INTEGRATED AMPLIFIER

A-S701

SERVICE MANUAL

IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel.
It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that any service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

■ CONTENTS

101314

YAMAHA

YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan

IP '14.12

■ TO SERVICE PERSONNEL

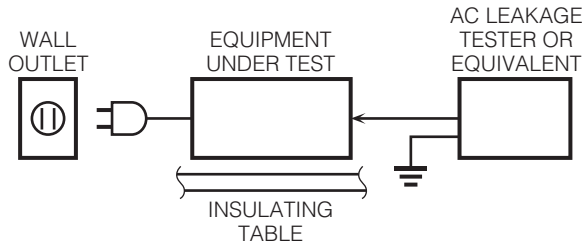
1. Critical Components Information

   Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only)

   When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohms shunted by 0.15 µF.



- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.

For U model

"CAUTION"

"F1: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 8A, 125V FUSE."

For C model

CAUTION

F1: REPLACE WITH SAME TYPE 8A, 125V FUSE.

ATTENTION

F1: UTILISER UN FUSIBLE DE RECHANGE DE MÉME TYPE DE 8A, 125V.

A-S701

WARNING: CHEMICAL CONTENT NOTICE!

This product contains chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

About lead free solder

All of the P.C.B.s installed in this unit and solder joints are soldered using the lead free solder.

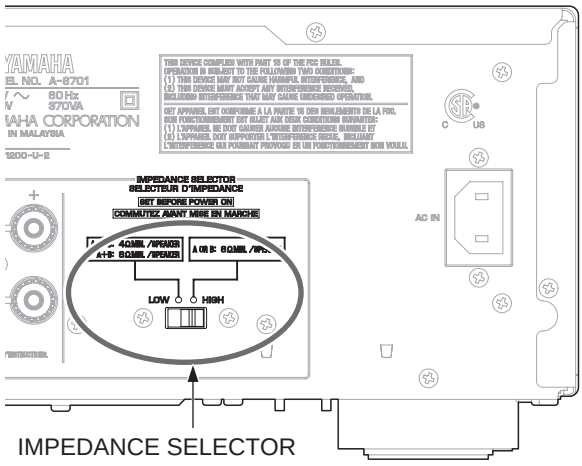
Among some types of lead free solder currently available, it is recommended to use one of the following types for the repair work.

- Sn + Ag + Cu (tin + silver + copper)
- Sn + Cu (tin + copper)
- Sn + Zn + Bi (tin + zinc + bismuth)

Caution:

As the melting point temperature of the lead free solder is about 30˚ C to 40˚ C (50˚ F to 70˚ F) higher than that of the lead solder, be sure to use a soldering iron suitable to each solder.

■ IMPEDANCE SELECTOR

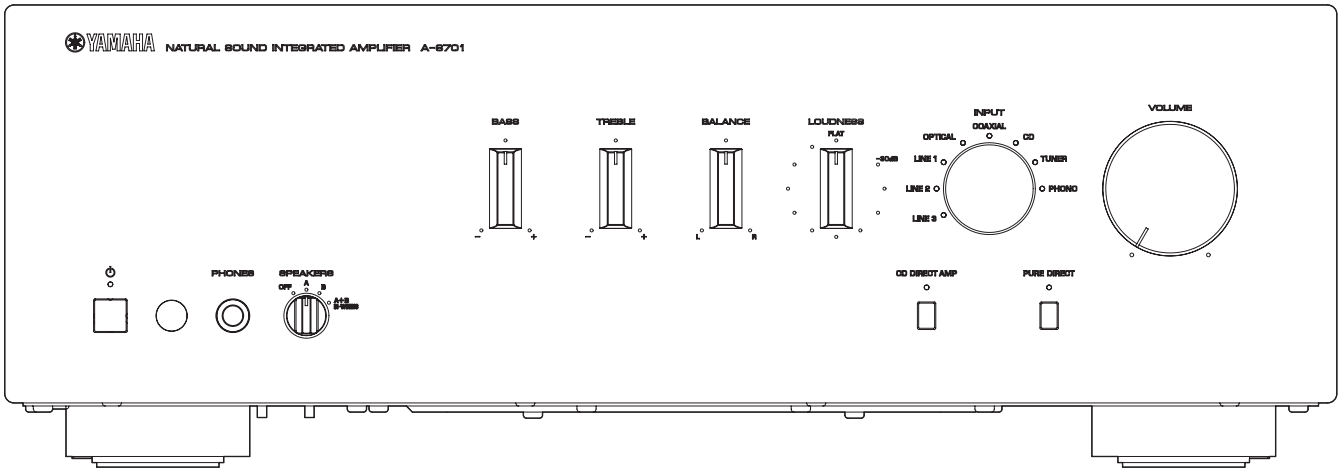


IMPEDANCE SELECTOR

WARNING:
Do not change the setting of the IMPEDANCE SELECTOR switch when the unit power is switched on, as doing so may damage the unit.

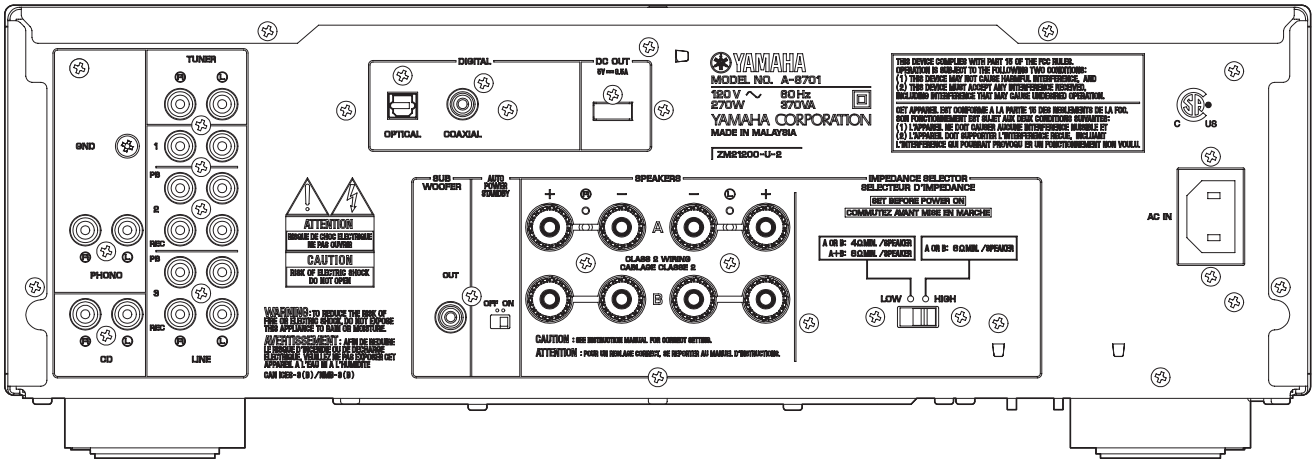
■ FRONT PANEL

A-S701

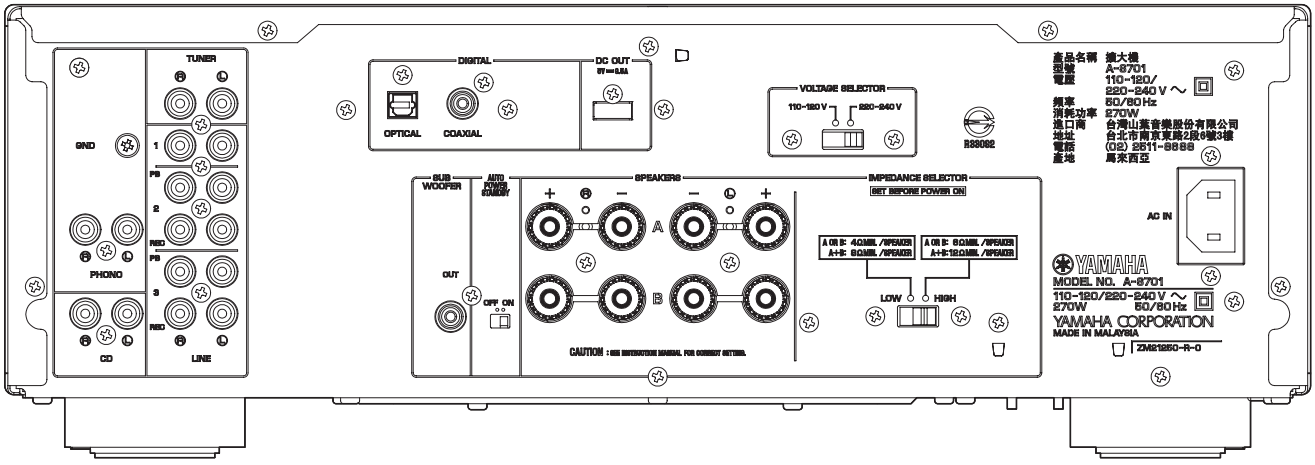


■ REAR PANELS

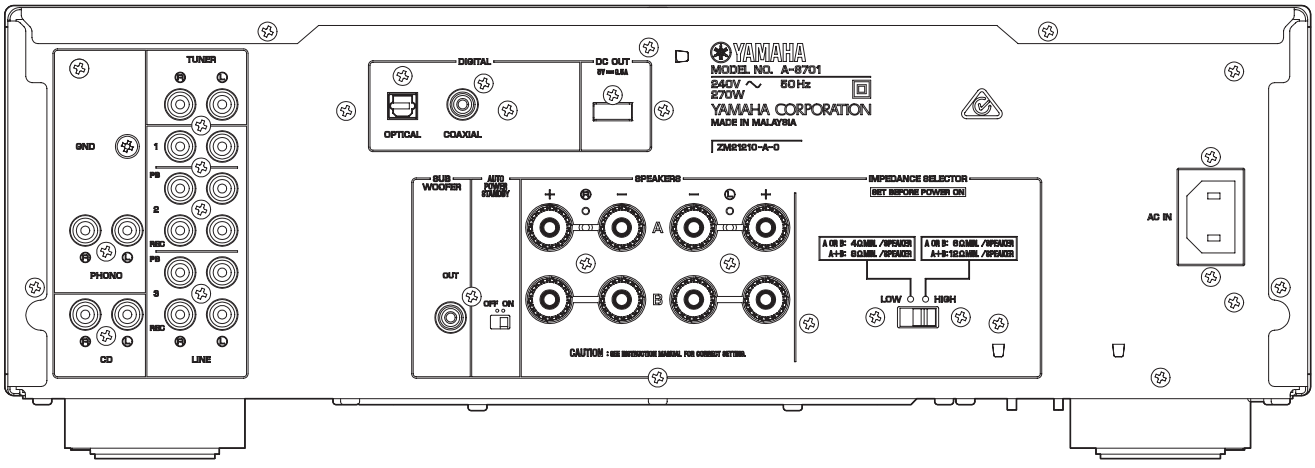
A-S701 (U model)



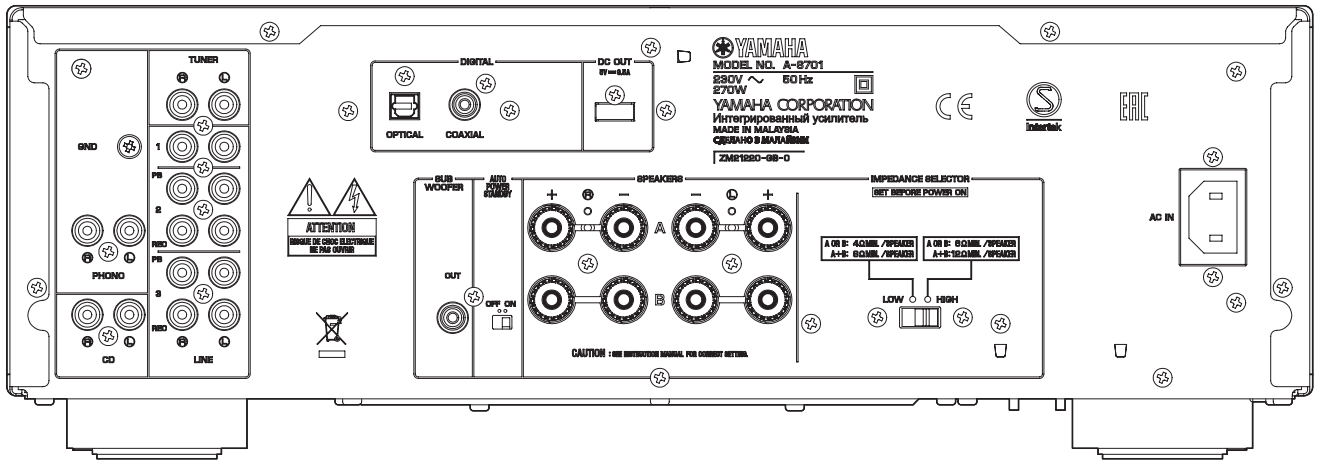
A-S701 (R model)



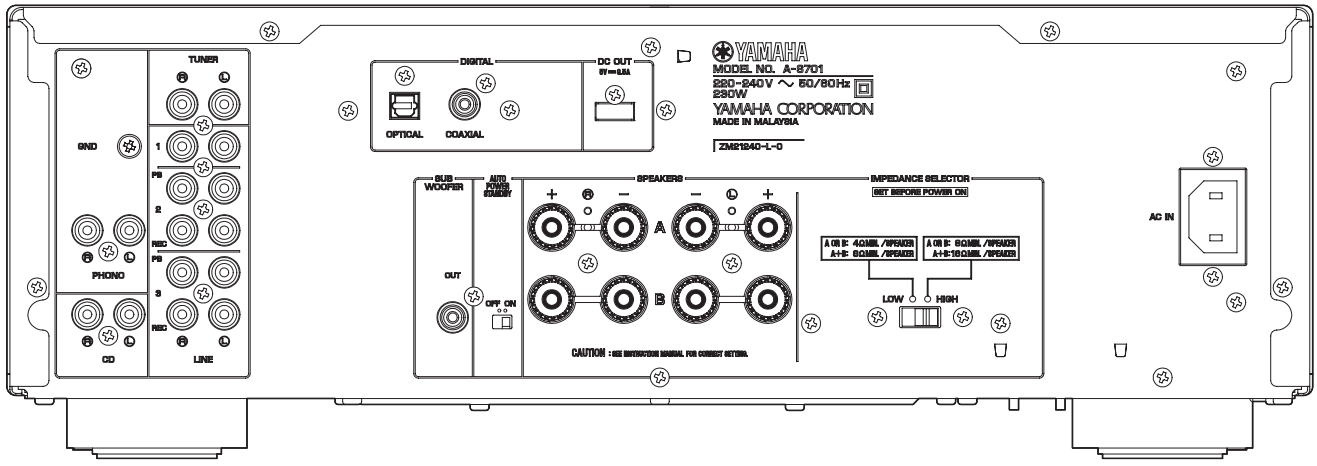
A-S701 (A model)



A-S701 (B, G models)

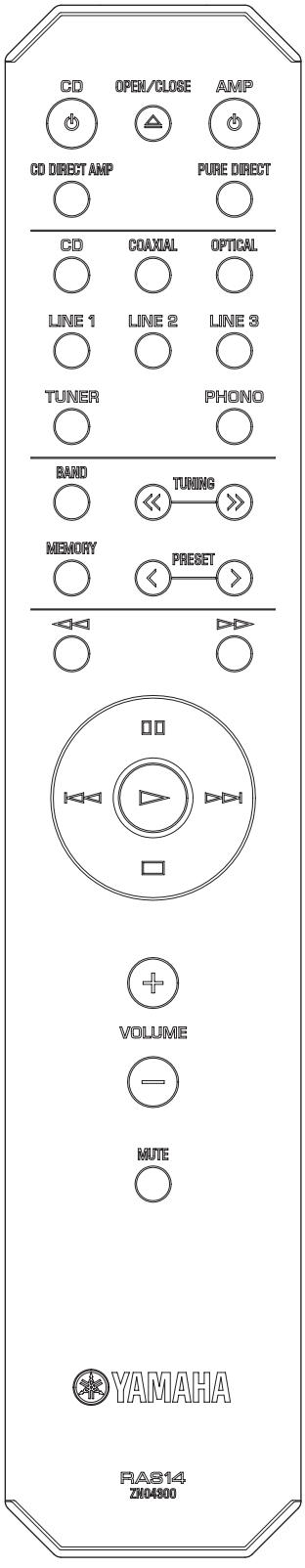


A-S701 (L model)



■ REMOTE CONTROL PANEL

RAS14



■ SPECIFICATIONS

■ Audio Section

Minimum RMS Output Power (Power Amp. Section) (20 Hz to 20 kHz)
8 ohms, 0.019 % THD ..... 100 W + 100 W
6 ohms, 0.038 % THD ..... 120 W + 120 W

Dynamic Power Per Channel (IHF)
8 / 6 / 4 / 2 ohms ..... 140 / 170 / 220 / 290 W

MAX Power Per Channel (1 kHz) [B, G models]
0.7 % THD, 4 ohms ..... 160 W

IEC Power (1 kHz) [B, G models]
0.019 % THD, 8 ohms ..... 115 W

Power Band Width
0.04 % THD, 50 W, 8 ohms ..... 10 Hz to 50 kHz

Damping Factor (SPEAKER-A)
1 kHz, 8 ohms ..... 240 or more

Maximum Effective Output Power (JEITA)
(1 kHz, 10 % THD)
R, L models (8 ohms) ..... 145 Wh
R model (6 ohms) ..... 170 Wh

Input Sensitivity/Input Impedance
PHONO (MM) ..... 3.0 mV / 47 k-ohms
CD, etc. ..... 200 mV / 47 k-ohms

Maximum Input Signal (1 kHz)
PHONO (MM) (0.03 % THD) ..... 45 mV or more
CD, etc. (0.5 % THD) ..... 2.2 V or more

Output Level/Output Impedance
REC OUT ..... 200 mV / 1.0 k-ohms or less
Subwoofer OUT ..... 3.5 V / 1.2 k-ohms
(Cut off Frequency: 100 Hz)

Headphone Jack Rated Output/Impedance
CD, etc. (Input, 1 kHz, 200 mV, 8 ohms) ..... 470 mV / 470 ohms

Frequency Response
CD, etc. (20 Hz to 20 kHz) ..... 0 ± 0.5 dB
CD, etc. Pure DIRECT ON (10 Hz to 100 kHz) ..... 0 ± 1.0 dB

RIAA Equalization Deviation
PHONO (MM) ..... ± 0.5 dB

Total Harmonic Distortion (20 Hz to 20 kHz)
PHONO (MM) to REC OUT (2.5 V) ..... 0.03 % or less
CD, etc. to SP OUT (50 W, 8 ohms) ..... 0.019 % or less

Signal to Noise Ratio (IHF-A Network)
PHONO (MM) (5 mV Input shorted) ..... 82 dB or more
CD, etc. (Pure DIRECT ON) (200 mV input shorted) ... 99 dB or more
CD DIRECT ON ..... 104 dB or more

Residual Noise (IHF-A Network)
..... 40 μ V

Channel Separation

CD, etc. (Input 5.1 k-ohms shorted)

1 kHz ..... 65 dB or more

10 kHz ..... 50 dB or more

Tone Control Characteristics

BASS

Boost/Cut (20 Hz) ..... ±10 dB

Turnover frequency ..... 400 Hz

TREBLE

Boost/Cut (20 kHz) ..... ±10 dB

Turnover frequency ..... 3.5 kHz

Continuous Loudness Control

Attenuation (1 kHz) ..... -30 dB

Supported Digital Audio Format (COAXIAL / OPTICAL) /

PCM (2-ch) ..... 192 / 176.4 / 96 / 88.2 / 48 / 44.1 kHz

PCM Word Depth

..... 16 / 24 bit

Gain Tracking Error

(0 to -99 dB) ..... 0.5 dB or less

■ General

Power Supply

U model ..... AC 120 V, 60 Hz

R model ..... AC 110–120/220–240 V, 50/60 Hz

A model ..... AC 240 V, 50 Hz

B, G models ..... AC 230 V, 50 Hz

L model ..... AC 220–240 V, 50/60 Hz

Power Consumption

U, R, A, B, G models ..... 270 W

L model ..... 230 W

Standby Power Consumption

..... 0.5 W

Maximum Power Consumption [R model]

1 kHz, 6 ohms, 10 % THD ..... 580 W

Dimensions (W x H x D)

..... 435 x 151 x 387 mm (17-1/8" x 6" x 15-1/4")

Weight

..... 11.2 kg (24.7 lbs.)

Finish

..... Black color / Silver color

Accessories

Remote control ..... x 1

Battery (R6, AA, UM-3) ..... x 2

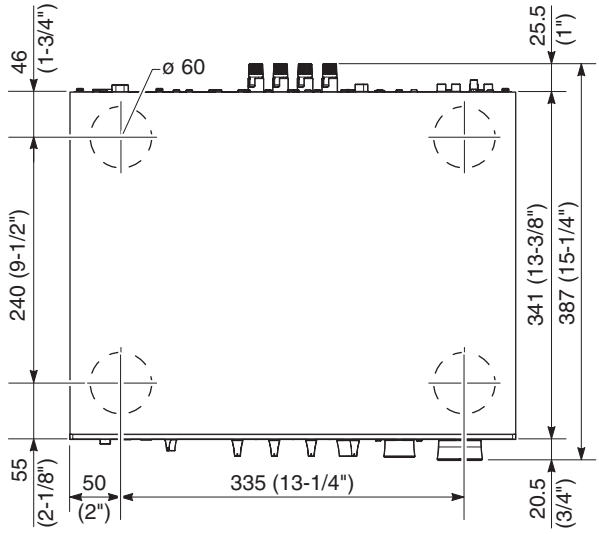
Power cable (2 m) ..... x 1

*** Specifications are subject to change without notice.**

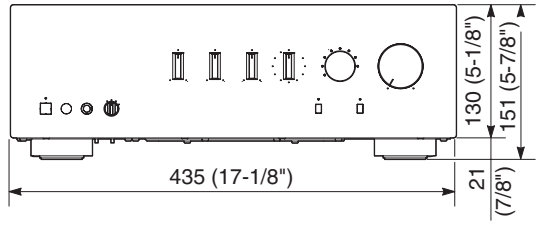
U ..... ***U.S.A. and Canadian models***
R ..... ***General model***
T ..... ***Chinese model***
K ..... ***Korean model***
A ..... ***Australian model***
B ..... ***British model***
G ..... ***European model***
L ..... ***Singapore model***
J ..... ***Japanese model***

• DIMENSIONS

Top view



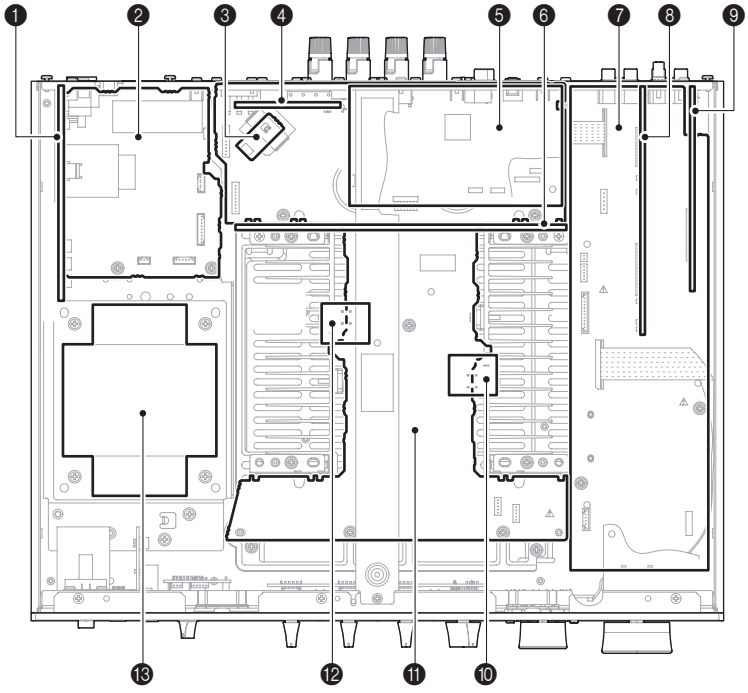
Front view



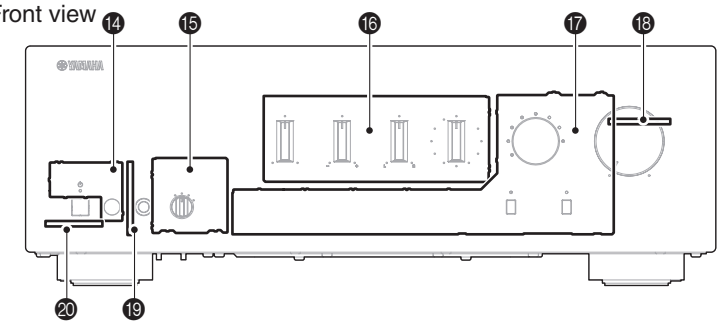
Unit: mm (inch)

■ INTERNAL VIEW

Top view



Front view



❶ MAIN (8)
❷ MAIN (2)
❸ FUNCTION (4)
❹ MAIN (3) (R model)
❺ DIGITAL
❻ MAIN (6)
❼ FUNCTION (1)
❽ FUNCTION (2)
❾ FUNCTION (3)
❿ MAIN (5)
⓫ MAIN (1)
⓬ MAIN (4)
⓭ POWER TRANSFORMER
⓮ OPERATION (7)
⓯ OPERATION (4)
⓰ OPERATION (3)
⓱ OPERATION (1)
⓲ OPERATION (2)
⓳ OPERATION (6)
⓴ OPERATION (5)

■ SERVICE PRECAUTIONS

Safety measures

- Some internal parts in this product contain high voltages and are dangerous. Be sure to take safety measures during servicing, such as wearing insulating gloves.
- Note that the capacitors indicated below are dangerous even after the power is turned off because an electric charge remains and a high voltage continues to exist there.

  Before starting any repair work, connect a discharging resistor (5 k-ohms/10 W) to the terminals of each capacitor indicated below to discharge electricity.

  The time required for discharging is about 30 seconds per each.

  C134, C135 on MAIN (1) P.C.B.

  For details, refer to "PRINTED CIRCUIT BOARDS: MAIN (1) P.C.B.".

■ DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)
Disconnect the power cable from the AC outlet.

1. Removal of Top Cover

a. Remove 4 screws (①), 4 screws (②) and screw (③). (Fig. 1)
b. Remove the top cover. (Fig. 1)

2. Removal of Front Panel Unit

a. Remove screw (④), screw (⑤) and then remove the top frame.(Fig. 1)
b. Pull out the knobs and cap. (Fig. 1)
c. Remove 7 screws (⑦). (Fig. 1)
d. Remove the front panel unit. (Fig. 1)

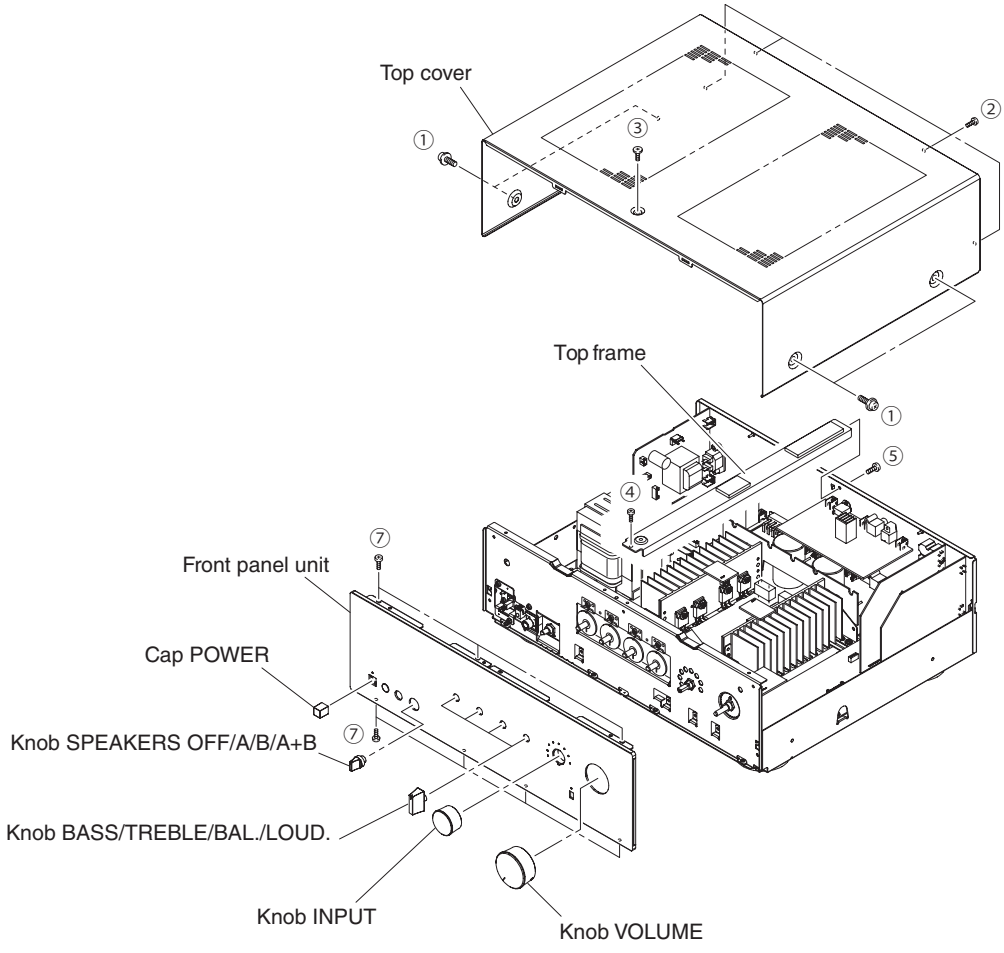


Fig. 1

3. Removal of Sub-chassis Unit

a. Remove 2 screws (⑧). (Fig. 2)
b. Remove CB505, CB508, CB706 and CB853. (Fig. 2)
c. Release 2 hooks and then remove the sub-chassis unit. (Fig. 2)

4. Removal of DIGITAL P.C.B.

a. Remove 3 screws (⑨). (Fig. 3)
b. Remove 3 screws (⑩). (Fig. 2)
c. Remove CB21, CB301, CB303 and CB304 and then remove the DIGITAL P.C.B. (Fig. 2)

5. Removal of DIGITAL P.C.B.

a. Remove 7 screws (⑪). (Fig. 3)
b. Remove screw (⑫) and screw (⑬). (Fig. 2)
c. Remove CB2, CB101, CB105 and CB404 and then remove the FUNCTION (1)–(3) P.C.B. (Fig. 2)

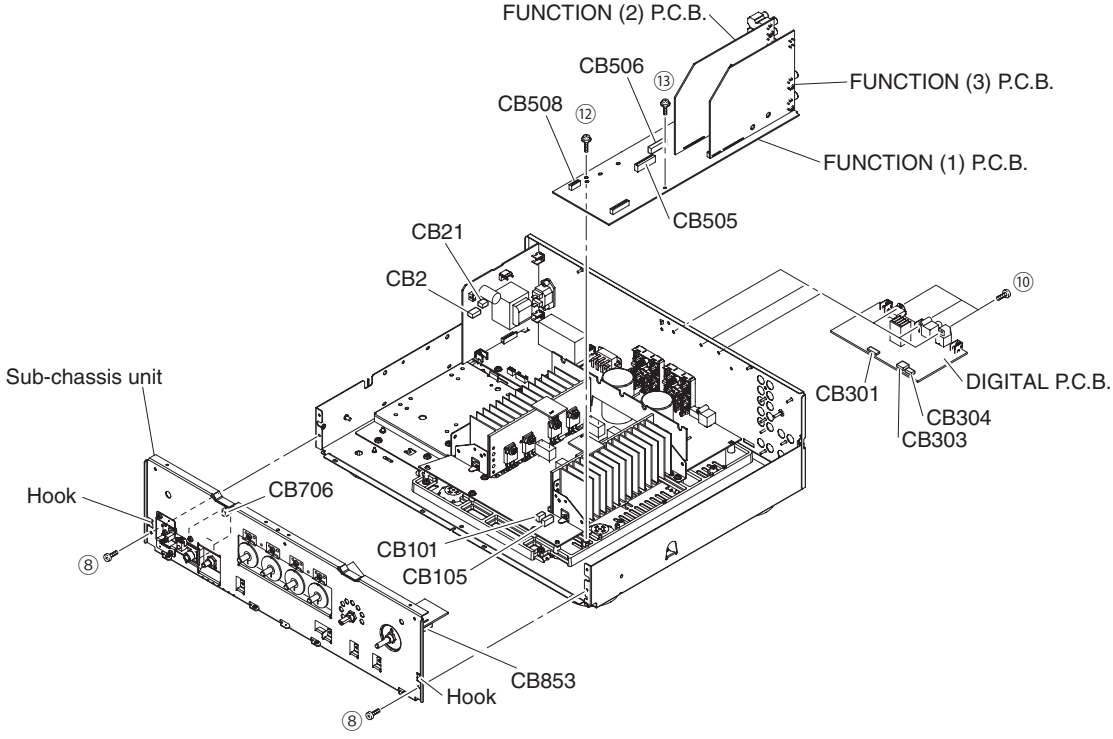


Fig. 2

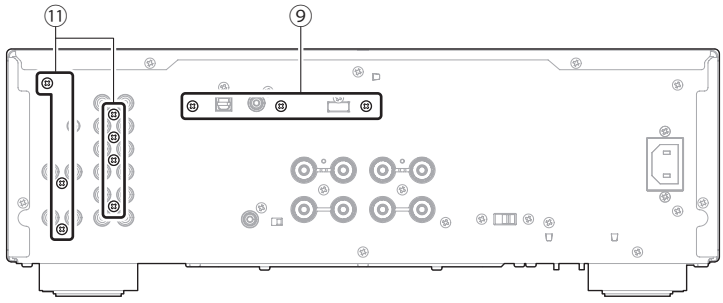


Fig. 3

When checking the P.C.B.s:

- Put the rubber sheet and the cloth over this unit, Then place the sub-chassis unit on the cloth and check it. (Fig. 4)
- Connect the ground point of the sub-chassis unit to the chassis with a ground lead or the like. (Fig. 4)
- Reconnect all cables (connectors) that have been disconnected.
- When connecting the flexible flat cable, be careful with polarity.

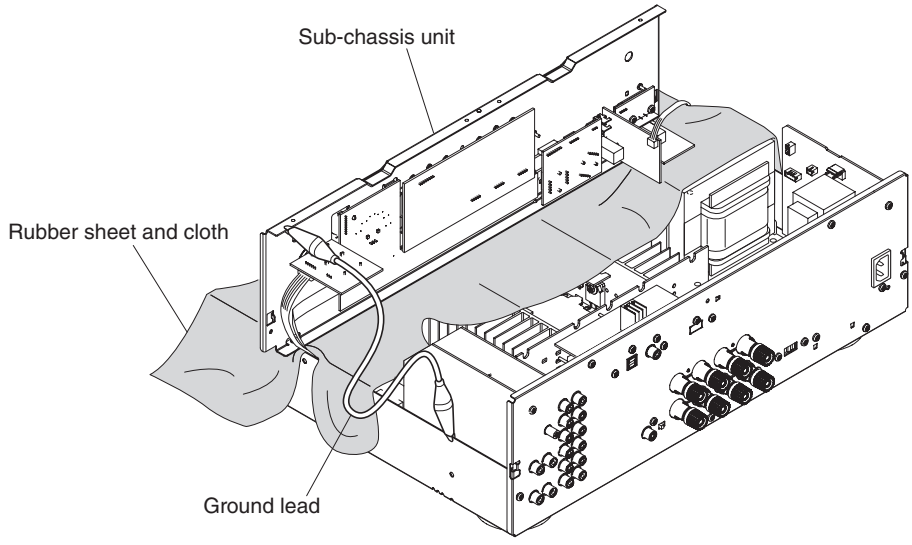


Fig. 4

■ UPDATING FIRMWARE

When the following parts are replaced, the firmware must be updated to the latest version.

FUNCTION P.C.B.

● Confirmation of firmware version

Before and after updating the firmware, check the firmware version by using the self-diagnostic function menu.

Start up the self-diagnostic function, have the firmware version indicated, and note them down.
(For details, refer to "SELF-DIAGNOSTIC FUNCTION")

* When the firmware version is different from written one after updating, perform the updating procedure again from the beginning.

● Factory preset

After updating the firmware, revert to factory presets with the following procedure to properly store the setup information.

Start up the self-diagnostic function.

(For details, refer to "SELF-DIAGNOSTIC FUNCTION")

Set the "SPEAKERS" selector to the "A" position, press the "⏻" (power) switch to turn off the power once and press the "⏻" (power) switch to turn on the power again.

Then the factory preset is performed.

● Required Tools

- CD, DVD or BD player (with DIGITAL OUTPUT (OPTICAL or COAXIAL) jack)

* The following models can be used as a tool to update the firmware.

CD player:	CD-C600/CD-S1000/CD-S2000/CD-S300/CD-S700/CDX-496/CDX-596/CDX-890
DVD player:	DV-C6760/DVD-840/DVD-C740/DVD-C750/DVD-C940/DVD-C950/DVD-CX1/DVD-S1200/ DVD-S1800/DVD-S2300(MKII)/DVD-S2700/DVD-S30/DVD-S510/DVD-S520/DVD-S530/ DVD-S540/DVD-S550/DVD-S657/DVD-S700/DVD-S80/DVD-S840
BD (Blu-ray) player:	BD-940/BD-S1065/BD-S1900/BD-S2900/BD-S671
Others:	CDR-D651/CDR-HD100

- Optical cable (when OPTICAL jack is used)
- Digital audio pin cable
  (when COAXIAL jack is used)
- Firmware CD
  Download the latest firmware from the specified download source and create the firmware CD.

● Connection

Use the optical cable (when OPTICAL jack is used) or Digital audio pin cable (when COAXIAL jack is used) to connect the CD, DVD or BD player and the unit.

● Operation Procedures

1. Set this unit to the firmware update mode.
   a. Connect the power cable of this unit to the AC outlet. (Fig.1)
   b. Set the "⏻" (power) switch to the OFF position. (Fig.1)
   c. Fully turn the "BALANCE" knob to the right (R). (Fig.1)
   d. Fully turn the "VOLUME" knob to the left (minimum). (Fig.1)
   e While pressing the "PURE DIRECT" switch, press the "⏻" (power) switch to turn on this unit. (Fig.1)
   The unit is set to the firmware update mode.

   When this unit is set to the firmware update mode, the power indicator flashes at a 1-second interval.

   When this unit is set to the firmware update mode, the "LINE3" indicator light up. (Fig. 2)

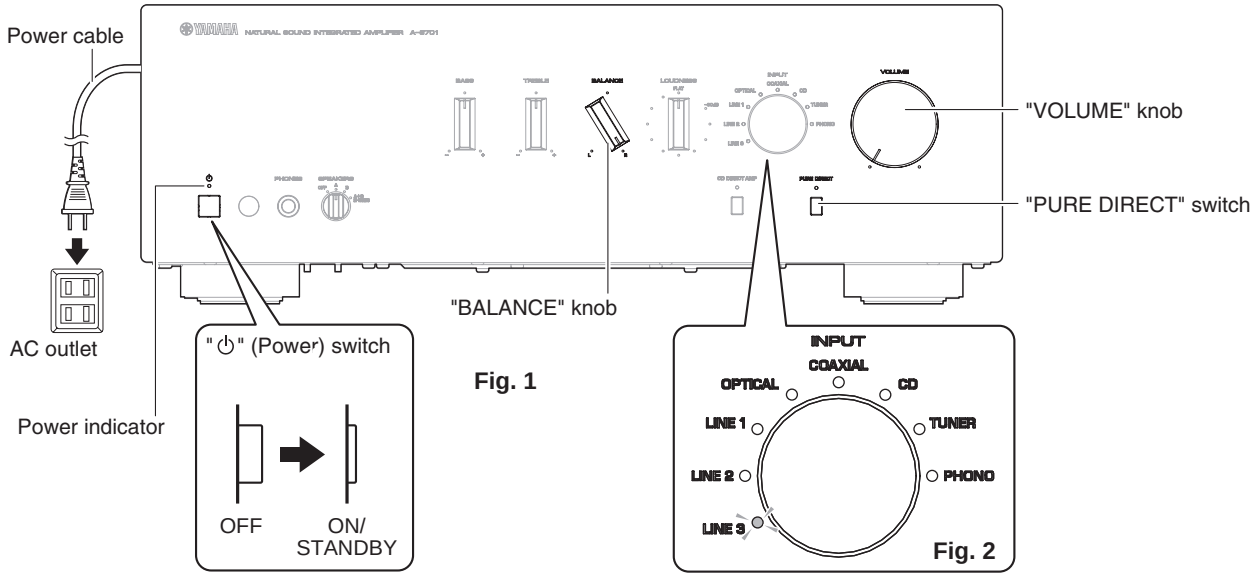


Fig. 1

Fig. 2

2. Play the firmware CD on the CD/DVD/BD player. Updating of the firmware starts automatically. (Fig. 3)

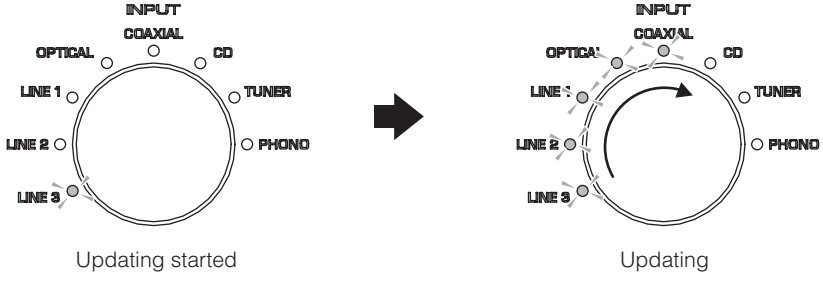
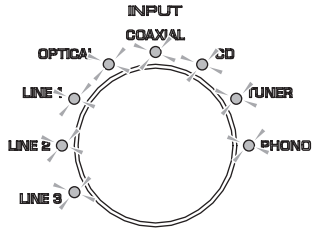


Fig. 3

Note:

- If the lighting pattern of the "INPUT" indicators does not change 10 seconds or more after playback of the firmware CD was started, try updating the firmware again, starting from the beginning of the procedure.
- Be careful that the power cable is not unplugged and the power voltage does not drop while the firmware is being updated. Otherwise, firmware updating may fail and cannot be performed again.

3. After the firmware has been updated, all “INPUT” indicators light up. (Fig. 4)



Update is completed

Fig. 4

After checking that all “INPUT” indicators light up, press the “⏻” (power) switch to turn it off, then on again.

Note:
If the power indicator flashes at a 0.5-second interval or all “INPUT” indicators do not light up after updating the firmware, try updating the firmware again, starting from the beginning of the procedure. (Fig. 5)

These indicate that the data was not correctly written to the microprocessor. If the same result is obtained after trying to update the firmware again, the microprocessor may be damaged.

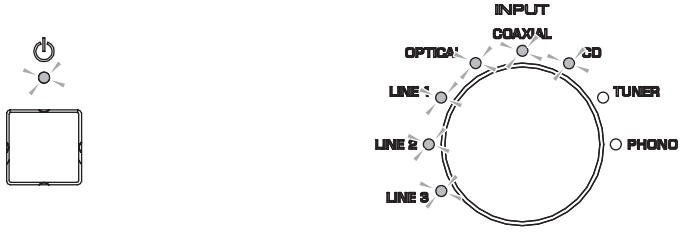


Fig. 5

4. Press the “⏻” (power) switch to turn off the power.
5. Eject the firmware CD from the CD/DVD/BD player.
6. Start up the self-diagnostic function and check that the firmware version is the same as written one.
   (For details, refer to “Indication of firmware version”.)
7. Revert to factory presets.
   (For details, refer to “Factory Preset”.)

■ SELF-DIAGNOSTIC FUNCTION

This unit has self-diagnostic functions that provides the following functions.

- Indication of firmware version
- Indication of "AUTO POWER STANDBY" switch status
- Indication and checking of protection information
- Factory preset

● Starting Self-Diagnostic Function

1. Press the "⏻" (power) switch to turn off this unit. (Fig. 1)
2. Connect the power cable of this unit to the AC outlet. (Fig. 1)
3. Set the "SPEAKERS" knob to the "OFF" position. (Fig. 1)
   Note: Since factory preset is reserved by turning off this unit when the "SPEAKERS" knob is set to the "A" position, set the "SPEAKERS" knob to the "OFF" position before starting the self-diagnostic function mode.
4. Set the "BASS", "TREBLE" and "BALANCE" knobs to the top positions. (Fig. 1)
   Note: Be sure to set the "BASS", "TREBLE" and "BALANCE" knobs to the top positions. These positions are stored when the self-diagnostic function mode is started, and software corrections are made to the top position for each selector.
   In addition, the self diagnostic function mode cannot be started if the top positions for the knobs are off by more than ± 5% of the 2.5 V input voltage.
5. Set the "LOUDNESS" knob to the "FLAT" position. (Fig. 1)
6. Press the "⏻" (power) key to turn on this unit. (Fig. 1)
7. Press the "⏻" (AMP) key on the remote control to set this unit to standby. (Fig. 2)
8. Repeat pressing the "PURE DIRECT" key 6 times within 15 seconds. (Fig. 1)
9. Press the "⏻" (AMP) key on the remote control to turn on this unit. (Fig. 2)

This unit starts the self-diagnostic function mode.

Keys of this unit

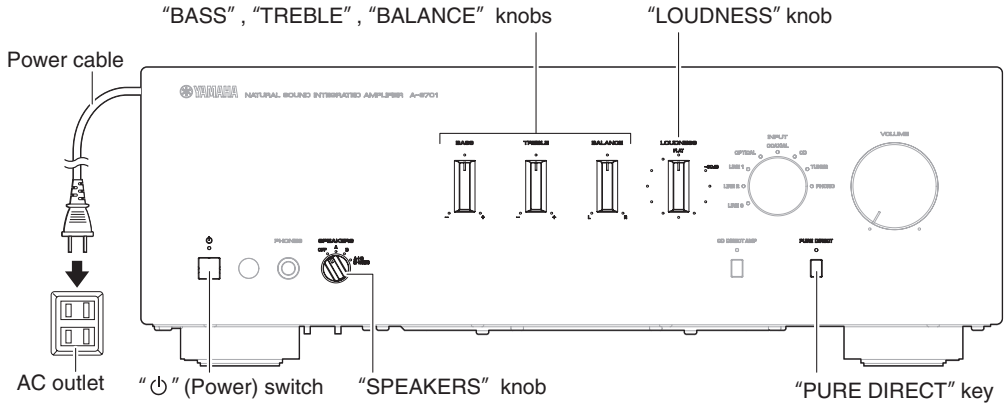


Fig. 1

Key on Remote control

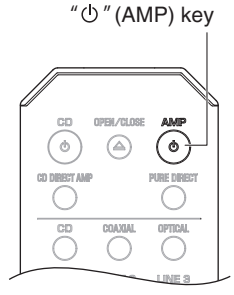


Fig. 2

● Display provided when Self-Diagnostic Function started

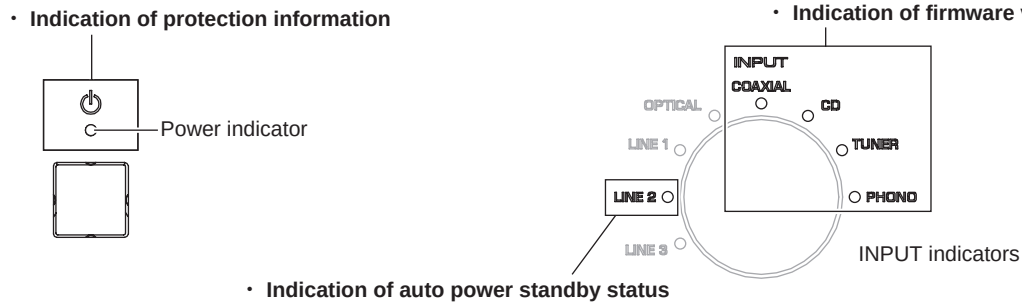
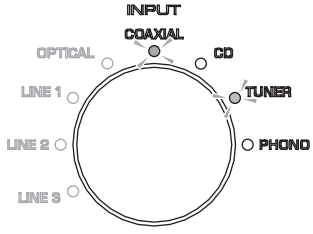


Fig. 3

● Details of Indication

• Indication of firmware version

The firmware version of the microprocessor (IC502 of the FUNCTION P.C.B.) is indicated in the binary code (BCD) using the "COAXIAL", "CD", "TUNER" and "PHONO" indicators. (Fig. 4)



INPUT indicators				Firmware version
Binary number (BCD) [Lightup: 1, Off: 0]				
COAXIAL	CD	TUNER	PHONO	Decimal number
(2^3 = 8)	(2^2 = 4)	(2^1 = 2)	(2^0 = 1)	
1	0	1	0	V0010 (8+2=10)
1	0	1	1	V0011 (8+2+1=11)
1	1	0	0	V0012 (8+4=12)
⋮				⋮

Fig. 4

• Indication of AUTO POWER STANDBY switch status

The status (ON/OFF) of the "AUTO POWER STANDBY" switch located on the rear panel is indicated using the "LINE 2 INPUT" indicator. (Fig. 5)

Light up:"AUTO POWER STANDBY" switch is "ON"

Off: "AUTO POWER STANDBY" switch is "OFF"

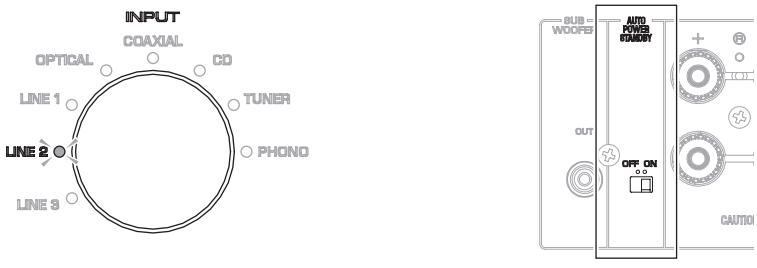


Fig. 5

- **Indication of protection information**

  The protection information is indicated by the flashing pattern of the "⏻"(power) indicator.

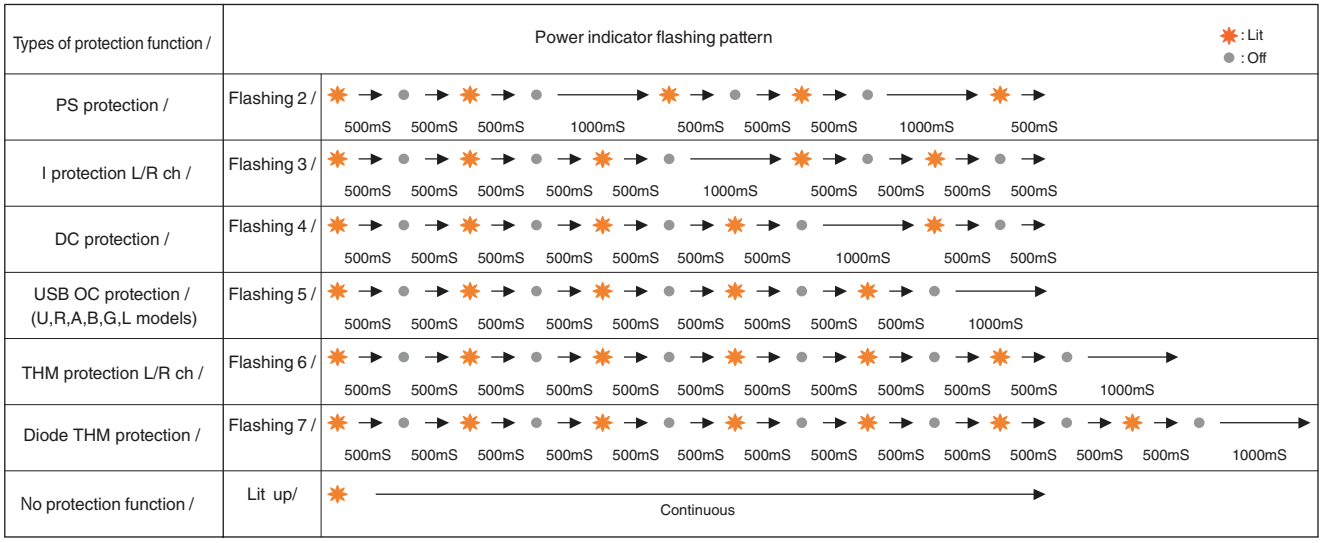


Fig. 6

PS (Power Supply) protection

Cause: The voltage in the power supply section is abnormal.
Normal value: 2.559 to 3.259V (AD value: 130-167)
Detection port: PRV (FUNCTION (1) P.C.B. 93 pin of the microprocessor IC502)
Detected at: ACL, ± 15, +5S

I protection L/Rch

Cause: Excess current flow into amplifier.
Speaker terminal shorted. (*)
Normal value: LOW (0V)
Detection port: PRI (FUNCTION (1) P.C.B. 69 pin of the microprocessor IC502)
Detected at: PRI (Amplifier output L/Rch of MAIN (1) P.C.B.)

* If the protection function works due to shortage at the speaker terminal, the power turns off at the excess current protection L/Rch.
However, pressing the "⏻" (power) switch for OFF/ON, all "INPUT" indicators flash 5 times and the power to turn on.

DC voltage protection

Cause: Abnormal DC voltage of amplifier output.
Normal value: 0.947 to 2.517V (AD value: 48-129)
Detection port: PRD (FUNCTION (1) P.C.B. 89 pin of the microprocessor IC502)
Detected at: Amplifier output L/Rch of MAIN (1) P.C.B.

USB OC (Over Current) protection

Cause: USB power supply is overcurrent.
Normal value: HIGH (5V)
Detection port: USB_N_OCPRT（FUNCTION (1) P.C.B. 45 pin of the microprocessor IC502）
Detected at: USB_OCPRT (IC309 of DIGITAL P.C.B.)

THM protection L/Rch

Cause: Abnormal temperature of heat sink.
Normal value: A-S501: 0.20 to 1.80V (AD value: 10-91)
A-S301: 0.20 to 1.66V (AD value: 10-85)
Detection port: THM1 (FUNCTION (1) P.C.B. 84 pin of the microprocessor IC502)
THM2 (FUNCTION (1) P.C.B. 83 pin of the microprocessor IC502)
Detected at: THML (Heat sink temperature detection Lch IC101 of the MAIN (4) P.C.B.)
THMR (Heat sink temperature detection Rch IC102 of the MAIN (5) P.C.B.)

Diode THM protection

Cause:	Abnormal temperature of diode (D111 of MAIN (1) P.C.B).
Normal value:	0 to 0.346V (AD value: 0-18)
Detection port:	THM3 (FUNCTION (1) P.C.B. 97 pin of the microprocessor IC502)
Detected at:	THM3 (TH501 of FUNCTION (4) P.C.B., D111 of MAIN (1) P.C.B.)

• Checking of protection information

Check the following information when a protection function has been activated.

- Protection history (up to 4)
- Position of "VOLUME" knob when the protection function was activated (*)
- AD value when the protection function was activated
- AD value when the diode THM protection function was activated
- Operating information for the speaker relay/headphones relay
- AD value for the "BALANCE" knob
- Input source information

* Since the "VOLUME" knob automatically moves to the position when the protection function was activated, do not to operate any other knob while the "VOLUME" knob is moving.

If several protection functions have been activated, history for up to four of the most recent protection functions can be viewed by turning the knob indicated below.

BASS:	History for the most recent protection function
TREBLE:	History for the 2nd most recent protection function
BALANCE:	History for the 3rd most recent protection function
LOUDNESS:	History for the 4th most recent protection function

* When the "BASS" or "TREBLE" knob is turned to "–" or the "BALANCE" knob is turned to "L", the corresponding protection history will be indicated by the power indicator.

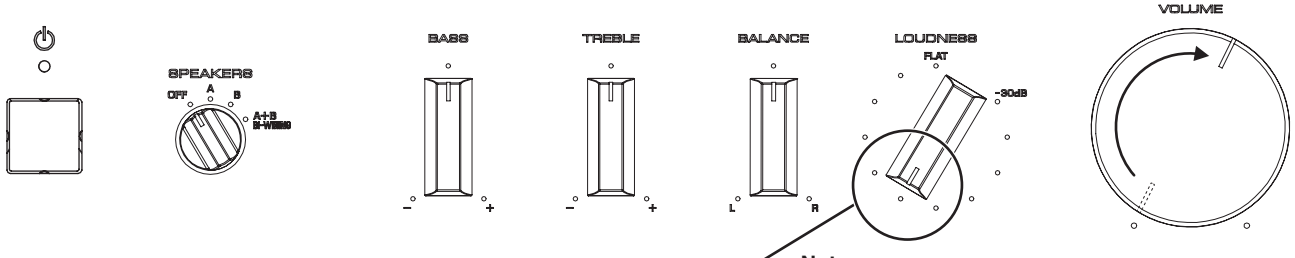
* When the "LOUDNESS" knob is turned to a position halfway between "FLAT" and "-30dB", the 4th most recent protection history will be indicated.

* When the "BASS", "TREBLE" and "BALANCE" knobs are set to their top positions and the "LOUDNESS" knob is set to "FLAT", the most recent protection function (the same as that indicated by turning the "BASS" knob) is indicated by the "⏻" (power) indicator. However, the "VOLUME" knob will not move at this time. The "VOLUME" knob will move if a protection history is selected with one of the knobs. (Fig. 7)

* The order of priority for indicating the protection history is as follows:
BASS > TREBLE > BALANCE > LOUDNESS.

If the "TREBLE" and "BALANCE" knobs were turned at the same time, the "TREBLE" knob will have priority, and the 2nd most recent protection function is indicated.

When the 4th most recent protection function is indicated



* When the "LOUDNESS" knob is turned to a position halfway between "FLAT" and "-30dB", the 4th most recent protection history will be indicated.

Note:
When checking the protection history, the "VOLUME" knob will automatically move to the position when the protection function was activated. Do not operate any other knob while the "VOLUME" knob is moving.

Fig. 7

Example:

To check the history for the 3rd most recent protection function, set the “SPEAKERS” knob to “OFF”, the “BASS” and “TREBLE” knobs to their top positions, the “LOUDNESS” knob to “FLAT”, and the “BALANCE” knob to “L”. (Fig. 8)

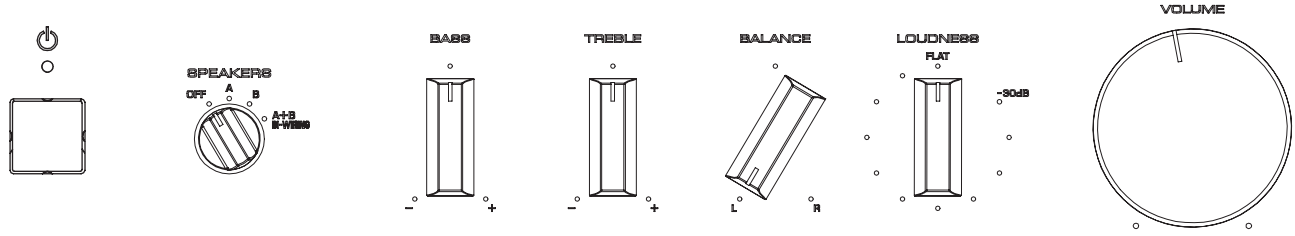


Fig. 8

1. AD value when the protection function was activated

   At the same time that the protection history is indicated, the AD value when the protection function was activated is indicated in binary code (BCD) using the “INPUT” indicators. (Fig. 9)

   BASS:
   AD value for the most recent protection function

   TREBLE:
   AD value for the 2nd most recent protection function

   BALANCE:
   AD value for the 3rd most recent protection function

   LOUDNESS:
   AD value for the 4th most recent protection function

   * When checking the AD value when the protection function was activated, the “VOLUME” knob will automatically move to the position when the protection function was activated. Do not operate any knob while this knob is moving.
   * For functions If protection L/Rch or USB over current protection or if there is no protection history, all “INPUT” indicators will be off since there are no AD values stored.

Indication example

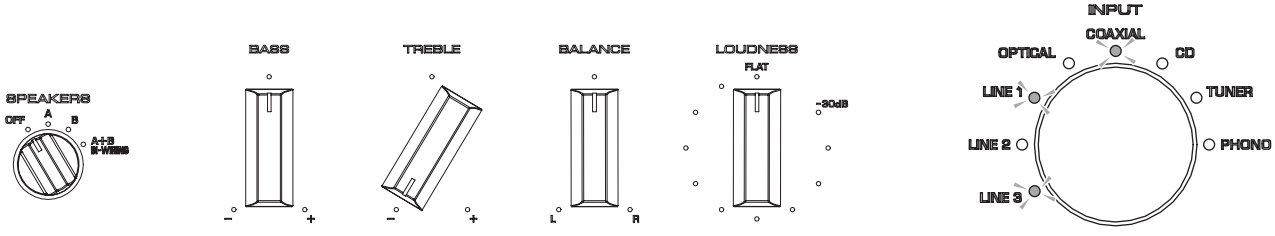


Fig. 9

Indications for AD values of the abnormal voltage detected when a protection function is activated

“INPUT” indicators								AD value
Binary number (BCD) [Light up: 1, Off: 0]								
LINE 3	LINE 2	LINE 1	OPTICAL	COAXIAL	CD	TUNER	PHONO	
2^7 = 128	2^6 = 64	2^5 = 32	2^4 = 16	2^3 = 8	2^2 = 4	2^1 = 2	2^0 =1	5V=255
0	0	0	0	0	0	0	0	0 /255
0	1	0	0	0	0	0	0	64 /255
1	0	0	0	0	0	0	0	128 /255
1	0	1	0	1	0	0	0	168 /255
1	1	1	1	1	1	1	1	255 /255

Fig. 10

2. AD value for diode THM (temperature)

Turn the "TREBLE" knob to "+" and the "SPEAKERS" knob to "OFF". (Fig. 11)

The AD value for the diode THM (temperature) (TH501 on FUNCTION (4) P.C.B. and D111 on MAIN (1) P.C.B.) is indicated in binary code (BCD) using the "INPUT" indicators. (Fig. 11)

* The AD value of the diode (D111 on MAIN (1) P.C.B.) temperature when a protection function is activated is stored, regardless of the type of protection function.

Indication example

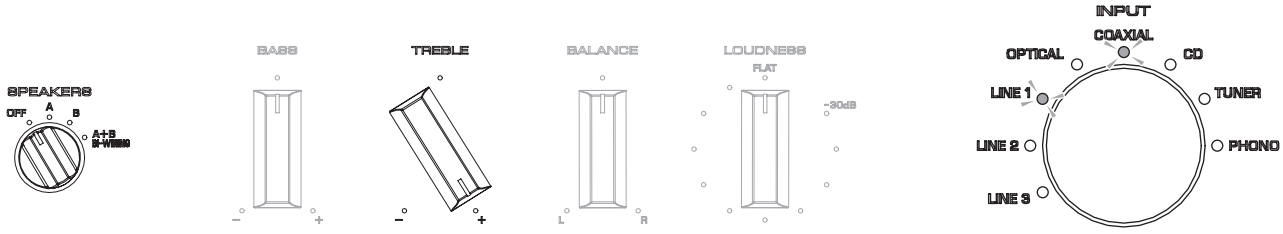


Fig. 11

"INPUT" indicators								AD value
Binary number (BCD) [Light up: 1, Off: 0]								
LINE 3	LINE 2	LINE 1	OPTICAL	COAXIAL	CD	TUNER	PHONO	
2^7 = 128	2^6 = 64	2^5 = 32	2^4 = 16	2^3 = 8	2^2 = 4	2^1 = 2	2^0 =1	5V=255
0	0	0	0	0	0	0	0	0 /255
0	0	1	0	1	0	0	0	40 /255
0	1	0	0	0	0	0	0	64 /255
1	0	0	0	0	0	0	0	128 /255
1	0	1	0	1	0	0	0	168 /255
1	1	1	1	1	1	1	1	255 /255

Fig. 12

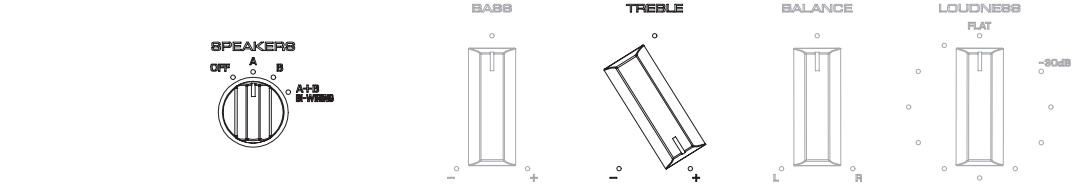
3. Operating information for the speaker relay/headphones relay

Turn the "TREBLE" knob to "+" and the "SPEAKERS" knob to "A". (Fig. 13)

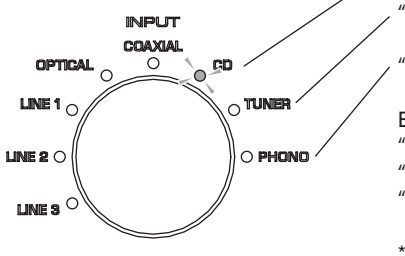
The ON/OFF states of speaker relays A/B (RY101 and RY102 on MAIN (1) P.C.B.) and the headphones relay (RY103 on MAIN (1) P.C.B.) when a protection function is activated are indicated using the "INPUT" indicators. (Fig. 13)

Note:

Since factory preset is reserved by turning off this unit when the "SPEAKERS" knob is set to the "A" position, be sure to set the "SPEAKERS" knob to the "OFF" position before turning off this unit in case of keeping setup information stored in the backup memory of the microprocessor.



Indication example



"CD" Indicator : Headphones relay ON/OFF

"TUNER" Indicator : Speaker relay B ON/OFF

"PHONO" Indicator : Speaker relay A ON/OFF

Example:
"CD" indicator lights up: Headphones relay is ON
"TUNER" indicator off: Speaker relay B is OFF
"PHONO" indicator off: Speaker relay A is OFF

* The state indicated in the example shows that headphones are plugged into the PHONES jack and both speaker outputs A and B are off.

Fig. 13

4. AD value for the “BALANCE” knob

Turn the “TREBLE” knob to “+” and the “SPEAKERS” knob to “B”.(Fig. 14)

The position of the “BALANCE” knob when the protection function was activated is indicated in binary code (BCD) using the “INPUT” indicators. (Fig. 14)

Indication example

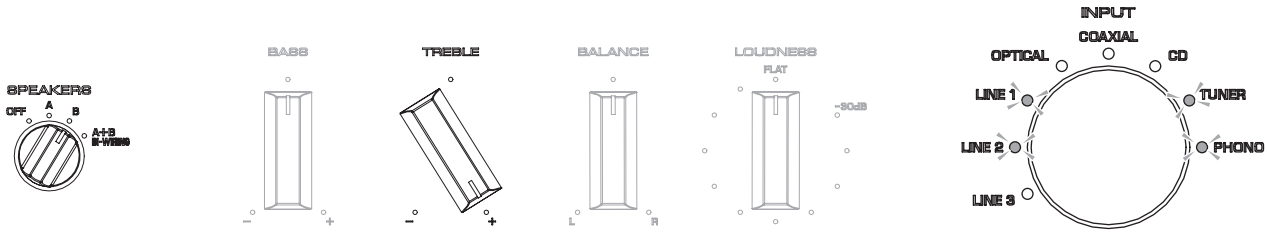
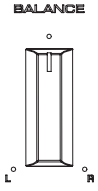


Fig. 14

“INPUT” indicators								AD value
Binary number (BCD) [Light up: 1, Off: 0]								
LINE 3	LINE 2	LINE 1	OPTICAL	COAXIAL	CD	TUNER	PHONO	
2^7 = 128	2^6 = 64	2^5 = 32	2^4 = 16	2^3 = 8	2^2 = 4	2^1 = 2	2^0 =1	5V=255
0	0	0	0	0	0	0	0	0 /255
0	1	0	0	0	0	0	0	64 /255
0	1	1	0	0	0	1	1	99 /255
1	0	0	0	0	0	0	0	128 /255
1	0	1	0	1	0	0	0	168 /255
1	1	1	1	1	1	1	1	255 /255

Fig. 15

AD value for turning direction



Turning direction	Variation	AD value range settings (approximation)		
		Minimum	Center	Maximum
R (clockwise)	+10 (R MAX)	253	254	255
	+9	238	245	252
	+8	226	232	237
	+7	214	220	225
	+6	202	208	213
	+5	190	196	201
	+4	178	184	189
	+3	166	172	177
	+2	154	160	165
	+1	142	148	153
	0	115	128	141
L (counterclockwise)	-1	103	109	114
	-2	91	97	102
	-3	79	85	90
	-4	67	73	78
	-5	55	61	66
	-6	43	49	54
	-7	31	37	42
	-8	19	25	30
	-9	3	11	18
	-10 (L MAX)	0	1	2

Fig. 16

5. Indication of input source

The input source when the protection function was activated is indicated.

Turn the “TREBLE” knob to “+” and the “SPEAKERS” knob to “A+B”. (Fig. 17)

The input source selected when the protection function was activated is indicated using the “INPUT” indicators. (Fig. 17)

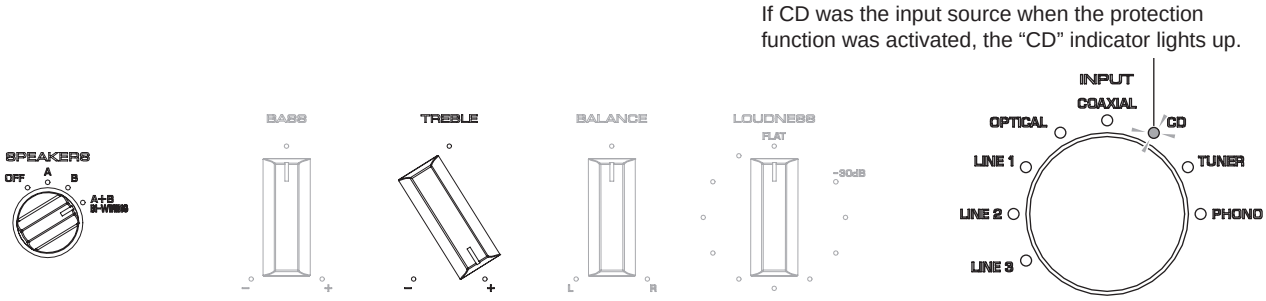


Fig. 17

- **Factory Preset**

The backup memory of the microprocessor will be initialized, and the following stored settings will be reverted to the factory presets. This operation is called “factory preset”.

a. “INPUT” (CD)

b. Protection history (None)

c. Number of times when protection is detected (0 times)

d. “PURE DIRECT” switch (OFF)

e. “⏻” (power) switch ON/OFF position

* In the parentheses ( ) are settings when shipped from the factory.

Operation Procedures

With the self-diagnostic function activated, follow the steps below.

1. Set the SPEAKERS knob to the “A” position to reserve reverting to factory presets and the “OPTICAL INPUT” indicator lights up. (Fig. 18)
2. Press the “⏻” (power) switch to turn off this unit, and then press it again to turn it on and perform the factory preset.

When factory preset is reserved

Fig. 18

● Canceling Self-Diagnostic Function

To keep setup information stored in the backup memory of the microprocessor:

Set the "SPEAKERS" knob to the "OFF", "B" or "A+B" position and press the "⏻" (power) key to turn off the power.

Self-diagnostic function is canceled.

To initialize the backup memory of the microprocessor and revert the following stored settings to the factory presets:

Set the "SPEAKERS" knob to the "A" position, press the "⏻" (power) key to turn off the power.

Self-diagnostic function is canceled with the initialization reserved.

When the "⏻" (power) switch is pressed again to turn on this unit, the backup memory of the microprocessor will be initialized, and the stored settings will be reverted to the factory presets.

For details, refer to "Factory Preset" in the section "SELF-DIAGNOSTIC FUNCTION".

● Starting in the Protection Cancel mode

CAUTION!
Using this product with the protection function disabled may cause further damage to this unit. Use special care for this point when using this mode.

If the protection function works and causes hindrance to trouble shoot, cancel the protection function as described below, and it will be possible to enter the self-diagnostic function mode.

(The protection functions other than the excess current detect function will be disabled.)

1. Press the "⏻" (power) switch to turn off this unit. (Fig. 19)
2. Connect the power cable of this unit to the AC outlet. (Fig. 19)
3. Set the "SPEAKERS" knob to the "OFF" position. (Fig. 19)
   Note: Since factory preset is reserved by turning off this unit when the "SPEAKERS" knob is set to the "A" position, set the "SPEAKERS" knob to the "OFF" position before starting the self-diagnostic function mode.
4. Set the "BASS", "TREBLE" and "BALANCE" knobs to the top positions. (Fig. 19)
   Note: Be sure to set the "BASS", "TREBLE" and "BALANCE" knobs to the top positions. These positions are stored when the self-diagnostic function mode is started, and software corrections are made to the top position for each selector. In addition, the self diagnostic function mode cannot be started if the top positions for the knobs are off by more than ± 5% of the 2.5 V input voltage.
5. Set the "LOUDNESS" knob to the "FLAT" position. (Fig. 19)
6. Press the "⏻" (power) key to turn on this unit. (Fig. 19)
7. Press the "⏻" (AMP) key on the remote control to set this unit to standby. (Fig. 20)
8. Repeat pressing the "PURE DIRECT" key 12 times within 15 seconds. (Fig. 19)
9. Press the "⏻" (AMP) key on the remote control to turn on this unit. (Fig. 20)

This unit starts the self-diagnostic function mode.

Keys of this unit

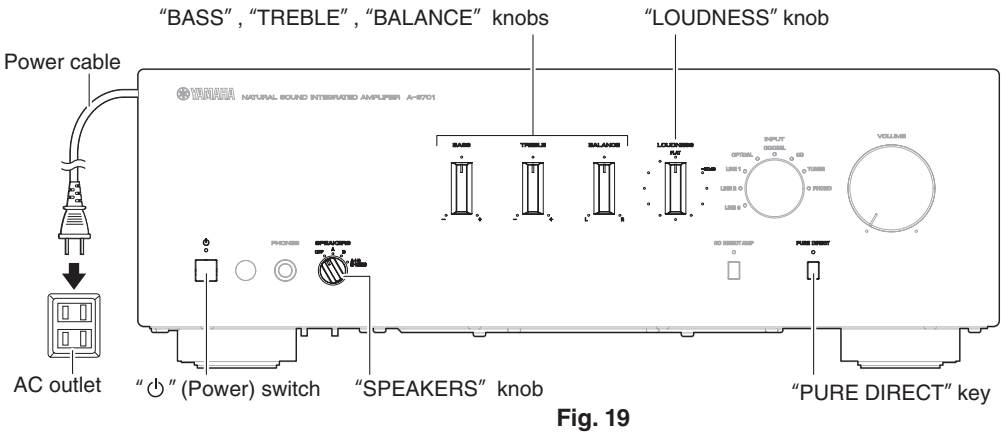


Fig. 19

Key on Remote control

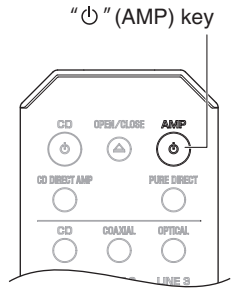


Fig. 20

Notes:

- Applying the power to this unit without correcting the abnormality can be dangerous and cause additional circuit damage. To avoid this, if protection function has been activated the number of times which is set beforehand, the power will not turn on even when the "⏻" (power) switch is pressed.
- The output transistors in each amplifier channel should be checked for damage before applying power to this unit.
- Amplifier current should be monitored by measuring DC voltage across the emitter resistors for each channel.
- When turning on this unit again:

  1. Remove the top cover.
  2. While pressing the SW501 of FUNCTION (1) P.C.B., press the "⏻" (power) switch. (Fig. 21)

     This unit starts the self-diagnostic function mode.

     * When you start the self-diagnostic function mode by pressing SW501 for 3 seconds or more, the function will start in the protection cancel mode. (Except when the current protection function is working.)

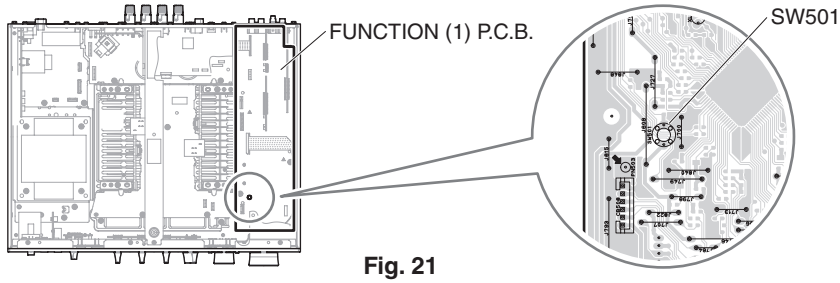


Fig. 21

After the Protection Cancel mode is started, the "LINE 1" indicator flashes. (Fig. 22)

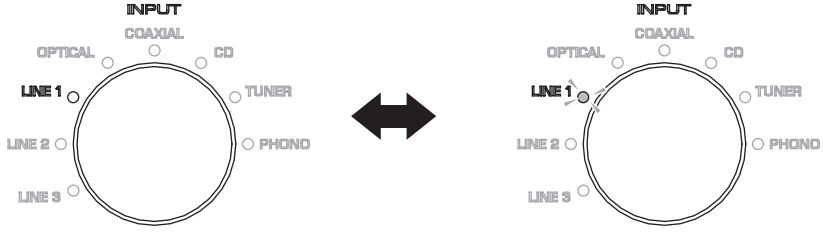


Fig. 22

PS (Power Supply) protection:

If protection function has been activated 3 times consecutively, the power will not turn on.

I protection L/Rch:

If protection function has been activated 1 time, the power will not turn on.

* However, the power turns on when the protection function worked due to short at the speaker terminal.

Amplifier DC voltage protection L/Rch:

If protection function has been activated 3 times consecutively, the power will not turn on.

THM protection L/Rch:

The power turns on no matter how many times the protection function has worked.

Diode THM protection:

The power turns on no matter how many times the protection function has worked.

■ POWER AMPLIFIER ADJUSTMENT

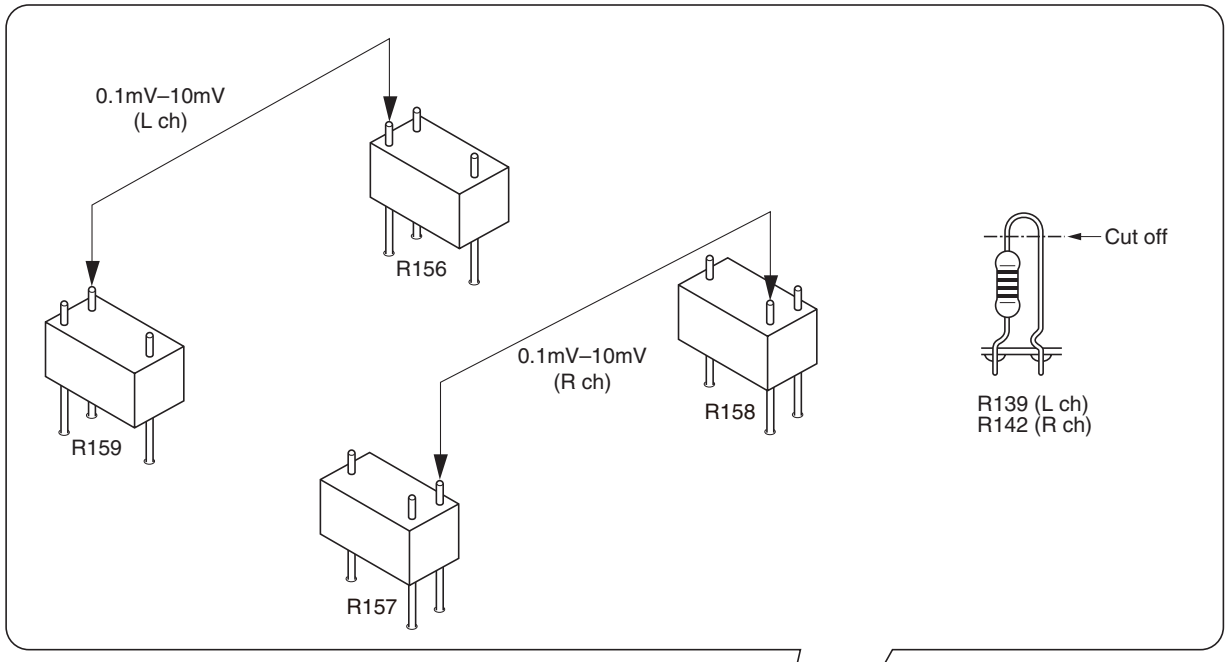
● CONFIRMATION OF IDLING CURRENT

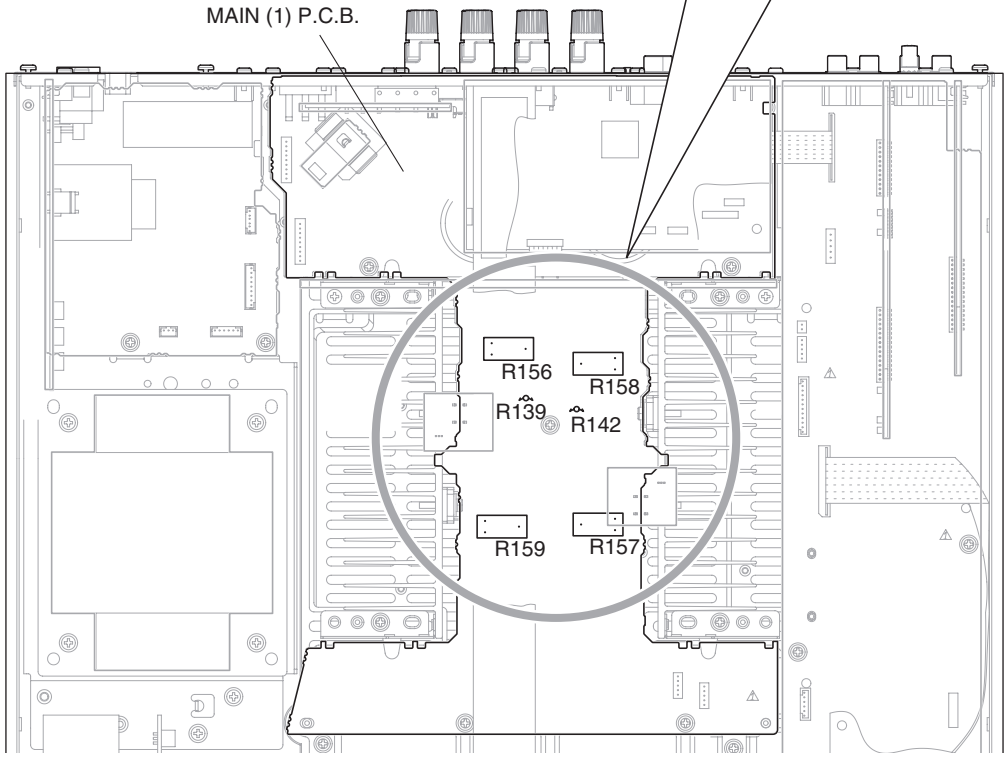
1. Right after power is turned on, confirm that the voltage across the terminals of R156-R159 (L ch) and R157-R158 (R ch) are between 0.1 mV and 10 mV.
2. If measured voltage exceeds 10 mV, open (cut off) R139 (L ch), R142 (R ch) and reconfirm the voltage.

Attention

If the measured voltage exceeds 10 mV after repairing the power amplifier, check other parts again for any possible defect before cutting the resistor.

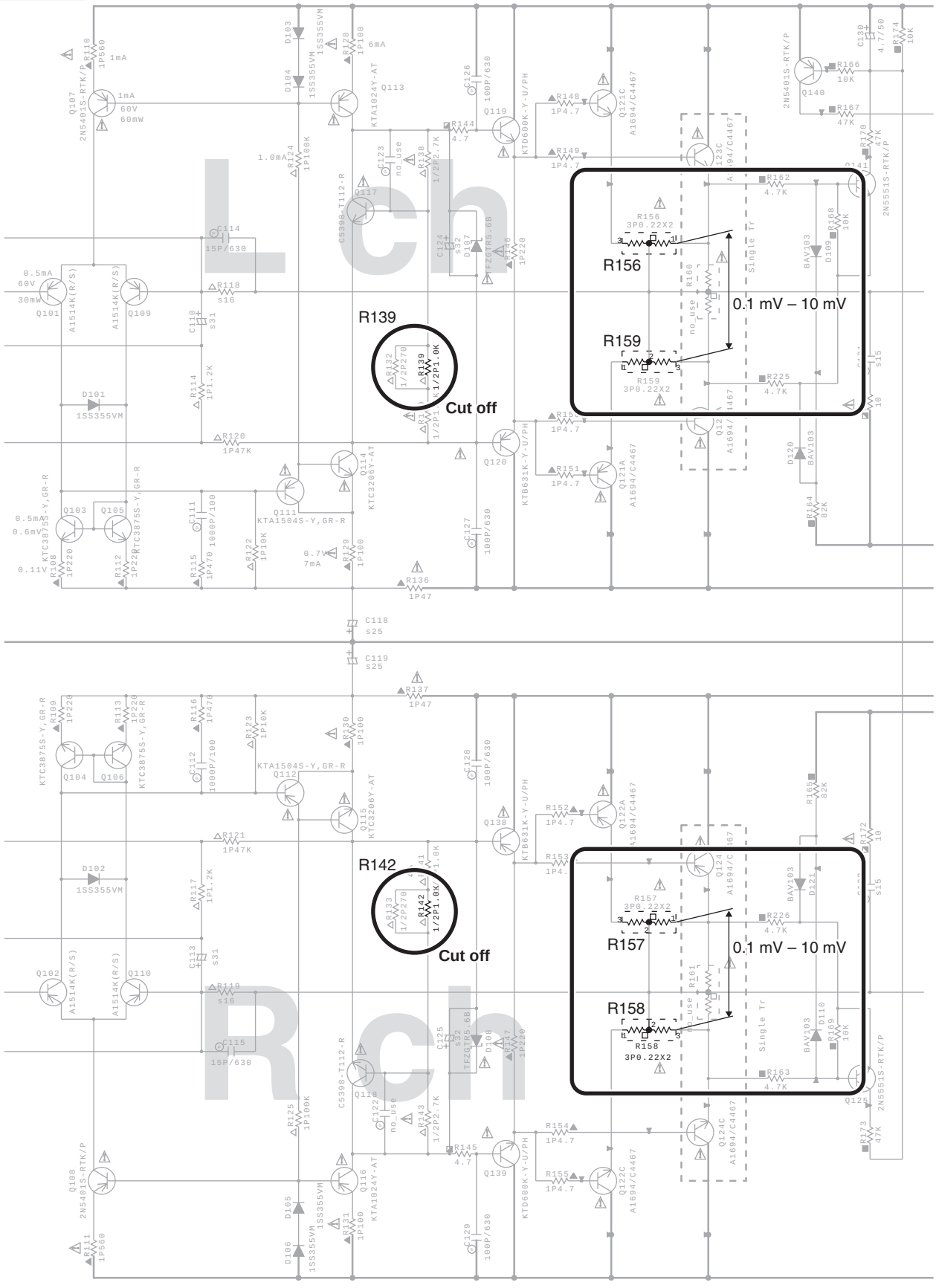
3. Confirm that the voltage is between 0.2 mV and 15 mV after 60 minutes.





SCHEMATIC DIAGRAM

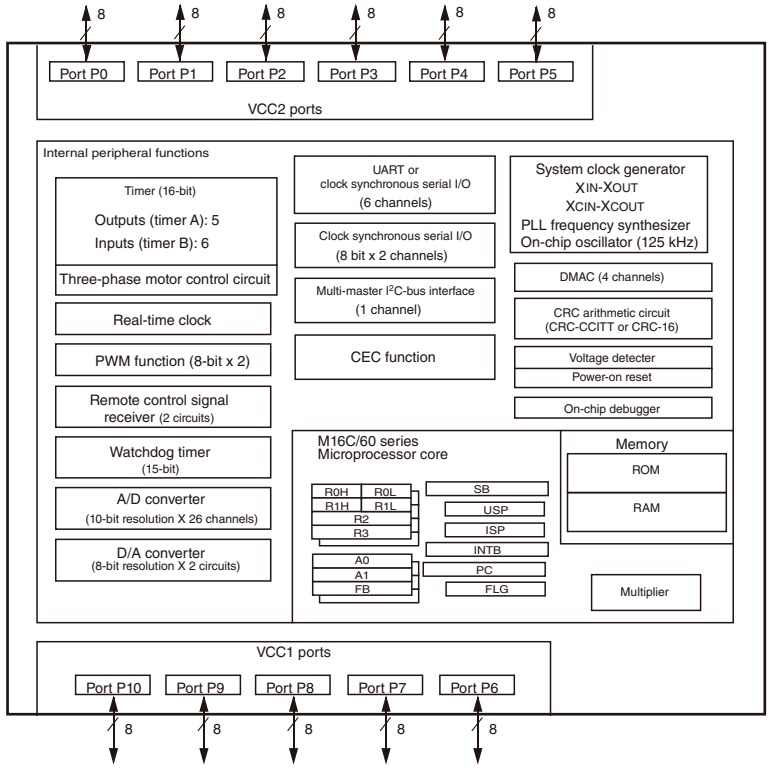
MAIN (1)

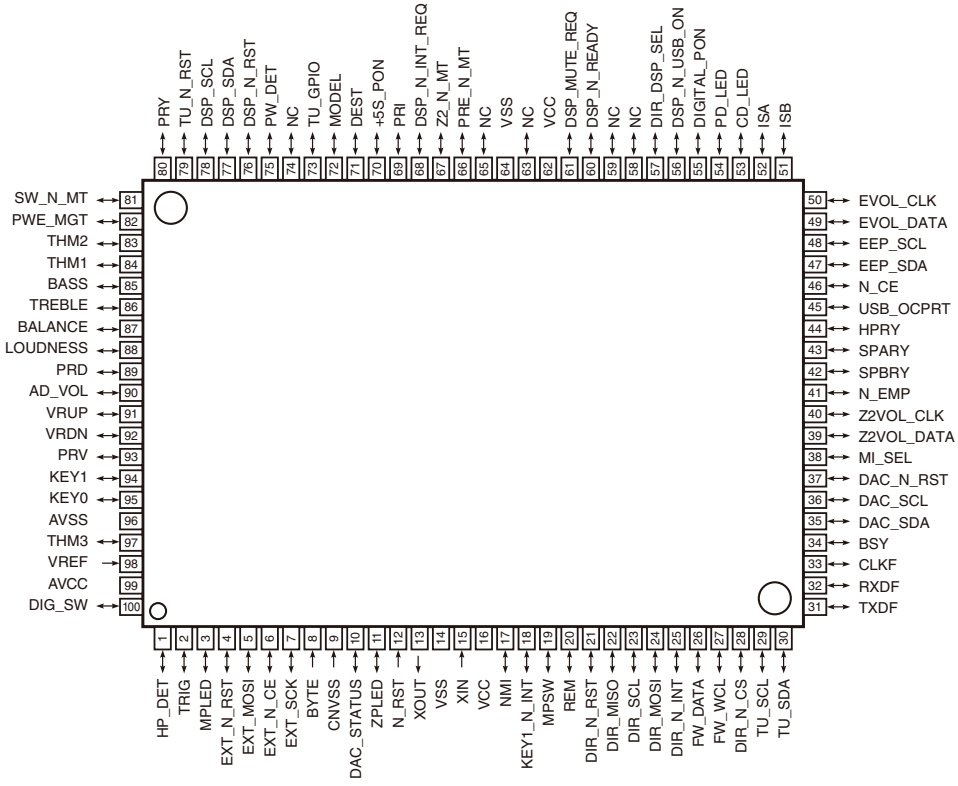


■ IC DATA

IC502: R5F3640ECNFA (FUNCTION P.C.B.)

Single chip 16-bit microprocessor





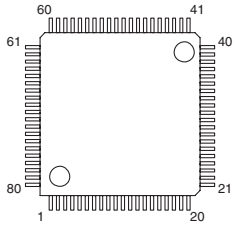
Pin No.	Port Name	Function Name (P.C.B.)	I/O			Detail of Function
			Power On	Standby	MCU Sleep [AC OFF]	
1	P9_6/ANEX1/SOUT4	HP_DET	I	I	I	Headphone detection terminal
2	P9_5/ANEX0/CLK4	TRIG	O	O	O	CONTROL +12V control
3	P9_4/DA1/TB4IN	MPLED	O	O	O	LED control for MAIN POWER ON display
4	P9_3/DA0/TB3IN	EXT_N_RST	O	O	O	EXT IC reset signal
5	P9_2/TB2IN/SOUT3	EXT_MOSI	SO	O	O	EXT IC serial data
6	P9_1/TB1IN/SIN3	EXT_N_CE	O	O	O	EXT IC chip select
7	P9_0/TB0IN/CLK3	EXT_SCK	SO	O	O	EXT IC serial clock
8	BYTE	BYTE	MCU	MCU	MCU	Connect to Vss when in the single chip mode (External data bus width change: 16 bit)
9	CNVss	CNVSS	MCU	MCU	MCU	Low: processor mode select: single chip mode Hi: To the FLASH included boot mode
10	P8_7/XCIN	DAC_STATUS	O	O	O	PCM-DSD change selector
11	P8_6/XCOUT	ZPLED	O	O	O	LED control for ZONE2 POWER ON display
12	RESET	N_RST	MCU	MCU	MCU	Reset input
13	Xout	XOUT	MCU	MCU	MCU	Main clock 20MHz output
14	Vss	VSS	MCU	MCU	MCU	
15	Xin	XIN	MCU	MCU	MCU	Main clock 20MHz input
16	Vcc1	VCC	MCU	MCU	MCU	
17	P8_5/NMI/SD * Nch Open Drain	NMI	MCU	MCU	MCU	Unused, Pull Up
18	P8_4/INT2/ZP	KEY1_N_INT	IRQ	IRQ	I	Tuner operation SW/ZONE2 POWER SW detection interrupt input Read KEY1 voltage by this interrupt
19	P8_3/INT1	MPSW	I	I	I	MAIN POWER SW detection input
20	P8_2/INT0	REM	IRQ	IRQ	IRQ	Remote control pulse detection interrupt input
21	P8_1/TA4IN/U/CTS5/ RTS5	DIR_N_RST	O	O	O	DIR reset terminal
22	P8_0/TA4OUT/U//RXD5/ SCL5	DIR_MISO	SI	O	O	Reception data from DIR
23	P7_7/TA3IN/CLK5	DIR_SCL	O	O	O	DIR communication clock
24	P7_6/TA3OUT/TXD5/ SDA5	DIR_MOSI	SO	O	O	Transmission data for DIR
25	P7_5/TA2IN/W	DIR_N_INT	I	O	O	Error output from DIR
26	P7_4/TA2OUT/W	FW_DATA	I	O	O	CD/DA firmware update data via SPDIF
27	P7_3/CTS2/RTS2/TA1IN/ V	FW_WCL	I	O	O	CD/DA firmware update word clock via SPDIF
28	P7_2/CLK2/TA1OUT/V	DIR_N_CS	O	O	O	CS signal of DIR
29	P7_1/RXD2/SCL2/TA0IN/ TB5IN * Nch Open Drain	TU_SCL	SO	I	I	TUNER I2C communication bus clock
30	P7_0/TXD2/SDA2/ TA0OUT * Nch Open Drain	TU_SDA	SO	I	I	TUNER I2C communication bus data
31	P6_7/TXD1/SDA1	TXDF	SO	SO	O	For easy emulation For writing FLASH (Rx)
32	P6_6/RXD1/SCL1	RXDF	SI	SI	O	For easy emulation For writing FLASH (Tx)
33	P6_5/CLK1	CLKF	SO	SO	O	For easy emulation For writing FLASH (Clock)
34	P6_4/CTS1/RTS1/CTS0/ CLKS1	BSY	O	O	O	For easy emulation BUSY signal output for writing FLASH
35	P6_3/TXD0/SDA0	DAC_SDA	SIO	I	I	DAC control data
36	P6_2/RXD0/SCL0	DAC_SCL	SO	I	I	DAC control serial clock
37	P6_1/CLK0	DAC_N_RST	O	O	O	DAC reset terminal
38	P6_0/CTS0/RTS0	MI_SEL	O	O	O	Analog SW IC output change signal
39	P5_7/RDY/CLKOUT	Z2VOL_DATA	SIO	I	I	ZONE2 electronic VOLUME control serial daga
40	P5_6/ALE	Z2VOL_CLK	SO	O	O	ZONE2 electronic VOLUME control serial clock
41	P5_5/HOLD	N_EPM	I	-	-	For writing FLASH (Low) Pull it down as it may fall in the Hiz state while the emulator is working
42	P5_4/HLDA	SPBRY	O	O	O	Speaker B relay control
43	P5_3/BCLK	SPARY	O	O	O	Speaker A relay control
44	P5_2/RD	HPRY	O	O	O	Headphone relay control
45	P5_1/WRH/BHE	USB_N_OCPRT	I	I	I	USB high current detection terminal
46	P5_0/WRL/WR	N_CE	I	-	-	For writing FLASH (Hi)
47	P4_7/TXD7/SDA7/ /CS3	EEP_SDA	SIO	I	I	EEPROM I2C communication bus data
48	P4_6/RXD7/SCL7/ CS2	EEP_SCL	SO	I	I	EEPROM I2C communication bus clock
49	P4_5/CLK7/CS1	EVOL_DATA	SO	O	O	Electronic VOLUME control serial data
50	P4_4/CTS7/RTS7/CS0	EVOL_CLK	SO	O	O	Electronic VOLUME control serial clock

Pin No.	Port Name	Function Name (P.C.B.)	I/O			Detail of Function
			Power On	Standby	MCU Sleep [AC OFF]	
51	P4_3/A19	ISB	I	I	I	Encoder phase detection input/output for Input selector
52	P4_2/A18	ISA	I	I	I	Encoder phase detection input/output for Input selector
53	P4_1/A17	CD_LED	I	I	I	CD Direct LED control
54	P4_0/A16	PD_LED	O	O	O	Pure Direct LED control
55	P3_7/A15	DIGITAL_PON	O	O	O	Digital power supply 5V control signal of DIGITAL printed circuit boards
56	P3_6/A14	DSP_N_USB_ON	I	O	O	Signal for USB insertion detection
57	P3_5/A13	DIR_DSP_SEL	O	O	O	DIR, DSP select signal
58	P3_4/A12	NC	O	O	O	Free terminal
59	P3_3/A11	NC	O	O	O	Free terminal
60	P3_2/A10	DSP_N_READY	I	O	O	USB DSP GP6[0] operation status
61	P3_1/A9	DSP_MUTE_REQ	I	O	O	USB DSP GP6[1] mute request
62	Vcc2	VCC	MCU	MCU	MCU	
63	P3_0/A8	NC	O	O	O	Free terminal
64	Vss	VSS	MCU	MCU	MCU	
65	P2_7/AN2_7/A7	NC	O	O	O	Free terminal
66	P2_6/AN2_6/A6	PRE_N_MT	I	I	O	PRE OUT MUTE control Low=MUTE ON
67	P2_5/INT7/AN2_5/A5	Z2_N_MT	O	I	I	ZONE2 MUTE control Low=MUTE ON
68	P2_4/INT6/AN2_4/A4	DSP_N_INT_REQ	IRQ	IRQ	IRQ	Interrupt output from USB DSP GP6[7] USB DSP
69	P2_3/AN2_3/A3	PRI	AD	AD	AD	AMP current protection
70	P2_2/AN2_2/A2	+5S_PON	O	O	O	+5S drive control
71	P2_1/AN2_1/A1	DEST	AD	AD	AD	Destination discrimination AD value input
72	P2_0/AN2_0/A0	MODEL	AD	AD	AD	MODEL discrimination AD value input
73	P1_7/INT5/D15	TU_GPIO	IRQ	IRQ	IRQ	TUNER GRIO interrupt input Low=Normal Hi=Abnormal
74	P1_6/INT4/D14	NC	-	-	-	Free terminal
75	P1_5/INT3/D13	PW_DET	IRQ	IRQ	IRQ	PW_DET detection interrupt input
76	P1_4/D12	DSP_N_RST	O	O	O	USB DSP reset terminal Reset USB DSP from microprocessor
77	P1_3/TXD6/SDA6/D11	DSP_SDA	SIO	I	I	USB DSP control serial data
78	P1_2/RXD6/SCL6/D10	DSP_SCL	SO	I	I	USB DSP control serial clock
79	P1_1/CLK6/D9	TU_N_RST	O	I	I	TUNER reset terminal
80	P1_0/CTS6/RTS6/D8	PRY	O	I	I	Power relay control
81	P0_7/AN0_7/D7	SW_N_MT	O	I	I	Subwoofer MUTE control Low=MUTE ON
82	P0_6/AN0_6/D6	PWR_MGT	I	I	I	Power management detection input
83	P0_5/AN0_5/D5	THM2	AD	AD	AD	Right-hand side heat sinc temperature detection AD value input
84	P0_4/AN0_4/D4	THM1	AD	AD	AD	Left-hand side heat sinc temperature detection AD value input
85	P0_3/AN0_3/D3	BASS	AD	AD	AD	BASS position detection AD value input
86	P0_2/AN0_2/D2	TREBLE	AD	AD	AD	TREBLE position detection AD value input
87	P0_1/AN0_1/D1	BALANCE	AD	AD	AD	BALANCE position detection AD value input
88	P0_0/AN0_0/D0	LOUDNESS	AD	AD	AD	LOUDNESS position detection AD value input
89	P10_7/AN7/KI3	PRD	AD	AD	AD	DC protection detection
90	P10_6/AN6/KI2	AD_VOL	AD	AD	AD	VOLUME position detection AD value taken input
91	P10_5/AN5/KI1	VRUP	O	O	O	MOTOR VOLUME +direction control
92	P10_4/AN4/KI0	VRDN	O	O	O	MOTOR VOLUME -direction control
93	P10_3/AN3	PRV	AD	AD	AD	Protection voltage detection AD value taken input
94	P10_2/AN2	KEY1	AD	AD	AD	KEY1 AD value input (SPEAKER SELECT SW)
95	P10_1/AN1	KEY0	AD	AD	AD	KEY0 AD value input (CD DIRECT SW/PURE DIRECT SW)
96	Avss	AVSS	MCU	MCU	MCU	
97	P10_0/AN0	THM3	AD	AD	AD	For Diode Bridge temperature detection of Main Amp
98	Vref	VREF	MCU	MCU	MCU	
99	Avcc	AVCC	MCU	MCU	MCU	
100	P9_7/ADTRG/SIN4	DIG_SW	I	I	I	DIG_SW input

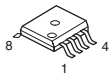
■ PIN CONNECTION DIAGRAMS

• ICs

BD3473KS2



BH6578FVM-TR



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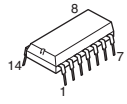
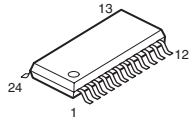
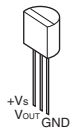


LC709004AMJ



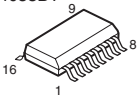
LM61CIZ



EL816

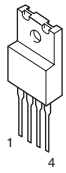
1: Anode
2: Cathode
3: Emitter
4: Collector

HEF4053BT



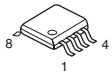
NJM2068MD-TE2
NJM5532M-D

NJM2388F05

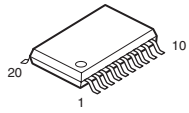


1. VIN
2. VOUT
3. GND
4. ON/OFF CONTROL

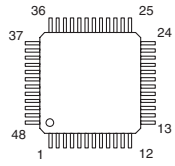
NJM4580E



PCM5101APWR



PCM9211PTR

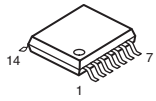


R1190H050B-T1-FE

RP130Q331D-TR-F

RP170H331

TC74VHCT08AFT



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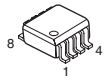
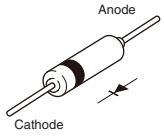


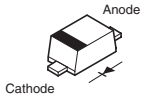
TPS2051CDBVR

• Diodes

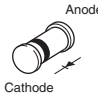
1N4003S



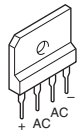
1SS355VM



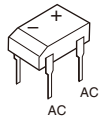
BAV103



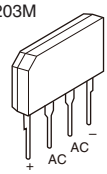
D4SBN20-7101



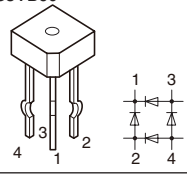
DB105



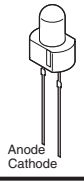
RS203M



S5VB60



SEL6910A-CD



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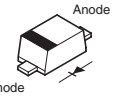
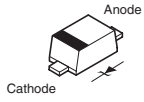


UDZV5.1B UDZV8.2B
UDZV5.6B UDZV10B
UDZV6.8B UDZV15B
UDZV7.5B UDZV30B

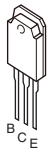


• Transistors

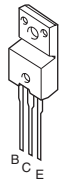
2N5401S-RTK
2N5551S-RTK/P

2SA1162-Y
2SA1514K
2SC2712-Y

2SA1694 O,P,Y
2SC4467 O,P,Y

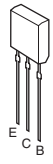


2SB1257

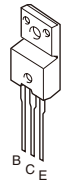


2SC2412K

2SC5398



2SD2014

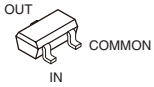


2SD2704 K

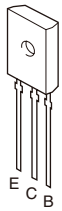
DTA114EKA
DTA143EKA
DTC114EKA
DTC143XKA

1: GND
2: IN
3: OUT

KRC104S-RTK



KTA1024Y-AT/P
KTC3206Y-AT



KTA1504S
KTC3875S

KTA1659A-Y-U/PF

KTD600K-Y-U/PH
KTB631K

MCH6336-TL-E

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

RAL035P01

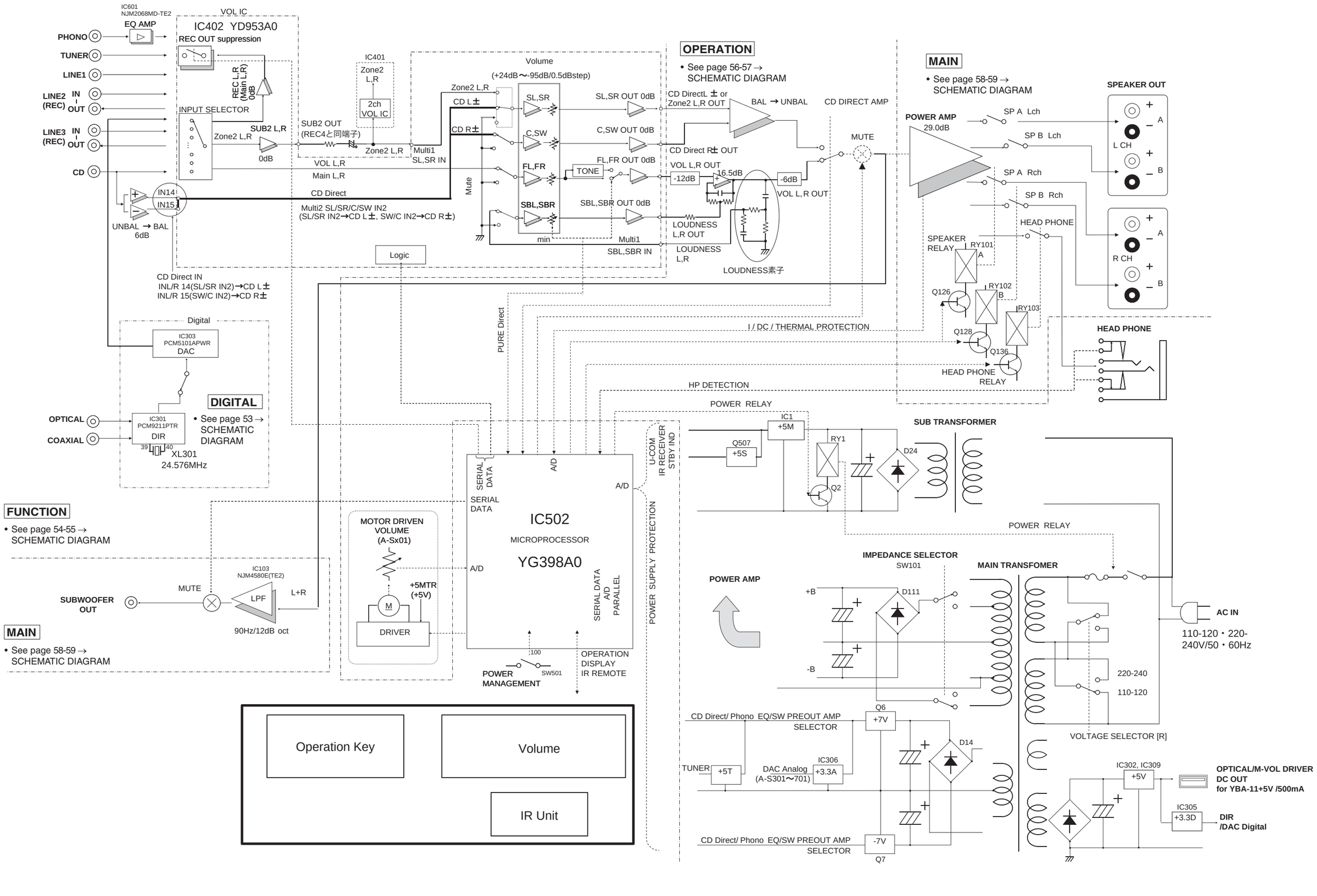
1. DRAIN
2. DRAIN
3. GATE
4. SOURCE
5. DRAIN
6. DRAIN

SFT1440-E

MEMO

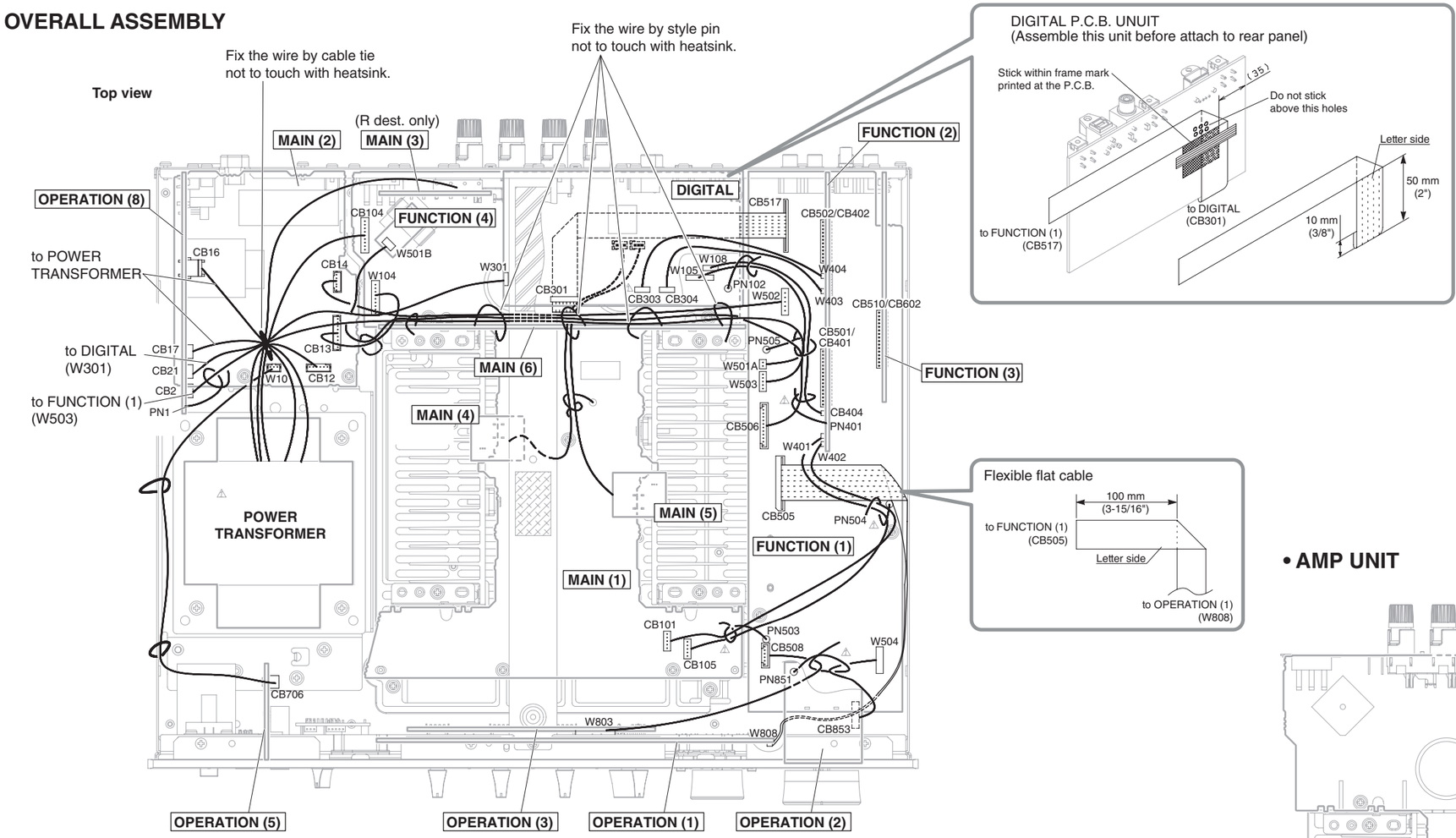
A-S701

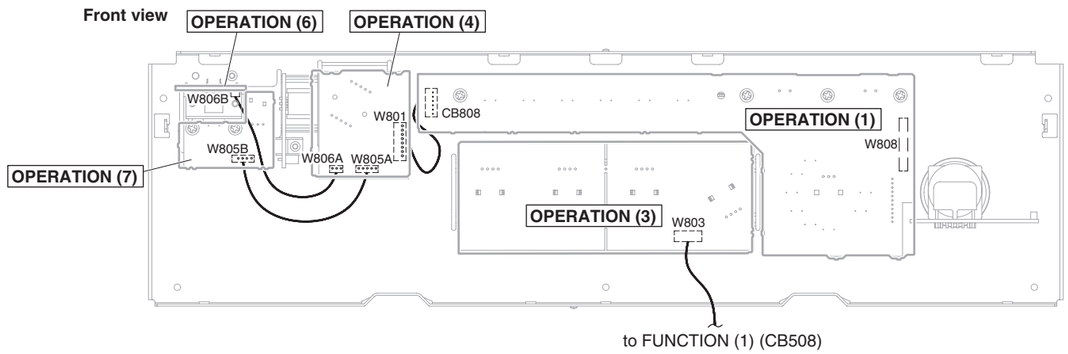
■ BLOCK DIAGRAM



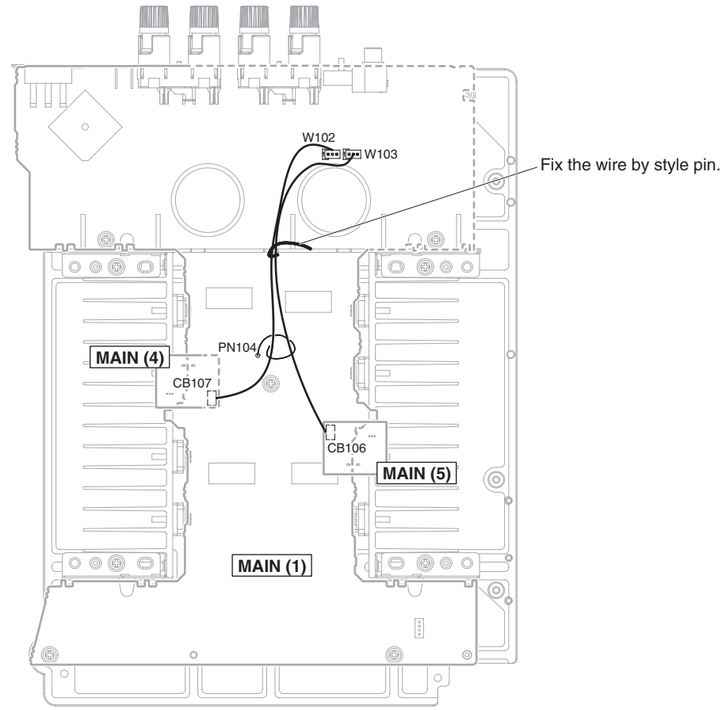
■ WIRING DIAGRAMS

• OVERALL ASSEMBLY



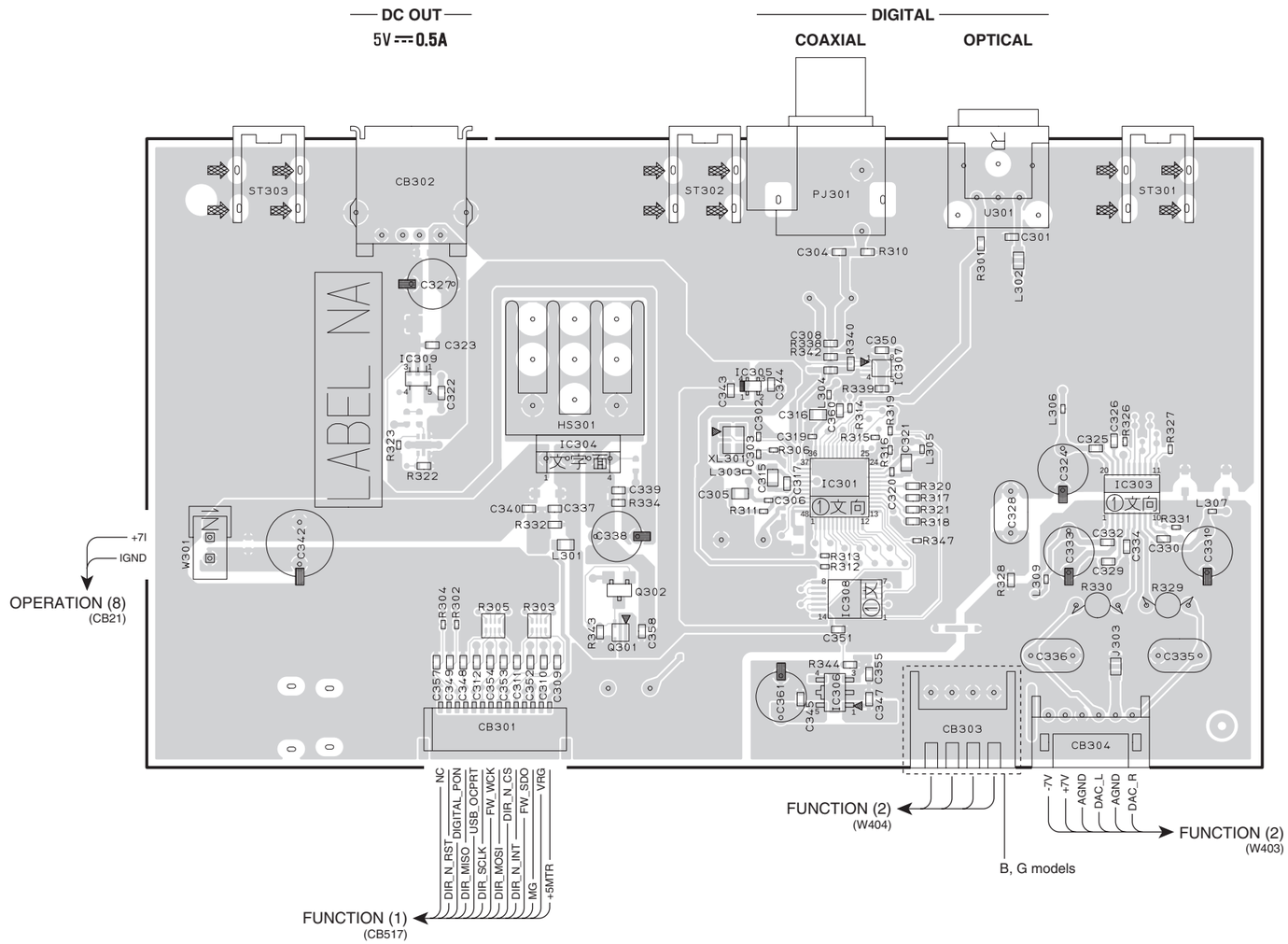


• AMP UNIT



■ PRINTED CIRCUIT BOARDS

DIGITAL (Side A)

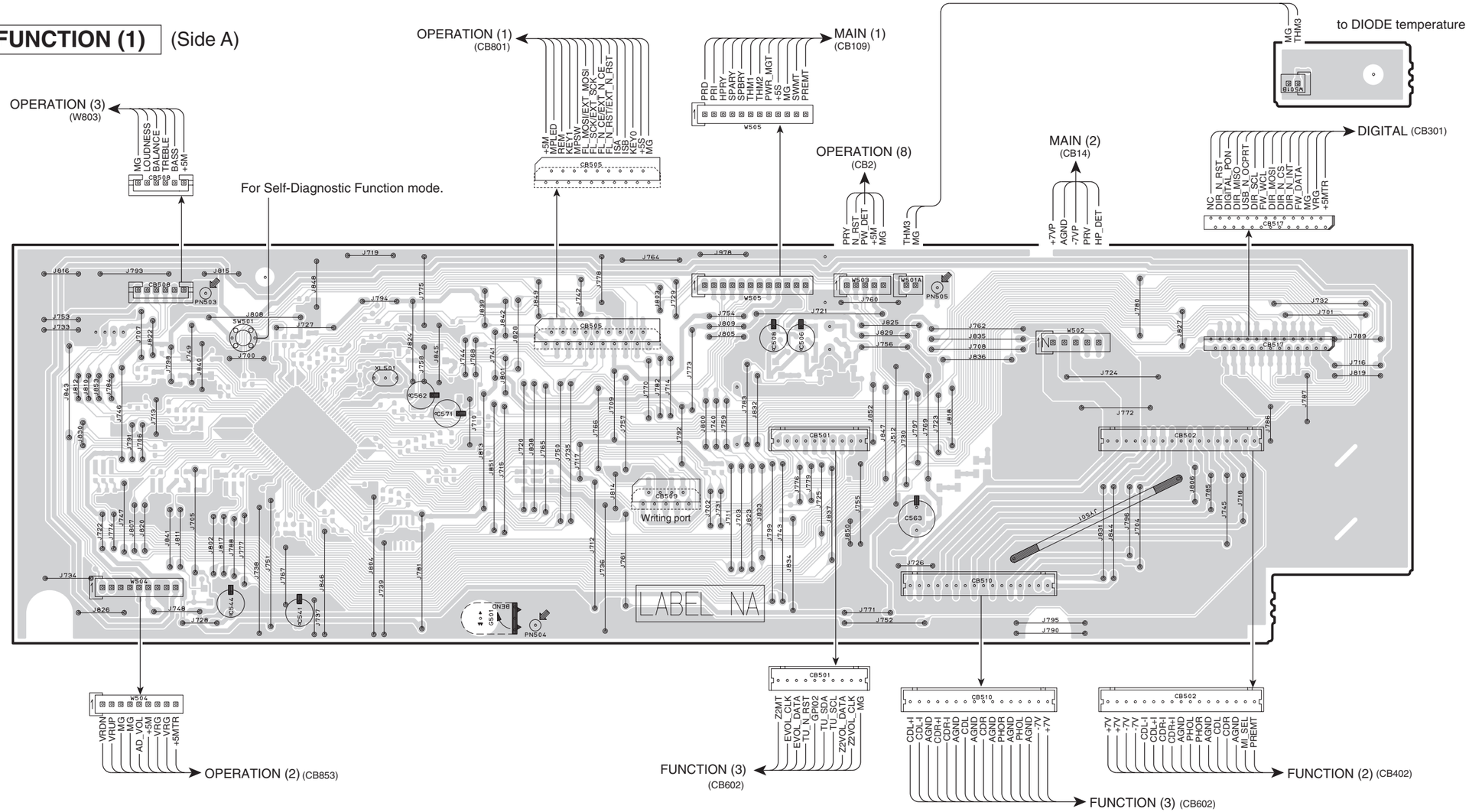


• Semiconductor Location

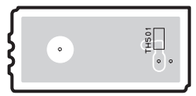
Ref no.	Location
IC301	F4
IC303	H4
IC304	E4
IC305	F4
IC306	F5
IC307	G4
IC308	F5
IC309	D4

FUNCTION (4) (Side A)

FUNCTION (1) (Side A)

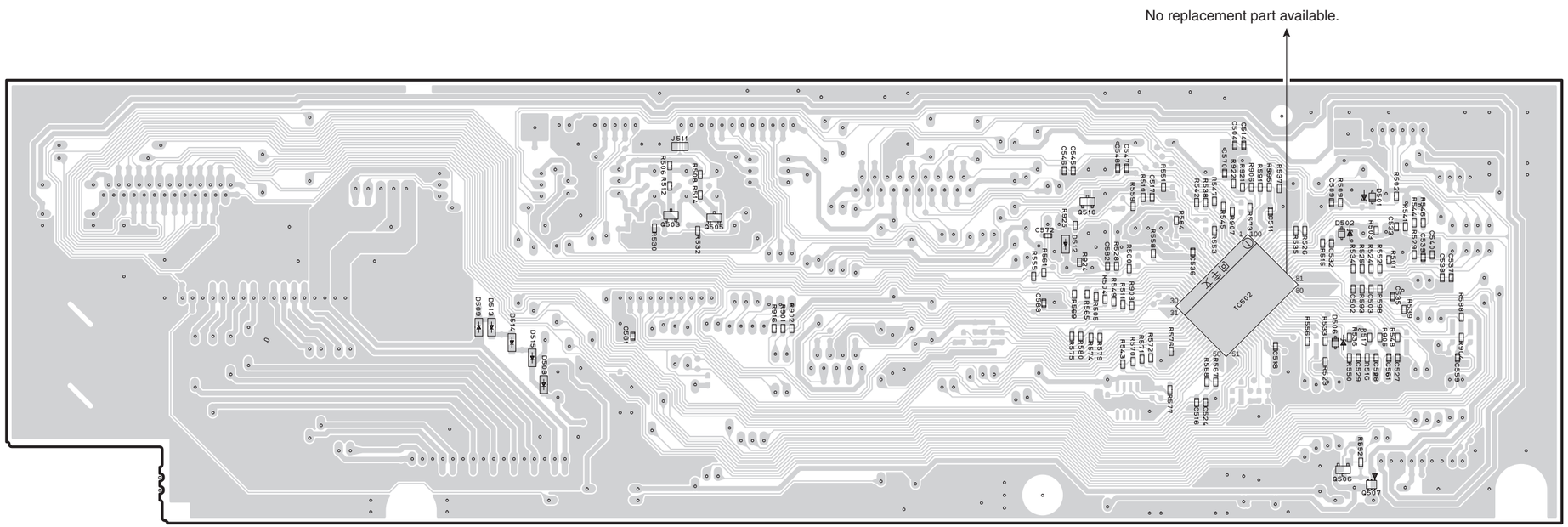


FUNCTION (4) (Side B)



FUNCTION (1) (Side B)

No replacement part available.

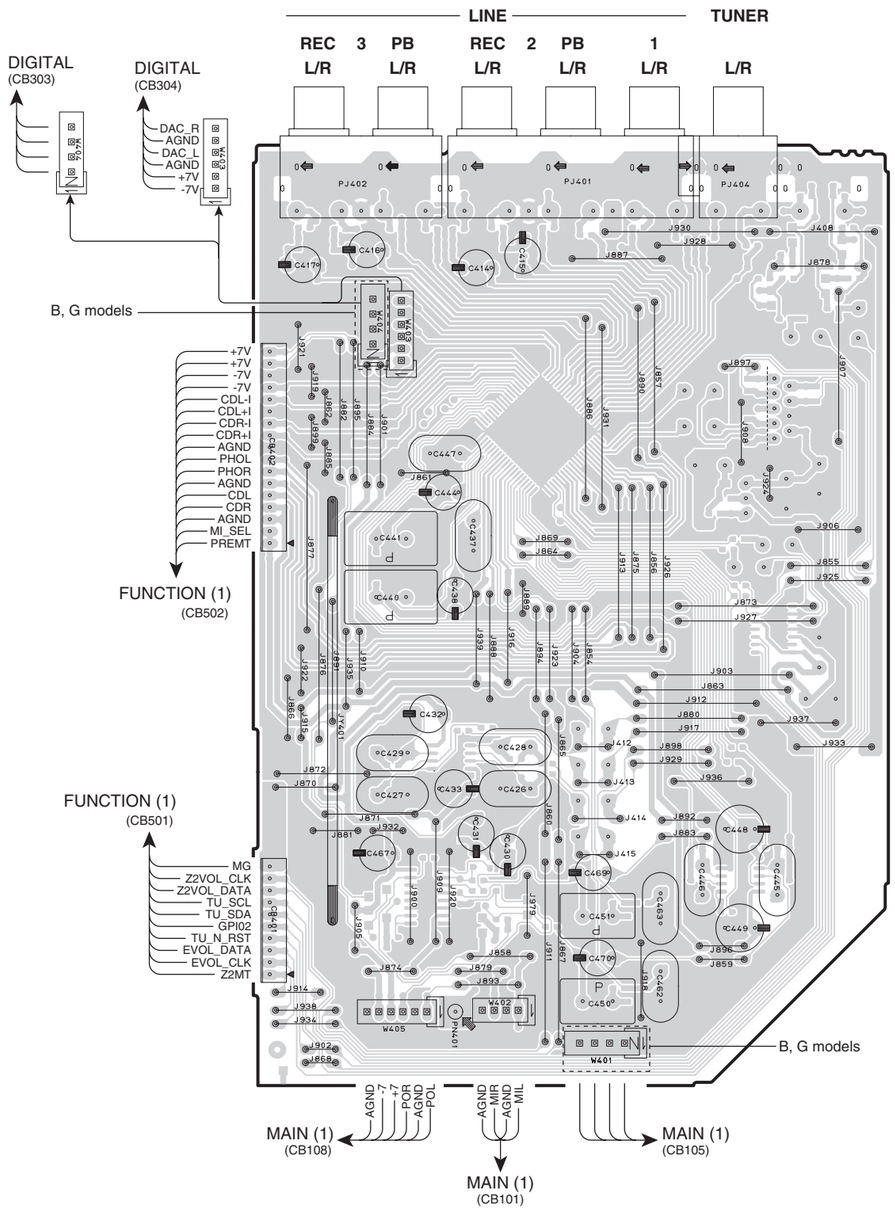


• Semiconductor Location

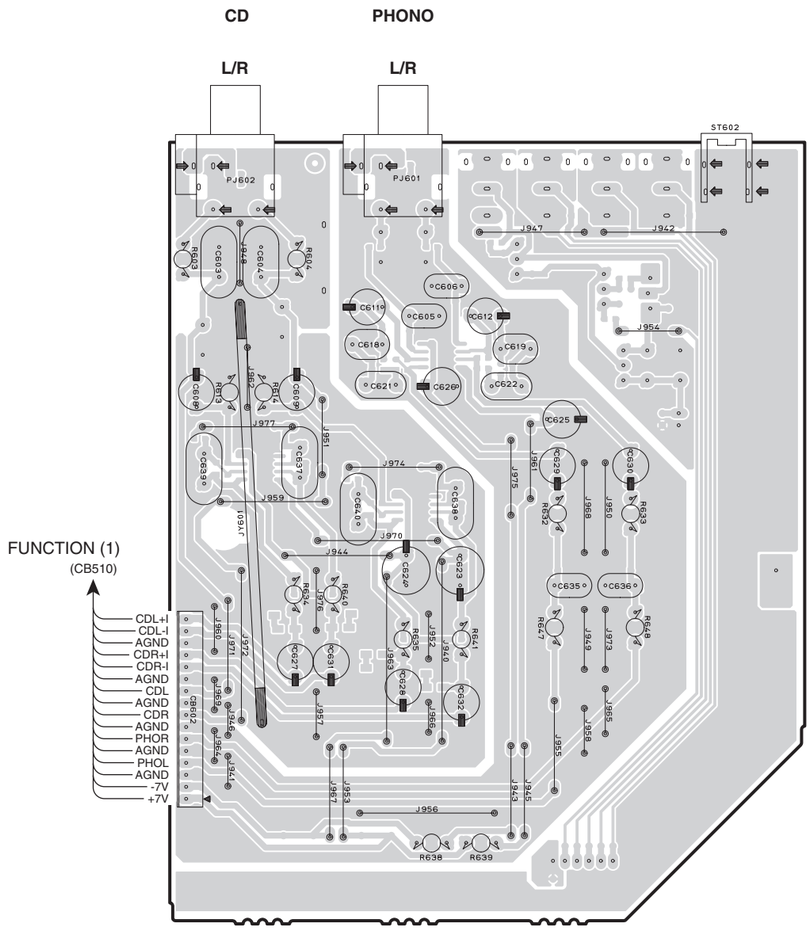
Ref no.	Location
D501	I4
D502	H4
D506	H4
D508	D5
D509	D4
D512	G4
D513	D4
D514	D4
D515	D4

Ref no.	Location
IC502	H4
Q503	E4
Q505	E4
Q510	G4
Q506	H5
Q507	I5

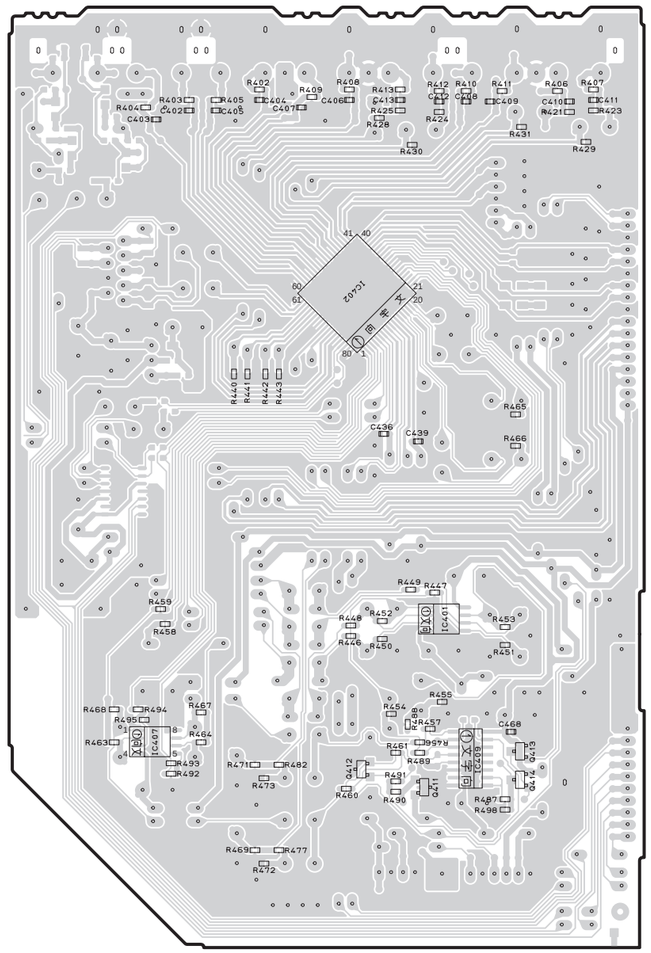
FUNCTION (2) (Side A)



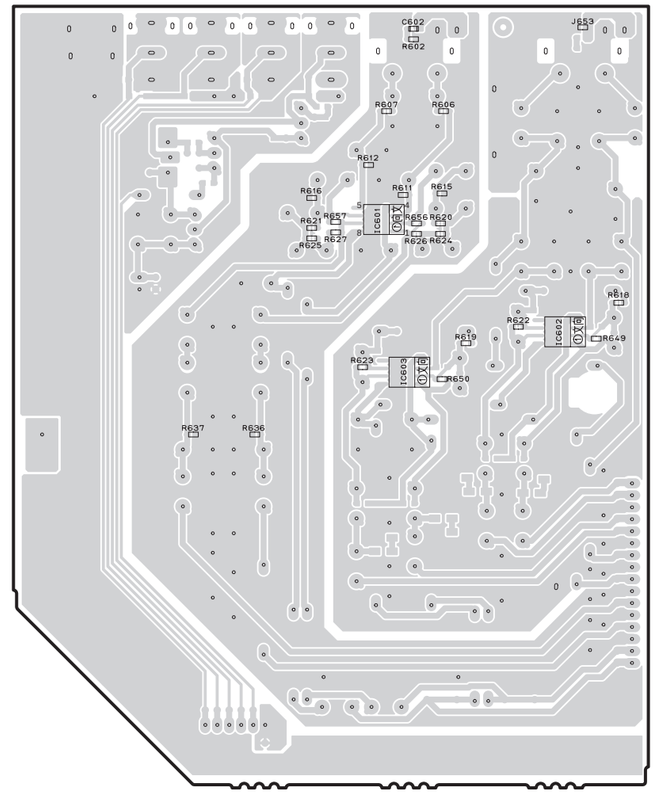
FUNCTION (3) (Side A)



FUNCTION (2) (Side B)



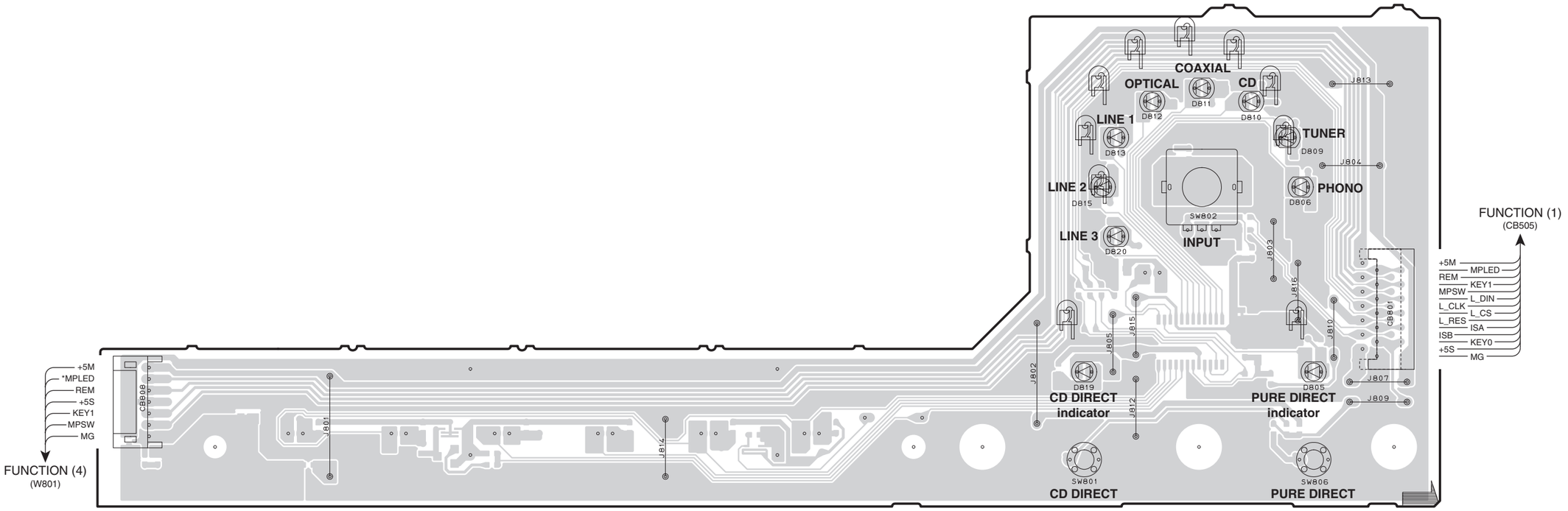
FUNCTION (3) (Side B)



• Semiconductor Location

Ref no.	Location
IC401	D5
IC402	D3
IC407	C5
IC409	D5
IC601	H3
IC602	I4
IC603	H4
Q411	D5
Q412	D5
Q413	D5
Q414	D5

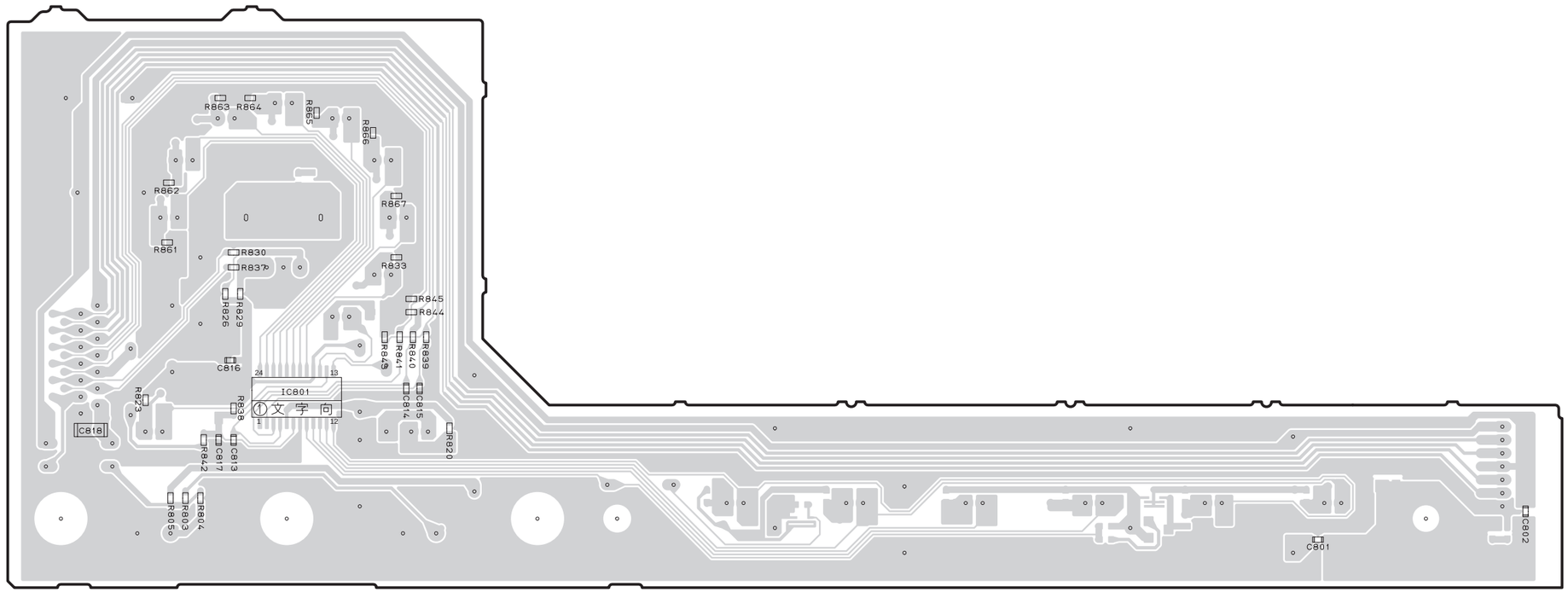
OPERATION (1) (Side A)



• Semiconductor Location

Ref no.	Location
D805	I4
D806	I3
D809	I3
D810	H3
D811	H3
D812	H3
D813	H3
D815	G3
D819	G5
D820	H4

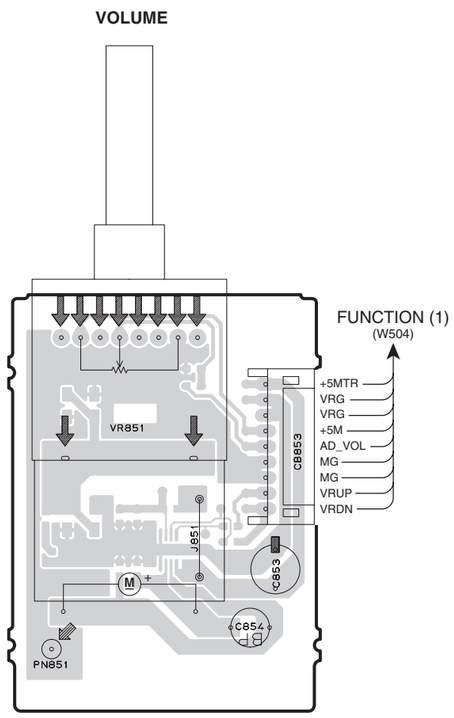
OPERATION (1) (Side B)



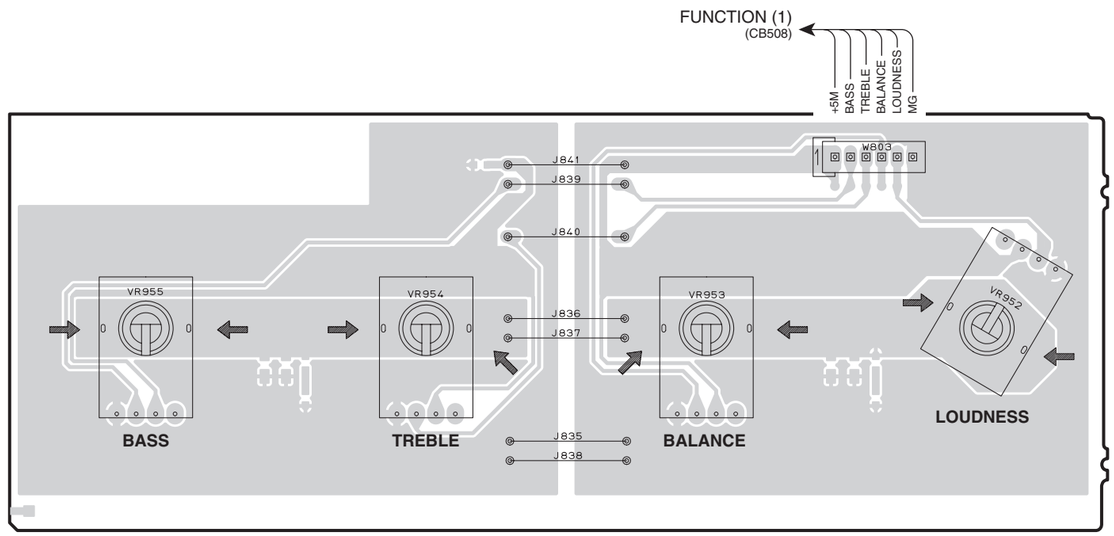
• Semiconductor Location

Ref no.	Location
IC801	C4

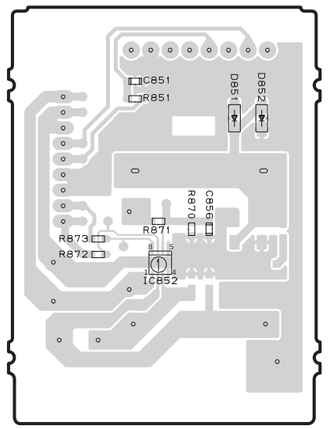
OPERATION (2) (Side A)



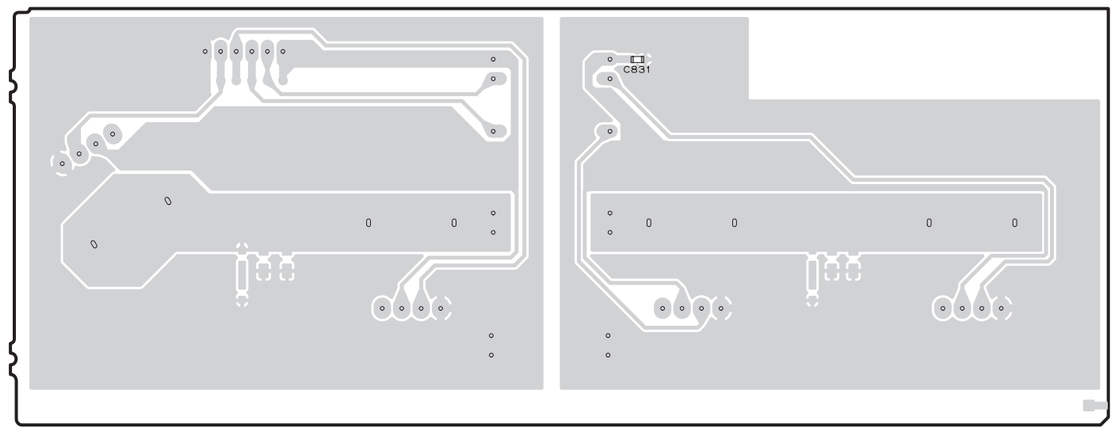
OPERATION (3) (Side A)



OPERATION (2) (Side B)



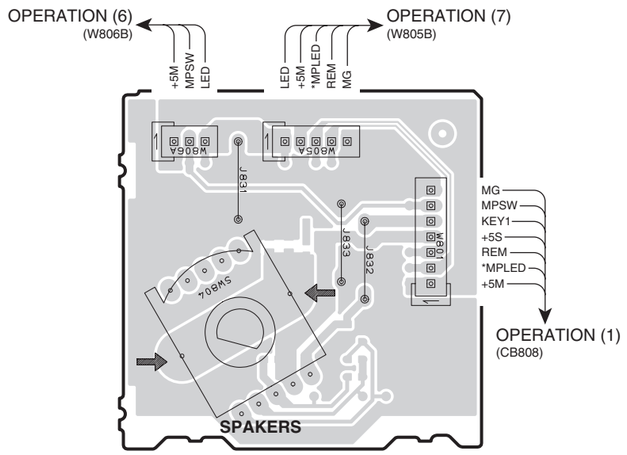
OPERATION (3) (Side B)



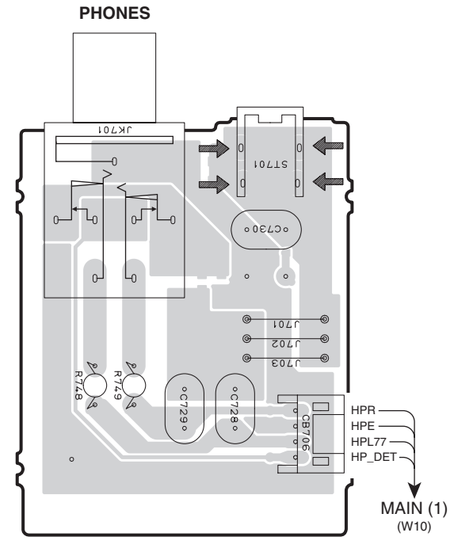
• Semiconductor Location

Ref no.	Location
D851	C4
D852	C4
IC852	C4

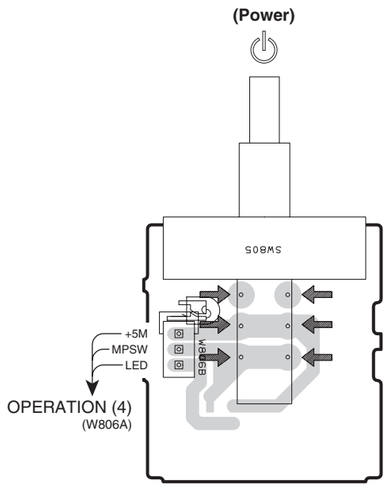
OPERATION (4) (Side A)



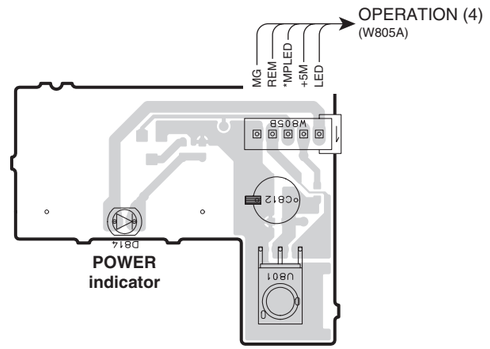
OPERATION (5) (Side A)



OPERATION (6) (Side A)



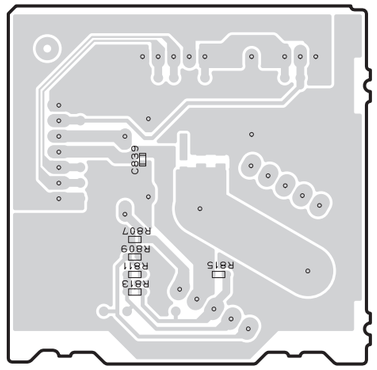
OPERATION (7) (Side A)



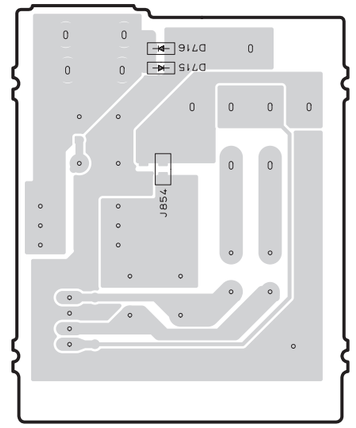
• Semiconductor Location

Ref no.	Location
D814	H6

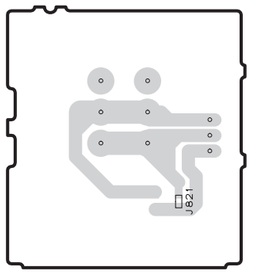
OPERATION (4) (Side B)



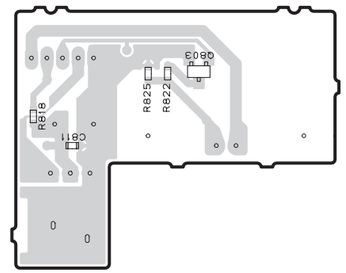
OPERATION (5) (Side B)



OPERATION (6) (Side B)



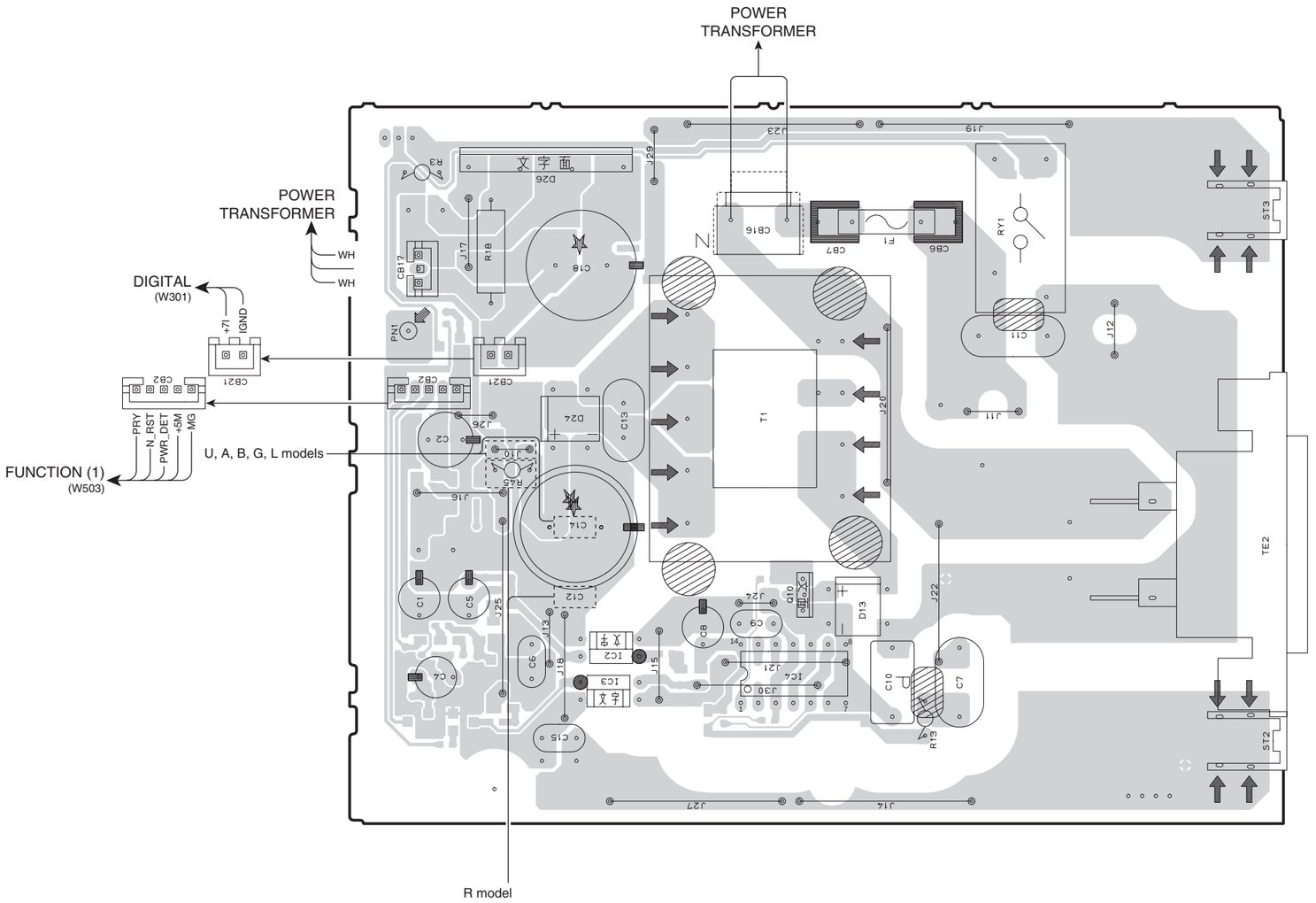
OPERATION (7) (Side B)



• Semiconductor Location

Ref no.	Location
D715	H2
D716	H2
Q803	H5

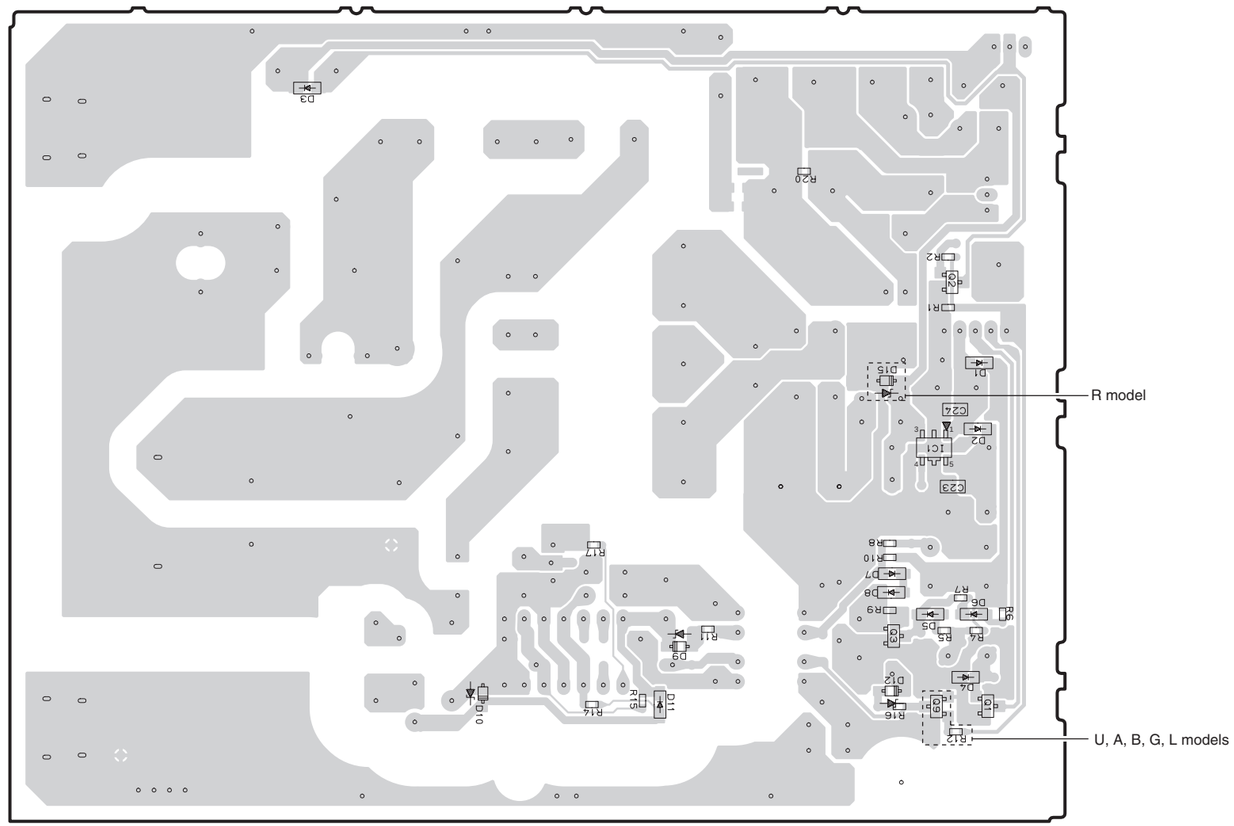
OPERATION (8) (Side A)



• Semiconductor Location

Ref no.	Location
D13	F5
D24	E4
D26	D3
IC2	E5
IC3	E5
IC4	F5
Q10	F5

OPERATION (8) (Side B)

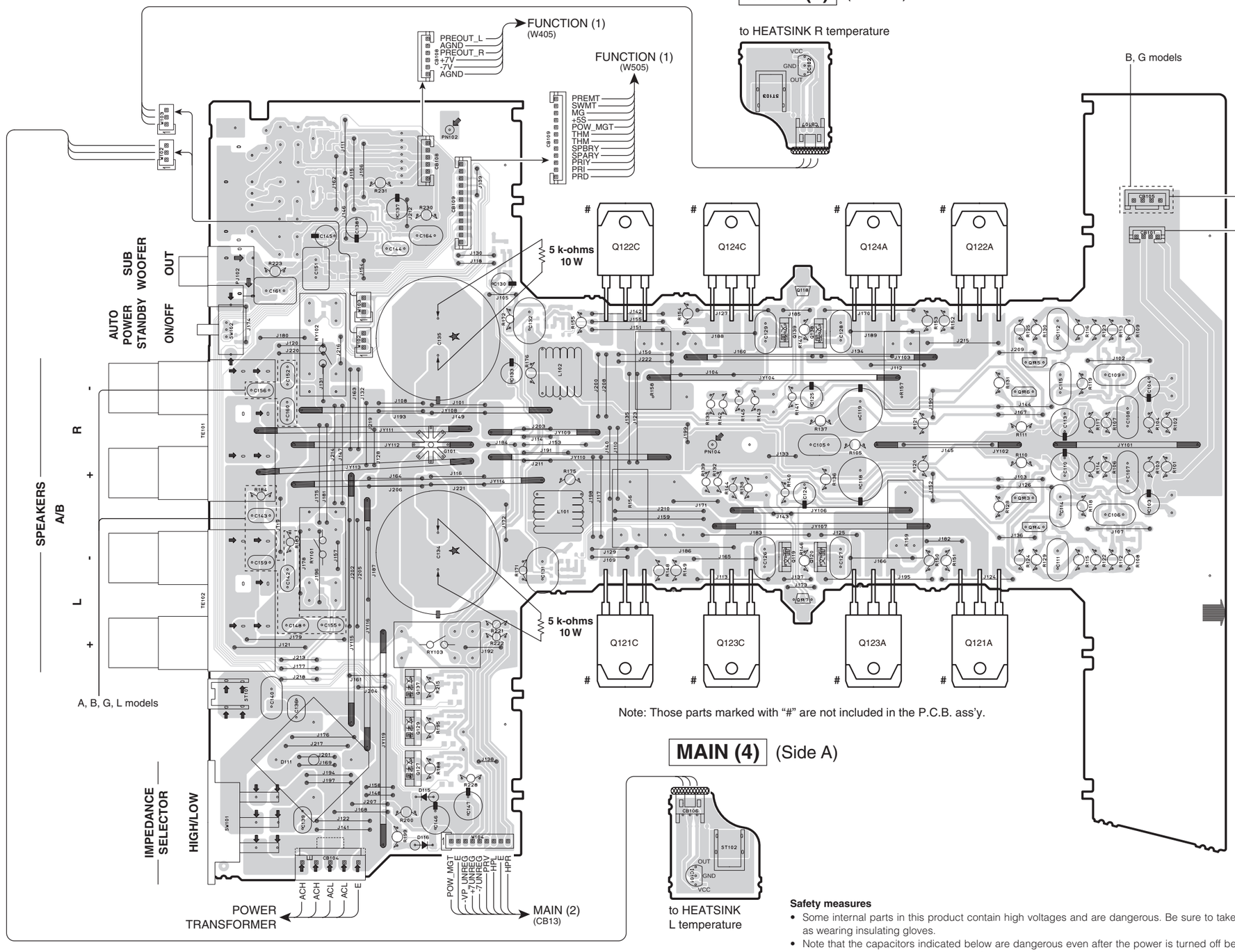


• Semiconductor Location

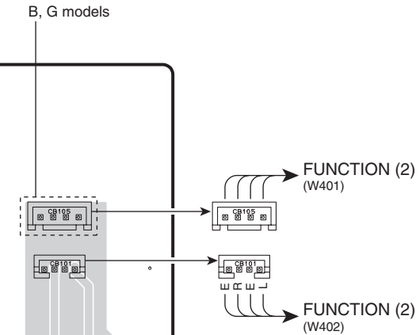
Ref no.	Location
D1	H4
D10	E5
D11	F5
D12	G5
D15	G4
D2	H4
D3	E3
D4	H5

Ref no.	Location
D5	G5
D6	H5
D9	F5
Q1	H5
Q2	G3
Q3	G5
Q9	G5
IC1	G4

MAIN (1) (Side A)



MAIN (5) (Side A)



MAIN (4) (Side A)

Note: Those parts marked with "#" are not included in the P.C.B. ass'y.

• Semiconductor Location

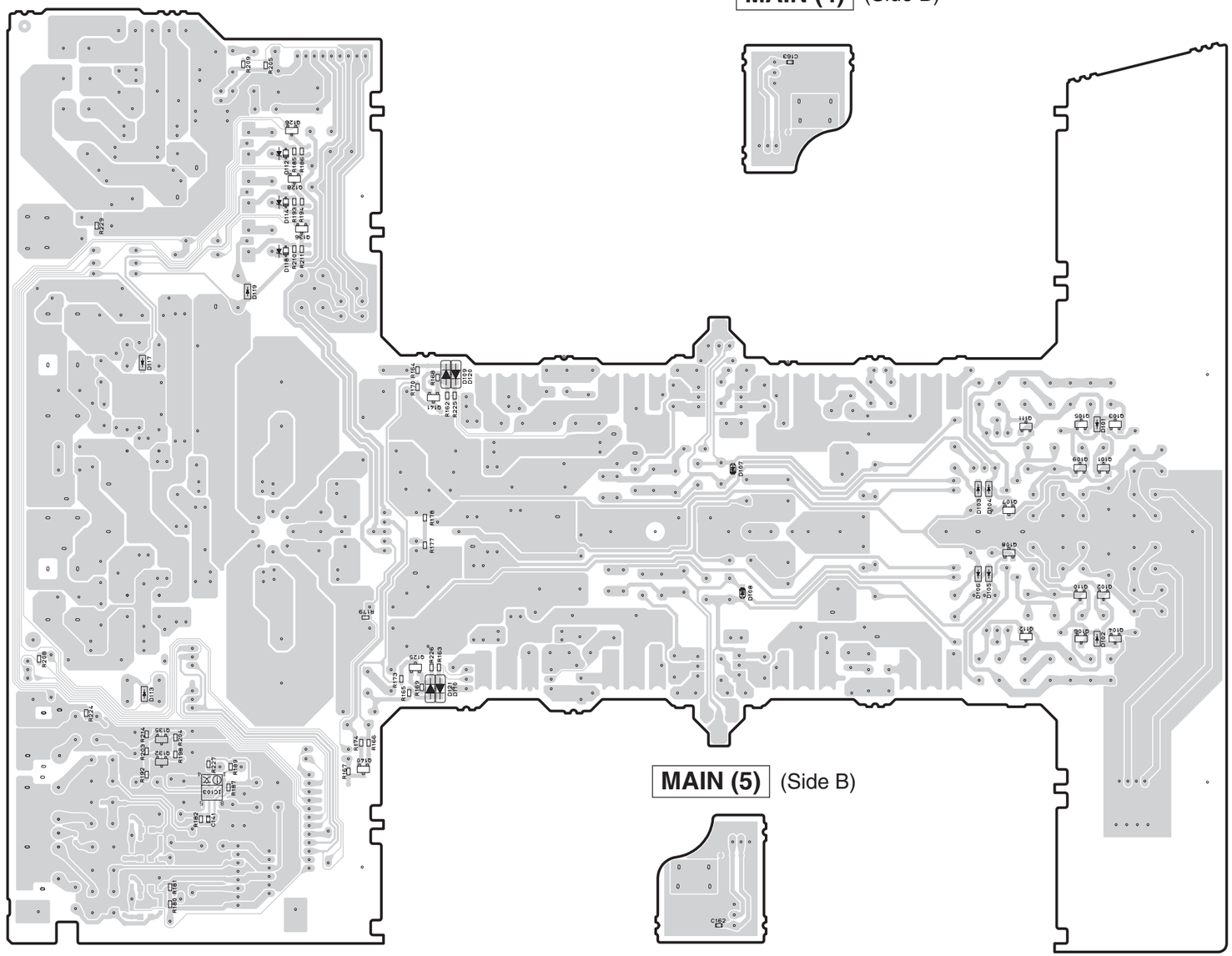
Ref no.	Location
D111	D6
IC101	F6
IC102	G2
Q137	D5
Q129	D6
Q127	D6
Q139	F3
Q119	F4
Q138	G3
Q118	G3
Q120	G4
Q117	G5
Q115	H3
Q116	H4
Q113	H4
Q114	H4
IC101	F6
IC102	G2

Safety measures

- Some internal parts in this product contain high voltages and are dangerous. Be sure to take safety measures during servicing, such as wearing insulating gloves.
- Note that the capacitors indicated below are dangerous even after the power is turned off because an electric charge remains and a high voltage continues to exist there. Before starting any repair work, connect a discharging resistor (5 k-ohms/10 W) to the terminals of each capacitor indicated below to discharge electricity. The time required for discharging is about 30 seconds per each.
  C134, C135 on MAIN (1) P.C.B.

MAIN (1) (Side B)

MAIN (4) (Side B)

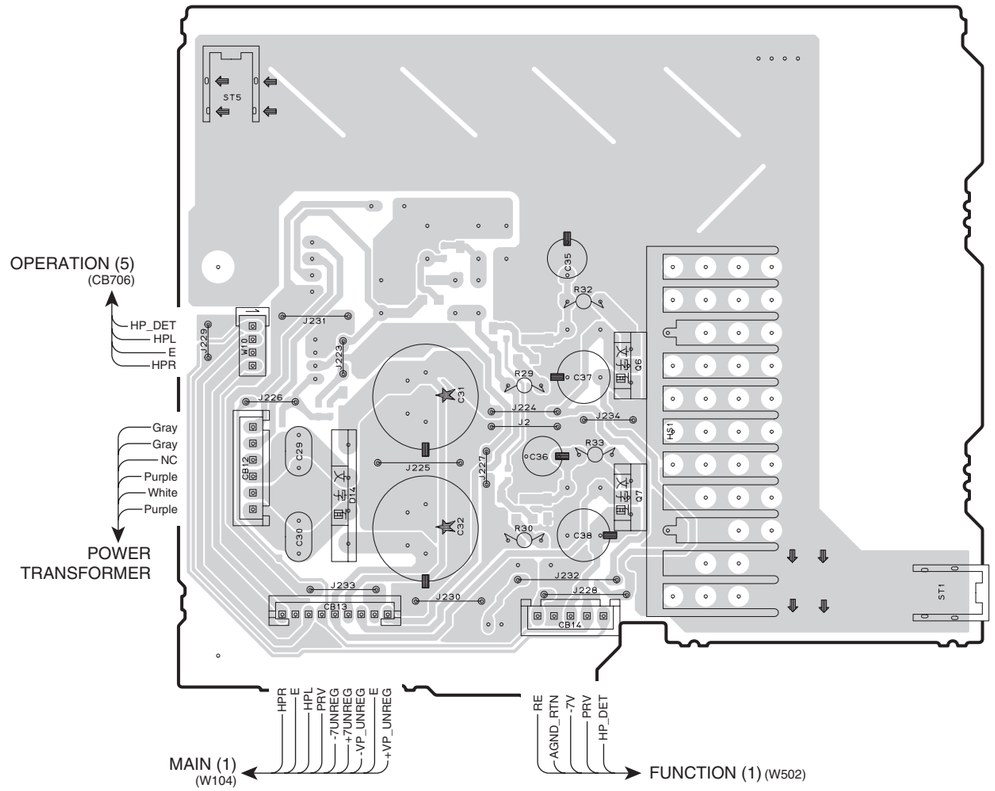


MAIN (5) (Side B)

• Semiconductor Location

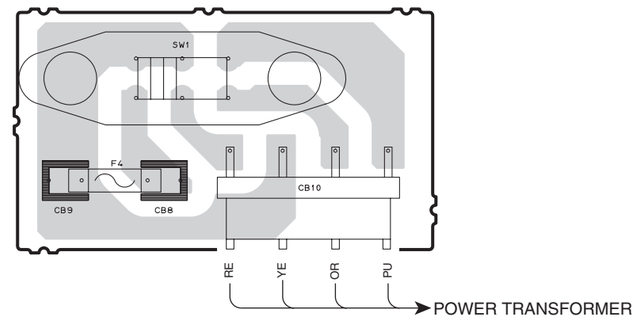
Ref no.	Location
D101	H4
D102	H5
D103	H4
D104	H4
D105	H5
D106	H5
D107	F4
D108	F5
D109	E4
D110	E5
D112	D2
D113	C5
D114	D3
D117	C4
D118	D3
D119	D3
D120	E4
D121	E5
IC103	D6
Q101	H4
Q102	H5
Q103	H4
Q104	H5
Q105	H4
Q106	H5
Q107	H4
Q108	H4
Q109	H4
Q110	H5
Q111	H4
Q112	H5
Q125	E5
Q126	D2
Q128	D3
Q132	C6
Q135	C5
Q136	D3
Q140	E6
Q141	E4

MAIN (2) (Side A)

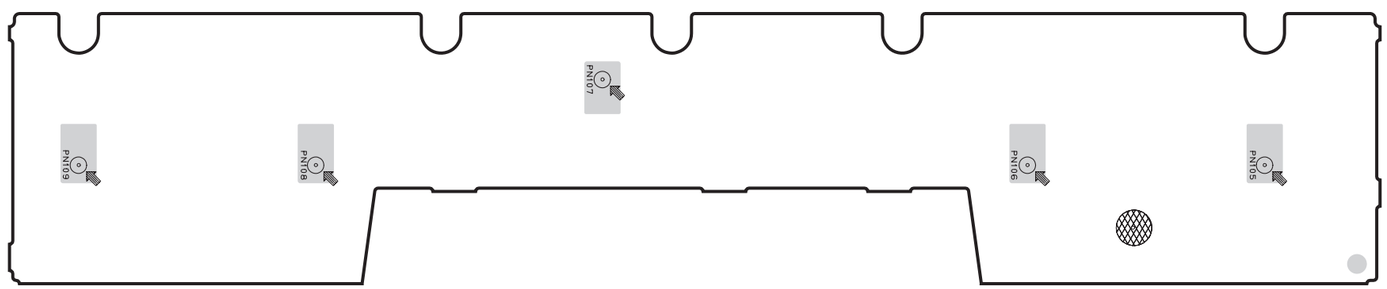


MAIN (3) (Side A)

R model



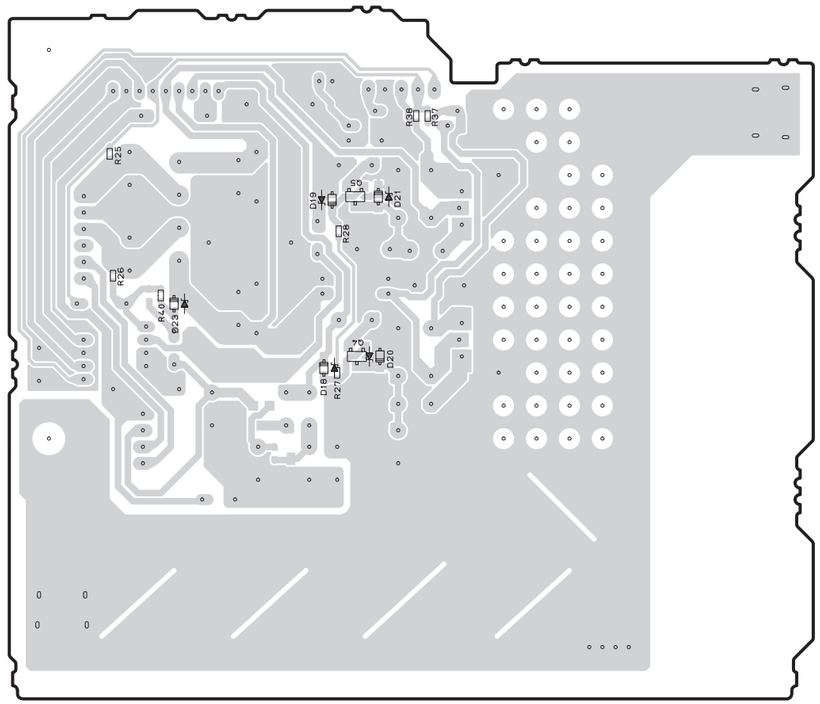
MAIN (6) (Side A)



• Semiconductor Location

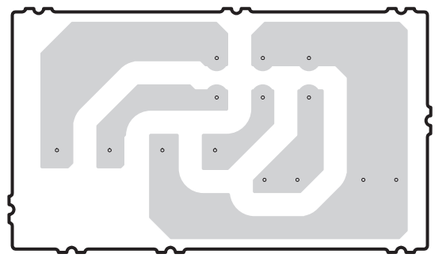
Ref no.	Location
D14	C4
Q6	D3
Q7	D4

MAIN (2) (Side B)

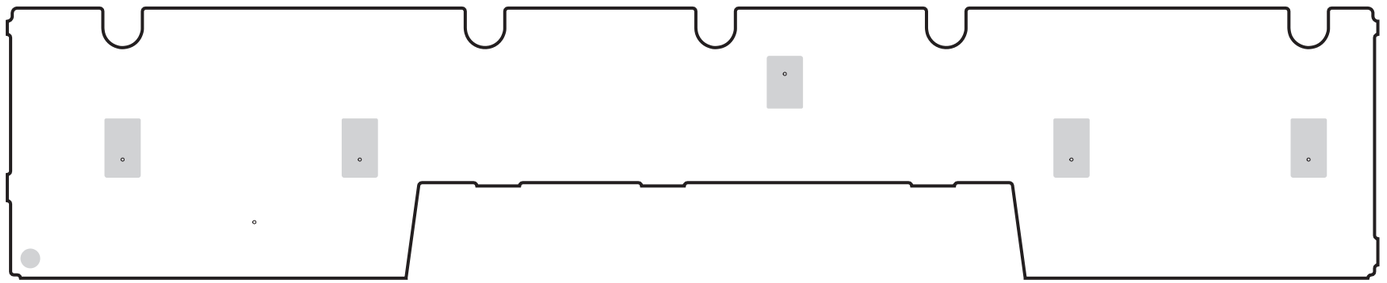


MAIN (3) (Side B)

R model



MAIN (6) (Side B)



• Semiconductor Location

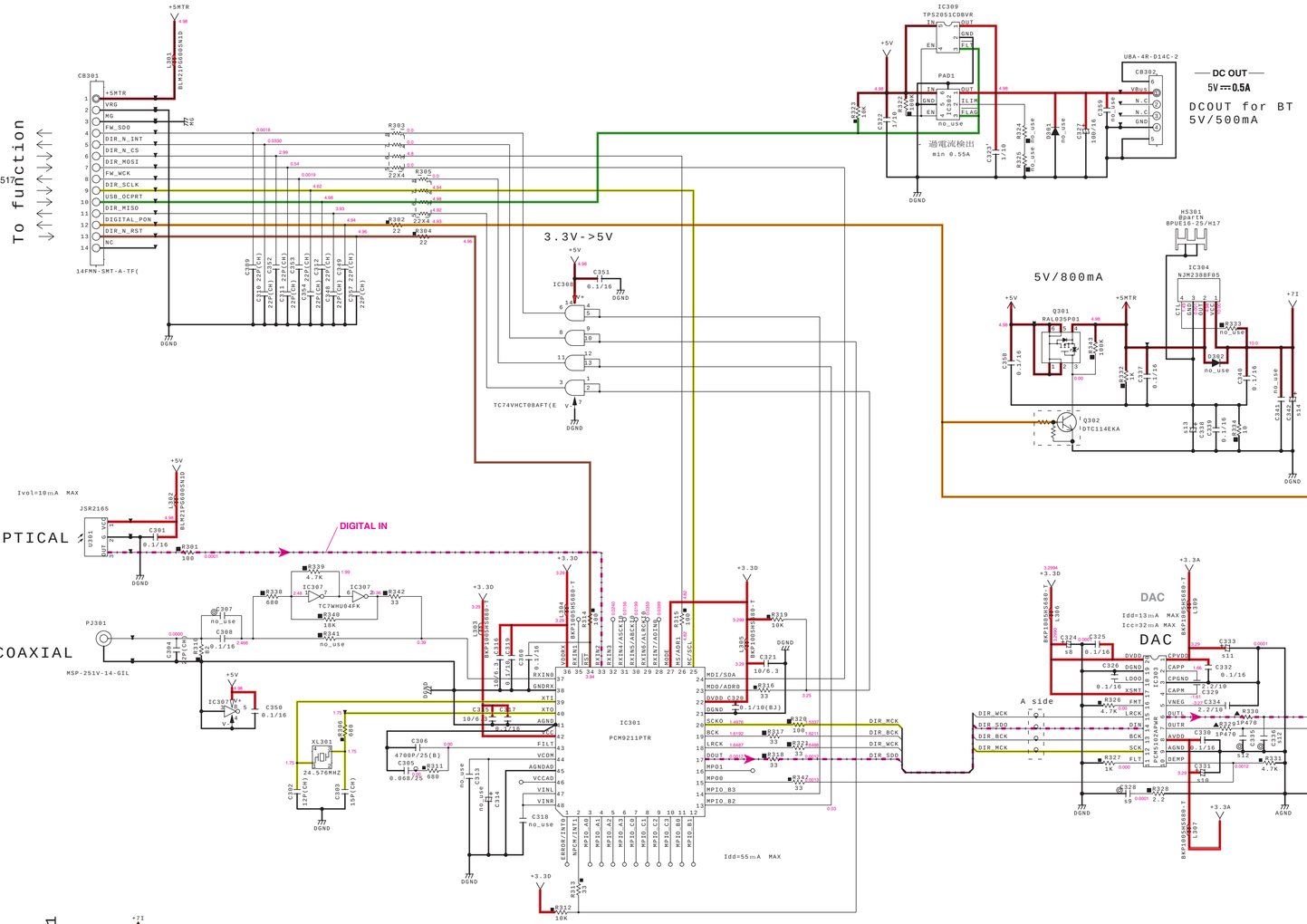
Ref no.	Location
Q1002	E5
D18	D3
D19	D2
D20	D3
D21	D2
D23	C3
Q4	D3
Q5	D2

MEMO

MEMO

■ SCHEMATIC DIAGRAMS

DIGITAL



Destination Part List

sxx	LOCATION	URAL	B	G
s8	C324	UR23710 10/16	UU23710 10/16	UU23710 10/16
s9	C326	ZD52000 0.01/100	WE10290 0.01/100	WE10290 0.01/100
s10	C331	UR23747 47/16	UR03747 47/16	UR03747 47/16
s11	C333	UR23710 10/16	UU23710 10/16	UU23710 10/16
s12	C335 C336	ZD51920 2200P/100	WE10210 2200P/100	WE10210 2200P/100
s13	C338	UR23810 100/16	UR03810 100/16	UR03810 100/16
s14	C342	UR24822 220/25	UR04822 220/25	UR04822 220/25
s16	CB303	X	LB91904 XHL	LB91904 XHL
s17	C361	UR23710 10/16	UU23710 10/16	UU23710 10/16

Details of colored lines

Red / full line:	Power supply (+)
Red /dashed line:	Power supply (-)
Orange:	Signal detect
Yellow:	Clock
Green:	Protection detect
Brown:	Reset signal
Blue:	Panel key input

★ All voltages are measured with a 10M Ω /V DC electronic voltmeter.
★ Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

NOTICE (model)
[J]····· JAPAN
[U]····· U.S.A
[C]····· CANADA
[R]····· GENERAL
[T]····· CHINA
[K]····· KOREA
[A]····· AUSTRALIA
[B]····· BRITISH
[G]····· STANDARD
[L]····· SINGAPORE
[E]····· SOUTH EUROPE
[V]····· TAIWAN
[F]····· RUSSIAN
[P]····· LATIN AMERICA
[S]····· BRAZIL
[H]····· THAI

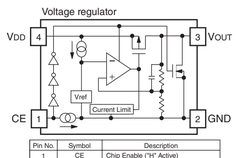
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
	CARBON FILM RESISTOR (P=10)
	METAL OXIDE FILM RESISTOR
	METAL FILM RESISTOR
	METAL PLATE RESISTOR
	FIRE PROOF CARBON FILM RESISTOR
	CEMENT MOLDED RESISTOR
	SEMI VARIABLE RESISTOR
	CHIP RESISTOR

CAPACITOR

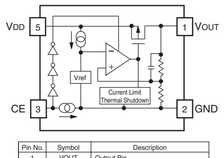
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
	CERAMIC TUBULAR CAPACITOR
	POLYESTER FILM CAPACITOR
	POLYSTYRENE FILM CAPACITOR
	MICA CAPACITOR
	POLYPROPYLENE FILM CAPACITOR
	SEMICONDUCTIVE CERAMIC CAPACITOR
	POLYPHENYLENE SULFIDE FILM CAPACITOR

IC305 : RP130Q331D-TR-F
Voltage regulator



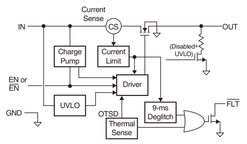
Pin No.	Symbol	Description
1	CE	Chip Enable ("H" Active)
2	GND	Ground Pin
3	VOUT	Output Pin
4	VDD	Input Pin

IC306 : RP170H331B-T1-FE
Voltage regulator

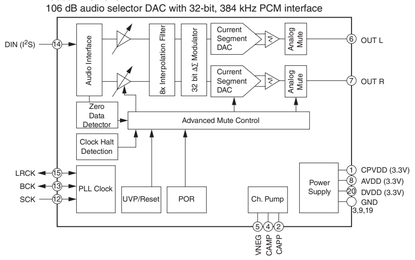


Pin No.	Symbol	Description
1	VOUT	Output Pin
2	GND	Ground Pin
3	CE	Chip Enable Pin
4	NC	No Connection
5	VDD	Input Pin

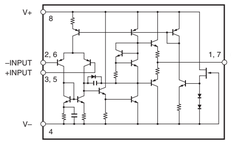
IC309 : TPS2051CDBVR
Power-Distribution Switch



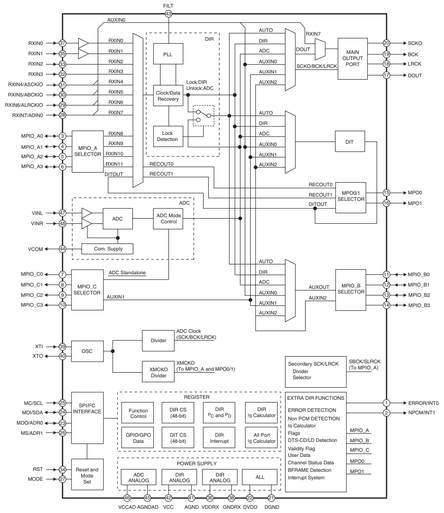
IC303 : PCM5101APWR
106 dB audio selector DAC with 32-bit, 384 kHz PCM interface



IC304: NJM4580E
Dual operational amplifier



IC301: PCM9211PTR
216-kHz digital audio interface transceiver (DIX) with stereo ADC and routing



FUNCTION 1/2

Page 53 K7 to DIGITAL_CB303 — to DIGITAL

Page 53 K6 to DIGITAL_CB304 — to DIGITAL

FFC connector 1.25mm Pitch — to TUNER PACK CB400

FUNC(2) 401-

FUNCTION (2)

DIGITAL IN

ANALOG IN

TUNER

TUNER IN

LINE1 IN

PB LINE2 IN

LINE REC LINE2 OUT

PB LINE3 IN

REC LINE3 OUT

ZONE2

TUNER IN LINE1 IN LINE2 IN LINE3 IN DAC IN

Pos Cir Current:max 60mA
Neg Cir Current:min -60mA

IC402
YD953A0
BD3473KS2

CD IN

MIX OUT

Lch Rch

No replacement part available.

R-S only

A-S701/801 only

Supply Current max 50mA

IC409 HEF4053BT

BtoB

Page 58 G9 to MAIN (1)_CB108

Page 58 B6 to MAIN (1)_CB105

Page 58 B6 to MAIN (1)_CB101

to MAIN(1)

Page 56 F3 to OPERATION (1)_CB801 — FFC connector 1.25mm Pitch — to OPE(1)

Page 53 B3 to DIGITAL_CB301 — FFC connector 1.00mm Pitch — to DIGITAL

FUNC(1) 501- 901-

FUNCTION (1)

MICROPROCESSOR
IC502
YG398A0
R5F3640ECNFA
No replacement part available.
FLASH U-COM:YG398A0
FLASH U-COM(Written by YEM):YG398A0
Power Current:typ 20mA

For Self-Diagnostic Function mode.

to FUNC(3) — BtoB — Page 55 F5 to FUNCTION (3)_CB602

to OPE(3) — Page 56 H5 to OPERATION (3)_W803

to OPE (SubTrans PCB) — Page 57 F7 to OPERATION (8)_CB2

to MAIN(2) — Page 59 J7 to MAIN (2)_CB14

IC402: BD3473KS2
Silicon Monolithic Integrated Circuit)

to OPE for R-S

Page 56 J7 to OPERATION (2)_CB853

to OPE(2)

Page 58 H9 to MAIN (1)_CB109

IC409: HEF4053BT
Triple single-pole double-throw analog switch

from decoder and enable logic

FUNC(4) — to DIODE temperature

Writing port — FFC connector 1.25mm Pitch

IC502: R5F3640ECNFA
CPU core and flash memory

Port P0 Port P1 Port P2 Port P3 Port P4 Port P5 — VCC2 ports

Internal peripheral functions:
- Timer (16 bit) — Outputs (timer A): 5 Inputs (timer B): 6
- Three-phase motor control circuit
- Real-time clock
- PWM function (8 bit x 2)
- Remote control signal receiver (2 circuits)
- Watchdog timer (15 bit)
- A/D converter (10-bit resolution x 26 channels)
- D/A converter (8-bit resolution x 2 circuits)
- UART or clock synchronous serial I/O (6 channels)
- Clock synchronous serial I/O (8 bit x 2 channels)
- Multi-master I²C-bus interface (1 channel)
- CEC function
- System clock generator — XIN-XOUT, XCIN-XCOUT; PLL frequency synthesizer; On-chip oscillator (125 kHz)
- DMAC (4 channels)
- CRC calculator (CRC-CCITT or CRC-16)
- Voltage detector; Power-on reset
- On-chip debugger
- M16C/60 Series CPU core: R0H R0L R1H R1L R2 R3 A0 A1 FB; SB USP ISP INTB PC FLG; Multiplier
- Memory: ROM (1), RAM (2)

VCC1 ports — Port P10 Port P9 Port P8 Port P7 Port P6

Notes:
1. ROM size depends on MCU type.
2. RAM size depends on MCU type.

IC401, 407 : NJM5532M-D
Dual low noise operational amplifier
(B, G models)

A OUTPUT 1, A-INPUT 2, A+INPUT 3, V- 4, V+ 8, B OUTPUT 7, B-INPUT 6, B+INPUT 5

IC401, 407 : NJM2068MD-TE2
Dual operational amplifier
(U, R, A, L models)

OUT1 1, −IN1 2, +IN1 3, −VCC 4, +VCC 8, OUT2 7, −IN2 6, +IN2 5

Destination Part List

xxx	LOC	UKA	B	G	L
s402	C432 C432	UR03J10 100/10 UR03J10 100/10	UR03J22 220/16 UR03J22 220/16	UR03J22 220/16 UR03J22 220/16	UR03J10 100/16 UR03J10 100/16
s403	C431 C430	UR23J10 10/16 UR23J10 10/16	UR23J10 10/16 UR23J10 10/16	UR23J10 10/16 UR23J10 10/16	UR23J10 10/16 UR23J10 10/16
s404	W401	X	WM6570 SCN-XH	WM6570 SCN-XH	X
s405	W404	X	ZP42500	ZP42500	X
s406	IC401 IC407	X3505A0 NJM2068MD-TE2	X9127A0 NJM5532MD-D(TE1)	X9127A0 NJM5532MD-D(TE1)	X3505A0 NJM2068MD-TE2
s407	C409 C470	UR23J10 100/16 UR23J10 100/16	UU26J10 10/50 UU26J10 10/50	UU26J10 10/50 UU26J10 10/50	UR23J10 10/16 UR23J10 10/16
s501	R559	RD35556 560	RD35647 4.7K	RD35627 2.7K	RD35712 12K
s602	IC602 IC603	X3505A0 NJM2068MD-TE2	X9127A0 NJM5532MD-D(TE1)	X9127A0 NJM5532MD-D(TE1)	X3505A0 NJM2068MD-TE2

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
	CARBON FILM RESISTOR (P=10)
	METAL OXIDE FILM RESISTOR
	METAL FILM RESISTOR
	METAL PLATE RESISTOR
	FIRE PROOF CARBON FILM RESISTOR
	CEMENT MOLDED RESISTOR
	SEMI VARIABLE RESISTOR
	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⊣⊢
	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⊣⊢
	CERAMIC TUBULAR CAPACITOR	
	POLYESTER FILM CAPACITOR	
	POLYSTYRENE FILM CAPACITOR	
	MICA CAPACITOR	
	POLYPROPYLENE FILM CAPACITOR	
	SEMICONDUCTIVE CERAMIC CAPACITOR	
	POLYPHENYLENE SULFIDE FILM CAPACITOR	

NOTICE (model)
(J)····· JAPAN
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(E)····· SOUTH EUROPE
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(F)····· RUSSIAN
(P)····· LATIN AMERICA
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(H)····· THAI

★ All voltages are measured with a 10M Ω /V DC electronic voltmeter.
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★ Schematic diagram is subject to change without notice.

Details of colored lines

Red / full line:	Power supply (+)
Red /dashed line:	Power supply (-)
Orange:	Signal detect
Yellow:	Clock
Green:	Protection detect
Brown:	Reset signal
Blue:	Panel key input

Details of colored lines

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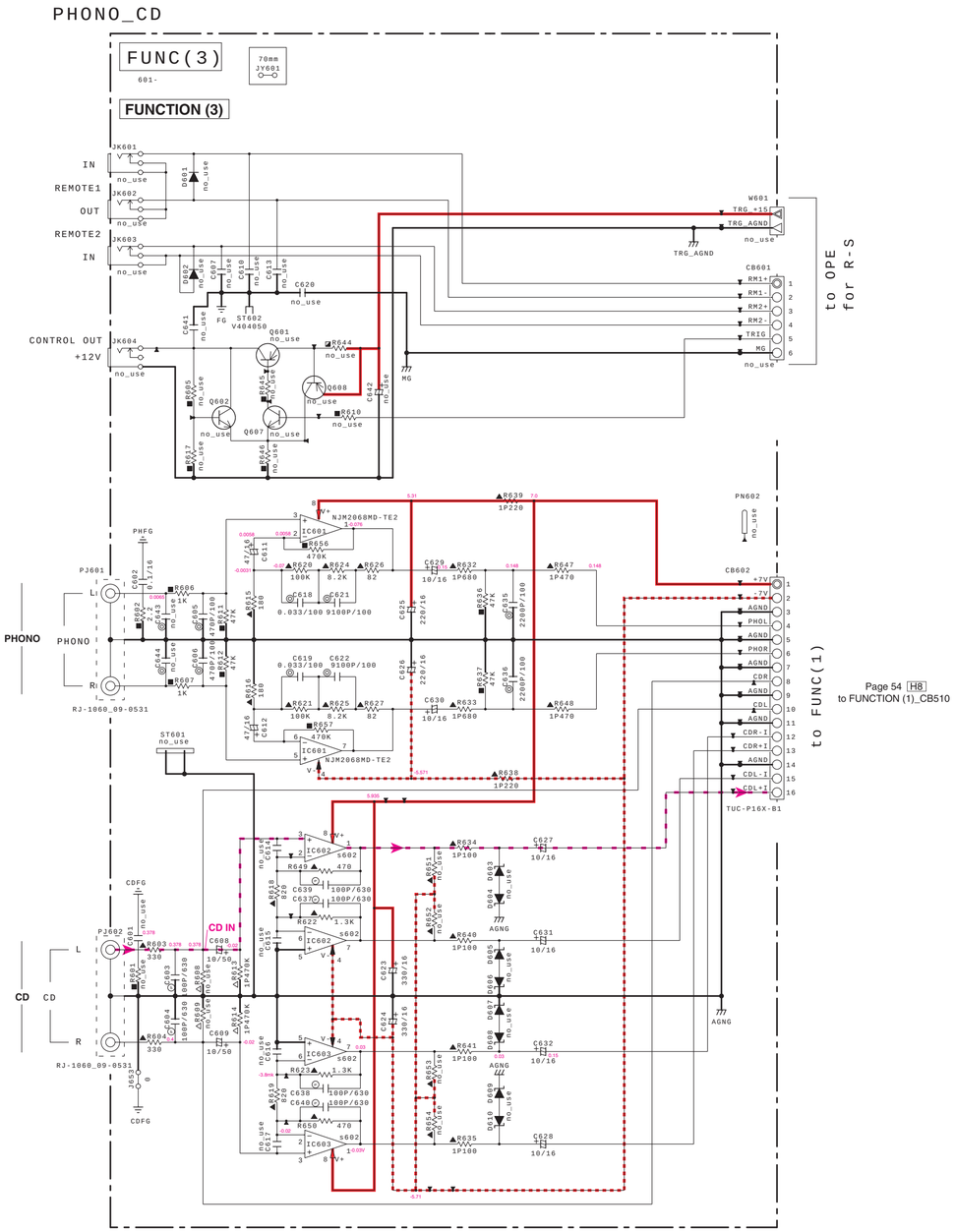
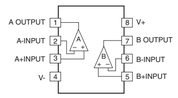
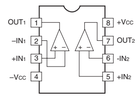
FUNCTION 2/2



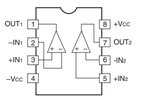
IC602, 603 : NJM5532M-D
Dual low noise operational amplifier
(B, G models)



IC602, 603 : NJM2068MD-TE2
Dual operational amplifier
(U, R, A, L models)



IC601: NJM2068MD-TE2
Dual operational amplifier



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- [P] ····· LATIN AMERICA
- [S] ····· BRAZIL
- [H] ····· THAI

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
▽	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	#
⊗	TANTALUM CAPACITOR	#
NO MARK	CERAMIC CAPACITOR	⫞⫟
◉	CERAMIC TUBULAR CAPACITOR	⫞⫟
◎	POLYESTER FILM CAPACITOR	⫞⫟
○	POLYSTYRENE FILM CAPACITOR	⫞⫟
Ⓘ	MICA CAPACITOR	⫞⫟
Ⓟ	POLYPROPYLENE FILM CAPACITOR	⫞⫟
ⓒ	SEMICONDUCTIVE CERAMIC CAPACITOR	⫞⫟
Ⓐ	POLYPHENYLENE SULFIDE FILM CAPACITOR	⫞⫟

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OPERATION 1/2

FUNC_LED

OPE(1)

OPERATION (1)

INPUT indicators

USB_LED, LINE3_LED, LINE2_LED, LINE1_LED, OPTICAL_LED, COAXIAL_LED, CD_LED, TUNER_LED, PHONO_LED, PURE_DIR_LED, CD_DIR_LED, DSDX2_LED, DSDX1_LED, PCMX8_LED, PCMX4_LED, PCMX2_LED, PCMX1_LED

SEL6910A-CD

IC801 LC709004AMJ-AM

INPUT Selector XRE81250SPV825F

COM B A SW802

INPUT

CD DIRECT SW801

PURE DIRECT SW806

no_use

to FUNC(2) → CB801

Page 54 K2 to FUNCTION (1)_CB505

Page 54 J8 to FUNCTION (1)_CB508

OPERATION (3)

TC

OPE(3)

BASS, TREBLE, BALANCE, LOUDNESS

to FUNC(2)

Page 59 B5 to MAIN (1)_W10

OPERATION (5)

HP

OPE(5)

PHONES

to MAIN(1)

SP A/B

OPE(4) **OPERATION (4)**

SPEAKERS SRBV141408

P_LED

POWER indicator

U801 BODY

OPE(7) **OPERATION (7)**

P_SW

POWER

OPE(6) **OPERATION (6)**

MVOL

OPE(2) **OPERATION (2)**

VOLUME

to FUNC(2)

Page 54 L3 to FUNCTION (1)_W504

IC852 : BH6578FVM
Silicon monolithic integrated circuit

INFWD, INREV, LDCONT, GND_S, Control Logic, PAW CMOS H-Bridge, THERMAL SHUT DOWN, POW GND, Vcc, OUT+, OUT-, GND

IC801 : LC709004AMJ
I/O-Expander for Microcontroller

DIN, CLK, CS, RES, Control logic, Serial/parallel converter/shift register, I/O control/output register, Port 0 I/O buffer, Port 1 I/O buffer, DOUT, VDD, VSS, P00, P07, VDDP1, P10, P17

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RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⏍
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⏀
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
◉	SEMICONDUCTIVE CERAMIC CAPACITOR	
Ⓢ	POLYPHENYLENE SULFIDE FILM CAPACITOR	

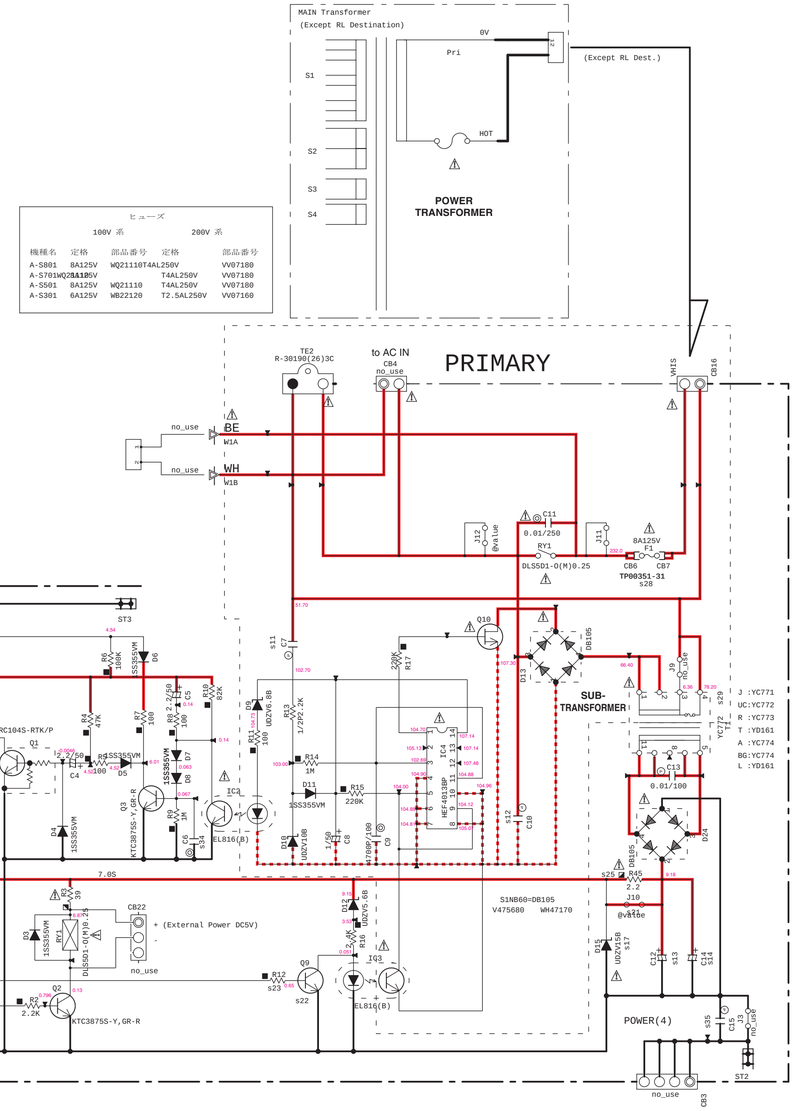
OPERATION 2/2

Destination Part List

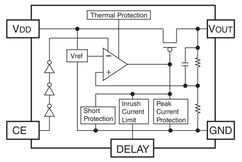
sxx	LOCATION	U	R	ABG	L
s11	C7	WJ36120 0.047/400	WF08150 0.047/630	WF08150 0.047/630	WF08150 0.047/630
s12	C10	WB69630 0.1/400	WF08150 0.047/630	WF08150 0.047/630	WF08150 0.047/630
s13	C12	X	WD04730 3300/50	X	X
s14	C14	UU24933 3300/25	X	UU24933 3300/25	UU24933 3300/25
s17	D15	X	WY16430 UDZV15B	X	X
s21	J10	VN50000 -	X	VN50000 -	VN50000 -
s22	Q9	WC52940 KTC3875S-Y,GR-R	X	WC52940 KTC3875S-Y,GR-R	WC52940 KTC3875S-Y,GR-R
s23	R12	RD35747 47K	X	RD35747 47K	RD35747 47K
s25	R45	X	WW86130 2.2	X	X
s28	F1	WQ21110 8A125V	WQ21110 8A125V	VV07180 4A250V	VV07180 4A250V
s29	T1	YC772A0 YC772	YC773A0 YC773	YC774A0 YC774	YD161A0 YD161
s34	C6	ZD52000 0.01/100	ZD52000 0.01/100	WE10290 0.01/100	ZD52000 0.01/100
s35	C15	ZD51880 1000P/100	ZD51880 1000P/100	WE10170 1000P/100	ZD51880 1000P/100

ヒューズ

	100V 系		200V 系	
機種名	定格	部品番号	定格	部品番号
A-S801	8A125V	WQ21110	T4AL250V	VV07180
A-S701W/2	8A125V		T4AL250V	VV07180
A-S501	8A125V	WQ21110	T4AL250V	VV07180
A-S301	6A125V	WB22120	T2.5AL250V	VV07160



IC1: R1190H050B-T1-FE
Voltage regulator



Pin No.	Symbol	Description
1	VOUT	Output Pin
2	GND	Ground Pin
3	CE	Chip Enable Pin ("H" Active)
4	DELAY	Delay Pin (for setting Inrush Current Limit Time)
5	VDD	Input Pin

NOTICE (model)

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RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
◬	METAL FILM RESISTOR
☒	METAL PLATE RESISTOR
◪	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	⫩
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	⫫
◉	CERAMIC TUBULAR CAPACITOR	
Ⓔ	POLYESTER FILM CAPACITOR	
Ⓢ	POLYSTYRENE FILM CAPACITOR	
Ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
◎	SEMICONDUCTIVE CERAMIC CAPACITOR	
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Yellow:	Clock
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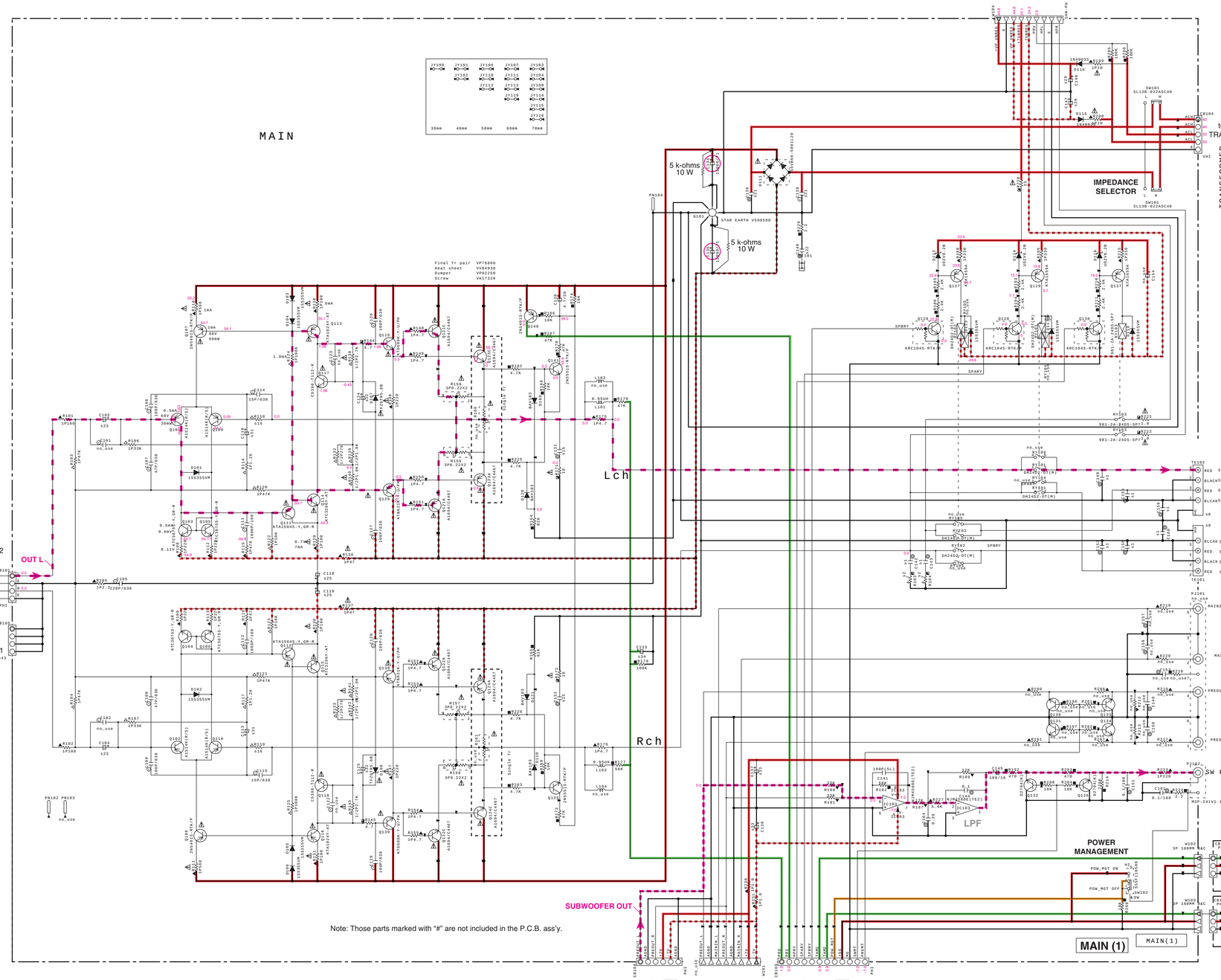
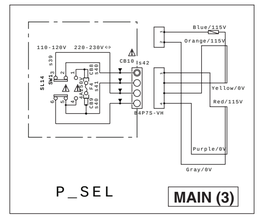
Blue:	Panel key input

MAIN 1/2





Destination Part List

xxx	LOCATION	U	K	A	B	G	L
s1	C142 C143 C148 C152 C155 C158 C159 C160	x	x	ZD52000 0.01/100	ZD52000 0.01/100	ZD52000 0.01/100	ZD52000 0.01/100
s2	R183 R184	X	X	WW86170 4.7	WW86170 4.7	WW86170 4.7	WW86170 4.7
s8	TE102	WU98740 MST-224VD-03-GI	WU98740 MST-224VD-03-GI	WU98740 MST-224VD-03-GI	WU98760 MST-224VD-03-GI	WU98760 MST-224VD-03-GI	WU98760 MST-224VD-03-GI
s9	TE101	WU98730 MST-224VD-02-GI	WU98730 MST-224VD-02-GI	WU98730 MST-224VD-02-GI	WU98750 MST-224VD-02-GI	WU98750 MST-224VD-02-GI	WU98750 MST-224VD-02-GI
s15	C131 C132	ZD52050 0.027/100	ZD52050 0.027/100	ZD52050 0.027/100	WD29970 0.027/100	WD29970 0.027/100	ZD52050 0.027/100
s16	R118 R119	V897260 1P33K	V897260 1P33K	V897260 1P33K	WW46220 1P22K	WW46220 1P22K	V897260 1P33K
s21	C136 C139	ZH99690 0.1/100	ZH99690 0.1/100	ZH99690 0.1/100	WW31470 0.033/100	WW31470 0.033/100	ZH99690 0.1/100
s22	C140	ZD52000 0.01/100	ZD52000 0.01/100	ZD52000 0.01/100	WE10290 0.01/100	WE10290 0.01/100	ZD52000 0.01/100
s23	C103 C104	UR23710 10/16	UR23710 10/16	UR23710 10/16	WW89810 4.7/50	WW89810 4.7/50	UR23710 10/16
s25	C118 C119	UR27847 470/63	UR27847 470/63	UR27847 470/63	UR07847 470/63	UR07847 470/63	UR27847 470/63
s29	C146 C147	UR26710 10/50	UR26710 10/50	UR26710 10/50	UU29733 33/100	UU29733 33/100	UR26710 10/50
s31	C110 C113	UR25810 100/50	UR25810 100/50	UR25810 100/50	UU23810 100/16	UU23810 100/16	UR25810 100/50
s32	C124 C125	UR23747 47/16	UR23747 47/16	UR23747 47/16	UR34810 100/25	UR34810 100/25	UR23747 47/16
s33	C137 C138	UR23747 47/16	UR23747 47/16	UR23747 47/16	UR03810 100/35	UR03810 100/35	UR23747 47/16
s34	C133	UR21810 100/6.3	UR21810 100/6.3	UR21810 100/6.3	UR03810 100/16	UR03810 100/16	UR21810 100/6.3
s39	SW1	X	X	WV38290 SL34	X	X	X
s40	CB8 CB9	X	X	WN10300 TP08351-31	X	X	X
s41	F4	X	X	VV97180 4A250V	X	X	X
s42	CB10	X	X	V937700 B6P7S-VH	X	X	X
s43	CB105	X	X	X	X	VL84480 XH2	VL84480 XH2	X

Note: Those parts marked with “#” are not included in the P.C.B. ass’y.

NOTICE (model)

- (J)····· JAPAN
- (U)····· U.S.A
- (C)····· CANADA
- (R)····· GENERAL
- (T)····· CHINA
- (K)····· KOREA
- (A)····· AUSTRALIA
- (B)····· BRITISH
- (G)····· STANDARD
- (L)····· SINGAPORE
- (E)····· SOUTH EUROPE
- (V)····· TAIWAN
- (F)····· RUSSIAN
- (P)····· LATIN AMERICA
- (S)····· BRAZIL
- (H)····· THAI

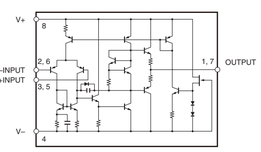
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
▨	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

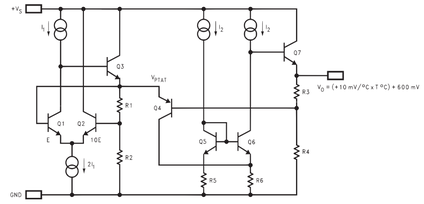
CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	[U]
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	[K]
◉	CERAMIC TUBULAR CAPACITOR	
◎	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
Ⓘ	MICA CAPACITOR	
Ⓟ	POLYPROPYLENE FILM CAPACITOR	
◉	SEMICONDUCTIVE CERAMIC CAPACITOR	
Ⓢ	POLYPHENYLENE SULFIDE FILM CAPACITOR	

IC103: NJM4580E
Dual operational amplifier



IC101, 102: LM61CIZ
Temperature sensor



Safety measures

- Some internal parts in this product contain high voltages and are dangerous. Be sure to take safety measures during servicing, such as wearing insulating gloves.
- Note that the capacitors indicated below are dangerous even after the power is turned off because an electric charge remains and a high voltage continues to exist there.
  Before starting any repair work, connect a discharging resistor (5 k-ohms/10 W) to the terminals of each capacitor indicated below to discharge electricity.
  The time required for discharging is about 30 seconds per each.
  C134, C135 on MAIN (1) P.C.B.

★ All voltages are measured with a 10M Ω /V DC electronic voltmeter.
★ Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

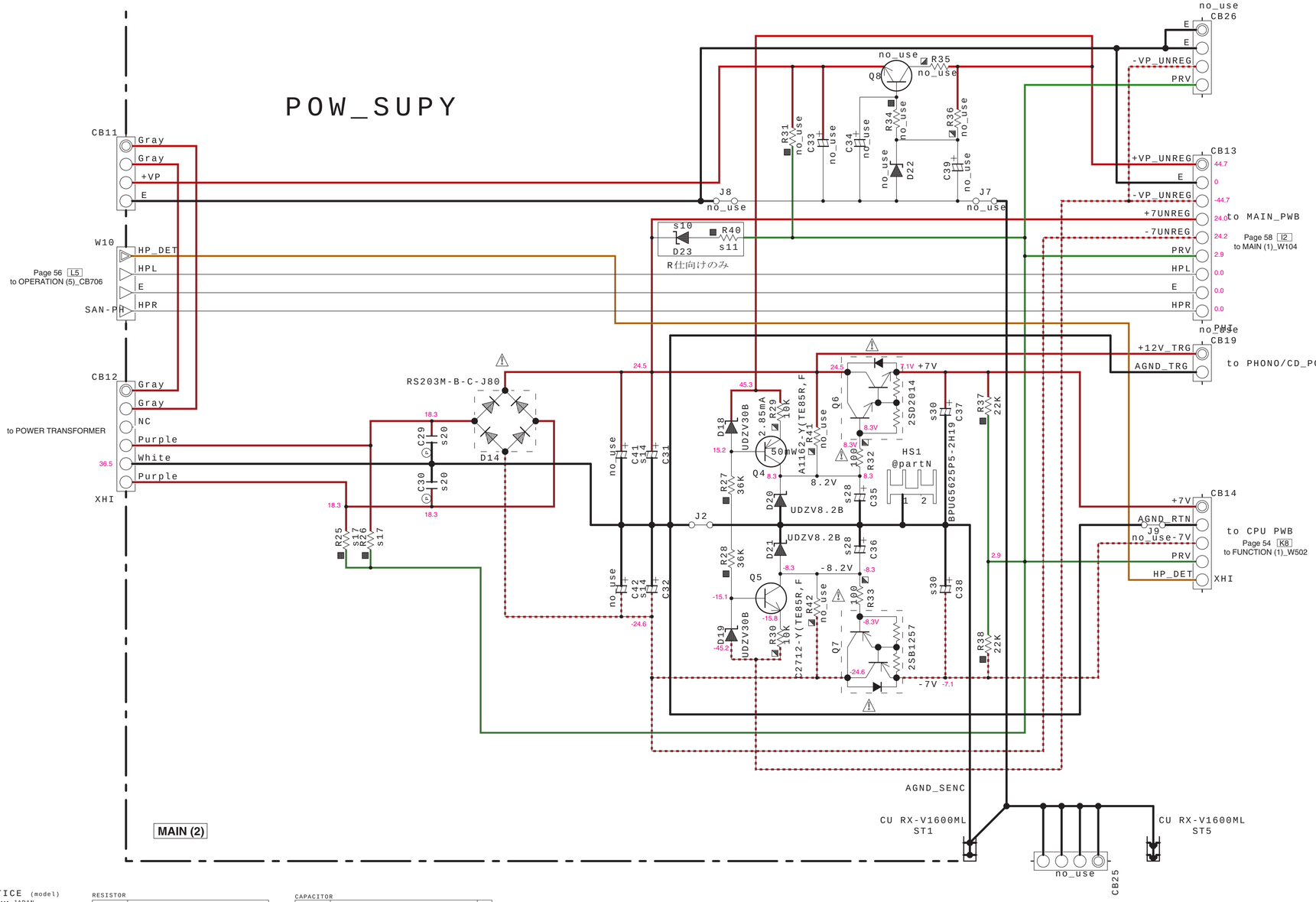
Details of colored lines

Red / full line:	Power supply (+)
Red /dashed line:	Power supply (-)
Orange:	Signal detect
Yellow:	Clock
Green:	Protection detect
Brown:	Reset signal
Blue:	Panel key input

MAIN 2/2

Destination Part List

Sxx	LOCATION	U	R	A	B	G	L
s10	D23	X	WY16500 UDZV30B	X	X	X	X
s11	R40	X	RD35710 10K	X	X	X	X
s14	C31 C32	UR05922 2200/35	UR05922 2200/35	UR05922 2200/35	UR05947 4700/35	UR05947 4700/35	UR05922 2200/35
s17	R25 R26	RD35782 82K	RD35782 82K	RD35782 82K	RF35782 82K	RF35782 82K	RD35782 82K
s20	C29 C30	ZD52000 0.01/100	ZD52000 0.01/100	ZD52000 0.01/100	WE10290 0.01/100	WE10290 0.01/100	ZD52000 0.01/100
s28	C35 C36	UR26710 10/50	UR26710 10/50	UR26710 10/50	UR06710 10/50	UR06710 10/50	UR26710 10/50
s30	C37 C38	UR04833 330/25	UR04833 330/25	UR04833 330/25	UR04847 470/25	UR04847 470/25	UR04833 330/25



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RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
▨	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
▩	METAL PLATE RESISTOR
▨	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊘	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	#
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	##
◉	CERAMIC TUBULAR CAPACITOR	
ⓟ	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
ⓜ	MICA CAPACITOR	
ⓟ	POLYPROPYLENE FILM CAPACITOR	
◉	SEMICONDUCTIVE CERAMIC CAPACITOR	
ⓟ	POLYPHENYLENE SULFIDE FILM CAPACITOR	

★ All voltages are measured with a 10M Ω /V DC electronic voltmeter.
★ Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

Details of colored lines

Red / full line:	Power supply (+)
Red /dashed line:	Power supply (-)
Orange:	Signal detect
Yellow:	Clock
Green:	Protection detect
Brown:	Reset signal
Blue:	Panel key input

■ REPLACEMENT PARTS LIST

• ELECTRICAL COMPONENT PARTS

WARNING

- Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
- The chip resistor is not supplied as a replacement part.
  * When a chip resistor is necessary, use the following part.
    AAX60720: CHIP RESISTOR SAMPLE BOOK

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

C.A.EL.CHP : CHIP ALUMI.ELECTROLYTIC CAP
C.CE : CERAMIC CAP
C.CE.ARRAY : CERAMIC CAP ARRAY
C.CE.CHP : CHIP CERAMIC CAP
C.CE.M.CHP : CHIP MULTILAYER CERAMIC CAP
C.CE.SAFTY : RECOGNIZED CERAMIC CAP
C.CE.TUBLR : CERAMIC TUBULAR CAP
C.CE.SMI : SEMI CONDUCTIVE CERAMIC CAP
C.EL : ELECTROLYTIC CAP
C.EL.BP : BIPOLAR ELECTROLYTIC CAP
C.EL.CHP : CHIP ELECTROLYTIC CAP
C.MICA : MICA CAP
C.ML.FLM : MULTILAYER FILM CAP
C.MP : METALLIZED POLYESTER FILM CAP
C.MYLAR : MYLAR FILM CAP
C.MYLAR.ML : MULTILAYER MYLAR FILM CAP
C.NIOB.OXD : NIOBIUM OXIDE CAP
C.PAPER : PAPER CAPACITOR
C.PLS : POLYSTYRENE FILM CAP
C.POL : POLYESTER FILM CAP
C.PP : POLYPROPYLENE FILM CAP
C.PP.CHP : CHIP POLYPROPYLENE FILM CAP
C.TNTL : TANTALIUM CAP
C.TNTL.CHP : CHIP TANTALIUM CAP
C.TRIM : TRIMMER CAP
CN : CONNECTOR
CN.BS.PIN : CONNECTOR,BASE PIN
CN.CANNON : CONNECTOR,CANNON
CN.DIN : CONNECTOR,DIN
CN.FLAT : CONNECTOR,FLAT CABLE
CN.FFC : CONNECTOR,FLEXIBLE FLAT CABLE
CN.HDMI : HDMI CONNECTOR
CN.PHOTO.R : PHOTO FIBER SENSOR,RECEIVED
CN.PHOTO.T : PHOTO FIBER SENSOR,TRANSMITTED
D.SCHOTTKY : SCHOTTKY BARRIER DIODE
DIODE.ARRAY : DIODE ARRAY
DIODE.BRG : DIODE BRIDGE
DIODE.CHP : CHIP DIODE
DIODE.VAR : VARACTOR DIODE
DIODE.ZENR : ZENER DIODE
DIODE.Z.CHP : CHIP ZENER DIODE
DIODE.PHOT : PHOTO DIODE
FER.BEAD : FERRITE BEADS
FER.CORE : FERRITE CORE
FET.CHP : CHIP FET
FL.DSPLY : FLUORESCENT DISPLAY
FLTR.CE : CERAMIC FILTER
FLTR.COMB : COMB FILTER MODULE
FLTR.LC.RF : LC FILTER,EMI
FUSE.CHP : CHIP FUSE
GND.MTL : GROUND PLATE
GND.TERM : GROUND TERMINAL
JUMPER.CN : JUMPER CONNECTOR
JUMPER.TST : JUMPER,TEST POINT
L.DTCT : LIGHT DETECTING MODULE
LED.CHP : CHIP LED
LED.DSPLY : LED DISPLAY
LED.INFRD : LED,INFRARED
PHOT.CPL : PHOTO COUPLER
PHOT.INTR : PHOTO INTERRUPTER
PHOT.RFLCT : PHOTO REFLECTOR
PHOT.TR : PHOTO TRANSISTOR
PIN.TEST : PIN,TEST POINT
PTC.THERM : POSITIVE TEMPERATURE COEFFICIENT THERMISTOR
R.ANTI.SURGE : FIXED ANTI SURGE RESISTOR
R.ARRAY : RESISTOR ARRAY
R.CAR. : CARBON RESISTOR
R.CAR.CHP : CHIP RESISTOR
R.CAR.FP : FLAME PROOF CARBON RESISTOR
R.CEMENT : CEMENT RESISTOR
R.CHP : CHIP RESISTOR
R.FUS : FUSIBLE RESISTOR
R.MTL.CHP : CHIP METAL FILM RESISTOR
R.MTL.FLM : METAL FILM RESISTOR
R.MTL.OXD : METAL OXIDE FILM RESISTOR
R.MTL.PLAT : METAL PLATE RESISTOR
RSNR.CE : CERAMIC RESONATOR
RSNR.CRYS : CRYSTAL RESONATOR
SCR.BND.HD : BIND HEAD B-TIGHT SCREW
SCR.TERM : SCREW TERMINAL
SCR.TR : SCREW,TRANSISTOR
SURG.PRTCT : SURGE PROTECTOR
SUPRT.PCB : P.C.B. SUPPORT
SW.LEVER : LEVER SWITCH
SW.MICRO : MICRO SWITCH
SW.LEAF : LEAF SWITCH
SW.PUSH : PUSH SWITCH
SW.RT : ROTARY SWITCH
SW.RT.ENC : ROTARY ENCODER
SW.RT.MTR : ROTARY SWITCH WITH MOTOR
SW.SLIDE : SLIDE SWITCH
SW.TACT : TACT SWITCH
TERM.SP : SPEAKER TERMINAL
TERM.WRAP : WRAPPING TERMINAL
THRMST.CHP : CHIP THERMISTOR
TR : TRANSISTOR
TR.CHP : CHIP TRANSISTOR
TR.DGT : DIGITAL TRANSISTOR
TR.DGT.CHP : CHIP DIGITAL TRANSISTOR
TR.PAIR : PAIR TRANSISTOR
TRANS : TRANSFORMER
TRANS.PULS : PULSE TRANSFORMER
TRANS.PWR : POWER TRANSFORMER
VARISTOR.C : CHIP VARISTOR
VOLT.SELCT : VOLTAGE SELECTOR
VR : ROTARY POTENTIOMETER
VR.MTR : POTENTIOMETER WITH MOTOR
VR.SLIDE : SLIDE POTENTIOMETER
VR.SW : POTENTIOMETER WITH SWITCH
VR.TRIM : TRIMMER POTENTIOMETER

P.C.B. DIGITAL

	Ref No.	Part No.	Description		Remarks	Markets
*		ZN157200	P. C. B.	DIGITAL		URAL
*		ZN157300	P. C. B.	DIGITAL		B
*		ZN157400	P. C. B.	DIGITAL		G
	CB301	WA901400	CN	14P SE		
	CB302	WG939700	CN. USB	4P SE		
	CB303	LB919040	CN. BS. PIN	4P		BG
	CB304	VB858500	CN. BS. PIN	6P		
	C301	US035100	C. CE. CHP	0. 1uF 16V B		
	C302	US661120	C. CE. CHP	12pF 50V		
	C303	US661150	C. CE. CHP	15pF 50V		
	C304	US061220	C. CE. CHP	22pF 50V B		
	C305	UB214680	C. CE. CHP	0. 068uF 25V		
	C306	US643470	C. CE. CHP	4700pF 25V		
	C308	US035100	C. CE. CHP	0. 1uF 16V B		
	C309-312	US061220	C. CE. CHP	22pF 50V B		
	C315-316	WG888300	C. CE. M. CHP	10uF 6. 3V		
	C317	US035100	C. CE. CHP	0. 1uF 16V B		
	C319-320	US625100	C. CE. CHP	0. 1uF 10V		
	C321	WG888300	C. CE. M. CHP	10uF 6. 3V		
	C322-323	US126100	C. CE. CHP	1uF 10V		
	C324	UR237100	C. EL	10uF 16V		URAL
	C324	UU237100	C. EL	10uF 16V		BG
	C325-326	US035100	C. CE. CHP	0. 1uF 16V B		
	C327	UU238100	C. EL	100uF 16V		
	C328	ZD520000	C. MYLAR	0. 01uF 100V		URAL
	C328	WE102900	C. PP	0. 01uF 100V J		BG
	C329	WV169100	C. CE. CHP	2. 2uF 10V		
	C330	US035100	C. CE. CHP	0. 1uF 16V B		
	C331	UR237470	C. EL	47uF 16V		URAL
	C331	UR037470	C. EL	47uF 16V		BG
	C332	US035100	C. CE. CHP	0. 1uF 16V B		
	C333	UR237100	C. EL	10uF 16V		URAL
	C333	UU237100	C. EL	10uF 16V		BG
	C334	WV169100	C. CE. CHP	2. 2uF 10V		
*	C335-336	ZD519200	C. MYLAR	2200pF 100V		URAL
	C335-336	WE102100	C. PP	2200pF 100V J		BG
	C337	US035100	C. CE. CHP	0. 1uF 16V B		
	C338	UR238100	C. EL	100uF 16V		URAL
	C338	UR038100	C. EL	100uF 16V		BG
	C339-340	US035100	C. CE. CHP	0. 1uF 16V B		
	C342	UR248220	C. EL	220uF 25V		URAL
	C342	UR048220	C. EL	220uF 25V		BG
	C343-345	US046100	C. CE. CHP	1uF 25V		
	C347	US046100	C. CE. CHP	1uF 25V		
	C348-349	US061220	C. CE. CHP	22pF 50V B		
	C350-351	US035100	C. CE. CHP	0. 1uF 16V B		
	C352	US062120	C. CE. CHP	120pF 50V B		
	C353-354	US061220	C. CE. CHP	22pF 50V B		
	C355	US035100	C. CE. CHP	0. 1uF 16V B		
	C357	US065100	C. CE. CHP	0. 1uF 50V B		
	C358	US035100	C. CE. CHP	0. 1uF 16V B		
	C360	US135100	C. CE. CHP	0. 1uF 16V		

* New Parts

P.C.B. DIGITAL and P.C.B. FUNCTION

	Ref No.	Part No.	Description		Remarks	Markets
	C361	UR237100	C. EL	10uF 16V		URAL
	C361	UU237100	C. EL	10uF 16V		BG
	IC301	YD216A00	IC	PCM9211PTR		
*	IC303	YG390A00	IC	PCM5102APWR		
	IC304	X6143A00	IC	NJM2388F05 5.0V		
	IC305	YC288A00	IC	RP130Q331D-TR-F		
	IC306	YF016A00	IC	RP170H331B-T1-FE		
	IC307	X8385A00	IC	TC7WHU04FK TE85L		
	IC308	X3586B00	IC	TC74VHCT08AFT EL,K		
*	IC309	YG529A00	IC	TPS2051CDBVR		
	PJ301	ZA568100	JACK. PIN	1P MSP-251V-14-GIL		
	Q301	WZ703400	FET	RAL035P01		
	Q302	VV655400	TR. DGT	DTC114EKA		
	R329-330	V8071300	R. MTL. FLM	470 Ω 1W		
	ST301-303	V4040500	SCR. TERM	M3		
	U301	ZF740400	CN. PHOTO. R	1P JSR2165		
	XL301	WS190000	RSNR. CRYS	24.576MHz DSX321G		
		WE774300	SCR. BND. HD	3x8 MFZN2W3		
		WK020500	DAMPER	15x40x2		
*		ZN218200	P. C. B.	FUNCTION		URA
*		ZN218300	P. C. B.	FUNCTION		B
*		ZN218400	P. C. B.	FUNCTION		G
*		ZN218500	P. C. B.	FUNCTION		L
	CB401	V7827700	SOCKET	10P SE TUC SERIES		
	CB402	V7828400	SOCKET	17P SE TUC SERIES		
	CB501	V7826000	CN	10P TE TUC SERIES		
	CB502	V7826700	CN	17P TE TUC SERIES		
	CB505	VN394900	CN. BS. PIN	14P		
	CB508	VB390200	CN. BS. PIN	6P		
	CB509	VQ047200	CN. BS. PIN	9P		
	CB510	V7826600	CN	16P TE TUC SERIES		
	CB517	WE220400	CN. BS. PIN	14P TE		
	CB602	V7828300	SOCKET	16P TE TUC SERIES		
	C402-409	US062220	C. CE. CHP	220pF 50V B		
	C410-413	US062470	C. CE. CHP	470pF 50V B		
	C414-417	UR237100	C. EL	10uF 16V		
	C426-429	WE100500	C. PP	100pF 630V K		
	C430-431	UR237100	C. EL	10uF 16V		URAL
	C430-431	UU237100	C. EL	10uF 16V		BG
	C432-433	UR038100	C. EL	100uF 16V		URAL
	C432-433	UR038220	C. EL	220uF 16V		BG
	C436	US035100	C. CE. CHP	0.1uF 16V B		
	C437	WE101800	C. PP	1200pF 100V J		
	C438	UU237100	C. EL	10uF 16V		
	C439	US035100	C. CE. CHP	0.1uF 16V B		
	C440-441	WZ363500	C. PP	0.047uF 100V		
	C444	UU237100	C. EL	10uF 16V		
	C445-446	WE100300	C. PP	33pF 630V K		
	C447	WE101800	C. PP	1200pF 100V J		

* New Parts

P.C.B. FUNCTION

	Ref No.	Part No.	Description			Remarks	Markets
	C448-449	UR038330	C. EL	330uF	16V		
*	C450-451	WY401300	C. PP	0. 022uF	100V		
	C462-463	WE102900	C. PP	0. 01uF	100V J		
	C467	UR037470	C. EL	47uF	16V		
	C468	US035100	C. CE. CHP	0. 1uF	16V B		
	C469-470	UR238100	C. EL	100uF	16V		URAL
	C469-470	UU267100	C. EL	10uF	50V		BG
	C502-503	US135100	C. CE. CHP	0. 1uF	16V		
	C504	US062100	C. CE. CHP	100pF	50V B		
	C506	UR066220	C. EL	2. 2uF	50V		
	C508	UR066220	C. EL	2. 2uF	50V		
	C509	US062100	C. CE. CHP	100pF	50V B		
	C511	US046100	C. CE. CHP	1uF	25V		
	C514	US062100	C. CE. CHP	100pF	50V B		
	C516	US062100	C. CE. CHP	100pF	50V B		
	C517-518	US135100	C. CE. CHP	0. 1uF	16V		
	C524	US062100	C. CE. CHP	100pF	50V B		
	C527	US135100	C. CE. CHP	0. 1uF	16V		
	C528-529	US062100	C. CE. CHP	100pF	50V B		
	C532-533	US062100	C. CE. CHP	100pF	50V B		
	C535	US064100	C. CE. CHP	0. 01uF	50V B		
	C536	US035100	C. CE. CHP	0. 1uF	16V B		
	C537-540	US062100	C. CE. CHP	100pF	50V B		
	C541	UR019100	C. EL	1000uF	6. 3V		
	C544	UR038100	C. EL	100uF	16V		
	C545-548	US062100	C. CE. CHP	100pF	50V B		
	C559	US062100	C. CE. CHP	100pF	50V B		
	C561	US062100	C. CE. CHP	100pF	50V B		
	C562	UR038220	C. EL	220uF	16V		
	C563	UR038470	C. EL	470uF	16V		
	C570	US063100	C. CE. CHP	1000pF	50V B		
*	C571	UR066330	C. EL	3. 3uF	50V		
	C572	US061470	C. CE. CHP	47pF	50V B		
	C581-583	US135100	C. CE. CHP	0. 1uF	16V		
	C602	US135100	C. CE. CHP	0. 1uF	16V		
	C603-604	WE100500	C. PP	100pF	630V K		
*	C605-606	ZD518400	C. MYLAR	470pF	100V		
	C608-609	UU267100	C. EL	10uF	50V		
	C611-612	UR237470	C. EL	47uF	16V		
*	C618-619	ZD520600	C. MYLAR	0. 033uF	100V		
*	C621-622	ZJ772400	C. MYLAR	9100pF	100V		
	C623-624	UR038330	C. EL	330uF	16V		
	C625-626	UR038220	C. EL	220uF	16V		
	C627-628	UU237100	C. EL	10uF	16V		
	C629-630	UR237100	C. EL	10uF	16V		
	C631-632	UU237100	C. EL	10uF	16V		
*	C635-636	ZD519200	C. MYLAR	2200pF	100V		
	C637-640	WE100500	C. PP	100pF	630V K		
	D501	WY163600	DIODE. ZENR	UDZV7. 5B			
	D502	WY163200	DIODE. ZENR	UDZV5. 1B			
	D506	WY163200	DIODE. ZENR	UDZV5. 1B			
	D508-509	WW783900	DIODE	1SS355VM			

* New Parts

P.C.B. FUNCTION and P.C.B. OPERATION

	Ref No.	Part No.	Description		Remarks	Markets
	D512-515	WW783900	DIODE	1SS355VM		
	IC401	X3505A00	IC	NJM2068MD-TE2		URAL
	IC401	X9127A00	IC	NJM5532M-D		BG
	IC402	YD953A00	IC	BD3473KS2		
	IC407	X3505A00	IC	NJM2068MD-TE2		URAL
	IC407	X9127A00	IC	NJM5532M-D		BG
*	IC409	YG322A00	IC	HEF4053BT		
	IC601	X3505A00	IC	NJM2068MD-TE2		
	IC602-603	X3505A00	IC	NJM2068MD-TE2		URAL
	IC602-603	X9127A00	IC	NJM5532M-D		BG
	PJ401	WH237900	JACK. PIN	6P MSP-246V1-03 GI		
	PJ402	V9796700	JACK. PIN	4P MSP-244V1-03 GI		
	PJ404	WD194900	JACK. PIN	2P RJ-1060_09-0531		
	PJ601-602	WD194900	JACK. PIN	2P RJ-1060_09-0531		
	PN401	WS488500	STYLE. PIN	L=90 #18		
	PN503-505	WS488500	STYLE. PIN	L=90 #18		
	Q411-412	WC883400	TR	2SD2704 K		
	Q413	V3033500	TR. DGT	DTC143XKA		
	Q414	VV655000	TR. DGT	DTA114EKA		
	Q503	VV655200	TR. DGT	DTA143EKA		
	Q505	VV655200	TR. DGT	DTA143EKA		
	Q506	VV655400	TR. DGT	DTC114EKA		
	Q507	WQ381000	FET	MCH6336-TL-E		
	Q510	VV556400	TR	2SC2412K Q, R, S		
	R603-604	WW970500	R. MTL. OXD	330 Ω 1/4W		
	R613-614	V8073200	R. MTL. OXD	470K Ω 1W		
	R632-633	V8071500	R. MTL. FLM	680 Ω 1W J		
	R634-635	V8070900	R. MTL. FLM	100 Ω 1W		
	R638-639	V8071100	R. MTL. FLM	220 Ω 1W		
	R640-641	V8070900	R. MTL. FLM	100 Ω 1W		
	R647-648	V8071300	R. MTL. FLM	470 Ω 1W		
	ST602	V4040500	SCR. TERM	M3		
	SW501	WD483100	SW. TACT	SKRGAAD010		
	TH501	V9760200	THRMST. CHP	NCP18XH103J03RB		
	XL501	WV402100	RSNR. CE	20MHz CSTLS20M0X51		
*		ZN149300	P. C. B.	OPERATION		U
*		ZN149400	P. C. B.	OPERATION		R
*		ZN149500	P. C. B.	OPERATION		ABG
*		ZN149600	P. C. B.	OPERATION		L
	CB2	VB390100	CN. BS. PIN	5P		
	CB6-7	WN103000	CLIP. FUSE	TP00351-31		
⚠	CB16	VG879900	CN. BS. PIN	2P		
	CB17	VB389900	CN. BS. PIN	3P		
	CB21	LB918020	CN. BS. PIN	2P		
	CB706	VB858300	CN. BS. PIN	4P		
	CB801	VF982200	CN. BS. PIN	14P		
	CB808	VB858600	CN. BS. PIN	7P		
	CB853	VB858800	CN. BS. PIN	9P		
	C1	UR237100	C. EL	10uF 16V		

* New Parts

P.C.B. OPERATION

	Ref No.	Part No.	Description		Remarks	Markets
	C2	UR038470	C. EL	470uF 16V		
	C4	UU266220	C. EL	2. 2uF 50V		
	C5	UR266220	C. EL	2. 2uF 50V		
	C6	ZD520000	C. MYLAR	0. 01uF 100V		URL
	C6	WE102900	C. PP	0. 01uF 100V J		ABG
	C7	WJ361200	C. POL. MTL	0. 047uF 400V		U
	C7	WF081500	C. PP	0. 047uF 630V J		RABGL
	C8	UU266100	C. EL	1uF 50V		
*	C9	ZD519600	C. MYLAR	4700pF 100V		
	C10	WB696300	C. POL. MTL	0. 1uF 400V		U
	C10	WF081500	C. PP	0. 047uF 630V J		RABGL
⚠	C11	WQ939400	C. CE. SAFTY	0. 01uF 250V		
	C12	WD047300	C. EL	3300uF 50V		R
	C13	WE102900	C. PP	0. 01uF 100V J		
	C14	UU249330	C. EL	3300uF 25V		
	C14	UU249330	C. EL	3300uF 25V		UABGL
	C15	WE101700	C. PP	1000pF 100V J		ABG
	C15	ZD518800	C. MYLAR	1000pF 100V		URL
	C18	UR239470	C. EL	4700uF 16V		
	C23-24	WH046700	C. CE. M. CHP	4. 7uF 16V		
	C728-730	ZD520000	C. MYLAR	0. 01uF 100V		
	C801-802	US035100	C. CE. CHP	0. 1uF 16V B		
	C811	US035100	C. CE. CHP	0. 1uF 16V B		
	C812	UM397100	C. EL	10uF 16V		
	C813-815	US062100	C. CE. CHP	100pF 50V B		
	C816-817	US035100	C. CE. CHP	0. 1uF 16V B		
	C818	WG888300	C. CE. M. CHP	10uF 6. 3V		
	C831	US035100	C. CE. CHP	0. 1uF 16V B		
	C839	US035100	C. CE. CHP	0. 1uF 16V B		
	C851	US064100	C. CE. CHP	0. 01uF 50V B		
	C853	UR018470	C. EL	470uF 6. 3V		
	C854	UN866100	C. EL. BP	1uF 50V BP		
	C856	US064100	C. CE. CHP	0. 01uF 50V B		
	D1-8	WW783900	DIODE	1SS355VM		
	D9	WY163500	DIODE. ZENR	UDZV6. 8B		
	D10	WY163900	DIODE. ZENR	UDZV10B		
	D11	WW783900	DIODE	1SS355VM		
	D12	WY163300	DIODE. ZENR	UDZV5. 6B		
⚠	D13	WH471700	DIODE. BRG	DB105 1A 600V		
⚠	D15	WY164300	DIODE. ZENR	UDZV15B		R
⚠	D24	WH471700	DIODE. BRG	DB105 1A 600V		
⚠	D26	WK870400	DIODE. BRG	D4SBN20-7101 4A		
	D715-716	WW783900	DIODE	1SS355VM		
	D805-806	WA467800	LED	SEL6910A-CD		
	D809-815	WA467800	LED	SEL6910A-CD		
	D819-820	WA467800	LED	SEL6910A-CD		
	D851-852	WW783900	DIODE	1SS355VM		
⚠	F1	WQ211100	FUSE	8A 125V		UR
	F1	VV071800	FUSE	4A 250V		ABGL
⚠ *	IC1	YD413A00	IC	R1190H050B-T1-FE		
⚠	IC2-3	WJ688100	PHOT. CPL	EL816(B)		
⚠	IC4	YF442A00	IC	HEF4013BP		

* New Parts

P.C.B. OPERATION and P.C.B. MAIN

	Ref No.	Part No.	Description		Remarks	Markets
	IC801	YE686A00	IC	LC709004AMJ-AH		
*	IC852	YD292A00	IC	BH6578FVM-TR		
*	JK701	ZK754000	JACK. PHONE	JY-6355-03-070GD		
	PN851	WS488500	STYLE. PIN	L=90 #18		
	Q1	WC435100	TR. DGT	KRC104S-RTK		
	Q2-3	WC529400	TR	KTC3875S Y GR RTK		
	Q9	WC529400	TR	KTC3875S Y GR RTK		UABGL
⚠	Q10	ZC267500	FET	SFT1440-E		
	Q803	VV655400	TR. DGT	DTC114EKA		
⚠	R3	HF354680	R. CAR	68 Ω 1/2W		
	R13	HF356220	R. CAR	2. 2K Ω 1/2W		
⚠	R18	WH819500	R. FUS	0. 47 Ω 1W		
⚠	R45	WW861300	R. CAR. FP	2. 2 Ω 1/4W		R
	R748-749	V8071300	R. MTL. FLM	470 Ω 1W		
⚠	RY1	WQ804100	RELAY	DC DLS5D1-0(M)0. 25		
	ST2-3	V4040500	SCR. TERM	M3		
	ST701	WG095100	SCR. TERM	M3		
	SW801	WD483100	SW. TACT	SKRGAAD010		
	SW802	WU974300	SW. RT. ENC	XREB12505PVB25FINA		
	SW804	WP187400	SW. RT	SRBV141400		
	SW805	WQ270000	SW. PUSH	SPUN122100		
	SW806	WD483100	SW. TACT	SKRGAAD010		
	T1	YC772A00	TRANS. SUB			U
	T1	YC773A00	TRANS. SUB			R
	T1	YC774A00	TRANS. SUB			ABG
	T1	YD161A00	TRANS			L
⚠	TE2	ZD538700	INLET. AC	2P R-30190(26) CCC		
	U801	WK918500	L. DTCT	GP1UE271RKVF		
*	VR851	ZN318600	VR. SW	RK16811MGA09		
*	VR952-955	ZP472700	VR. ROTALY	B 10K Ω RK11K1140D		
*		ZN139300	P. C. B.	MAIN		U
*		ZN139400	P. C. B.	MAIN		R
*		ZN139500	P. C. B.	MAIN		A
*		ZN139600	P. C. B.	MAIN		B
*		ZN139700	P. C. B.	MAIN		G
*		ZN139800	P. C. B.	MAIN		L
	CB8-9	WN103000	CLIP. FUSE	TP00351-31		R
⚠	CB10	V9377900	CN. BS. PIN	4P		R
	CB12	VL845000	CN. BS. PIN	6P		
	CB13	VB390500	CN. BS. PIN	9P		
	CB14	VL844900	CN. BS. PIN	5P		
	CB101	VB390000	CN. BS. PIN	4P		
	CB104	LB932050	CN. BS. PIN	5P		
	CB105	VL844800	CN. BS. PIN	4P		BG
	CB106-107	VB858200	CN. BS. PIN	3P		
	CB108	VB390200	CN. BS. PIN	6P		
	CB109	VB390800	CN. BS. PIN	12P		
	C29-30	ZD520000	C. MYLAR	0. 01uF 100V		URAL
	C29-30	WE102900	C. PP	0. 01uF 100V J		BG

* New Parts

P.C.B. MAIN

	Ref No.	Part No.	Description		Remarks	Markets
	C31-32	UR059220	C. EL	2200uF 35V		URAL
	C31-32	UR059470	C. EL	4700uF 35V		BG
	C35-36	UR267100	C. EL	10uF 50V		URAL
	C35-36	UR067100	C. EL	10uF 50V		BG
	C37-38	UR048330	C. EL	330uF 25V		URAL
	C37-38	UR048470	C. EL	470uF 25V		BG
	C103-104	UR237100	C. EL	10uF 16V		URAL
	C103-104	WM098100	C. EL	4. 7uF 50V		BG
	C105	WE100900	C. PP	220pF 630V K		
	C106	WE100500	C. PP	100pF 630V K		
	C107-108	WE100400	C. PP	47pF 630V K		
	C109	WE100500	C. PP	100pF 630V K		
	C110	UR268100	C. EL	100uF 50V		URAL
	C110	UU238100	C. EL	100uF 16V		BG
	C111-112	WE101700	C. PP	1000pF 100V J		
	C113	UR268100	C. EL	100uF 50V		URAL
	C113	UU238100	C. EL	100uF 16V		BG
	C114-115	WE100100	C. PP	15pF 630V K		
	C118-119	UR278470	C. EL	470uF 63V		URAL
	C118-119	UR078470	C. EL	470uF 63V		BG
	C124-125	UR237470	C. EL	47uF 16V		URAL
	C124-125	UR348100	C. EL	100uF 25V		BG
	C126-129	WE100500	C. PP	100pF 630V K		
	C130	UR266470	C. EL	4. 7uF 50V		
*	C131-132	ZD520500	C. MYLAR	0. 027uF 100V		URAL
	C131-132	WQ209700	C. PP	0. 027uF 100V		BG
	C133	UR218100	C. EL	100uF 6. 3V		URAL
	C133	UR038100	C. EL	100uF 16V		BG
	C134-135	WJ788600	C. EL	12000uF 71V		
	C136	ZH996900	C. MYLAR	0. 1uF 100V		URAL
	C136	WW314700	C. PP	0. 033uF 100V		BG
	C137	UR038100	C. EL	100uF 16V		BG
	C137-138	UR237470	C. EL	47uF 16V		URAL
	C138	UR038100	C. EL	100uF 16V		BG
	C139	ZH996900	C. MYLAR	0. 1uF 100V		URAL
	C139	WW314700	C. PP	0. 033uF 100V		BG
	C140	ZD520000	C. MYLAR	0. 01uF 100V		URAL
	C140	WE102900	C. PP	0. 01uF 100V J		BG
	C141	US062100	C. CE. CHP	100pF 50V B		
	C142-143	ZD520000	C. MYLAR	0. 01uF 100V		ABGL
	C144	VR168300	C. MYLAR	0. 1uF 50V		
	C145	UR238100	C. EL	100uF 16V		
	C146-147	UR267100	C. EL	10uF 50V		URAL
	C146-147	UU297330	C. EL	33uF 100V		BG
	C148	ZD520000	C. MYLAR	0. 01uF 100V		ABGL
	C151	ZH996900	C. MYLAR	0. 1uF 100V		
	C152	ZD520000	C. MYLAR	0. 01uF 100V		ABGL
	C155-156	ZD520000	C. MYLAR	0. 01uF 100V		ABGL
	C159-160	ZD520000	C. MYLAR	0. 01uF 100V		ABGL
	C161	ZH996900	C. MYLAR	0. 1uF 100V		
	C162-163	US135100	C. CE. CHP	0. 1uF 16V		
	C164	VR169100	C. MYLAR	0. 39uF 50V		

* New Parts

P.C.B. MAIN

	Ref No.	Part No.	Description		Remarks	Markets
⚠	D14	WH487300	DIODE. BRG	RS203M 2.0A 200V		
	D18-19	WY165000	DIODE. ZENR	UDZV30B		
	D20-21	WY163700	DIODE. ZENR	UDZV8.2B		
	D23	WY165000	DIODE. ZENR	UDZV30B		R
	D101-106	WW783900	DIODE	1SS355VM		
⚠ *	D107-108	ZA384100	DIODE. ZENR	TFZGTR5.6B 5.6V		
	D109-110	ZA984400	DIODE	BAV103		
⚠	D111	WV189000	DIODE. BRG	S5VB60 3.5A 600V		
	D112	WY163700	DIODE. ZENR	UDZV8.2B		
	D113	WW783900	DIODE	1SS355VM		
	D114	WY163700	DIODE. ZENR	UDZV8.2B		
	D115-116	WU201600	DIODE	1N4003S TP		
⚠	D117	WW783900	DIODE	1SS355VM		
	D118	WY163700	DIODE. ZENR	UDZV8.2B		
	D119	WW783900	DIODE	1SS355VM		
	D120-121	ZA984400	DIODE	BAV103		
⚠	F4	VV071800	FUSE	4A 250V		R
	G101	V5995800	PLATE. GND			
	IC101-102	X0515B00	IC	LM61CIZ THERMAL		
	IC103	X2331A00	IC	NJM4580E OP AMP		
	PJ102	WU849800	JACK. PIN	1P MSP-241V1-10-GI		
	Q4	VJ927200	TR	2SA1162-Y(TE85R,F)		
	Q5	VJ927100	TR	2SC2712-Y(TE85R,F)		
⚠	Q6	WF691400	TR	2SD2014		
⚠	Q7	WF691300	TR	2SB1257		
	Q101-102	WD896300	TR	2SA1514K R,S		
	Q103-106	WC529400	TR	KTC3875S Y GR RTK		
⚠	Q107-108	WC397600	TR	2N5401S-RTK/P		
	Q109-110	WD896300	TR	2SA1514K R,S		
⚠	Q111-112	WC529500	TR	KTA1504S Y GR RTK		
⚠	Q113	WH409600	TR	KTA1024Y-AT/P		
⚠	Q114-115	WC292200	TR	KTC3206Y-AT		
⚠	Q116	WH409600	TR	KTA1024Y-AT/P		
⚠ *	Q117-118	ZD374700	TR	2SC5398 R T112		
⚠ *	Q119	ZG214200	TR	KTD600K-Y-U/PH		
⚠ *	Q120	ZG214100	TR	KTB631K Y,GR		
⚠ #	Q121-124	VP768600	TR. PAIR	2SA1694/C4467 OPY		
	Q125	WC398300	TR	2N5551S-RTK/P		
	Q126	WC435100	TR. DGT	KRC104S-RTK		
	Q127	WW510000	TR	KTA1659A-Y-U/PF		
	Q128	WC435100	TR. DGT	KRC104S-RTK		
	Q129	WW510000	TR	KTA1659A-Y-U/PF		
	Q132	WC883400	TR	2SD2704 K		
	Q135	WC883400	TR	2SD2704 K		
	Q136	WC435100	TR. DGT	KRC104S-RTK		
	Q137	WW510000	TR	KTA1659A-Y-U/PF		
⚠ *	Q138	ZG214100	TR	KTB631K Y,GR		
⚠ *	Q139	ZG214200	TR	KTD600K-Y-U/PH		
	Q140	WC397600	TR	2N5401S-RTK/P		
	Q141	WC398300	TR	2N5551S-RTK/P		
	R29-30	WW866000	R. CAR. FP	10K Ω 1/4W		
⚠	R32-33	WW863300	R. CAR. FP	100 Ω 1/4W		

* New Parts

Note: Those parts marked with "#" are not included in the P.C.B. ass'y.

P.C.B. MAIN

	Ref No.	Part No.	Description		Remarks	Markets
	R101-102	V8070900	R. MTL. FLM	100 Ω 1W		
	R103-104	V8072700	R. MTL. OXD	47K Ω 1W J		
	R105	V8070100	R. MTL. FLM	2.2 Ω 1W		
	R106-107	V8072600	R. MTL. OXD	33K Ω 1W		
	R108-109	V8071100	R. MTL. FLM	220 Ω 1W		
⚠	R110-111	V8071400	R. MTL. FLM	560 Ω 1W		
	R112-113	V8071100	R. MTL. FLM	220 Ω 1W		
	R114	WA622000	R. MTL. OXD	1.2K Ω 1W		
	R115-116	V8071300	R. MTL. FLM	470 Ω 1W		
	R117	WA622000	R. MTL. OXD	1.2K Ω 1W		
	R118-119	V8072600	R. MTL. OXD	33K Ω 1W		URAL
	R118-119	WN462200	R. MTL. OXD	33K Ω 1W		BG
	R120-121	V8072700	R. MTL. OXD	47K Ω 1W J		
	R122-123	V8072300	R. MTL. OXD	10K Ω 1W		
	R124-125	V8073000	R. MTL. OXD	100K Ω 1W		
⚠	R128-131	V8070900	R. MTL. FLM	100 Ω 1W		
	R132-133	HL005270	R. MTL. OXD	270 Ω 1/2W		
⚠	R136-137	V8070700	R. MTL. FLM	47 Ω 1W		
⚠	R138	HL006270	R. MTL. OXD	2.7K Ω 1/2W		
⚠	R139-142	HL006100	R. MTL. OXD	1K Ω 1/2W		
⚠	R143	HL006270	R. MTL. OXD	2.7K Ω 1/2W		
	R144-145	WW861700	R. CAR. FP	4.7 Ω 1/4W		
⚠	R146-147	V8071100	R. MTL. FLM	220 Ω 1W		
	R148-155	V8070200	R. MTL. FLM	4.7 Ω 1W		
⚠	R156-159	V3873200	R. CEMENT	0.22 Ω 3W		
⚠	R171-172	WW862100	R. CAR. FP	10 Ω 1/4W		
	R175-176	V8070200	R. MTL. FLM	4.7 Ω 1W		
	R183-184	WW861700	R. CAR. FP	4.7 Ω 1/4W		ABGL
	R188	V8071200	R. MTL. OXD	330 Ω 1W J		
	R195	V8071200	R. MTL. OXD	330 Ω 1W J		
⚠	R199-200	V8070300	R. MTL. FLM	10 Ω 1W		
	R215	V8071200	R. MTL. OXD	330 Ω 1W J		
⚠	R221-222	WW861100	R. CAR. FP	1 Ω 1/4W		
	R223	V8071100	R. MTL. FLM	220 Ω 1W		
⚠	R228	WW862700	R. CAR. FP	33 Ω 1/4W		
	R230-231	V8070000	R. MTL. FLM	1 Ω 1W		
	RY101-102	VK438300	RELAY	DH24D2-0T/M2		
	RY103	WJ122400	RELAY	981-2A-24DS-SP7		
	ST1	WG095100	SCR. TERM	M3		
	ST5	WG095100	SCR. TERM	M3		
	ST101	V4040500	SCR. TERM	M3		
	ST102-103	WA246200	SCR. TERM	3.5		
⚠	SW1	WV382900	SW. SLIDE	SL14		R
	SW101	V4104200	SW. SLIDE	SL13B-022-AMCS		
	SW102	VF541200	SW. SLIDE	SSSF11		
	TE101	WU987300	TERM. SP	4P MST-224VD-02		URA
	TE101	WU987500	TERM. SP	4P MST-224VD-02		BGL
	TE102	WU987400	TERM. SP	4P MST-224VD-03		URA
	TE102	WU987600	TERM. SP	4P MST-224VD-03		BGL
		WE774300	SCR. BND. HD	3x8 MFZN2W3		
		WN440100	DAMPER	15x80 t=2		BG

* New Parts

Carbon Resistors

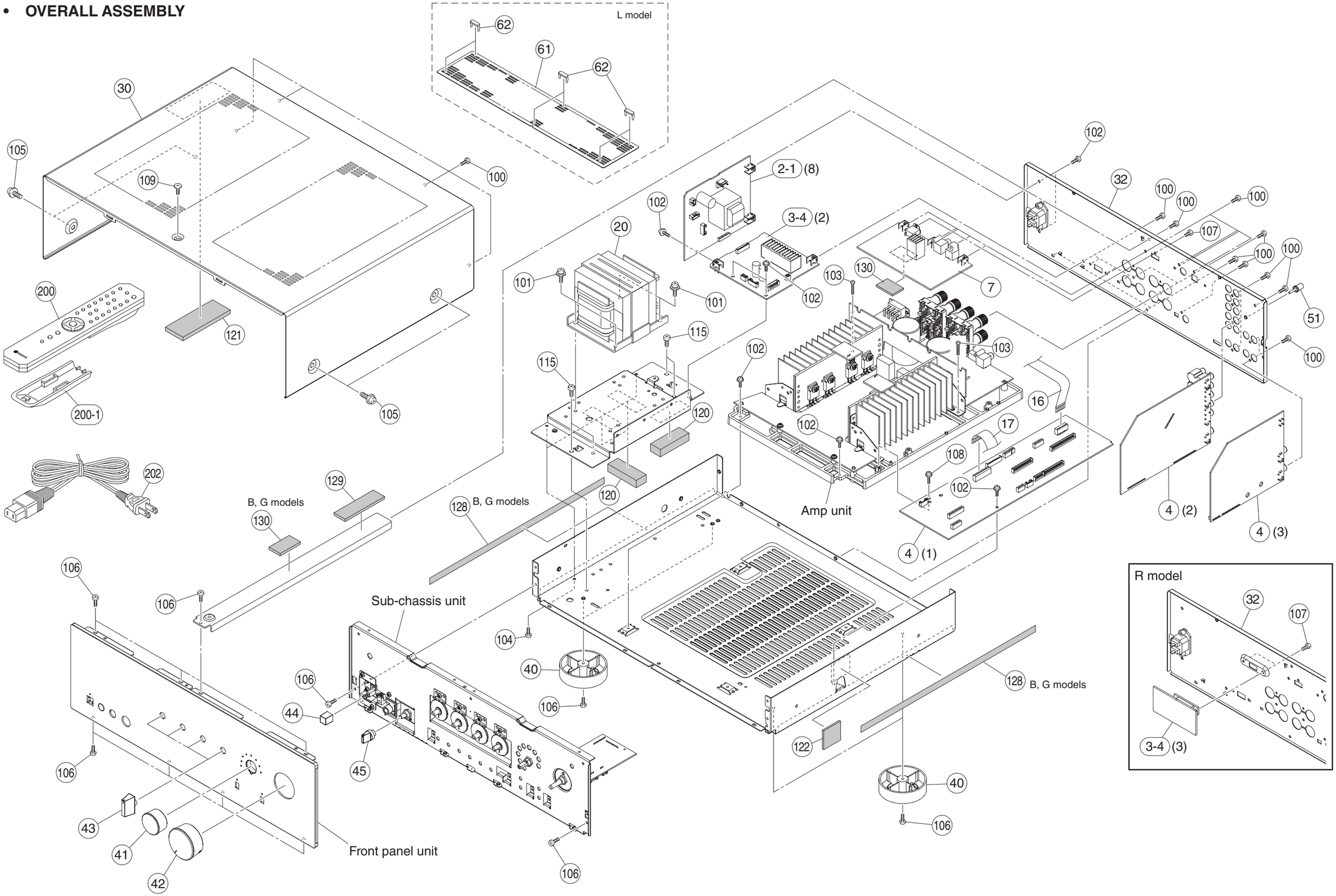
Value	**1/4W** Type Part No.	**1/6W** Type Part No.	Value	**1/4W** Type Part No.	**1/6W** Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	11 kΩ	HF45 7110	HF45 7110
1.8 Ω	HJ35 3180	✻	12 kΩ	HJ35 7120	HF85 7120
2.2 Ω	HJ35 3220	HF85 3220	13 kΩ	HF45 7130	HF45 7130
3.3 Ω	HJ35 3330	HF85 3330	15 kΩ	HF45 7150	HF45 7150
4.7 Ω	HJ35 3470	HF85 3470	18 kΩ	HF45 7180	HF45 7180
5.6 Ω	HJ35 3560	HF85 3560	22 kΩ	HF45 7220	HF45 7220
10 Ω	HF45 4100	HF45 4100	24 kΩ	HF45 7240	HF45 7240
15 Ω	HJ35 4150	HF85 4150	27 kΩ	HJ35 7270	HF85 7270
22 Ω	HF45 4220	HF45 4220	30 kΩ	HF45 7300	HF45 7300
27 Ω	HJ35 4270	HF85 4270	33 kΩ	HF45 7330	HF45 7330
33 Ω	HF45 4330	HF45 4330	36 kΩ	HF45 7360	HF45 7360
39 Ω	HJ35 4470	HF85 4390	39 kΩ	HF45 7390	HF45 7390
47 Ω	HF45 4470	HF45 4470	47 kΩ	HF45 7470	HF45 7470
56 Ω	HF45 4560	HF45 4560	51 kΩ	HF45 7510	HF45 7510
68 Ω	HF45 4680	HF45 4680	56 kΩ	HF45 7560	HF45 7560
75 Ω	HF45 4750	HF45 4750	62 kΩ	HF45 7620	HF45 7620
82 Ω	HF45 4820	HF45 4820	68 kΩ	HF45 7680	HF45 7680
91 Ω	HF45 4910	HF45 4910	82 kΩ	HF45 7820	HF45 7820
100 Ω	HF45 5100	HF45 5100	91 kΩ	HF45 7910	HF45 7910
110 Ω	HJ35 5110	HF85 5110	100 kΩ	HF45 8100	HF45 8100
120 Ω	HF45 5120	HF45 5120	110 kΩ	HF45 8110	HF45 8110
150 Ω	HF45 5150	HF45 5150	120 kΩ	HF45 8120	HF45 8120
160 Ω	HJ35 5160	✻	130 kΩ	HF45 8130	✻
180 Ω	HF45 5180	HF45 5180	150 kΩ	HF45 8150	HF45 8150
200 Ω	HF45 5200	HF45 5200	180 kΩ	HF45 8180	HF45 8180
220 Ω	HF45 5220	HF45 5220	220 kΩ	HJ35 8220	HF85 8220
270 Ω	HF45 5270	HF45 5270	270 kΩ	HF45 8270	HF45 8270
330 Ω	HF45 5330	HF45 5330	300 kΩ	HF45 8300	HF45 8300
390 Ω	HF45 5390	HF45 5390	330 kΩ	HF45 8330	HF45 8330
430 Ω	HF45 5430	HF45 5430	390 kΩ	HJ35 8390	HF85 8390
470 Ω	HF45 5470	HF45 5470	470 kΩ	HF45 8470	HF45 8470
510 Ω	HF45 5510	HF45 5510	560 kΩ	HJ35 8560	HF85 8560
560 Ω	HF45 5560	HF45 5560	680 kΩ	HJ35 8680	HF85 8680
680 Ω	HF45 5680	HF45 5680	820 kΩ	HJ35 8820	HF85 8820
820 Ω	HF45 5820	HF45 5820	1.0 MΩ	HF45 9100	HF45 9100
910 Ω	HF45 5910	HF45 5910	1.2 MΩ	HJ35 9120	✻
1.0 kΩ	HF45 6100	HF45 6100	1.5 MΩ	HJ35 9150	HF85 9150
1.2 kΩ	HF45 6120	HF45 6120	1.8 MΩ	HJ35 9180	HF85 9180
1.5 kΩ	HF45 6150	HF45 6150	2.2 MΩ	HJ35 9220	HF85 9220
1.8 kΩ	HF45 6180	HF45 6180	3.3 MΩ	HJ35 9330	HF85 9330
2.0 kΩ	HJ35 6200	HF85 6200	3.9 MΩ	HJ35 9390	✻
2.2 kΩ	HF45 6220	HF45 6220	4.7 MΩ	HJ35 9470	HF85 9470
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270			
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			
10 kΩ	HF45 7100	HF45 7100			

1/4W Type
HJ35
10mm

1/4W Type
HF45
1/6W Type
HF85
5mm

✻ : Not available

• OVERALL ASSEMBLY



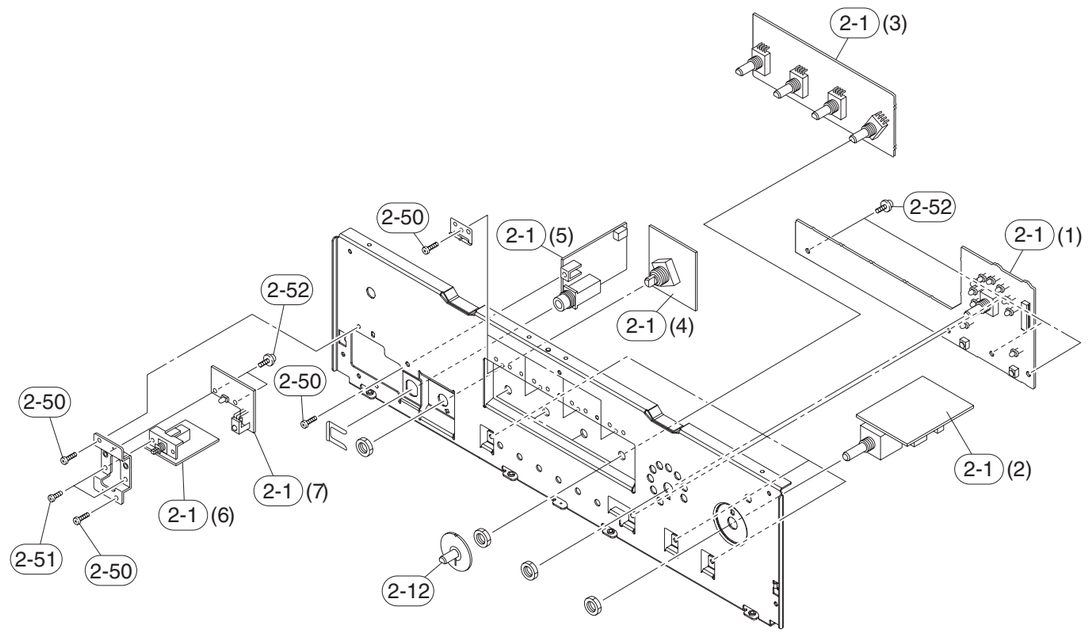
	Ref No.	Part No.	Description		Remarks	Markets
*	2-1	ZN149300	P.C.B. ASSEMBLY	OPERATION		U
*	2-1	ZN149400	P.C.B. ASSEMBLY	OPERATION		R
*	2-1	ZN149500	P.C.B. ASSEMBLY	OPERATION		ABG
*	2-1	ZN149600	P.C.B. ASSEMBLY	OPERATION		L
*	3-4	ZN139300	P.C.B. ASSEMBLY	MAIN		U
*	3-4	ZN139400	P.C.B. ASSEMBLY	MAIN		R
*	3-4	ZN139500	P.C.B. ASSEMBLY	MAIN		A
*	3-4	ZN139600	P.C.B. ASSEMBLY	MAIN		B
*	3-4	ZN139700	P.C.B. ASSEMBLY	MAIN		G
*	3-4	ZN139800	P.C.B. ASSEMBLY	MAIN		L
*	4	ZN218200	P.C.B. ASSEMBLY	FUNCTION		UA
*	4	ZN218300	P.C.B. ASSEMBLY	FUNCTION		B
*	4	ZN218400	P.C.B. ASSEMBLY	FUNCTION		G
*	4	ZN218500	P.C.B. ASSEMBLY	FUNCTION		L
*	7	ZN157200	P.C.B. ASSEMBLY	DIGITAL		UAL
*	7	ZN157300	P.C.B. ASSEMBLY	DIGITAL		B
*	7	ZN157400	P.C.B. ASSEMBLY	DIGITAL		G
*	16	MFA14200	FLEXIBLE FLAT CABLE	14P 200mm P=1.0		
	17	MF114300	FLEXIBLE FLAT CABLE	14P 300mm P=1.25		
⚠	20	YC884A00	POWER TRANSFORMER			U
⚠	20	YC885A00	POWER TRANSFORMER			R
⚠	20	YC886A00	POWER TRANSFORMER			AL
⚠	20	YC887A00	POWER TRANSFORMER			BG
	30	WQ616500	TOP COVER		BL	
	30	WQ616600	TOP COVER		SI	
*	32	ZM212000	REAR PANEL			U
*	32	ZM212500	REAR PANEL			R
*	32	ZM212100	REAR PANEL			A
*	32	ZM212200	REAR PANEL			BG
*	32	ZM212400	REAR PANEL			L
	40	WT6113I0	LEG	D60 H21 Black		
*	41	ZM213400	KNOB	D30 INPUT SELECTOR	BL	
*	41	ZM213500	KNOB	D30 INPUT SELECTOR	SI	
*	42	ZM213600	KNOB	D44 VOLUME	BL	
*	42	ZM213700	KNOB	D44 VOLUME	SI	
	43	WP083200	KNOB	BASS/TREBLE/BAL./LOUD.	BL	
	43	WP083100	KNOB	BASS/TREBLE/BAL./LOUD.	SI	
	44	ZJ461100	CAP	POWER	BL	
	44	ZJ461000	CAP	POWER	SI	
	45	WP083600	KNOB	SPEAKERS OFF/A/B/A+B	BL	
	45	WP083500	KNOB	SPEAKERS OFF/A/B/A+B	SI	
	51	AA627310	GROUND TERMINAL			
	61	ZP323900	SHEET	TOP COVER	BL	L
*	61	ZN274000	SHEET	TOP COVER	SI	L
	62	ZH306700	RIVET	TOP COVER	BL	L
	62	WJ053800	RIVET	TOP COVER	SI	L
	100	WE774100	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2B3		
	101	WU048900	BIND HEAD S-TIGHT SCREW	4x10 MFZN2W3		
	102	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3		
	103	WE973300	BIND HEAD B-TIGHT SCREW	3x16 MFZN2B3		
	104	WF821300	BIND HEAD S-TIGHT SCREW	4x7 MFZN2W3		
	105	VH313200	PW HEAD S-TIGHT SCREW	4x8-10 MFNI3BL	BL	

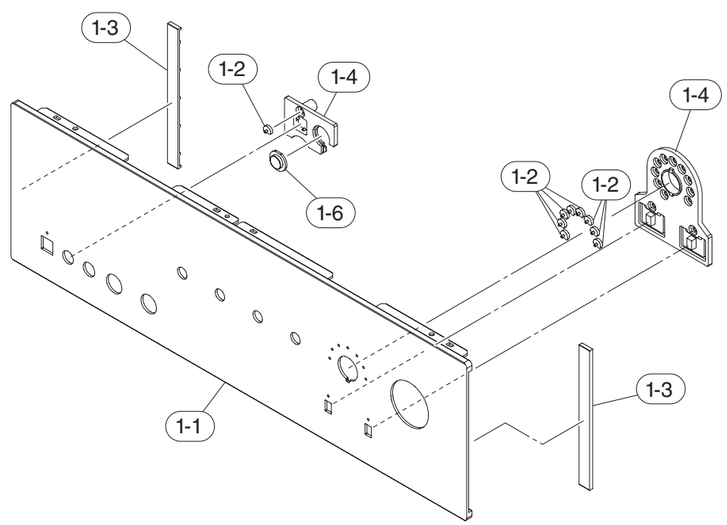
* New Parts

	Ref No.	Part No.	Description			Remarks	Markets
	105	VD069600	PW HEAD S-TIGHT SCREW	4x8-10	MFNI33	SI	
	106	WE774300	BIND HEAD B-TIGHT SCREW	3x8	MFZN2W3		
	107	WE877900	BIND HEAD S-TIGHT SCREW	3x6	MFZN2W3		
	108	VB770200	PW HEAD P-TIGHT SCREW	3x10-8	MFC2		
	109	WE200500	DISH HEAD B-TIGHT SCREW	3x6	MFNI3BL	BL	
	109	WE200400	DISH HEAD B-TIGHT SCREW	3x6	MFNI33	SI	
*	115	ZK590300	BIND S-TIGHT SCREW	4x10 SP	MFZN2W3		
	120	WQ790900	DAMPER	15x35x10			
	121	WT770800	DAMPER	30x90x8			
	122	WU538200	DAMPER	30x30x3			
	128	WQ621800	DAMPER	2x10x310			BG
	129	WQ962100	DAMPER	20x70x3			
	130	V9597500	DAMPER BASE	36x20X3			
			ACCESSORIES				
*	200	ZN043000	REMOTE CONTROL	RAS14		RC-70601@01-0002	
	200-1	AAX13340	BATTERY COVER			BLJYE 60050001	
⚠	202	WK991800	POWER CABLE	2m 1pc			U
⚠	202	WK391000	POWER CABLE	2m 1pc			R
⚠	202	WB750900	POWER CABLE	2m 1pc			A
⚠	202	WQ749200	POWER CABLE	2m 1pc			BL
⚠	202	WK991900	POWER CABLE	2m 1pc			G
			BATTERY	R6, AA, UM-3 2pcs			

* New Parts

• FRONT PANEL UNIT and SUB-SHASSIS UNIT

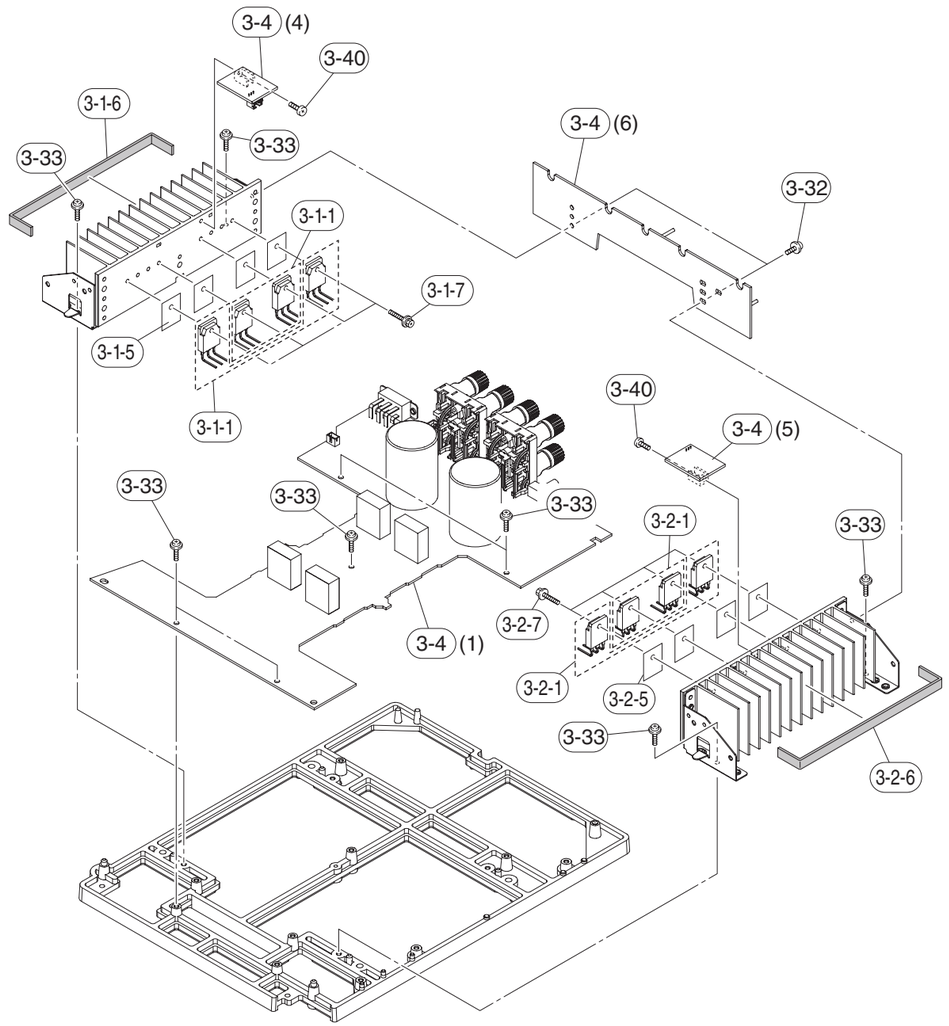




	Ref No.	Part No.	Description		Remarks	Markets
*	1-1	ZM209400	FRONT PANEL		BL	
*	41640	ZM209500	FRONT PANEL		SI	
	1-2	WP080600	LENS			
	1-3	WP081200	SIDE PLATE		BL	
	1-3	WP081100	SIDE PLATE		SI	
*	1-4	ZM601300	LENS SUPPORT		SI	
*	1-4	ZM601200	LENS SUPPORT		BL	
	1-6	WK863700	LENS	PURPLE, REMOTE CONTROL	BL	
	1-6	WK863600	LENS	MEDIUM, REMOTE CONTROL	SI	
*	2-1	ZN149300	P.C.B. ASSEMBLY	OPERATION		U
*	2-1	ZN149400	P.C.B. ASSEMBLY	OPERATION		R
*	2-1	ZN149500	P.C.B. ASSEMBLY	OPERATION		ABG
*	2-1	ZN149600	P.C.B. ASSEMBLY	OPERATION		L
	2-12	WP083300	DISC	TONE CONTROL		
	2-50	WE774300	BIND HEAD B-TIGHT SCREW	3x8 MFZN2W3		
	2-51	WE877900	BIND HEAD S-TIGHT SCREW	3x6 MFZN2W3		
	2-52	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3		

* New Parts

• AMP UNIT



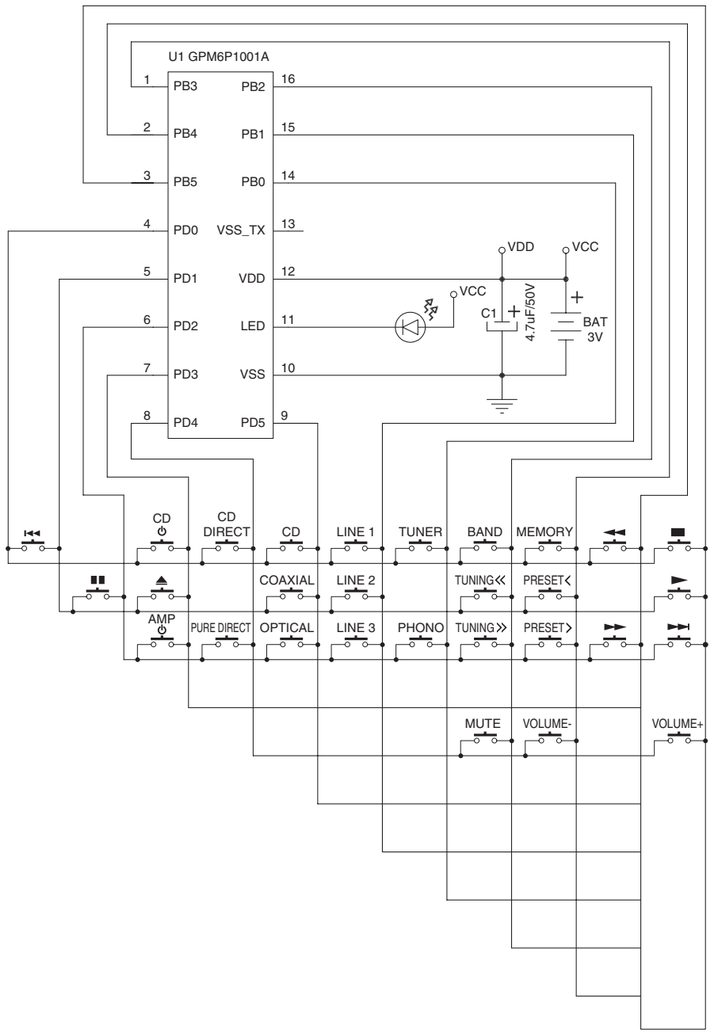
	Ref No.	Part No.	Description		Remarks	Markets
⚠ #	3-1-1	VP768600	PAIR TRANSISTOR	2SA1694/C4467 OPY	Q121A, Q121C, Q123A, Q123C	
	3-1-5	VV849300	RADIATION SHEET	19x24		
	3-1-6	VP922500	DAMPER	2x10x170		BG
	3-1-7	VK173200	SCREW TRANSISTOR	3x15 SP MFC2		
⚠ #	3-2-1	VP768600	PAIR TRANSISTOR	2SA1694/C4467 OPY	Q122A, Q122C, Q124A, Q124C	
	3-2-5	VV849300	RADIATION SHEET	19x24		
	3-2-6	VP922500	DAMPER	2x10x170		BG
	3-2-7	VK173200	SCREW TRANSISTOR	3x15 SP MFC2		
*	3-4	ZN139300	P.C.B. ASSEMBLY	MAIN		U
*	3-4	ZN139400	P.C.B. ASSEMBLY	MAIN		R
*	3-4	ZN139500	P.C.B. ASSEMBLY	MAIN		A
*	3-4	ZN139600	P.C.B. ASSEMBLY	MAIN		B
*	3-4	ZN139700	P.C.B. ASSEMBLY	MAIN		G
*	3-4	ZN139800	P.C.B. ASSEMBLY	MAIN		L
	3-32	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3		
	3-33	VB770200	PW HEAD P-TIGHT SCREW	3x10-8 MFC2		
	3-40	WE774300	BIND HEAD B-TIGHT SCREW	3x8 MFZN2W3		

* New Parts

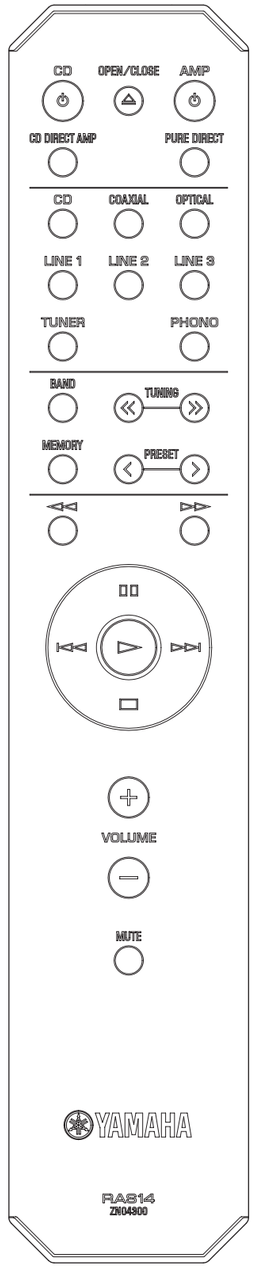
Note: Those parts marked with "#" are not included in the P.C.B. ass'y.

■ REMOTE CONTROL

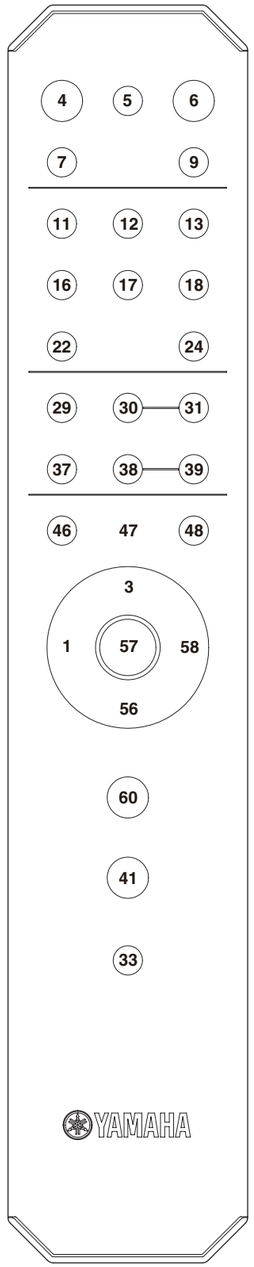
SCHEMATIC DIAGRAM



PANEL



KEY NO. LAYOUT



KEY CODE

Key No	Function	Customer Code	Data Code
1	⏮	7986	04FB
3	⏸	7986	55AA
4	CD ⏻	7986	609F
5	⏏	7986	01FE
6	AMP ⏻	7E81	2AD5
7	CD DIRECT	7A85	56A9
9	PURE DIRECT	7A85	DD22
11	CD	7A85	15EA
12	COAXIAL	7A85	18E7
13	OPTICAL	7A85	532C
16	LINE 1	7A85	19E6
17	LINE 2	7A85	C13E
18	LINE 3	7A85	C03F
22	TUNER	7A85	16E9
24	PHONO	7A85	14EB
29	BAND	7A85	AE51
30	TUNING ≪	7F01	641B
31	TUNING ≫	7F01	611E
33	MUTE	7A85	1CE3
37	MEMORY	7A85	AF50
38	PRESET <	7A85	11EE
39	PRESET >	7A85	10EF
41	VOL−	7A85	1BE4
46	⏪	7986	05FA
48	⏩	7986	06F9
56	⏹	7986	56A9
57	▶	7986	02FD
58	⏭	7986	07F8
60	VOL+	7AB5	1AE5

MEMO

A-S701

YAMAHA