

BDV-E385/E390/T39

SERVICE MANUAL

Ver. 1.0 2012.03

US Model
BDV-E385/E390/T39

Canadian Model
BDV-E390

- BDV-E385/E390/T39 are composed of following models.
As service manuals are issued for each component model, please refer to them.

COMPONENT MODEL NAME

	BDV-E385	BDV-E390	BDV-T39
BLU-RAY DISC/ DVD receiver	HBD-E385	HBD-E390	HBD-T39
Front speaker	SS-TSB118	SS-TSB118	SS-TSB118
Center speaker	SS-CTB113	SS-CTB113	SS-CTB113
Surround speaker	SS-TSB118	SS-TSB118	SS-TSB118
Subwoofer	SS-WSB114	SS-WSB114	SS-WSB114

SPECIFICATIONS

Power requirements	120 V AC, 60 Hz
Power consumption	On: 130 W Standby: 0.3 W (at the Power Saving mode)
BDV-E385/BDV-E390/ BDV-T39	
Dimensions (approx.)	430 mm × 50 mm × 275 mm (17 in × 2 in × 10 7/8 in) (w/h/d) incl. projecting parts
Mass (approx.)	2.8 kg (6 lb 2 3/4 oz)

Design and specifications are subject to change without notice.

- Standby power consumption 0.3W.
- Over 85% power efficiency of amplifier block is achieved with the full digital amplifier, S-Master.

- iPhone, iPod, iPod classic, iPod nano, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries.

Unpacking

- Front speakers (2)
- Surround speakers (2)
- Center speakers (1)
- Subwoofer (1)
- FM wire antenna (aerial) (1)
- Remote commander (remote) (1)
- R6 (size AA) batteries (2)
- Dock for iPod/iPhone (TDM-iP30) (1) (BDV-E390/BDV-T39)
- USB cable (1) (BDV-E390/BDV-T39)
- Video cord (1)
- High Speed HDMI cable (1) (BDV-T39)
- Operating Instructions
- Quick Setup Guide
- Speaker Installation Guide

– Refer to next page for accessories list –

BLU-RAY DISC/DVD HOME THEATRE SYSTEM

9-890-583-01

2012C80-1

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Sony Corporation

Published by Sony EMCS (Malaysia) PG Tec

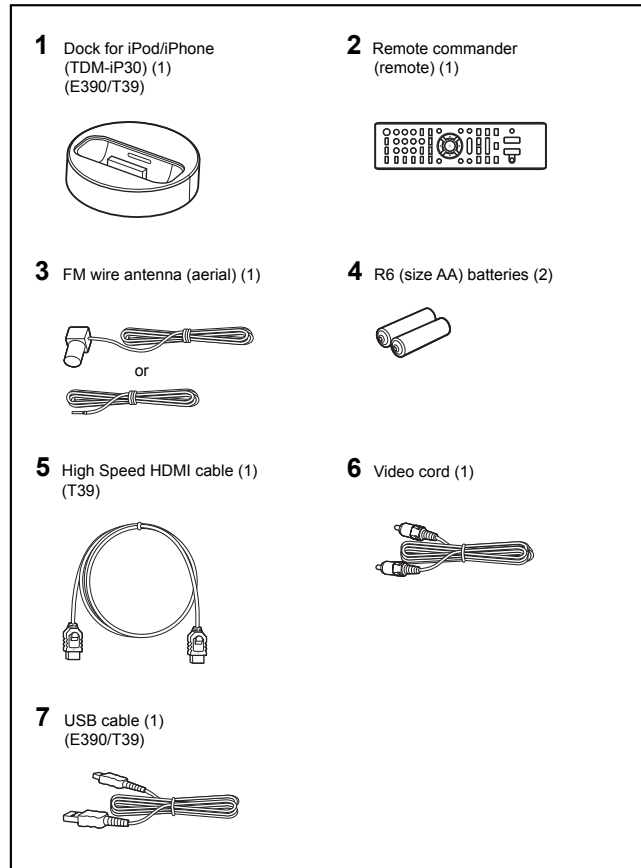
SONY®

BDV-E385/E390/T39

ACCESSORIES

Ref. No.	Part No.	Description	Remark
	4-418-859-12	MANUAL, INSTRUCTION (ENGLISH (US))	
	4-418-859-22	MANUAL, INSTRUCTION (FRENCH) (CND)	
	4-418-859-32	MANUAL, INSTRUCTION (SPANISH) (E385)	
1	A-1797-336-A	OVERALL ASSY (Dock for iPod/iPhone: TDM-iP30) (E390/T39)	
2	1-489-949-11	REMOTE COMMANDER (including BATTERY LID) (RM-ADP072)	
3	1-793-184-41	CONNECTOR (F TYPE ADAPTOR) (FM wire antenna (aerial))	
4	1-756-988-21	BATTERY, MANGANESE (R6)	
5	1-835-855-31	CORD WITH CONNECTOR (1.5m) (HDMI CAB (High Speed HDMI cable) (T39)	
6	1-838-669-11	CORD, CONNECTION (1.2m) (Video cord)	
7	1-839-590-11	CORD, CONNECTION (USB5P) (0.5m) (USB cable) (E390/T39)	

- Abbreviation
CND : Canadian model



MEMO

HBD-E385/E390/T39

SERVICE MANUAL

Ver. 1.0 2012.03

US Model
HBD-E385/E390/T39

Canadian Model
HBD-E390



Photo: HBD-E390

- HBD-E385 is the amplifier, video, HDMI, BD/DVD/CD system, USB, LAN, wireless LAN and FM tuner section in BDV-E385.
- HBD-E390 is the amplifier, video, HDMI, BD/DVD/CD system, USB, LAN, wireless LAN and FM tuner section in BDV-E390.
- HBD-T39 is the amplifier, video, HDMI, BD/DVD/CD system, USB, LAN, wireless LAN and FM tuner section in BDV-T39.

Model Name Using Similar Mechanism	BDP-S390
Mechanism Type	BPX-7
Optical Pick-up Block Name	KEM480AAA

SPECIFICATIONS

Amplifier Section

BDV-E385/BDV-E390/BDV-T39

US models:

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC

DISTORTION:

(FTC)

Front L + Front R:	With 3 ohms loads, both channels driven, from 180 Hz - 20 kHz; rated 50 watts per channel minimum RMS power, with no more than 1% total harmonic distortion from 250 milli watts to rated output.
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Other models:

POWER OUTPUT (rated)

Front L/Front R:	75 W + 75 W (at 3 ohms, 1 kHz, 1% THD)
------------------	--

POWER OUTPUT (reference)

Front L/Front R/Surround L/Surround R:	125 W (per channel at 3 ohms, 1 kHz)
Center:	250 W (at 6 ohms, 1 kHz)
Subwoofer:	250 W (at 6 ohms, 80 Hz)

Inputs (Analog)

AUDIO (AUDIO IN) Sensitivity: 1 V/400 mV

Inputs (Digital)

TV (Audio Return Channel/OPTICAL)

Supported formats: LPCM
2CH (up to 48 kHz), Dolby
Digital, DTS

Video Section

Outputs VIDEO: 1 Vp-p 75 ohms

HDMI Section

Connector Type A (19pin)

BD/DVD/Super Audio CD/CD System

Signal format system NTSC

USB Section

⚡ (USB) port: Type A (For connecting USB memory, memory card reader, digital still camera, and digital video camera)

LAN Section

LAN (100) terminal 100BASE-TX Terminal

Wireless LAN Section

Blu-ray Disc/DVD receiver (HBD-E390/HBD-E385/HBD-T39)

Standards Compliance IEEE 802.11 b/g/n
Frequency and Channel 2.4 GHz - 2.4835 GHz
[CH1 -11]

FM Tuner Section

System PLL quartz-locked digital synthesizer
Tuning range 87.5 MHz - 108.0 MHz
(100 kHz step)
Antenna (aerial) FM wire antenna (aerial)
Antenna (aerial) terminals 75 ohms, unbalanced

General

Power requirements 120 V AC, 60 Hz

Power consumption
BDV-E385/BDV-E390/
BDV-T39

On: 130 W
Standby: 0.3 W (at the
Power Saving mode)
Dimensions (approx.) 430 mm × 50 mm × 275
mm (17 in × 2 in ×
10 7/8 in) (w/h/d) incl.
projecting parts
Mass (approx.) 2.8 kg (6 lb 2 3/4 oz)

Design and specifications are subject to change
without notice.

- Standby power consumption 0.3W.
- Over 85% power efficiency of amplifier block is achieved with the full digital amplifier, S-Master.

BLU-RAY DISC/DVD RECEIVER

9-890-584-01

2012C80-1

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Sony Corporation

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CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage.

Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes.).

Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

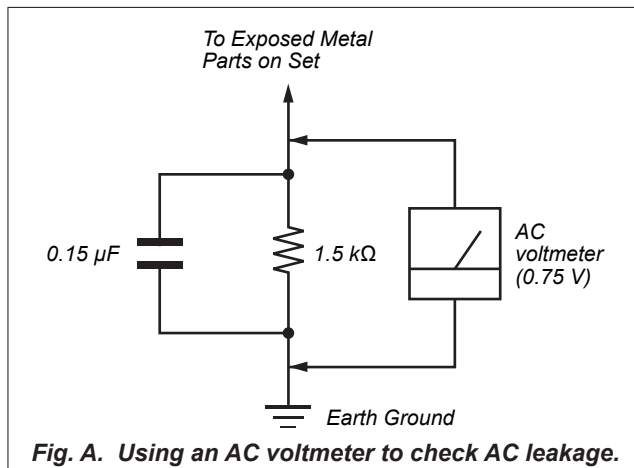


Fig. A. Using an AC voltmeter to check AC leakage.

TABLE OF CONTENTS

1. SERVICING NOTES	5	6. EXPLODED VIEWS	
2. DISASSEMBLY		6-1. Panel Section.....	79
2-1. Disassembly Flow.....	12	6-2. Front Panel Section.....	80
2-2. How To Bend FFC.....	13	6-3. Chassis Bottom Section.....	81
2-3. Left Panel, Right Panel.....	14	6-4. Chassis Section.....	82
2-4. Loading Panel.....	14	6-5. BD Drive Section (BPX-7).....	83
2-5. Top Panel, Front Panel Assy.....	15	7. ELECTRICAL PARTS LIST	84
2-6. Top Chassis, Wireless LAN Card (WLC1), POWER KEY Board, PANEL Board.....	16		
2-7. BD Drive (BPX-7).....	17		
2-8. MB148 Board.....	17		
2-9. Switching Regulator (SWR1).....	18		
2-10. AMP Board.....	18		
2-11. Optical Pick-up Block (KEM480AAA), Wire (Flat Type).....	19		
3. TEST MODE	20		
4. ELECTRICAL CHECK	28		
5. DIAGRAMS			
5-1. Block Diagram - SERVO Section -	29		
5-2. Block Diagram - MEMORY/HDMI Section -	30		
5-3. Block Diagram - MAIN Section -	31		
5-4. Block Diagram - AMP Section -	32		
5-5. Block Diagram - POWER SUPPLY Section -	33		
5-6. Printed Wiring Board - MB148 Board (Side A) -	35		
5-7. Printed Wiring Board - MB148 Board (Side B) -	36		
5-8. Schematic Diagram - MB148 Board (1/9) -	37		
5-9. Schematic Diagram - MB148 Board (2/9) -	38		
5-10. Schematic Diagram - MB148 Board (3/9) -	39		
5-11. Schematic Diagram - MB148 Board (4/9) -	40		
5-12. Schematic Diagram - MB148 Board (5/9) -	41		
5-13. Schematic Diagram - MB148 Board (6/9) -	42		
5-14. Schematic Diagram - MB148 Board (7/9) -	43		
5-15. Schematic Diagram - MB148 Board (8/9) -	44		
5-16. Schematic Diagram - MB148 Board (9/9) -	45		
5-17. Printed Wiring Board - AMP Board (Side A) -	46		
5-18. Printed Wiring Board - AMP Board (Side B) -	47		
5-19. Schematic Diagram - AMP Board (1/3) -	48		
5-20. Schematic Diagram - AMP Board (2/3) -	49		
5-21. Schematic Diagram - AMP Board (3/3) -	50		
5-22. Printed Wiring Boards - PANEL Section -	51		
5-23. Schematic Diagram - PANEL Section -	52		
5-24. Printed Wiring Board - TUNER2FMF-NS Board -	53		
5-25. Schematic Diagram - TUNER2FMF-NS Board -	54		



This appliance is classified as a CLASS 1 LASER product. This marking is located on the rear exterior.

This appliance is classified as a CLASS 3R LASER product. Visible and invisible laser radiation is emitted when the laser protective housing is opened, so be sure to avoid direct eye exposure. This marking is located on the laser protective housing inside the enclosure.

NOTES ON CHIP COMPONENT REPLACEMENT

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

FLEXIBLE CIRCUIT BOARD REPAIRING

- Keep the temperature of soldering iron around 270 °C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SECTION 1 SERVICING NOTES

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pickup block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350 °C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

RELEASING THE DISC TRAY LOCK

The disc tray lock function for the antitheft of an demonstration disc in the store is equipped.

Releasing Procedure:

1. Press the [I/⏻] button to turn on the system.
2. Touch the [FUNCTION] sensor to select "BD/DVD".
3. Touch the [■] and [▲] sensors simultaneously and hold down unit "DEMO OFF" displayed on the fluorescent indicator tube (around 5 seconds).

Note: When "DEMO LOCK" is displayed, the disc tray lock is not released by turning power on/off with the [I/⏻] button.

ABOUT THE LENS CLEANING

Do not do the lens cleaning with the cotton bud etc. It causes the trouble.

NOTE OF REPLACING THE IC101, IC501 AND IC8001 ON THE MB148 BOARD

IC101, IC501 and IC8001 on the MB148 board cannot exchange with single. When these parts are damaged, exchange the complete mounted board.

NOTE OF REPLACING THE IC106 AND IC206 ON THE MB148 BOARD

Replacement of IC106 and IC206 on the MB148 board used in this unit requires a special tool.

TEST DISC

Part No.	Description	Layer
J-6090-199-A	BLX-104	Single Layer
J-6090-200-A	BLX-204	Dual Layer
J-2501-307-A	CD (HLX-A1)	
J-2501-305-A	HLX-513	Single Layer (NTSC)
J-2501-306-A	HLX-514	Dual Layer (NTSC)
J-6090-077-A	HLX-506	Single Layer (PAL)
J-6090-078-A	HLX-507	Dual Layer (PAL)

Note: Refer to the service manual of BDP-BX1/S350 (Part No. 9-883-989-1□) (page 1-3 to 1-14E) for the use of BLX-104/204.

Operation and Display:

1. BLX-104

Procedure:

1. Select 23.976Hz/1080p.
2. Play "4.Motion picture".
3. Check whether player can play back or not.
4. Check each outputs.

Video:

Composite/S Video/component/HDMI.

Audio:

Speaker out.

- * When 1080/24p monitor is nothing, 1080i (59.94Hz or 50Hz) can use instead of 1080/24p.

However this is temporary correspondence.

2. BLX-204

Procedure:

1. Select 1080i (59.94Hz or 50Hz).
2. Play "4.Motion picture".
3. Check whether player can play back or not (Check the picture and sound output).

3. CD (HLX-A1)

Procedure:

Check whether player can play back or not (Check the sound output).

4. HLX-513/514 (NTSC), HLX-506/507 (PAL)

Procedure:

1. After displayed Main Menu, select "1.Video Signal".
2. Play "1.Color bar 100%" (Check the picture and sound output).
3. Return to Menu.
4. Play "Demonstration 4:3" or "Demonstration 16:9" (Check the picture and sound output).

NOTE OF REPLACING THE OPTICAL DEVICE (KEM480AAA) OR MB148 BOARD

The password will be supplied to only service HQ, and service center name, q'ty and all of software registered information should be maintained by service HQ, and Audio will ask to report the registration information.

Optical device (KEM480AAA) for BD requires precise read out functions and secure contents protection system for more than past DVD/CD.

Therefore, in the case repaired as follows, the writing work of the OP data is necessary.

- When the optical device (KEM480AAA) is replaced (The MB148 board doesn't replace).
- When both the optical device (KEM480AAA) and MB148 board are replaced.
- When the MB148 board is replaced (The optical device (KEM480AAA) doesn't replace) (In this case, do the work of "3. Optical device (KEM480AAA) replacement" other than the replacement of new optical device).

Note: The servo adjustment is done while writing the OP data. The manual adjustment is unnecessary.
LD ON TIME history doesn't carry over.
Do not touch any optical block parts, turn table and during replacing. BD laser diode is very sensitive.

1. Preparation

1-1. ESD Countermeasure

It is necessary to confirm the state of static electricity in the work space before the repair is started.

The static electricity resistance of the BD laser is weaker than that of the DVD/CD laser.

Do work space and worker's ESD countermeasures to prevent destruction by ESD.

1-2. Jig

- Digital camera (Recommend with macro mode)
- USB memory
- PC
- Barcode decoder (Refer to "1-3. Barcode decoder (BDPRdec)")

1-3. Barcode decoder (BDPRdec)

Jig name : BDPRdec.exe

Release : 2011.8.25

Version : 3.0.0.0

Software contents :

- BDPRdec.exe : Barcode decoder software
- SavePath.ini : Decoded file destination setting file (Initial destination is "C:\BD\BuData.txt")
- TasmanBars.dll : Decode dll
- Uninst.exe : Uninstall the "BDPRdec.exe" from PC

Install procedure:

1. Unzip the barcode decoder files to any PC folder.
2. Check the attached 2D code photo (OK_sample.JPG) drag & drop onto "BDPRdec.exe".

When the barcode decoder is used for the first time, the password is necessary. It is unnecessary since the second times.

Note 1: The password will be supplied to only service headquarters, and service center name/q'ty/all of software registered information should be maintained by service headquarters.

Note 2: Do not change the decoded file name "BuData.txt".

3. When ".NET frame work requirements" is displayed, download following applications from Microsoft download site.

- Microsoft .NET Framework Version 2.0 Redistributable Package (x86)
<http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5>
- Microsoft .NET Framework 2.0 Service Pack 1 (x86)
<http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=79bc3b77-e02c-4ad3-aacf-a7633f706ba5>

How to use:

Case 1 Drag & drop 2D code photo onto "BDPRdec.exe".

Case 2 Drag & drop BU data file onto "BDPRdec.exe".

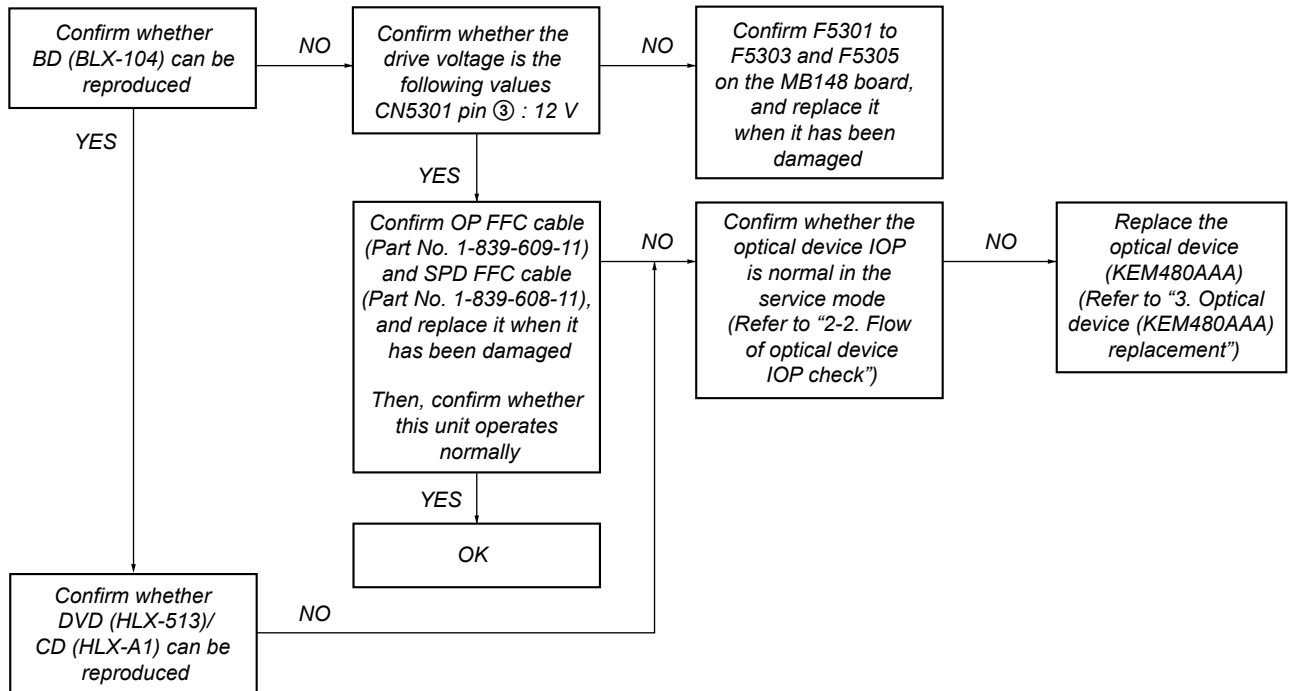
Data file name be changed to specify format and end of 7 character are defined.

You can also enter the file path at the prompt.

2. Pass-fail judgment of the optical device (KEM480AAA)

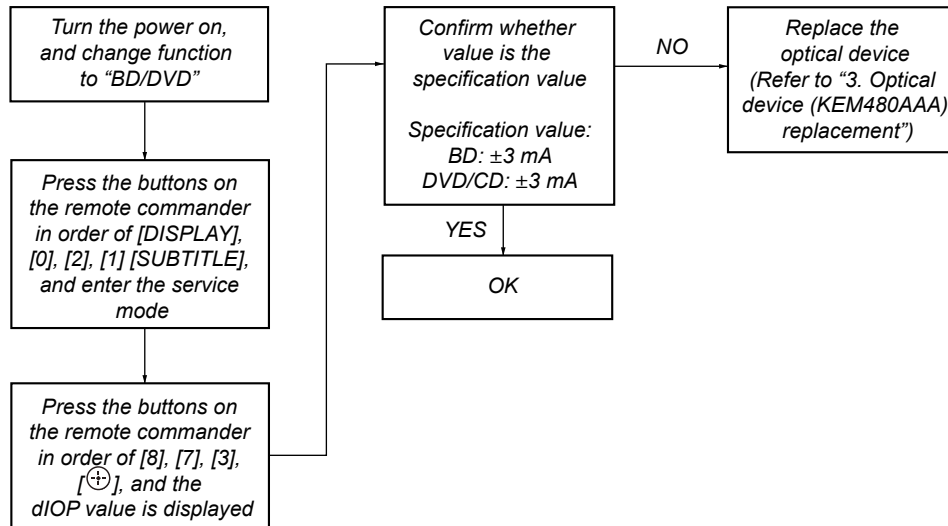
Perform pass-fail judgment to judge whether the repair of the optical device (KEM480AAA) is necessary.

2-1. Flow of drive section check



Note: Refer to "2-11. OPTICAL PICK-UP BLOCK (KEM480AAA), WIRE (FLAT TYPE)" (page 19) about how to remove the COVER, DRIVE.

2-2. Flow of optical device IOP check



3. Optical device (KEM480AAA) replacement

Flow of replacement:

Note: The photo in flow is an image.



Barcode label on new optical device (KEM480AAA) bottom side



Take photo (JPEG) by digital camera



Change photo into the text data with the barcode decoder



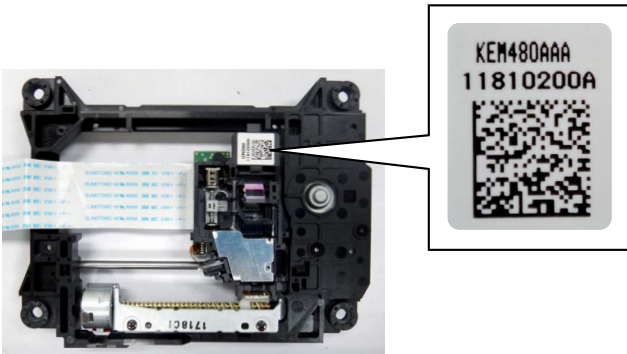
Save the text data to USB memory (memory capacity need not be 8GB)



Connect USB memory with front USB connector on this unit, and read the text data by the service mode

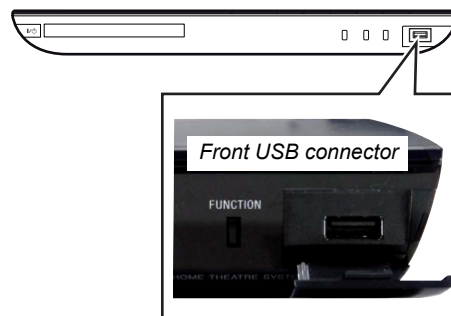
Procedure:

1. Remove the INSULATOR (4 pieces) and broken optical device (KEM480AAA) from LOADING ASSY.
2. Take photo of the barcode on new optical device (KEM480AAA) bottom side by digital camera.



3. Assemble the INSULATOR (4 pieces) to new optical device (KEM480AAA), fix (Torque value: 2 kgf) it to LOADING ASSY with screw, and assemble this unit.
4. Drag & drop the taken photo by step 2 to "BDPRdec.exe", and make the text data (File name: BuData.txt).
5. Save the text data to USB memory.
6. Connect USB memory with front USB connector on this unit, and turn the power on.

- Front view -



7. Press the [FUNCTION] button on the remote commander to select "BD/DVD".
8. Press the buttons on the remote commander in order of [DISPLAY], [0], [2], [1], [SUBTITLE], and enter the service mode.
9. Press the buttons on the remote commander in order of [8], [1], [ENTER], and execute "[1] Drive OP data Write".
10. Turn the power off after writing the OP data.
11. Turn the power on, and enter the service mode again.
12. Press the buttons on the remote commander in order of [8], [7], [3], [ENTER], and the dIOP value is displayed.
13. Confirm value is the following specification value, and turn the power off.

Specification value:

BD : ±3 mA
DVD/CD : ±3 mA

14. Turn the power on, confirm playback performance of the BD (BLX-104)/DVD (HLX-514)/CD (HLX-A1).
15. Completely assemble this unit, and complete the repair.

NOTE THE BD DRIVE (BPX-7) PARTS REPLACING

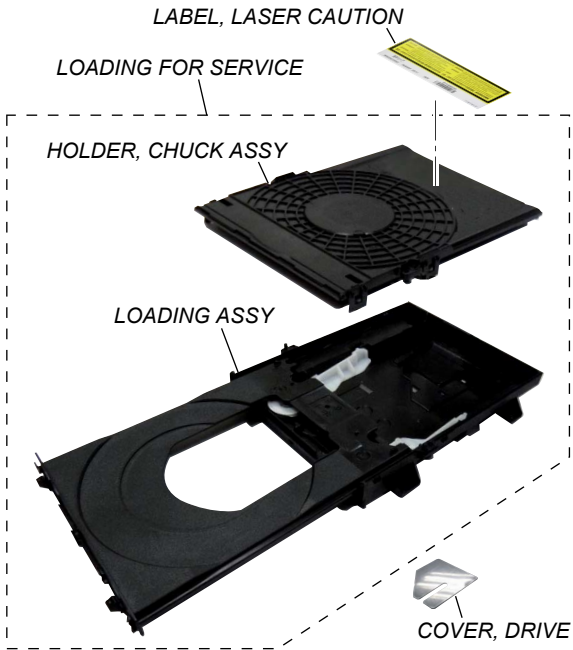
The mechanism blocks except optical device of BD drive (BPX-7) are chiefly composed of the following parts.

- HOLDER, CHUCK ASSY
- LOADING ASSY
- COVER, DRIVE

These parts are produced by two vendors, it is not compatible. Therefore, HOLDER, CHUCK ASSY and LOADING ASSY are supplied by one pair as repair parts. Please exchange both HOLDER, CHUCK ASSY and LOADING ASSY at the same time.

COVER, DRIVE need not be exchanged at the same time.

Note 1: The laser caution label is not pasted to LOADING FOR SERVICE. Please peel off an original laser caution label, and paste it to LOADING FOR SERVICE when you use LOADING FOR SERVICE.

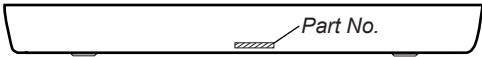


• Limit sample in state of laser caution label

Note 2: If laser caution label is a condition of the figure below, it is acceptable.

MODEL IDENTIFICATION

- Rear view -



Model	Part No.
E385/E390/T39	4-295-427-2□

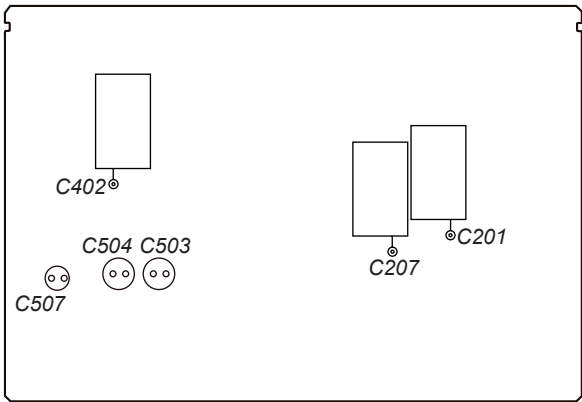
CAPACITOR ELECTRICAL DISCHARGE PROCESSING

When checking the board, the electrical discharge is necessary for the electric shock prevention.

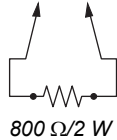
Connect the resistor to both ends of respective capacitors.

- Switching regulator
C207, C201, C402, C503, C504, C507

- SWITCHING REGULATOR (Conductor Side) -



(To both ends of each capacitor)

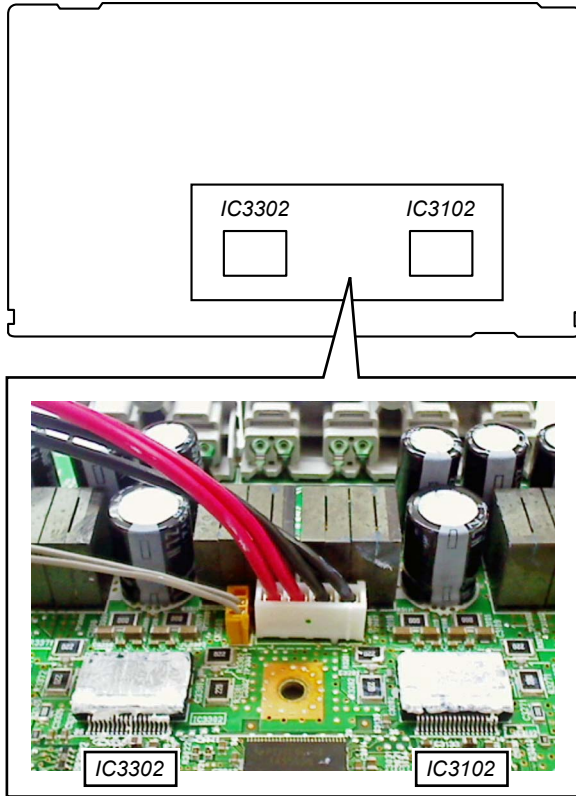


NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD

When IC3102 and IC3302 on the AMP board and the complete AMP board are replaced, it is necessary to spread the compound (GREASE (G-747) 1KG) (Part No. 7-640-004-33) between parts and heat sink.

Spread the compound referring to the figure below.

– AMP Board (Component Side) –



CHECKING METHOD OF NETWORK OPERATION

It is necessary to check the network operation, when replacing the MB148 board. Check the operation of wireless and wired LAN, according to the following method.

1. Checking Method of Wireless LAN Operation

Check that access point is recognized surely.

Necessary Equipment:

Wireless access point with router function (AP)

Procedure:

1. Press the [HOME] button on the remote commander to enter the home menu.
2. Press the [↓]/[↑]/[←]/[→] buttons on the remote commander to select “Network Settings”→“Internet Settings”, and press the [⊕] button on the remote commander.
3. Press the [↓]/[↑] buttons on the remote commander to select “Wireless Setup (built-in)”, and press the [⊕] button on the remote commander.
4. Press the [↓]/[↑] buttons on the remote commander to select “Scan”, and press the [⊕] button on the remote commander.
5. The system starts searching for access points, and displays a list of up available network name (SSID).
6. Check that access point (SSID) is displayed on the searching result.

Note: Refer to the instruction manual about details of the setting method.

2. Checking method of wired LAN operation

Check that access point is recognized surely.

Procedure:

1. Connect the main unit to the router or the hub, etc. with the LAN cable.
2. Press the [HOME] button on the remote commander to enter the home menu.
3. Press the [↓]/[↑]/[←]/[→] buttons on the remote commander to select “Network Settings”→“Internet Settings”, and press the [⊕] button on the remote commander.
4. Press the [↓]/[↑] buttons on the remote commander to select “Wired Setup”, and press the [⊕] button on the remote commander.
5. Press the [↓]/[↑]/[←]/[→] buttons on the remote commander to select “Auto”, and press the [⊕] button on the remote commander.
6. Press the [→] button on the remote commander.
7. Press the [↓]/[↑] buttons on the remote commander to select “Save & Connect”, and press the [⊕] button on the remote commander.
8. When “Internet Settings is now complete.” appears, then press the [⊕] button on the remote commander.
9. Press the [HOME] button on the remote commander to enter the home menu.
10. Press the [↓]/[↑]/[←]/[→] buttons on the remote commander to select “Network Settings”→“Internet Settings”, and press the [⊕] button on the remote commander.
11. Press the [↓]/[↑] buttons on the remote commander to select “Network Connection Diagnostics”, and press the [⊕] button on the remote commander.
12. Press the [←]/[→] buttons on the remote commander to select “Start”, and press the [⊕] button on the remote commander.
13. Check that IP address can be acquired.

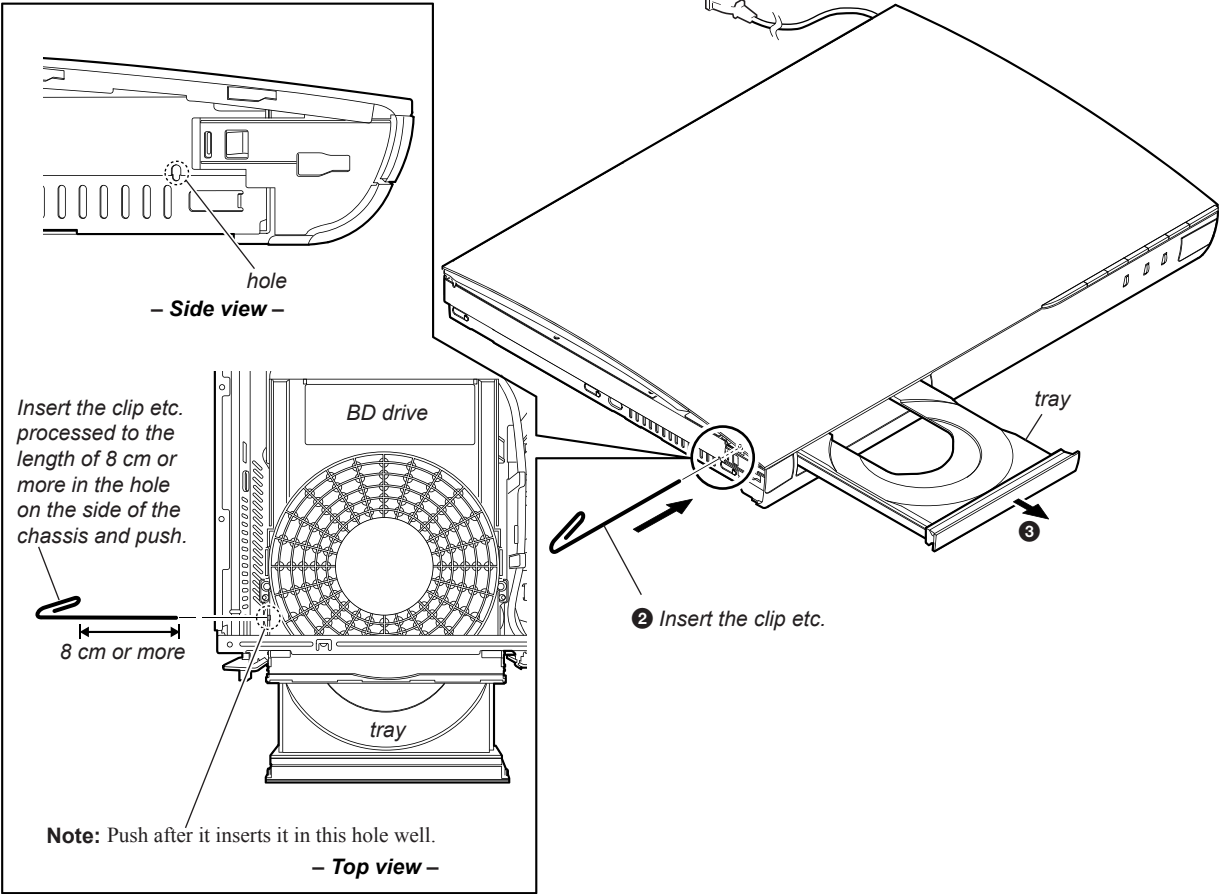
Note: Refer to the instruction manual about details of the setting method.

HOW TO OPEN THE TRAY WHEN POWER SWITCH TURN OFF

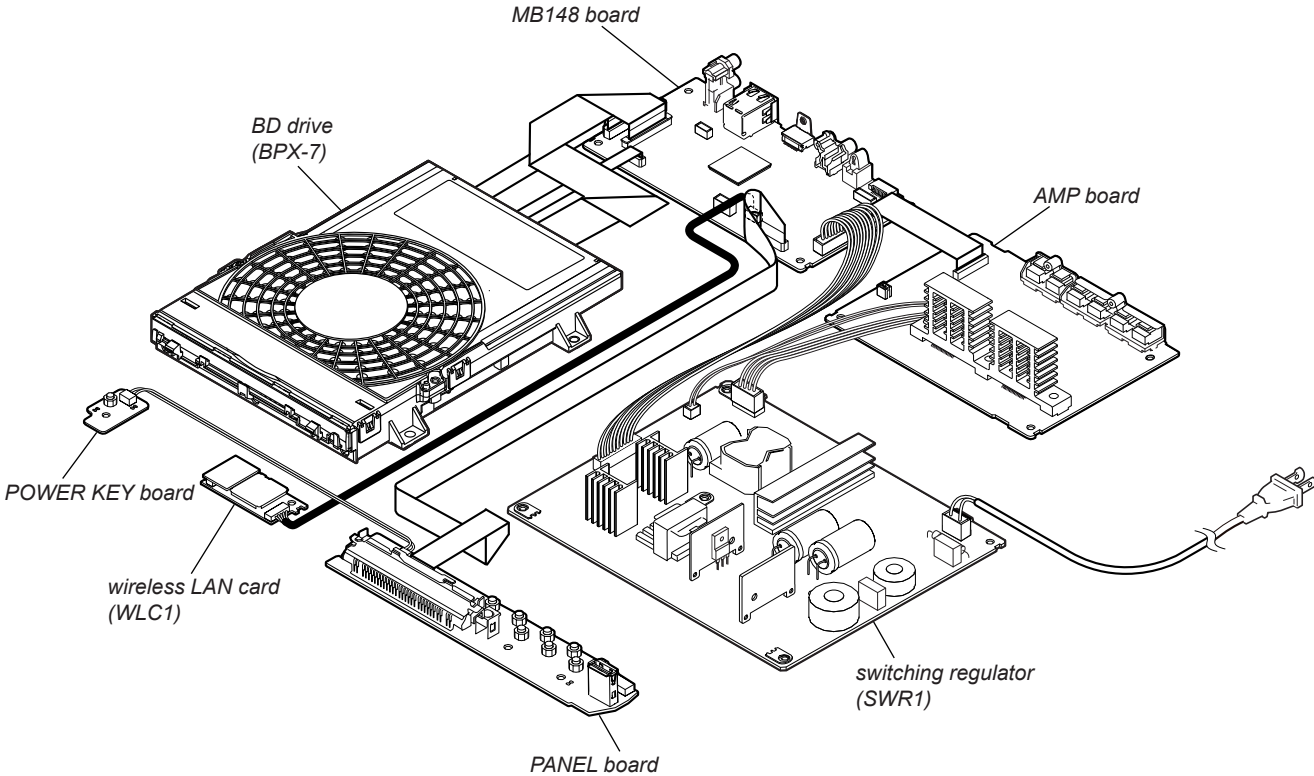
Note 1: After the left panel is removed, this work is done.

Note 2: Please prepare the thin wire (clip etc. processed to the length of 8 cm or more).

- ① Remove the panel, left.
(Illustration of disassembly is omitted.)



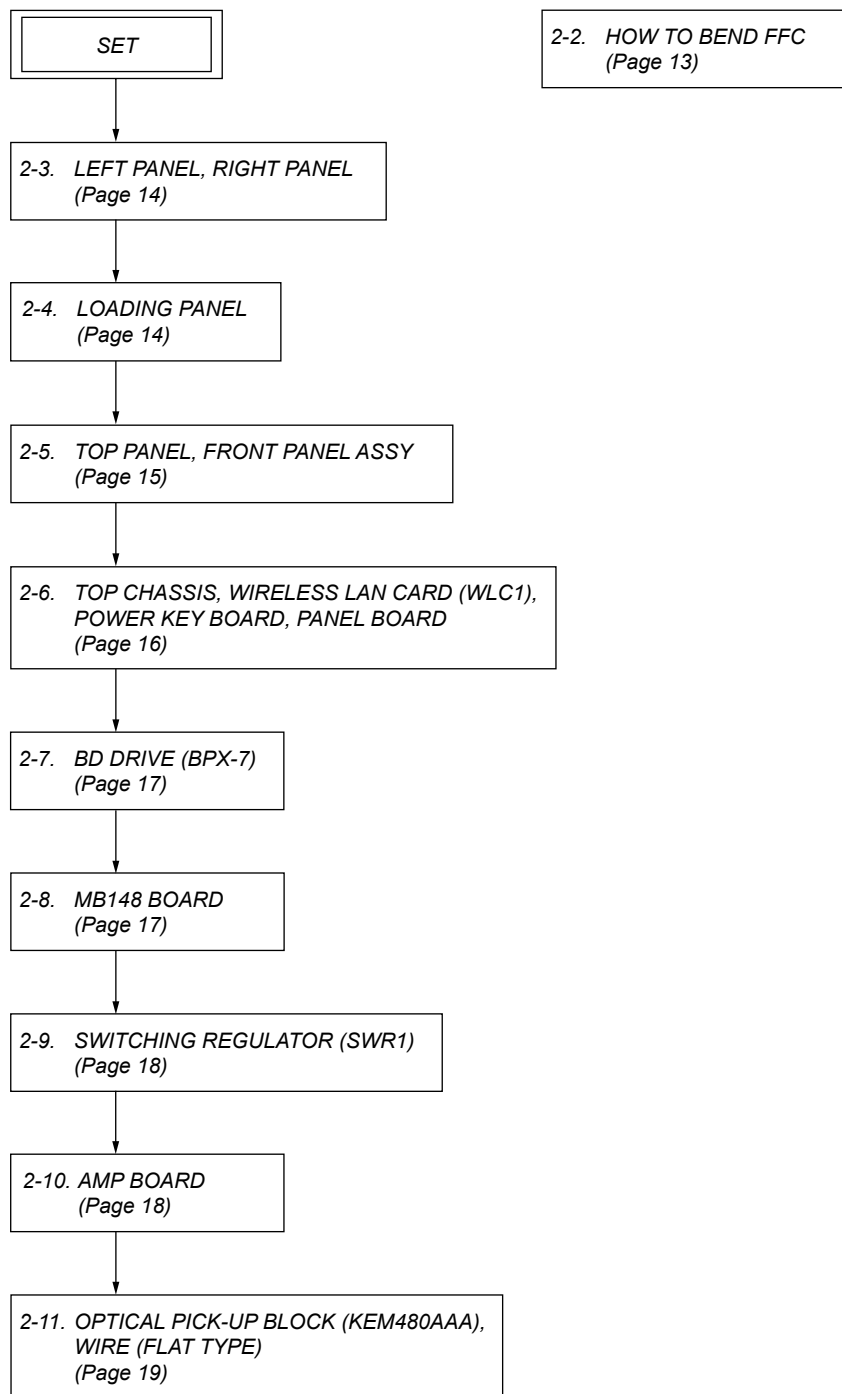
SERVICE POSITION



SECTION 2 DISASSEMBLY

- This set can be disassembled in the order shown below.

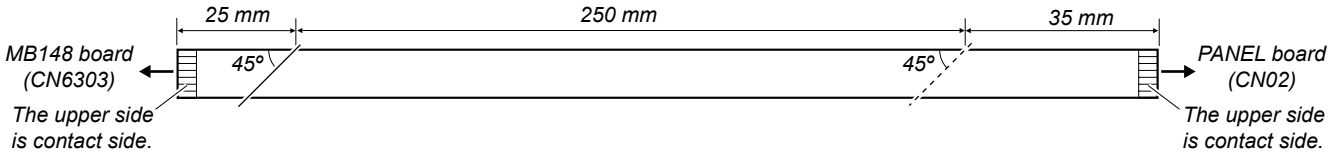
2-1. DISASSEMBLY FLOW



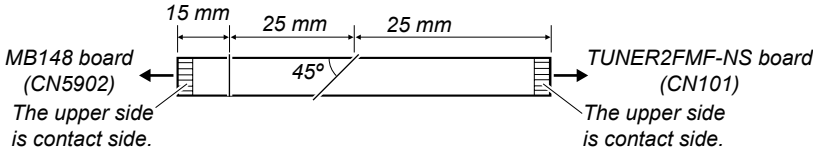
2-2. HOW TO BEND FFC

————— : Mountain fold
- - - - - : Valley fold

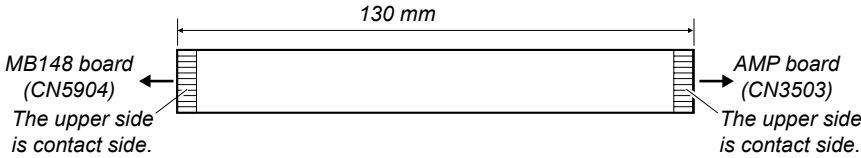
wire (flat type) (13 core), length 320 mm (Ref. No. 55)



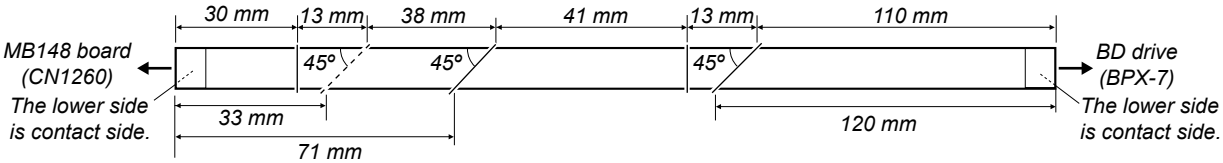
wire (flat type) (7 core), length 65 mm (Ref. No. 104)



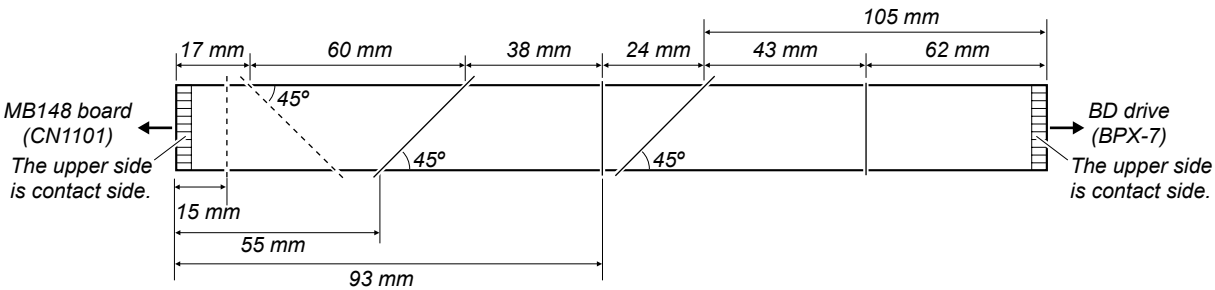
wire (flat type) (30 core), length 130 mm (Ref. No. 107)



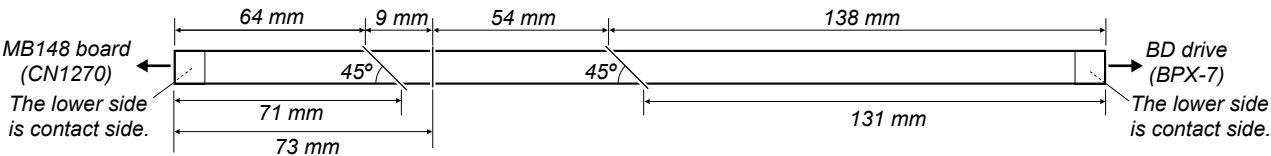
wire (flat type) (9 core), length 245 mm (Ref. No. 206)



flexible flat cable (45 core), length 244 mm (Ref. No. 207)

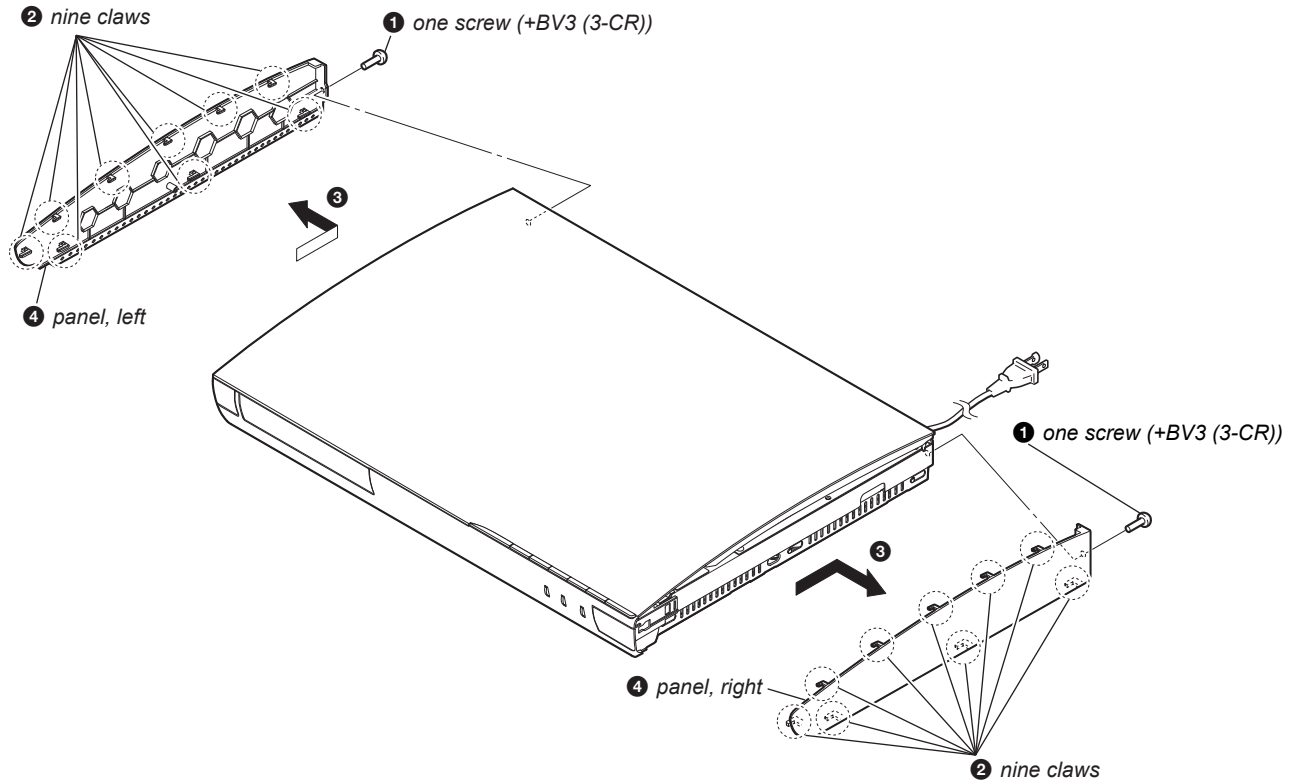


wire (flat type) (5 core), length 265 mm (Ref. No. 208)

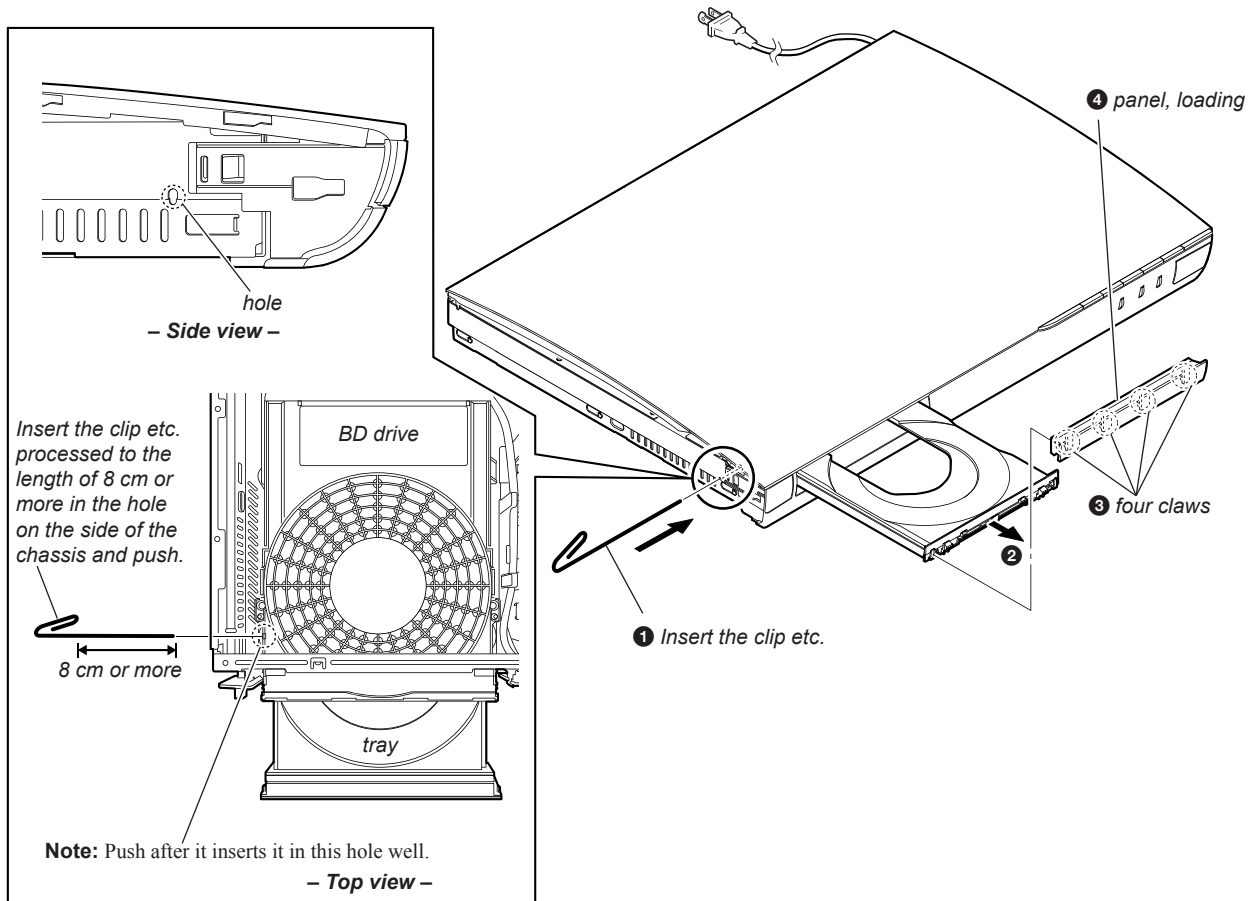


Note: Follow the disassembly procedure in the numerical order given.

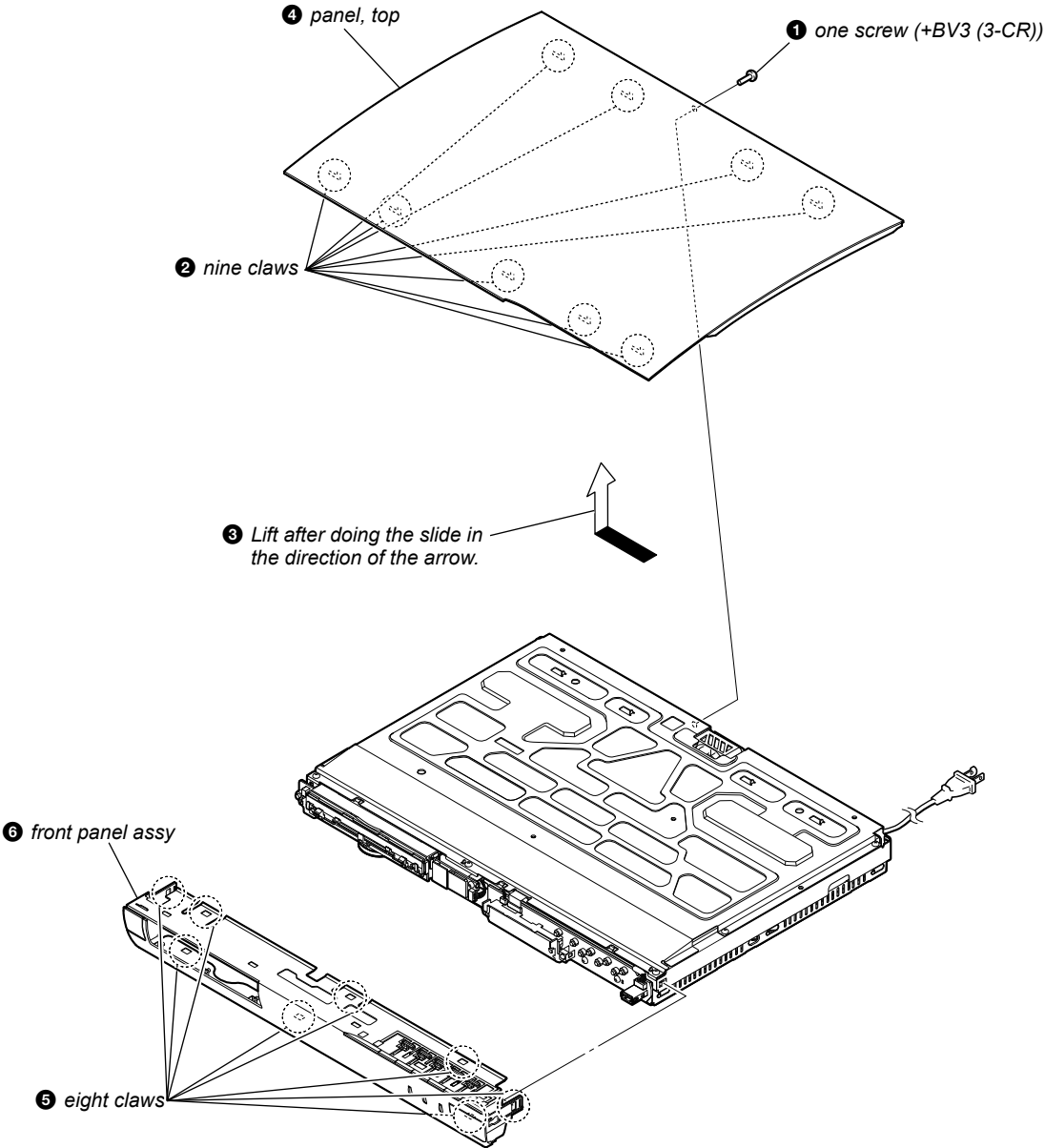
2-3. LEFT PANEL, RIGHT PANEL



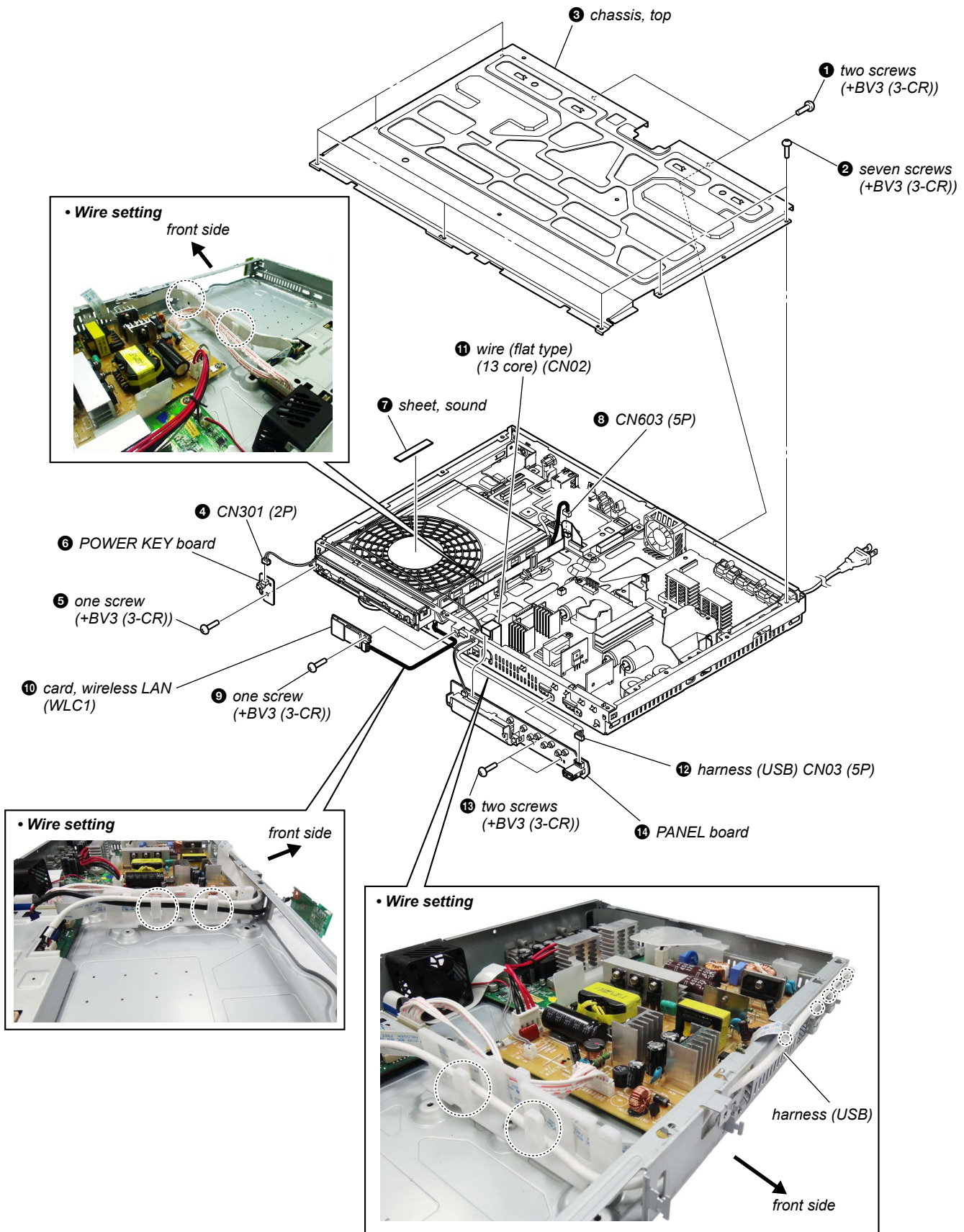
2-4. LOADING PANEL



2-5. TOP PANEL, FRONT PANEL ASSY

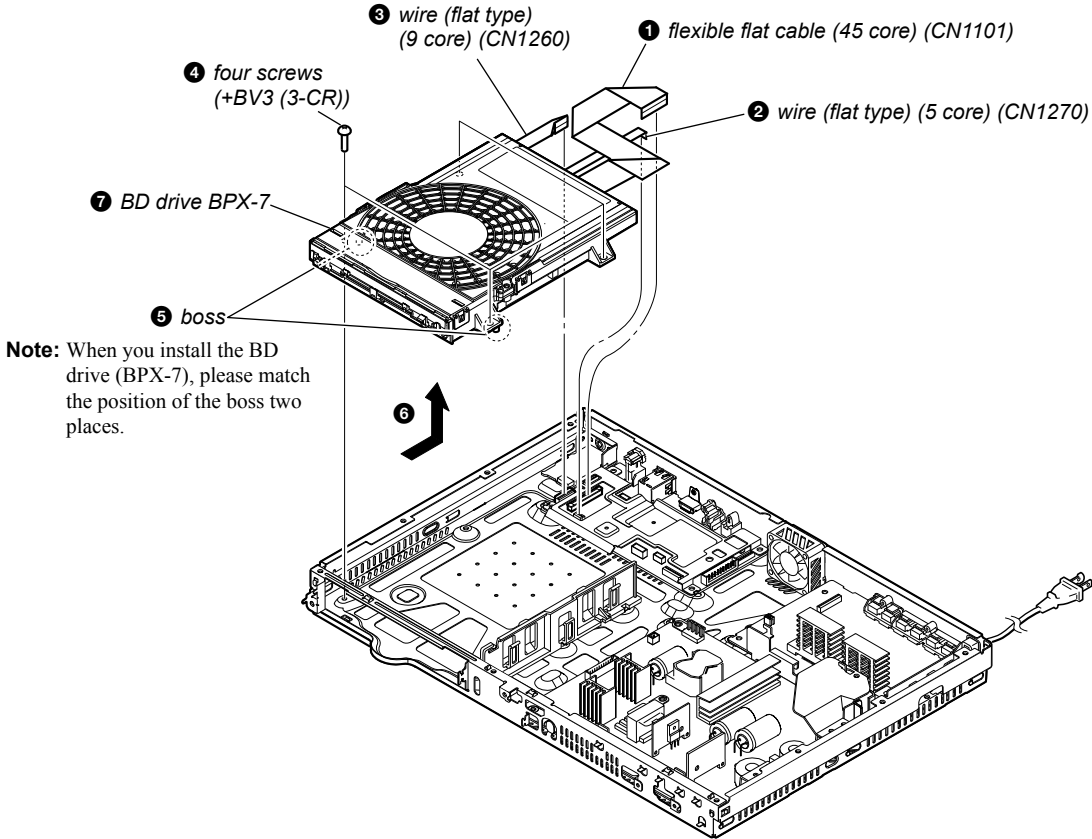


2-6. TOP CHASSIS, WIRELESS LAN CARD (WLC1), POWER KEY BOARD, PANEL BOARD

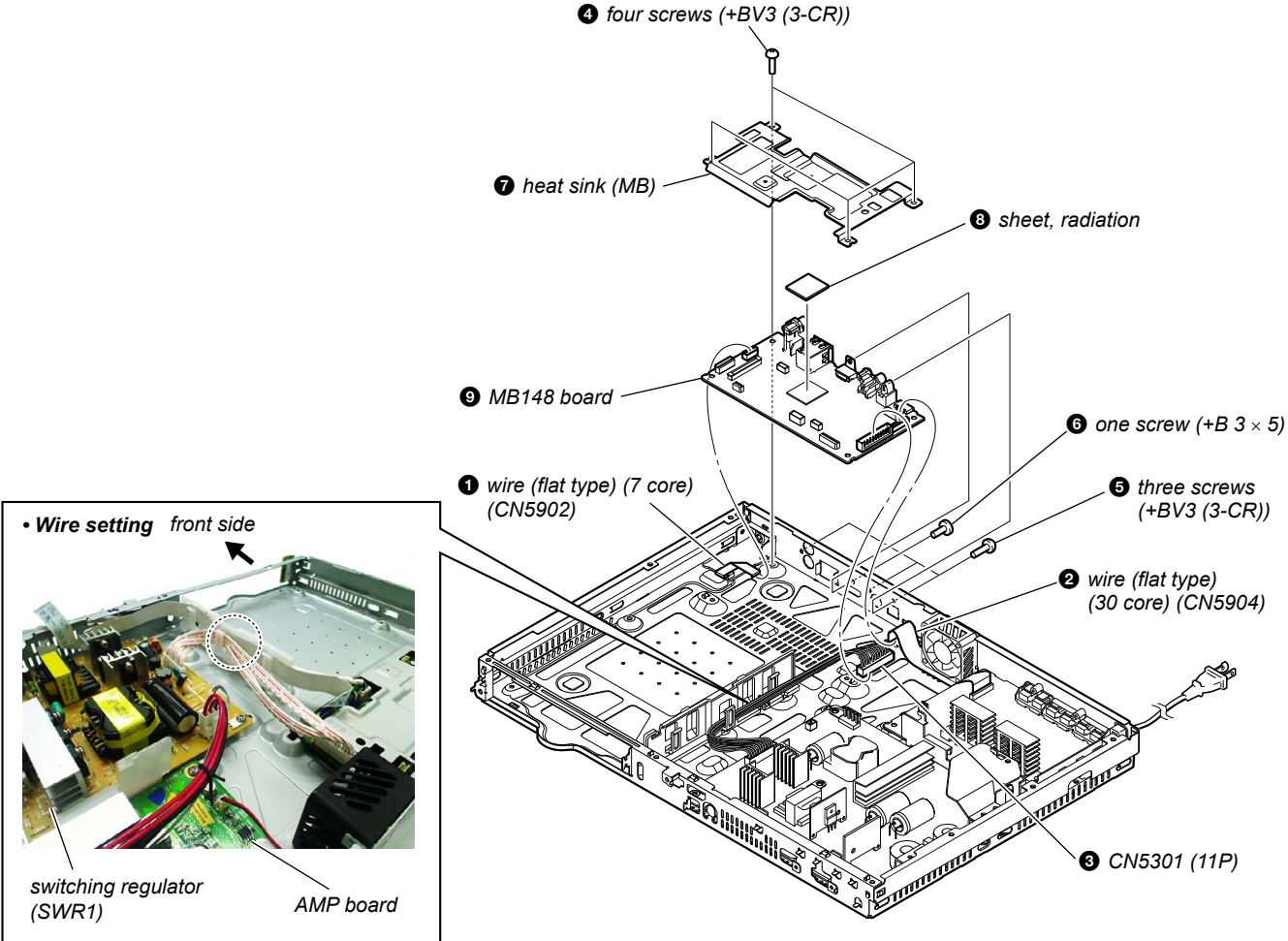


Note: When replacing the wireless LAN card (WLC1), refer to “CHECKING METHOD OF NETWORK OPERATION” (page 10).

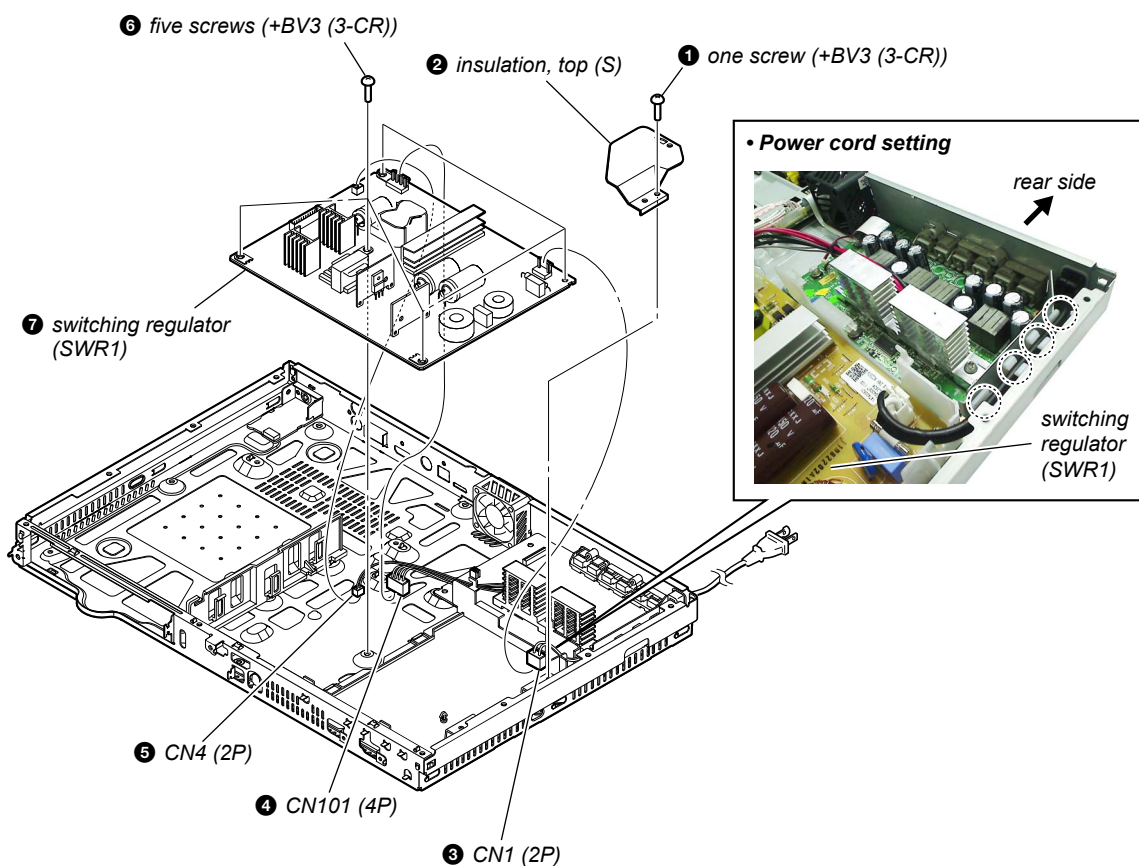
2-7. BD DRIVE (BPX-7)



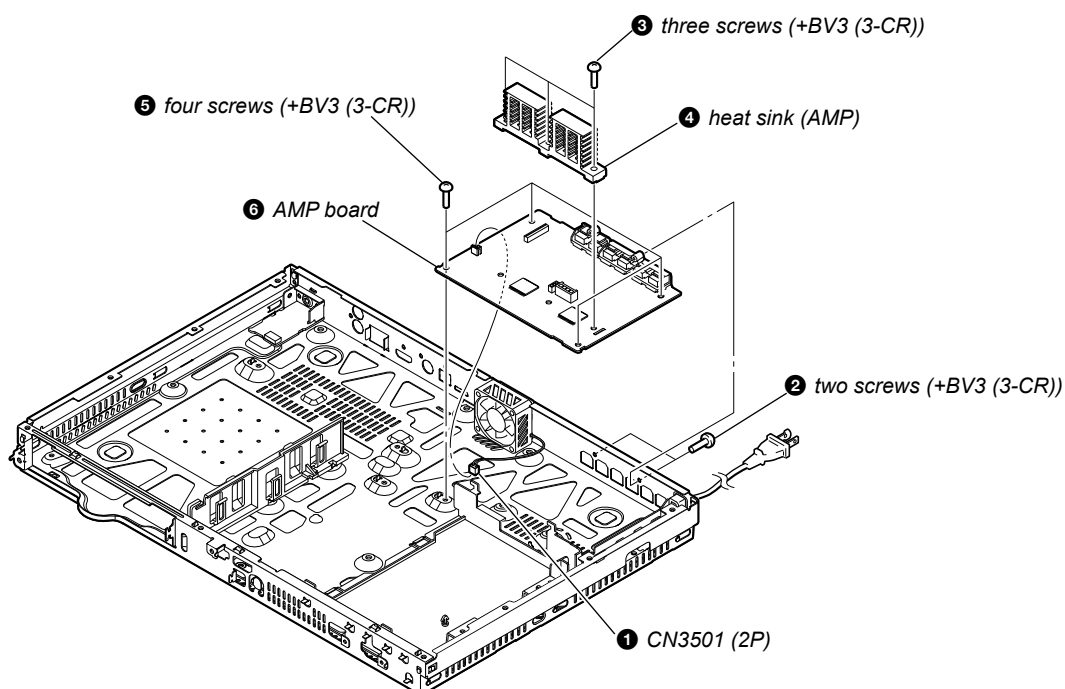
2-8. MB148 BOARD



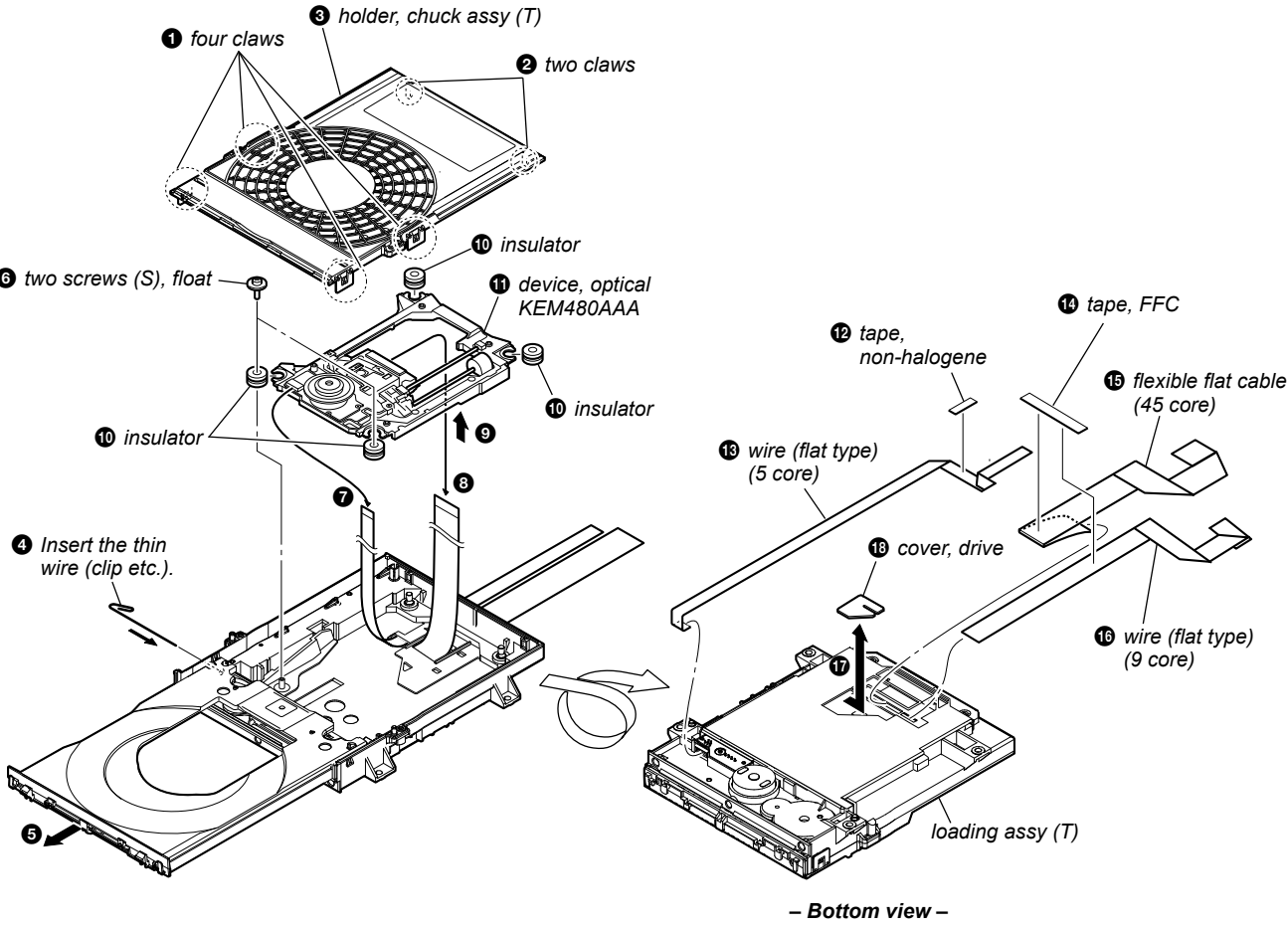
2-9. SWITCHING REGULATOR (SWR1)



2-10. AMP BOARD

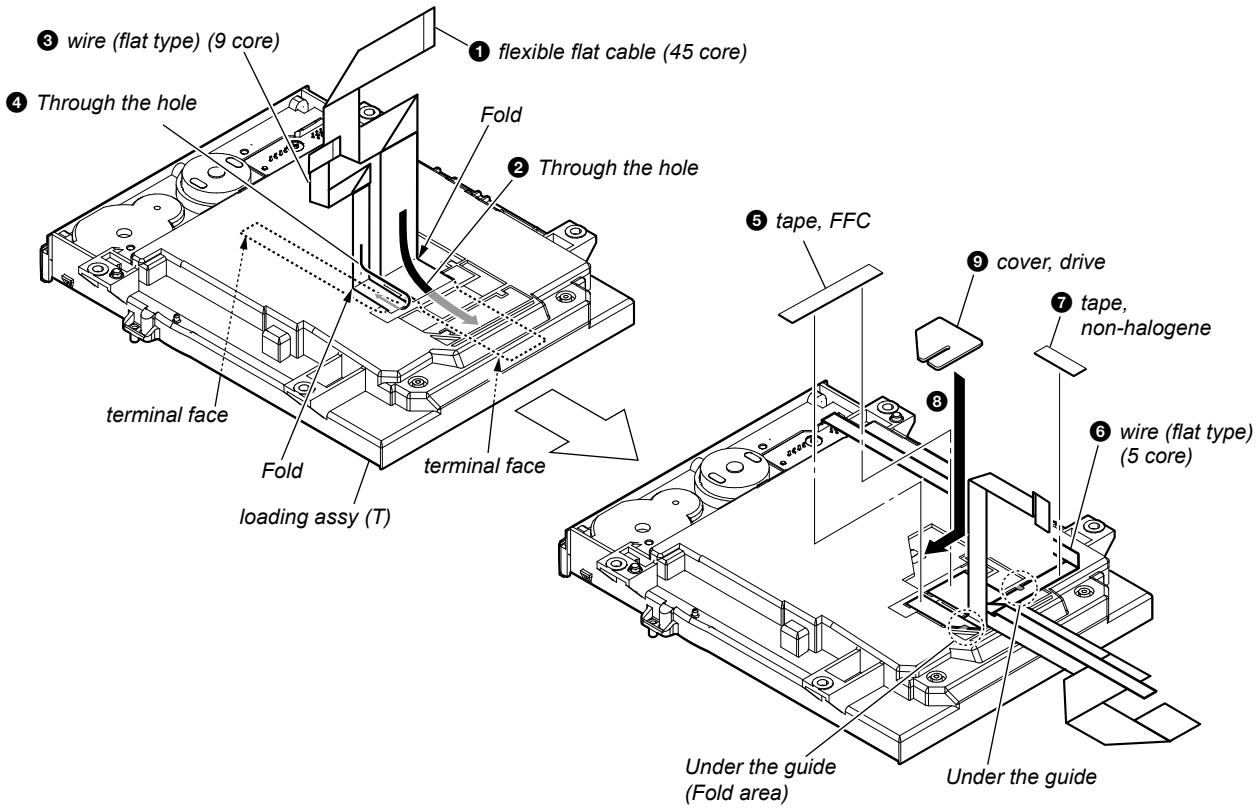


2-11. OPTICAL PICK-UP BLOCK (KEM480AAA), WIRE (FLAT TYPE)



• Installation of flexible flat cable (45 core), wire (flat type) (9 core) and wire (flat type) (5 core)

Note: This illustration sees the loading assy (T) from bottom side.



SECTION 3 TEST MODE

COLD RESET

The cold reset clears data except BD/DVD data stored in the RAM to initial conditions. Execute this mode when returning the unit to the customers.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [■] and [VOL -] buttons simultaneously and hold down (around 5 seconds).
3. The message “RESET” appears on fluorescent indicator tube, then becomes standby states.

DEMO MODE

This mode let you lock the disc tray. When this mode is activated, the disc will not eject when the [▲] button is pressed. The message “DEMO. LOCK” will be displayed on the fluorescent indicator tube.

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press the [FUNCTION] button to select the “BD/DVD”.
3. Press the [■] and [▲] buttons simultaneously and hold down until “DEMO. LOCK” or “DEMO OFF” displayed on the fluorescent indicator tube (around 5 seconds).

Releasing method:

Press the [■] and [▲] buttons simultaneously and hold down until “DEMO OFF” displayed on the fluorescent indicator tube (around 5 seconds).

PANEL TEST

Procedure:

1. Press the [I/⏻] button to turn the power on.
2. Press button in order of the [DISPLAY] → [0] → [0] → [1] → [SUBTITLE] on the remote commander (Make the interval when each button is pressed within two seconds).
3. All segments in fluorescent indicator tube are lighted up. And half segments in fluorescent indicator tube are lighted up, others half segments in fluorescent indicator tube are lighted up, then all segments in fluorescent indicator tube are lighted up. This operation is repeated.
4. When all segments in fluorescent indicator tube are lighted up in the state of step 3, press the [VOL +] button on the remote commander and model information is displayed on the fluorescent indicator tube.
Each time the [VOL +] button on the remote commander is pressed, the display changes from destination information, STR version in this order, and returns to the model information display.
5. In the state of step 3, press the [FUNCTION] button on the remote commander and “K 0” is displayed on the fluorescent indicator tube.
“K 0” value increases whenever a button or sensor on the unit is pressed. However, once a button or sensor has been pressed, it is no longer taken into account.
All button and sensors on the unit are pressed, “OK” and “K 9” are alternately displayed on the fluorescent indicator tube.

Releasing method:

To release from this mode, press the [I/⏻] button.

FACTORY INITIALIZE

Return all of the unit setting to their factory defaults.

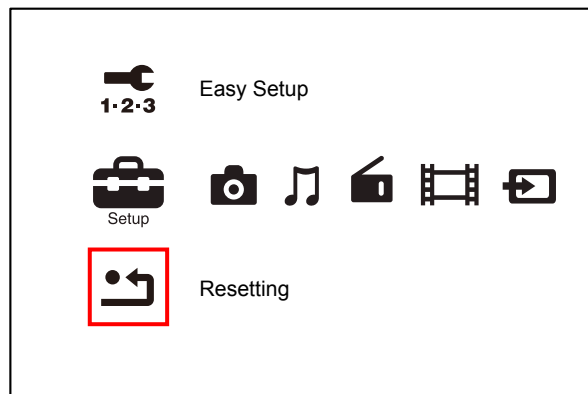
Note 1: Disconnect the following connections when you use this mode.

- USB
- LAN

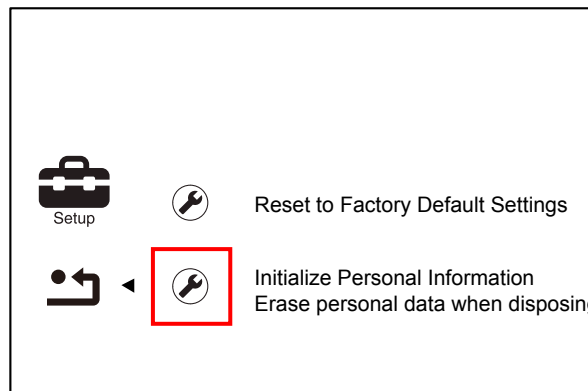
Note 2: The operation in this mode must use a remote commander and TV monitor.

Procedure:

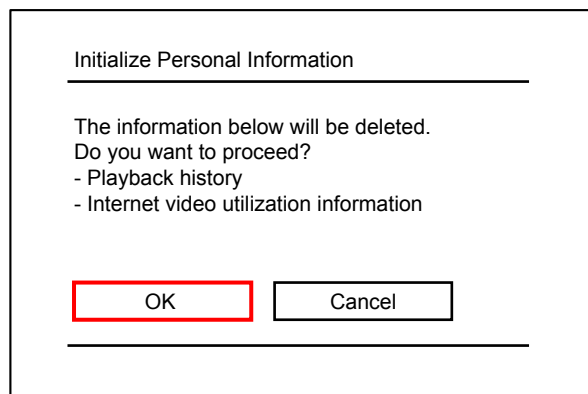
1. Press the [I/⏻] button to turn the power on.
2. Press the [HOME] button on the remote commander, and the home menu is displayed.
3. Select “Setup” → “Resetting”, and press the [⊕] button on the remote commander.



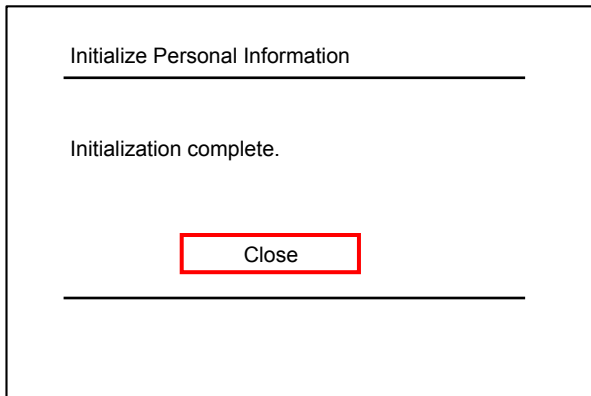
4. Select “Initialize Personal Information”, and press the [⊕] button on the remote commander.



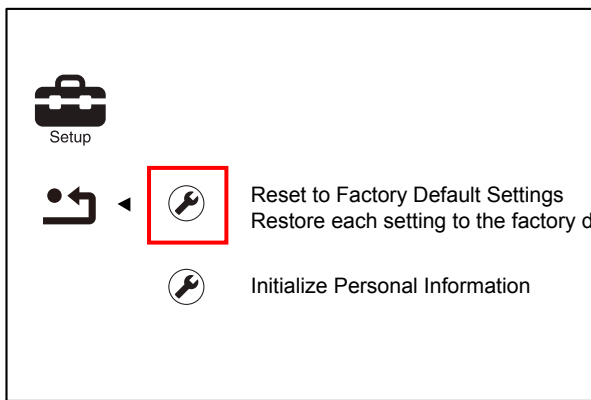
5. Select “OK”, and press the [⊕] button on the remote commander.



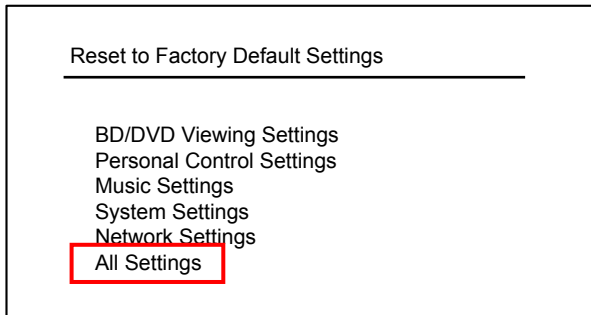
- The message “Close” appears, and press the [⊕] button on the remote commander.



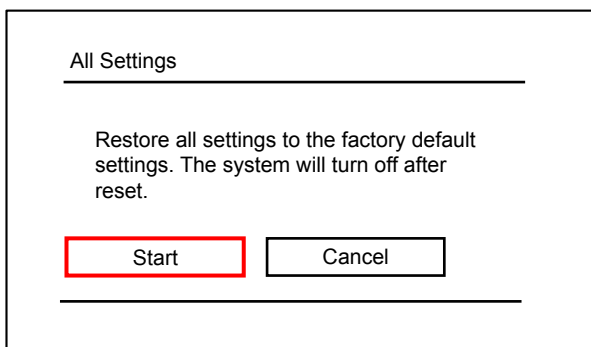
- Select “Reset to Factory Default Settings”, and press the [⊕] button on the remote commander.



- Select “All Settings”, and press the [⊕] button on the remote commander.



- Select “Start”, and press the [⊕] button on the remote commander.



- Initialization ends when the message “WELCOME” on the fluorescent indicator tube disappears.

BD SERVICE MODE

Note: The operation in this mode must use a remote commander and TV monitor.

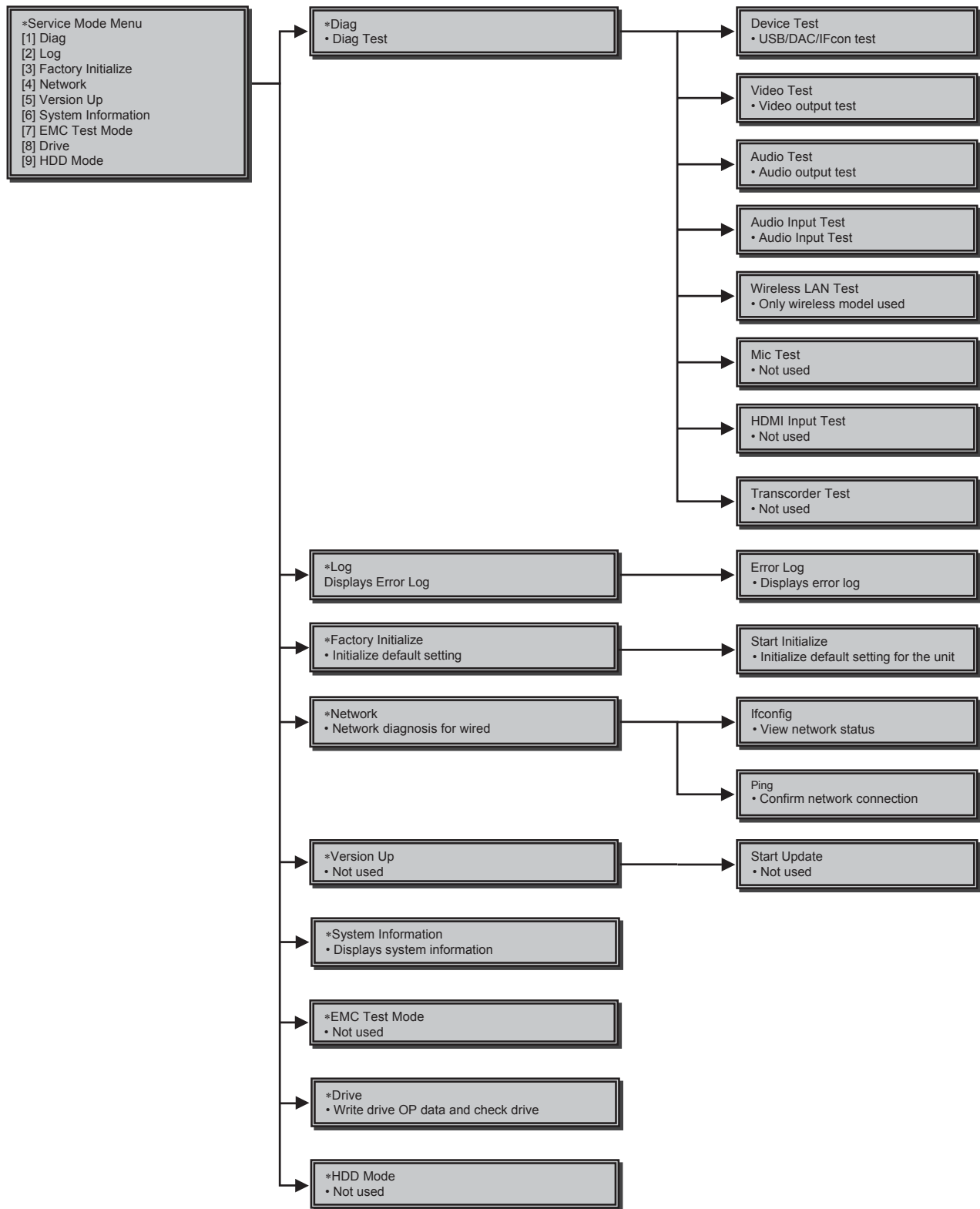
Setting method of the BD service mode:

- Connect this unit with TV monitor.
- Press the [I/⏻] button to turn the power on.
- Press button in order of the [DISPLAY] → [0] → [2] → [1] → [SUBTITLE] on the remote commander. (Make the interval when each button is pressed within two seconds)
- Enter the BD service mode. The OSD menu on TV monitor can be operated by remote commander.

1. Main Functions

- **Diag**
Performs unit test of devices installed on the board.
- **Log**
Error log is displayed. Displayed contents can also be saved in an USB memory device.
- **Factory Initialize**
Restores the unit to its factory settings.
- **Network**
Checks the wired network connection.
- **Version Up**
Not used.
- **System Information**
Displays the system information of the unit. Displays information such as the software version, drive information, etc.
- **EMC Test Mode**
Not used.
- **Drive**
Write drive OP data and check drive.

2. Menu Tree



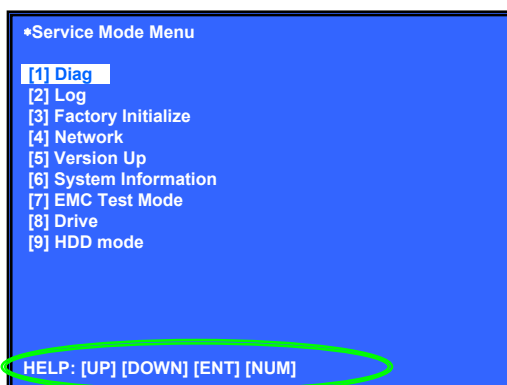
3. Service Mode Menu (Top Menu)

This is the top menu of service mode.
Each function is accessed from this screen.

Operation:

- [1] Moves to Diag screen
- [2] Moves to Log screen
- [3] Moves to Factory Initialize screen
- [4] Moves to Network screen
- [5] Moves to Version Up (DISC version update) screen (Not used)
- [6] Moves to System Information screen
- [7] Moves to EMC test mode screen (Not used)
- [8] Moves to Drive screen
- [9] Moves to HDD mode (Not used)
- [↑]/[↓] Moves the cursor
- [⊕] Moves to the screen of the item selected with the cursor

* Cursor is not displayed when the menu is first displayed.



HELP (currently available keys, etc.) is displayed

4. Diag (Device Test)

This screen is used to test devices mounted on the board.

Screen 1: Selects the test category

Operation:

- [←]/[→] Selects the category
- [↓]/[⊕] Moves to the selected category
- [RETURN] Returns to the service top menu

Screen 2: Device test

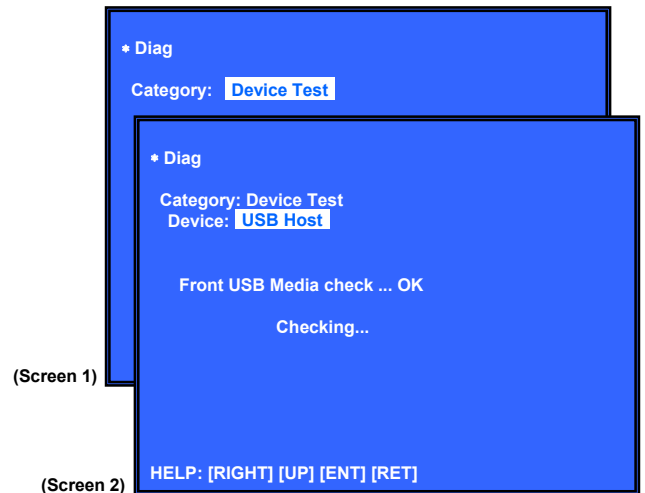
Selects the device to test after selecting Device Test in screen 1.

Operation:

- [←]/[→] Selects the device to test
- [⊕] Executes the test
- [↑] Returns to selection of test category
- [RETURN] Returns to selection of test category

List of test categories

- Device Test
- Video Test
- Audio Test
- Audio Input Test
- Wireless LAN Test (Only wireless model used)
- Mic Test (Not used)
- HDMI Input Test (Not used)
- Transcoder Test (Not used)



- Device Test: List of devices
- USB Host : USB media check (front). Only one time.
- D/A Converter : DAC write check (non-verification).
- Ifcon : Not used in this unit.
- MIC : Not used in this unit.
- MFI : MFI read/write Check
- IPC : Not used
- External HDMI : Not used
- Transcoder : Not used

5. Diag (Video/Audio Test)

This screen performs video and audio tests.

Screen 1: When video test category is selected

Operation:

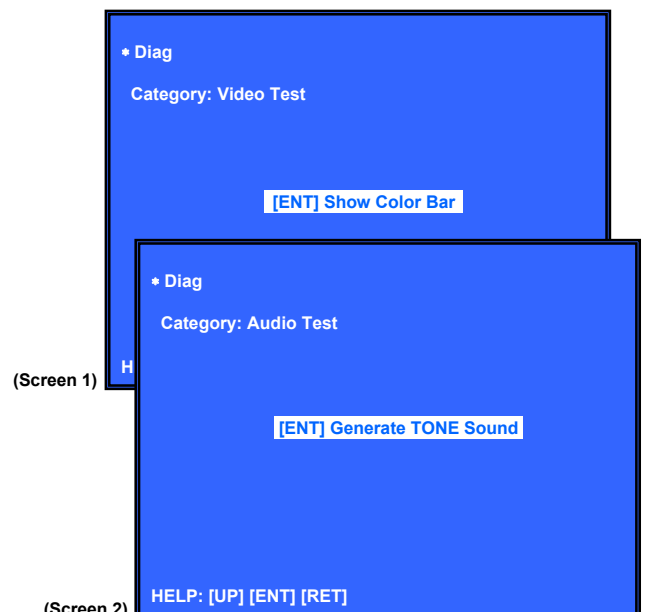
- [⊕] Shows/hides the color bar
- [↑]/[RETURN] Returns to the selection of test category

Screen 2: When audio test category is selected

Operation:

- [⊕] Plays back/stops the tone sound
- [↑]/[RETURN] Returns to the selection of test category

- Video test:
Outputs a color bar (composite & HDMI).
- Audio test:
TONE sound output (speaker & HDMI).



6. Diag (Audio Input Test)

This screen performs audio input test.

Screen 1: Select Audio Input Test Category

Operation:

- [←]/[→] Selects the category
- [↓]/[⊕] Activate the selected category
- [RETURN] Returns to the service top menu

Screen 2: Select Input Device

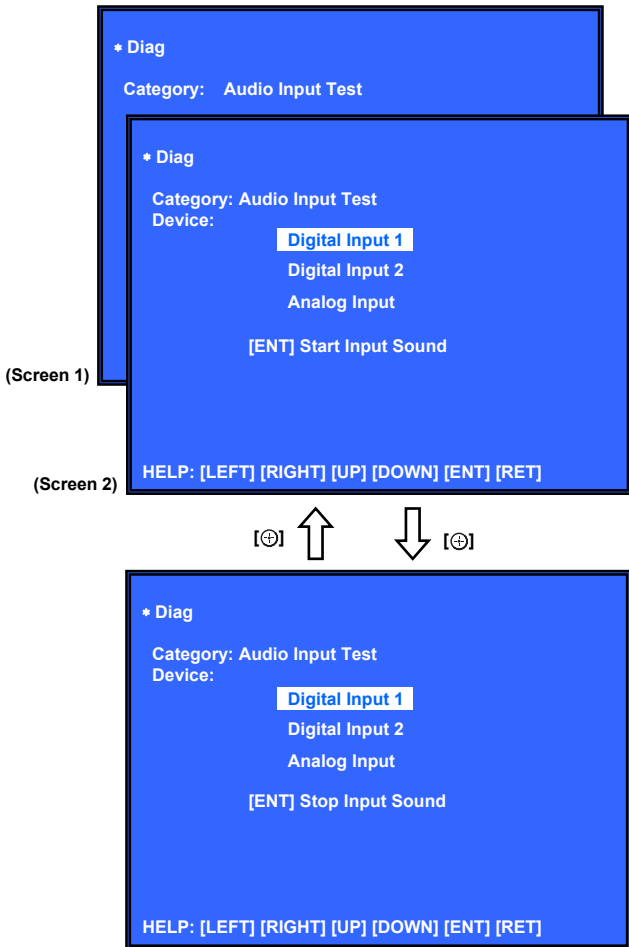
After “Audio Input Test” selects in Screen 1, the device to test is chosen.

Operation:

- [↑]/[↓] Selects Device
- [⊕] Activate and Start Test/Stop
- [RETURN] Returns to the selection of test category

- Device Test : Device List
- Digital Input1 : CXD90008 is inputted from ARC
- Digital Input2 : CXD90008 is inputted from Optical
- Analog Input : CXD90008 is inputted from AUDIO

- Audio Input Test
- CXD90008 is inputted from DIR/analog and outputs LineOut (8ch) L and R.
- Check tone sound by speaker connected with LineOut (8ch) L and R.
- (Input; LPCM 48kHz 2ch)



7. Diag (Wireless LAN Test)

This screen performs wireless LAN test.

Note: This mode doesn't operate correctly. Never use this mode. Refer to “CHECKING METHOD OF NETWORK OPERATION” on page 10 when you confirm the wireless LAN operation.

8. Diag (MIC Input Test)

This screen performs MIC input test.

Note: Not used for the servicing.

9. Diag (HDMI Input Test)

This screen performs HDMI input test.

Note: Not used for the servicing.

10. Diag (Transcoder Test)

Note: Not used for the servicing.

11. Log: Error Log (Output of each Log)

This screen displays the contents of each log.

Note: Do not refer to the displayed date.

Screen 1: Selects log

Operation:

- [1]/[⊕] Moves to the Error Log output screen
- [RETURN] Returns to the top menu of the service mode

Screen 2: Displays the Error Log

Operation:

- [←] Returns to the previous page
- [→] Moves to the next page
- [RETURN] Returns to the screen (Screen 1) that selects the log type
- [RED] Writes the log contents to a USB memory device

- Viewing the log display

Error Log:

[174] 2010/01/01 00:00:08 [ErrCode:0902A4053002]
[Index number] [Date] [Time] [Error code]

About copying log to USB memory device:

Press the [RED] button in each log display screen with the USB memory device inserted into the unit.

Note: Please do not press the [RED] button immediately after USB memory is inserted. Please do not pull out USB memory immediately after the [RED] button was pressed.

Error Log:

When “getErrLogFile.trm file” exists in the USB memory device, errlog.log file is output.



12. Factory Initialize (Factory Settings)

There is a possibility that this mode cannot be correctly executed. Never use this mode.

13. Network (Network Test Diagnosis Screen: Ifconfig)

Network menu for the wired ethernet.

Screen 1: Ifconfig Test

Operation:

- [⊕] Activate Ifconfig (Display network setting)
- [➡] Select ping test
- [RETURN] Returns to the top menu of the service mode

Screen 2: Ping Test

Operation:

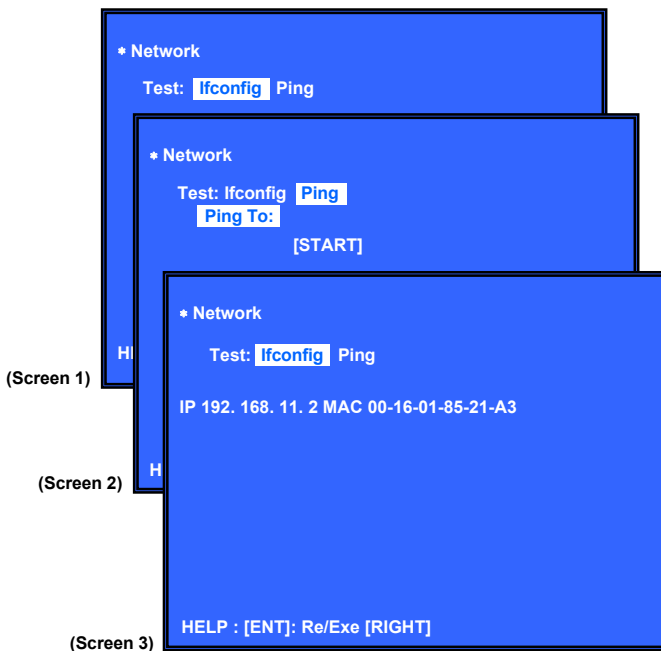
- [←] Select Ifconfig test
- [RETURN] Returns to the top menu of the service mode
(The details of a Ping test are “14. Network (Network Test Diagnosis Screen: Ping)”)

Screen 3: Ifconfig Test Active

Display Ifconfig command results.

Operation:

- [⊕] Ifconfig retry
- [➡] Select Ping Test
- [RETURN] Returns to the top menu of the service mode



14. Network (Network Test Diagnosis Screen: Ping)

Ping test for the wired ethernet.

Screen 1: Ping Test

Operation:

- [←] Select Ifconfig test
- [↓] Ping execution preparation
- [RETURN] Returns to the top menu of the service mode

Screen 2: The IP address of the Ping point is set up (IP address input mode)

When “Ping to :>” is reversed, the [⊕] button is pressed and IP is inputted.

Operation:

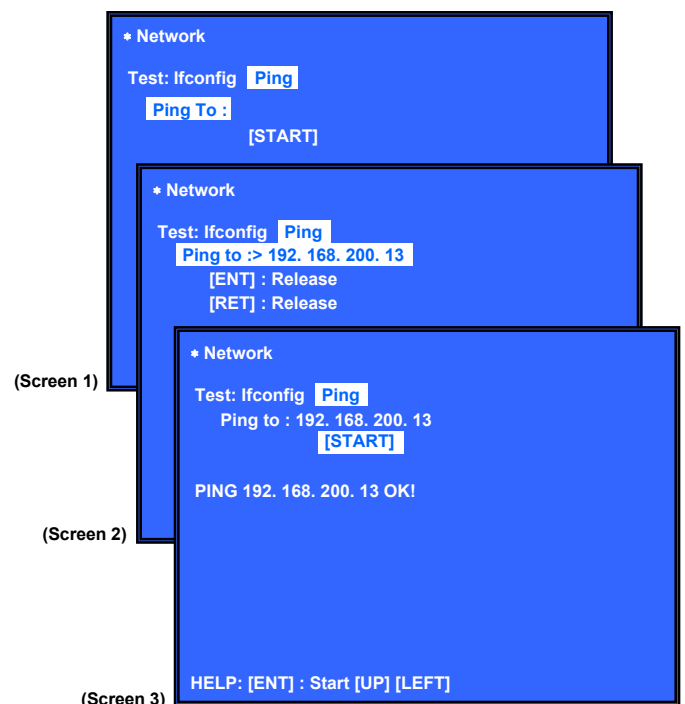
- [⊕] Finish to input
- [RETURN] Finish to input
- [←] Finish to input and Select Ifconfig Test
- [0] to [9] Input Character sting ‘0-9’
- [TIME] Input Character sting ‘.’
- [CLEAR] Backspace

Screen 3: Ping Test Active

When [START] is reversed, the [⊕] button is pressed and execute ping.

Operation:

- [⊕] Activate ping test
- [↑] The IP address of the ping point is set up
- [RETURN] Returns to the top menu of the service mode



15. System Information (System Information Display)

This screen displays system information.

Screen 1: Basic Information

Operation:

- [➡] Drive information (delta IOP of a drive is measured) and wireless device information (E385/E390/T39) displayed (go to Screen 2)
- [RETURN] Returns to the top menu of the service mode

Screen 2: Drive and Wireless Information Menu

Operation:

- [←] Basic Information displayed (go to Screen 1)
- [RETURN] Returns to the top menu of the service mode

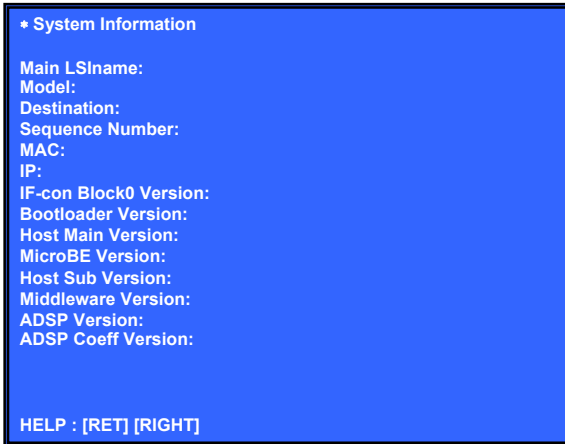
When delta IOP is measured, it becomes impossible to use the Version Up function.

Contents List:

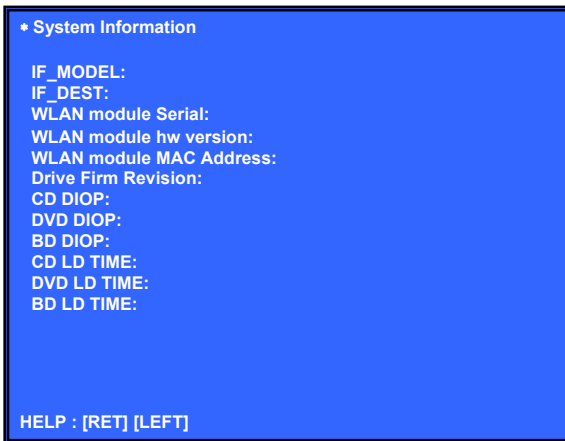
Main LSIname
 Model
 Destination
 Sequence Number
 MAC
 IP
 IFCON IFCON Version
 Bootloader Bootloader Version
 Host Main Host Main Version
 MicroBE MicroBE Version
 Host Sub Host Sub Version
 Middleware Middleware Version
 ADSP ADSP Version
 ADSP Coeff ADSP Coeff Version
 2nd DSP 2nd DSP Version (not used)

IF Model
 IF Dest
 WLAN module Serial
 WLAN module hw Version
 WLAN module MAC Address
 Drive Firm Revision
 CD DIOP Delta IOP
 DVD DIOP Delta IOP
 BD DIOP Delta IOP
 CD LD TIME LD Time
 DVD LD TIME LD Time
 BD LD TIME LD Time

(Screen 1)



(Screen 2)



16. Drive

This menu is used to operate the drive using drive-related diagnostic and tools.

Screen 1: Selecting items under *Drive

Operation:

- [←]/[→] Selects the category
- [↓]/[⊕] Activate the selected category
- [RETURN] Returns to the top menu of the service mode
- [1] Drive OP data Write
- [2] Servo Parameter Check Menu (Not used)
- [3] Servo Signal Check Menu (Not used)
- [4] S-Curve Check Menu (Not used)
- [5] Readability Check Menu (Not used)
- [6] OP Position Check Menu (Not used)
- [7] OP Check Menu (Not used)
- [8] Load Eject Aging (Not used)
- [9] Spindle Control Check Menu (Not used)
- [10] FA Test Mode (Not used)

Screen 2: To start OP data Write

Operation:

- [⊕] Starts

Screen 3: Show OP data Write result

Operation:

- NG - USB is not find
- OK - OP data write

- Drive Test

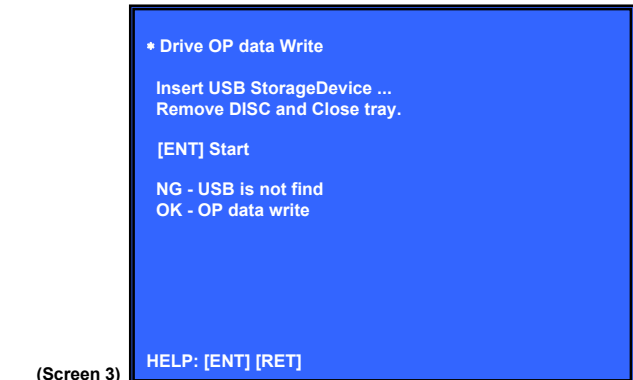
For drive operating check. Service is only use Drive OP data write to rewrite OP data after change of new CPU.



(Screen 1)



(Screen 2)



(Screen 3)

CONFIRMATION ITEM**1. Playback Operation Confirmation****1-1. Test Disc**

Part No.	Description	Layer
J-6090-199-A	BLX-104	Single Layer
J-6090-200-A	BLX-204	Dual Layer
J-2501-307-A	CD (HLX-A1)	
J-2501-305-A	HLX-513	Single Layer (NTSC)
J-2501-306-A	HLX-514	Dual Layer (NTSC)
J-6090-077-A	HLX-506	Single Layer (PAL)
J-6090-078-A	HLX-507	Dual Layer (PAL)

Note: Refer to the service manual of BDP-BX1/S350 (Part No. 9-883-989-1□) (page 1-3 to 1-14E) for the use of BLX-104/204.

Operation and Display:**1. BLX-104****Procedure:**

1. Select 23.976Hz/1080p.
 2. Play "4.Motion picture".
 3. Check whether player can play back or not.
 4. Check each outputs.
Video:
Composite/S Video/component/HDMI.
Audio:
Speaker out.
- * When 1080/24p monitor is nothing, 1080i (59.94Hz or 50Hz) can use instead of 1080/24p.
However this is temporary correspondence.
- * When the output of HDMI is 1080p, the signal of Composite/S Video/Component are not output.
It is necessary to lower the output of HDMI to 1080i or less.

2. BLX-204**Procedure:**

1. Select 1080i (59.94Hz or 50Hz).
2. Play "4.Motion picture".
3. Check whether player can play back or not.
(Check the picture and sound output)

3. CD (HLX-A1)**Procedure:**

Check whether player can play back or not.
(Check the sound output)

4. HLX-513/514 (NTSC), HLX-506/507 (PAL)**Procedure:**

1. After displayed Main Menu, select "1.Video Signal".
2. Play "1.Color bar 100%".
(Check the picture and sound output)
3. Return to Menu.
4. Play "Demonstration 4:3" or "Demonstration 16:9".
(Check the picture and sound output)

1-2. Playback operation confirmation

Confirm operation in each signal/output mode of test disc (BLX-104/204) according to the content of the repair.

Note: "AV Sync." doesn't operate.

2. Networking Confirmation

Confirm it according to the following procedure when you confirm the connection of the network.

Note: Do not execute "Network Connection Diagnostics" of "Network Settings" of the home menu with only the router connected.

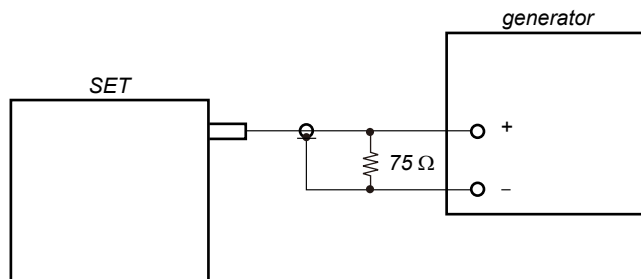
Procedure:

1. Connect the router with the unit with LAN cable.
2. Turn on the power of the unit and the router.
3. Press the [HOME] button on the remote commander, and the home menu is displayed.
4. Select "Setup" → "Network Settings" → "Internet Settings", and press the [⊕] button on the remote commander.
5. Select "View Networks Status" and press the [⊕] button on the remote commander.
6. Confirm IP address are displayed in "IP Address", "Subnet Mask" and "Default Gateway".

Physical Connection:	XXXX
Internet Access:	XXXX
IP Address Setting:	XXXX
IP Address:	XXX.XXX.XXX.XXX
Subnet Mask:	XXX.XXX.XXX.XXX
Default Gateway:	XXX.XXX.XXX.XXX
DNS Settings:	XXXX
Primary DNS:	XXX.XXX.XXX.XXX
Secondary DNS:	XXX.XXX.XXX.XXX
MAC Address:	XXX.XXX.XXX.XXX

SECTION 4 ELECTRICAL CHECK

FM AUTO STOP CHECK

**Procedure:**

1. Turn the power on.
2. Input the following signal from Signal Generator to FM antenna input directly.

Carrier frequency : A = 87.5 MHz, B = 98 MHz, C = 108 MHz

Deviation : 75 kHz

Modulation : 1 kHz

ANT input : 35 dBu (EMF)

Note: Please use 75 ohm "coaxial cable" to connect SG and the set. You cannot use video cable for checking.

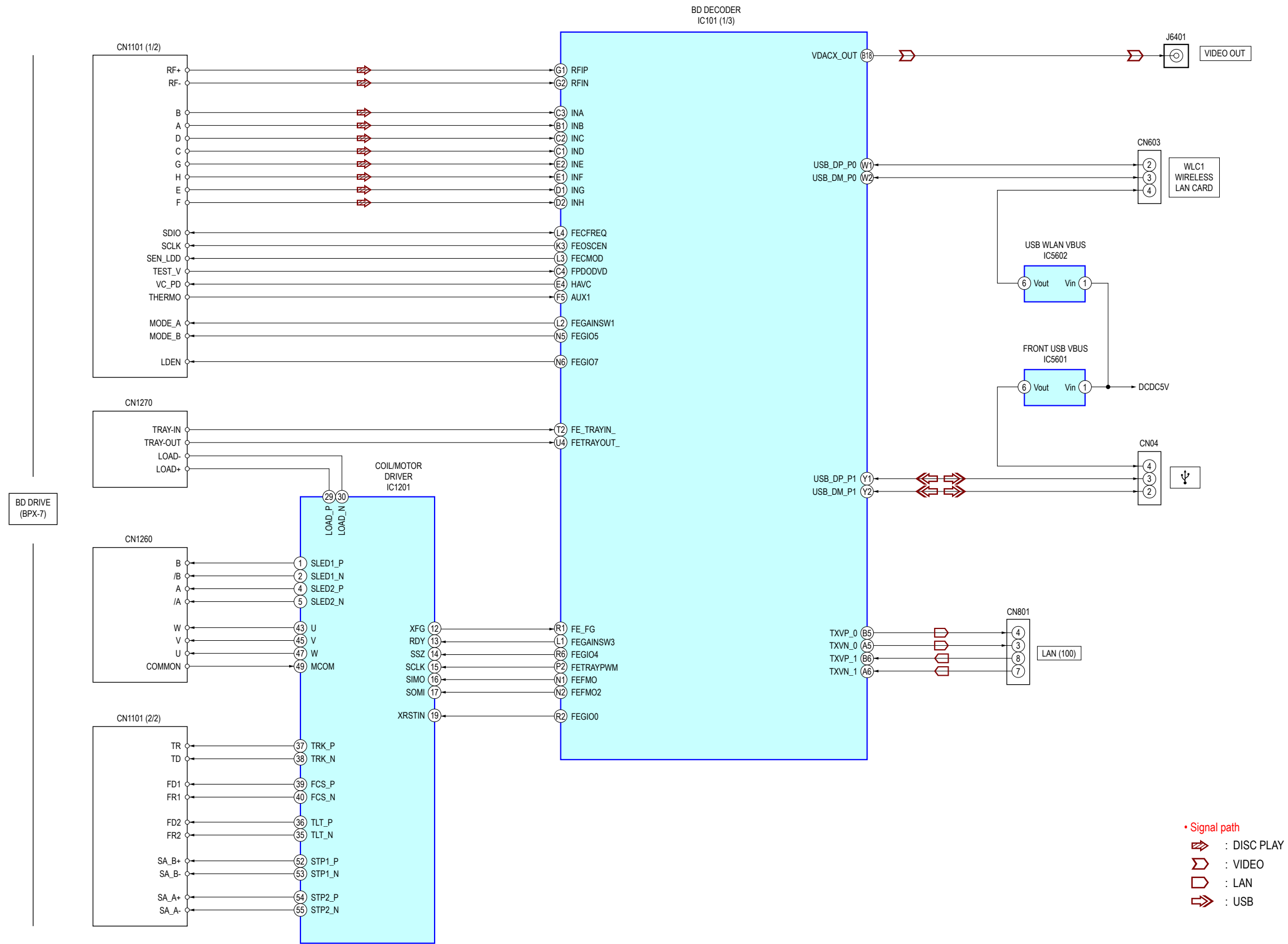
Please use SG whose output impedance is 75 ohm.

3. Set to FM tuner function and scan the input FM signal with automatic scanning.
4. Confirm that input Frequency of A, B and C detected and automatic scanning stops.

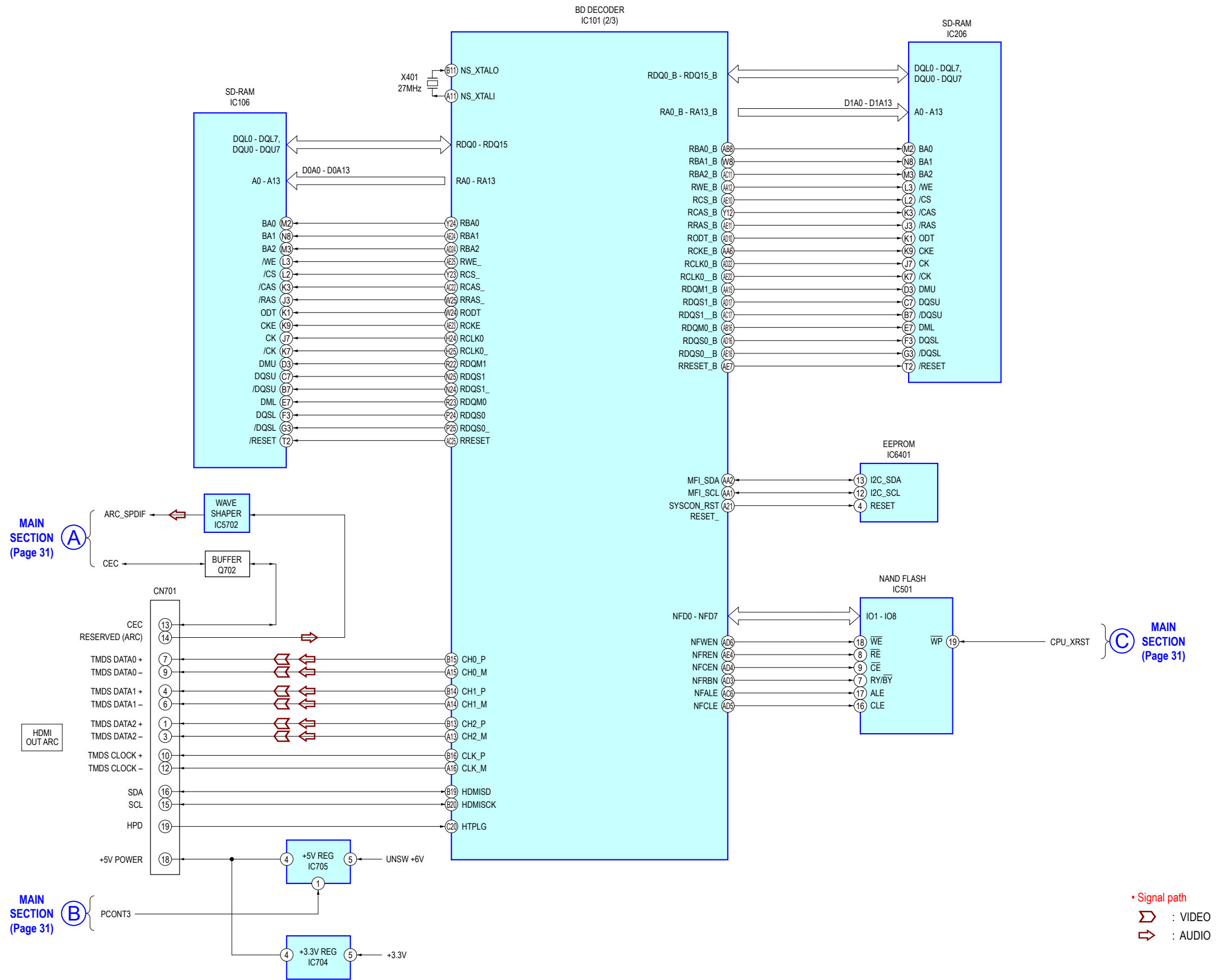
The stop of automatic scanning means "The station signal is received in good condition".

SECTION 5 DIAGRAMS

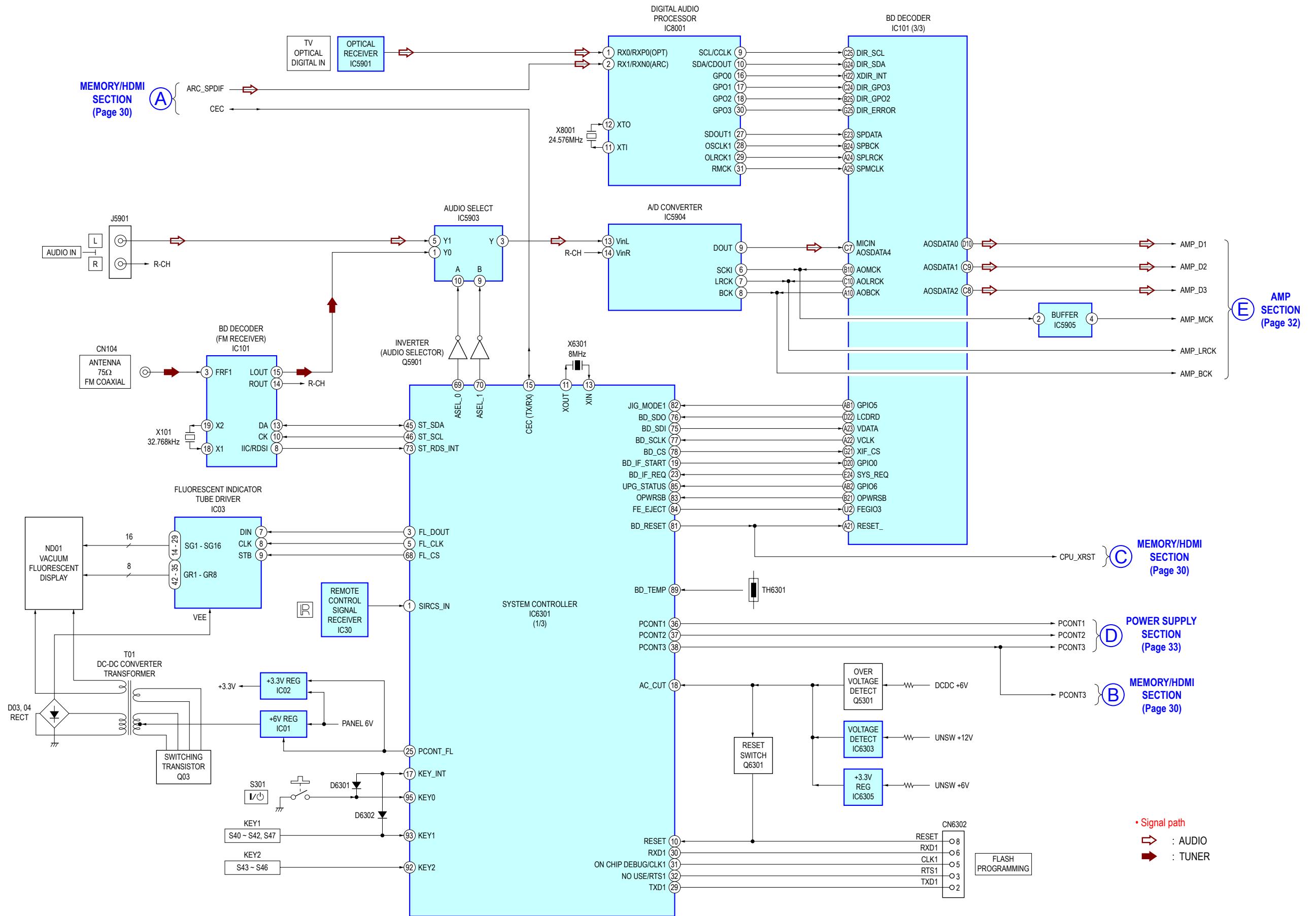
5-1. BLOCK DIAGRAM - SERVO Section -



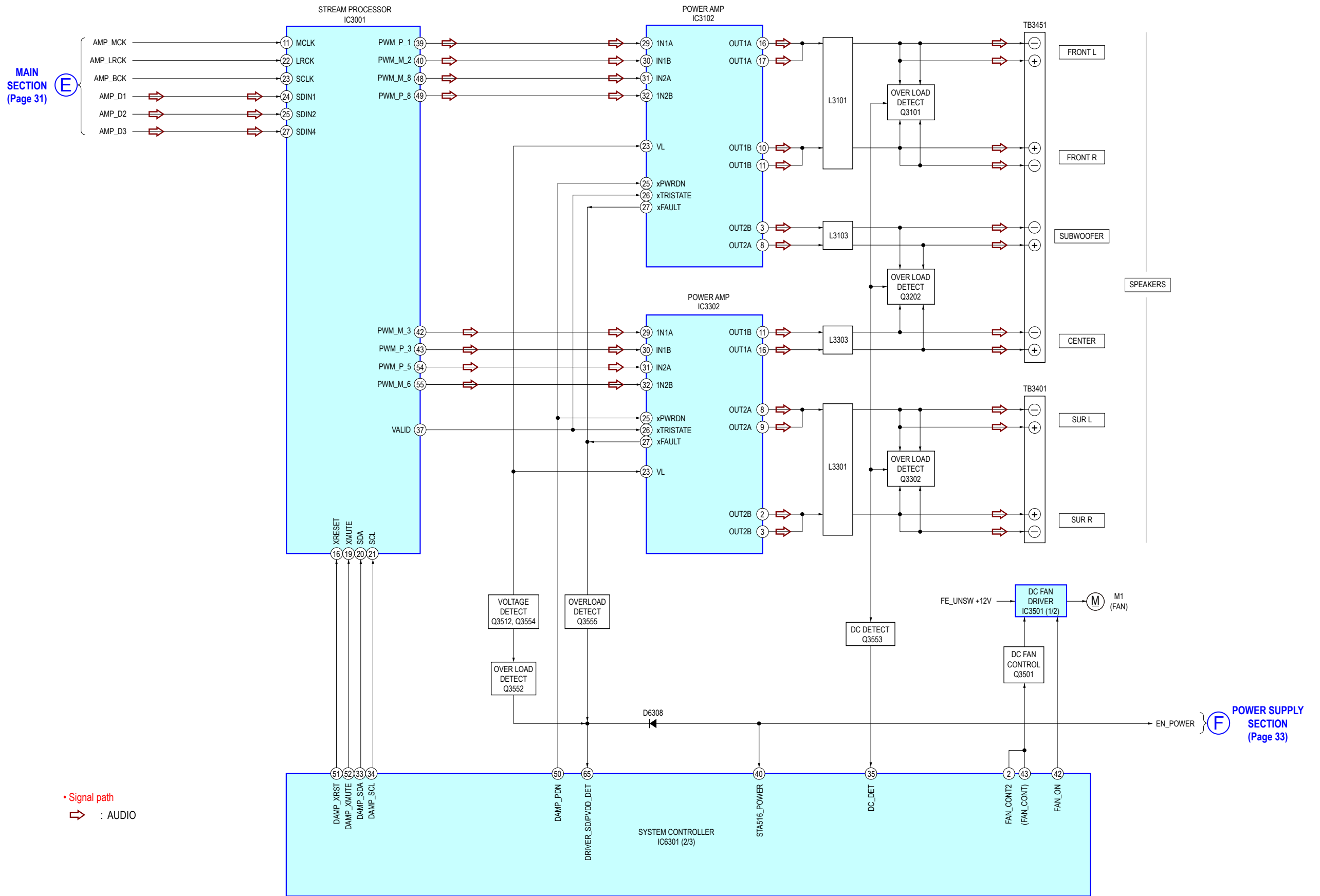
5-2. BLOCK DIAGRAM - MEMORY/HDMI Section -



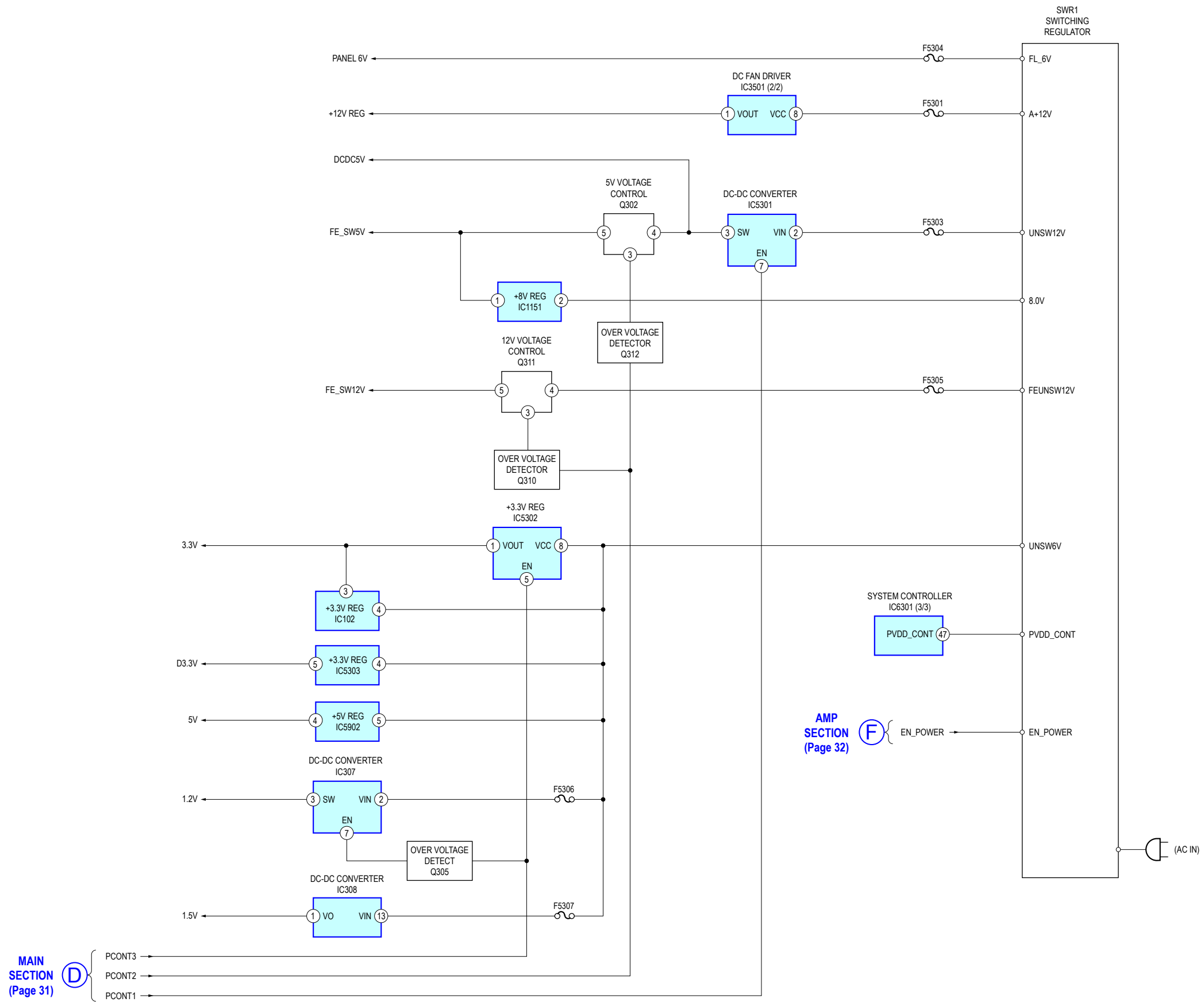
5-3. BLOCK DIAGRAM - MAIN Section -



5-4. BLOCK DIAGRAM - AMP Section -



5-5. BLOCK DIAGRAM - POWER SUPPLY Section -



THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
 (In addition to this, the necessary note is printed in each block.)

For Printed Wiring Boards.

Note:

- —: Parts extracted from the component side.
- : Parts extracted from the conductor side.
- △: Internal component.
- : Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)

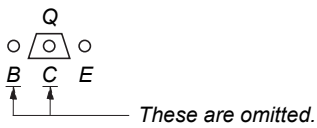
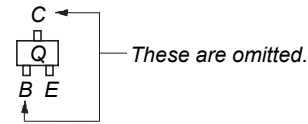
Caution:

Pattern face side: Parts on the pattern face side seen (Conductor Side) from the pattern face are indicated.
 Parts face side: Parts on the parts face side seen from (Component Side) the parts face are indicated.

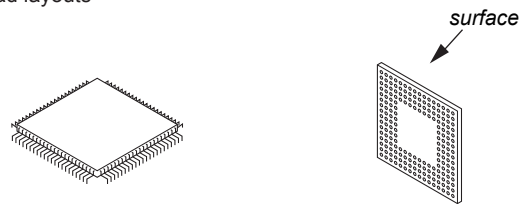
Caution:

Pattern face side: Parts on the pattern face side seen (SIDE B) from the pattern face are indicated.
 Parts face side: Parts on the parts face side seen from (SIDE A) the parts face are indicated.

- MB148 board is multi-layer printed board. However, the patterns of intermediate-layers have not been included in this diagrams.
- Abbreviation
 CND : Canadian model
- Indication of transistor.



- Lead layouts



Lead layout of conventional IC CSP (Chip Size Package)

* Replacement of IC106 and IC206 on the MB148 board used in this unit requires a special tool.

Note: When the AMP board is replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

For Schematic Diagrams.

Note:

- All capacitors are in μF unless otherwise noted. (p: pF) 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △: internal component.
- □: panel designation.

Note: The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

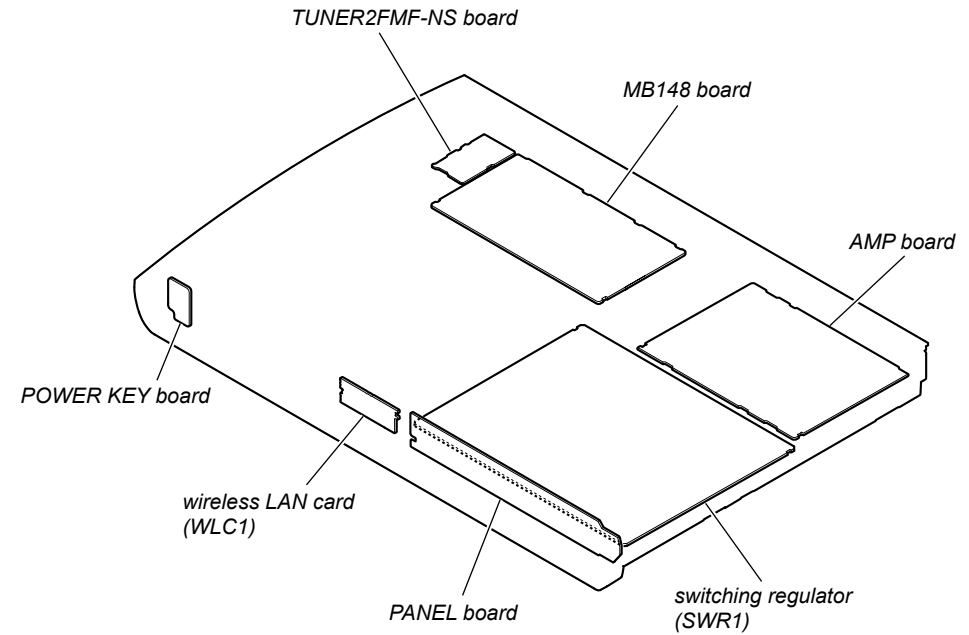
- —: B+ Line.
- - - -: B- Line.
- Voltages and waveforms are dc with respect to ground under no-signal conditions.
 no mark: TUNER
 * : Impossible to measure
- Voltages are taken with VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 □: AUDIO
 ▣: TUNER
 ▤: USB
 ▥: VIDEO
 ▦: LAN
 ▧: DISC PLAY

- Abbreviation
 CND : Canadian model
- The voltage and waveform of CSP (chip size package) cannot be measured, because its lead layout is different from that of conventional IC.

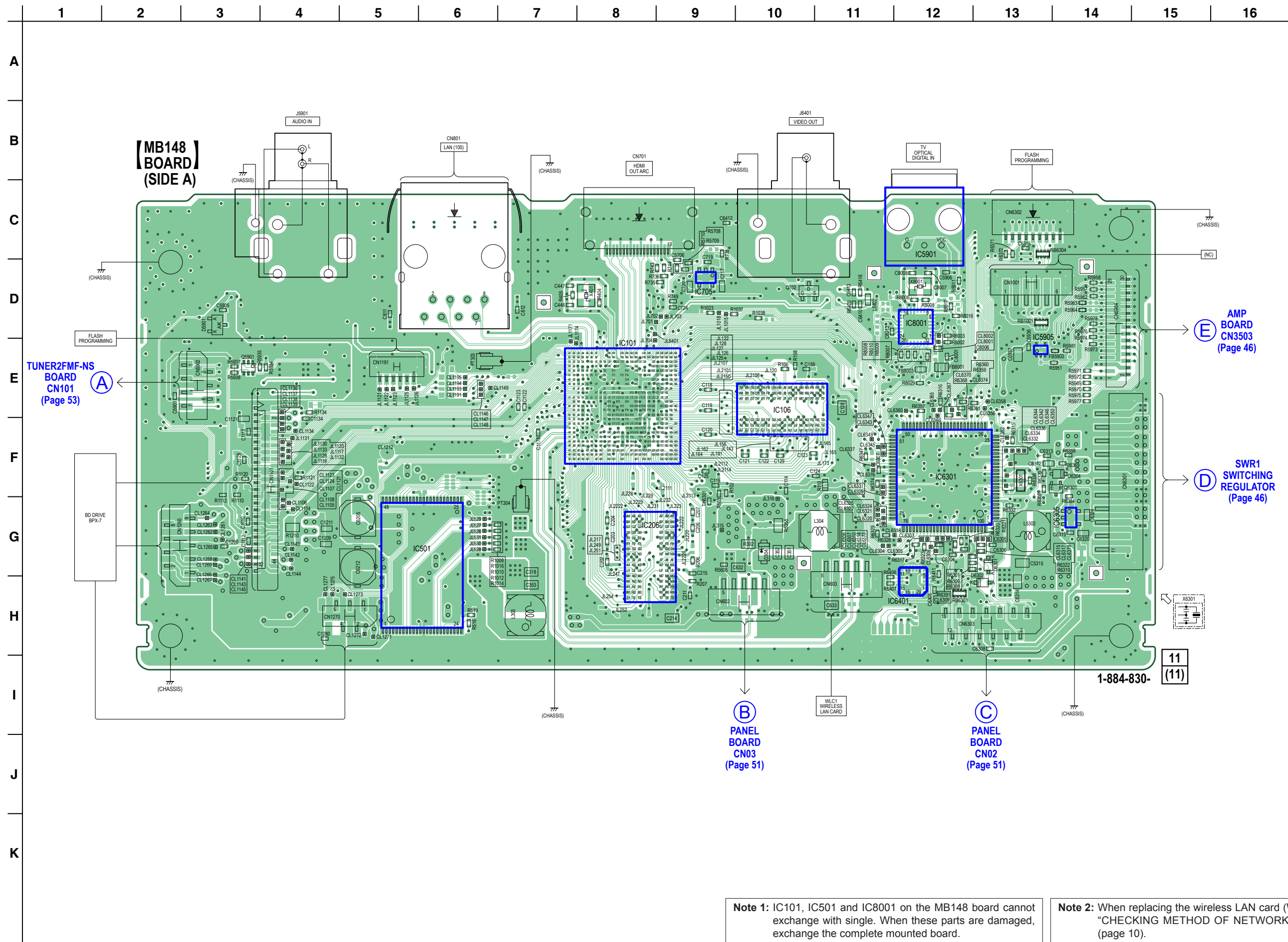
* Replacement of IC106 and IC206 on the MB148 board used in this unit requires a special tool.


Note: When the AMP board is replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

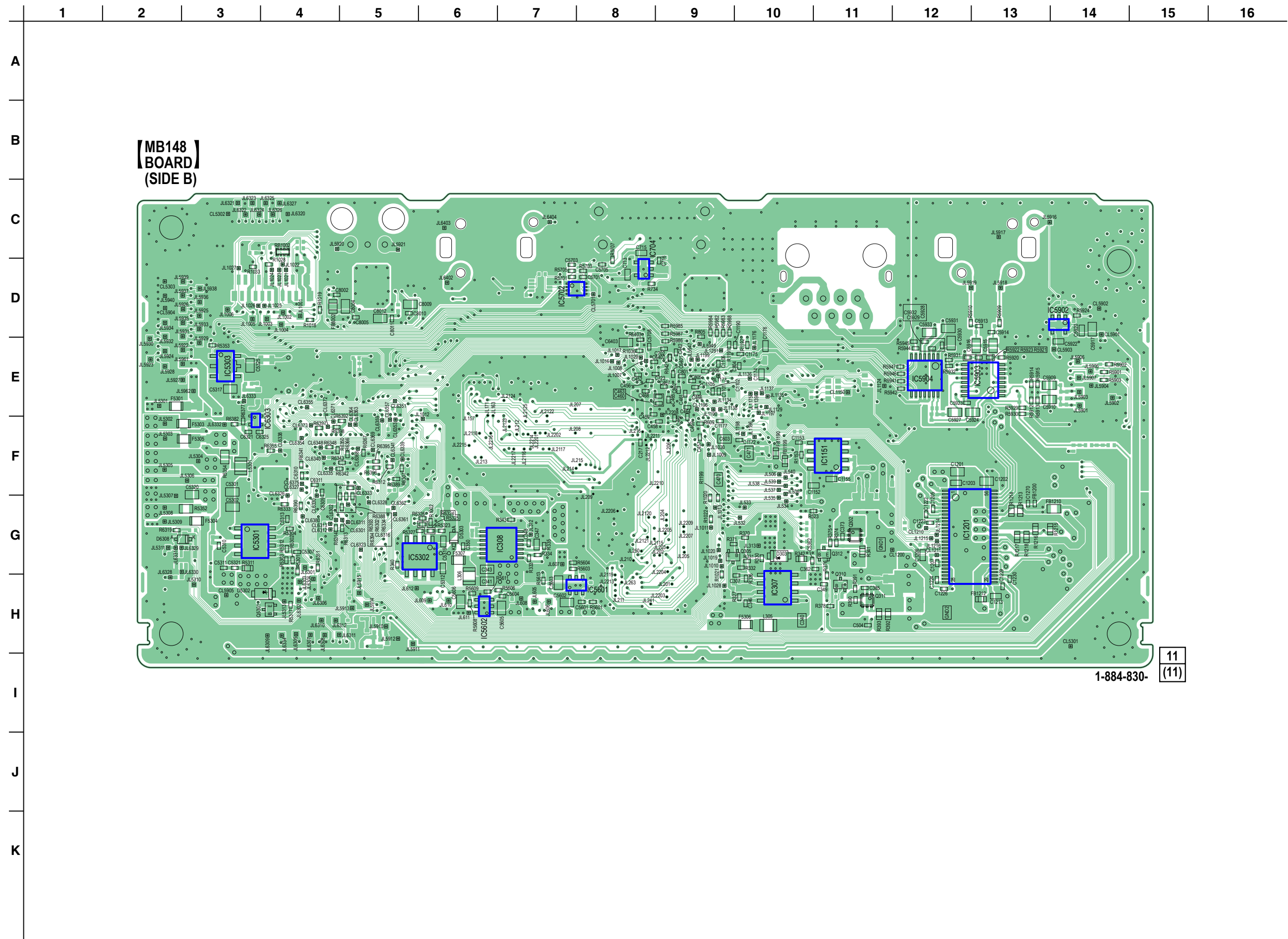
• Circuit Boards Location



5-6. PRINTED WIRING BOARD - MB148 Board (Side A) - • See page 34 for Circuit Boards Location. •  : Uses unleaded solder.



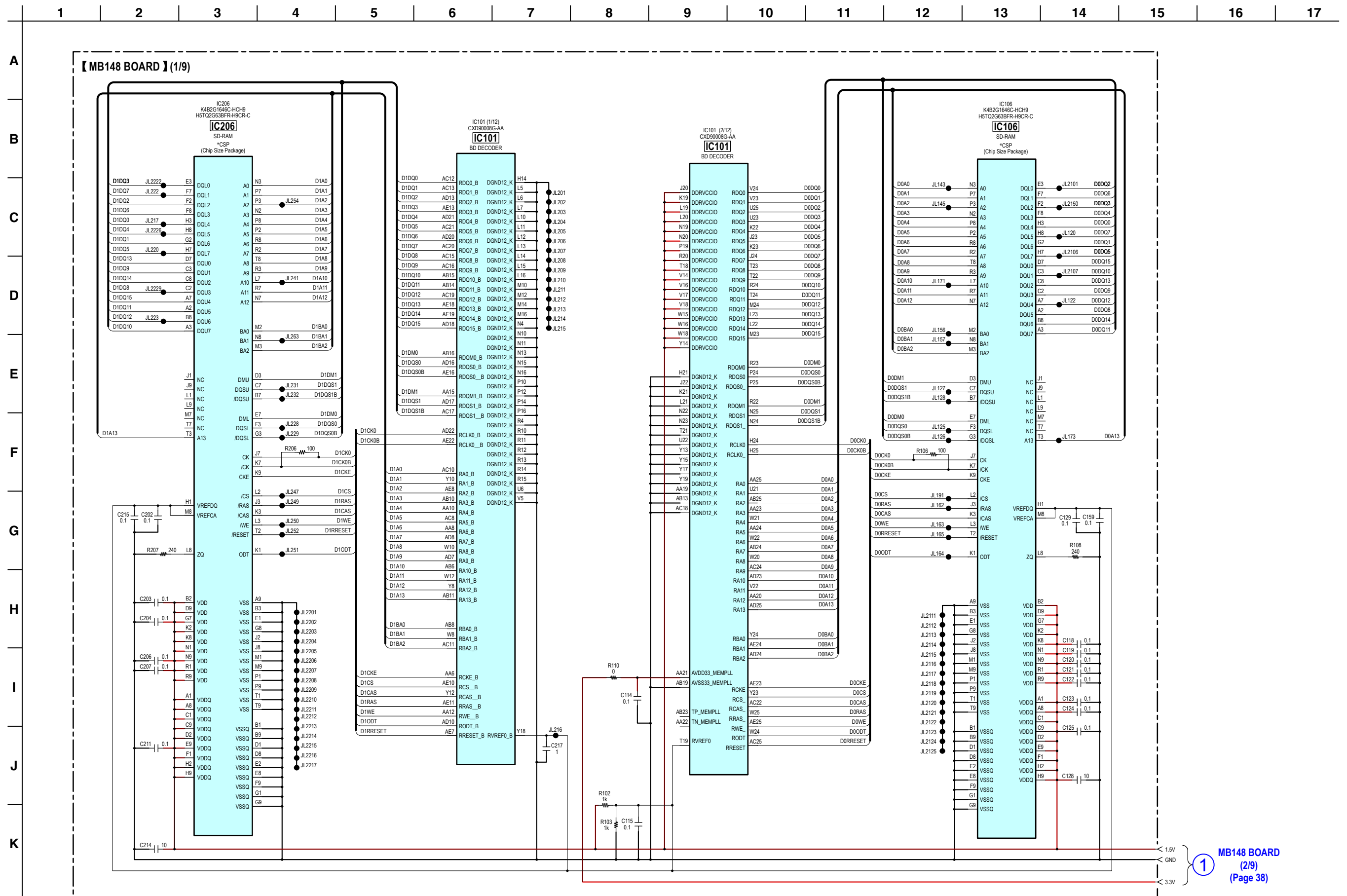
5-7. PRINTED WIRING BOARD - MB148 Board (Side B) - • See page 34 for Circuit Boards Location. •  : Uses unleaded solder.



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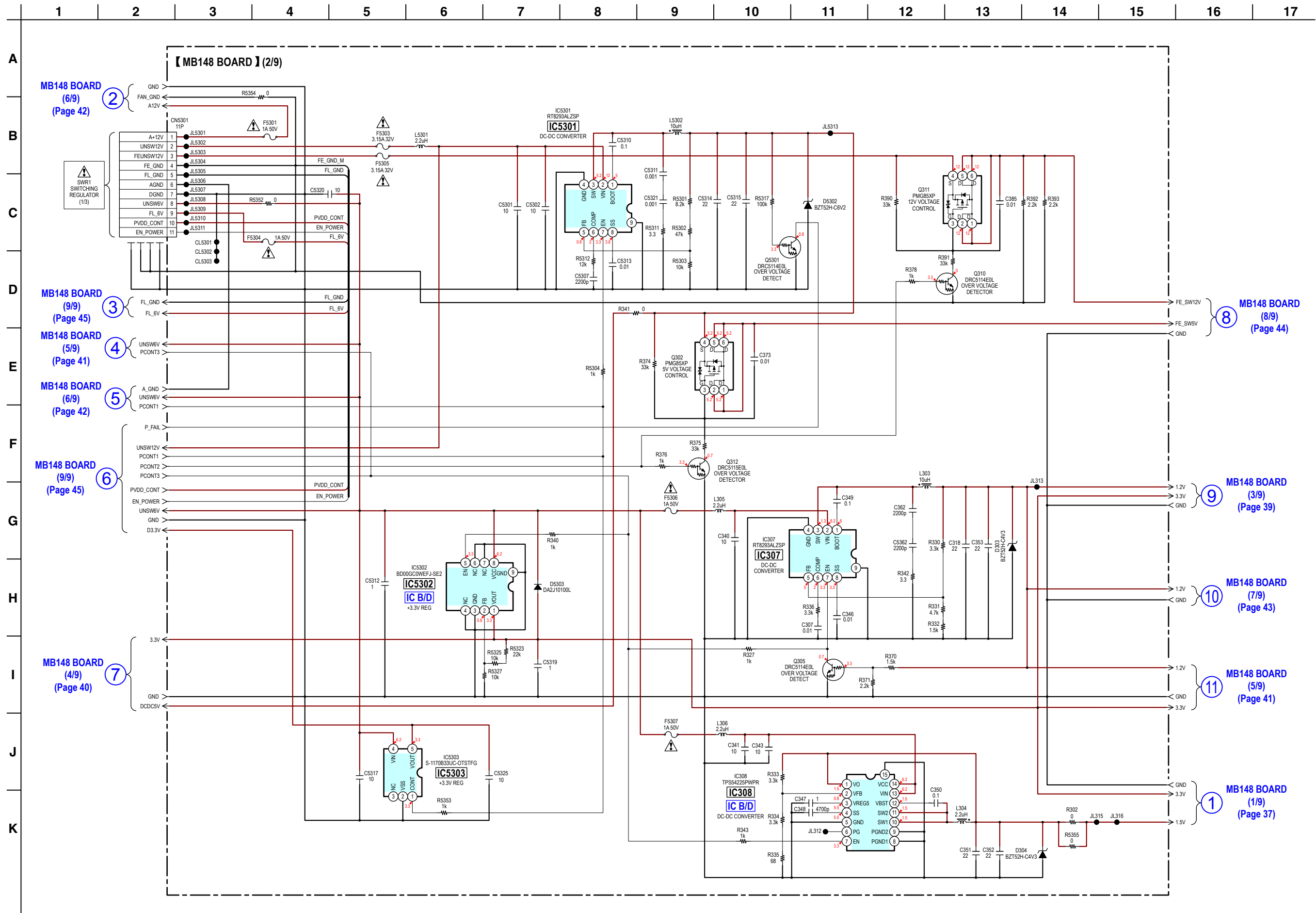
5-8. SCHEMATIC DIAGRAM - MB148 Board (1/9) - • See page 61 for IC Pin Function Descriptions.



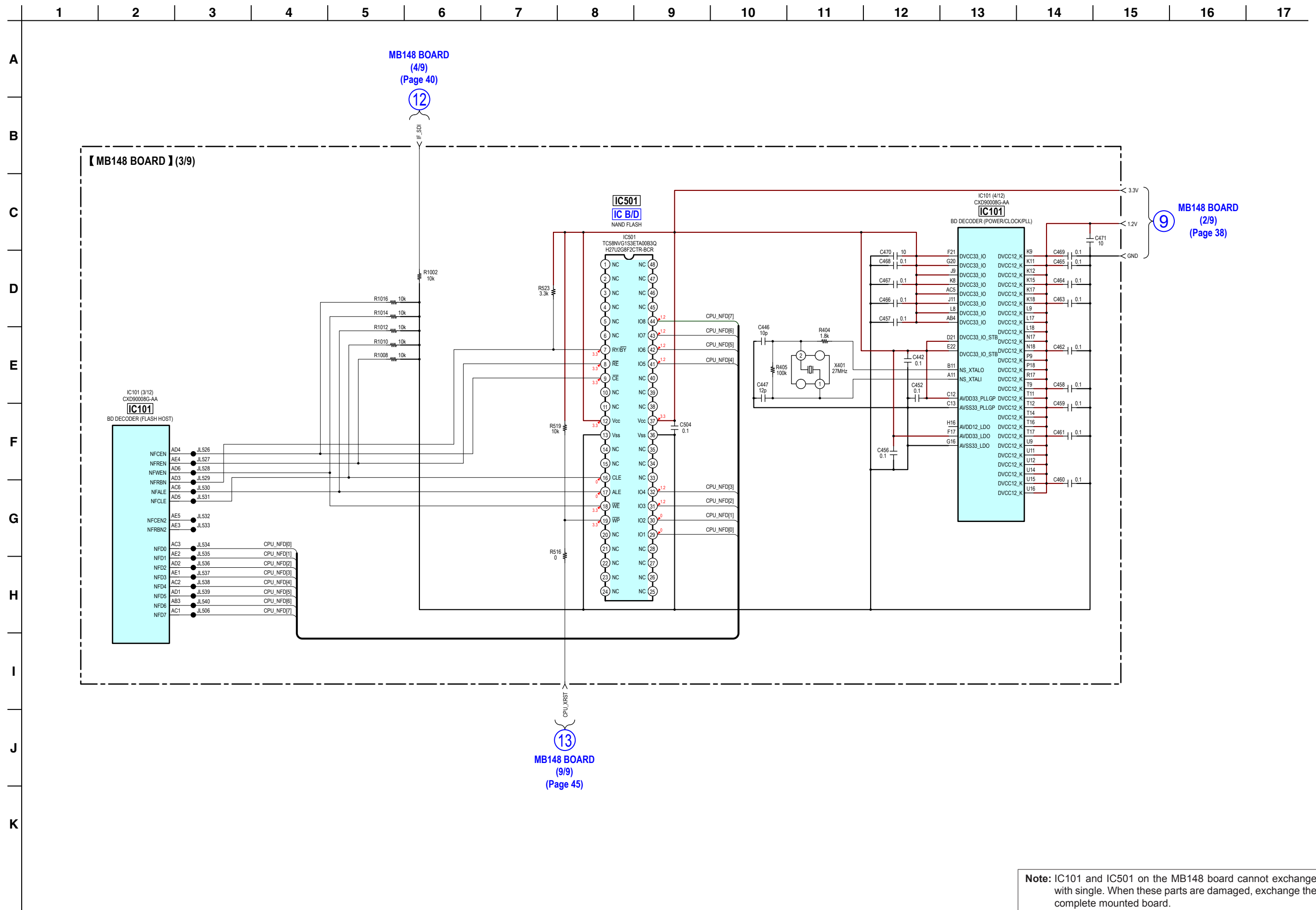
1 MB148 BOARD (2/9) (Page 38)

Note: IC101 on the MB148 board cannot exchange with single. When this part is damaged, exchange the complete mounted board.

5-9. SCHEMATIC DIAGRAM - MB148 Board (2/9) - See page 55 for IC Block Diagrams.

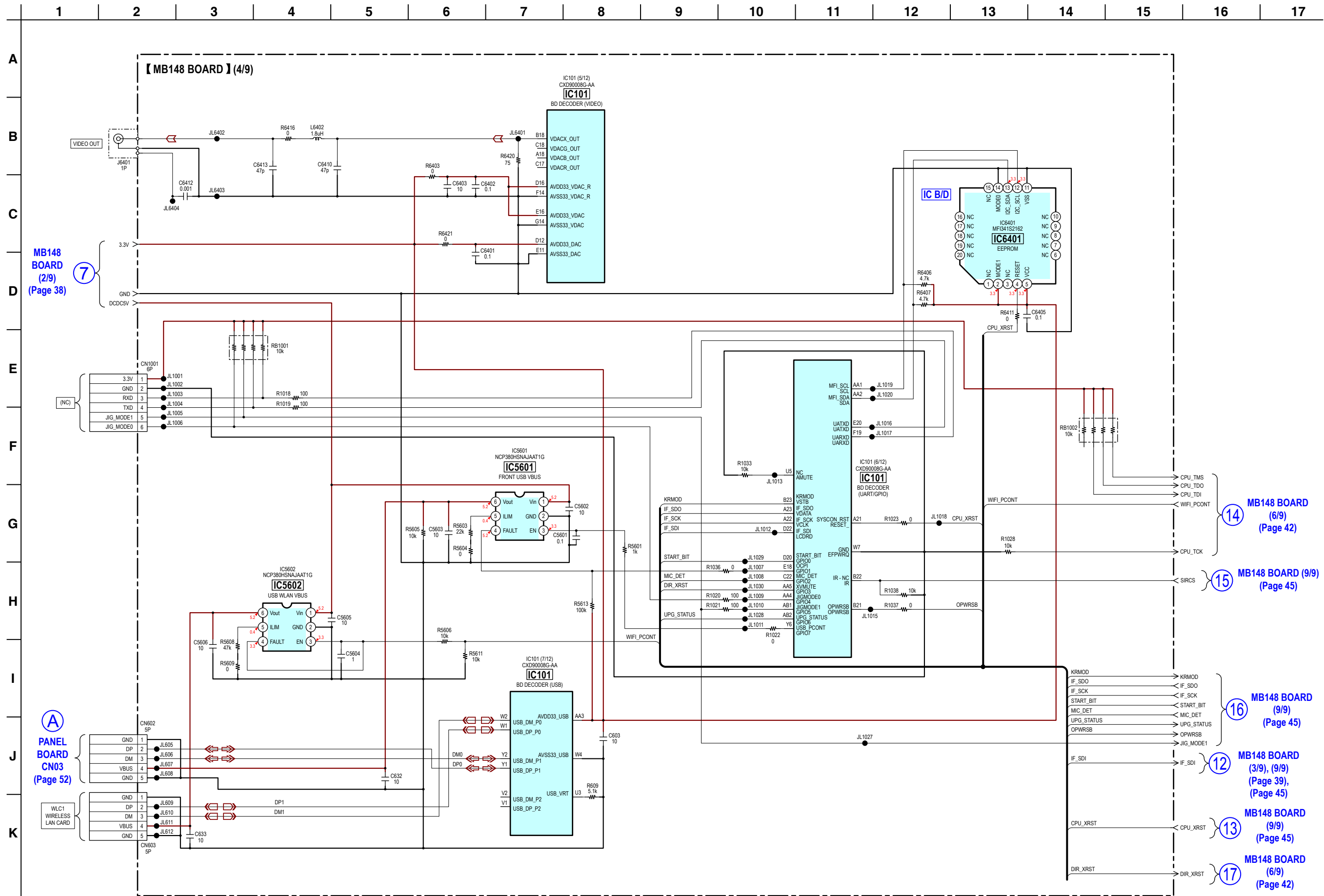


5-10. SCHEMATIC DIAGRAM - MB148 Board (3/9) - • See page 55 for IC Block Diagrams. • See page 61 for IC Pin Function Descriptions.



Note: IC101 and IC501 on the MB148 board cannot exchange with single. When these parts are damaged, exchange the complete mounted board.

5-11. SCHEMATIC DIAGRAM - MB148 Board (4/9) - • See page 55 for IC Block Diagrams. • See page 61 for IC Pin Function Descriptions.



MB148 BOARD (2/9) (Page 38)

MB148 BOARD (6/9) (Page 42)

MB148 BOARD (9/9) (Page 45)

MB148 BOARD (9/9) (Page 45)

MB148 BOARD (3/9), (9/9) (Page 39), (Page 45)

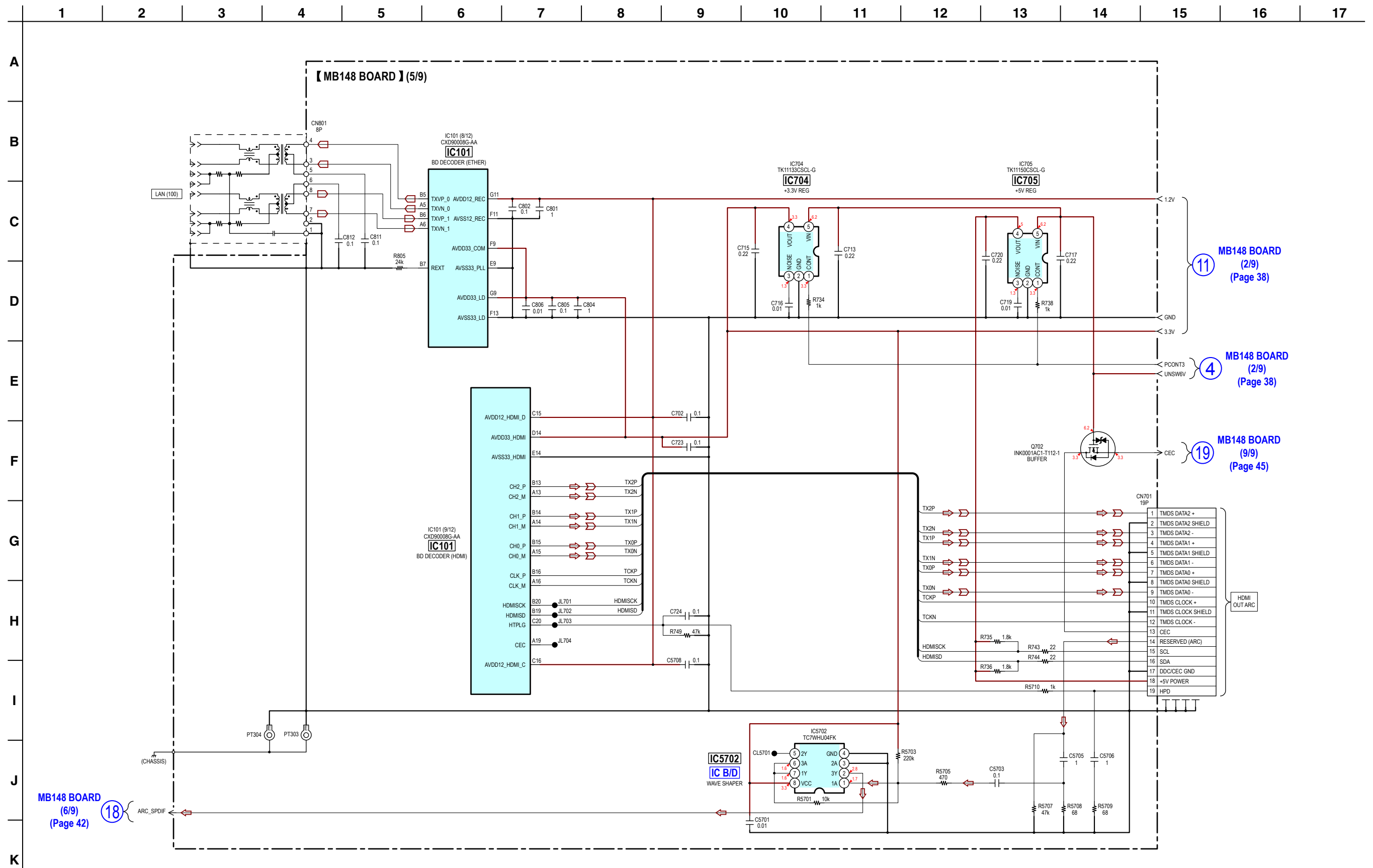
MB148 BOARD (9/9) (Page 45)

MB148 BOARD (6/9) (Page 42)

Note 1: IC101 on the MB148 board cannot exchange with single. When this part is damaged, exchange the complete mounted board.

Note 2: When replacing the wireless LAN card (WLC1), refer to "CHECKING METHOD OF NETWORK OPERATION" (page 10).

5-12. SCHEMATIC DIAGRAM - MB148 Board (5/9) - • See page 55 for IC Block Diagrams. • See page 61 for IC Pin Function Descriptions.



11 MB148 BOARD (2/9) (Page 38)

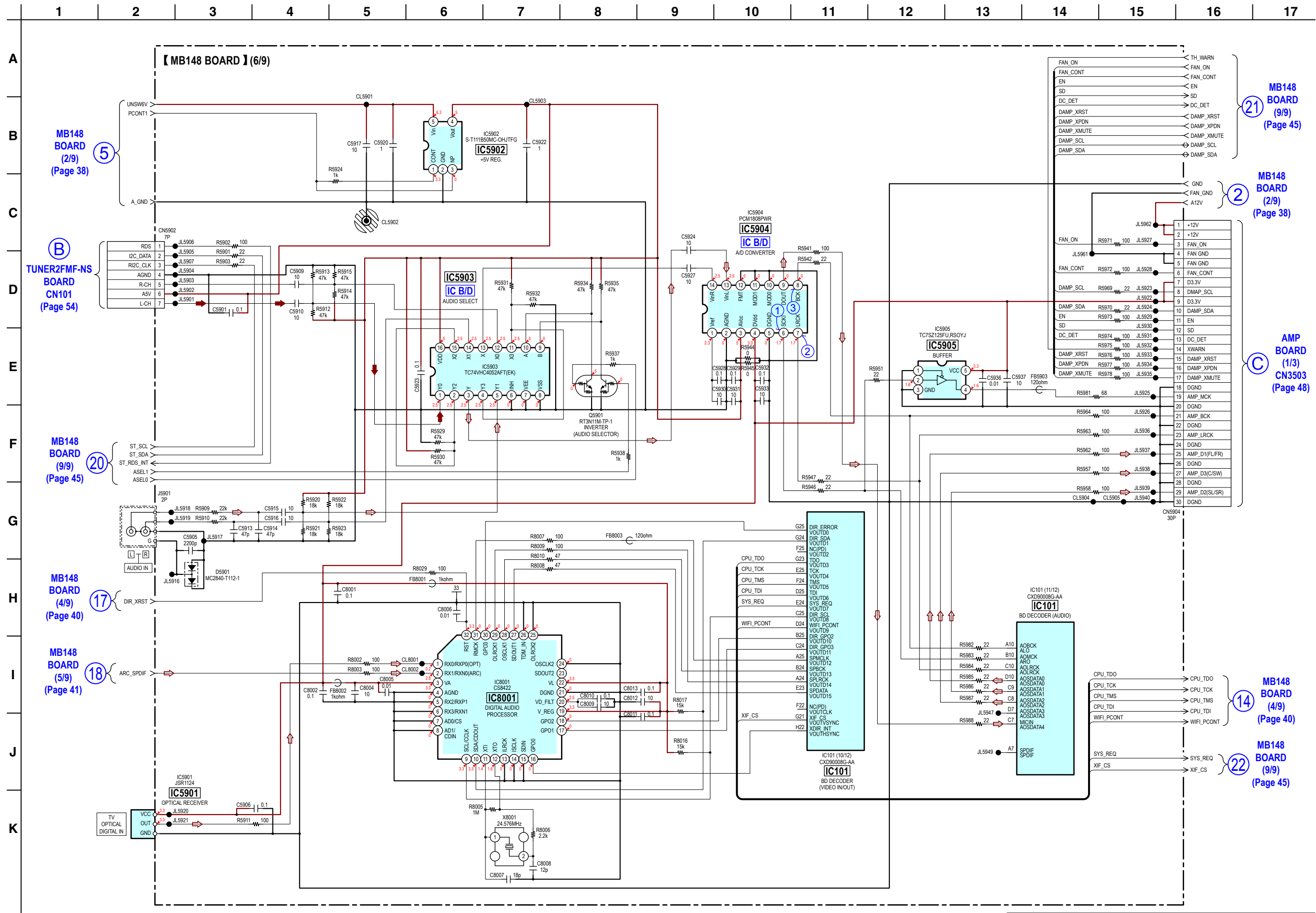
4 MB148 BOARD (2/9) (Page 38)

19 MB148 BOARD (9/9) (Page 45)

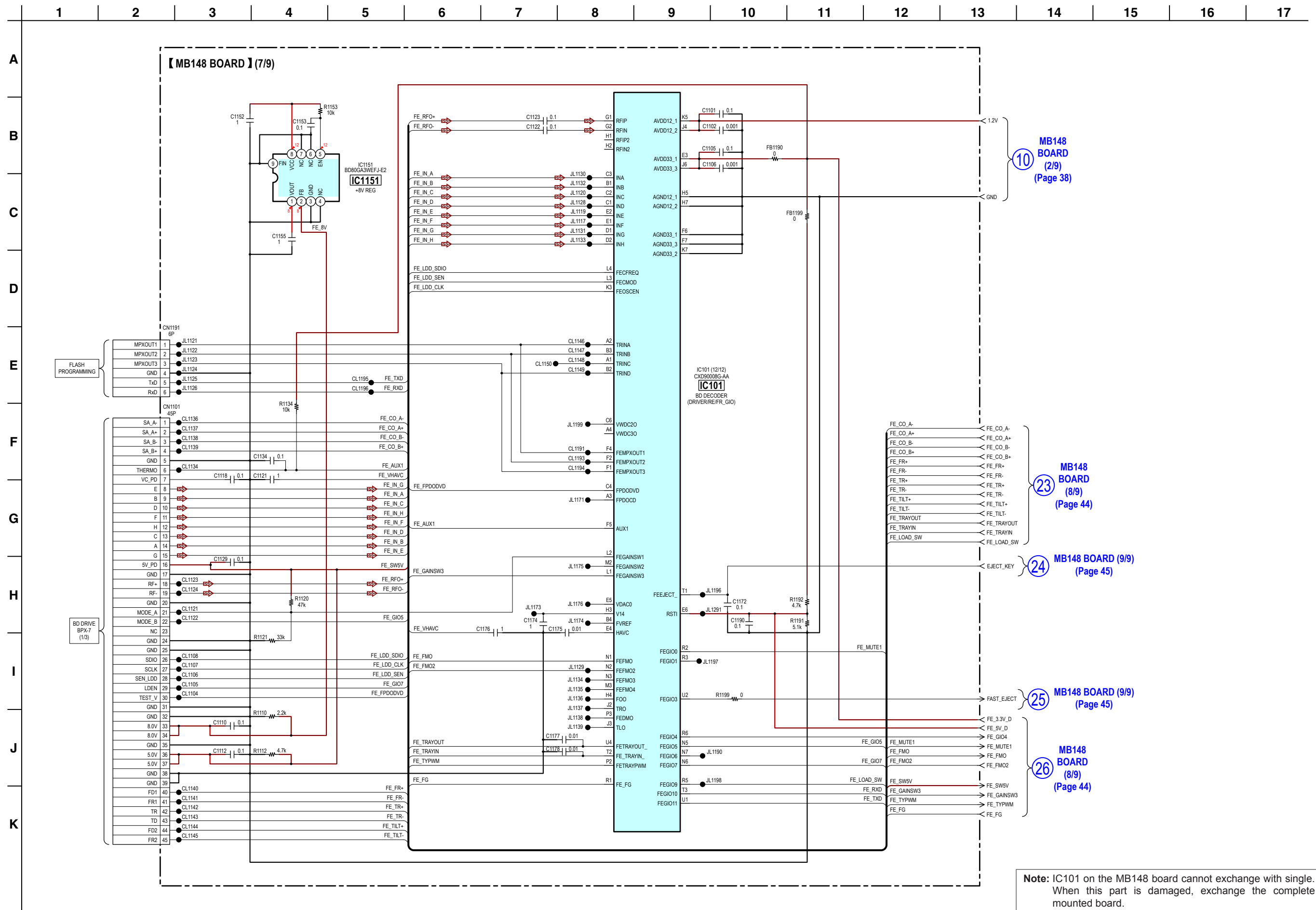
18 MB148 BOARD (6/9) (Page 42)

Note: IC101 on the MB148 board cannot exchange with single. When this part is damaged, exchange the complete mounted board.

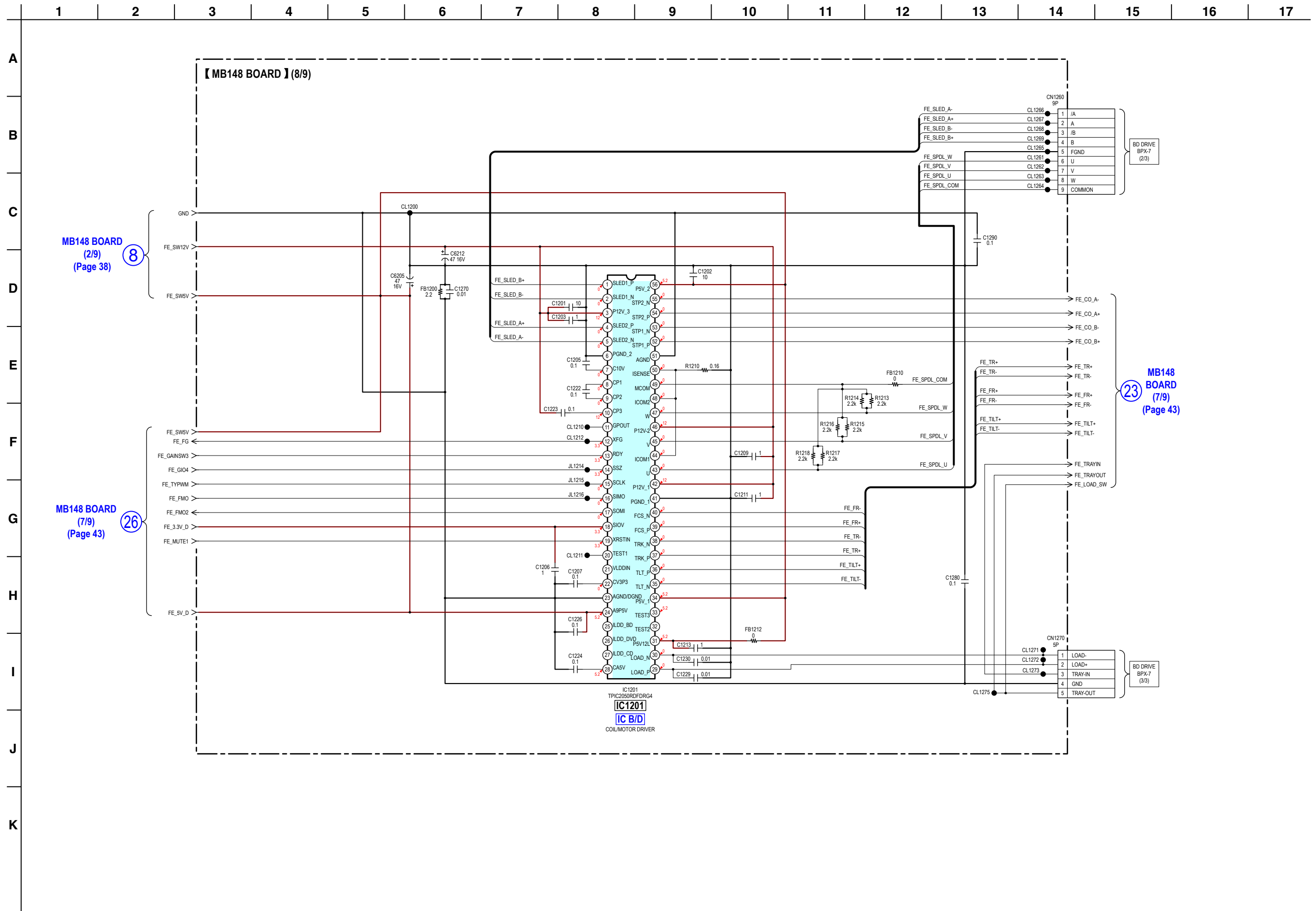
5-13. SCHEMATIC DIAGRAM - MB148 Board (6/9) - • See page 53 for Waveforms. • See page 55 for IC Block Diagrams. • See page 61 for IC Pin Function Descriptions.



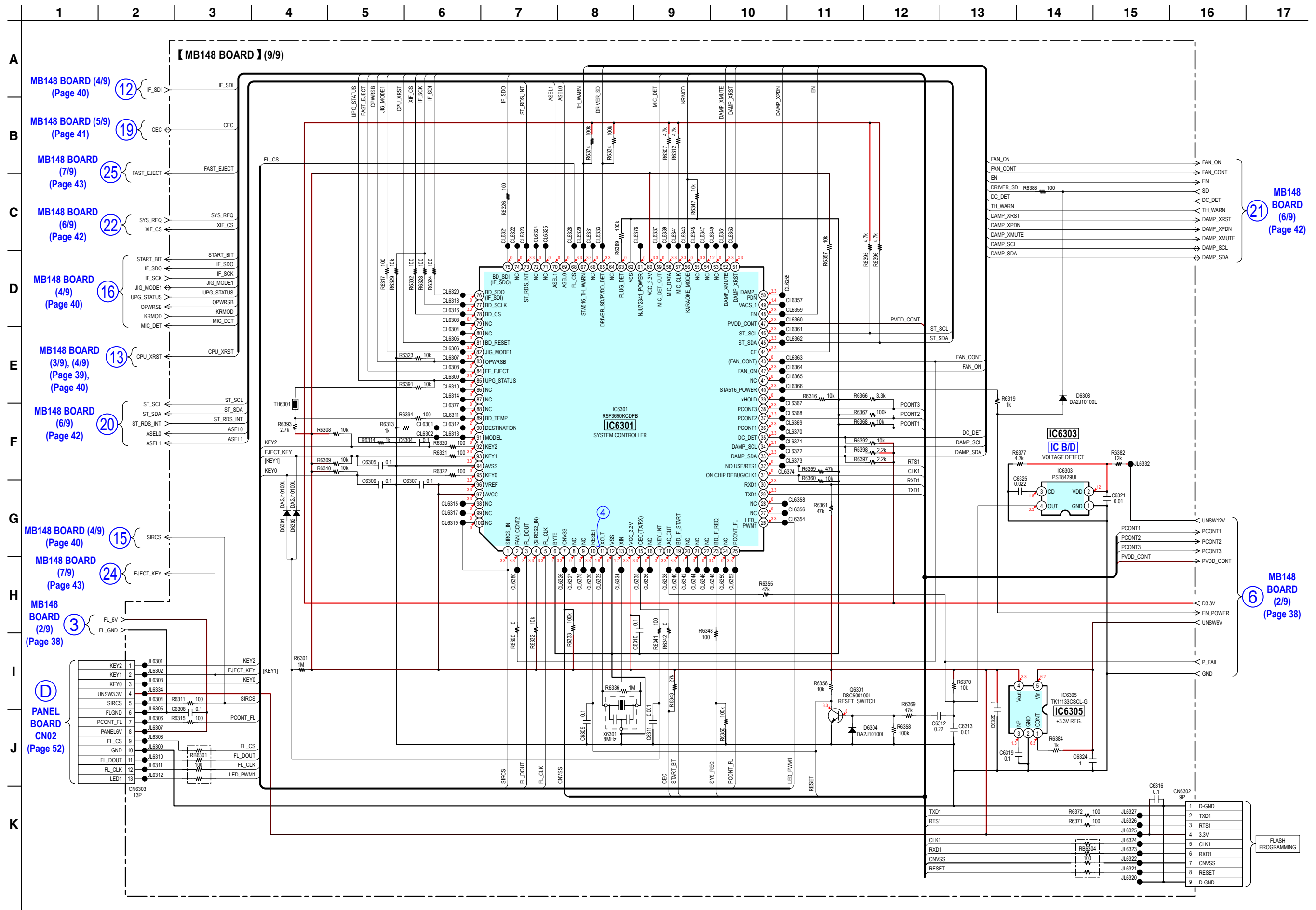
5-14. SCHEMATIC DIAGRAM - MB148 Board (7/9) - • See page 61 for IC Pin Function Descriptions.



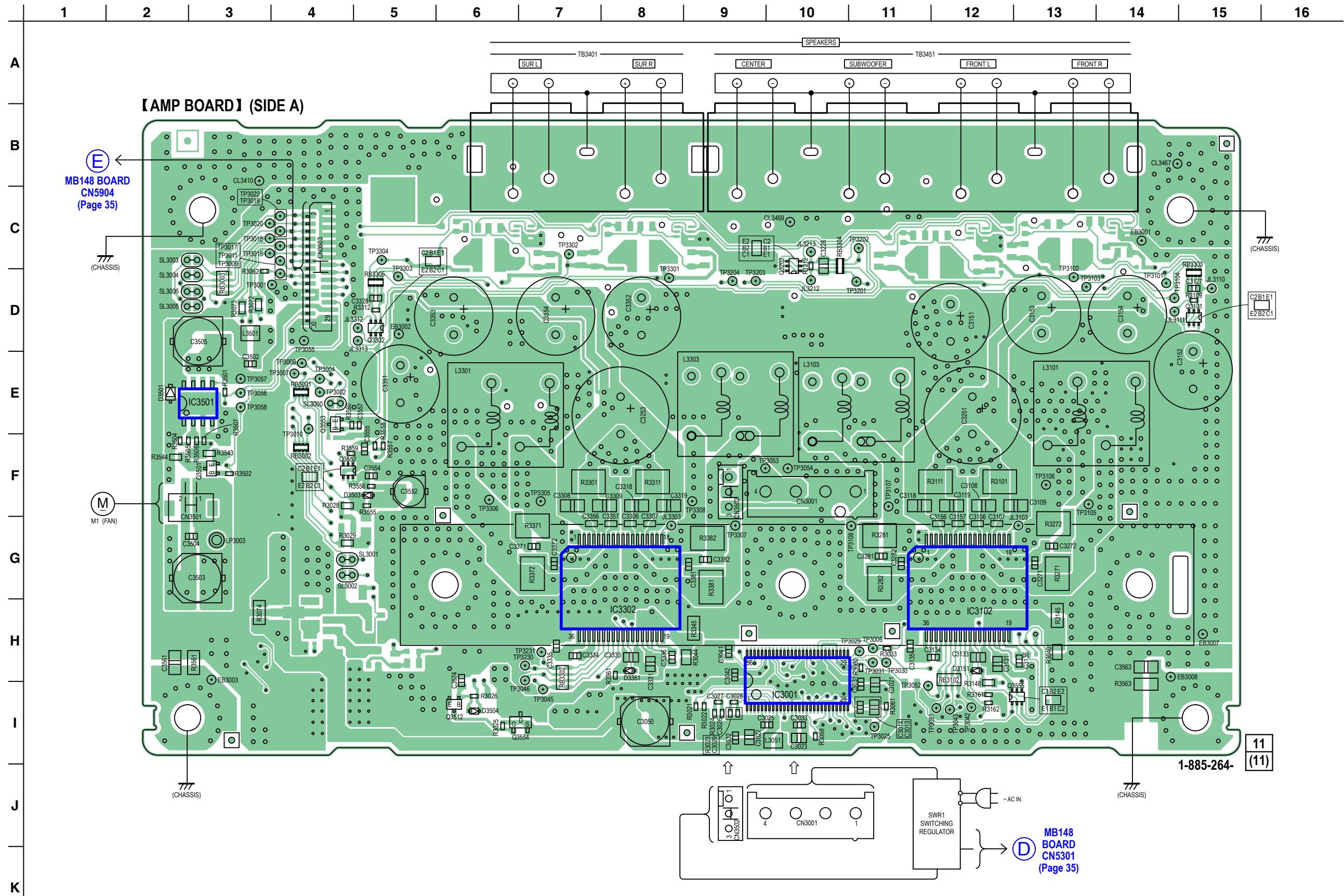
5-15. SCHEMATIC DIAGRAM - MB148 Board (8/9) - • See page 55 for IC Block Diagrams.



5-16. SCHEMATIC DIAGRAM - MB148 Board (9/9) - • See page 53 for Waveforms. • See page 55 for IC Block Diagrams. • See page 61 for IC Pin Function Descriptions.

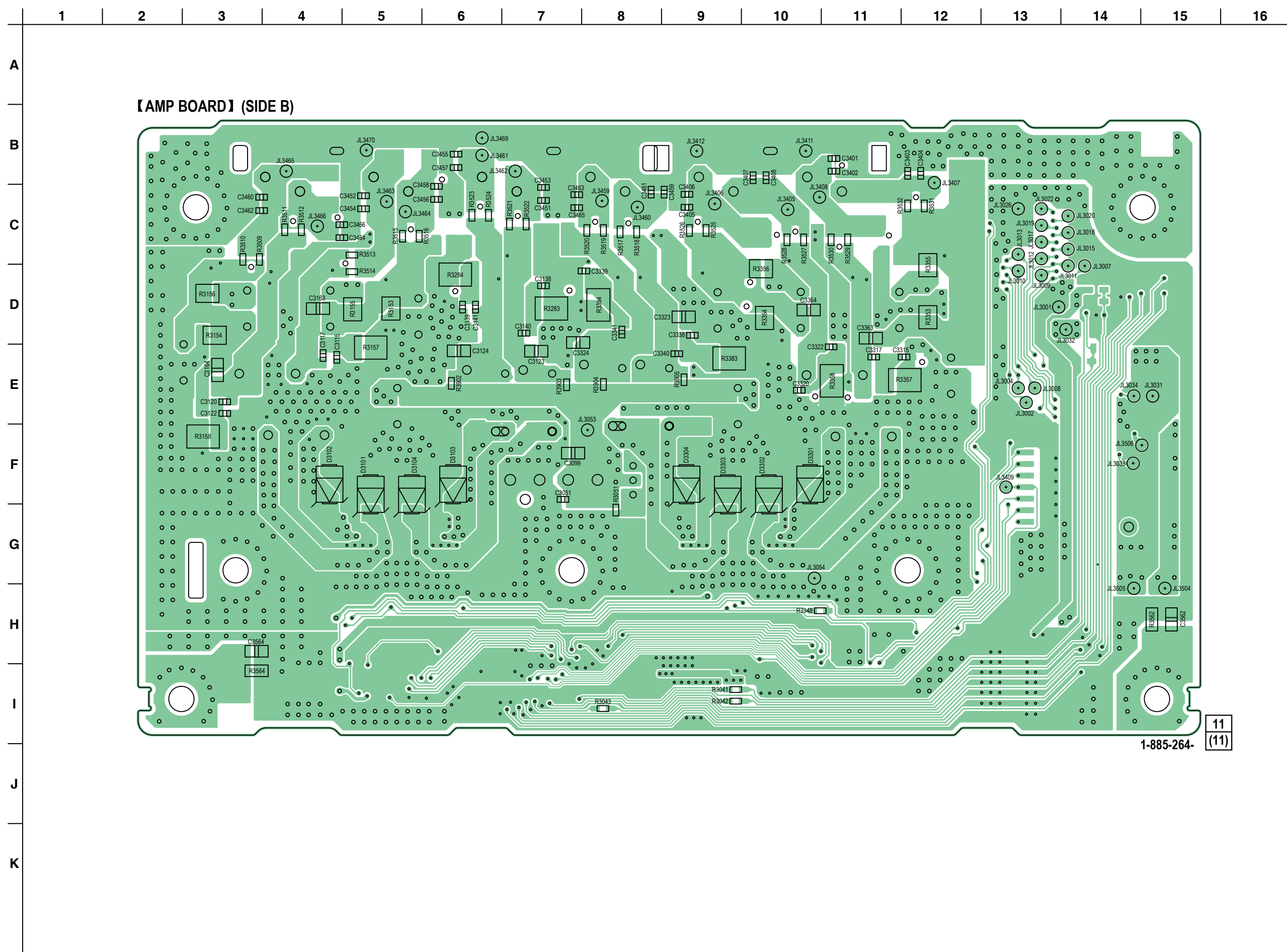


5-17. PRINTED WIRING BOARD - AMP Board (Side A) - • See page 34 for Circuit Boards Location. •  : Uses unleaded solder.



Note: When the AMP board is replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

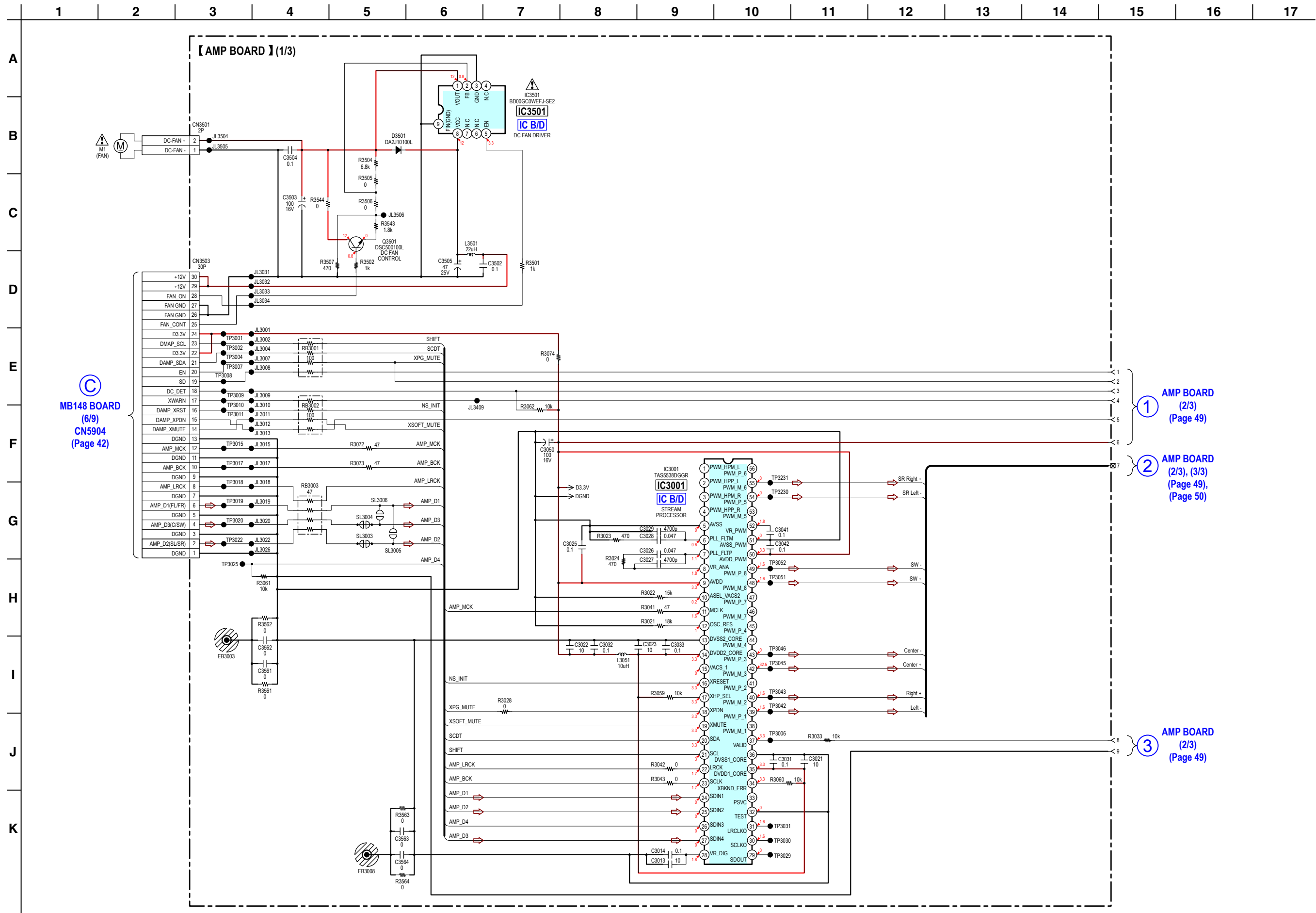
5-18. PRINTED WIRING BOARD - AMP Board (Side B) - • See page 34 for Circuit Boards Location. •  : Uses unleaded solder.



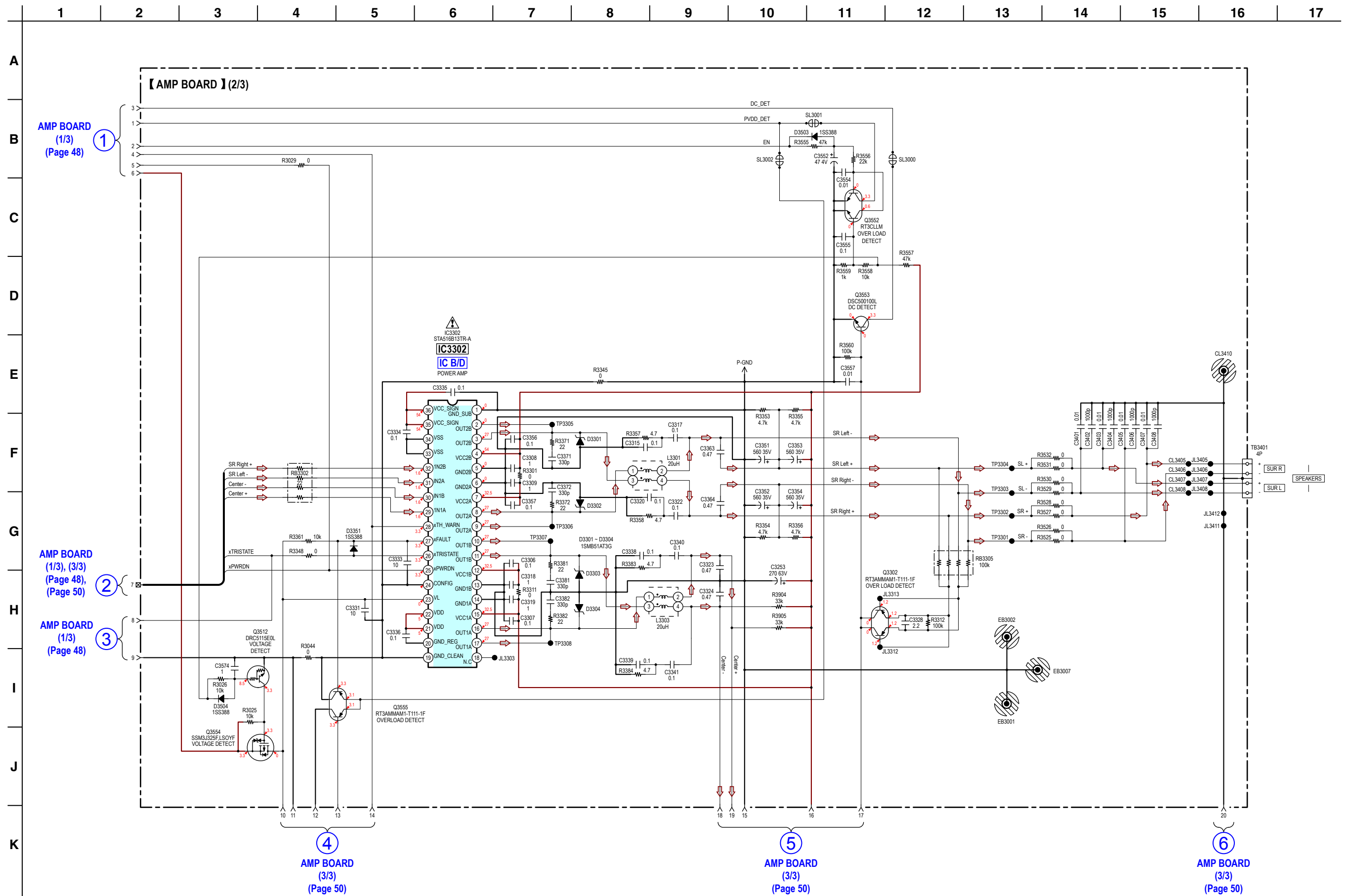
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5-19. SCHEMATIC DIAGRAM - AMP Board (1/3) - • See page 55 for IC Block Diagrams.

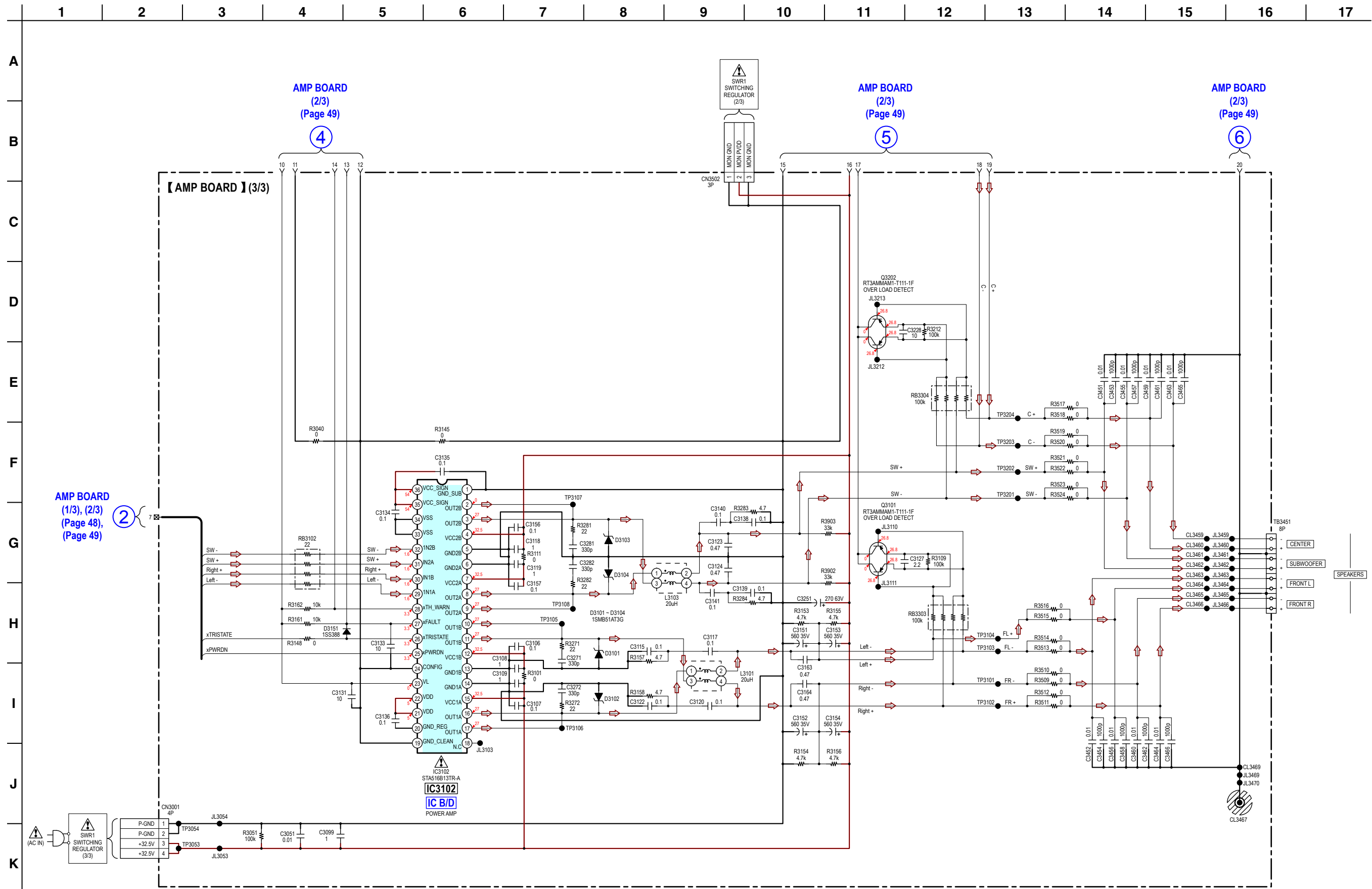


5-20. SCHEMATIC DIAGRAM - AMP Board (2/3) - See page 55 for IC Block Diagrams.




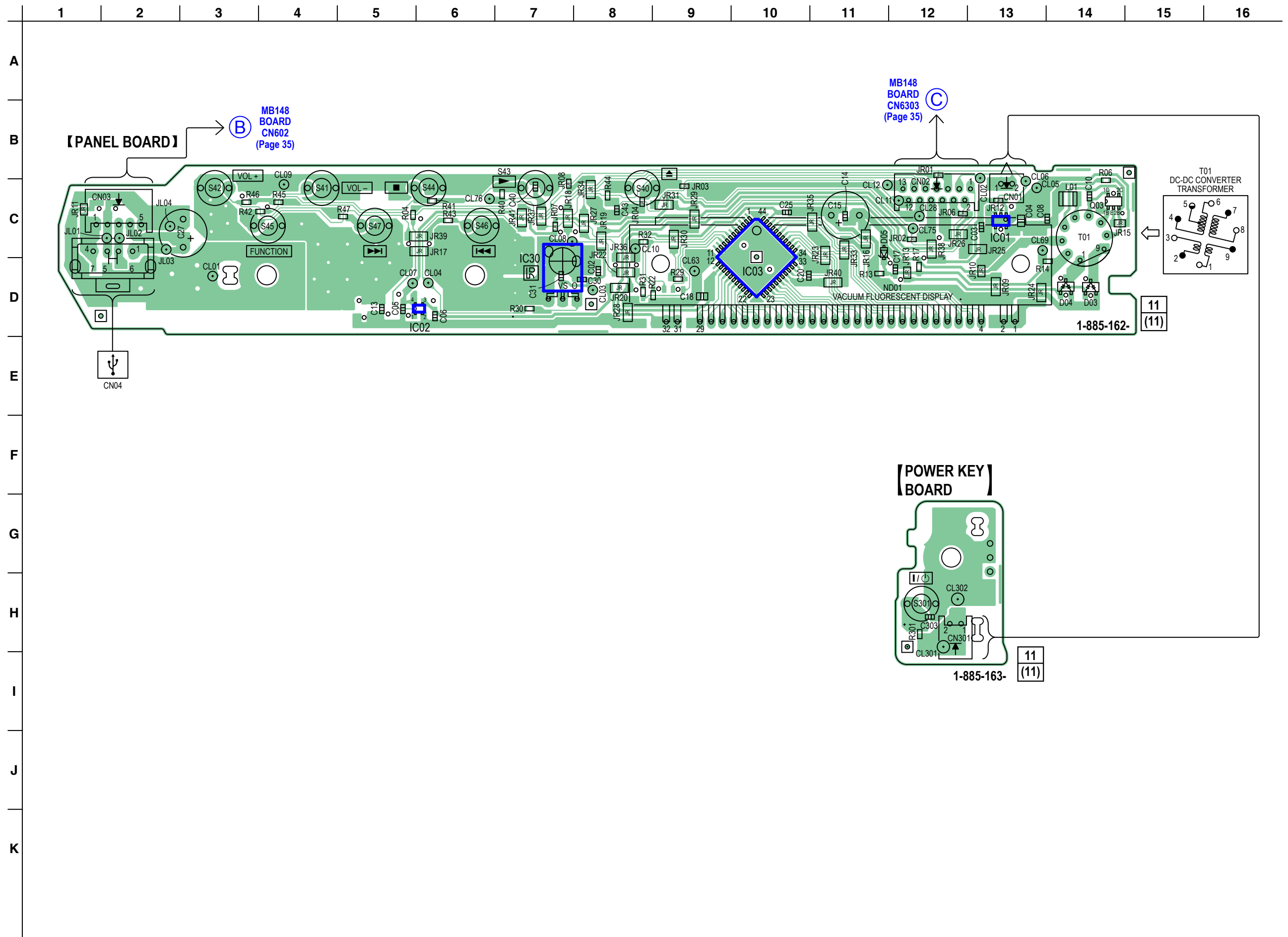
Note: When the AMP board is replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

5-21. SCHEMATIC DIAGRAM - AMP Board (3/3) - • See page 55 for IC Block Diagrams.

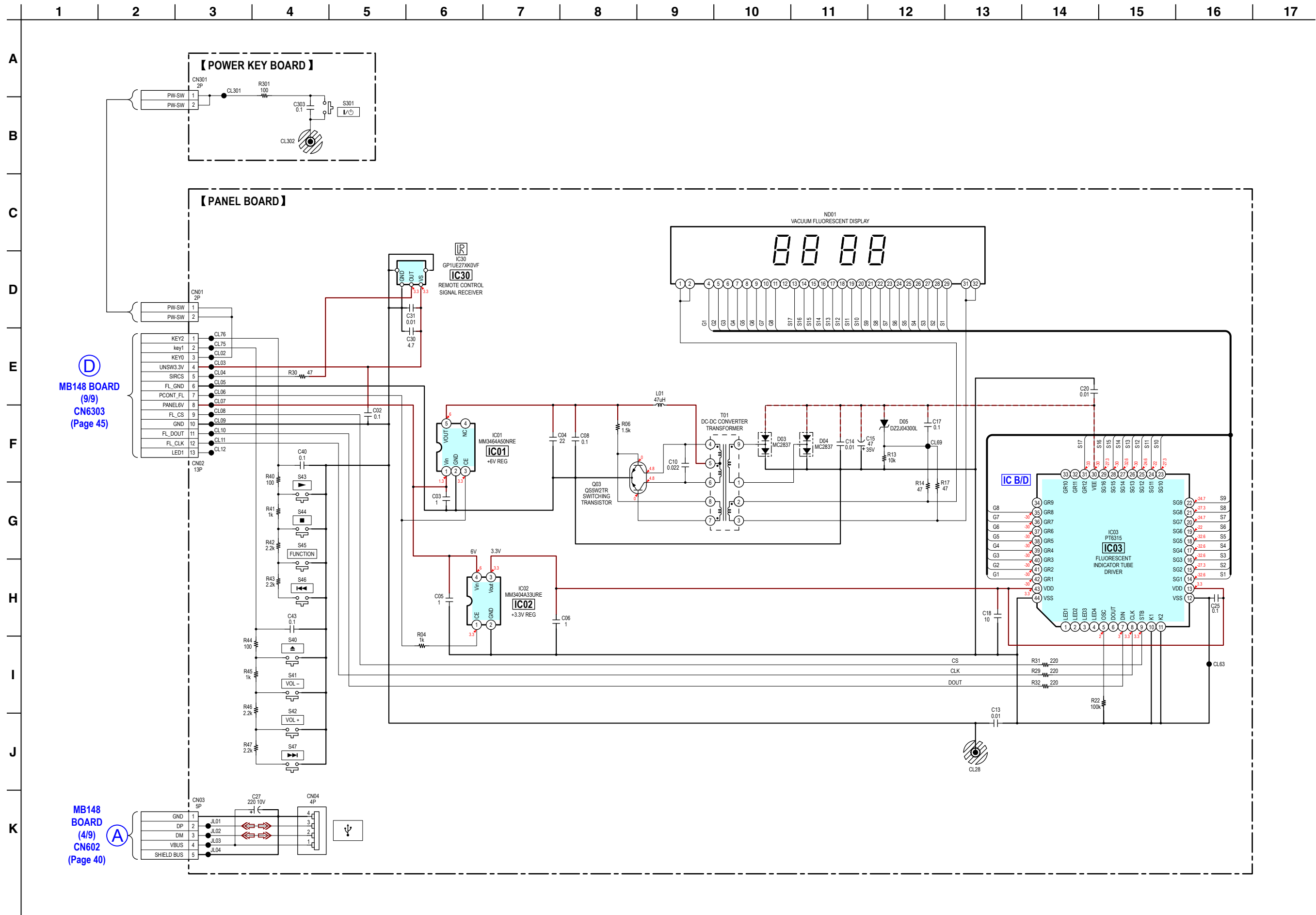


Note: When the AMP board is replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

5-22. PRINTED WIRING BOARDS - PANEL Section - • See page 34 for Circuit Boards Location. •  : Uses unleaded solder.



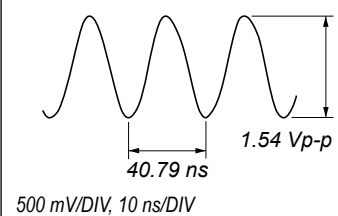
5-23. SCHEMATIC DIAGRAM - PANEL Section - • See page 55 for IC Block Diagrams.



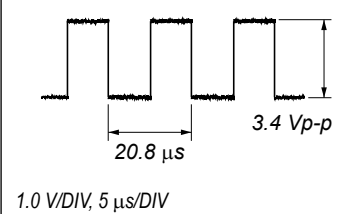
• Waveforms

– MB148 Board –

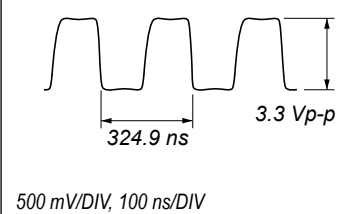
① IC5904 ⑥ (SCKI)



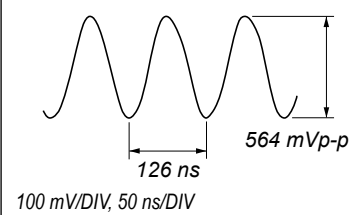
② IC5904 ⑦ (LRCK)



③ IC5904 ⑧ (BCK)

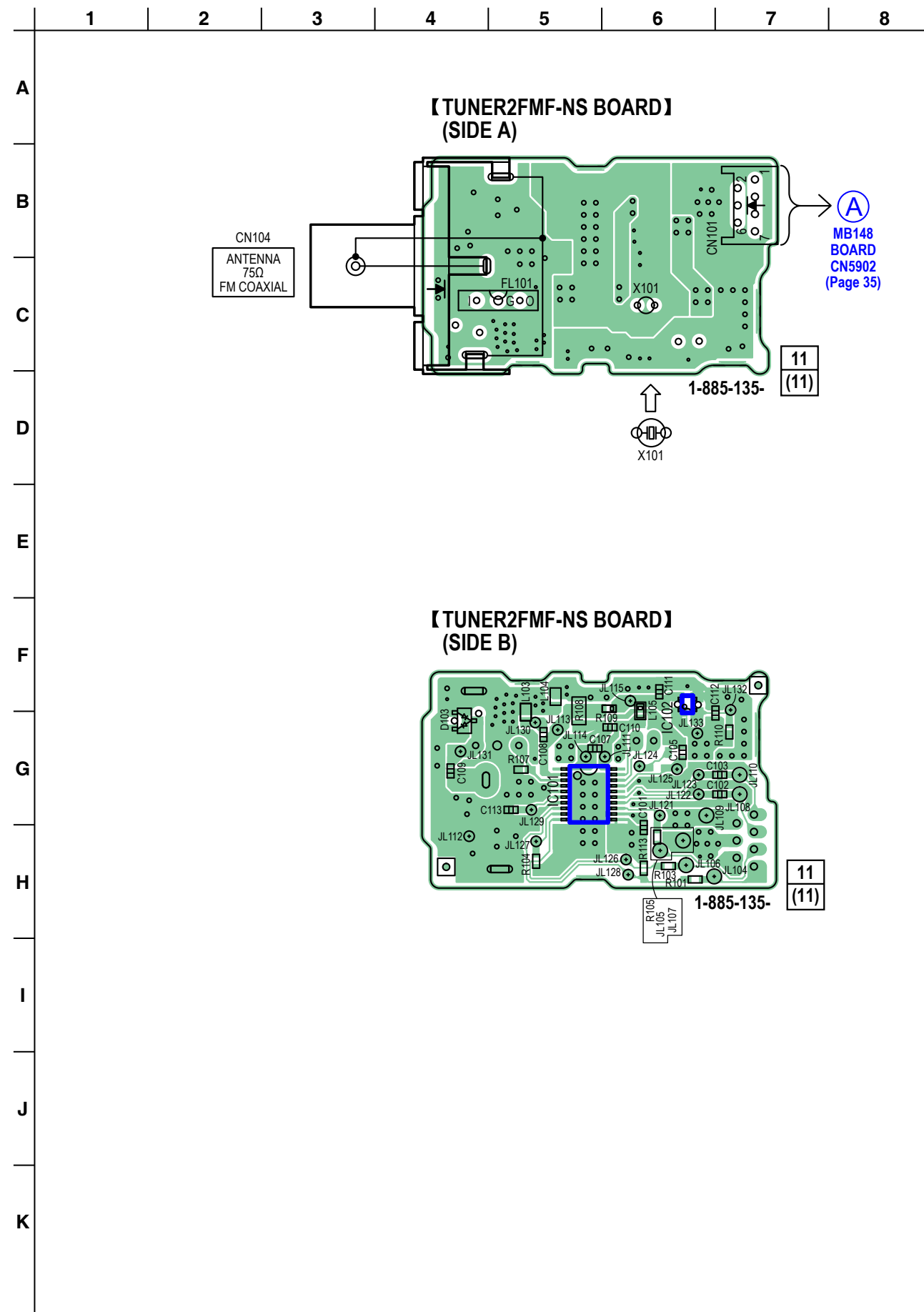


④ IC6301 ⑪ (XOUT)

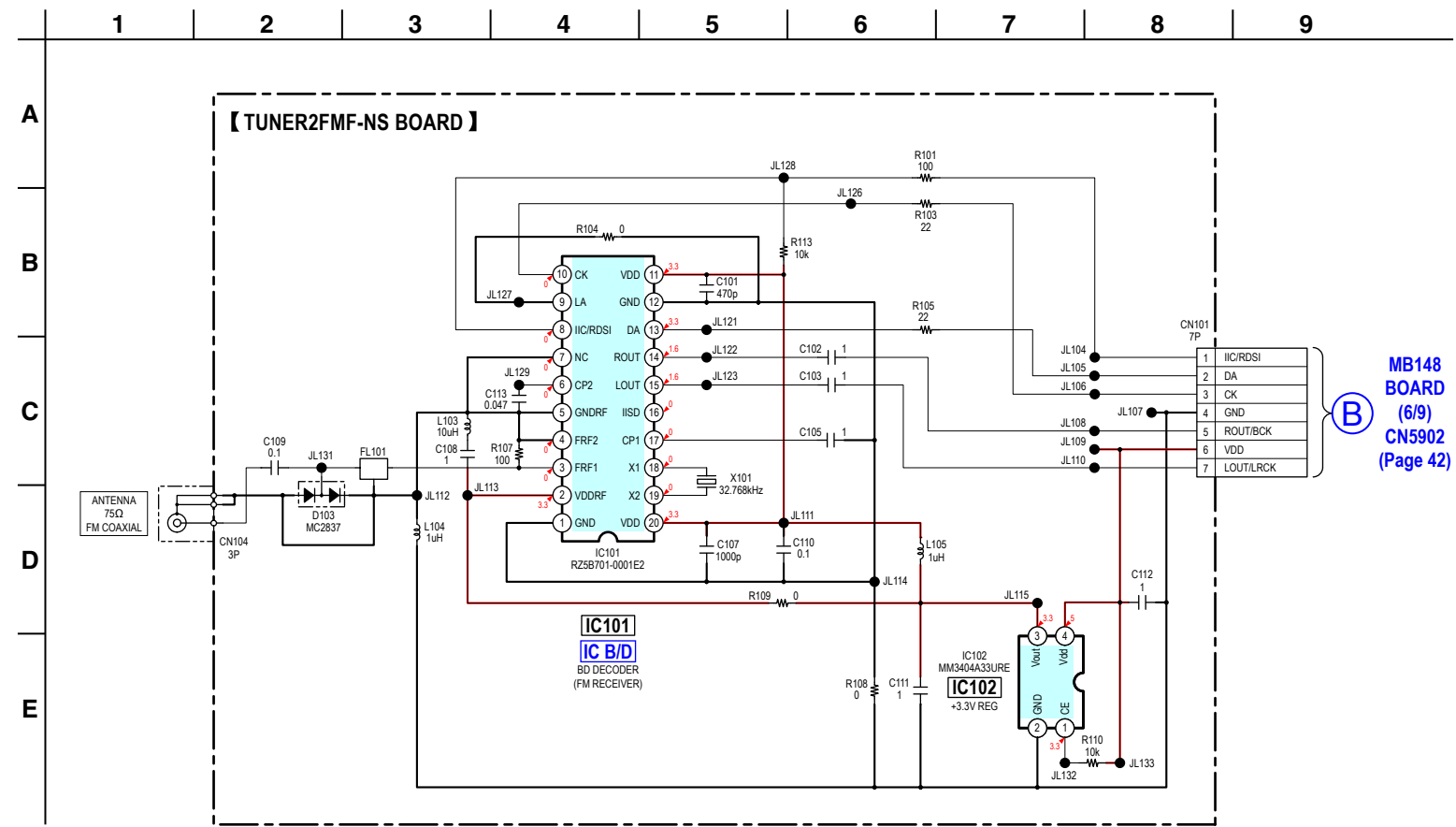


5-24. PRINTED WIRING BOARD - TUNER2FMF-NS Board -

• See page 34 for Circuit Boards Location. • : Uses unleaded solder.

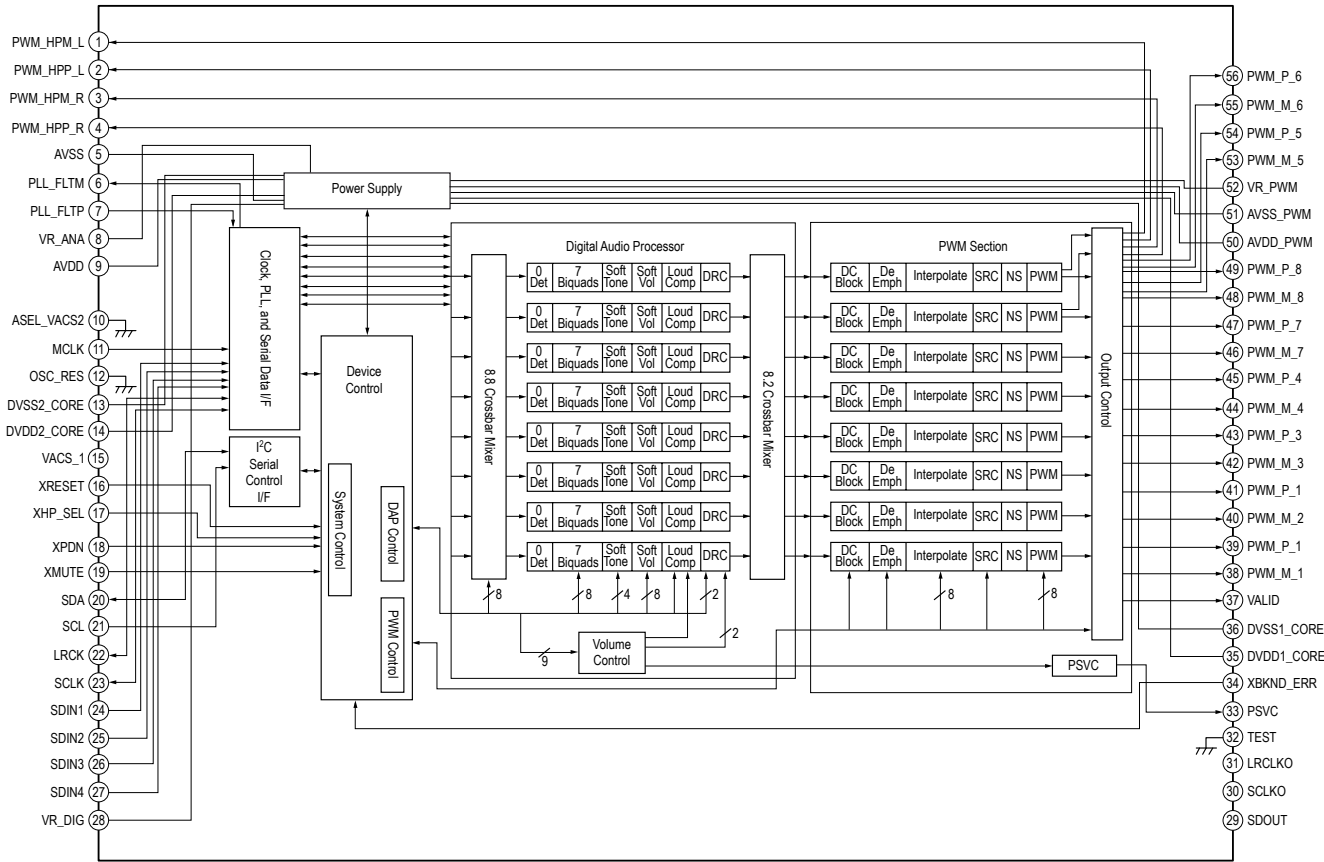


5-25. SCHEMATIC DIAGRAM - TUNER2FMF-NS Board - • See page 55 for IC Block Diagrams.



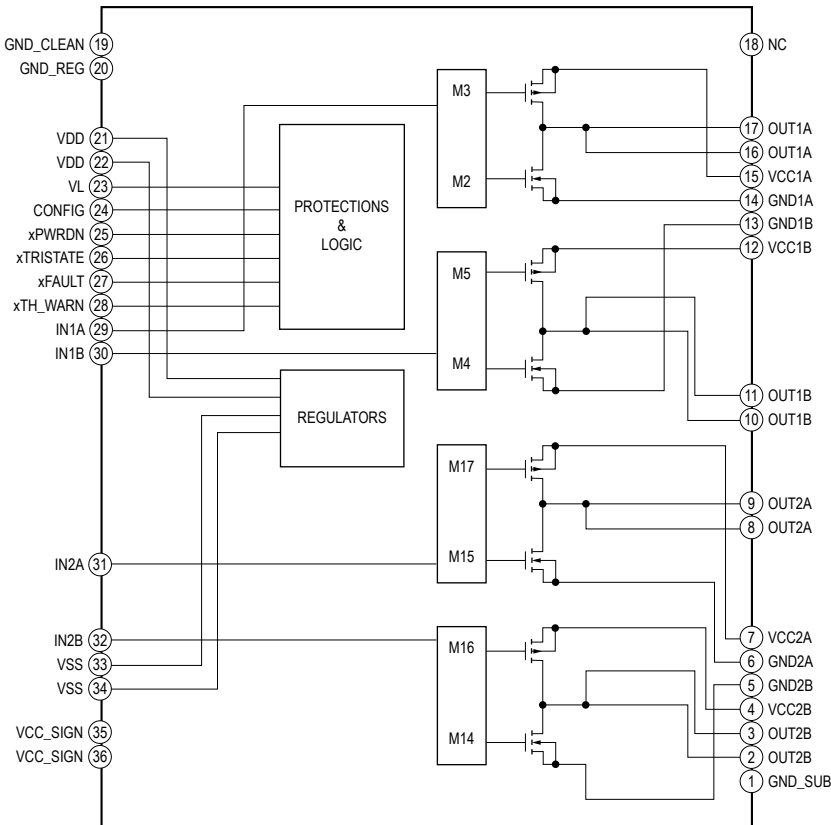
• IC Block Diagrams

IC3001 TAS5538DGGR (AMP BOARD (1/3))



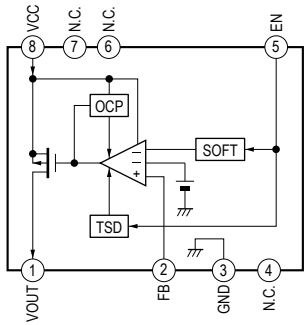
IC3102 STA516B13TR-A (AMP BOARD (3/3))

IC3302 STA516B13TR-A (AMP BOARD (2/3))

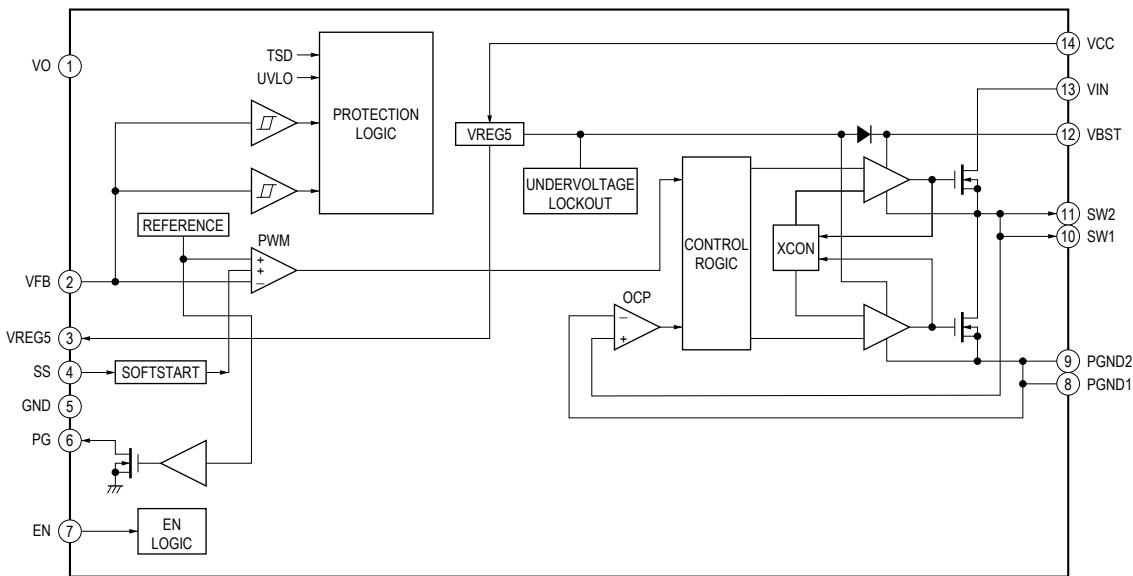


HBD-E385/E390/T39

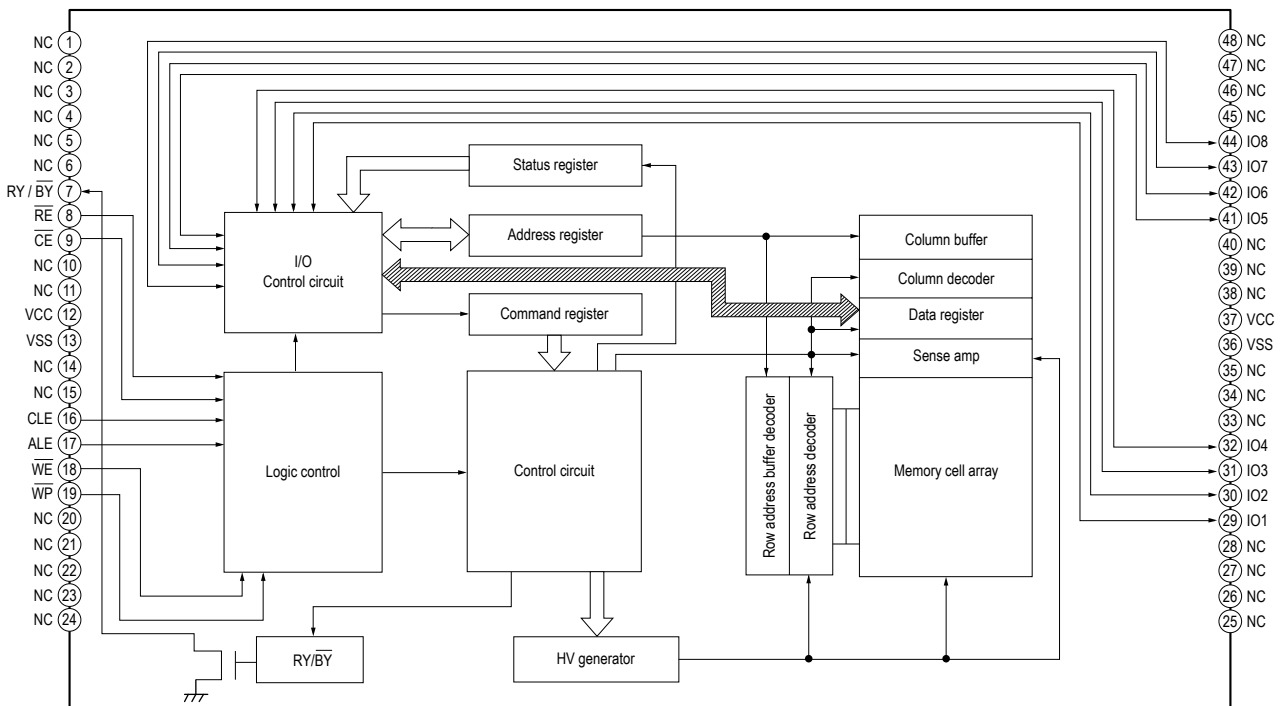
IC3501 BD00GC0WEFJ-SE2 (AMP BOARD (1/3))
IC5302 BD00GC0WEFJ-SE2 (MB148 BOARD (2/9))



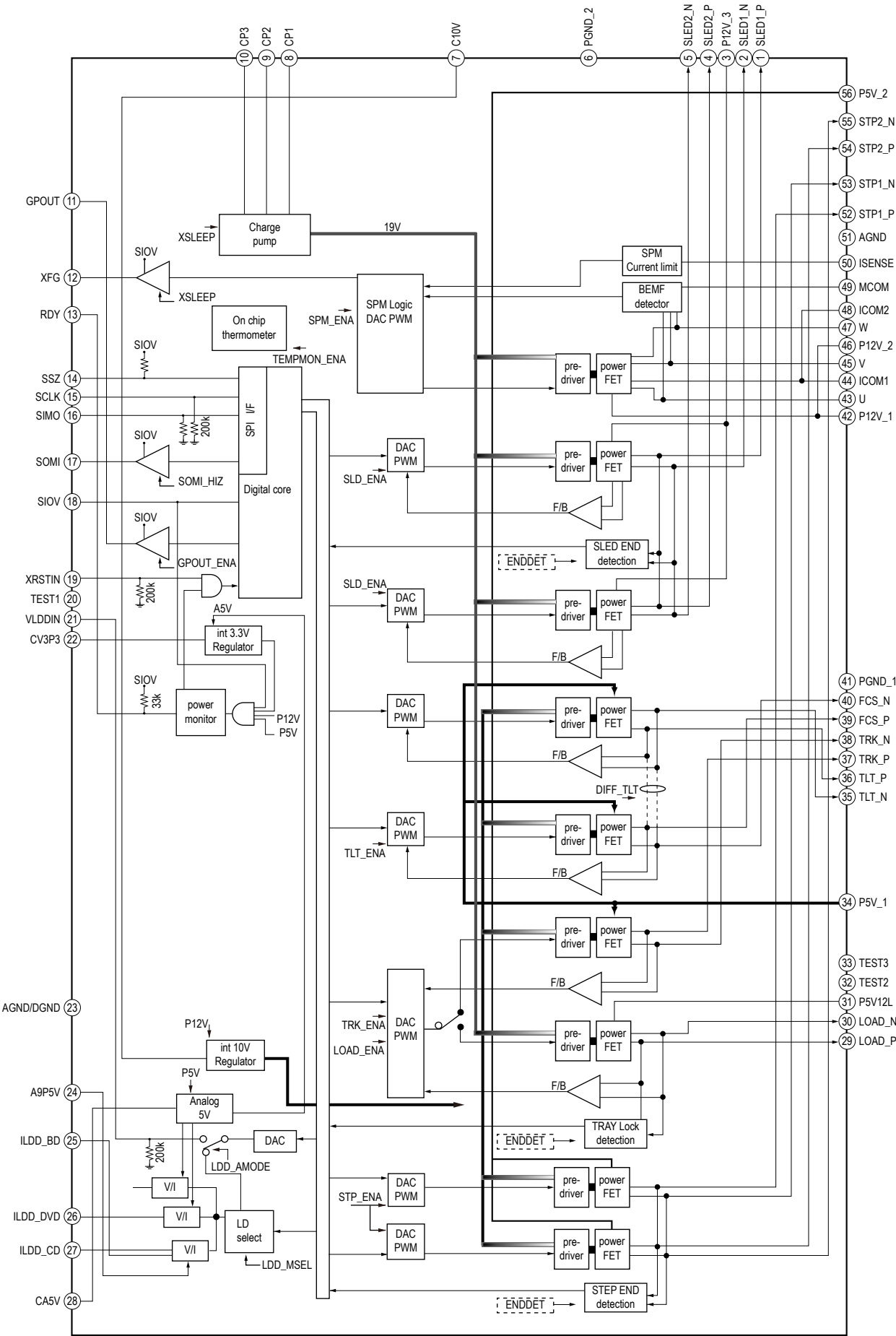
IC308 TPS54225PWR (MB148 BOARD (2/9))



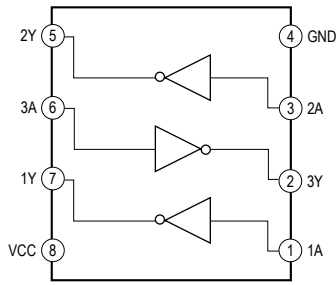
IC501 TC58NVG1S3ETA00B3Q (MB148 BOARD (3/9))
IC501 H27U2G8F2CTR-BCR (MB148 BOARD (3/9))



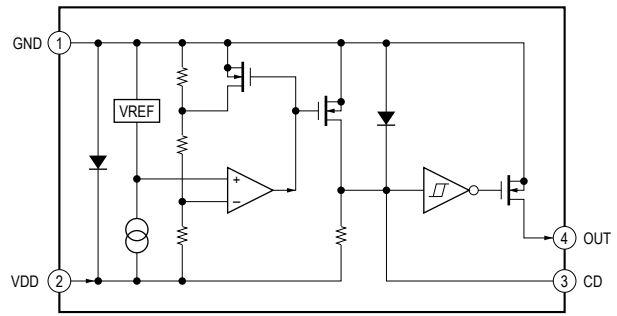
IC1201 TPIC2050RDFDRG4 (MB148 BOARD (8/9))



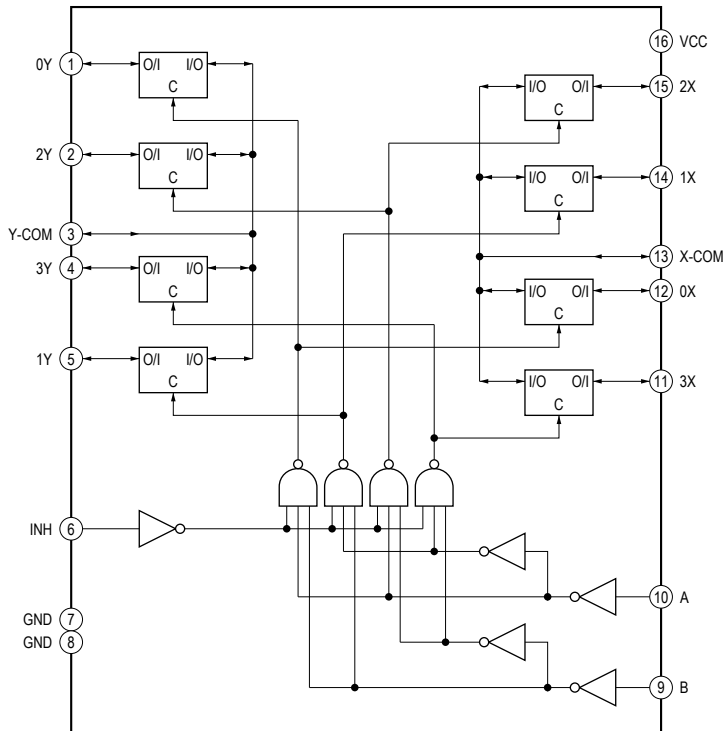
IC5702 TC7WHU04FK (MB148 BOARD (5/9))



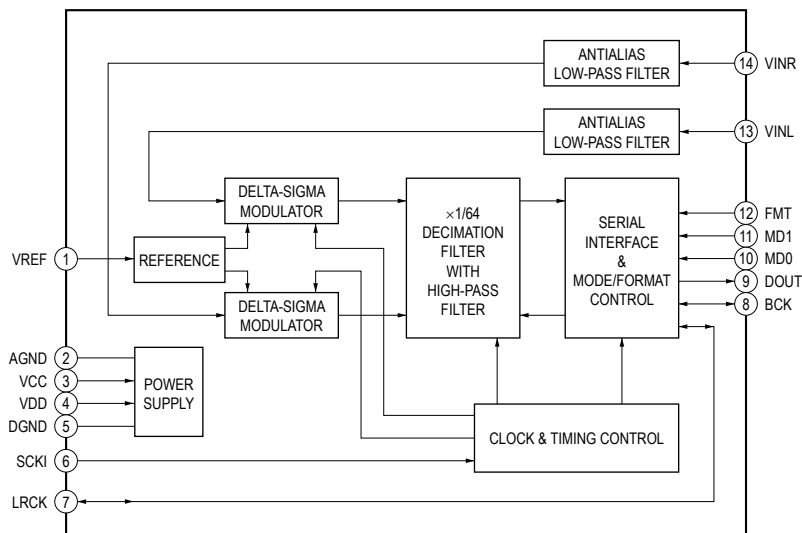
IC6303 PST8429UL (MB148 BOARD (9/9))



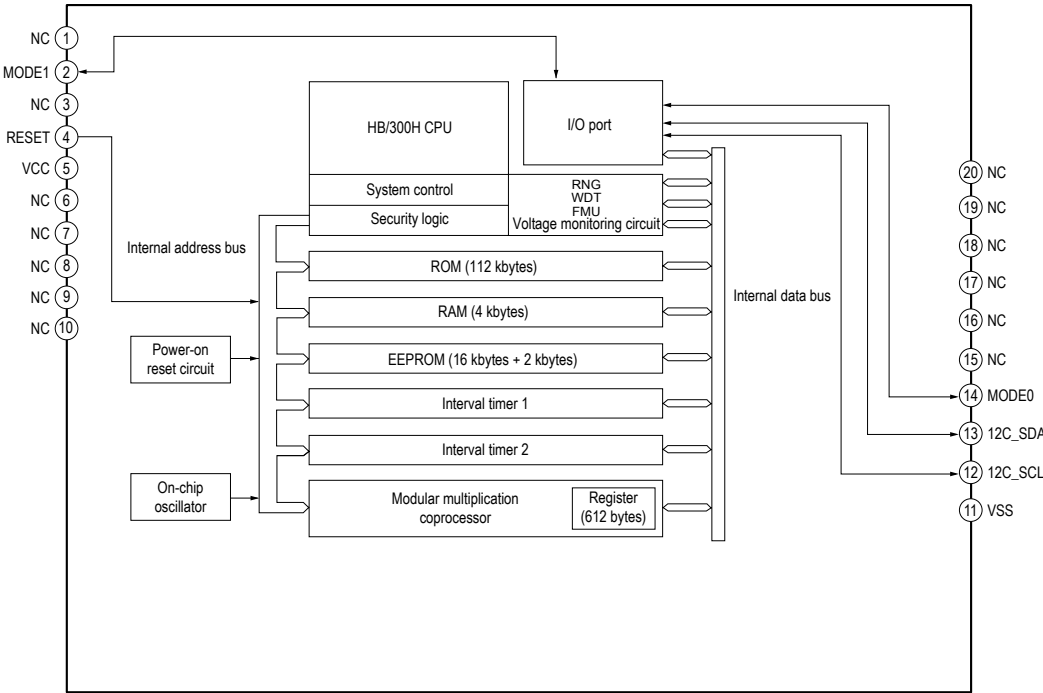
IC5903 TC74VHC4052AFT (EK) (MB148 BOARD (6/9))



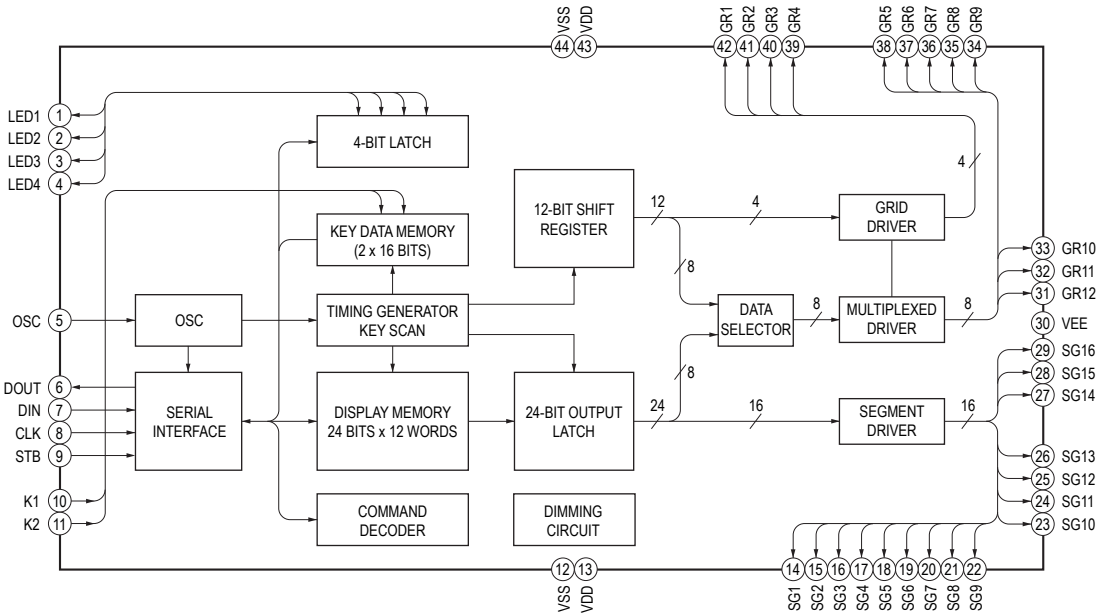
IC5904 PCM1808PWR (MB148 BOARD (6/9))



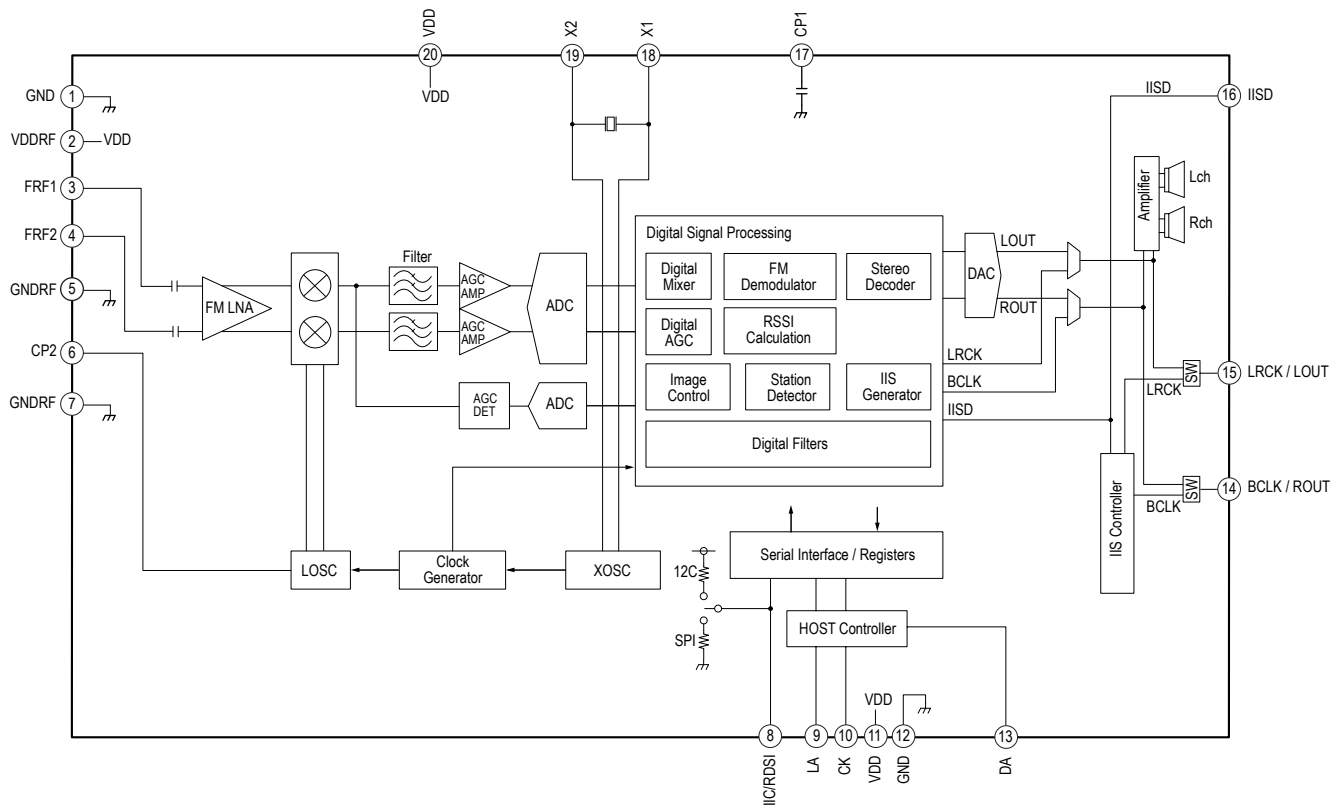
IC6401 MFI341S2162 (MB148 BOARD (4/9))



IC03 PT6315 (PANEL BOARD)



IC101 RZ5B701-0001E2 (TUNER2FMF-NS BOARD)



• IC Pin Function Descriptions

MB148 BOARD (1/9), (3/9), (4/9), (5/9), (6/9), (7/9) IC101 CXD90008G-AA (BD DECODER)

Pin No.	Pin Name	I/O	Description
A1	TRINC	I	Input of Tracking Signal (C)
A2	TRINA	I	Input of Tracking Signal (A)
A3	FPDOCD	I	Laser Power Monitor Input for CD APC / Differential negative input
A4	VWDC3O	O	Output Voltage 3 of Laser Diode Control in APC
A5	TXVN_0	I/O	Ethernet TD -
A6	TXVN_1	I/O	Ethernet RD -
A7	SPDIF	I/O	SPDIF digital audio output
A8	NO_USE	-	Not used
A9	NO_USE	-	Not used
A10	AOBCK ALO	I/O	Audio output bit clock
A11	NS_XTALI	-	3.3V power for standby
A12	NO_USE	-	Not used
A13	CH2_M	O	HDMI TX data 2 differential pair (M)
A14	CH1_M	O	HDMI TX data 1 differential pair (M)
A15	CH0_M	O	HDMI TX data 0 differential pair (M)
A16	CLK_M	O	HDMI TX clock differential pair (M)
A17	NO_USE	-	Not used
A18	VDACG_OUT	O	DAC output
A19	CEC	I/O	HDMI CEC
A20	NO_USE	-	Not used
A21	RESET_	I	Power on reset
A22	IF_SCK VCLK	I/O	VFD clock
A23	IF_SDO VDATA	I/O	VFD data
A24	SPLRCK	I/O	SPDIF input left-right clock
A25	SPMCLK	I/O	SPDIF input master clock
B1	INB	I	Input of Main Beam Signal (B)
B2	TRIND	I	Input of Tracking Signal (D)
B3	TRINB	I	Input of Tracking Signal (B)
B4	FVREF	O	Output of Voltage Reference
B5	TXVP_0	I/O	Ethernet TD +
B6	TXVP_1	I/O	Ethernet RD +
B7	REXT	O	External reference resistor
B8	NO_USE	-	Not used
B9	NO_USE	-	Not used
B10	AOMCL ARO	I/O	Audio output master clock
B11	NS_XTALO	I	27MHz Crystal In
B12	NO_USE	-	Not used
B13	CH2_P	O	HDMI TX data 2 differential pair (P)
B14	CH1_P	O	HDMI TX data 1 differential pair (P)
B15	CH0_P	O	HDMI TX data 0 differential pair (P)
B16	CLK_P	O	HDMI TX clock differential pair (P)
B17	NO_USE	-	Not used
B18	VDACX_OUT	O	DAC output
B19	HDMISD	I/O	HDMI I2C data
B20	HDMISCK	I/O	HDMI I2C clock
B21	OPWRSB	I/O	Power Control
B22	NC IR	I/O	Infrared input
B23	KRMOD VSTB	I/O	GPIO

HBD-E385/E390/T39

Pin No.	Pin Name	I/O	Description
B24	SPBCK	I/O	SPDIF input bit clock
B25	DIR_GPO2	I/O	GPIO
C1	IND	I	Input of Main Beam Signal (D)
C2	INC	I	Input of Main Beam Signal (C)
C3	INA	I	Input of Main Beam Signal (A)
C4	FPDODVD	I	Laser Power Monitor Input for DVD APC / Differential positive input
C5	NO_USE	-	Not used
C6	VWDD20	O	Output Voltage 2 of Laser Diode Control in APC
C7	MICIN AOSDATA4	I/O	Audio line input data
C8	AOSDATA2	I/O	Audio output serial data 2
C9	AOSDATA1	I/O	Audio output serial data 1
C10	AOLRCK	I/O	Audio output left-right clock
C11	NO_USE	-	Not used
C12	AVDD33_PLLGP	-	3.3 V Analog Power for PLL Group
C13	AVSS33_PLLGP	-	Analog Ground for PLL Group
C14	NO_USE	-	Not used
C15	AVDD12_HDMI_D	-	1.2 V Analog Power
C16	AVDD12_HDMI_C	-	1.2 V Analog Power
C17	VDACR_OUT	O	DAC output
C18	VDACG_OUT	O	DAC output
C19	NO_USE	-	Not used
C20	HTPLG	I/O	HDMI Hot Plug
C21	NO_USE	-	Not used
C22	MIC_DET GPIO2	I/O	GPIO
C23	NO_USE	-	Not used
C24	DIR_GPO3	I/O	GPIO
C25	DIR_SCL	I/O	GPIO
D1	ING	I	Input of Main Beam Signal (G)
D2	INH	I	Input of Main Beam Signal (H)
D3	NO_USE	-	Not used
D4	NO_USE	-	Not used
D5	NO_USE	-	Not used
D6	NO_USE	-	Not used
D7	NO USE	-	Not used
D8	NO_USE	-	Not used
D9	NO_USE	-	Not used
D10	AOSDATA0	I/O	Audio output serial data 0
D11	NO_USE	-	Not used
D12	AVDD33_DAC	-	3.3 V Analog Power
D13	NO_USE	-	Not used
D14	AVDD33_HDMI	-	3.3 V Analog Power
D15	NO_USE	-	Not used
D16	AVDD33_VDAC_R	-	3.3 V Analog Power
D17	NO_USE	-	Not used
D18	NO_USE	-	Not used
D19	NO_USE	-	Not used
D20	START_BIT GPIO0	I/O	GPIO
D21	DVCC33_IO_STB	-	3.3 V digital IO power for Stand-By Module
D22	IF_SDI LCDRD	I/O	GPIO
D23	NO_USE	-	Not used
D24	WIFI_PCONT	I/O	GPIO
D25	TDI	I/O	JTAG ICE data in

Pin No.	Pin Name	I/O	Description
E1	INF	I	Input of Main Beam Signal (F)
E2	INE	I	Input of Main Beam Signal (E)
E3	AVDD33_1	-	3.3 V Power Pin
E4	HAVC	O	Decoupling Pin for Reference Voltage of Main and Sub Beams
E5	VDAC0	O	Output of General DAC
E6	RSTI	I	Front-End Power on reset
E7	NO_USE	-	Not used
E8	NO_USE	-	Not used
E9	AVSS33_PLL	-	PLL /BG analog ground
E10	NO_USE	-	Not used
E11	AVSS33_DAC	-	Analog Ground
E12	NO_USE	-	Not used
E13	NO_USE	-	Not used
E14	AVSS33_HDMI	-	3.3 V Analog Power
E15	NO_USE	-	Not used
E16	AVDD33_VDAC	-	3.3 V Analog Power
E17	NO_USE	-	Not used
E18	OCPI GPIO1	I/O	GPIO
E19	NO_USE	-	Not used
E20	UATXD	I/O	Reserved for debug-only Uart pins. (1) 1st RS232 TX (2) T8032 RS232 TX
E21	NO_USE	-	Not used
E22	DVCC33_IO_STB	-	3.3 V digital IO power for Stand-By Module
E23	SPDATA	I/O	SPDIF input data
E24	SYS_REQ	I/O	GPIO
E25	TCK	I/O	JTAG ICE clock
F1	FEMPXOUT3	O	Multiplexer Output 3 for Signal Monitoring. The pin is not allowed to pull-up in circuit layout. Alternative function: Internal monitored signal output / General output.
F2	FEMPXOUT2	O	Multiplexer Output 2 for Signal Monitoring. The pin is not allowed to pull-up in circuit layout. Alternative function: Internal monitored signal output / General output.
F3	NO_USE	-	Not used
F4	FEMPXOUT1	O	Multiplexer Output 1 for Signal Monitoring. The pin is not allowed to pull-up in circuit layout. Alternative function: Internal monitored signal output / General output.
F5	AUX1	I/O	Auxiliary Input Alternative function: Signal Monitoring
F6	AGND33_1	-	Analog Ground
F7	AGND33_3	-	Analog Ground
F8	NO_USE	-	Not used
F9	AVDD33_COM	-	PLL / BG 3.3 V analog power
F10	NO_USE	-	Not used
F11	AVSS12_REC	-	ADC analog ground
F12	NO_USE	-	Not used
F13	AVSS33_LD	-	Line driver analog ground
F14	AVSS33_VDAC_R	-	Analog Ground
F15	NO_USE	-	Not used
F16	NO_USE	-	Not used
F17	AVDD33_LD0	-	3.3 V power for standby
F18	NO_USE	-	Not used
F19	UARXD	I/O	Reserved for debug-only Uart pins. (1) 1st RS232 RX (2) T8032 RS232 RX
F20	NO_USE	-	Not used
F21	DVCC33_IO	-	3.3 V digital IO power
F22	NC (PD)	-	Not used
F23	NO_USE	-	Not used

HBD-E385/E390/T39

Pin No.	Pin Name	I/O	Description
F24	TMS	I/O	GPIO
F25	NC (PD)	-	Not used
G1	RFIP	I	Differential Input of AC Coupling RF SUM Signal (Positive)
G2	RFIN	I	Differential Input of AC Coupling RF SUM Signal (Negative)
G3	NO_USE	-	Not used
G4	NO_USE	-	Not used
G5	NO_USE	-	Not used
G6	NO_USE	-	Not used
G7	NO_USE	-	Not used
G8	NO_USE	-	Not used
G9	AVDD33_LD	-	Line driver 3.3 V analog power
G10	NO_USE	-	Not used
G11	AVDD12_REC	-	ADC analog power
G12	NO_USE	-	Not used
G13	NO_USE	-	Not used
G14	AVSS33_VDAC	-	Analog Ground
G15	NO_USE	-	Not used
G16	AVSS33_LDO	-	Analog ground for standby
G17	NO_USE	-	Not used
G18	NO_USE	-	Not used
G19	NO_USE	-	Not used
G20	DVCC33_IO	-	3.3 V digital IO power
G21	XIF_CS	I/O	GPIO
G22	NO_USE	-	Not used
G23	TDO	I/O	JTAG ICE data out
G24	DIR_SDA	I/O	GPIO
G25	DIR_ERROR	I/O	GPIO
H1	RFIP2	I	Differential Input of AC Coupling RF SUM Signal (Positive)
H2	RFIN2	I	Differential Input of AC Coupling RF SUM Signal (Negative)
H3	V14	O	Output of Voltage Reference (1.4 V)
H4	FOO	O	Focus servo output. PDM output of focus servo compensator.
H5	AGND12_1	-	Analog Ground
H6	NO_USE	-	Not used
H7	AGND12_2	-	Analog Ground
H8	NO_USE	-	Not used
H9	NO_USE	-	Not used
H10	NO_USE	-	Not used
H11	NO_USE	-	Not used
H12	NO_USE	-	Not used
H13	NO_USE	-	Not used
H14	DGND12_K	-	Digital ground
H15	NO_USE	-	Not used
H16	AVDD12_LDO	-	1.2 V standby power
H17	NO_USE	-	Not used
H18	NO_USE	-	Not used
H19	NO_USE	-	Not used
H20	NO_USE	-	Not used
H21	DGND12_K	-	Digital ground
H22	XDIR_INT	I/O	GPIO
H23	NO_USE	-	Not used
H24	RCLK0	O	Memory clock 0 positive
H25	RCLK0_	O	Memory clock 0 negative
J1	NO_USE	-	Not used
J2	TRO	O	Tracking servo output. PDM output of tracking servo compensator.
J3	TLO	O	Tilt servo output
J4	AVDD12_2	-	1.2 V Power Pin

Pin No.	Pin Name	I/O	Description
J5	NO_USE	-	Not used
J6	AVDD33_3	-	3.3 V Power Pin
J7	NO_USE	-	Not used
J8	NO_USE	-	Not used
J9	DVCC33_IO	-	3.3 V digital IO power
J10	NO_USE	-	Not used
J11	DVCC33_IO	-	3.3 V digital IO power
J12	NO_USE	-	Not used
J13	NO_USE	-	Not used
J14	NO_USE	-	Not used
J15	NO_USE	-	Not used
J16	NO_USE	-	Not used
J17	NO_USE	-	Not used
J18	NO_USE	-	Not used
J19	NO_USE	-	Not used
J20	DDRVCCIO	-	1.5 V digital IO power
J21	NO_USE	-	Not used
J22	DGND12_K	-	Digital ground
J23	RDQ5	I/O	Memory data bit 5
J24	RDQ7	I/O	Memory data bit 7
J25	NO_USE	-	Not used
K1	NO_USE	-	Not used
K2	NO_USE	-	Not used
K3	FEOSCEN	I/O	High frequency modulation enable signal output, or LDD serial interface CLK or I2C SCL. The pin is spike-free at power-on stage.
K4	NO_USE	-	Not used
K5	AVDD12_1	-	1.2 V Power Pin
K6	NO_USE	-	Not used
K7	AGND33_2	-	Analog Ground
K8	DVCC33_IO	-	3.3 V digital IO power
K9	DVCC12_K	-	1.2V digital power
K10	NO_USE	-	Not used
K11	DVCC12_K	-	1.2V digital power
K12	DVCC12_K	-	1.2V digital power
K13	NO_USE	-	Not used
K14	NO_USE	-	Not used
K15	DVCC12_K	-	1.2V digital power
K16	NO_USE	-	Not used
K17	DVCC12_K	-	1.2V digital power
K18	DVCC12_K	-	1.2V digital power
K19	DDRVCCIO	-	1.5 V digital IO power
K20	NO_USE	-	Not used
K21	DGND12_K	-	Digital ground
K22	RDQ4	I/O	Memory data bit 4
K23	RDQ6	I/O	Memory data bit 6
K24	NO_USE	-	Not used
K25	NO_USE	-	Not used
L1	FEGAINSW3	O	Read gain switch 3.
L2	FEGAINSW1	O	Read gain switch 1.
L3	FECMOD	I/O	High frequency modulation mode selection signal output, or LDD serial interface command enable. The pin is spike-free at power-on stage.
L4	FECFREQ	I/O	Frequency selection signal output, or LDD serial interface data or I2C SDA. The pin is spike-free at power-on stage.
L5	DGND12_K	-	Digital ground
L6	DGND12_K	-	Digital ground

Pin No.	Pin Name	I/O	Description
L7	DGND12_K	-	Digital ground
L8	DVCC3_IO	-	3.3 V digital IO power
L9	DVCC12_K	-	1.2V digital power
L10	DGND12_K	-	Digital ground
L11	DGND12_K	-	Digital ground
L12	DGND12_K	-	Digital ground
L13	DGND12_K	-	Digital ground
L14	DGND12_K	-	Digital ground
L15	DGND12_K	-	Digital ground
L16	DGND12_K	-	Digital ground
L17	DVCC12_K	-	1.2V digital power
L18	DVCC12_K	-	1.2V digital power
L19	DDRVCCIO	-	1.5 V digital IO power
L20	DDRVCCIO	-	1.5 V digital IO power
L21	DGND12_K	-	Digital ground
L22	RDQ14	I/O	Memory data bit 14
L23	RDQ13	I/O	Memory data bit 13
L24	NO_USE	-	Not used
L25	NO_USE	-	Not used
M1	NO_USE	-	Not used
M2	FEGAINSW2	O	Read gain switch 2.
M3	FEFMO4	I/O	Feed motor 4 control. DAC output. Alternative function: Auxiliary servo input
M4	NO_USE	-	Not used
M5	NO_USE	-	Not used
M6	NO_USE	-	Not used
M7	NO_USE	-	Not used
M8	NO_USE	-	Not used
M9	NO_USE	-	Not used
M10	DGND12_K	-	Digital ground
M11	NO_USE	-	Not used
M12	DGND12_K	-	Digital ground
M13	NO_USE	-	Not used
M14	DGND12_K	-	Digital ground
M15	NO_USE	-	Not used
M16	DGND12_K	-	Digital ground
M17	NO_USE	-	Not used
M18	NO_USE	-	Not used
M19	NO_USE	-	Not used
M20	NO_USE	-	Not used
M21	NO_USE	-	Not used
M22	NO_USE	-	Not used
M23	RDQ15	I/O	Memory data bit 15
M24	RDQ12	I/O	Memory data bit 12
M25	NO_USE	-	Not used
N1	FEFMO	O	Feed motor 1 control. DAC output.
N2	FEFMO2	O	Feed motor 2 control. DAC output.
N3	FEFMO3	I/O	Feed motor 3 control. DAC output. Alternative function: Auxiliary servo input
N4	DGND12_K	-	Digital ground
N5	FEGIO5	O	General IO
N6	FEGIO7	I/O	General IO. The pin is spike-free at power-on stage. The pin is not allowed to pull-up in circuit layout.
N7	FEGIO6	O	Read gain switch 6. The pin is not allowed to pull-up in circuit layout. General IO
N8	NO_USE	-	Not used

Pin No.	Pin Name	I/O	Description
N9	NO_USE	-	Not used
N10	DGND12_K	-	Digital ground
N11	DGND12_K	-	Digital ground
N12	NO_USE	-	Not used
N13	DGND12_K	-	Digital ground
N14	NO_USE	-	Not used
N15	DGND12_K	-	Digital ground
N16	DGND12_K	-	Digital ground
N17	DVCC12_K	-	1.2V digital power
N18	DVCC12_K	-	1.2V digital power
N19	DDRVCIO	-	1.5 V digital IO power
N20	DDRVCIO	-	1.5 V digital IO power
N21	NO_USE	-	Not used
N22	DGND12_K	-	Digital ground
N23	DGND12_K	-	Digital ground
N24	RDQS1_	I/O	Memory negative data strobe bit 1
N25	RDQS1	I/O	Memory positive data strobe bit 1
P1	NO_USE	-	Not used
P2	FETRYPWM	O	Tray DAC / PWM control input. Controlled by uP.
P3	FEDMO	O	Disk motor control output. DAC output.
P4	NO_USE	-	Not used
P5	NO_USE	-	Not used
P6	NO_USE	-	Not used
P7	NO_USE	-	Not used
P8	NO_USE	-	Not used
P9	DVCC12_K	-	1.2V digital power
P10	DGND12_K	-	Digital ground
P11	NO_USE	-	Not used
P12	DGND12_K	-	Digital ground
P13	NO_USE	-	Not used
P14	DGND12_K	-	Digital ground
P15	NO_USE	-	Not used
P16	DGND12_K	-	Digital ground
P17	NO_USE	-	Not used
P18	DVCC12_K	-	1.2V digital power
P19	DDRVCIO	-	1.5 V digital IO power
P20	NO_USE	-	Not used
P21	NO_USE	-	Not used
P22	NO_USE	-	Not used
P23	NO_USE	-	Not used
P24	RDQS0	I/O	Memory positive data strobe bit 0
P25	RDQS0_	I/O	Memory negative data strobe bit 0
R1	FE_FG	I/O	Motor Hall sensor input. The pin is spike-free at power-on stage.
R2	FEGIO0	I/O	LDD serial interface data. The pin is spike-free at power-on stage. The pin is not allowed to pull-up in circuit layout. General IO
R3	NO_USE	-	Not used
R4	DGND12_K	-	Digital ground
R5	FEGIO9	I/O	General IO. The pin is spike-free at power-on stage. General IO
R6	FEGIO4	O	Read gain switch 4 General IO
R7	NO_USE	-	Not used
R8	NO_USE	-	Not used
R9	NO_USE	-	Not used
R10	DGND12_K	-	Digital ground

Pin No.	Pin Name	I/O	Description
R11	DGND12_K	-	Digital ground
R12	DGND12_K	-	Digital ground
R13	DGND12_K	-	Digital ground
R14	DGND12_K	-	Digital ground
R15	DGND12_K	-	Digital ground
R16	NO_USE	-	Not used
R17	DVCC12_K	-	1.2V digital power
R18	NO_USE	-	Not used
R19	NO_USE	-	Not used
R20	DDRVCCIO	-	1.5 V digital IO power
R21	NO_USE	-	Not used
R22	RDQM1_B	O	Memory data mask bit 1
R23	RDQM0	O	Memory data mask bit 0
R24	RDQ10	I/O	Memory data bit 10
R25	NO_USE	-	Not used
T1	FEEJECT_	I/O	Eject / stop key input, active low. The pin is spike-free at power-on stage. Alternative function: General IO
T2	FE_TRAYIN_	I/O	Tray_is_in Input, A Logical Low Indicates the Tray is IN. Feedback Flag is from Tray Connector. The pin is spike-free at power-on stage. Alternative function: General IO
T3	FEGIO10	I/O	PC RS232 serial receive data. The pin is spike-free at power-on stage.
T4	NO_USE	-	Not used
T5	NO_USE	-	Not used
T6	NO_USE	-	Not used
T7	NO_USE	-	Not used
T8	NO_USE	-	Not used
T9	DVCC12_K	-	1.2V digital power
T10	NO_USE	-	Not used
T11	DVCC12_K	-	1.2V digital power
T12	DVCC12_K	-	1.2V digital power
T13	NO_USE	-	Not used
T14	DVCC12_K	-	1.2V digital power
T15	NO_USE	-	Not used
T16	DVCC12_K	-	1.2V digital power
T17	DVCC12_K	-	1.2V digital power
T18	DDRVCCIO	-	1.5 V digital IO power
T19	RVREFO	I	Memory VREF
T20	NO_USE	-	Not used
T21	DGND12_K	-	Digital ground
T22	RDQ9	I/O	Memory data bit 9
T23	RDQ8	I/O	Memory data bit 8
T24	RDQ11	I/O	Memory data bit 11
T25	NO_USE	-	Not used
U1	FEGIO11	I/O	PC RS232 serial transmit data. The pin is spike-free at power-on stage.
U2	FEGIO3	I/O	LED Control Output. Initial 0 Output. The pin is spike-free at power-on stage. General IO
U3	USB_VRT	O	USB reference resistor
U4	FETRAYOUT_	I/O	Tray_is_in Input, A Logical Low Indicates the Tray is OUT. Feedback Flag is from Tray Connector. The pin is spike-free at power-on stage. Alternative function: General IO
U5	NC AMUTE	I/O	Multiple function: (1) 1st Audio DAC mute (2) GPIO
U6	DGND12_K	-	Digital ground
U7	NO_USE	-	Not used

Pin No.	Pin Name	I/O	Description
U8	NO_USE	-	Not used
U9	DVCC12_K	-	1.2V digital power
U10	NO_USE	-	Not used
U11	DVCC12_K	-	1.2V digital power
U12	DVCC12_K	-	1.2V digital power
U13	NO_USE	-	Not used
U14	DVCC12_K	-	1.2V digital power
U15	DVCC12_K	-	1.2V digital power
U16	DVCC12_K	-	1.2V digital power
U17	NO_USE	-	Not used
U18	NO_USE	-	Not used
U19	NO_USE	-	Not used
U20	NO_USE	-	Not used
U21	RA1	O	Memory address bit 1
U22	DGND12_K	-	Digital ground
U23	RDQ3	I/O	Memory data bit 3
U24	NO_USE	-	Not used
U25	RDQ2	I/O	Memory data bit 2
V1	USB_DP_P2	I/O	USB port2 differential serial data bus (plus)
V2	USB_DM_P2	I/O	USB port2 differential serial data bus (minus)
V3	NO_USE	-	Not used
V4	NO_USE	-	Not used
V5	DGND12_K	-	Digital ground
V6	NO_USE	-	Not used
V7	NO_USE	-	Not used
V8	NO_USE	-	Not used
V9	NO_USE	-	Not used
V10	NO_USE	-	Not used
V11	NO_USE	-	Not used
V12	NO_USE	-	Not used
V13	NO_USE	-	Not used
V14	DDRVCIO	-	1.5 V digital IO power
V15	NO_USE	-	Not used
V16	DDRVCIO	-	1.5 V digital IO power
V17	DDRVCIO	-	1.5 V digital IO power
V18	DDRVCIO	-	1.5 V digital IO power
V19	NO_USE	-	Not used
V20	NO_USE	-	Not used
V21	NO_USE	-	Not used
V22	RA11	O	Memory address bit 11
V23	RDQ1	I/O	Memory data bit 1
V24	RDQ0	I/O	Memory data bit 0
V25	NO_USE	-	Not used
W1	USB_DP_P0	I/O	USB port0 differential serial data bus (plus)
W2	USB_DM_P0	I/O	USB port0 differential serial data bus (minus)
W3	NO_USE	-	Not used
W4	AVSS33_USB	-	Analog ground for USB
W5	NO_USE	-	Not used
W6	NO_USE	-	Not used
W7	GND EFPWRQ	-	2.5 V power for E-fuse programming
W8	RBA1_B	O	Memory bank address bit 1
W9	NO_USE	-	Not used
W10	RA8_B	O	Memory address bit 8
W11	NO_USE	-	Not used
W12	RA11_B	O	Memory address bit 11

HBD-E385/E390/T39

Pin No.	Pin Name	I/O	Description
W13	NO_USE	-	Not used
W14	NO_USE	-	Not used
W15	DDRVCCIO	-	1.5 V digital IO power
W16	DDRVCCIO	-	1.5 V digital IO power
W17	NO_USE	-	Not used
W18	DDRVCCIO	-	1.5 V digital IO power
W19	NO_USE	-	Not used
W20	RA8	O	Memory address bit 8
W21	RA4	O	Memory address bit 4
W22	RA6	O	Memory address bit 6
W23	NO_USE	-	Not used
W24	RODT_B	O	Memory on die termination enable
W25	RRAS_B	O	Memory row address strobe
Y1	USB_DP_P1	I/O	USB port1 differential serial data bus (plus)
Y2	USB_DM_P1	I/O	USB port1 differential serial data bus (minus)
Y3	NO_USE	-	Not used
Y4	NO_USE	-	Not used
Y5	NO_USE	-	Not used
Y6	USB_PCONT GPIO7	I/O	GPIO
Y7	NO_USE	-	Not used
Y8	RA12_B	O	Memory address bit 12
Y9	NO_USE	-	Not used
Y10	RA1_B	O	Memory address bit 1
Y11	NO_USE	-	Not used
Y12	RCAS_B	O	Memory column address strobe
Y13	DGND12_K	-	Digital ground
Y14	DDRVCCIO	-	1.5 V digital IO power
Y15	DGND12_K	-	Digital ground
Y16	NO_USE	-	Not used
Y17	DGND12_K	-	Digital ground
Y18	RVREF0_B	I	Memory VREF
Y19	DGND12_K	-	Digital ground
Y20	NO_USE	-	Not used
Y21	NO_USE	-	Not used
Y22	NO_USE	-	Not used
Y23	RCS_	O	Memory chip select
Y24	RBA0	O	Memory bank address bit 0
Y25	NO_USE	-	Not used
AA1	MFI_SCL	I/O	Serial interface control line
AA2	MFI_SDA	I/O	Serial interface data line
AA3	AVDD33_USB	-	3.3 V Analog power for USB
AA4	JIGMODE0 GPIO4	I/O	GPIO
AA5	XVMUTE GPIO3	I/O	GPIO
AA6	RCKE_B	O	Memory clock enable
AA7	NO_USE	-	Not used
AA8	RA6_B	O	Memory address bit 6
AA9	NO_USE	-	Not used
AA10	RA4_B	O	Memory address bit 4
AA11	NO_USE	-	Not used
AA12	RWE_B	O	Memory write enable
AA13	NO_USE	-	Not used
AA14	NO_USE	-	Not used
AA15	RDQM1_B	O	Memory data mask bit 1

Pin No.	Pin Name	I/O	Description
AA16	NO_USE	-	Not used
AA17	NO_USE	-	Not used
AA18	NO_USE	-	Not used
AA19	DGND12_K	-	Digital ground
AA20	RA12	O	Memory address bit 12
AA21	AVDD33_MEMPLL	-	3.3 V Analog Power for MEMPLL
AA22	NO_USE	-	Not Used
AA23	RA3	O	Memory address bit 3
AA24	RA5	O	Memory address bit 5
AA25	RA0	O	Memory address bit 0
AB1	JIGMODE1 GPIO5	I/O	GPIO
AB2	UPG_STATUS GPIO6	I/O	GPIO
AB3	NFD6	I/O	NAND Flash Data input/output bit6
AB4	DVCC33_IO	-	3.3 V digital IO power
AB5	NO_USE	-	Not used
AB6	RA10_B	O	Memory address bit 10
AB7	NO_USE	-	Not used
AB8	RBA0_B	O	Memory bank address bit 0
AB9	NO_USE	-	Not used
AB10	RA3_B	O	Memory address bit 3
AB11	RA13_B	O	Memory address bit 13
AB12	NO_USE	-	Not used
AB13	DGND12_K	-	Digital ground
AB14	RDQ11_B	I/O	Memory data bit 11
AB15	RDQ10_B	I/O	Memory data bit 10
AB16	RDQM0_B	O	Memory data mask bit 0
AB17	NO_USE	-	Not used
AB18	NO_USE	-	Not used
AB19	AVSS33_MEMPLL	-	Analog Ground for MEMPLL
AB20	NO_USE	-	Not used
AB21	NO_USE	-	Not used
AB22	NO_USE	-	Not used
AB23	NO_USE	-	Not used
AB24	RA7	O	Memory address bit 7
AB25	RA2	O	Memory address bit 2
AC1	NFD7	I/O	NAND Flash Data input/output bit7
AC2	NFD4	I/O	NAND Flash Data input/output bit4
AC3	NFD0	I/O	NAND Flash Data input/output bit0
AC4	NO_USE	-	Not used
AC5	DVCC33_IO	-	3.3 V digital IO power
AC6	NFALE	I/O	NAND Flash address latch enable
AC7	NO_USE	-	Not used
AC8	RA5_B	O	Memory address bit 5
AC9	NO_USE	-	Not used
AC10	RA0_B	O	Memory address bit 9
AC11	RBA2_B	O	Memory bank address bit 2
AC12	RDQ0_B	I/O	Memory data bit 0
AC13	RDQ1_B	I/O	Memory data bit 1
AC14	NO_USE	-	Not used
AC15	RDQ8_B	I/O	Memory data bit 8
AC16	RDQ9_B	I/O	Memory data bit 9
AC17	RDQS1_B	I/O	Memory negative data strobe bit 1
AC18	DGND12_K	-	Digital ground
AC19	RDQ12_B	I/O	Memory data bit 12

Pin No.	Pin Name	I/O	Description
AC20	RDQ7_B	I/O	Memory data bit 7
AC21	RDQ5_B	I/O	Memory data bit 5
AC22	RCAS_	O	Memory column address strobe
AC23	NO_USE	-	Not used
AC24	RA9	O	Memory address bit 9
AC25	RRESET	O	Memory reset
AD1	NFD5	I/O	NAND Flash Data input/output bit5
AD2	NFD2	I/O	NAND Flash Data input/output bit2
AD3	NFRBN	I/O	NAND Flash ready / busy
AD4	NFCEN	I/O	NAND Flash chip enable
AD5	NFCLE	I/O	NAND Flash command latch enable
AD6	NFWEN	I/O	NAND Flash write enable
AD7	RA9_B	O	Memory address bit 9
AD8	RA7_B	O	Memory address bit 7
AD9	NO_USE	-	Not used
AD10	RODT_B	O	Memory on die termination enable
AD11	NO_USE	-	Not used
AD12	NO_USE	-	Not used
AD13	RDQ2_B	I/O	Memory data bit 2
AD14	NO_USE	-	Not used
AD15	NO_USE	-	Not used
AD16	RDQS0_B	I/O	Memory positive data strobe bit 0
AD17	RDQS1_B	I/O	Memory positive data strobe bit 1
AD18	RDQ15_B	I/O	Memory data bit 15
AD19	NO_USE	-	Not used
AD20	RDQ6_B	I/O	Memory data bit 6
AD21	RDQ4_B	I/O	Memory data bit 4
AD22	RCLK0_B	O	Memory clock 0 positive
AD23	RA10	O	Memory address bit 10
AD24	RBA2	O	Memory bank address bit 2
AD25	RA13	O	Memory address bit 13
AE1	NFD3	I/O	NAND Flash Data input/output bit3
AE2	NFD1	I/O	NAND Flash Data input/output bit1
AE3	NFRBN2	I/O	NAND Flash 2nd ready / busy
AE4	NFREN	I/O	NAND Flash read enable
AE5	NFCEN2	I/O	NAND Flash 2nd chip enable
AE6	NO_USE	-	Not used
AE7	RRESET_B	O	Memory reset
AE8	RA2_B	O	Memory address bit 2
AE9	NO_USE	-	Not used
AE10	RCS_B	O	Memory chip select
AE11	RRAS_B	O	Memory row address strobe
AE12	NO_USE	-	Not used
AE13	RDQ3_B	I/O	Memory data bit 3
AE14	NO_USE	-	Not used
AE15	NO_USE	-	Not used
AE16	RDQS0_B	I/O	Memory negative data strobe bit 0
AE17	NO_USE	-	Not used
AE18	RDQ13_B	I/O	Memory data bit 13
AE19	RDQ14_B	I/O	Memory data bit 14
AE20	NO_USE	-	Not used
AE21	NO_USE	-	Not used
AE22	RCLK0_B	O	Memory clock 0 negative
AE23	RCKE	O	Memory clock enable
AE24	RBA1	O	Memory bank address bit 1
AE25	RWE_	O	Memory write enable

MB148 BOARD (1/9) IC106, IC206 K4B2G1646C-HCH9 (SD-RAM)

Pin No.	Pin Name	I/O	Description
A1	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
A2	DQU5	I/O	Data Input/output: Bi-directional data bus.
A3	DQU7	I/O	Data Input/output: Bi-directional data bus.
A4	NO_USE	-	Not used
A5	NO_USE	-	Not used
A6	NO_USE	-	Not used
A7	DQU4	I/O	Data Input/output: Bi-directional data bus.
A8	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
A9	VSS	-	Ground
B1	VSSQ	-	DQ Ground
B2	VDD	-	Power Supply: 1.5V +/-0.075
B3	VSS	-	Ground
B4	NO_USE	-	Not used
B5	NO_USE	-	Not used
B6	NO_USE	-	Not used
B7	$\overline{\text{DQS}}_U$	I/O	Data Strobe: Output with read data, input with write data. Edge-aligned with read data, centered in write data. For the x16, DQSL: corresponds to the data on DQL0-DQL7; DQSU corresponds to the data on DQU0-DQU7. The data strobe DQS, DQSL and DQSU are paired with differential signals DQS, DQSL and DQSU, respectively, to provide differential pair signaling to the system during reads and writes. DDR3 SDRAM supports differential data strobe only and does not support single-ended.
B8	DQU6	I/O	Data Input/output: Bi-directional data bus.
B9	VSSQ	-	DQ Ground
C1	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
C2	DQU3	I/O	Data Input/output: Bi-directional data bus.
C3	DQU1	I/O	Data Input/output: Bi-directional data bus.
C4	NO_USE	-	Not used
C5	NO_USE	-	Not used
C6	NO_USE	-	Not used
C7	DQSU	I/O	Data Strobe: Output with read data, input with write data. Edge-aligned with read data, centered in write data. For the x16, DQSL: corresponds to the data on DQL0-DQL7; DQSU corresponds to the data on DQU0-DQU7. The data strobe DQS, DQSL and DQSU are paired with differential signals DQS, DQSL and DQSU, respectively, to provide differential pair signaling to the system during reads and writes. DDR3 SDRAM supports differential data strobe only and does not support single-ended.
C8	DQU2	I/O	Data Input/output: Bi-directional data bus.
C9	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
D1	VSSQ	-	DQ Ground
D2	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
D3	DMU	I	Input Data Mask: DM is an input mask signal for write data. Input data is masked when DM is sampled HIGH coincident with that input data during a Write access. DM is sampled on both edges of DQS. For x8 device, the function of DM or TDQS/ $\overline{\text{TDQS}}$ is enabled by Mode Register A11 setting in MR1.
D4	NO_USE	-	Not used
D5	NO_USE	-	Not used
D6	NO_USE	-	Not used
D7	DQU0	I/O	Data Input/output: Bi-directional data bus.
D8	VSSQ	-	DQ Ground
D9	VDD	-	Power Supply: 1.5V +/-0.075
E1	VSS	-	Ground
E2	VSSQ	-	DQ Ground
E3	DQL0	I/O	Data Input/output: Bi-directional data bus.
E4	NO_USE	-	Not used
E5	NO_USE	-	Not used
E6	NO_USE	-	Not used
E7	DML	I	Input Data Mask: DM is an input mask signal for write data. Input data is masked when DM is sampled HIGH coincident with that input data during a Write access. DM is sampled on both edges of DQS. For x8 device, the function of DM or TDQS/ $\overline{\text{TDQS}}$ is enabled by Mode Register A11 setting in MR1.
E8	VSSQ	-	DQ Ground

Pin No.	Pin Name	I/O	Description
E9	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
F1	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
F2	DQL2	I/O	Data Input/output: Bi-directional data bus.
F3	DQSL	I/O	Data Strobe: Output with read data, input with write data. Edge-aligned with read data, centered in write data. For the x16, DQSL: corresponds to the data on DQL0-DQL7; DQSU corresponds to the data on DQU0-DQU7. The data strobe DQS, DQSL and DQSU are paired with differential signals DQS, DQSL and DQSU, respectively, to provide differential pair signaling to the system during reads and writes. DDR3 SDRAM supports differential data strobe only and does not support single-ended.
F4	NO_USE	-	Not used
F5	NO_USE	-	Not used
F6	NO_USE	-	Not used
F7	DQL1	I/O	Data Input/output: Bi-directional data bus.
F8	DQL3	I/O	Data Input/output: Bi-directional data bus.
F9	VSSQ	-	DQ Ground
G1	VSSQ	-	DQ Ground
G2	DQL6	I/O	Data Input/output: Bi-directional data bus.
G3	$\overline{\text{DQSL}}$	I/O	Data Strobe: Output with read data, input with write data. Edge-aligned with read data, centered in write data. For the x16, DQSL: corresponds to the data on DQL0-DQL7; DQSU corresponds to the data on DQU0-DQU7. The data strobe DQS, DQSL and DQSU are paired with differential signals DQS, DQSL and DQSU, respectively, to provide differential pair signaling to the system during reads and writes. DDR3 SDRAM supports differential data strobe only and does not support single-ended.
G4	NO_USE	-	Not used
G5	NO_USE	-	Not used
G6	NO_USE	-	Not used
G7	VDD	-	Power Supply: 1.5V +/-0.075
G8	VSS	-	Ground
G9	VSSQ	-	DQ Ground
H1	VREFDQ	-	Reference voltage for DQ
H2	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
H3	DQL4	I/O	Data Input/output: Bi-directional data bus.
H4	NO_USE	-	Not used
H5	NO_USE	-	Not used
H6	NO_USE	-	Not used
H7	DQL7	I/O	Data Input/output: Bi-directional data bus.
H8	DQL5	I/O	Data Input/output: Bi-directional data bus.
H9	VDDQ	-	DQ Power Supply: 1.5V +/-0.075V
J1	NC	-	No Connect: No internal electrical connection is present.
J2	VSS	-	Ground
J3	$\overline{\text{RAS}}$	I	Command Input: $\overline{\text{RAS}}$ (along with $\overline{\text{CS}}$) define the command being entered.
J4	NO_USE	-	Not used
J5	NO_USE	-	Not used
J6	NO_USE	-	Not used
J7	CK	I	Clock: CK is differential clock input. All address and control input signals are sampled on the crossing of the positive edge of CK. Output (read) data is referenced to the crossing of CK.
J8	VSS	-	Ground
J9	NC	-	No Connect: No internal electrical connection is present.
K1	ODT	I	On Die Termination: ODT (registered HIGH) enables termination resistance internal to the DDR3 SDRAM. When enabled, ODT is only applied to each DQ, DQS, DQS and DM/TDQS, NU/TDQS (When TDQS is enabled via Mode Register A11=1 in MR1) signal for x8 configurations. The ODT pin will be ignored if the Mode Register (MR1) is programmed to disable ODT.
K2	VDD	-	Power Supply: 1.5V +/-0.075
K3	$\overline{\text{CAS}}$	I	Command Input: $\overline{\text{CAS}}$ (along with $\overline{\text{CS}}$) define the command being entered.
K4	NO_USE	-	Not used
K5	NO_USE	-	Not used
K6	NO_USE	-	Not used
K7	$\overline{\text{CK}}$	I	Clock: $\overline{\text{CK}}$ is differential clock input. All address and control input signals are sampled on the crossing of the negative edge of $\overline{\text{CK}}$. Output (read) data is referenced to the crossing of $\overline{\text{CK}}$.
K8	VDD	-	Power Supply: 1.5V +/-0.075

Pin No.	Pin Name	I/O	Description
K9	CKE	I	Clock Enable: CKE HIGH activates, and CKE LOW deactivates, internal clock signal and device input buffers and output drivers. Talking CKE LOW provides Precharge Power-Down and Self Refresh operation (all banks idle), or Active Power-Down (Row Active in any bank). CKE is asynchronous for self refresh exit. After V _{REFCA} has become stable during the power on and initialization sequence, it must be maintained during all operations (including Self-Refresh). CKE must be maintained high throughout read and write accesses. Input buffers, excluding CK, \overline{CK} , ODT and CKE are disabled during power-down. Input buffers, excluding CKE, are disabled during Self-Refresh.
L1	NC	-	No Connect: No internal electrical connection is present.
L2	\overline{CS}	I	Chip Select: All commands are masked when \overline{CS} is registered HIGH. \overline{CS} provides for external Rank selection on system with multiple Ranks. \overline{CS} is considered part of the command code.
L3	\overline{WE}	I	Command Input: \overline{WE} (along with \overline{CS}) define the command being entered.
L4	NO_USE	-	Not used
L5	NO_USE	-	Not used
L6	NO_USE	-	Not used
L7	A10	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands. Autoprecharge: A10 is sampled during Read/Write commands to determine whether Autoprecharge should be performed to the accessed bank after the Read/Write operation. (HIGH: Autoprecharge; LOW: No Autoprecharge) A10 is sampled during a Precharge command to determine the Precharge applies to one bank (A10 LOW) or all banks (A10 HIGH). If only one bank is to be precharged, the bank is selected by bank addresses.
L8	ZQ	-	Reference Pin for ZQ calibration
L9	NC	-	No Connect: No internal electrical connection is present.
M1	VSS	-	Ground
M2	BA0	I	Bank Address Inputs: BA0 define to which bank an Active, Read, Write or Precharge command is being applied. Bank address also determines if the mode register or extended mode register is to be accessed during a MRS cycle.
M3	BA2	I	Bank Address Inputs: BA2 define to which bank an Active, Read, Write or Precharge command is being applied. Bank address also determines if the mode register or extended mode register is to be accessed during a MRS cycle.
M4	NO_USE	-	Not used
M5	NO_USE	-	Not used
M6	NO_USE	-	Not used
M7	NC	-	No Connect: No internal electrical connection is present.
M8	VREFCA	-	Reference voltage for CA
M9	VSS	-	Ground
N1	VDD	-	Power Supply: 1.5V +/-0.075
N2	A3	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
N3	A0	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
N4	NO_USE	-	Not used
N5	NO_USE	-	Not used
N6	NO_USE	-	Not used
N7	A12	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands. Burst Chop: A12 is sampled during Read and Write commands to determine if burst chop (on-the-fly) will be performed. (HIGH: no burst chop, LOW: burst chopped).
N8	BA1	I	Bank Address Inputs: BA1 define to which bank an Active, Read, Write or Precharge command is being applied. Bank address also determines if the mode register or extended mode register is to be accessed during a MRS cycle.
N9	VDD	-	Power Supply: 1.5V +/-0.075
P1	VSS	-	Ground
P2	A5	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
P3	A2	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.

Pin No.	Pin Name	I/O	Description
P4	NO_USE	-	Not used
P5	NO_USE	-	Not used
P6	NO_USE	-	Not used
P7	A1	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
P8	A4	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
P9	VSS	-	Ground
R1	VDD	-	Power Supply: 1.5V +/-0.075
R2	A7	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
R3	A9	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
R4	NO_USE	-	Not used
R5	NO_USE	-	Not used
R6	NO_USE	-	Not used
R7	A11	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
R8	A6	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
R9	VDD	-	Power Supply: 1.5V +/-0.075
T1	VSS	-	Ground
T2	$\overline{\text{RESET}}$	I	Active Low Asynchronous Reset: Reset is active when $\overline{\text{RESET}}$ is LOW, and inactive when $\overline{\text{RESET}}$ is HIGH. $\overline{\text{RESET}}$ must be HIGH during normal operation. $\overline{\text{RESET}}$ is CMOS rail to rail signal with DC high and low at 80% and 20% of V_{DD} , example, 1.20V for DC high and 0.30V for DC low.
T3	A13	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
T4	NO_USE	-	Not used
T5	NO_USE	-	Not used
T6	NO_USE	-	Not used
T7	NC	-	No Connect: No internal electrical connection is present.
T8	A8	I	Address inputs: Provided the row address for active commands and the column address for Read/Write commands to select one location out of the memory array in the respective bank. The address inputs also provide the op-code during Mode Register Set commands.
T9	VSS	-	Ground

MB148 BOARD (9/9) IC6301 R5F3650KCDFB (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Description
1	SIRCS_IN	I	SIRCS signal input from the remote control receiver
2	FAN CONT2	O	Fan motor speed control signal output terminal control by DA converter Port output higher, speed slower
3	FL_D_OUT	O	Serial data output to the fluorescent indicator tube driver
4	NO_USE	-	No used
5	FL_CLK	O	Serial data transfer clock signal output to the fluorescent indicator tube driver
6	BYTE	I	External data bus width selection signal input terminal
7	CNVss	I	Processor mode selection signal input terminal
8	NO_USE	-	No used
9	NO_USE	-	No used
10	RESET	I	System reset signal input from the reset signal generator and reset switch "L": reset For several hundreds msec. After the power supply rises, "L" is input, then it change to "H"
11	Xout	O	System clock output terminal (8MHz)
12	Vss	-	Ground terminal
13	Xin	I	System clock input terminal (5MHz)
14	Vcc1	-	Power supply terminal (+3.3V)
15	CEC_TX_RX	I/O	CEC serial data input/output with the HDMI connector
16	NO_USE	-	No used
17	KEY_INT	I	Key wake-up signal input terminal
18	AC_CUT	I	AC cut detection signal input terminal "L": AC cut
19	BD_IF_START	O	Ready signal output to the BD decoder "H": ready
20	NO_USE	-	No used
21	NO_USE	-	No used
22	NO_USE	-	No used
23	BD_IF_REQ	I	Request signal input from the BD decoder
24	NO_USE	-	No used
25	PCONT_FL	O	Power supply on/off control signal output terminal for fluorescent indicator tube driver "H": power on
26	LED_PWM 1	O	LED drive signal output terminal
27	NO_USE	-	No used
28	NO_USE	-	No used
29	TXD1	O	No used
30	RXD1	I	No used
31	ON CHIP DEBUG / CLK1	I	No used
32	NO USE / RTS1	O	No used
33	DAMP_SDAO	I/O	Two-way data bus with the DAMP processor
34	DAMP_SCLO	I/O	Serial data transfer clock signal output to the DAMP processor
35	DC_DET	I	Speaker DC detection signal input terminal "L": speaker DC is detected
36	PCONT1	O	Power supply on/off control signal output terminal "H": power on
37	PCONT2	O	Power supply control signal output terminal
38	PCONT3	O	Power supply on/off control signal output terminal "H": power on
39	EPM	O	EPM for update used
40	STA516_POWER	O	STA516 IC Power Control, "H": power on
41	NO_USE	-	No used
42	FAN_ON	O	Power supply on/off control signal output terminal for fan motor "H": power on
43	NO_USE	-	No used
44	CE	I	Chip enable signal input terminal
45	ST_SDA	I/O	Two-way data bus with the FM receiver
46	ST_SCL	I/O	Serial data transfer clock signal output to the FM receiver
47	PVDD_CONT	O	Power Supply PVDD control for eco used
48	DRIVER_RST (EN)	O	Reset signal output to the power amplifier "L": reset
49	NO_USE	-	No used
50	DAMP_PDN	O	DAMP Driver Standby Control
51	DAMP XRST	O	Reset signal output to the DAMP processor "L": reset
52	DAMP_XMUTE	O	Muting on/off control signal output to DAMP processor "L": muting on
53	NO_USE	-	No used

HBD-E385/E390/T39

Pin No.	Pin Name	I/O	Description
54	NO_USE	-	No used
55	NO_USE	-	No used
56	KARAOKE_MODE	I	Karaoke mode information input terminal
57	MIC_CLK	I/O	Clock signal output terminal
58	MIC_DATA	I/O	Serial data output terminal
59	MIC-DET_OUT	O	Microphone detection signal output terminal
60	Vcc	-	Power supply terminal (+3.3V)
61	NJU72341_POWER	O	Power control for MIC IC
62	Vss	-	Ground terminal
63	PLUG DET / PLUG1 DET / PLUG2 DET	I	Microphone A or B plug insert detection signal input terminal Detection by AD
64	NO_USE	-	No used
65	DRIVE_SD / POW- ER_DET	I	Shut down signal input from the power amplifier "L": shut down
66	NO_USE	-	No used
67	STA516_TH_WARN	I	Thermal warning for temperature of the IC STA516 more than 130 °C
68	FL_CS	O	Chip select signal output to the fluorescent indicator tube driver
69	ASEL0	O	Audio selection signal output terminal "L": external audio input, "H": FM
70	ASEL1	O	Audio selection signal output terminal
71	NO_USE	-	No used
72	NO_USE	-	No used
73	ST_RDS_INT	I	RDS interrupt signal input from the FM receiver
74	NO_USE	-	No used
75	BD_SDI (IF_SDO)	O	Serial data output to the BD decoder
76	BD_SDO (IF_SDI)	I	Serial data input from the BD decoder
77	BD_SCLK	I	Serial data transfer clock signal input from the BD decoder
78	BD_CS	O	Chip select signal output to the BD decoder
79	NO_USE	-	No used
80	NO_USE	-	No used
81	BD_RESET	O	Reset signal output to the BD decoder, NAND flash and EEPROM "L": reset
82	JIG MODE1	I/O	Jig mode selection signal input from the BD decoder
83	OPWRSB	I	Power control signal input from the BD decoder
84	FE EJECT	O	Eject/ stop key input detection signal output to the BD decoder
85	UPG STATUS	I	UPG status signal input from the BD decoder
86	NO_USE	-	No used
87	NO_USE	-	No used
88	NO_USE	-	No used
89	BD_TEMP	I	Temperature detection signal input terminal
90	DESTINATION	I	Destination setting terminal
91	MODEL	I	Model setting terminal Fixed at "L" in this unit
92, 93	KEY2, KEY1	I	Key input terminal
94	Vss	-	Ground terminal
95	KEY0	I	Power supply key input terminal
96	Vref	I	Reference voltage (+3.3V) input terminal
97	Vcc	-	Power supply terminal (+3.3V)
98	NO_USE	-	No used
99	NO_USE	-	No used
100	NO_USE	-	No used

SECTION 6 EXPLODED VIEWS

Note:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:
 KNOB, BALANCE (WHITE) . . . (RED)
 ↑ ↑
 Parts Color Cabinet's Color
- Abbreviation
 CND : Canadian model

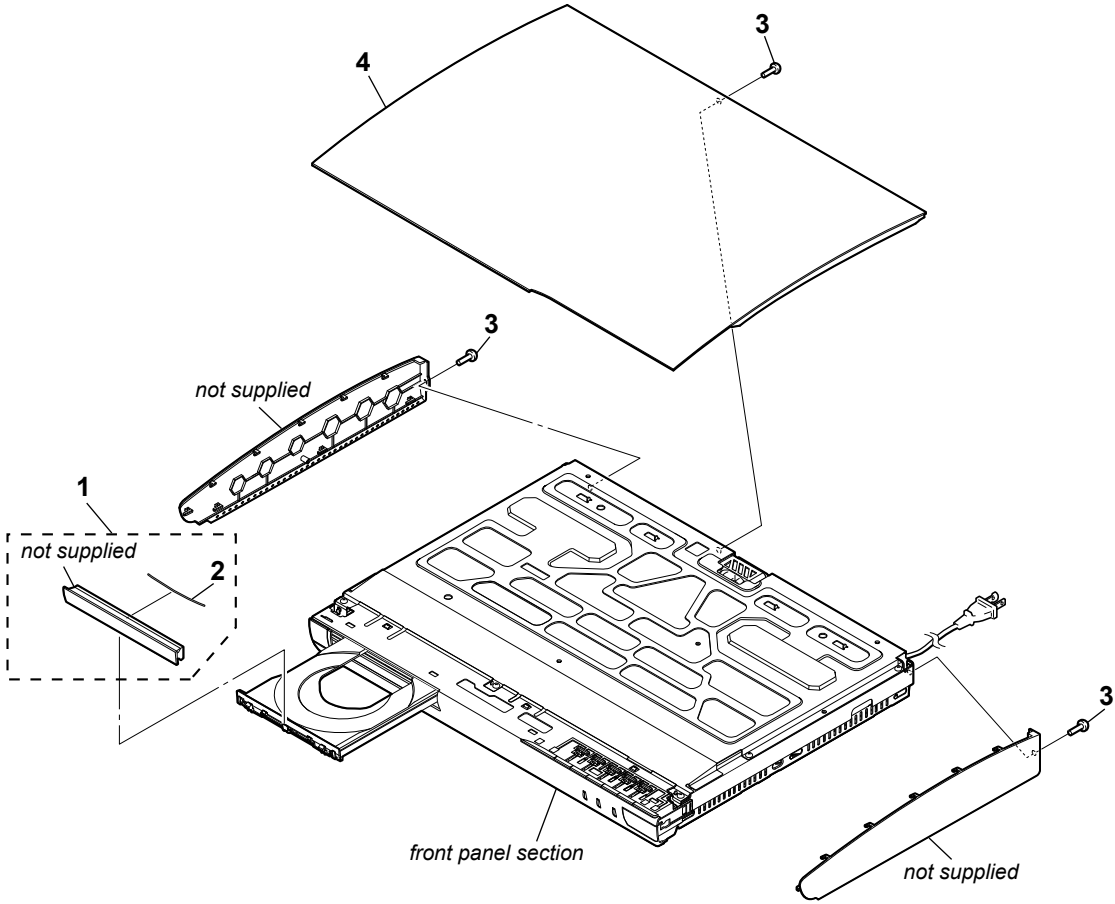
The components identified by mark or dotted line with mark are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by mark contain confidential information. Strictly follow the instructions whenever the components are repaired and/or replaced.

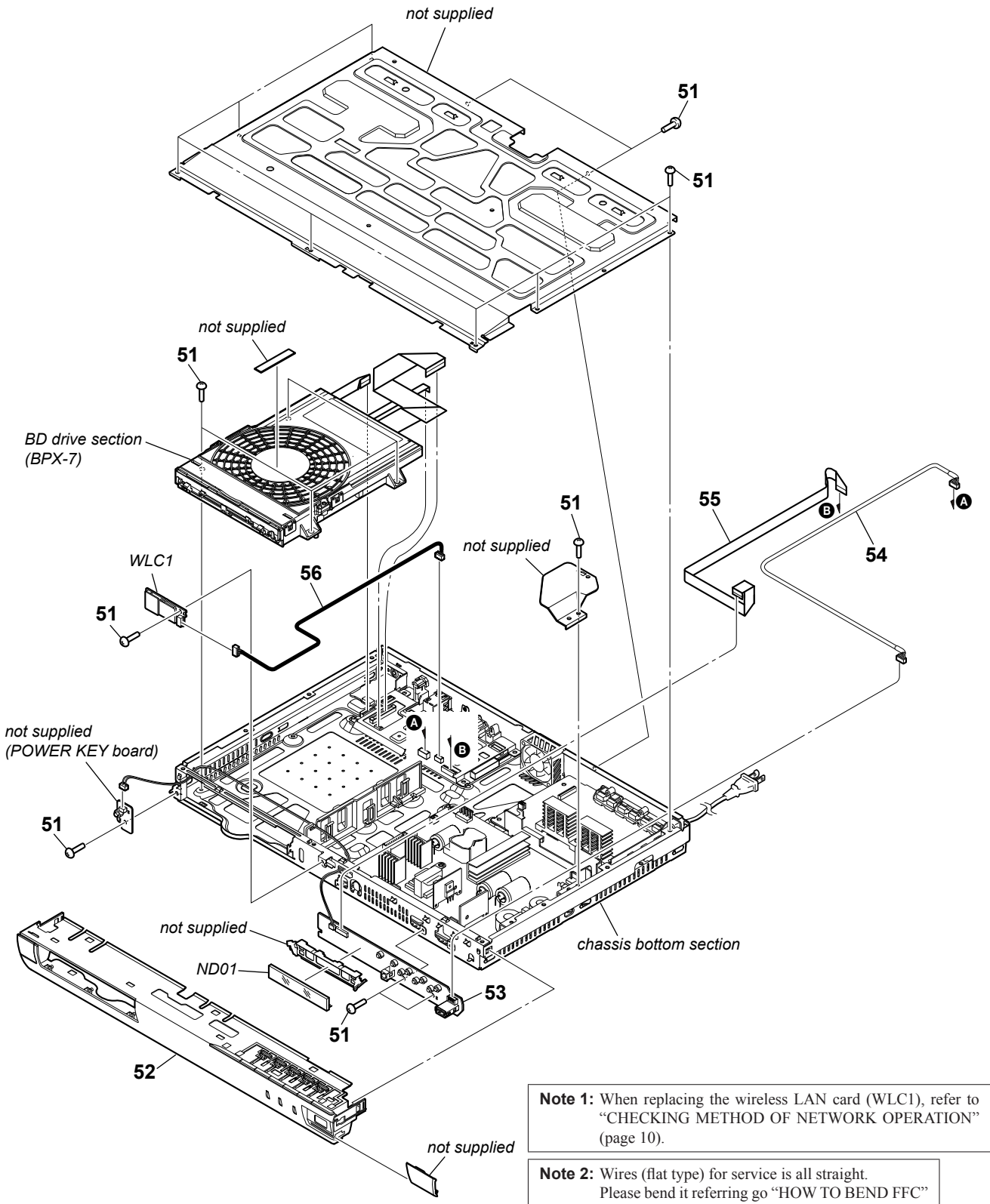
Les composants identifiés par la marque contiennent des informations confidentielles. Suivre scrupuleusement les instructions chaque fois qu'un composant est remplacé et / ou réparé.

6-1. PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-2582-883-2	LOADING ASSY		4	4-295-412-01	PANEL, TOP (US)	
2	4-295-431-01	SPRING, LOADING		4	4-295-412-11	PANEL, TOP (CND)	
3	3-077-331-71	+BV3 (3-CR)					

6-2. FRONT PANEL SECTION

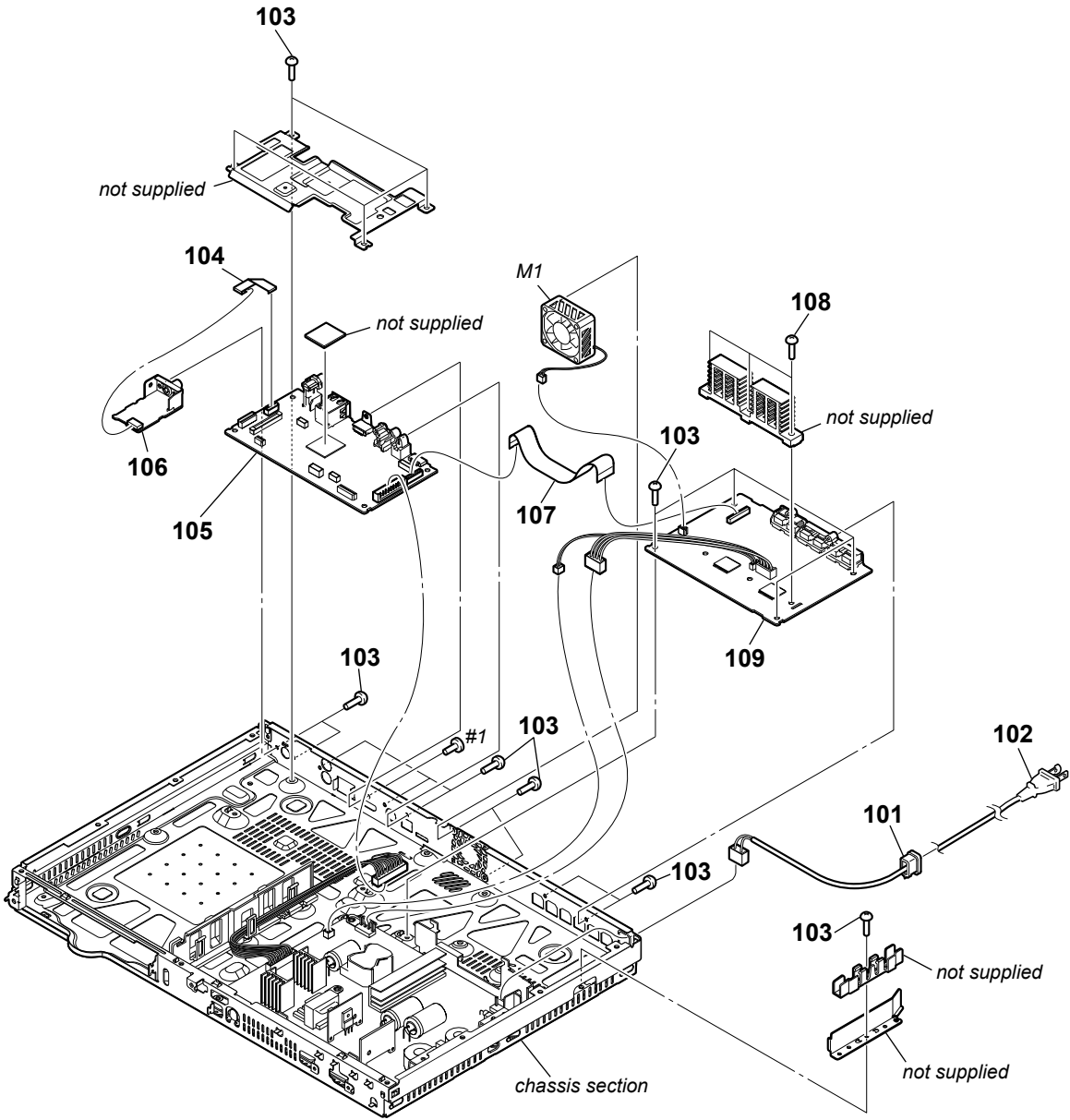


Note 1: When replacing the wireless LAN card (WLC1), refer to "CHECKING METHOD OF NETWORK OPERATION" (page 10).

Note 2: Wires (flat type) for service is all straight. Please bend it referring go "HOW TO BEND FFC" on page 13 when you install it in the unit.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-077-331-71	+BV3 (3-CR)		54	1-968-135-11	HARNESS (USB)	
52	X-2582-882-2	FRONT PANEL ASSY (E390)		55	1-828-333-51	WIRE (FLAT TYPE) (13 CORE)	
52	X-2582-920-2	FRONT PANEL ASSY (T39)		56	1-968-113-11	HARNESS (USB)	
52	X-2582-921-2	FRONT PANEL ASSY (E385)		ND01	1-483-411-11	VACUUM FLUORESCENT DISPLAY	
53	A-1848-680-A	PANEL BOARD, COMPLETE		WLC1	1-458-494-11	CARD, WIRELESS LAN	

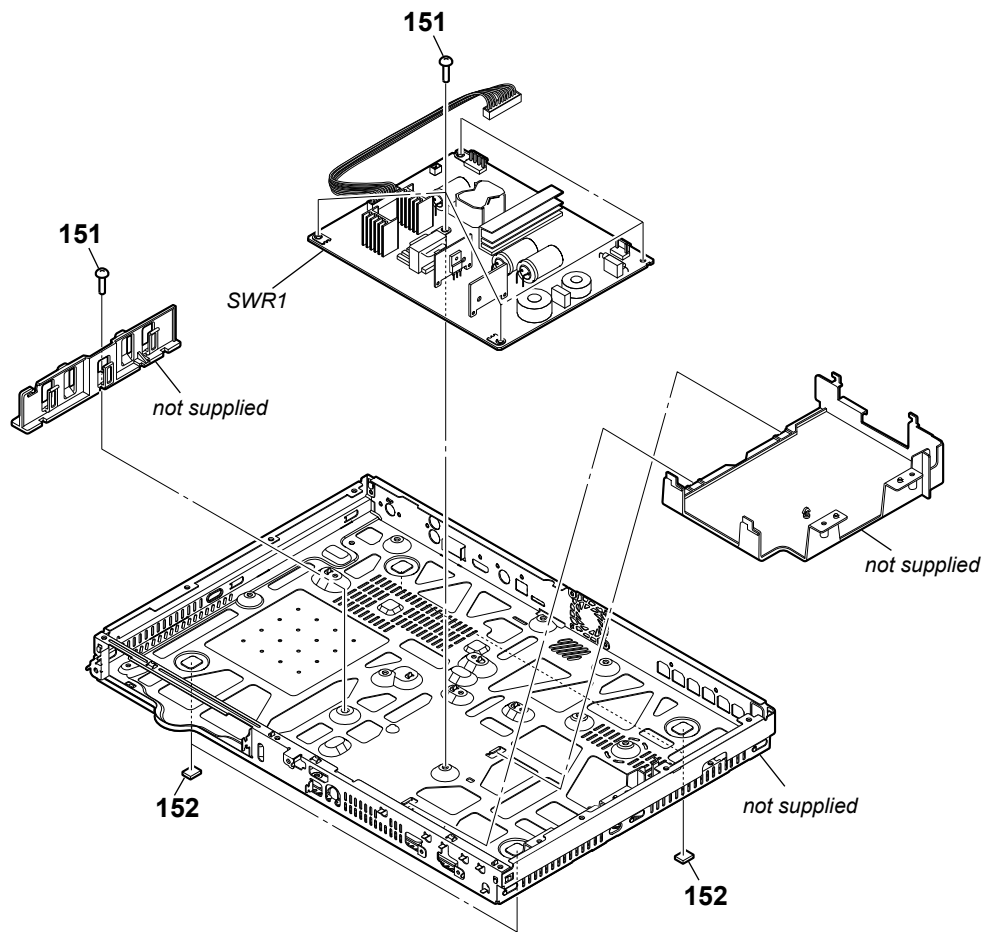
6-3. CHASSIS BOTTOM SECTION



Note: Wires (flat type) for service is all straight. Please bend it referring go "HOW TO BEND FFC" on page 13 when you install it in the unit.

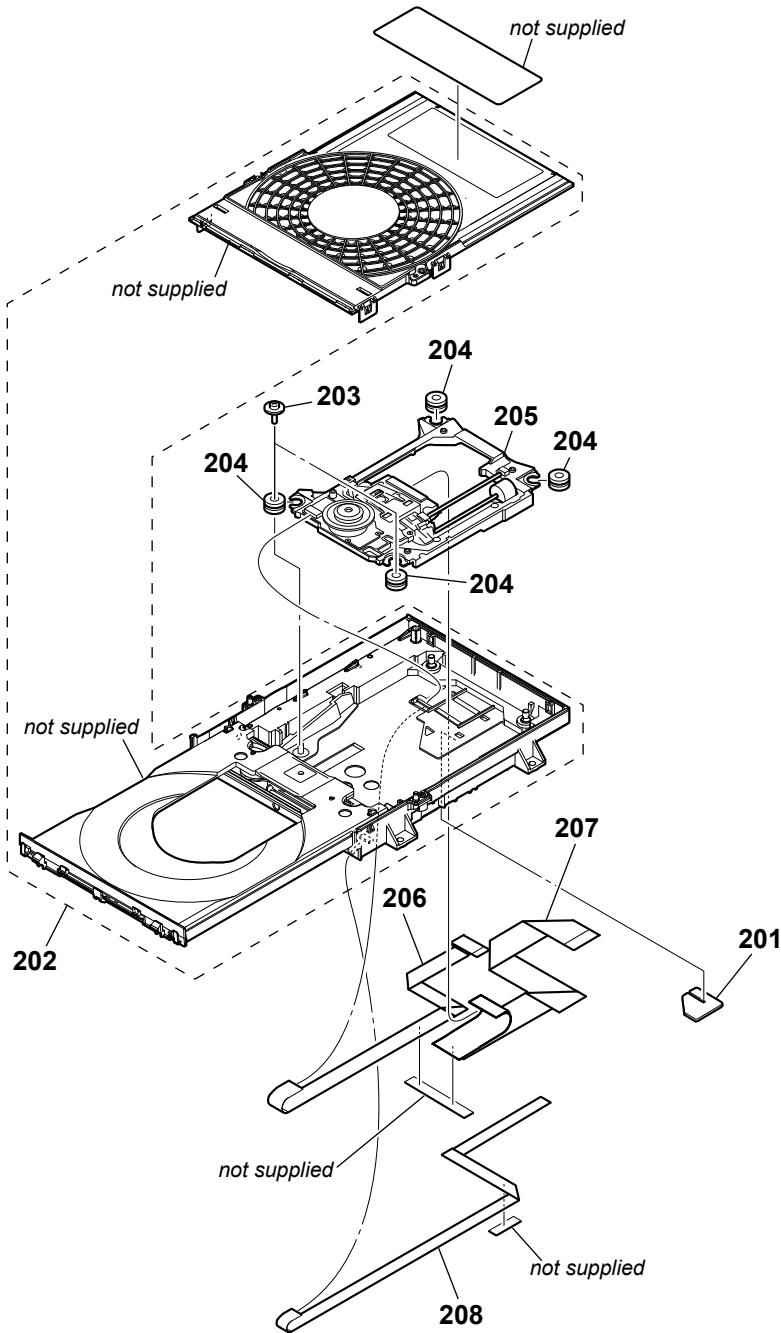
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
△ 101	4-966-267-12	BUSHING (FBS001), CORD		🔒 105	A-1871-182-A	MB148 BOARD, COMPLETE (E385)	
△ 102	1-837-308-11	CORD, POWER-SUPPLY		106	A-1846-434-A	TUNER2FMF-NS BOARD, COMPLETE	
103	3-077-331-71	+BV3 (3-CR)		107	1-828-799-51	WIRE (FLAT TYPE) (30 CORE)	
104	1-828-296-51	WIRE (FLAT TYPE) (7 CORE)		108	3-077-331-81	+BV3 (3-CR)	
🔒 105	A-1871-179-A	MB148 BOARD, COMPLETE (E390: US)		109	A-1848-679-A	AMP BOARD, COMPLETE	
🔒 105	A-1871-180-A	MB148 BOARD, COMPLETE (CND)		△ M1	1-855-134-11	FAN, DC	
🔒 105	A-1871-181-A	MB148 BOARD, COMPLETE (T39)		#1	7-682-546-09	SCREW +B 3X5	

6-4. CHASSIS SECTION



Ref. No.	Part No.	Description	Remark
151	3-077-331-71	+BV3 (3-CR)	
152	4-295-590-01	FOOT	
△ SWR1	1-474-368-11	SWITCHING REGULATOR (3L382W-1)	

6-5. BD DRIVE SECTION (BPX-7)



Note: Wires (flat type) for service is all straight. Please bend it referring go “HOW TO BEND FFC” on page 13 when you install it in the unit.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	4-295-426-01	COVER, DRIVE		206	1-839-608-61	WIRE (FLAT TYPE) (9 CORE)	
202	A-1850-153-A	LOADING FOR SERVICE (BPX-7)		207	1-839-609-11	FLEXIBLE FLAT CABLE (45 CORE)	
203	2-345-115-01	SCREW (S), FLOAT		208	1-839-611-61	WIRE (FLAT TYPE) (5 CORE)	
204	4-175-937-31	INSULATOR					
△ 205	8-820-452-03	DEVICE, OPTICAL KEM480AAA/C2RP1					

SECTION 7 ELECTRICAL PARTS LIST

AMP

Note:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor.
METAL OXIDE: Metal oxide-film resistor.
F: nonflammable
- CAPACITORS
uF: μ F
- COILS
uH: μ H

- SEMICONDUCTORS
In each case, u: μ , for example:
uA. . . : μ A. . . , uPA. . . , μ PA. . . ,
uPB. . . : μ PB. . . , uPC. . . , μ PC. . . ,
uPD. . . : μ PD. . .
- Abbreviation
CND : Canadian model

When indicating parts by reference number, please include the board name.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by mark $\hat{\square}$ contain confidential information.
Strictly follow the instructions whenever the components are repaired and/or replaced.

Les composants identifiés par la marque $\hat{\square}$ contiennent des informations confidentielles.
Suivre scrupuleusement les instructions chaque fois qu'un composant est remplacé et / ou réparé.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-1848-679-A	AMP BOARD, COMPLETE *****		C3134	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
		< CAPACITOR >		C3135	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3013	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	C3136	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V
C3014	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3138	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V
C3021	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	C3139	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V
C3022	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	C3140	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3023	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	C3141	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3025	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3156	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3026	1-112-779-11	CERAMIC CHIP 0.047uF	10% 25V	C3157	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3027	1-112-776-11	CERAMIC CHIP 0.0047uF	10% 50V	C3163	1-118-119-91	CERAMIC CHIP 0.47uF 10%	100V
C3028	1-112-779-11	CERAMIC CHIP 0.047uF	10% 25V	C3164	1-118-119-91	CERAMIC CHIP 0.47uF 10%	100V
C3029	1-112-776-11	CERAMIC CHIP 0.0047uF	10% 50V	C3228	1-100-909-11	CERAMIC CHIP 10uF 10%	6.3V
C3031	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3251	1-118-122-11	ELECT 270uF 20%	63V
C3032	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3253	1-118-122-11	ELECT 270uF 20%	63V
C3033	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3271	1-100-154-91	CERAMIC CHIP 330PF 5%	100V
C3041	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3272	1-100-154-91	CERAMIC CHIP 330PF 5%	100V
C3042	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3281	1-100-154-91	CERAMIC CHIP 330PF 5%	100V
C3050	1-117-681-11	ELECT CHIP 100uF	20% 16V	C3282	1-100-154-91	CERAMIC CHIP 330PF 5%	100V
C3051	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	C3306	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3099	1-114-831-91	CERAMIC CHIP 1uF	10% 100V	C3307	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3106	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	C3308	1-114-831-91	CERAMIC CHIP 1uF 10%	100V
C3107	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	C3309	1-114-831-91	CERAMIC CHIP 1uF 10%	100V
C3108	1-114-831-91	CERAMIC CHIP 1uF	10% 100V	C3315	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V
C3109	1-114-831-91	CERAMIC CHIP 1uF	10% 100V	C3317	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3115	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3318	1-114-831-91	CERAMIC CHIP 1uF 10%	100V
C3117	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	C3319	1-114-831-91	CERAMIC CHIP 1uF 10%	100V
C3118	1-114-831-91	CERAMIC CHIP 1uF	10% 100V	C3320	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V
C3119	1-114-831-91	CERAMIC CHIP 1uF	10% 100V	C3322	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3120	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	C3323	1-118-119-91	CERAMIC CHIP 0.47uF 10%	100V
C3122	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	C3324	1-118-119-91	CERAMIC CHIP 0.47uF 10%	100V
C3123	1-118-119-91	CERAMIC CHIP 0.47uF	10% 100V	C3328	1-114-869-11	CERAMIC CHIP 2.2uF 10%	6.3V
C3124	1-118-119-91	CERAMIC CHIP 0.47uF	10% 100V	C3331	1-116-717-11	CERAMIC CHIP 10uF 20%	10V
C3127	1-114-869-11	CERAMIC CHIP 2.2uF	10% 6.3V	C3333	1-116-717-11	CERAMIC CHIP 10uF 20%	10V
C3131	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	C3334	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
C3133	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	C3335	1-118-066-11	CERAMIC CHIP 0.1uF 10%	100V
				C3336	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V
				C3338	1-114-868-11	CERAMIC CHIP 0.1uF 10%	50V

Note: When the AMP board is replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C3339	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	D3303	6-503-733-01	DI 1SMB51AT3G	
C3340	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	D3304	6-503-733-01	DI 1SMB51AT3G	
C3341	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	D3351	8-719-056-48	DI 1SS388	
C3356	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V				
C3357	1-118-066-11	CERAMIC CHIP 0.1uF	10% 100V	D3501	6-502-961-01	DI DA2J10100L	
				D3503	8-719-056-48	DI 1SS388	
C3363	1-118-119-91	CERAMIC CHIP 0.47uF	10% 100V	D3504	8-719-056-48	DI 1SS388	
C3364	1-118-119-91	CERAMIC CHIP 0.47uF	10% 100V				
C3371	1-100-154-91	CERAMIC CHIP 330PF	5% 100V			< IC >	
C3372	1-100-154-91	CERAMIC CHIP 330PF	5% 100V	IC3001	6-718-103-01	IC TAS5538DGGR	
C3381	1-100-154-91	CERAMIC CHIP 330PF	5% 100V	△ IC3102	6-718-443-01	IC STA516B13TR-A	
				△ IC3302	6-718-443-01	IC STA516B13TR-A	
C3382	1-100-154-91	CERAMIC CHIP 330PF	5% 100V	△ IC3501	6-716-739-01	IC BD00GC0WEFJ-SE2	
C3401	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V				
C3402	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V			< COIL >	
C3403	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V				
C3404	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	L3051	1-469-525-91	INDUCTOR 10uH	
				L3101	1-481-939-11	INDUCTOR 20uH	
C3405	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	L3103	1-481-939-11	INDUCTOR 20uH	
C3406	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	L3301	1-481-939-11	INDUCTOR 20uH	
C3407	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	L3303	1-481-939-11	INDUCTOR 20uH	
C3408	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V				
C3451	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	L3501	1-469-526-91	INDUCTOR 22uH	
						< TRANSISTOR >	
C3452	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	Q3101	6-552-772-01	TR RT3AMMAM1-T111-1F	
C3453	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	Q3202	6-552-772-01	TR RT3AMMAM1-T111-1F	
C3454	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	Q3302	6-552-772-01	TR RT3AMMAM1-T111-1F	
C3455	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	Q3501	6-552-408-01	TR DSC500100L	
C3456	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	Q3512	6-552-433-01	TR DRC5115E0L	
C3457	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	Q3552	6-551-272-01	TRANSISTOR RT3CLLM	
C3458	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	Q3553	6-552-408-01	TR DSC500100L	
C3459	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	Q3554	6-552-760-01	TR SSM3J325F, LSOYF	
C3460	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	Q3555	6-552-772-01	TR RT3AMMAM1-T111-1F	
C3461	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V			< RESISTOR >	
C3462	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	R3021	1-208-713-11	METAL CHIP 18K 0.5% 1/16W	
C3463	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	R3022	1-218-967-11	METAL CHIP 15K 5% 1/16W	
C3464	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	R3023	1-218-949-11	METAL CHIP 470 5% 1/16W	
C3465	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	R3024	1-218-949-11	METAL CHIP 470 5% 1/16W	
C3466	1-100-158-91	CERAMIC CHIP 1000PF	5% 100V	R3025	1-218-965-11	METAL CHIP 10K 5% 1/16W	
C3502	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	R3026	1-218-965-11	METAL CHIP 10K 5% 1/16W	
C3503	1-117-681-11	ELECT CHIP 100uF	20% 16V	R3028	1-216-864-11	SHORT CHIP 0	
C3504	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	R3029	1-216-864-11	SHORT CHIP 0	
C3505	1-128-992-21	ELECT CHIP 47uF	20% 25V	R3033	1-218-965-11	METAL CHIP 10K 5% 1/16W	
C3552	1-126-208-21	ELECT CHIP 47uF	20% 4V	R3040	1-216-295-91	SHORT CHIP 0	
C3554	1-116-405-11	CERAMIC CHIP 0.01uF	10% 100V	R3041	1-216-805-11	METAL CHIP 47 5% 1/10W	
C3555	1-114-868-11	CERAMIC CHIP 0.1uF	10% 50V	R3042	1-216-864-11	SHORT CHIP 0	
C3557	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V	R3043	1-216-864-11	SHORT CHIP 0	
C3561	1-216-296-11	SHORT CHIP 0		R3044	1-216-295-91	SHORT CHIP 0	
C3562	1-216-296-11	SHORT CHIP 0		R3051	1-216-845-11	METAL CHIP 100K 5% 1/10W	
C3563	1-216-296-11	SHORT CHIP 0		R3059	1-218-965-11	METAL CHIP 10K 5% 1/16W	
C3564	1-216-296-11	SHORT CHIP 0		R3060	1-218-965-11	METAL CHIP 10K 5% 1/16W	
C3574	1-116-734-11	CERAMIC CHIP 1uF	20% 16V	R3061	1-218-965-11	METAL CHIP 10K 5% 1/16W	
				R3062	1-218-965-11	METAL CHIP 10K 5% 1/16W	
				R3072	1-216-805-11	METAL CHIP 47 5% 1/10W	
				R3073	1-216-805-11	METAL CHIP 47 5% 1/10W	
				R3074	1-216-296-11	SHORT CHIP 0	
				R3101	1-219-365-11	SHORT CHIP 0	
				R3109	1-218-977-11	METAL CHIP 100K 5% 1/16W	
				R3111	1-219-365-11	SHORT CHIP 0	
				R3145	1-216-296-11	SHORT CHIP 0	
				R3148	1-216-864-11	SHORT CHIP 0	
D3101	6-503-733-01	DI 1SMB51AT3G					
D3102	6-503-733-01	DI 1SMB51AT3G					
D3103	6-503-733-01	DI 1SMB51AT3G					
D3104	6-503-733-01	DI 1SMB51AT3G					
D3151	8-719-056-48	DI 1SS388					
D3301	6-503-733-01	DI 1SMB51AT3G					
D3302	6-503-733-01	DI 1SMB51AT3G					

Note: When the IC3102 and IC3302 on the AMP board are replaced, spread the compound referring to "NOTE OF REPLACING THE IC3102 AND IC3302 ON THE AMP BOARD AND THE COMPLETE AMP BOARD" on servicing notes (page 10).

HBD-E385/E390/T39

AMP **MB148**

Ref. No.	Part No.	Description			Remark
R3153	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3154	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3155	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3156	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3157	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3158	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3161	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3162	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3212	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3271	1-218-282-11	METAL CHIP	22	5%	1/2W
R3272	1-218-282-11	METAL CHIP	22	5%	1/2W
R3281	1-218-282-11	METAL CHIP	22	5%	1/2W
R3282	1-218-282-11	METAL CHIP	22	5%	1/2W
R3283	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3284	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3301	1-219-365-11	SHORT CHIP	0		
R3311	1-219-365-11	SHORT CHIP	0		
R3312	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3345	1-216-296-11	SHORT CHIP	0		
R3348	1-216-864-11	SHORT CHIP	0		
R3353	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3354	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3355	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3356	1-220-281-11	METAL CHIP	4.7K	5%	1/4W
R3357	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3358	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3361	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3371	1-218-282-11	METAL CHIP	22	5%	1/2W
R3372	1-218-282-11	METAL CHIP	22	5%	1/2W
R3381	1-218-282-11	METAL CHIP	22	5%	1/2W
R3382	1-218-282-11	METAL CHIP	22	5%	1/2W
R3383	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3384	1-218-232-91	METAL CHIP	4.7	10%	1/2W
R3501	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3502	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3504	1-208-703-11	METAL CHIP	6.8K	0.5%	1/16W
R3505	1-218-990-81	SHORT CHIP	0		
R3506	1-218-990-81	SHORT CHIP	0		
R3507	1-208-675-11	METAL CHIP	470	0.5%	1/16W
R3509	1-216-295-91	SHORT CHIP	0		
R3510	1-216-295-91	SHORT CHIP	0		
R3511	1-216-295-91	SHORT CHIP	0		
R3512	1-216-295-91	SHORT CHIP	0		
R3513	1-216-295-91	SHORT CHIP	0		
R3514	1-216-295-91	SHORT CHIP	0		
R3515	1-216-295-91	SHORT CHIP	0		
R3516	1-216-295-91	SHORT CHIP	0		
R3517	1-216-295-91	SHORT CHIP	0		
R3518	1-216-295-91	SHORT CHIP	0		
R3519	1-216-295-91	SHORT CHIP	0		
R3520	1-216-295-91	SHORT CHIP	0		
R3521	1-216-295-91	SHORT CHIP	0		
R3522	1-216-295-91	SHORT CHIP	0		
R3523	1-216-295-91	SHORT CHIP	0		
R3524	1-216-295-91	SHORT CHIP	0		
R3525	1-216-295-91	SHORT CHIP	0		
R3526	1-216-295-91	SHORT CHIP	0		
R3527	1-216-295-91	SHORT CHIP	0		
R3528	1-216-295-91	SHORT CHIP	0		
R3529	1-216-295-91	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remark
R3530	1-216-295-91	SHORT CHIP	0		
R3531	1-216-295-91	SHORT CHIP	0		
R3532	1-216-295-91	SHORT CHIP	0		
R3543	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R3544	1-216-864-11	SHORT CHIP	0		
R3555	1-218-973-11	METAL CHIP	47K	5%	1/16W
R3556	1-218-969-11	METAL CHIP	22K	5%	1/16W
R3557	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R3558	1-208-911-11	METAL CHIP	10K	0.5%	1/16W
R3559	1-208-683-11	METAL CHIP	1K	0.5%	1/16W
R3560	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3561	1-216-296-11	SHORT CHIP	0		
R3562	1-216-296-11	SHORT CHIP	0		
R3563	1-216-296-11	SHORT CHIP	0		
R3564	1-216-296-11	SHORT CHIP	0		
R3902	1-216-839-11	METAL CHIP	33K	5%	1/10W
R3903	1-216-839-11	METAL CHIP	33K	5%	1/10W
R3904	1-216-839-11	METAL CHIP	33K	5%	1/10W
R3905	1-216-839-11	METAL CHIP	33K	5%	1/10W
< COMPOSITION CIRCUIT BLOCK >					
RB3001	1-234-372-11	RES, NETWORK 100 (1005X4)			
RB3002	1-234-372-11	RES, NETWORK 100 (1005X4)			
RB3003	1-239-409-11	RES, CHIP NETWORK 47 (3216)			
RB3102	1-233-575-11	RES, CHIP NETWORK 22 (3216)			
RB3302	1-233-575-11	RES, CHIP NETWORK 22 (3216)			
RB3303	1-234-381-11	RES, NETWORK 100K (1005X4)			
RB3304	1-234-381-11	RES, NETWORK 100K (1005X4)			
RB3305	1-234-381-11	RES, NETWORK 100K (1005X4)			
< TERMINAL >					
TB3401	1-780-452-11	TERMINAL BOARD (SPEAKER) 2P (SPEAKERS SUR R/SUR L)			
TB3451	1-780-951-11	TERMINAL BOARD (SPEAKER) 4P (SPEAKERS FRONT R/FRONT L/SUBWOOFER/ CENTER)			

⊞	A-1871-179-A	MB148 BOARD, COMPLETE (for SERVICE) (E390: US)			
⊞	A-1871-180-A	MB148 BOARD, COMPLETE (for SERVICE) (CND)			
⊞	A-1871-181-A	MB148 BOARD, COMPLETE (for SERVICE) (T39)			
⊞	A-1871-182-A	MB148 BOARD, COMPLETE (for SERVICE) (E385) *****			
< CAPACITOR >					
C114	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C115	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C118	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C119	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C120	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C121	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C122	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C123	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C124	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C125	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C128	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V
C129	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C159	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C202	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C203	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
C204	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C806	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C206	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C811	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C207	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C812	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C211	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1101	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C214	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V	C1102	1-100-905-11	CERAMIC CHIP	0.001uF	10%	50V
C215	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1105	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C217	1-116-738-11	CERAMIC CHIP	1uF	10%	6.3V	C1106	1-100-905-11	CERAMIC CHIP	0.001uF	10%	50V
C307	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V	C1110	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C318	1-116-714-11	CERAMIC CHIP	22uF	20%	6.3V	C1112	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C340	1-116-717-11	CERAMIC CHIP	10uF	20%	10V	C1118	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C341	1-116-717-11	CERAMIC CHIP	10uF	20%	10V	C1121	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C343	1-116-717-11	CERAMIC CHIP	10uF	20%	10V	C1122	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C346	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V	C1123	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C347	1-112-298-91	CERAMIC CHIP	1uF	10%	16V	C1129	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C348	1-112-776-11	CERAMIC CHIP	0.0047uF	10%	50V	C1134	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C349	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1152	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C350	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1153	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C351	1-116-714-11	CERAMIC CHIP	22uF	20%	6.3V	C1155	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
* C352	1-116-714-11	CERAMIC CHIP	22uF	20%	6.3V	C1172	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C353	1-116-714-11	CERAMIC CHIP	22uF	20%	6.3V	C1174	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C362	1-112-775-11	CERAMIC CHIP	0.0022uF	10%	50V	C1175	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C373	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V	C1176	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C385	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V	C1177	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C442	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1178	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C446	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V	C1190	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C447	1-164-852-11	CERAMIC CHIP	12PF	5%	50V	C1201	1-116-716-11	CERAMIC CHIP	10uF	10%	16V
C452	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1202	1-116-716-11	CERAMIC CHIP	10uF	10%	16V
C456	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1203	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C457	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1205	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C458	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1206	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C459	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1207	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C460	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1209	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C461	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1211	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C462	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1213	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C463	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1222	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C464	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1223	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C465	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1224	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C466	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1226	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C467	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1229	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C468	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1230	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C469	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C1270	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
* C470	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V	C1280	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
* C471	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V	C1290	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C504	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C5301	1-116-716-11	CERAMIC CHIP	10uF	10%	16V
* C603	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V	C5302	1-116-716-11	CERAMIC CHIP	10uF	10%	16V
* C632	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V	C5307	1-112-775-11	CERAMIC CHIP	0.0022uF	10%	50V
* C633	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V	C5310	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C702	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C5311	1-100-905-11	CERAMIC CHIP	0.001uF	10%	50V
C713	1-112-067-11	CERAMIC CHIP	0.22uF	10%	16V	C5312	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C715	1-112-067-11	CERAMIC CHIP	0.22uF	10%	16V	C5313	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V
C716	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V	* C5314	1-116-714-11	CERAMIC CHIP	22uF	20%	6.3V
C717	1-112-067-11	CERAMIC CHIP	0.22uF	10%	16V	* C5315	1-116-714-11	CERAMIC CHIP	22uF	20%	6.3V
C719	1-112-777-11	CERAMIC CHIP	0.01uF	10%	25V	C5317	1-116-717-11	CERAMIC CHIP	10uF	20%	10V
C720	1-112-067-11	CERAMIC CHIP	0.22uF	10%	16V	C5319	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C723	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C5320	1-116-717-11	CERAMIC CHIP	10uF	20%	10V
C724	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C5321	1-100-905-11	CERAMIC CHIP	0.001uF	10%	50V
* C801	1-116-738-11	CERAMIC CHIP	1uF	10%	6.3V	* C5325	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V
C802	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	C5362	1-112-775-11	CERAMIC CHIP	0.0022uF	10%	50V
* C804	1-116-738-11	CERAMIC CHIP	1uF	10%	6.3V	C5601	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V
C805	1-100-916-11	CERAMIC CHIP	0.1uF	10%	16V	* C5602	1-116-719-11	CERAMIC CHIP	10uF	10%	6.3V

HBD-E385/E390/T39

MB148

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
* C5603	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	C8005	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V
C5604	1-114-130-11	CERAMIC CHIP 1uF	10% 6.3V	C8006	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V
* C5605	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	C8007	1-164-856-81	CERAMIC CHIP 18PF	5% 50V
* C5606	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	C8008	1-164-852-11	CERAMIC CHIP 12PF	5% 50V
C5701	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V	* C8009	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V
C5703	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	C8010	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V
* C5705	1-116-738-11	CERAMIC CHIP 1uF	10% 6.3V	C8011	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V
* C5706	1-116-738-11	CERAMIC CHIP 1uF	10% 6.3V	* C8012	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V
C5708	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	C8013	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V
C5901	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	< CONNECTOR/JACK >			
C5905	1-164-939-11	CERAMIC CHIP 0.0022uF	10% 50V	CN602	1-573-768-21	PIN, CONNECTOR (1.5MM) (SMD) 5P	
C5906	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	CN603	1-573-768-61	PIN, CONNECTOR (1.5MM) (SMD) 5P	
* C5909	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	CN701	1-821-398-21	HDMI CONNECTOR (HDMI OUT ARC)	
* C5910	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	CN801	1-819-875-31	UDE ETHERNET CONNECTOR (8P) (LAN (100))	
C5913	1-164-866-11	CERAMIC CHIP 47PF	5% 50V	CN1001	1-573-806-21	PIN, CONNECTOR (1.5MM) (SMD) 6P	
C5914	1-164-866-11	CERAMIC CHIP 47PF	5% 50V	CN1101	1-843-036-11	FFC/FPC CONNECTOR 45P	
* C5915	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	CN1260	1-820-112-51	CONNECTOR, FFC/FPC 9P	
* C5916	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	CN1270	1-794-362-51	CONNECTOR, FFC/FPC 5P	
C5917	1-116-717-11	CERAMIC CHIP 10uF	20% 10V	CN5301	1-794-032-21	PIN, CONNECTOR (PC BOARD) 11P	
C5920	1-112-298-91	CERAMIC CHIP 1uF	10% 16V	CN5902	1-785-466-51	CONNECTOR, FFC/FPC 7P	
C5922	1-112-298-91	CERAMIC CHIP 1uF	10% 16V	CN6302	1-784-861-51	CONNECTOR, FFC (LIF (NON-ZIF)) 9P	
C5923	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	CN6303	1-785-468-51	CONNECTOR, FFC/FPC 13P	
* C5924	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	< DIODE >			
* C5927	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	D303	6-503-735-01	DI BZT52H-C4V3	
C5928	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	D304	6-503-735-01	DI BZT52H-C4V3	
C5929	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	D5302	6-503-752-01	DI BZT52H-C6V2	
* C5930	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	D5303	6-502-961-01	DI DA2J10100L	
* C5931	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	D5901	6-500-848-01	DIODE MC2840-T112-1	
C5932	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	D6301	6-502-961-01	DI DA2J10100L	
* C5933	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	D6302	6-502-961-01	DI DA2J10100L	
C5936	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V	D6304	6-502-961-01	DI DA2J10100L	
* C5937	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	D6308	6-502-961-01	DI DA2J10100L	
C6205	1-137-765-21	ELECT CHIP 47uF	20% 16V	< FUSE >			
C6212	1-137-765-21	ELECT CHIP 47uF	20% 16V	△ F5301	1-523-132-31	FUSE (1A/50V)	
C6304	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	△ F5303	1-523-135-31	FUSE (3.15A/32V)	
C6305	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	△ F5304	1-523-132-31	FUSE (1A/50V)	
C6306	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	△ F5305	1-523-135-31	FUSE (3.15A/32V)	
C6307	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	△ F5306	1-523-132-31	FUSE (1A/50V)	
C6308	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	△ F5307	1-523-132-31	FUSE (1A/50V)	
C6309	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	< RESISTOR/FERRITE BEAD >			
C6310	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	FB1190	1-216-864-11	SHORT CHIP	0
C6311	1-100-905-11	CERAMIC CHIP 0.001uF	10% 50V	FB1199	1-216-864-11	SHORT CHIP	0
C6312	1-112-067-11	CERAMIC CHIP 0.22uF	10% 16V	FB1200	1-244-161-81	METAL CHIP	2.2 5% 1/16W
C6313	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V	FB1210	1-216-295-91	SHORT CHIP	0
C6316	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	FB1212	1-216-864-11	SHORT CHIP	0
C6319	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	FB5903	1-400-462-21	FERRITE, EMI (SMD) (1005)	
C6320	1-112-298-91	CERAMIC CHIP 1uF	10% 16V	FB8001	1-469-152-11	FERRITE, EMI (SMD) (2012)	
C6321	1-112-777-11	CERAMIC CHIP 0.01uF	10% 25V	FB8002	1-469-152-11	FERRITE, EMI (SMD) (2012)	
C6324	1-112-298-91	CERAMIC CHIP 1uF	10% 16V	FB8003	1-500-283-11	INDUCTOR, FERRITE BEAD	
C6325	1-107-819-11	CERAMIC CHIP 0.022uF	10% 16V	< IC >			
C6401	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	IC101	(Not supplied)	IC CXD90008G-AA	
C6402	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	@*IC106	6-716-964-01	IC K4B2G1646C-HCH9	
* C6403	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V	@ IC106	6-718-284-01	IC H5TQ2G63BFR-H9CR-C	
C6405	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V	@*IC206	6-716-964-01	IC K4B2G1646C-HCH9	
C6410	1-164-866-11	CERAMIC CHIP 47PF	5% 50V	@ IC206	6-718-284-01	IC H5TQ2G63BFR-H9CR-C	
C6412	1-100-905-11	CERAMIC CHIP 0.001uF	10% 50V				
C6413	1-164-866-11	CERAMIC CHIP 47PF	5% 50V				
C8001	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V				
C8002	1-100-916-11	CERAMIC CHIP 0.1uF	10% 16V				
* C8004	1-116-719-11	CERAMIC CHIP 10uF	10% 6.3V				

@ Replacement of IC106 and IC206 on the MB148 board used in this unit requires a special tool.

Note: IC101 on the MB148 board cannot exchange with single. When this part is damaged, exchange the complete mounted board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
IC307	6-717-879-01	IC RT8293ALZSP		R207	1-208-668-11	METAL CHIP 240	0.5% 1/16W
IC308	6-714-935-01	IC TPS54225PWPR		R302	1-216-295-91	SHORT CHIP 0	
IC501	(Not supplied)	IC TC58NVG1S3ETA00B3Q		R327	1-218-953-11	METAL CHIP 1K	5% 1/16W
IC501	(Not supplied)	IC H27U2G8F2CTR-BCR		* R330	1-250-507-11	METAL CHIP 3.3K	1% 1/16W
IC704	6-702-302-01	IC TK11133CSCL-G		* R331	1-250-511-11	METAL CHIP 4.7K	1% 1/16W
IC705	6-705-337-01	IC TK11150CSCL-G		* R332	1-250-499-11	METAL CHIP 1.5K	1% 1/16W
IC1151	6-718-188-01	IC BD80GA3WEFJ-E2		R333	1-208-695-11	METAL CHIP 3.3K	0.5% 1/16W
IC1201	6-718-022-11	IC TPIC2050RDFDRG4		R334	1-208-695-11	METAL CHIP 3.3K	0.5% 1/16W
IC5301	6-717-879-01	IC RT8293ALZSP		R335	1-208-859-81	METAL CHIP 68	0.5% 1/16W
IC5302	6-716-739-01	IC BD00GC0WEFJ-SE2		* R336	1-250-507-11	METAL CHIP 3.3K	1% 1/16W
IC5303	6-711-049-01	IC S-1170B33UC-OTSTFG		R340	1-218-953-11	METAL CHIP 1K	5% 1/16W
IC5601	6-717-848-01	IC NCP380HSNAJAAT1G		R341	1-216-864-11	SHORT CHIP 0	
IC5602	6-717-848-01	IC NCP380HSNAJAAT1G		R342	1-216-791-11	METAL CHIP 3.3	5% 1/10W
IC5702	6-709-888-01	IC TC7WHU04FK		R343	1-218-953-11	METAL CHIP 1K	5% 1/16W
IC5901	6-600-827-01	IC JSR1124 (TV OPTICAL DIGITAL IN)		* R370	1-250-499-11	METAL CHIP 1.5K	1% 1/16W
IC5902	6-705-313-01	IC S-T111B50MC-OHJTFG		R371	1-218-957-11	METAL CHIP 2.2K	5% 1/16W
IC5903	6-712-384-01	IC TC74VHC4052AFT (EK)		R374	1-218-971-11	METAL CHIP 33K	5% 1/16W
IC5904	6-710-554-01	IC PCM1808PWR		R375	1-218-971-11	METAL CHIP 33K	5% 1/16W
IC5905	6-715-041-01	IC TC7SZ125FU, RSOYJ		R376	1-218-953-11	METAL CHIP 1K	5% 1/16W
IC6301	A-1857-997-A	IC R5F3650KCDFB (for SERVICE)		R378	1-218-953-11	METAL CHIP 1K	5% 1/16W
IC6303	6-713-333-01	IC PST8429UL		R390	1-218-971-11	METAL CHIP 33K	5% 1/16W
IC6305	6-702-302-01	IC TK11133CSCL-G		R391	1-218-971-11	METAL CHIP 33K	5% 1/16W
IC6401	6-713-560-01	IC MFI341S2162		R392	1-216-825-11	METAL CHIP 2.2K	5% 1/10W
IC8001	(Not supplied)	IC CS8422		R393	1-216-825-11	METAL CHIP 2.2K	5% 1/10W
		< JACK >		R404	1-218-956-11	METAL CHIP 1.8K	5% 1/16W
J5901	1-780-853-11	JACK, PIN 2P (AUDIO IN L/R)		R405	1-218-977-11	METAL CHIP 100K	5% 1/16W
J6401	1-794-970-11	JACK, PIN 1P (VIDEO OUT)		R516	1-218-990-81	SHORT CHIP 0	
		< COIL >		R519	1-218-965-11	METAL CHIP 10K	5% 1/16W
L303	1-457-995-11	INDUCTOR 10uH		R523	1-208-695-11	METAL CHIP 3.3K	0.5% 1/16W
L304	1-457-771-11	INDUCTOR 2.2uH		R609	1-218-864-11	METAL CHIP 5.1K	0.5% 1/10W
L305	1-400-789-21	INDUCTOR 2.2uH		R734	1-218-953-11	METAL CHIP 1K	5% 1/16W
L306	1-400-789-21	INDUCTOR 2.2uH		R735	1-218-956-11	METAL CHIP 1.8K	5% 1/16W
L5301	1-400-789-21	INDUCTOR 2.2uH		R736	1-218-956-11	METAL CHIP 1.8K	5% 1/16W
L5302	1-457-995-11	INDUCTOR 10uH		R738	1-218-953-11	METAL CHIP 1K	5% 1/16W
L6402	1-412-982-21	INDUCTOR 1.8uH		R743	1-218-933-11	METAL CHIP 22	5% 1/16W
		< CONTACT TERMINAL >		R744	1-218-933-11	METAL CHIP 22	5% 1/16W
PT303	1-780-945-11	TERMINAL, CONTACT		R749	1-218-973-11	METAL CHIP 47K	5% 1/16W
PT304	1-780-945-11	TERMINAL, CONTACT		R805	1-208-920-81	METAL CHIP 24K	0.5% 1/16W
		< TRANSISTOR >		R1002	1-218-965-11	METAL CHIP 10K	5% 1/16W
Q302	6-553-007-01	TR PMG85XP		R1008	1-218-965-11	METAL CHIP 10K	5% 1/16W
Q305	6-552-430-01	TR DRC5114E0L		R1010	1-218-965-11	METAL CHIP 10K	5% 1/16W
Q310	6-552-430-01	TR DRC5114E0L		R1012	1-218-965-11	METAL CHIP 10K	5% 1/16W
Q311	6-553-007-01	TR PMG85XP		R1014	1-218-965-11	METAL CHIP 10K	5% 1/16W
Q312	6-552-433-01	TR DRC5115E0L		R1016	1-218-965-11	METAL CHIP 10K	5% 1/16W
Q702	6-551-714-01	TR INK0001AC1-T112-1		R1018	1-218-941-81	METAL CHIP 100	5% 1/16W
Q5301	6-552-430-01	TR DRC5114E0L		R1019	1-218-941-81	METAL CHIP 100	5% 1/16W
Q5901	6-551-690-01	TRANSISTOR RT3N11M-TP-1		R1020	1-218-941-81	METAL CHIP 100	5% 1/16W
Q6301	6-552-408-01	TR DSC500100L		R1021	1-218-941-81	METAL CHIP 100	5% 1/16W
		< RESISTOR >		R1022	1-218-990-81	SHORT CHIP 0	
R102	1-208-683-11	METAL CHIP 1K	0.5% 1/16W	R1023	1-218-990-81	SHORT CHIP 0	
R103	1-208-683-11	METAL CHIP 1K	0.5% 1/16W	R1028	1-218-965-11	METAL CHIP 10K	5% 1/16W
R106	1-218-941-81	METAL CHIP 100	5% 1/16W	R1033	1-218-965-11	METAL CHIP 10K	5% 1/16W
R108	1-208-668-11	METAL CHIP 240	0.5% 1/16W	R1036	1-218-990-81	SHORT CHIP 0	
R110	1-216-864-11	SHORT CHIP 0		R1037	1-218-990-81	SHORT CHIP 0	
R206	1-218-941-81	METAL CHIP 100	5% 1/16W	R1038	1-218-965-11	METAL CHIP 10K	5% 1/16W
				R1110	1-218-957-11	METAL CHIP 2.2K	5% 1/16W
				R1112	1-218-961-11	METAL CHIP 4.7K	5% 1/16W
				R1120	1-250-535-11	METAL CHIP 47K	1% 1/16W
				R1121	1-250-531-11	METAL CHIP 33K	1% 1/16W
				R1134	1-250-519-11	METAL CHIP 10K	1% 1/16W

Note: IC501 and IC8001 on the MB148 board cannot exchange with single. When these parts are damaged, exchange the complete mounted board.

HBD-E385/E390/T39

MB148

Ref. No.	Part No.	Description			Remark	Ref. No.	Part No.	Description			Remark
R1153	1-218-965-11	METAL CHIP	10K	5%	1/16W	R5934	1-218-973-11	METAL CHIP	47K	5%	1/16W
R1191	1-250-512-11	METAL CHIP	5.1K	1%	1/16W	R5935	1-218-973-11	METAL CHIP	47K	5%	1/16W
R1192	1-218-961-11	METAL CHIP	4.7K	5%	1/16W	R5937	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1199	1-218-990-81	SHORT CHIP	0			R5938	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1210	1-248-476-11	RES-CHIP	0.16	1%	1/3W	R5941	1-218-941-81	METAL CHIP	100	5%	1/16W
R1213	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R5942	1-218-933-11	METAL CHIP	22	5%	1/16W
R1214	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R5944	1-218-990-81	SHORT CHIP	0		
R1215	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R5945	1-218-990-81	SHORT CHIP	0		
R1216	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R5946	1-218-933-11	METAL CHIP	22	5%	1/16W
R1217	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R5947	1-218-933-11	METAL CHIP	22	5%	1/16W
R1218	1-216-825-11	METAL CHIP	2.2K	5%	1/10W	R5951	1-218-933-11	METAL CHIP	22	5%	1/16W
R5301	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W	R5957	1-218-941-81	METAL CHIP	100	5%	1/16W
R5302	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	R5958	1-218-941-81	METAL CHIP	100	5%	1/16W
R5303	1-208-911-11	METAL CHIP	10K	0.5%	1/16W	R5962	1-218-941-81	METAL CHIP	100	5%	1/16W
R5304	1-218-953-11	METAL CHIP	1K	5%	1/16W	R5963	1-218-941-81	METAL CHIP	100	5%	1/16W
R5311	1-216-791-11	METAL CHIP	3.3	5%	1/10W	R5964	1-218-941-81	METAL CHIP	100	5%	1/16W
R5312	1-218-966-11	METAL CHIP	12K	5%	1/16W	R5969	1-218-933-11	METAL CHIP	22	5%	1/16W
R5317	1-218-977-11	METAL CHIP	100K	5%	1/16W	R5970	1-218-933-11	METAL CHIP	22	5%	1/16W
R5323	1-208-715-11	METAL CHIP	22K	0.5%	1/16W	R5971	1-218-941-81	METAL CHIP	100	5%	1/16W
R5325	1-208-911-11	METAL CHIP	10K	0.5%	1/16W	R5972	1-218-941-81	METAL CHIP	100	5%	1/16W
R5327	1-208-911-11	METAL CHIP	10K	0.5%	1/16W	R5973	1-218-941-81	METAL CHIP	100	5%	1/16W
R5352	1-216-295-91	SHORT CHIP	0			R5974	1-218-941-81	METAL CHIP	100	5%	1/16W
R5353	1-218-953-11	METAL CHIP	1K	5%	1/16W	R5975	1-218-941-81	METAL CHIP	100	5%	1/16W
R5354	1-216-295-91	SHORT CHIP	0			R5976	1-218-941-81	METAL CHIP	100	5%	1/16W
R5355	1-216-295-91	SHORT CHIP	0			R5977	1-218-941-81	METAL CHIP	100	5%	1/16W
R5601	1-218-953-11	METAL CHIP	1K	5%	1/16W	R5978	1-218-941-81	METAL CHIP	100	5%	1/16W
R5603	1-208-715-11	METAL CHIP	22K	0.5%	1/16W	R5981	1-208-859-81	METAL CHIP	68	0.5%	1/16W
R5604	1-218-990-81	SHORT CHIP	0			R5982	1-218-933-11	METAL CHIP	22	5%	1/16W
R5605	1-218-965-11	METAL CHIP	10K	5%	1/16W	R5983	1-218-933-11	METAL CHIP	22	5%	1/16W
R5606	1-218-965-11	METAL CHIP	10K	5%	1/16W	R5984	1-218-933-11	METAL CHIP	22	5%	1/16W
R5608	1-208-927-11	METAL CHIP	47K	0.5%	1/16W	R5985	1-218-933-11	METAL CHIP	22	5%	1/16W
R5609	1-218-990-81	SHORT CHIP	0			R5986	1-218-933-11	METAL CHIP	22	5%	1/16W
R5611	1-218-965-11	METAL CHIP	10K	5%	1/16W	R5987	1-218-933-11	METAL CHIP	22	5%	1/16W
R5613	1-218-977-11	METAL CHIP	100K	5%	1/16W	R5988	1-218-933-11	METAL CHIP	22	5%	1/16W
R5701	1-218-965-11	METAL CHIP	10K	5%	1/16W	R6301	1-218-989-11	METAL CHIP	1M	5%	1/16W
R5703	1-218-981-91	METAL CHIP	220K	5%	1/16W	R6302	1-218-941-81	METAL CHIP	100	5%	1/16W
R5705	1-218-949-11	METAL CHIP	470	5%	1/16W	R6307	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R5707	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6308	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5708	1-208-859-81	METAL CHIP	68	0.5%	1/16W	R6309	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5709	1-208-859-81	METAL CHIP	68	0.5%	1/16W	R6310	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5710	1-218-953-11	METAL CHIP	1K	5%	1/16W	R6311	1-218-941-81	METAL CHIP	100	5%	1/16W
R5901	1-218-933-11	METAL CHIP	22	5%	1/16W	R6312	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R5902	1-218-941-81	METAL CHIP	100	5%	1/16W	R6313	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5903	1-218-933-11	METAL CHIP	22	5%	1/16W	R6314	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5909	1-218-969-11	METAL CHIP	22K	5%	1/16W	R6315	1-218-941-81	METAL CHIP	100	5%	1/16W
R5910	1-218-969-11	METAL CHIP	22K	5%	1/16W	R6316	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5911	1-218-941-81	METAL CHIP	100	5%	1/16W	R6317	1-218-941-81	METAL CHIP	100	5%	1/16W
R5912	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6319	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5913	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6320	1-218-941-81	METAL CHIP	100	5%	1/16W
R5914	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6321	1-218-941-81	METAL CHIP	100	5%	1/16W
R5915	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6322	1-218-941-81	METAL CHIP	100	5%	1/16W
R5920	1-218-968-11	METAL CHIP	18K	5%	1/16W	R6323	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5921	1-218-968-11	METAL CHIP	18K	5%	1/16W	R6324	1-218-941-81	METAL CHIP	100	5%	1/16W
R5922	1-218-968-11	METAL CHIP	18K	5%	1/16W	R6326	1-218-941-81	METAL CHIP	100	5%	1/16W
R5923	1-218-968-11	METAL CHIP	18K	5%	1/16W	R6328	1-218-941-81	METAL CHIP	100	5%	1/16W
R5924	1-218-953-11	METAL CHIP	1K	5%	1/16W	R6329	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5929	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6332	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5930	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6333	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5931	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6334	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5932	1-218-973-11	METAL CHIP	47K	5%	1/16W	R6336	1-218-989-11	METAL CHIP	1M	5%	1/16W

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R6341	1-218-941-81	METAL CHIP	100 5%			< THERMISTOR >	
R6342	1-218-990-81	SHORT CHIP	0				
R6343	1-218-970-11	METAL CHIP	27K 5%	TH6301	1-804-949-11	THERMISTOR, NTC (SMD)	
R6347	1-218-965-11	METAL CHIP	10K 5%			< VIBRATOR >	
R6348	1-218-941-81	METAL CHIP	100 5%				
R6350	1-218-977-11	METAL CHIP	100K 5%	X401	1-814-278-11	VIBRATOR, CRYSTAL (27MHz)	
R6355	1-218-973-11	METAL CHIP	47K 5%	X6301	1-795-313-21	VIBRATOR, CERAMIC (8MHz)	
R6356	1-218-965-11	METAL CHIP	10K 5%	X8001	1-814-130-11	QUARTZ CRYSTAL UNIT (24.576MHz)	
R6357	1-218-965-11	METAL CHIP	10K 5%	*****			
R6358	1-218-977-11	METAL CHIP	100K 5%	A-1848-680-A		PANEL BOARD, COMPLETE	
R6359	1-218-973-11	METAL CHIP	47K 5%			*****	
R6360	1-218-965-11	METAL CHIP	10K 5%			< CAPACITOR >	
R6361	1-218-973-11	METAL CHIP	47K 5%				
* R6366	1-250-507-11	METAL CHIP	3.3K 1%				
R6367	1-218-977-11	METAL CHIP	100K 5%	C02	1-114-325-11	CERAMIC CHIP 0.1uF	10% 25V
R6368	1-218-965-11	METAL CHIP	10K 5%	C03	1-165-908-11	CERAMIC CHIP 1uF	10% 10V
R6369	1-218-973-11	METAL CHIP	47K 5%	C04	1-100-611-91	CERAMIC CHIP 22uF	20% 6.3V
R6370	1-218-965-11	METAL CHIP	10K 5%	C05	1-165-908-11	CERAMIC CHIP 1uF	10% 10V
R6371	1-218-941-81	METAL CHIP	100 5%	C06	1-165-908-11	CERAMIC CHIP 1uF	10% 10V
R6372	1-218-941-81	METAL CHIP	100 5%	C08	1-114-325-11	CERAMIC CHIP 0.1uF	10% 25V
R6374	1-218-977-11	METAL CHIP	100K 5%	C10	1-114-324-11	CERAMIC CHIP 0.022uF	10% 50V
R6377	1-208-699-11	METAL CHIP	4.7K 0.5%	C13	1-114-323-11	CERAMIC CHIP 0.01uF	10% 50V
R6382	1-208-709-11	METAL CHIP	12K 0.5%	C14	1-114-323-11	CERAMIC CHIP 0.01uF	10% 50V
R6384	1-218-953-11	METAL CHIP	1K 5%	C15	1-119-772-91	ELECT 47uF	20% 35V
R6388	1-218-941-81	METAL CHIP	100 5%	C17	1-114-325-11	CERAMIC CHIP 0.1uF	10% 25V
R6389	1-218-977-11	METAL CHIP	100K 5%	C18	1-165-989-11	CERAMIC CHIP 10uF	10% 6.3V
R6390	1-218-990-81	SHORT CHIP	0	C20	1-114-323-11	CERAMIC CHIP 0.01uF	10% 50V
R6391	1-218-965-11	METAL CHIP	10K 5%	C25	1-114-325-11	CERAMIC CHIP 0.1uF	10% 25V
R6392	1-218-965-11	METAL CHIP	10K 5%	C27	1-126-176-11	ELECT 220uF	20% 10V
R6393	1-218-958-11	METAL CHIP	2.7K 5%	C30	1-112-746-11	CERAMIC CHIP 4.7uF	10% 6.3V
R6394	1-218-941-81	METAL CHIP	100 5%	C31	1-114-323-11	CERAMIC CHIP 0.01uF	10% 50V
R6395	1-218-961-11	METAL CHIP	4.7K 5%	C40	1-114-325-11	CERAMIC CHIP 0.1uF	10% 25V
R6396	1-218-961-11	METAL CHIP	4.7K 5%	C43	1-114-325-11	CERAMIC CHIP 0.1uF	10% 25V
R6397	1-218-957-11	METAL CHIP	2.2K 5%			< CONNECTOR >	
R6398	1-218-957-11	METAL CHIP	2.2K 5%	CN02	1-779-550-21	CONNECTOR, FFC (LIF (NON-ZIF)) 13P	
R6403	1-218-990-81	SHORT CHIP	0	CN03	1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P	
R6406	1-218-961-11	METAL CHIP	4.7K 5%	CN04	1-819-866-11	USB CONNECTOR (A) (♣)	
R6407	1-218-961-11	METAL CHIP	4.7K 5%			< DIODE >	
R6411	1-218-990-81	SHORT CHIP	0	D03	6-501-579-01	DIODE MC2837	
R6416	1-218-990-81	SHORT CHIP	0	D04	6-501-579-01	DIODE MC2837	
R6420	1-208-860-81	METAL CHIP	75 0.5%	D05	6-503-012-01	DI DZ2J04300L	
R6421	1-218-990-81	SHORT CHIP	0			< IC >	
R8002	1-218-941-81	METAL CHIP	100 5%	IC01	6-715-891-01	IC MM3464A50NRE	
R8003	1-218-941-81	METAL CHIP	100 5%	IC02	6-715-134-01	IC MM3404A33URE	
R8005	1-218-989-11	METAL CHIP	1M 5%	IC03	6-701-729-01	IC PT6315	
R8006	1-218-957-11	METAL CHIP	2.2K 5%	IC30	6-600-665-01	IC GP1UE27XK0VF	
R8007	1-218-941-81	METAL CHIP	100 5%			< JUMPER RESISTOR >	
R8008	1-218-937-11	METAL CHIP	47 5%	JR01	1-216-864-11	SHORT CHIP 0	
R8009	1-218-941-81	METAL CHIP	100 5%	JR02	1-216-864-11	SHORT CHIP 0	
R8010	1-218-937-11	METAL CHIP	47 5%	JR03	1-216-864-11	SHORT CHIP 0	
R8016	1-218-967-11	METAL CHIP	15K 5%	JR04	1-216-864-11	SHORT CHIP 0	
R8017	1-218-967-11	METAL CHIP	15K 5%	JR06	1-216-864-11	SHORT CHIP 0	
R8029	1-218-941-81	METAL CHIP	100 5%	JR07	1-216-864-11	SHORT CHIP 0	
		< COMPOSITION CIRCUIT BLOCK >		JR08	1-216-864-11	SHORT CHIP 0	
RB1001	1-234-378-21	RES, NETWORK 10K (1005X4)		JR09	1-216-296-11	SHORT CHIP 0	
RB1002	1-234-378-21	RES, NETWORK 10K (1005X4)		JR10	1-216-295-91	SHORT CHIP 0	
RB6301	1-234-372-11	RES, NETWORK 100 (1005X4)		JR11	1-216-295-91	SHORT CHIP 0	
RB6304	1-234-372-11	RES, NETWORK 100 (1005X4)					

HBD-E385/E390/T39

PANEL **POWER KEY** **TUNER2FMF-NS**

Ref. No.	Part No.	Description	Remark
JR12	1-216-864-11	SHORT CHIP	0
JR13	1-216-295-91	SHORT CHIP	0
JR15	1-216-295-91	SHORT CHIP	0
JR16	1-216-296-11	SHORT CHIP	0
JR17	1-216-296-11	SHORT CHIP	0
JR18	1-216-296-11	SHORT CHIP	0
JR19	1-216-296-11	SHORT CHIP	0
JR20	1-216-296-11	SHORT CHIP	0
JR22	1-216-296-11	SHORT CHIP	0
JR23	1-216-296-11	SHORT CHIP	0
JR24	1-216-296-11	SHORT CHIP	0
JR25	1-216-296-11	SHORT CHIP	0
JR26	1-216-296-11	SHORT CHIP	0
JR27	1-216-296-11	SHORT CHIP	0
JR28	1-216-296-11	SHORT CHIP	0
JR29	1-216-296-11	SHORT CHIP	0
JR30	1-216-296-11	SHORT CHIP	0
JR31	1-216-296-11	SHORT CHIP	0
JR33	1-216-296-11	SHORT CHIP	0
JR34	1-216-296-11	SHORT CHIP	0
JR35	1-216-296-11	SHORT CHIP	0
JR36	1-216-296-11	SHORT CHIP	0
JR37	1-216-296-11	SHORT CHIP	0
JR38	1-216-296-11	SHORT CHIP	0
JR39	1-216-296-11	SHORT CHIP	0
JR40	1-216-296-11	SHORT CHIP	0
JR41	1-216-296-11	SHORT CHIP	0
		< COIL >	
L01	1-481-781-21	INDUCTOR	47uH
		< FLUORESCENT INDICATOR TUBE >	
ND01	1-483-411-11	VACUUM FLUORESCENT DISPLAY	
		< TRANSISTOR >	
Q03	6-552-713-01	TR	QS5W2TR
		< RESISTOR >	
R04	1-216-821-11	METAL CHIP	1K 5% 1/10W
R06	1-216-823-11	METAL CHIP	1.5K 5% 1/10W
R13	1-216-833-11	METAL CHIP	10K 5% 1/10W
R14	1-216-805-11	METAL CHIP	47 5% 1/10W
R17	1-216-805-11	METAL CHIP	47 5% 1/10W
R22	1-216-845-11	METAL CHIP	100K 5% 1/10W
R29	1-216-813-11	METAL CHIP	220 5% 1/10W
R30	1-216-805-11	METAL CHIP	47 5% 1/10W
R31	1-216-813-11	METAL CHIP	220 5% 1/10W
R32	1-216-813-11	METAL CHIP	220 5% 1/10W
R40	1-216-809-11	METAL CHIP	100 5% 1/10W
R41	1-216-821-11	METAL CHIP	1K 5% 1/10W
R42	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R43	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R44	1-216-809-11	METAL CHIP	100 5% 1/10W
R45	1-216-821-11	METAL CHIP	1K 5% 1/10W
R46	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
R47	1-216-825-11	METAL CHIP	2.2K 5% 1/10W
		< SWITCH >	
S40	1-771-410-21	SWITCH, TACTILE (▲)	

Ref. No.	Part No.	Description	Remark
S41	1-771-410-21	SWITCH, TACTILE (VOL -)	
S42	1-771-410-21	SWITCH, TACTILE (VOL +)	
S43	1-771-410-21	SWITCH, TACTILE (▶)	
S44	1-771-410-21	SWITCH, TACTILE (■)	
S45	1-771-410-21	SWITCH, TACTILE (FUNCTION)	
S46	1-771-410-21	SWITCH, TACTILE (◀▶)	
S47	1-771-410-21	SWITCH, TACTILE (▶▶)	
		< TRANSFORMER >	
T01	1-697-104-11	DC-DC CONVERTER TRANSFORMER	

		POWER KEY BOARD	

		< CAPACITOR >	
C303	1-114-325-11	CERAMIC CHIP	0.1uF 10% 25V
		< CONNECTOR >	
CN301	1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P	
		< RESISTOR >	
R301	1-216-809-11	METAL CHIP	100 5% 1/10W
		< SWITCH >	
S301	1-771-410-21	SWITCH, TACTILE (⏏)	

	A-1846-434-A	TUNER2FMF-NS BOARD, COMPLETE	

		< CAPACITOR >	
C101	1-100-155-91	CERAMIC CHIP	470PF 5% 100V
C102	1-116-734-11	CERAMIC CHIP	1uF 20% 16V
C103	1-116-734-11	CERAMIC CHIP	1uF 20% 16V
C105	1-116-734-11	CERAMIC CHIP	1uF 20% 16V
C107	1-100-158-91	CERAMIC CHIP	1000PF 5% 100V
C108	1-116-734-11	CERAMIC CHIP	1uF 20% 16V
C109	1-114-325-11	CERAMIC CHIP	0.1uF 10% 25V
C110	1-114-325-11	CERAMIC CHIP	0.1uF 10% 25V
C111	1-116-734-11	CERAMIC CHIP	1uF 20% 16V
C112	1-116-734-11	CERAMIC CHIP	1uF 20% 16V
C113	1-165-176-11	CERAMIC CHIP	0.047uF 10% 16V
		< CONNECTOR >	
CN101	1-779-544-21	CONNECTOR, FFC (LIF (NON-ZIF)) 7P	
		< DIODE >	
D103	6-501-579-01	DIODE MC2837	
		< FILTER >	
FL101	1-236-711-21	FILTER, BAND PASS	
		< IC >	
IC101	6-717-989-01	IC RZ5B701-0001E2	
IC102	6-715-134-01	IC MM3404A33URE	

Ref. No.	Part No.	Description	Remark		
< COIL >					
L103	1-481-524-11	INDUCTOR	10uH		
L104	1-481-521-11	INDUCTOR	1uH		
L105	1-481-521-11	INDUCTOR	1uH		
< RESISTOR >					
R101	1-216-809-11	METAL CHIP	100	5%	1/10W
R103	1-216-801-11	METAL CHIP	22	5%	1/10W
R104	1-216-864-11	SHORT CHIP	0		
R105	1-216-801-11	METAL CHIP	22	5%	1/10W
R107	1-216-809-11	METAL CHIP	100	5%	1/10W
R108	1-216-296-11	SHORT CHIP	0		
R109	1-216-864-11	SHORT CHIP	0		
R110	1-216-833-11	METAL CHIP	10K	5%	1/10W
R113	1-216-833-11	METAL CHIP	10K	5%	1/10W
< VIBRATOR >					
X101	1-767-317-11	VIBRATOR, CRYSTAL (32.768kHz)			

MISCELLANEOUS					

54	1-968-135-11	HARNESS (USB)			
55	1-828-333-51	WIRE (FLAT TYPE) (13 CORE)			
56	1-968-113-11	HARNESS (USB)			
△ 102	1-837-308-11	CORD, POWER-SUPPLY			
104	1-828-296-51	WIRE (FLAT TYPE) (7 CORE)			
107	1-828-799-51	WIRE (FLAT TYPE) (30 CORE)			
202	A-1850-153-A	LOADING FOR SERVICE (BPX-7)			
△ 205	8-820-452-03	DEVICE, OPTICAL KEM480AAA/C2RP1			
206	1-839-608-61	WIRE (FLAT TYPE) (9 CORE)			
207	1-839-609-11	FLEXIBLE FLAT CABLE (45 CORE)			
208	1-839-611-61	WIRE (FLAT TYPE) (5 CORE)			
△ M1	1-855-134-11	FAN, DC			
△ SWR1	1-474-368-11	SWITCHING REGULATOR (3L382W-1)			
WLC1	1-458-494-11	CARD, WIRELESS LAN			

Note 2: Wires (flat type) for service is all straight. Please bend it referring go "HOW TO BEND FFC" on page 13 when you install it in the unit.

Note 1: When replacing the wireless LAN card (WLC1), refer to "CHECKING METHOD OF NETWORK OPERATION" (page 10).

SS-CTB112/CTB113/TSB117/ TSB118/TSB119

SERVICE MANUAL

Ver. 1.0 2012.02

US Model
PX Model
SS-CTB113/TSB118
Canadian Model
AEP Model
UK Model
E Model
SS-CTB112/CTB113/TSB117/TSB118/TSB119
Australian Model
SS-CTB112/SS-CTB113/TSB117/TSB118



Photo:
SS-CTB112

Photo:
SS-CTB113

Photo:
SS-TSB117

Photo:
SS-TSB118

Photo:
SS-TSB119

- SS-CTB112 is the center speaker in BDV-E190.
- SS-CTB113 is the center speaker in BDV-E290/E385/E390/E490/E690/T39.
- SS-TSB117 is the front and surround speaker in BDV-E190.
- SS-TSB118 is the front and surround speaker in BDV-E290/E385/E390/T39 and the surround speaker in BDV-E490.
- SS-TSB119 is the front speaker in BDV-E490/E690 and the surround speaker in BDV-E690.

SPECIFICATIONS

Center (SS-CTB112) for BDV-E190 only

Dimensions (approx.) 145 mm × 94 mm × 84 mm
(5 3/4 in × 3 3/4 in ×
3 3/8 in) (w/h/d)
Mass (approx.) 0.39 kg (13 3/4 oz) (with
speaker cord)

Center (SS-CTB113) for BDV-E290/BDV-E385/ BDV-E390/BDV-E490/BDV-E690/BDV-T39 only

Dimensions (approx.) 245 mm × 87 mm × 78 mm
(9 3/4 in × 3 1/2 in ×
3 1/8 in) (w/h/d)
Mass (approx.) 0.59 kg (1 lb 4 3/4 oz) (with
speaker cord)

Front/Surround (SS-TSB117) for BDV-E190 only

Dimensions (approx.) 91 mm × 148 mm × 87 mm
(3 5/8 in × 5 7/8 in ×
3 1/2 in) (w/h/d)
Mass (approx.) Front:
0.33 kg (11 5/8 oz) (with
speaker cord)
Surround:
0.38 kg (13 3/8 oz) (with
speaker cord)

Front/Surround (SS-TSB118) for BDV-E290/ BDV-E385/BDV-E390/BDV-T39 only

Surround (SS-TSB118) for BDV-E490 only
Dimensions (approx.) 95 mm × 210 mm × 93 mm
(3 3/4 in × 8 3/8 in ×
3 3/4 in) (w/h/d)

Mass (approx.) Front:
0.54 kg (1 lb 3 oz) (with
speaker cord)
Surround:
0.62 kg (1 lb 5 7/8 oz) (with
speaker cord)

Front/Surround (SS-TSB119) for BDV-E690 only

Front (SS-TSB119) for BDV-E490 only
Dimensions (approx.) 95 mm × 680 mm × 71 mm
(3 3/4 in × 26 7/8 in ×
2 7/8 in) (w/h/d) (wall-
mounted part)
260 mm × 1,190 mm × 260
mm (10 1/4 in × 46 7/8 in ×
10 1/4 in) (w/h/d) (whole speaker)
Mass (approx.) 1.2 kg (2 lb 10 3/8 oz) (wall-
mounted part)
2.9 kg (6 lb 6 1/4 oz) (with
speaker cord and stand)

– Refer to next page for part list –

• JIG

When disassembling the set, use the
following jig (for front panel removal).
Part No.: J-2501-238-A
JIG FOR SPEAKER REMOVAL



Design and specifications are subject to change
without notice.

SPEAKER SYSTEM

9-890-585-01
2012B80-1
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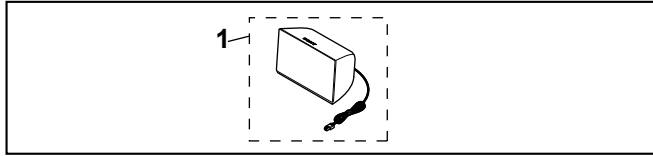
Sony Corporation
Published by Sony EMCS (Malaysia) PG Tec

SONY®

SS-CTB112/CTB113/TSB117/TSB118/TSB119

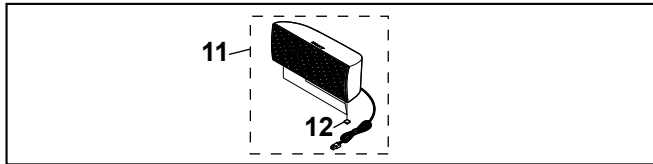
PART LIST (SS-CTB112)

Ref. No.	Part No.	Description	Remark
1	A-1848-369-A	SS-CTB112 (Center) (E190: AUS)	
1	A-1849-651-A	SS-CTB112 (Center) (E190: SAF, SP)	
1	A-1849-652-A	SS-CTB112 (Center) (E190: AEP, UK)	
1	A-1849-653-A	SS-CTB112 (Center) (E190: MX6)	
1	A-1862-339-A	SS-CTB112 (Center) (E190: CND)	



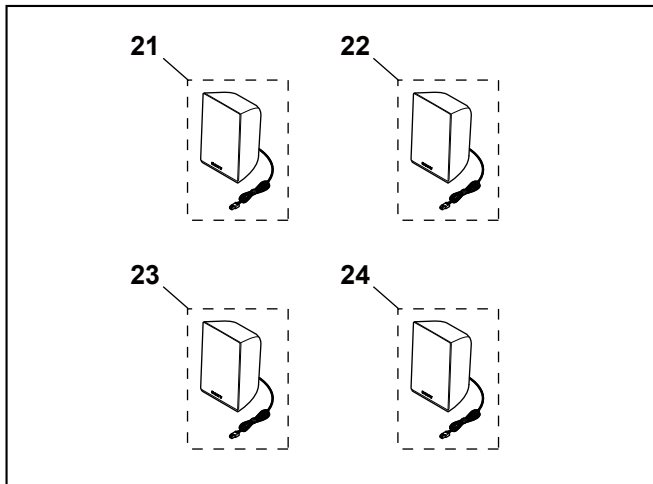
PART LIST (SS-CTB113)

Ref. No.	Part No.	Description	Remark
11	A-1848-455-A	SS-CTB113 (Center) (E390/E490: CND)	
11	A-1848-456-A	SS-CTB113 (Center) (E290: AUS, PX, TW, E12/ E385/E390/T39: US/E490: E12, E15, EA)	
11	A-1849-824-A	SS-CTB113 (Center) (E290: AEP/E490: AEP, UK)	
11	A-1849-828-A	SS-CTB113 (Center) (E290: E3, SAF, SP/E490: E3, SP)	
11	A-1849-832-A	SS-CTB113 (Center) (E290: E32)	
11	A-1849-952-A	SS-CTB113 (Center) (E690: E12, E15, EA)	
11	A-1849-953-A	SS-CTB113 (Center) (E690: AEP)	
11	A-1849-954-A	SS-CTB113 (Center) (E690: E3, SP)	
12	2-893-646-01	FOOT (4 pieces)	



PART LIST (SS-TSB117)

Ref. No.	Part No.	Description	Remark
21	A-1862-335-A	SS-TSB117 (Front Lch) (E190: CND)	
21	A-1849-626-A	SS-TSB117 (Front Lch) (E190: AEP, UK)	
21	A-1849-625-A	SS-TSB117 (Front Lch) (E190: SAF, SP)	
21	A-1849-627-A	SS-TSB117 (Front Lch) (E190: MX6)	
21	A-1848-365-A	SS-TSB117 (Front Lch) (E190: AUS)	
22	A-1862-336-A	SS-TSB117 (Front Rch) (E190: CND)	
22	A-1849-640-A	SS-TSB117 (Front Rch) (E190: AEP, UK)	
22	A-1849-639-A	SS-TSB117 (Front Rch) (E190: SAF, SP)	
22	A-1849-641-A	SS-TSB117 (Front Rch) (E190: MX6)	
22	A-1848-366-A	SS-TSB117 (Front Rch) (E190: AUS)	
23	A-1862-337-A	SS-TSB117 (Surround Lch) (E190: CND)	
23	A-1849-644-A	SS-TSB117 (Surround Lch) (E190: AEP, UK)	
23	A-1849-643-A	SS-TSB117 (Surround Lch) (E190: SAF, SP)	
23	A-1849-645-A	SS-TSB117 (Surround Lch) (E190: MX6)	
23	A-1848-367-A	SS-TSB117 (Surround Lch) (E190: AUS)	
24	A-1862-338-A	SS-TSB117 (Surround Rch) (E190: CND)	
24	A-1849-648-A	SS-TSB117 (Surround Rch) (E190: AEP, UK)	
24	A-1849-647-A	SS-TSB117 (Surround Rch) (E190: SAF, SP)	
24	A-1849-649-A	SS-TSB117 (Surround Rch) (E190: MX6)	
24	A-1848-368-A	SS-TSB117 (Surround Rch) (E190: AUS)	

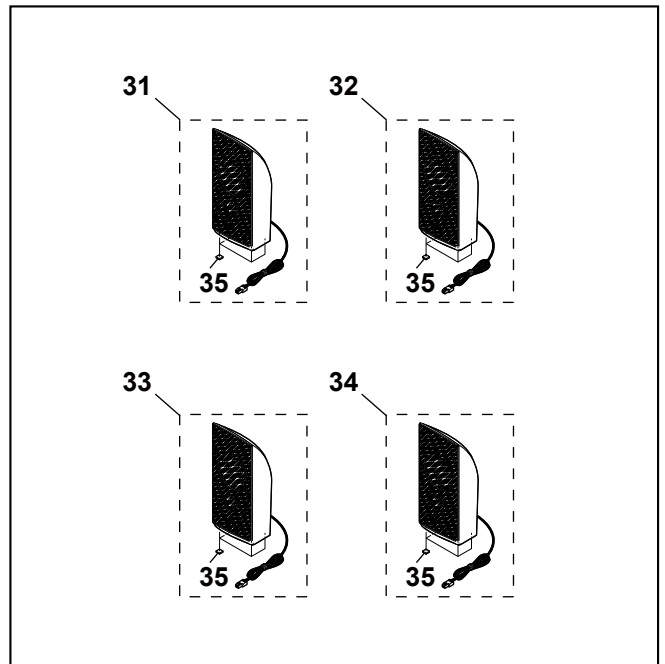


• Abbreviation

- AUS : Australian model
- CND : Canadian model
- E3 : 240 V AC area in E model
- E12 : 220-240 V AC area in E model
- E15 : Iran model
- E32 : 110-240 V AC area in E model
- EA : Saudi Arabia model
- MX6 : Latin-American model
- PX : PX model
- SAF : South African model
- SP : Singapore model
- TW : Taiwan model

PART LIST (SS-TSB118)

Ref. No.	Part No.	Description	Remark
31	A-1848-447-A	SS-TSB118 (Front Lch) (E390: CND)	
31	A-1849-891-A	SS-TSB118 (Front Lch) (E290: AEP)	
31	A-1849-919-A	SS-TSB118 (Front Lch) (E290: E3, SAF, SP)	
31	A-1849-926-A	SS-TSB118 (Front Lch) (E290: E32)	
31	A-1848-448-A	SS-TSB118 (Front Lch) (E290: AUS, E12, PX, TW/E385/E390/T39: US)	
32	A-1848-449-A	SS-TSB118 (Front Rch) (E390: CND)	
32	A-1849-892-A	SS-TSB118 (Front Rch) (E290: AEP)	
32	A-1849-920-A	SS-TSB118 (Front Rch) (E290: E3, SAF, SP)	
32	A-1849-927-A	SS-TSB118 (Front Rch) (E290: E32)	
32	A-1848-450-A	SS-TSB118 (Front Rch) (E290: AUS, E12, PX, TW/E385/E390/T39: US)	
33	A-1848-451-A	SS-TSB118 (Surround Lch) (E390/E490: CND)	
33	A-1849-822-A	SS-TSB118 (Surround Lch) (E290: AEP/E490: AEP, UK)	
33	A-1849-826-A	SS-TSB118 (Surround Lch) (E290: E3, SAF, SP/E490: E3, SP)	
33	A-1849-830-A	SS-TSB118 (Surround Lch) (E290: E32)	
33	A-1848-452-A	SS-TSB118 (Surround Lch) (E290: AUS, PX, TW, E12/E385/E390/T39: US/E490: E12, E15 EA3)	
34	A-1848-453-A	SS-TSB118 (Surround Rch) (E390/E490: CND)	
34	A-1849-823-A	SS-TSB118 (Surround Rch) (E290: AEP/E490: AEP, UK)	
34	A-1849-827-A	SS-TSB118 (Surround Rch) (E290: E3, SAF, SP/E490: E3, SP)	
34	A-1849-831-A	SS-TSB118 (Surround Rch) (E290: E32)	
34	A-1848-454-A	SS-TSB118 (Surround Rch) (E290: AUS, PX, TW, E12/E385/E390/T39: US/E490: E12, E15 EA3)	
35	2-893-646-01	FOOT (4 pieces)	



PART LIST (SS-TSB119)

Ref. No.	Part No.	Description	Remark
41	A-1862-416-A	SS-TSB119 (Front Lch) (E490: CND)	
41	A-1849-656-A	SS-TSB119 (Front Lch) (E490: AEP, UK/E690: AEP)	
41	A-1849-661-A	SS-TSB119 (Front Lch) (E490/E690: E3, SP)	
41	A-1849-524-A	SS-TSB119 (Front Lch) (E490/E690: E12, E15, EA)	
42	A-1862-417-A	SS-TSB119 (Front Rch) (E490: CND)	
42	A-1849-657-A	SS-TSB119 (Front Rch) (E490: AEP, UK/E690: AEP)	
42	A-1849-662-A	SS-TSB119 (Front Rch) (E490/E690: E3, SP)	
42	A-1849-525-A	SS-TSB119 (Front Rch) (E490/E690: E12, E15, EA)	
43	A-1849-947-A	SS-TSB119 (Surround Lch) (E690: AEP)	
43	A-1849-948-A	SS-TSB119 (Surround Lch) (E690: E3, SP)	
43	A-1849-946-A	SS-TSB119 (Surround Lch) (E690: E12, E15, EA)	
44	A-1849-950-A	SS-TSB119 (Surround Rch) (E690: AEP)	
44	A-1849-951-A	SS-TSB119 (Surround Rch) (E690: E3, SP)	
44	A-1849-949-A	SS-TSB119 (Surround Rch) (E690: E12, E15, EA)	

