

Service Manual

Home Theater Audio System



SA-HT40EE

Colour

(S).....Silver Type

Specification

AMPLIFIER SECTION

RMS output power of each channel driven

10% total harmonic distortion

1 kHz front CH

90 W per channel (4 Ω)

1 kHz surround CH

90 W per channel (4 Ω)

1 kHz center CH

220 W per channel (6 Ω)

100 Hz subwoofer CH

220 W per channel (6 Ω)

Total RMS output power

800 W

Rated minimum sine wave RMS power output

1% total harmonic distortion (Dolby Digital mode)

1 kHz front CH

50 W per channel (4 Ω)

1 kHz surround CH

50 W per channel (4 Ω)

1 kHz center CH

150 W per channel (6 Ω)

100 Hz subwoofer CH

150 W per channel (6 Ω)

Total RMS output power

500 W

Total harmonic distortion

Half power at 1 kHz (Front CH)

0.5% (4 Ω)

Input sensitivity

GAME/AUX, TV, DVR/DVD-P

450 mV, IHF'66

MUSIC PORT

250 mV, IHF'66

S/N at rated power (4 Ω)

GAME/AUX, TV, DVR/DVD-P

80 dB, (85 dB, IHF'66)

MUSIC PORT

70 dB, (85 dB, IHF'66)

Input impedance

GAME/AUX, TV, DVR/DVD-P, MUSIC PORT

47 kΩ

Tone controls

BASS

50 Hz, +10 to -10 dB

TREBLE

20 kHz, +10 to -10 dB

Digital input

OPTICAL

2

COAXIAL

1

FM TUNER SECTION

Frequency range

87.50 MHz to 108.00 MHz

Sensitivity

S/N 30 dB

1.9 μV/75 Ω

S/N 26 dB

1.8 μV/75 Ω

S/N 20 dB

1.6 μV/75 Ω

IHF usable sensitivity

(IHF'58) 2.2 μV/75 Ω

IHF 46 dB stereo quieting sensitivity

22 μV/75 Ω

Total Harmonic distortion

MONO

0.2%

STEREO

0.3%

S/N

MONO

60 dB (71 dB, IHF)

STEREO

58 dB (65 dB, IHF)

Frequency response

20 Hz to 15 kHz, +1 dB, -2 dB

Image rejection at 98 MHz

40 dB

IF rejection at 98 MHz

70 dB

Stereo separation (1 kHz)

40 dB

Panasonic

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| | | |
|---|---|---|
| Antenna terminal | 75 Ω (unbalanced) | System: SC-HT40 (EE) |
| AM TUNER SECTION | | Main unit: SA-HT40 (EE) |
| Frequency range | 522 kHz to 1611 kHz (9 kHz steps) 530 kHz to 1620 kHz (10 kHz steps) | Front speakers: SB-PF41 (GN) |
| Sensitivity | 500 µV/m | Surround speakers: SB-PS41 (GN) |
| Selectivity (at 999 kHz) | 30 dB | Center speaker: SB-PC40 (P) |
| GENERAL | | Subwoofer: SB-W40 (P) |
| Power supply | | Notes: |
| | AC 230 to 240 V, 50 Hz | 1. Specifications are subject to change without notice. Mass and dimensions are approximate. |
| Power consumption | 120 W | 2. Total harmonic distortion is measured by the digital spectrum analyzer. |
| Dimensions (W × H × D) | 430 mm x 105 mm x 385 mm | * Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories. |
| Mass | 3.8 kg | ** Manufactured under license from Digital Theater System. "DTS" and "DTS Digital Surround" are trademarks of Digital Theater System. |
| Power consumption in standby mode: | 1 W | |
| SYSTEM | | |

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.

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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, make 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 $1M\Omega$ and 5.2Ω .
When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

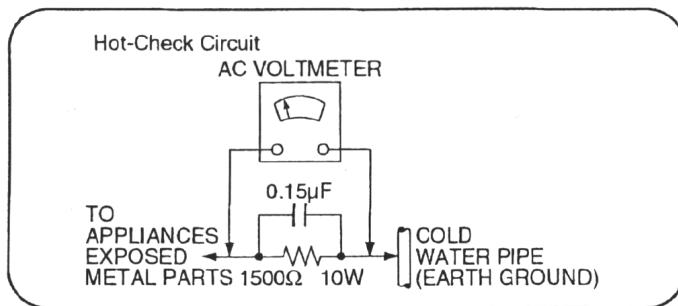


Fig. 1

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 $1.5k\Omega$, 10 watts resistor, in parallel with a $0.15\mu F$ 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 C707 & C1706 through a 10Ω , 1W 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 230 V - 240 V, 50Hz in NO SIGNAL mode should be 200 ~ 800 mA.

1.3. Protection Circuitry

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

*No sound is heard when the power is supplied.

*Sound stops during a performance.

The functions of this circuitry is to prevent circuitry damage, 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 this unit are used.

If this occurs, follow the procedure outlined below:

1. Press the STANDBY /ON button, switch to STANDBY mode.

2. Determine the cause of the problem and correct it.
3. Press the STANDBY  /ON button once again, supply the power.

Note:

When the protection circuitry functions, the unit will not operate unless the STANDBY  /ON button is first switched STANDBY 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 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-equipied 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 equiped with ES devices, place the assembly on a conductive surface such as aluminium foil, to prevent electrostatic charge build up or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder remover device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge 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, aluminium 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 body 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 imortant 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 Handling the Lead Solder

3.1. About Lead Free Solder (PbF)

Distinction of PbF P.C.B. :

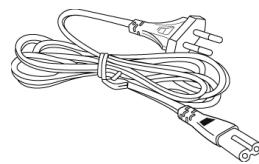
P.C.B.s (manufactured) using lead free solder will have a PbF stamp on the P.C.B.

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 $700 \pm 20^{\circ}\text{F}$ ($370 \pm 10^{\circ}\text{C}$).
- 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.

4 Accessories

Note: Refer to Packing Materials & Accessories (Section 18) for part number.



AC power cord



FM indoor antenna



AM loop antenna



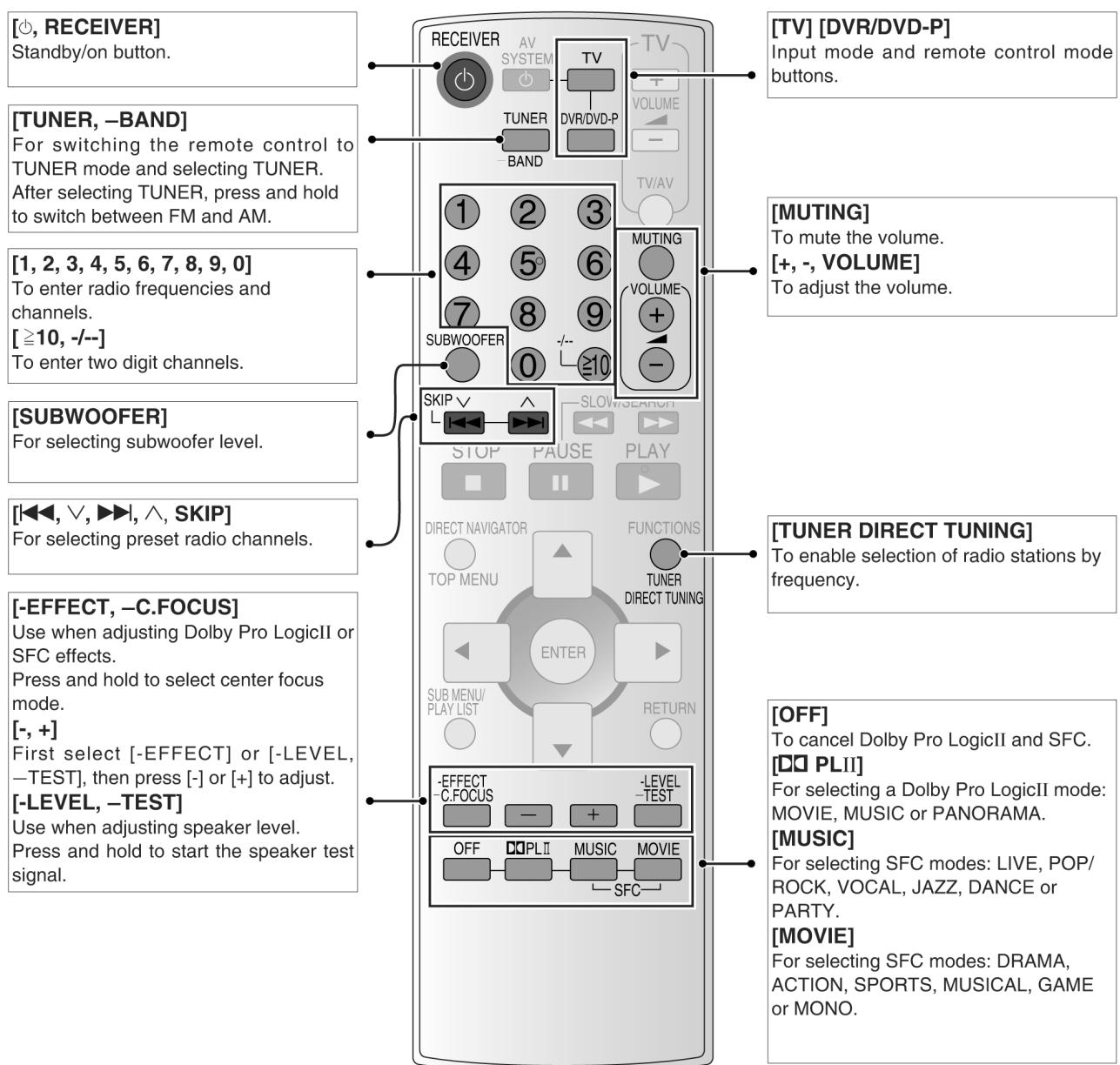
Remote control

5 Operation Procedures

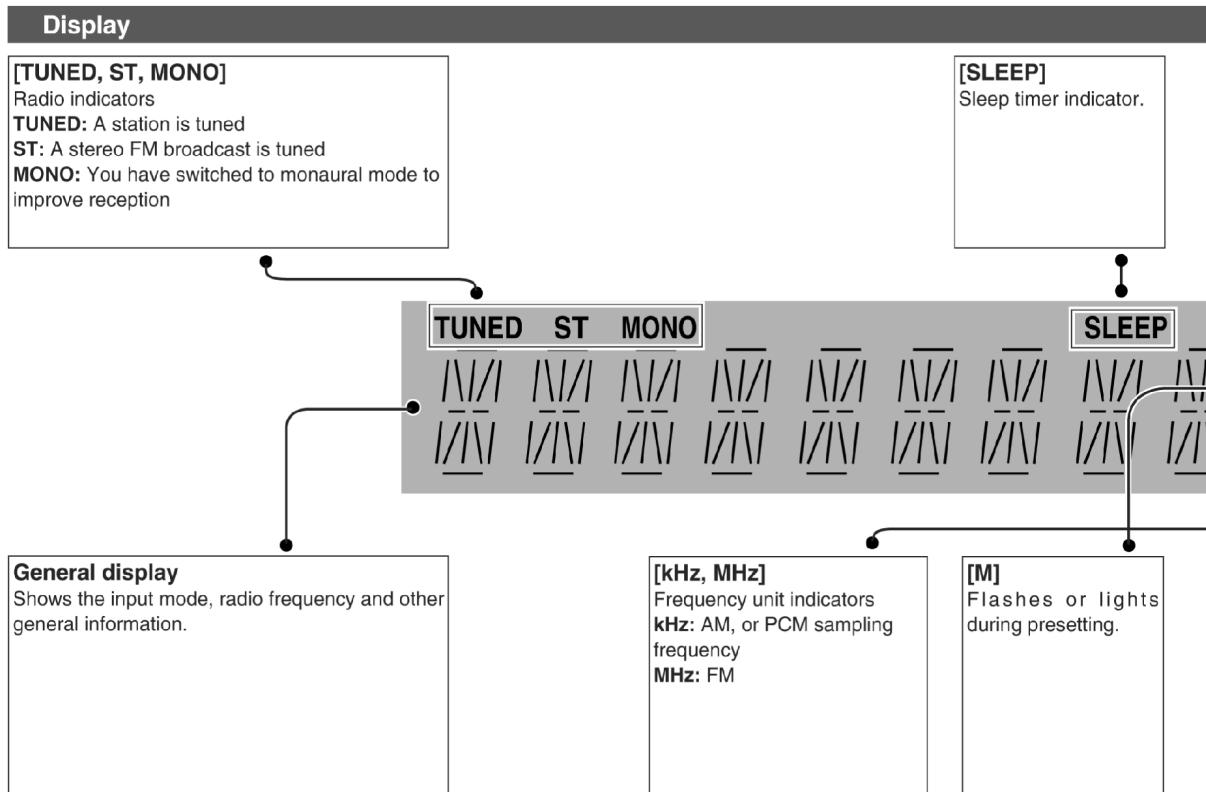
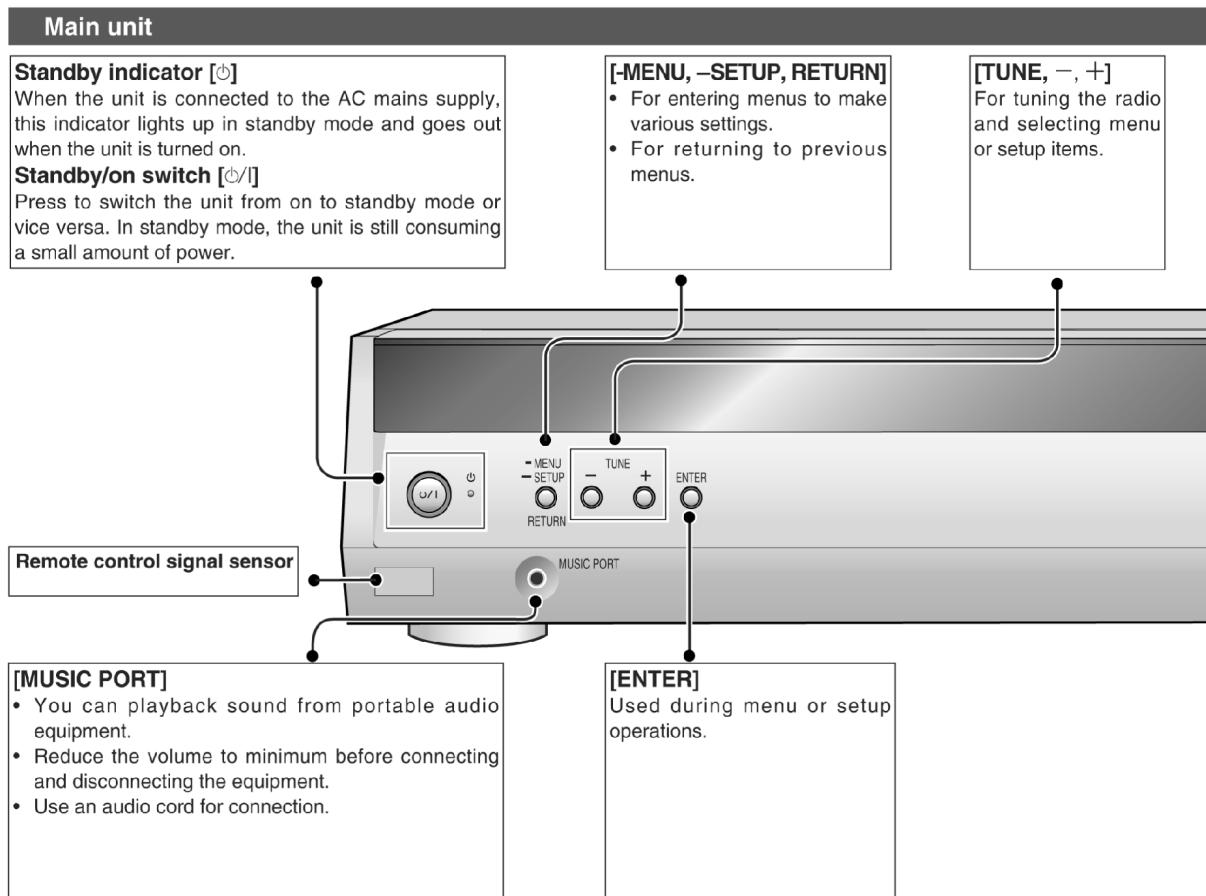
5.1. Remote Control Operation

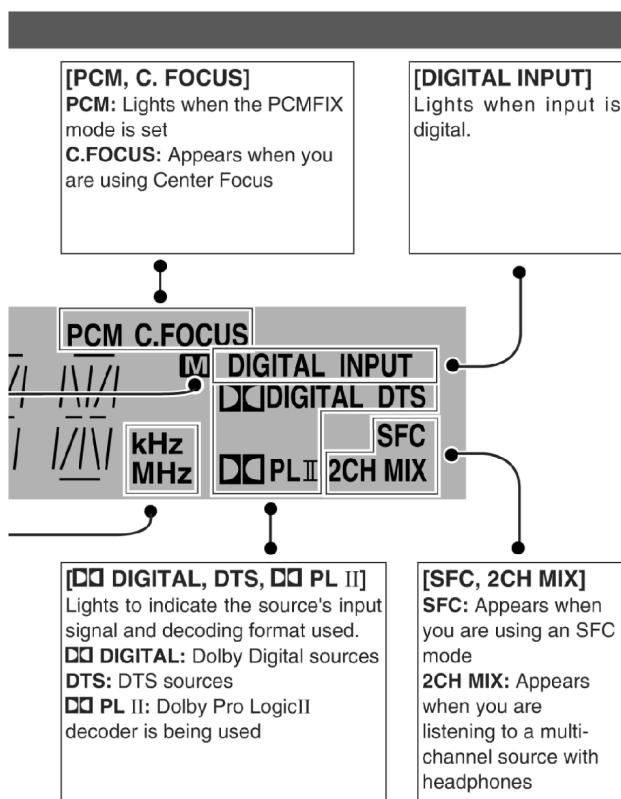
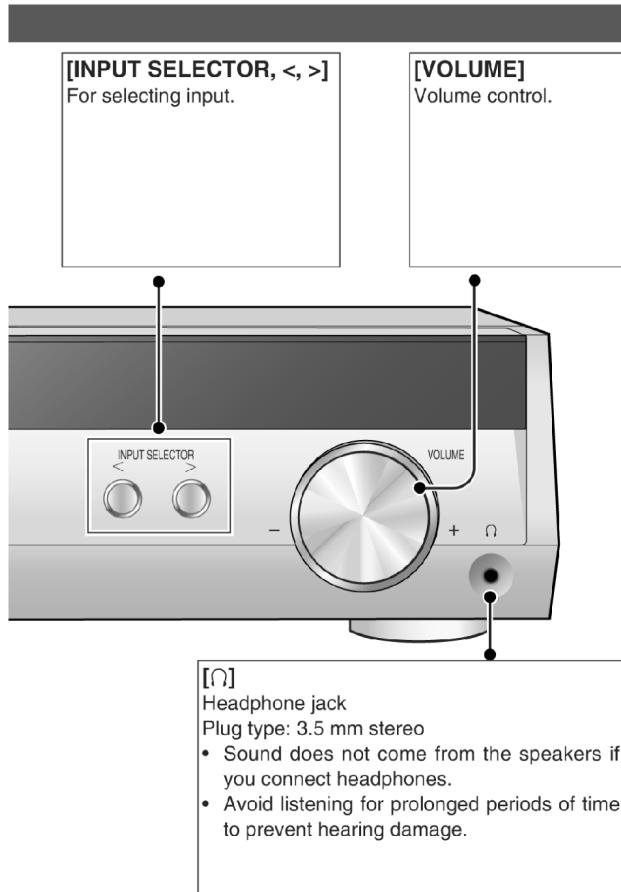
Remote control

This page describes the buttons used to control this unit.



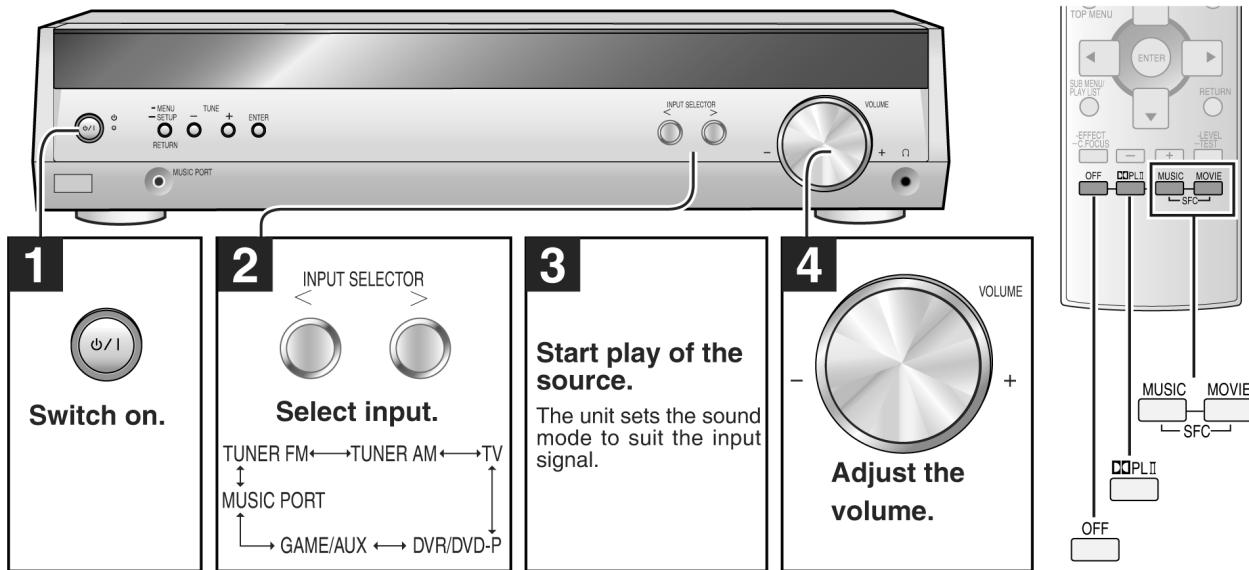
5.2. Main Unit Operation





6 New Features

6.1. Music Port



7 Self Diagnosis and Special Mode Setting

This unit is equipped with function for checking and inspecting namely: Self-Diagnostic and Test Mode.

7.1. Doctor & Service Mode (Special Mode setting)

| Item | | FL Display | Key Operation |
|--------------|--|---|---|
| Mode Name | Description | | Front Key |
| Doctor Mode | To enter into Doctor Mode for checking of various items. (For more information, refer to section 7.1.1.) | <p>1. FL will display as below for 3s:</p> <p>2. Initialization of all settings & the tuner frequency is set as below.</p> | <p>1. Press & hold [INPUT SELECTOR, <] and [-MENU] button on main unit follow by the [OK, POWER] button at the same time.</p> <p>To exit, press the [OK, POWER] button on the main unit or remote control.</p> |
| Service Mode | To enter into Service Mode for checking of uP software Version and displaying EEPROM checksum. | <p>1. FL will display as below:</p> <p>2. Next is the micro-processor firmware version no.</p> <p>3. This is followed by checking of EEPROM:-</p> | <p>For Service mode:</p> <p>1. Press & hold [INPUT SELECTOR, <] and [TUNE, -] button on main unit follow by the [OK, POWER] button at the same time.</p> <p>To check uP software Version:</p> <p>1. Press [TUNE, +] button on main unit.</p> <p>To check EEPROM:</p> <p>1. Press [TUNE, -] button on main unit.</p> <p>To exit, press the [OK, POWER] button on main unit or remote control.</p> |

7.1.1. Inspection & Checking Items

After entering into doctor mode, the main unit can be used for checking of various items using the remote control.

| Remote Control | Test Mode Function and settings | | | |
|----------------|--|------------|--|-----------|
| | Selector | Sound Mode | Other setting | Vol/Tone |
| CH 1 | TV | STEREO | Analog | -18dB/0dB |
| CH 2 | DVR/DVD-P | STEREO | Analog | -18dB/0dB |
| CH 3 | REAR MUSIC PORT | STEREO | Analog | -18dB/0dB |
| CH 4 | FRONT MUSIC PORT | STEREO | Analog | -18dB/0dB |
| CH 5 | TV | STEREO | Digital (OPT 1) | -48dB/0dB |
| CH 6 | DVR/DVD-P | STEREO | Digital (OPT 2) | -48dB/0dB |
| CH 7 | TV | STEREO | Digital (COAX) | -48dB/0dB |
| CH 8 | If the input selector is TUNER, auto tuning function is started to upward on current frequency. | | | |
| CH 9 | If the input selector is TUNER, auto tuning function is started to downward on current frequency. | | | |
| CH 0 | If the input selector is TUNER in E2 mode, Display Mode (PS/PTY) is changed. | | | |
| ≥10 | TUNER | STEREO | Frequency: FM max FM Mode: MONO | -48dB/0dB |
| MUTING | All indicators of FL are displayed. All LED are off. Note: After this setting, only 'POWER' button by the remote control can be entered. | | | |
| Volume Up | Check Main uP software Version. Display [K 100R **]; ** is current version. * Volume is still increased but not displayed. | | | |
| Volume Down | Check for EEPROM & Check Sum. Display [SUM ****]; **** is checksum. If no ROM correction, and when EEPROM is not attached, display [NO EEPROM] * Volume is still reduced but not displayed. | | | |
| SUBW | DVR/DVD-P | ----- | All CH printed out | -18dB/0dB |
| LEVEL | No change | SURROUND | Scan the test noise output channel with 500ms intervals. | -18dB/0dB |
| -/L | TV | STEREO | Balance is set to leftmost. | -18dB/0dB |
| +/R | TV | STEREO | Balance is set to rightmost | -18dB/0dB |

7.2. Error Code Table

Self-Diagnosis Function provides information on any problems occurring for the units and its respective parts by displaying error codes.

| Error Code | Diagnosis Contents | Description of error | Automatic FL Display | Remarks |
|------------|--|--|---|---------------------------|
| OVERLOAD | Speaker short, power amplifier failure Digital amplifier abnormal operation | Both [SHORT_DET] & [FAN_LOCK] signal is detected as active high while [DC_DET] signal is active low. | OVERLOAD | |
| FAN LOCK | Detection of FAN LOCK | Both [SHORT_DET] & [DC_DET] signal is detected as active high while [FAN_LOCK] signal is active low. | FAN LOCK SWITCH_OFF_POWER * When any button is next press when in this condition. | All channels into muting. |
| F76 | Detection of POWER MALFUNCTION & abnormal operation | Both [FAN_LOCK] & [DC_DET] signal is detected as active high while [SHORT_DET] is active low. | F76 | |
| F70 | Detection of POWER MALFUNCTION & abnormal operation | | F70 | |

8 Assembling and Disassembling

8.1. Caution

“Attention Servicer”

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.
2. For reassembly after operation checks or replacement, reverse the respective procedures.
Special reassembly procedures are described only when required.
3. Select items from the following index when checks or replacement are required.
4. Refer to the Parts No. on the page of “Replacement Parts List” (Section 18), if necessary.

Below is the list of disassembly procedures

- Disassembly of Top Cabinet
- Disassembly of Rear Panel
- Disassembly of Front Panel
- Disassembly of Panel P.C.B., Music Port P.C.B. & Volume P.C.B.
- Disassembly of Main P.C.B.
- Disassembly of DSP P.C.B.
- Disassembly of AC In P.C.B.
- Disassembly of Power P.C.B.
- Disassembly of Digital Amp P.C.B.

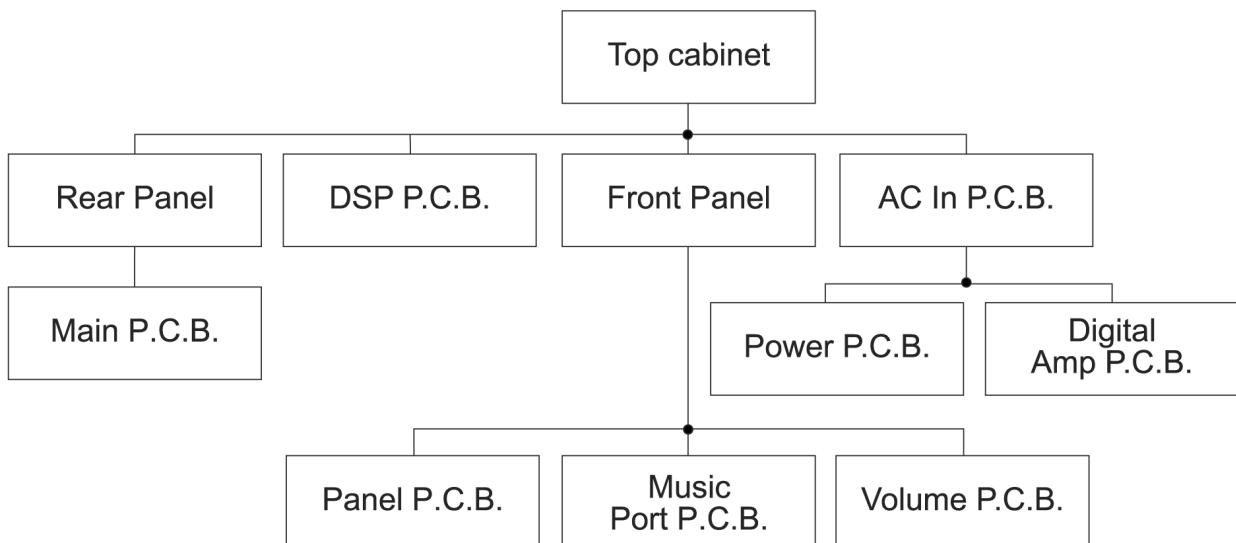
Caution

Do ensure the correct screw is used.

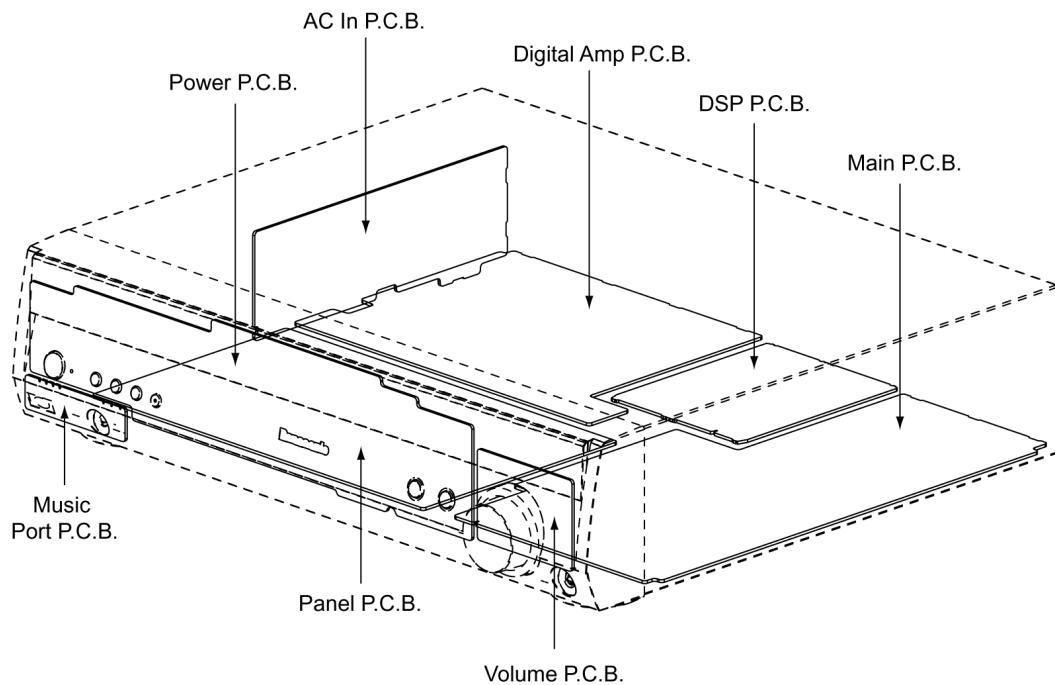
8.2. Disassembly Flow Chart

The following chart is the procedure for disassembling the casing and inside parts for internal inspection when carrying out the servicing.

To assemble the unit, reverse the steps shown in the chart as below.

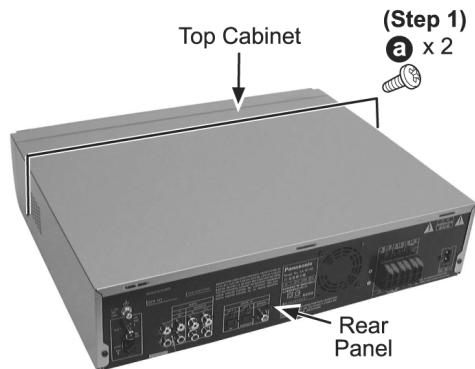


8.3. Main Parts Location

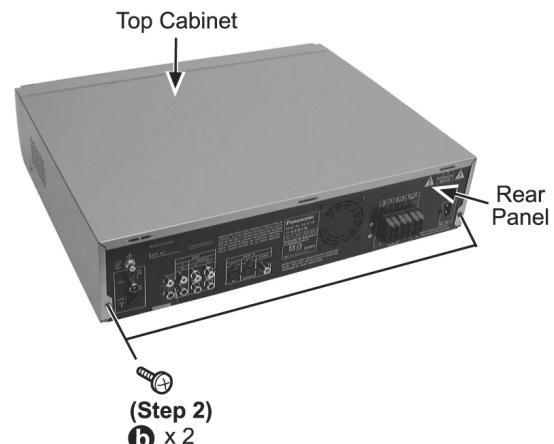


8.4. Disassembly of Top Cabinet

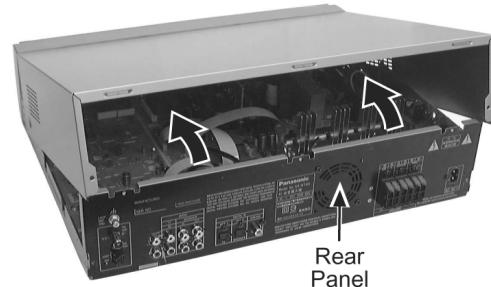
Step 1: Remove 2 screws.



Step 2 : Remove 2 screws at rear panel.



Step 3 : Open and lift up the top cabinet as arrow shown.

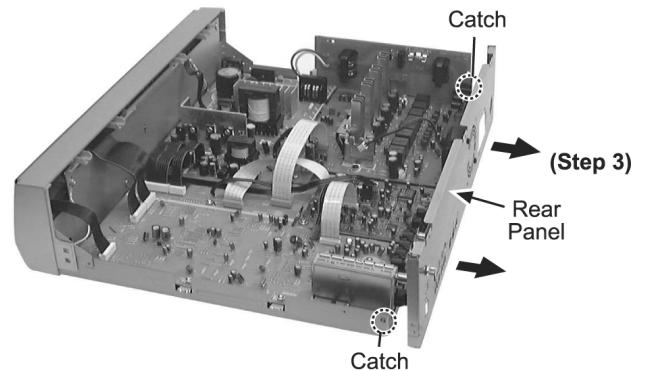
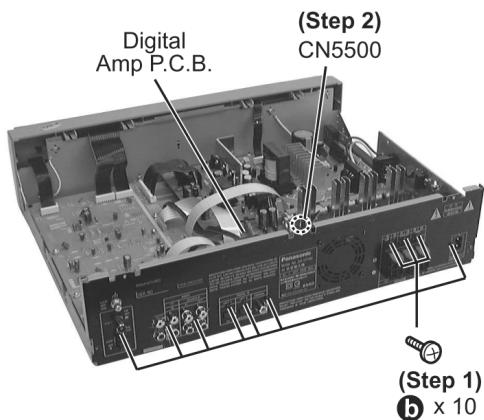


8.5. Disassembly of Rear Panel

- Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet

Step 1 : Remove 10 screws at rear panel.

Step 2 : Detach wire connector (CN5500) at Digital Amp P.C.B..

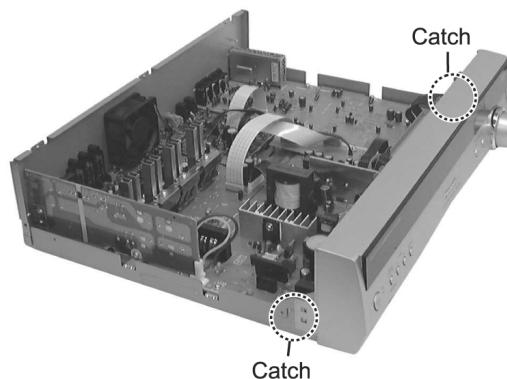
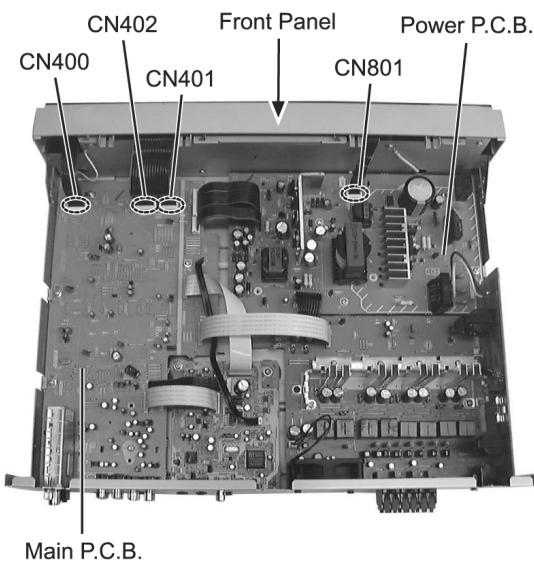


Step 3 : Release 2 catches and pull the rear panel backwards as the arrow shown.

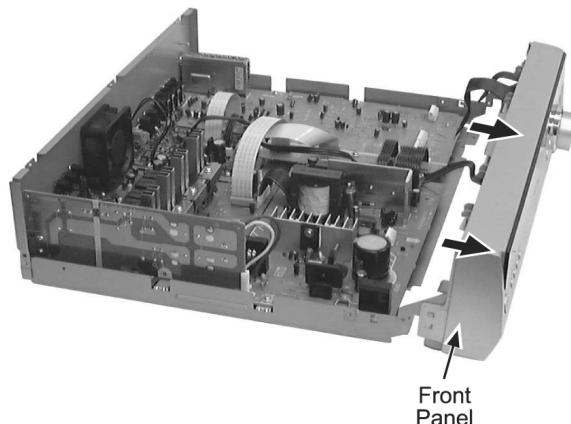
8.6. Disassembly of Front Panel

- Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet

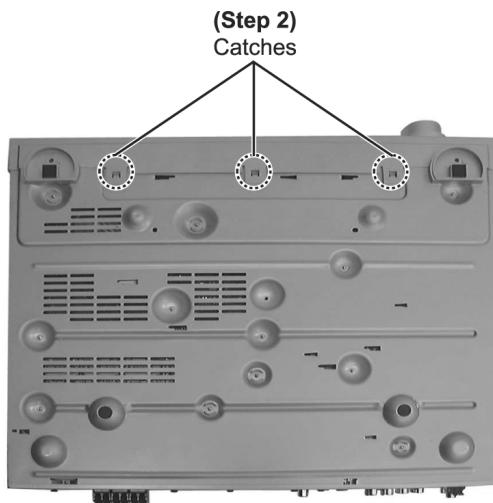
Step 1 : Detach the wire connections (CN400, CN402 & CN401) at Main P.C.B. and (CN801) at Power P.C.B.. Step 3 : Release 2 catches.



Step 4 : Push forward front panel as the arrow shown.



Step 2 : Release 3 catches.



8.7. Disassembly of Panel P.C.B., Music Port P.C.B. & Volume P.C.B.

- Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet

- Follow the (Step 1) - (Step 4) of item 8.6. - Disassembly of Front Panel

Step 1 : Remove the volume knob as picture shown.

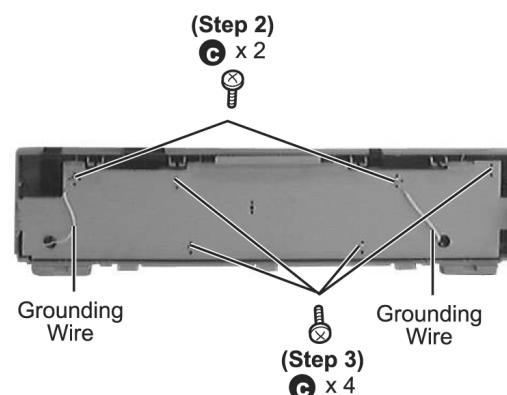


Step 2 : Remove 2 screws grounding wires as picture shown.

Caution:

Remember to screw the 2 grounding wires during assembly.

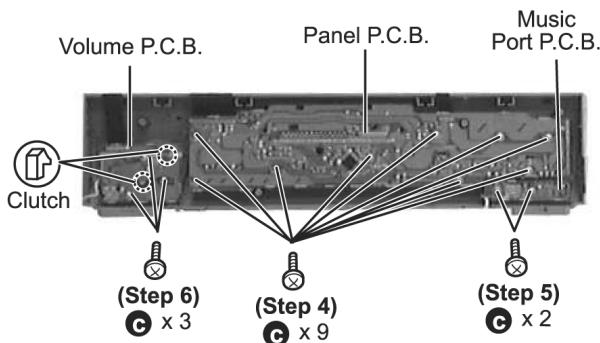
Step 3 : Remove 4 screws as picture shown.



• **Disassembly of Panel P.C.B. and Music Port P.C.B.**

Step 4 : Remove 9 screws at Panel P.C.B..

Step 5 : Remove 2 screws at Music Port P.C.B..



• **Disassembly of Volume P.C.B.**

Step 6 : Remove 3 screws at Volume P.C.B..

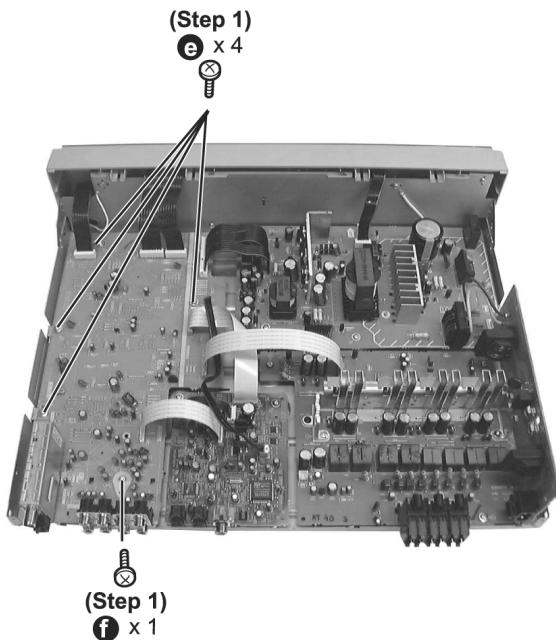
Step 7 : Release 2 clutches.

8.8. Disassembly of Main P.C.B.

• Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet

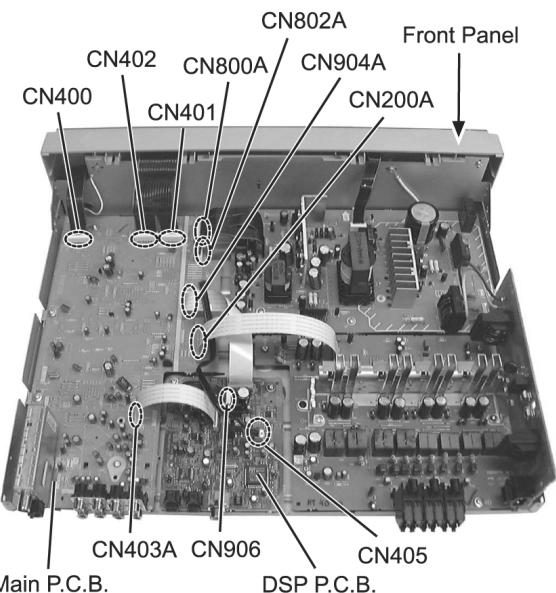
• Follow the (Step 1) - (Step 3) of item 8.5. - Disassembly of Rear Panel

Step 1 : Remove 5 screws at Main P.C.B..

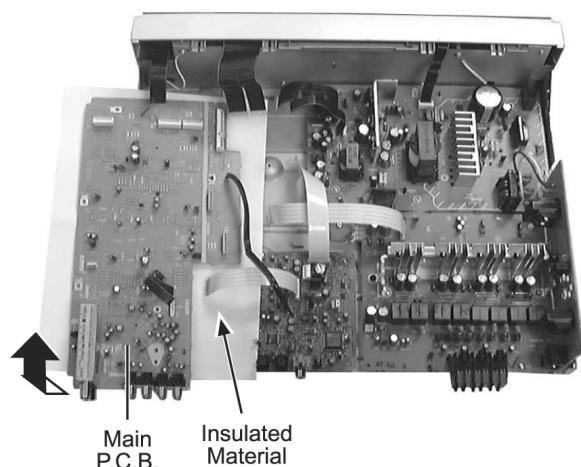


Step 2 : Disconnect FFC cables (CN400, CN402, CN401, CN800A, CN802A, CN904A, CN200A and CN403A) at Main P.C.B. .

Step 3 : Disconnect 2 connectors (CN906 & CN405) at DSP P.C.B..



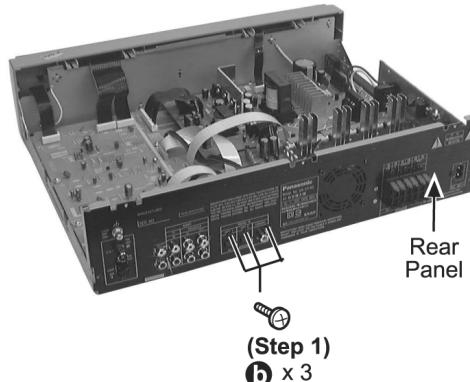
Step 4 : Lift up and remove the Main P.C.B. as picture shown.



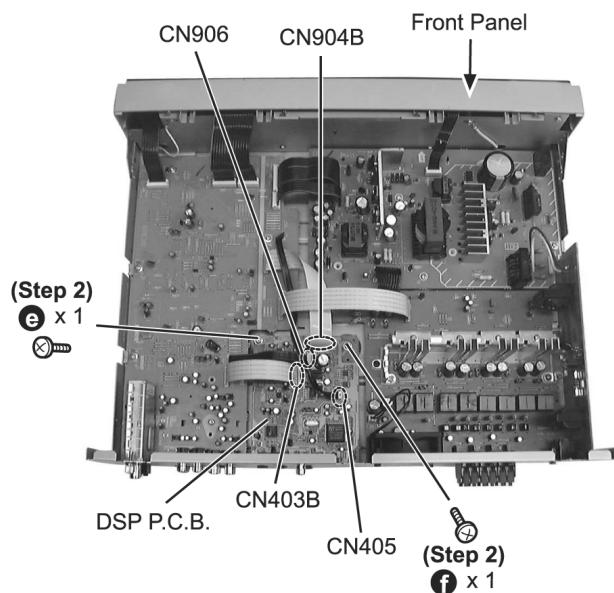
8.9. Disassembly of DSP P.C.B.

- Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet

Step 1 : Remove 3 screws at rear panel.

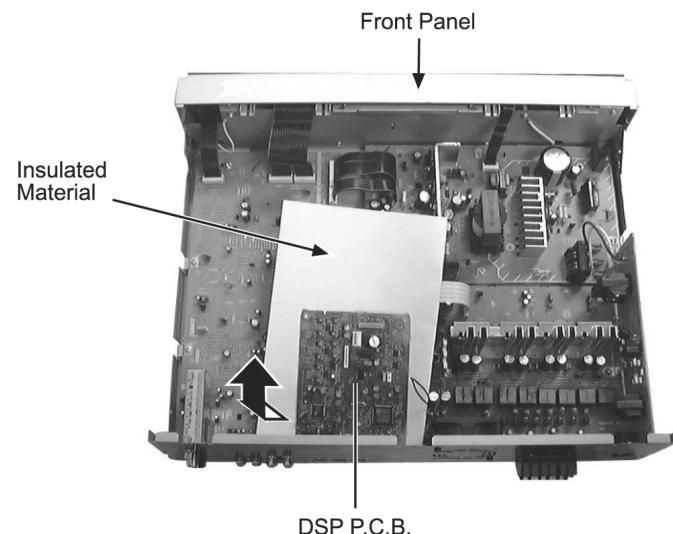


Step 2 : Remove 2 screws at DSP P.C.B..



Step 3 : Disconnect 4 connectors (CN906, CN904B, CN405 &CN403B) at DSP P.C.B..

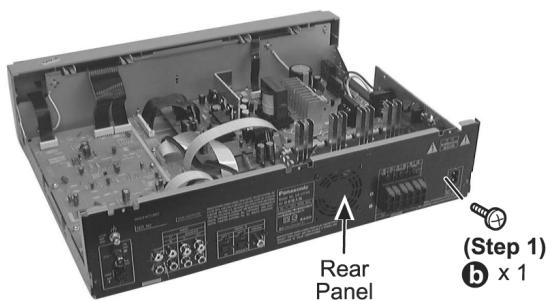
Step 4 : Lift up and remove the DSP P.C.B. as the arrow shown.



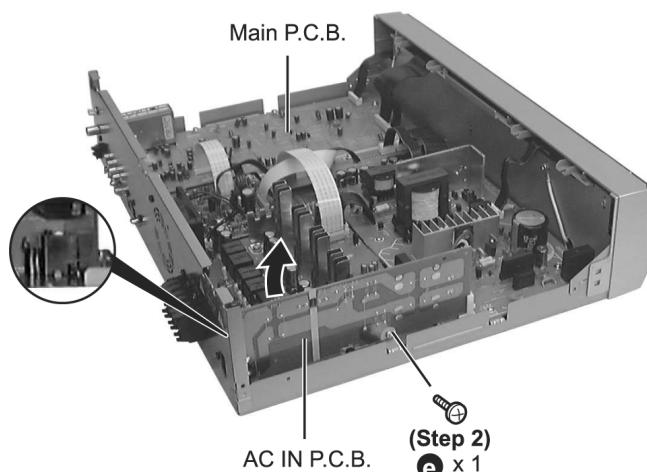
8.10. Disassembly of AC In P.C.B.

- Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet

Step 1 : Remove 1 screw at rear panel.



Step 2 : Remove 1 screw at AC In P.C.B..



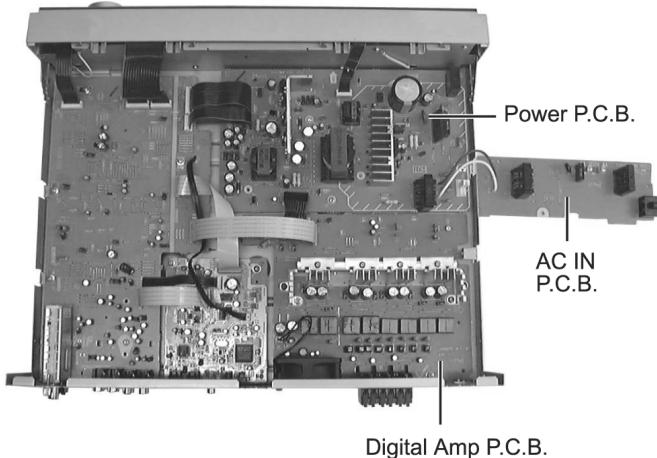
Caution:

Remember to use tie wraps to tie red/ white wires between (AC In P.C.B. and Power P.C.B.) to the side of AC In P.C.B. after repair or troubleshooting.

Step 3 : Lift up and place AC In P.C.B. as picture shown.

Note:

Caution when lift up the AC In P.C.B..



8.11. Disassembly of Power P.C.B.

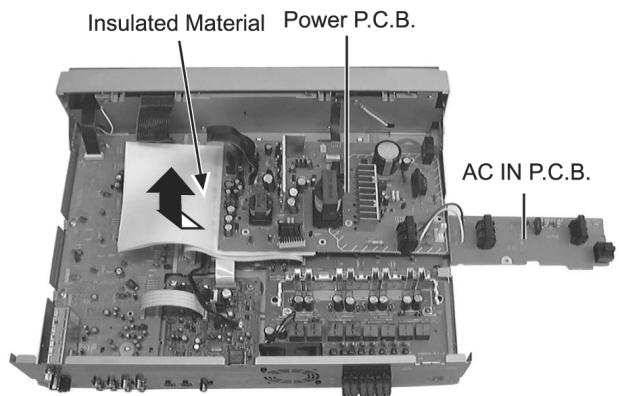
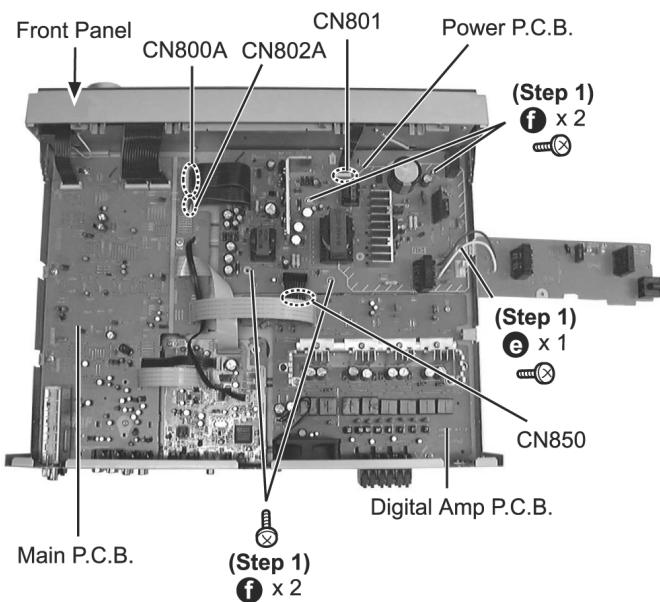
- Follow the **(Step 1) - (Step 3)** of item 8.4. - Disassembly of Top Cabinet
- Follow the **(Step 1) - (Step 3)** of item 8.10. - Disassembly of AC In P.C.B.

Step 1 : Remove 5 screws at Power P.C.B..

Step 2 : Disconnect 2 connectors (CN800A & CN802A) at Main P.C.B..

Step 3 : Disconnect 1 connector (CN801) at Power P.C.B..

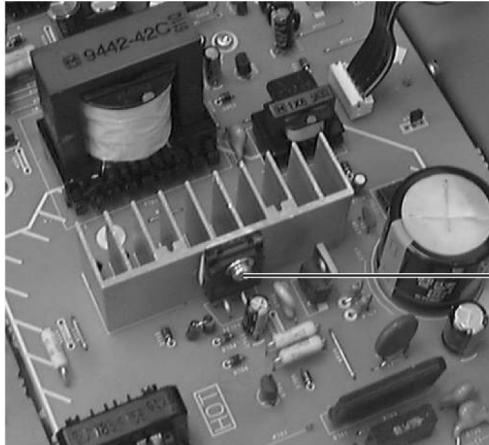
Step 4 : Disconnect 1 connector (CN850) at Digital Amp P.C.B..



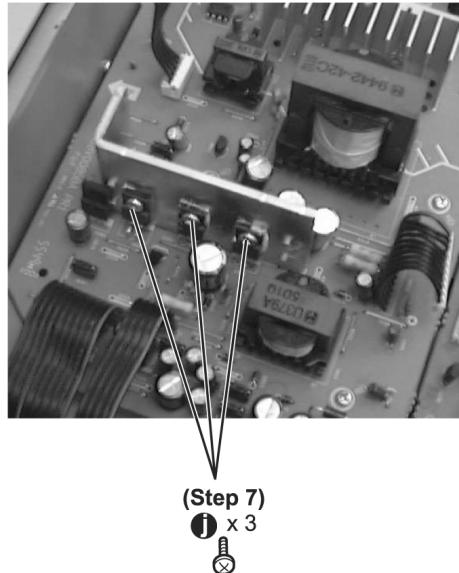
Step 5 : Lift up the Power P.C.B. as picture shown.

• Replacement of the Power Supply IC and Diode

Step 6 : Remove 1 screw (from IC701).



(Step 6)
i x 1
④

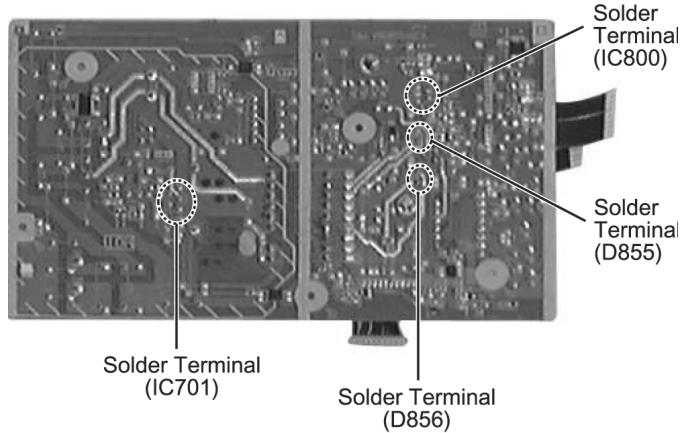


(Step 7)
j x 3
④

Step 7 : Remove 3 screws (from IC800, D855 and D856).

Step 8 : Flip over the Power P.C.B..

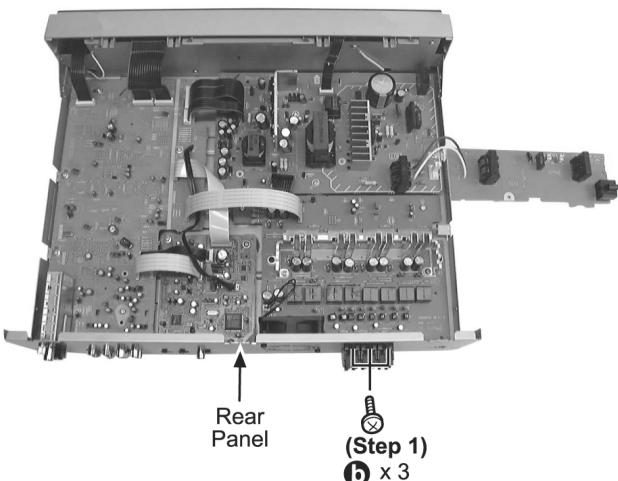
Step 9 : Desolder the terminal to replace the components.



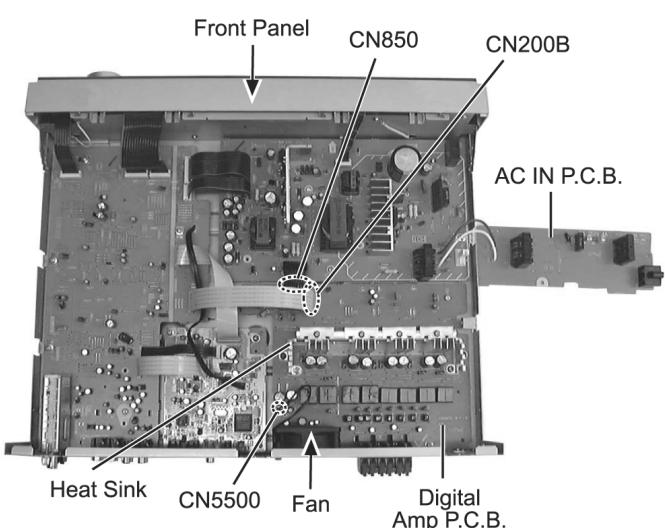
8.12. Disassembly of Digital Amp P.C.B.

- Follow the (Step 1) - (Step 3) of item 8.4. - Disassembly of Top Cabinet
- Follow the (Step 1) - (Step 3) of item 8.10. - Disassembly of AC In P.C.B.

Step 1 : Remove 3 screws at rear panel.

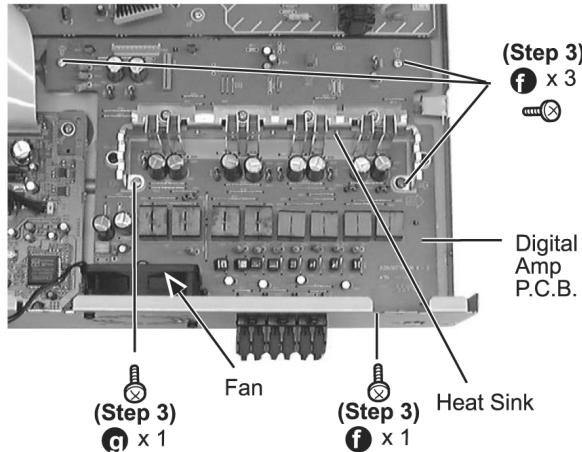


Rear Panel
(Step 1)
b x 3

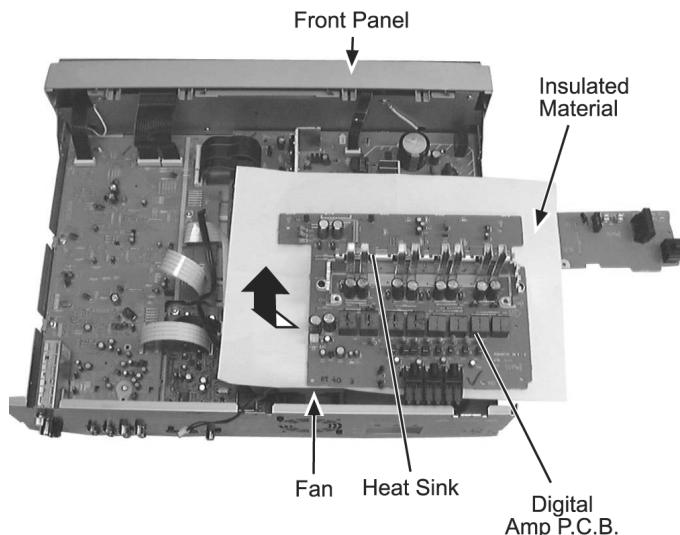


Step 2 : Detach FFC cables (CN5500, CN200B & CN850) at Digital Amp P.C.B..

Step 3 : Remove 5 screws at Digital Amp P.C.B..

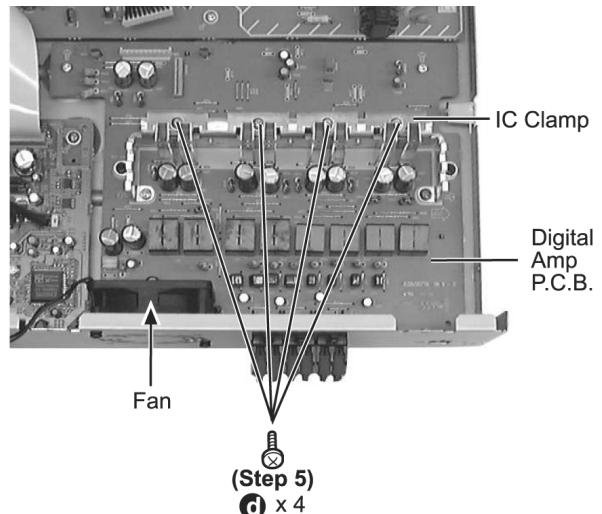


Step 4 : Lift up and remove the Digital Amp P.C.B. as arrow shown.



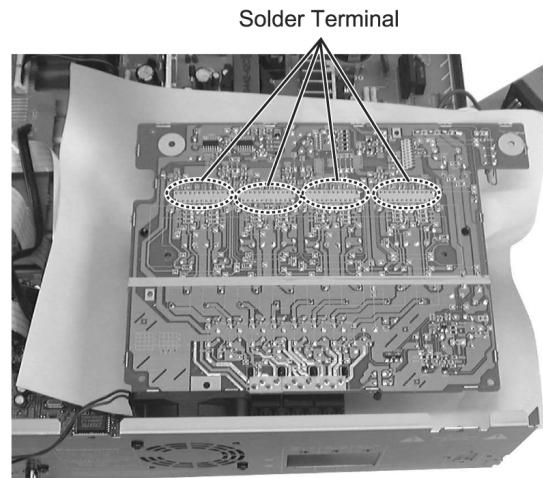
• Replacement of the Power Amp IC

Step 5 : Remove 4 screws at the IC Clamp.



Step 6 : Flip over Digital Amp P.C.B..

Step 7 : Desolder the terminal to replace the components.



9 Service Position

Note:

Checking of all Major P.C.B. (Main P.C.B., DSP P.C.B., AC In P.C.B., Digital Amp P.C.B., Power P.C.B., Panel P.C.B., Music Port P.C.B. & Volume P.C.B.) can be carried out using below procedures.

For the disassembling procedure, see Section 8.

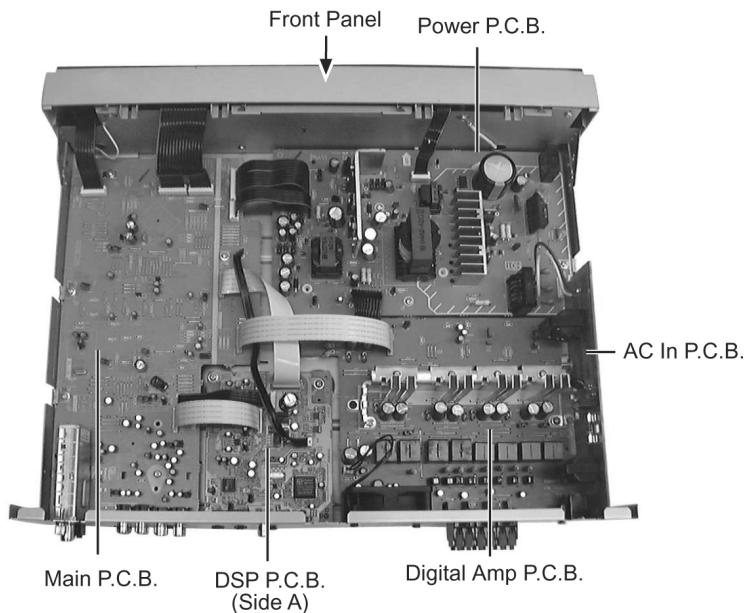
9.1. Checking the DSP P.C.B. (Side A) & AC In P.C.B.

1. Remove Top Cabinet

Remove 2 screws at the side cabinet.

Remove 2 screws at the rear cabinet.

Remove top cabinet.



9.2. Checking the DSP P.C.B. (Side B)

1. Remove Top Cabinet

Remove 2 screws at the side cabinet.

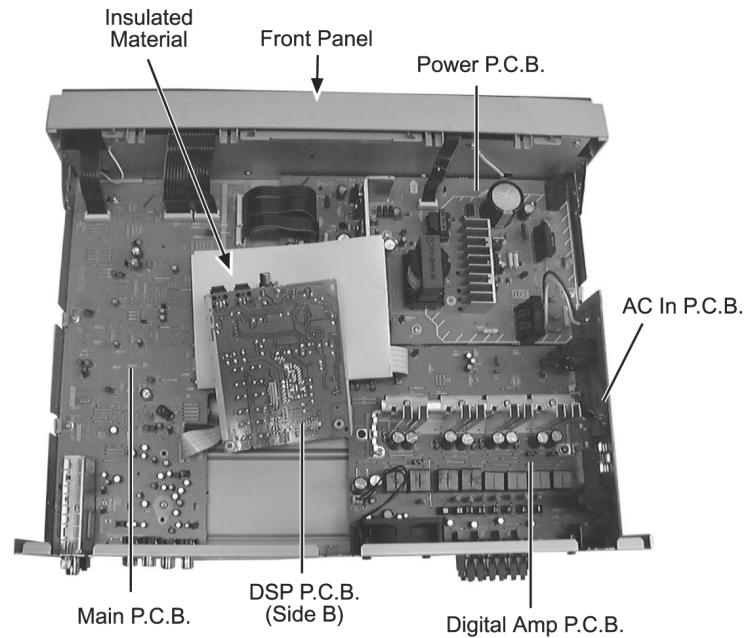
Remove 2 screws at the rear cabinet.

Remove top cabinet.



2. Flip Over

Flip over the DSP P.C.B..



9.3. Checking the Panel P.C.B., Music Port P.C.B. and Volume P.C.B.

1. Remove Top Cabinet

Remove 2 screws at the side cabinet.

Remove 2 screws at the rear cabinet.

Remove top cabinet.

2. Disassemble of Front Panel

Detach 4 wire connections CN400, CN402, CN401 & CN801.

Release 3 catches at the bottom of the unit.

Release 2 claws.

3. Disassemble of Panel P.C.B., Music Port P.C.B. & Volume P.C.B.

Remove the volume knob.

Remove 6 screws.

Remove 9 screws at Panel P.C.B..

Remove 2 screws at Music Port P.C.B..

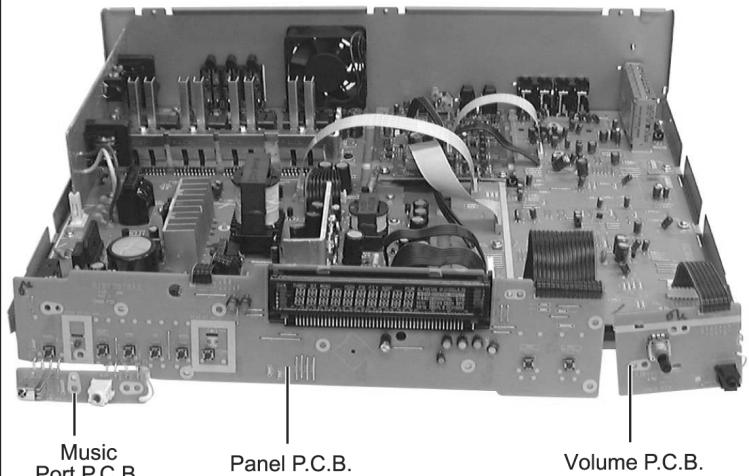
Remove 3 screws at Volume P.C.B..

4. Connect Panel P.C.B. & Volume P.C.B.

Connect 7P cable between JW400 to CN400.

Connect 15P cable between JW401 to (CN402 & CN401).

Connect 5P cable between JW801 to CN801.



9.4. Checking the Main P.C.B., Power P.C.B. & Digital Amp P.C.B.

1. Remove Top Cabinet

Remove 2 screws at the side cabinet.

Remove 2 screws at the rear cabinet.

Remove top cabinet.

2. Remove Rear Panel

Remove 10 screws at rear panel, detach wire connector CN5500.

Remove 2 claws.

3. Disassemble of Main P.C.B.

Remove 5 screws.

4. Disassemble of DSP P.C.B.

Remove 2 screws.

5. Disassemble of AC In P.C.B.

Remove 1 screw.

Lift up AC In P.C.B..

6. Disassemble of Power P.C.B.

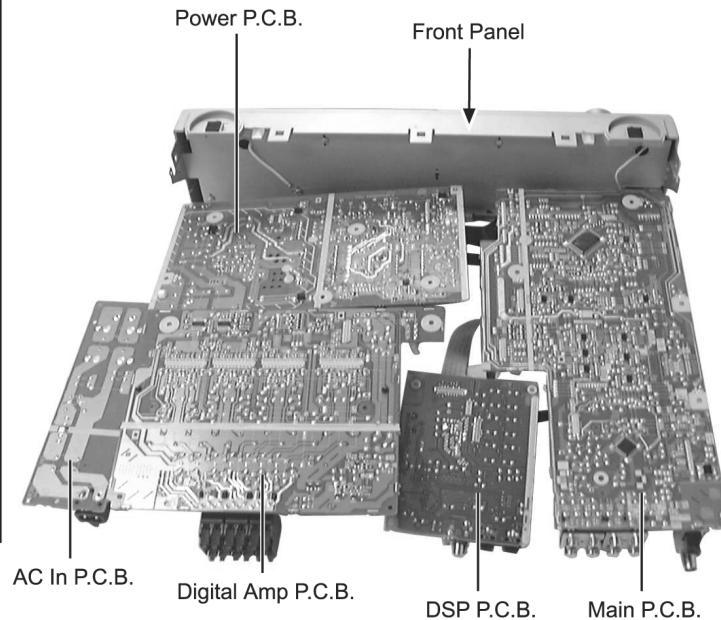
Remove 5 screws.

7. Disassemble of Digital Amp P.C.B.

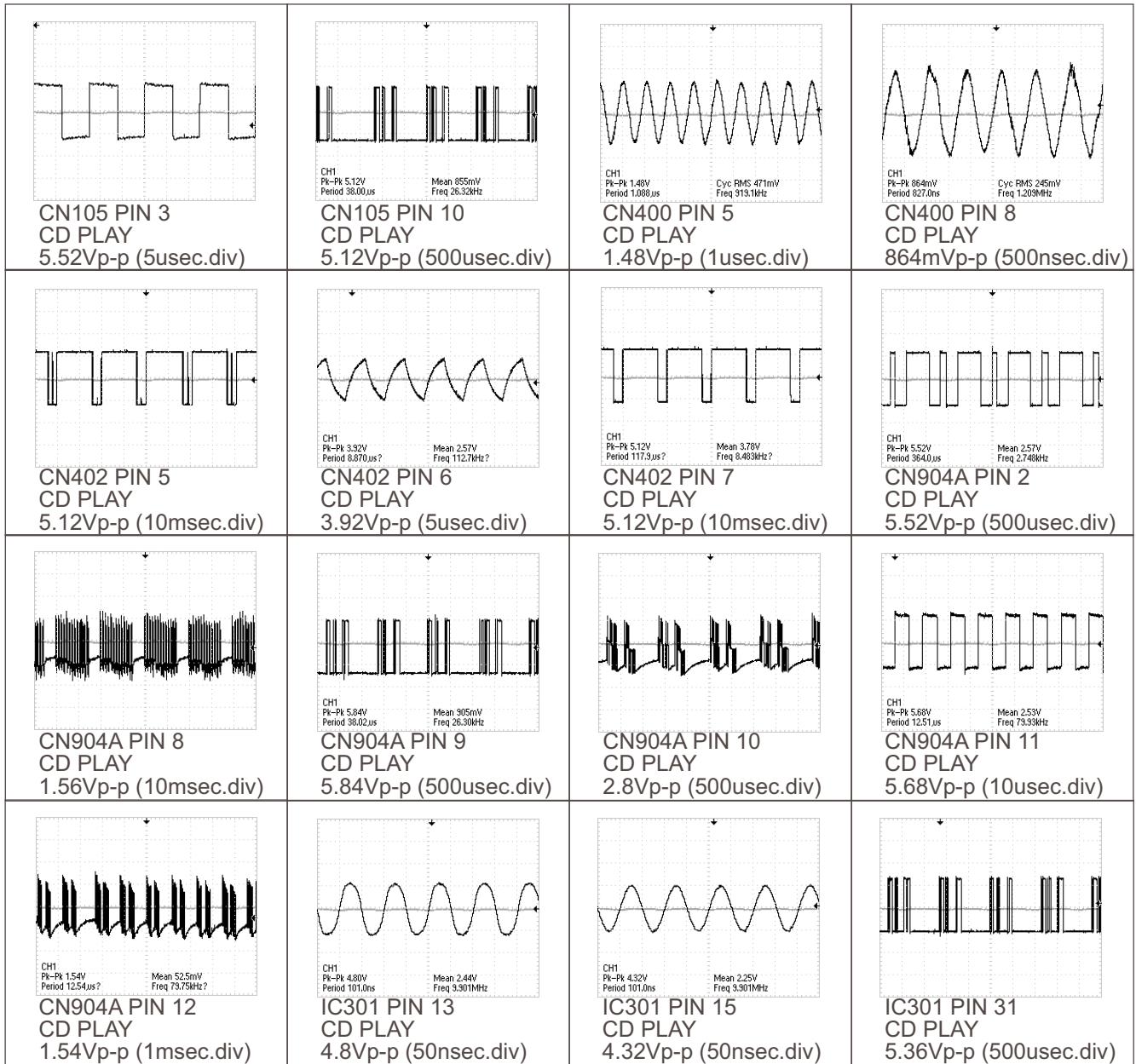
Remove 5 screws.

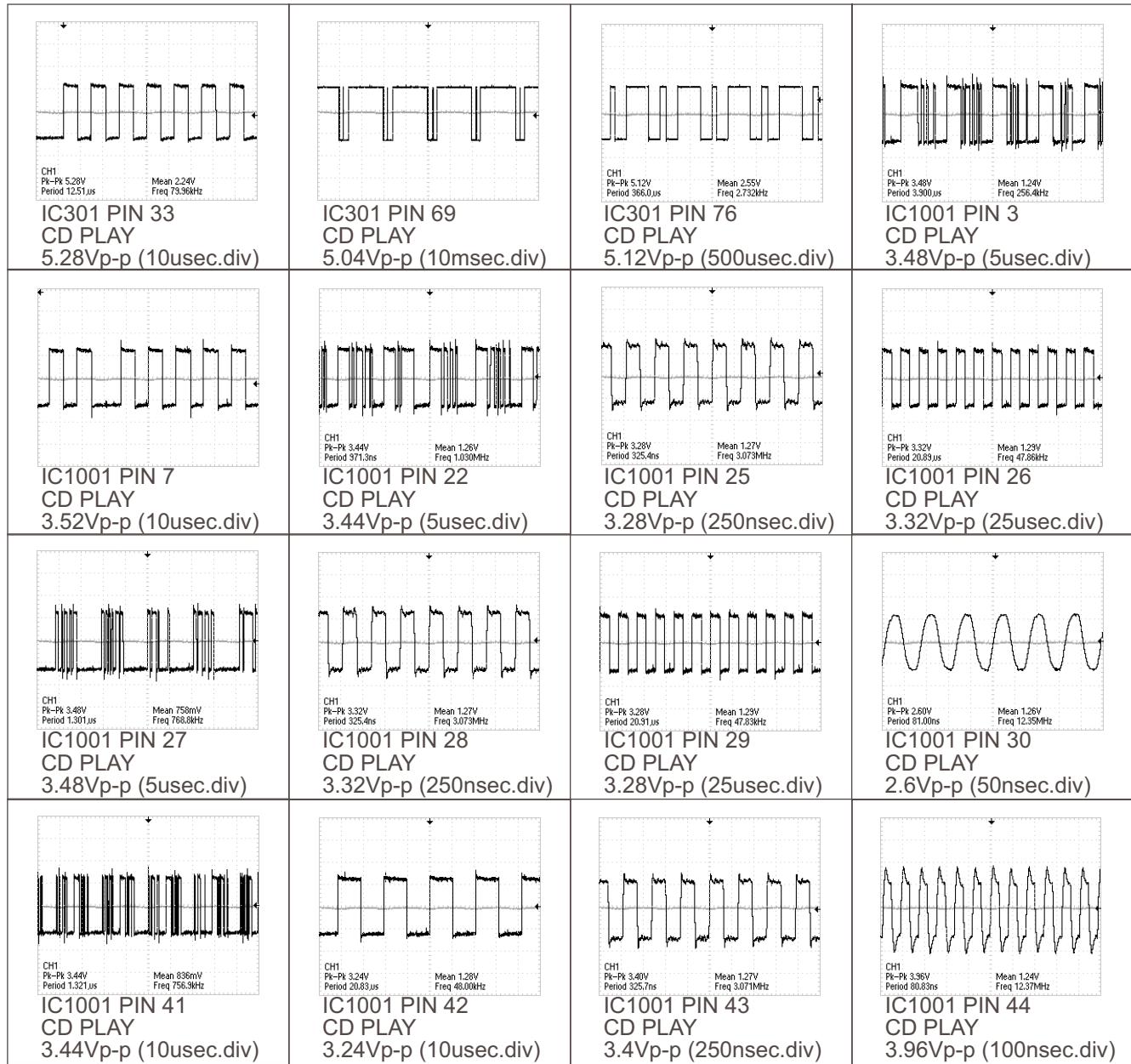
8. Flip Over

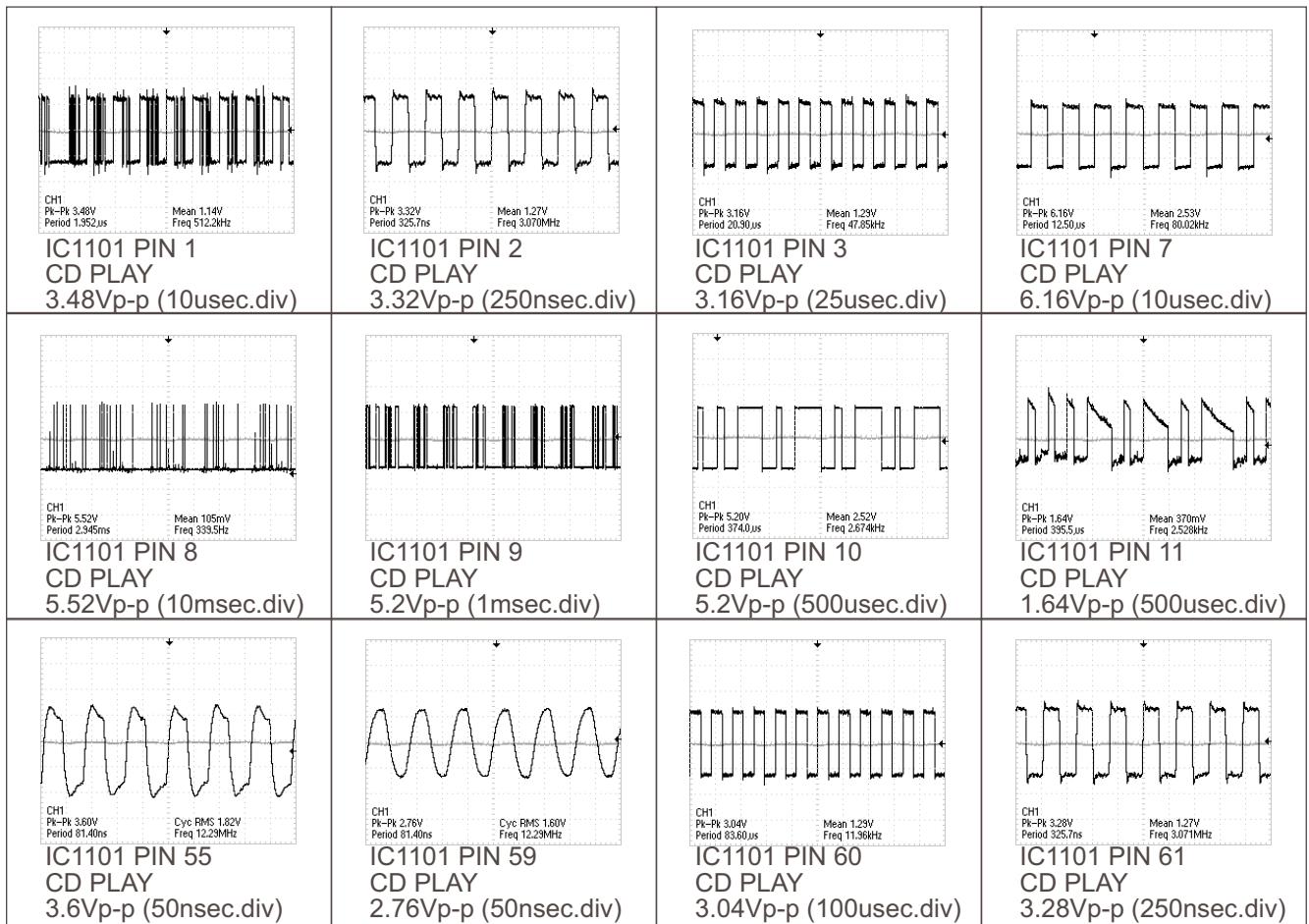
Flip all the PCBs over. (See as shown in picture below.)



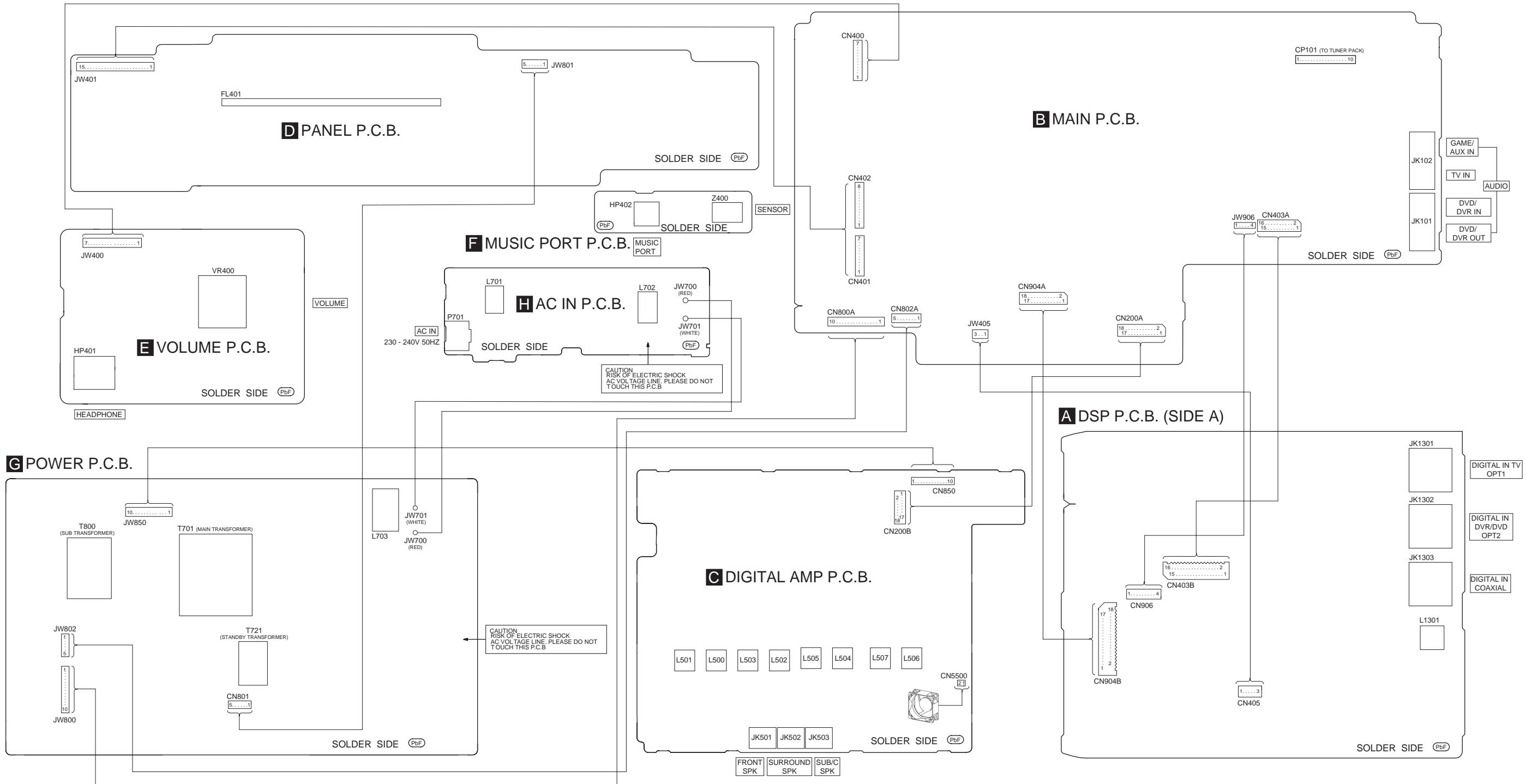
10.2. Waveform Chart



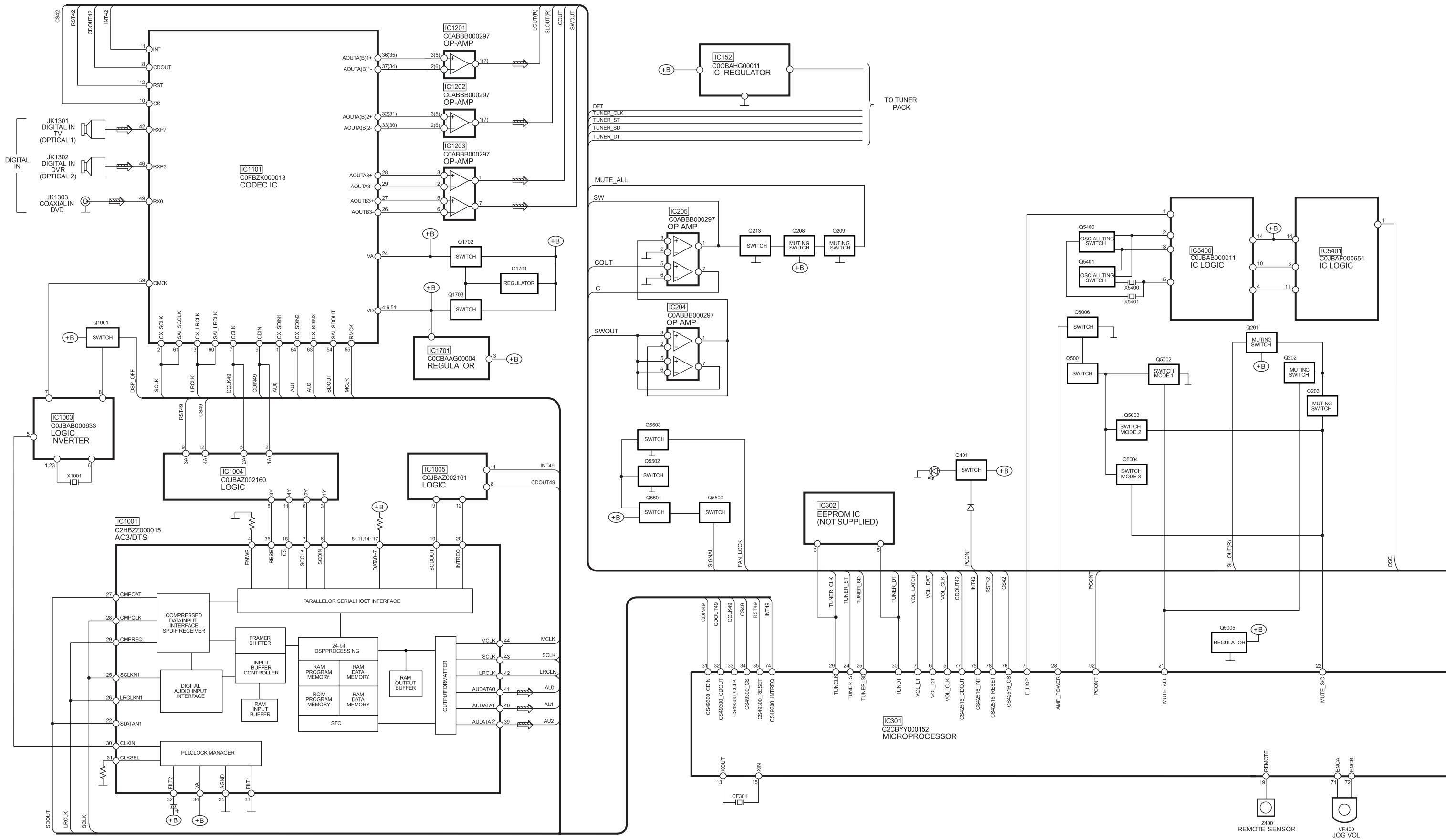


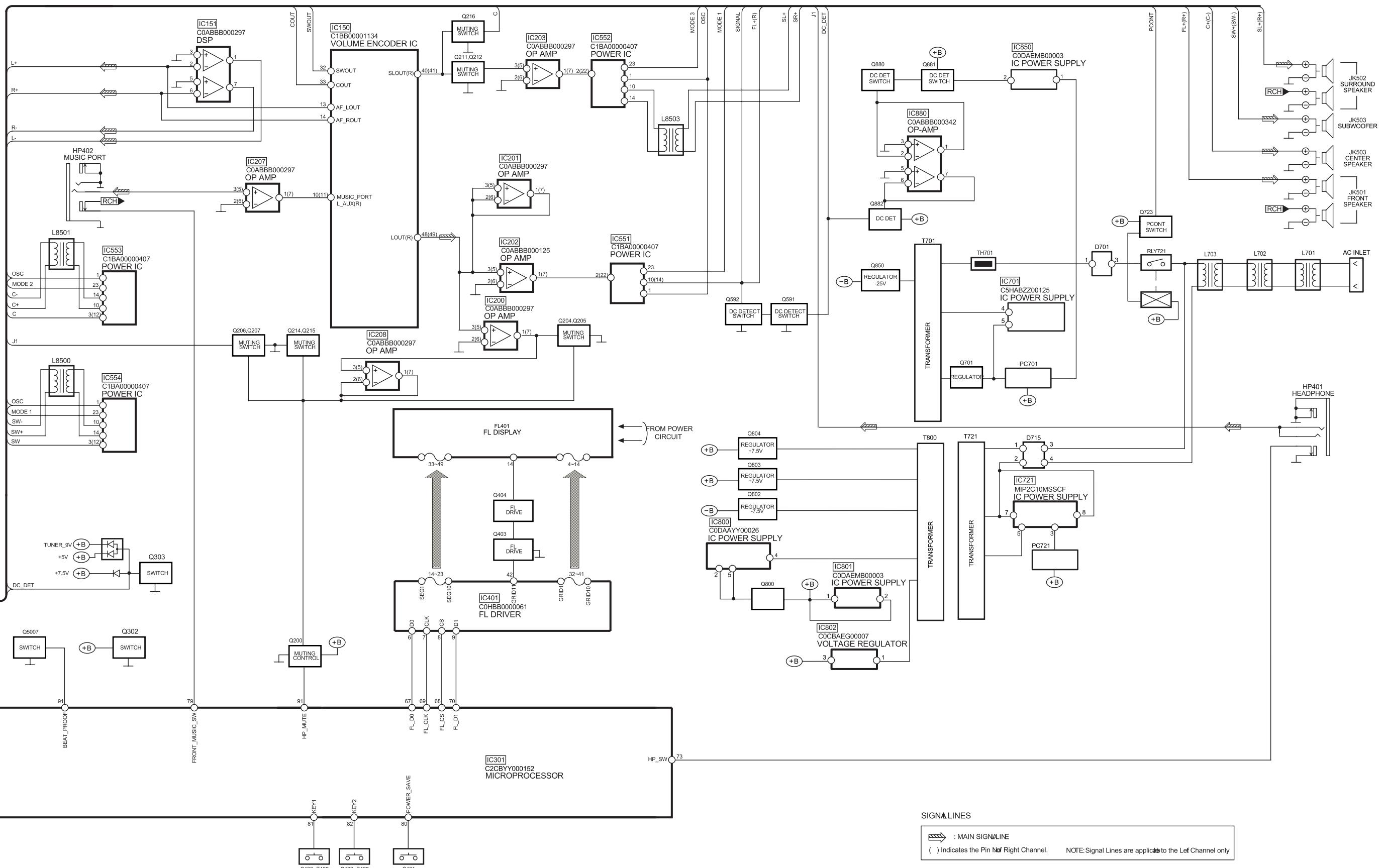


11 Wiring Diagrams



12 Block Diagram





13 Schematic Diagram

13.1. Notes of Schematic Diagram

(All schematic diagrams may be modified at any time with the development of the new technology)

Note:

| | |
|-------------|-----------------------|
| S401 | : Power switch |
| S402 | : < I/P Select switch |
| S403 | : I/P Select > switch |
| S404 | : Enter switch |
| S406 | : Menu/-Setup switch |
| S407 | : Tune_down switch |
| S408 | : Tune_up switch |

- The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

· **Importance 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.

Caution !

IC, LSI and VLSI are sensitive to static electricity.

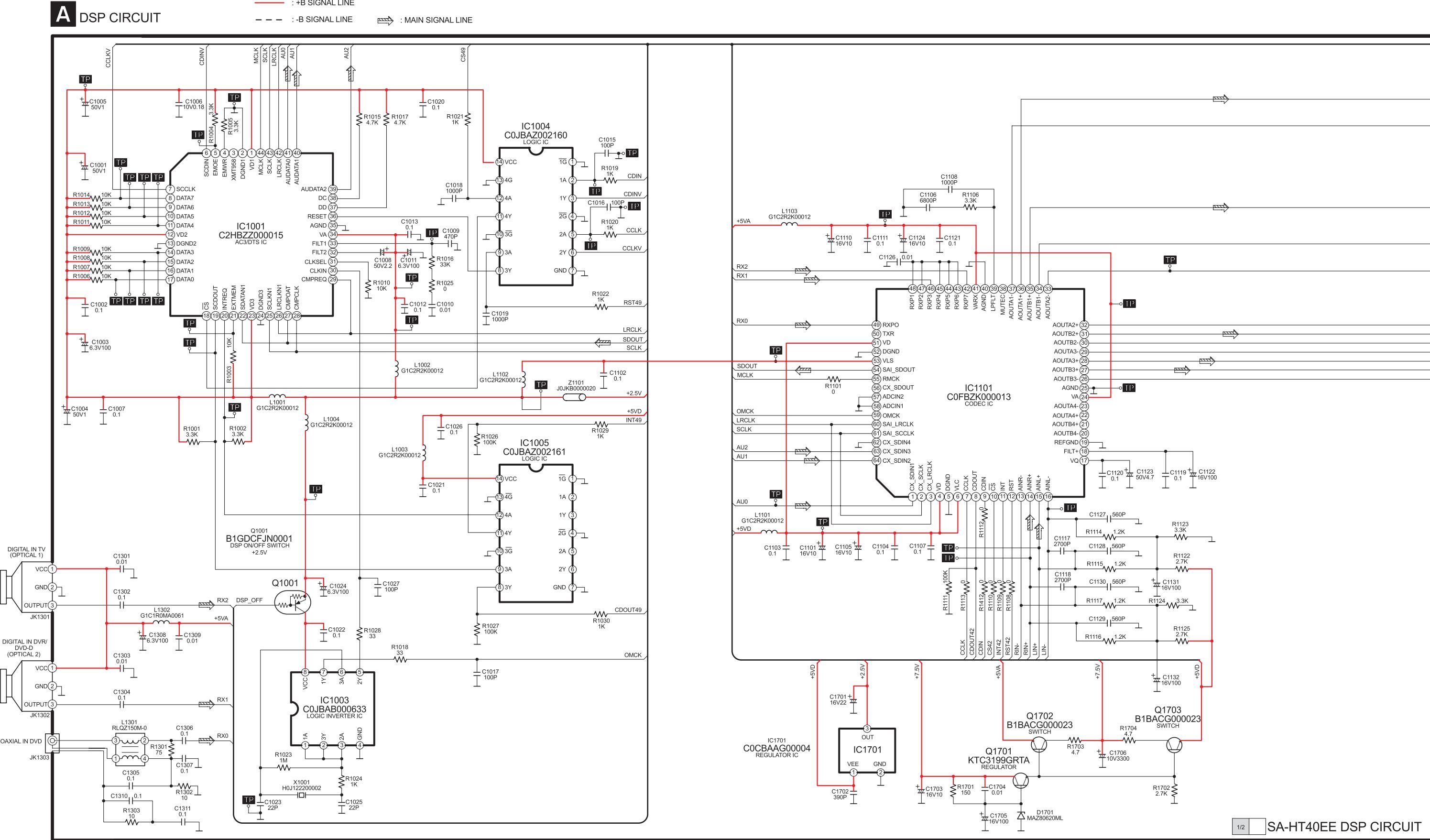
Secondary trouble can be prevented by taking care during repair.

- Cover the parts boxes made of plastics with aluminium foil.
- Put a conductive mat on the work table.
- Ground the soldering iron.
- Do not touch the pins of IC, LSI or VLSI with fingers directly.

13.2. (A) DSP Circuit

SCHEMATIC DIAGRAM - 1

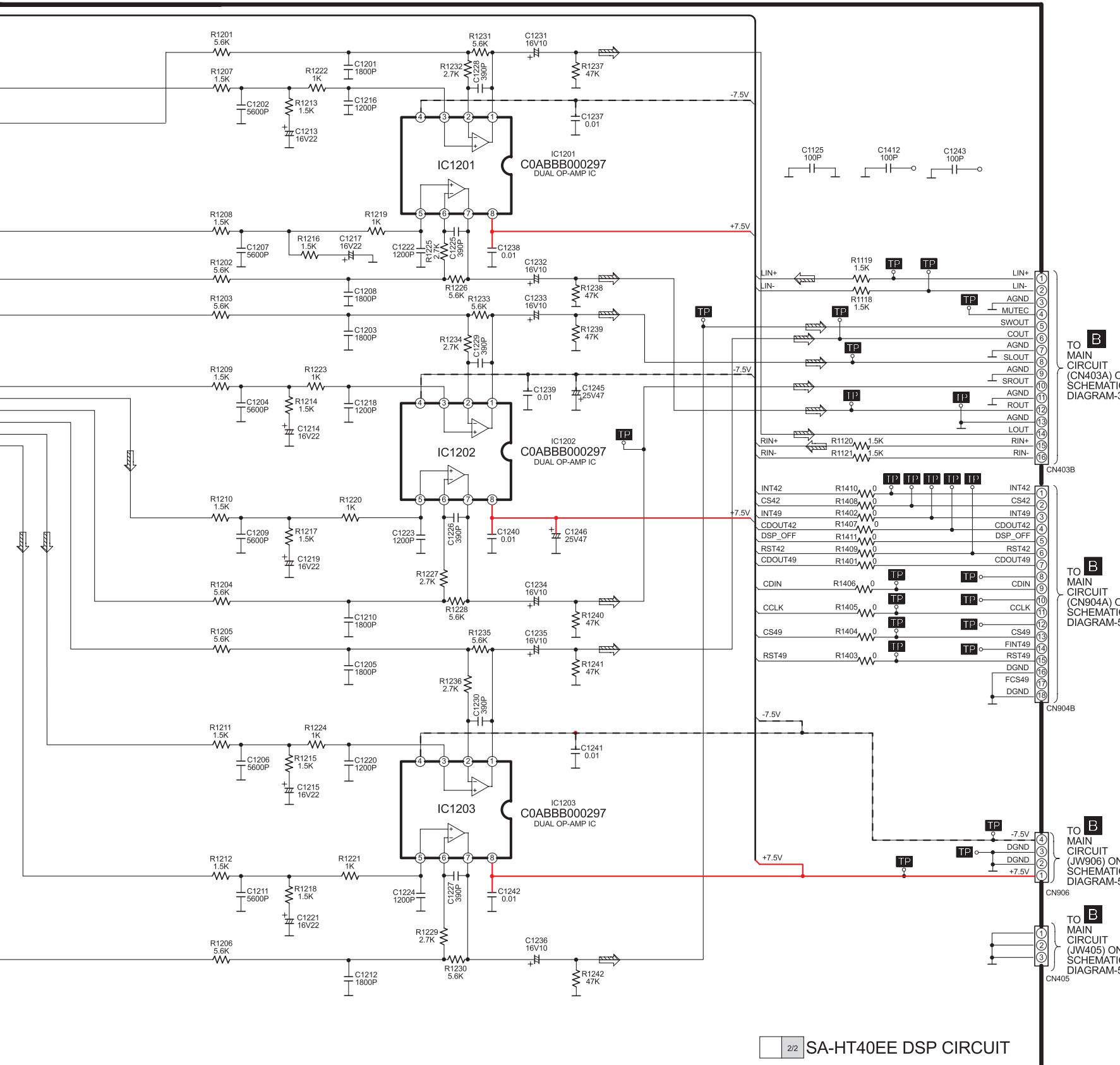
A DSP CIRCUIT



SCHEMATIC DIAGRAM - 2

A DSP CIRCUIT

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

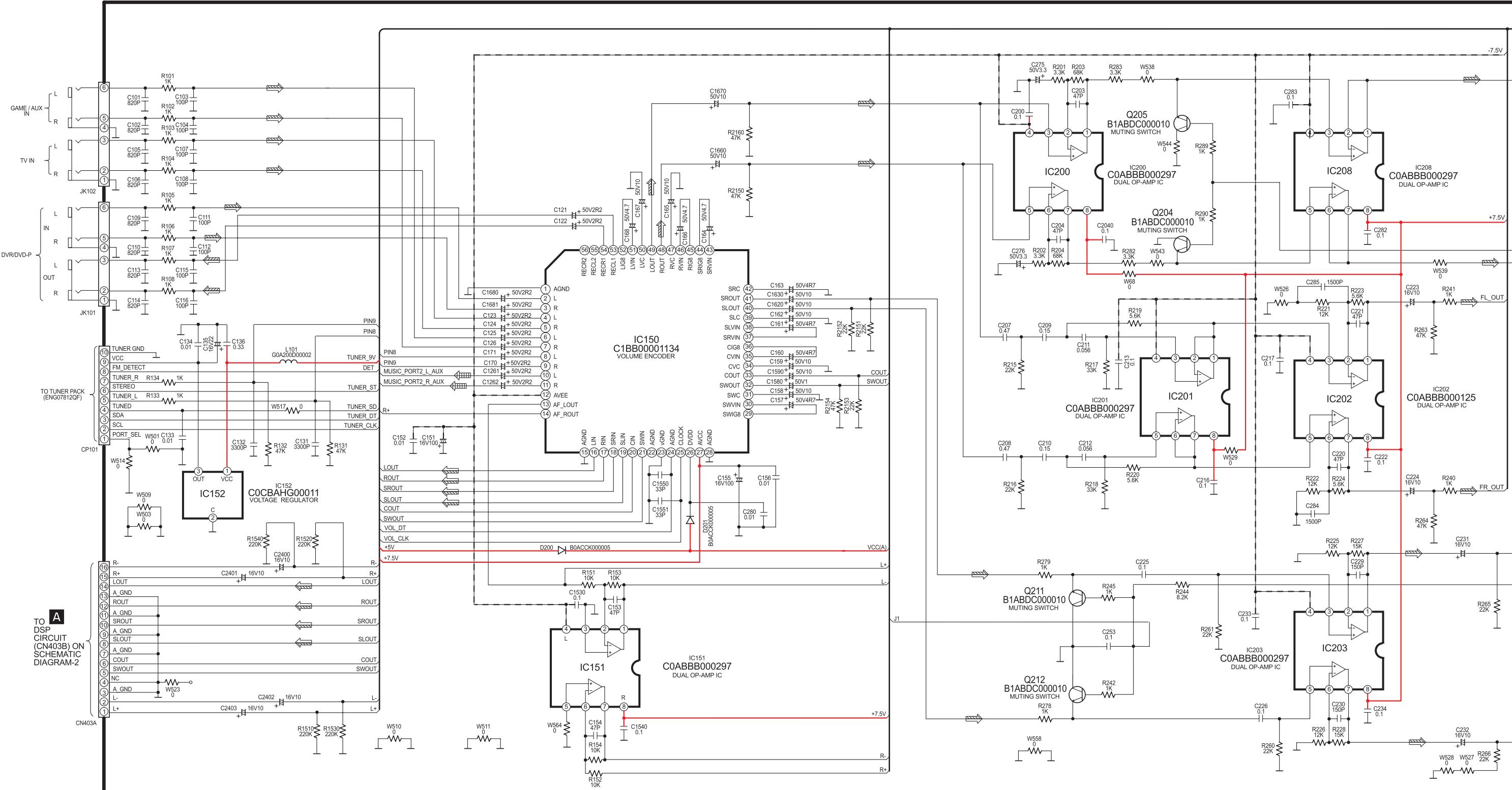


13.3. (B) Main Circuit

SCHEMATIC DIAGRAM - 3

B MAIN CIRCUIT

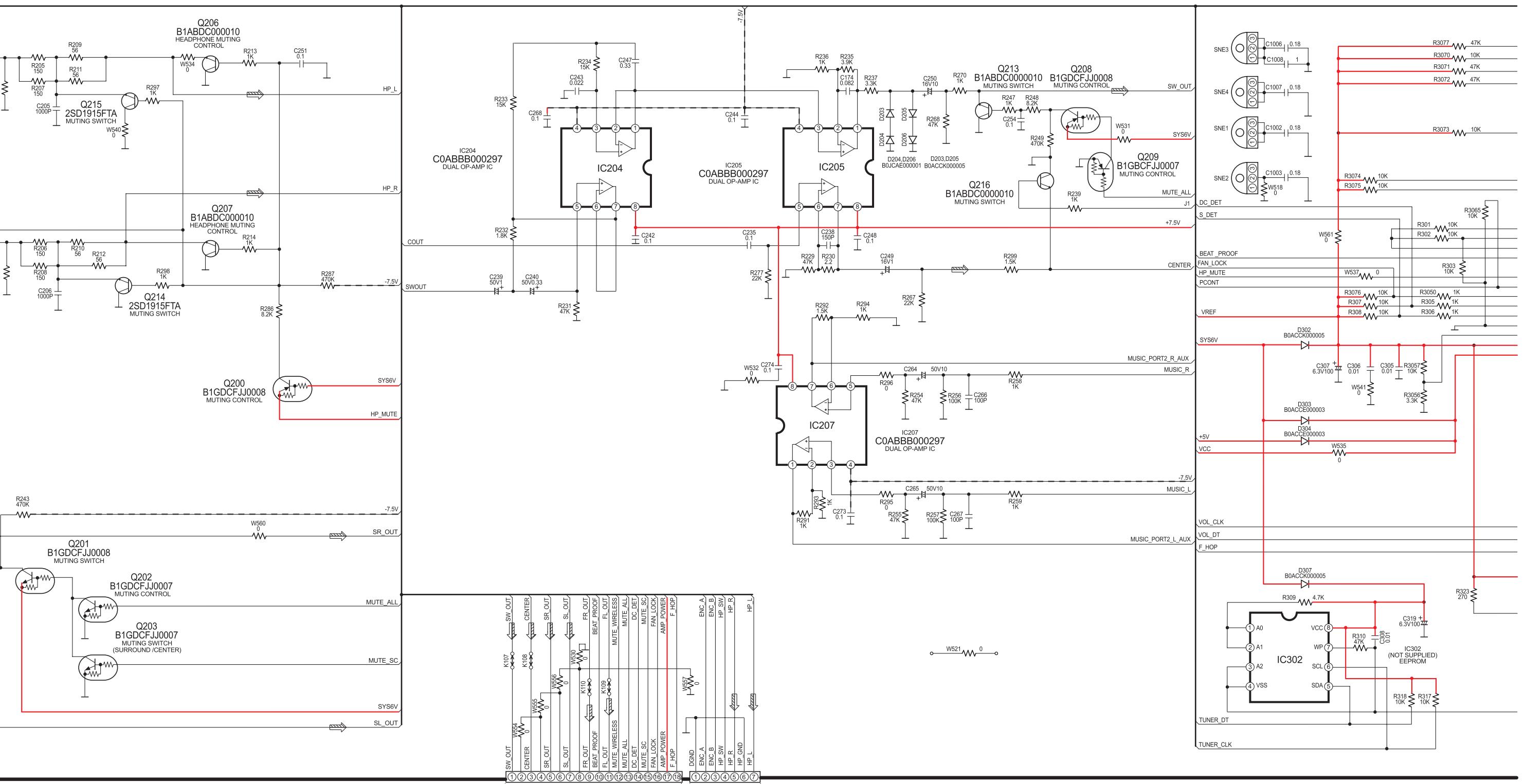
— : +B SIGNAL LINE
 - - - : -B SIGNAL LINE
 → : MAIN SIGNAL LINE
 □□□ : AUX SIGNAL LINE



SCHEMATIC DIAGRAM - 4

B MAIN CIRCUIT

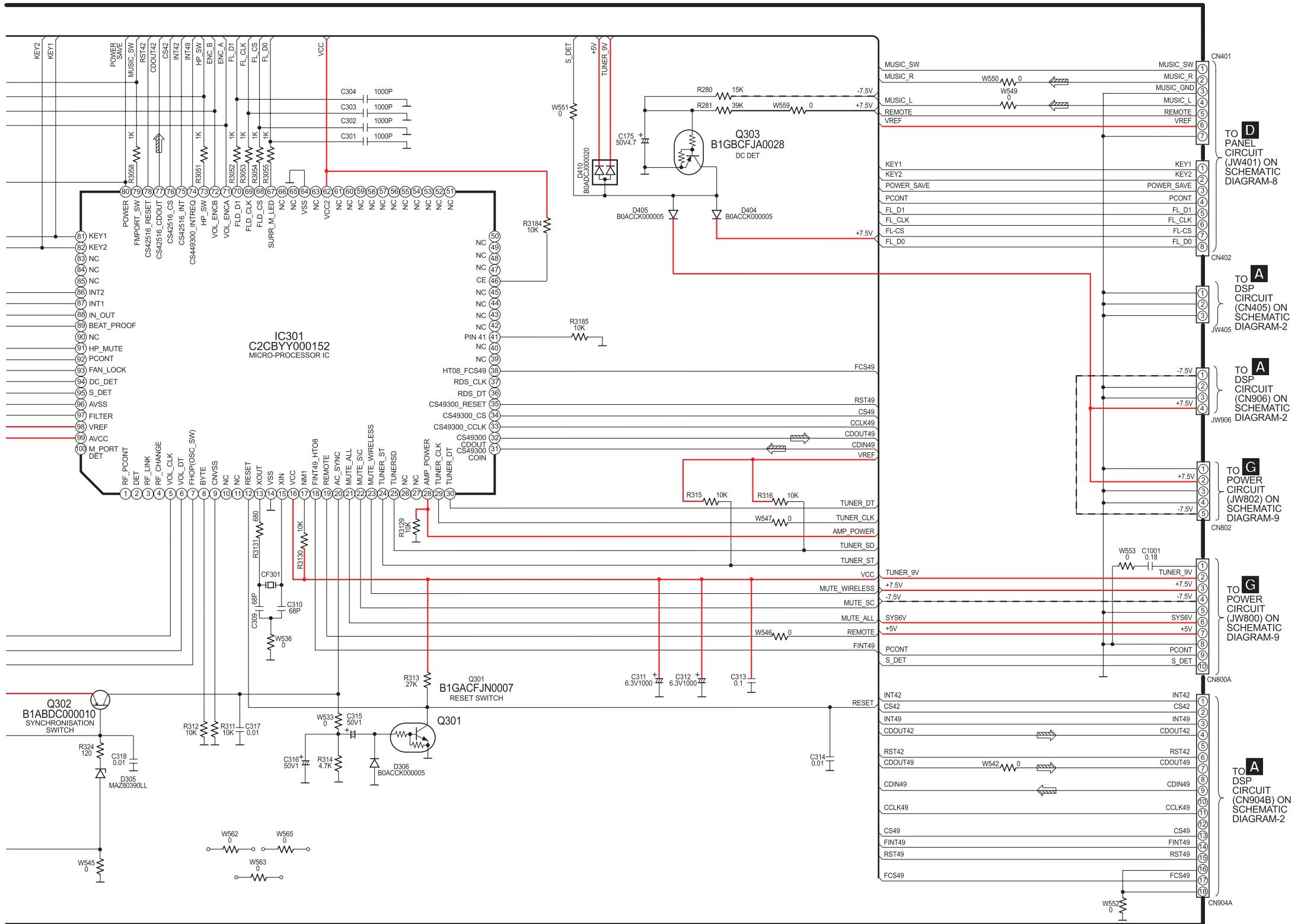
— : +B SIGNAL LINE
 - - - : -B SIGNAL LINE
 : MAIN SIGNAL LINE
 : AUX SIGNAL LINE



SCHEMATIC DIAGRAM - 5

B MAIN CIRCUIT

— : +B SIGNAL LINE
 - - - : -B SIGNAL LINE
 → : MAIN SIGNAL LINE
 ▶ : AUX SIGNAL LINE

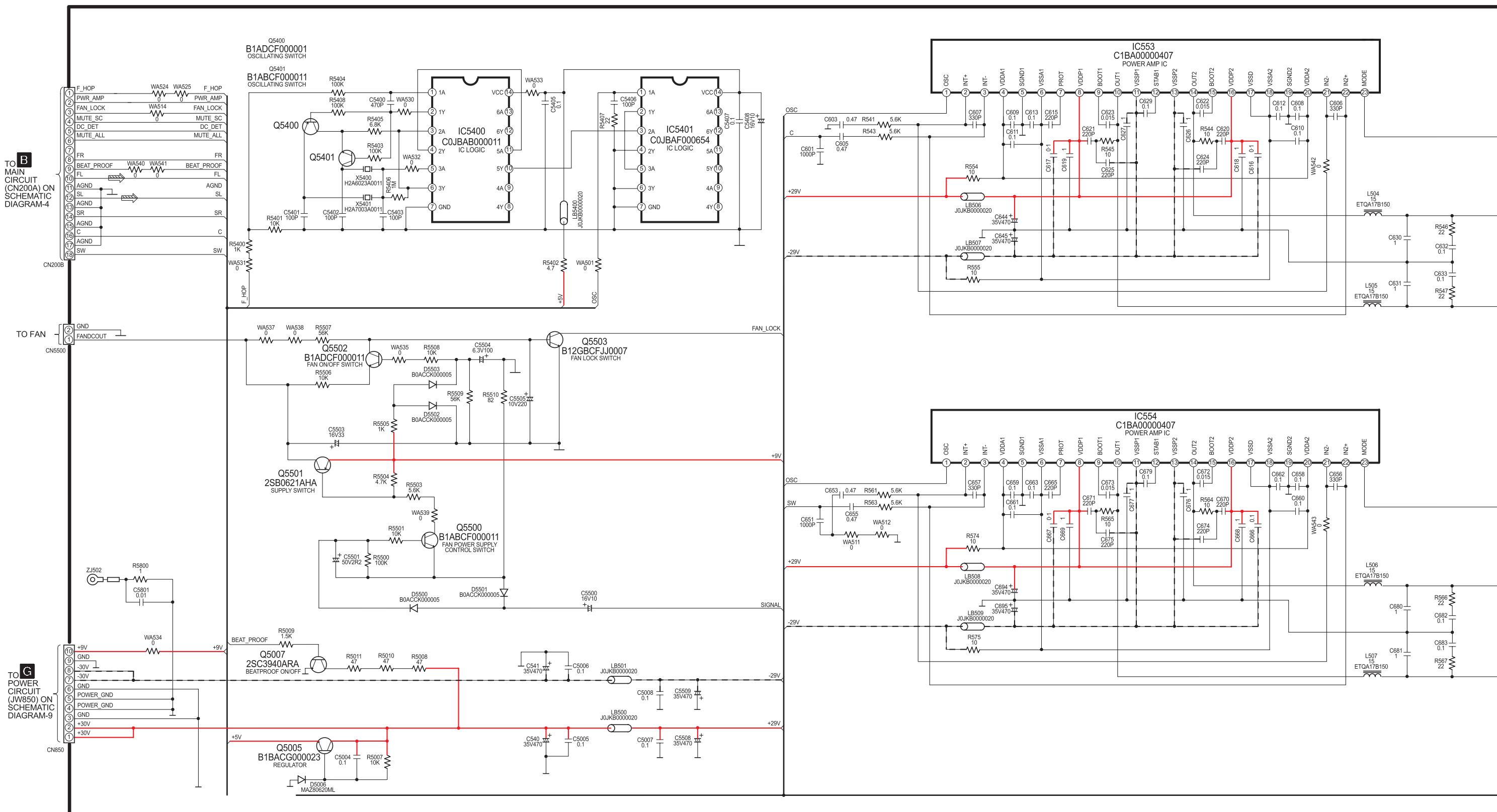


□ □ 3/3 SA-HT40EE MAIN CIRCUIT

13.4. (C) Digital Amp Circuit

SCHEMATIC DIAGRAM - 6

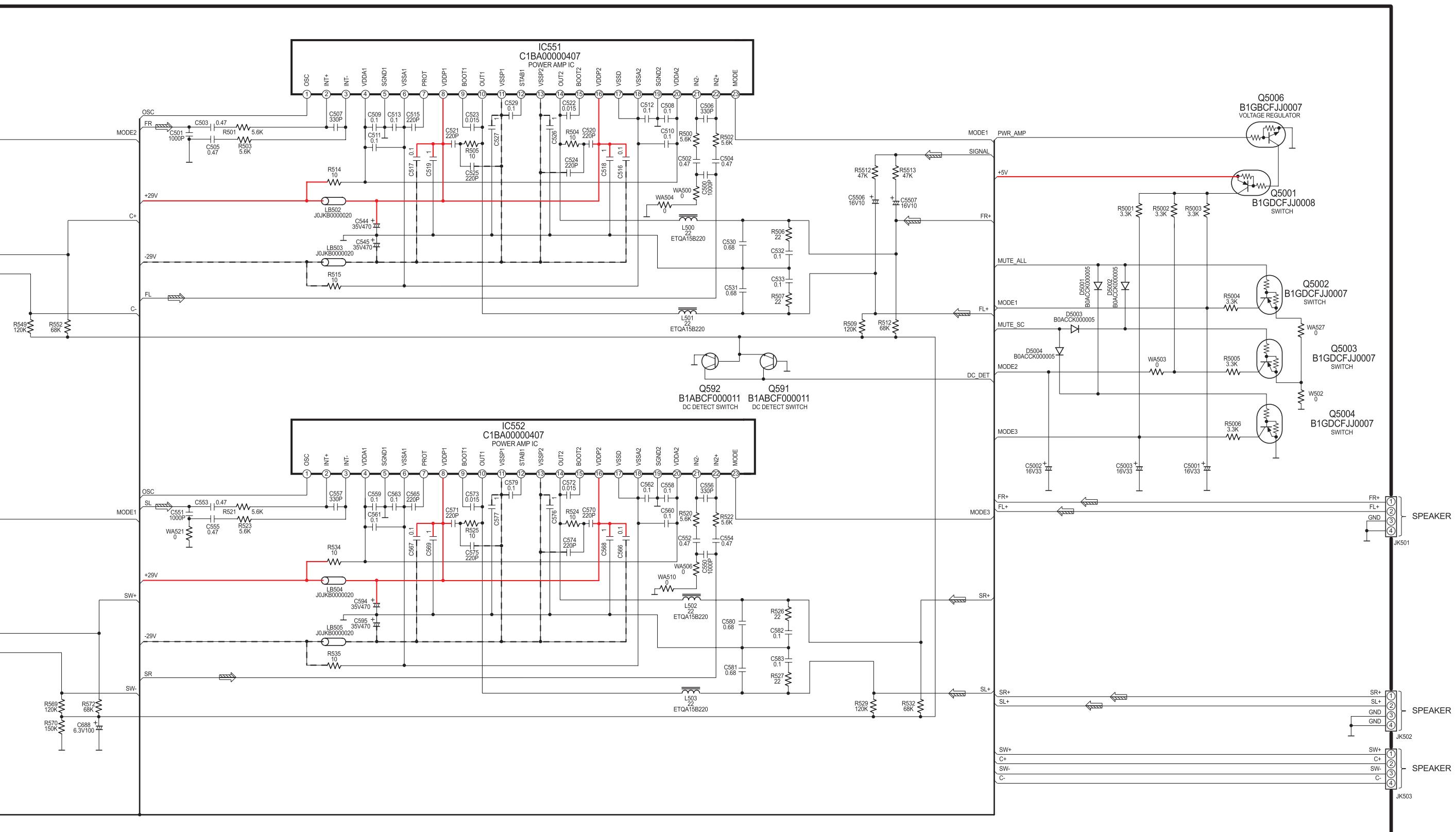
C DIGITAL AMP CIRCUIT



SCHEMATIC DIAGRAM - 7

C DIGITAL AMP CIRCUIT

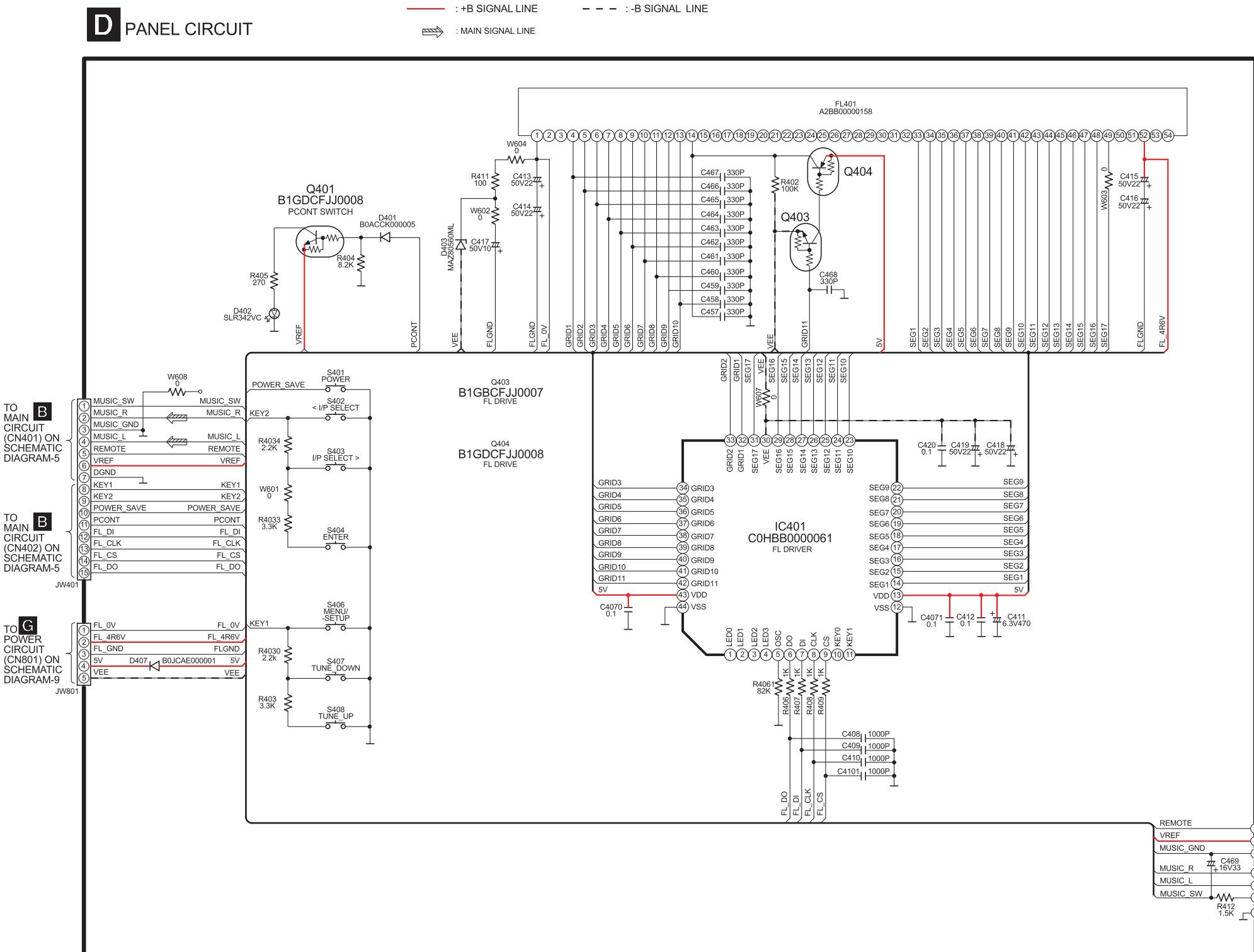
— : +B SIGNAL LINE
 - - : -B SIGNAL LINE
 → : MAIN SIGNAL LINE



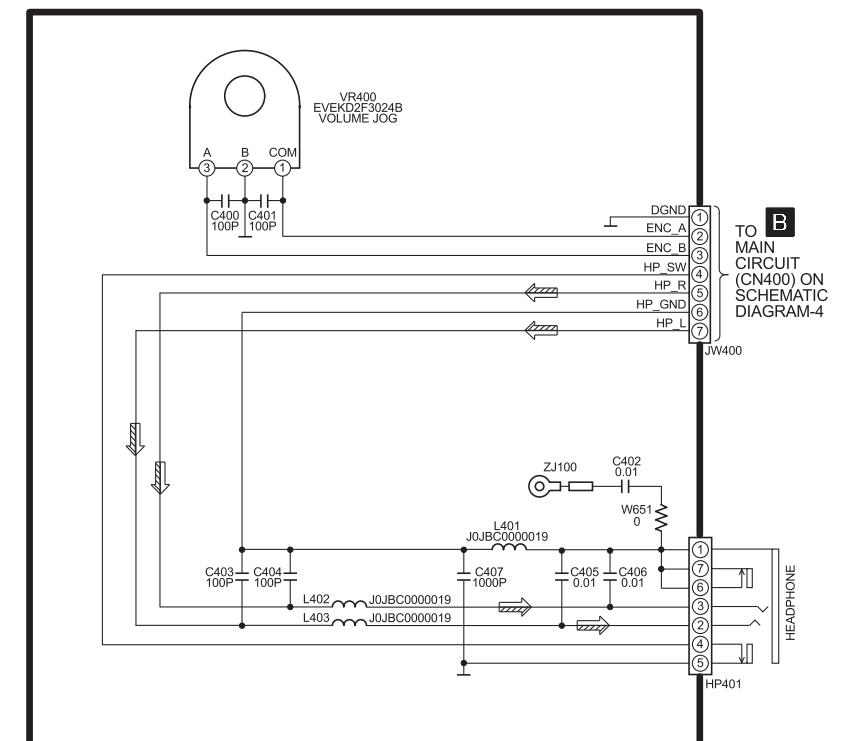
13.5. (D) Panel Circuit, (E) Volume Circuit & (F) Music Port Circuit

SCHEMATIC DIAGRAM - 8

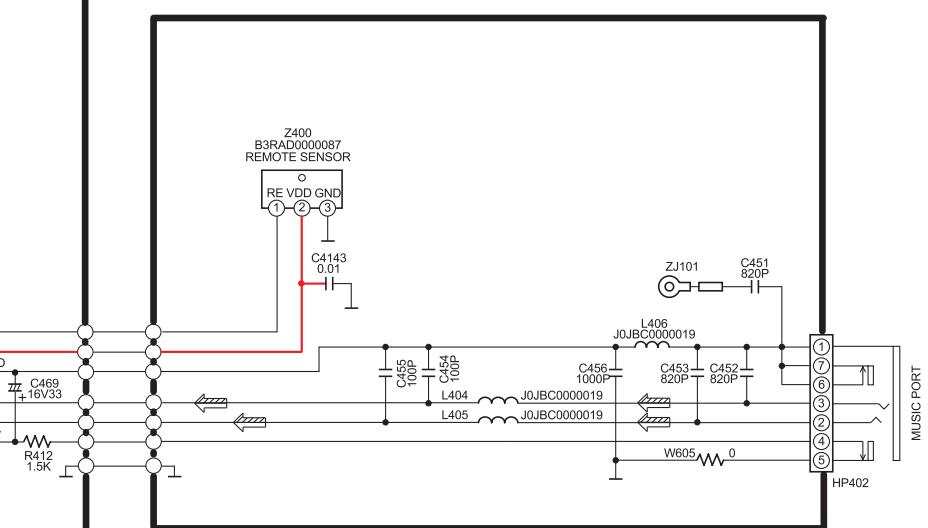
D PANEL CIRCUIT



E VOLUME CIRCUIT



F MUSIC PORT CIRCUIT

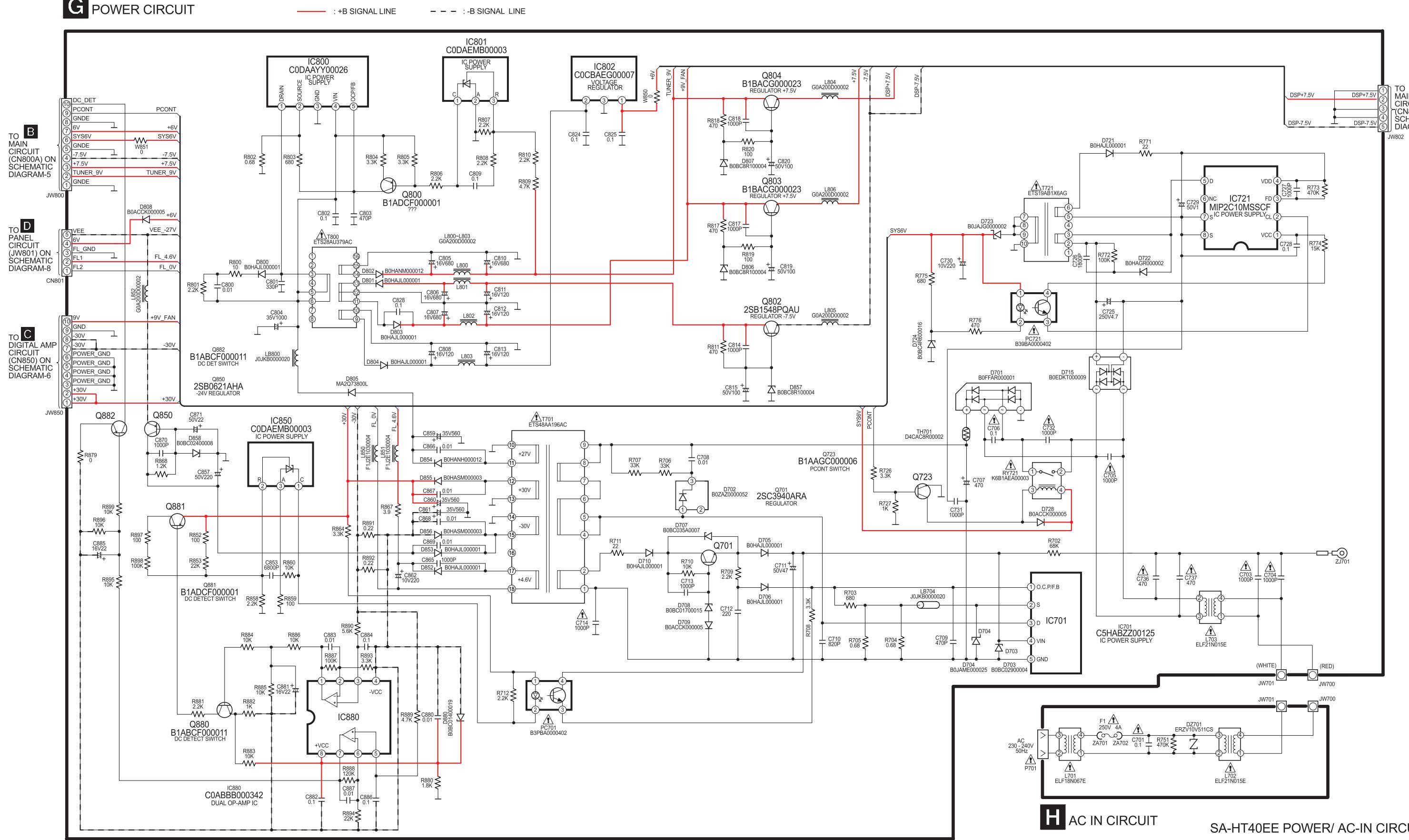


SA-HT40EE PANEL CIRCUIT / VOLUME CIRCUIT / MUSIC PORT CIRCUIT

13.6. (G) Power Circuit & (H) AC In Circuit

SCHEMATIC DIAGRAM - 9

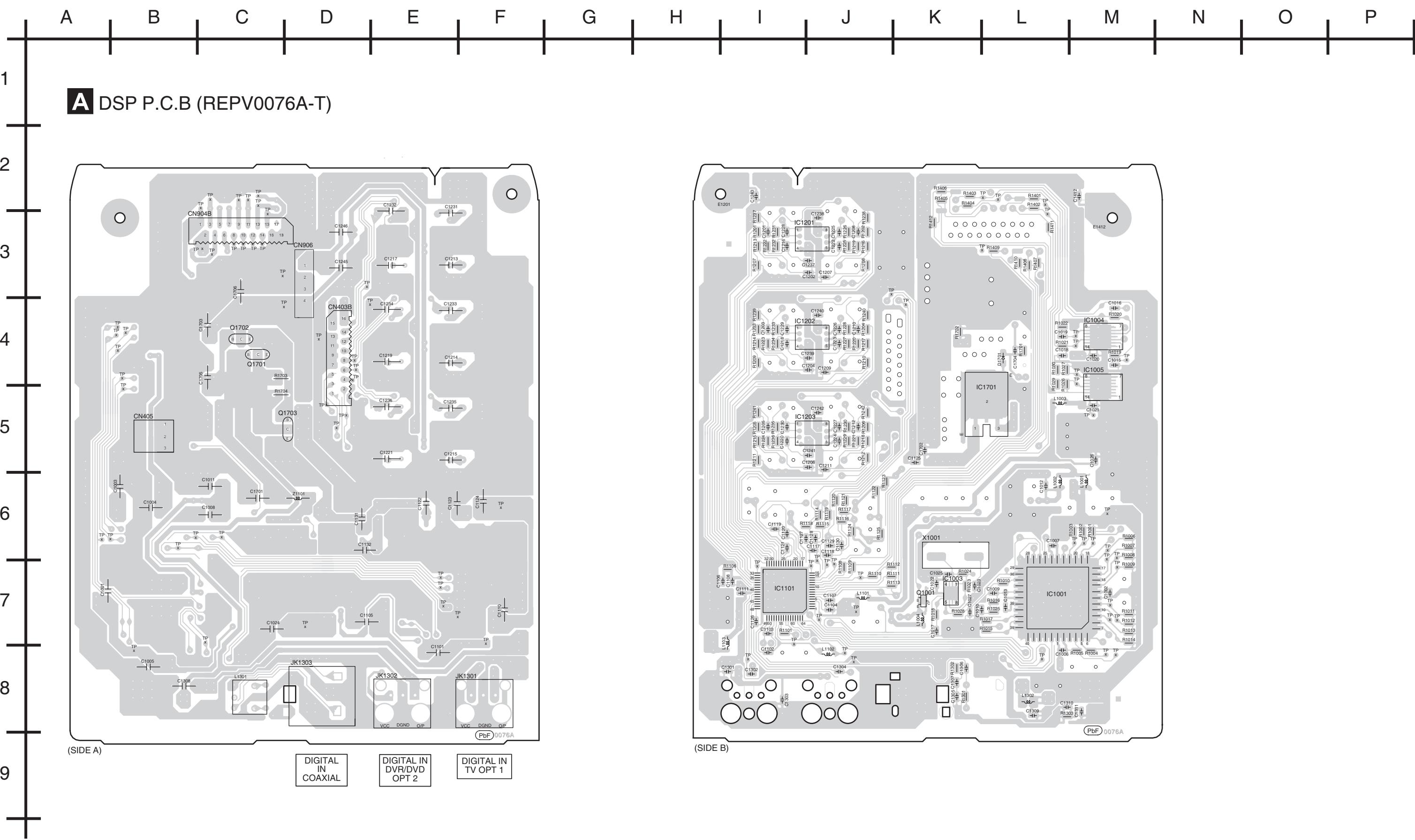
G POWER CIRCUIT



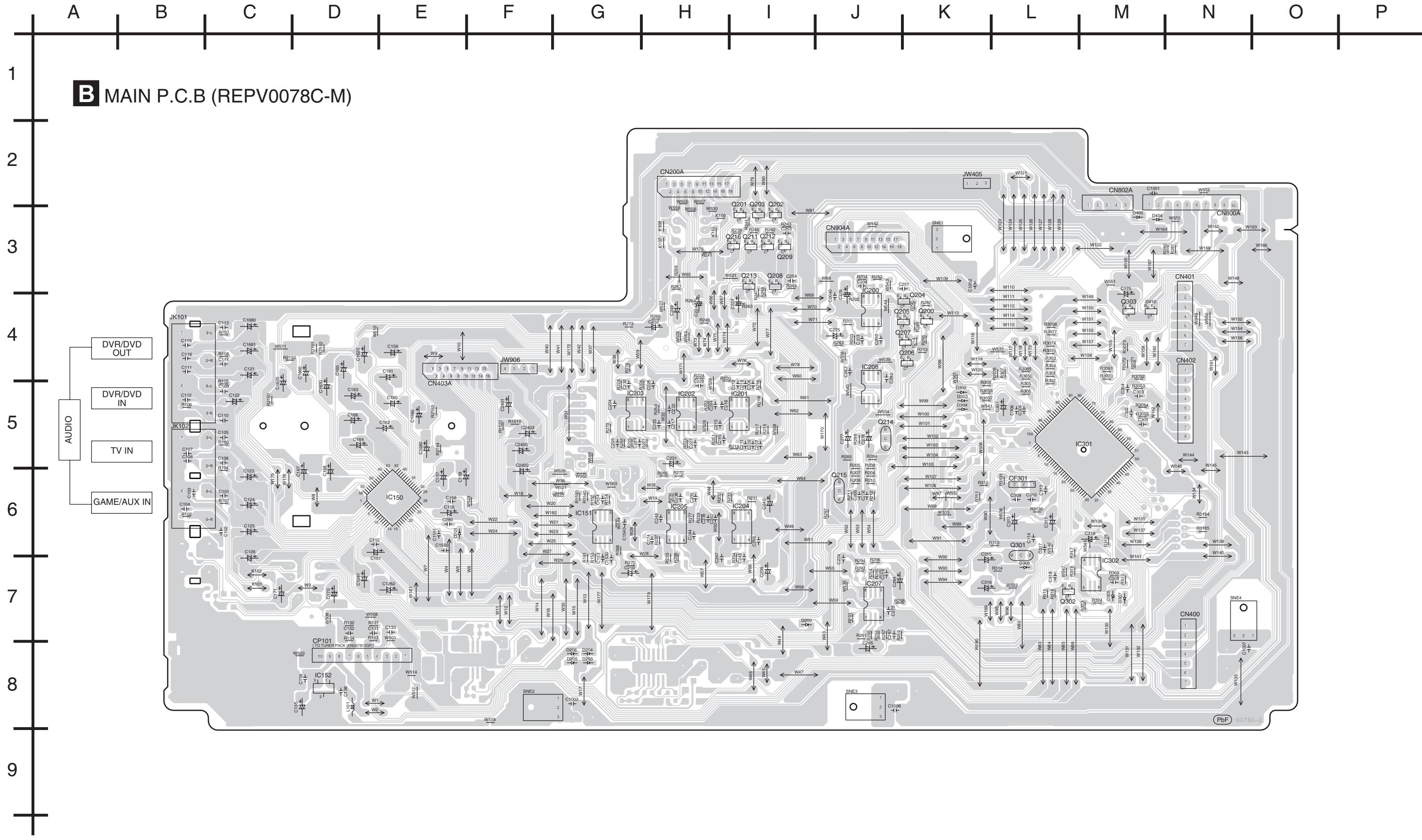
14 Printed Circuit Board Diagram

Note: Circuit board diagrams may be modified at any time with the development of new technology.

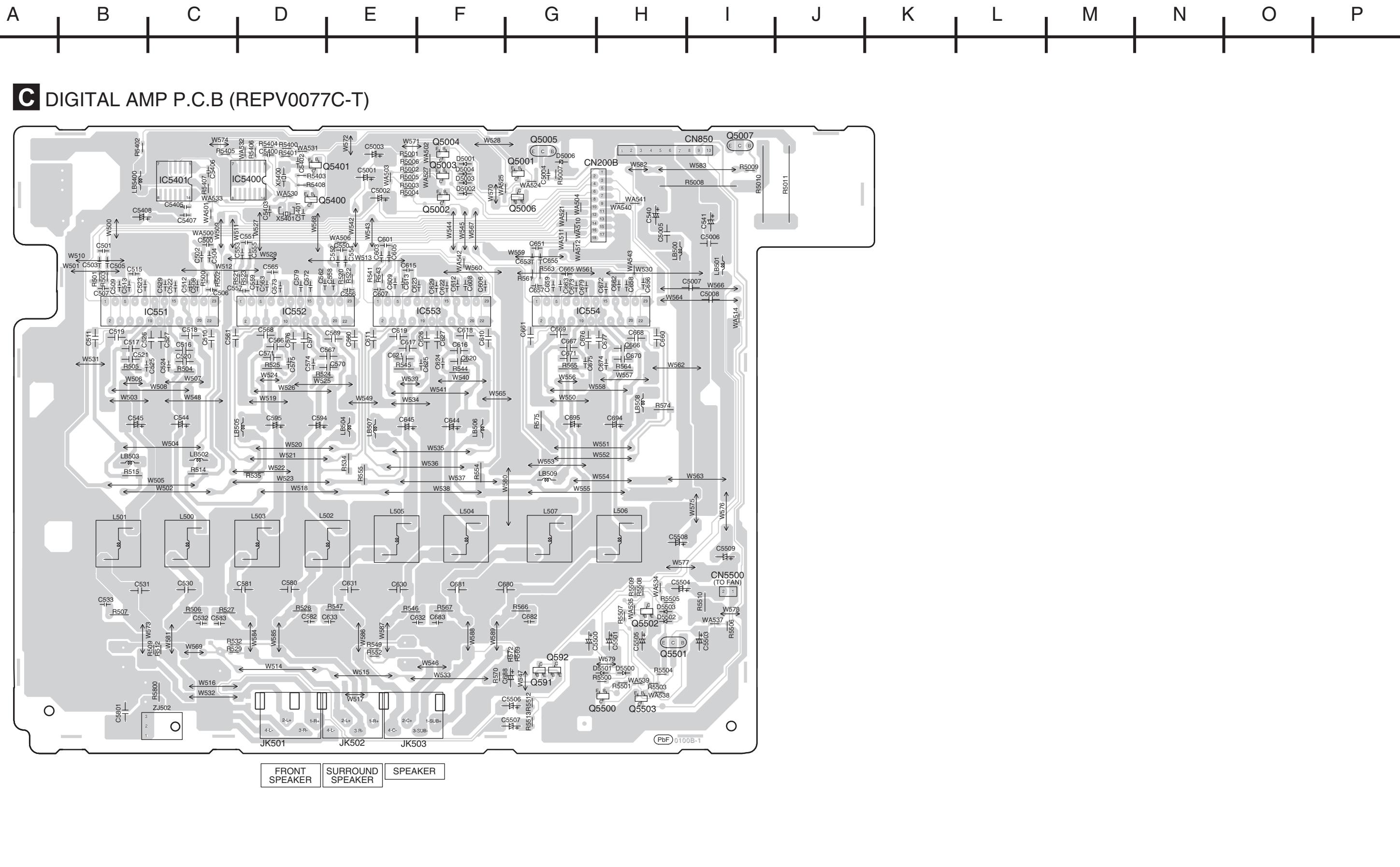
14.1. (A) DSP P.C.B.



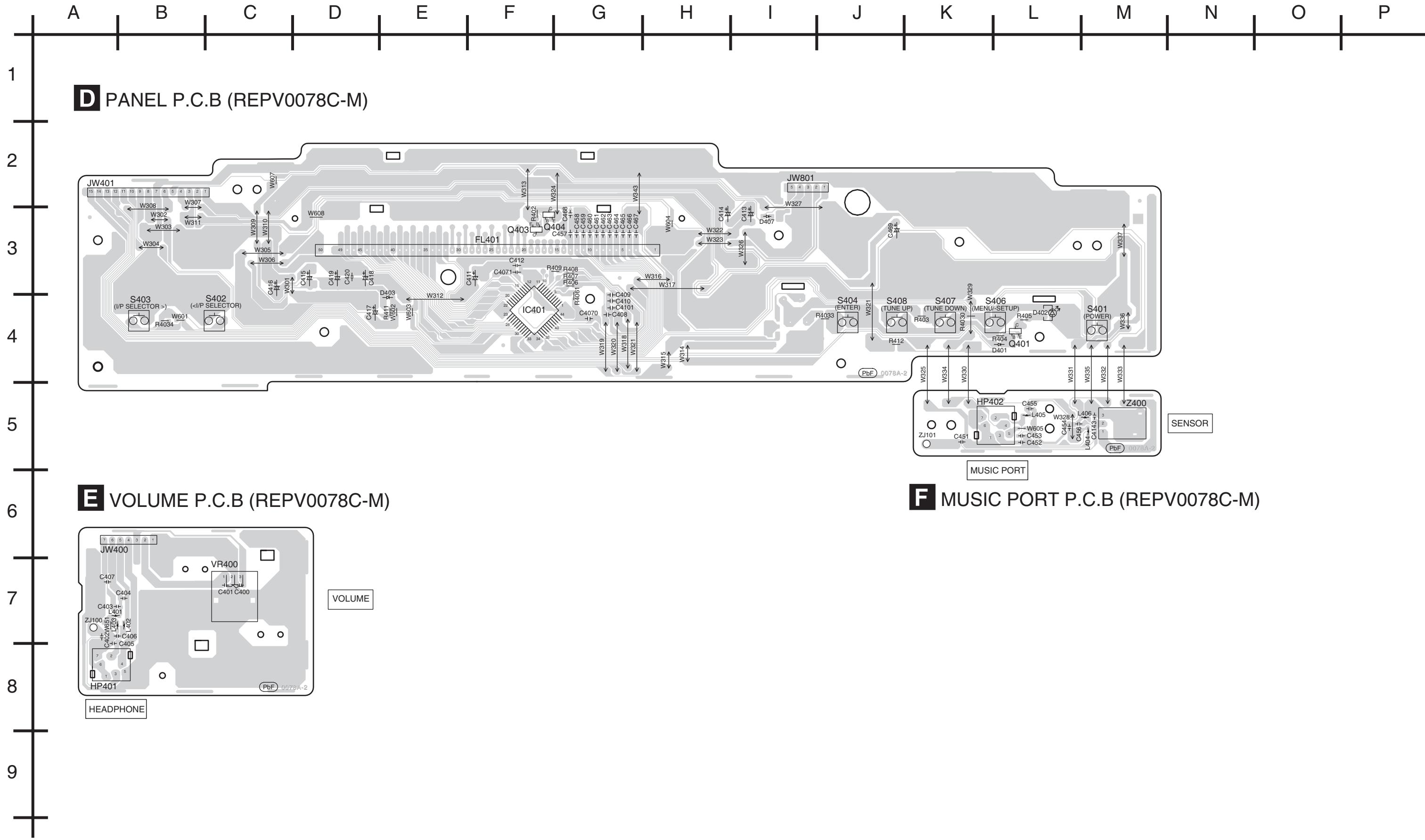
14.2. (B) Main P.C.B.



14.3. (C) Digital Amp P.C.B.

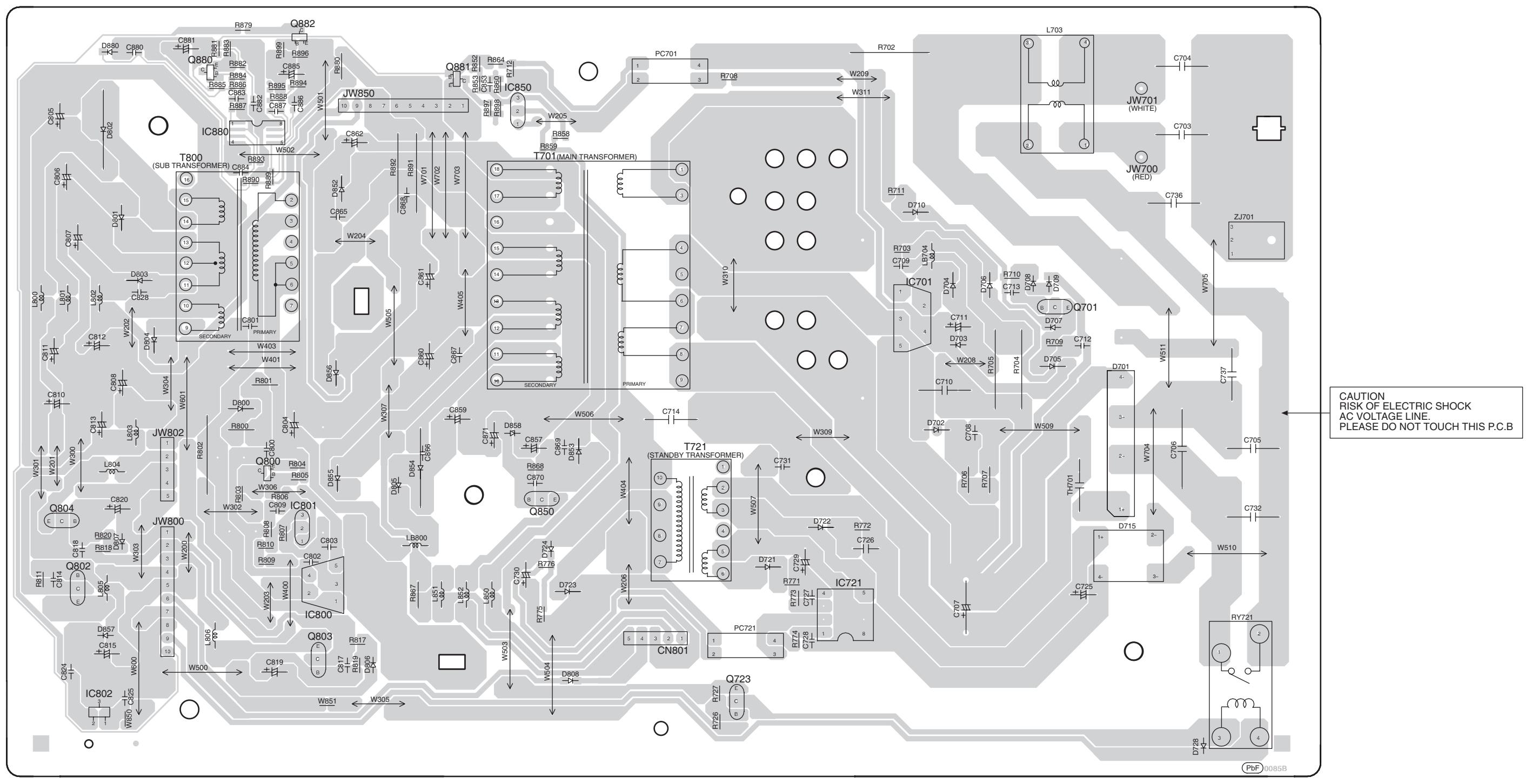


14.4. (D) Panel P.C.B., (E) Volume P.C.B. & (F) Music Port P.C.B.

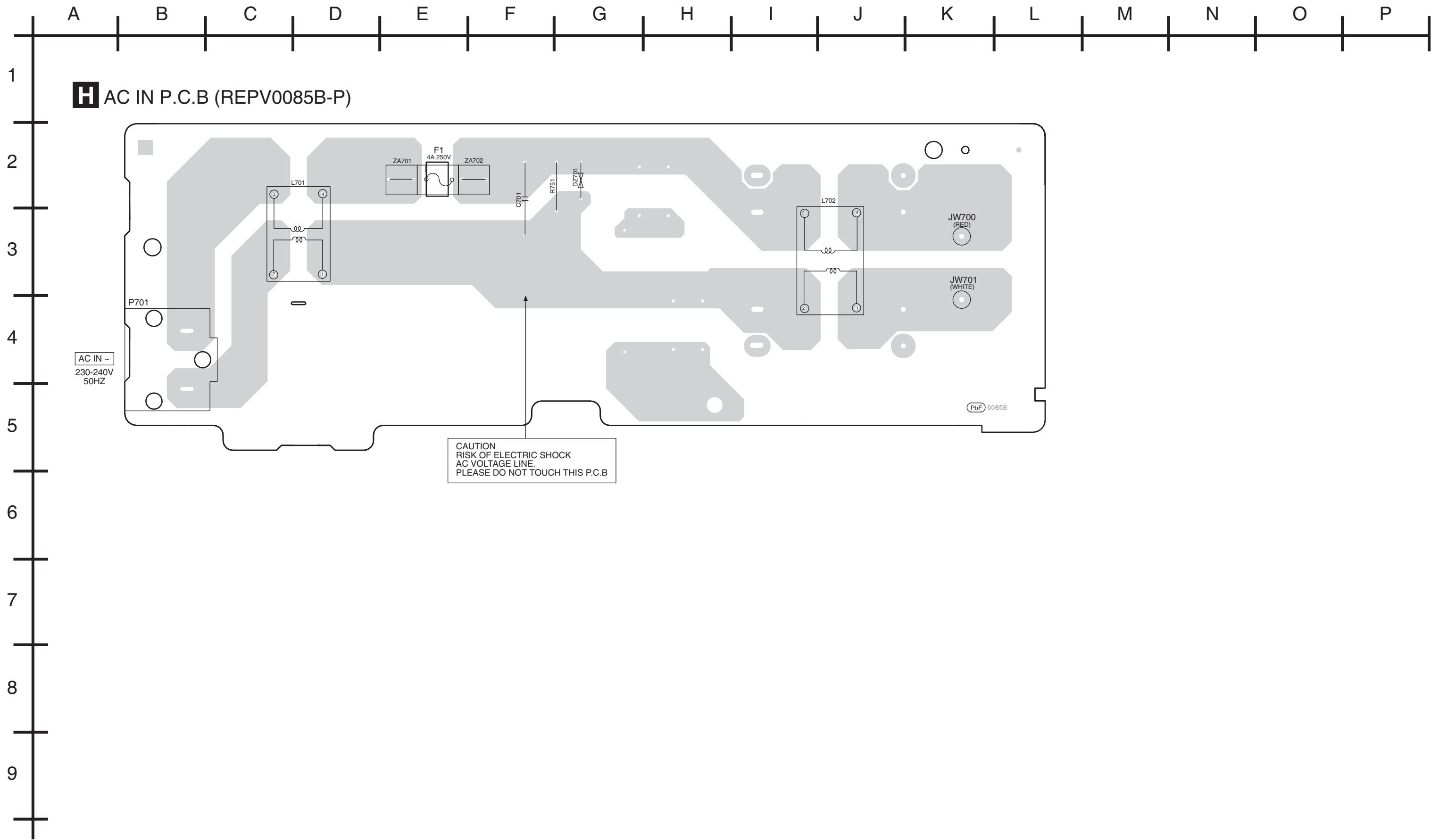


14.5. (G) Power P.C.B.

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

G POWER P.C.B(REPV0085B-P)

14.6. (H) AC In P.C.B.



15 Illustrations of IC's, Transistors & Diodes

| | | | | | | | | | |
|--|--|---|--|--|--|--|--|--|--|
| C1BB00001134 (56p) C0HBB000061 (44p) C2CBYY000152 (100p) C0FBZK000013 (64p) | | C2HBZZ000015 (44p) | | C0ABBB000342 C0ABBB000297 | | C0JBAZ002160 (14p) C0JBAZ002161 (14p) | | C1BA00000407 | |
| C0CBAAG00004 (3p) C0CBAEG00007 | | C0DAAYY00026 | | MIP2C10MSSCF | | C0DAEMB00003 | | C0JBAB000633 (8p) C0JBAB000011 (14p) C0JBAF000654 (14p) C0ABBB000125 (8p) | |
| C5HABZZ00125 | | C0CBAHG00011 | | B1GBCFJA0028 | | B1GACFJN0007 | | 2SB1548PQAU | |
| B1BACG000023 | | B1ABCF000011 B1ADCF000001 B1GDCFJN0001 B1GBCFJJ0007 B1ABDC000010 | | 2SB0621AHA | | B1GDCFJJ0008 | | KTC3199GRTA 2SD1915FTA | |
| 2SC3940ARA | | B0EDKT000009 | | B0ACCK000005 B0ACCE000003 | | B0HASM000003 | | B0ZAZ0000052 | |
| MAZ80560ML B0BC8R100004 MAZ80620ML | | B0HANM000012 B0BC02900004 B0HAJL000001 B0HAGR000002 B0JAME000025 B0AJG000002 | | B0BC01400019 B0BC01700015 B0BC4R600016 B0BC02400011 | | B0BC035A0007 B0JCAE000001 | | SLR342VC | |
| MA2Q73800L MAZ80390LL | | ERZV10V511CS | | B0FFAR000001 | | | | | |

16 Terminal Functions of Integrated Circuits

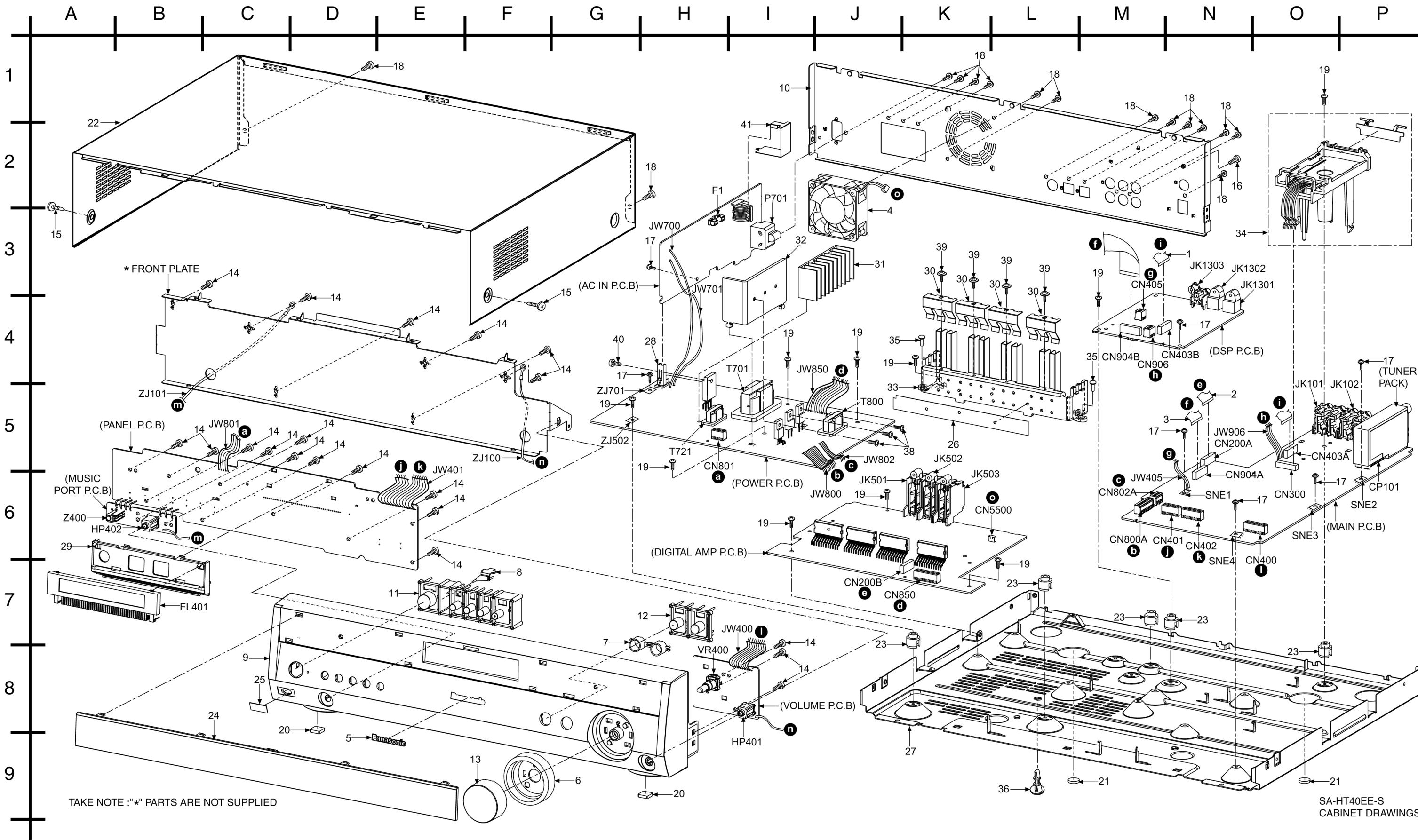
16.1. IC301 (C2CBYY000152): Microprocessor

| Pin No. | Terminal Name | I/O | Function |
|---------|----------------|-----|---|
| 1 | RF_PCONT | O | Wireless Module PCONT |
| 2 | RF_DET | I | Wireless Module Detection |
| 3 | RF_LINK | I | Wireless Module Link Detection |
| 4 | RF_CHANGE | O | Wireless Module Role Change (TX↔RX) |
| 5 | VOL_CLK | O | Volume + Selector control |
| 6 | VOL_DT | O | Volume + Selector control |
| 7 | FHOP(OSC_SW) | - | Osc switching for Digital Amplifier |
| 8 | BYTE | - | GND |
| 9 | CNVss | I | CNVss |
| 10 | N.C. | - | No Connection |
| 11 | N.C. | - | No Connection |
| 12 | RESET | I | Reset input pin for active "L" |
| 13 | XOUT | - | Clock output [10.00MHz] |
| 14 | VSS | - | GND |
| 15 | XIN | - | Clock input [10.00MHz] |
| 16 | VCC | - | Power source [5v] |
| 17 | NMI | - | Pull-up resistance |
| 18 | N.C. | - | No Connection |
| 19 | REMOTE | I/O | Remote Control signal |
| 20 | AC_SYNC | - | Power Failure Detection |
| 21 | MUTE_ALL | O | MUTE all Channel |
| 22 | MUTE_S/C | O | MUTE Surround Channel |
| 23 | MUTE_WIRELESS | O | MUTE Wireless Channel |
| 24 | TUNER | I | New Tuner Stereo Detect |
| 25 | TUNER | I | New Tuner SD Detect |
| 26 | N.C. | - | No Connection |
| 27 | N.C. | - | No Connection |
| 28 | AMP_POWER | O | Amplifier Power Shut Down |
| 29 | TUNER_CLK | I/O | New Tuner (12C Clock) |
| 30 | TUNER_DT | I | New Tuner (12C Data) |
| 31 | CS49300_CDIN | O | DSP/CODEC serial Data IN (uP-->DSP/CODEC) |
| 32 | CS49300_SCDOUT | I | DSP serial DATA OUT (DSP-->uP) |
| 33 | CS49300_CCLK | O | DSP/CODEC Clock |
| 34 | CS49300_CS | O | DSP Chip Select |
| 35 | CS49300_RESET | O | DSP Reset |
| 36 | RDS_DATA | I | RDS: DATA |
| 37 | RDS_CLK | I | RDS: Clock |
| 38 | N.C. | - | No Connection |
| 39 | N.C. | - | No Connection |
| 40 | N.C. | - | No Connection |
| 41 | N.C. | - | No Connection |
| 42 | N.C. | - | No Connection |
| 43 | N.C. | - | No Connection |
| 44 | N.C. | - | No Connection |
| 45 | N.C. | - | No Connection |
| 46 | N.C. | - | No Connection |
| 47 | N.C. | - | No Connection |
| 48 | N.C. | - | No Connection |
| 49 | N.C. | - | No Connection |
| 50 | N.C. | - | No Connection |
| 51 | N.C. | - | No Connection |
| 52 | N.C. | - | No Connection |
| 53 | N.C. | - | No Connection |
| 54 | N.C. | - | No Connection |
| 55 | N.C. | - | No Connection |
| 56 | N.C. | - | No Connection |

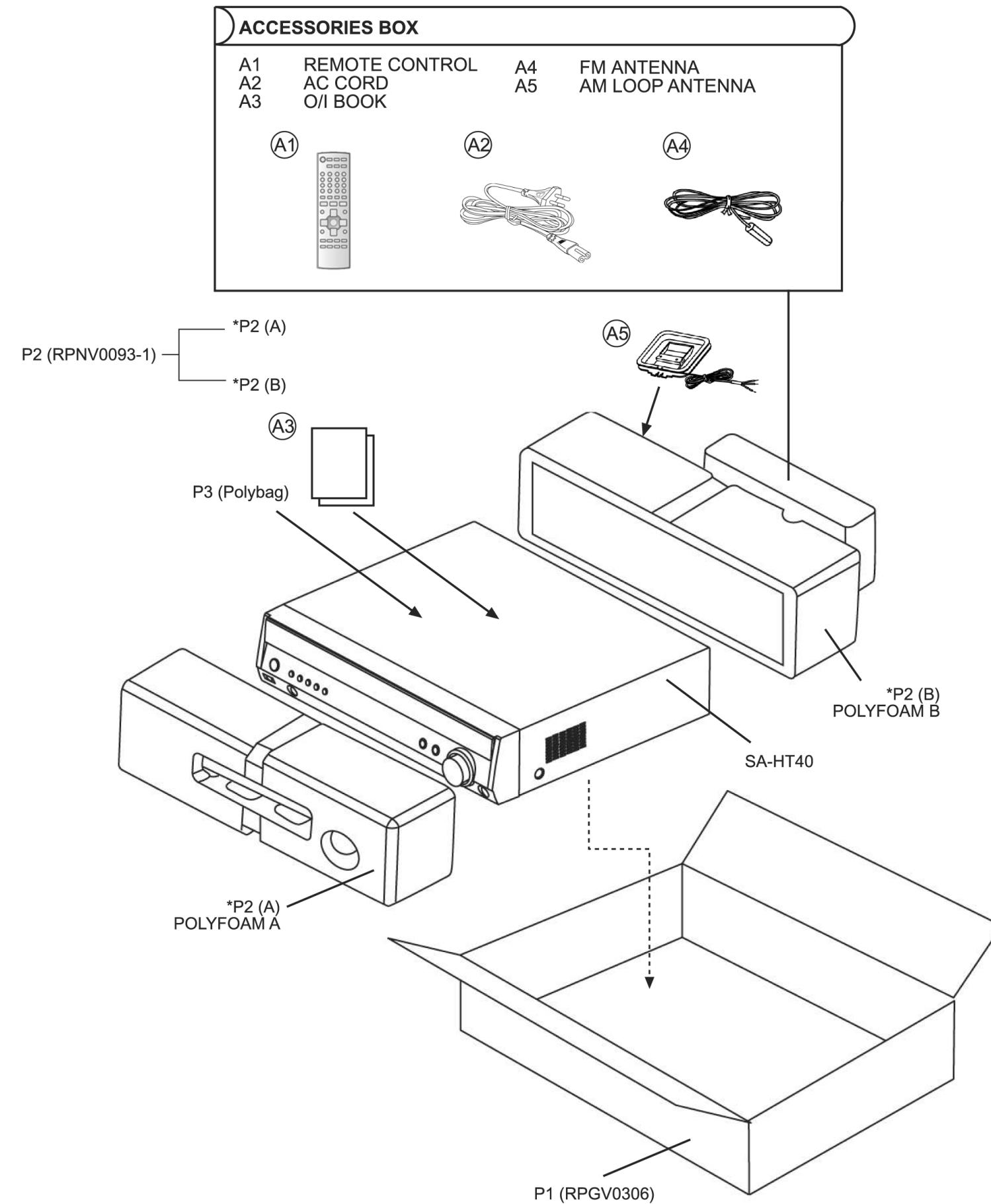
| Pin No. | Terminal Name | I/O | Function |
|---------|----------------|-----|--|
| 57 | N.C. | - | No Connection |
| 58 | N.C. | - | No Connection |
| 59 | N.C. | - | No Connection |
| 60 | N.C. | - | No Connection |
| 61 | N.C. | - | No Connection |
| 62 | Vcc2 | - | Vcc2 |
| 63 | N.C. | - | No Connection |
| 64 | Vss | - | Vss |
| 65 | N.C. | - | No Connection |
| 66 | N.C. | - | No Connection |
| 67 | SURR_M_LED | O | Led for SURROUND MUSIC mode |
| 68 | FLD_CS | O | FLD Dr CS |
| 69 | FLD_CLK | O | FLD Dr Serial Clock |
| 70 | FLD_D1 | O | FLD Dr serial data output |
| 71 | VOL_ENCD_A | I | Volume Encoder Input A |
| 72 | VOL_ENCD_B | I | Volume Encoder Input B |
| 73 | HP_SWITCH | I | Detect H/Phone Connection |
| 74 | CS49300_INTREQ | I | DSP Interrupt Request |
| 75 | CS42516_INT | I | CODEC interrupt Request |
| 76 | CS42516_CS | I/O | CODEC Chip Select |
| 77 | CS42516_CDOUT | O | CODEC Data OUT |
| 78 | CS42516_RESET | O | CODEC RESET |
| 79 | FIMPORT_SW | I | Front Music Port Detect |
| 80 | POWER | I | Power Key Detection |
| 81 | KEY1 | I | Key Input1 |
| 82 | KEY2 | I | Key Input2 |
| 83 | N.C. | - | No Connection |
| 84 | N.C. | - | No Connection |
| 85 | N.C. | - | No Connection |
| 86 | INIT2 | I | INITIAL SETTING 2 |
| 87 | INIT1 | I | INITIAL SETTING 1 |
| 88 | INIT_OUT | O | INITIAL SETTING OUTPUT |
| 89 | BEAT_PROOF | I/O | Beat Proof Control |
| 90 | N.C. | - | No Connection |
| 91 | HP_MUTE | O | MUTE for Headphones |
| 92 | PCONT | O | Power Relay Control |
| 93 | FAN_LOCK | I | FAN LOCK Detection |
| 94 | DC_DET | I | Power Amp Failure |
| 95 | S_DET | I | Power supply Short detection |
| 96 | Avss | - | Avss |
| 97 | FILTER | - | Filter setting |
| 98 | VREF | - | Reference power supply of the A/D converter [5v] |
| 99 | Avcc | - | Avcc |
| 100 | M_PORTDET | I | Wireless Module MPORT detection |

17 Exploded Views

17.1. Cabinet Parts Location



17.2. Packaging



| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| CN402 | K1MP08A00003 | 8P CONNECTOR | [M] |
| CN403A | K1MN16AA0003 | 16P FFC CONNECTOR | [M] |
| CN403B | K1MN16AA0003 | 16P FFC CONNECTOR | [M] |
| CN405 | K1MP03A00012 | 3P CONNECTOR | [M] |
| CN800A | K1MP10A00007 | 10P MOLEX CONNECTOR | [M] |
| CN801 | K1MP05A00009 | 5P CONNECTOR | [M] |
| CN802A | K1MP05A00009 | 5P CONNECTOR | [M] |
| CN850 | K1KA10AA0319 | 10P CONNECTOR | [M] |
| CN904A | K1MN18A00046 | 18P CONNECTOR | [M] |
| CN904B | K1MN18A00046 | 18P CONNECTOR | [M] |
| CN906 | K1MP04A00007 | 4P CONNECTOR | [M] |
| CN5500 | K1KA02AA0186 | 2P FAN CONNECTOR | [M] |
| CP101 | ENG07812QF | TUNER PACK | [M] |
| | | THERMISTOR | |
| TH701 | D4CAC8R00002 | THERMISTOR | [M] |
| | | COILS & TRANSFORMERS | |
| L101 | G0A200D00002 | RF CHOKE COIL | [M] |
| L401 | J0JBC0000019 | CHIP INDUCTOR | [M] |
| L402 | J0JBC0000019 | CHIP INDUCTOR | [M] |
| L403 | J0JBC0000019 | CHIP INDUCTOR | [M] |
| L404 | J0JBC0000019 | CHIP INDUCTOR | [M] |
| L405 | J0JBC0000019 | CHIP INDUCTOR | [M] |
| L406 | J0JBC0000019 | CHIP INDUCTOR | [M] |
| L500 | ETQA15B220 | CHOKE COIL | [M] |
| L501 | ETQA15B220 | CHOKE COIL | [M] |
| L502 | ETQA15B220 | CHOKE COIL | [M] |
| L503 | ETQA15B220 | CHOKE COIL | [M] |
| L504 | ETQA17B150 | CHOKE COIL | [M] |
| L505 | ETQA17B150 | CHOKE COIL | [M] |
| L506 | ETQA17B150 | CHOKE COIL | [M] |
| L507 | ETQA17B150 | CHOKE COIL | [M] |
| L701 | ELF18N067E | COMMON MODE COIL | [M] △ |
| L702 | ELF21N015E | COMMON MODE COIL | [M] △ |
| L703 | ELF21N015E | COMMON MODE COIL | [M] △ |
| L800 | G0A200D00002 | RF CHOKE COIL | [M] |
| L801 | G0A200D00002 | RF CHOKE COIL | [M] |
| L802 | G0A200D00002 | RF CHOKE COIL | [M] |
| L803 | G0A200D00002 | RF CHOKE COIL | [M] |
| L804 | G0A200D00002 | RF CHOKE COIL | [M] |
| L805 | G0A200D00002 | RF CHOKE COIL | [M] |
| L806 | G0A200D00002 | RF CHOKE COIL | [M] |
| L850 | G0A200D00002 | RF CHOKE COIL | [M] |
| L851 | G0A200D00002 | RF CHOKE COIL | [M] |
| L852 | G0A200D00002 | RF CHOKE COIL | [M] |
| L1001 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1002 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1003 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1004 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1101 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1102 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1103 | G1C2R2K00012 | CHIP INDUCTOR | [M] |
| L1301 | RLQZ150M-0 | CHOKE COIL | [M] |
| L1302 | G1C1R0MA0061 | CHIP INDUCTOR | [M] |
| LB500 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB501 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB502 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB503 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB504 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB505 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB506 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB507 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB508 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB509 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB704 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB800 | J0JKB0000020 | EMI BEAD CORE | [M] |
| LB5400 | J0JKB0000020 | EMI BEAD CORE | [M] |
| T701 | ETS48AA196AC | MAIN TRANSFORMER | [M] △ |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| T721 | ETS19AB1X6AG | STANDBY TRANSFORMER | [M] △ |
| T800 | ETS28AU379AC | SUB TRANSFORMER | [M] △ |
| | | COMPONENT COMBINATIONS | |
| Z400 | B3RAD0000087 | REMOTE SENSOR | [M] |
| Z1101 | J0JKB0000020 | EMI BEAD CORE | [M] |
| ZA701 | EYF52BCY | FUSE CLIP | [M] |
| ZA702 | EYF52BCY | FUSE CLIP | [M] |
| | | | |
| ZJ502 | K9ZZ00001279 | EARTH PLATE | [M] |
| ZJ701 | K4CZ01000027 | EARTH LUG | [M] |
| | | | |
| PC701 | B3PBA0000402 | PHOTO COUPLER | [M] △ |
| PC721 | B3PBA0000402 | PHOTO COUPLER | [M] △ |
| | | | |
| SNE1 | K9ZZ00001279 | EARTH PLATE | [M] |
| SNE2 | K9ZZ00001279 | EARTH PLATE | [M] |
| SNE3 | K9ZZ00001279 | EARTH PLATE | [M] |
| SNE4 | K9ZZ00001279 | EARTH PLATE | [M] |
| | | | |
| CF301 | H2A1005A0005 | 10MHZ RESONATOR | [M] |
| | | RELAY | |
| RY721 | K6B1AEA00003 | DC POWER RELAY | [M] △ |
| | | OSCILLATORS | |
| X1001 | H0J122200002 | CYRSTAL | [M] |
| X5400 | H2A6023A0011 | CERAMIC RESONATOR | [M] |
| X5401 | H2A7003A0011 | CERAMIC RESONATOR | [M] |
| | | DISPLAY TUBE | |
| FL401 | A2BB00000158 | FL DISPLAY | [M] |
| | | FUSE | |
| F1 | K5D402BLA013 | FUSE | [M] △ |
| | | FUSE PROTECTORS | |
| HP401 | K2HC103A0024 | JK HP | [M] |
| HP402 | K2HC1YYA0005 | JK MUSIC PORT | [M] |
| | | | |
| P701 | K2AA2B000015 | JK AC INLET | [M] △ |
| | | JACKS | |
| JK101 | K4BK04H00008 | JK 4P RCA | [M] |
| JK102 | K4BK04H00008 | JK 4P RCA | [M] |
| JK501 | K4BC04B00107 | JK SPEAKER | [M] |
| JK502 | K4BC04B00107 | JK SPEAKER | [M] |
| JK503 | K4BC04B00107 | JK SPEAKER | [M] |
| JK1301 | B3RAB0000048 | JK OPTICAL | [M] |
| JK1302 | B3RAB0000048 | JK OPTICAL | [M] |
| JK1303 | K4BK01H00010 | JK COAX INPUT | [M] |
| | | WIRES | |
| JW400 | RWJ1807100SQ | 7P WIRE (POWER-I/O) | [M] |
| JW401 | RWJ1815130SQ | 15P WIRE (PANEL-MAIN) | [M] |
| JW405 | RWJ1803220SQ | 3P WIRE | [M] |
| JW700 | REEV0122 | PRIMARY WIRE (RED) | [M] |
| JW701 | REEV0123 | PRIMARY WIRE (WHITE) | [M] |
| JW800 | RWJ1810100SQ | 10P WIRE | [M] |
| JW801 | RWJ1805110SQ | 5P WIRE (PANEL-POWER) | [M] |
| JW802 | RWJ1805110SQ | 5P WIRE (PANEL-POWER) | [M] |
| JW850 | REXV0069 | 10P WIRE (POWER-DAM) | [M] |
| JW906 | RWJ1804110SQ | 4P MAIN-DSP | [M] |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| ZJ100 | REX1161-1 | WIRE | [M] |
| ZJ101 | REXV0071-1 | GROUNDING WIRE | [M] |
| | | PACKING MATERIALS | |
| P1 | RPGV0306 | PACKING CASE | [M] |
| P2 | RPNV0093-1 | POLYFOAM | [M] |
| P3 | VPF1122-1 | POLYBAG | [M] |
| | | ACCESSORIES | |
| A1 | N2QAYB000010 | REMOTE CONTROL | [M] |
| A1-1 | RKK-HTR0051K | R/C BATTERY COVER | [M] |
| A2 | K2CQ2CA00006 | AC CORD | [M] △ |
| A3 | RQTV0111-R | O/I BOOK (Ru) | [M] |
| A4 | RSA0007-L | FM ANTENNA WIRE | [M] |
| A5 | N1DAAA00002 | AM LOOP ANTENNA | [M] |
| | | RESISTORS | |
| R101 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R102 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R103 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R104 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R105 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R106 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R107 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R108 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R131 | D0GB473JA041 | 47K 1/16W | [M] |
| R132 | D0GB473JA041 | 47K 1/16W | [M] |
| R133 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R134 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R151 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R152 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R153 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R154 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R201 | D0GB332JA007 | 3.3K 1/16W | [M] |
| R202 | D0GB332JA007 | 3.3K 1/16W | [M] |
| R203 | D0GB683JA007 | 68K 1/16W | [M] |
| R204 | D0GB683JA007 | 68K 1/16W | [M] |
| R205 | D0GB151JA007 | 150 1/16W | [M] |
| R206 | D0GB151JA007 | 150 1/16W | [M] |
| R207 | D0GB151JA007 | 150 1/16W | [M] |
| R208 | D0GB151JA007 | 150 1/16W | [M] |
| R209 | D0GB560JA007 | 56 1/16W | [M] |
| R210 | D0GB560JA007 | 56 1/16W | [M] |
| R211 | D0GB560JA007 | 56 1/16W | [M] |
| R212 | D0GB560JA007 | 56 1/16W | [M] |
| R213 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R214 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R215 | D0GB223JA041 | 22K 1/16W | [M] |
| R216 | D0GB223JA041 | 22K 1/16W | [M] |
| R217 | D0GB333JA007 | 33K 1/16W | [M] |
| R218 | D0GB333JA007 | 33K 1/16W | [M] |
| R219 | D0GB562JA007 | 5.6K 1/16W | [M] |
| R220 | D0GB562JA007 | 5.6K 1/16W | [M] |
| R221 | D0GB123JA007 | 12K 1/16W | [M] |
| R222 | D0GB123JA007 | 12K 1/16W | [M] |
| R223 | D0GB562JA007 | 5.6K 1/16W | [M] |
| R224 | D0GB562JA007 | 5.6K 1/16W | [M] |
| R225 | D0GB123JA007 | 12K 1/16W | [M] |
| R226 | D0GB123JA007 | 12K 1/16W | [M] |
| R227 | D0GB153JA007 | 15K 1/16W | [M] |
| R228 | D0GB153JA007 | 15K 1/16W | [M] |
| R229 | D0GB473JA041 | 47K 1/16W | [M] |
| R230 | D0GB222JA041 | 2.2K 1/16W | [M] |
| R231 | D0GB473JA041 | 47K 1/16W | [M] |
| R232 | D0GB182JA007 | 1.8K 1/16W | [M] |
| R233 | D0GB153JA007 | 15K 1/16W | [M] |
| R234 | D0GB153JA007 | 15K 1/16W | [M] |
| R235 | D0GB392JA007 | 3.9K 1/16W | [M] |
| R236 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R237 | D0GB332JA007 | 3.3K 1/16W | [M] |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| R239 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R240 | ERJ3GEY0R00V | 1K 1/16W | [M] |
| R241 | ERJ3GEY0R00V | 1K 1/16W | [M] |
| R242 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R243 | D0GB474JA041 | 470K 1/16W | [M] |
| R244 | ERJ3GEYJ822V | 8.2K 1/16W | [M] |
| R245 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R247 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R248 | ERJ3GEYJ822V | 8.2K 1/16W | [M] |
| R249 | D0GB474JA041 | 470K 1/16W | [M] |
| R254 | D0GB473JA041 | 47K 1/16W | [M] |
| R255 | D0GB473JA041 | 47K 1/16W | [M] |
| R256 | D0GB104JA007 | 100K 1/16W | [M] |
| R257 | D0GB104JA007 | 100K 1/16W | [M] |
| R258 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R259 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R260 | D0GB223JA041 | 22K 1/16W | [M] |
| R261 | D0GB223JA041 | 22K 1/16W | [M] |
| R263 | D0GB473JA041 | 47K 1/16W | [M] |
| R264 | D0GB473JA041 | 47K 1/16W | [M] |
| R265 | D0GB223JA041 | 22K 1/16W | [M] |
| R266 | D0GB223JA041 | 22K 1/16W | [M] |
| R267 | D0GB223JA041 | 22K 1/16W | [M] |
| R268 | D0GB473JA041 | 47K 1/16W | [M] |
| R270 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R272 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R273 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R277 | D0GB223JA041 | 22K 1/16W | [M] |
| R278 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R279 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R280 | D0GB153JA007 | 15K 1/16W | [M] |
| R281 | D0GB393JA007 | 39K 1/16W | [M] |
| R282 | D0GB332JA007 | 3.3K 1/16W | [M] |
| R283 | D0GB332JA007 | 3.3K 1/16W | [M] |
| R284 | D0GB473JA041 | 47K 1/16W | [M] |
| R285 | D0GB473JA041 | 47K 1/16W | [M] |
| R286 | ERJ3GEYJ822V | 8.2K 1/16W | [M] |
| R287 | D0GB474JA041 | 470K 1/16W | [M] |
| R289 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R290 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R291 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R292 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R293 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R294 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R295 | ERJ3GEY0R00V | 0 1/16W | [M] |
| R296 | ERJ3GEY0R00V | 0 1/16W | [M] |
| R297 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R298 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R299 | D0GB152JA007 | 1.5K 1/16W | [M] |
| R301 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R302 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R303 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R305 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R306 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R307 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R308 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R309 | D0GB472JA041 | 4.7K 1/16W | [M] |
| R310 | D0GB473JA041 | 47K 1/16W | [M] |
| R311 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R312 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R313 | D0GB273JA007 | 27K 1/16W | [M] |
| R314 | D0GB472JA041 | 4.7K 1/16W | [M] |
| R315 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R316 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R317 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R318 | ERJ3GEYJ103V | 10K 1/16W | [M] |
| R323 | D0GB271JA007 | 270 1/16W | [M] |
| R324 | D0GB121JA007 | 120 1/16W | [M] |
| R402 | D0GB104JA007 | 100K 1/16W | [M] |
| R403 | D0GB332JA007 | 3.3K 1/16W | [M] |
| R404 | ERJ3GEYJ822V | 8.2K 1/16W | [M] |
| R405 | D0GB271JA007 | 270 1/16W | [M] |
| R406 | ERJ3GEYJ102V | 1K 1/16W | [M] |
| R407 | ERJ3GEYJ102V | 1K 1/16W | [M] |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|----------|--------------|-------------------------|---------|
| C1681 | ECA1HAK2R2XB | 2.2 50V | [M] |
| C1701 | ECA1CAK220XB | 22 16V | [M] |
| C1702 | F1H1H391A013 | 390P 50V | [M] |
| C1703 | ECA1CAK100XB | 10 16V | [M] |
| C1704 | F1H1H103A219 | 0.01 50V | [M] |
| C1705 | ECA1CAK101XB | 100 16V | [M] |
| C1706 | ECA1AM332E | 3300 10V | [M] |
| C2040 | F1H1C104A008 | 0.1 16V | [M] |
| C2400 | ECA1CAK100XB | 10 16V | [M] |
| C2401 | ECA1CAK100XB | 10 16V | [M] |
| C2402 | ECA1CAK100XB | 10 16V | [M] |
| C2403 | ECA1CAK100XB | 10 16V | [M] |
| C4070 | F1H1C104A008 | 0.1 16V | [M] |
| C4071 | F1H1C104A008 | 0.1 16V | [M] |
| C4101 | F1H1H102A219 | 1000P 50V | [M] |
| C4143 | F1H1E103A029 | 0.01 25V | [M] |
| C5001 | ECA1CAK330XB | 33 16V | [M] |
| C5002 | ECA1CAK330XB | 33 16V | [M] |
| C5003 | ECA1CAK330XB | 33 16V | [M] |
| C5004 | F1H1H104A783 | 0.1 50V | [M] |
| C5005 | F1K2A1040007 | 0.1 100V | [M] |
| C5006 | F1K2A1040007 | 0.1 100V | [M] |
| C5007 | F1K2A1040007 | 0.1 100V | [M] |
| C5008 | F1K2A1040007 | 0.1 100V | [M] |
| C5400 | F1H1H471A219 | 470P 50V | [M] |
| C5401 | F1H1H101A230 | 100P 50V | [M] |
| C5402 | F1H1H101A230 | 100P 50V | [M] |
| C5403 | F1H1H101A230 | 100P 50V | [M] |
| C5405 | F1H1H104A783 | 0.1 50V | [M] |
| C5406 | F1H1H101A230 | 100P 50V | [M] |
| C5407 | F1H1H104A783 | 0.1 50V | [M] |
| C5408 | ECA1CAK100XB | 10 16V | [M] |
| C5500 | ECA1CAK100XB | 10 16V | [M] |
| C5501 | ECA1HAK2R2XB | 2.2 50V | [M] |
| C5503 | ECA1CAK330XB | 33 16V | [M] |
| C5504 | ECA0JAK101XB | 100 6.3V | [M] |
| C5505 | ECA1AAK221XB | 220 10V | [M] |
| C5506 | ECA1CAK100XB | 10 16V | [M] |
| C5507 | ECA1CAK100XB | 10 16V | [M] |
| C5508 | EEUFF1V471E | 470P 35V | [M] |
| C5509 | EEUFF1V471E | 470P 35V | [M] |
| C5801 | ECQB1H103JF3 | 0.01 50V | [M] |