harman/kardon

AVR130

5 X 45W 5.1 CHANNEL A/V RECEIVER

SERVICE MANUAL

CONTENTS

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ELECTROSTATICALLY SENSITIVE (ES) DEVICES

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

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

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

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

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing.

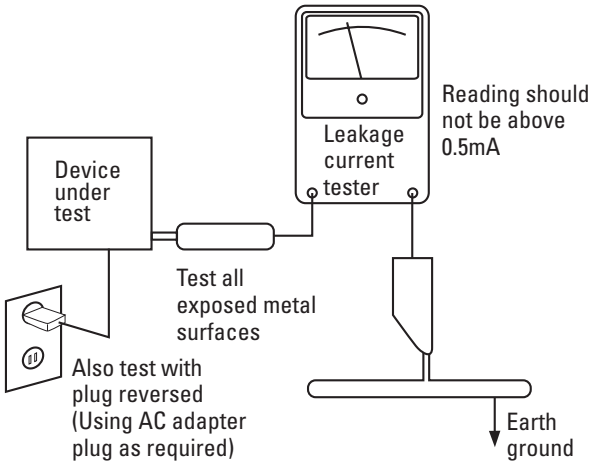
Components identified with the IEC symbol ⚠ in the parts list are special significance to safety. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings or resistance, wattage, or voltage that are designated in the parts list in this manual.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

SAFETY PRECAUTIONS

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

LEAKAGE CURRENT CHECK

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



AC Leakage Test

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

AVR 130 TECHNICAL SPECIFICATIONS

Audio Section

Stereo Mode

Continuous Average Power (FTC)

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

Five Channel Surround Modes

Power Per Individual Channel

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

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

Surround channels:
45 Watts per channel
@ < 0.07% THD, 20Hz–20kHz into 8 ohms

Input Sensitivity/Impedance	
Linear (High-Level)	200mV/47k ohms
Signal-to-Noise Ratio (IHF-A)	100dB
Surround System Adjacent Channel Separation	
Pro Logic II	45dB
Dolby Digital (AC-3)	55dB
DTS	55dB
Frequency Response	
@ 1W (+0dB, –3dB)	10Hz–130kHz
High Instantaneous Current Capability (HCC)	±25 Amps
Transient Intermodulation Distortion (TIM)	Unmeasurable
Slew Rate	40V/µsec

FM Tuner Section

Frequency Range	87.5–108.0MHz
Usable Sensitivity	IHF 1.3µV/13.2dBf
Signal-to-Noise Ratio	Mono/Stereo 70dB/68dB
Distortion	Mono/Stereo 0.2%/0.3%
Stereo Separation	40dB @ 1kHz
Selectivity	±400kHz, 70dB
Image Rejection	80dB
IF Rejection	90dB

AM Tuner Section

Frequency Range	520–1720kHz
Signal-to-Noise Ratio	45dB
Usable Sensitivity	Loop 500µV
Distortion	1kHz, 50% Mod 0.8%
Selectivity	±10kHz, 30dB

Video Section

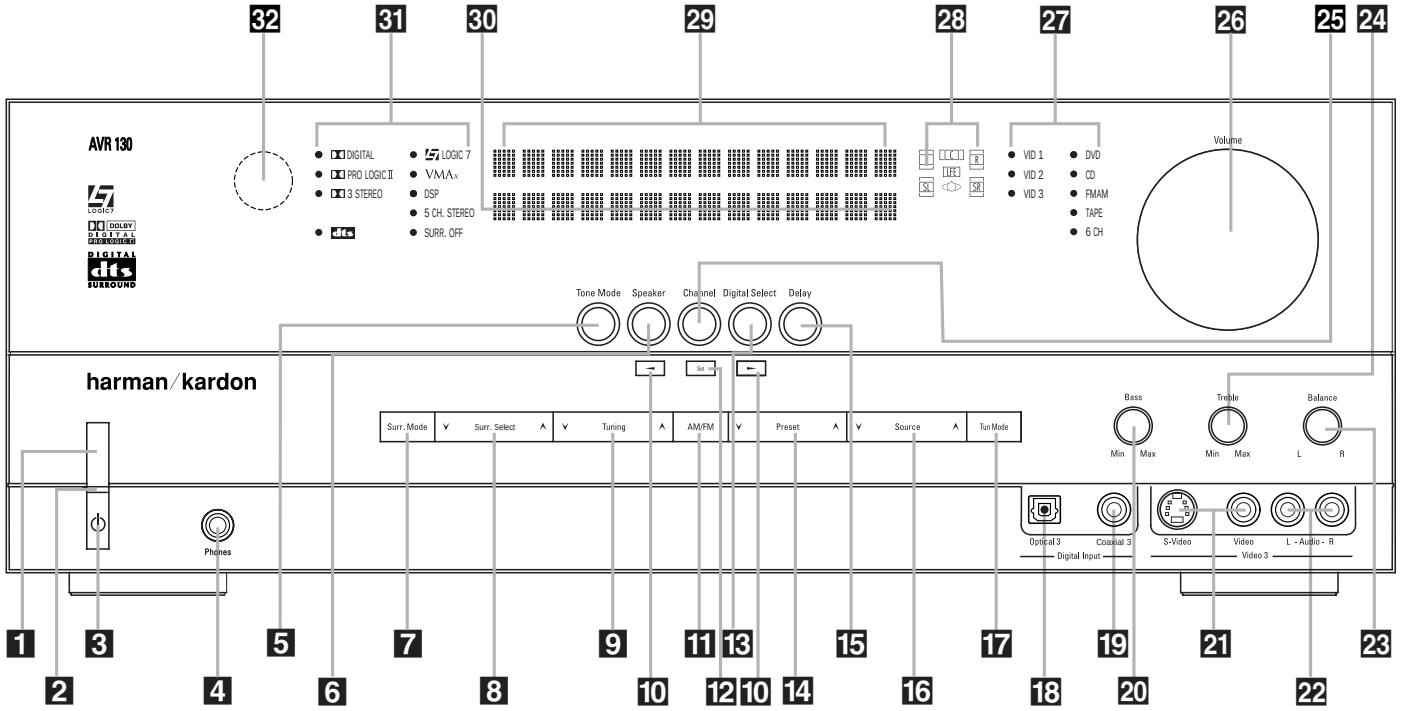
Television Format	NTSC
Input Level/Impedance	1Vp-p/75 ohms
Output Level/Impedance	1Vp-p/75 ohms
Video Frequency Response	10Hz–8MHz (–3dB)

General

Power Requirement	AC 120V/60Hz	
Power Consumption	68W idle, 540W maximum (2 channels driven)	
Dimensions	(Product)	(Shipping)
Width	17.3 inches (440mm)	21.5 inches (545mm)
Height	6.6 inches (168mm)	9.9 inches (251mm)
Depth	15 inches (382mm)	17.9 inches (455mm)
	(Product)	(Shipping)
Weight	23.8 lb (10.8kg)	28.2 lb (12.8kg)

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

FRONT-PANEL CONTROLS



1 Main Power Switch
2 Power Indicator
3 Standby/On Switch
4 Headphone Jack
5 Tone Mode Selector Buttons
6 Speaker Selector
7 Surround Mode Group Selector
8 Surround Mode Selector
9 Tuning Selector
10 ◀/▶ Buttons
11 Tuner Band Selector
12 Set Button
13 Digital Input Selector
14 Preset Stations Selector
15 Delay Adjust Selector
16 Input Source Selector
17 Tuner Mode Selector
18 Optical 3 Digital Input
19 Coaxial 3 Digital Input
20 Bass Control
21 Video 3 Video Input Jacks
22 Video 3 Audio Input Jacks
23 Balance Control
24 Treble Control
25 Channel Adjust Selector
26 Volume Control
27 Input Indicators
28 Speaker/Channel Input Indicators
29 Upper Display Line
30 Lower Display Line
31 Surround Mode Indicators
32 Remote Sensor Window

NOTE: To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at www.harmankardon.com.

1 Main Power Switch: Press this button to apply power to the AVR 130. When the switch is pressed in, the unit is in a Standby mode, as indicated by the amber LED **2** above the Standby/On Switch **3**. This button MUST be pressed in to operate the unit. To turn the unit off and prevent the use of the remote control, this switch should be pressed until it pops out from the front panel and the word "OFF" is seen at the top of the switch.

NOTE: This switch is normally left in the "ON" position.

2 Power Indicator: This LED lights amber when the unit is in the Standby mode to signal that the AVR is ready to be turned on. When the unit is in operation, the indicator is blue.

3 Standby/On Switch: When the Main Power Switch **1** is "ON," press this button to turn on the AVR 130; press it again to turn the unit off. The Power Indicator **3** turns blue when the unit is on.

4 Headphone Jack: This jack may be used to listen to the AVR 130's output through a pair of headphones. The speakers will automatically be turned off when the headphone jack is in use.

5 Tone Mode Selector Buttons: Pressing this button enables or disables the Bass and Treble tone controls. When the button is pressed so that TONE IN appears in the Lower Display Line **30**, the Bass **20** and Treble **24** controls may be used to adjust the output signals. When the button is pressed once or twice so that the words TONE OUT appear in the Lower Display Line **30**, the output signal will be "flat," no matter how the actual Bass and Treble Controls **20** **24** are adjusted.

6 Speaker Selector: Press this button to begin the process of configuring the unit to match the type of speakers used in your listening room. (See pages 16–19 for more information on speaker setup and configuration.)

7 Surround Mode Group Selector: Press this button to select the top-level group of surround modes. Each press of the button will select the current mode in each of the major groupings (e.g., Dolby, DTS, Logic 7, DSP, Stereo).

When the button is pressed so that the name of a mode in the desired surround-mode group appears in the on-screen display and in the Lower Display Line **30**, press the Surround Mode Selector **8** to cycle through the individual modes available. For example, press this button to select Dolby modes, and then press the Surround Mode Selector **8** to choose from the various mode options.

FRONT-PANEL CONTROLS

8 Surround Mode Selector: Press this button to select from among the available surround mode options for the mode group selected. The specific modes will vary based on the number of speakers available, the mode group and if the input source is digital or analog. For example, press the Surround Mode Group Selector **7** to select a mode grouping such as Dolby or Logic 7, and then press this button to see the available mode choices. For more information on mode selection, see pages 22 and 23.

9 Tuning Selector: Press the left side of the button to tune lower-frequency stations and the right side of the button to tune higher-frequency stations. When the tuner is in the MANUAL mode, each tap will increase or decrease the frequency by one increment. When the tuner receives a strong enough signal for adequate reception, MANUAL TUNED will appear in the Lower Display Line **30**. When the tuner is in the AUTO mode, press the button once, and the tuner will scan for a station with acceptable signal strength. When the next station with a strong signal is tuned, the scan will stop and the Lower Display Line **30** will indicate AUTO TUNED. When an FM Stereo station is tuned, the display will read AUTO ST TUNED.

To switch back and forth between the Auto and Manual tuning modes, press the Tuner Mode Selector **17**.

10 ◀/▶ Buttons: When configuring the AVR 130's settings, use these buttons to select from the choices available, as shown in the Upper or Lower Display Lines **29** **30**.

11 Tuner Band Selector: Press this button to turn the AVR on and switch to select the Tuner as the input source. Press it again to switch between the AM and FM frequency bands. (See page 25 for more information on the tuner.)

12 Set Button: When making choices during the setup and configuration process, press this button to enter the desired setting into the AVR 130's memory.

13 Digital Input Selector: Press this button to select one of the digital inputs or the analog input for any source. (See pages 23–25 for more information on digital audio.)

14 Preset Stations Selector: Press this button to scroll up or down through the list of stations that have been entered into the preset memory. (See page 25 for more information on tuner presets.)

15 Delay Adjust Selector: Press this button to begin the steps required to enter delay settings. (See page 19 for more information on delay times.)

16 Input Source Selector: Press this button to change the input by scrolling up or down through the list of Input Indicators **27**.

17 Tuner Mode Selector: Press this button to select Auto or Manual tuning. When the button is pressed so that AUTO appears in the Lower Display Line **30**, the tuner will search for the next station with an acceptable signal when the Tuning Selector **9** **21** is pressed. When the button is pressed so that MANUAL appears in the Lower Display Line **30**, each press of the Tuning Selector **9** **21** will increase the frequency. This button may also be used to switch between Stereo and Mono modes for FM radio reception. When weak reception is encountered, press the button so that MANUAL appears in the Lower Display Line **30** to switch to Mono reception. Press it again to switch back to STEREO mode. (See page 25 for more information on using the tuner.)

18 Optical 3 Digital Input: Connect the optical digital audio output of an audio or video product to this jack. When the input is not in use, be certain to keep the plastic cap installed to avoid dust contamination that might degrade future performance.

19 Coaxial 3 Digital Input: This jack is used for connection to the output of portable audio devices, video game consoles or other products that have a coax digital audio jack.

20 Bass Control: Turn this control to modify the low-frequency output of the left/right channels by as much as ±10dB, when the unit is in the "Surround Off" mode.

21 Video 3 Video Input Jacks: These jacks may be used for temporary connection to the composite or S-Video output of video games, camcorders or other portable video products. You may make a connection to either jack at any time, but not both simultaneously.

22 Video 3 Audio Input Jacks: These audio jacks may be used for temporary connection to video games or portable audio/video products such as camcorders and portable audio players.

23 Balance Control: Turn this control to change the relative volume for the front left/right channels.

NOTE: For proper operation of the surround modes this control should be at the midpoint or "12 o'clock" position.

24 Treble Control: Turn this control to modify the high frequency output of the left/right channels by as much as ±10dB, when the unit is in the "Surround Off" mode.

25 Channel Adjust Selector: Press this button to begin the process of trimming the channel output levels using an external audio source. (For more information on output level trim adjustment, see page 26.)

26 Volume Control: Turn this knob clockwise to increase the volume, counterclockwise to decrease the volume. If the AVR 130 is muted, adjusting the Volume Control **26** **37** will automatically release the unit from the silenced condition.

27 Input Indicators: The name of the selected input will appear here.

28 Speaker/Channel Input Indicators: These indicators are multipurpose, indicating both the speaker type selected for each channel and the incoming data-signal configuration. The left, center, right, right surround and left surround speaker indicators are composed of three boxes, while the subwoofer is a single box. The center box lights when a "small" speaker is selected, and the two outer boxes light when "large" speakers are selected. When none of the boxes are lit for the center, surround or subwoofer channels, no speaker has been assigned that position. (See page 16 for more information on configuring speakers.) The letters inside each box display the active input channels. For standard analog inputs, only the L and R will light, indicating a stereo input. For a digital source, the indicators will light to display the channels being received at the digital input. When the letters flash, the digital input has been interrupted. (See pages 18–19 for more information on the Channel Indicators.)

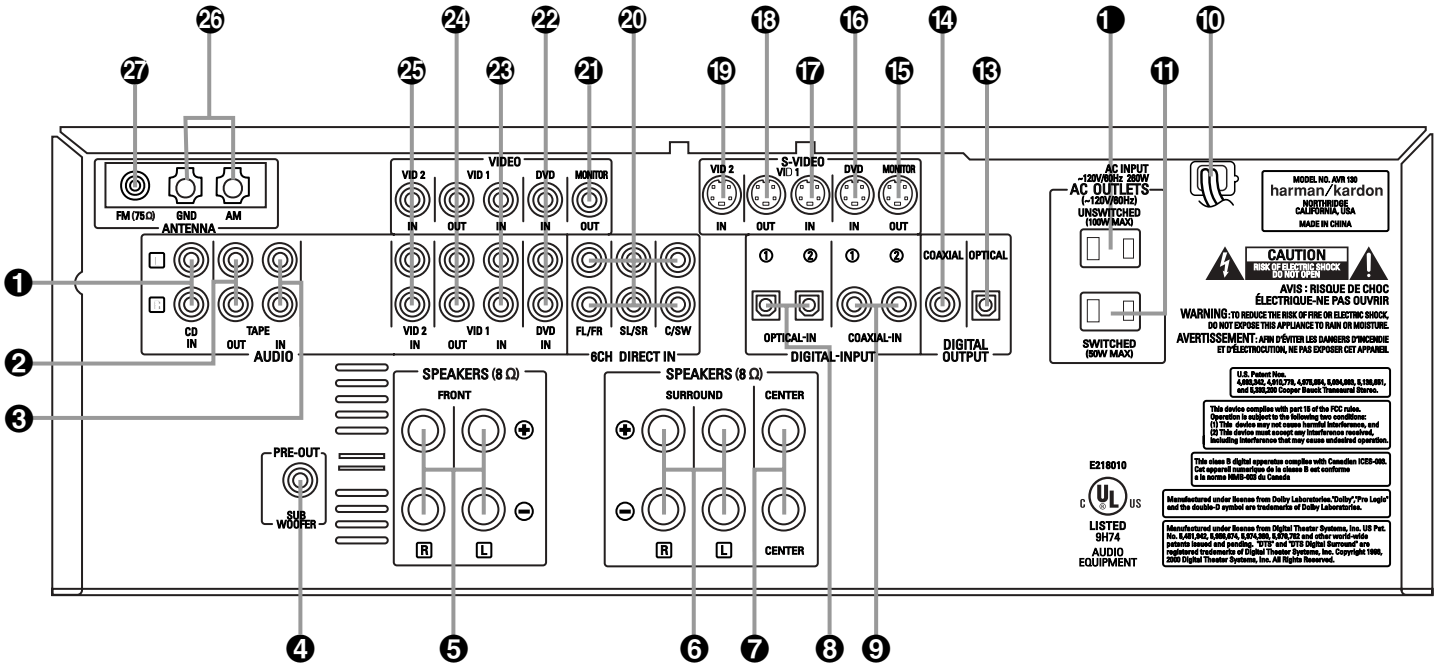
29 Upper Display Line: Depending on the unit's status, a variety of messages will appear here. In normal operation, this line will show the current input source and which analog or digital input is in use. When the tuner is the input, this line will identify the station as AM or FM and show the frequency and preset number, if any.

30 Lower Display Line: Depending on the unit's status, a variety of messages will appear here. In normal operation, the current surround mode will show here.

31 Surround Mode Indicators: The name of the selected surround mode will appear here.

32 Remote Sensor Window: The sensor behind this window receives infrared signals from the remote control. Aim the remote at this area and do not block or cover it.

REAR-PANEL CONNECTIONS



❶ CD Audio Inputs
❷ Tape Outputs
❸ Tape Inputs
❹ Subwoofer Output
❺ Front Speaker Outputs
❻ Surround Speaker Outputs
❼ Center Speaker Outputs
❽ Optical Digital Inputs
❾ Coaxial Digital Inputs
❿ AC Power Cord
⓫ Switched AC Accessory Outlet
⓬ Unswitched AC Accessory Outlet
⓭ Optical Digital Output
⓮ Coaxial Digital Output
⓯ S-Video Monitor Output
⓰ DVD S-Video Input
⓱ Video 1 S-Video Input
⓲ Video 1 S-Video Output
⓳ Video 2 S-Video Input
⓴ 6-Channel Direct Inputs
㉑ Video Monitor Output
㉒ DVD Audio/Video Inputs
㉓ Video 1 Audio/Video Inputs
㉔ Video 1 Audio/Video Outputs
㉕ Video 2 Audio/Video Inputs
㉖ AM Antenna Terminals
㉗ FM Antenna Jack

NOTE: To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at www.harmankardon.com.

NOTE: To assist in making the correct connections for multichannel input, output and speaker connections, all connection jacks and terminals are color-coded in conformance with the CEA standards as follows:

Front Left:	White	Surround Right:	Gray
Front Right:	Red	Subwoofer:	Purple
Center:	Green	Coaxial Digital Audio:	Orange
Surround Left:	Blue	Composite Video:	Yellow

❶ CD Audio Inputs: Connect these jacks to the output of a Compact Disc player or changer.

❷ Tape Outputs: Connect these jacks to the RECORD/INPUT jacks of an audio recorder.

❸ Tape Inputs: Connect these jacks to the PLAY/OUT jacks of an audio recorder.

❹ Subwoofer Output: Connect this jack to the line-level input of a powered subwoofer. If an external subwoofer amplifier is used, connect this jack to the subwoofer amplifier input.

❺ Front Speaker Outputs: Connect these outputs to the matching + and – terminals on your front speakers.

❻ Surround Speaker Outputs: Connect these outputs to the matching + or – terminals on your left and right surround speakers.

❼ Center Speaker Outputs: Connect these speaker outputs to the matching (+) and (–) terminals on your center channel speaker.

NOTE ON ALL SPEAKER CONNECTIONS: When making speaker connections always make certain to maintain correct polarity by connecting the black terminal to the negative (–) terminal on the speakers. Connect the blue terminal to the positive (+) terminal on the left surround speaker and the gray terminal to the positive (+) terminal on the right surround speaker. When a newer complete 5-piece speaker system is used, the individual speakers may have matching color terminals in accordance with CEA specifications, while existing speakers typically use a red terminal for the positive (+) speaker wire connection. (See page 13 for more information on speaker polarity.)

REAR-PANEL CONNECTIONS

❽ Optical Digital Inputs: Connect the optical digital audio output from a DVD player, HDTV receiver, LD player, satellite receiver, cable box, MiniDisc player or recorder, or CD player to these jacks. The signal may be either a Dolby Digital signal, a DTS signal or a standard PCM digital source.

❾ Coaxial Digital Inputs: Connect the coax digital audio output from a DVD player, HDTV receiver, LD player, satellite receiver, cable box, MiniDisc recorder or CD player to these jacks. The signal may be either a Dolby Digital signal, DTS signal or a standard PCM digital source. Do not connect the RF digital output of an LD player to these jacks.

NOTE: The default setting for the audio input associated with DVD is the Coaxial Digital Input 1 ❾. If you connect the audio outputs of a DVD player to another digital or analog audio jack, change the input setting as shown on page 19.

❿ AC Power Cord: Connect the AC plug to an unswitched AC wall outlet.

⓫ Switched AC Accessory Outlet: This outlet may be used to power any device you wish to have turned on or off at the same time as the AVR 130. Any device connected to this outlet will be off when the AVR 130 is in the Standby mode, and power will be supplied to the outlet when the AVR 130 is turned on.

❶ Unswitched AC Accessory Outlet: This outlet may be used to power any AC device. The power will remain on at this outlet regardless of whether the AVR 130 is on or off.

IMPORTANT NOTE: The total power consumption of all devices connected to the accessory outlets should not exceed 100 watts. Do not connect power amplifiers or other high-current-draw devices to these outlets.

⓭ Optical Digital Output: Connect this jack to the matching digital audio input connector on a digital recorder such as a CD-R or MiniDisc recorder.

⓮ Coaxial Digital Output: Connect this jack to the matching digital audio input connector on a digital recorder such as a CD-R or MiniDisc recorder.

⓯ S-Video Monitor Output: When your television or other video display is equipped with an S-Video input and you are using at least one video source with S-Video capability, connect this jack to the S-Video input on the video display.

⓰ DVD S-Video Input: If you are not making a direct connection from the component video outputs of your DVD player to a television or other video display, connect the S-Video output of the DVD player to this jack and then make certain that the S-Video Monitor Output ⓯ is also connected as described above.

⓱ Video 1 S-Video Input: If the product connected to the Video 1 Audio Inputs ㉓ has S-Video capability, connect this jack to the PLAY/OUT S-Video jack on that unit and then make cerain that the S-Video Monitor Output ⓯ is also connected as described above.

⓲ Video 1 S-Video Output: If the product connected to the Video 1 Audio Outputs ㉔ has S-Video capability, connect this jack to the REC/IN S-Video jack on that unit.

⓳ Video 2 S-Video Input: If the product connected to the Video 2 Audio Inputs ㉕ has S-Video capability, connect this jack to the PLAY/OUT S-Video jack on that unit and then make certain that the S-Video Monitor Output ⓯ is also connected as described above.

⓴ 6-Channel Direct Inputs: Connect the outputs of a DVD Audio or SACD player,or another product with built-in multichannel decoding, to these jacks.

These jacks have been color-coded as follows to assist you in making correct channel connections:

Front Left	White
Front Right	Red
Center	Green
Surround Left	Blue
Surround Right	Gray
Subwoofer	Purple

㉑ Video Monitor Output: Connect this jack to the composite video input of a TV monitor or video projector to view the output of any standard video source selected by the receiver's video switcher.

㉒ DVD Audio/Video Inputs: Connect one of these jacks to the composite video and L/R analog audio output jacks on a DVD or other video source.

NOTE: The default setting for the audio input associated with DVD is the Coaxial Digital Input 1 ❾. If you connect the audio outputs of a DVD player to another digital or analog audio jack, change the input setting as shown on page 19.

㉓ Video 1 Audio/Video Inputs: Connect these jacks to the PLAY/OUT composite video jacks and L/R audio jacks on a VCR or other video source.

㉔ Video 1 Audio/Video Outputs: Connect these jacks to the RECORD/INPUT composite video and L/R audio jacks on a VCR.

㉕ Video 2 Audio/Video Inputs: Connect these jacks to the PLAY/OUT composite video and L/R audio jacks on a TV, VCR or other video source.

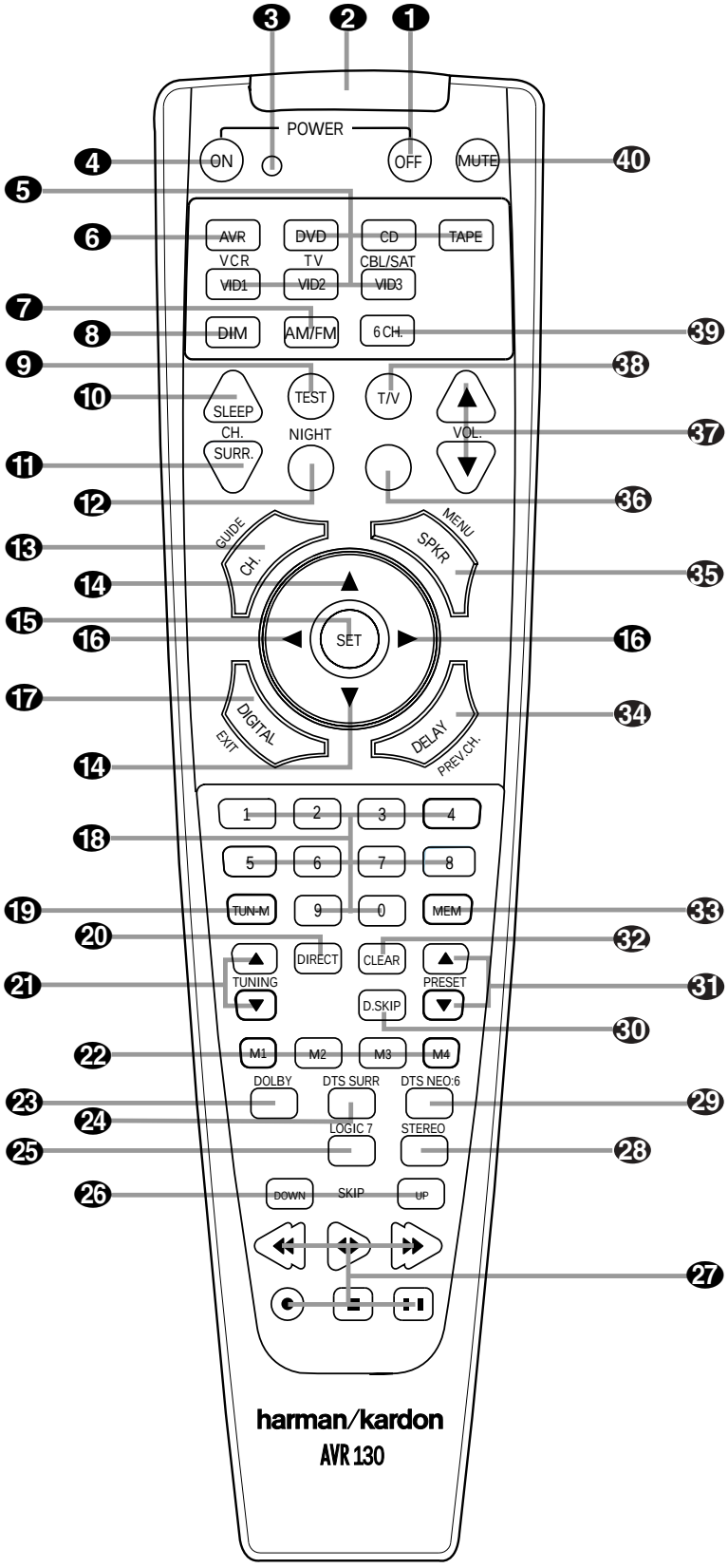
㉖ AM Antenna Terminals: Connect the AM loop antenna supplied with the receiver to these terminals. If an external AM antenna is used, make connections to the AM and GND terminals in accordance with the instructions supplied with the antenna.

㉗ FM Antenna Jack: Connect the supplied indoor or an optional external FM antenna to this jack.

Note on Video Connections: When connecting a source device such as a VCR, DVD Player, cable or satellite set top box or video game to the AVR, use either a composite or S-Video connection for each input, but not both.

REMOTE CONTROL FUNCTIONS

1. Power Off Button
2. IR Transmitter Window
3. Program Indicator
4. Power On Button
5. Input Selectors
6. AVR Selector
7. AM/FM Tuner Select
8. Dim Button
9. Test Button
10. Sleep Button
11. DSP Surround Mode Selector
12. Night Mode Button
13. Channel Select Button
14. ▲▼ Buttons
15. Set Button
16. ◄► Buttons
17. Digital Select Button
18. Numeric Keys
19. Tuner Mode Button
20. Direct Button
21. Tuning Up/Down Buttons
22. Macro Buttons
23. Dolby Mode Select Button
24. DTS Digital Mode Select Button
25. Logic 7 Mode Select Button
26. Track Skip Up/Down Buttons
27. Transport Controls
28. Stereo Mode Selector Button
29. DTS Neo:6 Mode Select Button
30. Disc Skip Button
31. Preset Up/Down Buttons
32. Clear Button
33. Memory Button
34. Delay Button
35. Speaker Select Button
36. Spare Button
37. Volume Up/Down Button
38. TV/Video Button
39. 6-Channel Direct Input Button
40. Mute



NOTES:

- The function names shown here refer to each button's feature when used with the AVR 130. Most buttons have additional functions when used with other devices. See pages 31–32 for a list of these functions.
- To make it easier to follow the instructions that refer to this illustration, a larger copy may be downloaded from the Product Support section for this product at www.harmankardon.com.

REMOTE CONTROL FUNCTIONS

IMPORTANT NOTE: The AVR 130's remote may be programmed to control up to seven devices, including the AVR 130. Before using the remote, remember to press the Input Selector Button ❺ that corresponds to the unit you wish to operate. In addition, the AVR 130's remote is shipped from the factory to operate the AVR 130 and most recent Harman Kardon products. The remote is also capable of operating a wide variety of other products using the control codes that are part of the remote. Before using the remote with other products, follow the instructions on pages 27–29 to program the proper codes for the products in your system.

It is also important to remember that many of the buttons on the remote take on different functions, depending on the product selected using the Device Control Selectors. The descriptions shown here primarily detail the functions of the remote when it is used to operate the AVR 130. (See pages 31–32 for information about alternate functions for the remote's buttons.)

❶ Power Off Button: Pressing this button turns off (places in the Standby mode) the device that was last selected by pressing one of the Input Selectors ❺. To place the AVR 130 in the Standby mode, first press the AVR Selector Button ❻ and then press this button.

❷ IR Transmitter Window: Point this window towards the AVR 130 when pressing buttons on the remote to make certain that infrared commands are properly received.

❸ Program Indicator: This three-color indicator is used to guide you through the process of programming the remote. (See pages 27–29 for information on programming the remote.)

❹ Power On Button: After selecting a device by pressing one of the Input Selectors ❺, press this button to turn the device on. To turn on the AVR 130, press the AVR Selector Button ❻.

❺ Input Selectors: Pressing one of these buttons will perform three actions at the same time. First, if the AVR 130 is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR 130. Finally, it will change the remote control so that it controls the device selected. After pressing one of these buttons you must press the AVR Selector Button ❻ again to operate the AVR 130's functions with the remote.

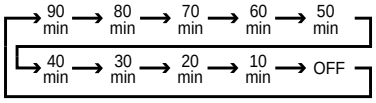
❻ AVR Selector: Pressing this button will switch the remote so that it will operate the AVR 130's functions. If the AVR 130 is in the Standby mode, it will also turn the AVR 130 on.

❼ AM/FM Tuner Select: Press this button to select the AVR 130's tuner as the listening choice. Pressing this button when the tuner is already in use will switch between the AM and FM bands.

❽ Dim Button: Press this button to activate the Dimmer function, which reduces the brightness of the front-panel display, or turns it off entirely. The first press of the button shows the default state, which is full brightness, by indicating DIMMER FULL in the Lower Display Line 30. Press the button again within five seconds to reduce the brightness by 50%, as indicated by DIMMER HALF showing in the Lower Display Line 30. Press the button again within five seconds and the main display will go completely dark. Note that this setting is temporary, in that, regardless of any changes, the display will always return to full brightness when the AVR is turned on. In addition, both the Power Indicator 2 and the blue accent lighting inside the volume control will always remain at full brightness regardless of the setting. This is to remind you that the AVR is still turned on.

❾ Test Button: Press this button to begin the sequence used to calibrate the AVR 130's output levels. (See pages 18–19 for more information on calibrating the AVR 130.)

❿ Sleep Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 130 will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



Note that when the Sleep function is in use, the display will dim to half brightness. This button is also used to change channels on your TV when the TV is selected, and it is also used to end the process of creating a macro command. (See page 28 for more information on creating macros.)

⓫ DSP Surround Mode Selector: Press this button to select one of the DSP surround modes, such as VMAx, Hall or Theater. Each press of the button selects another mode. (See page 22 for more information on surround modes.)

NOTE: The Sleep Button ❿ and DSP Surround Mode Selector ⓫ may also function as the Channel + and – keys when the remote is programmed for use with TVs, cable boxes, VCRs, satellite receivers or other video devices with tuners. See page 29 for information on programming the remote for Channel Control Punch-Through capability so that you may change channels on a separate device when the remote is in AVR mode.

⓬ Night Mode Button: Press this button to activate the Night mode. This mode is available in specially encoded digital sources to preserve dialogue (center channel) intelligibility at low volume levels.

⓭ Channel Select Button: This button is used to start the process of setting the AVR 130's output levels to an external source. Once this button is pressed, use the ▲/▼ Buttons ⓮ to select the channel being adjusted, then press the Set Button ⓯, followed by the ▲/▼ Buttons ⓮ again, to change the level setting. (See page 26 for more information.)

⓮ ▲▼ Buttons: These multipurpose buttons are used to change configuration settings, such as output levels. When changing an item such as the surround mode or digital input directly, first press the function or mode to be changed (e.g., press the Digital Select Button ⓱ to change the digital input) and then press this button to scroll through the list of available choices.

⓯ Set Button: This button is used to enter settings into the AVR 130's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

⓰ ◀▶ Buttons: Thess buttons are not used to operate or configure the AVR 130's settings, but they are used as part of the navigation system for other devices you may operate with the remote, such as DVD players, video displays and cable or satellite set top boxes. (See pages 28 and 30–32 for more information on using the AVR's remote with other products.)

⓱ Digital Select Button: Press this button to assign one of the digital inputs ❽❾18 19 to the source currently in use. (See page 23 for more information on using digital inputs.)

⓲ Numeric Keys: These buttons serve as a ten-button numeric keypad to enter tuner preset positions. They are also used to select channel numbers when TV has been selected on the remote, or to select track numbers on a CD, DVD or LD player, depending on how the remote has been programmed.

REMOTE CONTROL FUNCTIONS

⓳ Tuner Mode Button: Press this button to change the tuner mode between manual and automatic. When the button is pressed so that AUTO appears at the left side of the Lower Display Line 30, only stations with acceptable signal quality will be tuned, and the tuner will play FM stations in stereo, when available. In the AUTO mode, when the Tuning Up/Down Buttons 9 21 are pressed, the unit will automatically search for the next available station with good signal strength. When this button is pressed so that MANUAL appears on the left side of the Lower Display Line 30 each press of the Tuning Up/Down Buttons 9 21 will move the frequency up or down in single-step increments. When the FM band is in use, pressing this button so that the MANUAL mode is activated will enable you to tune stations with weak signals by changing to monaural reception. (See page 25 for more information.)

⓴ Direct Button: When the tuner is in use, press this button to start the sequence for direct entry of a station's frequency. After pressing the button simply press the proper Numeric Keys ⓲ to select a station. (See page 25 for more information on the tuner.)

㉑ Tuning Up/Down Buttons: When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the Tuner Mode Button ⓳ 17 has been pressed so that the word AUTO appears in the Lower Display Line 30, pressing either of the buttons will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the word MANUAL appears in the Lower Display Line 30, pressing these buttons will tune stations in single-step increments. (See page 25 for more information.)

㉒ Macro Buttons: Press these buttons to store or recall a "Macro", which is a preprogrammed sequence of commands stored in the remote. (See page 28 for more information on storing and recalling macros.)

㉓ Dolby Mode Select Button: This button is used to select from among the available Dolby Surround processing modes. Each press of this button will select one of the Dolby Pro Logic II modes or Dolby 3 Stereo. When a Dolby Digital-encoded source is in use, the Dolby Digital mode may also be selected. (See page 22 for the available Dolby surround mode options.)

㉔ DTS Digital Mode Select Button: Although the AVR 130 will automatically select DTS processing when the digital audio input source is a DTS data stream, you may also press this button to select DTS playback.

㉕ Logic 7 Mode Select Button: Press this button to seelct from among the available Logic 7 surround modes. (See page 22 for available Logic 7 options.)

㉖ Track Skip Up/Down Buttons: These buttons have no direct function with the AVR 130, but when used with a compatibly programmed CD or DVD changer, they will change the track or chapter of the disc currently being played in the changer.

㉗ Transport Controls: These buttons do not have any functions for the AVR 130, but they may be programmed for the forward/ reverse play operation of a wide variety of CD or DVD players, and audio or video cassette recorders. (See page 29 for more information on programming the Transport Control Punch-Through capability of the remote.)

㉘ Stereo Mode Select Button: Press this button to select a stereo playback mode. When the button is pressed so that DSP SURR OFF appears in the Lower Display Line 30, the AVR will operate in a bypass mode with true fully analog, two-channel left/right stereo mode with no surround processing or bass management as opposed to other modes where digital processing is used. When the button is pressed so that SURROUND OFF appears in the Lower Display Line 30, you may enjoy a two-channel presentation of the sound along with the benefits of bass management. When the button is pressed so that 5 CH STEREO appears, the stereo signal is routed to all five speakers, if installed. (See page 22 for more information on stereo playback modes.)

㉙ DTS Neo:6 Mode Select Button: Press this button to select a DTS Neo:6 mode. These modes take a two-channel stereo- or matrix surround-encoded source and create a full five-channel sound field. (See page 22 for the available DTS Neo:6 options.)

㉚ Disc Skip Button: This button has no direct function for the AVR 130, but when used with a compatibly programmed CD or DVD changer, it will change the disc currently being played in the changer. (See page 28 for more information on using the remote with other devices.)

㉛ Preset Up/Down Buttons: When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR 130's memory. When some source devices, such as CD players, VCRs and cassette decks, are selected using the device Input Selectors ❺, these buttons may function as Chapter Step or Track Advance.

㉜ Clear Button: Press this button to clear incorrect entries when using the remote to directly enter a radio station's frequency.

㉝ Memory Button: Press this button to enter a radio station into the AVR 130's preset memory. First, tune the desired station, and then press this button. When two underline indicators flash at the right side of the Upper Display Line 29, press the numeric keys for the preset number between 01 and 30 that you wish to assign to the station within five seconds. (See page 25 for more information.)

㉞ Delay Button: Press this button to begin the process for setting the delay times used by the AVR 130 when processing surround sound. After pressing this button, the delay times are entered by pressing the Set Button ⓯ and then using the ▲/▼ Buttons ⓮ to change the setting. Press the Set Button ⓯ again to complete the process. (See page 19 for more information.)

㉟ Speaker Select Button: Press this button to begin the process of configuring the AVR 130's bass management system for use with the type of speakers used in your system. Once the button has been pressed, use the ▲/▼ Buttons ⓮ to select the channel you wish to set up. Press the Set Button ⓯ and then select another channel to configure. When all adjustments have been completed, press the Set Button ⓯ twice to exit the settings and return to normal operation. (See page 16 for more information.)

㊱ Spare Button: This button does not have any function for the operation of the AVR 130, but it is available for use when programmed with the code from another remote. (See page 27 for information on programming the remote with codes for other devices.)

㊲ Volume Up/Down: Press these buttons to raise or lower the system volume. (See page 29 for more information on programming the Volume Punch-Through capability of the remote, which allows you to change the AVR 130's volume while the remote is set to control another device.)

㊳ TV/Video Selector: This button does not have a direct function on the AVR 130, but when used with a compatibly programmed VCR, DVD or satellite receiver that has a "TV/Video" function, pressing this button will switch between the output of the player or receiver and the external video input to that player. Consult the owner's manual for your specific player or receiver for the details of how it implements this function.

REMOTE CONTROL FUNCTIONS

㊴ 6-Channel Direct Input: Press this button to select the component connected to the 6-Channel Direct Input ⑳ as the audio source. Note that when you wish to use the 6-Channel Direct Input in conjunction with a video source, you must first select the video source by pressing one of the Input Selectors ❺. Then press this button to choose the 6-Channel Direct Input ⑳ as the audio source.

㊵ Mute: Press this button to momentarily silence the AVR 130 or TV set being controlled, depending on which device has been selected. When the AVR 130 is muted, press this button or use the Volume Control 26 ㊲ to return to the previous volume level. When the AVR 130 remote is being programmed to operate another device or when a macro command is being programmed, this button is pressed with the Input Selector Button ❺ to begin the programming process. (See page 27 for more information on programming the remote.)

TROUBLESHOOTING GUIDE

Your AVR 130 receiver has been designed to provide many years of trouble-free service. In the event that you are experiencing difficulties, please check the suggestions below for a possible solution to your problem. Additional information on the AVR 130, including updated information and user hints, is available from our Web site at www.harmankardon.com.

SYMPTOM	CAUSE	SOLUTION
Unit does not function when Main Power Switch 1 is pushed	• No AC Power	• Make certain AC Power Cord 10 is plugged into a live outlet • Check to see whether outlet is switch-controlled
Display lights, but no sound or picture	• Intermittent input connections • Mute is on • Volume control is down	• Make certain that all input and speaker connections are secure • Press Mute Button 40 • Turn up volume control
No sound from any speakers	• Amplifier is in protection mode due to possible short • Amplifier is in protection mode due to internal problems	• Unplug the AC Power Cord 10 and check speaker wire connections for shorts at receiver and speaker ends • Contact your local Harman Kardon service center, which you can locate by visiting our Web site at www.harmankardon.com
No sound from surround or center speakers	• Incorrect surround mode • Input is monaural • Incorrect speaker configuration • Stereo or Mono program material	• Select a mode other than Stereo or Dolby 3 Stereo • There is no surround information from mono sources • Check speaker mode configuratioin • The surround decoder may not create center- or rear-channel information from nonencoded programs
Unit does not respond to remote commands	• Weak batteries in remote • Wrong device selected • Remote sensor is obscured	• Change remote batteries • Press the AVR Selector 6 • Make certain front-panel sensor is visible to remote
Intermittent buzzing in tuner	• Local interference	• Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
Letters flash in the channel indicator display and digital audio stops	• Digital audio feed paused	• Resume play for DVD • Check that appropriate Digital Input is selected

Processor Reset

In the rare case where the unit's operation or the displays seem abnormal, the cause may involve the erratic operation of the system's memory or microprocessor.

To correct this problem, first unplug the unit from the AC wall outlet and wait at least three minutes. After the pause, reconnect the AC power cord and check the unit's operation. If the system still malfunctions, a system "reset" may clear the problem.

To clear the AVR 130's entire system memory including the tuner presets, output level settings, delay times and speaker configuration data, first put the unit in Standby by pressing the Standby/On Switch 3 so that the Power Indicator 2 turns amber. Next, press and hold the Tone Mode Button 6 for three seconds.

The unit will reset and then turn on automatically. Once you have cleared the memory in this manner, it is necessary to reestablish all system configuration settings and tuner presets.

The reset will not affect settings that were programmed into the remote control. To reset the remote control and restore it to the factory default settings, please follow the instructions on page 29.

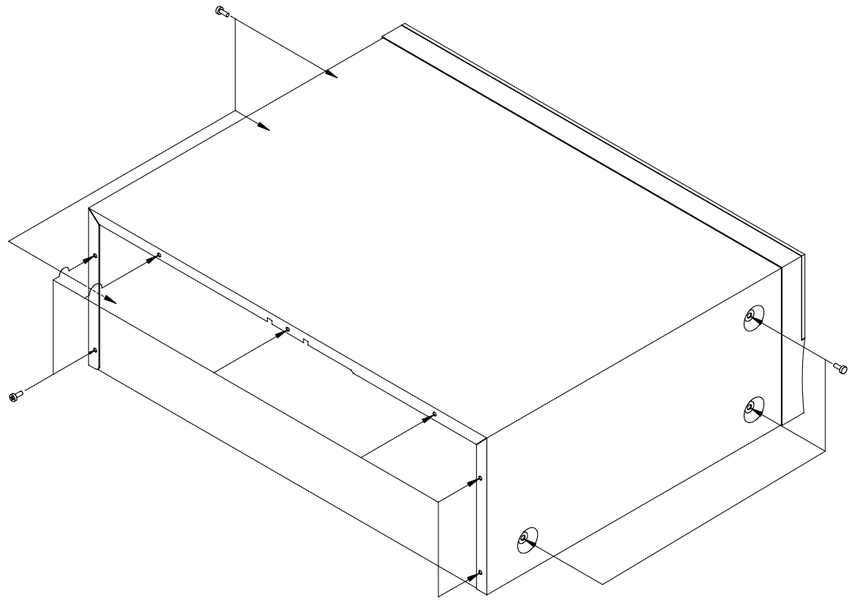
If these steps do not solve the problem, consult an authorized Harman Kardon service center. You can locate the service center nearest to you by visiting our Web site at www.harmankardon.com.

Memory Backup

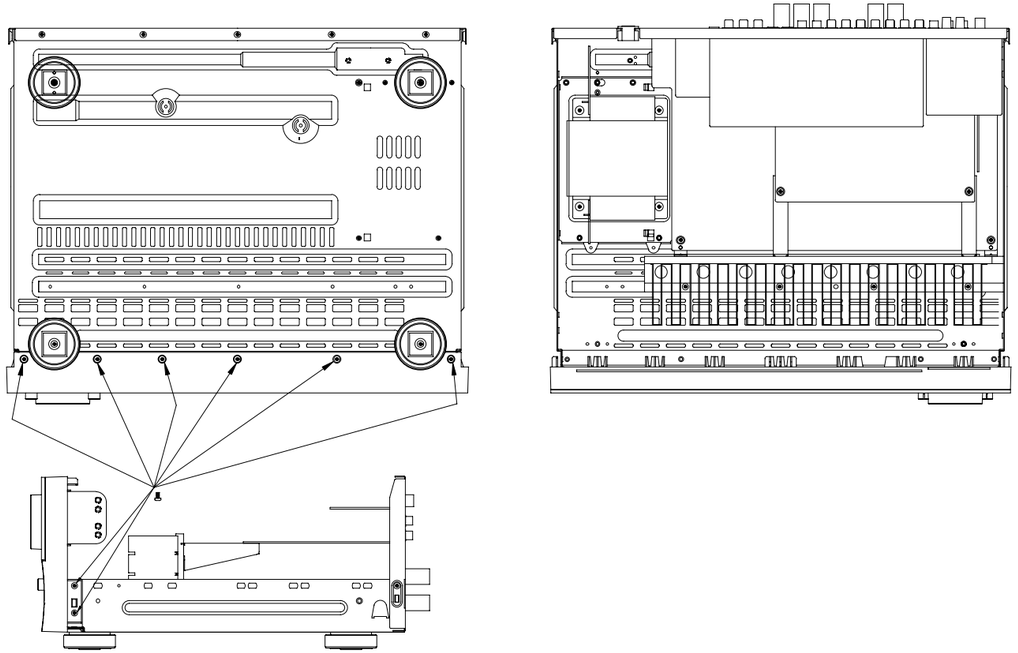
This product is equipped with a memory backup system that preserves the system configuration information and tuner presets if the unit is accidentally unplugged or subjected to a power outage. This memory will last for approximately four weeks, after which time all information must be reentered.

DISASSEMBLY

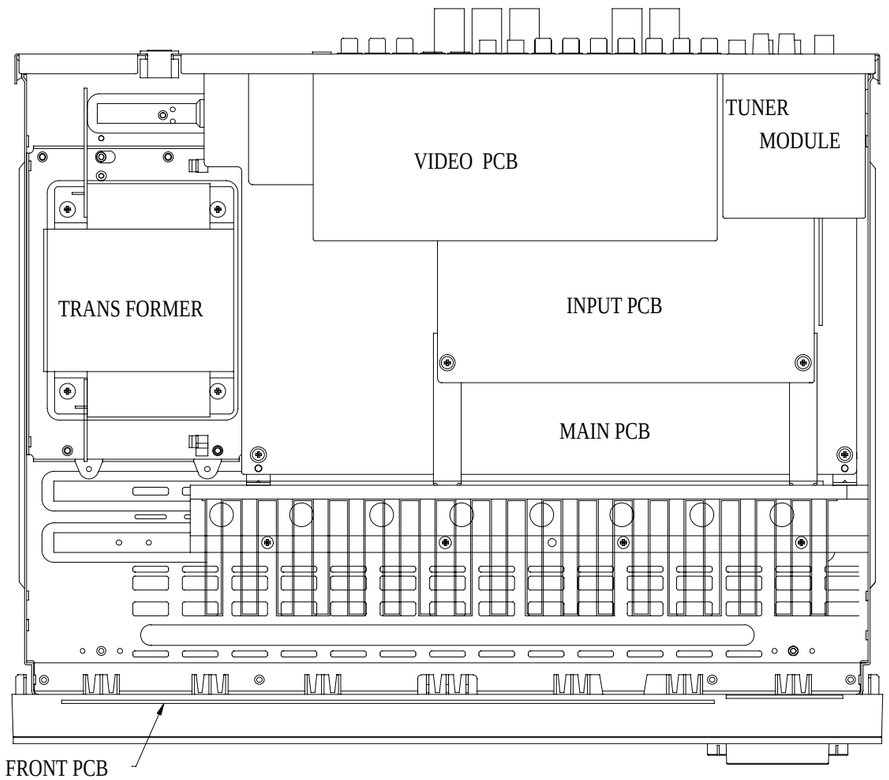
1) REMOVAL OF TOP COVER



2) REMOVAL OF FRONT PANEL



3) PRINCIPAL PARTS LOACTION



harman/kardon Service Bulletin

Service bulletin # H/K2003-10 December 2003 Warranty labor rate: MAJOR repair

To: All harman/kardon Service Centers

Models: AVR130, AVR230, AVR330, HK3380, HK3480

Subject: Volume Level Changes

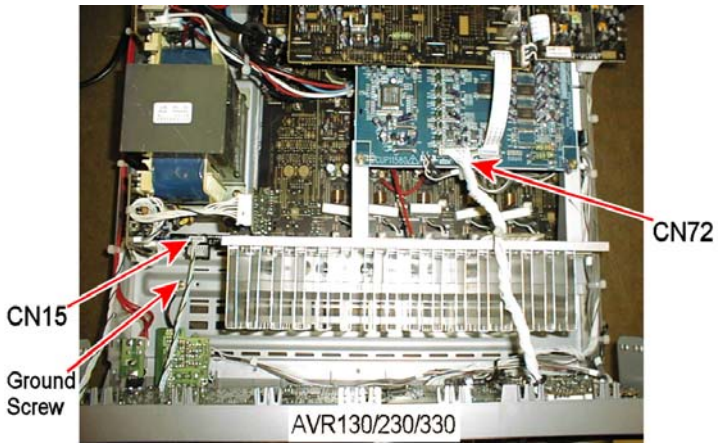
On early versions of the AVR130,AVR230,AVR330,HK3380,HK3480, when the volume control is turned, the volume level and display may be erratic, and not track accurately, or the level may progress in an unintended direction. This may happen on a random basis and depends on where the volume control knob is positioned after a volume adjustment. During a running production change, new volume encoders were installed.

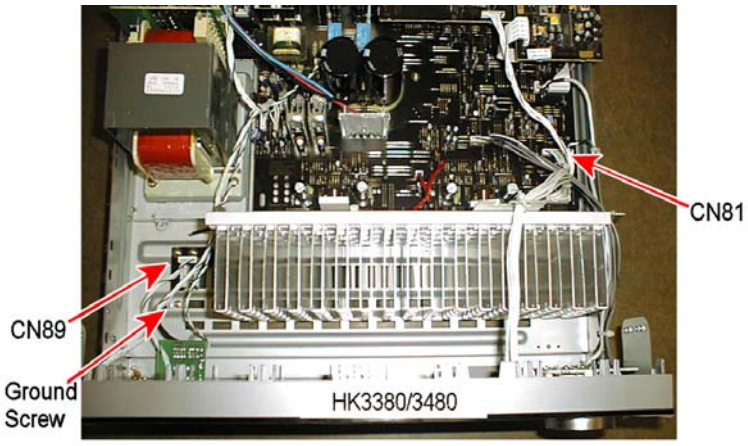
In the event you receive an AVR model listed above with the complaint "The volume control on my receiver does not track accurately when turned", perform the following procedure:

REPLACE VR74 (AVR130/230/330) or VR81 (HK3380/3480) VOLUME ENCODER

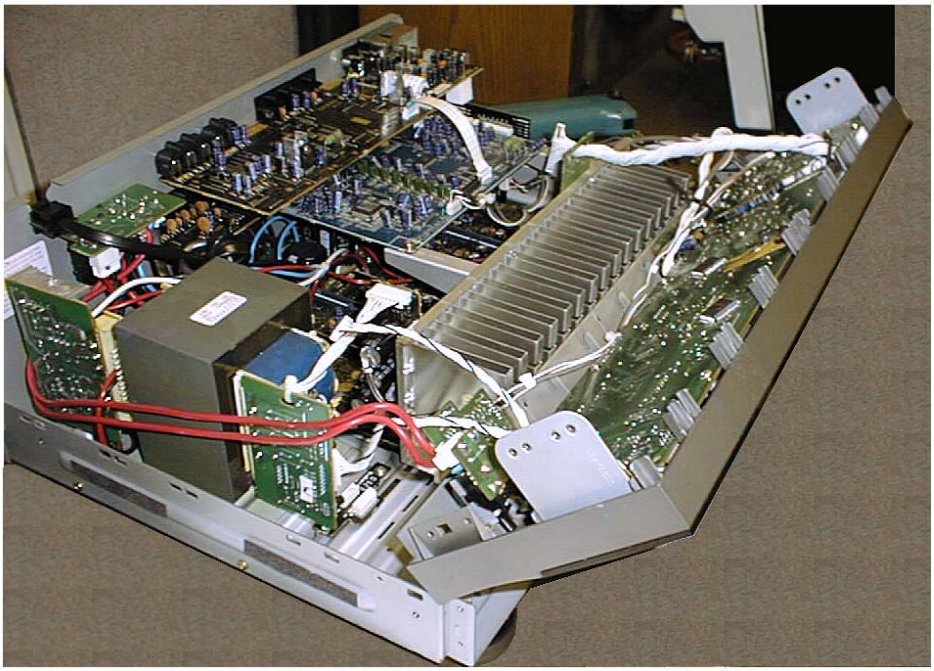
Note: It is important that the various screws do not get mixed up and inserted in other locations upon reassembly. Make note or label each removed screw set; keep them apart from other screw sets.

1) Remove the top cover, (13) Phillips screws.
2) Remove the volume, bass, treble and balance knobs by pulling them straight out and off. If a tool is necessary for removal of the smaller knobs, make sure the jaws are insulated to avoid knob damage.
3) Remove the (10) Phillips screws holding the front panel ass'y to the chassis: (6) at the bottom and (4) at the sides.
4) Cut all plastic cable ties that would prevent you detaching the front panel ass'y from the chassis. Draw a diagram if necessary, for a location reminder, to aid reassembly.
5) Unplug connector CN15 (6 cond) or CN89 (7 cond) at the left side of the unit. See below.
6) Remove single ground screw at the left side of the unit, near CN15 or CN89. (Black wire)
7) Unplug connector CN72 (32 cond) or CN81 (20 cond) on the DSP PCB, coming from the top of the front panel ass'y. See below.
8) There should now be enough slack in the connecting cables to lift and detach the front panel ass'y from the chassis. Pull the front panel as far away as the remaining connecting wires will allow, enough to tilt and gain access to the rear of the Tone/Volume PCB. See illustration Page 2.
9) Remove the (10) screws or (9) screws holding the Tone/Volume PCB to the front panel.
10) Detach and pull back the PCB; unplug top connector CN84 (7 cond) or CN83 (4 cond) if necessary.
11) Remove and replace VR74 or VR81 (5 soldered pads) with hk part# HSR2A029Z.
12) Reassemble in reverse order, taking care to replace all connectors, cable ties, and ground screw.
13) Power up receiver, and test volume control to assure setting no longer changes settings by itself, or when the volume knob is tapped.





Ready for Volume/Tone PCB removal



Model	Serial Number 120V	STATUS	ACTION
AVR130	AN0006-01000 to AN0006-13800	Volume control may not track accurately when turned; erratic operation	Change VR74 Rotary encoder
AVR130	AN0006-13801 and above	Modified By Factory	NONE REQUIRED
AVR230	AN0007-01000 to AN0007-11400	Volume control may not track accurately when turned; erratic operation	Change VR74 Rotary encoder
AVR230	AN0007-11401 and above	Modified By Factory	NONE REQUIRED
AVR330	AN0008-01000 to AN0008-08524	Volume control may not track accurately when turned; erratic operation	Change VR74 Rotary encoder
AVR330	AN0008-08525 and above	Modified By Factory	NONE REQUIRED
HK3380	AN0015-01000 to AN0015-02728	Volume control may not track accurately when turned; erratic operation	Change VR81 Rotary encoder
HK3380	AN0015-02729 and above	Modified By Factory	NONE REQUIRED
HK3480	AN0016-01000 to AN0016-01864	Volume control may not track accurately when turned; erratic operation	Change VR81 Rotary encoder
HK3480	AN0016-01865 and above	Modified By Factory	NONE REQUIRED

harman/kardon TECH TIPS

Troubleshooting tips and solutions to common service problems

TIP# HKTT2004-03

Isolating audio problems in an AVR receiver
Using 6/8 Direct In

Models covered:	
AVR210	AVR310
AVR220	AVR320
AVR520	AVR225
AVR125	AVR525
AVR130	AVR230
AVR330	AVR430
AVR630	

The following charts are used to help the tech quickly isolate audio problems in an AVR receiver. Use the following procedures to help find what is working, then to quickly locate the problem area.

Equipment needed:

- ✓ 1 set of (RCA) Y adaptors.
- ✓ Function/signal generator.
- ✓ Oscilloscope.

Procedure:

1) Do a factory reset of the receiver. (This will eliminate any common micro processor problems.) Reset List can be found in this service manual.

2) Print the block diagram from the service manual.

3) With no inputs or speakers attached to the AVR turn on the receiver and turn the volume all the way down.

4) Turn unit off.

5) Hook up an oscillator to the 6/8 Direct in jacks using the Y adaptors. Adjust the oscillator to about 0db (.775Volts RMS).

6) Hook up an oscilloscope to monitor the line out jacks. Or, if there are no line out (preamp out) jacks monitor the input to the power amps or the speaker outs. (AVR125, 225, 130 do not have preamp out jacks)

7) Turn the AVR on. Select 6 or 8 direct in, depending on the receiver.

8) Slowly turn the volume control up until you can easily measure the voltage at the line out jacks. (-40 to -25db)

Isolating audio problems in an AVR receiver
Using 6/8 Direct In

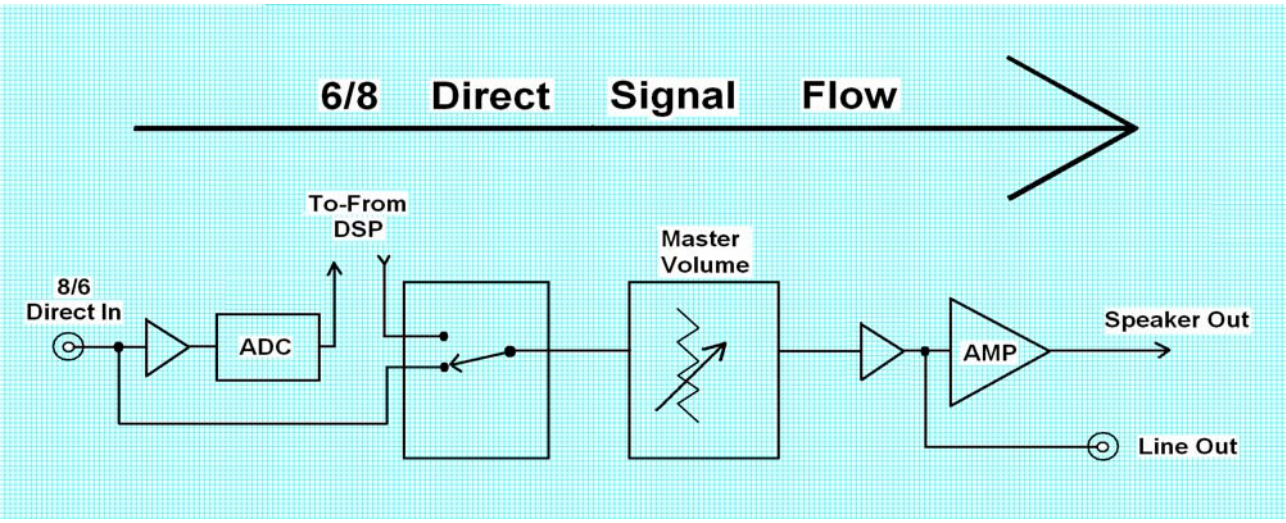
9) At this point you will be able to check and assure all output levels are the same.

10) IF THE OUTPUT LEVELS ARE NOT THE SAME STOP! Go no further. At this point you will need to use the charts to see where you are losing your signal. The chart shows the analog signal flow from the input jacks to the output jacks.

11) If the output levels are the same check the power out stage at the speaker out jacks.

12) If you find the levels at the speaker out jacks are OK, your problem will be in the DSP part of the receiver.

Congratulations! You have now eliminated 90% of the electronics in the AVR and confirmed that the problem is in the DSP section.



Isolating audio problems in an AVR receiver
Using 6/8 Direct In

AVR,210,310,510

6 CH IN	IC 501 In	IC 501 Out	CN 408	IC 704 In	IC704 Out	IC705 In	IC705 Out	IC706 In	IC 706 Out	IC 705 In	IC 705 Out	IC 716 In	IC716 Out	IC 717 In	IC 717 Out	IC 718 In	IC 718 Out	CP 405
FR	3	1	15	2	4	8	9	4	3	19	17	3	1					3
FL	5	7	13	27	25	21	20	25	26	10	12	5	7					1
SR			11	5	7			7	6					5	7			9
SL			9	24	22			22	23					3	1			7
C			5	21	19			19	20							3	1	5
SW			7	8	10			10	9							5	7	11

AVR220

6 CH IN	IC 501 In	IC 501 Out	CN 408	IC 704 In	IC704 Out	IC705 In	IC705 Out	IC706 In	IC 706 Out	IC714 In	IC714 Out	IC 705 In	IC 705 Out	IC 716 In	IC716 Out	IC 717 In	IC 717 Out	IC 718 In	IC 718 Out	CP 405
FR	5	7	15	2	4	8	9	4	3	5	7	10	12	5	7					1
FL	3	1	13	27	25	21	20	25	26	3	1	19	17	3	1					3
SR			11	5	7			7	6							5	7			9
SL			9	24	22			22	23							3	1			7
C			5	21	19			19	20									3	1	5
SW			7	8	10			10	9									5	7	11

AVR320/520

8 CH IN	IC 501 In	IC 501 Out	CN 408	IC 704 In	IC704 Out	IC705 In	IC705 Out	IC706 In	IC 706 Out	IC714 In	IC714 Out	IC 705 In	IC 705 Out	IC 716 In	IC716 Out	IC 717 In	IC 717 Out	IC 718 In	IC 718 Out	CP 405
FR	5	7	15	2	4	8	9	4	3	5	7	10	12	5	7					1
FL	3	1	13	27	25	21	20	25	26	3	1	19	17	3	1					3
SR			11	5	7			7	6							5	7			9
SL			9	24	22			22	23							3	1			7
C			5	21	19			19	20									3	1	5
SW			7	8	10			10	9									5	7	11

	CN418	CP102	IC101 In	IC101Out	IC102 In	ic102 oUT	ic103 iN	ic103 Out
SBR	3	3	3	4	21	23	5	7
SBL	1	1	25	26	4	2	3	1

AVR225/125

6 CH IN	IC 30 In	IC 30 Out	IC 31 In	IC 31 Out	IC 32 In	IC 32 Out	IC 33 In	IC 33 Out	IC 34 In	IC 34 Out	BN12	IC 81 In	IC 81 Out	IC 80 In	IC 80 Out	BN16 In	BN16 Out
L ch	27	25	19	20	5	7					1	3	1	9	10	1	2
R ch	24	22	22	23	3	1					3	5	7	15	14	4	5
SL	5	4	7	6					5	7	9						
SR	2	4	10	9					3	1	11						
C	8	18	4	3			3	1			7						
SW	21	19	25	26			5	7			5						

Isolating audio problems in an AVR receiver
Using 6/8 Direct In

AVR 525

In Jack	N404	P6	IC5 In	IC5 Out	IC3 In	IC3 Out	IC19 In	IC19 Out	IC18 In	IC20 In	IC20 Out	IC3 In	IC3 Out	IC18 Out	IC23 In	IC23 Out	IC25 In	IC25 Out	IC24 In	IC24 Out	IC26 In	IC26 Out	P9	N806
FL	1	1			10	9			4	2	3	1	3	5	3	1							1	1
FR	3	3			21	22			21	23	5	7	28	6	6	7							3	3
SL	5	5	2	4			4	3									3	1					5	5
SR	7	7	29	27			25	26									5	7					7	7
CTR	9	9	5	7			7	6											3	1			9	9
SW	11	11	26	24			22	23											5	7			11	11
SBL	13	13	8	10			10	9													3	1	13	13
SBR	15	15	23	21			19	20													6	7	15	15

AVR130

6 ch in	IC 23 In	IC 23 Out	IC 26 In	IC 26 Out	IC 42 In	IC42 Out	IC 44 In	IC 44 Out	IC 43 In	IC 43 Out	IC40 In	IC40 Out	IC49 In	IC49 Out	BN 12	BN11
L	18	17			21	23								1		
R	19	12			4	2									14	
SL			24	22			21	23						9		
SR			5	7			4	2						7		
C			27	25					21	23				5		
SUB			2	4					4	2				3		
SBL			21	19							21	23	5	7	13	
SBR			8	10							4	2	3	1	11	

AVR230/330

6 ch in	IC 23 In	IC 23 Out	IC 26 In	IC 26 Out	IC 42 In	IC42 Out	IC 44 In	IC 44 Out	IC 43 In	IC 43 Out	IC40 In	IC40 Out	IC49 In	IC49 Out	BN 12	BN11
L	18	17			21	23								1		
R	19	12			4	2									14	
SL			24	22			21	23						9		
SR			5	7			4	2						7		
C			27	25					21	23				5		
SUB			2	4					4	2				3		
SBL			21	19							21	23	5	7	13	
SBR			8	10							4	2	3	1	11	

AVR630/430

8 CH In	N404	IC 3	IC 3 Out	IC 14 In	IC 14 Out	IC 12 In	IC 12 Out	IC 3 In	IC 3 Out	IC 27 In	IC 27 Out	IC 18 In	IC 18 Out	IC 20 In	IC 20 Out	IC 3 In	IC 3 Out
FL	1	10	12	10	9	3	1	6	9	3	1	4	2	3	1	3	1
FR	3	19	17	19	20	5	7	23	20	5	7	21	23	5	7	26	7

	N404	IC 5 In	IC 5 Out	IC19 In	IC 19 Out	IC 25 In	IC 25 Out	IC 24 In	IC 24 Out	IC 26 In	IC 26 Out
SL	5	2	4	4	3	3	1				
SR	7	27	25	25	26	5	7				
CTR	9	5	7	7	6			3	1		
SW	11	24	22	22	23			5	7		
SBL	13	8	10	10	9					3	1
SBR	15	21	19	19	20					5	7

harman/kardon TECH TIPS

Troubleshooting tips and solutions to common service problems

For models: **TIP# HKTT2003-01 Rev5**

AVR7000/7200/7300/8000
AVR100/200/300/500
AVR110/210/310/510
AVR120/220/320/520
AVR125/225/325/525
AVR130/230/330/430/630
AVR135/235/335/435/635
AVR10
DPR1001
DPR1005
DPR2005
HK3370/3470/3375/3475
HK3250

Subject: Backup Memory on AVR/DPR/HK series receivers

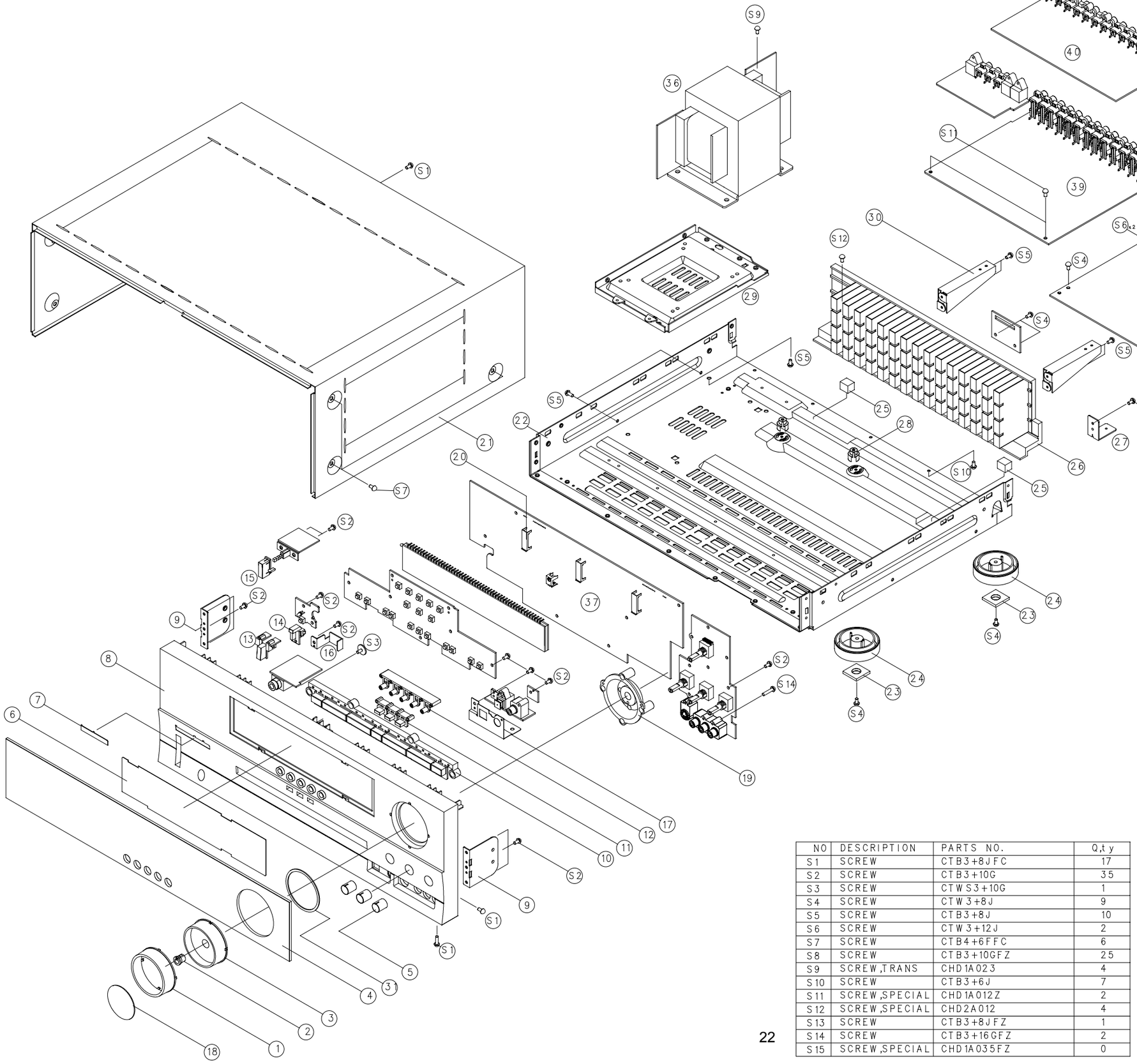
In the event of the complaint: "the receiver is losing its memory (any programmed system settings) when the unit is turned off, or after the unit is unplugged (briefly*)":

Check and replace:

Model	Designator	Location	Description	Part number
AVR10	C712 D709	Front PCB	0.047 Farad 5.5v capacitor and 1N4148 diode	#3439247315 #2058322101
AVR7000	C730	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND or # J3432147324X
AVR7200	C106	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND
AVR7300	C657	DSP PCB	0.047 Farad 5.5v capacitor	# H01-CEZXA0479MN-5
AVR8000	C726	Front PCB	0.047 Farad 5.5v capacitor	# 55230310NR or # P10790-ND
AVR100/200	C412	Front PCB	0.047 Farad 5.5v capacitor	# CEGT-B473J-0J0
AVR300	C906	Front PCB	0.1Farad 5.5v capacitor	# J4433210421X or # P10791-ND
AVR500	C906	Front PCB	0.1Farad 5.5v capacitor	# J4433210421X or # P10791-ND
AVR110/210/310/510 AVR120/220/320/520	C216	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND
AVR125/225	C734,C885	Front PCB	two 0.1F capacitors in parallel	# BCESOHD104
AVR325/525	C106	Front PCB	0.047 Farad 5.5v capacitor	# P10790-ND
AVR130/230/330	BAT1	Front PCB	3.6v Battery	# HABGP40BVH3A3H
AVR135/235/335	BAT1	Front PCB	3.6v Battery	# HGP15BNH3A3H
AVR430/630	C657	DSP PCB	0.047 Farad 5.5v capacitor	# CEZXA0479MN-5
AVR435/635	C557	DSP PCB	0.047 Farad 5.5v capacitor	# H03-CEZXA0479MN-0
DPR1001	BC601	Main PCB	0.1Farad 5.5v capacitor	# CEGT-B104J-0J0
DPR1005/2005	C437	Processor PCB	0.047 Farad 5.5v capacitor	# CEZXA0479MN-5
HK3370/3470	C301	Front PCB	0.1Farad 5.5v capacitor	# CEGT-B104J-0J0
HK3375/3475	C301	Front PCB	0.1Farad 5.5v capacitor	# CEGT-B104J-0J0
HK3250	C712 D709	Front PCB	0.047 Farad 5.5v capacitor and 1N4148 diode	#3439247315 #2058322101

* After approximately two weeks of being disconnected from AC supply, even a normally functioning receiver may lose any programmed settings and switch to default settings. (Four weeks for the DPR1005 & 2005)

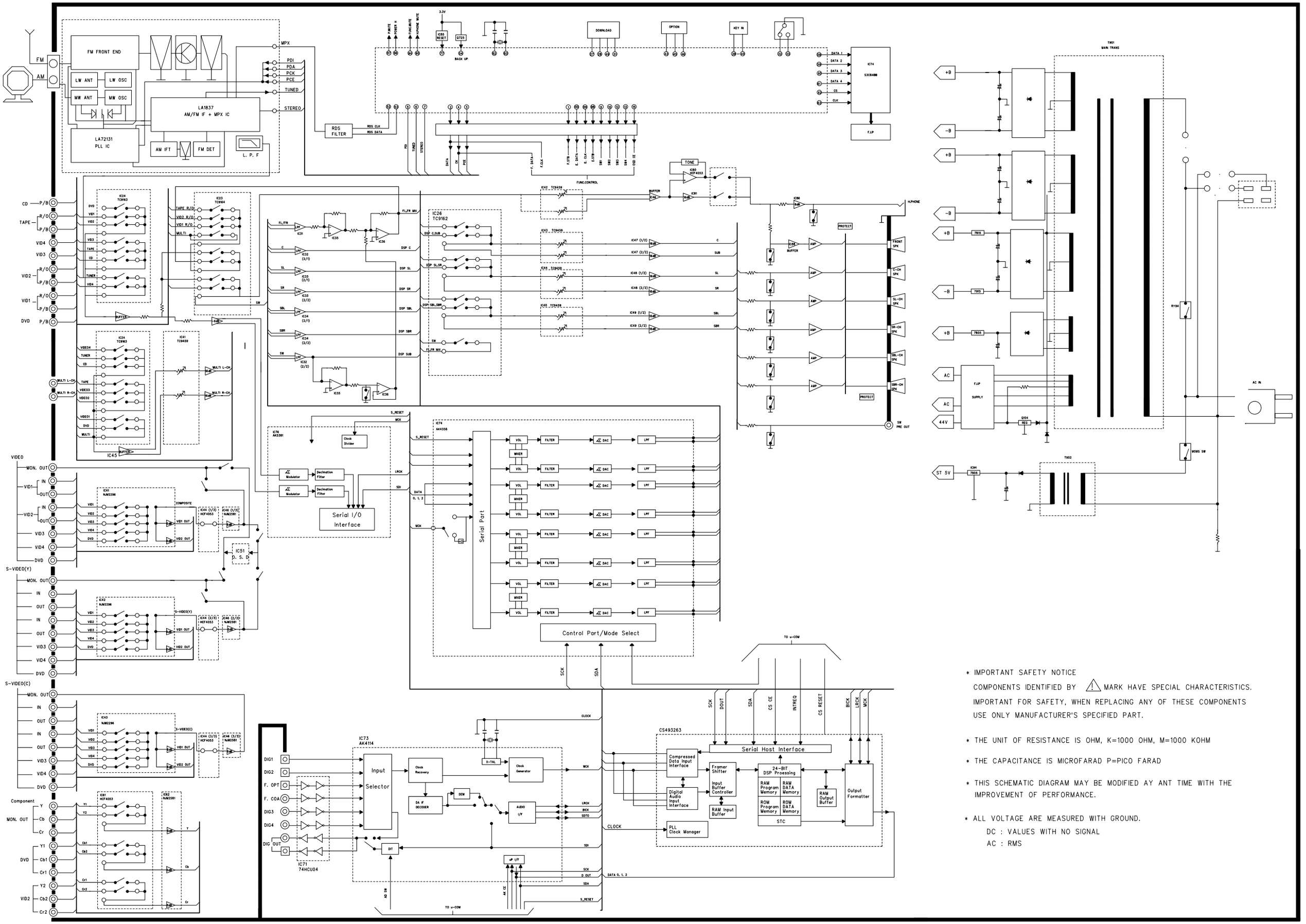
AVR130 EXPLODED VIEW



NO	DESCRIPTION	PARTS NO.	Q,ty
S1	SCREW	CTB3+8JFC	17
S2	SCREW	CTB3+10G	35
S3	SCREW	CTWS3+10G	1
S4	SCREW	CTW3+8J	9
S5	SCREW	CTB3+8J	10
S6	SCREW	CTW3+12J	2
S7	SCREW	CTB4+6FFC	6
S8	SCREW	CTB3+10GFZ	25
S9	SCREW,TRANS	CHD1A023	4
S10	SCREW	CTB3+6J	7
S11	SCREW,SPECIAL	CHD1A012Z	2
S12	SCREW,SPECIAL	CHD2A012	4
S13	SCREW	CTB3+8JFZ	1
S14	SCREW	CTB3+16GFZ	2
S15	SCREW,SPECIAL	CHD1A035FZ	0

NO	DESCRIPTION	PARTS NO.	Q,ty
1	CAP,VOLUME	KGX1A338MBC22	1
2	HOLDER,VOLUME	CMH1A214	1
3	INDICATOR,VOLUME	CGL1A222	1
4	WINDOW,FIP	CGU1A317Z	1
5	KNOB,ROTARY	KBN1A174MBC22	3
6	FILTER,FIP	CMZ1A088	1
7	BDAGE,HARMAN/KARDON	KGB1A111X	1
8	PANEL,FRONT	CGW1A366RDZH43	1
9	BRACKET,SIDE	CMD1A443	2
10	KNOB,FUNCTION	KBT1A905MBZC22	1
11	KNOB,SET	KBT1A904MBZC22	1
12	KNOB,DELAY	CBT1A819K128	1
13	KNOB,POWER	KBT1A903MMZC22	1
14	INDICATOR,POWER	CGL1A221	1
15	KNOB,MOMS	KBC1A147MBZC22	1
16	BRACKET,PCB	CMK1A010	1
17	PLATE,SHIELD	CMC1A200	1
18	ORNAMENT. VOLUME KNOB	CGU1A318Z	
19	HOLDER,LED	CMH1A215	1
20	BRACKET,FIP	CMD1A209	3
21	CABINET,TOP	CKC1B145S46	1
22	CHASSIS,BOTTOM	CUA1A229	1
23	RUBBER,CUSHION	KHG1A050	4
24	FOOT	CKL1A069H43	4
25	SUPPORT,CUSHION	CHG1A104	2
26	HEAT SINK	CMY1A217	1
27	BRACKET,PCB	CMD1A417	2
28	HOLDER,PCB	CHE1A170	2
29	BRACKET,TRANS	CMD1A487	1
30	BRACKET,PCB(H/T)	CMD1A398	2
31	SHEET,VOLUME	CMD1A398	1
32	BRACKET,PCB	CMD1A387	2
33	PANEL,REAR	CKF1A254Z	1
34	BUSHING,AC CORD	KHR1A028	1
35	CORD,POWER	CJA523FBY	1
36	TRANS,POWER	CLT5V034ZU	1
37	FRONT PAB ASS'Y	COP11578D	1
38	MAIN PCB ASS'Y	COP11579D	1
39	INPUT PCB ASS'Y	COP11580D	1
40	VIDEO PCB ASS'Y	COP11581D	1
41	TUNER MODULE	CNVKSTM9014MS07	1
42			
43			
44			

BLOCK DIAGRAM



* IMPORTANT SAFETY NOTICE
  COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.
  IMPORTANT FOR SAFETY, WHEN REPLACING ANY OF THESE COMPONENTS USE ONLY MANUFACTURER'S SPECIFIED PART.

* THE UNIT OF RESISTANCE IS OHM, K=1000 OHM, M=1000 KOHM

* THE CAPACITANCE IS MICROFARAD P=PICO FARAD

* THIS SCHEMATIC DIAGRAM MAY BE MODIFIED AY ANT TIME WITH THE IMPROVEMENT OF PERFORMANCE.

* ALL VOLTAGE ARE MEASURED WITH GROUND.
  DC : VALUES WITH NO SIGNAL
  AC : RMS

AMPLIFIER SECTION BIAS ADJUSTMENT

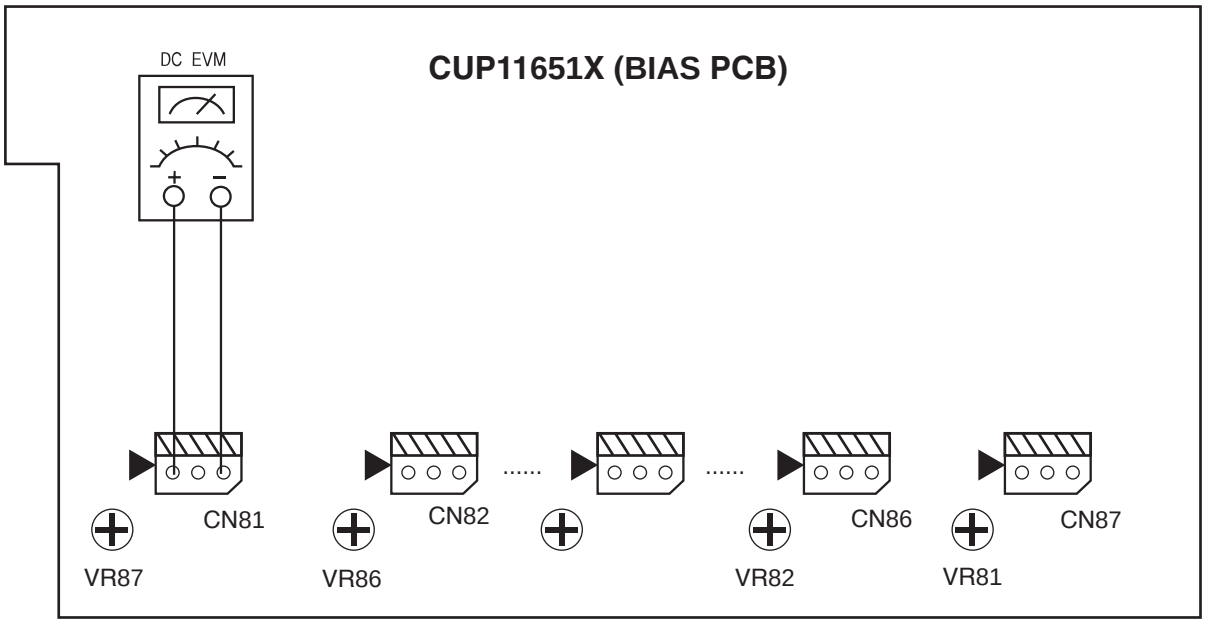
Measurement condition

. No input signal or volume position is minimum.

Standard value.

. Ideal current = 48mA (± 5%)

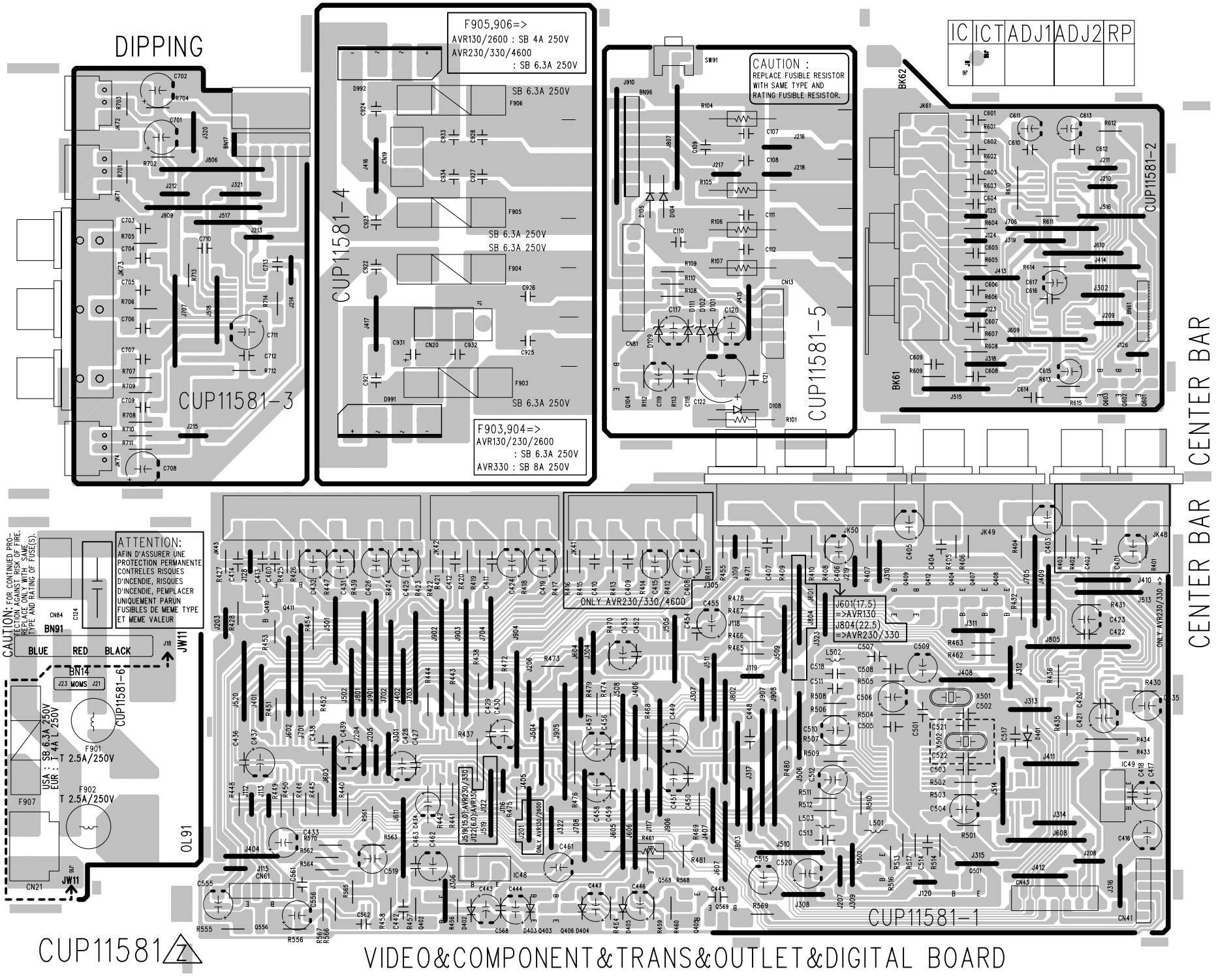
. Ideal DC Voltage = 25.92mV (± 5%)

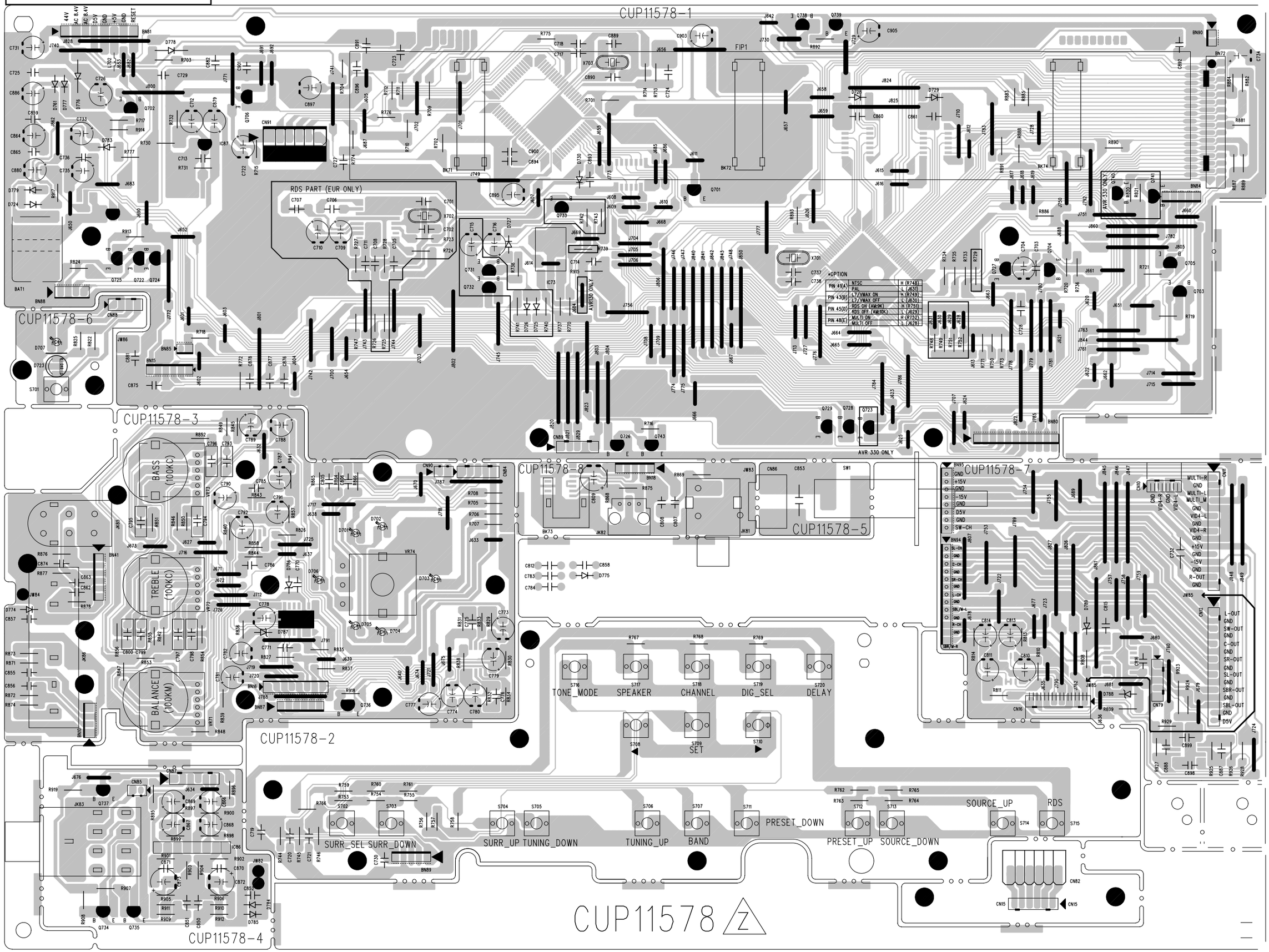


DC VOLTMETER.....Connect to CN81,CN82,CN83,CN84,CN85,CN86,CN87

NO.	Channel	Adjust for	Adjustment
1	Front Left	25.92mV (±5%)	VR83
2	Front Right	25.92mV (±5%)	VR84
3	Center	25.92mV (±5%)	VR85
4	Surround Left	25.92mV (±5%)	VR86
5	Surround Right	25.92mV (±5%)	VR87
6	Surround Back Left	25.92mV (±5%)	VR82(ONLY AVR230/330)
7	Surround Back Right	25.92mV (±5%)	VR81(ONLY AVR330)

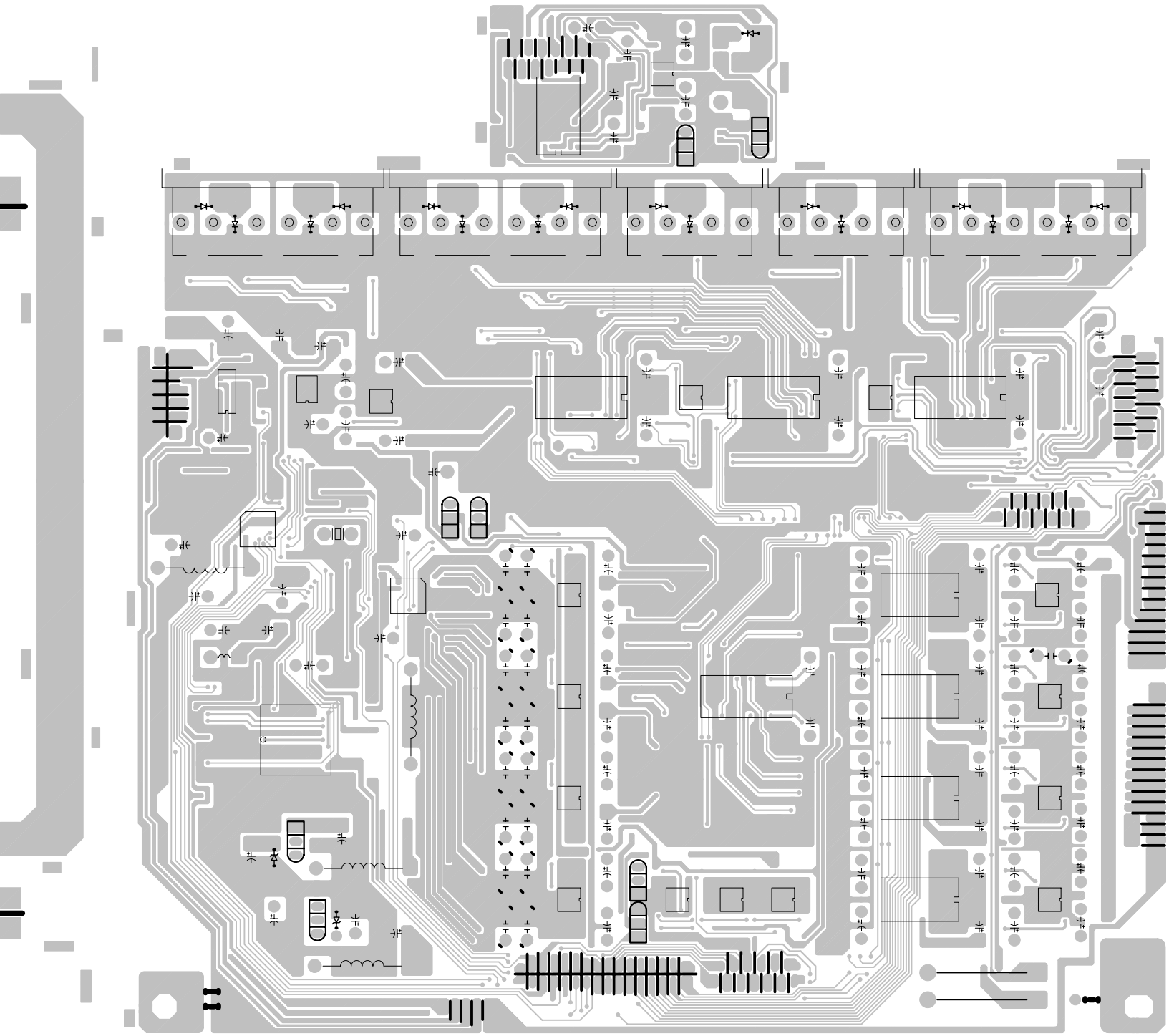
VIDEO BOARD


DIPPING
CUP11581-3
CUP11581-4
CUP11581-5
CUP11581-2
CUP11581-1
F905,906=>
AVR130/2600 : SB 4A 250V
AVR230/330/4600
: SB 6.3A 250V
SB 6.3A 250V
F906
F905
SB 6.3A 250V
SB 6.3A 250V
F904
F903
SB 6.3A 250V
F903,904=>
AVR130/230/2600
: SB 6.3A 250V
AVR330 : SB 8A 250V
CAUTION :
REPLACE FUSIBLE RESISTOR
WITH SAME TYPE AND
RATING FUSIBLE RESISTOR.
IC ICT ADJ1 ADJ2 RP
ATTENTION:
AFIN D'ASSURER UNE
PROTECTION PERMANENTE
CONTRELES RISQUES
D'INCENDIE, RISQUES
D'INCENDIE, PEMPLACER
UNIQUEMENT PARUN
FUSIBLES DE MEME TYPE
ET MEME VALEUR
CAUTION: FOR CONTINUED PRO-
TECTION AGAINST RISK OF FIRE.
REPLACE ONLY WITH SAME
TYPE AND RATING OF FUSE(S).
BN91
BLUE RED BLACK
BN14
J23 MOMS J21
F901
T 2.5A/250V
F902
T 2.5A/250V
F907
USA : SB 6.3A 250V
EUR : T 4A L 250V
CN21
JW11
OL91
ONLY AVR230/330/4600
J601(17.5)
=>AVR130
J804(22.5)
=>AVR230/330
ONLY AVR230/330 >
CENTER BAR
CUP11581Z
VIDEO&COMPONENT&TRANS&OUTLET&DIGITAL BOARD


CUP11578-1
CUP11578-2
CUP11578-3
CUP11578-4
CUP11578-5
CUP11578-6
CUP11578-7
CUP11578-8
CUP11578 Z
RDS PART (EUR ONLY)
AVR330 ONLY
*OPTION
PIN 41(A) NTSC H (R748) PAL L (J631)
PIN 43(B) L7/VMAX ON H (R749) L7/VMAX OFF L (J630)
PIN 45(D) RDS ON (AM:9K) H (R751) RDS OFF (AM:10K) L (J629)
PIN 48(E) MULTI ON H (R752) MULTI OFF L (J628)
TONE_MODE
SPEAKER
CHANNEL
DIG_SEL
DELAY
SET
SURR_SEL
SURR_DOWN
SURR_UP
TUNING_DOWN
TUNING_UP
BAND
PRESET_DOWN
PRESET_UP
SOURCE_DOWN
SOURCE_UP
RDS
BASS (100KC)
TREBLE (100KC)
BALLANCE (100KM)

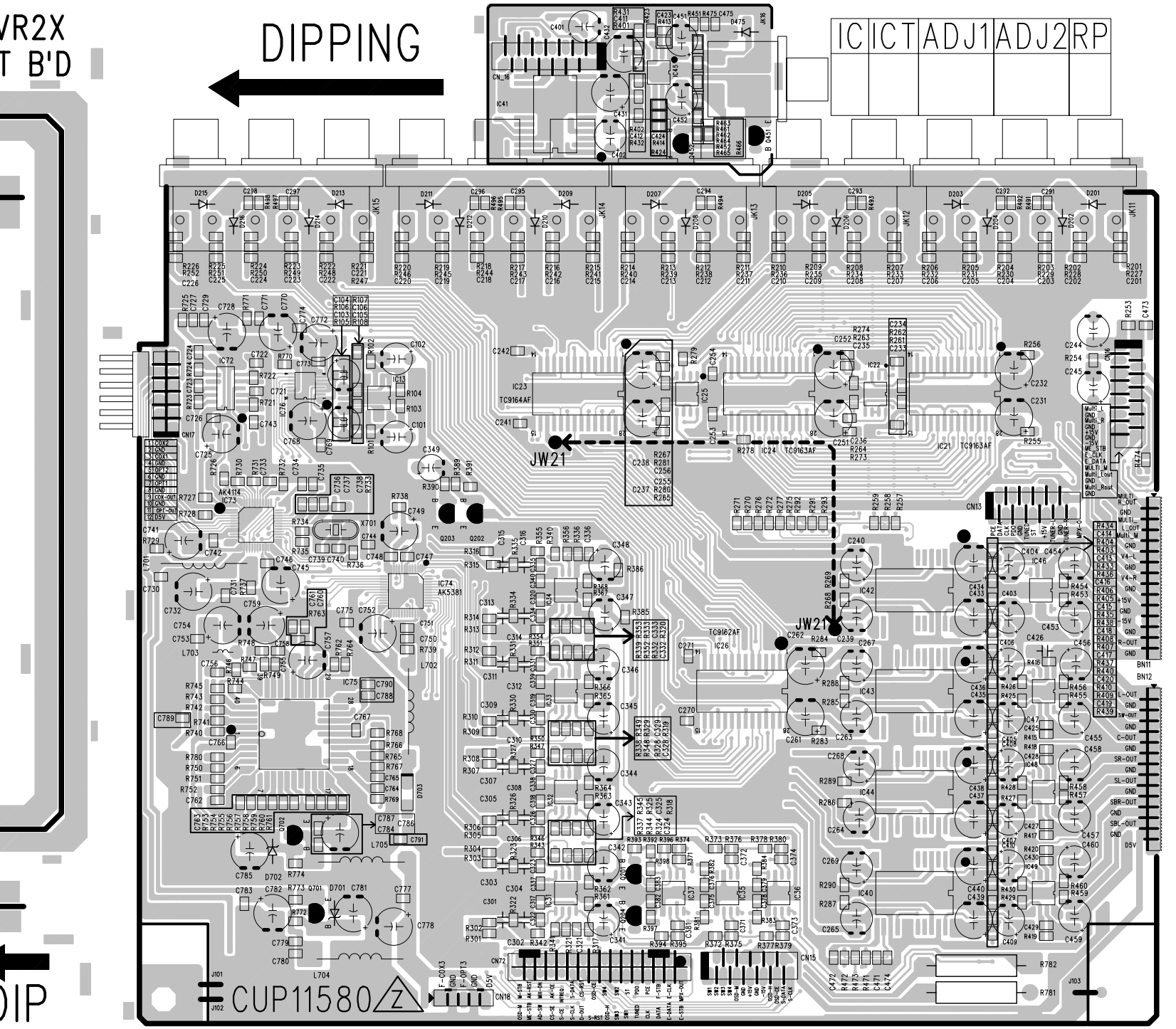
INPUT BOARD

BOTTOM VIEW

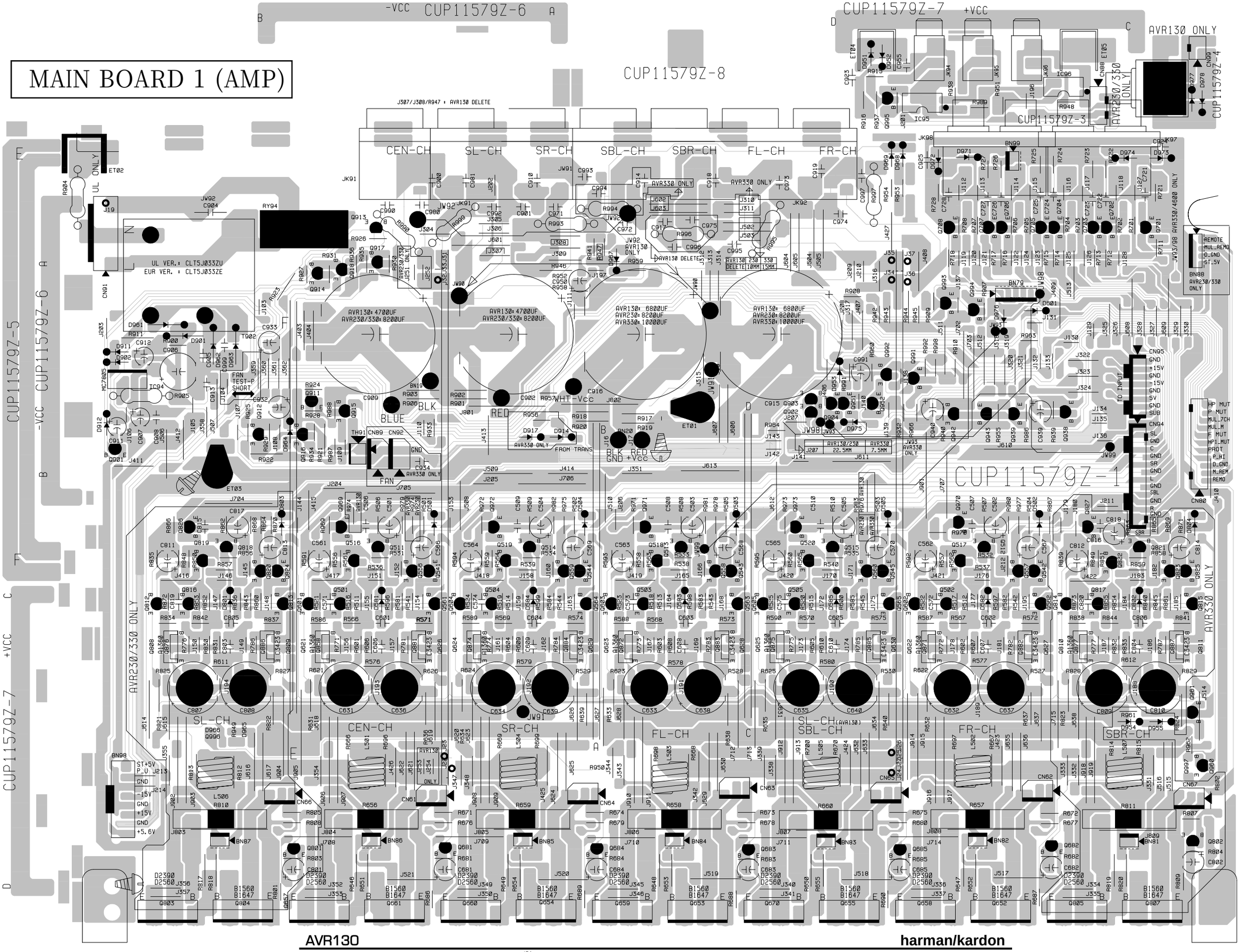


INPUT BOARD

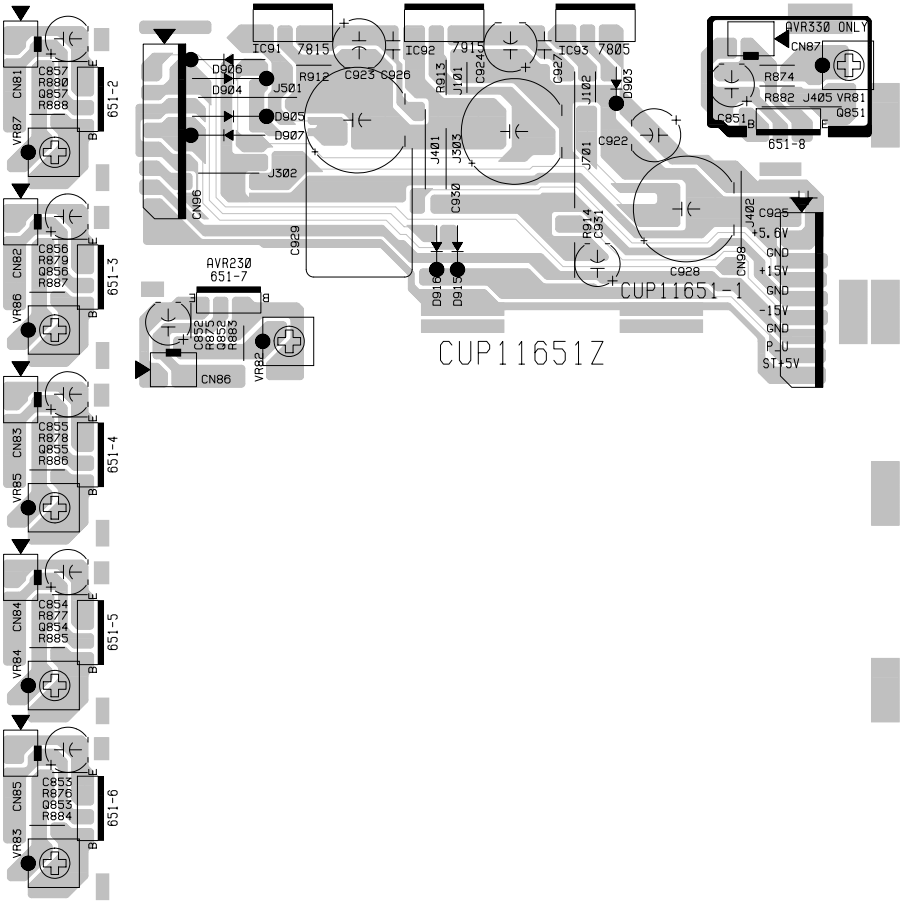
TOP VIEW



MAIN BOARD 1 (AMP)



MAIN BOARD 2 (BIAS & REGULATOR)



AVR130 Electrical Parts List

Ref. Designator	Part Number	Description	
FRONT PCB ASS'Y			
Capacitors			
C703	HCBS1H821KBT	CAP , CERAMIC	820PF 50V K
C704	HCEA1VH100T	CAP , ELECT	10UF 35V
C712	HCEA1HH1R0T	CAP , ELECT	1UF 50V
C713	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C714	HCBS1H151KBT	CAP , CERAMIC	150PF 50V K
C716	HCEA1CH331T	CAP , ELECT	330UF 16V
C717	HCBS1H221KBT	CAP , CERAMIC	220PF 50V K
C718	HCBS1H221KBT	CAP , CERAMIC	220PF 50V K
C719	HCBS1H181KBT	CAP , CERAMIC	180PF 50V K
C720	HCBS1H181KBT	CAP , CERAMIC	180PF 50V K
C721	HCBS1H181KBT	CAP , CERAMIC	180PF 50V K
C722	HCEA1CH101T	CAP , ELECT	100UF 16V
C723	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C724	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C725	CCKT1H473ZF	CAP , CERAMIC	0.047UF 50V ZF
C726	HCEA0JH102T	CAP , ELECT	1000UF 6.3V
C727	HCBS1H221KBT	CAP , CERAMIC	220PF 50V K
C728	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C729	CCKT1H473ZF	CAP , CERAMIC	0.047UF 50V ZF
C730	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C731	HCEA1HH100T	CAP , ELECT	10UF 50V
C732	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C733	HCEA1EH470T	CAP , ELECT	47UF 25V
C735	HCEA1VH100T	CAP , ELECT	10UF 35V
C736	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C737	HCBS1H180JT	CAP , CERAMIC	18PF 50V
C738	HCBS1H180JT	CAP , CERAMIC	18PF 50V
C770	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C771	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C773	HCEA1VH100T	CAP , ELECT	10UF 35V
C774	HCEA1VH100T	CAP , ELECT	10UF 35V
C775	HCBS1H151KBT	CAP , CERAMIC	150PF 50V K
C776	HCBS1H151KBT	CAP , CERAMIC	150PF 50V K
C777	HCEA1VH100T	CAP , ELECT	10UF 35V
C778	HCEA1VH100T	CAP , ELECT	10UF 35V
C779	HCEA1CKS470T	CAP, ELECT	47UF 16V
C780	HCEA1CKS470T	CAP, ELECT	47UF 16V
C781	HCEA1CKS100T	CAP , ELECT	10UF 16V
C782	HCEA1CKS100T	CAP , ELECT	10UF 16V
C785	HCBS1H470JT	CAP , CERAMIC	47PF 50V J
C786	HCBS1H470JT	CAP , CERAMIC	47PF 50V J
C787	HCEA1CKS100T	CAP , ELECT	10UF 16V
C788	HCEA1CKS100T	CAP , ELECT	10UF 16V
C789	HCEA1CKS100T	CAP , ELECT	10UF 16V
C790	HCEA1CKS100T	CAP , ELECT	10UF 16V
C791	HCEA1CKS470T	CAP, ELECT	47UF 16V
C792	HCEA1CKS470T	CAP, ELECT	47UF 16V
C793	KCFE1J183JBT	CAP , FILM	0.018UF 63V J
C794	KCFE1J183JBT	CAP , FILM	0.018UF 63V J
C795	KCFE1J823JBT	CAP , FILM	0.082UF 63V J
C796	KCFE1J823JBT	CAP , FILM	0.082UF 63V J
C797	KCFE1J332JBT	CAP , FILM	0.0033UF 63V J
C798	KCFE1J332JBT	CAP , FILM	0.0033UF 63V J
C799	KCFE1J183JBT	CAP , FILM	0.018UF 63V J
C800	KCFE1J183JBT	CAP , FILM	0.018UF 63V J
C805	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z

Ref. Designator	Part Number	Description	
		FRONT PCB ASS'Y	
C806	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C807	CCKT1H104ZF	CAP , CERAMIC	50V 0.1UF
C808	CCKT1H181KB	CAP , CERAMIC	180PF 50V KB
C809	HCEA1AH471T	CAP , ELECT	470UF 10V
C810	HCEA1CH101T	CAP , ELECT	100UF 16V
C811	HCEA1CH101T	CAP , ELECT	100UF 16V
C812	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C813	HCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C814	HCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C850	HCBS1H471KBT	CAP , CERAMIC	470PF 50V
C851	HCBS1H471KBT	CAP , CERAMIC	470PF 50V
C852	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C855	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C856	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C857	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C858	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C859	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C860	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C861	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C862	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C863	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C864	HCEA1VH100T	CAP , ELECT	10UF 35V
C865	CCKT1H473ZF	CAP , CERAMIC	0.047UF 50V ZF
C866	HCEA1CKS100T	CAP , ELECT	10UF 16V
C867	HCEA1CKS100T	CAP , ELECT	10UF 16V
C868	HCEA1CKS470T	CAP, ELECT	47UF 16V
C869	HCEA1CKS470T	CAP, ELECT	47UF 16V
C870	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C871	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C872	HCEA1CH331T	CAP , ELECT	330UF 16V
C873	HCEA1CH331T	CAP , ELECT	330UF 16V
C874	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C875	HCBS1H473ZFT	CAP , CERAMIC	0.047UF 50V Z
C876	HCBS1H473ZFT	CAP , CERAMIC	0.047UF 50V Z
C877	HCBS1H473ZFT	CAP , CERAMIC	0.047UF 50V Z
C878	HCBS1H473ZFT	CAP , CERAMIC	0.047UF 50V Z
C880	HCEA1AH221T	CAP , ELECT	220UF 10V
C882	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C886	HCEA0JH102T	CAP , ELECT	1000UF 6.3V
C889	HCBS1H220JT	CAP , CERAMIC	22PF 50V
C890	HCBS1H220JT	CAP , CERAMIC	22PF 50V
C891	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C892	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C893	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C894	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C895	HCEA1AH471T	CAP , ELECT	470UF 10V
C896	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C897	HCEA1AH471T	CAP , ELECT	470UF 10V
C900	HCBS1H104ZFT	CAP , CERAMIC	0.1UF 50V Z
C853	KCKDKS472ME	CAP , CERAMIC(X1/Y2/SC)	0.0047UF/2.5KV
Semiconductors			
D724	HVD1SS133MT	DIODE	1SS133T-77
D728	HVD1SS133MT	DIODE	1SS133T-77
D729	HVD1SS133MT	DIODE	1SS133T-77
D730	HVD1SS133MT	DIODE	1SS133T-77
D761	HVD1SS133MT	DIODE	1SS133T-77
D774	HVD1SS133MT	DIODE	1SS133T-77
D775	HVD1SS133MT	DIODE	1SS133T-77
D776	KVD1N4003ST	DIODE	1N4003

Ref. Designator	Part Number	Description	
		FRONT PCB ASS'Y	
D777	HVD1SS133MT	DIODE	1SS133T-77
D778	KVD1N4003ST	DIODE	1N4003
D779	HVD1SS133MT	DIODE	1SS133T-77
D783	HVD1SS133MT	DIODE	1SS133T-77
D784	HVD1SS133MT	DIODE	1SS133T-77
D785	HVD1SS133MT	DIODE	1SS133T-77
D786	HVDMTZJ5.6BT	DIODE , ZENER	5.6V ZENER
D787	HVDMTZJ5.6BT	DIODE , ZENER	5.6V ZENER
IC87	HVIRE5VL28CATZ	IC , RESET	2.8V I.C , RESET
Q701	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q702	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q703	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q705	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q706	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q722	HVTKRA107MT	TRANSISTOR NPN	KRA107M
Q724	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q725	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q726	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q727	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q728	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q729	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q734	HVTKTC2874BT	TRANSISTOR , NPN, MUTE	KTC2874B
Q735	HVTKTC2874BT	TRANSISTOR , NPN, MUTE	KTC2874B
Q736	HVTKTC2874BT	TRANSISTOR , NPN, MUTE	KTC2874B
Q737	HVTKTC2874BT	TRANSISTOR , NPN, MUTE	KTC2874B
Q738	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q739	HVTKTA1271YT	TRANSISTOR PNP	KTA1271Y
Q743	HVTKRA107MT	TRANSISTOR NPN	KRA107M
D702	CVD52CSBBCEAB2	BLUE L.E.D	
D703	CVD52CSBBCEAB2	BLUE L.E.D	
D704	CVD52CSBBCEAB2	BLUE L.E.D	
D706	CVD52CSBBCEAB2	BLUE L.E.D	
D707	CVD52CSBBCEAB2	BLUE L.E.D	
D723	CVD50BOBBWGA	L.E.D , 2 COLOR	
IC72	BVIMB90F482APFG130	IC , FLASH U-COM	FUJITSU
IC73	HRVRPM6938H4	SENSOR , REMOTE	RPM6938-H4
IC74	HVIS3F84BB130	I.C , FLASH U-COM	S3F84BB
IC75	HVI74ACT04MTR	I.C , HEX	
IC76	HVITC74HCU04AFN	IC , INVERTER	TC74HCU04AFN
IC80	HVIHCF4053M013T	I.C	S.T
IC81	HVINJM2068MDTE1	I.C , OP AMP	NJM2068MD-TE1
IC82	HVINJM2068MDTE1	I.C , OP AMP	NJM2068MD-TE1
IC83	HVI74ACT04MTR	I.C , HEX	
IC84	HVI74ACT04MTR	I.C , HEX	
IC85	HVIRH5VT18C	I.C , RESET	1.8V I.C , RESET
IC86	HVINJM4556AL	I.C	NJM4556AL
IC88	HVINJM2068MDTE1	I.C , OP AMP	NJM2068MD-TE1
Resistors			
R701	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R702	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R704	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R705	CRD20TJ820T	RES , CARBON	82 OHM 1/5W J
R706	CRD20TJ820T	RES , CARBON	82 OHM 1/5W J
R707	CRD20TJ820T	RES , CARBON	82 OHM 1/5W J
R708	CRD20TJ820T	RES , CARBON	82 OHM 1/5W J
R709	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R710	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R711	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R712	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J

Ref. Designator	Part Number	Description	
		FRONT PCB ASS'Y	
R713	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R714	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R715	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R716	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R717	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R718	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R719	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R721	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R730	CRD20TJ112T	RES,CABON	1.1K OHM 1/5W J
R731	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R732	CRD20TJ202T	RES , CARBON	2K OHM 1/5W J
R733	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R734	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R735	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R736	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R737	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R744	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R745	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R746	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R747	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R748	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R749	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R750	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R753	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R754	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R755	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R756	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R757	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R758	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R759	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R760	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R761	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R762	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R763	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R764	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R765	CRD20TJ752T	RES , CARBON	7.5K OHM 1/5W J
R766	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R767	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R768	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R769	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R771	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R772	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R773	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R774	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R775	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R776	CRD20TJ470T	RES , CARBON	47 OHM 1/5W J
R777	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R810	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R811	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R813	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R814	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R822	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R824	CRD20TJ820T	RES , CARBON	82 OHM 1/5W J
R825	CRD20TJ181T	RES , CARBON	180 OHM 1/5W J
R826	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R827	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R829	CRD20TJ184T	RES , CARBON	180K OHM 1/5W J
R830	CRD20TJ184T	RES , CARBON	180K OHM 1/5W J
R831	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R832	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R833	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J

Ref. Designator	Part Number		Description
		FRONT PCB ASS'Y	
R834	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R835	CRD20TJ184T	RES , CARBON	180K OHM 1/5W J
R836	CRD20TJ184T	RES , CARBON	180K OHM 1/5W J
R837	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R838	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R839	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R840	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R841	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R842	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R843	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R844	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R845	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R846	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R847	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R848	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R849	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R850	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R851	CRD20TJ392T	RES , CARBON	3.9K OHM 1/5W J
R852	CRD20TJ392T	RES , CARBON	3.9K OHM 1/5W J
R853	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R854	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R855	CRD20TJ681T	RES , CARBON	680 OHM 1/5W J
R856	CRD20TJ681T	RES , CARBON	680 OHM 1/5W J
R857	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R858	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R864	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R865	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R866	CRD20TJ272T	RES , CARBON	2.7K OHM 1/5W J
R868	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R869	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R871	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R872	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R873	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R874	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R875	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R876	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R877	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R878	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R881	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R882	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R883	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R884	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R885	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R886	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R887	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R888	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R889	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R890	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R891	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R892	CRD20TJ222T	RES , CARBON	2.2K OHM 1/5W J
R893	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R895	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R896	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R897	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R898	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R899	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R900	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R901	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R902	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R903	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R904	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J

Ref. Designator	Part Number	Description	
		FRONT PCB ASS'Y	
R905	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R906	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R907	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R908	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R909	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R910	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R911	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R912	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R913	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R914	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R915	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
R917	CRD20TJ123T	RES , CARBON	12K OHM 1/5W J
R918	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R919	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
VR71	CVV2X05M104Z	RES , VARIABLE(BALANCE)	RK14128030214Y
VR72	CVV2X07C104Z	RES , VARIABLE(TONE)	RK14128030214C
VR73	CVV2X07C104Z	RES , VARIABLE(TONE)	RK14128030214C
Miscellaneous			
VR74	HSR2A029Z	VR , ENCODER	
FIP1	HFLHCA18ML01	F.I.P	SAMSUNG S.D.I
L702	HLQ02C100KT	COIL , AXAIL	10UH
S701	HST1A020ZT	SW , TACT	
S702	HST1A020ZT	SW , TACT	
S703	HST1A020ZT	SW , TACT	
S704	HST1A020ZT	SW , TACT	
S705	HST1A020ZT	SW , TACT	
S706	HST1A020ZT	SW , TACT	
S707	HST1A020ZT	SW , TACT	
S708	HST1A020ZT	SW , TACT	
S709	HST1A020ZT	SW , TACT	
S710	HST1A020ZT	SW , TACT	
S711	HST1A020ZT	SW , TACT	
S712	HST1A020ZT	SW , TACT	
S713	HST1A020ZT	SW , TACT	
S714	HST1A020ZT	SW , TACT	
S715	HST1A020ZT	SW , TACT	
S716	HST1A020ZT	SW , TACT	
S717	HST1A020ZT	SW , TACT	
S718	HST1A020ZT	SW , TACT	
S719	HST1A020ZT	SW , TACT	
S720	HST1A020ZT	SW , TACT	
BAT1	HABGP40BVH3A3H	BATTERY , RECHARGEABLE	GP40BBVH3A3H
BK71	CMD1A209	BRACKET , FLT	A4-92-1739
BK72	CMD1A209	BRACKET , FLT	A4-92-1739
BK73	CMD1A387	BRACKET , PCB	
BK74	CMD1A209	BRACKET , FLT	A4-92-1739
BN10	CWZAVR230BN10	WIRE ASS'Y (SHIELD)	
BN15	CWB2B906150EN	WIRE ASS'Y	
BN16	CWZAVR2550BN16	WIRE ASS'Y (SHIELD)	
BN18	CWZAVR125BN18	WIRE ASS'Y (SHIELD)	
BN41	CWZAVR130BN41	WIRE ASS'Y (SHIELD)	
BN80	CWB2B911420EW	WIRE ASS'Y	
BN81	CWB2B908250BM	WIRE , ASS'Y	
BN84	CWB2B905080EN	WIRE ASS'Y	
BN85	CWB2B902090EN	WIRE ASS'Y	
BN87	CWZAVR2550BN87	WIRE ASS'Y (SHIELD)	
BN88	CWB2B904070EN	WIRE ASS'Y	
BN89	CWB2B905080EN	WIRE ASS'Y	
BN90	CWB2B902090EN	WIRE ASS'Y	

Ref. Designator	Part Number	Description	
		FRONT PCB ASS'Y	
BN94	KJP13GB99ZM	CONNECTOR	MOLEX35237-1310
BN95	KJP08GB99ZM	CONNECTOR , HOUSING	MOLEX35237-0810
CN10	KJP04GB46ZM	WAFER	MOLEX 53015
CN11	KJP15GA98ZM	WAFER	MOLEX35336-1510
CN12	KJP15GA98ZM	WAFER	MOLEX35336-1510
CN15	KJP06GA19ZM	WAFER	MOLEX53014-0610
CN16	KJP08GB46ZM	WAFER	
CN72	KJP32GA161ZY	WAFER	YD200 SERIES
CN82	KJP06HA37ZM	WAFER	MOLEX42140-2206
CN84	KJP05GA19ZM	WAFER	MOLEX53014-0510
CN85	KJP02GA19ZM	WAFER	
CN86	KJP02GA89ZM	WAFER	MOLEX35328-02
CN87	KJP06GA19ZM	WAFER	MOLEX53014-0610
CN88	KJP04GA19ZM	WAFER	
CN89	KJP05GA19ZM	WAFER	MOLEX53014-0510
CN90	KJP02GA19ZM	WAFER	
CN91	KJP06HA37ZM	WAFER	MOLEX42140-2206
JK81	CJJ4M041Y	JACK , BOARD (COAX)	
JK82	HJSTORX179L	MODULE , OPTICAL(RX)	TORX179L
JK83	CJJ2E026Z	JACK , HEADPHONE(SILVER PLATE)	
JK85	CJJ9M003Z	JACK , S-VIDEO	
JK86	CJJ4S023Y	JACK , BOARD	
JW82	CWZAVR2550JW82	WIRE , ASS'Y	
JW84	CWE8202110RV	WIRE, ASS'Y	
JW85	CWE8202070AA	WIRE ASS'Y	
SW01	CSH1A008ZV	SW , PUSH (MOMS)	
X701	HOX05000E160C	CRYSTAL	5 MHz
X703	HOX10000E220C	CRYSTAL	10 MHz
	CTB3+10G	SCREW	
	CTB3+16GFZ	SCREW	
	CTWS3+10G	SCREW	
	KBC1A147MBZC22	KNOB , MOMS	
	KBT1A903MMZC22	KNOB , POWER	
	KBT1A904MBZC22	KNOB , SET	
	KBT1A905MBZC22	KNOB , FUNCTIION	
	KHR301	CLAMPER	
BN72	CWZAVR230BN72	WIRE ASS'Y	
	CKC1B145S46	CABINET , TOP	
	CLZ9Z028Z	FERRITE CORE(21.2X6.4X12.7)	K5C T
	CMH1A214	HOLDER , VOLUME	
	CMZ1A090	SHEET , VOLUME	
	CTB3+8JFC	SCREW	
	CTB4+6FFC	SCREW	
MAIN PCB ASS'Y			
Capacitors			
C501	HCEA1VH100T	CAP , ELECT	10UF 35V
C502	HCEA1VH100T	CAP , ELECT	10UF 35V
C503	HCEA1VH100T	CAP , ELECT	10UF 35V
C504	HCEA1VH100T	CAP , ELECT	10UF 35V
C505	HCEA1VH100T	CAP , ELECT	10UF 35V
C506	CCKT1H331KB	CAP , CERAMIC	330PF 50V KB
C507	CCKT1H331KB	CAP , CERAMIC	330PF 50V KB
C508	CCKT1H331KB	CAP , CERAMIC	330PF 50V KB
C509	CCKT1H331KB	CAP , CERAMIC	330PF 50V KB
C510	CCKT1H331KB	CAP , CERAMIC	330PF 50V KB
C561	HCEA1CH101T	CAP , ELECT	100UF 16V
C562	HCEA1CH101T	CAP , ELECT	100UF 16V

Ref. Designator	Part Number	Description	
		MAIN PCB ASS'Y	
C563	HCEA1CH101T	CAP , ELECT	100UF 16V
C564	HCEA1CH101T	CAP , ELECT	100UF 16V
C565	HCEA1CH101T	CAP , ELECT	100UF 16V
C566	HCEA1CH101T	CAP , ELECT	100UF 16V
C567	HCEA1CH101T	CAP , ELECT	100UF 16V
C568	HCEA1CH101T	CAP , ELECT	100UF 16V
C569	HCEA1CH101T	CAP , ELECT	100UF 16V
C570	HCEA1CH101T	CAP , ELECT	100UF 16V
C571	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C572	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C573	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C574	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C575	HCBS1H681KBT	CAP , CERAMIC	680PF 50V
C601	CCCT1H120JC	CAP , CERAMIC	12PF 50V JC
C602	CCCT1H120JC	CAP , CERAMIC	12PF 50V JC
C603	CCCT1H120JC	CAP , CERAMIC	12PF 50V JC
C604	CCCT1H120JC	CAP , CERAMIC	12PF 50V JC
C605	CCCT1H120JC	CAP , CERAMIC	12PF 50V JC
C606	CCCT1H330JC	CAP , CERAMIC	33PF 50V JC
C607	CCCT1H330JC	CAP , CERAMIC	33PF 50V JC
C608	CCCT1H330JC	CAP , CERAMIC	33PF 50V JC
C609	CCCT1H330JC	CAP , CERAMIC	33PF 50V JC
C610	CCCT1H330JC	CAP , CERAMIC	33PF 50V JC
C681	HCEA1HH100T	CAP , ELECT	10UF 50V
C682	HCEA1HH100T	CAP , ELECT	10UF 50V
C683	HCEA1HH100T	CAP , ELECT	10UF 50V
C684	HCEA1HH100T	CAP , ELECT	10UF 50V
C685	HCEA1HH100T	CAP , ELECT	10UF 50V
C726	CCKT1H221KB	CAP , MYLAR	220PF 50V KB
C900	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C901	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C905	CCKT1H223ZF	CAP , CERAMIC	0.022UF 50V ZF
C907	HCEA1CH101T	CAP , ELECT	100UF 16V
C908	CCKT1H223ZF	CAP , CERAMIC	0.022UF 50V ZF
C910	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C911	HCEA1CH471T	CAP , ELECT	470UF 16V
C912	HCEA1CH221T	CAP , ELECT	220UF 16V
C913	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V ZF
C918	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C919	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C939	HCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C940	HCEA1AH471T	CAP , ELECT	470UF 10V
C971	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C973	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C974	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C980	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C981	HCQI1H562JZT	CAP , MYLAR	5600PF 50V J
C990	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C991	HCEA1HH1R0T	CAP , ELECT	1UF 50V
C992	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C993	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C995	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C997	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C999	CCKT1H223ZF	CAP , CERAMIC	0.022UF 50V ZF
C631	CCEA1JH221E	CAP , ELECT	220UF 63V
C632	CCEA1JH221E	CAP , ELECT	220UF 63V
C633	CCEA1JH221E	CAP , ELECT	220UF 63V
C634	CCEA1JH221E	CAP , ELECT	220UF 63V
C635	CCEA1JH221E	CAP , ELECT	220UF 63V
C636	CCEA1JH221E	CAP , ELECT	220UF 63V
C637	CCEA1JH221E	CAP , ELECT	220UF 63V

Ref. Designator	Part Number	Description		
		MAIN PCB ASS'Y		
C638	CCEA1JH221E	CAP , ELECT		220UF 63V
C639	CCEA1JH221E	CAP , ELECT		220UF 63V
C640	CCEA1JH221E	CAP , ELECT		220UF 63V
C902	CCET50VKL4472NK	CAP , ELECT		4700UF/50V
C904	KCKDKS472ME	CAP , CERAMIC(X1/Y2/SC)		0.0047UF/2.5KV
C906	HCEA1EH102E	CAP , ELECT		1000UF 25V
C909	CCET50VKL4472NK	CAP , ELECT		4700UF/50V
C915	CCET50VKL4682NK	CAP , ELECT		6800UF/50V
C916	CCET50VKL4682NK	CAP , ELECT		6800UF/50V
Semiconductors				
D501	HVD1SS133MT	DIODE		1SS133T-77
D502	HVD1SS133MT	DIODE		1SS133T-77
D503	HVD1SS133MT	DIODE		1SS133T-77
D504	HVD1SS133MT	DIODE		1SS133T-77
D505	HVD1SS133MT	DIODE		1SS133T-77
D581	HVD1SS133MT	DIODE		1SS133T-77
D582	HVD1SS133MT	DIODE		1SS133T-77
D583	HVD1SS133MT	DIODE		1SS133T-77
D584	HVD1SS133MT	DIODE		1SS133T-77
D585	HVD1SS133MT	DIODE		1SS133T-77
D901	KVD1N4003ST	DIODE		1N4003
D902	HVD1SS133MT	DIODE		1SS133T-77
D911	HVD1SS133MT	DIODE		1SS133T-77
D912	HVD1SS133MT	DIODE		1SS133T-77
D914	HVD1SS133MT	DIODE		1SS133T-77
D917	HVD1SS133MT	DIODE		1SS133T-77
D953	HVD1SS133MT	DIODE		1SS133T-77
D954	KVD1N4003SRT	DIODE	TW	1N4003
D955	KVD1N4003SRT	DIODE	TW	1N4003
D961	KVD1N4003ST	DIODE		1N4003
D962	KVD1N4003ST	DIODE		1N4003
D963	KVD1N4003ST	DIODE		1N4003
D977	HVD1SS133MT	DIODE		1SS133T-77
D978	HVD1SS133MT	DIODE		1SS133T-77
Q501	HVTKTA1268GRT	TRANSISTOR PNP		KTA1268GR
Q502	HVTKTA1268GRT	TRANSISTOR PNP		KTA1268GR
Q503	HVTKTA1268GRT	TRANSISTOR PNP		KTA1268GR
Q504	HVTKTA1268GRT	TRANSISTOR PNP		KTA1268GR
Q505	HVTKTA1268GRT	TRANSISTOR PNP		KTA1268GR
Q511	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q512	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q513	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q514	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q515	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q516	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q517	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q518	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q519	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q520	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q541	HVTKTC3198YT	TRANSISTOR NPN		KTC3198Y
Q542	HVTKTC3198YT	TRANSISTOR NPN		KTC3198Y
Q543	HVTKTC3198YT	TRANSISTOR NPN		KTC3198Y
Q544	HVTKTC3198YT	TRANSISTOR NPN		KTC3198Y
Q545	HVTKTC3198YT	TRANSISTOR NPN		KTC3198Y
Q556	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q557	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q558	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q559	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR
Q560	HVTKTC3200GRT	TRANSISTOR NPN		KTC3200GR

Ref. Designator	Part Number	Description	
		MAIN PCB ASS'Y	
Q561	HVTKTC3200GRT	TRANSISTOR NPN	KTC3200GR
Q562	HVTKTC3200GRT	TRANSISTOR NPN	KTC3200GR
Q563	HVTKTC3200GRT	TRANSISTOR NPN	KTC3200GR
Q564	HVTKTC3200GRT	TRANSISTOR NPN	KTC3200GR
Q565	HVTKTC3200GRT	TRANSISTOR NPN	KTC3200GR
Q601	HVTKTA1268GRT	TRANSISTOR PNP	KTA1268GR
Q602	HVTKTA1268GRT	TRANSISTOR PNP	KTA1268GR
Q603	HVTKTA1268GRT	TRANSISTOR PNP	KTA1268GR
Q604	HVTKTA1268GRT	TRANSISTOR PNP	KTA1268GR
Q605	HVTKTA1268GRT	TRANSISTOR PNP	KTA1268GR
Q681	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q682	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q683	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q684	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q685	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q706	HVTKTC2874BT	TRANSISTOR, NPN, MUTE	KTC2874B
Q901	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q938	HVTKRA107MT	TRANSISTOR NPN	KRA107M
Q939	HVTKRA107MT	TRANSISTOR NPN	KRA107M
Q942	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q943	KVTKSC2785YT	TRANSISTOR NPN	KSC2785Y
Q951	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q952	HVTKRA107MT	TRANSISTOR NPN	KRA107M
Q960	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q961	HVTKTA1024YT	TRANSISTOR PNP	KTA1024YT
Q969	HVTKTC2874BT	TRANSISTOR, NPN, MUTE	KTC2874B
Q970	HVTKTC2874BT	TRANSISTOR, NPN, MUTE	KTC2874B
Q971	HVTKTC2874BT	TRANSISTOR, NPN, MUTE	KTC2874B
Q972	HVTKTC2874BT	TRANSISTOR, NPN, MUTE	KTC2874B
Q973	HVTKTC2874BT	TRANSISTOR, NPN, MUTE	KTC2874B
Q991	HVTKRC107MT	TRANSISTOR NPN	KRC107M
Q992	HVTKRA107MT	TRANSISTOR NPN	KRA107M
Q652	BVT2SB1560-OKM	TRANSISTOR, PNP, POWER	2SB1560
Q653	BVT2SB1560-OKM	TRANSISTOR, PNP, POWER	2SB1560
Q654	BVT2SB1560-OKM	TRANSISTOR, PNP, POWER	2SB1560
Q655	BVT2SB1560-OKM	TRANSISTOR, PNP, POWER	2SB1560
Q657	BVT2SD2390-OKM	TRANSISTOR, NPN, POWER	2SD2390
Q658	BVT2SD2390-OKM	TRANSISTOR, NPN, POWER	2SD2390
Q659	BVT2SD2390-OKM	TRANSISTOR, NPN, POWER	2SD2390
Q660	BVT2SD2390-OKM	TRANSISTOR, NPN, POWER	2SD2390
Q661	BVT2SB1560-OKM	TRANSISTOR, PNP, POWER	2SB1560
Q670	BVT2SD2390-OKM	TRANSISTOR, NPN, POWER	2SD2390
Q858	HVT2SA1360O	TRANSISTOR PNP	2SA1360
Q871	HVT2SA1360O	TRANSISTOR PNP	2SA1360
Q872	HVT2SA1360O	TRANSISTOR PNP	2SA1360
Q874	HVT2SA1360O	TRANSISTOR PNP	2SA1360
Q875	HVT2SA1360O	TRANSISTOR PNP	2SA1360
Q881	HVT2SC3423O	TRANSISTOR NPN	2SC3423
Q882	HVT2SC3423O	TRANSISTOR NPN	2SC3423
Q883	HVT2SC3423O	TRANSISTOR NPN	2SC3423
Q884	HVT2SC3423O	TRANSISTOR NPN	2SC3423
Q885	HVT2SC3423O	TRANSISTOR NPN	2SC3423
IC94	HVIMC7805C	I.C, REGULATOR	KA7805-ABTU
Resistors			
R501	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R502	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R503	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R504	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J
R505	CRD20TJ433T	RES , CARBON	43K OHM 1/5W J

Ref. Designator	Part Number		Description
		MAIN PCB ASS'Y	
R506	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R507	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R508	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R509	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R510	CRD20TJ333T	RES , CARBON	33K OHM 1/5W J
R511	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R512	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R513	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R514	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R515	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R516	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R517	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R518	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R519	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R520	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R521	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R522	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R523	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R524	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R525	CRD20TJ471T	RES , CARBON	470 OHM 1/5W J
R531	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R532	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R533	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R534	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R535	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R536	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R537	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R538	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R539	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R540	CRD20TJ221T	RES , CARBON	220 OHM 1/5W J
R541	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R542	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R543	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R544	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R545	CRD20TJ271T	RES , CARBON	270 OHM 1/5W J
R556	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R557	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R558	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R559	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R560	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R561	CRD20TJ202T	RES , CARBON	2K OHM 1/5W J
R562	CRD20TJ202T	RES , CARBON	2K OHM 1/5W J
R563	CRD20TJ202T	RES , CARBON	2K OHM 1/5W J
R564	CRD20TJ202T	RES , CARBON	2K OHM 1/5W J
R565	CRD20TJ202T	RES , CARBON	2K OHM 1/5W J
R566	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R567	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R568	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R569	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R570	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R571	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R572	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R573	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R574	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R575	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R576	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R577	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R578	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R579	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R580	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R581	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J

Ref. Designator	Part Number		Description
		MAIN PCB ASS'Y	
R582	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R583	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R584	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R585	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R586	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R587	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R588	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R589	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R590	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R591	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R592	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R593	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R594	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R595	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R596	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R597	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R598	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R599	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R600	CRD20TJ561T	RES , CARBON	560 OHM 1/5W J
R601	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R602	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R603	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R604	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R605	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R606	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R607	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R608	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R609	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R610	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R631	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R632	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R633	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R634	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R635	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R636	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R637	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R638	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R639	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R640	KRD25FJ180T	RES , CARBON	18 OHM 1/4W F
R646	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R647	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R648	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R649	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R650	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R651	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R652	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R653	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R654	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R655	KRD25FJ3R3T	RES , CARBON	3.3 OHM 1/4W F
R666	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R667	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R668	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R669	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R670	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R671	CRD20TJ911T	RES , CARBON	910 OHM 1/5W J
R672	CRD20TJ911T	RES , CARBON	910 OHM 1/5W J
R673	CRD20TJ911T	RES , CARBON	910 OHM 1/5W J
R674	CRD20TJ911T	RES , CARBON	910 OHM 1/5W J
R675	CRD20TJ911T	RES , CARBON	910 OHM 1/5W J
R676	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R677	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J

Ref. Designator	Part Number		Description
		MAIN PCB ASS'Y	
R678	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R679	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R680	CRD20TJ182T	RES , CARBON	1.8K OHM 1/5W J
R681	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R682	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R683	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R684	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R685	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R686	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R687	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R688	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R689	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R690	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R696	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R697	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R698	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R699	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R700	CRD25TJ470T	RES , CARBON	47 OHM 1/4W J
R706	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R716	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R726	CRD20TJ104T	RES , CARBON	100K OHM 1/5W J
R771	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R772	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R773	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R774	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R775	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R781	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R782	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R783	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R784	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R785	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R900	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R901	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R902	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R903	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R906	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R910	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R911	CRD25TJ680T	RES , CARBON	68 OHM 1/4W J
R917	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R918	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R919	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R920	CRD25TJ393T	RES , CARBON	39K OHM 1/4W J
R932	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R939	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R940	CRD20TJ152T	RES , CARBON	1.5K OHM 1/5W J
R941	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R942	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R943	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R944	CRD25TJ223T	RES , CARBON	22K OHM 1/4W J
R945	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R946	CRD25TJ223T	RES , CARBON	22K OHM 1/4W J
R947	CRD20TJ223T	RES , CARBON	22K OHM 1/5W J
R955	CRD20TJ393T	RES , CARBON	39K OHM 1/5W J
R956	CRD20TJ394T	RES , CARBON	390K OHM 1/5W J
R957	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R960	CRD20TJ562T	RES , CARBON	5.6K OHM 1/5W J
R961	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R962	CRD20TJ273T	RES , CARBON	27K OHM 1/5W J
R963	CRD20TJ105T	RES , CARBON	1M OHM 1/5W J
R966	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J
R969	CRD20TJ472T	RES , CARBON	4.7K OHM 1/5W J

Ref. Designator	Part Number	Description		
		MAIN PCB ASS'Y		
R970	CRD20TJ472T	RES , CARBON		4.7K OHM 1/5W J
R971	CRD20TJ472T	RES , CARBON		4.7K OHM 1/5W J
R972	CRD20TJ472T	RES , CARBON		4.7K OHM 1/5W J
R973	CRD20TJ472T	RES , CARBON		4.7K OHM 1/5W J
R974	CRD20TJ331T	RES , CARBON		330 OHM 1/5W J
R975	CRD20TJ331T	RES , CARBON		330 OHM 1/5W J
R976	CRD20TJ331T	RES , CARBON		330 OHM 1/5W J
R977	CRD20TJ331T	RES , CARBON		330 OHM 1/5W J
R978	CRD20TJ331T	RES , CARBON		330 OHM 1/5W J
R979	CRD20TJ473T	RES , CARBON		47K OHM 1/5W J
R980	CRD20TJ473T	RES , CARBON		47K OHM 1/5W J
R981	CRD20TJ473T	RES , CARBON		47K OHM 1/5W J
R982	CRD20TJ473T	RES , CARBON		47K OHM 1/5W J
R983	CRD20TJ473T	RES , CARBON		47K OHM 1/5W J
R986	CRD20TJ102T	RES , CARBON		1K OHM 1/5W J
R987	CRD20TJ561T	RES , CARBON		560 OHM 1/5W J
R988	CRD20TJ562T	RES , CARBON		5.6K OHM 1/5W J
R991	CRD20TJ822T	RES , CARBON		8.2K OHM 1/5W J
R992	CRD20TJ562T	RES , CARBON		5.6K OHM 1/5W J
R998	CRD20TJ103T	RES , CARBON		10K OHM 1/5W J
R656	CRF5EKR27HX2	RES , CEMENT		0.27OHM(*2) ,5W
R657	CRF5EKR27HX2	RES , CEMENT		0.27OHM(*2) ,5W
R658	CRF5EKR27HX2	RES , CEMENT		0.27OHM(*2) ,5W
R659	CRF5EKR27HX2	RES , CEMENT		0.27OHM(*2) ,5W
R660	CRF5EKR27HX2	RES , CEMENT		0.27OHM(*2) ,5W
R904	BRDERC12UGK335T	RES , CARBON	JP	3.3M OHM 1/2W
R905	CRG1ANJ100H	RES , METAL OXIDE FILM		10 OHM 1W
R990	CRG1ANJ100H	RES , METAL OXIDE FILM		10 OHM 1W
R993	CRG1ANJ100H	RES , METAL OXIDE FILM		10 OHM 1W
R995	CRG1ANJ100H	RES , METAL OXIDE FILM		10 OHM 1W
R997	CRG1ANJ100H	RES , METAL OXIDE FILM		10 OHM 1W
R999	CRG1ANJ100H	RES , METAL OXIDE FILM		10 OHM 1W
Miscellaneous				
	CMD1A387	BRACKET , PCB		
	CMYAVR130CC	HEAT SINK ASS'Y		
	CHD1A012Z	SCREW , SPECIAL		AVR125CC
	CMD1A398	BRACKET , PCB		AG-D9320
	CMD1A417	BRACKET , PCB		AG-D8900
	CMY1A217	HEAT SINK		AVR130
	CTB3+8J	SCREW		
	CTW3+10J	SCREW		
	CTW3+12J	SCREW		
	CTW3+8J	SCREW		
BN19	CWB3FE03250UP	WIRE ASS'Y		
BN20	CWB3FB43280UP	WIRE ASS'Y		
BN82	CWB1C902050EN	WIRE ASS'Y		
BN83	CWB1C902050EN	WIRE ASS'Y		
BN84	CWB1C902050EN	WIRE ASS'Y		
BN85	CWB1C902050EN	WIRE ASS'Y		
BN86	CWB1C902050EN	WIRE ASS'Y		
BN98	BJP08GA130ZK	WAFER		
BN99	CWB1C902050EN	WIRE ASS'Y		
CN61	KJP02GA01ZM	WAFER		MOLEX 5267-02A
CN62	KJP02GA01ZM	WAFER		MOLEX 5267-02A
CN63	KJP02GA01ZM	WAFER		MOLEX 5267-02A
CN64	KJP02GA01ZM	WAFER		MOLEX 5267-02A
CN65	KJP02GA01ZM	WAFER		MOLEX 5267-02A
CN80	KJP11GA19ZM	WAFER		MOLEX-53014
CN91	KJP03GA89ZM	WAFER		MOLEX35328-0310

Ref. Designator	Part Number	Description	
		MAIN PCB ASS'Y	
CN94	KJP13GA98ZM	WAFER	MOLEX35336-1310
CN95	KJP08GA98ZM	WAFER	MOLEX35336-0810
CN99	KJP02GA19ZM	WAFER	
ET01	CNE75	PLATE , EARTH	
ET02	CMD1A387	BRACKET , PCB	
ET03	CNE75	PLATE , EARTH	
JK90	CJJ4M040Z	JACK , BOARD (SW)	
JK91	CJJ5R006Z	TERMINAL , SPEAKER	
JK92	CJJ5P020Z	TERMINAL , SPEAKER	
JW90	CWEE212120VV	WIRE ASS'Y	
JW91	CWE8212180VV	WIRE ASS'Y	
JW92	CWEE212120VV	WIRE ASS'Y	
JW99	CWE8202150AA	WIRE ASS'Y	
L501	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L502	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L503	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L504	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
L505	CLEY0R5KAK	COIL , SPEAKER	0.5UH K
RY94	HSL1A008ZE	RELAY	SDT-S-112DMR
TH91	KRTP42T7D330B	THERMAL SENSOR , POSISTOR	P42T7D330BW20
T902	CLT5J033ZU	TRANS , SUB	SR-68
INPUT PCB ASS'Y			
Capacitors			
C105	HCUS1H223KC	CAP , CHIP 0.022UF	
C106	HCUS1H223KC	CAP , CHIP 0.022UF	
C201	HCUS1H221JA	CAP , CHIP 220PF	
C202	HCUS1H221JA	CAP , CHIP 220PF	
C203	HCUS1H221JA	CAP , CHIP 220PF	
C204	HCUS1H221JA	CAP , CHIP 220PF	
C205	HCUS1H221JA	CAP , CHIP 220PF	
C206	HCUS1H221JA	CAP , CHIP 220PF	
C211	HCUS1H221JA	CAP , CHIP 220PF	
C212	HCUS1H221JA	CAP , CHIP 220PF	
C213	HCUS1H221JA	CAP , CHIP 220PF	
C214	HCUS1H221JA	CAP , CHIP 220PF	
C215	HCUS1H221JA	CAP , CHIP 220PF	
C216	HCUS1H221JA	CAP , CHIP 220PF	
C217	HCUS1H221JA	CAP , CHIP 220PF	
C218	HCUS1H221JA	CAP , CHIP 220PF	
C219	HCUS1H221JA	CAP , CHIP 220PF	
C220	HCUS1H221JA	CAP , CHIP 220PF	
C221	HCUS1H221JA	CAP , CHIP 220PF	
C222	HCUS1H221JA	CAP , CHIP 220PF	
C223	HCUS1H221JA	CAP , CHIP 220PF	
C224	HCUS1H221JA	CAP , CHIP 220PF	
C241	HCUS1H181JA	CAP , CHIP 180PF	
C242	HCUS1H471JA	CAP , CHIP 470PF	
C253	HCUS1H181JA	CAP , CHIP 180PF	
C254	HCUS1H471JA	CAP , CHIP 470PF	
C255	HCUS1H223KC	CAP , CHIP 0.022UF	
C256	HCUS1H223KC	CAP , CHIP 0.022UF	
C270	HCUS1H181JA	CAP , CHIP 180PF	
C271	HCUS1H471JA	CAP , CHIP 470PF	
C291	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C292	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C294	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C295	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
C296	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C297	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C317	HCUS1H223KC	CAP , CHIP 0.022UF	
C318	HCUS1H223KC	CAP , CHIP 0.022UF	
C319	HCUS1H223KC	CAP , CHIP 0.022UF	
C320	HCUS1H223KC	CAP , CHIP 0.022UF	
C321	HCUS1H561JA	CAP , CHIP 560PF	
C322	HCUS1H561JA	CAP , CHIP 560PF	
C323	HCUS1H561JA	CAP , CHIP 560PF	
C324	HCUS1H561JA	CAP , CHIP 560PF	
C325	HCUS1H561JA	CAP , CHIP 560PF	
C326	HCUS1H561JA	CAP , CHIP 560PF	
C327	HCUS1H561JA	CAP , CHIP 560PF	
C328	HCUS1H561JA	CAP , CHIP 560PF	
C329	HCUS1H561JA	CAP , CHIP 560PF	
C330	HCUS1H561JA	CAP , CHIP 560PF	
C331	HCUS1H561JA	CAP , CHIP 560PF	
C332	HCUS1H561JA	CAP , CHIP 560PF	
C333	HCUS1H561JA	CAP , CHIP 560PF	
C334	HCUS1H561JA	CAP , CHIP 560PF	
C335	HCUS1H561JA	CAP , CHIP 560PF	
C336	HCUS1H561JA	CAP , CHIP 560PF	
C337	HCUS1H223KC	CAP , CHIP 0.022UF	
C338	HCUS1H223KC	CAP , CHIP 0.022UF	
C339	HCUS1H223KC	CAP , CHIP 0.022UF	
C340	HCUS1H223KC	CAP , CHIP 0.022UF	
C371	HCUS1H221JA	CAP , CHIP 220PF	
C372	HCUS1H221JA	CAP , CHIP 220PF	
C373	HCUS1H221JA	CAP , CHIP 220PF	
C374	HCUS1H221JA	CAP , CHIP 220PF	
C375	HCUS1H223KC	CAP , CHIP 0.022UF	
C376	HCUS1H223KC	CAP , CHIP 0.022UF	
C378	HCUS1H223KC	CAP , CHIP 0.022UF	
C379	HCUS1H223KC	CAP , CHIP 0.022UF	
C381	HCUS1H561JA	CAP , CHIP 560PF	
C382	HCUS1H223KC	CAP , CHIP 0.022UF	
C383	HCUS1H223KC	CAP , CHIP 0.022UF	
C413	HCUS1H223KC	CAP , CHIP 0.022UF	
C414	HCUS1H223KC	CAP , CHIP 0.022UF	
C415	HCUS1H223KC	CAP , CHIP 0.022UF	
C416	HCUS1H223KC	CAP , CHIP 0.022UF	
C417	HCUS1H223KC	CAP , CHIP 0.022UF	
C418	HCUS1H223KC	CAP , CHIP 0.022UF	
C425	HCUS1H151JA	CAP , CHIP , 150PF JA	1608 SIZE
C427	HCUS1H151JA	CAP , CHIP , 150PF JA	1608 SIZE
C428	HCUS1H151JA	CAP , CHIP , 150PF JA	1608 SIZE
C471	HCUS1H181JA	CAP , CHIP 180PF	
C472	HCUS1H181JA	CAP , CHIP 180PF	
C474	HCUS1H181JA	CAP , CHIP 180PF	
C721	HCUS1H270JA	CAP , CHIP , 27PF JA	1608 SIZE
C722	HCUS1H270JA	CAP , CHIP , 27PF JA	1608 SIZE
C723	HCUS1H270JA	CAP , CHIP , 27PF JA	1608 SIZE
C724	HCUS1H270JA	CAP , CHIP , 27PF JA	1608 SIZE
C726	HCUS1H473ZF	CAP , CHIP 0.047UF	
C727	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C729	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C730	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C731	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C733	HCUS1H223KC	CAP , CHIP 0.022UF	
C734	HCUS1H101JA	CAP , CHIP 100PF	
C735	HCUS1H101JA	CAP , CHIP 100PF	

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
C736	HCUS1H101JA	CAP , CHIP 100PF	
C737	HCUS1H101JA	CAP , CHIP 100PF	
C738	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C739	HCUS1H330JA	CAP , CHIP 33PF	
C740	HCUS1H330JA	CAP , CHIP 33PF	
C742	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C743	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C744	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C746	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C747	HCUS1H223KC	CAP , CHIP 0.022UF	
C748	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C750	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C751	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C753	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C755	HCUS1H223KC	CAP , CHIP 0.022UF	
C756	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C758	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C760	HCUS1H471JA	CAP , CHIP 470PF	
C761	HCUS1H103KC	CAP , CHIP 0.01UF	
C762	HCUS1H120JA	CAP , CHIP 12PF	
C763	HCUS1H120JA	CAP , CHIP 12PF	
C764	HCUS1H102KC	CAP , CHIP 0.001UF	
C765	HCUS1H101JA	CAP , CHIP 100PF	
C766	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C767	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C769	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C771	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C773	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C774	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C775	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C777	HCUS1H473ZF	CAP , CHIP 0.047UF	
C779	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C780	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C783	HCUS1H473ZF	CAP , CHIP 0.047UF	
C784	HCUS1E104ZF	CAP , CHIP , 0.1UF ZF	1608 SIZE
C787	HCUS1H473ZF	CAP , CHIP 0.047UF	
C101	HCEA1VH100T	CAP , ELECT	10UF 35V
C102	HCEA1VH100T	CAP , ELECT	10UF 35V
C103	HCEA1VH100T	CAP , ELECT	10UF 35V
C104	HCEA1VH100T	CAP , ELECT	10UF 35V
C237	HCEA1CH101T	CAP , ELECT	100UF 16V
C238	HCEA1CH101T	CAP , ELECT	100UF 16V
C239	HCEA1VH100T	CAP , ELECT	10UF 35V
C240	HCEA1VH100T	CAP , ELECT	10UF 35V
C251	HCEA1CH101T	CAP , ELECT	100UF 16V
C252	HCEA1CH101T	CAP , ELECT	100UF 16V
C261	HCEA1CH101T	CAP , ELECT	100UF 16V
C262	HCEA1CH101T	CAP , ELECT	100UF 16V
C263	HCEA1VH100T	CAP , ELECT	10UF 35V
C264	HCEA1VH100T	CAP , ELECT	10UF 35V
C267	HCEA1VH100T	CAP , ELECT	10UF 35V
C268	HCEA1VH100T	CAP , ELECT	10UF 35V
C301	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C302	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C303	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C304	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C305	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C306	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C307	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C308	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C309	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
C310	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C311	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C312	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C313	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C314	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C315	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C316	HCQI1H332JZT	CAP , MYLAR	3300PF 50V J
C341	HCEA1VH100T	CAP , ELECT	10UF 35V
C342	HCEA1VH100T	CAP , ELECT	10UF 35V
C343	HCEA1VH100T	CAP , ELECT	10UF 35V
C344	HCEA1VH100T	CAP , ELECT	10UF 35V
C345	HCEA1VH100T	CAP , ELECT	10UF 35V
C346	HCEA1VH100T	CAP , ELECT	10UF 35V
C347	HCEA1VH100T	CAP , ELECT	10UF 35V
C348	HCEA1VH100T	CAP , ELECT	10UF 35V
C349	HCEA1HH1R0T	CAP , ELECT	1UF 50V
C403	HCEA1VH100T	CAP , ELECT	10UF 35V
C404	HCEA1VH100T	CAP , ELECT	10UF 35V
C405	HCEA1VH100T	CAP , ELECT	10UF 35V
C406	HCEA1VH100T	CAP , ELECT	10UF 35V
C407	HCEA1VH100T	CAP , ELECT	10UF 35V
C408	HCEA1VH100T	CAP , ELECT	10UF 35V
C426	HCQI1H182JZT	CAP , MYLAR	1800PF 50V J
C433	HCEA1CH101T	CAP , ELECT	100UF 16V
C434	HCEA1CH101T	CAP , ELECT	100UF 16V
C435	HCEA1CH101T	CAP , ELECT	100UF 16V
C436	HCEA1CH101T	CAP , ELECT	100UF 16V
C437	HCEA1CH101T	CAP , ELECT	100UF 16V
C438	HCEA1CH101T	CAP , ELECT	100UF 16V
C453	HCEA1VH100T	CAP , ELECT	10UF 35V
C454	HCEA1VH100T	CAP , ELECT	10UF 35V
C455	HCEA1VH100T	CAP , ELECT	10UF 35V
C456	HCEA1VH100T	CAP , ELECT	10UF 35V
C457	HCEA1VH100T	CAP , ELECT	10UF 35V
C458	HCEA1VH100T	CAP , ELECT	10UF 35V
C725	HCEA1CH101T	CAP , ELECT	100UF 16V
C728	HCEA1EH470T	CAP , ELECT	47UF 25V
C732	HCEA1CH101T	CAP , ELECT	100UF 16V
C741	HCEA1CH101T	CAP , ELECT	100UF 16V
C745	HCEA1CH101T	CAP , ELECT	100UF 16V
C749	HCEA1CH101T	CAP , ELECT	100UF 16V
C752	HCEA1CH101T	CAP , ELECT	100UF 16V
C754	HCEA1VH100T	CAP , ELECT	10UF 35V
C757	HCEA1HH2R2T	CAP , ELECT	2.2UF 50V
C759	HCEA1VH100T	CAP , ELECT	10UF 35V
C768	HCEA1HH2R2T	CAP , ELECT	2.2UF 50V
C770	HCEA1EH470T	CAP , ELECT	47UF 25V
C772	HCEA1EH470T	CAP , ELECT	47UF 25V
C776	HCEA1CH101T	CAP , ELECT	100UF 16V
C778	HCEA0JH102T	CAP , ELECT	1000UF 6.3V
C781	HCEA1CH101T	CAP , ELECT	100UF 16V
C782	HCEA1AH471T	CAP , ELECT	470UF 10V
C785	HCEA1CH101T	CAP , ELECT	100UF 16V
C786	HCEA1AH471T	CAP , ELECT	470UF 10V
Semiconductors			
D703	HVDRB160L60TE25	DIODE , SCHOTTKEY BARRIER	RB160L-60TE25
IC13	HVINJM2068MDTE1	I.C , OP AMP	NJM2068MD-TE1
IC23	HVITC9164AF	I.C , FUNCTION	TC9164AF
IC24	HVITC9163AF	I.C , FUNCTION	TC9163AF

Ref. Designator	Part Number	Description		
		INPUT PCB ASS'Y		
IC25	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC26	HVITC9162AF	I.C , FUNCTION		TC9162AF
IC31	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC32	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC33	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC34	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC35	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC36	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC37	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC42	HVITC9459F	I.C , VOLUME		TC9459F
IC43	HVITC9459F	I.C , VOLUME		TC9459F
IC44	HVITC9459F	I.C , VOLUME		TC9459F
IC46	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC47	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC48	HVINJM2068MDTE1	I.C , OP AMP		NJM2068MD-TE1
IC72	HVITC74HCU04AFN	IC , INVERTER		TC74HCU04AFN
IC73	HVIAK4114VQ	IC , DIR		A.K.M
IC74	HVIAK4358VQ	I.C , DAC(8CH)		A.K.M
IC75	HVICS493263-CLG	I.C , DSP	HK	CS493263-CLG
IC76	HVIAK5381VT	I.C , ADC		A.K.M
D201	HVD1SS133MT	DIODE		1SS133T-77
D202	HVD1SS133MT	DIODE		1SS133T-77
D203	HVD1SS133MT	DIODE		1SS133T-77
D204	HVD1SS133MT	DIODE		1SS133T-77
D207	HVD1SS133MT	DIODE		1SS133T-77
D208	HVD1SS133MT	DIODE		1SS133T-77
D209	HVD1SS133MT	DIODE		1SS133T-77
D210	HVD1SS133MT	DIODE		1SS133T-77
D211	HVD1SS133MT	DIODE		1SS133T-77
D212	HVD1SS133MT	DIODE		1SS133T-77
D213	HVD1SS133MT	DIODE		1SS133T-77
D214	HVD1SS133MT	DIODE		1SS133T-77
D701	HVDMTZJ4.7BT	DIODE , ZENER		4.7V 1/2W
D702	HVDMTZJ3.3BT	DIODE , ZENER		3.3V 1/2W
Q201	HVTKTD1302T	TRANSISTOR NPN		KTD1302
Q202	HVTKTC2874BT	TRANSISTOR, NPN, MUTE		KTC2874B
Q203	HVTKTC2874BT	TRANSISTOR, NPN, MUTE		KTC2874B
Q204	HVTKRA107MT	TRANSISTOR PNP		KRA107M
Q701	HVTKSC2316YT	TRANSISTOR NPN		KSC2316Y
Q702	HVTKSC2316YT	TRANSISTOR NPN		KSC2316Y
Resistors				
R101	HRJ10DJ562T	RES , CHIP 5.6K OHM		
R102	HRJ10DJ562T	RES , CHIP 5.6K OHM		
R103	HRJ10DJ682T	RES , CHIP 6.8K OHM		1608 SIZE
R104	HRJ10DJ682T	RES , CHIP 6.8K OHM		1608 SIZE
R105	HRJ10DJ151T	RES , CHIP 150 OHM		
R106	HRJ10DJ151T	RES , CHIP 150 OHM		
R107	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J		1608 SIZE
R108	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J		1608 SIZE
R201	HRJ10DJ471T	RES , CHIP 470 OHM		
R202	HRJ10DJ471T	RES , CHIP 470 OHM		
R203	HRJ10DJ471T	RES , CHIP 470 OHM		
R204	HRJ10DJ471T	RES , CHIP 470 OHM		
R205	HRJ10DJ471T	RES , CHIP 470 OHM		
R206	HRJ10DJ471T	RES , CHIP 470 OHM		
R211	HRJ10DJ471T	RES , CHIP 470 OHM		
R212	HRJ10DJ471T	RES , CHIP 470 OHM		
R213	HRJ10DJ471T	RES , CHIP 470 OHM		
R214	HRJ10DJ471T	RES , CHIP 470 OHM		

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
R215	HRJ10DJ471T	RES , CHIP 470 OHM	
R216	HRJ10DJ471T	RES , CHIP 470 OHM	
R217	HRJ10DJ471T	RES , CHIP 470 OHM	
R218	HRJ10DJ471T	RES , CHIP 470 OHM	
R219	HRJ10DJ471T	RES , CHIP 470 OHM	
R220	HRJ10DJ471T	RES , CHIP 470 OHM	
R221	HRJ10DJ471T	RES , CHIP 470 OHM	
R222	HRJ10DJ471T	RES , CHIP 470 OHM	
R223	HRJ10DJ471T	RES , CHIP 470 OHM	
R224	HRJ10DJ272T	RES , CHIP 2.7K OHM	
R227	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R228	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R229	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R230	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R231	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R232	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R237	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R238	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R239	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R240	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R241	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R242	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R243	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R244	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R245	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R246	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R247	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R248	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R249	HRJ10DJ474T	RES , CHIP 470K OHM	1608 SIZE
R250	HRJ10DJ103T	RES , CHIP 10K OHM	
R265	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R267	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R268	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R269	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R270	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R271	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R272	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R273	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R274	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R275	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R276	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R277	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R278	HRJ10DJ104T	RES , CHIP 100K OHM	
R279	HRJ10DJ104T	RES , CHIP 100K OHM	
R280	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R281	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R283	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R284	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R285	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R286	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R288	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R289	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R291	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R292	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R293	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R301	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R302	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R303	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R304	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R305	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R306	HRJ10DJ332T	RES , CHIP 3.3K OHM	

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
R307	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R308	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R309	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R310	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R311	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R312	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R313	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R314	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R315	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R316	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R317	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R318	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R319	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R320	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R321	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R322	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R323	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R324	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R325	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R326	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R327	HRJ10DJ223T	RES , CHIP 22K OHM	1608 SIZE
R328	HRJ10DJ223T	RES , CHIP 22K OHM	1608 SIZE
R329	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R330	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R331	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R332	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R333	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R334	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R335	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R336	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R337	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R338	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R339	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R340	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R341	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R342	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R343	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R344	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R345	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R346	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R347	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R348	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R349	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R350	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R351	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R352	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R353	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R354	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R355	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R356	HRJ10DJ122T	RES , CHIP 1.2K OHM	
R361	HRJ10DJ104T	RES , CHIP 100K OHM	
R362	HRJ10DJ104T	RES , CHIP 100K OHM	
R363	HRJ10DJ104T	RES , CHIP 100K OHM	
R364	HRJ10DJ104T	RES , CHIP 100K OHM	
R365	HRJ10DJ104T	RES , CHIP 100K OHM	
R366	HRJ10DJ104T	RES , CHIP 100K OHM	
R367	HRJ10DJ104T	RES , CHIP 100K OHM	
R368	HRJ10DJ104T	RES , CHIP 100K OHM	
R371	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R372	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R373	HRJ10DJ332T	RES , CHIP 3.3K OHM	

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
R374	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R375	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R376	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R377	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R378	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R379	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R380	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R381	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R382	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R383	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R384	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R385	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R386	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R389	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R390	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R391	HRJ10DJ105T	RES , CHIP (1/10W) 1M OHM	1608 SIZE
R392	HRJ10DJ105T	RES , CHIP (1/10W) 1M OHM	1608 SIZE
R393	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R394	HRJ10DJ153T	RES , CHIP 15K OHM	
R395	HRJ10DJ153T	RES , CHIP 15K OHM	
R396	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R397	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R398	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R403	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R404	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R405	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R406	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R407	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R408	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R415	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R416	HRJ10DJ103T	RES , CHIP 10K OHM	
R417	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R418	HRJ10DJ562T	RES , CHIP 5.6K OHM	
R425	HRJ10DJ102T	RES , CHIP (1/10W) , 1K OHM J	1608 SIZE
R426	HRJ10DJ102T	RES , CHIP (1/10W) , 1K OHM J	1608 SIZE
R427	HRJ10DJ102T	RES , CHIP (1/10W) , 1K OHM J	1608 SIZE
R428	HRJ10DJ102T	RES , CHIP (1/10W) , 1K OHM J	1608 SIZE
R433	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R434	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R435	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R436	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R437	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R438	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R453	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R454	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R455	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R456	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R457	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R458	HRJ10DJ184T	RES , CHIP 180K OHM	1608 SIZE
R471	HRJ10DJ272T	RES , CHIP 2.7K OHM	
R472	HRJ10DJ272T	RES , CHIP 2.7K OHM	
R473	HRJ10DJ272T	RES , CHIP 2.7K OHM	
R491	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R492	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R494	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R495	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R496	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R497	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R721	HRJ10DJ104T	RES , CHIP 100K OHM	
R722	HRJ10DJ104T	RES , CHIP 100K OHM	
R723	HRJ10DJ104T	RES , CHIP 100K OHM	

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
R724	HRJ10DJ104T	RES , CHIP 100K OHM	
R725	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R726	HRJ10DJ1R0T	RES , CHIP 1 OHM	
R727	HRJ10DJ1R0T	RES , CHIP 1 OHM	
R728	HRJ10DJ1R0T	RES , CHIP 1 OHM	
R729	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R730	HRJ10DJ1R0T	RES , CHIP 1 OHM	
R731	HRJ10DJ1R0T	RES , CHIP 1 OHM	
R732	HRJ10DJ183T	RES , CHIP 18K OHM	
R733	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R734	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R735	HRJ10DJ105T	RES , CHIP (1/10W) 1M OHM	1608 SIZE
R736	HRJ10DJ121T	RES , CHIP (1/10W) 120 OHM	1608 SIZE
R737	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R738	HRJ10DJ1R0T	RES , CHIP 1 OHM	
R739	HRJ10DJ2R7T	RES , CHIP 2.7 OHM	
R740	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R741	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R742	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R743	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R744	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R745	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R746	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R747	HRJ10DJ472T	RES , CHIP (1/10W) ,4.7K OHM J	1608 SIZE
R748	HRJ10DJ103T	RES , CHIP 10K OHM	
R749	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R750	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R751	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R752	HRJ10DJ102T	RES , CHIP (1/10W) , 1K OHM J	1608 SIZE
R753	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R754	HRJ10DJ103T	RES , CHIP 10K OHM	
R755	HRJ10DJ103T	RES , CHIP 10K OHM	
R756	HRJ10DJ103T	RES , CHIP 10K OHM	
R757	HRJ10DJ103T	RES , CHIP 10K OHM	
R758	HRJ10DJ103T	RES , CHIP 10K OHM	
R759	HRJ10DJ103T	RES , CHIP 10K OHM	
R760	HRJ10DJ103T	RES , CHIP 10K OHM	
R761	HRJ10DJ103T	RES , CHIP 10K OHM	
R762	HRJ10DJ103T	RES , CHIP 10K OHM	
R763	HRJ10DJ333T	RES , CHIP 33K OHM	
R764	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R765	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R766	HRJ10DJ103T	RES , CHIP 10K OHM	
R767	HRJ10DJ332T	RES , CHIP 3.3K OHM	
R768	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R769	HRJ10DJ101T	RES , CHIP (1/10W) , 100 OHM J	1608 SIZE
R770	HRJ10DJ103T	RES , CHIP 10K OHM	
R771	HRJ10DJ4R7T	RES , CHIP 4.7 OHM	1608 SIZE
R772	HRJ10DJ182T	RES , CHIP 1.8K OHM	
R773	HRJ10DJ8R2T	RES , CHIP 8.2 OHM	
R774	HRJ10DJ471T	RES , CHIP 470 OHM	
R780	HRJ10DJ330T	RES , CHIP (1/10W) , 33 OHM J	1608 SIZE
R781	CRG2ANJ150H	RES , METAL OXIDE FILM	15 OHM 2W J
R782	CRG2ANJ330H	RES , METAL OXIDE FILM	33 OHM 2W J
Miscellaneous			
L703	KLQ100J405T	COIL, PEAKING(RADIAL)	10UH J 4X5
BN11	KJP15GB99ZM	WAFER	35237(15PIN)
BN12	KJP15GB99ZM	WAFER	35237(15PIN)
CN13	CJP13GA115ZY	WAFER , CARD CABLE	

Ref. Designator	Part Number	Description	
		INPUT PCB ASS'Y	
CN15	CJP09GA115ZY	WAFER , CARD CABLE	
CN17	KJP12GB142ZP	PIN HEADER	2110 - DR12 - G
CN18	KJP05GA19ZM	WAFER	MOLEX53014-0510
CN72	KJP32GA161ZY	WAFER	YD200 SERIES
JK11	CJJ4R019W	TERMINAL , IN/OUT	
JK13	CJJ4P014W	JACK , IN/OUT	
JK14	CJJ4R019W	TERMINAL , IN/OUT	
JK15	CJJ4P043W	JACK IN/OUT	
JW21	CWE7202090AA	WIRE ASS'Y	
L701	KLZ9H001Z	BEAD , CORE	
L702	KLZ9H001Z	BEAD , CORE	
L704	KLZ9H001Z	BEAD , CORE	
L705	KLZ9H001Z	BEAD , CORE	
X701	HOX12288E220TF	CRYSTAL(HC-49/S,ATS)	12.288MHZ 22PF
VIDEO PCB ASS'Y			
Capacitors			
C404	CCKT1H101KB	CAP , CERAMIC	100PF 50V KB
C407	CCKT1H101KB	CAP , CERAMIC	100PF 50V KB
C411	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C412	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C413	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C414	HCBS1H101KBT	CAP , CERAMIC	100PF 50V K
C416	HCEA1CH101T	CAP , ELECT	100UF 16V
C417	HCEA1CH101T	CAP , ELECT	100UF 16V
C418	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C420	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C421	HCEA1CH101T	CAP , ELECT	100UF 16V
C422	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C423	HCEA1CH101T	CAP , ELECT	100UF 16V
C427	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C428	HCEA1CH101T	CAP , ELECT	100UF 16V
C429	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C430	HCEA1CH101T	CAP , ELECT	100UF 16V
C436	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C437	HCEA1CH101T	CAP , ELECT	100UF 16V
C438	HCBS1H223ZFT	CAP , CERAMIC	0.022UF 50V Z
C439	HCEA1CH101T	CAP , ELECT	100UF 16V
C461	HCEA1CH101T	CAP , ELECT	100UF 16V
C462	HCEA1CH101T	CAP , ELECT	100UF 16V
C463	HCBS1H473ZFT	CAP , CERAMIC	0.047UF 50V Z
C701	HCEA1AH471T	CAP , ELECT	470UF 10V
C702	HCEA1AH471T	CAP , ELECT	470UF 10V
C703	CCKT1H181KB	CAP , CERAMIC	180PF 50V KB
C704	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V ZF
C705	CCKT1H181KB	CAP , CERAMIC	180PF 50V KB
C706	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V ZF
C707	CCKT1H101KB	CAP , CERAMIC	100PF 50V KB
C708	HCEA1CKS101T	CAP , ELECT	100UF 16V
C709	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V ZF
C710	CCCT1H270JC	CAP , CERAMIC	27PF 50V JC
C711	HCEA1CH101T	CAP , ELECT	100UF 16V
C712	CCKT1H473ZF	CAP , CERAMIC	0.047UF 50V ZF
C713	CCCT1H270JC	CAP , CERAMIC	27PF 50V JC
C124	BCQE2E104KDE	CAP , LINE ACROSS	0.1UF 250V KD

Ref. Designator	Part Number	Description	
		VIDEO PCB ASS'Y	
Semiconductors			
IC41	HVINJM2296M	I.C , VIDEO SW	NJM2296M
IC42	HVINJM2296M	I.C , VIDEO SW	NJM2296M
IC43	HVINJM2296M	I.C , VIDEO SW	NJM2296M
IC48	CVIL7805CPNA	I.C ASS'Y	
IC49	CVIL7905CPNA	I.C ASS'Y	
	HVIL7805CP	I.C, REGULATOR	L7805CP
	HVIL7905CP	I.C, REGULATOR	L7905CP
IC71	HVITC74HCU04AFN	IC , INVERTER	TC74HCU04AFN
Resistors			
R111	CRD20TJ154T	RES , CARBON	150K OHM 1/5W J
R404	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R405	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R406	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R407	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R408	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R409	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R410	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R417	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R418	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R419	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R420	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R421	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R422	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R423	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R424	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R425	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R426	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R427	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R428	CRD20TJ332T	RES , CARBON	3.3K OHM 1/5W J
R430	CRD20TJ1R8T	RES , CARBON	1.8 OHM 1/5W J
R431	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R432	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R433	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R434	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R435	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R436	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R437	CRD25TJ102T	RES , CARBON	1K OHM 1/4W J
R438	CRD25TJ1R0T	RES , CARBON	1 OHM 1/4W J
R439	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R440	CRD20TJ1R8T	RES , CARBON	1.8 OHM 1/5W J
R441	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R442	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R443	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R444	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R445	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R446	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R447	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J
R448	CRD20TJ1R8T	RES , CARBON	1.8 OHM 1/5W J
R449	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R450	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R451	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R452	CRD20TJ102T	RES , CARBON	1K OHM 1/5W J
R476	CRD20TJ101T	RES , CARBON	100 OHM 1/5W J
R701	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R702	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R703	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
R704	CRD20TJ1R0T	RES , CARBON	1 OHM 1/5W J
R705	CRD20TJ750T	RES , CARBON	75 OHM 1/5W J

Ref. Designator	Part Number	Description		
		VIDEO PCB ASS'Y		
R706	CRD20TJ750T	RES , CARBON		75 OHM 1/5W J
R707	CRD20TJ750T	RES , CARBON		75 OHM 1/5W J
R708	CRD20TJ101T	RES , CARBON		100 OHM 1/5W J
R709	CRD20TJ111T	RES , CARBON		110 OHM 1/5W J
R710	CRD20TJ1R0T	RES , CARBON		1 OHM 1/5W J
R711	CRD20TJ1R0T	RES , CARBON		1 OHM 1/5W J
R712	CRD20TJ101T	RES , CARBON		100 OHM 1/5W J
R713	CRD20TJ104T	RES , CARBON		100K OHM 1/5W J
R714	CRD20TJ104T	RES , CARBON		100K OHM 1/5W J
R481	CRG2ANJ150H	RES , METAL OXIDE FILM		15 OHM 2W J
Miscellaneous				
BN14	CWB4F232450PU	WIRE ASS'Y		
BN17	KJP12GB143ZP	DIP SOCKET		3011 - DR12 - G
CN21	KJP02GA89ZM	WAFER		MOLEX35328-02
CN41	KJP06GA19ZM	WAFER		MOLEX53014-0610
CN43	CJP09GA115ZY	WAFER , CARD CABLE		
JK42	CJJ9N001Z	JACK , S-VIDEO (2P/H)		
JK43	CJJ9S001Z	JACK , S-VIDEO (3P/H)		
JK49	CJJ4N043Z	JACK , BOARD		
JK50	CJJ4S010Z	JACK , BOARD		
JK71	HJSTORX179L	MODULE , OPTICAL(RX)		TORX179L
JK72	HJSTORX179L	MODULE , OPTICAL(RX)		TORX179L
JK73	CJJ4S022Z	JACK , BOARD		
JK74	HJSTOTX179L	MODULE , OPTICAL(TX)		TOTX179L
JW11	CWEP202110VV	WIRE		
BIAS TRANSISTOR PCB ASS'Y				
Capacitors				
C853	HCEA1HH100T	CAP , ELECT		10UF 50V
C854	HCEA1HH100T	CAP , ELECT		10UF 50V
C855	HCEA1HH100T	CAP , ELECT		10UF 50V
C856	HCEA1HH100T	CAP , ELECT		10UF 50V
C857	HCEA1HH100T	CAP , ELECT		10UF 50V
C922	HCEA1EH101T	CAP , ELECT		100UF 25V
C923	HCEA1EH101T	CAP , ELECT		100UF 25V
C924	HCEA1EH101T	CAP , ELECT		100UF 25V
C925	CCKT1H223ZF	CAP , CERAMIC		0.022UF 50V ZF
C926	CCKT1H223ZF	CAP , CERAMIC		0.022UF 50V ZF
C927	CCKT1H223ZF	CAP , CERAMIC		0.022UF 50V ZF
C931	HCEA1HH4R7T	CAP , ELECT		4.7UF 50V
C928	CCEA1CH472E	CAP , ELECT		
C929	CCEA1EH332F	CAP , ELECT		
C930	CCEA1EH222E	CAP. ELECT.		2200UF 25V
Semiconductors				
D903	KVD1N4003SRT	DIODE	TW	1N4003
D904	KVD1N4003ST	DIODE		1N4003
D905	KVD1N4003ST	DIODE		1N4003
D906	KVD1N4003ST	DIODE		1N4003
D907	KVD1N4003ST	DIODE		1N4003
D915	HVD1SS133MT	DIODE		1SS133T-77
D916	HVD1SS133MT	DIODE		1SS133T-77
IC91	HVIL7815CP	I.C, REGULATOR		L7815CP
IC92	HVIL7915CP	I.C, REGULATOR		L7915CP
IC93	HVIL7805CP	I.C, REGULATOR		L7805CP

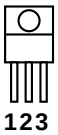
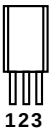
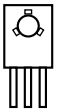
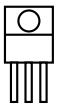
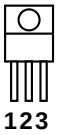
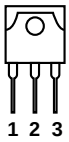
Ref. Designator	Part Number	Description	
		BIAS TRANSISTOR PCB ASS'Y	
Q853	HVTKTD600KGR	TRANSISTOR, NPN, BIAS	KTD600KGR
Q854	HVTKTD600KGR	TRANSISTOR, NPN, BIAS	KTD600KGR
Q855	HVTKTD600KGR	TRANSISTOR, NPN, BIAS	KTD600KGR
Q856	HVTKTD600KGR	TRANSISTOR, NPN, BIAS	KTD600KGR
Q857	HVTKTD600KGR	TRANSISTOR, NPN, BIAS	KTD600KGR
Resistors			
R876	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R877	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R878	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R879	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R880	CRD20TJ331T	RES , CARBON	330 OHM 1/5W J
R884	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R885	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R886	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R887	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R888	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R912	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R913	CRD20TJ153T	RES , CARBON	15K OHM 1/5W J
R914	CRD20TJ103T	RES , CARBON	10K OHM 1/5W J
VR83	HVN1RA221B01T	RES , SEMI FIXED(220 OHM)	RH0615C100221
VR84	HVN1RA221B01T	RES , SEMI FIXED(220 OHM)	RH0615C100221
VR85	HVN1RA221B01T	RES , SEMI FIXED(220 OHM)	RH0615C100221
VR86	HVN1RA221B01T	RES , SEMI FIXED(220 OHM)	RH0615C100221
VR87	HVN1RA221B01T	RES , SEMI FIXED(220 OHM)	RH0615C100221
Miscellaneous			
CN81	KJP02GB46ZM	WAFER	
CN82	KJP02GB46ZM	WAFER	
CN83	KJP02GB46ZM	WAFER	
CN84	KJP02GB46ZM	WAFER	
CN85	KJP02GB46ZM	WAFER	
CN96	KJP08GA01ZM	WAFER	MOLEX 5267-08A
CN98	BJP08GB131ZK	WAFER	
BOTTOM CHASSIS/POWER SUPPLY ASS'Y			
Capacitors			
C117	HCEA1HH4R7T	CAP , ELECT	4.7UF 50V
C118	CCKT1H103ZF	CAP , CERAMIC	0.01UF 50V ZF
C119	HCEA1HH470T	CAP , ELECT	47UF 50V
C120	HCEA1HH470T	CAP , ELECT	47UF 50V
C121	CCKT1H103ZF	CAP , CERAMIC	0.01UF 50V ZF
C122	HCEA1JH101E	CAP , ELECT	100UF 63V
C931	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C932	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C933	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C934	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C925	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C926	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C931	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C932	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C933	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C934	HCQI1H473JZT	CAP , MYLAR	0.047UF 50V J
C925	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C926	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C927	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J

Ref. Designator	Part Number	Description	
		BOTTOM CHASSIS/POWER SUPPLY ASS'Y	
C928	HCQI1H103JZT	CAP , MYLAR	0.01UF 50V J
C921	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C922	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C923	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C924	HCQI1H104JZT	CAP , MYLAR	0.1UF 50V J
C107	CCKT1H103ZF	CAP , CERAMIC	0.01UF 50V ZF
C108	CCKT1H103ZF	CAP , CERAMIC	0.01UF 50V ZF
C109	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V ZF
C110	CCFT1H104ZF	CAP , SEMICONDUCTOR	0.1UF 50V ZF
C111	CCKT1H103ZF	CAP , CERAMIC	0.01UF 50V ZF
C112	CCKT1H103ZF	CAP , CERAMIC	0.01UF 50V ZF
Resistors			
R101	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R104	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R105	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R106	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R107	KRQ1AJR47H	RES , FUSE	0.47 OHM 1W J
R108	CRD20TJ4R7T	RES , CARBON	4.7 OHM 1/5W J
R109	CRD20TJ100T	RES , CARBON	10 OHM 1/5W J
R110	CRD20TJ4R7T	RES , CARBON	4.7 OHM 1/5W J
R112	CRD20TJ122T	RES , CARBON	1.2K OHM 1/5W J
R113	CRD20TJ473T	RES , CARBON	47K OHM 1/5W J
Semiconductors			
D101	HVDMTZJ15BT	DIODE , ZENER	15V 1/2W
D102	HVDMTZJ27BT	DIODE , ZENER	27V 1/2W
D108	KVD1N4003ST	DIODE	1N4003
D109	HVDMTZ12BT	DIODE , ZENER(20MM)	12V 1/2W
D111	HVDMTZJ12BT	DIODE , ZENER	12V 1/2W
Q104	HVTKSC2316YT	TRANSISTOR	KSC2316Y
D104	KVD1N4003ST	DIODE	1N4003
D105	KVD1N4003ST	DIODE	1N4003
D106	KVD1N4003ST	DIODE	1N4003
D107	KVD1N4003ST	DIODE	1N4003
D992	CVDKBU804FMA	BRIDGE DIODE ASS'Y	KBU804F
D991	CVDKBU804FMA	BRIDGE DIODE ASS'Y	KBU804F
	HVDKBU804F	DIODE , BRIDGE	
	HVDKBU804F	DIODE , BRIDGE	
Miscellaneous			
	CTB3+10GFZ	SCREW	
	CTB3+6J	SCREW	
	CTB3+8J	SCREW	
	CTB3+8JFZ	SCREW	
	CTW3+12J	SCREW	
	CTW3+8J	SCREW	
	CUA1A229	CHASSIS , BOTTOM	AVR130/230/330
	KHE36-3	CLAMPER , WIRE	
	KHG1A050	RUBBER , CUSHION	
	KHR1A028	BUSHING , AC CORD	
	KHR301	CLAMPER	
CB13	CWC1C4A13B080B	CABLE , CARD 80mm 13P	
CB15	CWC1C4A09B100B	CABLE , CARD 100mm 8P	
	CHD1A012Z	SCREW , SPECIAL	AVR125CC
	CHD1A023	SCREW , TRANS	M4X10(SP/WA)
	CHD2A012	SCREW , TR	
	CHE170	HOLDER , PCB	

Ref. Designator	Part Number	Description	
		BOTTOM CHASSIS/POWER SUPPLY ASS'Y	
	CHG1A104	CUSHION , EVA	H=9.5(15X20)
	CHG1A157	CUSHION , RUBBER	
	CJA523FBYA	CORD , POWER	
	CKF1A254Z	PANEL , REAR	AVR130
	CKL1A069H43	FOOT	AVR125/225
	CLZ9W003Z	FERRITE , RING	29X7.7X19
	CMD1A487	BRACKET , TRANS	AVR130/230/330
F903	KBA2C6300TLUZ	FUSE	
F904	KBA2C6300TLUZ	FUSE	
F905	KBA2C4000TLUZ	FUSE	
F906	KBA2C4000TLUZ	FUSE	
F907	KBA2C6300TLUZ	FUSE	
F901	KBA2D2500TLET	FUSE	2.5A
F902	KBA2D2500TLET	FUSE	2.5A
T901	CLT5V034ZU	TRANS , POWER	
CN13	KJP05GA01ZM	WAFER	MOLEX 5267-05A
CN19	KJP03GA90ZM	WAFER	MOLEX35313-0310
CN20	KJP04GA90ZM	WAFER	MOLEX35313-0310
CN81	KJP08GA01ZM	WAFER	MOLEX 5267-08A
CN84	KJP02KA060ZY	WAFER	7.92MM(YUNHO)
	CMY1A219	HEAT SINK (BRIDGE DIODE)	AVR230/330/4600
	CTB3+12J	SCREW	
	CMY1A219	HEAT SINK (BRIDGE DIODE)	AVR230/330/4600
	CTB3+12J	SCREW	
F903	KJCFC5S	HOLDER , FUSE	
F904	KJCFC5S	HOLDER , FUSE	
F905	KJCFC5S	HOLDER , FUSE	
F906	KJCFC5S	HOLDER , FUSE	
F907	KJCFC5S	HOLDER , FUSE	6.3A
	CMY1A218	HEAT SINK(TR)	AVR130/230/330
	CTB3+8J	SCREW	
	CMY1A218	HEAT SINK(TR)	AVR130/230/330
	CTB3+8J	SCREW	
OL91	KJJ7A015Z	OUTLET , AC(UL/2P/SEP)	A204D0041P
SW91	KST1A010Z	SW , TACT CN	
BN91	CWB4FE53130PU	WIRE ASS'Y	
BN96	CWB1C908150BM	WIRE ASS'Y	

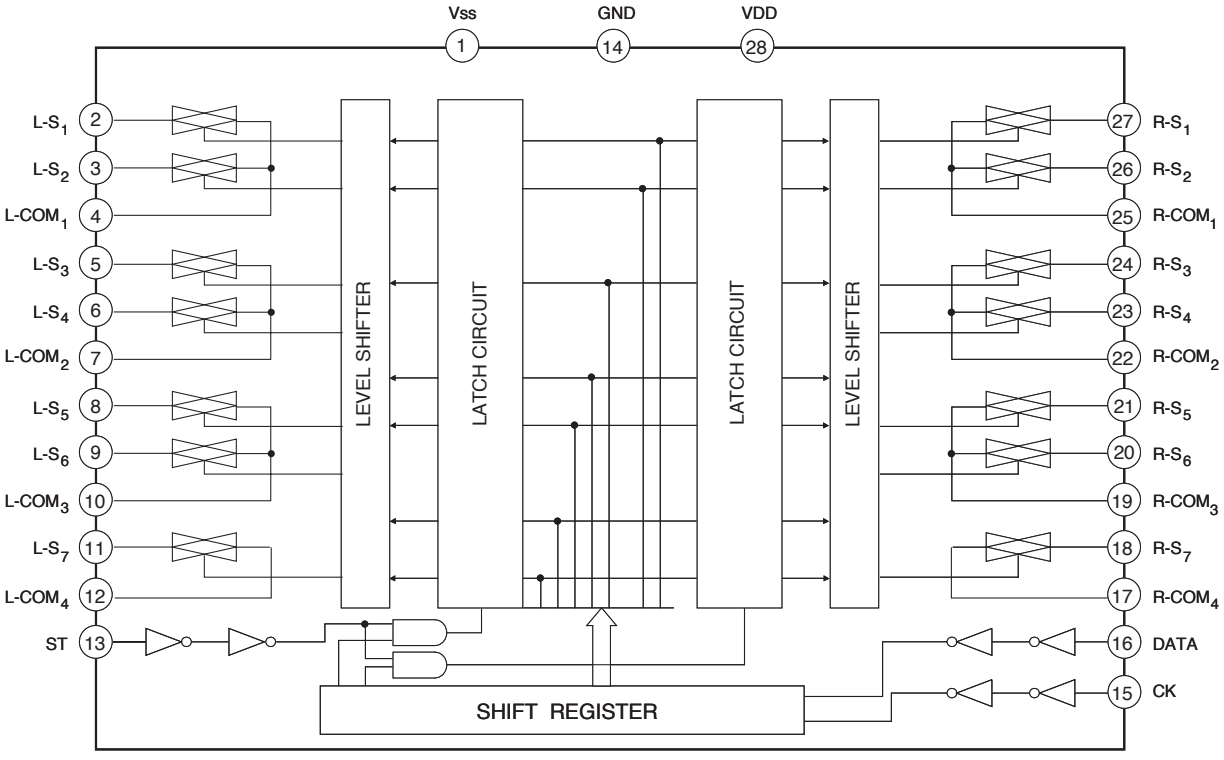
CNVKSTM9014MS07	**TUNER MODULE(USA)**

TRANSISTOR, REGULATOR IC BLOCK DIAGRAM

TO-92M  1. Emitter 2. Collector 3. Base KTC2874B KSC2785Y KRA107M KRC107M	TO-92  1. Emitter 2. Collector 3. Base KTD1302T KTA1268GR KTC3200GR KTC3198Y KTA1271Y	TO-220  1. GND 2. INPUT 3. OUTPUT MCNJM7905 MC7915C	TO-92L  1. Emitter 2. Collector 3. Base KTA1024Y KSC2316Y
TO-126  1. Emitter 2. Collector 3. Base 2SA1360O 2SC3423O KTD600KG	TO-220  1. Base 2. Collector 3. Emitter KSA614Y	TO-220  1. INPUT 2. GND 3. OUTPUT MC7815C MC7805C	TO-3P  1. Base 2. Collector 3. Emitter 2SB1560 2SD2390

TC9162AF (FUNCTION/INPUT : IC30)

■ BLOCK DIAGRAM



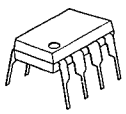
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

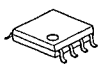
■ GENERAL DESCRIPTION

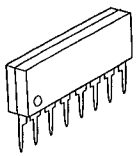
The NJM4556A integrated circuit is a high-gain, high output current dual operational amplifier capable of driving ±70mA into 150 Ω loads (±10.5V output voltage), and operating low supply voltage (V^+/V^-=±2V~).

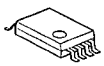
The NJM4556A combines many of the fetures of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ PACKAGE OUTLINE


NJM4556AD


NJM4556AM

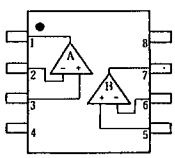

NJM4556AL


NJM4556AV

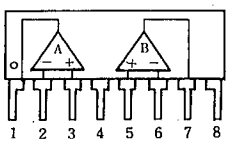
■ FEATURES

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

■ PIN CONFIGURATION



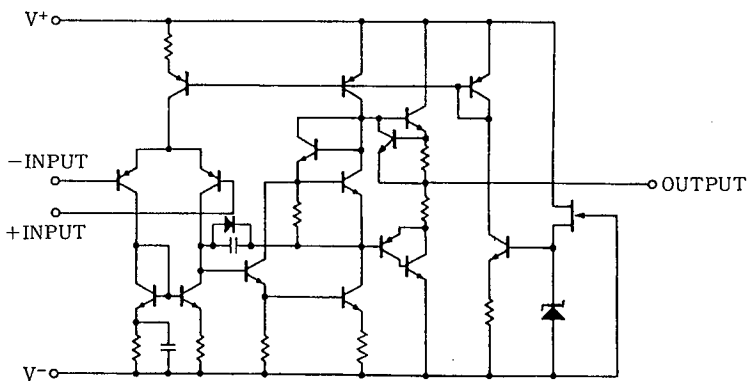
NJM4556AD
NJM4556AM
NJM4556AV



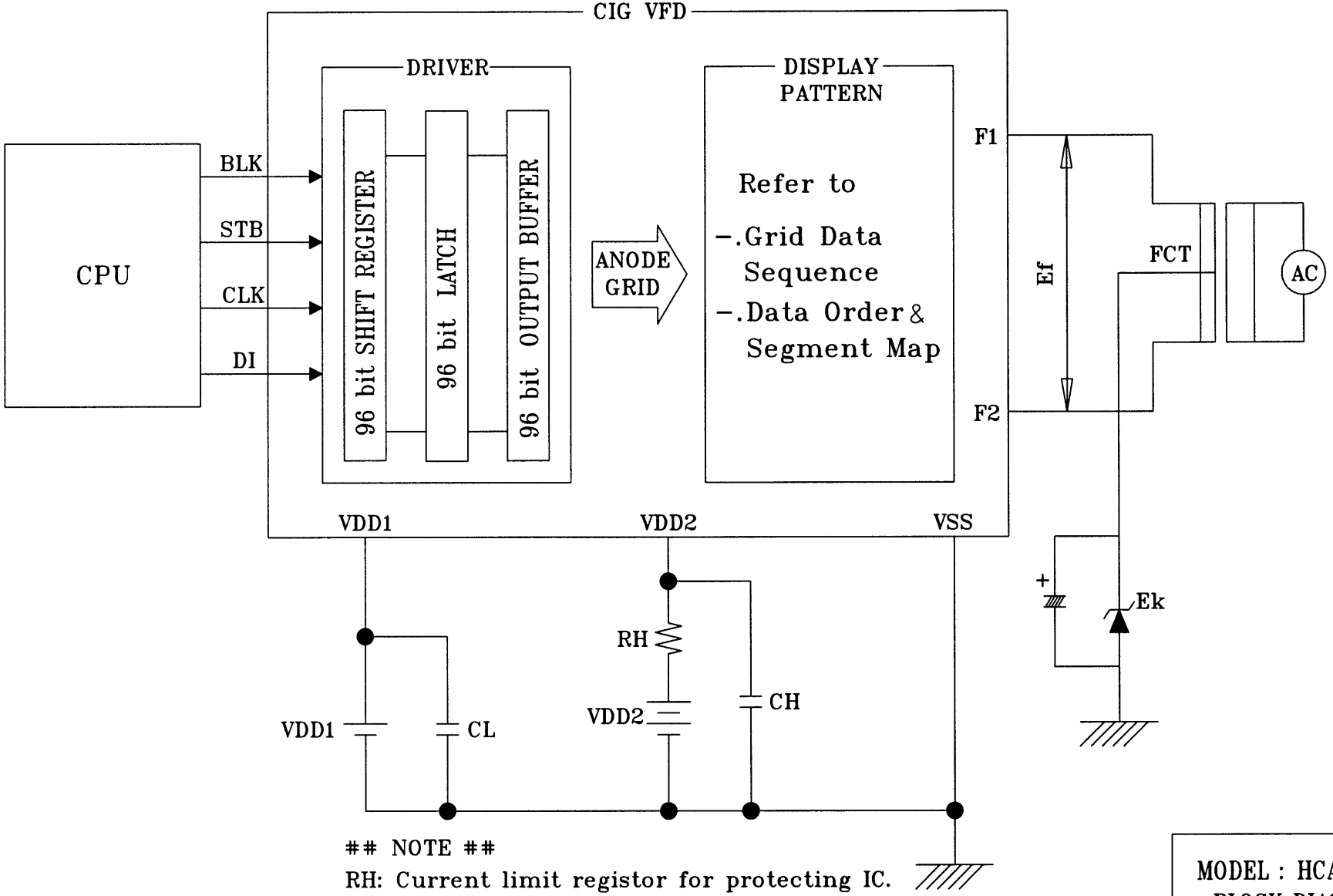
NJM4556AL

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

■ EQUIVALENT CIRCUIT (1/2 Shown)



BLOCK DIAGRAM



NOTE

RH: Current limit registor for protecting IC.

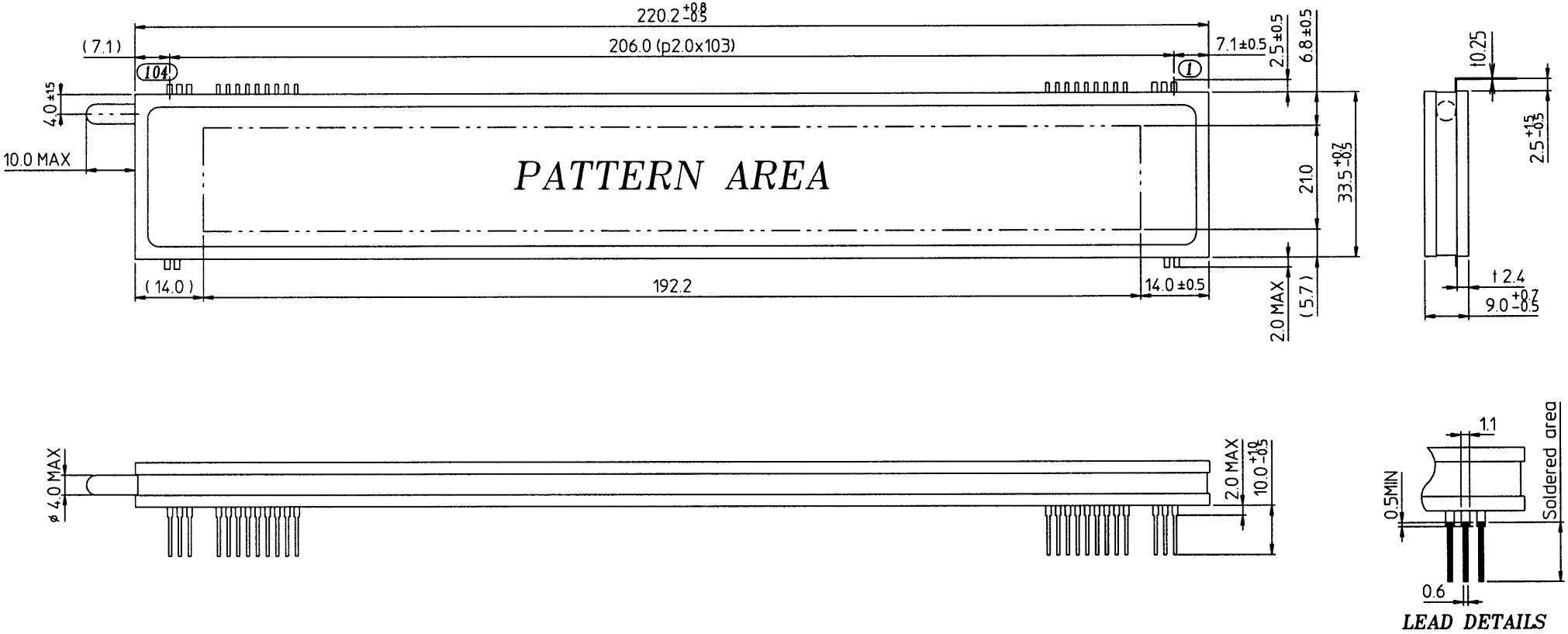
CH,CL: Low pass filter for noise filtering.

RH: 22Ω, CH: 0.1μF, CL: 0.1μF

FCT: Filament is center-tab grounded.

MODEL : HCA-18ML01
BLOCK DIAGRAM
Rev. ① 20-Feb-2003

OUTER DIMENSIONS



LEAD DETAILS

PIN CONNECTION

PIN NO.	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90~15	14~6	5	4	3	2	1
CONNECTION	F2	F2	F2	NP	NP	VDD2	VSS	VSS	CLK	DO	DI	BLK	STB	VDD1	NP	NC	NP	NP	F1	F1	F1

*Notes

Fn : Filament Pin

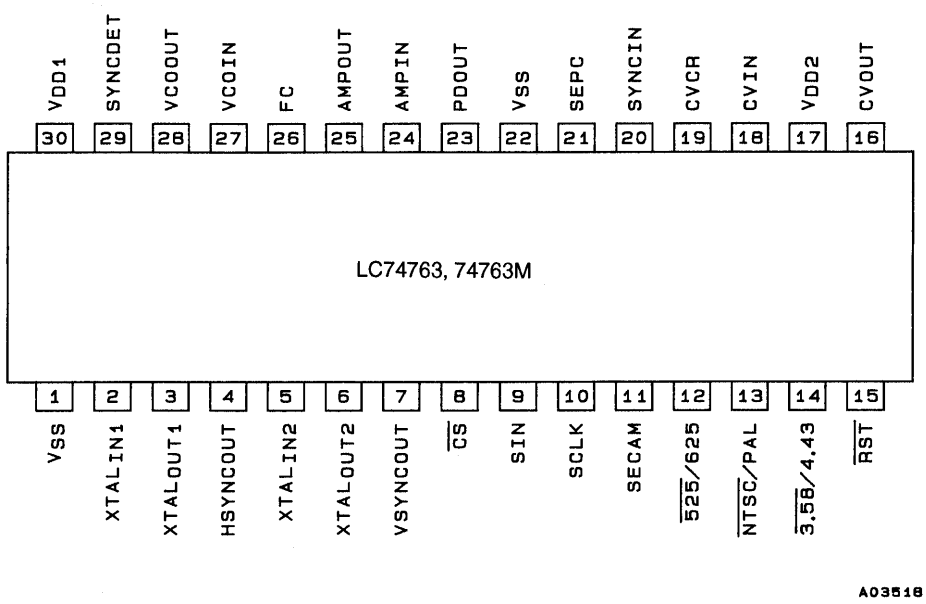
NP : No Pin

NC : No Connection Pin

* DO(Serial data output) : Be left open if not used.

MODEL : HCA-18ML01
OUTER DIMENSIONS
Rev. ① 20-Feb-2003

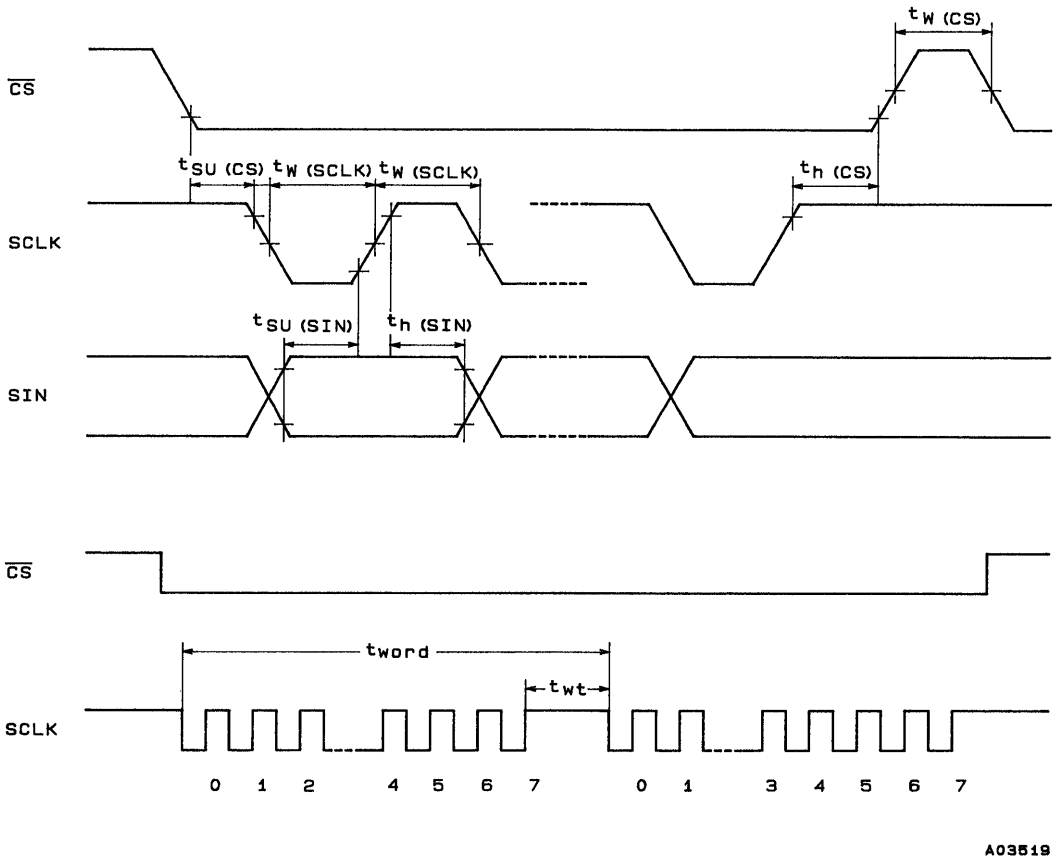
Pin Assignment



Top View

Top view

Serial Data Input Timing

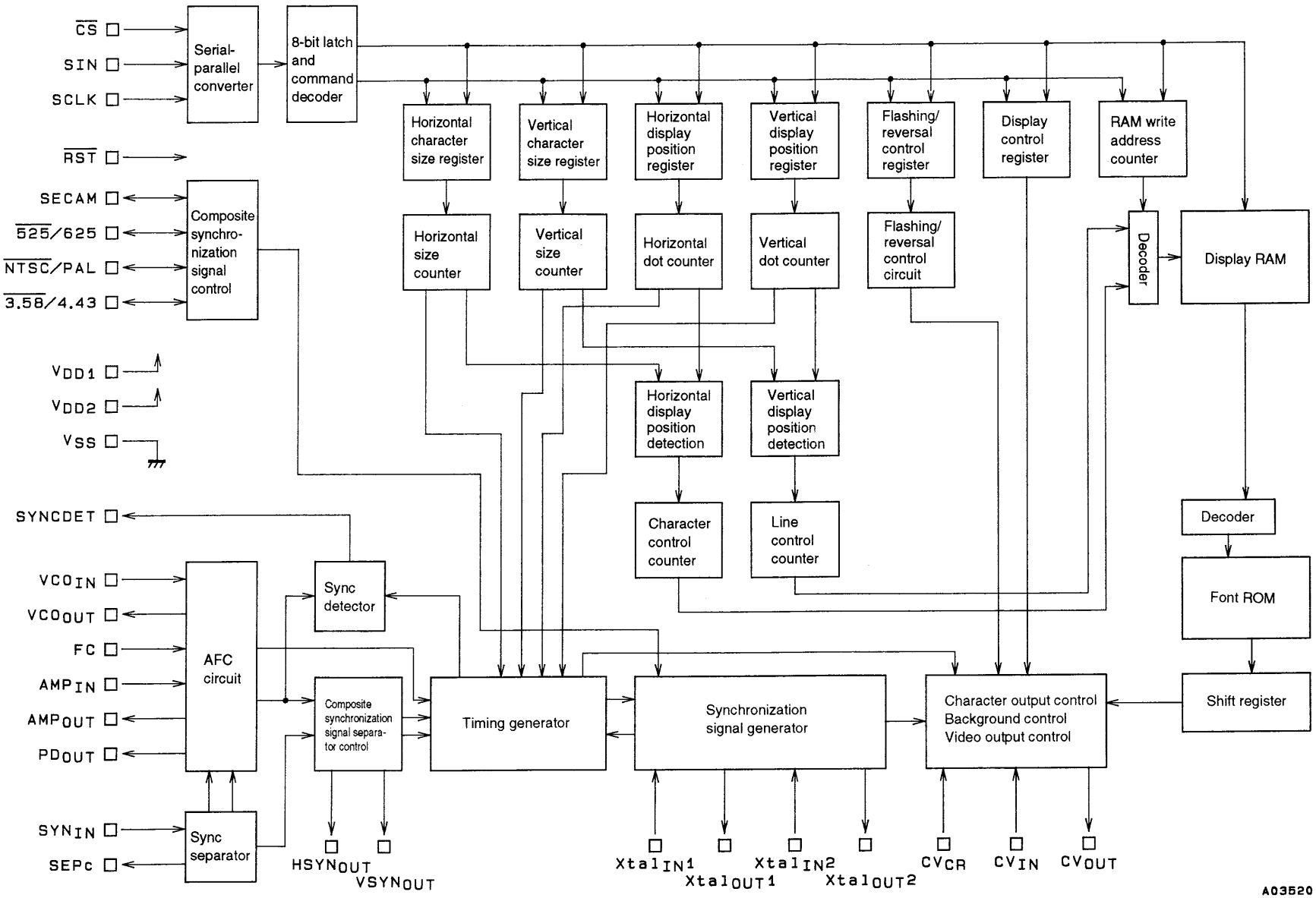


O.S.D IC (74763M)

Pin Functions (IC51)

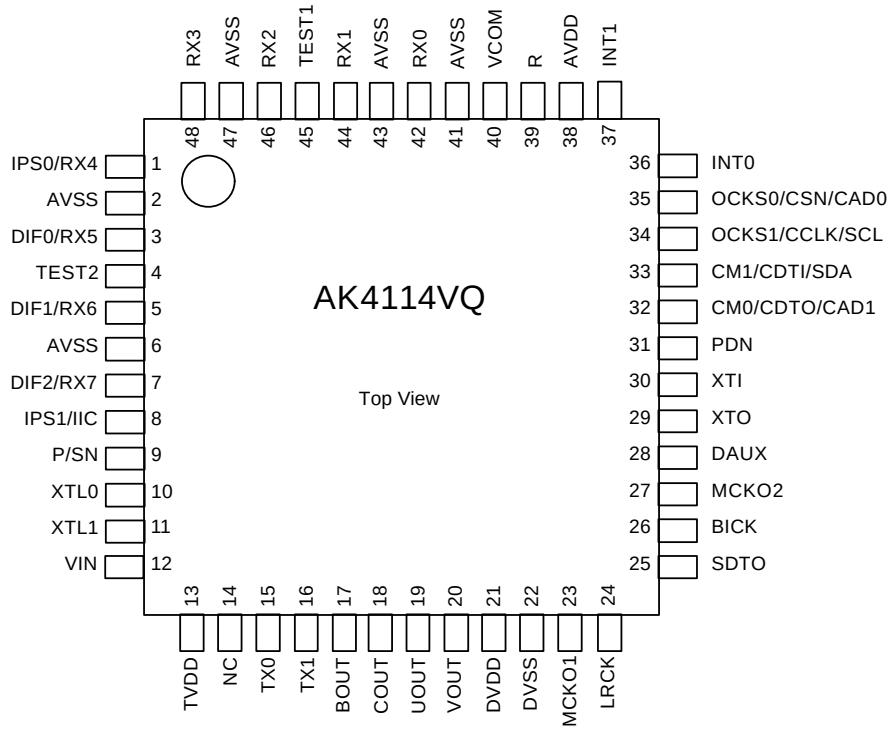
Pin No.	Symbol	Function	Description
1	V_{SS}	Ground	Ground connection
2	$Xtal_{IN1}$	Crystal oscillator connection	Connection for the crystal and capacitor used to form the crystal oscillator that generates the internal synchronization signal. The oscillator can be selected with a command switch.
3	$Xtal_{OUT1}$		
4	$HSYNC_{OUT}$	Horizontal synchronization output	Outputs the horizontal synchronization signal (AFC). The output polarity can be selected (metal option). Also functions as general output port (command switch).
5	$Xtal_{IN2}$	Crystal oscillator connection	Connection for the crystal and capacitor used to form the crystal oscillator that generates the internal synchronization signal.
6	$Xtal_{OUT2}$		
7	$VSYNC_{OUT}$	Vertical synchronization output	Outputs the vertical synchronization signal. The output polarity can be selected (metal option). Also functions as general output port (command switch).
8	$\overline{CS}$	Enable input	Enables/disables serial data input. Serial data is enabled when this pin is low (hysteresis input). Pull-up resistor built in (metal option).
9	SIN	Data input	Serial data input (hysteresis input). Pull-up resistor built in (metal option).
10	SCLK	Clock input	Clock input for serial data input (hysteresis input). Pull-up resistor built in (metal option).
11	SECAM	SECAM mode switch input/ output (command switch)	During input, switches between SECAM and other modes. During output, functions as general output port or internal V output (command switch). Low = other modes, high = SECAM mode
12	$\overline{525}$/625	525/625 switch input/output (command switch)	During input, switches between 525 scan lines and 625 scan lines. During output, functions as general output port or character data output (command switch). Low = 525 lines, high = 625 lines
13	$\overline{NTSC}$/PAL	NTSC/PAL switch input/output (command switch)	Switches the color mode between NTSC and PAL. During output, functions as general output port or frame data output (command switch). Low = NTSC, high = PAL
14	$\overline{3.58}$/4.43	3.58/4.43 switch input/output (command switch)	Switch FSC between 3.58 MHz and 4.43 MHz. During output, functions as general output port or halftone output (command switch). Low = 3.58, high = 4.43
15	$\overline{RST}$	Reset input	System reset input pin, low is active (hysteresis input). Pull-up resistor built in (metal option).
16	CV_{OUT}	Video signal output	Composite video output
17	V_{DD2}	Power supply connection	Power supply connection for composite video signal level generation
18	CV_{IN}	Video signal input	Composite video input
19	CV_{CR}	Video signal input	SECAM chroma signal input
20	$SYNC_{IN}$	Sync separator circuit input	Built-in sync separator circuit video signal input
21	SEP_{C}	Sync separator circuit	Built-in sync separator circuit
22	V_{SS}	Ground	Ground connection
23	PD_{OUT}	Control voltage output	AFC control voltage output
24	AMP_{IN}	AFC filter connection	Filter connection
25	AMP_{OUT}		
26	FC	Control voltage input	AFC control voltage input
27	VCO_{IN}	LC oscillator connection	VCO LC oscillator circuit coil and capacitor connection
28	VCO_{OUT}		
29	$SYNC_{DET}$	External synchronization signal detection output	Outputs the exclusive NOR of the horizontal synchronization signal (AFC) and CSYNC (sync separator). The output polarity can be selected (metal option). Also functions as general output port (command switch).
30	V_{DD1}	Power supply connection	Power supply connection (+5 V: digital system power supply)

System Block Diagram

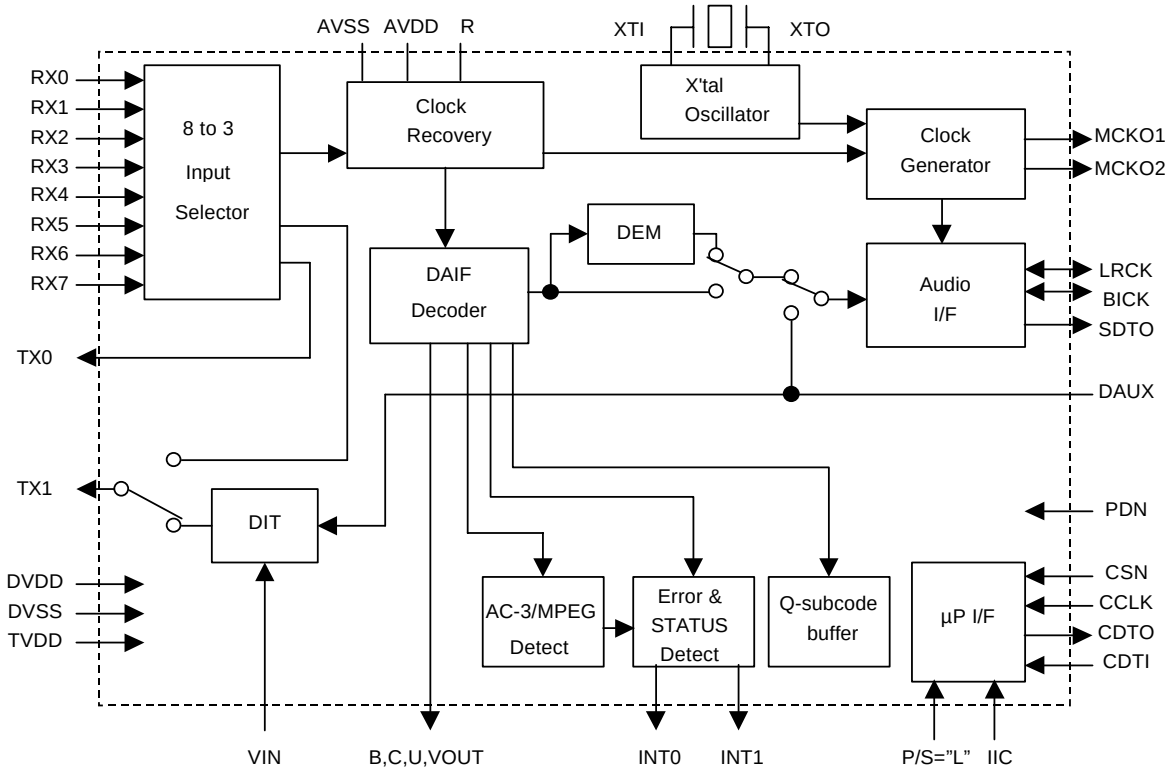


DIR IC PIN ASSIGNMENT & BLOCK DIAGRAM

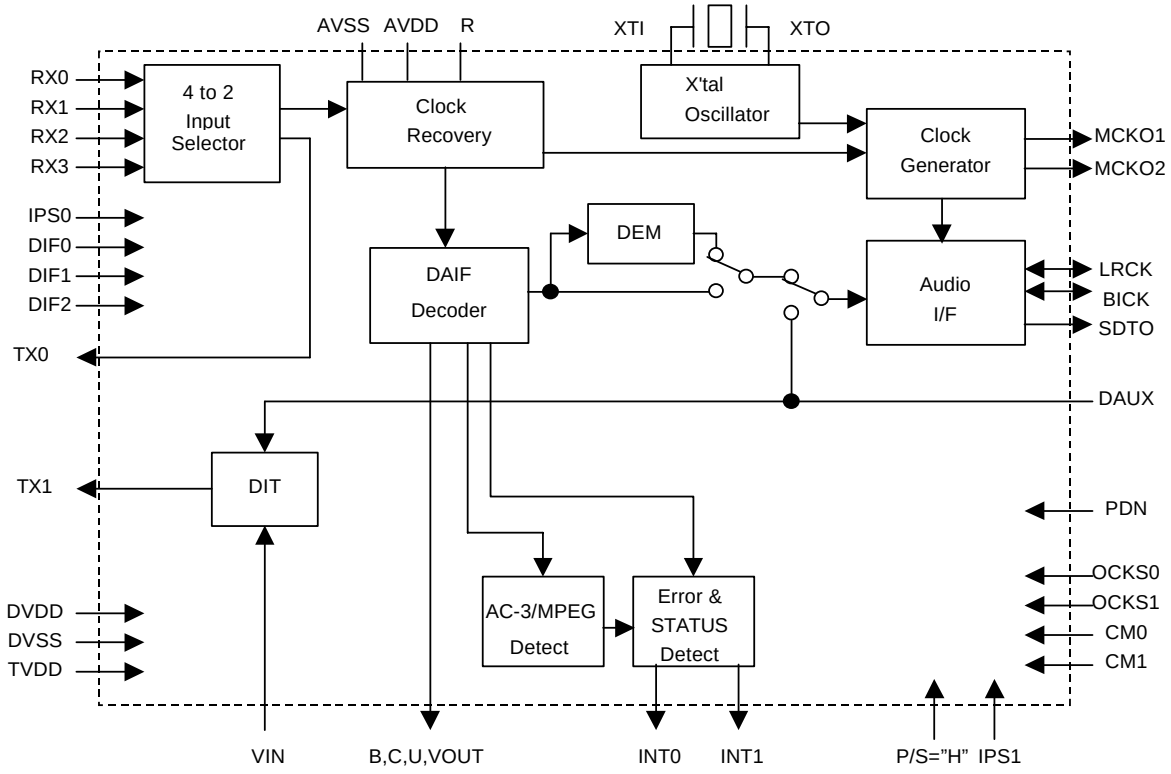
PIN ASSIGNMENT (TOP VIEW) : IC73



BLOCK DIAGRAM



Serial Control Mode



Parallel Control Mode

PIN/FUNCTION

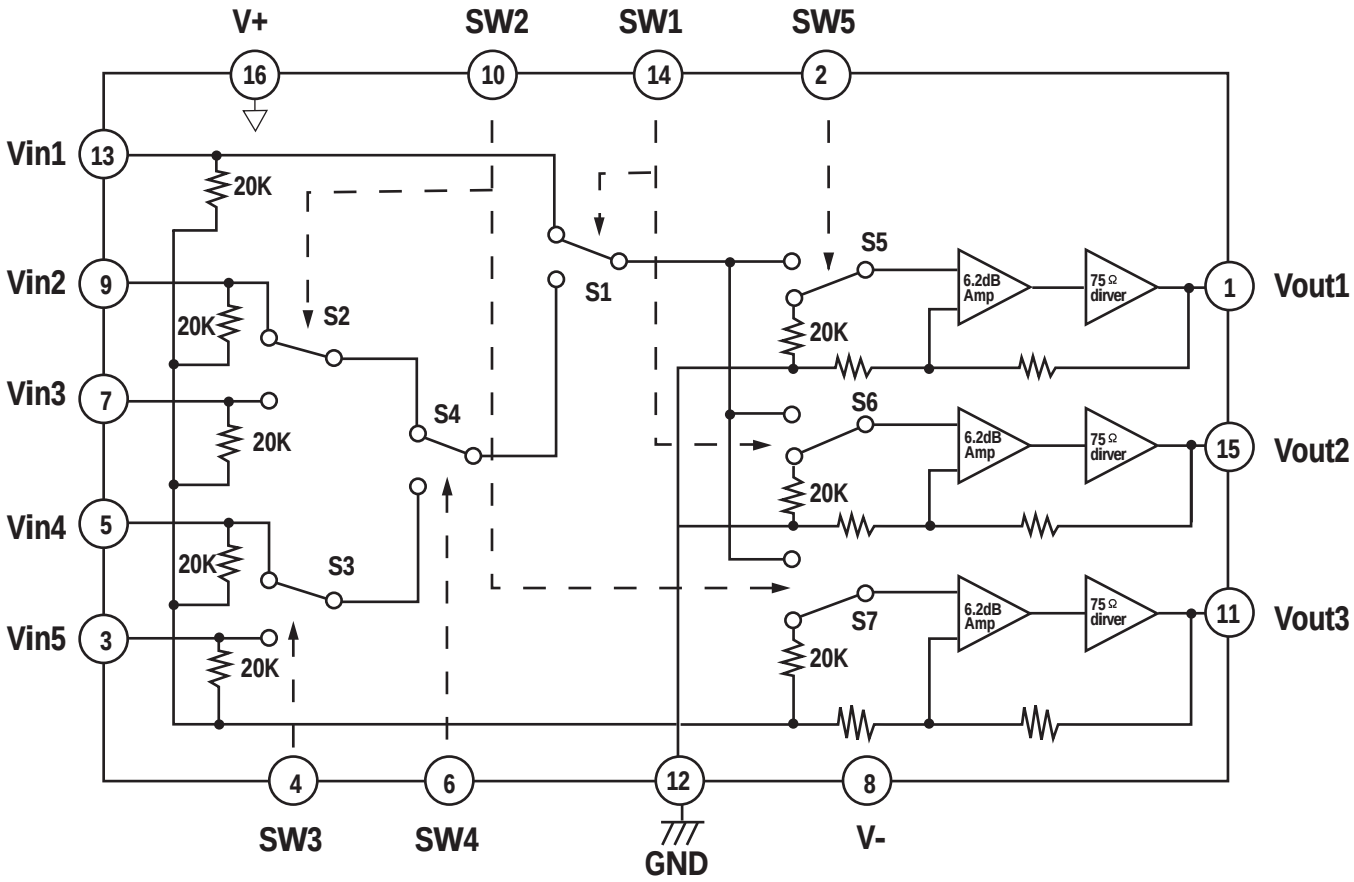
No.	Pin Name	I/O	Function
1	IPS0	I	Input Channel Select 0 Pin in Parallel Mode
	RX4	I	Receiver Channel 4 Pin in Serial Mode (Internal biased pin)
2	NC(AVSS)	I	No Connect No internal bonding. This pin should be connected to AVSS.
3	DIF0	I	Audio Data Interface Format 0 Pin in Parallel Mode
	RX5	I	Receiver Channel 5 Pin in Serial Mode (Internal biased pin)
4	TEST2	I	TEST 2 pin This pin should be connect to AVSS.
5	DIF1	I	Audio Data Interface Format 1 Pin in Parallel Mode
	RX6	I	Receiver Channel 6 Pin in Serial Mode (Internal biased pin)
6	NC(AVSS)	I	No Connect No internal bonding. This pin should be connected to AVSS.
7	DIF2	I	Audio Data Interface Format 2 Pin in Parallel Mode
	RX7	I	Receiver Channel 7 Pin in Serial Mode (Internal biased pin)
8	IPS1	I	Input Channel Select 1 Pin in Parallel Mode
	IIC	I	IIC Select Pin in Serial Mode. "L": 4-wire Serial, "H": IIC
9	P/SN	I	Parallel/Serial Select Pin "L": Serial Mode, "H": Parallel Mode
10	XTL0	I	X'tal Frequency Select 0 Pin
11	XTL1	I	X'tal Frequency Select 1 Pin
12	VIN	I	V-bit Input Pin for Transmitter Output
13	TVDD	I	Input Buffer Power Supply Pin, 3.3V or 5V
14	NC	I	No Connect No internal bonding. This pin should be open or connected to DVSS.
15	TX0	O	Transmit Channel (Through Data) Output 0 Pin
16	TX1	O	When TX bit = "0", Transmit Channel (Through Data) Output 1 Pin. When TX bit = "1", Transmit Channel (DAUX Data) Output Pin (Default).
17	BOUT	O	Block-Start Output Pin for Receiver Input "H" during first 40 flames.
18	COUT	O	C-bit Output Pin for Receiver Input
19	UOUT	O	U-bit Output Pin for Receiver Input
20	VOUT	O	V-bit Output Pin for Receiver Input
21	DVDD	I	Digital Power Supply Pin, 3.3V
22	DVSS	I	Digital Ground Pin
23	MCKO1	O	Master Clock Output 1 Pin
24	LRCK	I/O	Channel Clock Pin
25	SDTO	O	Audio Serial Data Output Pin
26	BICK	I/O	Audio Serial Data Clock Pin
27	MCKO2	O	Master Clock Output 2 Pin
28	DAUX	I	Auxiliary Audio Data Input Pin
29	XTO	O	X'tal Output Pin
30	XTI	I	X'tal Input Pin

PIN/FUNCTION (Continued)

No.	Pin Name	I/O	Function
31	PDN	I	Power-Down Mode Pin When “L”, the AK4114 is powered-down and reset.
32	CM0	I	Master Clock Operation Mode 0 Pin in Parallel Mode
	CDTO	O	Control Data Output Pin in Serial Mode, IIC= “L”.
	CAD1	I	Chip Address 1 Pin in Serial Mode, IIC= “H”.
33	CM1	I	Master Clock Operation Mode 1 Pin in Parallel Mode
	CDTI	I	Control Data Input Pin in Serial Mode, IIC= “L”.
	SDA	I/O	Control Data Pin in Serial Mode, IIC= “H”.
34	OCKS1	I	Output Clock Select 1 Pin in Parallel Mode
	CCLK	I	Control Data Clock Pin in Serial Mode, IIC= “L”
	SCL	I	Control Data Clock Pin in Serial Mode, IIC= “H”
35	OCKS0	I	Output Clock Select 0 Pin in Parallel Mode
	CSN	I	Chip Select Pin in Serial Mode, IIC=”L”.
	CAD0	I	Chip Address 0 Pin in Serial Mode, IIC= “H”.
36	INT0	O	Interrupt 0 Pin
37	INT1	O	Interrupt 1 Pin
38	AVDD	I	Analog Power Supply Pin, 3.3V
39	R	-	External Resistor Pin 18kΩ +/-1% resistor should be connected to AVSS externally.
40	VCOM	-	Common Voltage Output Pin 0.47μF capacitor should be connected to AVSS externally.
41	AVSS	I	Analog Ground Pin
42	RX0	I	Receiver Channel 0 Pin (Internal biased pin) This channel is default in serial mode.
43	NC(AVSS)	I	No Connect No internal bonding. This pin should be connected to AVSS.
44	RX1	I	Receiver Channel 1 Pin (Internal biased pin)
45	TEST1	I	TEST 1 pin. This pin should be connected to AVSS.
46	RX2	I	Receiver Channel 2 Pin (Internal biased pin)
47	NC(AVSS)	I	No Connect No internal bonding. This pin should be connected to AVSS.
48	RX3	I	Receiver Channel 3 Pin (Internal biased pin)

Note 1. All input pins except internal biased pins should not be left floating.

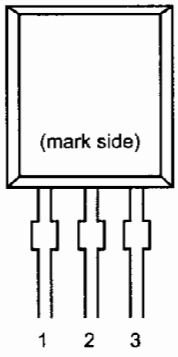
■ BLOCK DIAGAM (NJM2296M) : IC41, 42, 43



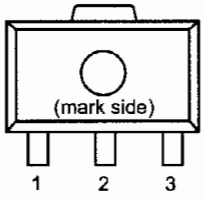
∗ Normally mute
Above circuits show that the switches are set at low.

PIN CONFIGURATION

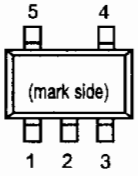
• TO-92



• SOT-89



• SOT-23-5



PIN DESCRIPTION

• TO-92

Pin No.	Symbol
1	OUT
2	VDD
3	GND

• SOT-89

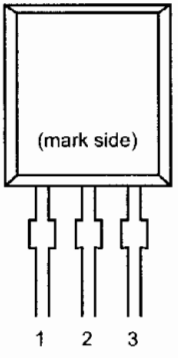
Pin No.	Symbol
1	OUT
2	VDD
3	GND

• SOT-23-5

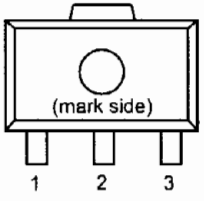
Pin No.	Symbol
1	OUT
2	VDD
3	GND
4	NC
5	NC

PIN CONFIGURATION

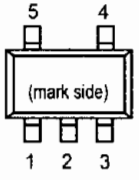
• TO-92



• SOT-89



• SOT-23-5



PIN DESCRIPTION

• TO-92

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

• SOT-89

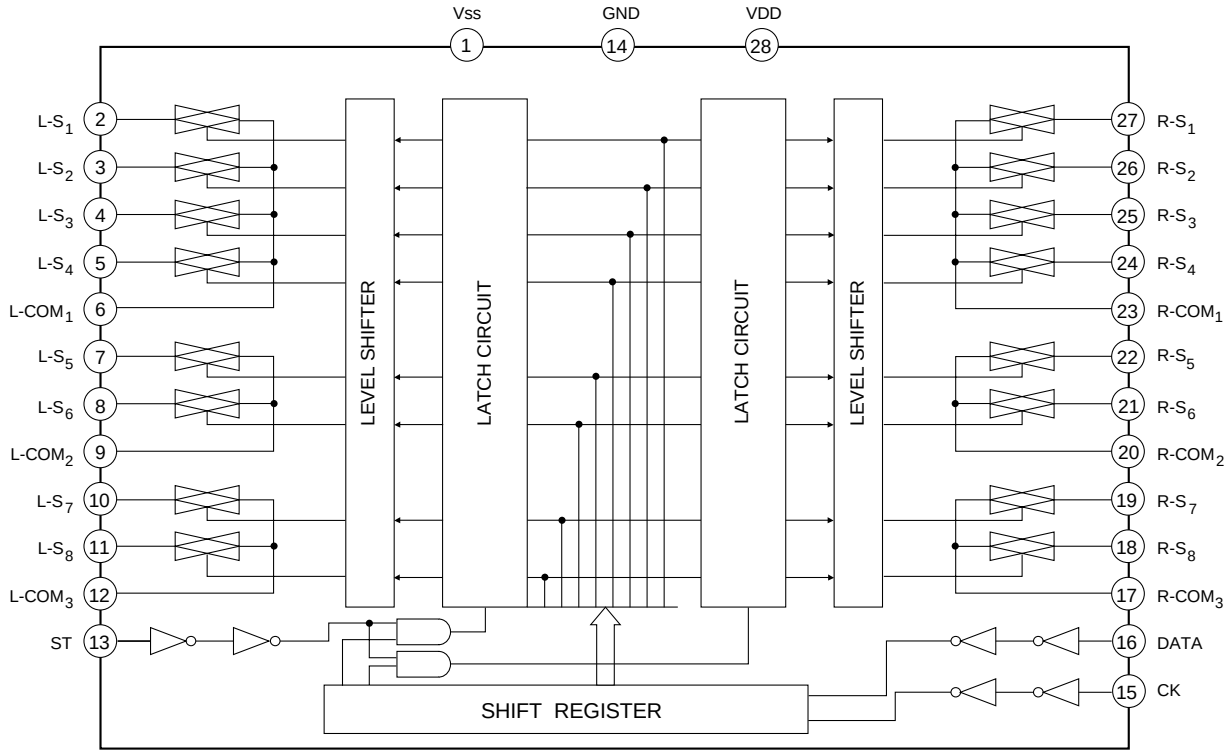
Pin No	Symbol
1	OUT
2	V_{DD}
3	GND

• SOT-23-5

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

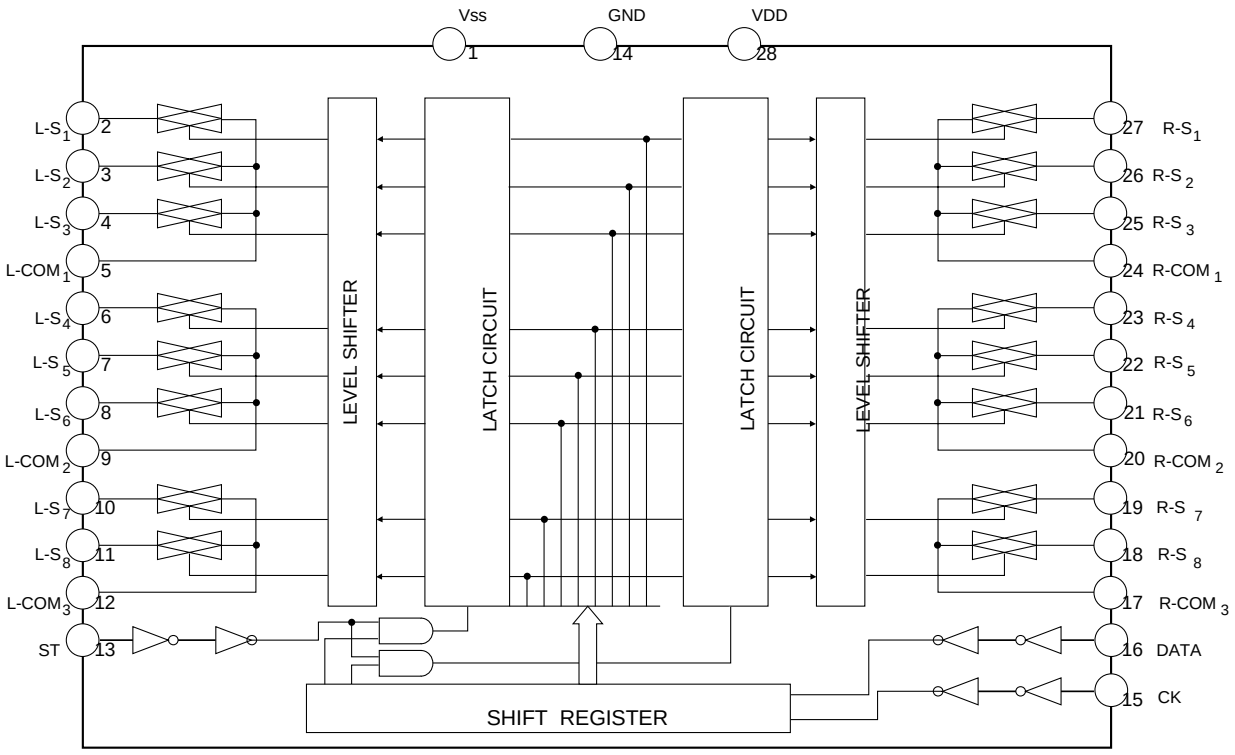
TC9164AF (FUNCTION/INPUT) : IC23

■ BLOCK DIAGRAM



TC9163AF (FUNCTION/INPUT) : IC21,24

■ BLOCK DIAGRAM



JRC **NJM2581**

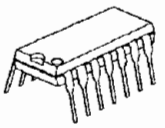
DUAL SUPPLY WIDE BAND 3ch VIDEO AMPLIFIER

■ GENERAL DESCRIPTION

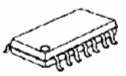
The **NJM2581** is a dual supply voltage wide band 3ch video amplifier. It is suitable for Y, Pb, and Pr signal because frequency range is 50MHz.

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

■ PACKAGE OUTLINE



NJM2581D

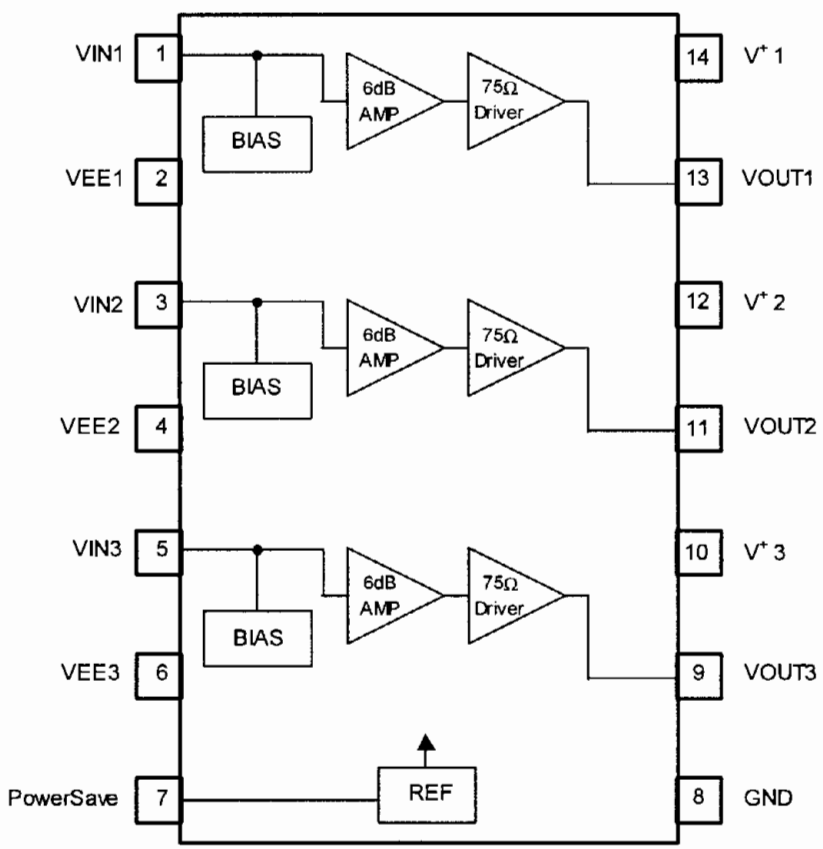


NJM2581M

■ FEATURES

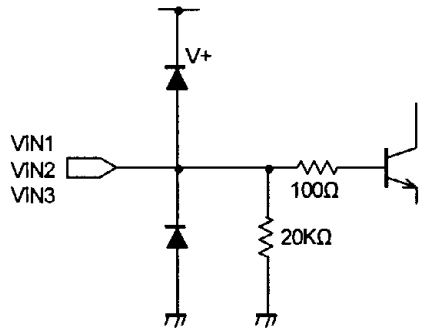
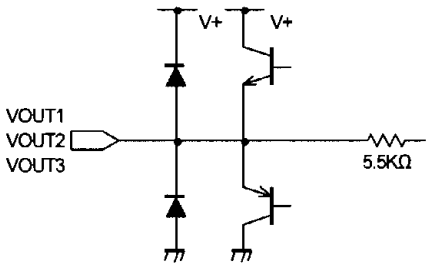
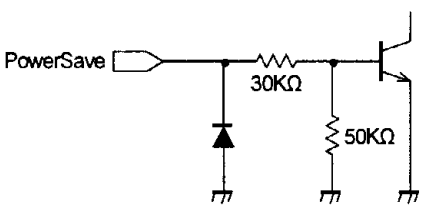
- Operating Voltage ±4.5 to ±5.5V
- Wide frequency range 50MHz at 0dB typ.
- Internal 6dB Amplifier
- Internal 75ΩDriver Circuit (2-system drive)
- Power Save Circuit
- Bipolar Technology
- Package Outline DIP14, DMP14

■ BLOCK DIAGRAM



NJM2581

■ EQUIVALENT CIRCUIT

PIN No.	PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
1 3 5	VIN1 VIN2 VIN3	Input	
13 11 9	VOUT1 VOUT2 VOUT3	Output	
7	PowerSave	Power Save	
14 12 10	V^+1 V^+2 V^+3	V+	———
2 4 6	VEE1 VEE2 VEE3	V-	———
8	GND	GND	———

BLOCK DIAGRAM (IC74)

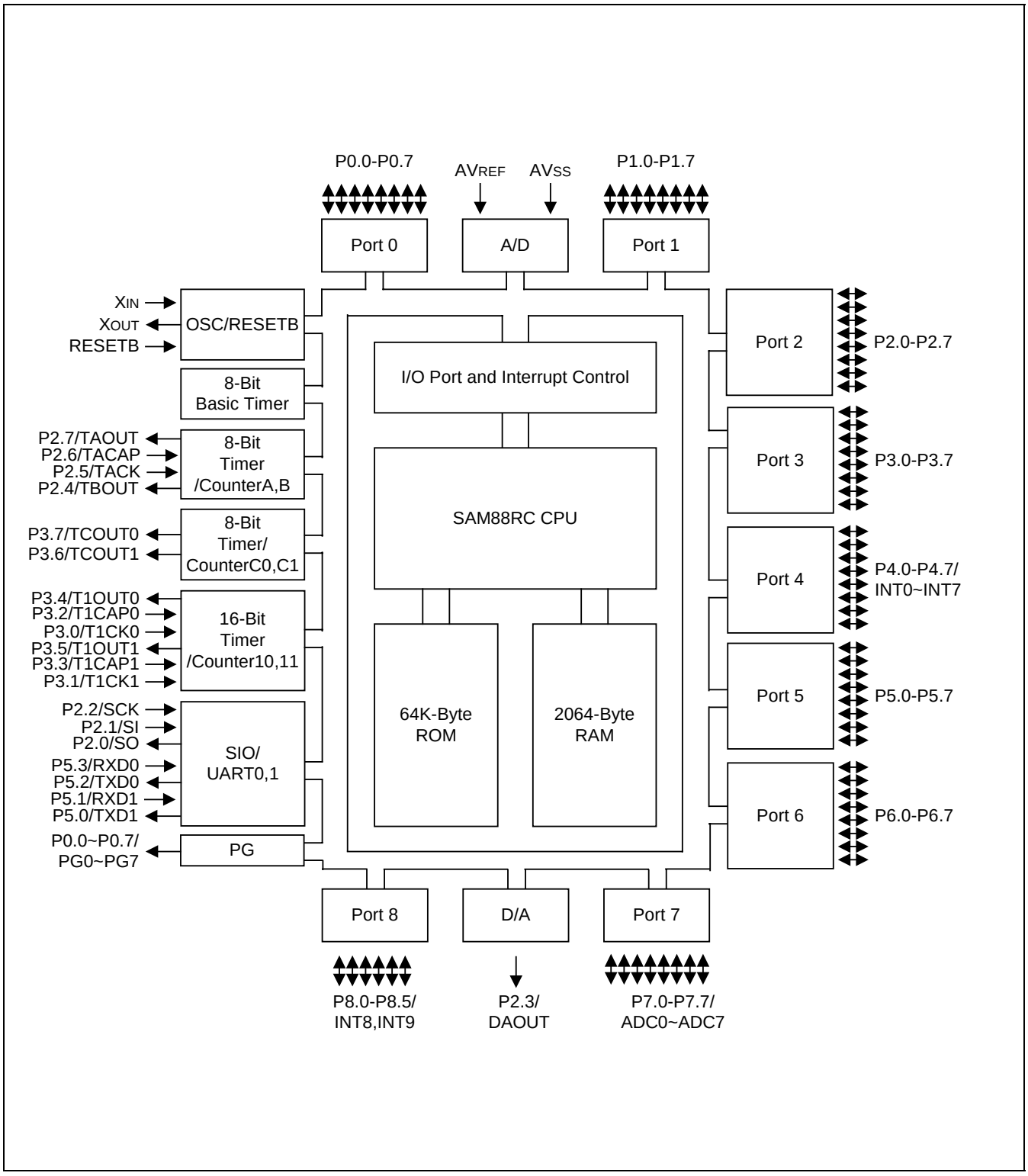


Figure 1-1. S3C84BB/F84BB Block Diagram

PIN ASSIGNMENT (IC74)

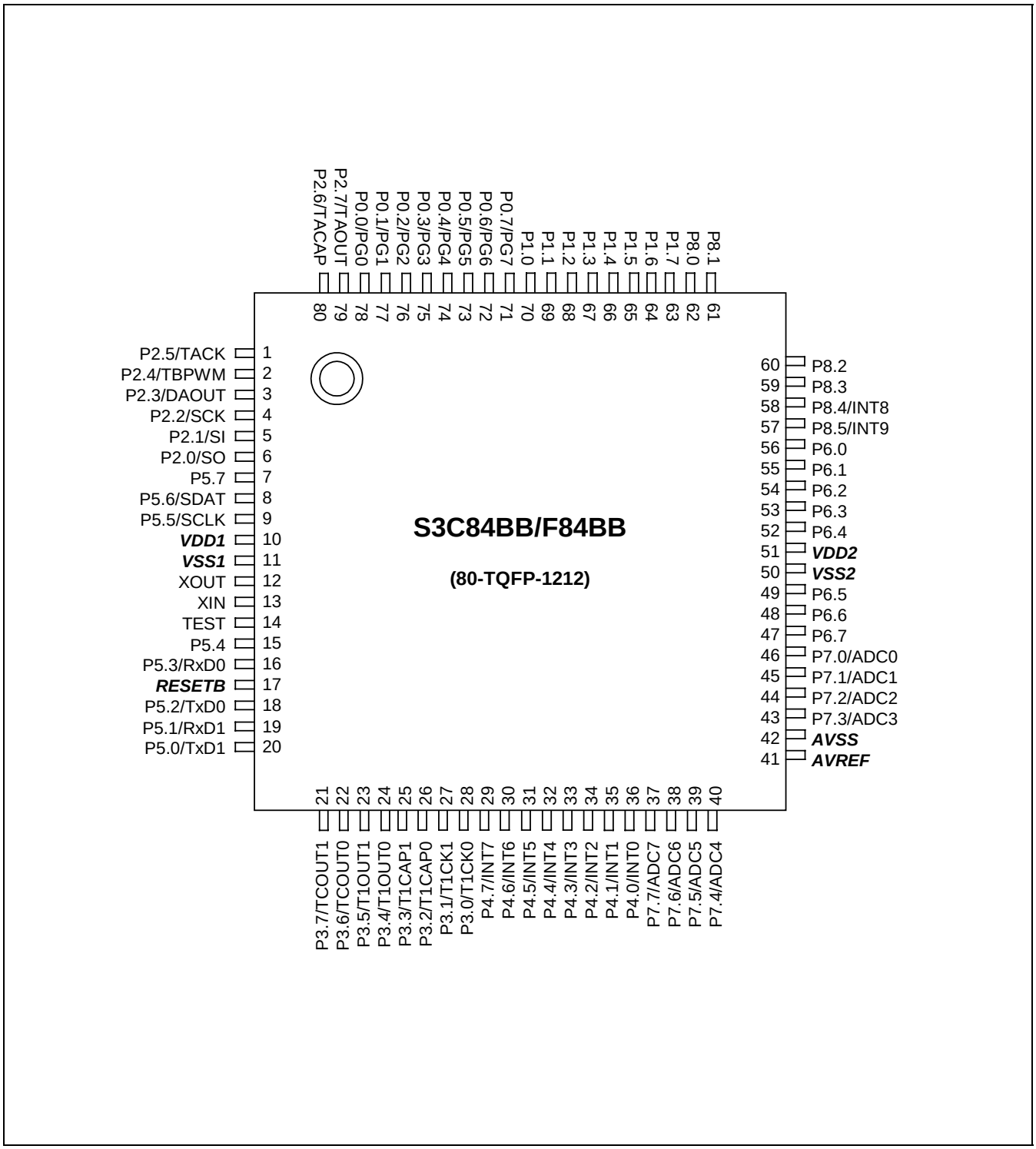


Figure 1-3. S3C84BB/F84BB Pin Assignment (80-TQFP)

PIN DESCRIPTIONS (IC74)

Table 1-1. S3C84BB/F84BB Pin Descriptions (80-QFP)

Pin Name	Pin Type	Pin Description	Circuit Type	Pin Number	Share Pins
P0.0 - P0.7	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up. Alternately, P0.0-P0.7 can be used as the PG output port (PG0-PG7).	D	80-73	PG0-PG7
P1.0 - P1.7	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up.	D	72-65	
P2.0 - P2.7	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up. Alternately, P2.0~P2.7 can be used as I/O for TIMERA, TIMERB, D/A, SIO	D,D-2	8-1	SO SI SCK DAOUT TBPWM TACK TACAP TAOUT
P3.0 - P3.7	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up. Alternately, P3.0~P3.7 can be used as I/O for TIMERC0/C1, TIMER10/11	D	30–23	T1CK0 T1CK1 T1CAP0 T1CAP1 T1OUT0 T1OUT1 TCOUT0 TCOUT1

Table 1-1. S3C84BB/F84BB Pin Descriptions (80-QFP) (Continued)

Pin Name	Pin Type	Pin Description	Circuit Type	Pin Number	Share Pins
P4.0 - P4.7	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up. P4.0-P4.7 can alternately be used as inputs for external interrupts INT0-INT7, respectively (with noise filters and interrupt controller)	D-1	38-31	INT0–INT7
P5.0 - P5.7	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up. Alternately, P5.0~P5.3 can be used as I/O for serial por, UART0, UART1, respectively.	G	22-17,11-9	TxD1 RxD1 TxD0 RxD0
P6.0 - P6.7	O	N-channel, open-drain output only port.	F	58–54,51-49	
P7.0 - P7.7	I	General-purpose digital input ports. Alternatively used as analog input pins for A/D converter modules.	E	48-45,42-39	ADC0-ADC7
P8.0 - P8.5	I/O	Bit programmable port; input or output mode selected by software; input or push-pull output. Software assignable pull-up. P8.4, P8.5 can alternately be used as inputs for external interrupts INT8, INT9, respectively (with noise filters and interrupt controller)	D,D-1	64-59	INT8,INT9

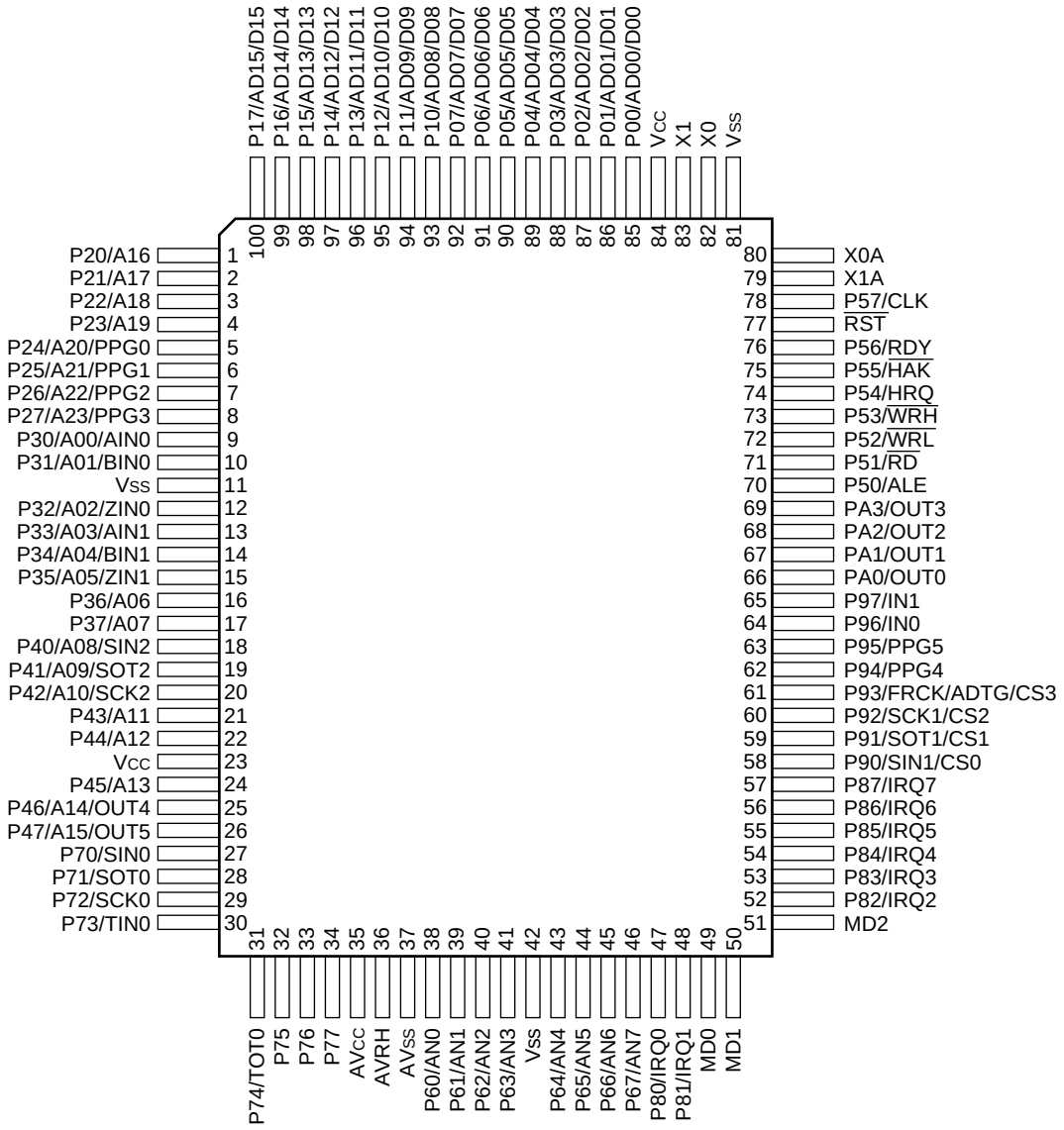
Table 1-1. S3C84BB/F84BB Pin Descriptions (80-QFP) (Continued)

Pin Name	Pin Type	Pin Description	Circuit Type	Pin Number	Share Pins
AD0 - AD7	I	Analog input pins for A/D converter module. Alternatively used as general-purpose digital input port 7.	E	48–45 42–39	P7.0–P7.7
AVREF, AVSS	-	A/D converter reference voltage and ground	-	43, 44	-
RxD0, RxD1	I/O	Serial data RxD pin for receive input and transmit output (mode 0)	D	18, 21	P5.3, P5.1
TxD0, TxD1	O	Serial data TxD pin for transmit output and shift clock input (mode 0)	D	20, 22	P5.2, P5.0
TACK	I	External clock input pins for timer A	D	3	P2.5
TACAP	I	Capture input pins for timer A	D	2	P2.6
TAOUT	O	Pulse width modulation output pins for timer A	D	1	P2.7
TBPWM	O	Carrier frequency output pins for timer B	D	4	P2.4
TCOUT0 TCOUT1	O	Timer C 8-bit PWM mode output or counter match toggle output pins	D	24,23	P3.6,P3.7
T1CK0 T1CK1	I	External clock input pins for timer 1	D	39,30	P3.0,P3.1
T1CAP0 T1CAP1	I	Capture input pins for timer 1	D	28,27	P3.2,P3.3
T1OUT0 T1OUT1	O	Timer 1 16-bit PWM mode output or counter match toggle output pins	D	26,25	P3.4,P3.5
SI,SO,SCK	I/O	Synchronous SIO pins	D	7,8,9	P2.1,P2.0, P2.2
RESETB	I	System reset pin (pull-up resistor: 240 kΩ)	B	19	-
TEST	I	Pull – down register connected internally	-	16	-
VDD1, VDD2, VSS1, VSS2	-	Power input pins	-	12,53, 13,52	-
XIN, XOUT	-	Main oscillator pins	-	15,14	-

U-COM IC PIN ASSIGNMENT & DESCRIPTIONS

■ PIN ASSIGNMENT (IC72)

(TOP VIEW)



(FPT-100P-M06)

■ PIN DESCRIPTIONS (IC72)

Pin No.		Pin name	Circuit type	Function
LQFP*1	QFP*2			
80	82	X0	A	Oscillator pin
81	83	X1	A	Oscillator pin
78	80	X0A	A	32 kHz oscillator pin
77	79	X1A	A	32 kHz oscillator pin
75	77	$\overline{\text{RST}}$	B	Reset input pin
83 to 90	85 to 92	P00 to P07	C (CMOS)	This is a general purpose I/O port. A setting in the pull-up resistance setting register (RDR0) can be used to apply pull-up resistance (RD00-RD07 = “1”) . (Disabled when pin is set for output.)
		AD00 to AD07		In multiplex mode, these pins function as the external address/ data bus low I/O pins.
		D00 to D07		In non-multiplex mode, these pins function as the external data bus low output pins.
91 to 98	93 to 100	P10 to P17	C (CMOS)	This is a general purpose I/O port. A setting in the pull-up resistance setting resister (RDR1) can be used to apply pull-up resistance (RD10-RD17 = “1”) . (Disabled when pin is set for output.)
		AD08 to AD15		In multiplex mode, these pins function as the external address/ data bus high I/O pins.
		D08 to D15		In non-multiplex mode, these pins function as the external data bus high output pins.
99, 100, 1,2	1 to 4	P20 to P23	E (CMOS/H)	This is a general purpose I/O port. When the bits of external address output control register (HACR) are set to "1" in external bus mode, these pins function as general purpose I/O ports.
		A16 to A19		When the bits of external address output control register (HACR) are set to "0" in multiplex mode, these pins function as address high output pins (A16-A19).
		A16 to A19		When the bits of external address output control register (HACR) are set to "0" in non-multiplex mode, these pins function as address high output pins (A16-A19).
3 to 6	5 to 8	P24 to P27	E (CMOS/H)	This is a general purpose I/O port. When the bits of external address output control register (HACR) are set to "1" in external bus mode, these pins function as general purpose I/O ports.
		A20 to A23		When the bits of external address output control register (HACR) are set to "0" in multiplex mode, these pins function as address high output pins (A20-A23).
		A20 to A23		When the bits of external address output control register (HACR) are set to "0" in non-multiplex mode, these pins function as address high output pins (A20-A23).
		PPG0 to PPG3		PPG timer output pins.

(Continued)

Pin No.		Pin name	Circuit type	Function
LQFP*1	QFP*2			
7	9	P30	E (CMOS/H)	This is a general purpose I/O port.
		A00		In non-multiplex mode, this pin functions as an external address pin.
		AIN0		8/16-bit up/down timer input pin (channel 0) .
8	10	P31	E (CMOS/H)	This is a general purpose I/O port.
		A01		In non-multplex mode, this pin functions as an external address pin.
		BIN0		8/16-bit up/down counter input pin (channel0) .
10	12	P32	E (CMOS/H)	This is a general purpose I/O port.
		A02		In non-multiplex mode, this pin functions as an external address pin.
		ZIN0		8/16-bit up/down counter input pin (channel 0)
11	13	P33	E (CMOS/H)	This is a general purpose I/O port.
		A03		In non-multiplex mode, this pin functions as an external address pin.
		AIN1		8/16-bit up/down counter input pin (channel 1) .
12	14	P34	E (CMOS/H)	This is a general purpose I/O port.
		A04		In non-multiplex mode, this pin functions as an external address pin.
		BIN1		8/16-bit up/down counter input pin (channel 1) .
13	15	P35	E (CMOS/H)	This is a general purpose I/O port.
		A05		In non-multiplex mode, this pin functions as an external address pin.
		ZIN1		8/16-bit up/down counter input pin (channel 1)
14 15	16 17	P36, P37	D*3 (CMOS)	This is a general purpose I/O port.
		A06, A07		In non-multiplex mode, this pin functions as an external address pin.
16	18	P40	G (CMOS/H)	This is a general purpose I/O port.
		A08		In non-multiplex mode, this pin functions as an external address pin.
		SIN2		Simple serial I/O input pin.
17	19	P41	F (CMOS)	This is a general purpose I/O port.
		A09		In non-multiplex mode, this pin functions as an external address pin.
		SOT2		Simple serial I/O output pin.
18	20	P42	G (CMOS/H)	This is a general purpose I/O port.
		A10		In non-multiplex mode, this pin functions as an external address pin.
		SCK2		Simple serial I/O clock input/output pin.

(Continued)

MB90482

Pin No.		Pin name	Circuit type	Function
LQFP*1	QFP*2			
19 20	21 22	P43, P44	F (CMOS)	This is a general purpose I/O port.
		A11, A12		In non-multiplex mode, this pin functions as an external address pin.
22	24	P45	F*4 (CMOS)	This is a general purpose I/O port.
		A13		In non-multiplex mode, this pin functions as an external address pin.
23 24	25 26	P46, P47	F (CMOS)	This is a general purpose I/O port.
		A14, A15		In non-multiplex mode, this pin functions as an external address pin.
		OUT4/OUT5		Output compare event output pins.
68	70	P50	D (CMOS)	This is a general purpose I/O port. In external bus mode, this pin functions as the ALE pin.
		ALE		In external bus mode, this pin functions as the address load enable (ALE) signal pin.
69	71	P51	D (CMOS)	This is a general purpose I/O port. In external bus mode, this pin functions as the $\overline{RD}$ pin.
		$\overline{RD}$		In external bus mode, this pin functions as the read strobe output ($\overline{RD}$) signal pin.
70	72	P52	D (CMOS)	This is a general purpose I/O port. In external bus mode, when the WRE pin in the EPCR register is set to “1”, this pin functions as the $\overline{WRL}$ pin.
		$\overline{WRL}$		In external bus mode, this pin functions as the lower data write strobe output ($\overline{WRL}$) pin. When the WRE bit in the EPCR register is set to “0”, this pin functions as a general purpose I/O port.
71	73	P53	D (CMOS)	This is a general purpose I/O port. In external bus mode with 16-bit bus width, when the WRE bit in the EPCR register is set to “1”, this pin functions as the $\overline{WRH}$ pin.
		$\overline{WRH}$		In external bus mode with 16-bit bus width, this pin functions as the upper data write strobe output ($\overline{WRH}$) pin. When the WRE bit in the EPCR register is set to “0”, this pin functions as a general purpose I/O port.
72	74	P54	D (CMOS)	This is a general purpose I/O port. In external bus mode, when the HDE bit in the EPCR register is set to “1”, this pin functions as the HRQ pin.
		HRQ		In external bus mode, this pin functions as the hold request input (HRQ) pin. When the HDE bit in the EPCR register is set to “0”, this pin functions as a general purpose I/O port.
73	75	P55	D (CMOS)	This is a general purpose I/O port. In external bus mode, when the HDE bit in the EPCR register is set to “1”, this pin functions as the $\overline{HAK}$ pin.
		$\overline{HAK}$		In external bus mode, this pin functions as the hold acknowledge ($\overline{HAK}$) pin. When the HDE bit in the EPCR register is set to “0”, this pin functions as a general purpose I/O port.

(Continued)

Pin No.		Pin name	Circuit type	Function
LQFP*1	QFP*2			
74	76	P56	D (CMOS)	This is a general purpose I/O port. In external bus mode, when the RYE bit in the EPCR register is set to “1”, this pin functions as the RDY pin.
		RDY		In external bus mode, this pin functions as the external ready (RDY) input pin. When the RYE bit in the EPCR register is set to “0”, this pin functions as a general purpose I/O port.
76	78	P57	D (CMOS)	This is a general purpose I/O port. In external bus mode, when the CKE bit in the EPCR register is set to “1”, this pin functions as the CLK pin.
		CLK		In external bus mode, this pin functions as the machine cycle clock (CLK) output pin. When the CKE bit in the EPCR register is set to “0”, this pin functions as a general purpose I/O port.
36 to 39	38 to 41	P60 to P63	H (CMOS)	These are general purpose I/O ports.
		AN0 to AN3		These are the analog input pins.
41 to 44	43 to 46	P64 to P67	H (CMOS)	These are general purpose I/O ports.
		AN4 to AN7		These are the analog input pins.
25	27	P70	G (CMOS/H)	This is a general purpose I/O port.
		SIN0		This is the UART data input pin.
26	28	P71	F (CMOS)	This is a general purpose I/O port.
		SOT0		This is the UART data output pin.
27	29	P72	G (CMOS/H)	This is a general purpose I/O port.
		SCK0		This is the UART clock I/O pin.
28	30	P73	G (CMOS/H)	This is a general purpose I/O port.
		TIN0		This is the 16-bit reload timer event input pin.
29	31	P74	F (CMOS)	This is a general purpose I/O port.
		TOT0		This is the 16-bit reload timer output pin.
30	32	P75	F*4 (CMOS)	This is a general purpose I/O port.
31	33	P76	F*5 (CMOS)	This is a general purpose I/O port.
32	34	P77	F*5 (CMOS)	This is a general purpose I/O port.
45, 46	47, 48	P80, P81	E (CMOS/H)	These are general purpose I/O ports.
		IRQ0, IRQ1		External interrupt input pins.
50 to 55	52 to 57	P82 to P87	E (CMOS/H)	These are general purpose I/O ports.
		IRQ2 to IRQ7		External interrupt input pins.

(Continued)

MB90482

(Continued)

Pin No.		Pin name	Circuit type	Function
LQFP*1	QFP*2			
56	58	P90	E (CMOS/H)	This is a general purpose I/O port.
		SIN1		Simple serial I/O data input pin.
		CS0		Chip select 0.
57	59	P91	D (CMOS)	This is a general purpose I/O port.
		SOT1		Simple serial I/O data output pin.
		CS1		Chip select 1.
58	60	P92	E (CMOS/H)	This is a general purpose I/O port.
		SCK1		Simple serial I/O data input/output pin.
		CS2		Chip select 2.
59	61	P93	E (CMOS/H)	This is a general purpose I/O port.
		FRCK		When the free run timer is in use, this pin functions as the external clock input pin.
		ADTG		When the A/D converter is in use, this pin functions as the external trigger input pin.
		CS3		Chip select 3.
60	62	P94	D (CMOS)	This is a general purpose I/O port.
		PPG4		PPG timer output pin.
61	63	P95	D (CMOS)	This is a general purpose I/O port.
		PPG5		PPG timer output pin.
62	64	P96	E (CMOS/H)	This is a general purpose I/O port.
		IN0		Input capture channel 0 trigger input pin.
63	65	P97	E (CMOS/H)	This is a general purpose I/O port.
		IN1		Input capture channel 1 trigger input pin.
64 to 67	66 to 69	PA0 to PA3	D (CMOS)	These are general purpose I/O ports.
		OUT0 to OUT3		Output compare event output pins.
33	35	AV_{CC}	—	A/D converter power supply pin.
34	36	AVRH	—	A/D converter external reference voltage supply pin.
35	37	AV_{SS}	—	A/D converter power supply pin.
47 to 49	49 to 51	MD0 to MD2	J (CMOS/H)	Operating mode selection input pins.
21, 82	23, 84	V_{CC}	—	3.3 V ± 0.3 V power supply pins (V_{CC}3) .
9, 40, 79	11, 42, 81	V_{SS}	—	Power supply input pins (GND) .

*1 : LQFP : FPT-100P-M05

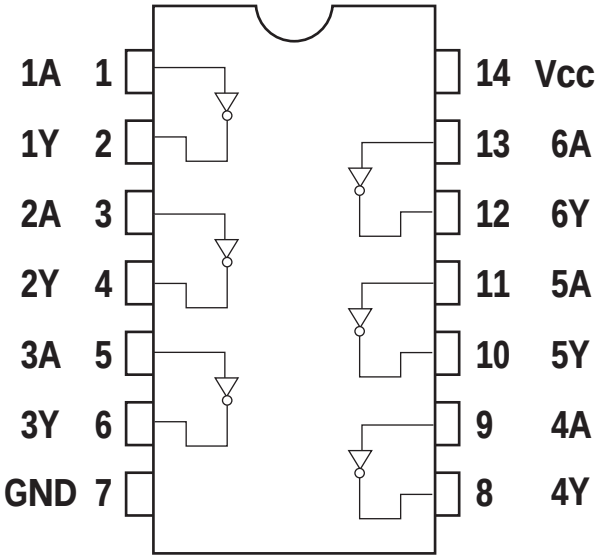
*2 : QFP : FPT-100P-M06

*3 : The circuit type of MB90V480 is E (CMOS/H).

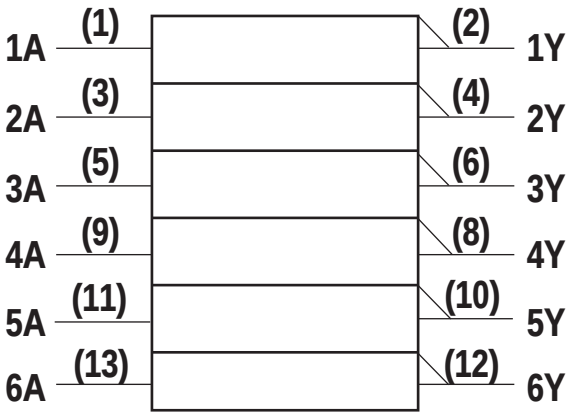
*4 : The circuit type of MB90V480 is G (CMOS/H).

*5 : The circuit type of MB90V480 is I (NMOS/H)

■ PIN ASSIGNMENT (74HCU04AFN : IC71,72,76)



■ LOGIC SYMBOL



■ TRUTH TABLE

A	Y
L	H
H	L

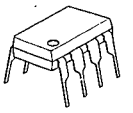
JRC **NJM2068**

LOW-NOISE DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

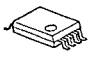
The NJM2068 is a high performance, low noise dual operational amplifier. This amplifier features popular pin-out, superior noise performance, and superior total harmonic distortion. This amplifier also features guaranteed noise performance with substantially higher gain-bandwidth product and slew rate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

■ PACKAGE OUTLINE

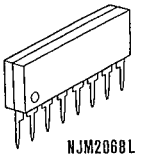


NJM2068D

NJM2068M



NJM2068V

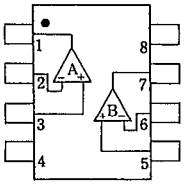


NJM2068L

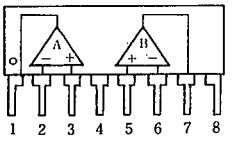
■ FEATURES

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

■ PIN CONFIGURATION



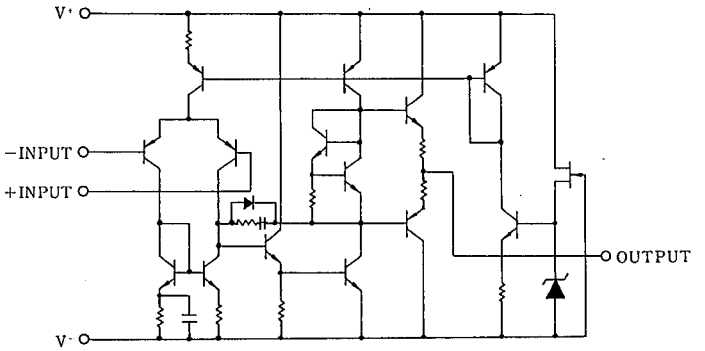
NJM2068D
NJM2068M
NJM2068V



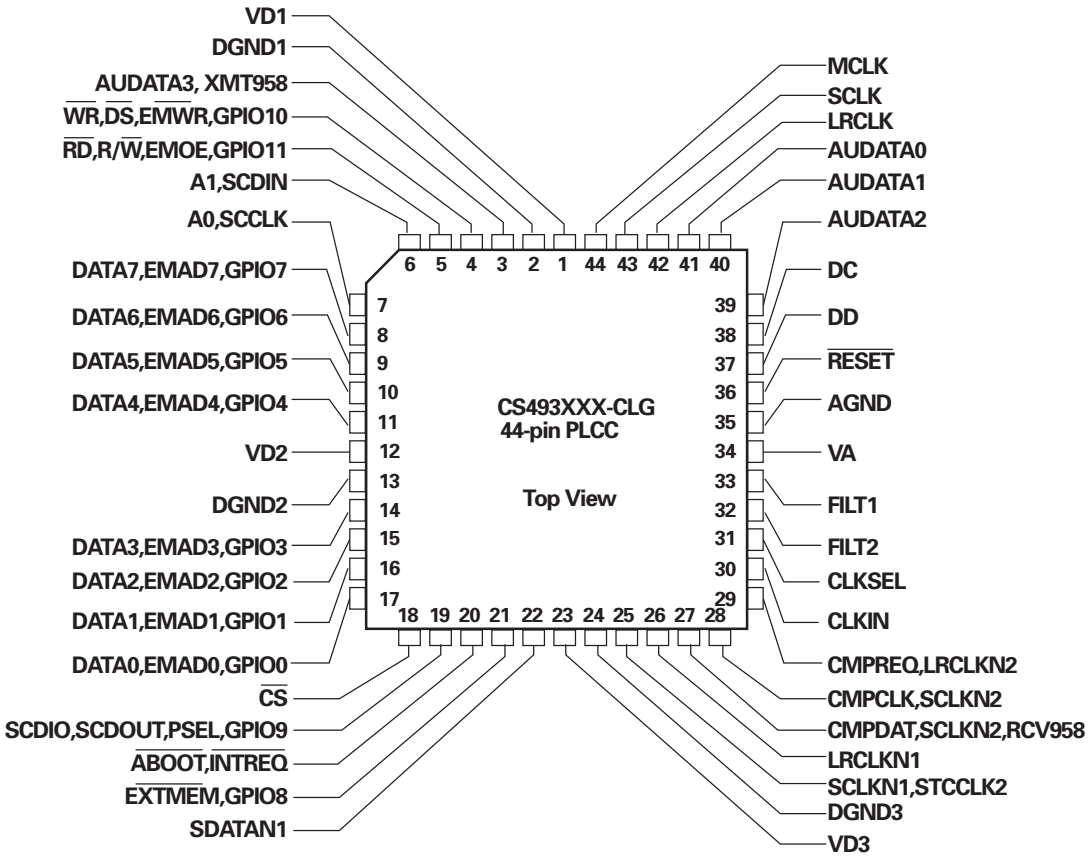
NJM2068L

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

■ EQUIVALENT CIRCUIT (1/2 Shown)

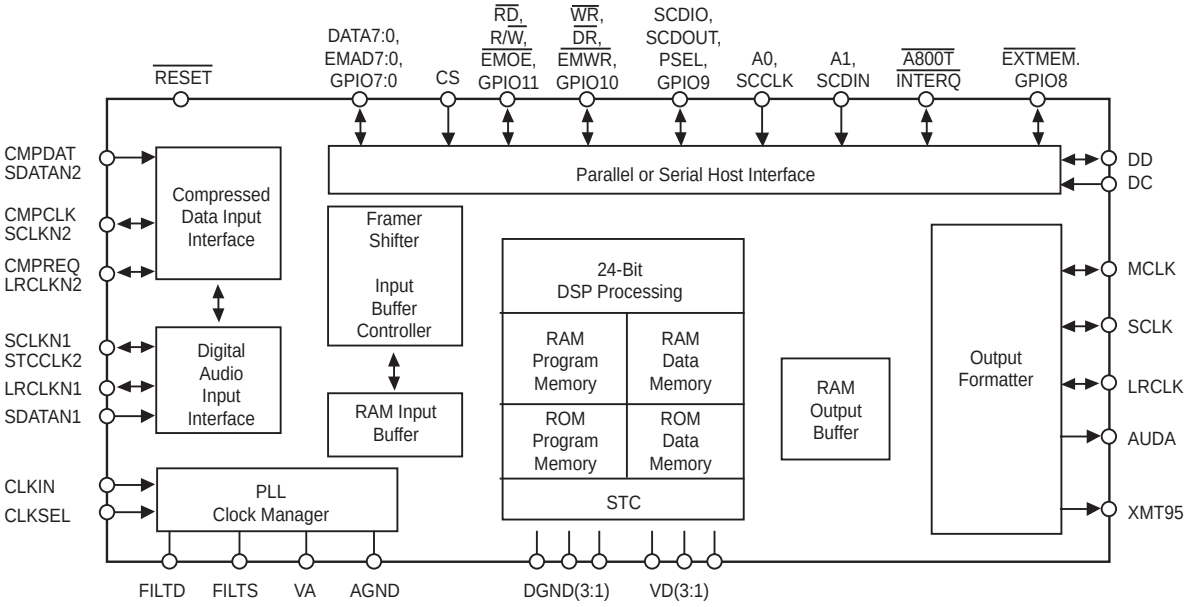


■ PIN ASSIGNMENT.(CS493263)



(TOP VIEW)

BIOCK DIAGRAM(CS493263)



AUDIO DSP (CS493263 - CLG : IC75)

PIN No.	Pin Name	I/O	Function
1,12,23	+VD1	-	Digital Power supply. Normally +2.5v
2,13,24	DGND	-	Digital Ground
3	AUD3	O	SPDIF transmitter output/Digital audio output(N.C)
4	WR	I	Host write strobe pin(connected to GND with an external resistor)
5	RD	I	Host parallel output enable pin(pulled up with an external resistor)
6	CS_DA	I	SPI Serial data input pin
7	CS_CK	I	Serial control clock input pin
8	EMAD7	I/O	Serial data IN/OUTPUT pins(pulled up with an external resistor)
9	EMAD6	I/O	
10	EMAD5	I/O	
11	EMAD4	I/O	
14	EMAD3	I/O	
15	EMAD2	I/O	
16	EMAD1	I/O	
17	EMAD0	I/O	
18	CS_CE	I	Host parallel chip select pin
19	SCDIO(AK_DOUT)	O	Serial control port data ouput pin
20	INTREQ	O	Control port interrupt request output pin
21	EXTMEM	I/O	External Memory Chip Selector(pulled up with an external resistor)
22	SDATAN1(SDI)	I	PCM audio data input number 1 pin
25	SCLKN1(BICK)	I	PCM audio input bit clock pin
26	LRCLKN1(LRCK)	I	PCM audio input sample rate clock pin
27	CMPDAT(SDI)	I	PCM audio data input number 2 pin
28	CMPCLK(BICK)	I	PCM audio input bit clock pin
29	CREQ(LRCK)	I	PCM audio input sample rate clock pin
30	CLKIN(XIN)	I	Master clock input(used external clock)
31	CLKSEL(GND)	I	DSP clock mode select pin: connect the GND
32	FILT1		Connects to an external filter for the on-chip phase-locked loop
33	FILT1		Connects to an external filter for the on-chip phase-locked loop
34	+2.5V	-	Analog Power supply for clock generator . Normally +2.5V
35	AGND	-	Analog ground supply for clock generator PLL.
36	RESET(CS_RST)	I	Master reset input pin
37	DBDATA	-	Reserved pin and should be pulled up with an external resistor.
38	DBCLK	-	Reserved pin and should be pulled up with an external resistor.
39	AUD2(SDO2)	O	PCM multi-format digital-audio data ouput2 pin
40	AUD1(SDO1)	O	PCM multi-format digital-audio data ouput1 pin
41	AUD0(SDO0)	O	PCM multi-format digital-audio data ouput0 pin
42	LRCLK	I	Audio output sample rate clock pin
43	SCLK(BICK)	I	Audio ouput bit clock pin
44	MCLK	I	Audio master clock output pin

FAIRCHILD SEMICONDUCTOR™

November 1988
Revised November 1999

74ACT04SC : IC52,75,83,84

74AC04 • 74ACT04
Hex Inverter

General Description

The AC/ACT04 contains six inverters.

Features

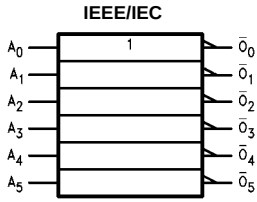
- I_{CC} reduced by 50% on 74AC only
- Outputs source/sink 24 mA
- ACT04 has TTL-compatible inputs

Ordering Code:

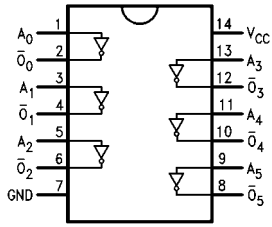
Order Number	Package Number	Package Description
74AC04SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150” Narrow Body
74AC04SJ	M14D	14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74AC04MTC	MTC14	14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide
74AC04PC	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300” Wide
74ACT04SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150” Narrow Body
74ACT04MTC	MTC14	14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide
74ACT04PC	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300” Wide

Device also available in Tape and Reel. Specify by appending suffix letter “X” to the ordering code. (PC not available in Tape and Reel.)

Logic Symbol



Connection Diagram



Pin Descriptions

Pin Names	Description
A_n	Inputs
$\overline{O}_n$	Outputs

= Target Spec =

AK4358

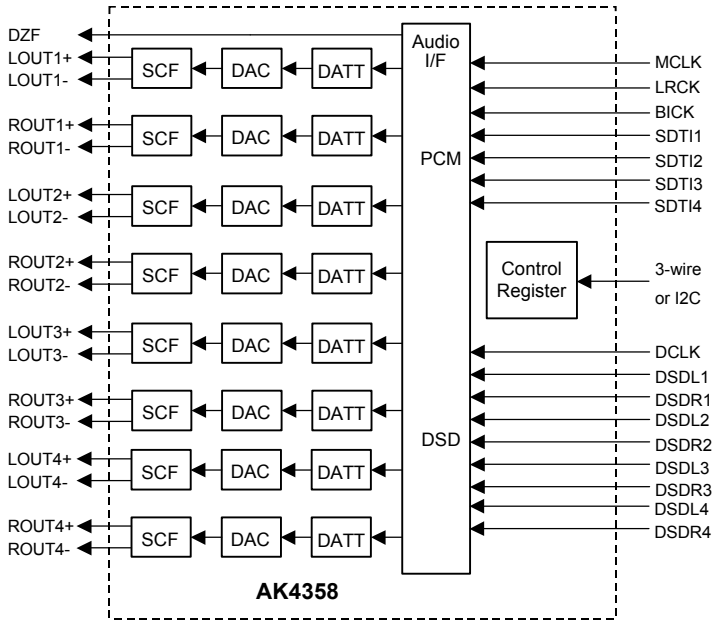
192kHz 24-Bit 8ch DAC with DSD Input

GENERAL DESCRIPTION

The AK4358 is eight channels 24bit DAC corresponding to digital audio system. Using AKM's advanced multi bit architecture for its modulator the AK4358 delivers a wide dynamic range while preserving linearity for improved THD+N performance. The AK4358 has full differential SCF outputs, removing the need for AC coupling capacitors and increasing performance for systems with excessive clock jitter. The AK4358 accepts 192kHz PCM data and 1-Bit DSD data, ideal for a wide range of applications including DVD-Audio and SACD.

FEATURES

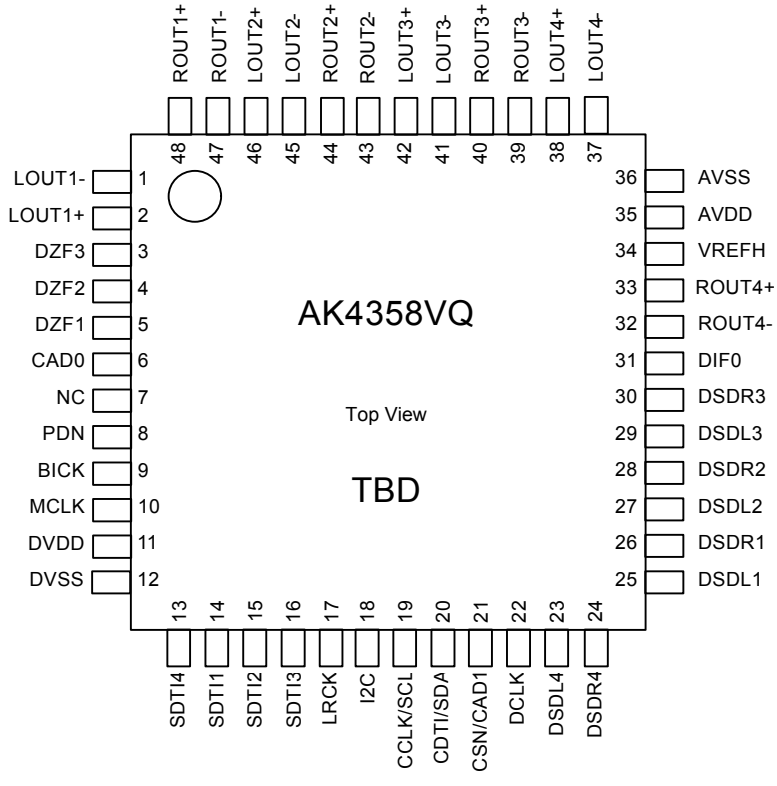
- ☐ **Sampling Rate Ranging from 8kHz to 192kHz**
- ☐ **24Bit 8 times Digital Filter with Slow roll-off option**
- ☐ **THD+N: -94dB**
- ☐ **DR, S/N: 114dB**
- ☐ **High Tolerance to Clock Jitter**
- ☐ **Low Distortion Differential Output**
- ☐ **DSD Data input available**
- ☐ **Channel Independent Digital De-emphasis for 32, 44.1 & 48kHz sampling**
- ☐ **Zero Detect function**
- ☐ **Channel Independent Digital Attenuator with soft-transition (3 Speed mode)**
- ☐ **Soft Mute**
- ☐ **3-wire Serial and I^2C Bus µP I/F for mode setting**
- ☐ **I/F format: MSB justified, LSB justified (16bit, 20bit, 24bit), I^2S, TDM or DSD**
- ☐ **Master clock: 256fs, 384fs, 512fs or 768fs (PCM Normal Speed Mode)**
  128fs, 192fs, 256fs or 384fs (PCM Double Speed Mode)
  128fs or 192fs (PCM Quad Speed Mode)
  512fs or 768fs (DSD Mode)
- ☐ **Power Supply: 4.75 to 5.25V**
- ☐ **48pin LQFP Package**



■ Ordering Guide

AK4358VQ	-40 ~ +85°C	48LQFP
AKD4358	Evaluation Board for AK4358	

■ Pin Layout (To be determined)



PIN/FUNCTION (TBD)

No.	Pin Name	I/O	Function
	LOUT1-	O	DAC1 Lch Negative Analog Output Pin
	LOUT1+	O	DAC1 Lch Positive Analog Output Pin
	DZF1	O	Zero Input Detect 1 Pin
	DZF2	O	Zero Input Detect 2 Pin
	DZF3	O	Zero Input Detect 3 Pin
	CAD0	I	Chip Address 0 Pin
	PDN	I	Power-Down Mode Pin When at "L", the AK4358 is in the power-down mode and is held in reset. The AK4358 should always be reset upon power-up.
	BICK	I	Audio Serial Data Clock Pin
	MCLK	I	Master Clock Input Pin An external TTL clock should be input on this pin.
	DVDD	-	Digital Power Supply Pin, +4.75~+5.25V
	DVSS	-	Digital Ground Pin
	SDTI1	I	DAC1 Audio Serial Data Input Pin
	SDTI2	I	DAC2 Audio Serial Data Input Pin
	SDTI3	I	DAC3 Audio Serial Data Input Pin
	SDTI4	I	DAC4 Audio Serial Data Input Pin
	LRCK	I	L/R Clock Pin
	I2C	I	Control Mode Select Pin "L": 3-wire Serial, "H": I^2C Bus
	CCLK/SCL	I	Control Data Clock Pin I2C = "L": CCLK (3-wire Serial), I2C = "H": SCL (I^2C Bus)
	CDTI/SDA	I/O	Control Data Input Pin I2C = "L": CDTI (3-wire Serial), I2C = "H": SDA (I^2C Bus)
	CSN/CAD1	I	Chip Select Pin I2C = "L": CSN (3-wire Serial), I2C = "H": CAD1 (I^2C Bus)
	DCLK	I	DSD Clock Pin
	DSDL1	I	DAC1 DSD Lch Data Input Pin
	DSDR1	I	DAC1 DSD Rch Data Input Pin
	DSDL2	I	DAC2 DSD Lch Data Input Pin
	DSDR2	I	DAC2 DSD Rch Data Input Pin
	DSDL3	I	DAC3 DSD Lch Data Input Pin
	DSDR3	I	DAC3 DSD Rch Data Input Pin
	DSDL4	I	DAC4 DSD Lch Data Input Pin
	DSDR4	I	DAC4 DSD Rch Data Input Pin
	DIF0	I	Audio Data Interface Format 0 Pin
	VREFH	I	Positive Voltage Reference Input Pin
	AVDD	-	Analog Power Supply Pin, +4.75~+5.25V
	AVSS	-	Analog Ground Pin
	ROUT4-	O	DAC4 Rch Negative Analog Output Pin
	ROUT4+	O	DAC4 Rch Positive Analog Output Pin
	LOUT4-	O	DAC4 Lch Negative Analog Output Pin
	LOUT4+	O	DAC4 Lch Positive Analog Output Pin
	ROUT3-	O	DAC3 Rch Negative Analog Output Pin
	ROUT3+	O	DAC3 Rch Positive Analog Output Pin
	LOUT3-	O	DAC3 Lch Negative Analog Output Pin
	LOUT3+	O	DAC3 Lch Positive Analog Output Pin
	ROUT2-	O	DAC2 Rch Negative Analog Output Pin
	ROUT2+	O	DAC2 Rch Positive Analog Output Pin
	LOUT2-	O	DAC2 Lch Negative Analog Output Pin
	LOUT2+	O	DAC2 Lch Positive Analog Output Pin
	ROUT1-	O	DAC1 Rch Negative Analog Output Pin

ASAHI KASEI

AKM CONFIDENTIAL

IC 76 [AK5381]

= Preliminary =

AK5381

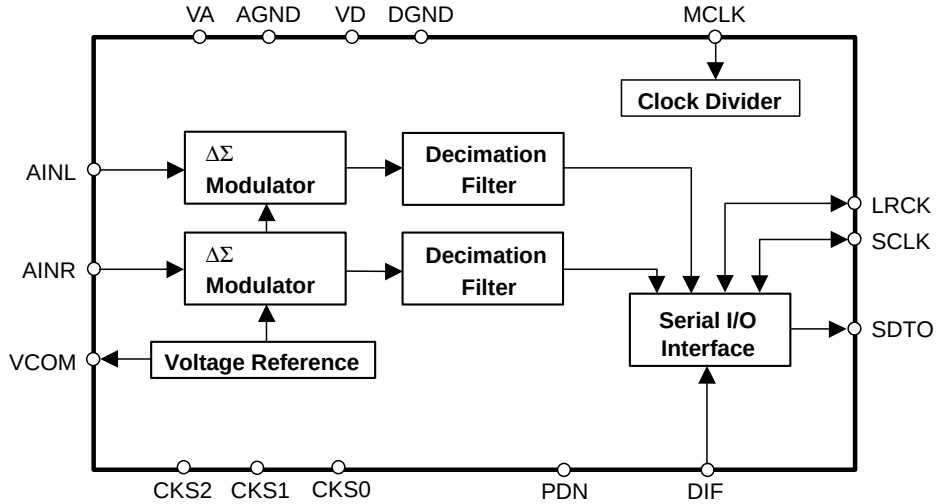
24Bit 96kHz ΔΣ ADC

GENERAL DESCRIPTION

The AK5381 is a stereo A/D Converter with wide sampling rate of 4kHz ~ 96kHz and is suitable for High-end audio system. The AK5381 achieves high accuracy and low cost by using Enhanced dual bit ΔΣ techniques. The AK5381 requires no external components because the analog inputs are single-ended. The audio interface has two formats (MSB justified, I^2S) and can correspond to many systems like music instrument and AV receiver.

FEATURES

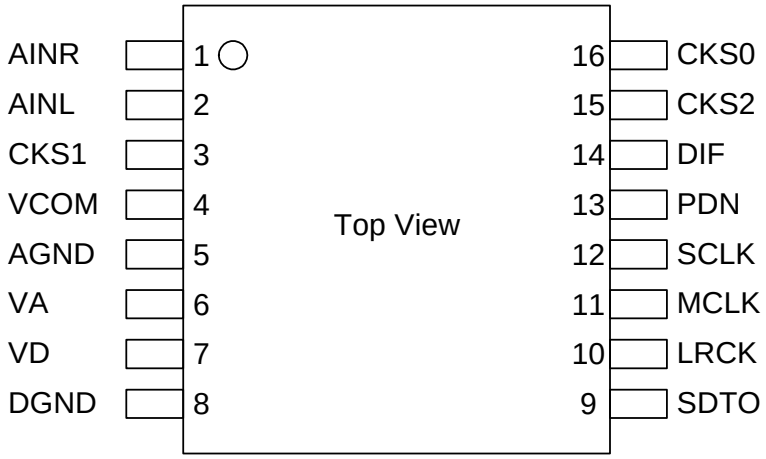
- ☐ **Stereo ΔΣ ADC**
- ☐ **On-Chip Digital Anti-Alias Filtering**
- ☐ **Single-ended Input**
- ☐ **Digital HPF for DC-Offset cancel**
- ☐ **S/(N+D): 96dB@5V for 48kHz**
- ☐ **DR: 106dB@5V for 48kHz**
- ☐ **S/N: 106dB@5V for 48kHz**
- ☐ **Sampling Rate Ranging from 4kHz to 96kHz**
- ☐ **Master Clock:**
  - **256fs/384fs/512fs/768fs (~ 48kHz)**
  - **256fs/384fs (~ 96kHz)**
- ☐ **Audio Interface: Master or Slave Mode selectable**
- ☐ **Input level: TTL/CMOS selectable**
- ☐ **Output format: 24bit MSB justified / I^2S selectable**
- ☐ **Power Supply: 4.5 ~ 5.5V (VA)**
  - **2.7 ~ 5.5V (VD at 48kHz)**
  - **3.0 ~ 5.5V (VD at 96kHz)**
- ☐ **Ta = -40 ~ 85°C**
- ☐ **Small 16pin TSSOP Package**
- ☐ **AK5380 Pin-compatible**



■ Ordering Guide

AK5381VT	–40 ~ +85°C	16pin TSSOP (0.65mm pitch)
AKD5381	Evaluation Board for AK5381	

■ Pin Layout



■ Compatibility with AK5380

	AK5380	AK5381
Master Mode	Not Available	Available
HPF OFF	Not Available	Available
VD (Digital Supply)	4.5 to 5.5V@fs=96kHz	3.0 to 5.5V@fs=96kHz
Pin #3	NC	CKS1
Pin #15	TTL	CKS2
Pin #16	TST	CKS0

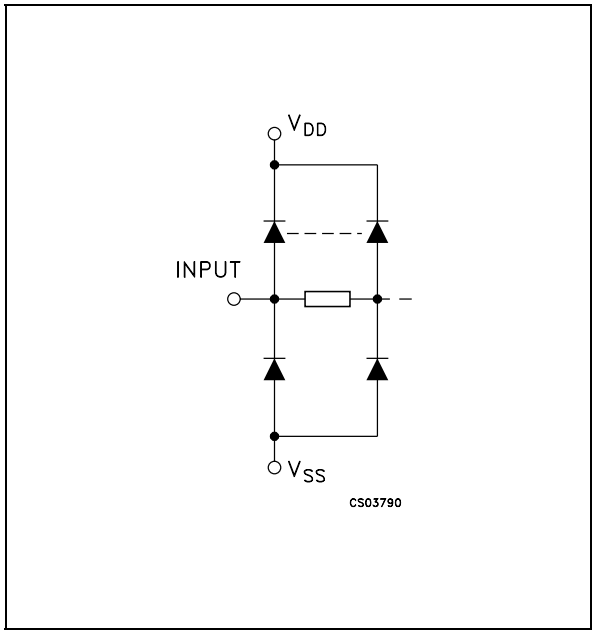
PIN / FUNCTION

No.	Pin Name	I/O	Function
1	AINR	I	Rch Analog Input Pin
2	AINL	I	Lch Analog Input Pin
3	CKS1	I	Mode Select 1 Pin
4	VCOM	O	Common Voltage Output Pin, VA/2 Bias voltage of ADC input.
5	AGND	-	Analog Ground Pin
6	VA	-	Analog Power Supply Pin, 4.5 ~ 5.5V
7	VD	-	Digital Power Supply Pin, 2.7 ~ 5.5V(fs=4k ~ 48kHz), 3.0 ~ 5.5V(fs=48k ~ 96kHz)
8	DGND	-	Digital Ground Pin
9	SDTO	O	Audio Serial Data Output Pin "L" Output at Power-down mode.
10	LRCK	I/O	Output Channel Clock Pin "L" Output in Master Mode at Power-down mode.
11	MCLK	I	Master Clock Input Pin
12	SCLK	I/O	Audio Serial Data Clock Pin "L" Output in Master Mode at Power-down mode.
13	PDN	I	Power Down Mode Pin "H": Power up, "L": Power down
14	DIF	I	Audio Interface Format Pin "H" : 24bit I^2S Compatible, "L" : 24bit MSB justified
15	CKS2	I	Mode Select 2 Pin
16	CKS0	I	Mode Select 0 Pin

Note: All digital input pins should not be left floating.

HCF4053B FUNCTION DIAGRAM & PIN DESCRIPTION

INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION (IC44,45,51,80,89)

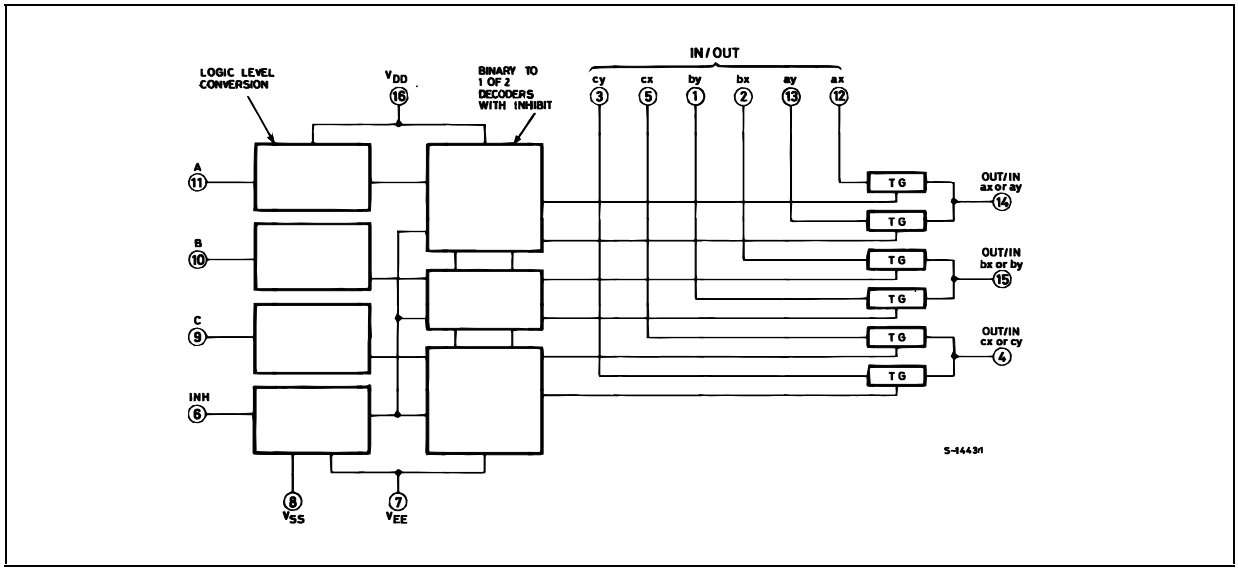
PIN No	SYMBOL	NAME AND FUNCTION
11, 10, 9	A, B, C	Binary Control Inputs
6	INH	Inhibit Inputs
12, 13, 2, 1, 5, 3	IN/OUT	ax,ay,bx,by,cx,cy Input/ Output
14	OUT/IN	ax or ay
15	OUT/IN	bx or by
4	OUT/IN	cx or cy
7	V_{EE}	Supply Voltage
8	V_{SS}	Negative Supply Voltage
16	V_{DD}	Positive Supply Voltage

TRUTH TABLE

INHIBIT	C or B or A	
0	0	ax or bx or cx
0	1	ay or by or cy
1	X	NONE

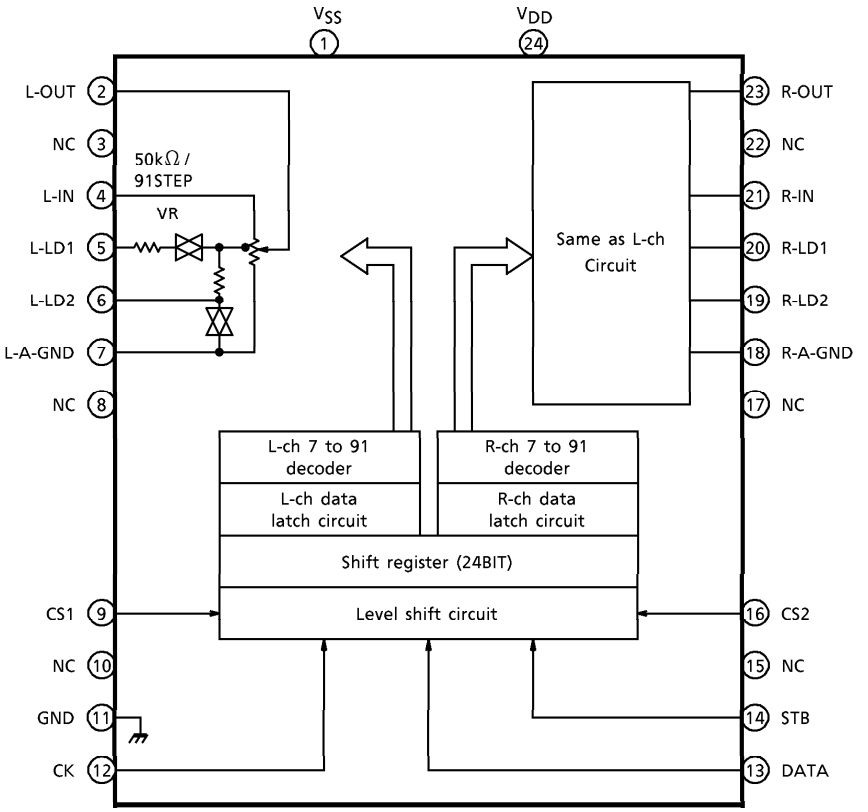
X : Don't Care

FUNCTIONAL DIAGRAM (IC44,45,51,80,89)



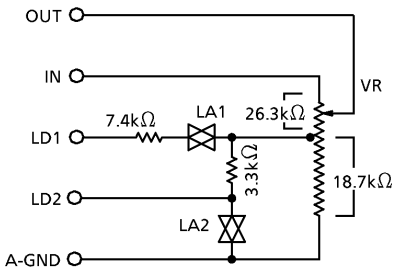
ELECTRONIC VOLUME CONTROL IC (IC40~44)

BLOCK DIAGRAM (TC9459F)



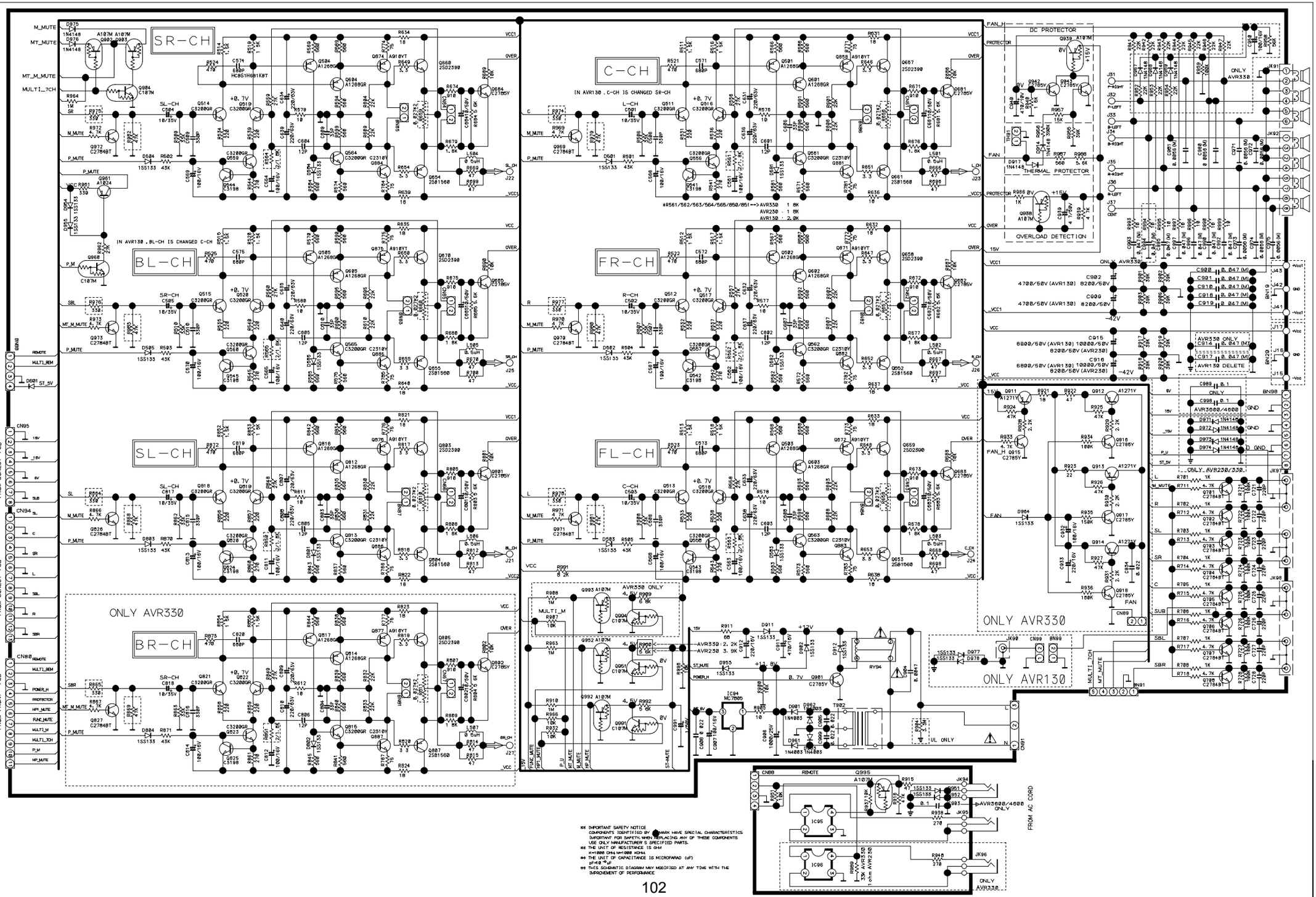
PIN DESCRIPTION

Numeral in ( ) means the pin No. of TC9459F.

PIN No.	SYMBOL	PIN NAME	FUNCTION	REMARK
1 (1)	V_{SS}	Negative power supply pin	When using dual power supplies: V_{DD} = 6.0~17V, GND = 0V, V_{SS} = −6.0~−17V When using a single power supply: V_{DD} = 6.0~18V, GND = V_{SS} = 0V	—
28 (24)	V_{DD}	Positive power supply pin		
13 (11)	GND	Digital GND pin		
3 (2)	L-OUT	Volume output pin	• Volume circuit 	—
26 (23)	R-OUT			
5 (4)	L-IN	Volume input pin		
24 (21)	R-IN			
6 (5)	L-LD1	Loudness tap output pin		
23 (20)	R-LD1			
7 (6)	L-LD2			
22 (19)	R-LD2			
8 (7)	L-A-GND	Analog GND pin		
21 (18)	R-A-GND			

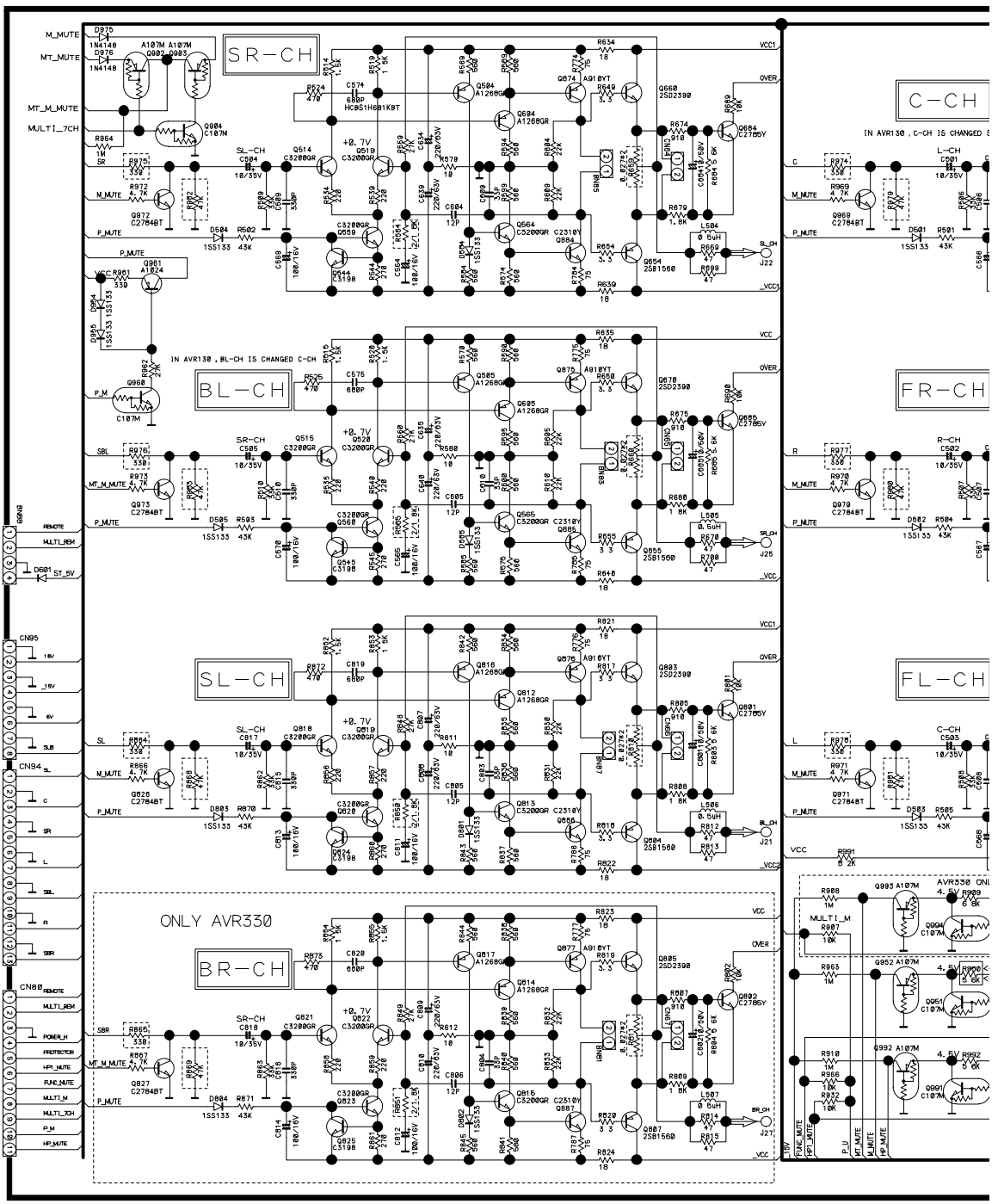
	LA1	LA2
LOUDNESS "ON"	ON	OFF
LOUDNESS "OFF"	OFF	ON

10 (9)	CS1	Chip select input pin	Up to 4 chips on the same bus can be used by switching over chip select code.	—
19 (16)	CS2			
14 (12)	CK	Clock input pin	Data transfer clock input	Low threshold value input pin
15 (13)	DATA	Data input pin	Volume setup serial data input	
16 (14)	STB	Strobe input pin	Data write strobe input	
2 (3)	NC	No connection	—	—
27 (22)				
4				
25				
9 (8)				
20 (17)				
11				
18				
12 (10)				
17 (15)				

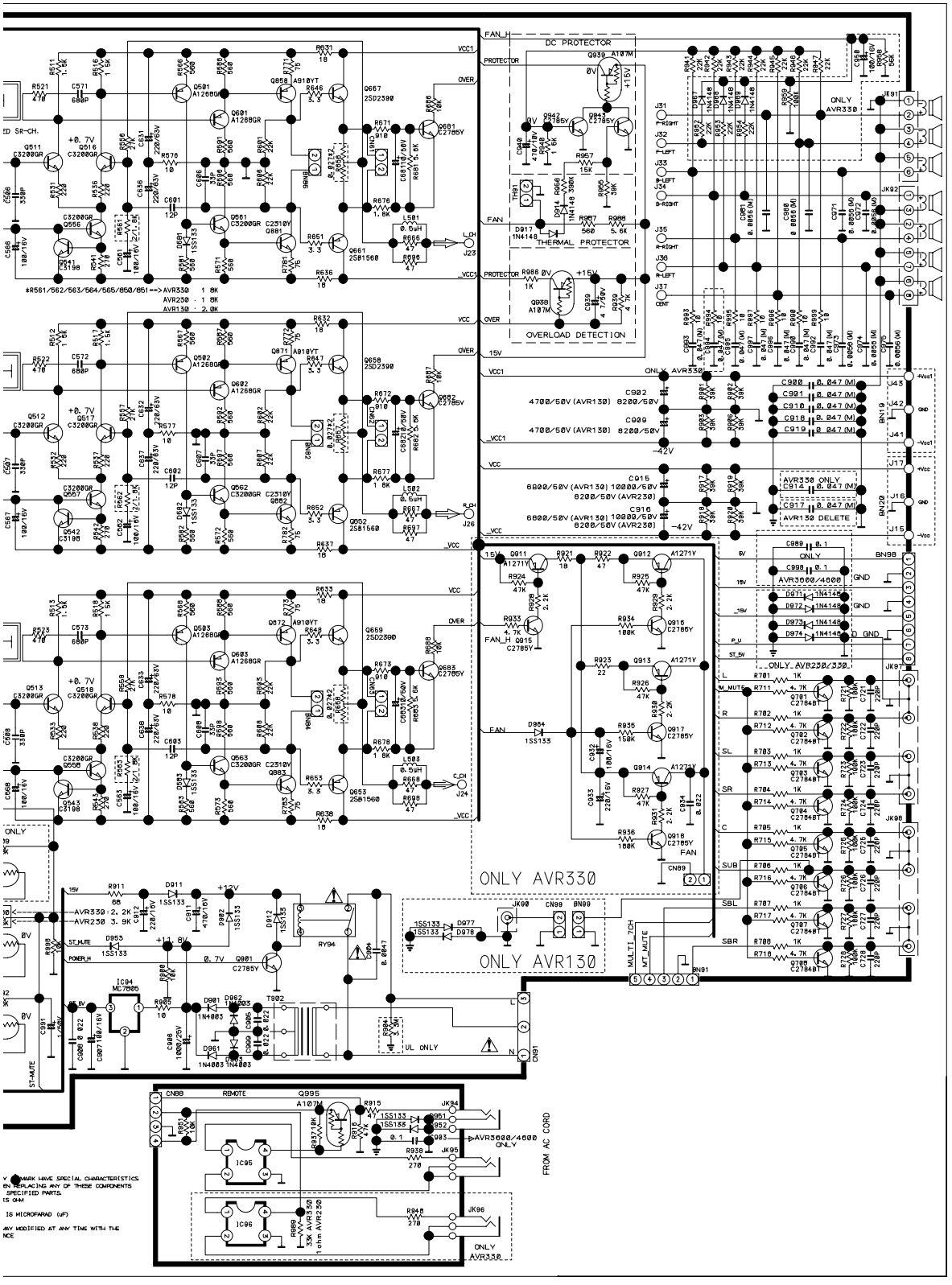

SR-CH
C-CH
BL-CH
FR-CH
SL-CH
FL-CH
BR-CH
ONLY AVR330
DC PROTECTOR
THERMAL PROTECTOR
OVERLOAD DETECTION
ONLY AVR130
FROM CONECT PCB
FROM FRONT PCB
FROM AC CORD
IN AVR130 , C-CH IS CHANGED SR-CH
IN AVR130 , BL-CH IS CHANGED C-CH

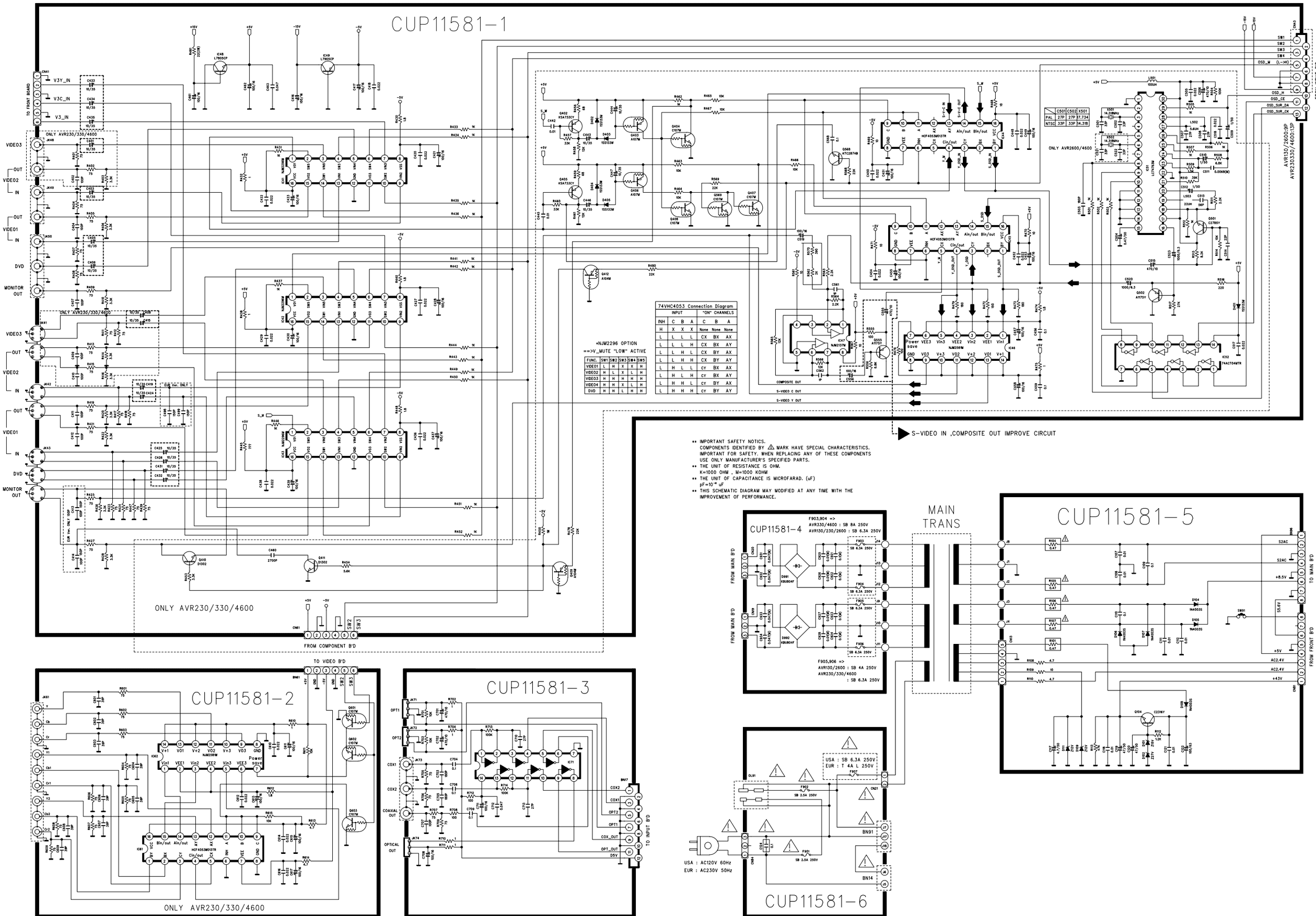
102

MAIN BOARD 1 (AMP)

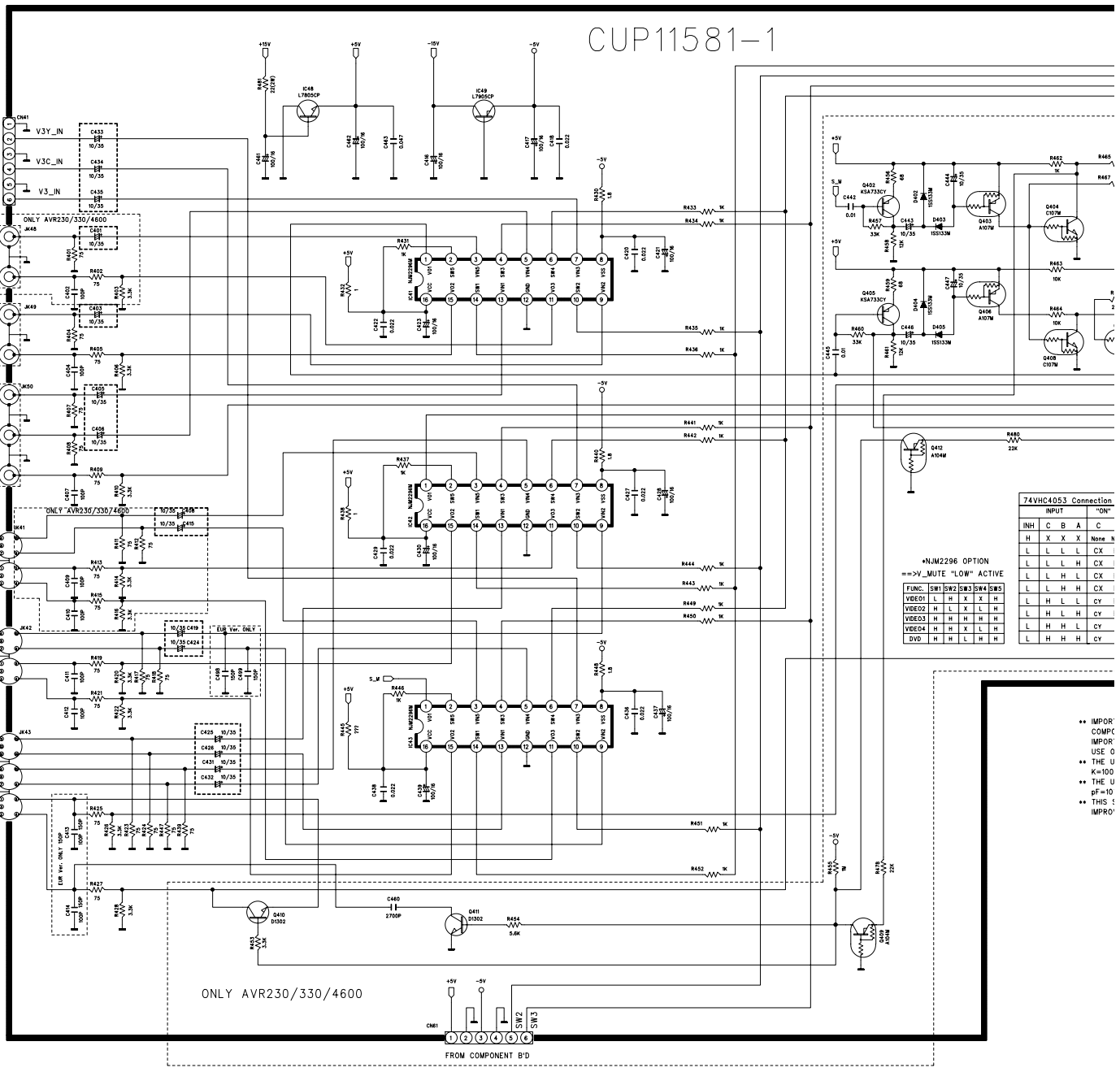


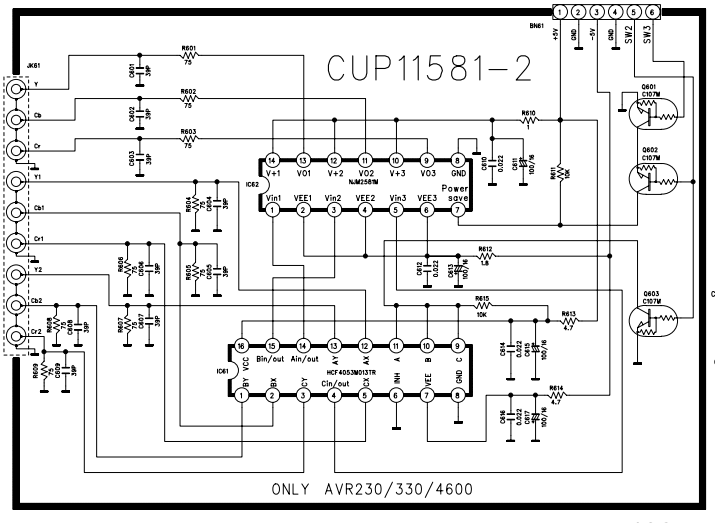
MAIN BOARD 1 (AMP)

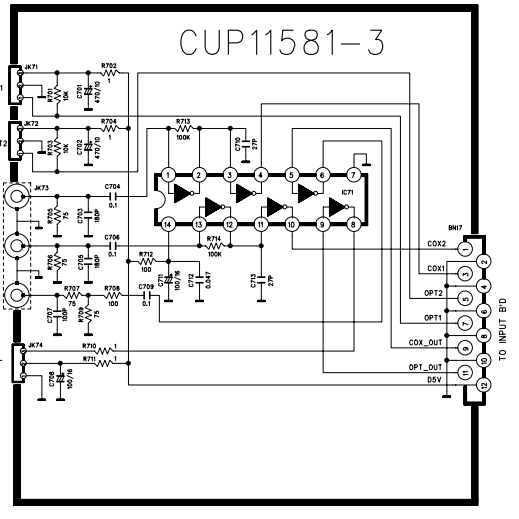



CUP11581-1
CUP11581-2
CUP11581-3
CUP11581-4
CUP11581-5
CUP11581-6
ONLY AVR230/330/4600
ONLY AVR2600/4600
FROM COMPONENT B'D
TO VIDEO B'D
TO INPUT B'D
TO MAIN B'D
FROM MAIN B'D
FROM FRONT B'D
MAIN TRANS
S-VIDEO IN ,COMPOSITE OUT IMPROVE CIRCUIT
** IMPORTANT SAFETY NOTICS.
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.
IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS
USE ONLY MANUFACTURER'S SPECIFIED PARTS.
** THE UNIT OF RESISTANCE IS OHM.
K=1000 OHM , M=1000 KOHM
** THE UNIT OF CAPACITANCE IS MICROFARAD. (uF)
pF=10⁻⁶ uF
** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE
IMPROVEMENT OF PERFORMANCE.
74VHC4053 Connection Diagram
+NJM2296 OPTION
==>V_MUTE "LOW" ACTIVE
USA : AC120V 60Hz
EUR : AC230V 50Hz
USA : SB 6.3A 250V
EUR : T 4A L 250V

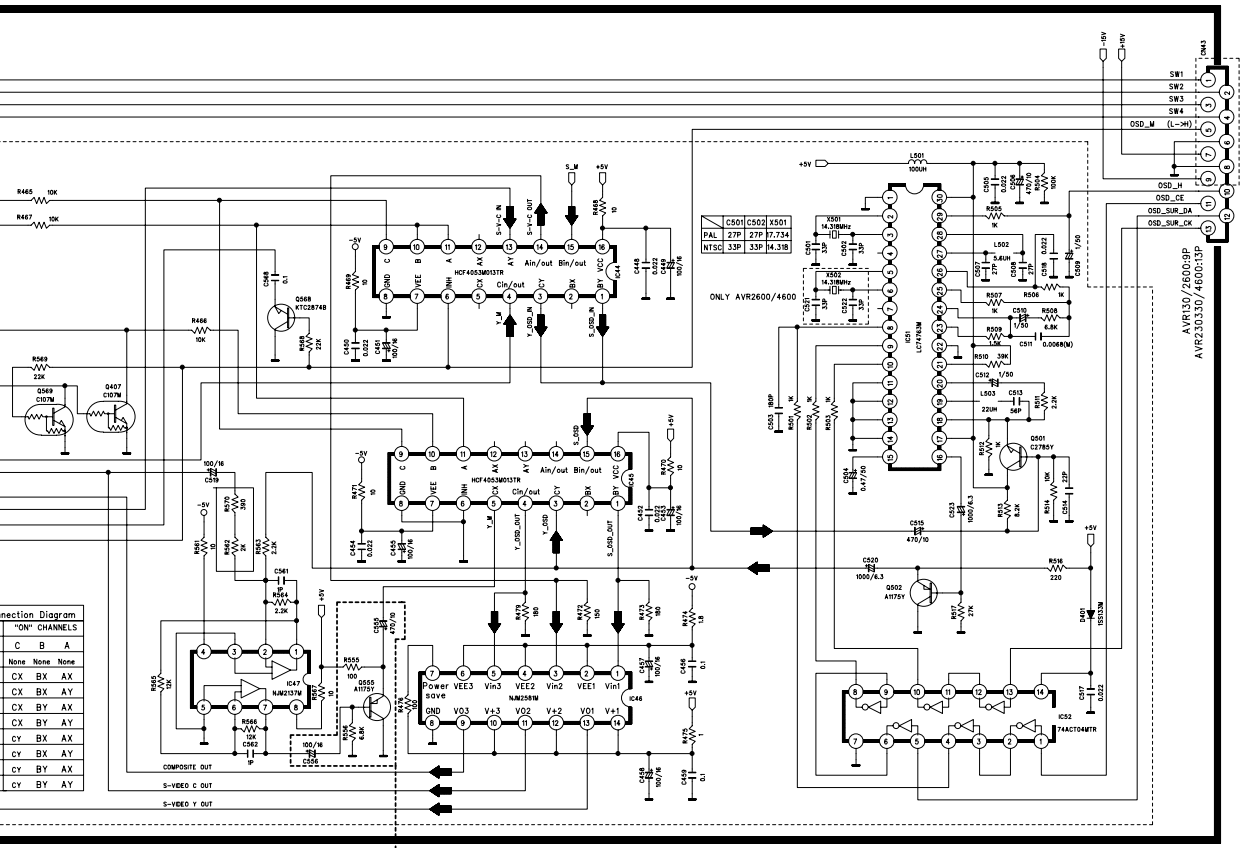
VIDEO BOARD


CUP11581-1
ONLY AVR230/330/4600
FROM COMPONENT B'D
74VHC4053 Connection
*NJM2296 OPTION
==>V_MUTE "LOW" ACTIVE

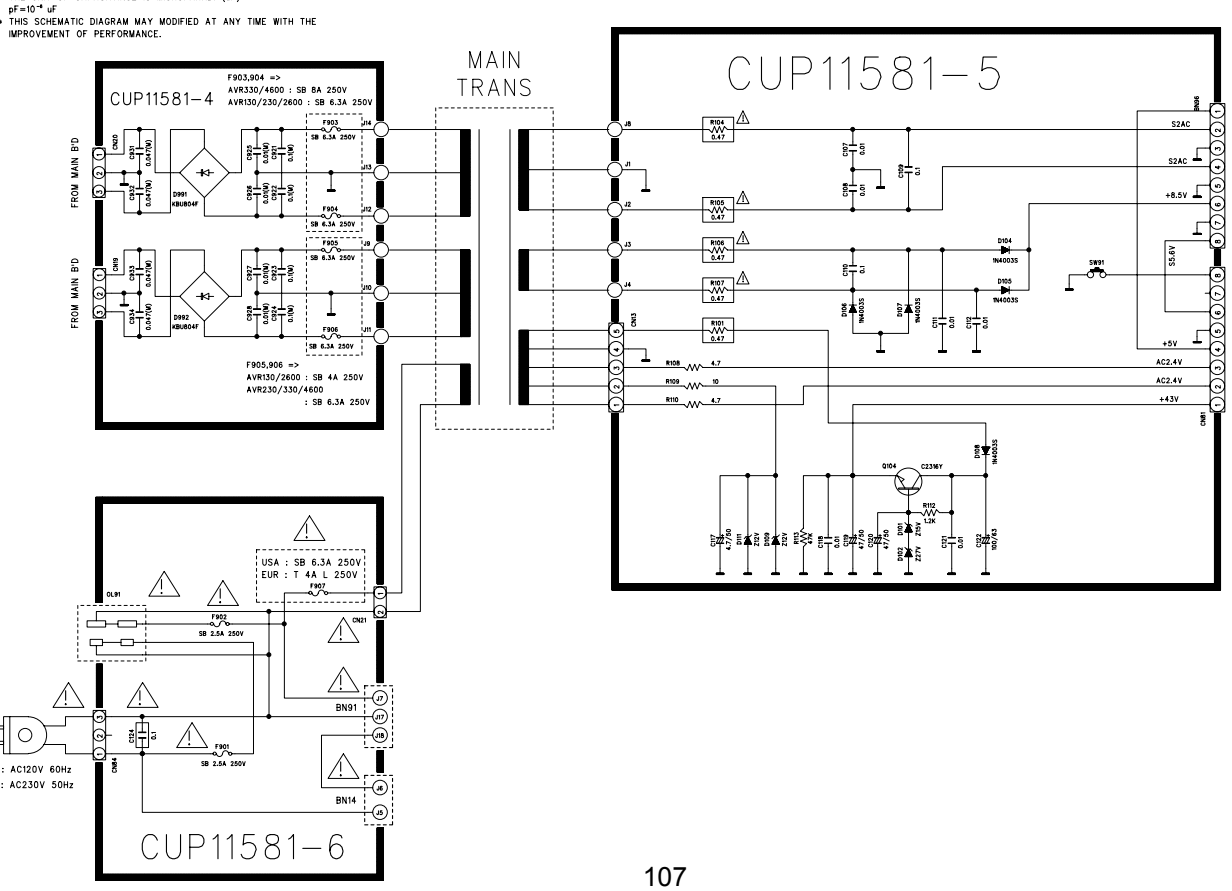

CUP11581-2
TO VIDEO B'D
ONLY AVR230/330/4600

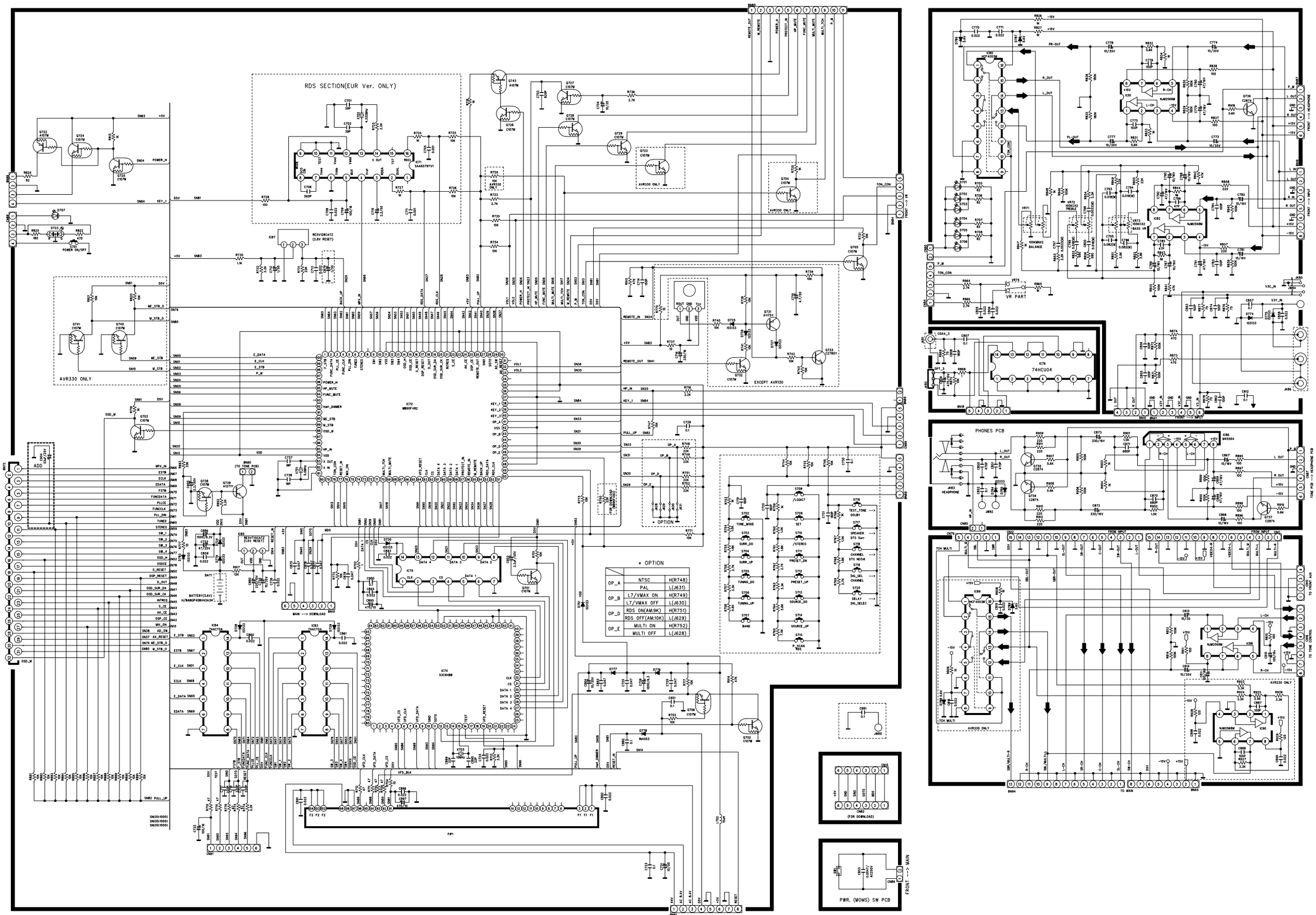

CUP11581-3
TO INPUT B'D

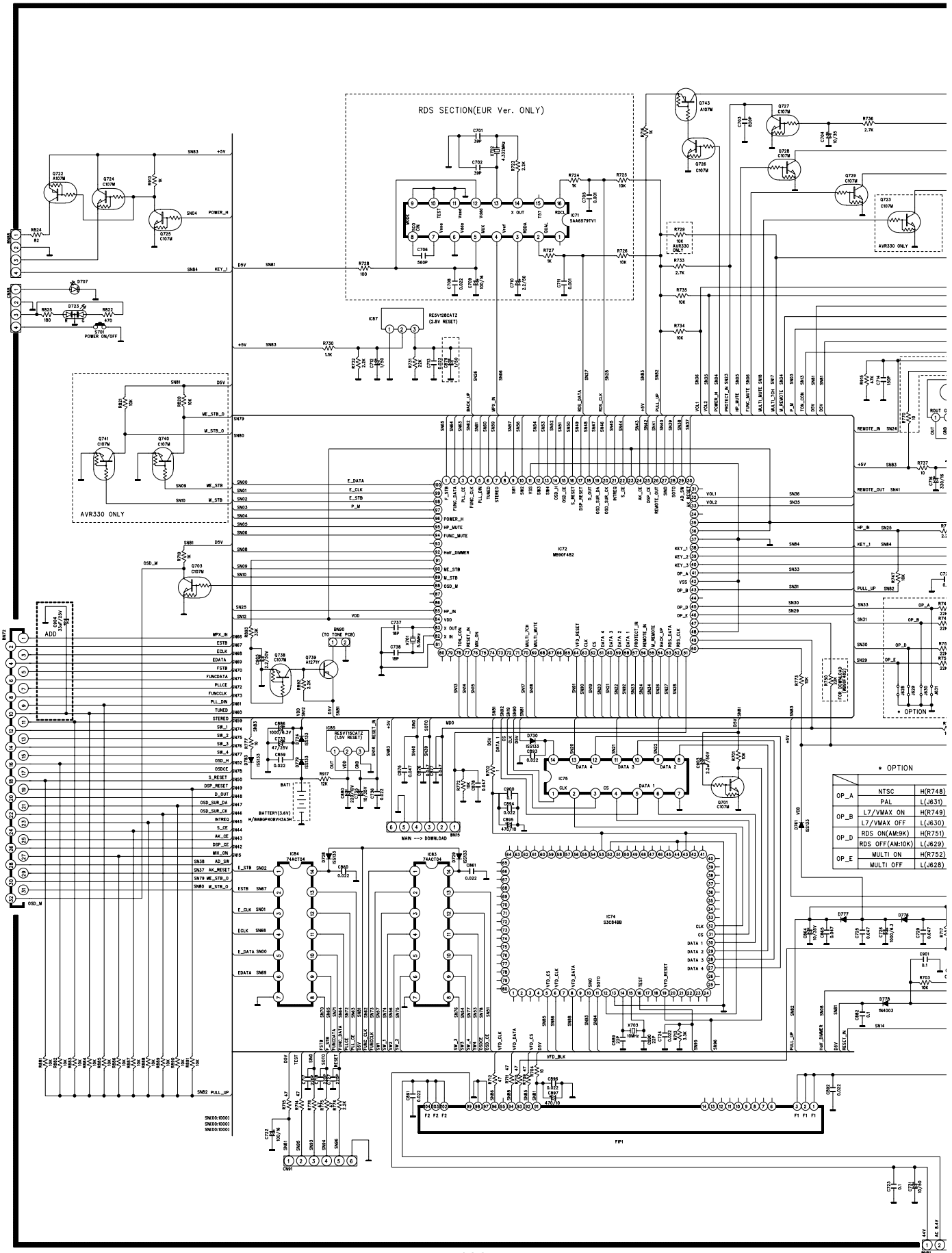
VIDEO BOARD



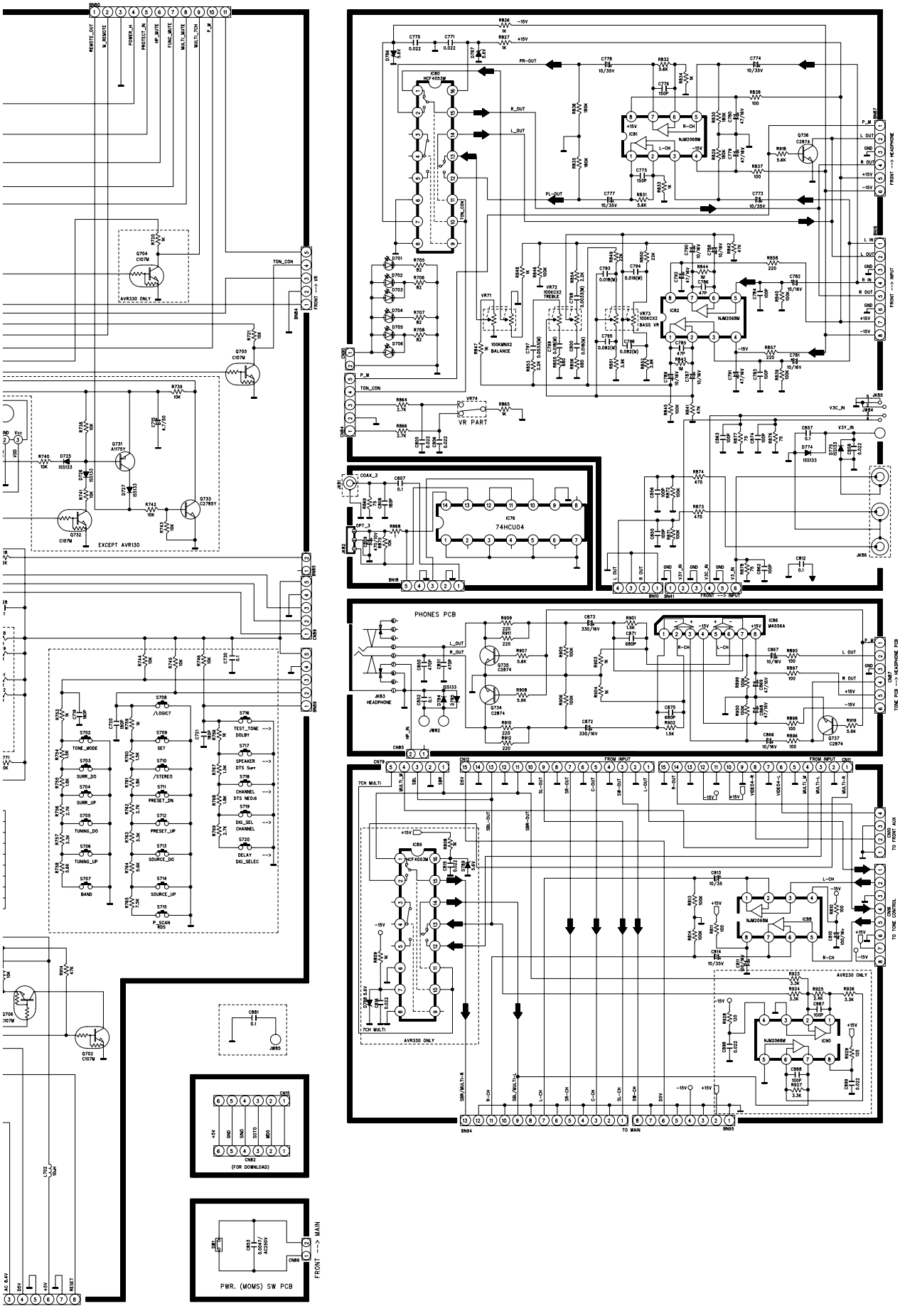
- IMPORTANT SAFETY NOTICS.
  COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.
  IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS
  USE ONLY MANUFACTURER'S SPECIFIED PARTS.
- THE UNIT OF RESISTANCE IS OHM.
  K=1000 OHM , M=1000 KOHM
- THE UNIT OF CAPACITANCE IS MICROFARAD. (uF)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

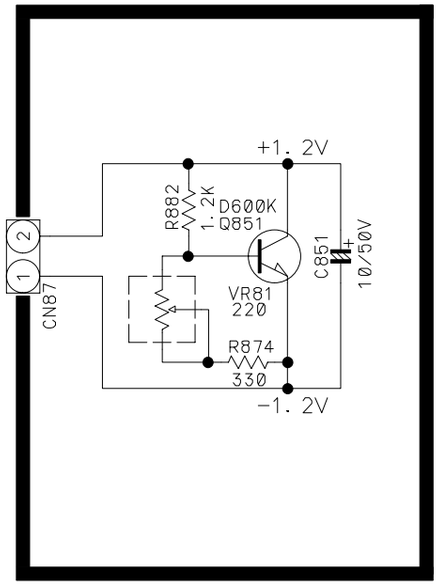


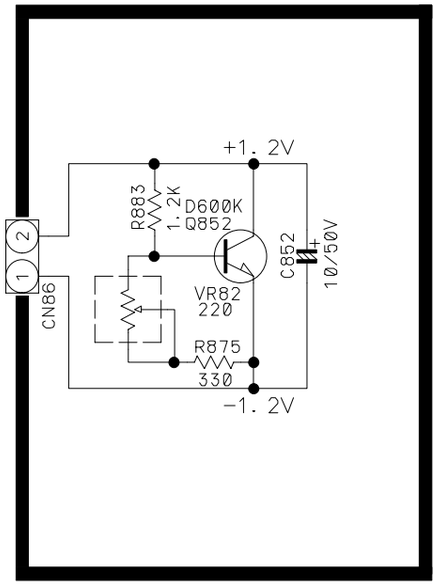

RDS SECTION(EUR Ver. ONLY)
AVR330 ONLY
EXCEPT AVR330
ADD
(TO TONE PCB)
MAIN --> DOWNLOAD
FRONT --> VR
VR PART
FRONT --> HEADPHONE
FRONT --> INPUT
PHONES PCB
JK83 HEADPHONE
FROM INPUT
TO FRONT AUX
TO TONE CONTROL
TO MAIN
FRONT --> MAIN
PWR. (MOMS) SW PCB
CN82 (FOR DOWNLOAD)
* OPTION
OP_A NTSC H(R748) PAL L(J631)
OP_B L7/VMAX ON H(R749) L7/VMAX OFF L(J630)
OP_D RDS ON(AM:9K) H(R751) RDS OFF(AM:10K) L(J629)
OP_E MULTI ON H(R752) MULTI OFF L(J628)

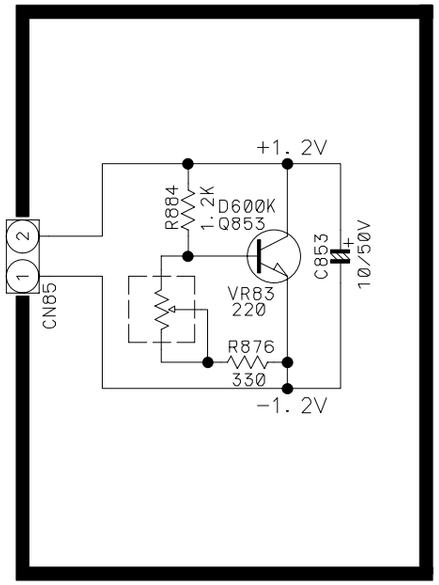

RDS SECTION(EUR Ver. ONLY)
AVR330 ONLY
POWER ON/OFF
ADD
MAIN --> DOWNLOAD
* OPTION
OP_A NTSC H(R748)
PAL L(J631)
OP_B L7/VMAX ON H(R749)
L7/VMAX OFF L(J630)
OP_D RDS ON(AM:9K) H(R751)
RDS OFF(AM:10K) L(J629)
OP_E MULTI ON H(R752)
MULTI OFF L(J628)

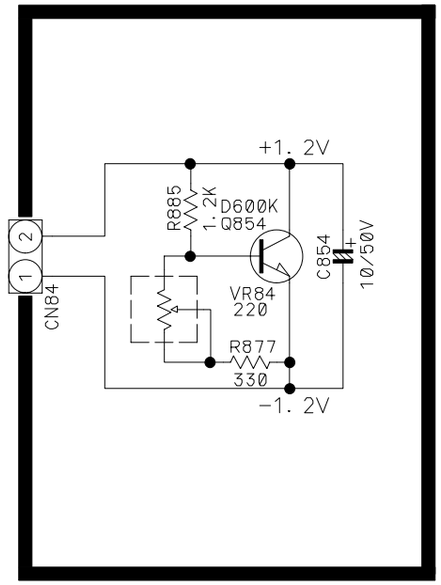
FRONT BOARD

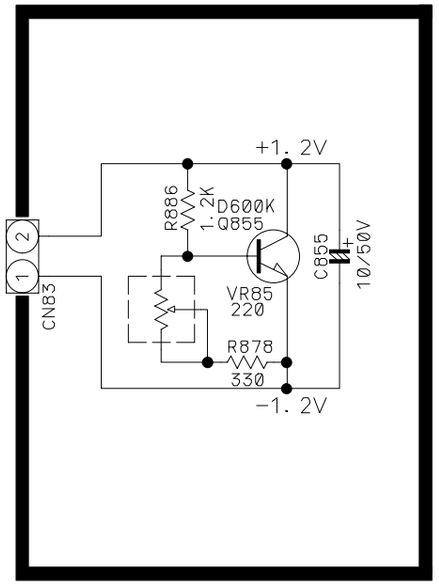

PHONES PCB
EXCEPT AVR130
AVR330 ONLY
PWR. (MOMS) SW PCB
FRONT ---> MAIN
FRONT ---> VR
FRONT ---> HEADPHONE
FRONT ---> INPUT
TONE PCB ---> HEADPHONE PCB
TO FRONT AUX
TO TONE CONTROL
TO MAIN
FROM INPUT
VR PART
74HCU04
(FOR DOWNLOAD)

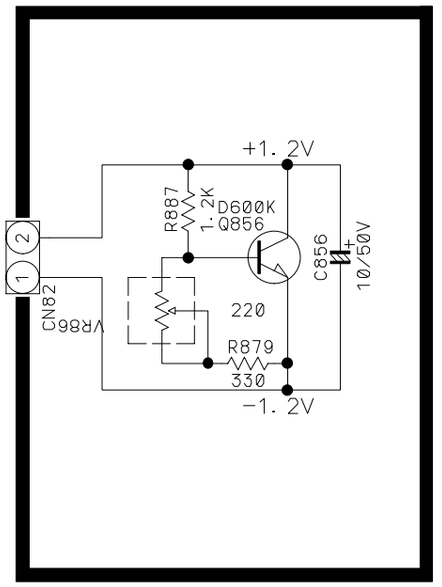


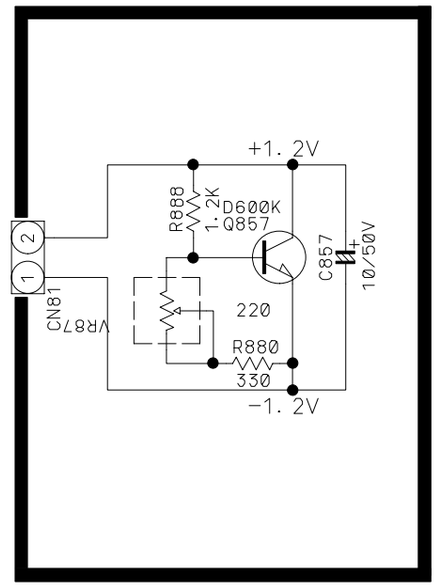










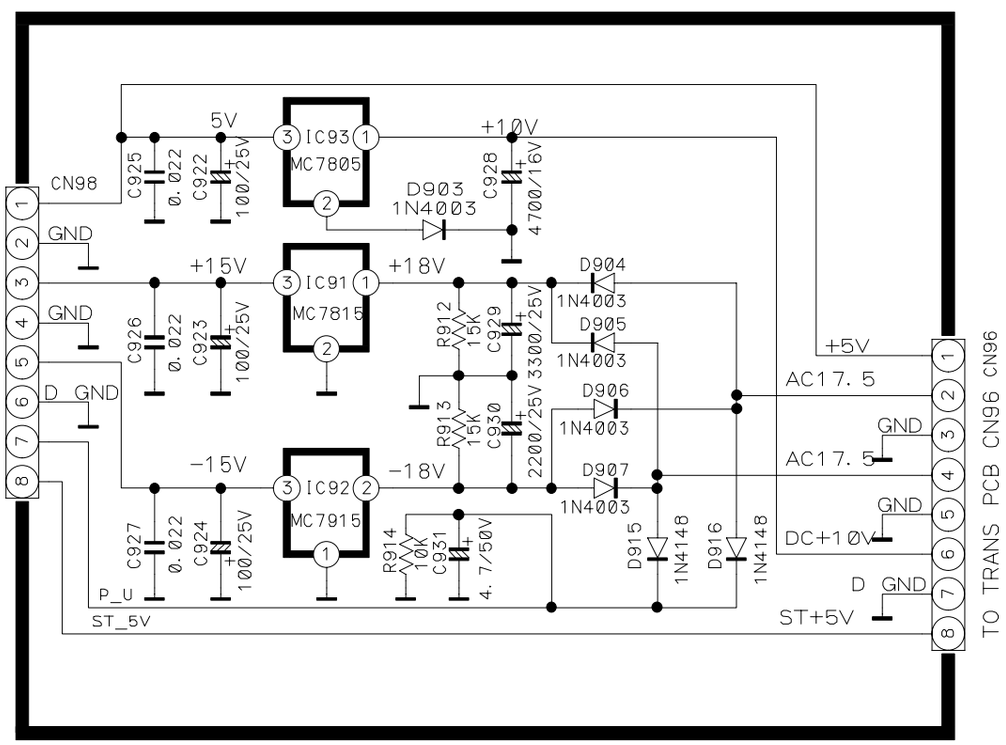


** IMPORTANT SAFETY NOTICE.
COMPONENTS IDENTIFIED BY ⚠ MARK HAVE SPECIAL CHARACTERISTICS.
IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS
USE ONLY MANUFACTURER'S SPECIFIED PARTS.

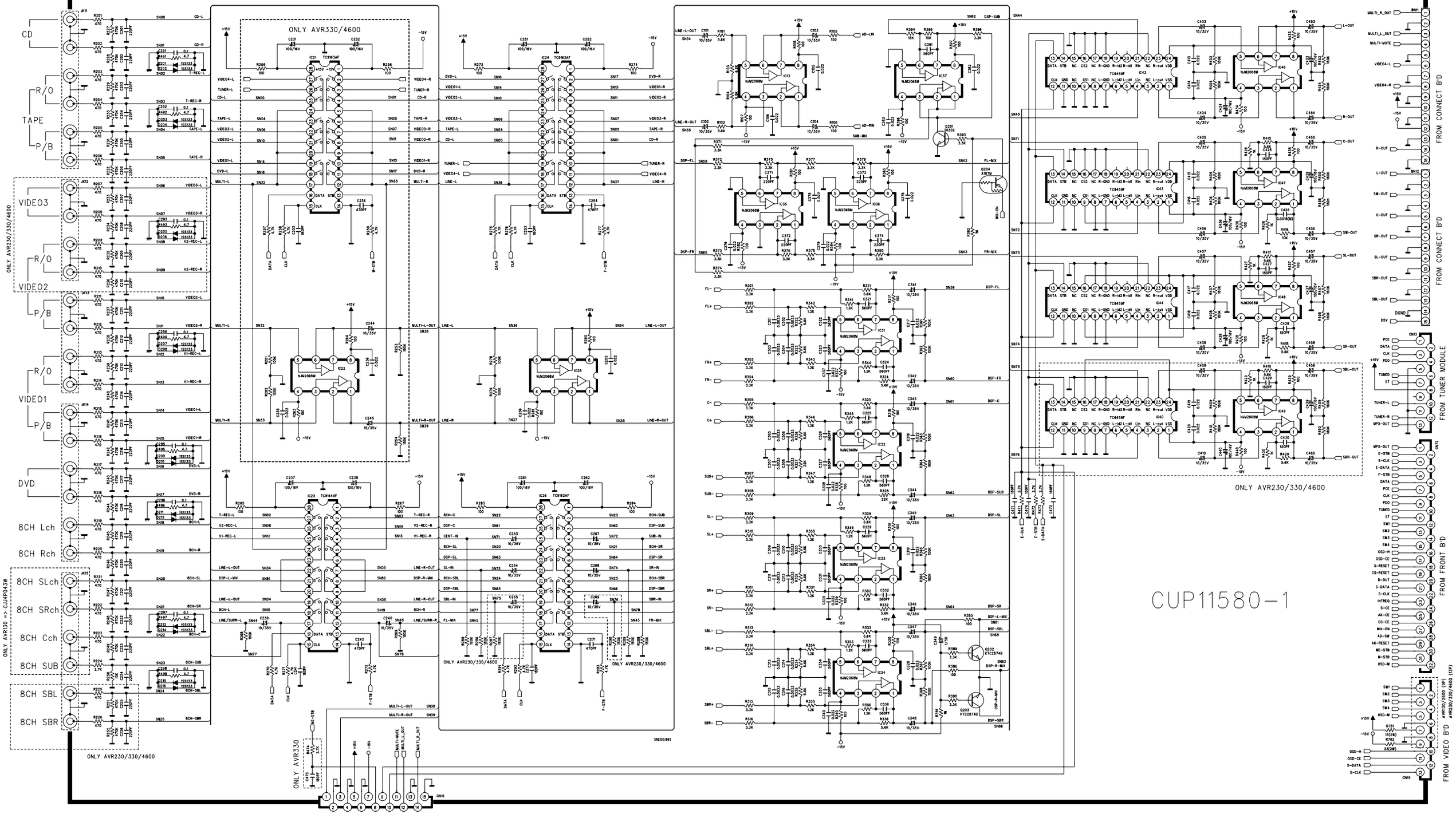
** THE UNIT OF RESISTANCE IS OHM.
K=1000 OHM, M=1000 KOHM.

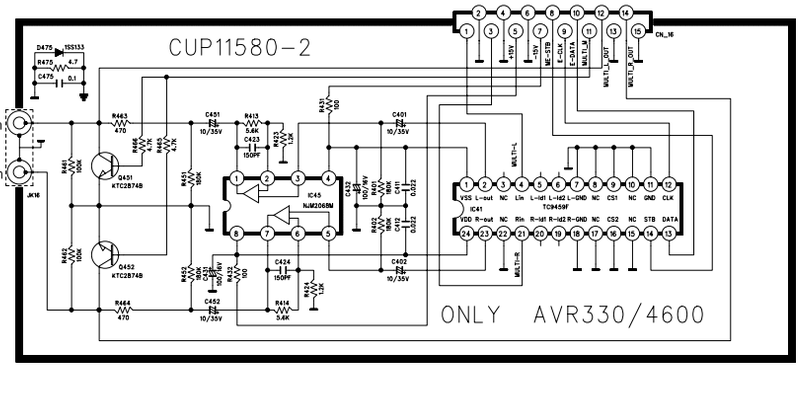
** THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
pF=10 $^{-6}$ uF

** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE
IMPROVEMENT OF PERFORMANCE



INPUT BOARD 1 (ANALOG)





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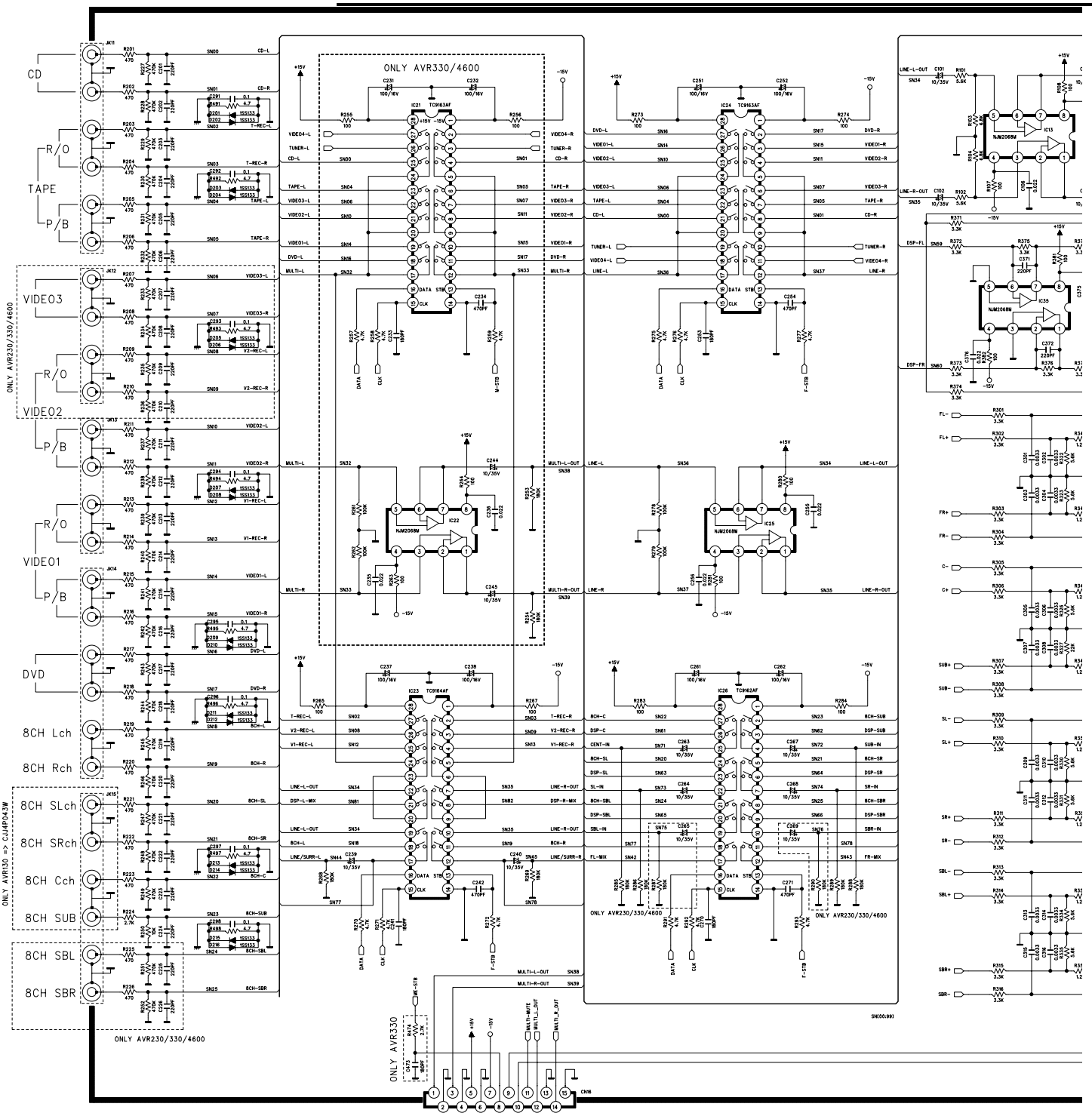

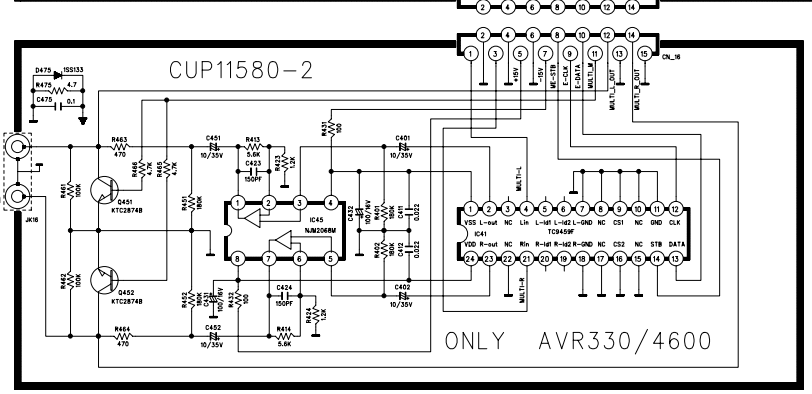

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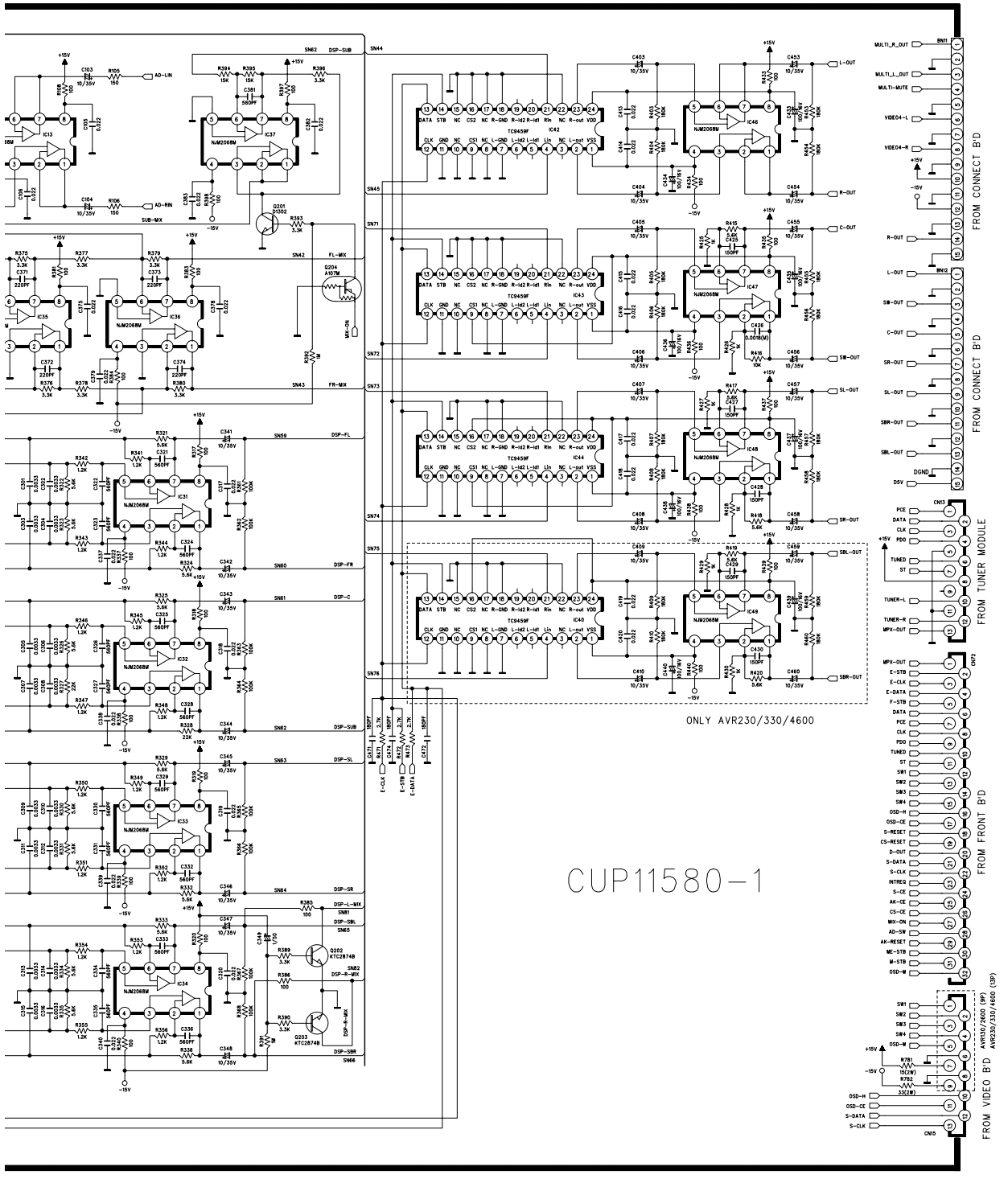
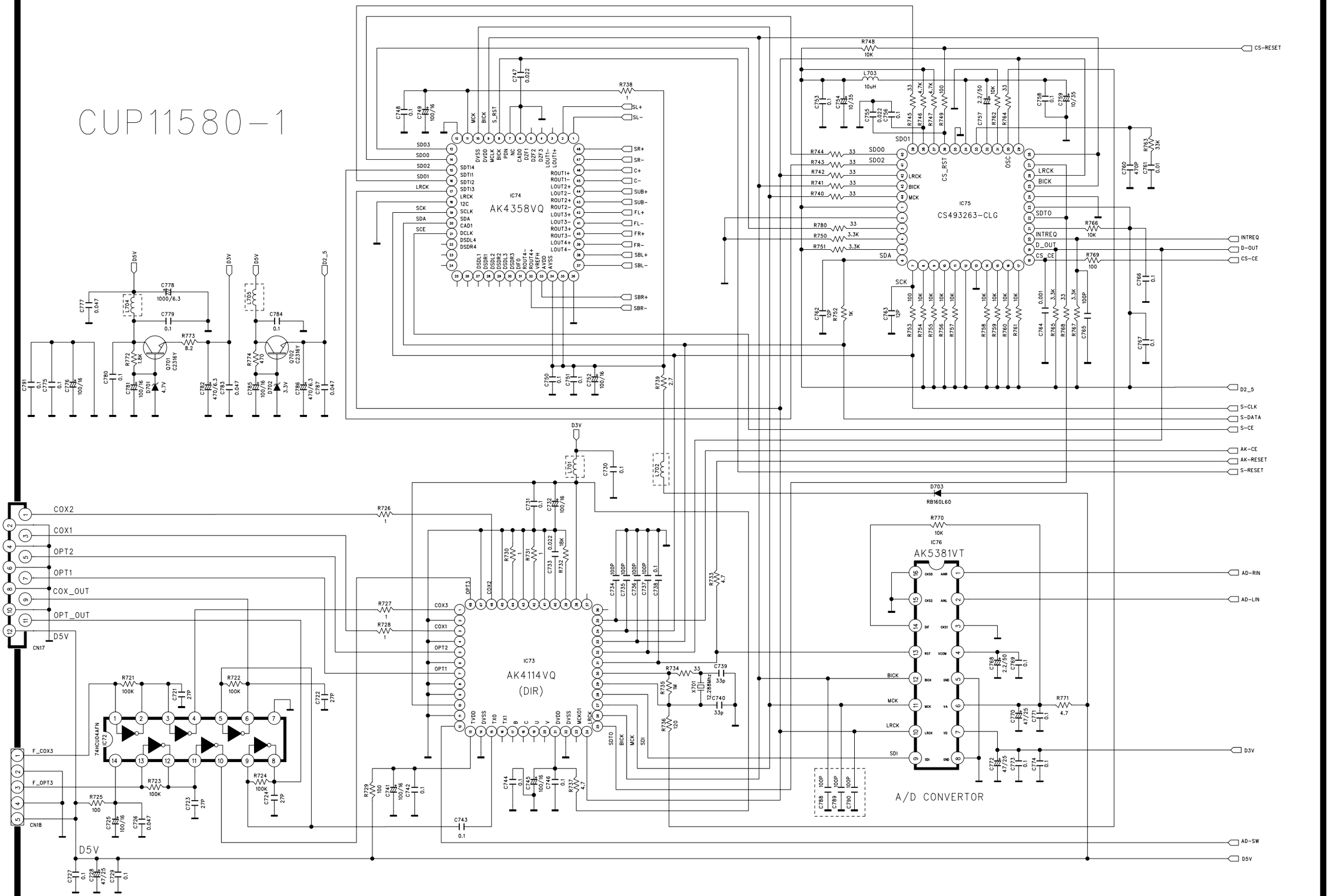
INPUT BOARD 1 (ANALOG)



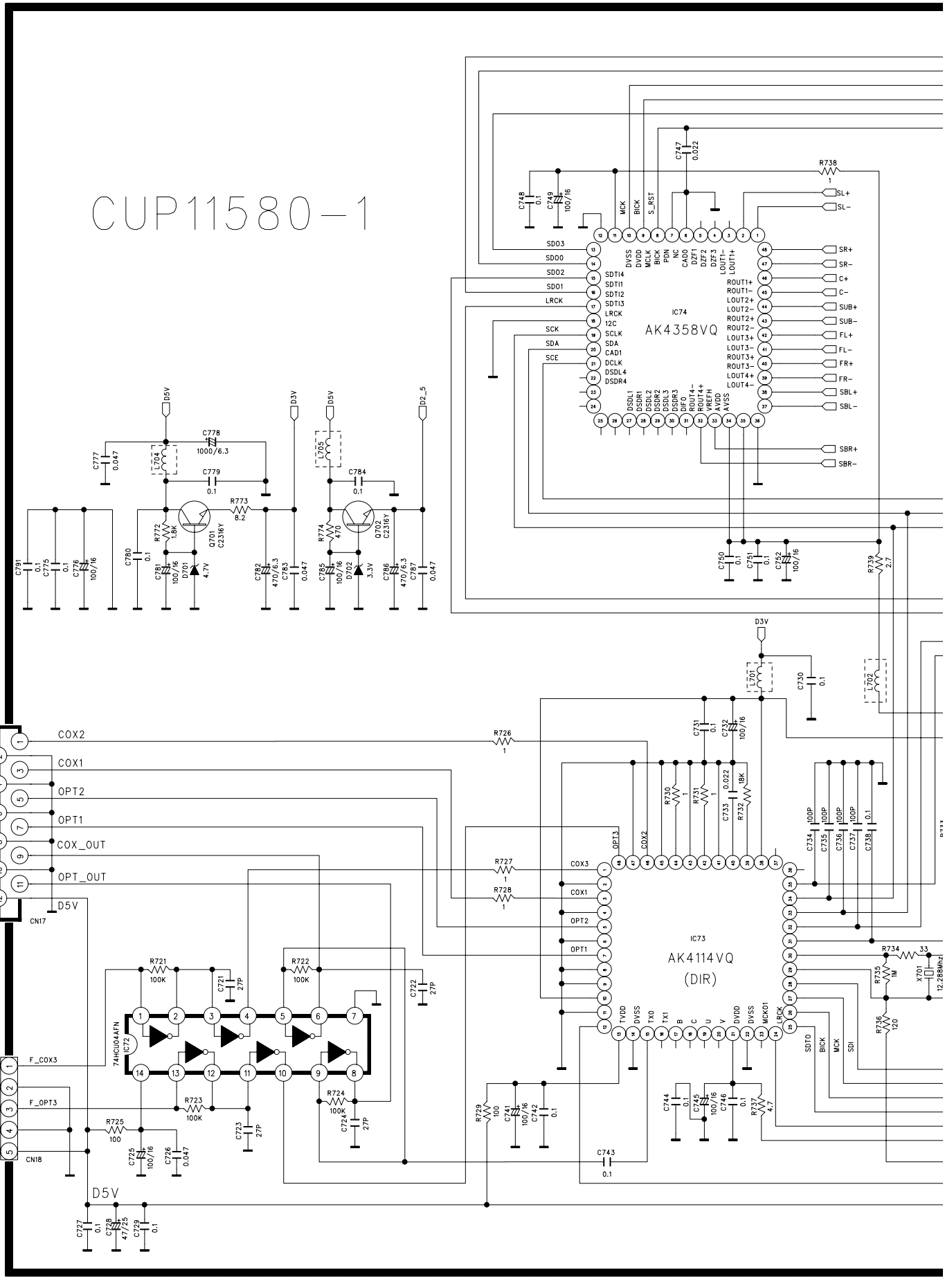
CTERISTICS.

PONENTS

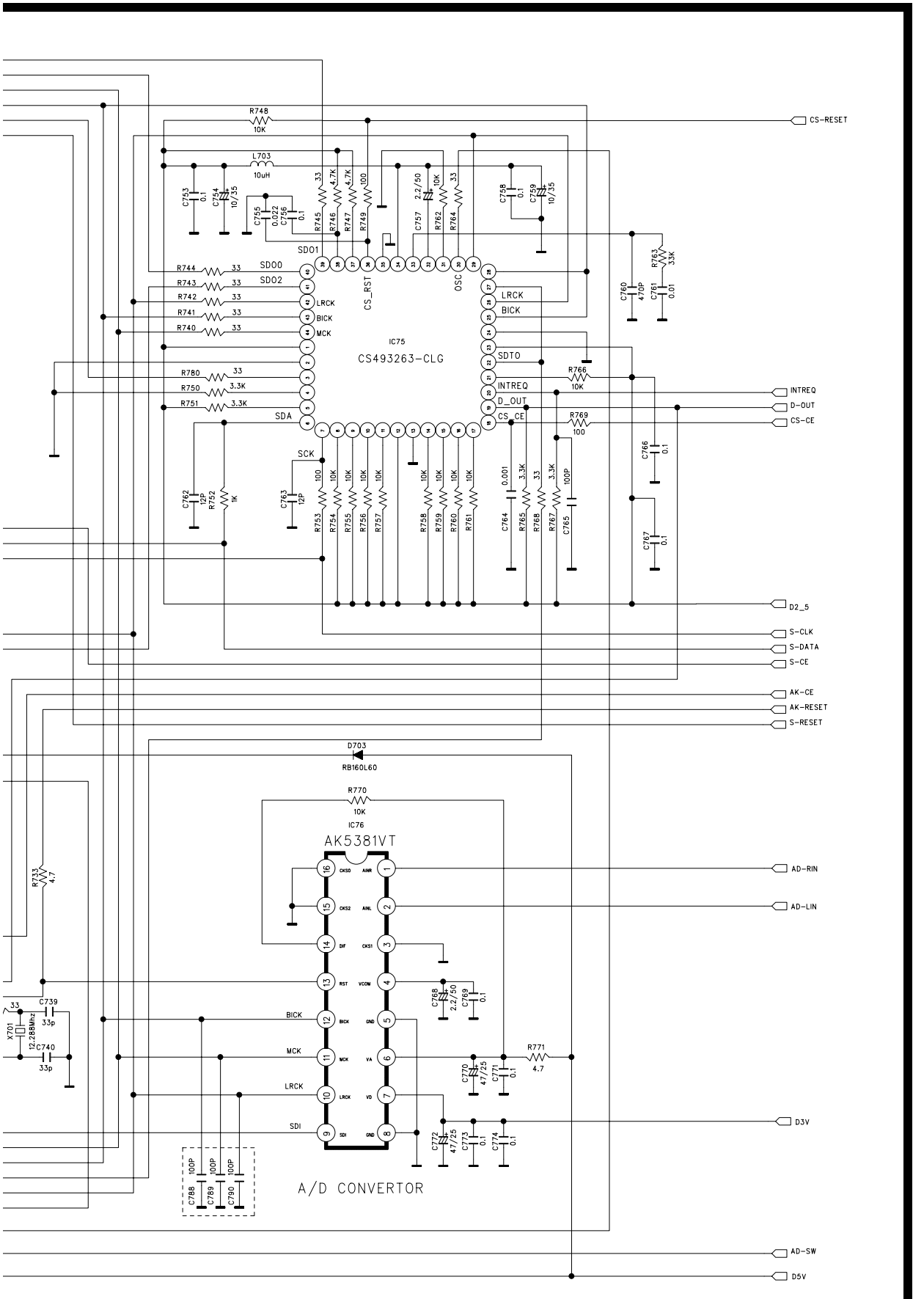
CUP11580-1


IC74
AK4358VQ
IC75
CS493263-CLG
IC76
AK5381VT
IC73
AK4114VQ
(DIR)
IC72
74HCU04AFN
A/D CONVERTOR
CN17
CN18
CS-RESET
INTREQ
D-OUT
CS-CE
S-CLK
S-DATA
S-CE
AK-CE
AK-RESET
S-RESET
AD-RIN
AD-LIN
AD-SW
D5V
D3V
D2_5
COX2
COX1
OPT2
OPT1
COX_OUT
OPT_OUT
F_COX3
F_OPT3
D703
RB160L60
L703
10uH
L704
L701
L702
X701
12.288Mhz

INPUT BOARD 2 (DIGITAL)

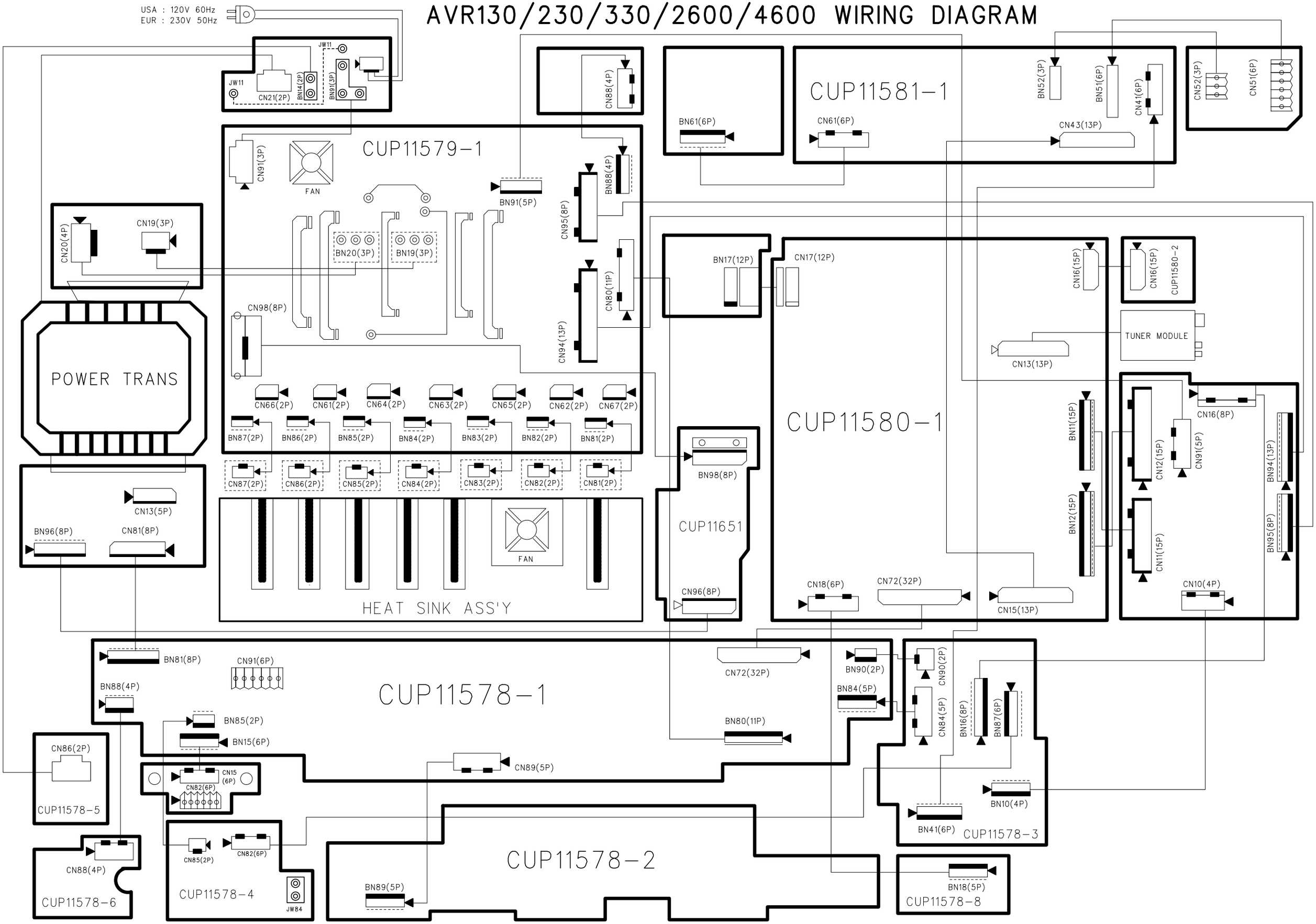


INPUT BOARD 2 (DIGITAL)

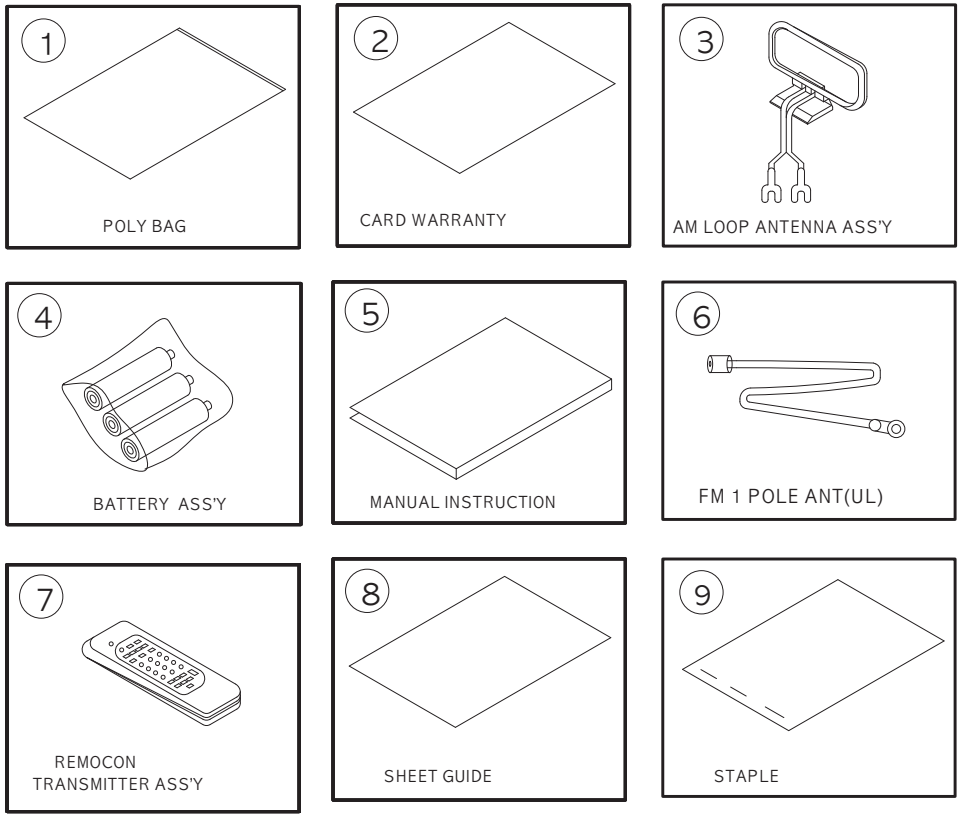


WIRING DIAGRAM

AVR130/230/330/2600/4600 WIRING DIAGRAM

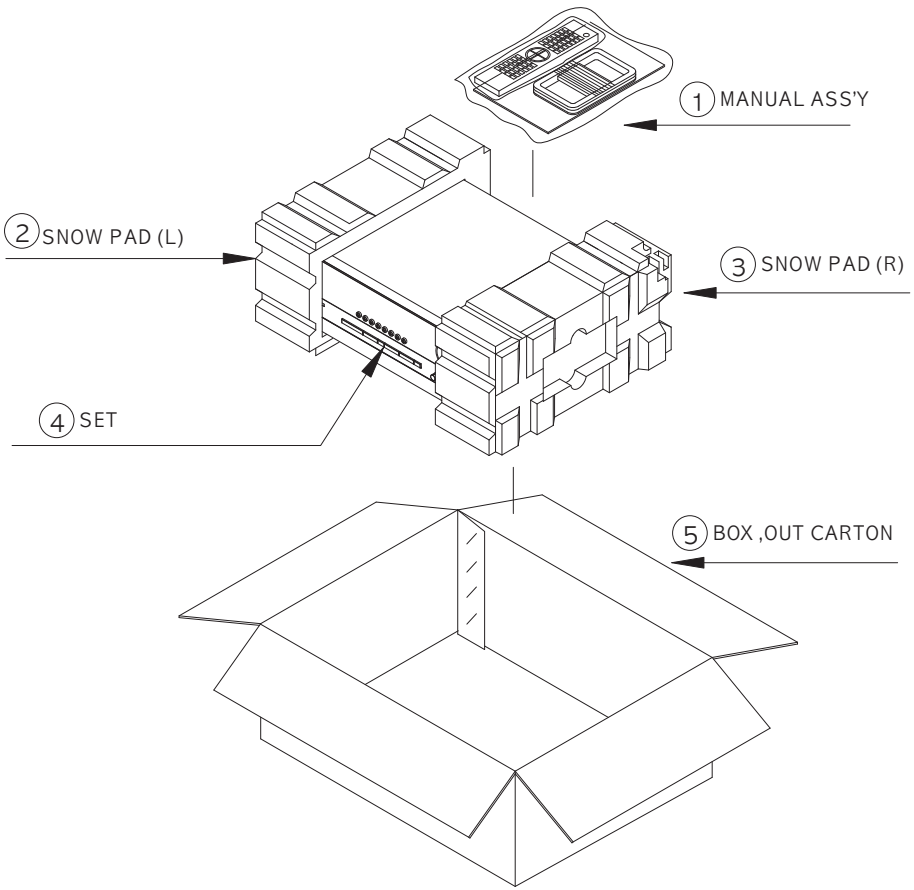


1. Instruction manual ass'y - Accessories



NO	DESCRIPTION	PARTS NO.	Q,ty
1	POLY BAG		1
2	CARD WARRANTY	CQE1A172X	1
3	AM LOOP ANTENNA ASS'Y	CSA3A012Z	1
4	BATTERY		3
5	INSTRUCTION MANUAL	CQX1A849Z	1
6	FM 1 POL ANT(UL)	CSA1A019Z	1
7	REMOCON TRANSMITTER ASS'Y	HARTAVR130CC	1
8	SHEET GUIDE	CQE1A198Z	1
9	STAPLE		3

2. Package Drawing



NO	DESCRIPTION	PARTS NO.	Q,ty
1	MANUAL ASS'Y		1
2	SNOW,PAD(L)	CPS4A564	1
3	SNOW,PAD(R)	CPS4A565	1
4	SET		1
5	BOX,OUT CARTON	CPG1A732R	1