ORDER NO.MD0603060C3

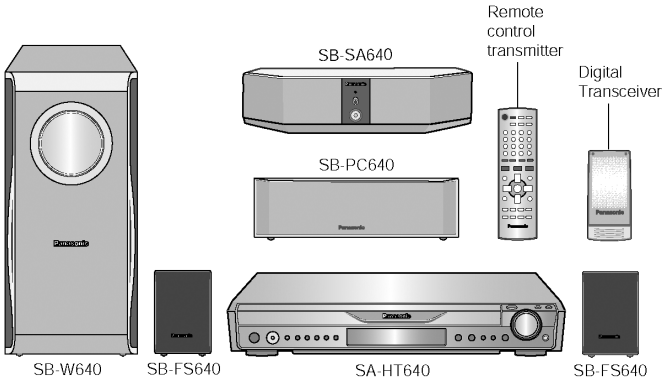
Service Manual

DVD Home Theater Sound System

SA-HT640WPL

Colour

(S).....Silver Type



Specifications

IGeneral

Power Source: AC 120V, 60Hz

Power consumption: 85 W

Dimensions (W×H×D): 430×70×439.2 mm

Mass: 4.65kg

IAmplifier section

RMS Output Power: Dolby Digital Mode

ITotal RMS Dolby Digital mode Power: 850 W

At 1kHz and total harmonic of 10%

IFront: 110 W/ Channel (3Ω)

ICenter: 225 W/ Channel (6Ω)

ISurround: 90 W/ Channel (4Ω)

At 100Hz and total harmonic of 10%

IActive subwoofers: 225 W/ Channel (6Ω)

FTC Output Power: Dolby Digital Mode:

ITotal FTC Dolby Digital mode Power: 360 W

At 120Hz-20kHz and total harmonic of 1%

IFront: 40 W/ Channel (3Ω)

ICenter: 75 W/ Channel (6Ω)

ISurround: 40 W/ Channel (4Ω)

At 45Hz-120Hz and total harmonic of 1%

ISubwoofer: 65 W/ Channel (6Ω)

IFM tuner section

Frequency Range: 87.9-107.9MHz (200kHz in step) 87.5-108.0MHz (100kHz in step)

Sensitivity: 2.5µV (IHF)

S/N 26dB 2.2µV

Antenna Terminals: 75Ω (unbalanced)

IAM tuner section

Frequency Range: 520-1710kHz (10kHz in step)

AM Sensitivity S/N 20dB at 1000kHz: 1000µV/m

IPhone Jack:

Terminal: Stereo 3.5 mm jack

IFront/Rear M. Port:

Sensitivity: 100mV (4.7kΩ)

Terminal (Input): Stereo 3.5 mm jack

IDisc section

Discs played [8 cm or 12 cm]:

(1) DVD [DVD-Video, DVD-Audio]

(2) DVD-RAM [DVD-VR, JPEG(*4,5)]

(3) DVD-R [DVD-Video]

Panasonic

(4) DVD-RW [DVD-Video]

(5) +R/+RW [Video]

(6) CD, CD-R/RW [CD-DA, Video CD, SVCD(*1), MP3(*2,5), WMA(*3,5), JPEG(*4,5), HighMAT Level 2 (Audio and Image)]

*1 Conforming to IEC62107

*2 MPEG-1 Layer 3, MPEG-2 Layer 3

*3 Windows Media Audio Ver.9.0 Class 2A

INot compatible with Multiple Bit Rate (MBR)

*4 Exif Ver 2.1 JPEG Baseline files

IPicture resolution: between 320 x 240 and 6144 x 4096 pixels (Sub sampling is 4:2:2 or 4:2:0). Extremely long and thin pictures may not be displayed.

*5 The total combined maximum number of recognizable audio and picture contents and groups: 4000 audio and picture contents and 400 groups.

Pick up:

Wavelength:

ICD: 785nm

IDVD: 662nm

Laser power:

ICD: CLASS I

IDVD: CLASS II

Audio output (DISC):

Number of channels: 5.1 ch (FL, FR, C, SL, SR, SW)

Audio performance:

Frequency response:

DVD (linear audio): 4 Hz-22 kHz (48 kHz sampling)
4 Hz-44 kHz (96 kHz sampling)

DVD-Audio: 4 Hz-88 kHz (192 kHz sampling)

CD-Audio: 4 Hz-20 kHz

S/N ratio:

CD-Audio: 105 dB

Dynamic range:

DVD (linear audio): 95 dB

CD-Audio: 95 dB

Total harmonic distortion:

CD-Audio: 0.005 %

IVideo section

Video system:

Signal system: NTSC

Composite video output:

Output level: 1 Vp-p (75 Ω)

Terminal: Pin jack (1 system)

S-video output:

Y output level: 1 Vp-p (75 Ω)

C output level: NTSC; 0.286 Vp-p (75 Ω)

Terminal S terminal (1 system)

Component video output (480p/480i):

Y output level: 1 Vp-p (75 Ω)

P_B output level: 0.7 Vp-p (75 Ω)

P_R output level: 0.7 Vp-p (75 Ω)

Terminal: Pin jack (Y: green, P_B: blue, P_R: red) (1 system)

Power consumption in standby mode:

approx 0.4W

Note:

1. Specifications are subject to change without notice.
   Mass and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

Solder:

This model uses lead free solder (PbF).

Mechanism:

This model uses RC1 (Rotary tray) mechanism.

System	SC-HT640WP
Main unit	SA-HT640WP
Speaker system	SB-HT640P
Active subwoofer	SB-W640P*4
Digital transceiver	SH-FX60TPP

Speaker system	SB-HT640P
Front speakers	SB-FS640P*1
Center speaker	SB-PC640P*2
Wireless surround speakers	SB-SA640P*3

Refer to the original service manual for *1, *2, *3, *4.

MPEG Layer-3 audio decoding technology licensed from Fraunhofer IIS and Thomson multimedia.

Windows Media, and the Windows logo are trademarks, or registered trademarks of Microsoft Corporation in the United States and/or other countries.
WMA is a compression format developed by Microsoft Corporation. It achieves the same sound quality as MP3 with a file size that is smaller than that of MP3.

Designed for Windows Media™

HIGH MAT AUDIO•IMAGE

HighMAT and the HighMAT logo are either trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.

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HDCD system manufactured under license from Pacific Microsonics, Inc. This product is covered by one or more of the following: In the USA: 5,479,168, 5,638,074, 5,640,161, 5,808,574, 5,838,274, 5,854,600, 5,864,311, 5,872,531, and in Australia: 669114, with other patents pending.

■ Built-in decoders

You can play discs with these symbols.

DOLBY DIGITAL

DIGITAL dts SURROUND

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

CONTENTS

1 Safety Precautions

1.1. GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, carry out the following leakage current checks to prevent the customer from being exposed to shock hazards.

1.1.1. LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1MΩ and 5.2MΩ.
   When the exposed metal does not have a return path to the chassis, the reading must be ∞.

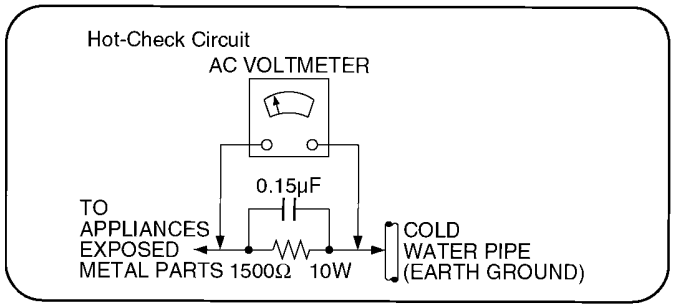


Figure 1

1.1.2. LEAKAGE CURRENT HOT CHECK (See Figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5kΩ, 10 watts resistor, in parallel with a 0.15μF capacitors, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

1.2. Before Repair and Adjustment

Disconnect AC power, discharge Power Supply Capacitors C5700, C5717, C5718, C5742, C5796 through a 10 Ω, 10 W resistor to ground.

DO NOT SHORT-CIRCUIT DIRECTLY (with a screwdriver blade, for instance), as this may destroy solid state devices.

After repairs are completed, restore power gradually using a variac, to avoid overcurrent.

Current consumption at AC 120 V, 60 Hz in NO SIGNAL mode volume minimal should be ~ 900 mA.

1.3. Protection Circuitry

The protection circuitry may have operated if either of the following conditions are noticed:

- No sound is heard when the power is turned on.
- Sound stops during a performance.

The function of this circuitry is to prevent circuitry damage if, for example, the positive and negative speaker connection wires are “shorted”, or if speaker systems with an impedance less than the indicated rated impedance of the amplifier are used.

If this occurs, follow the procedure outlines below:

1. Turn off the power.
2. Determine the cause of the problem and correct it.
3. Turn on the power once again after one minute.

Note:

When the protection circuitry functions, the unit will not operate unless the power is first turned off and then on again.

2 Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

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

   Caution

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

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are imporant for safety.
These parts are marked by ⚠ in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock. fire, or other hazards. Do not modify the original design without permission of manufacturer.

3 Precaution of Laser Diode

CAUTION:

This unit utilizes a class 1 laser.

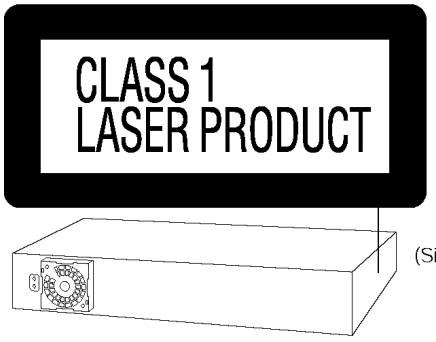
Invisible laser radiation is emitted from the optical pickup lens.

Wavelength: 662nm(DVD)/785nm(CD).

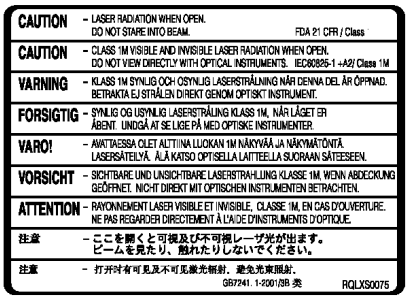
Maximum output radiation power from pickup: 100μW/VDE

When the unit is turned on:

1. Do not look directly into the pick up lens.
2. Do not use optical instruments to look at the pick up lens.
3. Do not adjust the preset variable resistor on the pickup lens.
4. Do not disassemble the optical pick up unit.
5. If the optical pick up is replaced, use the manufacturer's specified replacement pick up only.
6. Use of control or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



(Side of product)



(Inside of product)

The laser product label has not been attached to products for the U.S.A and Canada

CAUTION:
THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

4 About Lead Free Solder (PbF)

Distinction of PbF PCB: PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.

Caution:

- Pb free solder has a higher melting point than standard solder; Typically the melting point is 50 - 70°F (30 - 40°C) higher. Please use a high temperature soldering iron. In case of the soldering iron with temperature control, please set it to 700 ± 20°F (370 ± 10°C).
- Pb free solder will tend to splash when heated too high (about 1100°F/ 600°C).

When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.

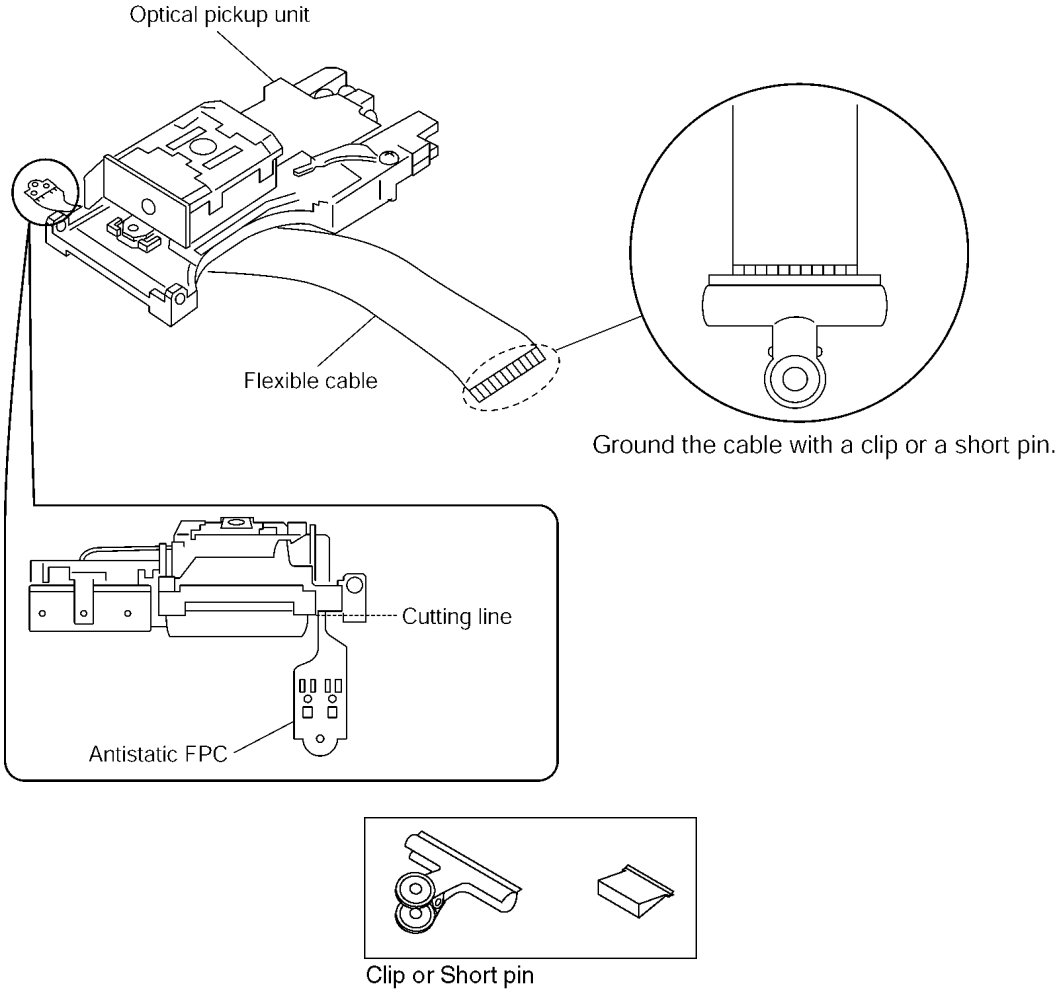
5 Handling Precautions for Traverse Unit

The laser diode in the optical pickup unit may break down due to static electricity of clothes or human body. Special care must be taken avoid caution to electrostatic breakdown when servicing and handling the laser diode.

5.1. Cautions to Be Taken in Handling the Optical Pickup Unit

The laser diode in the optical pickup unit may be damaged due to electrostatic discharge generating from clothes or human body. Special care must be taken avoid caution to electrostatic discharge damage when servicing the laser diode.

1. Do not give a considerable shock to the optical pickup unit as it has an extremely high-precise structure.
2. To prevent the laser diode from the electrostatic discharge damage, the flexible cable of the optical pickup unit removed should be short-circuited with a short pin or a clip.
3. The flexible cable may be cut off if an excessive force is applied to it. Use caution when handling the flexible cable.
4. The antistatic FPC is connected to the new optical pickup unit. After replacing the optical pickup unit and connecting the flexible cable, cut off the antistatic FPC.



5.2. Grounding for electrostatic breakdown prevention

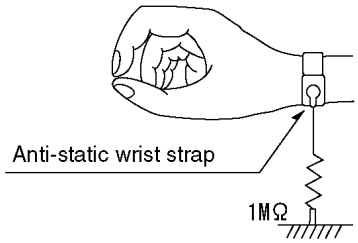
Some devices such as the DVD player use the optical pickup (laser diode) and the optical pickup will be damaged by static electricity in the working environment. Proceed servicing works under the working environment where grounding works is completed.

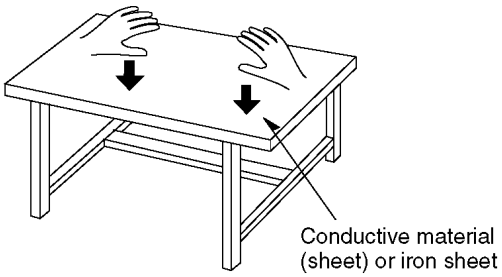
5.2.1. Worktable grounding

1. Put a conductive material (sheet) or iron sheet on the area where the optical pickup is placed, and ground the sheet.

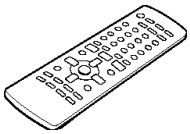
5.2.2. Human body grounding

1. Use the anti-static wrist strap to discharge the static electricity form your body.

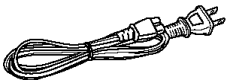

Anti-static wrist strap
1MΩ


Conductive material
(sheet) or iron sheet

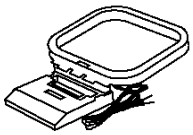
6 Accessories



Remote control

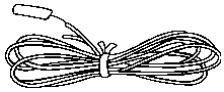


AC cord

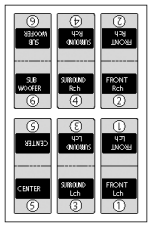


AM loop antenna

Digital transceiver*



FM indoor antenna



Speaker label

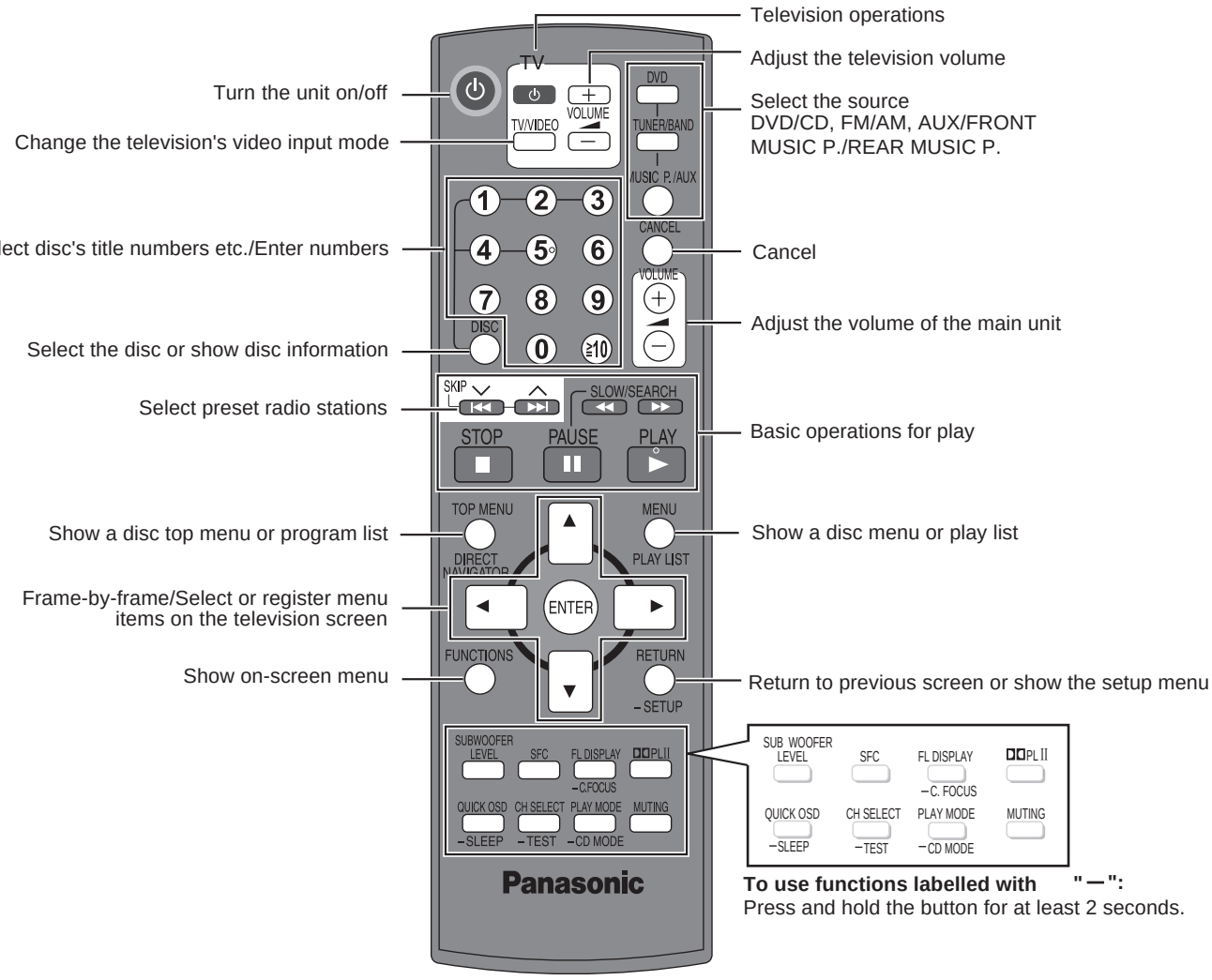
Video Cable

*Not supplied as individual service parts. Refer to Section 20.3 for more information.

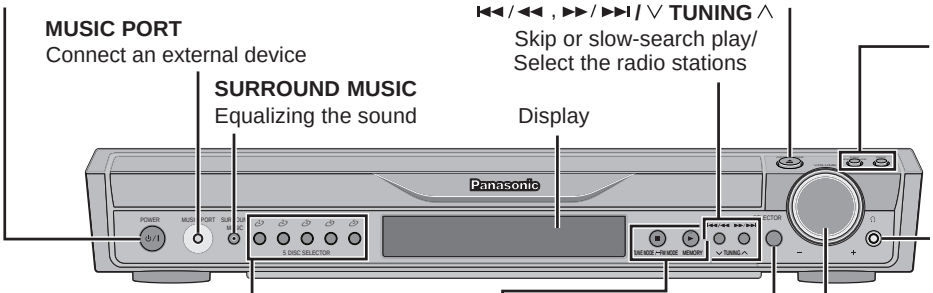
7 Operation Procedures

7.1. Operating instructions

7.1.1. Remote Control Key Buttons Operations



7.1.2. Main Unit Key Buttons Operations (SA-HT640W)



Standby/on switch [POWER ⏻/I]
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

MUSIC PORT
Connect an external device

SURROUND MUSIC
Equalizing the sound

⏮ / ◀◀ , ▶▶ / ▶▶I / ∨ TUNING ∧
Skip or slow-search play/
Select the radio stations

Display

⏏ OPEN/CLOSE
Open/Close the disc drawer

DISC EXCHANGE
Open the disc drawer to exchange the disc in the play position

DISC SKIP
Skip to the next disc tray

Phones
Connect headphones

5 DISC SELECTOR
Select the disc tray

■ / –TUNE MODE / —FM MODE
Stop playing/Select the tuning mode
Adjust the FM reception condition

► / MEMORY
Play discs/Memorize the receiving radio stations

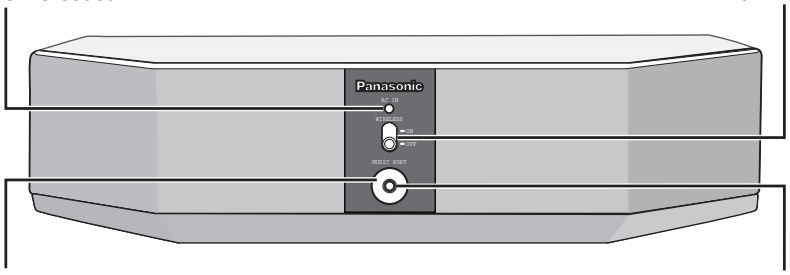
VOLUME
Turn up/down the volume

SELECTOR
DVD/CD→FM→AM→AUX→FRONT
MUSIC P.→REAR MUSIC P. →
Return to DVD/CD

7.1.3. Wireless Surround Speaker Key Buttons Operations (SB-SA640)

Power indicator
This indicator lights when the unit is plugged into the AC outlet.

Wireless selector [WIRELESS ON, OFF]
ON :Select when enjoying audio from the main unit.
OFF :Select when enjoying audio from MUSIC PORT on the surround speaker.



Lighting Ring
The light goes out when the speaker is in standby mode.

MUSIC PORT
Connect an external device

Note: Refer to original service manual (Order No. MD0603060C3) for more information of this unit (SB-SA640).

7.2. Disc information

■ Discs that can be played

DVD VIDEO DVD VIDEO	**DVD-Video** DVD-V —
DVD AUDIO	**DVD-Audio** DVD-A DVD-V ● DVD-V Some DVD-Audio Discs contain DVD-Video content.
COMPACT disc DIGITAL VIDEO COMPACT disc SUPER VIDEO	**Video CD** VCD ● Including SVCD (Conforming to IEC62107).
DVD RAM RAM4.7	**DVD-RAM** DVD-VR JPEG ● DVD-VR Recorded with devices using Version 1.1 of the Video Recording Format (a unified video recording standard), such as DVD video recorders, DVD video cameras, personal computers, etc. ● JPEG Recorded with Panasonic SD multi cameras or DVD video recorders using the DCF (Design rule for Camera File System) Standard Version 1.0.
DVD R R4.7 DVD RW	**DVD-R (DVD-Video) / DVD-RW (DVD-Video)** DVD-V ● Discs recorded and finalized* on DVD video recorders or DVD video cameras.
—	**+R(Video) / +RW(Video)** DVD-V ● Discs recorded and finalized* on DVD video recorders or DVD video cameras.
COMPACT disc DIGITAL AUDIO COMPACT disc DIGITAL AUDIO TEXT	**CD** CD WMA MP3 JPEG VCD ● This unit can play CD-R/RW recorded with the above formats. Close the sessions or finalize* the disc after recording. ● CD This unit is compatible with HDCD, but does not support the Peak Extend function (a function which expands the dynamic range of high-level signals). HDCD-encoded CDs sound better because they are encoded with 20 bits, as compared with 16 bits for all other CDs. ● WMA MP3 JPEG This unit also plays HighMAT discs. ● WMA This unit does not support Multiple Bit Rate (MBR: an encoding process for audio content that produces an audio file encoded at several different bit rates).

*A process that allows play on compatible equipment.

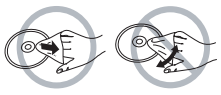
● It may not be possible to play all the above-mentioned discs in some cases due to the type of disc or condition of the recording.

■ Discs that cannot be played

DVD-RW version 1.0, DVD-ROM, CD-ROM, CDV, CD-G, SACD, DivX Video Discs and Photo CD, DVD-RAM that cannot be removed from their cartridge, 2.6-GB and 5.2-GB DVD-RAM, and "Chaoji VCD" available on the market including CVD, DVCD and SVCD that do not conform to IEC62107.

■ To clean discs

Wipe with a damp cloth and then wipe dry.



■ Disc handling precautions

- Do not attach labels or stickers to discs. This may cause disc warping, rendering it unusable.
- Do not write on the label side with a ball-point pen or other writing instrument.
- Do not use record cleaning sprays, benzine, thinner, liquids which prevent static electricity, or any other solvent.
- Do not use scratch-proof protectors or covers.
- Do not use the following discs:
  - – Discs with exposed adhesive from removed stickers or labels (rented discs, etc).
  - – Discs that are badly warped or cracked.
  - – Irregularly shaped discs, such as heart shapes.

Note about using a DualDisc

- The digital audio content side of a DualDisc does not meet the technical specifications of the Compact Disc Digital Audio (CD-DA) format so playback may not be possible.
- Do not use DualDisc in this unit as it may not possible to insert it correctly and it may get scratched or scraped.

■ Clean this unit with a soft, dry cloth.

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using chemically treated cloth, carefully read the instructions that came with the cloth.

Do not use commercially available lens cleaners as they may cause malfunction. Cleaning of the lens is generally not neccessary although this depends on the operating environment.

Before moving the unit, ensure the disc trays are empty.
Failure to do so will risk severely damaging the disc and the unit.

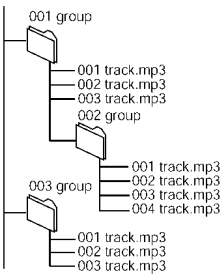
Tips for making WMA/MP3 and JPEG discs (For CD-R, CD-RW)

- Discs must conform to ISO9660 level 1 or 2 (except for extended formats).
- This unit supports multi-session but if there are a lot of sessions it takes more time for play to start. Keep the number of sessions to a minimum to avoid this.
- When there are more than 8 groups, the eighth group onwards will be displayed on one vertical line in the menu screen.
- There may be differences in the display order on the menu screen and computer screen.
- This unit cannot play files recorded using packet write.

Naming folders and files
(Files are treated as content and folders are treated as groups on this unit.)

At the time of recording, prefix folder and file names with 3-digit numbers in the order you want to play them (this may not work at times).
Files must have the extension:
".WMA" or ".wma"
".MP3" or ".mp3"
".JPG", ".jpg", ".JPEG" or ".jpeg"

e.g. MP3



WMA

- You cannot play WMA files that are copy protected.
- This unit does not support Multiple Bit Rate (MBR).

MP3

This unit does not support ID3 tags.
Compatible sampling rates: 8, 11.02, 12, 16, 22.05, 24, 32, 44.1 and 48 kHz.

JPEG

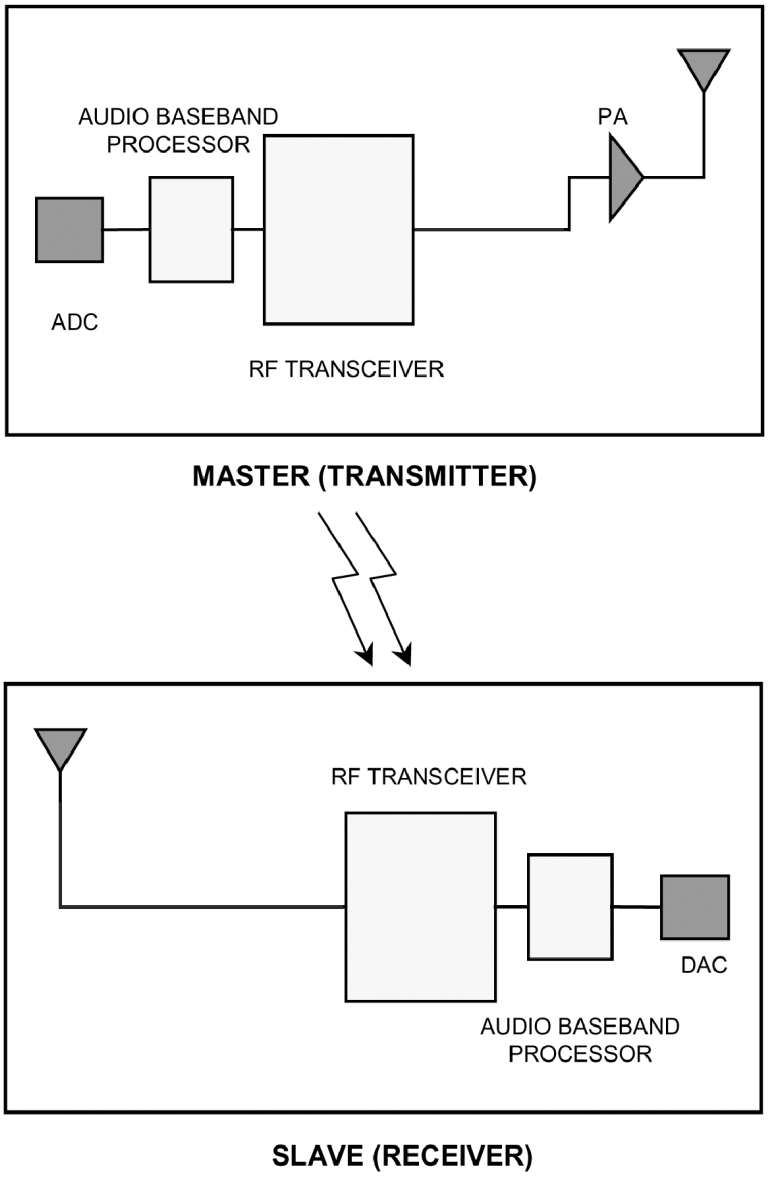
- To view JPEG files on this unit:
  - Take them on a digital camera that meets the DCF Standard (Design rule for Camera File system) Version 1.0. Some digital cameras have functions that are not supported by the DCF Standard Version 1.0 like automatic picture rotation which may render a picture un-viewable.
  - Do not alter the files in any way or save them under a different name.
- This unit cannot display moving pictures, MOTION JPEG and other such formats, still pictures other than JPEG (e.g. TIFF) or play pictures with attached audio.

8 New Features

・This model is equipped with the digital transmitter and receiver (SB-SA640P) to enjoy surround sound wirelessly. For more information on this model, please refer to the original service manual.

8.1. RF Wireless Audio Transceiver

8.1.1. Block Diagram



8.1.2. Definition

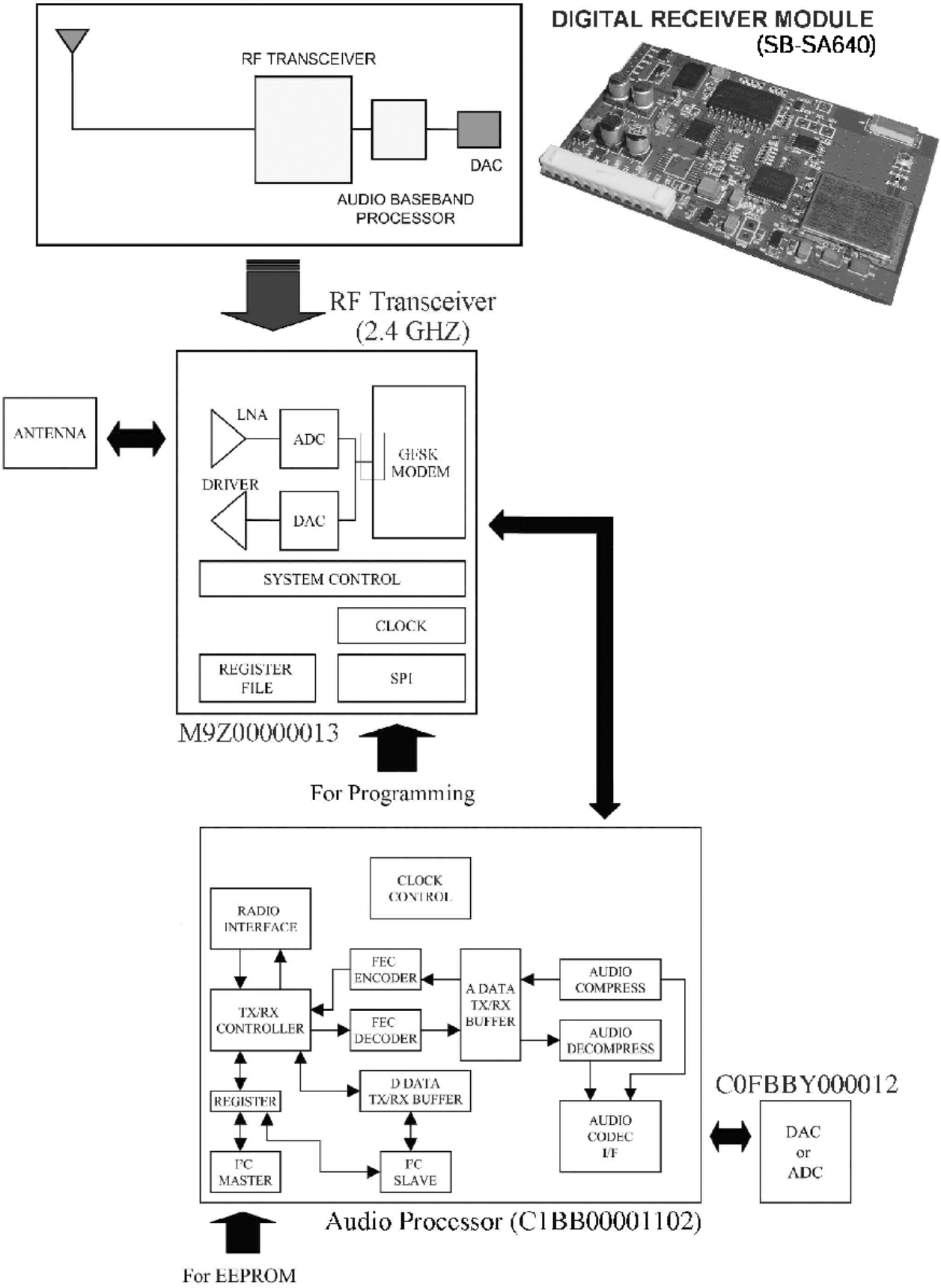
1. ADC : Analog-to-Digital Converter
2. Transceiver : Transmitter-Receiver Device
3. PA : Power Amplifier
4. DAC : Digital-to-Analog Converter

8.1.3. Features

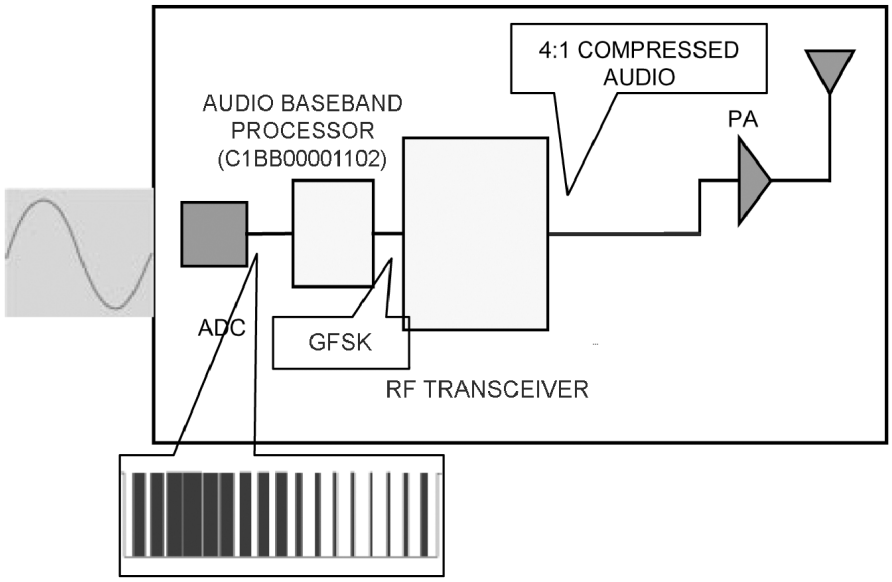
・Crystal Clear CD Quality Stereo Sound
・ Highly Robust Forward Error Correction
・ 44.1KHz / 48KHz sampling frequency
・ Adaptive Frequency Hopping System
・ Range (open space) : 100m

- Low power consumption
- SNR (for left / right channel analog interface) : 80 dB
- THD : 0.2%
- Compact : 40mm x 80mm

8.2. Detail Block Diagram (Receiver module)



8.2.1. Operation



RF signal transmission and reception:

During the receive process, the radio signal is taken from a pair of balanced RF I/O pins that feed into the low noise amplifier (LNA). Direct I/Q down conversion and on-chip filtering send the processed I/Q data to the analog-to-digital converter before processing by the GFSK (Gaussian Frequency Shift Keying) demodulator. Within the demodulator, data detection and timing recovery circuits convert the data for transfer to an external device. The transmit process operates in a similar fashion in reverse order.

The transmitted signal is GFSK (Gaussian Frequency Shift Keying) modulated data that is amplified on the chip to yield a radiated output of 0dBm. A power control signal for an external amplifier is provided.

The audio baseband processor (C1BB00001102) is a digital audio processor IC encompassing apt-XTM audio compress/decompress algorithm for wireless transmission of crystal-clear CD quality audio data.

For digital transmission the analog audio signals are sampled at 48kHz and converted to 1.536Mbps digital data through an external 16-bit stereo audio codec. The digitized data are apt-XTM 4:1 compressed to 384Kbps stream data for efficient transmission. Redundancy bits for forward error correction (FEC), synchronization flags, and control signals for time-division duplexing (TDD) are appended to form data frames for error-free transmission.

In the receiver(Slave), synchronization flags and control data are first detected from the input stream. FEC decoder corrects any errors that may have been introduced during the transmission and produces error-free compressed audio data. The compressed audio is decompressed into 16-bit stereo PCM audio data through digital signal processing blocks. External audio codec converts the PCM data to 2-channel (left and right) analog audio signals.

The Tx/Rx controller is in charge of several functions such as radio channel setup, frequency hopping for interference reduction and generation of control signal for TDD and external RF chip.

In audio mode, the transmitter(Master) can send additional 16Kbps digital data simultaneously with stereo audio data.

How much time delay to transmit audio in wireless?

Audio compression and decompression requires about 3ms. Total time delay can be calculated as follows: Total delay time = audio compression time + transmitter operating time + receiver operating time + audio decompression time. Total delay time is approximately 12.2ms.

What is the power consumption?

The 2.4GHz RF module consumes about 45mA (max 65mA) for the transmitter and 55mA (max 71mA) for the receiver. The EEPROM consumes about 1mA while the baseband IC consumes about 20mA. The total power consumption is 66mA (max 86mA) for the transmitter and 76mA (max 92mA) for the receiver.

Does the system support any mode to save power consumption?

Yes, it has POWER SAVING SCAN mode. When the communication link is lost, the slave starts scanning procedure to re-establish the link. If the slave cannot find the master within a certain amount of time (info stored in EEPROM), the slave automatically goes into power saving scan mode.

How does the system handle interference from other 2.4GHz RF devices?

It adopts Adaptive Frequency Hopping Spread Spectrum (AHSS) technology to avoid interference.

How does the system handle interference from other 2.4GHz RF devices?

The system supports 3 types of Spread Spectrum. These are

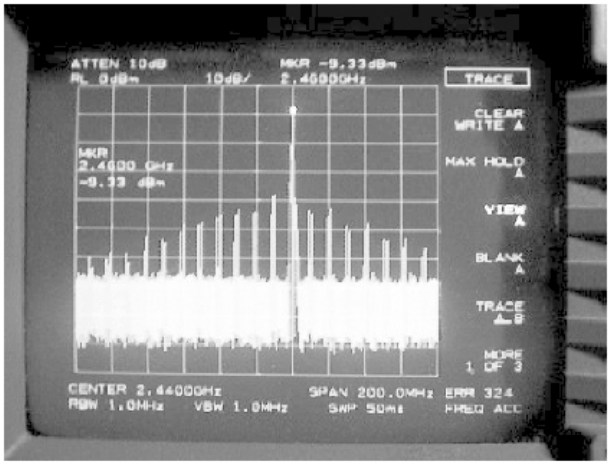
1. FHSS - Frequency Hopping Spread Spectrum
2. AHSS - Adaptive Frequency Hopping Spread Spectrum
3. Fixed Channel Mode

FHSS refers to the conventional 79 channels (or 23 dependent on the country) hopping of Bluetooth. Devices using such hopping method receives a lot of interference from other devices that use 2.4GHz range frequency such as WLAN and other Bluetooth devices. FHSS, being built to avoid interfering with other devices, rather interferes a lot with devices that has high output power using 2.4GHz frequency range and with other FHSS devices. During initialization, system scans 79 channels (or 23) and selects the clear, non-interfered and reliable channel and starts the communication between master and slave. During the channel link, the channel becomes unreliable and the error detection from FEC block exceeds the preset error threshold value, the system executes scanning, as in initialization, and reselects new clear and reliable channel.

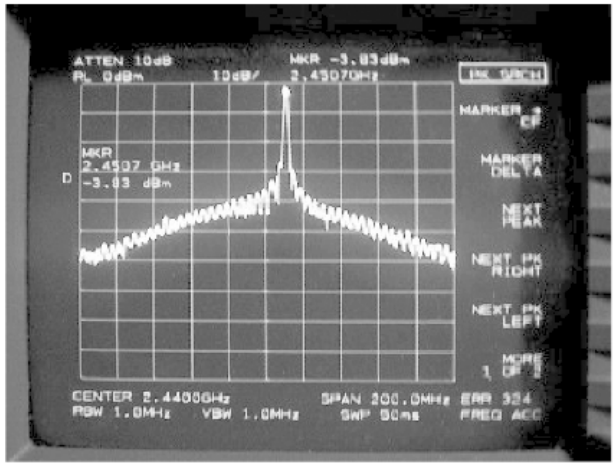
FHSS and AHSS can be selected by setting appropriate parameters on the EEPROM.

In Fixed Channel mode, 4 frequency levels can be selected (2.410GHz, 2.430GHz, 2.450GHz and 2.470GHz)

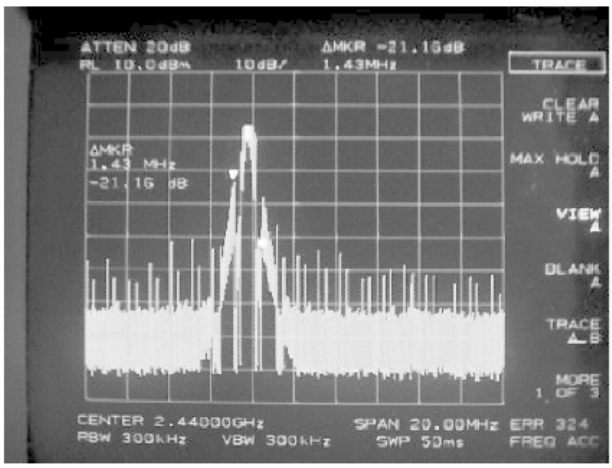
Spectrum distribution characteristic of 2.4GHz RF signal



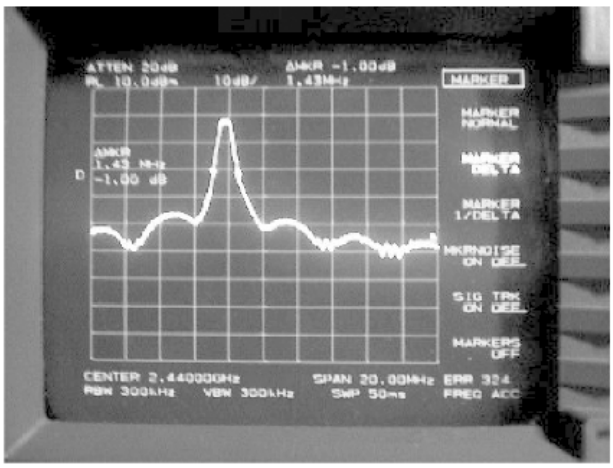
20MHz/Div FREQUENCY SPECTRUM



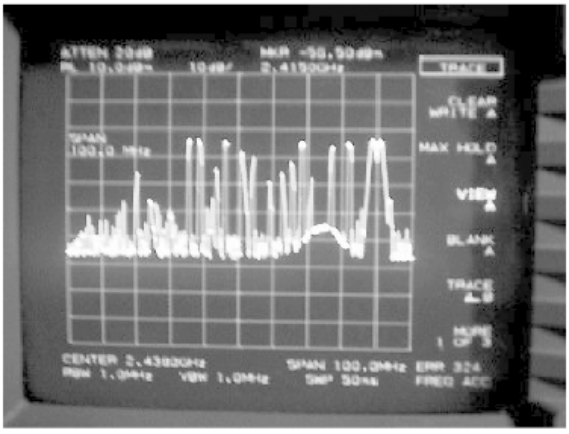
20MHz/Div (PEAK HOLD)

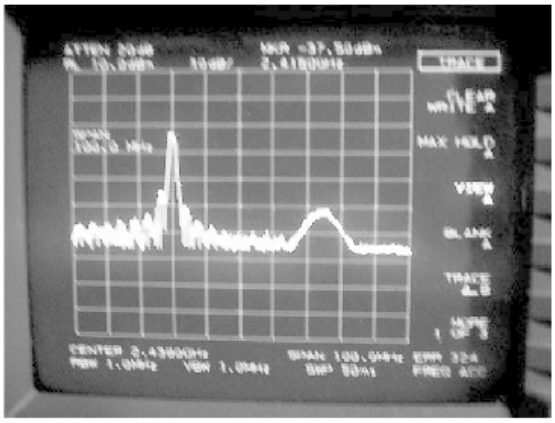


2MHz/Div FREQUENCY SPECTRUM



2MHz/Div (PEAK HOLD)





INTERFERENCE SEARCH AND LOCK TO CLEAN/RELIABLE CHANNEL

CHANNEL LOCK (3 –30 SECONDS)

How can Master or Slave setting be selected? By software or hardware?

It can be selected by external control pin.

How long does it take to transmit single packet?

To establish communication channel properly, hopping frequency and Syncword of each packet should be determined by Device ID(Identification). Device ID is unique value of each device, master and slaves. Only master and slaves with same Device ID can communicate each other. Device ID can be set manually in case selected master and slaves do not communicate together. This procedure is *Device ID set*. Device ID set procedure occurs when master and slave devices boot simultaneously with ID_SET=1. In this procedure, the slave can figure out the Device ID of the master and store it in external EEPROM. When ID_SET is established, S5G3000 performs ID send/scan to send Device ID of master to slave before general page operation. In normal mode, communication is accomplished by going into page state directly without ID send/scan.

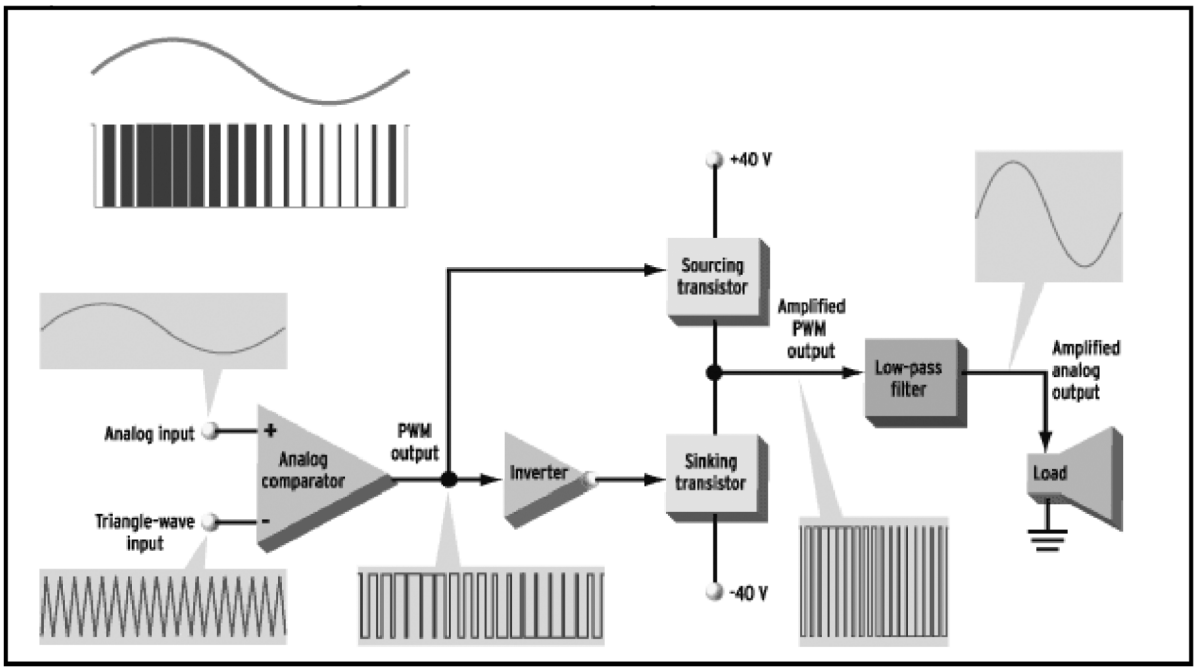
How can the Master and Slave units be paired to prevent mix-up?

It takes 2.5ms.

8.3. Class-D Amplifier

8.3.1. How are digital amplifiers different?

A digital amplifier incorporates a switching output stage that operates according to a principle known as pulse width modulation (PWM). In contrast to the low-frequency control signal used in a conventional analog amplifier output stage, the switching output stage of a digital amplifier is controlled by a high-frequency digital signal. The high-frequency digital signal is a PWM signal, in which the music is modulated into a fixed-frequency carrier signal. In a digital amplifier, the modulation process is based on a digital pulse code modulated (PCM) representation of the music signal (or other signal that needs amplification) from a CD player, a DVD player, or some other device.



8.3.2. What are the advantages of digital amplification technology?

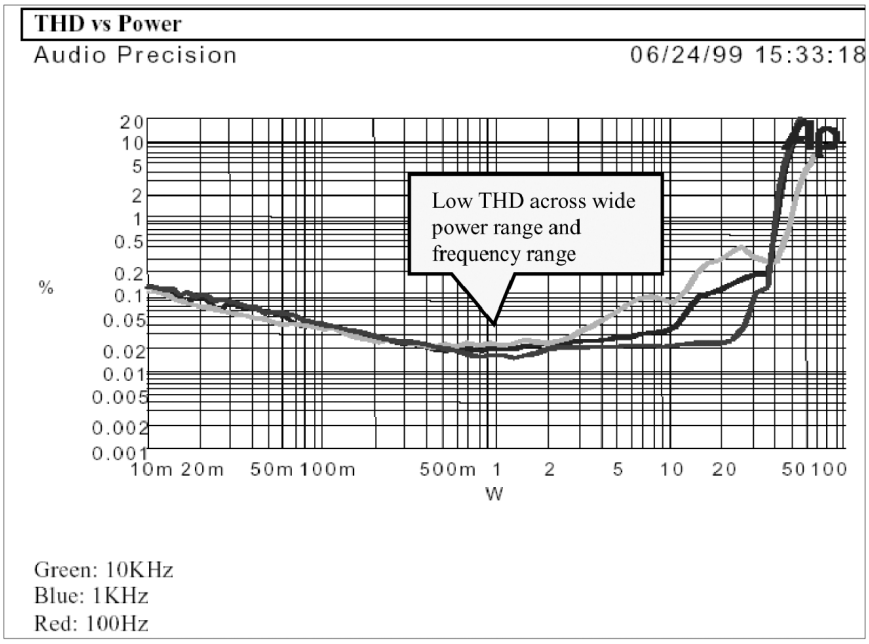
- High power efficiency, i.e., smaller heat sinks and/or no fan required
- Compact (reduced PCB area)
- Low weight (reduced transformer size)
- Good sound quality (low signal distortion/THD)

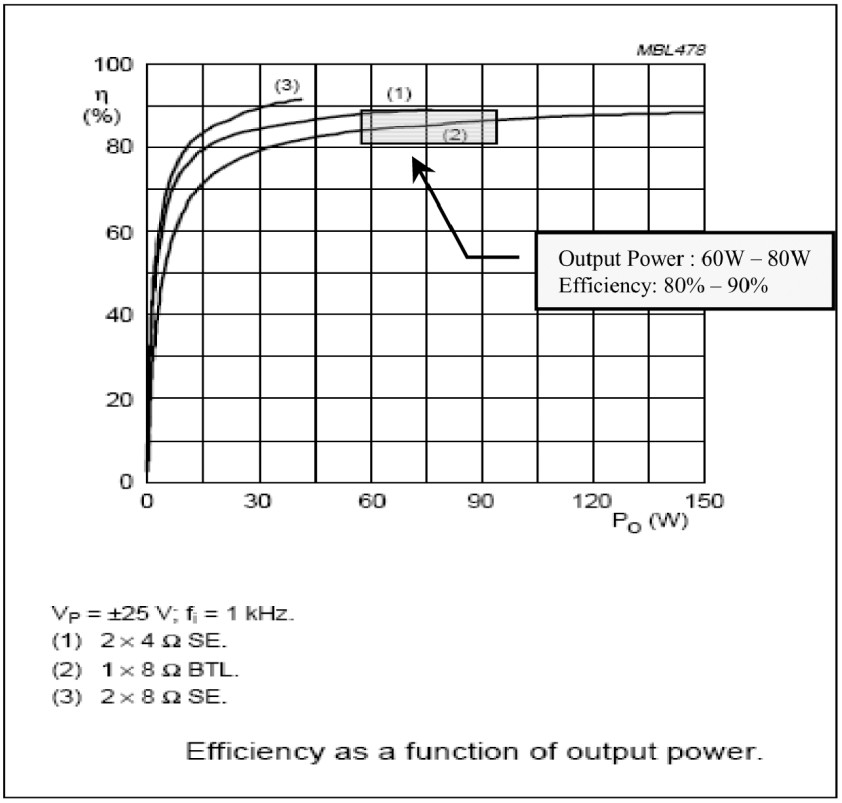
8.3.3. Why is the digital amplifier so efficient?

A class-D amplifier is one in which the output transistors are operated as switches. When a transistor is off, the current through it is zero. When it is on, the voltage across it is small, ideally zero. In each case, the power dissipation is very low.

8.3.4. Does the “D” in class-D mean DIGITAL?

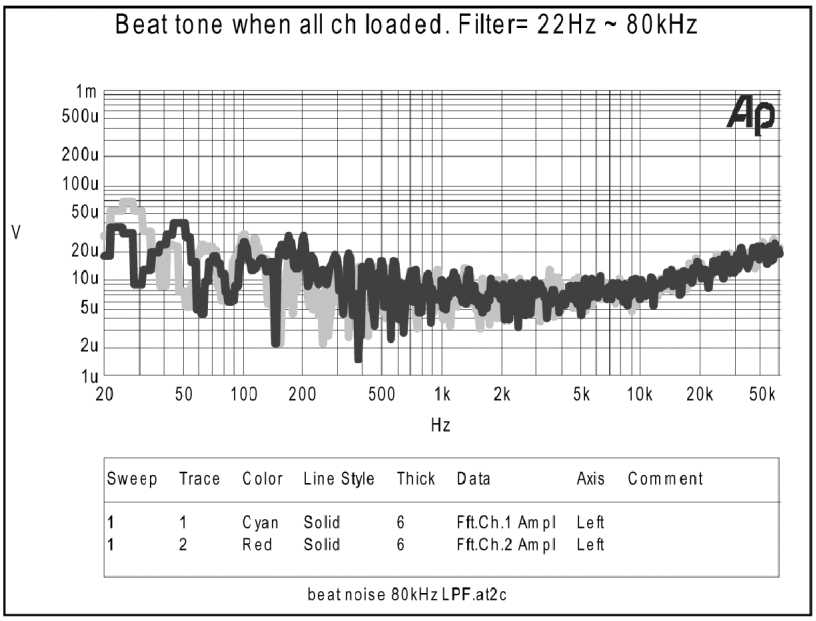
No. This is not correct because the operation of the class-D amplifier is based on analog principles. There is no digital coding of the signal. Before the advent of the class-D amplifier, the standard classes were class-A, class-AB, class-B, and class-C. The “D” is simply the next letter in the alphabet after “C.” Indeed, the earliest work on class-D amplifiers involved vacuum tubes and can be traced to the early 1950s.





8.3.5. What are the potential problems of a Class-D amplifier based system?

The two most common issues of class-D amp system are AM interference and EMI. The switching frequency of class-D ranges from 300kHz to 450kHz typically 315kHz. The harmonics of such switching frequency will fall into the AM band of 600kHz to 1710kHz. To avoid interference, it is recommended to have a variable switching frequency adjustment circuit [usually known as beatproofing in PSG). Systems without AM tuner are not required to have such circuitry.

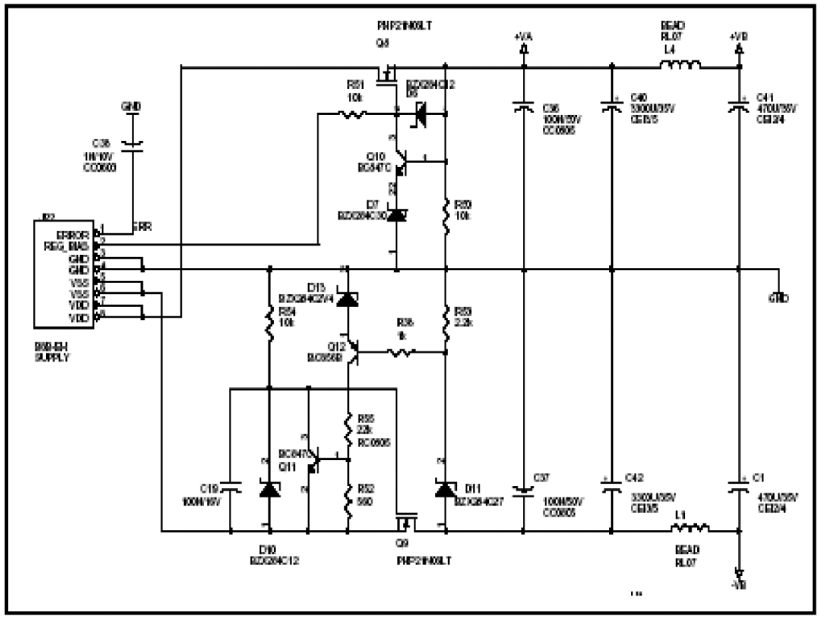


Class-D amp systems are basically switching systems. As such, it is prone to EMI. EMI issues can be rectified through proper grounding techniques and proper components layout. It is quite common to see ferrite beads, capacitors and inductors on these systems.

Another issue would be interchannel modulation. This problem would only arise if each channel is using different switching frequency. It would create an amplified “beat” that can be heard from speakers.

8.3.6. Other issues should we be aware of ?

The class-D amplifier IC is limited to only +/- 30volts power supply. This system uses a linear power source to supply power to the module. These linear power supplies are unregulated (i.e. voltage is not fixed). Therefore we have to implement a voltage limiter circuit that would limit the maximum voltage of +/-27volts. It is also imperative that the power supply voltages are almost balanced.

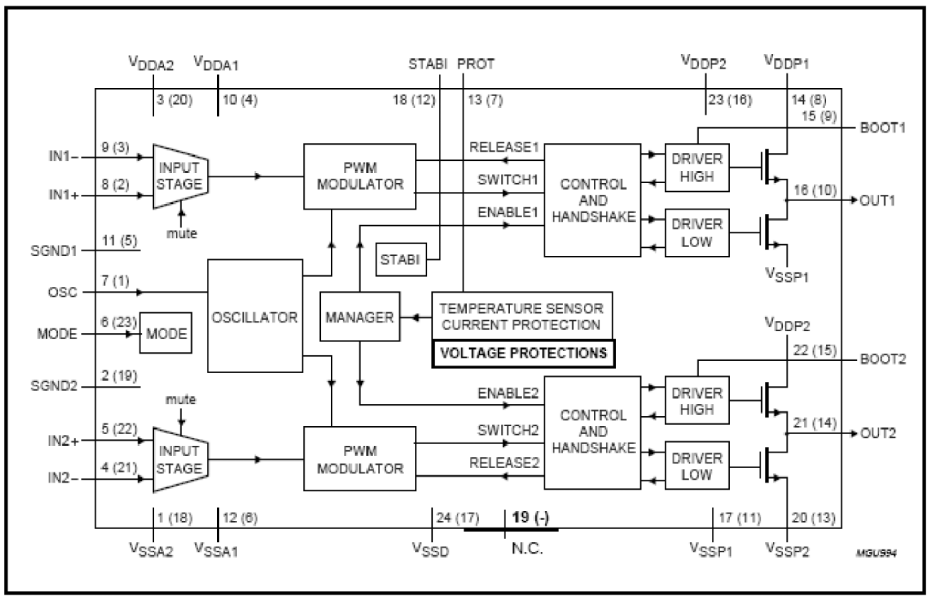


Also, the class-D amplifier IC is configured as single-ended connection. It means one of the outputs is a signal while the other is connected to ground. With this configuration, this Class D amplifiers will deliver energy back to the power supply. We refer to this phenomenon as “Supply pumping effect”. Supply pumping effect is more evident on very low frequencies. It is recommended to have enough buffer on the supply rails to limit the supply pumping effect. It is also advised not to use any type of speakers for testing. There is an output filter that needs to be matched with the intended speaker. A normal resistive load may be used.

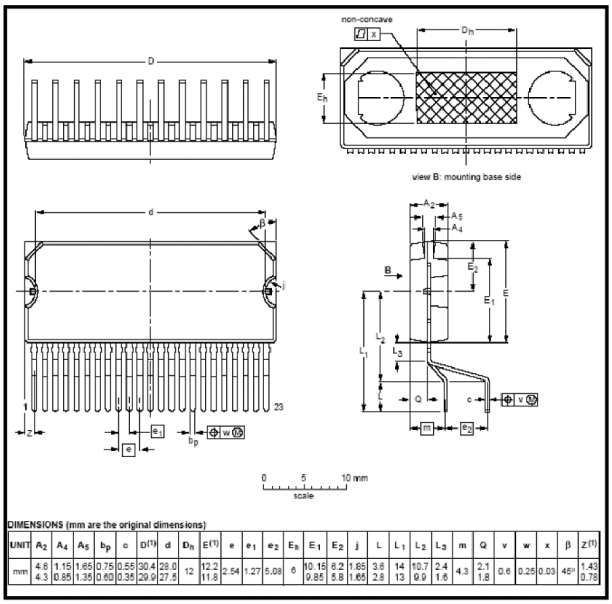
8.3.7. Actual Class-D amplifier IC information

Part number: C1BA00000407 (TDA8920BJ)

Block diagram:



IC Package Information



DIMENSIONS (mm are the original dimensions)

UNIT	A_2	A_4	A_5	b_p	c	$D^{(1)}$	d	D_h	$E^{(1)}$	e	e_1	e_2	E_h	E_1	E_2	j	L	L_1	L_2	L_3	m	Q	v	w	x	β	$z^{(1)}$
mm	4.6 4.3	1.15 0.85	1.65 1.35	0.75 0.60	0.55 0.35	30.4 29.9	28.0 27.5	12	12.2 11.8	2.54	1.27	5.08	6	10.15 9.85	6.2 5.8	1.65 1.65	3.8 2.8	14 13	10.7 9.9	2.4 1.6	4.3	2.1 1.8	0.6	0.25	0.03	45°	1.49 0.78

Soldering Information

Wave Soldering/Dipping: The maximum permissible temperature of the solder is 260 −C; solder at this temperature must not be in contact with the joints for more than 5 seconds. The total contact time of successive solder waves must not exceed 5 seconds. Manual Soldering: If the temperature of the soldering iron bit is less than 300 −C it may remain in contact for up to 10 seconds. If the bit temperature is between 300 and 400 −C, contact may be up to 5 seconds.

9 Self-Diagnosis and special mode setting

9.1. Service Mode Summary Table

The service modes can be activated by pressing various button combination on the player and remote control unit.

Below is the summary of major checking:

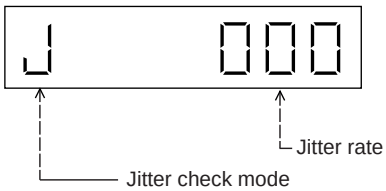
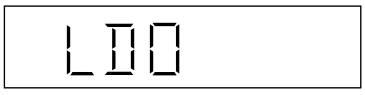
Player buttons	Remote control unit buttons	Application	Note
STOP	0	Error code display	(Refer to the section, “9.3 DVD Self Diagnostic Function-Error Code”).
	5	Jitter checking	(Refer to the section “9.2 Service Mode Table 1” for more information).
	6	Region display and mode	(Refer to the section “9.2 Service Mode Table 1” for more information).
	7	Micro-processor firmware version check	
	FUNCTIONS	DVD laser drive current check	(Refer to the section “9.2.1. Optical Pick-up Self-Diagnosis”).
	3	CD laser drive current check	
	PAUSE	Writing of laser drive current value after replacement of optical pickup (Do use this function only when optical pickup is replaced.)	
	≧10	Initialization of the player (factory setting is restored.) Used after replacement of micro-computer, FLASH ROM IC, EEPROM.	(Refer to the section “9.2 Service Mode Table 1” for more information).
	8	DVD HDMI Module firmware version check	
	ENTER	DVD Module Reset.	

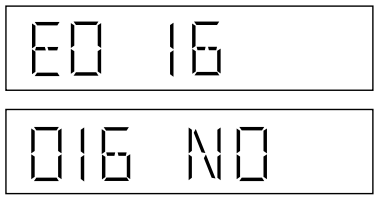
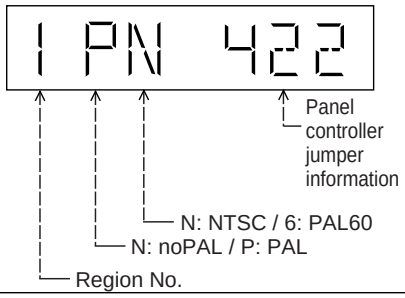
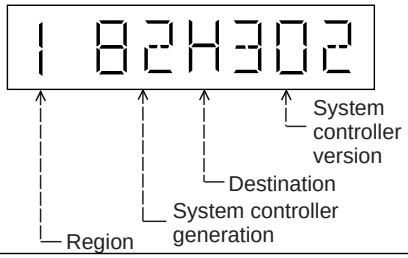
9.2. Service Mode Table 1

By pressing various button combinations on the player and remote control unit can activate the various service modes for checking.

Special Note:

Due to the limitations of the no. characters that can be shown on FL Display, the “FL Display” button on the remote control unit is used to show the following page. (Display 1/Display 2).

Item		FL Display	Key Operation
Mode Name	Description		Front Key
Jitter check	Jitter check Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of one second. Read error counter starts from zero upon mode setting. When target block data failed to be read out, the counter advances by one increment. When the failure is caused by minor error, it may be corrected when retried to enable successful reading. In this case, the counter advances by one. When the error persists even after retry, the counter may jump by two or more.	 Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.	In STOP (no disc) mode, press STOP button on the player, and "5" button on the remote control unit. Press STOP or OPEN button to exit. Press "FL Display" button on remote control unit for next page (FL Display).
Error code check	Error code check The latest error code stored in the EEPROM IC is displayed.	 Error code (play_err) is expressed in the following convention. Error code = 0 x DAXX is expressed: DVDnn UXX Error code = 0 x DBXX is expressed: → DVDnn HXX Error code = 0 x DXXX is expressed: → DVDnn FXXX Error code = 0 x 0000 is expressed: → DVDnn F--- * "xx" denotes the error code →	In STOP (no disc) mode, press STOP button on the player, and "0" button on the remote control unit. * With pointing of cursor up and down on display. Cancelled automatically 5 seconds later. To exit, press [POWER] button on main unit or remote control.
Initial setting of laser drive current	Initial setting of laser drive current. Initial current value for each of DVD laser and CD laser is separately saved in the EEPROM IC.	 The value denotes the current in decimal notation. The above example shows the initial current is 34mA and 28mA for DVD laser and CD laser respectively when the laser is switched on.	In STOP (no disc) mode, press STOP button on the player, and PAUSE button on the remote control unit. Cancelled automatically 5 seconds later. Press "FL Display" button on remote control unit for next page (FL Display) on values of laser drive current.
DVD laser drive current measurement	DVD laser drive current measurement ·DVD laser drive current is measured and the result is displayed together with the initial value stored in the EEPROM IC. After the measurement, DVD laser emission is kept on. It is turned off when POWER key is switched off. (It is also turned off when POWER button on the player is switched off.)	 The value denotes the current in decimal notation. The above example shows the initial current is 34mA and the measured value is 32mA.	In STOP (no disc) mode, press STOP button on the player, and FUNCTIONS button on the remote control unit. Cancelled automatically 5 seconds later. Press "FL Display" button on remote control unit for next page (FL Display) on values of dvd drive current.
ADSC internal RAM data check	ADSC internal RAM data check ·ADSC internal RAM data is read out and displayed.	 The value is shown in hexadecimal notation. The above example shows the data in ADSC address OFAh is 6901h.	In STOP (no disc) mode, press STOP button on the player, and "1" button on the remote control unit. Press STOP or PLAY button.
CD laser drive current measurement	CD laser drive current measurement CD laser drive current is measured and the result is displayed together with the initial value stored in the EEPROM IC. After the measurement, CD laser emission is kept on. It is turned off when POWER key is switched off. (It is also turned off when POWER button on the player is switched off.)	 The value denotes the current in decimal notation. The above example shows the initial current is 28mA and the measured value is 26mA.	In STOP (no disc) mode, press STOP button on the player, and "3" button on the remote control unit. Cancelled automatically 5 seconds later. Press "FL Display" button on remote control unit for next page. (FL Display)

Mode Name	Item Description	FL Display	Key Operation Front Key
Micro-processor firmware version display & EEPROM checksum display.	Micro-processor firmware version display & EEPROM checksum display.		In STOP (no disc) mode, press STOP button on the player, and "7" button on the remote control unit. Cancelled automatically 5 seconds later. Press "FL Display" button on remote control unit for next page. (FL Display)
Initialization	Initialization User settings are cancelled and player is initialized to factory setting.		In STOP (no disc) mode, press STOP button on the player , and ≧10 button on the remote control unit.
Region display	Region display & mode		In STOP (no disc) mode, press STOP button on the player, and "6" button on the remote control unit. Cancelled automatically 5 seconds later.
DVD (HDMI) module firmware version display	DVD (HDMI) module firmware version is displayed on the FL Display.		In STOP (no disc) mode, press STOP button on the player, and "8" button on the remote control unit. Cancelled automatically 5 seconds later.
Communication error display	Displays frequency of communication errors between system control IC and mechanism control IC during DVD module.		In STOP (no disc) mode, press STOP button on the player, and "MENU" button on the remote control unit. Cancelled automatically 5 seconds later.
DVD Module Reset	To reset DVD Module. (After initialisation) Refer to Section 9.5.3 for more information.		While in initialization mode, press 2 hold STOP button on player follow by "ENTER" button on remote control unit. Cancelled automatically 5 seconds later.

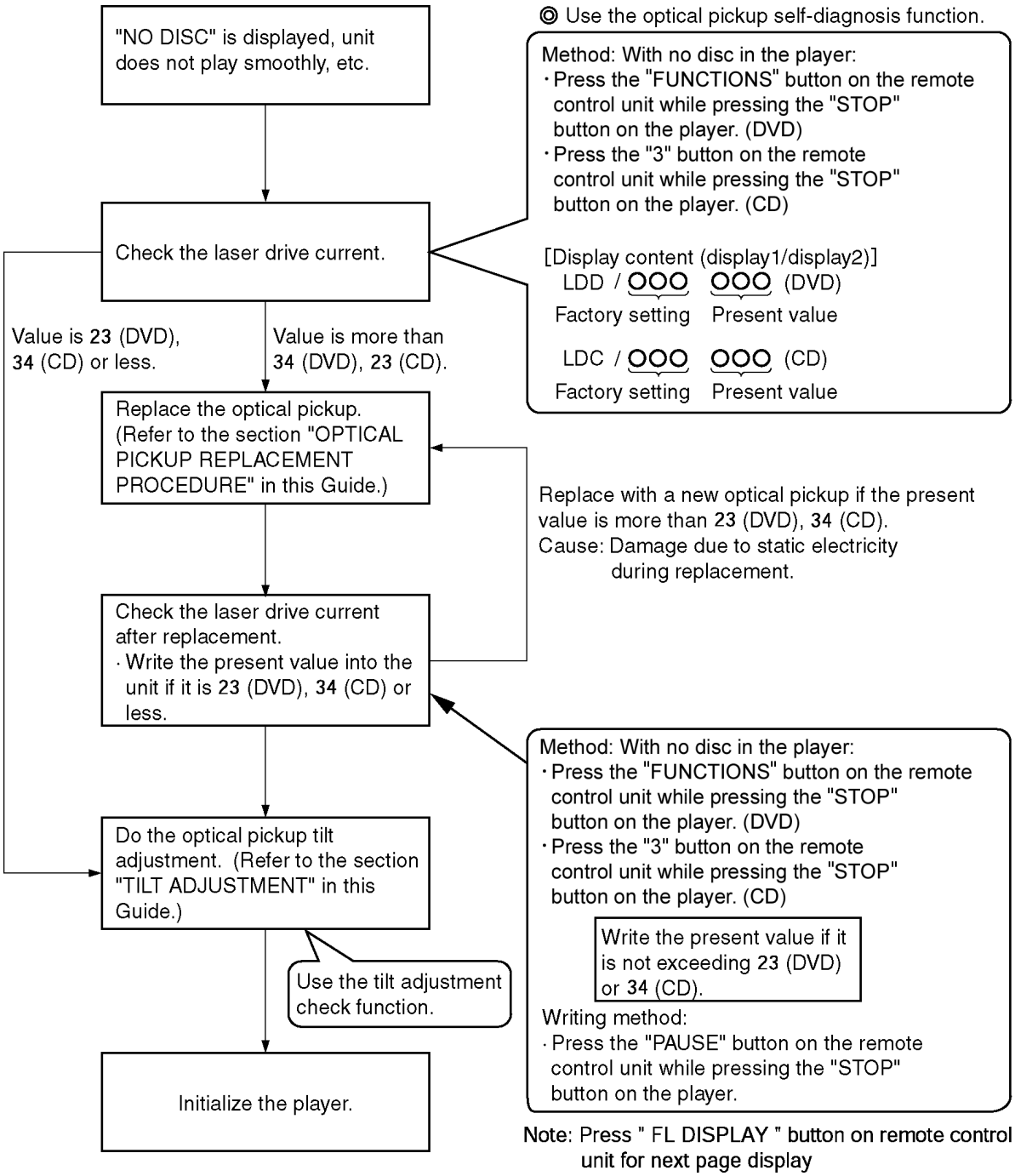
Item		FL Display	Key Operation
Mode Name	Description		Front Key
Timer 1 check	Timer 1 check Laser operation timer Operation time is measured separately for DVD laser and CD laser. Press "FL Display" button for next page of FL Display	 Shown to the left is DVD laser time, and to the right CD laser time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. "0000" will follow "9999".	In STOP (no disc) mode, press STOP button on the player, and "▲" button on the remote control unit. Cancelled automatically 5 seconds later.
Timer 1 reset	Timer 1 reset Laser operation timer Operation time of both DVD laser and CD laser is reset all at once.	T1_0000/0000 (display1/display2)	While displaying Timer 1 data, press STOP button on the player, and "▼" button on the remote control unit. Cancelled automatically 5 seconds later.
Timer 2 check	Timer 2 check Spindle motor operation timer Press "FL Display" button for next page of FL Display	 Time is shown in 5 digits of decimal notation in a unit of 10 hours. "00000" will follow "99999".	In STOP (no disc) mode, press STOP button on the player, and "▶" button on the remote control unit. Cancelled automatically 5 seconds later.
Timer 2 reset	Timer 2 reset Spindle motor operation timer Press "FL Display" button for next page of FL Display	T2_00000	While displaying Timer 2 data, press STOP button on the player, and "◀" button on the remote control unit. Cancelled automatically 5 seconds later.

9.2.1. Optical Pick-up Self-Diagnosis

The optical pickup self-diagnosis function and tilt adjustment check function have been included in this unit. When repairing, use the following procedure for effective self-diagnosis and tilt adjustment. Be sure to use the self-diagnosis function before replacing the optical pickup when "NO DISC" is displayed. As a guideline, you should replace the optical pickup when the value of the laser drive current is more than 55.

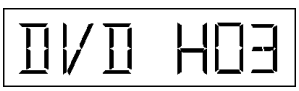
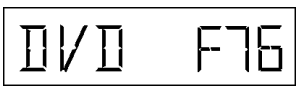
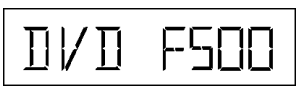
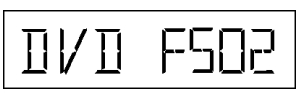
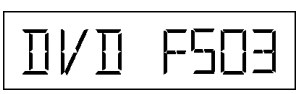
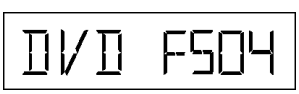
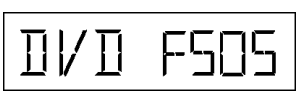
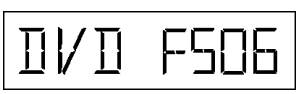
Note:

Press the power button to turn on the power, and check the value within three minutes before the unit warms up. (Otherwise, the result will be incorrect.)

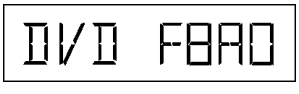


Note: Press " FL DISPLAY " button on remote control unit for next page display

9.3. DVD Self Diagnostic Function-Error Code

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
U11	Focus servo error	Focus coil NG (OPU unit abnormal)		Press [n STOP] on main unit for next error.
H01	Tray loading error / abnormality	The tray unit is not able to open		Press [n STOP] on main unit for next error
H02	Spindle servo error, DSC disc motor error	(Spindle servo, DSC (IC8251) Spindle motor, CLV servo error)		Press [n STOP] on main unit for next error
H03	Traverse motor error	(Traverse motor, IC8251)		Press [n STOP] on main unit for next error
H04	Tracking servo error	Tracking coil NG (OPU unit abnormal)		Press [n STOP] on main unit for next error
H05	Seek timeout error	Timeout of unit when seeking time is reached		Press [n STOP] on main unit for next error
H15	Disc tray open detection switch (S9001) failure	The disc tray cannot be opened: it closes spontaneously		Press [n STOP] on main unit for next error
H16	Disc tray close detection switch (S9001) failure	The disc tray cannot be closed: it opens spontaneously		Press [n STOP] on main unit for next error
F61	Power digital amp IC op & DC output voltage abnormal.	Upon power-on PCONT=High, DCDET=Low		Press [n STOP] on main unit for next error
F76	Power digital amp IC op & DC output voltage abnormal.	Speaker Jack shorted or amp circuit		Press [n STOP] on main unit for next error
F500	DSC error	DSC (IC8251) stops in the occurrence of servo error (startup, focus error, etc.)		Press [n STOP] on main unit for next error
F501	DSC not Ready error	DSC-system computer communication error (Communication failure caused by idling of DSC)		Press [n STOP] on main unit for next error
F502	DSC Time out error	Similar as F500		Press [n STOP] on main unit for next error
F503	DSC communication Failure	Communication error (result error occurred although communication command was sent)		Press [n STOP] on main unit for next error
F504	Abnormal adjusting DSC data slice offset			Press [n STOP] on main unit for next error
F505	DSC Attention error	Similar as F500		Press [n STOP] on main unit for next error
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc media		Press [n STOP] on main unit for next error

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
F600	Access failure to management information caused by demodulation error	Operation stopped because navigation data is not accessible caused by the demodulation defect		Press [n STOP] on main unit for next error
F601	Indeterminate sector ID requested	Operation stopped caused by the request to access abnormal ID data		Press [n STOP] on main unit for next error
F602	Access failure to LEAD-IN caused by demodulation error	LEAD IN data unreadable		Press [n STOP] on main unit for next error
F603	Access failure to KEYDET caused by demodulation error	Access failure to CSS data of disc		Press [n STOP] on main unit for next error
F610	ODC abnormality	No permission for command execution		Press [n STOP] on main unit for next error
F611	No CRC OK for a specific time (CD)	Access failure to seek address in CD series		Press [n STOP] on main unit for next error
F612	No CRC OK for a specific time (DVD)	Access failure to ID data in DVD series		Press [n STOP] on main unit for next error
F620	Laser safeguard: high temperature condition	High temperature of the laser guide unit (OPU unit)		Press [n STOP] on main unit for next error
F621	Laser safeguard: circuit failure condition	Circuitry failure of the laser guide unit (OPU unit)		Press [n STOP] on main unit for next error
F103	Illegal highlight Position	Big possibility of disc specification violation during highlight display		Press [n STOP] on main unit for next error
F4FF	Force initialize failure (time out)	Timeout when force initialization fails		Press [n STOP] on main unit for next error
F700	MBX overflow	When replying message to disc manager		Press [n STOP] on main unit for next error
F701	Message command does not end	Next message is sent before replying to disc manager		Press [n STOP] on main unit for next error
F702	Message command changes	Message is changed before it is sent as a reply to disc manager		Press [n STOP] on main unit for next error
F880	Task number is not appropriate	Message coming from a non-existing task		Press [n STOP] on main unit for next error
F890	Sending message when message is being sent to AV task	Sending message to AV task		Press [n STOP] on main unit for next error
F891	Message couldn't be sent to AV task	Begin sending message to AV task		Press [n STOP] on main unit for next error

Error Code	Diagnosis Contents	Description of error	Automatic FL Display	Remarks
F893	FLASH ROM IC problem	FLASH ROM IC installed is not operating properly (Neccessary replacement of FLASH ROM IC) or firmw are problem		Press [n STOP] on main unit for next error
F894	EEPROM abnormality	EEPROM IC installed is not operating in normal condition (EEPROM contains neccessary data)		Press [n STOP] on main unit for next error
F895	Region setting abnormality	Firm version agreement check for factory preset setting failure prevention. Check region setting & re-initialize		Press [n STOP] on main unit for next error
F896	No existence model	Firm version agreement check for factory preset setting failure prevention		Press [n STOP] on main unit for next error
F897	Initialize is not completed	Initialize completion check for factory preset setting failure prevention		Press [n STOP] on main unit for next error
F898	Disagreement of hardware and software	Unsuitable combination of AV DECORDER, SDRAM and FLASH ROM (firmware)		Press [n STOP] on main unit for next error
F8A0	Message command is not appropriate	Begin sending message to AV task		Press [n STOP] on main unit for next error

Note:

An error code will be canceled if a power supply is turned OFF.

*1: CPPM is the copy guard function beforehand written in the disk for protection of copyrights.

*2: CEC is the consumer electronic control used for high-level user control of HDMI-connected devices.

*3: HDCP is the specification developed to control digital audio & video contents transmission for DVI or HDMI connections.

9.4. Sales Demonstration Lock Function

This function prevents discs from being lost when the unit is used for sales demonstrations by disabling the disc eject function. "LOCKED" is displayed on the unit, and ordinary operation is disabled.

9.4.1. Setting

· Prohibiting removal of disc

1. Select the DVD/CD function.
2. Press and hold down the ■ button and the power button on the player for at least three seconds. (The message, "___LOCKED_" appears when the function is activated.)

Note:

OPEN/CLOSE ▲ , DISC CHECK and DISC CHANGE buttons are invalid and the player displays "___LOCKED_" while the lock function mode is entered.

· Prohibiting operation of selector and disk

1. Select the DVD/CD function.
2. Press and hold down the ► button and the power button on the player for at least three seconds. (The message, "___LOCKED_" appears when the function is activated.)

Note:

The following buttons are invalid and the player displays "___LOCKED_" while the lock function mode is entered.

Player	▲ , ■ , ❚❚ , SELECTOR, ►►I , I◄◄ , VOLUME KNOB, DISC CHECK, DISC CHANGE, DISC1-DISC5
Remote controller unit	SLEEP, REPEAT, 0~9, ≧10 , RETURN, TOP MENU, ■ , ❚❚ , I◄◄ , ►►I , ◄◄ , ►► , POSITION MEMORY, TUNER/BAND, D.MIX, CH SELECT/ TEST, SET UP/ MUTING, DISPLAY, GROUP, TV, VCR/ AUX, QUICK REPLAY, SUBTITLE, FL DISPLAY, CH & VOLUME

9.4.2. Cancellation

The lock can be cancelled by the same procedure as used in setting. ("UNLOCK" is displayed on cancellation. Disconnecting the

power cable from power outlet does not cancel the lock.)

9.5. Service Precautions

9.5.1. Recovery after the DVD player is repaired

- When the FLASH ROM IC or HDMI module P.C.B. is replaced, carry out the recovery processing to optimize the drive.
  Playback the recovery disk to process the recovery automatically.
- Recovery disc (Product number: RFKZD03R005)
- Performing recovery process
  1. Load the recovery disc RFKZD03R005 on to the player and run it.
  2. Recovery is performed automatically. When it is finished, a message appears on the screen.
  3. Remove the recovery disc.
  4. Turn off the power.
  5. Initialize the player.

9.5.2. Firmware version-up of the DVD player

- The firmware of the DVD player may be renewed to improve the quality including operability and playability to the substandard discs.processing to optimize the drive.
  The recovery disc has also firmware version-up.
- After version-up, recovery processing is executed automatically.
- Part number of the recovery disc for version-up will be noticed when it is supplied.
- Updating firmware
  1. Load the recovery disc on to the player and run it.
  2. Firmware version of the player is automatically checked. Appropriate message appears whenever necessary.
  3. Using remote controller´s cursor key, select whether version updating is to be done or not. (Selection of Yes/No)
  4. a. If Yes is selected, version updating is performed.
     b. If No is selected, only recovery is performed.
  5. a. When updating is finished, remove the disc according to the message appearing on the screen.
     b. Remove the disc according to the message appearing on the screen.
  6. Turn off the power.

Note:

If the AC power supply is shut out during version-up due to a power failure, the version-up is improperly carried out.
In such a case, replace the FLASH ROM IC and carry out the version-up again.

9.5.3. DVD Module Reset

- When after replacing Flash Rom IC or the DVD Module P.C.B., FL displays error code “ DVD F897”. This means the unit is not initialized properly and the following process needs to be carry out.
- Procedures:
  1. Press ≧10 on remote control while pressing “STOP” button on main unit.
  2. FL display show “ Initialize”
  3. While still pressing “STOP” button on main unit, press “ENTER” on remote control.
  4. FL will display “DVD RESET” before FL display will change to TOC reading again.
  5. Power off unit. Unplug the AC cord.
  6. Power on the unit. It should be no problem. If problem persist check on the DVD module P.C.B. or FLASH ROM IC.

10 Assembling and Disassembling

“ATTENTION SERVICER”

Be careful when disassembling and servicing.

Some chassis components may have sharp edges.

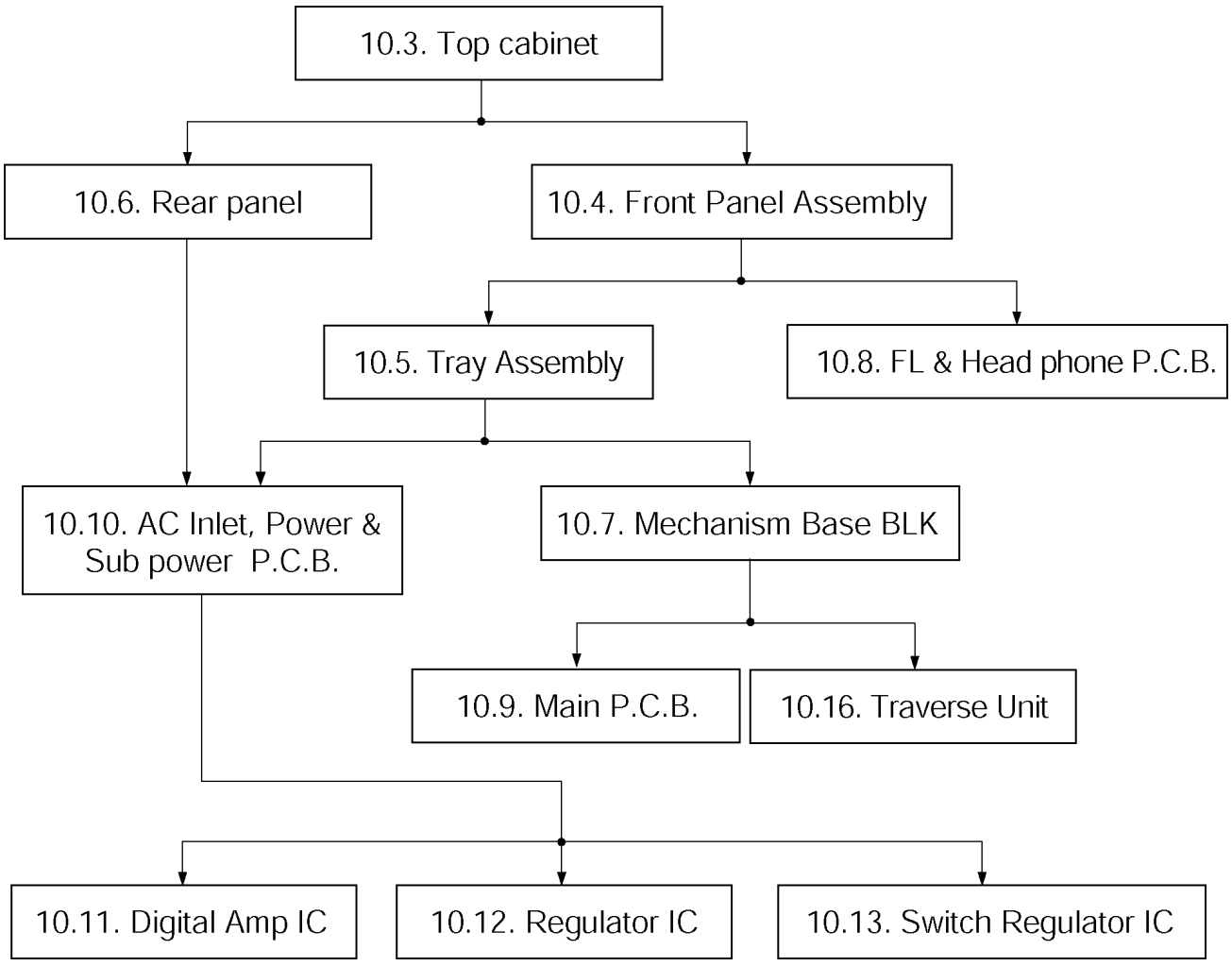
Special Note:

1. **This section describes the disassembly procedures for all the major printed circuit boards and main components.**
2. **Before the disassembly process was carried out, do take special note that all safety precautions are to be carried out. (Ensure that no AC power supply is connected during disassembling.)**
3. **For assembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.**
4. **The Switch Regulator IC may have high temperature after prolonged use. Use caution when removing the top cabinet and avoid touching heat sinks located in the unit.**
5. **Select items from the following index when checks or replacement are required.**

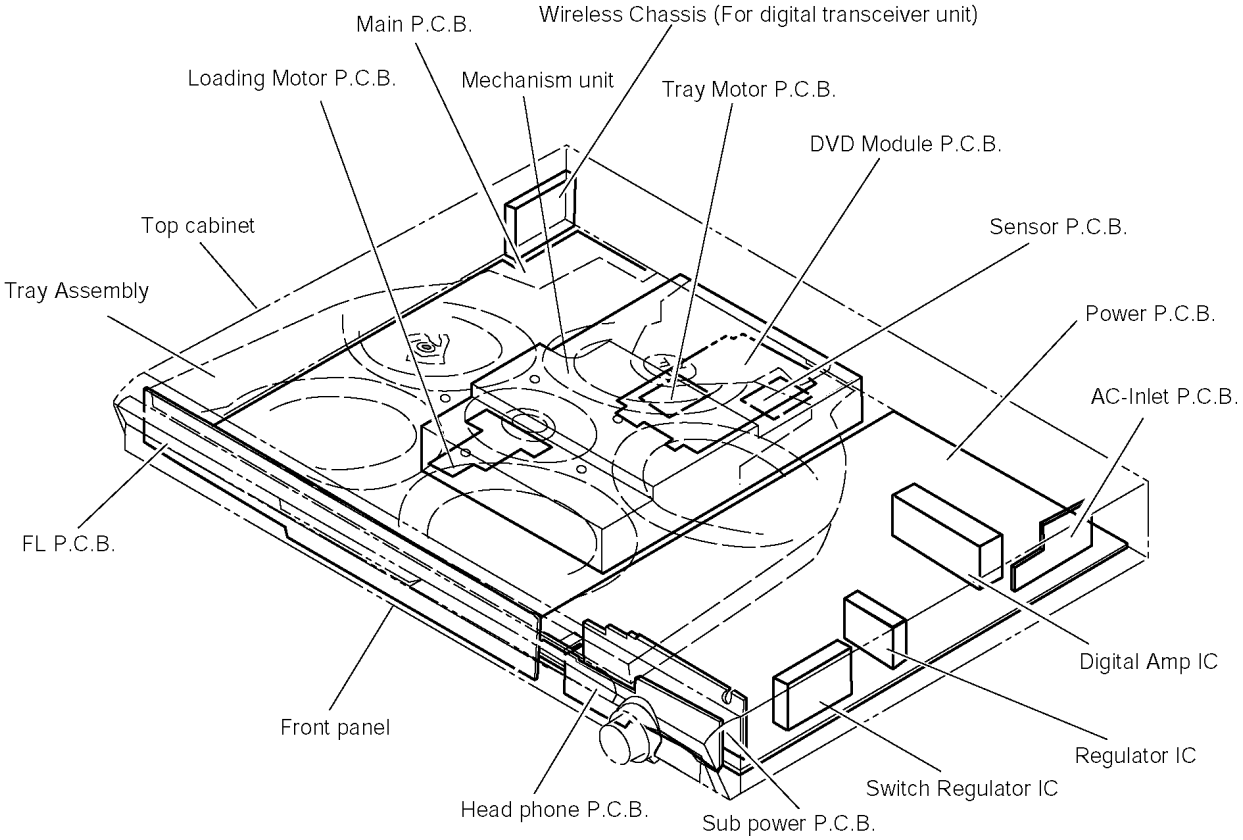
- Disassembling the Top Cabinet
- Disassembling the Front Panel
- Disassembling the Tray Assembly
- Disassembling the Rear Panel
- Disassembling the Mechanism Base Block
- Disassembling the FL & Head phone P.C.B.
- Disassembling the Main P.C.B.
- Disassembling the AC Inlet, Power & Sub power P.C.B.
- Disassembly of Digital Amp IC
- Disassembly of Regulator IC
- Disassemby of Switch Regulator IC
- Disassembly of the Tray Base Guide (L) and Tray Base Guide (R)
- Disassembly of the Rotary Tray
- Disassembly of the Open Lock Gear
- Disassembly of the Close Lock Gear
- Disassembly of the Tray Motor P.C.B.and Sensor P.C.B.
- Disassembly of the Traverse Unit
- Disassembly of the Pulley Gear
- Disassembly of the Loading Motor P.C.B.
- Disassembly of the Drive Gear (A) & (B)
- Disassembly of Fixed Plate, Magnet and Clamper
- Disassembly of Cam Gear & Support Piece
- Disassembly of the Slide Plate (L) & (R) and Change Lever
- Assembly of Tray Assembly

CAUTION NOTE:
Please use original screw and at correct locations.

10.1. Disassembly Flow Chart



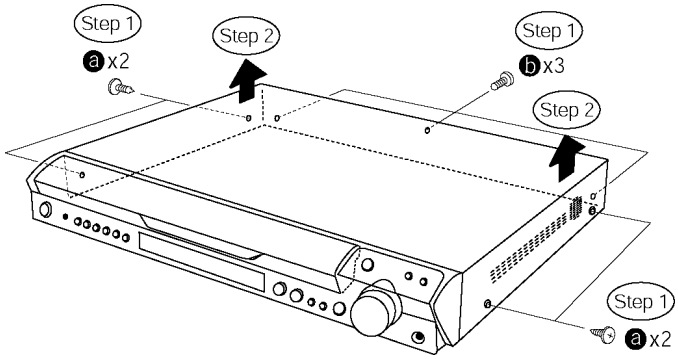
10.2. Main Components and P.C.B. Locations



10.3. Disassembling the Top Cabinet

Step 1 Remove 7 screws.

Step 2 Remove the top cabinet in the direction of arrow.



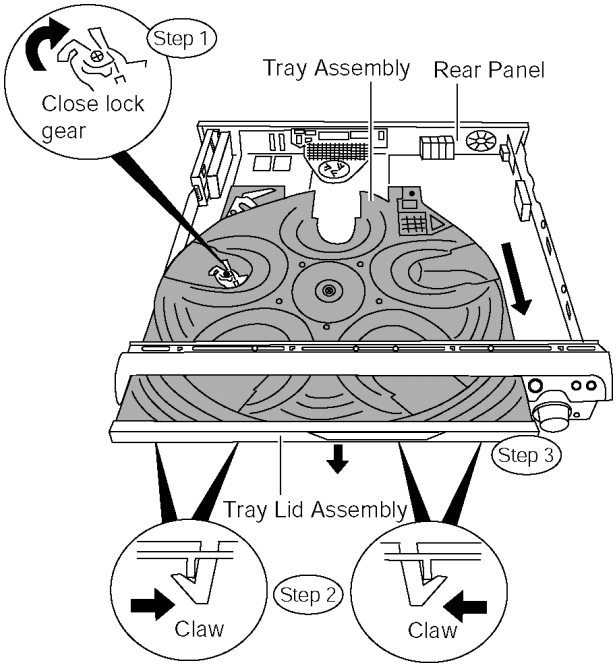
10.4. Disassembling the Front Panel Assembly

・Follow (Step 1) to (Step 2) of Item 10.3.

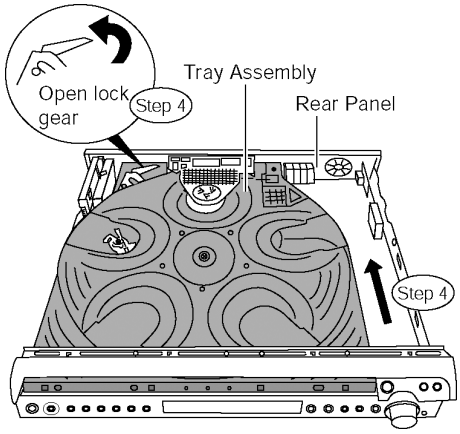
Step 1 Keep the close lock gear pressed in clockwise direction, then move the tray assembly out halfway in the direction of the arrow.

Step 2 Release the claws at the bottom of the tray lid assembly.

Step 3 Remove the tray lid assembly in the direction of arrow.



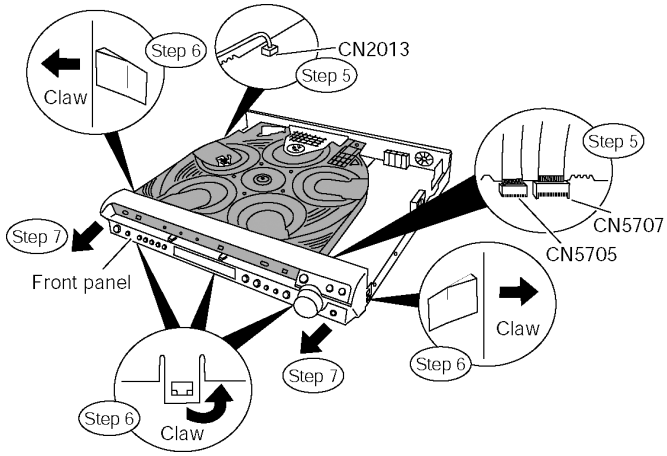
Step 4 Keep the open lock gear pressed in anti clockwise direction and push back the tray assembly.



Step 5 Detach the FFC cables from connectors (CN5705, CN5707 & CN2013).

Step 6 Release the claws of the front panel in the directions.

Step 7 Detach the front panel assembly in the direction of arrow.



10.5. Disassembling the Tray Assembly

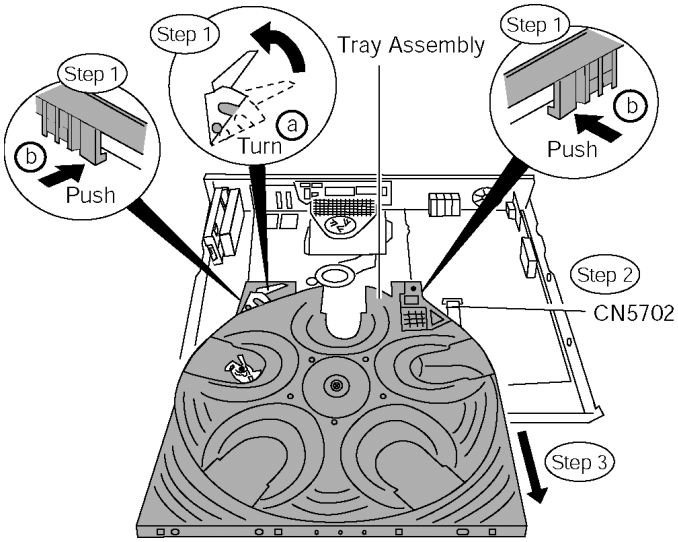
・Follow the (Step 1) to (Step 7) Item 10.4.

Step 1 Press and hold the open lock gear, then push and release the claws in the direction of arrow.

Step 2 Detach the FFC cable from connector (CN5702).

Step 3 Remove the tray assembly in the direction of arrow.

Caution: Avoid using excessive strong force when removing the tray assembly.



10.6. Disassembling the Rear Panel

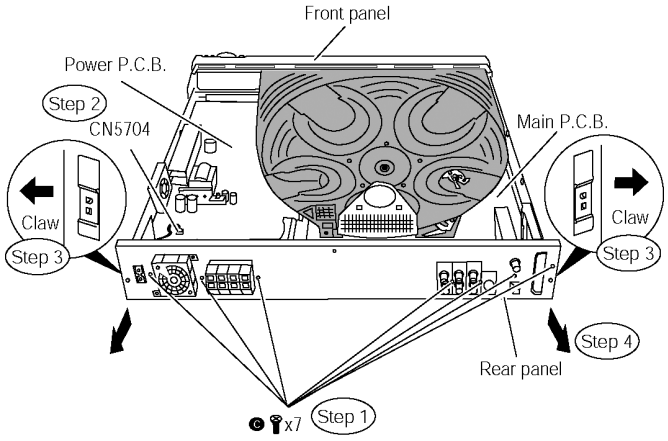
・Follow (Step 1) to (Step 2) of Item 10.3.

Step 1 Remove 7 screws.

Step 2 Detach the FFC cable from connector (CN5704).

Step 3 Release the claws of the rear panel in the directions.

Step 4 Remove the rear panel in the direction of arrow.



10.7. Disassembling the Mechanism Base Assembly

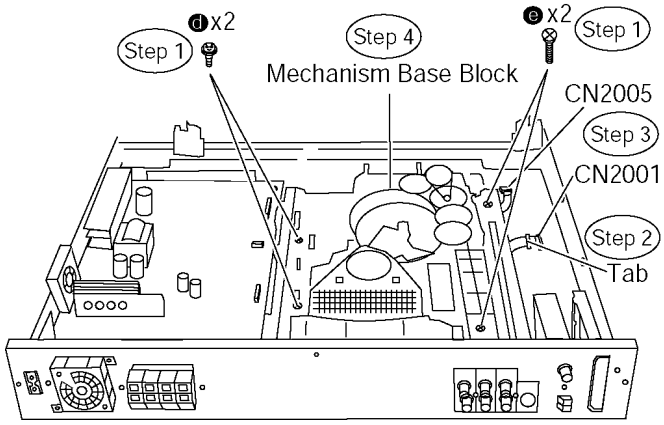
・Follow (Step 1) to (Step 3) Item 10.5.

Step 1 Remove 2 screws on each side of the mechanism base block.

Caution: Take note of the screw type used. During assembling, use the correct screw type and at the correct location.

Step 2 Remove the tab.

Step 3 Detach FFC cables at connectors (CN2005 & CN2001).



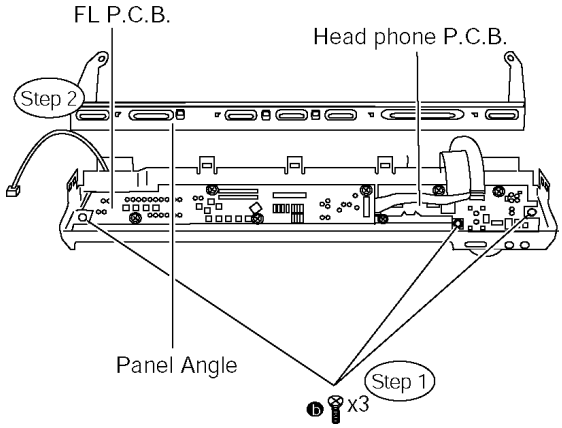
Step 4 Remove the mechanism base block.

10.8. Disassembling the FL & Head phone P.C.B.

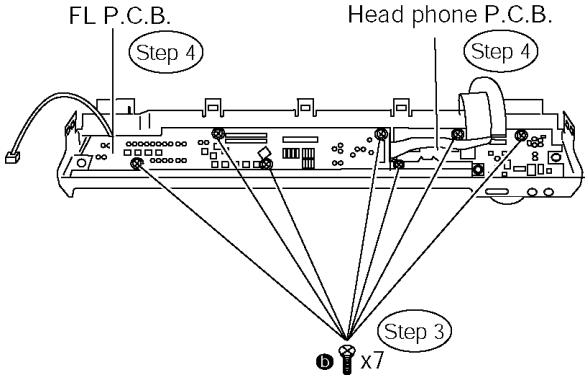
・Follow (Step 1) to (Step 7) Item 10.4.

Step 1 Remove 3 screws.

Step 2 Remove the panel angle.



Step 3 Remove 7 screws.



Step 4 Remove the FL & Head phone P.C.B.

10.9. Disassembling the Main P.C.B.

・Follow (Step 1) to (Step 4) of Item 10.6.

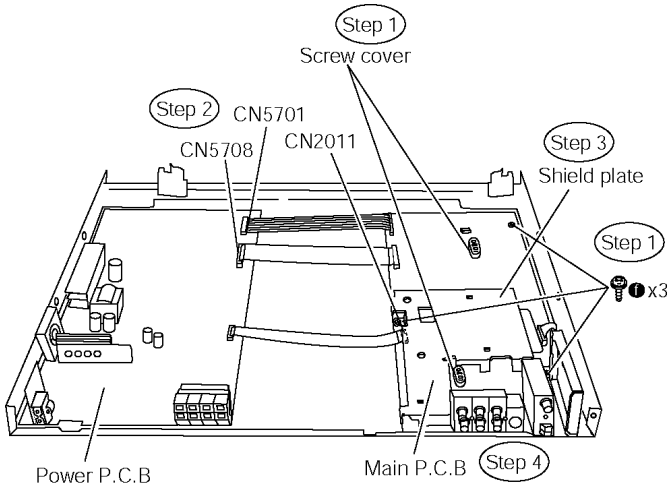
・Follow (Step 1) to (Step 4) of Item 10.7.

Step 1 Remove 3 screws and 2 screw covers.

Step 2 Detach the FFC cables from connectors (CN2011, CN5701, CN5708).

Step 3 Remove the shield plate.

Step 4 Remove the Main P.C.B.



10.10. Disassembling the AC Inlet, Power & Sub power P.C.B

- Follow the (Step 1) to (Step 4) of Item 10.6.
- Follow the (Step 1) to (Step 4) of Item 10.7.

Step 1 Remove 2 screws. (side fan unit)

Step 2 Detach fan unit. (CN5714)

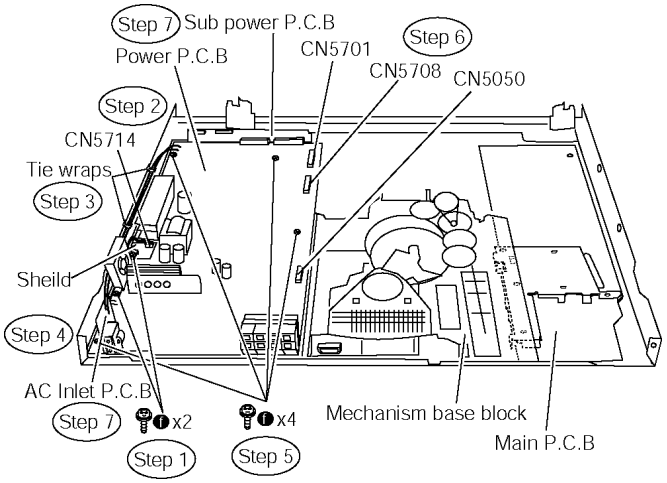
Step 3 Remove the 2 tie wraps (used for black/red wires between AC Inlet P.C.B. and Power P.C.B.) to the side of bottom chassis.

Step 4 Remove shield.

Step 5 Remove 4 screws.

Step 6 Detach the FFC cables from connectors (CN5701, CN5708, CN5050).

Step 7 Remove the AC Inlet, Power & Sub power P.C.B.



Caution: Remember to use tie wraps to tie the black/red wires to the side of bottom chassis after repair or troubleshooting.

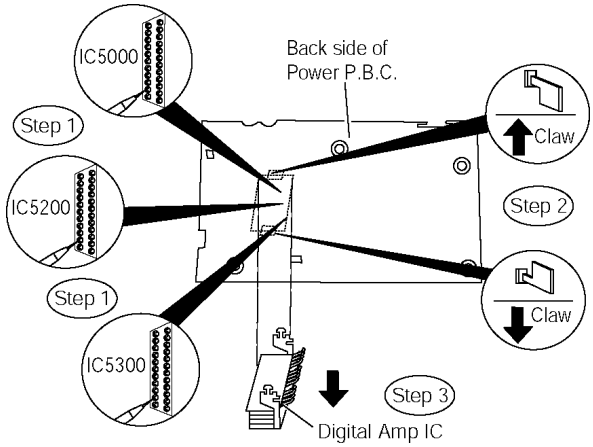
10.11. Disassembly of Digital Amp IC

- Follow (Step 1) to (Step 7) of Item 10.10.

Step 1 Desolder all IC5000, IC5200, IC5300 pins.

Step 2 Release the claws.

Step 3 Remove the D. Amp IC.



Note: Refer to the diagrams of Power P.C.B. (Section 19.3) for location of the parts.

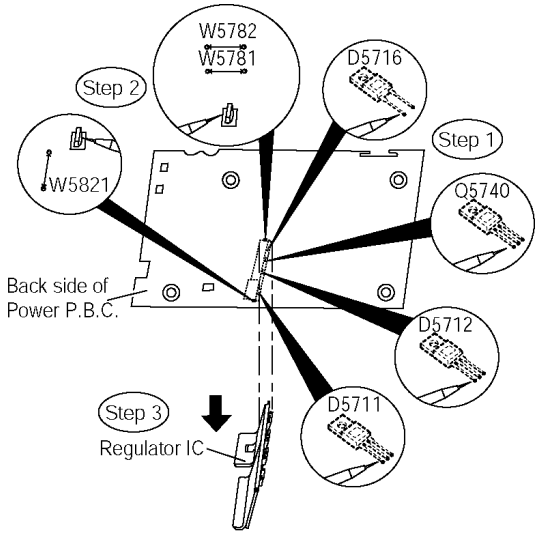
10.12. Disassembly of Regulator IC

- Follow (Step 1) to (Step 7) of Item 10.10.

Step 1 Desolder all pins of D5711, D5712, D5716, Q5740.

Step 2 Desolder 2 pins of Regulator IC.

Step 3 Remove the Regulator IC.



Note: Refer to the diagrams of Power P.C.B. (Section 19.3) for location of the parts.

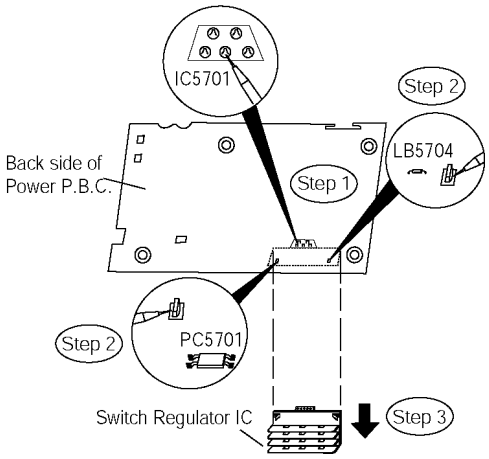
10.13. Disassembly of Switch Regulator IC (IC5701)

- Follow (Step 1) to (Step 7) of Item 10.10.

Step 1 Desolder all pins of IC5701.

Step 2 Desolder 2 pins of Switch Regulator IC.

Step 3 Remove the Switch Regulator IC.

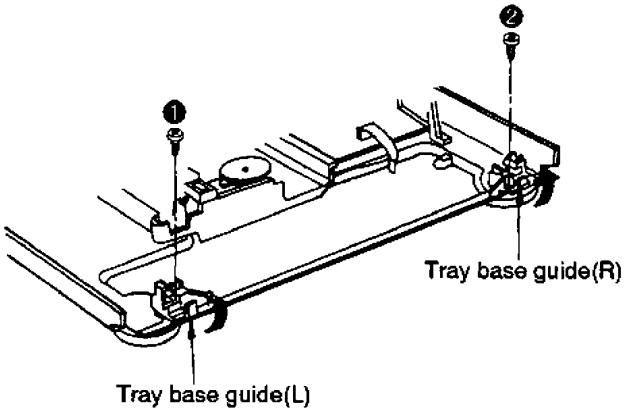


Note: Refer to the diagrams of Power P.C.B. (Section 19.3) for location of the parts.

Caution: Be careful when removing the Switch Regulator IC which has high temperature after prolonged use.

10.14. Disassembly of the Tray Base Guide (L) and Tray Base Guide (R)

・Follow (Step 1) to (Step 3) of Item 10.5.

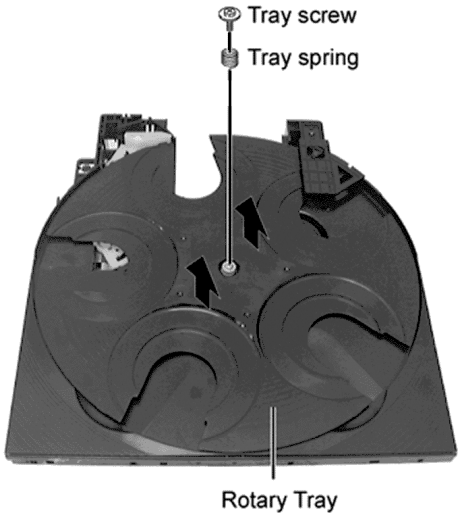


Step 1 Remove the 2 screws.

Step 2 Remove the tray base guide (L) and tray guide (R) in the direction of arrow.

10.15. Disassembly of the Rotary Tray

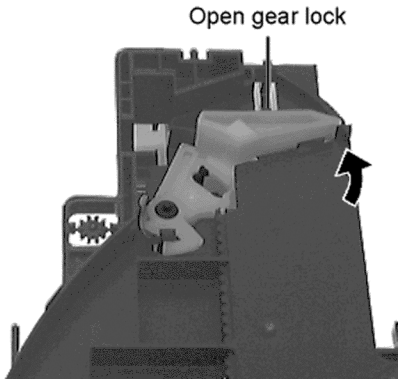
・Follow (Step 1) to (Step 3) of Item 10.5.



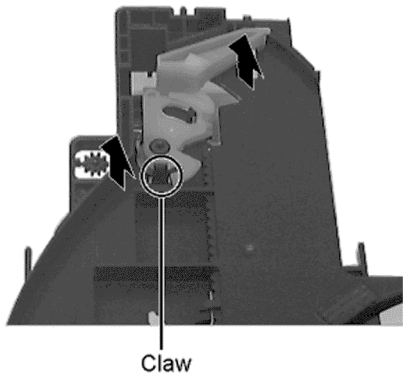
Step 1 Remove tray screw and tray spring.

Step 2 Remove rotary tray.

10.15.1. Disassembly of the Open Lock Gear



Step 1 Rotate open lock gear in the direction of arrow. (Anti-clockwise)

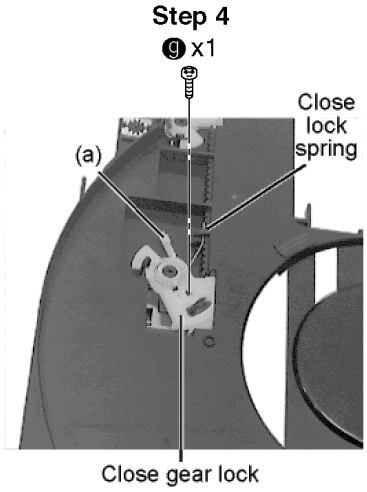


Step 2 Release claw of open lock gear, remove open lock gear in the direction of arrow.

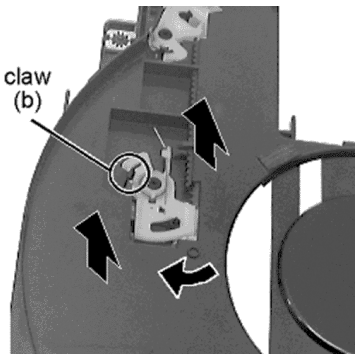
10.15.2. Disassembly of the Close Lock Gear

・Follow (Step 1) to (Step 3) of Item 10.5.

Step 1 Remove 1 screw.



Step 2 Hook close lock spring to claw (a).

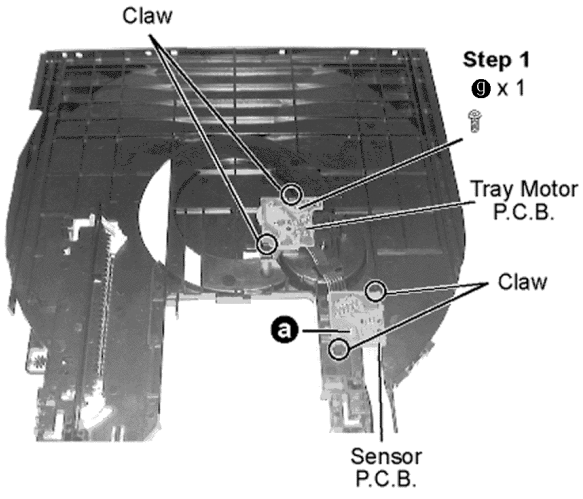


Step 3 Rotate close lock gear to direction of arrow, press claw (b) and pull out close lock gear.

10.15.3. Disassembly of the Tray Motor P.C.B. and Sensor P.C.B.

・Follow (Step 1) to (Step 3) of Item 10.5.

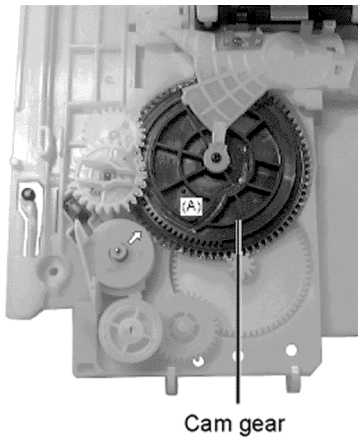
Step 1 Remove 2 screws.



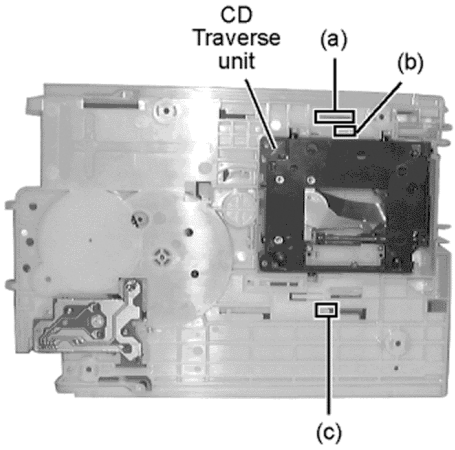
Step 2 Release 4 claws at Tray Motor P.C.B. and Sensor P.C.B.

10.16. Disassembly of the Traverse Unit

Step 1 Rotate cam gear anti-clockwise. (Align at position (A) as marking on gear with arrow)



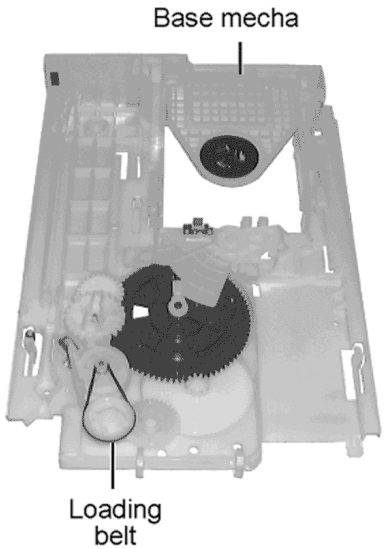
Step 2 Flip the base mecha unit in vertical position.



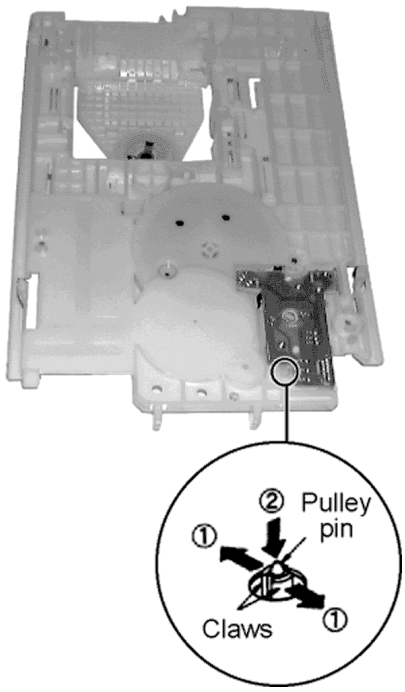
Step 3 Press upward (a), push backward (b) and press to left (c) to release CD traverse unit.

10.16.1. Disassembly of the Pulley Gear

Step 1 Remove of the loading belt.



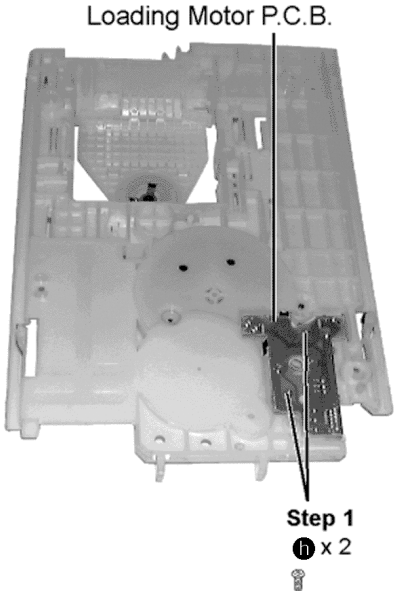
Step 2 Flip the base mecha.



Step 3 Release the 2 claws in the direction of arrow (1), and then push the pulley pin in the direction of arrow (2).

10.16.2. Disassembly of the Loading Motor P.C.B.

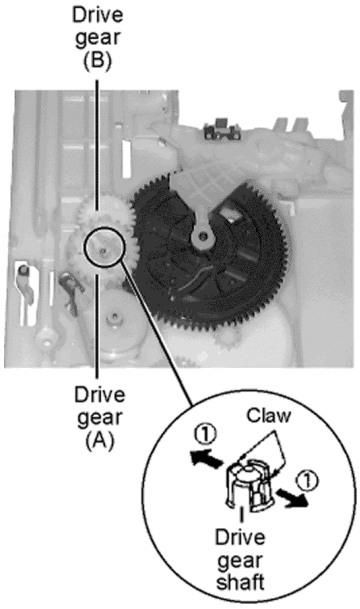
Step 1 Remove 2 screws.



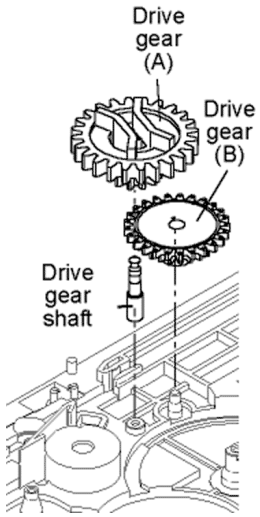
Step 2 Remove Loading Motor P.C.B.

10.16.3. Disassembly of the Drive Gear (A) & (B)

Step 1 Release the claw in the direction of arrow (1), and then push drive gear shaft up.

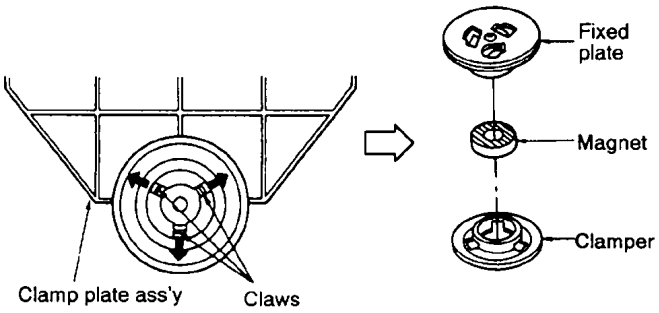


Step 2 Remove Drive Gear (A) and Drive Gear (B).



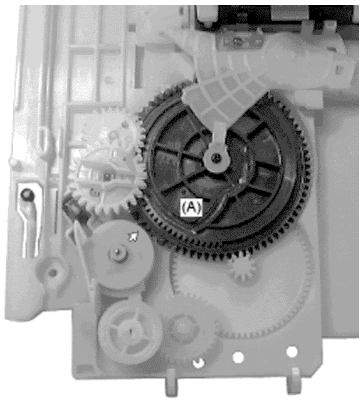
10.16.4. Disassembly of Fixed Plate, Magnet and Clamper

Release 3 claws in the direction of arrow.

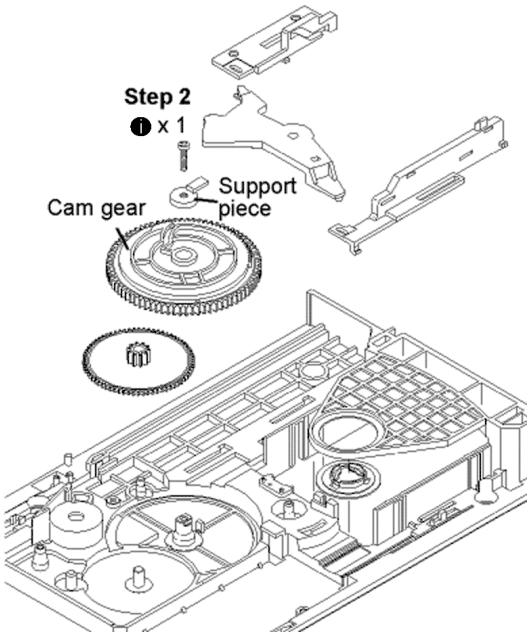


10.16.5. Disassembly of Cam Gear & Support Piece

Step 1 Rotate (A) in cam gear anti-clockwise.

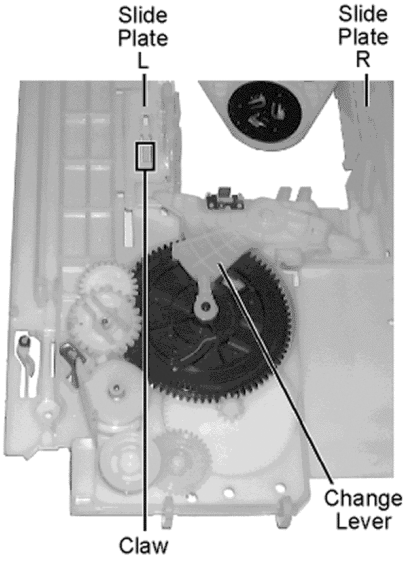


Step 2 Remove 1 screw and support piece.

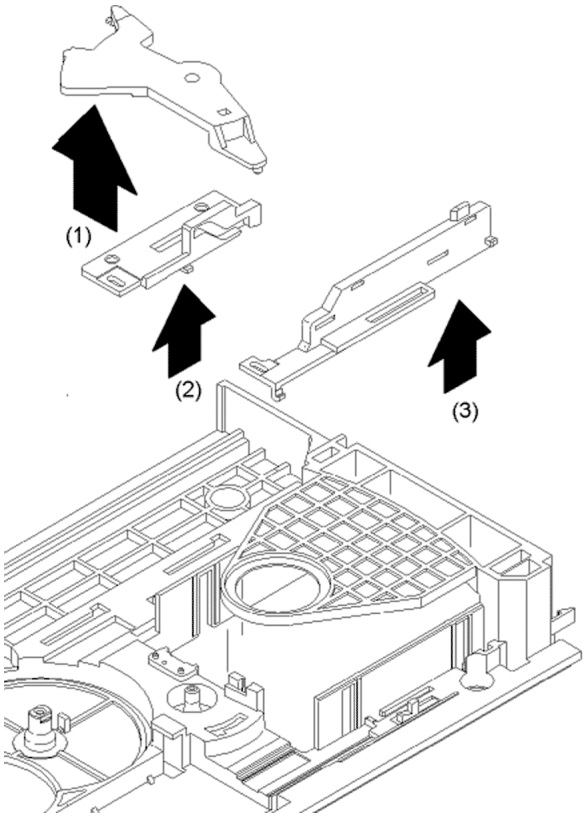


10.16.6. Disassembly of the Slide Plate (L) & (R) and Change Lever

Step 1 Press the claw and push the Slide Plate (L) up.

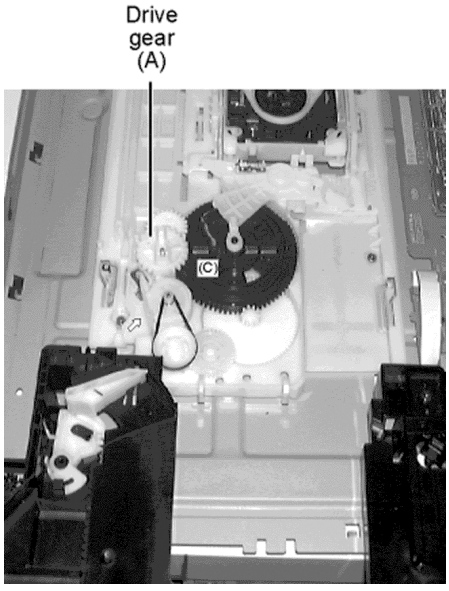


Step 2 Remove slide plate (L) & (R) and change lever as arrow shown.

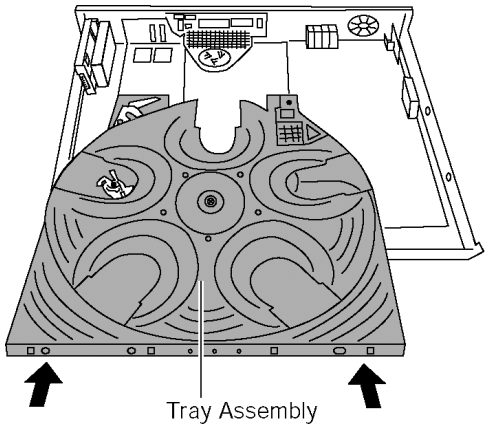


10.17. Assembly of Tray Assembly

Step 1 Rotate cam gear anti-clockwise. Align at position (C) as marking on gear with arrow.



Step 2 Make sure drive gear (A) at vertical position.



Step 3 Push tray assembly to the direction of arrow shown.

11 Service Fixture and Tools

Prepare service tools before proccess service position.

Service Tools	
Loading Motor P.C.B. - Main P.C.B.	REEX0633 (11 pin)
Sensor P.C.B. - Power P.C.B.	REEX0465 (11 pin)

12 Service Positions

12.1. Checking & Repair Main P.C.B., Power P.C.B., FL and Head phone P.C.B.

- Follow the Item 10.5.
- Follow the (Step 1) - (Step 4) of Item 10.6.
- Follow the (Step 1) - (Step 2) of Item 10.7.
- Follow the (Step 1) - (Step 3) of Item 10.8.
- Follow the (Step 1) - (Step 3) of Item 10.10.
- Follow the (Step 1) - (Step 3) of Item 10.11.

Step 1 Change cable (REEX0524) to extended cable (REEX0633) .

Step 2 Change cable (REZ1483) to extended cable (REEX0465) .

Step 3 Connect all the cables.

Step 4 Connect 2 fans.

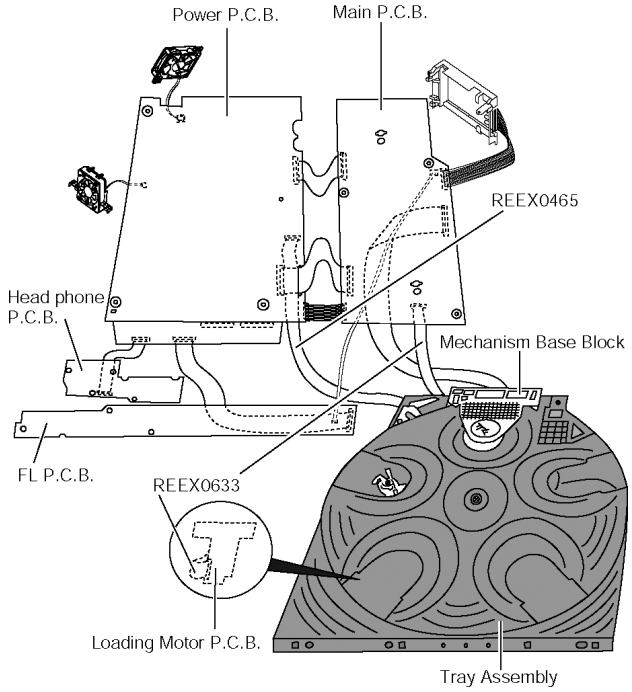
Step 5 Turn over Power P.C.B., Main P.C.B., FL P.C.B. and Head phone P.C.B.

Step 6 Position mechanism base block and tray assembly in horizontally.

Step 7 Connect the AC cord and switch on the power.

Step 8 Insert CD into tray assembly.

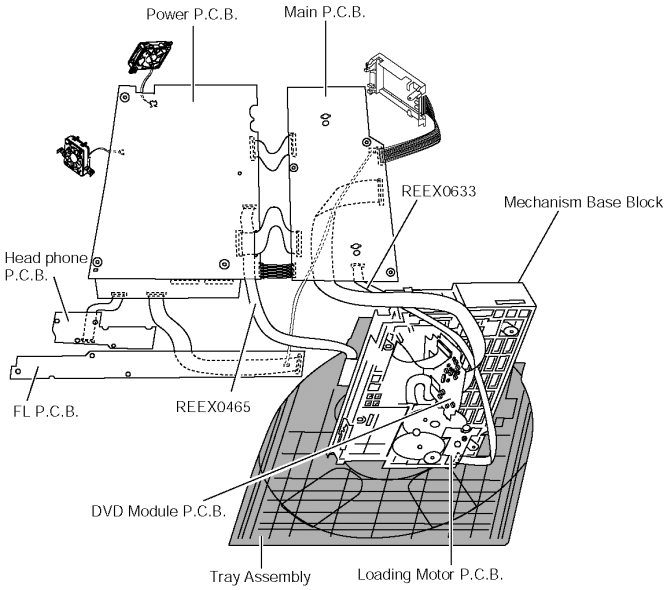
Step 9 Press DISC SELECTOR button to lock the CD. For example, press “1” of “5 DISC SELECTOR” if the CD is placed at the first tray.



12.2. Checking & Repair DVD Module P.C.B

- Follow the Item 12.1.

Step 1 Remove 4 screws of DVD module P.C.B.



13 Measurements and Adjustments

13.1. Service Tools and Equipment

Application	Name	Number
Tilt adjustment	DVD test disc	DVDT-S20 [SPG]
	TORX screw driver (T6)	Available on sales route. (T6) or RFKZ0185 [SPG]
Others	Grease	RFKXPG641 [SPG]
Confirmation	CD test disc	PVCD-K06 or any other commercially available disc
	VCD test disc	PVCD-K06 or any other commercially available disc
	Recovery disc	RFKZD03R005 [SPG]

13.2. Important points in adjustment

13.2.1. Important points in optical adjustment

・Before starting optical adjustment, be sure to take anti-static measures.

・Optical pickup tilt adjustment is needed after replacement of the following components.

1. Optical pickup unit
2. Spindle motor unit
3. Optical pickup peripheral parts

Notes

Adjustment is generally unnecessary after replacing other parts of the traverse unit. However, make adjustment if there is a noticeable degradation in picture quality. Optical adjustments cannot be made inside the optical pickup. Adjustment is generally unnecessary after replacing the traverse unit.

13.2.2. Important points in electrical adjustment

・Follow the adjustment procedures described in this manual.

13.3. Storing and handling of test discs

・Surface precision is vital for DVD test discs. Be sure to store and handle them carefully.

1. Do not place discs directly onto the workbench, etc., after use.
2. Handle discs carefully in order to maintain their flatness. Place them into their case after use and store them vertically. Store discs in a cool place where they are not exposed to direct sunlight or air from air conditioners.
3. Accurate adjustment will not be possible if the disc is warped when placed on a surface made of glass, etc. If this happens, use a new test disc to make optical adjustments.
4. If adjustment is done using a warped disc, the adjustment will be incorrect and some discs will not be playable.

13.4. Optical adjustment

13.4.1. Optical pickup tilt adjustment

Measurement point	Adjustment point	Mode	Disc
	Tangential adjustment screw Tilt adjustment screw	T01 (inner periphery) play T30 (center periphery) T43 (outer periphery) play	DVDT-S20 [SPG]
Measuring equipment		Adjustment value	
None (Main unit display for servicing is used.)		Adjust to the minimum jitter value.	

13.4.1.1. Adjustment procedure

1. While pressing STOP button on the main unit, press "5" on the remote control unit.
2. Confirm that "J_xxx/yyy_zz" (display1/display2) is shown on the front display.

   For your information:

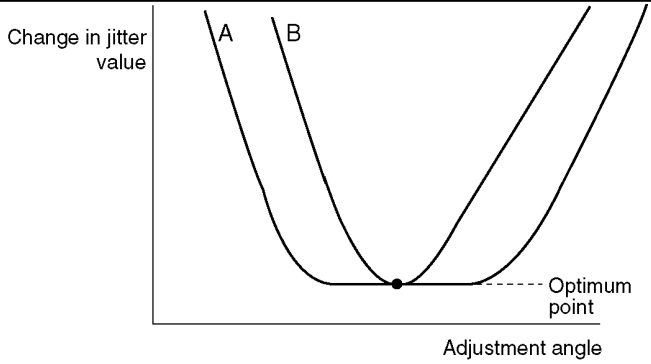
   "yyy" and "zz" shown to the right have nothing to do with the jitter value. "yyy" is the error counter, while "zz" is the focus drive value.

   Note:

   Jitter value appears on the front display.
3. Play test disc T30 (center periphery).
4. Adjust tangential adjustment screw so that the jitter value is minimized.
5. Play test disc T30 (center periphery).
6. Adjust tilt adjustment screw 1 so that the jitter value is minimized.
7. Play test disc T30 (center periphery).
8. Adjust tilt adjustment screw 2 so that the jitter value is minimized.
9. Repeat adjusting tilt adjustment screws 1 and 2 alternately until the jitter value is minimized.

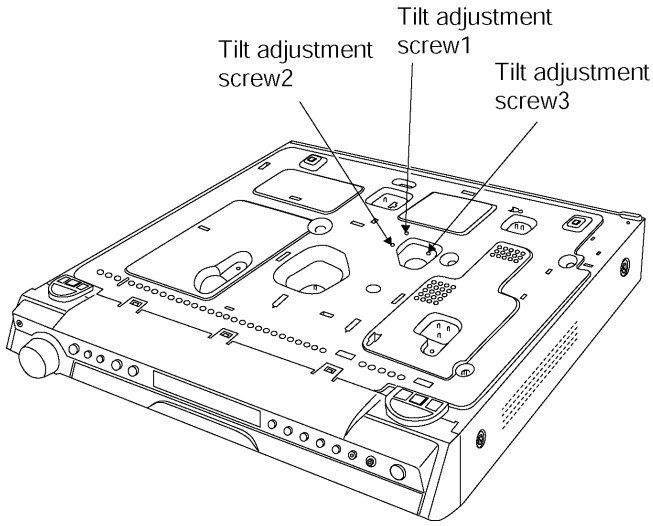
13.4.1.2. Important points

1. Make tangential adjustment first, and then make tilt adjustment.
2. Repeat adjusting two or three times to find the optimum point.
3. Finish the procedure with tilt adjustment.



Jitter value depends on the model:

1. If the jitter value changes like B, the optimum point is easy to find.
2. If the jitter value changes like A, set the optimum point near the middle.

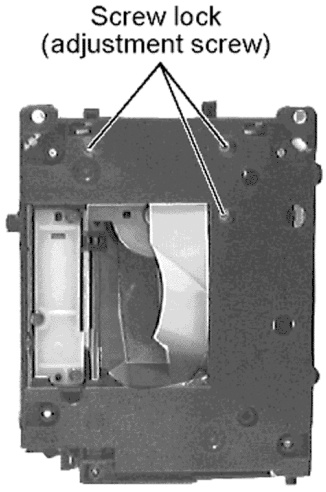


13.4.1.3. Check after adjustment

Play test disc or any other disc to make sure there is no picture degradation in the inner, middle and outer peripheries, and no audio skipping. After adjustment is finished, lock each adjustment screw in position using screw lock.

13.4.1.4. Procedure for screw lock

1. After adjustment, remove top cover, tray, clamper base and traverse unit in this sequence.
2. Lay the traverse unit upside down, and fix adjustment screw with screw lock.
3. After fixing, reassemble traverse unit, clamper base, tray and top cover.



13.5. Abbreviations

INITIAL/LOGO		ABBREVIATIONS
A	A0~UP	ADDRESS
	ACLK	AUDIO CLOCK
	AD0~UP	ADDRESS BUS
	ADATA	AUDIO PES PACKET DATA
	ALE	ADDRESS LATCH ENABLE
	AMUTE	AUDIO MUTE
	AREQ	AUDIO PES PACKET REQUEST
	ARF	AUDIO RF
	ASI	SERVO AMP INVERTED INPUT
	ASO	SERVO AMP OUTPUT
	ASYNC	AUDIO WORD DISTINCTION SYNC
B	BCK	BIT CLOCK (PCM)
	BCKIN	BIT CLOCK INPUT
	BDO	BLACK DROP OUT
	BLKCK	SUB CODE BLOCK CLOCK
	BOTTOM	CAP. FOR BOTTOM HOLD
	BYP	BYPATH
	BYTCK	BYTE CLOCK
C	CAV	CONSTANT ANGULAR VELOCITY
	CBDO	CAP. BLACK DROP OUT
	CD	COMPACT DISC
	CDSCK	CD SERIAL DATA CLOCK
	CDSRDATA	CD SERIAL DATA
	CDRF	CD RF (EFM) SIGNAL
	CDV	COMPACT DISC-VIDEO
	CHNDATA	CHANNEL DATA
	CKSL	SYSTEM CLOCK SELECT
	CLV	CONSTANT LINEAR VELOCITY
	COFTR	CAP. OFF TRACK
	CPA	CPU ADDRESS
	CPCS	CPU CHIP SELECT
	CPDT	CPU DATA
	CPUADR	CPU ADDRESS LATCH
	CPUADT	CPU ADDRESS DATA BUS
	CPUIRQ	CPU INTERRUPT REQUEST
	CPRD	CPU READ ENABLE
	CPWR	CPU WRITE ENABLE
	CS	CHIP SELECT
	CSYNCIN	COMPOSITE SYNC IN
	CSYNCOUT	COMPOSITE SYNC OUT
D	DACCK	D/A CONVERTER CLOCK
	DEEMP	DEEMPHASIS BIT ON/OFF
	DEMPH	DEEMPHASIS SWITCHING
	DIG0~UP	FL DIGIT OUTPUT
	DIN	DATA INPUT
	DMSRCK	DM SERIAL DATA READ CLOCK
	DMUTE	DIGITAL MUTE CONTROL
	DO	DROP OUT
	DOUT0~UP	DATA OUTPUT
	DRF	DATA SLICE RF (BIAS)
	DRPOUT	DROP OUT SIGNAL
	DREQ	DATA REQUEST
	DRESP	DATA RESPONSE
	DSC	DIGITAL SERVO CONTROLLER
	DSLF	DATA SLICE LOOP FILTER
	DVD	DIGITAL VIDEO DISC

INITIAL/LOGO		ABBREVIATIONS
E	EC	ERROR TORQUE CONTROL
	ECR	ERROR TORQUE CONTROL REFERENCE
	ENCSEL	ENCODER SELECT
	ETMCLK	EXTERNAL M CLOCK (81MHz/40.5MHz)
	ETSCLK	EXTERNAL S CLOCK (54MHz)
F	FBAL	FOCUS BALANCE
	FCLK	FRAME CLOCK
	FE	FOCUS ERROR
	FFI	FOCUS ERROR AMP INVERTED INPUT
	FEO	FOCUS ERROR AMP OUTPUT
	FG	FREQUENCY GENERATOR
	FSC	FREQUENCY SUB CARRIER
	FSCK	FS (384 OVER SAMPLING) CLOCK
G	GND	COMMON GROUNDING (EARTH)
H	HA0~UP	HOST ADDRESS
	HD0~UP	HOST DATA
	HINT	HOST INTERRUPT
	HRXW	HOST READ/WRITE
I	IECOUT	IEC958 FORMAT DATA OUTPUT
	IPFRAG	INTERPOLATION FLAG
	IREF	I (CURRENT) REFERENCE
	ISEL	INTERFACE MODE SELECT
L	LDON	LASER DIODE CONTROL
	LPC	LASER POWER CONTROL
	LRCK	L CH/R CH DISTINCTION CLOCK
M	MA0~UP	MEMORY ADDRESS
	MCK	MEMORY CLOCK
	MCKI	MEMORY CLOCK INPUT
	MCLK	MEMORY SERIAL COMMAND CLOCK
	MDATA	MEMORY SERIAL COMMAND DATA
	MDQ0~UP	MEMORY DATA INPUT/OUTPUT
	MDQM	MEMORY DATA I/O MASK
	MLD	MEMORY SERIAL COMMAND LOAD
	MPEG	MOVING PICTURE EXPERTS GROUP
O	ODC	OPTICAL DISC CONTROLLER
	OFTR	OFF TRACKING
	OSCI	OSCILLATOR INPUT
	OSCO	OSCILLATOR OUTPUT
	OSD	ON SCREEN DISPLAY
P	P1~UP	PORT
	PCD	CD TRACKING PHASE DIFFERENCE
	PCK	PLL CLOCK
	PDVD	DVD TRACKING PHASE DIFFERENCE
	PEAK	CAP. FOR PEAK HOLD
	PLLCLK	CHANNEL PLL CLOCK
	PLLOK	PLL LOCK
	PWMCTL	PWM OUTPUT CONTROL
	PWMDA	PULSE WAVE MOTOR DRIVE A
	PWMOA, B	PULSE WAVE MOTOR OUT A, B

INITIAL/LOGO		ABBREVIATIONS
R	RE	READ ENABLE
	RFENV	RF ENVELOPE
	RFO	RF PHASE DIFFERENCE OUTPUT
	RS	(CD-ROM) REGISTER SELECT
	RSEL	RF POLARITY SELECT
	RST	RESET
	RSV	RESERVE
S	SBI0, 1	SERIAL DATA INPUT
	SBO0	SERIAL DATA OUTPUT
	SBT0, 1	SERIAL CLOCK
	SCK	SERIAL DATA CLOCK
	SCKR	AUDIO SERIAL CLOCK RECEIVER
	SCL	SERIAL CLOCK
	SCLK	SERIAL CLOCK
	SDA	SERIAL DATA
	SEG0~UP	FL SEGMENT OUTPUT
	SELCLK	SELECT CLOCK
	SEN	SERIAL PORT ENABLE
	SIN1, 2	SERIAL DATA IN
	SOUT1, 2	SERIAL DATA OUT
	SPDI	SERIAL PORT DATA INPUT
	SPDO	SERIAL PORT DATA OUTPUT
	SPEN	SERIAL PORT R/W ENABLE
	SPRCLK	SERIAL PORT READ CLOCK
	SPWCLK	SERIAL PORT WRITE CLOCK
	SQCK	SUB CODE Q CLOCK
	SQCX	SUB CODE Q DATA READ CLOCK
	SRDATA	SERIAL DATA
	SRMADR	SRAM ADDRESS BUS
	SRMDT0~7	SRAM DATA BUS 0~7
	SS	START/STOP
	STAT	STATUS
	STCLK	STREAM DATA CLOCK
	STD0~UP	STREAM DATA
	STENABLE	STREAM DATA INPUT ENABLE
	STSEL	STREAM DATA POLARITY SELECT
	STVALID	STREAM DATA VALIDITY
	SUBC	SUB CODE SERIAL
	SBCK	SUB CODE CLOCK
	SUBQ	SUB CODE Q DATA
	SYSCLK	SYSTEM CLOCK
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

INITIAL/LOGO		ABBREVIATIONS
V	VBLANK	V BLANKING
	VCC	COLLECTOR POWER SUPPLY VOLTAGE
	VCDCONT	VIDEO CD CONTROL (TRACKING BALANCE)
	VDD	DRAIN POWER SUPPLY VOLTAGE
	VFB	VIDEO FEED BACK
	VREF	VOLTAGE REFERENCE
	VSS	SOURCE POWER SUPPLY VOLTAGE
W	WAIT	BUS CYCLE WAIT
	WDCK	WORD CLOCK
	WEH	WRITE ENABLE HIGH
	WSR	WORD SELECT RECEIVER
X	X	X´ TAL
	XALE	X ADDRESS LATCH ENABLE
	XAREQ	X AUDIO DATA REQUEST
	XCDROM	X CD ROM CHIP SELECT
	XCS	X CHIP SELECT
	XCSYNC	X COMPOSITE SYNC
	XDS	X DATA STROBE
	XHSYNCO	X HORIZONTAL SYNC OUTPUT
	XHINT	XH INTERRUPT REQUEST
	XI	X´ TAL OSCILLATOR INPUT
	XINT	X INTERRUPT
	XMW	X MEMORY WRITE ENABLE
	XO	X´ TAL OSCILLATOR OUTPUT
	XRE	X READ ENABLE
	XSRMCE	X SRAM CHIP ENABLE
	XSRMOE	X SRAM OUTPUT ENABLE
	XSRMWE	X SRAM WRITE ENABLE
	XVCS	X V-DEC CHIP SELECT
	XVDS	X V-DEC CONTROL BUS STROBE
	XVSYNCO	X VERTICAL SYNC OUTPUT

14 Voltage and Waveform Chart

14.1. DVD Module P.C.B.

Ref No.	IC8001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	3.1	3.0	0	3.1	3.3	3.4	3.0	3.1	0	0	3.1	3.4	2.9	3.1	3.0	0	3.0	3.0	3.4	0
Ref No.	IC8001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	3.4	-	-	1.5	0.8	1.2	1.0	3.4	0	0.5	1.0	-	-	3.4	0	-	-	2.4	-	-
Ref No.	IC8001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CD PLAY	-	-	-	1.2	-	-	-	3.4	0	-	-	2.5	0	0	0	-	-	-	-	-
Ref No.	IC8001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
CD PLAY	-	3.4	0	0	0.1	1.0	1.0	3.0	2.8	3.1	0.1	0.1	3.2	0	1.7	.0	1.7	0.1	3.4	0
Ref No.	IC8001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
CD PLAY	3.4	0.1	3.4	3.4	0.1	0.1	0	0.1	1.2	0	0	0	0	0.1	0.1	0	0	3.4	0.8	0.1
Ref No.	IC8001																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
CD PLAY	2.4	2.1	1.9	0.3	0	1.9	3.4	2.1	2.1	1.9	1.8	1.1	1.1	1.7	1.7	1.7	1.7	3.3	2.0	1.7
Ref No.	IC8001																			
MODE	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
CD PLAY	1.5	0	0	0.1	0	0	2.3	1.7	2.6	2.6	2.6	2.6	2.6	2.6	2.4	2.4	0	2.4	0	0
Ref No.	IC8001																			
MODE	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
CD PLAY	0.5	0	0	0	0	1.1	2.2	1.7	2.6	2.6	2.6	2.6	2.6	2.6	2.4	2.4	0	2.4	3.4	0
Ref No.	IC8001																			
MODE	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
CD PLAY	3.4	0	0	0	0	3.4	3.4	1.7	0	1.7	0.9	1.2	0	0	0	0.9	1.7	3.4	0	3.4
Ref No.	IC8001																			
MODE	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
CD PLAY	0	3.4	0	0	-	-	-	-	-	3.4	0	1.0	1.7	0	1.5	3.4	1.3	0.5	1.5	1.4
Ref No.	IC8001																			
MODE	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
CD PLAY	0	3.4	3.4	1.2	0	1.7	1.4	1.4	3.4	3.4	1.0	1.8	0	-	-	3.4	2	0	1.2	1.6
Ref No.	IC8001																			
MODE	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
CD PLAY	0.2	0	1.7	0.2	3.4	1.7	0.1	0.9	0	0.1	3.4	1.6	-	2.2	0	1.2	0.1	0.1	3.4	3.2
Ref No.	IC8001																			
MODE	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256				
CD PLAY	1.7	0	1.7	3.3	3.4	3.4	0	3.3	2.6	0	3.6	2.8	0	2.9	3.4	2.9				
Ref No.	IC8051																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	3.4	3.2	3.4	3.1	3.2	0.1	3.2	3.4	3.1	3.0	-	0.1	2.9	3.4	2.7	3.3	3.3	3.3	3.0	2.2
Ref No.	IC8051																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	1.6	0.1	-	-	-	-	3.4	0	-	-	-	-	-	-	-	-	3.4	1.7	2.7	-
Ref No.	IC8051																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
CD PLAY	0.1	3.0	3.4	3.2	3.1	0	3.0	3.1	3.4	2.8	2.8	0	2.9	0						
Ref No.	IC8111																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	3.4	0	0.1	-	-	0	0	4.9												
Ref No.	IC8151																			
MODE	1	2	3	4	5															
CD PLAY	-	-	-	-	-															
Ref No.	IC8251																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	1.7	1.7	1.7	1.9	1.9	1.8	0	4.9	3.4	0.1	2.6	2.4	2.5	2.5	4.5	4.6	5.1	4.0	0.1	0.6
Ref No.	IC8251																			
MODE	21	22	23	24	25	26	27	28												
CD PLAY	9.6	9.4	1.8	1.7	1.7	1.7	3.4	3.2												
Ref No.	IC8421																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	3.4	3.0	3.4	1.7	0.9	1.7	1.7	4.8	0	0.9	0.1	0.1	0	2.4	2.4	4.9	0	2.4	2.4
Ref No.	IC8421																			
MODE	21	22	23	24	25	26	27	28												
CD PLAY	2.4	4.9	-	0	2.5	2.4	2.4	4.8												
Ref No.	IC8601																			
MODE	1	2	3																	
CD PLAY	0	3.2	3.4																	
Ref No.	IC8606																			
MODE	1	2	3	4	5															
CD PLAY	0.7	1.2	0	0	0															
Ref No.	IC8611																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	0.1	0.1	0.1	0.1	3.4	3.4	0.1	3.4												
Ref No.	IC8651																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	-	-	-	-	-	2.4	0	1.9	1.0	1.0	1.0	1.0	1.4	1.2	1.5	1.5	3.4	1.4	1.2	1.3
Ref No.	IC8651																			
MODE	41	42	43	44	45	46	47	48												
CD PLAY	1.4	1.4	1.7	1.7	1.9	0	3.4	-												
Ref No.	IC8691										IC8695									
MODE	1	2	3	4	5						1	2	3	4	5					
CD PLAY	3.0	3.0	0.1	4.3	4.9						0	0	0	0	4.9					
Ref No.	Q8550				Q8551				Q8552				Q8560				Q8561			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	4.9	4.8	4.2		0.1	4.8	0.1		4.8	0	4.8		0.1	0.1	0.7		1.5	3.5	2.1	
Ref No.	Q8562				Q8606				Q8607											
MODE	E	C	B		E	C	B		E	C	B									
CD PLAY	4.2	2.3	3.6		0	0.1	0.7		0	3.2	0.1									
Ref No.	QR8111				QR8112				QR8420				QR8571							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	0.1	0.1	1.2		0.1	4.5	0.1		0	4.0	0.1		3.4	3.3	0.1					

14.2. Main P.C.B.

Ref No.	IC2001																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	2.9	4.9	0	2.0	3.4	0.7	1.9	2.4	4.9	5.0	-	2.3	0	0	5.0	0	4.9	4.9	4.9
STANDBY	0	2.9	4.9	0	2.0	3.4	0.7	2.0	2.4	4.9	4.9	-	2.3	0	0	4.9	0	4.8	4.9	0
Ref No.	IC2001																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	0	0	0	0	0	4.8	4.8	-	0.4	2.6	3.1	4.9	4.9	4.7	0	0	0	0.7	4.9	4.9
STANDBY	0	0	0	0	0	4.8	-	-	0.2	0.1	3.2	4.9	4.9	4.7	0	0	0	0.7	4.9	4.9
Ref No.	IC2001																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CD PLAY	4.9	3.1	4.2	4.6	0	4.9	0	0	4.9	0	0	4.9	0	0	0	0	0	0	4.9	0
STANDBY	4.9	3.1	4.3	4.7	5.3	4.9	0	0	4.9	4.5	0	4.9	0	0	0	0	0	0	4.9	0
Ref No.	IC2001																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
CD PLAY	4.9	0	0	4.9	0	4.8	0	4.8	4.7	4.8	4.8	0	0	0	0	0	0	0	0	0
STANDBY	4.9	0	0	4.8	0	4.8	0	4.8	4.6	4.9	4.8	0	0	0	0	0	0	0	0	0
Ref No.	IC2001																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
CD PLAY	4.9	0	0	0	0	0	3.8	0	4.6	0.6	0	0	4.9	0	0	0	0	0	0	4.9
STANDBY	4.9	0	0	0	0	0	3.7	0	4.6	0.7	0	0	4.9	0	0	0	0	0	0	4.9
Ref No.	IC2003																			
MODE	1	2	3	4	5	6	7	8	9											
CD PLAY	0	0.3	0	0.3	8.7	9.1	0	0	0											
STANDBY	0	0.3	0	0.3	8.6	9.1	0	0	0											
Ref No.	IC2102																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	0	0	0	0	0	0	0	0	0	0	0	0	0	-0.1	0	0	0	0	0	0
STANDBY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ref No.	IC2102																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	0	0	0	0	0	0	0	0	-0.1	0	0	0	0	-0.1	0	0	0	0	0	0
STANDBY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ref No.	IC2102																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
CD PLAY	0	0	0	0	0	0	0	0	0	1.4	-0.1	0	0	0	0	0	0.2	-	-	-0.1
STANDBY	0	0	0	0	0	0	0	0	0	1.4	0	0	0	0	0	0	0	-	-	-0.1
Ref No.	IC2102																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
CD PLAY	-0.1	0	0	4.9	0	5.1	0	0	0	0	0	-0.1	0	0	0	0	0	0	0	0
STANDBY	-0.1	0	0	4.9	0	5.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ref No.	IC2102																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
CD PLAY	0	-0.1	0	0	-6.9	6.9	0	0	-0.1	-	-	0	0	0	0	0	0	-0.1	0	0
STANDBY	0	0	0	0	-6.9	6.9	0	0	0	-	-	0	0	0	0	0	0	0	0	0
Ref No.	IC2103																			
MODE	1	2	3	4	5	6	7	8												
CD PLAY	-0.1	-0.1	-0.1	-6.9	0	0	0	6.9												
STANDBY	0	0	0	-6.9	0	0	0	6.9												
Ref No.	IC2105																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
CD PLAY	0	0	0	6.9	-0.1	-0.1	-0.1	0	-0.1	0	-6.9	0	0	0						
STANDBY	0	0	0	6.9	0	0	0	0	0	0	-6.9	0	0	0						
Ref No.	IC2801																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	4.9	0	0	2.1	4.7	1.6	0	1.6	2.1	0	1.6	0	2.1	4.7	2.1	4.9	2.2	2.2	0	2.2
STANDBY	4.9	0	0	2.1	4.7	1.5	0	1.5	2.1	0	1.6	0	2.1	4.7	2.1	4.9	2.2	2.2	0	2.2
Ref No.	IC2801																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32								
CD PLAY	2.2	0	1.5	1.7	0	1.5	2.0	0	1.6	1.8	0	2.2								
STANDBY	2.2	0	1.4	1.7	0	1.4	1.7	0	1.5	1.8	0	2.2								
Ref No.	IC2901				IC2902				IC2903						IC2904					
MODE	1	2	3		1	2	3		1	2	3	4	5		1	2	3			
CD PLAY	13.4	0	9.1		12.1	0	9.1		3.2	1.0	0	-	13.4		9.1	0	5.0			
STANDBY	13.6	0	9.1		12.7	0	9.1		3.2	1.0	0	-	13.6		9.1	0	5.0			
Ref No.	IC2906																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
CD PLAY	0	0.1	0	0.1	0	0	-6.9	-0.1	0	0	0	0	0	0.1	0.1	6.9				
STANDBY	0	0	0.2	0.1	0.1	0	-6.9	0	0	0	0.1	0	0.1	0.1	0.1	6.9				
Ref No.	IC2907				IC2908															
MODE	1	2	3		1	2	3													
CD PLAY	6.1	5.0	0		6.1	5.0	0													
STANDBY	6.1	5.0	0		6.1	5.0	0													
Ref No.	Q2001				Q2003				Q2006				Q2098							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	0	0	4.5		0	4.9	0		0	0	4.1		0	-	0					
STANDBY	0	0	4.5		0	4.9	0		0	5.3	0		0	-	0					
Ref No.	Q2101							Q2307												
MODE	1	2	3	4	5	6		1	2	3	4	5	6							
CD PLAY	0	-4.7	0	-0.1	-4.7	-0.1		0	-0.1	0	0	-0.1	0							
STANDBY	0	0.6	0	0	0.6	0		0	-0.8	0	0	-0.8	0							
Ref No.	Q2308							Q2310												
MODE	1	2	3	4	5	6		E	C	B										
CD PLAY	0	-0.9	0	0	-0.9	0		0	-0.1	0										
STANDBY	0	-0.8	0	0	-0.8	0		0	-0.7	0										
Ref No.	Q2201				Q2901				Q2903				Q2904							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	0	-4.7	-0.1		0	4.9	-2.5		6.9	18.6	7.5		5.6	9.1	6.3					
STANDBY	1.7	1.7	0		0	4.9	-2.5		7.0	18.7	7.5		5.6	9.1	6.3					
Ref No.	Q2906				Q2907				Q2909				Q2911							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	-6.9	-18.6	-7.4		0	-7.4	-0.6		0	4.9	-2.6		0	0	0.6					
STANDBY	-6.9	-18.6	-7.4		0	-7.4	-0.6		0	4.9	-2.6		0	0	0.7					
Ref No.	Q2912				Q2913				Q2914				Q2935							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	0	0	0.6		0	0	0.6		5.6	5.6	5.0		3.3	4.4	3.9					
STANDBY	0	0	0.7		0	0.7	0		5.6	5.6	5.0		-	-	-					

14.3. Power P.C.B.

Ref No.	IC5000																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	2.2	-0.1	-0.1	28.9	-0.1	-29.2	-20.8	29.2	8.1	-3.3	-29.5	-17.0	-29.5	-3.3	8.1	29.2	29.2	-29.2	-0.1	28.9
STANDBY	2.0	-0.1	-0.1	28.9	0	-29.2	-20.9	29.3	8.3	-3.2	-29.4	-16.8	-29.4	-3.3	8.2	29.3	-29.2	-29.2	0	28.9
Ref No.	IC5000																			
MODE	21	22	23																	
CD PLAY	-0.1	-0.1	2.8																	
STANDBY	-0.1	-0.1	2.8																	
Ref No.	IC5200																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	2.0	-0.1	-0.1	28.9	-0.1	-29.2	-21.1	29.2	8.0	-3.3	-29.5	-17.1	-29.5	-3.3	8.1	29.2	-29.2	29.2	-0.1	28.9
STANDBY	2.0	-0.1	-0.1	28.9	0	-29.2	-21.1	29.3	8.1	-3.2	-29.4	-17.1	-29.4	-3.2	8.1	29.3	-29.2	-29.2	0	28.9
Ref No.	IC5200																			
MODE	21	22	23																	
CD PLAY	-0.1	-0.1	2.9																	
STANDBY	-0.1	-0.1	2.9																	
Ref No.	IC5300																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	2.0	-0.1	-0.1	28.9	-0.1	-29.2	-21.1	29.2	7.9	-3.3	-29.5	-17.2	-29.5	-3.3	8.0	29.3	-29.2	-29.2	-0.1	28.9
STANDBY	2.0	-0.1	-0.1	28.9	0	-29.2	-21.1	29.3	8.0	-3.2	-29.4	-17.1	-29.4	-3.2	8.0	29.3	-29.2	-29.2	0	28.9
Ref No.	IC5300																			
MODE	21	22	23																	
CD PLAY	-0.1	-0.1	2.8																	
STANDBY	-0.1	-0.1	2.8																	
Ref No.	IC5500																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
CD PLAY	0	0	2.0	2.2	1.9	2.0	-0.1	3.6	1.5	2.1	2.3	1.0	1.5	4.6						
STANDBY	0	4.2	2.0	2.2	1.9	2.0	0	3.4	-	2.1	2.2	1.7	-	4.6						
Ref No.	IC5701						IC5702				IC5721									
MODE	1	2	3	4	5		1	2	3		1	2	3	4	5	6	7	8		
CD PLAY	1.5	0	164.4	13.7	0		2.5	0	15.2		0	19.4	0	0.9	164.4	0	163.4	163.8		
STANDBY	1.5	0	164.2	13.8	0		2.5	0	15.3		0	19.5	0	0.9	163.5	0	163.2	163.3		
Ref No.	IC5750																			
MODE	1	2	3	4	5	6	7	8	9											
CD PLAY	0	0.3	0	0.3	8.6	9.1	0	0	0											
STANDBY	0	0.3	0	0.3	8.8	9.1	0	0	0											
Ref No.	Q5101				Q5102				Q5500				Q5501							
MODE	E	C	B		E	C	B		E	C	B		E	C	B					
CD PLAY	-0.1	4.9	-0.1		-0.1	4.9	-0.1		2.1	0	4.2		2.1	2.1	1.9					
STANDBY	0	4.9	0		0	4.9	0		2.3	0	4.5		2.3	2.3	2.0					
Ref No.	Q5701				Q5704				Q5705				Q5706				Q5710			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	6.8	7.9	7.1		3.4	4.2	4.0		-0.1	3.2	0.4		-17.5	-17.0	-16.8		-0.1	29.3	-0.1	
STANDBY	6.8	7.9	7.1		3.4	4.2	4.1		0	3.2	0.4		-17.5	-16.9	-16.8		0	29.3	0	
Ref No.	Q5740				Q5741				Q5742					Q5744						
MODE	E	C	B		E	C	B		E	C	B			E	C	B				
CD PLAY	0.2	0.2	0.2		0	4.9	0		0	0.1	0.7			0	4.5	0.3				
STANDBY	0.2	0.2	0.2		0	4.9	0		0	0.1	0.7			0	4.5	0.3				
Ref No.	Q5745				Q5746				Q5747				Q5748							
MODE	1	2	3	4		E	C	B		E	C	B		1	2	3	4			
CD PLAY	1.1	0	-11.6	-11.5		0	0	4.8		14.1	13.7	6.8		0.7	0	0.2	0.2			
STANDBY	1.1	0	-11.4	-11.3		0	0	4.7		14.2	13.8	6.8		0.7	0	0.2	0.2			
Ref No.	Q5750				Q5908				Q5930				Q5931				Q5932			
MODE	E	C	B		E	C	B		E	C	B		E	C	B		E	C	B	
CD PLAY	0	0	4.5		-21.4	-29.4	-22.0		-0.1	0	0.6		-0.1	4.9	0		1.3	-0.1	0.6	
STANDBY	0	0	4.5		-21.4	-29.4	-22.0		0	0	0.6		0	4.9	0		1.3	0	0.7	

14.4. FL P.C.B.

Ref No.	IC6901																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CD PLAY	4.9	0	0	-0.1	2.8	-	0.7	4.6	3.7	-	-	0	4.8	-21.0	-21.0	-18.9	-18.8	-14.7	-18.9	-14.7
STANDBY	4.9	0	0	0	2.8	-	0.7	4.6	3.7	-	-	0	4.9	-21.0	-21.0	-21.0	-18.9	-10.5	-8.4	-14.7
Ref No.	IC6901																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
CD PLAY	-12.9	-21.0	-21.0	-14.7	-14.7	-18.9	-21.0	-21.0	-16.8	-21.4	-14.9	-12.8	-19.1	-19.1	-19.1	-19.1	-19.1	-19.1	-19.1	-19. 1
STANDBY	-14.7	-21.0	-18.9	-10.5	-10.5	-16.8	-21.0	-18.9	-8.4	-21.4	-12.7	-10.6	-19.1	-19.1	-19.1	-19.1	-19.1	-19.1	-19.1	-19.1
Ref No.	IC6901																			
MODE	41	42	43	44																
CD PLAY	-19.1	-19.1	4.9	-0.1																
STANDBY	-19.1	-19.1	4.9	0																
Ref No.	Q6901																			
MODE	E	C	B																	
CD PLAY	-0.1	4.5	0																	
STANDBY	0	4.7	0																	

14.5. Loading Motor P.C.B., Tray Motor P.C.B., Sensor P.C.B.

Loading Motor P.C.B.

Ref No.	Q9001																			
MODE	1	2	3	4																
CD PLAY	1.2	4.5	0	0																
STANDBY	0.2	4.8	0	0																

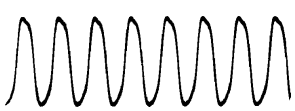
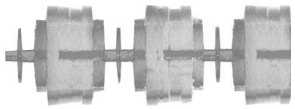
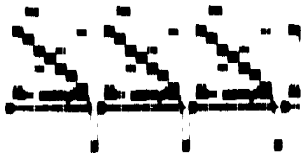
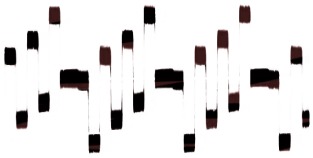
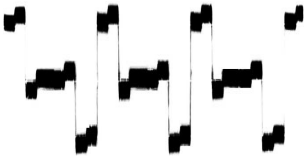
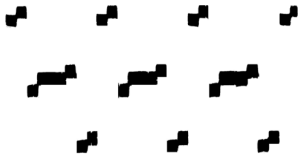
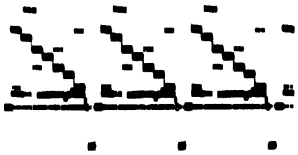
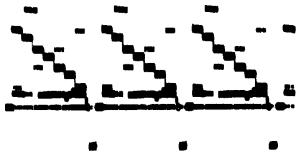
Tray Motor P.C.B.

Ref No.	Q9101					Q9102														
MODE	1	2	3	4		1	2	3	4											
CD PLAY	1.2	0	4.7	0		2.5	1.2	0.1	0											
STANDBY	0.1	0	4.8	0		0.4	-0.2	4.8	0											

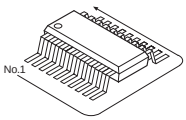
Sensor P.C.B.

Ref No.	Q9103																			
MODE	1	2	3	4																
CD PLAY	3.7	2.5	0	0.2																
STANDBY	0.2	0.4	0	4.7																

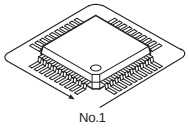
14.6. Waveform Chart

WF No. IC2001-12 (PLAY)  5.6Vp-p(100nsec/div)	WF No. IC2102-15 (PLAY)  2.5Vp-p(200usec/div)	WF No. IC2102-17 (PLAY)  3.5Vp-p(200usec/div)	WF No. IC2102-30 (PLAY)  12Vp-p(5msec/div)
WF No. IC2103-1 (PLAY)  3.4Vp-p(200usec/div)	WF No. IC2801-4 (PLAY)  0.6Vp-p(20usec/div)	WF No. IC2801-8 (PLAY)  1.2Vp-p(20usec/div)	WF No. IC2801-11 (PLAY)  1.2Vp-p(20usec/div)
WF No. IC2801-13 (PLAY)  0.6Vp-p(20usec/div)	WF No. IC2801-15 (PLAY)  1.6Vp-p(20usec/div)	WF No. IC2801-18 (PLAY)  1.0Vp-p(20usec/div)	WF No. IC2801-21 (PLAY)  1.0Vp-p(20usec/div)
WF No. IC2801-24 (PLAY)  2.1Vp-p(20usec/div)	WF No. IC2801-27 (PLAY)  1.6Vp-p(20usec/div)	WF No. IC2801-30 (PLAY)  2.1Vp-p(20usec/div)	WF No. IC2801-32 (PLAY)  1.3-Vp-p(20usec/div)
WF No. IC5000-10 (PLAY)  90-Vp-p(500nsec/div)	WF No. IC5200-14 (PLAY)  90-Vp-p(500nsec/div)	WF No. IC5300-14 (PLAY)  94-Vp-p(500nsec/div)	

15 Illustration of IC's, Transistors and Diodes

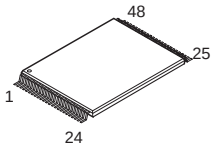


C0ABCB000088 (14p)
C0CBCBD00018 (8p)
C0FBBK000050 (28p)
C0JBAB000011 (14p)
C0JBAR000326 (16p)
C3ABPG000133 (54p)
C3EBEG000073 (8p)
C3EBGC000044 (8p)
C9ZB00000461 (132p)

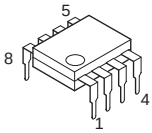


C0HBB0000057 (44p)
C1AB00002463 (100p)
MN101C49GHG (100p)
MN2DS0003APH (256p)
MN864701 (164p)

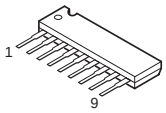
RFKWMH82H160



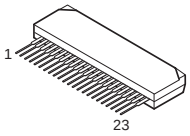
C0DABYY00002
C0AABB000125



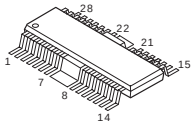
C0GAG0000007



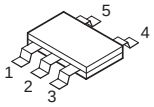
C1BA00000407



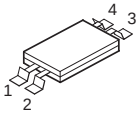
C0GBG0000048



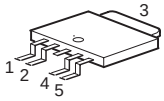
C0EBA0000031
C0JBAA000346



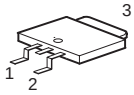
B3PBA0000237



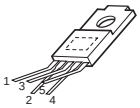
C0DBEHG00006



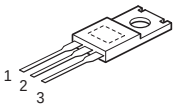
C0CBADG00023



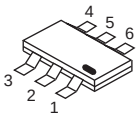
C0DAAMH00012
C0DAZYY00001
STR-F6628



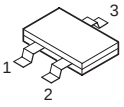
C0CAADE00007



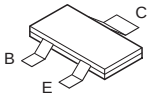
B1GFGCAA0001



C0EBE0000384

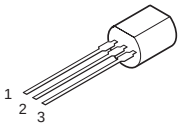


2SB09700RL
2SB1219AHL
2SD1819A0L
B1ABCF000011
B1ABCF000176

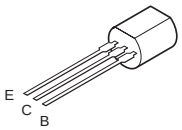


B1ADCE000012
B1ADCF000001
B1GBCFLL0037
B1GBCFJN0033
B1GDCFGA0018
B1GBCFJJ0051
B1GDCFJJ0047
UNR511V00L
UNR521100L
UNR521400L

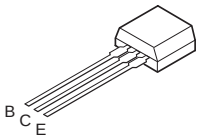
C0DABFC00002



B1ACKD000005
B1AAKD000012
2SC3940ARA



B1BACD000018
B1BCCD000019



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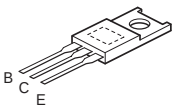

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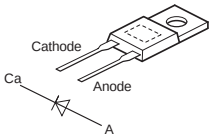
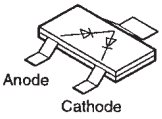


B0ADCJ000020



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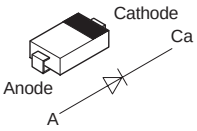
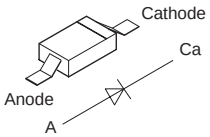
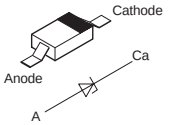


MA2J11100L

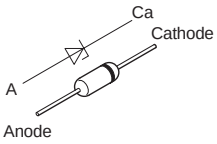


B0BC01200019
B0BC01700015
B0BC02900004
B0BC035A0007
B0BC2R4A0006
B0BC3R400001
B0BC3R700004

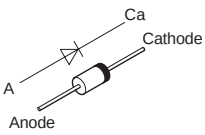
B0BC4R0A0006
B0BC7R500001
B0JCPD000025



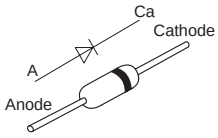
B0BC5R600003



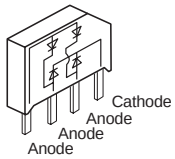
B0EAKM000117
B0EAMM000057
B0JAME000029



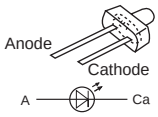
MA2J72800L



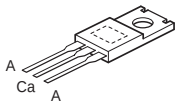
B0FBAR000018



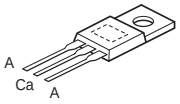
B3ABA0000397



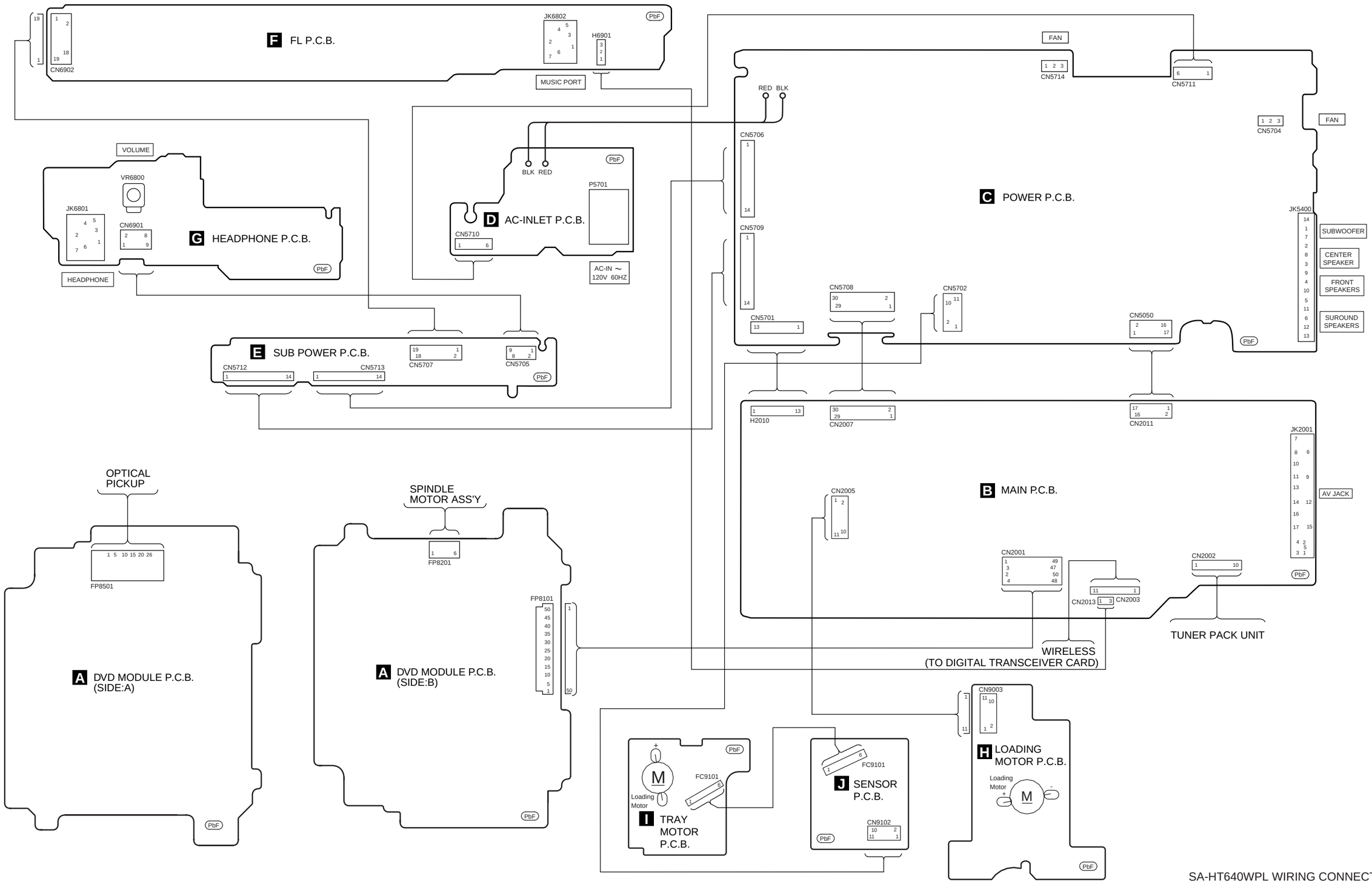
B0HBSM000043



B0ZAZ0000052

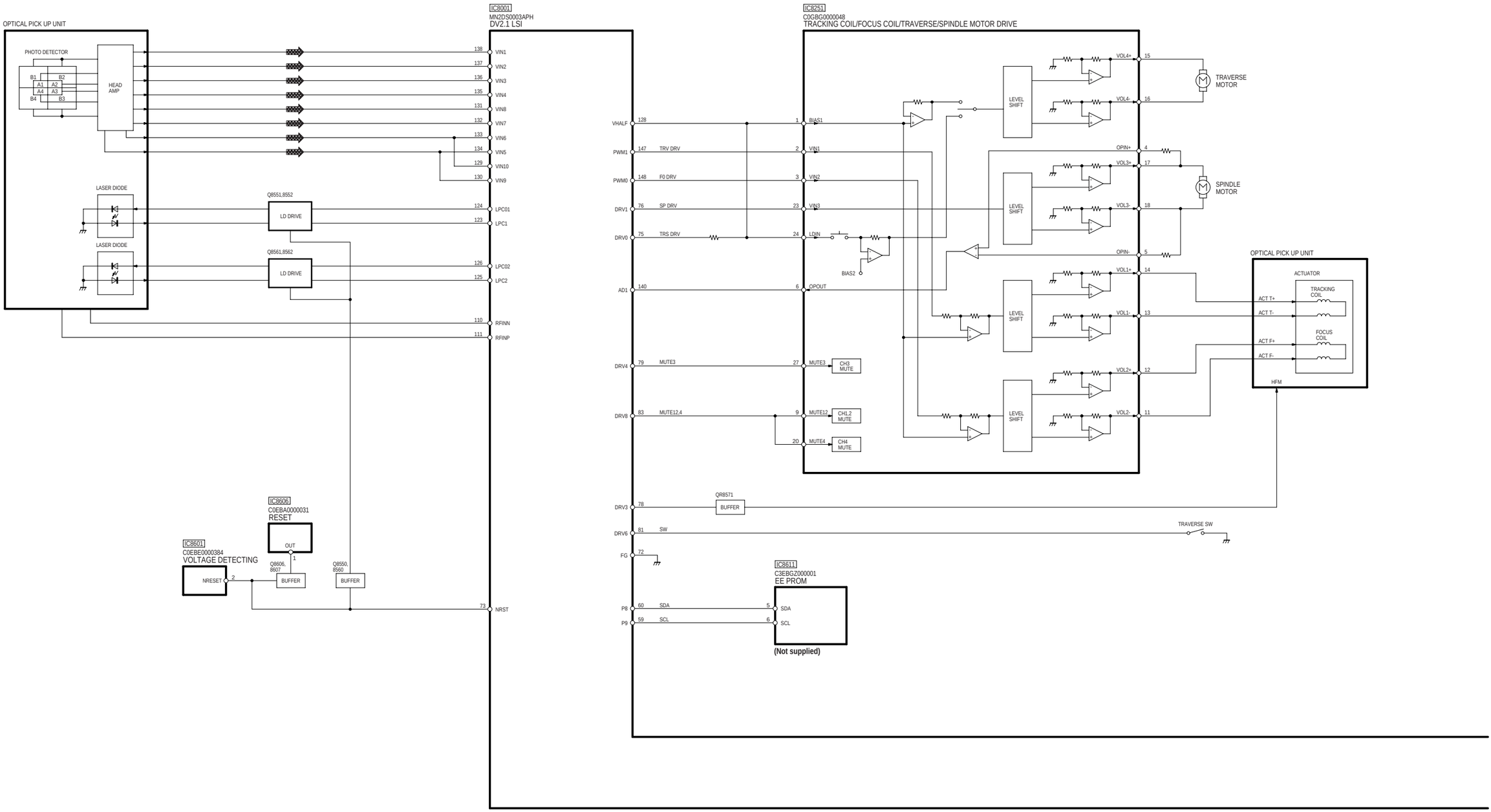


16 Wiring Connection Diagram

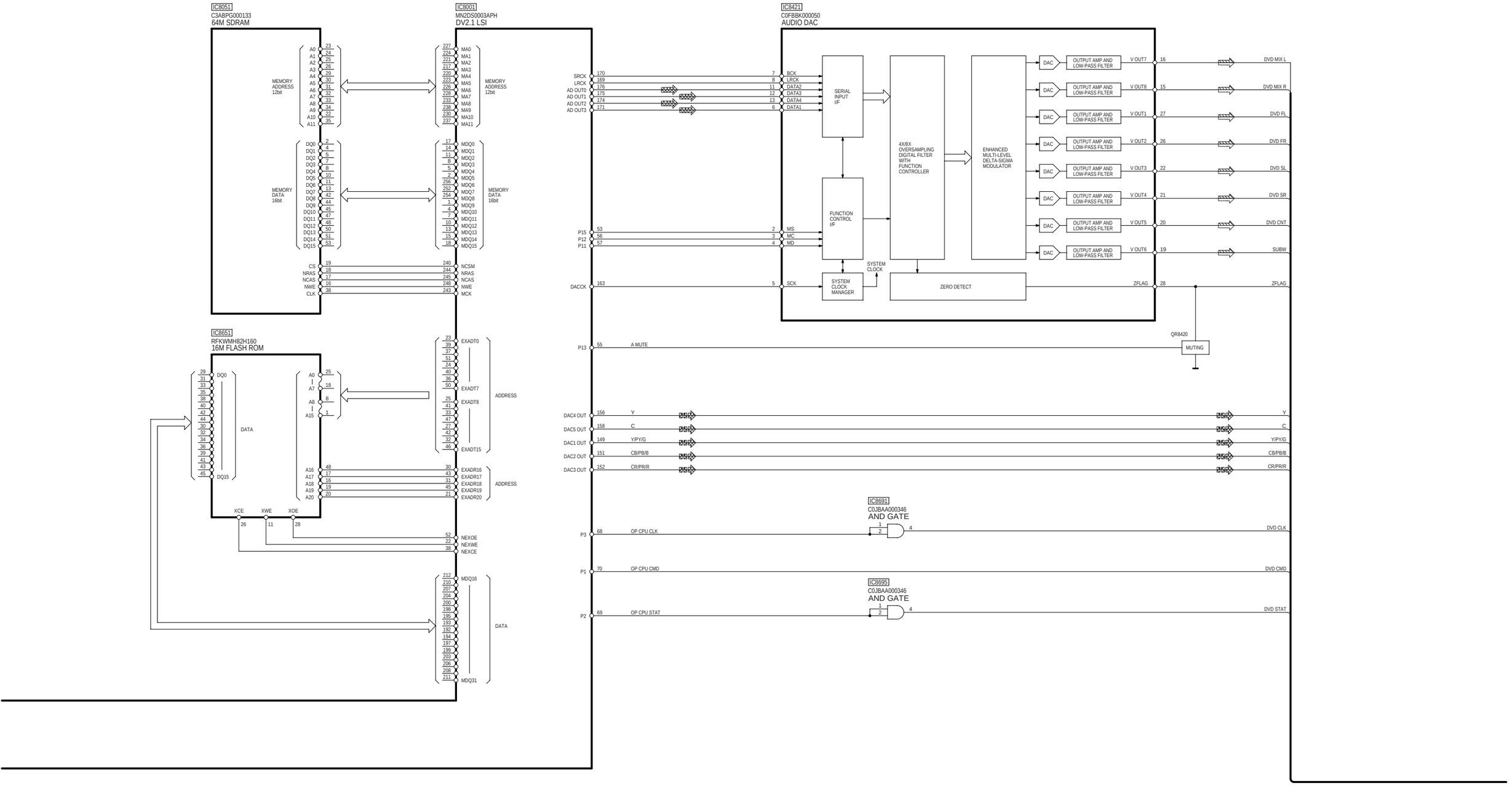


SA-HT640WPL WIRING CONNECTION

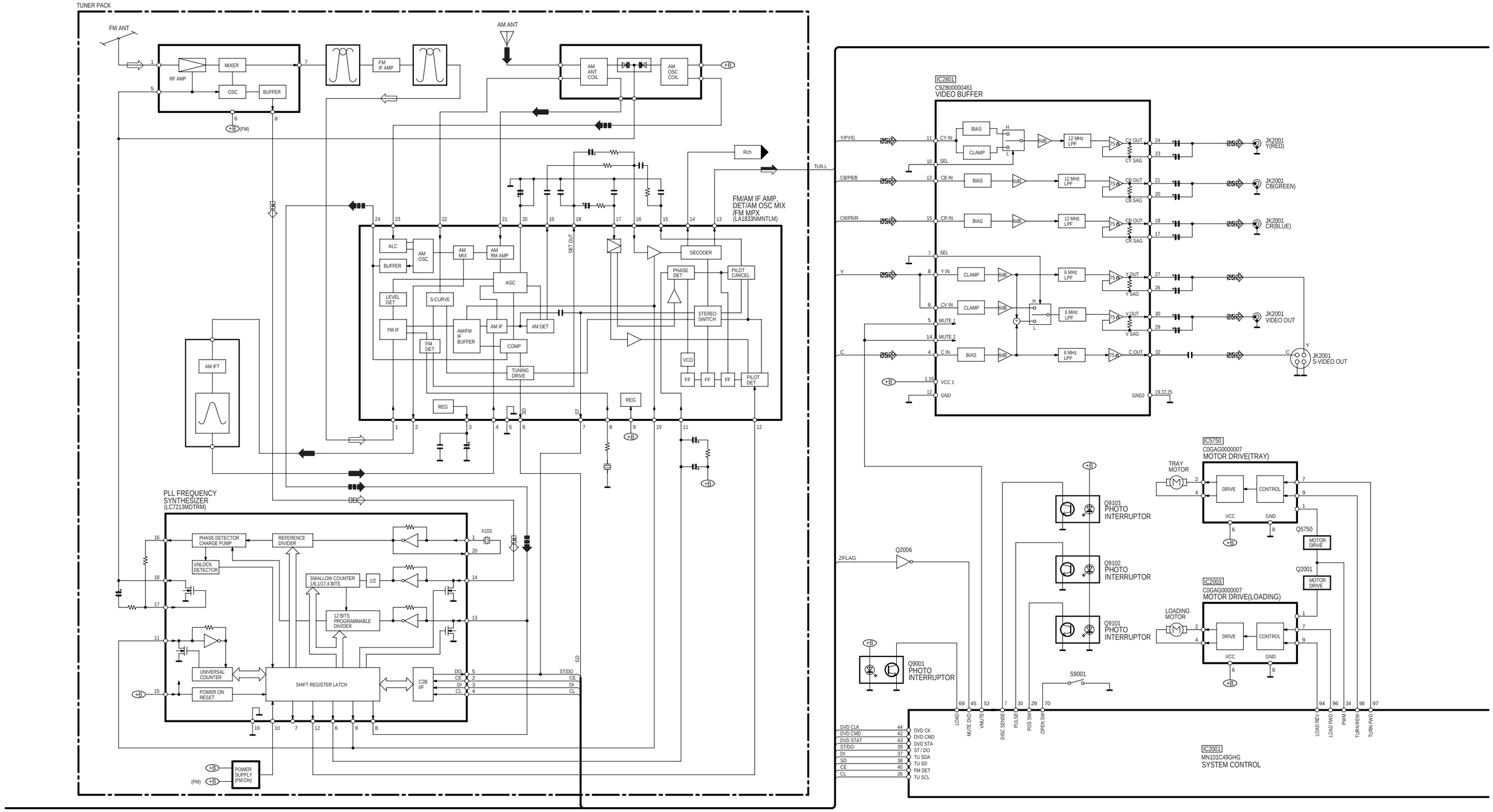
17 Block Diagram



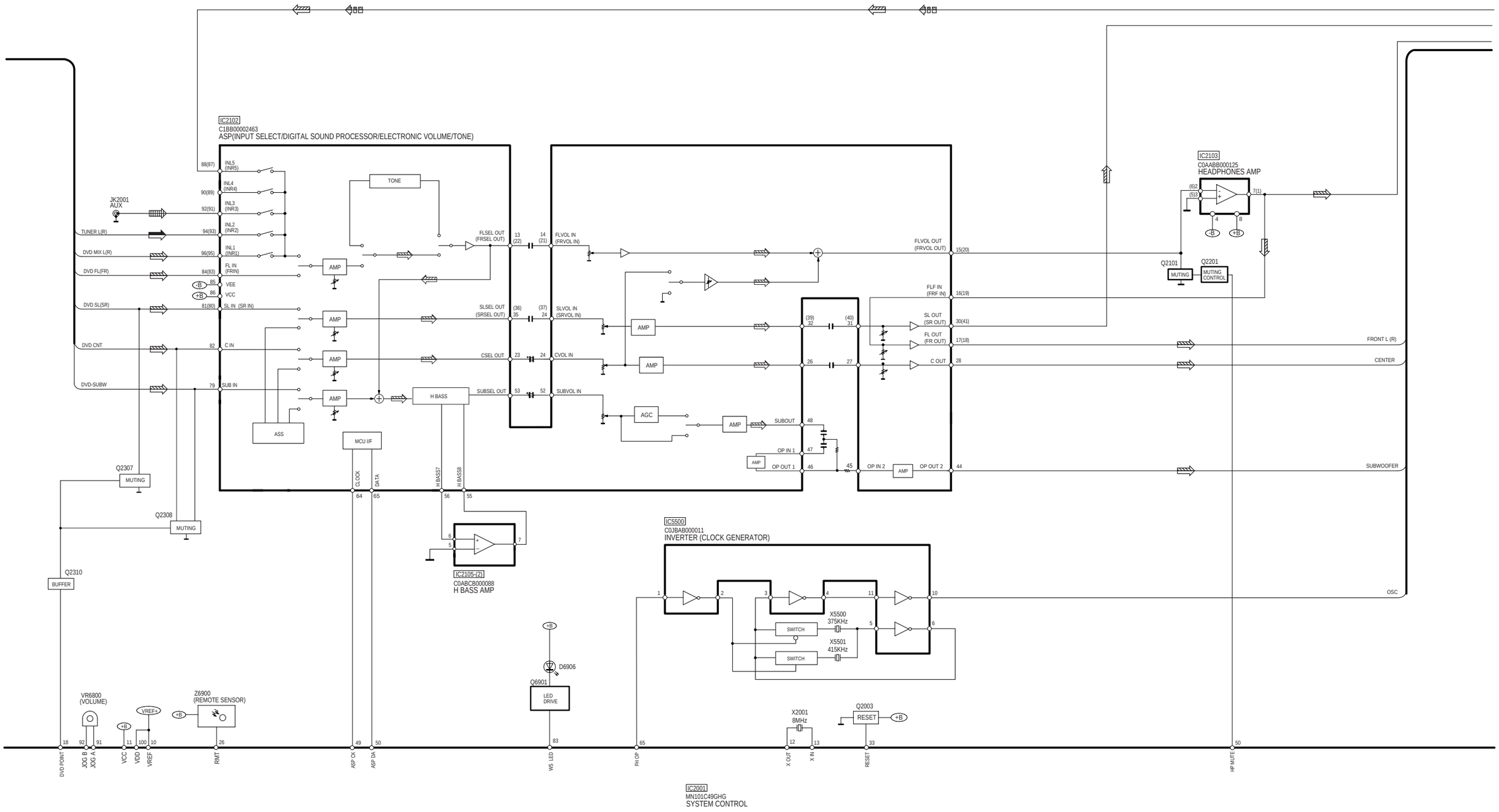
SA-HT640WPL BLOCK DIAGRAM



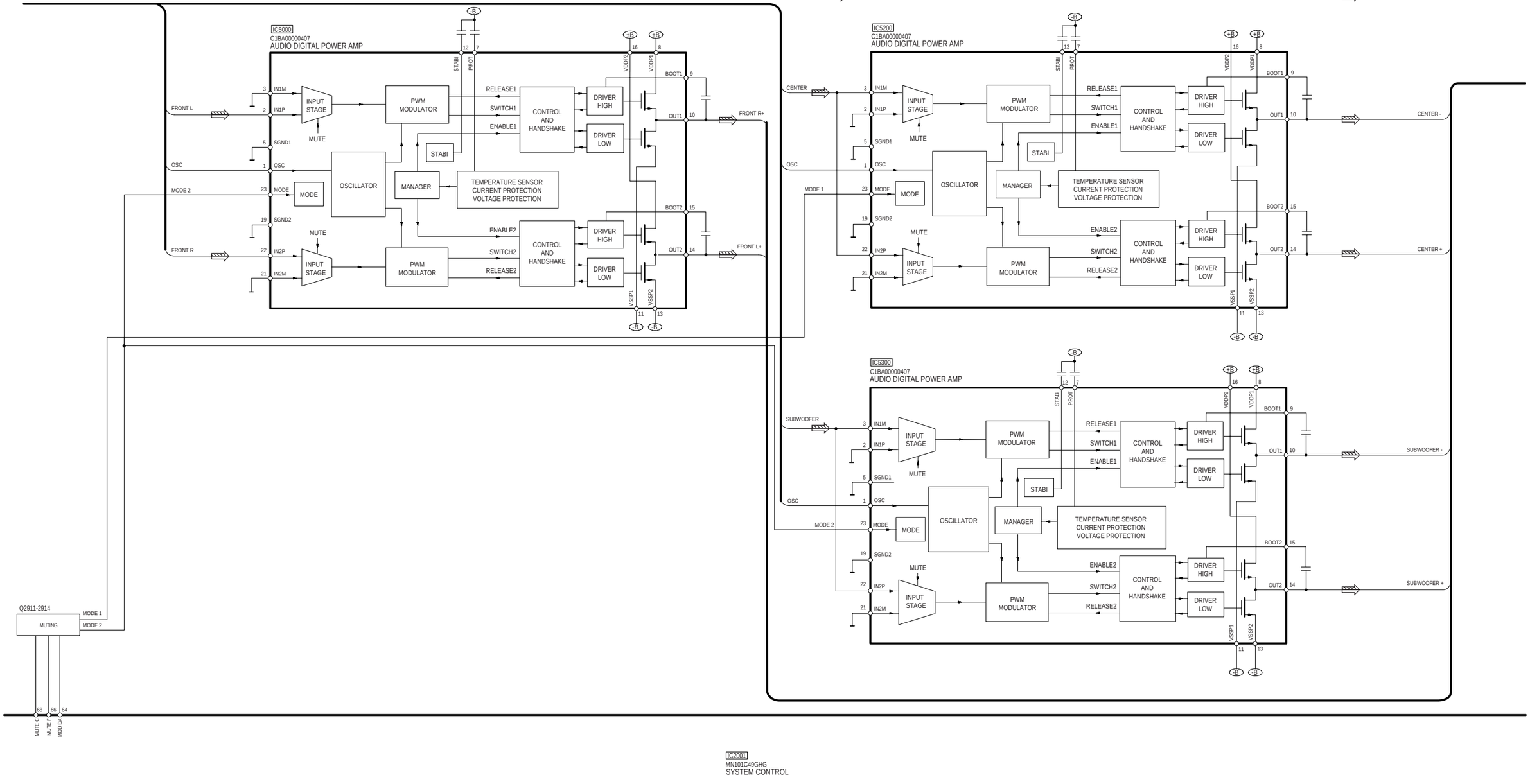
SA-HT640WPL BLOCK DIAGRAM

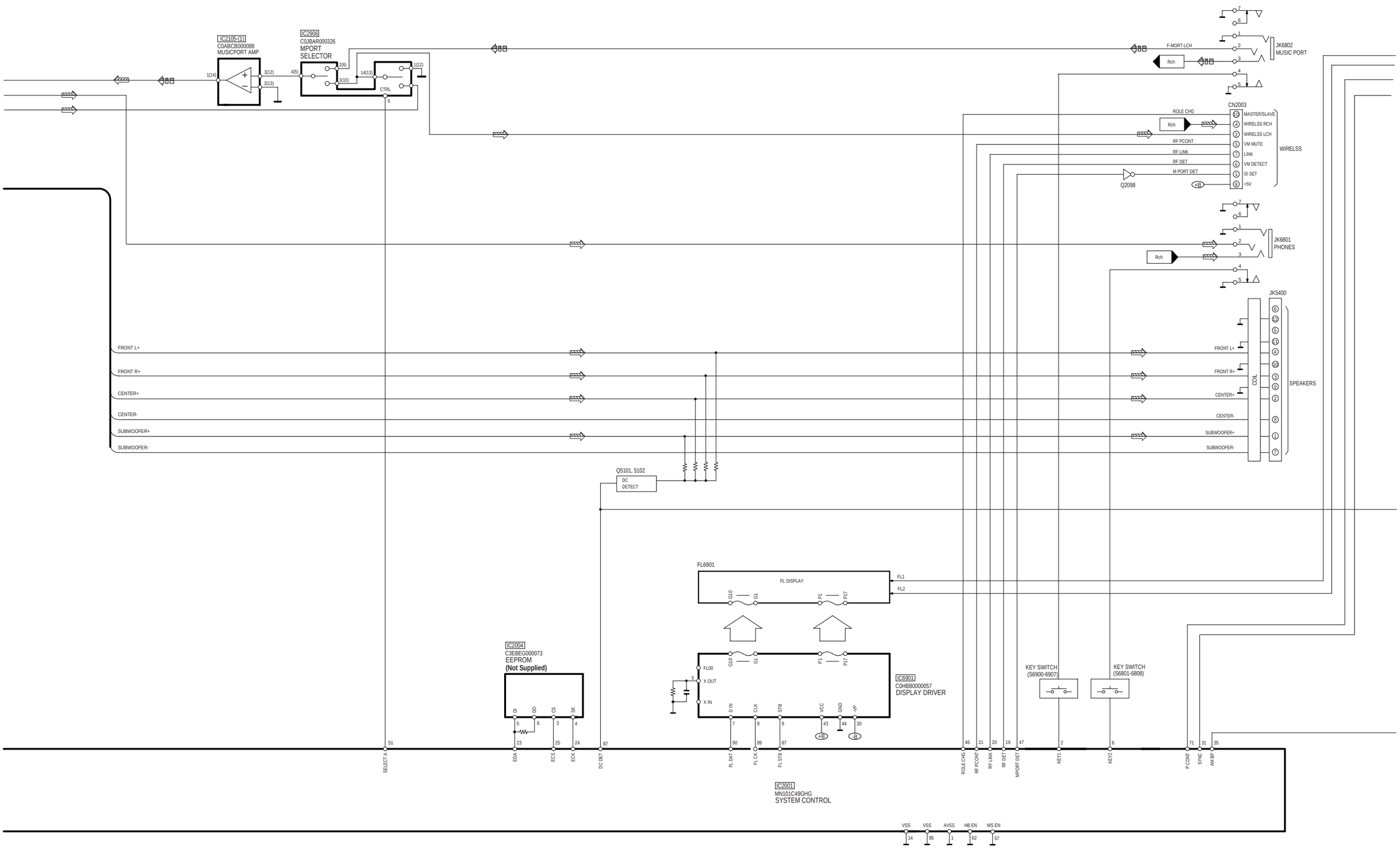


SA-HT640WPL BLOCK DIAGRAM



SA-HT640WPL BLOCK DIAGRAM


IC5000
C1BA00000407
AUDIO DIGITAL POWER AMP
-B
+B
STABI
PROT
VDDP2
VDDP1
BOOT1
OUT1
BOOT2
OUT2
VSSP1
VSSP2
IN1M
IN1P
SGND1
OSC
MODE
SGND2
IN2P
IN2M
INPUT STAGE
MUTE
PWM MODULATOR
RELEASE1
SWITCH1
ENABLE1
ENABLE2
SWITCH2
RELEASE2
CONTROL AND HANDSHAKE
DRIVER HIGH
DRIVER LOW
OSCILLATOR
MODE
MANAGER
STABI
TEMPERATURE SENSOR
CURRENT PROTECTION
VOLTAGE PROTECTION
FRONT L
FRONT R
FRONT R+
FRONT L+
MODE 2
IC5200
C1BA00000407
AUDIO DIGITAL POWER AMP
CENTER
MODE 1
CENTER -
CENTER +
IC5300
C1BA00000407
AUDIO DIGITAL POWER AMP
SUBWOOFER
SUBWOOFER -
SUBWOOFER +
Q2911-2914
MUTING
MODE 1
MODE 2
MUTE C
MUTE F
MOD DA
68
66
64
IC2001
MN101C49GHG
SYSTEM CONTROL



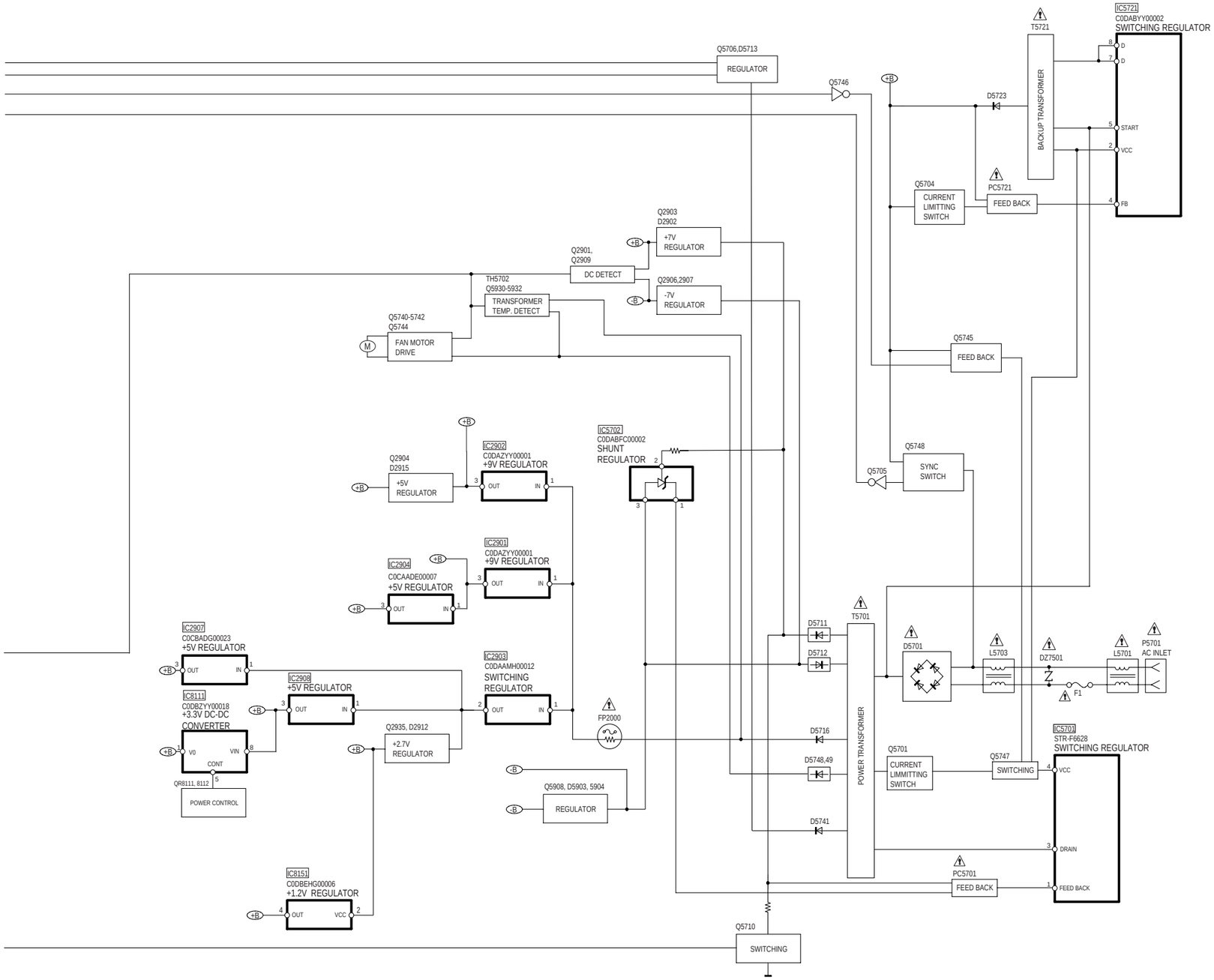
SA-HT640WPL BLOCK DIAGRAM

SIGNAL LINES

: MAIN SIGNAL LINE
: FM SIGNAL LINE
: FM OSC SIGNAL LINE
: AUX SIGNAL LINE
: AM SIGNAL LINE
: AM OSC SIGNAL LINE
: FM /AM SIGNAL LINE
: MUSIC PORT SIGNAL LINE
: DVD AUDIO SIGNAL LINE
: DVD VIDEO SIGNAL LINE
: CD-DA (AUDIO /VIDEO) SIGNAL LINE

( ) Indicates the Pin No. of Right Channel.

NOTE : Signal Lines are applicable to the Left Channel only.



18 Schematic Diagram

- **This schematic diagram may be modified at any time with the development of new technology.**

Notes:

S6801:	Play and memory switch (▶ Memory).
S6802:	R. skip, search and Tuning switch (⏮ / ◀◀ / TUNING ∨).
S6803:	F. skip, search and Tuning switch (⏭ / ▶▶ / TUNING ∧).
S6804:	Stop and TUNE mode switch (■ TUNE MODE). / Pause and FM mode switch (⏸ FM MODE).
S6808:	Tray open / close switch (⏏ Open / Close).
S6806:	Disc skip switch (DISC SKIP).
S6805:	Disc exchange switch (DISC EXCHANGE).
S6900:	Standby / on switch (POWER ⏻/I).
S6907:	Source select switch (SELECTOR).
S6902-S6906:	Disc switch (DISC1-DISC5).
S6901:	CD mode switch [PARTY MODE].
VR6800:	Volume control.

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
- Important safety notice:

  Components identified by ⚠ mark have special characteristics important for safety.

  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

  When replacing any of components, be sure to use only manufacturer´s specified parts shown in the parts list.
- The supply part number is described alone in the replacement parts list.
- Voltage and signal line

  : +B signal line
  : CD-DA signal line
  : Main signal line
  : DVD (Video) signal line
  : DVD (Audio) signal line
  : FM/AM signal line
  : -B signal line
  : MUSIC PORT signal line
  : AUX signal line

Caution!

IC and LSI are sensitive to static electricity.

Secondary trouble can be prevented by taking care during repair.

Cover the parts boxes made of plastics with aluminum foil.

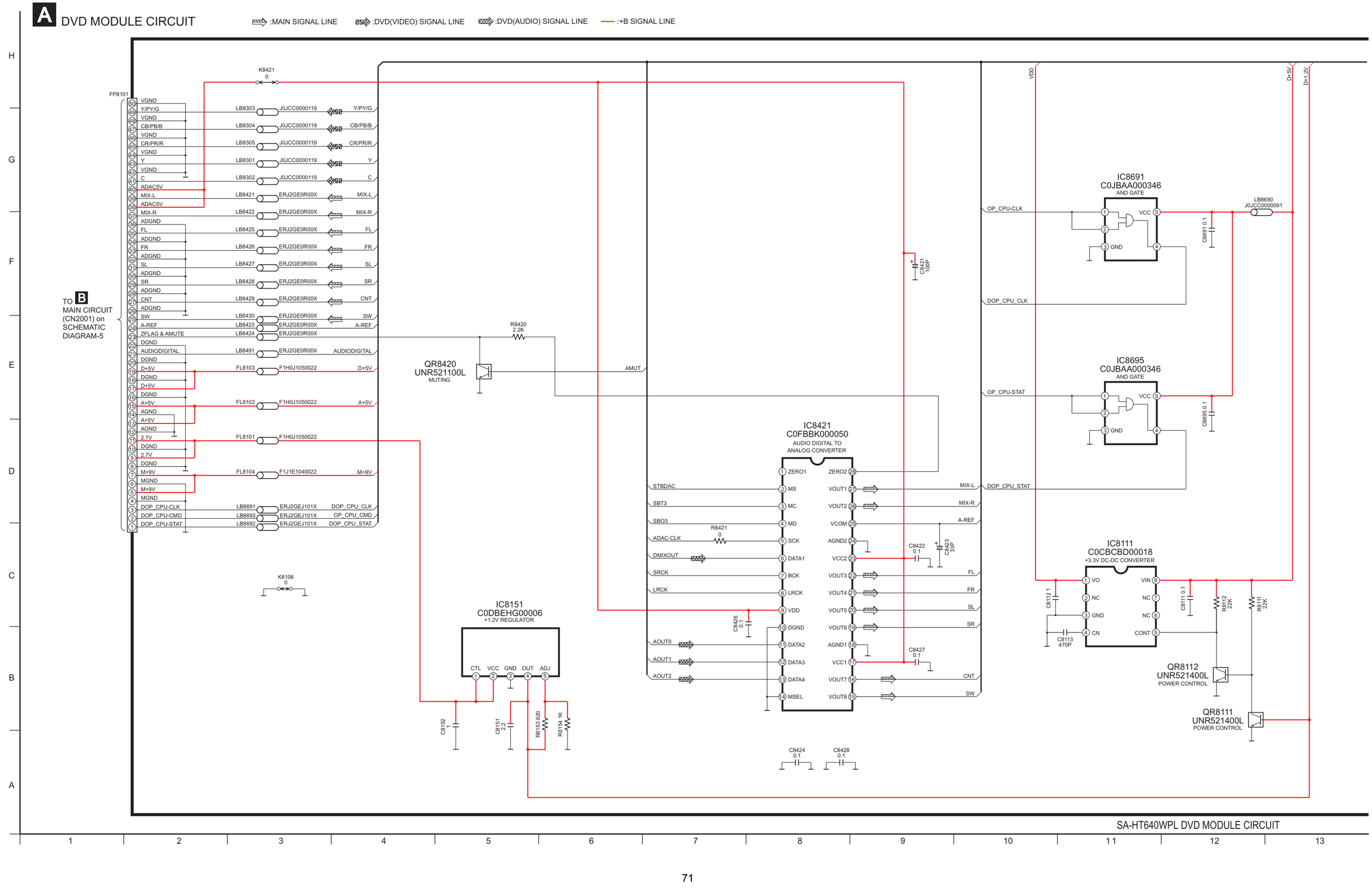
Ground the soldering iron.

Put a conductive mat on the work table.

Do not touch ith the fingers directly.

18.1. (A) DVD Module Circuit

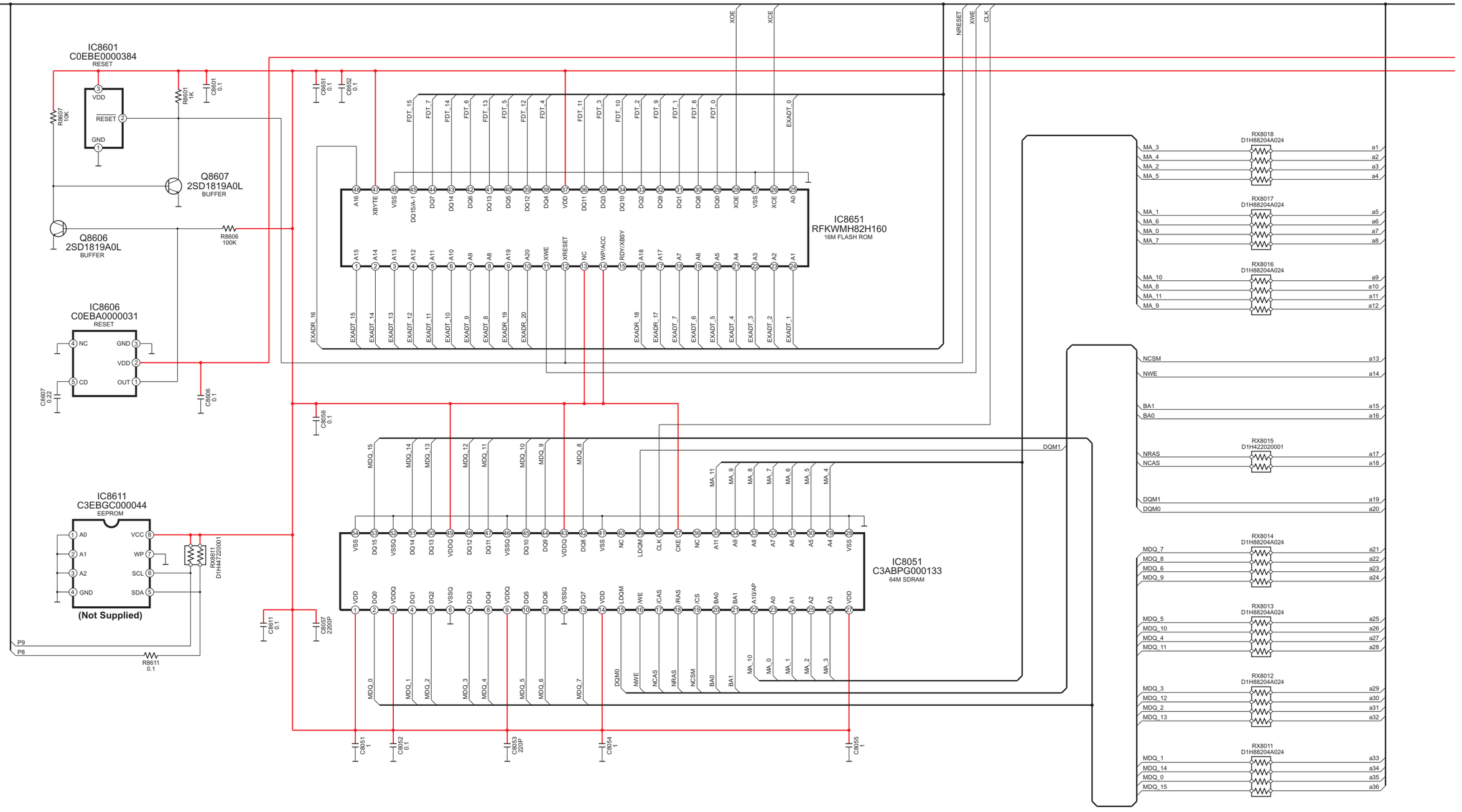
SCHEMATIC DIAGRAM-1



SCHEMATIC DIAGRAM-2

A DVD MODULE CIRCUIT

—— :+B SIGNAL LINE



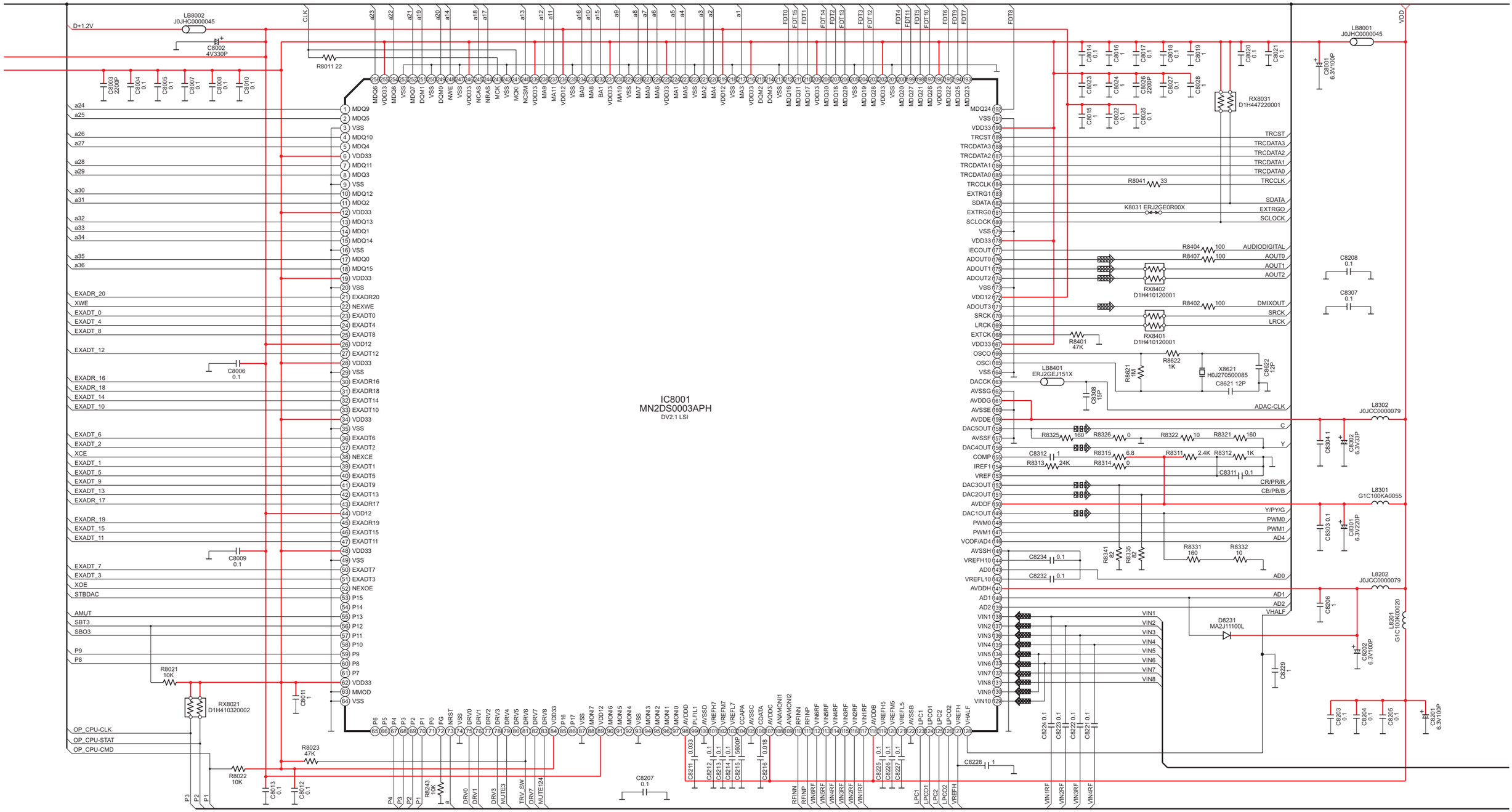
SA-HT640WPL DVD MODULE CIRCUIT

14 15 16 17 18 19 20 21 22 23 24 25 26

SCHEMATIC DIAGRAM-3

A DVD MODULE CIRCUIT

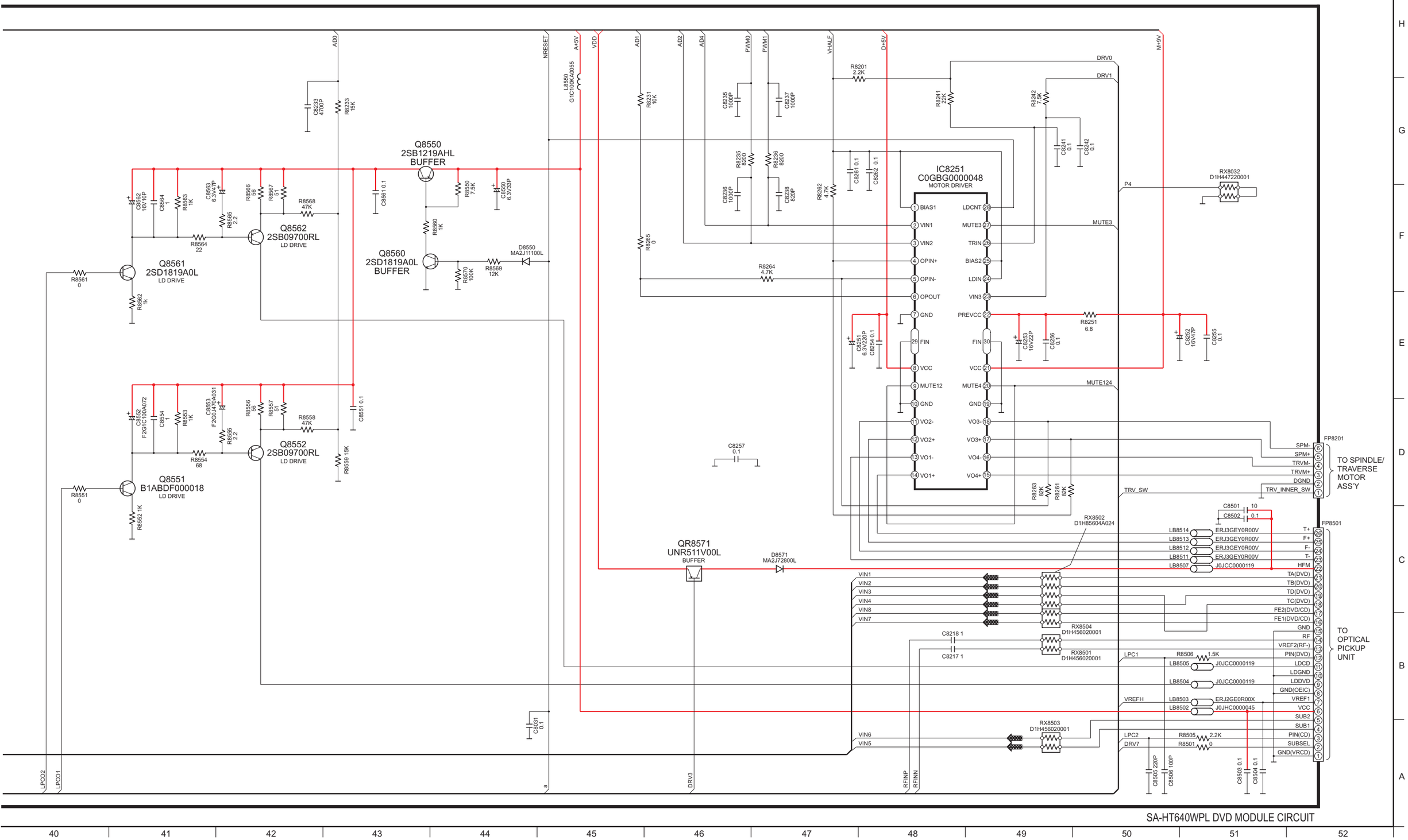
:DVD(AUDIO) SIGNAL LINE :DVD(VIDEO) SIGNAL LINE :CD-DA SIGNAL LINE :+B SIGNAL LINE



SCHEMATIC DIAGRAM-4

A DVD MODULE CIRCUIT

:CD-DA SIGNAL LINE :+B SIGNAL LINE



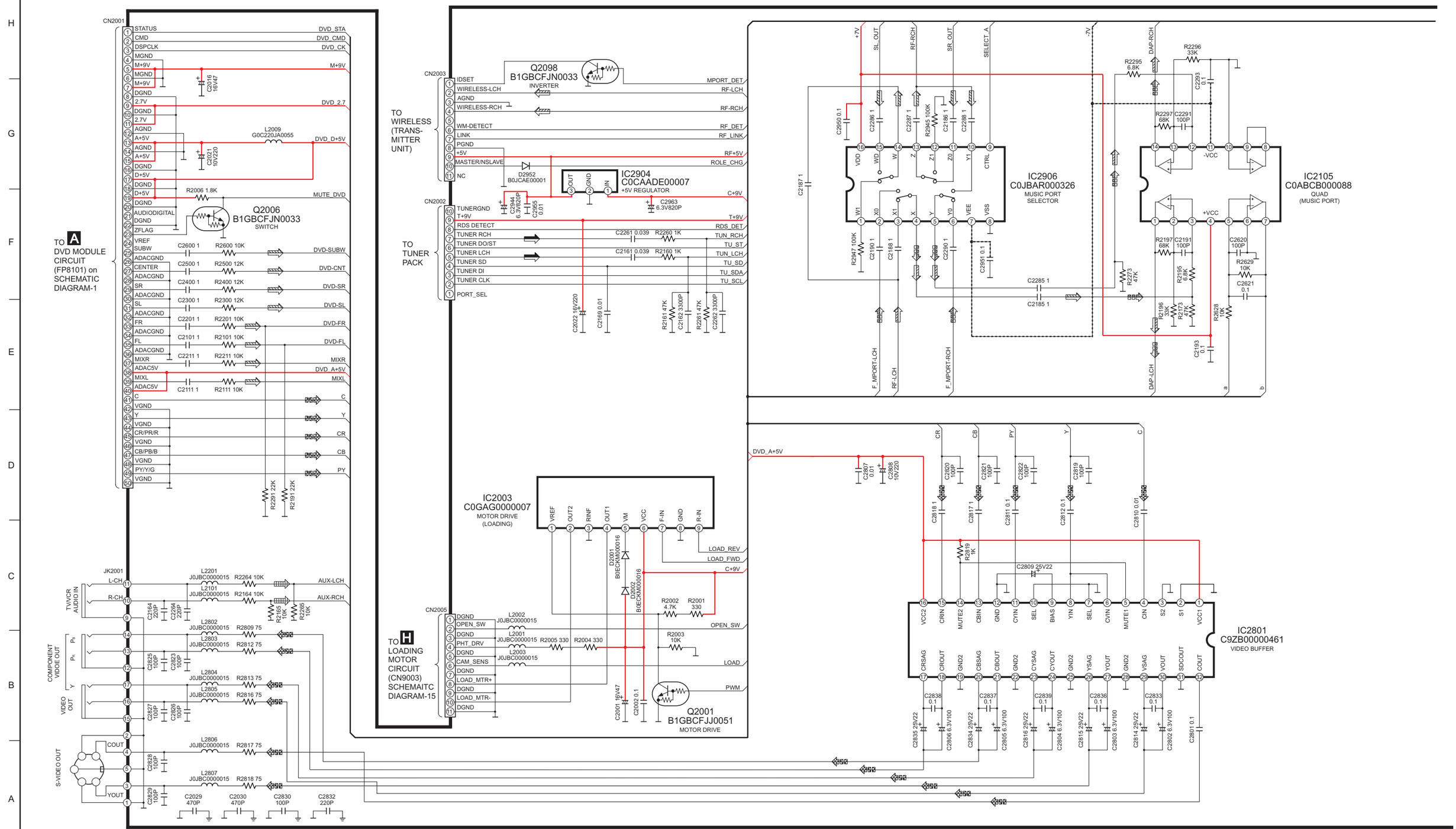
SA-HT640WPL DVD MODULE CIRCUIT

18.2. (B) Main Circuit

SCHEMATIC DIAGRAM-5

B MAIN CIRCUIT

:MAIN SIGNAL LINE :MUSIC PORT SIGNAL LINE :FM/AM SIGNAL LINE :DVD(VIDEO) SIGNAL LINE :AUX SIGNAL LINE :+B SIGNAL LINE :-B SIGNAL LINE

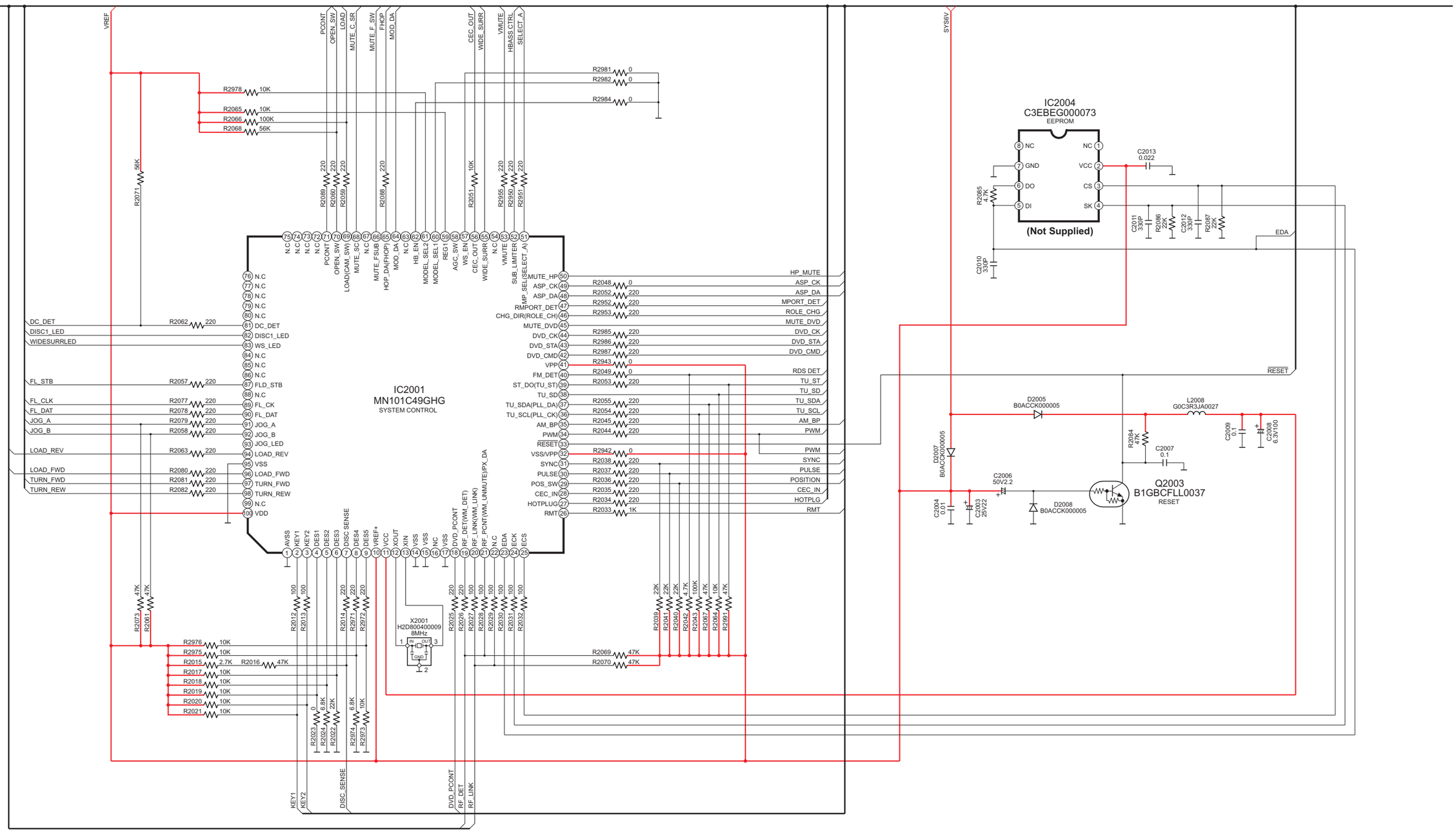


SA-HT640WPL MAIN CIRCUIT

SCHEMATIC DIAGRAM-6

B MAIN CIRCUIT

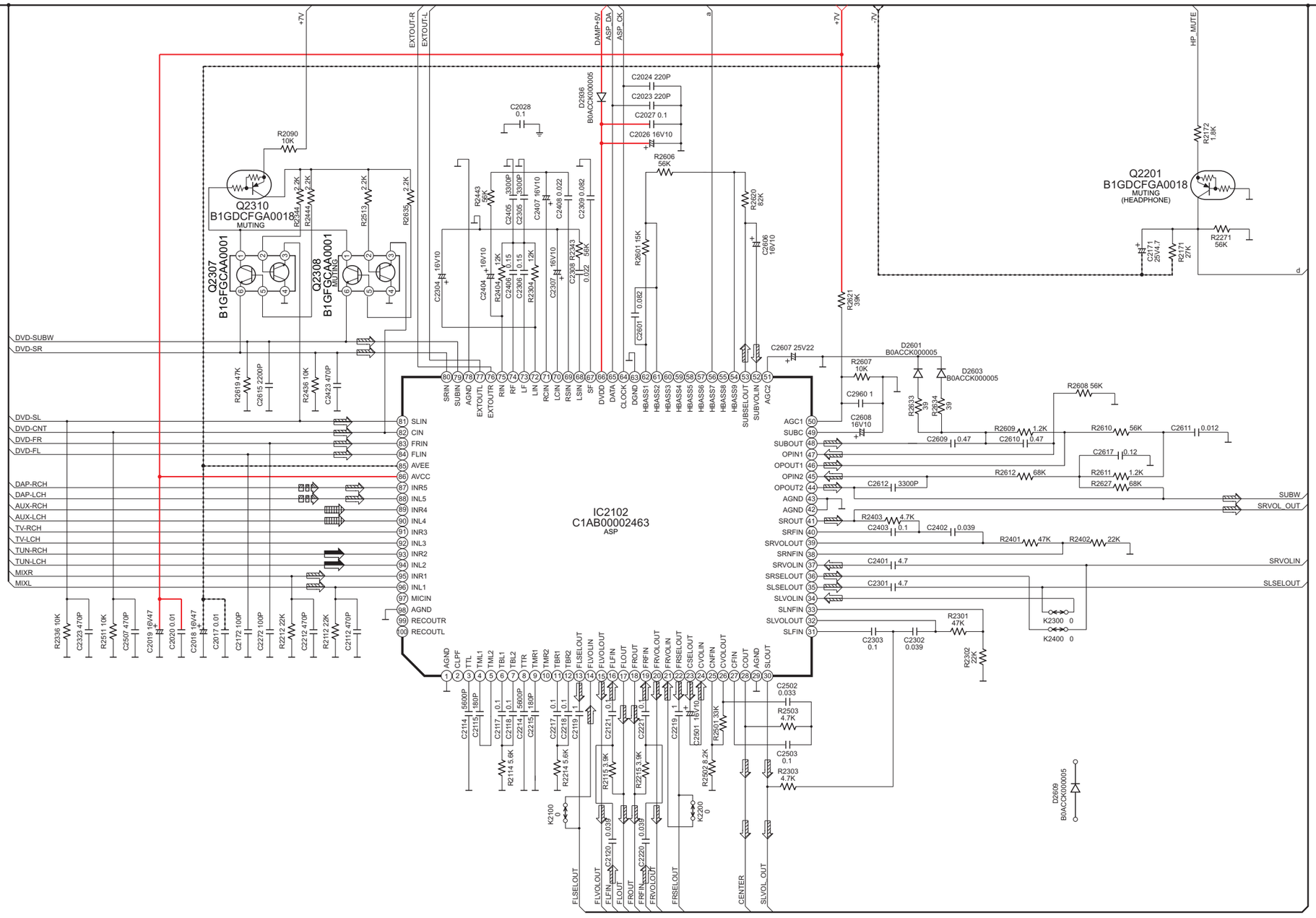
—— :+B SIGNAL LINE



SCHEMATIC DIAGRAM-7

B MAIN CIRCUIT

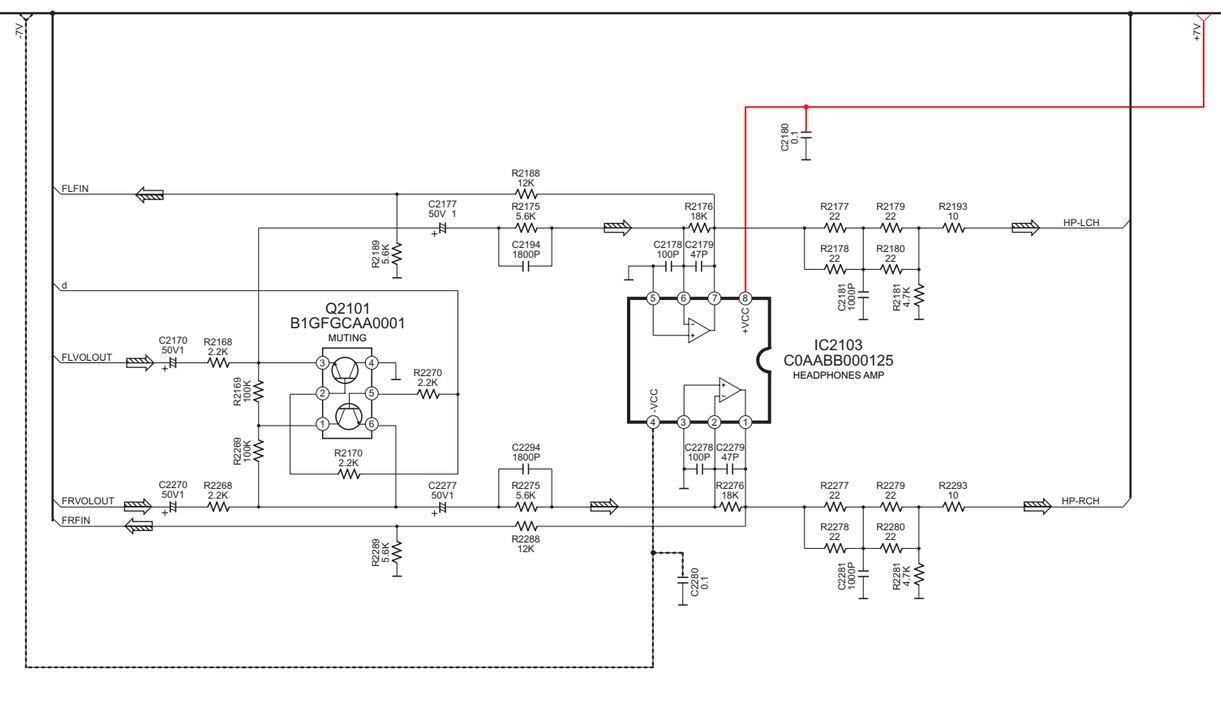
: AUX SIGNAL LINE : MUSIC PORT SIGNAL LINE : MAIN SIGNAL LINE : FM/AM SIGNAL LINE :+B SIGNAL LINE :-B SIGNAL LINE



SCHEMATIC DIAGRAM-8

B MAIN CIRCUIT

:MAIN SIGNAL LINE :+B SIGNAL LINE :-B SIGNAL LINE



SCHEMATIC DIAGRAM-9

B MAIN CIRCUIT

:MAIN SIGNAL LINE : MUSIC PORT SIGNAL LINE :+B SIGNAL LINE :-B SIGNAL LINE

SW+5V
C+9V
M+9V
T+9V
L2905 G0A200D00002
D2935 B0ACCK000005
DAMP+5V
RF+5V
IC2902 C0DAZYY00001 +9V REGULATOR
Q2904 B1AAKD000012 +5V REGULATOR
R2990 8.2
L2910 G0A200D00002
IC2901 C0DAZYY00001 +9V REGULATOR
D2906 B0ADCJ000020
D2951 B0ADCJ000020
D2907 B0ADCJ000020
DC_DET
Q2903 B1BACD000018 +7V REGULATOR
Q2909 B1GBCFJN0033 DC DETECT
Q2901 B1ABCF000176 DC DETECT
+7V
-7V
Q2906 B1BCCD000019 -7V REGULATOR
Q2907 B1ABCF000001 -7V REGULATOR
IC2907 C0CBADG00023 +5V REGULATOR (DVD)
IC2908 C0CBADG00023 +5V REGULATOR (DVD)
IC2903 C0DAAMH00012 SWITCHING REGULATOR
DVD_A+5V
DVD_D+5V
DVD_2.7
DVD_PCONT
Q2935 B1BACD000018 +2.7V REGULATOR
L2904 G0A200D00002
L2908 G0A200D00002
L2906 G0A200D00002
L2903 G0A200D00002
L2902 G0A1012A0028
L2909 G0A200D00002
D2902 B0BC7R500001
D2912 B0BC3R700004
D2950 B0BC7R500001
D2904 B0JCPD000025
FP2000 2A
FLOUT
FROUT
SUBW
SLVOL_OUT
SRVOL_OUT
CENTER
SR_OUT
SL_OUT
FHOP
Q2914 B1ADCF000001 MUTING
Q2911 B1ABCF000176 MUTING
Q2912 B1ABCF000176 MUTING
Q2913 B1ABCF000176 MUTING
MOD_DA
MUTE_C_SR
MUTE_F_SW
W4A
CN2011
FRONT L
FRONT R
SUBWOOFER
SURROUND L
SURROUND R
CENTER
MUTE_C_SR(MODE 1)
MUTE_F_SW(MODE 2)
FHOP
MUTE_CSW
MOD_DA
TO C POWER(DIGITAL AMP) CIRCUIT (CN5050) on SCHEMATIC DIAGRAM-10
CN2007
PWM
TURN_REW
TURN_FWD
DISC_SENS
PULSE
POSITION
C+9V
HP-RCH
HP-LCH
DISC1_LED
WIDESURRLED
FL_STB
FL_CLK
FL_DAT
JOG_A
JOG_B
VREF
SW+5V
BLUE_LED
KEY1
KEY2
RMT
VSS_GND
TO C POWER(SMPS) CIRCUIT (CN5708) on SCHEMATIC DIAGRAM-13
CN2013
FMPORT-RCH
FMPORT-LCH
TO F FL CIRCUIT (H6901) on SCHEMATIC DIAGRAM-14
H2010
-VCC
AGND
+VCC
DC_DET
SYS6V
SYNC
DC_GND
SW5VG_GND
DC_13V
AM_BP
PCONT
TO C POWER CIRCUIT (CN5701) on SCHEMATIC DIAGRAM-13

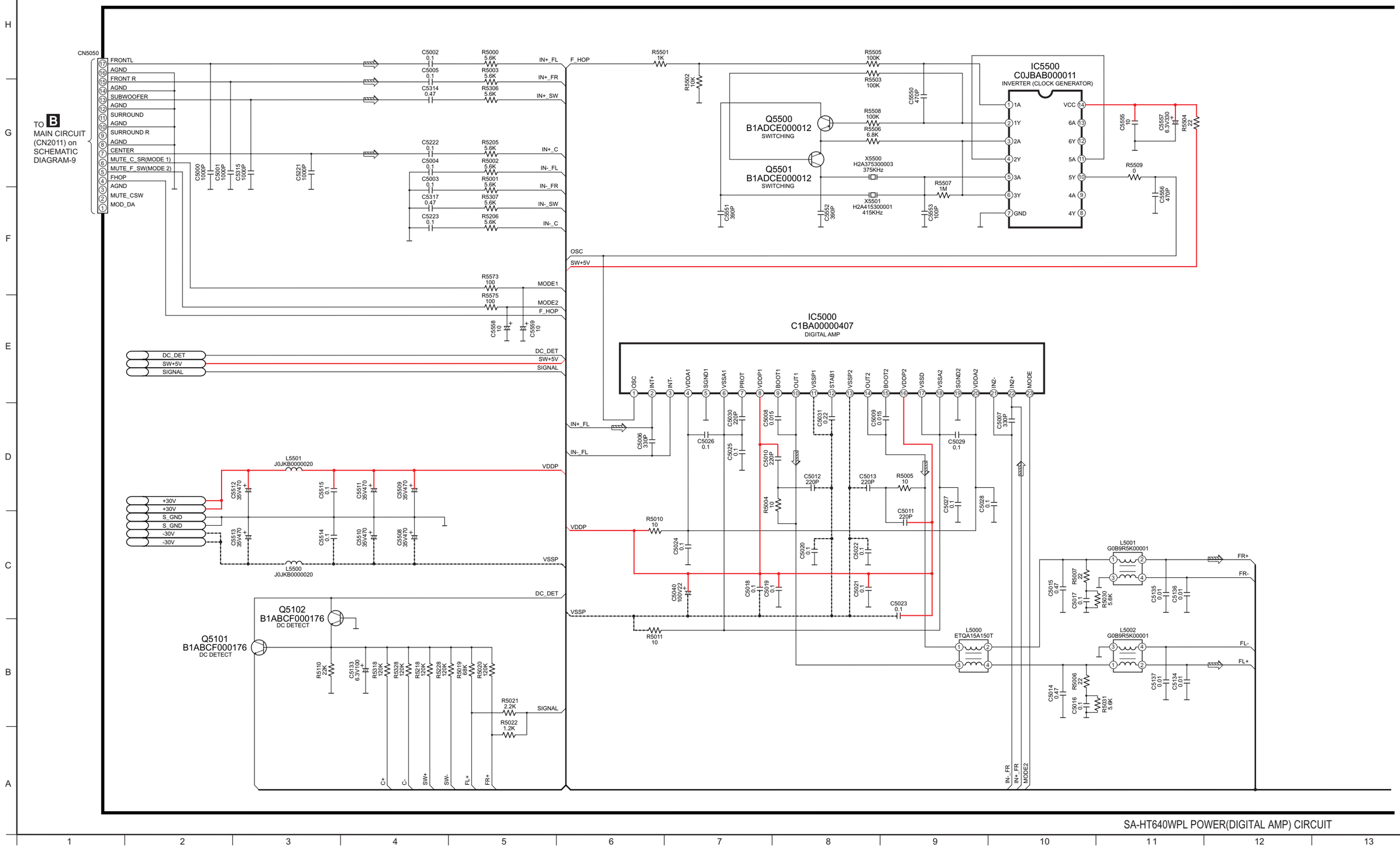
SA-HT640WPL MAIN CIRCUIT

18.3. (C) Power, AC-Inlet and Sub Power Circuit

SCHEMATIC DIAGRAM-10

C POWER(DIGITAL AMP) CIRCUIT

:MAIN SIGNAL LINE — :+B SIGNAL LINE ---- :-B SIGNAL LINE

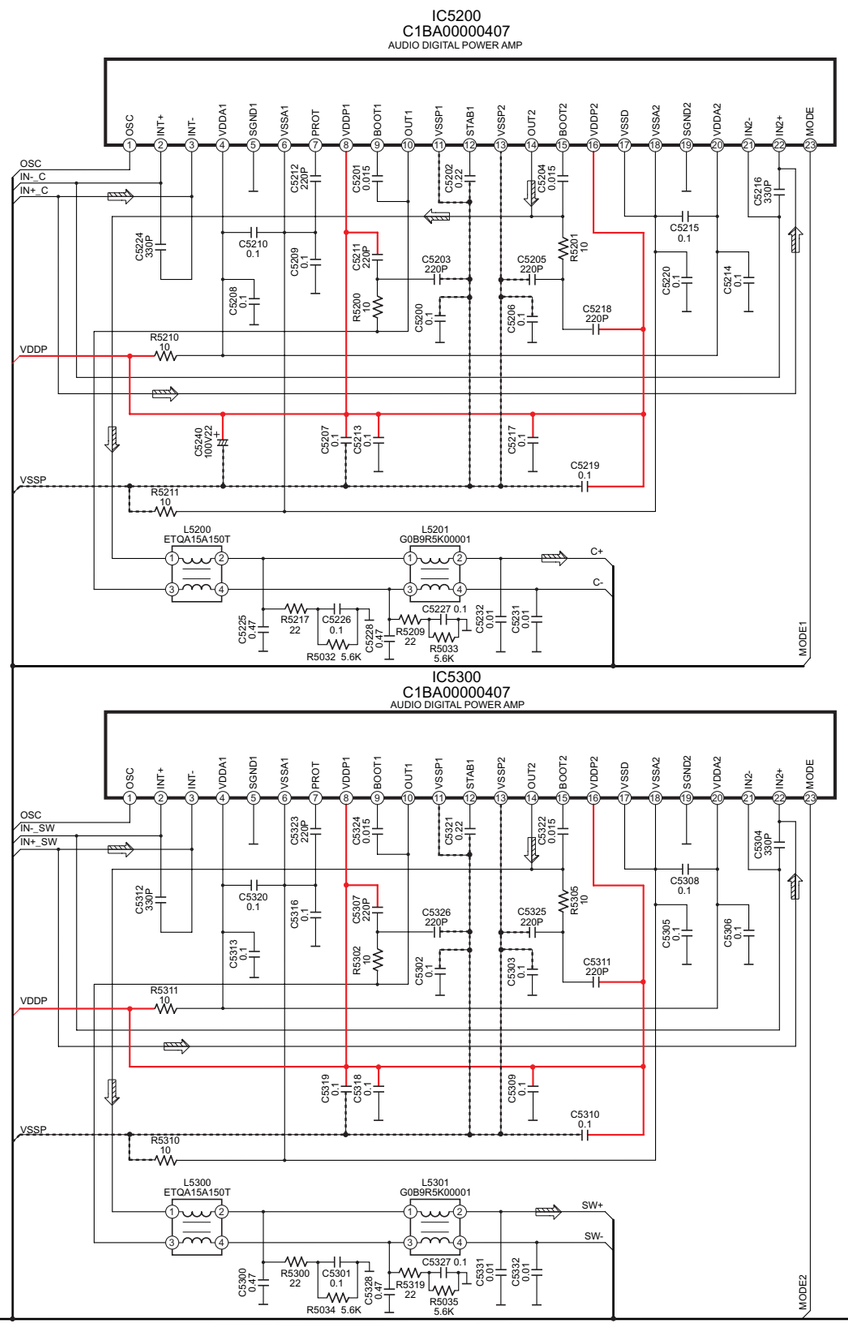


SA-HT640WPL POWER(DIGITAL AMP) CIRCUIT

SCHEMATIC DIAGRAM-11

C POWER(DIGITAL AMP) CIRCUIT

:MAIN SIGNAL LINE — :+B SIGNAL LINE ---- :-B SIGNAL LINE

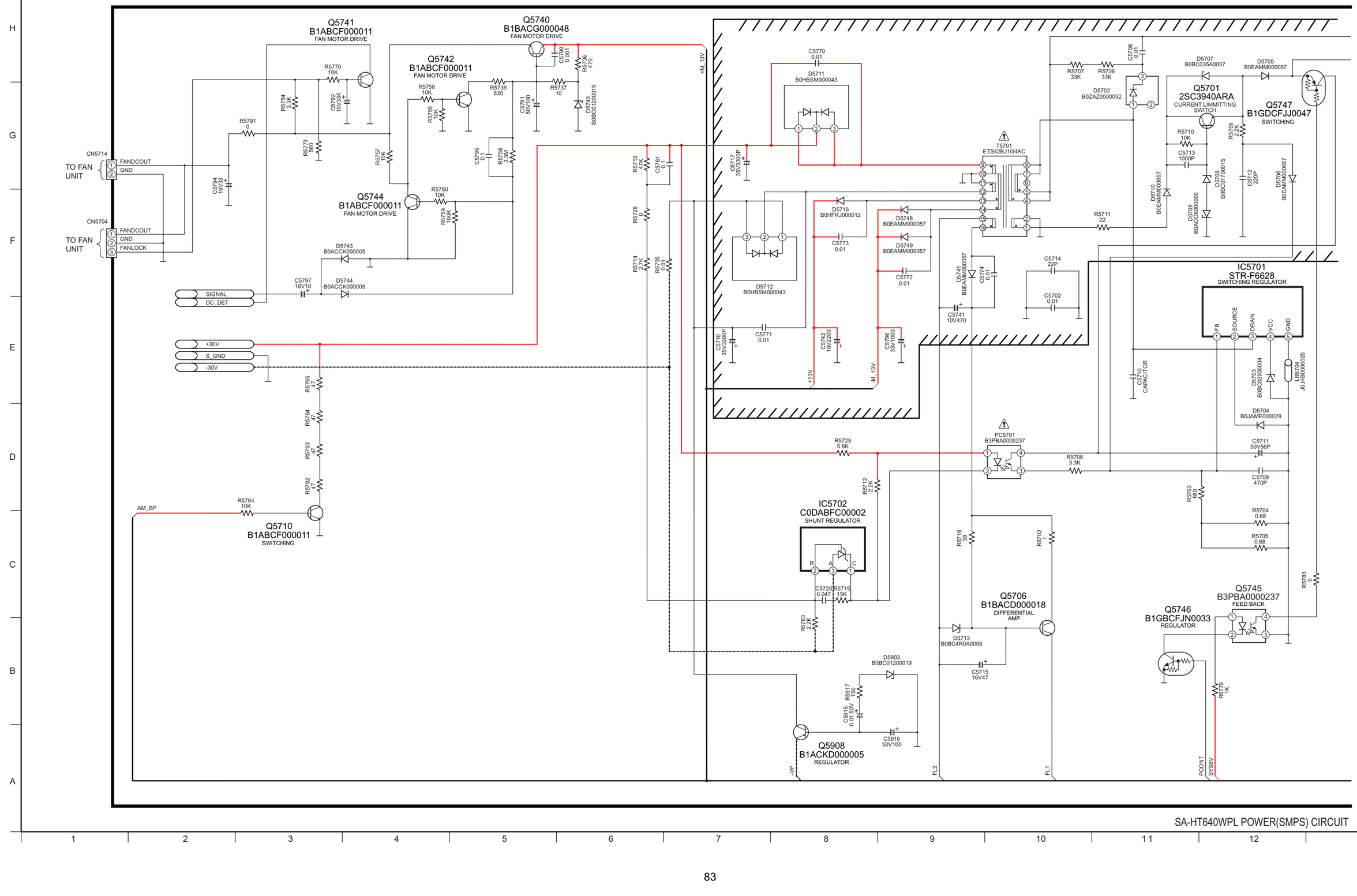


SA-HT640WPL POWER(DIGITAL AMP) CIRCUIT

SCHEMATIC DIAGRAM-12

C POWER(SMPS) CIRCUIT

:+B SIGNAL LINE :-B SIGNAL LINE



SA-HT640WPL POWER(SMPS) CIRCUIT

SCHEMATIC DIAGRAM-13

C POWER(SMPS) CIRCUIT

D AC-INLET CIRCUIT

:+B SIGNAL LINE :-B SIGNAL LINE

E SUB POWER CIRCUIT

D5701 B0FBAR000018
TH5701 D40A20R200001
C5706 0.22
L5703 ELF22V035B
(RED)
(BLK)
R5701 3.3M
C5737 22P
C5736 22P
R5705 390K
C5700 2500V682P
R5704 390K
R5778 4.7
Q5748 B3PBA0000237 SYNC SWITCH
SYS6V
SYNC
Q5705 B1ABCF000176 INVERTER
R5788 100K
C5722 0.1
T5721 ETS19AB1Z6AG
D5723 B0EAMM000057
R5771 10
D5721 B0EAMM000057
C5733 16V220
R5724 1.2K
R5725 560
R5772 4.7
C5727 47P
IC5721 C0DABYY00002 SWITCHING REGULATOR
D OCP VCC GND FB START
R5776 330
C5732 0.1
Q5704 B1ABCF000176 CURRENT LIMITTING SWITCH
R5726 1K
D5724 B0BC3R700004
R5723 4.7K
C5729 50V22
PC5721 B3PBA0000237
R5727 2.2K
R5930 10K
Q5931 B1ABCF000011 TRANSFORMER TEMP. DETECT
Q5932 B1ADCF000001 TRANSFORMER TEMP. DETECT
R5931 10K
R5932 10K
R5933 8.2K
R5934 10K
D5764 B0ACCK000005
D5761 B0ACCK000005
Q5930 B1ABCF000011 TRANSFORMER TEMP. DETECT
TH5702 D4CC11040013
C5738 680P
R5774 4.7
D5746 B0BC5R600003
R5777 3.3K
D5752 B0BC3R400001
C5725 50V2.2
D5745 B0EAKM000117
DC_DET
+13V
+M_13V
F1 25V 6.3A
ZA5702
ZA5701
L5701 ELF15N050A
DZ5701 0.22
R5751 470K
C5701 250V0.1
P5701
AC120V 60Hz
CHASSIS GND
CN5710
CN5711
ZJ5701 K9ZZ00001279
IC5750 C0GAG0000007 MOTOR DRIVE (TRAY)
VREF OUT2 RINF OUT1 VM VCC F-IN GND R-IN
R5750 330
R5780 330
R5753 330
R5752 4.7K
D5751 B0ECKM000016
D5750 B0ECKM000016
R5761 10K
Q5750 B1GBCFJJ0051 MOTOR DRIVE
PWM
L5710 J0JKB0000020
L5720 J0JKB0000020
L5750 J0JBC0000015
L5752 J0JBC0000015
L5753 J0JBC0000015
-30_SENSE
+30V
DC_DET
SYS6V
SYNC
+13V
AM_BP
PCONT
TURN_REV
TURN_FWD
C+9V
DISC_SENS
PULSE
POSITION
CN5701
-VCC GND +VCC DC_DET SYS6V SYNC DC_GND DC_GND DC_GND M+13V DC+13V AM_BP PCONT
CN5702
TRV- TRV+ DGND PHOTO_DRIVER DGND DISC_SENSOR DGND PULSE_SENSOR DGND POSITION_SENSOR DGND
TO B MAIN CIRCUIT (H2010) on SCHEMATIC DIAGRAM-9
TO J SENSOR CIRCUIT (CN9102) on SCHEMATIC DIAGRAM-15
CN5709
CN5712
STBY_LED KEY1 DGND VREF RMT F+ F- FLGND SW+5V FL_IC_DATA FL_IC_CLOCK FL_IC_STB -VP WIDESURR LED DISC5_LED F_MPORT-RCH AGND F_MPORT-LCH MPORT_CTRL DGND KEY2 VREF JOG_B JOG_A HP-RCH AGND HP-LCH
CN5713
CN5706
CN5708
PWM TURN_REV TURN_FWD DISC_SENS PULSE POSITION
CN5707
CN5705
TO F FL CIRCUIT (CN6902) on SCHEMATIC DIAGRAM-14
TO G HEADPHONE CIRCUIT (CN6901) on SCHEMATIC DIAGRAM-14
MGND C+9V F_MPORT-RCH F_MPORT-LCH HP-RCH AGND HP-LCH DISC5_LED WIDESURR_LED FL_IC_STB FL_IC_CLOCK FL_IC_DATA JOG_A JOG_B VREF SW+5V BLUELED KEY1 KEY2 DGND RMT VSS_GND
TO B MAIN CIRCUIT (CN2007) on SCHEMATIC DIAGRAM-9
SW+5V

SA-HT640WPL POWER(SMPS) CIRCUIT

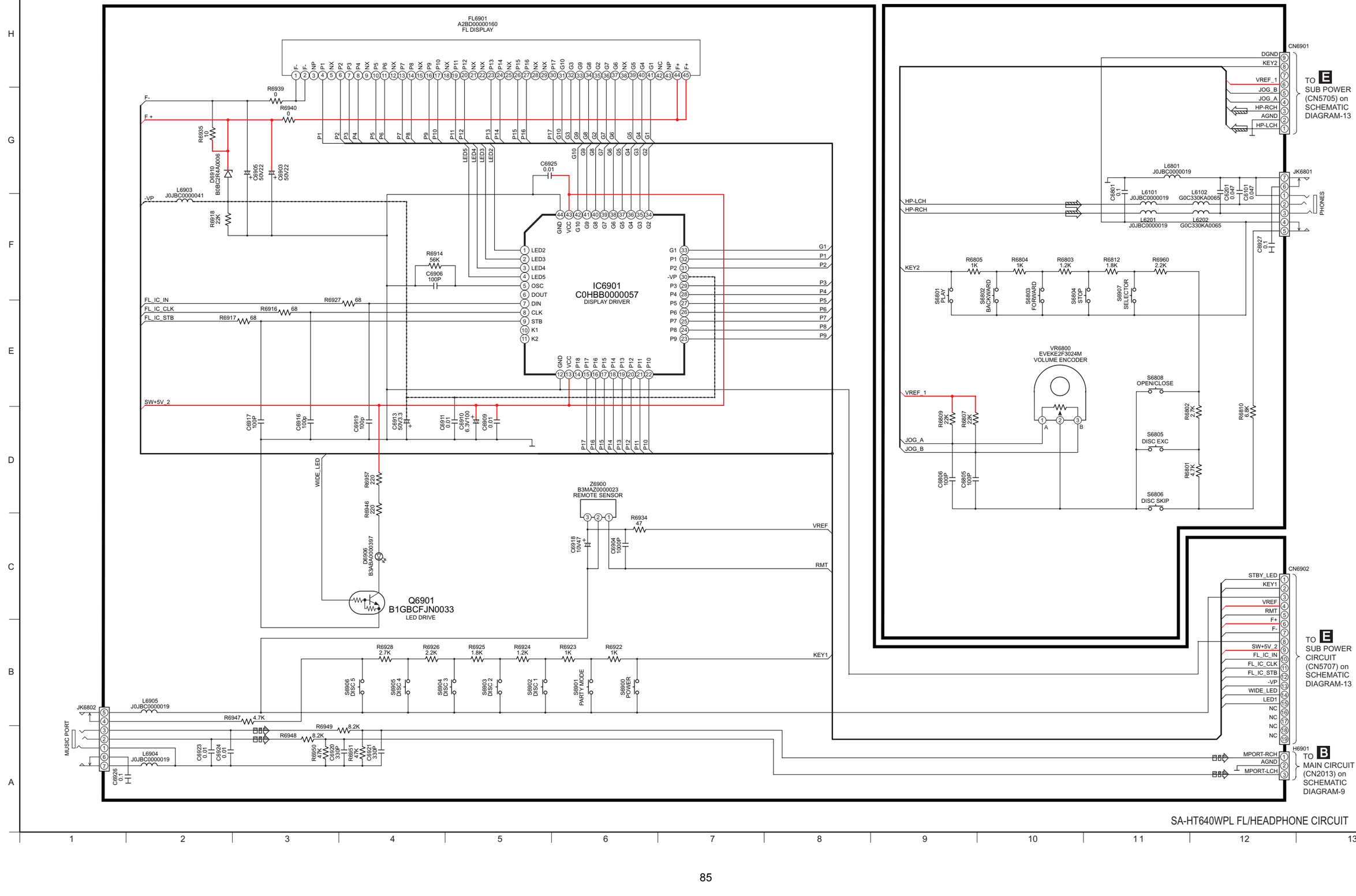
18.4. (D) FL and Headphone Circuit

SCHEMATIC DIAGRAM-14

F FL CIRCUIT

: MUSIC PORT SIGNAL LINE : MAIN SIGNAL LINE :+B SIGNAL LINE :-B SIGNAL LINE

G HEADPHONE CIRCUIT

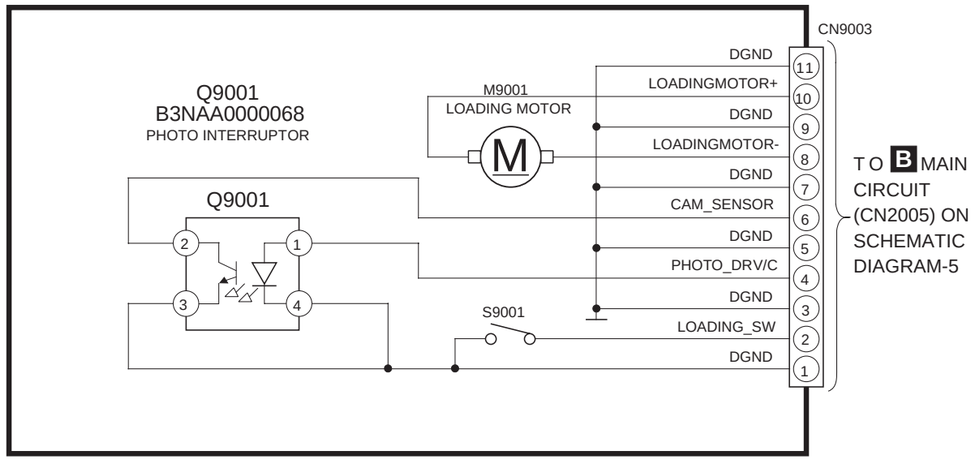


SA-HT640WPL FL/HEADPHONE CIRCUIT

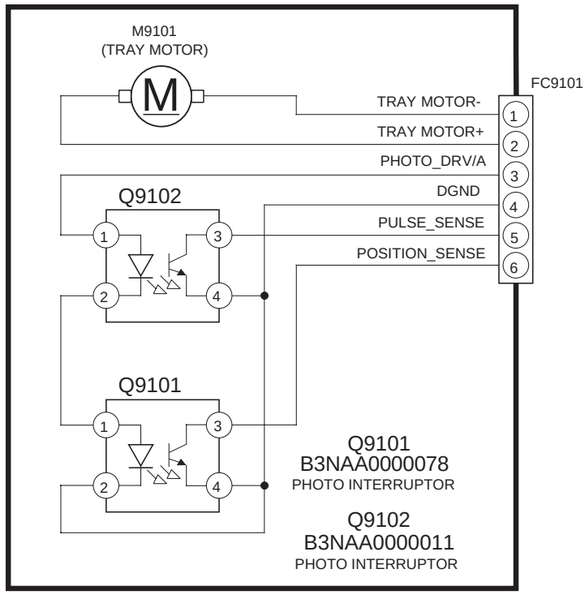
18.5. (E) Loading Motor, Tray Motor and Sensor Circuit

SCHEMATIC DIAGRAM-15

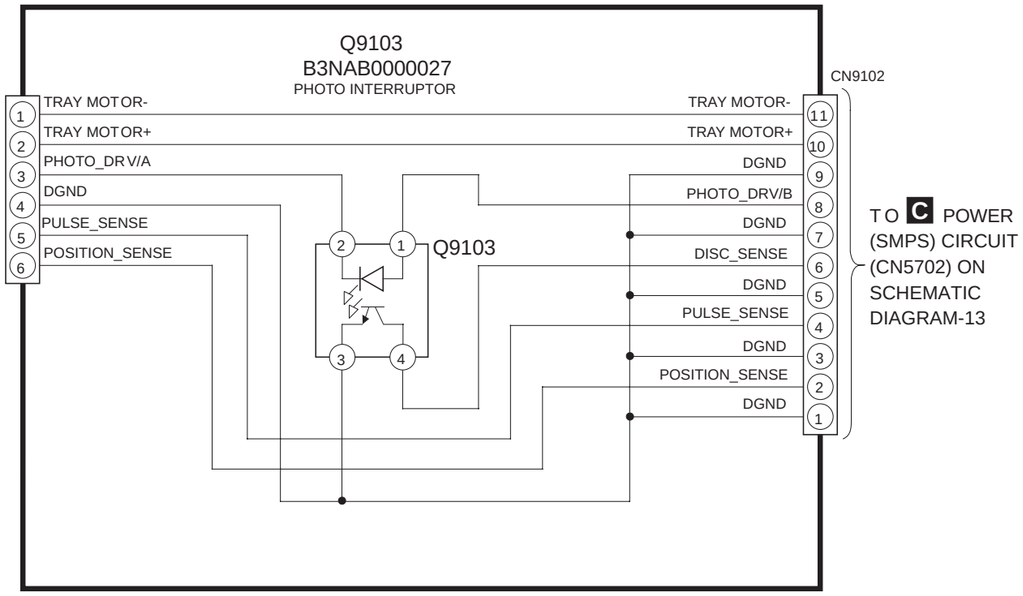
H LOADING MOTOR CIRCUIT



I TRAY MOTOR CIRCUIT



J SENSOR CIRCUIT



SA-HT640WPL LOADING MOTOR/TRAY MOTOR/SENSOR CIRCUIT

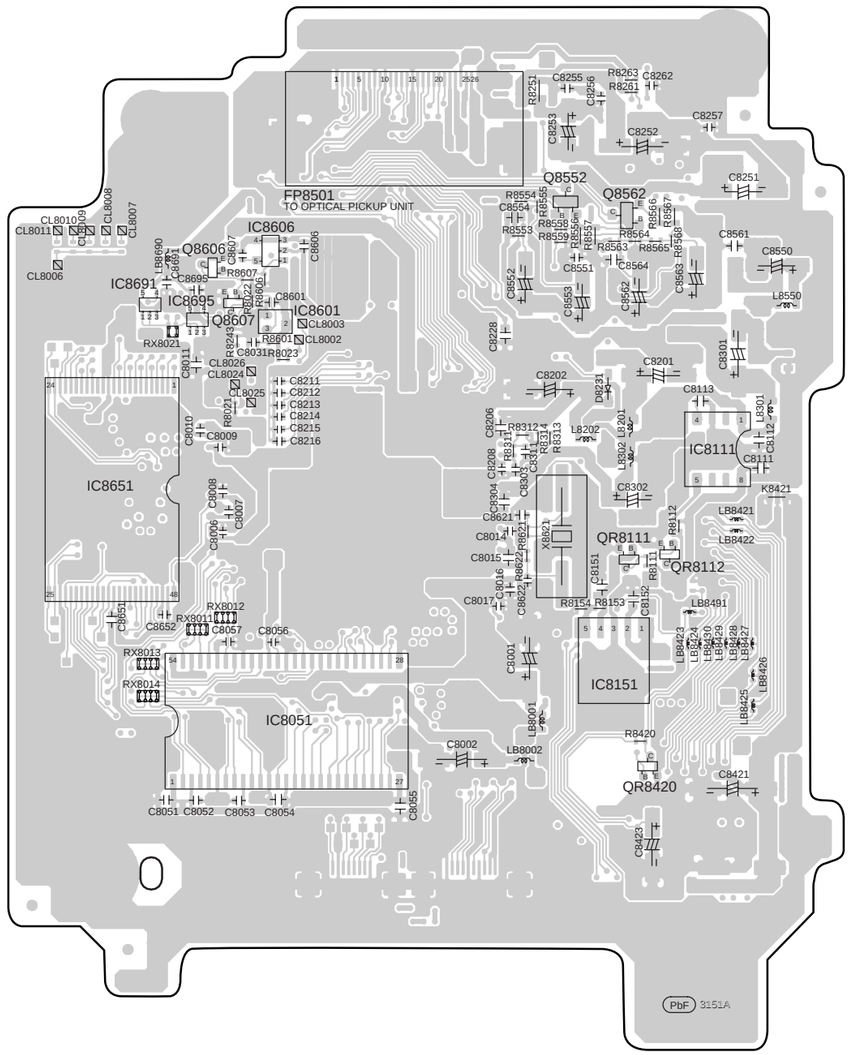
19 Printed Circuit Board

19.1. (A) DVD Module P.C.B.

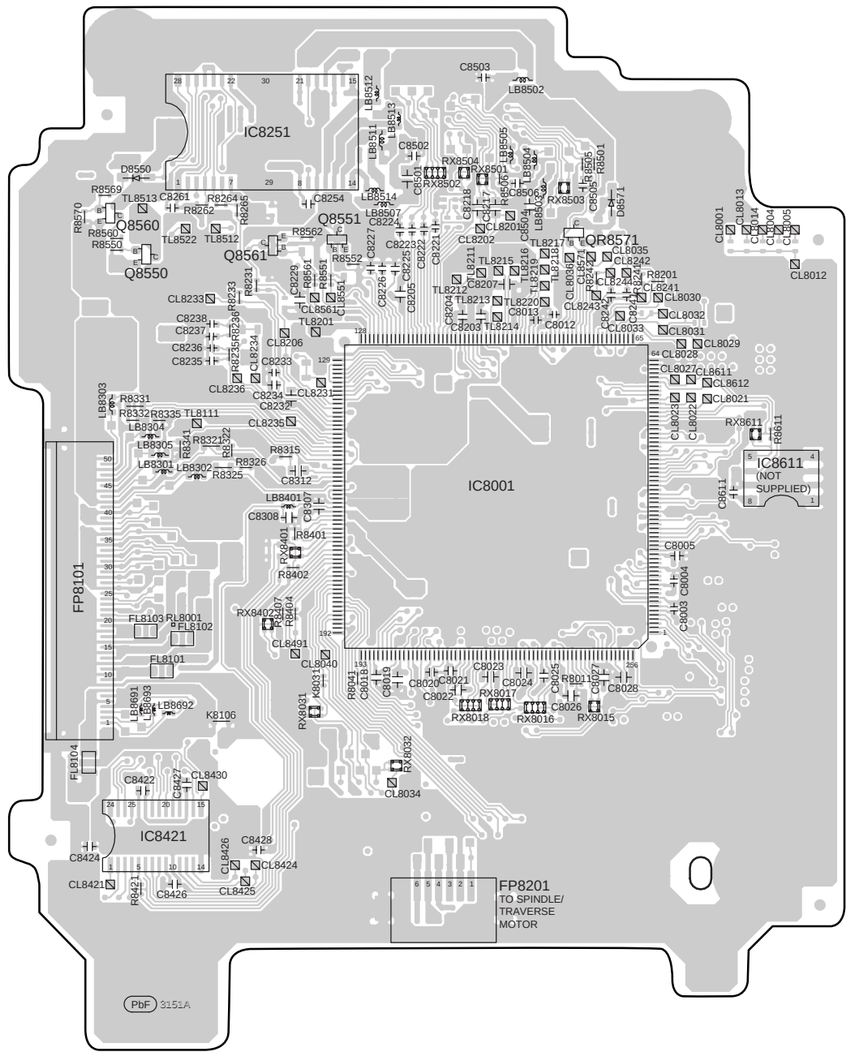
A B C D E F G H I J K L M N

1 2 3 4 5 6 7 8 9

A DVD MODULE P.C.B. (REP4080A)



(SIDE A)

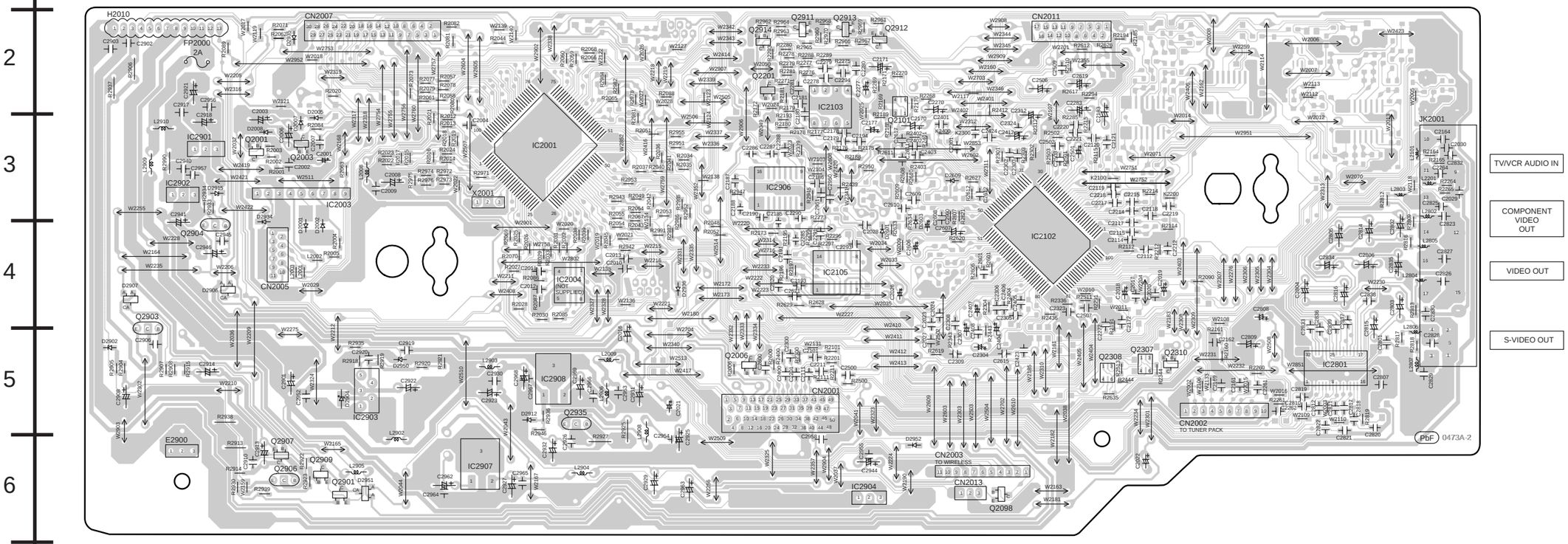


(SIDE B)

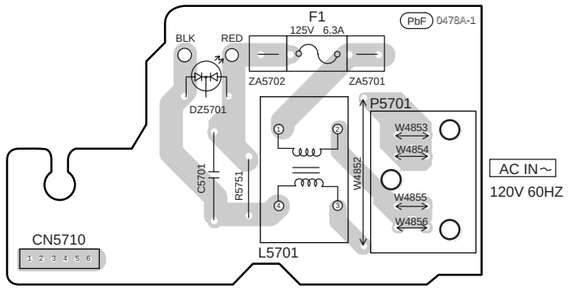
SA-HT640WPL DVD MODULE P.C.B.

19.2. (B) Main, AC-Inlet and Sub Power P.C.B.

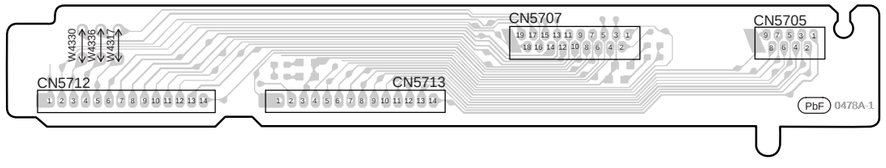
B MAIN P.C.B. (REPX0509B)



D AC-INLET P.C.B. (REPX0515A)

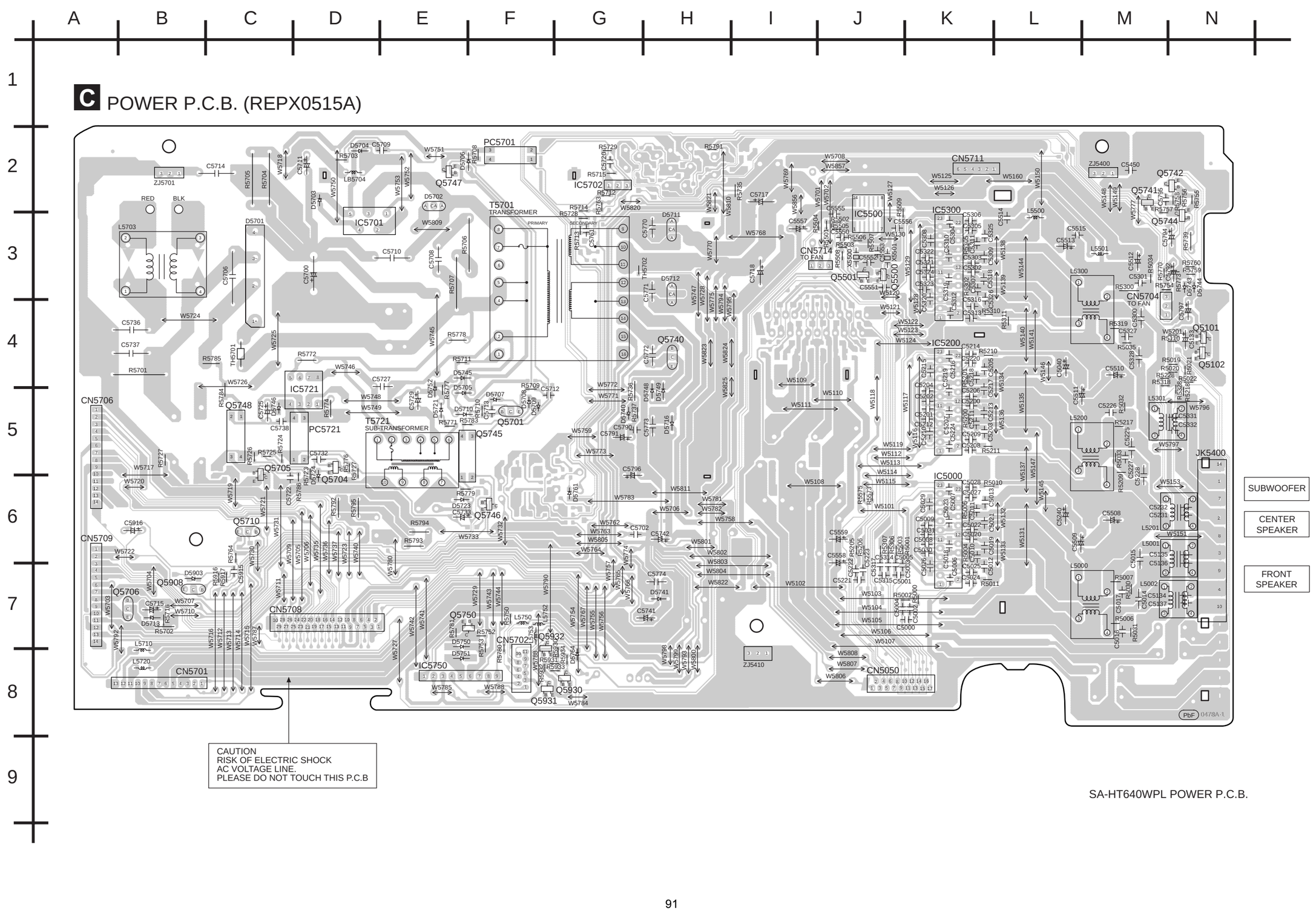


E SUB POWER P.C.B. (REPX0515A)



SA-HT640WPL MAIN/AC-INLET/SUB-POWER P.C.B.

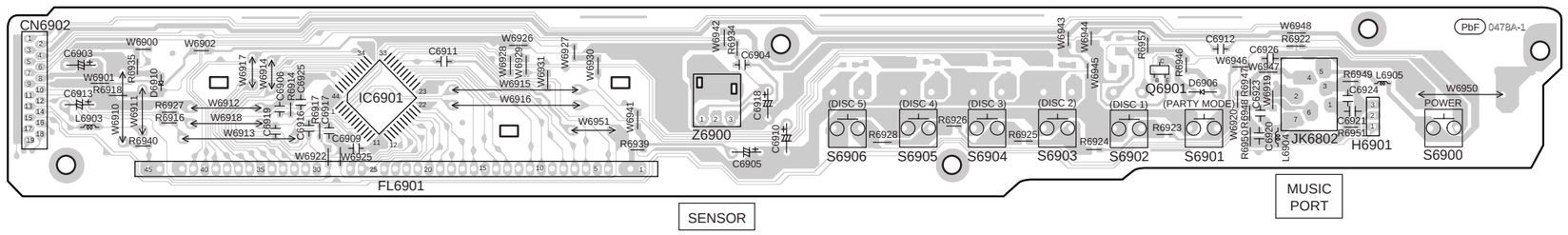
19.3. (C) Power P.C.B.



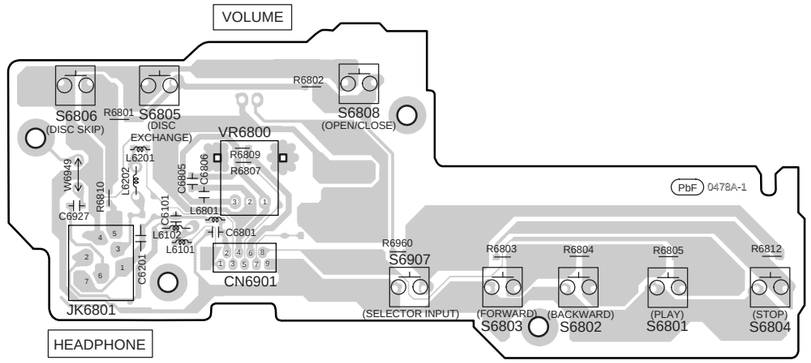
SA-HT640WPL POWER P.C.B.

19.4. (D) FL, Headphone, Loading Motor, Tray Motor and Sensor P.C.B.

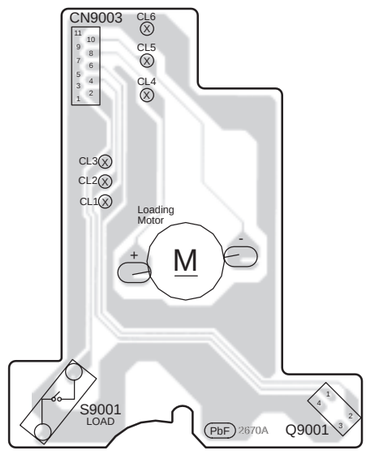
F FL P.C.B. (REPX0515A)



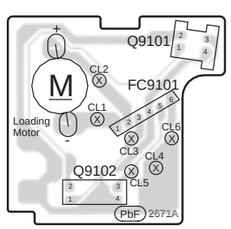
G HEADPHONE P.C.B. (REPX0515A)



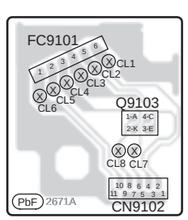
H LOADING MOTOR P.C.B. (REP3465B)



I TRAY MOTOR P.C.B. (REP3466B)



J SENSOR P.C.B. (REP3466B)



SA-HT640WPL FL/HEADPHONE/LOADING MOTOR/TRAY MOTOR/SENSOR P.C.B.

20 Basic Troubleshooting Guide

20.1. Basic Troubleshooting Guide for DVD Module

20.1.1. Firmware and Key Download

Problems	Checking Points	Checking components
1) Firmware downloading fails	a) Check supply voltages on ICs pins	IC8111, IC8651, IC8001, IC8051, IC8151
	b) Check Oscillation frequency and level	X8621 , C8621 , C8622 , R8621 , R8622
2) CPPM/CPRM key download fails	c) Check reset signal and power voltage rise time	IC8601
	d) Check Flash ROM address and data bus	IC8651
	e) Check SDRAM addresand data bus, CLK and other control signals waveform	IC8051
	f) Check EEPROM CLK & data line	IC8611
	***Compare the above with OK condition Module**	***Check for solder short and/or component missing/damaged**

20.1.2. Initialisation and playability

Problems	Checking Points	Checking components
1) No DVD logo screen saver	a) Check supply voltages (3.3V and 1.2V) b) Check video signals especially Luminance,Y signal c) Check SDRAM, EEPROM and Flash ROM for solder short.	IC8111, IC8151 LB8301, R8321, R8322 IC8051, IC8611, IC8651
2) Picture black and white only	a) Check C (chroma) signal if using Composite or S-Video b) Check Pb & Pr signal if using Component	LB8302 LB8304 , LB8305
3) Distorted picture or abnormal sound is heard during initialisation	a) Check SDRAM addresand data bus, CLK and other control signals waveform b) Check video signals c) Check audio DAC circuitry ***Compare the above with OK condition Module**	IC8051 LB8301, R8321, R8322, LB8302, R8325, R8326 IC8421 ***Check for solder short and/or component missing/damaged**
4) No TOC/Long TOC	a) Check motor driver circuitry (voltages) b) Check laser drive circuitry (voltages and current) c) Check LSI connection to motor drive circuitry ***Compare the above with OK condition Module**	IC8251 Q8550, Q8551, Q8552, Q8560, Q8561, Q8562 IC8001 ***Check for solder short and/or component missing/damaged**
5) Disc not spinning 6) Traverse not moving 7) Traverse and spindle abnormal movement	a) Check connection from Backend Module to Traverse unit b) Check motor driver circuitry on voltages and control signals ***Compare the above with OK condition Module**	FP8251, FP8531, IC8251 M+9V = FP8101 (PIN 5/ 7), IC8251 (PIN 21) ***Check for solder short and/or component damaged**
8) Cannot read disc but spindle is spinning - Cannot read CD - Cannot read DVD	a) Check laser drive circuitry (voltages and current) - Check CD laser drive - Check DVD laser drive ***Check voltages and LD current and compare with OK Module**	Q8550, Q8551, Q8552, Q8560, Q8561, Q8562 Q8550, Q8560, Q8561, Q8562 Q8550, Q8551, Q8552, Q8560 ***Check for solder short and/or component missing/damaged**
9) Block noise during play	a) Check SDRAM address and data bus signal ***Compare the above with OK condition Module**	IC8051 ***Check for solder short and/or component damaged**
10) DVD Audio no audio output	a) CPPM key download NG, check test point for CPPM key download b) Check EEPROM ***Check for test point damaged or broken pattern**	IC8611 ***Check for component damaged**
11) No audio	a) Check audio signal IC8421 (5.1ch), IC8420 (2.1ch) b) Check audio DAC control signals c) Check Zero Flag and A-Mute signal ***Compare the above with OK condition Module**	(MIXL / MIXR / FL / FR) LB8421 , LB8422 , LB8425 , LB8426 (SURL / SURR / CEN / SW) LB8427 , LB8428 , LB8429 , LB8431 (IC8421 / IC8420) Pin 5 , 6 , 7 & 8 QR8420 , LB8424 ***Check for solder short and/or component missing/damaged**

20.2. Basic Troubleshooting Guide for Traverse Unit

Problems	Checking Points	Checking components
1) Distorted picture or abnormal sound is heard during initialisation	a) Check SDRAM addresand data bus, CLK and other control signals waveform b) Check video signals c) Check audio DAC circuitry ***Compare the above with OK condition Module**	IC8051 LB8301, R8321, R8322, LB8302, R8325, R8326 IC8421 ***Check for solder short and/or component missing / damaged**
2) No TOC/Long TOC	a) Check motor driver circuitry (voltages) b) Check laser drive circuitry (voltages and current) c) Check LSI connection to motor drive circuitry ***Compare the above with OK condition Module**	IC8251 Q8550, Q8551, Q8552, Q8560, Q8561, Q8562 IC8001 ***Check for solder short and/or component missing / damaged**
3) Disc not spinning 4) Traverse not moving 5) Traverse and spindle abnormal movement	a) Check connection from Backend Module to Traverse unit b) Check motor driver circuitry on voltages and control signals ***Compare the above with OK condition Module**	FP8201 IC8251 ***Check for solder short and/or component damaged**
6) Cannot read disc but spindle is spinning - Cannot read CD - Cannot read DVD	a) Check laser drive circuitry (voltages and current) - Check CD laser drive - Check DVD laser drive ***Check voltages and LD current and compare with OK Module**	Q8550, Q8551, Q8552, Q8560, Q8561, Q8562 Q8550, Q8560, Q8561, Q8562 Q8550, Q8551, Q8552, Q8560 ***Check for solder short and/or component missing / damaged**
7) Block noise during play	a) Check SDRAM address and data bus signal ***Compare the above with OK condition Module**	IC8051 ***Check for solder short and/or component damaged**

Problems	Checking Points	Checking components
8) Jitter out of specification	a) Check LD current b) Check OPU (change to other unit and confirm)	

20.3. Troubleshooting Guide for Wireless Surround Speaker (SB-SA640)

20.3.1. Troubleshooting for digital receiver unit (SB-SA640)

Problem	Phenomenon	Possible Causes
No Audio Output (At surround speaker)	1. No wireless connection between the main unit and the digital receiver unit (SB-SA640). Note: FL Display on main unit will not show "W" if the wireless connection link is not established. If FL displays shows "W", it means the wireless link connection is established.	1. Transmitter card is not inserted properly in the main unit. 2. No AC input power to the digital receiver unit (SB-SA640) or AC cord faulty. 3. Shorted/Open circuit at speaker jack. 4. SMPS module unit or the digital amp P.C.B is not working properly (For more information, refer to section 8.2 on the troubleshooting of the digital amp circuit.) 5. No +5V supply voltage to the transmitter card due to poor connection at the transmitter chassis unit to MAIN P.C.B (main unit) 6. No signal from the main unit. (Refer to the troubleshooting for main unit) 7. Poor contact or no contact between the transmitter card to the transmitter chassis. 8. Transmitter card is not working properly due to faulty parts within.
Intermittent Audio output (At surround speaker)	Wireless link connection is established with FL display showing "W"	1. Transmitted signal interrupted by nearby operating devices. 2. Loose speaker wire connection SMPS module unit or the digital amp P.C.B is not working properly (For more information, refer to following section on the troubleshooting of the digital amp circuit.)

Special Note: The digital transceiver and the receiver module P.C.B should be replaced using the transmitter assembly (RFKVHFX60PP-S) if it is found to be in not working condition.

20.3.2. Troubleshooting for digital amp circuit (Step By Step guide)

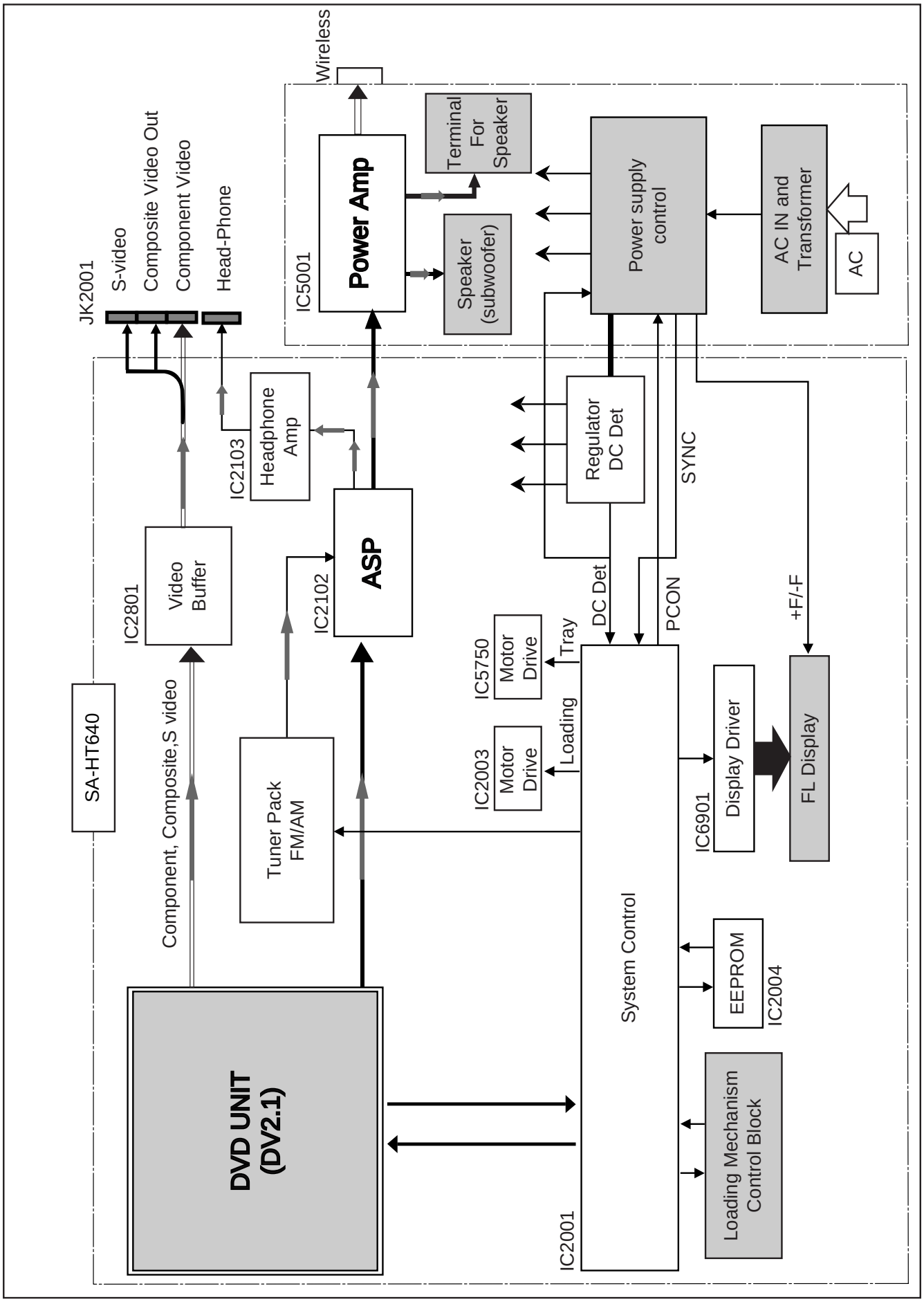
Below is the step by step guide on the troubleshooting of the digital amp circuit (When there is no audio output): -

Procedures	Checking points	Checking components
Step 1	Check open/short circuit connection at speaker jack	JK1002, L1601-L1603 (Replace parts when determine NG)
Step 2	1. Check regulated supply voltage +27V (pin 4, 8, 16 & 20) 2. Check regulated supply voltage -27V (pin 6, 11, 13 & 18) Regulated supply to digital amp IC from SMPS module unit.	Digital amp IC, IC1500 1. If no supply voltages to IC1500, go to Step 3. 2. If there is regulated voltage supply to IC1500, go to Step 4.
Step 3	Check for supply voltage +30V (pin 1 & 2) / -30V (pin 6 & 7) & +5V (pin 8)	No supply voltages (from SMPS module unit to Digital amp P.C.B), check the following: - 1. Wire cable (W1) at H1000 (Digital amp P.C.B) 2. F1 (blown fuse), 3. SMPS module unit (Faulty parts with burnt mark etc) 4. AC Inlet Jack (SMPS module unit). If there is supply from SMPS module unit, go to Step 4 Special note: SMPS module should be replaced if determined NG.
Step 4	Check for supply voltage at pin 4 (+VCC) & 8 (-Vcc)	Op-amp IC, IC1501 If there is supply voltages to IC1501, proceed to Step 6If no supply voltages to IC1501, proceed to Step 5
Step 5	Check voltage regulator circuit	Q1000, Q1002, Q1010 & Q1011If parts NG, replaced.
Step 6	1. Check for output audio signal at pin 10 & 14 2. Check for input audio signal at pin 3 & 22	Digital amp IC, IC1500 If there is input signal but no generated output signal from IC1500 (all supply voltages is present), replaced IC1500. If there is no input audio signal, go to Step 7 for checking on the Op-amp output.
Step 7	1. Check for output audio signal at pin 1 & 7 2. Check for input audio signal at pin 2 & 6	Op-amp IC, IC1501 If there is input signal but no output signal from IC1501, (all supply voltages is present), replaced IC1501. If there is no input signal, go to Step 8
Step 8	Check input audio signal at pin 5 & 7 (CN1003)	If no input signal, check following: 1. FFC cable NG 2. FFC cable not connected properly 3. Receiver module P.C.B NG (parts NG - Baseband IC, RF antenna etc) 4. No signal received by Receiver module due to no transmission from the digital transmitter. 5. No supply to receiver module. (Check pin 8 at H1000 from SMPS module)
Step 9 (For music port input only)	Check input signal at pin 6 & 8 (CN1002)	If no input signal, check following: 1. If wire cable is not connected properly or NG. 2. Music port jack abnormal (shorted).

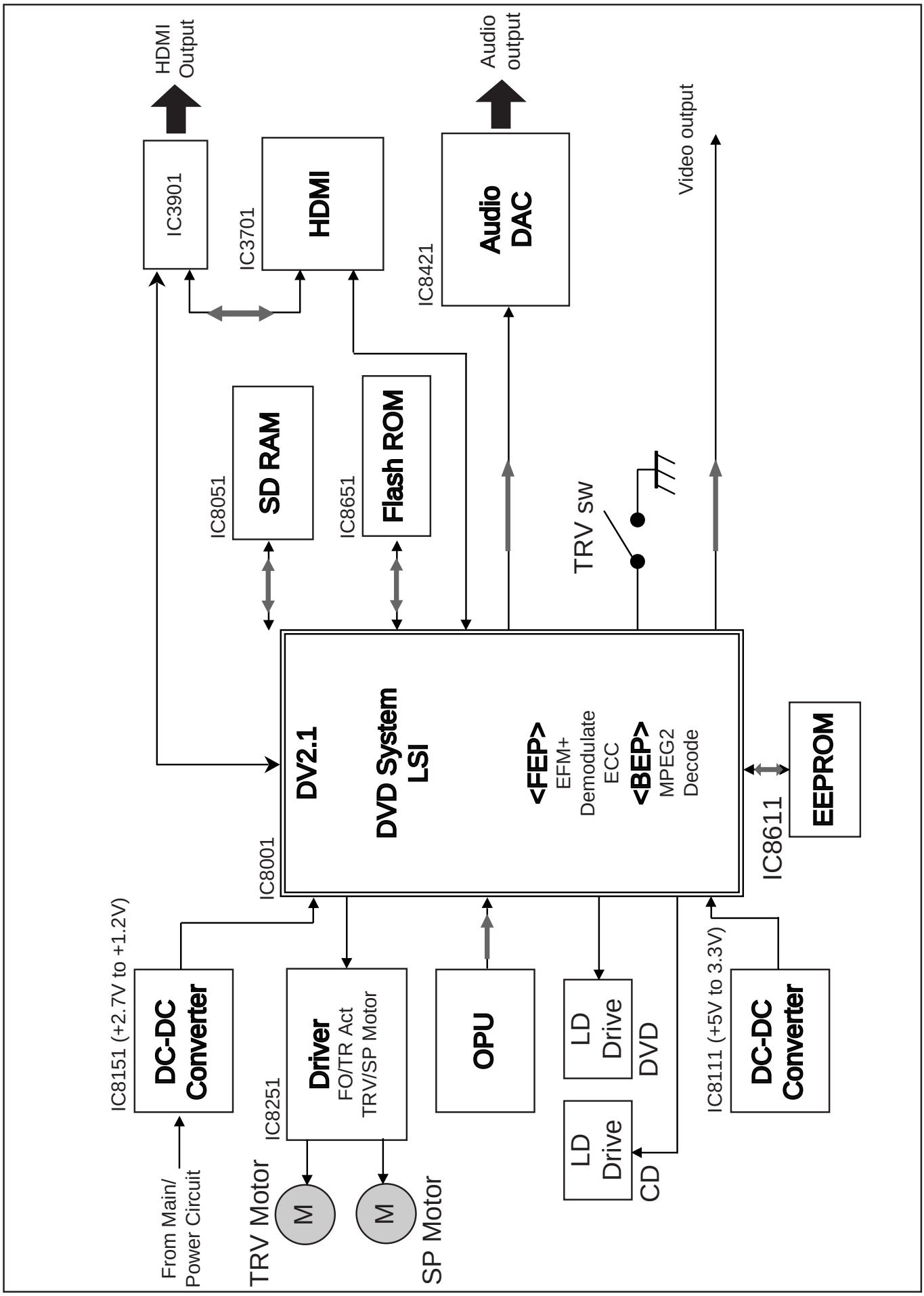
(SMPS stands for switching mode power supply)

Special Note: The SMPS module unit is supplied as service parts and should be replaced as a unit if it is in not working condition.

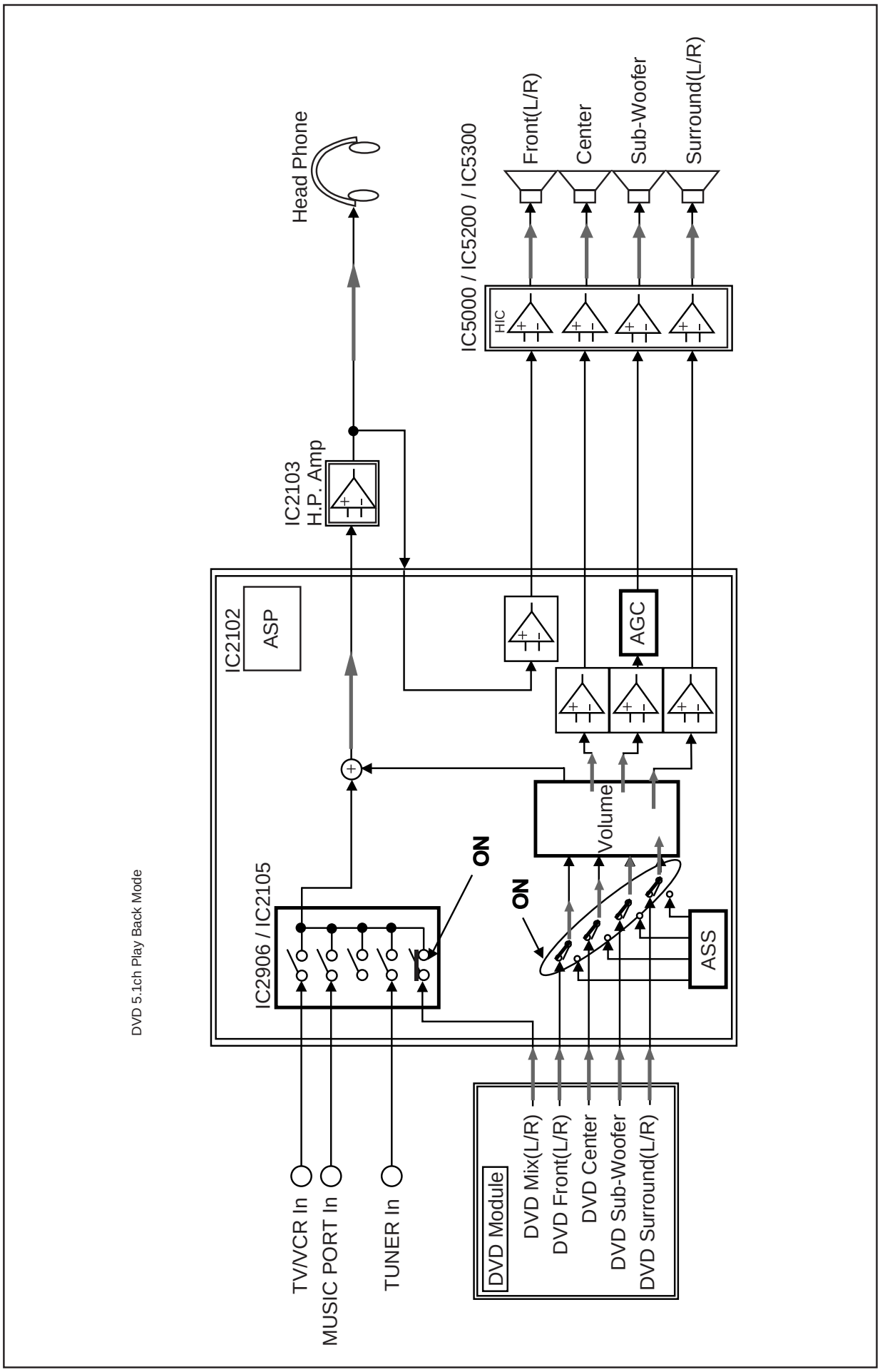
21 Overall Block Diagram for HT640



21.1. SC-HT640 DVD Unit Block Diagram



21.2. HT640 Block Diagram (Analog Signal : DVD 5.1ch Play Back Mode)



21.3. Service parts replacement

This document describes additional information during service parts replacement for the mention models. (see behind)

21.3.1. Transmitter Assembly (RFKVHFX60PPS)

This assembly part consists of :

1. Transmitter card
2. Receiver Module P.C.B. (RX).

Refer to Figure 1 for the diagram of transmitter assembly.

Note:

1. This transmitter assembly can be used as a service parts replacement.
2. Below is the service part no. of transmitter assembly for the applied models. (Table 1)
3. The transmitter card consists of the top & bottom cover transmitter module P.C.B. (TX) & screws (x4).
4. The receiver module P.C.B. (RX) in the receiver unit must also be replaced together after replacement of transmitter.

Part No	Part Name & Descriptions	Applied models	Remarks
RFKVHFX60PPS	Transmitter Assembly	SB-SA640P-S	[M]

Table 1

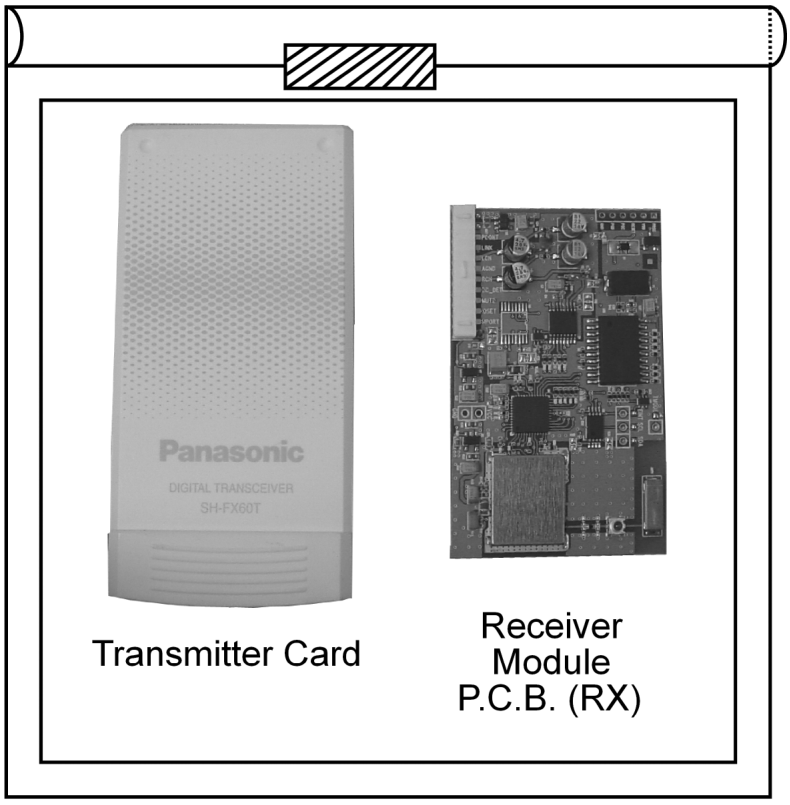


Figure 1

Failure to do so may lead to the disabled of receiver unit due to ID codes mismatched hence no function of wireless surround.

21.3.2. Additional Information

Below is additional information for the system combination.

- If [W] is flashing on the main unit after installing the modules P.C.B.. This is due to no link between the main unit & the digital receiver. (Refer to Table 2 for model no. of digital receiver for applicable models) please check the digital receiver is turned on & that all installations is carried out properly.
- If “W01” is flashing or light up re-initialization of the main unit is necessary. Refer to the self diagnostic section for original service manual of applied models.

Applied models	Digital system	Transmitter	Receiver
SC-HT640WP-S	SA-HT640WP-S	SH-FX60TPPS	SB-SA640P-S

Table 2

21.3.3. Module Kit Unit (Part No. RFKBHFX60PPS)

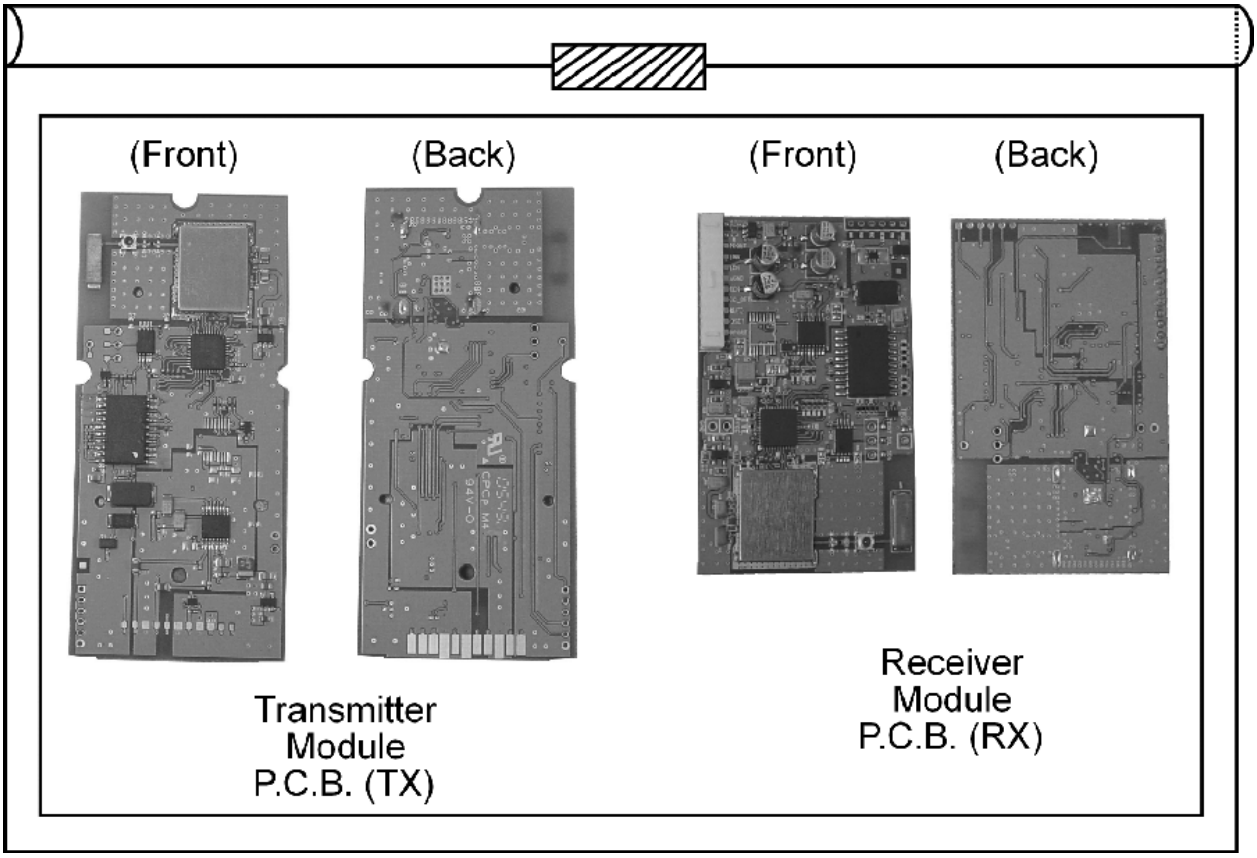
This kit unit consists of :

1. Transmitter Module P.C.B. (TX)
2. Receiver Module P.C.B. (RX)

Refer to Figure 2 for the diagram of module kit unit.

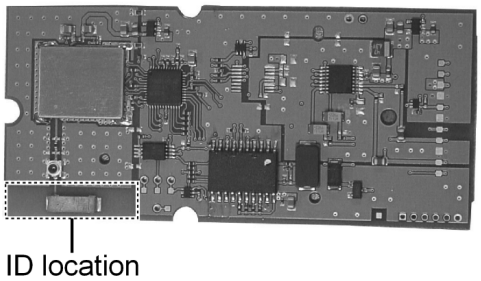
Note:

- If either the transmitter module P.C.B. (TX) or the receiver module P.C.B. (RX) is faulty after checking. Both the transmitter module P.C.B. (TX) & the receiver module P.C.B. (RX) must be replaced together. This is for purpose of matching ID codes. Mismatching of ID codes will lead to the wireless digital system not working. The ID codes is located on the back of the P.C.B.
- If [W] is flashing on the main unit after installing the modules P.C.B.. This is due to no link between the main unit & the digital receiver. (Refer to Table 2 for model no. of digital receiver for applicable models) please check the digital receiver is turned on & that all installations is carried out properly.
- If "W01" is flashing or light up re-initialization of the main unit is necessary. Refer to the self diagnostic section for original service manual of applied models.

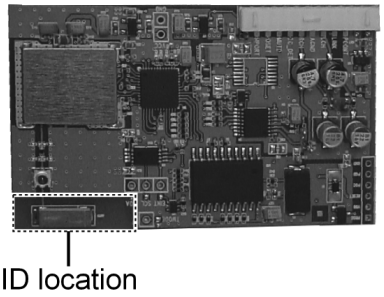


21.3.4. Location of ID

21.3.4.1. Transmitter Module P.C.B.



21.3.4.2. Receiver Module P.C.B.



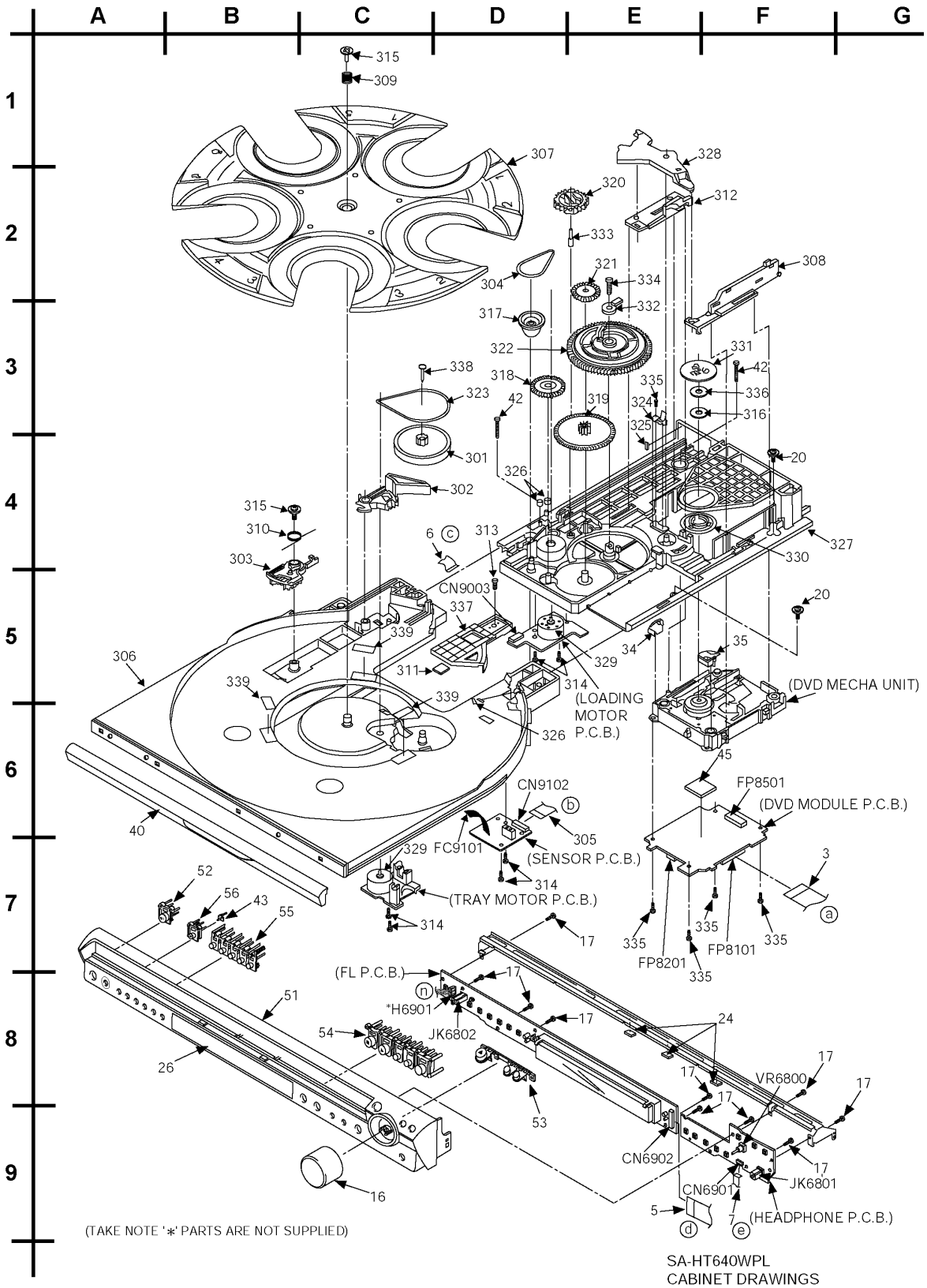
22 Terminal Function of ICs

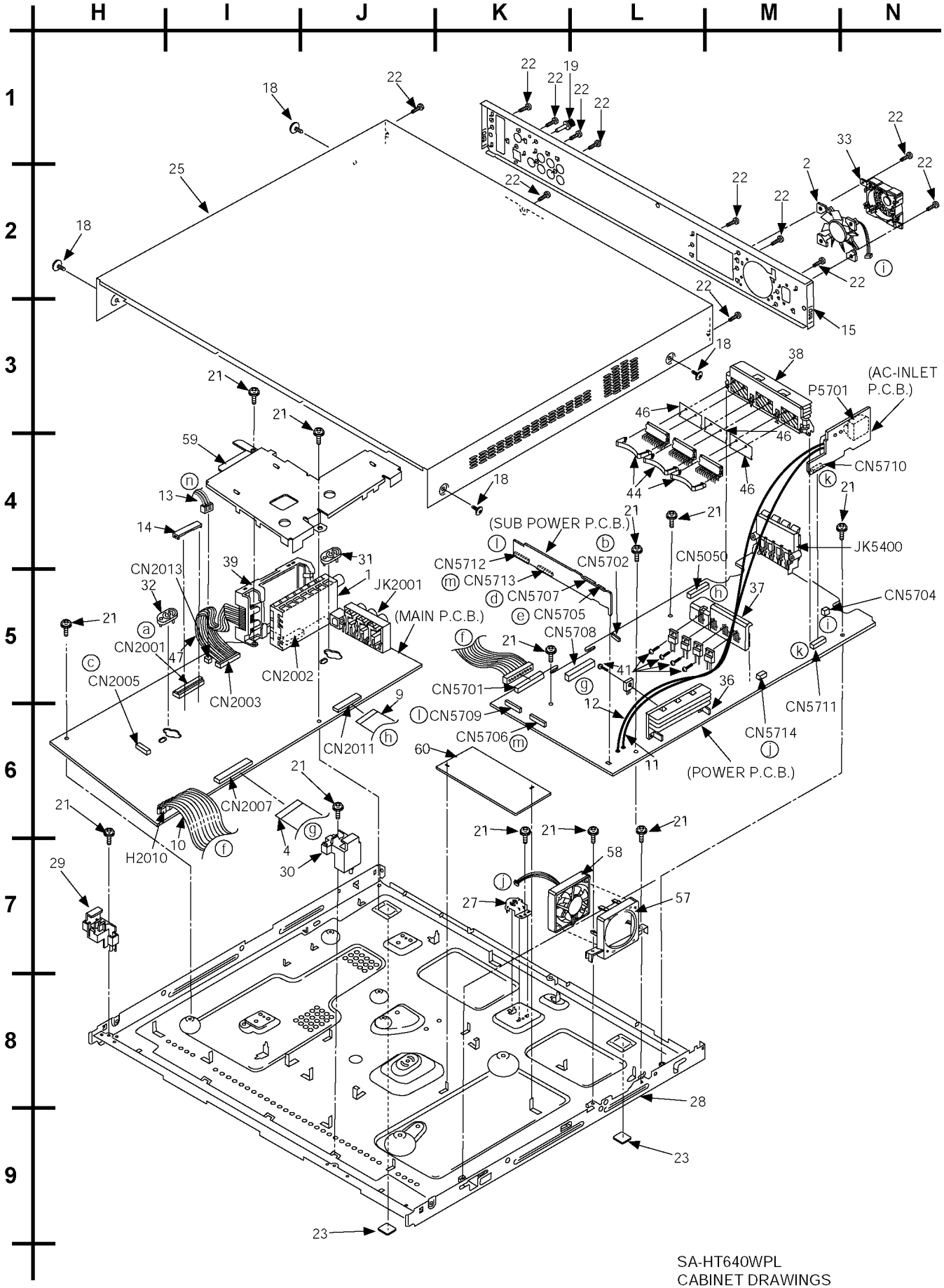
22.1. IC2001 (MN101C49GHG): Micro-processor IC

Pin No.	Terminal Name	I/O	Function
1	AVSS	-	Power supply for A/D converter
2	KEY1	I	Key 1 line input
3	KEY2	I	Key 2 line input
4	DES1	I	Tuner region setting
5	DES2	I	Model code Digit 1
6	DES3	I	DVD region setting
7	DISC SENSE	I	Disc sensor (RC1)
8	DES4	I	Model code Digit 2
9	DES5	I	Model code Digit 3
10	VREF+	-	+ Power supply for A/D converter
11	VCC	-	Power supply (5V)
12	XOUT	-	Main clock output (8MHz)
13	XIN	-	Main clock input (8MHz)
14	VSS	-	GND (0V)
15	VSS	-	GND (0V)
16	N.C	-	No connection
17	VSS	-	GND (0V)
18	DVD_ PCONT	O	DVD module power control
19	RF_DET (WM_DET)	I	RF module detection - wireless ready
20	RF_LINK / WM_LINK	I	RF link control - wireless ready
21	RF_PCNT (WM_ UNMUTE)	O	RF power control
22	N.C	-	No connection
23	EDA	I/O	EEPROM data
24	ECK	O	EEPROM clock
25	ECS	O	EEPROM latch
26	RMT	I	REMOCON input
27	HOTPLUG	I	HDMI interrupt 1
28	CEC_IN	I	HDMI interrupt 2
29	POS_SW	I	Position sensor (RC1)
30	PULSE	I	Pulse sensor speed detection (RC1)
31	SYNC	I	AC failure detect input
32	VSS/VPP	-	GND (0V)
		-	Power supply (Flash Micom only)
33	RESET	I	System reset
34	PWM	O	Pulse width modulation (RC1)
35	AM_BP	O	AM beat proof
36	TU_SCL (PLL_CK)	O	Tuner clock
37	TU_SDA (PLL_DA)	O	Tuner data
38	TU_SD	I	Tuner signal detect
39	ST/DO (TU_ST)	I	Stereo indicator / data (Tuner to Opecon)
40	FM_DET	I	Tuner FM detect (Tuner to Opecon)
41	VPP	-	Power supply (Flash Micom only)
42	DVD_CMD	O	DVD Command (Opecon to syscon)
43	DVD_STA	I	DVD status (Syscon to Opecon)
44	DVD_CK	I	DVD clock (Syscon to Opecon)
45	MUTE_ DVD	I	DVD mute (Syscon to Opecon)
46	CHG_DIR (ROLE_CH)	O	Wireless module change direction (Tx/Rx)
47	RMPORT_ DET	I	Rear M.Port detect
48	ASP_DA	O	ASP data (R2S15203FP)
49	ASP_CK	O	ASP clock (R2S15203FP)
50	MUTE_HP	O	Headphone mute
51	MP_SEL (SELECT_ A)	O	Select front MPort or rear MPort
52	SUB_ LIMITER	O	Subwoofer frequency Limiter
53	VMUTE	O	Video mute control
54	N.C	-	No connection
55	WIDE_ SURR	O	Surround Enhancer
56	CEC_OUT	I	Output port for HDMI
57	WS_EN	I	Surround Enhancer Enable
58	AGC_SW	-	Connection GND via resistor
59	REG1	I	Speaker protection (For Latin America)
60	MODEL_ SEL1	I	Model selector 1
61	MODEL_ SEL2	I	Model selector 2
62	HB_EN	I	H.Bass enable (H=Enable, L=Disable)
63	N.C	-	No connection
64	MOD_DA	O	Digital amplifier standby control
65	HOP_DA (FHOP)	O	Digital Amp frequency hop control
66	MUTE_ FSUB	O	Front / subwoofer mute
67	N.C	-	No connection
68	MUTE_SC	O	Surround / centre mute
69	LOAD (CAM_SW)	I	UP / DOWN switch (RC1)
70	OPEN_SW	I	OPEN switch (RC1)
71	PCONT	O	Relay power control (System)
72	N.C	-	No connection
73	N.C	-	No connection
74	N.C	-	No connection
75	N.C	-	No connection
76	N.C	-	No connection
77	N.C	-	No connection
78	N.C	-	No connection
79	N.C	-	No connection
80	N.C	-	No connection
81	DC_DET	I	DC detection (System)
82	DISC1_ LED	O	Disc LED 1
83	WS_LED	O	Wide surround LED
84	N.C	-	No connection
85	N.C	-	No connection
86	N.C	-	No connection
87	FLD_STB	-	FL driver strobe
88	N.C	-	No connection
89	FL_CK	O	FL driver clock
90	FL_DAT	O	FL driver data
91	JOG_A	I	Volume jog signal A
92	JOG_B	I	Volume jog signal B
93	JOG_LED	O	VOlume jog LED (For HT1040)
94	LOAD_ REV	O	Loading motor control (Open / close-RC1)
95	VSS	-	-ve Power supply for D/A converter
96	LOAD_ FWD	O	Loading motor control (Open / close-RC1)
97	TURN_ FWD	O	Tray motor control (Turn-RC1)
98	TURN_ REW	O	Tray motor control (Turn-RC1)
99	N.C	-	No connection
100	VDD	-	+ve Power supply for D/A converter

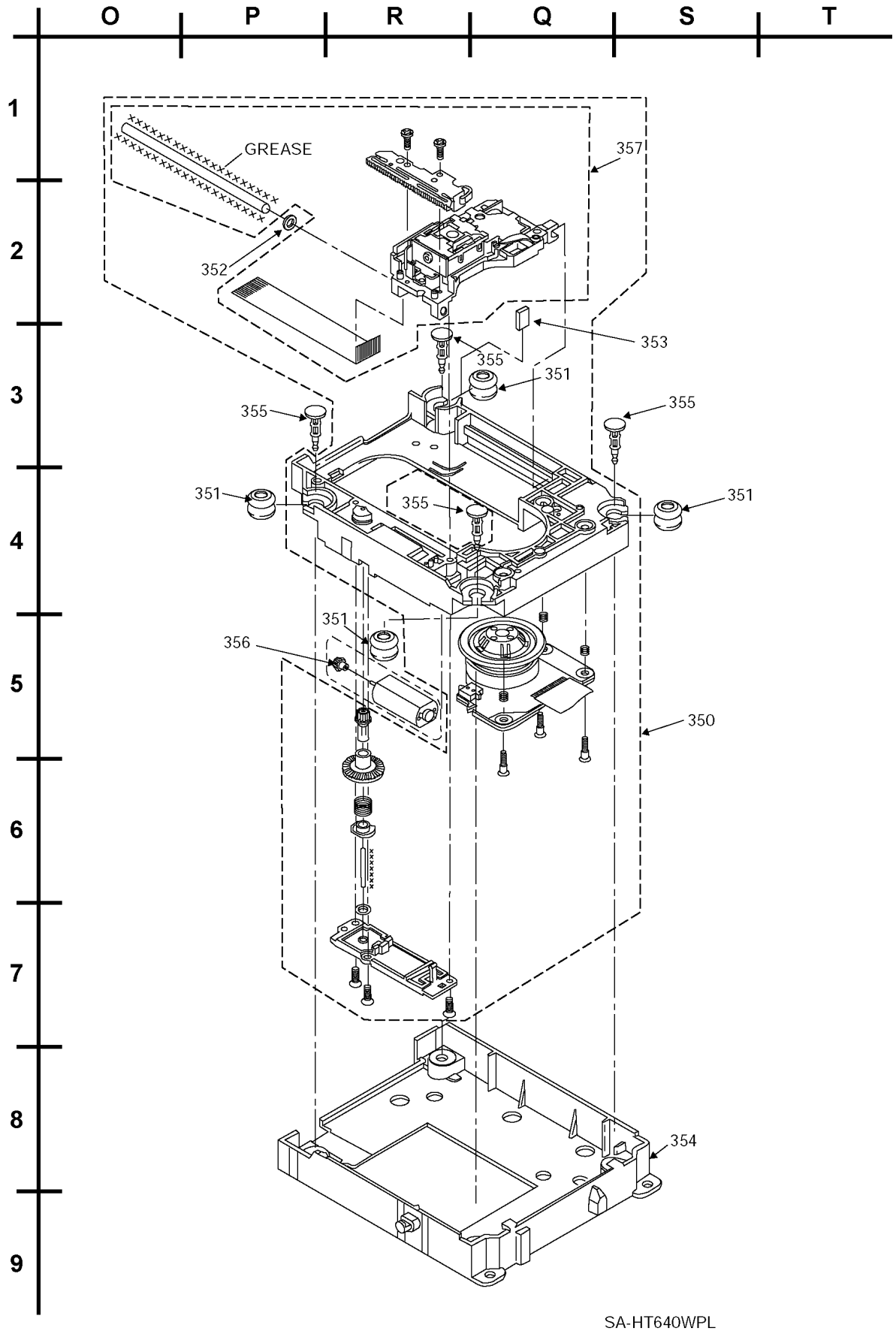
23 Explode Views

23.1. Cabinet Parts Location



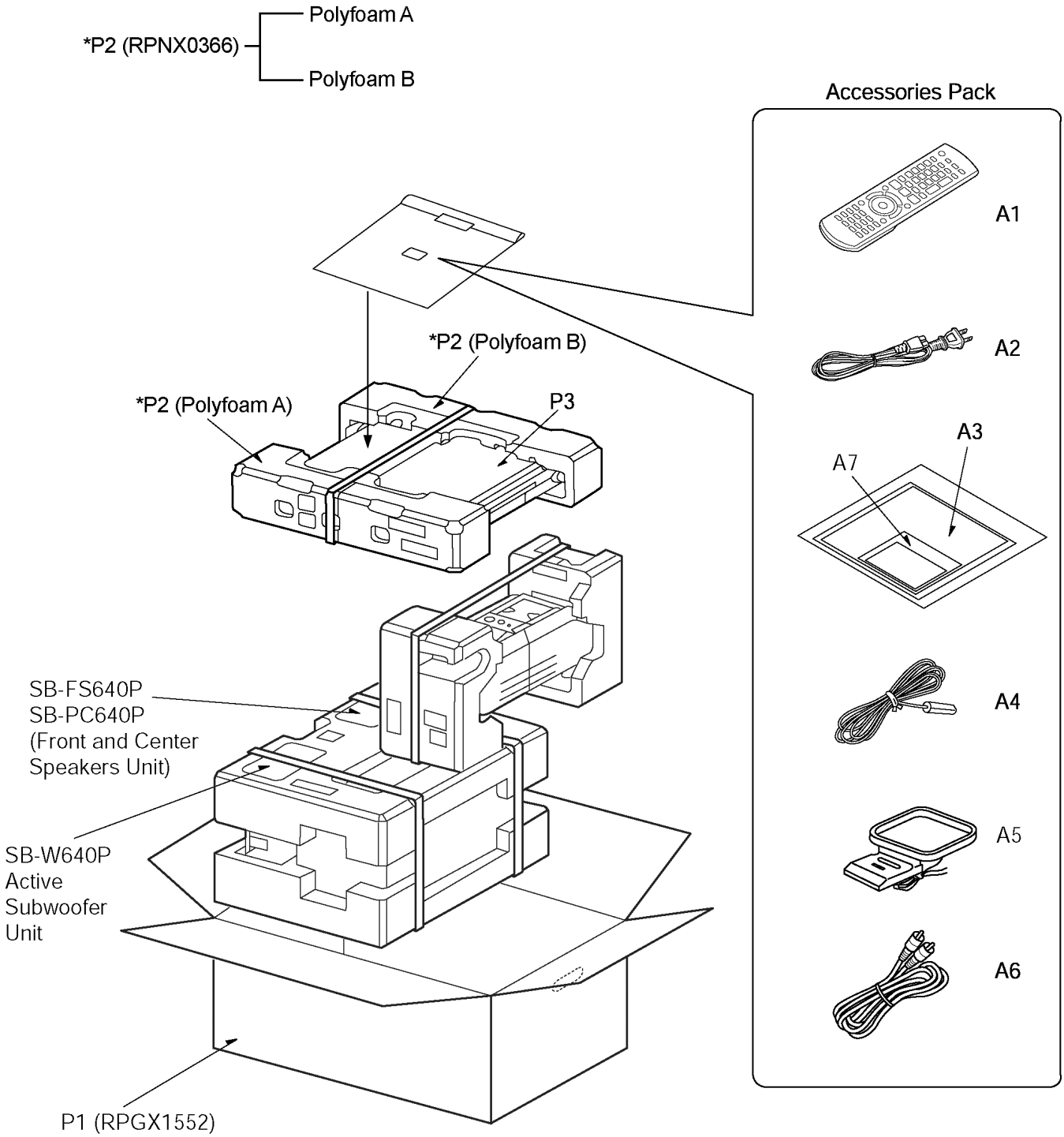


SA-HT640WPL
CABINET DRAWINGS



SA-HT640WPL
TRAVERSE MECHANISM DRAWINGS

23.2. Packaging



24 Replacement Parts List

Notes:

*Important safety notice:

Components identified by ⚠ mark have special characteristics important for safety purpose.

Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.

When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.

*Warning: This product uses a laser diode. Refer to caution statements.

*Capacity values are in microfarads (μF) unless specified otherwise, P=Pico-farads (pF), F=Farads (F).

*Resistance values are in ohms, unless specified otherwise, 1K=1,000 (OHM), 1M=1,000K (OHM).

*The parenthesized indications in the Remarks columns specify the model names and areas. (Refer to the cover page)

*The marking (RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

*Reference for O/I book languages are as follows:

[Sp: Spanish]

*[M] indicates in the Remarks columns indicates parts supplied by PAVCSG.

*[SPG] indicates in the Remarks columns indicates parts supplied by SPG [PAVC].

24.1. Component Parts List

Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	J3CCBC000012	TUNER PACK	[M]
2	L6FAYYYH0001	FAN UNIT	[M]
3	REEX0518-1	50P FFC WIRE	[M]
4	REEX0520	30P WIRE	[M]
5	REEX0521	19P WIRE	[M]
6	REEX0524	11P WIRE	[M]
7	REEX0526	9P WIRE	[M]
9	REEX0642	17P FFC WIRE	[M]
10	REXX0499	13P WIRE	[M]
11	REXX0500	PRIMARY WIRE	[M]
12	REXX0512-1	PRIMARY WIRE	[M]
13	REXX0518	3P MUSIC PORT WIRE	[M]
14	RGQX0027	TOP FFC COVER	[M]
15	RGRX0056B-C	REAR CABINET	[M]
16	RGWX0084-S	VOLUME KNOB	[M]
17	RHD26046	SCREW	[M]
18	RHD30007-1SJ	SCREW	[M]
19	RHD30070	EARTH TERMINAL	[M]
20	RHD30107-1	SCREW	[M]
21	RHD30111-3	SCREW	[M]
22	RHD30119-S	SCREW	[M]
23	RKA0059-K	LEG RUBBER	[M]
24	RKAX0030-K	CUSHION FELT	[M]
25	RKMX0118-S1	TOP CABINET	[M]
26	RKWX0256-Q	FL ORNAMENT	[M]
27	RMAX0090	MECHA/P BRACKET	[M]
28	RMKX0115A-1	BOTTOM CHASSIS	[M]
29	RMN0730	TRAY GUIDE L	[M]
30	RMN0731	TRAY GUIDE R	[M]
31	RMNX0166	MECHA HOLDER A	[M]
32	RMNX0171	MECHA HOLDER B	[M]
33	RMQX0153-H	FAN BRACKET	[M]
34	RMX0274	TRAY SUPPORT R	[M]
35	RMX0275	TRAY SUPPORT L	[M]
36	RXXX0067	HEAT SINK (UNIT C)	[M]
37	RXXX0068	HEAT SINK (UNIT D)	[M]
38	RXXX0069	HEAT SINK	[M]
39	RYPX0113-X	TRANS. CHASSIS ASS'Y	[M]
40	RYQX0231D-S2	TRAY LID ASSY	[M]
41	XTB3+10JFJ	SCREW	[M]
42	XTB3+16JFJ	SCREW	[M]
43	RGLX0130-Q	SURROUND LIGHT CHIP	[M]
44	RMCX0035	HEAT SINK CLIP	[M]
45	RMX0290	PLASTIC SHEET	[M]
46	RMZX0026-1	IC INSULATOR A	[M]
47	K1NA11B00003	WIRELESS CONNECTOR	[M]
51	RGPX0210A-S2	FRONT PANEL	[M]
52	RGUX0647-S	POWER BUTTON	[M]
53	RGUX0648-S	OPEN/CLOSE BUTTON	[M]
54	RGUX0649-S	PLAY BUTTON	[M]
55	RGUX0650-S	5 DISC BUTTON	[M]
56	RGUX0667-S	SURROUND BUTTON	[M]
57	RMQX0175	FAN BRACKET	[M]
58	L6FAHAKH001	SIDE FAN	[M]
59	RXQX0034	SHIELD PLATE	[M]
60	RMNX0197	INSULATOR SHEET	[M]
		CASSETTE DECK	
		TRAVERSE DECK	
301	RDG0567	PULSE GEAR	[M]
302	RDG0568	OPEN LOCK GEAR	[M]
303	RDG0569	CLOSE LOCK GEAR	[M]
304	RDV0073	TRAY BELT	[M]
305	REZ1734	FFC WIRE	[M]
306	RGQ0446-K	TRAY BASE	[M]
307	RGQ0359-K1	ROTARY TRAY	[M]
308	RMM0254-2	SLIDE PLATE R	[M]
309	RMB0842	TRAY SPRING	[M]
310	RME0384	CLOSE LOCK GEAR SPRI	[M]
311	RMF0324-1	BLOCK SHEET	[M]
312	RMM0255	SLIDE PLATE L	[M]
313	XTB3+10JFJ	SCREW	[M]
314	XTN26+8GFJ	SCREW	[M]
315	XTWS3+10SFJ	SCREW	[M]
316	RHM0003-J	MAGNET	[M]
317	RDG0562	PULLEY GEAR	[M]
318	RDG0563-1	REALAY GEAR A	[M]
319	RDG0564	RELAY GEAR B	[M]
320	RDG0565	DRIVE GEAR A	[M]
321	RDG0566	DRIVE GEAR B	[M]
322	RDG0570	CAM GEAR	[M]
323	RDV0072	LOADING BELT	[M]
324	RMC0387	SUPPORT SPRING	[M]
325	RMG0615-K	CUSHION SHEET	[M]
326	RMG0620-K	CUSHION RUBBER	[M]
327	RMK0555	MECHA BASE	[M]
328	RML0646	CHANGE LEVER	[M]
329	REM0112	LOADING MOTOR ASS'Y	[M]
330	RMR1446-X	CLAMPER	[M]
331	RMR1447-X	MAGNET HOLDER	[M]
332	RMR1507-X	SUPPORT PIECE	[M]
333	RMS0802-J	DRIVE SHAFT	[M]
334	XTN26+14JFJK	SUPPORT PIECE SCREW	[M]
335	XTV2+6GFJ	PCB SCREW	[M]
336	XWG6FFJ	WASHER	[M]
337	RMM0256-2	BLOCK BASE	[M]
338	RMS0123-1	FIXED PIN B	[M]
339	RMF0182	TRAY FELT	[M]
350	RAE2018W-S	DT69U3 BLOCK	[M]
351	RMG0598-A	FLOATING RUBBER	[M]
352	RMG0617-H	CUSHION RUBBER A	[M]
353	RMG0618-H	CUSHION RUBBER B	[M]
354	RMR1596-X2	MIDDLE CHASSIS	[M]
355	RMS0789	FIXED PIN	[M]
356	RXQ0946	TRAVERSE MOTOR ASS'Y	[M]
357	RXQ1389	DVD OPU SUB ASS'Y	[M]
		PRINTED CIRCUIT BOARDS	
	REP4080A	DVD MODULE P.C.B	[M] (RTL)
	REPX0509A	MAIN P.C.B	[M] (RTL)
	REPX0515A	POWER P.C.B	[M] (RTL)
	REPX0515A	SUB POWER P.C.B	[M] (RTL)
	REPX0515A	AC-INLET P.C.B.	[M] (RTL)
	REPX0515A	FL P.C.B	[M] (RTL)
	REPX0515A	HEADPHONE P.C.B	[M] (RTL)
	REP3465B	LOADING MOTOR P.C.B	[M] (RTL)
	REP3466B	TRAY MOTOR P.C.B	[M] (RTL)
	REP3466B	SENSOR MOTOR P.C.B	[M] (RTL)
		INTEGRATED CIRCUITS	
IC2001	MN101C49GHG	IC MICRO-PROCESSOR	[M]
IC2003	C0GAG0000007	IC MOTOR DRIVE (LOADING)	[M]
IC2004	C3EBEG000073	IC EEPROM	[M]
IC2102	C1AB00002463	IC ASP	[M]
IC2103	C0AABB000125	IC HEADPHONES AMP	[M]
IC2105	C0ABCB000088	IC MUSIC PORT AMP	[M]
IC2801	C9ZB00000461	IC VIDEO BUFFER	[M]
IC2901	C0DAZYY00001	IC +9V REGULATOR	[M]
IC2902	C0DAZYY00001	IC +9V REGULATOR	[M]
IC2903	C0DAAMH00012	IC SW REGULATOR	[M]
IC2904	C0CAADE00007	IC +5V REGULATOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
IC2906	C0JBAR000326	IC MPORT SELECTOR	[M]
IC2907	C0CBADG00023	IC 5V REGULATOR (DVD)	[M]
IC2908	C0CBADG00023	IC 5V REGULATOR (DVD)	[M]
IC5000	C1BA00000407	IC DIGITAL AMP	[M]
IC5200	C1BA00000407	IC DIGITAL AMP	[M]
IC5300	C1BA00000407	IC DIGITAL AMP	[M]
IC5500	C0JBAB000011	IC INVERTER (CLOCK GENERATOR)	[M]
IC5701	STR-F6628	IC SW REGULATOR	[M]
IC5702	C0DABFC00002	IC SHUNT REGULATOR	[M]
IC5721	C0DABYY00002	IC SW REGULATOR	[M]
IC5750	C0GAG0000007	IC MOTOR DRIVE LOADING	[M]
IC6901	C0HBB0000057	IC DISPLAY DRIVER	[M]
IC8001	MN2DS0003APH	IC D2.1 LSI	[M]
IC8051	C3ABPG000133	IC 64M SDRAM	[M]
IC8111	C0CBCBD00018	IC 3.3V DC-DC CONVERTER	[M]
IC8151	C0DBEHG00006	IC 1.2V REGULATOR	[M]
IC8251	C0GBG0000048	IC MOTOR DRIVER	[M]
IC8421	C0FBBK000050	IC AUDIO DAC	[M]
IC8601	C0EBE0000384	IC RESET	[M]
IC8606	C0EBA0000031	IC RESET	[M]
IC8651	RFKWMH82H160	IC FLASH ROM	[SPG]
IC8691	C0JBAA000346	IC AND GATE	[M]
IC8695	C0JBAA000346	IC AND GATE	[M]
		TRANSISTORS	
Q2001	B1GBCFJJ0051	TRANSISTOR	[M]
Q2003	B1GBCFLL0037	TRANSISTOR	[M]
Q2006	B1GBCFJN0033	TRANSISTOR	[M]
Q2098	B1GBCFJN0033	TRANSISTOR	[M]
Q2101	B1GFGCAA0001	TRANSISTOR	[M]
Q2201	B1GDCFGA0018	TRANSISTOR	[M]
Q2307	B1GFGCAA0001	TRANSISTOR	[M]
Q2308	B1GFGCAA0001	TRANSISTOR	[M]
Q2310	B1GDCFGA0018	TRANSISTOR	[M]
Q2901	B1ABCF000176	TRANSISTOR	[M]
Q2903	B1BACD000018	TRANSISTOR	[M]
Q2904	B1AAKD000012	TRANSISTOR	[M]
Q2906	B1BCCD000019	TRANSISTOR	[M]
Q2907	B1ADCF000001	TRANSISTOR	[M]
Q2909	B1GBCFJN0033	TRANSISTOR	[M]
Q2911	B1ABCF000176	TRANSISTOR	[M]
Q2912	B1ABCF000176	TRANSISTOR	[M]
Q2913	B1ABCF000176	TRANSISTOR	[M]
Q2914	B1ADCF000001	TRANSISTOR	[M]
Q2935	B1BACD000018	TRANSISTOR	[M]
Q5101	B1ABCF000176	TRANSISTOR	[M]
Q5102	B1ABCF000176	TRANSISTOR	[M]
Q5500	B1ADCE000012	TRANSISTOR	[M]
Q5501	B1ABCF000176	TRANSISTOR	[M]
Q5701	2SC3940ARA	TRANSISTOR	[M]
Q5704	B1ABCF000176	TRANSISTOR	[M]
Q5705	B1ABCF000176	TRANSISTOR	[M]
Q5706	B1BACD000018	TRANSISTOR	[M]
Q5710	B1ABCF000011	TRANSISTOR	[M]
Q5740	B1BACG000048	TRANSISTOR	[M]
Q5741	B1ABCF000011	TRANSISTOR	[M]
Q5742	B1ABCF000011	TRANSISTOR	[M]
Q5744	B1ABCF000011	TRANSISTOR	[M]
Q5745	B3PBA0000237	TRANSISTOR	[M]
Q5746	B1GBCFJN0033	TRANSISTOR	[M]
Q5747	B1GDCFJJ0047	TRANSISTOR	[M]
Q5748	B3PBA0000237	TRANSISTOR	[M]
Q5750	B1GBCFJJ0051	TRANSISTOR	[M]
Q5908	B1ACKD000005	TRANSISTOR	[M]
Q5930	B1ABCF000011	TRANSISTOR	[M]
Q5931	B1ABCF000011	TRANSISTOR	[M]
Q5932	B1ADCF000001	TRANSISTOR	[M]
Q6901	B1GBCFJN0033	TRANSISTOR	[M]
Q8550	2SB1219AHL	TRANSISTOR	[M]
Q8551	2SD1819A0L	TRANSISTOR	[M]
Q8552	2SB09700RL	TRANSISTOR	[M]
Q8560	2SD1819A0L	TRANSISTOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
Q8561	2SD1819A0L	TRANSISTOR	[M]
Q8562	2SB09700RL	TRANSISTOR	[M]
Q8606	2SD1819A0L	TRANSISTOR	[M]
Q8607	2SD1819A0L	TRANSISTOR	[M]
QR8111	UNR521400L	CHIP TRANSISTOR	[M]
QR8112	UNR521400L	CHIP TRANSISTOR	[M]
QR8420	UNR521100L	CHIP TRANSISTOR	[M]
QR8571	UNR511V00L	CHIP TRANSISTOR	[M]
Q9001	B3NAA0000098	CAM SENSOR	[M]
Q9101	B3NAA0000082	POSITION SENSOR	[M]
Q9002	B3NAA0000102	PHOTO INTERRUPTOR	[M]
Q9103	B3NAB0000027	PHOTO REFLECTOR	[M]
PC5701	B3PBA0000237	PHOTOCOUPLER	[M] ⚠
PC5721	B3PBA0000237	PHOTOCOUPLER	[M] ⚠
		DIODES	
D2001	B0ECKM000016	DIODE	[M]
D2002	B0ECKM000016	DIODE	[M]
D2005	B0ACCK000005	DIODE	[M]
D2007	B0ACCK000005	DIODE	[M]
D2008	B0ACCK000005	DIODE	[M]
D2601	B0ACCK000005	DIODE	[M]
D2603	B0ACCK000005	DIODE	[M]
D2609	B0ACCK000005	DIODE	[M]
D2902	B0BC7R500001	DIODE	[M]
D2904	B0JCPD000025	DIODE	[M]
D2906	B0ADCJ000020	DIODE	[M]
D2907	B0ADCJ000020	DIODE	[M]
D2912	B0BC3R700004	DIODE	[M]
D2915	B0BC5R600003	DIODE	[M]
D2934	B0ACCK000005	DIODE	[M]
D2935	B0ACCK000005	DIODE	[M]
D2936	B0ACCK000005	DIODE	[M]
D2950	B0BC7R500001	DIODE	[M]
D2951	B0ADCJ000020	DIODE	[M]
D2952	B0JCAE000001	DIODE	[M]
D5701	B0FBAR000018	DIODE	[M] ⚠
D5702	B0ZAZ0000052	DIODE	[M]
D5703	B0BC02900004	DIODE	[M]
D5704	B0JAME000029	DIODE	[M]
D5705	B0EAMM000057	DIODE	[M]
D5706	B0EAMM000057	DIODE	[M]
D5707	B0BC035A0007	DIODE	[M]
D5708	B0BC01700015	DIODE	[M]
D5709	B0ACCK000005	DIODE	[M]
D5710	B0EAMM000057	DIODE	[M]
D5711	B0HBSM000043	DIODE	[M]
D5712	B0HBSM000043	DIODE	[M]
D5713	B0BC4R0A0006	DIODE	[M]
D5716	B0HFRJ000012	DIODE	[M]
D5721	B0EAMM000057	DIODE	[M]
D5723	B0EAMM000057	DIODE	[M]
D5724	B0BC3R700004	DIODE	[M]
D5740	B0BC01200019	DIODE	[M]
D5741	B0EAMM000057	DIODE	[M]
D5743	B0ACCK000005	DIODE	[M]
D5744	B0ACCK000005	DIODE	[M]
D5745	B0EAKM000117	DIODE	[M]
D5746	B0BC5R600003	DIODE	[M]
D5748	B0EAMM000057	DIODE	[M]
D5749	B0EAMM000057	DIODE	[M]
D5750	B0ECKM000016	DIODE	[M]
D5751	B0ECKM000016	DIODE	[M]
D5752	B0BC3R400001	DIODE	[M]
D5761	B0ACCK000005	DIODE	[M]
D5764	B0ACCK000005	DIODE	[M]
D5903	B0BC01200019	DIODE	[M]
D5904	B0BC01200019	DIODE	[M]
D6906	B3ABA0000397	DIODE	[M]
D6910	B0BC2R4A0006	DIODE	[M]
D8231	MA2J11100L	DIODE	[M]
D8550	MA2J11100L	DIODE	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
D8571	MA2J72800L	DIODE	[M]
	CHIP INDUCTORS		
LB5704	J0JKB0000020	EMI BEAD CORE	[M]
LB8001	J0JHC0000045	CHIP INDUCTOR	[M]
LB8002	J0JHC0000045	CHIP INDUCTOR	[M]
LB8301	J0JCC0000119	CHIP INDUCTOR	[M]
LB8302	J0JCC0000119	CHIP INDUCTOR	[M]
LB8303	J0JCC0000119	CHIP INDUCTOR	[M]
LB8304	J0JCC0000119	CHIP INDUCTOR	[M]
LB8305	J0JCC0000119	CHIP INDUCTOR	[M]
LB8401	ERJ2GEJ151X	CHIP RESISTOR	[M]
LB8421	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8422	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8423	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8424	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8425	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8426	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8427	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8428	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8429	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8430	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8491	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8502	J0JHC0000045	CHIP INDUCTOR	[M]
LB8503	ERJ2GE0R00X	CHIP RESISTOR	[M]
LB8504	J0JCC0000119	CHIP INDUCTOR	[M]
LB8505	J0JCC0000119	CHIP INDUCTOR	[M]
LB8507	J0JCC0000119	CHIP INDUCTOR	[M]
LB8511	ERJ3GEY0R00V	CHIP RESISTOR	[M]
LB8512	ERJ3GEY0R00V	CHIP RESISTOR	[M]
LB8513	ERJ3GEY0R00V	CHIP RESISTOR	[M]
LB8514	ERJ3GEY0R00V	CHIP RESISTOR	[M]
LB8690	J0JCC0000091	FILTER	[M]
LB8691	ERJ2GEJ101X	CHIP RESISTOR	[M]
LB8692	ERJ2GEJ101X	CHIP RESISTOR	[M]
LB8693	ERJ2GEJ101X	CHIP RESISTOR	[M]
DZ5701	ERZV10V511CS	ZENER	[M] ⚠
		VARIABLE RESISTORS	
VR6800	EVEKE2F3024M	VOLUME JOG	[M]
		SWITCHES	
S6801	EVQ21405R	SW PLAY	[M]
S6802	EVQ21405R	SW BACKWARD	[M]
S6803	EVQ21405R	SW FORWARD	[M]
S6804	EVQ21405R	SW STOP	[M]
S6805	EVQ21405R	SW DISC EXCHANGE	[M]
S6806	EVQ21405R	SW DISC SKIP	[M]
S6808	EVQ21405R	SW OPEN/CLOSE	[M]
S6900	EVQ21405R	SW POWER	[M]
S6901	EVQ21405R	SW PARTY MODE	[M]
S6902	EVQ21405R	SW DISC 1	[M]
S6903	EVQ21405R	SW DISC 2	[M]
S6904	EVQ21405R	SW DISC 3	[M]
S6905	EVQ21405R	SW DISC 4	[M]
S6906	EVQ21405R	SW DISC 5	[M]
S6907	EVQ21405R	SW SELECTOR INPUT	[M]
S9001	K0L1BA000086	OPEN SWITCH	[M]
		CONNECTORS	
CN2001	K1MY50AA0029	50P CONNECTOR	[M]
CN2002	K1KA10AA0031	10P CONNECTOR	[M]
CN2003	K1MP11A00004	11P CONNECTOR	[M]
CN2005	K1MN11AA0003	11P CONNECTOR	[M]
CN2007	K1MN30BA0005	30P CONNECTOR	[M]
CN2011	K1MN17B00037	17P CONNECTOR	[M]
CN2013	K1KA03AA0193	3P CONNECTOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
CN5050	K1MN17BA0005	17P CONNECTOR	[M]
CN5701	K1KA13BA0062	13P CONNECTOR	[M]
CN5702	K1MN11AA0003	11P CONNECTOR	[M]
CN5704	K1KA03AA0301	3P CONNECTOR	[M]
CN5705	K1MN09B00038	9P CONNECTOR	[M]
CN5706	K1KA14AA0031	14P CONNECTOR	[M]
CN5707	K1MN19B00072	19P CONNECTOR	[M]
CN5708	K1MN30AA0004	30P CONNECTOR	[M]
CN5709	K1KA14AA0031	14P CONNECTOR	[M]
CN5710	K1KB06B00038	6P CONNECTOR	[M]
CN5711	K1KA06AA0031	6P CONNECTOR	[M]
CN5712	K1KB14B00026	14P CONNECTOR	[M]
CN5713	K1KB14B00026	14P CONNECTOR	[M]
CN5714	K1KA03AA0301	3P CONNECTOR	[M]
CN6901	K1MN09B00038	9P CONNECTOR	[M]
CN6902	K1MN19AA0004	19P CONNECTOR	[M]
CN9003	K1MY11BA0021	11P CONNECTOR	[M]
CN9102	K1MY11BA0021	11P CONNECTOR	[M]
FP8101	K1MN50BA0173	50P CONNECTOR	[M]
FP8251	K1MN06AA0046	6P CONNECTOR	[M]
FP8531	K1MN26AA0041	26P CONNECTOR	[M]
FP8101	K1MN50BA0173	50P CONNECTOR	[M]
FP8201	K1MN06BA0148	6P CONNECTOR	[M]
FP8501	K1MY26BA0025	6P CONNECTOR	[M]
		HOLDER	
H2010	K1YZ13000001	13P HOLDER	[M]
		THERMISTOR	
TH5701	D4CAA2R20001	THERMISTOR	[M]
TH5702	D4CC11040013	SENSOR	[M]
		COILS & TRANSFORMERS	
L2001	J0JBC0000015	CHIP INDUCTOR	[M]
L2002	J0JBC0000015	CHIP INDUCTOR	[M]
L2003	J0JBC0000015	CHIP INDUCTOR	[M]
L2008	G0C3R3JA0027	COIL	[M]
L2009	G0C220JA0055	COIL	[M]
L2101	J0JBC0000015	CHIP INDUCTOR	[M]
L2201	J0JBC0000015	CHIP INDUCTOR	[M]
L2801	G0C220JA0055	COIL	[M]
L2802	J0JBC0000015	CHIP INDUCTOR	[M]
L2803	J0JBC0000015	CHIP INDUCTOR	[M]
L2804	J0JBC0000015	CHIP INDUCTOR	[M]
L2805	J0JBC0000015	CHIP INDUCTOR	[M]
L2806	J0JBC0000015	CHIP INDUCTOR	[M]
L2807	J0JBC0000015	CHIP INDUCTOR	[M]
L2902	G0A101ZA0028	COIL	[M]
L2903	G0A200D00002	COIL	[M]
L2904	G0A200D00002	COIL	[M]
L2905	G0A200D00002	COIL	[M]
L2906	G0A200D00002	COIL	[M]
L2908	G0A200D00002	COIL	[M]
L2909	G0A200D00002	COIL	[M]
L2910	G0A200D00002	COIL	[M]
L5000	ETQA15A150T	COIL	[M]
L5001	G0B9R5K00001	COIL	[M]
L5002	G0B9R5K00001	COIL	[M]
L5200	ETQA15A150T	COIL	[M]
L5201	G0B9R5K00001	COIL	[M]
L5300	ETQA15A150T	COIL	[M]
L5301	G0B9R5K00001	COIL	[M]
L5500	J0JKB0000020	EMI BEAD CORE	[M]
L5501	J0JKB0000020	EMI BEAD CORE	[M]
L5701	ELF15N050A	COIL	[M] ⚠
L5703	ELF22V035B	COIL	[M] ⚠
L5710	J0JKB0000020	EMI BEAD CORE	[M]
L5720	J0JKB0000020	EMI BEAD CORE	[M]
L5750	J0JBC0000015	CHIP INDUCTOR	[M]
L5752	J0JBC0000015	CHIP INDUCTOR	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
L5753	J0JBC0000015	CHIP INDUCTOR	[M]
L6101	J0JBC0000019	CHIP INDUCTOR	[M]
L6102	G0C330KA0065	COIL	[M]
L6201	J0JBC0000019	CHIP INDUCTOR	[M]
L6202	G0C330KA0065	COIL	[M]
L6801	J0JBC0000019	CHIP INDUCTOR	[M]
L6903	J0JBC0000041	CHIP INDUCTOR	[M]
L6904	J0JBC0000019	CHIP INDUCTOR	[M]
L6905	J0JBC0000019	CHIP INDUCTOR	[M]
L8201	G1C100K00020	CHIP INDUCTOR	[M]
L8202	J0JCC0000079	FILTER	[M]
L8301	G1C100KA0055	CHIP INDUCTOR	[M]
L8302	J0JCC0000079	FILTER	[M]
L8550	G1C100KA0055	CHIP INDUCTOR	[M]
T5701	ETS42BJ1G4AC	TRANSFORMER	[M] ⚠
T5721	ETS19AB1Z6AG	TRANSFORMER	[M] ⚠
		COMPONENT COMBINATION	
Z6900	B3MAZ0000023	REMOTE CONTROL SENSOR	[M]
ZA5701	EYF52BCY	FUSE HOLDER	[M]
ZA5702	EYF52BCY	FUSE HOLDER	[M]
		OSCILLATORS	
X2001	H2D800400009	CRYSTAL	[M]
X5500	H2A375300003	CRYSTAL	[M]
X5501	H2A415300001	CRYSTAL	[M]
X8621	H0J270500085	CRYSTAL	[M]
		DISPLAY TUBE	
FL6901	A2BD00000160	FL DISPLAY	[M]
FL8101	F1H0J1050022	CHIP CAPACITOR	[M]
FL8102	F1H0J1050022	CHIP CAPACITOR	[M]
FL8103	F1H0J1050022	CHIP CAPACITOR	[M]
FL8104	F1J1E1040022	CHIP CAPACITOR	[M]
		FUSE	
F1	K5D632APA008	FUSE	[M] ⚠
		FUSE PROTECTOR	
FP2000	K5G202AA0002	FUSE PROTECTOR	[M] ⚠
		JACKS	
JK2001	K1U717B00004	JK COMBO JACK	[M]
JK5400	K4AC08B00008	JK SPEAKER	[M]
JK6801	K2HC103A0024	JK SMALL SIGN	[M]
JK6802	K2HC1YYA0005	JK JUMPER WIRE	[M]
P5701	K2AB2B000008	JK AC INLET	[M] ⚠
P5701	K2AB2B000010	JK AC INLET	[M] ⚠
		EARTH TERMINALS	
ZJ5400	K4CZ01000027	TERMINALS	[M]
ZJ5410	K4CZ01000027	TERMINALS	[M]
ZJ5701	K9ZZ00001279	OTHER CONNECTING COM	[M]
		PACKING MATERIALS	
P1	RPGX1552	PACKING CASE	[M]
P2	RPNX0366	POLYFOAM	[M]
P3	RPFX0058-1J	MIRAMAT	[M]
		ACCESSORIES	
A1	N2QAYZ000001	REMOTE CONTROL	[M]
A1-1	RKK-HTR0051K	R/C BATTERY COVER	[M]
A2	K2CB2CB00018	AC CORD	[M] ⚠
A3	RQT8613-M	O/I BOOK	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
A4	RSA0007-L	FM ANTENNA	[M]
A5	N1DAAAA00002	AM LOOP ANTENNA	[M]
A6	K2KA2BA00001	VIDEO CABLE	[M]
A7	RQCA0968	SPEAKER LABEL	[M]
		RESISTORS	
R2001	ERJ3GEYJ331V	330 1/16W	[M]
R2002	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2003	ERJ3GEYJ103V	10K 1/16W	[M]
R2004	ERJ3GEYJ331V	330 1/16W	[M]
R2005	ERJ3GEYJ331V	330 1/16W	[M]
R2006	ERJ3GEYJ182V	1.8K 1/16W	[M]
R2012	ERJ3GEYJ101V	100 1/16W	[M]
R2013	ERJ3GEYJ101V	100 1/16W	[M]
R2014	ERJ3GEYJ221V	220 1/16W	[M]
R2015	ERJ3GEYJ272V	2.7K 1/16W	[M]
R2016	ERJ3GEYJ473V	47K 1/16W	[M]
R2017	ERJ3GEYJ103V	10K 1/16W	[M]
R2018	ERJ3GEYJ103V	10K 1/16W	[M]
R2019	ERJ3GEYJ103V	10K 1/16W	[M]
R2020	ERJ3GEYJ103V	10K 1/16W	[M]
R2021	ERJ3GEYJ103V	10K 1/16W	[M]
R2022	ERJ3GEYJ223V	22K 1/16W	[M]
R2023	ERJ3GEY0R00V	0 1/16W	[M]
R2024	ERJ3GEYJ682V	6.8K 1/16W	[M]
R2025	ERJ3GEYJ221V	220 1/16W	[M]
R2026	ERJ3GEYJ221V	220 1/16W	[M]
R2027	ERJ3GEYJ101V	100 1/16W	[M]
R2028	ERJ3GEYJ101V	100 1/16W	[M]
R2029	ERJ3GEYJ101V	100 1/16W	[M]
R2030	ERJ3GEYJ101V	100 1/16W	[M]
R2031	ERJ3GEYJ101V	100 1/16W	[M]
R2032	ERJ3GEYJ101V	100 1/16W	[M]
R2033	ERJ3GEYJ102V	1K 1/16W	[M]
R2034	ERJ3GEYJ221V	220 1/16W	[M]
R2035	ERJ3GEYJ221V	220 1/16W	[M]
R2036	ERJ3GEYJ221V	220 1/16W	[M]
R2037	ERJ3GEYJ221V	220 1/16W	[M]
R2038	ERJ3GEYJ221V	220 1/16W	[M]
R2039	ERJ3GEYJ223V	22K 1/16W	[M]
R2040	ERJ3GEYJ223V	22K 1/16W	[M]
R2041	ERJ3GEYJ223V	22K 1/16W	[M]
R2042	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2043	ERJ3GEYJ104V	100K 1/16W	[M]
R2044	ERJ3GEYJ221V	220 1/16W	[M]
R2045	ERJ3GEYJ221V	220 1/16W	[M]
R2048	ERJ3GEY0R00V	0 1/16W	[M]
R2049	ERJ3GEY0R00V	0 1/16W	[M]
R2051	ERJ3GEYJ103V	10K 1/16W	[M]
R2052	ERJ3GEYJ221V	220 1/16W	[M]
R2053	ERJ3GEYJ221V	220 1/16W	[M]
R2054	ERJ3GEYJ221V	220 1/16W	[M]
R2055	ERJ3GEYJ221V	220 1/16W	[M]
R2057	ERJ3GEYJ221V	220 1/16W	[M]
R2058	ERJ3GEYJ221V	220 1/16W	[M]
R2059	ERJ3GEYJ221V	220 1/16W	[M]
R2060	ERJ3GEYJ221V	220 1/16W	[M]
R2061	ERJ3GEYJ473V	47K 1/16W	[M]
R2062	ERJ3GEYJ221V	220 1/16W	[M]
R2063	ERJ3GEYJ221V	220 1/16W	[M]
R2064	ERJ3GEYJ103V	10K 1/16W	[M]
R2065	ERJ3GEYJ103V	10K 1/16W	[M]
R2066	ERJ3GEYJ104V	100K 1/16W	[M]
R2067	ERJ3GEYJ473V	47K 1/16W	[M]
R2068	ERJ3GEYJ563V	56K 1/16W	[M]
R2069	ERJ3GEYJ473V	47K 1/16W	[M]
R2070	ERJ3GEYJ473V	47K 1/16W	[M]
R2071	ERJ3GEYJ563V	56K 1/16W	[M]
R2073	ERJ3GEYJ473V	47K 1/16W	[M]
R2077	ERJ3GEYJ221V	220 1/16W	[M]
R2078	ERJ3GEYJ221V	220 1/16W	[M]
R2079	ERJ3GEYJ221V	220 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R2080	ERJ3GEYJ221V	220 1/16W	[M]
R2081	ERJ3GEYJ221V	220 1/16W	[M]
R2082	ERJ3GEYJ221V	220 1/16W	[M]
R2084	ERJ3GEYJ473V	47K 1/16W	[M]
R2085	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2086	ERJ3GEYJ223V	22K 1/16W	[M]
R2087	ERJ3GEYJ223V	22K 1/16W	[M]
R2088	ERJ3GEYJ221V	220 1/16W	[M]
R2089	ERJ3GEYJ221V	220 1/16W	[M]
R2090	ERJ3GEYJ103V	10K 1/16W	[M]
R2101	ERJ3GEYJ103V	10K 1/16W	[M]
R2111	ERJ3GEYJ103V	10K 1/16W	[M]
R2112	ERJ3GEYJ223V	22K 1/16W	[M]
R2114	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2115	ERJ3GEYJ392V	3.9K 1/16W	[M]
R2160	ERJ3GEYJ102V	1K 1/16W	[M]
R2161	ERJ3GEYJ473V	47K 1/16W	[M]
R2164	ERJ3GEYJ103V	10K 1/16W	[M]
R2165	ERJ3GEYJ103V	10K 1/16W	[M]
R2168	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2169	ERJ3GEYJ104V	100K 1/16W	[M]
R2170	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2171	ERJ3GEYJ273V	27K 1/16W	[M]
R2172	ERJ3GEYJ182V	1.8K 1/16W	[M]
R2173	ERJ3GEYJ473V	47K 1/16W	[M]
R2175	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2176	ERJ3GEYJ183V	18K 1/16W	[M]
R2177	ERJ3GEYJ220V	22 1/16W	[M]
R2178	ERJ3GEYJ220V	22 1/16W	[M]
R2179	ERJ3GEYJ220V	22 1/16W	[M]
R2180	ERJ3GEYJ220V	22 1/16W	[M]
R2181	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2185	ERJ3GEYJ103V	10K 1/16W	[M]
R2188	ERJ3GEYJ123V	12K 1/16W	[M]
R2189	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2191	ERJ3GEYJ223V	22K 1/16W	[M]
R2193	ERJ3GEYJ100V	10 1/16W	[M]
R2194	ERJ3GEYJ223V	22K 1/16W	[M]
R2195	ERJ3GEYJ682V	6.8K 1/16W	[M]
R2196	ERJ3GEYJ333V	33K 1/16W	[M]
R2197	ERJ3GEYJ683V	68K 1/16W	[M]
R2201	ERJ3GEYJ103V	10K 1/16W	[M]
R2211	ERJ3GEYJ103V	10K 1/16W	[M]
R2212	ERJ3GEYJ223V	22K 1/16W	[M]
R2214	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2215	ERJ3GEYJ392V	3.9K 1/16W	[M]
R2260	ERJ3GEYJ102V	1K 1/16W	[M]
R2261	ERJ3GEYJ473V	47K 1/16W	[M]
R2264	ERJ3GEYJ103V	10K 1/16W	[M]
R2265	ERJ3GEYJ103V	10K 1/16W	[M]
R2268	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2269	ERJ3GEYJ104V	100K 1/16W	[M]
R2270	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2271	ERJ3GEYJ563V	56K 1/16W	[M]
R2273	ERJ3GEYJ473V	47K 1/16W	[M]
R2275	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2276	ERJ3GEYJ183V	18K 1/16W	[M]
R2277	ERJ3GEYJ220V	22 1/16W	[M]
R2278	ERJ3GEYJ220V	22 1/16W	[M]
R2279	ERJ3GEYJ220V	22 1/16W	[M]
R2280	ERJ3GEYJ220V	22 1/16W	[M]
R2281	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2285	ERJ3GEYJ103V	10K 1/16W	[M]
R2288	ERJ3GEYJ123V	12K 1/16W	[M]
R2289	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2291	ERJ3GEYJ223V	22K 1/16W	[M]
R2293	ERJ3GEYJ100V	10 1/16W	[M]
R2294	ERJ3GEYJ223V	22K 1/16W	[M]
R2295	ERJ3GEYJ682V	6.8K 1/16W	[M]
R2296	ERJ3GEYJ333V	33K 1/16W	[M]
R2297	ERJ3GEYJ683V	68K 1/16W	[M]
R2300	ERJ3GEYJ123V	12K 1/16W	[M]
R2301	ERJ3GEYJ473V	47K 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R2302	ERJ3GEYJ223V	22K 1/16W	[M]
R2303	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2304	ERJ3GEYJ123V	12K 1/16W	[M]
R2312	ERJ3GEYJ103V	10K 1/16W	[M]
R2336	ERJ3GEYJ103V	10K 1/16W	[M]
R2339	ERJ3GEYJ223V	22K 1/16W	[M]
R2343	ERJ3GEYJ563V	56K 1/16W	[M]
R2344	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2400	ERJ3GEYJ123V	12K 1/16W	[M]
R2401	ERJ3GEYJ473V	47K 1/16W	[M]
R2402	ERJ3GEYJ223V	22K 1/16W	[M]
R2403	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2404	ERJ3GEYJ123V	12K 1/16W	[M]
R2412	ERJ3GEYJ103V	10K 1/16W	[M]
R2436	ERJ3GEYJ103V	10K 1/16W	[M]
R2439	ERJ3GEYJ223V	22K 1/16W	[M]
R2443	ERJ3GEYJ563V	56K 1/16W	[M]
R2444	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2500	ERJ3GEYJ123V	12K 1/16W	[M]
R2501	ERJ3GEYJ333V	33K 1/16W	[M]
R2502	ERJ3GEYJ822V	8.2K 1/16W	[M]
R2503	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2510	ERJ3GEYJ123V	12K 1/16W	[M]
R2511	ERJ3GEYJ103V	10K 1/16W	[M]
R2512	ERJ3GEYJ103V	10K 1/16W	[M]
R2513	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2600	ERJ3GEYJ103V	10K 1/16W	[M]
R2601	ERJ3GEYJ153V	15K 1/16W	[M]
R2606	ERJ3GEYJ563V	56K 1/16W	[M]
R2607	ERJ3GEYJ103V	10K 1/16W	[M]
R2608	ERJ3GEYJ563V	56K 1/16W	[M]
R2609	ERJ3GEYJ122V	1.2K 1/16W	[M]
R2610	ERJ3GEYJ563V	56K 1/16W	[M]
R2611	ERJ3GEYJ122V	1.2K 1/16W	[M]
R2612	ERJ3GEYJ683V	68K 1/16W	[M]
R2617	ERJ3GEYJ103V	10K 1/16W	[M]
R2619	ERJ3GEYJ473V	47K 1/16W	[M]
R2620	ERJ3GEYJ823V	82K 1/16W	[M]
R2621	ERJ3GEYJ393V	39K 1/16W	[M]
R2626	ERJ3GEYJ683V	68K 1/16W	[M]
R2627	ERJ3GEYJ683V	68K 1/16W	[M]
R2628	ERJ3GEYJ103V	10K 1/16W	[M]
R2629	ERJ3GEYJ103V	10K 1/16W	[M]
R2633	ERJ3GEYJ390V	39 1/16W	[M]
R2634	ERJ3GEYJ390V	39 1/16W	[M]
R2635	ERJ3GEYJ222V	2.2K 1/16W	[M]
R2809	ERJ3GEYJ750V	75 1/16W	[M]
R2812	ERJ3GEYJ750V	75 1/16W	[M]
R2813	ERJ3GEYJ750V	75 1/16W	[M]
R2816	ERJ3GEYJ750V	75 1/16W	[M]
R2817	ERJ3GEYJ750V	75 1/16W	[M]
R2818	ERJ3GEYJ750V	75 1/16W	[M]
R2819	ERJ3GEYJ102V	1K 1/16W	[M]
R2904	ERJ3GEYJ471V	470 1/16W	[M]
R2905	ERJ3GEYJ392V	3.9K 1/16W	[M]
R2906	ERG2SJ471E	470 2W	[M]
R2907	ERJ3GEYJ272V	2.7K 1/16W	[M]
R2908	ERJ3GEYJ561V	560 1/16W	[M]
R2913	ERG2SJ471E	470 2W	[M]
R2914	ERJ3GEYJ392V	3.9K 1/16W	[M]
R2915	ERJ3GEYJ272V	2.7K 1/16W	[M]
R2918	ERJ3GEYJ103V	10K 1/16W	[M]
R2919	ERJ3GEYJ102V	1K 1/16W	[M]
R2920	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2921	ERJ3GEYJ471V	470 1/16W	[M]
R2922	ERJ3GEYJ393V	39K 1/16W	[M]
R2923	ERJ3GEYJ153V	15K 1/16W	[M]
R2925	ERX2SJ1R5E	1.5 2W	[M]
R2927	ERX2SJ1R5E	1.5 2W	[M]
R2930	ERJ3GEYJ333V	33K 1/16W	[M]
R2933	ERJ3GEYJ151V	150 1/16W	[M]
R2934	ERJ3GEYJ102V	1K 1/16W	[M]
R2935	ERJ3GEYJ472V	4.7K 1/16W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R2936	ERJ3GEYJ181V	180 1/16W	[M]
R2937	ERG2SJ471E	470 2W	[M]
R2938	ERG2SJ471E	470 2W	[M]
R2939	ERJ3GEYJ393V	39K 1/16W	[M]
R2942	ERJ3GEY0R00V	0 1/16W	[M]
R2943	ERJ3GEY0R00V	0 1/16W	[M]
R2945	ERJ3GEYJ104V	100K 1/16W	[M]
R2946	ERJ3GEYJ330V	33 1/16W	[M]
R2947	ERJ3GEYJ104V	100K 1/16W	[M]
R2950	ERJ3GEYJ221V	220 1/16W	[M]
R2951	ERJ3GEYJ221V	220 1/16W	[M]
R2952	ERJ3GEYJ221V	220 1/16W	[M]
R2953	ERJ3GEYJ221V	220 1/16W	[M]
R2955	ERJ3GEYJ221V	220 1/16W	[M]
R2960	ERJ3GEYJ104V	100K 1/16W	[M]
R2961	ERJ3GEYJ103V	10K 1/16W	[M]
R2962	ERJ3GEYJ473V	47K 1/16W	[M]
R2963	ERJ3GEYJ103V	10K 1/16W	[M]
R2964	ERJ3GEYJ103V	10K 1/16W	[M]
R2965	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2966	ERJ3GEYJ472V	4.7K 1/16W	[M]
R2967	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2968	ERJ3GEYJ104V	100K 1/16W	[M]
R2969	ERJ3GEYJ103V	10K 1/16W	[M]
R2970	ERJ3GEYJ562V	5.6K 1/16W	[M]
R2971	ERJ3GEYJ221V	220 1/16W	[M]
R2972	ERJ3GEYJ221V	220 1/16W	[M]
R2973	ERJ3GEYJ103V	10K 1/16W	[M]
R2974	ERJ3GEYJ682V	6.8K 1/16W	[M]
R2975	ERJ3GEYJ103V	10K 1/16W	[M]
R2976	ERJ3GEYJ103V	10K 1/16W	[M]
R2978	ERJ3GEYJ103V	10K 1/16W	[M]
R2981	ERJ3GEY0R00V	0 1/16W	[M]
R2982	ERJ3GEY0R00V	0 1/16W	[M]
R2984	ERJ3GEY0R00V	0 1/16W	[M]
R2985	ERJ3GEYJ221V	220 1/16W	[M]
R2986	ERJ3GEYJ221V	220 1/16W	[M]
R2987	ERJ3GEYJ221V	220 1/16W	[M]
R2990	D0C18R2JA020	8.2 1W	[M]
R2991	ERJ3GEYJ473V	47K 1/16W	[M]
R5000	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5001	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5002	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5003	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5004	ERJ8GEYJ100V	10 1/8W	[M]
R5005	ERJ8GEYJ100V	10 1/8W	[M]
R5006	ERJ1TYJ220U	22 1/8W	[M]
R5007	ERJ1TYJ220U	22 1/8W	[M]
R5010	ERJ8GEYJ100V	10 1/8W	[M]
R5011	ERJ8GEYJ100V	10 1/8W	[M]
R5019	ERJ3GEYJ683V	68K 1/16W	[M]
R5020	ERJ3GEYJ124V	120K 1/16W	[M]
R5021	ERJ3GEYJ222V	2.2K 1/16W	[M]
R5022	ERJ3GEYJ122V	1.2K 1/16W	[M]
R5030	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5031	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5032	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5033	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5034	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5035	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5110	ERJ3GEYJ223V	22K 1/16W	[M]
R5200	ERJ8GEYJ100V	10 1/8W	[M]
R5201	ERJ8GEYJ100V	10 1/8W	[M]
R5205	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5206	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5209	ERJ1TYJ220U	22 1/8W	[M]
R5210	ERJ8GEYJ100V	10 1/8W	[M]
R5211	ERJ8GEYJ100V	10 1/8W	[M]
R5217	ERJ1TYJ220U	22 1/8W	[M]
R5218	ERJ3GEYJ124V	120K 1/16W	[M]
R5228	ERJ3GEYJ124V	120K 1/16W	[M]
R5300	ERJ1TYJ220U	22 1/8W	[M]
R5302	ERJ8GEYJ100V	10 1/8W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R5305	ERJ8GEYJ100V	10 1/8W	[M]
R5306	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5307	ERJ3GEYJ562V	5.6K 1/16W	[M]
R5310	ERJ8GEYJ100V	10 1/8W	[M]
R5311	ERJ8GEYJ100V	10 1/8W	[M]
R5318	ERJ3GEYJ124V	120K 1/16W	[M]
R5319	ERJ1TYJ220U	22 1/8W	[M]
R5328	ERJ3GEYJ124V	120K 1/16W	[M]
R5501	ERJ3GEYJ102V	1K 1/16W	[M]
R5502	ERJ3GEYJ103V	10K 1/16W	[M]
R5503	ERJ3GEYJ104V	100K 1/16W	[M]
R5504	ERJ3GEYJ220V	22 1/16W	[M]
R5505	ERJ3GEYJ104V	100K 1/16W	[M]
R5506	ERJ3GEYJ682V	6.8K 1/16W	[M]
R5507	ERJ3GEYJ105V	1M 1/16W	[M]
R5508	ERJ3GEYJ104V	100K 1/16W	[M]
R5509	ERJ3GEY0R00V	0 1/16W	[M]
R5573	ERJ3GEYJ101V	100 1/16W	[M]
R5575	ERJ3GEYJ101V	100 1/16W	[M]
R5701	ERC12UGK335D	3.3M 1/2W	[M] ⚠
R5702	ERDS1FVJ1R0T	1 1/2W	[M]
R5703	ERJ6GEYJ681V	680 1/10W	[M]
R5704	ERX2LJ68MP	0.68 2W	[M]
R5705	ERX2LJ68MP	0.68 2W	[M]
R5706	ERG2SJ333P	33K 2W	[M]
R5707	ERG2SJ333P	33K 2W	[M]
R5708	ERJ6GEYJ332V	3.3K 1/10W	[M]
R5709	ERJ6GEYJ222V	2.2K 1/10W	[M]
R5710	ERJ6GEYJ103V	10K 1/10W	[M]
R5711	ERJ6GEYJ220V	22 1/10W	[M]
R5712	ERJ6GEYJ222V	2.2K 1/10W	[M]
R5713	ERJ3GEYF272V	2.7K 1/16W	[M]
R5714	ERJ3GEYF473V	47K 1/16W	[M]
R5715	ERJ3GEYD153V	15K 1/16W	[M]
R5716	ERJ3GEYJ390V	39 1/16W	[M]
R5723	ERJ3GEYF472V	4.7K 1/16W	[M]
R5724	ERJ3GEYF122V	1.2K 1/16W	[M]
R5725	ERJ3GEYF561V	560 1/16W	[M]
R5726	ERJ3GEYJ102V	1K 1/16W	[M]
R5727	ERJ3GEYJ222V	2.2K 1/16W	[M]
R5728	ERJ3GEY0R00V	0 1/16W	[M]
R5729	ERJ6GEYJ562V	5.6K 1/10W	[M]
R5735	ERJM1WSF10MU	1 1/2W	[M]
R5736	ERDS1FVJ471T	470 1/2W	[M]
R5737	ERJ3GEYJ100V	10 1/16W	[M]
R5739	ERDS1FVJ821T	820 1/2W	[M]
R5750	ERJ3GEYJ331V	330 1/16W	[M]
R5751	ERDS1TJ474	470K 1/2W	[M]
R5752	ERJ3GEYJ472V	4.7K 1/16W	[M]
R5753	ERJ3GEYJ331V	330 1/16W	[M]
R5754	ERJ3GEYJ332V	3.3K 1/16W	[M]
R5755	ERJ3GEYJ103V	10K 1/16W	[M]
R5756	ERJ3GEYJ103V	10K 1/16W	[M]
R5757	ERJ3GEYJ103V	10K 1/16W	[M]
R5758	ERJ3GEYJ335V	3.3M 1/16W	[M]
R5759	ERJ3GEYJ104V	100K 1/16W	[M]
R5760	ERJ3GEYJ103V	10K 1/16W	[M]
R5763	ERJ3GEYF222V	2.2K 1/16W	[M]
R5764	ERJ3GEYJ103V	10K 1/16W	[M]
R5770	ERJ3GEYJ103V	10K 1/16W	[M]
R5771	ERJ6GEYJ100V	10 1/10W	[M]
R5772	ERDS1FVJ4R7T	4.7 1/2W	[M]
R5773	ERJ3GEYF561V	560 1/16W	[M]
R5774	ERDS1FVJ4R7T	4.7 1/2W	[M]
R5776	ERJ3GEYJ331V	330 1/16W	[M]
R5777	ERJ3GEYJ332V	3.3K 1/16W	[M]
R5778	ERDS1FVJ4R7T	4.7 1/2W	[M]
R5779	ERJ3GEYJ102V	1K 1/16W	[M]
R5780	ERJ3GEYJ331V	330 1/16W	[M]
R5781	ERJ3GEYJ103V	10K 1/16W	[M]
R5783	ERJ3GEY0R00V	0 1/16W	[M]
R5784	ERJ8GEYJ394V	390K 1/8W	[M]
R5785	ERJ8GEYJ394V	390K 1/8W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R5786	ERJ3GEYJ104V	100K 1/16W	[M]
R5791	ERJ3GEY0R00V	0 1/16W	[M]
R5792	ERG2SJ470E	47 2W	[M]
R5793	ERG2SJ470E	47 2W	[M]
R5794	ERG2SJ470E	47 2W	[M]
R5795	ERG2SJ470E	47 2W	[M]
R5916	ERJ3GEYJ151V	150 1/16W	[M]
R5917	ERJ3GEYJ472V	4.7K 1/16W	[M]
R5930	ERJ3GEYJ103V	10K 1/16W	[M]
R5931	ERJ3GEYJ103V	10K 1/16W	[M]
R5932	ERJ3GEYJ103V	10K 1/16W	[M]
R5933	ERJ3GEYJ822V	8.2K 1/16W	[M]
R5934	ERJ3GEYJ103V	10K 1/16W	[M]
R6801	ERJ3GEYJ472V	4.7K 1/16W	[M]
R6802	ERJ3GEYJ272V	2.7K 1/16W	[M]
R6803	ERJ3GEYJ122V	1.2K 1/16W	[M]
R6804	ERJ3GEYJ102V	1K 1/16W	[M]
R6805	ERJ3GEYJ102V	1K 1/16W	[M]
R6807	ERJ3GEYJ223V	22K 1/16W	[M]
R6809	ERJ3GEYJ223V	22K 1/16W	[M]
R6810	ERJ3GEYJ682V	6.8K 1/16W	[M]
R6812	ERJ3GEYJ182V	1.8K 1/16W	[M]
R6914	ERJ3GEYJ563V	56K 1/16W	[M]
R6916	ERJ3GEYJ680V	68 1/16W	[M]
R6917	ERJ3GEYJ680V	68 1/16W	[M]
R6918	ERJ3GEYJ223V	22K 1/16W	[M]
R6922	ERJ3GEYJ102V	1K 1/16W	[M]
R6923	ERJ3GEYJ102V	1K 1/16W	[M]
R6924	ERJ3GEYJ122V	1.2K 1/16W	[M]
R6925	ERJ3GEYJ182V	1.8K 1/16W	[M]
R6926	ERJ3GEYJ222V	2.2K 1/16W	[M]
R6927	ERJ3GEYJ680V	68 1/16W	[M]
R6928	ERJ3GEYJ272V	2.7K 1/16W	[M]
R6934	ERJ3GEYJ470V	47 1/16W	[M]
R6935	ERJ3GEYJ100V	10 1/16W	[M]
R6939	ERJ3GEY0R00V	0 1/16W	[M]
R6940	ERJ3GEY0R00V	0 1/16W	[M]
R6946	ERJ3GEYJ221V	220 1/16W	[M]
R6947	ERJ3GEYJ472V	4.7K 1/16W	[M]
R6948	ERJ3GEYJ822V	8.2K 1/16W	[M]
R6949	ERJ3GEYJ822V	8.2K 1/16W	[M]
R6950	ERJ3GEYJ473V	47K 1/16W	[M]
R6951	ERJ3GEYJ473V	47K 1/16W	[M]
R6957	ERJ3GEYJ221V	220 1/16W	[M]
R6960	ERJ3GEYJ222V	2.2K 1/16W	[M]
R8011	ERJ2GEJ220X	22 2W	[M]
R8021	ERJ2GEJ103X	10K 2W	[M]
R8022	ERJ2GEJ103X	10K 2W	[M]
R8023	ERJ2GEJ473X	47K 2W	[M]
R8041	ERJ2GEJ330X	33 2W	[M]
R8111	ERJ2GEJ223X	22K 2W	[M]
R8112	ERJ2GEJ223X	22K 2W	[M]
R8153	ERJ2RHD621X	620 2W	[M]
R8154	ERJ2RHD102X	1K 2W	[M]
R8201	ERJ2GEJ222X	2.2K 2W	[M]
R8231	ERJ2GEJ103X	10K 2W	[M]
R8233	ERJ2GEJ153X	15K 2W	[M]
R8235	ERJ2GEJ822X	8.2K 2W	[M]
R8236	ERJ2GEJ822X	8.2K 2W	[M]
R8241	ERJ2GEJ223X	22K 2W	[M]
R8242	ERJ2GEJ752X	7.5K 2W	[M]
R8243	ERJ2GEJ103X	10K 2W	[M]
R8251	ERJ6GEYJ6R8V	6.8 1/10W	[M]
R8261	ERJ2GEJ823X	82K 2W	[M]
R8262	ERJ2GEJ472X	4.7K 2W	[M]
R8263	ERJ2GEJ823X	82K 2W	[M]
R8264	ERJ2GEJ472X	4.7K 2W	[M]
R8265	ERJ2GE0R00X	0 2W	[M]
R8311	ERJ2RHD242X	2.4K 2W	[M]
R8312	ERJ2RHD102X	1K 2W	[M]
R8313	ERJ2RHD243X	24K 2W	[M]
R8314	ERJ2GE0R00X	0 2W	[M]
R8315	ERJ2GEJ6R8X	6.8 2W	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
R8321	ERJ3RBD161V	160 3W	[M]
R8322	ERJ2RKD100X	10 2W	[M]
R8325	ERJ3RBD161V	160 3W	[M]
R8326	ERJ2GE0R00X	0 2W	[M]
R8331	ERJ3RBD161V	160 3W	[M]
R8332	ERJ2RKD100X	10 2W	[M]
R8335	ERJ3RED820V	82 3W	[M]
R8341	ERJ3RED820V	82 3W	[M]
R8401	ERJ2GEJ473X	47K 2W	[M]
R8402	ERJ2GEJ101X	100 2W	[M]
R8404	ERJ2GEJ101X	100 2W	[M]
R8407	ERJ2GEJ101X	100 2W	[M]
R8420	ERJ2GEJ222X	2.2K 2W	[M]
R8421	ERJ2GE0R00X	0 2W	[M]
R8501	ERJ2GE0R00X	0 2W	[M]
R8505	ERJ2GEJ222X	2.2K 2W	[M]
R8506	ERJ2GEJ152X	1.5K 2W	[M]
R8550	ERJ2GEJ752X	7.5K 2W	[M]
R8551	ERJ2GE0R00X	0 2W	[M]
R8552	ERJ2GEJ102X	1K 2W	[M]
R8553	ERJ2GEJ102X	1K 2W	[M]
R8554	ERJ2GEJ680X	68 2W	[M]
R8555	ERJ2GEJ2R2X	2.2 2W	[M]
R8556	ERJ3GEYJ560V	56 1/16W	[M]
R8557	ERJ3GEYJ510V	51 1/16W	[M]
R8558	ERJ2GEJ473X	47K 2W	[M]
R8559	ERJ2GEJ153X	15K 2W	[M]
R8560	ERJ2GEJ102X	1K 2W	[M]
R8561	ERJ2GE0R00X	0 2W	[M]
R8562	ERJ2GEJ102X	1K 2W	[M]
R8563	ERJ2GEJ102X	1K 2W	[M]
R8564	ERJ2GEJ220X	22 2W	[M]
R8565	ERJ2GEJ2R2X	2.2 2W	[M]
R8566	ERJ3GEYJ560V	56 1/16W	[M]
R8567	ERJ3GEYJ510V	51 1/16W	[M]
R8568	ERJ2GEJ473X	47K 2W	[M]
R8569	ERJ2GEJ123X	12K 2W	[M]
R8570	ERJ2GEJ104X	100K 2W	[M]
R8601	ERJ2GEJ102X	1K 2W	[M]
R8606	ERJ2GEJ104X	100K 2W	[M]
R8607	ERJ2GEJ103X	10K 2W	[M]
R8611	ERJ2GEJ101X	100 2W	[M]
R8621	ERJ2GEJ105X	1M 2W	[M]
R8622	ERJ2RHD102X	1K 2W	[M]
RX8011	D1H88204A024	CHIP RESISTOR	[M]
RX8012	D1H88204A024	CHIP RESISTOR	[M]
RX8013	D1H88204A024	CHIP RESISTOR	[M]
RX8014	D1H88204A024	CHIP RESISTOR	[M]
RX8015	D1H422020001	CHIP RESISTOR	[M]
RX8016	D1H88204A024	CHIP RESISTOR	[M]
RX8017	D1H88204A024	CHIP RESISTOR	[M]
RX8018	D1H88204A024	CHIP RESISTOR	[M]
RX8021	D1H410320002	CHIP RESISTOR	[M]
RX8031	D1H447220001	CHIP RESISTOR	[M]
RX8032	D1H447220001	CHIP RESISTOR	[M]
RX8401	D1H410120001	CHIP RESISTOR	[M]
RX8402	D1H410120001	CHIP RESISTOR	[M]
RX8501	D1H456020001	CHIP RESISTOR	[M]
RX8502	D1H85604A024	CHIP RESISTOR	[M]
RX8503	D1H456020001	CHIP RESISTOR	[M]
RX8504	D1H456020001	CHIP RESISTOR	[M]
RX8611	D1H447220001	CHIP RESISTOR	[M]
W2001	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2002	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2003	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2004	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2005	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2006	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2007	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2008	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2009	ERJ3GEY0R00V	CHIP JUMPER	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
W2010	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2011	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2012	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2013	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2014	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2015	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2016	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2017	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2018	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2019	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2020	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2021	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2022	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2023	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2024	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2025	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2026	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2027	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2028	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2101	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2102	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2103	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2104	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2105	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2106	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2107	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2108	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2109	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2110	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2111	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2112	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2113	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2114	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2115	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2116	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2117	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2118	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2119	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2120	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2121	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2122	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2123	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2124	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2127	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2128	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2129	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2130	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2131	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2133	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2134	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2135	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2136	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2137	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2138	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2139	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2140	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2150	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2156	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2157	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2158	ERJ3GEY0R00V	CHIP JUMPER	[M]
W2159	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5201	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5781	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5782	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5783	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5784	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5785	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5786	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5787	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5788	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5789	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5790	ERDS2TJ472T	RESISTOR	[M]
W5791	ERJ3GEY0R00V	CHIP JUMPER	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
W5793	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5795	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5796	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5797	ERJ3GEY0R00V	CHIP JUMPER	[M]
W5798	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6900	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6901	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6902	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6903	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6904	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6905	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6906	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6907	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6908	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6909	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6910	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6911	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6912	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6913	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6914	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6915	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6916	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6917	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6919	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6920	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6921	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6922	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6923	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6924	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6925	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6926	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6927	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6928	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6929	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6930	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6931	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6932	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6933	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6934	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6935	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6936	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6937	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6938	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6939	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6940	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6941	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6942	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6943	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6944	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6945	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6946	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6947	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6948	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6949	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6950	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6951	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6960	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6961	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6962	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6963	ERJ3GEY0R00V	CHIP JUMPER	[M]
W6965	ERJ3GEY0R00V	CHIP JUMPER	[M]
		WIRES	
FC9101	RWJ4906082SS	6P WIRE	[M]
K2100	ERJ3GEY0R00V	CHIP JUMPER	[M]
K2200	ERJ3GEY0R00V	CHIP JUMPER	[M]
K2300	ERJ3GEY0R00V	CHIP JUMPER	[M]
K2400	ERJ3GEY0R00V	CHIP JUMPER	[M]
K8031	ERJ2GE0R00X	CHIP JUMPER	[M]
K8106	ERJ3GEY0R00V	CHIP JUMPER	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
K8421	ERJ3GEY0R00V	CHIP JUMPER	[M]
		CAPACITORS	
C2001	ECEA1CKS470I	47 16V	[M]
C2002	ECJ1VB1C104K	0.1 16V	[M]
C2003	ECEA1EKS220B	22 25V	[M]
C2004	ECJ1VB1H103K	0.01 50V	[M]
C2006	ECEA1HKS2R2B	2.2 50V	[M]
C2007	ECJ1VB1C104K	0.1 16V	[M]
C2008	ECEA0JKS101B	100 6.3V	[M]
C2009	ECJ1VB1C104K	0.1 16V	[M]
C2010	ECJ1VB1H331K	330P 50V	[M]
C2011	ECJ1VB1H331K	330P 50V	[M]
C2012	ECJ1VB1H331K	330P 50V	[M]
C2013	ECJ1VB1H223K	0.022 50V	[M]
C2016	ECEA1CKS470I	47 16V	[M]
C2017	ECJ1VB1H103K	0.01 50V	[M]
C2018	ECEA1CKS470I	47 16V	[M]
C2019	ECEA1CKS470I	47 16V	[M]
C2020	ECJ1VB1H103K	0.01 50V	[M]
C2021	ECA1AAD221XI	220 10V	[M]
C2022	ECA1CAK221XB	220 16V	[M]
C2023	ECJ1VB1H221K	220P 50V	[M]
C2024	ECJ1VB1H221K	220P 50V	[M]
C2026	ECEA1CKS100I	10 16V	[M]
C2027	ECJ1VB1C104K	0.1 16V	[M]
C2028	ECJ1VB1C104K	0.1 16V	[M]
C2029	ECJ1VB1H471K	470P 50V	[M]
C2030	ECJ1VB1H471K	470P 50V	[M]
C2101	ECJ1VB1A105K	1 10V	[M]
C2111	ECJ1VB1A105K	1 10V	[M]
C2112	ECJ1VB1H471K	470P 50V	[M]
C2114	ECJ1VB1H562K	5600P 50V	[M]
C2115	ECJ1VC1H181J	180P 50V	[M]
C2117	ECJ1VB1C104K	0.1 16V	[M]
C2118	ECJ1VB1C104K	0.1 16V	[M]
C2119	ECJ1VB1A105K	1 10V	[M]
C2120	ECJ1VB1C393K	0.039 16V	[M]
C2121	ECJ1VB1C104K	0.1 16V	[M]
C2161	ECJ1VB1C393K	0.039 16V	[M]
C2162	ECJ1VB1H332K	3300P 50V	[M]
C2164	ECJ1VB1H221K	220P 50V	[M]
C2169	ECJ1VB1H103K	0.01 50V	[M]
C2170	ECEA1HKS010B	1 50V	[M]
C2171	ECEA1EKS4R7B	4.7 25V	[M]
C2172	ECJ1VC1H101J	100P 50V	[M]
C2177	ECEA1HKS010I	1 50V	[M]
C2178	ECJ1VC1H101J	100P 50V	[M]
C2179	ECJ1VC1H470J	47P 50V	[M]
C2180	ECJ1VB1C104K	0.1 16V	[M]
C2181	ECJ1VB1H102K	1000P 50V	[M]
C2183	ECEA1HKS3R3B	3.3 50V	[M]
C2185	ECJ1VB1A105K	1 10V	[M]
C2186	ECJ1VB1A105K	1 10V	[M]
C2187	ECJ1VB1A105K	1 10V	[M]
C2188	ECJ1VB1A105K	1 10V	[M]
C2190	ECJ1VB1A105K	1 10V	[M]
C2191	ECJ1VC1H101J	100P 50V	[M]
C2193	ECJ1VB1C104K	0.1 16V	[M]
C2194	ECJ1VB1H182K	1800P 50V	[M]
C2201	ECJ1VB1A105K	1 10V	[M]
C2211	ECJ1VB1A105K	1 10V	[M]
C2212	ECJ1VB1H471K	470P 50V	[M]
C2214	ECJ1VB1H562K	5600P 50V	[M]
C2215	ECJ1VC1H181J	180P 50V	[M]
C2217	ECJ1VB1C104K	0.1 16V	[M]
C2218	ECJ1VB1C104K	0.1 16V	[M]
C2219	ECJ1VB1A105K	1 10V	[M]
C2220	ECJ1VB1C393K	0.039 16V	[M]
C2221	ECJ1VB1C104K	0.1 16V	[M]
C2261	ECJ1VB1C393K	0.039 16V	[M]
C2262	ECJ1VB1H332K	3300P 50V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C2264	ECJ1VB1H221K	220P 50V	[M]
C2270	ECEA1HKS010B	1 50V	[M]
C2272	ECJ1VC1H101J	100P 50V	[M]
C2277	ECEA1HKS010I	1 50V	[M]
C2278	ECJ1VC1H101J	100P 50V	[M]
C2279	ECJ1VC1H470J	47P 50V	[M]
C2280	ECJ1VB1C104K	0.1 16V	[M]
C2281	ECJ1VB1H102K	1000P 50V	[M]
C2283	ECEA1HKS3R3B	3.3 50V	[M]
C2285	ECJ1VB1A105K	1 10V	[M]
C2286	ECJ1VB1A105K	1 10V	[M]
C2287	ECJ1VB1A105K	1 10V	[M]
C2288	ECJ1VB1A105K	1 10V	[M]
C2290	ECJ1VB1A105K	1 10V	[M]
C2291	ECJ1VC1H101J	100P 50V	[M]
C2293	ECJ1VB1C104K	0.1 16V	[M]
C2294	ECJ1VB1H182K	1800P 50V	[M]
C2300	ECJ1VB1A105K	1 10V	[M]
C2301	ECJ2YB0J475K	4.7 6.3V	[M]
C2302	ECJ1VB1C393K	0.039 16V	[M]
C2303	ECJ1VB1C104K	0.1 16V	[M]
C2304	ECEA1CKS100I	10 16V	[M]
C2305	ECJ1VB1H332K	3300P 50V	[M]
C2306	ECJ1VB1A154K	0.15 10V	[M]
C2307	ECEA1CKS100I	10 16V	[M]
C2308	ECJ1VB1H223K	0.022 50V	[M]
C2309	ECJ1VB1C823K	0.082 16V	[M]
C2312	ECEA1HKS3R3B	3.3 50V	[M]
C2323	ECJ1VB1H471K	470P 50V	[M]
C2324	ECJ1VB1H272K	2700P 50V	[M]
C2400	ECJ1VB1A105K	1 10V	[M]
C2401	ECJ2YB0J475K	4.7 6.3V	[M]
C2402	ECJ1VB1C393K	0.039 16V	[M]
C2403	ECJ1VB1C104K	0.1 16V	[M]
C2404	ECEA1CKS100I	10 16V	[M]
C2405	ECJ1VB1H332K	3300P 50V	[M]
C2406	ECJ1VB1A154K	0.15 10V	[M]
C2407	ECEA1CKS100I	10 16V	[M]
C2408	ECJ1VB1H223K	0.022 50V	[M]
C2412	ECEA1HKS3R3B	3.3 50V	[M]
C2423	ECJ1VB1H471K	470P 50V	[M]
C2424	ECJ1VB1H272K	2700P 50V	[M]
C2500	ECJ1VB1A105K	1 10V	[M]
C2501	ECEA1CKS100I	1 16V	[M]
C2502	ECJ1VB1C333K	0.033 16V	[M]
C2503	ECJ1VB1C104K	0.1 16V	[M]
C2506	ECEA1HKS010B	1 50V	[M]
C2507	ECJ1VB1H471K	470P 50V	[M]
C2509	ECJ1VB1H222K	2200P 50V	[M]
C2600	ECJ1VB1A105K	1 10V	[M]
C2601	ECJ1VB1C823K	0.082 16V	[M]
C2606	ECEA1CKS100I	10 16V	[M]
C2607	ECEA1EKS220B	22 25V	[M]
C2608	ECEA1CKS100I	10 16V	[M]
C2609	ECJ1VB1A474K	0.47 10V	[M]
C2610	ECJ1VB1A474K	0.47 10V	[M]
C2611	ECJ1VB1H123K	0.012 50V	[M]
C2612	ECJ1VB1H332K	3300P 50V	[M]
C2615	ECJ1VB1H222K	2200P 50V	[M]
C2617	ECJ1VB1C124K	0.12 16V	[M]
C2619	ECEA1HKA100B	10 50V	[M]
C2620	ECJ1VC1H101J	100P 50V	[M]
C2621	ECJ1VB1C104K	0.1 16V	[M]
C2623	ECJ1VC1H101J	100P 50V	[M]
C2801	ECJ1VB1C104K	0.1 16V	[M]
C2802	ECEA0JKS101B	100 6.3V	[M]
C2803	ECEA0JKS101B	100 6.3V	[M]
C2804	ECEA0JKS101B	100 6.3V	[M]
C2805	ECEA0JKS101B	100 6.3V	[M]
C2806	ECEA0JKS101B	100 6.3V	[M]
C2807	ECJ1VB1H103K	0.01 50V	[M]
C2808	ECA1AAD221XI	220 10V	[M]
C2809	ECEA1EKS220B	22 25V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C2810	ECJ1VB1H103K	0.01 50V	[M]
C2811	ECJ1VB1C104K	0.1 16V	[M]
C2812	ECJ1VB1C104K	0.1 16V	[M]
C2814	ECEA1EKS220B	22 25V	[M]
C2815	ECEA1EKS220B	22 25V	[M]
C2816	ECEA1EKS220B	22 25V	[M]
C2817	ECJ1VB1A105K	1 10V	[M]
C2818	ECJ1VB1A105K	1 10V	[M]
C2819	ECJ1VC1H101J	100P 50V	[M]
C2820	ECJ1VC1H101J	100P 50V	[M]
C2821	ECJ1VC1H101J	100P 50V	[M]
C2822	ECJ1VC1H101J	100P 50V	[M]
C2823	ECJ1VC1H101J	100P 50V	[M]
C2825	ECJ1VC1H101J	100P 50V	[M]
C2826	ECJ1VC1H101J	100P 50V	[M]
C2827	ECJ1VC1H101J	100P 50V	[M]
C2828	ECJ1VC1H101J	100P 50V	[M]
C2829	ECJ1VC1H101J	100P 50V	[M]
C2830	ECJ1VC1H101J	100P 50V	[M]
C2832	ECJ1VB1H221K	220P 50V	[M]
C2833	ECJ1VB1H104K	0.1 50V	[M]
C2834	ECEA1EKS220B	22 25V	[M]
C2835	ECEA1EKS220B	22 25V	[M]
C2836	ECJ1VB1C104K	0.1 16V	[M]
C2837	ECJ1VB1C104K	0.1 16V	[M]
C2838	ECJ1VB1C104K	0.1 16V	[M]
C2839	ECJ1VB1C104K	0.1 16V	[M]
C2901	ECA1EM102B	1000 25V	[M]
C2902	ECJ1VB1H103K	0.01 50V	[M]
C2903	ECJ1VB1H103K	0.01 50V	[M]
C2906	ECJ1VB1H103K	0.01 50V	[M]
C2908	ECEA1CKA101B	100 16V	[M]
C2910	ECJ1VB1H103K	0.01 50V	[M]
C2913	ECEA1CKA101B	100 16V	[M]
C2914	ECEA1AKA330B	33 10V	[M]
C2917	ECJ1VB1H104K	0.1 50V	[M]
C2918	ECA1CAK470XB	47 16V	[M]
C2919	ECJ1VC1H101J	100P 50V	[M]
C2920	ECJ1VB1H103K	0.01 50V	[M]
C2921	ECA1EM221B	220 25V	[M]
C2922	EEUFC0J821B	820P 6.3V	[M]
C2923	ECEA1CKA101B	100 16V	[M]
C2925	ECA0JAK221XB	220 6.3V	[M]
C2926	ECJ1VB1C104K	0.1 16V	[M]
C2927	ECEA1CKA101B	100 16V	[M]
C2929	ECA0JAK221XB	220 6.3V	[M]
C2930	ECJ1VB1A105K	1 10V	[M]
C2931	ECA0JAK221XB	220 6.3V	[M]
C2932	ECEA1CKA101B	100 16V	[M]
C2940	ECJ1VB1H104K	0.1 50V	[M]
C2941	ECEA1CKA470B	47 16V	[M]
C2944	EEUFC0J821B	820P 6.3V	[M]
C2945	ECJ1VB1H103K	0.01 50V	[M]
C2946	ECEA1CKA101B	100 16V	[M]
C2950	ECJ1VB1C104K	0.1 16V	[M]
C2951	ECJ1VB1C104K	0.1 16V	[M]
C2952	ECJ1VB1H103K	0.01 50V	[M]
C2953	ECJ1VB1H103K	0.01 50V	[M]
C2954	ECJ1VB1H103K	0.01 50V	[M]
C2955	ECJ1VB1H103K	0.01 50V	[M]
C2956	ECJ1VB1H103K	0.01 50V	[M]
C2957	ECJ1VB1H103K	0.01 50V	[M]
C2958	ECJ1VB1H103K	0.01 50V	[M]
C2959	ECEA0JKS101B	100 6.3V	[M]
C2960	ECJ1VB1A105K	1 10V	[M]
C2962	ECEA1CKA101B	100 16V	[M]
C2963	EEUFC0J821B	820P 6.3V	[M]
C2964	ECJ1VB1H103K	0.01 50V	[M]
C2965	ECJ1VB1H103K	0.01 50V	[M]
C2966	ECJ1VB1H103K	0.01 50V	[M]
C2967	ECJ1VB1H103K	0.01 50V	[M]
C2968	ECEA1CKA101B	100 16V	[M]
C2969	ECEA1CKA101B	100 16V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C5000	ECJ1VB1H102K	1000P 50V	[M]
C5001	ECJ1VB1H102K	1000P 50V	[M]
C5002	ECJ1VB1H104K	0.1 50V	[M]
C5003	ECJ1VB1H104K	0.1 50V	[M]
C5004	ECJ1VB1H104K	0.1 50V	[M]
C5005	ECJ1VB1H104K	0.1 50V	[M]
C5006	ECJ1VB1H331K	330P 50V	[M]
C5007	ECJ1VB1H331K	330P 50V	[M]
C5008	ECJ1VB1H153K	0.015 50V	[M]
C5009	ECJ1VB1H153K	0.015 50V	[M]
C5010	ECJ2VC2A221J	220P 100V	[M]
C5011	ECJ2VC2A221J	220P 100V	[M]
C5012	ECJ2VC2A221J	220P 100V	[M]
C5013	ECJ2VC2A221J	220P 100V	[M]
C5014	ECQV1H474JL3	0.47 50V	[M]
C5015	ECQV1H474JL3	0.47 50V	[M]
C5016	ECJ1VB1H104K	0.1 50V	[M]
C5017	ECJ1VB1H104K	0.1 50V	[M]
C5018	ECJ3YB2A104K	0.1 100V	[M]
C5019	ECJ3YB2A104K	0.1 100V	[M]
C5020	ECJ1VB1H104K	0.1 50V	[M]
C5021	ECJ3YB2A104K	0.1 100V	[M]
C5022	ECJ1VB1H104K	0.1 50V	[M]
C5023	ECJ3YB2A104K	0.1 100V	[M]
C5024	ECJ1VB1H104K	0.1 50V	[M]
C5025	ECJ1VB1H104K	0.1 50V	[M]
C5026	ECJ3YB2A104K	0.1 100V	[M]
C5027	ECJ1VB1H104K	0.1 50V	[M]
C5028	ECJ1VB1H104K	0.1 50V	[M]
C5029	ECJ3YB2A104K	0.1 100V	[M]
C5030	ECJ1VC1H221J	220P 50V	[M]
C5031	ECJ1VB1C224K	0.22 16V	[M]
C5040	ECA2AM220B	22 100V	[M]
C5133	ECA0JAK101XB	100 6.3V	[M]
C5134	ECJ1VB1H103K	0.01 50V	[M]
C5135	ECJ1VB1H103K	0.01 50V	[M]
C5136	ECJ1VB1H103K	0.01 50V	[M]
C5137	ECJ1VB1H103K	0.01 50V	[M]
C5200	ECJ1VB1H104K	0.1 50V	[M]
C5201	ECJ1VB1H153K	0.015 50V	[M]
C5202	ECJ1VB1C224K	0.22 16V	[M]
C5203	ECJ2VC2A221J	220P 100V	[M]
C5204	ECJ1VB1H153K	0.015 50V	[M]
C5205	ECJ2VC2A221J	220P 100V	[M]
C5206	ECJ1VB1H104K	0.1 50V	[M]
C5207	ECJ3YB2A104K	0.1 100V	[M]
C5208	ECJ1VB1H104K	0.1 50V	[M]
C5209	ECJ1VB1H104K	0.1 50V	[M]
C5210	ECJ3YB2A104K	0.1 100V	[M]
C5211	ECJ2VC2A221J	220P 100V	[M]
C5212	ECJ1VC1H221J	220P 50V	[M]
C5213	ECJ3YB2A104K	0.1 100V	[M]
C5214	ECJ1VB1H104K	0.1 50V	[M]
C5215	ECJ3YB2A104K	0.1 100V	[M]
C5216	ECJ1VB1H331K	330P 50V	[M]
C5217	ECJ3YB2A104K	0.1 100V	[M]
C5218	ECJ2VC2A221J	220P 100V	[M]
C5219	ECJ3YB2A104K	0.1 100V	[M]
C5220	ECJ1VB1H104K	0.1 50V	[M]
C5221	ECJ1VB1H102K	1000P 50V	[M]
C5222	ECJ1VB1H104K	0.1 50V	[M]
C5223	ECJ1VB1H104K	0.1 50V	[M]
C5224	ECJ1VB1H331K	330P 50V	[M]
C5225	ECQV1H474JL3	0.47 50V	[M]
C5226	ECJ1VB1H104K	0.1 50V	[M]
C5227	ECJ1VB1H104K	0.1 50V	[M]
C5228	ECQV1H474JL3	0.47 50V	[M]
C5231	ECJ1VB1H103K	0.01 50V	[M]
C5232	ECJ1VB1H103K	0.01 50V	[M]
C5240	ECA2AM220B	22 100V	[M]
C5300	ECQV1H474JL3	0.47 50V	[M]
C5301	ECJ1VB1H104K	0.1 50V	[M]
C5302	ECJ1VB1H104K	0.1 50V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C5303	ECJ1VB1H104K	0.1 50V	[M]
C5304	ECJ1VB1H331K	330P 50V	[M]
C5305	ECJ1VB1H104K	0.1 50V	[M]
C5306	ECJ1VB1H104K	0.1 50V	[M]
C5307	ECJ2VC2A221J	220P 100V	[M]
C5308	ECJ3YB2A104K	0.1 100V	[M]
C5309	ECJ3YB2A104K	0.1 100V	[M]
C5310	ECJ3YB2A104K	0.1 100V	[M]
C5311	ECJ2VC2A221J	220P 100V	[M]
C5312	ECJ1VB1H331K	330P 50V	[M]
C5313	ECJ1VB1H104K	0.1 50V	[M]
C5314	ECJ1VB1A474K	0.47 10V	[M]
C5315	ECJ1VB1H102K	1000P 50V	[M]
C5316	ECJ1VB1H104K	0.1 50V	[M]
C5317	ECJ1VB1A474K	0.47 10V	[M]
C5318	ECJ3YB2A104K	0.1 100V	[M]
C5319	ECJ3YB2A104K	0.1 100V	[M]
C5320	ECJ3YB2A104K	0.1 100V	[M]
C5321	ECJ1VB1C224K	0.22 16V	[M]
C5322	ECJ1VB1H153K	0.015 50V	[M]
C5323	ECJ1VC1H221J	220P 50V	[M]
C5324	ECJ1VB1H153K	0.015 50V	[M]
C5325	ECJ2VC2A221J	220P 100V	[M]
C5326	ECJ2VC2A221J	220P 100V	[M]
C5327	ECJ1VB1H104K	0.1 50V	[M]
C5328	ECQV1H474JL3	0.47 50V	[M]
C5331	ECJ1VB1H103K	0.01 50V	[M]
C5332	ECJ1VB1H103K	0.01 50V	[M]
C5450	ECJ1VB1H104K	0.1 50V	[M]
C5508	ECA1VM471B	470 35V	[M]
C5509	ECA1VM471B	470 35V	[M]
C5510	ECA1VM471B	470 35V	[M]
C5511	ECA1VM471B	470 35V	[M]
C5512	ECA1VM471B	470 35V	[M]
C5513	ECA1VM471B	470 35V	[M]
C5514	ECJ1VB1H104K	0.1 50V	[M]
C5515	ECJ1VB1H104K	0.1 50V	[M]
C5550	ECJ1VB1H471K	470P 50V	[M]
C5551	ECJ1VB1H391K	390P 50V	[M]
C5552	ECJ1VB1H391K	390P 50V	[M]
C5553	ECJ1VC1H101J	100P 50V	[M]
C5555	ECJ3YB1C106K	10 16V	[M]
C5556	ECJ1VB1H471K	470P 50V	[M]
C5557	ECA0JM331B	330 6.3V	[M]
C5558	ECA1CAK100XB	10 16V	[M]
C5559	ECA1CAK100XB	10 16V	[M]
C5700	F2B2D5610008	560P 250V	[M]
C5701	ECQU2A224MLC	0.22 100V	[M]
C5702	F1J2E1030004	0.01 250V	[M]
C5706	ECQU2A224MLC	0.22 100V	[M] ⚠
C5708	ECQE2103KF	0.01 250V	[M]
C5709	ECJ1VB1H471K	470P 50V	[M]
C5710	ECQP6332JUB	CAPACITOR	[M]
C5711	F2A1H5600009	56P 50V	[M]
C5712	ECJ1VB1H221K	220P 50V	[M]
C5713	ECJ1VB1H102K	1000P 50V	[M]
C5714	F1BAF2220023	22P 10V	[M] ⚠
C5715	ECA1CAK470XB	47 16V	[M]
C5717	F2A1V3320011	3300P 35V	[M]
C5718	F2A1V3320011	3300P 35V	[M]
C5720	ECJ1VB1H104K	0.1 50V	[M]
C5722	ECJ1VB1H104K	0.1 50V	[M]
C5725	ECA1HAK2R2XB	2.2 50V	[M]
C5727	ECCN3A470KGE	47P 1000V	[M]
C5729	ECA1HAK220XB	22 50V	[M]
C5732	ECJ1VB1H104K	0.1 50V	[M]
C5733	ECA1CAK221XB	220 16V	[M]
C5736	F1BAF2220023	22P 10	[M] ⚠
C5737	F1BAF2220023	22P 10	[M] ⚠
C5738	ECJ1VB1H681K	680P 50V	[M]
C5741	ECA1AM471B	470 10V	[M]
C5742	ECA1CM222B	2200 16V	[M]
C5761	ECJ1VB1H104K	0.1 50V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C5770	F1B2H103A060	0.01 500V	[M]
C5771	F1B2H103A060	0.01 500V	[M]
C5772	F1B2H103A060	0.01 500V	[M]
C5773	F1B2H103A060	0.01 500V	[M]
C5774	F1B2H103A060	0.01 500V	[M]
C5790	ECJ1VB1H102K	1000P 50V	[M]
C5791	ECA1HAM101XB	100 50V	[M]
C5792	ECA1AM331B	330 10V	[M]
C5794	ECA1CAK330XB	33 16V	[M]
C5795	ECJ1VB1H104K	0.1 50V	[M]
C5796	ECA1VAM102XB	1000 35V	[M]
C5797	ECA1CAK100XB	10 16V	[M]
C5915	ECJ1VB1H103K	0.01 50V	[M]
C5916	ECA1HM101B	100 50V	[M]
C6101	ECJ1VB1H473K	0.047 50V	[M]
C6201	ECJ1VB1H473K	0.047 50V	[M]
C6801	ECJ1VB1H104K	0.1 50V	[M]
C6805	ECJ1VC1H101K	100P 50V	[M]
C6806	ECJ1VC1H101K	100P 50V	[M]
C6903	ECEA1HKA220B	22 50V	[M]
C6904	ECJ1VB1H102K	1000P 50V	[M]
C6905	ECEA1HKA220B	22 50V	[M]
C6906	ECJ1VC1H101K	100P 50V	[M]
C6909	ECJ1VB1H103K	0.01 50V	[M]
C6910	ECEA0JKS101B	100 6.3V	[M]
C6911	ECJ1VB1H103K	0.01 50V	[M]
C6912	ECJ1VB1C104K	0.1 16V	[M]
C6913	ECEA1HKS3R3B	3.3 50V	[M]
C6916	ECJ1VC1H101K	100P 50V	[M]
C6917	ECJ1VC1H101K	100P 50V	[M]
C6918	ECEA1AKA470B	47 10V	[M]
C6919	ECJ1VC1H101K	100P 50V	[M]
C6920	ECJ1VB1H331K	330P 50V	[M]
C6921	ECJ1VB1H331K	330P 50V	[M]
C6923	ECJ1VB1H103K	0.01 50V	[M]
C6924	ECJ1VB1H103K	0.01 50V	[M]
C6925	ECJ1VB1H103K	0.01 50V	[M]
C6926	ECJ1VB1C104K	0.1 16V	[M]
C6927	ECJ1VB1C104K	0.1 16V	[M]
C8001	F2G0J101A066	100P 6.3V	[M]
C8002	F2G0G331A012	330P 4V	[M]
C8003	ECJ0EB1E222K	2200P 25V	[M]
C8004	ECJ0EF1C104Z	0.1 16V	[M]
C8005	ECJ0EF1C104Z	0.1 16V	[M]
C8006	ECJ0EF1C104Z	0.1 16V	[M]
C8007	ECJ0EF1C104Z	0.1 16V	[M]
C8008	ECJ0EF1C104Z	0.1 16V	[M]
C8009	ECJ0EF1C104Z	0.1 16V	[M]
C8010	ECJ0EF1C104Z	0.1 16V	[M]
C8011	ECJ1VB0J105K	1 6.3V	[M]
C8012	ECJ0EF1C104Z	0.1 16V	[M]
C8013	ECJ0EF1C104Z	0.1 16V	[M]
C8014	ECJ0EF1C104Z	0.1 16V	[M]
C8015	ECJ1VB0J105K	1 6.3V	[M]
C8016	ECJ1VB0J105K	1 6.3V	[M]
C8017	ECJ0EF1C104Z	0.1 16V	[M]
C8018	ECJ0EF1C104Z	0.1 16V	[M]
C8019	ECJ1VB0J105K	1 6.3V	[M]
C8020	ECJ0EF1C104Z	0.1 16V	[M]
C8021	ECJ0EF1C104Z	0.1 16V	[M]
C8022	ECJ0EF1C104Z	0.1 16V	[M]
C8023	ECJ1VB0J105K	1 6.3V	[M]
C8024	ECJ1VB0J105K	1 6.3V	[M]
C8025	ECJ0EF1C104Z	0.1 16V	[M]
C8026	ECJ0EB1E222K	2200P 25V	[M]
C8027	ECJ0EF1C104Z	0.1 16V	[M]
C8028	ECJ1VB0J105K	1 6.3V	[M]
C8031	ECJ0EF1C104Z	0.1 16V	[M]
C8051	ECJ1VB0J105K	1 6.3V	[M]
C8052	ECJ0EF1C104Z	0.1 16V	[M]
C8053	ECJ0EC1H221J	220P 50V	[M]
C8054	ECJ1VB0J105K	1 6.3V	[M]
C8055	ECJ1VB0J105K	1 6.3V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C8056	ECJ0EF1C104Z	0.1 16V	[M]
C8057	ECJ0EB1E222K	2200P 25V	[M]
C8111	ECJ0EB1A104K	0.1 10V	[M]
C8112	ECJ1VB0J105K	1 6.3V	[M]
C8113	ECJ0EB1E471K	470P 25V	[M]
C8151	ECJ2YB0J225K	2.2 6.3V	[M]
C8152	ECJ1VB1C105K	1 16V	[M]
C8201	F2H0J101A003	100P 6.3V	[M]
C8202	F2G0J101A066	100P 6.3V	[M]
C8203	ECJ0EF1C104Z	0.1 16V	[M]
C8204	ECJ0EF1C104Z	0.1 16V	[M]
C8205	ECJ0EF1C104Z	0.1 16V	[M]
C8206	ECJ1VB0J105K	1 6.3V	[M]
C8207	ECJ1VF1C104Z	0.1 16V	[M]
C8208	ECJ0EF1C104Z	0.1 16V	[M]
C8211	ECJ0EB1A333K	0.033 10V	[M]
C8212	ECJ0EF1C104Z	0.1 16V	[M]
C8213	ECJ0EF1C104Z	0.1 16V	[M]
C8214	ECJ0EF1C104Z	0.1 16V	[M]
C8215	ECJ0EB1E562K	5600P 25V	[M]
C8216	ECJ0EB1C183K	0.018 16V	[M]
C8217	ECJ1VB0J105K	1 6.3V	[M]
C8218	ECJ1VB0J105K	1 6.3V	[M]
C8221	ECJ0EB1A104K	0.1 10V	[M]
C8222	ECJ0EB1A104K	0.1 10V	[M]
C8223	ECJ0EB1A104K	0.1 10V	[M]
C8224	ECJ0EB1A104K	0.1 10V	[M]
C8225	ECJ0EF1C104Z	0.1 16V	[M]
C8226	ECJ0EF1C104Z	0.1 16V	[M]
C8227	ECJ0EF1C104Z	0.1 16V	[M]
C8228	ECJ1VB0J105K	1 6.3V	[M]
C8229	ECJ1VB0J105K	1 6.3V	[M]
C8232	ECJ1VF1C104Z	0.1 16V	[M]
C8233	ECJ0EB1E472K	4700P 25V	[M]
C8234	ECJ0EF1C104Z	0.1 16V	[M]
C8235	ECJ0EB1H102K	1000P 50V	[M]
C8236	ECJ0EB1H102K	1000P 50V	[M]
C8237	ECJ0EB1H102K	1000P 50V	[M]
C8238	ECJ0EB1H821K	820P 50V	[M]
C8241	ECJ0EB1A104K	0.1 10V	[M]
C8242	ECJ0EB1A104K	0.1 10V	[M]
C8251	F2G0J221A065	220P 6.3V	[M]
C8252	F2G1C470A076	47P 16V	[M]
C8253	F2H1C220A003	22P 16V	[M]
C8254	ECJ0EF1C104Z	0.1 16V	[M]
C8255	ECJ0EF1C104Z	0.1 16V	[M]
C8256	ECJ0EF1C104Z	0.1 16V	[M]
C8257	ECJ0EF1C104Z	0.1 16V	[M]
C8261	ECJ0EF1C104Z	0.1 16V	[M]
C8262	ECJ0EF1C104Z	0.1 16V	[M]
C8301	F2H0J2210006	220P 6.3V	[M]
C8302	F2H0J330A003	33P 6.3V	[M]
C8303	ECJ0EF1C104Z	0.1 16V	[M]
C8304	ECJ1VB0J105K	1 6.3V	[M]
C8307	ECJ0EF1C104Z	0.1 16V	[M]
C8308	ECJ0EC1H150J	15P 50V	[M]
C8311	ECJ0EF1C104Z	0.1 16V	[M]
C8312	ECJ1VB0J105K	1 6.3V	[M]
C8421	F2G0J101A083	100P 6.3V	[M]
C8422	ECJ0EF1C104Z	0.1 16V	[M]
C8423	F2G0J330A083	33P 6.3V	[M]
C8424	ECJ0EF1C104Z	0.1 16V	[M]
C8426	ECJ0EF1C104Z	0.1 16V	[M]
C8427	ECJ0EF1C104Z	0.1 16V	[M]
C8428	ECJ0EF1C104Z	0.1 16V	[M]
C8501	ECJ3YB1A106M	10 10V	[M]
C8502	ECJ0EF1C104Z	0.1 16V	[M]
C8503	ECJ0EF1C104Z	0.1 16V	[M]
C8504	ECJ0EF1C104Z	0.1 16V	[M]
C8505	ECJ0EC1H221J	220P 50V	[M]
C8506	ECJ0EC1H101J	100P 50V	[M]
C8550	F2H0J330A003	33P 6.3V	[M]
C8551	ECJ0EF1C104Z	0.1 16V	[M]

Ref. No.	Part No.	Part Name & Description	Remarks
C8552	F2G1C100A072	10P 16V	[M]
C8553	F2H0J470A003	47P 6.3V	[M]
C8554	ECJ1VB0J105K	1 6.3V	[M]
C8561	ECJ0EF1C104Z	0.1 16V	[M]
C8562	F2G1C100A072	10P 16V	[M]
C8563	F2H0J470A003	47P 6.3V	[M]
C8564	ECJ1VB0J105K	1 6.3V	[M]
C8601	ECJ0EF1C104Z	0.1 16V	[M]
C8606	ECJ0EF1C104Z	0.1 16V	[M]
C8607	ECJ0EB0J224K	0.22 6.3V	[M]
C8611	ECJ0EF1C104Z	0.1 16V	[M]
C8621	ECJ0EC1H120J	12P 50V	[M]
C8622	ECJ0EC1H120J	12P 50V	[M]
C8651	ECJ0EF1C104Z	0.1 16V	[M]
C8652	ECJ0EF1C104Z	0.1 16V	[M]
C8691	ECJ0EF1C104Z	0.1 16V	[M]
C8695	ECJ0EF1C104Z	0.1 16V	[M]