MICRO COMPONENT SYSTEM MCR-940/MCR-840/MCR-640
RECEIVER/SPEAKER PACKAGE

R-840/NS-BP300

SERVICE MANUAL

- When accepting a repair order from the user, it is recommended to receive the R-840 and BD-940/DVD-840/CD-640 as a set for the repair work.
- The **MCR-940** consists of the R-840, BD-940 and NS-BP300.
  The **MCR-840** consists of the R-840, DVD-840 and NS-BP300.
  The **MCR-640** consists of the R-840, CD-640 and NS-BP300.

  This service manual is for the R-840/NS-BP300. For service manual of the BD-940/DVD-840/CD-640, please refer to the following publication numbers:

BD-940: **101154** / DVD-840: **101155** / CD-640: **101156**

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

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This Service Manual uses recycled paper.

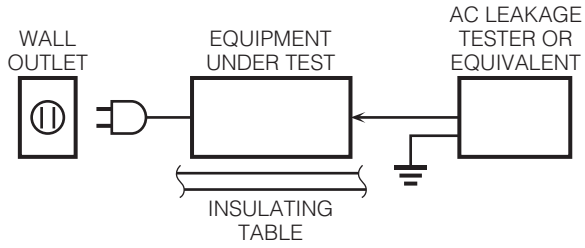
101153

YAMAHA
YAMAHA CORPORATION
P.O.Box 1, Hamamatsu, Japan
'09.11

■ 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 3.5A, 125V FUSE."

For C model

CAUTION

F1: REPLACE WITH SAME TYPE 3.5A, 125V FUSE.

ATTENTION

F1: UTILISER UN FUSIBLE DE RECHANGE DE MÉME TYPE DE 3.5A, 125V.

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.

■ SYSTEM COMPOSITION

When accepting a repair order from the user, it is recommended to receive the R-840 and BD-940/DVD-840/CD-640 as a set for the repair work.

The **MCR-940** consists of the R-840, BD-940 and NS-BP300.

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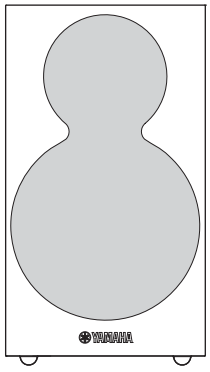
The **MCR-640** consists of the R-840, CD-640 and NS-BP300.

This service manual is for the R-840/NS-BP300. For service manual of the BD-940/DVD-840/CD-640, please refer to the following publication numbers:

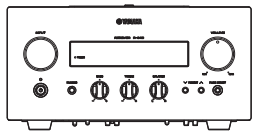
BD-940: **101154** / DVD-840: **101155** / CD-640: **101156**

MCR-940

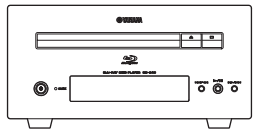
▼ NS-BP300

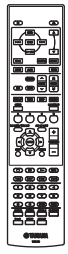


▼ R-840

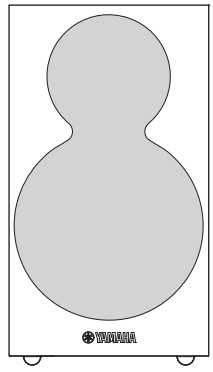


▼ BD-940



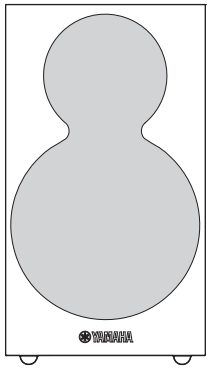


▼ NS-BP300

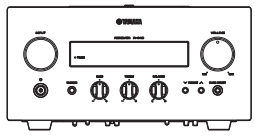


MCR-840

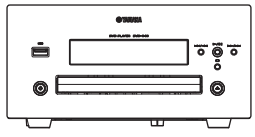
▼ NS-BP300

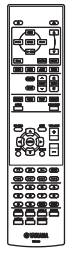


▼ R-840

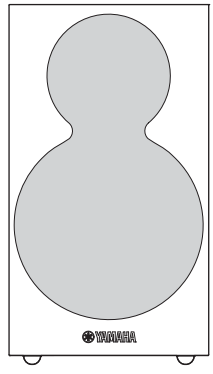


▼ DVD-840



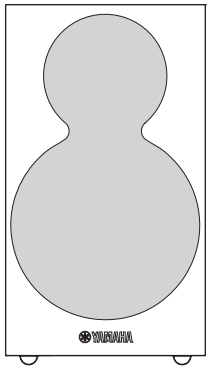


▼ NS-BP300

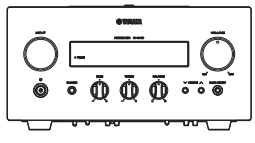


MCR-640

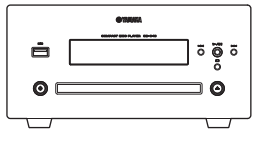
▼ NS-BP300



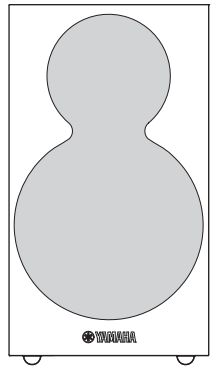
▼ R-840



▼ CD-640



▼ NS-BP300

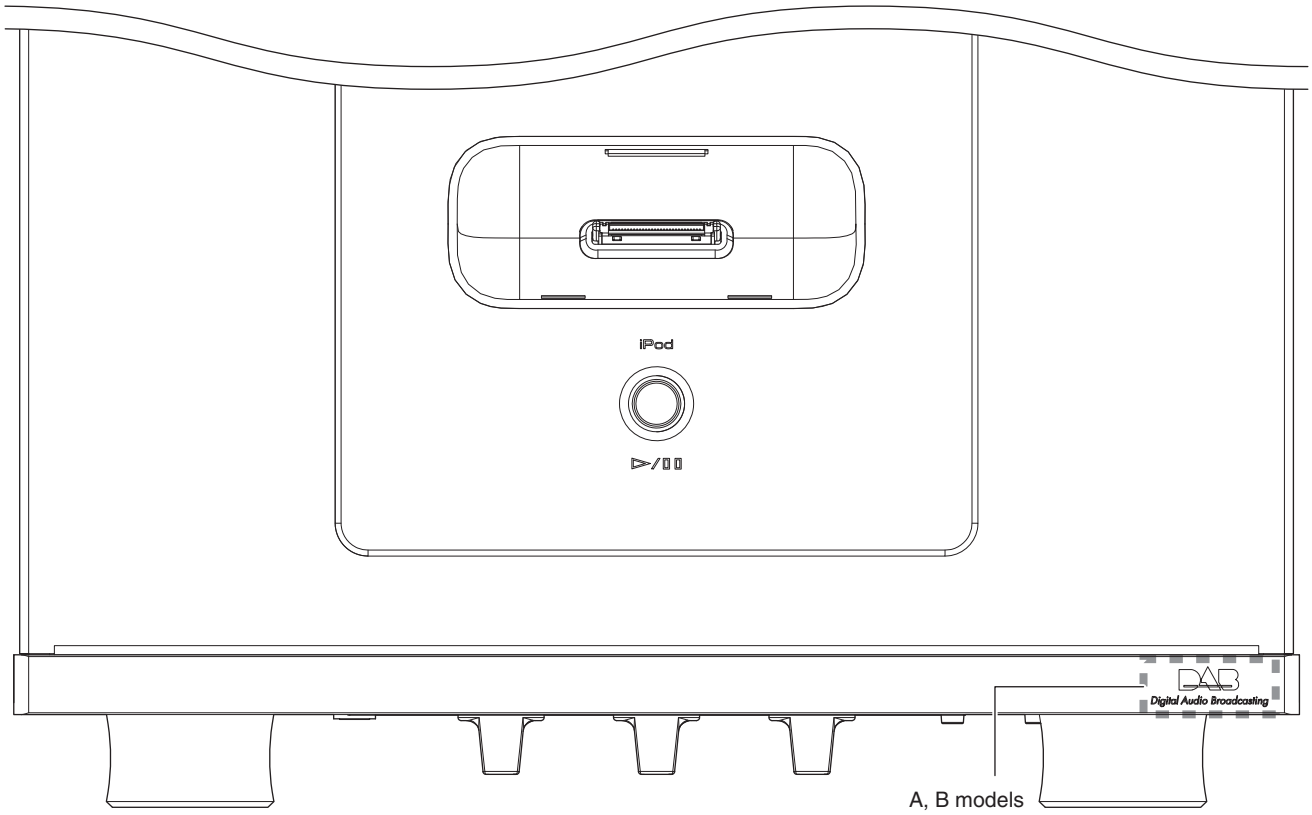


■ FRONT PANELS

R-840

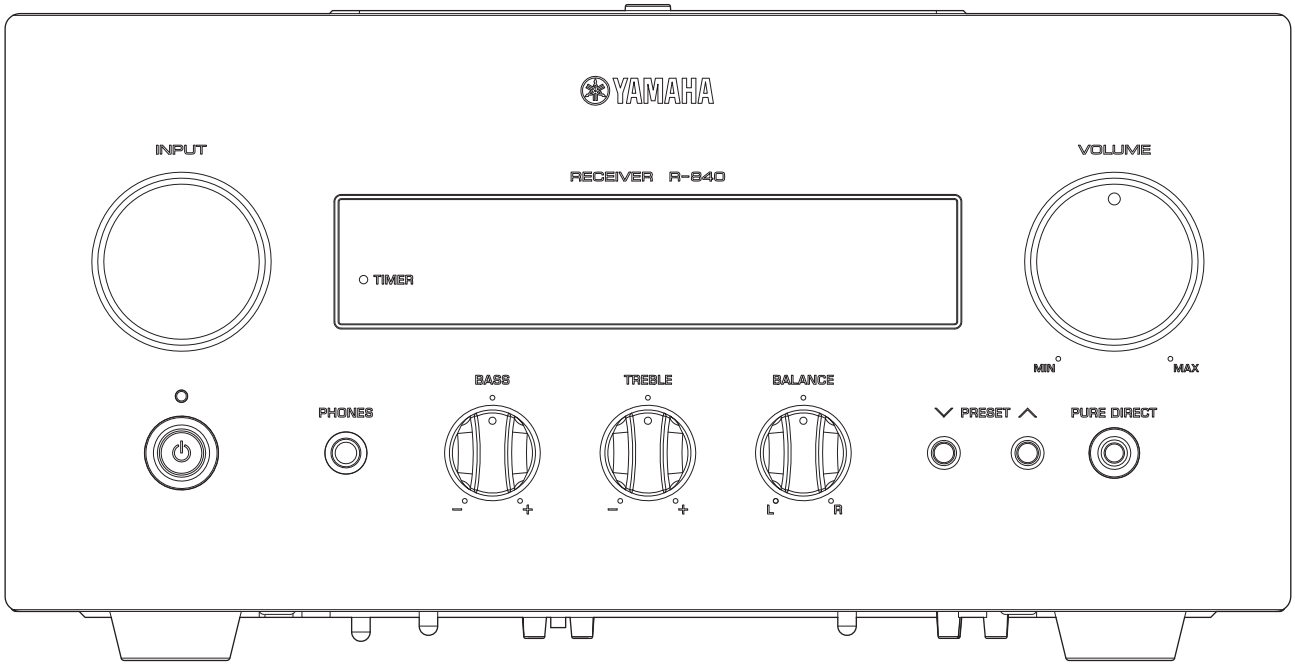
Top view

C, T, K, A, B, G, L, V models

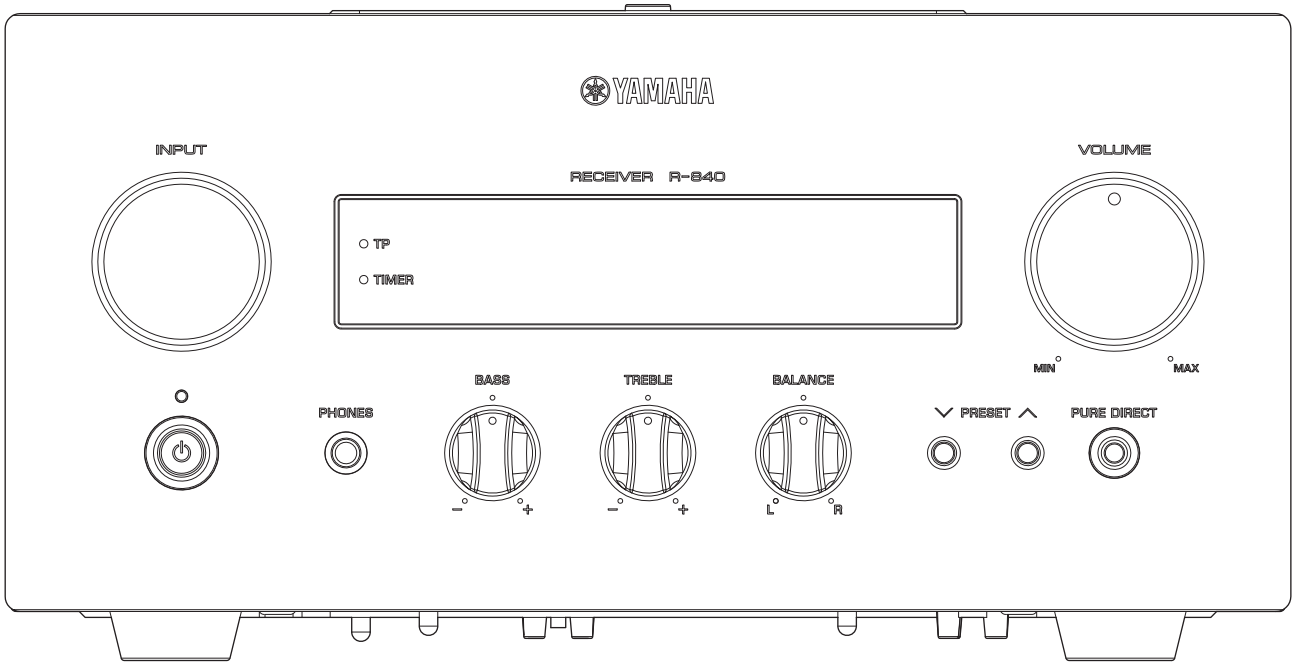


Front view

C, T, K, A, L, V models

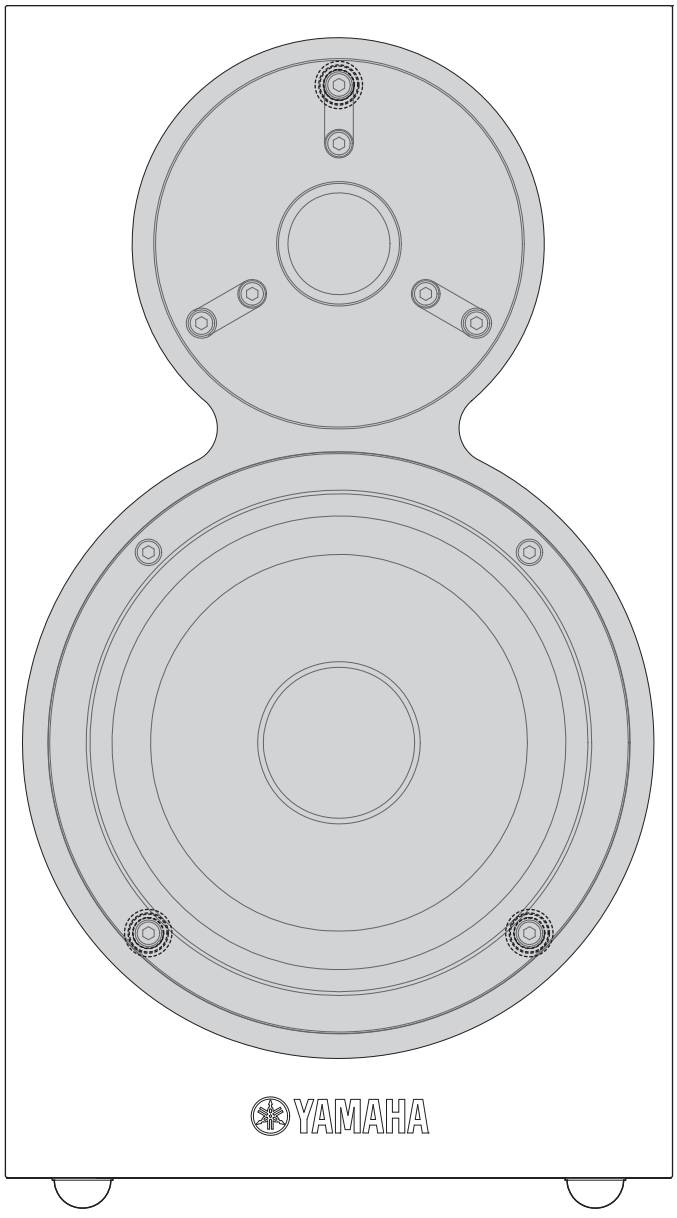


B, G models


YAMAHA
INPUT
RECEIVER R-840
TP
TIMER
VOLUME
MIN
MAX
PHONES
BASS
TREBLE
BALANCE
PRESET
PURE DIRECT
L
R

NS-BP300

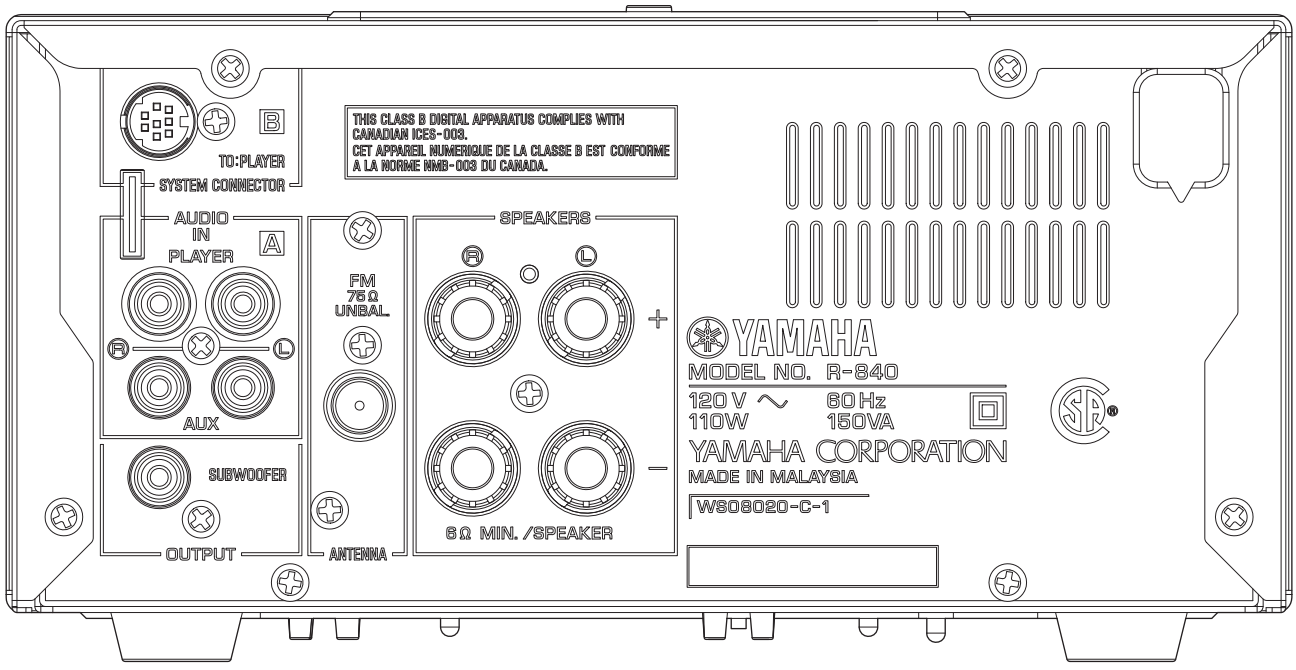
C, T, K, A, B, G, L, V models



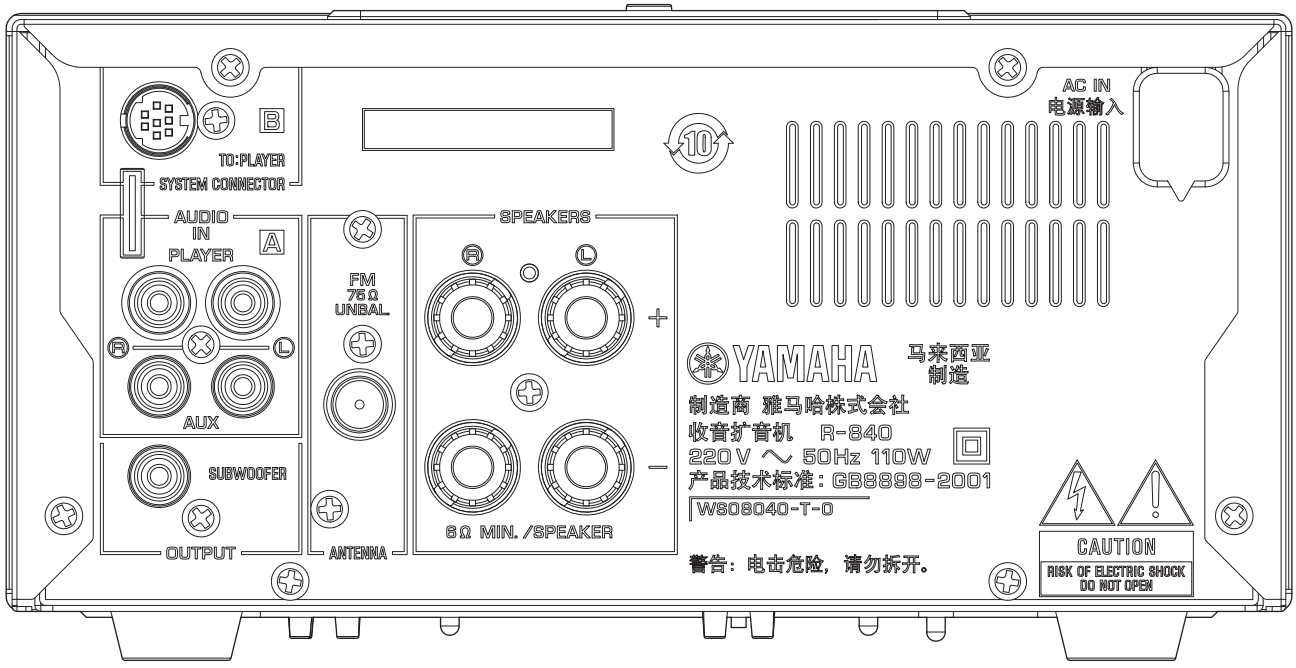
■ REAR PANELS

R-840

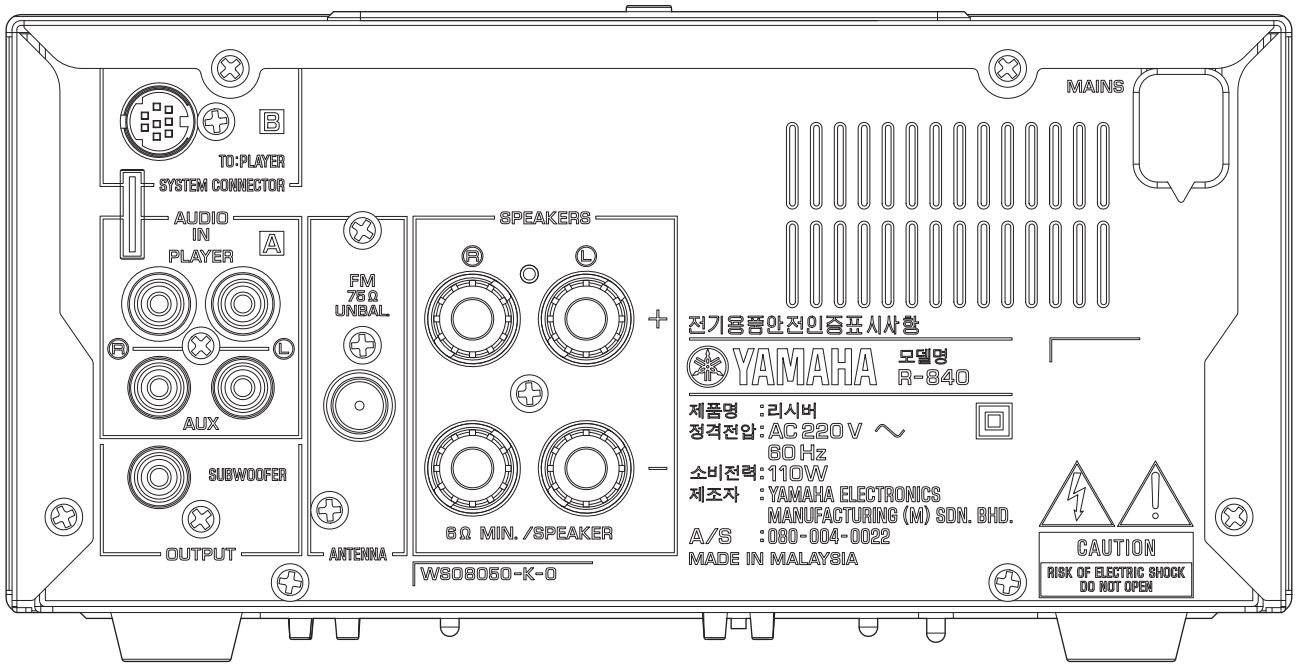
C model



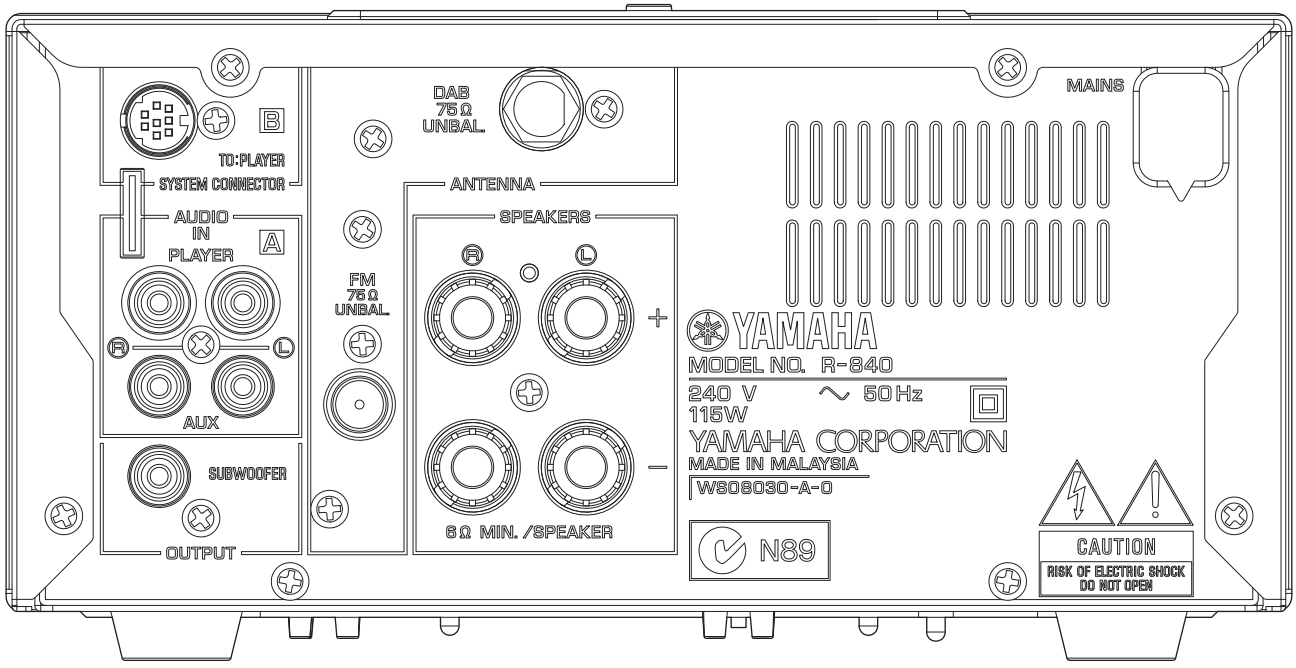
T model



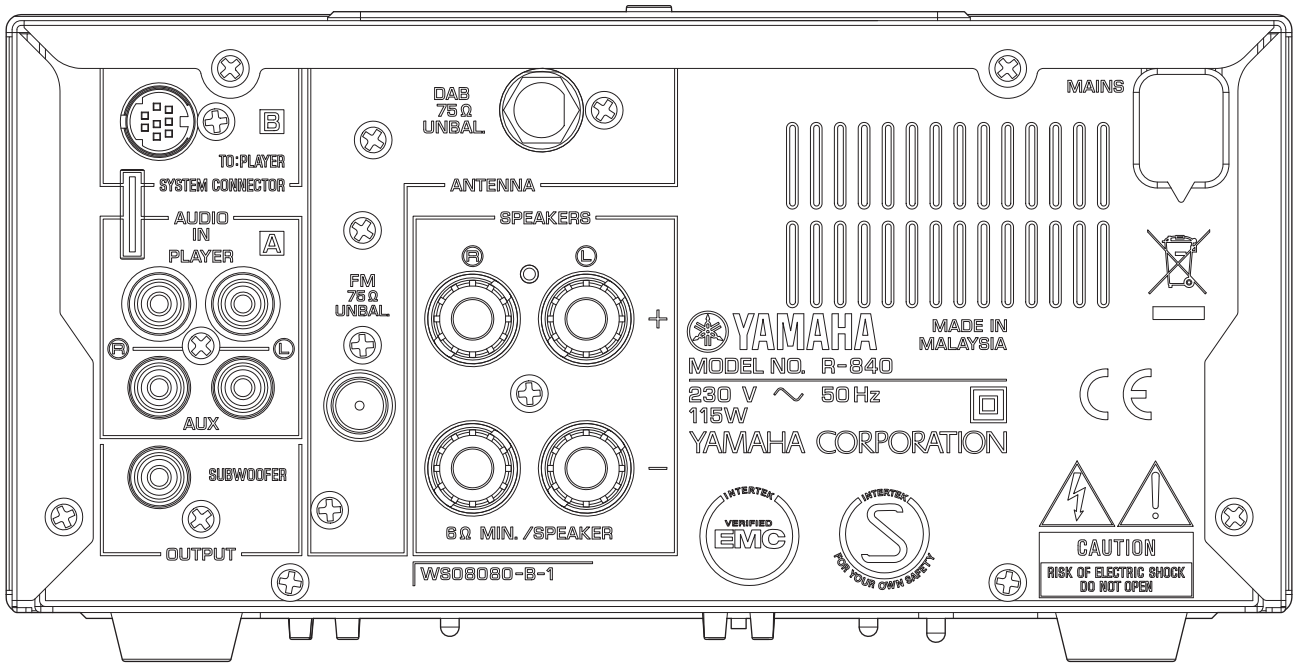
K model



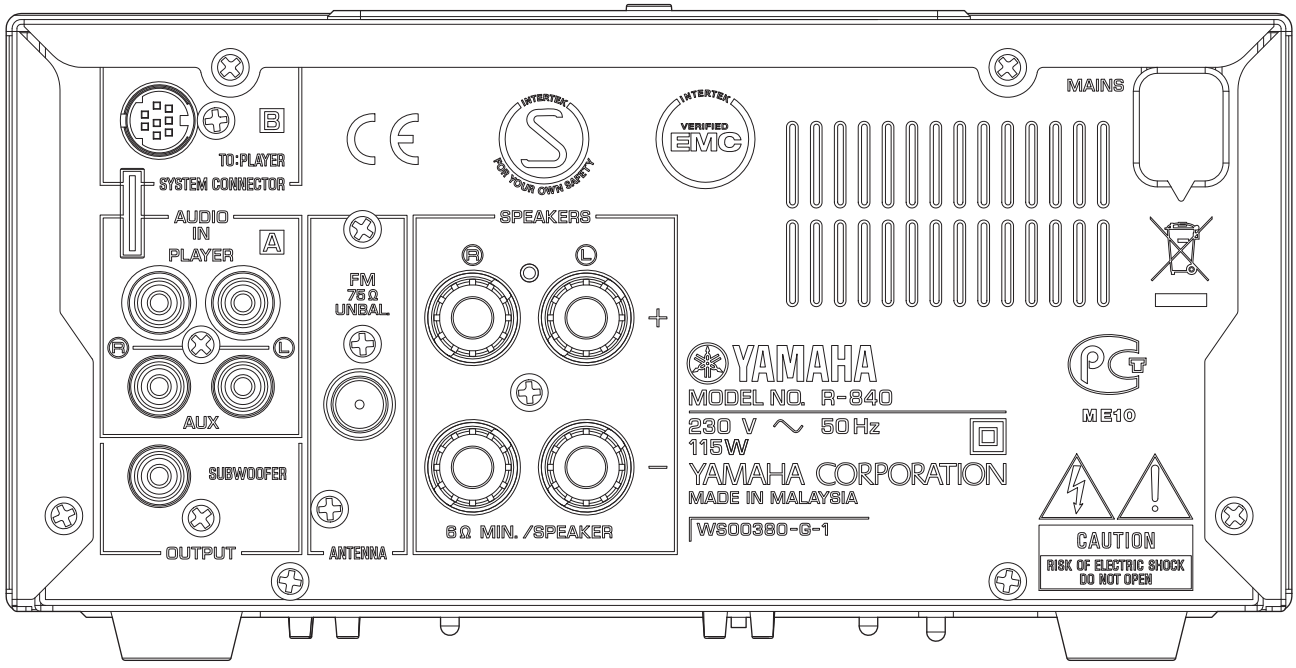
A model



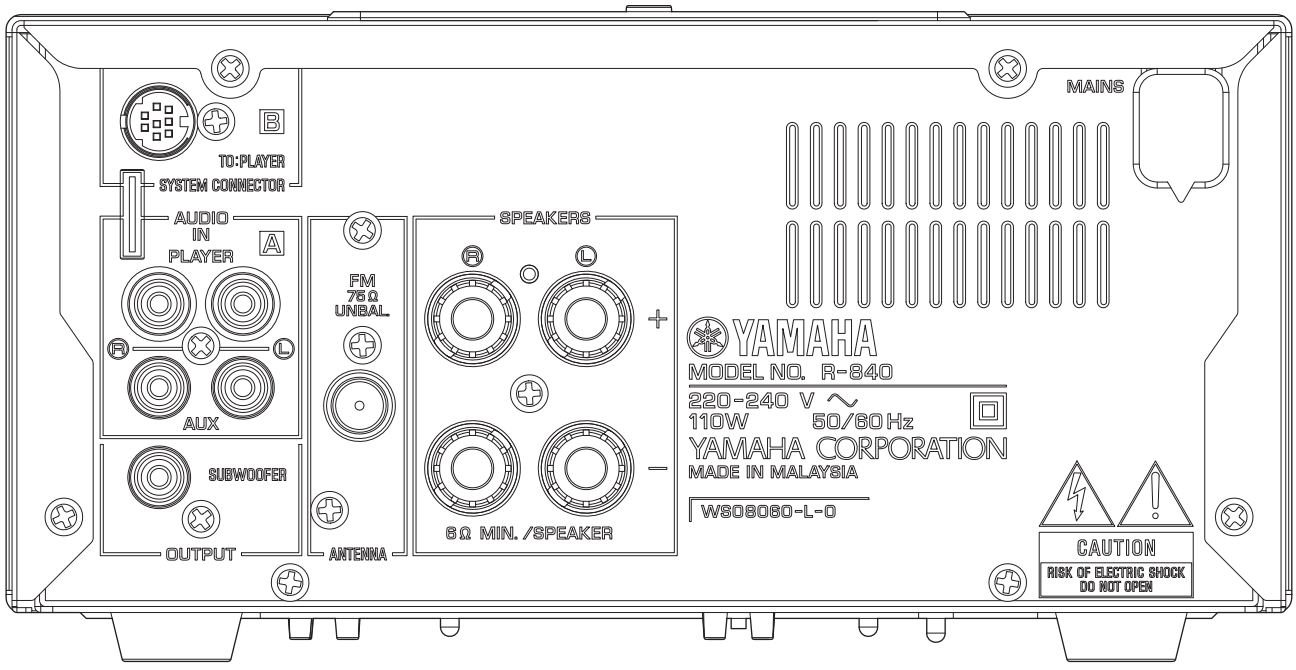
B model



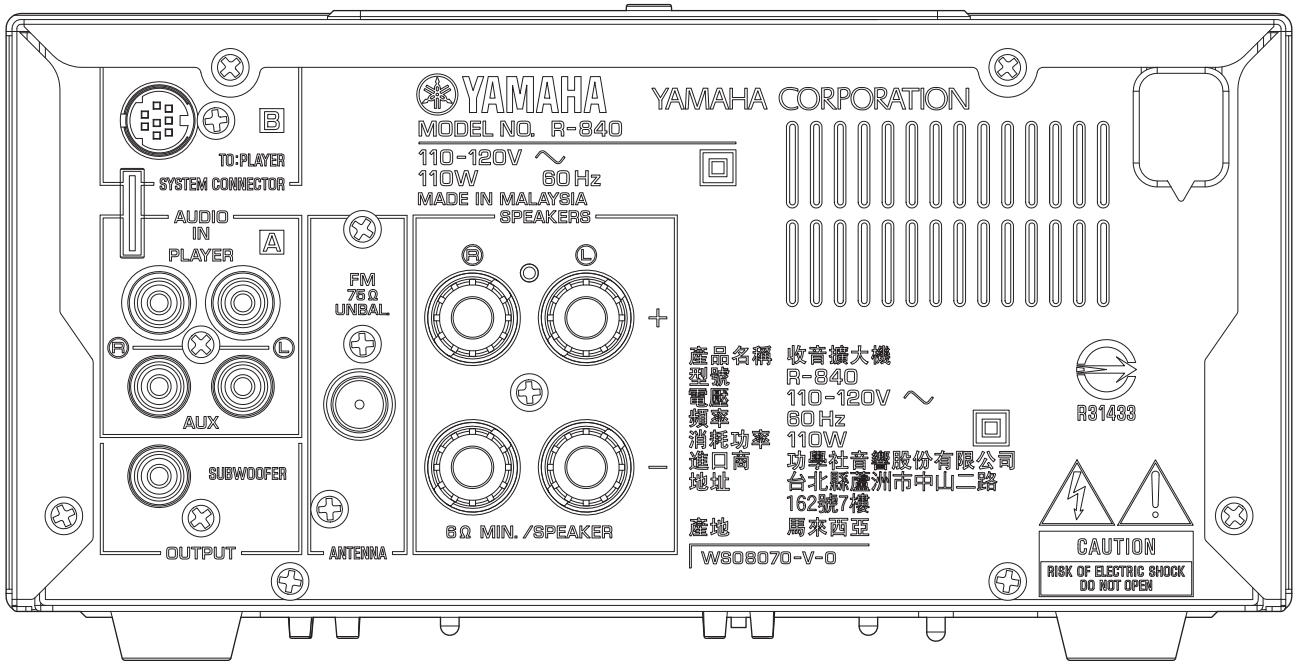
G model



L model

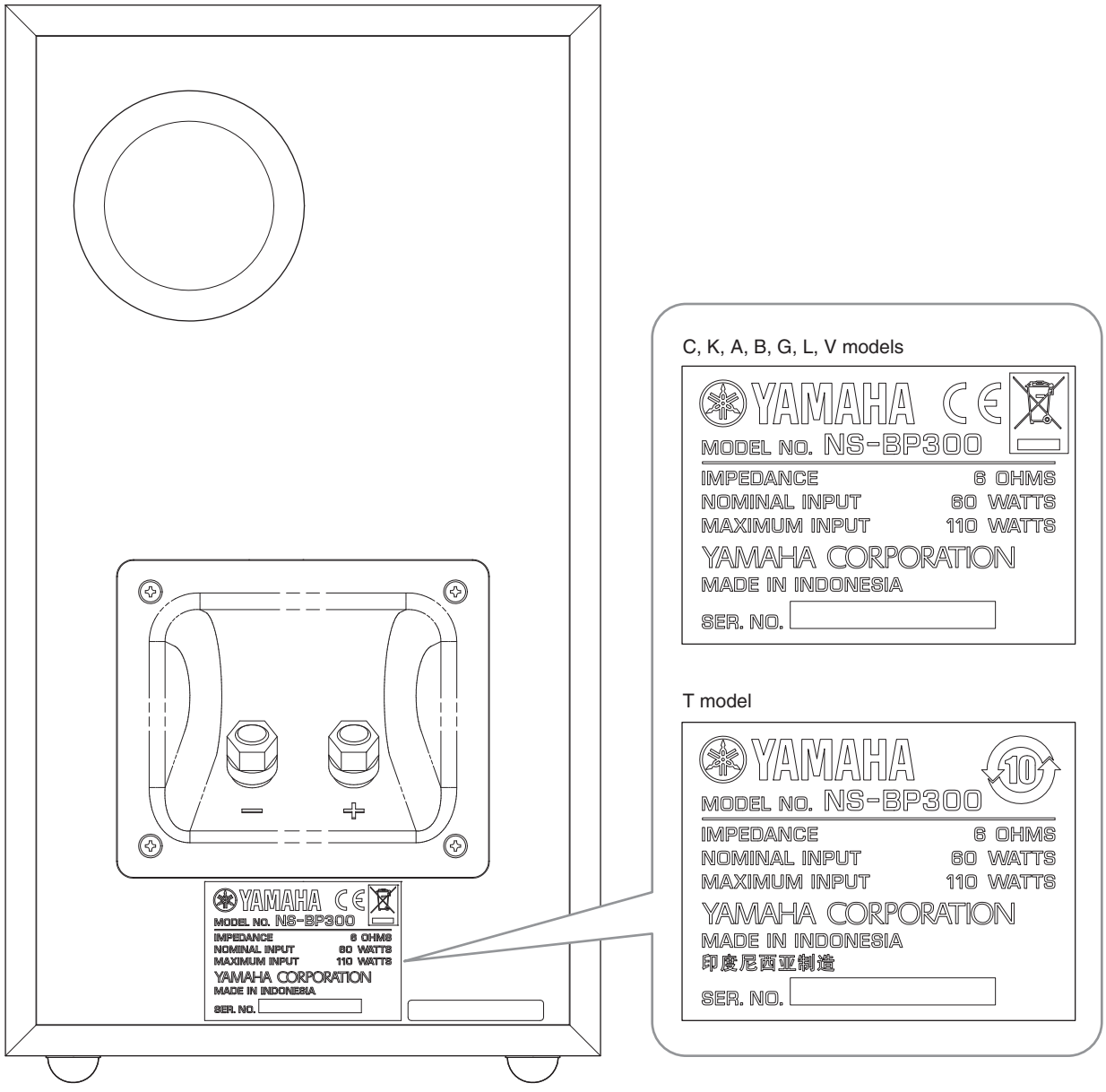


V model



NS-BP300

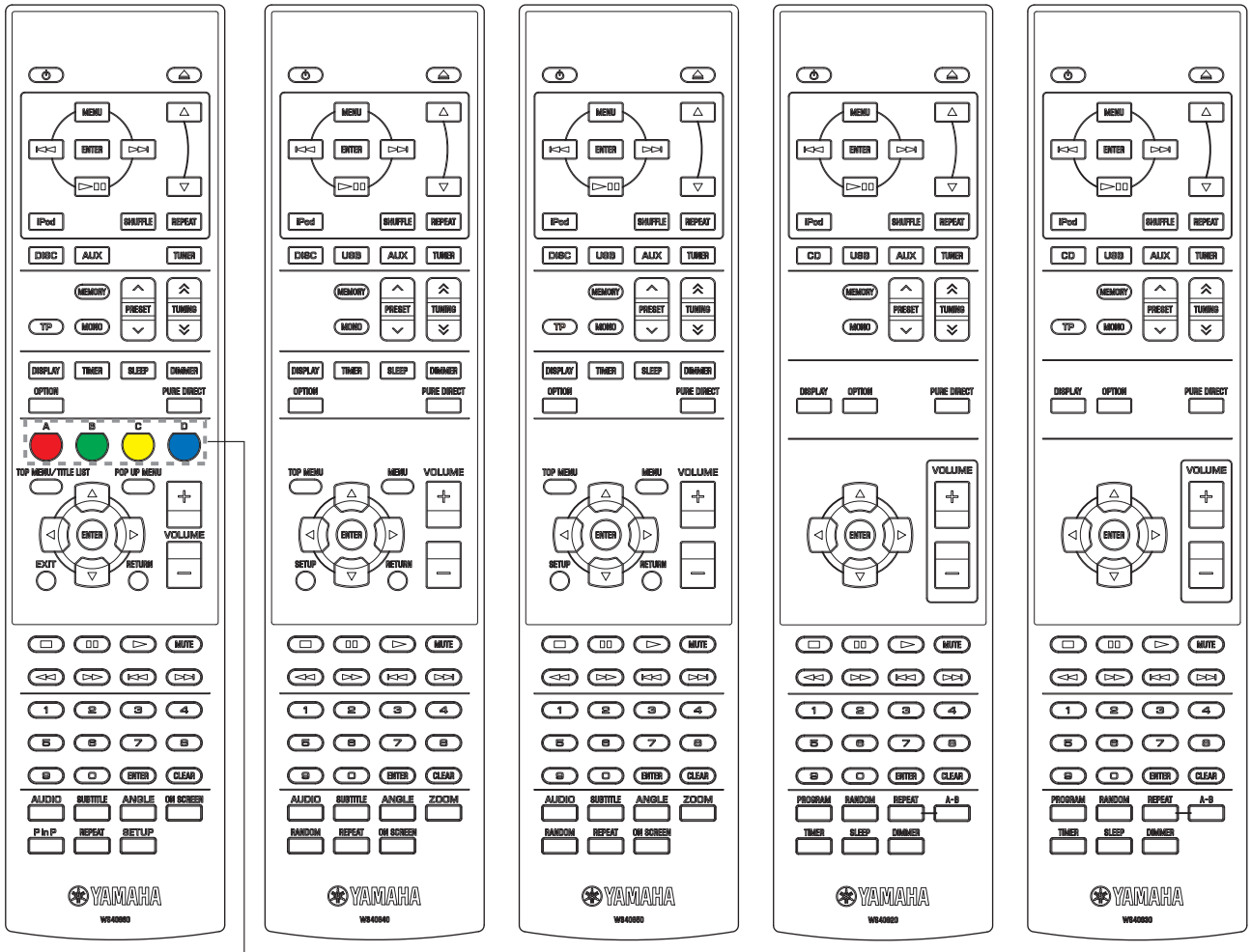
C, T, K, A, B, G, L, V models



■ REMOTE CONTROL PANELS

MCR-940 — **MCR-840** — **MCR-640**

B, G, F models | **C, T, K, A, L, V models** | **G, F models** | **C, L, V models** | **B, G models**



Key colors

A. Red
B. Green
C. Yellow
D. Blue

■ SPECIFICATIONS

R-840

■ Audio Section

Minimum RMS Output Power (Power Amp. Section)
(L/R drive, 1 kHz, 10 % THD, 6 ohms)
C, T, K, A, B, G, V models ..... 65 W + 65 W
L model ..... 60 W + 60 W

Dynamic Power Per Channel (IHF) (6 / 4 / 2 ohms)
C, T, K, A, B, G, V models ..... 60 / 75 / 100 W
L model ..... 55 / 70 / 92 W

MAX. Power Per Channel (1 kHz, 0.7 % THD, 4 ohms) [B, G models]
..... 64 W + 64 W

IEC Power (1 kHz, 0.1 % THD, 6 ohms) [B, G models]
..... 52 W + 52 W

Maximum Power (JEITA) (1 kHz, 10 % THD, 6 ohms) [L, V models]
V model ..... 65 W
L model ..... 60 W

Power Band Width (MAIN L/R drive, 0.1 % THD, 30 W, 6 ohms)
..... 10 Hz to 50 kHz

Damping Factor (20 Hz to 20 kHz, 6 ohms)
..... 60 or more

Input Sensitivity/Input Impedance
Player etc. ..... 200 mV / 47 k-ohms

Maximum Input Voltage (1 kHz, 0.5 % THD)
DVD etc. ..... 2.8 V

Rated Output Voltage/Output Impedance
SUBWOOFER ..... 1.2 V

Headphone Jack Rated Output/Output Impedance
(1 kHz, 200 mV, 8 ohms)
Player etc. ..... 130 mV / 8 ohms

Frequency Response (20 Hz to 20 kHz)
Player etc. ..... 0 ±0.5 dB

Total Harmonic Distortion (20 Hz to 20 kHz, 30 W, 6 ohms)
Player etc. to SP OUT ..... 0.04 % or less

Signal to Noise Ratio (IHF-A network)
Player (Input shorted 200 mV) ..... 100 dB or more

Residual Noise (IHF-A network)
PURE DIRECT ON ..... 110 µV

Channel Separation (DVD etc., Input 5.1 k-ohms shorted)
1 kHz / 10 kHz ..... 60 dB or more / 45 dB or more

Tone Control Characteristics
Bass
Boost/Cut ..... ±10 dB, step 50 Hz
Turnover frequency ..... 350 Hz
Treble
Boost/Cut ..... ±10 dB, step 20 kHz
Turnover frequency ..... 3.5 kHz

■ FM Section

Tuning Range
C model ..... 87.5 to 107.9 MHz
T, K, A, B, G, L, V models ..... 87.50 to 108.00 MHz

50 dB Quieting Sensitivity (IHF) (1 kHz, 100 % MOD.)
Mono ..... 2.8 µV (20.2 dBf)

Signal to Noise Ratio (IHF)
Mono ..... 73 dB
Stereo ..... 70 dB

Harmonic Distortion (1 kHz)
Mono ..... 0.5 %
Stereo ..... 0.5 %

Antenna Input
..... 75 ohms unbalanced

■ DAB Section [A, B models]

Tuning Range
..... 174.0 to 240 MHz (BAND III)

■ General

Power Supply
C model ..... AC 120 V, 60 Hz
T model ..... AC 220 V, 50 Hz
K model ..... AC 220 V, 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
V model ..... AC 110–120 V, 60 Hz

Power Consumption
C, T, K, L, V models ..... 110 W
A, B, G models ..... 115 W

Standby Power Consumption (reference data)
..... 0.3 W or less

Maximum Power Consumption (1 kHz, 10 % THD, 6 ohms) [V model]
..... 400 W

Dimensions (W x H x D)
..... 215 x 110 x 348 mm (8-1/2" x 4-3/8" x 13-3/4")

Weight
..... 5.7 kg (12.6 lbs.)

Finish
Black color ..... C, T, K, A, B, G, L, V models
Silver color ..... C, T, K, A, B, G, L, V models

Accessories
for R-840
Indoor FM antenna ..... x 1
DAB wire antenna (B model) ..... x 1
DOCK cover ..... x 1
for MCR-940/MCR-840/MCR-640
Remote control ..... x 1
Battery (R03, AAA, UM-4) ..... x 2
Audio pin cable (1.0 m) ..... x 1
Video pin cable (1.5 m) ..... x 1
System control cable (0.6 m) ..... x 1
USB cap ..... x 1

*** Specifications are subject to change without notice due to product improvements.**

NS-BP300

■ Speaker Section

Type ..... 2-way bass reflex speaker system

Driver

Woofer ..... 13 cm (5-1/8") cone type

Tweeter ..... 2.5 cm (1") soft dome type

Frequency Response .....55 Hz to 28 kHz (-10dB)
55 Hz to 80 kHz (-30dB)

Impedance ..... 6 ohms

Nominal Input ..... 60 W

Maximum Input ..... 110 W

Sensitivity ..... 85 dB/2.83 V/m

Crossover Frequency ..... 3 kHz

Input Terminal ..... Screw/Banana type

Dimensions (W x H x D)

..... 176 x 318 x 305 mm (6-7/8" x 12-1/2" x 12")

Weight ..... 4.3 kg (9.5 lbs.)

Finish

Black piano color (PN) .....C, T, K, A, B, G, L, V models

White piano color (WH) .....C, T, K, A, B, G, L, V models

Accessories

Speaker cable (2.0 m) .....x 2

*** Specifications are subject to change without notice due to product improvements.**

C .....Canadian model	***B .....British model***
T ..... Chinese model	***G .....European model***
K .....Korean model	***L .....Singapore model***
A .....Australian model	***V ..... Taiwan model***

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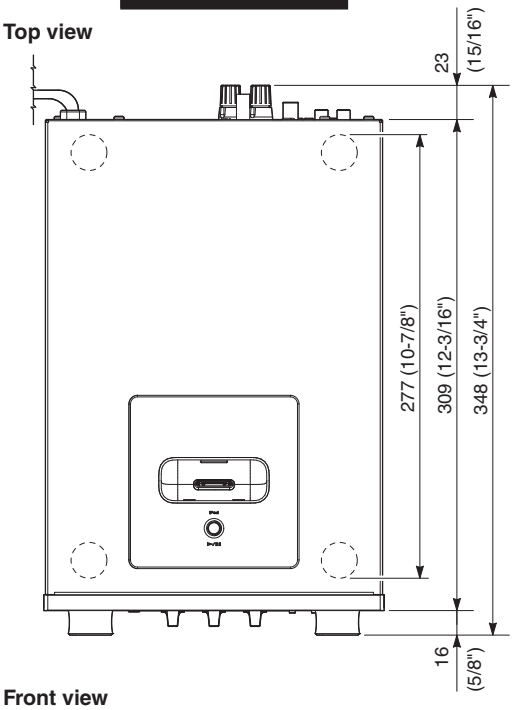
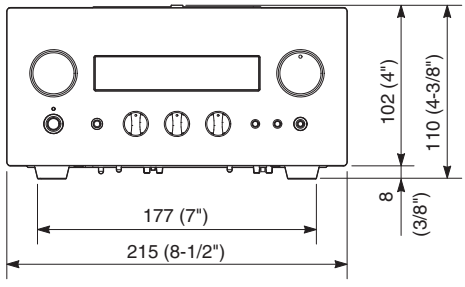
- **DIMENSIONS**

R-840

Top view



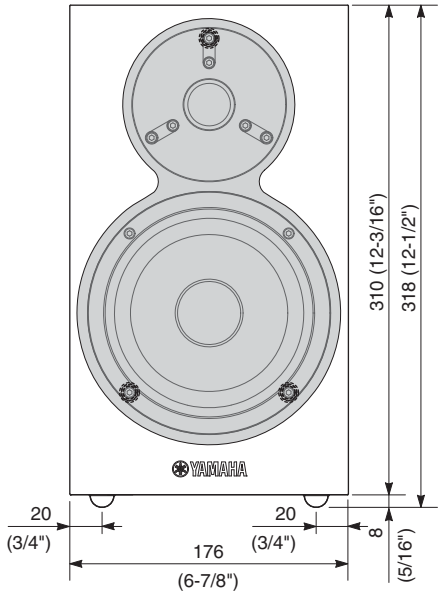
Front view



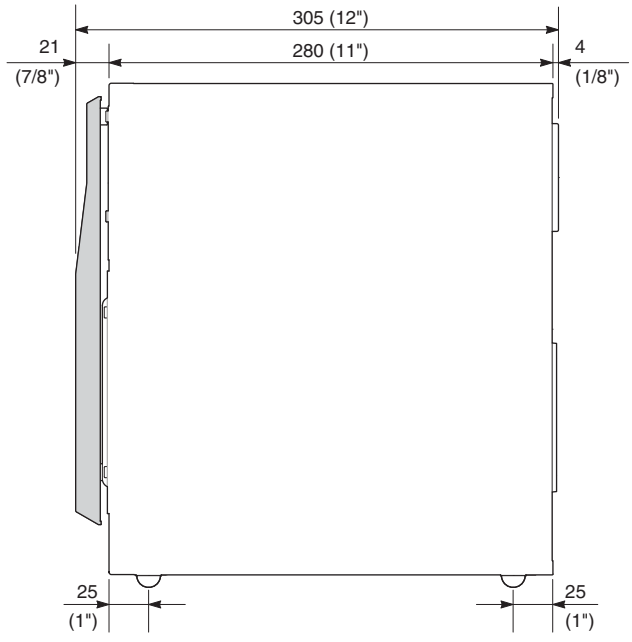
Unit: mm (inch)

NS-BP300

Front view



Side view

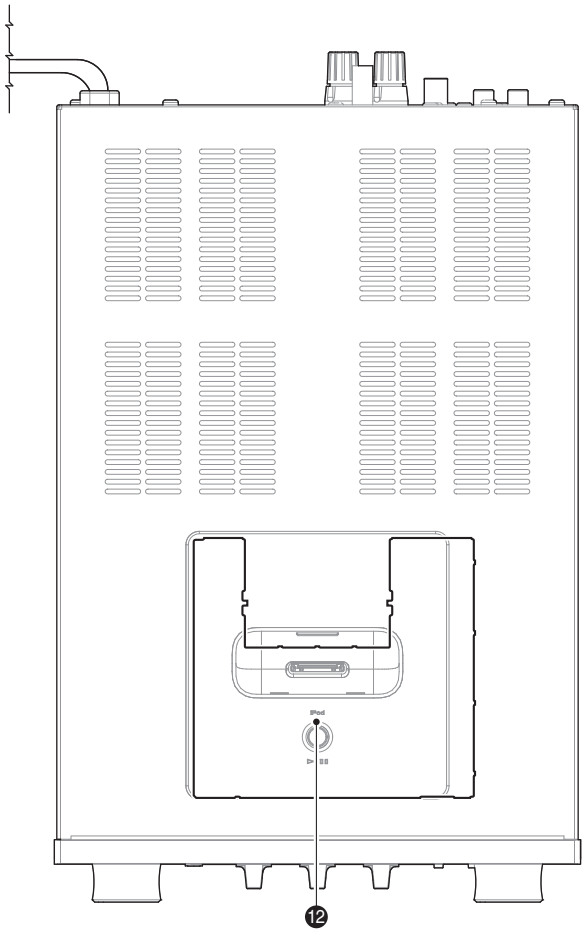


Unit: mm (inch)

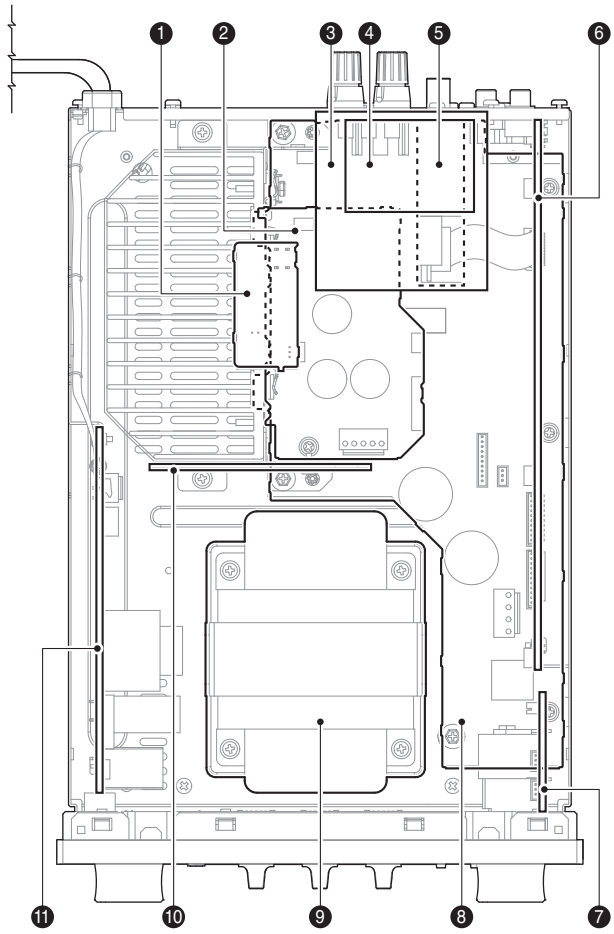
■ INTERNAL VIEW

R-840

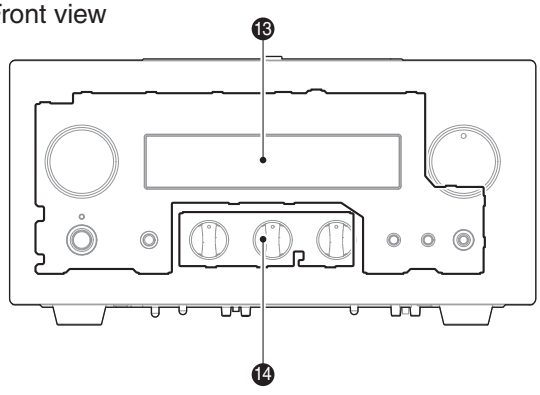
Top view



Top view



Front view



❶ MAIN (8) P.C.B.
❷ MAIN (2) P.C.B.
❸ DAB P.C.B. (A, B models)
❹ DAB MODULE (A, B models)
❺ FM TUNER
❻ FUNCTION (1) P.C.B.
❼ MAIN (5) P.C.B.
❽ MAIN (1) P.C.B.
❾ POWER TRANSFORMER
❿ MAIN (7) P.C.B.
⓫ MAIN (4) P.C.B.
⓬ FUNCTION (2) P.C.B.
⓭ MAIN (3) P.C.B.
⓮ MAIN (6) P.C.B.

■ DISASSEMBLY PROCEDURES

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

1. Removal of Top Cover Unit

a. Remove 4 screws (①) and 4 screws (②). (Fig. 1)
b. Lift the top cover unit. (Fig. 1)
c. Remove CB108 and CB301. (Fig. 1)
d. Remove the top cover unit. (Fig. 1)

2. Removal of Front Panel Unit

a. Remove 2 screws (③) and 2 screws (④). (Fig. 1)
b. Remove 2 screws (⑤) and remove W804-805. (Fig. 1)
c. Remove CB53, CB101 and CB109. (Fig. 1)
d. Release 2 hooks and remove the front panel unit. (Fig. 1)

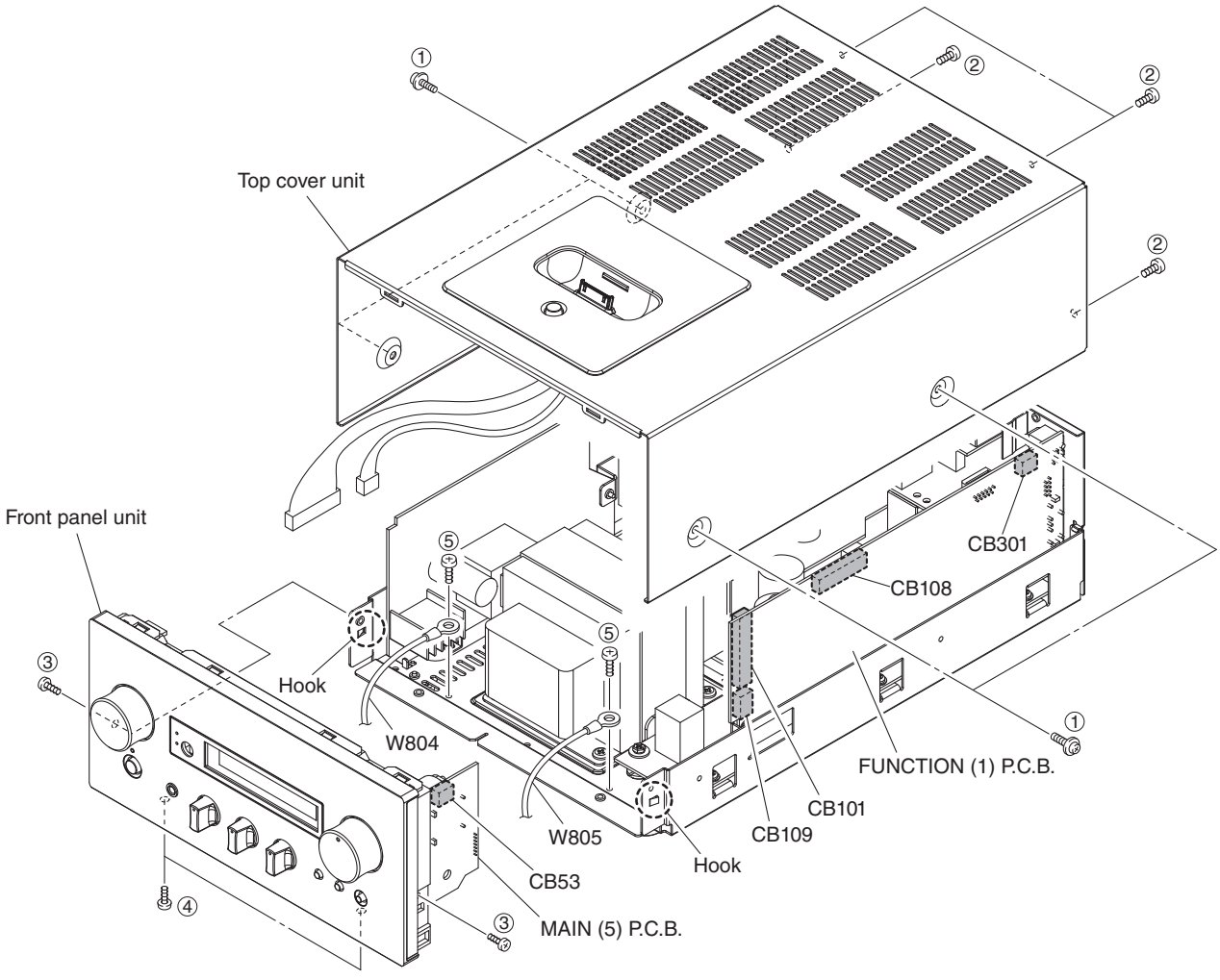


Fig. 1

3. Removal of Amp Unit

a. Remove 2 screws (⑥), 2 screws (⑦), 3 screws (⑧), 3 screws (⑨) and screw (⑩). (Fig. 2)
b. Remove CB103, CB403 and CB505. (Fig. 2)
c. Remove the amp unit together with the MAIN (1) P.C.B., the FUNCTION (1) P.C.B. and the rear panel. (Fig. 2)

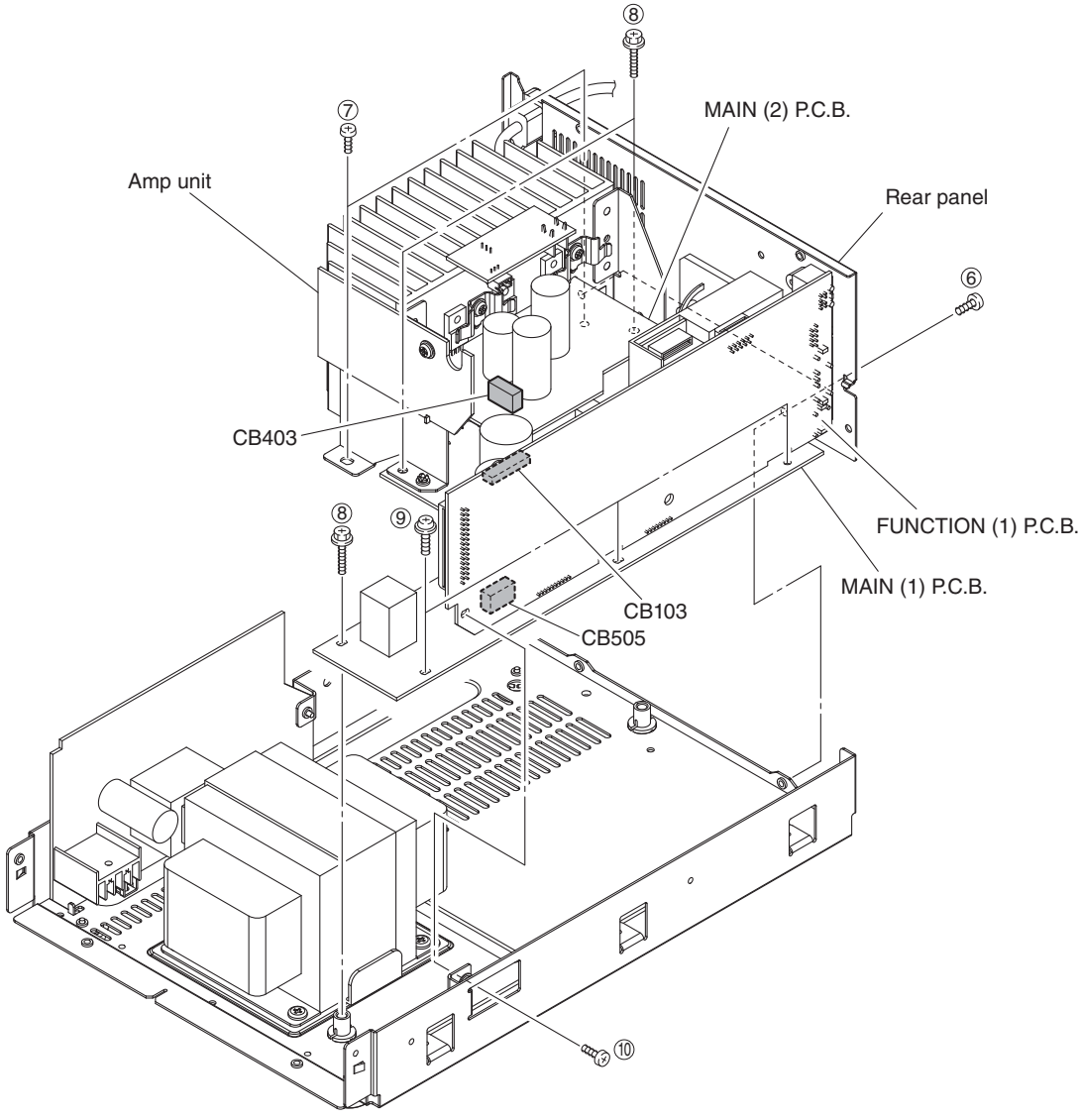


Fig. 2

When checking the P.C.B.s:

- Spread the rubber sheet and the cloth. Then place the amp unit on the cloth and check it. (Fig. 3)
- Connect the ground point of the rear panel to the chassis with a ground lead or the like. (Fig. 3)
- Reconnect all cables (connectors) that have been disconnected.
- When connecting the flexible flat cable, be careful with polarity.

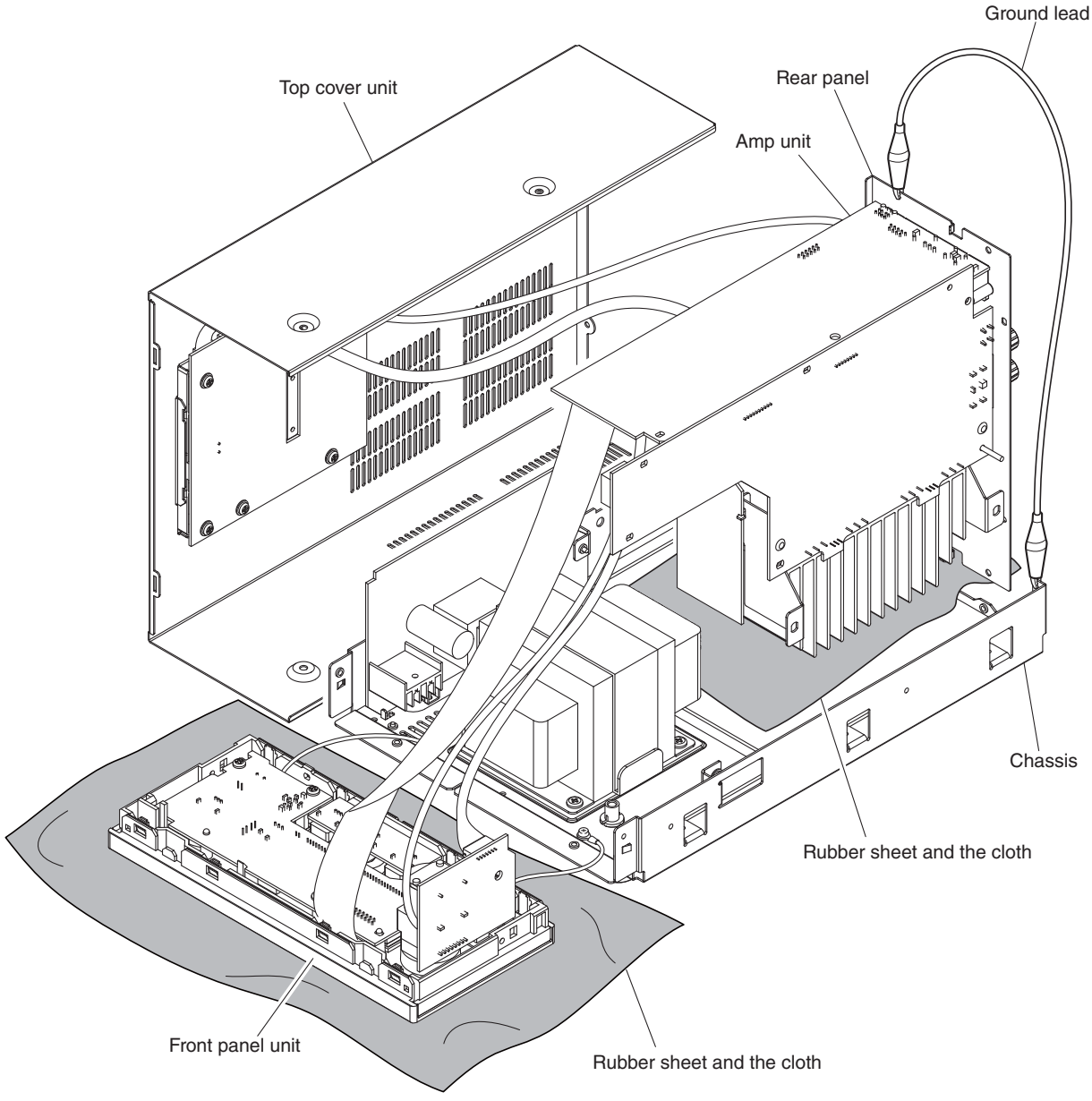


Fig. 3

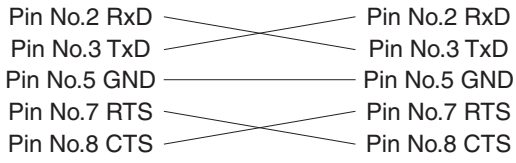
■ UPDATING FIRMWARE

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

MAIN P.C.B.
Microprocessor (IC101) of FUNCTION P.C.B.

● Required tools

- Firmware downloader program
  ..... FlashSta.exe
- Firmware
  ..... R840_xxx.mot
  R840_xxx.id
- RS232C cross cable "D-sub 9 pin female"
  (Specifications)



- RS232C conversion adaptor (Part No.: AAX77610)

Note: Do not use the RS232C conversion adaptor (Part No.: WR492800), which is used for updating BD-940/DVD-840/CD-640, otherwise the update will not proceed.

● Preparation and precautions

- Download the firmware downloader program and the latest firmware from the specified source to the same folder of the PC.
- Prepare the above specified RS232C cross cable.
- While writing the firmware, keep the other application software on the PC closed.
  It is also recommended to keep the software on the task tray closed as well.

● Confirmation of firmware version

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

Start up the self-diagnostic function.

Using the "1-1. Firmware version" / "1-2. Checksum" menu, have the firmware version and checksum displayed, and note down them. (See "SELF-DIAGNOSTIC FUNCTION")

1-1. Firmware version

The firmware version of microprocessor (IC101 of the MAIN P.C.B.) is displayed.

1-2. Checksum

The checksum value of microprocessor (IC101 of the MAIN P.C.B.) is displayed.

● Connection

* Disconnect the power cable of this unit from the AC outlet.

1. Set the switch (SW301) of RS232C conversion adaptor to the “FLASH UCOM” position. (Fig. 1)
2. Connect the writing port (CB104 of FUNCTION P.C.B.) located on the rear panel of this unit to the serial port (RS232C) of the PC with RS232C cross cable, RS232C conversion adaptor and flexible flat cable as shown below. (Fig. 3)

Note: Do not use the RS232C conversion adaptor (Part No.: WR492800), which is used for updating BD-940/ DVD-840/CD-640, otherwise the update will not proceed.

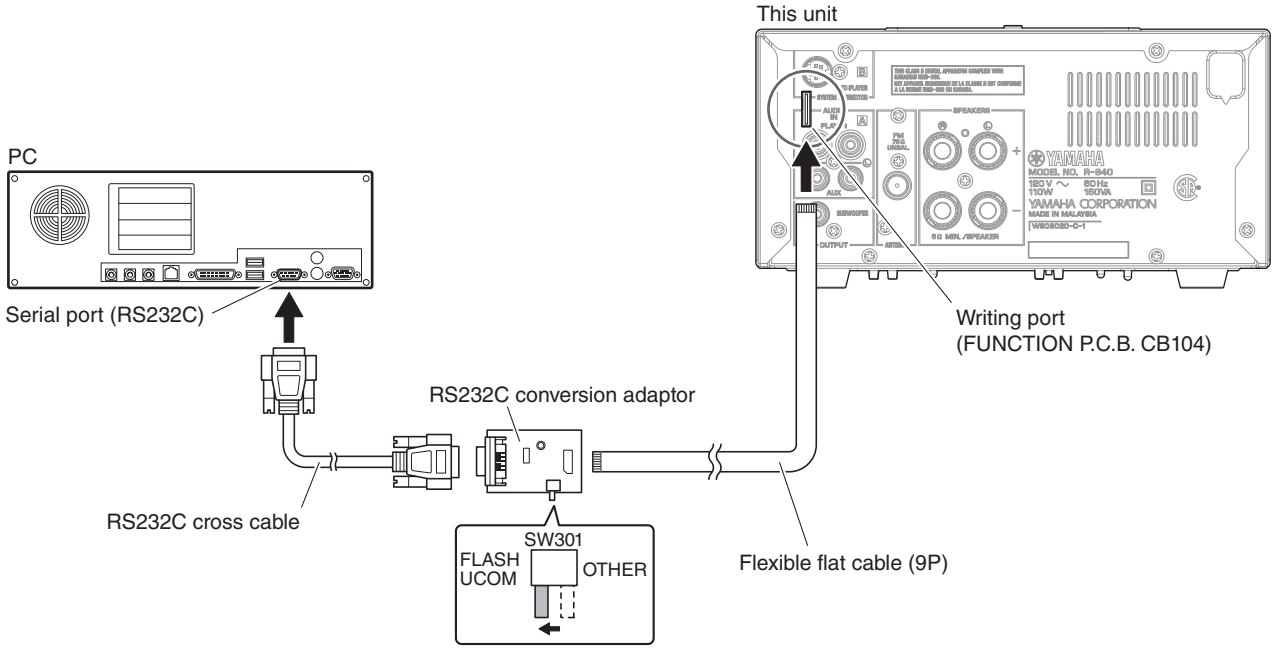


Fig. 1

● Operation procedure

1. Connect the power cable of this unit to the AC outlet.
   The power to this unit is supplied and the microprocessor is in the writing mode.
2. Start up FlashSta.exe.
   The screen appears as shown below. (Fig. 2)
3. Select the data to be transmitted and port. (Fig. 2)
   - Select Program
     Select Internal flash memory
   - RS232C
     Select the port of RS-232C
     * For selection of the port, COM1 to 4 can be used.
       As COM5 or higher port cannot be used, select from COM 1 to 4 of the setting on the PC side.

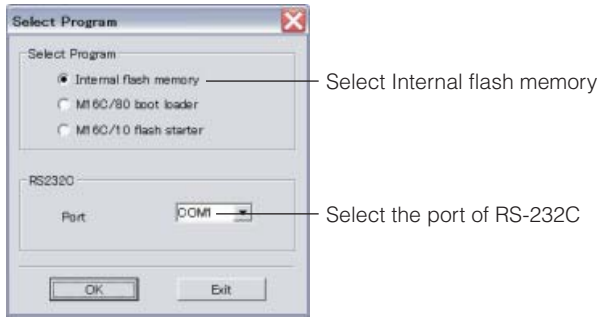
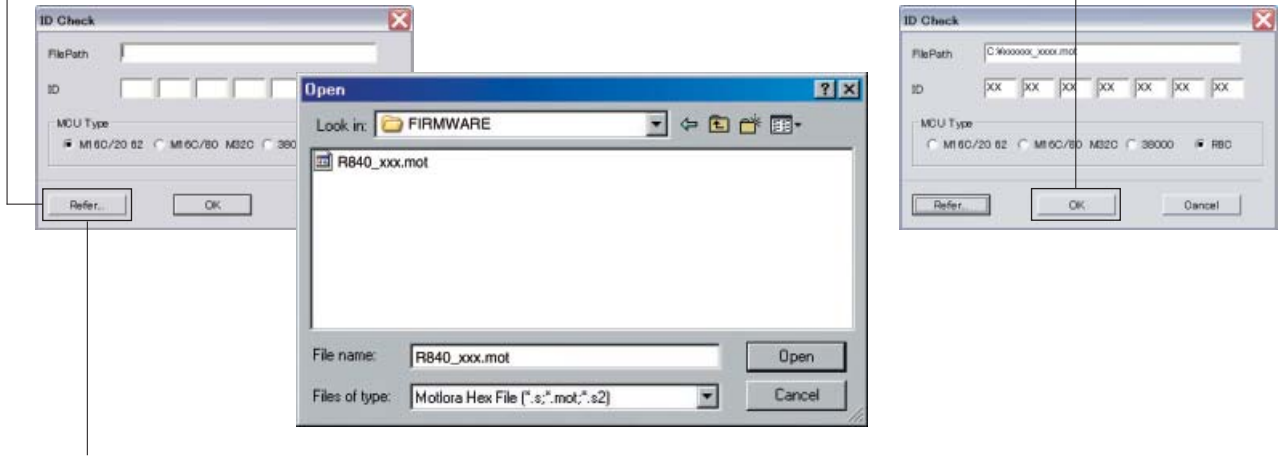


Fig. 2

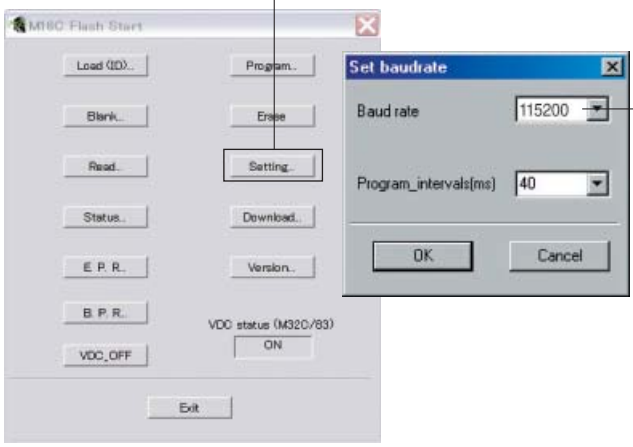
4. Click [Refer...] and select the firmware name. (Fig. 3)
   * The ID and MCU Type are loaded automatically when the file is selected. (Fig. 3)
   Click [OK]. (Fig. 3)



When [Refer...] is clicked, the “Open” screen appears.

Fig. 3

5. Click [Setting], and set the baud rate. (Fig. 4)

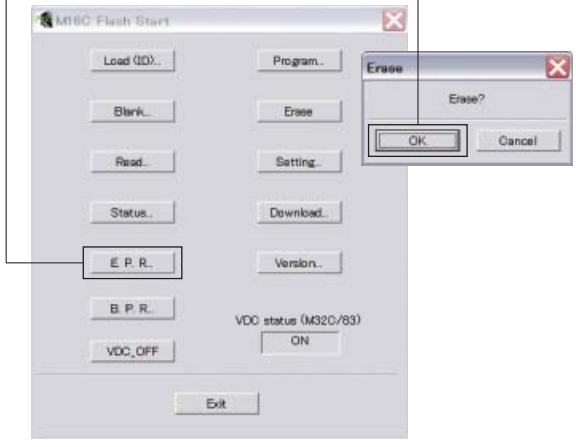


Select 115200 bps for the baud rate and 40 ms for the program intervals.

* Reduce the baud rate if a transmission error occurs frequently.

Fig. 4

6. Click [E.P.R.], then the “Erase” screen appears. (Fig. 5)
7. Click [OK] to start writing. (Fig. 5)



Writing being executed.

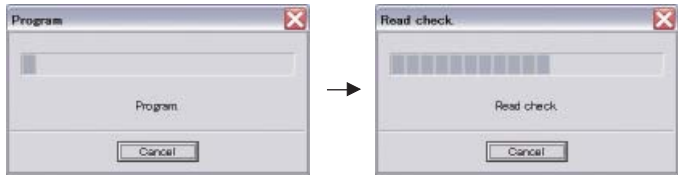


Fig. 5

8. When writing of the firmware is completed, the screen appears as shown below. (Fig. 6)
   Click [OK]. (Fig. 6)
9. Click [Exit] to end FlashSta.exe. (Fig. 6)

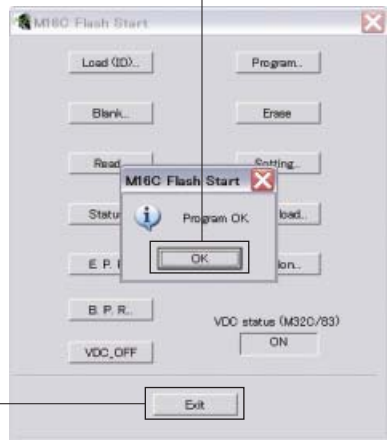


Fig. 6

10. Disconnect the power cable of this unit from the AC outlet.
11. Remove the RS232C conversion adaptor and flexible flat cable from the writing port (CB104 of FUNCTION P.C.B.) of this unit.
12. Start up the self-diagnostic function.

    Using the "1-1. Firmware version" / "1-2. Checksum" menu, have the firmware version and checksum displayed, and note down them. (See "SELF-DIAGNOSTIC FUNCTION")

    * When the firmware version and checksum are different from written ones, perform the "UPDATING FIRMWARE" again from the beginning.
13. Disconnect the power cable of this unit from the AC outlet.

■ SELF-DIAGNOSTIC FUNCTION

There are 10 main menu items, each of which has sub-menu items.

Listed in the table below are main menu items and sub-menu items.

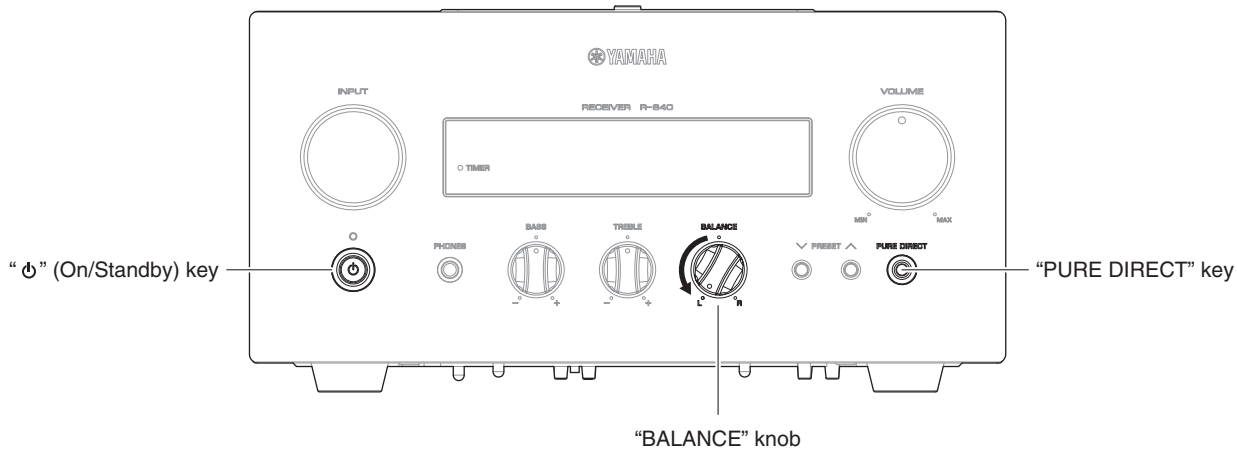
MAIN MENU		SUB-MENU	
1	VER/DEST/SUM	1	FIRMWARE VERSION / DESTINATION
		2	CHECKSUM
		3	DAB MODULE VERSION (A, B models)
2	DISPLAY CHECK	1	MENU DISPLAY
		2	VFD DISPLAY OFF
		3	VFD DISPLAY ALL
		4	VFD DIMMER 1 (100 %) / 2 (50 %) / 3 (25 %)
3	FACTORY PRESET	0	PRESET INH / RSRV
4	AD DATA CHECK	1	PS1 PROTECTION
		2	PS2 PROTECTION
		3	DC PROTECTION
		4	THM PROTECTION
		5	VOL (VOLUME)
		6	BAS (TONE CONTROL: BASS)
		7	TBL (TONE CONTROL: TREBLE)
		8	BAL (BALANCE L/R)
		9	CNT (CENTER)
		A	KEY
		B	DST (DESTINATION)
5	PROTECTION HISTORY	0	DISPLAY / RESET
		1	HISTORY 1
		2	HISTORY 2
		3	HISTORY 3
		4	HISTORY 4
6	EEPROM CHECK	1	EEPROM CHECK
7	iPod CHECK	1	iPod CONNECTOR CHECK
		2	iPod ACCESSORY POWER (DET_IPAP)
		3	iPod DETECTION (N_DET_IP)
		4	iPod PLAY/PAUSE KEY CHECK
8	AUDIO CHECK	1	AUDIO MUTE ON
		2	SP RELAY OFF
		3	HP MUTE ON
		4	BASS MAX (100Hz +10dB)
		5	BASS MIN (100Hz -10dB)
		6	TRE MAX (10kHz +10dB)
		7	TRE MIN (10kHz -10dB)
9	POWER OFF FACTOR HISTORY	1	LAST
		2	HISTORY 1
		3	HISTORY 2
		4	HISTORY 3
		5	HISTORY 4
A	SYSTEM CONNECTOR CHECK	1	SYSTEM CONNECTOR LOOP BACK CHECK
		2	SYSTEM CONNECTOR POWER LOW / HIGH (for CD-640)

● Starting Self-Diagnostic Function

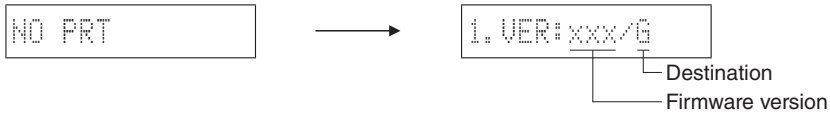
Turn the “BALANCE” knob counterclockwise fully and then while pressing the “PURE DIRECT” key of this unit as shown in the figure below, press the “⏻” (On/Standby) key to turn on the power.

The self-diagnostic function mode is activated.

Keys of this unit



Display



● Starting Self-diagnostic function in the protection cancel 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 PRI function will be disabled.)

Turn the “BALANCE” knob counterclockwise fully and then while pressing the “PURE DIRECT” key of this unit as shown in the figure above, press the “⏻” (On/Standby) key to turn on the power and keep pressing the “PURE DIRECT” key for 4 seconds or longer.

The self-diagnostic function mode is activated with the protection functions disabled.

In this mode, the “SLEEP” segment of the FL display of this unit flashes to indicate that the mode is self-diagnostic function mode with the protection functions disabled.

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

● Canceling Self-diagnostic function

① Before canceling self-diagnostic function, execute setting for FACTORY PRESET of main menu No. 3 (Memory initialization inhibited or Memory initialized).

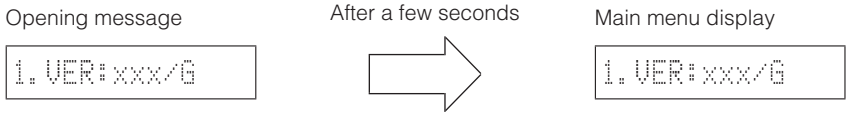
* In order to keep the user memory preserved, be sure to select PRESET INH (Memory initialization inhibited).

② Press the “⏻” (On/Standby) key of this unit to turn off the power.

● Display provided when Self-Diagnostic Function started

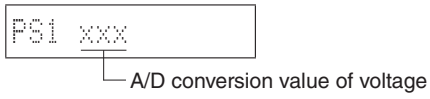
The FL display of this unit displays the history of protection function data then the main menu (sub-menu FIRMWARE VERSION/DESTINATION of main menu No. 1 VER/DEST/SUM) a few seconds later.

When there is no history of protection function:



When there is a history of protection function:

When there is a history of protection function due to abnormal voltage in the power supply section.

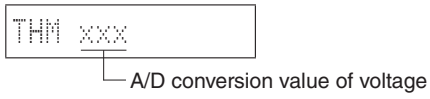


For details of protection functions, refer to the main menu No. 4-1 PS1 / 4-2 PS2.

When there is a history of protection function due to abnormal DC output from the amplifier.

For details of protection functions, refer to the main menu No. 4-3 DC.

When there is a history of protection function due to abnormal temperature.



For details of protection functions, refer to the main menu No. 4-4 THM.

● History of protection function

When the protection function has worked, its history is stored in memory with a backup. Even if no abnormality is noted while servicing the unit, an abnormality which has occurred previously can be defined as long as the backup data has been stored.

The history of the protection function will be initialized when self-diagnostic function is cancelled by selecting No. 3 PRESET RSRV (Memory initialized) / No. 5 PROTECTION HISTORY (History reset) or when the backup data is erased.

● Operation procedure of Main menu and Sub-menu

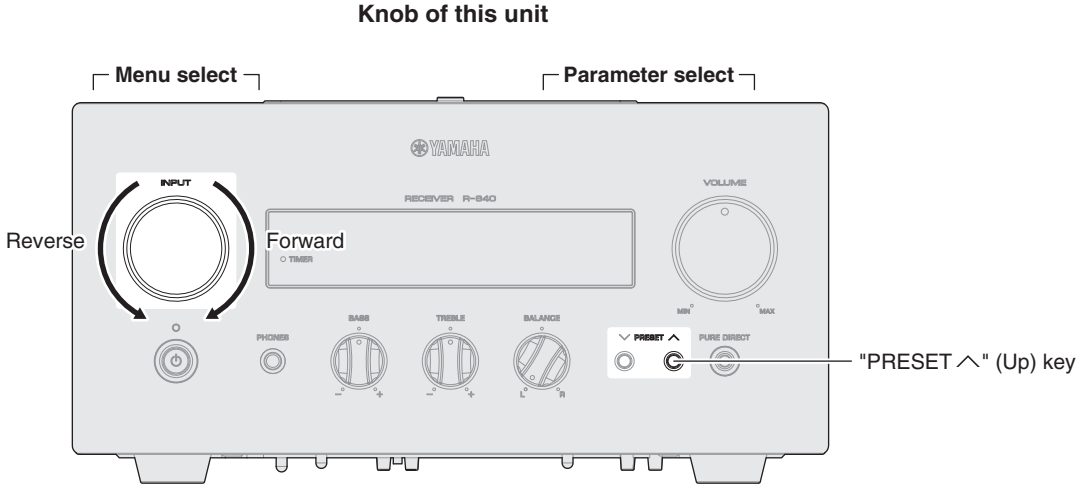
There are 10 main menu items, each of them having sub-menu items.

Main menu and Sub-menu selection

Both main menu and sub-menu can be selected by using the “INPUT” knob.

Parameter selection

The parameter can be selected by using the “PRESET ∧” (Up) key.



● Functions in Self-Diagnostic Function mode

In addition to the self-diagnostic function menu items, functions as listed below are available.

- Power on/off
- Master volume

* Functions related to the tuner and the set menu are not available.

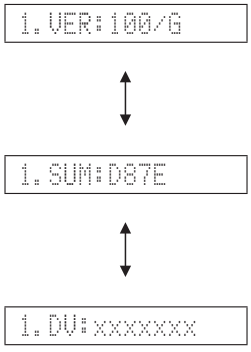
● Details of Self-Diagnostic Function menu

1. VER/DEST/SUM

This menu is used to display the firmware version, checksum and destination.

The checksum is obtained by adding the data at every 8-bit for each program area and expressing the result as a 4-figure hexadecimal data.

* Numeric values in the figure example are for reference.



1-1. FIRMWARE VERSION/DESTINATION

The firmware version of microprocessor (IC101 of FUNCTION P.C.B.) and destination are displayed.

1-2. CHECKSUM

The checksum value of microprocessor (IC101 of FUNCTION P.C.B.) is displayed.

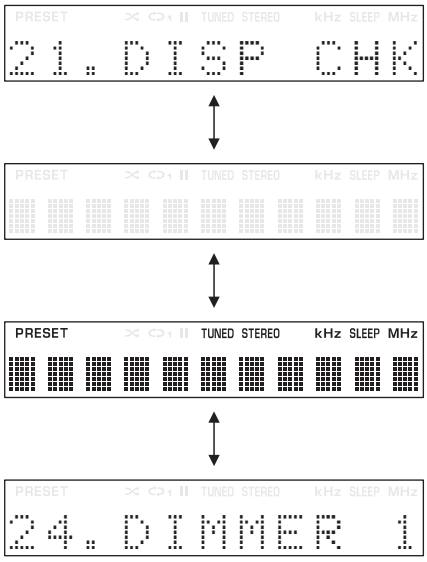
1-3. DAB MODULE VERSION (A, B models)

The Firmware version of DAB module is displayed.

2. FL DISPLAY CHECK

This menu is used to check the FL display section/indicators for displaying/indicating.

Using the sub-menu, the display condition changes as shown below.



2-1. Initial display

"⏻" (On/Standby) indicator: On (Green)

PURE DIRECT indicator: Off

2-2. All segments Off

"⏻" (On/Standby) indicator: Off

PURE DIRECT indicator: Off

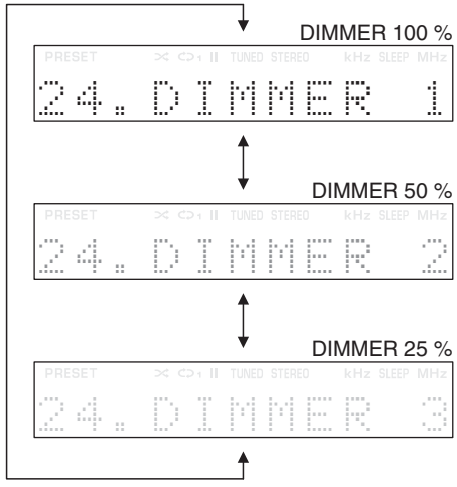
2-3. All segments On

"⏻" (On/Standby) indicator: On (Orange)

PURE DIRECT indicator: On

2-4. DIMMER 100 % / 50 % / 25 %

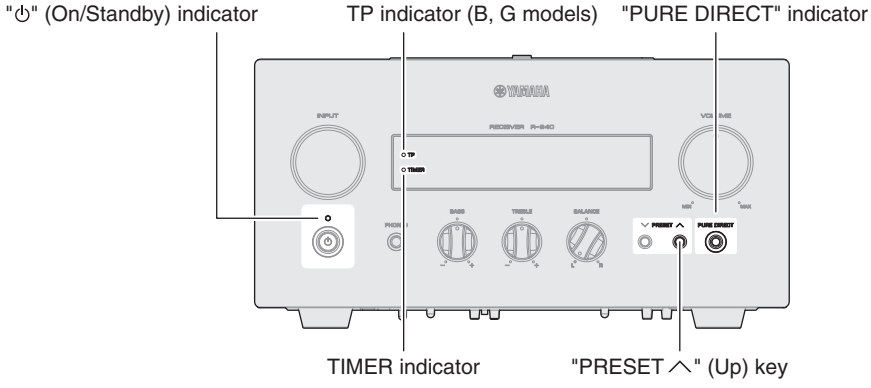
Select this menu and press the "PRESET ∧" (Up) key to change display.



TP indicator: On (B, G models)
TIMER indicator: Off

TP indicator: Off (B, G models)
TIMER indicator: On

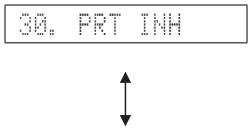
TP indicator: Off (B, G models)
TIMER indicator: Off



3. FACTORY PRESET

This menu is used to reserve/inhibit initialization of the back-up IC.

Select this menu and press the "PRESET ∧" (Up) key to change display.



PRESET INHIBIT (Initialization inhibited)

Back-up IC initialization is not executed.

Select this sub-menu to protect the values set by the user.

PRESET RESERVED (Initialization reserved)

Initialization of the back-up IC is reserved. (Actually, initialization is executed the next time the power is turned on.)

Select this sub-menu to reset to the original factory settings or to reset the back-up IC.

Any protection history will be initialized.

4. AD DATA CHECK

This menu is used to display the A/D conversion value of the microprocessor which detects panel keys of this unit and protection functions by using the sub-menu. (Reference voltage: 5.0 V = 1023)

4-1. PS1

Power supply voltage protection 1 detection

Voltage detects: ±B, +VP and +9T.

Normal value: 366 to 687
(Reference voltage: 5.0 V = 1023)

* If PS1 becomes out of the normal value range, the protection function works to turn off the power.

4-2. PS2

Power supply voltage protection 2 detection

Voltage detects: +9T, ±7V and +3.3DAB (A, B models).

Normal value: 366 to 679
(Reference voltage: 5.0 V = 1023)

* If PS2 becomes out of the normal value range, the protection function works to turn off the power.

4-3. DC

Power amplifier DC (DC voltage) output detection

Normal value: 0 to 500
(Reference voltage: 5.0 V = 1023)

* If DC becomes out of the normal value range, the protection function works to turn off the power.

4-4. THM

Temperature detection

Temperature of the heatsink is detected by IC501 of the MAIN P.C.B..

Normal value: 41 to 317
(Reference voltage: 5.0 V = 1023)

```
44.THM: 0186
```

* If THM becomes out of the normal value range, the protection function works to turn off the power.

4-5. VOLUME

VOLUME knob position detection

The voltage at 97 pin (I-VOL) of microprocessor IC101 is displayed.

Normal value: 0 (MIN) to 1010 or more (MAX)
(Reference voltage: 5.0 V = 1023)

```
45.VOL:0000
```

4-6. BASS

BASS knob position detection

The voltage at 94 pin (I-BAS) of microprocessor IC101 is displayed.

Normal value: 0 (-) to 1010 or more (+)
(Reference voltage: 5.0 V = 1023)

```
46.BAS:0502
```

4-7. TBL

TREBLE knob position detection

The voltage at 95 pin (I-TRE) of microprocessor IC101 is displayed.

Normal value: 0 (-) to 1010 or more (+)
(Reference voltage: 5.0 V = 1023)

```
47.TBL:0502
```

4-8. BAL

BALANCE knob position detection

The voltage at 93 pin (I-LRBAL) of microprocessor IC101 is displayed.

Normal value: 0 (L) to 1010 or more (R)
(Reference voltage: 5.0 V = 1023)

```
48.BAL:0502
```

4-9. CNT

Center position detection of BASS, TREBLE and BALANCE knobs

Normal value: 470 to 552
(Reference voltage: 5.0 V = 1023)

```
49.CNT:0502
```

4-A. KEY

Panel keys detection

The voltage at 74 pin (I-KEY0) of microprocessor IC101 is displayed.

(Reference voltage: 5.0 V = 1023)

Key detection for A/D port

Key input (A/D) pull-up resistance 10 k-ohms

Ohm	0	+1.2 k	+91 k
V	0 – 0.2	0.3 – 0.8	4.0 – 5.0
A/D value (5V=1023)	0 – 40	60 – 165	820 – 1023
I-KEY0 (91 pin)	PRESET UP	PRESET DOWN	PURE DIRECT

4-B. DST

Destination detection

The voltage at 81 pin (DEST) of microprocessor IC101 is displayed.

(Reference voltage: 5.0 V = 1023)

Destination detection for A/D port

Destination input (A/D) pull-up resistance 10 k-ohms

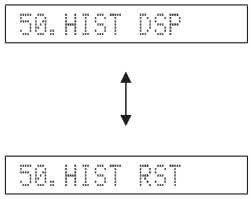
Ohm	1.2 k	4.7 k	6.8 k	15.0 k	24.0 k	47.0 k	100.0 k
V	0.2 – 1.0	1.1 – 1.8	1.9 – 2.5	2.6 – 3.2	3.3 – 3.8	3.9 – 4.3	4.4 – 4.8
A/D value (5V=1023)	40 – 205	225 – 370	390 – 510	530 – 655	675 – 780	800 – 880	900 – 985
DEST (81 pin)	C	V	T, K	A	B	G	L

5. PROTECTION HISTORY

This menu is used to display the history of protection function.

5-0. DSP / RST

Select this menu and press the "PRESET ∧" (Up) key to change display.

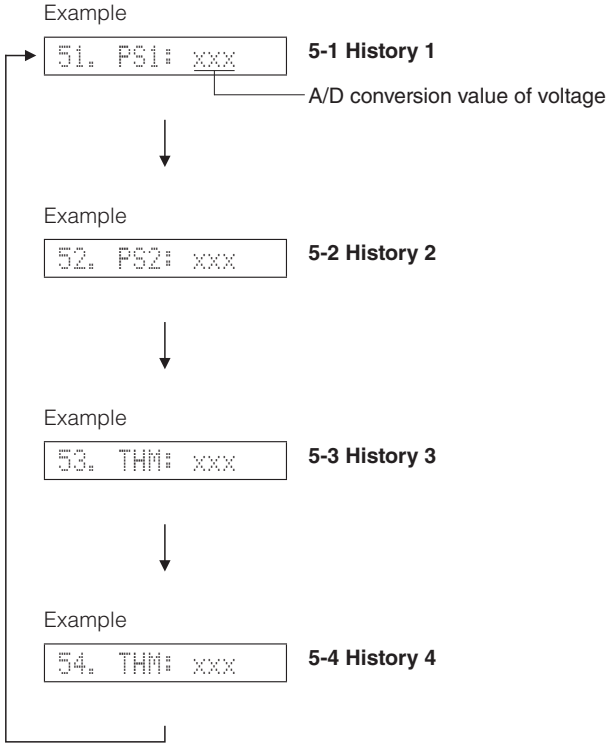


DSP: Displayed.

RST: Initialization of the history of protection function is reserved.
(Actually, initialization is executed the next time the power is turned on.)

5-1. History 1 to 4

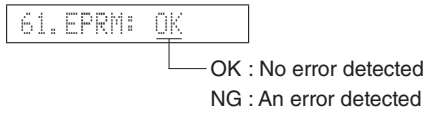
Select this menu and press the "PRESET ∧" (Up) key to change display.



For details of the protection function, see "4. AD DATA CHECK".

6. EEPROM CHECK

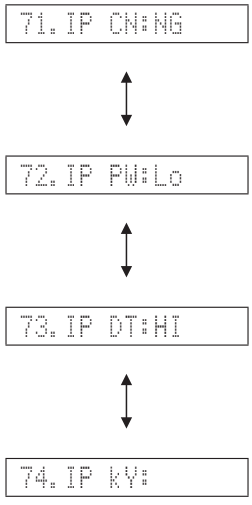
This menu is used to check the communicating condition between the microprocessor (IC101) and the EEPROM (IC102) on the FUNCTION P.C.B..



7. iPod

This menu is used to check the connecting condition of the iPod terminal.

Before starting check, connect the iPod to the iPod terminal of this unit.



7-1. The iPod terminal loop-back check

Not applied to this model.

7-2. The iPod Accessory Power (DET_IPAP) is detected

Not applied to this model.

7-3. The iPod installation (N_DET_IP) is detected

HI: Undetect iPod

LO: Detect iPod

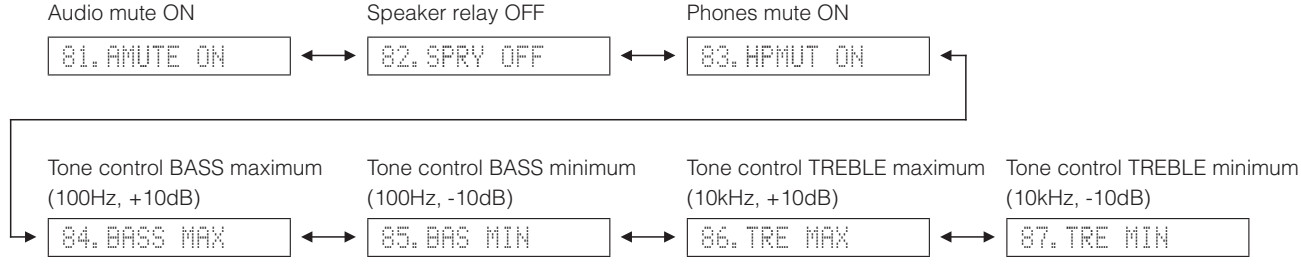
7-4. The "iPod ►/▮▮" (iPod Play/Pause) key detection

ON: "iPod ►/▮▮" (iPod Play/Pause) key of this unit is pressed

---: NO detection key

8. AUDIO CHECK

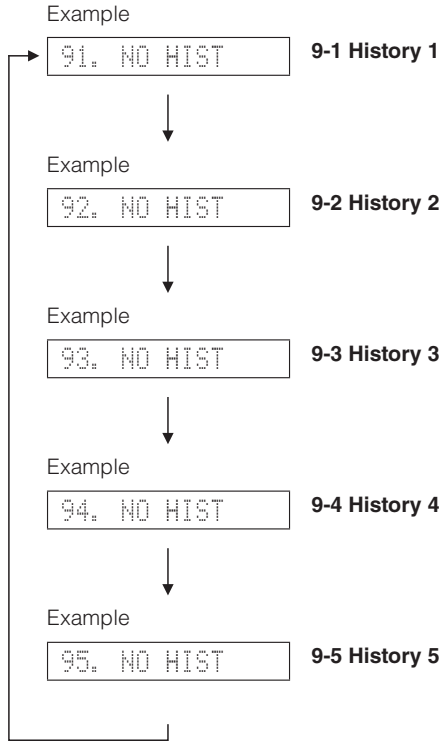
This menu is used to check the MUTE status and volume level setting.



9. POWER OFF FACTOR HISTORY

This menu is used to display the history of power off factor.

Select this menu and press the "PRESET ∧" (Up) key to change display.



Power off factor display are as follows.

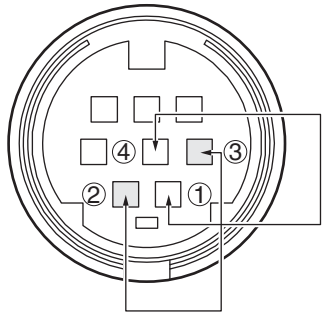
9x. PWR DN	Power down
9x. PRT	Protection
9x. SLEEP	SLEEP timer
9x. PANEL SW	"⏻" (On/Standby) key of this unit
9x. RC KEY	"⏻" (On/Standby) key of the remote control
9x. SYS LINK	System link to player
9x. AT STBY	Auto standby
9x. TIMER	Timer play ends
9x. NO HIST	No history

A. SYSTEM CONNECTOR

This menu is used to check the SYSTEM connector without connecting the BD/DVD/CD player to this unit.

With the power to this unit turned off, short between pins No. 1 (SYS_MOSI) and No. 4 (SYS_MISO), between pins No. 2 (SYS_PL_EN) and No. 3 (SYS_RE_EN).

SYSTEM CONNECTOR



Note) Be sure to return the shorted pins to their original condition after executing this check.

Start up the self-diagnostic function and select this menu.

A-1. SYSTEM CONNECTOR Loop back check

System control line loop back check is executed.

SYS LB NG	System control line loop back check OK : No error detected NG : An error is detected

A-2. SYS POW (System connector power supply detection)

The output status at 5 pin (PLAYER_S10) of the SYSTEM connector is displayed.

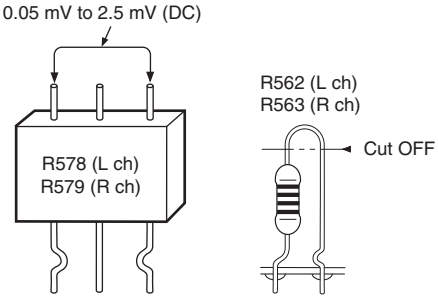
SYS POW LOW	Power supply control line loop back check LOW : Player undetected HIGH : Player detected

■ CONFIRMATION OF IDLING CURRENT OF AMP UNIT

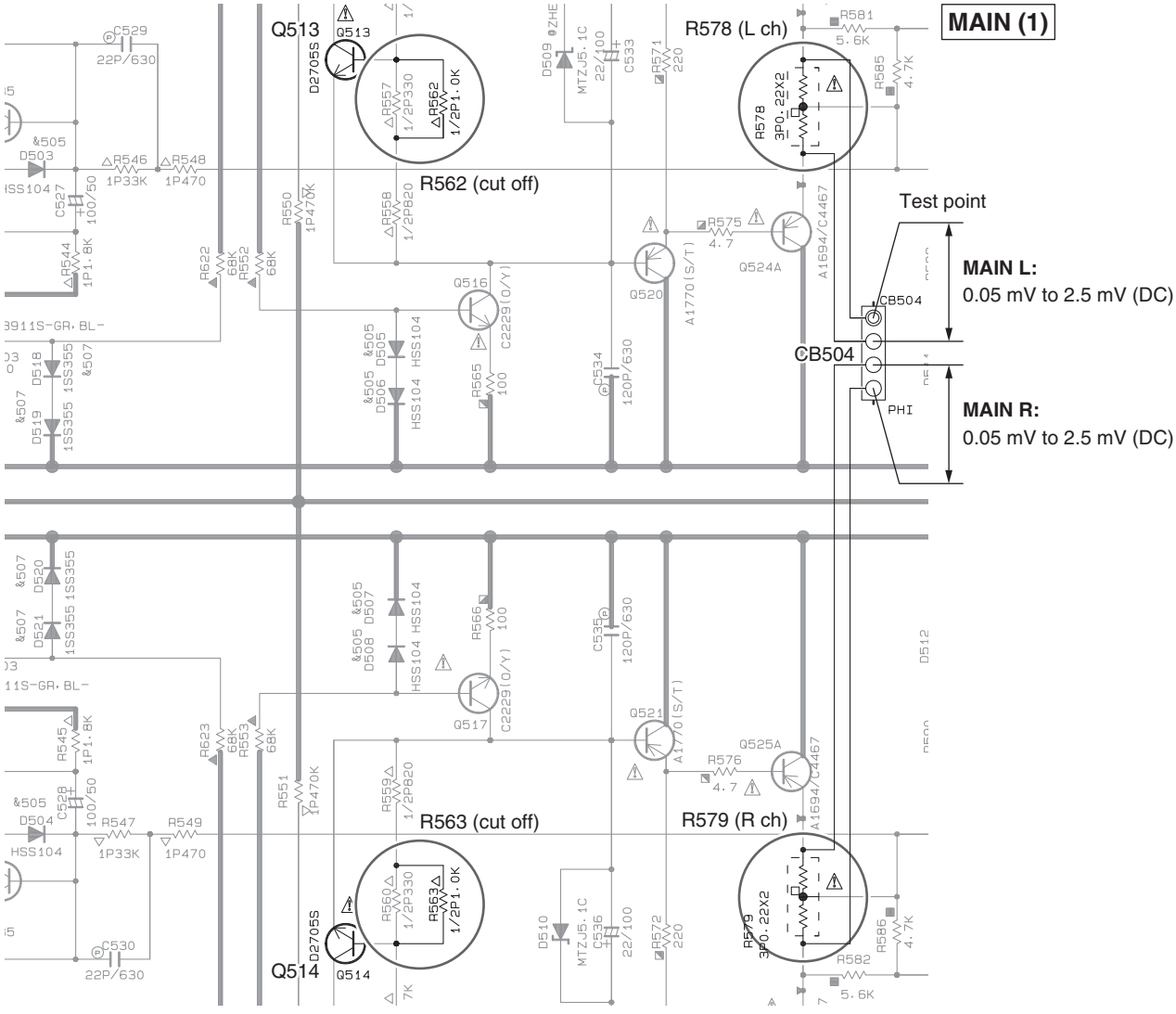
1) No signal applied.
2) Non-loaded condition.
3) Aging is not necessary.

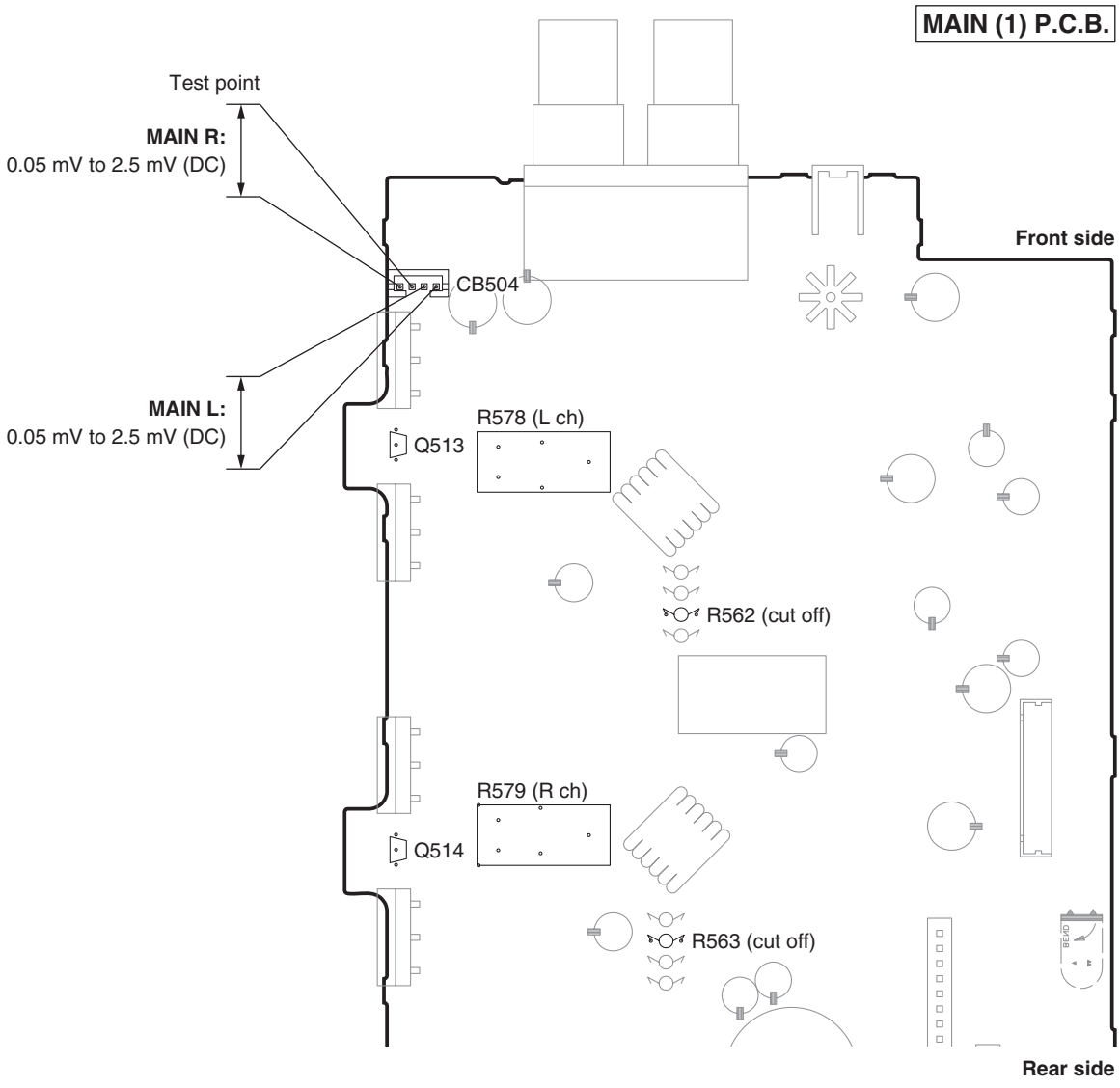
Item	Test Point	Rating (DC)	Note
MAIN L: R578	CB504 1 – 2 pin	0.05mV – 2.5mV	If the measured voltage exceeds 2.6 mV, cut the lead wire of R562 (L ch) or R563 (R ch) and then check again if each measured value satisfies the rating.
MAIN R: R579	CB504 3 – 4 pin		

* Confirm that the idling current is 0.2 mV – 15 mV after 60 minutes.



SCHEMATIC DIAGRAM



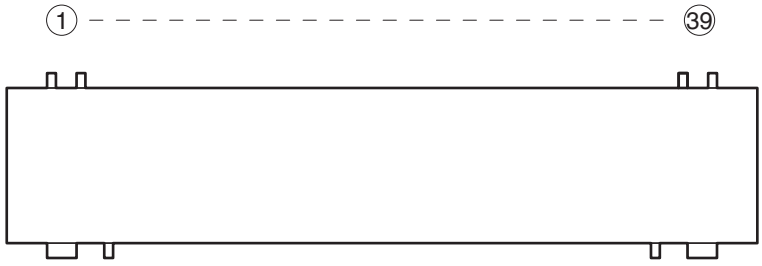


Notes)

- If the measured voltage exceeds 2.6 mV after an amplifier repair, first check for a defective component before cutting the bias resistor.
- If R562 (L ch) or R563 (R ch) have already been cut off and idling current does not flow, reconnect R562 (1 k-ohms) or R563 (1 k-ohms).
- Q513 and Q514 are transistors for temperature correction. Apply silicone grease to the contact surface with the heatsink.

■ DISPLAY DATA

● **V801 : 12-ST-73GINK (MAIN P.C.B.)**

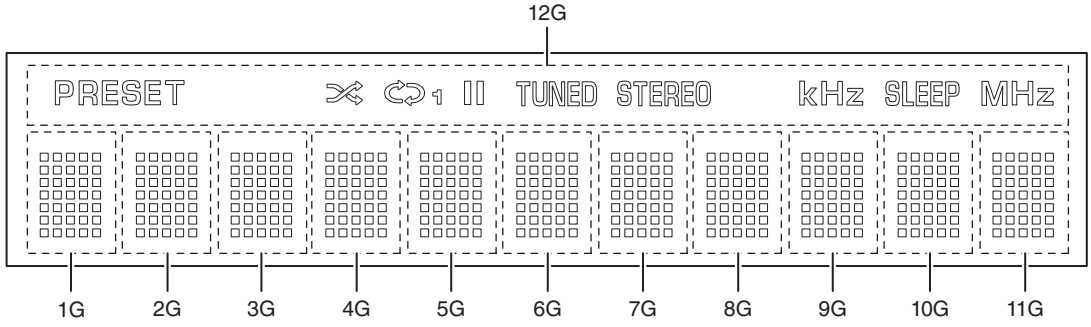


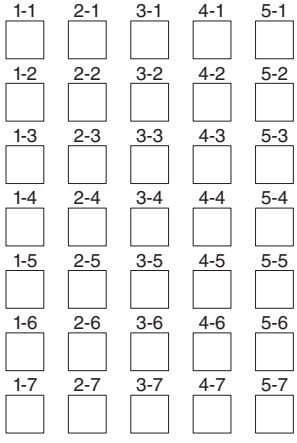
● **PIN CONNECTION**

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Connection	F1	NP	NP	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX	NX
Pin No.	21	22	23	24	25	26	27	28	29	30	31		32	33	34	35		36	37	38	39
Connection	NX	NX	NX	NX	NX	TSB	TSA	DA	CP	$\overline{CS}$	$\overline{RESET}$		OSC	VDD	VH	PGND		LGND	NP	NP	F2

Note: 1) F1, F2 ..... Filament 2) NP ..... No pin 3) NX ..... No extended pin 4) DL ..... Datum line 5) LGND ..... Logic GND pin
6) PGND ..... Power GND pin 7) VH ..... High voltage supply pin 8) VDD ..... Logic voltage supply pin 9) CP ..... Shift register clock
10) DA ..... Serial data input 11) CS ..... Chip select input pin 12) TSA, B ..... Test pin 13) OSC ..... Pin for self-oscillation
14) RESET ..... Reset input

● **GRID ASSIGNMENT**





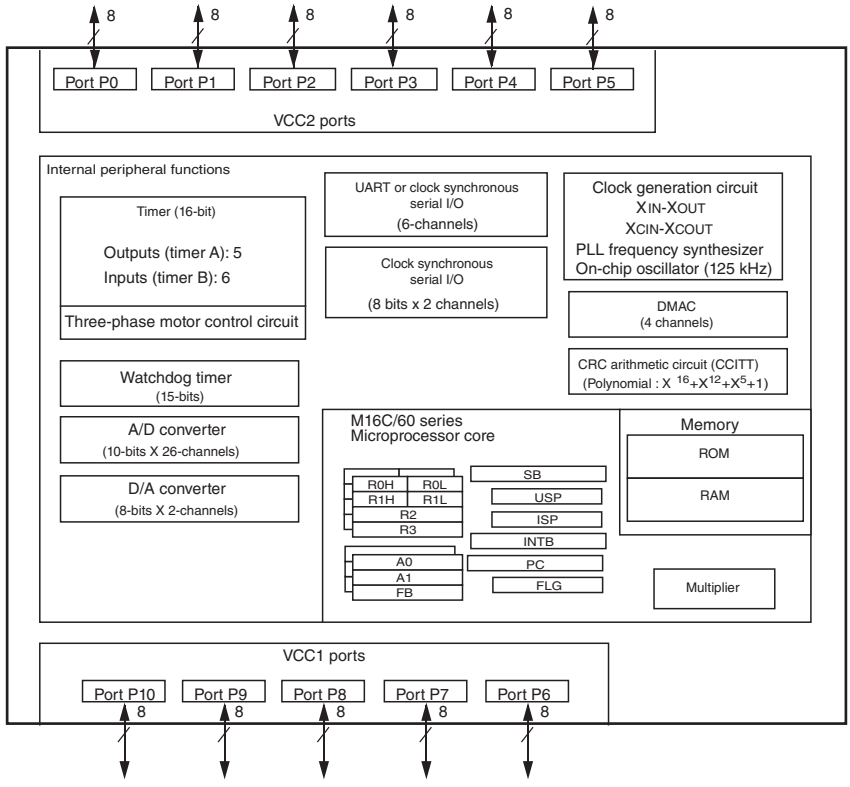
1G to 11G

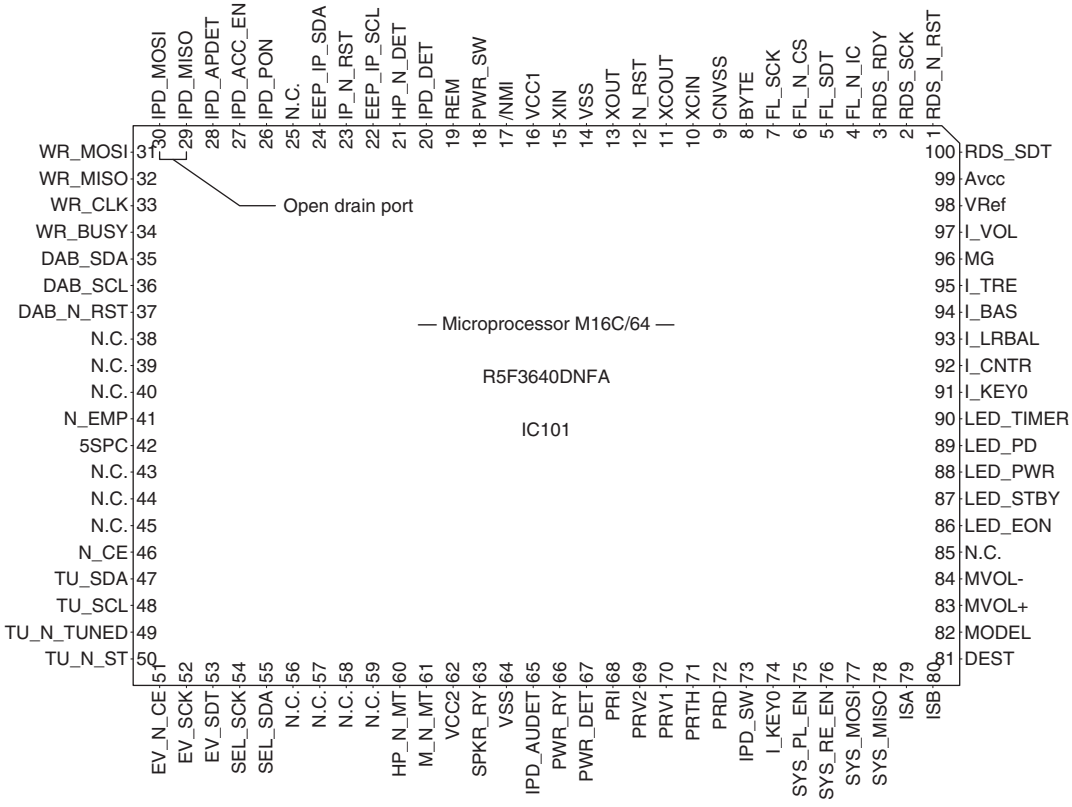
● **ANODE CONNECTION**

	1G to 11G	12G		1G to 11G	12G		1G to 11G	12G
D0	1-1	PRESET	D15	1-4	–	D30	1-7	–
D1	2-1		D16	2-4	–	D31	2-7	–
D2	3-1		D17	3-4	–	D32	3-7	–
D3	4-1	1	D18	4-4	–	D33	4-7	–
D4	5-1	II	D19	5-4	–	D34	5-7	–
D5	1-2	TUNED	D20	1-5	–			
D6	2-2	STEREO	D21	2-5	–			
D7	3-2	kHz	D22	3-5	–			
D8	4-2	SLEEP	D23	4-5	–			
D9	5-2	MHz	D24	5-5	–			
D10	1-3	–	D25	1-6	–			
D11	2-3	–	D26	2-6	–			
D12	3-3	–	D27	3-6	–			
D13	4-3	–	D28	4-6	–			
D14	5-3	–	D29	5-6	–			

■ IC DATA

IC101: R5F3640DNFA (FUNCTION P.C.B.)
Single-chip 16-bit CMOS microprocessor





Pin No.	Port Name	Function Name (P.C.B.)	I/O				Detail of Function
			PowerOn	Standby	MCUSleep [Standby]	Writing	
1	P9_6/ANEX1/SOUT4	RDS_N_RST	O	O	O		RDS reset control
2	P9_5/ANEX0/CLK4	RDS_SCK	SO	O	O		Serial clock for RDS communication
3	P9_4/DA1/TB4IN	RDS_RDY	I	O	O		RDS READY input terminal
4	P9_3/DA0/TB3IN	FL_N_IC	O	O	O		FL initial clear control
5	P9_2/TB2IN/SOUT3	FL_SDT	SO	O	O		FL serial communication data
6	P9_1/TB1IN/SIN3	FL_N_CS	O	O	O		FL communication chip select
7	P9_0/TB0IN/CLK3	FL_SCK	SO	O	O		FL communication serial clock
8	BYTE	BYTE	MCU	MCU	MCU		Connect to Vss when using the single chip mode (for change of external data bus width: 16bit)
9	CNVss	CNVss	MCU	MCU	MCU		Low: Processor mode select: Single chip mode H: To flash included boot mode
10	P8_7/XCIN	XCIN	MCU	MCU	MCU		Sub clock 32.768 kHz input
11	P8_6/XCOUT	XCOUT	MCU	MCU	MCU		Sub clock 32.768 kHz output
12	RESET	N_RST	MCU	MCU	MCU		Reset input
13	Xout	XOUT	MCU	MCU	MCU		Main clock 20 MHz output
14	Vss	VSS	MCU	MCU	MCU		
15	Xin	XIN	MCU	MCU	MCU		Main clock 20 MHz input
16	Vcc1	VCC1	MCU	MCU	MCU		
17	P8_5/NMI/SD	/NMI	MCU	MCU	MCU		No use (Pull-up) * Nch Open Drain
18	P8_4/INT2/ZP	PWR_SW	IRQ	IRQ	O		POWER SW detection
19	P8_3/INT1	REM	IRQ	IRQ	O		Remote control pulse input
20	P8_2/INT0	IPD_DET	IRQ	IRQ	O		iPod detection
21	P8_1/TA4IN/U/CTS5/RTS5	HP_DET	I	O	O		Headphone detection Hi: Insert HP
22	P8_0/TA4OUT/U//RXD5/SCL5	EEP_IP_SCL	SO	O	O		I2C bus clock for EEP ROM and iPod certification
23	P7_7/TA3IN/CLK5	IP_N_RST	O	O	O		iPod certification chip reset control 50kHz when in the I2C low speed mode As inputting the high speed causes a malfunction, be sure to set at “Low” and keep the reset state except during communication
24	P7_6/TA3OUT/TXD5/SDA5	EEP_IP_SDA	SIO	O	O		I2C bus data for EEP ROM and iPod certification
25	P7_5/TA2IN/W	NC	O	O	O		
26	P7_4/TA2OUT/W	IPD_PON	O	O	O		Power supply regulator IC for iPod charge ON/OFF control Hi = ON, Low = OFF
27	P7_3/CTS2/RTS2/TA1IN/V	IPD_ACC_EN	O	O	O		Set at Low while in the Standby mode and when AC turned off Kept at Hi in the usual state (communicable with iPod)
28	P7_2/CLK2/TA1OUT/V	IPD_AP_DET	I	O	O		Accessory power detection
29	P7_1/RXD2/SCL2/TA0IN/TB5IN	IPD_MISO	SI	O	O		iPod UART communication * Nch Open Drain
30	P7_0/TXD2/SDA2/TA0OUT	IPD_MOSI	SO	O	O		iPod UART communication * Nch Open Drain
31	P6_7/TXD1/SDA1	WR_MOSI	SO	SO	O	MCU	For simple emulation Rx during flash writing
32	P6_6/RXD1/SCL1	WR_MISO	SI	SI	O	MCU	For simple emulation Tx during flash writing
33	P6_5/CLK1	WR_CLK	SO	SO	O	MCU	For simple emulation Clock during flash writing
34	P6_4/CTS1/RTS1/CTS0/CLKS1	WR_BUSY	O	O	O	MCU	For simple emulation BUSY output during flash writing
35	P6_3/TXD0/SDA0	DAB_SDA	SIO	O	O		Bus data of DAB I2C communication I2C fs = 100 k/400 k
36	P6_2/RXD0/SCL0	DAB_SCL	SO	O	O		Bus clock of DAB I2C communication I2C fs = 100 k/400 k
37	P6_1/CLK0	DAB_N_RST	O	O	O		DAB reset control
38	P6_0/CTS0/RTS0	NC	O	O	O		
39	P5_7/RDY/CLKOUT	NC	O	O	O		
40	P5_6/ALE	NC	O	O	O		
41	P5_5/HOLD	/EMP	I				(LO) for flash writing Pull down as the Hiz state may occur while the emulator is operating

Pin No.	Port Name	Function Name (P.C.B.)	I/O				Detail of Function
			PowerOn	Standby	MCUSleep [Standby]	Writing	
42	P5_4/HLDA	5SPC	O	O	O [O]		ON/OFF control of the +5SPC power supply (L = ON / H = OFF: for reduction of standby power) Fixed at Low usually The standby power is reduced (MCUSleep) by setting at Hi after the procedure required for the standby setting is completed When changing to the Standby mode, set at Hi after the ending procedure is completed
43	P5_3/BCLK	NC	O	O	O		
44	P5_2/RD	NC	O	O	O		
45	P5_1/WRH/BHE	NC	O	O	O		
46	P5_0/WRL/WR	/CE	I				(HI) for flash writing
47	P4_7/TXD7/SDA7/CS3	TU_SDA	SIO	O	O		I2C bus data of TUNER communication
48	P4_6/RXD7/SCL7/CS2	TU_SDL	O	O	O		I2C bus clock of TUNER communication
49	P4_5/CLK7/CS1	TU_N_TUNED	O	O	O		TUNER TUNED input
50	P4_4/CTS7/RTS7/CS0	TU_N_ST	O	O	O		TUNER STEREO detection input
51	P4_3/A19	EV_N_CE	O	O	O		Chip enable of electronic VOLUME control
52	P4_2/A18	EV_SCK	SO	O	O		Serial clock of electronic VOLUME control
53	P4_1/A17	EV_SDT	SO	O	O		Serial data of electronic VOLUME control
54	P4_0/A16	SEL_TU	SO	O	O		Sound switch of DAB and TUNER L: DAB, H: TUNER (FM) (B model)
55	P3_7/A15	NC	O	O	O		
56	P3_6/A14	NC	O	O	O		
57	P3_5/A13	NC	O	O	O		
58	P3_4/A12	NC	O	O	O		
59	P3_3/A11	NC	O	O	O		
60	P3_2/A10	HP_N_MT	O	O	O		Head phone MUTE control Low = MUTE ON
61	P3_1/A9	M_N_MT	O	O	O		MAIN MUTE control Low = MUTE ON
62	Vcc2	VCC2	MCU	MCU	MCU		
63	P3_0/A8	SPKER_RY	O	O	O		Speaker relay control Hi = Relay ON
64	Vss	VSS	MCU	MCU	MCU		
65	P2_7/AN2_7/A7	IP_AUDET	AD	O	O		iPod Audio signal detection
66	P2_6/AN2_6/A6	PWR_RY	O	O	O		Power relay control
67	P2_5/INT7/AN2_5/A5	PWR_DET	IRQ	IRQ	IRQ		AC IN detection circuit Pull up to +5M by 100 k-ohms on the SUB TR circuit board
68	P2_4/INT6/AN2_4/A4	PRI	IRQ	O	O		POWER AMP current protection is detected * R-840 used as current protection as well If specifications are the same, the current protection and DC protection are monitored by AD Low = normal, Hi = abnormal The PRI logic 5V is made with +B and Zener
69	P2_3/AN2_3/A3	PRV2	AD	O	O		Power supply protection detection 2
70	P2_2/AN2_2/A2	PRV1	AD	O	O		Power supply protection detection 1
71	P2_1/AN2_1/A1	PRTH	AD	O	O		Temperature detection
72	P2_0/AN2_0/A0	PRD	AD	O	O		POWER AMP DC protection is detected The PRI logic 5V is made with +B and Zener The PD resistance is for fixing at Low in the normal state
73	P1_7/INT5/D15	IPD_SW	IRQ	IRQ	O		iPod Play/Pause SW detection
74	P1_6/INT4/D14	I_KEY0	IRQ	IRQ	O		Connecting 91pin: AD5: I-KEY0 Usable for the direct play by TUNER PRESET Up/Down The key is discriminated by checking the AD5 value after an interruption is detected
75	P1_5/INT3/D13	SYS_PL_EN	IRQ	IRQ	O		POWER DET detection of SYSTEM (PLAYER) Effective distinction of player's CPU Hi = player CPU effective
76	P1_4/D12	SYS_R_EN	O	O	O		RECEIVER CPU state signal Hi = Receiver CPU effective
77	P1_3/TXD6/SDA6/D11	SYS_MOSI	SO	O	O		SYSTEM communication receiver CPU to player CPU
78	P1_2/RXD6/SCL6/D10	SYS_MISO	SI	O	O		SYSTEM communication player CPU to receiver CPU
79	P1_1/CLK6/D9	ISA	I	O	O		Encoder phase detection input for input selector
80	P1_0/CTS6/RTS6/D8	ISB	I	O	O		Encoder phase detection input for input selector
81	P0_7/AN0_7/D7	DEST	AD	AD	O		Destination distinction

Pin No.	Port Name	Function Name (P.C.B.)	I/O				Detail of Function
			PowerOn	Standby	MCUSleep [Standby]	Writing	
82	P0_6/AN0_6/D6	MODEL	AD	AD	O		Model distinction
83	P0_5/AN0_5/D5	MVOL+	O	O	O		Direction control of upside of MOTOR VOLUME
84	P0_4/AN0_4/D4	MVOL-	O	O	O		Direction control of downside of MOTOR VOLUME
85	P0_3/AN0_3/D3	0	O	O	O		
86	P0_2/AN0_2/D2	LED_EON	O	O	O		EON LED control
87	P0_1/AN0_1/D1	LED_STBY	O	O	O		STANDBY LED control STANDBY = Hi (LED ON)
88	P0_0/AN0_0/D0	LED_PWR	O	O	O		POWER ON LED control POWER ON = Hi (LED ON)
89	P10_7/AN7/KI3	LED_PD	O	O	O		PURE DIRECT LED control PURE DIRECT = Hi (LED ON)
90	P10_6/AN6/KI2	LED_TIMER	O	O	O		TIMER LED control TIMER setting = Hi (LED ON)
91	P10_5/AN5/KI1	I_KEY0	AD	O	O		KEY AD value input
92	P10_4/AN4/KI0	I_CNTR	AD	O	O		Reference value of AD uptake of TREBLE, BASS, LRBALANCE Knob center value
93	P10_3/AN3	I_LRBAL	AD	O	O		LRBALANCE knob position detection AD value input
94	P10_2/AN2	I_BAS	AD	O	O		BASS knob position detection AD value input
95	P10_1/AN1	I_TRE	AD	O	O		TREBLE knob position detection AD value input
96	Avss	MG	MCU	MCU	MCU		
97	P10_0/AN0	I_VOL	AD	O	O		VOLUME position detection AD value input
98	Vref	VREF	MCU	MCU	MCU		
99	Avcc	AVCC	MCU	MCU	MCU		
100	P9_7/ADTRG/SIN4	RDS_SDT	SI	O	O		Serial data for RDS communication

Key detection for A/D port
Key input (A/D) pull-up resistance 10 k-ohms

Ohm	0	+1.2 k	+91 k
V	0 – 0.2	0.3 – 0.8	4.0 – 5.0
A/D value (5V=1023)	0 – 40	60 – 165	820 – 1023
I-KEY0 (91 pin)	PRESET UP	PRESET DOWN	PURE DIRECT

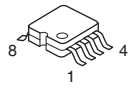
Destination detection for A/D port
Destination input (A/D) pull-up resistance 10 k-ohms

Ohm	1.2 k	4.7 k	6.8 k	15.0 k	24.0 k	47.0 k	100.0 k
V	0.2 – 1.0	1.1 – 1.8	1.9 – 2.5	2.6 – 3.2	3.3 – 3.8	3.9 – 4.3	4.4 – 4.8
A/D value (5V=1023)	40 – 205	225 – 370	390 – 510	530 – 655	675 – 780	800 – 880	900 – 985
DEST (81 pin)	C	V	T, K	A	B	G	L

■ PIN CONNECTION DIAGRAMS

• ICs

BA15218F



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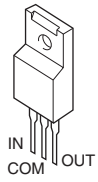

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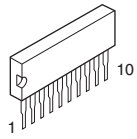

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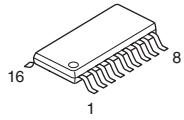

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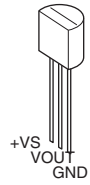

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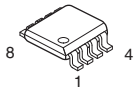

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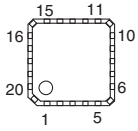

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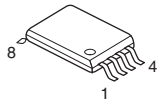

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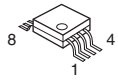

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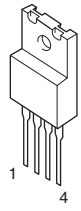
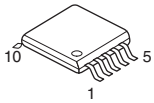


1. VIN
2. VOUT
3. GND
4. ON/OFF CONTROL

NJM2752RB0



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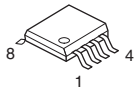

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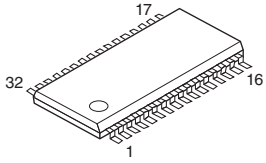

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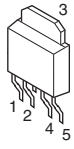
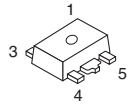


1: Vin
2: VB
3: Vout
4: NC
5: GND

R1154H058B-T1-F



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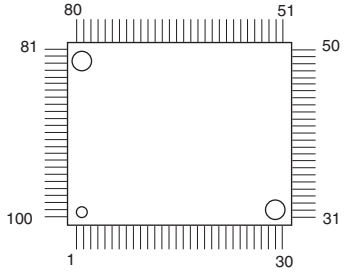

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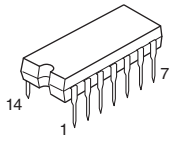

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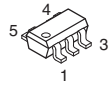

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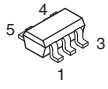

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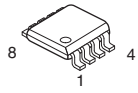

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 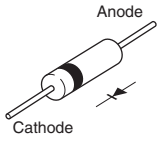 </td>
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 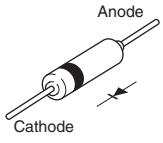 </td>
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 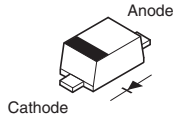 </td>
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 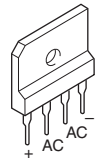 </td>
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HZU3.0B1 TRF-E
HZU3.9B2 TRF-E
HZU4.7B2 TRF-E
HZU5.1B2 TRF-E
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 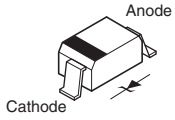 </td>
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 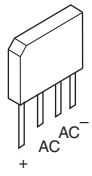 </td>
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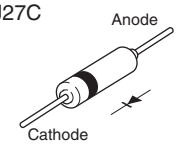
MTZJ5.1C
MTZJ8.2C
MTZJ12C
MTZJ27C
  </td>
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 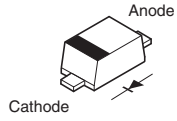 </td>
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 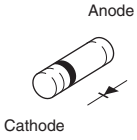 </td>
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 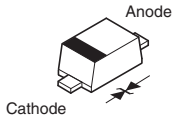 </td>
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 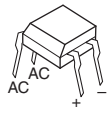 </td>
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 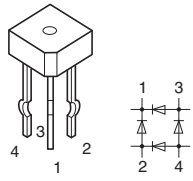 </td>
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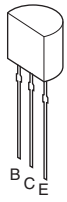
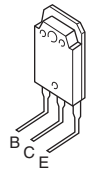
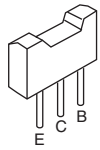
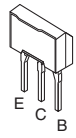
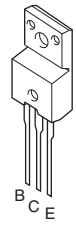
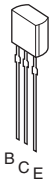
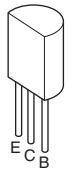
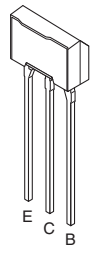
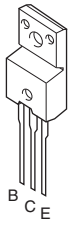
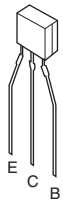
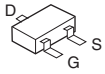
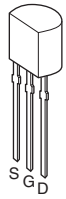
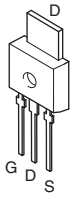
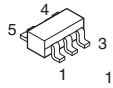
• Transistors

2SA1037K 	2SA1145 	2SA1694 O,P,Y 2SC4467 O,P,Y 	2SA1708 2SC4488 	2SA1770S/T-AN 	2SB1257 
2SC1740S 	2SC1815 Y 2SC2229 	2SC2412K 	2SC3326-A (TE85R, F) 2SC3326-B (TE85R, F) 	2SC4614S/T-AN 	
2SD2014 	2SD2704 K 	2SD2705S TP 	2SK2158-T2B-A 	2SK246-Y (F) 	
2SK3850 	3LN01C-TB-E 	DTA114EKA DTC144EKA  1: GND 2: IN 3: OUT	HN4C06J  1. BASE 1 (B1) 2. EMITTER (E) 3. BASE 2 (B2) 4. COLLECTOR 2 (C2) 5. COLLECTOR 1 (G2)	KTA1517S KTC3911S 	

MEMO

R-840/NS-BP300

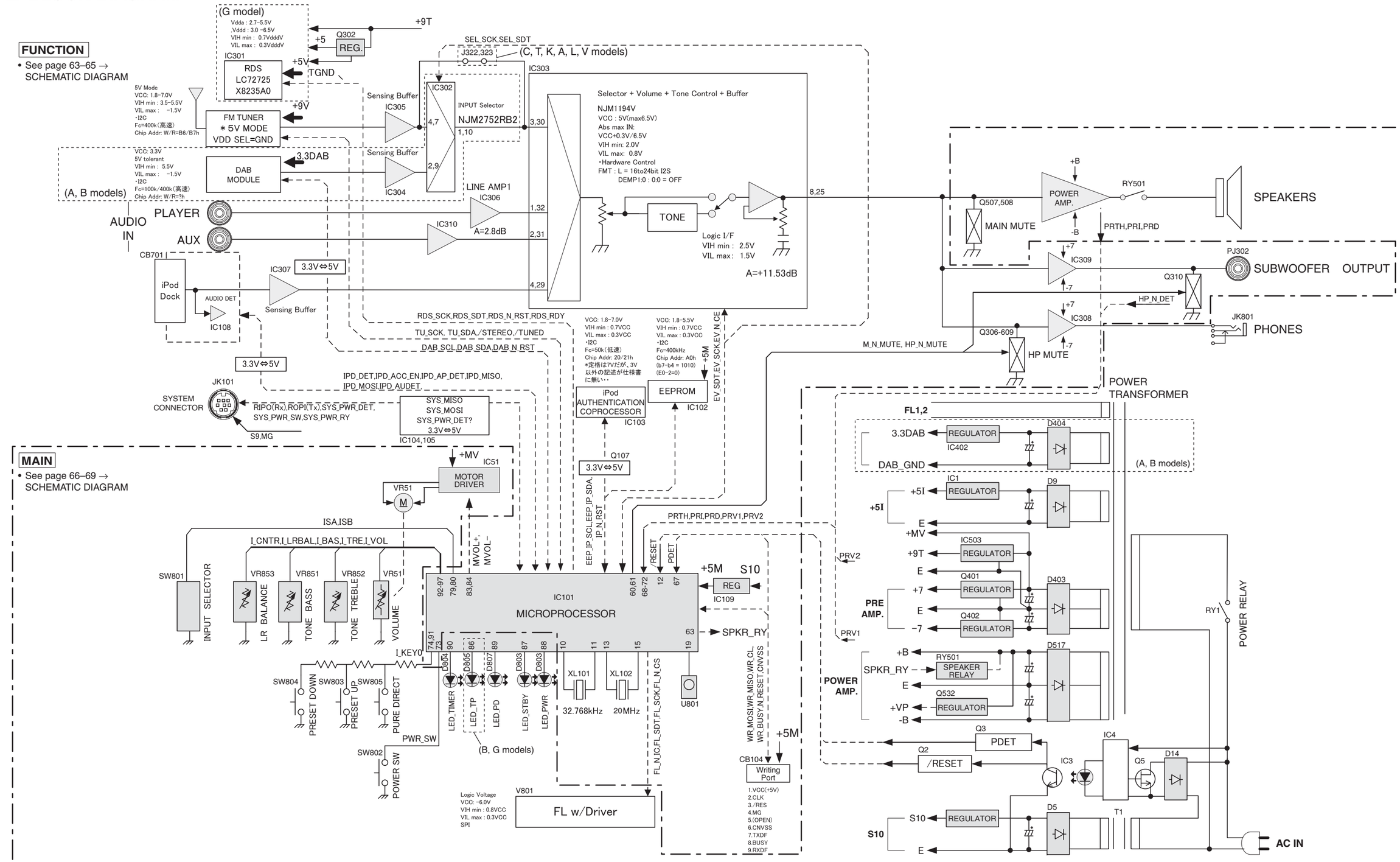
■ BLOCK DIAGRAM

FUNCTION

• See page 63–65 →
SCHEMATIC DIAGRAM

MAIN

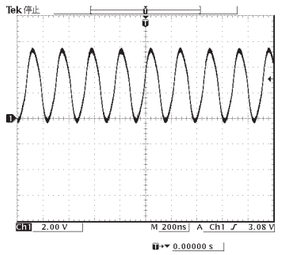
• See page 66–69 →
SCHEMATIC DIAGRAM



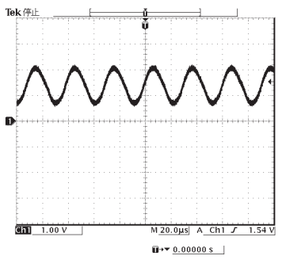
■ PRINTED CIRCUIT BOARDS

FUNCTION (1) P.C.B. (Side A)

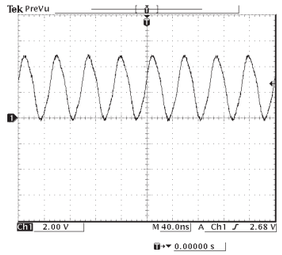
POINT Ⓐ XL301 (Pin 14 of IC301)



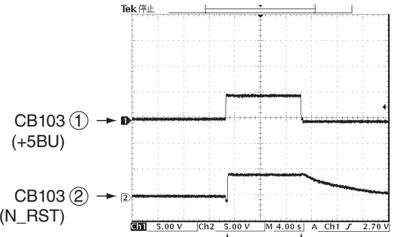
POINT Ⓑ XL101 (Pin 10 of IC101)

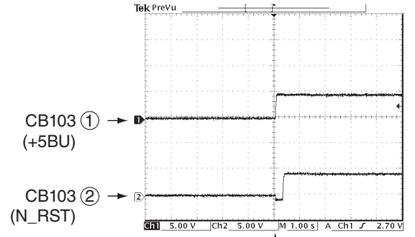


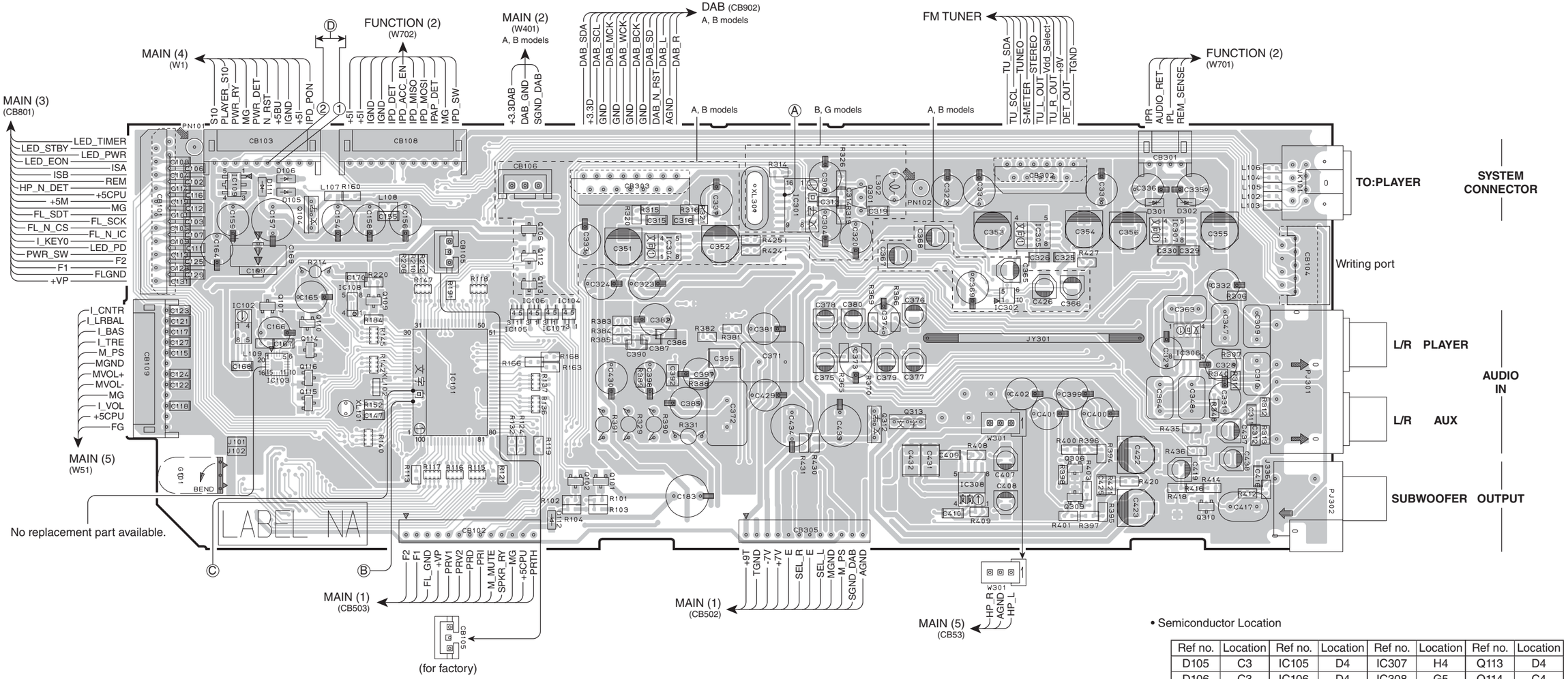
POINT Ⓒ XL102 (Pin 13 of IC101)



POINT Ⓓ ①/ CB103 (+5BU), ②/ CB103 (N_RST)



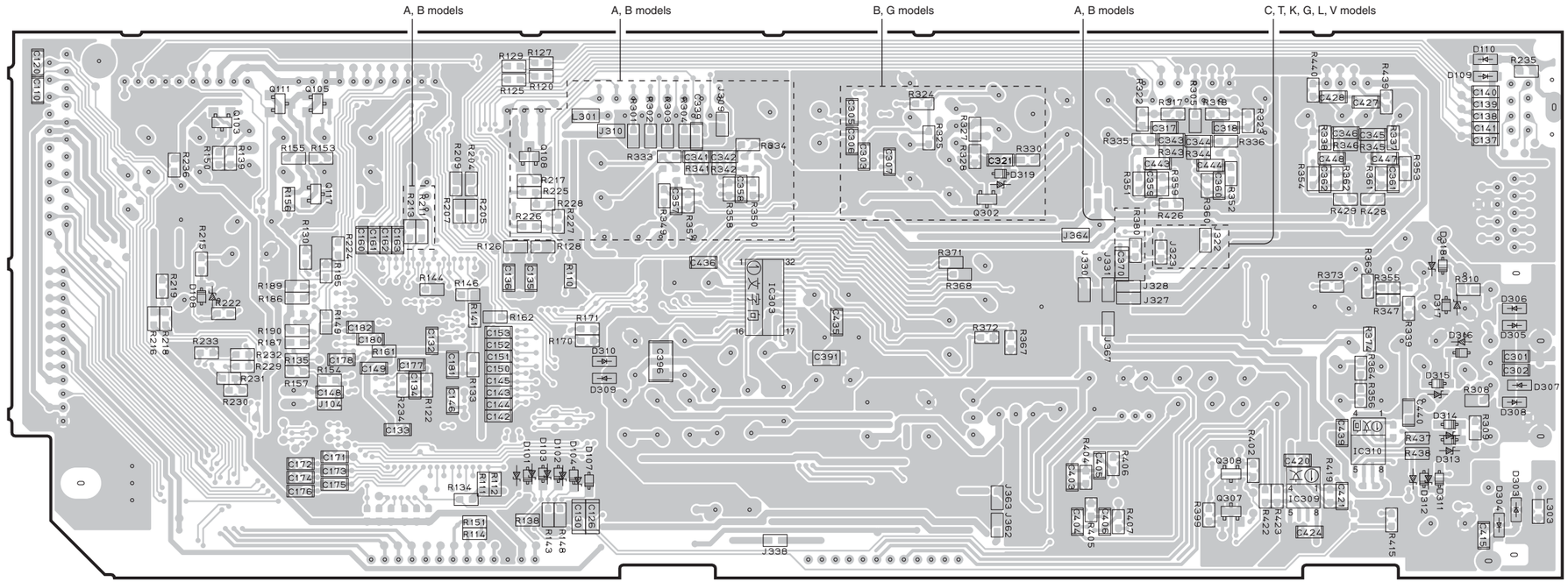




• Semiconductor Location

Ref no.	Location	Ref no.	Location	Ref no.	Location	Ref no.	Location
D105	C3	IC105	D4	IC307	H4	Q113	D4
D106	C3	IC106	D4	IC308	G5	Q114	C4
D111	B3	IC107	D4	Q101	E5	Q115	C5
D112	D5	IC108	C4	Q102	D5	Q116	C5
D301	H3	IC109	B3	Q104	C4	Q301	F3
D302	H3	IC301	F3	Q106	D4	Q306	G5
IC101	D5	IC302	G4	Q107	C4	Q309	G5
IC102	B4	IC304	E4	Q109	C4	Q310	H5
IC103	C4	IC305	G4	Q110	C4	Q312	F5
IC104	D4	IC306	H4	Q112	D4	Q313	F5

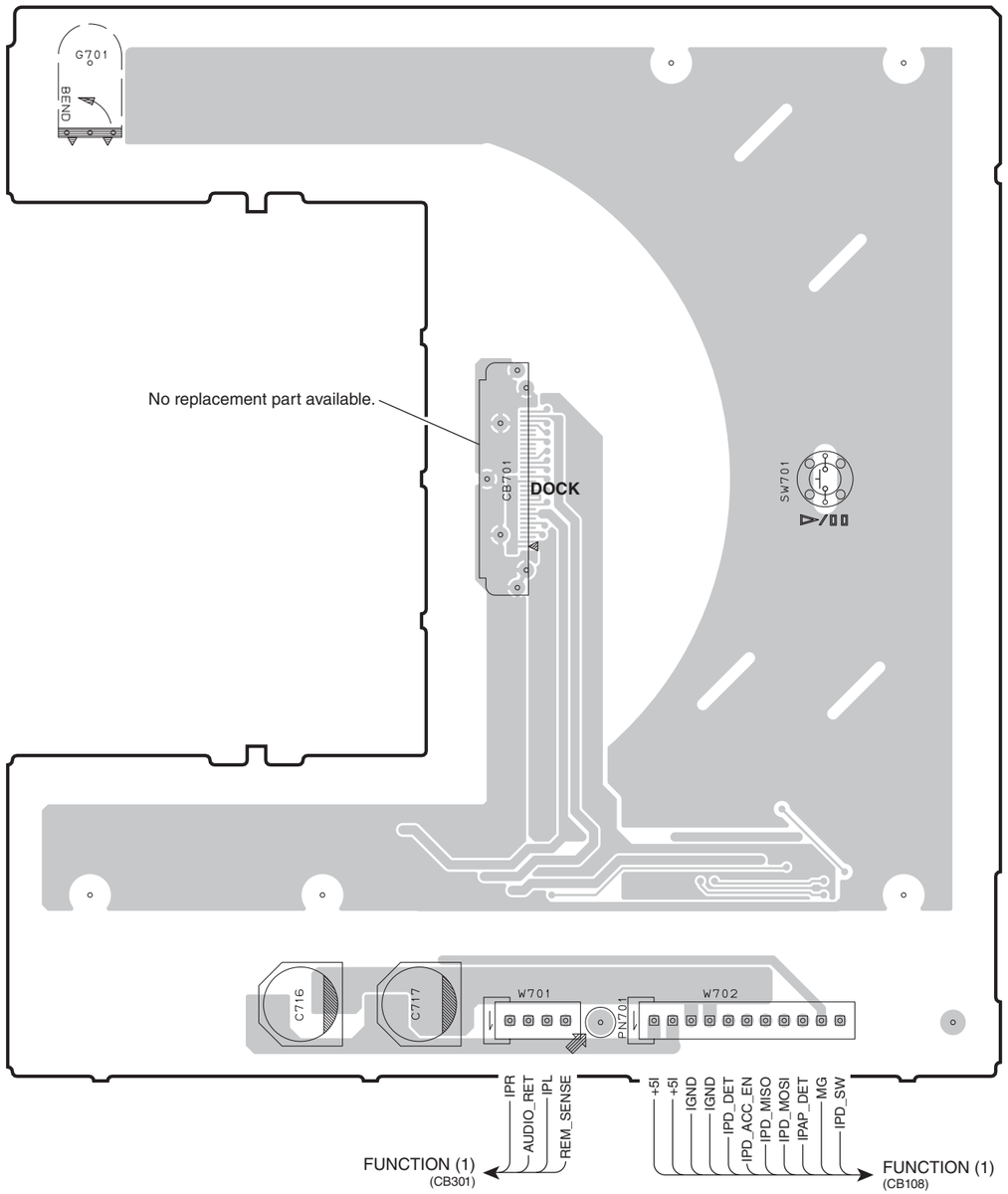
FUNCTION (1) P.C.B. (Side B)



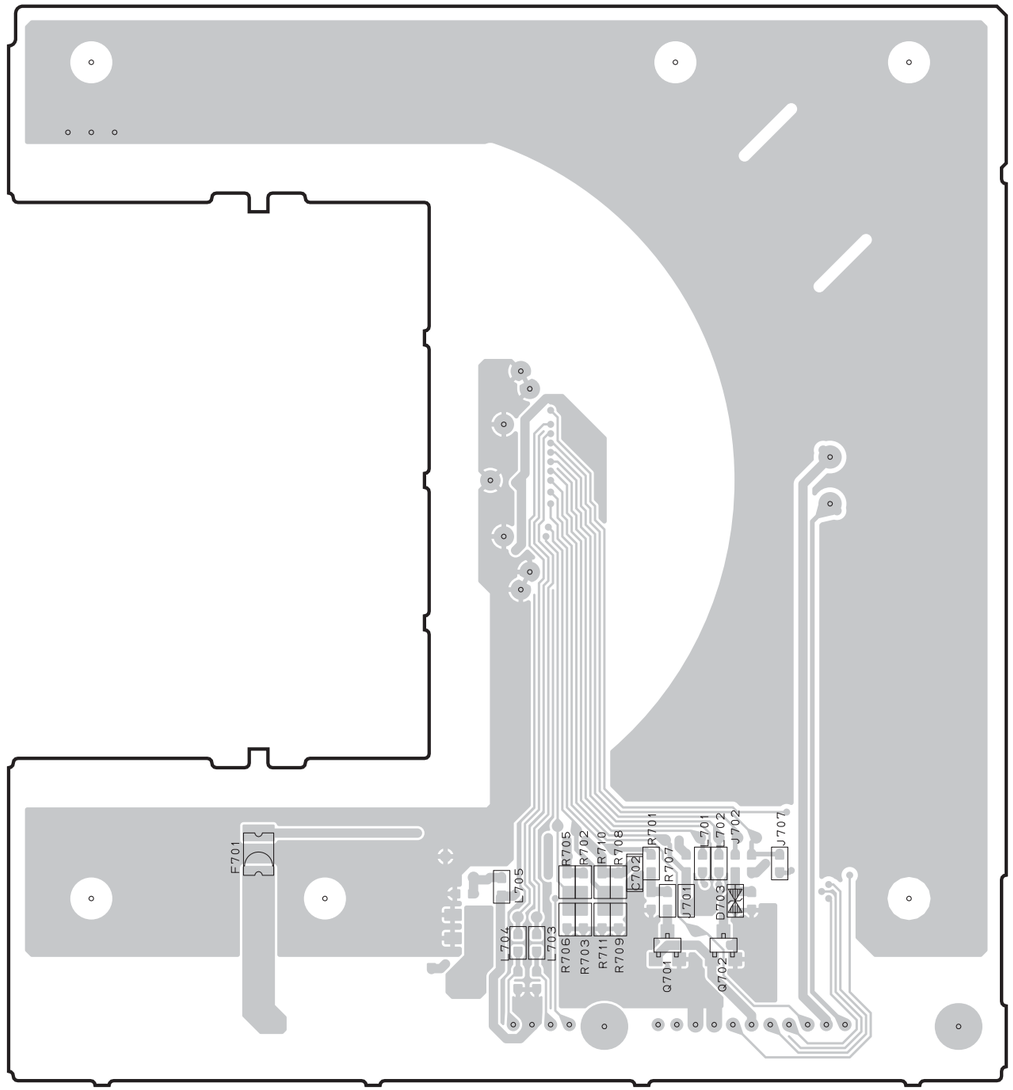
• Semiconductor Location

Ref no.	Location	Ref no.	Location	Ref no.	Location	Ref no.	Location
D101	D5	D305	I4	D315	H5	Q108	D4
D102	D5	D306	I4	D316	I4	Q111	C3
D103	D5	D307	I5	D317	H4	Q117	C4
D104	D5	D308	I5	D318	H4	Q302	F4
D107	D5	D309	D5	D319	F4	Q307	G5
D108	C4	D310	D5	IC303	F4	Q308	G5
D109	I3	D311	H5	IC309	H5		
D110	I3	D312	H5	IC310	H5		
D303	I5	D313	H5	Q103	C3		
D304	I5	D314	H5	Q105	C3		

FUNCTION (2) P.C.B. (Side A)



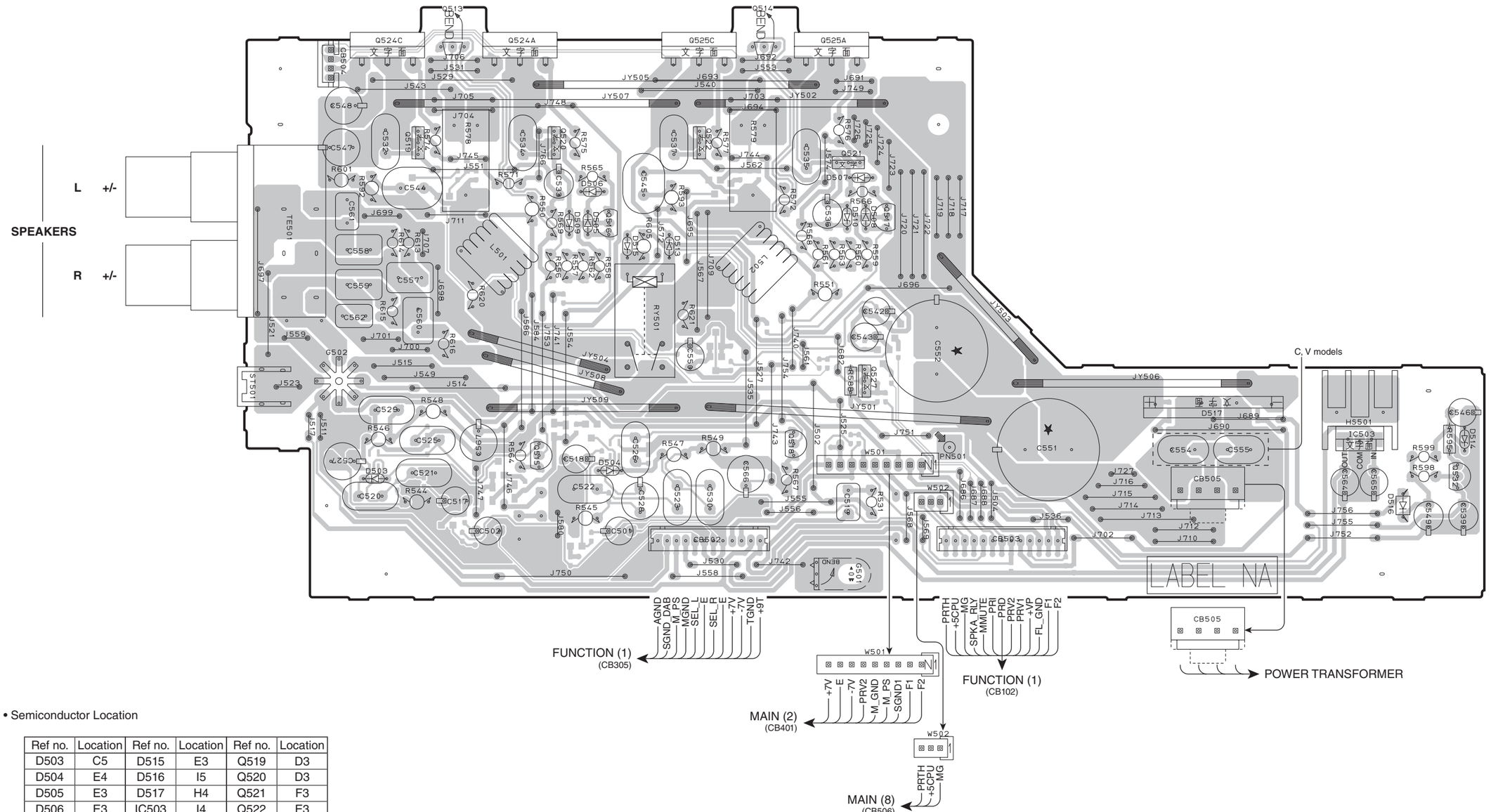
FUNCTION (2) P.C.B. (Side B)



• Semiconductor Location

Ref no.	Location
D703	G6

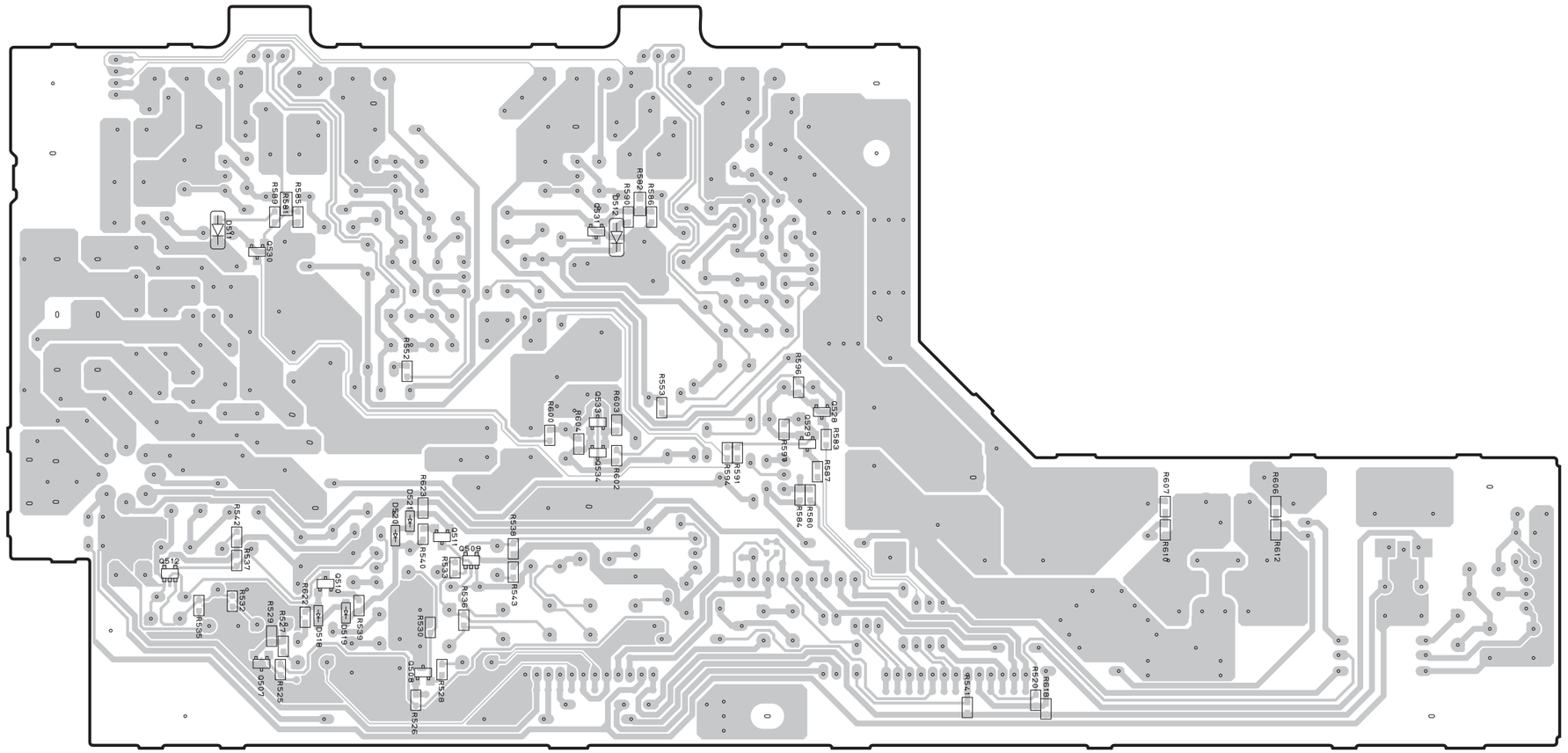
MAIN (1) P.C.B. (Side A)



• Semiconductor Location

Ref no.	Location	Ref no.	Location	Ref no.	Location
D503	C5	D515	E3	Q519	D3
D504	E4	D516	I5	Q520	D3
D505	E3	D517	H4	Q521	F3
D506	E3	IC503	I4	Q522	E3
D507	F3	Q513	D2	Q523	C2
D508	F3	Q514	F2	Q524	D2
D509	D3	Q515	D4	Q525	F2
D510	F3	Q516	E3	Q526	E2
D513	E3	Q517	F3	Q527	F4
D514	J4	Q518	F4	Q532	J5

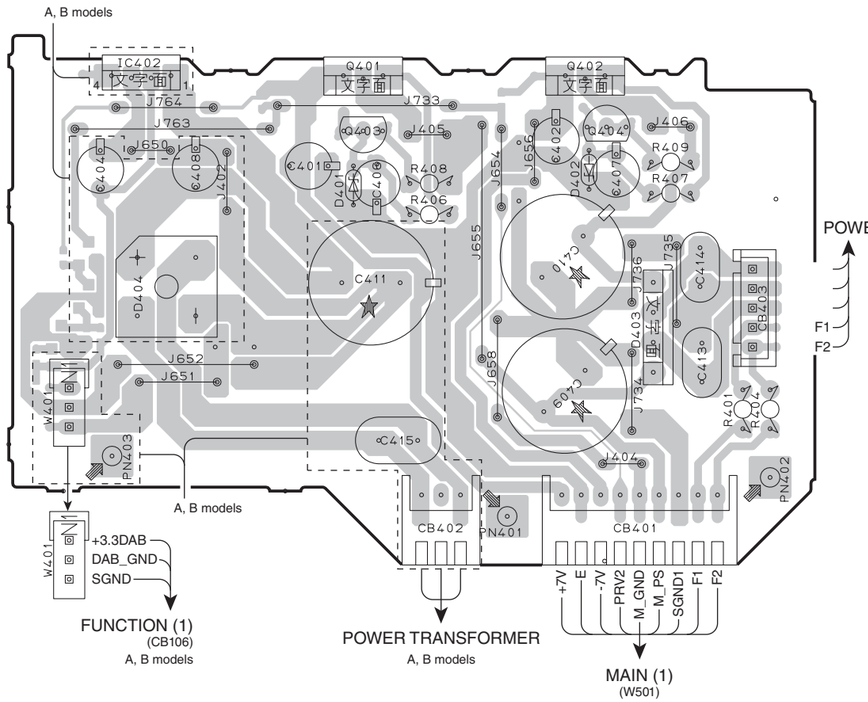
MAIN (1) P.C.B. (Side B)



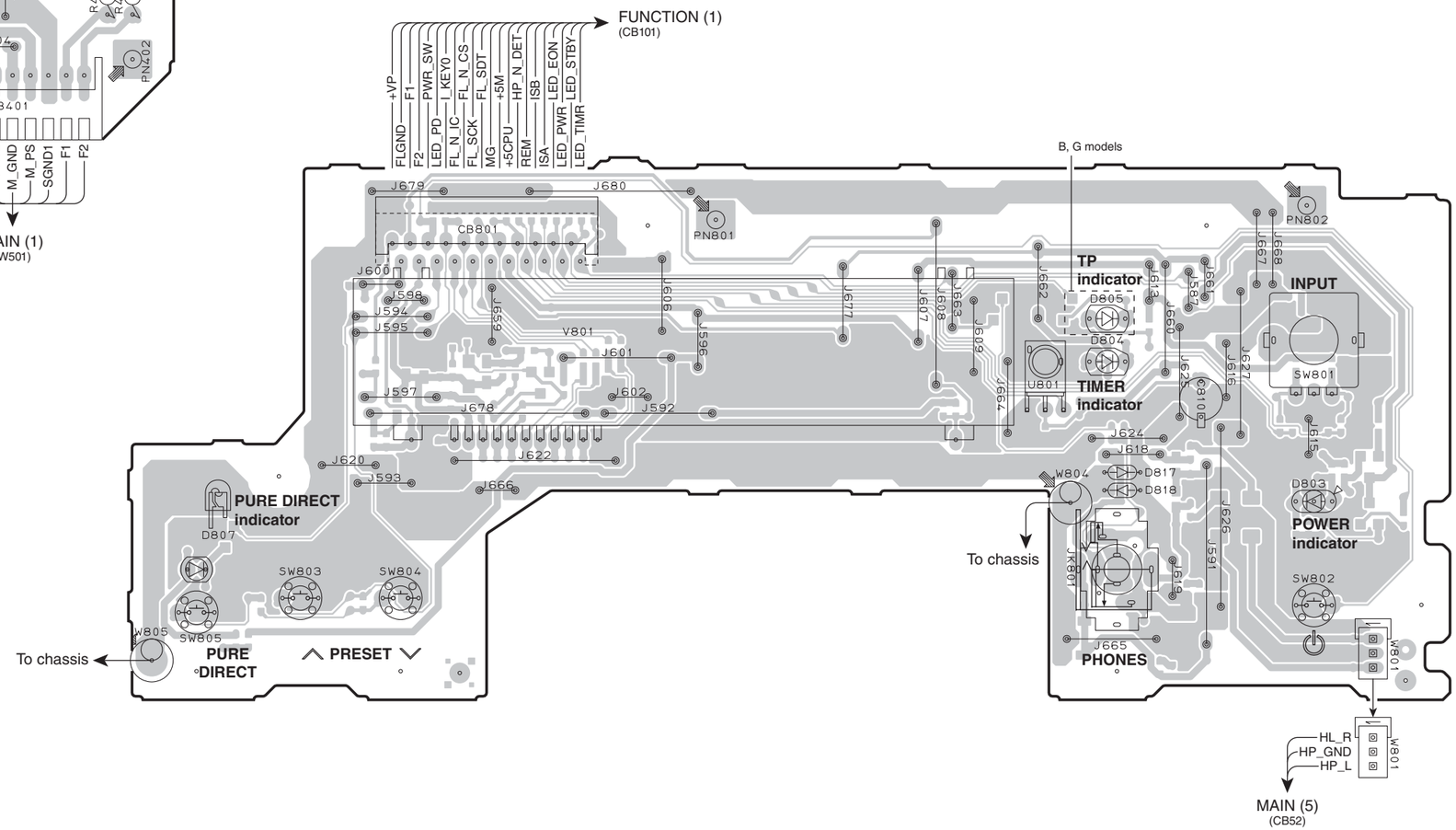
• Semiconductor Location

Ref no.	Location	Ref no.	Location
D511	C3	Q510	D4
D512	E3	Q511	D4
D518	C5	Q512	C4
D519	D5	Q528	F4
D520	D4	Q529	F4
D521	D4	Q530	C3
Q507	C5	Q531	E3
Q508	D5	Q533	E4
Q509	D4	Q534	E4

MAIN (2) P.C.B. (Side A)



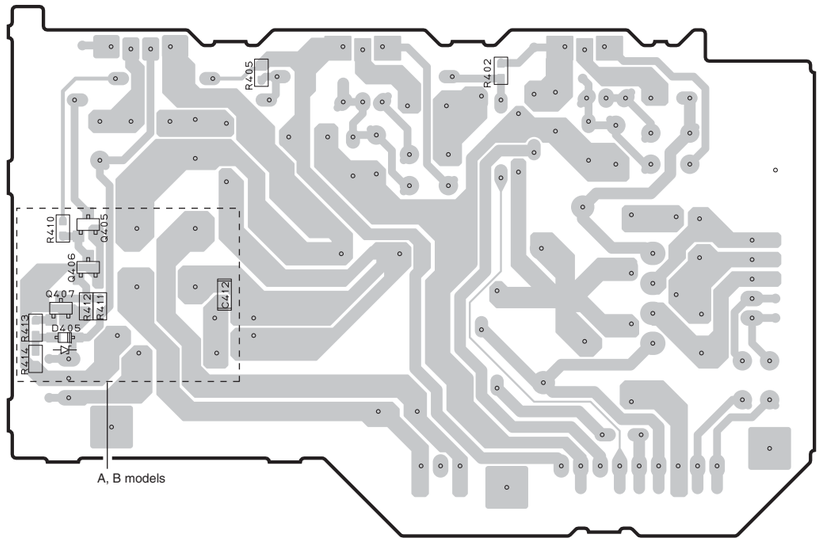
MAIN (3) P.C.B. (Side A)



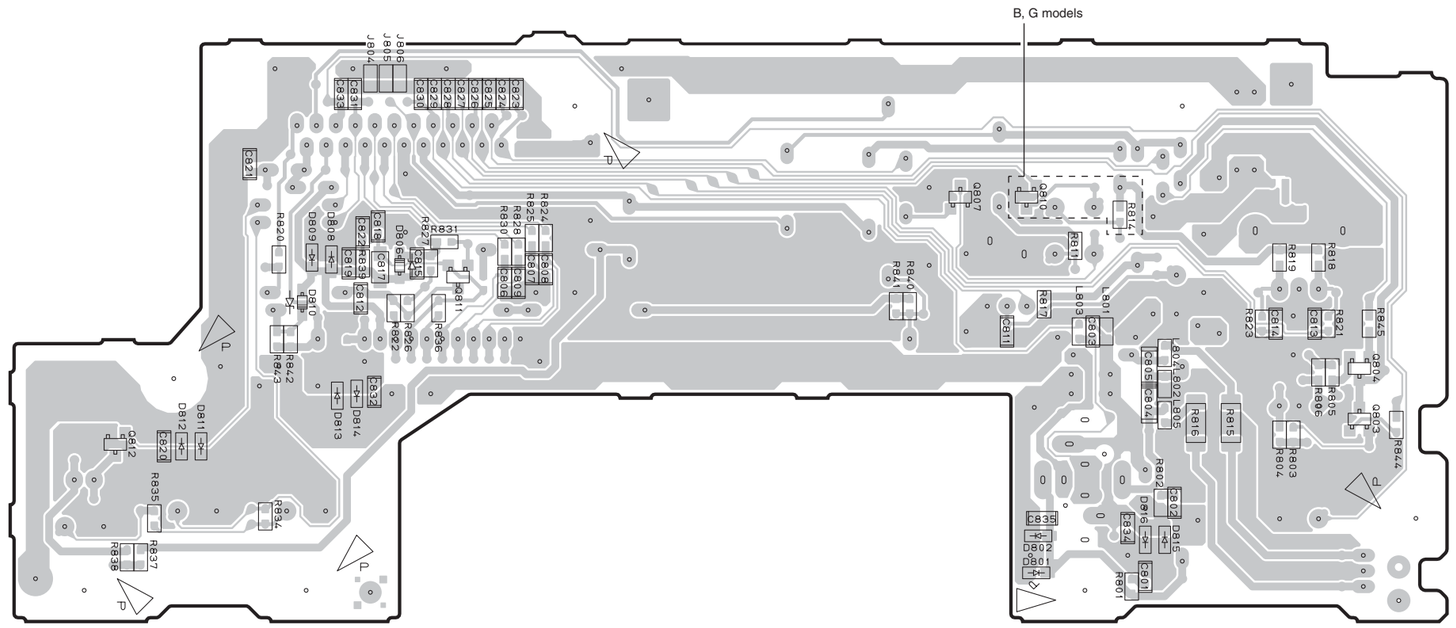
• Semiconductor Location

Ref no.	Location
D401	C2
D402	D2
D403	D3
D404	B3
D803	J6
D804	I5
D805	I5
D807	E6
D817	I5
D818	I6
IC402	B2
Q401	C2
Q402	D2
Q403	C2
Q404	D2

MAIN (2) P.C.B. (Side B)



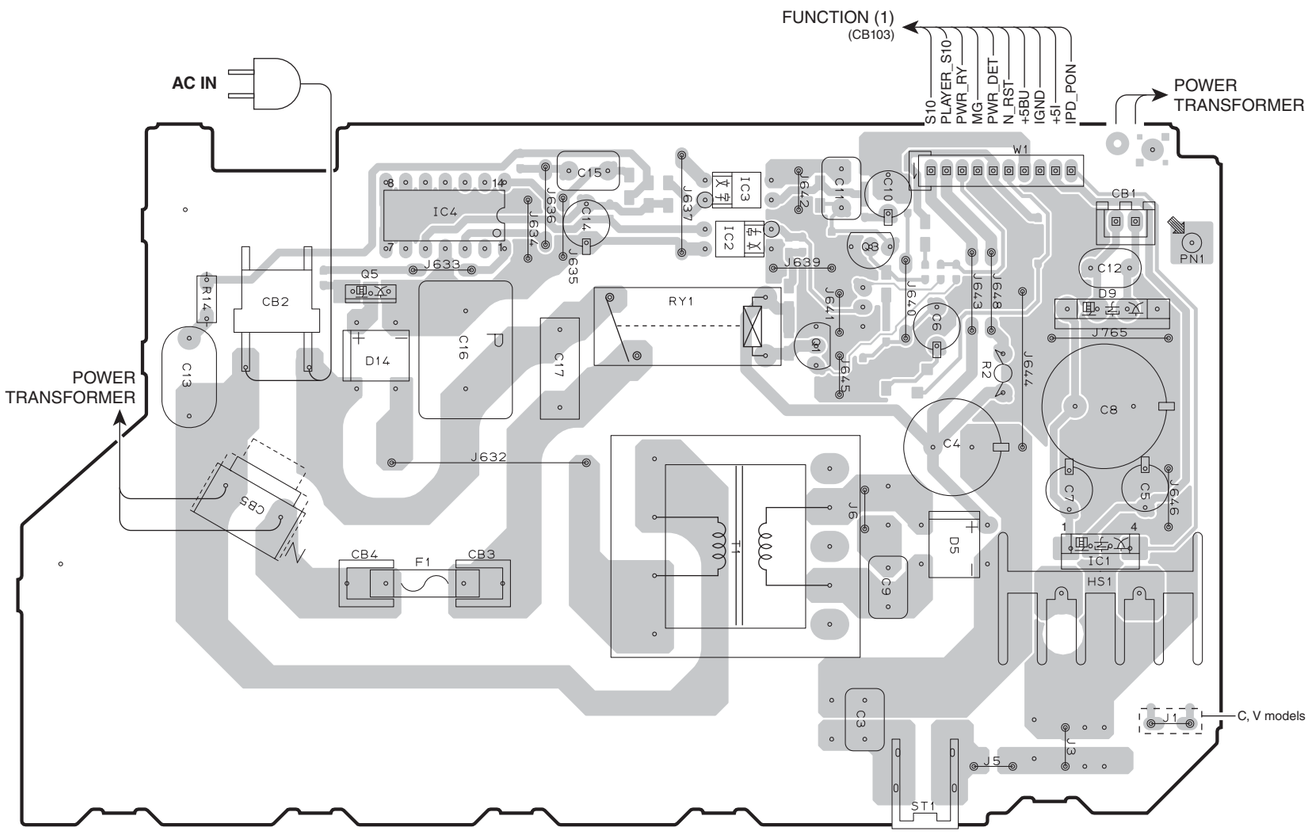
MAIN (3) P.C.B. (Side B)



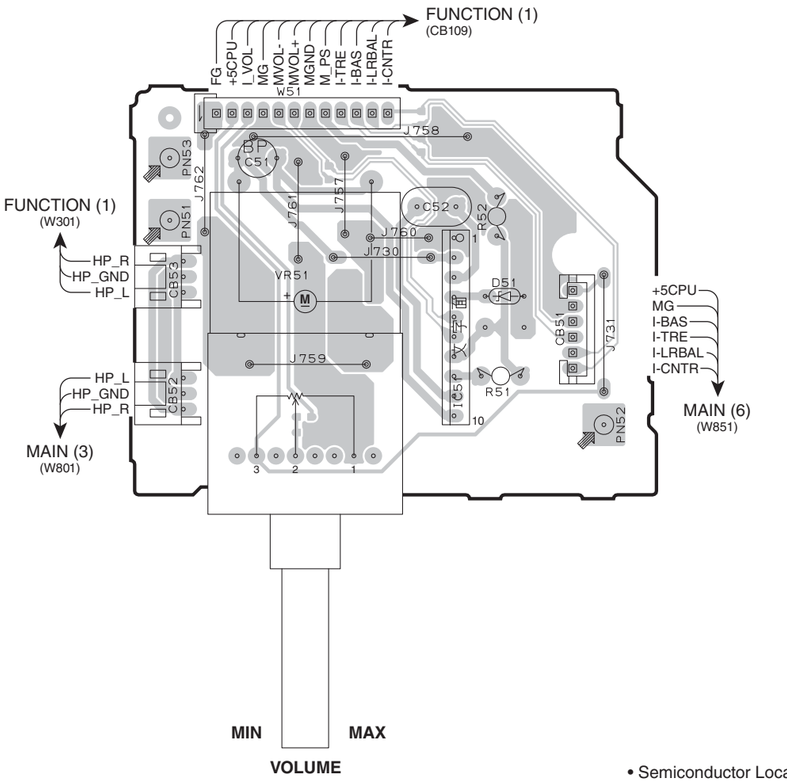
• Semiconductor Location

Ref no.	Location
D405	A3
D801	H6
D802	H6
D806	F5
D808	E5
D809	E5
D810	E5
D811	E6
D812	E6
D813	E6
D814	F6
D815	I6
D816	I6
Q405	A3
Q406	A3
Q407	A3
Q803	J6
Q804	J5
Q807	H5
Q810	H5
Q811	F5
Q812	E6

MAIN (4) P.C.B. (Side A)



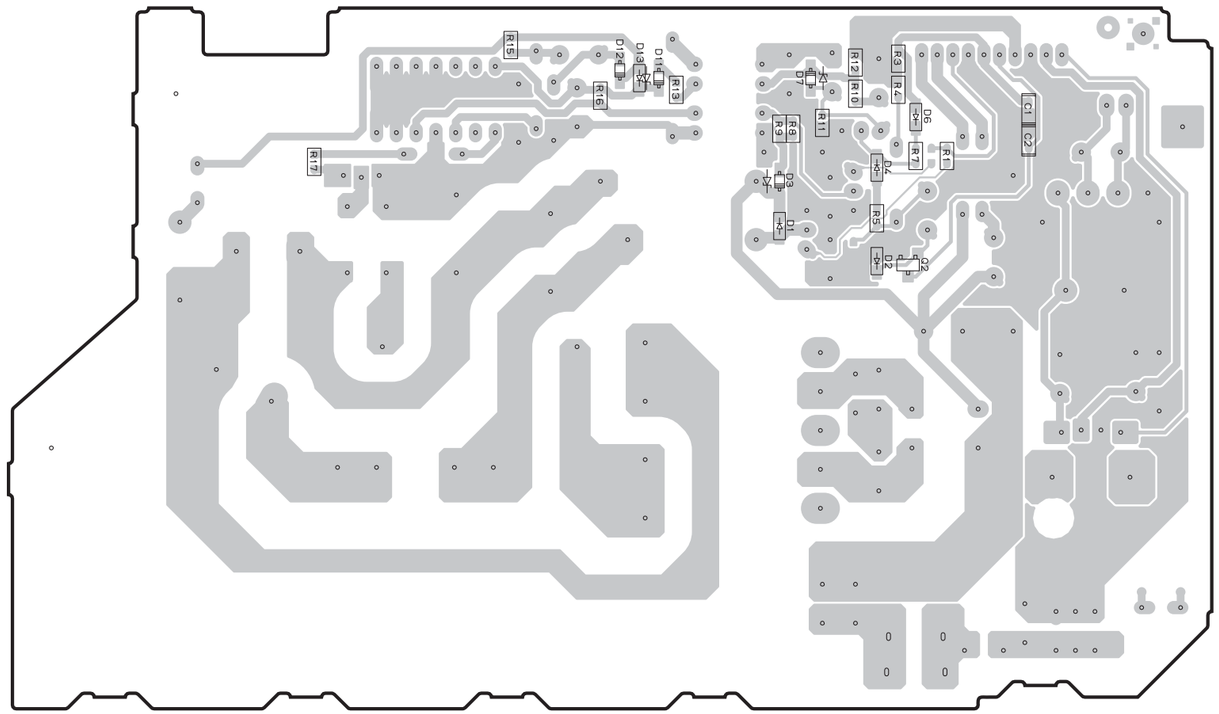
MAIN (5) P.C.B. (Side A)



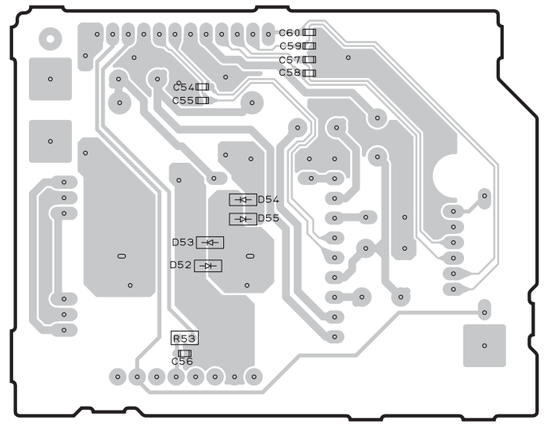
• Semiconductor Location

Ref no.	Location
D5	E4
D9	F3
D14	C4
D51	I4
IC1	F4
IC2	D3
IC3	D3
IC4	C3
IC51	I4
Q1	D4
Q3	E3
Q5	C3

MAIN (4) P.C.B. (Side B)



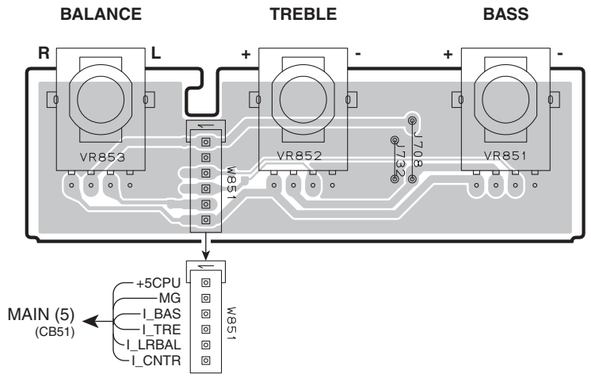
MAIN (5) P.C.B. (Side B)



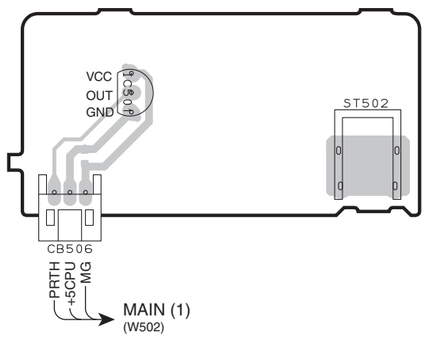
• Semiconductor Location

Ref no.	Location
D1	D4
D2	E4
D3	D3
D4	E3
D6	E3
D7	D3
D11	D3
D12	D3
D13	D3
D52	H4
D53	H4
D54	H4
D55	H4
Q2	E4

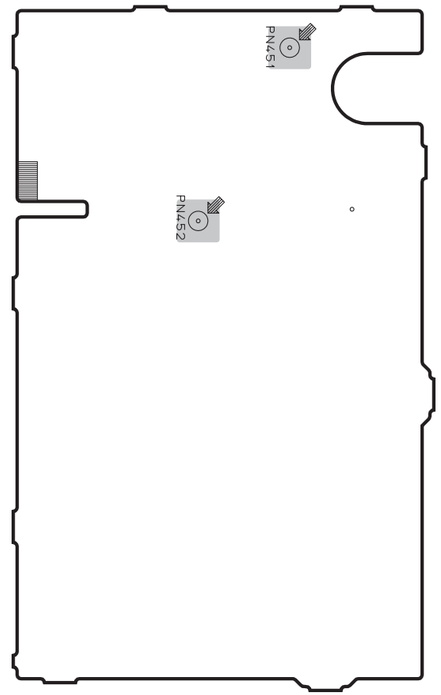
MAIN (6) P.C.B. (Side A)



MAIN (8) P.C.B. (Side A)



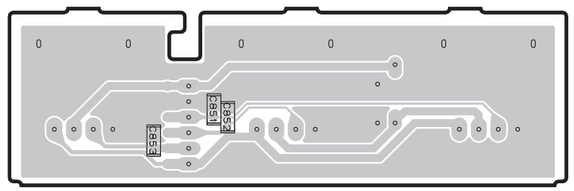
MAIN (7) P.C.B. (Side A)



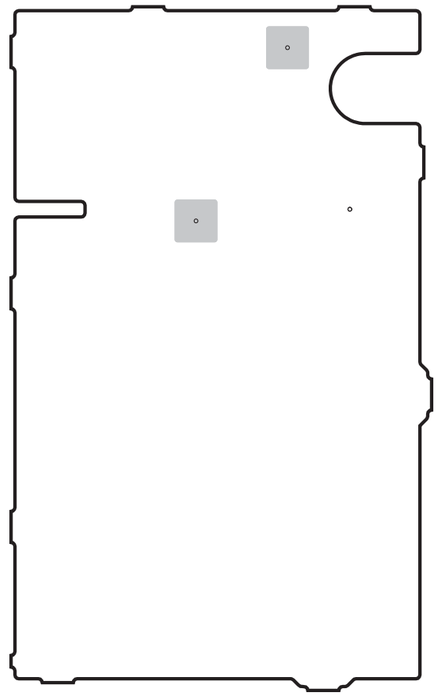
• Semiconductor Location

Ref no.	Location
IC501	C5

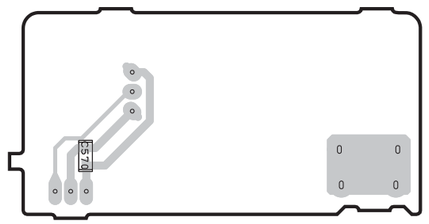
MAIN (6) P.C.B. (Side B)



MAIN (7) P.C.B. (Side B)

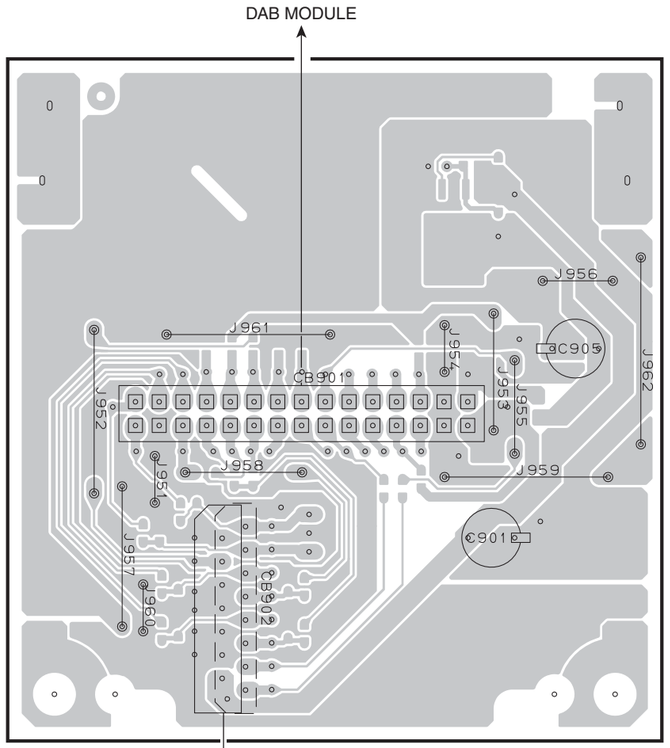


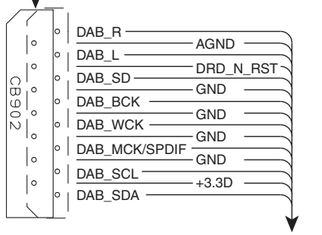
MAIN (8) P.C.B. (Side B)



DAB P.C.B. (Side A)

A, B models

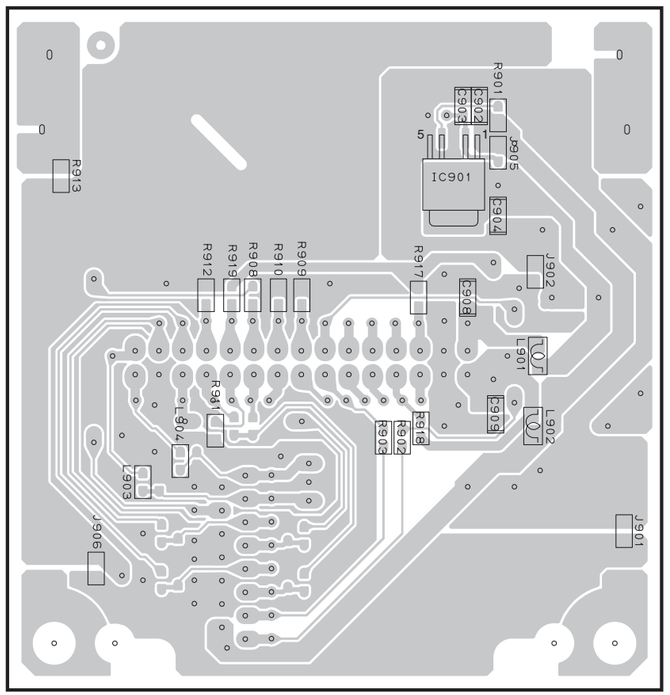




FUNCTION (1)
(CB303)
A, B models

DAB P.C.B. (Side B)

A, B models

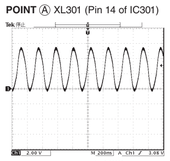


• Semiconductor Location

Ref no.	Location
IC901	H4

■ SCHEMATIC DIAGRAMS
FUNCTION 1/3

POINT Ⓐ XL301 (Pin 14 of IC301)



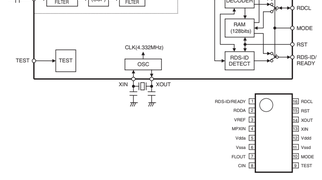
Destination Part List

&xx	LOC	C	TK	A	B	G	L	V
s301	C308 C304	X	X	X	UR23747 47/16	UR23747 47/16	X	X
s302	C306 C305	X	X	X	US06127 27P(CH)	US06127 27P(CH)	X	X
s303	C303	X	X	X	US13510 0.1/16	US13510 0.1/16	X	X
s305	C307 C314 C312 C313	X	X	X	US06233 330P(SL)	US06233 330P(SL)	X	X
s306	XL301	X	X	X	V393090 4.332MHz	V393090 4.332MHz	X	X
s307	R314	X	X	X	RD35447 47	RD35447 47	X	X
s308	R328	X	X	X	RD35733 33K	RD35733 33K	X	X
s309	R319	X	X	X	RD35722 22K	RD35722 22K	X	X
s310	C320	X	X	X	UR26733 33/50	UR26733 33/50	X	X
s311	R325 R324	X	X	X	RD35747 47K	RD35747 47K	X	X
s312	Q301	X	X	X	IC17402 (17402(R/S))	IC17402 (17402(R/S))	X	X
s313	R336 R330	X	X	X	RD35633 3.3K	RD35633 3.3K	X	X
s314	L302	X	X	X	VK26750 220UH	VK26750 220UH	X	X
s315	R327	X	X	X	RD35810 100K	RD35810 100K	X	X
s316	IC301	X	X	X	X82354D LC72725KM-UY-TL	X82354D LC72725KM-UY-TL	X	X
s317	L301	X	X	X	V990120 BLM21PG221SN1D	V990120 BLM21PG221SN1D	X	X
s318	CB303	X	X	X	V985960 52045	V985960 52045	X	X
s320	R304 R301 R302 R303	X	X	X	RD35810 100K	RD35810 100K	X	X
s321	J310	X	X	RD25000 0	RD25000 0	X	X	X
s322	J309	X	X	RD35000 0	RD35000 0	X	X	X

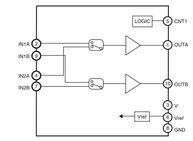
Destination Part List

&xx	LOC	C	TK	A	B	G	L	V
s323	R315 R316	X	X	RD35747 47K	RD35747 47K	X	X	X
s324	R321 R320	X	X	RD35510 100	RD35510 100	X	X	X
s325	C315 C316	X	X	US06210 100P(SL)	US06210 100P(SL)	X	X	X
s326	C305 C426 C308 C369 C364	X	X	UF43710 10/16	UF43710 10/16	X	X	X
s327	C370	X	X	UB44610 1/16	UB44610 1/16	X	X	X
s328	R380	X	X	RD35810 100K	RD35810 100K	X	X	X
s329	C369	X	X	UR23810 100/16	UR23810 100/16	X	X	X
s330	C337 C333	X	X	UR23722 22/16	UR23722 22/16	X	X	X
s331	R333 R341 R367 R343 R349 R342 R348 R358	X	X	RD35639 3.9K	RD35639 3.9K	X	X	X
s332	C358 C356 C341 C367	X	X	US06210 100P(SL)	US06210 100P(SL)	X	X	X
s333	C351 C352	X	X	UF43747 47/16	UF43747 47/16	X	X	X
s334	IC304	X	X	X35054A NJM2068MD-TE2	X35054A NJM2068MD-TE2	X	X	X
s335	R424 R425	X	X	RD35447 47	RD35447 47	X	X	X
s336	J322 J323	RD35000 0	RD35000 0	X	X	RD35000 0	RD35000 0	RD35000 0
s337	IC302	X	X	YA85SA0 NJM2752RB2	YA85SA0 NJM2752RB2	X	X	X
s338	Q302	X	X	X	VV55640 C2412K(G/R/S)	VV55640 C2412K(G/R/S)	X	X
s339	C321	X	X	X	US12610 1/10	US12610 1/10	X	X
s340	D319	X	X	X	W569420 HZU5.6B	W569420 HZU5.6B	X	X
s341	C339	X	X	US13510 0.1/16	US13510 0.1/16	X	X	X

IC301: LC72725KM-UY-TLM-E
RDS signal demodulation IC



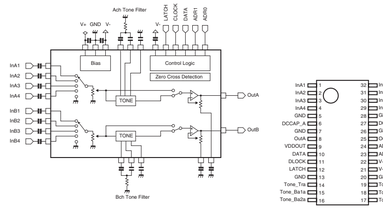
IC302: NJM2752RB0
2-input/1-output stereo audio selector



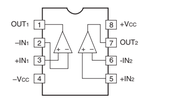
Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
s301	Q306-310	2SC3326-A-B 2SD2704(K)
s302	Q301-310	1SS355 KDS160-RTK/P
s303	D311-D319	HZU5.6B HZU5.6B2

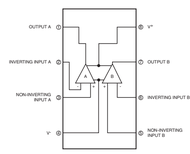
IC303: NJW1194V
2-channel electronic volume input selector and tone control



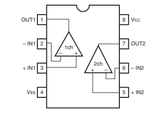
IC304, 305, 307, 310: NJM2068MD-TE2
Dual operational amplifier



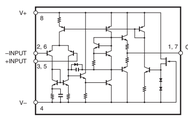
IC306: LME49723MAX/NOPB
Dual high fidelity audio operational amplifier



IC308: BA15218F
Dual high slew rate, low noise operational amplifier



IC309: NJM4580E
Dual operational amplifier



FUNCTION (1)

FUNC1
300-500

Page 70 C5
to DAB_CB902
(A, B models)

Page 64 I5
to FUNCTION (2)_W701

To FM TUNER

Page 66 B2
to MAIN (1)_CB502

Page 69 B7
to MAIN (5)_CB53

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	

NOTICE (mode1)
(J)····· JAPAN
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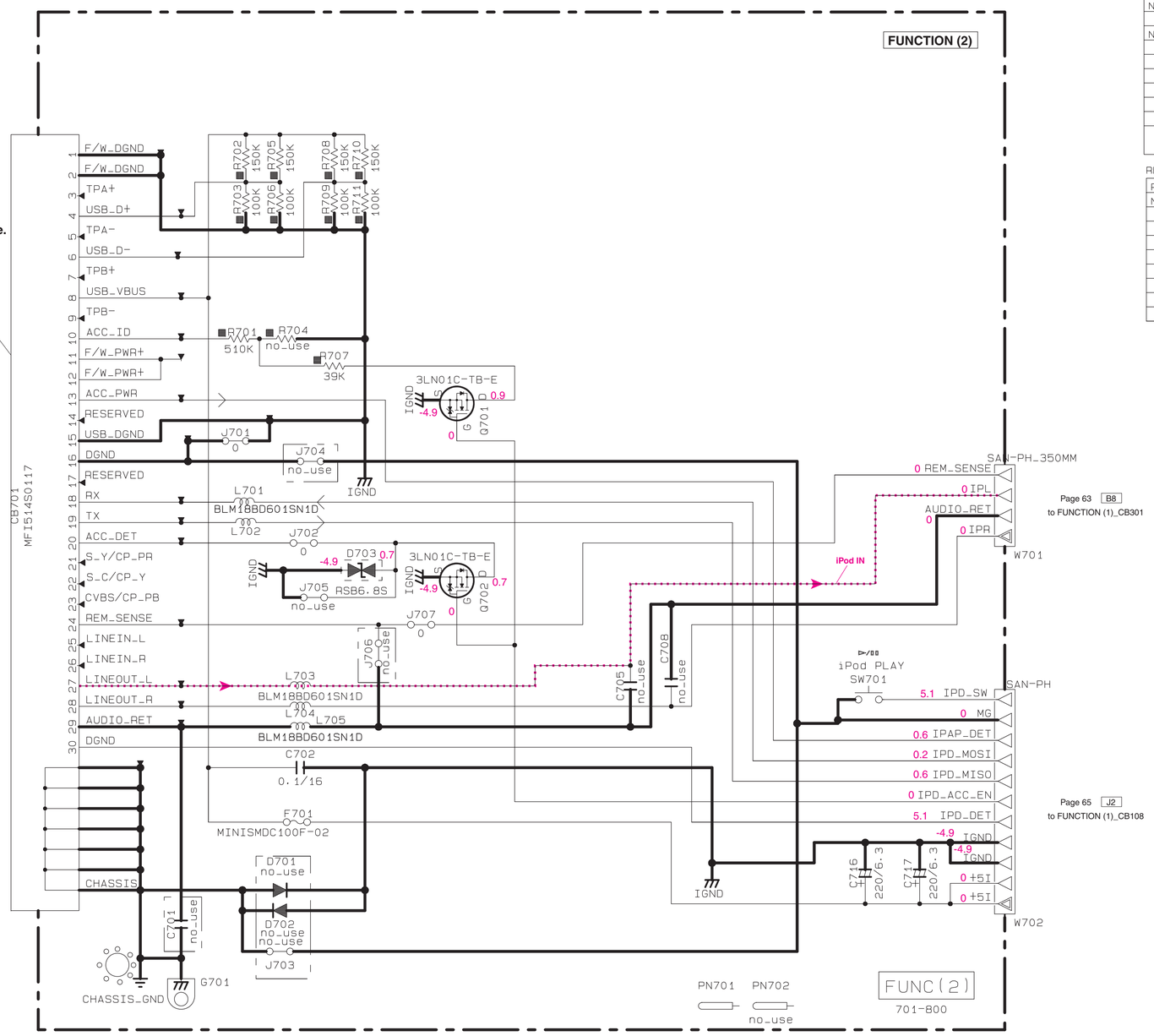
(G)····· EUROPE
(L)····· SINGAPORE
(E)····· SOUTH EUROPE
(V)····· TAIWAN
(F)····· RUSSIAN
(P)····· LATIN AMERICA

★ All voltages are measured with a 10MΩ/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.

FUNCTION 2/3

No replacement part available.



Page 63 B8
to FUNCTION (1)_CB301

Page 65 J2
to FUNCTION (1)_CB108

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	

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

NOTICE (model)

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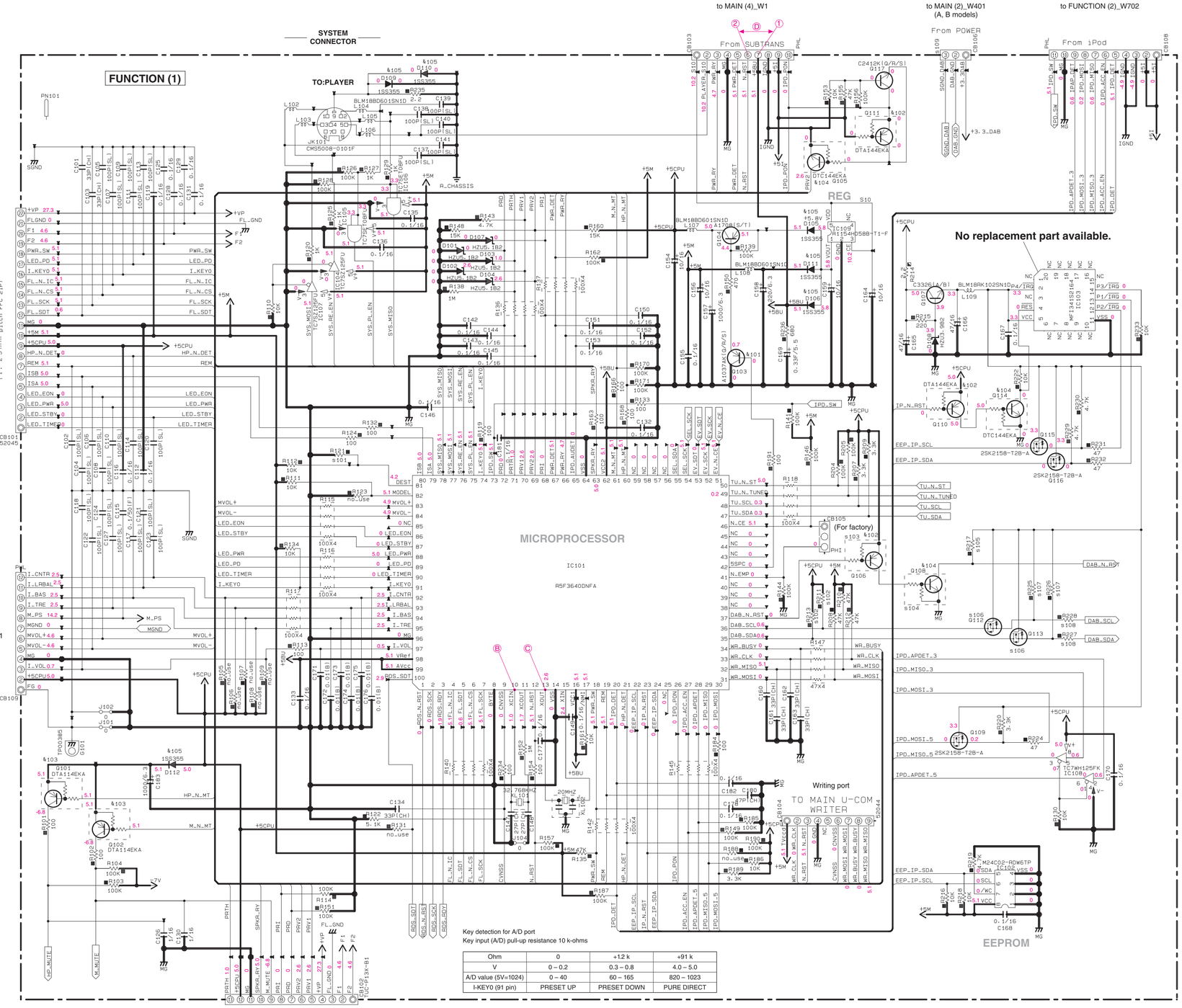
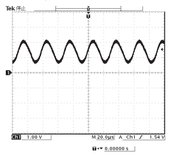
★ Schematic diagram is subject to change without notice.

FUNCTION 3/3

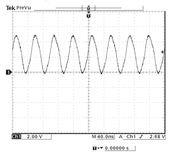


Ohm	0	+12 k	+91 k
V	0 – 0.2	0.3 – 0.8	4.0 – 5.0
A/D value (5V=1024)	0 – 40	60 – 165	820 – 1023
I-KEY0 (91 pin)	PRESET UP	PRESET DOWN	PURE DIRECT

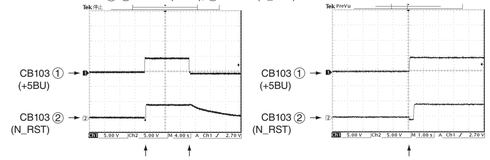
POINT Ⓑ XL101 (Pin 10 of IC101)



POINT Ⓒ XL102 (Pin 13 of IC101)



POINT Ⓓ ①/ CB103 (+5BU), ②/ CB103 (N_RST)



Destination Part List

sXX	LOC	C	TK	A	B	G	L	V
s101	R121	RD35612 1.2K	RD35668 6.8K	RD35715 15K	RD35724 24K	RD35747 47K	RD35810 100K	RD35647 4.7K
s102	R211 R213	X	X	RD35633 3.3K	RD35633 3.3K	X	X	X
s103	Q106	X	X	VV65530 DTA144EKA	VV65530 DTA144EKA	X	X	X
s104	Q108	X	X	VV65570 DTC144EKA	VV65570 DTC144EKA	X	X	X
s105	R217	X	X	RD35710 10K	RD35710 10K	X	X	X
s106	Q113 Q112	X	X	WG26120 2SK2158-T2B-A	WG26120 2SK2158-T2B-A	X	X	X
s107	R226 R225	X	X	RD35647 4.7K	RD35647 4.7K	X	X	X
s108	R227 R228	X	X	RD35447 47	RD35447 47	X	X	X
s109	CB106	X	X	LB91803 XHI	LB91803 XHI	X	X	X

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&101	Q103	2SA1037AK(Q/R/S) KTA1504S-Y.GR-RTK/P
&102	Q106.110.111	DTA144EKA KRA104S-RTK/P
&103	Q101.102	DTA114EKA KRA102S-RTK/P
&104	Q105.108.114	DTC144EKA KRC104S-RTK/P
&105	D105.106.109-112	1SS355 KDS160-RTK/P

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
☑	CARBON FILM RESISTOR (P=1Ø)
△	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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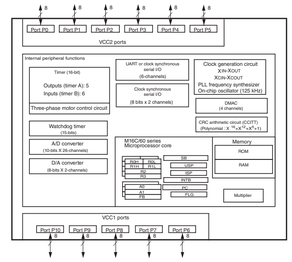
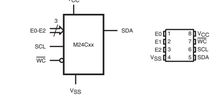
(P)····· LATIN AMERICA

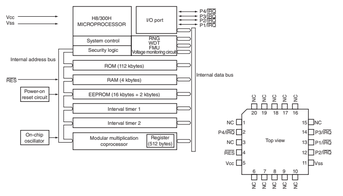
IC101: R5F3640DNFA
Single-chip 16-bit CMOS microprocessor



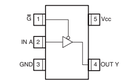
IC102: M24C02-RDW6TP
2 K-bit and 1 K-bit serial I2C bus EEPROM



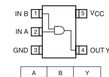
IC103: MFI341S2164
IC digital



IC104, 107: TC7SZ125FU
Bus buffer 3-state output

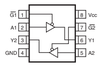


IC105, 106: TC7SET08FU
2 input AND gate

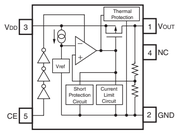


A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

IC108: TC7WH125FK
Dual bus buffer



IC109: R1154H058B-T1-F
Voltage regulator



Pin No.	Symbol	Description
1	VOUT	Output Pin for Voltage Regulator
2	GND	Ground
3	CE	Chip Enable Pin (active at "H")
4	NC1	No Connection
5	VDD	Power Supply Pin

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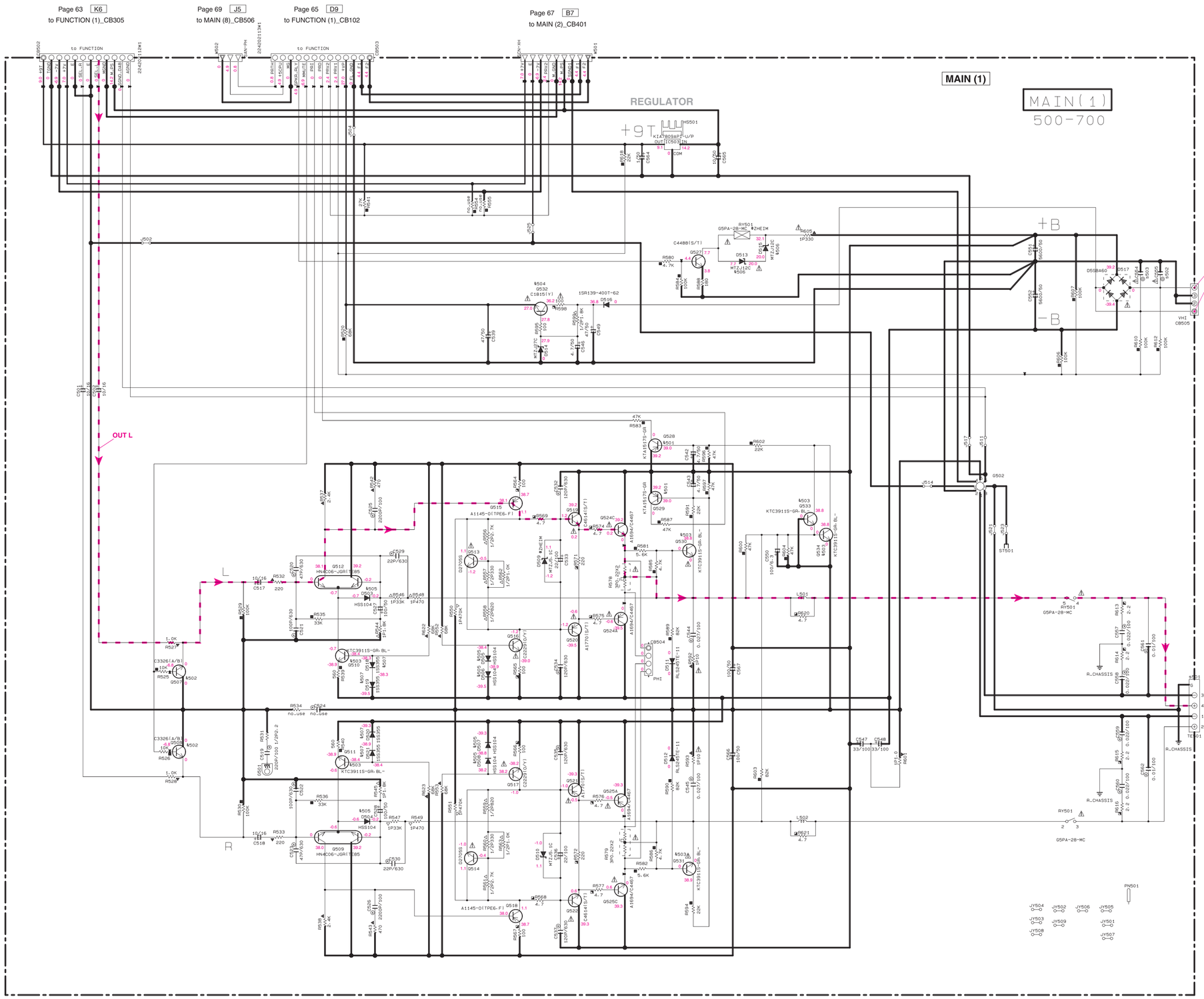
★ Schematic diagram is subject to change without notice.

MAIN 1/4



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	‖

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

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(L)····· SINGAPORE
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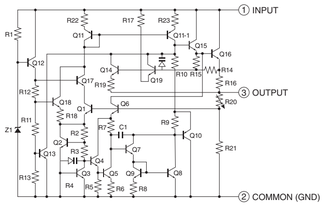
Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
♣501	Q528-529	KTA1517S-GR 2SA1312-GR-BL
♣502	Q507-508	2SC3326(A/B) 2SC3326(B)
♣503	Q510-511-530 531-533-534	KTC3911S-GR-BL-RTK/P 2SC3324-GR-BL
♣504	Q532	2SC1815(Y) KTC3198 Y-AT
♣505	D503-508	HSS104 1SS133 HSS4148TA-E G
♣506	D513-515	MTZJ12C HZS12B2TD-E
♣507	D518-521	1SS355 KDS160-RTK/P

Destination Part List

sXX	LOC	CV	T	K	A	B	G	L
s501	TE501	WG47930 MST-2142-01	WG47930 MST-2142-01	WG47940 MST-2142-01	WG47930 MST-2142-01	WG47940 MST-2142-01	WG47940 MST-2142-01	WG47940 MST-2142-01
s502	C555	WJ60580 0.047	X	X	X	X	X	X
s503	C554	WJ60580 0.047	X	X	X	X	X	X

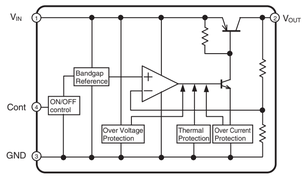
IC503: KIA7809API-U/P
Voltage regulator

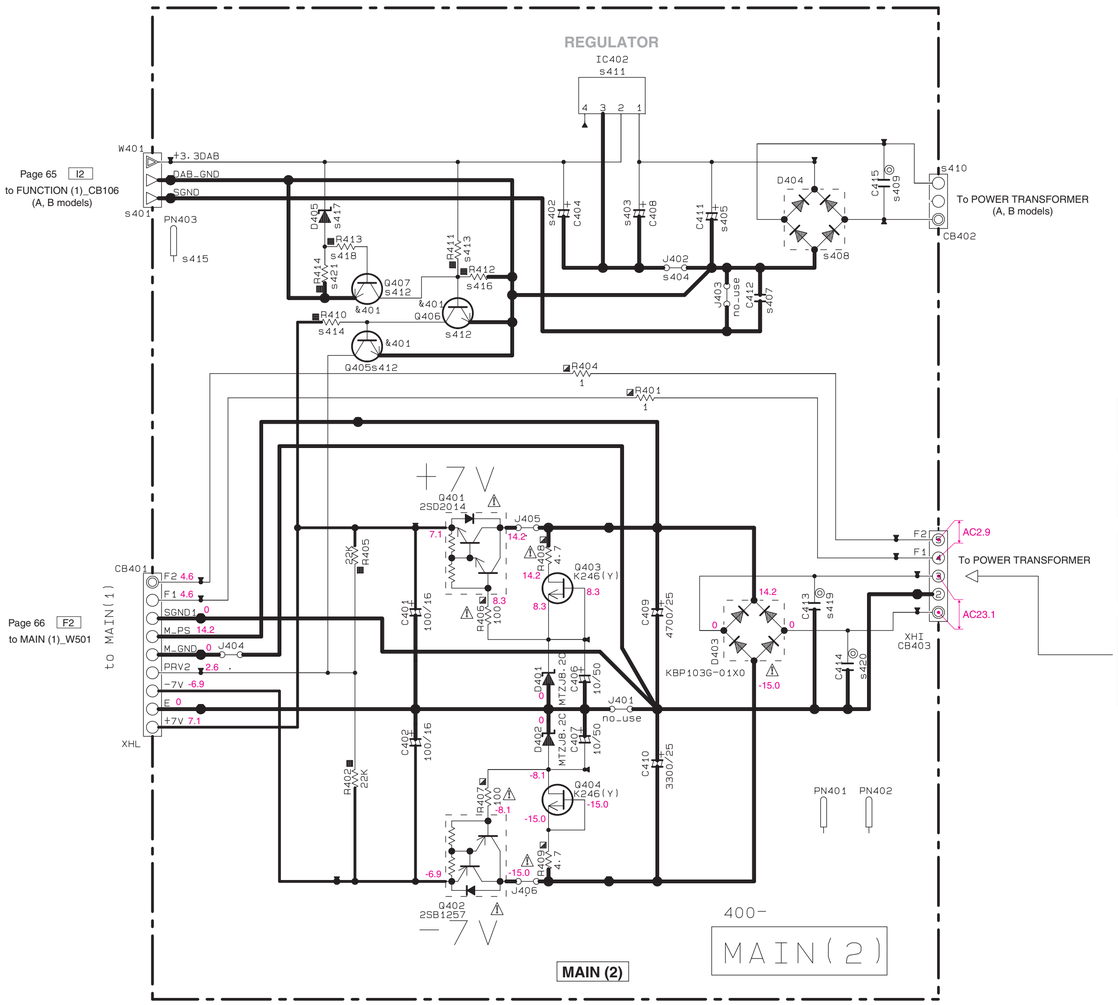


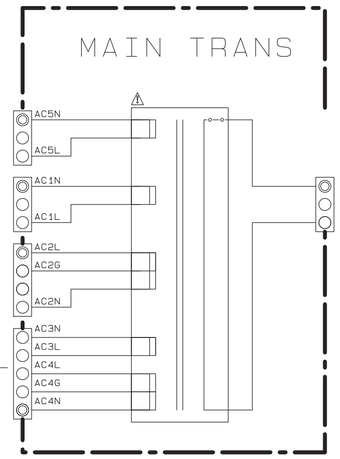
★ All voltages are measured with a 10MΩ/V DC electronic voltmeter.
★ Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

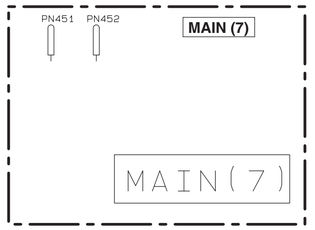
MAIN 2/4

IC402: NJM2388F33
Low dropout voltage regulator with ON/OFF control









Destination Part List

sXX	LOC	CV	T	K	A	B	G	L
s401	W401	X	X	X	WM6330 SCN-XH	WM6330 SCN-XH	X	X
s402	C404	X	X	X	UR83810 100/16	UR83810 100/16	X	X
s403	C408	X	X	X	UR86610 1/50	UR86610 1/50	X	X
s404	J402	X	X	X	VN50000 -	VN50000 -	X	X
s405	C411	X	X	X	UU23947 4700/16	UU23947 4700/16	X	X
s407	C412	X	X	X	US06410 0.01(B)	US06410 0.01(B)	X	X
s408	D404	X	X	X	WU01180 S2VB60	WU01180 S2VB60	X	X
s409	C415	X	X	X	VR32490 0.1/100	VR32490 0.1/100	X	X
s410	CB402	X	X	X	LB91903 XHL	LB91903 XHL	X	X
s411	IC402	X	X	X	X6248A0 NJM2388F33	X6248A0 NJM2388F33	X	X
s412	Q406 Q405 Q407	X	X	X	VV55640 C2412K(Q/R/S)	VV55640 C2412K(Q/R/S)	X	X
s413	R411	X	X	X	RD35633 3.3K	RD35633 3.3K	X	X
s414	R410	X	X	X	RD35810 100K	RD35810 100K	X	X
s415	PN403	X	X	X	V963750 -	V963750 -	X	X
s416	R412	X	X	X	RD35710 10K	RD35710 10K	X	X
s417	D405	X	X	X	WS69180 HZU2.7B2	WS69180 HZU2.7B2	X	X
s418	R413	X	X	X	RD35610 1K	RD35610 1K	X	X
s419	C413	WJ61140 0.1/100	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027
s420	C414	WJ61140 0.1/100	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027	WQ20970 0.027
s421	R414	X	X	X	RD35510 100	RD35510 100	X	X

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	

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

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Interchangeable Parts at Manufacture-Stage

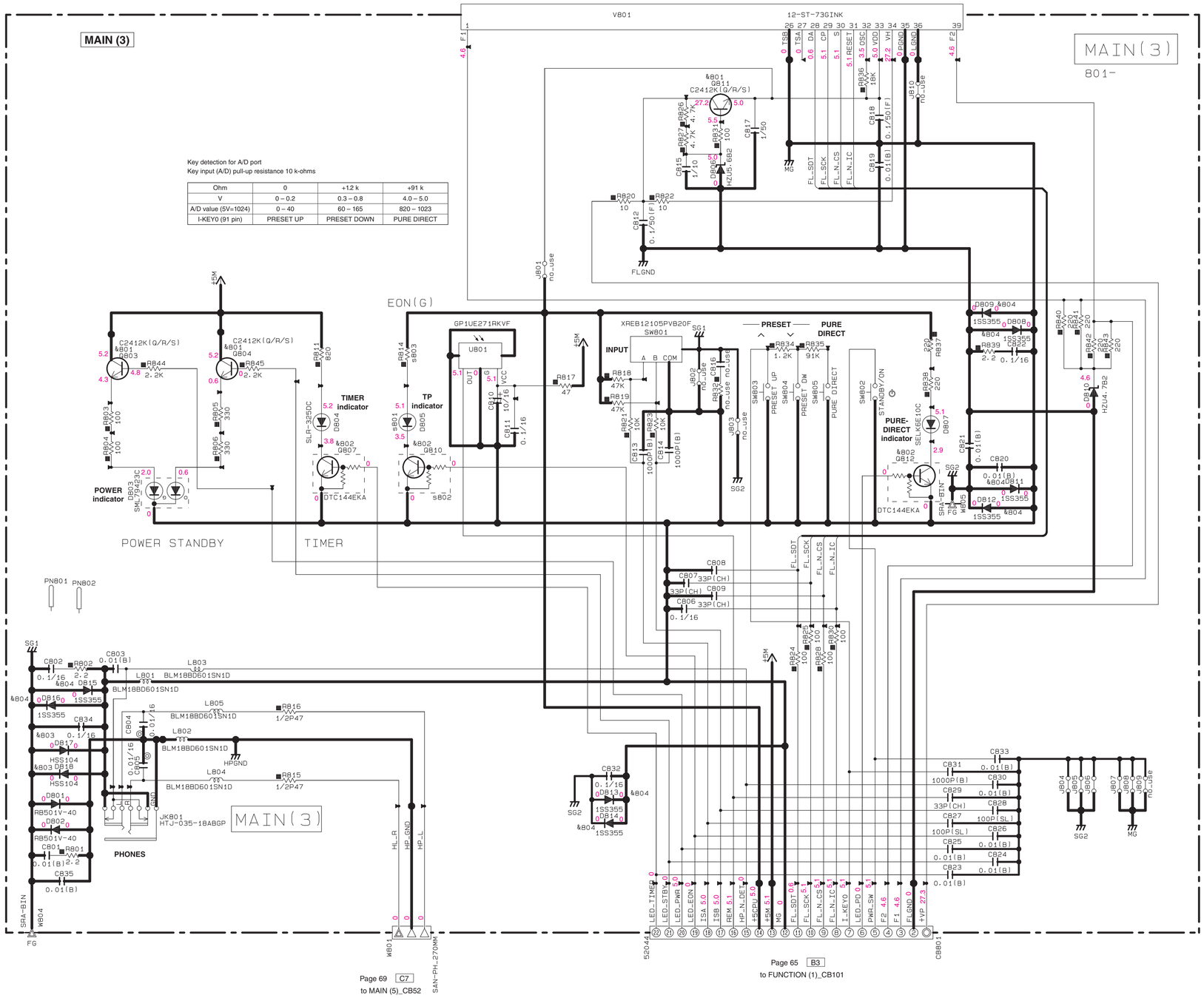
Mark	Reference Parts Number	Parts Name
&401	Q405, 406, 407	2SC2412K(Q/R/S) KTC3875-Y, GR-RTK/P

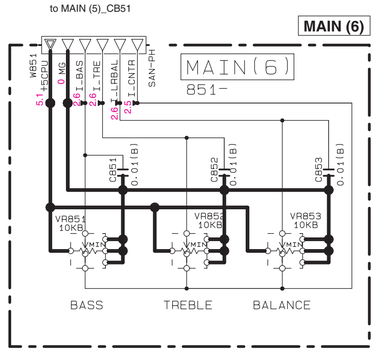
★ All voltages are measured with a 10MΩ/V DC electronic voltmeter.
★ Components having special characteristics are marked ⚠ and must be replaced with parts having specifications equal to those originally installed.
★ Schematic diagram is subject to change without notice.

MAIN 3/4

Destination Part List

sXX	LOC	CV	T	K	A	B	G	L
s801	DB05	X	X	X	X	VR71140 SLR-325MCT31	VR71140 SLR-325MCT31	X
s802	QB10	X	X	X	X	VV65570 DTC144EKA	VV65570 DTC144EKA	X
s803	RB14	X	X	X	X	RD35522 220	RD35522 220	X





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	

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

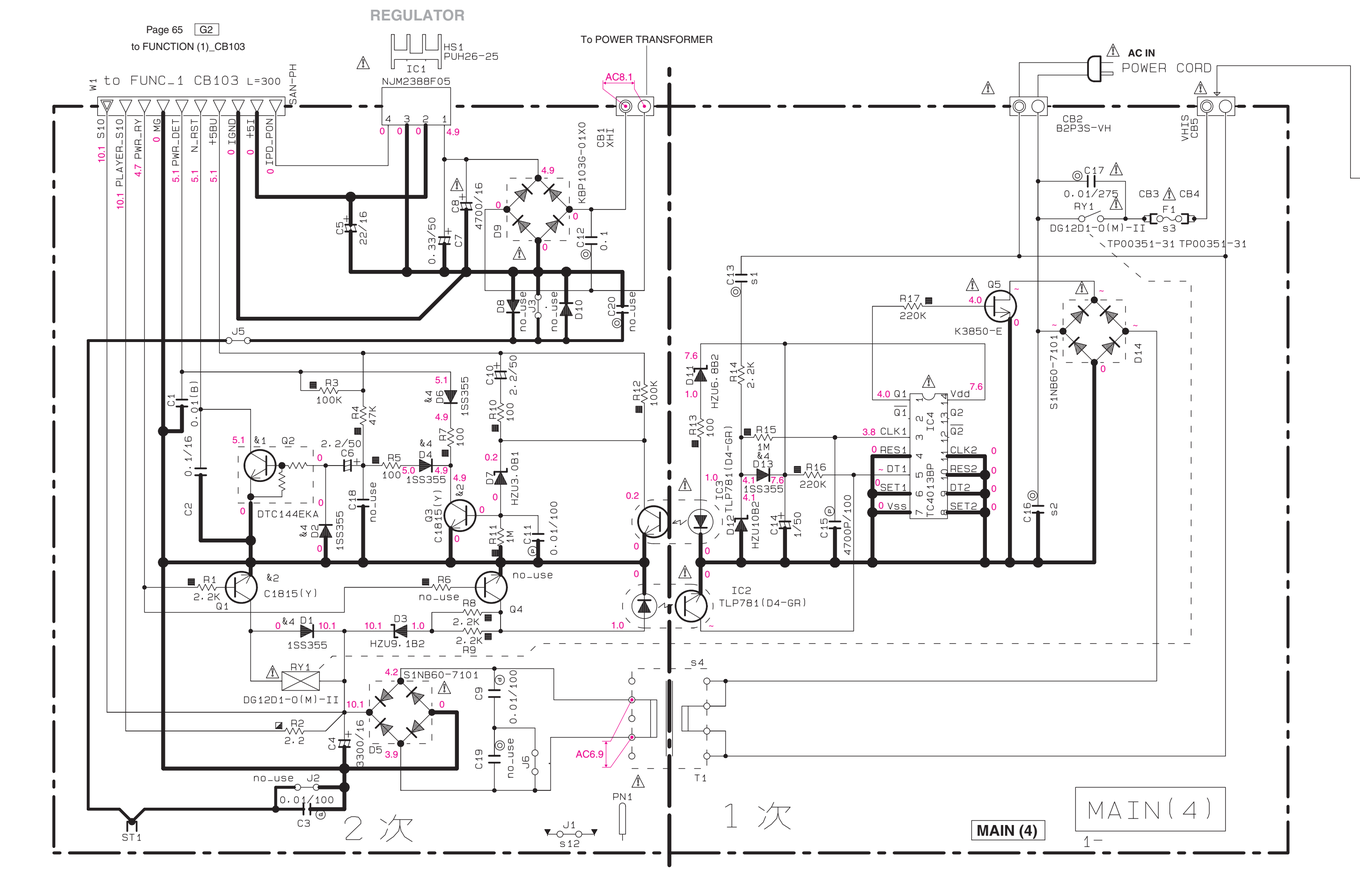
NOTICE (model)
(J)····· JAPAN
(U)····· U.S.A
(C)····· CANADA
(R)····· GENERAL
(T)····· CHINA
(K)····· KOREA
(A)····· AUSTRALIA
(B)····· BRITISH
(G)····· EUROPE
(L)····· SINGAPORE
(E)····· SOUTH EUROPE
(V)····· TAIWAN
(F)····· RUSSIAN
(P)····· LATIN AMERICA

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&801	QB03, B04, B11	2SC2412K(Q/R/S) KTC3875-Y, GR-RTK/P
&802	QB07, B10, B12	DTC144EKA KRC104S-RTK/P
&803	DB17, B18	HSS104 1SS133 HSS414BTA-E Q
&804	DB08, B09, B11-B16	1SS355 KDS160-RTK/P

★ All voltages are measured with a 10MΩ/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.

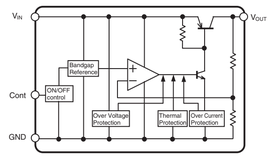
MAIN 4/4



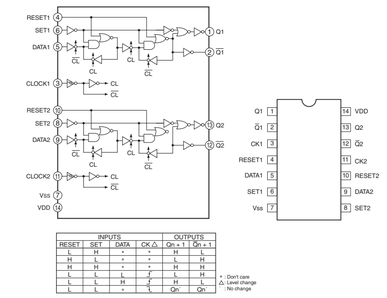
Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
&1	Q2	DTC144EKA KRC104S-RTK/P
&2	Q1, 3	2SC1815(Y) KTC3198 Y-AT
&3	D51	MTZJ5.1B HZS5C2TD-E
&4	D1, 2, 4, 6, 13 52-55	1SS355 KDS160-RTK/P

IC1: NJM2388F05
Low dropout voltage regulator with ON/OFF control



IC4: TC4013BP
Dual D-type flip flop



INPUTS				OUTPUTS	
RESET	SET	DATA	CK △	Qn+1	Qn+1
L	H	*	*	H	L
H	L	*	*	L	H
H	H	*	*	H	H
L	L	L	↗	L	H
L	L	H	↗	H	L
L	L	*	↘	Qn	Qn

* : Don't care
△ : Level change
↘ : No change

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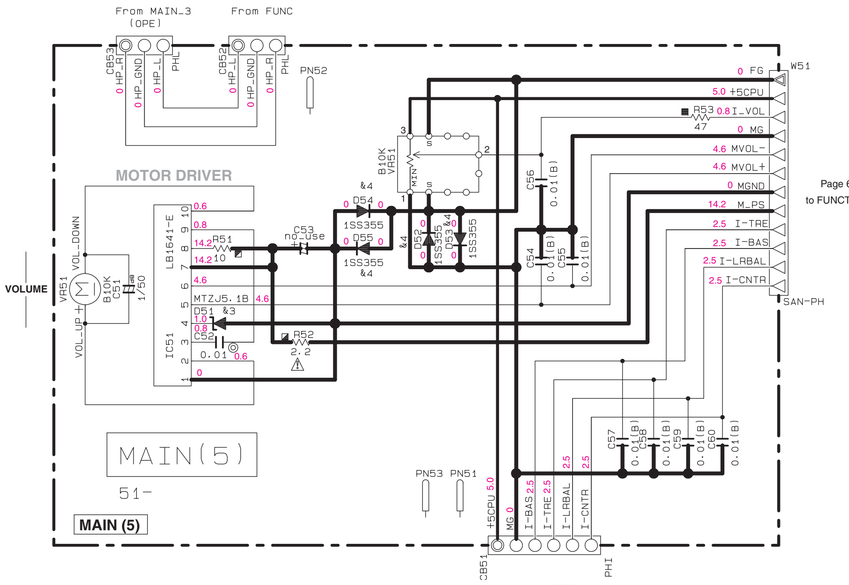
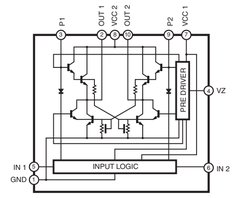
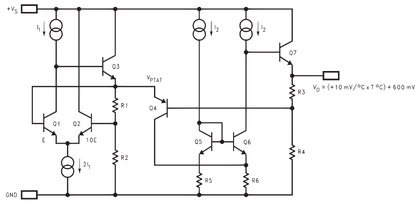
to MAIN (3)_W801



IC51: LB1641
Motor driver



IC501: LM61CIZ
Temperature sensor



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	⏚

Destination Part List

sXX	LOC	CV	T	K	A	B	G	L
s1	C13	WJ36120 0.047/400	WJ36180 0.022/630	WJ36180 0.022/630	WJ36180 0.022/630	WJ36180 0.022/630	WJ36180 0.022/630	WJ36180 0.022/630
s2	C16	WB69630 0.1/400	WD25760 0.047/800	WD25760 0.047/800	WD25760 0.047/800	WD25760 0.047/800	WD25760 0.047/800	WD25760 0.047/800
s3	F1	WB22090 3.50A125V	KB00075 T2AL250V	KB00075 T2AL250V	KB00075 T2AL250V	KB00075 T2AL250V	KB00075 T2AL250V	KB00075 T2AL250V
s4	T1	YC073A0 YC073	X7035A0 X7035	X7035A0 X7035	X7035A0 X7035	X7035A0 X7035	X7035A0 X7035	X7035A0 X7035
s12	J1	VN50000	X	X	X	X	X	X

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(E)····· SOUTH EUROPE
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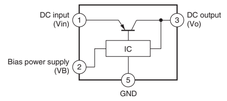
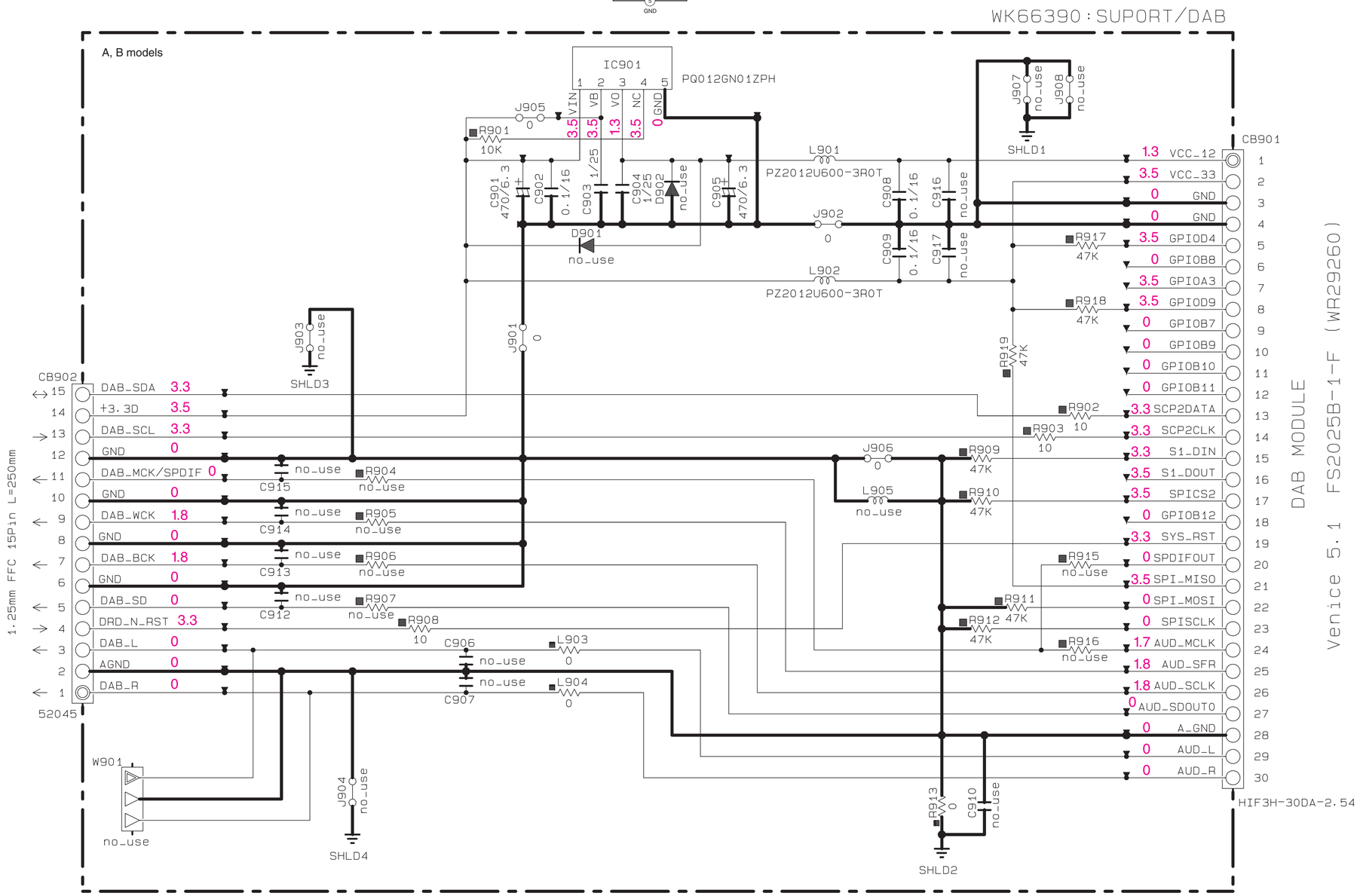
★ Schematic diagram is subject to change without notice.

DAB

IC901: PQ012GN01ZPH
Low power loss regulator





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to FUNCTION (1)_CB303

NOTICE (model)
(J)····· JAPAN
(U)····· U.S.A
(C)····· CANADA
(R)····· GENERAL
(T)····· CHINA
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(E)····· SOUTH EUROPE
(V)····· TAIWAN
(F)····· RUSSIAN
(P)····· LATIN AMERICA

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 10MΩ/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.

■ 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.

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.ML	: MULTILAYER 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.MICA	: MICA CAP
C.ML.FLM	: MULTILAYER FILM CAP
C.MP	: METALLIZED PAPER CAP
C.MYLAR	: MYLAR FILM CAP
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP
C.PAPER	: PAPER CAPACITOR
C.PLS	: POLYSTYRENE FILM CAP
C.POL	: POLYESTER FILM CAP
C.POLY	: POLYETHYLENE FILM CAP
C.PP	: POLYPROPYLENE FILM CAP
C.TNTL	: TANTALUM CAP
C.TNTL.CHP	: CHIP TANTALUM 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.POST	: CONNECTOR,BASE POST
COIL.MX.AM	: COIL,AM MIX
COIL.AT.FM	: COIL,FM ANTENNA
COIL.DT.FM	: COIL,FM DETECT
COIL.MX.FM	: COIL,FM MIX
COIL,OUTPT	: OUTPUT COIL
DIOD.ARRAY	: DIODE ARRAY
DIODE.BRG	: DIODE BRIDGE
DIODE.CHP	: CHIP DIODE
DIODE.VAR	: VARACTOR DIODE
DIOD.Z.CHP	: CHIP ZENER DIODE
DIODE.ZENR	: ZENER DIODE
DSCR.CE	: CERAMIC DISCRIMINATOR
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
GND.MTL	: GROUND PLATE
GND.TERM	: GROUND TERMINAL
HOLDER.FUS	: FUSE HOLDER
IC.PRTCT	: IC PROTECTOR
JUMPER.CN	: JUMPER CONNECTOR
JUMPER.TST	: JUMPER,TEST POINT
L.DTCT	: LIGHT DETECTING MODULE
L.EMIT	: LIGHT EMITTING MODULE
LED.DSPLY	: LED DISPLAY
LED.INFRD	: LED,INFRARED
MODUL.RF	: MODULATOR,RF
PHOT.CPL	: PHOTO COUPLER
PHOT.INTR	: PHOTO INTERRUPTER
PHOT.RFLCT	: PHOTO REFLECTOR
PIN.TEST	: PIN,TEST POINT
PLST.RIVET	: PLASTIC RIVET
R.ARRAY	: RESISTOR ARRAY
R.CAR.	: CARBON RESISTOR
R.CAR.CHP	: CHIP RESISTOR
R.CAR.FP	: FLAME PROOF CARBON RESISTOR
R.FUS	: FUSABLE 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
R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
R.CEMENT	: CEMENT RESISTOR
SCR.BND.HD	: BIND HEAD B-TIGHT SCREW
SCR.BW.HD	: BW HEAD TAPPING SCREW
SCR.CUP	: CUP TIGHT SCREW
SCR.TERM	: SCREW TERMINAL
SCR.TR	: SCREW,TRANSISTOR
SUPRT.PCB	: SUPPORT,P.C.B.
SURG.PRTCT	: SURGE PROTECTOR
SW.TACT	: TACT SWITCH
SW.LEAF	: LEAF SWITCH
SW.LEVER	: LEVER SWITCH
SW.MICRO	: MICRO SWITCH
SW.PUSH	: PUSH SWITCH
SW.RT.ENC	: ROTARY ENCODER
SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
SW.RT	: ROTARY SWITCH
SW.SLIDE	: SLIDE SWITCH
TERM.SP	: SPEAKER TERMINAL
TERM.WRAP	: WRAPPING TERMINAL
THRMST.CHP	: CHIP THERMISTOR
TR.CHP	: CHIP TRANSISTOR
TR.DGT	: DIGITAL TRANSISTOR
TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
TRANS	: TRANSFORMER
TRANS.PULS	: PULSE TRANSFORMER
TRANS.PWR	: POWER TRANSFORMER ASS'Y
TUNER.AM	: TUNER PACK,AM
TUNER.FM	: TUNER PACK,FM
TUNER.PK	: FRONT-ENDTUNER PACK
VR	: ROTARY POTENTIOMETER
VR.MTR	: POTENTIOMETER WITH MOTOR
VR.SW	: POTENTIOMETER WITH ROTARY SW
VR.SLIDE	: SLIDE POTENTIOMETER
VR.TRIM	: TRIMMER POTENTIOMETER

P.C.B. FUNCTION

	Ref No.	Part No.	Description			Markets
*		WS536300	P. C. B.	FUNCTION		C
*		WS536400	P. C. B.	FUNCTION		TK
*		WS536500	P. C. B.	FUNCTION		A
*		WS536600	P. C. B.	FUNCTION		B
*		WS536700	P. C. B.	FUNCTION		G
*		WS536800	P. C. B.	FUNCTION		L
*		WS536900	P. C. B.	FUNCTION		V
*	CB101	VQ047700	CN. BS. PIN	22P		
	CB102	V7828000	SOCKET	13P SE TUC SERIES		
	CB103	VB858900	CN. BS. PIN	10P		
	CB104	VQ044400	CN. BS. PIN	9P		
	CB105	VB389900	CN. BS. PIN	3P		
	CB106	LB918030	CN. BS. PIN	3P		AB
	CB108	VB389600	CN. BS. PIN	11P		
	CB109	VC166500	CN. BS. PIN	12P		
	CB301	VB858300	CN. BS. PIN	4P		
	CB302	VM859500	CN. BS. PIN	11P		
	CB303	VM859600	CN. BS. PIN	15P		AB
	CB305	V7827900	SOCKET	12P TE TUC SERIES		
	C101	US061330	C. CE. CHP	33pF	50V B	
	C102	US062100	C. CE. CHP	100pF	50V B	
	C103	US061330	C. CE. CHP	33pF	50V B	
	C104-111	US062100	C. CE. CHP	100pF	50V B	
	C112	US035100	C. CE. CHP	0. 1uF	16V B	
	C113-114	US062100	C. CE. CHP	100pF	50V B	
	C115	US065100	C. CE. CHP	0. 1uF	50V B	
	C116	US035100	C. CE. CHP	0. 1uF	16V B	
	C117-118	US062100	C. CE. CHP	100pF	50V B	
	C119	US135100	C. CE. CHP	0. 1uF	16V	
	C120-124	US062100	C. CE. CHP	100pF	50V B	
	C125	US135100	C. CE. CHP	0. 1uF	16V	
	C126	UB446100	C. CE. CHP	1uF	16V	
	C127	US062100	C. CE. CHP	100pF	50V B	
	C128-129	US135100	C. CE. CHP	0. 1uF	16V	
	C130	UB446100	C. CE. CHP	1uF	16V	
	C131-132	US135100	C. CE. CHP	0. 1uF	16V	
	C133	US035100	C. CE. CHP	0. 1uF	16V B	
	C134	US061330	C. CE. CHP	33pF	50V B	
	C135-136	US135100	C. CE. CHP	0. 1uF	16V	
	C137-141	US062100	C. CE. CHP	100pF	50V B	
	C142-146	US135100	C. CE. CHP	0. 1uF	16V	
	C147-148	US061270	C. CE. CHP	27pF	50V B	
	C149-153	US135100	C. CE. CHP	0. 1uF	16V	
	C154	UR237100	C. EL	10uF	16V	
	C155	US135100	C. CE. CHP	0. 1uF	16V	
	C156	UR237100	C. EL	10uF	16V	
	C157	UR219100	C. EL	1000uF	6. 3V	
	C158	UR818220	C. EL	220uF	6. 3V	
	C159	UR237100	C. EL	10uF	16V	
	C160-163	US061330	C. CE. CHP	33pF	50V B	
	C164	UR237100	C. EL	10uF	16V	
	C165-166	UR037470	C. EL	47uF	16V	
	C167-168	US135100	C. CE. CHP	0. 1uF	16V	
	C169	WB165500	C. EL	0. 33F	5. 5V	
	C170	US135100	C. CE. CHP	0. 1uF	16V	
	C171-176	US064100	C. CE. CHP	0. 01uF	50V B	
	C177-178	US135100	C. CE. CHP	0. 1uF	16V	

* New Parts

	Ref No.	Part No.	Description			Markets
	C180	US061470	C. CE. CHP	47pF	50V B	
	C181-182	US135100	C. CE. CHP	0. 1uF	16V	
*	C183	UR019100	C. EL	1000uF	6. 3V	
	C301-302	US063100	C. CE. CHP	1000pF	50V B	
	C303	US135100	C. CE. CHP	0. 1uF	16V	BG
	C304	UR237470	C. EL	47uF	16V	BG
	C305-306	US061270	C. CE. CHP	27pF	50V B	BG
	C307	US062330	C. CE. CHP	330pF	50V B	BG
	C308	UR237470	C. EL	47uF	16V	BG
	C309-310	WE100500	C. PP	100pF	630V	
	C311-312	US062100	C. CE. CHP	100pF	50V B	
	C313-314	US062330	C. CE. CHP	330pF	50V B	BG
	C315-316	US062100	C. CE. CHP	100pF	50V B	AB
	C317-318	US063100	C. CE. CHP	1000pF	50V B	
	C319	US062330	C. CE. CHP	330pF	50V B	BG
	C320	UR267330	C. EL	33uF	50V	BG
	C321	US126100	C. CE. CHP	1uF	10V	BG
	C322	UR267330	C. EL	33uF	50V	
	C323-324	UR038100	C. EL	100uF	16V	
	C325-326	US135100	C. CE. CHP	0. 1uF	16V	
	C327-328	UR038100	C. EL	100uF	16V	
	C329-330	US135100	C. CE. CHP	0. 1uF	16V	
	C331-332	UR237100	C. EL	10uF	16V	
	C333	UR237220	C. EL	22uF	16V	AB
	C334-336	UR237220	C. EL	22uF	16V	
	C337	UR237220	C. EL	22uF	16V	AB
	C338	UR237220	C. EL	22uF	16V	
	C339	US135100	C. CE. CHP	0. 1uF	16V	AB
	C341-342	US062100	C. CE. CHP	100pF	50V B	AB
	C343-344	US062100	C. CE. CHP	100pF	50V B	
	C345-346	US063100	C. CE. CHP	1000pF	50V B	
	C347-348	WP420700	C. PP	100pF	100V	
	C351-352	UF437470	C. EL. CHP	47uF	16V	AB
	C353-356	UF437470	C. EL. CHP	47uF	16V	
	C357-358	US062100	C. CE. CHP	100pF	50V B	AB
	C359-362	US063100	C. CE. CHP	1000pF	50V B	
	C363-364	WP420700	C. PP	100pF	100V	
	C365-368	UF437100	C. EL. CHP	10uF	16V	AB
	C369	UR238100	C. EL	100uF	16V	AB
	C370	UB446100	C. CE. CHP	1uF	16V	AB
	C371-372	WJ611400	C. MYLAR	0. 1uF	100V J	
	C373-374	UR237100	C. EL	10uF	16V	
	C375-380	UF437100	C. EL. CHP	10uF	16V	
	C381-382	UR038100	C. EL	100uF	16V	
	C385	UR047100	C. EL	10uF	25V	
	C386-387	US061220	C. CE. CHP	22pF	50V B	
	C390	US061220	C. CE. CHP	22pF	50V B	
	C391-392	WB575600	C. MYLA. CHP	0. 0033uF	50V	
	C395-396	WB573700	C. MYLA. CHP	0. 1uF	16V	
	C397-398	UR266470	C. EL	4. 7uF	50V	
	C399-402	UR237100	C. EL	10uF	16V	
	C403-406	US062100	C. CE. CHP	100pF	50V B	
	C407-408	UF437100	C. EL. CHP	10uF	16V	
	C409-410	US062100	C. CE. CHP	100pF	50V B	
	C415	US063100	C. CE. CHP	1000pF	50V B	
	C416	US063120	C. CE. CHP	1200pF	50V B	
	C417	VE326400	C. MYLAR	0. 22uF	50V	

* New Parts

P.C.B. FUNCTION and P.C.B. MAIN

	Ref No.	Part No.	Description		Markets
	C419	UF437100	C. EL. CHP	10uF 16V	
	C420	US135100	C. CE. CHP	0. 1uF 16V	
	C421	US062100	C. CE. CHP	100pF 50V B	
	C422-423	UF437470	C. EL. CHP	47uF 16V	
	C424	US135100	C. CE. CHP	0. 1uF 16V	
	C425	US063330	C. CE. CHP	3300pF 50V B	
	C426	UF437100	C. EL. CHP	10uF 16V	AB
	C427-428	US062100	C. CE. CHP	100pF 50V B	
	C429-430	UR038100	C. EL	100uF 16V	
	C431-432	WB573700	C. MYLA. CHP	0. 1uF 16V	
	C433-434	UR238470	C. EL	470uF 16V	
	C435-436	US063100	C. CE. CHP	1000pF 50V B	
	C437-438	UF437100	C. EL. CHP	10uF 16V	
	C439-440	US135100	C. CE. CHP	0. 1uF 16V	
	C443-444	US062100	C. CE. CHP	100pF 50V B	
	C447-448	US062100	C. CE. CHP	100pF 50V B	
	C702	US135100	C. CE. CHP	0. 1uF 16V	
	C716-717	UF118220	C. EL. CHP	220uF 6. 3V	
*	D101-104	WS694000	DIODE. ZENR	HZU5. 1B2 TRF-E	
	D105-106	VT332900	DIODE	1SS355	
*	D107	WS694000	DIODE. ZENR	HZU5. 1B2 TRF-E	
*	D108	WS692900	DIODE. ZENR	HZU3. 9B2 TRF-E	
	D109-112	VT332900	DIODE	1SS355	
	D301-310	VT332900	DIODE	1SS355	
*	D311-318	WS694200	DIODE. ZENR	HZU5. 6B TRF-E	
*	D319	WS694200	DIODE. ZENR	HZU5. 6B TRF-E	BG
	D703	WC413300	DIODE. ZENR	RSB6. 8S 6. 8V	
	F701	V2429100	SW. POLY	SMDC100-02	
	IC101	YA013A00	IC. CPU	R5F3640DNFA CPU	(unwritten)
	IC102	X9056A00	IC	M24C02-RDW6TP	
*	IC104	X2973A00	IC	TC7SZ125FU	
	IC105-106	X8398A00	IC	TC7SET08FU(T5L, JF)	
*	IC107	X2973A00	IC	TC7SZ125FU	
	IC108	X8201A00	IC	TC7WH125FK	
	IC109	X9428A00	IC	R1154H058B-T1-F	
	IC301	X8235A00	IC	LC72725KM	BG
*	IC302	YA855A00	IC	NJM2752RB2	AB
	IC303	X8355A00	IC	NJW1194	
	IC304	X3505A00	IC	NJM2068MD-TE2	AB
	IC305	X3505A00	IC	NJM2068MD-TE2	
	IC306	YA089A00	IC	LME49723MAX/NOPB	
	IC307	X3505A00	IC	NJM2068MD-TE2	
	IC308	XS377A00	IC	BA15218F OP AMP	
	IC309	X2331A00	IC	NJM4580E OP AMP	
	IC310	X3505A00	IC	NJM2068MD-TE2	
	JK101	VV881000	CN. DIN	8P CMS5008-0101	
	PJ301	VV551500	JACK. PIN	4P	
	PJ302	WH981900	JACK. PIN	RCA-107AG-01	
	Q101-102	VV655000	TR. DGT	DTA114EKA	
	Q103	VV556500	TR	2SA1037K Q, R, S	
	Q104	VP872600	TR	2SA1708 S, T	
	Q105	VV655700	TR. DGT	DTC144EKA	
	Q106	VV655300	TR. DGT	DTA144EKA	AB
	Q107	VD303700	TR	2SC3326 A, B	
	Q108	VV655700	TR. DGT	DTC144EKA	AB
	Q109	WG261200	FET	2SK2158-T2B-A	
	Q110-111	VV655300	TR. DGT	DTA144EKA	

✻ New Parts

	Ref No.	Part No.	Description		Markets
	Q112-113	WG261200	FET	2SK2158-T2B-A	AB
	Q114	VV655700	TR. DGT	DTC144EKA	
	Q115-116	WG261200	FET	2SK2158-T2B-A	
	Q117	VV556400	TR	2SC2412K Q, R, S	
	Q301	iC174020	TR	2SC1740S QRS	BG
	Q302	VV556400	TR	2SC2412K Q, R, S	BG
	Q306-310	WC883400	TR	2SD2704 K	
	Q312	V4096100	TR	2SC4614 S, T	
	Q313	V4096000	TR	2SA1770 S, T	
	Q701-702	WH445000	FET	3LN01C-TB-E	
	R214	HV753220	R. CAR. FP	2. 2Ω 1/4W	
	R329	V8070100	R. MTL. FLM	2. 2Ω 1W	
	R331	V8070100	R. MTL. FLM	2. 2Ω 1W	
	R390-391	V8070100	R. MTL. FLM	2. 2Ω 1W	
	SW701	WD483100	SW. TACT	SKRGAAD010	
	XL101	VQ328900	RSNR. CRYS	32. 768KHz	
	XL102	WF997400	RSNR. CE	20MHz	
	XL301	V3930900	RSNR. CRYS	4. 332MHz	BG
*		WS535400	P. C. B.	MAIN	CV
*		WS535500	P. C. B.	MAIN	T
*		WS535600	P. C. B.	MAIN	K
*		WS535700	P. C. B.	MAIN	A
*		WS535800	P. C. B.	MAIN	B
*		WS535900	P. C. B.	MAIN	G
*		WS536000	P. C. B.	MAIN	L
	CB1	LB918020	CN. BS. PIN	2P	
⚠	CB2	VP245600	CN	2P	
	CB3-4	WN103000	CLIP. FUSE	TP00351-31	
⚠	CB5	VG879900	CN. BS. PIN	2P	
	CB51	VB390200	CN. BS. PIN	6P	
	CB52-53	VB858200	CN. BS. PIN	3P	
	CB401	LB919090	CN. BS. PIN	9P	
	CB402	LB919030	CN. BS. PIN	3P	AB
	CB403	LB918050	CN. BS. PIN	5P	
	CB502	V7826200	CN	12P TE TUC SERIES	
	CB503	V7826300	CN	13P TE TUC SERIES	
	CB504	VB390000	CN. BS. PIN	4P	
	CB505	LB932040	CN. BS. PIN	4P	
	CB506	VB858200	CN. BS. PIN	3P	
	CB801	VQ045200	CN. BS. PIN	22P	
	C1	US064100	C. CE. CHP	0. 01uF 50V B	
	C2	US135100	C. CE. CHP	0. 1uF 16V	
	C3	WN165300	C. PP	0. 01uF 100V	
	C4	UU239330	C. EL	3300uF 16V	
	C5	UR237220	C. EL	22uF 16V	
	C6	UR266220	C. EL	2. 2uF 50V	
	C7	UR265330	C. EL	0. 33uF 50V	
⚠	C8	UR739470	C. EL	4700uF 16V	
	C9	WN165300	C. PP	0. 01uF 100V	
	C10	UR266220	C. EL	2. 2uF 50V	
	C11	WN165300	C. PP	0. 01uF 100V	
	C12	VE326000	C. MYLAR	0. 1uF 50V	
	C13	WJ361200	C. POL. MTL	0. 047uF 400V	CV
	C13	WJ361800	C. POL. MTL	0. 022uF 630V	TKABGL

✻ New Parts

P.C.B. MAIN

	Ref No.	Part No.	Description			Markets
	C14	UR266100	C. EL	1uF	50V	
	C15	WN165000	C. PP	4700pF	100V	
	C16	WB696300	C. POL. MTL	0. 1uF	400V	CV
	C16	WD257600	C. PP	0. 047uF	800V	TKABGL
⚠	C17	V6185300	C. CE. SAFTY	0. 01uF	275V	
	C51	UN866100	C. EL	1uF	50V	
	C52	WJ605000	C. MYLAR	0. 01uF	50V J	
	C54-60	US064100	C. CE. CHP	0. 01uF	50V B	
	C401-402	UR038100	C. EL	100uF	16V	
	C404	UR838100	C. EL	100uF	16V	AB
	C406-407	UR267100	C. EL	10uF	50V	
	C408	UR866100	C. EL	1uF	50V	AB
	C409	UU249470	C. EL	4700uF	25V	
	C410	UU249330	C. EL	3300uF	25V	
*	C411	UU239470	C. EL	4700uF	16V	AB
	C412	US064100	C. CE. CHP	0. 01uF	50V B	AB
	C413	WJ611400	C. MYLAR	0. 1uF	100V J	CV
	C413	WQ209700	C. PP	0. 027uF	100V	TKABGL
	C414	WJ611400	C. MYLAR	0. 1uF	100V J	CV
	C414	WQ209700	C. PP	0. 027uF	100V	TKABGL
	C415	VR324900	C. MYLAR	0. 1uF	100V	AB
	C501-502	UR237100	C. EL	10uF	16V	
	C517-518	WK041800	C. EL	10uF	16V	
	C519	WN164200	C. PP	220pF	100V	
	C520	WE100400	C. PP	47pF	630V	
	C521-522	WE100500	C. PP	100pF	630V	
	C523	WE100400	C. PP	47pF	630V	
	C525-526	WE102100	C. PP	2200pF	100V	
	C527-528	UR068100	C. EL	100uF	50V	
	C529-530	WE100200	C. PP	22pF	630V	
	C532	WE100600	C. PP	120pF	630V	
	C533	UR297220	C. EL	22uF	100V	
	C534-535	WE100600	C. PP	120pF	630V	
	C536	UR297220	C. EL	22uF	100V	
	C537	WE100600	C. PP	120pF	630V	
	C539	UR067470	C. EL	47uF	50V	
	C542-543	UR066470	C. EL	4. 7uF	50V	
⚠	C544-545	WQ209700	C. PP	0. 027uF	100V	
	C546	UR066470	C. EL	4. 7uF	50V	
*	C547-548	UR097330	C. EL	33uF	100V	
	C549	UR067470	C. EL	47uF	50V	
	C550	UR218100	C. EL	100uF	6. 3V	
*	C551-552	WT518500	C. EL	5600uF	50V	
	C554-555	WJ605800	C. MYLAR	0. 047uF	50V J	CV
	C557-560	WN165500	C. PP	0. 022uF	100V	
	C561-562	WN165300	C. PP	0. 01uF	100V	
	C564	UR066100	C. EL	1uF	50V	
	C565	UR067100	C. EL	10uF	50V	
	C566-567	UR068100	C. EL	100uF	50V	
	C570	US135100	C. CE. CHP	0. 1uF	16V	
	C801	US064100	C. CE. CHP	0. 01uF	50V B	
	C802	US135100	C. CE. CHP	0. 1uF	16V	
	C803	US064100	C. CE. CHP	0. 01uF	50V B	
*	C804-805	VR326200	C. MYLA. CHP	0. 01uF	16V	
	C806	US135100	C. CE. CHP	0. 1uF	16V	
	C807-809	US061330	C. CE. CHP	33pF	50V B	
	C810	UM397100	C. EL	10uF	16V	

✻ New Parts

	Ref No.	Part No.	Description			Markets
	C811	US135100	C. CE. CHP	0. 1uF	16V	
	C812	US065100	C. CE. CHP	0. 1uF	50V B	
	C813-814	US063100	C. CE. CHP	1000pF	50V B	
	C815	US126100	C. CE. CHP	1uF	10V	
*	C817	WG863700	C. CE. M. CHP	1uF	50V	
	C818	US065100	C. CE. CHP	0. 1uF	50V B	
	C819-821	US064100	C. CE. CHP	0. 01uF	50V B	
	C822	US135100	C. CE. CHP	0. 1uF	16V	
	C823-826	US064100	C. CE. CHP	0. 01uF	50V B	
	C827-828	US062100	C. CE. CHP	100pF	50V B	
	C829	US061330	C. CE. CHP	33pF	50V B	
	C830	US064100	C. CE. CHP	0. 01uF	50V B	
	C831	US063100	C. CE. CHP	1000pF	50V B	
	C832	US135100	C. CE. CHP	0. 1uF	16V	
	C833	US064100	C. CE. CHP	0. 01uF	50V B	
	C834	US135100	C. CE. CHP	0. 1uF	16V	
	C835	US064100	C. CE. CHP	0. 01uF	50V B	
	C851-853	US064100	C. CE. CHP	0. 01uF	50V B	
	D1-2	VT332900	DIODE	1SS355		
*	D3	WS696400	DIODE. ZENR	HZU9. 1B2 TRF-E		
	D4	VT332900	DIODE	1SS355		
⚠	D5	V4756800	DIODE. BRG	S1NB60 1A 600V		
	D6	VT332900	DIODE	1SS355		
*	D7	V8045400	DIODE. ZENR	HZU3. 0B1 TRF-E		
⚠	D9	WA653100	DIODE. BRG	KBP103G 1A 200V		
*	D11	WS695200	DIODE. ZENR	HZU6. 8B2 TRF-E		
*	D12	V2425200	DIODE. ZENR	HZU10B2		
	D13	VT332900	DIODE	1SS355		
⚠	D14	V4756800	DIODE. BRG	S1NB60 1A 600V		
	D51	VG437400	DIODE. ZENR	MTZJ5. 1B 5. 1V		
	D52-55	VT332900	DIODE	1SS355		
	D401-402	VG439000	DIODE. ZENR	MTZJ8. 2C 8. 2V		
⚠	D403	WA653100	DIODE. BRG	KBP103G 1A 200V		
	D404	WU011800	DIODE. BRG	S2VB60 2A 600V		AB
*	D405	WS691800	DIODE. ZENR	HZU2. 7B2 TRF-E		AB
	D503-508	VD631600	DIODE	1SS133, 176		
	D509-510	VG437500	DIODE. ZENR	MTZJ5. 1C 5. 1V		
	D511-512	VH282500	DIODE	RLS245		
⚠	D513	VG440300	DIODE. ZENR	MTZJ12C 12V		
	D514	VG443000	DIODE. ZENR	27. 0V		
	D515	VG440300	DIODE. ZENR	MTZJ12C 12V		
	D516	VU264200	DIODE	1SR139, 400		
⚠	D517	VN953300	DIODE. BRG	D5SBA60 5A 600V		
	D518-521	VT332900	DIODE	1SS355		
	D801-802	VV220700	DIODE. SHOT	RB501V-40		
	D803	WP947300	LED	ORANGE/GREEN		
	D804	VR711500	LED(or)	SLR-325DC		
	D805	VR711400	LED(gr)	SLR-325MC		BG
*	D806	WS694400	DIODE. ZENR	HZU5. 6B2 TRF-E		
	D807	WG760400	LED	SELK6E10C BLUE		
	D808-809	VT332900	DIODE	1SS355		
*	D810	WS693600	DIODE. ZENR	HZU4. 7B2 TRF-E		
	D811-816	VT332900	DIODE	1SS355		
	D817-818	VD631600	DIODE	1SS133, 176		
⚠	F1	WB220900	FUSE	T3. 5A 125V		CV
⚠	F1	KB000750	FUSE. MNI	T2A 250V		TKABGL
	G502	V5995800	PLATE. GND			

✻ New Parts

P.C.B. MAIN and P.C.B. DAB

	Ref No.	Part No.	Description		Markets
⚠	IC1	X6143A00	IC	NJM2388F05 5.0V	
⚠	IC2-3	WP388200	PHOT.CPL	TLP781(D4-GR,F)	
⚠	IC4	iG001180	IC	TC4013BP FF	
	IC51	XF494A00	IC	LB1641	
	IC402	X6248A00	IC	NJM2388F33	AB
	IC501	X0515B00	IC	LM61CIZ THERMAL	
	IC503	X7974A00	IC	KIA7809API-U/P	
	JK801	VY810500	JACK.MNI	HTJ-035-18ABG	
	Q1	iC1815I0	TR	2SC1815 Y	
	Q2	VV655700	TR.DGT	DTC144EKA	
	Q3	iC1815I0	TR	2SC1815 Y	
⚠	Q5	WC741200	FET	2SK3850	
⚠	Q401	WF691400	TR	2SD2014	
⚠	Q402	WF691300	TR	2SB1257	
	Q403-404	iE102620	FET	2SK246 Y	
	Q405-407	VV556400	TR	2SC2412K Q,R,S	AB
	Q507-508	VD303700	TR	2SC3326 A,B	
	Q509	WH199400	IC	HN4C06J	
	Q510-511	WC139600	TR	KTC3911S GR BL	
	Q512	WH199400	IC	HN4C06J	
⚠ *	Q513-514	WT676000	TR	2SD2705S	
	Q515	VE198700	TR	2SA1145 O,Y	
⚠	Q516-517	VR325600	TR	2SC2229 O,Y	
	Q518	VE198700	TR	2SA1145 O,Y	
⚠	Q519	V4096100	TR	2SC4614 S,T	
⚠	Q520-521	V4096000	TR	2SA1770 S,T	
⚠	Q522	V4096100	TR	2SC4614 S,T	
⚠	Q524-525	VR355800	TR.PAIR	A1694/C4467 OPY	(IX615750/IX615760)
	Q527	VP872700	TR	2SC4488 S,T	
	Q528-529	WH372100	TR	KTA1517S GR TP	
⚠	Q530-531	WC139600	TR	KTC3911S GR BL	
⚠	Q532	iC1815I0	TR	2SC1815 Y	
	Q533-534	WC139600	TR	KTC3911S GR BL	
	Q803-804	VV556400	TR	2SC2412K Q,R,S	
	Q807	VV655700	TR.DGT	DTC144EKA	
	Q810	VV655700	TR.DGT	DTC144EKA	BG
	Q811	VV556400	TR	2SC2412K Q,R,S	
	Q812	VV655700	TR.DGT	DTC144EKA	
	R2	HV753220	R.CAR.FP	2.2Ω 1/4W	
	R51	HV754100	R.CAR.FP	10Ω 1/4W	
⚠	R52	HV753220	R.CAR.FP	2.2Ω 1/4W	
	R401	HV753100	R.CAR.FP	1Ω 1/4W	
	R404	HV753100	R.CAR.FP	1Ω 1/4W	
⚠	R406-407	HV755100	R.CAR.FP	100Ω 1/4W	
⚠	R408-409	HV753470	R.CAR.FP	4.7Ω 1/4W	
*	R531	WK771200	R.CAR	2.2Ω 1/2W	
*	R544-545	WQ965300	R.MTL.OXD	1.8KΩ 1W	
	R546-547	WN462200	R.MTL.OXD	33KΩ 1W	
	R548-549	WQ964700	R.MTL.OXD	470Ω 1W	
*	R550-551	V8073200	R.MTL.OXD	470KΩ 1W	
	R556	HL006270	R.MTL.OXD	2.7KΩ 1/2W	
	R557	HL005330	R.MTL.OXD	330Ω 1/2W	
	R558-559	HL005820	R.MTL.OXD	820Ω 1/2W	
	R560	HL005330	R.MTL.OXD	330Ω 1/2W	
	R561	HL006270	R.MTL.OXD	2.7KΩ 1/2W	
	R562-563	HL006100	R.MTL.OXD	1KΩ 1/2W	
	R564-567	HV755100	R.CAR.FP	100Ω 1/4W	

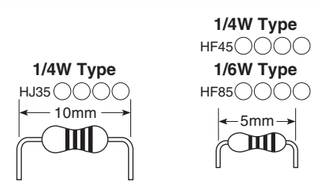
✻ New Parts

	Ref No.	Part No.	Description		Markets
	R568-569	HV753470	R.CAR.FP	4.7Ω 1/4W	
	R571-572	HV755220	R.CAR.FP	220Ω 1/4W	
	R574-577	HV753470	R.CAR.FP	4.7Ω 1/4W	
⚠	R578-579	V3873200	R.CEMENT	0.22Ω 3W	
⚠	R592-593	V8070300	R.MTL.FLM	10Ω 1W	
⚠	R598	HV755100	R.CAR.FP	100Ω 1/4W	
	R599	HL006180	R.MTL.OXD	1.8KΩ 1/2W	
	R601	V8070000	R.MTL.FLM	1Ω 1W	
⚠	R605	V8071200	R.MTL.OXD	330Ω 1W J	
	R613-616	HV753220	R.CAR.FP	2.2Ω 1/4W	
	R620-621	HV753470	R.CAR.FP	4.7Ω 1/4W	
⚠	RY1	V0073400	RELAY	DC DG12D1-OM-II	
⚠	RY501	WM959000	RELAY	DC24V G5PA-28-MC	
	ST1	V4040500	SCR.TERM	M3	
	ST501	V4040500	SCR.TERM	M3	
	ST502	WA246200	SCR.TERM	3.5	
	SW801	WH251700	SW.RT.ENC	XREB12105PVB20FINA	
	SW802-805	WD483100	SW.TACT	SKRGAAD010	
⚠ *	T1	YC073A00	TRANS.PWR		CV
⚠	T1	X7035A00	TRANS.PWR		TKABGL
	TE501	WQ479300	TERM.SP	4P MST-214V2-01	CTAV
	TE501	WQ479400	TERM.SP	4P MST-214V2-01	KBGL
	U801	WK918500	L.DTCT	GP1UE271RKVF	
	V801	WQ551300	FL.DSPLY	12-ST-73GINK	
	VR51	WK707400	VR.MOTOR	B 10KΩ	
*	VR851-853	WS395700	VR	B 10KΩ	
		WQ150000	SHEET.FL		
		V6203300	SPACER.FL		
		WE774400	SCR.BND.HD	3x8 MFZN2B3	
		WR343800	P.C.B.	DAB	AB
	CB901	WR261900	TERM	30P TE	AB
	CB902	VM859600	CN.BS.PIN	15P	AB
	C901	UR818470	C.EL	470uF 6.3V	AB
	C902	US135100	C.CE.CHP	0.1uF 16V	AB
	C903-904	US046100	C.CE.CHP	1uF 25V	AB
	C905	UR818470	C.EL	470uF 6.3V	AB
	C908-909	US135100	C.CE.CHP	0.1uF 16V	AB
	IC901	X9321A00	IC	PQ012GN01ZPH	AB

✻ New Parts

Carbon Resistors

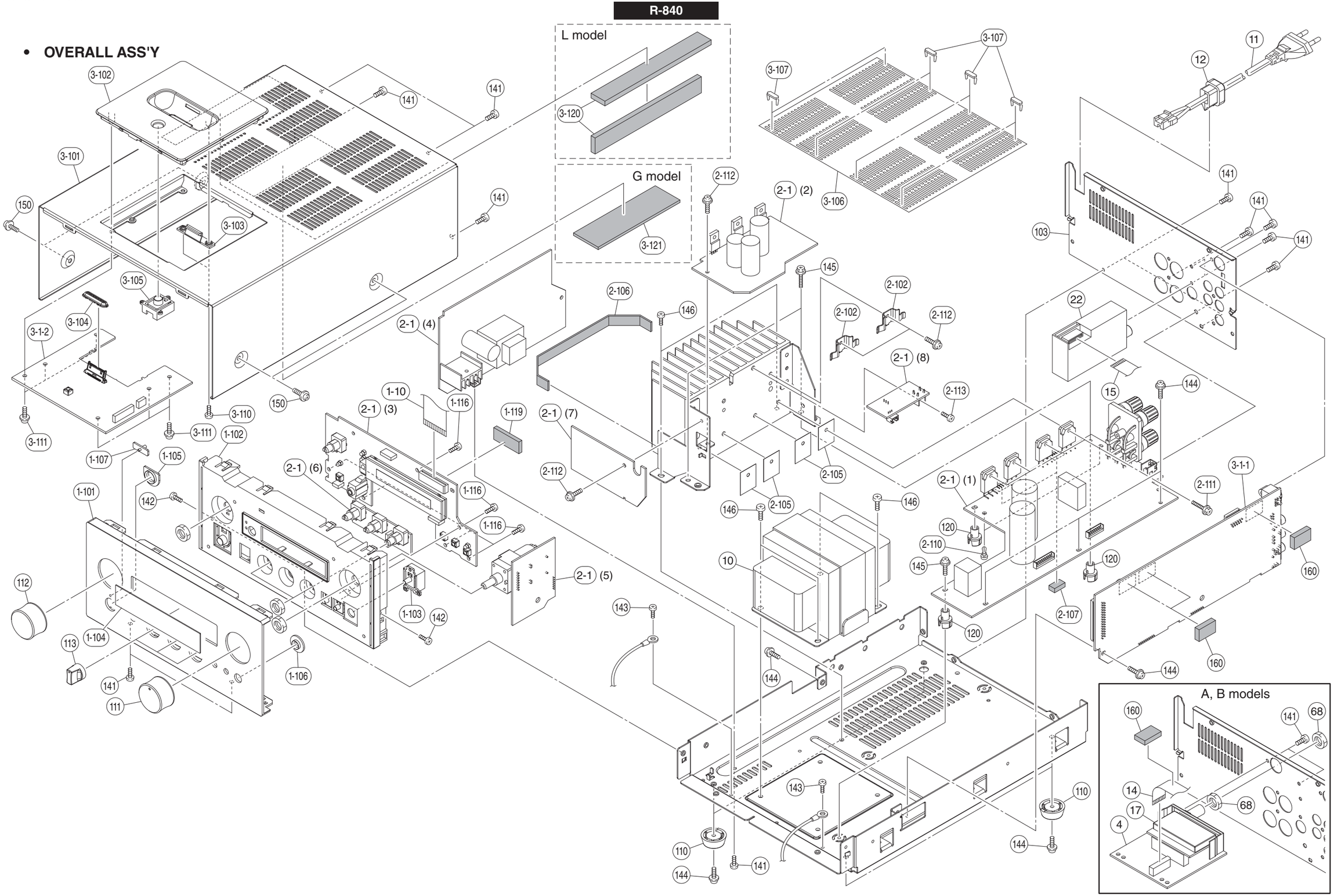
Value	**1/4W** Type Part No.	**1/6W** Type Part No.	Value	**1/4W** Type Part No.	**1/6W** Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	11 kΩ	HF45 7110	HF45 7110
1.8 Ω	HJ35 3180	✻	12 kΩ	HJ35 7120	HF85 7120
2.2 Ω	HJ35 3220	HF85 3220	13 kΩ	HF45 7130	HF45 7130
3.3 Ω	HJ35 3330	HF85 3330	15 kΩ	HF45 7150	HF45 7150
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			



✻ : Not available

R-840

- **OVERALL ASS'Y**



R-840

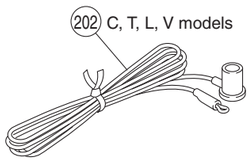
	Ref No.	Part No.	Description	Remarks	Markets
*	1-10	WS600800	FLEXIBLE FLAT CABLE 22P 160mm P=1.25		
*	1-101	WR981000	FRONT PANEL	BL	CTKGLV
*	1-101	WR980900	FRONT PANEL	SI	CTKGLV
*	1-101	WS545000	FRONT PANEL	BL	AB
*	1-101	WS544900	FRONT PANEL	SI	AB
*	1-102	WS027800	SUB PANEL	BL	
*	1-102	WS027700	SUB PANEL	SI	
*	1-103	WR981100	BUTTON PURE DIRECT		
*	1-104	WS102500	SHEET WINDOW		CTKALV
*	1-104	WR988700	SHEET WINDOW		BG
*	1-105	WR947500	ESCUTCHEON D12x3	BL	
*	1-105	WR947400	ESCUTCHEON D12x3	SI	
*	1-106	WR950300	ESCUTCHEON D8x4	BL	
*	1-106	WR950200	ESCUTCHEON D8x4	SI	
*	1-107	WR951100	LED LENS		
	1-116	WE774800	BIND HEAD P-TIGHT SCREW 3x8 MFZN2W3		
	1-119	WQ488500	CUSHION 10x20		
*	2-1	WS535400	P.C.B. ASS'Y MAIN		CV
*	2-1	WS535500	P.C.B. ASS'Y MAIN		T
*	2-1	WS535600	P.C.B. ASS'Y MAIN		K
*	2-1	WS535700	P.C.B. ASS'Y MAIN		A
*	2-1	WS535800	P.C.B. ASS'Y MAIN		B
*	2-1	WS535900	P.C.B. ASS'Y MAIN		G
*	2-1	WS536000	P.C.B. ASS'Y MAIN		L
*	2-102	WR939800	SUPPORT TR		
	2-105	WE807300	RADIATION SHEET 19x24		
	2-106	VP922500	DAMPER 2x10x170		
*	2-107	WS765400	DAMPER 6x14x10		
	2-110	VQ368600	PUSH RIVET P3555-B		
	2-111	WH010900	SCREW IC 3x20 MFZN2W3		
	2-112	WG959600	PW HEAD TAPPING B-T. SCREW 3x6-8 MFZN2W3		
	2-113	WE774300	BIND HEAD B-TIGHT SCREW 3x8 MFZN2W3		
*	3-1-1	WU734600	P.C.B. ASS'Y FUNCTION(1)		C
*	3-1-1	WU735000	P.C.B. ASS'Y FUNCTION(1)		TK
*	3-1-1	WU734400	P.C.B. ASS'Y FUNCTION(1)		A
*	3-1-1	WU734500	P.C.B. ASS'Y FUNCTION(1)		B
*	3-1-1	WU734700	P.C.B. ASS'Y FUNCTION(1)		G
*	3-1-1	WU734900	P.C.B. ASS'Y FUNCTION(1)		L
*	3-1-1	WU735100	P.C.B. ASS'Y FUNCTION(1)		V
*	3-1-2	WU734800	P.C.B. ASS'Y FUNCTION(2)		
*	3-101	WS064400	TOP COVER	BL	
*	3-101	WS064300	TOP COVER	SI	
*	3-102	WS065300	BASE DOCK	BL	
*	3-102	WS065200	BASE DOCK	SI	
*	3-103	WR246500	SPRING HOOK	BL	
	3-103	WP232500	SPRING HOOK	SI	
*	3-104	WR246600	SUPPORT CONNECTOR	BL	
	3-104	WP232600	SUPPORT CONNECTOR	SI	
*	3-105	WS065600	BUTTON iPod	BL	
*	3-105	WS065500	BUTTON iPod	SI	
*	3-106	WS575400	SHEET TOP		
	3-107	WJ053800	RIVET TOP		
	3-110	WF267600	BIND HEAD P-TIGHT SCREW 2x6 MFZN2B3		

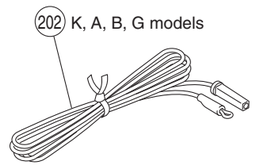
※ New Parts

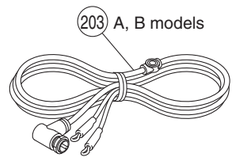
	Ref No.	Part No.	Description	Remarks	Markets
	3-111	WF002600	PW HEAD B-TIGHT SCREW 3x8 MFZN2W3		
*	3-120	WT683900	DAMPER 17x130x5		L
*	3-121	WT806500	DAMPER 30x100x2		G
*	4	WR343800	P.C.B. ASS'Y DAB		AB
⚠ *	10	YC115A00	POWER TRANSFORMER		CV
⚠ *	10	YC116A00	POWER TRANSFORMER		TK
⚠ *	10	YC117A00	POWER TRANSFORMER		A
⚠ *	10	YC119A00	POWER TRANSFORMER		B
⚠ *	10	YC120A00	POWER TRANSFORMER		G
⚠ *	10	YC118A00	POWER TRANSFORMER		L
⚠	11	WB120500	POWER CABLE 2m		C
⚠	11	WB120600	POWER CABLE 2m		T
⚠	11	WC753000	POWER CABLE 2m		K
⚠	11	WC743700	POWER CABLE 2m		A
⚠	11	WB212200	POWER CABLE 2m		B
⚠	11	WB212300	POWER CABLE 2m		GL
⚠	11	WC992700	POWER CABLE 2m		V
	12	V2438700	CORD STOPPER 10P1		
*	14	WQ273900	FLEXIBLE FLAT CABLE 15P 120mm P=1.25		AB
*	15	WQ273000	FLEXIBLE FLAT CABLE 11P 70mm P=1.25		
*	17	WR292600	DAB MODULE VENICE 5.1 FS2025B		AB
*	22	WS547000	FM TUNER FAEH06-A02N		CTLV
*	22	WS547100	FM TUNER FAEH06-E02N		KABG
	68	WG205000	NUT 3/8 UNEF-32		AB
*	103	WS080200	REAR PANEL		C
*	103	WS080400	REAR PANEL		T
*	103	WS080500	REAR PANEL		K
*	103	WS080300	REAR PANEL		A
*	103	WS080800	REAR PANEL		B
*	103	WS003800	REAR PANEL		G
*	103	WS080700	REAR PANEL		V
*	103	WS080600	REAR PANEL		L
	110	V3688500	LEG D18/22 t=8.2		
*	111	WR986300	KNOB VOLUME	BL	
*	111	WR986200	KNOB VOLUME	SI	
*	112	WR986500	KNOB INPUT	BL	
*	112	WR986400	KNOB INPUT	SI	
*	113	WR987400	KNOB TONE CONTROL	BL	
*	113	WR987300	KNOB TONE CONTROL	SI	
*	120	WR927400	SUPPORT H10		
	141	WE774100	BIND HEAD BONDING B-T. SCREW 3x8 MFZN2B3		
	142	WE774300	BIND HEAD B-TIGHT SCREW 3x8 MFZN2W3		
*	143	WS092400	BIND HEAD S-TIGHT SCREW 3x6 MFZN2W3		
	144	WG959600	PW HEAD TAPPING B-T. SCREW 3x6-8 MFZN2W3		
	145	WH010900	SCREW IC 3x20 MFZN2W3		
	146	WF821300	BIND HEAD S-TIGHT SCREW 4x7 MFZN2W3		
	150	WE977900	PW HEAD B-TIGHT SCREW 3x6-8 MFZN2B3	BL	
	150	WG959600	PW HEAD TAPPING B-T. SCREW 3x6-8 MFZN2W3	SI	
	160	WQ488500	CUSHION 10x20		
			SERVICE TOOL		
		AAX77610	RS232C CONVERSION ADAPTOR 5Vtype with FFC(9P)	RXN600ADAPTER	

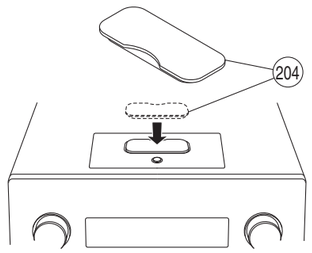
※ New Parts

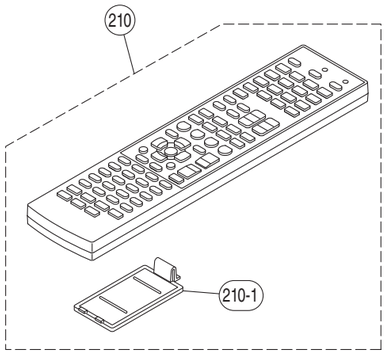
- **ACCESSORIES**

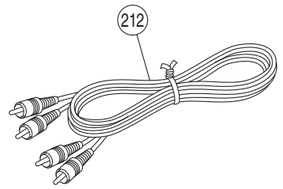


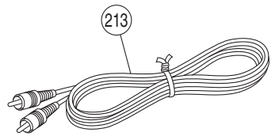


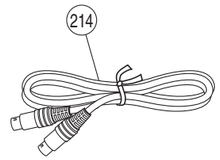


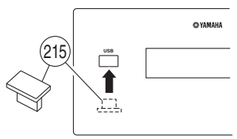










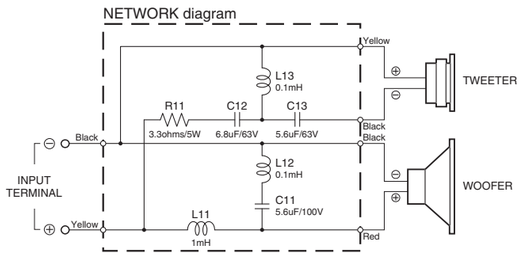


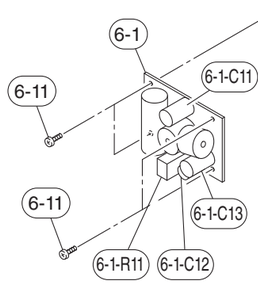
	Ref No.	Part No.	Description		Remarks	Markets
			ACCESSORIES for R-840			
	202	V6267000	INDOOR FM ANTENNA	1.4m 1pc		CTLV
	202	VQ147100	INDOOR FM ANTENNA	1.4m 1pc		KABG
	203	WK830700	DAB WIRE ANTENNA	1.6m 1pc		AB
	204	WQ850900	DOCK COVER	1pc	BL	
	204	WQ850800	DOCK COVER	1pc	SI	
			ACCESSORIES for MCR-940/MCR-840/MCR-640			
*	210	WS408600	REMOTE CONTROL	for MCR-940	000-213200130	BGF
*	210	WS408400	REMOTE CONTROL	for MCR-840	000-213200150	CTKALV
*	210	WS408500	REMOTE CONTROL	for MCR-840	000-213200120	GF
*	210	WS408200	REMOTE CONTROL	for MCR-640	000-213200140	CLV
*	210	WS408300	REMOTE CONTROL	for MCR-640	000-213200110	BG
	210-1	AAX82380	BATTERY COVER		CG-2209	
	212	VY952200	AUDIO PIN CABLE	2P 1.0m 1pc		
	213	WG299500	VIDEO PIN CABLE	1P 1.5m 1pc		
*	214	WQ579900	SYSTEM CONTROL CABLE	8P 0.6m 1pc		
*	215	WQ866500	USB CAP	1pc	BL	
*	215	WQ866400	USB CAP	1pc	SI	
			BATTERY	R03,AAA,UM-4 2pcs		

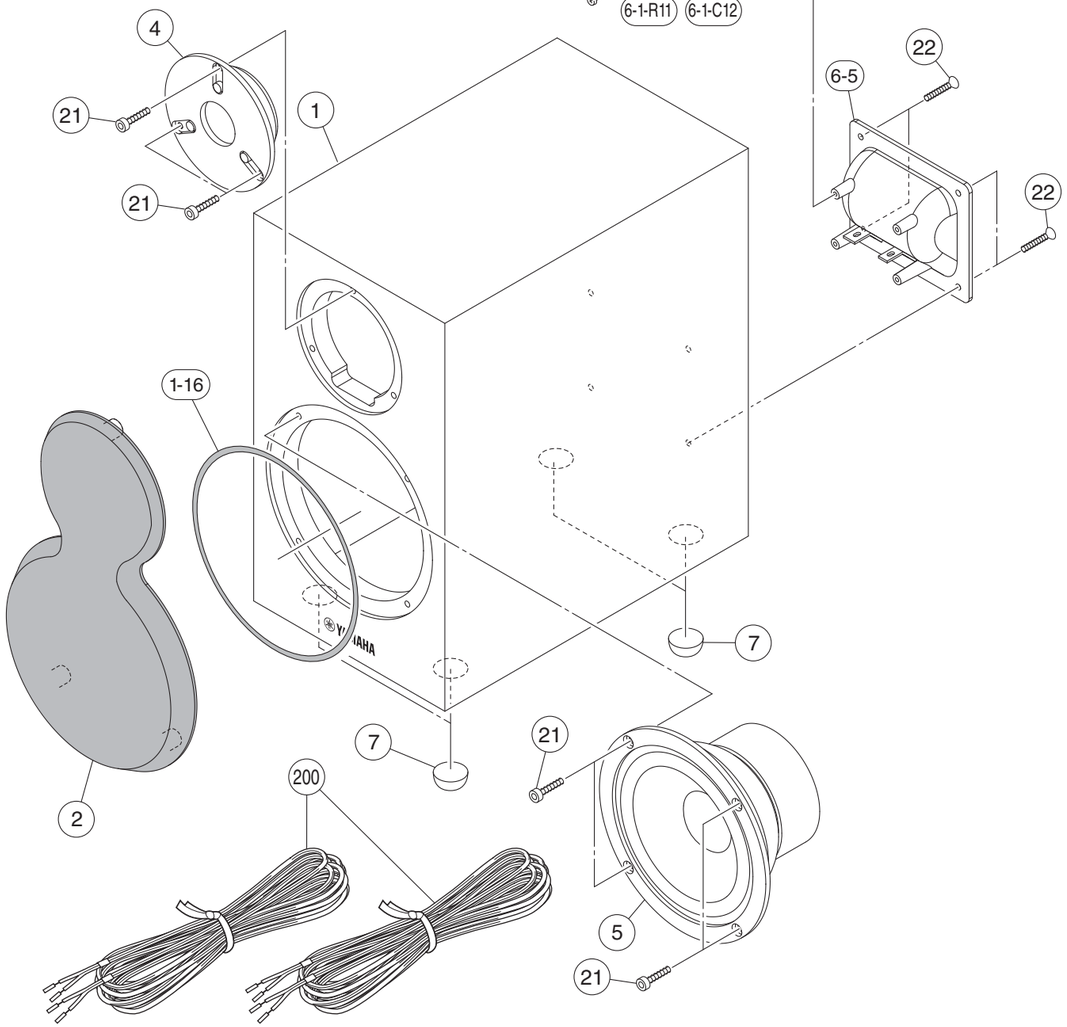
* New Parts

NS-BP300

• OVERALL ASS'Y





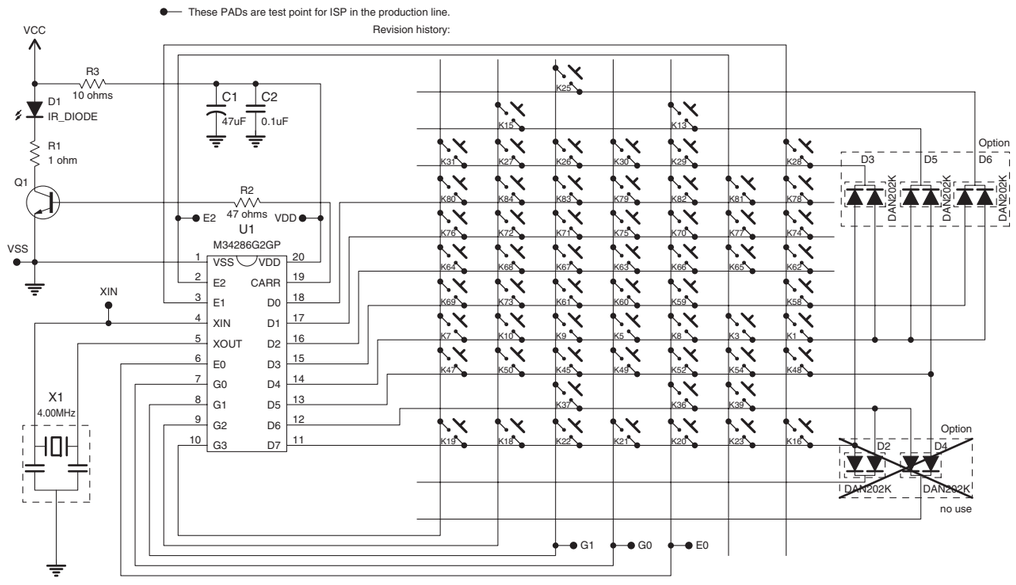


	Ref No.	Part No.	Description		Remarks	Markets
*	1	WS572000	CABINET ASS'Y		WH	
*	1	WS499700	CABINET ASS'Y		PN	
*	1-16	WT871200	PACKING	4x480		
*	2	WS499800	FRONT GRILLE ASS'Y			
*	4	YC053A00	DRIVER TWEETER	2.5cm 5Ω	JA0518	
*	5	YC054A00	DRIVER WOOFER	13cm 6Ω	JA1395	
*	6-1	WS500000	P.C.B. ASS'Y	NETWORK		
	6-1-C11	V9930800	ELECTROLYTIC CAPACITOR	5.6uF 100V	C11	
*	6-1-C12	WP588000	ELECTROLYTIC CAPACITOR	6.8uF 63V	C12	
	6-1-C13	WP587900	ELECTROLYTIC CAPACITOR	5.6uF 63V	C13	
*	6-1-R11	WU191100	CEMENT RESISTOR	3.3Ω 5W	R11	
*	6-5	WS494900	SPEAKER TERMINAL			
	6-11	WE774800	BIND HEAD P-TIGHT SCREW	3x8 MFZN2W3		
*	7	WS498700	LEG	D16 t7.9		
	21	WF824200	HEXAGON HEAD WOOD SCREW	4x25 MFZN2B3		
	22	WE963200	FLAT HEAD WOOD SCREW	3.5x20 MFZN2B3		
			ACCESSORY			
	200	WQ102500	SPEAKER CABLE	2m 1pc		

* New Parts

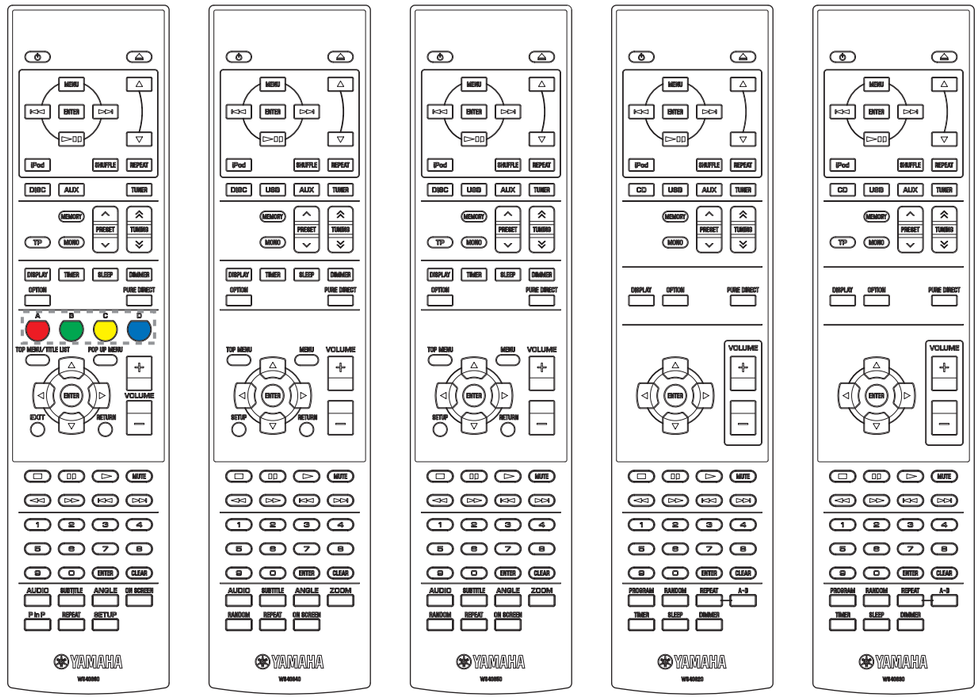
■ REMOTE CONTROL

SCHEMATIC DIAGRAM



PANELS

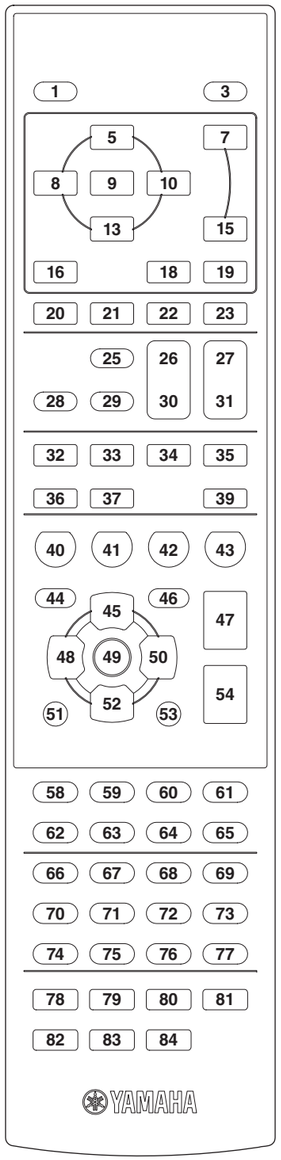
MCR-940 (B, G, F models) | MCR-840 (C, T, K, A, L, V models) | MCR-840 (G, F models) | MCR-640 (C, L, V models) | MCR-640 (B, G models)



Key colors

A. Red
B. Green
C. Yellow
D. Blue

KEY LAYOUT



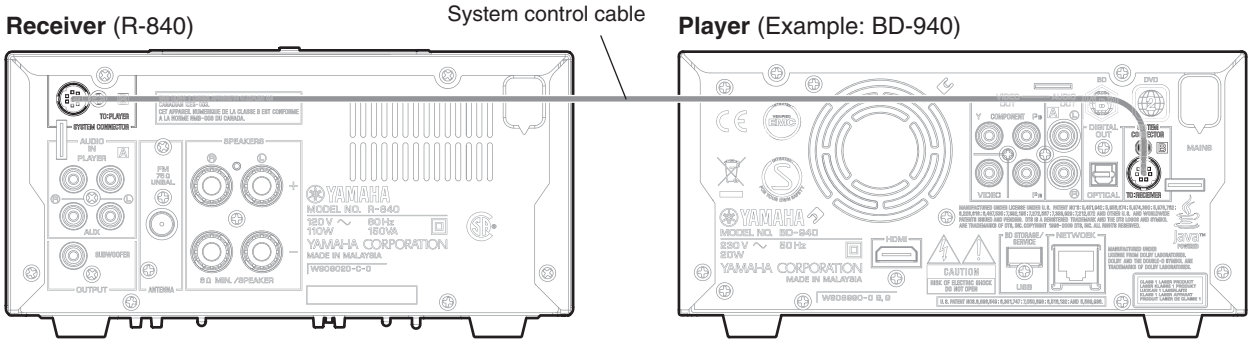
KEY CODE

Key No.	Key Name	Category	Code	BD (MCR-940)	DVD (MCR-840)	CD (MCR-640)
1	⏻	System	78-0F	●	●	●
3	⏏	Disc	78-00	●	●	●
5	MENU	iPod	7F01-0FF0	●	●	●
7	▲	iPod	7F01-0EF1	●	●	●
8	⏮	iPod	7F01-1BE4	●	●	●
9	ENTER	iPod	7F01-11EE	●	●	●
10	⏭	iPod	7F01-1CE3	●	●	●
13	⏯	iPod	7F01-1EE1	●	●	●
15	▼	iPod	7F01-14EB	●	●	●
16	iPod	Input select	78-D0	●	●	●
18	SHUFFLE	iPod	78-07	●	●	●
19	REPEAT	iPod	78-0C	●	●	●
20	DISC	Input select	78-4A	●	●	
	CD					●
21	AUX	Input select	78-49	●		
	USB	Input select	78-29		●	●
22	AUX	Input select	78-49		●	●
23	TUNER	Input select	78-4B	●	●	
25	MEMORY	Tuner	78-B2	●	●	
26	PRESET ∧	Tuner	78-1B	●	●	
27	TUNING ⩓	Tuner	78-AA	●	●	
28	TP (B, G, E, F models)	Tuner	78-81	●	●	
29	MONO	Tuner	78-B7	●	●	
30	PRESET ∨	Tuner	78-1C	●	●	
31	TUNING ⩔	Tuner	78-A9	●	●	
32	DISPLAY	System	78-4E	●	●	
33	TIMER	System	78-A0	●	●	
34	SLEEP	System	78-4F	●	●	
35	DIMMER	System	78-BA	●	●	
36	OPTION	System	78-2B	●	●	
	DISPLAY		78-4E			●
37	OPTION	System	78-2B			●
39	PURE DIRECT	System	78-50			●
40	A (Red)	Disc	7C-E9	●		
41	B (Green)	Disc	7C-EA	●		
42	C (Yellow)	Disc	7C-EC	●		
43	D (Blue)	Disc	7C-EB	●		
44	TOP MENU/TITLE LIST	Disc	7C-B1	●		
	TOP MENU				●	
45	▲	System	7C-B4	●	●	●
46	POP UP MENU	Disc	7C-B2	●		
	MENU				●	
47	VOLUME +	System	78-1E	●	●	●
48	◄	System	7C-B5	●	●	●
49	ENTER	System	7C-B8	●	●	●
50	►	System	7C-B6	●	●	●
51	EXIT	Disc	7C-C0	●		
	SETUP		7C-AC		●	
52	▼	System	7C-B3	●	●	●
53	RETURN	Disc	7C-B7	●	●	
54	VOLUME -	System	78-1F	●	●	●
58	■	Disc	7C-85	●	●	●
59	▮▮	Disc	7C-83	●	●	●
60	►	Disc	7C-82	●	●	●
61	MUTE	System	78-9C	●	●	●
62	◄◄	Disc	7C-86	●	●	●
63	►►	Disc	7C-87	●	●	●
64	⏮	Disc	7C-B9	●	●	●
65	⏭	Disc	7C-BA	●	●	●
66	1	Disc	7C-94	●	●	●
67	2	Disc	7C-95	●	●	●
68	3	Disc	7C-96	●	●	●
69	4	Disc	7C-97	●	●	●
70	5	Disc	7C-98	●	●	●
71	6	Disc	7C-99	●	●	●
72	7	Disc	7C-9A	●	●	●
73	8	Disc	7C-9B	●	●	●
74	9	Disc	7C-9C	●	●	●
75	0	Disc	7C-93	●	●	●
76	ENTER	Disc	7C-B8	●	●	●
77	CLEAR	Disc	7C-9F	●	●	●
78	AUDIO	Disc	7C-AD	●	●	
	PROGRAM		7C-A0			●
79	SUBTITLE	Disc	7C-AA	●	●	
	RANDOM		7C-A1			●
80	ANGLE	Disc	7C-AE	●	●	
	REPEAT		7C-A3			●
81	ON SCREEN	Disc	7C-A6	●		
	ZOOM		7C-D7		●	
	A–B		7C-A4			●
82	P in P	Disc	7C-ED	●		
	RANDOM		7C-A1		●	
	TIMER	System	78-A0			●
83	REPEAT	Disc	7C-A3	●	●	
	SLEEP	System	78-4F			●
84	SETUP	Disc	7C-AC	●		
	ON SCREEN		7C-A6		●	
	DIMMER	System	78-BA			●

■ SYSTEM CONNECTOR

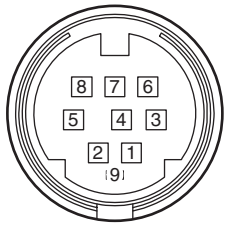
● Connections

Connect the SYSTEM CONNECTOR (TO: PLAYER) of the R-840 to the SYSTEM CONNECTOR (TO: RECEIVER) of the player with the system control cable.



● Specifications

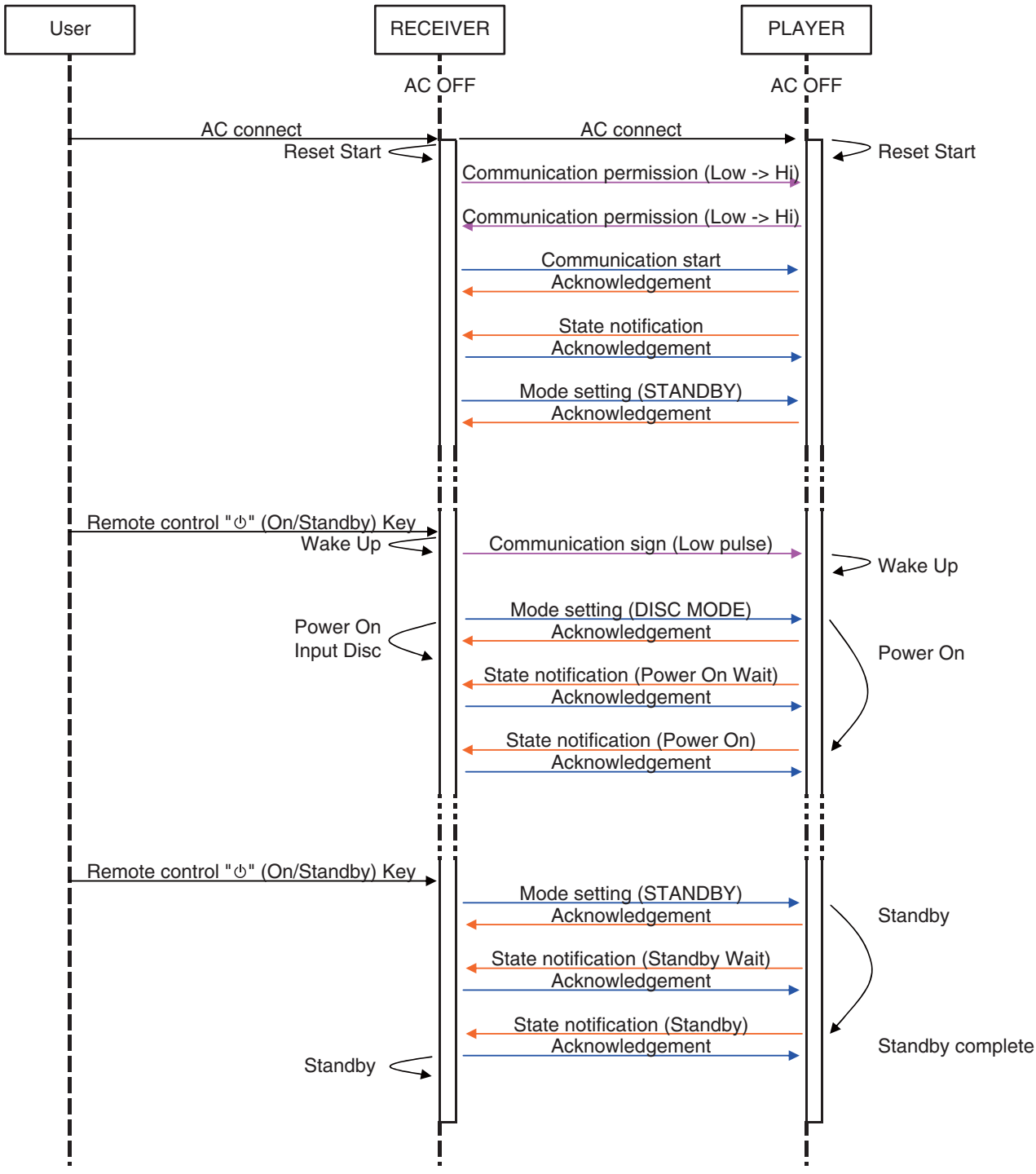
SYSTEM CONNECTOR



SYSTEM CONNECTOR		RECEIVER			PLAYER				
		R-840			BD-940 / DVD-840 / CD-640				
		Microprocessor: IC101			Microprocessor: IC204 / IC113 / IC501				
Pin no.	Function	Port type	Terminal name	Pin no.	Port type	Terminal name	Pin no.		
							940	840	640
1	Message R-840 to player	SO	SYS_MOSI	77	SI	SYS_MOSI	33		32
2	Message player to R-840	IRQ	SYS_PL_EN	75	SO	SYS_PL_EN	35		–
						SYS_POW_DET	–		24
3	Message R-840 to player	O	SYS_RE_EN	76	SI	SYS_RE_EN	2		20
4	Message player to R-840	SI	SYS_MISO	78	O	SYS_MISO	34		31
5	Message R-840 to CD-640	–	PLAYER_S10		–	+10EX			
6	No connected								
7	No connected								
8	No connected								
9	GND	Chassis	AGND		Chassis	AGND			

● Operation

Example



MEMO

R-840/NS-BP300

YAMAHA