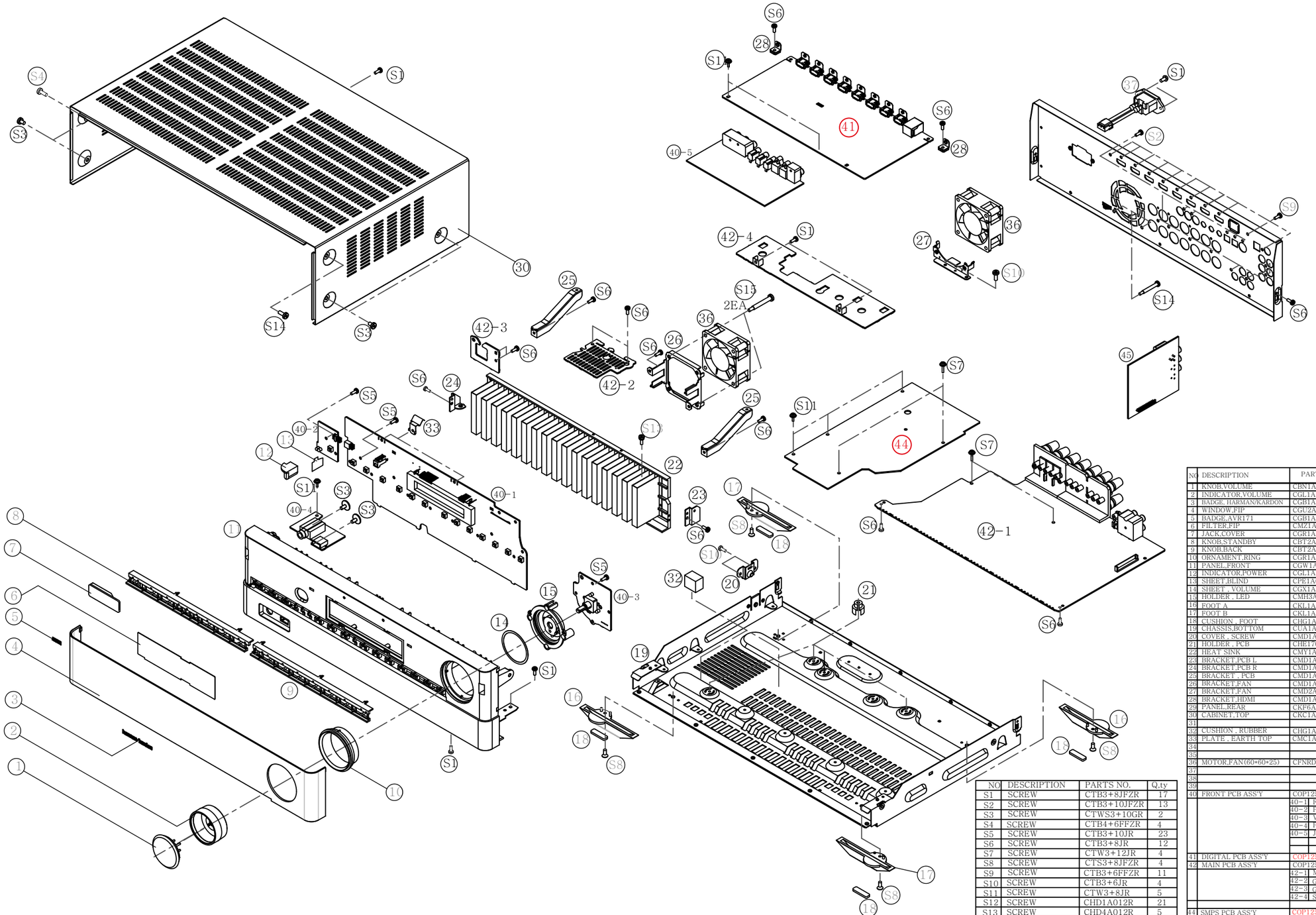
3. Removing the Rear Panel
   Remove the Screws ①~㉘



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



AVR171/230 EXPLODED VIEW



NO	DESCRIPTION	PARTS NO.	Q.ty
S1	SCREW	CTB3+8JFZR	17
S2	SCREW	CTB3+10JFZR	13
S3	SCREW	CTWS3+10GR	2
S4	SCREW	CTB4+6FFZR	4
S5	SCREW	CTB3+10JR	23
S6	SCREW	CTB3+8JR	12
S7	SCREW	CTW3+12JR	4
S8	SCREW	CTS3+8JFZR	4
S9	SCREW	CTB3+6FFZR	11
S10	SCREW	CTB3+6JR	4
S11	SCREW	CTW3+8JR	5
S12	SCREW	CHD1A012R	21
S13	SCREW	CHD4A012R	5
S14	SCREW, SPECIAL	CHD1A036FZR	5
S15	SCREW, SPECIAL	CHD1A036R	2
S16	SCREW	CTB4+10JFZR	2

NO	DESCRIPTION	PARTS NO.	Q.ty	REMARK
1	KNOB,VOLUME	CBN1A269B65	1	
2	INDICATOR,VOLUME	CGL1A300	1	
3	BAIGE, HARMAN/KARDON	CGB1A253Z	1	
4	WINDOW,FIP	CGU2A410A25J	1	
5	BADGE,AVR171	CGB1A261Z	1	
6	FILTER,FIP	CMZ1A145	1	
7	JACK,COVER	CGR1A555B63	1	
8	KNOB,STANDBY	CBT2A1064	1	
9	KNOB,BACK	CBT2A1065	1	
10	ORNAMENT,RING	CGR1A538G5	1	
11	PANEL,FRONT	CGW1A533RHYB63	1	
12	INDICATOR,POWER	CGL1A265Y	11	
13	SHEET,BLIND	CPE1A009	11	
14	SHEET , VOLUME	CGX1A476Z	1	
15	HOLDER , LED	CMH3A215	1	
16	FOOT A	CKL1A094	2	
17	FOOT B	CKL1A095	2	
18	CUSHION , FOOT	CHG1A373	4	
19	CHASSIS,BOTTOM	CUA1A343	1	
20	COVER , SCREW	CMD1A815	1	
21	HOLDER , PCB	CHE170	4	
22	HEAT SINK	CMY1A389	11	
23	BRACKET,PCB L	CMD1A811	1	
24	BRACKET,PCB R	CMD1A812	1	
25	BRACKET , PCB	CMD1A810	2	
26	BRACKET,FAN	CMD1A828	1	
27	BRACKET,FAN	CMD2A506	1	
28	BRACKET,HDMI	CMD1A809	2	
29	PANEL,REAR	CKP6A463Z	1	
30	CABINET,TOP	CKC1A219B64	1	
31				
32	CUSHION , RUBBER	CHG1A160Z	2	
33	PLATE , EARTH TOP	CMC1A416	2	
34				
35				
36	MOTOR,FAN(60*60*25)	CFNRDM6025S	1	
37				
38				
39				
40	FRONT PCB ASS'Y	COP12502B	1	
		40-1 FIP & 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	COP12505C	1	
42	MAIN PCB ASS'Y	COP12507B	1	
		42-1 MAIN PCB		
		42-2 GUIDE PCB(CARD)	1	
		42-3 GUIDE PCB(CARD)	1	
		42-4 SHIELD PCB	1	
43			1	
44	SMPS PCB ASS'Y	COP12509C	1	
45	AUDIO I/O ASSY	COP12508C	1	

		AVR 171/230 SPARE PARTS LIST		
Level	**Ref#**	**Component**	**Description**	**Drawing No**
..2		CBN1A269B65	KNOB , VOLUME	
..2		CGL1A300	INDICATOR , VOLUME	
..2		CGR1A555B63	COVER , JACK AVR1510	
..2		CGWAVR171/230	FRONT PANEL ASS'Y	
...3		CBT2A1064	KNOB , STANDBY	
...3		CBT2A1065	KNOB , BACK	
...3		CGB1A255Z	BADGE , HARMAN/KARDON	
...3		CGB1A261Z	BADGE , AVR171	
...3		CGL1A265Y	INDICATOR , POWER AVR155	
...3		CGR1A538G5	ORNAMENT , RING	
...3		CGU2A410A25J	WINDOW , FIP AVR170/230	
...3		CGW1A533RHYB63	PANEL , FRONT AVR1710	
...3		CGX1A476Z	SHEET , VOLUME	
...3		CMC1A416	PLATE , EARTH TOP	
...3		CMH3A215	HOLDER , LED	
...3		CMZ1A145	FILTER AVR1510	
...3		**COP12502B**	**AVR1710 FRONT PCB ASS'Y**	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....6	C109	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C121	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....6	C151	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C213	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)	
.....6	C214	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)	
.....6	C311	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....6	C322	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....6	C351	CCUS1H181JA	CAP, CHIP(1608, 50V/180pF)	1608 SIZE
.....6	C352	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C353	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C361	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....6	C362	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....6	C363	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C364	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C365	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C366	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C421	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C422	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C423	CCUS1H680JA	CAP, CHIP(1608, 50V/68pF)	
.....6	C431	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C441	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)	
.....6	C442	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)	
.....6	C451	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C456	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C557	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C558	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C601	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C602	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C603	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C604	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C605	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C644	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C645	CCUS1H471JA	CAP, CHIP(1608, 50V/470pF)	
.....6	C646	CCUS1H471JA	CAP, CHIP(1608, 50V/470pF)	
.....6	C647	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C714	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C715	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....6	C732	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C751	CCUS1H222KC	CAP, CHIP(1608, 50V/2200pF)	
.....6	C752	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....6	C753	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....6	C754	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C801	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C802	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C813	CCUS1H470JA	CAP, CHIP(1608, 50V/47pF)	
.....6	C821	CCUS1H471JA	CAP, CHIP(1608, 50V/470pF)	
.....6	C822	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....6	C830	CCUS1H473KC	CAP, CHIP(1608, 50V/0.047uF)	
.....6	C911	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C912	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C923	CCUS1H681JA	CAP, CHIP(1608, 50V/680pF)	
.....6	C924	CCUS1H681JA	CAP, CHIP(1608, 50V/680pF)	
.....6	C951	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	C952	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	D1	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D2	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D361	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)

...3		COP12502B	AVR1710 FRONT PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....6	D362	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D363	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D643	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D644	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D955	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	IC13	CVISN74ACT04DR	I.C , HEX INVERTERS(SOIC/D-14P)	SN74ACT04DR
.....6	IC14	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)	
.....6	IC421	HVINJM2244MTE1	I.C , VIDEO SWITCH	QRW-6500
.....6	IC91	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....6	IC92	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....6	L451	HLZ9Z014Z	CHIP , BEAD	HU-1M4516-600JT
.....6	Q111	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....6	Q112	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q113	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q114	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q252	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q362	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C
.....6	Q363	CVTRT1P141C	T.R,RT1P141C(10K-10K)	RT1P141C-T112-1
.....6	Q373	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....6	Q721	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q906	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....6	Q907	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....6	Q955	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....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	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	R353	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	R378	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....6	R379	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
.....6	R381	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....6	R402	CRJ14CJ4R7T	RES, CHIP(3216/5%/4.7ohm)	3216
.....6	R404	CRJ14CJ4R7T	RES, CHIP(3216/5%/4.7ohm)	3216
.....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

...3		COP12502B	AVR1710 FRONT PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....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	R811	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....6	R812	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....6	R813	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....6	R821	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....6	R822	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....6	R823	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....6	R834	CRJ10DJ222T	RES, CHIP(1608/5%/2.2Kohm)	00200-0142
.....6	R835	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....6	R836	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....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
.....6	R923	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....6	R924	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....6	R925	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....6	R926	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....6	R931	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....6	R932	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....6	R933	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
.....6	R934	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
.....6	R935	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
.....6	R936	CRJ10DJ221T	RES, CHIP(1608/5%/220ohm)	00200-0101
.....6	R941	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R942	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R943	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R944	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R955	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....6	ZD451	HVDUDZS5.6BSR	DIODE , ZENER(CHIP,5.6V)	UDZSTE-175.6B
.....6	ZD452	HVDUDZS5.6BSR	DIODE , ZENER(CHIP,5.6V)	UDZSTE-175.6B
.....6	ZD453	HVDUDZS5.6BSR	DIODE , ZENER(CHIP,5.6V)	UDZSTE-175.6B
.....5	C108	CCEA1AH471TC	CAP, ELECT(10V/470uF)	
.....5	C122	CCEA1AKS331TC	CAP, ELECT(10V/330uF)-S	
.....5	C152	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C251	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C252	CCEA1HKS2R2TC	CAP, ELECT(50V/2.2uF)-S	
.....5	C401	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C424	CCEA1AH471TC	CAP, ELECT(10V/470uF)	
.....5	C425	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C426	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C452	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C453	CCEA1JH470TCS	CAP , ELECT(63V/47uF),105'C	
.....5	C454	CCME2E273JX14T	CAP , POLYESTER FILM(250V/0.027UF, 5%)	
.....5	C455	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C556	CCEA1AKS331TC	CAP, ELECT(10V/330uF)-S	
.....5	C559	CCEA1AKS331TC	CAP, ELECT(10V/330uF)-S	

...3		COP12502B	AVR1710 FRONT PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....5	C721	CCEA1HKS2R2TC	CAP, ELECT(50V/2.2uF)-S	
.....5	C731	CCEA1AH471TC	CAP, ELECT(10V/470uF)	
.....5	C811	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C823	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C901	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C902	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C931	CCEA1CH331TC	CAP, ELECT(16V/330uF)	
.....5	C932	CCEA1CH331TC	CAP, ELECT(16V/330uF)	
.....5	C933	CCEA1VKS470TCS	CAP, ELECT(35V/47uF, 105'C)-S	
.....5	C944	CCEA1VKS470TCS	CAP, ELECT(35V/47uF, 105'C)-S	
.....5	ET90	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	L452	CLZ9Z112Z	COIL , CHOKE (220uH)	
.....5	Q251	HVTKTA1271YT	T.R	KTA1271-Y-AT/P
.....5	Q361	HVTKTA1266YT	T.R	KTA1266-Y-AT/PJ
.....5	Q451	CVTKTC1027YT	T.R	KTC1027Y
.....5	Q452	CVTKTC1027YT	T.R	KTC1027Y
.....5	S311	CST1A024ZT	SW , TACT	
.....5	S312	CST1A024ZT	SW , TACT	
.....5	S313	CST1A024ZT	SW , TACT	
.....5	S314	CST1A024ZT	SW , TACT	
.....5	S315	CST1A024ZT	SW , TACT	
.....5	S316	CST1A024ZT	SW , TACT	
.....5	S317	CST1A024ZT	SW , TACT	
.....5	S318	CST1A024ZT	SW , TACT	
.....5	S319	CST1A024ZT	SW , TACT	
.....5	S320	CST1A024ZT	SW , TACT	
.....5	S321	CST1A024ZT	SW , TACT	
.....5	S322	CST1A024ZT	SW , TACT	
.....5	S323	CST1A024ZT	SW , TACT	
.....5	S330	CST1A024ZT	SW , TACT	
....4	BK71	CMD1A572-V1	BRACKET , FIP	
....4	BK72	CMD1A572-V1	BRACKET , FIP	
....4	BN71	CWB1B007150HC	WIRE ASS'Y Locking (YH) (7P,2MM,150MM,#26)	
....4	BN72	CWB1B005100HC	WIRE ASS'Y Locking (YH) (5P,2MM,100MM,26#)	
....4	BN73	CJP06GB142ZB	PIN HEADER(6P, 2.54mm)	
....4	BN76	CWB1C207380H6001	WIRE ASS'Y (7P,2.0mm,380mm,Shield_ANGLE)_usb	
....4	BN78	CWB1B005100HC	WIRE ASS'Y Locking (YH) (5P,2MM,100MM,26#)	
....4	CN72	CJP05GJ288ZY	LOCK-WAFER/ANGLE/2MM PITCH/5PIN	
....4	CN73	CJP06GB143ZB	FEMALE HEADER(6P, 2.54mm)	
....4	CN78	CJP05GI236ZW	LOCKING TYPE , STRAIGHT WAFER , 2mm	A2008WV0-5P
....4	D101	CVD1L0345W31BOCT201V	L.E.D , WHITE	
....4	D102	CVD30ASOGCAA-S7	L.E.D , ORANGE	
....4	D201	CVD1L0345W31BOCT201V	L.E.D , WHITE	
....4	D202	CVD1L0345W31BOCT201V	L.E.D , WHITE	
....4	D203	CVD1L0345W31BOCT201V	L.E.D , WHITE	
....4	FIP1	CFL162SD19GINK	V.F.D , (FUTABA, 162-SD-19GINK)	162SD19GINK
....4	IC12	CRVKSM603TE5B	SENSOR , REMOCON	
....4	IC15	HVINJM4556AL	I.C , HEADPHONE (JRC)	NJM4556AL
....4	IC371	BVIKP1010B	IC, PHOTO COUPLER (COSMO)	
....4	IC372	BVIKP1010B	IC, PHOTO COUPLER (COSMO)	
....4	JK351	CJJ4M044X	JACK , RCA (1P,RCA-115A-04)	RCA-115A-04
....4	JK352	CJSJSR1124	MODULE , OPTICAL(RX 16MHz)	
....4	JK353	CJSJSR1124	MODULE , OPTICAL(RX 16MHz)	
....4	JK401	CJJ4S010Z	JACK , BOARD	RCA-325A-02
....4	JK402	CJJ2D008Z	JACK, STEREO (BLK MOLD)	PJ-308-02
....4	JK403	CJJ2D008Z	JACK, STEREO (BLK MOLD)	PJ-308-02
....4	JK404	CJJ2D008Z	JACK, STEREO (BLK MOLD)	PJ-308-02
....4	JK53	CJJ9X012Z	JACK , USB (ANGLE TYPE)	
....4	JK64	CJJ2E026Z	JACK, PHONES(6.35mm,SILVER)	PJ-612A-51
....4	JW19	CWE8202150RV	WIRE ASS'Y	HTS-5000
....4	JW20	CWE8202120RV	WIRE ASS'Y	PM-4200
....4	RL91	CSL4A016ZU	RELAY,BC3-12H,DC12V,2C2P	BC3-12H
....4	TF94	CLT9Z092ZE	TRANS , DC-AC (AVR1X1)	
....4	VR74	CSR2A037Z	ENCODER	
....4	WF31	CJP13GA285ZN	WAFER, FFC(13P-1.25mm, STRAIGHT)	
....4	WF70	CJP23GA285ZN	WAFER,FPC 1.25mm,stright	
...3		COP12510B	AVR1710 BT PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....7	AN1101	CLA9V003Z	BLUETOOTH ANT , CHIP(3.0*1.5) 2.425MHz	
.....7	C1101	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1109	CCUI1H101JA	CAP, CHIP(1005, 50V/100pF)	0402N101J500HI
.....7	C1111	CCUI1H101JA	CAP, CHIP(1005, 50V/100pF)	0402N101J500HI
.....7	C1112	CCUI1H1R2CA	CAP, CHIP(1005, 50V/1.2pF)	
.....7	C1134	CCUS0J225KC	CAP, CHIP(1608, 6.3V/2.2uF)	
.....7	C1135	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	

...3		COP12510B	AVR1710 BT PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....7	C1136	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	D1100	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1101	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	IC1101	CVIMX25L8006EM2I-12G	I.C , SERIAL FLASH(8M)	
.....7	R1113	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1119	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1120	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1121	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1122	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....6		CIP12510BTSMD	AVR1710 BT PCB TOP SMD ASS'Y	
.....7		CUP12510Z	PCB,AVR1710 BT(FR-4/2L/293X181)	
.....7	CN1101	CJP17GB210ZY	WAFER, (CARD CABLE,ANGLE, SMT, 1MM,10008HR-17L(P)	
.....7	CN1102	CJP07GA193ZY	WAFER, FFC, SMD(07P-1mm, STRAIGHT)	
.....7	C1100	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1102	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1103	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1104	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1130	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1131	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1132	CCUS0J225KC	CAP, CHIP(1608, 6.3V/2.2uF)	
.....7	C1133	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1137	CCUS1H222KC	CAP, CHIP(1608, 50V/2200pF)	
.....7	C1138	CCUS1H222KC	CAP, CHIP(1608, 50V/2200pF)	
.....7	C1139	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1140	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1141	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1142	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	IC1100	CNVBM840-AVR171	MODULE, BLUETOOTH SPEC 4.0	
.....7	IC1102	CVIPCM5100PWR	I.C , 2CH DAC(32BIT,384KHZ,TSSOP-20P)	
.....7	L1130	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	RN1100	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)	
.....7	R1100	CRJ06IJ332T	RES, CHIP(1005/5%/3.3Kohm)	RM04JC3K3
.....7	R1101	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1102	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1103	CRJ06IJ332T	RES, CHIP(1005/5%/3.3Kohm)	RM04JC3K3
.....7	R1104	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1105	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1106	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1107	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1108	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1114	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1115	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1116	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1117	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1118	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1129	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1130	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1132	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1133	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1134	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)	00200-0088
.....7	R1135	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)	00200-0088
.....7	R1136	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1137	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
....4	BK21	CMD1A629	BRACKET , PCB	
....4	BK22	CMD1A629	BRACKET , PCB	
...3		CPE1A009	SHEET , BLIND	
...3		CTB3+10JR	SCREW	
...3		CTWS3+10GR	SCREW	
...3		CWC4F2A17A180B10	CARD , CABLE (17P,1.0mm,180mm,B,10mm)	
...3		CWC6C4A23B220B10	CARD , CABLE (23P,1.25mm,220mm,B,10mm)	
..2		CKC1A219B64	CABINET, TOP AVR1510	
..2		CQB1A549Y	LABEL , ATTENTION DVD48	
..2		CQB1A622	LABEL , SERIAL NO	DVD-310
..2		CTB3+8JFZR	SCREW	
..2		CTB4+10JFZR	SCREW	
..2		CTB4+6FFZR	SCREW	
..2		CUAAVR171/230	BOTTOM CHASSIS ASS'Y	
...3		CFNRDM6025S-150	MOTOR , FAN (60X60X25, 150mm)12V, 0.1A	
...3		CHD1A036FZR	SCREW , SPECIAL	
...3		CHD4A012R	SCREW , SPECIAL	
...3		CHE170	HOLDER , PCB	ALL MODEL
...3		CHG1A160Z	CUSHION , RUBBER	
...3		CHG1A373	CUSHION , FOOT AVR350	
...3		CHS1A032	TAPE , HEMELON	
...3		CKF6A463Z	PANEL , REAR AVR171	
...3		CKL1A094	FOOT , A AVR350	
...3		CKL1A095	FOOT , B AVR350	

...3		COP12510B	AVR1710 BT PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
...3		CMD1A809	BRACKET , HDMI	
...3		CMD1A815	COVER , SCREW	
...3		CMD2A506	BRACKET , FAN	
...3		**COP12505C**	**AVR171/230 DIGITAL PCB ASS'Y (EUR)**	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....7	C1002	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1003	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1008	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1010	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1012	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1014	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1016	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1017	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1018	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1019	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1022	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1023	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1024	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1025	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1027	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1028	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1029	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1030	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1031	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1032	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1033	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1034	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1035	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1036	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1037	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1038	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1039	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1040	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1041	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1042	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1043	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1044	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1045	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1046	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1047	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1048	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1049	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1050	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1051	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1052	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1053	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1054	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1061	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1062	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1063	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1064	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1068	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1069	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1104	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1110	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1112	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1113	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1114	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1119	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1120	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1121	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1122	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1123	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1124	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1125	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1126	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1127	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1128	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1129	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1130	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1131	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1132	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1133	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1134	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1135	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	C1136	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1137	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1138	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1139	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1140	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1141	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1142	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1143	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1144	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1145	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1146	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1147	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1148	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1149	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1150	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1151	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1152	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1153	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1154	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1155	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1156	CCUI1H100JA	CAP, CHIP(1005, 50V/10pF)	0402N100J500HI
.....7	C1157	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1161	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1162	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1163	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1164	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1165	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1167	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1170	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1201	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1202	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1212	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1213	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1217	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1218	CCUS1H471JA	CAP, CHIP(1608, 50V/470pF)	
.....7	C1219	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1222	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1223	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1229	CCUS1H222KC	CAP, CHIP(1608, 50V/2200pF)	
.....7	C1230	CCUS1H222KC	CAP, CHIP(1608, 50V/2200pF)	
.....7	C1302	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1303	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1305	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1308	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1310	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1312	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1313	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1314	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1320	CCUS1H153KC	CAP, CHIP(1608, 50V/0.015uF)	
.....7	C1322	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1324	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1325	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1326	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1327	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1337	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1348	CCUYAP0J226KC	CAP , CHIP (3216, 6.3V/22uF)	
.....7	C1349	CCUSSP1E106KC	CAP, CHIP(3216, 25V/10uF)	
.....7	C1350	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1352	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1353	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1354	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1355	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1363	CCUS1H153KC	CAP, CHIP(1608, 50V/0.015uF)	
.....7	C1402	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1403	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1404	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1405	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1406	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1407	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1408	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1409	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1410	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1413	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1414	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1415	CCUS1H331JA	CAP, CHIP(1608, 50V/330pF)	1608 SIZE
.....7	C1418	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1419	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	C1420	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1423	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1424	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1425	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1426	CCUS1H223KC	CAP, CHIP(1608, 50V/0.022uF)	
.....7	C1427	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1429	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1430	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1431	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1432	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1434	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1435	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1436	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1442	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
.....7	C1444	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1445	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
.....7	C1447	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1452	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1453	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1454	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1455	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1456	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1457	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1459	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1460	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1462	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1463	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1464	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1465	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1466	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1467	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1468	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1469	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1470	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1472	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1473	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1475	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1476	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1477	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1478	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1479	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1480	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1481	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1482	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1483	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1484	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1485	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1486	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1487	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1488	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1489	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1501	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1504	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1508	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	
.....7	C1512	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1513	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1514	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C1515	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1520	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1522	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1523	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1524	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1525	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1526	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1527	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1528	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1529	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1530	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1531	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1532	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1603	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1605	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1607	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1609	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1611	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1613	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1614	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	C1619	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)	
.....7	C1621	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1623	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1625	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1627	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1628	CCUS1H683KC	CAP, CHIP(1608, 50V/0.068uF)	
.....7	C1633	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1635	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1637	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1639	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1641	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1642	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1647	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1649	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1651	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1653	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1655	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1656	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1661	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1663	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1667	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C1668	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	D1501	CVDBAR43C	DIODE, SCHOTTKY	BAR43CFILM
.....7	D1503	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1601	HVDUDZS3.3BSR	DIODE , ZENER(CHIP,3.3V)	UDZSTE-173.3B
.....7	IC1103	CVIH27U1G8F2BTR-BC	I.C, 1G NAND FLASH(48P-TSOP1)	H27U1G8F2BTR-BC
.....7	IC1204	CVIPCM5100PWR	I.C , 2CH DAC(32BIT,384KHZ,TSSOP-20P)	
.....7	IC1406	HVINJM2115MDTE1	IC, OP AMP	NJM2115M
.....7	IC1407	HVINJM2115MDTE1	IC, OP AMP	NJM2115M
.....7	L1001	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1002	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	L1009	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1010	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1101	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1102	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1103	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1210	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1303	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1304	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1305	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1306	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1307	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1308	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1317	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1401	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1402	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1503	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	Q1011	CVTRT1N241C	T.R,RT1N241C(22K-22K)	RT1N241C-T112-1
.....7	Q1102	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C
.....7	Q1401	CVTRT1N241C	T.R,RT1N241C(22K-22K)	RT1N241C-T112-1
.....7	Q1501	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C
.....7	Q1503	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1504	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1505	CVTINC2001AC1	T.R , MUTE	INC2001AC1
.....7	Q1506	CVT2SC3052	T.R,2SC3052	2SC3052
.....7	Q1507	CVT2SC3052	T.R,2SC3052	2SC3052
.....7	Q1601	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1602	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1605	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)	
.....7	Q1609	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1610	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1611	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1612	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1613	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1614	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1615	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1616	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1617	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1619	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1621	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1622	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1623	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	Q1624	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	RN1001	CRJ104DJ220T	RES, CHIP(1608/5%/22ohm*4)	22X4/2012

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	RN1002	CRJ104DJ220T	RES, CHIP(1608/5%/22ohm*4)	22X4/2012
.....7	RN1104	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)	
.....7	RN1105	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)	
.....7	RN1106	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)	
.....7	RN1107	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)	
.....7	RN1108	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)	
.....7	RN1111	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1114	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1115	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1116	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1119	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1120	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1401	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1402	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1407	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1408	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1409	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	R1003	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1016	CRJ06IJ512T	RES, CHIP(1005/5%/5.1Kohm)	
.....7	R1023	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1025	CRJ06IJ512T	RES, CHIP(1005/5%/5.1Kohm)	
.....7	R1033	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1034	CRJ06IJ512T	RES, CHIP(1005/5%/5.1Kohm)	
.....7	R1042	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1043	CRJ06IJ512T	RES, CHIP(1005/5%/5.1Kohm)	
.....7	R1051	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1052	CRJ06IJ512T	RES, CHIP(1005/5%/5.1Kohm)	
.....7	R1060	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1061	CRJ06IJ512T	RES, CHIP(1005/5%/5.1Kohm)	
.....7	R1063	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1064	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1066	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1068	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1069	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1071	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1072	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1084	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1085	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1086	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1102	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1116	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1120	CRJ06IJ152T	RES, CHIP(1005/5%/1.5Kohm)	RM04JC1K5
.....7	R1132	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1133	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1134	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1137	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1138	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1139	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1141	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1202	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1207	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1208	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1216	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1219	CRJ10DF1501T	RES, CHIP(1608/1%/1.5Kohm)	1.5K /1/10W/F
.....7	R1223	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1224	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1226	CRJ10DF1000T	RES, CHIP(1608/1%/100ohm)	00200-0205
.....7	R1227	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)	00200-0088
.....7	R1228	CRJ10DJ471T	RES, CHIP(1608/5%/470ohm)	00200-0088
.....7	R1232	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1233	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1234	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1235	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1236	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1301	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1302	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1303	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1304	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1305	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1306	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1307	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1308	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1313	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1314	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1315	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1316	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1318	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	R1319	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1322	CRJ10DF4702T	RES, CHIP(1608/1%/47Kohm)	
.....7	R1352	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1353	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1356	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1357	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1373	CRJ10DF1202T	RES, CHIP(1608/1%/12Kohm)	12K, 1/10W/F
.....7	R1402	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1407	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1408	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1409	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1410	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1411	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1413	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1414	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1415	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1416	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1430	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1436	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1440	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1441	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1442	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1443	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1445	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1446	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1447	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1448	CRJ10DF1371T	RES, CHIP(1608/1%/1.37Kohm)	
.....7	R1449	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1457	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1458	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1459	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1461	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
.....7	R1462	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1463	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1464	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1466	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
.....7	R1467	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1468	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
.....7	R1470	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
.....7	R1473	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1509	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1510	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1511	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1512	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1513	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1521	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1532	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1533	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1537	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1542	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1543	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1546	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1547	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1552	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1553	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
.....7	R1554	CRJ10DJ272T	RES, CHIP(1608/5%/2.7Kohm)	
.....7	R1555	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1556	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1557	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1560	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1565	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1566	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1567	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1568	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1569	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1570	CRJ10DJ225T	RES, CHIP(1608/5%/2.2Mohm)	
.....7	R1571	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1572	CRJ10DJ224T	RES, CHIP(1608/5%/220Kohm)	
.....7	R1575	CRJ10DJ203T	RES, CHIP(1608/5%/20Kohm)	1608
.....7	R1576	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1578	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1579	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1580	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1601	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
.....7	R1602	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
.....7	R1605	CRJ10DJ302T	RES, CHIP(1608/5%/3Kohm)	1608
.....7	R1606	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	R1607	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1609	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1610	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1612	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1613	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1614	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1618	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1619	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1620	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1621	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1622	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1623	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1624	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1627	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1628	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1630	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1631	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1632	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1636	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1637	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1638	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1639	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1640	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1641	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1642	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1645	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1646	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1648	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1649	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1650	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1655	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1656	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1657	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1658	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1659	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1660	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1661	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1664	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1665	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1667	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1668	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1669	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1673	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1674	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1675	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1676	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1677	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1678	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1679	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1682	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1683	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1684	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1685	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1686	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1687	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1688	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1689	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1690	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1692	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1693	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1694	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1695	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1709	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1714	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)	00200-0170
.....7	R1715	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)	00200-0170
.....7	R1716	CRJ10DJ620T	RES, CHIP(1608/5%/62ohm)	
.....7	R1717	CRJ10DJ620T	RES, CHIP(1608/5%/62ohm)	
.....7	R1718	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)	00200-0170
.....7	R1719	CRJ10DJ301T	RES, CHIP(1608/5%/300ohm)	00200-0170
.....7	R1720	CRJ10DJ620T	RES, CHIP(1608/5%/62ohm)	
.....7	R1721	CRJ10DJ620T	RES, CHIP(1608/5%/62ohm)	
.....7	R1722	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1723	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1724	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1725	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1726	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1727	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	R1728	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1729	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1730	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1731	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1732	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1733	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1735	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1736	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1740	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1755	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....6		CIP12505CTSMD	AVR171/230 DIGITAL PCB TOP SMD ASS'Y (EUR)	
.....7		CUP12505Z	PCB,AVR1710 DIGITAL (FR-4/4L/256X135)	
.....7	BN1501	CJP03GA208ZY	WAFER , SMD (2MM PITCH)-3P	
.....7	CN1001	CJP07GA193ZY	WAFER, FFC, SMD(07P-1mm, STRAIGHT)	
.....7	CN1101	CJP07GA193ZY	WAFER, FFC, SMD(07P-1mm, STRAIGHT)	
.....7	CN1201	CJP07GA208ZY	WAFER, 2mm, SMD, Vertical, 07p	
.....7	CN1301	CJP15GB276ZY	WAFER, 20037WR-NN Series, 2mm, SMD, ANGLE, 15P	
.....7	CN1501	CJP03GA208ZY	WAFER , SMD (2MM PITCH)-3P	
.....7	CN1502	CJP07GA193ZY	WAFER, FFC, SMD(07P-1mm, STRAIGHT)	
.....7	CN1503	CJP09GA193ZY	WAFER, FFC, SMD(09-1mm, STRAIGHT)	
.....7	CN1601	CJP13GA193ZY	WAFER, FFC, SMD(13P-1mm, STRAIGHT)	
.....7	CN1602	CJP40GA193ZY	WAFER, FFC, SMD(40P-1mm, STRAIGHT)	
.....7	CN1603	CJP17GA193ZY	WAFER, FFC, SMD(17P-1mm, STRAIGHT)	
.....7	C1001	CCUS1H473KC	CAP, CHIP(1608, 50V/0.047uF)	
.....7	C1004	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1006	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1020	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1021	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1026	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1055	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1057	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1058	CCUS1H100JA	CAP, CHIP(1608, 50V/10pF)	
.....7	C1059	CCUS1H100JA	CAP, CHIP(1608, 50V/10pF)	
.....7	C1060	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1065	CCUS1A105KC	CAP, CHIP(1608, 10V/1uF)	
.....7	C1067	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1070	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1108	CCUS1H080DA	CAP, CHIP(1608, 50V/8pF)	
.....7	C1109	CCUS1H080DA	CAP, CHIP(1608, 50V/8pF)	
.....7	C1111	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1115	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1116	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1117	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1118	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1158	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1159	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1160	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1166	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1168	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1169	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1171	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1172	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1203	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1204	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1205	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1206	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1207	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1208	CCUI1H102KC	CAP, CHIP(1005, 50V/1000pF)	0402B102K500HI
.....7	C1209	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1210	CCUI1H150JA	CAP, CHIP(1005, 50V/15pF)	0402N150J500HI
.....7	C1211	CCUI1H150JA	CAP, CHIP(1005, 50V/15pF)	0402N150J500HI
.....7	C1214	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1220	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1221	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1224	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1225	CCUS0J225KC	CAP, CHIP(1608, 6.3V/2.2uF)	
.....7	C1226	CCUS0J225KC	CAP, CHIP(1608, 6.3V/2.2uF)	
.....7	C1227	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1228	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1231	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C1232	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C1233	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1234	CCUI1C104KC	CAP, CHIP(1005, 16V/0.1uF)	
.....7	C1235	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1236	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1301	CCEC1CMVG471T	CAP,ALUMINUM ELECTROLYTIC (16V/470uF)	
.....7	C1304	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	C1306	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1307	CCEC1CMVG101T	CAP,ALUMINUM ELECTROLYTIC CAPACITORS(16V/100uF)	
.....7	C1309	CCEC1CMVG101T	CAP,ALUMINUM ELECTROLYTIC CAPACITORS(16V/100uF)	
.....7	C1311	CCEC0JMVG221T	CAP,ALUMINUM ELECTROLYTIC (6.3V/220uF)	
.....7	C1315	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1316	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1317	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1318	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	
.....7	C1319	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1321	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1323	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1328	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1329	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1330	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1331	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1332	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1333	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1334	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	
.....7	C1335	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1336	CCUS1H153KC	CAP, CHIP(1608, 50V/0.015uF)	
.....7	C1339	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1340	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1341	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1342	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1343	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	
.....7	C1344	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1345	CCUS1H153KC	CAP, CHIP(1608, 50V/0.015uF)	
.....7	C1346	CCUYAP0J226KC	CAP , CHIP (3216, 6.3V/22uF)	
.....7	C1347	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1351	CCEC0JMVG470T	CAP,ALUMINUM ELECTROLYTIC (6.3V/47uF)	
.....7	C1356	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1357	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1361	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	
.....7	C1362	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1364	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1411	CCUS1H120JA	CAP, CHIP(1608, 50V/12pF)	
.....7	C1412	CCUS1H120JA	CAP, CHIP(1608, 50V/12pF)	
.....7	C1416	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1417	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1421	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1422	CCEC1CMVG101T	CAP,ALUMINUM ELECTROLYTIC CAPACITORS(16V/100uF)	
.....7	C1428	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1433	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1437	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1438	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1439	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1440	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1441	CCUC0J106KC	CAP, CHIP(2012, 6.3V/10uF, X7R)	LAO-63V103MS56PW#
.....7	C1443	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C1446	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C1448	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1449	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1450	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1451	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1458	CCEC0JMVG101T	CAP,ALUMINUM ELECTROLYTIC (6.3V/100uF)	
.....7	C1461	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1471	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1474	CCEC0JMVG101T	CAP,ALUMINUM ELECTROLYTIC (6.3V/100uF)	
.....7	C1502	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1505	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1506	CCUS1H120JA	CAP, CHIP(1608, 50V/12pF)	
.....7	C1507	CCUS1H120JA	CAP, CHIP(1608, 50V/12pF)	
.....7	C1509	CCUC1A225KC	CAP, CHIP(2012, 10V/2.2uF)	
.....7	C1510	CCUS1H103KC	CAP, CHIP(1608, 50V/0.01uF)	1608 SIZE
.....7	C1516	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1517	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1518	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C1519	CCUC1A226KC	CAP, CHIP(2012, 10V/22uF)	
.....7	C1521	CCUS0J475KC	CAP, CHIP(1608, 6.3V/4.7uF, MURATA GRM18)	GRM188R60J475KE19D
.....7	C1601	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1602	CCUS1H102KC	CAP, CHIP(1608, 50V/1000pF)	
.....7	C1604	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1606	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1608	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1610	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1612	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1615	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	C1616	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1617	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1618	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1620	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1622	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1624	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1626	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1629	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1630	CCUS1H822KC	CAP, CHIP(1608, 50V/8200pF)	
.....7	C1631	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1632	CCUS1H683KC	CAP, CHIP(1608, 50V/0.068uF)	
.....7	C1634	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1636	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1638	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1640	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1643	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1644	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1645	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1646	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1648	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1650	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1652	CCEC1CMVG100T	CAP,ALUMINUM ELECTROLYTIC (16V/10uF)	
.....7	C1654	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1657	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1658	CCUS1H391JA	CAP, CHIP(1608, 50V/390pF)	
.....7	C1659	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1660	CCUS1H272KC	CAP, CHIP(1608, 50V/2700pF)	
.....7	C1662	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1664	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C1665	CCEC1CMVG471T	CAP,ALUMINUM ELECTROLYTIC (16V/470uF)	
.....7	C1666	CCEC1CMVG471T	CAP,ALUMINUM ELECTROLYTIC (16V/470uF)	
.....7	D1201	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1202	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1502	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1504	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1602	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1603	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1604	CVD1SR159-200H	DIODE, SCHOTTKY	
.....7	D1605	CVD1SR159-200H	DIODE, SCHOTTKY	
.....7	D1606	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D1607	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	F1301	CRTMINISMDC200F	SW , POLY (RESETTABLE 2A 0.02 OHM 1W 4532)	MINISMDC200F
.....7	IC1001	CVITC74VCX541FT	I,C , OCTAL BUS BUFFER (TOSHIBA)	TC74VCX541FT(EL,M)
.....7	IC1002	CVIMX25L8006EM2I-12G	I.C , SERIAL FLASH(8M)	
.....7	IC1004	CVISTMPS2161STR	I.C , Current Limiter 1A (SOT-5L)	
.....7	IC1005	CVISII9573CTUC	I.C , HDMI PORT PROCESSOR	SII9573CTUC
.....7	IC1101	CVIDM860A-AQE-HK	I.C , Network Media processor(LFBGA-320P)	DM860A-AQE(HARMAN)
.....7	IC1104	CVIW9825G6JH-6	I.C , 256M SDRAM	
.....7	IC1201	CVIISL54220IUZ-T	I.C , USB2.0 Multiplexer(TQFN-10P)	ISL54220IUZ-T
.....7	IC1202	CVIMFI337S3959-HK	IC, Apple iPod Authentication coprocessor 2.0c	MFI337S3959
.....7	IC1203	CVILAN8720ACPTR	I.C , Ethernet Transceiver(QFN-24P)	LAN8720A-CP-TR
.....7	IC1301	CVIDB1230HETR	I.C , DC DC CONVERTER(3A,700KHZ,SOP-8P)	DB1230HETR
.....7	IC1302	CVIDB1230HETR	I.C , DC DC CONVERTER(3A,700KHZ,SOP-8P)	DB1230HETR
.....7	IC1303	CVIDB1514AHETR	I.C,REGULATOR(1.5A,ADJ,CONT,8-SOP-EP)	
.....7	IC1304	CVIDB1230HETR	I.C , DC DC CONVERTER(3A,700KHZ,SOP-8P)	DB1230HETR
.....7	IC1305	CVIDB1230HETR	I.C , DC DC CONVERTER(3A,700KHZ,SOP-8P)	DB1230HETR
.....7	IC1306	CVIEML3418-00SE08GRR	I.C , DCDC CONVERTER(SOP-8FD)	
.....7	IC1307	CVIAZ1117CH-1.2TRG1	LDO , low dropout three-terminal regulator	AZ1117CH-1.2TRG1
.....7	IC1401	CVICS49834A-CQZ	I.C , AUDIO DSP(TRI-CORE,LQFP-144P)	
.....7	IC1402	CVIM12L16161A5TG2Q	I.C, 16MB SDRAM(TSOP-50P)	M12L16161A5TG2Q
.....7	IC1403	CVIMX25L3206EM2I-12G	I.C , SERIAL FLASH(32M)	
.....7	IC1404	CVITC74VCX541FT	I,C , OCTAL BUS BUFFER (TOSHIBA)	TC74VCX541FT(EL,M)
.....7	IC1405	HVICS42528-CQ	I.C , CODEC + DIR (CIRRUS LOGIC)	CS42528-CQZ
.....7	IC1408	HVITC74VHC157FT	I.C, QUAD 2-CHANNEL MUX(TSSOP-16)	TC74VHC157FT(EL,M)
.....7	IC1501	CVISTM32F205ZGT6	I.C , FLASH MCU (32 BIT, 1MB, LQFP 144)	
.....7	IC1503	CVICAT809RTBI-GT3	I.C , RESET IC (2.63V, SOT-23-3)	CAT809RTBI-GT3
.....7	IC1504	CVICAT24C32WI-GT3	I.C, EEPROM, 32K	CAT24C32WI-GT3
.....7	IC1505	CVTUPA672T	F.E.T (NEC)	UPA672T-T1-A
.....7	IC1506	CRTLM94022BIMG	SENSOR , TEMPERATURE	LM94022BIMG
.....7	IC1507	CVIDB1510BT3TR33	I.C, REGULATOR(1.0A,3.3V,TO252-(1))	DB1510BT3TR33
.....7	IC1601	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)	
.....7	IC1602	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)	
.....7	IC1603	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)	
.....7	IC1604	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)	
.....7	IC1605	CVILM7808RTRL	IC, REGULATOR(1A, 8V)	LM7808RTRL
.....7	IC1606	CVILM7908RTRL	IC, REGULATOR(1A, -8V)	LM7908RTRL
.....7	JK1001	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	JK1002	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1003	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1004	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1005	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1006	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1007	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1008	CJJ9H008Y	JACK, HDMI(TYPE-A, SMT-19P)	
.....7	JK1201	CJJ9L026Z	JACK , RJ-45 With TR (SMT)	
.....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	L1012	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1013	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1201	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1202	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1203	CLZ9Z127Z	COIL, CHOKE CHIP(2012/180R)	DLW21SN181SQ2L
.....7	L1204	CLZ9Z128Z	COIL, CHOKE CHIP(2012/90R)	DLW21SN900SQ2L
.....7	L1205	CLZ9Z128Z	COIL, CHOKE CHIP(2012/90R)	DLW21SN900SQ2L
.....7	L1206	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1207	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1208	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1209	CLZ9R018V	FERRITE CHIP BEAD(2012/220R, CB05YTYH221)	
.....7	L1302	CLQ20E3R3NRZ	COIL,SMD POWER(3.3uH/3.2A)	
.....7	L1309	CLQ20E3R3NRZ	COIL,SMD POWER(3.3uH/3.2A)	
.....7	L1310	CLZ9R005V	FERRITE CHIP BEAD(1608/60R, CB03YTYH600)	
.....7	L1311	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1312	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1313	CLQ20E3R3NRZ	COIL,SMD POWER(3.3uH/3.2A)	
.....7	L1314	CLQ20E3R3NRZ	COIL,SMD POWER(3.3uH/3.2A)	
.....7	L1315	CLQ18E1R5NRZ	COIL,SMD POWER(1.5uH/2A)	SWPA3015S1R5MT
.....7	L1316	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1318	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1319	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....7	L1501	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	L1502	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	Q1101	CVTRT1P141C	T.R,RT1P141C(10K-10K)	RT1P141C-T112-1
.....7	Q1502	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1508	HVTKTA1504SYRTK	T.R , CHIP , SOT-23	KTA1504S-Y-RTK/P
.....7	Q1509	HVTKTC3875SYRTK	T.R , CHIP , SOT-23	KTC3875S-Y-RTK/P
.....7	Q1603	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)	
.....7	Q1604	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)	
.....7	Q1606	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)	
.....7	Q1607	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)	
.....7	Q1608	CVTMMBT5401	High Voltage PNP Transistors(SOT-23)	
.....7	Q1618	CVTRT1P144C	T.R,RT1P144C(10K-47K)	RT1P144C-T112-1
.....7	Q1620	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....7	RN1003	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)	
.....7	RN1004	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)	
.....7	RN1005	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)	
.....7	RN1101	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1102	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1103	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1109	CRJ064IJ103T	RES, CHIP(1005/5%/10Kohm*4)	
.....7	RN1110	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1112	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1113	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1117	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1118	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1201	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1202	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1203	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1403	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1404	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1405	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1406	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1410	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1411	CRJ064IJ330T	RES, CHIP(1005/5%/33ohm*4)	0402*4 5% 33 OHM
.....7	RN1501	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)	
.....7	RN1502	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)	
.....7	RN1503	CRJ104DJ101T	RES, CHIP(1608/5%/100ohm*4)	
.....7	RN1504	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)	
.....7	RN1505	CRJ104DJ330T	RES, CHIP(1608/5%/33ohm*4)	
.....7	R1002	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1004	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1005	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1006	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1007	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	R1012	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1013	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1015	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1017	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1021	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1022	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1026	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1030	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1031	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1035	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1039	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1040	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1044	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1048	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1049	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1053	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1057	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1058	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1065	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1076	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1077	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1078	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1079	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1080	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1081	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1082	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1083	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1087	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1088	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1089	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1090	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1091	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1092	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1093	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1094	CRJ06IJ5R1T	RES, CHIP(1005/5%/5.1ohm)	
.....7	R1095	CRJ10DJ220T	RES, CHIP(1608/5%/22ohm)	
.....7	R1096	CRJ10DJ220T	RES, CHIP(1608/5%/22ohm)	
.....7	R1097	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1098	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1099	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1103	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1104	CRJ06IJ152T	RES, CHIP(1005/5%/1.5Kohm)	RM04JC1K5
.....7	R1105	CRJ06IJ102T	RES, CHIP(1005/5%/1Kohm)	RM04JC1K
.....7	R1106	CRJ06IJ123T	RES, CHIP(1005/5%/12Kohm)	RM04JC12K
.....7	R1107	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1108	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1109	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1114	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1115	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1117	CRJ06IJ182T	RES, CHIP(1005/5%/1.8Kohm)	RM04JC1K8
.....7	R1118	CRJ06IJ122T	RES, CHIP(1005/5%/1.2Kohm)	RM04JC1K2
.....7	R1119	CRJ06IJ470T	RES, CHIP(1005/5%/47ohm)	RM04JC47R
.....7	R1121	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1124	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1125	CRJ06IJ330T	RES, CHIP(1005/5%/33ohm)	RM04JC33R
.....7	R1126	CRJ06IJ272T	RES, CHIP(1005/5%/2.7Kohm)	RM04JC2K7
.....7	R1127	CRJ06IJ152T	RES, CHIP(1005/5%/1.5Kohm)	RM04JC1K5
.....7	R1129	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1130	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1135	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1136	CRJ06IJ472T	RES, CHIP(1005/5%/4.7Kohm)	RM04JC4K7
.....7	R1140	CRJ06IJ101T	RES, CHIP(1005/5%/100ohm)	RM04JC100R
.....7	R1201	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1205	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1206	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1209	CRJ06IJ100T	RES, CHIP(1005/5%/10ohm)	RM04JC10R
.....7	R1210	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE
.....7	R1211	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE
.....7	R1212	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE
.....7	R1213	CRJ10DJ510T	RES, CHIP(1608/5%/51ohm)	1608 SIZE
.....7	R1214	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1221	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1222	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1225	CRJ10DF1202T	RES, CHIP(1608/1%/12Kohm)	12K, 1/10W/F
.....7	R1229	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1230	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1231	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	R1237	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1238	CRJ06IJ103T	RES, CHIP(1005/5%/10Kohm)	RM04JC10K
.....7	R1250	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
.....7	R1309	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1310	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1311	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1312	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1320	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1321	CRJ10DF1502T	RES, CHIP(1608/1%/15Kohm)	
.....7	R1323	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1324	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
.....7	R1325	CRJ10DF6201T	RES, CHIP(1608/1%/6.2Kohm)	
.....7	R1326	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R1327	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1328	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1329	CRJ10DF3301T	RES, CHIP(1608/1%/3.3Kohm)	
.....7	R1330	CRJ10DF1802T	RES, CHIP(1608/1%/18Kohm)	1/10W 1608 F 18K OHM
.....7	R1332	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	R1333	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1334	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1335	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
.....7	R1336	CRJ10DF2491T	RES, CHIP	
.....7	R1337	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1338	CRJ10DF1002T	RES, CHIP(1608/1%/10Kohm)	10K /1/10W/F
.....7	R1339	CRJ10DF4702T	RES, CHIP(1608/1%/47Kohm)	
.....7	R1340	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1350	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1351	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1354	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1355	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1359	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1360	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1361	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1362	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1367	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1368	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1369	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1371	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1372	CRJ10DF2401T	RES, CHIP(1608/1%/2.4Kohm)	00200-0365
.....7	R1374	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1401	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1403	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1404	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1405	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1406	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1412	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1417	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1418	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1419	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1421	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1422	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1423	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1424	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1425	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1426	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1427	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1428	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1429	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1431	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1432	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1433	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1434	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1435	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1437	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1438	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1439	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1444	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1450	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1451	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1452	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1453	CRJ10DJ560T	RES, CHIP(1608/5%/56ohm)	00200-0226
.....7	R1454	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1455	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R1456	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1460	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1465	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1469	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	Ref#	Component	Description	Drawing No
.....7	R1471	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1472	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R1474	CRJ10DJ560T	RES, CHIP(1608/5%/56ohm)	00200-0226
.....7	R1475	CRJ10DJ820T	RES, CHIP(1608/5%/82ohm)	1608 SIZE
.....7	R1476	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1477	CRJ10DJ820T	RES, CHIP(1608/5%/82ohm)	1608 SIZE
.....7	R1478	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1501	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1503	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1504	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1506	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1507	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1508	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1514	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1515	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1516	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1518	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1523	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1524	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1525	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1526	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1527	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1528	CRJ06IJ0R0T	RES, CHIP(1005/5%/0ohm)	RM04JC0R
.....7	R1529	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1530	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1534	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1535	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1536	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R1538	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1539	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1540	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1541	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1544	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1545	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1548	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1549	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1550	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1551	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1562	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1563	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1577	CRJ10DJ100T	RES, CHIP(1608/5%/10ohm)	1608 SIZE
.....7	R1581	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1582	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1583	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1584	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1585	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1586	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1587	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1588	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1589	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1590	CRJ06IJ473T	RES, CHIP(1005/5%/47Kohm)	RM04JC47K
.....7	R1591	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1592	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1603	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1604	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1608	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1611	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1615	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1616	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1617	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1625	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1626	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1629	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1633	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1634	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1635	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1643	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1644	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1647	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1651	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1652	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1654	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1662	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1663	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1666	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1670	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1671	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE

...3		COP12505C	AVR171/230 DIGITAL PCB ASS'Y (EUR)	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....7	R1672	CRJ10DJ682T	RES, CHIP(1608/5%/6.8Kohm)	1608 SIZE
.....7	R1680	CRJ10DJ152T	RES, CHIP(1608/5%/1.5Kohm)	00200-0119
.....7	R1681	CRJ10DJ332T	RES, CHIP(1608/5%/3.3Kohm)	00200-0105
.....7	R1691	CRJ10DJ105T	RES, CHIP(1608/5%/1Mohm)	00200-0095
.....7	R1702	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R1703	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1704	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1705	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1706	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1707	CRJ10DJ124T	RES, CHIP(1608/5%/120Kohm)	1608
.....7	R1708	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1710	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1711	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1712	CRJ10DJ151T	RES, CHIP(1608/5%/150ohm)	
.....7	R1734	CRJ06IJ470T	RES, CHIP(1005/5%/47ohm)	RM04JC47R
.....7	R1737	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200
.....7	R1738	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200
.....7	R1739	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1741	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R1742	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200
.....7	R1743	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200
.....7	R1744	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1745	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1746	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....7	R1747	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1748	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1749	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1750	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R1753	CRJ06IJ102T	RES, CHIP(1005/5%/1Kohm)	RM04JC1K
.....7	R1770	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1771	CRJ10DJ330T	RES, CHIP(1608/5%/33ohm)	00200-0118
.....7	R1772	CRJ10DJ151T	RES, CHIP(1608/5%/150ohm)	
.....7	WF1501	CJP23GA299ZN	WAFER, FFC, SMD(23P-1.25mm, STRAIGHT)	
.....7	WF1502	CJP13GA299ZN	WAFER, FFC, SMD(13P-1.25mm, STRAIGHT)	
.....7	X1001	COX27000I100ST	X-TAL, SMD 3.2X2.5, 27.000MHz, 10PF	7V27000050
.....7	X1102	COX24000I080ST	X-TAL, SMD 3.2X2.5, 24.000MHz, 8PF	7V24000002
.....7	X1401	COX24576I120ST	X-TAL, SMD 3.2X2.5, 24.576MHz, 12PF	7V24500006
.....7	X1501	COX25000I120ST	X-TAL, SMD 3.2X2.5, 25.000MHz, 12PF	7V25000009
...3		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....6	C511	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....6	C512	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....6	C513	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....6	C514	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....6	C515	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....6	C725	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....6	C924	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....6	D964	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D965	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D967	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D968	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D969	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D970	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D971	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D972	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D975	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D976	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D980	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	D981	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....6	Q915	CVTMMBT5551	High Voltage NPN Transistors(SOT-23)	
.....6	Q916	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q917	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	Q937	CVTMMBT5401	High Voltage PNP Transistors(SOT-23)	
.....6	Q940	CVTMMBT5401	High Voltage PNP Transistors(SOT-23)	
.....6	Q960	CVTRT1N144C	T.R,RT1N144C(10K-47K)	RT1N144C
.....6	R500	CRJ10DJ103T	RES, CHIP(1608/5%/10Kohm)	00200-0096
.....6	R526	CRJ10DJ183T	RES, CHIP(1608/5%/18Kohm)	1608 SIZE
.....6	R527	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R528	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R529	CRJ10DJ183T	RES, CHIP(1608/5%/18Kohm)	1608 SIZE
.....6	R717	CRJ10DJ333T	RES, CHIP(1608/5%/33Kohm)	1608 SIZE
.....6	R791	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....6	R792	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....6	R933	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6	R953	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)	00200-0093

...3		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....6	R954	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)	00200-0093
.....6	R964	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)	00200-0093
.....6	R965	CRJ10DJ223T	RES, CHIP(1608/5%/22Kohm)	00200-0093
.....5	C501	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C502	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C503	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C504	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C505	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C506	CCKT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FK5
.....5	C507	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	CH UP025 B331K-A-B Z
.....5	C508	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	CH UP025 B331K-A-B Z
.....5	C509	CCKT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FK5
.....5	C510	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	CH UP025 B331K-A-B Z
.....5	C561	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C562	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C563	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C564	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C565	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C566	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C567	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C568	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C569	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C570	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C571	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C572	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C573	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C574	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C575	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C601	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C602	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C603	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C604	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C605	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C606	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C607	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C608	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C609	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C610	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C631	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C632	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C633	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C634	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C635	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C636	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C637	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C638	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C639	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C640	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C681	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C682	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C683	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C684	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C685	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C716	CCEA1CH220TC	CAP, ELECT(16V/22uF)	
.....5	C801	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C802	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C803	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C804	CCCT1H330JC	CAP, CERAMIC(50V/33pF/J)	CCC 1H 330J 05 FK5
.....5	C805	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C806	CCCT1H120JC	CAP, CERAMIC(50V/12pF/J)	CCC 1H 120J 04 FK5
.....5	C807	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C808	CCEA1JH470TC	CAP , ELECT(63V/47uF)	
.....5	C809	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C810	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C811	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C812	CCEA1HH221T	CAP, ELECT(50V/220uF)	
.....5	C813	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C814	CCEA1CH101TC	CAP, ELECT(16V/100uF)	
.....5	C815	CCKT1H331KB	CAP, CERAMIC(50V/330pF/K)	CKB 1H 331K 04 FK5
.....5	C816	CCBS1H331KBT	CAP , CERAMIC(330PF/50V)	CH UP025 B331K-A-B Z
.....5	C817	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C818	CCEA2AH100T	CAP, ELECT(100V/10uF)	
.....5	C819	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C820	CCBS1H271KBT	CAP , CERAMIC(270PF/50V)	CH UP025 B271K-A-B Z
.....5	C851	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033
.....5	C852	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033
.....5	C853	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033

...3		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	C854	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033
.....5	C855	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033
.....5	C856	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033
.....5	C857	CCEA1HH220T	CAP, ELECT(50V/22uF)	00107-1033
.....5	C900	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C901	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C910	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C914	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C917	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C918	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C919	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C936	CCEA1EH221T	CAP, ELECT(25V/220uF)	25V 220UF 8*11.5
.....5	C940	CCEA1AH471TC	CAP, ELECT(10V/470uF)	
.....5	C950	CCEA1AH471TC	CAP, ELECT(10V/470uF)	
.....5	C951	CCEA1HH470TC	CAP , ELECT (50V/47uF)	
.....5	C971	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C972	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C973	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C974	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C975	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C980	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C981	HCQI1H562JZT	CAP, MYLAR(50V/5600pF/J)	HPE562J2AP050T
.....5	C990	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C992	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C993	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C994	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C995	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C996	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	C997	HCQI1H473JZT	CAP, MYLAR(50V/0.047uF/J)	HPE473J2AP050T
.....5	D501	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D502	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D503	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D504	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D505	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D581	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D582	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D583	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D584	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D585	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D801	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D802	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D803	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D804	CVD1SS133MT	DIODE , SWITCHING	ISS133(T/B)
.....5	D954	CVD1N4003SRT	DIODE , RECT	1N4003 SRT
.....5	D955	CVD1N4003SRT	DIODE , RECT	1N4003 SRT
.....5	ET90	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	ET91	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	Q501	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q502	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q503	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q504	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q505	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q508	HVTKTD1302T	T.R	KTD1302-AT/PF
.....5	Q509	HVTKTD1302T	T.R	KTD1302-AT/PF
.....5	Q511	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q512	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q513	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q514	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q515	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q516	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q517	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q518	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q519	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q520	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q541	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q542	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q543	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q544	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q545	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q556	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q557	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q558	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q559	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q560	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q561	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q562	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q563	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA

...3		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	Q564	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q565	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q601	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q602	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q603	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q604	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q605	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q681	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q682	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q683	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q684	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q685	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q801	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q802	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q812	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q813	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q814	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q815	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q816	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q817	CVTKSA992FTA	PNP, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	
.....5	Q818	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q819	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q820	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q821	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q822	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q823	CVTKSC1845FTA	NPN, TO-92, LOW NOISE, HFE:300-600, FAILCHILD	KSC1845FTA
.....5	Q824	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q825	HVTKTC3198YT	T.R	KTC3198-Y-AT/PJ
.....5	Q911	HVTKTA1271YT	T.R	KTA1271-Y-AT/P
.....5	Q912	HVTKTA1271YT	T.R	KTA1271-Y-AT/P
.....5	Q913	HVTKTA1271YT	T.R	KTA1271-Y-AT/P
.....5	Q961	HVTKTA1024YT	T.R	KTA1024-Y-AT/P
.....5	R501	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R502	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R503	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R504	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R505	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R506	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R507	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R508	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R509	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R510	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R511	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R512	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R513	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R514	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R515	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R516	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R517	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R518	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R519	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R520	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R521	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R522	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R523	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R524	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R525	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R531	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R532	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R533	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R534	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R535	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R536	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R537	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R538	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R539	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R540	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R541	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R542	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R543	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R544	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R545	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R556	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R557	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R558	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R559	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R560	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	

...3		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	R561	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R562	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R563	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R564	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R565	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R566	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R567	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R568	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R569	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R570	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R571	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R572	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R573	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R574	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R575	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R576	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R577	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R578	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R579	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R580	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R581	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R582	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R583	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R584	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R585	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R586	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R587	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R588	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R589	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R590	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R591	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R592	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R593	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R594	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R595	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R596	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R597	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R598	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R599	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R600	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R601	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R602	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R603	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R604	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R605	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R606	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R607	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R608	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R609	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R610	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R611	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R612	CRD20TJ100T	RES, CARBON(1/5W,10ohm,J)	
.....5	R631	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R632	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R633	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R634	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R635	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R636	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R637	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R638	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R639	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R640	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R646	CRD25FJ3R3T	RES , CARBON	
.....5	R647	CRD25FJ3R3T	RES , CARBON	
.....5	R648	CRD25FJ3R3T	RES , CARBON	
.....5	R649	CRD25FJ3R3T	RES , CARBON	
.....5	R650	CRD25FJ3R3T	RES , CARBON	
.....5	R651	CRD25FJ3R3T	RES , CARBON	
.....5	R652	CRD25FJ3R3T	RES , CARBON	
.....5	R653	CRD25FJ3R3T	RES , CARBON	
.....5	R654	CRD25FJ3R3T	RES , CARBON	
.....5	R655	CRD25FJ3R3T	RES , CARBON	
.....5	R666	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R667	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R668	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R669	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R670	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	

		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	R671	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R672	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R673	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R674	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R675	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R676	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	
.....5	R677	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	
.....5	R678	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	
.....5	R679	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	
.....5	R680	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	
.....5	R681	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R682	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R683	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R684	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R685	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R686	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R687	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R688	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R689	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R690	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R696	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R697	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R698	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R699	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R700	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R718	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R719	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R720	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R721	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R722	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R723	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R724	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R725	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R726	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R727	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R728	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R729	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R730	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R731	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R732	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R733	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R734	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R735	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R736	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R737	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R738	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R739	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R740	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R741	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R742	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R743	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R744	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R745	CRG2SANJR47RT	RES, M-OXIDE FILM(2W/0.47ohm)	
.....5	R746	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R747	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R771	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R772	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R773	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R774	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R775	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R776	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R777	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R781	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R782	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R783	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R784	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R785	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R786	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R787	CRD20TJ750T	RES, CARBON(1/5W,75ohm,J)	
.....5	R800	CRD20TJ102T	RES, CARBON(1/5W,1Kohm,J)	
.....5	R801	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R802	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R803	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R804	CRD20TJ562T	RES, CARBON(1/5W,5.6Kohm,J)	
.....5	R805	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R807	CRD20TJ472T	RES, CARBON(1/5W,4.7Kohm,J)	
.....5	R808	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	

		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	R809	CRD25TJ182T	RES, CARBON(1/4W,1.8Kohm,J)	
.....5	R812	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R813	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R814	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R815	CRD25TJ470T	RES, CARBON(1/4W,47ohm,J)	
.....5	R817	CRD25FJ3R3T	RES , CARBON	
.....5	R818	CRD25FJ3R3T	RES , CARBON	
.....5	R819	CRD25FJ3R3T	RES , CARBON	
.....5	R820	CRD25FJ3R3T	RES , CARBON	
.....5	R821	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R822	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R823	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R824	CRD25FJ180T	RES , CARBON (18 OHM) NONFLAMMABLE	
.....5	R830	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R831	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R832	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R833	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R834	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R835	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R836	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R837	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R838	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R839	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R840	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R841	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R842	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R843	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R844	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R845	CRD20TJ561T	RES, CARBON(1/5W,560ohm,J)	
.....5	R848	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R849	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R850	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R851	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R852	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R853	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R854	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R855	CRD20TJ152T	RES, CARBON(1/5W,1.5Kohm,J)	
.....5	R856	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R857	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R858	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R859	CRD20TJ101T	RES, CARBON(1/5W,100ohm,J)	
.....5	R860	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R861	CRD20TJ271T	RES, CARBON(1/5W,270ohm,J)	
.....5	R862	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R863	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R870	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R871	CRD20TJ433T	RES, CARBON(1/5W,43Kohm,J)	43K OHM 1/5W J
.....5	R872	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R873	CRD20TJ471T	RES, CARBON(1/5W,470ohm,J)	
.....5	R874	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R875	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R876	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R877	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R878	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R879	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R880	CRD20TJ361T	RES, CARBON(1/5W,360ohm,J)	360 OHM 1/5W J
.....5	R882	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R883	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R884	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R885	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R886	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R887	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R888	CRD20TJ122T	RES, CARBON(1/5W,1.2Kohm,J)	
.....5	R891	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R892	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R893	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R894	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R895	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R896	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R897	CRD20TJ391T	RES, CARBON(1/5W,390ohm,J)	
.....5	R901	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R908	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)	
.....5	R909	CRD20TJ333T	RES, CARBON(1/5W,33Kohm,J)	
.....5	R917	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
.....5	R918	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
.....5	R919	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	
.....5	R920	CRD25TJ393T	RES, CARBON(1/4W,39Kohm,J)	

		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	R921	CRG1SANJ220RT	RES, M-OXIDE FILM(1W/22ohm)	
.....5	R922	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R923	CRG1SANJ1R0RT	RES, M-OXIDE FILM(1W/1ohm)	
.....5	R924	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)	
.....5	R925	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)	
.....5	R926	CRD20TJ473T	RES, CARBON(1/5W,47Kohm,J)	
.....5	R928	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R929	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R930	CRD20TJ222T	RES, CARBON(1/5W,2.2Kohm,J)	
.....5	R941	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R942	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R943	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R944	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R945	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R946	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R947	CRD20TJ103T	RES, CARBON(1/5W,10Kohm,J)	
.....5	R951	CRD20TJ1R0T	RES, CARBON(1/5W,1ohm,J)	
.....5	R952	CRD20TJ223T	RES, CARBON(1/5W,22Kohm,J)	
.....5	R958	CRD20TJ563T	RES, CARBON(1/5W,56Kohm,J)	
.....5	R959	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)	
.....5	R960	CRD20TJ104T	RES, CARBON(1/5W,100Kohm,J)	
.....5	R961	CRD20TJ331T	RES, CARBON(1/5W,330ohm,J)	
.....5	R962	CRD20TJ273T	RES, CARBON(1/5W,27Kohm,J)	
.....5	R990	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R993	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R994	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R995	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R996	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R997	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	R998	CRD20TJ564T	RES, CARBON(1/5W,560Kohm,J)	
.....5	R999	CRG1SANJ100RT	RES, M-OXIDE FILM(1W/10ohm)	
.....5	VR81	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
.....5	VR82	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
.....5	VR83	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
.....5	VR84	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
.....5	VR85	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
.....5	VR86	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
.....5	VR87	CVN12A221B03T	RES , SEMI FIXED (220 OHM)	NVZ6TLTAB221
....4		CMYAVR1710	HEAT SINK ASS'Y	
.....5		CFNRDM6025S-150	MOTOR , FAN (60X60X25, 150mm)12V, 0.1A	
.....5		CHD1A012R	SCREW , SPECIAL	
.....5		CHD1A036R	SCREW , SPECIAL	
.....5		CHD4A012R	SCREW , SPECIAL	
.....5		CMD1A810	BRACKET , PCB	
.....5		CMD1A811	BRACKET , PCB L	
.....5		CMD1A812	BRACKET , PCB R	
.....5		CMD1A828	BRACKET , FAN	
.....5		CMY1A389	HEAT SINK AVR1710	
.....5		CTB3+8JR	SCREW	00M51260308M0
.....5	Q652	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q653	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q654	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q655	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q657	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q658	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q659	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q660	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q661	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q670	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q803	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q804	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q805	CVT2SD2390P43M	TR , POWER (MICA 43 TYPE)	2SD2390P
.....5	Q807	CVT2SB1560P43M	TR , POWER (MICA 43 TYPE)	2SB1560P43M
.....5	Q851	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
.....5	Q852	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
.....5	Q853	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
.....5	Q854	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
.....5	Q855	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
.....5	Q856	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
.....5	Q857	HVTKTD600KGR	T.R , BIAS	KTD600K-Y-U/PH
....4	BK90	CMD1A629	BRACKET , PCB	
....4	BK91	CMD1A629	BRACKET , PCB	
....4	BN14	CWB1D00718088	WIRE ASS'Y (2.5MM, 180MM, 7PIN, DUAL-DIPPING TYPE)	
....4	BN15	CWB1D00915088	WIRE ASS'Y (2.5mm, 150mm, 9pin, Dual-dipping type)	
....4	BN20	CWB3FE03320UZ	WIRE ASS'Y (3P, 320mm)	
....4	BN25	CWB1F002120ZZ	WIRE ASS'Y(#18,2P,120mm, 3.96mm Dual-dipping type)	
....4	CN11	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R

		COP12507B	AVR171/1710 MAIN PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
....4	CN53	CJP27GI281Z	PIN HEADER (27P,1.25mm,STRAIGHT,B-TO-B)	
....4	CN61	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN62	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN63	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN64	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN65	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN66	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN67	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN89	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	CN93	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	C915	CCET63VLP332NC	CAP , ELECT (3300uF/63V, 85'C)	
....4	C916	CCET63VLP332NC	CAP , ELECT (3300uF/63V, 85'C)	
....4	JK89	CJJ4M040Z	JACK , BOARD (SW)	RCA-107B-01
....4	JK90	CJJ4M040Z	JACK , BOARD (SW)	RCA-107B-01
....4	JK91	CJJ5R006Z	TERMINAL , SPEAKER	JB-602A-08
....4	JK92	CJJ5Q012Z	TERMINAL , SPEAKER	JB-801A-11
....4	JW51	CWE5202080A	WIRE ASS'Y (1P, 80MM,BLK,#22)	
....4	L501	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	L502	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	L503	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	L504	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	L505	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	L506	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	L507	CLEY0R5KAK	COIL , SPEAKER(0.5uH)	0.5UH K
....4	Q858	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q871	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q872	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q874	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q875	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q876	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q877	HVTKTA1360Y	T.R , PRE DRIVE	KTA1360-Y-U/PH
....4	Q881	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	Q882	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	Q883	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	Q884	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	Q885	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	Q886	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	Q887	HVTKTC3423Y	T.R , PRE DRIVE	KTC3423-Y-U/PH
....4	R937	CRF5EKR10HS	RES , CEMENT (SMALL SIZE)	
....4	R938	CRF5EKR10HS	RES , CEMENT (SMALL SIZE)	
		COP12508C	**AVR171/230 AUDIO I/O PCB ASS'Y**	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
.....7	C305	CCUS1H561JA	CAP, CHIP(1608, 50V/560pF)	
.....7	C306	CCUS1H561JA	CAP, CHIP(1608, 50V/560pF)	
.....7	C307	CCUS1H561JA	CAP, CHIP(1608, 50V/560pF)	
.....7	C308	CCUS1H561JA	CAP, CHIP(1608, 50V/560pF)	
.....7	C309	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
.....7	C310	CCUS1H101JA	CAP, CHIP(1608, 50V/100pF)	
.....7	C403	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C404	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	R423	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R424	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....6		CIP12508CTSMD	AVR171/230 AUDIO I/O PCB TOP SMD ASS'Y	
.....7	CN51	CJP40GA193ZY	WAFER, FFC, SMD(40P-1mm, STRAIGHT)	
.....7	CN52	CJP13GA193ZY	WAFER, FFC, SMD(13P-1mm, STRAIGHT)	
.....7	C301	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C302	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C303	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C304	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C311	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C312	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C313	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C314	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C315	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C316	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C317	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C318	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C321	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C322	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C323	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C324	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C325	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C326	CCUS1H220JA	CAP, CHIP(1608, 50V/22pF)	
.....7	C351	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	
.....7	C352	CCUS1H221JA	CAP, CHIP(1608, 50V/220pF)	

		COP12508C	AVR171/230 AUDIO I/O PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....7	C354	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C371	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C372	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C401	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C402	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C407	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C408	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C413	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C414	CCUS1H151JA	CAP, CHIP(1608, 50V/150pF)	
.....7	C513	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	C514	CCUS1H104KC	CAP, CHIP(1608, 50V/0.1uF)	
.....7	D371	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	D372	CVD1SS355T	DIODE , CHIP , SWITCHING	1SS355(T/B)
.....7	IC31	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	IC41	CVIBD3812F	I.C , VIDEO 2CH	BD3812F-E2
.....7	IC42	CVINJM4580CG	I.C , DUAL OPAMP(SOP-8P)	
.....7	IC43	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	IC51	CVINJU72340AFH3	I.C , INPUT WITH 8CH VOLUME(52P LQFP)	
.....7	IC52	CVINJM8080G	I.C , DUAL OPAMP(SOP-8P)	
.....7	IC53	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	IC54	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	IC55	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	IC56	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	IC57	HVTKTC812TB	T.R , CHIP(TS6)	KTC812T-B-RTK/P
.....7	PCB1	CUP12508Z	PCB , VOLUME AVR1710(216 X 181,FR4/2L)	
.....7	Q531	CVTINC2001AC1	T.R , MUTE	INC2001AC1
.....7	R301	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R302	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R303	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R304	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R305	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R306	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R307	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R308	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R313	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R314	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R351	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R352	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R353	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R354	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R355	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R356	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R357	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R358	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R359	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R360	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R361	CRJ10DJ472T	RES, CHIP(1608/5%/4.7Kohm)	00200-0087
.....7	R373	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R380	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R381	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R401	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R402	CRJ10DJ101T	RES, CHIP(1608/5%/100ohm)	00200-0100
.....7	R403	CRJ10DJ182T	RES, CHIP(1608/5%/1.8Kohm)	00200-0200
.....7	R411	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R412	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R413	CRJ10DJ122T	RES, CHIP(1608/5%/1.2Kohm)	00200-0092
.....7	R414	CRJ10DJ122T	RES, CHIP(1608/5%/1.2Kohm)	00200-0092
.....7	R415	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R416	CRJ10DJ102T	RES, CHIP(1608/5%/1Kohm)	00200-0094
.....7	R417	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R418	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R419	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R420	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R421	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R422	CRJ10DJ104T	RES, CHIP(1608/5%/100Kohm)	00200-0097
.....7	R501	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R502	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R503	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R504	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R505	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R506	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R507	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R511	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R512	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R513	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R514	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R515	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	

		COP12508C	AVR171/230 AUDIO I/O PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....7	R516	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R517	CRJ10DJ0R0T	RES, CHIP(1608/5%/0ohm)	00200-0090
.....7	R521	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R522	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R523	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R531	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R532	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R533	CRJ10DJ271T	RES, CHIP(1608/5%/270ohm)	1608 SIZE
.....7	R534	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R535	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R541	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R542	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R543	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R551	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R552	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R553	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R561	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R562	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R563	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....7	R571	CRJ10DJ473T	RES, CHIP(1608/5%/47Kohm)	00200-0185
.....7	R572	CRJ10DJ561T	RES, CHIP(1608/5%/560ohm)	00200-0225
.....7	R573	CRJ10DJ392T	RES, CHIP(1608/5%/3.9Kohm)	
.....5	C331	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C332	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C333	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C336	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C337	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C338	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C339	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C340	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C341	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C342	CCEA1HH101T	CAP, ELECT(50V/100uF)	50V 100UF 8*11.5
.....5	C343	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C344	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C355	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C356	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C411	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C412	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C415	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C416	CCEA1HH100TC	CAP, ELECT(50V/10uF)	
.....5	C501	CCEA1EH101TC	CAP, ELECT(25V/100uF)	
.....5	C502	CCEA1EH101TC	CAP, ELECT(25V/100uF)	
.....5	C531	CCEA1CH470TC	CAP, ELECT	
....4	CN53	CJP27HJ282Z	PIN SOCKET (27P,1.25mm,ANGLE,B-TO-B)	
....4	JK31	CJJ4R019W	TERMINAL , IN/OUT	RCA-601DA(II)-05
....4	TUN1	CNVMW104MV1R78	MODULE , TUNER (AM/FM WITH RDS)	
		COP12509C	AVR171/230 SMPS PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....6	C903	CCUC1H474KC	CAP, CHIP(2012, 50V/0.47uF)	
.....6	C904	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)	
.....6	C905	CCUP3A102KC	CAP, CHIP(3216, 1KV/1000pF, X7R)	
.....6	C906	CCUC1H222KC	CAP, CHIP(2012, 50V/2200pF)	
.....6	C907	CCUC1H470JA	CAP, CHIP(2012, 50V/47pF)	
.....6	C908	CCUP3A221JA	CAP, CHIP(3216, 1KV/220pF, X7R)	
.....6	C909	CCUC1H821JA	CAP, CHIP(2012, 50V/820pF, NPO)	
.....6	C910	CCUP3A222KC	CAP, CHIP(3216, 1KV/2200pF, X7R)	
.....6	C912	CCUP3A470JA	CAP, CHIP(3216, 1KV/47pF, X7R)	
.....6	C913	CCUC1E225KC	CAP, CHIP(2012, 25V/2.2uF, X7R)	
.....6	C914	CCUC1H472KC	CAP, CHIP(2012, 50V/4700pF)	
.....6	C915	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)	
.....6	C917	CCUC1H472KC	CAP, CHIP(2012, 50V/4700pF)	
.....6	C919	CCUP3A470JA	CAP, CHIP(3216, 1KV/47pF, X7R)	
.....6	C923	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C924	CCUC1H222KC	CAP, CHIP(2012, 50V/2200pF)	
.....6	C925	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C926	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C927	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)	
.....6	C934	CCUC1H105KC	CAP, CHIP(2012, 50V/1uF)	
.....6	C945	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C956	CCUP3A102KC	CAP, CHIP(3216, 1KV/1000pF, X7R)	
.....6	C957	CCUP3A102KC	CAP, CHIP(3216, 1KV/1000pF, X7R)	
.....6	C958	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)	
.....6	C959	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C960	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)	
.....6	C961	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	

		COP12509C	AVR171/230 SMPS PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....6	C962	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)	
.....6	C963	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C964	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)	
.....6	C967	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C968	CCUC1H103KC	CAP, CHIP(2012, 50V/0.01uF)	
.....6	C969	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)	
.....6	C970	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)	
.....6	C971	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)	
.....6	C972	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)	
.....6	C973	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)	
.....6	C974	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)	
.....6	C975	CCUC1H224KC	CAP, CHIP(2012, 50V/0.22uF)	
.....6	C976	CCUC1H223KC	CAP, CHIP(2012, 50V/0.022uF, X7R)	
.....6	C977	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C978	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	C979	CCUC1H104KC	CAP, CHIP(2012, 50V/0.1uF)	
.....6	D901	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)	
.....6	D902	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)	
.....6	D903	CVDUS1M	DIODE , ULTRA FAST RECTIFIER	
.....6	D904	CVDUS1M	DIODE , ULTRA FAST RECTIFIER	
.....6	D906	CVDUS1M	DIODE , ULTRA FAST RECTIFIER	
.....6	D907	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D908	CVDMM1Z24H	DIODE , ZENER(24V/0.5W, SOD-123)	
.....6	D909	CVDMM1Z20H	DIODE , ZENER(20V/0.5W, SOD-123)	
.....6	D911	CVDUS1M	DIODE , ULTRA FAST RECTIFIER	
.....6	D912	CVDMM1Z27H	DIODE , ZENER(27V/0.5W, SOD-123)	
.....6	D913	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)	
.....6	D914	CVDMM1Z18H	DIODE , ZENER(18V/0.5W, SOD-123)	
.....6	D917	CVDMM1Z16H	DIODE , ZENER(16V/0.5W, SOD-123)	
.....6	D918	CVDMM1Z16H	DIODE , ZENER(16V/0.5W, SOD-123)	
.....6	D922	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D924	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D925	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D926	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D927	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D929	CVDMM1Z12H	DIODE , ZENER(12V/0.5W, SOD-123)	
.....6	D932	CVDS1M	DIODE, SURFACE MOUNT RECTIFIER(1000V/1A)	
.....6	D935	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D936	CVD1N4448W	DIODE , FAST SWITCHING(0.5W, SOD-123)	
.....6	D944	CVDUS1M	DIODE , ULTRA FAST RECTIFIER	
.....6	D950	CVDMM1Z15H	DIODE , ZENER(15V/0.5W, SOD-123)	
.....6	IC93	CVIICE2QS02G	I.C , PWM CONTROLLER(PG-DSO-8)	
.....6	IC94	CVIKA431SAMF2	I.C , SHUNT REGULATOR(SOT-23F)	
.....6	IC95	CVIKA431SAMF2	I.C , SHUNT REGULATOR(SOT-23F)	
.....6	IC96	CVIKA431SAMF2	I.C , SHUNT REGULATOR(SOT-23F)	
.....6	L922	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....6	L923	CLZ9Z014Z	FERRITE CHIP BEAD(4516/60R)	HCB4516KF-600T60
.....6	Q909	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C
.....6	Q915	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C
.....6	Q916	CVTRT1N141C	T.R,RT1N141C(10K-10K)	RT1N141C
.....6	R901	CRJ18AJ392T	RES, CHIP(2012/5%/3.9Kohm)	0805 5%
.....6	R902	CRJ18AJ153T	RES, CHIP(2012/5%/15Kohm)	0805 5%
.....6	R904	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)	
.....6	R906	CRJ18AJ390T	RES, CHIP(2012/5%/39ohm)	
.....6	R907	CRJ01HJ683T	RES, CHIP(6432/5%/68Kohm)	
.....6	R910	CRJ18AJ330T	RES, CHIP(2012/5%/33ohm)	
.....6	R911	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000
.....6	R912	CRJ18AJ112T	RES, CHIP(2012/5%/1.1Kohm)	
.....6	R915	CRJ18AJ683T	RES, CHIP(2012/5%/68Kohm)	0805 5%
.....6	R916	CRJ18AJ153T	RES, CHIP(2012/5%/15Kohm)	0805 5%
.....6	R918	CRJ18AJ203T	RES, CHIP(2012/5%/20Kohm)	
.....6	R919	CRJ18AJ103T	RES, CHIP(2012/5%/10Kohm)	0805 5%
.....6	R921	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)	
.....6	R922	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001
.....6	R923	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%
.....6	R924	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)	
.....6	R925	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)	
.....6	R926	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)	
.....6	R927	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)	
.....6	R928	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001
.....6	R929	CRJ14CJ125T	RES, CHIP(3216/5%/1.2Mohm)	
.....6	R930	CRJ18AF4702T	RES, CHIP(2012/1%/47Kohm)	
.....6	R931	CRJ18AJ824T	RES, CHIP(2012/5%/820Kohm)	
.....6	R932	CRJ14CJ4R7T	RES, CHIP(3216/5%/4.7ohm)	3216
.....6	R933	CRJ18AJ181T	RES, CHIP(2012/5%/180ohm)	0805 5%
.....6	R934	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%
.....6	R935	CRJ18AJ220T	RES, CHIP(2012/5%/22ohm)	0805 5%

		COP12509C	AVR171/230 SMPS PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....6	R936	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%
.....6	R937	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%
.....6	R938	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%
.....6	R939	CRJ18AJ470T	RES, CHIP(2012/5%/47ohm)	0805 5%
.....6	R940	CRJ18AJ153T	RES, CHIP(2012/5%/15Kohm)	0805 5%
.....6	R941	CRJ18AJ622T	RES, CHIP(2012/5%/6.2Kohm)	
.....6	R942	CRJ18AJ222T	RES, CHIP(2012/5%/2.2Kohm)	0805 5%
.....6	R943	CRJ18AJ622T	RES, CHIP(2012/5%/6.2Kohm)	
.....6	R944	CRJ18AJ472T	RES, CHIP(2012/5%/4.7Kohm)	0805 5%
.....6	R945	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%
.....6	R946	CRJ18AF1002T	RES, CHIP(2012/1%/10Kohm)	
.....6	R947	CRJ18AF1002T	RES, CHIP(2012/1%/10Kohm)	
.....6	R948	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)	
.....6	R950	CRJ18AJ224T	RES, CHIP(2012/5%/220Kohm)	
.....6	R952	CRJ01HJ101T	RES, CHIP(6432/5%/100ohm)	
.....6	R953	CRJ18AF1502T	RES, CHIP(2012/1%/15Kohm)	
.....6	R954	CRJ18AJ472T	RES, CHIP(2012/5%/4.7Kohm)	0805 5%
.....6	R955	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)	
.....6	R956	CRJ18AJ473T	RES, CHIP(2012/5%/47Kohm)	0805 5%
.....6	R957	CRJ18AJ181T	RES, CHIP(2012/5%/180ohm)	0805 5%
.....6	R958	CRJ18AF1002T	RES, CHIP(2012/1%/10Kohm)	
.....6	R959	CRJ18AF5601T	RES, CHIP(2012/1%/5.6Kohm)	
.....6	R960	CRJ01HJ752T	RES, CHIP(6432/5%/7.5Kohm)	
.....6	R961	CRJ18AJ103T	RES, CHIP(2012/5%/10Kohm)	0805 5%
.....6	R962	CRJ18AF1602T	RES, CHIP(2012/1%/16Kohm)	
.....6	R963	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)	
.....6	R966	CRJ18AJ220T	RES, CHIP(2012/5%/22ohm)	0805 5%
.....6	R967	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001
.....6	R968	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000
.....6	R969	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000
.....6	R970	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001
.....6	R971	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001
.....6	R972	CRJ18AJ100T	RES, CHIP(2012/5%/10ohm)	00200-0001
.....6	R973	CRJ01HJ221T	RES, CHIP(6432/5%/220ohm)	
.....6	R974	CRJ14CJ154T	RES, CHIP(3216/5%/150Kohm)	
.....6	R975	CRJ14CJ154T	RES, CHIP(3216/5%/150Kohm)	
.....6	R976	CRJ14CJ154T	RES, CHIP(3216/5%/150Kohm)	
.....6	R977	CRJ18AF1503T	RES, CHIP(2012/1%/150Kohm)	
.....6	R978	CRJ01HJ221T	RES, CHIP(6432/5%/220ohm)	
.....6	R979	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)	
.....6	R980	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)	
.....6	R981	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)	
.....6	R982	CRJ14CJ474T	RES, CHIP(3216/5%/470Kohm)	
.....6	R984	CRJ18AJ470T	RES, CHIP(2012/5%/47ohm)	0805 5%
.....6	R985	CRJ18AJ182T	RES, CHIP(2012/5%/1.8Kohm)	
.....6	R986	CRJ18AJ561T	RES, CHIP(2012/5%/560ohm)	0805 5%
.....6	R988	CRJ18AJ0R0T	RES, CHIP(2012/5%/0ohm)	00200-0000
.....6	R989	CRJ18AJ182T	RES, CHIP(2012/5%/1.8Kohm)	
.....6	R990	CRJ01HJ100T	RES , CHIP	2515 5% 100HM
.....6	R991	CRJ18AJ102T	RES, CHIP(2012/5%/1Kohm)	0805 5%
.....6	R992	CRJ14CJ0R0T	RES, CHIP(3216/5%/0ohm)	
.....6	R993	CRJ01HJ752T	RES, CHIP(6432/5%/7.5Kohm)	
.....6	R994	CRJ01HJ361T	RES, CHIP(6432/5%/360ohm)	
.....6	R995	CRJ01HJ361T	RES, CHIP(6432/5%/360ohm)	
.....6	R996	CRJ18AJ470T	RES, CHIP(2012/5%/47ohm)	0805 5%
.....6	R997	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)	
.....6	R999	CRJ14CF5602T	RES, CHIP(3216/1%/56Kohm)	
.....5	C901	C3A206	WIRE, COPPER(D0.6)	SN95/PB5 , 0.6
.....5	C911	CCKT3A102KBL	CAP, CERAMIC(1kV/1000pF/K)	EKR3A102K05FK5
.....5	C918	CCEA1HH100TCS	CAP, ELECT(50V/10uF),105'C	
.....5	C920	CCEA1HH470TCS	CAP, ELECT(50V/47uF),105'C	
.....5	C921	CCEA1HH220TCS	CAP, ELECT(50V/22uF),105'C	
.....5	C929	CCEA0JH471TCS	CAP, ELECT(6.3V/470uF),105'C	
.....5	C932	CCEA1HH470TCS	CAP, ELECT(50V/47uF),105'C	
.....5	C944	CCEA0JH102TCS	CAP, ELECT(6.3V/1000uF),105'C	
.....5	C949	CCEA2AH100TCS	CAP, ELECT(100V/10uF),105'C	
.....5	C953	CCEA1EH101TCS	CAP, ELECT(25V/100uF),105'C	
.....5	C955	CCEA1HH220TCS	CAP, ELECT(50V/22uF),105'C	
.....5	C984	CCEA0JH471TCS	CAP, ELECT(6.3V/470uF),105'C	
.....5	D910	HVDUF4007T	DIODE , SCHOTTKY	UF4007
.....5	D916	CVDZJ20BT	DIODE , ZENER ,1/2W, 20V	ZJ20BT(26MM T/B)
.....5	D919	HVD1N4007T	DIODE	1N4007T
.....5	D920	HVDUF4004T	DIODE , SCHOTTKY	UF4004
.....5	D921	HVD11EQ06T	DIODE , SCHOTTKY (60V/1A)	11EQ06
.....5	D928	CVDZJ20BT	DIODE , ZENER ,1/2W, 20V	ZJ20BT(26MM T/B)
.....5	D933	CVDSF26	DIODE , SUPER FAST RECTIFIER	
.....5	D937	CVDSF26	DIODE , SUPER FAST RECTIFIER	

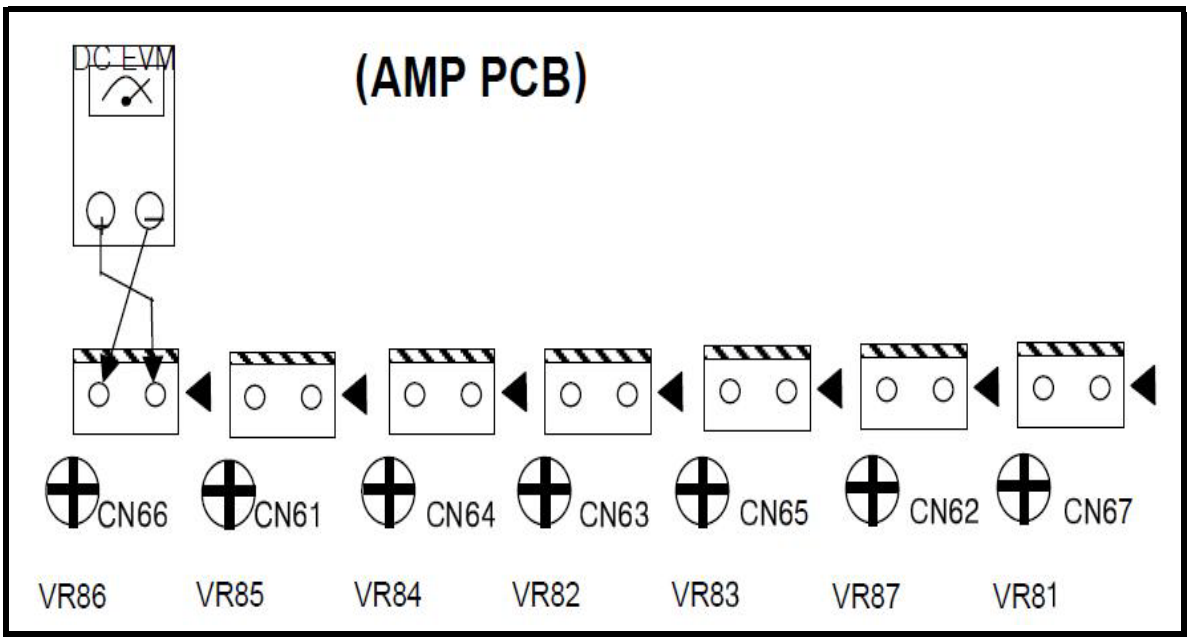
		COP12509C	AVR171/230 SMPS PCB ASS'Y	
Level	Ref#	Component	Description	Drawing No
.....5	D943	HVDUF4004T	DIODE , SCHOTTKY	UF4004
.....5	ET91	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	ET92	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	ET93	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	ET95	CJT1A026	PLATE , EARTH(TRONIC ELECTRONICS)	
.....5	FH91	KJCFC5S	HOLDER , FUSE	
.....5	FH92	KJCFC5S	HOLDER , FUSE	
.....5	IC99	CVIL78L24AB	IC, REGULATOR (24V, TO-92L)	L78L24ABZ-TR
.....5	Q902	HVTKSA708YT	T.R	KSA708-YTA
.....5	Q903	HVTKSA708YT	T.R	KSA708-YTA
.....5	Q914	HVTKSA708YT	T.R	KSA708-YTA
.....5	RX93	CRO50TJ155T	RES , SURGE ,(1.5M OHM, 5%, 1/2W, PRC TYPE)	
....4		C4B120122	TUBE , UL	
....4	BD91	CLZ9H002Z	BEAD , CORE(100MHz MIN 120ohm)	
....4	BN65	CWB1C01525047	WIRE ASSY (LOCK, 15P, 250mm, 2.0mm)	
....4	CN20	CJP03GA90ZY	WAFER,YW396-03B(3.96mm)	
....4	CN66	CJP07GI236ZW	LOCKING TYPE , STRAIGHT WAFER , 2MM	A2008WV0-7P
....4	CN90	CJP02KA060ZY	WAFER, 2P, 3.96mm	
....4	CX91	CCQF2E224KZFS	CAP , X2(275VAC, 0.22uF, 12mm, SEORYONG)	
....4	CX92	CCQF2E334KZES	CAP , X2(275VAC, 0.33uF, 15mm, SEORYONG)	
....4	CY91	CCKDHS152ME	CAP , CERAMIC (400V Y-CAP)	SDE1152M10FF7
....4	CY92	CCKDHS152ME	CAP , CERAMIC (400V Y-CAP)	SDE1152M10FF7
....4	CY93	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	SDE102M10FF7
....4	CY94	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	SDE102M10FF7
....4	CY95	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	SDE102M10FF7
....4	CY96	CCKDHS152ME	CAP , CERAMIC (400V Y-CAP)	SDE1152M10FF7
....4	C902	CCET450VKM220NCS	CAP, ELECT(450V/22uF),105'C,13X20	
....4	C928	CCEA1JGF222ECS	CAP, ELECT(63V/2200uF/105'C), 18X40	
....4	C930	CCET450VK3J151NKS	CAP , ELECT(K3J, 150uF/450V, 25 X 40)	
....4	C933	CCEA1EH471ECS	CAP, ELECT(25V/470uF),105'C	
....4	C936	CCEA1JGF222ECS	CAP, ELECT(63V/2200uF/105'C), 18X40	
....4	C937	CCEA1JH471ECS	CAP , ELECT(63V/470uF),105'C	
....4	C939	CCEA1JH471ECS	CAP , ELECT(63V/470uF),105'C	
....4	C941	CCEA1AGF562ECS	CAP, ELECT(10V/5600uF/105'C), 13X30	
....4	C943	CCEA1AH102ECS	CAP, ELECT(10V/1000uF),105'C	
....4	DB91	CVDRS1005M	DIODE , BRIDGE (600V/10A,RS-10M)	
....4	D934	CVD31DQ06FC6	DIODE , SB (60V, 3A, DO-201)	
....4	D938	HVD31DQ06H	DIODE	31DQ06H
....4	D939	HVD31DQ06H	DIODE	31DQ06H
....4	HS91	CVTSPW17N80C3ZA	FET HEAT SINK ASS'Y (AVR170, CMY2A327ZA)	
.....5		CMD1A720	BRACKET , THERMAL SENSOR	
.....5		CMX1A164	INSULATOR , SILICON	QRW-7500
.....5		CMY2A327ZA-V2	HEAT SINK	
.....5		CRTST22110070WZA	PROTECTOR , THERMAL ASS'Y	
......6		CRTST22110070W	PROTECTOR , THERMAL (110'C, 70mm)	
......6		CRTST22110070WA	PROTECTOR , THERMAL ASS'Y (110'C, 70mm)	
.....5		CTB3+10JR	SCREW	
.....5		CVTSPW17N80C3	F.E.T , SPW17N80C3 (800V/17A, PG-TO247-3)	
....4	HS92	CVDFCU20A40XA	DIODE HEAT SINK ASS'Y (CMY3A222)	
.....5		CMY3A222-V1	HEAT SINK	
.....5		CTB3+10JR	SCREW	
.....5		CVDFCU20A40	DIODE , FAST RECOVERY (400V/20A,TO-220)	
.....5		K8AYG6260	COMPOUND , SILICONE	
....4	HS93	CVDFCU20A40XA	DIODE HEAT SINK ASS'Y (CMY3A222)	
.....5		CMY3A222-V1	HEAT SINK	
.....5		CTB3+10JR	SCREW	
.....5		CVDFCU20A40	DIODE , FAST RECOVERY (400V/20A,TO-220)	
.....5		K8AYG6260	COMPOUND , SILICONE	
....4	HS94	CVINJM7812FAXA	HEAT SINK ASS'Y(HVINJM7812FA+CMY2A223)	
.....5		CMY2A223-V2	HEAT SINK	
.....5		CTB3+8JR	SCREW	00M51260308M0
.....5		HVINJM7812FA	I.C , REGULATOR	NJM7812FA
.....5		K8AYG6260	COMPOUND , SILICONE	
....4	IC91	CVIOB2358LAP	I.C , PWM	
....4	IC92	CVIICE2B265	IC , COOLSET	ICE2B265
....4	IC98	HVINJM7912FA	I.C , REGULATOR	NJM7912FA
....4	LF91	CLZ9Z135Z	FILTER , LINE (SQE2930, 8mH)	
....4	LF92	CLZ9Z135Z	FILTER , LINE (SQE2930, 8mH)	
....4	LF93	CLZ9Z121Z	LINE, FILTER (150uH, RING-616)	
....4	L924	CLZ9Z090Z	COIL , CHOKE(7UH)	
....4	L925	CLZ9Z090Z	COIL , CHOKE(7UH)	
....4	L928	CLZ9Z090Z	COIL , CHOKE(7UH)	
....4	PC91	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	PC92	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	PC93	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	PC94	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	PC95	CVIEL817B	I.C , PHOTO COUPLER	EL817B

		COP12509C	AVR171/230 SMPS PCB ASS'Y	
Level	**Ref#**	**Component**	**Description**	**Drawing No**
....4	PC96	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	PC97	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	PC98	CVIEL817B	I.C , PHOTO COUPLER	EL817B
....4	R903	CRG2ANJ470H	RES , METAL OXIDE FILM	47 OHM 2W J
....4	R908	CRW1PJ0R6V	RES , WIRE WOUND (1W/0.6OHM)	
....4	R913	CRW1PJ0R1V	RES , WIRE WOUND (1W/0.1OHM)	
....4	R914	CRW1PJ0R1V	RES , WIRE WOUND (1W/0.1OHM)	
....4	R920	CRG2ANJ683H	RES , METAL OXIDE FILM	68K OHM 2W J
....4	TF91	CLT9Z087ZE	TRANS , STBY (AVR1X1)	
....4	TF92	CLT9Z088ZE	TRANS , SUB (AVR1X1)	
....4	TF93	CLT9Z089ZE	TRANS , MAIN (AVR1X1)	
....4	TH91	CRT2R5D20MSFC	NTC , THERMISTOR (10MM PITCH, 2.5D-20)	
....4	TS92	CJP02GA01ZY	WAFER/STRAIGHT/2.5mm/2P	YMW025-02R
....4	VT91	CRVSVC561D14A	VARISTOR(560V, 14mm)	
....4	VT92	CRVSVC561D14A	VARISTOR(560V, 14mm)	
...3		CTB3+10JFZR	SCREW	
...3		CTB3+6FFZR	SCREW	
...3		CTB3+6JR	SCREW	
...3		CTB3+8JFZR	SCREW	
...3		CTB3+8JR	SCREW	00M51260308M0
...3		CTS3+8JFZR	SCREW	
...3		CTW3+12JR	SCREW	
...3		CTW3+8JR	SCREW	
...3		CUA1A343	CHASSIS , BOTTOM AVR1510	
...3		CWB1B003200HH	WIRE ASS'Y (3P, 2.0mm, 200mm)	
...3		CWC4C4A13B150B10	CARD , CABLE (13P,1.25mm,150mm,B,10mm)	
...3		CWC4F2A40A080B10	CARD , CABLE (40P,1.0mm,80mm,B,10mm)	
...3		CWZAVR2700CN90A	INLET WIRE ASS'Y	
....4		CJJ8A006ZW	RECEPTACLE , AC(15A/250V,R-301,B21)	R-301-(B21)
....4		CLZ9W003Z	FERRITE , RING	29X7.7X19
....4		CWZAVR1700CN90	WIRE ASS'Y	
...3	F901	KBA2C6300TLHEY	FUSE(215Series, 250V/6.3)	
...3	WF1601	CWC4F2A13A080B10	CARD , CABLE (13P,1.0mm,80mm,B,10mm)	
.1		CHE154	CLAMPER , ARM	
.1		CPG1A972U	BOX , OUT CARTON AVR171	
..2		CARTAVR171-HK	REMOTE CONTROLLER (AVR171)	
..2		CJA2B120Z	CORD , POWER (PLUG+SOCKET) EUR	
..2		CJXAVR365MICRO	MICRO PHONE ASS'Y	
..2		CQE1A570Z	SHEET , QUICK START GUIDE AVR1510	
..2		CSA1A018Z	FM 1 POLE ANT	T15011F-1
..2		CSA1A039Z	ANT, AM LOOP(9.5uH/5T)	
.1		CRE1A037	LOCKER	SH08M790BO

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 (±7%)
.Ideal DC Voltage = 22.5mA (±7%)



DC VOLTMETER ; Connect to
CN66(SL),CN61(CNT),CN64(SR),CN63(FL),CN65(SBL),CN62(FR),CN67(SBR)

No.	Channel	Adjust for	Adjust
1	Front Left	22.5mV (±7%)	CN63
2	Front Right	22.5mV (±7%)	CN62
3	Center	22.5mV (±7%)	CN61
4	Surround Left	22.5mV (±7%)	CN66
5	Surround Right	22.5mV (±7%)	CN64
6	SBL ZONE 2L	22.5mV (±7%)	CN65
7	SBL ZONE 2R	22.5mV (±7%)	CN67

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.

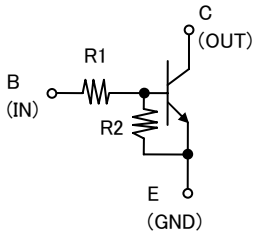
FEATURE

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

APPLICATION

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

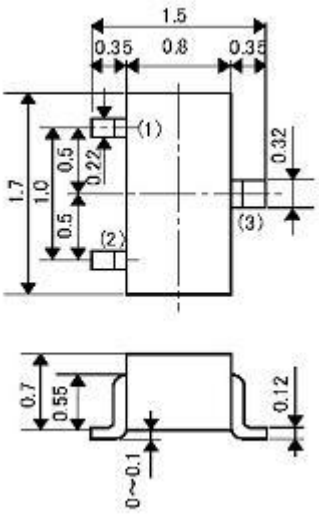
Equivalent circuit



OUTLINE DRAWING

UNIT : mm

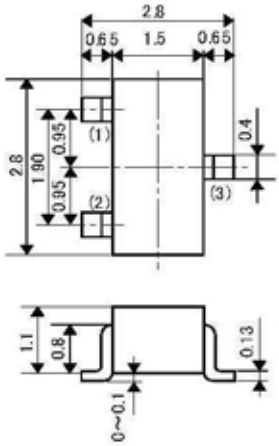
RT1N241U



JEITA : —
JEDEC : —

Terminal Connector
①:Base
②:Emitter
③:Collector

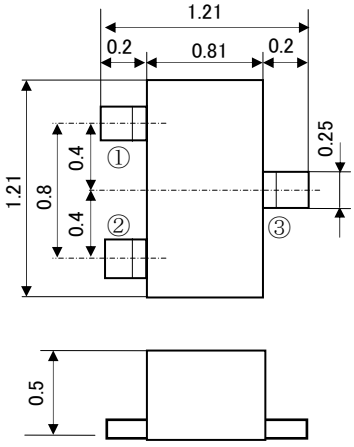
RT1N241C



JEITA : SC-59
JEDEC : Similar to TO-236

Terminal Connector
①:Base
②:Emitter
③:Collector

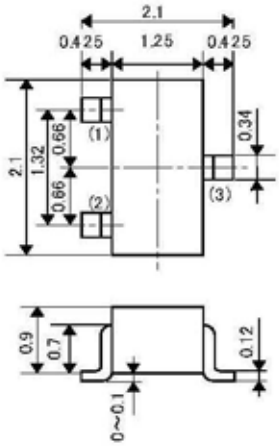
RT1N241T2



JEITA, JEDEC : —
ISAHAYA : T-USM

Terminal Connector
①:Base
②:Emitter
③:Collector

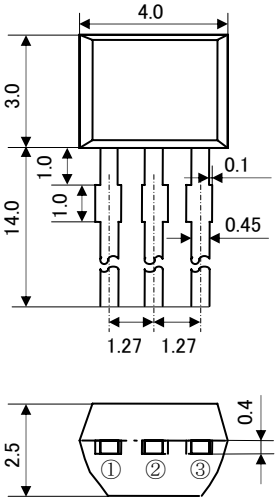
RT1N241M



JEITA : SC-70
JEDEC : —

Terminal Connector
①:Base
②:Emitter
③:Collector

RT1N241S

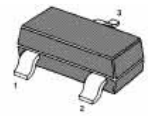


JEITA : —
JEDEC : —

Terminal Connector
①:Emitter
②:Collector
③:Base

SPECIFICATION OF MMBT5551

NPN Silicon Epitaxial Planar Transistors
for high voltage amplifier applications.



1. Base 2. Emitter 3. Collector

SOT-23 Plastic Package

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	160	V
Collector Base Voltage	V_{CBO}	180	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	-55 to +150	°C

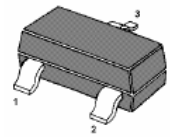
Characteristics at T_{amb}=25 °C

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at V_{CE}=5V, I_C=1mA at V_{CE}=5V, I_C=10mA at V_{CE}=5V, I_C=50mA	 h_{FE} h_{FE} h_{FE}	 80 80 30	 - 250 -	 - - -
Collector Emitter Breakdown Voltage at I_C=1mA	$V_{(BR)CEO}$	160	-	V
Collector Base Breakdown Voltage at I_C=100µA	$V_{(BR)CBO}$	180	-	V
Emitter Base Breakdown Voltage at I_E=10µA	$V_{(BR)EBO}$	6	-	V
Collector Cutoff Current at V_{CB}=120V	I_{CBO}	-	50	nA
Emitter Cutoff Current at V_{EB}=4V	I_{EBO}	-	50	nA
Collector Saturation Voltage at I_C=10mA, I_B=1mA at I_C=50mA, I_B=5mA	 $V_{CE\ sat}$ $V_{CE\ sat}$	 - -	 0.15 0.2	 V V
Base Saturation Voltage at I_C=10mA, I_B=1mA at I_C=50mA, I_B=5mA	 $V_{BE\ sat}$ $V_{BE\ sat}$	 - -	 1 1	 V V
Gain Bandwidth Product at V_{CE}=10V, I_C=10mA, f=100MHz	f_T	100	300	MHz
Collector Base Capacitance at V_{CB}=10V, f=1MHz	C_{CBO}	-	6	pF
Noise Figure at V_{CE}=5V, I_C=200µA, R_G=2KΩ, f=30Hz…15KHz	NF	-	8	dB
Thermal Resistance Junction to Ambient	R_{thA}	-	200	K/W

SPECIFICATION OF MMBT5401

PNP Silicon Epitaxial Planar Transistor

for high voltage amplifier applications



1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

Absolute Maximum Ratings (T_a = 25 °C)

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	160	V
Collector Emitter Voltage	$-V_{CEO}$	150	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current Continuous	$-I_C$	600	mA
Power Dissipation	P_{tot}	200	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	- 55 to + 150	°C

Characteristics at T_a = 25 °C

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $-V_{CE}$ = 5 V, $-I_C$ = 1 mA at $-V_{CE}$ = 5 V, $-I_C$ = 10 mA at $-V_{CE}$ = 5 V, $-I_C$ = 50 mA	 h_{FE} h_{FE} h_{FE}	 50 60 50	 - 240 -	 - - -
Collector Cutoff Current at $-V_{CB}$ = 120 V	$-I_{CBO}$	-	50	nA
Emitter Cutoff Current at $-V_{EB}$ = 3 V	$-I_{EBO}$	-	50	nA
Collector Base Breakdown Voltage at $-I_C$ = 100 µA	$-V_{(BR)CBO}$	160	-	V
Collector Emitter Breakdown Voltage at $-I_C$ = 1 mA	$-V_{(BR)CEO}$	150	-	V
Emitter Base Breakdown Voltage at $-I_E$ = 10 µA	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C$ = 10 mA, $-I_B$ = 1 mA at $-I_C$ = 50 mA, $-I_B$ = 5 mA	 $-V_{CE(sat)}$ $-V_{CE(sat)}$	 - -	 0.2 0.5	 V V
Base Emitter Saturation Voltage at $-I_C$ = 10 mA, $-I_B$ = 1 mA at $-I_C$ = 50 mA, $-I_B$ = 5 mA	 $-V_{BE(sat)}$ $-V_{BE(sat)}$	 - -	 1 1	 V V
Gain Bandwidth Product at $-V_{CE}$ = 10 V, $-I_C$ = 10 mA, f = 100 MHz	f_T	100	300	MHz
Output Capacitance at $-V_{CB}$=10 V, f = 1 MHz	C_{obo}	-	6	pF

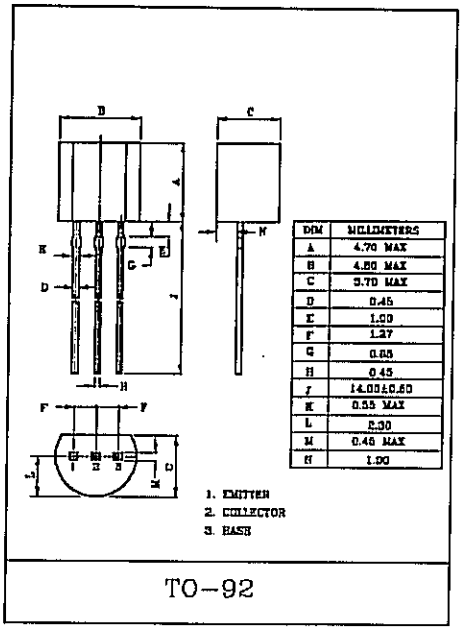
KEC
KOREA ELECTRONICS CO,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KTD1302
EPITAXIAL PLANAR NPN TRANSISTOR

AUDIO MUTING APPLICATION.

FEATURES
- High Emitter-Base Voltage : V_{EBO}=12V(Min.).
- High Reverse h_{FE}
  : Reverse h_{FE}=20(Min.)(V_{CE}=2V, I_C=4mA).
- Low on Resistance :R_{ON}=0.6Ω(Typ.) (I_B=1mA).



DIM	MILLIMETERS
A	4.70 MAX
B	4.80 MAX
C	3.70 MAX
D	0.45
E	1.00
F	1.27
G	0.85
H	0.45
J	14.00±0.50
K	0.55 MAX
L	2.30
M	0.45 MAX
N	1.00

TO-92

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	25	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	12	V
Collector Current	I_C	300	mA
Base Current	I_B	30	mA
Collector Power Dissipation	P_C	625	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55~150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=25V, I_E=0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=-12V, I_C=0	-	-	0.1	μA
DC Current Gain	h_{FE}(1) (FOR)	V_{CE}=2V, I_C=4mA	200	-	800	
	h_{FE}(2) (REV)	V_{CE}=2V, I_C=4mA	20	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100mA, I_B=10mA	-	-	0.25	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=100mA, I_B=10mA	-	-	1.0	V
Transition Frequency	f_T	V_{CE}=10V, I_C=1mA	-	60	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	10	-	pF
On Resistance	R_{on}	f=1KHz, I_B=1mA, V_{in}=0.3V	-	0.6	-	Ω

KEC KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR TECHNICAL DATA

KTD600K

EPITAXIAL PLANAR NPN TRANSISTOR

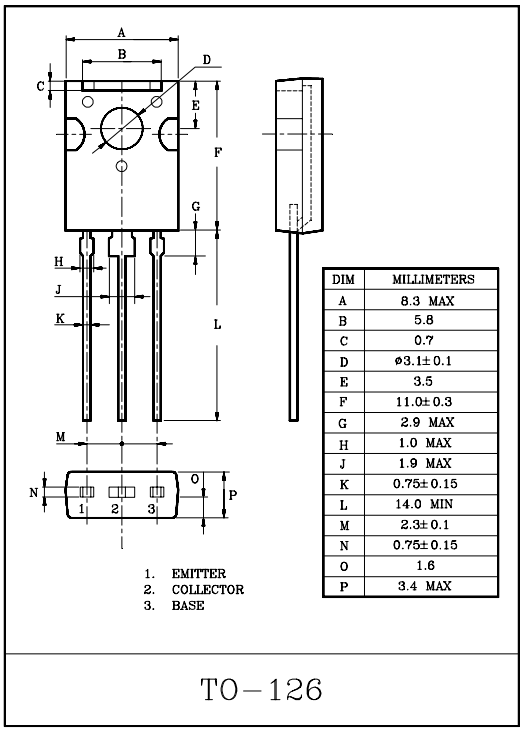
LOW FREQUENCY POWER AMP,
MEDIUM SPEED SWITCHING APPLICATIONS

FEATURES

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

MAXIMUM RATINGS (Ta=25℃)

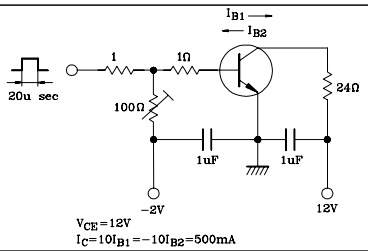
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	120	V
Collector-Emitter Voltage		V_{CEO}	120	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	1	A
		I_{CP}	2	
Collector Power Dissipation	Ta=25℃	P_C	1.5	W
	Tc=25℃		8	
Junction Temperature		T_j	150	℃
Storage Temperature Range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



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

TO-126

ELECTRICAL CHARACTERISTICS (Ta=25℃)

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

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

KEC

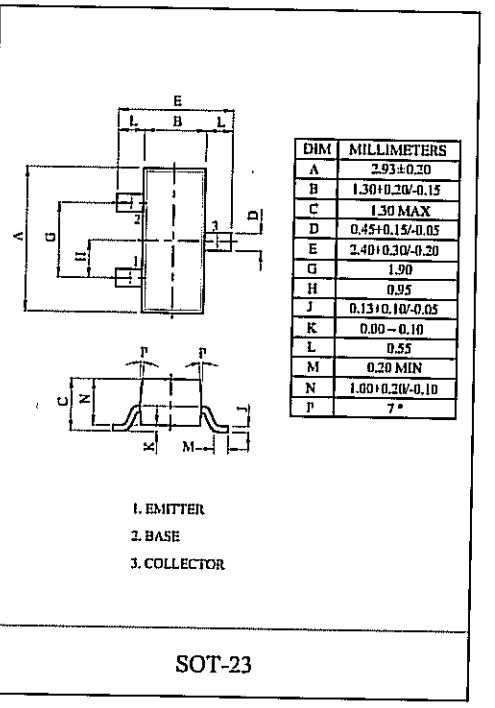
SEMICONDUCTOR
TECHNICAL DATA

KTC3875S
EPITAXIAL PLANAR NPN TRANSISTOR

GENERAL PURPOSE APPLICATION.
SWITCHING APPLICATION.

FEATURES

- Excellent h_{FE} Linearity
  : h_{FE}(0.1mA)/h_{FE}(2mA)=0.95(Typ.).
- High h_{FE} : h_{FE}=70~700.
- Low Noise : NF=1dB(Typ.), 10dB(Max.).
- Complementary to KTA1504S.



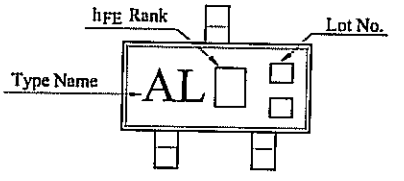
DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.45+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00~0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°

SOT-23

MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	150	mA
Base Current	I_B	30	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55~150	℃

Marking



ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=60V, I_E=0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=5V, I_C=0	-	-	0.1	μA
DC Current Gain	h_{FE}(Note)	V_{CE}=6V, I_C=2mA	70	-	700	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100mA, I_B=10mA	-	0.1	0.25	V
Transition Frequency	f_T	V_{CE}=10V, I_C=1mA	80	-	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	2.0	3.5	pF
Noise Figure	NF	V_{CE}=6V, I_C=0.1mA f=1kHz, Rg=10kΩ	-	1.0	10	dB

Note : h_{FE} Classification O:70~140, Y:120~240, GR(G):200~400, BL(L):350~700

KEC

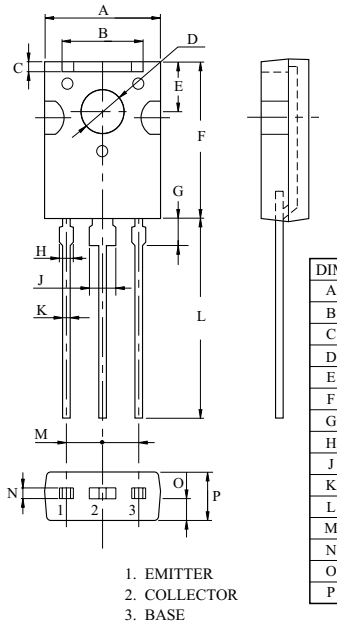
SEMICONDUCTOR
TECHNICAL DATA

KTC3423
TRIPLE DIFFUSED NPN TRANSISTOR

AUDIO FREQUENCY AMPLIFIER APPLICATION.

FEATURES

- High Breakdown Voltage : V_{CEO}=150V(Min.).
- Low Output Capacitance : C_{ob}=5.0pF(Max.).
- High Transition Frequency : f_T=120MHz(Typ.).
- Complementary to KTA1360.



DIM	MILLIMETERS
A	8.3 MAX
B	5.8
C	0.7
D	Φ3.2±0.1
E	3.5
F	11.0±0.3
G	2.9 MAX
H	1.0 MAX
J	1.9 MAX
K	0.75±0.15
L	15.50±0.5
M	2.3±0.1
N	0.65±0.15
O	1.6
P	3.4 MAX

1. EMITTER
2. COLLECTOR
3. BASE

TO-126

MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	150	V
Collector-Emitter Voltage		V_{CEO}	150	V
Emitter-Base Voltage		V_{EBO}	5	V
Collector Current		I_C	50	mA
Emitter Current		I_B	5	mA
Collector Power Dissipation	Ta=25℃	P_C	1.5	W
	Tc=25℃		5	
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 ~ 150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=150V, I_E=0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=5V, I_C=0	-	-	0.1	μA
DC Current Gain	h_{FE}(Note)	V_{CE}=5V, I_C=10mA	70	-	240	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=10mA, I_B=1mA	-	-	0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=10mA, I_B=1mA	-	-	1.0	V
Transition Frequency	f_T	V_{CE}=30V, I_C=10mA	-	120	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	3.5	5.0	pF

Note : h_{FE} Classification O:70 ~ 140, Y:120 ~ 240

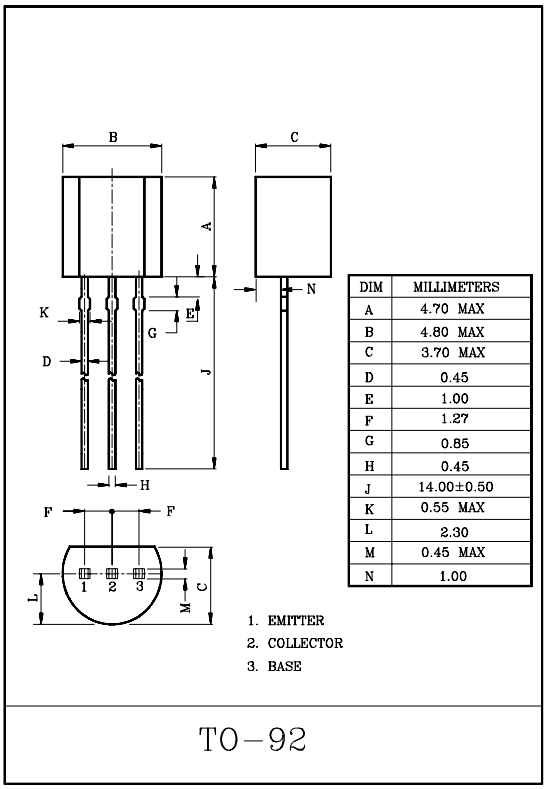
KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KTC3198
EPITAXIAL PLANAR NPN TRANSISTOR

GENERAL PURPOSE APPLICATION.
SWITCHING APPLICATION.

FEATURES
- Excellent h_{FE} Linearity
  : $h_{FE}(2)$=100(Typ.) at V_{CE}=6V, I_C=150mA.
  : $h_{FE}(I_C$=0.1mA)/$h_{FE}(I_C$=2mA)=0.95(Typ.)
- Low Noise : NF=1dB(Typ.) at f=1kHz.
- Complementary to KTA1266 (O,Y,GR class).



DIM	MILLIMETERS
A	4.70 MAX
B	4.80 MAX
C	3.70 MAX
D	0.45
E	1.00
F	1.27
G	0.85
H	0.45
J	14.00±0.50
K	0.55 MAX
L	2.30
M	0.45 MAX
N	1.00

TO-92

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	150	mA
Base Current	I_B	50	mA
Collector Power Dissipation	P_C	625	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55~150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=60V, I_E=0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=5V, I_C=0	-	-	0.1	μA
DC Current Gain	$h_{FE}(1)$ (Note)	V_{CE}=6V, I_C=2mA	70	-	700	
	$h_{FE}(2)$	V_{CE}=6V, I_C=150mA	25	100	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100mA, I_B=10mA	-	0.1	0.25	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=100mA, I_B=10mA	-	-	1.0	V
Transition Frequency	f_T	V_{CE}=10V, I_E=-1mA	80	-	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	2.0	3.5	pF
Base Intrinsic Resistance	rbb′	V_{CB}=10V, I_C=-1mA, f=30MHz	-	50	-	Ω
Noise Figure	NF	V_{CE}=6V, I_C=0.1mA, Rg=10kΩ, f=1kHz	-	1.0	10	dB

Note : h_{FE} Classification O:70~140, Y:120~240, GR:200~400, BL:300~700

KEC SEMICONDUCTOR TECHNICAL DATA

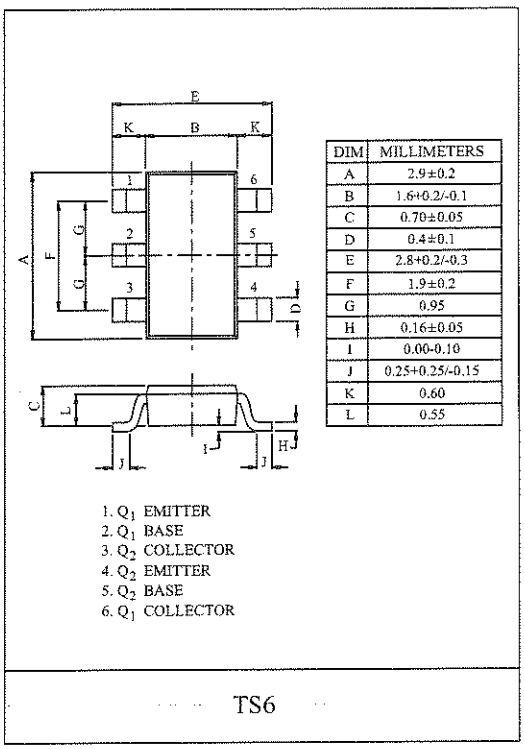
KTC812T

EPITAXIAL PLANAR NPN TRANSISTOR

FOR MUTING AND SWITCHING APPLICATION.

FEATURES

- High Emitter-Base Voltage : V_{EBO}=25V(Min.)
- High Reverse h_{FE}
  : Reverse h_{FE}=150(Typ.) (V_{CE}=-2V, I_C=-4mA)
- Low on Resistance : R_{ON}=1 Ω(Typ.), (I_B=5mA)



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

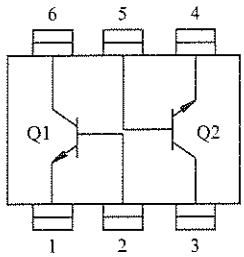
TS6

MAXIMUM RATING (Ta=25℃)

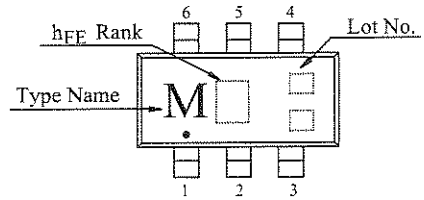
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	25	V
Collector Current	I_C	300	mA
Base Current	I_B	60	mA
Collector Power Dissipation	P_C *	0.9	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}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

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

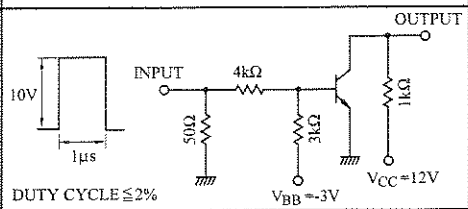
EQUIVALENT CIRCUIT (TOP VIEW)



Marking



ELECTRICAL CHARACTERISTICS (Ta=25℃)

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

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

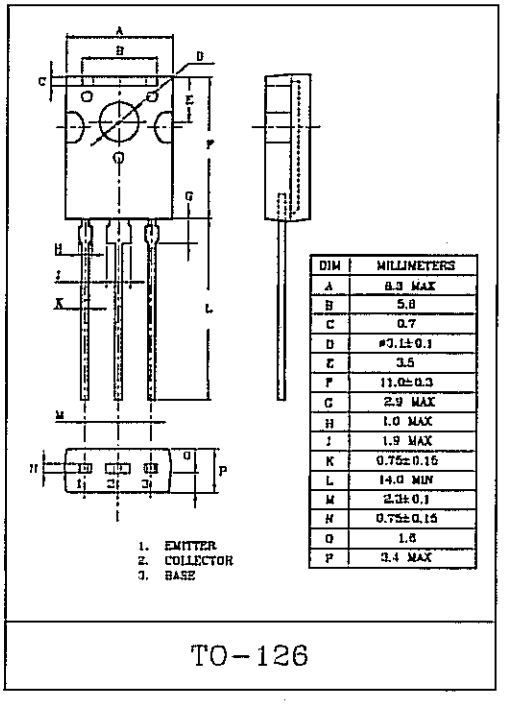
KEC

SEMICONDUCTOR
TECHNICAL DATA

KTA1380
TRIPLE DIFFUSED PNP TRANSISTOR

AUDIO FREQUENCY AMPLIFIER APPLICATION.

FEATURES
- High Voltage : V_{CEO}=-150V.
- Low Output Capacitance : C_{ob}=5.0pF(Max.).
- High Transition Frequency : f_T=120MHz(Typ.)
- Complementary to KTC3423.



TO-126

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	-150	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-50	mA
Emitter Current	I_E	50	mA
Collector Power Dissipation	P_C	1.5	W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55~150	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=-150V, I_E=0	-	-	-0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=-5V, I_C=0	-	-	-0.1	μA
DC Current Gain	h_{FE}(Note)	V_{CE}=-5V, I_C=-10mA	70	-	240	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=-10mA, I_B=-1mA	-	-	-0.8	V
Base-Emitter Voltage	V_{BE}	V_{CE}=-5V, I_C=-30mA	-	-	-0.9	V
Transition Frequency	f_T	V_{CE}=-30V, I_C=-10mA	-	120	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=-10V, I_E=0, f=1MHz	-	4.0	5.0	pF

Note : h_{FE} Classification O:70~140, Y:120~240

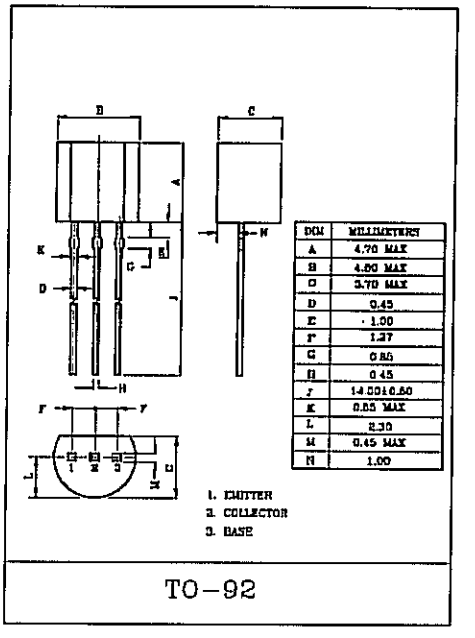
KEC
KOREA ELECTRONICS CO.,LTD.

SEMICONDUCTOR
TECHNICAL DATA

KTA1271
EPITAXIAL PLANAR PNP TRANSISTOR

HIGH CURRENT APPLICATION.

FEATURES
- High h_{FE} : h_{FE}=100~320.
- Complementary to KTC3203.



DIM	MILLIMETERS
A	4.70 MAX
B	4.80 MAX
C	3.70 MAX
D	0.45
E	1.00
F	1.27
G	0.85
H	0.45
J	14.00±0.50
K	0.55 MAX
L	2.30
M	0.45 MAX
N	1.00

TO-92

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	-35	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-800	mA
Emitter Current	I_E	800	mA
Collector Power Dissipation	P_C	625	mW
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	-55~150	℃

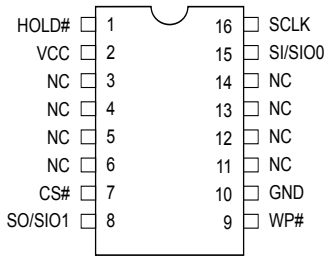
ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=-35V, I_E=0	-	-	-100	nA
Emitter Cut-off Current	I_{EBO}	V_{EB}=-5V, I_C=0	-	-	-100	nA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=-10mA, I_B=0	-30	-	-	V
DC Current Gain	h_{FE}(1) (Note)	V_{CE}=-1V, I_C=-100mA	100	-	320	
	h_{FE}(2)	V_{CE}=-1V, I_C=-700mA	35	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=-500mA, I_B=-20mA	-	-	-0.7	V
Base-Emitter Voltage	V_{BE}	V_{CE}=-1V, I_C=-10mA	-0.5	-	-0.8	V
Transition Frequency	f_T	V_{CE}=-5V, I_C=-10mA	-	120	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB}=-10V, f=1MHz	-	19	-	pF

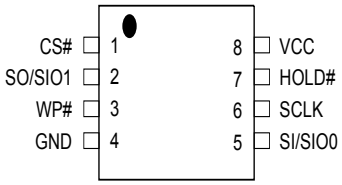
Note : h_{FE}(1) Classification O:100~200, Y:160~320

PIN CONFIGURATIONS

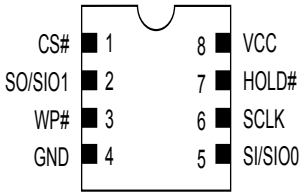
16-PIN SOP (300mil) for MX25L1606E only



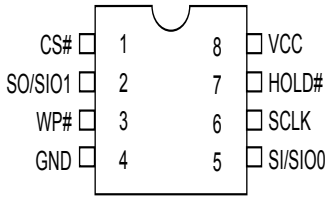
8-PIN SOP (200mil, 150mil)



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



8-PIN PDIP (300mil)

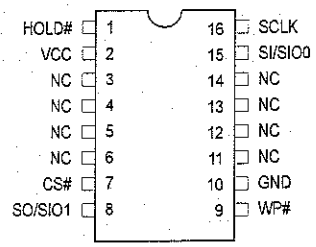


PIN DESCRIPTION

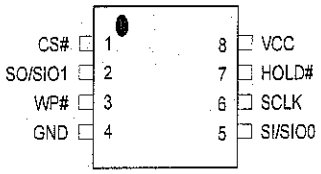
SYMBOL	DESCRIPTION
CS#	Chip Select
SI/SIO0	Serial Data Input (for 1 x I/O)/ Serial Data Input & Output (for Dual Output mode)
SO/SIO1	Serial Data Output (for 1 x I/O)/ Serial Data Output (for Dual Output mode)
SCLK	Clock Input
WP#	Write protection
HOLD#	Hold, to pause the device without deselecting the device
VCC	+ 3.3V Power Supply
GND	Ground

PIN CONFIGURATIONS

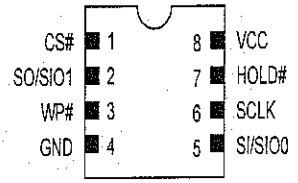
16-PIN SOP (300mil)



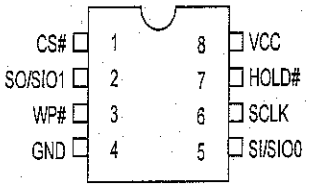
8-PIN SOP (200mil)



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



8-PIN PDIP (300mil)



PIN DESCRIPTION

SYMBOL	DESCRIPTION
CS#	Chip Select
SI/SIO0	Serial Data Input (for 1 x I/O)/ Serial Data Input & Output (for Dual Output mode)
SO/SIO1	Serial Data Output (for 1 x I/O)/ Serial Data Output (for Dual Output mode)
SCLK	Clock Input
WP#	Write protection
HOLD#	Hold, to pause the device without deselecting the device
VCC	+ 3.3V Power Supply
GND	Ground

ML61 Series Positive Voltage Detector

❖ *Application*

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

❖ *Features*

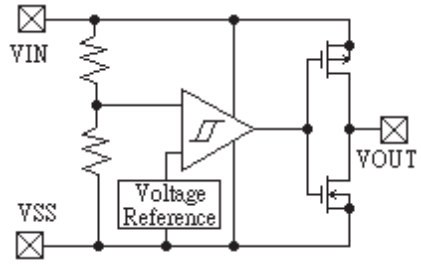
- CMOS Low Power Consumption : Typical 1.0uA at Vin=2.0V
- Selectable Detect Voltage : 1.1V to 6.0V in 0.1V increments
- Highly Accurate : Detect Voltage 1.1V to 1.9V ±3%
  Detect Voltage 2.0V to 6.0V ±2%
- Operating Voltage : 0.8V to 10.0V
- Package Available : SOT23 (150mW), SOT89 (500mW) & TO92 (300mW)

❖ *General Description*

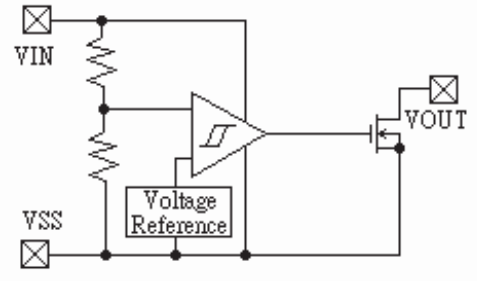
The ML61 is a group of high-precision and low-power voltage detectors.
The ML61 consists of a highly-accurate and low-power reference voltage source, a comparator, a hysteresis circuit, and an output driver. Detect voltage is very accurate and stable with N-channel open drain and CMOS, are available.

❖ *Block Diagram*

(1) CMOS Output



(2) N-Channel Open Drain Output

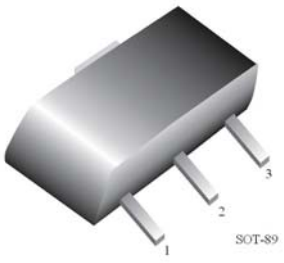


❖ *Absolute Maximum Ratings*

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

❖ *Pin Configuration*

SOT-89



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

CHAPTER 2

Signal Descriptions and Reference Circuit

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

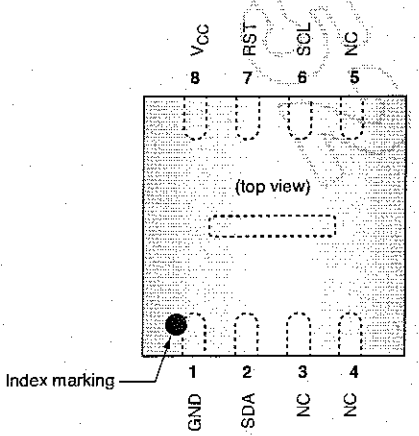
CP Signals and Pinouts

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	I²C data
NC	3-5		Must not be connected
SCL	6	I	I²C clock
RST	7	I	At reset: selects I²C slave address. During operation: CP warm reset.
V_{CC}	8		Supply voltage, positive terminal

Figure 2-1 CP chip pinouts, top view



PG-USON-8-1 package

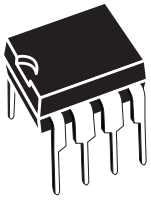
The thermal pad on the bottom of the CP may be left unconnected or optionally connected to GND.

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

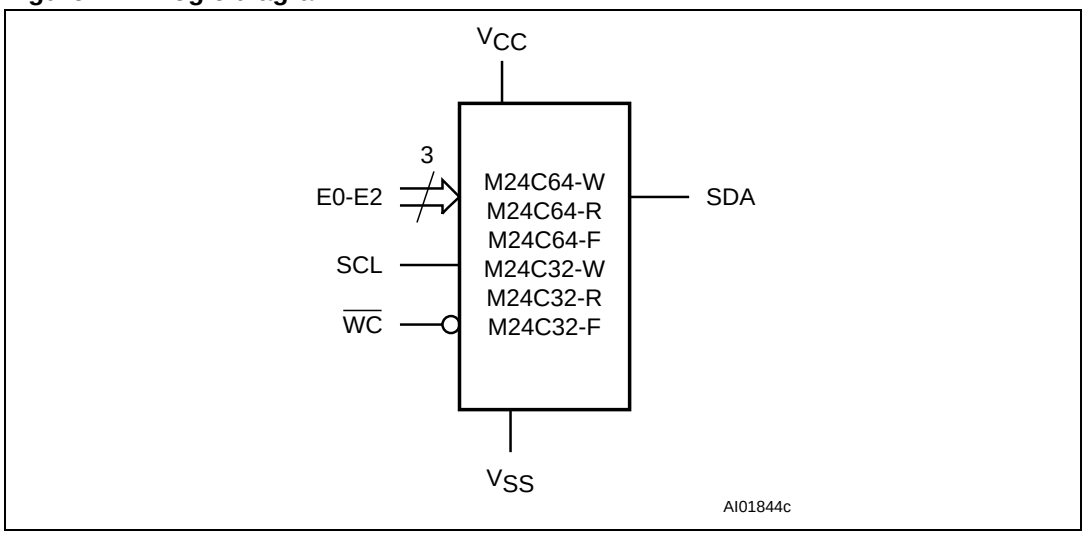
TSSOP8 (DW)
169 mil width

UFDFPN8 (MB)
2x3mm² (MLP)

1 Summary description

These I^2C-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



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

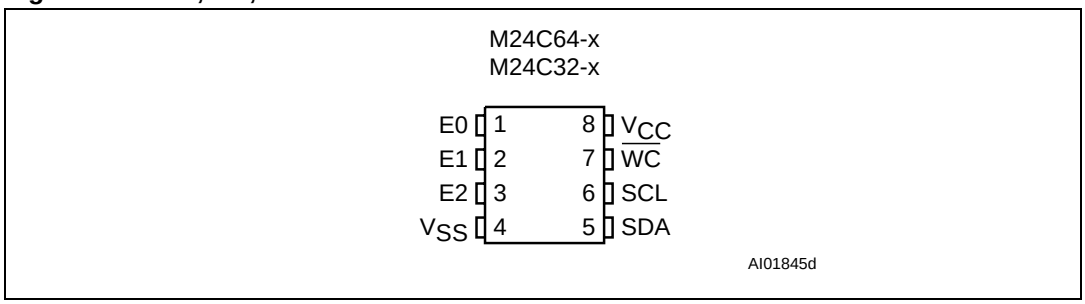
The device behaves as a slave in the I^2C protocol, with all memory operations synchronized by the serial clock. Read and Write operations are initiated by a Start condition, generated by the bus master. The Start condition is followed by a Device Select Code and Read/$\overline{\text{Write}}$ bit ($\overline{\text{RW}}$) (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

Figure 2. DIP, SO, TSSOP and UFDFPN 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.

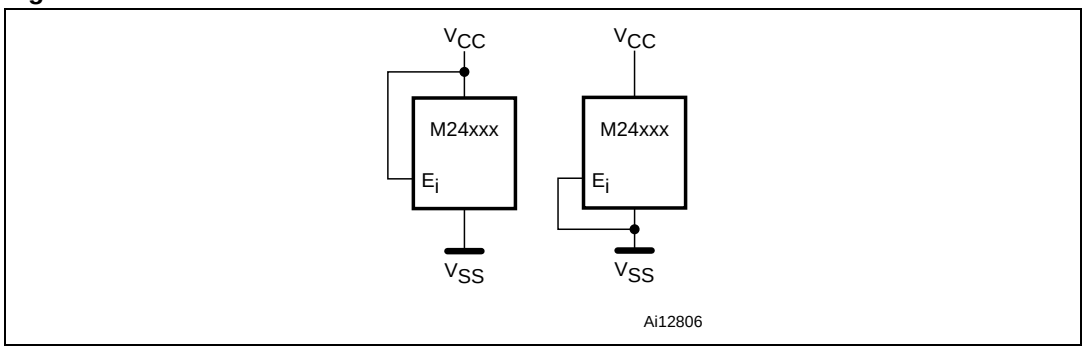
2.0.2 Serial Data (SDA)

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 I^2C bus

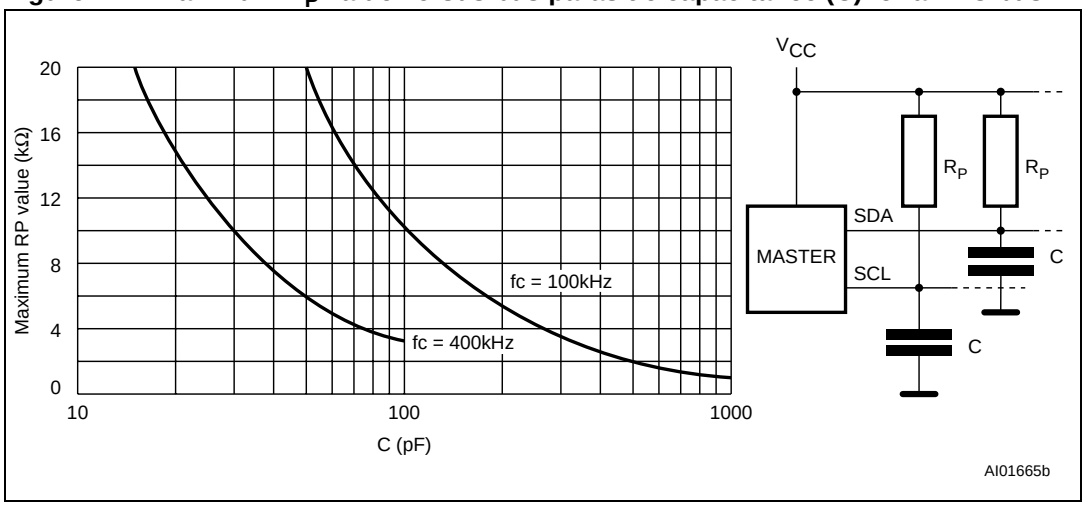


Figure 5. I^2C bus protocol

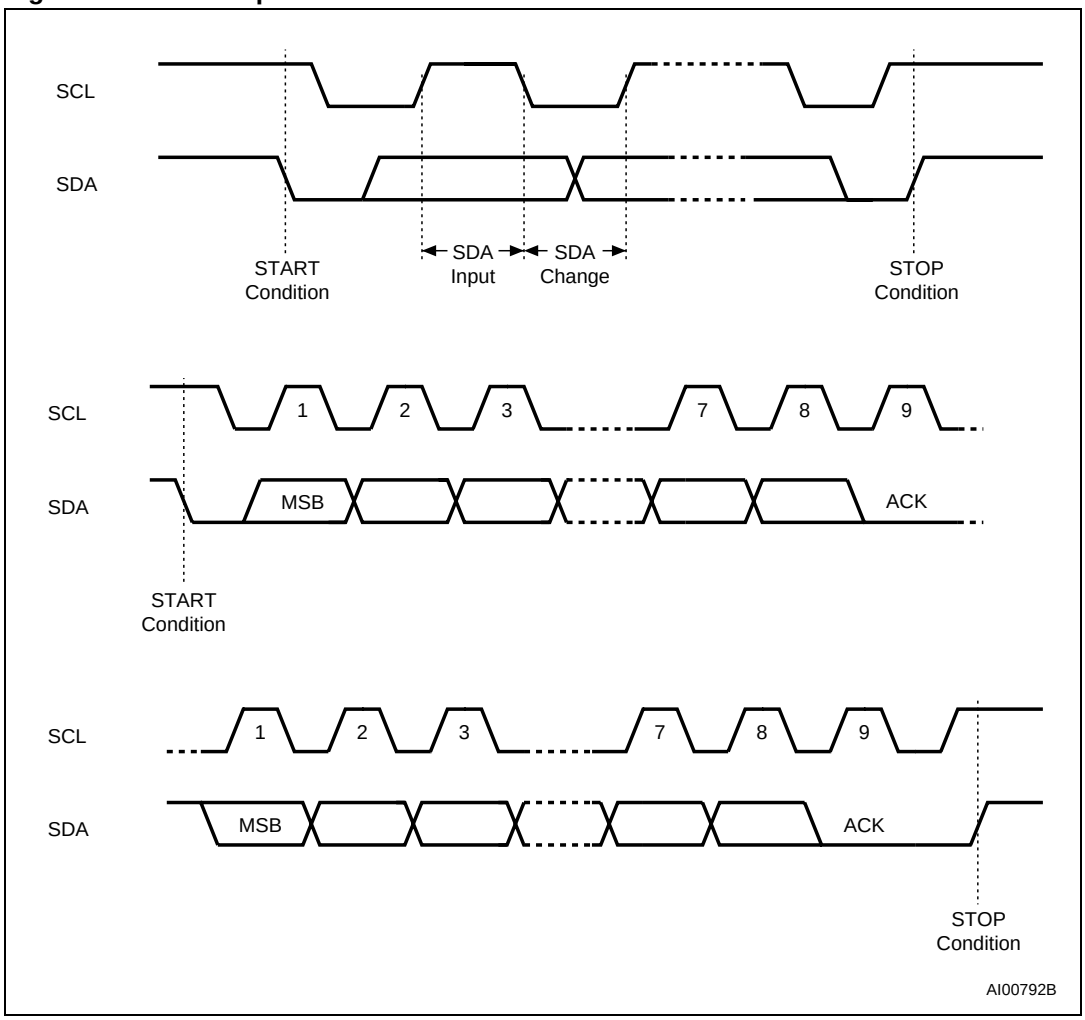


Table 2. Device select code

	Device Type Identifier(1)				Chip Enable Address(2)			RW
	b7	b6	b5	b4	b3	b2	b1	b0
Device Select Code	1	0	1	0	E2	E1	E0	RW

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

National Semiconductor

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°C, the LM94022 delivers an output voltage that is inversely porportional 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 mV/°C, −8.2 mV/°C, −10.9 mV/°C, and −13.6 mV/°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°C operating range. Tying both inputs high causes the transfer function to have the largest gain of −13.6 mV/°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

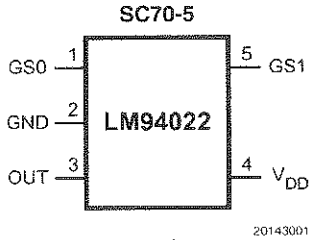
- LM94022Q is AEC-Q100 Grade 0 qualified and is manufactured on an Automotive Grade Flow.
- Low 1.5V operation
- Push-pull output with 50µA source current capability
- Four selectable gains
- Very accurate over wide temperature range of −50°C to +150°C
- Low quiescent current
- Output is short-circuit 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		±50 µA
Temperature Accuracy	20°C to 40°C	±1.5°C
	-50°C to 70°C	±1.8°C
	-50°C to 90°C	±2.1°C
	-50°C to 150°C	±2.7°C
Operating Temperature		−50°C to 150°C

Connection Diagram

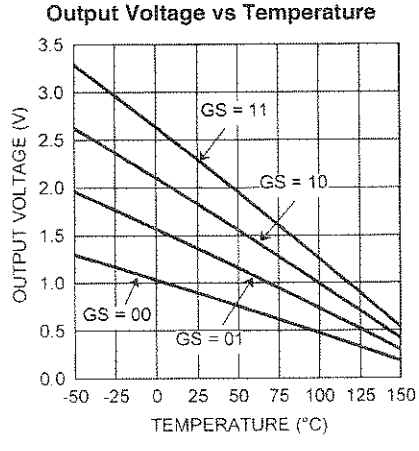
SC70-5



Top View
See NS Package Number MAA05A

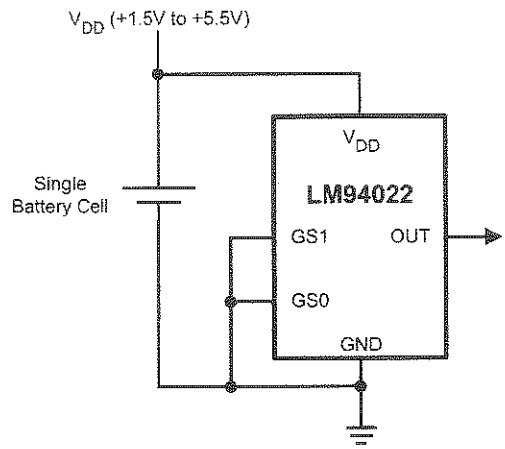
Typical Transfer Characteristic

Output Voltage vs Temperature



Typical Application

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



20143002

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.

1. Overview

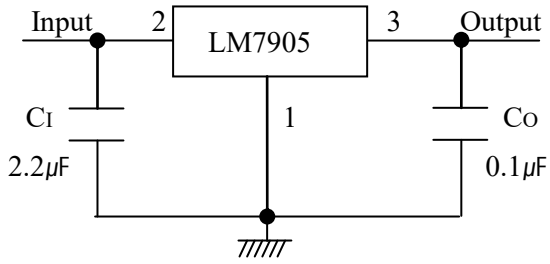
1.1 Description

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)

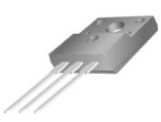
1.3 Standard Application



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

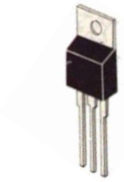
- CI is required if regulator is located an appreciable distance from power filter.
- Co improves transient response. Values of ≤1.0 μF could cause instability.

1.4 Package Type



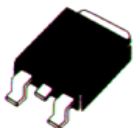
123

TO-220F



123

TO-220



1 2 3

D-PAK(TO-252)

1. GND
2. INPUT
3. OUTPUT

1. Overview

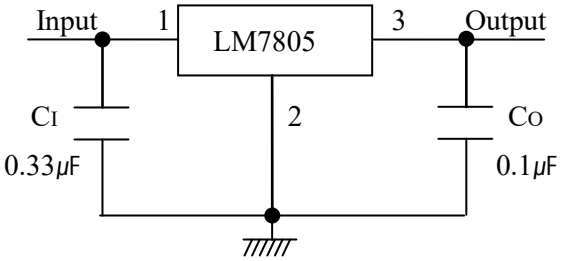
1.1 Description

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)

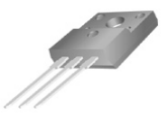
1.3 Standard Application



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

- CI is required if regulator is located an appreciable distance from power filter.
- Co improves transient response. Value of ≤0.1μF could cause instability.

1.4 Package Type

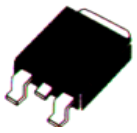


1 2 3

TO-220F

123

TO-220



1 2 3

D-PAK(TO-252)

1. INPUT
2. GND
3. OUTPUT

Chapter 2 Pin Configuration

2.1 Package Pin-out Diagram and Signal Table

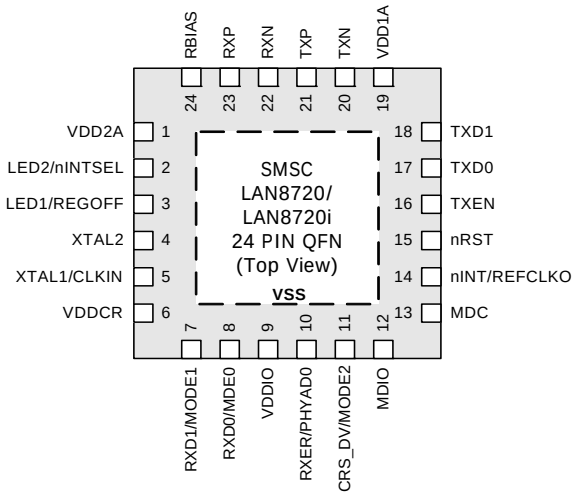


Figure 2.1 LAN8720/LAN8720i 24-QFN Pin Assignments (TOP VIEW)

Table 2.1 LAN8720/LAN8720i 24-PIN QFN Pinout

PIN NO.	PIN NAME	PIN NO.	PIN NAME
1	VDD2A	13	MDC
2	LED2/nINTSEL	14	nINT/REFCLKO
3	LED1/REGOFF	15	nRST
4	XTAL2	16	TXEN
5	XTAL1/CLKIN	17	TXD0
6	VDDCR	18	TXD1
7	RXD1/MODE1	19	VDD1A
8	RXD0/MODE0	20	TXN
9	VDDIO	21	TXP
10	RXER/PHYAD0	22	RXN
11	CRS_DV/MODE2	23	RXP
12	MDIO	24	RBIAS

Chapter 3 Pin Description

This chapter describes the signals on each pin. When a lower case “n” is used at the beginning of the signal name, it indicates that the signal is active low. For example, nRST indicates that the reset signal is active low. The buffer type for each signal is indicated in the TYPE column, and a description of the buffer types is provided in Table 3.1.

Table 3.1 Buffer Types

BUFFER TYPE	DESCRIPTION
I8	Input.
O8	Output with 8mA sink and 8mA source.
IOD8	Input/Open-drain output with 8mA sink.
IPU Note 3.1	Input with 67k (typical) internal pull-up.
IPD Note 3.1	Input with 67k (typical) internal pull-down.
IOPU Note 3.1	Input/Output with 67k (typical) internal pull-up. Output has 8mA sink and 8mA source.
IOPD Note 3.1	Input/Output with 67k (typical) internal pull-down. Output has 8mA sink and 8mA source.
AI	Analog input
AIO	Analog bi-directional
ICLK	Crystal oscillator input pin
OCLK	Crystal oscillator output pin
P	Power pin

Note 3.1 Unless otherwise noted in the pin description, internal pull-up and pull-down resistors are always enabled. The internal pull-up and pull-down resistors prevent unconnected inputs from floating, and must not be relied upon to drive signals external to LAN8720/LAN8720i. When connected to a load that must be pulled high or low, an external resistor must be added.

Note: The digital signals are not 5V tolerant.They are variable voltage from +1.6V to +3.6V, as shown in Table 7.1.

ISL54220

High-Speed USB 2.0 (480Mbps) Multiplexer

ISL54220

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

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

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

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

Related Literature

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

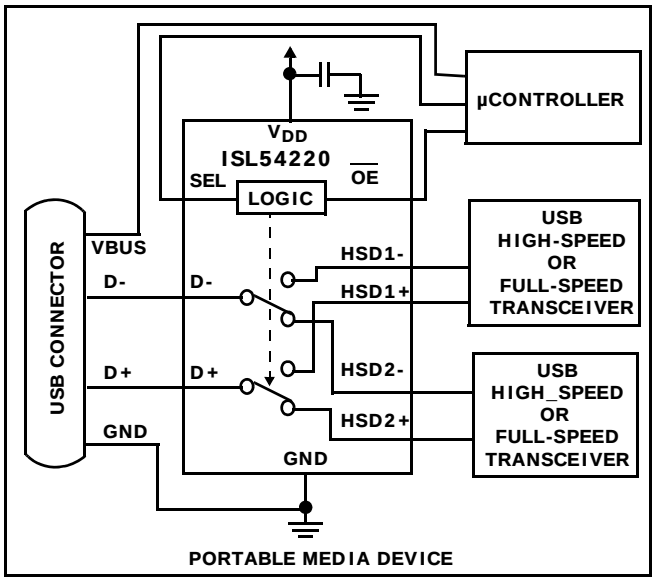
Features

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

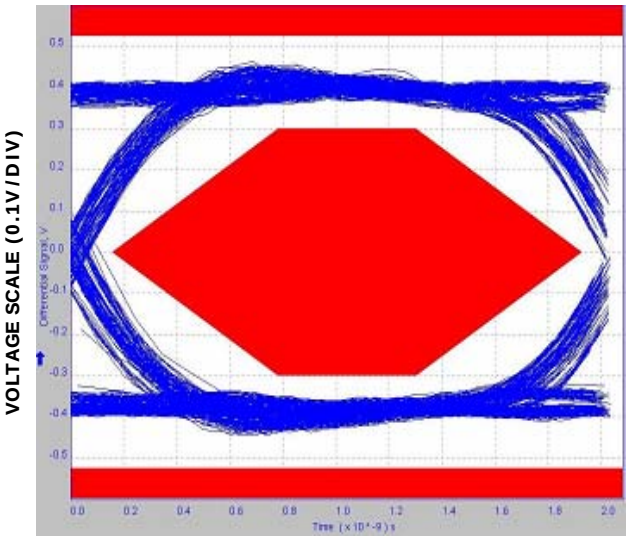
Applications* (see page 15)

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

Application Block Diagram

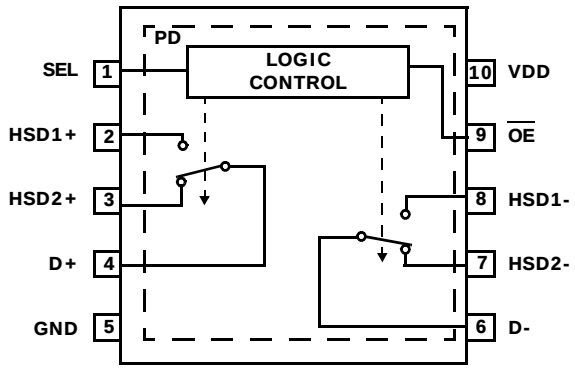


USB 2.0 HS Eye Pattern With Switches In The Signal Path

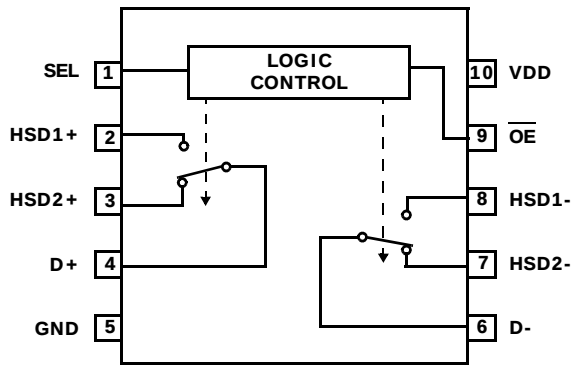


Pin Configurations

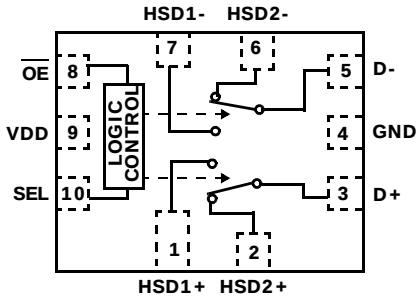
ISL54220
(10 LD 3.0X3.0 TDFN)
TOP VIEW



ISL54220
(10 LD MSOP)
TOP VIEW



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



NOTE:

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

Truth Table

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

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

Pin Descriptions

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

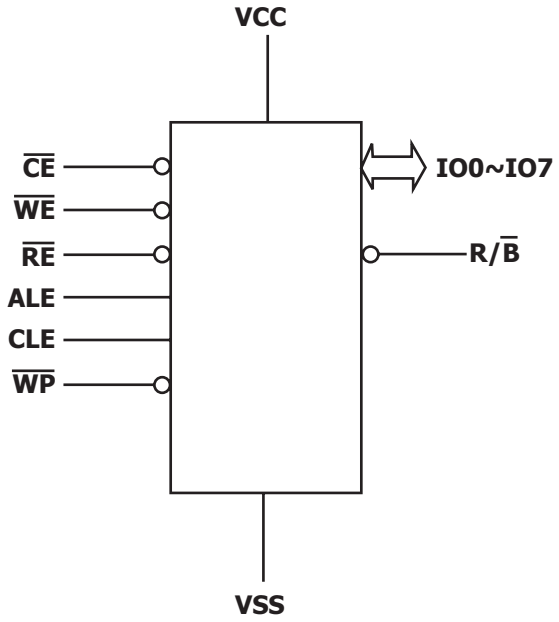


Figure 1 : Logic Diagram

IO7 - IO0	Data Input / Outputs
CLE	Command latch enable
ALE	Address latch enable
$\overline{CE}$	Chip Enable
$\overline{RE}$	Read Enable
$\overline{WE}$	Write Enable
$\overline{WP}$	Write Protect
R/$\overline{B}$	Ready / Busy
Vcc	Power Supply
Vss	Ground
NC	No Connection

Table 1 : Signal Names

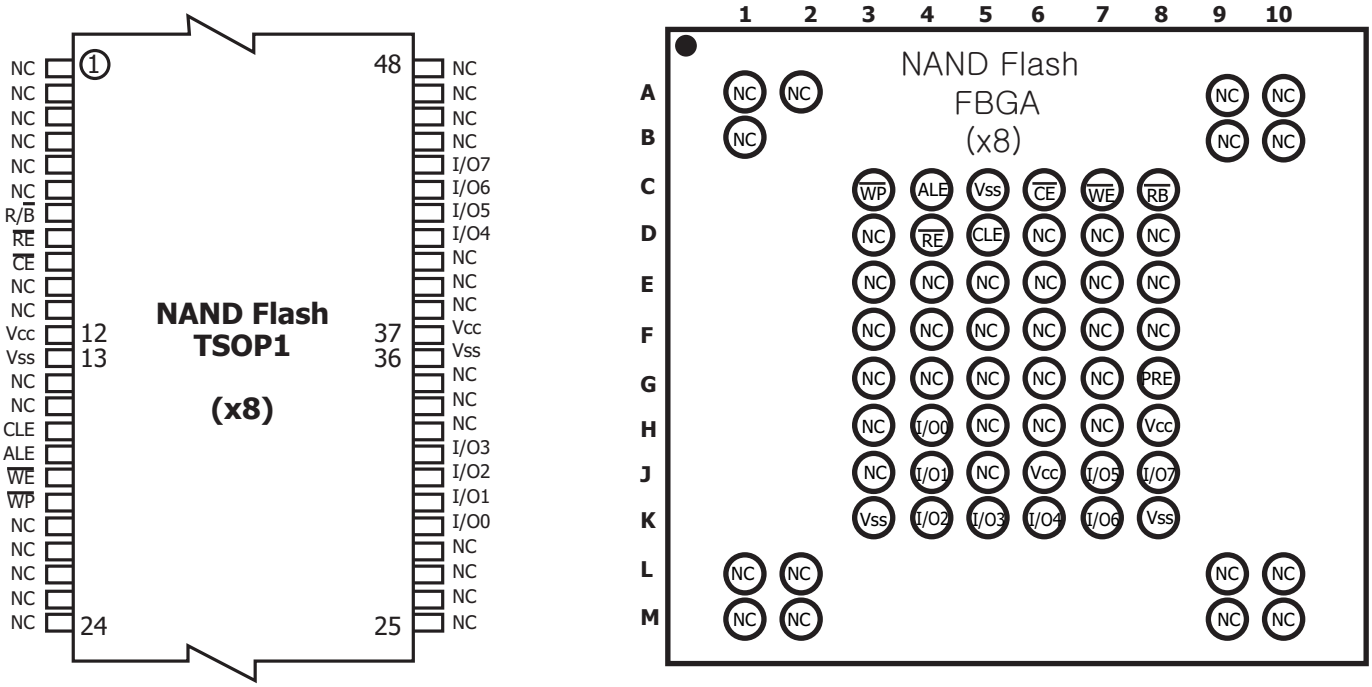


Figure 2 : 48-TSOP1 / 63-FBGA Contact, x8 Device

1.2 PIN DESCRIPTION

Pin Name	Description
IO0 ~ IO7	**DATA INPUTS/OUTPUTS** The IO pins allow to input command, address and data and to output data during read / program operations. The inputs are latched on the rising edge of Write Enable ($\overline{WE}$). The I/O buffer float to High-Z when the device is deselected or the outputs are disabled.
CLE	**COMMAND LATCH ENABLE** This input activates the latching of the IO inputs inside the Command Register on the Rising edge of Write Enable ($\overline{WE}$).
ALE	**ADDRESS LATCH ENABLE** This input activates the latching of the IO inputs inside the Address Register on the Rising edge of Write Enable ($\overline{WE}$).
$\overline{CE}$	**CHIP ENABLE** This input controls the selection of the device.
$\overline{WE}$	**WRITE ENABLE** This input acts as clock to latch Command, Address and Data. The IO inputs are latched on the rise edge of $\overline{WE}$.
$\overline{RE}$	**READ ENABLE** The $\overline{RE}$ input is the serial data-out control, and when active drives the data onto the I/O bus. Data is valid tREA after the falling edge of $\overline{RE}$ which also increments the internal column address counter by one.
$\overline{WP}$	**WRITE PROTECT** The $\overline{WP}$ pin, when Low, provides an Hardware protection against undesired modify (program / erase) operations.
R/$\overline{B}$	**READY BUSY** The Ready/Busy output is an Open Drain pin that signals the state of the memory.
Vcc	**SUPPLY VOLTAGE** The Vcc supplies the power for all the operations (Read, Write, Erase).
Vss	GROUND
NC	NO CONNECTION

Table 2 : Pin Description

NOTE :

1. A 0.1uF capacitor should be connected between the Vcc Supply Voltage pin and the Vss Ground pin to decouple the current surges from the power supply. The PCB track widths must be sufficient to carry the currents required during program and erase operations.

ESMT/EMP EML3418

1.3MHz 2A, Synchronous Step-Down Regulator

General Description

EML3418 is designed with high efficiency step down DC/DC converter for portable devices applications. It features with extreme low quiescent current with no load which is the best fit for extending battery life during the standby mode. The device operates from 2.5V to 5.5V input voltage and up to 2.0A output current capability. High 1.3MHz internal frequency makes small surface mount inductors and capacitors possible and reduces overall PCB board space. Further, build-in synchronous switch makes external Schottky diode is no longer needed and efficiency is improved. EML3418 is designed base on pulse width modulation (PWM) for low output voltage ripple and fixed frequency noise, low dropout mode provides 100% duty cycle operation. Low reference voltage is designed for achieving regulated output down to 0.6V.
The device is available in an adjustable version for TDFN-8 and SOP-8FD package.

Features

- Achieve 95% efficiency
- Input Voltage : 2.5V to 5.5V
- Output Current up to 2A
- Reference voltage 0.6V
- Quiescent Current 240 μA with No Switching
- Internal switching frequency 1.3MHz
- No Schottky Diode needed
- Low Dropout Operation: 100% Duty Cycle
- Shutdown current < 1 μA
- Excellent Line and Load Transient Response
- Over-current and Over-temperature Protection

Applications

- Blue-Tooth devices
- Cellular and Smart Phones
- Personal multi-media Player (PMP)
- Wireless networking
- Digital Still Cameras
- Portable applications

Typical Application (adjustable)

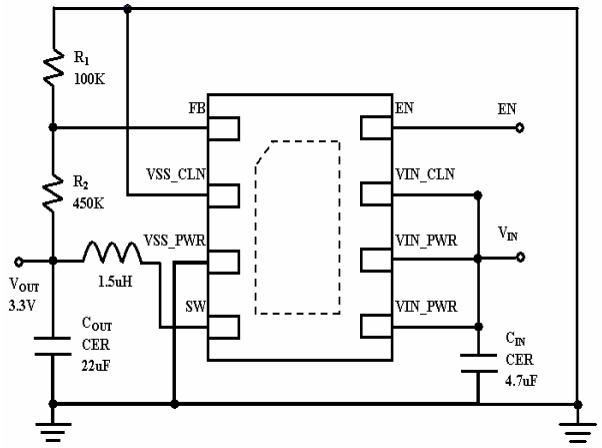


Fig. 1

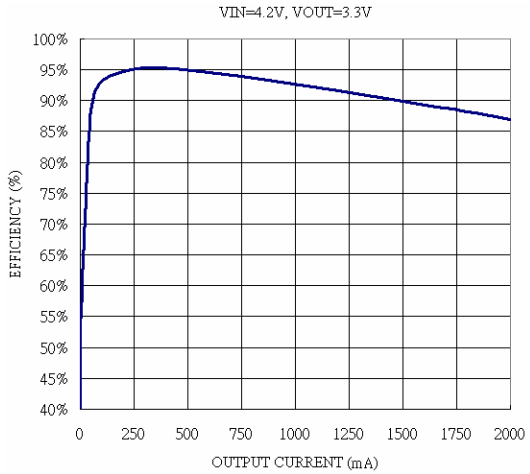
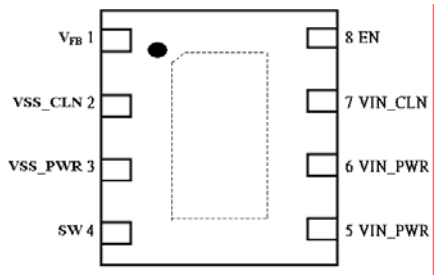


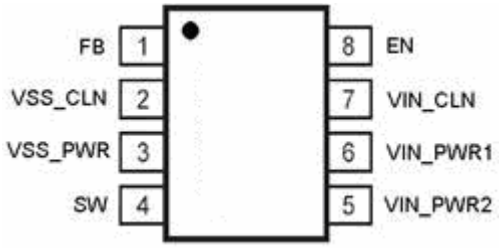
Fig. 2

Connection Diagram

TDFN-8 Package



SOP-8FD Package

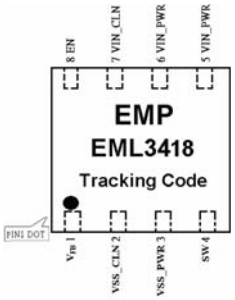
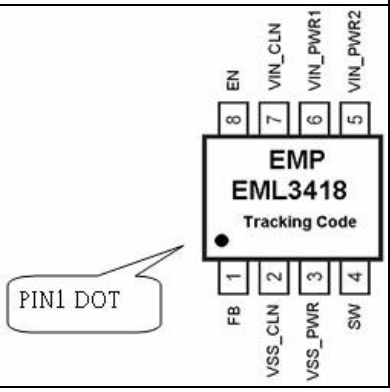


Order information

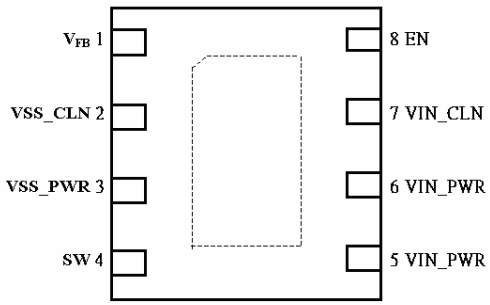
EML3418-00FF08NRR
00 Adj Operation
FF08 TDFN-8 Package
NRR RoHS & Halogen Free
Rating: -40 to 85°C
Package in Tape & Reel

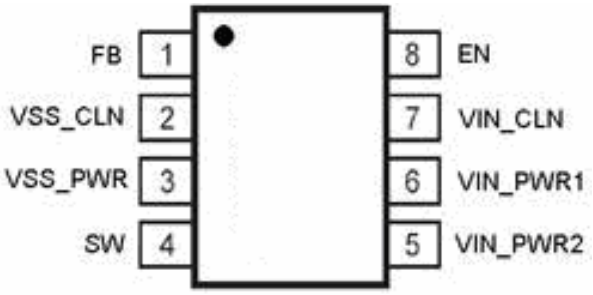
EML3418-00SE08GRR/NRR
00 Adj Operation
SE08 SOP-8FD package
GRR RoHS (Pb Free)
Rating: -40 to 85°C
Package in Tape & Reel
NRR RoHS & Halogen free (By Request)
Rating: -40 to 85°C
Package in Tape & Reel

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

Package Configuration





FBP-8, Adjustable

Pin Fun

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.

2 Pin Description

2.1 Pin Assignment

Figure 3 below shows the DM860A package and the signal names. Note that some pins have multiple functions; please see pin description tables for details.

Top View

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
A	USBDN	VDD33 USBC	VSS33 USBC	n.c.	n.c.	VDD33	RFCLKP	RFRXQP	RFRXIP	HIGHZ	SSMD0	SSMD4	SSMCMD	RXD1	TDO	TDI	A0	A1	A
B	USBDP	VDD33 USBT	VSS33 USBT	n.c.	n.c.	VSS	RFCLKN	RFRXQN	RFRXIN	TEST1	SSMD1	SSMD5	TXD1	RXD0	TMS	SPICLK	SPINCS1	A2	B
C	VSS12 USB	USBREXT	USBXO	USBXI	NRES12 OUT	VSS	RREF	n.c.	n.c.	SSMCLK	SSMD2	SSMD6	TXD0	TCK	SPINCS0	A3	A4	A5	C
D	VDD12 USB	USBVBUS	USBATST	NRES33 OUT	NRES33 REF	NRES12 REF	VDD33	VDD12	SSMWP	SSMCP	SSMD3	SSMD7	NRESET	SPIDI	SPIDO	A6	A7	A8	D
E	VSS33 RTC	USBID	USBVB USDRV	NC		VDD12 CORE	VDD12 CORE	VDD33IO	VDD33IO	VDD12 CORE	VDD12 CORE	VDD33IO	VDD33IO		A9	A10	A11	A12	E
F	VDD33 RTC	RTCXIN	VDD33 PLL	NC	VDD33IO	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD12 CORE	A13_RAS	A14_CAS	A15_BA0	A16_BA1	F
G	VDD12 DCO	RTCXOUT	VSS33 PLL	NC	VDD33IO	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD12 CORE	A17_DQ M0	A18_DQ M1	A19	A20	G
H	VSS12 DCO	VSS12 PLL	VDD12 PLL	NC	VDD12 CORE	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD33IO	A21	A22	A23	NCS3	H
J	PDOUT1	VCO1	XTALO	NC	VDD12 CORE	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD33IO	NCS0	NCS1	NCS2	MEMCKE	J
K	PDOUT0	VCO0	XTALI	AOUTLP	VDD33IO	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD12 CORE	MEMCLK	NWE	NOE	NWAIT	K
L	AV0CLK	AOUTLN	AOUTRN	AOUTRP	VDD33IO	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD12 CORE	D3	D2	D1	D0	L
M	AV0 CTRL0	AV0 CTRL1	AV0 CTRL2	AV0 DATA3	VDD12 CORE	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD33IO	D7	D6	D5	D4	M
N	AV0 DATA2	AV0 DATA1	AV0 DATA0	AV1 DATA3	VDD12 CORE	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VSS	VDD33IO	D11	D10	D9	D8	N
P	AV1 DATA2	AV1 DATA1	AV1 DATA0	AV2 DATA3		VDD33IO	VDD33IO	VDD12 CORE	VDD12 CORE	VDD33IO	VDD33IO	VDD12 CORE	VDD12 CORE		FD0	FD1	D13	D12	P
R	AV2CLK	AV2 CTRL1	AV2 DATA2	AV3CLK	AV3 DATA1	LCDD11	LCDD7	LCDD3	LCD CTRL0	VPP	MIITXEN	MIITXCLK	MIIRXER	MIICRS	FD2	FD3	FD4	D14	R
T	AV2 CTRL0	AV2 DATA1	AV3 CTRL1	AV3 DATA0	LCDD14	LCDD10	LCDD6	LCDD2	LCD CTRL1	LCDCLK	MIIITXER	MIIRXCLK	MIICOL	MII RXDV	FD5	FD6	FD7	D15	T
U	AV2 DATA0	AV3 CTRL0	AV4 DATA1	LCDD16	LCDD13	LCDD9	LCDD5	LCDD1	LCD CTRL2	MIITXD0	MIITXD2	MIIRXD0	MIIRXD2	MIIMDIO	NFCE0	FCLE	NFWE	NFRB	U
V	NC	AV4 DATA0	LCDD17	LCDD15	LCDD12	LCDD8	LCDD4	LCDD0	LCD CTRL3	MIITXD1	MIITXD3	MIIRXD1	MIIRXD3	MIIMDC	MIIPHY CLK	NFWP	NFRE	FALE	V
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	

Figure 3: Package outline with pin assignment

2.2 Functional Diagram

Please see Figure 2 for block diagram.

2.3 AV-Port 0

Name	Pin	Type	Description
AV0DATA[3:0]	M4, N1, N2, N3	I/O	Audio/video data. Several formats are supported, as described in chapter 11
AV1DATA[3:0]	N4, P1, P2, P3	I/O	Video data, together with AV0DATA[3:0]: AV0DATA[3:0] = video[3:0] AV1DATA[3:0] = video[7:4]
AV0CLK	L1	I/O	Data clock. Depending on the AV-Port 0 configuration, this clock is a bit- or byte-clock which is used to transmit or receive the AV0DATA[*] synchronously
AV0CTRL0	M1	I/O	Configurable sync signal: • serial audio formats: LRCK input or output • video formats: PSYNC input or output
AV0CTRL1	M2	I/O	Configurable sync signal: • serial audio formats: master clock output • video formats: DVALID input or output
AV0CTRL2	M3	I/O	Configurable sync signal: • video formats: FSYNC input or output

2.4 AV-Port 2

Name	Pin	Type	Description
AV2DATA[3:0]	P4, R3, T2, U1	I/O	Audio data. Several formats are supported, as described in chapter 11
AV2CLK	R1	I/O	Data clock. Depending on the AV-Port 2 configuration this clock is a bit-clock which is used to transmit or receive the AV2DATA[*] synchronously
AV2CTRL0	T1	I/O	Configurable sync signal: serial audio formats: LRCK input or output
AV2CTRL1	R2	I/O	Configurable sync signal: serial audio formats: master clock output

2.5 AV-Port 3

Name	Pin	Type	Description
AV3DATA[1:0]	R5, T4	I/O	Audio data. Several formats are supported, as described in chapter 11
AV3CLK	R4	I/O	Data clock. Depending on the AV-Port 3 configuration this clock is a bit-clock which is used to transmit or receive the AV3DATA[*] synchronously
AV3CTRL0	U2	I/O	Configurable sync signal: serial audio formats: LRCK input or output
AV3CTRL1	T3	I/O	Configurable sync signal: serial audio formats: master clock output

2.6 AV-Port 4

Name	Pin	Type	Description
AV4DATA[1:0]	U3, V2	I/O	Audio data. Several formats are supported, as described in chapter 11

2.7 PWM-DAC

Name	Pin	Type	Description
AOUTLP	K4	O	Left channel PWM output (positive)
AOUTLN	L2	O	Left channel PWM output (negative)
AOUTRP	L4	O	Right channel PWM output (positive)
AOUTRN	L3	O	Right channel PWM output (negative)

2.8 UART Interface

Name	Pin	Type	Description
RXD0	B14	I	UART-0 receive signal
TXD0	C13	O	UART-0 transmit signal
RXD1	A14	I	UART-1 receive signal
TXD1	B13	O	UART-1 transmit signal

2.9 Serial Peripheral Interface (SPI)

Name	Pin	Type	Description
SPIDIN	D14	I	SPI data receive
SPIDOUT	D15	O	SPI data transmit
SPICLK	B16	I/O	SPI clock
SPINCS0	C15	I/O	Multi-master mode: chip-select input (used to detect bus conflict) Master only mode: chip-select 1 output Slave mode: chip-select input
SPINCS1	B17	I/O	Multi-master mode: chip-select 2 output Master only mode: chip-select 2 output Slave mode: not used

2.10 External Memory Interface

Name	Pin(s)	Type	Description
D[15:0]	T18, R18, P17, P18, N15, N16, N17, N18, M15, M16, M17, M18, L15, L16, L17, L18	I/O	Data bus for external memory and peripheral access
A[12:0]	E18, E17, E16, E15, D18, D17, D16, C18, C17, C16, B18, A18, A17	O	Address bus for external memory and peripheral access
A13_RAS	F15	O	SRAM: address output SDRAM: row access strobe
A14_CAS	F16	O	SRAM: address output SDRAM: column access strobe
A15_BA0	F17	O	SRAM: address output SDRAM: bank select
A16_BA1	F18	O	SRAM: address output SDRAM: bank select
A17_DQM0	G15	O	SRAM: address output SDRAM: data mask
A18_DQM1	G16	O	SRAM: address output SDRAM: data mask
A[23:19]	H17, H16, H15, G18, G17	O	Address bus for external memory and peripheral access
NCS[3:0]	H18, J17, J16, J15	O	Chip select signals. The active memory range for NCS[n] (active low) can be configured. • NCS[0] supports SRAM, can be used for booting • NCS[1] supports SDRAM or SRAM • NCS[2] supports SRAM • NCS[3] supports SRAM
NOE	K17	O	Output enable, asserted (low) for read operations
NWE	K16	O	Write enable, asserted (low) for write operations
NWAIT	K18	I	External wait line. If NWAIT is asserted, memory access will be stalled. Can be configured as either low-active (default) or high-active.
MEMCLK	K15	O	SDRAM system clock
MEMCKE	J18	O	SDRAM clock enable

2.11 NAND-Flash Interface

Name	Pin(s)	Type	Description
FD[7:0]	T17, T16, T15, R17, R16, R15, P16, P15	I/O	Bi-directional data bus
FALE	V18	O	Address latch enable; pull-up/down defines boot mode
FCLE	U16	O	Command latch enable; pull-up/down defines boot mode
NFCE0	U15	O	Chip-enable, low-active
NFRB	U18	I	Ready/busy. NAND flash is busy when NFRB is low.
NFRE	V17	O	Read enable, low-active
NFWE	U17	O	Write enable, low-active
NFWP	V16	O	Write protect, low-active

2.12 Ethernet MAC-Phy Interface (MII)

Name	Pin	Type	MII	RMII	SMII
MIIDIO	U14	I/O	management data	management data	
MIIMDC	V14	O	management clock	management clock	
MIIRXD[3]	V13	I	RxD 3	RxD 1	
MIIRXD[2]	U13	I	RxD 2	RxD 0	
MIIRXD[1]	V12	I	RxD 1		Rx-Sync
MIIRXD[0]	U12	I	RxD 0		RxD
MIIRXCLK	T12	I	receive clock		receive clock
MIIRXER	R13	I	receive error	receive error	
MIIRXDV	T14	I	receive data valid	carrier sense/data valid	
MIITXD[3]	V11	O	TxD 3	TxD 1	
MIITXD[2]	U11	O	TxD 2	TxD 0	
MIITXD[1]	V10	O	TxD 1		Tx-Sync
MIITXD[0]	U10	O	TxD 0		TxD
MIITXCLK	R12	I	transmit clock		transmit clock
MIITXER	T11	O	transmit error		
MIITXEN	R11	O	transmit data enable	transmit data enable	
MIICOL	T13	I	MII ethernet collision		
MIICRS	R14	I	MII carrier sense		
MIIPHYCLK	V15	O	25.000 MHz clock	50.000 MHz clock	125.000 MHz clock

2.13 USB 2.0 OTG

Name	Pin	Type	Description
USBD+	B1	I/O	Positive data line that is connected to the serial USB cable
USBD–	A1	I/O	Negative data line that is connected to the serial USB cable
USBID	E2	I	USB ID pin of mini-AB receptacle
USBREXT	C2	I	External bias resistor (2K7, 1%); connect resistor to VSSUSB
USBVBUS	D2	I	VBUS voltage sense
USBVBUSDRV	E3	O	Control signal to control VBUS 5V voltage source
USBXTALI	C4	I	Oscillator circuit input for a 24.000 MHz crystal (optional). Without external crystal, pull this pin to GND.
USBXTALO	C3	O	Oscillator circuit output for a 24.000 MHz crystal (optional). Without external crystal, leave this pin open.
USBATST	D3	–	Do not connect

2.14 Power-on Reset Pins

Name	Pin	Type	Description
NRES12REF	D6	I	Voltage reference input. NRES12OUT is release when this input voltage exceeds V_{TH12}.
NRES12OUT	C5	O	Open-drain reset (active low) for 1.2V core power supply.
NRES33REF	D5	I	Voltage reference input. NRES33OUT is release when this input voltage exceeds V_{TH33}.
NRES33OUT	D4	O	Open-drain reset (active low) for 3.3V core power supply

2.15 Real-Time Clock (RTC) Pins

Name	Pin	Type	Description
RTCXIN	F2	I	Oscillator circuit input. Connect 32.768 kHz tuning fork crystal here.
RTCXOUT	G2	O	Oscillator circuit output. Connect 32.768 kHz tuning fork crystal here.
VDD33RTC	F1	Power	Power supply (+3.3 V) for RTC
VSS33RTC	E1	Power	Ground (0 V) for RTC

2.16 LCD Interface

Name	Pin	Type	TFT Mode	LCD STN monochr.	LCD STN monochr. (double)	LCD STN color	LCD STN color (bias)
LCDD[17]	V3	O	RED5				
LCDD[16]	U4	O	RED4				
LCDD[15]	V4	O	RED3				
LCDD[14]	T5	O	RED2				
LCDD[13]	U5	O	RED1				
LCDD[12]	V5	O	(RED0)				
LCDD[11]	R6	O	GREEN5				
LCDD[10]	T6	O	GREEN4				
LCDD[9]	U6	O	GREEN3				
LCDD[8]	V6	O	GREEN2				
LCDD[7]	R7	O	GREEN1		DATAHIGH3	DATA7	DATA7
LCDD[6]	T7	O	GREEN0		DATAHIGH2	DATA6	DATA6
LCDD[5]	U7	O	BLUE5		DATAHIGH1	DATA5	DATA5
LCDD[4]	V7	O	BLUE4		DATAHIGH0	DATA4	DATA4
LCDD[3]	R8	O	BLUE3	DATA3	DATALOW3	DATA3	DATA3
LCDD[2]	T8	O	BLUE2	DATA2	DATALOW2	DATA2	DATA2
LCDD[1]	U8	O	BLUE1	DATA1	DATALOW1	DATA1	DATA1
LCDD[0]	V8	O	(BLUE0)	DATA0	DATALOW0	DATA0	DATA0
LCDCLK	T10	O	Byte clock	CL2	CL2	CL2	CL2
LCDCTRL[3]	V9	O	Display off	Display off	Display off	Display off	Display off
LCDCTRL[2]	U9	O	Vsync	FLM	FLM	FLM	FLM
LCDCTRL[1]	T9	O	HSync	CL1	CL1	CL1	CL1
LCDCTRL[0]	R9	O	DVALID				M/Bias

2.17 SSM Interface

Name	Pin(s)	Type	Description
SSMD[7:0]	D12, C12, B12, A12, D11, C11, B11, A11	I/O	Data lines
SSMCLK	C10	O	Clock output
SSMCMD	A13	O	Command output
SSMCP	D10	I	Card power input (high = off)
SSMWP	D9	I	Write protect input (low = protect)

2.18 External PLL Pins

Name	Pins	Type	Description
VCO[1:0]	J2, K2	I	External oscillator inputs, typically coming from an external VCO. Together with the external loop-filter and the internal clock dividers, each PDOUT/VCO pair can form a complete PLL.
PDOUT[1:0]	J1, K1	O	Phase discriminator outputs. These signals are charge-pump type outputs. Each of them can be used to feed the loop-filter of a PLL structure.

2.19 Global Pins

Name	Pin(s)	Type	Description
NRESET	D13	I	Reset (active low). When asserted, the chip is placed in the reset state and the peripheral pins are configured as inputs. After deassertion of NRESET, the chip is clocked by XTALI and starts booting from the port configured by the FCLE, FALE pins. The NRESET signal must be asserted after power-up.
XTALI	K3	I	Oscillator circuit input. Internal system clock will be derived from XTALI (internal clock multiplier)
XTALO	J3	O	Oscillator circuit output
RREF	C7	I	Reference current. Connect a 3.0 kOhm ±1% resistor to GND.
TEST1	B10	I	Reserved. Connect to VDD for normal operation.
HIGHZ	A10	I	Reserved. Connect to VDD for normal operation.
n.c.	E4, F4, G4, H4, J4, V1, A4, A5, B4, B5, C8, C9	–	Pins must be left unconnected (18x)

2.20 JTAG Interface

Name	Pin	Type	Description
TMS	B15	I	JTAG mode select
TCK	C14	I	JTAG clock
TDI	A16	I	JTAG serial data input
TDO	A15	O	JTAG serial data output

2.21 Power Supply Pins

Name	Pin	Description
VDD33	A6, E8, E9, E12, E13, F5, G5, H14, J14, K5, L5, M14, N14, P6, P7, P10, P11, D7	I/O power supply (+3.3 V)
VSS	F6, F7, F8, F9, F10, F11, F12, F13, G6, G7, G8, G9, G10, G11, G12, G13, H6, H7, H8, H9, H10, H11, H12, H13, J6, J7, J8, J9, J10, J11, J12, J13, K6, K7, K8, K9, K10, K11, K12, K13, L6, L7, L8, L9, L10, L11, L12, L13, M6, M7, M8, M9, M10, M11, M12, M13, N6, N7, N8, N9, N10, N11, N12, N13, B6, C6,	Ground (0 V)
VPP	R10	
VDD33USB VSS33USB	A2,B2 A3,B3	Power supply (+3.3 V) for USB interface Ground (0 V)
VDD33PLL VSS33PLL	F3 G3	Power supply (+3.3V) for PLL Ground (0 V)
VDD12	E6, E7, E10, E11, F14, G14, H5, J5, K14, L14, M5, N5, P8, P9, P12, P13, D8	Power supply (+1.2V)
VDD12USB VSS12USB	D1 C1	Power supply (+1.2V) for USB interface Ground (0 V)
VDD12PLL VSS12PLL	H3 H2	Power supply (+1.2V) for PLL Ground (0 V)
VDD12DCO VSS12DCO	G1 H1	Power supply (+1.2V) for DCO Ground (0 V)

Dongbu HiTek Semiconductor Business

DB1514A

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 (VIN - V_{DRP}) with an external resistor divider and it has ±2% accuracy through all temperature ranges include the line as well as load variations.

It is allowed to use a small 4.7μF 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***
- ***Thermal Shutdown Protection***
- ***Over Current & Short Circuit Protection***

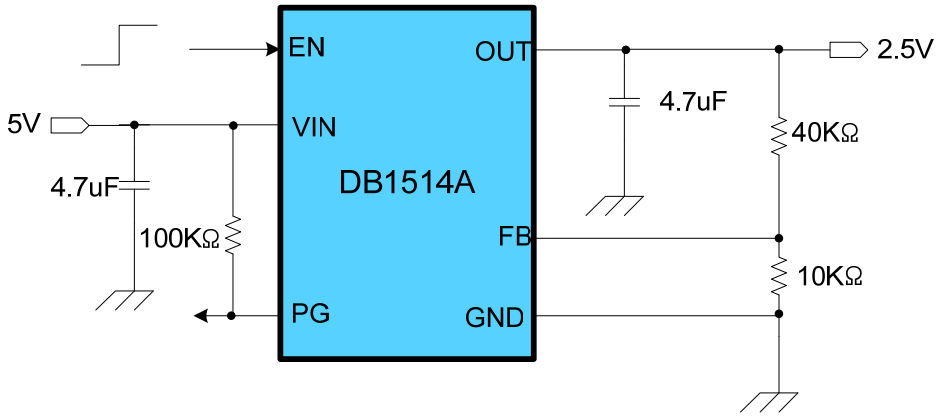
APPLICATIONS

- 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

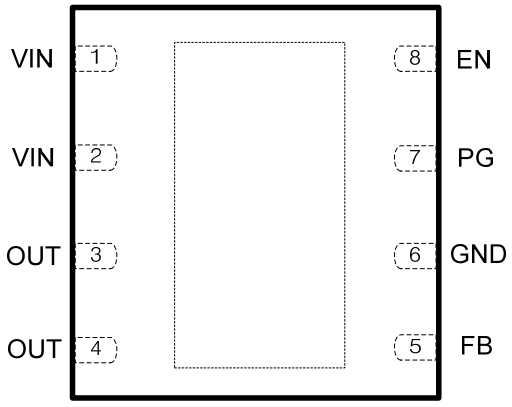


PIN DESCRIPTION

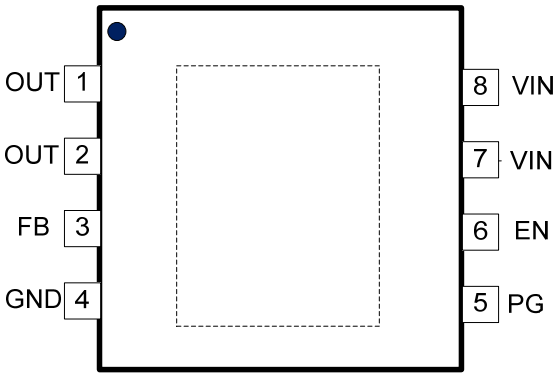
PIN NO		SYMBOL	DESCRIPTION
8-TDFN	8-SOP-EP		
7	5	PG	Open Drain Power-Good (PG) Output.
8	6	EN	Enable Input.
1,2	7,8	VIN	Input Supply Voltage Pin.
3,4	1,2	OUT	Output pin
5	3	FB	Feedback Pin. Connect to output through a voltage-divider to set the output. Recommended that the tolerance of feedback resistors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

PIN CONFIGURATION

TOP VIEW

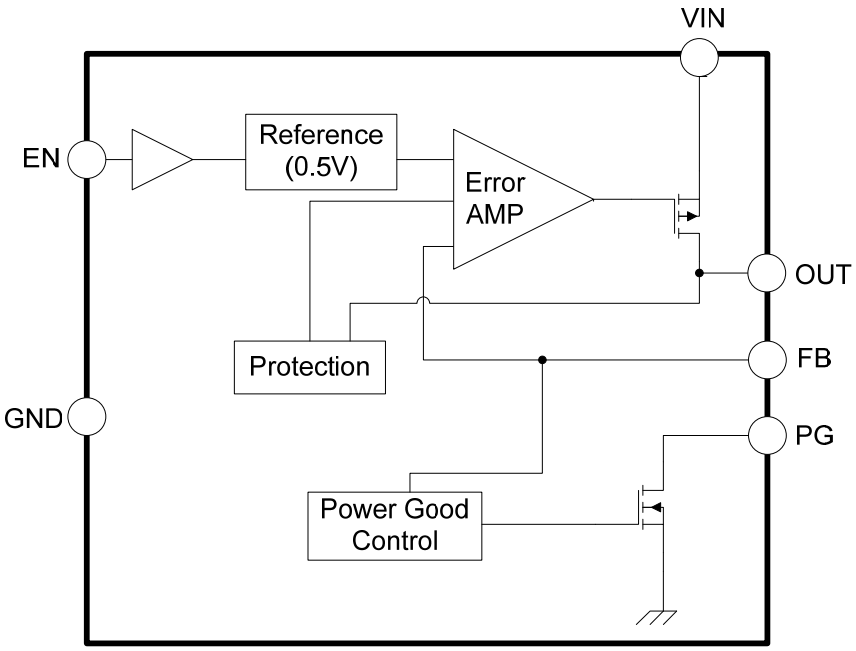


8-TDFN(3x3)



8-SOP-EP

BLOCK DIAGRAM



Dongbu HiTek
Semiconductor Business

DB1510B

1A, 0.8V Dropout LDO Regulator

DESCRIPTION

The DB1510B low-dropout linear regulator operates from input voltages as low as 2.2V and are able to deliver up to 1A of continuous output current the DB1510B offers low dropout (typically 800mV at 1A) and low quiescent current (typically 400uA at 0.1A).

Fixed output voltages of the DB1510B are 1.0V, 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.3V & 3.5V and the output voltage is 2% accurate over load and line variations. These regulators use small 2.2µF MLCC input capacitor and 4.7µF MLCC output capacitors to deliver 1A output current.

Soft-start reduces inrush current. The other features include over current protection (OCP), short-circuit protection (SCP), and thermal shut down protection (TSD).

The DB1510B is packaged SOT-223, TO-252 & 8-pin thin dual flat no lead (TDFN) package that a heat sink or an exposed pad for optimal power dissipation.

FEATURES

- ***Input Voltage Range: 2.2V to 6.0V***
- ***Quiescent Current: Typ. 400uA***
- ***Current limit : Min. 1.2A***
- ***Dropout Voltage: Typ. 800mV @ 1A***
- ***Compatible with MLCC Capacitors***
- ***Soft-Start Limits Inrush Current***
- Thermal Shutdown Protection
- Over Current & Short Circuit Protection

APPLICATIONS

- Servers
- Storage
- Networking
- Optical Modules
- Post Regulators
- Notebooks
- PDA

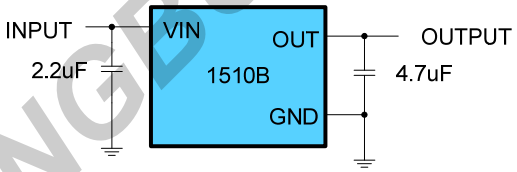
ORDERING INFORMATION

PART NUMBER	PACKAGE
DB1510BT3TRxx[NOTE1)]	TO-252 (I)
DB1510BT32TRxx[NOTE1)]	TO-252 (II)
DB1510BNNTRxx[NOTE1)]	SOT-223 (I)
DB1510BNN2TRxx[NOTE1)]	SOT-223 (II)
DB1510BDLTRxx[NOTE1)]	8-TDFN (3x3)

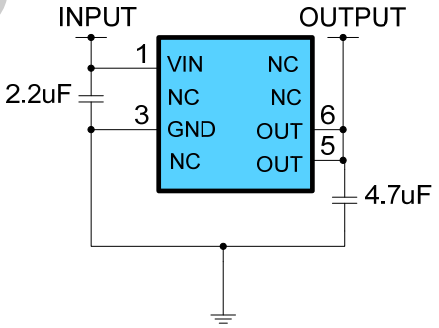
NOTE1) xx: Voltage Code, 1.0V (10), 1.2V (12), 1.5V (15), 1.8V (18), 2.5V (25), 2.8V (28), 3.3V (33) & 3.5V (35)

TYPICAL APPLICATION

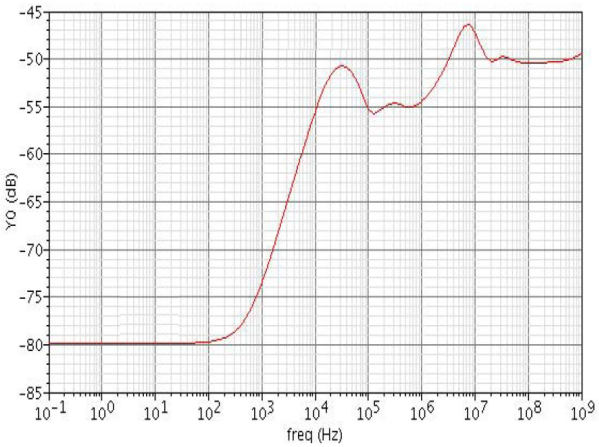
3-Lead Application Circuit



8-TDFN (3x3) Application Circuit



Power Supply Ripple Rejection

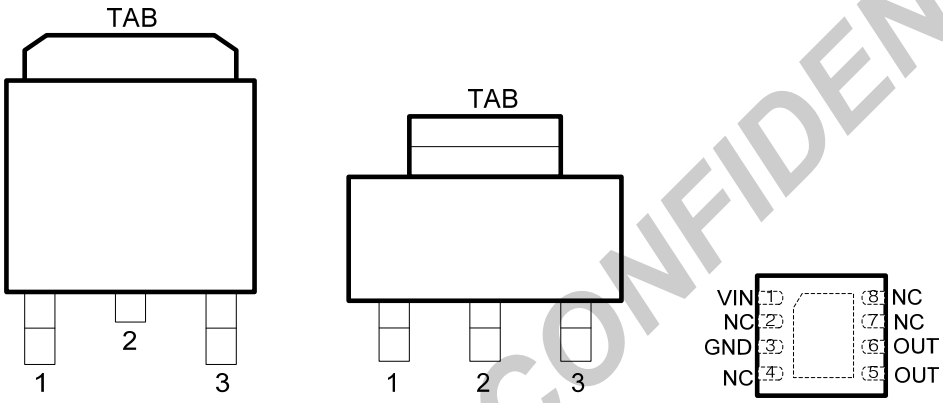


PIN DESCRIPTION

PIN NO			SYMBOL	DESCRIPTION
TO-252 (I) SOT-223 (I)	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

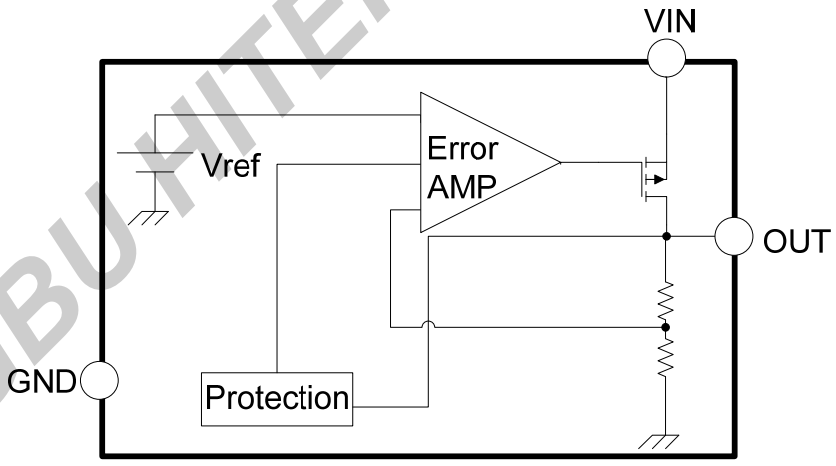
PIN CONFIGURATION

TOP VIEW



TO-252 *SOT-223* *8-TDFN (3x3)*

BLOCK DIAGRAM



Dongbu HiTek
Semiconductor Business

DB1230

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 : ± 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

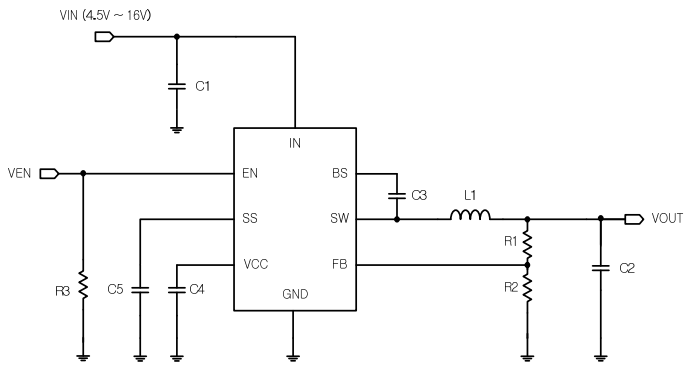


Fig.1 Normal application circuit

EFFICIENCY

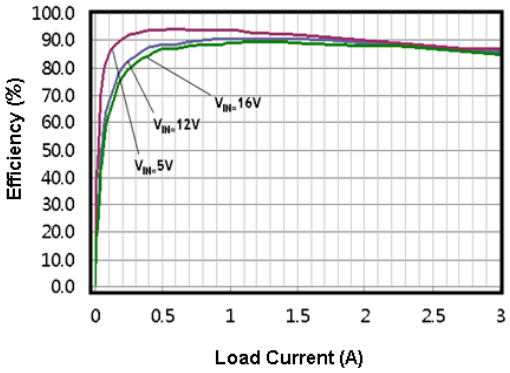


Fig.2 Efficiency (Vout=3.3V)

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

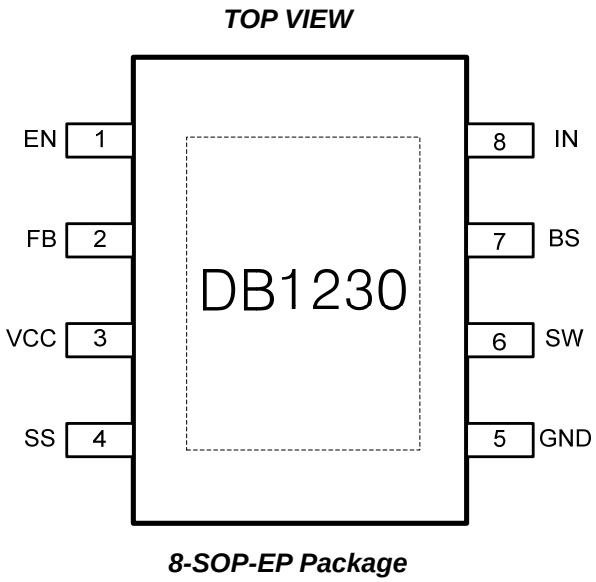


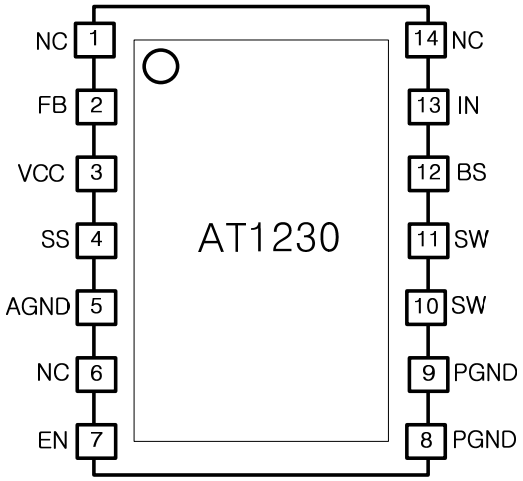
Fig.3 DB1230 PIN configuration

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

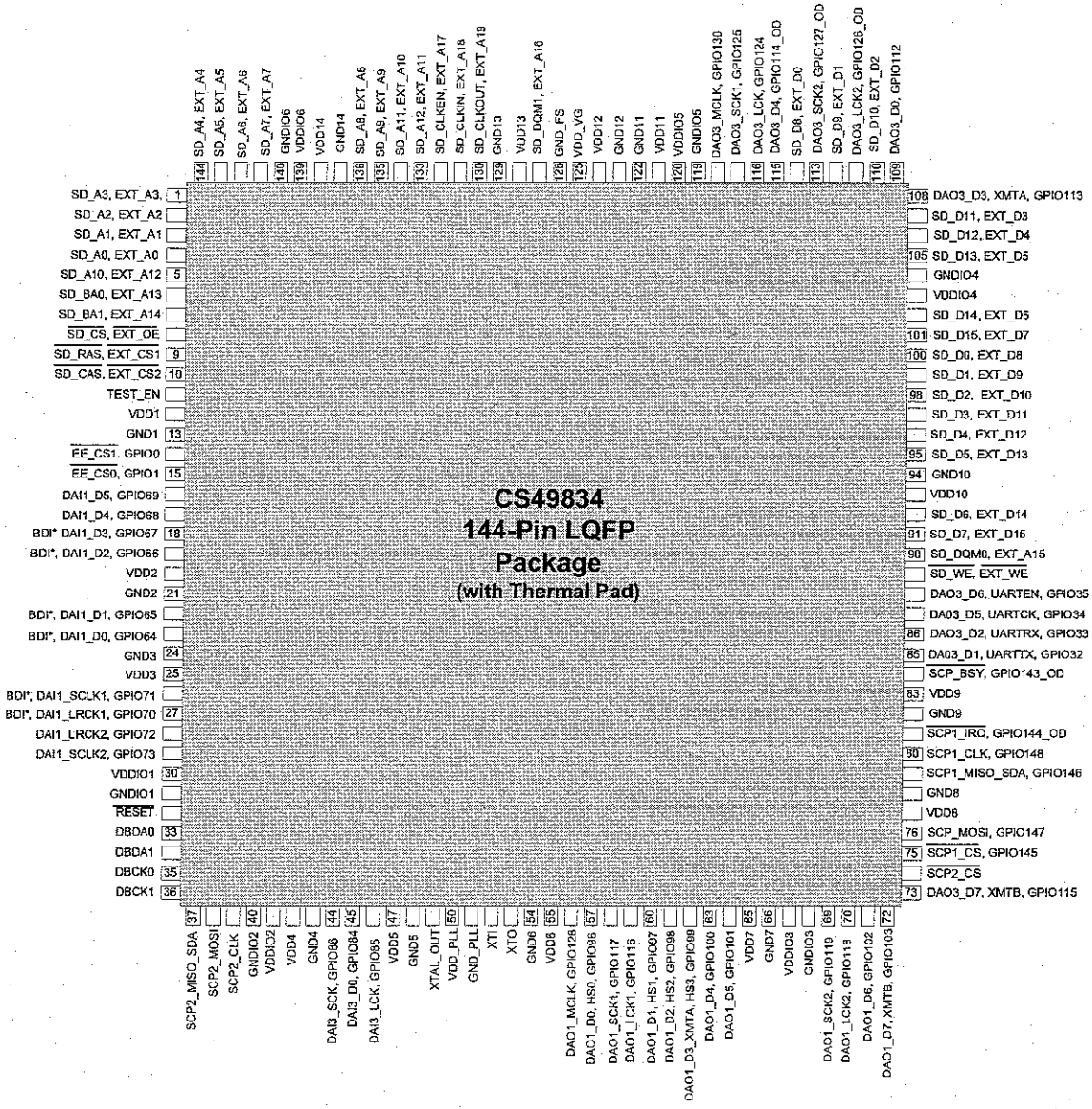
TOP VIEW



14-TSSOP-EP Package

Fig.4 DB1230 PIN configuration

8.2 144-Pin LQFP Pinout Diagram



Note: BDI* pin—Check with Factory if this pin is used.

Figure 23. 144-Pin LQFP Pin-Out Drawing for the CS49834 DSP

9. Package Mechanical Drawings

9.1 128-Pin LQFP Package Drawing

Figure 24 contains the 128-pin LQFP package drawing.

CIRRUS LOGIC®

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.

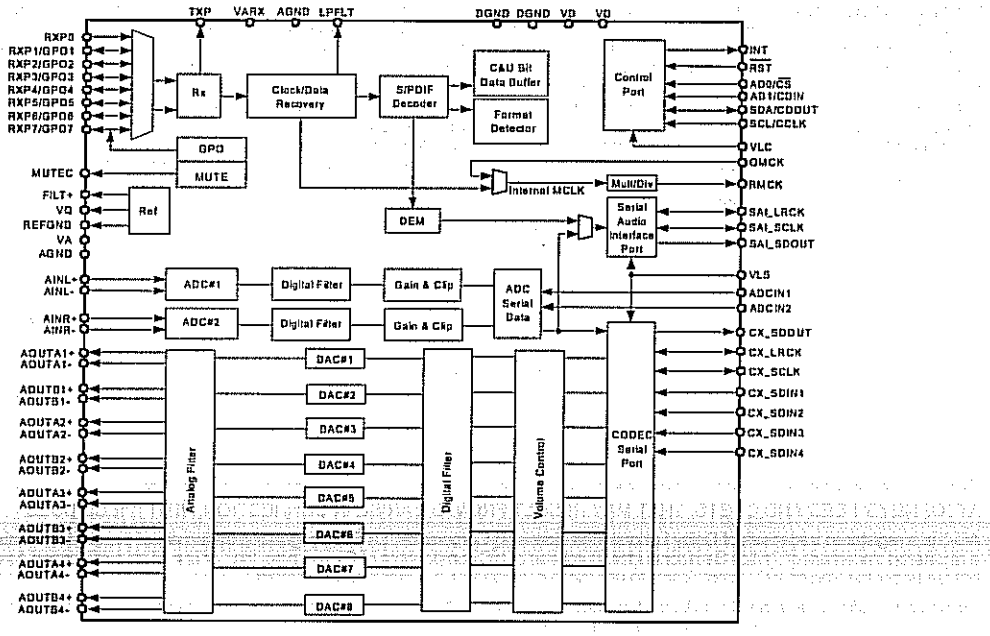
The CS42528 integrated S/PDIF receiver supports up to eight inputs, clock recovery circuitry and format auto-detection. The internal stereo ADC is capable of independent channel gain control for single-ended or differential analog inputs. All eight channels of DAC provide digital volume control and differential 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.

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

JUL '03
DS586PP1
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FILT+ Nominal Voltage		-	5.0	-	-	5.0	-	V
Output Impedance		-	35	-	-	35	-	kΩ
Maximum allowable DC current		-	0.01	-	-	0.01	-	mA

Notes: 3. Referred to the typical full-scale voltage.
4. Measured between AIN+ and AIN-

A/D DIGITAL FILTER CHARACTERISTICS

Parameter			Symbol	Min	Typ	Max	Unit
Single Speed Mode (2 to 50 kHz sample rates)							
Passband	(-0.1 dB)	(Note 5)		0	-	0.47	Fs
Passband Ripple				-	-	±0.035	dB
Stopband		(Note 5)		0.58	-	-	Fs
Stopband Attenuation				-95	-	-	dB
Total Group Delay (Fs = Output Sample Rate)			t_{gd}	-	12/Fs	-	s
Group Delay Variation vs. Frequency			Δt_{gd}	-	-	0.0	µs
Double Speed Mode (50 to 100 kHz sample rates)							
Passband	(-0.1 dB)	(Note 5)		0	-	0.45	Fs
Passband Ripple				-	-	±0.035	dB
Stopband		(Note 5)		0.68	-	-	Fs
Stopband Attenuation				-92	-	-	dB
Total Group Delay (Fs = Output Sample Rate)			t_{gd}	-	9/Fs	-	s
Group Delay Variation vs. Frequency			Δt_{gd}	-	-	0.0	µs
Quad Speed Mode (100 to 192 kHz sample rates)							
Passband	(-0.1 dB)	(Note 5)		0	-	0.24	Fs
Passband Ripple				-	-	±0.035	dB
Stopband		(Note 5)		0.78	-	-	Fs
Stopband Attenuation				-97	-	-	dB
Total Group Delay (Fs = Output Sample Rate)			t_{gd}	-	5/Fs	-	s
Group Delay Variation vs. Frequency			Δt_{gd}	-	-	0.0	µs
High Pass Filter Characteristics							
Frequency Response	-3.0 dB			-	1	-	Hz
	-0.13 dB	(Note 6)			20	-	Hz
Phase Deviation	@ 20 Hz	(Note 6)		-	10	-	Deg
Passband Ripple				-	-	0	dB
Filter Setting Time				-	10^5/Fs	-	s

Notes: 5. The filter frequency response scales precisely with Fs.
6. Response shown is for Fs equal to 48 kHz. Filter characteristics scale with Fs.

D/A DIGITAL FILTER CHARACTERISTICS

Parameter		Fast Roll-Off Min	Fast Roll-Off Typ	Fast Roll-Off Max	Slow Roll-Off Min	Slow Roll-Off Typ	Slow Roll-Off Max	Unit
Combined Digital and On-chip Analog Filter Response - Single Speed Mode - 48 kHz								
Passband (Note 9)	to -0.01 dB corner	0	-	0.4535	0	-	0.4166	Fs
	to -3 dB corner	0	-	0.4998	0	-	0.4998	Fs
Frequency Response 10 Hz to 20 kHz		-0.01	-	+0.01	-0.01	-	+0.01	dB
StopBand		0.5465	-	-	0.5834	-	-	Fs
StopBand Attenuation	(Note 10)	90	-	-	64	-	-	dB
Group Delay		-	12/Fs	-	-	6.5/Fs	-	s
Passband Group Delay Deviation	0 - 20 kHz	-	-	±0.41/Fs		-	±0.14/Fs	s
De-emphasis Error (Note 11)	Fs = 32 kHz	-	-	±0.23	-	-	±0.23	dB
(Relative to 1 kHz)	Fs = 44.1 kHz	-	-	±0.14	-	-	±0.14	dB
	Fs = 48 kHz	-	-	±0.09	-	-	±0.09	dB
Combined Digital and On-chip Analog Filter Response - Double Speed Mode - 96 kHz								
Passband (Note 9)	to -0.01 dB corner	0	-	0.4166	0	-	0.2083	Fs
	to -3 dB corner	0	-	0.4998	0	-	0.4998	Fs
Frequency Response 10 Hz to 20 kHz		-0.01	-	0.01	-0.01	-	0.01	dB
StopBand		0.5834	-	-	0.7917	-	-	Fs
StopBand Attenuation	(Note 10)	80	-	-	70	-	-	dB
Group Delay		-	4.6/Fs	-	-	3.9/Fs	-	s
Passband Group Delay Deviation	0 - 20 kHz	-	-	±0.03/Fs		-	±0.01/Fs	s
Combined Digital and On-chip Analog Filter Response - Quad Speed Mode - 192 kHz								
Passband (Note 9)	to -0.01 dB corner	0	-	0.1046	0	-	0.1042	Fs
	to -3 dB corner	0	-	0.4897	0	-	0.4813	Fs
Frequency Response 10 Hz to 20 kHz		-0.01	-	0.01	-0.01	-	0.01	dB
StopBand		0.6355	-	-	0.8683	-	-	Fs
StopBand Attenuation	(Note 10)	90	-	-	75	-	-	dB
Group Delay		-	4.7/Fs	-	-	4.2/Fs	-	s
Passband Group Delay Deviation	0 - 20 kHz	-	-	±0.01/Fs		-	±0.01/Fs	s

Notes: 9. Response is clock dependent and will scale with Fs. Note that the response plots (Figures 46 to 69) have been normalized to Fs and can be de-normalized by multiplying the X-axis scale by Fs.

10. Single and Double Speed Mode Measurement Bandwidth is from stopband to 3 Fs. Quad Speed Mode Measurement Bandwidth is from stopband to 1.34 Fs.

11. De-emphasis is available only in Single Speed Mode.

SWITCHING CHARACTERISTICS - CONTROL PORT - I²C FORMAT (For CQ, T_A = -10 to +70° C; For DQ, T_A = -40 to +85° C; VA=VARX = 5 V, VD =VLS= 3.3 V; VLC = 1.8 V to 5.25 V; Inputs: Logic 0 = DGND, Logic 1 = VLC, C_L = 30 pF)

Parameter		Symbol	Min	Max	Unit
SCL Clock Frequency		f_{scl}	-	100	kHz
$\overline{RST}$ Rising Edge to Start		t_{irs}	500	-	ns
Bus Free Time Between Transmissions		t_{buf}	4.7	-	µs
Start Condition Hold Time (prior to first clock pulse)		t_{hdst}	4.0	-	µs
Clock Low time		t_{low}	4.7	-	µs
Clock High Time		t_{high}	4.0	-	µs
Setup Time for Repeated Start Condition		t_{sust}	4.7	-	µs
SDA Hold Time from SCL Falling	(Note 16)	t_{hdd}	0	-	µs
SDA Setup time to SCL Rising		t_{sud}	250	-	ns
Rise Time of SCL and SDA		t_{rc}	-	1	µs
Fall Time SCL and SDA		t_{fc}	-	300	ns
Setup Time for Stop Condition		t_{susp}	4.7	-	µs
Acknowledge Delay from SCL Falling	(Note 17)	t_{ack}	-	(Note 18)	ns

Notes: 16. Data must be held for sufficient time to bridge the transition time, t_{fc}, of SCL.

17. The acknowledge delay is based on MCLK and can limit the maximum transaction speed.

18. $\frac{15}{256 \times Fs}$ for Single-Speed Mode, $\frac{15}{128 \times Fs}$ for Double-Speed Mode, $\frac{15}{64 \times Fs}$ for Quad-Speed Mode

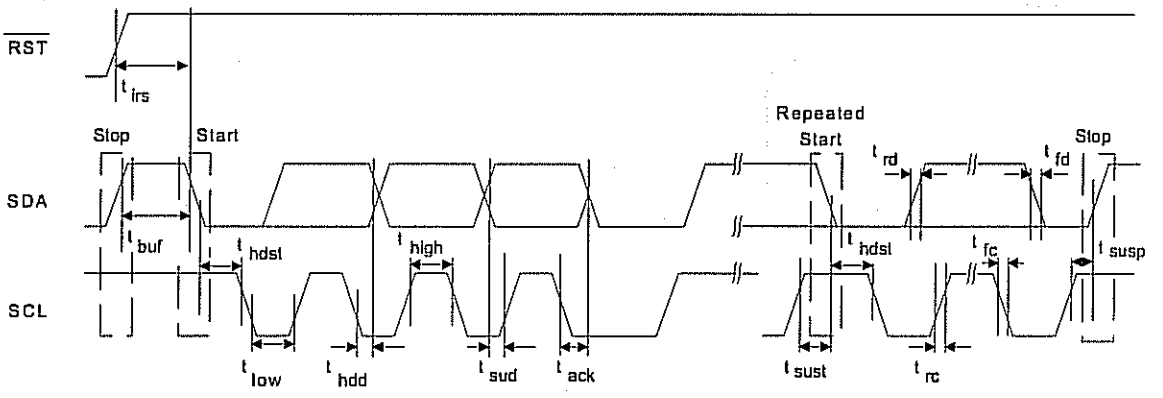


Figure 3. Control Port Timing - I²C Format

DC ELECTRICAL CHARACTERISTICS (T_A = 25° C; AGND=DGND=0, all voltages with respect to ground; OMCK=12.288 MHz; Master Mode)

Parameter		Symbol	Min	Typ	Max	Units
Power Supply Current (Note 22)	normal operation, VA = VARX = 5 V	I_A	-	90	-	mA
	VD = 5 V	I_D	-	150	-	mA
	VD = 3.3 V	I_D	-	100	-	mA
	Interface current, VLC=5 V (Note 23)	I_{LC}	-	250	-	µA
	VLS=5 V	I_{LS}	-	250	-	µA
	power-down state (all supplies) (Note 24)	I_{pd}	-	250	-	µA
Power Consumption	(Note 22)					
VA=VARX=5 V, VD=VLS=VLC=3.3 V	normal operation		-	780	850	mW
	power-down (Note 24)		-	1.25	-	mW
VA=VARX=5 V, VD=VLS=VLC=5 V	normal operation		-	950	1050	mW
	power-down (Note 24)		-	1.25	-	mW
Power Supply Rejection Ratio (Note 25)	(1 kHz)	PSRR	-	60	-	dB
	(60 Hz)		-	40	-	dB

Notes: 22. Current consumption increases with increasing FS and increasing OMCK. Max values are based on highest FS and highest OMCK. Variance between speed modes is negligible.

23. I_{LC} measured with no external loading on the SDA pin.

24. Power down mode is defined as $\overline{RST}$ pin = Low with all clock and data lines held static.

25. Valid with the recommended capacitor values on FILT+ and VQ as shown in Figure 5.

DIGITAL INTERFACE CHARACTERISTICS (For CQ, T_A = +25° C; For DQ, T_A = -40 to +85° C)

Parameters (Note 26)		Symbol	Min	Typ	Max	Units
High-Level Input Voltage	Serial Port		0.7xVLS	-	-	V
	Control Port	V_{IH}	0.7xVLC	-	-	V
Low-Level Input Voltage	Serial Port		-	-	0.2xVLS	V
	Control Port	V_{IL}	-	-	0.2xVLC	V
High-Level Output Voltage at I_o=2 mA	(Note 27)Serial Port		VLS-1.0	-	-	V
	Control Port		VLC-1.0	-	-	V
	MUTEC, GPOx	V_{OH}	VA-1.0	-	-	V
	TXP		VD-1.0	-	-	V
Low-Level Output Voltage at I_o=2 mA (Note 27) Serial Port, Control Port, MUTEC, GPOx,TXP		V_{OL}	-	-	0.4	V
Input Sensitivity, RXP[7:0]		V_{TH}	-	150	200	mVpp
Input Leakage Current		I_{in}	-	-	±10	µA
Input Capacitance			-	8	-	pF
MUTEC Drive Current			-	3	-	mA

Notes: 26. Serial Port signals include: RMCK, OMCK, SAI_SCLK, SAI_LRCK, SAI_SDOUT, CX_SCLK, CX_LRCK, CX_SDOUT, CX_SDIN1-4 ADCIN1/2
Control Port signals include: SCL/CCLK, SDA/CDOUT, AD0/$\overline{CS}$, AD1/CDIN, INT, $\overline{RST}$
S/PDIF-GPO Interface signals include: RXP0, RXP/GPO[1:7]

27. When operating RMCK above 24.576 MHz, limit the loading on the signal to 1 CMOS load.

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

Product Specification

BM840 Stereo Solution Module

Bluetooth Qualified

CSR**8640A04**

April 2012

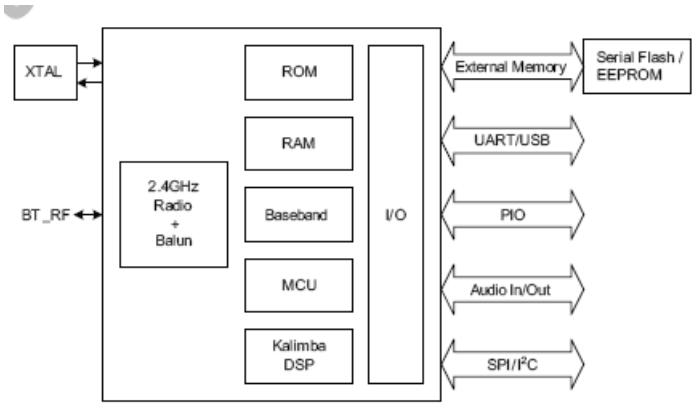
Features:

- Bluetooth Spec 4.0 Compliant
- Class 2 type Output Power
- Support A2DP 1.2,AVRCP V1.4,HSP 1.2 and HFP 1.6 Profiles
- Secure simple pairing, CSR's proximity pairing and CSR's proximity connection
- HFP v1.6 includes wideband speech and mSBC Codec.
- CSR's latest CVC technology audio enhancement
- Multipoint connection to 2 phones for voice and Music
- Support for multi-language programmable audio prompts
- OS battery status monitoring and smart apps
- Voice recognition support for answering a call, enables true hands-free use
- Wired audio support (USB and analogue)
- SBC, MP3, and AAC decoder support
- 5-band fully configurable EQ
- Integrated dual switch-mode regulators, linear regulators and battery charger
- Support for 802.11 Co-existence
- Size: 15mm x 11mm x 2.35mm
- Weight: 0.8g

Product Description:

The BM840 is a Class 2 Bluetooth sub-system using CSR8640 chipset from leading Bluetooth chipset supplier Cambridge Silicon Radio.

It is a single-chip radio and baseband IC for Bluetooth 2.4GHz systems.The integrated peripherals reduce the number of external components required, including no requirement for external codec, battery charger, SMPS, LDOs, balun or external program memory, ensuring minimum production costs.



System Architecture

Applications:

- Stereo headsets and Headphones
- Wireless speaker

Specifications:

Operating Frequency Band	2.4GHz ~ 2.48GHz unlicensed ISM band
Bluetooth Specification	V4.0
Output Power Class	Class 2
Operating Voltage	3.3V
Host Interface	USB 1.1
Audio Interface	PCM, I2S, Analogue and USB audio
Dimension	15mm (L) x 11(W) mm x 2.35mm (H)

Specifications are subject to change without prior notice

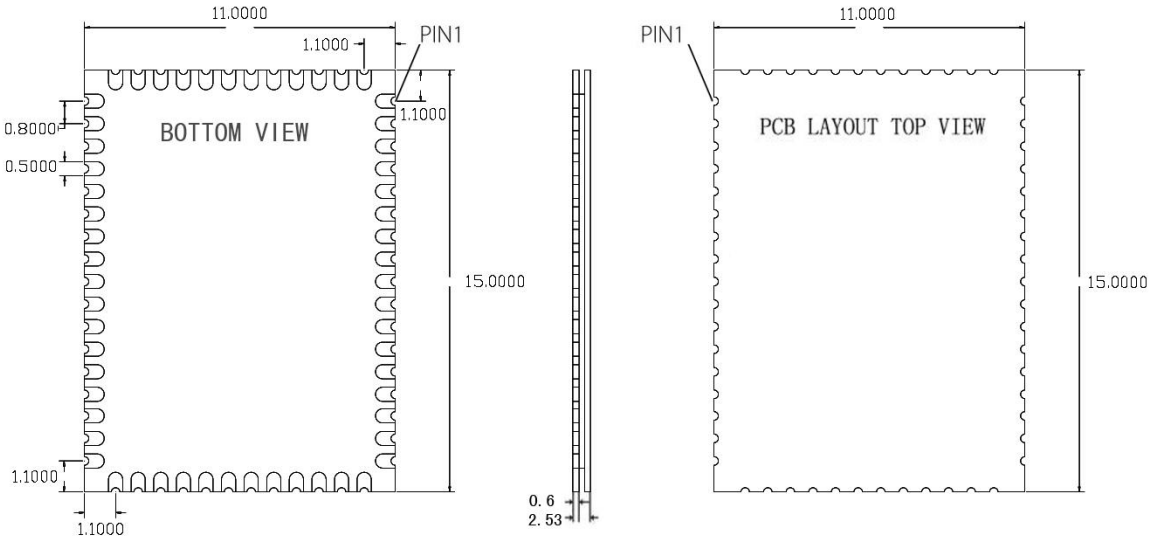
Pin Configurations

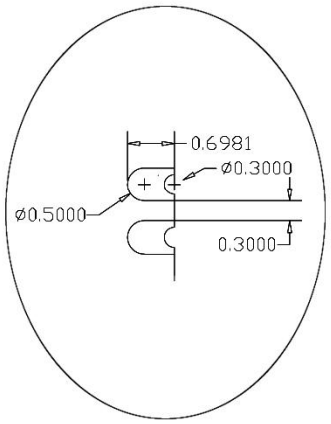
PIN NO.	NAME	TYPE	FUNCTION	RE-MARK
1	GND	GND	Ground	
2	GND	GND	Ground	
3	AIO0	Bi-directional	Analogue programmable input / output line	
4	PIO12	Bi-directional	Programmable Input/Output Line Alternative function: ■ QSPI_FLASH_CS#: serial quad I/O flash chip select ■ I2C_WP: I²C bus memory write protect line	
5	PIO14	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_RX: UART data input	
6	PIO11	Bi-directional	Programmable Input/Output Line Alternative function: ■ QSPI_IO[0]: serial quad I/O flash data bit 0 ■ I2C_SDA: I²C serial data line	
7	PIO17	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_CTS: UART clear to send, active low	
8	PIO10	Bi-directional	Programmable Input/Output Line Alternative function: ■ QSPI_FLASH_CLK: serial quad I/O flash clock ■ I2C_SCL: I²C serial clock line	
9	PIO15	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_TX: UART data output	
10	PIO16	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_RTS: UART request to send, active low	
11	PIO13	Bi-directional	Programmable Input/Output Line Alternative function: ■ QSPI_IO[1]: serial quad I/O flash data bit 1	
12	GND	GND	Ground	
13	PIO2	Bi-directional	Programmable Input/Output Line Alternative functions: ■ SPI_MOSI: SPI data input ■ PCM1_IN: PCM1 synchronous data input	
14	PIO5	Bi-directional	Programmable Input/Output Line Alternative functions: ■ SPI_CLK: SPI clock ■ PCM1_CLK: PCM1 synchronous data clock	
15	PIO4	Bi-directional	Programmable Input/Output Line Alternative functions: ■ SPI_CS#: chip select for SPI, active low ■ PCM1_SYNC: PCM1 synchronous data sync	
16	PIO3	Bi-directional	Programmable Input/Output Line Alternative functions: ■ SPI_MISO: SPI data output ■ PCM1_OUT: PCM1 synchronous data output	
17	GND	GND	Ground	
18	LED1	Bi-directional	LED driver. Alternative function: programmable output PIO[30].	
19	LED0	Bi-directional	LED driver. Alternative function: programmable output PIO[29].	
20	RST#	Input with strong pull-up	Reset if low. Pull low for minimum 5ms to cause a reset.	
21	SPI_PCM#	Bidirectional with weak pull-down	SPI/PCM select input: ■ 0 = PCM/PIO interface ■ 1 = SPI	
22	VREGENABLE	CMOS Input	Regulator enable input Can also be sensed as an input. Regulator enable and multifunction button. A high input (tolerant to VBAT) enables the on-chip regulators, which can then be latched on internally and the button used as a multifunction input	
23	GND	GND	Ground	
24	VBUS	Power Input	Charger input.	

			Typically connected to VBUS (USB supply) as Section 12 shows.	
25	CHG_EXT		External battery charger control. External battery charger transistor base control when using external charger boost. Otherwise leave unconnected.	
26	VBAT_SENSE		Battery charger sense input. Connect directly to the battery positive pin.	
27	VBAT	Power IN	Battery positive terminal.	
28	GND	GND	Ground	
29	1V8_SMPS	Power out	Serial Peripheral Interface Clock	
30	VDD_PADS	Power IN	Positive supply input for input/output ports	
31	PIO9	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_CTS: UART clear to send, active low	
32	PIO0	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_RX: UART data input	
33	PIO6	Bi-directional	Programmable Input/Output Line	
34	PIO18	Bi-directional	Programmable Input/Output Line	
35	PIO19	Bi-directional	Programmable Input/Output Line	
36	GND	GND	Ground	
37	USB_N	Bi-directional	USB data minus	
38	USB_P	Bi-directional	USB data plus with selectable internal 1.5kΩ pull-up resistor	
39	PIO7	Bi-directional	Programmable Input/Output Line	
40	PIO1	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_TX: UART data output	
41	PIO8	Bi-directional	Programmable Input/Output Line Alternative functions: ■ UART_RTS: UART request to send, active low	
42	PIO21	Bi-directional	Programmable Input/Output Line	
43	PIO20	Bi-directional	Programmable Input/Output Line	
44	LED2	Bi-directional	LED driver. Alternative function: programmable output PIO[31]	
45	GND	GND	Ground	
46	MIC_BIAS	Analogue out	Microphone bias	
47	MIC_RN	Analogue in	Microphone input negative, channel A	
48	MIC_RP	Analogue in	Microphone input positive, channel A	
49	MIC_LN	Analogue in	Microphone input negative, channel B	
50	MIC_LP	Analogue in	Microphone input positive, channel B	
51	AGND	Analogue	Ground connection for audio and audio driver.	
52	SPK_RN	Analogue out	Speaker A output negative, right	
53	SPK_RP	Analogue out	Speaker A output positive, right	
54	SPK_LN	Analogue out	Speaker A output negative, left	
55	SPK_LP	Analogue out	Speaker A output positive, left	
56	GND	GND	Ground	
57	RF_IN	GND	Bluetooth 50Ω transmitter output /receiver input	
58	GND	GND	Ground	

Recommended Layout patterns:

Physical Dimension Unit in mm





NO	PINNAME	NO	PINNAME
1	GND	31	PIO[9]
2	GND	32	PIO[0]
3	AIO[0]	33	PIO[6]
4	PIO[12]	34	PIO[18]
5	PIO[14]	35	PIO[19]
6	PIO[11]	36	GND
7	PIO[17]	37	USB_N
8	PIO[10]	38	USB_P
9	PIO[15]	39	PIO[7]
10	PIO[16]	40	PIO[1]
11	PIO[13	41	PIO[8]
12	GND	42	PIO[21]
13	PIO[2]	43	PIO[20]
14	PIO[5]	44	LED[2]
15	PIO[4]	45	GND
16	PIO[3]	46	MIC_BIAS
17	GND	47	MIC_RN
18	LED[1]	48	MIC_RP
19	LED[0]	49	MIC_LN
20	RST#	50	MIC_LP
21	SPI_PCM#	51	AGND
22	VREGENABLE	52	SPKR_RN
23	GND	53	SPKR_RP
24	VBUS	54	SPKR_LN
25	CHG_EXT	55	SPKR_LP
26	VBAT_SENSE	56	GND
27	VBAT	57	RF
28	GND	58	GND
29	1V8_SMPS		
30	VDD_PADS		

Configuration

BD3812F

Audio ICs

2 channel Volume IC

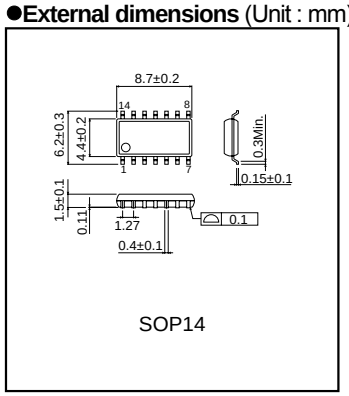
BD3812F

BD3812F is a sound processor IC that has features of volume, and gain amplifier required for AV receiver and mini-component stereo. Up to 4 chips can be used with common bus line by chip select pin.

●Applications

AV receiver and mini stereo set.

●External dimensions (Unit : mm)



SOP14

●Features

1) Volume residual noise : 1.2μ Vrms {Dynamic range : 131dB (IHF-A)}
2) Volume is 2ch-independence. (0 to -103dB, MUTE 1dB / step)
3) BUS is common and be possible to maximum 8channnel-ization of 6ch-Volume IC.
4) It can be controlled until 4 chips with common bus line at the same time.
5) Maximum output voltage : 4.2Vrms (Vcc=7V, V_{EE}=−7V, RL=10kΩ)
6) The serial data control of 2-wire type. (correspond to 3.3V and 5V)
7) Built-in the convenient output gain amp.(0, 6 to 18dB, 2dB / step) for the adjustment of the output signal.
8) Output mute be able to serial data and external mute terminal both.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Impressed voltage	V_{CC}–V_{EE}	15	V
Input voltage	V_{IN}	V_{CC}+0.3 to V_{EE}–0.3	V
Power dissipation	Pd	450 *	mW
Operating temperature	Topr	–20 to +75	˚C
Storage temperature	Tastg	–55 to +125	˚C

* This value decreases 4.5mW/ ˚C for Ta=25˚C or more.
A standard board,70×70×1.6mm, shall be mounted.

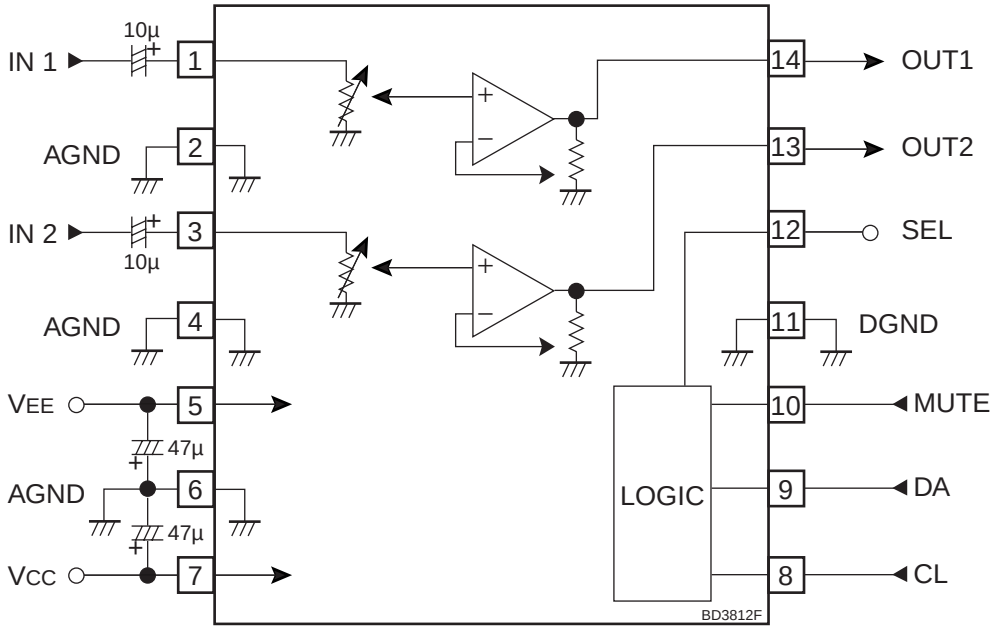
●Operating voltage range (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply (Positive)	V_{CC}–GND	5	–	7.3	V
Power supply (Negative)	V_{EE}–GND	–5	–	–7.3	V

●**Electrical Characteristics** (Unless otherwise noted, Ta=25°C, V_{CC}=7V, V_{EE}=-7V, f=1kHz, V_{IN}=1Vrms, RL=10kΩ, Rg=600Ω, Master volume=0dB, Output gain=0dB)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Circuit current (7pin / 5pin)	IQ	–	2	6	mA	No signal
Output voltage gain	GV	–2	0	+2	dB	Measure : Pin13, 14
Total harmonic distortion ratio	THD	–	0.005	0.09	%	Measure : Pin13, 14, BW=400~30kHz
Maximum output voltage	Vomax	3.4	4.2	–	Vrms	Measure : Pin13, 14, THD=1%
Output noise voltage	Vno	–	1.2	5	μVrms	Measure : Pin13, 14, Rg=0Ω, BW=IHF–A
Input impedance	Rin	20	30	40	kΩ	Measure : Pin1, 3
Cross-talk between channels	CTC	–	–100	–70	dB	Measure : Pin13(OUT2), Rg=0Ω, BW=IHF–A, Reference : Pin14(OUT1)=1Vrms
Volume control range	GVR	–106	–103	–100	dB	Measure : Pin13, 14, V_{IN}=3Vrms
Maximum attenuation	Vmin	–	–118	–105	dB	BW=IHF–A, Measure : Pin13, 14, V_{IN}=3Vrms
Output gain control range	GOG	16	18	20	dB	Measure : Pin13, 14, V_{IN}=0.4Vrms

●**Application circuit diagram**



UNIT
CAPACITOR : F

Appendix

Notes

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Data Sheet

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 ±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 vesions 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: ±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°C

Applications

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

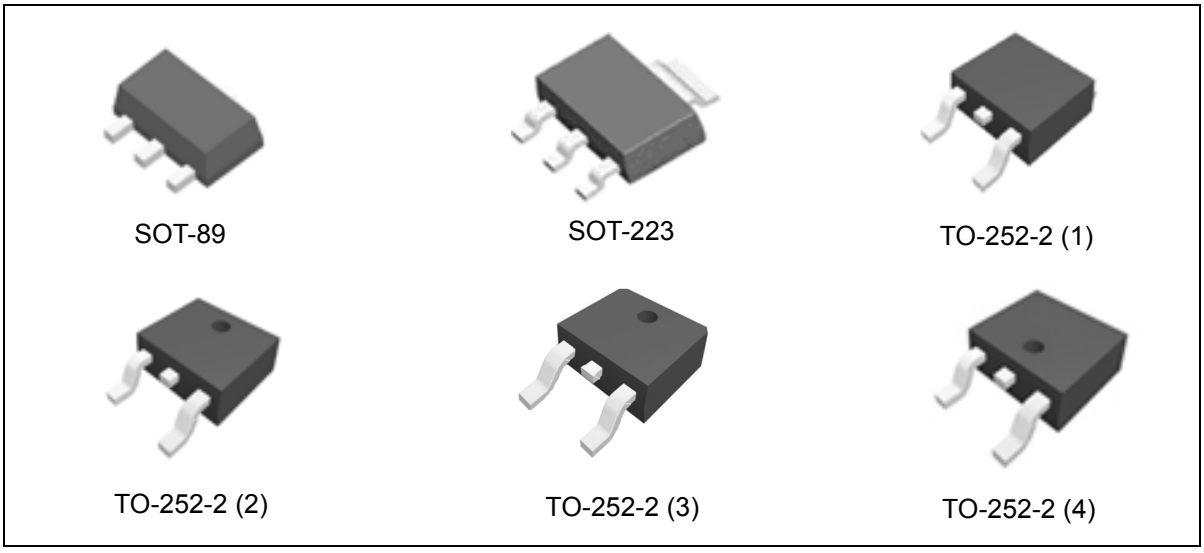
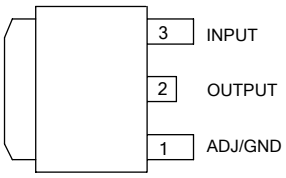


Figure 1. Package Types of AZ1117C

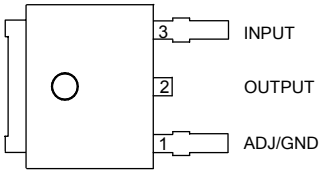
Pin Configuration

D Package

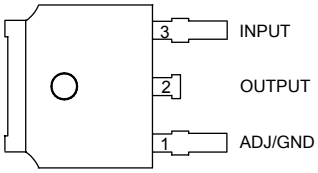
(TO-252-2 (1))



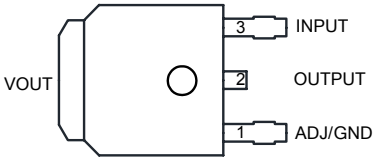
(TO-252-2 (2))



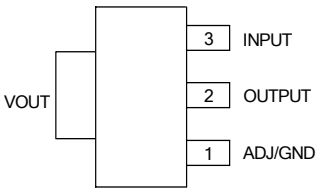
(TO-252-2 (3))



(TO-252-2 (4))



H Package
(SOT-223)



R Package
(SOT-89)

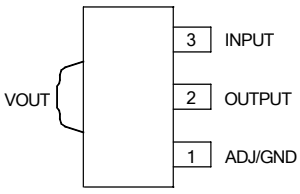


Figure 2. Pin Configuration of AZ1117C (Top View)

KEC

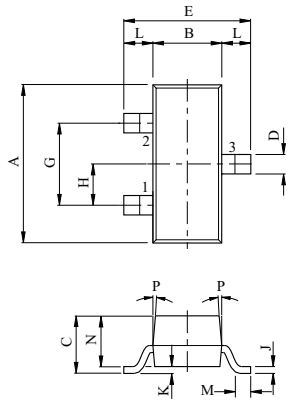
SEMICONDUCTOR
TECHNICAL DATA

2N7002K
N Channel MOSFET
ESD Protected 2000V

INTERFACE AND SWITCHING APPLICATION.

FEATURES

- ESD Protected 2000V.
- High density cell design for low $R_{DS(ON)}$.
- Voltage controlled small signal switch.
- Rugged and reliable.
- High saturation current capablity.



DIM	MILLIMETERS
A	2.93± 0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.45+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°

1. SOURCE
2. GATE
3. DRAIN

SOT-23

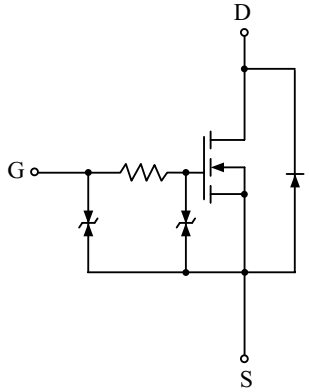
MAXIMUM RATING (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	300	mA
	Pulsed (Note 1)	I_{DP}	1200	
Drain Power Dissipation (Note 2)		P_D	300	mW
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55～150	℃

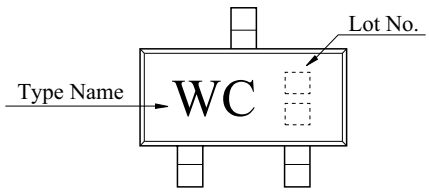
Note 1) Pulse Width ≦10㎲, Duty Cycle ≦1%

Note 2) Package mounted on a glass epoxy PCB($100mm^2 \times 1mm$)

EQUIVALENT CIRCUIT



Marking



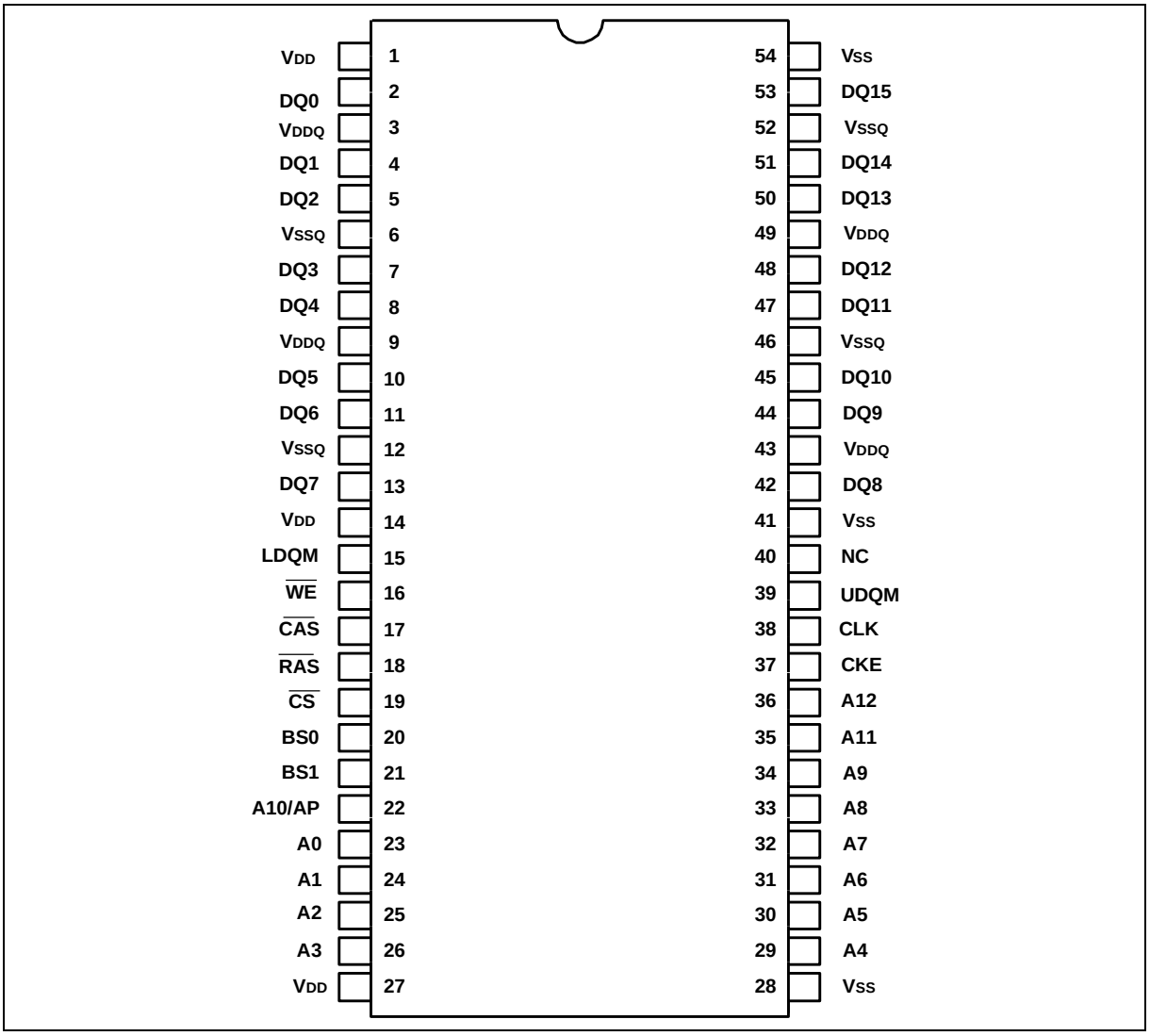
ELECTRICAL CHARACTERISTICS (Ta=25℃)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=10㎂	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	㎂
Gate-Body Leakage, Forward	I_{GSSF}	V_{GS}=20V, V_{DS}=0V	-	-	10	㎂
Gate-Body Leakage, Reverse	I_{GSSR}	V_{GS}=-20V, V_{DS}=0V	-	-	-10	㎂

3. AVAILABLE PART NUMBER

PART NUMBER	SPEED GRADE	SELF REFRESH CURRENT (MAX)	OPERATING TEMPERATURE
W9825G6JH-5	200MHz/CL3	2mA	0°C ~ 70°C
W9825G6JH-6	166MHz/CL3 or 133MHz/CL2	2mA	0°C ~ 70°C
W9825G6JH-6I	166MHz/CL3	2mA	-40°C ~ 85°C
W9825G6JH-6A	166MHz/CL3	2mA	-40°C ~ 85°C
W9825G6JH-6L	166MHz/CL3	1.5mA	0°C ~ 70°C
W9825G6JH-75	133MHz/CL3	1mA	0°C ~ 70°C
W9825G6JH75L	133MHz/CL3	1.5mA	0°C ~ 70°C

4. PIN CONFIGURATION



5. PIN DESCRIPTION

PIN NUMBER	PIN NAME	FUNCTION	DESCRIPTION
23–26, 22, 29–36	A0–A12	Address	Multiplexed pins for row and column address. Row address: A0–A12. Column address: A0–A8.
20, 21	BS0, BS1	Bank Select	Select bank to activate during row address latch time, or bank to read/write during address latch time.
2, 4, 5, 7, 8, 10, 11, 13, 42, 44, 45, 47, 48, 50, 51, 53	DQ0–DQ15	Data Input/Output	Multiplexed pins for data output and input.
19	$\overline{CS}$	Chip Select	Disable or enable the command decoder. When command decoder is disabled, new command is ignored and previous operation continues.
18	$\overline{RAS}$	Row Address Strobe	Command input. When sampled at the rising edge of the clock, $\overline{RAS}$, $\overline{CAS}$ and $\overline{WE}$ define the operation to be executed.
17	$\overline{CAS}$	Column Address Strobe	Referred to $\overline{RAS}$
16	$\overline{WE}$	Write Enable	Referred to $\overline{RAS}$
15, 39	LDQM, UDQM	Input/Output Mask	The output buffer is placed at Hi-Z(with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
38	CLK	Clock Inputs	System clock used to sample inputs on the rising edge of clock.
37	CKE	Clock Enable	CKE controls the clock activation and deactivation. When CKE is low, Power Down mode, Suspend mode, or Self Refresh mode is entered.
1, 14, 27	V_{DD}	Power (+3.3V)	Power for input buffers and logic circuit inside DRAM.
28, 41, 54	V_{SS}	Ground	Ground for input buffers and logic circuit inside DRAM.
3, 9, 43, 49	V_{DDQ}	Power (+3.3V) for I/O Buffer	Separated power from V_{DD}, to improve DQ noise immunity.
6, 12, 46, 52	V_{SSQ}	Ground for I/O Buffer	Separated ground from V_{SS}, to improve DQ noise immunity.
40	NC	No Connection	No connection.

DATA SHEET

NEC

MOS FIELD EFFECT TRANSISTOR

μPA672T

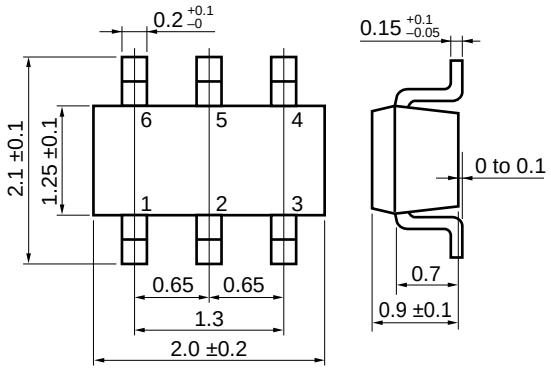
N-CHANNEL MOS FET ARRAY FOR SWITCHING

The μPA672T is a super-mini-mold device provided with two MOS FET elements. It achieves high-density mounting and saves mounting costs.

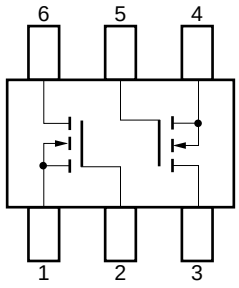
FEATURES

- Two MOS FET circuits in package the same size as SC-70
- Automatic mounting supported

PACKAGE DIMENSIONS (in millimeters)



PIN CONNECTION



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

Marking: MA

ABSOLUTE MAXIMUM RATINGS (T_A = 25 ˚C)

PARAMETER	SYMBOL	TEST CONDITIONS	RATINGS	UNIT
Drain to Source Voltage	V_{DSS}		50	V
Gate to Source Voltage	V_{GSS}		±7.0	V
Drain Current (DC)	$I_{D(DC)}$		100	mA
Drain Current (pulse)	$I_{D(pulse)}$	PW ≤ 10 ms, Duty Cycle ≤ 50 %	200	mA
Total Power Dissipation	P_T		200 (Total)	mW
Channel Temperature	T_{ch}		150	˚C
Storage Temperature	T_{stg}		–55 to +150	˚C

Document No. G11259EJ1V0DS00 (1st edition)
Date Published June 1996 P
Printed in Japan

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC74VHC157F, TC74VHC157FN, TC74VHC157FT

QUAD 2-CHANNEL MULTIPLEXER

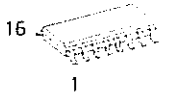
The TC74VHC157 is an advanced high speed CMOS QUAD 2 - CHANNEL MULTIPLEXER fabricated with silicon gate C^2MOS technology.
It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.
It consists of four 2 - input digital multiplexers with common select and strobe inputs.
When the $\overline{STROBE}$ input is held "H" level, selection of data is inhibited and all the outputs become "L" level.
The SELECT decoding determines whether the A or B inputs get routed to their corresponding Y outputs.
An Input protection circuit ensures that 0 to 5.5V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5V to 3V systems and on two supply systems such as battery back up. This circuit prevents device destruction due to mismatched supply and input voltages.

FEATURES:

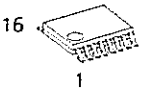
- High Speed ..... t_{pd} = 4.1ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ..... I_{CC} = 4μA(Max.) at Ta = 25°C
- High Noise Immunity ..... $V_{NIH} = V_{NIL}$ = 28% V_{CC} (Min.)
- Power Down Protection is provided on all inputs.
- Balanced Propagation Delays ..... $t_{pLH} \simeq t_{pHL}$
- Wide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

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

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

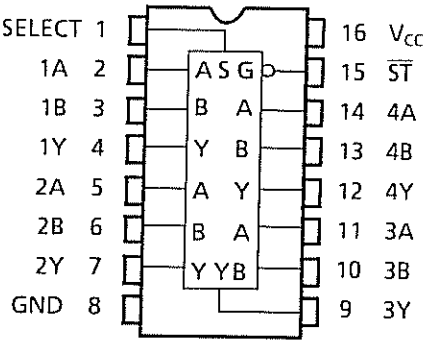


FN (SOL16-P-150-1.27)
Weight : 0.13g (Typ.)



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

PIN ASSIGNMENT



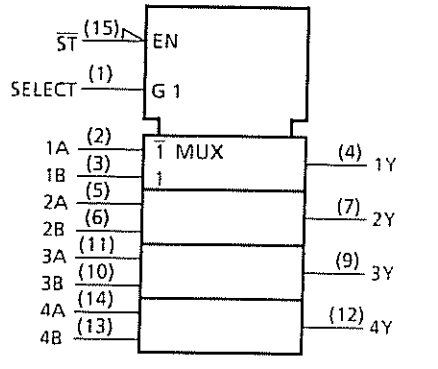
(TOP VIEW)

TRUTH TABLE

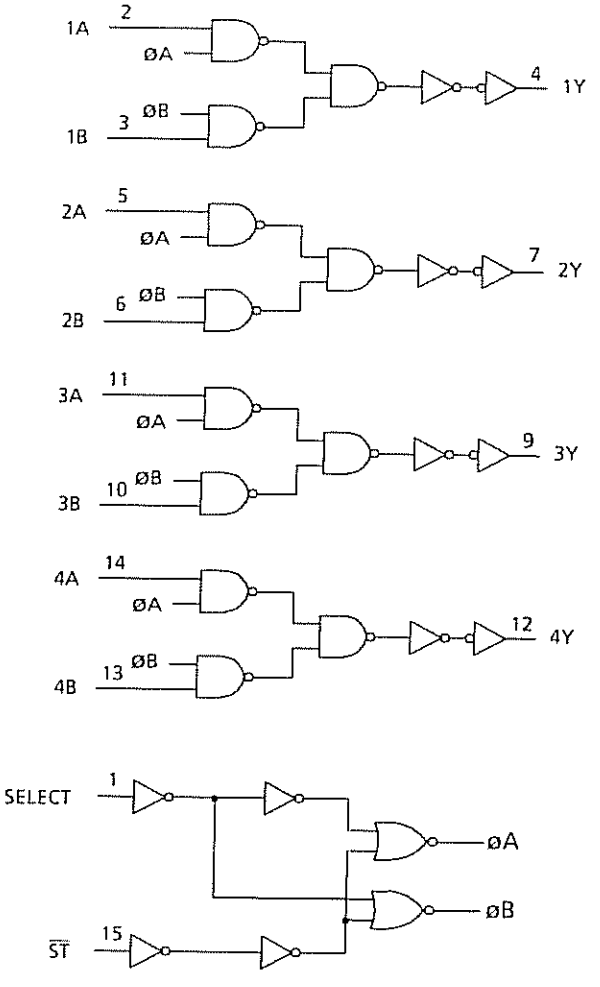
INPUTS				OUTPUT
$\overline{ST}$	SELECT	A	B	
H	X	X	X	L
L	L	L	X	L
L	L	H	X	H
L	H	X	L	L
L	H	X	H	H

X : Don't Care

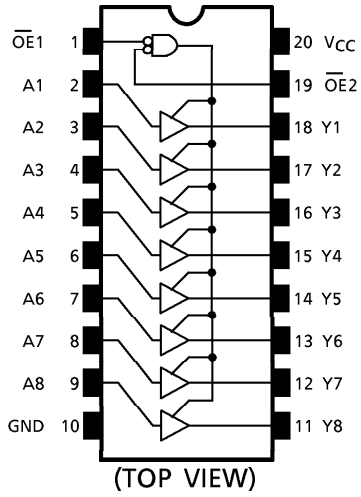
IEC LOGIC SYMBOL



SYSTEM DIAGRAM

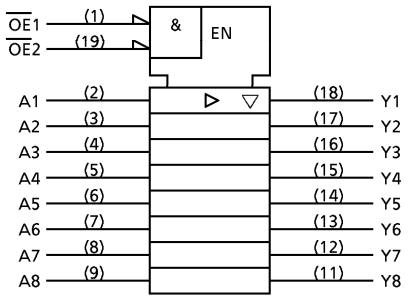


PIN ASSIGNMENT



(TOP VIEW)

IEC LOGIC SYMBOL



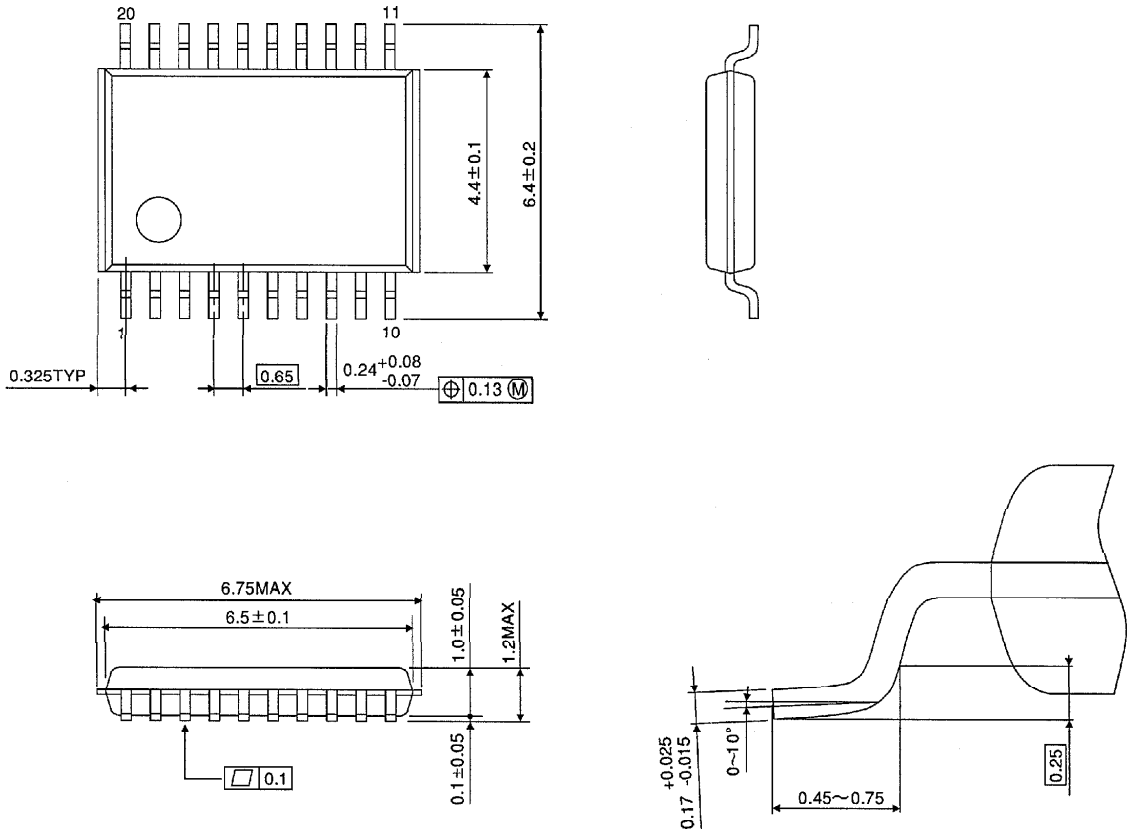
TRUTH TABLE

INPUTS			OUTPUTS
$\overline{OE1}$	$\overline{OE2}$	An	
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.)

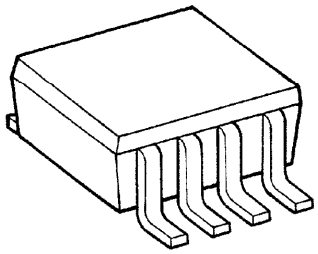
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC7WH74FU, TC7WH74FK

D-TYPE FLIP FLOP WITH PRESET AND CLEAR

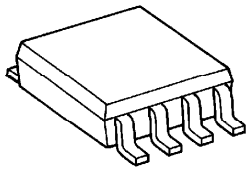
The TC7WH74 is an advanced high speed CMOS D-FLIP FLOP fabricated with silicon gate CMOS technology.
It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.
The signal level applied to the D INPUT is transferred to Q OUTPUT during the positive going transition of the CK pulse.
CLR and PR are independent of the CK and are accomplished by setting the appropriate input low.
An input protection circuit ensures that 0 to 7V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5V to 3V system and two supply systems such as battery back up.
This circuit prevents device destruction due to mismatched supply and input voltages.

TC7WH74FU



SSOP8-P-0.65

TC7WH74FK



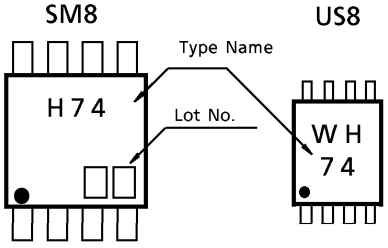
SSOP8-P-0.50A

Weight
SSOP8-P-0.65 : 0.02g (Typ.)
SSOP8-P-0.50A : 0.01g (Typ.)

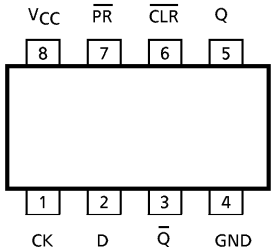
FEATURES

- High Speed ····· f_{MAX} = 170MHz (Typ.) at V_{CC} = 5V
- Low Power Dissipation ····· I_{CC} = 2μA (Max.) at Ta = 25°C
- High Noise Immunity ····· $V_{NIH} = V_{NIL}$ = 28% V_{CC} (Min.)
- Power Down Protection is provided on all inputs.
- Balanced Propagation Delays ····· $t_{pLH} \fallingdotseq t_{pHL}$
- Wide Operation Voltage Range ··· V_{CC} (opr) = 2~5.5V

MARKING



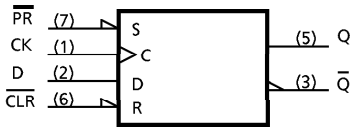
PIN ASSIGNMENT (TOP VIEW)



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	V_{CC}	−0.5~7.0	V
DC Input Voltage	V_{IN}	−0.5~7.0	V
DC Output Voltage	V_{OUT}	−0.5~V_{CC}+0.5	V
Input Diode Current	I_{IK}	−20	mA
Output Diode Current	I_{OK}	±20	mA
DC Output Current	I_{OUT}	±25	mA
DC V_{CC} / Ground Current	I_{CC}	±50	mA
Power Dissipation	P_D	300 (SM8)	mW
		200 (US8)	
Storage Temperature	T_{stg}	−65~150	°C
Lead Temperature (10 s)	T_L	260	°C

LOGIC DIAGRAM



TRUTH TABLE

INPUTS				OUTPUTS		FUNCTION
$\overline{CLR}$	$\overline{PR}$	D	CK	Q	$\overline{Q}$	
L	H	×	×	L	H	CLEAR
H	L	×	×	H	L	PRESET
L	L	×	×	H	H	—
H	H	L	↑	L	H	—
H	H	H	↑	H	L	—
H	H	×	↓	Q_n	$\overline{Q}_n$	NO CHANGE

× : Don't care

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	2~5.5	V
Input Voltage	V_{IN}	0~V_{CC}	V
Output Voltage	V_{OUT}	0~V_{CC}	V
Operating Temperature	T_{opr}	−40~85	°C
Input Rise and Fall Time	dt / dv	0~100 (V_{CC} = 3.3 ± 0.3V)	ns / V
		0~20 (V_{CC} = 5 ± 0.5V)	

SILERGY

SY6288

Low Loss Power Distribution Switch

Preliminary Specification

General Description

SY6288 is an ultra-low $R_{DS(ON)}$ switch with current limiting function to protect the power source from over current and short circuit conditions.

Ordering Information

SY6288□(□□)□
- Temperature Code
- Package Code
- Optional Spec Code

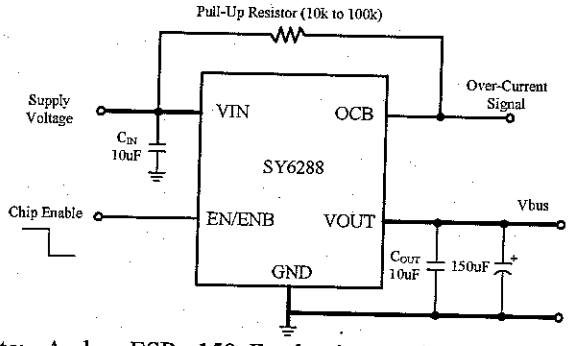
Temperature Range: -40°C to 85°C

Ordering Number	Package type	Note
SY6288AAAC	SOT23-5	0.6A/Active High
SY6288ACAC	MSOP8	0.6A/Active High
SY6288AFAC	SO8	0.6A/Active High
SY6288BAAC	SOT23-5	0.6A/Active Low
SY6288BCAC	MSOP8	0.6A/Active Low
SY6288BFAC	SO8	0.6A/Active Low
SY6288CAAC	SOT23-5	2A/Active High
SY6288CCAC	MSOP8	2A/Active High
SY6288CFAC	SO8	2A/Active High
SY6288DAAC	SOT23-5	2A/Active Low
SY6288DCAC	MSOP8	2A/Active Low
SY6288DFAC	SO8	2A/Active Low
SY6288D1AAC	SOT23-5	1.5A/Active Low
SY6288D1CAC	MSOP8	1.5A/Active Low
SY6288D1FAC	SO8	1.5A/Active Low
SY6288EAAC	SOT23-5	2A/Active Low
SY6288ECAC	MSOP8	2A/Active Low
SY6288EFAC	SO8	2A/Active Low

Features

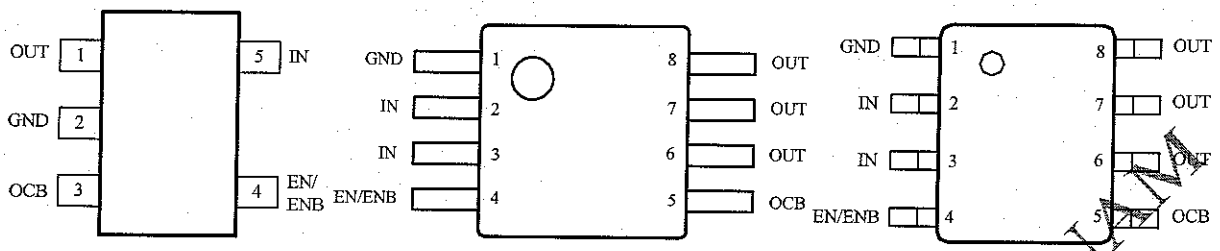
- Distribution voltages: 2.5V to 5.5V
- Over temperature shutdown and automatic retry
- Reverse blocking (no body diode)
- At shutdown, OUT can be forced higher than IN
- Fault flag (OCB) output for over current and fault conditions
- Automatic output discharge at shutdown
- Built-in softstart
- 0.4ms rise time
- RoHS Compliant and Halogen Free
- Two Enable polarities and three current levels
  - SY6288A: Active High/0.6A
  - SY6288B: Active Low/0.6A
  - SY6288C: Active High/2A
  - SY6288D: Active Low/2A
  - SY6288D1: Active Low/1.5A
  - SY6288E: Active Low/2A
- Compact packages minimize board space: SOT23-5, SO8, MSOP8
- UL certification NO. 20100428-E333762
  TUV certification NO. R501887690001

Typical Application Circuit



Note: A low-ESR 150uF aluminum electrolytic or tantalum between VOUT and GND is strongly recommended.

Pin Configurations (Top View)



3 Pinouts and pin description

Figure 9. STM32F20x LQFP64 pinout

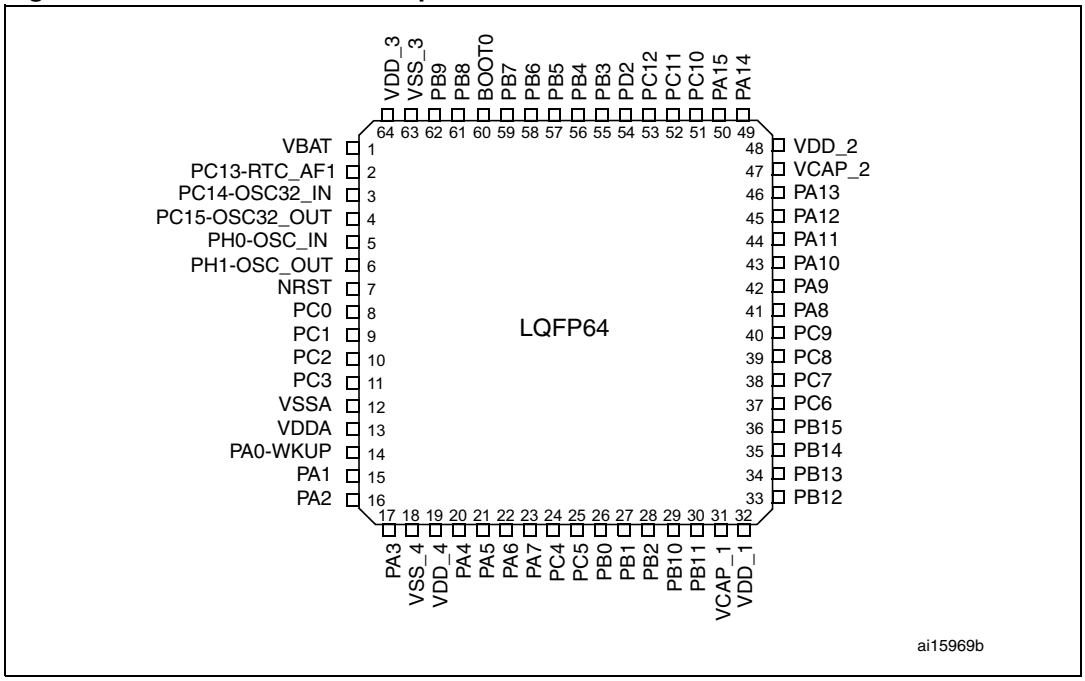


Figure 10. STM32F20x WLCSP64+2 ballout

	1	2	3	4	5	6	7	8	9
A	PA14	PA15	PC12	PB3	PB5	PB7	PB9	VDD_2	V_{BAT}
B	VSS_2	PA13	PC10	PB4	PB6	BOOT0	PB8	PC13	PC14
C	PA12	VCAP_2	PC11				PD2	PDROFF	PC15
D	PC9	PA11	PA10				PC2	VSS_3	VDD_3
E	VDD_4	PA8	PA9				PA0	NRST	PH0-OSC_IN
F	VSS_4	PC7	PC8				VREF+	PC1	PH1-OSC_OUT
G	PB15	PC6	PC5				PA3	PC3	PC0
H	PB14	PB13	PB10	PC4	PA6	PA5	REGOFF	PA1	VSS_5
J	PB12	PB11	VCAP_1	PB2	PB1	PB0	PA7	PA4	PA2

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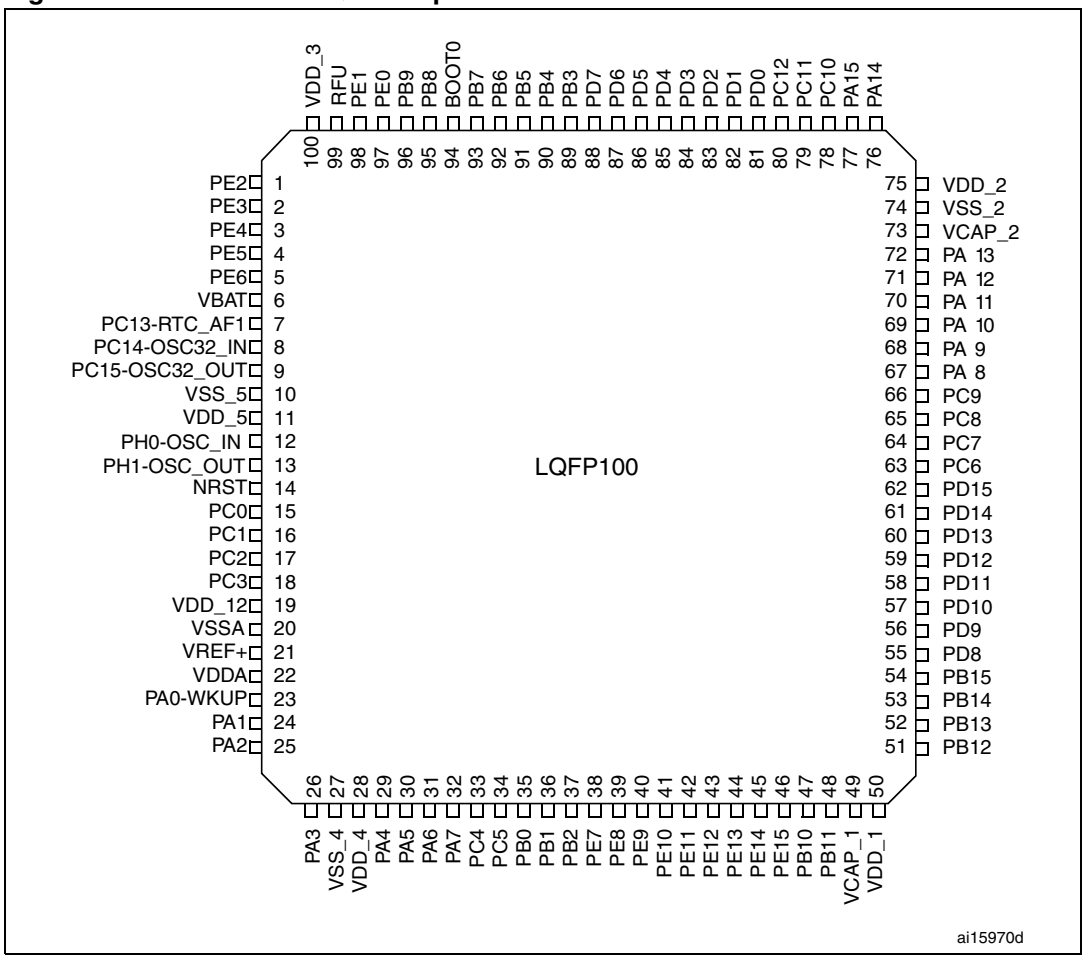
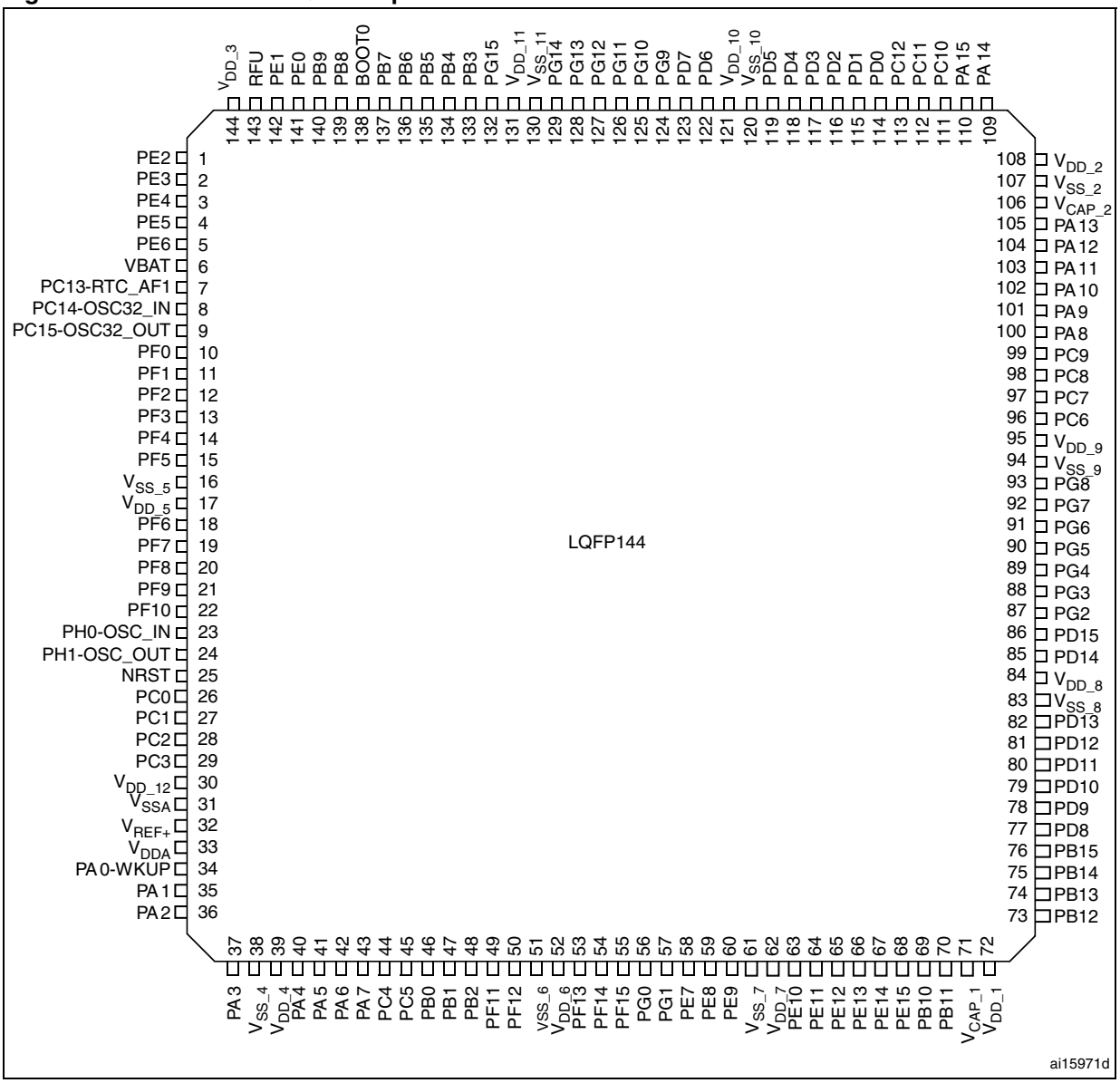
1. Top view.

Figure 11. STM32F20x LQFP100 pinout



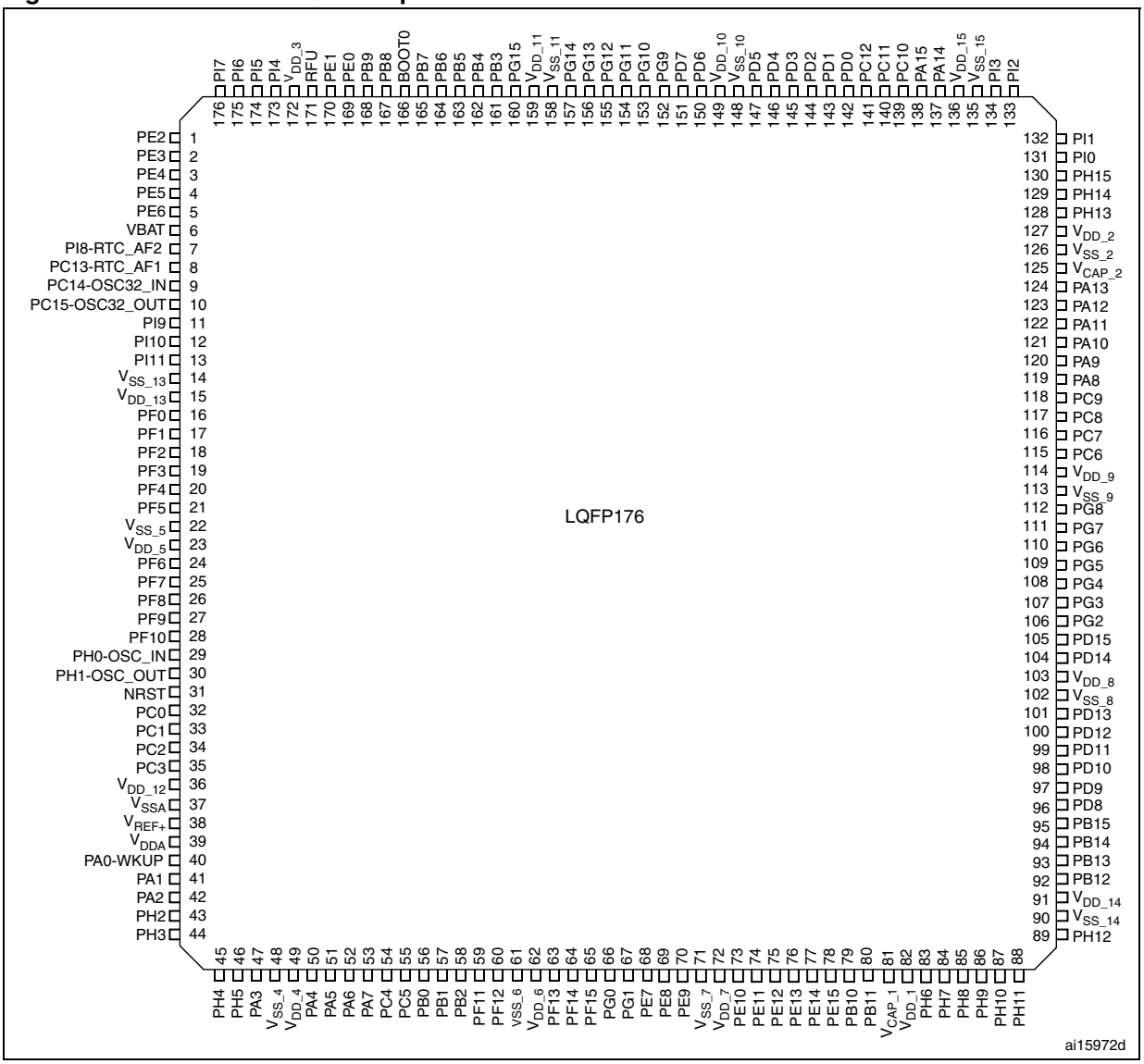
1. RFU means “reserved for future use”.

Figure 12. STM32F20x LQFP144 pinout



1. RFU means “reserved for future use”.

Figure 13. STM32F20x LQFP176 pinout



1. Package not in production and available for development only.
2. RFU means “reserved for future use”.

Figure 14. STM32F21xxx UFBGA176 ballout

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	PE3	PE2	PE1	PE0	PB8	PB5	PG14	PG13	PB4	PB3	PD7	PC12	PA15	PA14	PA13
B	PE4	PE5	PE6	PB9	PB7	PB6	PG15	PG12	PG11	PG10	PD6	PD0	PC11	PC10	PA12
C	VBAT	PI7	PI6	PI5	VDD_3	RFU	VDD_11	VDD_10	VDD_15	PG9	PD5	PD1	PI3	PI2	PA11
D	PC13-TAMP1	PI8-TAMP2	PI9	PI4	VSS	BOOT0	VSS_11	VSS_10	VSS_15	PD4	PD3	PD2	PH15	PI1	PA10
E	PC14-OSC32_IN	PF0	PI10	PI11								PH13	PH14	PI0	PA9
F	PC15-OSC32_OUT	VSS_13	VDD_13	PH2		VSS	VSS	VSS	VSS	VSS		VSS_2	VCAP2	PC9	PA8
G	PH0-OSC_IN	VSS_5	VDD_5	PH3		VSS	VSS	VSS	VSS	VSS		VSS_9	VDD_2	PC8	PC7
H	PH1-OSC_OUT	PF2	PF1	PH4		VSS	VSS	VSS	VSS	VSS		VSS_14	VDD_9	PG8	PC6
J	NRST	PF3	PF4	PH5		VSS	VSS	VSS	VSS	VSS		VDD_14	VDD_8	PG7	PG6
K	PF7	PF6	PF5	VDD_4		VSS	VSS	VSS	VSS	VSS		PH12	PG5	PG4	PG3
L	PF10	PF9	PF8	REGOFF								PH11	PH10	PD15	PG2
M	VSSA	PC0	PC1	PC2	PC3	PB2	PG1	VSS_6	VSS_7	VCAP1	PH6	PH8	PH9	PD14	PD13
N	VREF-	PA1	PA0-WKUP	PA4	PC4	PF13	PG0	VDD_6	VDD_7	VDD_1	PE13	PH7	PD12	PD11	PD10
P	VREF+	PA2	PA6	PA5	PC5	PF12	PF15	PE8	PE9	PE11	PE14	PB12	PB13	PD9	PD8
R	VDDA	PA3	PA7	PB1	PB0	PF11	PF14	PE7	PE10	PE12	PE15	PB10	PB11	PB14	PB15

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1. RFU means “reserved for future use”.
2. Top view.

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

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_CRS / 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_CRS	
-	-	-	-	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	

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	

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	

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}		

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	

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	

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	

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.

Pin Diagram

Pin diagram is subject to change.

Figure 2 shows the pin assignments of the SiI957n port processor. The Target Pin Descriptions section describing the pin functions begins on page 16. The package is a 20 mm x 20 mm x 0.4 mm 176-pin TQFP with an ePad, which ***must*** be connected to ground.

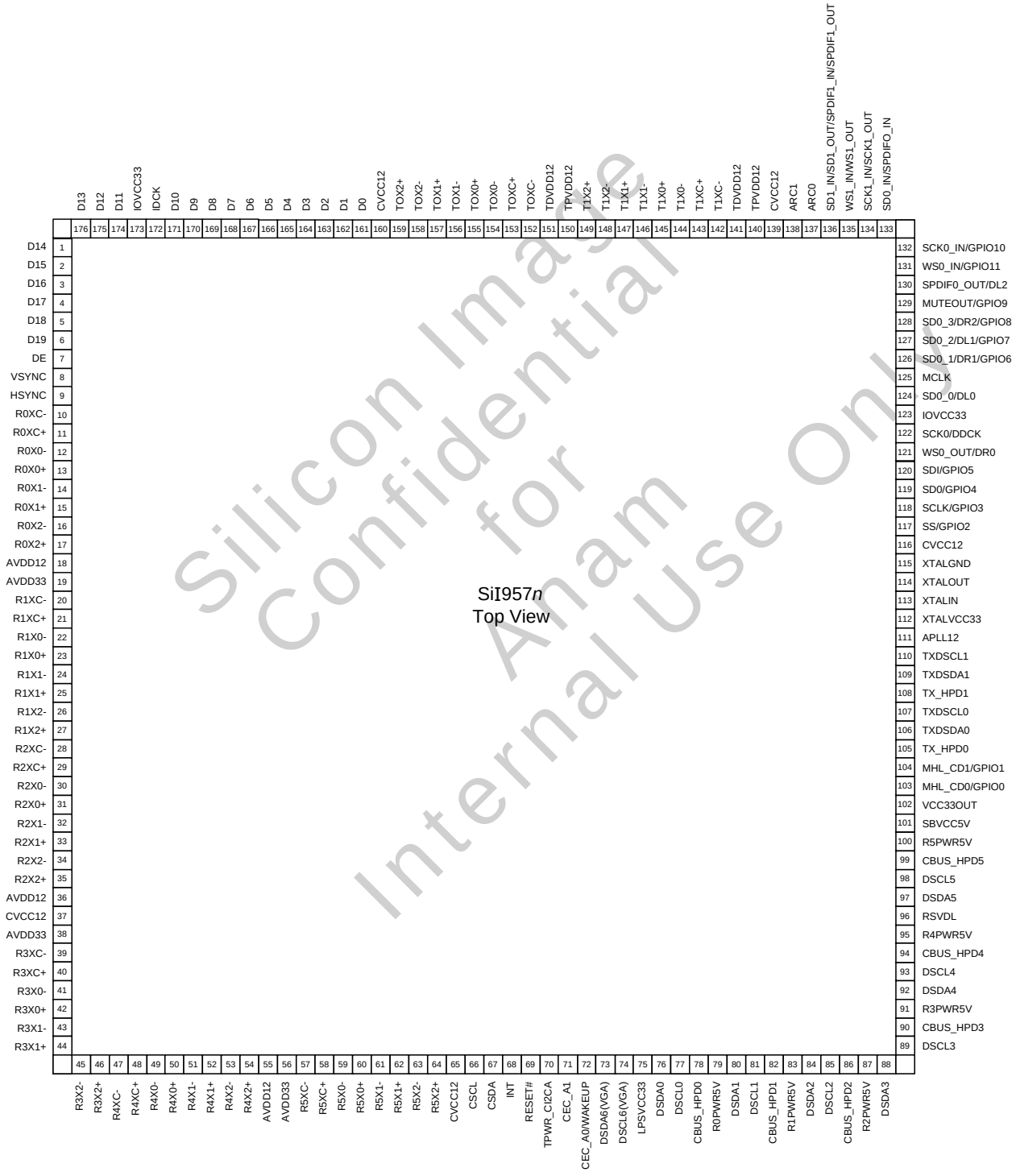


Figure 2. Pin Diagram (Top View)

DEVICE INFORMATION

TERMINAL FUNCTIONS, PCM510x

PCM510X (top view)

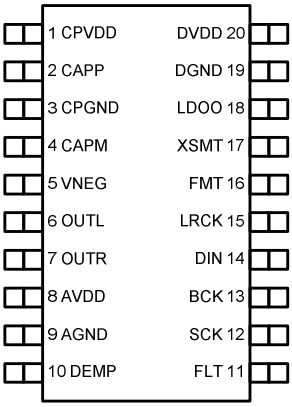


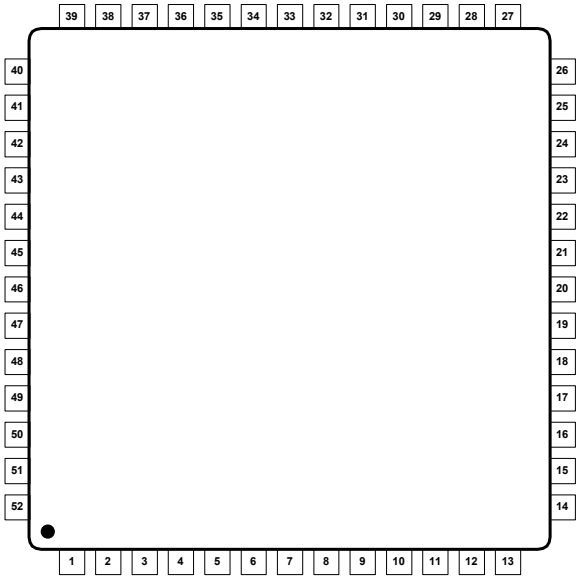
Table 2. TERMINAL FUNCTIONS, PCM510x

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^2S (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

NJU72340A

■ PIN FUNCTION



No.	SYMBOL	FUNCTION	No.	SYMBOL	FUNCTION
1	LOUT	Lch output	27	R4IN	“Input selector” Rch input 4
2	ROUT	Rch output	28	L4IN	“Input selector” Lch input 4
3	COUT	Cch output	29	R5IN	“Input selector” Rch input 5
4	LSOUT	LSch output	30	L5IN	“Input selector” Lch input 5
5	RSOUT	RSch output	31	R6IN	“Input selector” Rch input 6
6	LBOUT	LBch output	32	L6IN	“Input selector” Lch input 6
7	RBOUT	RBch output	33	R7IN	“Input selector” Rch input 7
8	SWOUT	SWch output	34	L7IN	“Input selector” Lch input 7
9	DCAP_1	Switching noise rejection capacitor 1	35	DCAP_5	Switching noise rejection capacitor 5
10	DCAP_2	Switching noise rejection capacitor 2	36	MONOIN	Monaural input selector
11	GND	Ground	37	DCAP_6	“Input selector” Lch input 7
12	DATA	Control data signal input	38	ADC_R	Rch output for ADC
13	CLOCK	Clock signal input	39	ADC_L	Lch output for ADC
14	DCAP_3	Switching noise rejection capacitor 3	40	GND	Ground
15	REC_R	“Input selector” Rch REC output	41	LIN	Multi-channel Lch input
16	REC_L	“Input selector” Lch REC output	42	RIN	Multi-channel Rch input
17	GND	Ground	43	CIN	Multi-channel Cch input
18	RB2IN	Multi-channel RBch input 2	44	LSIN	Multi-channel LSch input
19	LB2IN	Multi-channel LBch input 2	45	RSIN	Multi-channel RSch input
20	R1IN	“Input selector” Rch input 1	46	LBIN	Multi-channel LBch input
21	L1IN	“Input selector” Lch input 1	47	RBIN	Multi-channel RBch input
22	R2IN	“Input selector” Rch input 2	48	SWIN	Multi-channel SWch input
23	L2IN	“Input selector” Lch input 2	49	V-	Power Supply (-)
24	R3IN	“Input selector” Rch input 3	50	V+	Power Supply (+)
25	L3IN	“Input selector” Lch input 3	51	DCAP_7	Switching noise rejection capacitor 7
26	DCAP_4	Switching noise rejection capacitor 4	52	DCAP_8	Switching noise rejection capacitor 8

Note) This is not a final specification. Some parametric limits are subject to change without notice at any time.

tenatative

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

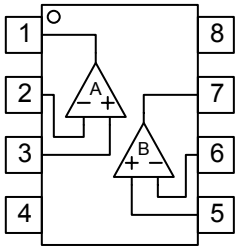
NJM8080G
(SOP8)

■ FEATURES

● Operating Voltage	±2V~±18V
● Low Input Noise Voltage	0.8μVrms typ. (RIAA)
● Wide GBW	15MHz typ.
● Low Distortion	0.0005% typ.
● Slew Rate	5V/μs typ.
● Bipolar Technology	
● Package Outline	SOP8

■ PIN CONFIGURATION

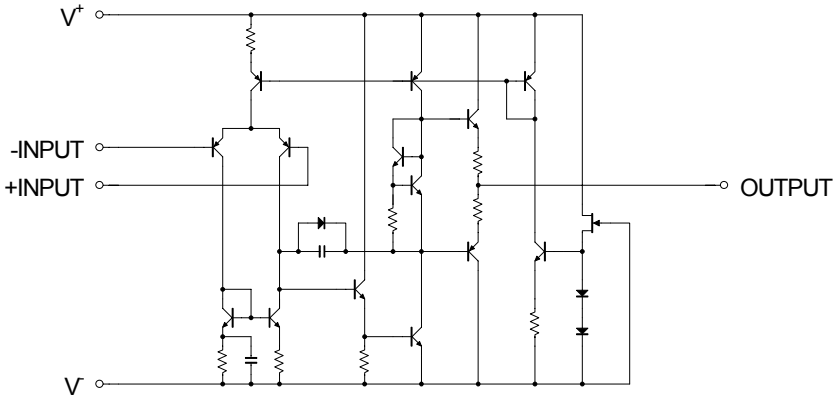
Top View



SOP8 Package

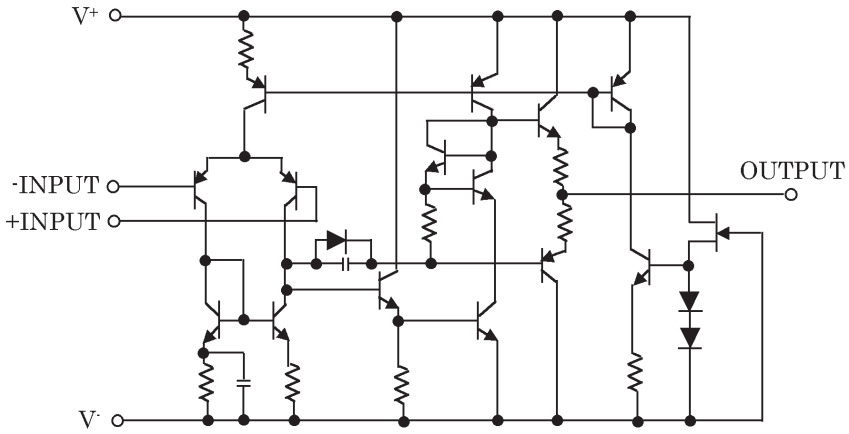
PIN FUNCTION
1.A OUTPUT
2.A -INPUT
3.A +INPUT
4.V^-
5.B +INPUT
6.B -INPUT
7.B OUTPUT
8.V^+

■ EQUIVALENT CIRCUIT (1/2 Shown)



■EQUIVALENT CIRCUIT(1/2 Shown)

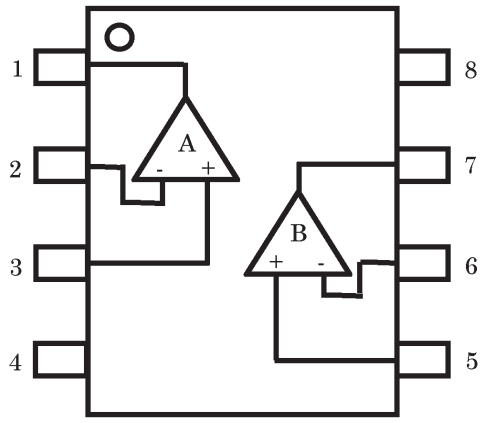
BDE-07950-000-02



■PIN CONFIGURATION

BEE-P0001-000-01

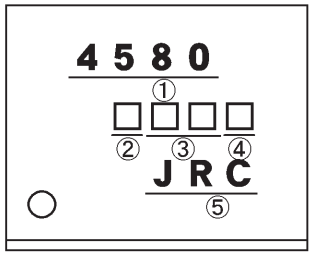
(Top View)



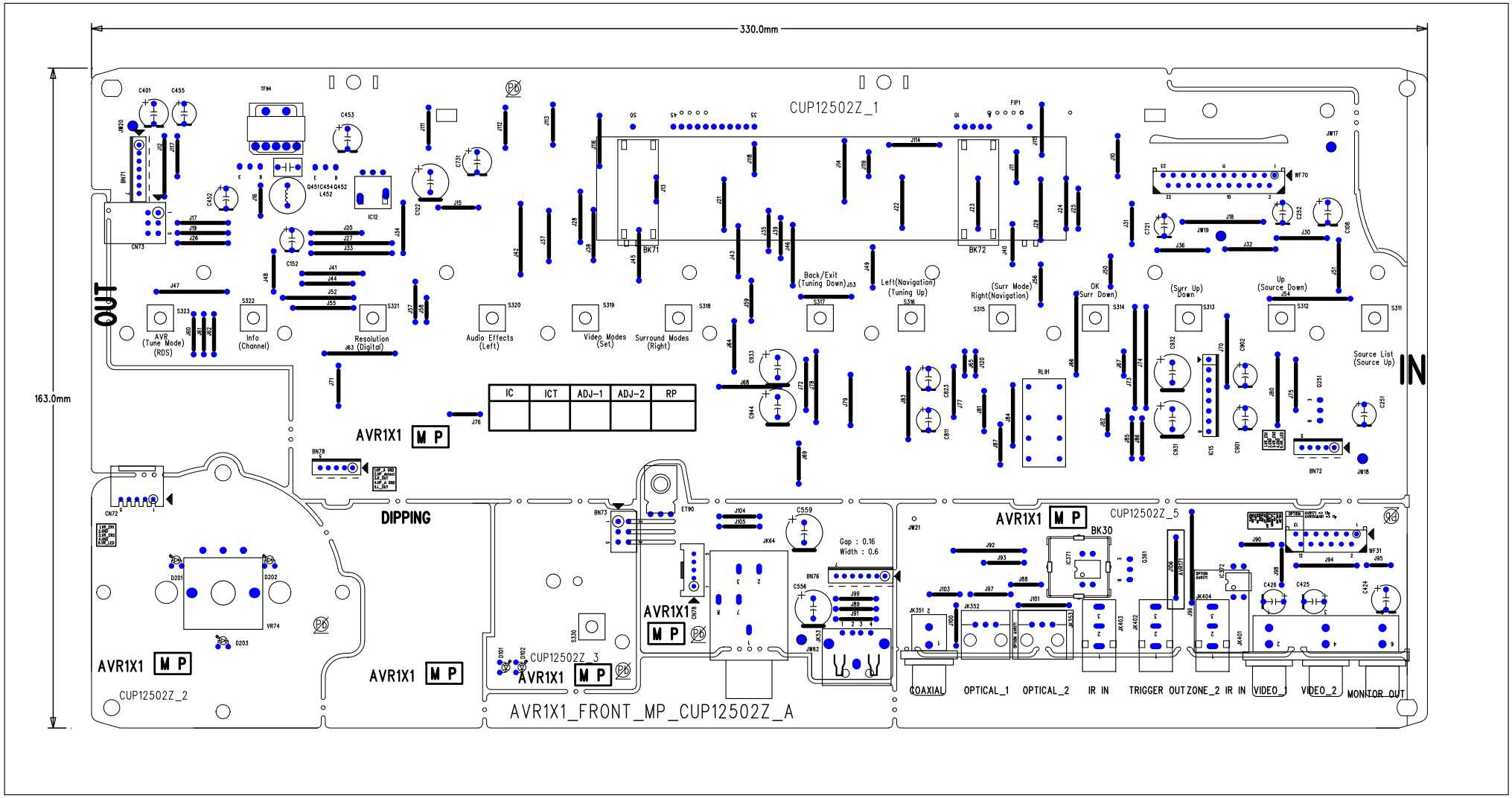
PIN FUNCTION
1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V-
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. V+

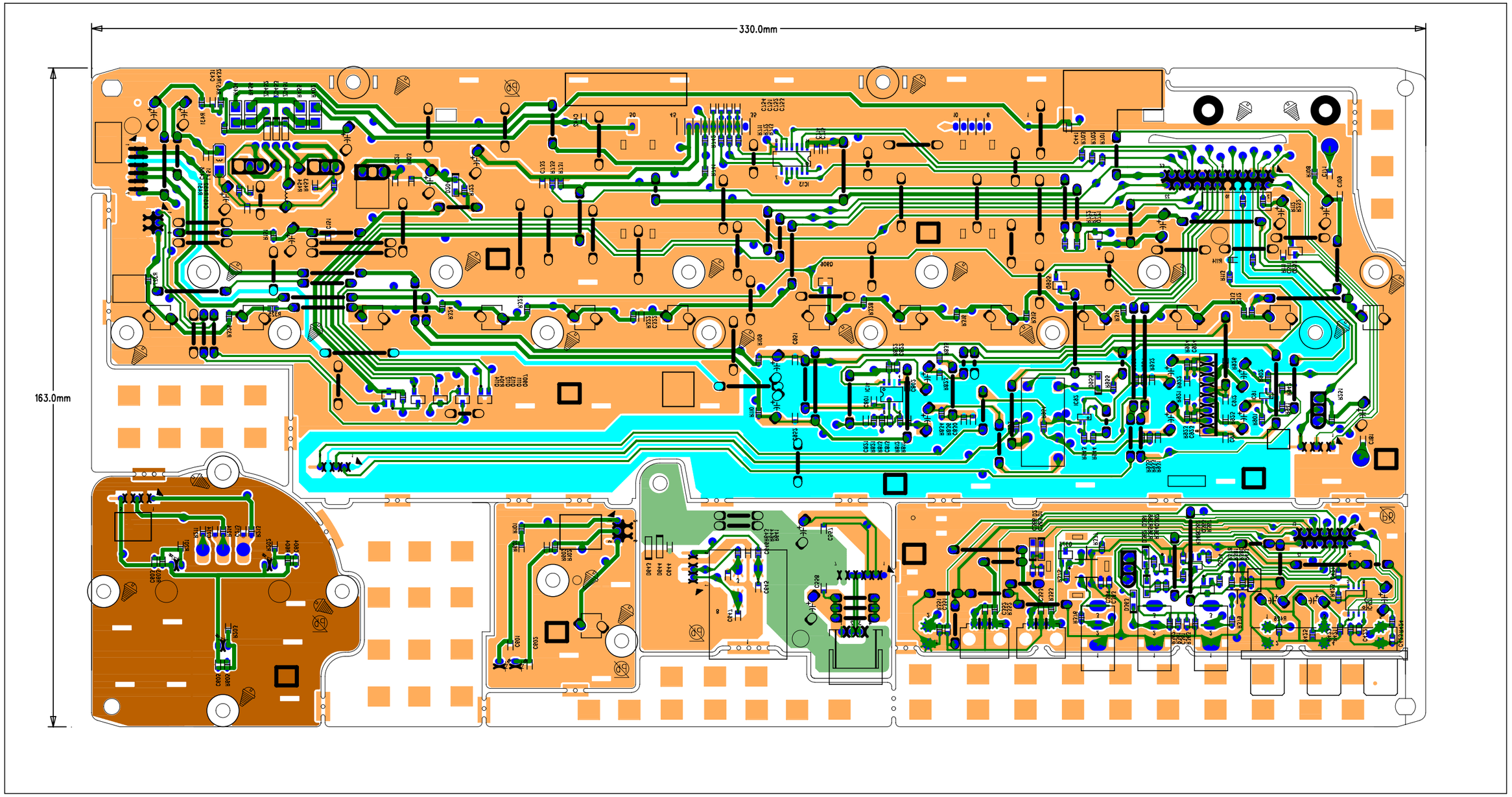
■MARK SPECIFICATION

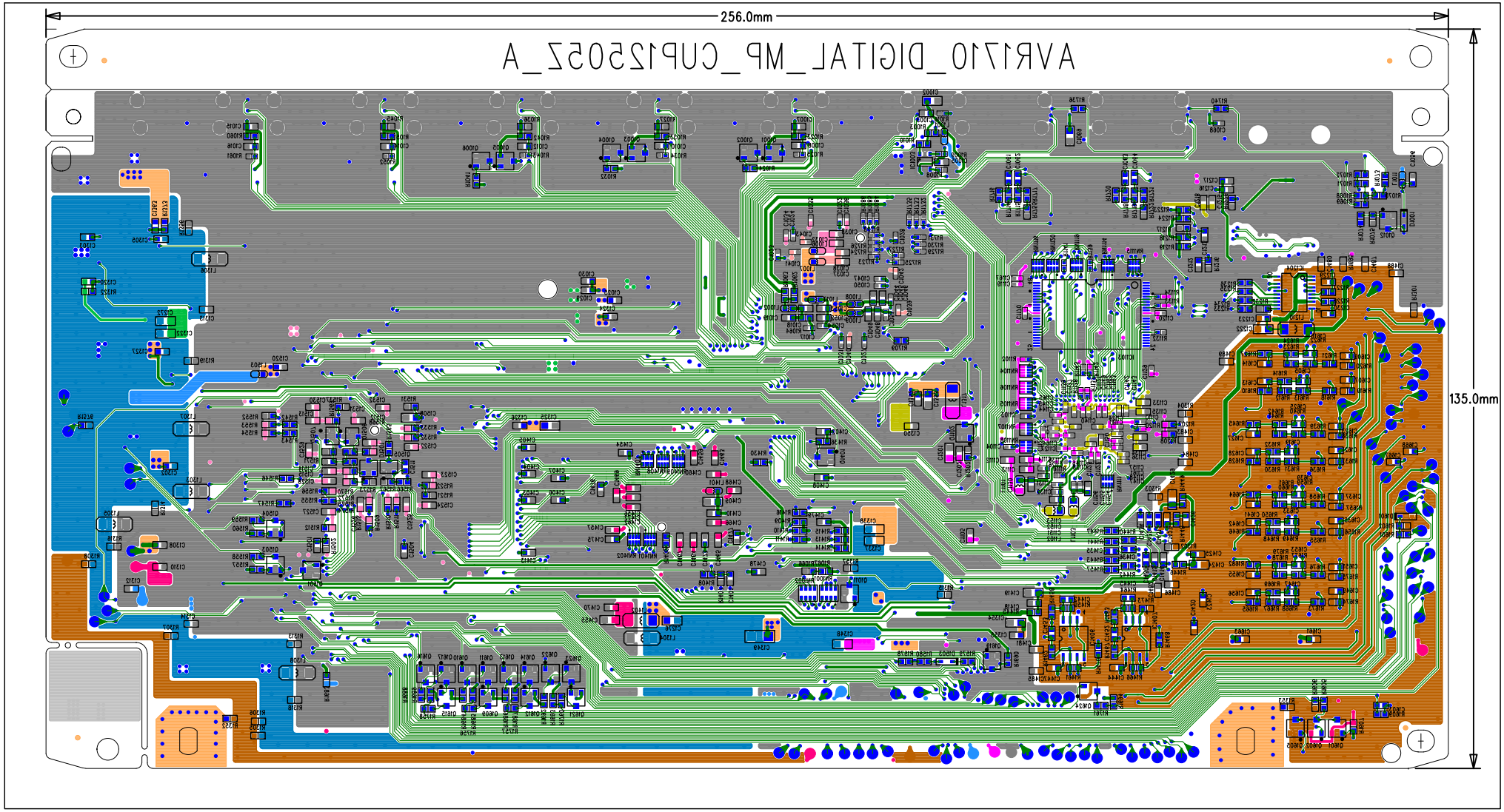
BKE-62233-B00-00

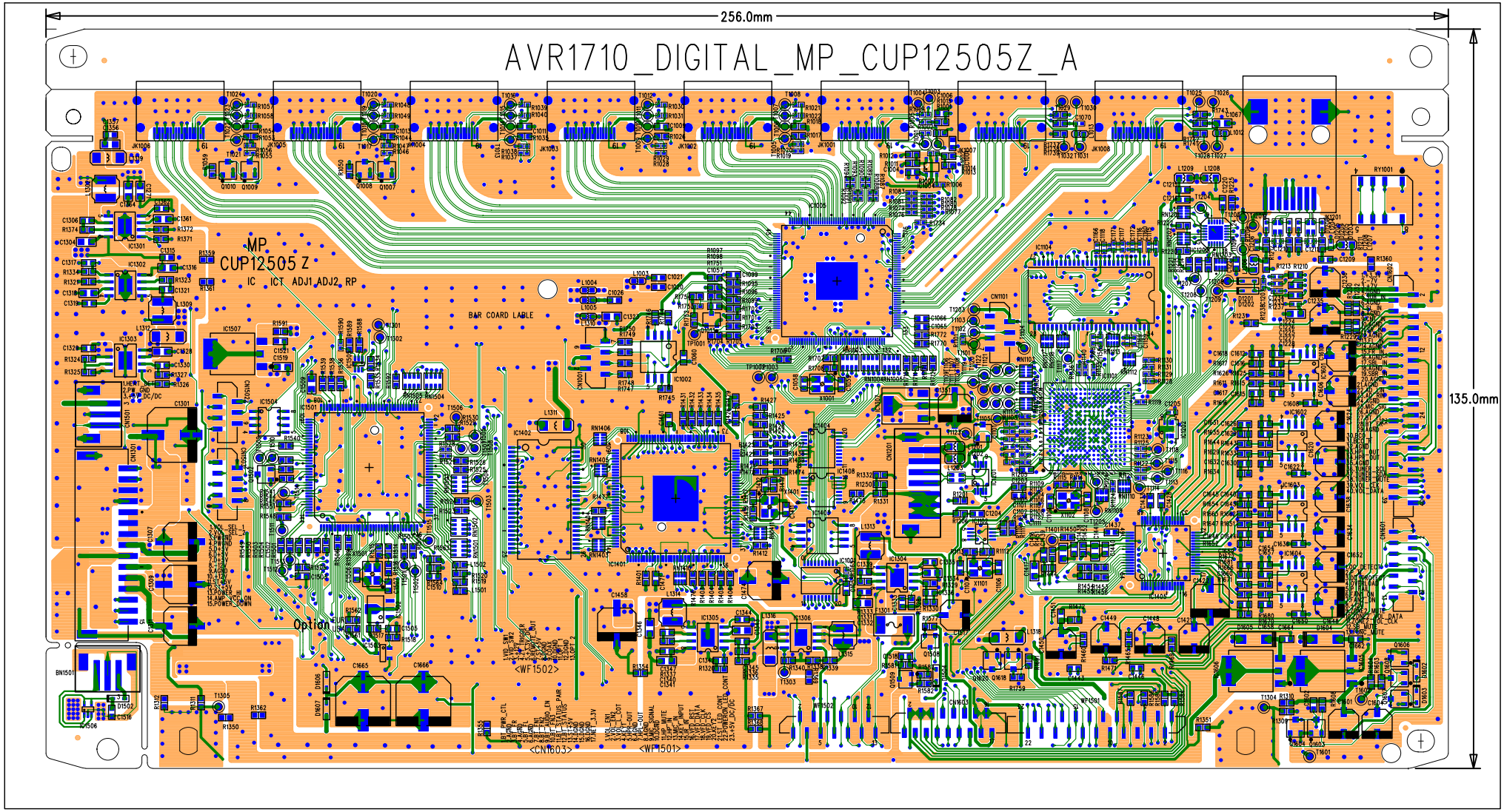


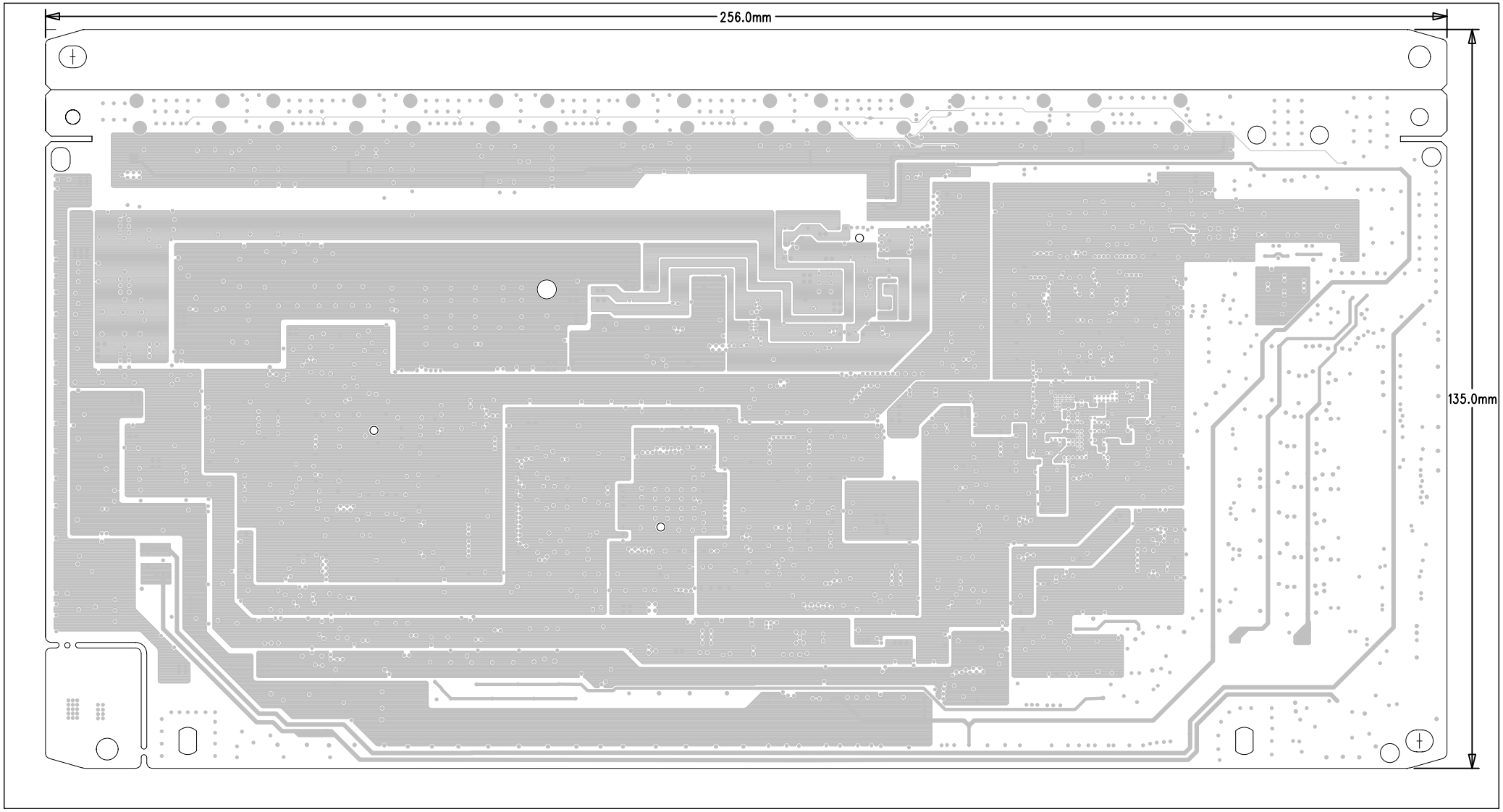
① Device No. (4580)
② Last Digit Year
③ Lot No.
④ Production Code
⑤ Manufacturer's Symbol (JRC)


330.0mm
163.0mm
OUT
IN
CUP12502Z_1
CUP12502Z_2
CUP12502Z_3
CUP12502Z_5
AVR1X1_FRONT_MP_CUP12502Z_A
AVR1X1 M P
DIPPING
IC ICT ADJ-1 ADJ-2 RP
Back/Exit (Tuning Down)
Left(Navigation) (Tuning Up)
(Surr Mode) Right(Navigation)
OK Surr Down)
(Surr Up) Down
Up (Source Down)
Source List (Source Up)
AVR (Tune Mode) (RDS)
Info (Channel)
Resolution (Digital)
Audio Effects (Left)
Video Modes (Set)
Surround Modes (Right)
Gap : 0.16
Width : 0.6
COAXIAL
OPTICAL_1
OPTICAL_2
IR IN
TRIGGER OUT
ZONE_2 IR IN
VIDEO_1
VIDEO_2
MONITOR OUT


330.0mm
163.0mm


256.0mm
135.0mm
AVR1710_DIGITAL_MP_CUP1250527_A


256.0mm
135.0mm
AVR1710_DIGITAL_MP_CUP12505Z_A
MP
CUP12505Z
IC ICT ADJ1 ADJ2 RP
BAR COARD LABLE
Option
<WF1502>
<CN1603>
<WF1501>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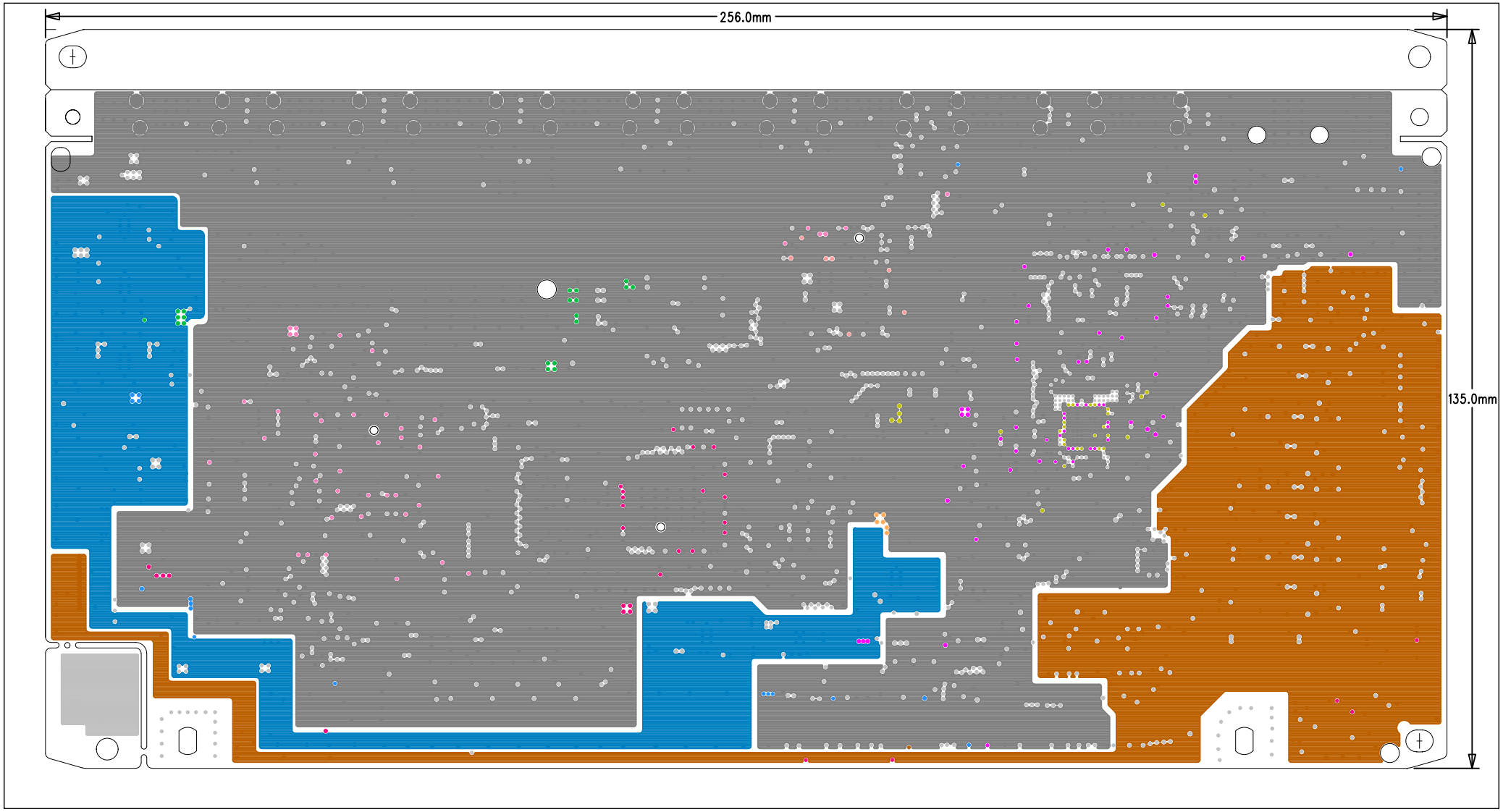
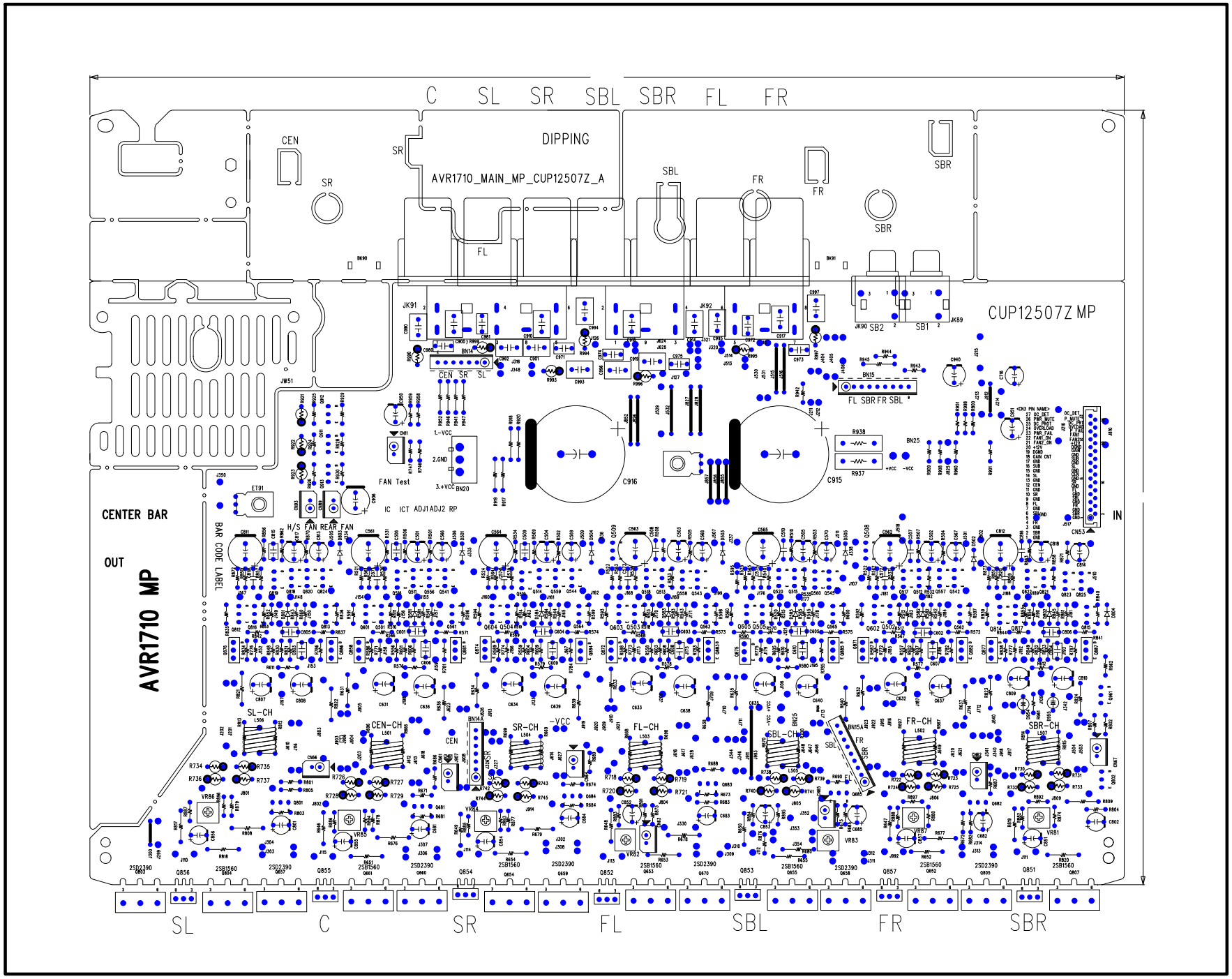
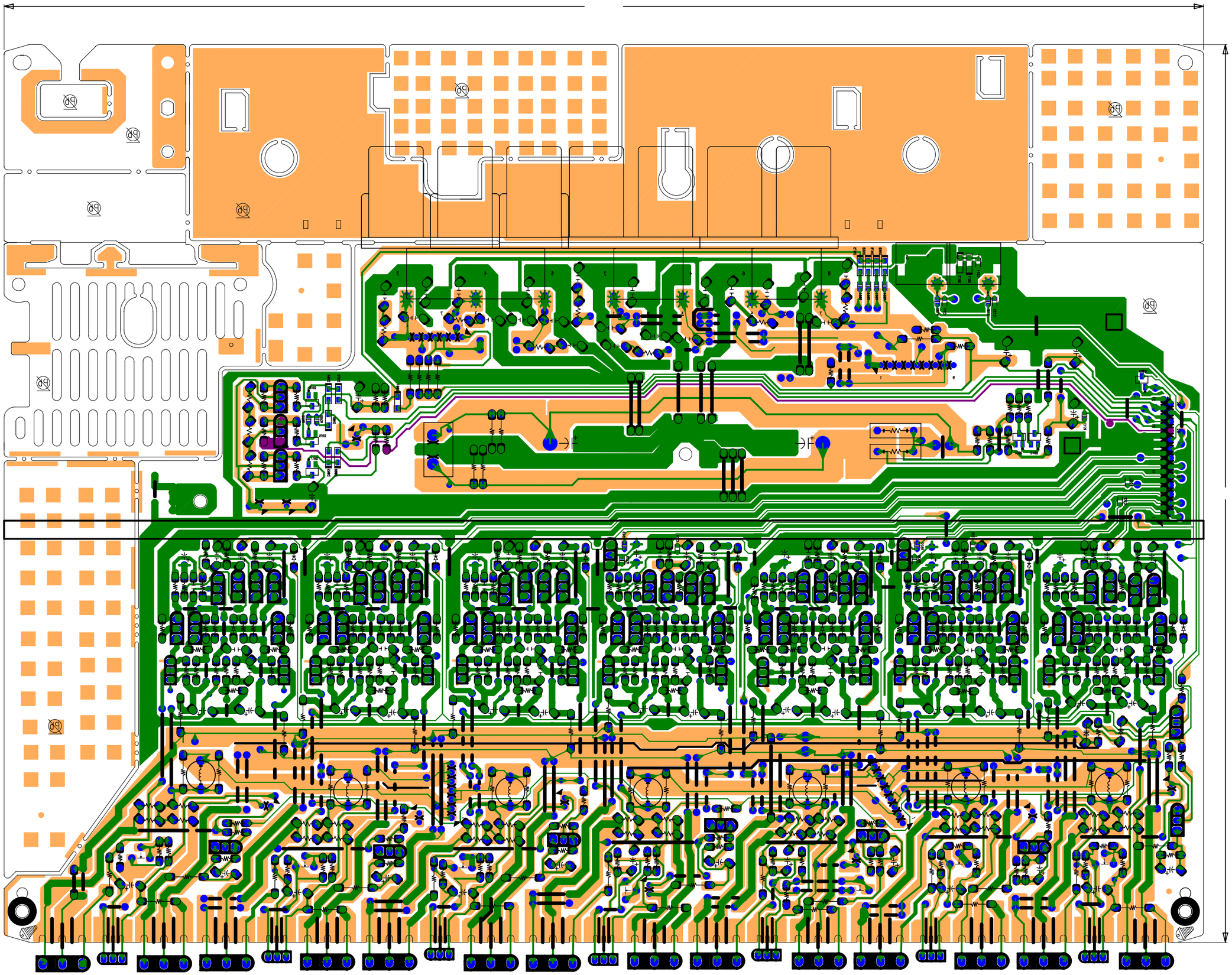
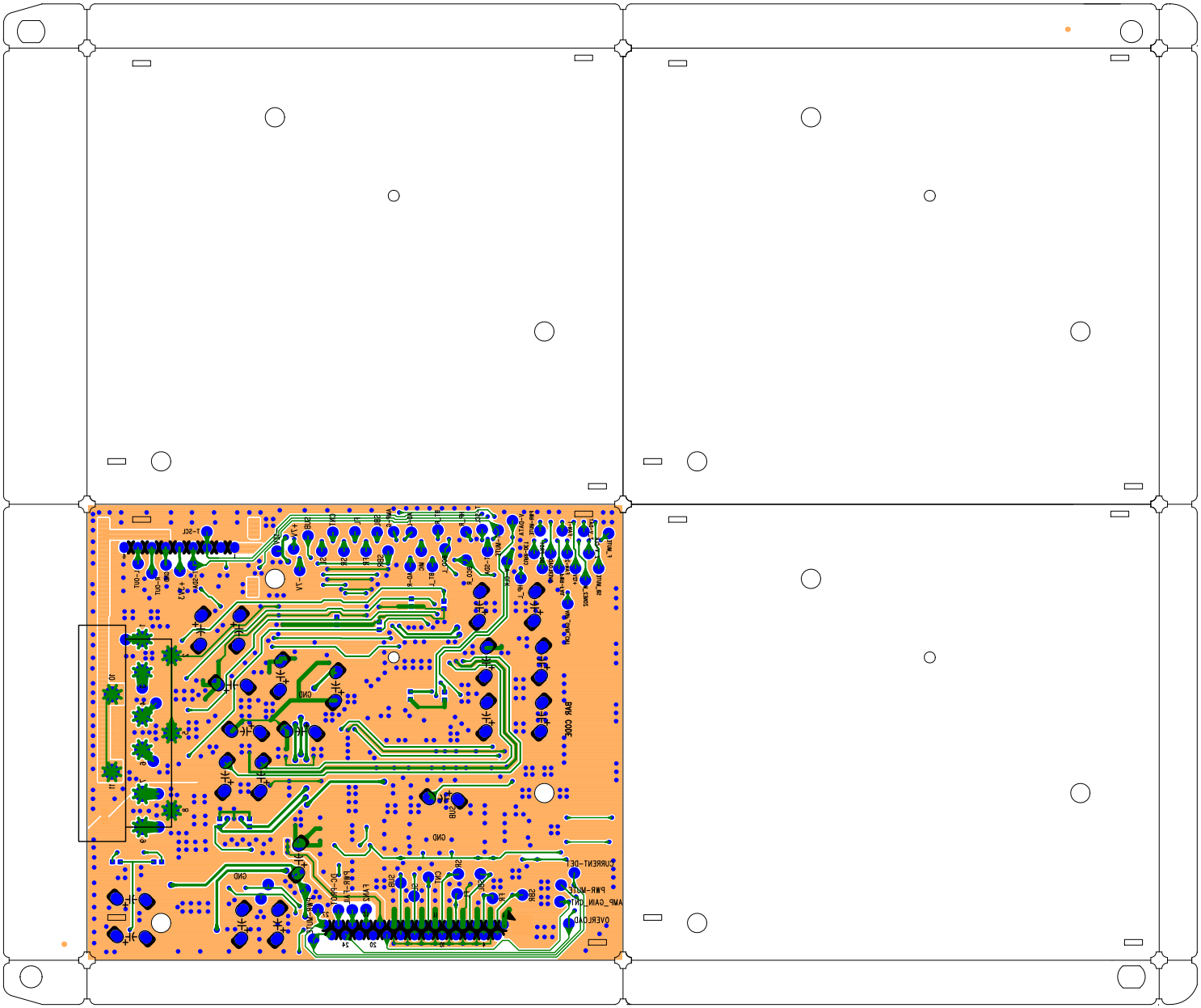
135.0mm


256.0mm
135.0mm

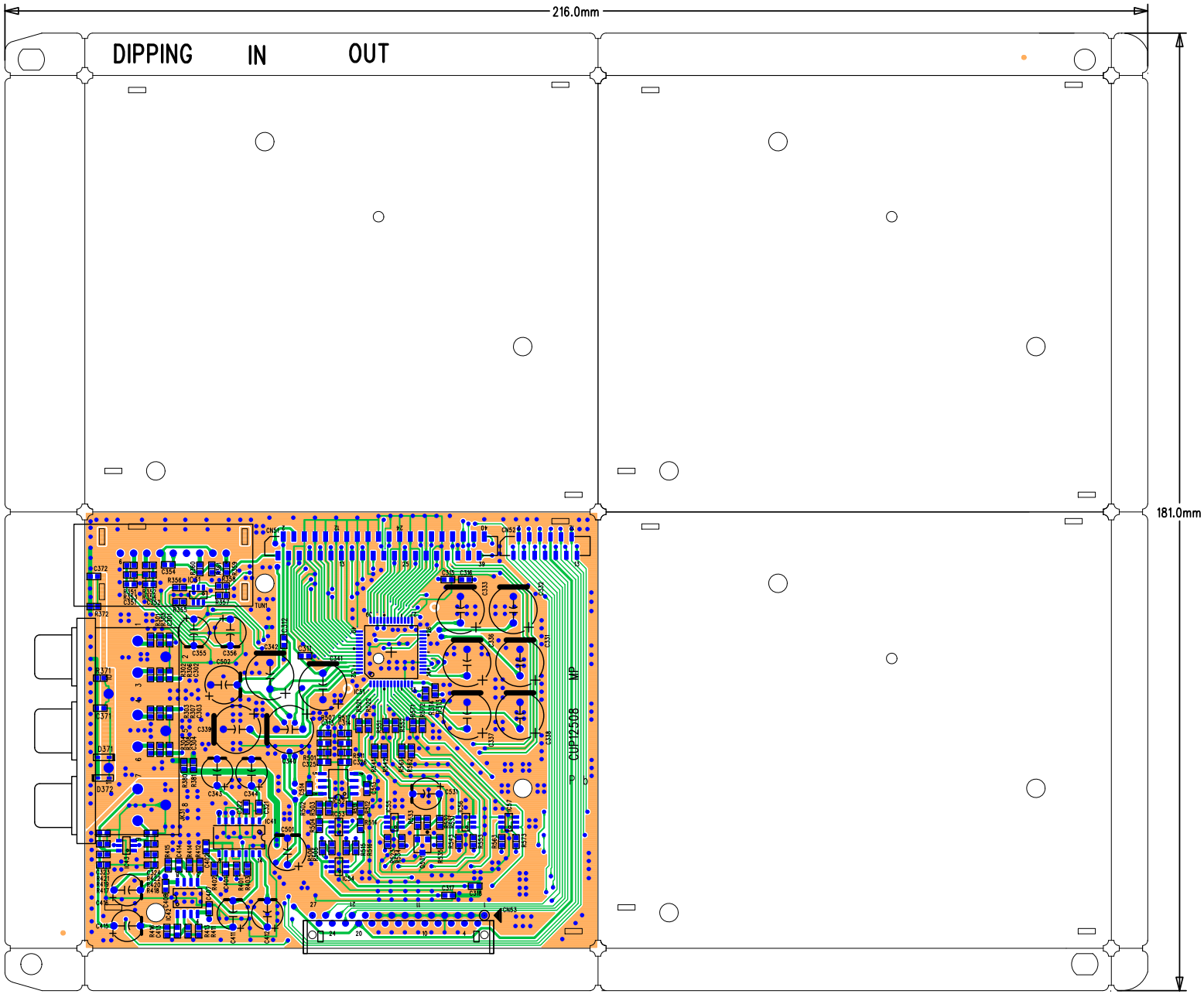

C SL SR SBL SBR FL FR
DIPPING
AVR1710_MAIN_MP_CUP12507Z_A
CUP12507Z MP
CENTER BAR
OUT
AVR1710 MP
BAR CODE LABEL
IN
SL C SR FL SBL FR SBR



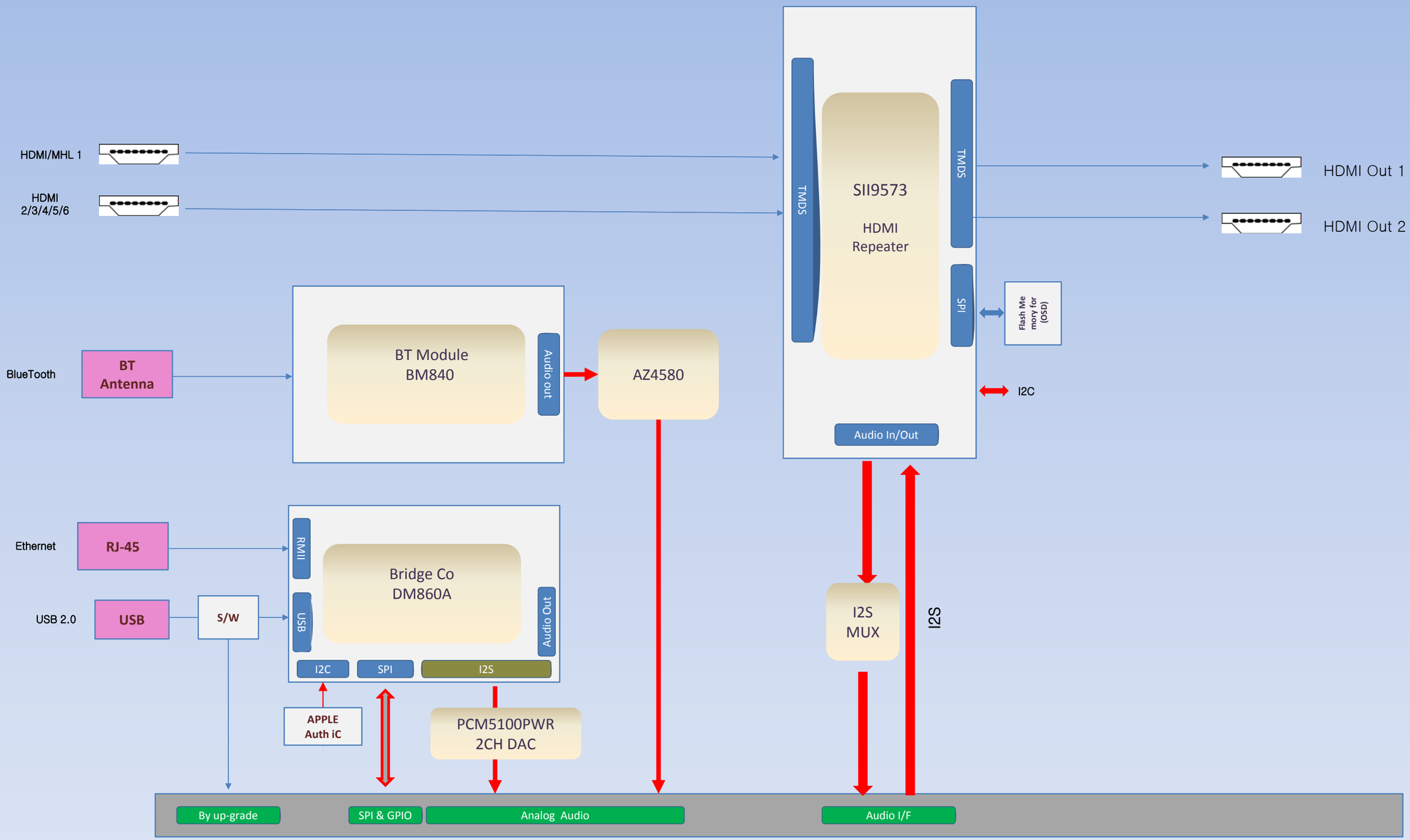
AVR171/1710 AUDIO I/O PCB



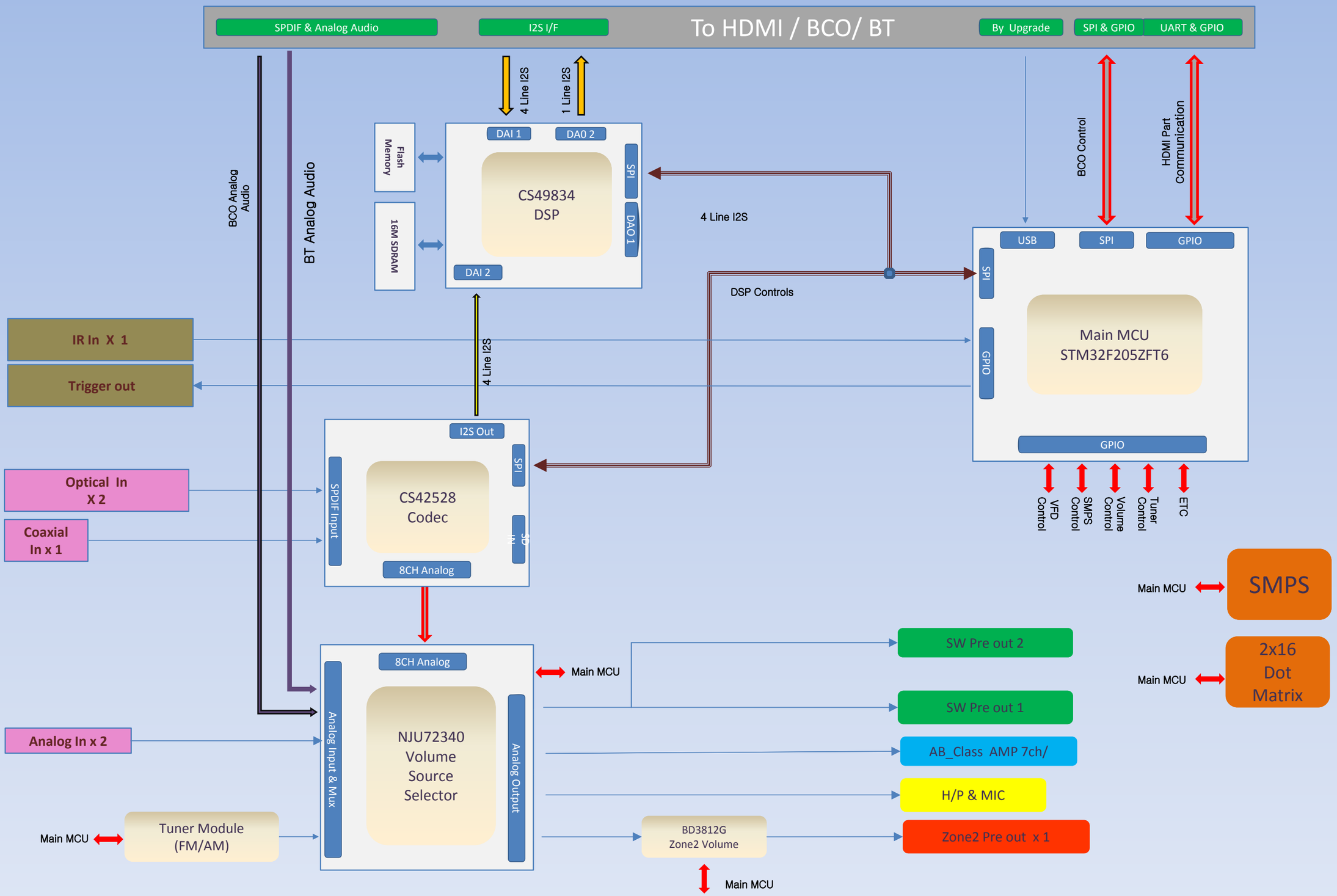
AVR171/1710 AUDIO I/O PCB



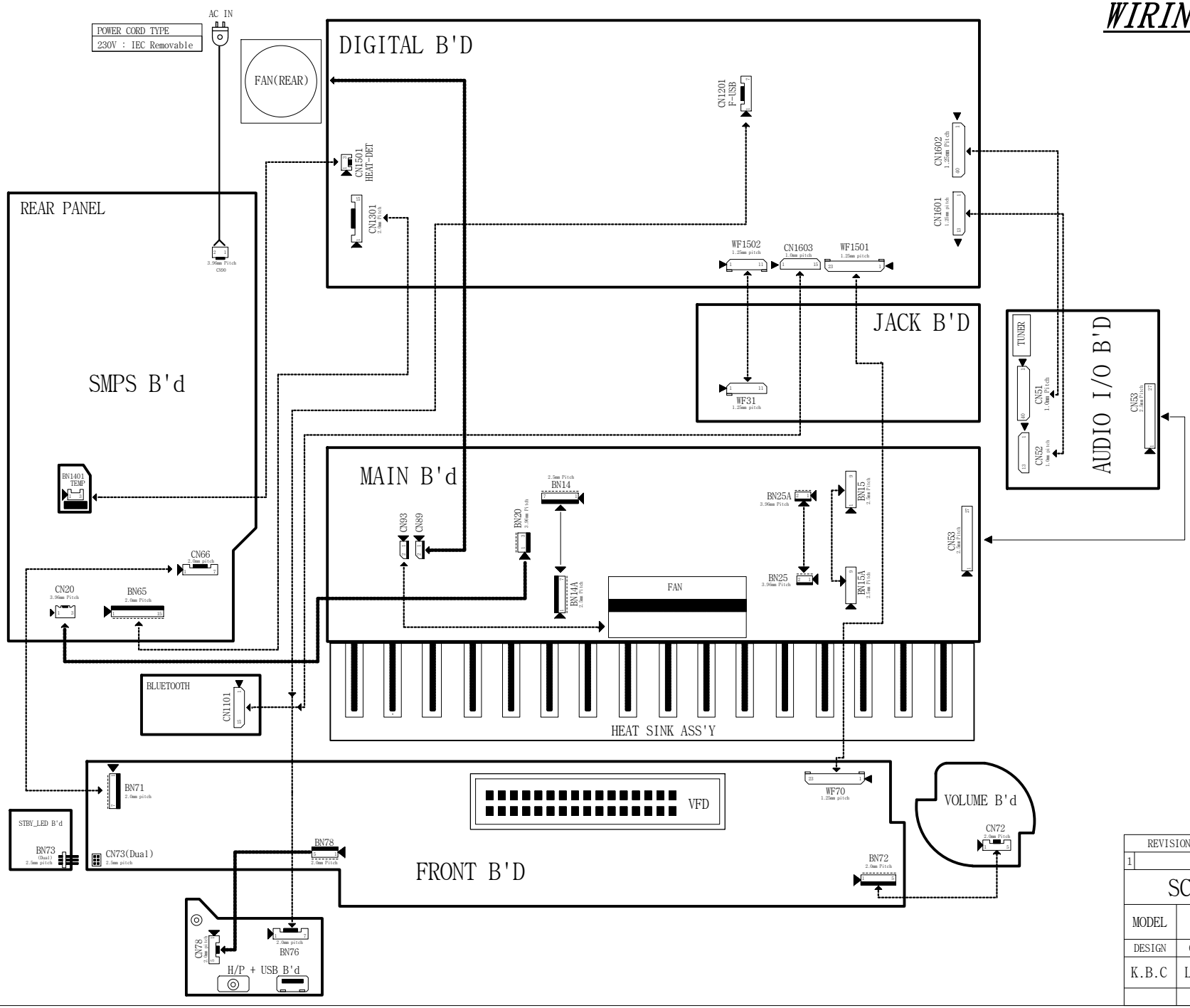
AVR171 Block Diagram



AVR171 Block Diagram



WIRING DIAGRAM



REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM				SHEET
MODEL	AVR171/230			1 / 1
DESIGN	CHECK	APPROVE	DRAWING NO	
K.B.C	L.J.H	Y.W.Y		

AVR1710 Main Schematic Diagram

SR-CH

C-CH

BL-CH

FR-CH

SL-CH

FL-CH

BR-CH

CONNECT From VOLUME B'd

FAN_H

JK91 CENTER SL SR

JK92 SBL SBR FL FR

FAN TEST (SHORT)

70°C Operation FAN1 ON: 6.96V

80°C Operation FAN2 ON: 11.16V

FAN1_H/S

FAN2_BACK

FROM SMPS B'D(WIRE ASS'Y)

SUB1_OUT

SUB2_OUT

SUB_OUT

FOR ESD

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

MP

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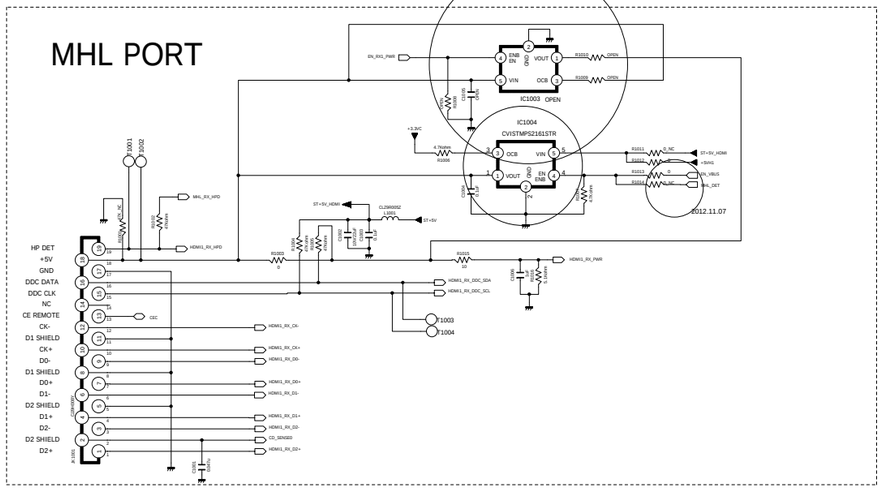
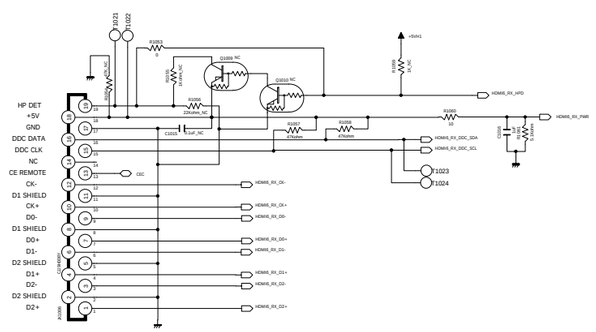
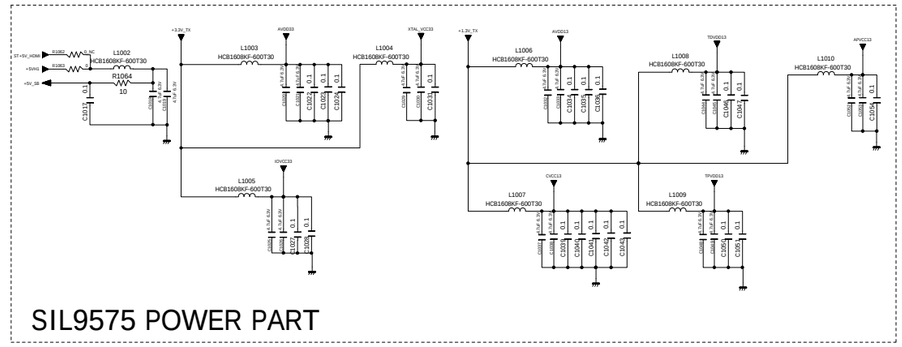
MULTI. LAB
2012.12.24

REVISION	1	2	3	
SCHEMATIC DIAGRAM				SHEET 24/27
MODEL	AVR171/230			
DESIGN	CHECK	APPROVE	DRAWING NO	
JH LEE	DC CHOI	W.Y.YANG	12507SCDZ (MAIN)	1/1
2012.12.24	2012.12.24	2012.12.24		

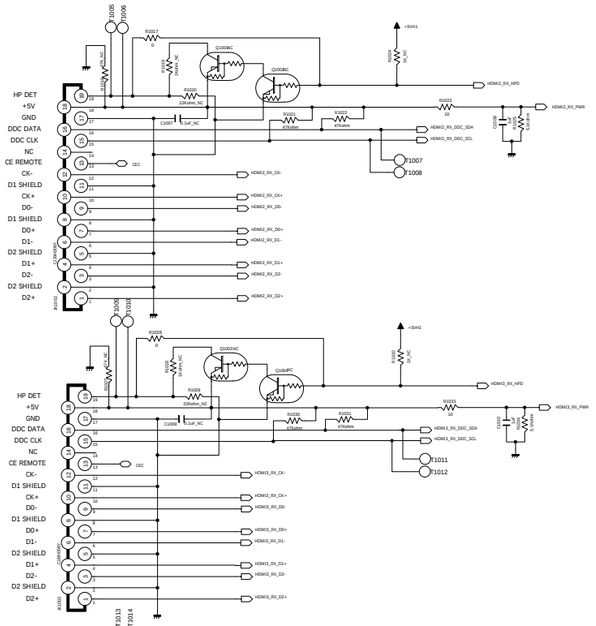
MHL PORT

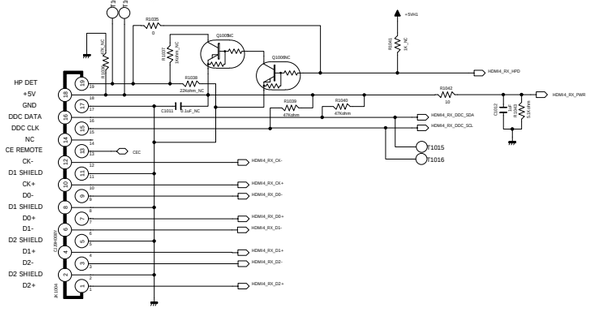


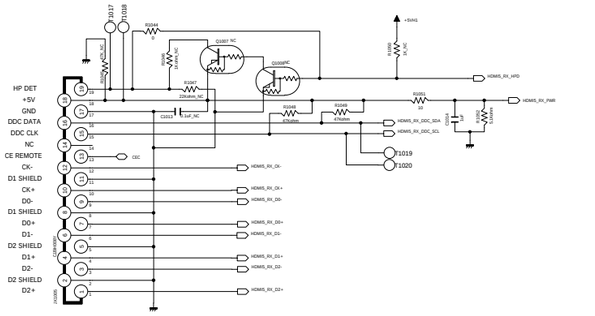


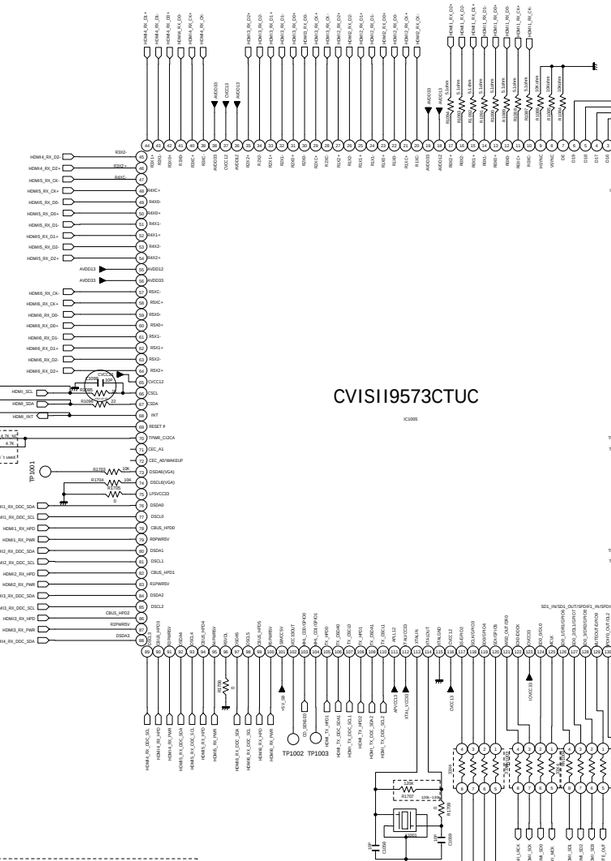


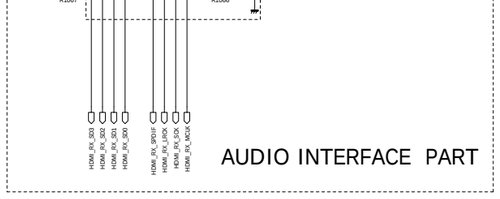
SIL9575 POWER PART

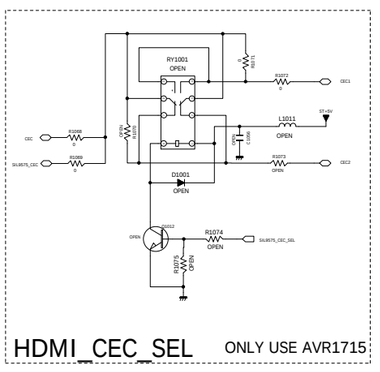












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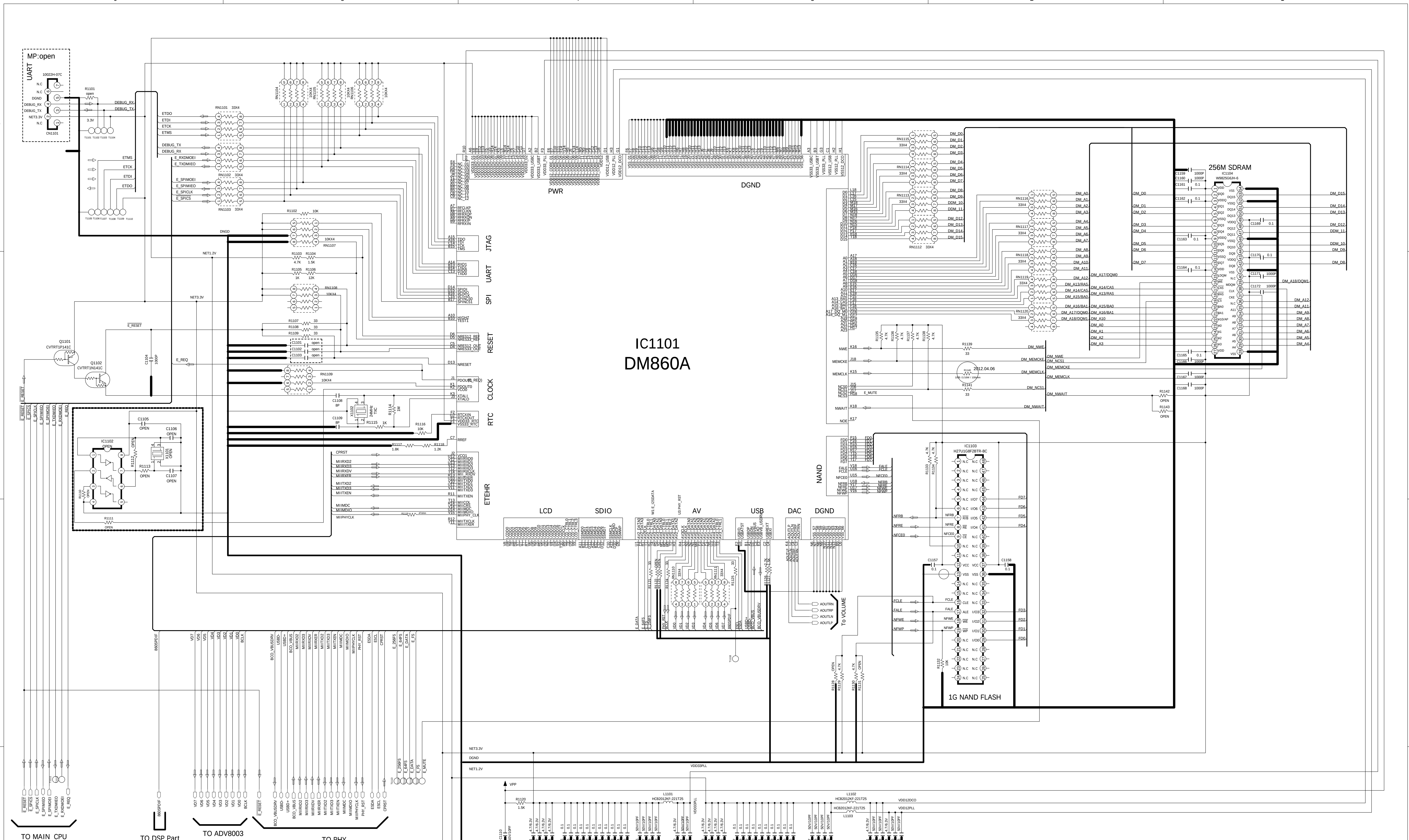
REVISION	2		4		6	
1		3		5		7

SCHEMATIC DIAGRAM

SHEET 15 27

MODEL	AVR171/230		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	12505SCDZ
12.12.21	12.12.21	12.12.21	HDMI_REPEATER



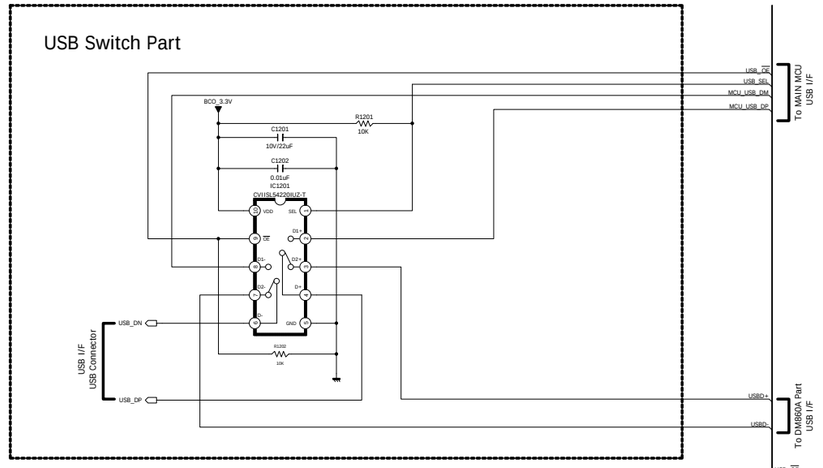
REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET 16 / 27

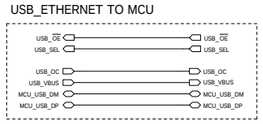
MODEL: AVR171/230

DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	12505SCDZ (NETWORK_DM860A)
12.12.21	12.12.21	12.12.21	

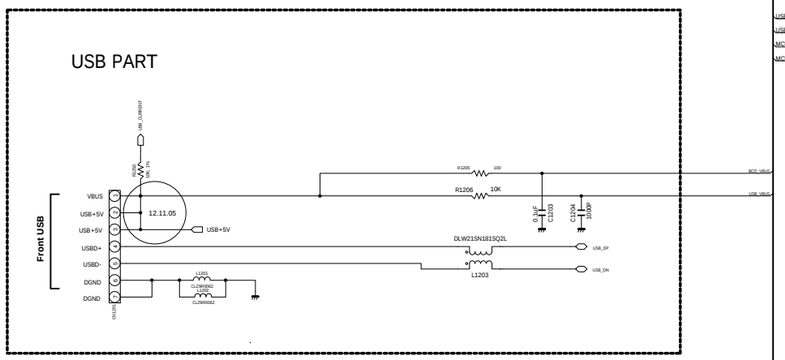
USB Switch Part



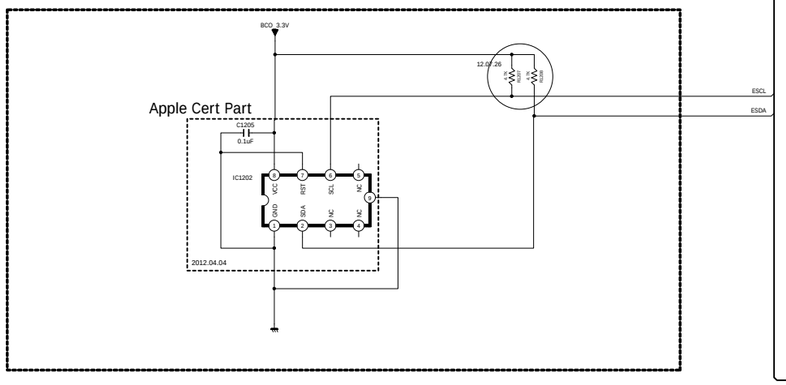
USB_ETHERNET TO MCU



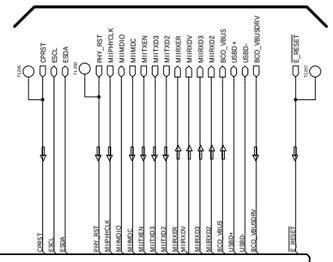
USB PART



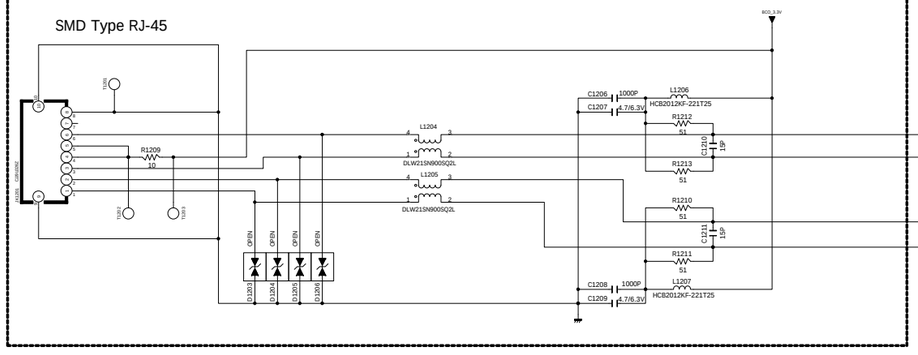
Apple Cert Part



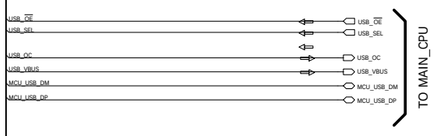
TO DM860A_NETWORK



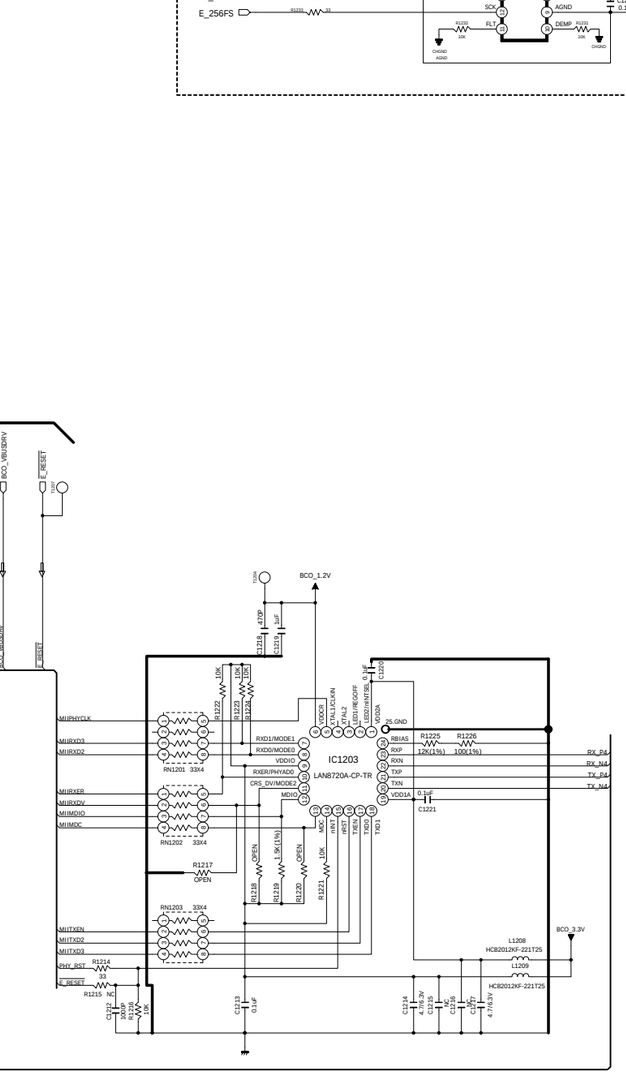
SMD Type RJ-45



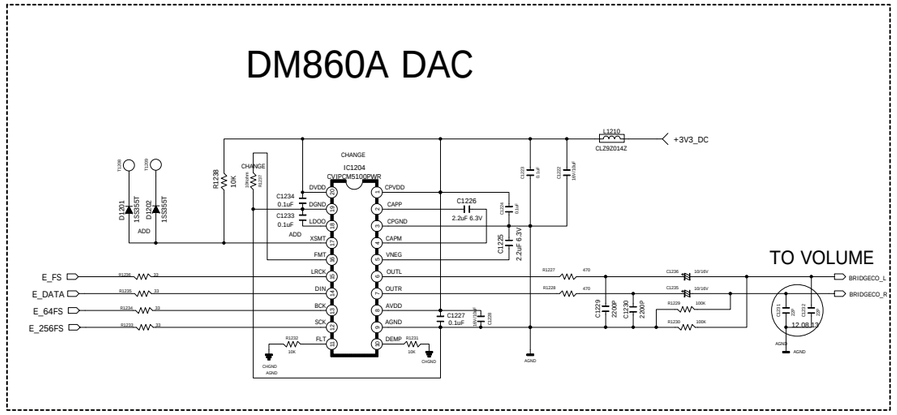
TO MAIN_CPU



TO ETHERNET PHY



DM860A DAC



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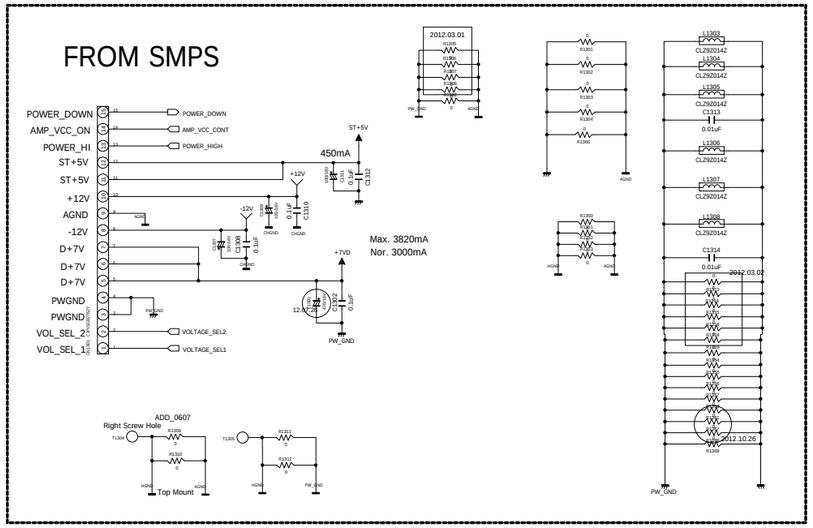
12.12.21

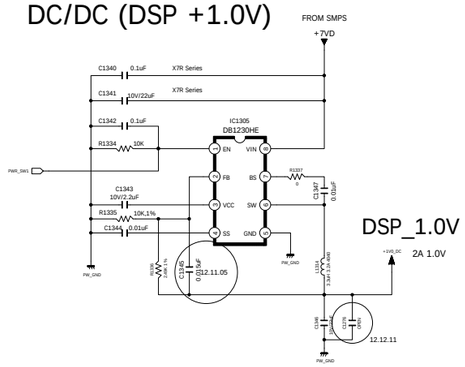
REVISION	2		4		6	
1		3		5		7	

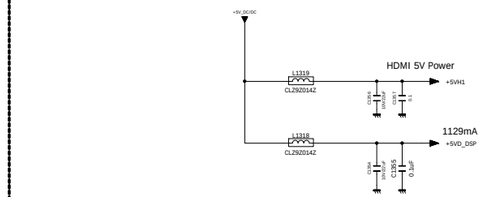
SCHEMATIC DIAGRAM

SHEET 17 / 27

MODEL	AVR171/230		
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	12505SCDZ (USB_ETHERNET) 0
12.12.21	12.12.21	12.12.21	







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REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM				SHEET
MODEL	AVR171/230			18 27
DESIGN	CHECK	APPROVE	DRAWING NO	
C.D.W	S.K.S	C.D.C	12505SCDZ (DC_DC_POWER)	
12.12.21	12.12.21	12.12.21		

ADC INPUT

To Volume

From Volume

AD_LIN

AD_RIN

IC1401

CVICS49834CVZ

<=> MCU PART

FROM JACK PCB

FROM HDMI RX AUDIO

TO HDMI TX AUDIO

ON : HIGH

CS49834 VDDIO * 6EA

CS49834 VDD * 15EA

REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM

SHEET 19 27

MODEL	AVR171/230	
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	12505SCDZ (DSP_CODEC)
12.12.21	12.12.21	12.12.21	F

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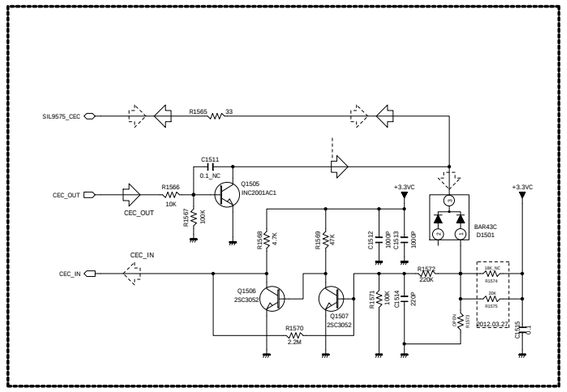
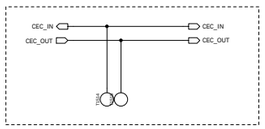
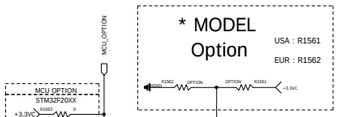
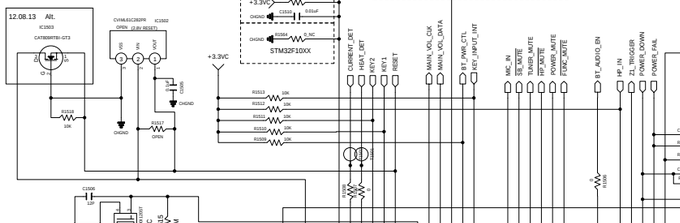
12.12.21









REVISION		2		4		6
1		3		5		7

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MULTI. LAB
12.12.21

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR171/230		20 27
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	12505SCDZ (ST_MCU)
12.12.21	12.12.21	12.12.21	

CUP12456Z

FROM CODEC

D_FR-
D_FR+
D_FL+
D_FL-
D_SW-
D_SW+
D_CT+
D_CT-
D_SR-
D_SR+
D_SL+
D_SL-
D_BR-
D_BR+
D_BL+
D_BL-

DAC-R
DAC-L
DAC-SW
DAC-SR
DAC-SL
DAC-C
DAC-SBR
DAC-SBL

DC PROTECTOR
R940=1.5K
Operating: +5.0V~ , -5.0V~

OVERLOAD DETECTION
0V

PROTECT TEST
(SHORT)

FUNC_MUTE
SB_MUTE
ZONE2_VOL_CLK
ZONE2_VOL_DATA
ZONE2_MUTE
+12V
FAN2_ON
FAN1_ON
P_FAIL
OVERLOAD
DC-PROTECT
P_M
OC_DETECT

CONNECT TO VOL B'd

* 3 Step Detect *
4.7A : VCC 48V->42.2V
7.0A : VCC 42.2V->25.2V
8.0A: Protect

SUB_IN
SL_IN
CNT_IN
SR_IN
FL_IN
FR_IN
SBL_IN
SBR_IN

+3.3V
+7V
+7V
CHGND
SUB_IN
AGND
SL_IN
AGND
CNT_IN
AGND
SR_IN
AGND
FL_IN
AGND
FR_IN
AGND
SBL_IN
AGND
SBR_IN
AGND
AGND
AD_LIN
AD_RIN
AGND
MIC_SIG
AGND
BT_FL
BT_FR
AGND
BCO_L
BCO_R
AGND
HPL_OUT
HPR_OUT
AGND
TUNER_SCL
TUNER_SDA
TUNER_MUTE
VOL_CLK
VOL_DATA

CONNECT TO VOL B'd

MUTE CONTROL

ST+5V
+12V
FUNC_MUTE
ZONE2_MUTE
SB_MUTE
SF_MUTE
AMP_GAIN_CONT
TUNER_MUTE1
TUNER_MUTE

12.08.13

Bluetooth

+3.3V_BT
GND
GND
GND
+5V_BT
BT_STATUS
BT_STATUS_PAIR
FN3
BT_AUDIO_EN
FN2
FN1
GND
BT_FL
GND
BT_FR
GND
BT_PWR_CTL

BCO_3.3V
ST+5V
BT_STATUS
BT_STATUS_PAIR
BT_FN3
BT_AUDIO_EN
BT_FN2
BT_FN1
BT_FL
BT_FR
BT_PWR_CTL

MP

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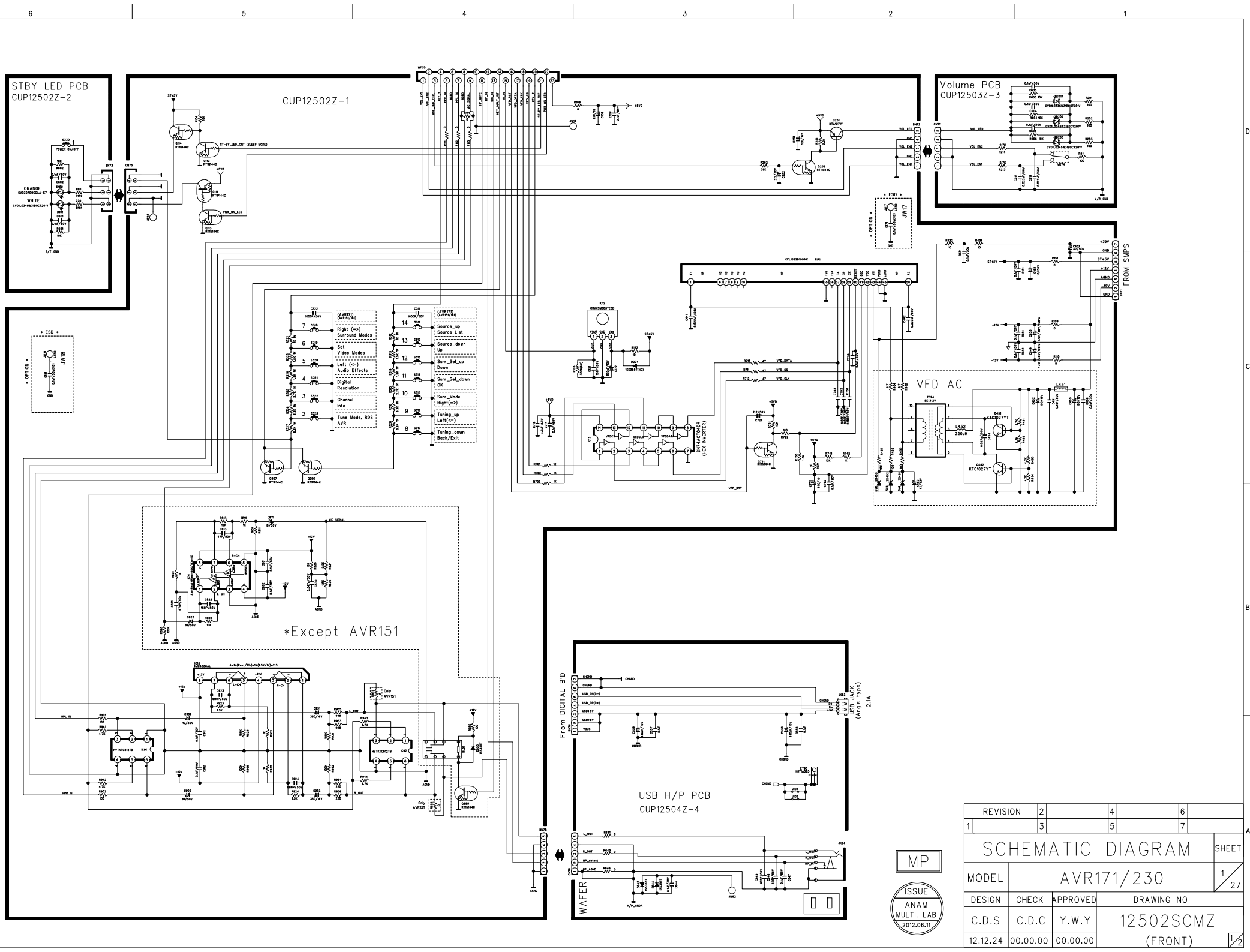
12.12.21

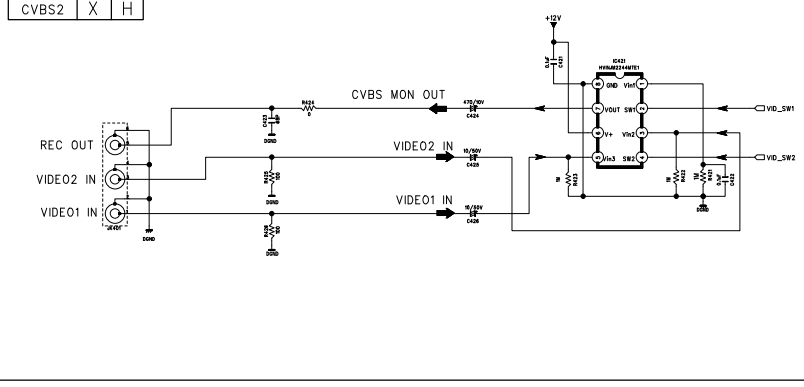
REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR171/230		21 / 27
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.W	S.K.S	C.D.C	12505SCDZ (VOLUME_FILTER)
12.12.21	12.12.21	12.12.21	7 / 174


STBY LED PCB
CUP12502Z-2
CUP12502Z-1
Volume PCB
CUP12503Z-3
FROM SMPS
VFD AC
*Except AVR151
USB H/P PCB
CUP12504Z-4
From DIGITAL B'D
WAFER
MP
ISSUE
ANAM
MULTI. LAB
2012.06.11
REVISION
SCHEMATIC DIAGRAM
SHEET
MODEL
AVR171/230
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)

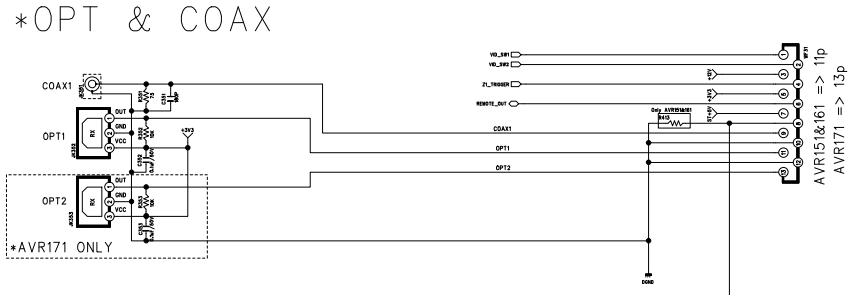
	SW1	SW2
MUTE	L	L
CVBS1	H	L
CVBS2	X	H

*ANALOG VIDEO SW

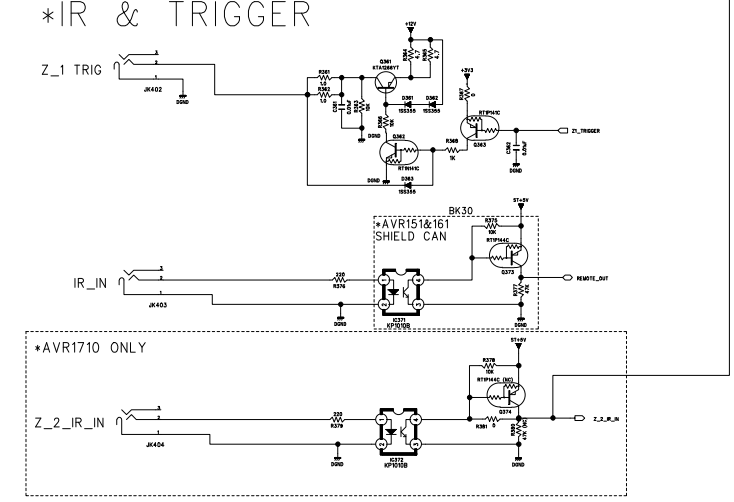


JACK PCB
CUP12502Z-5

*OPT & COAX



*IR & TRIGGER



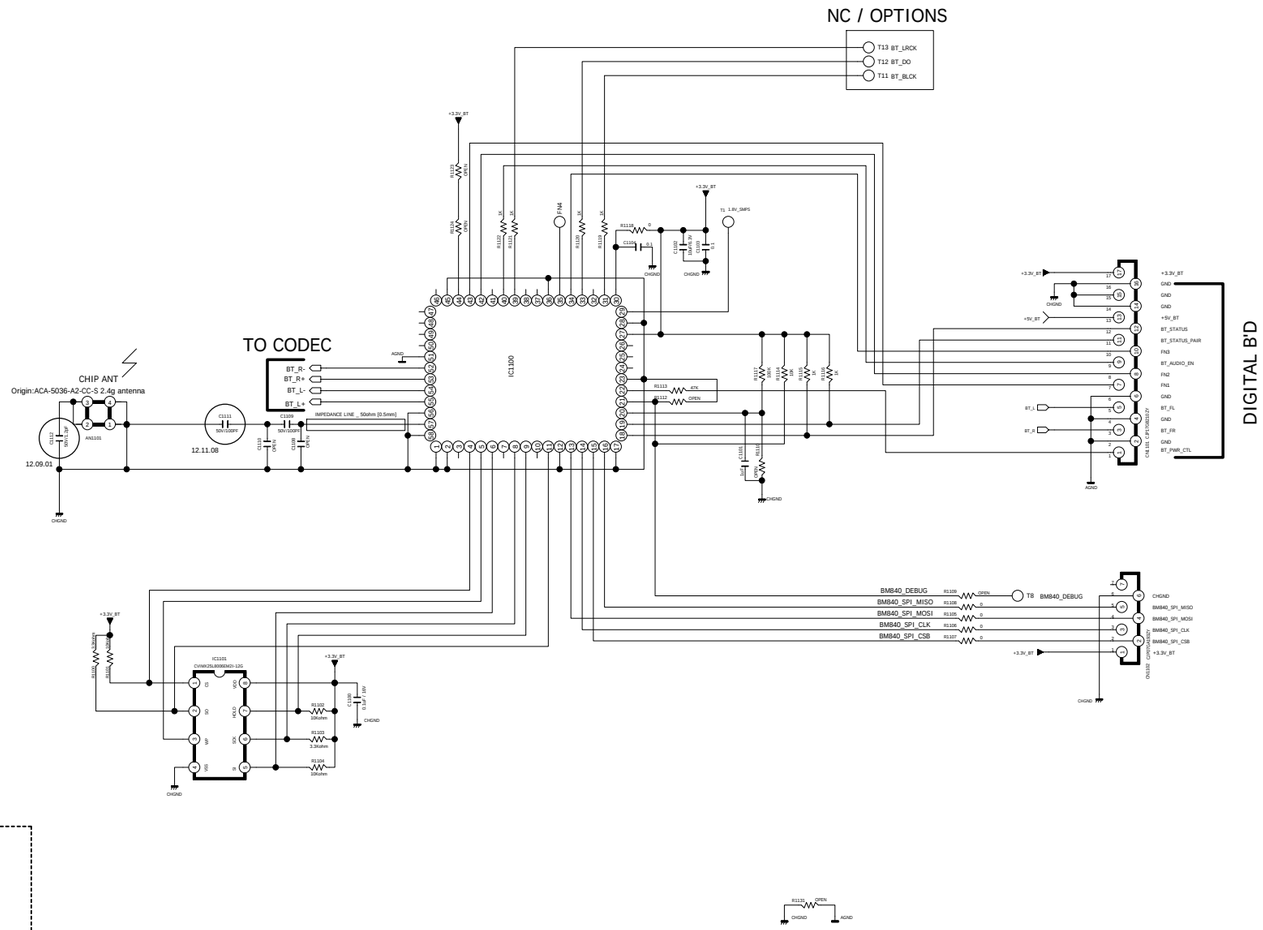
MP

ISSUE
ANAM
MULTI. LAB
2012.06.11

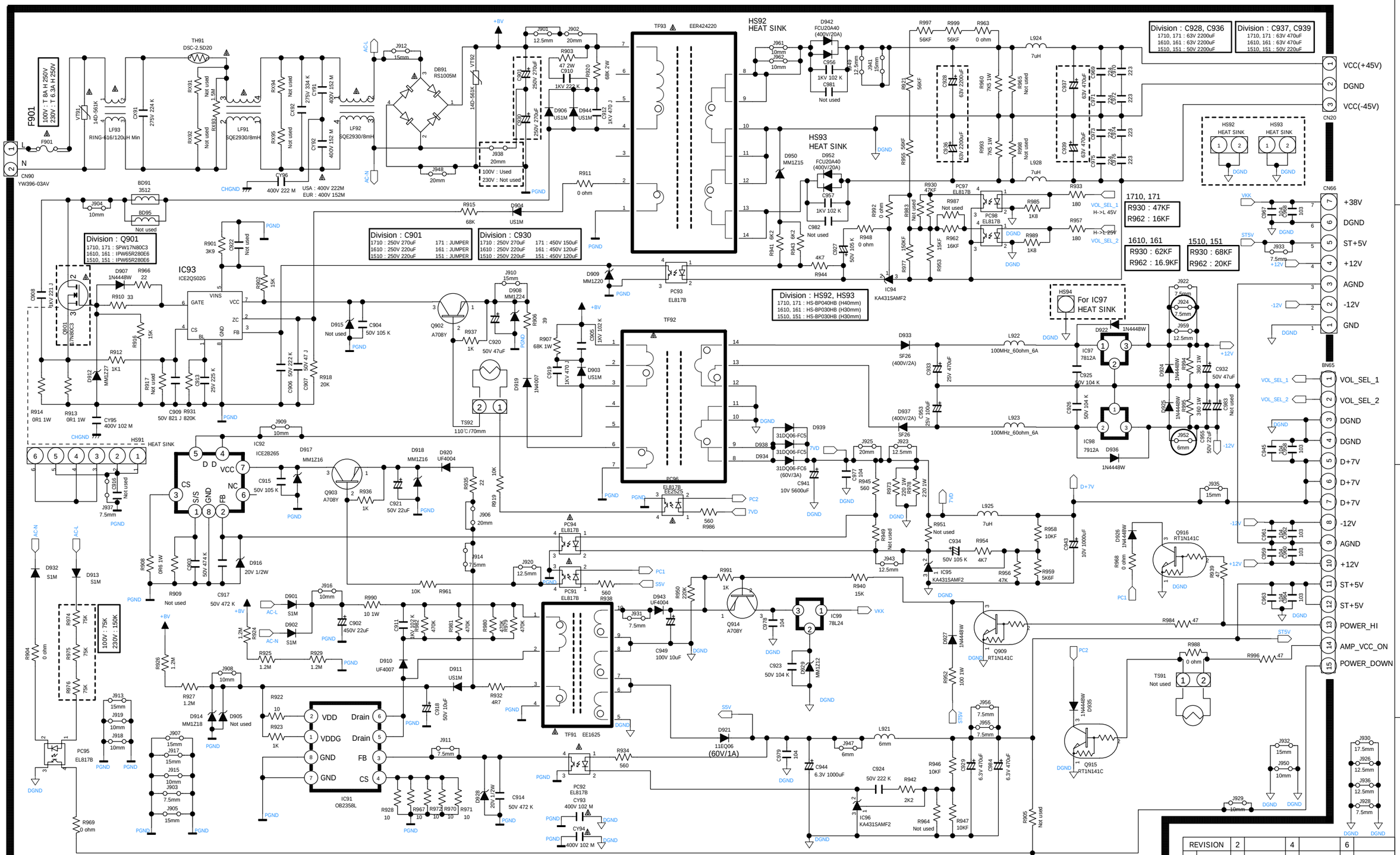
REVISION	2		4		6	
1		3		5		7	

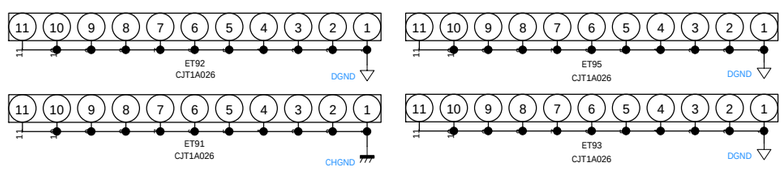
SCHEMATIC DIAGRAM			SHEET
MODEL	AVR171/230		2 / 27
DESIGN	CHECK	APPROVE	DRAWING NO
C.D.S	C.D.C	Y.K.Y	12502SCMZ (JACK) 2 2
12.12.24	05.00.00	05.00.00	

Bluetooth_BM840



AVR1X10/AVR1X1 SMPS SCHEMATIC DIAGRAM





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

MP

ISSUE
ANAM
MULTI. LAB
2012.12.24

REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM			SHEET
MODEL	AVR171/230		26 / 27
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) 1 / 1

CONNECT TO DIGITAL B'D

TUNER MODULE
EU : CNVMW104MV1R78
US : CNVMW004MV1R78S

TUNER MODULE

VOL_OUT

ZONE2

CONNECT TO MAIN B'D

ISSUE
ANAM
MULTI. LAB
2002.07.07

MP

**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).
1pF = 10^{-6}uF

**THIS SCHEMATIC DIAGRAM MAY BE MODIFIED AT ANYTIME WITH THE IMPROVEMENT OF PERFORMANCE.

REVISION	2		4		6	
1		3		5		7	

SCHEMATIC DIAGRAM

SHEET 25 / 27

MODEL	ARV171/230		
DESIGN	CHECK	APPROVE	DRAWING NO
			12508SCPZ
			ANALOG AUDIO I/O - Vol Control PART)