harman/kardon Service Manual

DVD 26/230
DVD 28/230

DVD players (technically identical to DVD 29 and DVD 37)

CONTENTS

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ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity . Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD 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 ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly .
3. Use only a grounded-tip soldering iron to solder or unsolder ESD 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 ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will by installed.

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

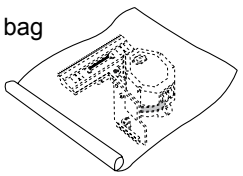
SERVICING PRECAUTIONS

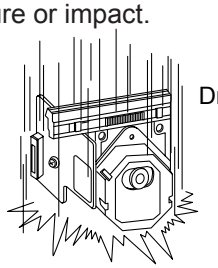
NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

1) The pick-up should always be left in its conductive bag until immediately prior to use.
2) The pick-up should never be subjected to external pressure or impact.

Storage in conductive bag

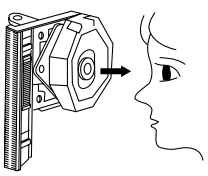




Drop impact

2. Repair notes

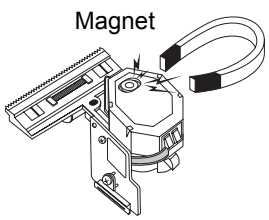
1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
2) The pick-up should always be handled correctly and carefully , taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation
screws should absolutely never be touched.
4) Laser beams may damage the eyes!
Absolutely never permit laser beams to enter the eyes!
Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.

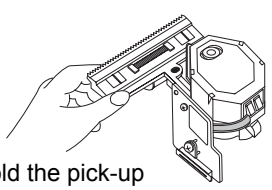


NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

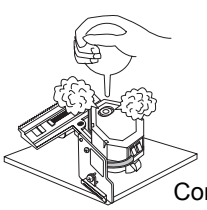
5) Cleaning the lens surface
If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cot - ton swab should be used, taking care not to distort this.

Magnet



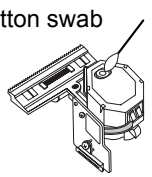


How to hold the pick-up



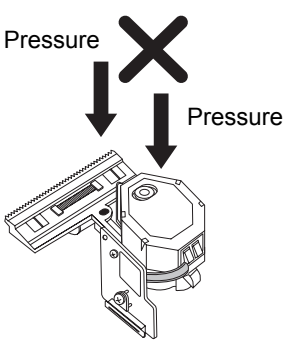
Conductive Sheet

Cotton swab



Pressure

Pressure



6) Never attempt to disassemble the pick-up.
Spring by excess pressure. If the lens is extremely dirty , apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

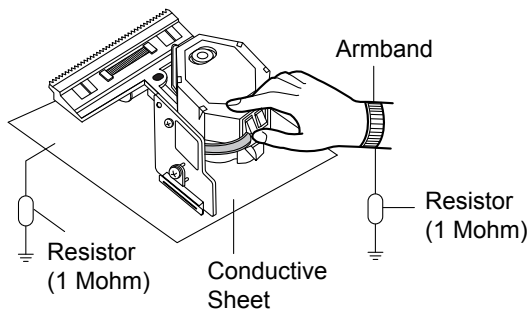
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

1) Before replacing a component part, first disconnect the power supply lead wire from the unit
2) All equipment, measuring instruments and tools must be grounded.
3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity .)
4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
5) Workers should be grounded by an armband (1M Ω)
6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



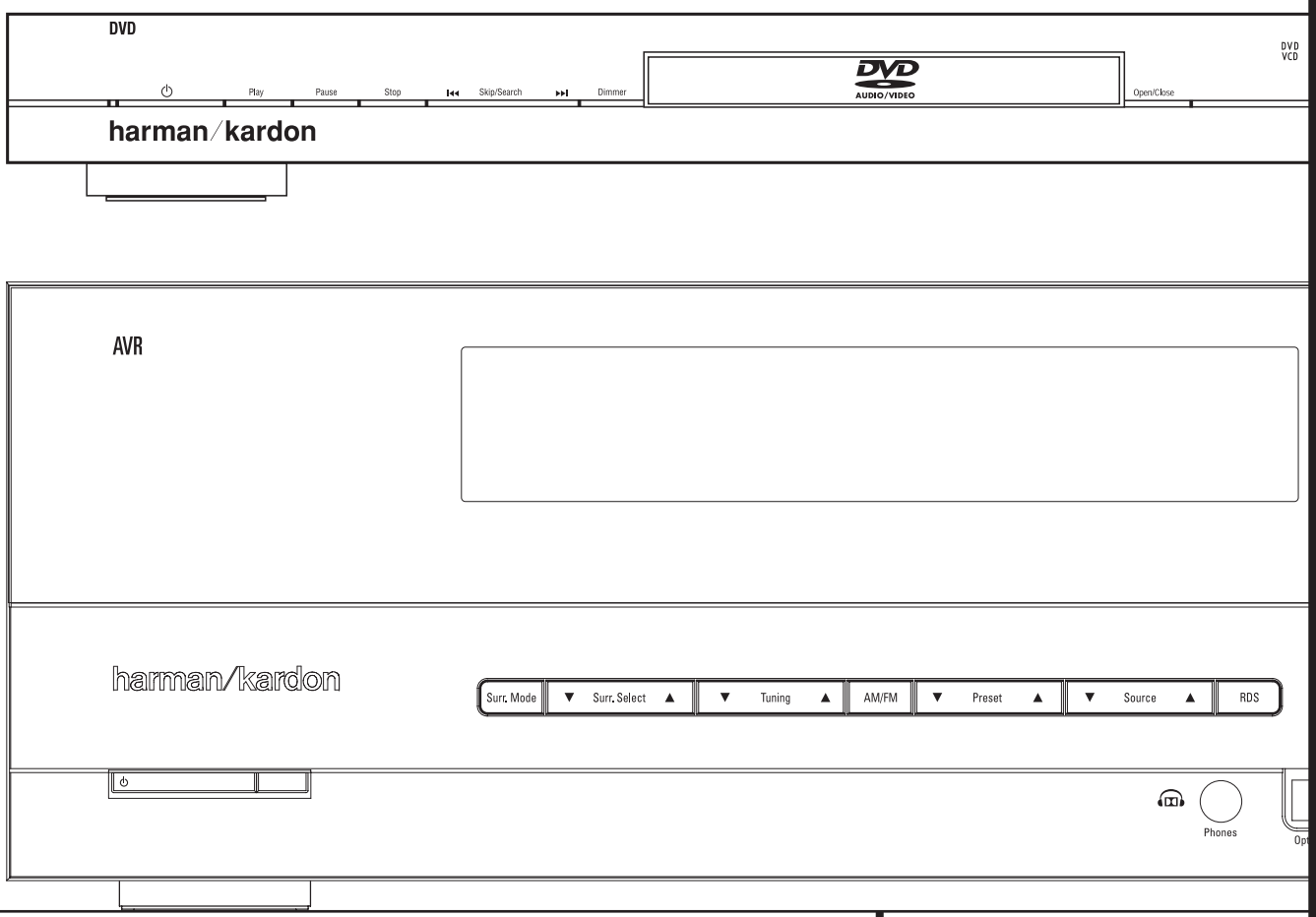
ENGLISH

AVR/DVD System

AVR Audio/Video Receiver
DVD Digital Versatile Disc Player

This owner's manual covers any combination of AVR 139, AVR 141, DVD 26 and DVD 28.

OWNER'S MANUAL



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Designed to Entertain™

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DECLARATION OF CONFORMITY

CE

We, Harman Consumer Group International
2, route de Tours
F-72500 Château-du-Loir
France

declare in own responsibility, that the product described in this owners manual is in compliance with technical standards:

EN55013(2001) & + A2(2006)
EN55020(2002) & + A2(2005)
EN60065:2002
EN61000-3-2(2000)+A2(2005)
EN61000-3-3 (1995)+A1(2001)+A2(2005)
EN61000-4-2(1995) & + A1(1998) & + A2(2001)
EN61000-4-3(2002) & + A1(2002)
EN61000-4-4(2004)

Jurjen Amsterdam
Harman Consumer Group Inc.
03/09

Typographical Conventions

In order to help you use this manual with the remote control, front-panel controls and rear-panel connections, certain conventions have been used.

Example – (bold type) indicates a specific remote control or front-panel button, or rear-panel connection jack

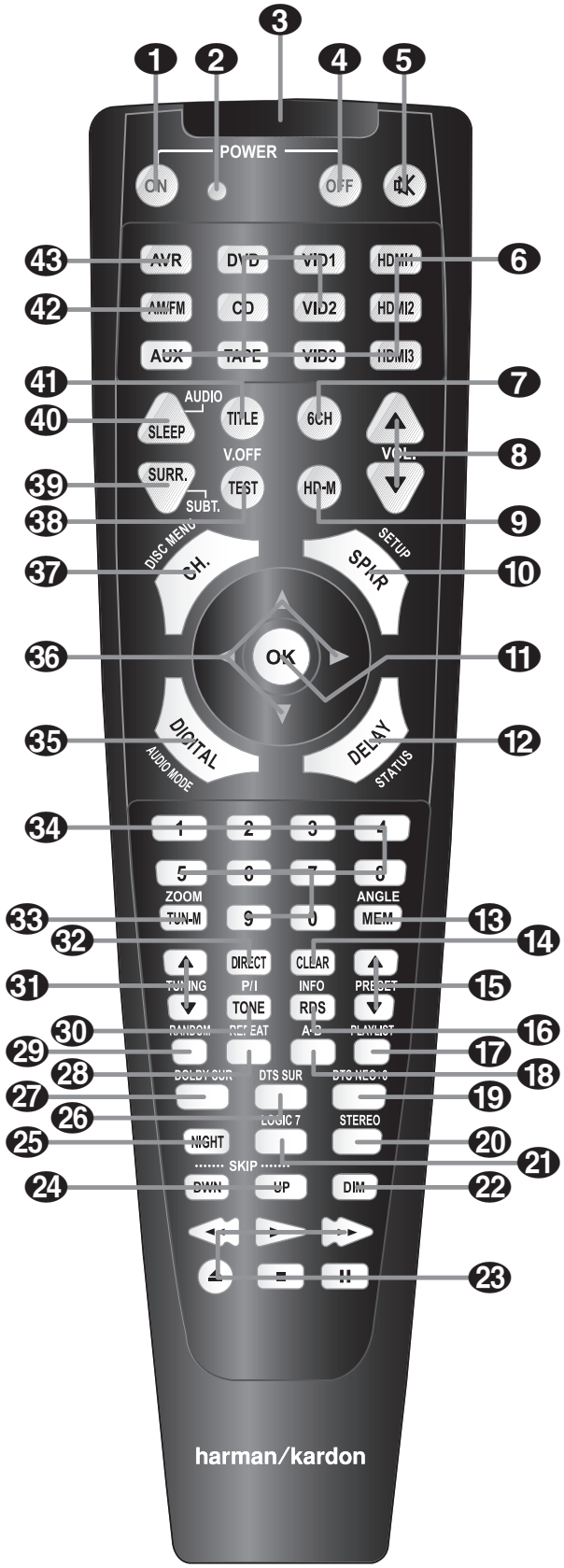
EXAMPLE – (OCR type) indicates a message that is visible on the front-panel information display

1 – (number in a square) indicates a specific front-panel control

❶ – (number in a circle) indicates a rear-panel connection

❶ – (number in an oval) indicates a button or indicator on the remote.

Remote Control Functions for Receiver and DVD Player System



1. Power On Button
2. Not active
3. IR Transmitter Window
4. Power Off Button
5. Mute
6. Input Selectors
7. 6-Channel Direct Input
8. Volume Up/Down
9. HD Mode Selector
10. Speaker Select/Setup
11. OK Button
12. Delay/Status Button
13. Memory/Angle Button
14. Clear Button
15. Preset Up/Down
16. RDS Select/Info Button
17. Playlist
18. A-B
19. DTS Neo:6 Mode Selector
20. Stereo Mode Selector
21. Logic 7 Selector
22. Dim Button
23. Transport Buttons
24. Skip Up/Down Buttons (DWN)/(UP)
25. Night Mode
26. DTS Digital Mode Selector
27. Dolby Mode Selector
28. Repeat
29. Random
30. Tone Mode/Progressive Scan/Interlaced Button
31. Tuning Up/Down
32. Direct Button
33. Tuner Mode/Zoom
34. Numeric Keys
35. Digital Select/Audio Mode
36. Navigation Buttons
37. Channel Select /Disc Menu Button
38. V.OFF/Test Button
39. Surround Mode Selector/Program Down/ Subtitle Button
40. Sleep/Program Up/Audio Select Button
41. Title
42. AM/FM Tuner Select
43. AVR Selector

Remote Control Functions, common for AVR and DVD

IMPORTANT NOTE: The combined AVR and DVD remote has some buttons that perform different functions. If you press the **AVR Button** 43, one set of functions is active, identical to the functions for buttons CD, Tape, Video 1/2/3. If you press the **DVD/HDMI1 Button** 6, some of the buttons change their function as indicated above the button itself, and explained below. Refer to the function table for an overview of functions in both modes. NOTE that pressing the **HDMI1** and **DVD** Buttons 6 activate the alternative commands as seen in the Function List on page 7.

1 **Power On Button**: Press this button to turn on the power to the AVR or the DVD selected by pressing either the **AVR** or the **DVD/HDMI1 Button** 43 or 6.

2 **This indicator is not active**.

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

4 **Power Off Button**: Press this button to place the AVR or a selected device unit in the Standby mode. If held for more than 3 seconds, both the AVR and the DVD switch to Standby.

5 **Mute**: Press this button to momentarily silence the AVR or TV set being controlled, depending on which device has been selected.

6 **Input Selectors**: Pressing one of these buttons will perform three actions at the same time. First, if the AVR 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. Finally, the DVD/HDMI1 Button will switch the double-function remote buttons to their DVD functions. After pressing the DVD/HDMI1 Button, you must press the **AVR Selector button** 43 again to operate all the AVR's functions with the remote. Note that pressing the DVD Button switches on BOTH the AVR and the DVD, whereas pressing the AVR Button just switches on the AVR.

7 **6-Channel Direct Input**: Press this button to select the component connected to the **6-Channel Direct Input** 24 as the audio. Note that when you wish to use the Six Channel Direct Input in conjunction with a video source, you must first select the video source by pressing one of the **Input Selectors** 6. Then press this button to choose the **6-Channel Direct Input** 24 as the audio source.

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

9 **HD Mode Selector (DVD)**: When the DVD player is connected to a video display using the **HDMI Output** 11, the display sends information to the DVD indicating the highest video resolution it is capable of handling, and the DVD automatically sets the video output to match it. Pressing this button allows you to manually change the output resolution, with your selection indicated by the **Video Output Indicators** O.

The DVD will not allow you to select a resolution beyond the capabilities of your display, and if you try to do so, an on-screen error message will appear to alert you to the selection of an incompatible video format. Changes made with this button remain active until the DVD or the display is turned off. When either is turned off, and then on again, the DVD will revert to the default setting transmitted by the display.

10 **Speaker Select/Setup**: Press this button to begin the process of configuring the AVR's Bass Management System for use with the type of speakers used in your system. Once the button has been pressed, use the ▲▼ buttons 36 to select the channel you wish to set up. Press the **OK** button 11 and then select the speaker type (see page 14 for more information.)

For DVD: Press this button to use the DVD's on-screen menu system to adjust the player's configuration settings. Note that the **Info Button** 7 must be pressed to access the DVD's Information menu to obtain detailed disc information, and to configure the playback mode of the disc.

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

12 **Delay/Status Button**: Press this button to begin the process for setting the delay times used by the AVR when processing surround sound. After pressing this button, the delay times are entered by pressing the **OK** button 11 and then using the ▲▼ buttons 36 to change the setting. Press the Set button again to complete the process. (See page 16 for more information.)

For DVD: Press while a disc is playing to view banner display. Use the ARROW buttons to move through the different features in the Banner Display. When a symbol is highlighted, press OK on the remote to select it.

13 **Memory/Angle Button**: Press this button to enter a radio station into the AVR's preset memory. Two underline indicators will flash at the right side of the **Main Information Display** 16, you then have five seconds to enter a preset memory location using the **Numeric Keys** 34. (See page 22 for more information.)

For DVD: Press to access various camera angles on a DVD (If the DVD contains multiple camera angles) or to rotate JPEG images.

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

15 **Preset Up/Down**: When the tuner is in use, press these buttons to scroll through the stations programmed into the AVR's memory. When CD or DVD is selected using the **Input Selector button** 6, these buttons may function as Slow Fwd/Rev (DVD) or "+10" (CD).

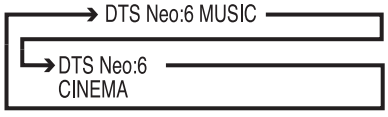
16 **RDS Select/Info (DVD) Button**: Press this button to display the various messages that are part of the RDS data system of the AVR's tuner. (See page 22 for more information on RDS).

For DVD: Press for detailed informations on the disc playing (Video/Audio Bit rate, Movie aspect ratio and others), and for current player settings made. Note that the unit doesn't react on any transport button as long as the info menu is displayed. Press again to remove information from screen.

17 **Playlist (DVD)**: Press this button to change the playback order of the disc.

18 **A-B (DVD)**: Press to select section A-B and to play repeatedly.

19 **DTS Neo:6 Mode Selector**: Pressing this selector button cycles the AVR through the various DTS Neo:6 modes, which extract a five-channel surround field from two-channel program material (from PCM source or analog input signal). The first press selects the last DTS Neo:6 surround mode that was in use, and each subsequent press selects the next mode in the following order:



Remote Control Functions, common for AVR and DVD

⑳ **Stereo Mode Selector**: Press this button to select a stereo playback mode. When the button is pressed so that DSP SURR OFF appears in the **Main Information Display** 16, the AVR will operate in a bypass mode with true fully analog, two-channel left/right stereo mode with no surround processing or bass management as opposed to other modes where digital processing is used. When the button is pressed so that SURROUND OFF appears in the **Main Information Display** 16, you may enjoy a two-channel presentation of the sound along with the benefits of bass management. When the button is pressed so that 5 CH STEREO appears, the stereo signal is routed to all five speakers, if installed.(See page 15 for more information on stereo playback modes).

㉑ **Logic 7 Selector**: Press this button to select one of the available Logic 7 surround modes. (See page 19 for the available Logic 7 options).

㉒ **Dim Button**: Press this button to activate the Dimmer function, which reduces the brightness of the front panel display, or turn it off entirely. The first press of the button shows the default state, which is full brightness by indicating VFD FULL in the **Main Information Display** 16. Press the button again within five seconds to reduce the brightness by 50%, as indicated by VFD HALF. Press the button again within five seconds and the main display will go completely dark. Note that this setting is temporary; the display will always return to full brightness when the AVR is turned on. In addition,both the **Power Indicator** 3 and the blue accent lighting inside the volume control will always remain at full brightness regardless of the setting. This is to remind you that the AVR is still turned on.

㉓ **Transport Buttons**: These buttons operate the DVD player.

㉔ **Skip Up/Down Buttons (DVD)**:

(**DWN**): Press to go to beginning of current track. Press again quickly to go to beginning of previous track. After pressing the **PAUSE** button, each press of this button will move the image in reverse frame by frame.

(**UP**): Press to go to beginning of next track. After pressing the **PAUSE** button, each press of this button will move the image forwards frame by frame.

㉕ **Night Mode**: Press this button to activate the Night mode. This mode is available only with Dolby Digital encoded digital sources, and it preserves dialog (center channel) intelligibilty at low volume levels (See page 16 for more information).

㉖ **DTS Digital Mode Selector**: When a DTS source is in use the AVR will select the appropriate mode automatically and no other mode will be available. Pressing this button will display the mode currently selected by the AVR´s decoder, depending on the surround material played and the speaker setting.

㉗ **Dolby Mode Selector**: This button is used to select one of the available Dolby Surround processing modes. Each press of this button will select one of the Dolby Pro Logic II modes, Dolby 3 Stereo or Dolby Digital. Note that the Dolby Digital mode is only available with a digital input selected and the other modes only as long as a Dolby Digital source is not playing.

㉘ **Repeat (DVD)**: Each press of this button changes the playback mode to repeat a chapter or track or the entire disc. A repeat icon will appear in the upper right corner of the screen indicating the current repeat mode. If the Player Information Screen is active, the changes will be displayed on screen.

㉙ **Random (DVD)**: Press for RANDOM playback in random order.

㉚ **Tone Mode/Progressive Scan/Interlaced Button**: 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** 16, the settings of the **Bass** and **Treble** controls will affect the output signals. When the button is pressed so that the words TONE OUT appear in the **Main Information Display** 16, the output signal will be "flat," without any bass or treble alteration.

For DVD: Press this button to change the resolution of the Component Video Output between standard definition and progressive definition (PAL interlaced and PAL progressive; NTSC interlaced and NTSC progressive).
The new setting will become effective after quitting the Setup menu.

㉛ **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 ㉝ has been pressed or the **Band** button 9 on the front panel was held pressed so that AUTO appears in the **Main Information Display** 16, pressing either of the buttons will cause the tuner to seek the next station with acceptable signal strength for quality reception. When the MANUAL appears in the **Main Information Display** 16, pressing these buttons will tune stations in single-step increments. (See page 22 for more information).

㉜ **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** ㉞ to select a station (See page 22 for more information on the tuner).

㉝ **Tuner Mode/Zoom**: Press this button when the tuner is in use to select between automatic tuning and manual tuning. When the button is pressed so MANUAL appears in the **Main Information Display** 16, pressing the **Tuning** buttons ㉛ 8 will move the frequency up or down in single-step increments. When the FM band is in use and AUTO appears in the **Main Information Display** 16, pressing this button will change to monaural reception making even week stations audible. (See page 22 for more information.)

When a DVD or VCD is playing, press this button to zoom the picture so that it is enlarged. There are 4 steps to the zoom function, each progressively larger. Press through each of the zoom stages to return to a normal picture.

㉞ **Numeric Keys**: These buttons serve as a ten-button numeric keypad to enter tuner preset positions. For DVD play you may enter track numbers directly, followed by OK to go to the track.

㉟ **Digital Select/Audio Mode**: Press this button to assign one of the digital inputs 5 17 ⑩ ㉒ to a source. (See page 12 for more information on using digital inputs.) **Audio Mode**: When operating the DVD, press this button to switch between Audio Modes.

㊱ **Navigation Buttons**: These are multi-purpose buttons. They will be used most frequently to select a surround mode. These buttons are also used to increase or decrease output levels when configuring the unit, to select speaker configuration or to select the digital inputs.

㊲ **Channel Select /Disc Menu Button**: This button is used to start the process of setting the AVR's output levels with an external source. Once this button is pressed, use the ▲▼ buttons ㊱ to select the channel being adjusted, then press the **OK** button ⑪, followed by the ▲▼ buttons again, to change the level setting. (See page 21 for more information.)

DVD Disc Menu: Displays the actual DVD Disc Menu on the TV screen in play mode. When playing discs with JPEG images, pressing this button will access the thumbnails.

㊳ **V.OFF/Test Button**: Press to turn off video output for improved performance from audio-only discs. Press again to restore video output.

Tone: Press this button to begin the sequence used to calibrate the AVR's output levels. (See page 16 for more information on calibrating the AVR).

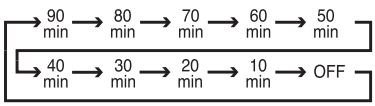
Remote Control Functions, common for AVR and DVD

㊴ Surround Mode Selector/Program Down/ Subtitle Button: Press this button to begin the process of changing the surround mode. After the button has been pressed, use the ▲▼ buttons ㊱ to select the desired surround mode. (See page 18 for more information).

When a DVD is playing, press to select a subtitle language or to turn subtitles off.

Note: Due to the variations in how DVD discs are authored, the subtitle languages selected with the Subtitle Button may not accurately reflect the actual languages available on the disc. It is recommended that subtitles be selected using the disc's menu.

㊵ Sleep/Program Up>/Audio Select Button: Press this button to place the unit in the Sleep mode. After the time shown in the display, the AVR will automatically go into the Standby mode. Each press of the button changes the time until turn-off in the following order:



Hold the button pressed for two seconds to turn off the Sleep mode setting.

Note that this button is also used to change channels on your TV, VCR and SAT receiver when selected.

DVD: Press to access various audio languages on a DVD (If the DVD contains multiple audio streams).

㊶ Title: When a disc is playing, press to make the player go back to the first section of the disc. If you are playing a DVD-Audio disc that contains other formats the DVD is capable of playing, such as linear PCM or Dolby Digital 5.1, pressing this button may enable you to switch playback from one audio format to another.

㊷ AM/FM Tuner Select: Press this button to select the AVR's tuner as the listening choice. Pressing this button when the tuner is in use will select between the AM and FM bands.

㊸ AVR Selector: Pressing this button will switch the remote so that it will operate the AVR's functions. If the AVR is in the Standby mode, it will also turn the AVR on.

Function List

Button Name	HK AVR Remote Command AVR/TAPE/CD/AUX/VID1/VID2/VID3/HDMI2/HDMI3	HK DVD Remote Command DVD/HDMI1
Power ON	Power On	Power On
Power OFF	Power Off (press and release)	Power Off (press and release)
	Power Off (press and hold)	Power Off (press and hold)
Mute	Mute	Mute(AVR)
AVR	AVR Power On	AVR(AVR)
DVD	DVD	DVD(AVR)
VID1	VID 1	VID 1(AVR)
HDMI1	HDMI 1	HDMI 1(AVR)
AM/FM	AM/FM	AM/FM(AVR)
CD	CD	CD(AVR)
VID2	VID 2	VID 2(AVR)
HDMI2	HDMI 2	HDMI 2(AVR)
AUX	AUX	AUX(AVR)
TAPE	TAPE	TAPE(AVR)
VID3	VID 3	VID 3(AVR)
HDMI3	HDMI 3	HDMI 3(AVR)
SLEEP / AUDIO	Sleep	Audio
TITLE		Title
6CH	6CH	6CH(AVR)
VOL Up	Vol Up	Vol Up(AVR)
SURR. / SUBT.	Surround Mode	Subtitle
TEST / V.OFF	Test Tone	Video Off
HD-M		HD Mode
VOL Down	Vol Down	Vol Down(AVR)
CH. / DISC MENU	Channel Select	Disc Menu
SPKR / SETUP	Speaker Select	Setup
Level+/Up	Level+/Up	Up
Left M	Left	Left
OK	SET	Enter
Right N	Right	Right
Level-/Down	Level-/Down	Down
DIGITAL / AUDIO MODE	Digital Select	Audio Mode
DELAY / STATUS	Delay	Status
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
TUN-M / ZOOM	Tuner Mode	Zoom
9	9	9
0	0	0
MEM / ANGLE	Memory	Angle
TUNING Up	Tuning Up	
DIRECT	Direct Tuning	
CLEAR	Clear	Clear
PRESET Up	Preset Up	Slow Up
TUNING Down	Tuning Down	
TONE / P/I	Tone Mode	P/I
RDS / INFO	RDS	Info
PRESET Down	Preset Down	Slow Down
RANDOM		Random Play
REPEAT		Repeat Play
A-B		A-B Repeat Play
PLAYLIST		Playlist
DOLBY SUR	Dolby Surround	Dolby Surround(AVR)
DTS SUR	DTS Surround	DTS Surround(AVR)
DTS NEO:6	DTS NEO:6	DTS NEO:6(AVR)
NIGHT	Night Mode	Night(AVR)
LOGIC 7	Logic7	Logic7(AVR)
STEREO	Stereo	Stereo(AVR)
SKIP DOWN	Skip Down(DVD)	Skip Down
SKIP UP	Skip Up(DVD)	Skip Up
DIM	Dimmer	Dimmer
Rew(G)	Rew(DVD)	Rew
Play(B)	Play(DVD)	Play
FF(H)	FF(DVD)	FF
Open/Close	Open/Close(DVD)	Open/Close
Stop	Stop(DVD)	Stop
Pause	Pause(DVD)	Pause

Features

High quality video

- High Definition Multimedia Interface (HDMI) for a single wire, digital connection to your HD-Ready screen.
- Advanced sophisticated 10-bit MPEG-2 video decoding circuits.
- Direct RGB output via SCART (selectable) for optimum video performance. SCART connector also configurable for Composite Video output.
- Test screen videos available for testing video performance and setup.
- Pure PAL with NTSC disc due to true NTSC/PAL conversion.
- Dual-layer compatibility for extended play DVD.
- Progressive Scan component video ouputs (NTSC and PAL)
- Playback of JPEG image files

High quality digital audio

- Built-in DVD-Audio decoder for improved musical realism.
- By connecting a DTS (Digital Theater Systems) or a Dolby Digital decoder, you can enjoy high quality 5.1 digital surround sound from DTS or Dolby Digital discs.
- With linear PCM audio at 16-24 bits and
- 44-96 kHz (also on digital output, see table page 33), audio quality exceeding that of CD becomes possible.
- Optical and coaxial digital audio output.

Many convenient features

- On-Screen Menu Icons for disc information or player information and access to many major functions of this unit.
- Subtitles may be displayed in one of numerous languages*.
- The multi-angle function allows you to choose the viewing angle of scenes which were shot from a number of different angles (Limited to DVD's recorded with multiple camera angles.)
- Multiple options for dialog language and soundtrack selection (limited to DVD's recorded with multiple dialog languages or soundtracks).
- Intuitive menu operating system.
- 4 step Zoom during play and pause.
- Backlit, ergonomically designed remote control.
- Future software upgrades accessible via Internet. (See information below.)

** The number of languages recorded depends on the software.*

Compatible with CD as well as DVD

- The DVD will play any conventional Audio CD or recordable (CD-R) or erasable CD (CD-RW), MP3, WMA (v8) or any DivX or VCD or DVD/Video with the region code 0 or 2.

Disc formats supported by this player

The unit can play the following disc formats (8 cm and 12 cm size):

- DVD-AUDIO
- DVD
- DVD-R
- DVD-RW
- DVD+R
- DVD+RW
- CD
- CD-R
- CD-RW
- VCD
- WMA (v8)

NOTE: Due to differences in the format of certain discs, it is possible that some discs may include a mix of features that are not compatible with the DVD. Similarly, although the DVD is capable of a wide range of features, not all discs include every capability of the DVD system. For example, although the DVD is compatible with multi-angle discs, that feature is only possible when the disc is specially encoded for multipleangle play. In addition, the DVD is capable of playing back both Dolby Digital and DTS soundtracks, but the number and types of tracks available will vary from disc to disc. To make certain that a specific feature or soundtrack option is available, please check the options noted on the disc jacket.

- Playback capability for CD-R, CD-RW, WMA, JPEG, MP3, DivX, VCD/SVCD, DVD-R, DVD+R, DVD-RW and DVD+RW discs may vary due to variations in the quality of the disc and the recorder used to create the disc.
- The DVD is compatible with most discs recorded with files encoded using MP3 or Windows Media 9, as well as JPEG still images. However, note that variations in the encoder or codec used and the bit rate of the encoding may affect the DVD's ability to play back a specific disc. As a result, we cannot guarantee complete compatibility with all encoders and versions of the codecs. For best results, we recommend that MP3 files be encoded at bit rates ranging between 32kbps and 320kbps. WMA files should be encoded at bit rates between 64kbps and 320kbps. Although the DVD is capable of playing some WMA 9 files, not all features of version 9 are supported. JPEG files should contain no more than 5 megapixels, and the file size should be no larger than 5Mb.

The DVD will NOT play the following:

- DVD discs with a Region Code other than 2
- DVD-ROM data discs
- DVD-RAM discs
- CD-I discs
- CD-G discs
- SVCD discs
- Kodak Photo CD™ discs (Kodak Picture CD discs, available to consumers, may be viewed using the DVD).
- Discs intended for use in video game consoles
- Discs recorded in the "VR" mode or at any speed other than "SP"
- High-definition optical discs such as WMVHD, HD-DVD and Blu-ray

Upgradeability via Internet

The "firmware" controlling the functionality of the Harman Kardon DVD is fully upgradeable. In the event of future improvements to its operations and features, it will be possible to download firmware upgrades from www.harmankardon.com/International

All you have to do is create a CD-R with the data and insert it in the DVD for an automatic upgrade.

Packing List

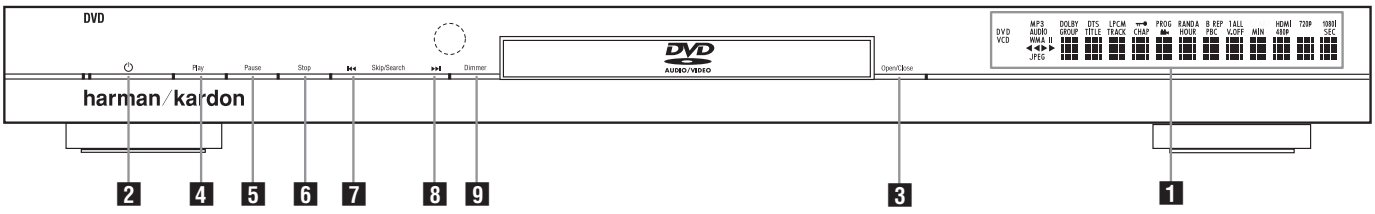
1 Harman Kardon DVD Player

1 A/V cable for stereo analog audio and composite video

1 HDMI cable

NOTE: This player is designed and manufactured for compatibility with Region Management Information that is encoded on most DVD discs. This player is designed only for playback of discs with Region Code 2, or for discs that do not contain Region Code infor mation. If there is any other Region Code on a disc, that disc will not play on the DVD.

Front Panel Controls



1 Main Information Display
2 Power On/Off (Standby)
3 Open/Close
4 Play
5 Pause
6 Stop
7 Skip/Search (Previous)
8 Skip/Search (Next)
9 Dimmer

1 Main Information Display: This display delivers messages and status indications to help you operate the DVD player.

2 Power On/Off (Standby): Press the button once to turn the DVD player on, press it again to put the unit in the Standby mode.

3 Open/Close: Press this button to open or close the Disc Tray.

4 Play: Press to initiate playback or to resume playback after Pause has been pressed.

5 Pause: Press this button to momentarily pause playback. To resume playback, press the button again. If a DVD is playing, action will freeze and a still picture will be displayed when the button is pressed.

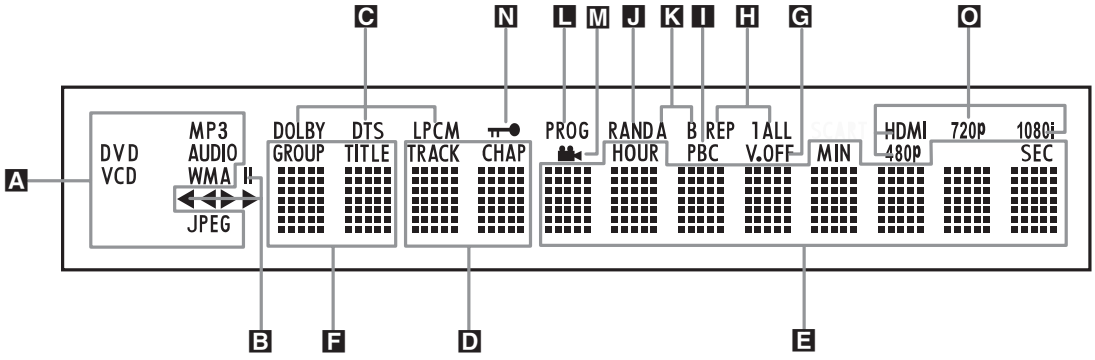
6 Stop: Press this button once to place the disc in the Resume mode, which means that playback will stop, but as long as the tray is not opened or the disc changed, DVD playback will continue from the same point on the disc when the Play Button is pressed again. Resume will also work if the unit was turned off. To stop a disc and have play start from the beginning, press the button twice.

7 Skip/Search (Previous): Press this button to move backward through the music tracks on a CD disc or the chapters on a DVD disc. Keep the button pressed to search backwards at one of the available speeds.

8 Skip/Search (Next): Press to move forward through the music tracks on a CD or the chapters on a DVD disc. Keep the button pressed to search forwards at one of the available speeds.

9 Dimmer: Press this button to reduce the brightness of the Information Display by 50% or to turn the display off completely in the following order: FULL BRIGHTNESS ' HALF BRIGHTNESS ' OFF ' FULL BRIGHTNESS.

Front Panel Information Display



- **A** Disc Type Indicators
- **B** Playback-Mode Indicators
- **C** Audio Bitstream Indicators
- **D** Chapter/Track Number Indicators
- **E** Time Indicators
- **F** Title Indicators
- **G** V-OFF Indicator
- **H** Repeat Indicators
- **I** VCD Playback Control Indicator
- **J** Random Indicator
- **K** A-B Repeat Indicator
- **L** Program Indicator
- **M** Angle Indicator
- **N** Parental Lock Indicator
- **O** Video Output Indicators

A Disc Type Indicators: The CD, DVD, DVD-Audio, VCD, MP3, WMA or JPEG indicator will illuminate to show the type of disc currently being played.

B Playback-Mode Indicators: These indicators light to show the current playback mode:

► Lights when a disc is playing in the normal mode

▸▸ Lights when the disc is in the Fast Search Forward mode. The on-screen banner display indicates the selected speed (x2, x4, x8, x20, x100).

II Lights when the disc is paused.

◂◂ Lights when the disc is in the Fast Search Reverse mode. The on-screen banner display indicates the selected speed (x2, x4, x8, x20, x100).

C Audio Bitstream Indicators: When a Dolby® Digital, DTS® or linear PCM digital audio signal is present on the disc, one of these indicators will light. DVD-Audio, MP3 and WMA bitstreams will be indicated by the **Disc Type Indicator A**.

D Chapter/Track Number Indicators: When a DVD disc is playing, these two positions in the display will show the current chapter. When a CD disc is playing they will show the current track number.

E Time Indicators: These positions in the indicator will show the running time of a DVD in play. When a CD is playing, these indicators will show the current track time, time remaining in the current track, or the total remaining time on the disc.

NOTE: The Indicators **D E F** will also display text messages about the DVD's status, including `LOADING` when a disc is loading, `POWER OFF` when the unit is turned off, and `DISC ERROR` when a disc not compatible with the DVD is put into the play position.

F Title Indicators: These two positions in the display will show the current title number when a DVD disc is playing.

G V-OFF Indicator: This indicator lights when the unit's video output has been turned off by pressing the V-OFF button on the remote control.

H Repeat Indicators: These indicators light when any of the Repeat functions are in use.

I VCD Playback Control Indicator: This indicator lights when the playback control function is turned on with VCDs.

J Random Indicator: This indicator lights when the unit is in the Random Play mode.

K A-B Repeat Indicator: This indicator lights when a specific passage for repeat playback has been selected.

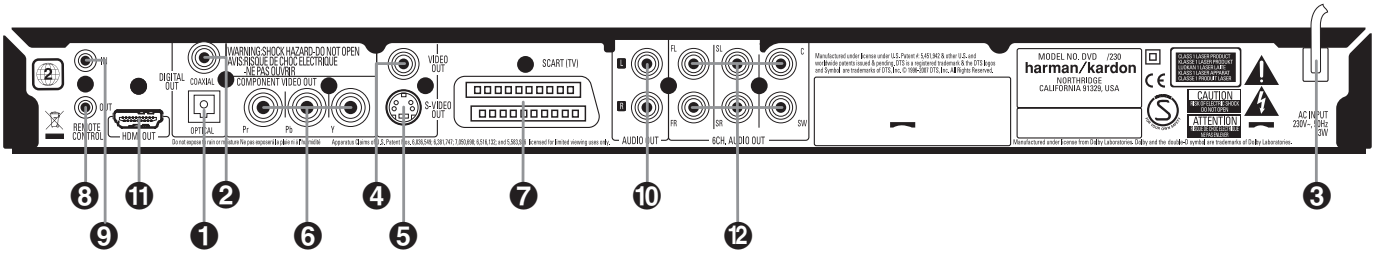
L Program Indicator: This indicator lights when the programming functions are in use.

M Angle Indicator: This indicator blinks when alternative viewing angles are available on the DVD currently playing.

N Parental Lock Indicator: This indicator lights when the parental-lock system is engaged in order to prevent anyone from changing the rating level without a code.

O Video Output Indicators: When the DVD is connected to a video display using the **HDMI Output ⑪**, the display sends information to the DVD indicating the highest video resolution it is capable of handling, and the DVD automatically sets the video output to match it. That resolution is displayed here. You may use the **HD Mode Selector ㉝** to manually select a lower video output resolution.

Rear Panel Connections



❶ Optical Digital Output
❷ Coaxial Digital Output
❸ AC Power Cord
❹ Composite Video Output
❺ S-Video Output
❻ Component Video Outputs
❼ Scart TV Output
❽ Remote Control Output
❾ Remote Control Input
❿ Analog Audio Output
⓫ HDMI Output
⓬ 6-Channel Audio Outputs

❶ **Optical Digital Output**: Connect this jack to the optical digital input of an A/V receiver or surround processor for Dolby Digital, DTS or PCM audio playback.

❷ **Coaxial Digital Output**: Connect this jack to the coaxial digital input of an A/V receiver or surround processor for Dolby Digital, DTS or PCM audio playback.

NOTE: The coaxial digital output should only be connected to a digital input. Even though it is the same RCA-type connector as standard analog audio connections, DO NOT connect it to a conventional analog input jack.

Connect either the **Optical Digital Audio Output** ❶ or the **Coaxial Digital Audio Output** ❷ to a corresponding digital audio input on your receiver or processor, but not both.

❸ **AC Power Cord**: Connect this plug to an AC outlet. If the outlet is controlled by a switch, make certain that it is in the ON position.

❹ **Composite Video Output**: Connect this jack to the video input on a television or video projector, or to a video input on an A/V receiver or processor if you are using that type of device for video input switching.

❺ **S-Video Output**: Connect this jack to the S-Video input on a television or video projector, or to an S-Video input on an A/V receiver or processor if you are using that type of device for S-Video input switching. Please note that the AVR Receiver in your system does not accept S-Video signals. Use composite or component connection instead.

❻ **Component Video Outputs**: These outputs carry the component video signals for connection to display monitors with component video inputs. For standard analog TV's or projectors with inputs marked Y/Pr/Pb or Y/Cr/Cb, connect these outputs to the corresponding inputs. If you have a high-definition television or projector that is compatible with high scan rate progressive video, connect these jacks to the "HD Component" inputs. Note that if you are using a progressive scan display device, then "Progressive" must be selected in the Video Set-up Menu in order to take advantage of the progressive scan circuitry. See page 39 for more information on progressive scan video.

IMPORTANT: These jacks should NOT be connected to standard composite video inputs.

❼ **SCART OUT (TV)**: If your TV has a SCART socket, you can connect a SCART cable to your TV and to your DVD Player for improved video quality. The SCART cable carries both audio and video. You can select Composite Video or RGB video for that SCART connector's video output signal.

❽ **Remote Control Output**: Connect this jack to the infrared (IR) input jack of another compatible Harman Kardon remote controlled product to have the built-in Remote Sensor on the DVD provide IR signals to other compatible products.

❾ **Remote Control Input**: Connect the output of a remote infrared sensor, or the remote control output of another compatible Harman Kardon product, to this jack. This will enable the remote control to operate even when the front panel **Remote Sensor** on the DVD is blocked. This jack may also be used with compatible IR remote control-based automation systems.

❿ **Analog Audio Output**: Connect these jacks to an audio input on an A/V receiver or surround processor for analog audio playback.

⓫ **HDMI Output**: If you have an HDMI-compatible receiver or video display device, connect this output to an HDMI input on the receiver or video display for the highest-quality uncompressed digital audio and video available. Even if your receiver is not capable of processing audio in the HDMI format, you may still experience the superb reproduction of HDMI video.

The AVR Receiver in your system can switch between three HDMI inputs and send the video signal to your screen from its HDMI Output. No audio processing takes place in the Receiver via HDMI, so no sound will be heard if only HDMI is connected. The Audio information is best transmitted from the DVD Player's Coaxial Digital Output to the AVR Receiver's Coaxial Digital Input. Alternatively, you may use the Optical Digital Connection, or the Analog Audio connections.

If your video display has a DVI input, you may use an optional HDMI-to-DVI cable or adapter for the connection to the display. In all cases, the video display must be HDCP-compliant in order to use the HDMI output. For best results, we do not recommend HDMI connections in excess of ten feet.

The following audio formats may be output via the HDMI connection:

Audio CD – 2-Channel PCM or 5.1-channel DTS
DVD-Audio – 2-Channel PCM
DVD-Video – Up to 5.1-channel Dolby Digital or DTS

Note: To hear the high-resolution surround sound recorded on DVD-Audio discs, you need to connect the **6-Channel Audio Outputs** ⓬ to the corresponding input jacks on your receiver or processor. These formats are not output digitally.

⓬ **6-Channel Audio Outputs**: Connect these outputs to the matching 6-channel analog audio inputs on your receiver or surround sound processor. This connection is required to listen to the multichannel tracks on DVD-Audio discs. If the disc also contains a linear PCM, Dolby Digital or DTS track, you may listen to it using the **HDMI** ⓫, **Optical** ❶ or **Coaxial Digital Audio Output** ❷ or the **Analog Audio Outputs** ❿.

Note: You'll find more details about all Audio/Video connections under Setup and Connections on the following pages.

Setup and Connections

Before connecting your DVD, please:

- Ensure that the power switch of this unit and other equipment to be connected is set to off before commencing connection.
- Do not block ventilation holes of any of the equipment and arrange them so that air can circulate freely.
- Read through the instructions before connecting other equipment.
- Ensure that you observe the color coding when connecting audio and video cables.

For the best quality, we recommend using the HDMI output. With a single cable connection between components, HDMI is able to deliver uncompressed high-definition digital video and digital audio programming. Please note that the AVR Receiver in this system does not process Audio through HDMI. Therefore, separate Audio connections must be established between DVD and AVR.

Note: If your video display has a DVI input, you may use an optional HDMI-to-DVI cable or adapter for the connection to the display. In all cases, the video display must be HDCP-compliant in order to use the HDMI output.

If your equipment is not HDMI-ready, we recommend the use of component video for higher quality pictures.

If you are using a television or video display that is compatible with high-resolution 576P video signals, make sure to use the input jacks on the video display marked "HD Component," if available. Also, make sure to configure the display's input settings for use with "576P" video signals. You will also need to change the scan type in the DVD's Video Setup menu from "Interlaced" to "Progressive." See above.

The Video output (yellow) combines the complete video signal (composite) and sends it to the TV (or to the AV Receiver) by one line only. Use the Video output, when your TV set is equipped with a Video input jack only.

The S (separate) video output connector separates the color (C) and luminance (Y) signals before transmitting them to the TV set in order to achieve a sharper picture. Use the S-video cable when connecting the player to a TV equipped with an S-video input for improved picture clarity. Never connect both outputs, Video and S-Video, to your TV, only one of them.

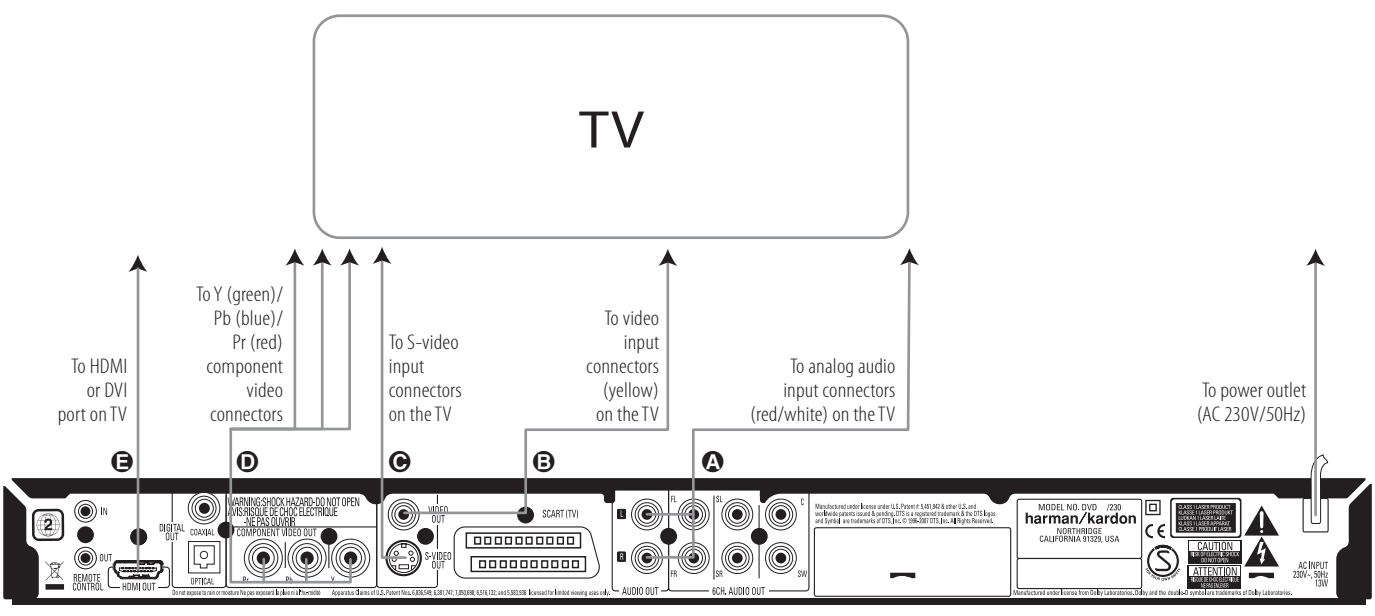
Most European TV´s are equipped with SCART connectors rather than with a normal video input (yellow cinch). In that case the SCART connection should be used, providing the audio signal too. Separate analog audio connections to TV are needed only if your TV is connected to the video or S-video output.

You may also use the standard S-video or composite video connection if your TV does not have component video inputs. The component and S-video outputs are not available simultaneously.

- Modern audio/video receivers are capable of connection to several video source devices, such as the DVD and a VCR, cable television set-top box, HDTV tuner or other device. The receiver is equipped with video monitor outputs for connection to your television, projector or plasma display. As you select any input source device, the receiver selects the correct video input and routes it to the correct video monitor output to your television. It is recommended that you connect one of the video outputs from the DVD to the corresponding input on your receiver to simplify operation of your home entertainment system.
- If connecting your DVD to another receiver capable of multiroom operation, it is recommended that you connect both the component (or HDMI) and composite video outputs of the DVD to the receiver. This enables the highest-quality picture (component video) for viewing in the main listening room, while enabling the multiroom system, if it is video-capable, to distribute the composite video signal to the remote zone. Consult the owner's guide for your receiver to determine whether it has video multiroom capability.

Connecting to a TV Only

When using the DVD with a television but no audio receiver or processor, connect it as follows. Make the **Analog Audio Connection** Ⓐ and one of the **Video Connections (Composite Video** Ⓑ**, S-Video** Ⓒ**, Component Video** Ⓓ). If your television or video display is HDMI-capable, you only need to make the **HDMI** Ⓔ connection, as it handles both audio and video. Remember to plug in the power cord.



Setup and Connections

Connecting to a Receiver/Amplifier With a Dolby Digital or DTS Decoder

One of the major advantages of the DVD format is its ability to use a variety of digital audio formats for the ultimate in sonic performance. However, in order to enjoy the benefits of digital audio, you must use a receiver or processor that has digital audio decoding capabilities and make an optical or coaxial digital audio connection between the DVD and your home theater system. This simple connection is made as shown below with an optional coax or optical cable. Only one of these connections is required, and both should not be made at the same time.

In order to take advantage of the high-resolution DVD-Audio output of the DVD, you must connect the **6-Channel Audio Outputs** ⑫ to the matching 6-channel inputs on your receiver or processor.

NOTES FOR ANALOG AUDIO:

- If you wish to use the DVD as the input for a multiroom system, the **Analog Audio Outputs** ⑩ should be connected to the standard analog left/right DVD or CD inputs on your digital receiver or processor.
- The connection from the **Analog Audio Outputs** ⑩ to the TV is optional.
- When the audio signal is to be fed to an analog receiver rather than to the TV, connect the **Analog Audio Outputs** ⑩ to any analog audio inputs on your receiver or processor.
- The analog audio connection should also be made if you wish to play high-resolution 96kHz PCM audio discs where your receiver does not support 96kHz processing.

NOTES ON VIDEO:

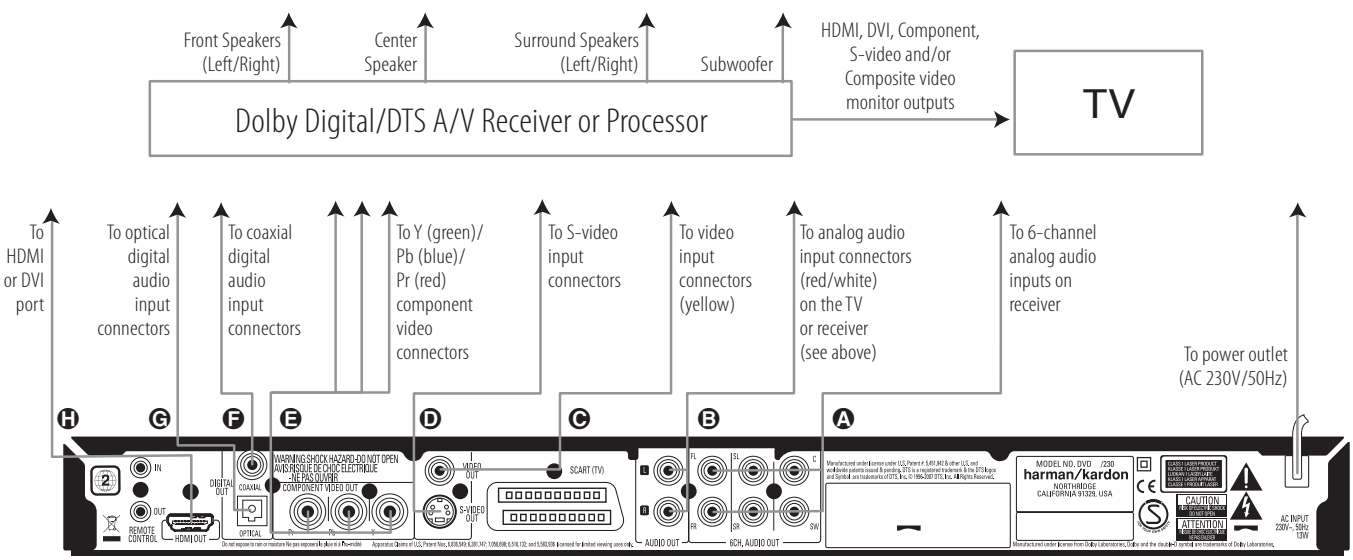
- Note: With multiple video sources, your Audio/Video device can be used for selecting the video signal and routing it to the TV. Connect the video output of the DVD player (whatever is provided with your device) to the video input on your device and the video output of this device to your TV. For more details, see the manual of your Audio/Video amplifier/receiver.
- Note for Analog Audio: The connection from Audio Out to the TV is optional only. Normally you'll hear the sound from your AV-system's speakers, so the TV volume should be completely turned down. If you plan to use your DVD player also without having to turn on your complete system, this connection must exist, then you can turn up the TV´s volume as needed.

Connecting to a Receiver

When using the DVD with an audio/video receiver or processor, connect it as follows. First, make one of the video connections (**Composite Video** Ⓒ, **Component Video** Ⓔ or **HDMI** Ⓗ) to the video input jacks on the A/V receiver, and then connect the receiver's video monitor output to the TV. When connecting to the Receiver of your system, use HDMI for input as well as output, if your video display is so equipped. Note that your Receiver has no S-Video input jack. In addition, to benefit from the high-resolution surround sound formats recorded on DVD-Audio discs, which are not output via the HDMI connection, you will need to make the **6-Channel Audio Connection** Ⓐ to your receiver or processor.

Second, if your receiver or processor is not HDMI-capable, make either the **Optical Digital Audio Connection** Ⓖ or the **Coaxial Digital Audio Connection** Ⓕ, to the receiver or processor.

IMPORTANT NOTE: Make certain that any device being connected, including the DVD, your receiver or processor and your TV or video display, is turned off whenever you make connections between products.



Important Notes on SCART and RGB format:

- Your DVD is equipped with a SCART connector for direct connection to the TV.
- The SCART connector provides the video signal as well as audio (stereo L/R) signals.
- The SCART connector for the TV provides the composite video signal or the direct RGB signal, delivering the best video performance possible, selectable in the Setup menu.

To view RGB video on your TV, the RGB compatible SCART connector on the TV must be used and the DVD´s TV SCART connector must be set to "RGB".

Note that with RGB video the color intensity cannot be adjusted with most TVs.

- When the RGB video signal is used, DVD´s recorded with the NTSC format (with regional code 0 or 2) can be viewed even on non-NTSC compatible TVs.

Digital Audio Connections

Audio output from the unit's optical/ coaxial digital audio output connector

Gently push the cable plug through the built-in shutter that covers the optical digital audio output and connect the cable firmly so that the configurations of both the cable and the connector match.

Disc	Sound recording format	Optical/coaxial digital audio output
DVD	Dolby Digital	Dolby Digital bitstream (2-5.1ch) or PCM (2ch, 48kHz, 16-bit)††
	Linear PCM (48/96kHz, 16/20/24-bit)	Linear PCM (2ch) (48/96kHz, 16/20/24-bit)
	DTS	Bitstream or no output*
	MPEG (2.0)	MPEG bitstream (2ch) or linear PCM (2ch, 48kHz)
VCD	MPEG-1 CD-DA	Linear PCM*
CD	Linear PCM	Linear PCM (44.1kHz sampling)
	MP3 MPEG-1 Audio Layer 3)	Linear PCM (44.1—48kHz, depending on source, if digital output format selected as "Bitstream"). (48kHz if digital output format selected as "PCM")
	WMA (Windows Media Audio)	Linear PCM (32—48kHz)

* Digital Format must be selected as "ORIGINAL" or "PCM" respectively in Menu

For your reference:

- Dolby Digital (AC-3) is a digital sound compression technique developed by the Dolby Laboratories Licensing Corporation, supporting 5.1-channel surround sound, as well as stereo (2-channel) sound, this technique enables a large quantity of sound data to be efficiently recorded on a disc.
- Linear PCM is a signal recording format used in CDs. While CDs are recorded in 44.1kHz/16 bit, DVDs are recorded in 48kHz/16 bit up to 96kHz/24 bit.
- If you have a Dolby Pro Logic Surround decoder connected to the DVD's analog AUDIO OUT connectors, thanks to the "Downmix" function of the DVD you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles encoded with Dolby Surround.
- The DVD is designed to digitally output 96kHz-PCM audio with a 96kHz sampling rate. However, some 96kHz DVD's may include copy protection codes that do not permit digital output. For full 96kHz fidelity from these discs, use the analog outputs of the DVD.

IMPORTANT: If your surround processor/D/A converter does not support 96kHz PCM audio, you must use the DVD analog outputs for full 96kHz fidelity with these discs.

Caution for the optical/coaxial digital audio outputs:

- When connecting an amplifier (with an optical/ coaxial digital input) which does not contain a Dolby Digital (AC-3) or DTS decoder, be sure to select "PCM" as initial setting in the "Digital Output" menu.
  Otherwise, any attempt to play a DVD may cause such a high level of noise that it may be harmful to your ears and damage your speakers.
- CD's can be played as they would normally be played.

Note:

- Some first generation DTS decoders which do not support DVD-DTS interface may not work properly with the DVD/CD player.
- Dolby Digital, DTS and PCM signals are passed through the **HDMI Output** ⓫ but are not processed in the AVR Receiver in your system. Connect the Digital Audio separately besides HDMI to get sound from your system Receiver. DVD-Audio signals are not carried via the HDMI connection or the Coaxial or Optical Digital Audio Outputs. You must connect the **6-Channel Audio Outputs** ⓬ to the corresponding input jacks on your receiver or processor in order to enjoy DVD-Audio materials.

Dolby Digital and DTS

Both Dolby Digital and DTS are audio formats used to record 5.1-channel audio signals onto the digital track of film. Both of these formats provide six separate channels: left, right, center, left rear, right rear, and common subwoofer. The latest 6.1-formats, Dolby Digital EX and DTS ES, even one (or two) additional "Surround Back" channel for a center between the rears.

Remember, that Dolby Digital or DTS will only play 5.1-channel sound if you've connected the optical or coaxial output of the DVD player to a DTS or Dolby Digital receiver or decoder and if the disc was recorded in the Dolby Digital or DTS format.

DVD-Audio

The high-resolution output of DVD-Audio discs is only available as an analog signal. For that reason, it is necessary to make direct analog connections between the **6-Channel Audio Outputs** ⓬ on the DVD and the matching 6-channel inputs on your receiver or surround processor.

Troubleshooting Guide

SYMPTOM	CAUSE	SOLUTION
Unit does not turn on	• No AC Power	• Check AC power plug and make certain any switched outlet is turned on.
Disc does not play	• Disc loaded improperly	• Load disc label-side up; align the disc with the guides and place it in its proper position.
	• Incorrect disc type	• Check to see that disc is CD, CD-R, CD-RW, DivX, VCD, MP3, WMA, JPEG, DVD-R, DVD-RW, DVD+R, DVD+RW (standard conforming), DVD-Audio or DVD-Video; other types will not play.
	• Invalid Region Code	• Use Region 2 or Open Region (0) disc only.
	• Rating is above parental preset	• Enter password to override or change rating settings.
No picture	• Intermittent connections	• Check all video connections.
	• Wrong input	• Check input selection of TV or receiver.
	• Progressive Scan output selected	• Use Progressive Scan mode only with compatible TV. If needed, press the **Progressive Scan/Interlaced Button** ㉚ to toggle to the correct mode.
	• Video Off feature active	• Press **Video Off Button** ㊳ to reactivate video circuitry (see page 43)
	• **HDMI Output** ⑪ is connected to a video display that is not HDCP-compliant.	• The **HDMI Output** ⑪ may not be used with video displays that are not HDCP-compliant. Unplug the cable and select another audio and video connection (see pages 31 through 32).
No sound	• Intermittent connections	• Check all audio connections.
	• Incorrect digital audio selection	• Check digital audio settings.
	• DVD disc is in fast or slow mode	• There is no audio playback on DVD discs during fast or slow modes.
	• Surround receiver not compatible with 96kHz PCM audio	• Use analog audio outputs.
	• DVD Audio disc is loaded without using analog audio connection	• Use **6-Channel Audio Outputs** ⑫ or **Analog Audio Outputs** ⑩.
Picture is distorted or jumps during fast forward or reverse play	• MPEG-2 decoding	• It is a normal artifact of DVD playback for pictures to jump or show some distortion during rapid play.
Some remote buttons do not operate during DVD play; prohibited symbol ⃠ appears (see below)	• Function not permitted at this time	• With most discs, some functions are not permitted at certain times (e.g., Track Skip) or at all (e.g., direct audio track selection).
The OSD menu is in a foreign language	• Incorrect OSD language	• Change the display language selection.
The ⃠ symbol appears	• Requested function not available at this time	• Certain functions may be disabled by the DVD itself during passages of a disc.
Picture is displayed in the wrong aspect ratio	• Incorrect match of aspect ratio settingsto disc	• Change aspect ratio settings.
Remote control inoperative	• Weak batteries	• Change both batteries.
	• Sensor is blocked	• Clear path to sensor or use optional outboard remote sensor.
Disc will not copy to VCR	• Copy protection	• Many DVDs are encoded with copy protection to prevent copying to VCR.
Password not accepted.	• Incorrect password being used or password has been forgotten.	• Stop play of disc. Press and hold the **Clear Button** ⑭ until the display blinks. This resets the password and all settings to their defaults.

Technical Specifications for DVD Player

ENGLISH

Applicable Disc:	Disc formats: 5 inch (12 cm) or 3 inch (8 cm) DVD Video, DVD-Audio, Standard conforming DVD+RW, DVD+R, DVD-R, DVD-RW, DivX, VCD, CD, CD-R, MP3, WMA, JPEG or CD-RW discs, Regio code: DVD Movie disc with Code 2 or 0 only. DVD-Layers: Single Side/Single Layer, Single Side/Dual Layer, Dual Side/Single Layer, Dual Side/Dual Layer Audio formats: DVD-Audio MLP lossless, Linear PCM, MPEG, Windows Media® 9, Dolby Digital or DTS Audio discs Still-image format: JPEG	
Video Signal System:	PAL/NTSC	
HDMI™ Output:	Video: 576p, 720p, 1080i HDMI Version 1.0-compliant HDCP Version 1.1-compliant	
Composite Video Output:	1 Vp-p/75 Ohms, sync negative polarity	
S Video Output:	Y/Luminance: 1 Vp-p/75 Ohms, sync negative polarity	
	C/Chrominance: 0.286 Vp-p	
Component Video Output:	Y: 1 Vp-p/75 Ohms, sync negative polarity	
	Cr: 0.7 Vp-p/75 Ohms	
	Cb: 0.7 Vp-p/75 Ohms	
Analog Audio Output:	2 Vrms max	
Frequency Response:	DVD (Linear PCM):	2Hz - 22kHz (48kHz sampling) 2Hz - 44kHz (96kHz sampling)
	CD:	2Hz - 20kHz
Signal/Noise Ratio (SNR):	105 dB (A-weighted)	
Dynamic Range:	DVD: CD/DVD:	100dB (18 Bit) / 105dB (20 Bit) 96dB (16 Bit)
THD/1kHz:	DVD/CD:	0.0025 %
Wow & Flutter:	Below Measurable Limits	
AC Power:	100 - 240 V/50 ~ 60 Hz	
Power Consumption:	1 Watt (Standby)/13 Watts (Max)	
Dimensions (WxHxD):	440 x 50 x 285 mm	
Weight:	4.0 kg	

Depth measurement includes knobs and connectors.
Height measurement includes feet and chassis.
All specifications subject to change without notice.

CLASS 1
LASER PRODUCT

MODEL NAME : DVD 37 & DVD 37/230

Description : Characteristics Specification of Audio
Test Disc : YEDS7 (SONY), TDV-540A (ABEX)
Test Conditions : 10kΩ Load Terminated, AC100V 50/60Hz
Test Measuerment : VP-7722A (Audio Analyzer) ,CASCADE SYS-2522(AP)

1.ANALOG AUDIO OUTPUT

Measurement Item			Limit	Result	TEST DISC
Output Level[Vrms]		L R	2.0 ± 0.2		YEDS7 (SONY) TRACK 1
Level difference [Vrms]			< 0.2		
F/ response [dB] Ref.1kHz 0dB	20 Hz	L R	0 ± 1.0		YEDS7 (SONY) TRACK 2
	100 Hz	L R	0 ± 1.0		YEDS7 (SONY) TRACK 4
	10 KHz	L R	0 ± 1.0		YEDS7 (SONY) TRACK 10
	20 KHz	L R	0 ± 1.5		YEDS7 (SONY) TRACK 13
	44 KHz	L R	0 ± 1.5		TDV-540A (ABEX) TITLE 4,CHAPTER 16 AUDIO STREAM 3
Emphasis Characteristic[dB] Ref.1kHz 0dB	5 KHz	L R	-4.53±1.0		YEDS7 (SONY) TRACK 40
	16 KHz	L R	-9.04 ± 1.0		YEDS7 (SONY) TRACK 41
S/N [dB]		L R	> 105		YEDS7 (SONY) TRACK 23
Channel Separation [dB]		L→R R→L	> 95		YEDS7 (SONY) TRACK 30,34
Linearity [dB] -90dB playback		L R	89.5±3		YEDS7 (SONY) TRACK 22
T.H.D [%]		L R	< 0.01		YEDS7 (SONY) TRACK 1
Dynamic Range [dB] -60dB playback		L R	> 93		YEDS7 (SONY) TRACK 20
全高調波歪率 [%] DVD 96k		L R	< 0.01		TDV-540A (ABEX) TITLE 3, CHAPTER 1
Dynamic Range [dB] DVD 96k		L R	> 95		TDV-540A (ABEX) TITLE 3, CHAPTER 2
全高調波歪率 [%] DVD 48k		L R	< 0.01		TDV-540A (ABEX) TITLE 2, CHAPTER 1 AUDIO STREAM 2
Dynamic Range [dB] DVD 48k		L R	> 95		TDV-540A (ABEX) TITLE 2, CHAPTER 2 AUDIO STREAM 2

2. DIGITAL OUTPUT

1) OPTICAL OUT

JITTER 44.1kHz (mUI)		< 50mUI		Normal 44.1kHz CD Playback
JITTER 96kHz (mUI)		< 50mUI		Normal 96kHz DVD Playback

2) COAXIAL OUT

OUTPUT Level [mV] Peak to Peak Level at 75ohm Lo		500±50 (mV)		Normal CD or DVD Playback

MODEL NAME : DVD 37& DVD 37/230
Description : Characteristics Specification of Video
Test Disc : TDV-540A (ABEX) , MDVD-111 (TEAC) Serial NO.:
Test Conditions : 75Ω Load Terminated
AC Input : For USA (120V/60Hz) , For Europe (230V/50Hz)
Test Measuerment : VM-700T

4. Video Frequency Respoens (75Ω Terminated)

Measurement Item		Limit	Result	Test Disc
Composite [dB]	0.5MHz 0dB Ref.	0		MDVD-111 TITLE2,CHAPTER9 100% Multi Brust
	1MHz	0dB ± 2dB		
	2MHz	0dB ± 2dB		
	3MHz	0dB ± 2dB		
	4MHz	0dB ± 2dB		
	5.8MHz	-3dB ± 2dB		

Measurement Item		Limit	Result	Test Disc
S-Video Y [dB]	0.5MHz 0dB Ref.	0		MDVD-111 TITLE2,CHAPTER9 100% Multi Brust
	1MHz	0dB ± 2dB		
	2MHz	0dB ± 2dB		
	3MHz	0dB ± 2dB		
	4MHz	0dB ± 2dB		
	5.8MHz	-3dB ± 2dB		

Measurement Item		Limit	Result	Test Disc
Component Y [dB] Interace Mode	0.5MHz 0dB Ref.	0		MDVD-111 TITLE2,CHAPTER9 100% Multi Brust
	1MHz	0dB ± 2dB		
	2MHz	0dB ± 2dB		
	3MHz	0dB ± 2dB		
	4MHz	0dB ± 2dB		
	5.8MHz	-3dB ± 2dB		

MODEL NAME : DVD 37& DVD 37/230
Description : Characteristics Specification of Video
Test Disc : TDV-540A (ABEX) , MDVD-111 (TEAC) Serial NO.:
Test Conditions : 75Ω Load Terminated
AC Input : For USA (120V/60Hz) , For Europe (230V/50Hz)
Test Measuerment : VM-700T

1. Video Level Test (75Ω Terminated)

Measurement Item		Limit	Result	Test Disc
Video output [V]	Composite	1.0V ± 0.1V		MDVD-111 TITLE2,CHAPTER1 100% COLOR BAR
	S-Video Y	1.0V ± 0.1V		
	S-Video C	286mV ± 30mV		
	Component Y	1.0V ± 0.1V		
	Component Pb	700mV ± 100mV		
	Component Pr	700mV ± 100mV		
	Scart CVBS	1.0V ± 0.15V		
	Scart Red	700mV ± 100mV		
	Scart Green	700mV ± 100mV		
	Scart Blue	700mV ± 100mV		

** Pb/Pr & RGB Video Level check before please setting the Black Level off in the set-up menu **

2. Video S/N Raito Test (75Ω Terminated)

Measurement Item		Limit	Result	Test Disc
Video SNR [dB] 100KHz~4.2MHz Use SC Trap	Composite	≥ 65.0 dB		MDVD-111 TITLE2,CHAPTER 4 50% Gray Color
	S-Video Y	≥ 65.0 dB		
	Component Y	≥ 65.0 dB		
	Component Pb	≥ 65.0 dB		
	Component Pr	≥ 65.0 dB		

3. Chroma Signal AM.PM Test (75Ω Terminated)

Measurement Item		Limit	Result	Test Disc
Chroma AM [dB] 10KHz~500KHz	Composite Chroma	≥ 65.0 dB		TDV-540A TITLE2,CHAPTER17 100% Magenta Color
	S-Video Chroma	≥ 65.0 dB		
Chroma PM [dB] 10KHz~500KHz	Composite Chroma	≥ 60.0 dB		
	S-Video Chroma	≥ 60.0 dB		

2. DVD-Audio Part (Test Disc V-612 , JVC)

		Track Inform.	Limit	Downmix 2CH		Muiti 5 CH					SW
				LT	RT	FL	FR	SL	SR	C	
Output Level (V)		Tr.38 1KHz 0dB	2.1±0.2Vrms								
T.H.D (%) 20KHz LPF		Tr.38 1KHz 0dB	↓0.01%								
Frequency Respones (dB) Ref. : Tr. 38	48 / 24	Tr.59 17Hz	0±1.0dB								
		Tr.54 10KHz	0±1.0dB								
		Tr.53 20KHz	0±2.0dB								
	96 / 20	Tr.49 17Hz	0±1.0dB								
		Tr.45 10KHz	0±1.0dB								
		Tr.44 20KHz	0±2.0dB								
	192 / 24	Tr.22 17Hz	0±1.0dB								
		Tr.18 10KHz	0±1.0dB								
		Tr.17 20KHz	0±2.0dB								
S/N (dB) "A" Filter		Tr.40 Infinity Zero	↑90dB								
Dynamic Range (dB) 20KHz LPF		Tr.39 -60dB	↑85dB								

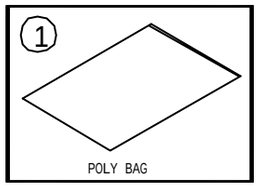
★ SW Level & THD --> Track 38 (30Hz) Play.

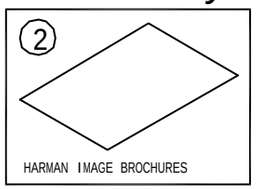
★ SW Frequency Respones -> Track 55(31Hz , 0dB) Reference

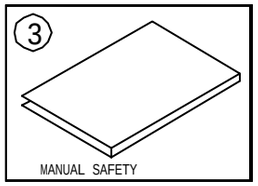
★ Track 54 (61Hz) , Track 53 (81Hz) , Track 51(127Hz) Play

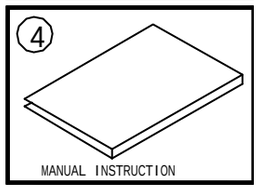
DVD37/230

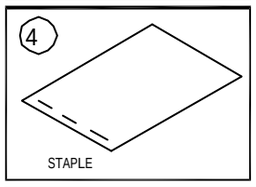
1. Instruction manual ass'y - Accessories





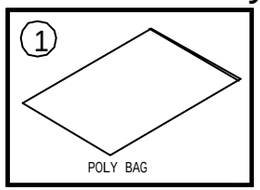


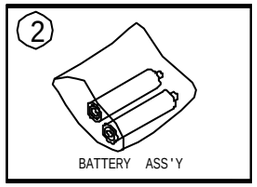


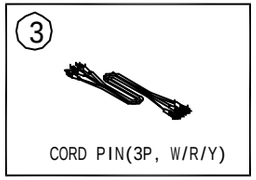


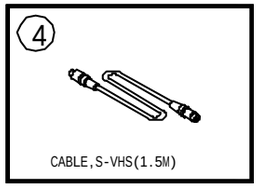
NO	DESCRIPTION	PARTS NO.	Q,ty
1	POLY BAG	CPB1061Y	1
2	HARMAN IMAGE BROCHURES	HQE1A273Z	1
3	SAFETY MANUAL	CQX1A1049Z	1
4	INSTRUCTION MANUAL	CQX1A1053Z	1
5	STAPLE	CPL0905	3

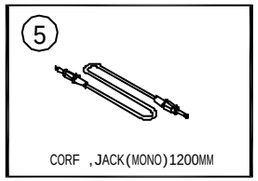
1. Cable ass'y - Accessories

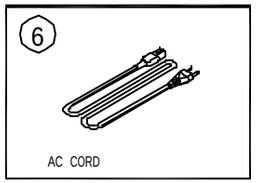


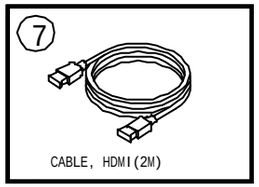


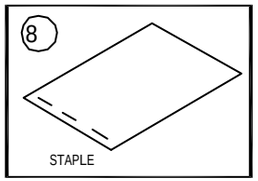






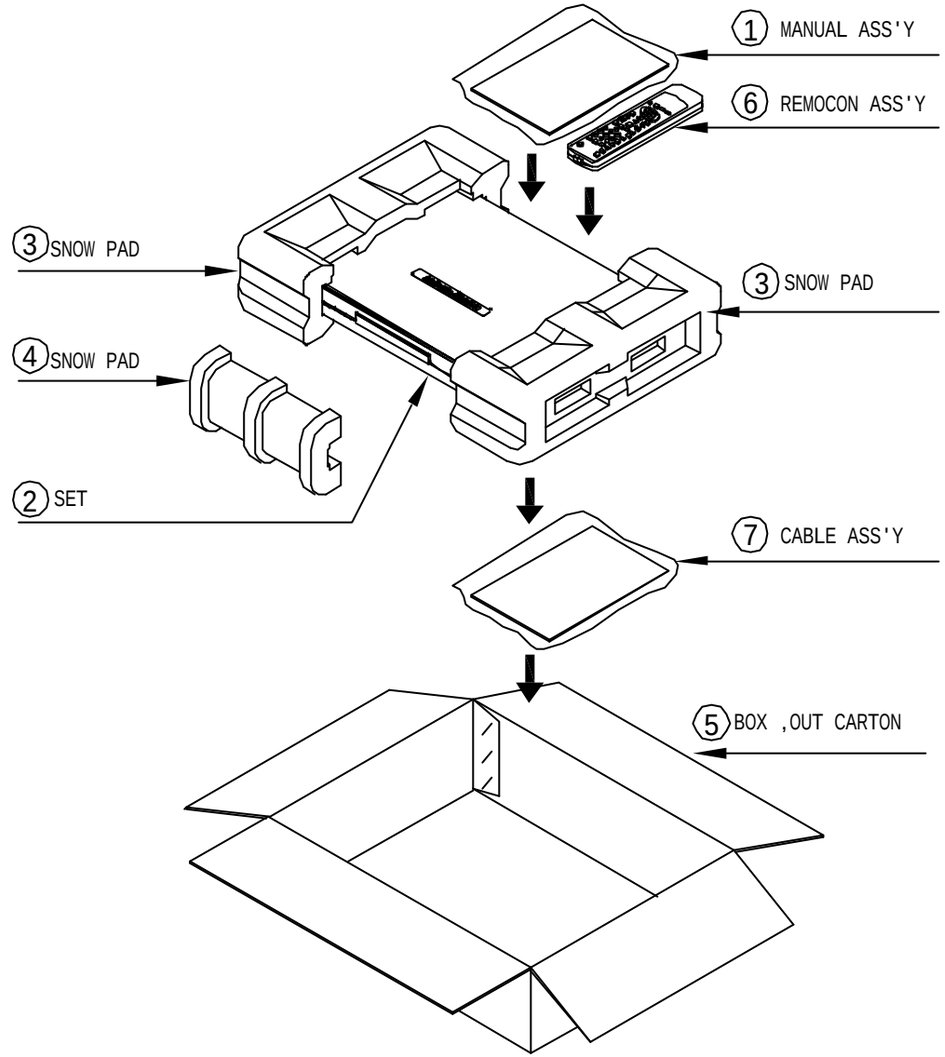






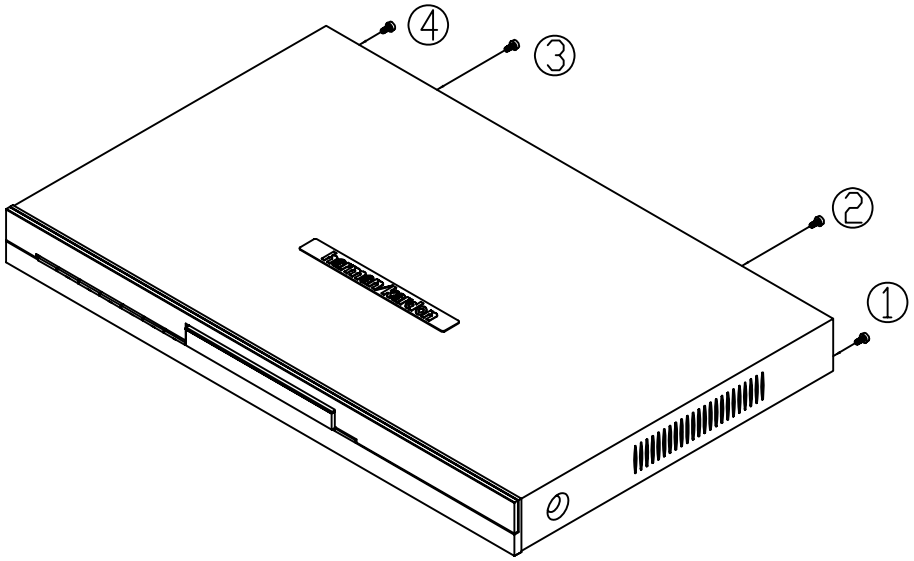
NO	DESCRIPTION	PARTS NO.	Q,ty
1	POLY BAG	CPB1061Y	1
2	BATTERY	CABR03P	2
3	CORD,PIN(3P,W/R/Y)	CJS4S004Z	1
4	CABLE,S-VHS(1.5M)	CJS01006Z	1
5	CORD,JACK(MONO)1200MM	CJS9D002Z	1
6	AC CORD	CJA2B020Z	1
7	CABLE,HDMI(2M)	CJS8T001Z	1
8	STAPLE	KPL0905	3

2. Package Drawing

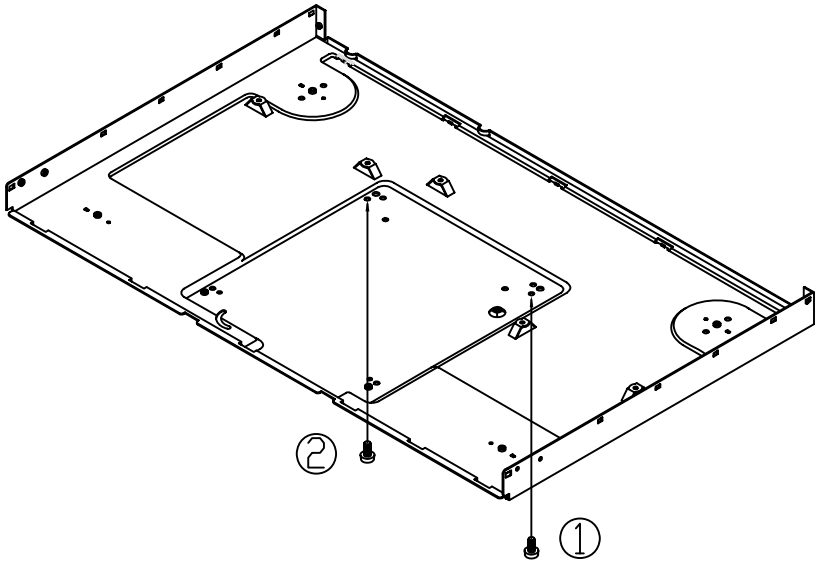


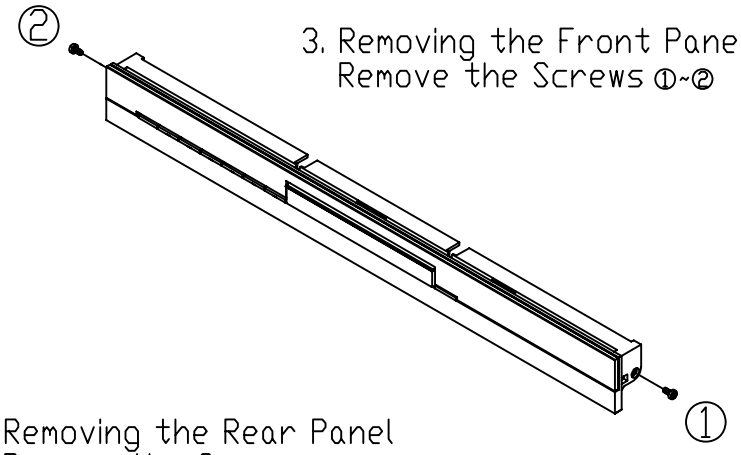
NO	DESCRIPTION	PARTS NO.	Q,ty
1	MANUAL ASS'Y	CQXDVD37A/230	1
2	SET	DVD37/230	1
3	SNOW,PAD	CPS1A714	2
4	SNOW,PAD	CPS1A715	1
5	BOX,OUT CARTON	CPG1A798V	1
6	REMOCON ASS'Y	CARTDVD37A	1
7	CABLE ASS'Y	CQXDVD47	1

1. Removing the Top Cabinet
Remove the Screws ①~④



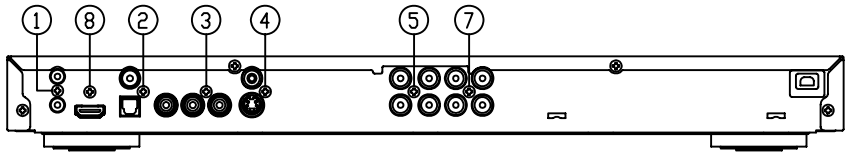
2. Removing the Bottom Chassis
Remove the Screws ①~②

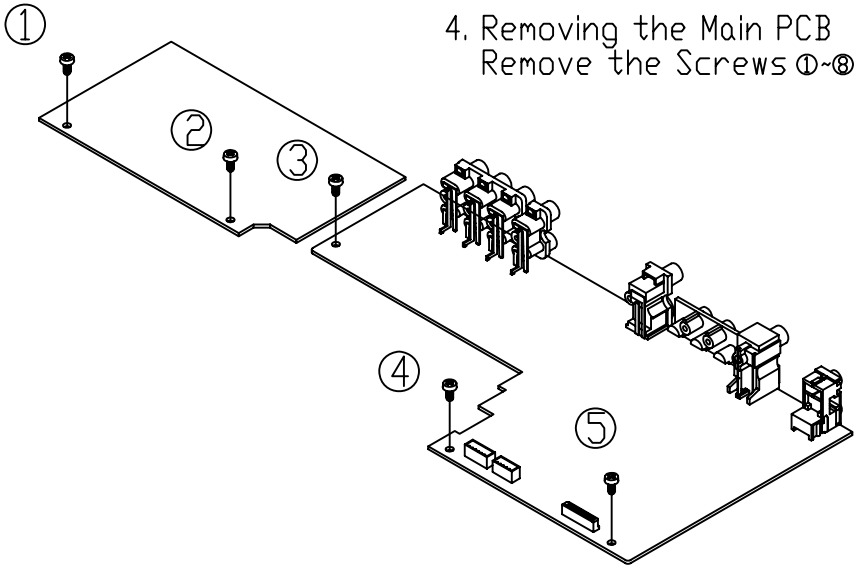




3. Removing the Front Panel
Remove the Screws ①~②

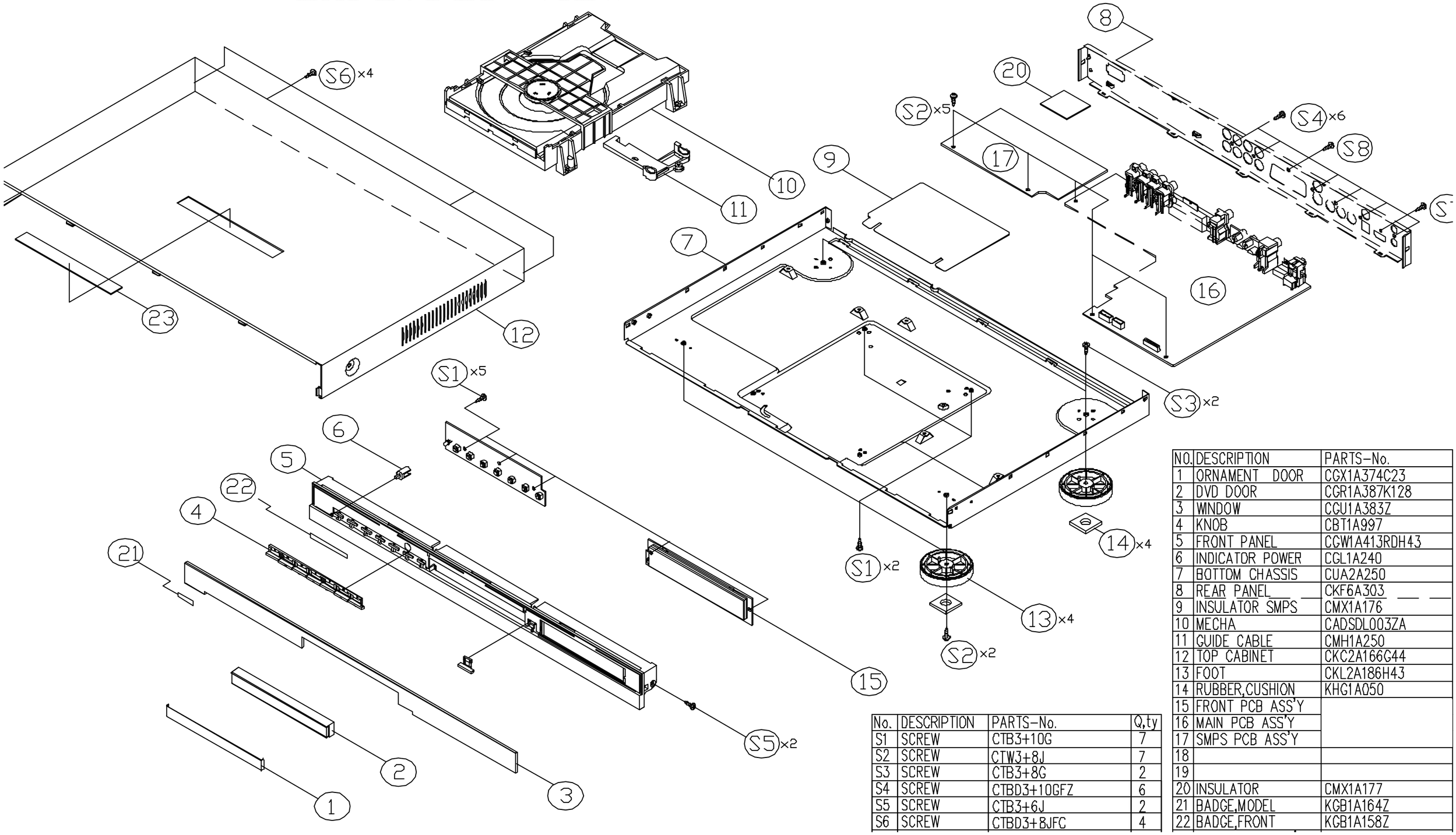
3. Removing the Rear Panel
Remove the Screws ①~⑧





4. Removing the Main PCB
Remove the Screws ①~⑧

EXPLODED VIEW



No.	DESCRIPTION	PARTS-No.	Q,ty
S1	SCREW	CTB3+10G	7
S2	SCREW	CTW3+8J	7
S3	SCREW	CTB3+8G	2
S4	SCREW	CTBD3+10GFZ	6
S5	SCREW	CTB3+6J	2
S6	SCREW	CTBD3+8JFC	4

NO.	DESCRIPTION	PARTS-No.
1	ORNAMENT DOOR	CGX1A374C23
2	DVD DOOR	CGR1A387K128
3	WNDOW	CGU1A383Z
4	KNOB	CBT1A997
5	FRONT PANEL	CGW1A413RDH43
6	INDICATOR POWER	CGL1A240
7	BOTTOM CHASSIS	CUA2A250
8	REAR PANEL	CKF6A303
9	INSULATOR SMPS	CMX1A176
10	MECHA	CADSDL003ZA
11	GUIDE CABLE	CMH1A250
12	TOP CABINET	CKC2A166G44
13	FOOT	CKL2A186H43
14	RUBBER,CUSHION	KHG1A050
15	FRONT PCB ASS'Y	
16	MAIN PCB ASS'Y	
17	SMPS PCB ASS'Y	
18		
19		
20	INSULATOR	CMX1A177
21	BADGE,MODEL	KGB1A164Z
22	BADGE,FRONT	KGB1A158Z

DVD 26/230 and DVD 28/230 Parts List			
Ref#	Component	Description	REQ-Qty
	CHE154	CLAMPER , ARM	0,12
	CPS1A830	PAD , SNOW L/R	2
	CPS1A831	PAD , SNOW CENTER	1
	CQB1A549Y	LABEL , ATTENTION DVD48	1
	CQB1A622	LABEL , SERIAL NO	3
	CQB1A741Z	ORIGIN LABEL	1
	CQB1A744Z	LABEL, DIVX	1
	CQB1A907Z	LABEL , BAR CODE AVR154	1
	CQB5A733T	SHEET , TOP LOGO	1
	DVD26/230SET	SET , DVD PLAYER	1
	CGWDVD26/230	FRONT PANEL ASS'Y	1
	CBT1A997	KNOB, FUNCTION	1
	CGB1A158Y	BADGE , FRONT HARMAN/KARDON	1
	CGL1A240	INDICATOR, POWER	1
	CGR1A387K128	DOOR, DVD	1
	CGUDVD26ZA	WINDOW ASS'Y	1
	CGB1A226Z	BADGE , DVD26	1
	CGU1A383Z	WINDOW, FIP	1
	CGW2A413RDH63	PANEL , FRONT DVD48BK	1
	CGX1A374YC23	ORNAMENT, DOOR	1
	CMZ1A105Y	FILTER , FIP	1
	CTB3+10JR	SCREW	5
	CTB3+6JR	SCREW	2
	CWC4F2A15A120B0	CARD , CABLE(15P,1.0mm,120mm,B,8mm)	1
	CGX1A375WA	AVR350/230 TOP BADGE ASS'Y	1
	CGB1A159Y	BADGE , TOP HARMAN/KARDON	1
	CGX1A375B24	ORNAMENT , BASE AVR350/230	1
	CHP1A066	TAPE , BOTH SIDE	1
	CHD1A055R	SCREW , SPECIAL	1
	CKC3A166B35	CABINET , TOP DVD28/230	1
	CTBD3+10GFZR	SCREW	6
	CTBD3+8JFZR	SCREW	4
	CTB3+6FFZR	SCREW	1
	CUADVD26/230	BOTTOM CHASSIS ASS'Y	1
	CADDVD27ZA	DVD MECHANISM ASS'Y(KOMI)	1
	CADSDL003YA	LOADER ASS'Y	1
	CMH1A250	GUIDE, CABLE	1
	CWB1B905150EE	WIRE ASS'Y	1
	CWB5A906150SE	WIRE ASS'Y	1
	CWC1G2A24G250B	CABLE , CARD	1
	C4FJ054	TAPE , BOTH SIDE	0,02
	CHG1A360	CUSHION , FOOT	4
	CHR301	CLAMPER	2
	CJA2B043ZA	CORD , POWER(EUR)	1
	CKF11A303U	PANEL , REAR DVD26	1

Ref#	Component	Description	REQ-Qty
	CKL2A186H43	FOOT	4
	CMX1A176	INSULATOR, SMPS	1
	CMX1A180Z	INSULATOR	1
	COP11840C	DVD37 SMPS ASS'Y (DVD37/47)	1
	CIP11840C	SMPS AUTO ASS'Y	1
	CUP11840Z	PCB , SMPS	0,5
C905	CCFT1H104ZF	CAP , SEMICONDUCTOR	1
C906	CCKT1H391KB	CAP , CERAMIC	1
C907	CCEA1HH100T	CAP , ELECT	1
C908	CCEA1HH470T	CAP , ELECT	1
C910	CCEA1HH1R0T	CAP , ELECT	1
C921	CCEA1EH331T	CAP , ELECT	1
C922	CCEA1HH0R1T	CAP , ELECT	1
C923	CCEA1EH331T	CAP , ELECT	1
C924	CCEA1VH101T	CAP , ELECT	1
C925	CCEA1EH331T	CAP , ELECT	1
C926	HCQI1H102JZT	CAP , MYLAR	1
C927	CCEA1HH470T	CAP , ELECT	1
C928	CCEA1HH470T	CAP , ELECT	1
C929	CCFT1H104ZF	CAP , SEMICONDUCTOR	1
C931	CCFT1H104ZF	CAP , SEMICONDUCTOR	1
C935	CCFT1H104ZF	CAP , SEMICONDUCTOR	1
D906	HVDMTZJ12BT	DIODE , ZENER	1
D907	HVD1N4148T	DIODE	1
D909	HVDMTZJ24BT	DIODE , ZENER	1
D910	HVD1N4148T	DIODE	1
D911	HVD1N4148T	DIODE	1
D912	HVDMTZJ5.1BT	DIODE , ZENER	1
D925	HVD1N4148T	DIODE	1
D926	HVDMTZJ12BT	DIODE , ZENER	1
D928	HVDMTZJ2.7BT	DIODE , ZENER	1
FH91	KJCFC5S	HOLDER , FUSE	1
FH92	KJCFC5S	HOLDER , FUSE	1
IC92	HVIKIA431BAT	I.C , REGULATOR	1
NT91	KRT10D9MSFT	THERMISTOR	1
Q904	HVTKTC3198YT	T.R	1
Q905	HVTKTA1273YT	T.R	1
Q906	HVTKSC1008YT	T.R	1
Q907	HVTKRC102MT	T.R	1
Q908	HVTKRA102MT	T.R	1
Q910	HVTKSC1008YT	T.R	1
Q911	HVTKSA708YT	T.R	1
Q912	HVDMCR100-6ZL1G	SCR (ON SEMI)	1
R901	KROS1TJ105V	RES , METAL FILM (1/2W , 1M OHM)	1
R903	CRD25TJ754T	RES	1
R904	CRD25TJ754T	RES	1
R905	CRD20TJ222T	RES , CARBON	1

Ref#	Component	Description	REQ-Qty
R906	CRD20TJ101T	RES , CARBON	1
R907	CRD20TJ103T	RES , CARBON	1
R909	CRD20TJ100T	RES , CARBON	1
R910	CRD20TJ103T	RES , CARBON	1
R911	CRD20TJ104T	RES , CARBON	1
R912	CRD20TJ102T	RES , CARBON	1
R913	CRD20TJ102T	RES , CARBON	1
R914	CRD20TJ333T	RES , CARBON	1
R920	CRD20TJ101T	RES , CARBON	1
R921	CRD20TJ222T	RES , CARBON	1
R922	CRD20TF3481T	RES , CARBON	1
R923	CRD20TF3001T	RES , CARBON	1
R924	CRD20TJ101T	RES , CARBON	1
R925	CRD25TJ101T	RES , CARBON	1
R926	CRD20TJ101T	RES , CARBON	1
R928	CRD20TJ102T	RES , CARBON	1
R929	CRD20TJ102T	RES , CARBON	1
R930	CRD20TJ101T	RES , CARBON	1
R934	CRD20TJ102T	RES , CARBON	1
R935	CRD20TJ153T	RES , CARBON	1
R940	CRD20TJ472T	RES , CARBON	1
CN91	CJP02KA060ZY	WAFER	1
CN92	CJP12GA19ZY	WAFER	1
C901	HCQF2E104KZE	CAP , POLYPROPYLENE FILM	1
C902	HCQF2E104KZE	CAP , POLYPROPYLENE FILM	1
C903	CCET400VKRH470I	CAP , ELECT(400V/47uF)	1
C904	CCKT3A222KBL	CAP , CERAMIC	1
C920	CCEA1EH102T	CAP , ELECT	1
C930	CCKDHS222ME	CAP , CERAMIC (400V Y-CAP)	1
C932	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	1
C933	CCKDHS102ME	CAP , CERAMIC (400V Y-CAP)	1
D901	HVD1N4007T	DIODE	1
D902	HVD1N4007T	DIODE	1
D903	HVD1N4007T	DIODE	1
D904	HVD1N4007T	DIODE	1
D905	HVDUF4007T	DIODE , SCHOTTKY	1
D908	HVD1N4007T	DIODE	1
D913	HVD1N4148T	DIODE	1
D920	HVD31DQ06H	DIODE	1
D921	HVDUF4007T	DIODE , SCHOTTKY	1
D922	HVD1N4937T	DIODE , RECTIFIERS	1
D923	HVD1N4937T	DIODE , RECTIFIERS	1
D924	HVDSF26T	DIODE , SUPER FAST	1
IC91	BVISG6848DZ	IC,PWM	1
LF91	CLZ9Z060Y	LINE FILTER	1
L903	CLZ9Z040Y	COIL , CHOCK(6.8uH)	1
L905	CLZ9Z040Y	COIL , CHOCK(6.8uH)	1

Ref#	Component	Description	REQ-Qty
PC91	HVIPC17L1CB	I.C , PHOTO COUPLER	1
Q901	CVIKHB4D5N60F2J	F.E.T HEAT SINK ASS'Y(CMY2A223)	1
	CMY2A223	HEAT SINK	1
	CTB3+8JR	SCREW	1
	CVIKHB4D5N60F2	F.E.T(TO-220IS)	1
	K8AYG6260	COMPOUND , SILICONE	0,2
Q903	HVTKSB1151Y	T.R	1
R902	KRG1SANJ104H	RES,METAL OXIDE FILM	1
R908	KRW1PJ1R5V	RES , WIRE WOUND(1W, 1.5ohm)	1
R927	KRDS1TJ681V	RES , CARBON	1
T901	CLT9Z018ZE	TRANS (DVD 27)	1
	COP11842F	DVD37A/230 PCB ASS'Y	1
CN11	CJP24GA195ZM	SMT FFC/FPC WAFER(0.5MM PITCH)	1
C100	CCUS1H104KC	CAP , CHIP	1
C101	CCUS1H104KC	CAP , CHIP	1
C102	CCUS1H104KC	CAP , CHIP	1
C103	CCUS1H104KC	CAP , CHIP	1
C104	CCUS1H104KC	CAP , CHIP	1
C106	CCUS1H104KC	CAP , CHIP	1
C107	CCUS1H104KC	CAP , CHIP	1
C110	CCUS1H104KC	CAP , CHIP	1
C112	CCUS1H104KC	CAP , CHIP	1
C113	CCUS1H104KC	CAP , CHIP	1
C115	CCUS1H104KC	CAP , CHIP	1
C117	CCUS1H104KC	CAP , CHIP	1
C120	CCUS1H104KC	CAP , CHIP	1
C122	CCUS1H104KC	CAP , CHIP	1
C124	CCUS1H104KC	CAP , CHIP	1
C126	CCUS1H104KC	CAP , CHIP	1
C127	CCUS1H104KC	CAP , CHIP	1
C129	CCUS1H104KC	CAP , CHIP	1
C146	CCUS1H104KC	CAP , CHIP	1
C156	CCUS1H180JA	CAP , CHIP(18PF/50V)	1
C156	CCUS1H180JA	CAP , CHIP(18PF/50V)	1
C157	CCUS1H330JA	CAP , CHIP	1
C158	CCUS1H330JA	CAP , CHIP	1
C159	CCUS1H562KC	CAP , CHIP CERAMIC(1608, 5600p)	1
C160	CCUS1H562KC	CAP , CHIP CERAMIC(1608, 5600p)	1
C161	CCUS1H562KC	CAP , CHIP CERAMIC(1608, 5600p)	1
C163	CCUS1H471JA	CAP , CHIP	1
C164	CCUS1H104KC	CAP , CHIP	1
C165	CCUS1H104KC	CAP , CHIP	1
C166	CCUS1H102KC	CAP , CHIP	1
C167	CCUS1H102KC	CAP , CHIP	1
C168	CCUS1H102KC	CAP , CHIP	1
C169	CCUS1H102KC	CAP , CHIP	1
C170	CCUS1H102KC	CAP , CHIP	1

Ref#	Component	Description	REQ-Qty
C172	CCUS1H102KC	CAP , CHIP	1
C173	CCUS1H102KC	CAP , CHIP	1
C174	CCUS1H333KC	CAP , CHIP	1
C175	CCUS1H104KC	CAP , CHIP	1
C176	CCUS1H102KC	CAP , CHIP	1
C178	CCUS1H104KC	CAP , CHIP	1
C179	CCUS1H104KC	CAP , CHIP	1
C180	CCUS1H104KC	CAP , CHIP	1
C181	CCUS1H104KC	CAP , CHIP	1
C183	CCUS1H104KC	CAP , CHIP	1
C185	CCUS1H104KC	CAP , CHIP	1
C186	CCUS1H104KC	CAP , CHIP	1
C187	CCUS1H104KC	CAP , CHIP	1
C188	CCUS1H104KC	CAP , CHIP	1
C189	CCUS1H104KC	CAP , CHIP	1
C190	CCUS1H104KC	CAP , CHIP	1
C191	CCUS1H104KC	CAP , CHIP	1
C192	CCUS1H104KC	CAP , CHIP	1
C193	CCUS1H104KC	CAP , CHIP	1
C194	CCUS1H104KC	CAP , CHIP	1
C195	CCUS1H104KC	CAP , CHIP	1
C196	CCUS1H104KC	CAP , CHIP	1
C197	CCUS1H104KC	CAP , CHIP	1
C199	CCUS1H104KC	CAP , CHIP	1
C200	CCUS1H104KC	CAP , CHIP	1
C201	CCUS1H104KC	CAP , CHIP	1
C204	CCUS1H104KC	CAP , CHIP	1
C205	CCUS1H104KC	CAP , CHIP	1
C207	CCUS1H272KC	CAP , CHIP	1
C208	CCUS1H102KC	CAP , CHIP	1
C209	CCUS1H273KC	CAP , CHIP	1
C210	CCUS1H102KC	CAP , CHIP	1
C214	CCUS1H104KC	CAP , CHIP	1
C215	CCUS1H561JA	CAP , CHIP	1
C217	CCUS1H273KC	CAP , CHIP	1
C218	CCUS1H104KC	CAP , CHIP	1
C220	CCUS1H104KC	CAP , CHIP	1
C222	CCUS1H104KC	CAP , CHIP	1
C225	CCUS1H104KC	CAP , CHIP	1
C227	CCUS1H104KC	CAP , CHIP	1
C228	CCUS1H222KC	CAP , CHIP	1
C229	CCUS1H222KC	CAP , CHIP	1
C230	CCUS1H222KC	CAP , CHIP	1
C231	CCUS1H222KC	CAP , CHIP	1
C232	CCUS1H330JA	CAP , CHIP	1
C240	CCUS1H104KC	CAP , CHIP	1
C242	CCUS1H104KC	CAP , CHIP	1

Ref#	Component	Description	REQ-Qty
C244	CCUS1H104KC	CAP , CHIP	1
C245	CCUS1H104KC	CAP , CHIP	1
C247	CCUS1H104KC	CAP , CHIP	1
C249	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C250	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C252	CCUS1H104KC	CAP , CHIP	1
C253	CCUS1H104KC	CAP , CHIP	1
C254	CCUS1H272KC	CAP , CHIP	1
C255	CCUS1H104KC	CAP , CHIP	1
C256	CCUS1H104KC	CAP , CHIP	1
C257	CCUS1H104KC	CAP , CHIP	1
C260	CCUS1H104KC	CAP , CHIP	1
C261	CCUS1H104KC	CAP , CHIP	1
C262	CCUS1H104KC	CAP , CHIP	1
C263	CCUS1H104KC	CAP , CHIP	1
C266	CCUS1H104KC	CAP , CHIP	1
C267	CCUS1H104KC	CAP , CHIP	1
C276	CCUS1H104KC	CAP , CHIP	1
C277	CCUS1H104KC	CAP , CHIP	1
C279	CCUS1H104KC	CAP , CHIP	1
C280	CCUS1H104KC	CAP , CHIP	1
C281	CCUS1H104KC	CAP , CHIP	1
C282	CCUS1H104KC	CAP , CHIP	1
C283	CCUS1H104KC	CAP , CHIP	1
C284	CCUS1H104KC	CAP , CHIP	1
C285	CCUS1H104KC	CAP , CHIP	1
C286	CCUS1H104KC	CAP , CHIP	1
C287	CCUS1H104KC	CAP , CHIP	1
C295	CCUS1H104KC	CAP , CHIP	1
C304	HCSHB21A220B	CAP , TANTAL B2 SIZE	1
C306	HCSHB21A220B	CAP , TANTAL B2 SIZE	1
C307	HCSHB21A220B	CAP , TANTAL B2 SIZE	1
C308	HCSHB21A220B	CAP , TANTAL B2 SIZE	1
C310	CCUS1H102KC	CAP , CHIP	1
C311	CCUS1H560JA	CAP , CHIP	1
C312	CCUS1H102KC	CAP , CHIP	1
C313	CCUS1H102KC	CAP , CHIP	1
C336	CCUS1H682KC	CAP , CHIP	1
C337	CCUS1H223KC	CAP , CHIP	1
C338	CCUS1H221JA	CAP , CHIP	1
C339	CCUS1H104KC	CAP , CHIP	1
C346	CCUS1H070DA	CAP , CHIP	1
C380	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C401	CCUS1H104KC	CAP , CHIP	1
C402	CCUS1H104KC	CAP , CHIP	1
C403	CCUS1H102KC	CAP , CHIP	1
C405	CCUS1H104KC	CAP , CHIP	1

Ref#	Component	Description	REQ-Qty
C406	CCUS1H104KC	CAP , CHIP	1
C408	CCUS1H104KC	CAP , CHIP	1
C429	CCUS1H104KC	CAP , CHIP	1
C430	CRJ10DJ0R0T	RES , CHIP	1
C431	CCUS1H221JA	CAP , CHIP	1
C432	CCUS1H104KC	CAP , CHIP	1
C511	CCUS1H151JA	CAP , CHIP	1
C531	CCUS1H104KC	CAP , CHIP	1
C533	CCUS1H104KC	CAP , CHIP	1
C552	CCUS1H104KC	CAP , CHIP	1
C553	CCUS1H104KC	CAP , CHIP	1
C555	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C556	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C578	CCUS1H104KC	CAP , CHIP	1
C580	CCUS1H104KC	CAP , CHIP	1
C581	CCUS1H104KC	CAP , CHIP	1
C584	CCUS1H104KC	CAP , CHIP	1
C585	CCUS1H104KC	CAP , CHIP	1
C593	CCUS1H104KC	CAP , CHIP	1
C594	CCUS1H104KC	CAP , CHIP	1
C615	CCUS1H391JA	CAP , CHIP	1
C617	CCUS1H104KC	CAP , CHIP	1
C620	CCUS1H104KC	CAP , CHIP	1
C630	CCUS1H104KC	CAP , CHIP	1
C631	CCUS1H104KC	CAP , CHIP	1
C636	CCUS1H391JA	CAP , CHIP	1
C638	CCUS1H391JA	CAP , CHIP	1
C639	CCUS1H391JA	CAP , CHIP	1
C641	CCUS1H391JA	CAP , CHIP	1
C644	CCUS1H391JA	CAP , CHIP	1
C646	CCUS1H391JA	CAP , CHIP	1
C650	CCUS1H391JA	CAP , CHIP	1
C657	CCUS1H391JA	CAP , CHIP	1
C659	CCUS1H391JA	CAP , CHIP	1
C660	CCUS1H391JA	CAP , CHIP	1
C662	CCUS1H391JA	CAP , CHIP	1
C664	CCUS1H104KC	CAP , CHIP	1
C665	CCUS1H104KC	CAP , CHIP	1
C668	CCUS1H104KC	CAP , CHIP	1
C672	CCUS1H104KC	CAP , CHIP	1
C674	CCUS1H104KC	CAP , CHIP	1
C677	CCUS1H104KC	CAP , CHIP	1
C678	CCUS1H104KC	CAP , CHIP	1
C679	CCUS1H104KC	CAP , CHIP	1
C809	CCUS1H104KC	CAP , CHIP	1
C810	CCUS1H560JA	CAP , CHIP	1
C812	CCUS1H101JA	CAP , CHIP	1

Ref#	Component	Description	REQ-Qty
C817	CCUS1H104KC	CAP , CHIP	1
C819	CCUS1H101JA	CAP , CHIP	1
C820	CCUS1H101JA	CAP , CHIP	1
C822	CCUS1H560JA	CAP , CHIP	1
C823	CCUS1H104KC	CAP , CHIP	1
C828	CCUS1H220JA	CAP , CHIP	1
C830	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C831	CCUS1H150JA	CAP , CHIP(15PF/50V)	1
C834	CCUS1H104KC	CAP , CHIP	1
D101	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D102	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D501	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D502	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D511	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D601	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D602	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
D603	HVDRLS4148SR	DIODE, SWITCHING, SMD TYPE	1
IC10	HVIZR36778	IC,MPEG (ZORAN)	1
IC11	HVILM1117S-3V3	I.C , REGULATOR (3.3V)	1
IC12	HVILM1117S-1V8	I.C , REGULATOR (1.8V)	1
IC13	HVILM1117S-3V3	I.C , REGULATOR (3.3V)	1
IC14	HVILM1117S-1V8	I.C , REGULATOR (1.8V)	1
IC15	HVIAT24C08N10SC	I.C	1
IC17	HVI74VHC04MX	I.C , INVERTER	1
IC19	HVIZR36721	IC,HDMI TRANSMITTER(ZORAN)	1
IC20	HVITL3472IDR	IC,OP AMP 8-SOIC (TI)	1
IC21	HVIM29W160ET70N	IC,16M FLASH (ST)	1
IC22	HVIM12L64164A7T	IC, 64M SDRAM (4X16)	1
IC23	HVIAM5888SLF	I. C , Motor Driver(AMtek,Pb free)	1
IC24	HVIZR36707	IC,RF (ZORAN)	1
IC40	HVICS4382-KQ	I.C , DAC	1
IC41	HVIBH7862FS	VIDEO DRIVER(ROHM)	1
IC42	HVIBA7660FS	IC , R.G.B DRIVER	1
IC43	HVI74LVC157ADBR	I.C , MULTIPLEXER	1
IC45	CVIANAM1441DVD	I,C , U-COM DVD37A(ST72F324K2/ST)	1
	HVIST72F324K2	IC,FLASH (ST)	1
IC47	HVITC74HCT7007F	I.C	1
IC51	HVILM1117S-5.0	IC REGULATOR/SOT-223	1
IC52	HVINJM2068MDTE1	I.C , OP AMP	1
IC53	HVILM1117S-3V3	I.C , REGULATOR (3.3V)	1
IC54	HVINJM2068MDTE1	I.C , OP AMP	1
IC55	HVINJM2068MDTE1	I.C , OP AMP	1
IC56	HVILM1117S-5.0	IC REGULATOR/SOT-223	1
IC57	HVTHN1K05FU	MOS FET	1
JK07	HJJ9H003Z	JACK , HDMI(JALCO)	1
L101	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L102	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1

Ref#	Component	Description	REQ-Qty
L103	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L104	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L105	HLQ06E100KRZ	INDUCTOR , CHIP	1
L106	HLQ06E100KRZ	INDUCTOR , CHIP	1
L107	HLQ06E100KRZ	INDUCTOR , CHIP	1
L109	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L110	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L111	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L112	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L113	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L114	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L115	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L116	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L117	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L120	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L121	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L123	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L124	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L125	HLZ9R006Z	BEAD , CHIP	1
L126	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L127	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L128	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L518	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L519	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L520	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L521	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L522	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L601	BLZ9R004Z	BEAD CHIP 90 OHM (2012 SIZE)	1
L602	BLZ9R004Z	BEAD CHIP 90 OHM (2012 SIZE)	1
L603	BLZ9R004Z	BEAD CHIP 90 OHM (2012 SIZE)	1
L604	BLZ9R004Z	BEAD CHIP 90 OHM (2012 SIZE)	1
L610	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L611	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L612	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L613	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L614	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L615	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L617	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L696	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L801	HLQ08ER68KRZ	CHIP FERRITE INDUCTOR	1
L802	HLQ08E1R8KRZ	CHIP , COIL (1.8UH)	1
L803	HLQ08E1R8KRZ	CHIP , COIL (1.8UH)	1
L804	HLQ09E8R2KRZ	CHIP , COIL	1
L805	HLQ08ER68KRZ	CHIP FERRITE INDUCTOR	1
L806	HLQ08ER39KRZ	CHIP FERRITE INDUCTOR	1
L807	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1
L808	HLZ9R001Z	FB, 2012(0805)600E, 1.5A,POWER	1

Ref#	Component	Description	REQ-Qty
L809	HLQ09E8R2KRZ	CHIP , COIL	1
L884	HLQ08E1R8KRZ	CHIP , COIL (1.8UH)	1
Q105	HVTKTA1664YP	T.R	1
Q106	HVTKTA1664YP	T.R	1
Q108	HVT2N3904SP	TR, CHIP (KEC)	1
Q109	HVT2N3904SP	TR, CHIP (KEC)	1
Q110	HVT2N3904SP	TR, CHIP (KEC)	1
Q307	HVT2SA1955B	T.R, TE85L,F, SSM Type, hFE=B	1
Q308	HVT2N3904SP	TR, CHIP (KEC)	1
Q315	HVTKRC107S	T.R , CHIP	1
Q316	HVTKTA1504SYRTK	T.R , CHIP	1
Q404	HVT2N3904SP	TR, CHIP (KEC)	1
Q407	HVTKRC107S	T.R , CHIP	1
Q408	HVTKRA107ST	T.R , CHIP	1
Q501	HVTKTA1504SYRTK	T.R , CHIP	1
Q502	HVTKTC3875SYRTK	T.R , CHIP	1
Q604	HVTKRA107ST	T.R , CHIP	1
Q606	HVTKRA107ST	T.R , CHIP	1
Q607	HVTKRA107ST	T.R , CHIP	1
Q608	HVTKRC107S	T.R , CHIP	1
Q609	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q610	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q611	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q612	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q613	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q614	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q615	HVTKRA107ST	T.R , CHIP	1
Q616	HVTKRC107S	T.R , CHIP	1
Q617	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q618	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q619	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q620	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q621	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q622	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q801	HVTKRC107S	T.R , CHIP	1
Q802	HVTKRC107S	T.R , CHIP	1
Q803	HVTKTA1504SYRTK	T.R , CHIP	1
Q804	HVTKTA1504SYRTK	T.R , CHIP	1
Q805	HVTKTD1304T	T.R , CHIP (MUTE)	1
Q806	HVTKRA107ST	T.R , CHIP	1
Q821	HVTKTA1504SYRTK	T.R , CHIP	1
R100	CRJ10DJ472T	RES , CHIP	1
R101	CRJ10DF4700T	RES, CHIP 470 OHM/1608/1%	1
R102	CRJ10DJ0R0T	RES , CHIP	1
R103	CRJ10DF4300T	RES	1
R104	CRJ10DF3920T	RES. CHIP (392R 1%)	1
R105	CRJ10DJ0R0T	RES , CHIP	1

Ref#	Component	Description	REQ-Qty
R109	CRJ10DJ472T	RES , CHIP	1
R112	CRJ10DJ202T	RES , CHIP	1
R113	CRJ10DJ202T	RES , CHIP	1
R114	CRJ10DJ121T	RES , CHIP	1
R115	CRJ10DJ0R0T	RES , CHIP	1
R116	CRJ10DJ121T	RES , CHIP	1
R117	CRJ10DJ121T	RES , CHIP	1
R118	CRJ10DJ103T	RES , CHIP	1
R123	CRJ10DJ0R0T	RES , CHIP	1
R124	CRJ10DJ0R0T	RES , CHIP	1
R125	CRJ10DJ113T	RES , CHIP	1
R126	CRJ10DJ0R0T	RES , CHIP	1
R127	CRJ10DJ0R0T	RES , CHIP	1
R128	CRJ10DJ121T	RES , CHIP	1
R133	CRJ10DF3920T	RES. CHIP (392R 1%)	1
R134	CRJ10DJ0R0T	RES , CHIP	1
R135	CRJ10DJ100T	RES , CHIP	1
R136	CRJ10DJ221T	RES , CHIP	1
R137	CRJ10DJ221T	RES , CHIP	1
R138	CRJ10DJ100T	RES , CHIP	1
R139	CRJ10DJ472T	RES , CHIP	1
R140	CRJ10DJ133T	RES , CHIP	1
R141	CRJ10DJ474T	RES , CHIP	1
R142	CRJ10DJ474T	RES , CHIP	1
R144	CRJ10DJ330T	RES , CHIP	1
R145	CRJ10DJ750T	RES , CHIP	1
R146	CRJ10DJ0R0T	RES , CHIP	1
R147	CRJ10DJ104T	RES , CHIP	1
R148	CRJ10DJ750T	RES , CHIP	1
R149	CRJ104DJ470T	RES , 4ARRAY (1608*4)	1
R150	CRJ104DJ470T	RES , 4ARRAY (1608*4)	1
R151	CRJ10DJ0R0T	RES , CHIP	1
R152	CRJ10DJ0R0T	RES , CHIP	1
R153	CRJ10DJ0R0T	RES , CHIP	1
R154	CRJ10DJ0R0T	RES , CHIP	1
R155	CRJ10DJ101T	RES , CHIP	1
R157	CRJ10DJ0R0T	RES , CHIP	1
R158	CRJ104DJ101T	RES , CHIP NETWORK(1/16W, 100ohm, 1608X	1
R159	CRJ10DJ472T	RES , CHIP	1
R160	CRJ10DJ330T	RES , CHIP	1
R162	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R163	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R164	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R165	CRJ10DJ330T	RES , CHIP	1
R166	CRJ10DJ330T	RES , CHIP	1
R167	CRJ10DJ330T	RES , CHIP	1
R168	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1

Ref#	Component	Description	REQ-Qty
R169	CRJ10DJ750T	RES , CHIP	1
R170	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R171	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R172	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R173	CRJ104DJ330T	RES , 4ARRAY (1608*4)	1
R174	CRJ10DJ472T	RES , CHIP	1
R175	CRJ10DJ912T	RES , CHIP	1
R176	CRJ10DJ132T	RES , CHIP	1
R177	CRJ10DJ132T	RES , CHIP	1
R178	CRJ10DJ272T	RES , CHIP	1
R180	CRJ10DJ0R0T	RES , CHIP	1
R181	CRJ10DJ0R0T	RES , CHIP	1
R182	CRJ10DJ0R0T	RES , CHIP	1
R183	CRJ10DF1202T	RES , CHIP 1%	1
R184	CRJ10DJ471T	RES , CHIP	1
R185	CRJ10DJ332T	RES , CHIP	1
R186	CRJ10DJ332T	RES , CHIP	1
R187	CRJ10DJ332T	RES , CHIP	1
R188	CRJ10DJ113T	RES , CHIP	1
R189	CRJ10DJ105T	RES , CHIP	1
R190	CRJ10DJ223T	RES , CHIP	1
R191	CRJ10DJ223T	RES , CHIP	1
R192	CRJ10DJ103T	RES , CHIP	1
R193	CRJ10DJ332T	RES , CHIP	1
R194	CRJ10DJ750T	RES , CHIP	1
R195	CRJ10DJ101T	RES , CHIP	1
R196	CRJ10DJ472T	RES , CHIP	1
R199	CRJ10DJ330T	RES , CHIP	1
R200	CRJ10DJ330T	RES , CHIP	1
R201	CRJ10DJ472T	RES , CHIP	1
R202	CRJ10DJ622T	RES , CHIP	1
R203	CRJ10DJ562T	RES , CHIP	1
R204	CRJ10DJ562T	RES , CHIP	1
R205	CRJ10DJ562T	RES , CHIP	1
R206	CRJ10DJ103T	RES , CHIP	1
R207	CRJ10DF4700T	RES, CHIP 470 OHM/1608/1%	1
R209	CRJ10DF1002T	RES , CHIP 1%	1
R210	CRJ10DF1002T	RES , CHIP 1%	1
R211	CRJ10DF1002T	RES , CHIP 1%	1
R219	CRJ10DJ273T	RES , CHIP	1
R220	CRJ10DJ562T	RES , CHIP	1
R221	CRJ10DJ562T	RES , CHIP	1
R222	CRJ10DJ562T	RES , CHIP	1
R230	CRJ10DJ472T	RES , CHIP	1
R241	CRJ10DF75R0T	RES, CHIP 1% 75 OHM	1
R243	CRJ10DF75R0T	RES, CHIP 1% 75 OHM	1
R244	CRJ10DF75R0T	RES, CHIP 1% 75 OHM	1

Ref#	Component	Description	REQ-Qty
R265	CRJ10DJ472T	RES , CHIP	1
R284	CRJ10DJ472T	RES , CHIP	1
R285	CRJ10DJ472T	RES , CHIP	1
R287	CRJ10DJ113T	RES , CHIP	1
R297	CRJ10DJ0R0T	RES , CHIP	1
R298	CRJ10DJ103T	RES , CHIP	1
R299	CRJ10DJ0R0T	RES , CHIP	1
R301	CRJ10DJ0R0T	RES , CHIP	1
R302	CRJ10DJ0R0T	RES , CHIP	1
R303	CRJ10DJ0R0T	RES , CHIP	1
R305	CRJ10DJ472T	RES , CHIP	1
R306	CRJ10DJ0R0T	RES , CHIP	1
R307	CRJ10DJ272T	RES , CHIP	1
R308	CRJ10DJ102T	RES , CHIP	1
R309	CRJ10DJ102T	RES , CHIP	1
R377	CRJ10DJ221T	RES , CHIP	1
R404	CRJ10DJ333T	RES , CHIP	1
R409	CRJ10DJ100T	RES , CHIP	1
R410	CRJ10DJ103T	RES , CHIP	1
R412	CRJ10DJ681T	RES , CHIP	1
R413	CRJ10DJ821T	RES , CHIP	1
R414	CRJ10DJ122T	RES , CHIP	1
R415	CRJ10DJ152T	RES , CHIP	1
R416	CRJ10DJ222T	RES , CHIP	1
R417	CRJ10DJ332T	RES , CHIP	1
R418	CRJ10DJ472T	RES , CHIP	1
R419	CRJ10DJ561T	RES , CHIP	1
R420	CRJ10DJ750T	RES , CHIP	1
R421	CRJ10DJ680T	RES , CHIP	1
R422	CRJ10DJ121T	RES , CHIP	1
R423	CRJ10DJ820T	RES , CHIP	1
R424	CRJ10DJ4R7T	RES , CHIP	1
R425	CRJ10DJ472T	RES , CHIP	1
R501	CRJ10DJ182T	RES , CHIP	1
R502	CRJ10DJ182T	RES , CHIP	1
R503	CRJ10DJ103T	RES , CHIP	1
R504	CRJ10DJ473T	RES , CHIP	1
R505	CRJ10DJ470T	RES , CHIP	1
R506	CRJ10DJ271T	RES , CHIP	1
R511	CRJ10DJ0R0T	RES , CHIP	1
R512	CRJ10DJ0R0T	RES , CHIP	1
R513	CRJ10DJ103T	RES , CHIP	1
R514	CRJ10DJ100T	RES , CHIP	1
R515	CRJ10DJ103T	RES , CHIP	1
R516	CRJ10DJ103T	RES , CHIP	1
R517	CRJ10DJ103T	RES , CHIP	1
R518	CRJ10DJ103T	RES , CHIP	1

Ref#	Component	Description	REQ-Qty
R519	CRJ10DJ473T	RES , CHIP	1
R522	CRJ10DJ0R0T	RES , CHIP	1
R533	CRJ10DJ0R0T	RES , CHIP	1
R544	CRJ10DJ0R0T	RES , CHIP	1
R549	CRJ10DJ105T	RES , CHIP	1
R552	CRJ10DJ0R0T	RES , CHIP	1
R553	CRJ10DJ0R0T	RES , CHIP	1
R564	CRJ10DJ472T	RES , CHIP	1
R593	CRJ10DJ750T	RES , CHIP	1
R600	CRJ10DJ132T	RES , CHIP	1
R601	CRJ10DJ132T	RES , CHIP	1
R602	CRJ10DJ132T	RES , CHIP	1
R603	CRJ10DJ132T	RES , CHIP	1
R604	CRJ10DJ132T	RES , CHIP	1
R605	CRJ10DJ132T	RES , CHIP	1
R606	CRJ10DJ132T	RES , CHIP	1
R607	CRJ10DJ132T	RES , CHIP	1
R608	CRJ10DJ132T	RES , CHIP	1
R609	CRJ10DJ132T	RES , CHIP	1
R611	CRJ10DJ0R0T	RES , CHIP	1
R612	CRJ10DJ332T	RES , CHIP	1
R618	CRJ10DJ332T	RES , CHIP	1
R619	CRJ10DJ101T	RES , CHIP	1
R620	CRJ10DJ132T	RES , CHIP	1
R621	CRJ10DJ132T	RES , CHIP	1
R622	CRJ10DJ132T	RES , CHIP	1
R623	CRJ10DJ132T	RES , CHIP	1
R624	CRJ10DJ102T	RES , CHIP	1
R625	CRJ10DJ332T	RES , CHIP	1
R626	CRJ10DJ332T	RES , CHIP	1
R627	CRJ10DJ332T	RES , CHIP	1
R628	CRJ10DJ102T	RES , CHIP	1
R629	CRJ10DJ332T	RES , CHIP	1
R630	CRJ10DJ221T	RES , CHIP	1
R631	CRJ10DJ221T	RES , CHIP	1
R632	CRJ10DJ104T	RES , CHIP	1
R633	CRJ10DJ104T	RES , CHIP	1
R641	CRJ10DJ224T	RES , CHIP	1
R642	CRJ10DJ224T	RES , CHIP	1
R650	CRJ10DJ132T	RES , CHIP	1
R651	CRJ10DJ132T	RES , CHIP	1
R652	CRJ10DJ132T	RES , CHIP	1
R653	CRJ10DJ132T	RES , CHIP	1
R654	CRJ10DJ102T	RES , CHIP	1
R655	CRJ10DJ332T	RES , CHIP	1
R656	CRJ10DJ332T	RES , CHIP	1
R657	CRJ10DJ332T	RES , CHIP	1

Ref#	Component	Description	REQ-Qty
R658	CRJ10DJ102T	RES , CHIP	1
R659	CRJ10DJ332T	RES , CHIP	1
R660	CRJ10DJ102T	RES , CHIP	1
R661	CRJ10DJ102T	RES , CHIP	1
R662	CRJ10DJ104T	RES , CHIP	1
R663	CRJ10DJ104T	RES , CHIP	1
R664	CRJ10DJ102T	RES , CHIP	1
R665	CRJ10DJ102T	RES , CHIP	1
R666	CRJ10DJ102T	RES , CHIP	1
R667	CRJ10DJ102T	RES , CHIP	1
R668	CRJ10DJ104T	RES , CHIP	1
R669	CRJ10DJ104T	RES , CHIP	1
R670	CRJ10DJ102T	RES , CHIP	1
R671	CRJ10DJ102T	RES , CHIP	1
R672	CRJ10DJ332T	RES , CHIP	1
R673	CRJ10DJ102T	RES , CHIP	1
R674	CRJ10DJ332T	RES , CHIP	1
R675	CRJ10DJ102T	RES , CHIP	1
R676	CRJ10DJ102T	RES , CHIP	1
R677	CRJ10DJ102T	RES , CHIP	1
R678	CRJ10DJ132T	RES , CHIP	1
R679	CRJ10DJ132T	RES , CHIP	1
R680	CRJ10DJ132T	RES , CHIP	1
R681	CRJ10DJ132T	RES , CHIP	1
R685	CRJ10DJ101T	RES , CHIP	1
R686	CRJ10DJ0R0T	RES , CHIP	1
R687	CRJ10DJ0R0T	RES , CHIP	1
R688	CRJ10DJ0R0T	RES , CHIP	1
R694	CRJ10DJ0R0T	RES , CHIP	1
R695	CRJ10DJ0R0T	RES , CHIP	1
R698	CRJ10DJ132T	RES , CHIP	1
R699	CRJ10DJ132T	RES , CHIP	1
R726	CRJ10DJ474T	RES , CHIP	1
R727	CRJ10DJ221T	RES , CHIP	1
R728	CRJ10DJ223T	RES , CHIP	1
R729	CRJ10DJ221T	RES , CHIP	1
R730	CRJ10DJ221T	RES , CHIP	1
R731	CRJ10DJ221T	RES , CHIP	1
R732	CRJ10DJ221T	RES , CHIP	1
R733	CRJ10DJ222T	RES , CHIP	1
R734	CRJ10DJ222T	RES , CHIP	1
R735	CRJ10DJ222T	RES , CHIP	1
R736	CRJ10DJ222T	RES , CHIP	1
R737	CRJ10DJ222T	RES , CHIP	1
R738	CRJ10DJ222T	RES , CHIP	1
R739	CRJ10DJ224T	RES , CHIP	1
R744	CRJ10DJ222T	RES , CHIP	1

Ref#	Component	Description	REQ-Qty
R745	CRJ10DJ222T	RES , CHIP	1
R746	CRJ10DJ222T	RES , CHIP	1
R747	CRJ10DJ222T	RES , CHIP	1
R748	CRJ10DJ222T	RES , CHIP	1
R749	CRJ10DJ222T	RES , CHIP	1
R801	CRJ10DJ0R0T	RES , CHIP	1
R802	CRJ10DJ820T	RES , CHIP	1
R803	CRJ10DJ0R0T	RES , CHIP	1
R806	CRJ10DJ820T	RES , CHIP	1
R807	CRJ10DJ680T	RES , CHIP	1
R808	CRJ10DJ680T	RES , CHIP	1
R809	CRJ10DJ680T	RES , CHIP	1
R810	CRJ10DJ471T	RES , CHIP	1
R811	CRJ10DJ471T	RES , CHIP	1
R812	CRJ10DJ102T	RES , CHIP	1
R813	CRJ10DJ821T	RES , CHIP	1
R814	CRJ10DJ750T	RES , CHIP	1
R815	CRJ10DJ181T	RES , CHIP	1
R816	CRJ10DJ390T	RES , CHIP	1
R817	CRJ10DJ750T	RES , CHIP	1
R818	CRJ10DJ750T	RES , CHIP	1
R821	CRJ10DJ0R0T	RES , CHIP	1
R823	CRJ10DJ0R0T	RES , CHIP	1
R824	CRJ10DJ750T	RES , CHIP	1
R825	CRJ10DJ101T	RES , CHIP	1
R826	CRJ10DJ222T	RES , CHIP	1
R827	CRJ10DJ221T	RES , CHIP	1
R828	CRJ18AJ221T	RES , CHIP	1
R829	CRJ10DJ104T	RES , CHIP	1
R830	CRJ10DJ390T	RES , CHIP	1
R831	CRJ10DJ620T	RES , CHIP	1
R832	CRJ10DJ102T	RES , CHIP	1
R833	CRJ10DJ750T	RES , CHIP	1
R834	CRJ10DJ820T	RES , CHIP	1
R878	CRJ10DJ104T	RES , CHIP	1
R879	CRJ10DJ101T	RES , CHIP	1
R880	CRJ10DJ221T	RES , CHIP	1
R895	CRJ10DJ221T	RES , CHIP	1
R896	CRJ10DJ680T	RES , CHIP	1
X101	HOX27000E180S	CRYSTAL , CHIP(27MHZ,SMD)	1
C105	CCEA1CH470T	CAP , ELECT	1
C108	CCEA1CH101T	CAP , ELECT	1
C109	CCEA1CH101T	CAP , ELECT	1
C111	CCEA1CH101T	CAP , ELECT	1
C114	CCEA1CH101T	CAP , ELECT	1
C116	CCEA1CH101T	CAP , ELECT	1
C118	CCEA1CH101T	CAP , ELECT	1

Ref#	Component	Description	REQ-Qty
C119	CCEA1CH101T	CAP , ELECT	1
C121	CCEA1CH101T	CAP , ELECT	1
C123	CCEA1CH101T	CAP , ELECT	1
C125	CCEA1CH101T	CAP , ELECT	1
C128	CCEA1CH101T	CAP , ELECT	1
C130	CCEA1CH101T	CAP , ELECT	1
C137	CCEA1CH470T	CAP , ELECT	1
C155	CCEA1CH470T	CAP , ELECT	1
C177	CCEA1CH101T	CAP , ELECT	1
C182	CCEA1CH470T	CAP , ELECT	1
C184	CCEA1CH470T	CAP , ELECT	1
C198	CCEA1CH101T	CAP , ELECT	1
C202	CCEA1CH470T	CAP , ELECT	1
C203	CCEA1CH470T	CAP , ELECT	1
C206	CCEA1CH470T	CAP , ELECT	1
C213	CCEA1CH221T	CAP , ELECT	1
C219	CCEA1CH470T	CAP , ELECT	1
C221	CCEA1CH101T	CAP , ELECT	1
C223	CCEA1CH101T	CAP , ELECT	1
C224	CCEA1CH101T	CAP , ELECT	1
C226	CCEA1CH101T	CAP , ELECT	1
C233	CCEA1CH101T	CAP , ELECT	1
C241	CCEA1CH470T	CAP , ELECT	1
C243	CCEA1CH470T	CAP , ELECT	1
C251	CCEA1CH470T	CAP , ELECT	1
C258	CCEA1HH4R7T	CAP , ELECT	1
C301	CCEA1CH101T	CAP , ELECT	1
C404	CCEA1CKS470T	CAP , ELECT	1
C504	CCEA1CH221T	CAP , ELECT	1
C508	CCEA1CH221T	CAP , ELECT	1
C510	CCEA1HH4R7T	CAP , ELECT	1
C530	CCEA1CH221T	CAP , ELECT	1
C532	CCEA1CH221T	CAP , ELECT	1
C548	CCEA1CH221T	CAP , ELECT	1
C549	CCEA1CH221T	CAP , ELECT	1
C561	CCEA1CH100T	CAP , ELECT	1
C562	CCEA1HH1R0T	CAP , ELECT	1
C574	CCEA1CH221T	CAP , ELECT	1
C579	CCEA1CH221T	CAP , ELECT	1
C582	CCEA1CH470T	CAP , ELECT	1
C583	CCEA1CH221T	CAP , ELECT	1
C586	CCEA1CH221T	CAP , ELECT	1
C616	CCEA1CH220T	CAP , ELECT	1
C618	CCEA1CH101T	CAP , ELECT	1
C628	CCEA1CH101T	CAP , ELECT	1
C629	CCEA1CH101T	CAP , ELECT	1
C637	HCQI1H222JZT	CAP , MYLAR	1

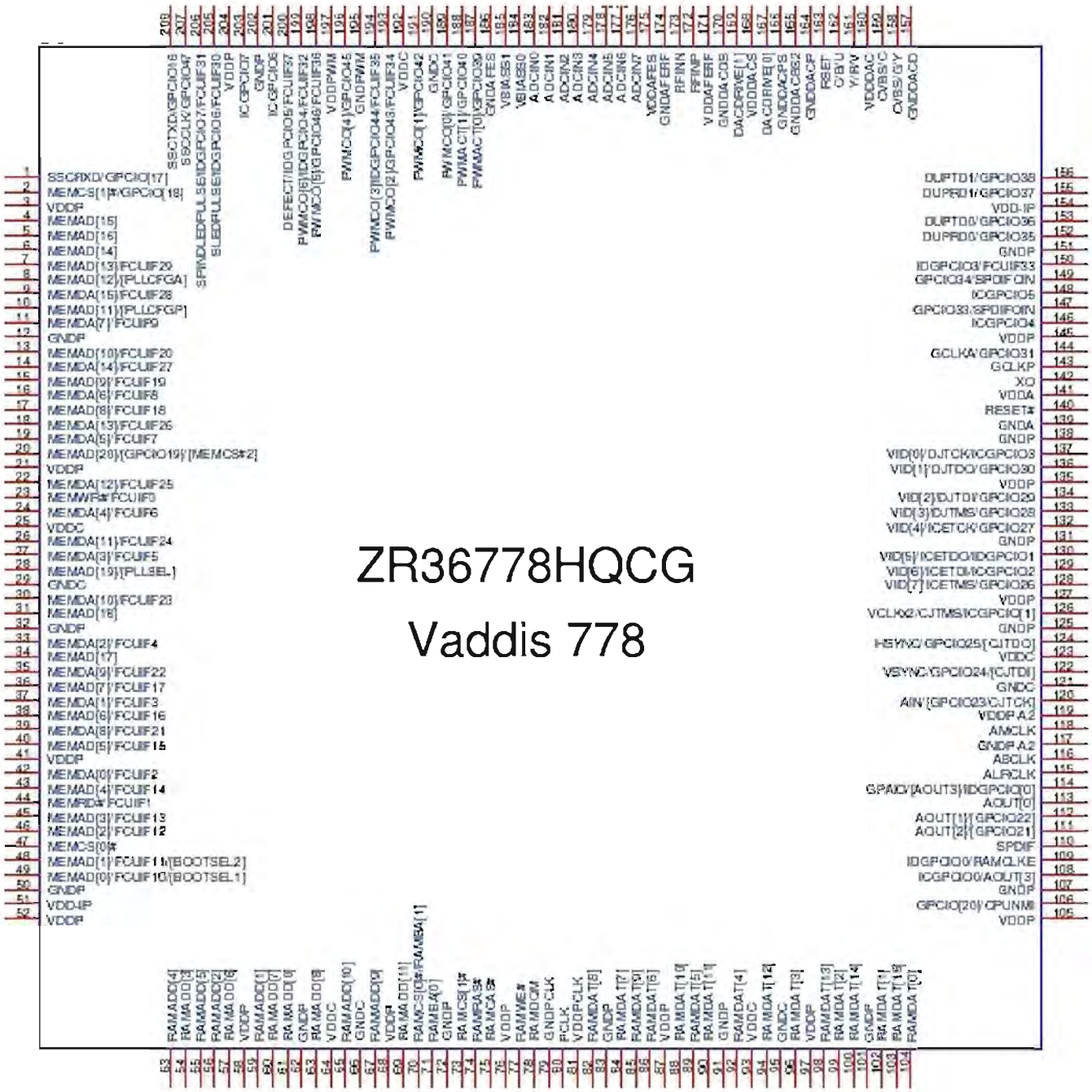
Ref#	Component	Description	REQ-Qty
C640	HCQI1H222JZT	CAP , MYLAR	1
C642	CCEA1CH220T	CAP , ELECT	1
C643	CCEA1CH220T	CAP , ELECT	1
C645	HCQI1H222JZT	CAP , MYLAR	1
C648	HCQI1H222JZT	CAP , MYLAR	1
C653	CCEA1CH220T	CAP , ELECT	1
C658	HCQI1H222JZT	CAP , MYLAR	1
C661	HCQI1H222JZT	CAP , MYLAR	1
C666	CCEA1CH101T	CAP , ELECT	1
C667	CCEA1CH101T	CAP , ELECT	1
C669	CCEA1CH101T	CAP , ELECT	1
C673	CCEA1CH101T	CAP , ELECT	1
C675	CCEA1CH470T	CAP , ELECT	1
C676	CCEA1HH1R0T	CAP , ELECT	1
C680	CCEA1CH221T	CAP , ELECT	1
C681	CCEA1CH101T	CAP , ELECT	1
C685	HCQI1H222JZT	CAP , MYLAR	1
C687	HCQI1H222JZT	CAP , MYLAR	1
C688	HCQI1H222JZT	CAP , MYLAR	1
C689	HCQI1H222JZT	CAP , MYLAR	1
C690	HCQI1H222JZT	CAP , MYLAR	1
C692	HCQI1H222JZT	CAP , MYLAR	1
C733	CCEA1HH3R3T	CAP , ELECT	1
C751	CCEA1CH220T	CAP , ELECT	1
C752	CCEA1CH220T	CAP , ELECT	1
C795	CCEA1CH221T	CAP , ELECT	1
C801	CCEA1AH331T	CAP , ELECT	1
C802	CCEA1AH331T	CAP , ELECT	1
C803	CCEA1CH220T	CAP , ELECT	1
C804	CCEA1CH101T	CAP , ELECT	1
C811	CCEA1AH331T	CAP , ELECT	1
C813	CCEA1AH331T	CAP , ELECT	1
C815	CCEA1AH331T	CAP , ELECT	1
C818	CCEA1AH331T	CAP , ELECT	1
C824	CCEA1HH1R0T	CAP , ELECT	1
C825	CCEA1HH1R0T	CAP , ELECT	1
C826	CCEA1CH470T	CAP , ELECT	1
C827	CCEA1CH470T	CAP , ELECT	1
C829	CCEA1AH471T	CAP , ELECT	1
C835	CCEA1CH221T	CAP , ELECT	1
C882	CCEA1AH471T	CAP , ELECT	1
C891	CCEA1AH471T	CAP , ELECT	1
IC50	HVIKA79L08AZT	REGULATOR, -8V	1
Q605	HVTKSA916YT	T.R	1
S401	CST1A024ZT	SW , TACT	1
S402	CST1A024ZT	SW , TACT	1
S403	CST1A024ZT	SW , TACT	1

Ref#	Component	Description	REQ-Qty
S404	CST1A024ZT	SW , TACT	1
S405	CST1A024ZT	SW , TACT	1
S406	CST1A024ZT	SW , TACT	1
S407	CST1A024ZT	SW , TACT	1
S408	CST1A024ZT	SW , TACT	1
	CMD1A504	BRACKET , FIP	2
	CQB1D022	A-ROHS/LABEL,SERIAL	1
BN01	CWB1C912060EN	WIRE ASS'Y	1
BN07	CWB1A906190EN	WIRE ASS'Y	1
CN01	CJP15GA117ZY	WAFER , CARD CABLE	1
CN03	CJP07GA01ZY	WAFER , STRAIGHT(7PIN)	1
CN05	CJP15GB113ZY	WAFER	1
CN07	CJP06GA19ZY	WAFER , STRAIGHT(DVD LOADER)	1
CN12	CJP05GA19ZY	WAFER , STRAIGHT	1
CN13	CJP06GA19ZY	WAFER , STRAIGHT(DVD LOADER)	1
D103	CVD1N4003ST	DIODE , RECT	1
D104	CVD1N4003ST	DIODE , RECT	1
D105	CVD1N4003ST	DIODE , RECT	1
D107	CVD1N4003ST	DIODE , RECT	1
D109	CVD1N4003ST	DIODE , RECT	1
D110	CVD1N4003ST	DIODE , RECT	1
D401	CVD50BOBBWGA	L.E.D , 2 COLOR (ORG , BLUE)	1
ET01	CMC1A111	PLATE , EARTH	1
ET02	CMC1A111	PLATE , EARTH	1
F401	CFL13BT229GINAK	F.I.P (FUTABA , 13BT229GINAK)	1
IC46	BVIKP1010B	IC, PHOTO COUPLER	1
IC49	HVIKIA7808API	I.C , REGULATOR +8V	1
IC61	HRVKSM603TH2	SENSOR , REMOCON	1
JK01	CJJ4R041Z	6P JACK, BOARD	1
JK02	CJJ4N067Z	JACK , 2P	1
JK03	CJJ4S043Z	JACK , BOARD	1
JK04	CJJ9N003Z	JACK , S-VIDEO+VHS	1
JK05	CJJ6K003Z	JACK, SCART	1
JK06	CJS9U011Z	JACK, OPTICAL+COXIAL(GOLD PLATE)	1
JK08	HJJ1D002Z	JACK , STEREO(2P 3.5PIE)	1
X501	HOX08000E160C	CRYSTAL 8MHz	1
	CQB1A778Z	LABEL , DTS	1
	CTB3+10JR	SCREW	2
	CTB3+8JR	SCREW	3
	CTW3+8JR	SCREW	7
	CUA2A259	CHASSIS , BOTTOM	1
	KBA2C2000TLEY	FUSE	1
	KHG1A326Z	LUG CUSHION	2
	KHR1A028	BUSHING , AC CORD	1
	KMC1A264	CUSHION , SHIELD	1

ZORAN

9 Package information

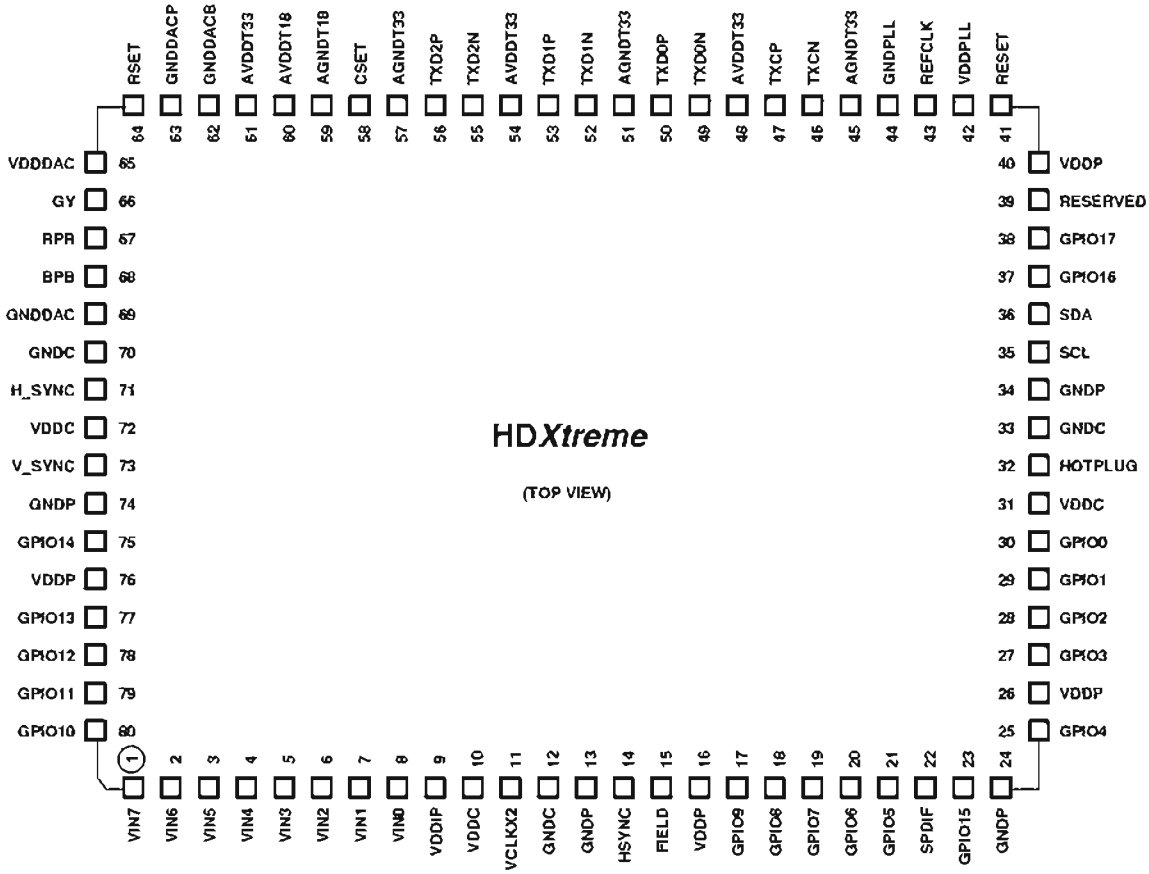
ZR36778HQCG is a green package



ZORAN Corporation, 1390 Kifer Road, Sunnyvale, CA 94086-5305
Phone (408) 523-6500 Fax (408) 523-6501

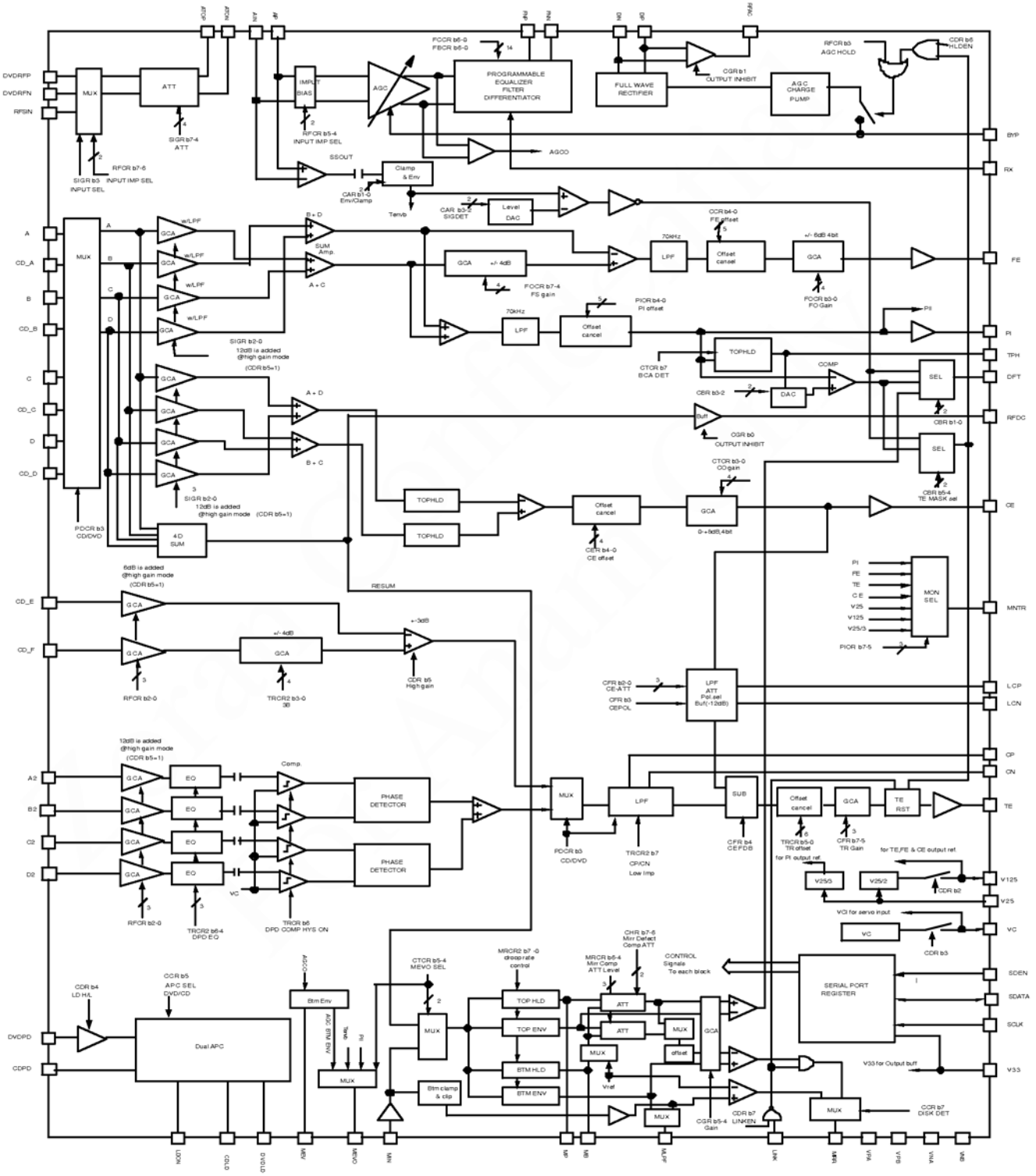
ZORAN

3 PIN DIAGRAM



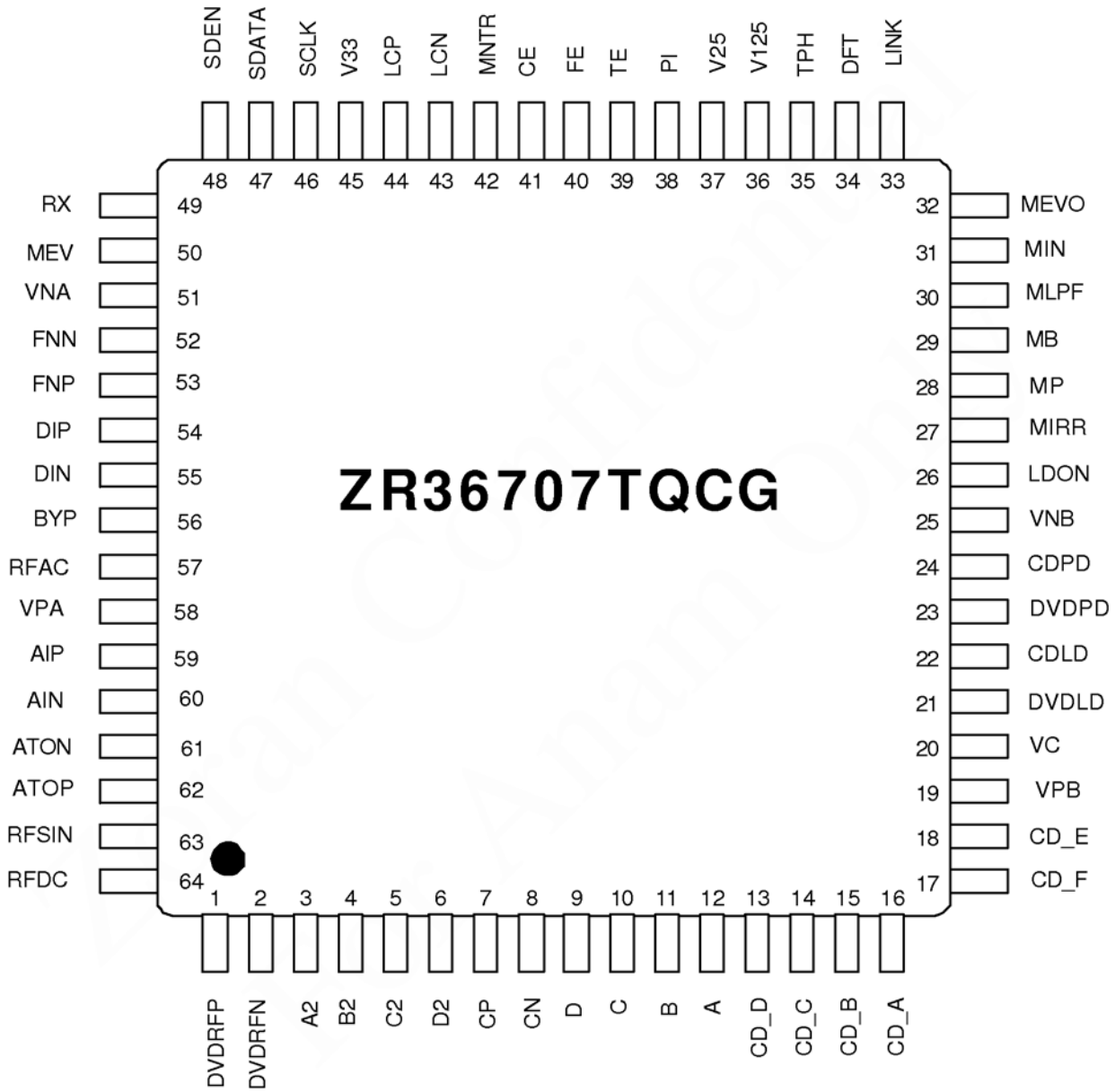
TITLE	DOCUMENT NO.	REV.
ZR36707TQCG Electrical Specification		1.0
	PAGE 6 OF 44	

1.1.2 Block Diagram(Figure 1)

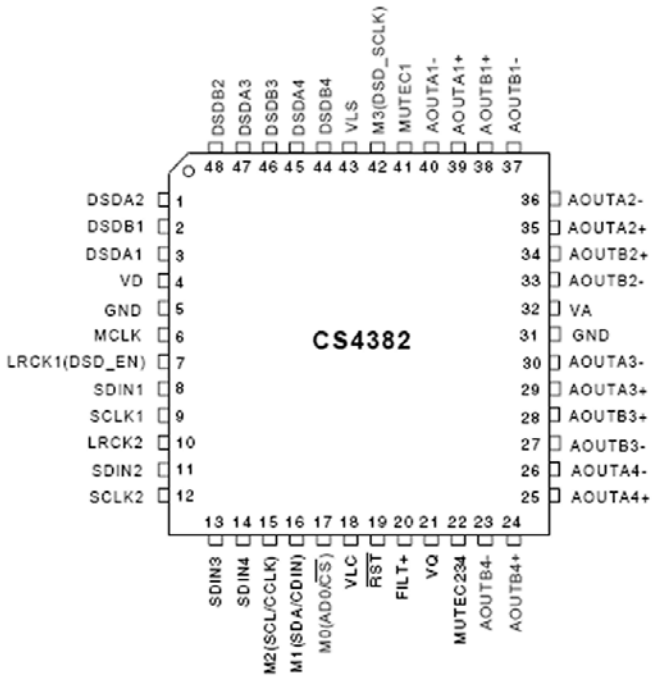


TITLE	DOCUMENT NO.	REV.
ZR36707TQCG Electrical Specification		1.0
	PAGE 44 OF 44	

PACKAGE PIN DESIGNATIONS
(Top view)



4. PIN DESCRIPTION



Pin Name	#	Pin Description
VD	4	**Digital Power** (*Input*) **-** Positive power supply for the digital section. Refer to the Recommended Operating Conditions for appropriate voltages.
GND	5 31	**Ground** (*Input*) - Ground reference. Should be connected to analog ground.
MCLK	6	**Master Clock** (*Input*) - Clock source for the delta-sigma modulator and digital filters. Table 5 illustrates several standard audio sample rates and the required master clock frequency.
LRCK1 LRCK2	7 10	**Left Right Clock** (*Input*) - Determines which channel, Left or Right, is currently active on the serial audio data line. The frequency of the left/right clock must be at the audio sample rate, Fs.
SDIN1 SDIN2 SDIN3 SDIN4	8 11 13 14	**Serial Audio Data Input** (*Input*) - Input for two's complement serial audio data.
SCLK1 SCLK2	9 12	**Serial Clock** (*Input*) - Serial clock for the serial audio interface.
VLC	18	**Control Port Power** (*Input*) **-** Determines the required signal level for the control port. Refer to the Recommended Operating Conditions for appropriate voltages.
$\overline{\text{RST}}$	19	**Reset** (*Input*) - The device enters a low power mode and all internal registers are reset to their default settings when low.
FILT+	20	**Positive Voltage Reference** (*Output*) **-** Positive reference voltage for the internal sampling circuits. Requires the capacitive decoupling to analog ground, as shown in the Typical Connection Diagram.
VQ	21	**Quiescent Voltage** (*Output*) - Filter connection for internal quiescent voltage. VQ must be capacitively coupled to analog ground, as shown in the Typical Connection Diagram. The nominal voltage level is specified in the Analog Characteristics and Specifications section. VQ presents an appreciable source impedance and any current drawn from this pin will alter device performance. However, VQ can be used to bias the analog circuitry assuming there is no AC signal component and the DC current is less than the maximum specified in the Analog Characteristics and Specifications section.

ESMT **M12L64164A**

SDRAM 1M x 16 Bit x 4 Banks Synchronous DRAM

FEATURES

- JEDEC standard 3.3V power supply
- LVTTL compatible with multiplexed address
- Four banks operation
- MRS cycle with address key programs
  - CAS Latency (2 & 3)
  - Burst Length (1, 2, 4, 8 & full page)
  - Burst Type (Sequential & Interleave)
- All inputs are sampled at the positive going edge of the system clock
- DQM for masking
- Auto & self refresh
- 64ms refresh period (4K cycle)

ORDERING INFORMATION

54 Pin TSOP (Type II)
(400mi l x 875mil)

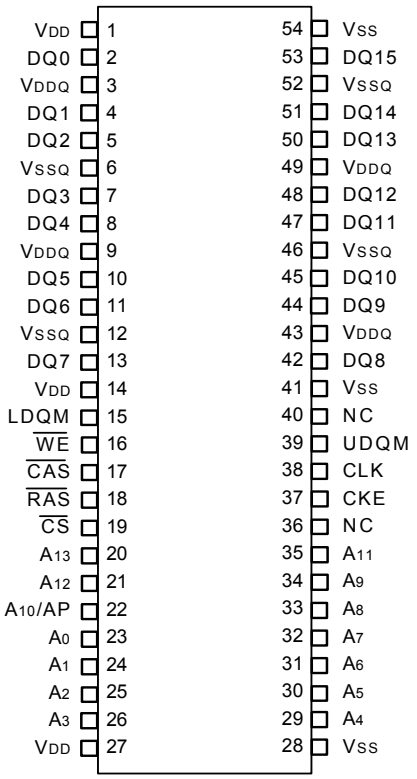
PRODUCT NO.	MAX FREQ.	PACKAGE
M12L64164A-6T	166MHz	TSOP II
M12L64164A-7T	143MHz	

GENERAL DESCRIPTION

The M12L64164A is 67,108,864 bits synchronous high data rate Dynamic RAM organized as 4 x 1,048, 576 words by 16 bits. S ynchronous desig n allo ws precis e c ycle co ntrols with the use of sy stem clo ck I/O transactions are poss ible o n every clock cycle. Range of operating frequencies, programmable burst length and programmable latencies allow the same device to be useful for a variety of high bandwidth, high performance memory system applications.

PIN ASSIGNMENT

Top View



TOSHIBA TC74HCT7007AP/AF

TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

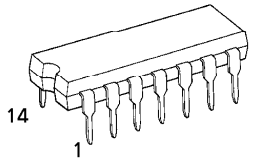
TC74HCT7007AP, TC74HCT7007AF

HEX BUFFER

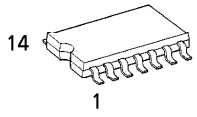
The TC74HCT7007A is a high speed CMOS BUFFER fabricated with silicon gate C^2MOS technology.
It achieves the high speed operation similar to equivalent LSTTL while maintaining the CMOS low power dissipation.
This device may be used as a level converter for interfacing TTL or NMOS to High Speed CMOS. The inputs are compatible with TTL, NMOS and CMOS output voltage levels.
The internal circuit is composed of 4 stages including a buffer output, which provides high noise immunity and stable output.
All inputs are equipped with protection circuits against static discharge or transient excess voltage.

FEATURES:

- High Speed ..... t_{pd} = 11ns(typ.) at V_{CC} = 5V
- Low Power Dissipation ..... I_{CC} = 1μA(Max.) at Ta = 25°C
- Compatible with TTL outputs .... V_{IH} = 2V (Min.)
  V_{IL} = 0.8V (Max.)
- Wide Interfacing ability ..... LSTTL, NMOS, CMOS
- Output Drive Capability ..... 10 LSTTL Loads
- Symmetrical Output Impedance ... $|I_{OH}| = I_{OL}$ = 4mA(Min.)
- Balanced Propagation Delays ..... $t_{pLH} \simeq t_{pHL}$
- Pin and Function Compatible with 74LS07

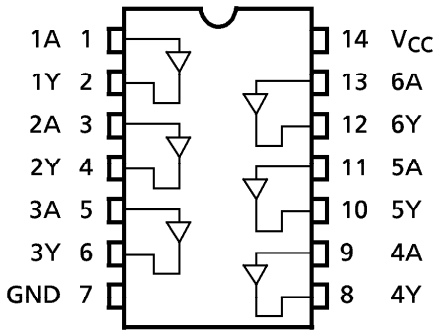


P (DIP14-P-300-2.54)
Weight : 0.96g (Typ.)



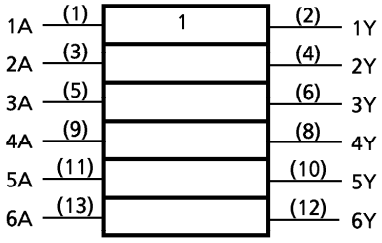
F (SOP14-P-300-1.27)
Weight : 0.18g (Typ.)

PIN ASSIGNMENT



(TOP VIEW)

IEC LOGIC SYMBOL



PIN ASSIGNMENT

A	Y
L	L
H	H

FAIRCHILD SEMICONDUCTOR®

November 1992
Revised February 2005

74VHC04
Hex Inverter

General Description

The VHC04 is an advanced high speed CMOS Inverter fabricated with silicon gate CMOS technology. It achieves the high speed operation similar to equivalent Bipolar Schottky TTL while maintaining the CMOS low power dissipation.

The internal circuit is composed of 3 stages including buffer output, which provide high noise immunity and stable output. An input protection circuit ensures that 0V 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} = 3.8 ns (typ) at V_{CC} = 5V
- High noise immunity: $V_{NIH} = V_{NIL}$ = 28% V_{CC} (Min)
- Power down protection is provided on all inputs
- Low Noise: V_{OLP} = 0.4V (typ)
- Low power dissipation: I_{CC} = 2 μA (Max) @ T_A = 25°C
- Pin and function compatible with 74HC04

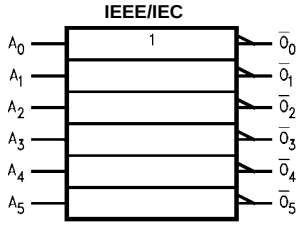
Ordering Code:

Order Number	Package Number	Package Description
74VHC04M	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
74VHC04MX_NL (Note 1)	M14A	Pb-Free 14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-012, 0.150" Narrow
74VHC04SJ	M14D	Pb-Free 14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74VHC04MTC	MTC14	14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide
74VHC04MTCX_NL (Note 1)	MTC14	Pb-Free 14-Lead Thin Shrink Small Outline Package (TSSOP), JEDEC MO-153, 4.4mm Wide
74VHC04N	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300" Wide

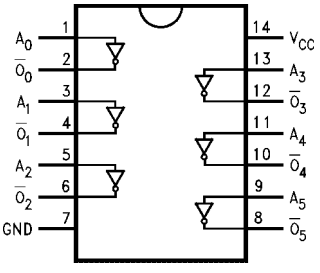
Surface mount packages are also available on Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.
Pb-Free package per JEDEC J-STD-020B.

Note 1: "_NL" indicates Pb-Free package (per JEDEC J-STD-020B). Device available in Tape and Reel only.

Logic Symbol



Connection Diagram



Pin Descriptions

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

Truth Table

A	$\overline{O}$
L	H
H	L

Features

- **Medium-voltage and Standard-voltage Operation**
  - **5.0 (V_{CC} = 4.5V to 5.5V)**
  - **2.7 (V_{CC} = 2.7V to 5.5V)**
- **Automotive Temperature Range –40°C to 125°C**
- **Internally Organized 128 x 8 (1K), 256 x 8 (2K), 512 x 8 (4K), 1024 x 8 (8K) or 2048 x 8 (16K)**
- **Two-wire Serial Interface**
- **Schmitt Trigger, Filtered Inputs for Noise Suppression**
- **Bidirectional Data Transfer Protocol**
- **400 kHz (2.7V) Compatibility**
- **Write Protect Pin for Hardware Data Protection**
- **8-byte Page (1K, 2K), 16-byte Page (4K, 8K, 16K) Write Modes**
- **Partial Page Writes are Allowed**
- **Self-timed Write Cycle (5 ms max)**
- **High-reliability**
  - **Endurance: 1 Million Write Cycles**
  - **Data Retention: 100 Years**
- **8-lead PDIP, 8-lead JEDEC SOIC, and 8-lead TSSOP Packages**

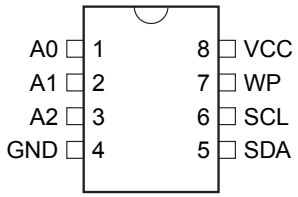
Description

The AT24C01A/02/04/08A/16A provides 1024/2048/4096/8192/16384 bits of serial electrically erasable and programmable read-only memory (EEPROM) organized as 128/256/512/1024/2048 words of 8 bits each. The device is optimized for use in many automotive applications where low-power and low-voltage operation are essential. The AT24C01A/02/04/08A/16A is available in space-saving 8-lead PDIP, 8-lead JEDEC SOIC, and 8-lead TSSOP packages and is accessed via a two-wire serial interface. In addition, the entire family is available in 2.7V (2.7V to 5.5V) versions.

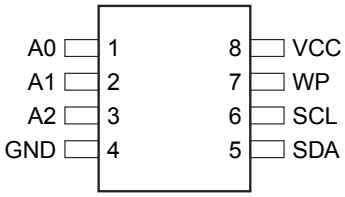
Table 1. Pin Configurations

Pin Name	Function
A0 – A2	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

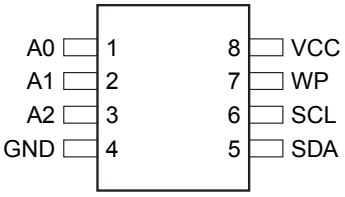
8-lead PDIP



8-lead SOIC



8-lead TSSOP



Two-wire Automotive Temperature Serial EEPROM

1K (128 x 8)

2K (256 x 8)

4K (512 x 8)

8K (1024 x 8)

16K (2048 x 8)

AT24C01A
AT24C02
AT24C04
AT24C08A
AT24C16A

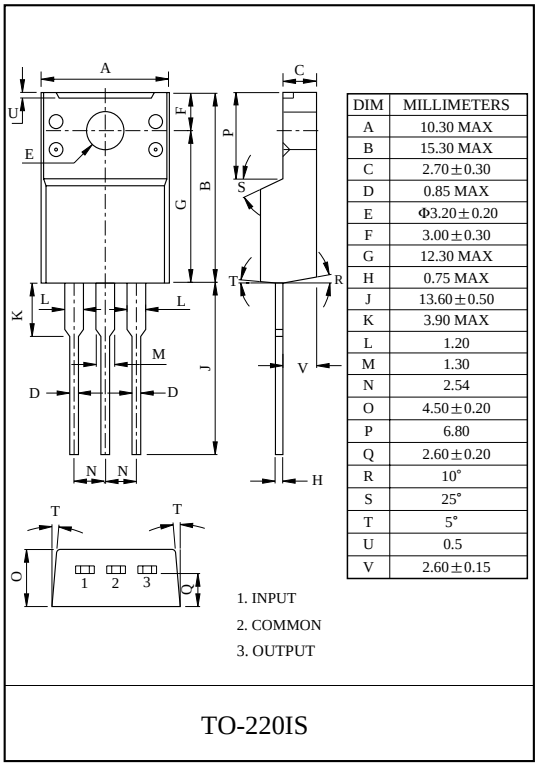
5092B–SEEPR–9/05

KEC

SEMICONDUCTOR
TECHNICAL DATA

KIA7805API~ KIA7824API
BIPOLAR LINEAR INTEGRATED CIRCUIT

THREE TERMINAL POSITIVE VOLTAGE REGULATORS
5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 20V, 24V.



DIM	MILLIMETERS
A	10.30 MAX
B	15.30 MAX
C	2.70±0.30
D	0.85 MAX
E	Φ3.20±0.20
F	3.00±0.30
G	12.30 MAX
H	0.75 MAX
J	13.60±0.50
K	3.90 MAX
L	1.20
M	1.30
N	2.54
O	4.50±0.20
P	6.80
Q	2.60±0.20
R	10°
S	25°
T	5°
U	0.5
V	2.60±0.15

TO-220IS

FEATURES

· Suitable for C-MOS, TTL, the Other Digital IC's Power Supply.
· Internal Thermal Overload Protection.
· Internal Short Circuit Current Limiting.
· Output Current in Excess of 1A.
· Satisfies IEC-65 Specification. (International Electronical Commission)

MAXIMUM RATINGS (Ta=25℃)

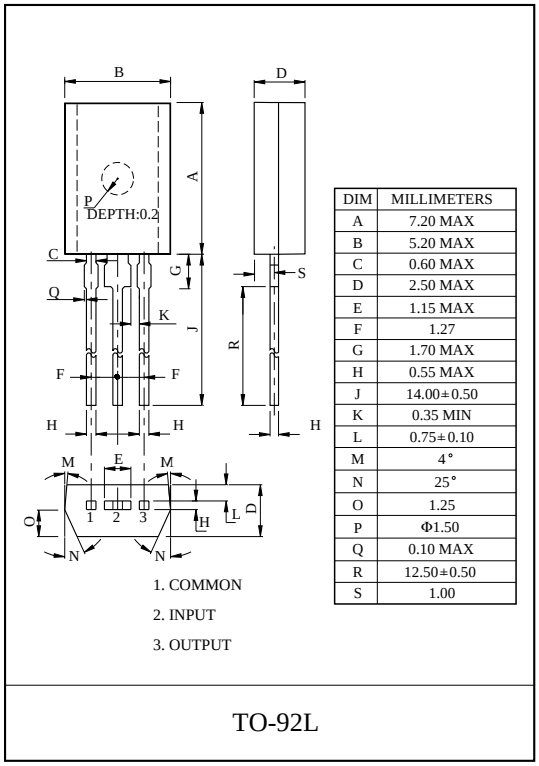
CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	KIA7805API ~ KIA7815API	V_{IN}	35	V
	KIA7818API ~ KIA7824API		40	
Power Dissipation (Tc=25℃)		P_D	20.8	W
Power Dissipation (Without Heatsink)	KIA7805API ~ KIA7824API	P_D	2.0	W
Operating Junction Temperature		T_j	-30 ~150	℃
Storage Temperature		T_{stg}	-55 ~150	℃

KEC

KIA79L05BP~ KIA79L24BP

BIPOLAR LINEAR INTEGRATED CIRCUIT

THREE TERMINAL POSITIVE VOLTAGE REGULATORS
5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 20V, 24V.



DIM	MILLIMETERS
A	7.20 MAX
B	5.20 MAX
C	0.60 MAX
D	2.50 MAX
E	1.15 MAX
F	1.27
G	1.70 MAX
H	0.55 MAX
J	14.00±0.50
K	0.35 MIN
L	0.75±0.10
M	4°
N	25°
O	1.25
P	Φ1.50
Q	0.10 MAX
R	12.50±0.50
S	1.00

TO-92L

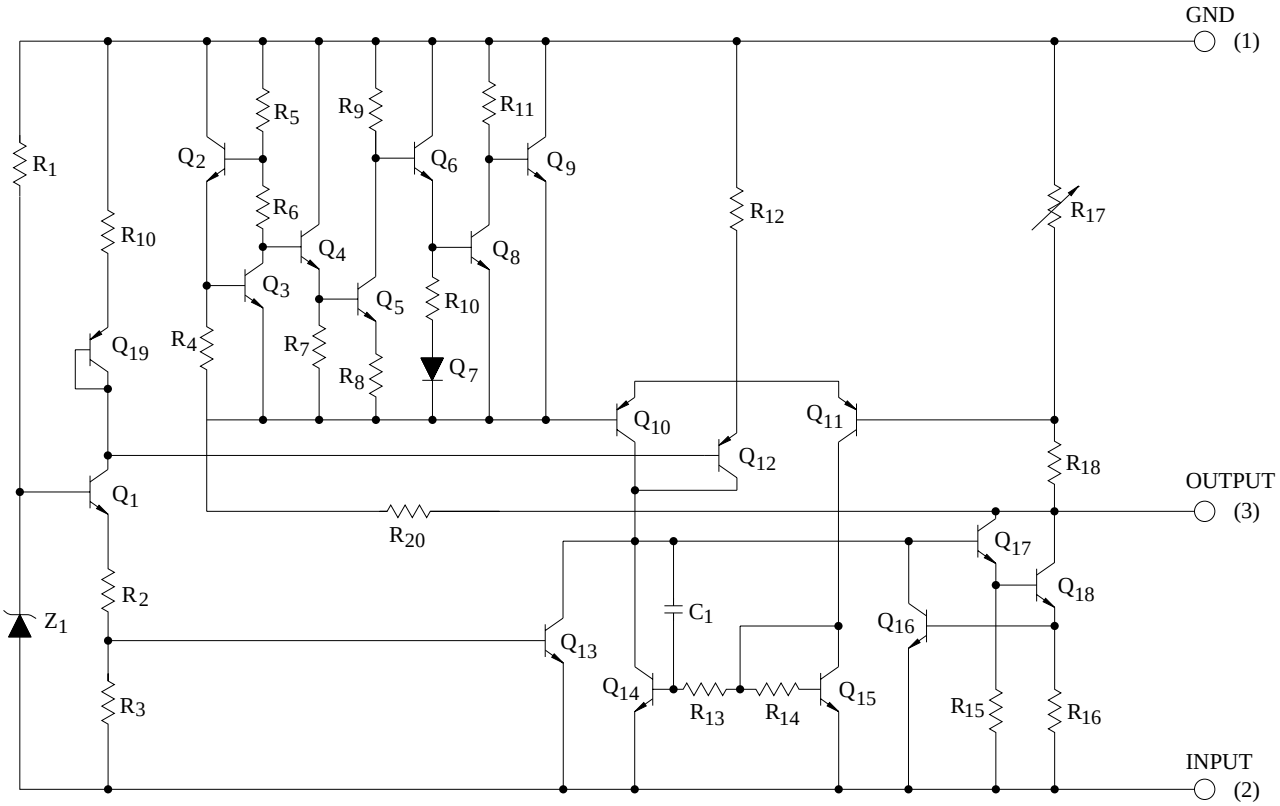
FEATURES

- Best Suited to a Power Supply for TTL and CMOS.
- Built-in Overcurrent Protective Circuit.
- Built-in Thermal Protective Circuit.
- Max. Output Current 150mA (T_j=25 ℃).
- Packaged in TO-92L.

MAXIMUM RATINGS (Ta=25 ℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Input Voltage	KIA79L05BP ~ KIA79L15BP	V_{IN}	-35	V
	KIA79L18BP ~ KIA79L24BP		-40	
Power Dissipation (Tc=25℃)		P_D	800	mW
Operating Junction Temperature		T_j	-30 ~ 150	℃
Operating Temperature		T_{opr}	-30 ~ 75	℃
Storage temperature		T_{stg}	-55 ~ 150	℃

EQUIVALENT CIRCUIT



Optic receiver modules

KODENSHI

KSM - 60 钡 TH2 · KSM - 70 钡 TH2

The KSM - 60钡TH2 consist of a PIN Photodiode of high speed and a preamplifier IC in the package as an receiver for Infrared remote control systems

FEATURES

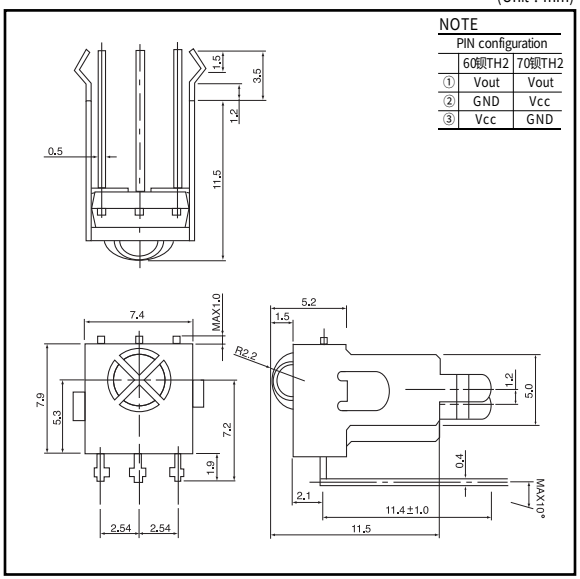
- One mold small package
- 5 Volt supply voltage, low power consumption
- Shielded against electrical field disturbance
- High immunity against ambient light
- Easy interface with the main board
- TTL and CMOS compatibility

APPLICATIONS

- TV, VTR, Acoustic Devices, Air Conditioners, Car Stereo Units, Computers, Interior controlling appliances, and all appliances that require remote controlling

DIMENSIONS

(Unit : mm)



MAXIMUM RATINGS

(Ta=25℃ Unless otherwise noted)

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	5.5	V
Operating Temperature	Topr.	- 10~+60	℃
Storage Temperature	Tstg.	- 20~+75	℃
Soldering Temperature	Tsol.	260(Max 5 sec)	℃

B.P.F CENTER FREQUENCY

Model NO.	B.P.F Center Frequency(kHz)
KSM - ◯◯1 TH2	40.0
KSM - ◯◯2 TH2	36.7
KSM - ◯◯3 TH2	37.9
KSM - ◯◯4 TH2	32.7
KSM - ◯◯5 TH2	56.9

ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25℃), Vcc=5.0V

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit.
Supply Voltage	V_{CC}			4.5	5.0	5.5	V
Current Consumption	I_{CC}	Input Signal=0		-	1.2	2.5	mA
Peak Wavelength *1	λp			-	940	-	nm
B.P.F Center Frequency	fo			-	37.9	-	kHz
Transmission Distance *1	L	200±50lx	0°	10	-	-	m
			±30°	7	-	-	m
H Level Output Voltage *1	V_{OH}	30cm over the ray axis		4.5	5.0	-	V
L Level Output Voltage *1	V_{OL}			-	0.1	0.5	V
H Level Output Pulse Width *1	T_{WH}	Burst Wave=600μs Period=1.2ms		500	600	700	μs
L Level Output Pulse Width *1	T_{WL}			500	600	700	μs
Output Form				Active Low Output			

Note : *1. It specifies the maximum distance between emitter and detector that the output waveform satisfies the standard under the conditions below against the standard transmitter

1) Measuring place : Indoor without extreme reflection of light
2) Ambient light source : Detecting surface illumination shall be irradiate 200±50lx under ordinary white fluorescence lamp without high frequency lightning
3) Standard transmitter : Burst wave of standard transmitter shall be arranged to 50mVp - p under the measuring circuit

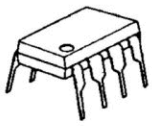
NJM2068

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.

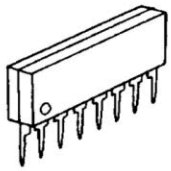
■ PACKAGE OUTLINE



NJM2068D

NJM2068M

NJM2068V

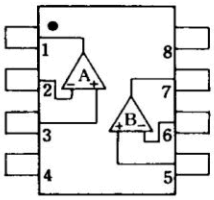


NJM2068L

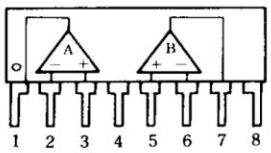
■ FEATURES

● 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



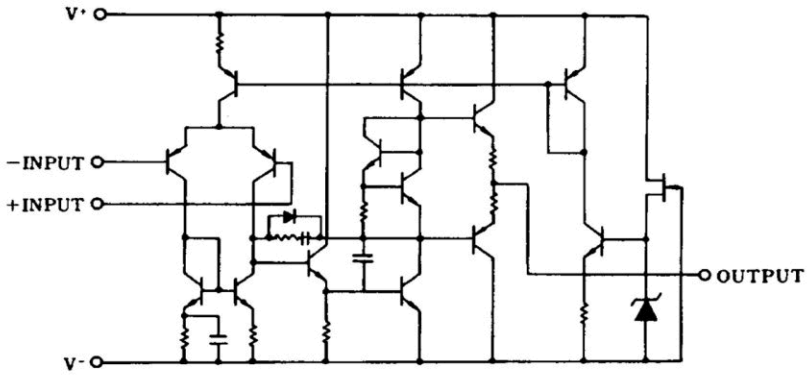
NJM2068D
NJM2068M
NJM2068V



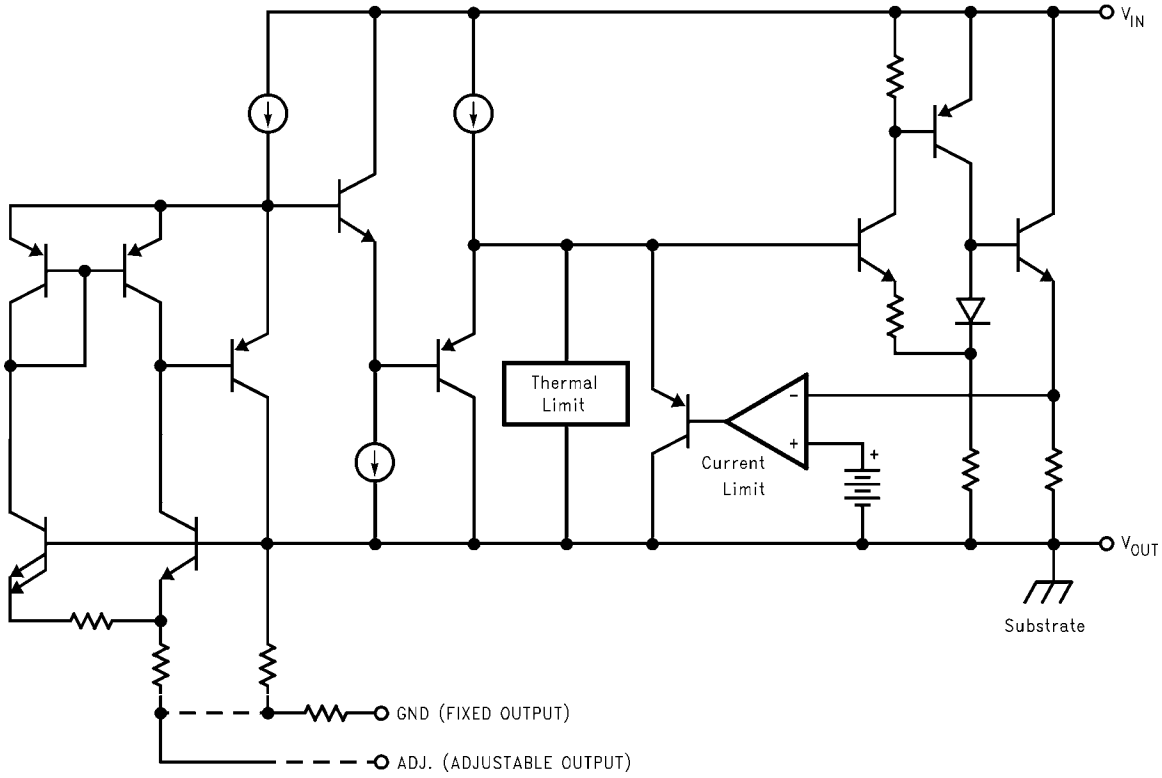
NJM2068L

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)



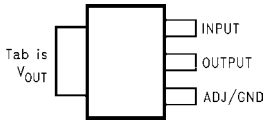
Block Diagram



10091901

Connection Diagrams

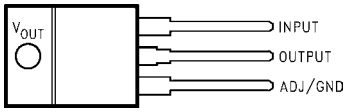
SOT-223



10091904

Top View

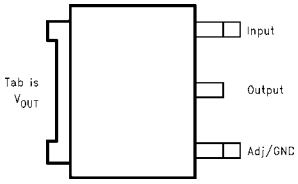
TO-220



10091902

Top View

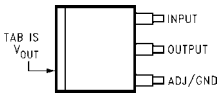
TO-252



10091938

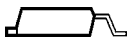
Top View

TO-263



10091944

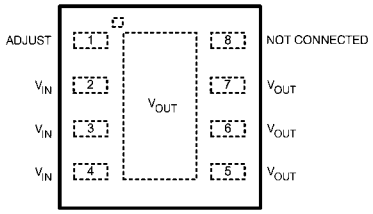
Top View



10091945

Side View

LLP



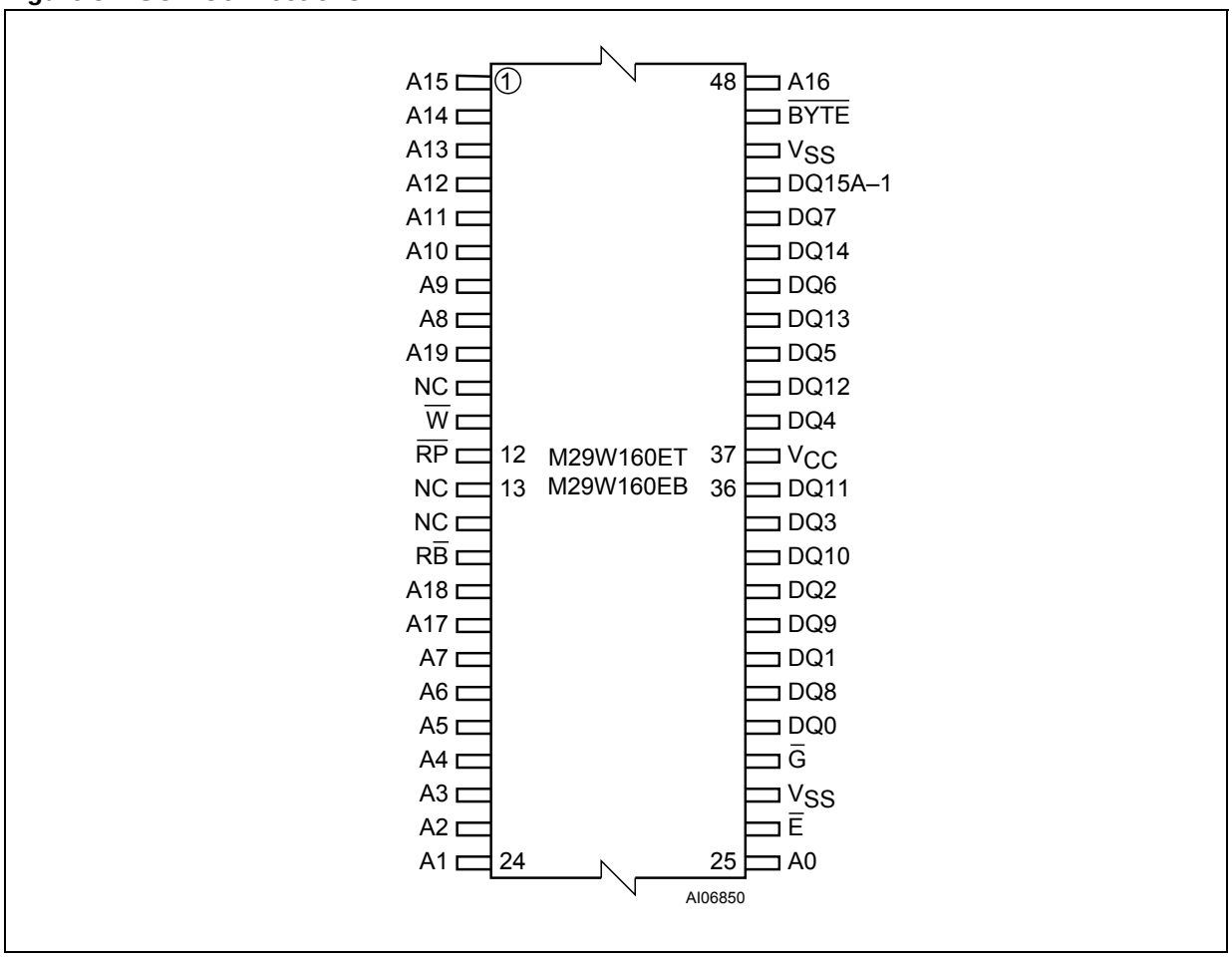
10091946

When using the LLP package
Pins 2, 3 & 4 must be connected together and
Pins 5, 6 & 7 must be connected together

Top View

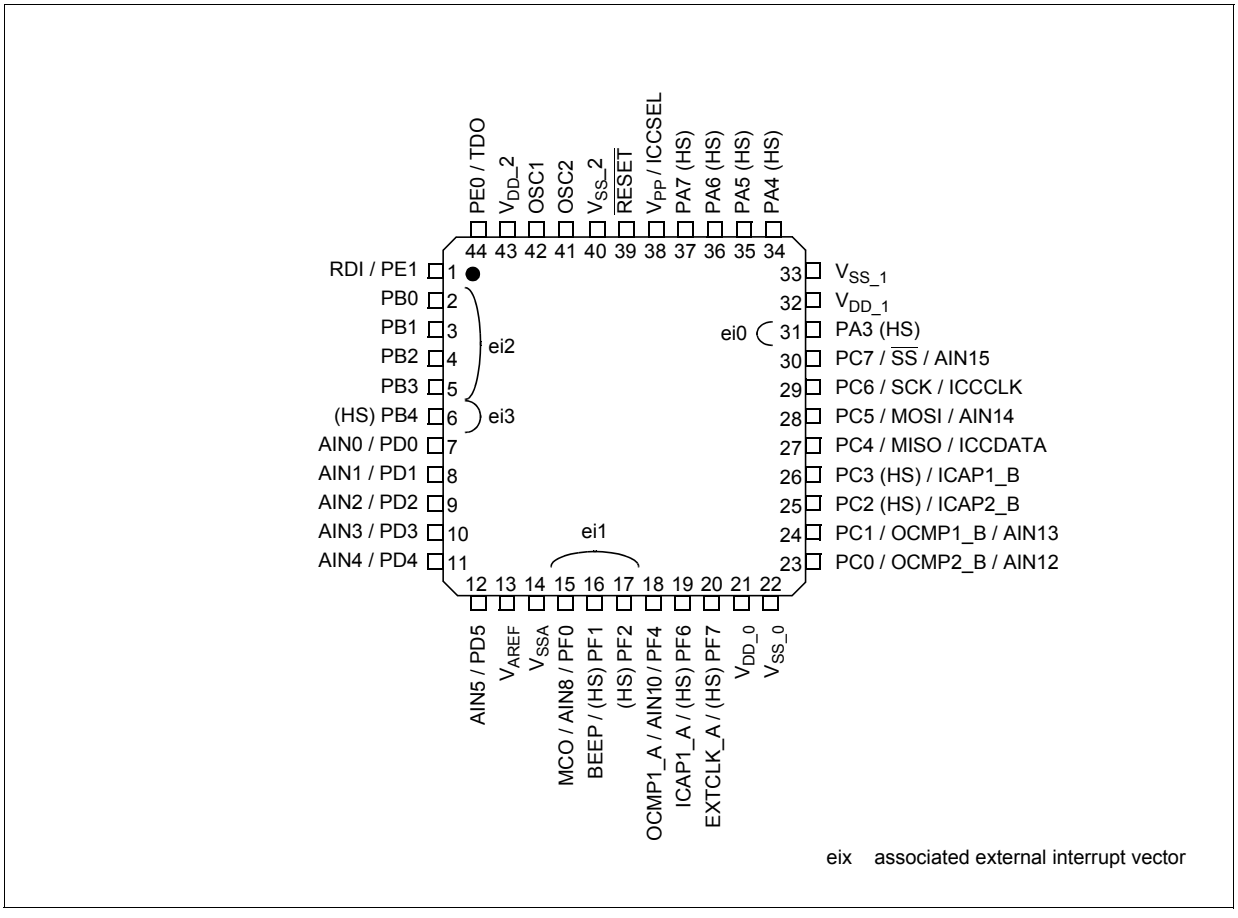
M29W160ET, M29W160EB

Figure 3. TSOP Connections



2 PIN DESCRIPTION

Figure 2. 44-Pin TQFP Package Pinouts



ST72F324L, ST72324BL

PIN DESCRIPTION (Cont'd)

Figure 3. 32-Pin SDIP Package Pinout

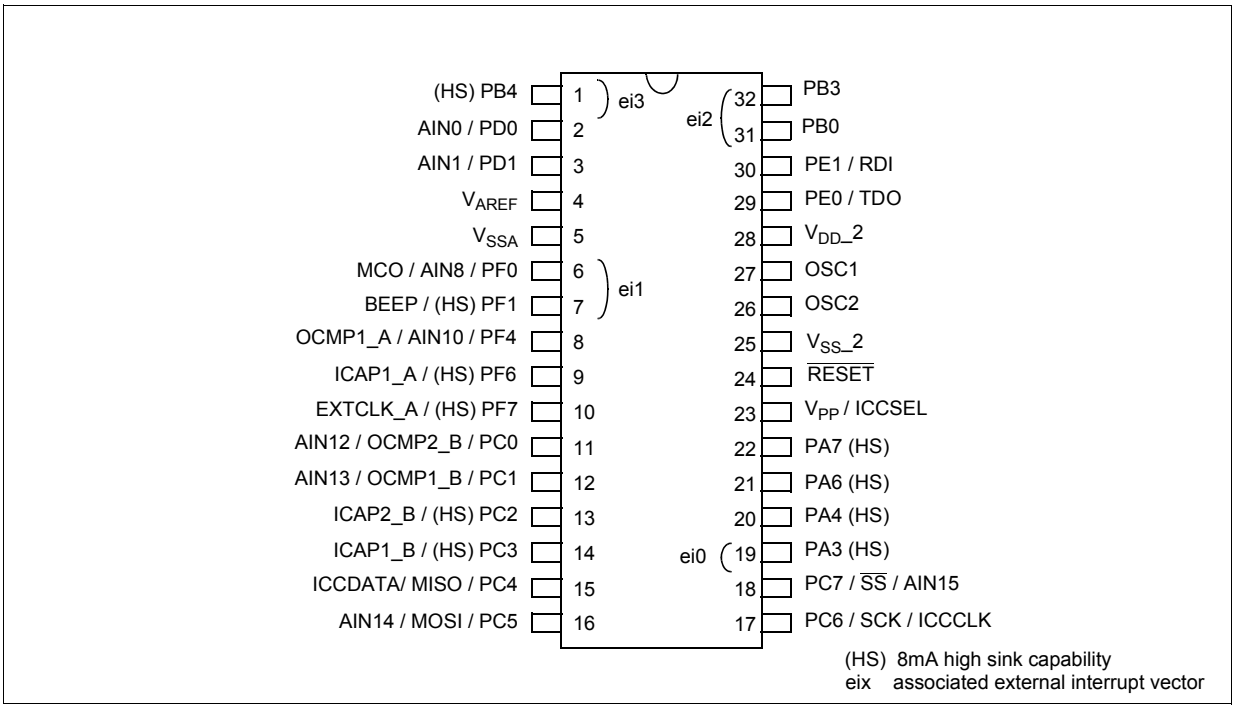
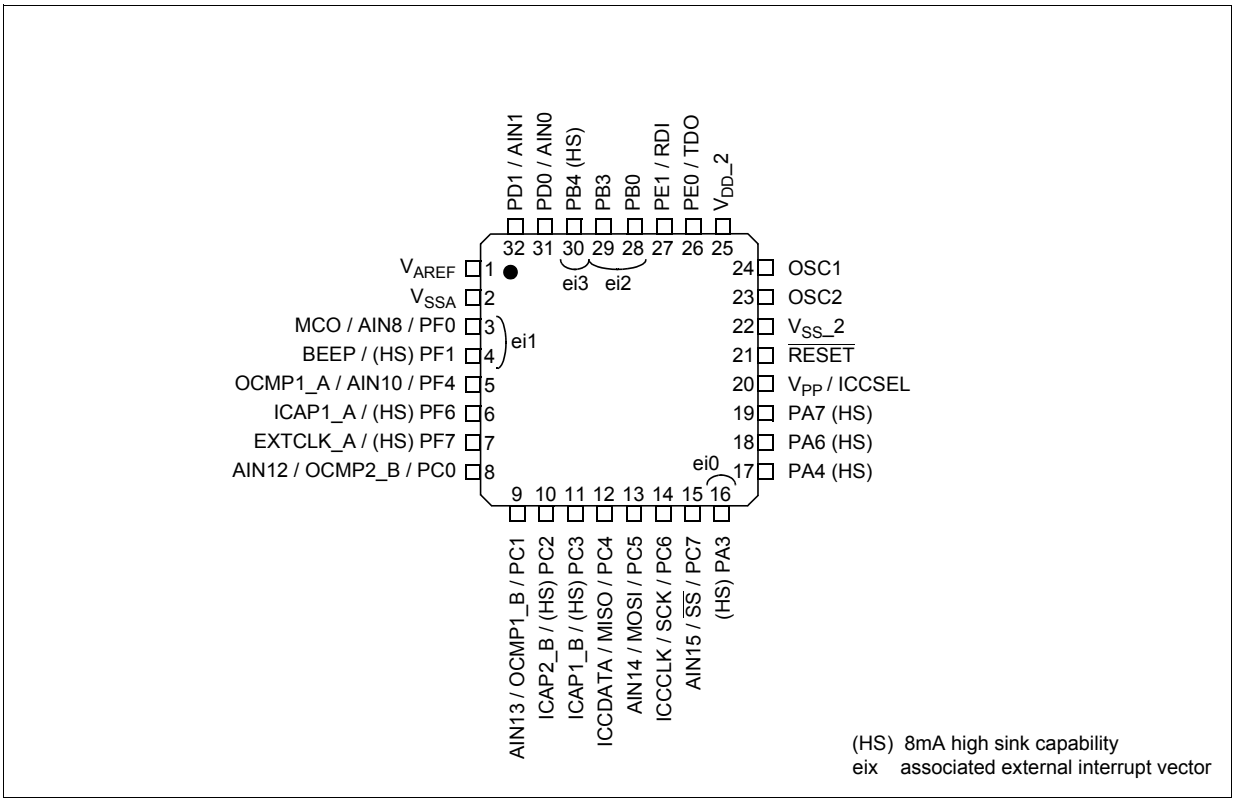


Figure 4. 32-Pin TQFP 7x7 Package Pinout

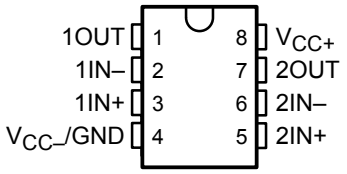


TL3472
HIGH-SLEW-RATE, SINGLE-SUPPLY OPERATIONAL AMPLIFIER

SLOS200G – OCTOBER 1997 – REVISED JULY 2003

- **Wide Gain-Bandwidth Product . . . 4 MHz**
- **High Slew Rate . . . 13 V/μs**
- **Fast Settling Time . . . 1.1 μs to 0.1%**
- **Wide-Range Single-Supply Operation . . . 4 V to 36 V**
- **Wide Input Common-Mode Range Includes Ground ($V_{CC–}$)**
- **Low Total Harmonic Distortion . . . 0.02%**
- **Large-Capacitance Drive Capability . . . 10,000 pF**
- **Output Short-Circuit Protection**

D OR P PACKAGE
(TOP VIEW)



description/ordering information

Quality, low-cost, bipolar fabrication with innovative design concepts is employed for the TL3472 operational amplifier. This device offers 4 MHz of gain-bandwidth product, 13-V/μs slew rate, and fast settling time, without the use of JFET device technology. Although the TL3472 can be operated from split supplies, it is particularly suited for single-supply operation because the common-mode input voltage range includes ground potential ($V_{CC–}$). With a Darlington transistor input stage, this device exhibits high input resistance, low input offset voltage, and high gain. The all-npn output stage, characterized by no dead-band crossover distortion and large output voltage swing, provides high-capacitance drive capability, excellent phase and gain margins, low open-loop high-frequency output impedance, and symmetrical source/sink ac frequency response. This low-cost amplifier is an alternative to the MC33072 and the MC34072 operational amplifiers.

ORDERING INFORMATION

T_A	PACKAGE†		ORDERABLE PART NUMBER	TOP-SIDE MARKING
0°C to 70°C	PDIP (P)	Tube of 25	TL3472CP	TL3472CP
	SOIC (D)	Tube of 50	TL3472CD	3472C
		Reel of 2500	TL3472CDR	
–40°C to 105°C	PDIP (P)	Tube of 25	TL3472IP	TL3472IP
	SOIC (D)	Tube of 50	TL3472ID	Z3472
		Reel of 2500	TL3472IDR	

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

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type HN1K05FU

TOSHIBA

HN1K05FU

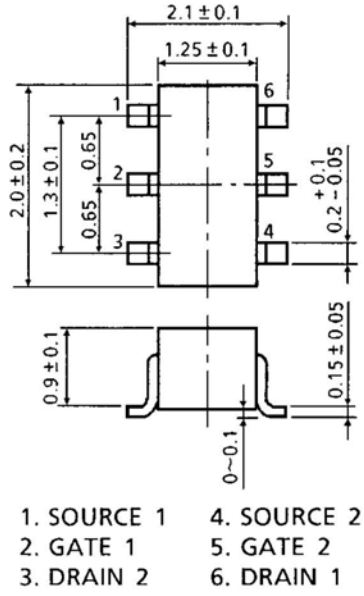
Unit: mm

For Portable Devices

High Speed Switching Applications

Interface Applications

- High input impedance and extremely low drive current.
- V_{th} is low and it is possible to drive directly at low-voltage CMOS.
  : V_{th} = 0.5 to 1.0 V
- Suitable for high-density mounting because of a compact package.



US6

JEDEC	—
JEITA	—
TOSHIBA	2-2J1C

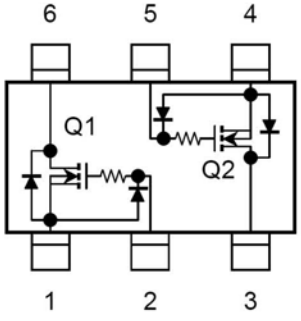
Weight: 6.8 mg

Maximum Ratings (Ta = 25°C) (Q1, Q2 common)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GSS}	10	V
DC drain current	I_D	100	mA
Drain power dissipation	P_D (Note)	200	mW
Channel temperature	T_{ch}	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

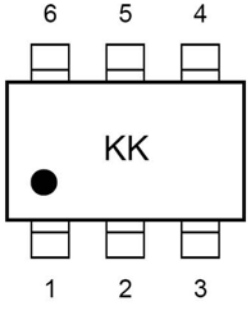
Note: TOTAL rating

Equivalent Circuit (top view)



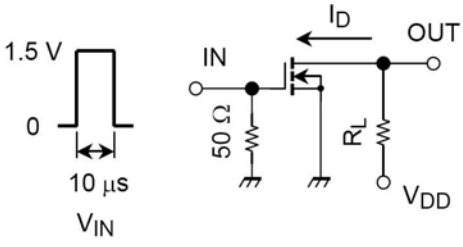
(Q1, Q2 common)

Marking



Switching Time Test Circuit

(a) Test circuit



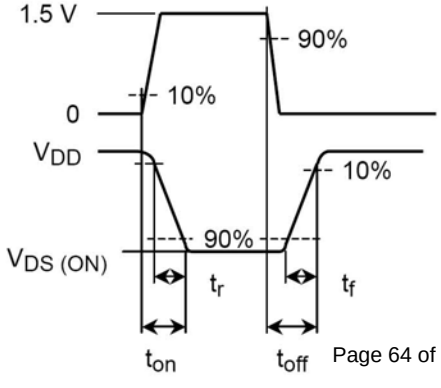
V_{DD} = 1.5 V
D.U. ≦ 1%
V_{IN}: t_r, t_f < 5 ns
(Z_{out} = 50 Ω)
Common Source
Ta = 25°C

(b) V_{IN}

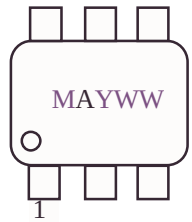
V_{GS}

(c) V_{OUT}

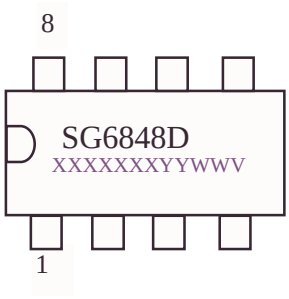
V_{DS}



MARKING DIAGRAMS

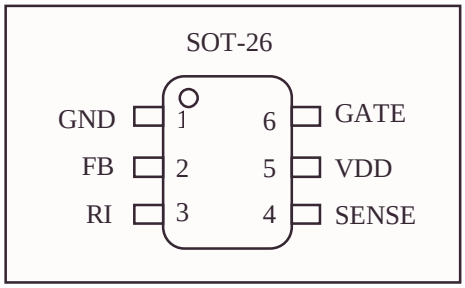


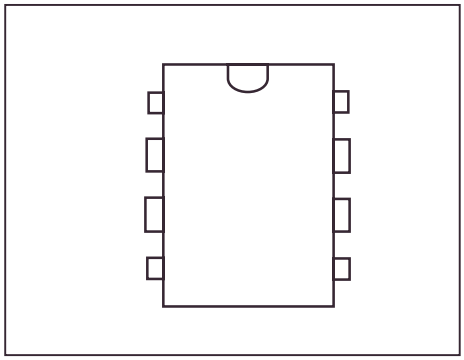
M: Mask Version
Y: Year; WW: Work Week



XXXXXXX: Wafer Lot
YY: Year; WW: Week
V: Assembly Location

PIN CONFIGURATION





ORDERING INFORMATION

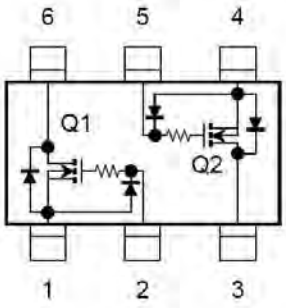
Part Number	PWM Frequency	Package
SG6848T 70	kHz	6-Pin SOT-26
SG6848D 70	kHz	8-pin DIP-8

PIN DESCRIPTIONS

Name	Pin No. DIP-8 / (SOT-26)	Type F	unction
GATE	1 / (6)	Driver Output	The totem-pole output driver for driving the power MOSFET.
VDD	2 / (5)	Supply	Power supply.
NC 3			NC pin.
SENSE	4 / (4)	Analog Input	Current sense. This pin senses the voltage across a resistor. When the voltage reaches the internal threshold, PWM output is disabled. This activates over-current protection. This pin also provides current amplitude information for current-mode control.
RI	5 / (3)	Analog Input/Output	A resistor connected from the RI pin to ground will generate a constant current source for the SG6848. This current is used to charge an internal capacitor, to determine the switching frequency. Increasing the resistance will reduce the amplitude of the current source and reduce the switching frequency. A 95kΩ resistor R_i results in a 50uA constant current I_i and a 70kHz switching frequency.
NC 6			NC pin.
FB	7 / (2)	Analog Input	Feedback. The FB pin provides the output voltage regulation signal. It provides feedback to the internal PWM comparator, so that the PWM comparator can control the duty cycle.
GND	8 / (1)	Supply	Ground.

Semiconductors

HN1K05FU N Channel



1. Source 1
2, Gate 1
3. Drain 2
4. Source 2
5. Gate 2
6. Drain 1

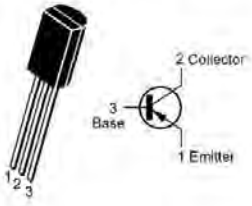
CEF04N6 N Channel

TO-220F

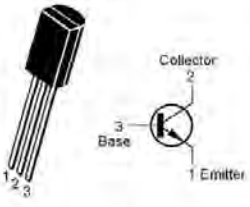
(SCR) MCR100

PIN ASSIGNMENT	
1	Cathode
2	Gate
3	Anode

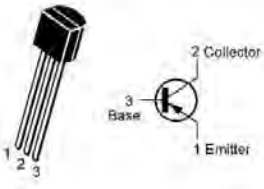
KTA1273Y
KSA916Y



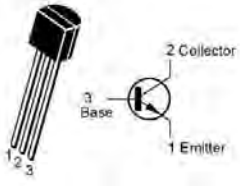
KTC3206



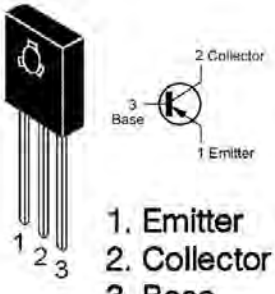
KRA102M
KTA708



KRC102M
KTC1008
KTC3198Y

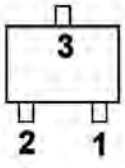


KSB1151Y PNP



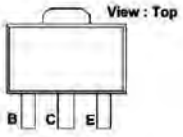
1. Emitter
2. Collector
3. Base

KRC107 PNP
KTC3875S NPN
KTA1504S PNP
KRA107S PNP
KTD1304 NPN
2N3904S NPN
KRC 107S NPN
2SA1955 PNP



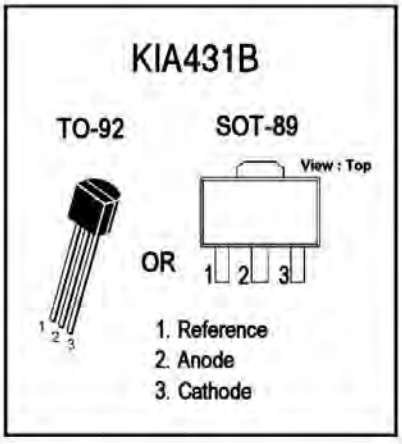
1) Emitter
2) Base
3) Collector

KTA1664 PNP



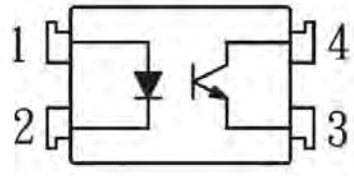
1 Base
2 Collector
3 Emitter

KIA431B



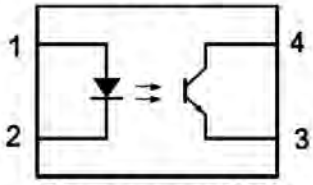
1. Reference
2. Anode
3. Cathode

Photo Coupler K1010

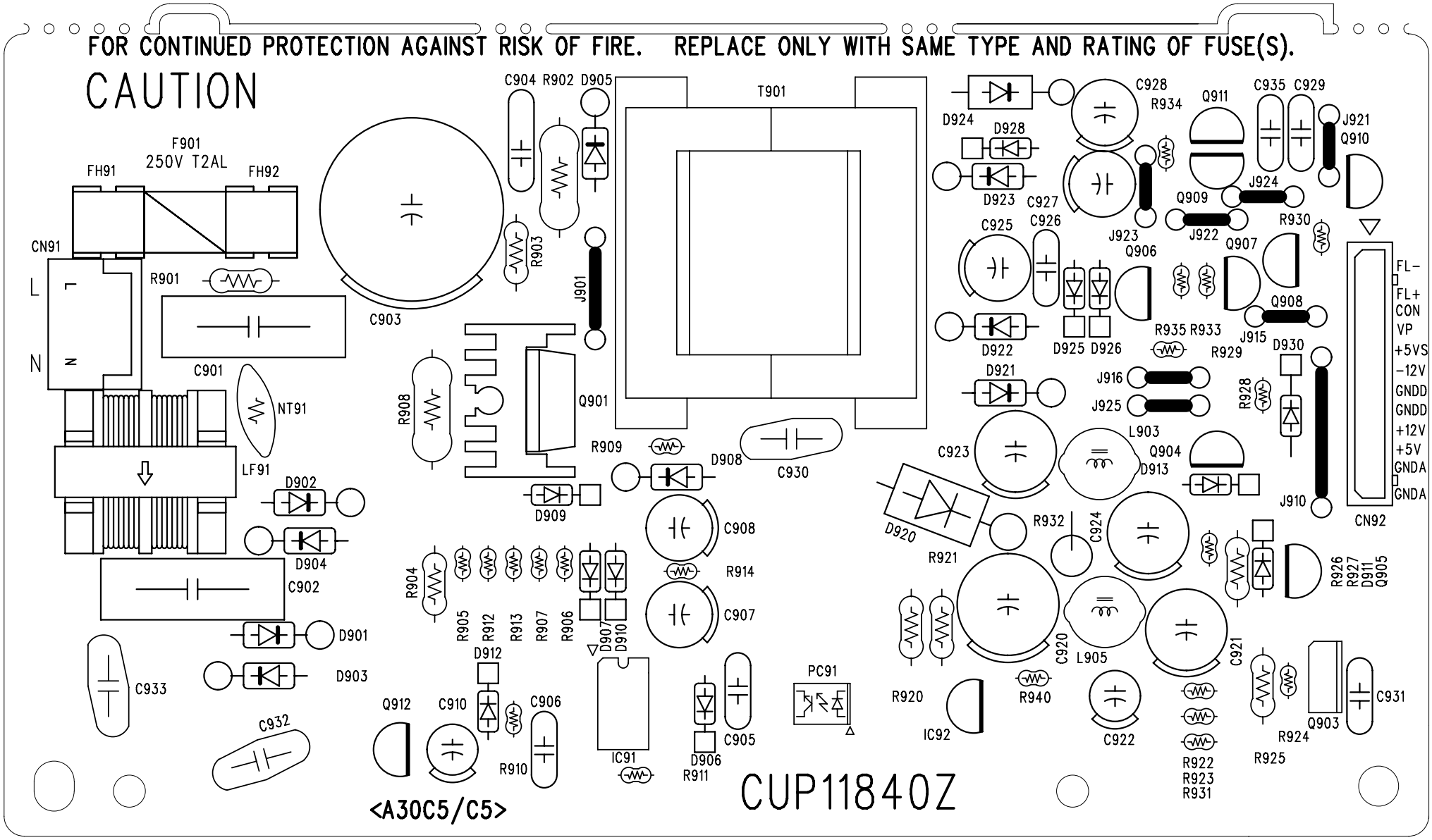


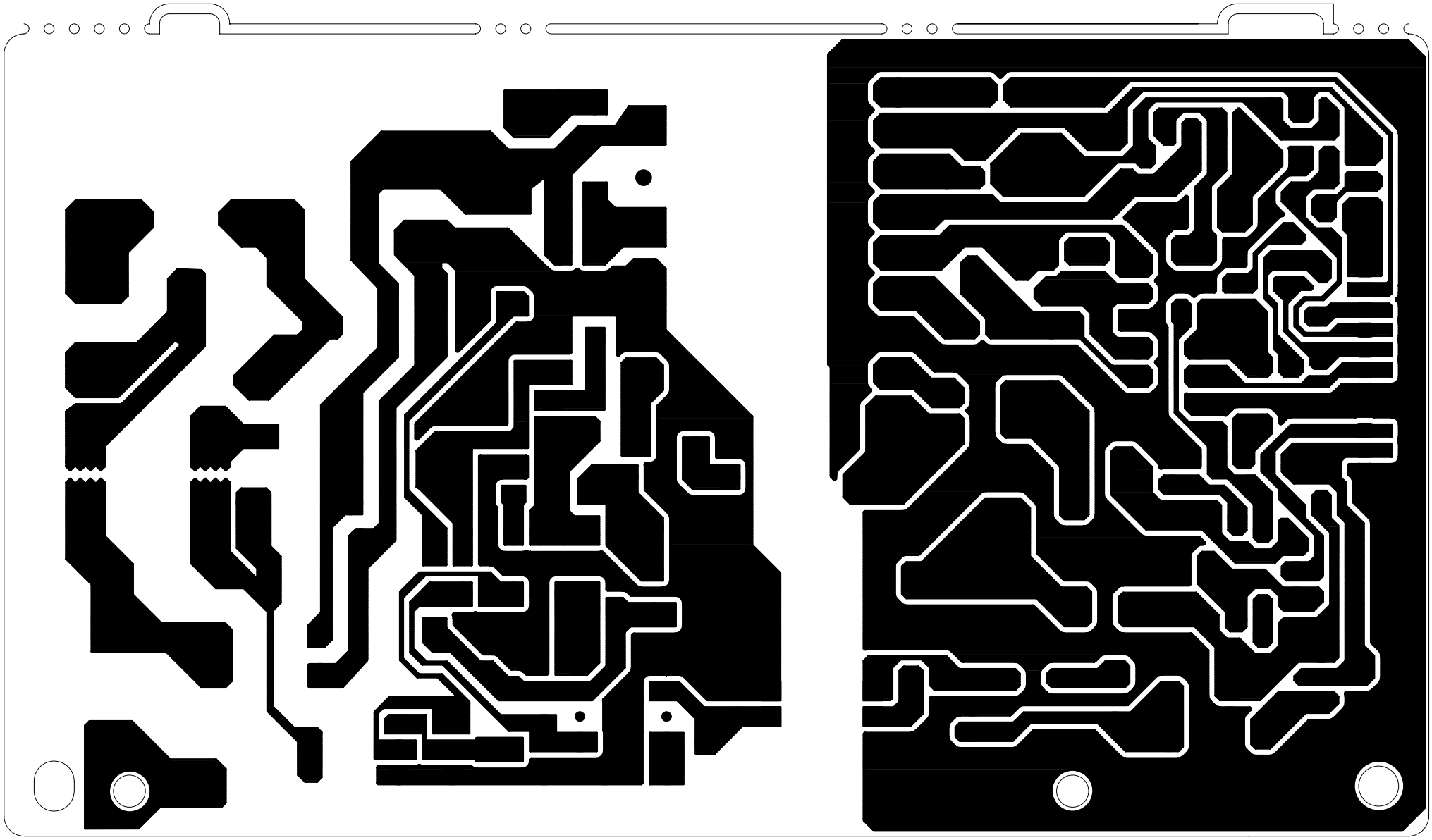
1. Anode
2. Cathode
3. Emitter
4. Collector

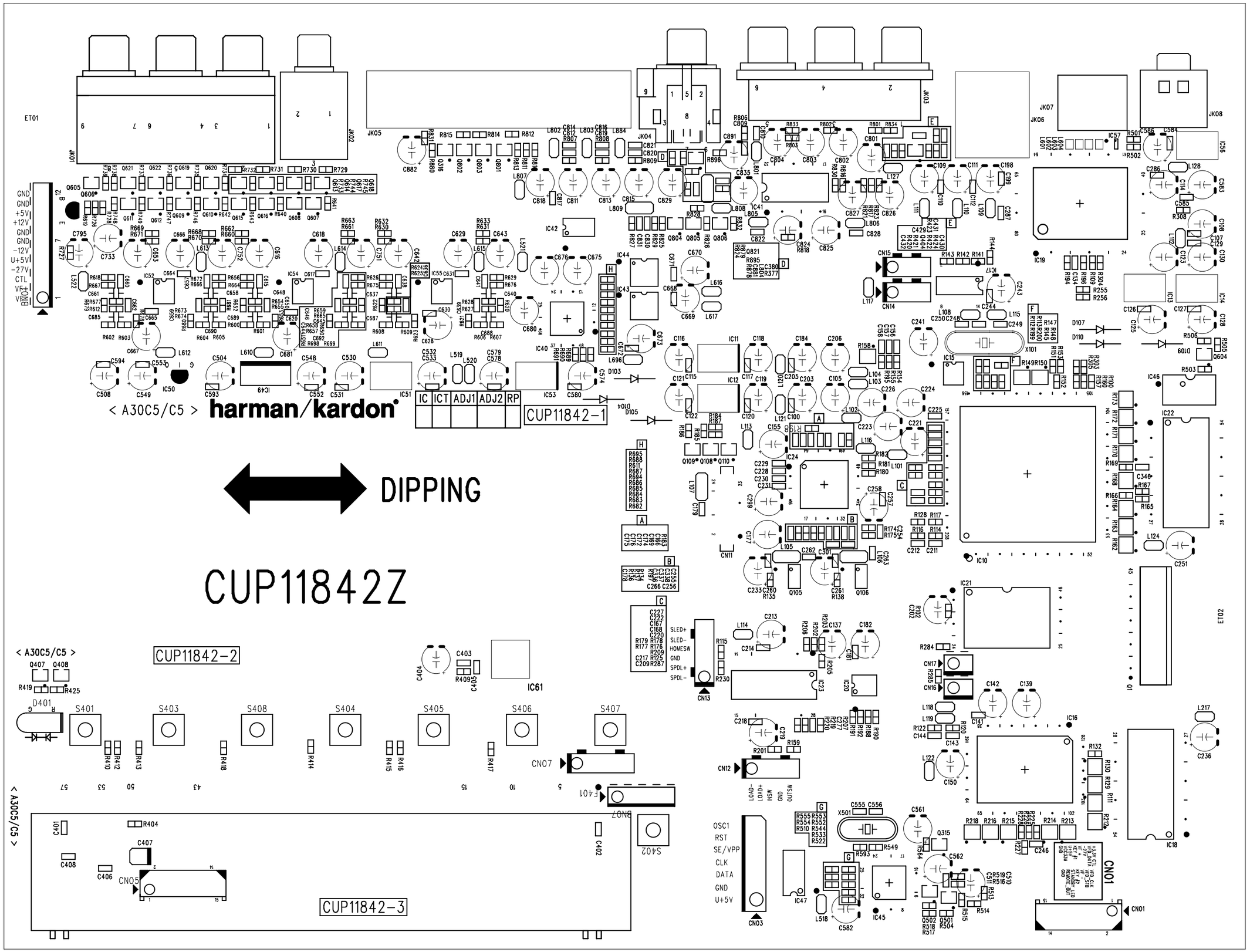
PC17L



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


FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE(S).
CAUTION
F901
250V T2AL
FH91
FH92
CN91
L
N
R901
C901
C903
NT91
LF91
D902
D904
C902
D901
D903
C933
C932
C904
R902
D905
R903
J901
T901
Q901
R908
R909
D908
C930
D909
C908
R914
C907
R904
R905
R912
R913
R907
R906
D907
D910
D912
Q912
C910
C906
R910
IC91
D906
C905
R911
PC91
D924
D928
D923
C928
R934
Q911
C935
C929
J921
Q910
J924
C927
Q909
J922
R930
C925
C926
J923
Q906
Q907
D922
D925
D926
R935
R933
R929
J915
Q908
D930
D921
J916
J925
R928
J910
L903
C923
Q904
D913
D920
R921
R932
C924
R926
R927
D911
Q905
C920
L905
C921
R940
R920
IC92
C922
R922
R923
R931
R924
R925
Q903
C931
CN92
FL-
FL+
CON
VP
+5VS
-12V
GNDD
GNDD
+12V
+5V
GNDA
GNDA
<A30C5/C5>
CUP11840Z




< A30C5/C5 >
harman/kardon
DIPPING
CUP11842Z
CUP11842-1
CUP11842-2
CUP11842-3
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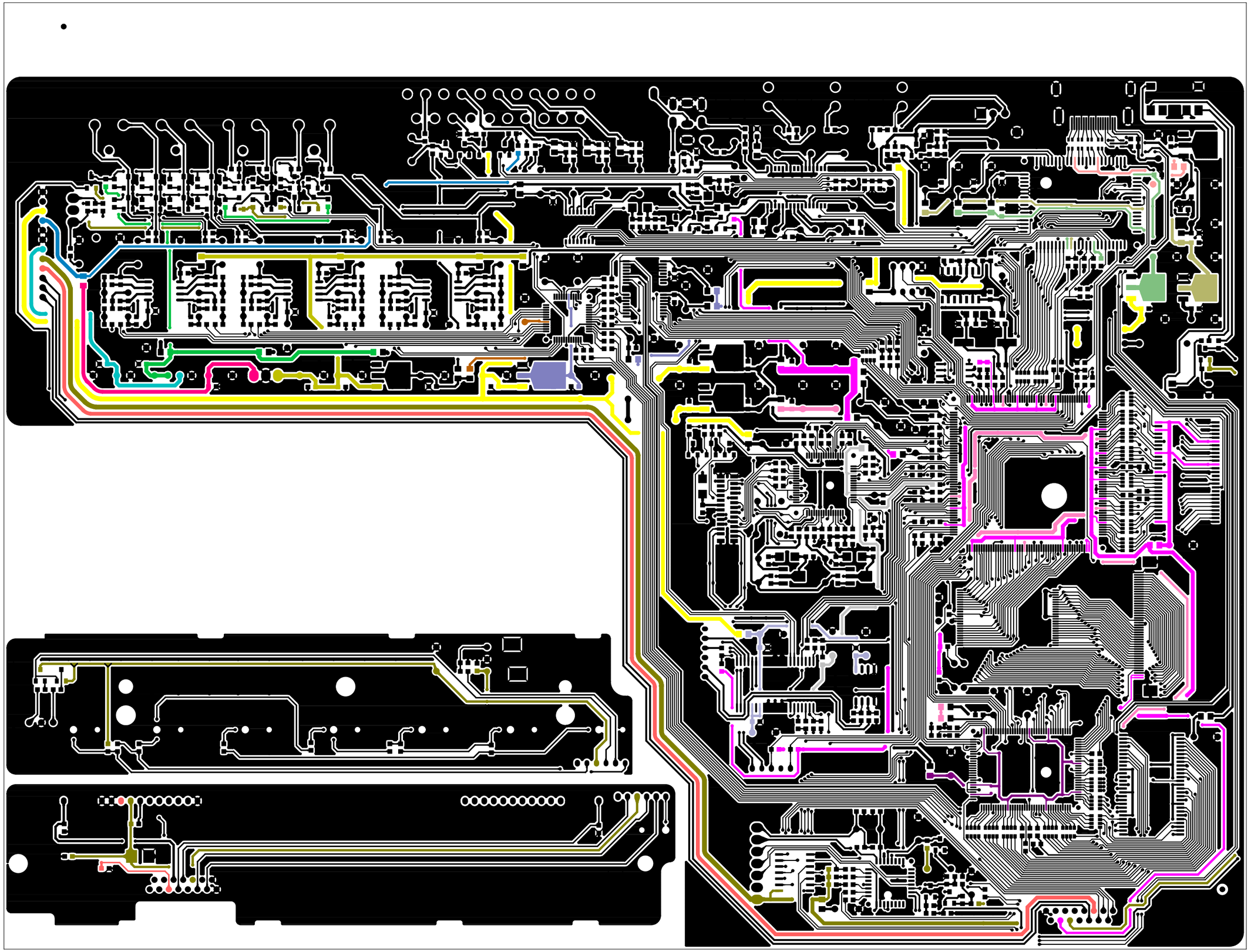
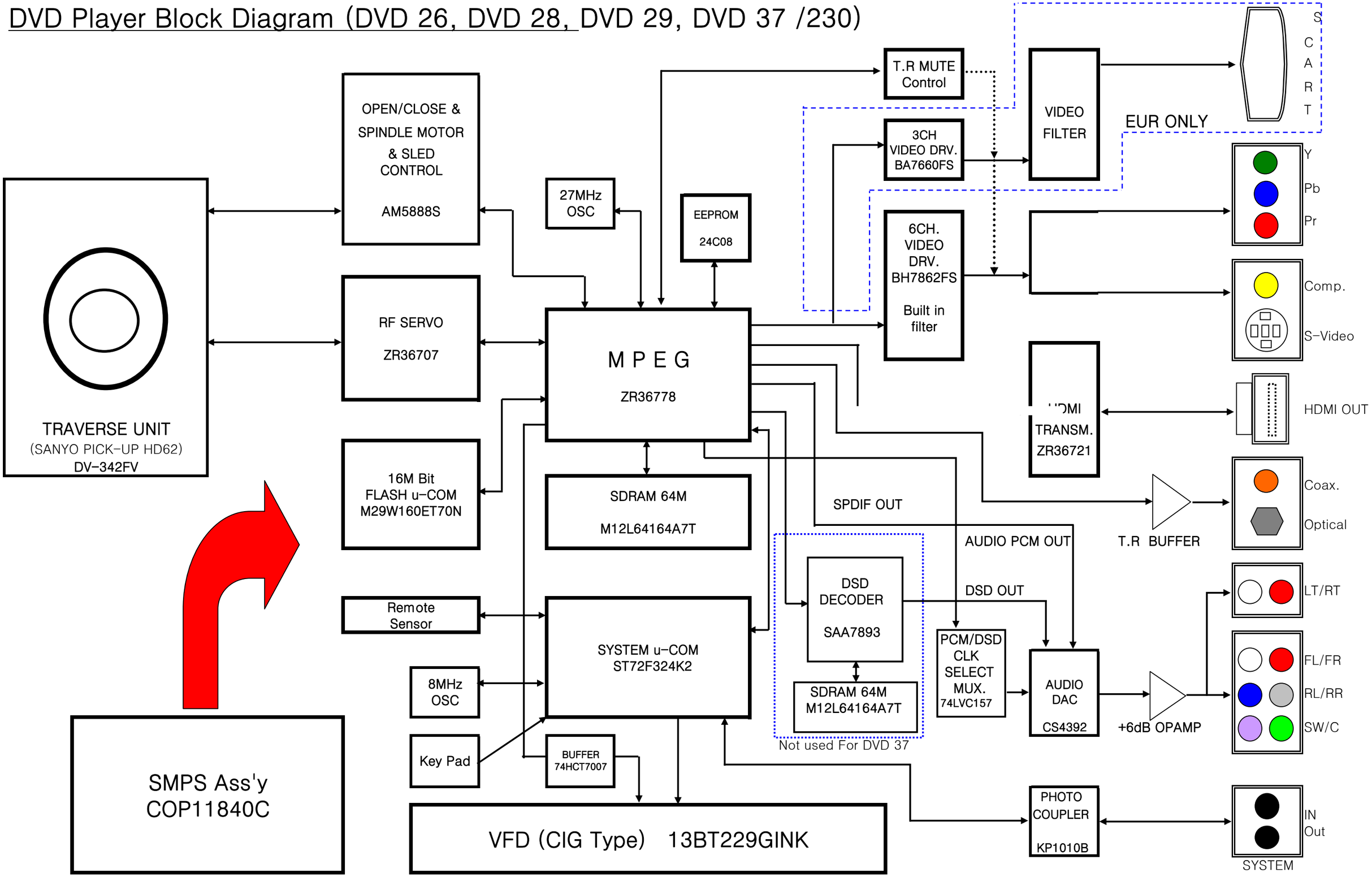
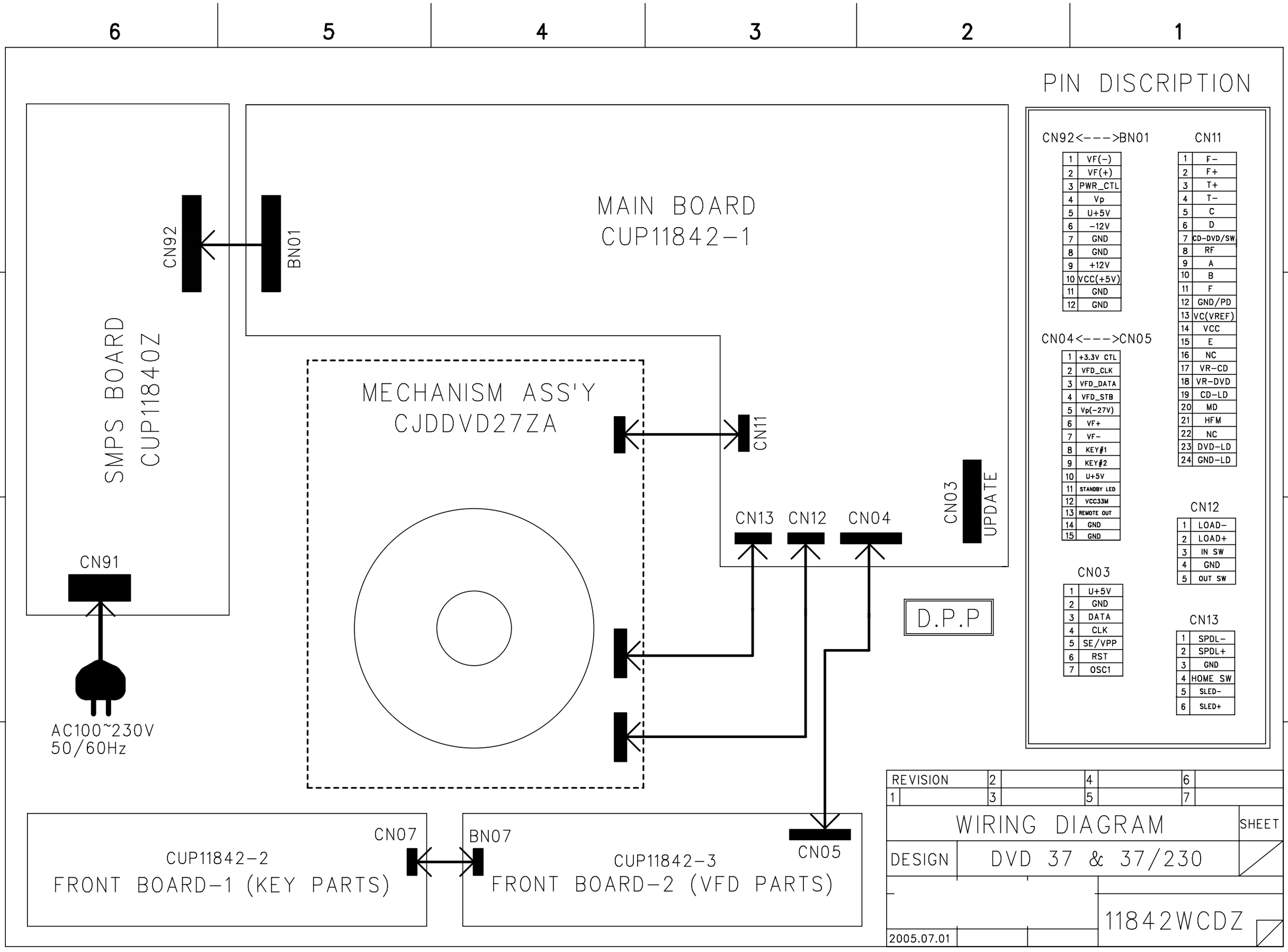
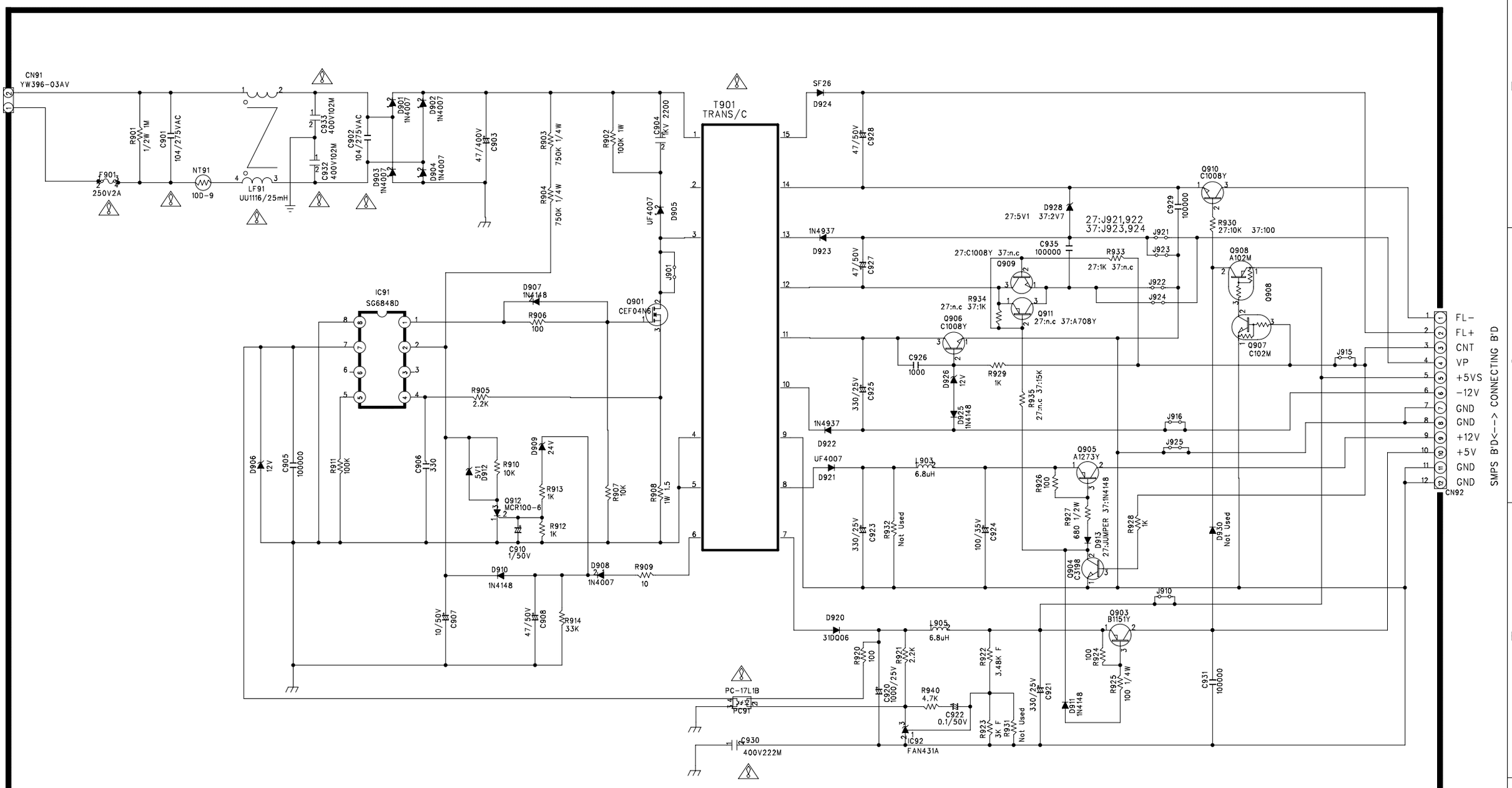
IC
ICT
ADJ1
ADJ2
RP
GND
GND
+5V
+12V
GND
GND
-12V
U+5V
-27V
CTL
VFL
VFD
GND
SLED+
SLED-
HOMESW
GND
SPDL+
SPDL-
OSC1
RST
SE/VPP
CLK
DATA
GND
U+5V
S401
S403
S408
S404
S405
S406
S407
CN01
CN03
CN05
CN07
CN11
CN12
CN13
CN14
CN15
CN16
CN17
IC61
ET01
ET02



DVD Player Block Diagram (DVD 26, DVD 28, DVD 29, DVD 37 /230)




6
5
4
3
2
1
D
C
B
A
SMPS BOARD
CUP11840Z
CN92
BN01
MAIN BOARD
CUP11842-1
MECHANISM ASS'Y
CJDDVD27ZA
CN11
CN03
UPDATE
CN13
CN12
CN04
D.P.P
CN91
AC100~230V
50/60Hz
CN07
BN07
CN05
CUP11842-2
FRONT BOARD-1 (KEY PARTS)
CUP11842-3
FRONT BOARD-2 (VFD PARTS)
PIN DISCRIPTION
CN92<--->BN01
1 VF(-)
2 VF(+)
3 PWR_CTL
4 Vp
5 U+5V
6 -12V
7 GND
8 GND
9 +12V
10 VCC(+5V)
11 GND
12 GND
CN11
1 F-
2 F+
3 T+
4 T-
5 C
6 D
7 CD-DVD/SW
8 RF
9 A
10 B
11 F
12 GND/PD
13 VC(VREF)
14 VCC
15 E
16 NC
17 VR-CD
18 VR-DVD
19 CD-LD
20 MD
21 HFM
22 NC
23 DVD-LD
24 GND-LD
CN04<--->CN05
1 +3.3V CTL
2 VFD_CLK
3 VFD_DATA
4 VFD_STB
5 Vp(-27V)
6 VF+
7 VF-
8 KEY#1
9 KEY#2
10 U+5V
11 STANDBY LED
12 VCC33M
13 REMOTE OUT
14 GND
15 GND
CN12
1 LOAD-
2 LOAD+
3 IN SW
4 GND
5 OUT SW
CN03
1 U+5V
2 GND
3 DATA
4 CLK
5 SE/VPP
6 RST
7 OSC1
CN13
1 SPDL-
2 SPDL+
3 GND
4 HOME SW
5 SLED-
6 SLED+
REVISION
1 2 3 4 5 6 7
WIRING DIAGRAM
SHEET
DESIGN
DVD 37 & 37/230
11842WCDZ
2005.07.01



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

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

**THE UNIT OF CAPACITANCE IS MICROFARAD (uF)
1pF = 10^{-6} uF

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

M.P

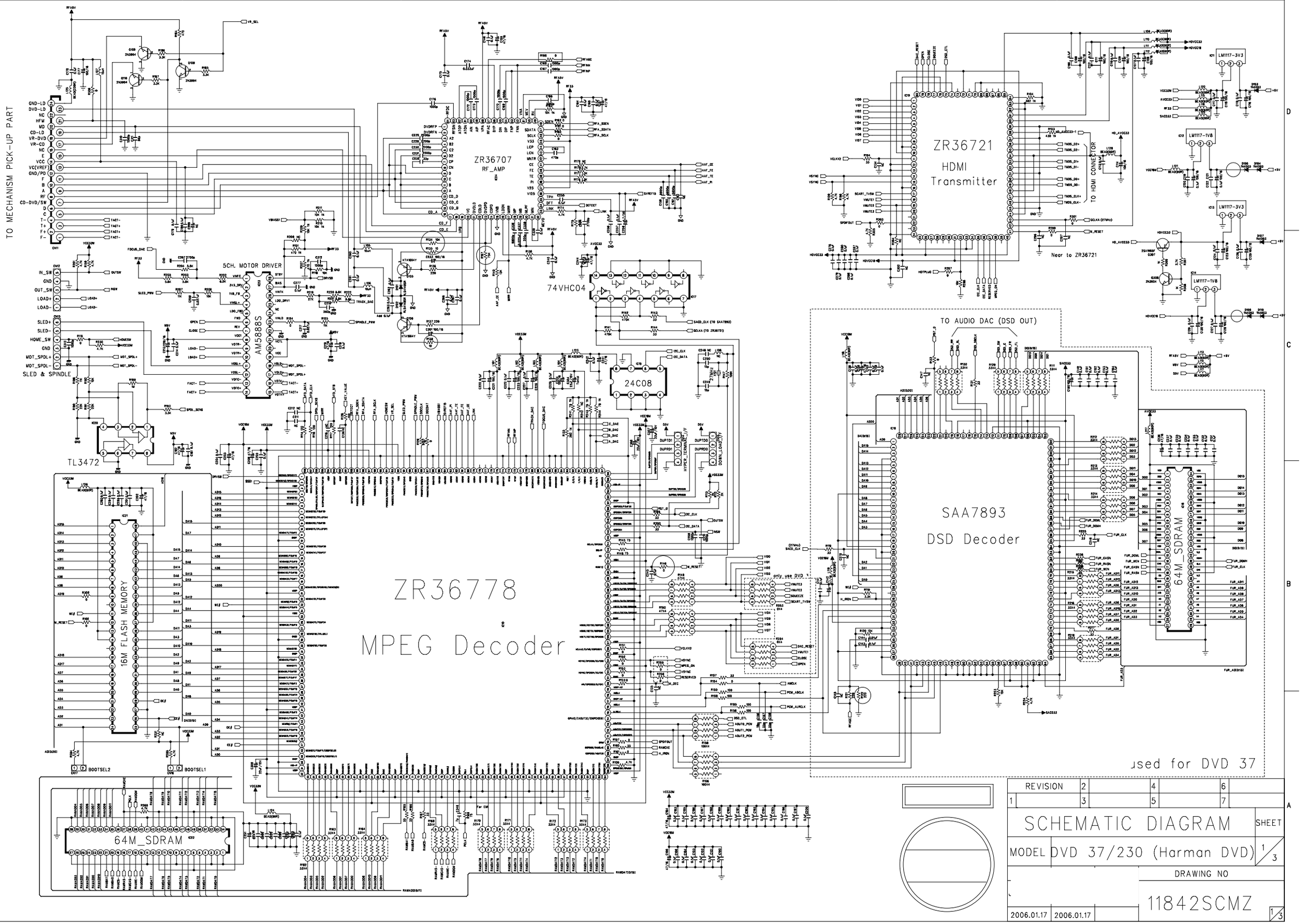
REVISION	2	4	6
1	3	5	7

SCHEMATIC DIAGRAM — SHEET

MODEL: DVD 27/37/47

DRAWING NO: 11840SCMZ (SMPS) 1/1

06.01.17 | 06.01.17



REVISION					
1	2	3	4	5	6 7

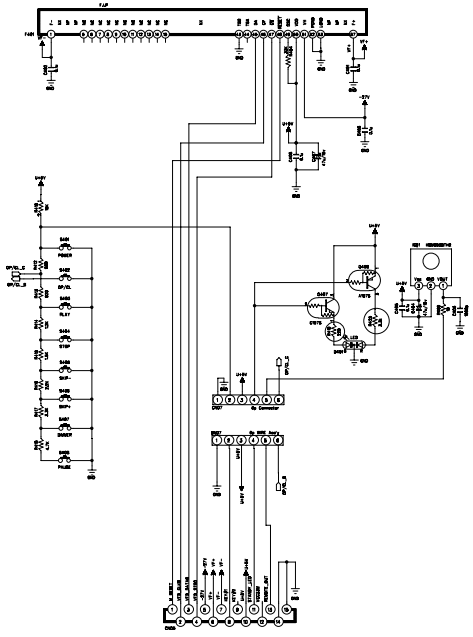
SCHEMATIC DIAGRAM — SHEET

MODEL DVD 37/230 (Harman DVD) — 1/3

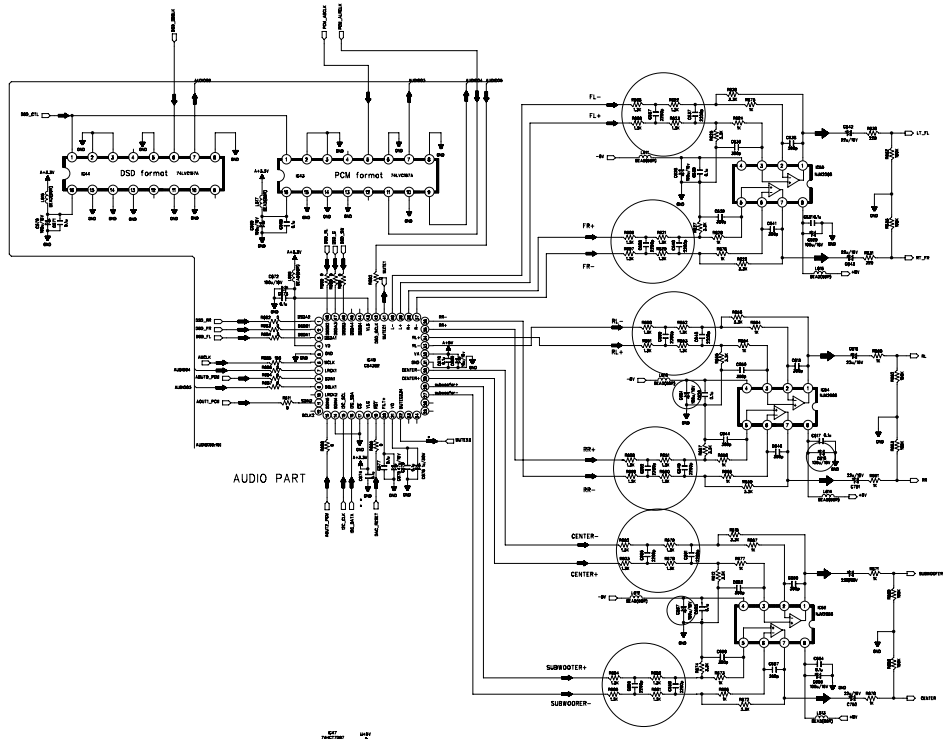
DRAWING NO

11842SCMZ — 1/3

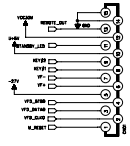
2006.01.17 | 2006.01.17



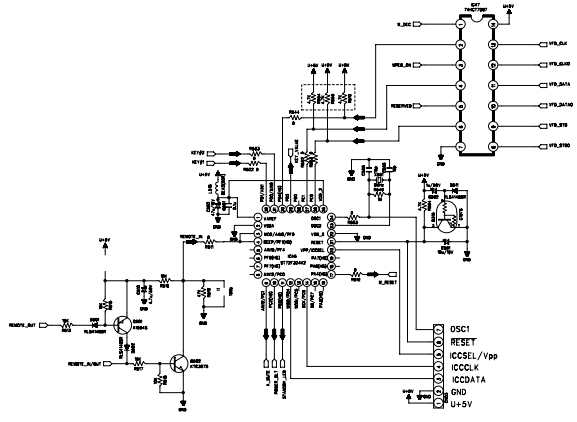
FRONT part



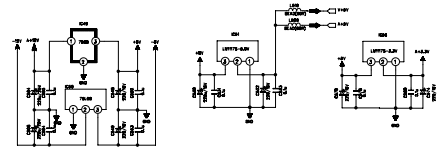
AUDIO PART



VFD PORT
MAIN-->FRONT



MCU PART



POWER PART

M.P

IS

2006.01.17

REVISION	2		4		6	
1		3		5		7

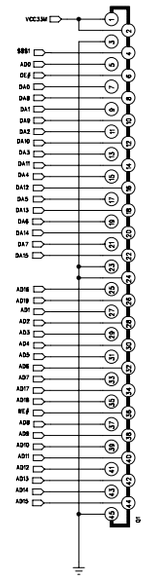
SCHEMATIC DIAGRAM SHEET

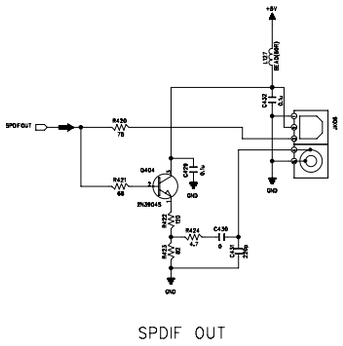
MODEL DVD 37/230 (Harman DVD) 2/3

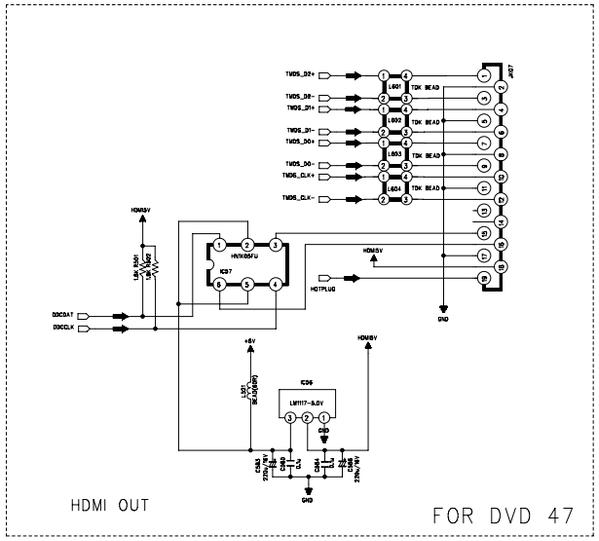
DRAWING NO

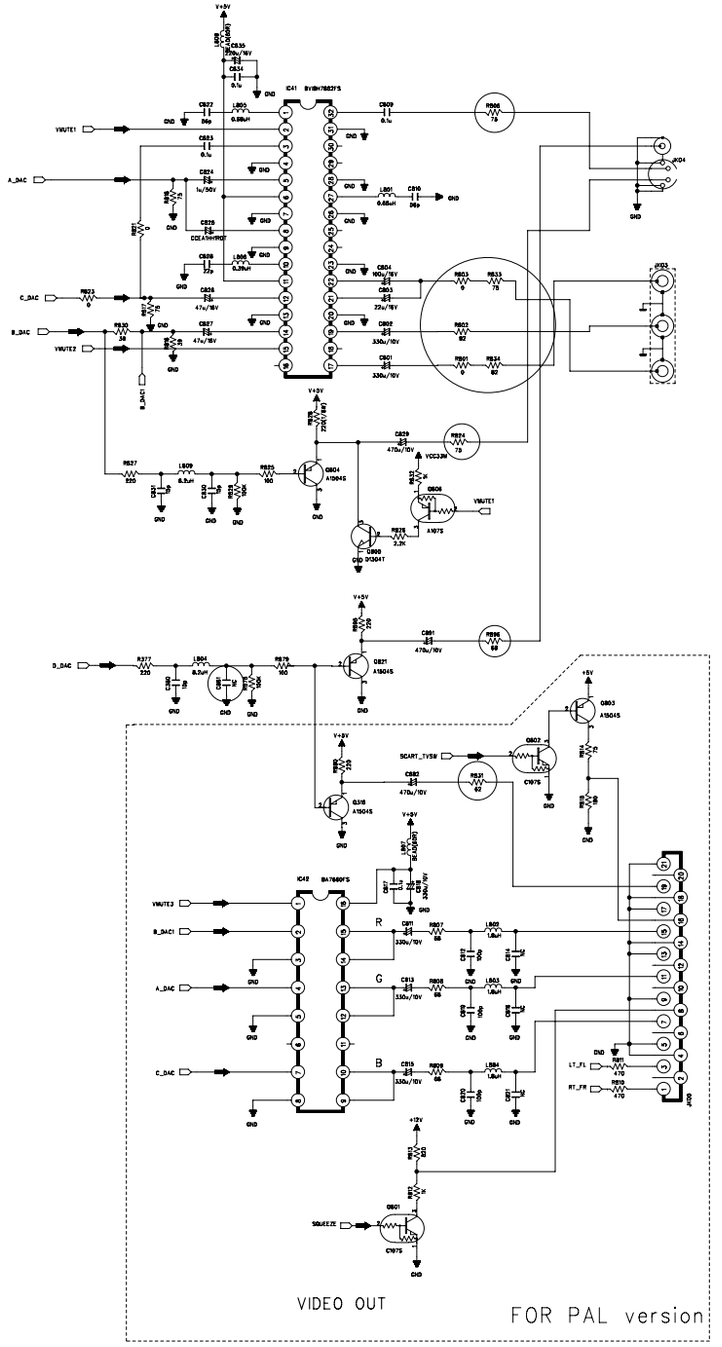
11842SCMZ

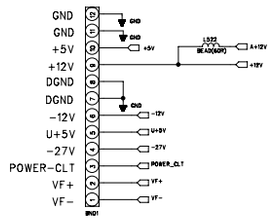
2006.01.17 2006.01.17 2/3

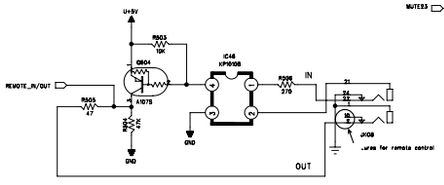


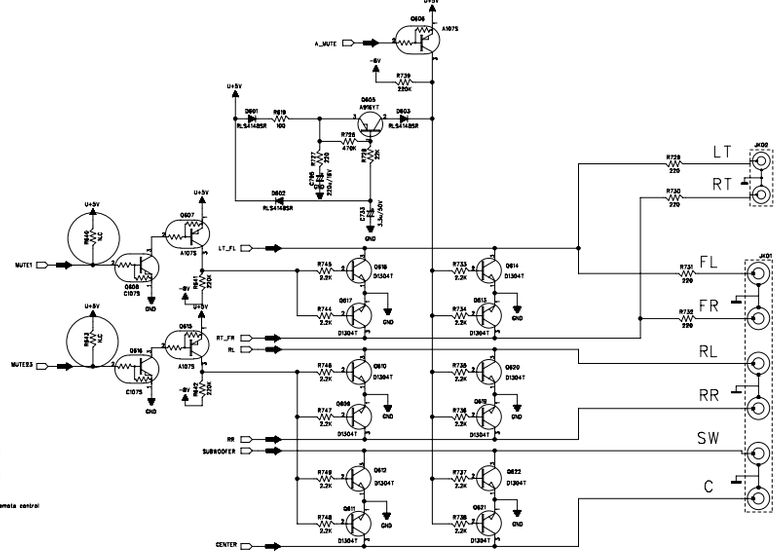












M.P	REVISION	2	4	6	
	1	3	5	7	
ISSUE	SCHEMATIC DIAGRAM			SHEET	
2'	MODEL	DVD 37/230 (Harman DVD)		3/3	
			DRAWING NO		
	2006.01.17	2006.01.17	11842SCMZ		3/3