harman/kardon

AVR120

A/V DOLBY DIGITAL RECEIVER

SERVICE MANUAL

CONTENTS

harman/kardon, Inc.
250 Crossways Park Dr.
Woodbury, New York 11797

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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

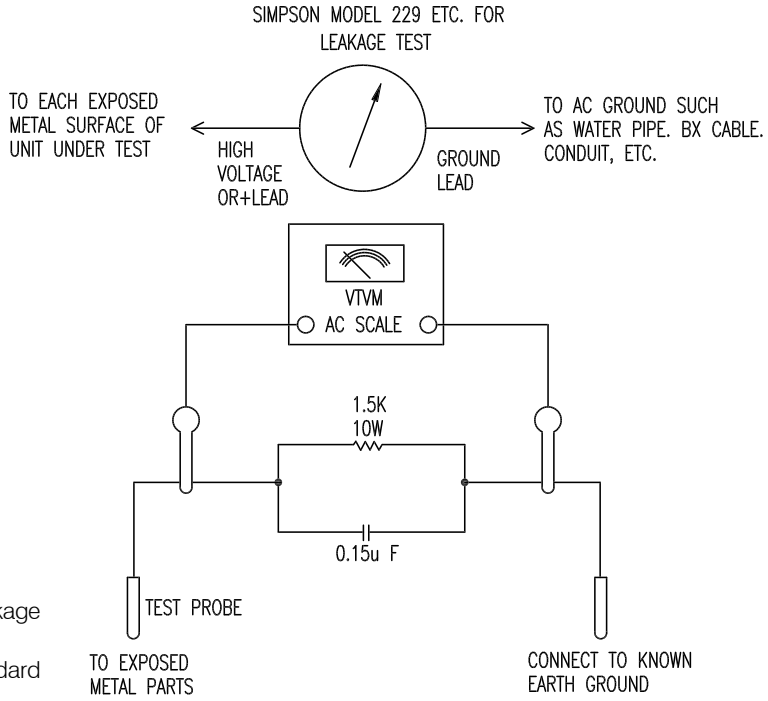
Each precaution in this manual should be followed during servicing.

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.

LEAKAGE TEST(FOR SERVICE ENGINEERS IN THE U.S.A)

Before returning the unit to the user, perform the following safety checks :

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fish-papers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. Which were removed for the servicing are properly re-installed.
3. Be sure that no shock hazard exists ; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows : Plug the power cord directly Into a 120 volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 ohms, 10watt Resistor paralleled by a 0.15uF capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (See diagram) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.



Technical Specifications

Audio Section

Stereo Mode
Continuous Average Power (FTC)

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

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

Surround channels:
40 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)	95dB
Surround System Adjacent Channel Separation	
Pro Logic II	45dB
Dolby Digital (AC-3)	55dB
DTS	55dB
Frequency Response	
@ 1W (+0dB, –3dB)	10Hz–100kHz
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	520–1710 kHz
Signal-to-Noise Ratio	45 dB
Usable Sensitivity	Loop 500 µV
Distortion	1kHz, 50% Mod 0.8%
Selectivity	±10kHz, 30dB

Video Section

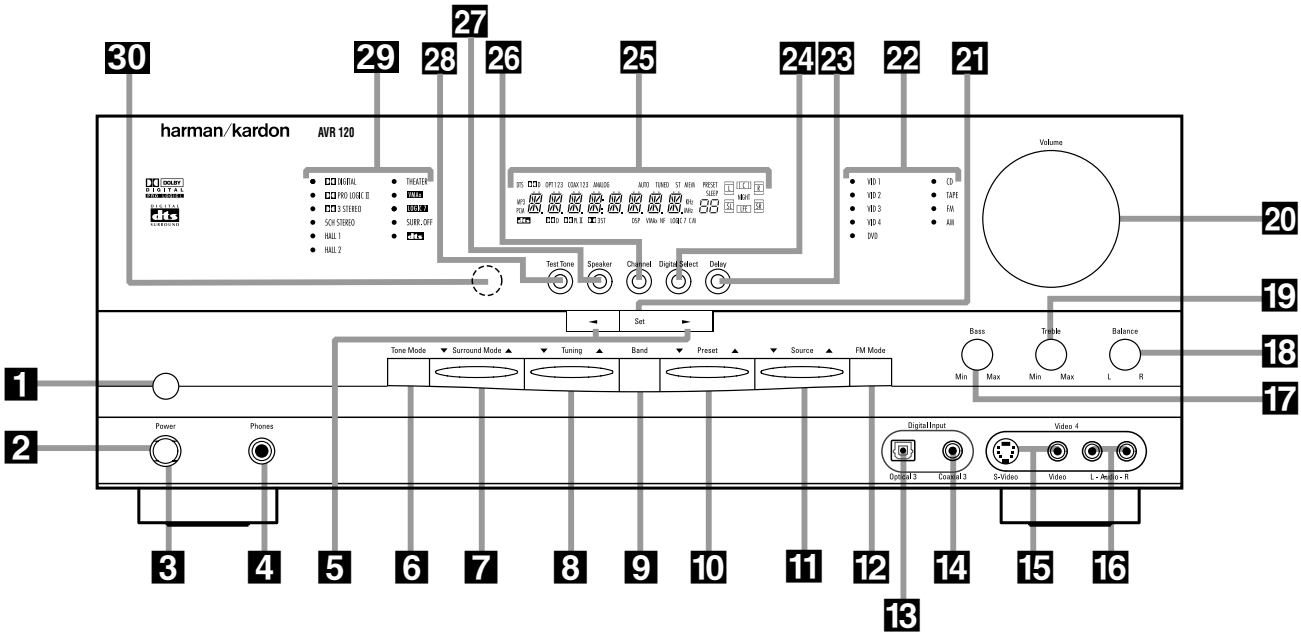
Television Format	NTSC
Input Level/Impedance	1Vp-p/75 ohms
Output Level/Impedance	1Vp-p/75 ohms
Video Frequency Response	10Hz–8MHz (–3dB)

General

Power Requirement	AC 120V/60Hz
Power Consumption	68W idle, 540W maximum (2 channels driven)
Dimensions	
Width	17.3 inches (440mm)
Height	6.5 inches (165mm)
Depth	17.1 inches (435mm)
Weight	31 lb (14.1kg)

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 System Power Control
3 Power Indicator
4 Headphone Jack
5 Selector Buttons
6 Tone Mode
7 Surround Mode Selector
8 Tuning Selector
9 Tuner Band Selector
10 Preset Stations Selector
11 Input Source Selector
12 FM Mode Selector
13 Digital Optical 3 Input
14 Digital Coax 3 Input
15 Video 4 Video Input Jacks
16 Video 4 Audio Input Jacks
17 Bass Control
18 Balance Control
19 Treble Control
20 Volume Control
21 Set Button
22 Input Indicators
23 Delay
24 Digital Input Selector
25 Main Information Display
26 Channel Select Button
27 Speaker Select Button
28 Test Tone Selector
29 Surround Mode Indicators
30 Remote Sensor Window

1 Main Power Switch: Press this button to apply power to the AVR 120. When the switch is pressed in, the unit is placed in a Standby mode, as indicated by the amber LED **3** surrounding the **System Power Control 2**. 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 so that the word "OFF" may be read at the top of the switch.

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

2 System Power Control: When the **Main Power Switch 1** is "ON," press this button to turn on the AVR 120; press it again to turn the unit off. Note that the **Power Indicator 3** surrounding the switch will turn green when the unit is on.

3 Power Indicator: This LED will be illuminated in amber when the unit is in the Standby mode to signal that the unit is ready to be turned on. When the unit is in operation, the indicator will turn green. Should the indicator turn red, turn the unit off using the **Main Power Switch 1** and check the speaker wire connections to make certain that there are no short circuits.

4 Headphone Jack: This jack may be used to listen to the AVR 120's output through a pair of headphones. Be certain that the headphones have a standard 1/4" stereo phone plug. Note that the main room speakers will automatically be turned off when the headphone jack is in use.

5 Selector Buttons: When you are establishing the AVR 120's configuration settings, use these buttons to select from the choices available, as shown in the **Main Information Display 25**.

6 Tone Mode: Pressing this button enables or disables the Bass and Treble tone controls. When the button is pressed so that the words TONE IN appear in the **Main Information Display 25**, the settings of the **Bass 17** and **Treble 19** controls may be used to adjust the output signals. When the button is pressed so that the words TONE OUT appear in the **Main Information Display 25**, the output signal will be "flat," without any bass or treble alteration, no matter how the actual **Bass** and **Treble Controls 17 19** are adjusted.

7 Surround Mode Selector: Press this button to change the surround mode by scrolling through the list of available modes. Note that depending on the type of input, some modes are not always available. (See page 22 for more information about surround modes.)

Front Panel Controls

8 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 a station with a strong signal is reached, the **TUNED Indicator Q** will be illuminated in the **Main Information Display 25** .

To tune manually, tap the button lightly and note that the tuner will step up one frequency increment per button press. When the button is held for a few seconds you will note that the unit will quickly search the frequency band. Release it once the fast tuning starts; the tuner will automatically scan for the next station with an acceptable signal and then stop.

9 Tuner Band Selector: Pressing this button will automatically switch the AVR 120 to the Tuner mode. Pressing it again will switch between the AM and FM frequency bands. (See page 25 for more information on the tuner.)

10 Preset Stations Selector: Press this button to scroll up or down through the list or stations that have been entered into the preset memory. (See page 26 for more information on tuner presets.)

11 Input Source Selector: Press this button to change the input by scrolling up or down through the list of input sources.

12 FM Mode Selector: Press this button to select Auto or Manual tuning. When the button is pressed so that the **AUTO Indicator R** lights, the tuner will search for the next station with an acceptable signal when the **Tuning Selector 8 21** is pressed. When the button is pressed so that the **AUTO Indicator R** is not lit, each press of the **Tuning Selector 8 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 until the **STEREO Indicator P** goes out to switch to Mono reception. Press and hold again to switch back to STEREO mode. (See page 25 for more information on using the tuner.)

13 Digital Optical 3 Input: Connect the optical digital 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.

14 Digital Coax 3 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 jack.

15 Video 4 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.

16 Video 4 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.

17 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. Set this control to a suitable position for your taste or room acoustics.

18 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.

19 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. Set this control to a suitable position for your taste or room acoustics.

20 Volume Control: Turn this knob clockwise to increase the volume, counterclockwise to decrease the volume. If the AVR 120 is muted, adjusting the **Volume Control 20 33** will automatically release the unit from the silenced condition.

21 Set Button: When making choices during the setup and configuration process, press this button to enter the desired setting as shown in the **Main Information Display 25** into the AVR 120's memory. The set button may also be used to change the display brightness. (See page 26.)

22 Input Indicators: A green LED will light in front of the input that is currently being used as the source for the AVR 120.

23 Delay: Press this button to begin the sequence of steps required to enter delay time settings. (See page 19 for more information on delay times.)

24 Digital Input Selector: When playing a source that has a digital output, press this button to select between the **Optical 13 23** and **Coaxial 14 24 Digital** inputs. (See pages 23–25 for more information on digital audio.)

25 Main Information Display: This display delivers messages and status indications to help you operate the receiver. (See pages 7–8 for a complete explanation of the Information Display.)

26 Channel Select Button: 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.)

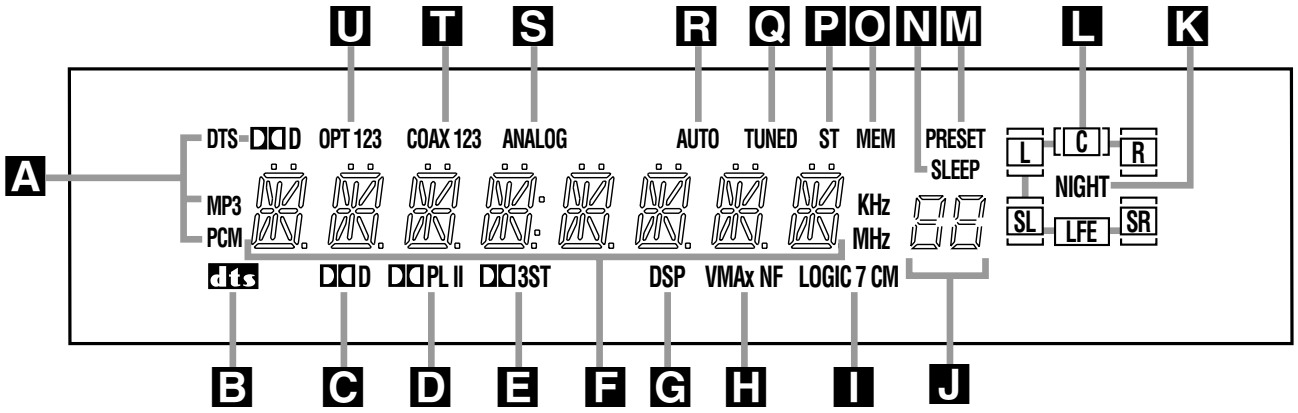
27 Speaker Select Button: Press this button to begin the process of configuring the unit to match the type of speakers used in your listening room. (See pages 16–19 for more information on speaker setup and configuration.)

28 Test Tone Selector: Press this button to begin the process of adjusting the channel output levels using the internal test tone as a reference. (For more information on output level adjustment, see page 18.)

29 Surround Mode Indicators: A green LED will light in front of the surround mode that is currently in use.

30 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.

Front Panel Information Display



A Bitstream Indicators
B DTS Mode Indicator
C Dolby Digital Indicator
D Dolby Pro Logic II Indicator
E Dolby 3 Stereo Indicator
F Main Information Display
G DSP Mode Indicator
H VMAx Mode Indicators
I Logic 7 Mode Indicators
J Preset Number/Sleep Timer
K Night Mode Indicator
L Speaker/Channel Input Indicators
M Preset Indicator
N Sleep Indicator
O Memory Indicator
P Stereo Indicator
Q Tuned Indicator
R Auto Indicator
S Analog Input Indicator
T Coaxial Digital Input Indicators
U Optical Digital Input Indicators

A Bitstream Indicators: When the input is a digital source, one of these indicators will light to display the specific type of data signal in use.

B DTS Mode Indicator: This indicator lights when a DTS-encoded source is playing.

C Dolby Digital Indicator: This indicator lights when a Dolby Digital source is being played.

D Dolby Pro Logic II Indicator: This indicator lights when the Dolby Pro Logic II mode has been selected.

NOTE: It is possible to see the Dolby Pro Logic II indicator lit simultaneously with the Dolby Digital indicator, even though the Dolby Digital surround mode has been selected. This is due to the specifications for Dolby Digital processing, which require that the Dolby Pro Logic II mode apply any time a 2-channel Dolby signal is detected. If you desire 5.1-channel audio, check the audio settings in the menus for both your DVD player and your DVD disc to make sure that a 5.1-channel Dolby Digital sound track is available and has been selected.

E Dolby 3 Stereo Indicator: This indicator lights when the Dolby 3 Stereo mode has been selected.

F Main Information Display: This display shows messages relating to the status, input source, surround mode, tuner, volume level or other aspects of the AVR 120's operation.

G DSP Mode Indicator: This indicator lights when any of the surround modes created by Digital Signal Processing, or DSP are in use. These modes include Hall 1, Hall 2, Theater and 5-Channel Stereo.

H VMAx Mode Indicators: This indicator lights when the VMAx mode is in use. VMAx F appears when the Far Field VMAx mode is selected; VMAx N appears when the Near Field VMAx mode is selected. (See page 22 for a description of the VMAx modes.)

I Logic 7 Mode Indicators: These indicators light when the Logic 7 mode is in use. LOGIC 7C appears for the Cinema version of Logic 7; LOGIC 7M appears for the Music version of Logic 7. (See page 22 for a description of the Logic 7 modes.)

J Preset Number/Sleep Timer: When the tuner is in use, these numbers indicate the specific preset memory location in use. (See page 26 for more information on preset stations.) When the Sleep function is in use, these numbers show how many minutes remain before the unit goes into the Standby mode.

K Night Mode Indicator: This indicator lights when the AVR 120 is in the Night mode, which preserves the dynamic range of digital program material at low volume levels.

L Speaker/Channel Input Indicators: These indicators are multipurpose, indicating either the speaker type selected for each channel or 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 to one of those positions. (See page 17 for more information on configuring speakers.) The letters inside each of the center boxes display active input channels. For standard analog inputs, only the L and R will light, indicating a stereo input. When a digital source is playing, 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.)

M Preset Indicator: This indicator lights when the tuner is in use to show that the **Preset Number/Sleep Timer J** is showing the station's preset memory number. (See page 26 for more information on tuner presets.)

N Sleep Indicator: This indicator lights when the Sleep function is in use. The numbers in the Preset Number/Sleep Timer Indicators will show the minutes remaining before the AVR 120 goes into the Standby mode. (See page 21 for more information on the Sleep function.)

Front Panel Information Display

O Memory Indicator: This indicator flashes when entering presets and other information into the tuner's memory.

P Stereo Indicator: This indicator lights when an FM station is being tuned in stereo.

Q Tuned Indicator: This indicator lights when a station is being received with sufficient signal strength to provide acceptable listening quality.

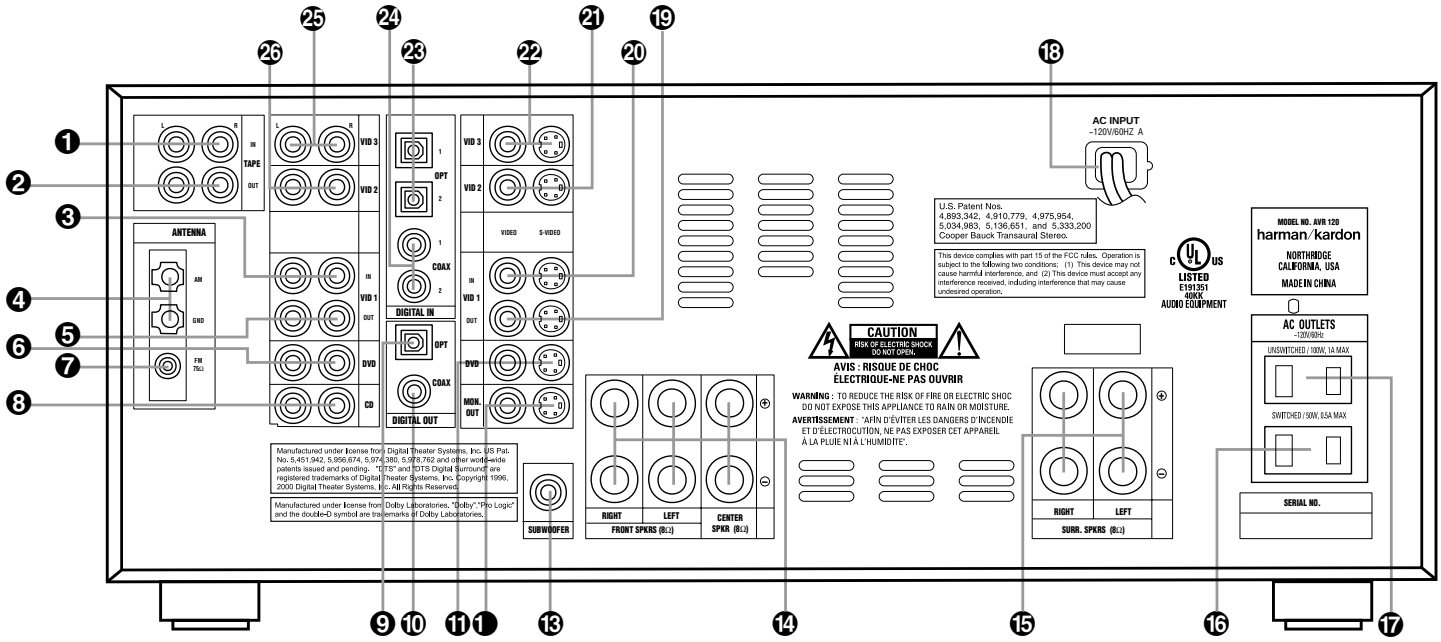
R Auto Indicator: This indicator lights when the tuner's Auto mode is in use.

S Analog Input Indicator: This indicator lights when an analog input source has been selected.

T Coaxial Digital Input Indicators: These indicators light to show when a Coaxial Digital Input has been selected.

U Optical Digital Input Indicators: These indicators light to show when an Optical Digital Input has been selected.

Rear Panel Connections



1. Tape Inputs
2. Tape Outputs
3. Video 1 Audio Inputs
4. AM Antenna
5. Video 1 Audio Outputs
6. DVD Audio Inputs
7. FM Antenna
8. CD Inputs
9. Optical Digital Output
10. Coaxial Digital Output
11. DVD Video Inputs
12. Video Monitor Outputs
13. Subwoofer Output
14. Front Speaker Outputs
15. Surround Speaker Outputs
16. Switched AC Accessory Outlet
17. Unswitched AC Accessory Outlet
18. AC Power Cord
19. Video 1 Video Outputs
20. Video 1 Video Inputs
21. Video 2 Video Inputs
22. Video 3 Video Inputs
23. Optical Digital Inputs
24. Coaxial Digital Inputs
25. Video 3 Audio Inputs
26. Video 2 Audio Inputs

Rear Panel Connections

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

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

❸ **Video 1 Audio Inputs:** Connect these jacks to the **PLAY/OUT** audio jacks on a VCR or other video source.

❹ **AM Antenna:** 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.

❺ **Video 1 Audio Outputs:** Connect these jacks to the **RECORD/INPUT** audio jacks on a VCR.

❻ **DVD Audio Inputs:** Connect these jacks to the analog audio 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** ㉔. If you connect the audio outputs of a DVD player to these jacks, change the input setting as shown on page 20.

❼ **FM Antenna:** Connect the supplied indoor or an optional external FM antenna to this terminal.

❽ **CD Inputs:** Connect these jacks to the output of a compact disc player or CD changer.

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

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

⓫ **DVD Video Inputs:** Connect these jacks to the composite or S-Video output jacks on a DVD or other video source.

⓬ **Video Monitor Outputs:** Connect this jack to the composite or S-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.

⓭ **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.

⓮ **Front Speaker Outputs:** Connect these outputs to the matching + or – terminals on your front speakers. 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 white terminal to the positive (+) terminal on the left front speaker, the red terminal to the positive (+) terminal on the right front speaker and the green terminal to the positive (+) terminal on the center front speaker. Newer speakers will have matching color terminals in accordance with the new CEA specifications, while existing speakers typically use a red terminal for the positive (+) speaker wire connection. (See page 14 for more information on speaker polarity.)

⓯ **Surround Speaker Outputs:** Connect these outputs to the matching + or – terminals on your left and right surround speakers. 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. Newer speakers will have matching color terminals in accordance with the new CEA specifications, while existing speakers typically use a red terminal for the positive (+) speaker wire connection. (See page 14 for more information on speaker polarity.)

⓰ **Switched AC Accessory Outlet:** This outlet may be used to power any device you wish to have turned on when the AVR 120 is turned on with the **System Power Control Switch** ❷.

⓱ **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 120 is on or off.

NOTE: The total power consumption of all devices connected to the accessory outlets should not exceed 100 watts.

⓲ **AC Power Cord:** Connect the AC plug to an unswitched AC wall output.

⓳ **Video 1 Video Outputs:** Connect these jacks to the **RECORD/INPUT** composite or S-Video jack on a VCR.

⓴ **Video 1 Video Inputs:** Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a VCR or other video source.

㉑ **Video 2 Video Inputs:** Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a TV, VCR or other video source.

㉒ **Video 3 Video Inputs:** Connect these jacks to the **PLAY/OUT** composite or S-Video jacks on a cable television box, satellite dish receiver, VCR or other video source.

㉓ **Optical Digital Inputs:** Connect the optical digital 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.

㉔ **Coaxial Digital Inputs:** Connect the coax digital 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.

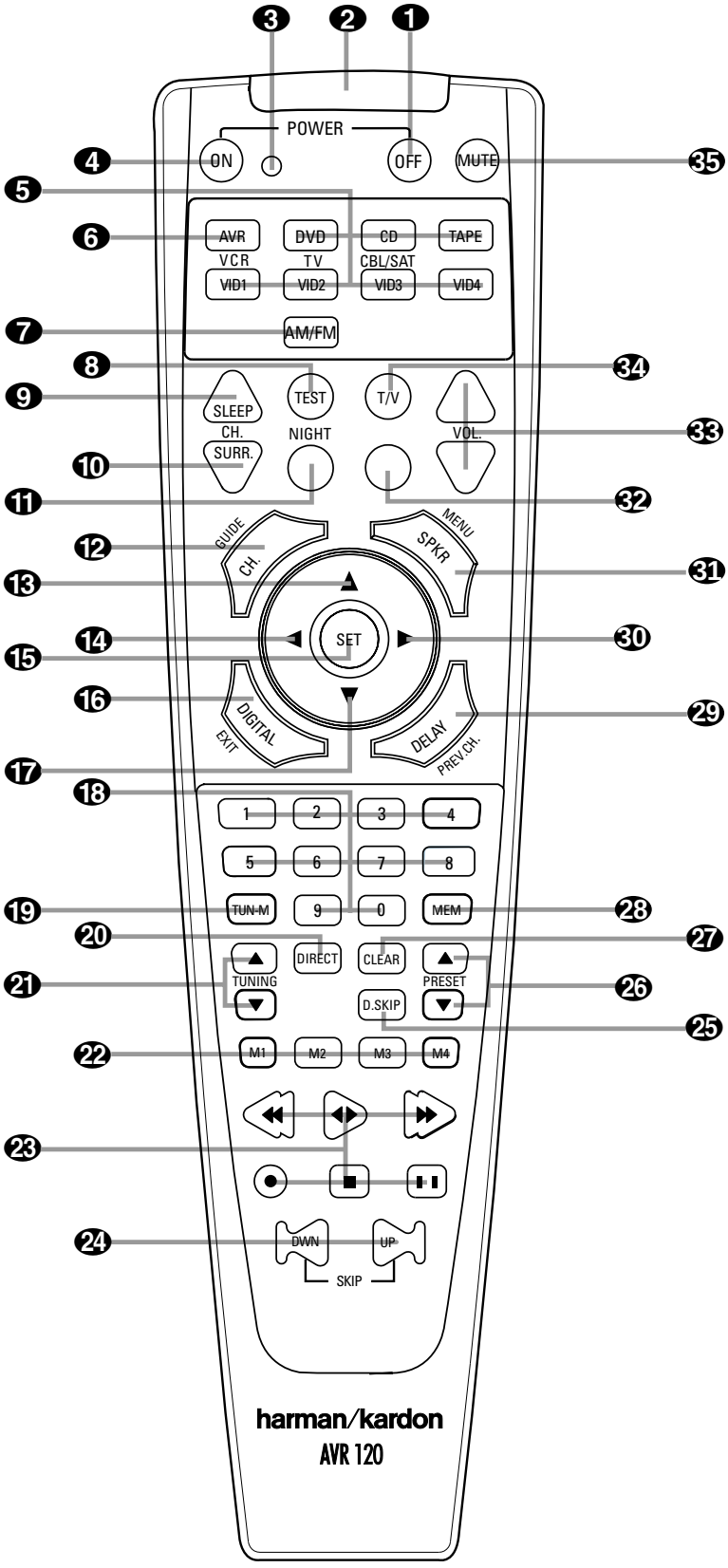
㉕ **Video 3 Audio Inputs:** Connect these jacks to the **PLAY/OUT** audio jacks on a VCR, satellite receiver, cable box, video game or other composite video source.

㉖ **Video 2 Audio Inputs:** Connect these jacks to the **PLAY/OUT** audio jacks on a VCR, satellite receiver, cable box, video game or other composite video source.

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. Test Button
9. Sleep Button
10. Surround Mode Selector
11. Night Mode
12. Channel Select Button
13. ▲ Button
14. ◄ Button
15. Set Button
16. Digital Select
17. ▼ Button
18. Numeric Keys
19. Tuner Mode
20. Direct Button
21. Tuning Up/Down
22. Macro Buttons
23. Transport Controls
24. Skip Up/Down Buttons
25. Disc Skip Button
26. Preset Up/Down
27. Clear Button
28. Memory Button
29. Delay/Prev. Ch.
30. ► Button
31. Speaker Select
32. Spare Button
33. Volume Up/Down
34. TV/Video Selector
35. Mute

NOTE: The function names shown here refer to each button's feature when used with the AVR 120. Most buttons have additional functions when used with other devices. See pages 31–32 for a list of these functions.



Remote Control Functions

IMPORTANT NOTE: The AVR 120's remote may be programmed to control up to eight devices, including the AVR 120. Before using the remote, it is important to remember to press the **Input Selector Button** ❺ that corresponds to the unit you wish to operate. In addition, the AVR 120's remote is shipped from the factory to operate the AVR 120 and most Harman Kardon CD or DVD players and cassette decks. 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 27–30 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 120. (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 120 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 120 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 27–30 for information on programming the remote.)

❹ **Power On Button:** Press this button to turn on power to the device that was last selected by pressing one of the **Input Selectors** ❺. To turn on the AVR 120, press the **AVR Selector Button** ❻.

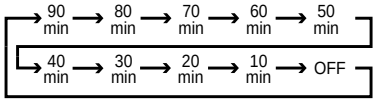
❺ **Input Selectors:** Pressing one of these buttons will perform three actions at the same time. First, if the AVR 120 is not turned on, this will power up the unit. Next, it will select the source shown on the button as the input to the AVR 120. Finally, it will change the remote control so that it controls the device selected. After pressing one of these buttons you must press the **AVR Selector Button** ❻ again to operate the AVR 120's functions with the remote.

❻ **AVR Selector:** Pressing this button will switch the remote so that it will operate the AVR 120's functions. If the AVR 120 is in the Standby mode, it will also turn the AVR 120 on.

❼ **AM/FM Tuner Select:** Press this button to select the AVR 120'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 **Test Button:** Press this button to begin the sequence used to calibrate the AVR 120's output levels. (See pages 18–19 for more information on calibrating the AVR 120.)

❾ **Sleep Button:** Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR 120 will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



Note that this button is also used to change channels on your TV when the TV is selected.

This button is also used to end the process of creating a macro command. (See page 28 for more information on creating macros.)

❿ **Surround Mode Selector:** Press this button to begin the process of changing the surround mode. After the button has been pressed, use the ▲/▼ **Buttons** ⓭ ⓱ to select the desired surround mode. (See page 22 for more information.) Note that this button is also used to tune channels when the TV is selected using the device **Input Selector** ❺. This button is also used in part of the process of erase stored macro commands. (See page 28 for more information on macros.)

NOTE: The **Sleep Button** ❾ and **Surround Mode Selector** ❿ 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.

⓫ **Night Mode:** Press this button to activate the Night mode. This mode is available in specially encoded digital sources, and it preserves dialog (center channel) intelligibility at low volume levels.

⓬ **Channel Select Button:** This button is used to start the process of setting the AVR 120's output levels to an external source. Once this button is pressed, use the ▲/▼ **Buttons** ⓭ ⓱ to select the channel being adjusted, then press the **Set Button** ⓯, followed by the ▲/▼ **Buttons** ⓭ ⓱ again, to change the level setting. (See page 26 for more information.)

⓭ ▲ **Button:** This multipurpose button is used to change or scroll through items in the menus, or 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 **Surround Mode Selector** ❿ to select a surround mode or the **Digital Select Button** ⓰ to change the digital input) and then press this button to scroll through the list of available choices.

⓮ ◀ **Button:** This button is used to change the menu selection or setting during some of the setup procedures for the AVR 120.

⓯ **Set Button:** This button is used to enter settings into the AVR 120's memory. It is also used in the setup procedures for delay time, speaker configuration and channel output level adjustment.

⓰ **Digital Select:** Press this button to assign one of the digital inputs ㉓ ㉔ ⓭ ⓮ to a source. (See page 23 for more information on using digital inputs.)

⓱ ▼ **Button:** This multipurpose button is used to change or scroll through items in the menus, or 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 **Surround Mode Selector** ❿ to select a surround mode or the **Digital Select Button** ⓰ to change the digital input) and then press this button to scroll through the list of available choices.

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:** Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so that the **AUTO Indicator** R goes out, pressing the **Tuning Buttons** ㉑ 8 will move the frequency up or down in single-step increments. When the FM band is in use, pressing this button when a station's signal is weak will change to monaural reception. (See page 25 for more information.)

⓴ **Direct Button:** Press this button when the tuner is in use 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:** When the tuner is in use, these buttons will tune up or down through the selected frequency band. If the **Tuner Mode Button** ⓳ 12 has been pressed so that the **AUTO Indicator** R is illuminated, pressing and holding either of the buttons for three seconds will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the **AUTO Indicator** R is NOT illuminated, 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 **Transport Controls:** These buttons do not have any functions for the AVR 120, 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 30 for more information on programming the Transport Control Punch-Through capability of the remote.)

㉔ **Skip Up/Down Button:** These buttons have no direct function with the AVR 120, but when used with a compatibly programmed CD or DVD changer they will change the disc currently being played in the changer.

㉕ **Disc Skip Button:** This button has no direct function for the AVR 120, but is often used when the remote is programmed to operate a CD or DVD changer to change the discs in the changer. (See page 28 for more information on using the remote with other devices.)

㉖ **Preset Up/Down:** When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR 120'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.

㉗ **Clear Button:** Press this button to clear incorrect entries when using the remote to directly enter a radio station's frequency.

㉘ **Memory Button:** Press this button to enter a radio station into the AVR 120's preset memory. Once the **MEMORY Indicator** O flashes, you have five seconds to enter a preset memory location using the **Numeric Keys** ⓲ (See page 26 for more information.)

㉙ **Delay/Prev Ch.:** Press this button to begin the process for setting the delay times used by the AVR 120 when processing surround sound. After pressing this button, the delay times are entered by pressing the **Set Button** ⓯ and then using the ▲/▼ **Buttons** ⓭ ⓱ to change the setting. Press the **Set Button** ⓯ again to complete the process. (See page 19 for more information.)

㉚ ▶ **Button:** Press this button to change a setting or selection when configuring many of the AVR 120's settings.

㉛ **Speaker Select:** Press this button to begin the process of configuring the AVR 120's bass management system for use with the type of speakers used in your system. Once the button has been pressed, use the ▲/▼ **Buttons** ⓭ ⓱ 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 17 for more information.)

㉜ **Spare Button:** This button does not have any function for the operation of the AVR 120, 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.)

㉝ **Volume Up/Down:** Press these buttons to raise or lower the system volume. See page 29 for more information on programming the Volume Control Punch-Through capability of the remote, which allows you to change the AVR 120's volume while the remote is set to control another device.

㉞ **TV/Video Selector:** This button does not have a direct function on the AVR 120, 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.

㉟ **Mute:** Press this button to momentarily silence the AVR 120 or TV set being controlled, depending on which device has been selected. When the AVR 120 is muted, press this button or use the **Volume Control** 20 ㉝ to return to the previous volume level. When the AVR 120 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 120 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 120, 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 is pushed	• No AC Power	• Make certain AC power cord 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 • Turn up volume control
Unit turns on, but front-panel display does not light up	• Display brightness is turned off	• Follow the instructions in the Display Brightness section on page 26 so that the display is set to VFD FULL
No sound from any speaker; light around power switch is red	• Amplifier is in protection mode due to possible short • Amplifier is in protection mode due to internal problems	• Check speaker wire connections for shorts at receiver and speaker ends • Contact your local Harman Kardon service 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 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 • Make certain front-panel sensor is visible to remote or connect remote sensor
Intermittent buzzing in tuner	• Local interference	• Move unit or antenna away from computers, fluorescent lights, motors or other electrical appliances
Letters flash in the channel indicator display and digital audio stops	• Digital audio feed paused	• Resume play for DVD • Check that 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 120's entire system memory including tuner presets, output level settings, delay times and speaker configuration data, first put the unit in Standby by pressing the **System Power Control Button** 2. Next, simultaneously press and hold the **Tone Mode** 6 and the **FM Mode Selector** 12 buttons for three seconds.

The unit will turn on automatically and display the RESET message in the **Main Information Display** F. Note that once you have cleared the memory in this manner, it is necessary to reestablish all system configuration settings and tuner presets.

NOTE: After a reset, the unit will be returned to the factory presets, and all settings for tuner memory and presets speaker configuration, delay times and surround mode memories must be reentered.

If the system is still operating incorrectly, there may have been an electronic discharge or severe AC line interference that has corrupted the memory or microprocessor.

If these steps do not solve the problem, consult an authorized Harman Kardon service 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 two weeks, after which time all information must be reentered.

harman/kardon Service Bulletin

Service bulletin # H/K2003-07 Sept. 2003

Warranty labor rate: MINOR repair

To: All harman/kardon Service Centers

Model: AVR110/210/310/510, AVR120/220; AVR320/520

Subject: Various Complaints

For Complaints:

NO AUDIO
NOISE
INTERMITTENT NOISE
INTERMITENT AUDIO

Possible Solution:

Voltages may be too high on DSP Buffer IC or DSP IC

All modifications are done to the DSP board.

AVR110/210/310/510
AVR120/220

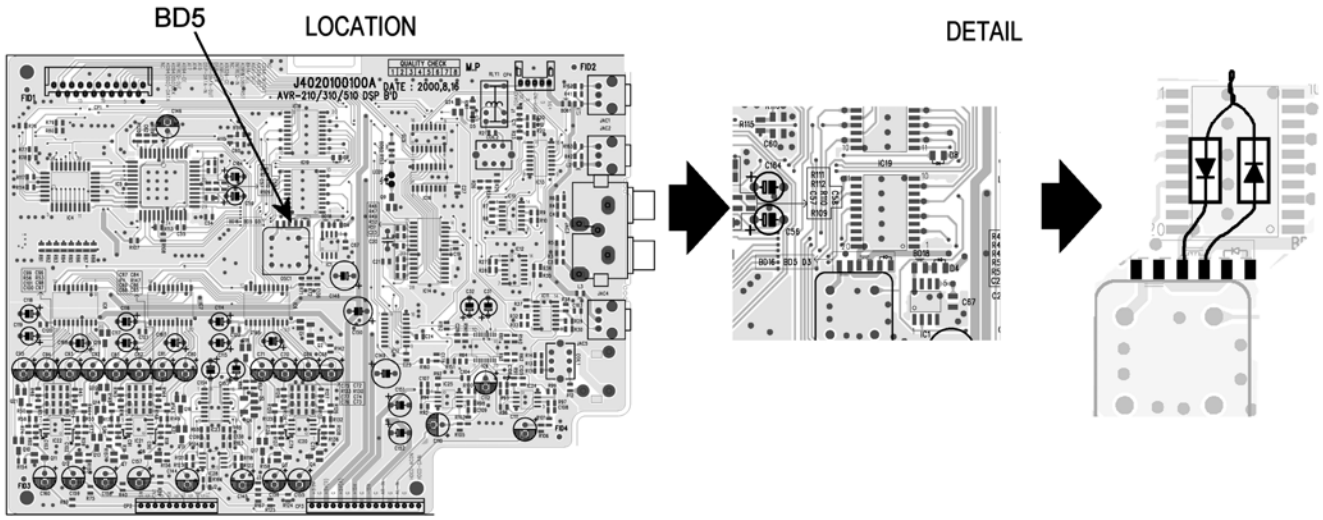
Remove BD5 and replace with two 1N4148 diodes in series.
Remove R43 and R90 (3.3Ω) and replace each with a 1N4148 diode.
(See diagram Page 2 for location and polarity)

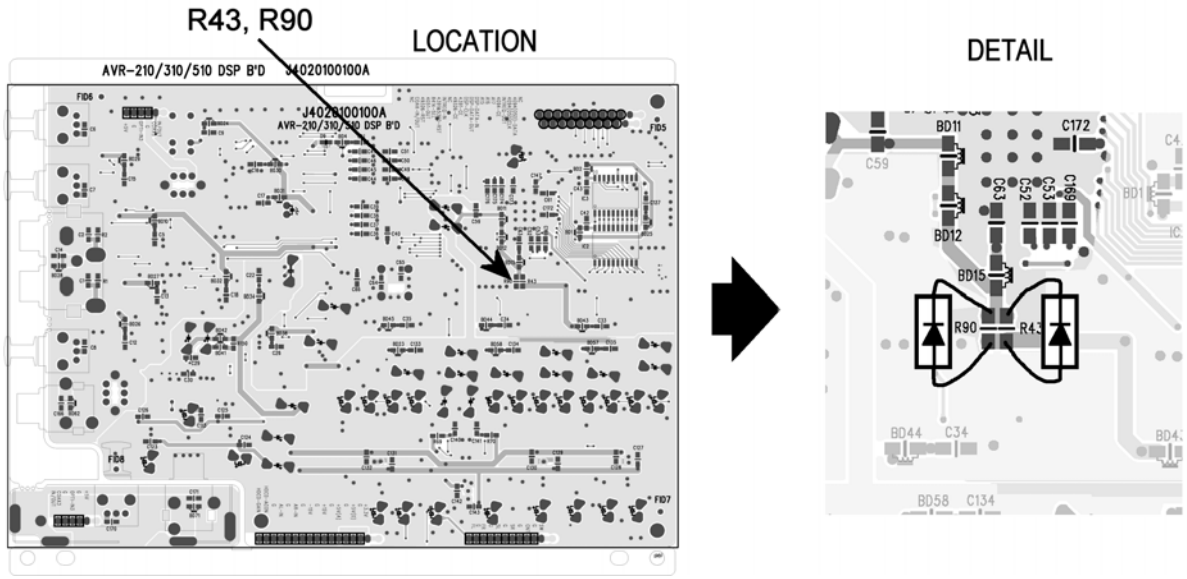
AVR320/520

Remove BD25 and replace with two 1N4148 diodes in series.
(See diagram Page 2 for location and polarity)

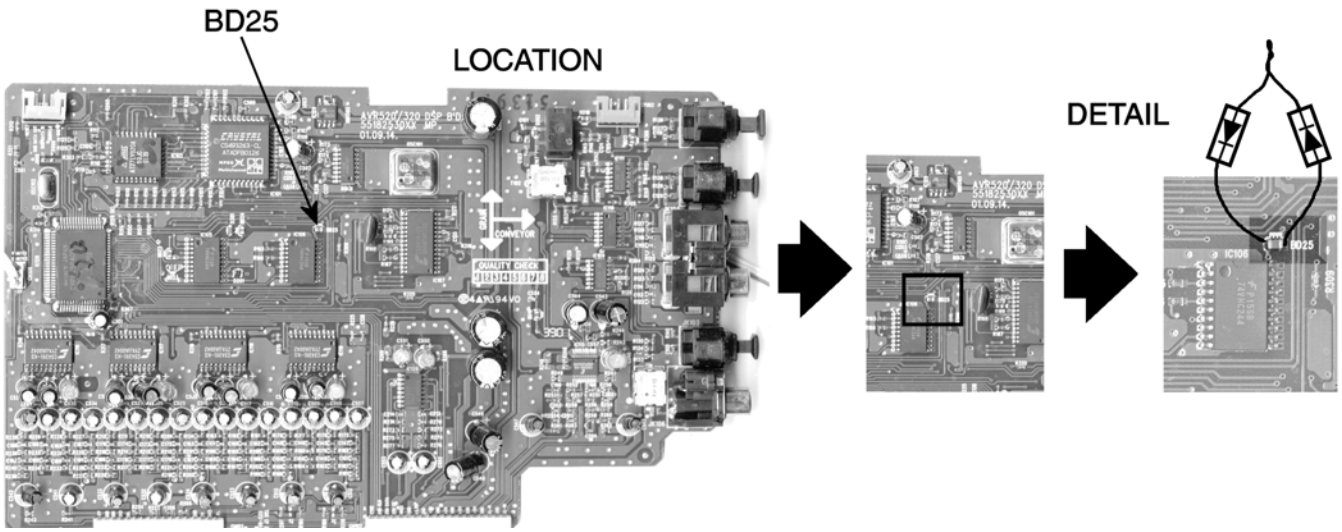
In all cases the 1N4148 diode(s) you need to add should be normal 2-lead axial components, like h/k part# 13-0482 or equivalent (not SMD devices).

MODELS: **AVR110/210/310/510**
AVR120/220





MODELS: AVR320/520



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

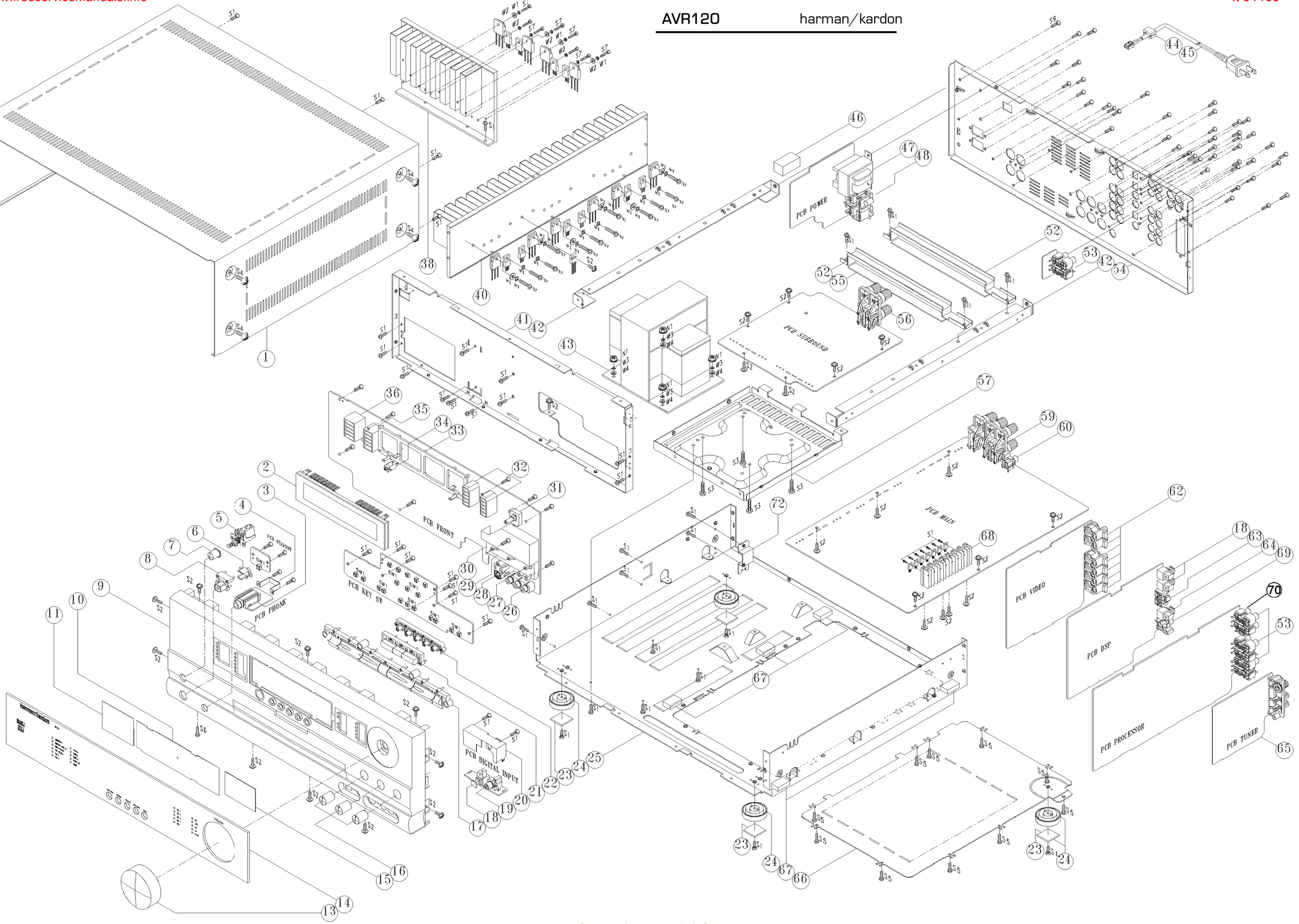
In the event of the complaint: "the receiver is losing its memory (any programmed system settings) when the unit is turned off, or after the unit is unplugged (briefly*)":

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)

AVR120 harman/kardon



AVR 130 EXPLODED VIEW PART LIST

NO.	Tocom#	Q'TY	SName
1	55178050XX	1	AC PUN COVER TOP
2	55155740XX	1	DISPLAY HNA-10MM22
3	55088400XX	1	CONN-PHJAC 6.35 ST HORZ EST-J6313 BK 0 0
4	55124350XX	1	AC PUN BRACKET HEADPHONE
5	55178000NR	1	SW PUSH POWER SWITCH 5.0A 250.0V 100M100HM 1T 2P
6	55178020XX	1	AC MLD BUTTON INDICATOR STAND-BY
7	55177810XX	1	AC DEC BUTTON POWER
8	55177820XX	1	AC DEC BUTTON STANDBY
9	55244110	1	AC DEC CABINET PANEL FRONT AVR120
10	55177800XX	1	AC DEC CRYSTAL FILTER DISPLAY
11	55191560XX	1	AC NON-METAL DIFFUSER 0.2T 62.5*41 WH
12	BLANK		
13	55177740XX	1	AC DEC KNOB MAIN HIPS 94H
14	55244220XX	1	AC DEC CRYSTAL DISPLAY AVR120
15	55177990XX	1	AC NON-METAL DIFFUSER 0.2T 59.6*41 WH
16	55177750XX	3	AC DEC KNOB TONE
17	55177790XX	1	AC DEC BUTTON 7 KEY
18	55125440XX	3	D-LEM TOTX178B RD RND CL
19	55175240XX	1	CON PHONO SCKT RCA 1P W/GND JE010003MG
20	55182550XX	1	AC PUN SHIELD DIGITAL ET
21	55177760XX	1	AC DEC BUTTON 3 KEY
22	55177780XX	1	AC DEC BUTTON 5 KEY
23	55174760XX	4	AC FOOT RUBBER ROUND 3.0MM 25.0MM JIS 60 Y DIA
24	55178110XX	4	AC FOOT ASSY ROUND 12.5MM 50MM
25	5517807BXX	1	AC CPL CABINET CHASSIS MAIN SECC 1.0T
26	55113740XX	1	CON PHONO SCKT RCA-307 3 PINS
27	551799100O	2	PR-ROT 100K0 OHM NON-LINEAR RK14K12400BQ 0 0
28	55113960XX	1	CON DIN SCKT SOCKET CONNECTOR SVHS EST-S408J
29	551799200O	1	PR-ROT 100K0 OHM NON-LINEAR RK14K12400BR 0 0
30	55177570XX	1	AC PUN SHIELD FENCE TONE
31	55134900NR	1	SWIROT EC16B24204A5 5V 500U0A 10T 3P 0 0
32	55178940XX	2	AC PLASTIC MOLD REFRACTOR E WH
33	55244320XX	1	AC MLD HOLDER FL-GUIDE HIPS 94HB
34	55155930NR	1	IC-REMOTE RPM6938-RSIP-A3 RECEIVER 38KHZ
35	55191520XX	1	AC PLASTIC MOLD REFRACTOR A WH
36	55178930XX	1	AC PLASTIC MOLD REFRACTOR F WH
37	BLANK		
38	55244260XX	1	AC METAL HEATSINK SURROUND
39	BLANK		
40	55244250XX	1	AC METAL HEATSINK MAIN
41	55178250XX	1	AC CPL CABINET CHASSIS FRONT SECC 1.0T
42	55178170XX	2	AC PUN BRACKET FRAME-GUIDE SECC T1.0
43	55201700XX	1	TF-LAM POWER-TRANSFORMER 120V
44	55125180XX	1	AC MLD CLAMP AC CORD
45	55099250XX	1	WIRE-MCRDM 0.75MM2 1830MM BK CORD POWER
46	55178400XX	1	AC BUFFER CUSHION (A) EVA
47	55175760XX	1	TF-LAM POWER-TRANSFORMER 120V
48	55206550XX	1	CONN-SPE AC OUTLET 2P 110V FE 12.75MM 2 BK 0 0
49	BLANK		
50	BLANK		
51	BLANK		
52	55244240XX	2	AC PUN BRACKET PCB
53	55176330XX	4	CON PHONO SCKT RCA 4P JW4104RS GND
54	55244270XX	1	AC CPL REAR PANEL AVR120
55	55178300XX	3	AC BUFFER CUSHION-BRK'T EVA
56	55191390XX	1	CONN-SPE TERMINAL SPKR 4P SH0410376P
57	5517809AXX	1	AC PUN COVER TRANS BOTTOM T1.0
58	BLANK		
59	55191400XX		CONN-SPE TERMINAL SPKR 6P
60	55191370XX	1	CON PHONO SCKT RCA 1P JACK JE010003XN
61	BLANK		
62	55149520XX	6	CON DIN SCKT MIX SOCKET RCA-118JP1S
63	55191600XX	1	CON PHONO SCKT RCA 2P W/GNDCAP JW-1502SN 00
64	55125440NR	1	D-LEM TOTX178B RD RND CL
65	55191640XX	1	AC MSA ASY KST-M1114MW1-60 TU MODULE
66	55178080XX	1	AC PUN COVER BOTTOM SECC T1.0
67	55125220XX	11	AC BUFFER PCB
68	55176400XX	1	AC METAL HEATSINK REG 118*20*50H
69	55175950XX	1	CON PHONO SCKT RCA 1P W/GND JE010003MN
70	BLANK		
71	BLANK		
72	55262430XX	1	AC PUN BRACKET PROTECT
73	BLANK		
XX	55178960XX	1	AC SPRING PLATE SPRING GND C5212 0.2T
XX	55148840NR	1	FCORE FERRIT MAGNET RING34 34.5X21X12 K-150
XX		1	
S1	55127070XX	59	SCREW-ST 3MM 10MM
S2	55127120XX	34	SCREW-ST 3MM 8MM
S3	55309240XX	4	SCREW-SPEC 4MM 10MM
S4	55127090XX	8	SCREW-ST 4MM 8MM
S5	55127280XX	10	SCREW-ST 3MM 6MM
S6	55164800XX	1	SCREW 3MM 8MM
S7	55178320XX	15	SCREW-ST 3MM 12MM
S9	55135460XX	45	SCREW-SPEC 3MM 10MM
N1	55309350XX	4	NUT-HEXAGON 4.0MM 5.0MM CIRCULAR EXTERNAL 53
W1	55127300XX	10	WASHER-SPRING 3
W2	55127310XX	10	WASHER-FLAT 3
W3	55168690XX	4	WASHER-SPRING 4
W4	55131730XX	4	WASHER-FLAT 4
L1	20932870XX	2	AC PRI LABEL QC CHECK CRKD1217(20X13MM)
L2	55149150XX	2	AC PRI LABEL RISK CDRW1211
L3	55174780XX	1	AC PRI LABEL DATE
L4	55244290XX	1	AC PRI LABEL SERIAL AVR120
L5	55244380XX	1	AC PRI LABEL BARCODE AVR120
L6	55178620XX	1	AC PRI LABEL "PLEASE REMOVE..."

BLOCK DIAGRAM

MODEL: AVR120/220

NO	DATE	POS.	CONTENTS	NO	DATE	POS.	CONTENTS

ANT
FM
AM
FM/AM TUNER MODULE
RDS DEMODUL
TUNER OUT

RDS DATA
RDS CLK
DATA IN
CLK
CE
DATA OUT
TUNED
MUTE
CPU

- VIDEO PARTS
- SUPPLY PART
- TUNER PARTS
- DD/DTS PARTS
- PRE PARTS
- MAIN AMP PARTS
- POWER SUPPLY PARTS

KEY MATRIX
MULTI
RMC IN OUT
RMC SENSOR
COMMANDER
RESORNATOR
C P U
IC201
6V REGU.
ST-BY TRANS
-30V
EUROPE : 230/50Hz
USA . 120/60Hz
PUSH S/W
AC-CORD
RELAY
RELAY
RELAY

FL AC 6V
+15V
-15V
+5V(LED)
+5VV. -5VV.
+5VA.+5VD
+3.3VA +3.3VD
REGULATOR
+15V -15V
+5V(LED)
+5VV. -5VV.
+5VA.+5VD
+3.3VA. +3.3VD.
MAIN POWER TRANS
US Version AC OUTLET
unfiltered
switched
unswitched
3-CH AMP (POWER/DRIVER)
2-CH AMP (POWER/DRIVER)
AMP POWER SUPPLY

AUDIO
VID4(IN/DUT)
TAPE
MULTI-ROOM
VID3
VID2
VID1
DVD
CD
IC707
IC711
IC708
IC709
IC710
TC9273-007 IC701
TC9273-007 IC702
TC9163 IC705
IC715
IC712
2CH-VOLUME TC9459N IC703
6-CH DIRECT-IN
KTC9163 IC705
FR
FL
S-L
S-R
CTR
SW
IC501-A
IC501-B
+10 5dB IC720
KIC9163 IC705
Summing Circuit
IC721
IC722
L-CH Same Block
Q732 2SK117

(SAME AS LEFT CHANNEL)
RIGHT CHANNEL

H/P AMP IC719
DISCRETE BUFFER
MUTE
HEAD PHONE
IC716
DISCRETE MAIN AMP
PROTECTION
FRONT SPKR

C-VIDEO/S-VIDEO
DVD
VID1
VID2
VID3
MULTI
MONITOR
VID4
6dB
NJM2296+3 IC601/602/603

IC126 FR
IC125 FL
AK5352-RESET
ADC AK5352 IC104
ADC+3 AK4393 IC105,106,107
BU4051-OUT
8-CH MPX /DEMPX BU4051 IC115
AK4393-RESET
AK4393-CE
AK4393-CLK
AK4393-DATA
CS8414-SEL
DIR CS8414 IC103
EP-ROM 27LV020A IC101
DD/DTS DECODER HDCD/96Khz DECODER Logic-7 DECODER CS4926-04 IC100
NJU6324M fs/2
12.288MHz
shift register BU4094 IC114
CLK DATA CE
DUAL 4-CH MPX 74VHC153FN IC102
D FLIP - FLOP 74VHC574M IC108
D FLIP - FLOP 74VHC574M IC109
QUAD 2-CH MPX 74VHC157M IC110
BUS BUFFER 74VHC244M IC111
M-TRANS
DSP-CLK
DSP-DA
DATA
RESET
CS4926-CE
OPTI-1 OPTI-2 COAX-1 COAX-2 OPTI OUT COAX OUT

LPF FR IC117/118-B
LPF FL IC116/118-A
LPF S-L IC122/123-A
LPF S-R IC124/123-B
LPF CTR IC119/121-A
LPF SW IC120/121-B
FR
FL
SL
SR
CTR
SW
MASTER VOLUME
TC9482N IC706
IC714
IC713-A
IC713-B
IC705-B TONE
IC705-A TONE
IC717-A
IC717-B
IC718-A
IC718-B
MUTE
DISCRETE S-L AMP
DISCRETE S-R AMP
DISCRETE CENTER AMP
PROTECTION
S-L SPKR
S-R SPKR
CENTER SPKR
SUB WOOFER OUT
CONFIDENTIAL/CONTROL COPY

FILENAME	CODE NO.			SHEET
BLOCK				
MODEL AVR120/220	DESIGN	CHKD	CHKD	APPROVAL
DESIGN DATE 30.OCT.2001				

AVR120 Electrical Parts List

Main PCB

Reference Designator	Part No.	Part Name / Description	Qty
#001	JE01009301UA	AVR120US MNBD ASM	
#002	JE01009302UA	AVR220US MNBD ASM	
'020	JE01009401UA	MNBD APP AVR120 US	1
'020	JE01009402UA	MNBD APP AVR220 US	1
'050	J60530002100	H/SINK REG 118*20*50H	1
CN401	55171550XX	CON 3.96MM PITCH MOLEX 35313-0310	1
CN402	55146610XX	CONN 2.5MM 6 MA ST NAT 0 0	1
CN403	55146570XX	CONN 2.5MM 3 MA ST NAT 0 0	1
CN407	55123350XX	CONN 2.0MM 9 MA ST NAT LW2002P09 0 0	1
CN408	55125010XX	CONN 2.0MM 15 MA R NAT MOLEX 35336-1510	1
CN409	55125010XX	CONN 2.0MM 15 MA R NAT MOLEX 35336-1510	1
CN410	55125010XX	CONN 2.0MM 15 MA R NAT MOLEX 35336-1510	1
CN411	55125010XX	CONN 2.0MM 15 MA R NAT MOLEX 35336-1510	1
CN412	J4423231600X	CONNECTOR	1
CN413	55124960XX	CONN 2.0MM 11 MA R NAT MOLEX 35336-1110	1
CN414	J4422112740X	FPC PLUG 27P 1.25	1
CN415	J4423231600X	CONNECTOR	1
CN416	55123330XX	CONN 2.0MM 6 MA ST NAT LW2002P06 0 0	1
CN417	55146570XX	CONN 2.5MM 3 MA ST NAT 0 0	1
CP404	J4305100067X	CNT ASSY12P 390MM SL 2.0MM #28	1
CP406	J4305100069X	CNT ASSY 10P 390+520 #28	1
CW407	55201730NR	WIRECONASY UNIQUE 10P 120MM UL1007	1
C421	13076940AM	CE 470U0F +20% 63.0V 85C	1
C422	13076940AM	CE 470U0F +20% 63.0V 85C	1
C423	13076940AM	CE 470U0F +20% 63.0V 85C	1
C424	13076940AM	CE 470U0F +20% 63.0V 85C	1
C481	55126170DD	CE 6MI8F +20% 63.0V 85C	1
C482	55126170DD	CE 6MI8F +20% 63.0V 85C	1
C485	4043313030	CE 2MI2F +20% 35.0V 85C	1
C486	4043313030	CE 2MI2F +20% 35.0V 85C	1
C487	J3420668236X	CE SHL 6800U 16V M	1
C488	13039870AM	CE 2MI2F +20% 16.0V 85C	1
C511	13076940AM	CE 470U0F +20% 63.0V 85C	1
C512	13076940AM	CE 470U0F +20% 63.0V 85C	1
D481	J2202306007X	DIODE BU8-04F	1
D482	J2203336007X	DIODE W2-04F	1
D568	55041640NR	D-SRSHC 1N5402 200.0V 3.0A	1
D569	55041640NR	D-SRSHC 1N5402 200.0V 3.0A	1
D570	55041640NR	D-SRSHC 1N5402 200.0V 3.0A	1
D571	55041640NR	D-SRSHC 1N5402 200.0V 3.0A	1
FU481	20828790NR	FUSULSLWBL 2.0 A 250.0 V	1
FU482	20828790NR	FUSULSLWBL 2.0 A 250.0 V	1
FU483	20828790NR	FUSULSLWBL 2.0 A 250.0 V	1
FU484	20828790NR	FUSULSLWBL 2.0 A 250.0 V	1
G011	J4200020000X	GND PLATE	1
IC481	20832440NR	IC-REGPOSFXD KIA7815API NORMAL	1
IC482	55124020NR	IC-REGNEGFXD KIA7915PI NORMAL	1
IC483	55125450NR	IC-REGPOSFXD BA033T NORMAL	1
IC484	55123960NR	IC-REGPOSFXD KIA7805API NORMAL	1
IC485	55123960NR	IC-REGPOSFXD KIA7805API NORMAL	1
IC486	55123990NR	IC-REGNEGFXD KIA7905PI NORMAL	1
IC487	J2112503001X	IC REG ADJ KA337 TO-220 SASUNG	1
IC501	55142240NR	IC-OPERAMP NJM2068DD DUAL OP	1
JK401	55191370XX	CON PHONO SCKT RCA 1P JACK JE010003XN	1
JK405	55191460XX	CON PHONO SCKT RCA 6P JW-4105RSA	1
JP401	55191400XX	CONN-SPE TERMINAL SPKR 6P SH0611705P FE	1
L401	J1451000030X	COIL-AF CHOKE .7UH	1
L402	J1451000030X	COIL-AF CHOKE .7UH	1

Reference Designator	Part No.	Part Name / Description	Qty
L501	J1451000030X	COIL-AF CHOKE .7UH	1
P551	J2431100002X	POSISTOR PTC	1
Q425	55133270NR	TR-SHPLF 2SC4137 V N 100MI0A 20V	1
Q426	55133270NR	TR-SHPLF 2SC4137 V N 100MI0A 20V	1
Q437	55127360NR	TR-SHPLF 2SD2390 DARLINGTON N 10.0A	1
Q438	55127360NR	TR-SHPLF 2SD2390 DARLINGTON N 10.0A	1
Q439	55127370NR	TR-SHPLF 2SB1560 DARLINGTON P 10.0A	1
Q440	55127370NR	TR-SHPLF 2SB1560 DARLINGTON P 10.0A	1
Q513	55133270NR	TR-SHPLF 2SC4137 V N 100MI0A 20V	1
Q519	55127360NR	TR-SHPLF 2SD2390 DARLINGTON N 10.0A	1
Q520	55127370NR	TR-SHPLF 2SB1560 DARLINGTON P 10.0A	1
R471	J3076228421X	RES MPR 0.22 5W J	1
R472	J3076228421X	RES MPR 0.22 5W J	1
R475	6044255016	RMOF 10R0 OHM +5% 1.0W	1
R476	6044255016	RMOF 10R0 OHM +5% 1.0W	1
R481	1502271006	RMOF 10R0 OHM +5% 2.0W	1
R482	1502271006	RMOF 10R0 OHM +5% 2.0W	1
R483	1502271006	RMOF 10R0 OHM +5% 2.0W	1
R484	8044278000	RMOF 4R7 OHM +5% 2.0W	1
R485	8044278000	RMOF 4R7 OHM +5% 2.0W	1
R486	8044278000	RMOF 4R7 OHM +5% 2.0W	1
R487	40440550XX	RMOF 3R3 OHM +5% 2.0W	1
R536	J3076228421X	RES MPR 0.22 5W J	1
R538	6044255016	RMOF 10R0 OHM +5% 1.0W	1
VR401	J3211322110X	RES SEMI J2R-220	1
VR402	J3211322110X	RES SEMI J2R-220	1
VR501	J3211322110X	RES SEMI J2R-220	1
WA401	55146560XX	CONN 2.5MM 2 MA ST NAT 0 0	1
WA402	55146560XX	CONN 2.5MM 2 MA ST NAT 0 0	1
WA403	55146560XX	CONN 2.5MM 2 MA ST NAT 0 0	1
W002	55097370XX	WCL 180-05-05 UL1007 HOOK-UP 18 180MM	1
W003	55097370XX	WCL 180-05-05 UL1007 HOOK-UP 18 180MM	1
W401	J4305100072X	CNT ASSY 1P 250MM #18	1
C111	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C112	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C113	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C114	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C115	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C116	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C401	2026888030	CE 10U0F +20% 50.0V 85C	1
C402	2026888030	CE 10U0F +20% 50.0V 85C	1
C403	1105530071	CC 68P0F +5% -5% 50.0V NP0	1
C404	1105530071	CC 68P0F +5% -5% 50.0V NP0	1
C405	2026907030	CE 100U0F +20% 25.0V 85C	1
C406	2026907030	CE 100U0F +20% 25.0V 85C	1
C407	2026908030	CE 220U0F +20% 10.0V 85C	1
C408	2026908030	CE 220U0F +20% 10.0V 85C	1
C409	3093607071	CC 12P0F +5% -5% 50.0V NP0	1
C410	3093607071	CC 12P0F +5% -5% 50.0V NP0	1
C411	6043915071	CC 33P0F +5% -5% 50.0V NP0	1
C412	6043915071	CC 33P0F +5% -5% 50.0V NP0	1
C413	2026888030	CE 10U0F +20% 50.0V 85C	1
C414	2026888030	CE 10U0F +20% 50.0V 85C	1
C417	J3640104320X	CP MET .1U 63V -K	1
C418	J3640104320X	CP MET .1U 63V -K	1
C419	J3640104320X	CP MET .1U 63V -K	1
C420	J3640104320X	CP MET .1U 63V -K	1
C425	1105553071	CC 1N5F +10% -10% 50.0V Y5P	1
C426	1105553071	CC 1N5F +10% -10% 50.0V Y5P	1
C431	1036482071	CPF 47N0F +10% 100.0V	1
C432	1036482071	CPF 47N0F +10% 100.0V	1
C433	1036482071	CPF 47N0F +10% 100.0V	1

Reference Designator	Part No.	Part Name / Description	Qty
C443	2025004016	CC 220P0F +10% -10% 50.0V Y5P	1
C444	2025004016	CC 220P0F +10% -10% 50.0V Y5P	1
C446	2024647071	CC 100N0F +80% -20% 25.0V Z5V	1
C483	J3640104350X	CP MET .1U 250V -M	1
C484	1036482071	CPF 47N0F +10% 100.0V	1
C489	2026888030	CE 10U0F +20% 50.0V 85C	1
C490	2026888030	CE 10U0F +20% 50.0V 85C	1
C492	2026888030	CE 10U0F +20% 50.0V 85C	1
C494	2026888030	CE 10U0F +20% 50.0V 85C	1
C496	2026888030	CE 10U0F +20% 50.0V 85C	1
C497	2026888030	CE 10U0F +20% 50.0V 85C	1
C498	2026888030	CE 10U0F +20% 50.0V 85C	1
C501	2026888030	CE 10U0F +20% 50.0V 85C	1
C502	1105530071	CC 68P0F +5% -5% 50.0V NP0	1
C503	2026907030	CE 100U0F +20% 25.0V 85C	1
C504	2026908030	CE 220U0F +20% 10.0V 85C	1
C505	3093607071	CC 12P0F +5% -5% 50.0V NP0	1
C506	6043915071	CC 33P0F +5% -5% 50.0V NP0	1
C507	2026888030	CE 10U0F +20% 50.0V 85C	1
C509	J3640104320X	CP MET .1U 63V -K	1
C510	J3640104320X	CP MET .1U 63V -K	1
C513	1105553071	CC 1N5F +10% -10% 50.0V Y5P	1
C551	J3640683220X	CMP 0.068U 63V J	1
C552	J3640683220X	CMP 0.068U 63V J	1
C553	J3640683220X	CMP 0.068U 63V J	1
C554	2025267030	CE 470U0F +20% 10.0V 85C	1
C555	7042852071	CC 10N0F +10% -10% 50.0V Y5P	1
C556	7042852071	CC 10N0F +10% -10% 50.0V Y5P	1
C558	2029347016	CC 100N0F +80% -20% 50.0V F	1
C563	2029347016	CC 100N0F +80% -20% 50.0V F	1
C564	J3640104350X	CP MET .1U 250V -M	1
C565	J3640104350X	CP MET .1U 250V -M	1
C566	1036482071	CPF 47N0F +10% 100.0V	1
C567	1036482071	CPF 47N0F +10% 100.0V	1
C568	1500213030	CE 10U0F +20% 16.0V 85C	1
C569	4043358071	CC 680P0F +10% -10% 50.0V Y5P	1
C570	4043358071	CC 680P0F +10% -10% 50.0V Y5P	1
C571	4043358071	CC 680P0F +10% -10% 50.0V Y5P	1
C576	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C577	2093665016	CC 100P0F +10% -10% 50.0V Y5P	1
C582	2026783030	CE 47U0F +20% 16.0V 85C	1
C583	2026783030	CE 47U0F +20% 16.0V 85C	1
C588	1500213030	CE 10U0F +20% 16.0V 85C	1
C589	1500213030	CE 10U0F +20% 16.0V 85C	1
C590	2026783030	CE 47U0F +20% 16.0V 85C	1
D401	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D402	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D403	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D404	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D405	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D406	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D501	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D502	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D551	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D552	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D553	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D554	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D555	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D556	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D566	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D567	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D572	2042121016	D-ZENER 1N5242B 12.0V 500MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
FH401	J4210020001X	FUSE CLIP 0.3T	1
FH402	J4210020001X	FUSE CLIP 0.3T	1
FH403	J4210020001X	FUSE CLIP 0.3T	1
FH404	J4210020001X	FUSE CLIP 0.3T	1
FH405	J4210020001X	FUSE CLIP 0.3T	1
FH406	J4210020001X	FUSE CLIP 0.3T	1
FH407	J4210020001X	FUSE CLIP 0.3T	1
FH408	J4210020001X	FUSE CLIP 0.3T	1
Q401	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q402	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q403	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q404	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q405	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q406	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q407	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q408	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q411	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q412	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q413	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q414	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q415	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q416	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q417	5513326056	TR-SLPLF KTA1024 Y N 50MI0A -150V	1
Q418	5513326056	TR-SLPLF KTA1024 Y N 50MI0A -150V	1
Q419	5513324056	TR-SLPLF KTC3206 Y N 50MI0A 150V	1
Q420	5513324056	TR-SLPLF KTC3206 Y N 50MI0A 150V	1
Q501	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q502	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q503	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q504	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q506	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q507	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q508	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q509	5513326056	TR-SLPLF KTA1024 Y N 50MI0A -150V	1
Q510	5513324056	TR-SLPLF KTC3206 Y N 50MI0A 150V	1
Q551	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q552	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q553	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q554	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q555	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q556	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q557	2050821056	TR-SLPLF KTA1266 Y P 150MI0A	1
Q558	5513326056	TR-SLPLF KTA1024 Y N 50MI0A -150V	1
Q559	J2021220001X	TR NPN KRC107M	1
Q561	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q562	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q563	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
R121	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R122	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R123	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R124	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R125	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R126	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R127	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R128	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R129	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R130	2046946016	RCF 2K2 OHM +5% 250MI0W	1
R131	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R132	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R401	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R402	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R403	8043703016	RCF 27K0 OHM +5% 250MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R404	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R405	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R406	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R407	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R408	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R409	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R410	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R411	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R412	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R413	1105961016	RCF 270R0 OHM +5% 250MI0W	1
R414	1105961016	RCF 270R0 OHM +5% 250MI0W	1
R415	2046951016	RCF 43K0 OHM +5% 250MI0W	1
R416	2046951016	RCF 43K0 OHM +5% 250MI0W	1
R417	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R418	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R419	8043701016	RCF 1K8 OHM +5% 250MI0W	1
R420	8043701016	RCF 1K8 OHM +5% 250MI0W	1
R421	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R422	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R423	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R424	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R425	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R426	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R427	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R428	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R429	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R430	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R431	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R432	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R433	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R434	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R435	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R436	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R437	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R438	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R439	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R440	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R445	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R446	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R447	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R448	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R449	8043700016	RCF 1K2 OHM +5% 250MI0W	1
R450	8043700016	RCF 1K2 OHM +5% 250MI0W	1
R451	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R452	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R453	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R454	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R455	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R456	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R473	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R474	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R477	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R478	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R489	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R490	1105963016	RCF 680R0 OHM +5% 250MI0W	1
R501	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R502	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R503	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R504	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R505	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R506	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R507	1105961016	RCF 270R0 OHM +5% 250MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R508	2046951016	RCF 43K0 OHM +5% 250MI0W	1
R509	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R510	8043701016	RCF 1K8 OHM +5% 250MI0W	1
R511	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R512	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R513	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R514	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R515	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R516	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R517	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R518	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R519	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R520	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R523	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R524	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R525	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R526	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R527	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R528	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R537	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R539	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R551	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R552	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R553	5088301016	RCF 15K0 OHM +5% 250MI0W	1
R554	5088301016	RCF 15K0 OHM +5% 250MI0W	1
R555	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R556	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R557	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R558	5088301016	RCF 15K0 OHM +5% 250MI0W	1
R559	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R561	7043057016	RCF 8K2 OHM +5% 250MI0W	1
R562	1105971016	RCF 56K0 OHM +5% 250MI0W	1
R563	1105971016	RCF 56K0 OHM +5% 250MI0W	1
R564	1105971016	RCF 56K0 OHM +5% 250MI0W	1
R565	9057112016	RCF 12K0 OHM +5% 250MI0W	1
R566	5088295016	RCF 100R0 OHM +5% 250MI0W	1
R567	3093948016	RCF 10K0 OHM +5% 250MI0W	1
R568	3093948016	RCF 10K0 OHM +5% 250MI0W	1
R569	3093948016	RCF 10K0 OHM +5% 250MI0W	1
R570	1105961016	RCF 270R0 OHM +5% 250MI0W	1
R571	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R585	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R586	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R587	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R588	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R589	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R590	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R591	3093948016	RCF 10K0 OHM +5% 250MI0W	1
R592	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R593	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R594	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R595	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R596	5088295016	RCF 100R0 OHM +5% 250MI0W	1
R597	5088295016	RCF 100R0 OHM +5% 250MI0W	1
R606	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R607	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R608	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R609	9057112016	RCF 12K0 OHM +5% 250MI0W	1
R610	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R611	9057112016	RCF 12K0 OHM +5% 250MI0W	1
R612	7043051016	RCF 47R0 OHM +5% 250MI0W	1
R613	5088300016	RCF 3K3 OHM +5% 250MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R614	5088300016	RCF 3K3 OHM +5% 250MI0W	1
Front PCB			
'050	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
CN201	J4305100051X	CNT ASSY 7P 450MM SL 2.5MM #24	1
CN202	J4305100052X	CNT ASSY 3P 620MM SL 2.5MM #24	1
CN203	J4305100055X	CNT ASSY 9P 400MM SL 2.0MM #26	1
CN204	J4305100053X	CNT ASSY 4P 100MM SL 2.0MM #26	1
CN205	J4305100058X	CNT ASSY 4P 360MM SHIELD SL 2.0MM #28	1
CN206	J4305100057X	CNT ASSY 10P 220MM SHIELD SL 2.0MM #28	1
CN207	J4112213801X	FPC CABLE 21P 380MM 1.25MM	1
CN208	J4112275001X	FPC CABLE 27P 500MM 1.25	1
CN209	J4305100059X	CNT ASSY 8P 500MM SHIELD SL 2.0MM #8	1
CN210	J4305100063X	CNT ASSY 2P 100MM SL 2.0MM #26	1
CP201	J4422212740X	FPC PLUG 27P 1.25	1
CP202	55124690XX	CONN 1.25MM 21 FE R WH GF120-21S-LS 2794	1
CP203	55123340XX	CONN 2.0MM 8 MA ST NAT LW2002P08 0 0	1
CP204	55123320XX	CONN 2.0MM 5 MA ST NAT LW2002P05 0 0	1
C203	2026783030	CE 47U0F +20% 16.0V 85C	1
C210	2026888030	CE 10U0F +20% 50.0V 85C	1
C216	5513436000	CM 47MI0F +80% -20% 5.5V 70C	1
D201	J2301213022X	LED GN LTL1CHGEC 3	1
D202	J2301213022X	LED GN LTL1CHGEC 3	1
D203	J2301213022X	LED GN LTL1CHGEC 3	1
D204	J2301213022X	LED GN LTL1CHGEC 3	1
D205	J2301213022X	LED GN LTL1CHGEC 3	1
D206	J2301213022X	LED GN LTL1CHGEC 3	1
D207	J2301213022X	LED GN LTL1CHGEC 3	1
D208	J2301213022X	LED GN LTL1CHGEC 3	1
D210	J2301213022X	LED GN LTL1CHGEC 3	1
D211	J2301213022X	LED GN LTL1CHGEC 3	1
D212	J2301213022X	LED GN LTL1CHGEC 3	1
D213	J2301213022X	LED GN LTL1CHGEC 3	1
D214	J2301213022X	LED GN LTL1CHGEC 3	1
D217	J2301213022X	LED GN LTL1CHGEC 3	1
D218	J2301213022X	LED GN LTL1CHGEC 3	1
D219	J2301213022X	LED GN LTL1CHGEC 3	1
D220	J2301213022X	LED GN LTL1CHGEC 3	1
D221	J2301213022X	LED GN LTL1CHGEC 3	1
D222	J2301213022X	LED GN LTL1CHGEC 3	1
D223	J2301213022X	LED GN LTL1CHGEC 3	1
D224	J2301213022X	LED GN LTL1CHGEC 3	1
D225	J2301213022X	LED GN LTL1CHGEC 3	1
D226	J2301213022X	LED GN LTL1CHGEC 3	1
D227	J2301213022X	LED GN LTL1CHGEC 3	1
D228	J2301213022X	LED GN LTL1CHGEC 3	1
D229	J2301213022X	LED GN LTL1CHGEC 3	1
D230	J2301213022X	LED GN LTL1CHGEC 3	1
D231	J2301213022X	LED GN LTL1CHGEC 3	1
D232	J2301213022X	LED GN LTL1CHGEC 3	1
D233	J2301213022X	LED GN LTL1CHGEC 3	1
D234	J2301213022X	LED GN LTL1CHGEC 3	1
D235	J2301213022X	LED GN LTL1CHGEC 3	1
D236	J2301213022X	LED GN LTL1CHGEC 3	1
D237	J2301213022X	LED GN LTL1CHGEC 3	1
D238	J2301213022X	LED GN LTL1CHGEC 3	1
D239	J2301213022X	LED GN LTL1CHGEC 3	1
D240	J2301213022X	LED GN LTL1CHGEC 3	1
D241	J2301213022X	LED GN LTL1CHGEC 3	1
D243	J2301213022X	LED GN LTL1CHGEC 3	1

Reference Designator	Part No.	Part Name / Description	Qty
D244	J2301213022X	LED GN LTL1CHGEC 3	1
D245	J2301213022X	LED GN LTL1CHGEC 3	1
D246	J2301213022X	LED GN LTL1CHGEC 3	1
D247	J2301213022X	LED GN LTL1CHGEC 3	1
D260	J2301213022X	LED GN LTL1CHGEC 3	1
D271	J2301213022X	LED GN LTL1CHGEC 3	1
D272	J2301213022X	LED GN LTL1CHGEC 3	1
D273	J2301213022X	LED GN LTL1CHGEC 3	1
FL201	55155740NR	DISPLAY HNA-10MM22	1
FN201	J60600006000	SHIELD FENCE TONE	1
IC201	55155730NR	IC-MICROCONT CXP828P60Q-1 QTP QFT100	1
IC205	55142240NR	IC-OPERAMP NJM2068DD DUAL	1
JA201	J44303000100	JACK RCA 3P	1
JA202	J44311000100	JACK S-VIDEO 1P	1
L201	J2616247920X	COIL 4.7UH K	1
L202	J2616247920X	COIL 4.7UH K	1
RM201	J2411320014X	REM 38KHZ	1
VR201	J32616100001	ENCODER EC 16E	1
VR202	J32214000201	VR-ROTARY 14MM	1
VR203	J32214000201	VR-ROTARY 14MM	1
VR204	J32214000101	VR-ROTARY 14MM	1
W201	55180140NR	WIRECONASY UNIQUE 1P 200MM UL1007 PVC DI	1
X201	J3911030020X	RESONATOR ZTA10MTT	1
CL201	1500213030	CE 10U0F +20% 16.0V 85C	1
CL202	3093623071	CC 100P0F +5% -5% 50.0V NP0	1
CL203	8043459071	CC 22P0F +5% -5% 50.0V NP0	1
CL204	1500213030	CE 10U0F +20% 16.0V 85C	1
CL205	1500213030	CE 10U0F +20% 16.0V 85C	1
CL206	J3640183232X	CAP M POLY 18NF 100V J	1
CL207	J3640823232X	CAP M POLY 82NF 100V J	1
CL208	J3640332232X	CAP POLY 3N3F 100V J	1
CL209	J3640183232X	CAP M POLY 18NF 100V J	1
CR201	1500213030	CE 10U0F +20% 16.0V 85C	1
CR202	3093623071	CC 100P0F +5% -5% 50.0V NP0	1
CR203	8043459071	CC 22P0F +5% -5% 50.0V NP0	1
CR204	1500213030	CE 10U0F +20% 16.0V 85C	1
CR205	1500213030	CE 10U0F +20% 16.0V 85C	1
CR206	J3640183232X	CAP M POLY 18NF 100V J	1
CR207	J3640823232X	CAP M POLY 82NF 100V J	1
CR208	J3640332232X	CAP POLY 3N3F 100V J	1
CR209	J3640183232X	CAP M POLY 18NF 100V J	1
C201	2026783030	CE 47U0F +20% 16.0V 85C	1
C202	2026783030	CE 47U0F +20% 16.0V 85C	1
C204	2026901030	CE 47U0F +20% 50.0V 85C	1
C214	2026783030	CE 47U0F +20% 16.0V 85C	1
C215	2026783030	CE 47U0F +20% 16.0V 85C	1
C219	2026901030	CE 47U0F +20% 50.0V 85C	1
C220	2026888030	CE 10U0F +20% 50.0V 85C	1
C232	2026783030	CE 47U0F +20% 16.0V 85C	1
C233	2026783030	CE 47U0F +20% 16.0V 85C	1
C234	2026895030	CE 100N0F +20% 50.0V 85C	1
C235	1036482071	CPF 47N0F +10% 100.0V	1
C236	1036482071	CPF 47N0F +10% 100.0V	1
Q222	5513321056	TR-SLPLF DTC114YSA N 100MI0A	1
Q223	5513321056	TR-SLPLF DTC114YSA N 100MI0A	1
Q224	5513321056	TR-SLPLF DTC114YSA N 100MI0A	1
Q225	5513321056	TR-SLPLF DTC114YSA N 100MI0A	1
Q226	5513321056	TR-SLPLF DTC114YSA N 100MI0A	1
Q227	5514267056	TR-SLPLF MPSA06 N 500MI0A	1
Q235	5513321056	TR-SLPLF DTC114YSA N 100MI0A	1
#001	JE01009801UA	FRTBD SMT AVR120 US	
#002	JE01009802UA	FRTBD SMT AVR220 US	

Reference Designator	Part No.	Part Name / Description	Qty
CL211	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
CR211	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C205	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C206	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C208	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C209	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C211	1507090091	CCCFMIN 820P0F +10% -10% 50.0V NP0	1
C212	1507090091	CCCFMIN 820P0F +10% -10% 50.0V NP0	1
C213	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C217	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C218	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C228	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C229	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C230	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C237	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C238	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C239	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C240	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C241	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C242	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C244	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C245	2026729091	CCCFMIN 100N0F +80% -20% 50.0V Y5V	1
C246	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C247	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C248	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
D248	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D249	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D250	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D251	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D253	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D254	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D255	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D261	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
D262	20496510NR	D-SLP 1SS355 35.0V 225MI0A	1
IC202	20718660NR	IC-LOGIC BU4094BF SHIFT REGISTER CMOS	1
IC203	20718660NR	IC-LOGIC BU4094BF SHIFT REGISTER CMOS	1
IC204	20718660NR	IC-LOGIC BU4094BF SHIFT REGISTER CMOS	1
J173	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J202	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J204	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J210	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J211	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J212	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J213	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J214	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J215	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J222	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J237	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J243	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J244	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J245	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J246	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J247	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J248	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J288	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J294	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
Q201	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q202	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q203	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q204	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q205	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q206	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1

Reference Designator	Part No.	Part Name / Description	Qty
Q207	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q208	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q209	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q210	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q211	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q212	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q213	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q214	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q215	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q217	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q218	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q219	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q220	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q221	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
Q236	5513319092	TR-SSD DTA114YKA P 10K0 OHM	1
Q237	5513318092	TR-SSD DTC114YKA N 10K0 OHM	1
Q238	5513333092	TR-SSD DTC114TKA N 10K0 OHM	1
RL201	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
RL202	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RL203	5088667091	RMGCFMIN 1M0 OHM +5% 100MI0W	1
RL204	1106648091	RMGCFMIN 47K0 OHM +5% 100MI0W	1
RL205	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
RL206	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RL207	2047194091	RMGCFMIN 680R0 OHM +5% 100MI0W	1
RL208	6044439091	RMGCFMIN 3K9 OHM +5% 100MI0W	1
RL209	6044440091	RMGCFMIN 22K0 OHM +5% 100MI0W	1
RL210	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
RP1	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP2	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP3	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP381	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP382	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP383	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP386	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP387	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP388	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP389	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP390	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP391	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP392	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP393	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP394	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP395	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP396	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP397	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP398	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP4	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP5	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP6	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP7	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RP8	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RR201	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
RR202	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RR203	5088667091	RMGCFMIN 1M0 OHM +5% 100MI0W	1
RR204	1106648091	RMGCFMIN 47K0 OHM +5% 100MI0W	1
RR205	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
RR206	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
RR207	2047194091	RMGCFMIN 680R0 OHM +5% 100MI0W	1
RR208	6044439091	RMGCFMIN 3K9 OHM +5% 100MI0W	1
RR209	6044440091	RMGCFMIN 22K0 OHM +5% 100MI0W	1
RR210	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R205	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R206	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R207	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R208	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R211	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R213	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R218	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R220	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R221	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R223	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R225	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R226	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R227	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R228	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R229	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R230	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R231	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R232	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R233	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R234	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R235	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R236	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R237	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R238	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R239	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R240	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R241	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R242	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R243	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R244	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R245	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R246	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R247	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R248	8044037091	RMGCFMIN 150R0 OHM +5% 100MI0W	1
R249	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R250	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R251	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R252	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R253	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R254	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R255	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R256	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R257	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R258	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R259	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R260	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R261	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R264	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R265	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R266	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R267	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R268	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R269	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R270	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R271	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R272	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R273	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R274	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R275	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R276	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R277	1035521091	RMGCFMIN 4R7 OHM +5% 100MI0W	1
R278	1035521091	RMGCFMIN 4R7 OHM +5% 100MI0W	1
R279	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R280	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1
R281	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1
R283	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1
R284	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R285	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R286	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1
R287	1106650091	RMGCFMIN 68K0 OHM +5% 100MI0W	1
R288	1106650091	RMGCFMIN 68K0 OHM +5% 100MI0W	1
R289	1106648091	RMGCFMIN 47K0 OHM +5% 100MI0W	1
R290	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R291	3094425091	RMGCFMIN 10R0 OHM +5% 100MI0W	1
R292	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R293	1106646091	RMGCFMIN 8K2 OHM +5% 100MI0W	1
R294	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1
R295	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R296	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R297	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R298	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R299	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R300	3094431091	RMGCFMIN 4K7 OHM +5% 100MI0W	1
R302	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R361	2047192091	RMGCFMIN 220R0 OHM +5% 100MI0W	1
R362	2047192091	RMGCFMIN 220R0 OHM +5% 100MI0W	1
R365	6044435091	RMGCFMIN 47R0 OHM +5% 100MI0W	1
R366	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
Processor PCB			
CN408	55125070XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CN409	55125070XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CN410	55125070XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CN411	55125070XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CP205	55123310XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CP206	55090050XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CP403	55090080XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CP404	55090060XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CP405	55090100XX	CONN 2.0MM 15 MA R NAT MOLEX 35237-1510	1
CP412	55202850NR	WIRECONASY UNIQUE 2P 120MM UL2791 SHIELD	1
CP413	55202850NR	WIRECONASY UNIQUE 2P 120MM UL2791 SHIELD	1
CP414	55202850NR	WIRECONASY UNIQUE 2P 120MM UL2791 SHIELD	1
CP415	55202850NR	WIRECONASY UNIQUE 2P 120MM UL2791 SHIELD	1
IC701	55142750NR	IC-SWITCH TC9273N-007 DIP28 ANALOG SWITC	1
JK701	J44302401201	JACK RCA 4P S	1
JK701	J44306000101	JACK RCA 6P GND W/CAP	1
JK702	J44302401201	JACK RCA 4P S	1
JK703	J44302401201	JACK RCA 4P S	1
C709	1012100039	CE 10U0F +20% 16.0V 85C	1
C710	2034206039	CE 47U0F +20% 16.0V 85C	1
C711	1012100039	CE 10U0F +20% 16.0V 85C	1
C714	1012100039	CE 10U0F +20% 16.0V 85C	1
C715	2034206039	CE 47U0F +20% 16.0V 85C	1
C716	1012100039	CE 10U0F +20% 16.0V 85C	1
C723	1012100039	CE 10U0F +20% 16.0V 85C	1
C724	2034206039	CE 47U0F +20% 16.0V 85C	1
C725	1012100039	CE 10U0F +20% 16.0V 85C	1
C728	1012100039	CE 10U0F +20% 16.0V 85C	1
C729	2034206039	CE 47U0F +20% 16.0V 85C	1
C730	1012100039	CE 10U0F +20% 16.0V 85C	1
C764	2034206039	CE 47U0F +20% 16.0V 85C	1
C765	2034206039	CE 47U0F +20% 16.0V 85C	1
C768	2034206039	CE 47U0F +20% 16.0V 85C	1

Reference Designator	Part No.	Part Name / Description	Qty
C769	2034206039	CE 47U0F +20% 16.0V 85C	1
C770	2034206039	CE 47U0F +20% 16.0V 85C	1
C771	2034206039	CE 47U0F +20% 16.0V 85C	1
C773	2034206039	CE 47U0F +20% 16.0V 85C	1
C774	2034206039	CE 47U0F +20% 16.0V 85C	1
C782	1012100039	CE 10U0F +20% 16.0V 85C	1
C783	2034206039	CE 47U0F +20% 16.0V 85C	1
C784	1012100039	CE 10U0F +20% 16.0V 85C	1
C787	1012100039	CE 10U0F +20% 16.0V 85C	1
C788	2034206039	CE 47U0F +20% 16.0V 85C	1
C789	1012100039	CE 10U0F +20% 16.0V 85C	1
C792	1012100039	CE 10U0F +20% 16.0V 85C	1
C795	2034206039	CE 47U0F +20% 16.0V 85C	1
C796	1012100039	CE 10U0F +20% 16.0V 85C	1
C797	2034206039	CE 47U0F +20% 16.0V 85C	1
C798	2034206039	CE 47U0F +20% 16.0V 85C	1
C799	2034206039	CE 47U0F +20% 16.0V 85C	1
C800	1012100039	CE 10U0F +20% 16.0V 85C	1
C801	1012100039	CE 10U0F +20% 16.0V 85C	1
C802	1012100039	CE 10U0F +20% 16.0V 85C	1
C804	1012100039	CE 10U0F +20% 16.0V 85C	1
C805	1012100039	CE 10U0F +20% 16.0V 85C	1
C807	2034206039	CE 47U0F +20% 16.0V 85C	1
C808	1012100039	CE 10U0F +20% 16.0V 85C	1
C809	1012100039	CE 10U0F +20% 16.0V 85C	1
C811	2034206039	CE 47U0F +20% 16.0V 85C	1
C813	1012100039	CE 10U0F +20% 16.0V 85C	1
C814	1012100039	CE 10U0F +20% 16.0V 85C	1
C816	2034206039	CE 47U0F +20% 16.0V 85C	1
C818	1012100039	CE 10U0F +20% 16.0V 85C	1
C819	1012100039	CE 10U0F +20% 16.0V 85C	1
C821	2034206039	CE 47U0F +20% 16.0V 85C	1
C822	1012100039	CE 10U0F +20% 16.0V 85C	1
C823	1012100039	CE 10U0F +20% 16.0V 85C	1
C825	2034206039	CE 47U0F +20% 16.0V 85C	1
C826	1012100039	CE 10U0F +20% 16.0V 85C	1
C827	1012100039	CE 10U0F +20% 16.0V 85C	1
C829	2034206039	CE 47U0F +20% 16.0V 85C	1
C831	1012100039	CE 10U0F +20% 16.0V 85C	1
C832	1012100039	CE 10U0F +20% 16.0V 85C	1
C834	2034206039	CE 47U0F +20% 16.0V 85C	1
C836	1012100039	CE 10U0F +20% 16.0V 85C	1
C837	1012100039	CE 10U0F +20% 16.0V 85C	1
C839	2034206039	CE 47U0F +20% 16.0V 85C	1
C841	1012100039	CE 10U0F +20% 16.0V 85C	1
C842	1012100039	CE 10U0F +20% 16.0V 85C	1
C844	2034206039	CE 47U0F +20% 16.0V 85C	1
C846	1012100039	CE 10U0F +20% 16.0V 85C	1
C847	1012100039	CE 10U0F +20% 16.0V 85C	1
C849	2034206039	CE 47U0F +20% 16.0V 85C	1
C851	1012100039	CE 10U0F +20% 16.0V 85C	1
C852	1012100039	CE 10U0F +20% 16.0V 85C	1
C854	2034206039	CE 47U0F +20% 16.0V 85C	1
C856	1012100039	CE 10U0F +20% 16.0V 85C	1
C857	1012100039	CE 10U0F +20% 16.0V 85C	1
C859	2034206039	CE 47U0F +20% 16.0V 85C	1
C861	2026911030	CE 330U0F +20% 6.3V 85C	1
C862	1012100039	CE 10U0F +20% 16.0V 85C	1
C864	2034206039	CE 47U0F +20% 16.0V 85C	1
C866	2026911030	CE 330U0F +20% 6.3V 85C	1
C867	2034206039	CE 47U0F +20% 16.0V 85C	1
Q704	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1

Reference Designator	Part No.	Part Name / Description	Qty
Q705	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q707	5513322056	TR-SLPLF DTA114YSA P 100MI0A	1
Q708	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q709	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q713	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q714	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q716	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q717	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q719	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q720	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q722	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q723	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q727	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q729	5513329056	TR-SLPLF KTD1302 B N 300MI0A 20V	1
Q730	5513322056	TR-SLPLF DTA114YSA P 100MI0A	1
Q731	5513334056	TR-SLPLF DTC114TS N 600MI0A	1
Q732	5511203056	TR-M FET RA/TAD 2SK117Y N 300MI0W	1
#001	JE01010201UA	PROBD SMT AVR120 US	
C701	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C702	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C703	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C704	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C705	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C706	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C707	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C708	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C712	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C713	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C717	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C718	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C719	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C720	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C721	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C722	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C726	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C727	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C731	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C732	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C733	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C734	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C735	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C736	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C737	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C738	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C739	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C740	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C763	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C767	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C772	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C775	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C793	1105933091	CCCFMIN 2N2F +10% -10% 50.0V X7R	1
C794	1105933091	CCCFMIN 2N2F +10% -10% 50.0V X7R	1
C812	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C817	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C820	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C824	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C828	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C830	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C833	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C835	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C838	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C840	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1

Reference Designator	Part No.	Part Name / Description	Qty
C843	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C845	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C848	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C850	1105933091	CCCFMIN 2N2F +10% -10% 50.0V X7R	1
C853	1105867091	CCCFMIN 100P0F +5% -5% 50.0V NP0	1
C855	5088236091	CCCFMIN 33P0F +5% -5% 50.0V NP0	1
C858	8043682091	CCCFMIN 680P0F +10% -10% 50.0V X7R	1
C860	8043682091	CCCFMIN 680P0F +10% -10% 50.0V X7R	1
C863	8043682091	CCCFMIN 680P0F +10% -10% 50.0V X7R	1
C865	8043682091	CCCFMIN 680P0F +10% -10% 50.0V X7R	1
IC704	55142710NR	IC-SWITCH KIC9162AF ANALOG SWITCH	1
IC705	55142680NR	IC-SWITCH KIC9163AF ANALOG SWITCH	1
IC706	J2115006002X	IC VOL TC9482F SOP TOSHIBA	1
IC707	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC708	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC709	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC713	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC714	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC715	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC716	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC717	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC718	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC719	J2110012005X	IC AMP NJM4556AM DMP8	1
IC720	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC721	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
IC722	55142610NR	IC-OPERAMP NJM2068M DUAL OP	1
J933	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J934	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J935	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J936	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J937	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J938	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J939	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J940	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J941	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J942	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J943	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J944	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J945	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J946	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J947	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J948	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J949	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J950	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J951	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J952	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J953	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J954	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J955	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J956	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J957	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J959	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J960	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J961	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J962	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J963	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J964	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J965	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J966	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J967	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
J970	8044051091	RMGCFMIN 0 OHM +0% 100MI0W	1
Q706	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1

Reference Designator	Part No.	Part Name / Description	Qty
Q715	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q718	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q721	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q724	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q725	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q733	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q734	5513318092	TR-SSD DTC114YKA N 10K0 OHM 47K0 OHM	1
Q735	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
Q736	5513319092	TR-SSD DTA114YKA P 10K0 OHM 47K0 OHM	1
R701	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R702	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R703	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R704	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R705	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R706	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R707	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R708	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R709	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R710	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R711	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R712	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R713	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R714	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R715	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R716	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R717	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R718	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R719	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R720	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R721	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R722	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R723	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R724	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R725	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R726	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R727	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R728	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R729	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R730	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R731	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R732	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R733	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R734	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R735	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R736	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R737	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R738	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R739	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R740	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R741	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R742	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R743	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R744	4043835091	RMGCFMIN 470K0 OHM +5% 100MI0W	1
R768	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R769	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R781	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R782	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R783	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R784	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R785	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R796	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R797	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R798	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R799	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R800	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R801	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R802	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R803	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R804	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R805	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R806	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R807	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R808	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R809	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R810	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R811	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R812	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R813	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R814	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R815	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R816	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R817	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R818	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R819	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R820	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R821	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R822	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R823	3094434091	RMGCFMIN 27K0 OHM +5% 100MI0W	1
R830	1106648091	RMGCFMIN 47K0 OHM +5% 100MI0W	1
R831	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R832	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R833	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R834	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R835	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R836	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R837	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R838	8044048091	RMGCFMIN 3M3 OHM +5% 100MI0W	1
R839	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R840	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R841	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R842	2047199091	RMGCFMIN 12K0 OHM +5% 100MI0W	1
R843	2047199091	RMGCFMIN 12K0 OHM +5% 100MI0W	1
R844	2047199091	RMGCFMIN 12K0 OHM +5% 100MI0W	1
R845	1106644091	RMGCFMIN 3K3 OHM +5% 100MI0W	1
R846	1106644091	RMGCFMIN 3K3 OHM +5% 100MI0W	1
R847	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R848	2047199091	RMGCFMIN 12K0 OHM +5% 100MI0W	1
R849	2047199091	RMGCFMIN 12K0 OHM +5% 100MI0W	1
R850	2047199091	RMGCFMIN 12K0 OHM +5% 100MI0W	1
R851	1106644091	RMGCFMIN 3K3 OHM +5% 100MI0W	1
R852	1106644091	RMGCFMIN 3K3 OHM +5% 100MI0W	1
R853	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R854	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R855	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R856	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R857	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R858	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R859	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R860	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R861	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R862	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R863	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R864	2047192091	RMGCFMIN 220R0 OHM +5% 100MI0W	1
R865	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R866	8044039091	RMGCFMIN 2K2 OHM +5% 100MI0W	1
R867	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R868	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R869	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R870	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R871	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R872	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R873	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R874	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R875	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R876	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R878	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R879	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R880	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R881	7043420091	RMGCFMIN 100R0 OHM +5% 100MI0W	1
R882	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R883	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R884	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R885	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R886	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R887	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R888	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R889	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R890	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R891	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R892	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R893	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R894	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R895	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R896	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R897	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R898	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R899	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R901	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R902	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R903	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R904	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R905	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R907	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R908	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R909	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R910	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R911	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R912	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R913	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R914	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R915	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R916	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R917	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R918	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R919	5088661091	RMGCFMIN 10K0 OHM +5% 100MI0W	1
R920	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R921	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R922	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R923	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R924	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R925	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R926	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R927	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R928	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R929	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R930	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R931	4043829091	RMGCFMIN 1K5 OHM +5% 100MI0W	1
R932	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R933	2047192091	RMGCFMIN 220R0 OHM +5% 100MI0W	1
R934	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R935	3094434091	RMGCFMIN 27K0 OHM +5% 100MI0W	1
R936	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R937	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R938	4043829091	RMGCFMIN 1K5 OHM +5% 100MI0W	1
R939	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R940	2047192091	RMGCFMIN 220R0 OHM +5% 100MI0W	1
R942	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R943	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R944	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R945	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R946	2047202091	RMGCFMIN 180K0 OHM +5% 100MI0W	1
R947	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R948	3094434091	RMGCFMIN 27K0 OHM +5% 100MI0W	1
R949	2047192091	RMGCFMIN 220R0 OHM +5% 100MI0W	1
R950	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R951	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R952	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R953	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R954	8044040091	RMGCFMIN 5K6 OHM +5% 100MI0W	1
R955	5088663091	RMGCFMIN 100K0 OHM +5% 100MI0W	1
R956	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R957	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R958	2047195091	RMGCFMIN 1K0 OHM +5% 100MI0W	1
R963	5088655091	RMGCFMIN 560R0 OHM +5% 100MI0W	1
R964	5088655091	RMGCFMIN 560R0 OHM +5% 100MI0W	1
R965	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R966	9057440091	RMGCFMIN 470R0 OHM +5% 100MI0W	1
R967	3094434091	RMGCFMIN 27K0 OHM +5% 100MI0W	1
R968	3094434091	RMGCFMIN 27K0 OHM +5% 100MI0W	1
R969	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R970	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
R971	9057443091	RMGCFMIN 18K0 OHM +5% 100MI0W	1
Surround/Sub Power Supply PCB			
'050	J60530006000	HEAT SINK 16X7.5X30	1
'060	J5636140010X	SCREW	1
'070	55210560XX	AC PRI LABEL PCB AVR120/220	1
AC981	J44900000110	AC OUTLET A204D0043P DAERYUNG	1
CA81	55095460NR	CPPMX 100N0F +20% -20%	1
CN606	J4305100066X	CNT ASSY 3P 900MM SL 2.5MM #26	1
C621	13073530AM	CE 470U0F +20% 50.0V 85C	1
C622	13073530AM	CE 470U0F +20% 50.0V 85C	1
C623	13073530AM	CE 470U0F +20% 50.0V 85C	1
C624	13073530AM	CE 470U0F +20% 50.0V 85C	1
C691	J3420447256X	CE DL 4700U 50V	1
C692	J3420447256X	CE DL 4700U 50V	1
C982	55095470NR	CC 4N7F +20% -20% 250.0V Y5V	1
C984	13073530AM	CE 470U0F +20% 50.0V 85C	1
C989	13073530AM	CE 470U0F +20% 50.0V 85C	1
C990	13073530AM	CE 470U0F +20% 50.0V 85C	1
D691	J2202366007X	DIODE BU6-04F	1
D981	2041506016	D-SR 1N4004 400.0V 1.0A	1
D982	2041506016	D-SR 1N4004 400.0V 1.0A	1
D983	2041506016	D-SR 1N4004 400.0V 1.0A	1
D984	2041506016	D-SR 1N4004 400.0V 1.0A	1
D985	2041506016	D-SR 1N4004 400.0V 1.0A	1

Reference Designator	Part No.	Part Name / Description	Qty
D986	2041506016	D-SR 1N4004 400.0V 1.0A	1
D989	2041506016	D-SR 1N4004 400.0V 1.0A	1
D990	2041506016	D-SR 1N4004 400.0V 1.0A	1
FU981	20828880NR	FUSULSLWBL 5.0 A 125.0 V	1
H012	J4305100026X	LUG WIRE 1P 200MM #24	1
H020	J4305100026X	LUG WIRE 1P 200MM #24	1
IC981	55123960NR	IC-REGPOSFXD KIA7805API NORMAL	1
JK601	55191390XX	CONN-SPE TERMINAL SPKR 4P SH0410376P	1
L601	J1451000030X	COIL-AF CHOKE .7UH	1
L602	J1451000030X	COIL-AF CHOKE .7UH	1
Q625	55133270NR	TR-SHPLF 2SC4137 V N 100MI0A 20V	1
Q626	55133270NR	TR-SHPLF 2SC4137 V N 100MI0A 20V	1
Q637	55127360NR	TR-SHPLF 2SD2390 DARLING TON N 10.0A	1
Q638	55127360NR	TR-SHPLF 2SD2390 DARLING TON N 10.0A	1
Q639	55127370NR	TR-SHPLF 2SB1560 DARLING TON P 10.0A	1
Q640	55127370NR	TR-SHPLF 2SB1560 DARLING TON P 10.0A	1
RL981	J5511300010X	RELAY 10A 12V	1
R671	J3076228421X	RES MPR 0.22 5W J	1
R672	J3076228421X	RES MPR 0.22 5W J	1
R675	6044255016	RMOF 10R0 OHM +5% 1.0W	1
R676	6044255016	RMOF 10R0 OHM +5% 1.0W	1
R995	1504110016	RA 3M3 OHM +10% 500MI0W	1
T981	J2812220031X	STBY TRANS AVR120	1
VR601	J3211322110X	RES SEMI J2R-220	1
VR602	J3211322110X	RES SEMI J2R-220	1
WA601	55146560XX	CONN 2.5MM 2 MA ST NAT 0 0	1
WA602	55146560XX	CONN 2.5MM 2 MA ST NAT 0 0	1
WA603	55171550XX	CON 3.96MM PITCH MOLEX 35313-0310	1
WA625	55123310XX	CONN 2.0MM 4 MA ST NAT LW2002P04 0 0	1
WA981	5504884AXX	CON 3.96MM PITCH HEADER 2 POS	1
WA983	55123510XX	CON 3.96MM PITCH HEADER 2 POS MOLEX 3532	1
WA985	55123510XX	CON 3.96MM PITCH HEADER 2 POS MOLEX 3532	1
WA986	55146620XX	CONN 2.5MM 7 MA ST NAT 0 0	1
C601	2026888030	CE 10U0F +20% 50.0V 85C	1
C602	2026888030	CE 10U0F +20% 50.0V 85C	1
C603	1105530071	CC 68P0F +5% -5% 50.0V NP0	1
C604	1105530071	CC 68P0F +5% -5% 50.0V NP0	1
C605	2026907030	CE 100U0F +20% 25.0V 85C	1
C606	2026907030	CE 100U0F +20% 25.0V 85C	1
C607	2026908030	CE 220U0F +20% 10.0V 85C	1
C608	2026908030	CE 220U0F +20% 10.0V 85C	1
C609	3093607071	CC 12P0F +5% -5% 50.0V NP0	1
C610	3093607071	CC 12P0F +5% -5% 50.0V NP0	1
C611	6043915071	CC 33P0F +5% -5% 50.0V NP0	1
C612	6043915071	CC 33P0F +5% -5% 50.0V NP0	1
C613	2026888030	CE 10U0F +20% 50.0V 85C	1
C614	2026888030	CE 10U0F +20% 50.0V 85C	1
C617	J3640104320X	CP MET .1U 63V -K	1
C618	J3640104320X	CP MET .1U 63V -K	1
C619	J3640104320X	CP MET .1U 63V -K	1
C620	J3640104320X	CP MET .1U 63V -K	1
C629	4043358071	CC 680P0F +10% -10% 50.0V Y5P	1
C630	4043358071	CC 680P0F +10% -10% 50.0V Y5P	1
C681	J3640683220X	CMP 0.068U 63V J	1
C682	J3640683220X	CMP 0.068U 63V J	1
C693	J3640104350X	CP MET .1U 250V -M	1
C694	J3640104350X	CP MET .1U 250V -M	1
C695	J3640104350X	CP MET .1U 250V -M	1
C696	1500213030	CE 10U0F +20% 16.0V 85C	1
C971	2026884030	CE 1U0F +20% 50.0V 85C	1
C983	7042852071	CC 10N0F +10% -10% 50.0V Y5P	1
C985	2049503016	CC 100N0F +10% -10% 25.0V Y5P	1

Reference Designator	Part No.	Part Name / Description	Qty
C986	2026884030	CE 1U0F +20% 50.0V 85C	1
C987	2026888030	CE 10U0F +20% 50.0V 85C	1
C988	2049503016	CC 100N0F +10% -10% 25.0V Y5P	1
C991	2026901030	CE 47U0F +20% 50.0V 85C	1
C992	1303935030	CE 100U0F +20% 35.0V 85C	1
C993	2049503016	CC 100N0F +10% -10% 25.0V Y5P	1
C994	2049503016	CC 100N0F +10% -10% 25.0V Y5P	1
C995	2049503016	CC 100N0F +10% -10% 25.0V Y5P	1
C997	7042852071	CC 10N0F +10% -10% 50.0V Y5P	1
C998	7042852071	CC 10N0F +10% -10% 50.0V Y5P	1
C999	7042852071	CC 10N0F +10% -10% 50.0V Y5P	1
D601	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D602	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D603	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D604	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D681	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D682	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D683	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D684	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D685	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D987	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D988	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D991	2047534016	D-ZENER BZX55B30 30V 500MI0W	1
D992	7043654016	D-SLP 1N4148 100.0V 150E-3A	1
D994	2087388016	D-ZENER 1N5236B 7.5V 500MI0W	1
D996	2052696016	D-ZENER 1N5231B 5.1V 500MI0W	1
FH981	J4210020001X	FUSE CLIP 0.3T	1
FH982	J4210020001X	FUSE CLIP 0.3T	1
Q601	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q602	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q603	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q604	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q605	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q606	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q607	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q608	2050808056	TR-SLPLF KTC3198BL N 150MI0A	1
Q611	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q612	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q613	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q614	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q615	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q616	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q617	5513326056	TR-SLPLF KTA1024 Y N 50MI0A -150V	1
Q618	5513326056	TR-SLPLF KTA1024 Y N 50MI0A -150V	1
Q619	5513324056	TR-SLPLF KTC3206 Y N 50MI0A 150V	1
Q620	5513324056	TR-SLPLF KTC3206 Y N 50MI0A 150V	1
Q681	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q682	2055660056	TR-SHPLF KTC3200BL N 100MI0A 120V	1
Q683	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q981	2064785056	TR-SHPLF KTA1268BL P 100MI0A 120V	1
Q982	5514267056	TR-SLPLF MPSA06 N 500MI0A	1
R601	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R602	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R603	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R604	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R605	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R606	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R607	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R608	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R609	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R610	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R611	2046945016	RCF 220R0 OHM +5% 250MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R612	2046945016	RCF 220R0 OHM +5% 250MI0W	1
R613	1105961016	RCF 270R0 OHM +5% 250MI0W	1
R614	1105961016	RCF 270R0 OHM +5% 250MI0W	1
R615	2046951016	RCF 43K0 OHM +5% 250MI0W	1
R616	2046951016	RCF 43K0 OHM +5% 250MI0W	1
R617	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R618	8043703016	RCF 27K0 OHM +5% 250MI0W	1
R619	8043701016	RCF 1K8 OHM +5% 250MI0W	1
R620	8043701016	RCF 1K8 OHM +5% 250MI0W	1
R621	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R622	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R623	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R624	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R625	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R626	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R627	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R628	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R629	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R630	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R631	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R632	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R633	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R634	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R635	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R636	1105959016	RCF 82R0 OHM +5% 250MI0W	1
R637	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R638	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R639	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R640	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R641	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R642	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R643	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R644	7043497016	RCF 3R3 OHM +5% 250MI0W	1
R645	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R646	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R647	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R648	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R649	8043700016	RCF 1K2 OHM +5% 250MI0W	1
R650	8043700016	RCF 1K2 OHM +5% 250MI0W	1
R651	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R652	6044155016	RCF 330R0 OHM +5% 250MI0W	1
R673	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R674	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R677	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R678	3093936016	RCF 10R0 OHM +5% 250MI0W	1
R679	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R680	5088297016	RCF 470R0 OHM +5% 250MI0W	1
R681	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R682	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R683	5088301016	RCF 15K0 OHM +5% 250MI0W	1
R684	5088301016	RCF 15K0 OHM +5% 250MI0W	1
R685	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R686	6044158016	RCF 22K0 OHM +5% 250MI0W	1
R687	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R688	4043563016	RCF 1K5 OHM +5% 250MI0W	1
R689	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R690	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R691	3093948016	RCF 10K0 OHM +5% 250MI0W	1
R692	9057113016	RCF 39K0 OHM +5% 250MI0W	1
R971	3093948016	RCF 10K0 OHM +5% 250MI0W	1
R972	3093951016	RCF 100K0 OHM +5% 250MI0W	1
R981	2047253016	RCF 4R7 OHM +5% 250MI0W	1

Reference Designator	Part No.	Part Name / Description	Qty
R982	2046946016	RCF 2K2 OHM +5% 250MI0W	1
R983	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R984	1105967016	RCF 2K7 OHM +5% 250MI0W	1
R985	3093938016	RCF 22R0 OHM +5% 250MI0W	1
R986	2046946016	RCF 2K2 OHM +5% 250MI0W	1
R987	6044156016	RCF 560R0 OHM +5% 250MI0W	1
R988	1106757016	RCF 1R0 OHM +5% 250MI0W	1
R989	1106757016	RCF 1R0 OHM +5% 250MI0W	1
R993	7043056016	RCF 5K6 OHM +5% 250MI0W	1
Video PCB			
B601	J2631200022X	BEAD AX 80.5 OHM	1
B602	J2631200022X	BEAD AX 80.5 OHM	1
B603	J2631200022X	BEAD AX 80.5 OHM	1
CP601	J4423331600X	CNT PLUG BD'BD 2.0	1
CP602	J4420030840X	CNT PLUG 2.0 ST 8P	1
G001	J4305100030X	CNT ASSY 1P 100MM #18	1
IC607	J2116209002X	IC OSD M35013	1
IC609	J2116204001X	IC VIDEO BA7046	1
JA601	J44312000100	JACK RCA+S GNDCAP	1
JA602	J44312000100	JACK RCA+S GNDCAP	1
JA603	J44312000100	JACK RCA+S GNDCAP	1
JA604	J44312000100	JACK RCA+S GNDCAP	1
JA605	J44312000100	JACK RCA+S GNDCAP	1
JA606	J44312000100	JACK RCA+S GNDCAP	1
JA607	J44312000100	JACK RCA+S GNDCAP	1
J050	J2631200012X	BEAD AXIAL 6MM	1
J051	J2631200012X	BEAD AXIAL 6MM	1
J052	J2631200012X	BEAD AXIAL 6MM	1
X601	J3913010026X	CRYSTAL 14.31818	1
CC601	2026888030	CE 10U0F +20% 50.0V 85C	1
CC603	2026888030	CE 10U0F +20% 50.0V 85C	1
CC606	2026888030	CE 10U0F +20% 50.0V 85C	1
CF601	2026888030	CE 10U0F +20% 50.0V 85C	1
CF602	2026888030	CE 10U0F +20% 50.0V 85C	1
CF604	2026888030	CE 10U0F +20% 50.0V 85C	1
CF605	2026888030	CE 10U0F +20% 50.0V 85C	1
CF611	2026888030	CE 10U0F +20% 50.0V 85C	1
CF612	2026888030	CE 10U0F +20% 50.0V 85C	1
CS607	2026888030	CE 10U0F +20% 50.0V 85C	1
C601	2026888030	CE 10U0F +20% 50.0V 85C	1
C602	2026888030	CE 10U0F +20% 50.0V 85C	1
C603	2026888030	CE 10U0F +20% 50.0V 85C	1
C604	2026888030	CE 10U0F +20% 50.0V 85C	1
C605	2025267030	CE 470U0F +20% 10.0V 85C	1
C605	2026888030	CE 10U0F +20% 50.0V 85C	1
C606	2025267030	CE 470U0F +20% 10.0V 85C	1
C613	2026888030	CE 10U0F +20% 50.0V 85C	1
C614	2026888030	CE 10U0F +20% 50.0V 85C	1
C615	2025267030	CE 470U0F +20% 10.0V 85C	1
C616	2026888030	CE 10U0F +20% 50.0V 85C	1
C617	2026888030	CE 10U0F +20% 50.0V 85C	1
C618	2025267030	CE 470U0F +20% 10.0V 85C	1
C621	2026888030	CE 10U0F +20% 50.0V 85C	1
C622	2026888030	CE 10U0F +20% 50.0V 85C	1
C623	2026888030	CE 10U0F +20% 50.0V 85C	1
C624	2026888030	CE 10U0F +20% 50.0V 85C	1
C625	2025267030	CE 470U0F +20% 10.0V 85C	1
C625	2026888030	CE 10U0F +20% 50.0V 85C	1
C626	2025267030	CE 470U0F +20% 10.0V 85C	1

Reference Designator	Part No.	Part Name / Description	Qty
C626	2026888030	CE 10U0F +20% 50.0V 85C	1
C627	2025267030	CE 470U0F +20% 10.0V 85C	1
C627	2026888030	CE 10U0F +20% 50.0V 85C	1
C628	2025267030	CE 470U0F +20% 10.0V 85C	1
C628	2026888030	CE 10U0F +20% 50.0V 85C	1
C630	2026885030	CE 2U2F +20% 50.0V 85C	1
C631	2026888030	CE 10U0F +20% 50.0V 85C	1
C633	2026894030	CE 100U0F +20% 10.0V 85C	1
C639	2026884030	CE 1U0F +20% 50.0V 85C	1
C647	2025267030	CE 470U0F +20% 10.0V 85C	1
C650	2025267030	CE 470U0F +20% 10.0V 85C	1
C651	2025267030	CE 470U0F +20% 10.0V 85C	1
C652	2025267030	CE 470U0F +20% 10.0V 85C	1
C653	2025267030	CE 470U0F +20% 10.0V 85C	1
C664	2025267030	CE 470U0F +20% 10.0V 85C	1
C665	2025267030	CE 470U0F +20% 10.0V 85C	1
C671	2026896030	CE 330N0F +20% 50.0V 85C	1
C672	2026894030	CE 100U0F +20% 10.0V 85C	1
C675	2026884030	CE 1U0F +20% 50.0V 85C	1
C678	J3513180270X	CC/DISC 18P 50V J	1
C679	2026888030	CE 10U0F +20% 50.0V 85C	1
C682	2026894030	CE 100U0F +20% 10.0V 85C	1
C683	8043459071	CC 22P0F +5% -5% 50.0V NP0	1
C684	8043459071	CC 22P0F +5% -5% 50.0V NP0	1
C685	2026894030	CE 100U0F +20% 10.0V 85C	1
C687	2026894030	CE 100U0F +20% 10.0V 85C	1
C691	2026884030	CE 1U0F +20% 50.0V 85C	1
C699	2026783030	CE 47U0F +20% 16.0V 85C	1
L601	J2616222020X	COIL LAL02 22UH K	1
L602	J2616222020X	COIL LAL02 22UH K	1
L603	J2616222020X	COIL LAL02 22UH K	1
Q602	J2021021501X	TR KTC2874 B NPN TO-92 TO-92 KEC	1
Q603	J2021021501X	TR KTC2874 B NPN TO-92 TO-92 KEC	1
Q604	J2021021501X	TR KTC2874 B NPN TO-92 TO-92 KEC	1
Q605	J2021000102X	TR PNP 2SA933S	1
Q609	J2021021501X	TR KTC2874 B NPN TO-92 TO-92 KEC	1
Q610	J2021060001X	TR NPN KTD1302 B	1
Q614	J2021220002X	TR NPN 2SC1740S	1
Q615	J2021021501X	TR KTC2874 B NPN TO-92 TO-92 KEC	1
Q616	J2021021501X	TR KTC2874 B NPN TO-92 TO-92 KEC	1
Q619	J2021220002X	TR NPN 2SC1740S	1
Q620	J2021000102X	TR PNP 2SA933S	1
R617	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R619	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R640	2046946016	RCF 2K2 OHM +5% 250MI0W	1
R674	1105964016	RCF 1K0 OHM +5% 250MI0W	1
R686	5088303016	RCF 150K0 OHM +5% 250MI0W	1
R695	6044155016	RCF 330R0 OHM +5% 250MI0W	1
CC602	2026729091	CCCFMIN 100N0F +80	1
CC604	2026729091	CCCFMIN 100N0F +80	1
CC607	2026729091	CCCFMIN 100N0F +80	1
CC609	2026729091	CCCFMIN 100N0F +80	1
CF603	2026729091	CCCFMIN 100N0F +80	1
CF606	2026729091	CCCFMIN 100N0F +80	1
CF613	2026729091	CCCFMIN 100N0F +80	1
C608	1105867091	CCCFMIN 100P0F +5%	1
C609	1105867091	CCCFMIN 100P0F +5%	1
C611	1105867091	CCCFMIN 100P0F +5%	1
C612	1105867091	CCCFMIN 100P0F +5%	1
C619	1105867091	CCCFMIN 100P0F +5%	1
C620	1105867091	CCCFMIN 100P0F +5%	1
C629	1105934091	CCCFMIN 10N0F +10%	1

Reference Designator	Part No.	Part Name / Description	Qty
C632	1105934091	CCCFMIN 10N0F +10%	1
C637	1105867091	CCCFMIN 100P0F +5%	1
C638	1105867091	CCCFMIN 100P0F +5%	1
C640	1105867091	CCCFMIN 100P0F +5%	1
C641	1105867091	CCCFMIN 100P0F +5%	1
C642	1105867091	CCCFMIN 100P0F +5%	1
C657	2026729091	CCCFMIN 100N0F +80	1
C658	1105867091	CCCFMIN 100P0F +5%	1
C659	1105867091	CCCFMIN 100P0F +5%	1
C670	1105867091	CCCFMIN 100P0F +5%	1
C673	1105934091	CCCFMIN 10N0F +10%	1
C674	4043518091	CCCFMIN 47P0F +5%	1
C676	5088236091	CCCFMIN 33P0F +5%	1
C681	1105867091	CCCFMIN 100P0F +5%	1
C686	1105934091	CCCFMIN 10N0F +10%	1
C688	1105933091	CCCFMIN 2N2F +10%	1
C690	1105932091	CCCFMIN 1N0F +10%	1
C696	1105867091	CCCFMIN 100P0F +5%	1
D601	J2244010104X	DIODE CHIP 1SS355	1
D602	J2244010104X	DIODE CHIP 1SS355	1
D603	J2244010104X	DIODE CHIP 1SS355	1
D604	J2244010104X	DIODE CHIP 1SS355	1
D605	J2244010104X	DIODE CHIP 1SS355	1
D606	J2244010104X	DIODE CHIP 1SS355	1
D607	J2244010104X	DIODE CHIP 1SS355	1
D608	J2244010104X	DIODE CHIP 1SS355	1
D609	J2244010104X	DIODE CHIP 1SS355	1
D611	J2244010104X	DIODE CHIP 1SS355	1
D612	J2244010104X	DIODE CHIP 1SS355	1
D613	J2244010104X	DIODE CHIP 1SS355	1
D614	J2244010104X	DIODE CHIP 1SS355	1
D615	J2244010104X	DIODE CHIP 1SS355	1
IC601	J2116012001X	IC VIDEO NJM2296	1
IC602	J2116012001X	IC VIDEO NJM2296	1
IC603	J2116012001X	IC VIDEO NJM2296	1
IC605	J2141004002X	IC BU4094 SOP16	1
IC619	J2141004002X	IC BU4094 SOP16	1
J025	8044051091	RMGCFMIN 0 OHM +0%	1
J031	8044051091	RMGCFMIN 0 OHM +0%	1
J032	8044051091	RMGCFMIN 0 OHM +0%	1
J033	8044051091	RMGCFMIN 0 OHM +0%	1
J036	8044051091	RMGCFMIN 0 OHM +0%	1
J039	8044051091	RMGCFMIN 0 OHM +0%	1
J040	8044051091	RMGCFMIN 0 OHM +0%	1
J041	8044051091	RMGCFMIN 0 OHM +0%	1
J045	8044051091	RMGCFMIN 0 OHM +0%	1
J048	8044051091	RMGCFMIN 0 OHM +0%	1
J052	8044051091	RMGCFMIN 0 OHM +0%	1
J058	8044051091	RMGCFMIN 0 OHM +0%	1
J063	8044051091	RMGCFMIN 0 OHM +0%	1
J065	8044051091	RMGCFMIN 0 OHM +0%	1
J067	8044051091	RMGCFMIN 0 OHM +0%	1
J072	8044051091	RMGCFMIN 0 OHM +0%	1
J073	8044051091	RMGCFMIN 0 OHM +0%	1
J074	8044051091	RMGCFMIN 0 OHM +0%	1
J076	8044051091	RMGCFMIN 0 OHM +0%	1
J077	8044051091	RMGCFMIN 0 OHM +0%	1
J079	8044051091	RMGCFMIN 0 OHM +0%	1
J081	8044051091	RMGCFMIN 0 OHM +0%	1
J083	8044051091	RMGCFMIN 0 OHM +0%	1
J086	8044051091	RMGCFMIN 0 OHM +0%	1
J089	8044051091	RMGCFMIN 0 OHM +0%	1

Reference Designator	Part No.	Part Name / Description	Qty
J090	8044051091	RMGCFMIN 0 OHM +0%	1
J091	8044051091	RMGCFMIN 0 OHM +0%	1
J099	8044051091	RMGCFMIN 0 OHM +0%	1
J101	8044051091	RMGCFMIN 0 OHM +0%	1
J116	8044051091	RMGCFMIN 0 OHM +0%	1
J121	8044051091	RMGCFMIN 0 OHM +0%	1
Q601	J2041220102X	TR NPN DTC114YKA	1
Q601	J2041220201X	TR CHIP NPN KRC107	1
Q606	J2041200101X	TR PNP KRA107S	1
Q606	J2041200102X	TR PNP DTA114YKA	1
Q607	J2041220102X	TR NPN DTC114YKA	1
Q607	J2041220201X	TR CHIP NPN KRC107	1
Q608	J2041200101X	TR PNP KRA107S	1
Q608	J2041200102X	TR PNP DTA114YKA	1
Q611	J2041220102X	TR NPN DTC114YKA	1
Q611	J2041220201X	TR CHIP NPN KRC107	1
Q613	J2041220102X	TR NPN DTC114YKA	1
Q613	J2041220201X	TR CHIP NPN KRC107	1
RC601	3094425091	RMGCFMIN 10R0 OHM	1
RC602	1106639091	RMGCFMIN 75R0 OHM	1
RC602	9057437091	RMGCFMIN 82R0 OHM	1
RC603	3094425091	RMGCFMIN 10R0 OHM	1
RC604	1106639091	RMGCFMIN 75R0 OHM	1
RC604	9057437091	RMGCFMIN 82R0 OHM	1
RC606	1106639091	RMGCFMIN 75R0 OHM	1
RC606	9057437091	RMGCFMIN 82R0 OHM	1
RC607	1106639091	RMGCFMIN 75R0 OHM	1
RC607	9057437091	RMGCFMIN 82R0 OHM	1
RC608	3094425091	RMGCFMIN 10R0 OHM	1
RC609	3094425091	RMGCFMIN 10R0 OHM	1
RC610	1106639091	RMGCFMIN 75R0 OHM	1
RC610	9057437091	RMGCFMIN 82R0 OHM	1
RC612	1106639091	RMGCFMIN 75R0 OHM	1
RC612	9057437091	RMGCFMIN 82R0 OHM	1
RC614	1106639091	RMGCFMIN 75R0 OHM	1
RC614	3094427091	RMGCFMIN 68R0 OHM	1
RF601	9057437091	RMGCFMIN 82R0 OHM	1
RF602	3094425091	RMGCFMIN 10R0 OHM	1
RF603	9057437091	RMGCFMIN 82R0 OHM	1
RF604	3094425091	RMGCFMIN 10R0 OHM	1
RF611	9057437091	RMGCFMIN 82R0 OHM	1
RF612	3094425091	RMGCFMIN 10R0 OHM	1
RF615	1106639091	RMGCFMIN 75R0 OHM	1
RF615	8044051091	RMGCFMIN 0 OHM +0%	1
RF616	1106639091	RMGCFMIN 75R0 OHM	1
RF616	8044051091	RMGCFMIN 0 OHM +0%	1
RF617	1106639091	RMGCFMIN 75R0 OHM	1
RF617	8044051091	RMGCFMIN 0 OHM +0%	1
RS602	1106639091	RMGCFMIN 75R0 OHM	1
RS602	9057437091	RMGCFMIN 82R0 OHM	1
RS603	1106639091	RMGCFMIN 75R0 OHM	1
RS603	9057437091	RMGCFMIN 82R0 OHM	1
RS605	1106639091	RMGCFMIN 75R0 OHM	1
RS605	9057437091	RMGCFMIN 82R0 OHM	1
RS606	1106639091	RMGCFMIN 75R0 OHM	1
RS606	9057437091	RMGCFMIN 82R0 OHM	1
RS608	1106639091	RMGCFMIN 75R0 OHM	1
RS608	9057437091	RMGCFMIN 82R0 OHM	1
RS609	1106639091	RMGCFMIN 75R0 OHM	1
RS609	9057437091	RMGCFMIN 82R0 OHM	1
RS611	1106639091	RMGCFMIN 75R0 OHM	1
RS611	9057437091	RMGCFMIN 82R0 OHM	1

Reference Designator	Part No.	Part Name / Description	Qty
RS612	1106639091	RMGCFMIN 75R0 OHM	1
RS612	9057437091	RMGCFMIN 82R0 OHM	1
RS620	1106639091	RMGCFMIN 75R0 OHM	1
RS620	9057437091	RMGCFMIN 82R0 OHM	1
RS621	1106639091	RMGCFMIN 75R0 OHM	1
RS621	9057437091	RMGCFMIN 82R0 OHM	1
RS622	1106639091	RMGCFMIN 75R0 OHM	1
RS622	9057437091	RMGCFMIN 82R0 OHM	1
RS623	1106639091	RMGCFMIN 75R0 OHM	1
RS623	9057437091	RMGCFMIN 82R0 OHM	1
R617	2047195091	RMGCFMIN 1K0 OHM +	1
R619	2047195091	RMGCFMIN 1K0 OHM +	1
R621	5088661091	RMGCFMIN 10K0 OHM	1
R622	5088661091	RMGCFMIN 10K0 OHM	1
R623	5088661091	RMGCFMIN 10K0 OHM	1
R624	5088661091	RMGCFMIN 10K0 OHM	1
R625	5088661091	RMGCFMIN 10K0 OHM	1
R626	5088661091	RMGCFMIN 10K0 OHM	1
R627	5088661091	RMGCFMIN 10K0 OHM	1
R628	5088661091	RMGCFMIN 10K0 OHM	1
R629	5088661091	RMGCFMIN 10K0 OHM	1
R632	1106639091	RMGCFMIN 75R0 OHM	1
R632	9057437091	RMGCFMIN 82R0 OHM	1
R633	1106639091	RMGCFMIN 75R0 OHM	1
R633	3094427091	RMGCFMIN 68R0 OHM	1
R634	5088663091	RMGCFMIN 100K0 OHM	1
R635	2047195091	RMGCFMIN 1K0 OHM +	1
R636	2047195091	RMGCFMIN 1K0 OHM +	1
R637	2047195091	RMGCFMIN 1K0 OHM +	1
R638	8044042091	RMGCFMIN 33K0 OHM	1
R639	3094427091	RMGCFMIN 68R0 OHM	1
R641	5088663091	RMGCFMIN 100K0 OHM	1
R642	2047195091	RMGCFMIN 1K0 OHM +	1
R643	1106648091	RMGCFMIN 47K0 OHM	1
R644	2047195091	RMGCFMIN 1K0 OHM +	1
R651	2047195091	RMGCFMIN 1K0 OHM +	1
R665	5088661091	RMGCFMIN 10K0 OHM	1
R666	8044043091	RMGCFMIN 43K0 OHM	1
R674	2047195091	RMGCFMIN 1K0 OHM +	1
R677	2047195091	RMGCFMIN 1K0 OHM +	1
R678	2047195091	RMGCFMIN 1K0 OHM +	1
R679	2047195091	RMGCFMIN 1K0 OHM +	1
R680	4043830091	RMGCFMIN 6K8 OHM +	1
R681	8044039091	RMGCFMIN 2K2 OHM +	1
R682	5088661091	RMGCFMIN 10K0 OHM	1
R683	1106646091	RMGCFMIN 8K2 OHM +	1
R684	1106650091	RMGCFMIN 68K0 OHM	1
R685	7043420091	RMGCFMIN 100R0 OHM	1
R687	6044442091	RMGCFMIN 150K0 OHM	1
R688	5088667091	RMGCFMIN 1M0 OHM +	1
R689	6044437091	RMGCFMIN 180R0 OHM	1
R690	3094427091	RMGCFMIN 68R0 OHM	1
R691	3094425091	RMGCFMIN 10R0 OHM	1
R692	3094425091	RMGCFMIN 10R0 OHM	1
R693	6044437091	RMGCFMIN 180R0 OHM	1
R694	5088667091	RMGCFMIN 1M0 OHM +	1
R696	4043835091	RMGCFMIN 470K0 OHM	1
R697	4043835091	RMGCFMIN 470K0 OHM	1
R698	5088661091	RMGCFMIN 10K0 OHM	1
R699	2047199091	RMGCFMIN 12K0 OHM	1

Reference Designator	Part No.	Part Name / Description	Qty
DSP PCB			
'050	J60600014000	SHIELD DIGITAL ET	1
CN05	J4305100060X	CNT ASSY 5P 480MM	1
COIL1	J2831020205X	TRANS PULSE 110UH	1
CP01	J4422212140X	FPC PLUG 21P 1.25M	1
CP02	J4423331100X	CNT PLUG BD'BD 2.0	1
CP03	J4423331600X	CNT PLUG BD'BD 2.0	1
CP04	J4420130540X	CNT 2.0MM 5P	1
C112	2025256030	CE 220U0F +20% 6.3	1
C148	20269180AM	CE 1MI0F +20% 6.3V	1
C149	20269180AM	CE 1MI0F +20% 6.3V	1
C150	20269180AM	CE 1MI0F +20% 6.3V	1
JAC1	J2123806001X	FIBER TORX178B	1
JAC2	J2123806001X	FIBER TORX178B	1
JAC3	55191600XX	CON PHOTO SCKT RCA 2P W/GND CAP JW-1502SN	1
JAC4	J2123806002X	FIBER OPT TRANS	1
JAC5	J44301000700	JACK RCA 1P O W/GN	1
JAC6	J2123806001X	FIBER TORX178B	1
JAC7	J44301000600	JACK RCA 1P O W/GN	1
OSC1	J3914010025X	CRY 12.28MHZ	1
W001	J4305100020X	LUG WIRE 1P 100MM	1
C020	J3640683220X	CMP 0.068U 63V J	1
C031	2026884030	CE 1U0F +20% 50.0V	1
C032	2026884030	CE 1U0F +20% 50.0V	1
C056	2026885030	CE 2U2F +20% 50.0V	1
C068	J3470910030X	CE RA/TAP 10UF 16V	1
C069	J3470910030X	CE RA/TAP 10UF 16V	1
C070	J3470910030X	CE RA/TAP 10UF 16V	1
C071	J3470910030X	CE RA/TAP 10UF 16V	1
C080	J3470910030X	CE RA/TAP 10UF 16V	1
C081	J3470910030X	CE RA/TAP 10UF 16V	1
C082	J3470910030X	CE RA/TAP 10UF 16V	1
C083	J3470910030X	CE RA/TAP 10UF 16V	1
C092	J3470910030X	CE RA/TAP 10UF 16V	1
C093	J3470910030X	CE RA/TAP 10UF 16V	1
C094	J3470910030X	CE RA/TAP 10UF 16V	1
C095	J3470910030X	CE RA/TAP 10UF 16V	1
C110	J3470910030X	CE RA/TAP 10UF 16V	1
C111	J3470910030X	CE RA/TAP 10UF 16V	1
C114	2026884030	CE 1U0F +20% 50.0V	1
C115	2026884030	CE 1U0F +20% 50.0V	1
C116	2026884030	CE 1U0F +20% 50.0V	1
C117	2026884030	CE 1U0F +20% 50.0V	1
C118	2026884030	CE 1U0F +20% 50.0V	1
C119	2026884030	CE 1U0F +20% 50.0V	1
C146	J3470910030X	CE RA/TAP 10UF 16V	1
C151	2026902030	CE 100U0F +20% 16.	1
C152	2026902030	CE 100U0F +20% 16.	1
C155	J3470910030X	CE RA/TAP 10UF 16V	1
C156	J3470910030X	CE RA/TAP 10UF 16V	1
C157	J3470910030X	CE RA/TAP 10UF 16V	1
C158	J3470910030X	CE RA/TAP 10UF 16V	1
C159	J3470910030X	CE RA/TAP 10UF 16V	1
C160	J3470910030X	CE RA/TAP 10UF 16V	1
C164	2026783030	CE 47U0F +20% 16.0	1
C165	2026783030	CE 47U0F +20% 16.0	1
C167	2026783030	CE 47U0F +20% 16.0	1
C168	2026783030	CE 47U0F +20% 16.0	1
BD05	J2631300204X	BEAD CHIP/TAP HB-1	1
BD16	J2631300204X	BEAD CHIP/TAP HB-1	1

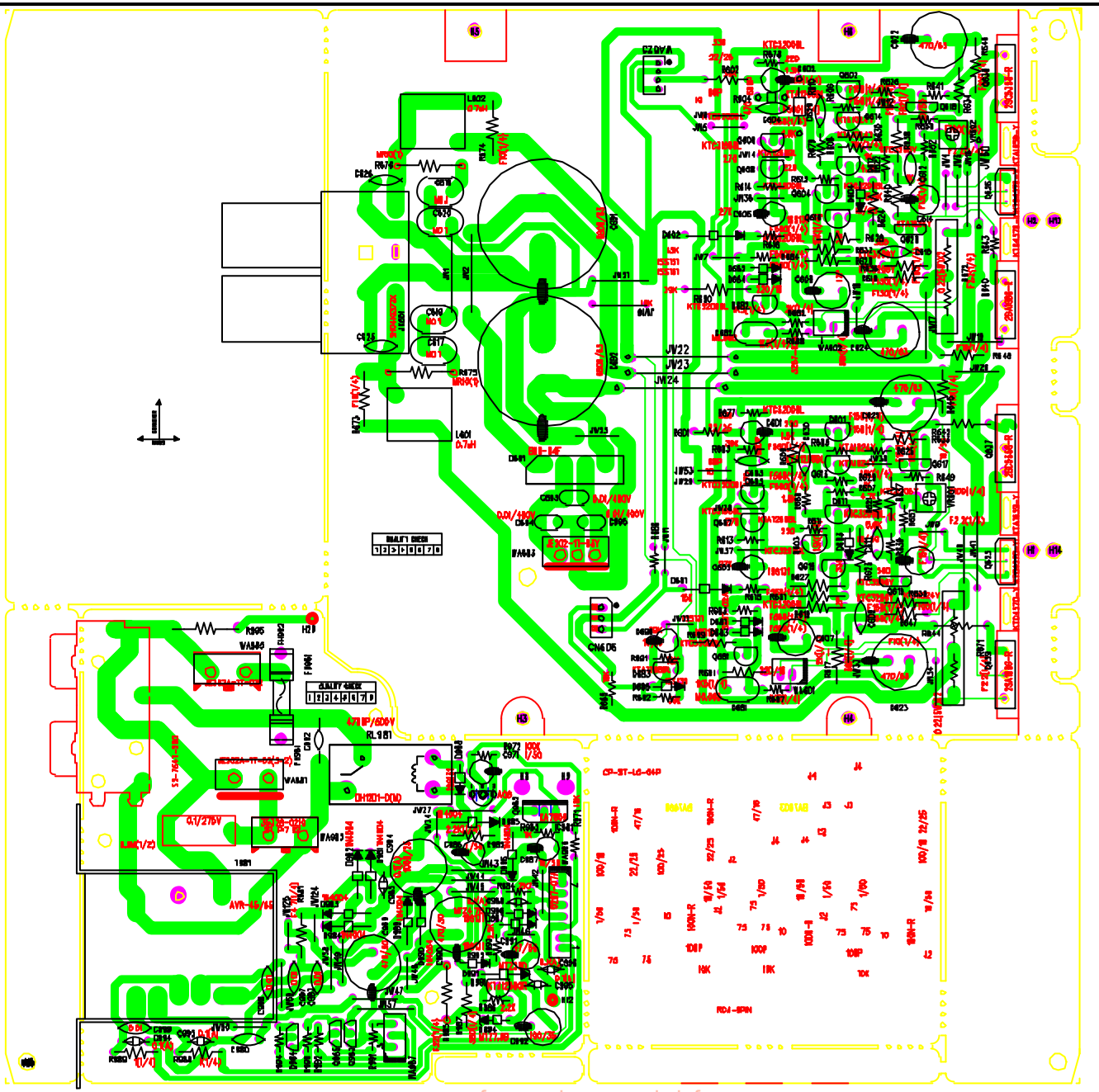
Reference Designator	Part No.	Part Name / Description	Qty
BD18	J2631300204X	BEAD CHIP/TAP HB-1	1
BD61	J2631300204X	BEAD CHIP/TAP HB-1	1
C003	1105934091	CCCFMIN 10N0F +10%	1
C004	1105934091	CCCFMIN 10N0F +10%	1
C010	6044108091	CCCFMIN 22P0F +5%	1
C011	1105934091	CCCFMIN 10N0F +10%	1
C019	2026729091	CCCFMIN 100N0F +80	1
C021	4043518091	CCCFMIN 47P0F +5%	1
C024	4043518091	CCCFMIN 47P0F +5%	1
C025	4043518091	CCCFMIN 47P0F +5%	1
C057	2026732091	CCCFMIN 220N0F +80	1
C060	2047195091	RMGCFMIN 1K0 OHM +	1
C062	1105864091	CCCFMIN 27P0F +5%	1
C067	4043518091	CCCFMIN 47P0F +5%	1
C072	3093923091	CCCFMIN 2N7F +10%	1
C073	3093923091	CCCFMIN 2N7F +10%	1
C074	1105871091	CCCFMIN 560P0F +5%	1
C075	3093923091	CCCFMIN 2N7F +10%	1
C076	3093923091	CCCFMIN 2N7F +10%	1
C077	1105871091	CCCFMIN 560P0F +5%	1
C078	1105871091	CCCFMIN 560P0F +5%	1
C079	1105871091	CCCFMIN 560P0F +5%	1
C084	3093923091	CCCFMIN 2N7F +10%	1
C085	3093923091	CCCFMIN 2N7F +10%	1
C086	1105871091	CCCFMIN 560P0F +5%	1
C087	3093923091	CCCFMIN 2N7F +10%	1
C088	3093923091	CCCFMIN 2N7F +10%	1
C089	1105871091	CCCFMIN 560P0F +5%	1
C090	1105871091	CCCFMIN 560P0F +5%	1
C091	1105871091	CCCFMIN 560P0F +5%	1
C096	3093923091	CCCFMIN 2N7F +10%	1
C097	3093923091	CCCFMIN 2N7F +10%	1
C098	1105871091	CCCFMIN 560P0F +5%	1
C099	2046934091	CCCFMIN 4N7F +10%	1
C100	2046934091	CCCFMIN 4N7F +10%	1
C101	1105932091	CCCFMIN 1N0F +10%	1
C102	1105871091	CCCFMIN 560P0F +5%	1
C103	1105932091	CCCFMIN 1N0F +10%	1
C104	1105933091	CCCFMIN 2N2F +10%	1
C105	1105933091	CCCFMIN 2N2F +10%	1
C106	1105867091	CCCFMIN 100P0F +5%	1
C107	1105867091	CCCFMIN 100P0F +5%	1
C108	1105867091	CCCFMIN 100P0F +5%	1
C109	1105867091	CCCFMIN 100P0F +5%	1
C120	2026729091	CCCFMIN 100N0F +80	1
C121	2026729091	CCCFMIN 100N0F +80	1
C122	2026729091	CCCFMIN 100N0F +80	1
C136	2026729091	CCCFMIN 100N0F +80	1
C163	7043420091	RMGCFMIN 100R0 OHM	1
C178	2026729091	CCCFMIN 100N0F +80	1
D003	J2244010104X	DIODE CHIP 1SS355	1
D004	J2244010104X	DIODE CHIP 1SS355	1
D008	J2244010104X	DIODE CHIP 1SS355	1
IC01	J2129012001X	IC CLK NJU6324M	1
IC04	55172540AVR120	IC AT27LV020A	1
IC05	J2135326005X	IC CS493263-CL PLC	1
IC06	J2133926005X	IC DAC CS4391-KS S	1
IC07	J2133926005X	IC DAC CS4391-KS S	1
IC08	J2133926005X	IC DAC CS4391-KS S	1
IC09	J2133926002X	IC ADC CS5360-KS	1
IC10	J2116007001X	IC 74HCU04M1R HEX	1

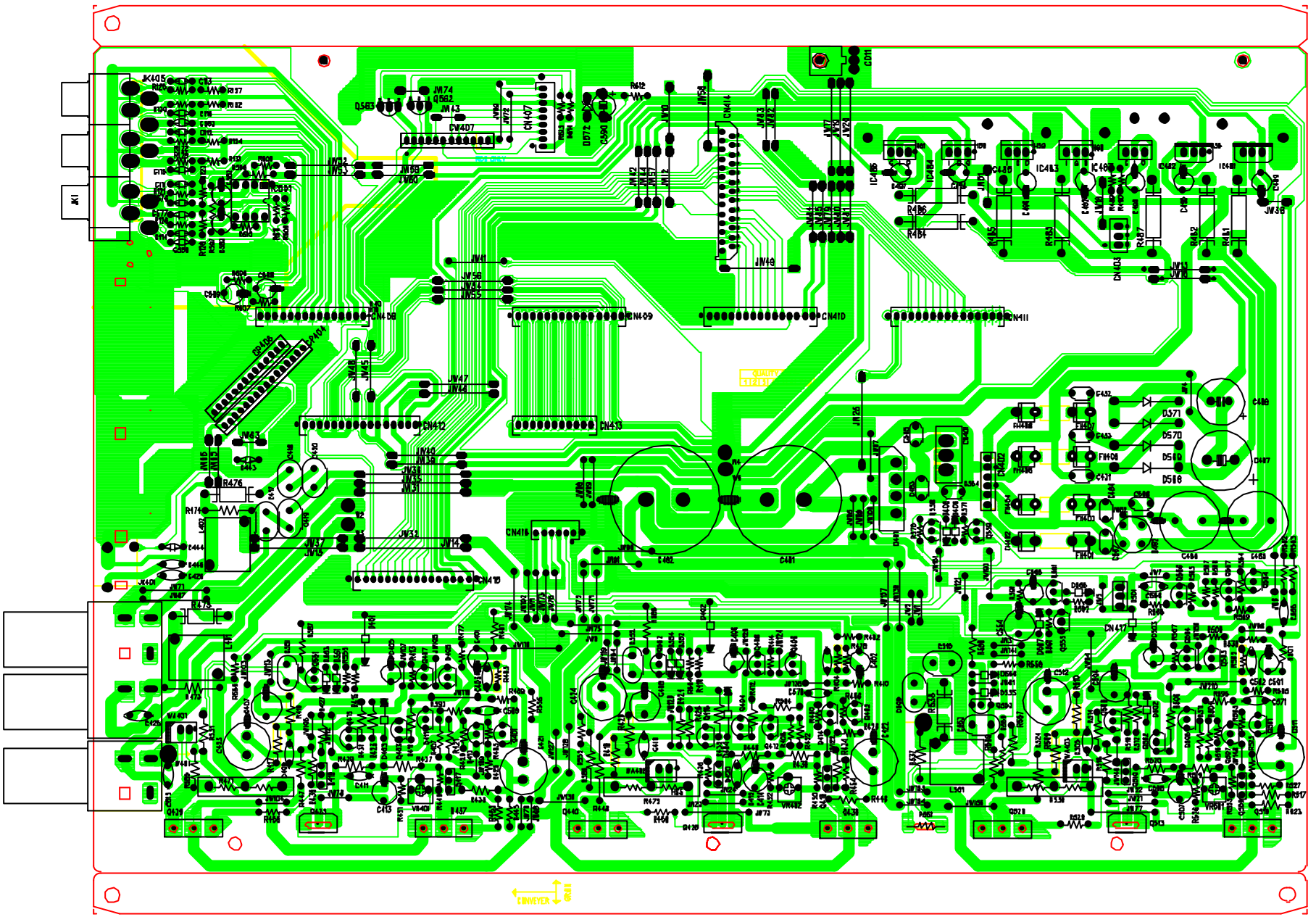
Reference Designator	Part No.	Part Name / Description	Qty
IC11	J2116007001X	IC 74HCU04M1R HEX	1
IC12	J2116007001X	IC 74HCU04M1R HEX	1
IC13	J2142032005X	IC 74VHC153MX	1
IC14	J2136926001X	IC DIR CS8414-CS	1
IC15	J2141004002X	IC BU4094 SOP16	1
IC16	J2141004001X	IC BU4051 SOP16	1
IC17	J2142032006X	IC 74VHC157MX	1
IC18	J2142032002X	IC TC74VHC244MX	1
IC19	J2142032002X	IC TC74VHC244MX	1
IC20	J2110012004X	IC OPAMP NJM2068	1
IC21	J2110012004X	IC OPAMP NJM2068	1
IC22	J2110012004X	IC OPAMP NJM2068	1
IC24	J2110012004X	IC OPAMP NJM2068	1
IC25	J2110012004X	IC OPAMP NJM2068	1
J001	J2611447822X	COIL CHIP 0.47UH K	1
J002	8044051091	RMGCFMIN 0 OHM +0%	1
J003	8044051091	RMGCFMIN 0 OHM +0%	1
L001	J2611433022X	COIL CHIP 33UH K F	1
L002	J2611433022X	COIL CHIP 33UH K F	1
L003	J2611433022X	COIL CHIP 33UH K F	1
L004	J2611433022X	COIL CHIP 33UH K F	1
R003	1106648091	RMGCFMIN 47K0 OHM	1
R004	1106648091	RMGCFMIN 47K0 OHM	1
R005	5088655091	RMGCFMIN 560R0 OHM	1
R006	5088655091	RMGCFMIN 560R0 OHM	1
R007	8044039091	RMGCFMIN 2K2 OHM +	1
R008	1106648091	RMGCFMIN 47K0 OHM	1
R009	8044039091	RMGCFMIN 2K2 OHM +	1
R010	1106648091	RMGCFMIN 47K0 OHM	1
R011	8044040091	RMGCFMIN 5K6 OHM +	1
R012	3094425091	RMGCFMIN 10R0 OHM	1
R013	9057440091	RMGCFMIN 470R0 OHM	1
R014	7043420091	RMGCFMIN 100R0 OHM	1
R015	2047193091	RMGCFMIN 510R0 OHM	1
R016	7043423091	RMGCFMIN 1K2 OHM +	1
R017	7043423091	RMGCFMIN 1K2 OHM +	1
R018	5088655091	RMGCFMIN 560R0 OHM	1
R019	5088655091	RMGCFMIN 560R0 OHM	1
R020	1106639091	RMGCFMIN 75R0 OHM	1
R022	1106648091	RMGCFMIN 47K0 OHM	1
R023	9057440091	RMGCFMIN 470R0 OHM	1
R027	8044039091	RMGCFMIN 2K2 OHM +	1
R028	1106648091	RMGCFMIN 47K0 OHM	1
R031	8044040091	RMGCFMIN 5K6 OHM +	1
R036	8044040091	RMGCFMIN 5K6 OHM +	1
R037	8044039091	RMGCFMIN 2K2 OHM +	1
R038	1106648091	RMGCFMIN 47K0 OHM	1
R039	5088663091	RMGCFMIN 100K0 OHM	1
R040	5088663091	RMGCFMIN 100K0 OHM	1
R041	2047195091	RMGCFMIN 1K0 OHM +	1
R042	2047195091	RMGCFMIN 1K0 OHM +	1
R044	8044040091	RMGCFMIN 5K6 OHM +	1
R045	8044040091	RMGCFMIN 5K6 OHM +	1
R046	5088661091	RMGCFMIN 10K0 OHM	1
R047	5088661091	RMGCFMIN 10K0 OHM	1
R048	5088660091	RMGCFMIN 5K1 OHM +	1
R049	9057440091	RMGCFMIN 470R0 OHM	1
R050	5088660091	RMGCFMIN 5K1 OHM +	1
R051	5088661091	RMGCFMIN 10K0 OHM	1
R052	5088661091	RMGCFMIN 10K0 OHM	1
R053	8044040091	RMGCFMIN 5K6 OHM +	1
R054	7043423091	RMGCFMIN 1K2 OHM +	1

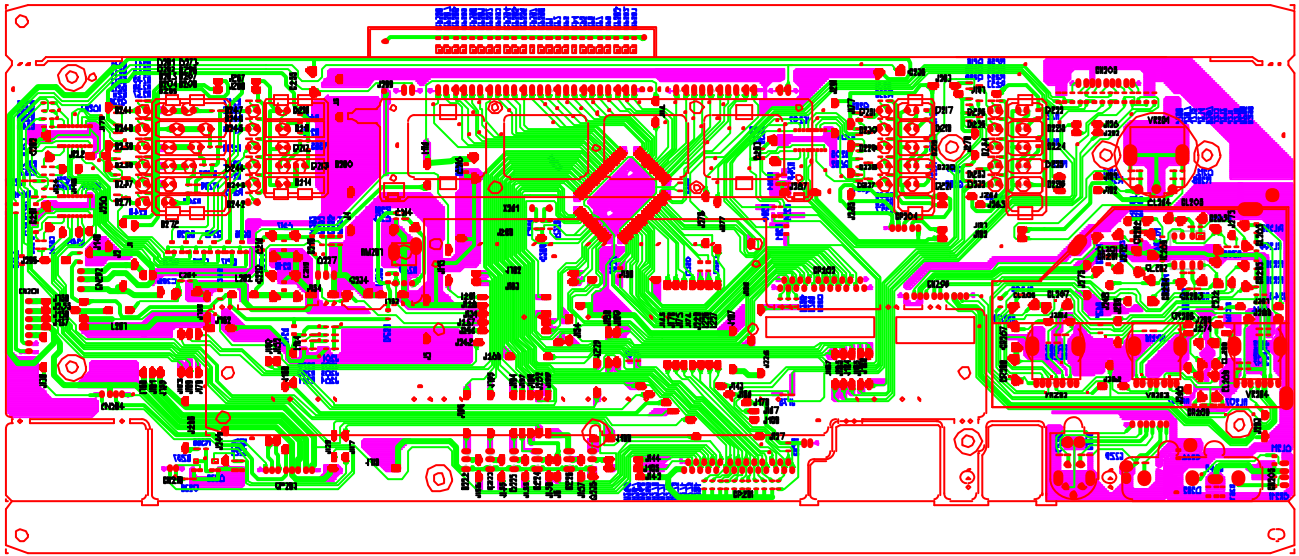
Reference Designator	Part No.	Part Name / Description	Qty
R055	7043423091	RMGCFMIN 1K2 OHM +	1
R056	8044040091	RMGCFMIN 5K6 OHM +	1
R057	7043423091	RMGCFMIN 1K2 OHM +	1
R058	7043423091	RMGCFMIN 1K2 OHM +	1
R059	5088655091	RMGCFMIN 560R0 OHM	1
R060	5088655091	RMGCFMIN 560R0 OHM	1
R061	5088661091	RMGCFMIN 10K0 OHM	1
R062	5088661091	RMGCFMIN 10K0 OHM	1
R063	5088661091	RMGCFMIN 10K0 OHM	1
R064	5088661091	RMGCFMIN 10K0 OHM	1
R071	2047195091	RMGCFMIN 1K0 OHM +	1
R072	4043829091	RMGCFMIN 1K5 OHM +	1
R073	8044040091	RMGCFMIN 5K6 OHM +	1
R074	8044040091	RMGCFMIN 5K6 OHM +	1
R075	5088663091	RMGCFMIN 100K0 OHM	1
R076	5088661091	RMGCFMIN 10K0 OHM	1
R078	5088661091	RMGCFMIN 10K0 OHM	1
R080	3094431091	RMGCFMIN 4K7 OHM +	1
R081	5088661091	RMGCFMIN 10K0 OHM	1
R082	5088661091	RMGCFMIN 10K0 OHM	1
R083	5088661091	RMGCFMIN 10K0 OHM	1
R084	5088661091	RMGCFMIN 10K0 OHM	1
R085	5088661091	RMGCFMIN 10K0 OHM	1
R086	5088661091	RMGCFMIN 10K0 OHM	1
R087	5088661091	RMGCFMIN 10K0 OHM	1
R088	5088661091	RMGCFMIN 10K0 OHM	1
R089	5088663091	RMGCFMIN 100K0 OHM	1
R091	8044037091	RMGCFMIN 150R0 OHM	1
R092	8044037091	RMGCFMIN 150R0 OHM	1
R093	5088661091	RMGCFMIN 10K0 OHM	1
R094	5088661091	RMGCFMIN 10K0 OHM	1
R095	5088661091	RMGCFMIN 10K0 OHM	1
R096	5088661091	RMGCFMIN 10K0 OHM	1
R097	5088661091	RMGCFMIN 10K0 OHM	1
R098	5088661091	RMGCFMIN 10K0 OHM	1
R099	8044037091	RMGCFMIN 150R0 OHM	1
R100	8044037091	RMGCFMIN 150R0 OHM	1
R101	3094433091	RMGCFMIN 20K0 OHM	1
R102	3094433091	RMGCFMIN 20K0 OHM	1
R105	5088663091	RMGCFMIN 100K0 OHM	1
R106	5088663091	RMGCFMIN 100K0 OHM	1
R107	3094431091	RMGCFMIN 4K7 OHM +	1
R108	3094431091	RMGCFMIN 4K7 OHM +	1
R109	5088661091	RMGCFMIN 10K0 OHM	1
R111	5088661091	RMGCFMIN 10K0 OHM	1
R112	3094431091	RMGCFMIN 4K7 OHM +	1
R113	5088661091	RMGCFMIN 10K0 OHM	1
R114	5088661091	RMGCFMIN 10K0 OHM	1
R115	2047195091	RMGCFMIN 1K0 OHM +	1
R116	2026729091	CCCFMIN 100N0F +80	1
R117	5088661091	RMGCFMIN 10K0 OHM	1
R119	3094431091	RMGCFMIN 4K7 OHM +	1
R120	3094431091	RMGCFMIN 4K7 OHM +	1
R124	2047202091	RMGCFMIN 180K0 OHM	1
R125	2047202091	RMGCFMIN 180K0 OHM	1
R126	5088660091	RMGCFMIN 5K1 OHM +	1
R127	5088660091	RMGCFMIN 5K1 OHM +	1
R128	5088660091	RMGCFMIN 5K1 OHM +	1
R129	5088660091	RMGCFMIN 5K1 OHM +	1
R130	8044040091	RMGCFMIN 5K6 OHM +	1
R131	7043423091	RMGCFMIN 1K2 OHM +	1
R132	7043423091	RMGCFMIN 1K2 OHM +	1

Reference Designator	Part No.	Part Name / Description	Qty
R133	8044040091	RMGCFMIN 5K6 OHM +	1
R134	7043423091	RMGCFMIN 1K2 OHM +	1
R135	7043423091	RMGCFMIN 1K2 OHM +	1
R136	5088655091	RMGCFMIN 560R0 OHM	1
R137	5088655091	RMGCFMIN 560R0 OHM	1
R138	8044040091	RMGCFMIN 5K6 OHM +	1
R139	8044040091	RMGCFMIN 5K6 OHM +	1
R141	1106648091	RMGCFMIN 47K0 OHM	1
R143	8044040091	RMGCFMIN 5K6 OHM +	1
R144	8044040091	RMGCFMIN 5K6 OHM +	1
R145	8044040091	RMGCFMIN 5K6 OHM +	1
R146	8044040091	RMGCFMIN 5K6 OHM +	1
R147	8044040091	RMGCFMIN 5K6 OHM +	1
R148	7043423091	RMGCFMIN 1K2 OHM +	1
R149	7043423091	RMGCFMIN 1K2 OHM +	1
R151	7043420091	RMGCFMIN 100R0 OHM	1
R152	7043420091	RMGCFMIN 100R0 OHM	1
R160	2047195091	RMGCFMIN 1K0 OHM +	1
R162	3094425091	RMGCFMIN 10R0 OHM	1
R163	3094425091	RMGCFMIN 10R0 OHM	1
R170	2047195091	RMGCFMIN 1K0 OHM +	1
BD01	J2631300204X	BEAD CHIP/TAP HB-1	1
BD02	J2631300204X	BEAD CHIP/TAP HB-1	1
BD04	J2631300204X	BEAD CHIP/TAP HB-1	1
BD10	J2631300204X	BEAD CHIP/TAP HB-1	1
BD11	J2631300204X	BEAD CHIP/TAP HB-1	1
BD12	J2631300204X	BEAD CHIP/TAP HB-1	1
BD15	J2631300224X	BEAD CHIP/TAP,HH-1	1
BD23	J2631300204X	BEAD CHIP/TAP HB-1	1
BD25	J2631300204X	BEAD CHIP/TAP HB-1	1
BD26	J2631300204X	BEAD CHIP/TAP HB-1	1
BD27	J2631300204X	BEAD CHIP/TAP HB-1	1
BD28	J2631300204X	BEAD CHIP/TAP HB-1	1
BD29	J2631300204X	BEAD CHIP/TAP HB-1	1
BD30	J2631300204X	BEAD CHIP/TAP HB-1	1
BD31	J2631300204X	BEAD CHIP/TAP HB-1	1
BD32	J2631300204X	BEAD CHIP/TAP HB-1	1
BD34	J2631300204X	BEAD CHIP/TAP HB-1	1
BD38	J2631300204X	BEAD CHIP/TAP HB-1	1
BD41	J2631300204X	BEAD CHIP/TAP HB-1	1
BD42	J2631300204X	BEAD CHIP/TAP HB-1	1
BD43	J2631300204X	BEAD CHIP/TAP HB-1	1
BD44	J2631300204X	BEAD CHIP/TAP HB-1	1
BD45	J2631300204X	BEAD CHIP/TAP HB-1	1
BD57	J2631300204X	BEAD CHIP/TAP HB-1	1
BD58	J2631300204X	BEAD CHIP/TAP HB-1	1
BD62	J2631300204X	BEAD CHIP/TAP HB-1	1
BD71	J2631300204X	BEAD CHIP/TAP HB-1	1
C001	6044108091	CCCFMIN 22P0F +5%	1
C002	6044108091	CCCFMIN 22P0F +5%	1
C005	2026729091	CCCFMIN 100N0F +80	1
C006	2026729091	CCCFMIN 100N0F +80	1
C007	2026729091	CCCFMIN 100N0F +80	1
C008	2026729091	CCCFMIN 100N0F +80	1
C012	2026729091	CCCFMIN 100N0F +80	1
C013	2026729091	CCCFMIN 100N0F +80	1
C014	2026729091	CCCFMIN 100N0F +80	1
C015	2026729091	CCCFMIN 100N0F +80	1
C016	2026729091	CCCFMIN 100N0F +80	1
C017	2026729091	CCCFMIN 100N0F +80	1
C018	2026729091	CCCFMIN 100N0F +80	1
C022	2026729091	CCCFMIN 100N0F +80	1

Reference Designator	Part No.	Part Name / Description	Qty
C026	2026729091	CCCFMIN 100N0F +80	1
C029	2026729091	CCCFMIN 100N0F +80	1
C030	2026729091	CCCFMIN 100N0F +80	1
C033	2026729091	CCCFMIN 100N0F +80	1
C034	2026729091	CCCFMIN 100N0F +80	1
C035	2026729091	CCCFMIN 100N0F +80	1
C036	4043518091	CCCFMIN 47P0F +5%	1
C037	4043518091	CCCFMIN 47P0F +5%	1
C040	2026729091	CCCFMIN 100N0F +80	1
C041	2026729091	CCCFMIN 100N0F +80	1
C042	2026729091	CCCFMIN 100N0F +80	1
C043	2026729091	CCCFMIN 100N0F +80	1
C049	4043518091	CCCFMIN 47P0F +5%	1
C050	4043518091	CCCFMIN 47P0F +5%	1
C059	2026729091	CCCFMIN 100N0F +80	1
C061	2046897091	CCCFMIN 330P0F +5%	1
C063	2026729091	CCCFMIN 100N0F +80	1
C064	1105867091	CCCFMIN 100P0F +5%	1
C065	2026729091	CCCFMIN 100N0F +80	1
C066	2026729091	CCCFMIN 100N0F +80	1
C113	2026729091	CCCFMIN 100N0F +80	1
C123	2026729091	CCCFMIN 100N0F +80	1
C124	2026729091	CCCFMIN 100N0F +80	1
C125	2026729091	CCCFMIN 100N0F +80	1
C126	2026729091	CCCFMIN 100N0F +80	1
C127	2026729091	CCCFMIN 100N0F +80	1
C128	2026729091	CCCFMIN 100N0F +80	1
C129	2026729091	CCCFMIN 100N0F +80	1
C130	2026729091	CCCFMIN 100N0F +80	1
C131	2026729091	CCCFMIN 100N0F +80	1
C132	2026729091	CCCFMIN 100N0F +80	1
C133	2026729091	CCCFMIN 100N0F +80	1
C134	2026729091	CCCFMIN 100N0F +80	1
C135	2026729091	CCCFMIN 100N0F +80	1
C137	2026729091	CCCFMIN 100N0F +80	1
C147	3093873091	CCCFMIN 220P0F +5%	1
C166	2026729091	CCCFMIN 100N0F +80	1
C169	2046897091	CCCFMIN 330P0F +5%	1
C170	2026729091	CCCFMIN 100N0F +80	1
C171	2026729091	CCCFMIN 100N0F +80	1
C172	2026729091	CCCFMIN 100N0F +80	1
C174	4043518091	CCCFMIN 47P0F +5%	1
C175	4043518091	CCCFMIN 47P0F +5%	1
C176	4043518091	CCCFMIN 47P0F +5%	1
D009	J2244010104X	DIODE CHIP 1SS355	1
IC02	J2142032001X	IC F/F 74VHC574MX	1
IC03	J2142032001X	IC F/F 74VHC574MX	1
R001	1106639091	RMGCFMIN 75R0 OHM	1
R002	1106639091	RMGCFMIN 75R0 OHM	1
R043	1511259091	RMGCFMIN 3R3 OHM +	1
R090	1511259091	RMGCFMIN 3R3 OHM +	1
R150	1035519091	RMGCFMIN 2R2 OHM +	1







SONY

CXP82832/82840/82852/82860

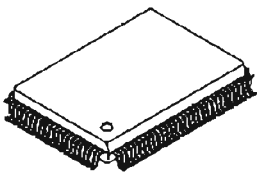
CMOS 8-bit Single Chip Microcomputer

Description

The CXP82832/82840/82852/82860 is a CMOS 8-bit single chip microcomputer integrating on a single chip an A/D converter, serial interface, timer/counter, time base timer, capture timer/counter, fluorescent display panel controller/driver, remote control reception circuit, and PWM output besides the basic configurations of 8-bit CPU, ROM, RAM, and I/O port.

The CXP82832/82840/82852/82860 also provides sleep/stop function that enables lower power consumption.

100 pin QFP (Plastic)



Structure

Silicon gate CMOS IC

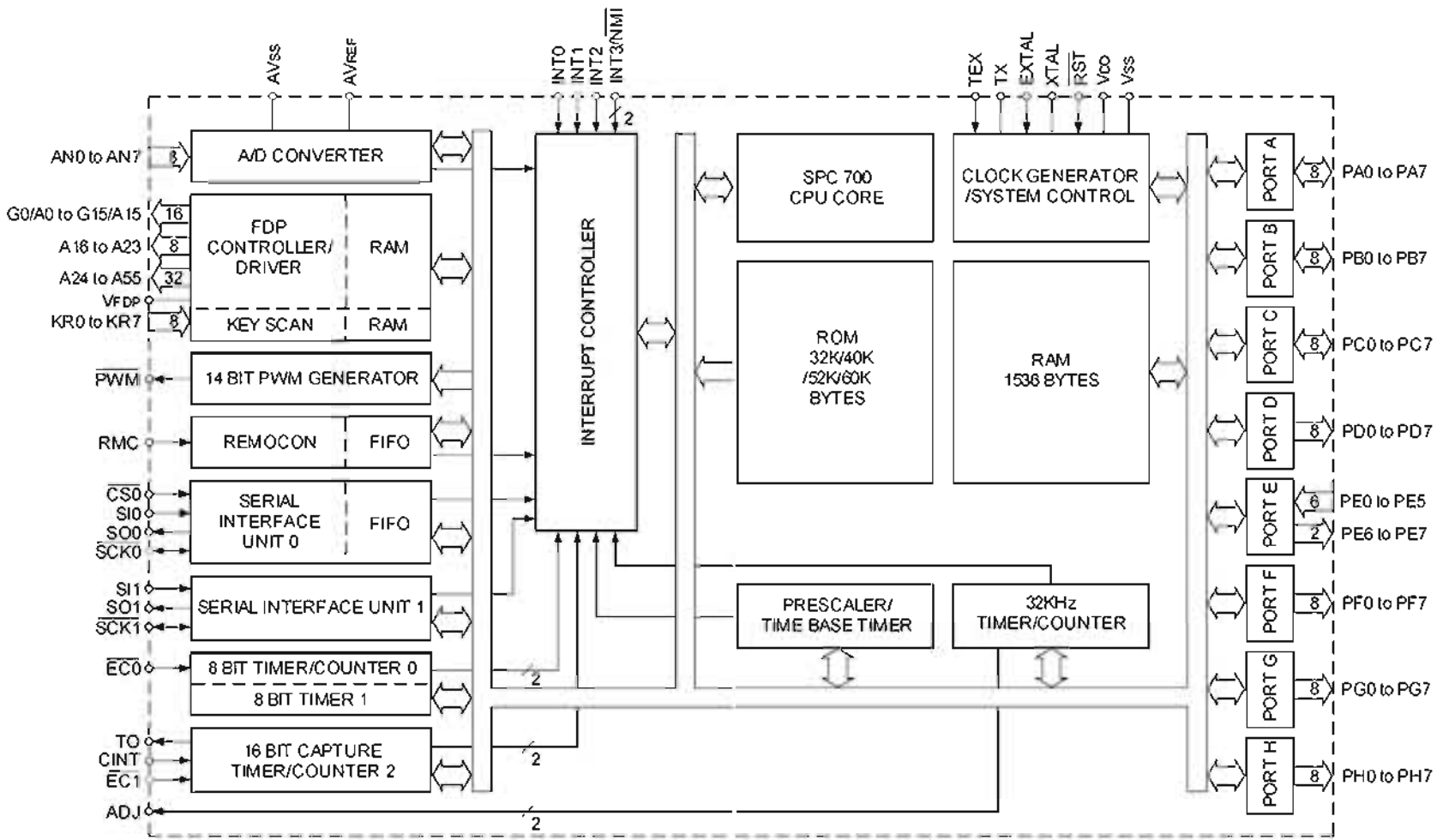
Features

- Wide-range instruction system (213 instructions) to cover various types of data
  — 16-bit arithmetic/multiplication and division/boolean bit operation instructions

• Minimum instruction cycle	400ns at 10MHz operation (122µs at 32kHz operation)
• Incorporated ROM capacity	32K bytes (CXP82832) 40K bytes (CXP82840) 52K bytes (CXP82852) 60K bytes (CXP82860)
• Incorporated RAM capacity	1536 bytes (including fluorescent display area)
• Peripheral functions	
— A/D converter	8 bits, 8 channels, successive approximation method (Conversion time of 32µs/10MHz)
— Serial interface	8-bit, 8-stage FIFO incorporated (Auto transfer for 1 to 8 bytes), 1 channel 8-bit clock synchronized type, 1 channel
— Timers	8-bit timer, 8-bit timer/counter, 19-bit time base timer 16-bit capture timer/counter, 32kHz timer/counter
— Fluorescent display panel controller/driver	Supports the universal grid fluorescent display panel. High voltage drive output port of 56 pins (40V) Maximum of 640 segments display possible Display timing number of 1 to 20 Dimmer function Incorporated pull-down resistor (Mask option) Hardware key scan function (Maximum of 16 × 8 key matrix supportable)
— Remote control reception circuit	8-bit pulse measurement counter, 6-stage FIFO
— PWM output	14 bits, 1 channel
• Interruption	16 factors, 15 vectors, multi-interruption possible
• Standby mode	SLEEP/STOP
• Package	100-pin plastic QFP
• Piggyback/evaluation chip	CXP82800 100-pin ceramic QFP

Block Diagram

SONY CXP82832/82840/82852/82860



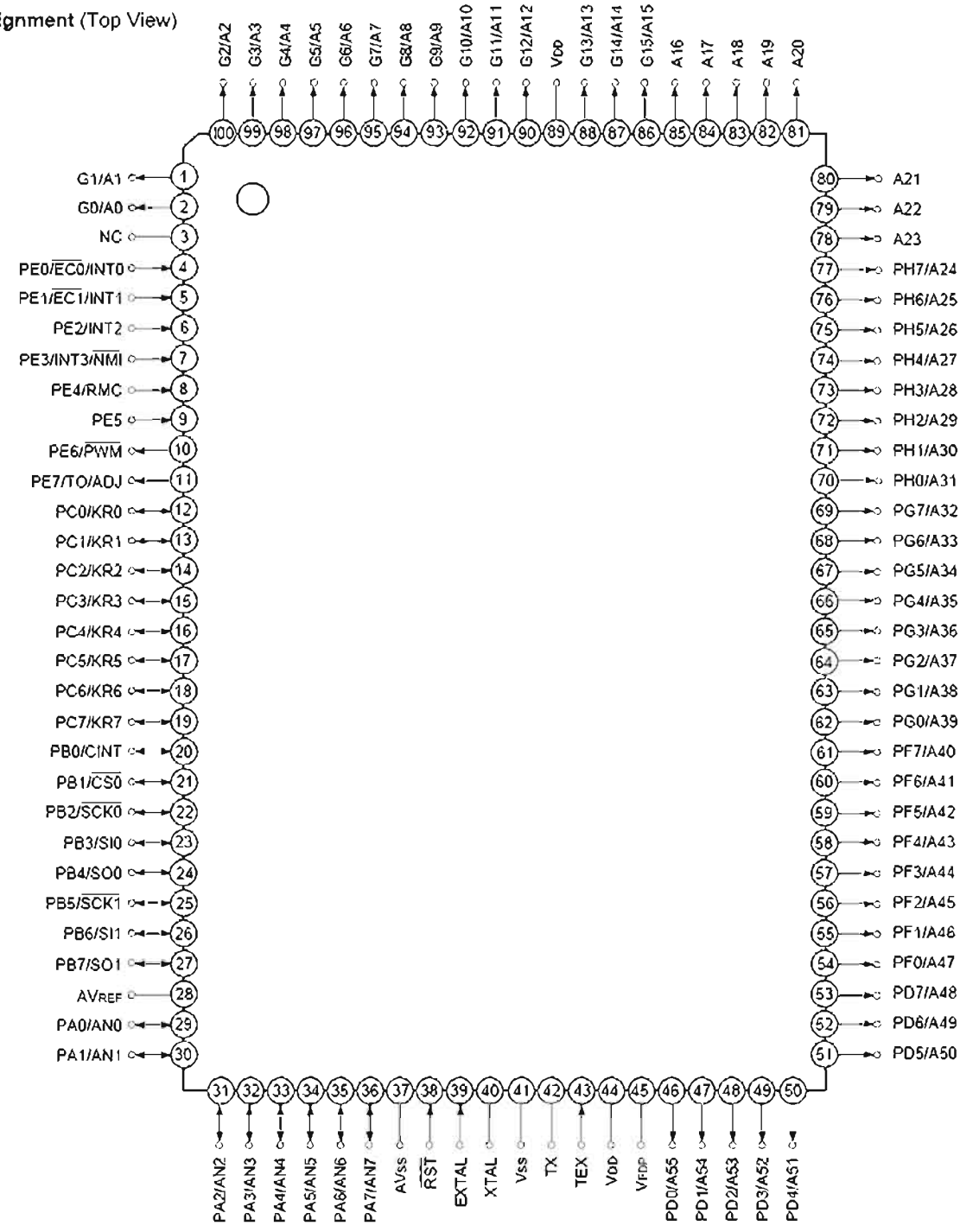
CMOS 8-Bit Single Chip Microcomputer IC

CXP82860

SONY

CXP82832/82840/82852/82860

Pin Assignment (Top View)



Note) 1. NC (Pin 3) must be connected to V_{DD}.
2. V_{DD} (Pins 44 and 89) must be connected to V_{DD}.

Pin code	I/O	Functions	
PA0/AN0 to PA7/AN7	I/O/ Analog input	(Port A) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of the pull-up resistor can be set through the software in a unit of 4 bits. (8pins)	Analog inputs to A/D converter. (8 pins)
PB0/CINT	I/O/Input	(Port B) 8-bit I/O port. I/O can be set in a unit of single bits. Incorporation of the pull-up resistor can be set through the software in a unit of 4 bits. (8 pins)	Capture input to 16-bit timer/counter.
PB1/$\overline{CS0}$	I/O/Input		Chip select input for serial interface (CH0).
PB2/$\overline{SCK0}$	I/O/I/O		Serial clock I/O (CH0).
PB3/SI0	I/O/Input		Serial data input (CH0).
PB4/SO0	I/O/Output		Serial data output (CH0).
PB5/$\overline{SCK1}$	I/O/I/O		Serial clock I/O (CH1).
PB6/SI1	I/O/Input		Serial data input (CH1).
PB7/SO1	I/O/Output		Serial data output (CH1).
PC0/KR0 to PC7/KR7	I/O/Input	(Port C) 8-bit I/O port. I/O can be set in a unit of single bits. Can drive 12mA sync current. Incorporation of the pull-up resistor can be set through the software in a unit of 4 bits. (8 pins)	Serves as key return inputs when operating key scan with fluorescent display panel (FDP) segment signal. (8 pins)
PD0/A55 to PD7/A48	Output/Output	(Port D) 8-bit output port. (8 pins)	FDP segment signal (anode connection) outputs.
PE0/INT0/ $\overline{EC0}$	Input/Input/Input	(Port E) 8-bit port. Lower 6 bits are for inputs; upper 2 bits are for outputs. (8 pins)	Inputs for external interruption request. (4 pins) — External event inputs for timer/counter. (2 pins)
PE1/INT1/ $\overline{EC1}$	Input/Input/Input		
PE2/INT2	Input/Input		
PE3/INT3/ $\overline{NMI}$	Input/Input/Input		Inputs for external interruption request. (4 pins) — Non-maskable interruption request input.
PE4/RMC	Input/Input		Remote control reception circuit input.
PE5	Input		
PE6/$\overline{PWM}$	Output/Output		14-bit PWM output.
PE7/TO/ADJ	Output/Output/ Output		Output for the 16-bit timer/counter rectangular waves, and 32kHz oscillation frequency division.
PF0/A47 to PF7/A40	Output/Output	(Port F) 8-bit output port. (8pins)	FDP segment signal (anode connection) outputs.

Pin code	I/O	Functions	
PG0/A39 to PG7/A32	Output/Output	(Port G) 8-bit output port. (8 pins)	FDP segment signal (anode connection) outputs. (8 pins)
PH0/A31 to PH7/A24	Output/Output	(Port H) 8-bit output port. (8 pins)	FDP segment signal (anode connection) outputs. (8 pins)
A16 to A23	Output	FDP segment signal (anode connection) outputs. (8 pins)	
G0/A0 to G15/A15	Output/Output	Outputs for FDP timing signals (grid connection)/segment signals (anode connection). (16 pins)	
V_{FDP}		FDP voltage supply when incorporated pull-down (PD) resistor is set by mask option.	
EXTAL	Input	Crystal connectors for system clock oscillation. When the clock is supplied externally, input to EXTAL; opposite phase clock should be input to XTAL.	
XTAL	Output		
TEX	Input	Crystal connectors for 32kHz timer/counter clock oscillation. For usage as event input, input to TEX, and open TX.	
TX	Output		
$\overline{RST}$	Input	Low-level active, system reset	
NC		NC. Under normal operation, connect to V_{DD}.	
AV_{REF}	Input	Reference voltage input for A/D converter.	
AVss		A/D converter GND.	
V_{DD}		Vcc supply.	
Vss		GND.	

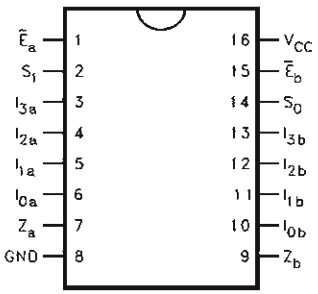
74VHC153MX

Dual 4-Input Multiplexer

Pin Descriptions

Pin Names	Description
I_{0a}–I_{3a}	Side A Data Inputs
I_{0b}–I_{3b}	Side B Data Inputs
S_0, S_1	Common Select Inputs
$\overline{E}_a$	Side A Enable Input
$\overline{E}_b$	Side B Enable Input
Z_a	Side A Output
Z_b	Side B Output

Connection Diagram



Functional Description

The VHC153 is a dual 4-input multiplexer. It can select two bits of data from up to four sources under the control of the common Select inputs (S_0, S_1). The two 4-input multiplexer circuits have individual active-LOW Enables ($\overline{E}_a$, $\overline{E}_b$) which can be used to strobe the outputs independently. When the Enables ($\overline{E}_a$, $\overline{E}_b$) are HIGH, the corresponding outputs (Z_a, Z_b) are forced LOW. The VHC153 is the logic implementation of a 2-pole, 4-position switch, where the position of the switch is determined by the logic levels supplied to the Select inputs. The logic equations for the outputs are shown below.

$$Z_a = \overline{E}_a \cdot (I_{0a} \cdot \overline{S}_1 \cdot \overline{S}_0 + I_{1a} \cdot \overline{S}_1 \cdot S_0 + I_{2a} \cdot S_1 \cdot S_0 + I_{3a} \cdot S_1 \cdot S_0)$$

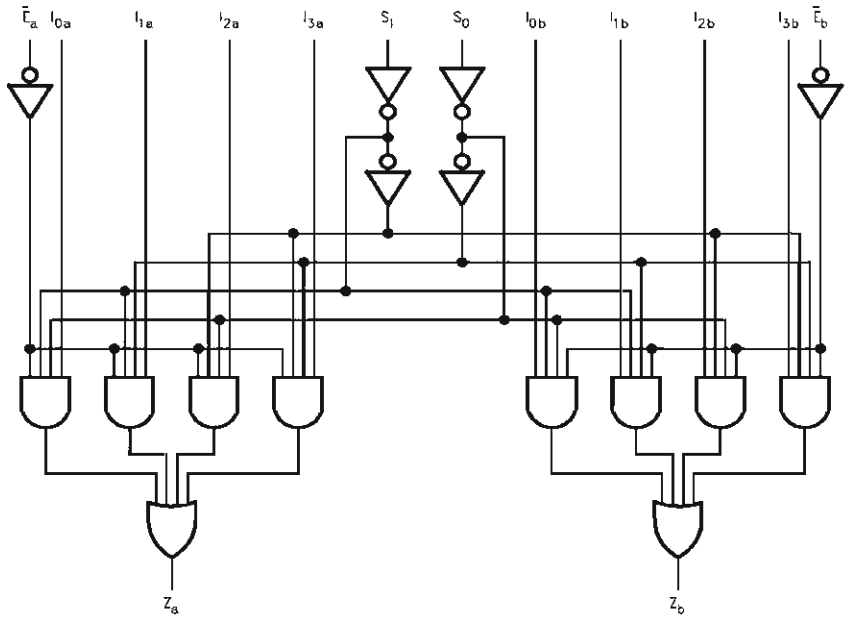
$$Z_b = \overline{E}_b \cdot (I_{0b} \cdot \overline{S}_1 \cdot \overline{S}_0 + I_{1b} \cdot \overline{S}_1 \cdot S_0 + I_{2b} \cdot S_1 \cdot S_0 + I_{3b} \cdot S_1 \cdot S_0)$$

Truth Table

Select Inputs		Inputs (a or b)					Output
S_0	S_1	$\overline{E}$	I_0	I_1	I_2	I_3	Z
X	X	H	X	X	X	X	L
L	L	L	L	X	X	X	L
L	L	L	H	X	X	X	H
H	L	L	X	L	X	X	L
H	L	L	X	H	X	X	H
L	H	L	X	X	L	X	L
L	H	L	X	X	H	X	H
H	H	L	X	X	X	L	L
H	H	L	X	X	X	H	H

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

Logic Diagram



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

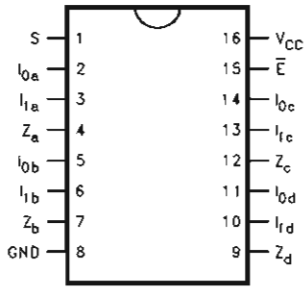
74VHC157MX

Quad 2-Input Multiplexer

Pin Configuration

Pin Names	Description
I_{0a}–I_{0d}	Source 0 Data Inputs
I_{1a}–I_{1d}	Source 1 Data Inputs
$\overline{E}$	Enable Input
S	Select Input
Z_a–Z_d	Outputs

Connection Diagram



Truth Table

Inputs				Outputs
$\overline{E}$	S	I_0	I_1	Z
H	X	X	X	L
L	H	X	L	L
L	H	X	H	H
L	L	L	X	L
L	L	H	X	H

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

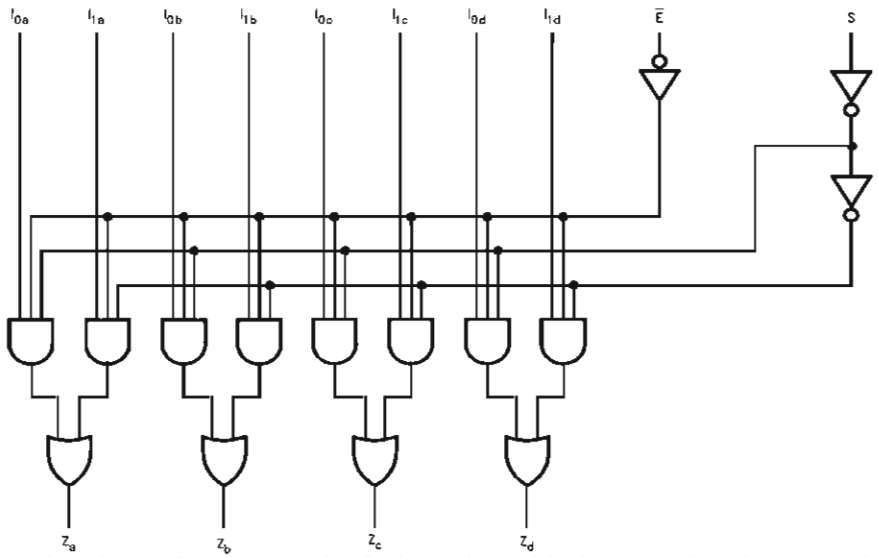
Functional Description

The VHC157 is a quad 2-input multiplexer. It selects four bits of data from two sources under the control of a common Select input (S). The Enable input ($\overline{E}$) is active-LOW. When $\overline{E}$ is HIGH, all of the outputs (Z) are forced LOW regardless of all other inputs. The VHC157 is the logic implementation of a 4-pole, 2-position switch where the position of the switch is determined by the logic levels supplied to the Select input. The logic equations for the outputs are shown below:

$$Z_a = \overline{E} \cdot (I_{1a} \cdot S + I_{0a} \cdot \overline{S})$$
$$Z_b = \overline{E} \cdot (I_{1b} \cdot S + I_{0b} \cdot \overline{S})$$
$$Z_c = \overline{E} \cdot (I_{1c} \cdot S + I_{0c} \cdot \overline{S})$$
$$Z_d = \overline{E} \cdot (I_{1d} \cdot S + I_{0d} \cdot \overline{S})$$

A common use of the VHC157 is the moving of data from two groups of registers to four common output busses. The particular register from which the data comes is determined by the state of the Select input. A less obvious use is as a function generator. The VHC157 can generate any four of the sixteen different functions of two variables with one variable common. This is useful for implementing gating functions.

Logic Diagram

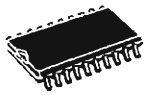


Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

74VHC574

OCTAL D-TYPE FLIP FLOP WITH 3 STATE OUTPUTS NON INVERTING

- HIGH SPEED:
- f_{MAX} = 180 MHz (TYP.) at V_{CC} = 5V
- LOW POWER DISSIPATION:
  I_{CC} = 4 µA (MAX.) at T_A=25°C
- HIGH NOISE IMMUNITY:
  $V_{NIH} = V_{NIL}$ = 28% V_{CC} (MIN.)
- POWER DOWN PROTECTION ON INPUTS
- SYMMETRICAL OUTPUT IMPEDANCE:
  $|I_{OH}| = I_{OL}$ = 8 mA (MIN)
- BALANCED PROPAGATION DELAYS:
  $t_{PLH} \cong t_{PHL}$
- OPERATING VOLTAGE RANGE:
  V_{CC}(OPR) = 2V to 5.5V
- PIN AND FUNCTION COMPATIBLE WITH 74 SERIES 574
- IMPROVED LATCH-UP IMMUNITY
- LOW NOISE: V_{OLP} = 0.9V (MAX.)



SOP

TSSOP

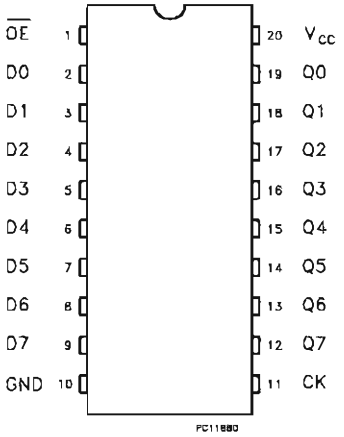
ORDER CODES

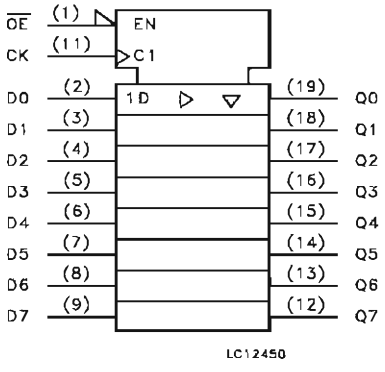
PACKAGE	TUBE	T & R
SOP	74VHC574M	74VHC574MTR
TSSOP		74VHC574TTR

DESCRIPTION

The 74VHC574 is an advanced high-speed CMOS OCTAL D-TYPE FLIP FLOP with 3 STATE OUTPUTS NON INVERTING fabricated with sub-micron silicon gate and double-layer metal wiring C^2MOS technology.
These 8 bit D-Type flip-flop is controlled by a clock input (CK) and an output enable input ($\overline{OE}$).
On the positive transition of the clock, the Q outputs will be set to the logic states that were setup at the D inputs.
While the ($\overline{OE}$) input is low, the 8 outputs will be in a normal logic state (high or low logic level) and while high level the outputs will be in a high impedance state.
The Output control does not affect the internal operation of flip flop; that is, the old data can be retained or the new data can be entered even while the outputs are off.
Power down protection is provided on all inputs and 0 to 7V can be accepted on inputs with no regard to the supply voltage. This device can be used to interface 5V to 3V.
All inputs and outputs are equipped with protection circuits against static discharge, giving them 2KV ESD immunity and transient excess voltage.

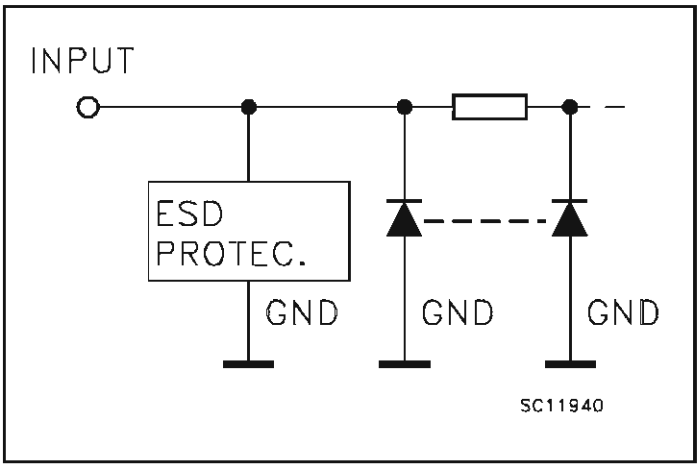
PIN CONNECTION AND IEC LOGIC SYMBOLS





74VHC574

INPUT EQUIVALENT CIRCUIT



PIN DESCRIPTION

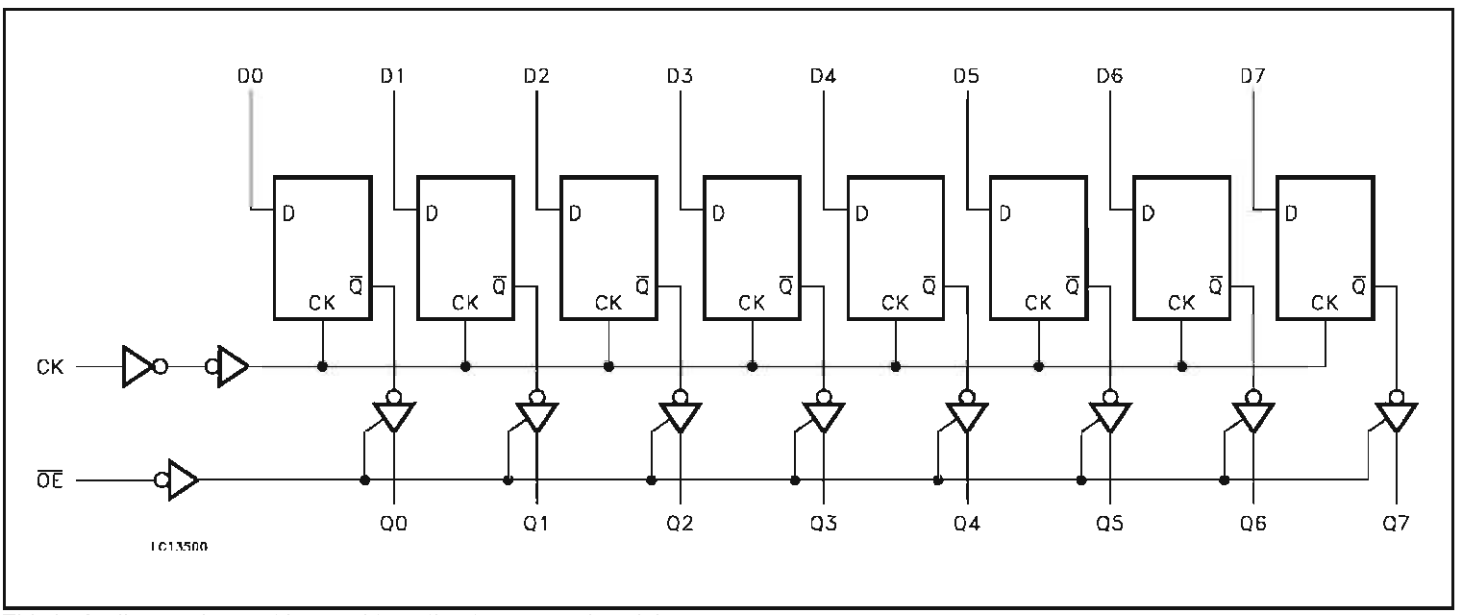
PIN No	SYMBOL	NAME AND FUNCTION
1	$\overline{OE}$	3-State Output Enable Input (Active LOW)
2, 3, 4, 5, 6, 7, 8, 9	D0 to D7	Data Inputs
12, 13, 14, 15, 16, 17, 18, 19	Q0 to Q7	3-State Outputs
11	CK	Clock Input (LOW-to-HIGH Edge Triggered)
10	GND	Ground (0V)
20	V_{CC}	Positive Supply Voltage

TRUTH TABLE

INPUTS			OUTPUT
$\overline{OE}$	CK	D	Q
H	X	X	Z
L	↓	X	NO CHANGE
L	↑	L	L
L	↑	H	H

X : Don't Care
Z : High Impedance

LOGIC DIAGRAM



This logic diagram has not be used to estimate propagation delays

Features

- Fast Read Access Time – 120 ns, see AT27BV020 for Faster Speeds
- Dual Voltage Range Operation
  - Low Voltage Power Supply Range, 3.0V to 3.6V or Standard 5V ± 10% Supply Range
- Compatible with JEDEC Standard AT27C020
- Low Power CMOS Operation
  - 20 µA Max (Less than 1 µA Typical) Standby for V_{CC} = 3.6V
  - 29 mW Max Active at 5 MHz for V_{CC} = 3.6V
- JEDEC Standard Packages
  - 32-lead PLCC
  - 32-lead TSOP
  - 32-lead VSOP
- High Reliability CMOS Technology
  - 2,000V ESD Protection
  - 200 mA Latchup Immunity
- Rapid Programming Algorithm – 100 µs/Byte (Typical)
- Two-line Control
- CMOS and TTL Compatible Inputs and Outputs
  - JEDEC Standard for LVTTL
- Integrated Product Identification Code
- Industrial Temperature Range
- Green (Pb/Halide-free) Packaging Option

2-Megabit (256K x 8) Low Voltage OTP EPROM

AT27LV020A

1. Description

The AT27LV020A is a high-performance, low-power, low-voltage 2,097,152 bit one-time programmable read-only memory (OTP EPROM) organized as 256K by 8 bits. It requires only one supply in the range of 3.0 to 3.6V in normal read mode operation, making it ideal for fast, portable systems using battery power.

Atmel's innovative design techniques provide fast speeds that rival 5V parts while keeping the low power consumption of a 3V supply. At V_{CC} = 3.0V, any byte can be accessed in less than 120 ns. With a typical power dissipation of only 18 mW at 5 MHz and V_{CC} = 3.3V, the AT27LV020A consumes less than one fifth the power of a standard 5V EPROM. Standby mode supply current is typically less than 1 µA at 3.3V.

The AT27LV020A is available in industry-standard JEDEC approved one-time programmable (OTP) plastic PLCC, TSOP, and VSOP. All devices feature two-line control ($\overline{CE}$, $\overline{OE}$) to give designers the flexibility to prevent bus contention.

The AT27LV020A operating with V_{CC} at 3.0V produces TTL level outputs that are compatible with standard TTL logic devices operating at V_{CC} = 5.0V. The device is also capable of standard 5-volt operation making it ideally suited for dual supply range systems or card products that are pluggable in both 3-volt and 5-volt hosts.

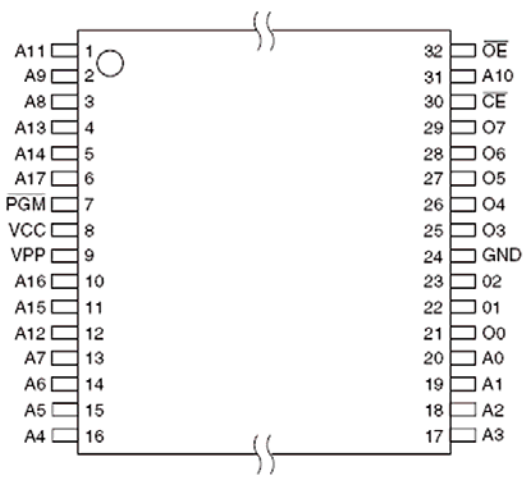
Atmel's AT27LV020A has additional features to ensure high quality and efficient production use. The Rapid Programming Algorithm reduces the time required to program the part and guarantees reliable programming. Programming time is typically only 100 µs/byte. The Integrated Product Identification Code electronically identifies the device and manufacturer. This feature is used by industry standard programming equipment to select the proper programming algorithms and voltages. The AT27LV020A programs exactly the same way as a standard 5V AT27C020 and uses the same programming equipment.

0549F–EPROM–05/05

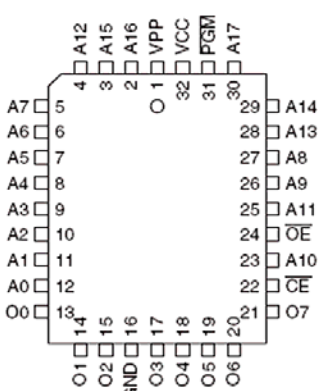
2. Pin Configurations

Pin Name	Function
A0 - A17	Addresses
O0 - O7	Outputs
$\overline{CE}$	Chip Enable
$\overline{OE}$	Output Enable
$\overline{PGM}$	Program Strobe
NC	No Connect

2.1 32-lead TSOP/VSOP (Type 1) Top View



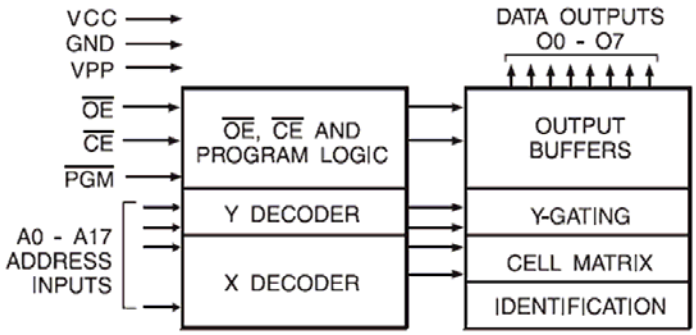
2.2 32-lead PLCC – Top View



3. System Considerations

Switching between active and standby conditions via the Chip Enable pin may produce transient voltage excursions. Unless accommodated by the system design, these transients may exceed datasheet limits, resulting in device non-conformance. At a minimum, a 0.1 µF high frequency, low inherent inductance, ceramic capacitor should be utilized for each device. This capacitor should be connected between the V_{CC} and Ground terminals of the device, as close to the device as possible. Additionally, to stabilize the supply voltage level on printed circuit boards with large EPROM arrays, a 4.7 µF bulk electrolytic capacitor should be utilized, again connected between the V_{CC} and Ground terminals. This capacitor should be positioned as close as possible to the point where the power supply is connected to the array.

4. Block Diagram



5. Absolute Maximum Ratings*

Temperature Under Bias	-40°C to +85°C
Storage Temperature	-65°C to +125°C
Voltage on any Pin with Respect to Ground	-2.0V to +7.0V(1)
Voltage on A9 with Respect to Ground	-2.0V to +14.0V(1)
V_{PP} Supply Voltage with Respect to Ground	-2.0V to +14.0V(1)

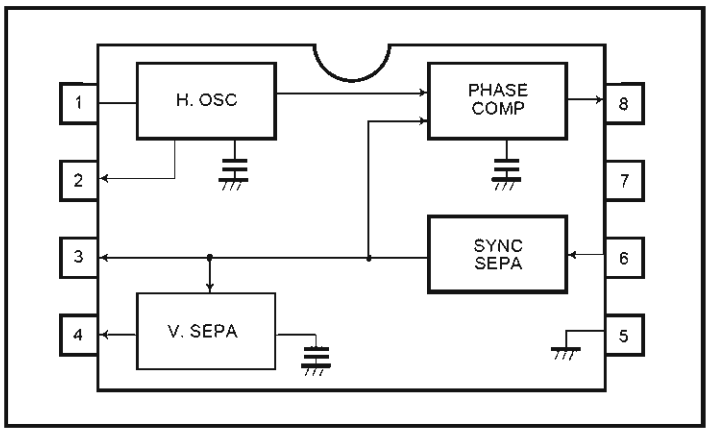
*NOTICE: Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Notes: 1. Minimum voltage is -0.6V DC which may undershoot to -2.0V for pulses of less than 20 ns. Maximum output pin voltage is V_{CC} + 0.75V DC which may be exceeded if certain precautions are observed (consult application notes) and which may overshoot to +7.0V for pulses of less than 20 ns.

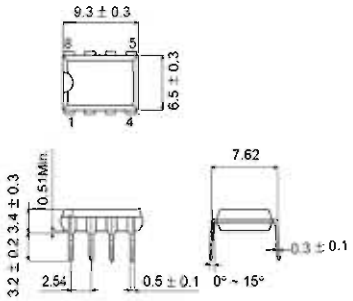
BA7046/BA7046F

SYNC Separator IC with AFC

● Block diagrams



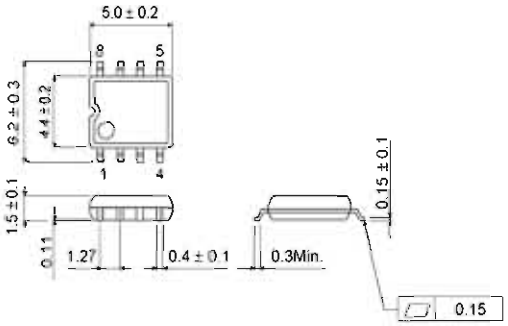
BA7046



● Pin descriptions

Pin No.	Function
1	Horizontal oscillator resistor
2	H_D output
3	SYNC output (open collector)
4	V_D output
5	GND
6	Video input
7	Power supply
8	Phase comparator output

BA7046F



● Input / output circuits

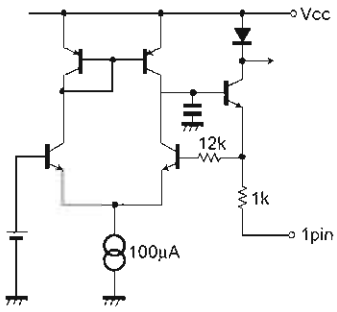


Fig. 1

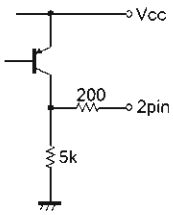


Fig. 2

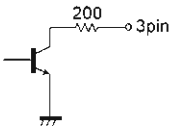


Fig. 3

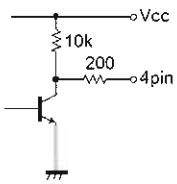


Fig. 4

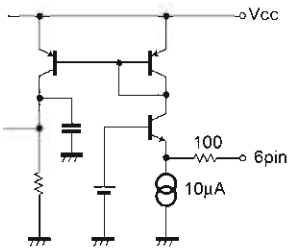


Fig. 5

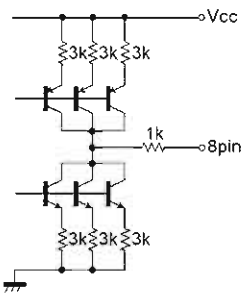
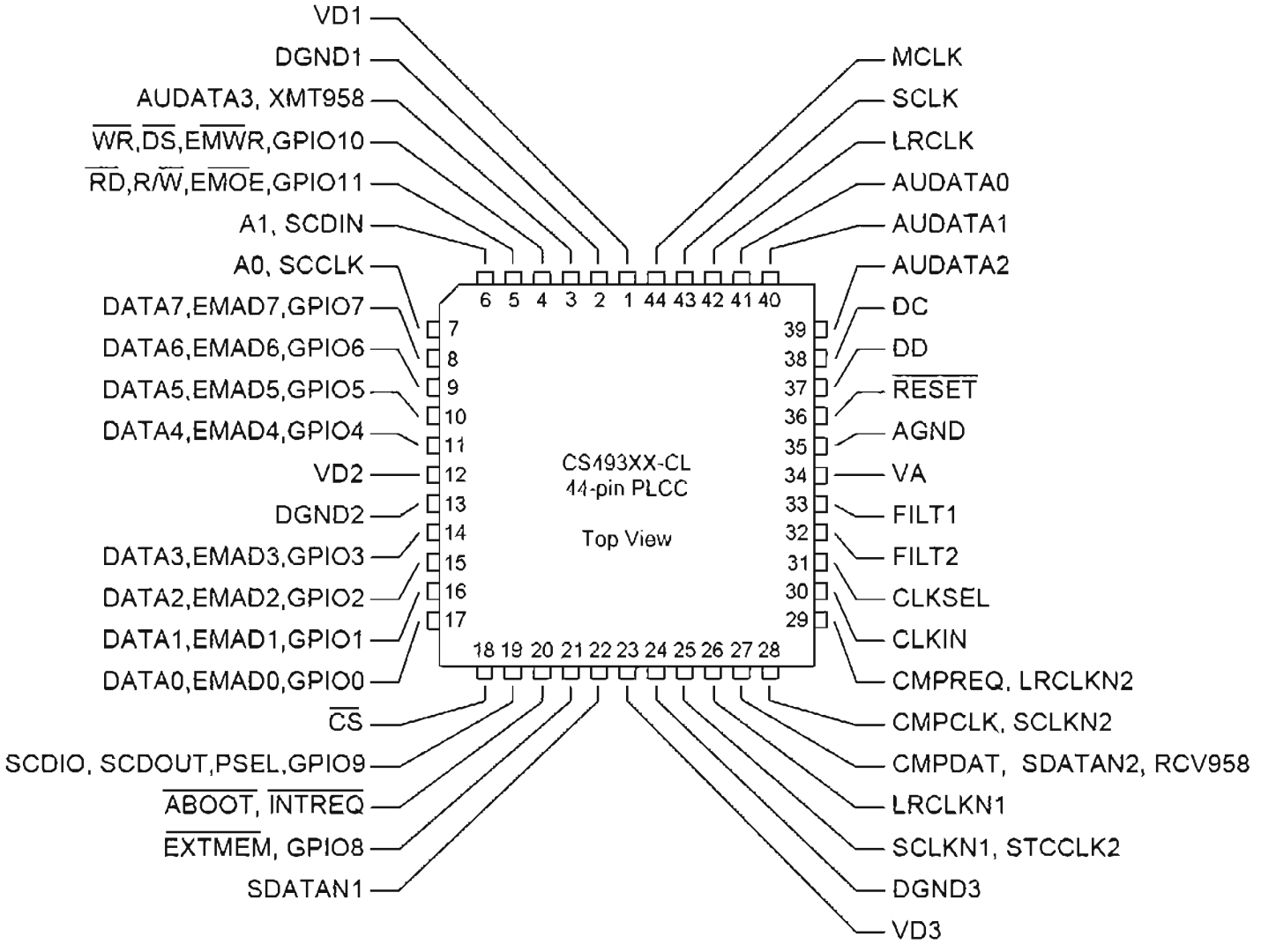


Fig. 6

24-Bit Multi Standard Audio DSP Decoder

CS493263

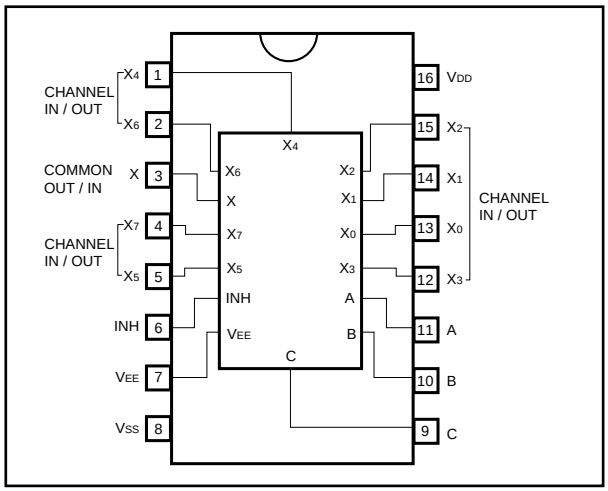


8-channel analog multiplexer / demultiplexer

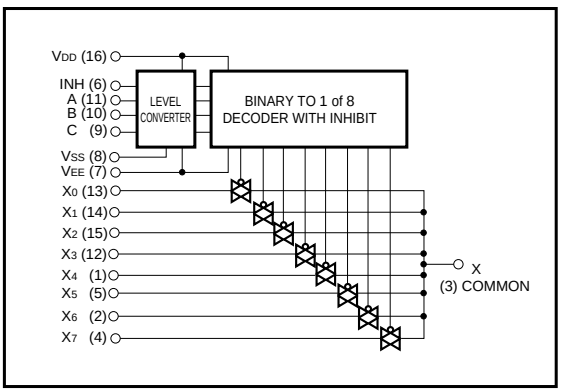
BU4051BC / BU4051BCF / BU4051BCFV

The BU4051BC, BU4051BCF and BU4051BCFV are analog multiplexers / demultiplexers which use three-input digital signals for control via an 8-channel analog switch.
These products feature high on / off output voltage ratio and low crosstalk between analog switches.

●Block diagram



●Logic circuit diagram



●Truth table

INH	A	B	C	ON SWITCH
L	L	L	L	X_0
L	H	L	L	X_1
L	L	H	L	X_2
L	H	H	L	X_3
L	L	L	H	X_4
L	H	L	H	X_5
L	L	H	H	X_6
L	H	H	H	X_7
H	X	X	X	NONE

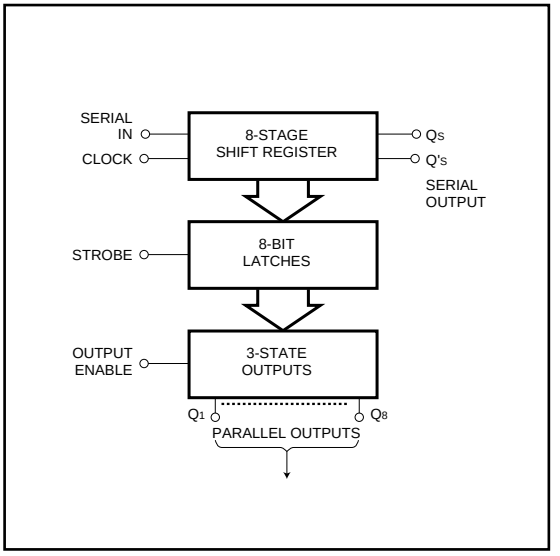
X: Irrelevant

8-bit compatible shift / store register

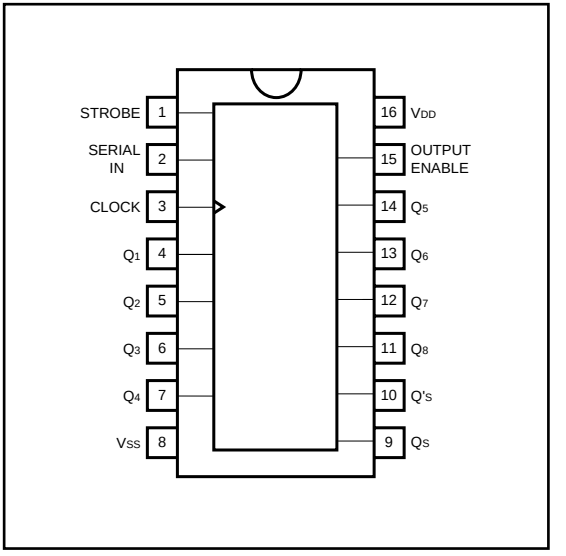
BU4094BC / BU4094BCF / BU4094BCFV

The BU4094BC, BU4094BCF, and BU4094BCFV are shift / store registers, each consisting of an 8-bit register and an 8-bit latch.
As the data in the shift register can be latched by an asynchronous strobe input, it is possible to hold the output in the data transfer mode.
The tri-state parallel output can be connected directly with an 8-bit bus line.
These registers are suitable for in-line / parallel data conversion, data receivers and other similar applications.

●Logic circuit diagram



●Block diagram



●Truth table

CLOCK	OUTPUT ENABLE	STROBE	SERIAL IN	Parallel output		Serial output	
				Q_1	Q_n	Q_S	Q'_S
↑	H	H	L	L	Q_{n-1}	Q_7	NC
↑	H	H	H	H	Q_{n-1}	Q_7	NC
↑	H	L	X	NC	NC	Q_7	NC
↑	L	X	X	Z	Z	Q_7	NC
↓	H	X	X	NC	NC	NC	Q_S
↓	L	X	X	Z	Z	NC	Q_S

NC: No Change Z: High Impedance X: Irrelevant

CS4391

24-Bit, 192 kHz Stereo DAC with Volume Control

Features

- Complete Stereo DAC System: Interpolation, D/A, Output Analog Filtering
- 108 dB Dynamic Range
- 94 dB THD+N
- Direct Stream Digital Mode
- Low Clock Jitter Sensitivity
- +5 V to +3 V Power Supply
- ATAPI Mixing
- On-Chip Digital De-emphasis for 32, 44.1, and 48 kHz
- Volume Control with Soft Ramp
  - 119 dB Attenuation
  - 1 dB Step Size
  - Zero Crossing Click-Free Transitions
- 36 mW with 3 V supply
- Direct Interface with 5 V to 1.8 V Logic

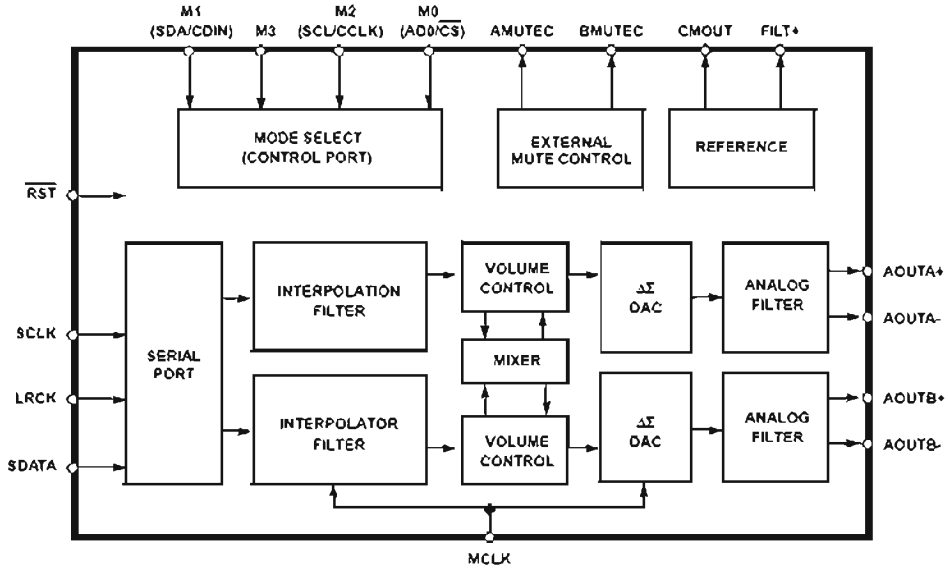
Description

The CS4391 is a complete stereo digital-to-analog system including digital interpolation, fourth-order delta-sigma digital-to-analog conversion, digital de-emphasis, volume control, channel mixing and analog filtering. The advantages of this architecture include: ideal differential linearity, no distortion mechanisms due to resistor matching errors, no linearity drift over time and temperature and a high tolerance to clock jitter.

The CS4391 accepts PCM data at sample rates from 2 kHz to 192 kHz, DSD audio data, consumes very little power and operates over a wide power supply range. These features are ideal for DVD, A/V receivers, CD and set-top box systems.

ORDERING INFORMATION

CS4391-KZ	20-pin TSSOP	-10 to 70 °C
CDB4391	Evaluation Board	



CRYSTAL®

CS4391

PIN DESCRIPTION - PCM DATA MODE

Reset	$\overline{\text{RST}}$	1	20	AMUTEC	Channel A Mute Control
Logic Voltage	VL	2	19	AOUTA-	Differential Output
Serial Data	SDATA	3	18	AOUTA+	Differential Output
Serial Clock	SCLK	4	17	VA	Analog Power
Left/Right Clock	LRCK	5	16	AGND	Analog Ground
Master Clock	MCLK	6	15	AOUTB+	Differential Output
	M3	7	14	AOUTB-	Differential Output
	(SCL/CCLK) M2	8	13	BMUTEC	Channel B Mute Control
	(SDA/CDIN) M1	9	12	CMOUT	Common Mode Voltage
	(AD0/$\overline{\text{CS}}$) M0	10	11	FILT+	Positive Voltage Reference

PIN DESCRIPTION - DSD MODE

Reset	$\overline{\text{RST}}$	1	20	AMUTEC	Refer to PCM Mode
Logic Voltage	VL	2	19	AOUTA-	Refer to PCM Mode
Channel A Data	DSD_A	3	18	AOUTA+	Refer to PCM Mode
Channel B Data	DSD_B	4	17	VA	Refer to PCM Mode
DSD Mode Select	DSD_MODE	5	16	AGND	Refer to PCM Mode
Master Clock	MCLK	6	15	AOUTB+	Refer to PCM Mode
DSD Serial Clock	DSD_SCLK	7	14	AOUTB-	Refer to PCM Mode
Refer to PCM Mode	(SCL/CCLK) M2	8	13	BMUTEC	Refer to PCM Mode
Refer to PCM Mode	(SDA/CDIN) M1	9	12	CMOUT	Refer to PCM Mode
Refer to PCM Mode	(AD0/$\overline{\text{CS}}$) M0	10	11	FILT+	Refer to PCM Mode

M74HCU04

HEX INVERTER (SINGLE STAGE)

DESCRIPTION

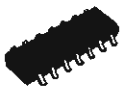
The M54/74HCU04 is a high speed CMOS HEX INVERTER (SINGLE STAGE) fabricated in silicon gate C^2MOS technology. It has the same high speed performance of LSTTL combined with true CMOS low power consumption.

As the intrnal circuit is composed of a single stage inverter, it can be used in crystal oscillator.

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

B1R
(Plastic Package)

F1R
(Ceramic Package)



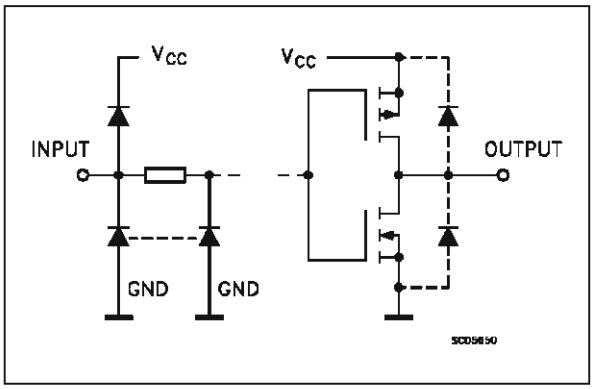
M1R
(Micro Package)

C1R
(Chip Carrier)

ORDER CODES :

M54HCU04F1R M74HCU04M1R
M74HCU04B1R M74HCU04C1R

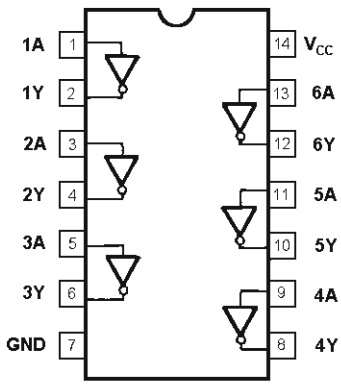
INPUT AND OUTPUT EQUIVALENT CIRCUIT

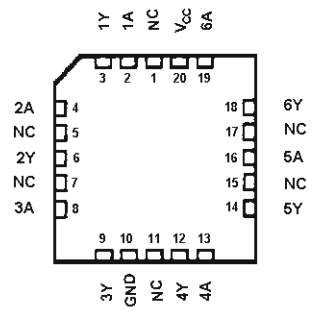


PIN DESCRIPTION

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

PIN CONNECTIONS (top view)





NC =
No Internal
Connection

CRYSTAL®

CS5360

24-Bit Stereo A/D Converter for Digital Audio

Features

- 24 Bit Conversion
- 105 dB Dynamic Range
- -95 dB THD+N
- 128X Oversampling
- Fully Differential Inputs
- Linear Phase Digital Anti-Alias Filtering
  - 21.7 kHz passband (Fs = 48kHz)
  - 85 dB stop band attenuation
  - 0.0025 dB pass band ripple
- High Pass Filter - DC Offset Removal
- Peak Signal Level Detector
  - High Resolution and Bar Graph Modes
- Pin Compatible with CS5334 and CS5335

Description

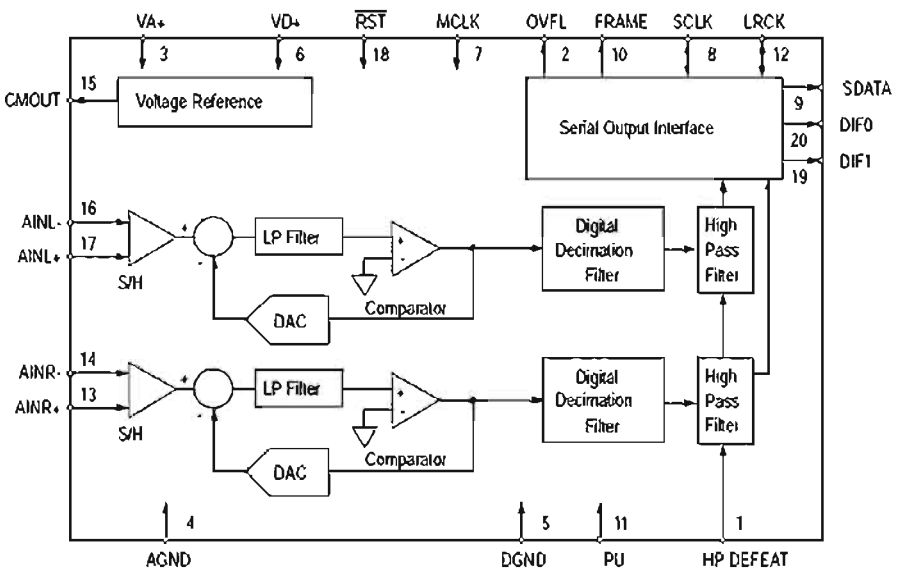
The CS5360 is a 2-channel, single +5 V supply, 24-bit analog-to-digital converter for digital audio systems. The CS5360 performs sampling, analog-to-digital conversion and anti-alias filtering, generating 24-bit values for both left and right inputs in serial form. The output word rate can be up to 50 kHz per channel.

The CS5360 uses 4th-order, delta-sigma modulation with 128X oversampling followed by digital filtering and decimation, which removes the need for an external anti-alias filter. This ADC uses a differential architecture which provides excellent noise rejection.

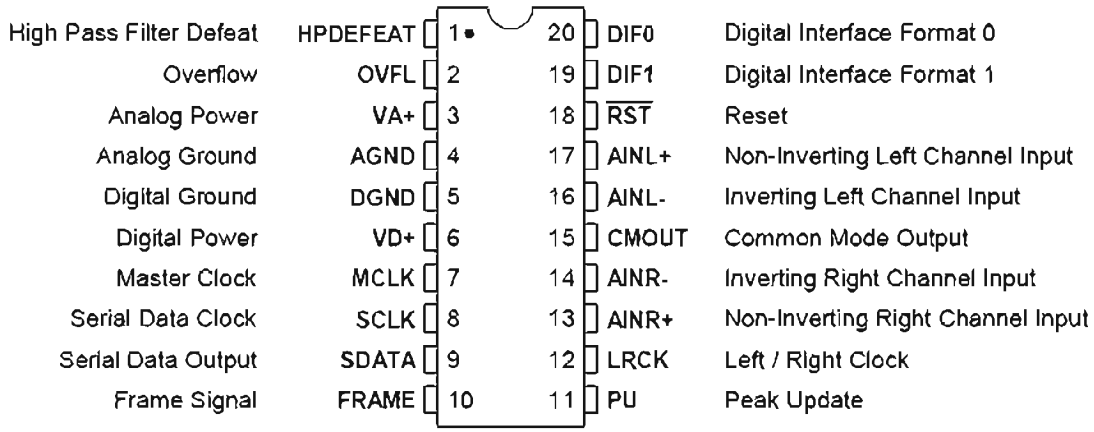
The CS5360 has a filter passband to 21.7 kHz. The filter has linear phase, 0.0025 dB passband ripple, and >85 dB stopband rejection. An on-chip high pass filter is also included to remove DC offsets.

ORDERING INFORMATION

CS5360-KS	-10° to 70°C	20-pin Plastic SSOP
CS5360-BS	-40° to 85°C	20-pin Plastic SSOP



5. PIN DESCRIPTIONS



High Pass Filter Defeat - HP DEFEAT

Pin 1, Input

Function

A high logic level on this pin disables the digital high pass filter. A low logic level on this pin enables the high pass filter.

Overflow - $\overline{\text{OVFL}}$

Pin 2, Input

Function

Overflow indicates analog input overrange, for both the Left and Right channels, since the last update request on the PEAK UPDATE (PU) pin. A value of 1 in the register indicates an overrange condition. The left channel information is output on OVFL during the left channel portion of LRCK. The right channel information is available on OVFL during the right channel portion of LRCK. The registers are updated with a high to low transition on the PEAK UPDATE pin. A 47 kΩ pull-down resistor on this pin will set the CS5360 in Master Mode.

Positive Analog Power - VA+

Pin 3, Input

Function:

Positive analog supply. Nominally +5 volts.

Analog Ground - AGND

Pin 4, Input

Function:

Analog ground reference.

DGND - Digital Ground

Pin 5, Input

Function:

Digital ground reference.

Positive Digital Power - VD+

Pin 6, Input

Function:

Positive digital supply. Nominally +5 volts.

Master Clock - MCLK

Pin 7, Input

Function:

Clock source for the delta-sigma modulator sampling and digital filters. In Master Mode, the frequency of this clock must be 256x the output sample rate, Fs. In Slave Mode, the frequency of this clock must be either 256x, 384x or 512x Fs.

Serial Data Clock - SCLK

Pin 8, Input/Output

Function:

Clocks the individual bits of the serial data out from the SDATA pin. The relationship between LRCK, SCLK and SDATA is controlled by DIF0 and DIF1.In Master Mode, SCLK is an output clock with a frequency of 64x the output sample rate, Fs.In Slave Mode, SCLK is an input.

Serial Data Output - SDATA

Pin 9, Output

Function:

Two's complement MSB-first serial data of 24 bits is output on this pin. Included in the serial data output is the 8-bit Input Signal Level Bits. The data is clocked out via the SCLK clock and the channel is determined by LRCK. The relationship between LRCK, SCLK and SDATA is controlled by DIF0 and DIF1.

Peak Update - PU

Pin 11, Input

Function:

Transfers the Peak Signal Level contents of the Active Registers to the Output Registers on a high to low transition on this pin. This transition will also reset the Active register.

Frame Signal - FRAME

Pin 10, Output

Function:

Frames the Peak Signal Level (PSL) Bits. FRAME goes high coincident with the leading edge of the first PSL bit and falls coincident with the trailing edge of the last PSL bit as shown in Figures 8-10. A 47 kΩ pull-down resistor on this pin will set the Peak Signal Level Monitoring format to "Bar Graph" mode.

Left/Right Clock - LRCK

Pin 12, Input/Output

Function:

LRCK determines which channel, left or right, is to be output on SDATA. The relationship between LRCK, SCLK and SDATA is controlled by DIF0 and DIF1. Although the outputs for each channel are transmitted at different times, Left/Right pairs represent simultaneously sampled analog inputs. In Master Mode, LRCK is an output clock whose frequency is equal to the output sample rate, Fs. In Slave Mode, LRCK is an input clock whose frequency must be equal to Fs.

Differential Right Channel Analog Input - AINR+, AINR-

Pin 13 and Pin 14, Input

Function.

Analog input connections of the right channel differential inputs. Typically 2 Vrms differential (1Vrms for each input pin) for a full-scale analog input signal.

Common Mode Output - CMOUT

Pin 15, Output

Function:

This output, nominally 2.2 V, can be used to bias the analog input circuitry to the common mode voltage of the CS5360. CMOUT is not buffered and the maximum current is 10 µA.

Differential Left Channel Analog Input - AINL+, AINL-

Pin 16 and Pin 17, Input

Function:

Analog input connections of the left channel differential inputs. Typically 2 Vrms differential (1Vrms for each input pin) for a full-scale analog input signal.

Reset - $\overline{\text{RST}}$

Pin 18, Input

Function:

A low logic level on this pin activates Reset.

Digital Interface Format - DIF0, DIF1

Pins 19 and 20, Input

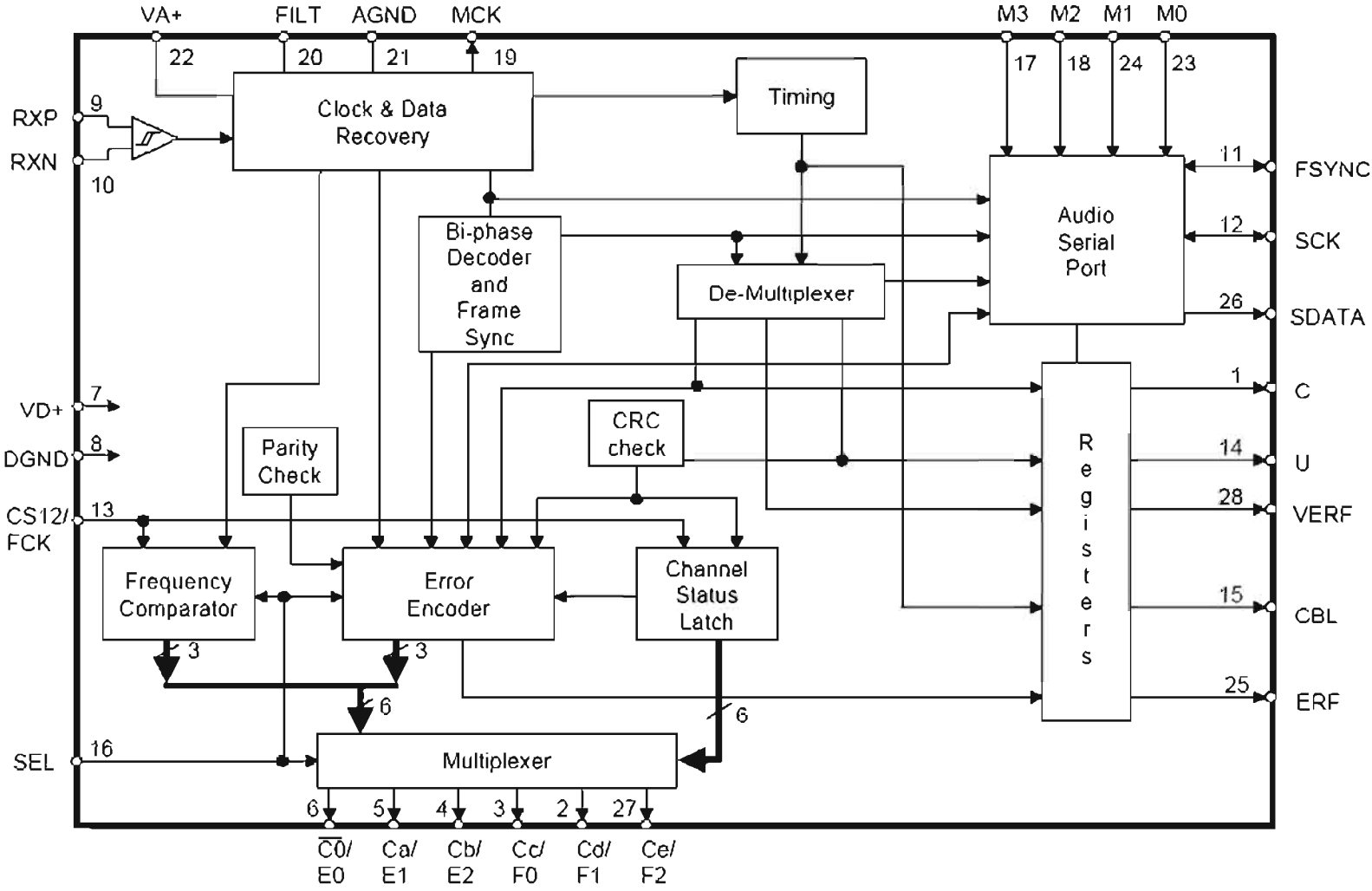
Function.

These two pins select one of 3 digital interface formats or power-down. The format determines the relationship between SCLK, LRCK and SDATA. The formats are detailed in Figures 8-10.

CS8414

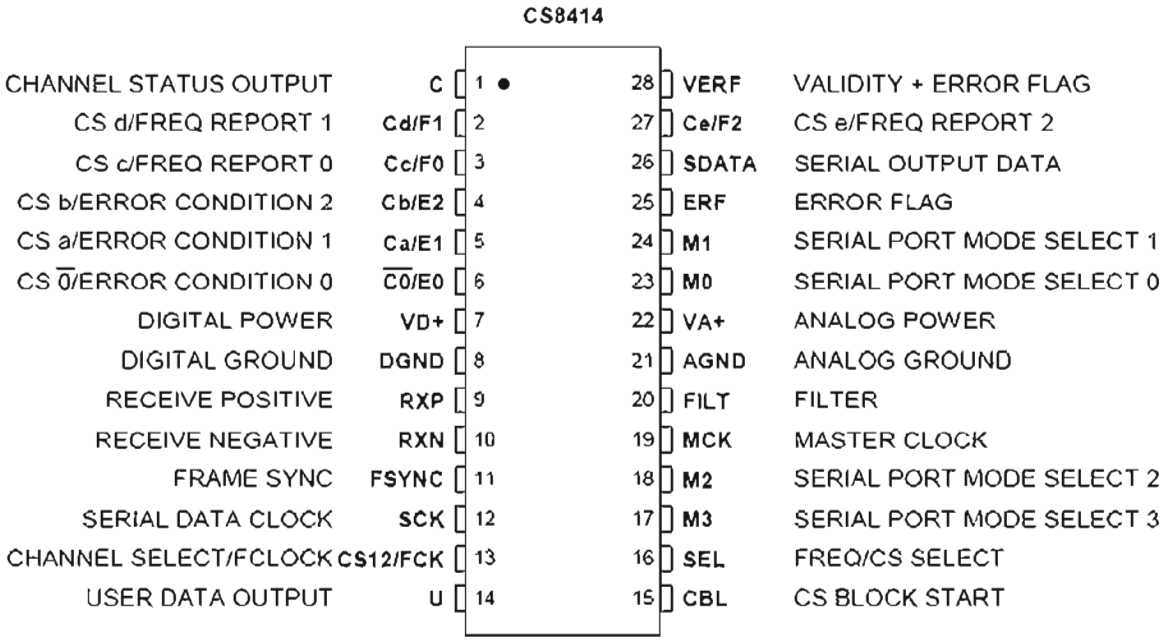
96 kHz Digital Audio Receiver

CHANNEL STATUS OUTPUT	C	1	28	VERF	VALIDITY + ERROR FLAG
CS d/FREQ REPORT 1	Cd/F1	2	27	Ce/F2	CS e/FREQ REPORT 2
CS c/FREQ REPORT 0	Cc/F0	3	26	SDATA	SERIAL OUTPUT DATA
CS b/ERROR CONDITION 2	Cb/E2	4	25	ERF	ERROR FLAG
CS a/ERROR CONDITION 1	Ca/E1	5	24	M1	SERIAL PORT MODE SELECT 1
CS $\overline{0}$/ERROR CONDITION 0	$\overline{C0}$/E0	6	23	M0	SERIAL PORT MODE SELECT 0
DIGITAL POWER	VD+	7	22	VA+	ANALOG POWER
DIGITAL GROUND	DGND	8	21	AGND	ANALOG GROUND
RECEIVE POSITIVE	RXP	9	20	FILT	FILTER
RECEIVE NEGATIVE	RXN	10	19	MCK	MASTER CLOCK
FRAME SYNC	FSYNC	11	18	M2	SERIAL PORT MODE SELECT 2
SERIAL DATA CLOCK	SCK	12	17	M3	SERIAL PORT MODE SELECT 3
CHANNEL SELECT/FCLOCK	CS12/FCK	13	16	SEL	FREQ/CS SELECT
USER DATA OUTPUT	U	14	15	CBL	CS BLOCK START



CS8413 CS8414

PIN DESCRIPTIONS: CS8414



Power Supply Connections

VD+ - Positive Digital Power, PIN 7.

Positive supply for the digital section. Nominally +5 volts.

VA+ - Positive Analog Power, PIN 22.

Positive supply for the analog section. Nominally +5 volts.

DGND - Digital Ground, PIN 8.

Ground for the digital section. DGND should be connected to same ground as AGND.

AGND - Analog Ground, PIN 21.

Ground for the analog section. AGND should be connected to same ground as DGND.

Audio Output Interface

SCK - Serial Clock, PIN 12.

Serial clock for SDATA pin which can be configured (via the M0, M1, M2, and M3 pins) as an input or output, and can sample data on the rising or falling edge. As an output, SCK will generate 32 clocks for every audio sample. As an input, 32 SCK periods per audio sample must be provided in all normal modes.

FSYNC - Frame Sync, PIN 11.

Delineates the serial data and may indicate the particular channel, left or right, and may be an input or output. The format is based on M0, M1, M2, and M3 pins.

SDATA - Serial Data, PIN 26.

Audio data serial output pin.

M0, M1, M2, M3 - Serial Port Mode Select, PINS 23, 24, 18, 17.

Selects the format of FSYNC and the sample edge of SCK with respect to SDATA. M3 selects between eight normal modes (M3 = 0), and six special modes (M3 = 1).

Control Pins

VERF - Validity + Error Flag, PIN 28.

A logical OR`ing of the validity bit from the received data and the error flag. May be used by interpolation filters to interpolate through errors.

U - User Bit, PIN 14.

Received user bit serial output port. FSYNC may be used to latch this bit externally. (Except in I^2S modes when this pin is updated on the active edge of FSYNC.)

C - Channel Status Output, PIN 1.

Received channel status bit serial output port. FSYNC may be used to latch this bit externally. (Except in I^2S modes when this pin is updated on the active edge of FSYNC.)

CBL - Channel Status Block Start, PIN 15.

The channel status block output is high for the first four bytes of channel status and low for the last 20 bytes.

SEL - Select, PIN 16.

Control pin that selects either channel status information (SEL = 1) or error and frequency information (SEL = 0) to be displayed on six of the following pins.

$\overline{C0}$, Ca, Cb, Cc, Cd, Ce - Channel Status Output Bits. PINS 2-6, 27.

These pins are dual function with the 'C' bits selected when SEL is high. Channel status information is displayed for the channel selected by CS12. $\overline{C0}$, which is channel status bit 0, defines professional ($\overline{C0}$ = 0) or consumer ($\overline{C0}$ = 1) mode and further controls the definition of the Ca-Ce pins. These pins are updated with the rising edge of CBL.

CS12 - Channel Select, PIN 13.

This pin is also dual function and is selected by bringing SEL high. CS12 selects sub-frame 1 (when low) or sub-frame 2 (when high) to be displayed by channel status pins $\overline{C0}$ and Ca through Ce.

FCK - Frequency Clock, PIN 13.

Frequency Clock input that is enabled by bringing SEL low. FCK is compared to the received clock frequency with the value displayed on F2 through F0. Nominal input value is 6.144 MHz.

E0, E1. E2 - Error Condition, PINS 4-6.

Encoded error information that is enabled by bringing SEL low. The error codes are prioritized and latched so that the error code displayed is the highest level of error since the last clearing of the error pins. Clearing is accomplished by bring SEL high for more than 8 MCK cycles.

F0, F1, F2 - Frequency Reporting Bits, PINS 2-3, 27.

Encoded sample frequency information that is enabled by bringing SEL low. A proper clock on FCK must be input for at least two thirds of a channel status block for these pins to be valid. They are updated three times per block, starting at the block boundary. These pins are invalid when the PLL is out of lock.

ERF - Error Flag, PIN 25.

Signals that an error has occurred while receiving the audio sample currently being read from the serial port. Three errors cause ERF to go high: a parity or biphase coding violation during the current sample, or an out of lock PLL receiver.

Receiver Interface

RXP, RXN - Differential Line Receivers, PINS 9, 10.

RS422 compatible line receivers.

Phase Locked Loop

MCK - Master Clock, PIN 19.

Low jitter clock output of 256 times the received sample frequency.

FILT - Filter, PIN 20.

An external 470Ω resistor and 0.068µF capacitor is required from FILT pin to analog ground.

MITSUBISHI MICROCOMPUTERS

M35012-XXXSP, M35013-XXXSP

SCREEN CHARACTER and PATTERN DISPLAY CONTROLLERS

DESCRIPTION

The M35012-XXXSP and M35013-XXXSP are TV screen display control IC which can be used to display information such as program schedules, the date and messages on the TV screen.

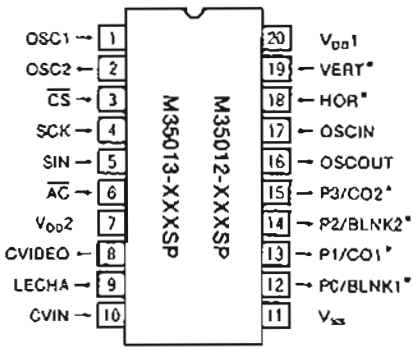
The differences among M35012-XXXSP and M35013-XXXSP are noted below.

The descriptions that follow describe the M35013-XXXSP unless otherwise noted.

Type name	M35012-XXXSP	M35013-XXXSP
Characters available	256	128
Data input	16 bits serial input	8 bits serial input
Exclusion function	Exclusion 1 and 2 function	Exclusion 1 function
CONT7F function	Normal/FF_{16} writing mode	Normal/$7F_{16}$ writing mode

For M35013-001SP and M35012-001SP that are standard ROM version of M35013-XXXSP and M35012-XXXSP respectively, the I/O polarity of pin and the character pattern are also mentioned.

PIN CONFIGURATION (TOP VIEW)



Outline 20P4B

Note : The pins remarked "*" are selectabled the input or output polarity when the character ROM masked.

FEATURES

- Screen composition ..... 24 columns × 10 lines
- Number of characters displayed ..... 240 (Max.)
- Character composition ..... 12 × 18 dot matrix
- Characters available
  - M35013-XXXSP ..... 128 characters
  - M35012-XXXSP ..... 256 characters
- Character sizes available ... 4 (horizontal) × 4 (vertical)
- Display locations available
  - Horizontal direction ..... 62 locations
  - Vertical direction ..... 64 locations
- Blinking ..... Character units
  - Cycle : approximately 1 second, or approximately 0.5 seconds
  - Duty : 25%, 50%, or 75%
- Data input
  - M35013-XXXSP ..... By the 8-bit serial input function
  - M35012-XXXSP ..... By the 16-bit serial input function
- Coloring
  - Background coloring (composite video signal)
- Blanking
  - Total blanking (14 × 18 dots)
  - Border size blanking
  - Character size blanking
- Synchronization signal
  - Composite synchronization signal generation (PAL, NTSC, M-PAL)
- Synchronized separation circuit ..... Built-in
- 4 output ports (2 digital lines)
- Oscillation stop function
  - Be possible to stop the oscillation for display and for synchronized signal generation
- Exclusion function
  - M35013-XXXSP 1
  - M35012-XXXSP 2
- Reversed character display function

APPLICATION

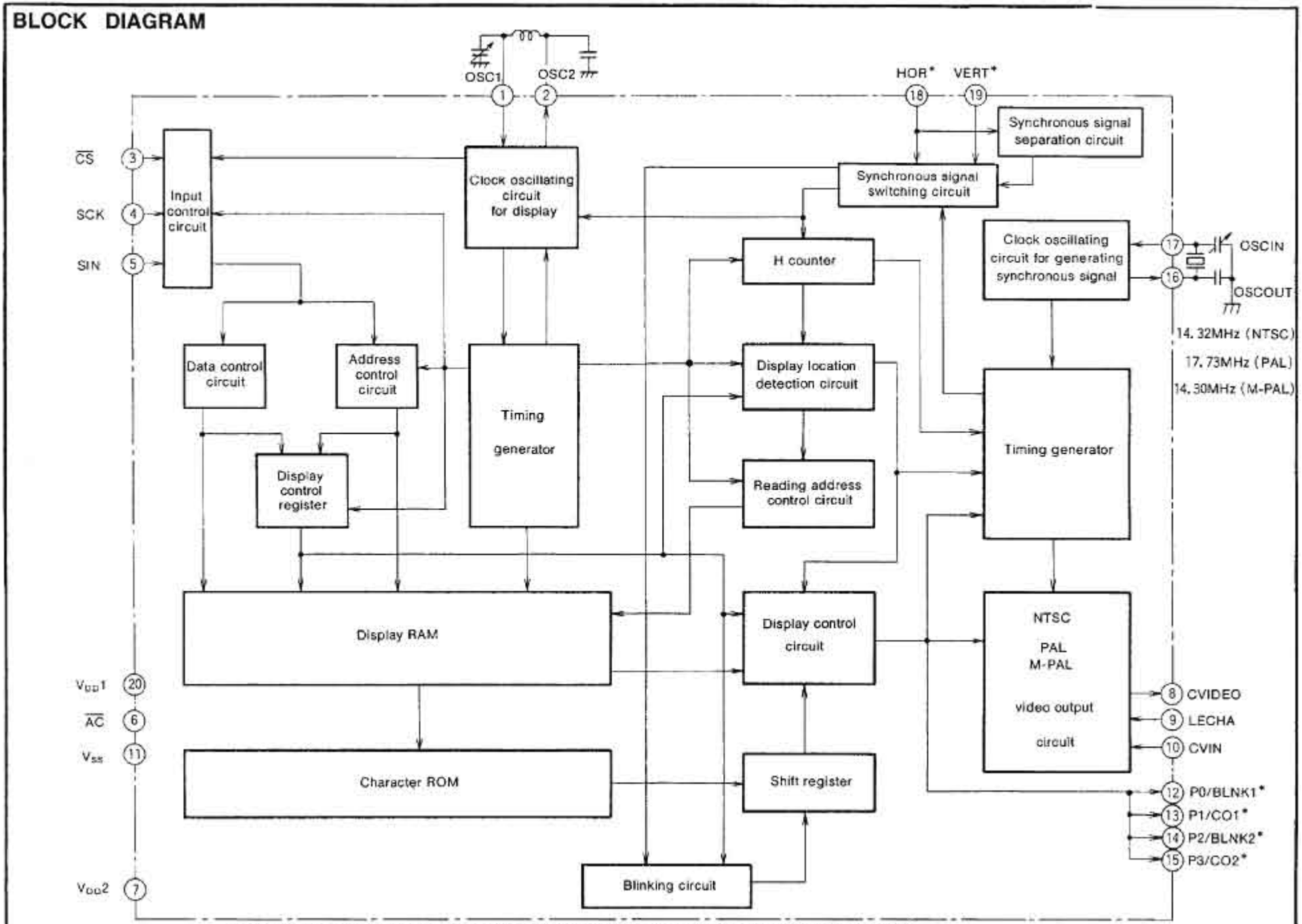
TV, VCR, Camcorder

MITSUBISHI MICROCOMPUTERS

M35012-XXXSP,M35013-XXXSP

SCREEN CHARACTER and PATTERN DISPLAY CONTROLLERS

BLOCK DIAGRAM



Note : The pins remarked "*" are selectabled the input or output polarity when the character ROM masked.

MITSUBISHI MICROCOMPUTERS

M35012-XXXSP,M35013-XXXSP

SCREEN CHARACTER and PATTERN DISPLAY CONTROLLERS

PIN DESCRIPTION

Pin Number	Symbol	Pin name	Input /Output	Function
1	OSC1	Pins for attachment of external oscillator circuit	Input	There are the pins for attaching an external display oscillator circuit. The standard oscillation frequency is approximately 7MHz. This oscillation frequency determines the horizontal position of the display on the TV screen and the width of the characters.
2	OSC2		Output	
3	$\overline{CS}$	Chip select input	Input	This is the chip select pin, and when serial data transmission is being carried out, it goes to "L". Hysteresis input. Includes built-in pull-up resistor.
4	SCK	Serial clock input	Input	When $\overline{CS}$ pin is "L", SIN serial data is taken in when SCK rises. Hysteresis input. Built-in pull-up resistor is included.
5	SIN	Serial data input	Input	This is the pin for serial input of data and addresses for the display control register and the display data memory. Hysteresis input. Includes built-in pull-up resistor.
6	$\overline{AC}$	Auto-clear input	Input	When "L", this pin resets the internal IC circuit. Hysteresis input. Includes built-in pull-up resistor.
7	$V_{DD}2$	Power pin	—	Please connect to +5V with the analog circuit power pin.
8	CVIDEO	Composite video signal output	Output	This is the output pin for composite video signals. It outputs $2V_{p-p}$ composite video signals. In superimpose mode, character output etc. is superimposed on the external composite video signals from CVIN.
9	LECHA	Character level input	Input	This is the input pin which determines the "white" character color level in the composite video signal.
10	CVIN	Composite video signal input	Input	This is the input pin for external composite video signals. In superimpose mode, character output etc. is superimposed on these external composite video signals.
11	V_{SS}	Earthing pin	—	Please connect to GND using circuit earthing pin.
12	P0	Port P0 output	Output	This pin can be toggled between port pin output and BLNK1* (character background) signal output. Polarity can be selected when the character ROM is masked.
13	P1	Port P1 output	Output	This pin can be toggled between port pin output and CO1* (character) signal output. Polarity can be selected when the character ROM is masked.
14	P2	Port P2 output	Output	This pin can be toggled between port pin output and BLNK2* (character background) signal output. Polarity can be selected when the character ROM is masked.
15	P3	Port P3 output	Output	This pin can be toggled between port pin output and CO2* (character) signal output. Polarity can be selected when the character ROM is masked.
16	OSCOUT	Pins for attachment of external oscillator circuit for synchronization signal generation	Output	These are the pins for attaching an external oscillator circuit for generating the synchronization signal. An oscillation of 14.32MHz is needed for NTSC, 17.73MHz is needed for PAL and 14.30MHz is needed for M-PAL.
17	OSCIN		Input	
18	HOR*	Horizontal synchronization signal input	Input	This pin inputs the horizontal synchronization signal. Hysteresis input. Polarity can be selected when the character ROM is masked.
19	VERT*	Vertical synchronization signal input	Input	This pin inputs the vertical synchronization signal. Hysteresis input. Polarity can be selected when the character ROM is masked.
20	$V_{DD}1$	Power pin	—	Please connect to +5V with the digital circuit power pin.

Note : The pins remarked "*" are selectabled the input or output polarity when the character ROM masked.

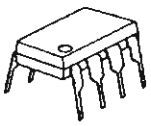
NJM2068

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.

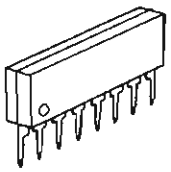
■ PACKAGE OUTLINE



NJM2068D

NJM2068M

NJM2068V

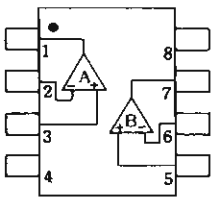


NJM2068L

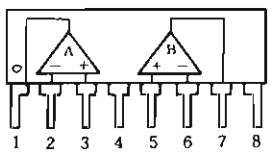
■ FEATURES

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

■ PIN CONFIGURATION



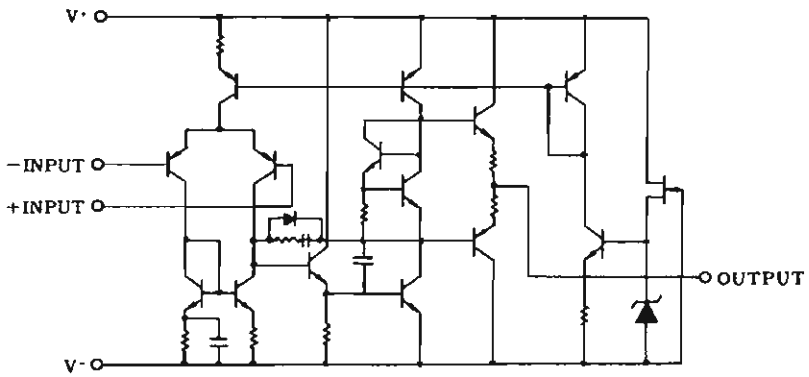
NJM2068D
NJM2068M
NJM2068V



NJM2068L

PIN 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)



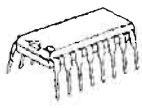
NJM2296

5-INPUT 3PUTPUT VIDEO SW

■GENERAL DESCRIPTION

The NJM2296 is a 5-input 3-output video switch.
Its switches select one from five signals received from VTR, TV, TV GAME and others.
This IC is designed for audio items, such as AV amplifier and receivers, and others

■PACKAGE OUTLINE

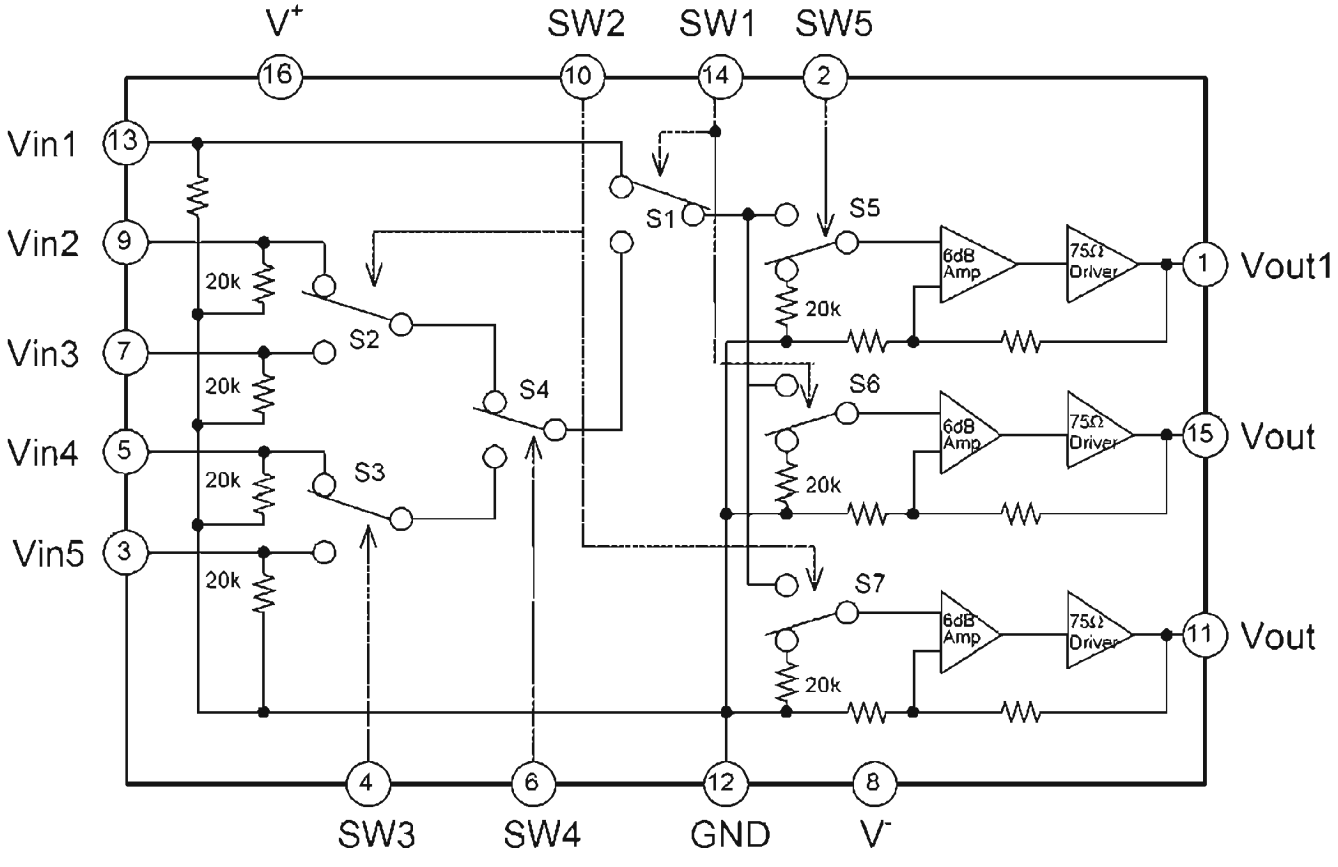



NJM2296D NJM2296M

■FEATURES

- ●5-input 3-output
- ●Operating Voltage ±4.0 to ±6.5V
- ●Operating Current ±31mA typ. at Vcc=±5V
- ●Crosstalk -65dB typ.
- ●Internal 6dB Amplifier
- ●Internal 75Ω Driver
- ●Bipolar Technology
- ●Package Outline DIP16,DMP16

■BLOCK DIAGRAM



NJM4556A

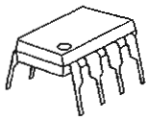
DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

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

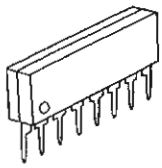
The NJM4556A combines many of the fetures of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ PACKAGE OUTLINE

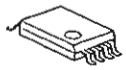


NJM4556AD

NJM4556AM



NJM4556AL

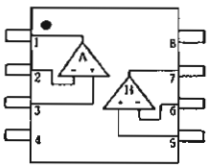


NJM4556AV

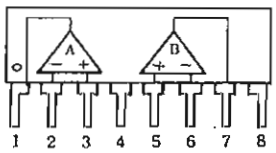
■ FEATURES

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

■ PIN CONFIGURATION



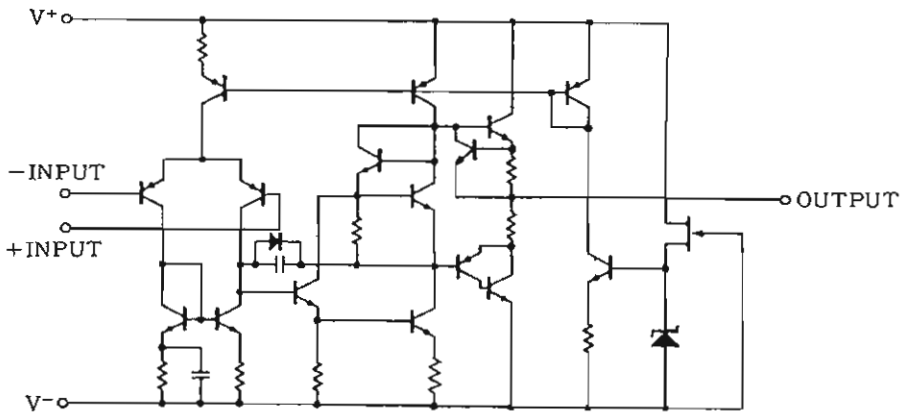
NJM4556AD
NJM4556AM
NJM4556AV



NJM4556AL

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

■ EQUIVALENT CIRCUIT (1/2 Shown)



QUARTZ CRYSTAL OSCILLATOR

■ GENERAL DESCRIPTION

The NJU6324 series is a C-MOS quartz crystal oscillator which consists of an oscillation amplifier, 3-stage divider and 3-state output buffer.

The oscillation frequency is as wide as up to 50MHz and the symmetry of 45-55% is realized over full oscillation frequency range.

The oscillation amplifier incorporates feed-back resistance and oscillation capacitors(Cg, Cd), therefore, it requires no external component except quartz crystal.

The 3-stage divider generates f_o, $f_o/2$, $f_o/4$ and $f_o/8$ and only one frequency selected by internal circuits is output

The 3-state output buffer is C-MOS compatible and capable of 10 LSTTL driving.

■ FEATURES

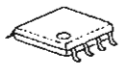
- Operating Voltage -- 3.0~6.0V
- Maximum Oscillation Frequency -- 50MHz
- Low Operating Current
- High Fan-out -- LSTTL 10
- 3-state Output Buffer
- Selected Frequency Output (mask option)
  Only one frequency out of f_o, $f_o/2$, $f_o/4$ and $f_o/8$ output
- Oscillation Capacitors Cg and Cd on-chip
- Oscillation and/or Output Stand-by Function
- Package Outline -- CHIP/EMP 8
- C-MOS Technology

■ LINE-UP TABLE

Type No.	Output Frequency	Cg	Cd
NJU6324L	f_o	23pF	23pF
NJU6324M	$f_o/2$	23pF	23pF
NJU6324N	$f_o/4$	23pF	23pF
NJU6324U	$f_o/8$	23pF	23pF

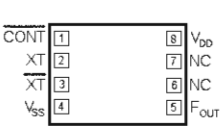
■ PACKAGE OUTLINE

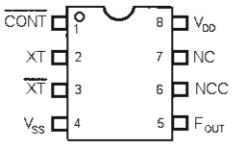
NJU6324XC



NJU6324XE

■ PIN CONFIGURATION/PAD LOCATION





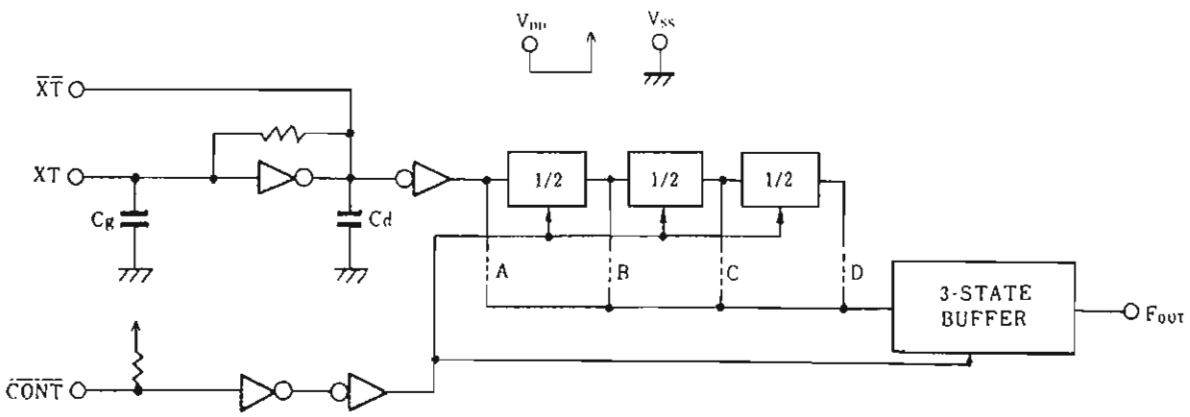
■ COORDINATES

Unit: μm

No.	PAD	X	Y
1	$\overline{CONT}$	170	649
2	XT	170	483
3	$\overline{XT}$	170	316
4	V_{SS}	170	143
5	F_{OUT}	1094	143
6	NC	-	-
7	NC	1094	462
8	V_{DD}	1094	649

Chip Size : 1.24 X 0.8mm
Chip Thickness : 400μm±30μm
(Note) No. 6 and 7 terminals are only for package type information. There is No.7 PAD on the chip but no No.6.

■ BLOCK DIAGRAM



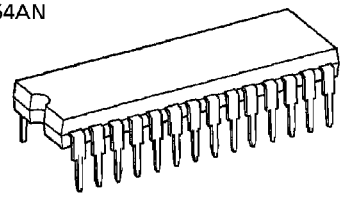
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC9162AN, TC9163AN, TC9164AN
TC9162AF, TC9163AF, TC9164AF

HIGH VOLTAGE ANALOG FUNCTION SWITCH ARRAY

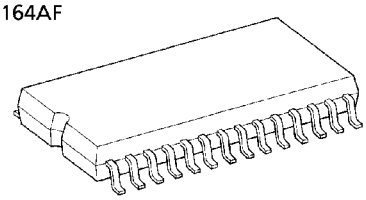
TC9162AN / AF, TC9163AN / AF and TC9164AN / AF are analog switch arrays for high voltage application. By inputting the specified serial data, the analog switches are controlled. As each analog switch is independently controllable, switch of wide use is available.

TC9162AN
TC9163AN
TC9164AN



SDIP28-P-400-1.78

TC9162AF
TC9163AF
TC9164AF



SOP28-P-450-1.27

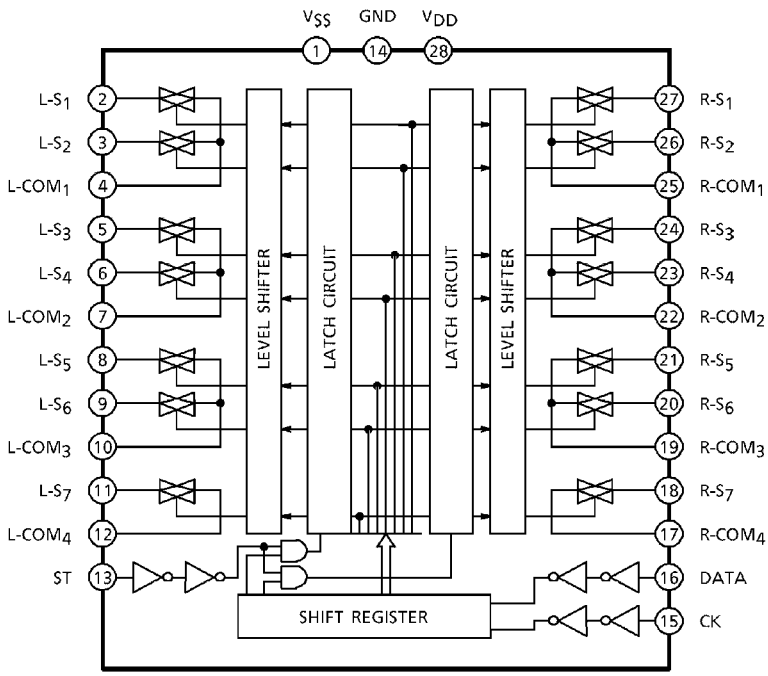
Weight
SDIP28-P-400-1.78 : 2.2g (Typ.)
SOP28-P-450-1.27 : 0.8g (Typ.)

FEATURES

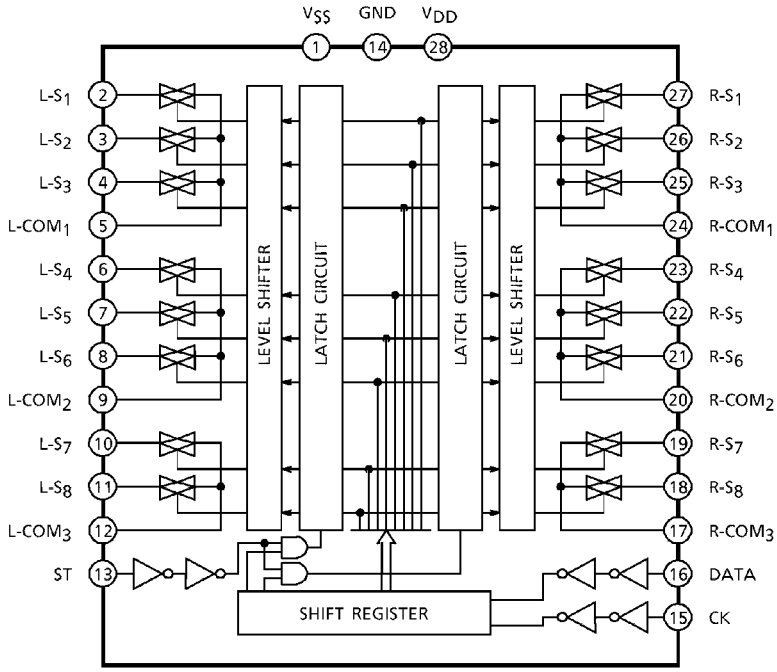
- Analog switches of 16 circuits are built in, allowing to provide three types according to internal connections.
- Dual power supply of (+) and (−) can be used.
  In this case the switch select data is operated in a single power supply by the built-in level shifter.
  As the threshold level of the input inverter is designed low, interface with CMOS microcomputer is easily available.
- As the analog switches are high-voltage (30V) use and have superior linearity of on-resistance, extra low distortion and wide dynamic range can be realized.
- Owing to CMOS structure current consumption is low.
- Package is shrinked DIP 28 PIN.

BLOCK DIAGRAM

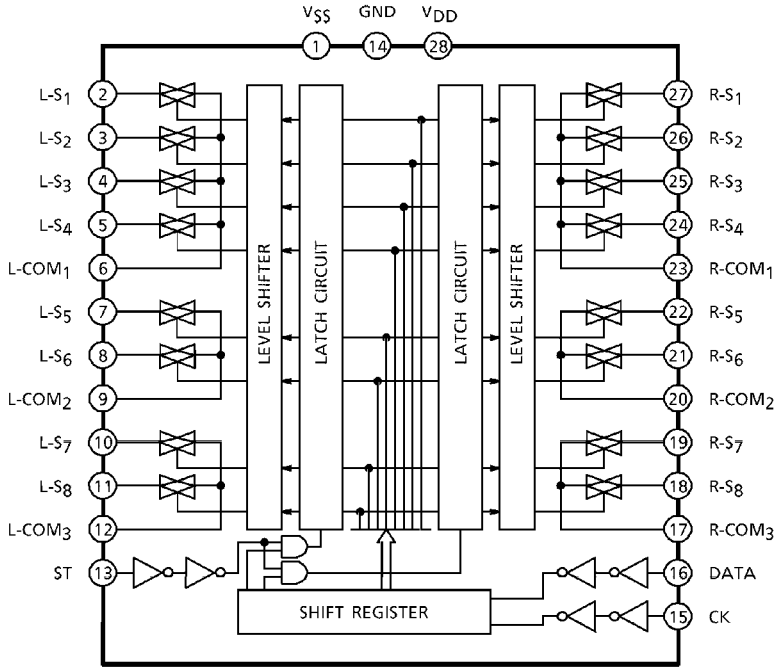
TC9162AN / AF



TC9163AN / AF

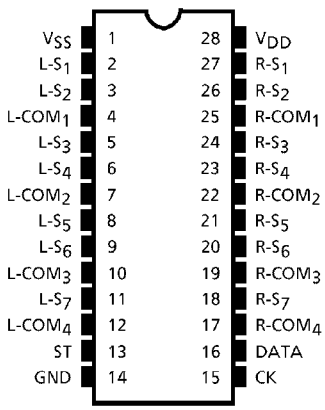


TC9164AN / AF

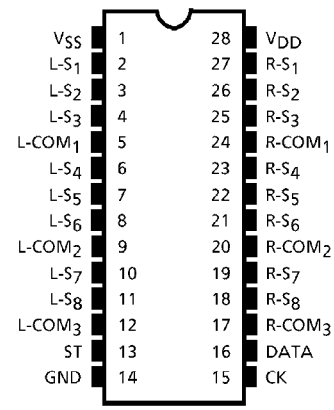


PIN CONNECTION (TOP VIEW)

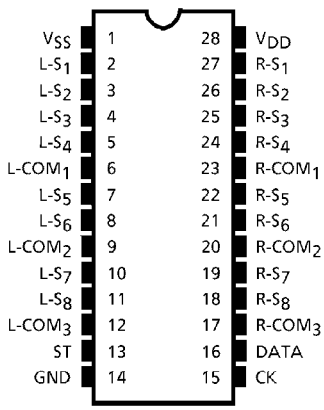
TC9162AN / AF



TC9163AN / AF



TC9164AN / AF



TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

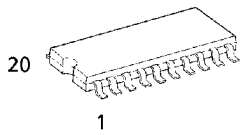
TC74VHC240F, TC74VHC240FW, TC74VHC240FT
TC74VHC244F, TC74VHC244FW, TC74VHC244FT

OCTAL BUS BUFFER
TC74VHC240F / FW / FT INVERTED, 3 - STATE OUTPUTS
TC74VHC244F / FW / FT NON - INVERTED, 3 - STATE OUTPUTS

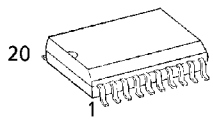
(Note) The JEDEC SOP (FW) is not available in Japan.

The TC74VHC240 and 244 are advanced high speed CMOS OCTAL BUS BUFFERs fabricated with silicon gate C²MOS technology.
They achieve the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.
The 74VHC240 is an inverting 3 - state buffer having two active - low output enables. The TC74VHC244 is a non - inverting 3 - state buffer, and has two active - low output enables.
These devices are designed to be used with 3 - state memory address drivers, etc.
An input protection circuit ensures that 0 to 7V can be applied to the input pins without regard to the supply voltage. This device can be used to interface 5V to 3V systems and two supply systems such as battery back up. This circuit prevents device destruction due to mismatched supply and input voltages.

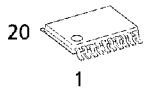
FEATURES :
- High Speed ..... t_{pd} = 3.9ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ..... I_{CC} = 4μA(Max.) at Ta = 25°C
- High Noise Immunity ..... $V_{NIH} = V_{NIL}$ = 28% V_{CC} (Min.)
- Power Down Protection is provided on all inputs.
- Balanced Propagation Delays ..... $t_{pLH} \simeq t_{pHL}$
- Wide Operating Voltage Range ..... V_{CC} (opr) = 2V ~ 5.5V
- Low Noise ..... V_{OLP} = 0.9V (Max.)
- Pin and Function Compatible with 74ALS240/244



F (SOP20-P-300-1.27)
Weight : 0.22g (Typ.)



FW (SOL20-P-300-1.27)
Weight : 0.46g (Typ.)



FT (TSSOP20-P-0044-0.65)
Weight : 0.08g (Typ.)

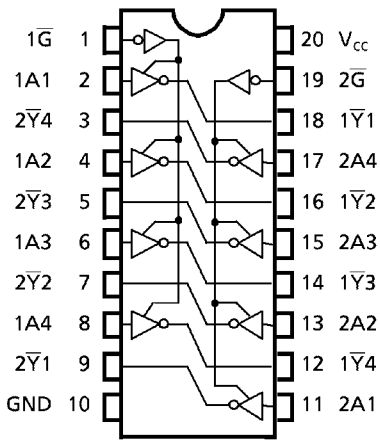
TRUTH TABLE

INPUTS		OUTPUTS	
$\overline{G}$	A_n	Y_n	$\overline{Y}_n$
L	L	L	H
L	H	H	L
H	X	Z	Z

X : Don't Care
Z : High Impedance
Y_n : TC74VHC244
$\overline{Y}_n$: TC74VHC240

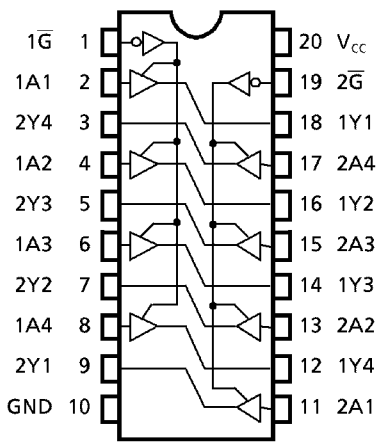
PIN ASSIGNMENT

TC74VHC240



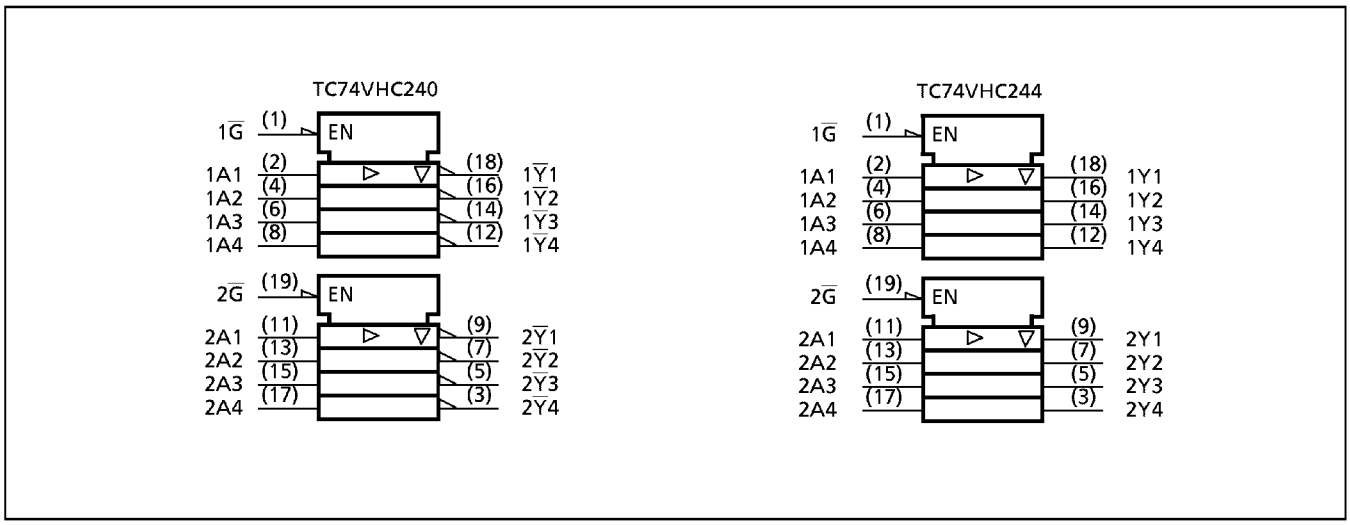
(TOP VIEW)

TC74VHC244



961001EBA2

IEC LOGIC SYMBOL



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage Range	V_{CC}	−0.5~7.0	V
DC Input Voltage	V_{IN}	−0.5~7.0	V
DC Output Voltage	V_{OUT}	−0.5~V_{CC}+0.5	V
Input Diode Current	I_{IK}	−20	mA
Output Diode Current	I_{OK}	±20	mA
DC Output Current	I_{OUT}	±25	mA
DC V_{CC}/Ground Current	I_{CC}	±75	mA
Power Dissipation	P_D	180	mW
Storage Temperature	T_{stg}	−65~150	°C

RECOMMENDED OPERATING CONDITIONS

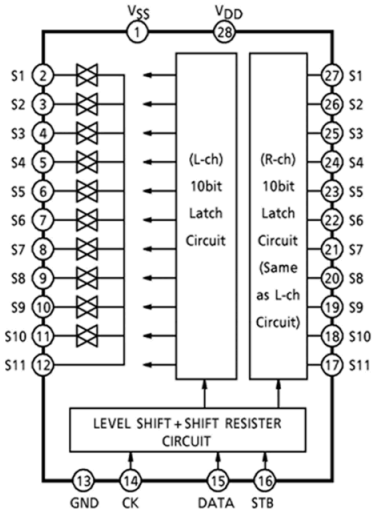
PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	2.0~5.5	V
Input Voltage	V_{IN}	0~5.5	V
Output Voltage	V_{OUT}	0~V_{CC}	V
Operating Temperature	T_{opr}	−40~85	°C
Input Rise and Fall Time	dt / dv	0~100 (V_{CC} = 3.3 ± 0.3V) 0~20 (V_{CC} = 5 ± 0.5V)	ns / V

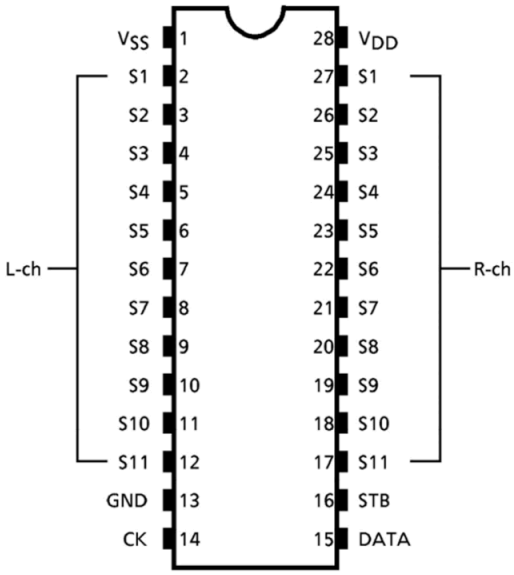
TC9273N

CMOS Digital IC

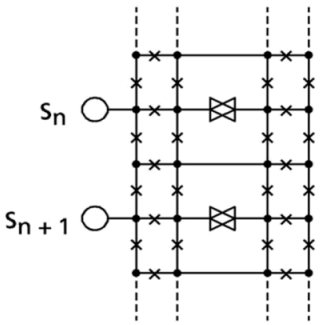
BLOCK DIAGRAM

TC9273N, TC9273F





PIN FUNCTION (Left channel / right channel)

PIN No. TC9273N / F	PIN No. TC9274N	PIN No. TC9274F	SYMBOL	PIN NAME	FUNCTION AND OPERATION	NOTE
1	1	40	V_{SS}	Negative power supply pin	Dual power supply: V_{DD} = 8.0~17V, GND = 0V, V_{SS} = −8.0~−17V	—
13	20	16	GND	Digital ground pin		
28	42	38	V_{DD}	Positive power supply pin	Single power supply: V_{DD} = 8.0~18V, V_{SS} = GND = 0V	
2 / 27	2 / 41	41 / 37	S1	Input / output pins	Analog switch input pins.  × : Aluminum mask switch. ● : Open or closed can be specified. Connection for right and left channels can be different.	—
3 / 26	3 / 40	42 / 36	S2			
4 / 25	4 / 39	43 / 35	S3			
5 / 24	5 / 38	44 / 34	S4			
6 / 23	6 / 37	1 / 33	S5			
7 / 22	7 / 36	2 / 32	S6			
8 / 21	8 / 35	3 / 31	S7			
9 / 20	9 / 34	4 / 30	S8			
10 / 19	10 / 33	5 / 29	S9			
11 / 18	11 / 32	6 / 28	S10			
12 / 17	12 / 31	7 / 27	S11			
—	13 / 30	8 / 26	S12			
—	14 / 29	9 / 25	S13			
—	15 / 28	10 / 24	S14			
—	16 / 27	11 / 23	S15			
—	17 / 26	12 / 22	S16			
—	18 / 25	13 / 21	S17			
—	19 / 24	14 / 20	S18			
—	—	17 / 39	NC	Not connected	—	—
14	21	16	CK	Clock input pin	Clock input for data transfer	Low threshold value input pins
15	22	18	DATA	Data input pin	Serial data input for setting switches	
16	23	19	STB	Strobe input pin	Strobe input for data writing	

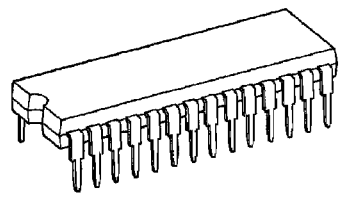
TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TC9482N, TC9482F

SYSTEM ELECTRONIC VOLUME CONTROL

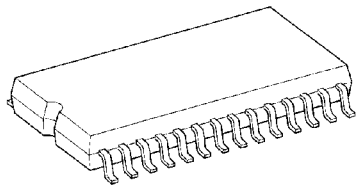
The TC9482N and TC9482F are six-channel electronic volume control ICs developed for Hi-Fi audio equipment. Since all six channels can be individually controlled, the devices are optimum for audio equipment with multiple outputs.

TC9482N



SDIP28-P-400-1.78

TC9482F



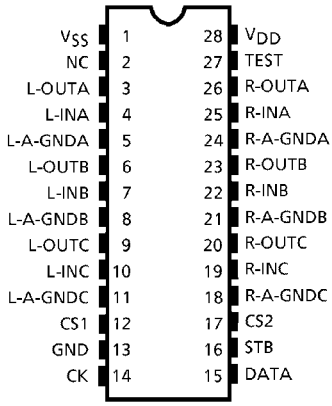
SOP28-P-450-1.27

Weight
SDIP28-P-400-1.78 : 2.2 g (Typ.)
SOP28-P-450-1.27 : 0.8 g (Typ.)

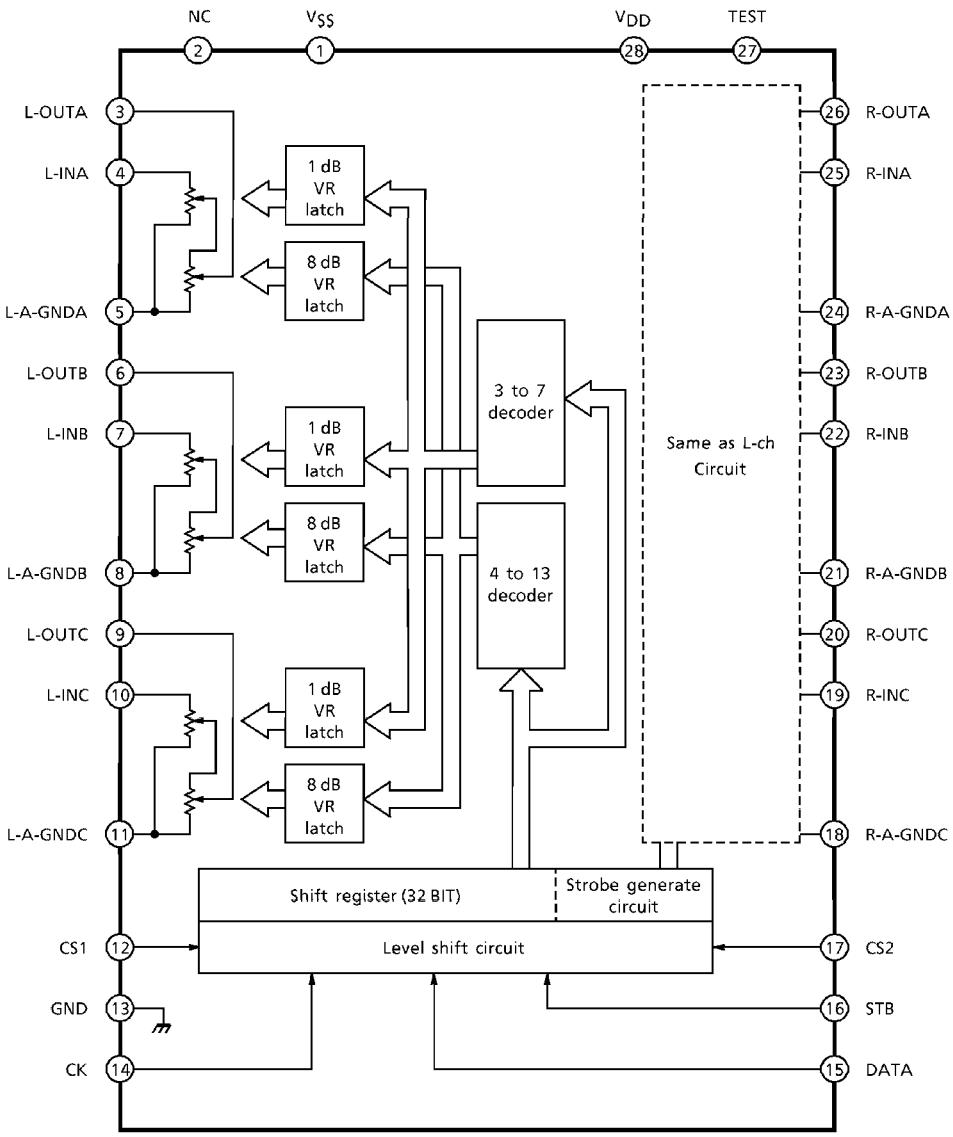
FEATURES

- Sound volume can be controlled in 97 steps from 0 to −95dB or up to an infinite level in 1dB increments.
- Incorporating six channels of volume control circuits, the device allows independent volume control.
- Can operate with a single or dual power supplies.
- Can control up to 4 chips on the same bus by using chip select input.
- Built-in interface for 5-V microcomputers.
- Thanks to its polysilicon resistor, the device allows you to configure a low-distortion, high-performance volume control system.
- Two packages supported: 28-pin shrink DIP and 28-pin flat package.

PIN CONNECTIONS

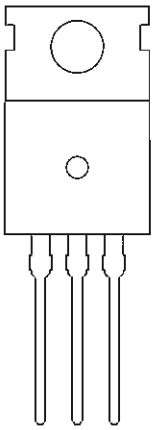


BLOCK DIAGRAM



3-Terminal 1.5A Negative Adjustment Regulator IC

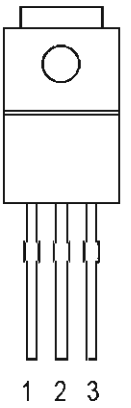
KA337



1. Adj.
2. Input
3. Output

Low Saturation Voltage Type 3-Pin Regulator IC

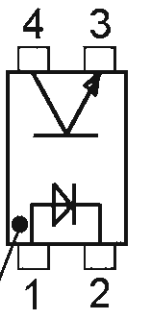
BA033T



1 Vcc
2 Ground
3 Out

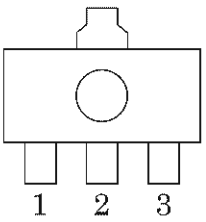
Photocoupler IC

PC-17T1

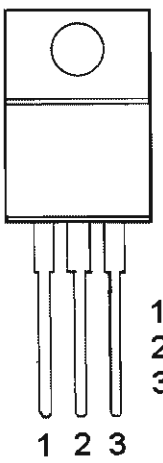


POSITIVE REGULATORS VARIOUS STYLES 7805, 7815

SOT-89

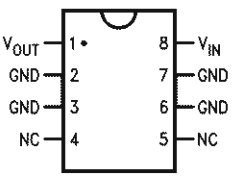


1.OUT
2.GND
3.IN



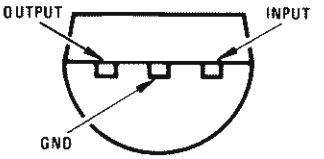
1. IN
2. GROUND
3. OUT

SO-8 Plastic (M) (Narrow Body)



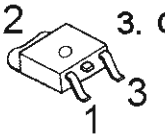
Top View

(TO-92) Plastic Package (Z)



Bottom View

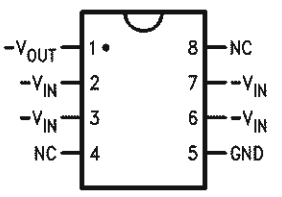
TO-252



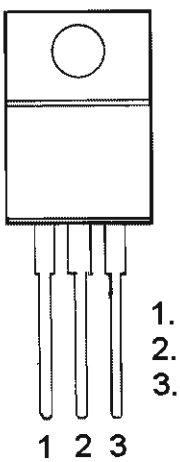
1. IN
2. GRD
3. OUT

NEGATIVE REGULATORS VARIOUS STYLES 7905, 7915

SO-8 Plastic (Narrow Body)

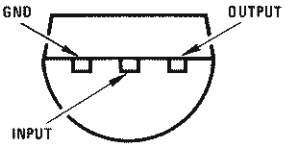


Top View



1. GROUND
2. IN
3. OUT

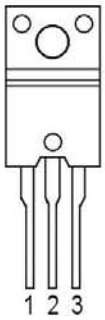
TO-92 Plastic Package (Z)



Bottom View

Silicon Transistor

2SA1859 PNP
2SC4883 NPN



1 Base
2 Collector
3 Emitter

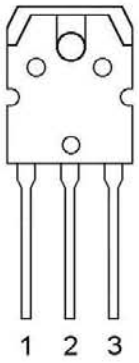
Small Signal Bi-Polar PNP Transistor

2SA933AS

1 Emitter
2 Collector
3 Base

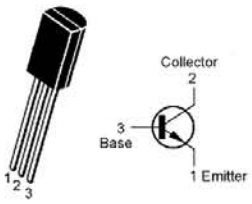
Silicon Transistor

2SA1986, 2SA1941, 2SB1560 PNP
2SC5198, 2SC5358, 2SD2390 NPN

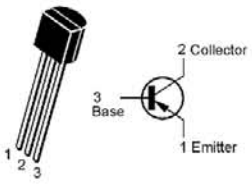


1 Base
2 Collector (Heat Sink)
3 Emitter

KTC3206

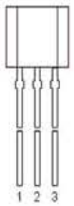


KRC107
KTA1268
KTA1266
KTA1024



EPITAXIAL PLANAR TRANSISTOR

KTC3200
KTC2874
KTC3198
KRA107M PNP



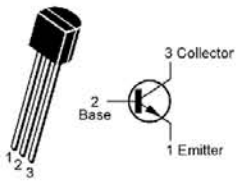
1 Emitter
2 Collector
3 Base

Silicon PNP Transistor

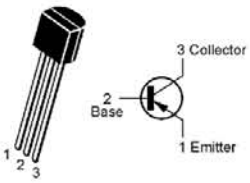
2SA1740S
DTA114TSA

1 Emitter
2 Collector
3 Base

MPSA06



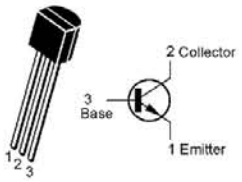
MPSA56



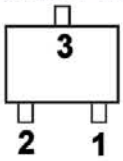
DTA114YSA
DTC114YSA NPN

1) Ground
2) In
3) Out

KTD1302



KRA107S PNP
KTD1304 NPN
KRC111S NPN
DTC114TKA NPN
DTC114YKA NPN



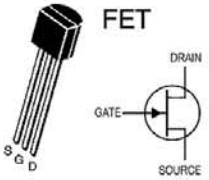
1) Emitter
2) Base
3) Collector

2SC4137

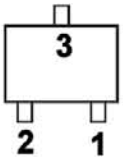
1. Emitter
2. Collector
3. Base

2SK117

FET



DTA114YKA



1) Ground
2) In
3) Out

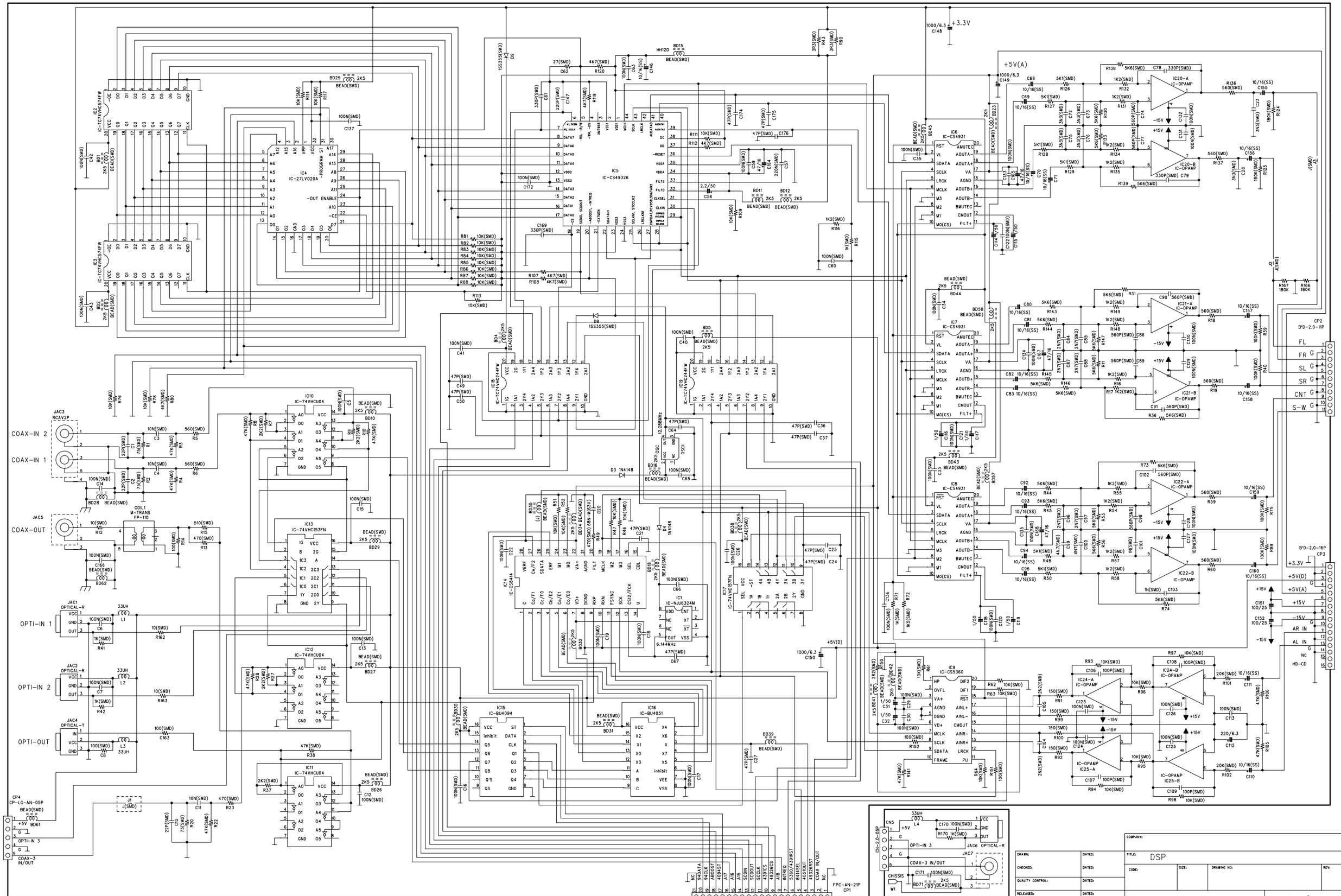
Silicon NPN Transistor

DTC114TSA

1 Emitter
2 Collector
3 Base

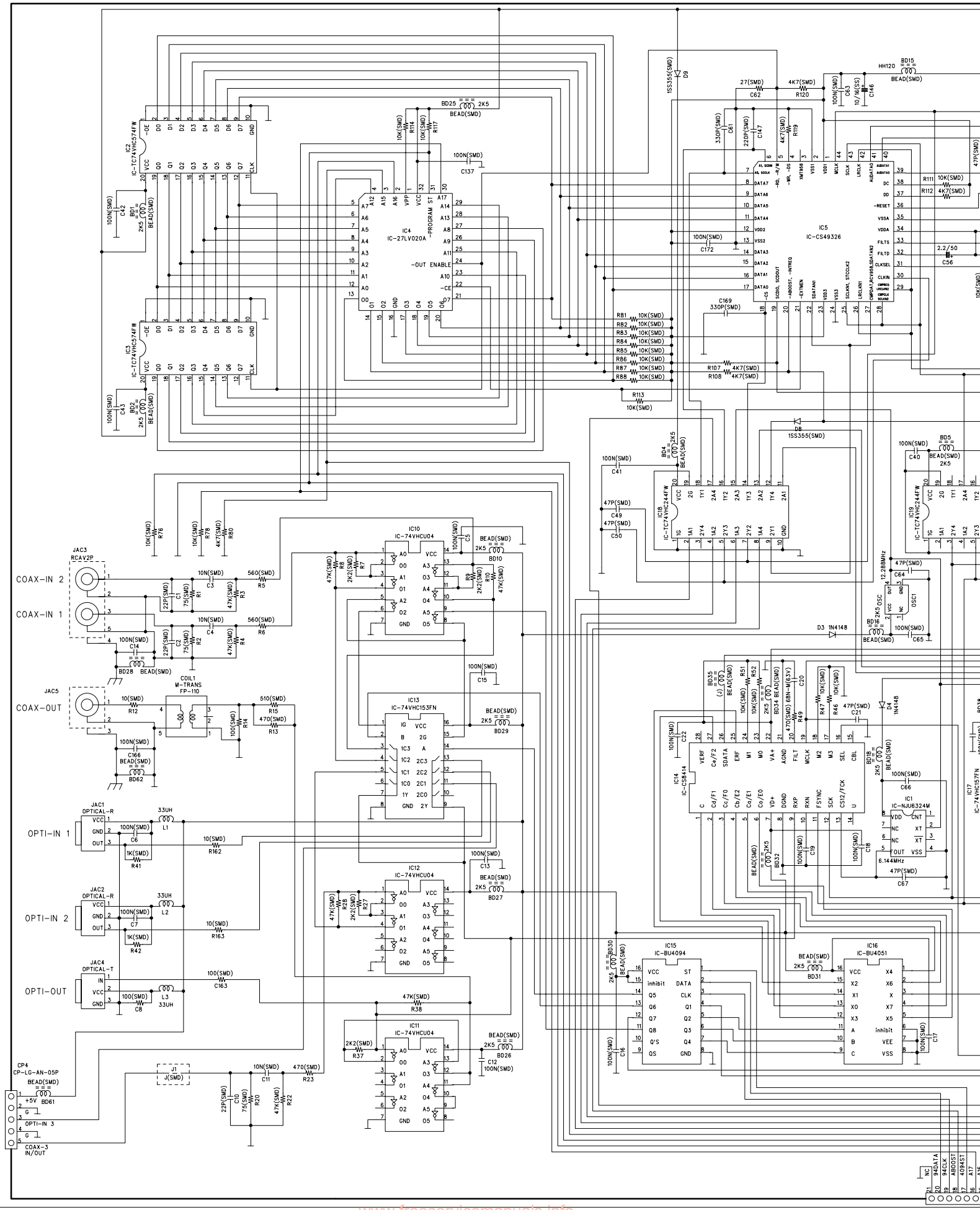
SCHEMATIC DIAGRAM AVR120/220/2500/3500 DSP B'D

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



AVR120 harman/kardon

SCHEMATIC DIAGRAM



AM AVR120/220/2500/3500 DSP B'D

REVISION RECORD			
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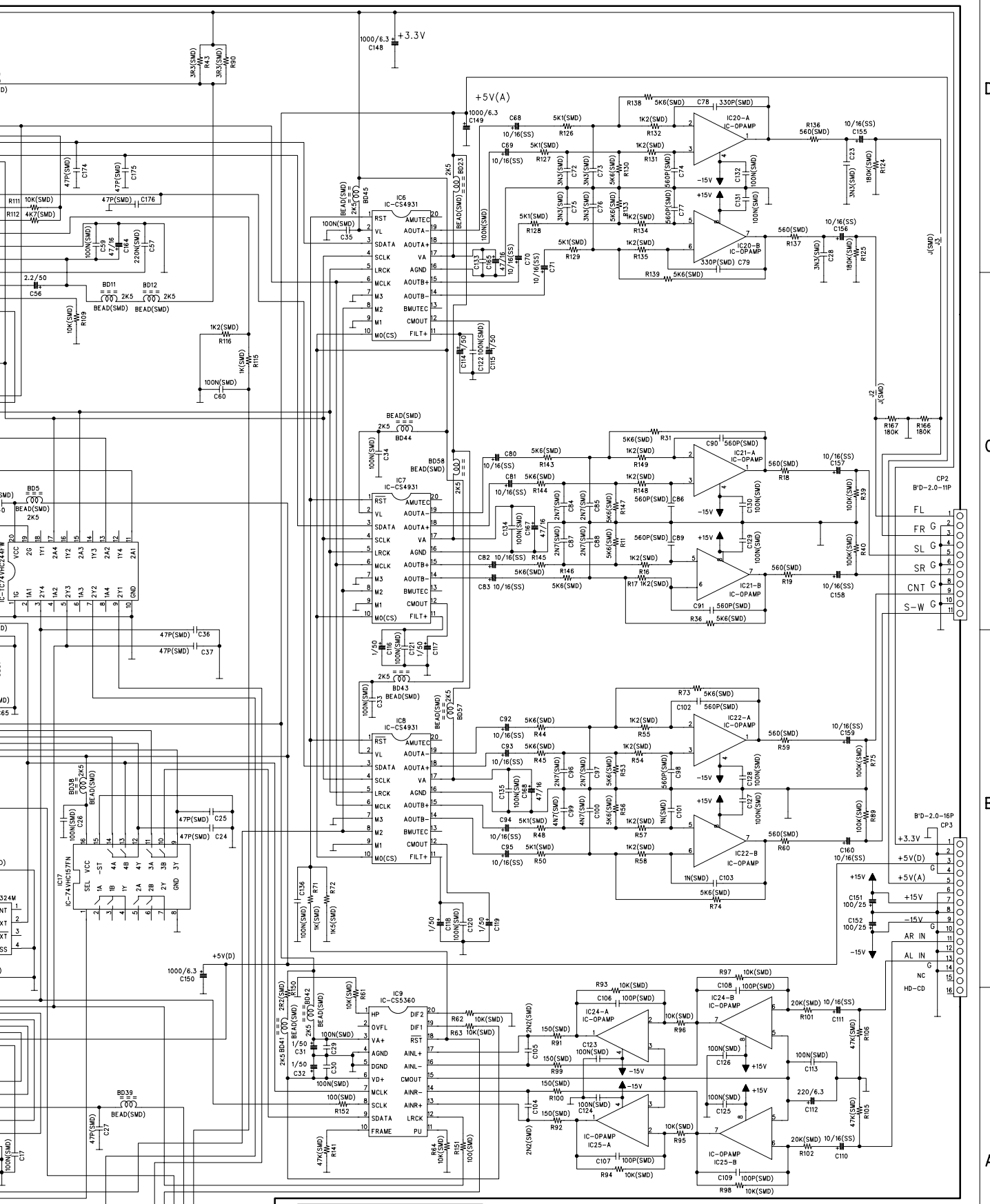


DRAWN:	DATED:	COMPANY:	
CHECKED:	DATED:	TITLE: DSP	
QUALITY CONTROL:	DATED:	CODE:	SIZE: / DRAWING NO: / REV:
RELEASED:	DATED:	SCALE:	SHEET: OF

AVR120/220/2500/3500 FRONT SCHEMATIC DIAGRAM

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

KEY B'D

FRONT B'D

H/P B'D

TACT S/W B'D

TAPE B'D

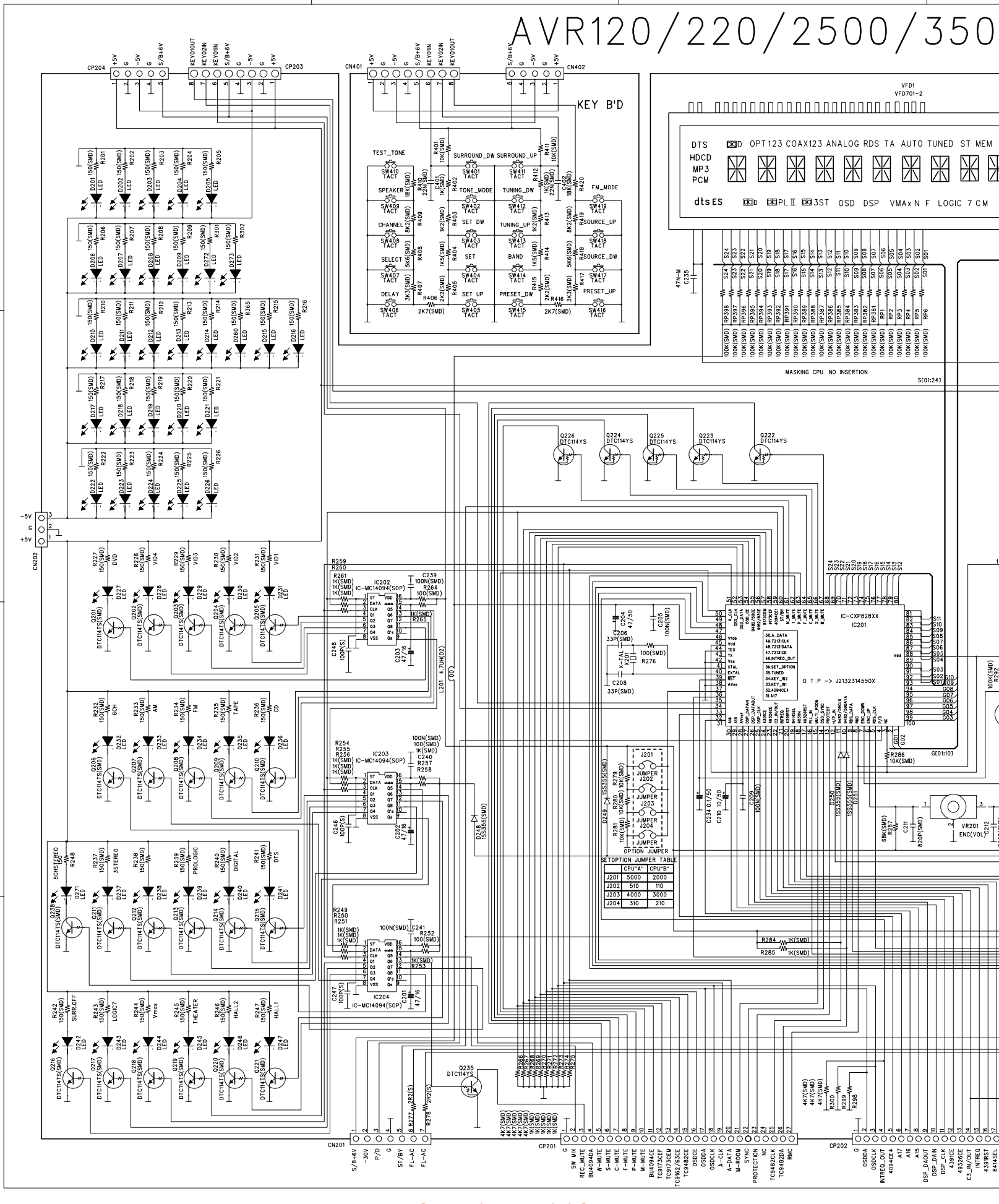
MASKING CPU NO INSERTION

OPTION JUMPER

SETOPTION JUMPER TABLE	CPU"A"	CPU"B"
J201	5000	2000
J202	510	110
J203	4000	3000
J204	310	210

COMPANY:	
TITLE:	AVR120/220 FRONT , KEY
DRAWN:	DATED: 2001.02.17
CHECKED:	DATED:
QUALITY CONTROL:	DATED:
RELEASED:	DATED:
CODE:	SIZE:
DRAWING NO:	REV:
SCALE:	SHEET: OF

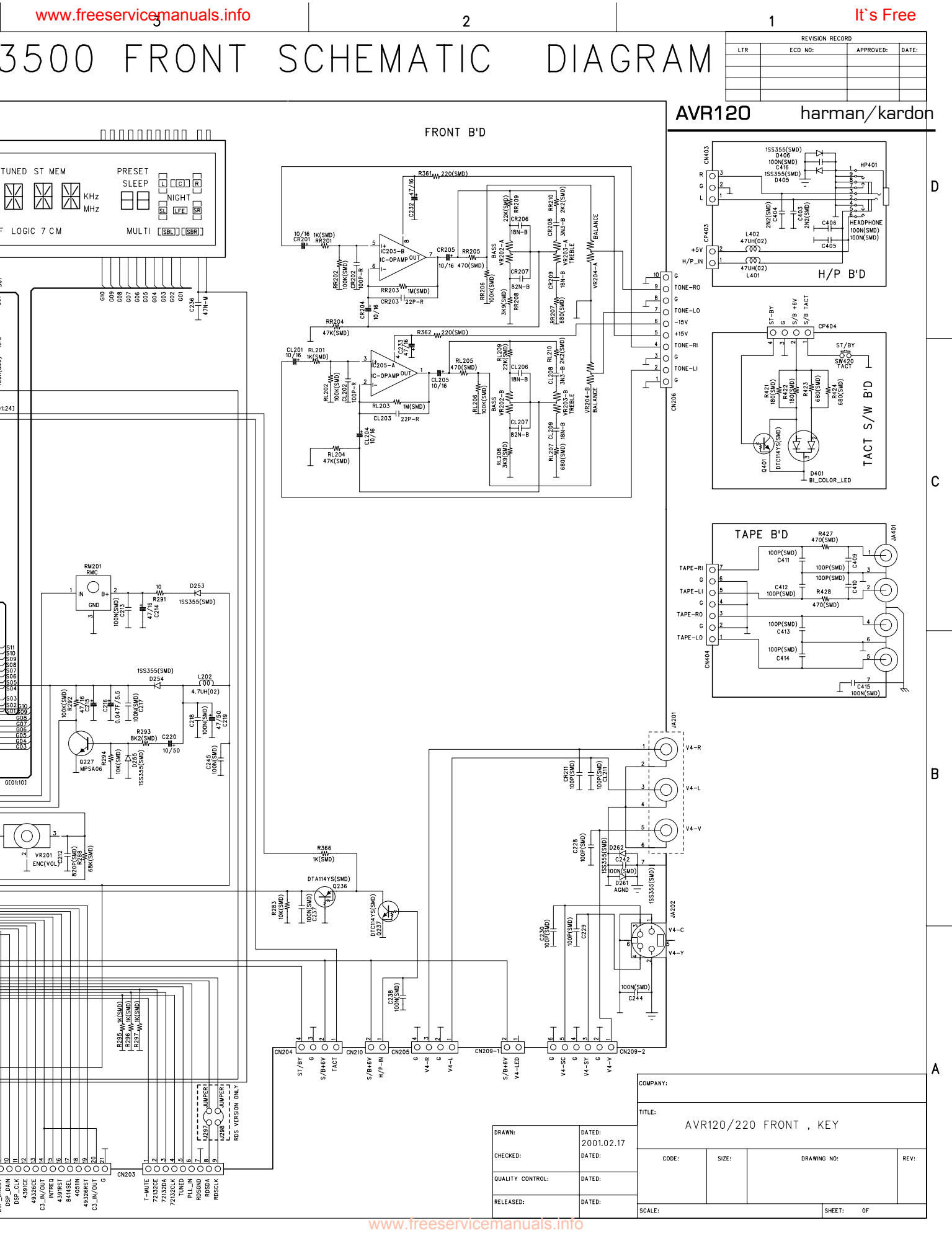
AVR120/220/2500/350



3500 FRONT SCHEMATIC DIAGRAM

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

AVR120 harman/kardon



DRAWN:	DATED: 2001.02.17	COMPANY:
CHECKED:	DATED:	TITLE: AVR120/220 FRONT , KEY
QUALITY CONTROL:	DATED:	CODE: / SIZE: / DRAWING NO: / REV:
RELEASED:	DATED:	SCALE: / SHEET: OF

AVR 120/220/2500/3500 MAIN AMP SCHEMATIC DIAGRAM

NO	DATE	POS.	CONTENTS	NO	DATE	POS.	CONTENTS

AVR 120	AVR 220
20V 8 ohm	20V 8 ohm
50W+2 40W+5	50W+2 40W+5

TO SURR B'D
CN417 CN-2.5-03P
OVER LOAD DET 3
DC DET 2
P-ON/OFF MUTE 1

OVER LOAD DETECTOR
DC DETECTOR
THERMAL DETECTOR
POWER ON/OFF MUTE
TEST POINT IDLE
IDLE ADJ.

FORNT-L
FORNT-R
CENTER
-L6V

RDS ONLY
JK500 SH0410772N
FL-OUT 4
FL-GND 3
FR-GND 2
FR-OUT 1
FRONT OUTPUT
CET.-OUT 2
CEN.-GND 1
CENTER OUTPUT
JK501 SH0210401

VOLTAGE REGULATOR
IC481 78M15
IC482 79M15
IC483 BA033T
IC484 78M05
IC485 78M05
IC486 79M05
IC487 KIA317
ANALOG
DIGITAL

◆1 OPTION

VERSION	UL / CSA	CE / CB
C435,C437,C439 C441,C443,C444	X	O
JK500	JW6014B	JW6014
JK501	JW6012B	JW6012

AVR120 DELETE
IC501-A NJM2068
IC501-B NJM2068

D481 BU8-04
D482 W2-04F
FU481 2A/250V
FU482 2A/250V
FU483 2A/250V
FU484 2A/250V
CN401 CP-3.96-03P
CN402 CP-MO-ST-06P
S1 CA2 RED BLK RED
S2 CA3 YEL BLK YEL
S3 CA4 BLU BLK BLU BRN BLK BRN
TO SURR B'D
FROM ST-BY B'D

TO FRONT B'D
CN403 CP-MO-ST-03P
SW-OUT
JK401 RCA1P-G

CN407 B'D-2.0-09P
MUTE
PLL CE
PLL DI
PLL CLK
TU
PLL DO
GND
RDS DATA
RDS CLK
RDS ONLY
Q562 KTD1302
Q563 KTD1302
CW407 B'D-2.0-10P
TL
GND
TR
GND
TU
VCC(+12V)
PLL DO
PLL CLK
PLL DI
PLL CE
RDS DATA
RDS CLK
RDS ONLY
FROM TUNER B'D

CN405 B'D-2.0-15P
FL-IN
FL-OUT
GND
FR-IN
FR-OUT
GND
C-IN
C-OUT
GND
SL-IN
SL-OUT
GND
SR-IN
SR-OUT
GND
TO MAIN B'D 2mm 6P
TO SURR B'D 2mm 4P

CN404 B'D-2.0-17P
SW
GND
FL-OUT
GND
FR-OUT
GND
C-OUT
GND
SL-OUT
GND
SR-OUT
GND
TO MAIN B'D 2mm 6P
TO SURR B'D 2mm 4P
CN406 B'D-2.0-14P
AVR 120,220

JK105 RCA2P-G
CENT
S-W
SL
SR
FL
FR
JK1 RCA2P-G
AVR120 DELETE

PROTECTION
DC01:07J
VI01:08J
AI01:07J
SI01:06J
AO1:07J

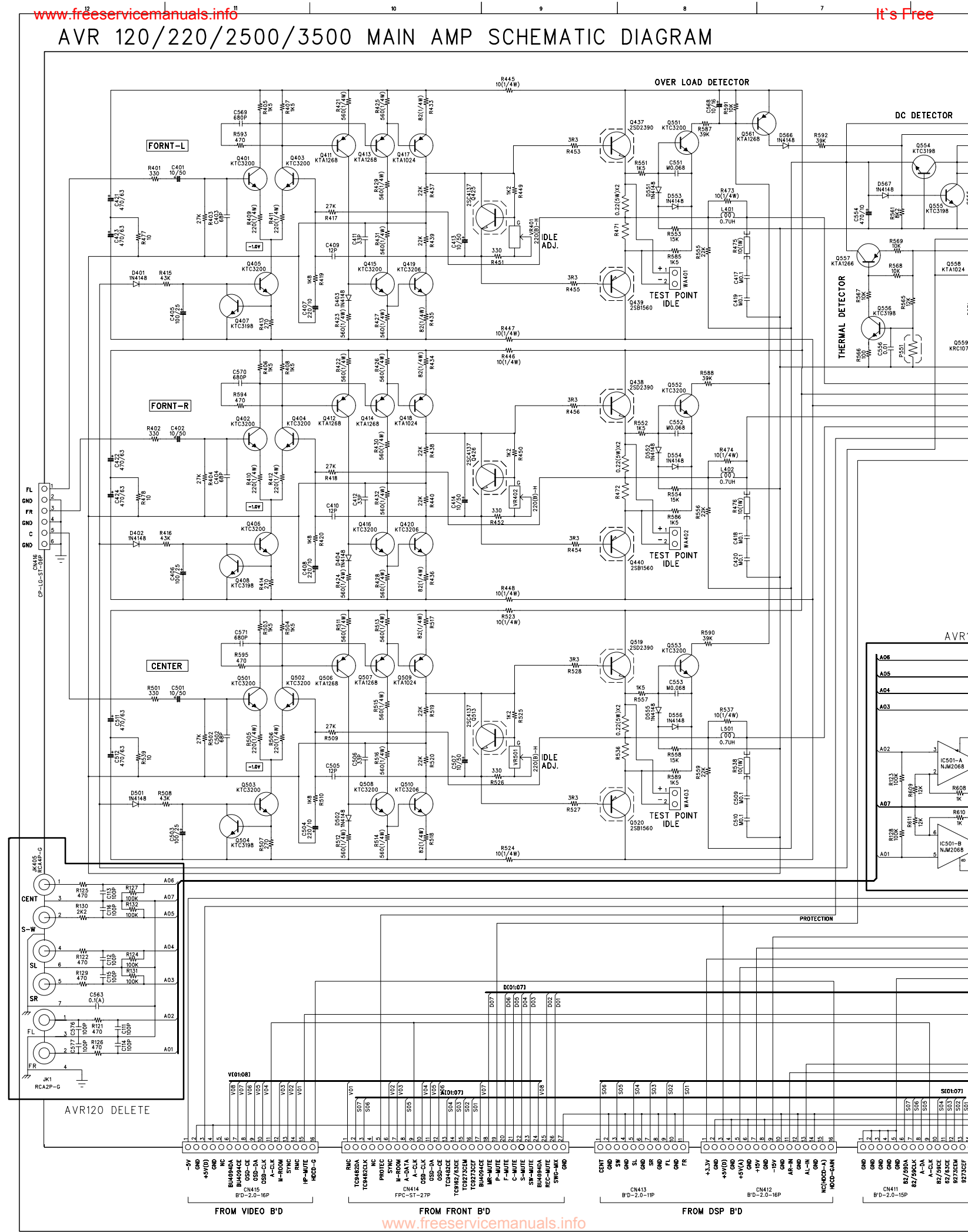
CN415 B'D-2.0-16P
FROM VIDEO B'D
CN414 FPC-ST-27P
FROM FRONT B'D
CN413 B'D-2.0-11P
CN412 B'D-2.0-16P
FROM DSP B'D
CN411 B'D-2.0-15P
CN410 B'D-2.0-15P
CN409 B'D-2.0-15P
CN408 B'D-2.0-15P
FROM PROCESS B'D

KTA1024Y KTC4126BL KTC3206Y KTC3206BL KBC1071W
KTA1658 Y KTC4379 Y 2SC5306 Y 2SA1986 Y 2SD1986 2SB1044

CONFIDENTIAL/CONTROL COPY

FILENAME	CODE NO.			SHEET
MODEL AVR-120/220	DESIGN	CHKD	CHKD	APPROVAL
DESIGN DATE				

AVR 120/220/2500/3500 MAIN AMP SCHEMATIC DIAGRAM



NO	DATE	POS.	CONTENTS	NO	DATE	POS.	CONTENTS

AVR120 harman/kardon

AVR 120	AVR 220
20V 8 ohm	20V 8 ohm
50W×2 40W×5	50W×2 40W×5

TO SURR B'D
CN417 CN-2.5-03P
OVER LOAD DET 3
DC DET 2
P-ON/OFF MUTE 1
DC DETECTOR
Q554 KTC3198
Q555 KTC3198
R562 56K
R564 56K
R563 56K
C555 0.01
+4.5V
POWER ON/OFF MUTE
Q558 KTA1024
R570 270
D406 1N4148
D405 1N4148
R571 27K(1/4W)
Q559 KRC107M
P551

RDS ONLY
JK500 SH041077ZN
FL-OUT
FL-GND
FR-GND
FR-OUT
C425 0.0015
C426 0.0015
FRONT OUTPUT
◆1
CET.-OUT
CEN.-GND
C513 0.0015
JK501 SH021040
CENTER OUTPUT

IC481 78M15
IC482 79M15
IC483 BA033T
IC484 78M05
IC485 78M05
IC486 79M05
IC487 KI337
R481 10(2W)
R482 10(2W)
R483 10(2W)
R484 4R7(2W)
R485 4R7(2W)
R486 4R7(2W)
R487 3R3(2W)
ANALOG
DIGITAL
10/50 C489
10/50 C490
10/50 C492
10/50 C494
10/50 C496
C497 10/50
C498 10/50
R489 220
R490 680
VOLTAGE REGULATOR

◆1 OPTION

VERION	UL / CSA	CE / CB
C435,C437,C439 C441,C443,C444	X	O
JK500	JW6014B	JW6014
JK501	JW6012B	JW6012

D481 BUB-04
D482 W2-04F
C481 6800/63V
C482 6800/63V
C485 2200/35
C486 2200/35
C487 2200/16
C488 2200/16
C483 0.1/250
C484 0.1/250
C565 0.1/250
C564 0.1/250
C566 47N-M
C567 47N-M
C431 47N-M
C432 47N-M
C433 47N-M
C434 47N-M
FU481 2A/250V
FU482 2A/250V
FU483 2A/250V
FU484 2A/250V
FM401
FM402
FM403
FM404
FM405
FM406
FM407
FM408
D568 1N5402
D569 1N5402
D570 1N5402
D571 1N5402

AC1
GND
AC1
CN401 CP-3.96-03P
S1 CA2 RED BLK RED
S2 CA3 YEL BLK YEL
S3 CA4 BLU BLK BLU BRN BLK BRN
CA1 BLU BLK
FROM ST-BY B'D
TO SURR B'D
AC3
GND
AC3
AC4
GND
AC4
CN402 CP-MO-ST-06P

+5V
GND
-5V
CN403 CP-MO-ST-03P
TO FRONT B'D

SW-OUT
C444 220P
JK401 RCA1P-G

CN407 B'D-2.0-09P
MUTE
PLL CE
PLL DI
PLL CLK
TU
PLL DO
GND
RDS DATA
RDS CLK
RDS ONLY
R613 3K3
R614 3K3
Q562 KTD1302
Q563 KTD1302

CW407 B'D-2.0-10P
TL
GND
TR
GND
TU
VCC(+12V)
PLL DO
PLL CLK
PLL DI
PLL CE
RDS DATA
RDS CLK
RDS ONLY
FROM TUNER B'D
47 R612
D572 UZ12V
C590 47/16

AVR120 DELETE
A06
A05
A04
A03
A02
A07
A01
IC501-A NJM2068
IC501-B NJM2068
R596 100
R597 100
C588 10/16
C589 10/16
C582 47/16
C583 47/16
R606 100K
R607 100K
R608 1K
R610 1K
R609 12K
R611 12K
R123 100K
R128 100K

FL-IN
FL-OUT
GND
FR-IN
FR-OUT
GND
C-IN
C-OUT
GND
SL-IN
SL-OUT
GND
SR-IN
SR-OUT
GND
SW
GND
CP404 B'D-2.0-17P
TO MAIN B'D 2mm 6P
TO SURR B'D 2mm 4P
CP405 B'D-2.0-15P

FL-OUT
GND
FR-OUT
GND
C-OUT
GND
SL-OUT
GND
SR-OUT
GND
CP406 B'D-2.0-14P
TO MAIN B'D 2mm 6P
TO SURR B'D 2mm 4P
※ AVR 120,220

KTA1024 Y KTC3200 BL KTC3200Y KRC107M
E C B
KTA1659 Y KTC4370 Y 2SC3358 R 2SA1586 R 2SB1386 R 2SB1694
B C E

A(01:07)
S(01:06)
S(01:07)
D07 D06 D05 D04 D03 D02 D01
S07 S06 S05 S04 S03 S02 S01
A06 A05 A07 A04 A03 A02 A01

CN411 B'D-2.0-15P
B2/59DA
B2/59CLK
A-DA
A-CLK
B2/53CE
B2/53CE
9273CEM
9273CEF
NC
VCC

CN410 B'D-2.0-15P
-15V
+15V
GND
MP-MUTE
MR-MUTE
F-MUTE
C-MUTE
S-MUTE
SW-MUTE
REC-MUTE
SWG-MIX
GND
MR-L
GND
MR-R

CN409 B'D-2.0-15P
AL-IN
GND
AR-IN
GND
CENT
GND
SW
GND
SL
GND
SR
GND
FL
GND
FR

CN408 B'D-2.0-15P
T-R
GND
T-L
GND
CENT
GND
SW
GND
SL
GND
SR
GND
FL
GND
FR

FROM PROCESS B'D

CONFIDENTIAL/CONTROL COPY

FILENAME	CODE NO.			SHEET
MODEL AVR-120/220	DESIGN	CHKD	CHKD	APPROVAL
DESIGN DATE				

AVR120/220/2500/3500 SCHEMATIC DIAGRAM

MP

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:

FROM MAIN B'D — CP405 B'D-2.0-12P — FL, G, FR, G, C, G, SL, G, SR, G, SW, G

FROM H/P B'D — CP403 CP-LG-ST-05P — G, L, R

FROM FRONT B'D TONE — CP206 B'D-2.0-10P — G, L, G, R, +15, -15, Lo, Go, Ro, G

FROM TAPE B'D — CP404 CP-LG-ST-07P — Lo, G, Ro, G, Li, G, Ri

VID4 FROM FRONT B'D — CP205 CP-LG-ST-04P — L1, G, R1, G

TONE BUFFER

BYPASS GAIN

LINE BUFFER

AVR120 DELETE

CD-L / CD-R — IC701 IC-TC9273 — T-L, T-R, VDD, VSS, STB, DATA, GND, CK

IC-TC9482N IC706 — VDD, TEST, NC, L-OA, L-IA, GND, L-INB, L-IC, L-OC, R-IC, R-OC, CS2, STB, DATA, CK

IC-KIC9163 IC705 — VDD, VSS, DATA, CLK, ST, GND

IC-KIC9162 IC704 — VDD, FL, VSS, SSP, SW, DATA, CLK, ST, GND

JK701 — VCR3 IN

VCR2 IN

VCR2 OUT

JK702 — VCR1 IN

JK703 — VCR1 OUT

DVD

CD

CN411 B'D-2.0-15P — G, 2G, 3G, 4G, 5G, 6 82/59DA, 7 82/59CE, 8 DA, 9 CK, 10 82/59CE, 11 62/63CE, 12 9273MCE, 13 9273CE, 14 NC, 15 VCC

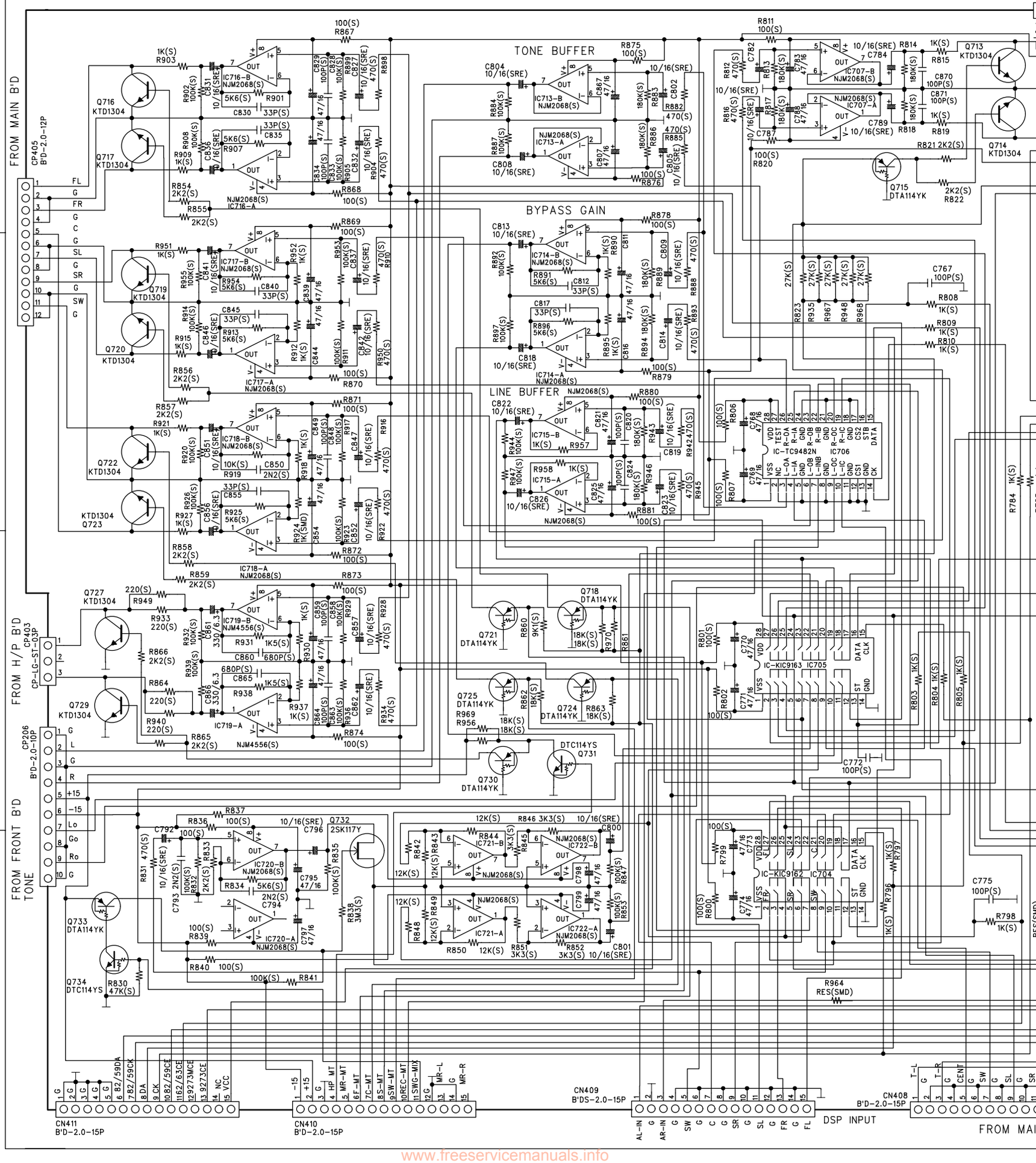
CN410 B'D-2.0-15P — 1 -15, 2 +15, 3 G, 4 HP MT, 5 MR-MT, 6 F-MT, 7 C-MT, 8 S-MT, 9 SW-MT, 10 REC-MT, 11 SWG-MT, 12 G, 13 MR-L, 14 G, 15 MR-R

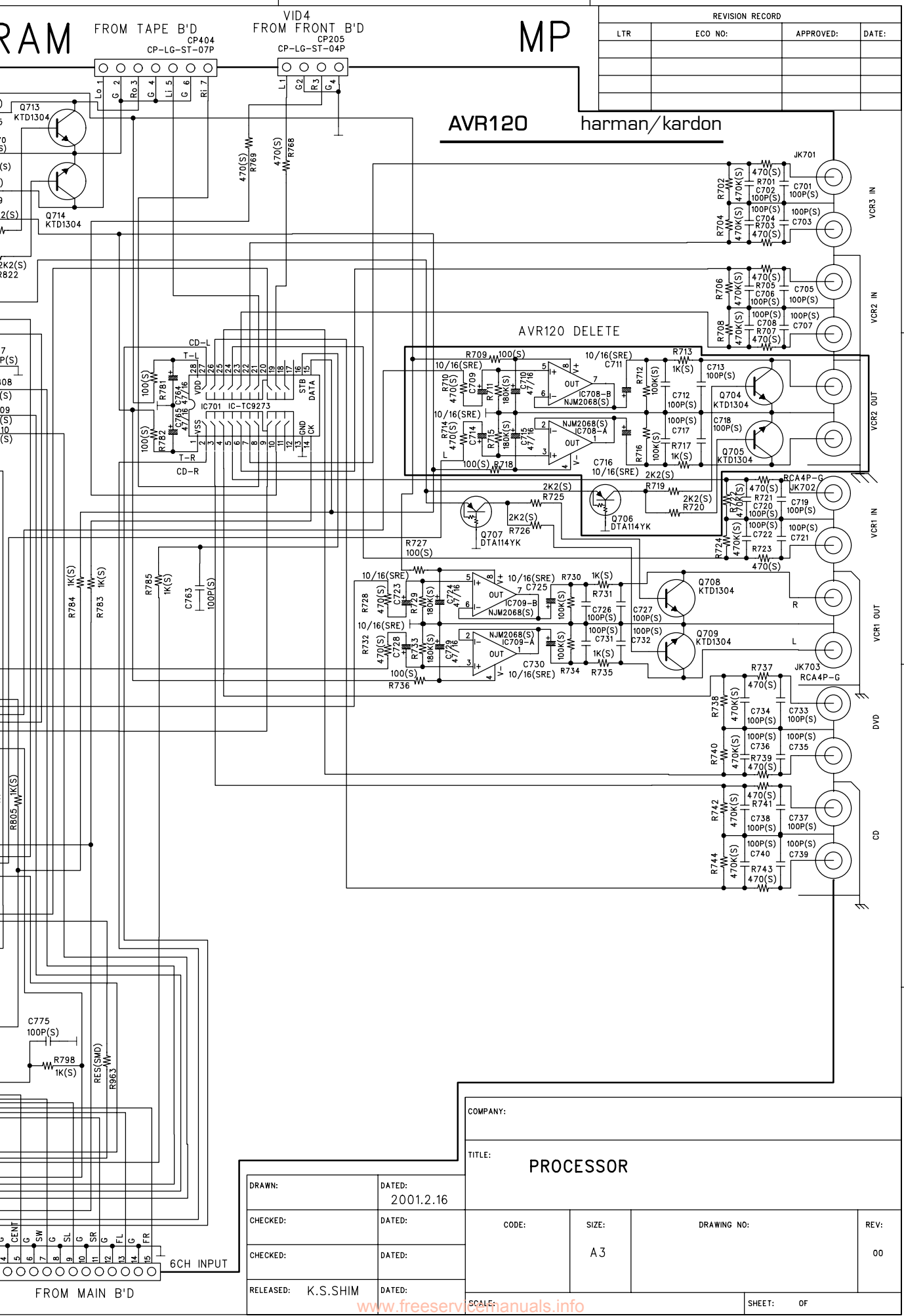
CN409 B'DS-2.0-15P — AL-IN, G, AR-IN, G, SW, G, C, G, SR, G, SL, G, FR, G, FL — DSP INPUT

CN408 B'D-2.0-15P — T-L, G, T-R, CENT, G, SW, G, SL, G, SR, G, FL, G, FR — 6CH INPUT — FROM MAIN B'D

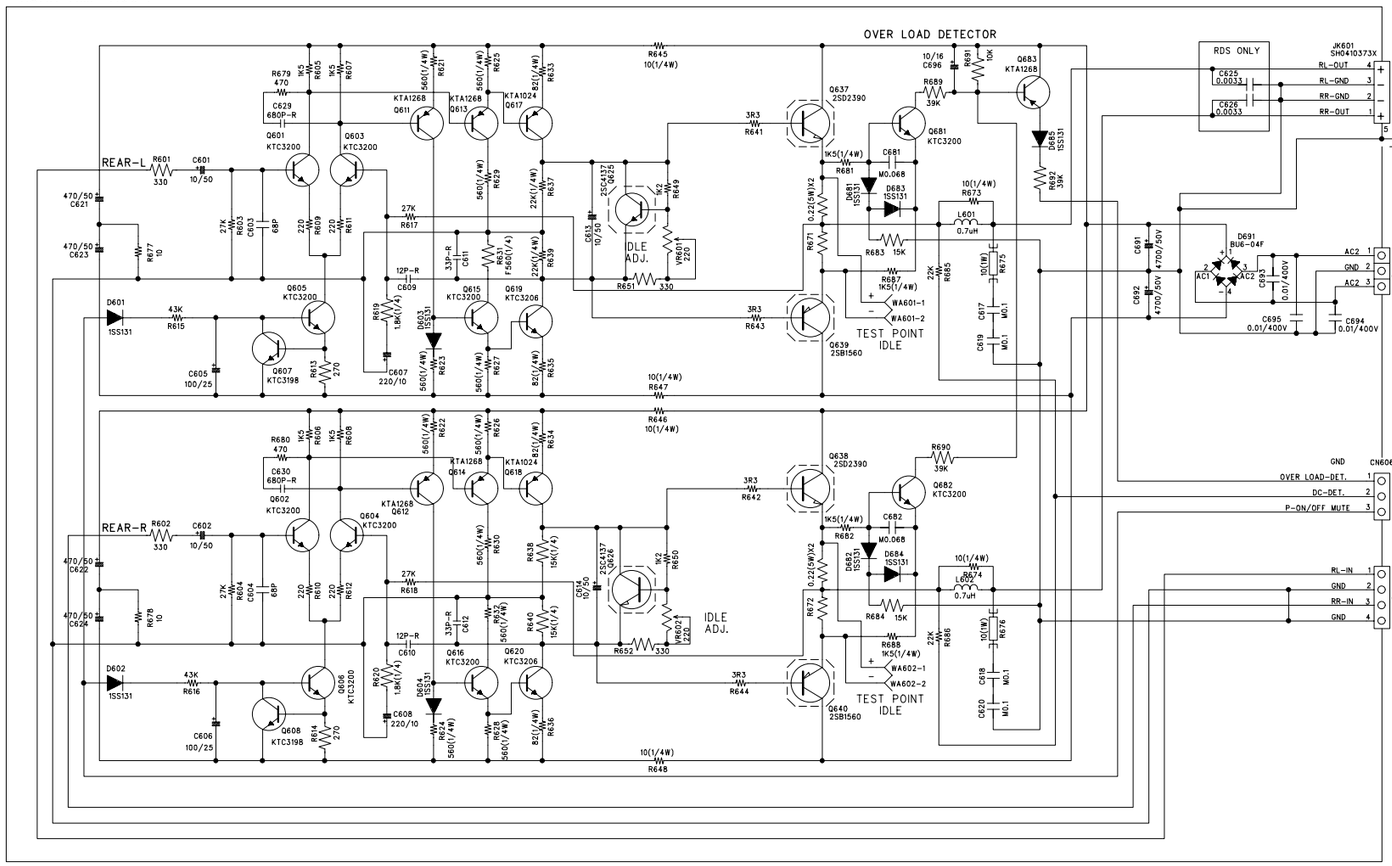
COMPANY:			
TITLE:	PROCESSOR		
DRAWN:	DATED: 2001.2.16		
CHECKED:	DATED:	CODE:	SIZE: A3 / DRAWING NO: / REV: 00
CHECKED:	DATED:		
RELEASED: K.S.SHIM	DATED:	SCALE:	SHEET: OF

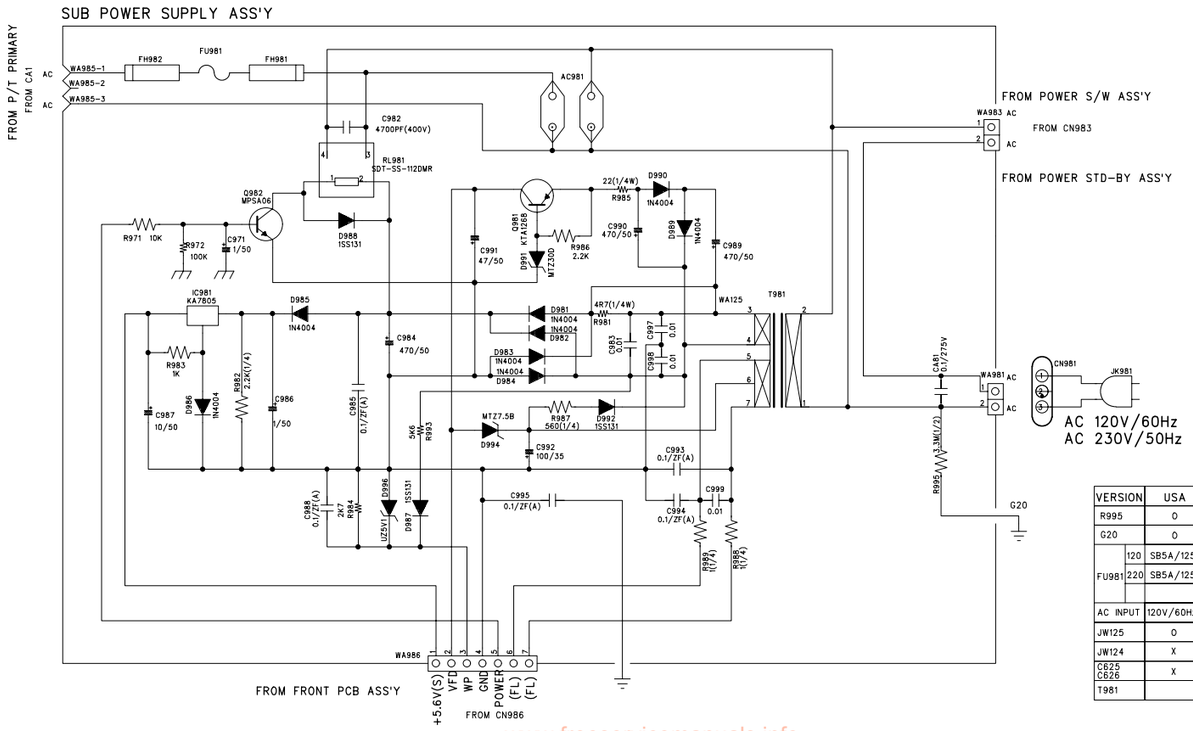
AVR120/220/2500/3500 SCHEMATIC DIAGRAM





AVR120/220/2500/3500 SURROUND AMP SCHEMATIC DIAGRAM





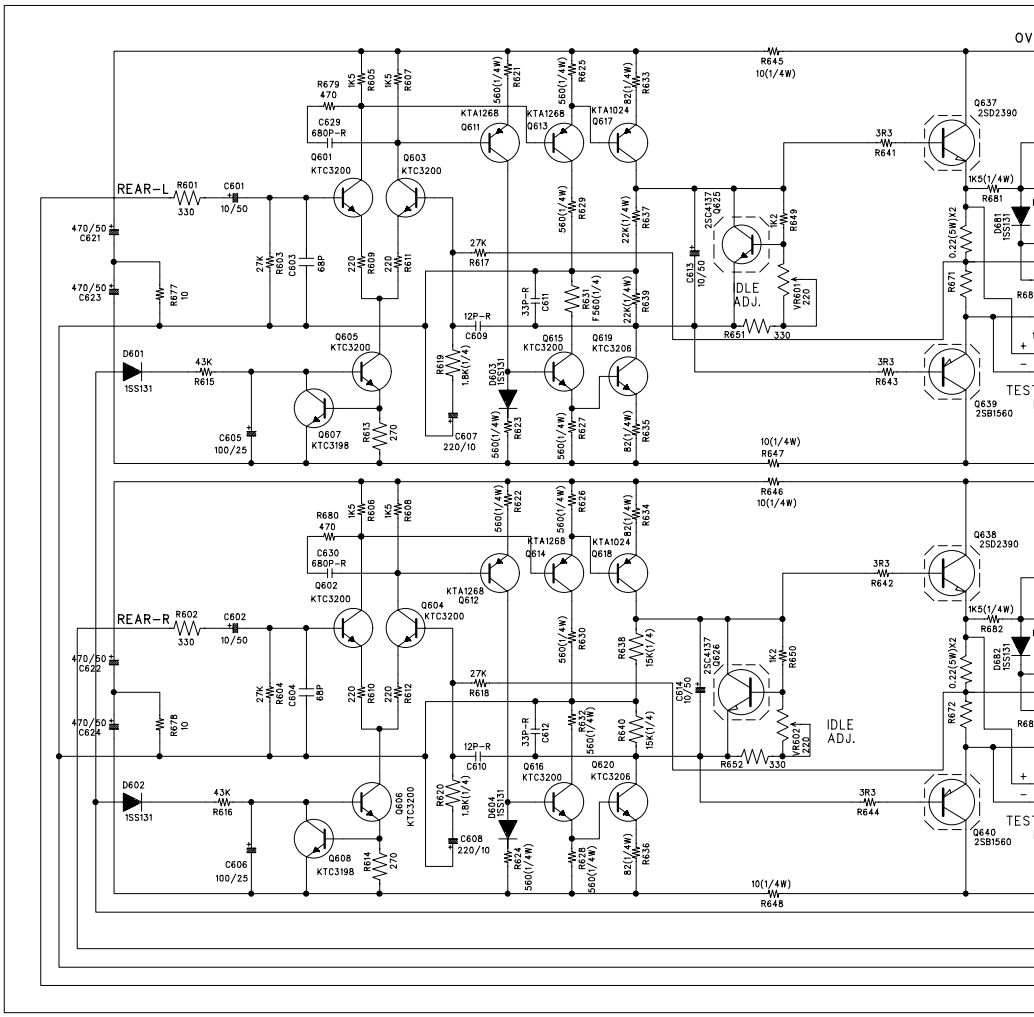
VERSION		USA	EU
R995		0	X
G20		0	X
FU981	120	SB5A/125V	T3.15A/250V
	220	SB5A/125V	T3.15A/250V
AC INPUT		120V/60Hz	230V/50Hz
JW125		0	X
JW124		X	0
C625 C626		X	0
T981			

CONFIDENTIAL/CONTROL COPY

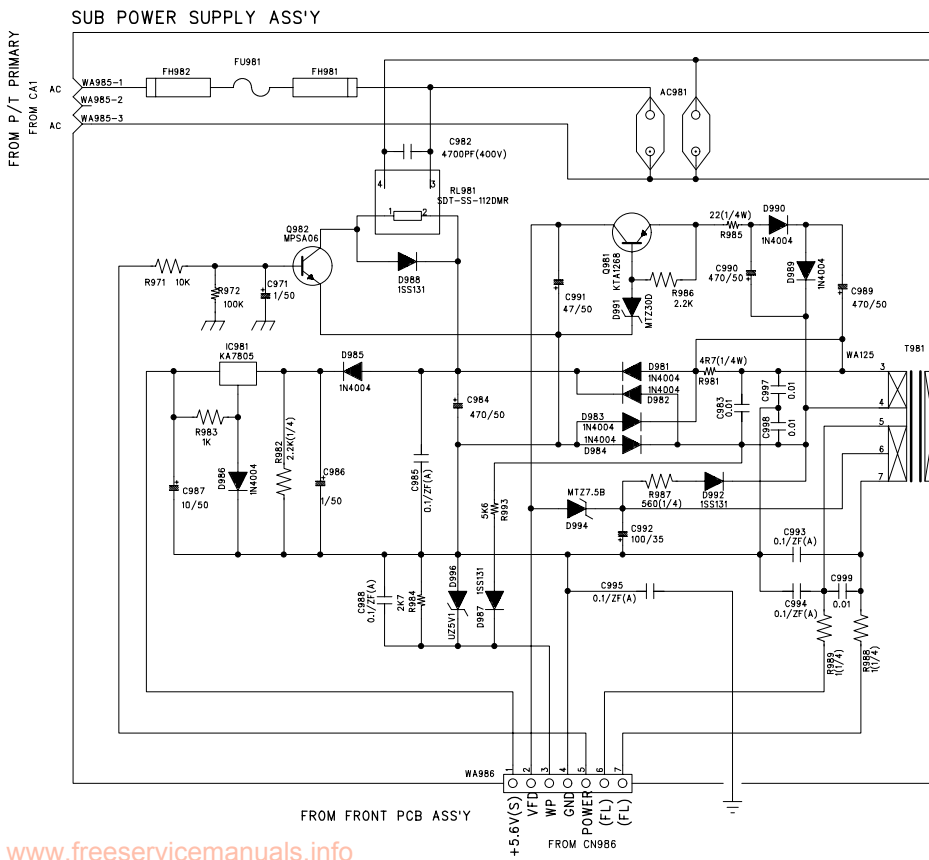
FILENAME SURROUND	CODE NO.			SHEET /
MODEL AVR120/220	DESIGN	CHKD	CHKD	APPROVAL
DESIGN DATE 01.04.15.				

AVR120/220/2500/3500 SURROUND AMP SC

REAR AMP ASS'Y

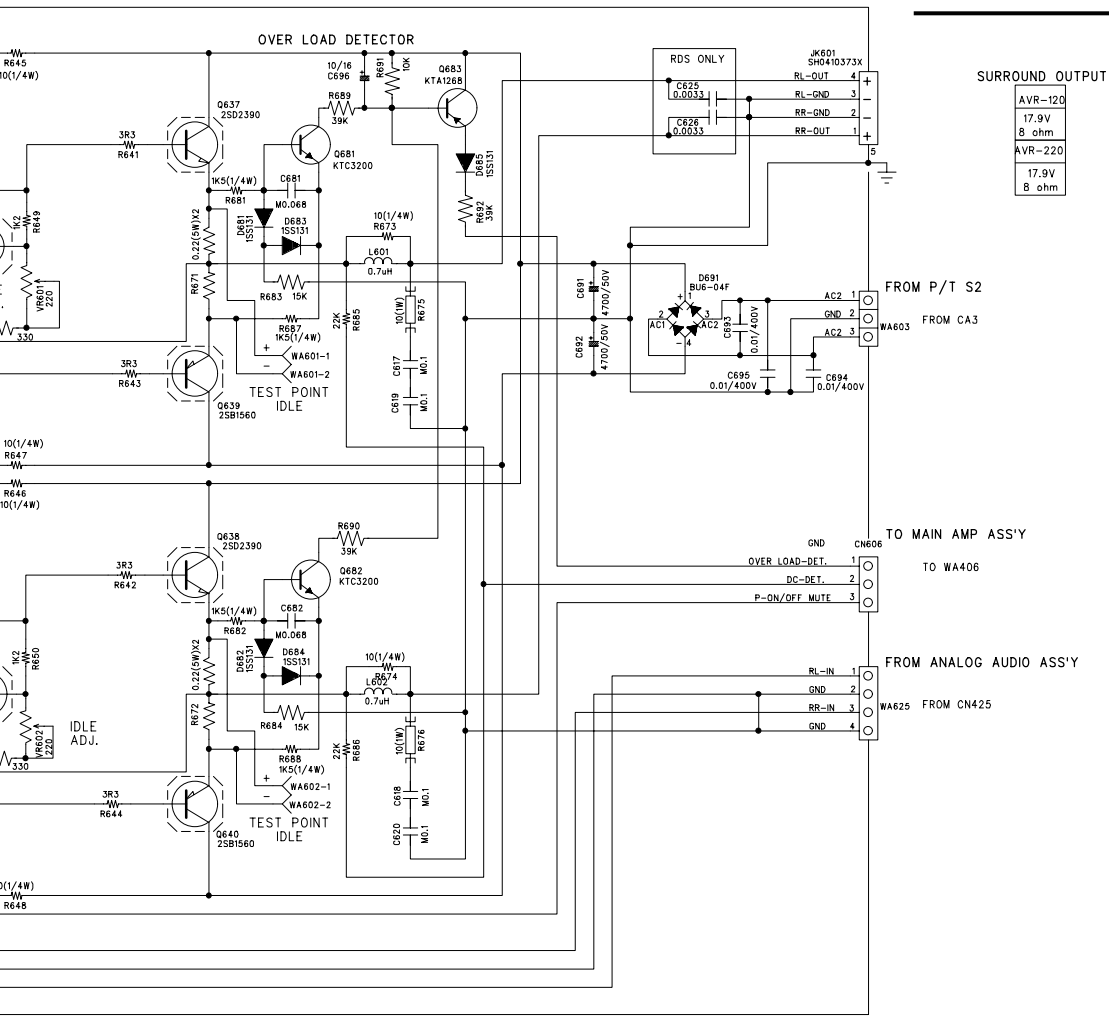


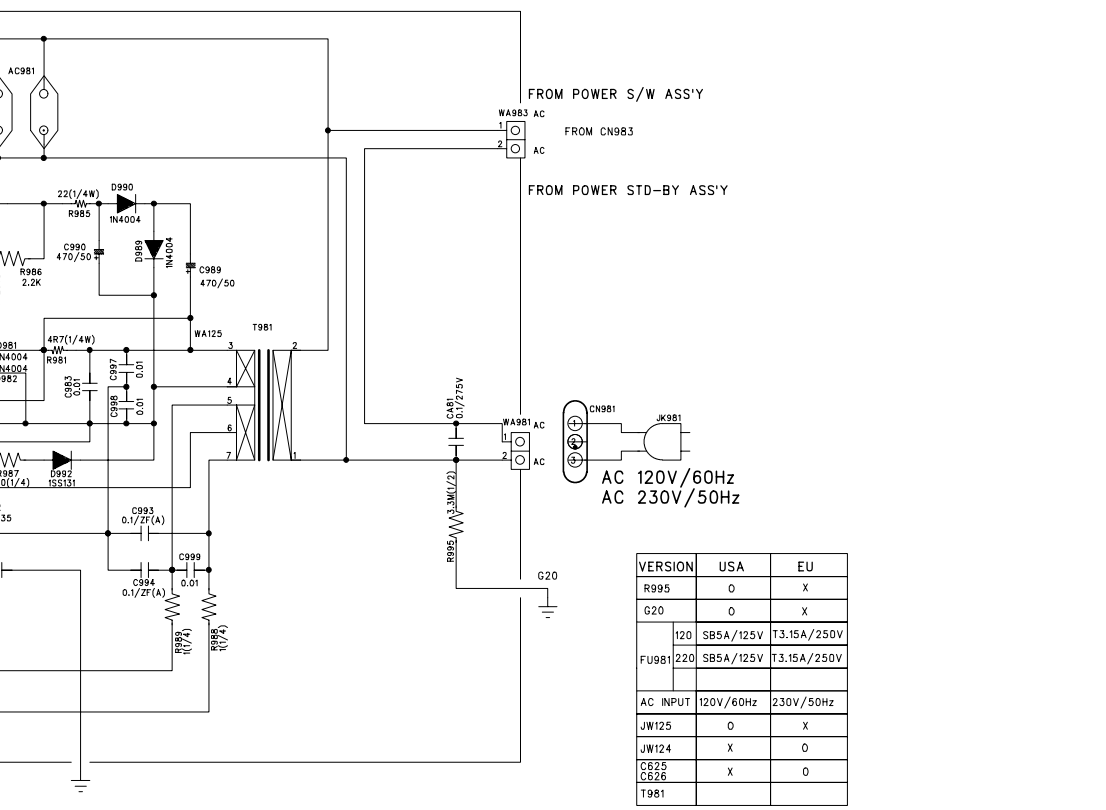
SUB POWER SUPPLY ASS'Y



AMP SCHEMATIC DIAGRAM

AVR120 harman/kardon





VERSION		USA	EU
R995		O	X
G20		O	X
FU981	120	SB5A/125V	T3.15A/250V
	220	SB5A/125V	T3.15A/250V
AC INPUT		120V/60Hz	230V/50Hz
JW125		O	X
JW124		X	O
C625 C626		X	O
T981			

CONFIDENT

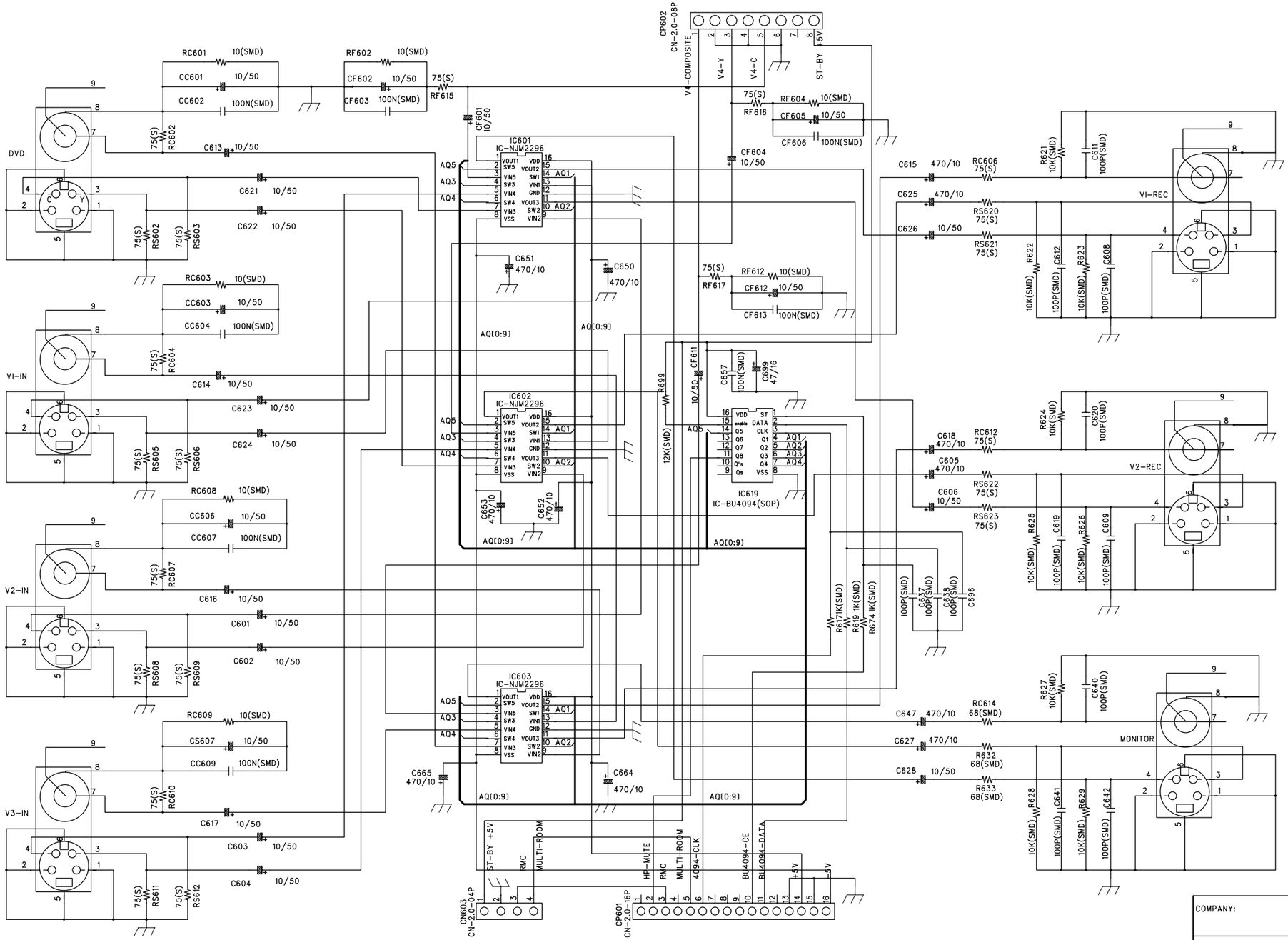
FILENAME SURROUND	CODE NO.
MODEL AVR120/220	DESIGN
DESIGN DATE 01.04.15.	

6	5	4	3	2	1

AVR120 harman/kardon

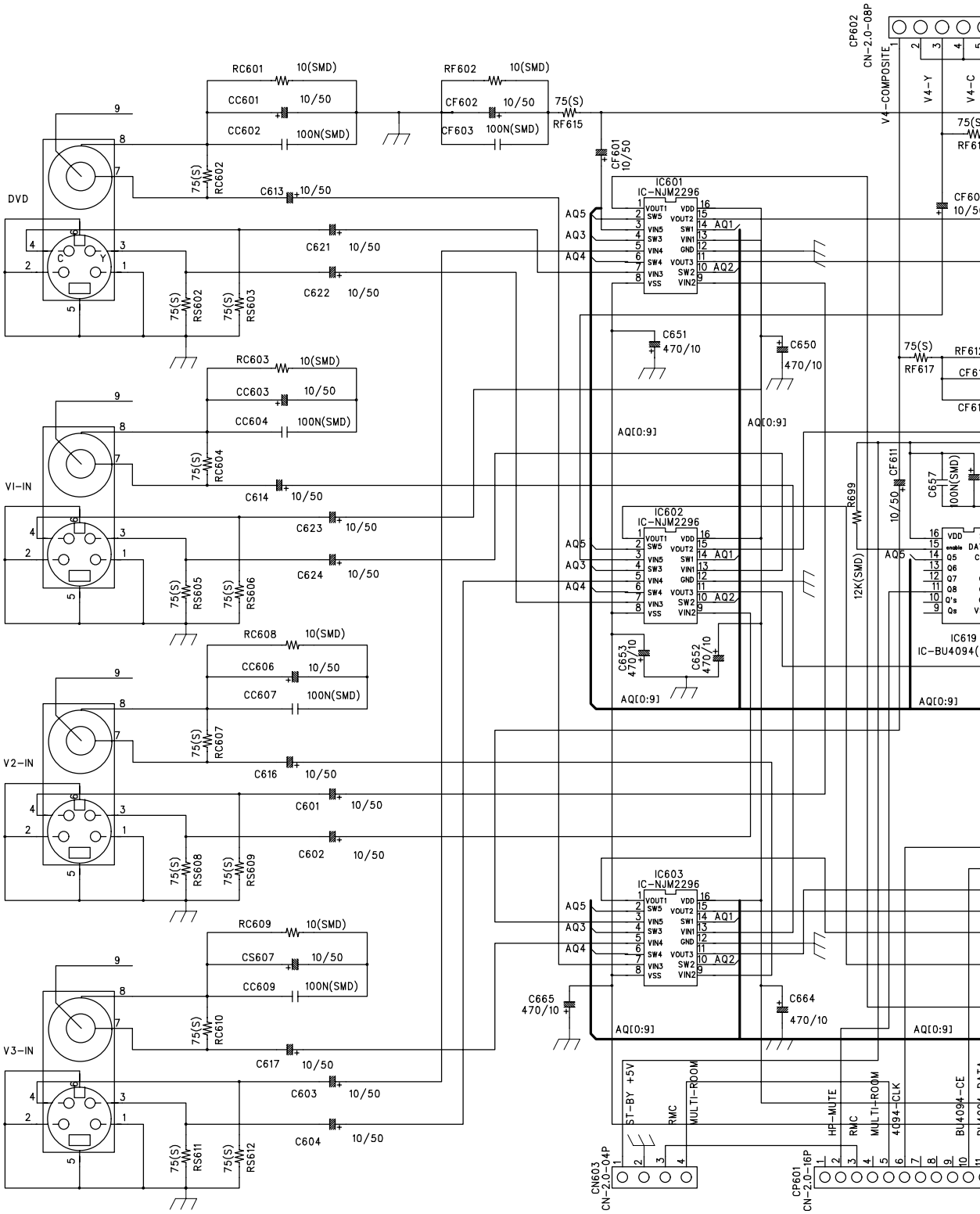
AVR120/2500 VIDEO SCHEMATIC DIAGRAM

REVISION RECORD			
LTR	ECO NO:	APPROVED:	DATE:



COMPANY:					
TITLE:					
DRAWN:	DATED:				
CHECKED:	DATED:	CODE:	SIZE:	DRAWING NO:	REV:

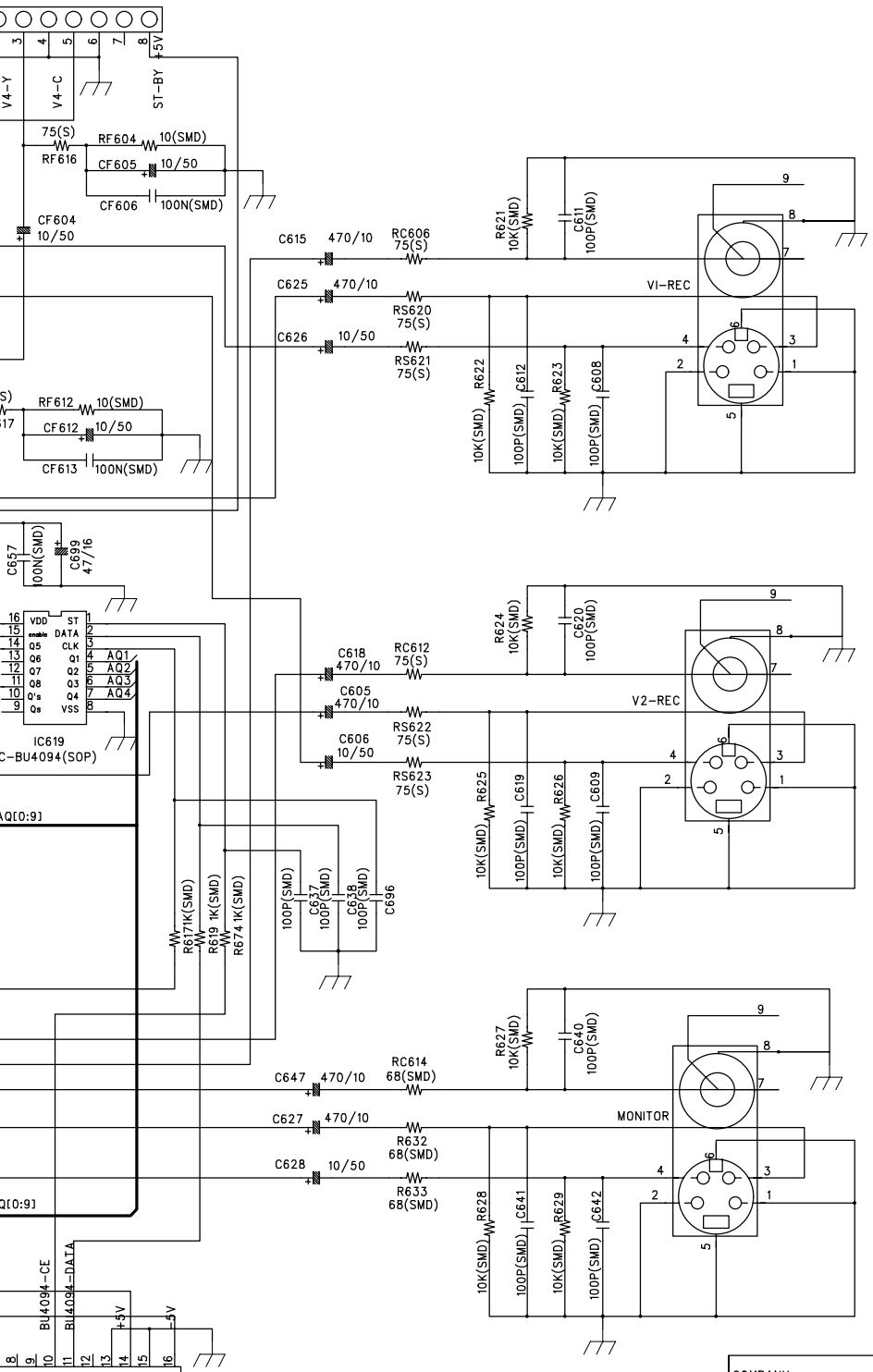
AVR120/2500 VIDEO SCHEM



AVR120 harman/kardon

REVISION RECORD		
LTR	ECO NO:	

EMATIC DIAGRAM



COMPANY:	
TITLE:	
DRAWN:	DATED:
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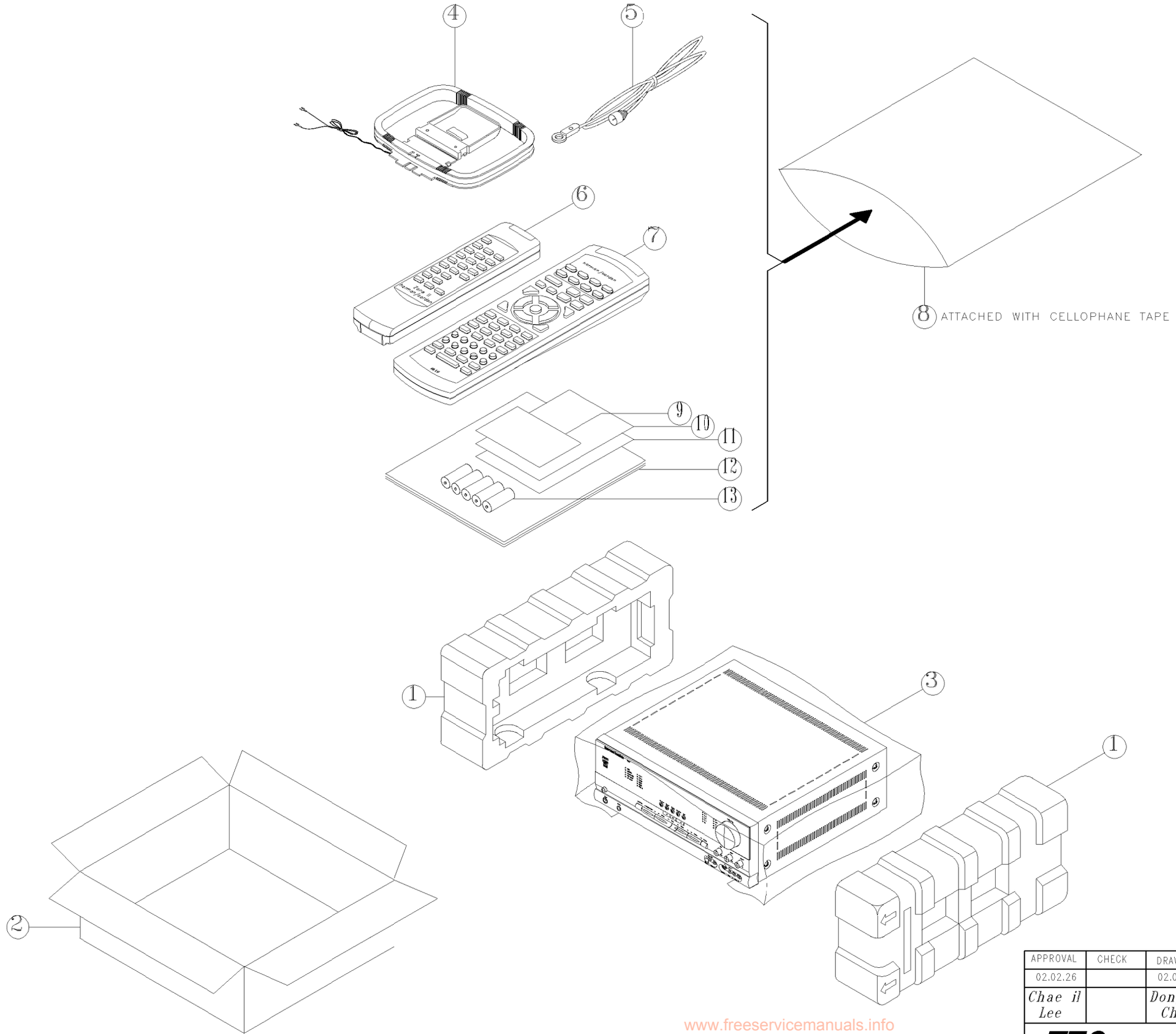
DRAWING NO:	



NO.	PARTS NO.	DESCRIPTION	AVR 520US	AVR 320US	AVR 220US	AVR 120US	AVR 5500EU	AVR 4500EU	AVR 3500EU	AVR 2500EU
1	55178610XX	CUSHION POLY	2	2	2	2	2	2	2	2
2	55178580XX	BOX CARTON AVR 520 US	1							
	55198680XX	BOX CARTON AVR 320 US		1						
	55244340XX	BOX CARTON AVR 220 US			1					
	55244330XX	BOX CARTON AVR 120 US				1				
	55247310XX	BOX CARTON AVR 5500 EU					1			
	55247300XX	BOX CARTON AVR 4500 EU						1		
	55243020XX	BOX CARTON AVR 3500 EU							1	
	55243010XX	BOX CARTON AVR 2500 EU								1
3	55170660XX	SHEET PE 0.5t	1	1	1	1	1	1	1	1
4	55127490XX	AM ANTENNA LOOP	1	1	1	1	1	1	1	1
5	55127460XX	FM ANTENNA 75 EU					1	1	1	1
	55127450XX	FM ANTENNA 75 US	1	1	1	1				
6	55178550XX	ASS'Y REMOCON ZONE II	1	1			1	1		
7	55178540XX	ASS'Y REMOCON AVR 520 US	1							
	55194410XX	ASS'Y REMOCON AVR 320 US		1						
	55244360XX	ASS'Y REMOCON AVR 220 US			1					
	55244350XX	ASS'Y REMOCON AVR 120 US				1				
	55262330XX	ASS'Y REMOCON AVR 5500 EU					1			
	55262320XX	ASS'Y REMOCON AVR 4500 EU						1		
	55242990XX	ASS'Y REMOCON AVR 3500 EU							1	
	55242980XX	ASS'Y REMOCON AVR 2500 EU								1
8	55164890XX	POLY BAG PE 0.05t	1	1	1	1	1	1	1	1
9	55178720XX	CARD POST PAPER	1	1	1	1				
10	55178740XX	CADR WARRANTY PAPER	1	1	1	1	1	1	1	1
11	55178770XX	SAFETY LEAFLET PAPER	1	1	1	1	1	1	1	1
12	55180380XX	MANUAL AVR 520 US	1							
	55198690XX	MANUAL AVR 320 US		1						
	55244450XX	MANUAL AVR 220 US			1					
	55244440XX	MANUAL AVR 120 US				1				
	55247330XX	MANUAL AVR 5500 EU					1			
	55247320XX	MANUAL AVR 4500 EU						1		
	55243040XX	MANUAL AVR 3500 EU							1	
	55243030XX	MANUAL AVR 2500 EU								1
13	55020220NR	BATTERY 1.5V AAA	3	3	3	5	3	3	5	5
	55178380XX	LABEL BARCODE AVR 520 US	2							
	55198670XX	LABEL BARCODE AVR 320 US		2						
	55244410XX	LABEL BARCODE AVR 220 US			2					
	55244380XX	LABEL BARCODE AVR 120 US				2				
	55247290XX	LABEL BARCODE 5500 EU					2			
	55247280XX	LABEL BARCODE 4500 EU						2		
	55242960XX	LABEL BARCODE 3500 EU							2	
	55242950XX	LABEL BARCODE 2500 EU								2

APPROVAL	CHECK	DRAWING	DESIGN	MODEL		PARTS NAME	PACKING DRAWING
02.02.26		02.02.26		SCALE	TOLERANCE		
Chae il Lee		Dong il Choi		N / S	LESS; ±	MODEL NO.	AVR 520/320/220/120 US
				UNIT	LESS; ±		AVR5500/4500/3500/2500 EU