

Service Manual

DVD Recorder



DMR-EH59



Remote
Control
Transmitter

Model No. **DMR-EH59GA**
DMR-EH59GC
DMR-EH59GN

Vol. 1

Colour:

(K).....Black Type

Notes: This model's RAM/Digital P.C.B.
Module are - RFKNEH59GA(GA)
- RFKNEH59GC(GC)
- RFKNEH59GN(GN)

When replacing Main P.C.B. or EEPROM,
"UNFORMAT" indication is displayed and HDD must be
formatted.

When replacing HDD, it is necessary to update
the firmware.

Please prepare the update disc.
(After that, FORMAT is necessary)

After that, programme in the HDD will be lost.
In detail, please refer to each content in this service
manual.

Caution:

Pairing of RAM Drive and Digital P.C.B. as "RAM/
Digital P.C.B. Module" have to be replaced together.
If either RAM drive or Digital P.C.B. is changed,
RAM Drive unit has to be re-aligned. Because the
alignment data for RAM Drive Unit is stored in Digital P.C.B..

Manufactured under license from Dolby Laboratories. Dolby and the double-D symbol are trademarks of Dolby Laboratories.

Manufactured under license under U.S. Patent #'s: 5,451,942; 5,956,674; 5,974,380; 5,978,762; 6,487,535 & other U.S. and worldwide patents issued & pending. DTS and DTS 2.0 + Digital Out are registered trademarks and the DTS logos and Symbol are trademarks of DTS, Inc. © 1996-2008 DTS, Inc. All Rights Reserved.

This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

- SDHC Logo is a trademark.
- Portions of this product are protected under copyright law and are provided under license by ARIS/SOLANA/4C.

Plays DivX® video
DivX® is a registered trademark of DivX, Inc., and is used under license.

HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.

HDAVI Control™ is a trademark of Panasonic Corporation.

Windows Media and the Windows logo are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries.
This product is protected by certain intellectual property rights of Microsoft Corporation and third parties. Use or distribution of such technology outside of this product is prohibited without a license from Microsoft or an authorized Microsoft subsidiary and third parties.

WARNING

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

TABLE OF CONTENTS

	PAGE		PAGE
1 Safety Precautions	4	10.1. Service Positions	41
1.1. General Guidelines	4	10.2. Caution for Replacing Parts	45
1.2. Caution for AC Cord(For EH59GC only)	5	10.3. Standard Inspection Specifications after Making Repairs	46
2 Warning	6	11 Block Diagram	47
2.1. Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices	6	11.1. Power Supply Block Diagram	47
2.2. Precaution of Laser Diode	7	11.2. Analog Video Block Diagram	49
2.3. Service caution based on Legal restrictions	8	11.3. Analog Audio Block Diagram	50
3 Service Navigation	9	11.4. Analog Timer Block Diagram	51
3.1. Service Information	9	11.5. HDMI Block Diagram	52
3.2. Caution for DivX	9	12 Schematic Diagram	53
4 Specifications	10	12.1. Interconnection Schematic Diagram	53
5 Location of Controls and Components	13	12.2. Power Supply Schematic Diagram	54
6 Operating Instruction	15	12.3. Main Net (1/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)	55
6.1. Taking out the Disc from DVD-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button	15	12.4. Main Net (2/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)	56
7 Service Mode	19	12.5. Main Net (3/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)	57
7.1. Self-Diagnosis and Special Mode Setting	19	12.6. Main Net (4/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)	58
8 Service Fixture & Tools	33	12.7. AV I/O (1/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)	60
9 Disassembly and Assembly Instructions	34	12.8. AV I/O (2/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)	61
9.1. Disassembly flow chart	34	12.9. AV I/O (3/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)	62
9.2. P.C.B. Positions	35	12.10. AV I/O (4/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)	63
9.3. Top cover	36	12.11. Tuner Section (Main P.C.B. (3/4)) Schematic Diagram (TU)	65
9.4. Front Panel	36	12.12. Timer (1/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)	67
9.5. Front (L) P.C.B., Front (R) P.C.B.	36		
9.6. HDD, SATA P.C.B.	37		
9.7. RAM/Digital P.C.B. Module	37		
9.8. DV Jack P.C.B., USB SD P.C.B.	38		
9.9. Rear Panel, Fan Motor	39		
9.10. Power P.C.B.	39		
9.11. HDMI P.C.B.	39		
9.12. Main P.C.B., SW P.C.B.	40		
10 Measurements and Adjustments	41		

12.13. Timer (2/4) Section (Main P.C.B. (4/4))	
Schematic Diagram (T) -----	68
12.14. Timer (3/4) Section (Main P.C.B. (4/4))	
Schematic Diagram (T) -----	69
12.15. Timer (4/4) Section (Main P.C.B. (4/4))	
Schematic Diagram (T) -----	70
12.16. HDMI Schematic Diagram -----	71
12.17. USB SD Schematic Diagram -----	72
12.18. DV Jack Schematic Diagram -----	73
12.19. SW Schematic Diagram -----	73
12.20. Front (L) Schematic Diagram -----	73
12.21. Front (R) Schematic Diagram -----	73
12.22. SATA Schematic Diagram -----	74
13 Printed Circuit Board -----	75
13.1. Power P.C.B. -----	75
13.2. Main P.C.B. -----	76
13.3. HDMI P.C.B. -----	81
13.4. USB SD P.C.B. -----	82
13.5. Front (L) P.C.B., Front (R) P.C.B., SW P.C.B. and DV Jack P.C.B. -----	83
13.6. SATA P.C.B. -----	84
14 Appendix for Schematic Diagram -----	85
14.1. Voltage and Waveform Chart -----	85
15 Exploded View and Replacement Parts List -----	93
15.1. Exploded Views -----	93
15.2. Electrical Replacement Parts List -----	96
16 Schematic Diagram for printing with A4 size -----	104

1 Safety Precautions

1.1. General Guidelines

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

1.1.1. Leakage Current Cold Check

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

1.1.2. Leakage Current Hot Check (See Figure 1.)

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

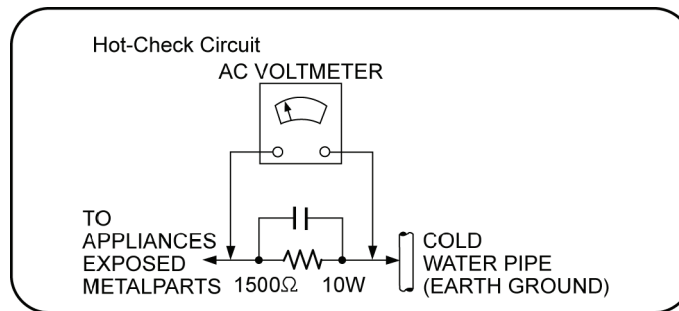


Fig. 1

1.2. Caution for AC Cord(For EH59GC only)

Caution for AC Mains Lead

For your safety, please read the following text carefully.
This appliance is supplied with a moulded three pin mains plug for your safety and convenience.
A 5-ampere fuse is fitted in this plug.
Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 5-ampere and that it is approved by ASTA or BSI to BS1362.
Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.
If you lose the fuse cover the plug must not be used until a replacement cover is obtained.
A replacement fuse cover can be purchased from your local dealer.

CAUTION!

IF THE FITTED MOULDED PLUG IS UNSUITABLE FOR THE SOCKET OUTLET IN YOUR HOME THEN THE FUSE SHOULD BE REMOVED AND THE PLUG CUT OFF AND DISPOSED OF SAFELY.
THERE IS A DANGER OF SEVERE ELECTRICAL SHOCK IF THE CUT OFF PLUG IS INSERTED INTO ANY 13-AMPERE SOCKET.

If a new plug is to be fitted please observe the wiring code as stated below.
If in any doubt please consult a qualified electrician.

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue: Neutral, Brown: Live.

As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Black or Blue.

The wire which is coloured Brown must be connected to the terminal which is marked with the letter L or coloured Brown or Red.

WARNING: DO NOT CONNECT EITHER WIRE TO THE EARTH TERMINAL WHICH IS MARKED WITH THE LETTER E, BY THE EARTH SYMBOL  OR COLOURED GREEN OR GREEN/YELLOW.

THIS PLUG IS NOT WATERPROOF—KEEP DRY.

Before use

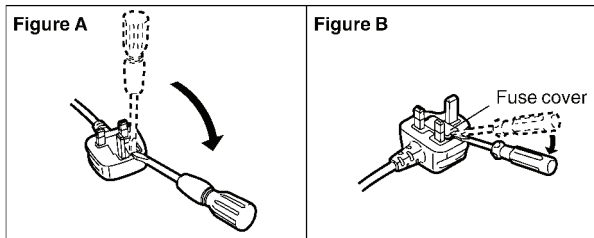
Remove the connector cover.

How to replace the fuse

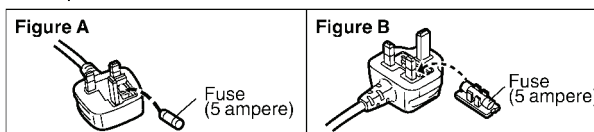
The location of the fuse differ according to the type of AC mains plug (figures A and B). Confirm the AC mains plug fitted and follow the instructions below.

Illustrations may differ from actual AC mains plug.

1. Open the fuse cover with a screwdriver.



2. Replace the fuse and close or attach the fuse cover.



2 Warning

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

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

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

Caution:

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device).

IMPORTANT SAFETY NOTICE

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

2.2. Precaution of Laser Diode

CAUTION :

This product utilizes a laser diode with the unit turned "ON", invisible laser radiation is emitted from the pick up lens.

Wave length : 662 nm(DVDs)/780 nm(CDs)

Maximum output radiation power from pick up : 100 μ W/VDE

Laser radiation from pickup unit lens is safety level, but be sure the followings:

1. Do not disassemble the optical pickup unit, since radiation from exposed laser diode is dangerous.
2. Do not adjust the variable resistor on the pickup unit. It was already adjusted.
3. Do not look at the focus lens using optical instruments.
4. Recommend not to look at pickup lens for a long time.



LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

CLASS 1
LASER PRODUCT

ACHTUNG :

Dieses Produkt enthält eine Lasereinheit. Im eingeschalteten Zustand wird unsichtbare Laserstrahlung von der Lasereinheit abgestrahlt.

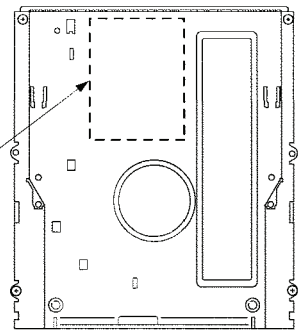
Wellenlänge : 662 nm(DVDs)/780 nm(CDs)

Maximale Strahlungsleistung der Lasereinheit : 100 μ W/VDE

Die Strahlung der Lasereinheit ungefährlich, wenn folgende Punkte beachtet werden:

1. Die Lasereinheit nicht zerlegen, da die Strahlung an der freigelegten Lasereinheit gefährlich ist.
2. Den werkseitig justierten Einstellregler der Lasereinheit nicht verstellen.
3. Nicht mit optischen Instrumenten in die Fokussierlines blicken.
4. Nicht über längere Zeit in die Fokussierlines blicken.

DANGER - VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM. FDA 21 CFR 101.10.10	
CAUTION - CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM. IEC 60825-1 + A2/Class 3B	
ATTENTION - RAYONNEMENT LASER VISIBLE ET INVISIBLE, CLASSE 3B, EN CAS D'OUVERTURE EVITER UNE EXPOSITION AU FAISCEAU.	
FORSIGTIG - SYNLIIG OG USYNLIIG LASERSTRÅLING KLASSE 3B, NÅR LÅGET ER ÅBENT. UNDGÅ AT BLIVE UDSAT FOR STRÅLEN.	
VARO - AVARTIASSA OLET ALTUINKA LUOKAN 3B NÄKYYVÄÄ JA NÄKYMÄTÖNTÄ LASERSÄTELYÄ. VARIO ALTISTUMISTA SÄTEELLE.	
VARNING - KLASSE 3B SYNLIIG OCH OSYNLIIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD. UNDVIK EXPONERING FÖR STRÅLEN.	
VORSICHT - SICHTBARE UND UNSICHTBARE LASERSTRALHUNG KLASSE 3B. WENN ABDECKUNG GEÖFFNET, NICHT DEM STRAHL AUSSETZEN.	
注意 - 打开时有可见及不可见激光辐射。避免光束照射。	
注意 - ここを開くと可視及び不可視レーザー光が出ます。ビームを直接、照れたりしないでください。 VOL1J70	



CAUTION!

THIS PRODUCT UTILIZES A LASER.

USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

2.3. Service caution based on Legal restrictions

2.3.1. General description about Lead Free Solder (PbF)

The lead free solder has been used in the mounting process of all electrical components on the printed circuit boards used for this equipment in considering the globally environmental conservation.

The normal solder is the alloy of tin (Sn) and lead (Pb). On the other hand, the lead free solder is the alloy mainly consists of tin (Sn), silver (Ag) and Copper (Cu), and the melting point of the lead free solder is higher approx.30 degrees C (86°F) more than that of the normal solder.

Definition of PCB Lead Free Solder being used

The letter of "PbF" is printed either foil side or components side on the PCB using the lead free solder. (See right figure)	PbF
---	-----

Service caution for repair work using Lead Free Solder (PbF)

- The lead free solder has to be used when repairing the equipment for which the lead free solder is used.
(Definition: The letter of "PbF" is printed on the PCB using the lead free solder.)
- To put lead free solder, it should be well molten and mixed with the original lead free solder.
- Remove the remaining lead free solder on the PCB cleanly for soldering of the new IC.
- Since the melting point of the lead free solder is higher than that of the normal lead solder, it takes the longer time to melt the lead free solder.
- Use the soldering iron (more than 70W) equipped with the temperature control after setting the temperature at 350±30 degrees C (662±86°F).

Recommended Lead Free Solder (Service Parts Route.)

- The following 3 types of lead free solder are available through the service parts route.
RFKZ03D01KS----- (0.3mm 100g Reel)
RFKZ06D01KS----- (0.6mm 100g Reel)
RFKZ10D01KS----- (1.0mm 100g Reel)

Note

* Ingredient: Tin (Sn), 96.5%, Silver (Ag) 3.0%, Copper (Cu) 0.5%, Cobalt (Co) / Germanium (Ge) 0.1 to 0.3%

3 Service Navigation

3.1. Service Information

This service manual contains technical information which will allow service personnel's to understand and service this model. Please place orders using the parts list and not the drawing reference numbers.

If the circuit is changed or modified, this information will be followed by supplement service manual to be filled with original service manual.

- 1) This service manual does not contain the following information, because of the impossibility of servicing at component level.
 - * Schematic Diagram, Block Diagram and P.C.B. layout of RAM/Digital P.C.B. Module.
 - * Parts List for individual parts of RAM/Digital P.C.B. Module.
 - * Schematic Diagram, Block Diagram and P.C.B. layout of RAM/Digital P.C.B. Module.
- 2) The following category are recycle module part. Please send them to Central Repair Center.
 - * RAM/Digital P.C.B. Module.(EH59GA: RFKNEH59GA , EH59GC: RFKNEH59GC, EH59GN: RFKNEH59GN)

3.2. Caution for DivX

Please will always pass the customer "Warning for Customers Who Use the DivX Video-on-Demand content." with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.). You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as "Warning for Customers Who Use the DivX Video-on-Demand content."

Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to "Manual for the customer" is recorded.

Appendix:

- * Parts that memorize user's information are only EEPROM.
 - * The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year.
- Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).

Model without VHS; Main P.C.B.

Model with VHS; Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)

If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated.

In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.

Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers Who Use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at

<http://vod.divx.com>

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

4 Specifications

Power supply:

DMR-EH59GA/GC: AC220-240V 50/60Hz
DMR-EH59GN: AC220-240V 50Hz

Power consumption:

Approx. 36W
Power save mode: ON Approx. 2W
OFF Approx. 8W

Operating temperature:

5°C-40°C

Operating humidity range:

10% - 80%RH (no condensation)

Television system:

DMR-EH59GA

Tuner system:	PAL-D, K SECAM-D, K, K1	PAL-B, G, H SECAM-B, G	PAL-I	PAL-D
Channel Coverage:	OIRT	CCIR	Hong Kong	China
VHF:	R1-R12	E2-E12		1-12
UHF:	21-69	E21-E69	21-69	13-57
CATV:	44MHz-470MHz	S01-S05 M1-M10, U1-U10 S21-S41		Z1-Z35

DMR-EH59GC

Tuner system:	PAL-D, K SECAM-D, K, K1	PAL-B, G, H SECAM-B, G	PAL-I
Channel Coverage:	OIRT	CCIR	South Africa
VHF:	R1-R12	E2-E12	4-13
UHF:	21-69	E21-E69	21-69
CATV:	44MHz-470MHz	S01-S05 M1-M10, U1-U10 S21-S41	

DMR-EH59GN

Tuner system:	PAL-B,G
Channel Coverage:	New Zealand
VHF:	1~11
UHF:	21~69
CATV:	44MHz~470MHz

RF Converter output:

Not provided

Video:

Video system(GA/GC): SECAM(only input)/PAL colour signal, 625 lines, 50 fields
NTSC colour signal, 525 lines, 60 fields

Video system(GN): PAL colour signal, 625 lines, 50 fields
NTSC colour signal, 525 lines, 60 fields

Recording system: MPEG2 (Hybrid VBR)
Video In (GA/GC) AV1/AV2 (21 pin), AV3/AV4 (pin jack)
(SECAM/PAL/NTSC) 1Vp-p 75Ω, termination

Video In (GN) AV1/AV2 (21 pin), AV3/AV4 (pin jack)
(PAL/NTSC) 1Vp-p 75Ω, termination

S-Video In (GA/GC) AV2 (21 pin), AV3/AV4 (S terminal)
(SECAM/PAL/NTSC) 1Vp-p 75Ω, termination

S-Video In (GN) AV2 (21 pin), AV3/AV4 (S terminal)
(PAL/NTSC) 1Vp-p 75Ω, termination

Video Out (PAL/NTSC) AV1/AV2 (21 pin), Video Out (pin jack)
1Vp-p 75Ω, termination

S-Video Out (PAL/NTSC)

AV1 (21 pin), S-Video Out (S terminal)

1Vp-p 75Ω, termination

RGB out (PAL/NTSC)

AV1 (21 pin), 0.7Vp-p (PAL), 75Ω, termination

Component video output (NTSC 480P/480I) (PAL 576P/576I)

Y: 1.0Vp-p 75Ω, termination

PB: 0.7Vp-p (PAL) 75Ω, termination

PR: 0.7Vp-p (PAL) 75Ω, termination

Recording time:

Approx.

Recording Mode	DVD-RAM		DVD-R/ DVD-RW/ +R/+RW/ 4.7GB	DVD-R DL 8.5GB	+R DL 8.5GB	Hard Disc 250GB
	4.7GB B	9.4GB (Double side)				
XP	1h.	2h.	1h.	1h.45m.	1h.45m.	55h.
SP	2h.	4h.	2h.	3h.35m.	3h.35m.	110h.
LP	4h.	8h.	4h.	7h.10m.	7h.10m.	221h.
EP (6h)	6h.	12h.	6h.	10h.45m.	-	331h.
EP (8h)	8h.	16h.	8h.	14h.20m.	-	441h.

Approximate copying times (Max. speed):

On Hard disc	
Recording mode	Recorded program
XP	1h.
SP	1h.
LP	1h.
EP (6h)	1h.
EP (8h)	1h.

5x speed DVD-RAM		12x speed DVD-R (*1)	
Required time	Speed	Required time	Speed
12m.	5x	5m.46s.	10x
6m.	10x	2m.30s.	24x
3m.	20x	1m.21s.	44x
2m.	30x	58s.	62x
1m30s.	40x	48s.	75x

4x speed DVD-R DL (Dual layer) (*2)		4x speed DVD-RW (*3)		8x speed +R (*4)	
Required time	Speed	Required time	Speed	Required time	Speed
15m	4x	15m.	4x	8m.20s.	7x
7m30s	8x	7m.30s.	8x	3m.45s.	16x
3m45s	16x	3m.45s.	16x	1m.53s.	32x
2m30s	24x	2m.30s.	24x	-	-
1m53s	32x	1m.57s.	31x	-	-

4x speed +R DL (Double layer) (*2)		4x speed +RW	
Required time	Speed	Required time	Speed
15m.	4x	15m.	4x
7m.30s.	8x	7m.30s.	8x
3m.45s.	16x	3m.45s.	16x
-	-	-	-
-	-	-	-

NOTE)

The above rated value indicates the fastest time and speed required for copying one-hour title from HDD to each disc in the above list supporting High-Speed copying. The amount of time and speed may vary depending on the conditions such as the area on where information is written or unique feature on the disc.

*1: In this unit, copying with 16X Speed DVD-R disc will be performed at the same speed as 12X Speed DVD-R disc takes.

*2: In this unit, copying with 8X Speed disc, DVD-R DL and +R DL, will be performed at the same speed as 4X Speed discs, DVD-R DL and +R DL, takes.

*3: In this unit, copying with 6X Speed DVD-RW disc will be performed at the same speed as 4X Speed DVD-RW disc takes.

*4: In this unit, copying with 16X Speed +R disc will be performed at the same speed as 8X Speed +R disc takes.

Audio:		Dolby Digital 2ch, Linear PCM(XP mode)	DVD-R:	DVD-Video format
Recording system			DVD-R DL (Dual Layer):	DVD-Video format
Audio in		AV1/AV2 (21pin), AV3/AV4(pin jack)	DVD-RW:	DVD-Video format
Input level		Standard: 0.5 Vrms, Full scale:2.0 Vrms at 1kHz	+R, +R DL(Dual Layer), +RW	
Input impedance		More than 10kΩ	HDMI	HDMI Ver. 1.3a (This unit supports "HDAVI Control 4" function.)
Audio out		AV1/AV2 (21 pin), Audio Out (pin jack)	Completion method	
Output level		Standard: 0.5 Vrms, Full scale: 2.0 Vrms at 1kHz	DVD(DivX), CD(DivX)	Plays all versions of DivX video (including DivX 6) with standard playback of DivX media files. Certified to the DivX Home Theater Profile
Output impedance		Less than 1kΩ	DVD(DivX), CD(DivX)	
Digital audio out		Optical terminal (PCM, Dolby Digital, DTS, MPEG)	Common Items	
HDMI Output:		19 pin type A: 1 pc	Maximum number of folders:	300 Recognizable folders per disc on this unit (including the root folder)
Internal HDD Capacity:		250GB	Maximum number of DivX files:	200 Recognizable DivX files per disc on this unit (*6)
DV input:		IEEE 1394 Standard, 4 pin:1 pc	DVD(MP3), CD(MP3)	
USB Port:		Type A:1 pc	Format:	ISO9660 level 1 or 2 (except for extended formats), Joliet
Recordable discs:			Compatible completion rate:	32kbps~320kbps
DVD-RAM:		2X SPEED (Ver. 2.0) 2-3X SPEED (Ver. 2.1) 2-5X SPEED (Ver. 2.2)	Compatible sampling rate:	16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, 48kHz
DVD-R:		1X SPEED (Ver. 2.0) 1-4X SPEED (Ver. 2.0) 1-8X SPEED (Ver. 2.0) 1-16X SPEED (Ver. 2.1)	This unit is not compatible with ID3 tags.	
DVD-R DL(Dual Layer):		2-4X SPEED (Ver. 3.0) 2-8X SPEED (Ver. 3.0)	DVD(WMA), CD(WMA)	
DVD-RW:		1X SPEED (Ver. 1.1) 1-2X SPEED (Ver. 1.1) 2-4X SPEED (Ver. 1.2) 2-6X SPEED (Ver. 1.2)	Format:	ISO9660 level 1 or 2 (except for extended formats), Joliet
+R:		2.4X SPEED (Ver. 1.0) 2.4-4X SPEED (Ver. 1.1) 2.4-8X SPEED (Ver. 1.2) 2.4-16X SPEED (Ver. 1.3)	This unit is compatible with Windows Media Audio 9(WMA9). This unit is not compatible with copy-protected, Lossless, Professional, Voice and Multiple Bit Rate(MBR). This unit is not compatible with WMA tags.	
+DL:		2.4X SPEED (Ver. 1.0) 2.4-8X SPEED (Ver. 1.1)	DVD(JPEG)/CD(JPEG)	
+RW:		2.4X SPEED (Ver. 1.1) 2.4-4X SPEED (Ver. 1.2)	Format:	ISO9660 level 1 or 2 (except for extended formats), Joliet
Optical pick-up:		System with 1 lens, 2 integration units (662 nm wavelength for DVDs, 780 nm wavelength for CDs)	Compatible pixels:	between 34X34 and 6144X4096 pixels Sub Sampling 4:2:2 or 4:2:0
LASER specification			This unit is not compatible with MOTION JPEG.	
Class 1 LASER Product (Pickup)			DVD(MP3),DVD(WMA), CD(MP3),CD(WMA), DVD(JPEG),CD(JPEG)	
Wave length:		CD 780 nm wavelength DVD 662 nm wavelength	Common Items	
Laser power:		No hazardous radiation is emitted with the safety protection	Maximum number of folders:	300 Recognizable folders per disc on this unit (including the root folder)
Region Code		#2 (GC), #3 (GA), #4 (GN)	Maximum number of MP3/WMA files:	3000 Recognizable MP3/WMA files per disc on this unit (*6)
Playable discs			Maximum number of JPEG files:	3000 Recognizable JPEG files per disc on this unit (*6)
DVD-RAM:		DVD Video Recording format	This units is compatible with multi-session/border(except for DVD-R DL).	
DVD-R:		DVD-Video format, DivX (*5), MP3(*5), WMA(*5), JPEG(*5)	This units is not compatible with packet writing.	
DVD-R DL(Dual Layer):		DVD-Video format, DivX(*5), MP3(*5), WMA(*5), JPEG(*5)	*6:Total number of recognizable file including MP3, WMA, JPEG, DivX and other type of files is 4000.	
DVD-RW:		DVD-Video format, DVD Video Recording format +R, +R DL(Dual Layer), +RW	Quick Start for Recording (Power Save: OFF):	1 Sec. Quick Start for Recording (*7) (When connecting to TV using 21-pin Scart, Component Video, Video or S-Video terminals)
DVD-VIDEO			*7: Form the power on, recording on DVD-RAM and HDD starts in about 1 second after the REC button is pressed.	
CD-Audio (CD-DA), Video CD			USB	
CD-R/CD-RW:		CD-DA(*5), Video CD(*5), MP3(*5), JPEG (*5), DivX (*5), WMA(*5)	USB standard:	USB 2.0 High Speed
*5: Finalising is necessary for compatible playback.			Format:	FAT16, FAT32
Recording System				
DVD-RAM:		DVD Video Recording format		

DivX: Plays all versions of DivX video (including DivX 6) with standard playback of DivX media files. Certified to the DivX Home Theater Profile.

Maximum number of folders: 300 Recognizable folders per USB on this unit (including the root folder)

Maximum number of DivX files: 200 Recognizable DivX files per USB on this unit (*6)

MP3:

Completion rate: 32kbps-320kbps

Completion sampling rate: 16kHz, 22.05kHz, 24kHz, 32kHz, 44.1kHz, 48kHz

This unit is compatible with ID3 tags.

WMA:

This unit is compatible with Windows Media Audio 9(WMA9)

This unit is not compatible with copy-protected, Lossless, Professional, Voice and Multiple Bit Rate(MBR).

This unit is compatible with WMA tags.

Still Picture(JPEG):

Format: JPEG

Completion pixels: Between 34 X 34 and 6144 X 4096 pixels
Sub Sampling 4:2:2, 4:2:0
This unit is not compatible with MOTION JPEG.

JPEG, MP3, WMA Common

Items:

Maximum number of folders: 300 Recognizable folders per USB on this unit (including the root folder)

Maximum number of MP3/WMA files: 3000 Recognizable MP3/WMA files per USB on this unit (*6)

Maximum number of JPEG files: 3000 Recognizable JPEG files per USB on this unit (*6)

Video (SD-Video) *8:

Codec: MPEG2(SD-Video Entertainment Video Profile)

File Format: SD-Video format conforming

*8. Video Recording conversion and transfer is possible from USB to HDD or DVD-RAM disc.

After Video Recording conversion and transfer to HDD or DVD-RAM disc,the playback is possible.

Dimensions:

430mm(W) x 59mm(H) x 326mm(D)

Mass: Approx. 4.2 kg

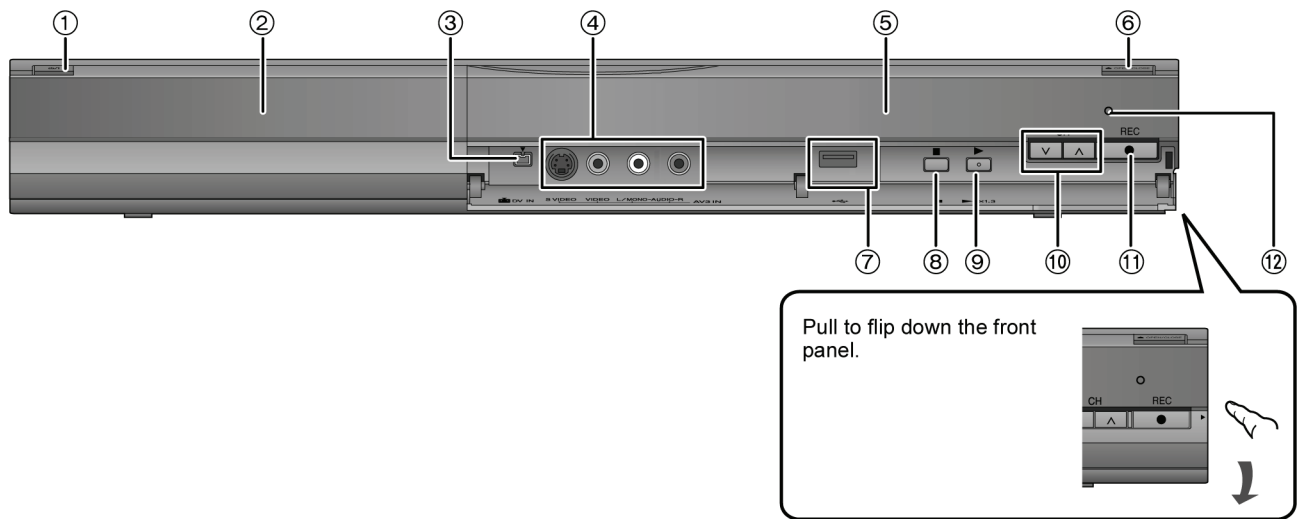
Solder: This model uses lead free solder(PbF).

Note: Specifications are subject to change without notice.

5 Location of Controls and Components

Followings are the Location of Controls and Components for DMR-EH59GN as a sample.
For other model, refer to each Operation Instructions.

Main unit

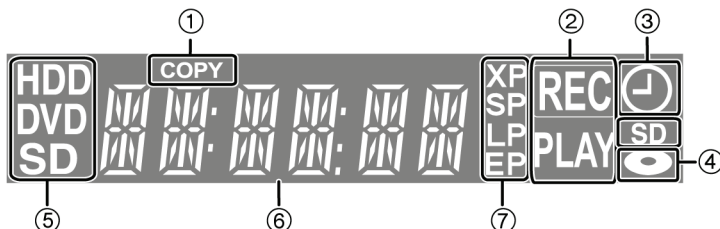


- ① **Standby/on switch (⏻/⏻)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- ② Disc tray
- ③ Connection for digital video (DV) camcorder
- ④ Connection for VCR, camcorder etc.
- ⑤ Display
- ⑥ Open/Close disc tray

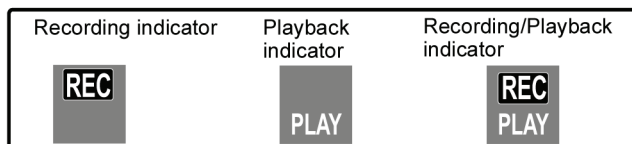
- ⑦ USB port
- ⑧ Stop
- ⑨ Start play
- ⑩ Channel select
- ⑪ Start recording/Specify a time to stop recording
- ⑫ Remote control signal sensor

Rear panel terminals

The unit's display



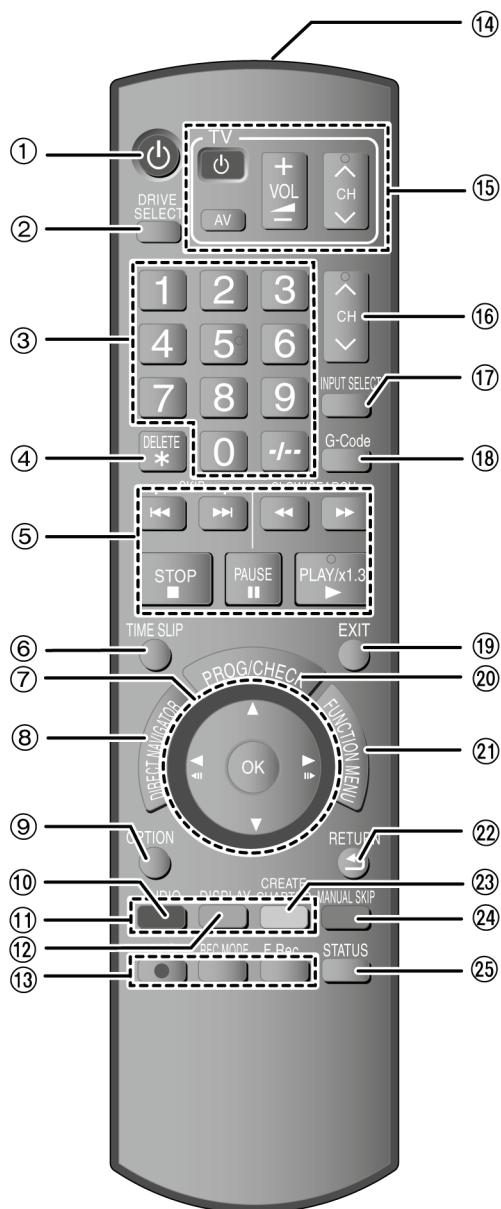
- ① Copying indicator
- ② Recording/Playback indicator



- ③ Timer recording indicator
- ④ Disc indicator
- ⑤ Drive [HDD, DVD] indicator
- ⑥ Main display section indicator
- ⑦ Recording mode indicator

Remote control

Instructions for operations are generally described using the remote control.



- ① Turn the unit on
- ② Select drive [HDD or DVD]
Drive changes each time you press [DRIVE SELECT].
- ③ Select channels and title numbers, etc./Enter numbers
- ④ To delete unnecessary recorded titles, timer programmes, still pictures or music
- ⑤ Basic operations for recording and play
- ⑥ Skip the specified time
- ⑦ Selection/OK, Frame-by-frame
- ⑧ Show DIRECT NAVIGATOR
- ⑨ Show OPTION menu
This menu is used when playing or editing titles and still pictures, etc.
- ⑩ Select audio
- ⑪ Colour buttons
– for switching the DIRECT NAVIGATOR screen
– for switching VIDEO/Playlists
– for manual tuning settings
– for deactivating timer programme
- ⑫ Show on-screen menu
- ⑬ Recording functions
 - [REC] Start recording
 - [REC MODE] Change recording mode
 - [F Rec] Start Flexible Recording
- ⑭ Transmit the remote control signal
- ⑮ Television operations
- ⑯ Channel select
- ⑰ Input select (AV1, AV2, AV3, AV4 or DV)
- ⑱ Show G-CODE screen (For EH59GN only)
- ⑲ Exit the menu screen
- ⑳ Show Timer Recording screen
- ㉑ Show FUNCTION MENU Display
By using the FUNCTION MENU window you may access the main functions (Playback, Recording, etc.) quickly and easily.
- ㉒ Return to previous screen
- ㉓ Create chapter
- ㉔ Skip approx. 1 minute forward
- ㉕ Show status messages

6 Operating Instruction

6.1. Taking out the Disc from DVD-Drive Unit when the Disc cannot be ejected by OPEN/CLOSE button

6.1.1. Forcible Disc Eject

6.1.1.1. When the power can be turned off.

1. Turn off the power and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

6.1.1.2. When the power can not be turned off.

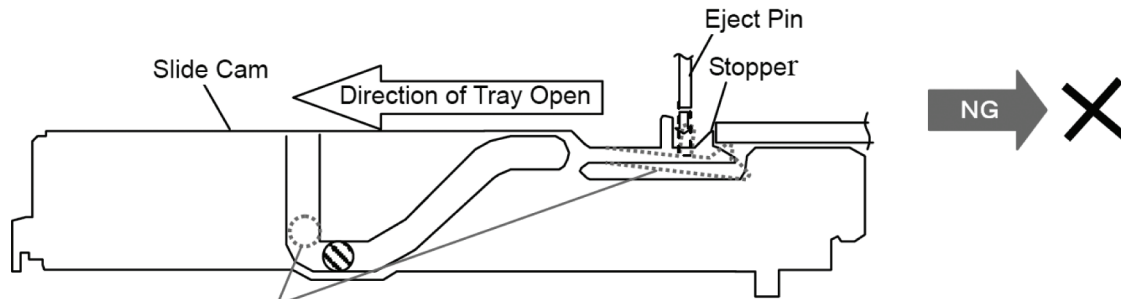
1. Press [POWER] key on the front panel for over 10 seconds to turn off the power forcibly, and press [STOP] [CH UP] keys on the front panel simultaneously for 5 seconds.

6.1.2. When the Forcible Disc Eject can not be done.

Caution!

- 1: If you push strong and move the Slide Cam to counter direction of the arrow, the Stopper will be bended and Slide Cam won't stop at Stopper and will reach position for taking out Traverse Base. And Traverse Base might fall down later.

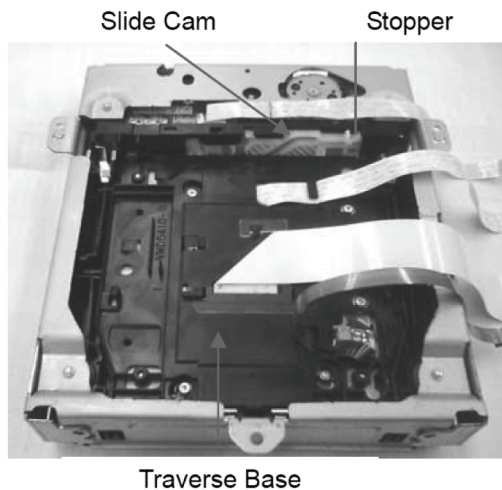
Absolutely, please do not move Slid Cam in the counter direction of the arrow.



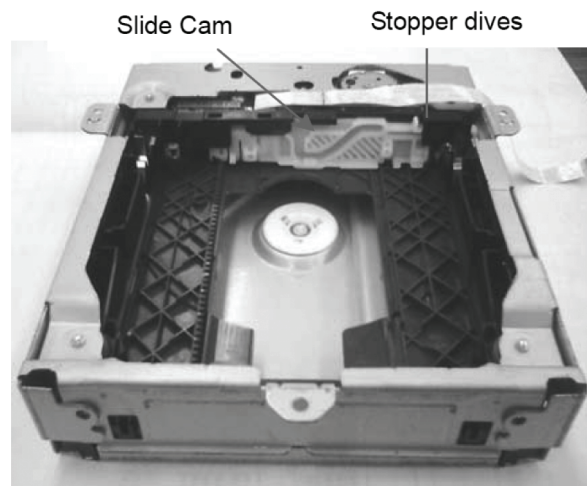
NG Position (Traverse Base might fall down later)

If you move the Slide Cam to counter direction of the arrow, Slide Cam won't stop at Stopper and will reach position for taking out Traverse Base. And Traverse Base might fall down later.

Before fall down of Traverse Base



After fall down of Traverse Base



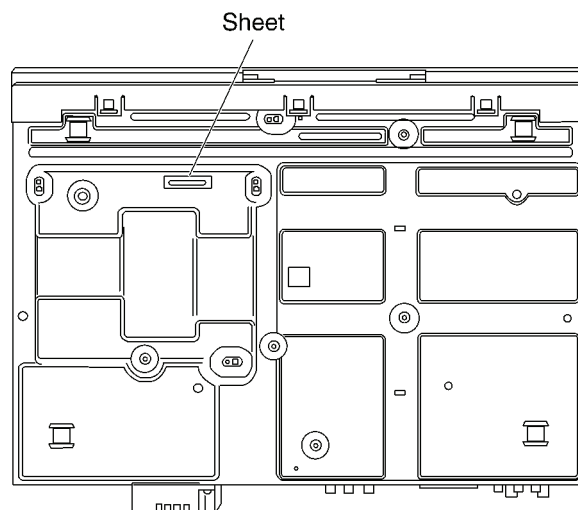
- 2: Moreover, the slide cam will be on irregular position against condition of the shipment if the tray is pushed by the hand after manual tray ejection is done, the hold of traverse Base becomes imperfect, and the danger of fall of traverse Base increases.

Absolutely, complete close of tray by electricity after manual tray ejection was done.

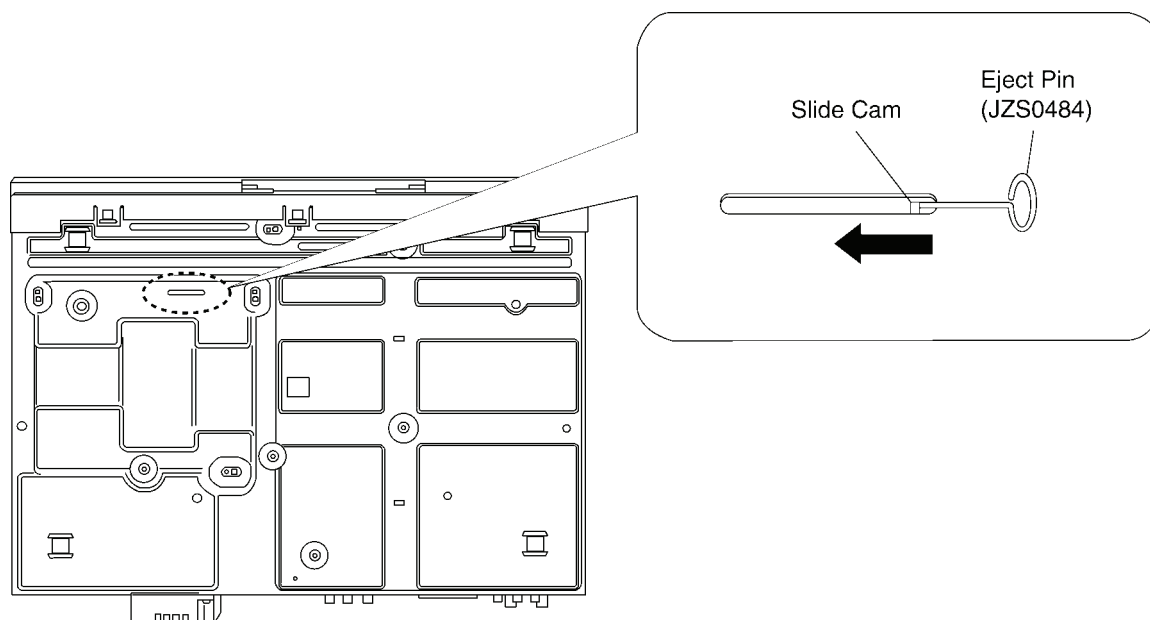
(Especially finish CLOSE function of tray by electricity when the product will be transported after inspection.

1. Turn off the power and pull out AC cord.
2. Remove the Top Cover.
3. Put deck so that bottom can be seen.

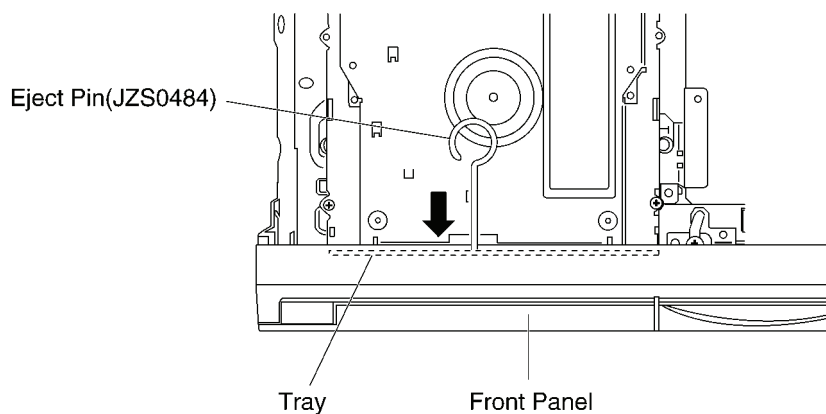
4. Remove the sheet of the bottom side.



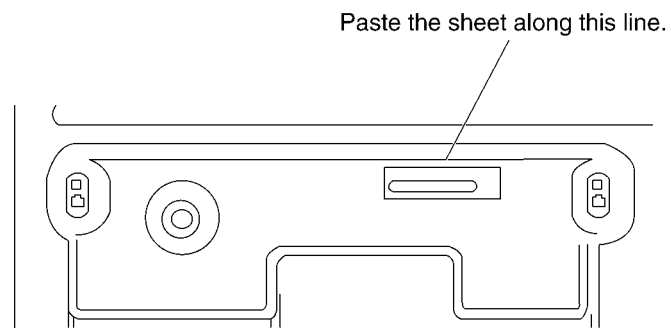
5. Slide SLIDE CAM by Eject Pin (JZS0484) or minus screw driver (small) in the direction of arrow to eject tray slightly.



6. Put deck upward, and push out Tray by Eject Pin (JZS0484) or minus screw driver (small).



7. It is necessary to paste the Sheet again after ejection of the disc. Refer to the illustration of the Step 4 and below figure about the portion of pasting the Sheet.



NOTE:

Use the replacement parts (RMV0335) when the Sheet has not being stickability.

7 Service Mode

7.1. Self-Diagnosis and Special Mode Setting

7.1.1. Self-Diagnosis Functions

Self-Diagnosis Function provides information for errors to service personnel by “Self-Diagnosis Display” when any error has occurred.

U, H** and F** are stored in memory and held.**

You can check latest error code by transmitting [0] [1] of Remote Controller in Service Mode.

Automatic Display on FL will be cancelled when the power is turned off or AC input is turned off during self-diagnosis display is ON.

Error Code	Diagnosis Contents	Description	Monitor Display	Automatic FL display
U30	Remote control code error	Display appears when main unit and remote controller codes are not matched.	No display	DVD * ** is remote controller code of the main unit. Display for 5 seconds.
U59	Abnormal inner temperature detected	Display appears when internal temperature of deck reaches limit temperature. The power is turned off forcibly. For 30 minutes after this, all key entries are disabled. (Fan motor operates at the highest speed for the first 5 minutes. For the remaining 25 minutes, fan motor is also stopped.) The event is saved in memory as well.	No display	U59 U59 is displayed for 30 minutes.
U61	The unit is carrying out its recovery process. (with no disc in the disc tray)	The unit detected an error while recording or playing <u>with no disc in the disc tray</u>. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	U61
U71	HDMI incompatible error (HDCP incompatible)	Display this error when the equipment (compatible with DVI such as TV, amplifier etc.) connected to the unit by HDMI is incompatible with HDCP. *HDCP=High-bandwidth Digital Content Protection	No display	U71
U72	HDMI connection error (communication error)	This error is displayed when there are any communication problems with the unit and the equipments (TV, amplifier etc.) connected to the unit by HDMI. (or when there is a problem with the HDMI cable)		U72 U72 display disappears when error has been solved by Power OFF/ON of connecting equipment or by inserting/removing of HDMI cable.
U73	HDMI connection error (authentication error)	When authentication error occurs while the equipments (TV, amplifier etc.) are connected by HDMI. (or when there is a problem with the HDMI cable)	No display	U73 U73 display disappears when error has been solved by Power OFF/ON of connecting equipment or by inserting/removing of HDMI cable.
U88	The unit is carrying out its recovery process. (with a disc in the disc tray)	The unit detected an error while recording or playing with a disc in the disc tray. The unit is carrying out its recovery process. This process restores the unit to normal operation. The unit is not broken. Wait until the message disappears.	No display	U88
U99	Hang-up	Displayed when communication error has occurred between Main microprocessor and Timer microprocessor.	No display	U99 Displayed is left until the [POWER] key is pressed.

Error Code	Diagnosis Contents	Description	Monitor Display	Automatic FL display
H19	Inoperative fan motor	When inoperative fan motor is detected after powered on, the power is turned off automatically. The event is saved in memory.	No display	No display
F00	No error information	Initial setting for error code in memory (Error code Initialization is possible with error code initialization and main unit initialization.)	No display	No display
F58	Drive hardware error	When drive unit error is detected, the event is saved in memory.	No display	No display
F34	Initialization error when main microprocessor is started up for program recording	When initialization error is detected after starting up main microprocessor for program recording, the power is turned off automatically. The event is saved in memory.	No display	No display
F74	HDMI Device Key Communication error.	HDMI connection could not be authenticated due to a transfer malfunction. Factor of HDMI Device key-road failure • When HDMI LSI is damaged. • When the bus line of I2C does not operate normally. • When device key information recorded is damaged.	No display	F74
F75	HDMI Device Key Information error	HDMI connection could not be authenticated due to a transfer malfunction. Factor of HDMI Device key-road failure • When HDMI LSI is damaged. • When the bus line of I2C does not operate normally. • When device key information recorded is damaged.	No display	F75
UNSUPPORT	Unsupported disc error	*An unsupported format disc was played, although the drive starts normally. *The data format is not supported, although the media type is supported. *Exceptionally in case of the disc is dirty.	"This disc is incompatible."	UNSUP ↓ PORT Display for 5 seconds.
NO READ	Disc read error	*A disc is flawed or dirty. *A poor quality failed to start. *The track information could not be read.	"Cannot read. Please check the disc."	NOREAD
HARD ERR	Drive error	The drive detected a hard error.	"DVD drive error."	Display for 5 seconds. HARD ↓ ERR
SELF CHECK	Restoration operation	Since the power cord fell out during a power failure or operation, it is under restoration operation. *It will OK, if a display disappears automatically. If a display does not disappear, there is the possibility that defective Digital P.C.B. / RAM drive.	No display	SELF ↓ CHECK
PLEASE WAIT	Unit is in termination process	Unit is in termination process now. "BYE" is displayed and power will be turned off. In case "Quick Start" of setup menu is ON, it is displayed in restoration operation for AC off.	No display	PLEASE ↓ WAIT
UNFORM AT	Unformatted disc error	You have inserted an unformatted DVD-RAM or DVD-RW that is unformatted or recorded on other equipment.	Format This disc is not formatted properly. Format the disc in DISK MANAGEMENT?	UNFOR ↓ MAT

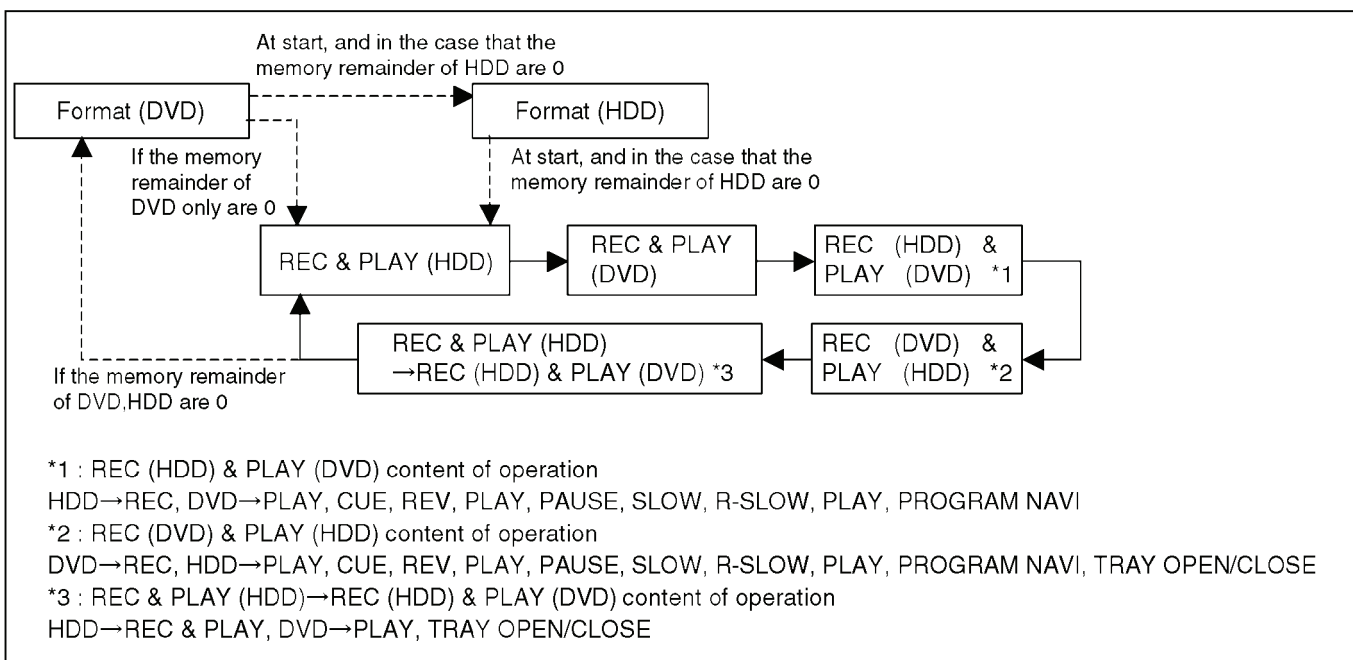
Error Code	Diagnosis Contents	Description	Monitor Display	Automatic FL display
IR ERR	IR communication error	[IR ERR] is displayed when communication between Timer microprocessor and IR microprocessor fails.	No display	IR ERR
No REC	Recording is impossible	[No REC] is displayed when recording is impossible due to the defect, dirt or wound of media.	No display	NoREC
HDD ERROR	[HDD ERR] is displayed when start up of HDD was failed. (Except error of setting of Power on Stand-by)	a) When normal start up was failed. b) When start up at HDD boot was failed. c) When start up from state of P-OFF was failed. d) When start up from state of HDD SLEEP was failed. [HDD ERR] is displayed when above each start up of HDD was failed. *In case b), tray opens automatically and [HDDERR] is displayed until version up disc is inserted.	No display	HDDERR
HDD NG	Power on Stand-by setting error	[HDD NG] is displayed when power on Standby setting of HDD is NG or when HDD which power on Stand-by is not set to is used. Please try to replace HDD with genuine HDD as service parts.	No display	HDD NG

7.1.2. Special Modes Setting

Item		FL Display	Key Operation
Mode Name	Description		Front Key
TEST Mode	*All the main unit's parameters (include tuner) are initialized.	TM*AV1	Press [STOP], [CH UP] and [OPEN/CLOSE] keys simultaneously for five seconds when power is off.
Rating password	The audiovisual level setting password is initialized to "Level 8".	INIT	Open the tray, set DRIVE SELECT to DVD, and press [REC] and [PLAY] simultaneously for 5 seconds.
Service Mode	Setting every kind of modes for servicing. *Details are described in "7.1.3. Service Mode at a glance".	SERV	When the power is off, press [CH UP], [OPEN/CLOSE] and [REC] keys simultaneously for 5 seconds.
Forced disc eject	Removing a disc that cannot be ejected. The tray will open and unit will shift to P-off mode. *When Timer REC is ON or EXT-LINK is ON, execute " Forced disc eject " after releasing Timer REC or EXT-LINK. *This command is not effective during "Child lock" is ON. While Demonstration Lock is being set, this Forced disc eject function is not accepted. If this command was executed while TIMER REC is being set, TIMER REC setting will be kept.	The display before execution leaves. *****	When the power is off, press [STOP] and [CH UP] keys simultaneously for 5 seconds.
Child lock/unlock	Set or release "Child Lock".	X HOLD	Press [OK] and [RETURN] by remote controller simultaneously until [X-HOLD] is displayed.
NTSC/PAL system select	To switch PAL/NTSC alternately.	The display before execution leaves. *****	While the power is on (E-E mode), press [STOP] and [OPEN/CLOSE] simultaneously for 5 seconds.
Forced power-off	When the power button is not effective while power is ON, turn off the power forcibly. *When Timer REC is ON or EXT-LINK is ON, execute "Forced Power-off" after releasing Timer REC or EXT-LINK.	Display in P-off mode.	Press [Power] key over than 10 seconds.

Item		FL Display	Key Operation
Mode Name	Description		Front Key
Aging	Perform sequence of modes as * Aging Description shown below continually. Caution: All programs in DVD-RAM disc will be deleted because Formatting is done once in Aging process.	Display following the then mode.	When the power is ON, press [STOP], [POWER] and [OPEN/CLOSE] simultaneously for over 5 seconds and less than 10 seconds. NOTE1: If Unit has not turned into Aging mode by operations shown above, execute TEST MODE once and reexecute operation shown above. (*All the main unit's parameters include tuner are initialized by TEST mode.) NOTE2: If the unit has hung-up because of pressing keys for over 10 seconds, once turn off the power, and reexecute this command. *When releasing Aging mode, press [POWER] key.

Aging Contents (Example):



Demonstration lock/unlock	Ejection of the disc is prohibited. The lock setting is effective until unlocking the tray and not released by "Main unit initialization" of service mode.	*When lock the tray. LOCK "LOCK" is displayed for 3 seconds.	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds in the condition that a disc in the tray. NOTE: Time difference between pressing [STOP] and [POWER] should be within 0.5 sec.
		*When unlock the tray. UNLOCK "UNLOCK" is displayed for 3 seconds.	When the power is on, press [STOP] and [POWER] keys simultaneously for 5 seconds while the tray being locked. NOTE: Time difference between pressing [STOP] and [POWER] should be within 0.5 sec.
		*When press OPEN/CLOSE key while the tray being locked. LOCK Display "LOCK" for 3 seconds.	Press [OPEN/CLOSE] key while the tray being locked.

Item		FL Display	Key Operation
Mode Name	Description		Front Key
ATP re-execution	Re-execute ATP.	Display at ATP executing. *****	When the power is on (E-E mode), press [CH UP] and [CH DOWN] simultaneously for 5 seconds.
Progressive initialization	The progressive setting is initialized to Interface.	The display before execution leaves. *****	When the power is on (E-E mode), press [STOP] and [PLAY] simultaneously for 5 seconds.

7.1.3. Service Modes at a glance

Service mode setting: While the power is off, press **REC, CH UP and OPEN / CLOSE** simultaneously for five seconds.

Item		FL Display	Key Operation
Mode Name	Description		(Remote controller key)
Release Items	Item of Service Mode executing is cancelled.	SERV	Press [0] [0] or [Return] in service mode.
Error Code Display	Last Error Code of U/H/F held by Timer is displayed on FL. *Details are described in "7.1.1. Self-Diagnosis Functions".	♣ □ □ * ♣ shows U/H/F. □ □ shows number. If any error history does not exist, [F00] is displayed.	Press [0] [1] in service mode
ROM Version Display	1. Region code (displayed for 5 sec.) 2. Main firm version (displayed for 5 sec.) 3. Timer firm version (displayed for 5 sec.) 4. Drive firm version (displayed for 5 sec.) 5. ROM correction version (displayed for 5 sec.) 6. Loader Version (displayed for 5 sec.) 7. Deviceinfo Version (displayed for 5 sec.)	1. NO * *: Region of DVD (Example: 1,2.....) 2. ***** 3. ***** 4. ***** 5. *** 6. *** L 7. ***** * are version displays.	Press [0] [2] in service mode
White Picture Output	White picture is output as component Output from AV Decoder. *White picture (Saturation rate : 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". WHIT I	Press [1] [1] in service mode.
		Switch Interlace/Progressive WHIT	Press [1] [4] in White Picture Output mode. *I/P are switched alternately.
Magenta Picture Output	Magenta picture is output with Component Output from AV Decoder. *Magenta picture (Saturation rate: 100%) *It is enable to switch Interlace/Progressive by "I/P switch: [1] [4]"	*Initial mode is "Interlace". MAGE I	Press [1] [2] in service mode.
		Switch Interlace/Progressive MAGE	Press [1] [4] in Magenta Picture Output mode. *I/P are switched alternately.

Item		FL Display	Key Operation
Mode Name	Description		(Remote controller key)
RTSC Return in XP (A & V)	AV1 input signal is encoded (XP), decoded (XP) and output decoded signal to external without DISC recording and DISC playback.	Initial mode: EE2/ Interlace/ XP/ Audio 48kHz EE2	Press [1] [3] in service mode.
		Switch Interlace/Progressive EE2P48	Press [1] [4] in RTSC Return XP mode. *I/P are switched alternately.
		Audio 44.1 kHz/ 48 kHz Switch EE2P44	Press [2] [4] in RTSC Return XP mode. *48 kHz / 44.1 kHz are switched alternately.
I/P Switch	Switch Interlace and Progressive in EE mode. *Initial setting is "Interlace". *This command is effective during executing "White Picture Output", "Magenta Picture Output" and "RTSC Return in XP (A & V)" modes.	Initial mode is Interlace SERV P Switch Interlace/Progressive SERV I	Press [1] [4] in I/P Switch mode. *I/P are switched alternately.
Audio Mute (XTMUTE)	Check whether mute is applied normally by the timer microprocessor.	T MUTE	Press [2] [1] in service mode.
Audio Mute (XDMUTE)	Check whether mute is applied normally by the Digital P.C.B.	D MUTE	Press [2] [2] in service mode.
Audio Pattern Output	The audio pattern stored in the internal memory is output (Lch: 1kHz/-18dB) (Rch: 400Hz/-18dB) *Audio sound clock switching operation of DAC can be confirmed by sub command [2] [4].	Initial mode (Audio 48kHz) AU 48	Press [2] [3] in service mode.
		Audio 44.1kHz/48kHz switching AU 44	Press [2] [4] in Audio Pattern Output mode. *48 kHz / 44.1 kHz are switched alternately.

Item		FL Display	Key Operation
Mode Name	Description		(Remote controller key)
HDD READ SEEK Inspection	Inspecting seek time of HDD to inspect performance.	At start * 00 ↓ The [*] sign is added every 20 seconds while inspecting. Two digits on the right side are the progress level of the inspection (The unit is %). Example on the way of inspection: *** 53 When HDD is OK after inspection: HDD OK (NG is displayed when error is excluding o) (Transfer rate is calculated from the AV scanning result, and when it is less than 35Mbps, NG is displayed.) HDD \$## \$: [X] is displayed when seek time is over 270msec., there is error or transfer rate is NG. Position at \$ is space when excluding those. ##: Number of data of over 100msec. and less than 270msec. When it is over 100, [99] is displayed. When the number is less than 5, we judge it normal.	Press [3] [1] in service mode. * When canceling the inspection mode while executing, do "forced power-off". Method: Press [POWER] key more than 10 seconds.

Item		FL Display	Key Operation
Mode Name	Description		(Remote controller key)
HDD READ VERIFY Inspection	Measure of access time in READ VERIFY MODE of HDD.	At start * 00 ↓ The [*] sign is added every 20 seconds while inspecting. Two digits on the right side are the progress level of the inspection (The unit is %). Example on the way of inspection: *** 53 When HDD is OK after inspection: HDD OK (NG is displayed when error is excluding o) (Transfer rate is calculated from the AV scanning result, and when it is less than 35Mbps, NG is displayed.) HDD \$## \$: [X] is displayed when seek time is over 270msec., there is error or transfer rate is NG. Position at \$ is space when excluding those. ##: Number of data of over 100msec. and less than 270msec. When it is over 100, [99] is displayed. When the number is less than 5, we judge it normal.	Press [3] [2] in service mode. * When canceling the inspection mode while executing, do "forced power-off". Method: Press [POWER] key more than 10 seconds.
HDD Spin-up time	The accumulation value of the Spin-up time of HDD is displayed.	***** Spin-up time of HDD is displayed. (The unit of display is hour.)	Press [3] [3] in service mode.

Item		FL Display	Key Operation (Remote controller key)
Mode Name	Description		
HDD High Speed Scan	High speed AV scan check of HDD	AVSCAN ↓ * 00 ↓ The [*] sign is added every 10 seconds while inspecting. Two digits on the right side are the progress level of the inspection (The unit is %). Example on the way of inspection: *** 53 When HDD is OK after inspection: HDD OK When HDD is NG after inspection: HDD *** [*] is the number of data of NG.	Press [3] [6] in service mode.
HDD Check	Simple quality judgment of HDD	HDDCHK ↓ When HDD is OK: HDD OK When HDD is NG: HDD NG	Press [3] [7] in service mode.
HDD/DVD Drive Simple Check	Check if HDD Self-Diagnosis test was performed or Drive last error occurred within 4 weeks. * If the current date or the date when the error occurred is wrong, correct judgement may not be made.	HDD Self-Diagnosis test start. HDDCHK When HDD Self-Diagnosis test result is OK. HDD OK When HDD Self-Diagnosis test result is NG. HDD NG When the drive malfunction was detected within 4 weeks ago. DRV NG When the drive malfunction was detected more than 4 weeks ago or Drive last error data does not exist. DRV OK [HDD OK] from [DRV OK] are repeatedly displayed in turn.	Press [3][8] in service mode.

Item		FL Display	Key Operation (Remote controller key)
Mode Name	Description		
Laser Used Time Indication	Check laser used time (hours) of drive.	* ● (*****) is the used time display in hour. ● Laser used time of DVD/ CD in Playback/Recording mode is counted.	Press [4] [1] in service mode.
Delete the Laser Used Time	Laser used time stored in the memory of the unit is deleted.	CLR	Press [9] [5] in service mode.
RAM Drive Last Error	RAM Drive error code display. *For details about the drive error code, refer to the Service Manual for the specific RAM Drive.	1. Error Number is displayed for 5 seconds. NO ** 2. Time when the error has occurred is displayed for 5 seconds. DDhhmm DD: Day hh: Hour mm: Minute 3. Last Drive Error (1/2) is displayed for 5 seconds. ***** ↑ 03: Bad disc 04: Bad disc or drive malfunction 4. Last Drive Error (2/2) is displayed for 5 seconds. ***** 5. Error occurring Disc type is displayed for 5 seconds. ***** 6. Disc Maker ID is displayed for 5 seconds. ***** 7. Factor of Drive Error occurring is left displayed *****	Press [4] [2] in service mode. When "INFO*****" is being displayed, past 19 error histories can be displayed by pressing [0] [1] - [1] [9] In case that the maker cannot be identified, display is black out.
Delete the Last Drive Error	Delete the Last Drive Error information stored on the DVD RAM-Drive.	CLR	Press [9] [6] in service mode.

Item		FL Display	Key Operation															
Mode Name	Description		(Remote controller key)															
Laser power confirmation	Drive state is judged based on difference between laser power value at shipping and present laser power value.	CHK * * is judgment result <table><tr><th>*</th><th>Power value difference</th><th>Evaluation</th></tr><tr><td>0</td><td>1mW or less</td><td>Very good.</td></tr><tr><td>1</td><td>2mW or less</td><td>Good.</td></tr><tr><td>2</td><td>3mW or less</td><td>Bad.</td></tr><tr><td>3</td><td>4mW or more</td><td>Very bad.</td></tr></table> If DVD-RAM disc in not inserted, [NO DISC] is displayed. If power value study was filed, [ERROR] is displayed.	*	Power value difference	Evaluation	0	1mW or less	Very good.	1	2mW or less	Good.	2	3mW or less	Bad.	3	4mW or more	Very bad.	1. Insert DVD-RAM disc into RAM Drive in service mode. (Other media are assumed to be noncorrespondence.) 2. Press [4] [4].
*	Power value difference	Evaluation																
0	1mW or less	Very good.																
1	2mW or less	Good.																
2	3mW or less	Bad.																
3	4mW or more	Very bad.																
Turn on all FL/LEDs	All segments of FL and all LEDs are turned on.	All segments are turned on.	Press [5] [1] in service mode.															
PB HIGH Signal Output	8 pin of AV 1 Jack (PB HIGH terminal) is High (approx. 11V DC).	PB HI	Press [5] [2] in service mode.															
PB MIDDLE Signal Output	8 pin of AV 1 Jack (PB HIGH terminal) is Middle (approx. 5.5V DC)	PB MID	Press [5] [3] in service mode.															
Front connection inspection	Press all front keys and check the connection between Main P.C.B. and Front key Switches.	0Γ ** (1) (2) (1) Each time a key is pressed, segment turned on increases one by one. (2) Total umber of keys that have been pressed.	Press [5] [4] in service mode.															
Production Date Display	Display the date when the unit was produced.	YYMMDD YY: Year MM: Month DD: Day	Press [6] [1] in service mode.															
Display the accumulated working time	Display the accumulated unit's working time.	***** (Indicating unit: Second)	Press [6] [4] in service mode.															

Item		FL Display	Key Operation (Remote controller key)
Mode Name	Description		
Display the Error History	Display the Error History stored on the unit.	Display reason of error for 5 seconds. NO ** 01: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 02: Defect of RAM Drive. 03: Defect of Disc. 04: Defect of Digital P.C.B. or Communication Error. 05: Defect of Digital P.C.B. (AV DEC / MAIN CPU) 06: Defect of HDD. Display the time when the error has occurred for 5 seconds. DDhhmm DD: Day hh: Hour mm: Minute Accumulated working time till occurring of the error is left displayed. ***** (Indicating unit: Second)	Press [6] [5] in service mode. Then press [0] [1] ~ [9] [9], the past 99 error histories are displayed.
Delete the Error History	Delete Error History information stored on the unit.	CLR	Press [9] [7] in service mode.
USB check	Display the volume label of the USB memory.	When USB memory is not connected. NO USB When USB check is OK. ***** [*] is volume label. Example of volume label is [PANASONIC] : PANASO When USB check is NG. ERROR	Press [7] [5] in service mode. * Insert USB memory.
AV4(V)/AV1(RGB) I/O Setting	Set input to AV4 (V) and set output to AV1 (RGB) for I/O checking	PAL 01	Press [8] [0] in service mode.
AV2(Y/C)/AV1(V) I/O Set- ting	Set input to AV2 (Y/C) and set output to AV1 (V) for I/O checking	PAL 02	Press [8] [1] in service mode.

Item		FL Display	Key Operation
Mode Name	Description		(Remote controller key)
AV2(V)/AV1(Y/C) I/O Setting	Set input to AV2 (V) and set output to AV1 (Y/C) for I/O checking	PAL 03	Press [8] [2] in service mode.
AV2(RGB)/AV1(V) I/O Setting	Set input to AV2 (RGB) and set output to AV1 (V) for I/O checking	PAL 04	Press [8] [3] in service mode.
P50(H) Output	Timer Microprocessor IC7501-76 output High signal for AV1-pin 10 passing through inverter (approx. 0V DC at AV1-pin 10).	When OK. P50HOK When NG. P50HNG	Press [8] [4] in service mode.
P50(L) Output	Timer Microprocessor IC7501-76 output Low signal for AV1-pin 10 passing through inverter (approx. 4.4V DC at AV1-pin 10).	When OK. P50LOK When NG. P50LNG	Press [8] [5] in service mode.
Tray OPEN/CLOSE Test	The tray is opened and closed repeatedly.	***** “*” is number of open/close cycle times.	Press [9] [1] in service mode *When releasing this mode, press the [POWER] button of Remote Controller more than 10 seconds.
Error code initialization	Initialization of the last error code held by timer (Write in F00)	CLR	Press [9] [8] in service mode.
Initialize Service	Last Drive Error, Error history and Error Codes stored on the unit are initialized to factory setting.	CLR	Press [9] [9] in service mode.
Finishing service mode	Release Service Mode.	Display in STOP (E-E) mode. *****	Press power button on the front panel or Remote controller in service mode.

8 Service Fixture & Tools

Prepare service tools before process service position.

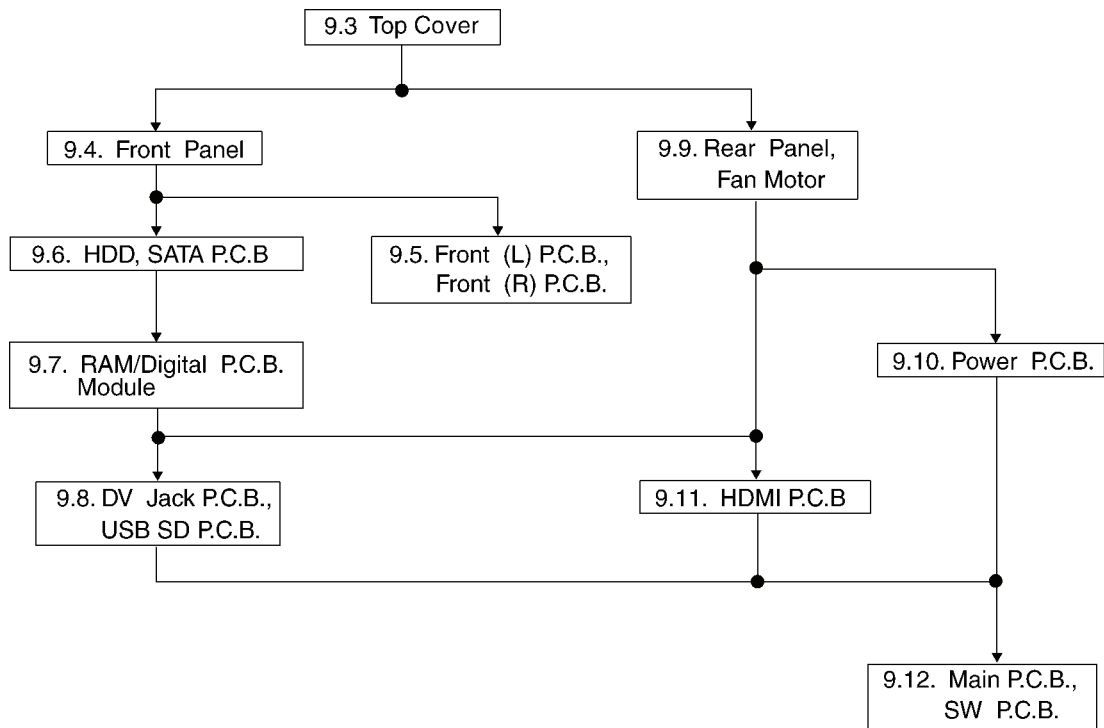
Part Number	Description	Compatibility
RFKZ0260	Extension Cable (MainP.C.B. - RAM/Digital P.C.B. Module/ 88 Pin)	Same as EH50 Series
RFKZ0327	Extension Cable (MainP.C.B. - Power P.C.B./ 15 Pin)	Same as E55 Series
RFKZ0125	Extension FFC (HDD - RAM/Digital P.C.B. Module/ 40 Pin)	Same as EH55 Series
RFKZ0168	Extension Cable (Main P.C.B. - Fan Motor/ 3 Pin)	Same as E50/E55 Series
RFKZ0169	Extension Cable (MainP.C.B. - HDD / 4 Pin)	Same as EH55 Series
RFKZ0197	Extension Cable (MainP.C.B. - HDMI P.C.B. / 8 Pin)	Same as E50/E55 Series
RFKZ0367	Extension Cable (MainP.C.B. - FRONT (R) P.C.B. / 6 Pin)	Same as EH75V Series
JZS0484	Eject Pin	Same as E50 Series
RFKZ03D01KS	Lead Free Solder (0.3mm/100g Reel)	Same as EH55 Series
RFKZ06D01KS	Lead Free Solder (0.6mm/100g Reel)	Same as EH55 Series
RFKZ10D01KS	Lead Free Solder (1.0mm/100g Reel))	Same as EH55 Series
RFKZ0316	Solder Remover (Lead free low temperature Solder/50g)	Same as EH55 Series
RFKZ0328	Flux	Same as EH55 Series

9 Disassembly and Assembly Instructions

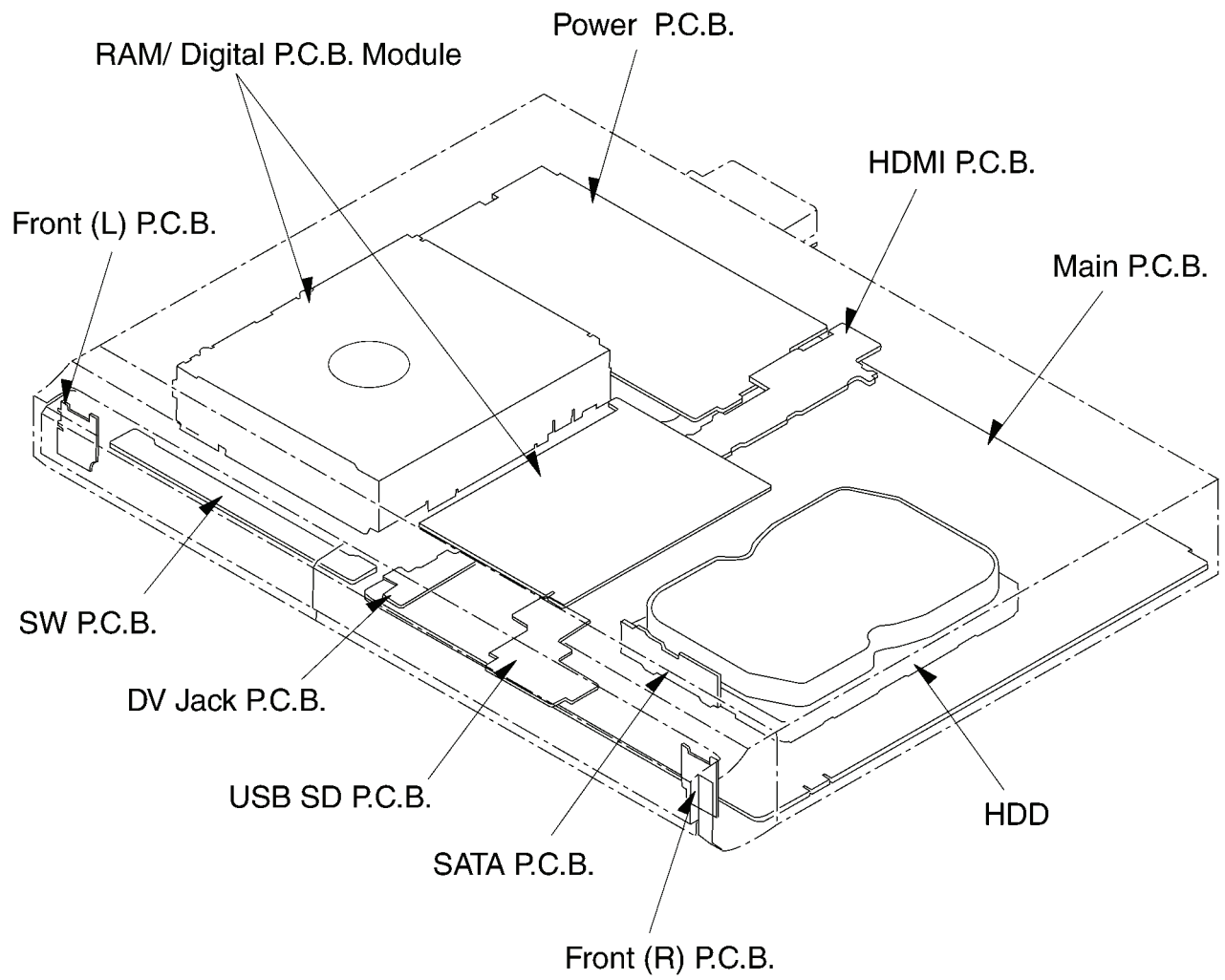
9.1. Disassembly flow chart

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

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

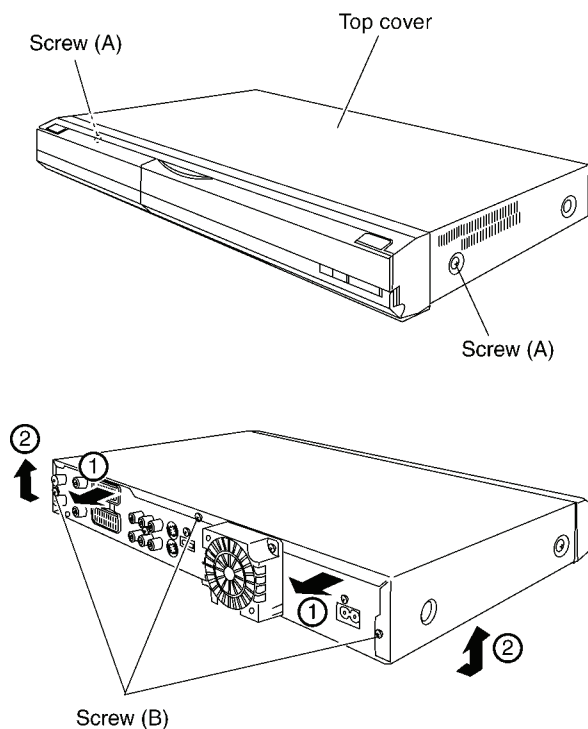


9.2. P.C.B. Positions



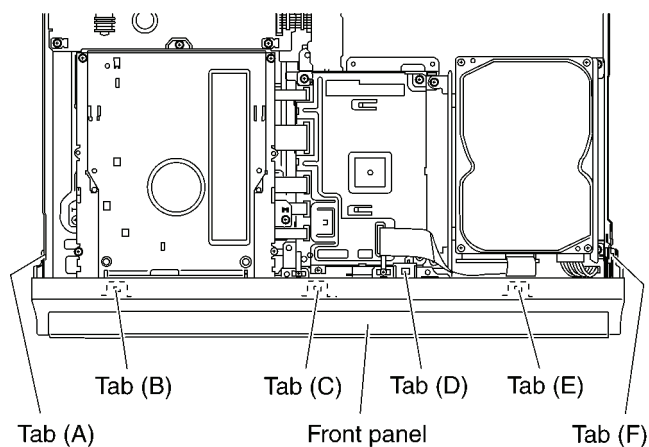
9.3. Top cover

1. Remove the 2 screws (A) and 3 screws (B).
2. Slide Top Cover rearward and open the both ends at rear side of the Top Cover a little and lift the Top Cover in the direction of the arrows.



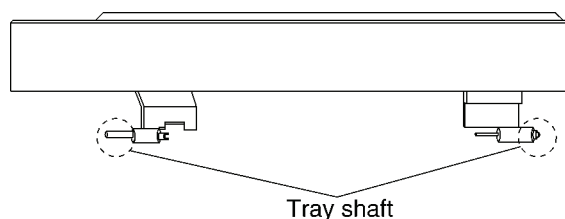
9.4. Front Panel

1. Unlock 6 tabs in (A) - (F) turn.
Pull with the front panel in the direction of your side.

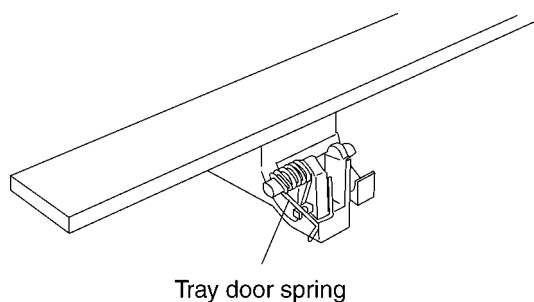


9.4.1. How to assemble Tray door ass'y

1. Apply about 0.1g lubricant to each part inside the tray shaft.

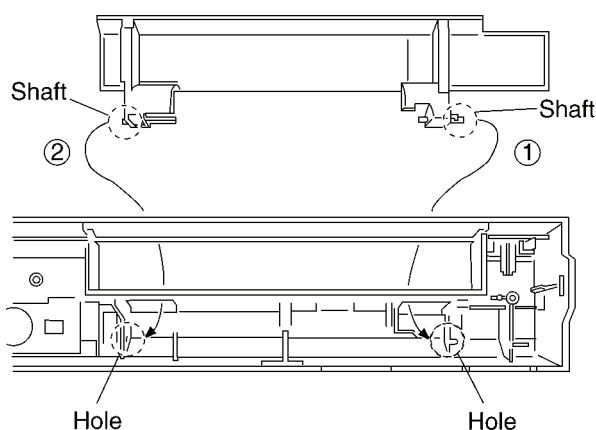


2. Attach the Tray door spring to Tray door ass'y.

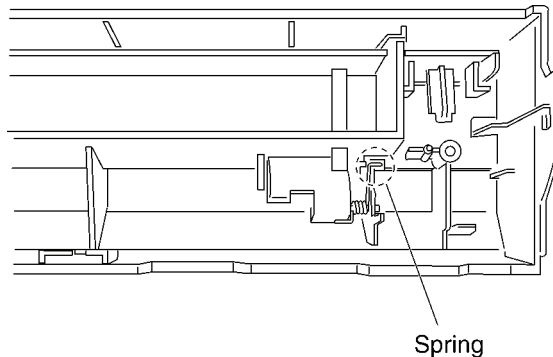


3. Attach Tray door ass'y in order from ① to ②.

- ① Insert the shaft in the hole.
- ② Insert the shaft in the hole.

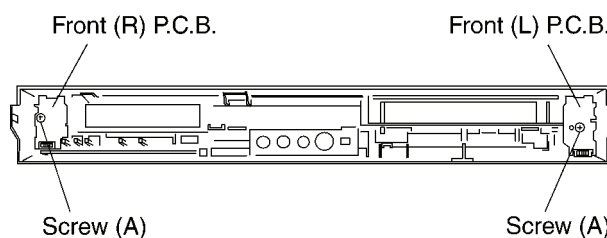


4. Confirm the Tray door spring is attached as following.



9.5. Front (L) P.C.B., Front (R) P.C.B.

1. Remove the 2 Screws (A) to remove the Front (L) P.C.B. and Front (R) P.C.B.



9.6. HDD, SATA P.C.B.

Caution:

Writing the main firmware to the unit is necessary after replacing the HDD.
Prepare the latest firmware updating disc.

Data of HDD:

Make sure to order the Part No., RFKV****HDK in Replacement Parts List when replacing the HDD.

The following data has been written on RFKV****HDK.

- Main Firm
- CD DB Data
- Other Data

Caution:

No use HDD (RFKV****HDK) of the capacity of the other model use.

Handling of HDD

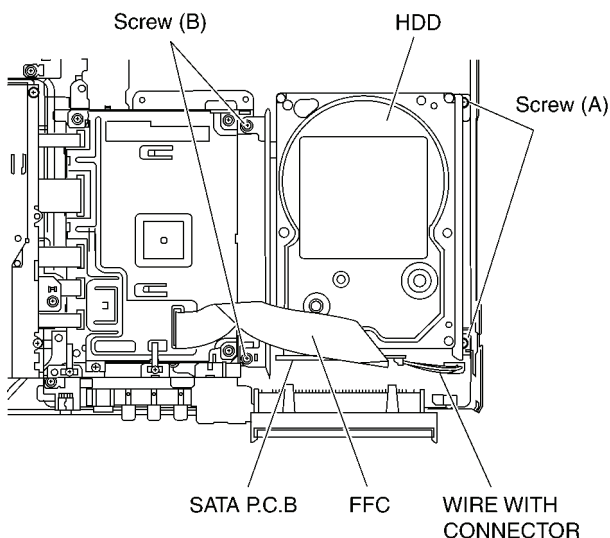
The following precautions should be taken when handling HDD.

- a. Never give an impact to HDD. (Even a drop from 1cm height can be a cause of HDD failure.
- b. When placing HDD on a workbench, provide a mat on a bench for shock absorption and anti-static purposes.
- c. When installing HDD, release it from your hands only after confirming that it is fully set on the chassis.
- d. Avoid stacking up HDD.
- e. HDD is unstable and easy to fall. Do not stand it on its side face.
- f. When handling HDD, hold its side faces to avoid static hazard.
- g. Do not place HDD on its wrapping bag after removal. (Prevention of static hazard)
- h. Use a screwdriver with low impact and anti-static features.

Note:

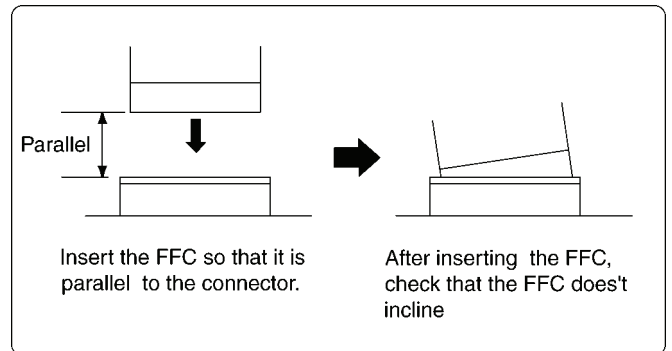
When replacing HDD, please make the rear jumper slave or cable select configuration.

1. Remove the 2 Screws (A) and (B), FFC and Wire with connector to remove HDD with SATA P.C.B.

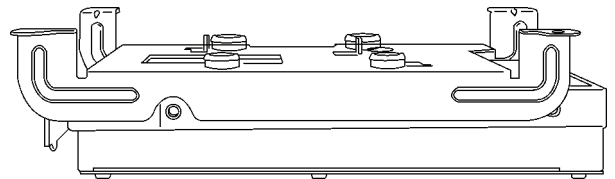


CAUTION:

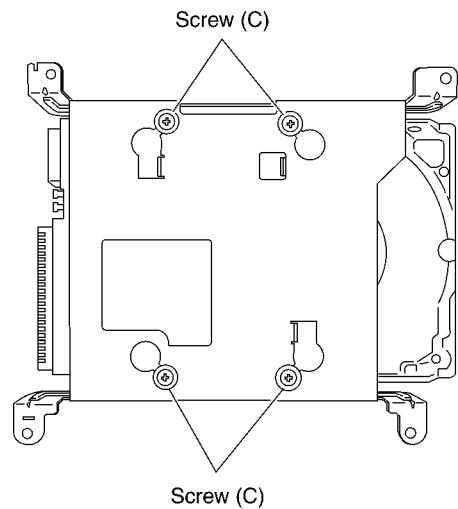
When replacing HDD, pay attention as below.



2. Put HDD with HDD angle up and down inversely so as not to give a shock to HDD.



3. Remove 4 Screws (C) to remove HDD from HDD angle.



9.7. RAM/Digital P.C.B. Module

Caution:

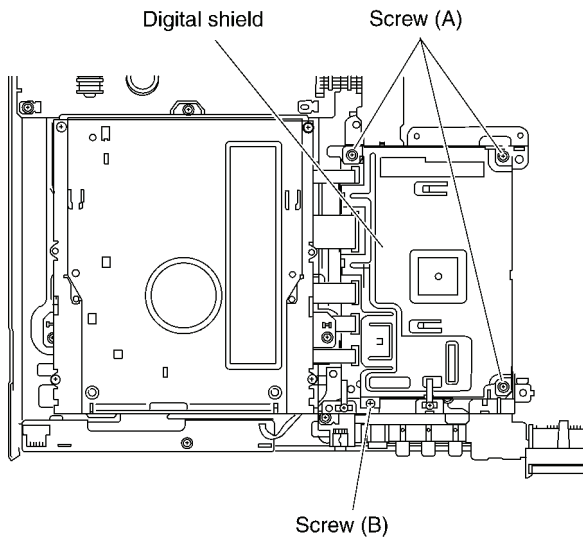
Pairing of RAM Drive and Digital P.C.B. as "RAM/Digital P.C.B. Module" have to be replaced together. If either RAM Drive or Digital P.C.B. is changed, RAM Drive unit has to be re-aligned. Because the alignment data for RAM Drive Unit is stored in Digital P.C.B..

NOTE:

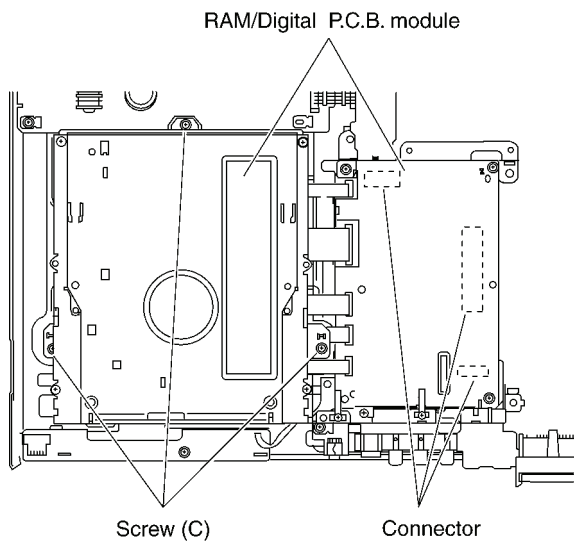
Formatting the HDD is unnecessary after replacing RAM/Digital P.C.B. Module.
[TM AV1] is displayed, once power OFF, and power ON again.

1. Remove the 3 Screws (A) and Screw (B) to remove

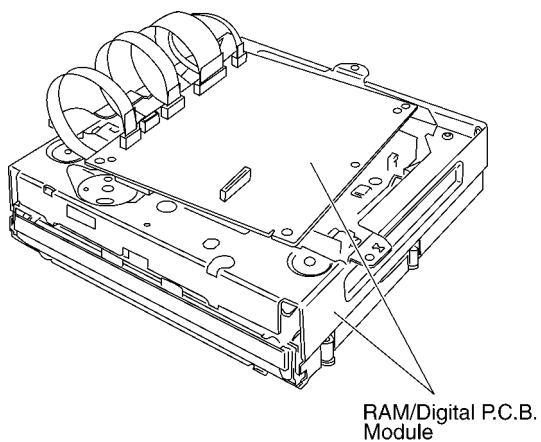
Digital Shield.



2. Lift up Digital P.C.B. slightly so to disconnect connectors to remove Digital P.C.B.
And remove 3 Screws (C) to remove DVD drive.



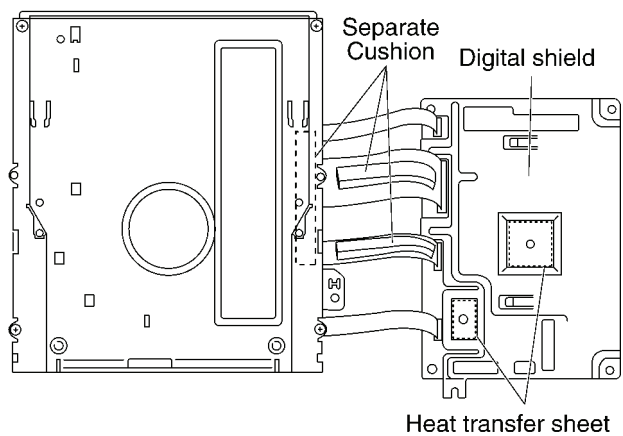
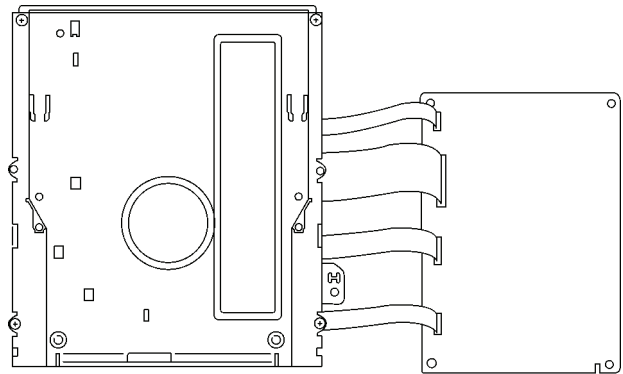
3. Put Digital P.C.B. on DVD drive and remove RAM/Digital P.C.B. Module.



NOTE:

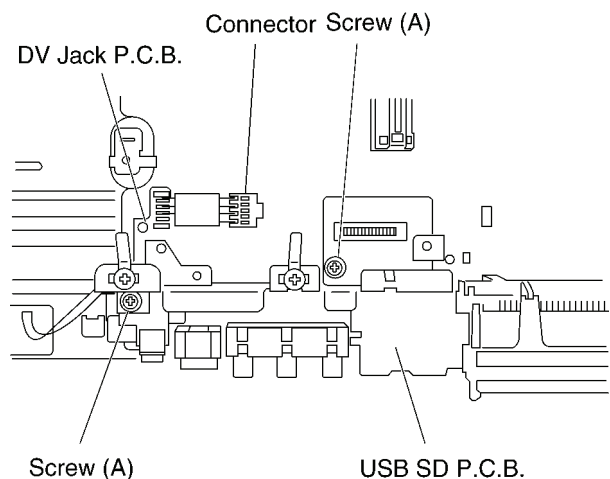
RAM/Digital P.C.B. Module as service part has heat sheet , heat transfer sheet and 3 Separate Cushions.
Before returning to customer, please ensure heat

sheet , heat transfer sheet and 3 Separate Cushions to be installed on Digital P.C.B.



9.8. DV Jack P.C.B., USB SD P.C.B.

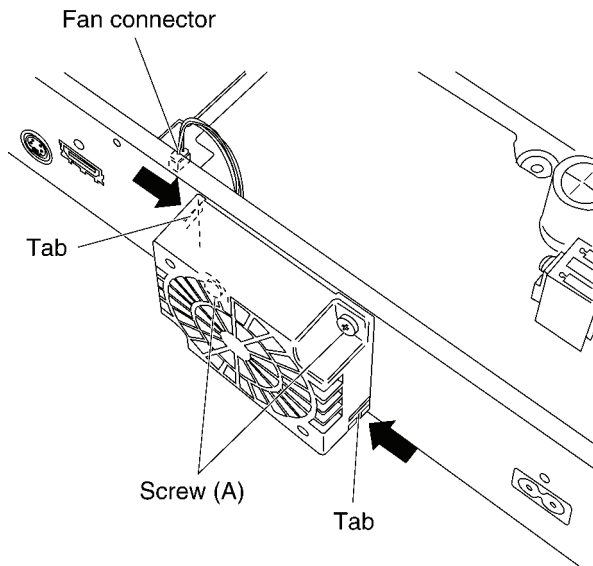
1. Remove 2 Screws (A) and connector to remove DV Jack P.C.B. and USB SD P.C.B.



9.9. Rear Panel, Fan Motor

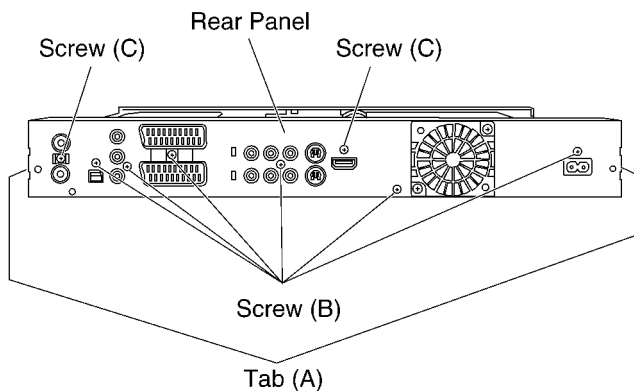
9.9.1. Only Fan Motor

1. Remove the 2 Screws (A) and fan connector, remove the Fan motor with pushing 2 tabs in the direction of arrows.



9.9.2. Rear Panel with Fan Motor

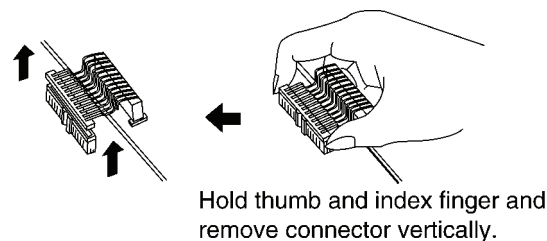
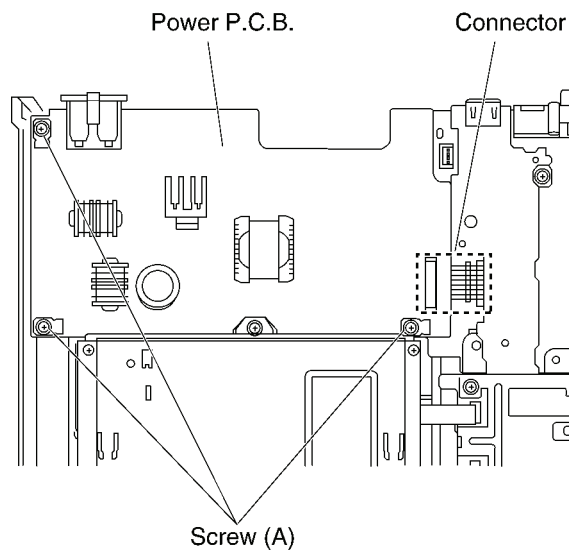
1. Remove 6 Screws (B) and 2 Screws (C).



2. Disconnect the Fan Connector and unlock 2 Tabs (A) to remove Rear Panel.

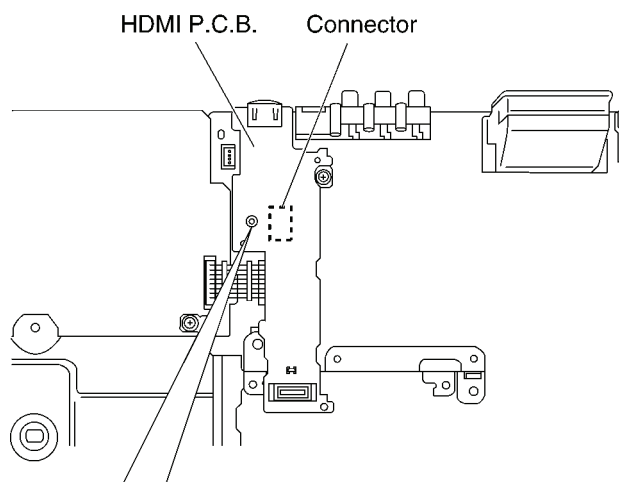
9.10. Power P.C.B.

1. Remove 3 Screws (A) and disconnect the connector to remove Power P.C.B.

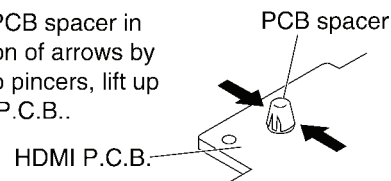


9.11. HDMI P.C.B.

1. Push the PCB spacer in the direction of arrows and lift up HDMI P.C.B. slightly so to disconnect connector to remove HDMI P.C.B.

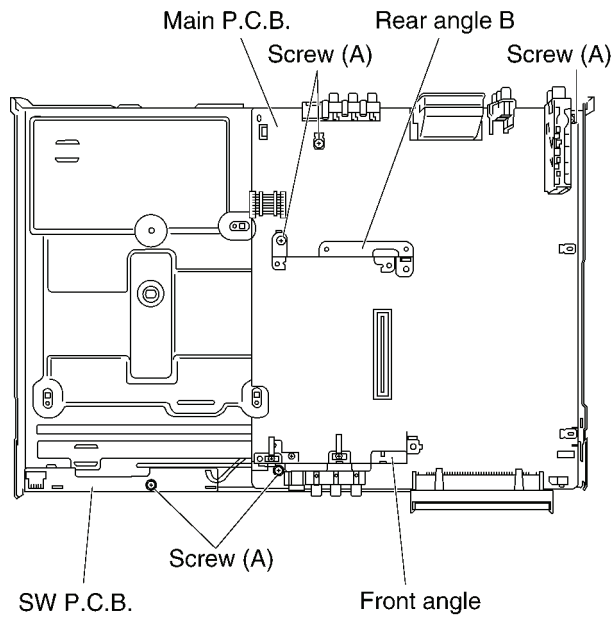


Push the PCB spacer in the direction of arrows by using radio pincers, lift up the HDMI P.C.B..



9.12. Main P.C.B., SW P.C.B.

1. Remove 5 Screws (A).
2. Remove Front angle and Rear angle B.
3. Remove Main P.C.B. and SW P.C.B.



10 Measurements and Adjustments

10.1. Service Positions

NOTE:

For description of the disassembling procedure, see the section 9.

10.1.1. Checking and Repairing of Power P.C.B.

1. Top Cover

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Cover

2. Power P.C.B.

Remove 1 Screw (A) for AC Inlet fixing

Remove 3 Screws (B) for Power P.C.B. fixing

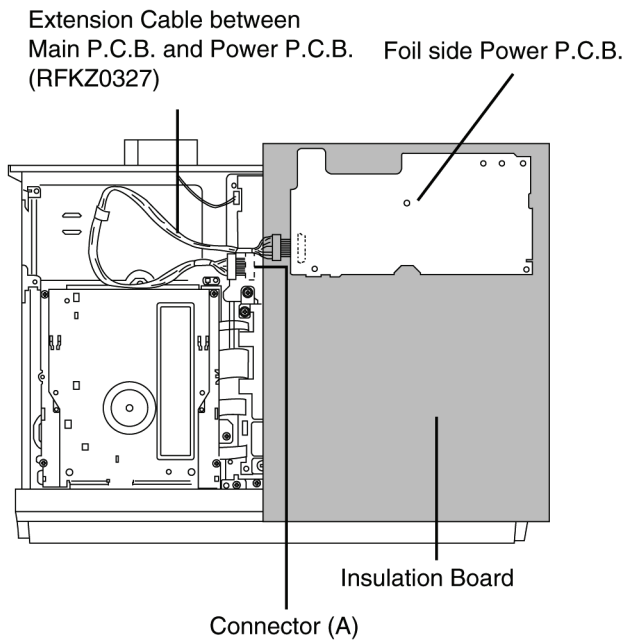
Remove Connector (A) to Main P.C.B.

Connect Extension Cable between Main P.C.B. and Power P.C.B. (RFKZ0327).

Put Power P.C.B. on Insulation Board so that it's foil side faces top.

Caution:

Red wire in the extension cable should be connected to (1) pin.



10.1.2. Checking and Repairing of RAM / Digital P.C.B. Module

1. Top Cover

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Cover

2. Front Panel

Unlock 1 Locking Tab on upper

Unlock 2 Locking Tabs on side

Unlock 3 Locking Tabs on bottom

Remove Front Panel

3. RAM/Digital P.C.B. Module

Remove 1 FFC from HDD

Remove 3 Screws (A), 1 Screw (B) and 3 Screws (C) fixing RAM/Digital P.C.B. Module

Lift up Digital P.C.B. to remove it

4. USB SD P.C.B.

Remove 1 Screw (A) fixing USB SD P.C.B.

Remove USB SD P.C.B.

5. HDMI P.C.B.

Remove 1 Screw fixing HDMI P.C.B.

Unlock a PCB spacer

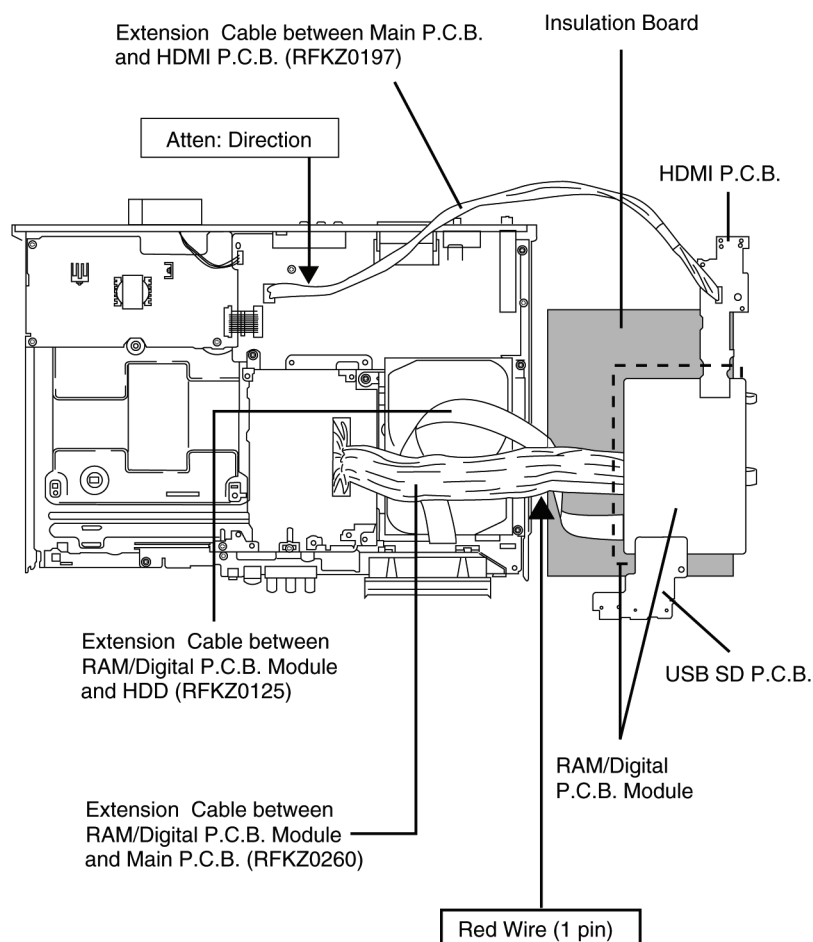
Remove HDMI P.C.B.

Attach USB SD P.C.B. and HDMI P.C.B. on to Digital P.C.B..
Put RAM/Digital P.C.B. Module on side.

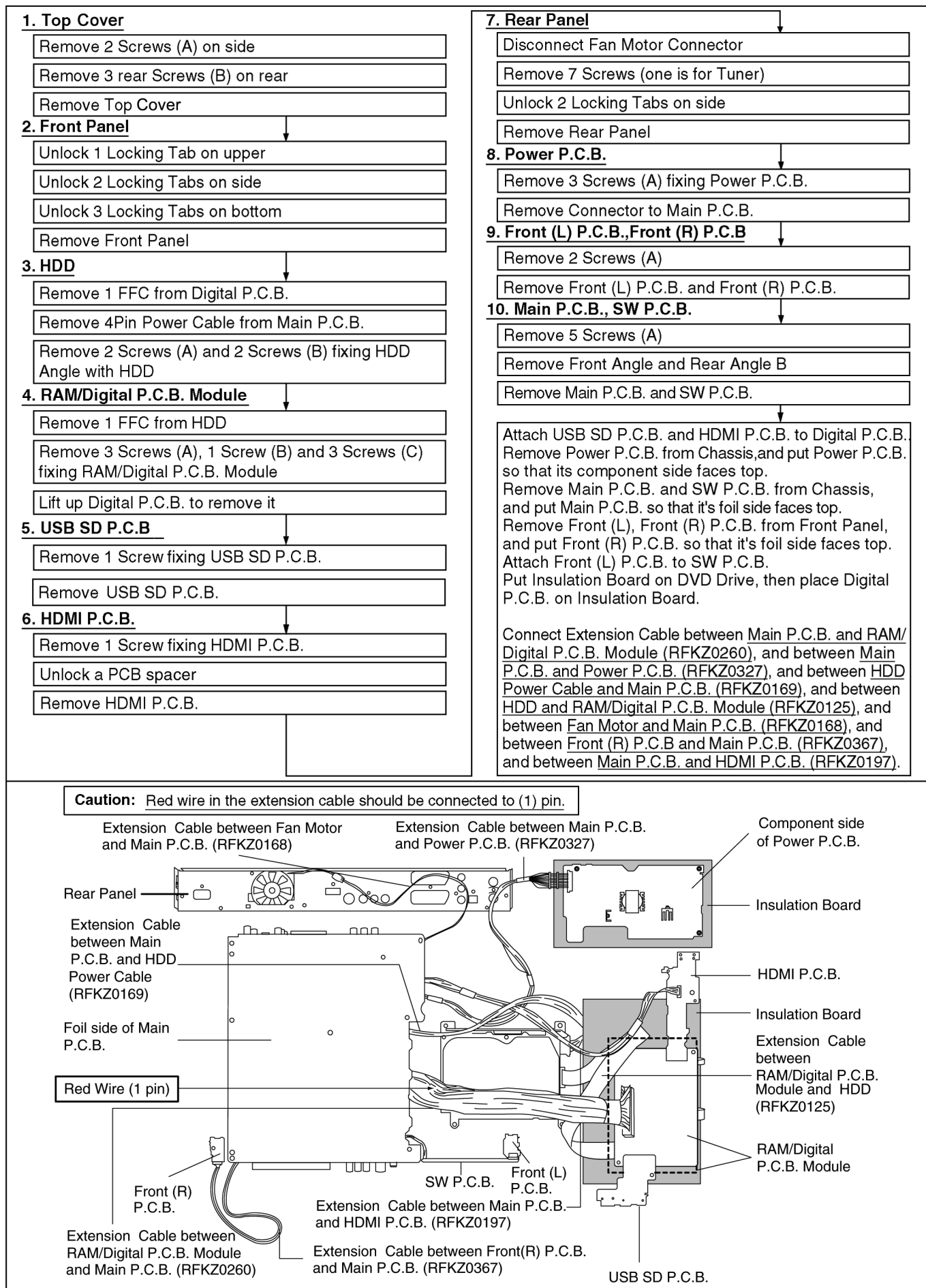
Connect Extension Cable between HDD and RAM/Digital P.C.B. Module (RFKZ0125), and between Main P.C.B. and RAM/Digital P.C.B. Module (RFKZ0260), and between Main P.C.B. and HDMI P.C.B. (RFKZ0197).

Caution:

Red wire in the extension cable should be connected to (1) pin.



10.1.3. Checking and Repairing of Main P.C.B.



10.1.4. Checking and Repairing of HDD

1. Top Cover

Remove 2 Screws (A) on side

Remove 3 rear Screws (B) on rear

Remove Top Cover

2. HDD

Remove 1 FFC from Digital P.C.B.

Remove 4 Pin Power Cable from Main P.C.B.

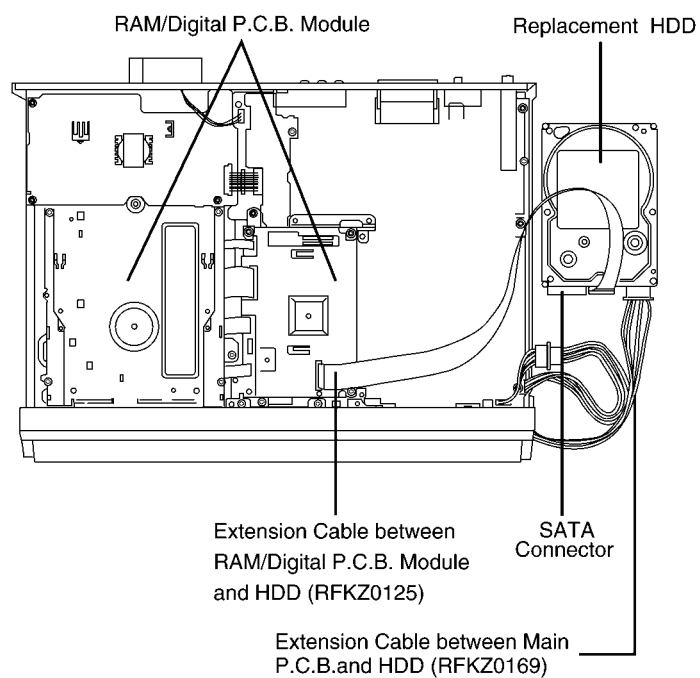
Remove 2 Screws (A) and 2 Screws (B) fixing HDD Angle with HDD

Connect HDD SATA Connector to Replacement HDD

Connect 4 Pin Power Cable to Replacement HDD

Put Replacement HDD on Insulation Board.

Connect Extension Cable between Replacement HDD and RAM/Digital P.C.B. Module (RFKZ0125), and between Replacement HDD and Main P.C.B. (RFKZ0169).



10.2. Caution for Replacing Parts

10.2.1. Items that should be done after replacing parts

✓ : Necessary

— : Unnecessary

Items that Should be done Replacing Parts	Reset IC7501 (*Note1)	Obtain and register a new registration code. (*Note2)	Main Firm update (*Note3)	HDD Format
Main P.C.B.	✓	✓	—	✓
IC7501 (Timer IC)	✓	—	—	—
IC7404 (EEPROM)	—	✓	—	✓
HDD	—	—	✓	✓

*Note1:

Resetting Method

Reset object	Condition of power	Short Terminal
IC7501 (Timer IC)	POWER ON	IC7503-5 (RESET_L) and GND

***NOTE2:**

Please will always pass the customer “Warning for Customers Who Use the DivX Video-on-Demand content.” with the product and get it when you unavoidably exchange EEPROM or P.C.B. including EEPROM (When the product is exchanged, it is the same.). You must use print attached to service part (EEPROM or P.C.B. including EEPROM) or must use copy of print below as “Warning for Customers Who Use the DivX Video-on-Demand content.”

Information needed without fail for the customer for whom it is used continuing DivX Video-on-Demand Service to “Manual for the customer” is recorded.

Appendix:

* Parts that memorize user's information are only EEPROM.

* The registration of Registration Code is possible for half a year up to 6 recorders up to 10 recorders a year.

Replacement of EEPROM or P.C.B. including EEPROM spends one of this.

Registration Code is memorized in EEPROM (RFKFxxxxxx).

Model without VHS; Main P.C.B.

Model with VHS; Digital I/F P.C.B. (Power & DVD I/F/P.C.B.)

If exchange above P.C.B. or EEPROM, new registration Code differ from previous Registration Code will be generated.

In this case if your customer uses DivX Video-on-Demand service, he/she will no longer be able to play any content that he/she purchased under that same registration code.

Therefore your customer will need to obtain and register the new registration code.

*Copy this page and cut on the dotted line and give the lower half to your customer.

Warning for Customers Who Use the DivX Video-on-Demand content.

1. The registration code has been changed for the repair of the product or the product exchange.
2. Obtain and register a new registration code, otherwise you will no longer be able to play DivX Video-on-Demand content.
3. Follow the procedure on the DivX Video-on-Demand web site to register at

<http://vod.divx.com>

* If you do not use the DivX Video-on-Demand content, please ignore this warning.

NOTE3:

Version up please improve in HDD exchange latest firm afterward.

10.2.2. Notice after replacing RAM/Digital P.C.B. Module

Formatting the HDD is unnecessary after replacing RAM/Digital P.C.B. Module, "TM AV1" is displayed on FL, once power off, and start-up again.

10.3. Standard Inspection Specifications after Making Repairs

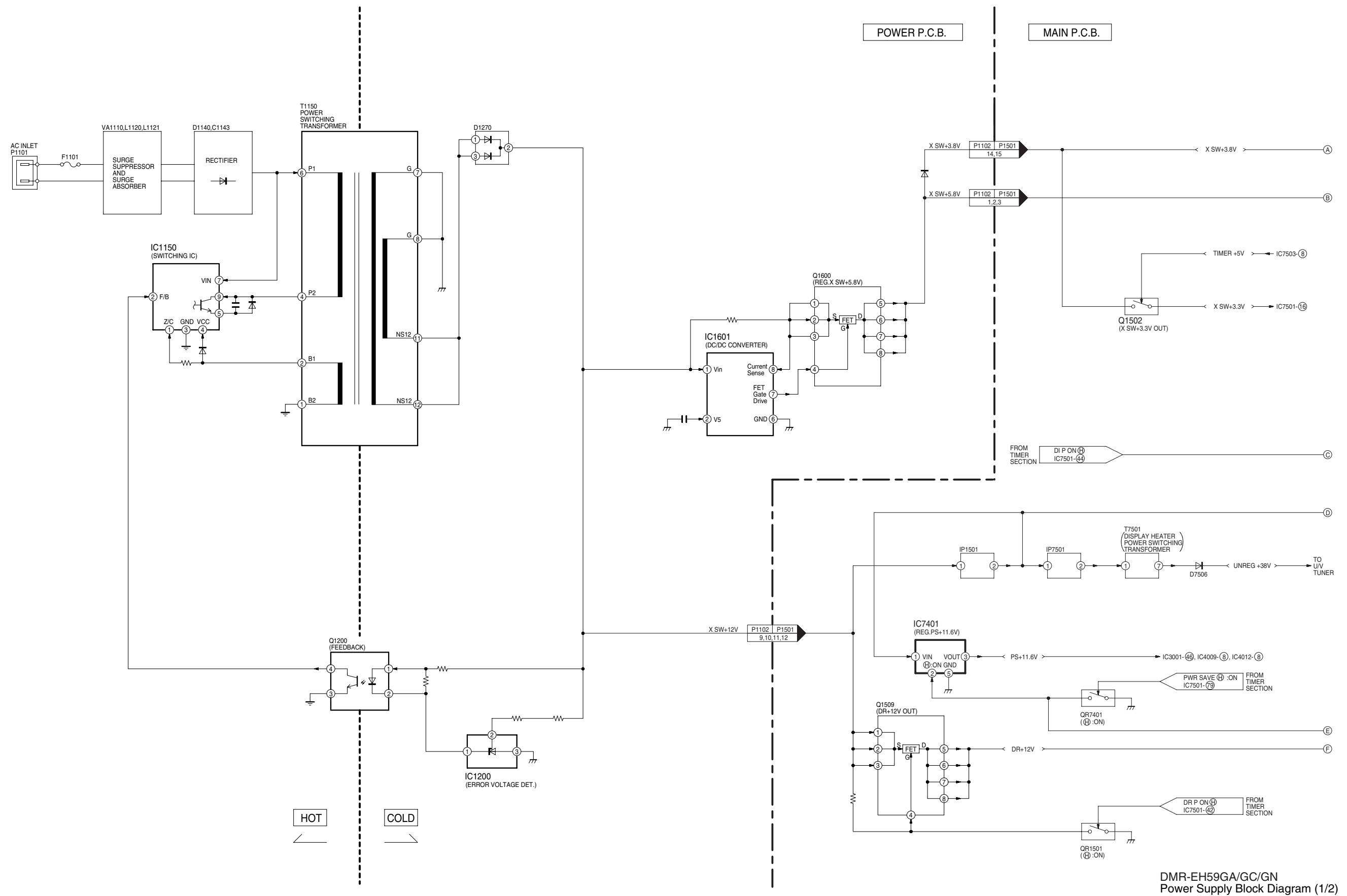
After making repairs, we recommend performing the following inspection, to check normal operation.

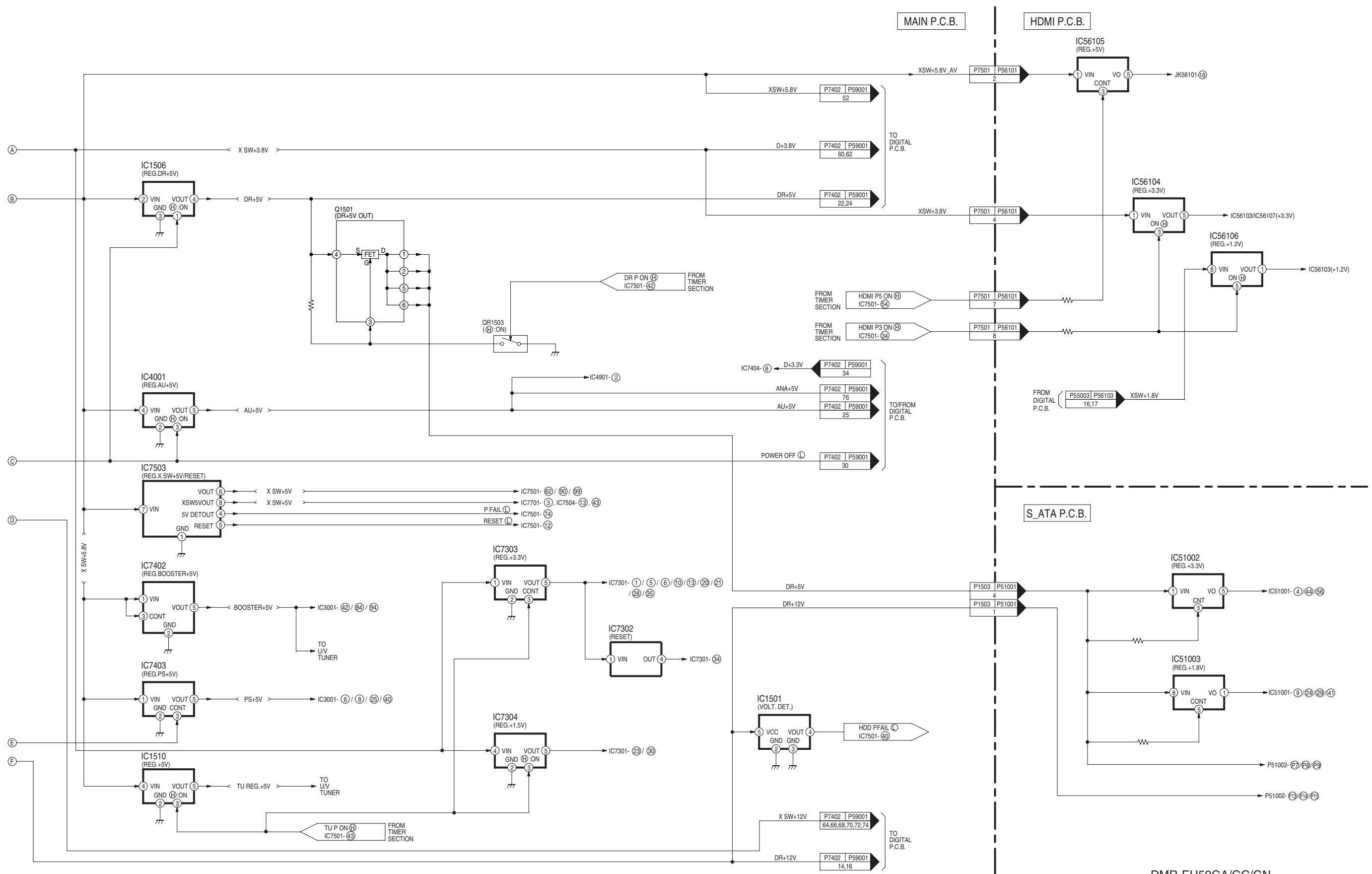
No.	Procedure	Item to Check
1	Turn on the power, and confirm items pointed out.	Items pointed out should reappear.
2	Insert RAM disc.	The Panasonic RAM disc should be recognized.
3	Enter the EE (TU IN / AV IN - AV OUT) mode.	No abnormality should be seen in the picture, sound or operation.
4	Perform auto recording and playback for one minute using the RAM disc.	No abnormality should be seen in the picture, sound or operation. *Panasonic DVD-RAM disc should be used when recording and playback.
5	Model with the HDD: Perform auto recording and playback for one minute using the HDD.	No abnormality should be seen in the picture, sound or operation.
6	If a problem is caused by a VCD, DVD-R, DVD-Video, Audio-CD, or MP3, playback the test disc.	No abnormality should be seen in the picture, sound or operation.
7	Models with USB Input Jack or DV Input Jack: In case of that the trouble is caused by USB terminal and/or DV terminal.	Models with USB Input Jack or DV Input Jack; 1) USB terminal: Check to be able to display and copy the picture. 2) DV terminal: Check to be able to record from DVC.
8	After checking and making repairs, upgrade the firmware to the latest version.	Make sure that [FIRM_SUCCESS] appears in the FL displays. *[UNSUPPORT] display means the unit is already updated to newest same version. Then version up is not necessary.
9	Transfer [9][9] in the service mode setting, and initialize the service settings (return various settings and error information to their default values. The laser time is not included in this initialization).	Make sure that [CLR] appears in the FL display. After checking it, turn the power off.

Use the following checklist to establish the judgement criteria for the picture and sound.

Item	Contents	Check	Item	Contents	Check
Picture	Block noise		Sound	Distorted sound	
	Crosscut noise			Noise (static, background noise, etc.)	
	Dot noise			The sound level is too low.	
	Picture disruption			The sound level is too high.	
	Not bright enough			The sound level changes.	
	Too bright				
	Flickering colour				
	Colour fading				

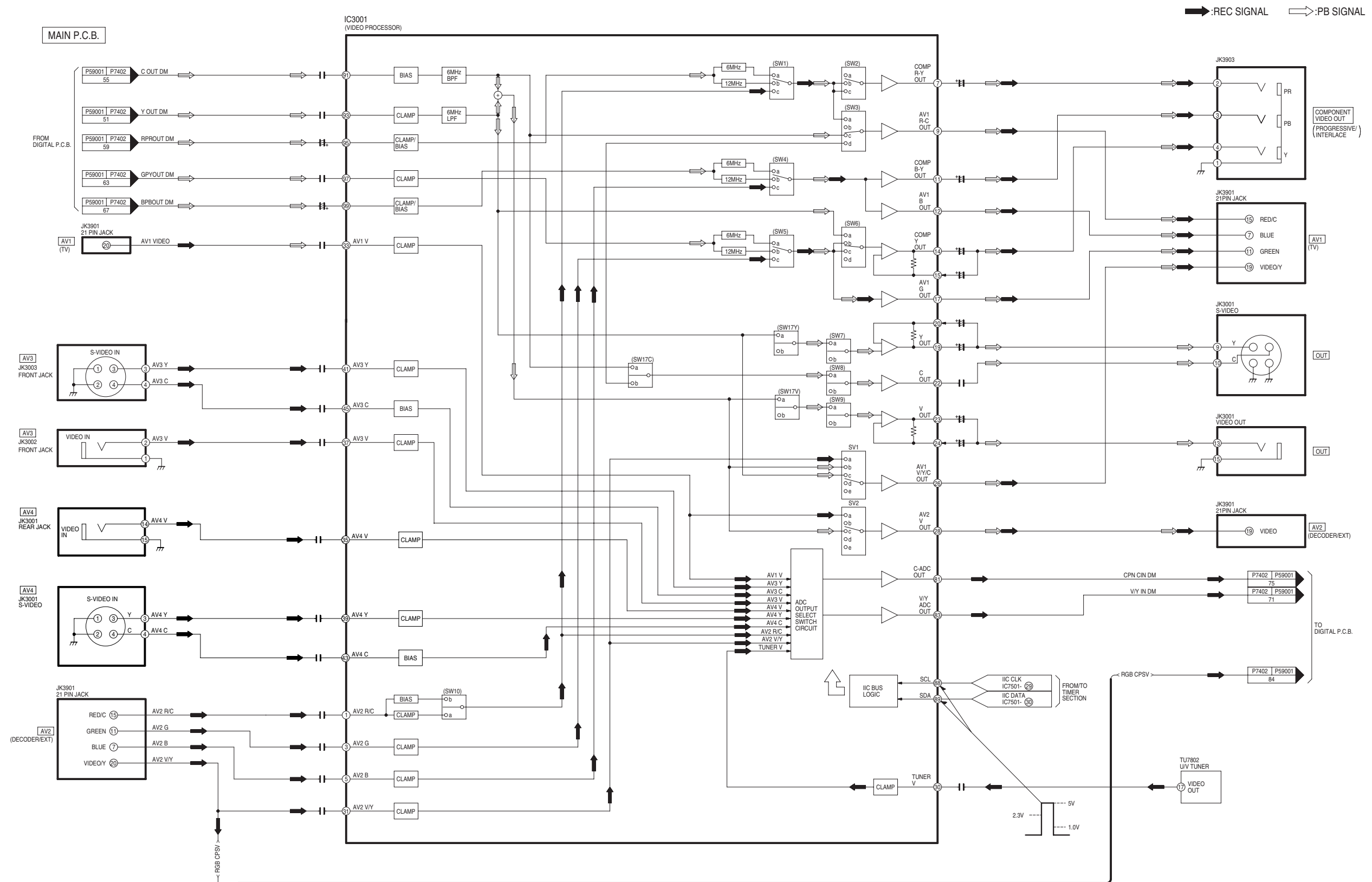
11.1. Power Supply Block Diagram





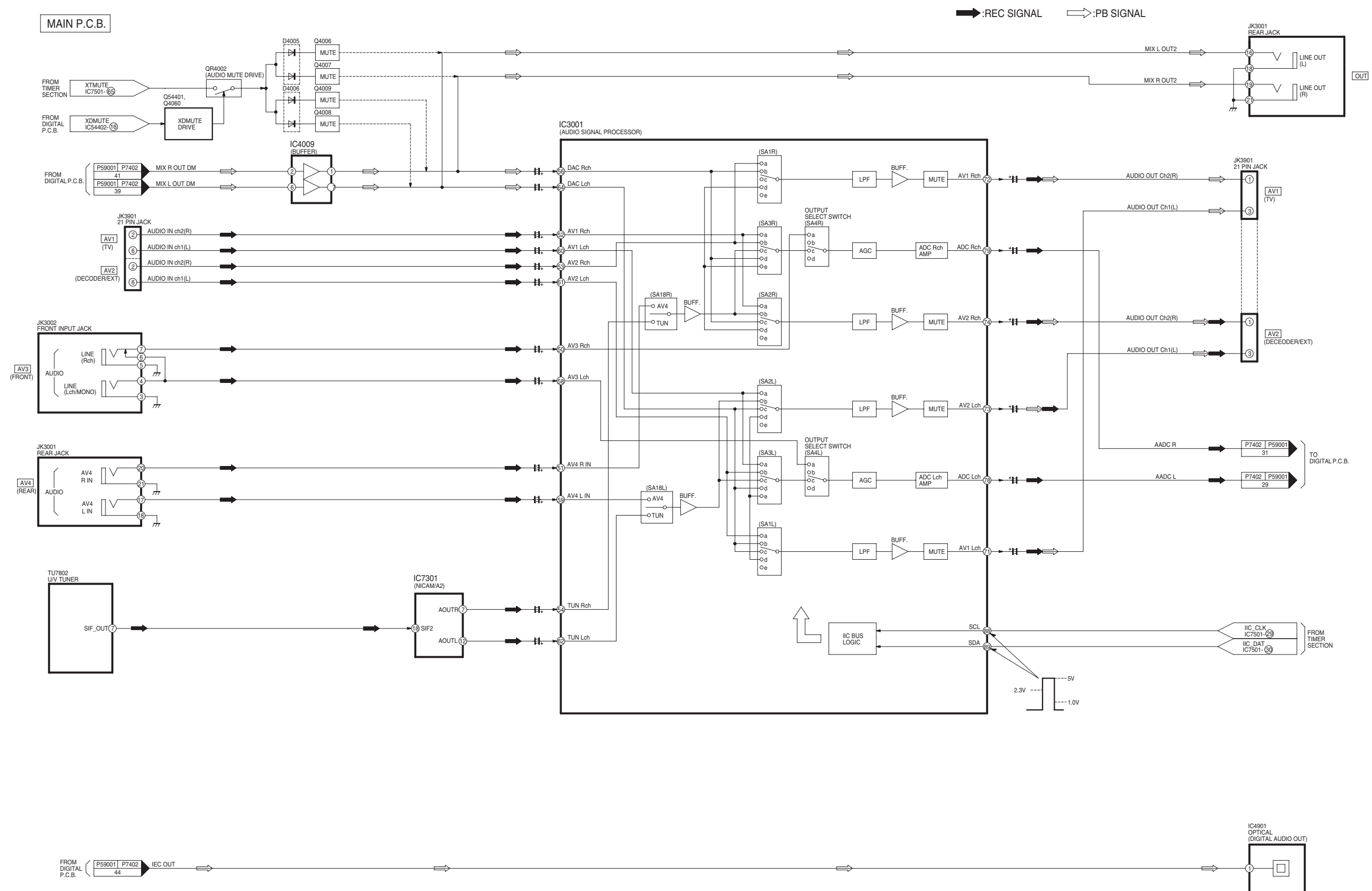
DMR-EH59GA/GC/GN
Power Supply Block Diagram (2/2)

11.2. Analog Video Block Diagram



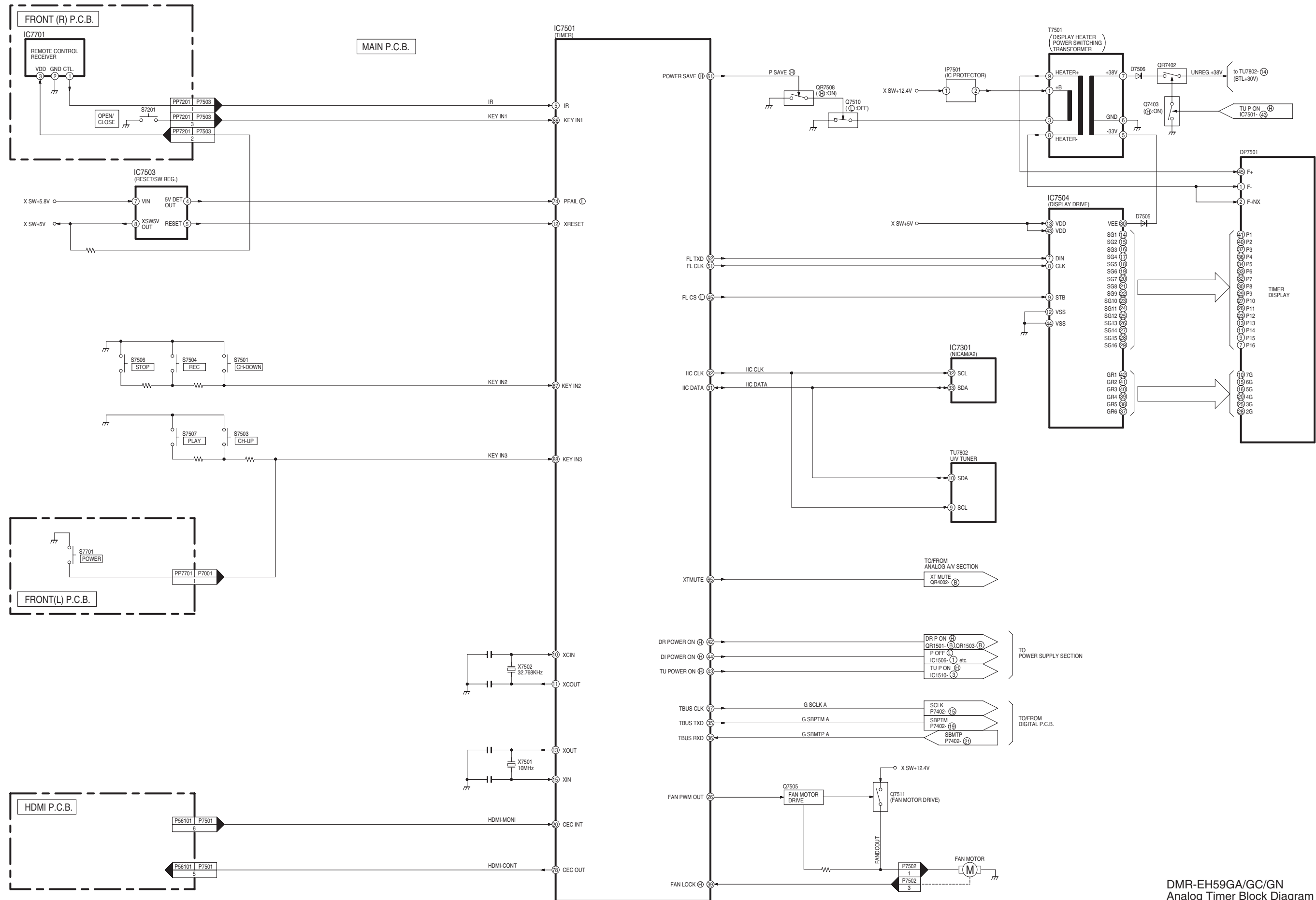
DMR-EH59GA/GC/GN Analog Video Block Diagram

11.3. Analog Audio Block Diagram



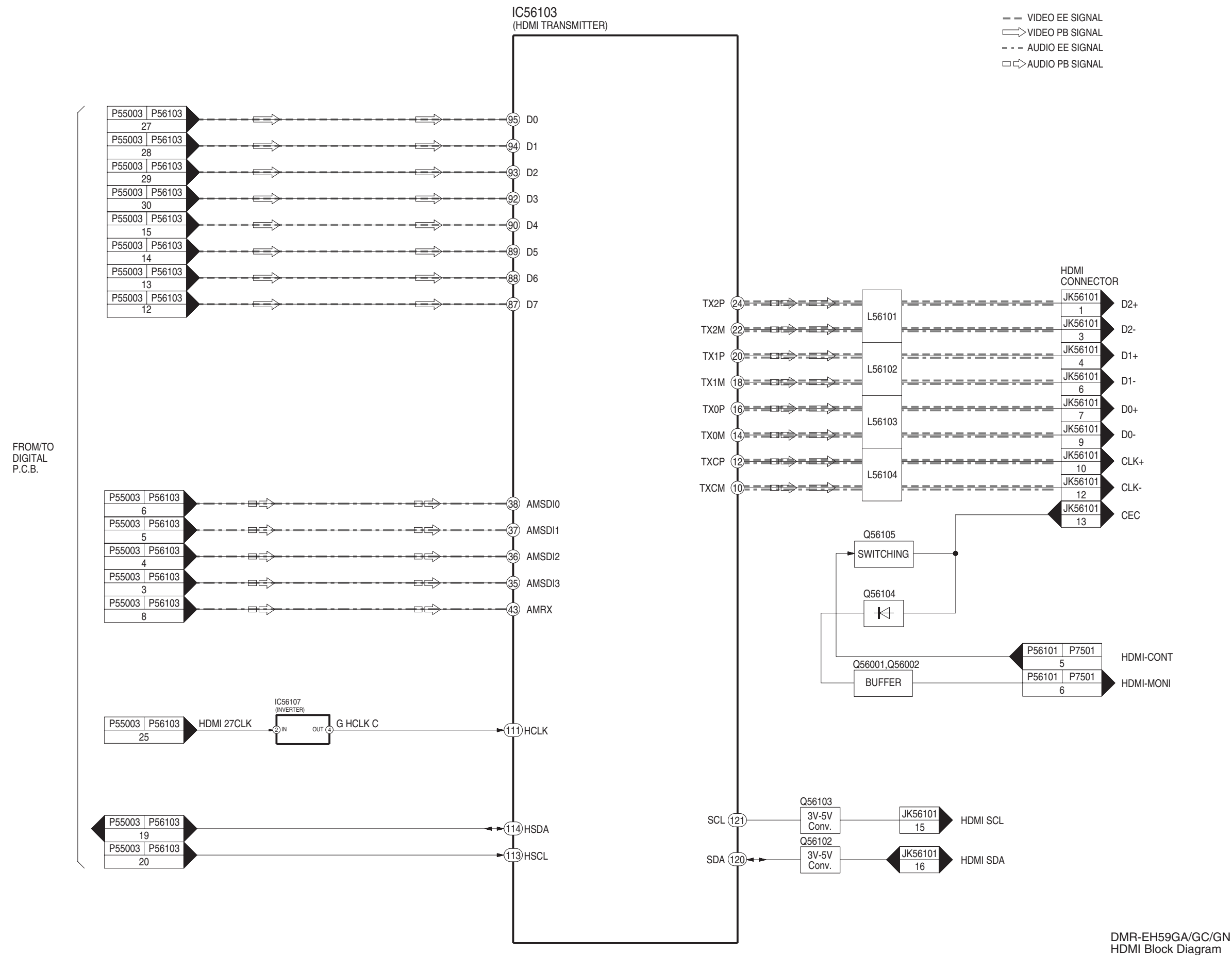
DMR-EH59GA/GC/GN Analog Audio Block Diagram

11.4. Analog Timer Block Diagram



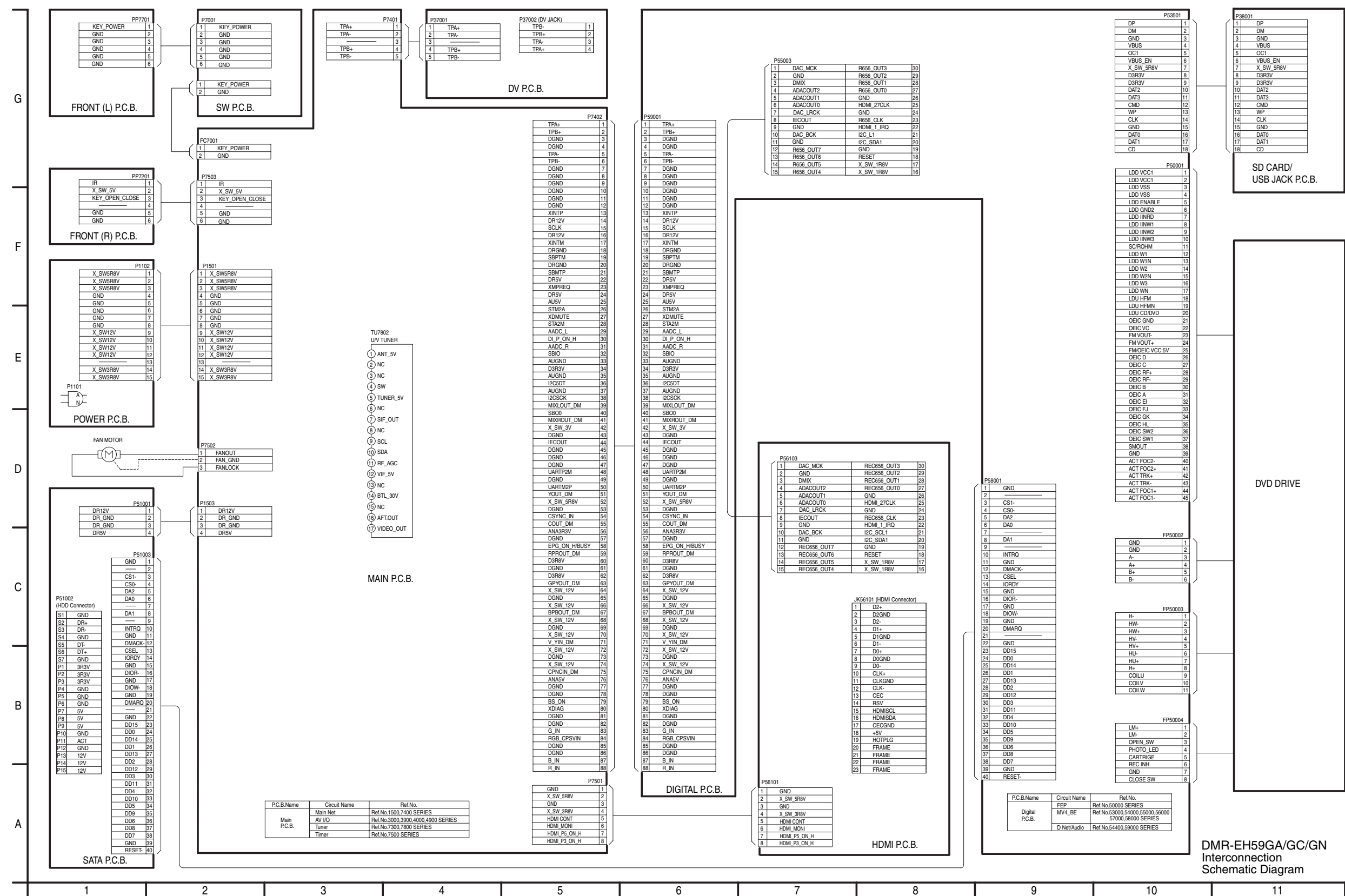
DMR-EH59GA/GC/GN
Analog Timer Block Diagram

11.5. HDMI Block Diagram

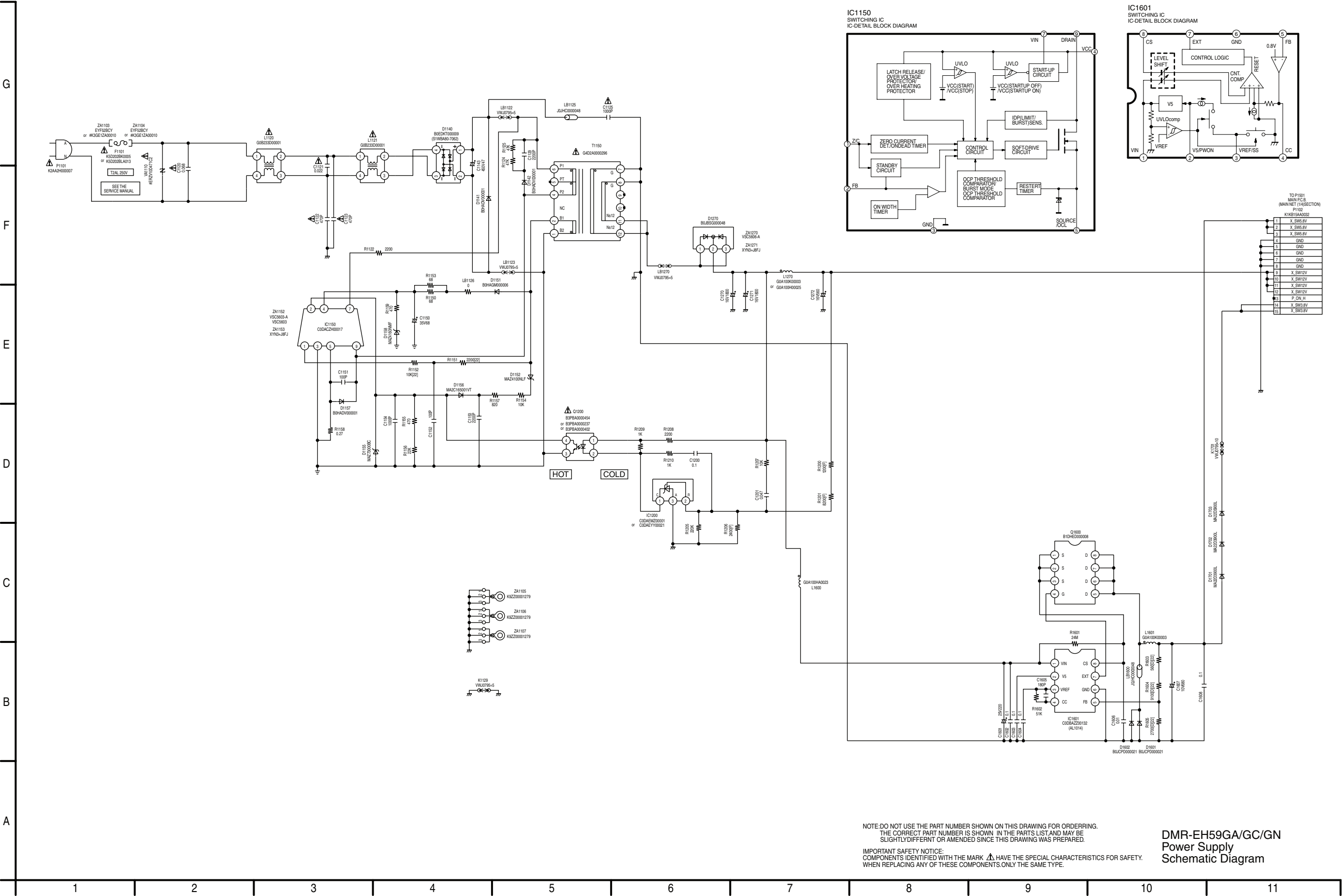


12 Schematic Diagram

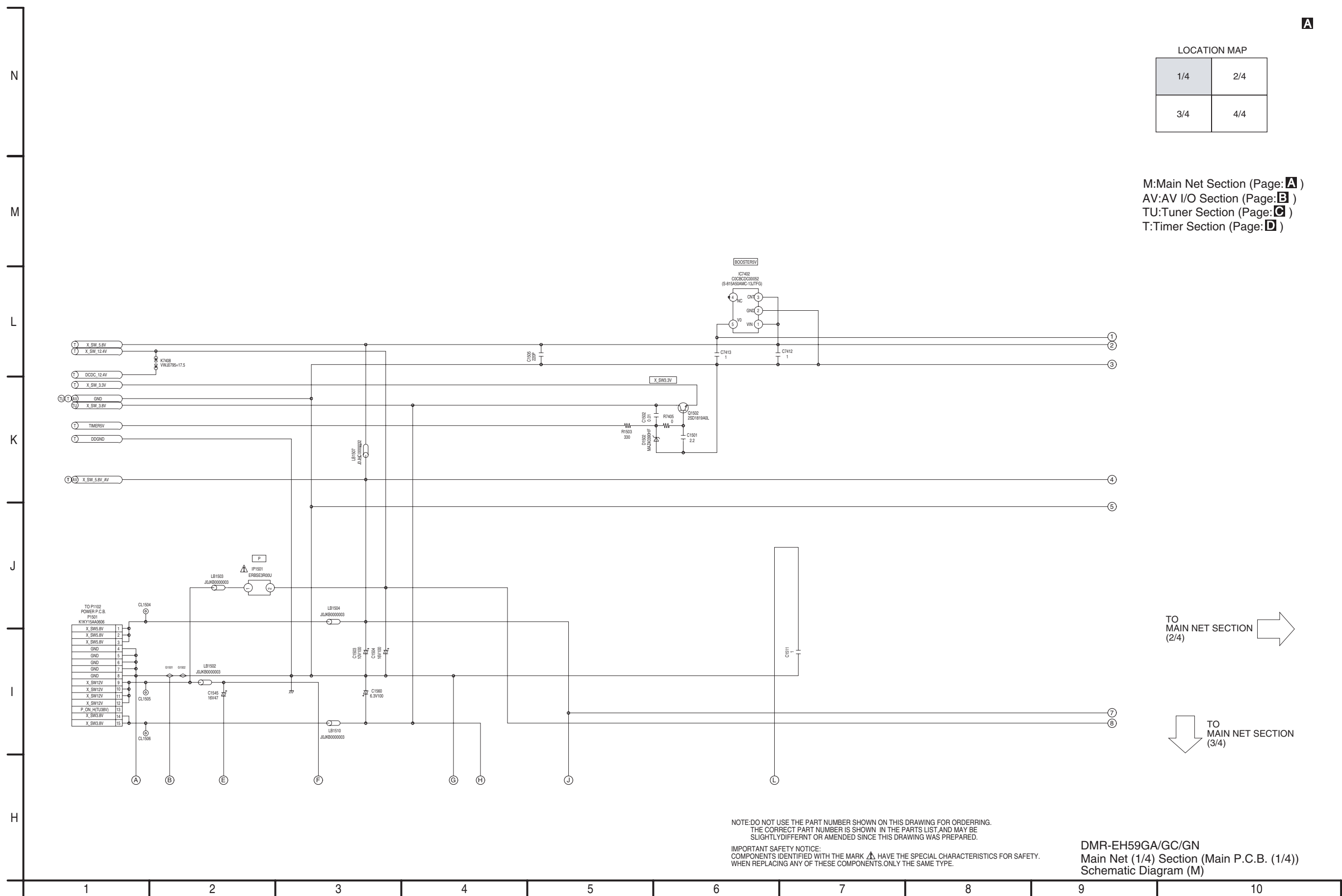
12.1. Interconnection Schematic Diagram



12.2. Power Supply Schematic Diagram



12.3. Main Net (1/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



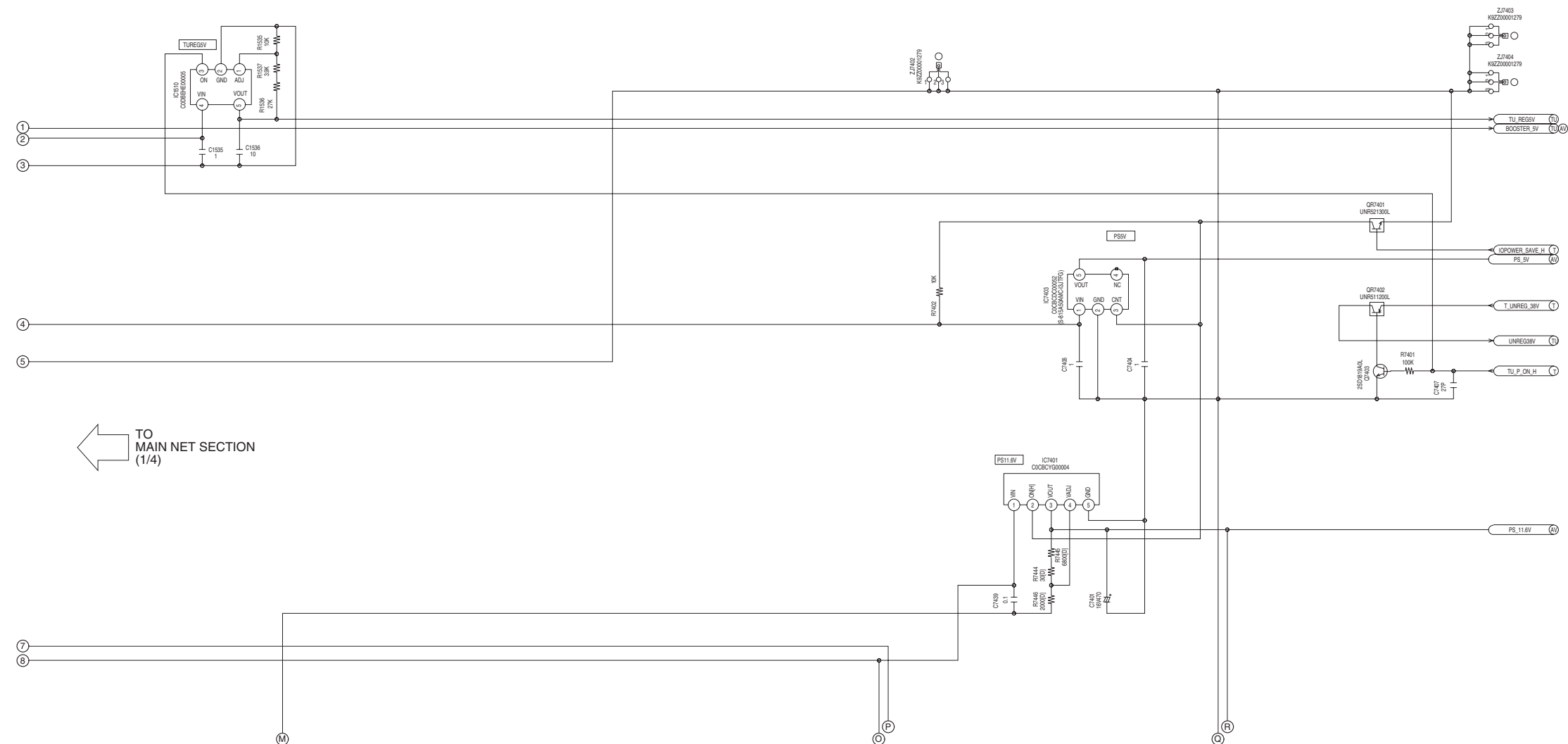
12.4. Main Net (2/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)

A

LOCATION MAP

$\frac{1}{4}$	$\frac{2}{4}$
$\frac{3}{4}$	$\frac{4}{4}$

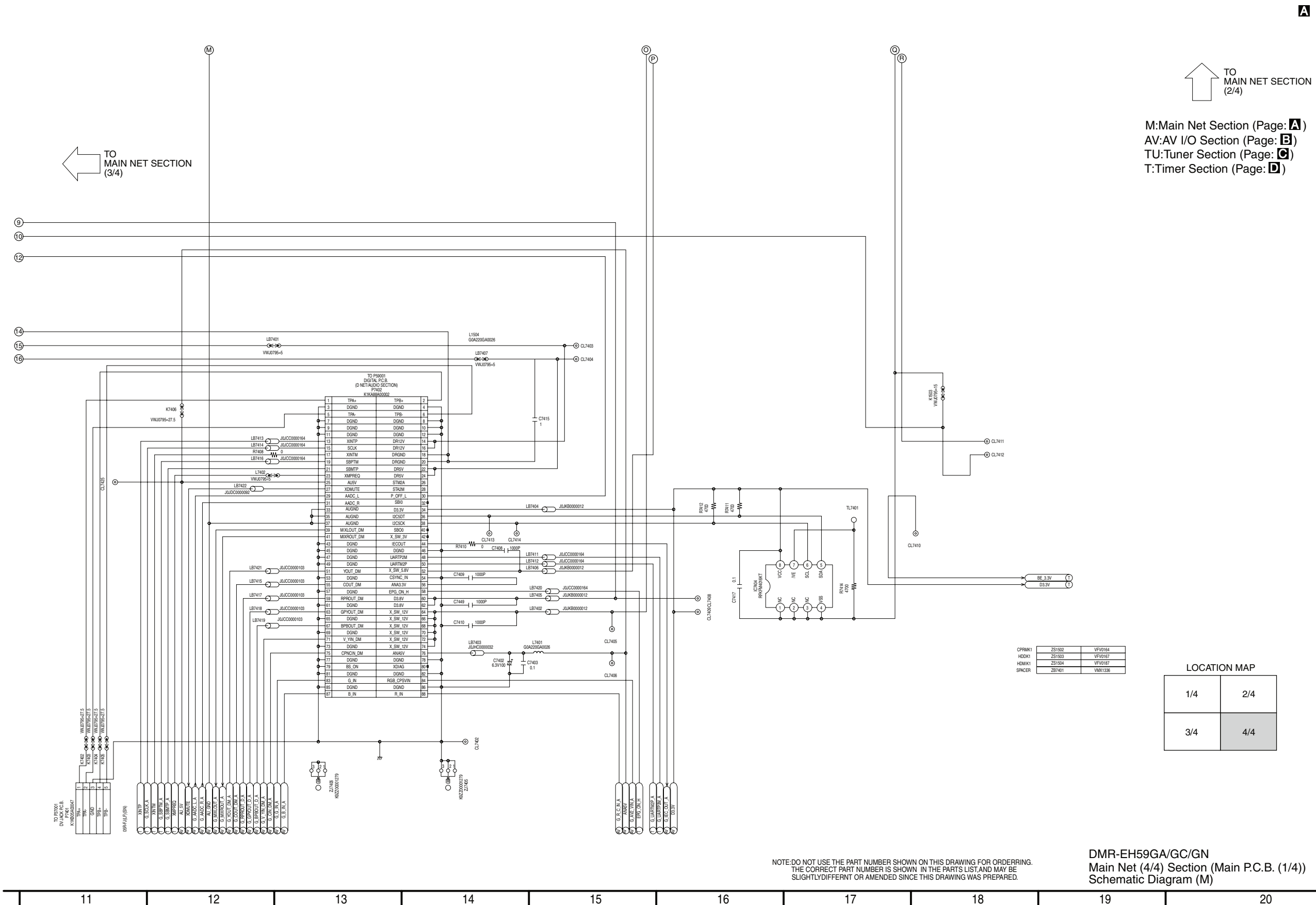
M:Main Net Section (Page:**A**)
AV:AV I/O Section (Page:**B**)
TU:Tuner Section (Page:**C**)
T:Timer Section (Page:**D**)



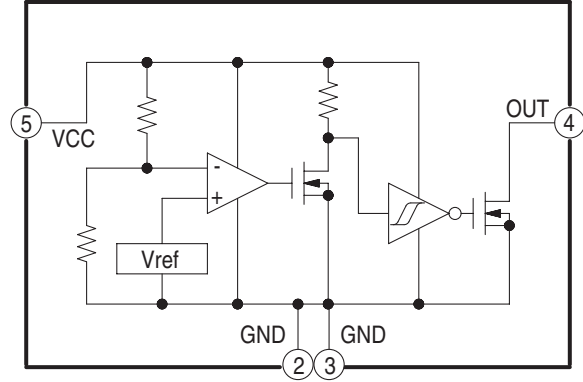
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH59GA/GC/GN
Main Net (2/4) Section (Main P.C.B. (1/4))
Schematic Diagram (M)

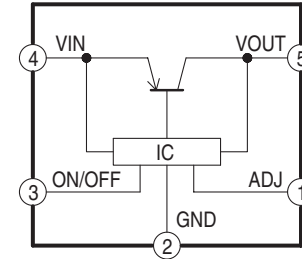
12.6. Main Net (4/4) Section (Main P.C.B. (1/4)) Schematic Diagram (M)



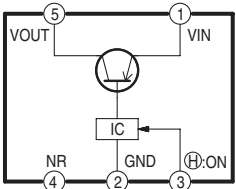
**IC1501
RESET
IC-DETAIL BLOCK DIAGRAM**



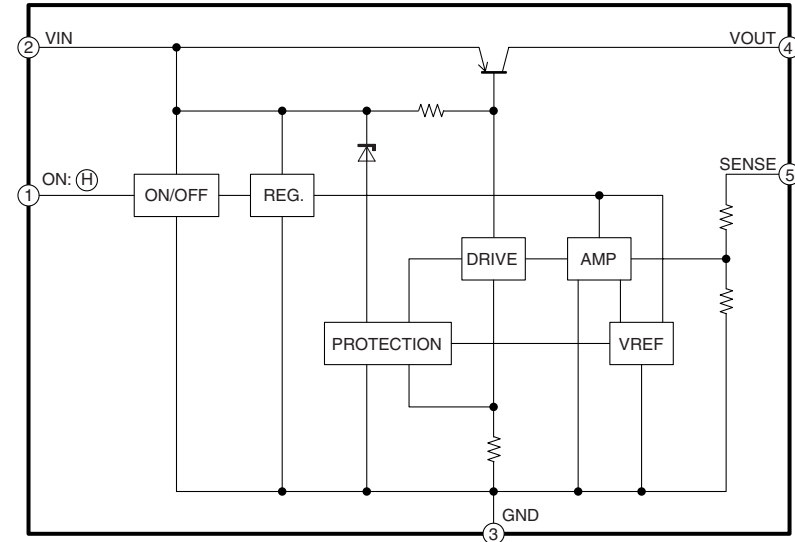
**IC1510
TU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



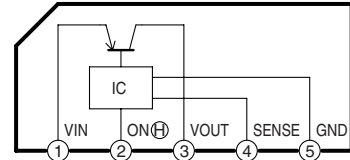
**IC7402
BOOSTER +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



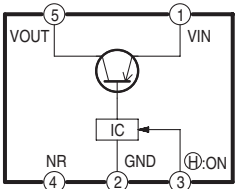
**IC1506
DR +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



**IC7401
PS +11.6V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**

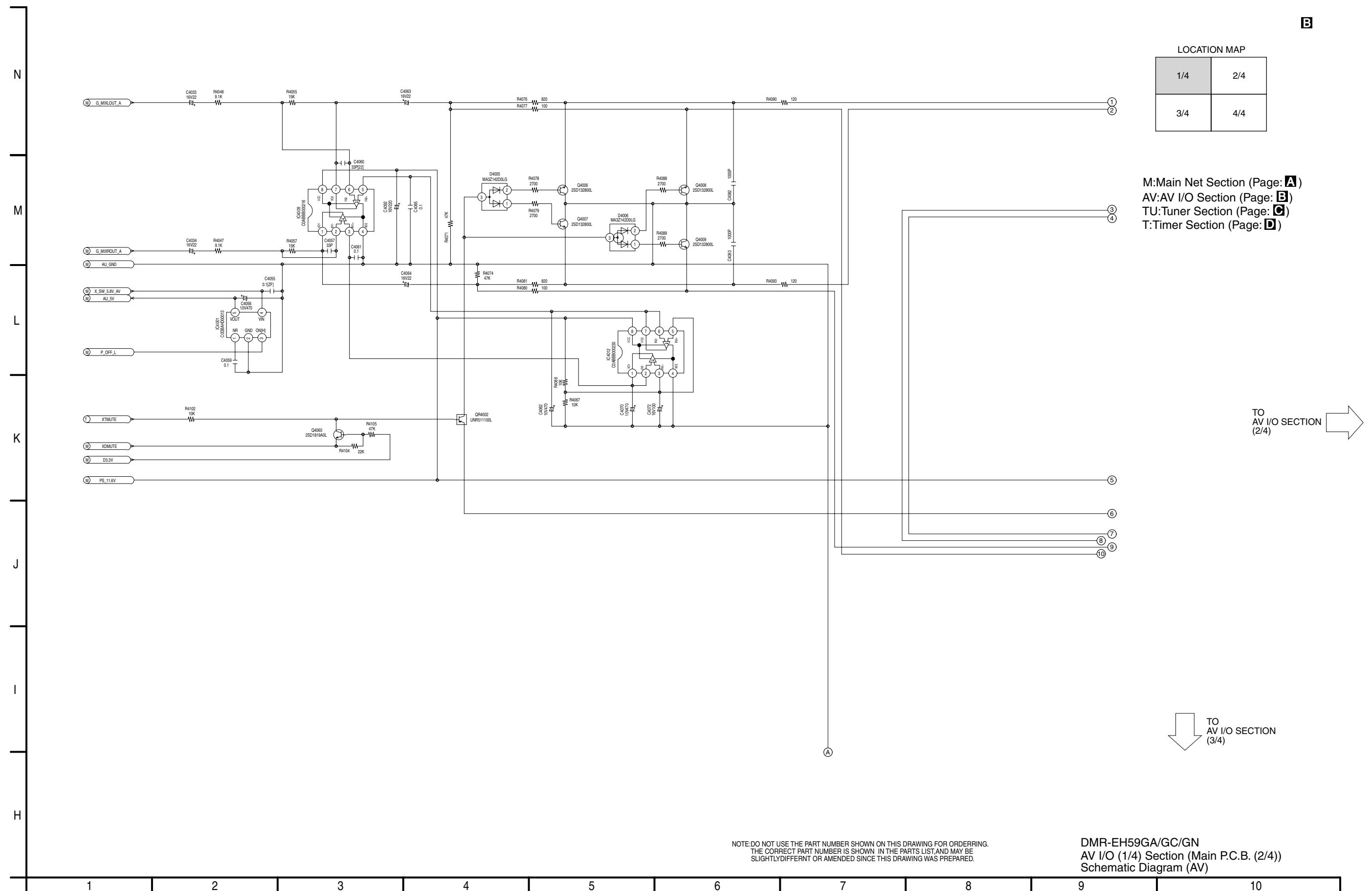


**IC7403
PS +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



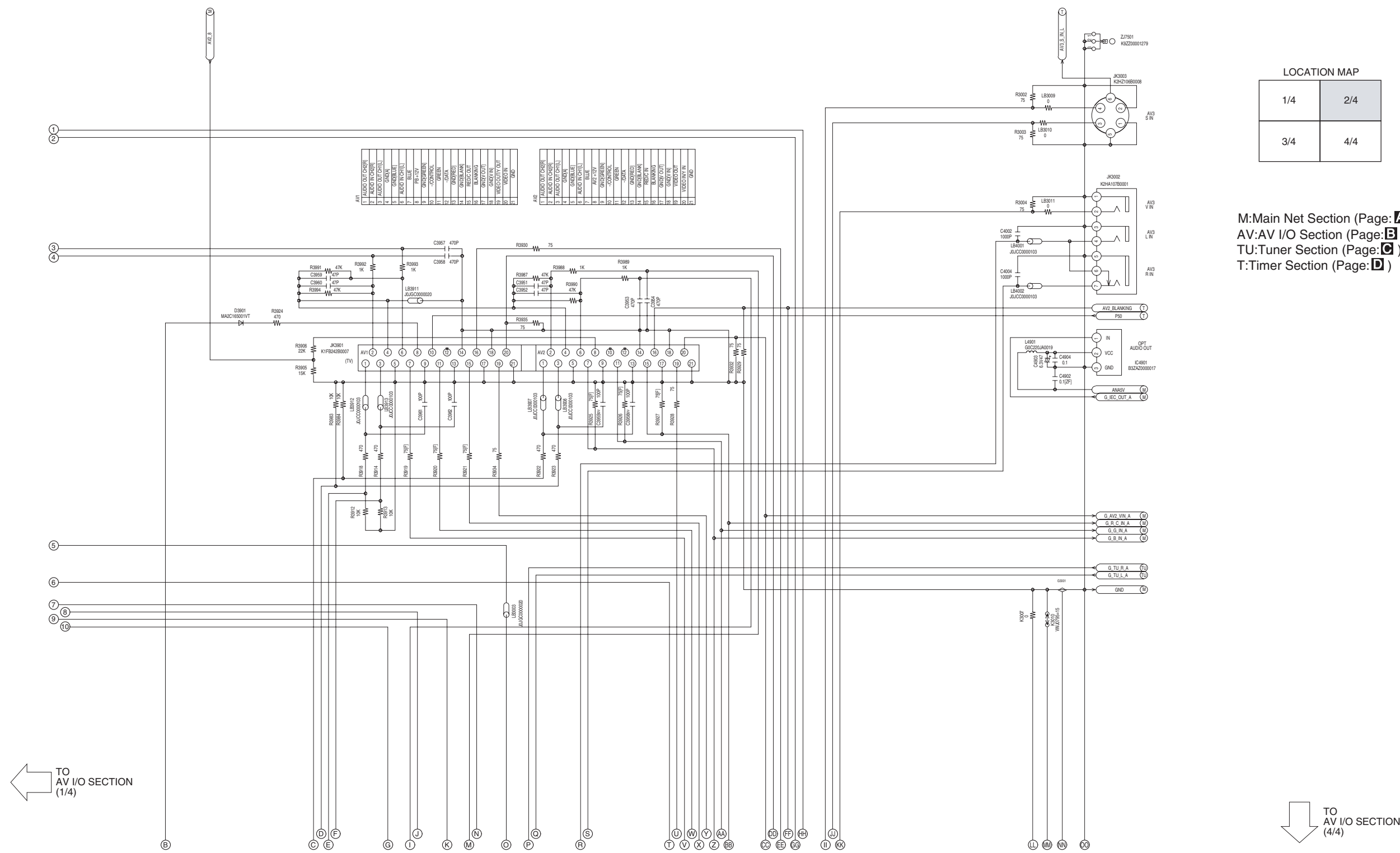
IC1501 Detail Block Diagram
IC1506 Detail Block Diagram
IC1510 Detail Block Diagram
IC7401 Detail Block Diagram
IC7402 Detail Block Diagram
IC7403 Detail Block Diagram
DMR-EH59GA/GC/GN IC-Detail Block Diagram

12.7. AV I/O (1/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)



12.8. AV I/O (2/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)

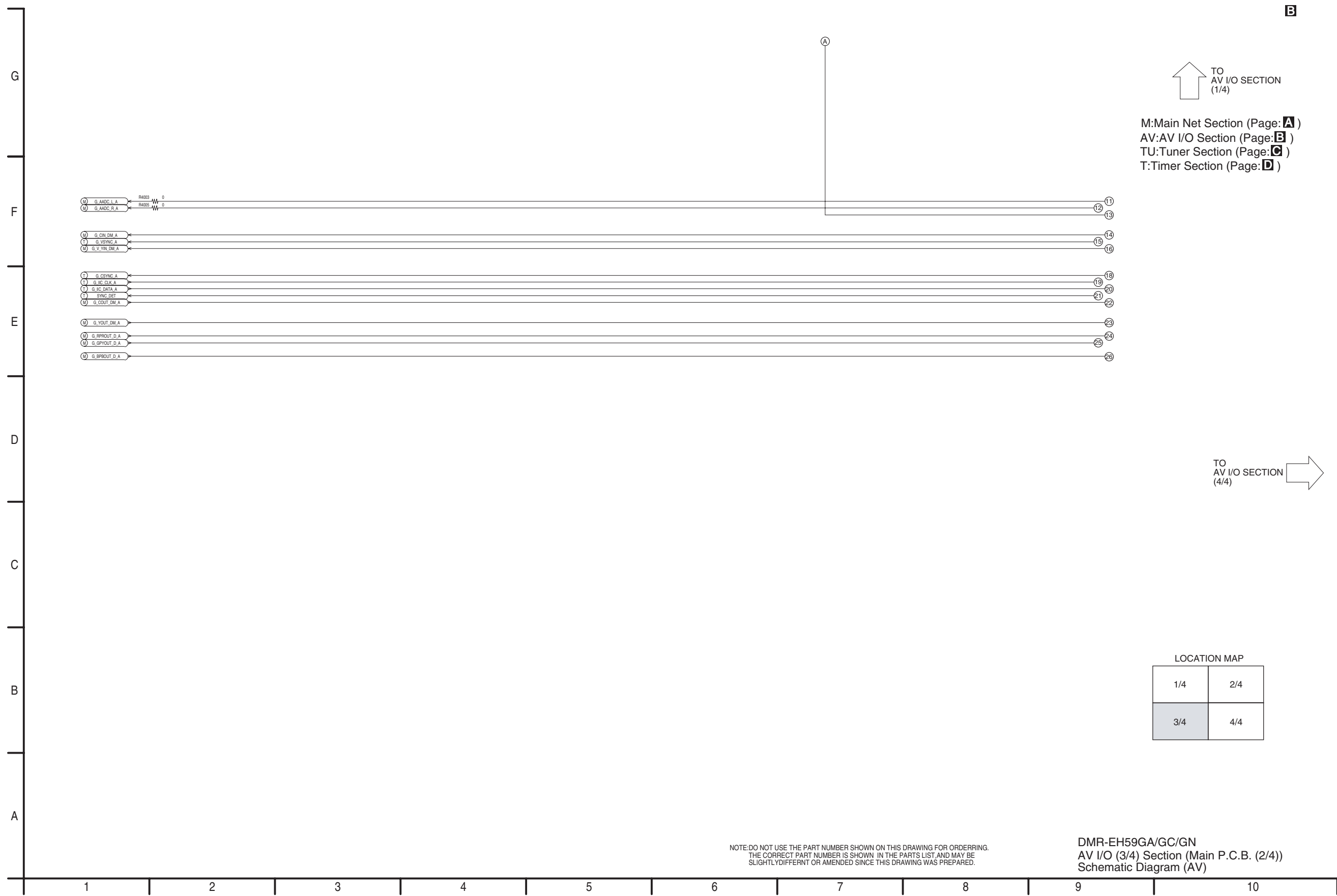
B

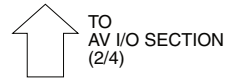


NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST AND MAY BE
SLIGHTLYDIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH59GA/GC/GN
AV I/O (2/4) Section (Main P.C.B. (2/4))
Schematic Diagram (AV)

12.9. AV I/O (3/4) Section (Main P.C.B. (2/4)) Schematic Diagram (AV)



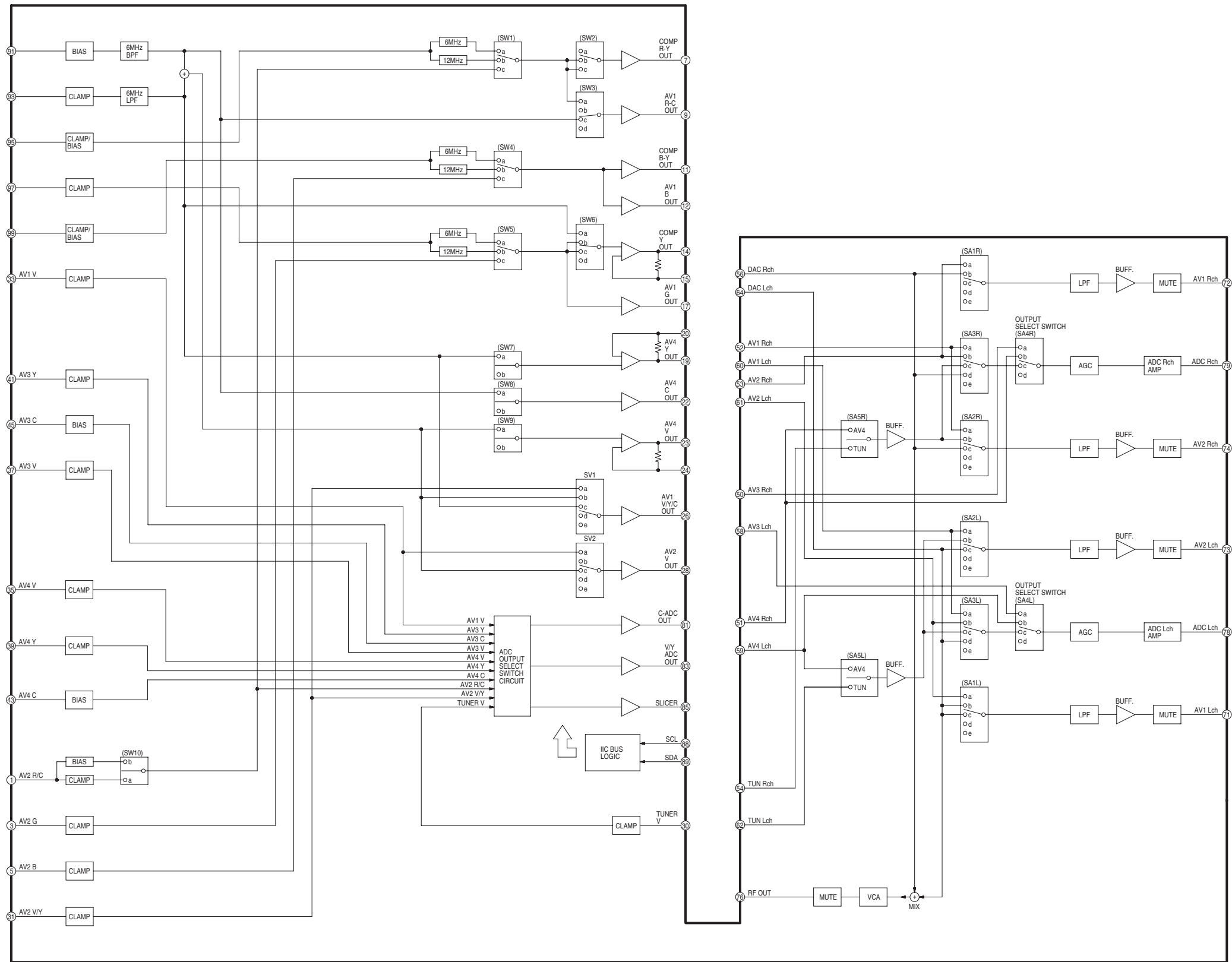
B

TO
AV I/O SECTION
(3/4)

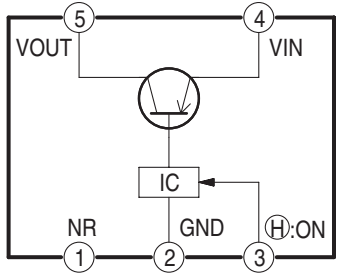
1/4	2/4
3/4	4/4

DMR-EH59GA/GC/GN
AV I/O (4/4) Section (Main P.C.B. (2/4))
Schematic Diagram (AV)

**IC3001
VIDEO/AUDIO PROCESSOR
IC-DETAIL BLOCK DIAGRAM**



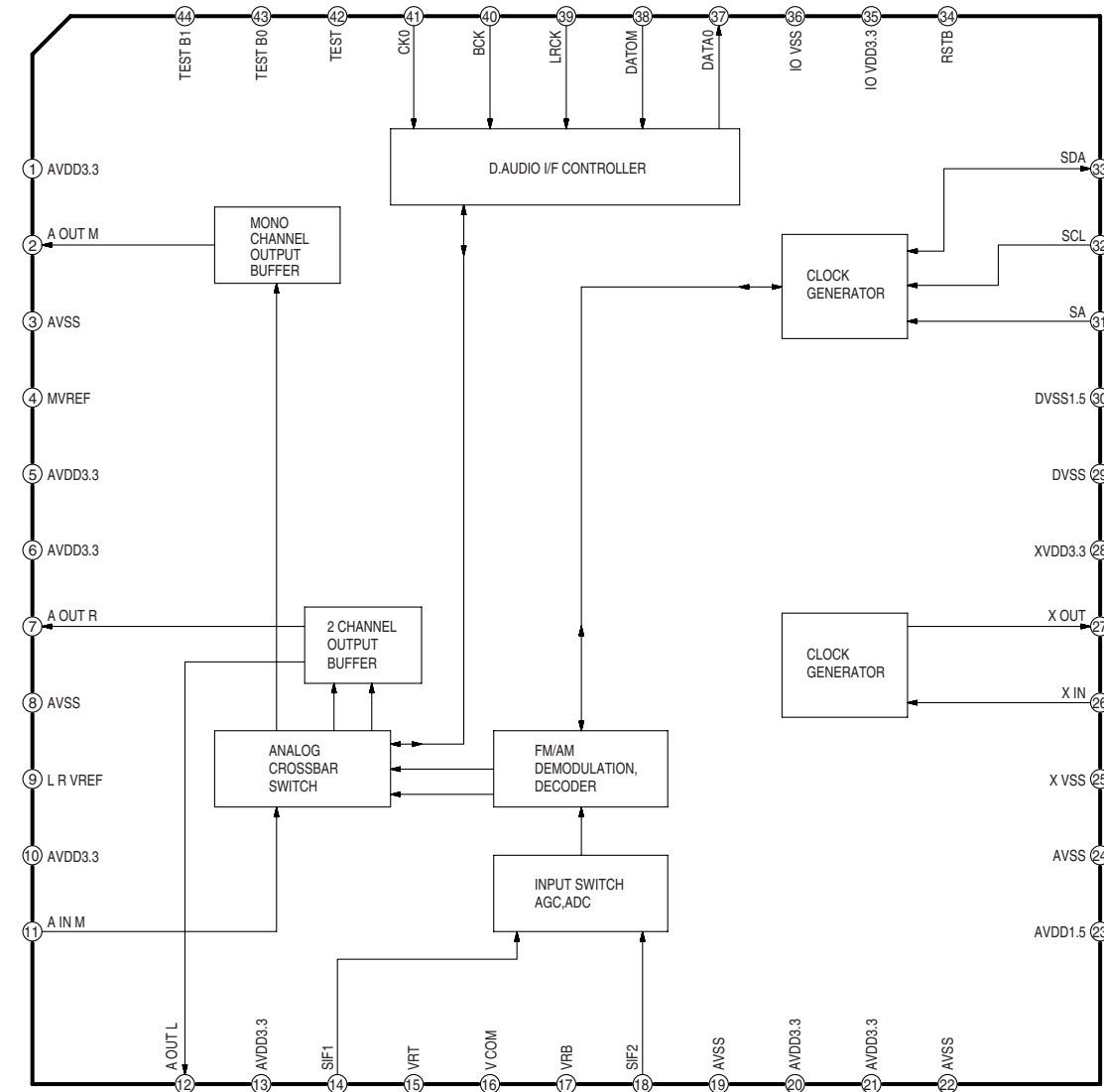
**IC4001
AU +5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



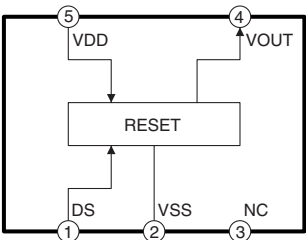
IC3001 Detail Block Diagram
IC4001 Detail Block Diagram
DMR-EH59GA/GC/GN IC-Detail Block Diagram



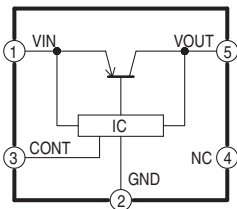
**IC7301
DECODER
IC-DETAIL BLOCK DIAGRAM**



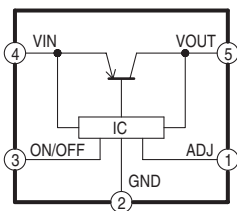
**IC7302
RESET
IC-DETAIL BLOCK DIAGRAM**



**IC7303
+3.3V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



**IC7304
+1.5V SWITCHING REGULATOR
IC-DETAIL BLOCK DIAGRAM**



IC7301 Detail Block Diagram
IC7302 Detail Block Diagram
IC7303 Detail Block Diagram
IC7304 Detail Block Diagram
DMR-EH59GA/GC/GN IC-Detail Block Diagram

LOCATION MAP

1/4	2/4
3/4	4/4

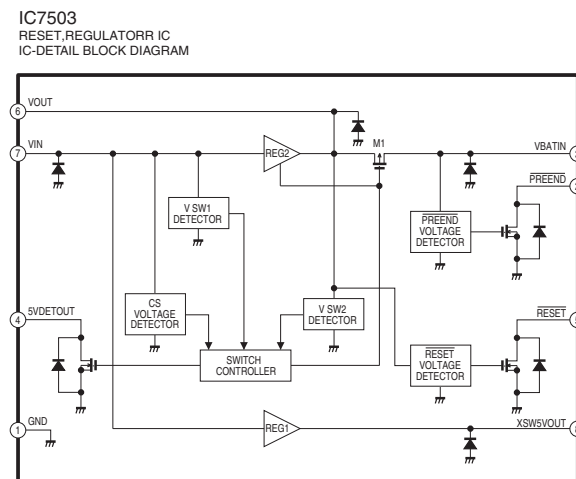
M: Main Net Section (Page: A)
AV: AV I/O Section (Page: B)
TU: Tuner Section (Page: C)
T: Timer Section (Page: D)

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH59GA/GC/GN
Timer (1/4) Section (Main P.C.B. (4/4))
Schematic Diagram (T)

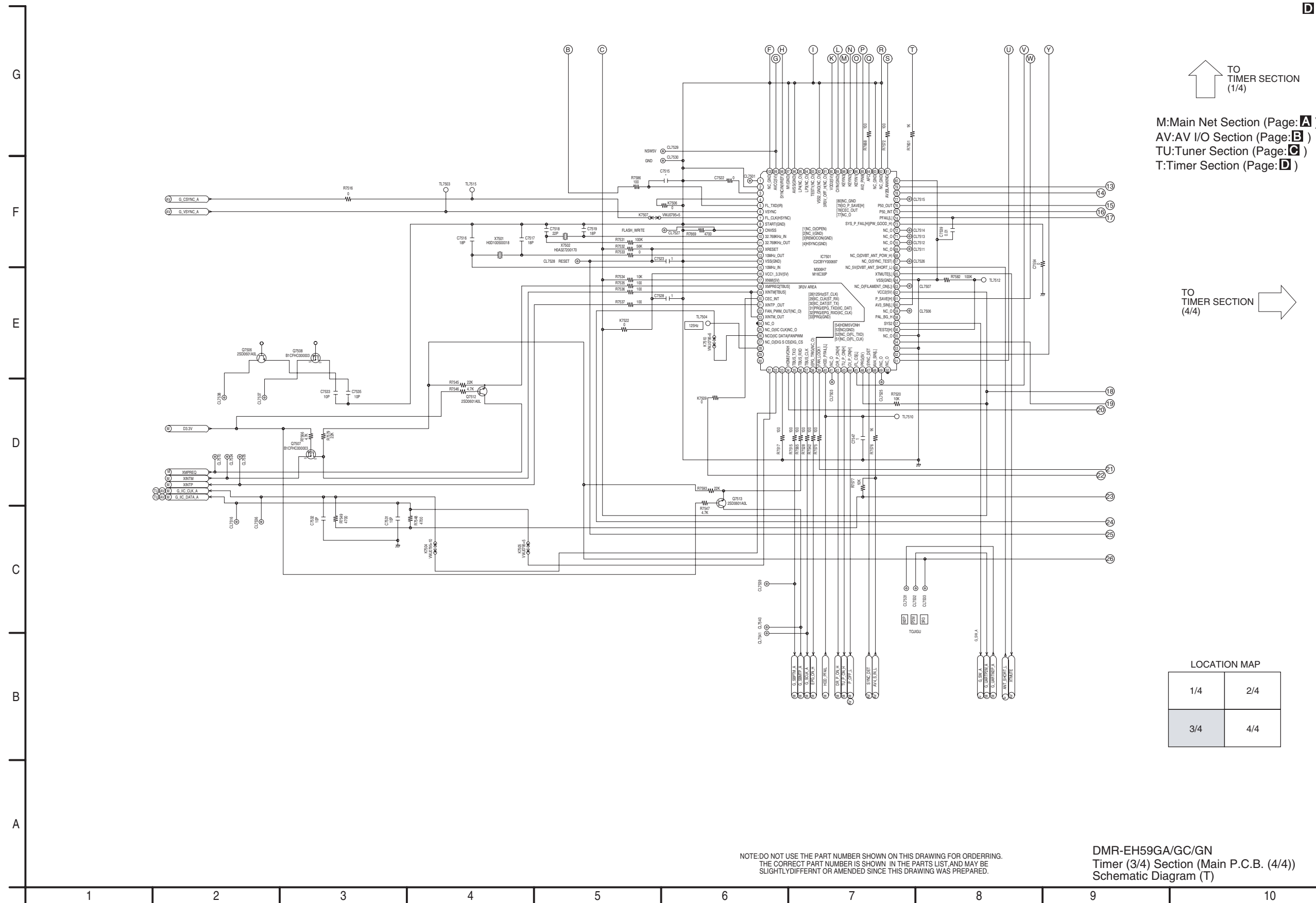
D

1/4	2/4
3/4	4/4



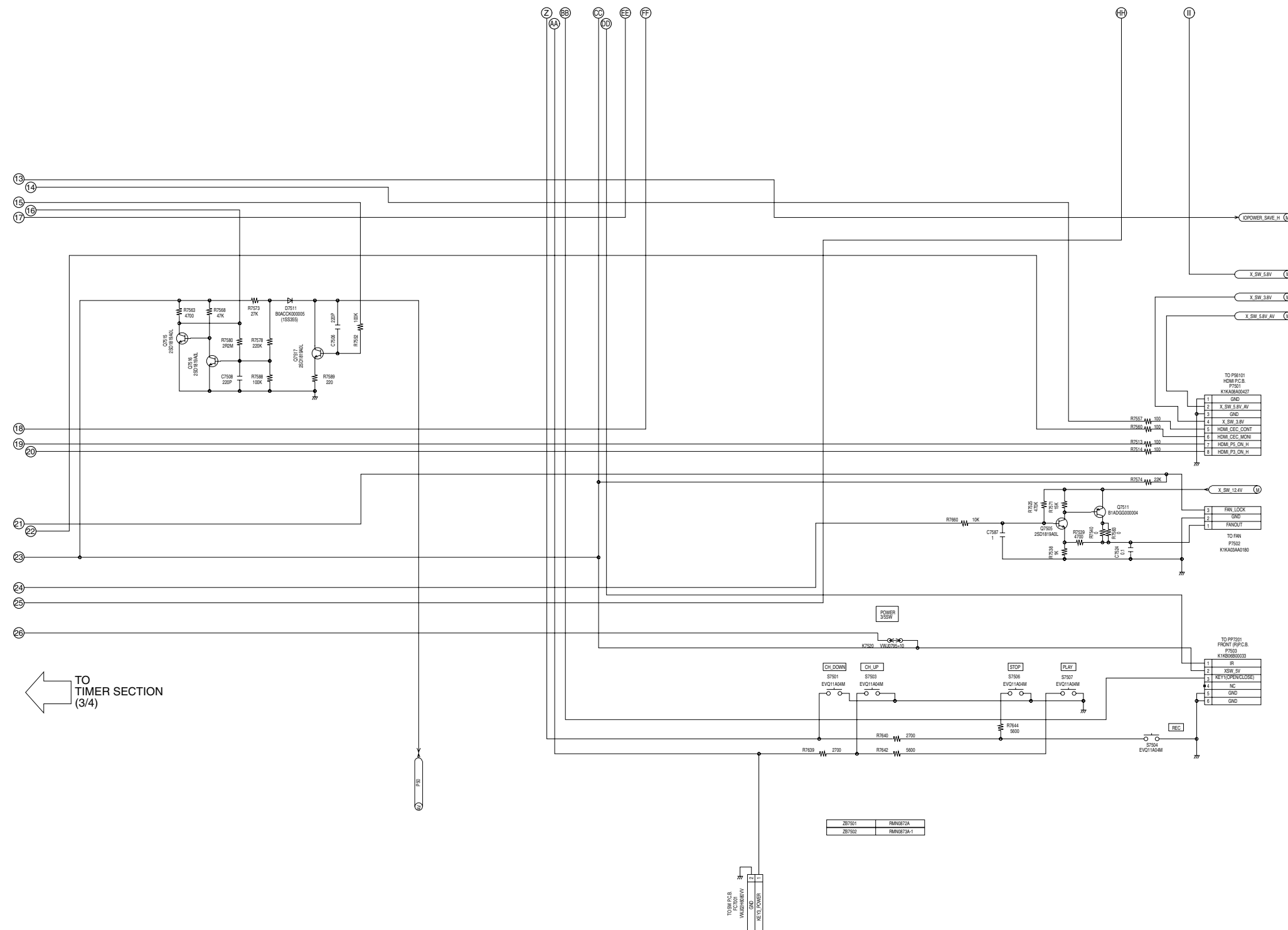
DMR-EH59GA/GC/GN
Timer (2/4) Section (Main P.C.B. (4/4))
Schematic Diagram (T)

12.14. Timer (3/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)



12.15. Timer (4/4) Section (Main P.C.B. (4/4)) Schematic Diagram (T)

D



↑ TO
TIMER SECTION
(2/4)

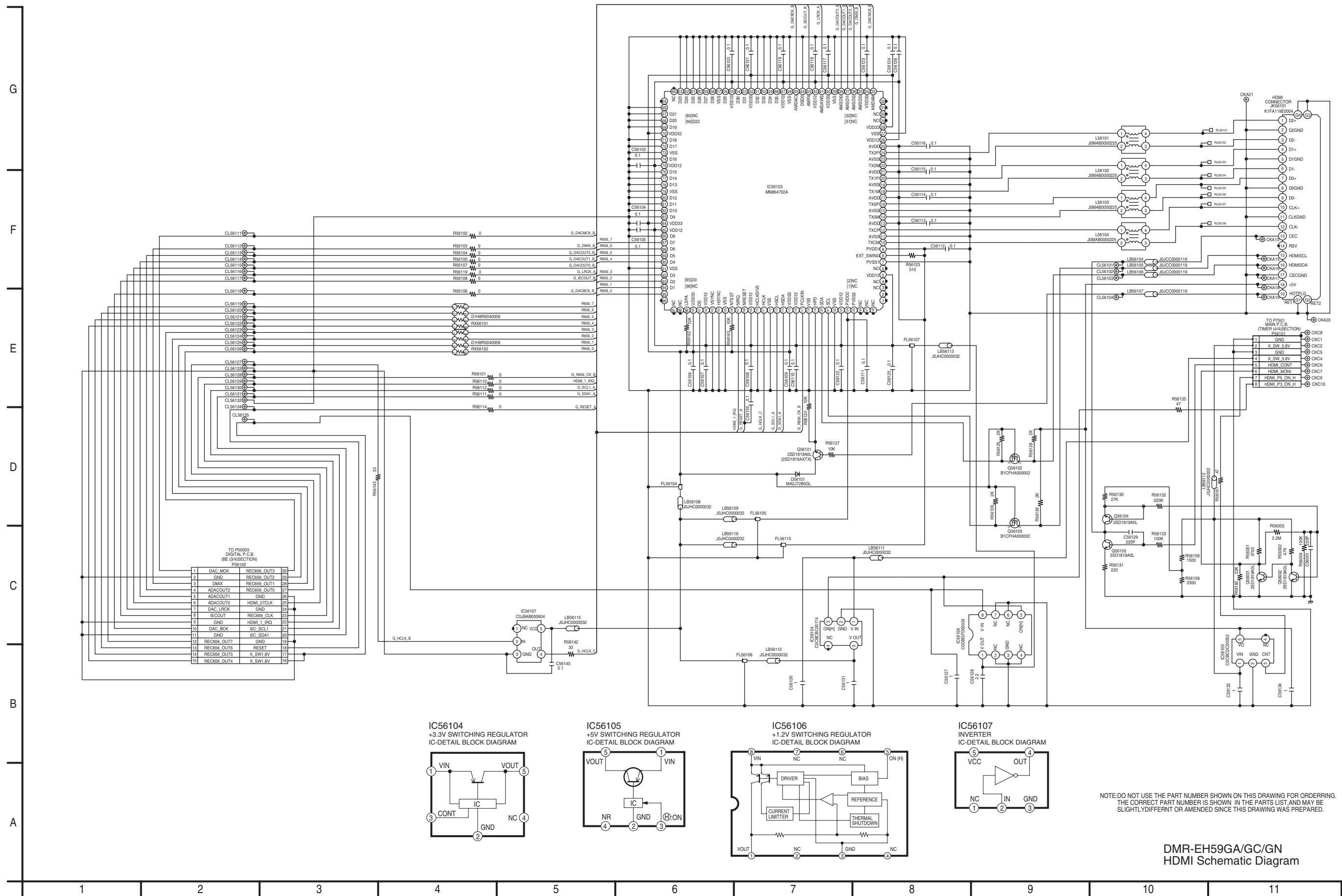
M:Main Net Section (Page: **A**)
 AV:AV I/O Section (Page: **B**)
 TU:Tuner Section (Page: **C**)
 T:Timer Section (Page: **D**)

1/4	2/4
3/4	4/4

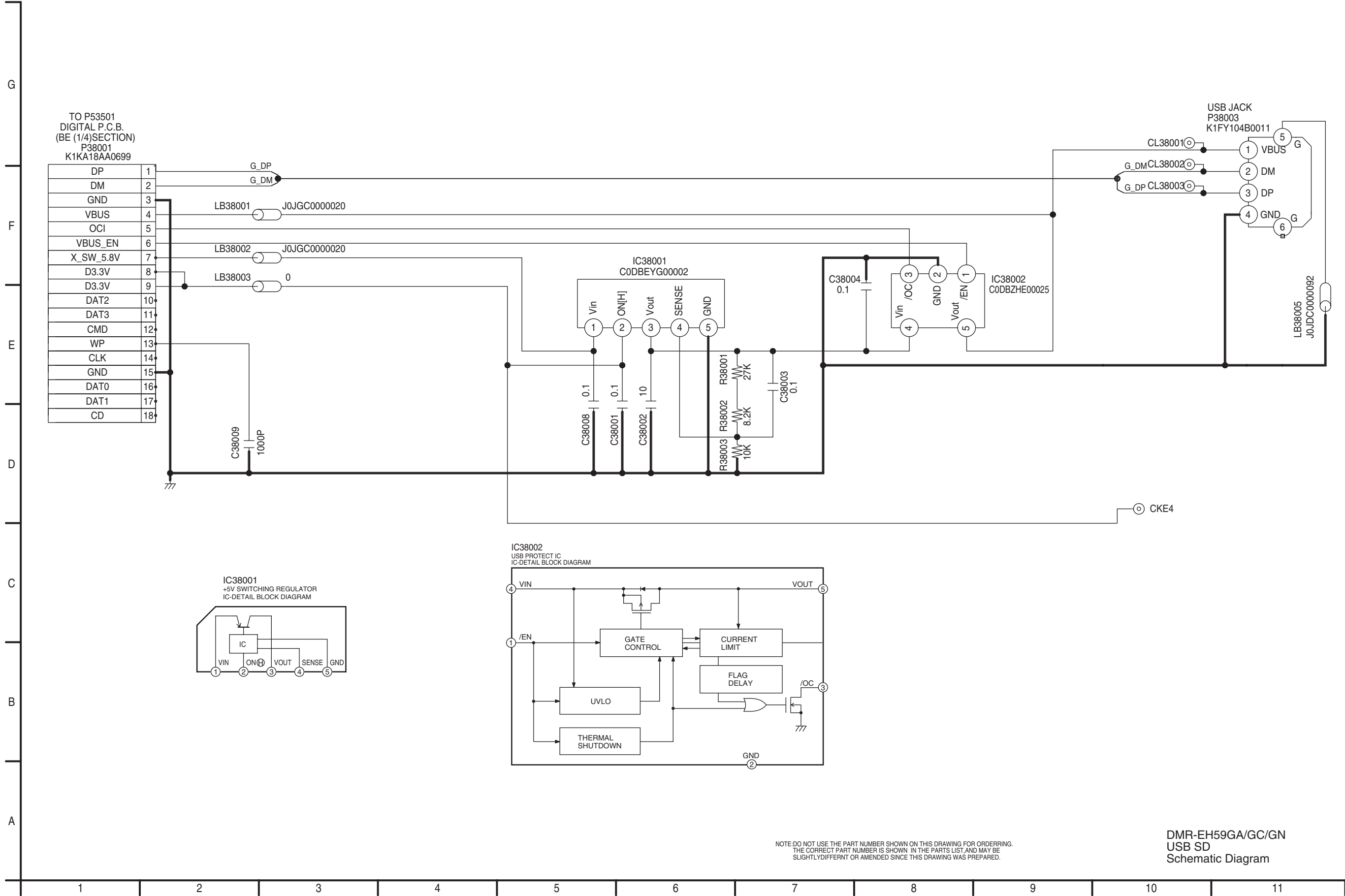
NOTE:DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING.
THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST,AND MAY BE
SLIGHTLYDIFFERNT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

DMR-EH59GA/GC/GN
Timer (4/4) Section (Main P.C.B. (4/4))
Schematic Diagram (T)

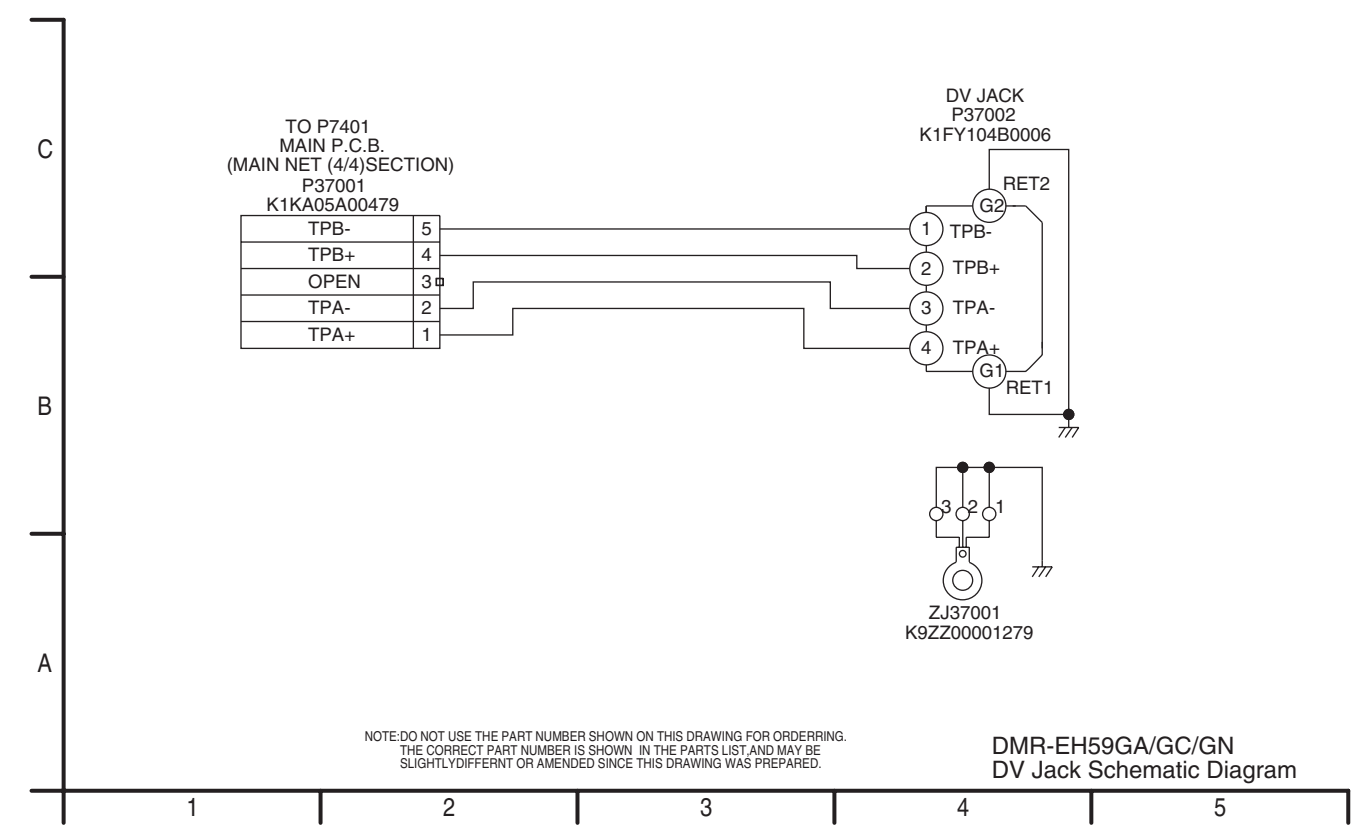
12.16. HDMI Schematic Diagram



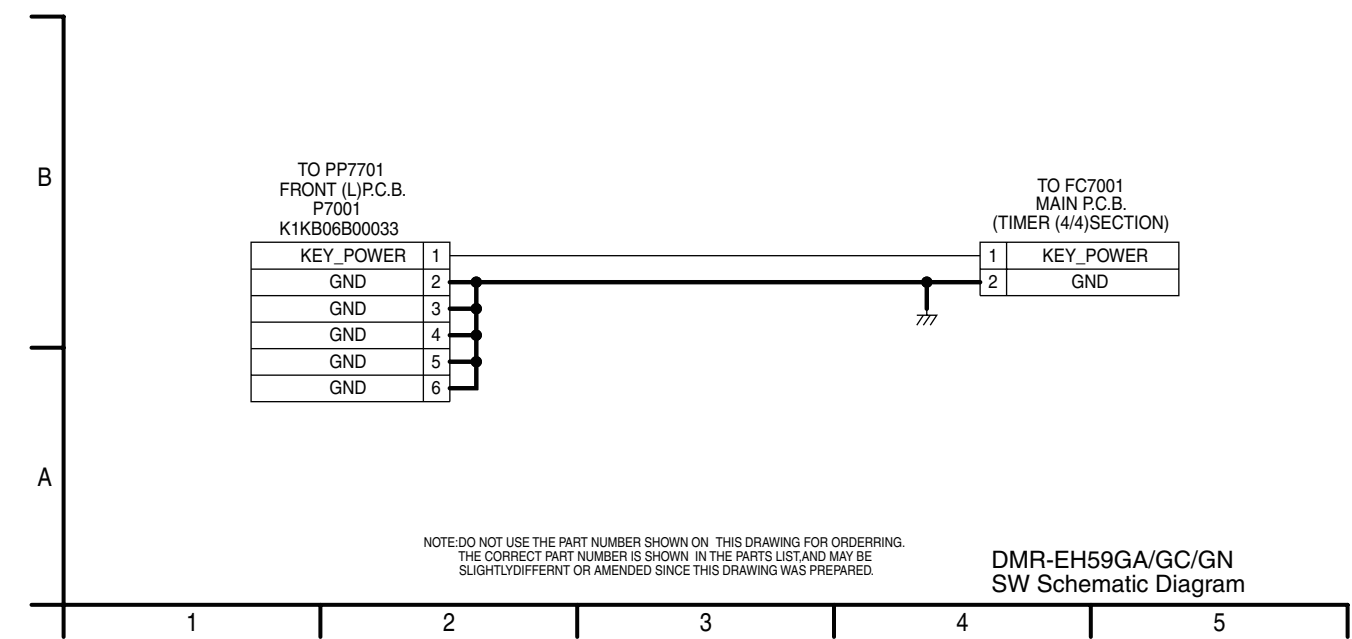
12.17. USB SD Schematic Diagram



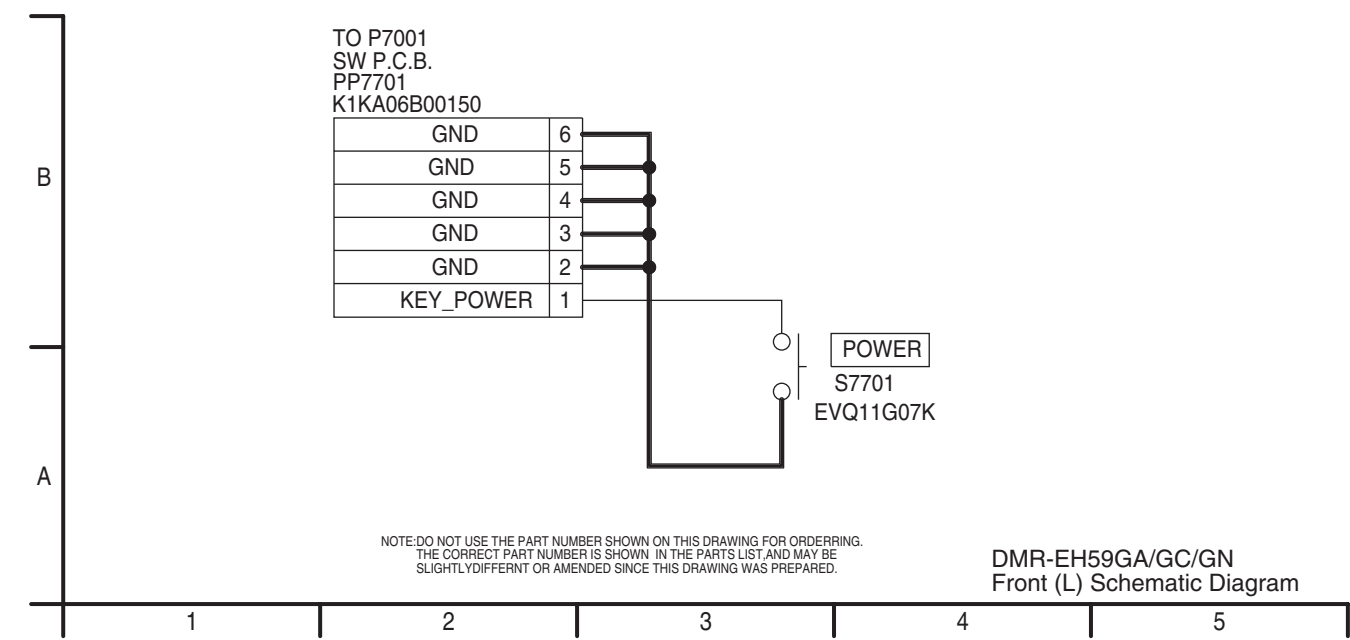
12.18. DV Jack Schematic Diagram



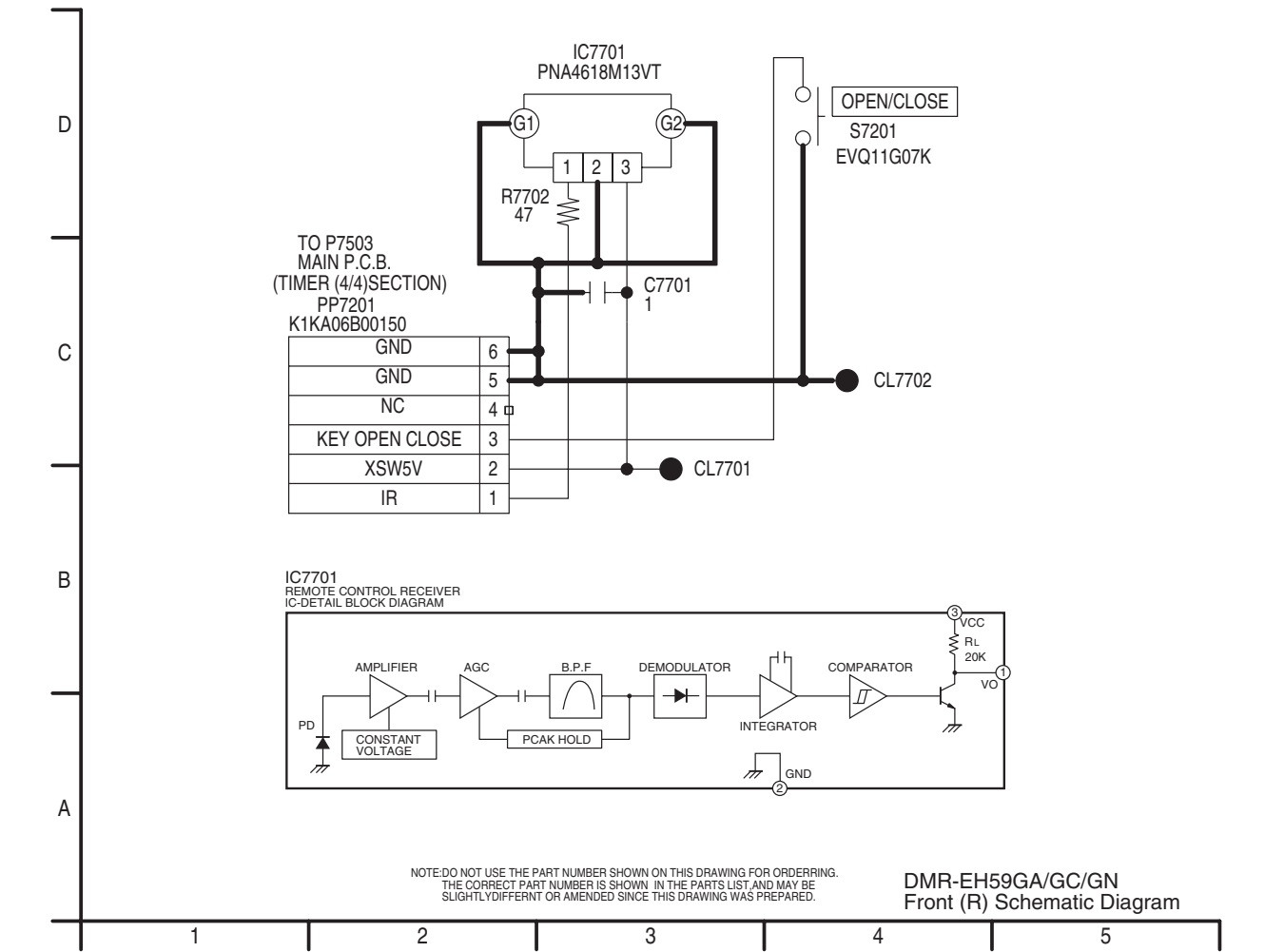
12.19. SW Schematic Diagram



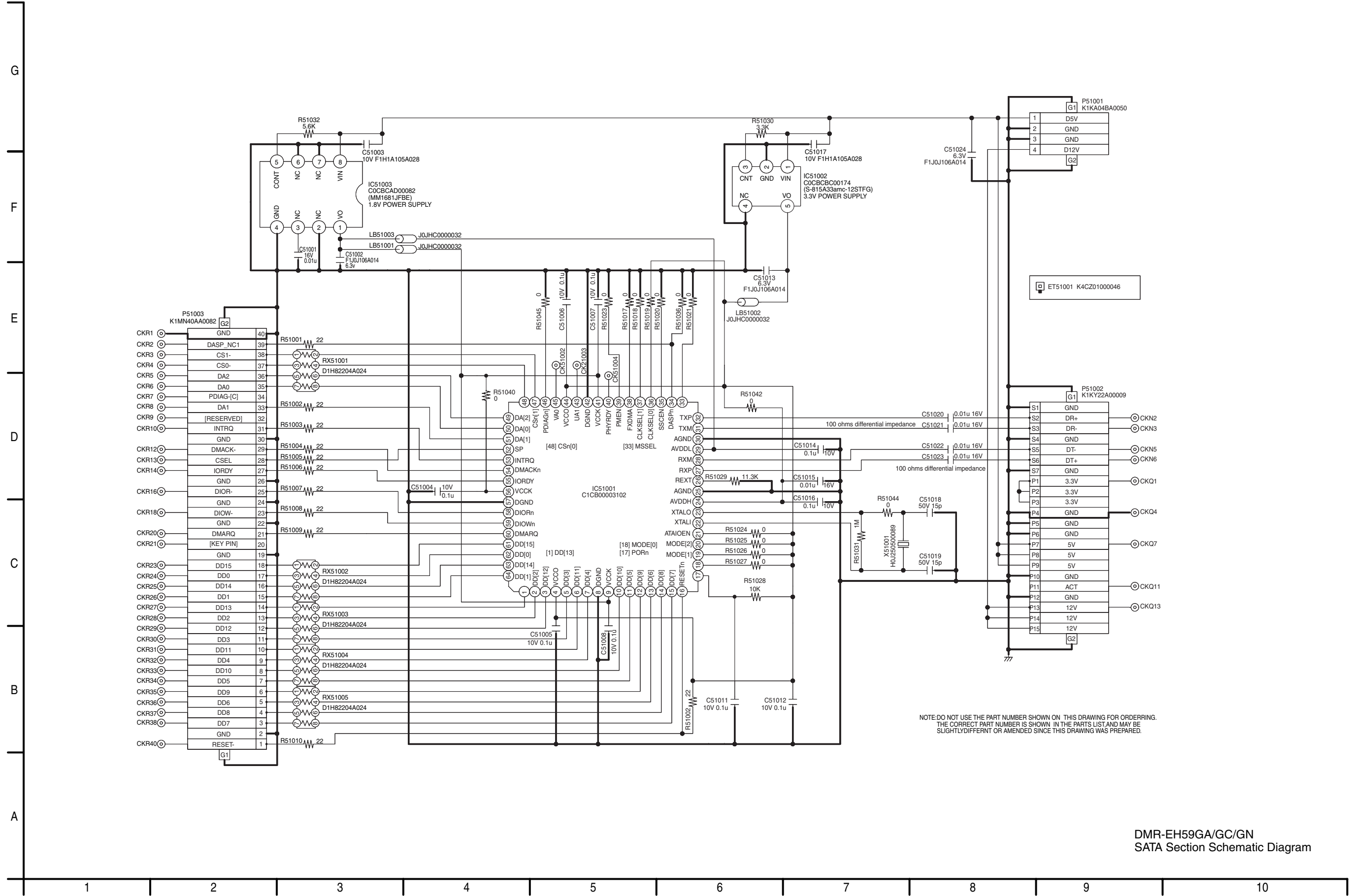
12.20. Front (L) Schematic Diagram



12.21. Front (R) Schematic Diagram



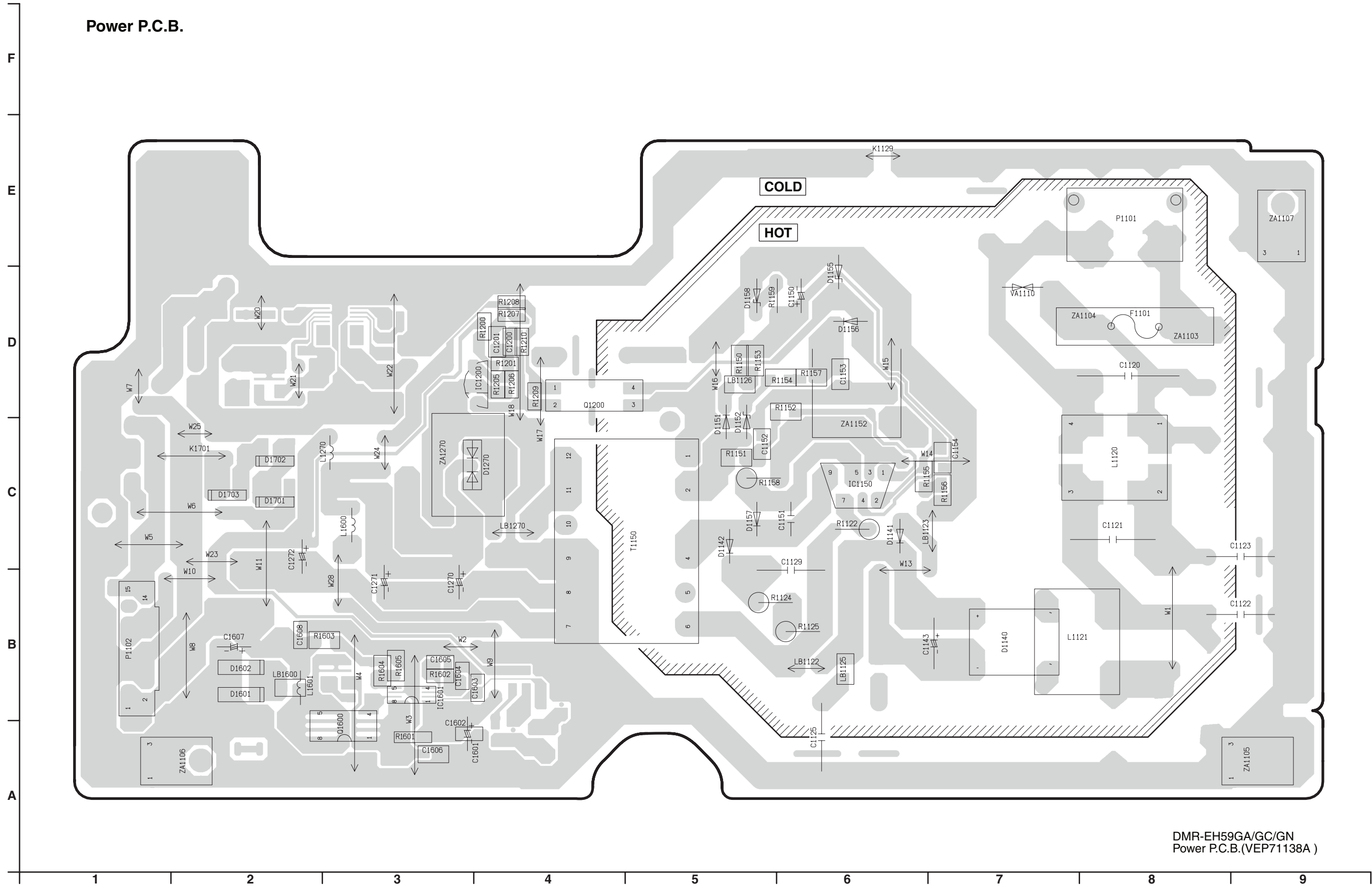
12.22. SATA Schematic Diagram



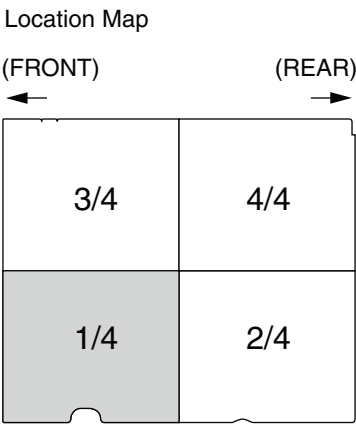
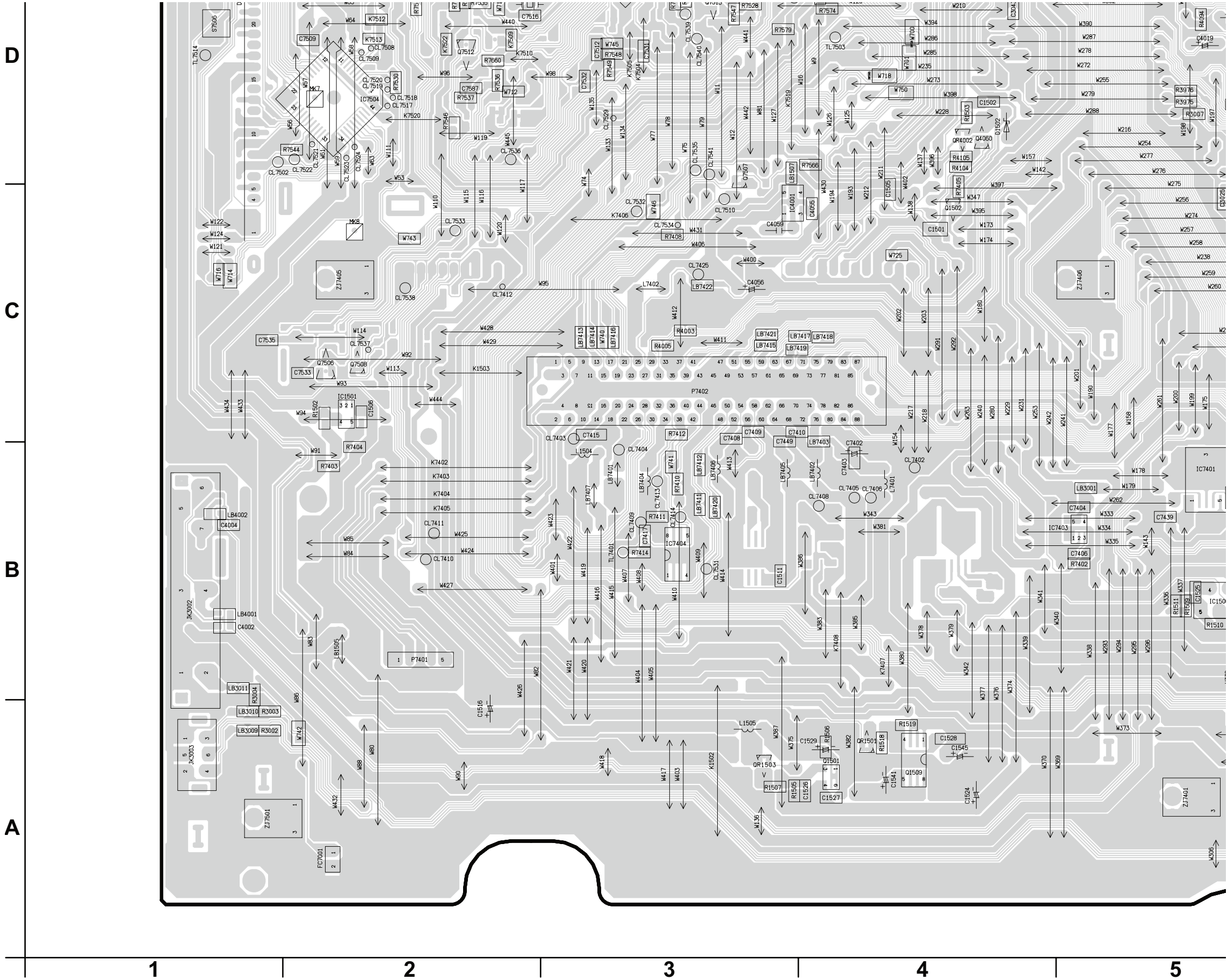
DMR-EH59GA/GC/GN
SATA Section Schematic Diagram

13 Printed Circuit Board

13.1. Power P.C.B.

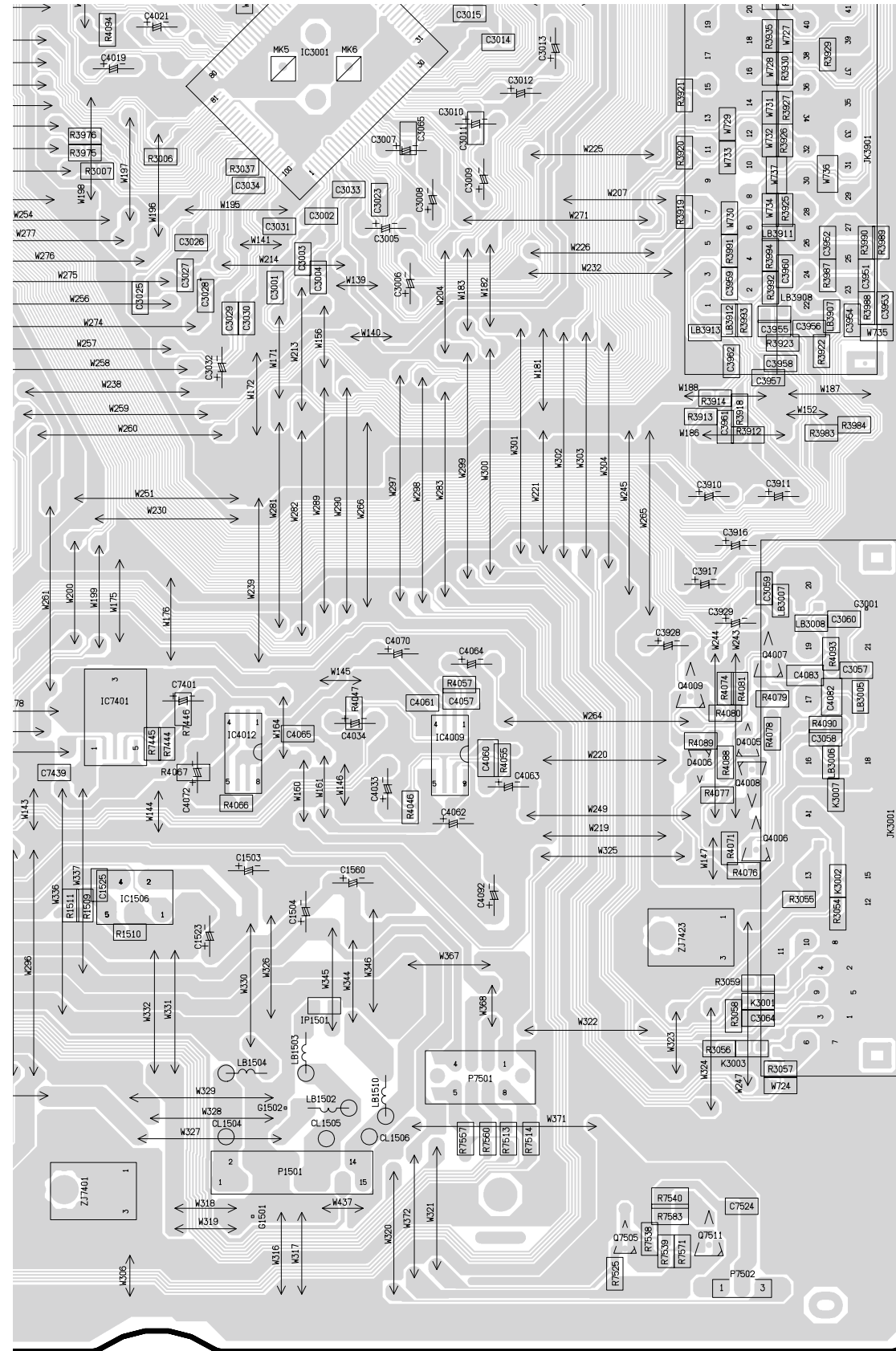


13.2. Main P.C.B.
13.2.1. Main P.C.B. (1/4 Section)



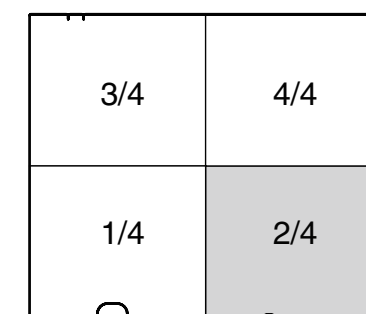
DMR-EH59GA/GC/GN
Main P.C.B.
(RFKB79183AA)
(1/4 Section)

13.2.2. Main P.C.B. (2/4 Section)



Location Map

(FRONT) (REAR)

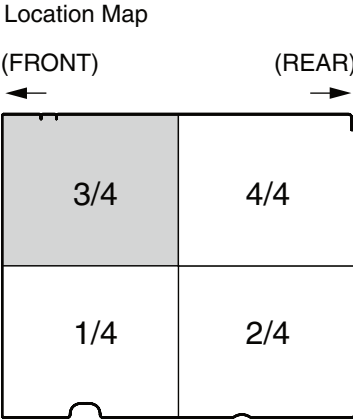
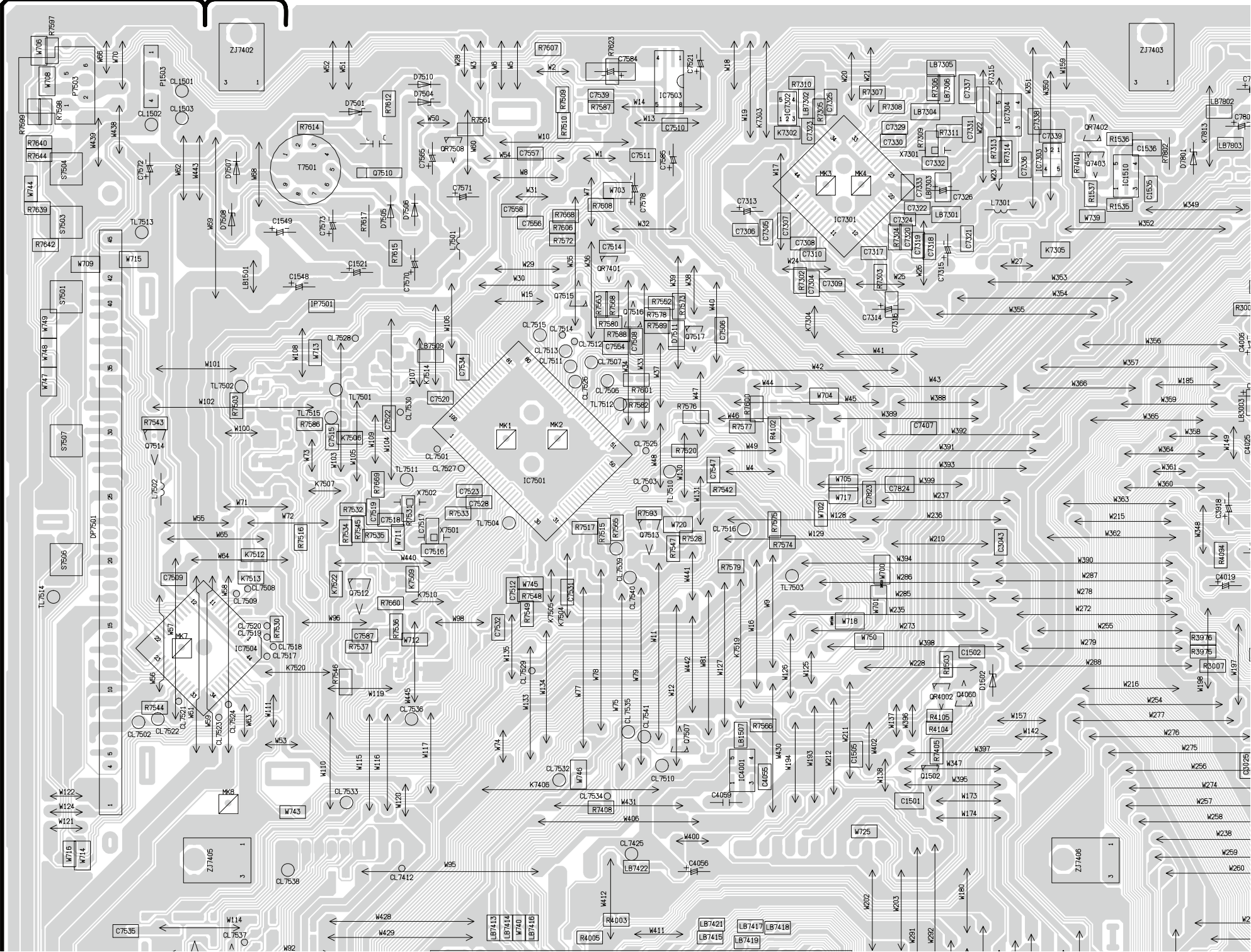


DMR-EH59GA/GC/GN
Main P.C.B.
(RFKB79183AA)
(2/4 Section)

13.2.3. Main P.C.B. (3/4 Section)

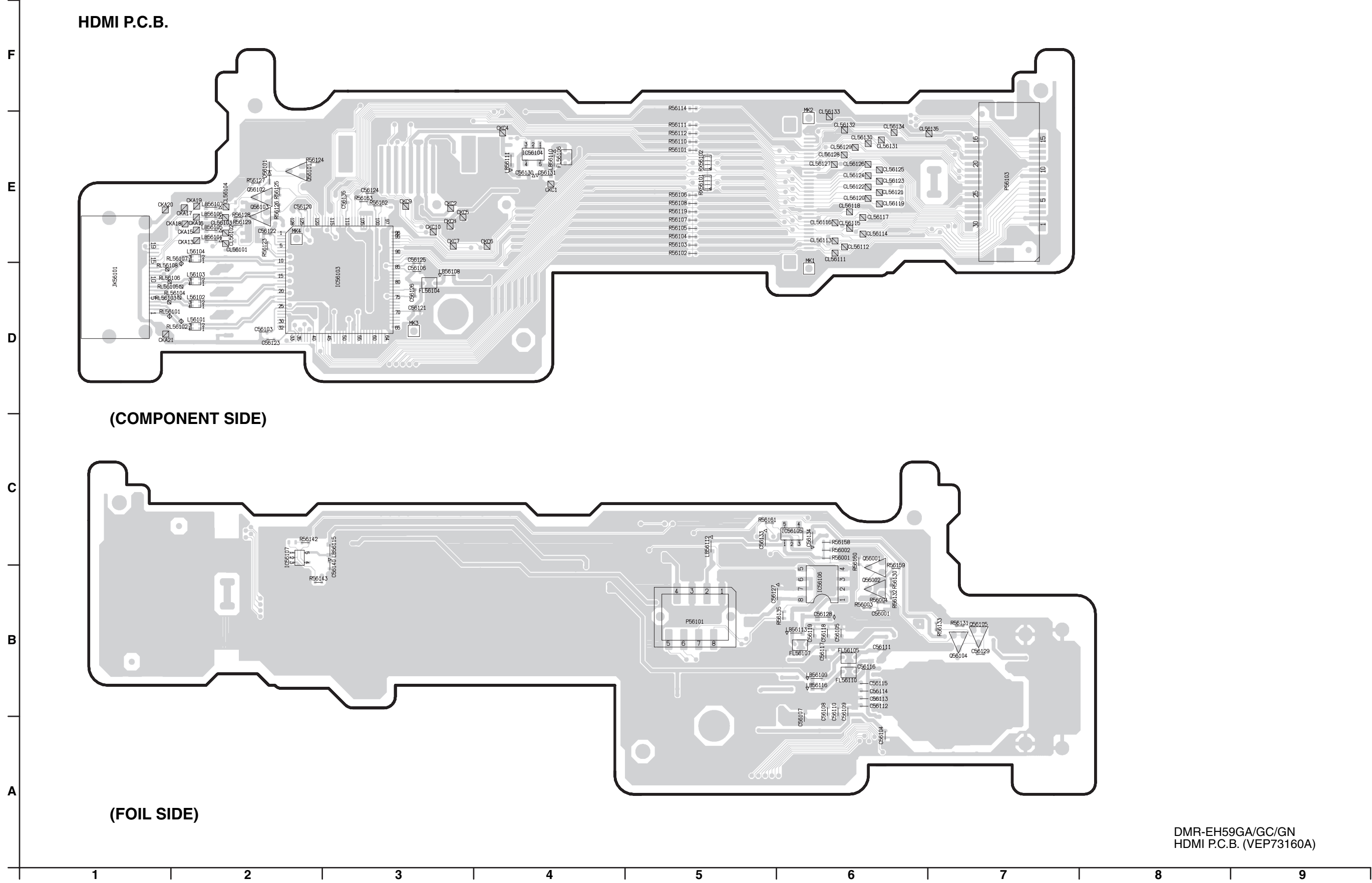
F
E
D
C

Main P. C.B.

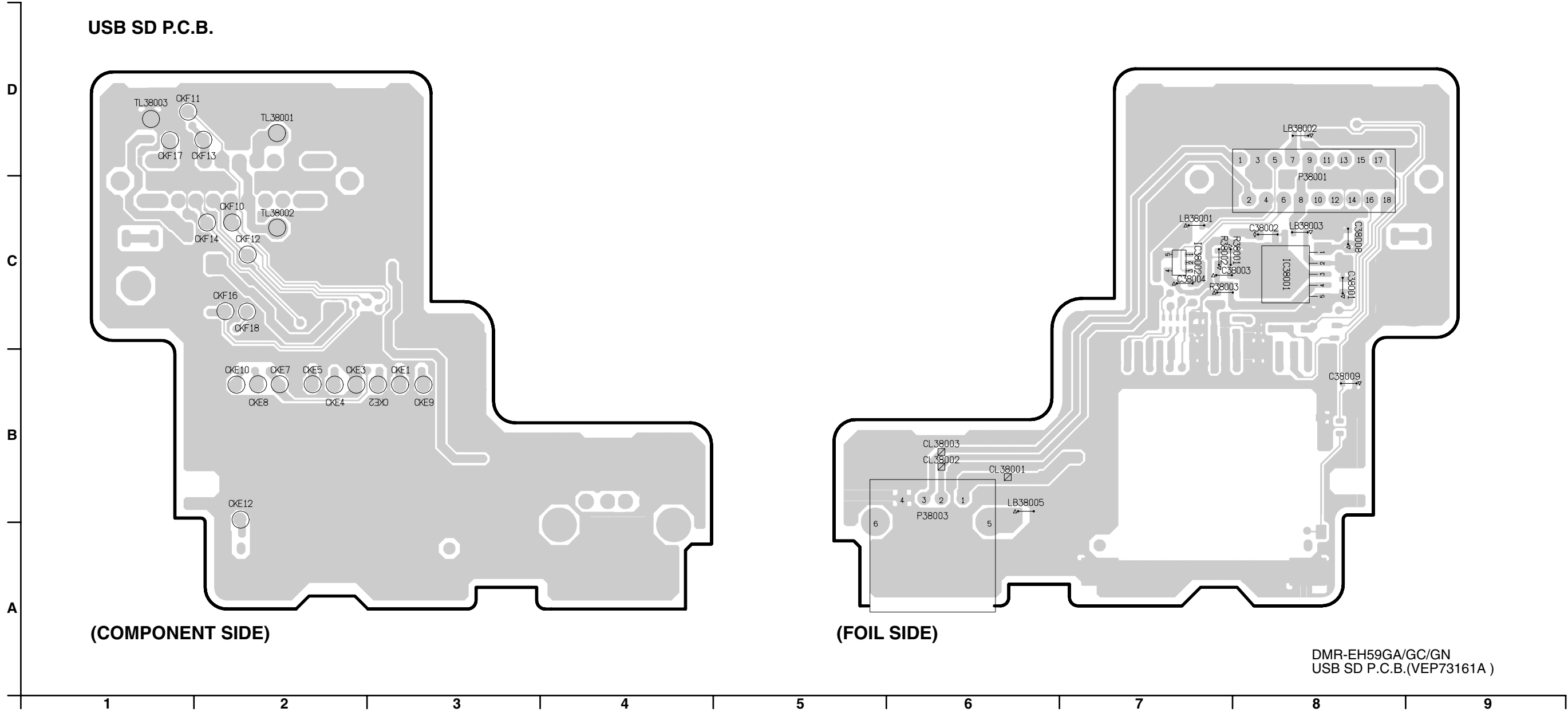


DMR-EH59GA/GC/GN
Main P.C.B.
(RFBK79183AA)
(3/4 Section)

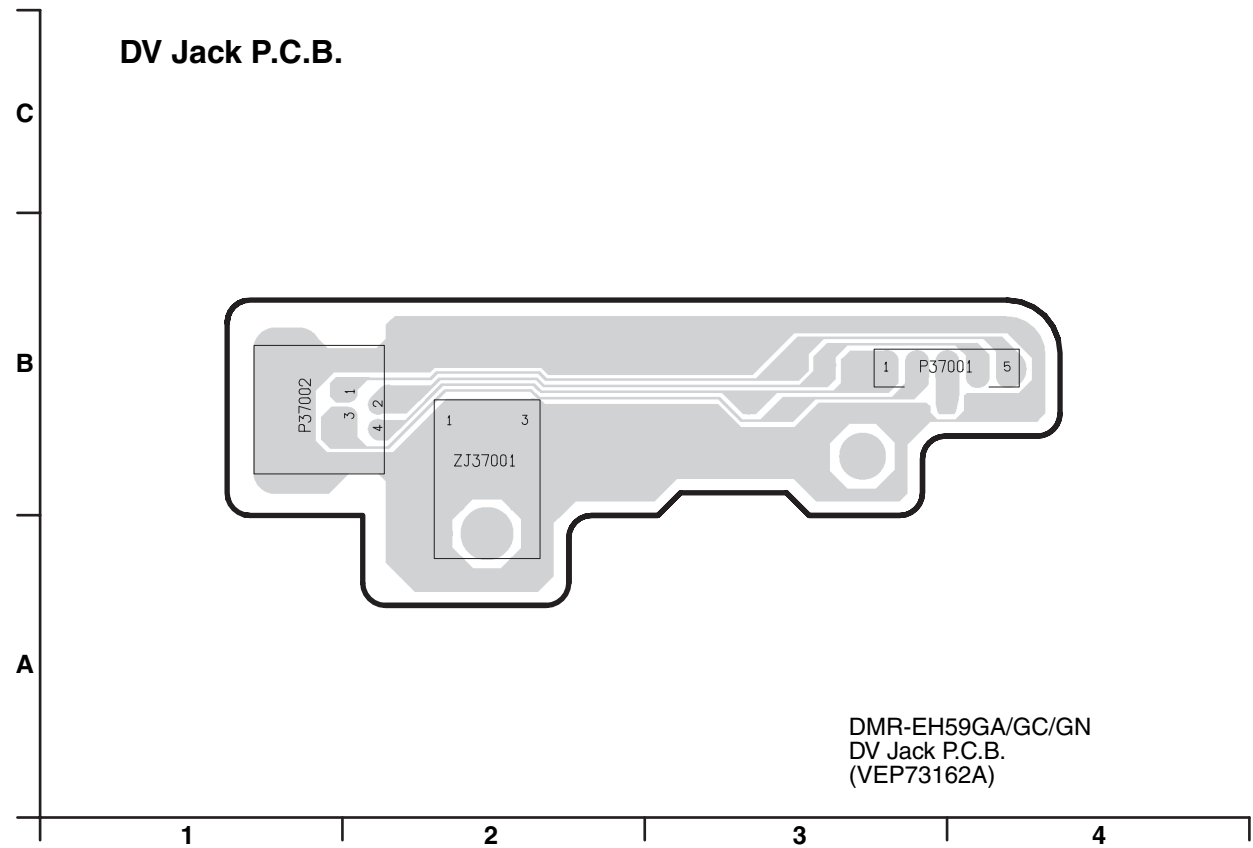
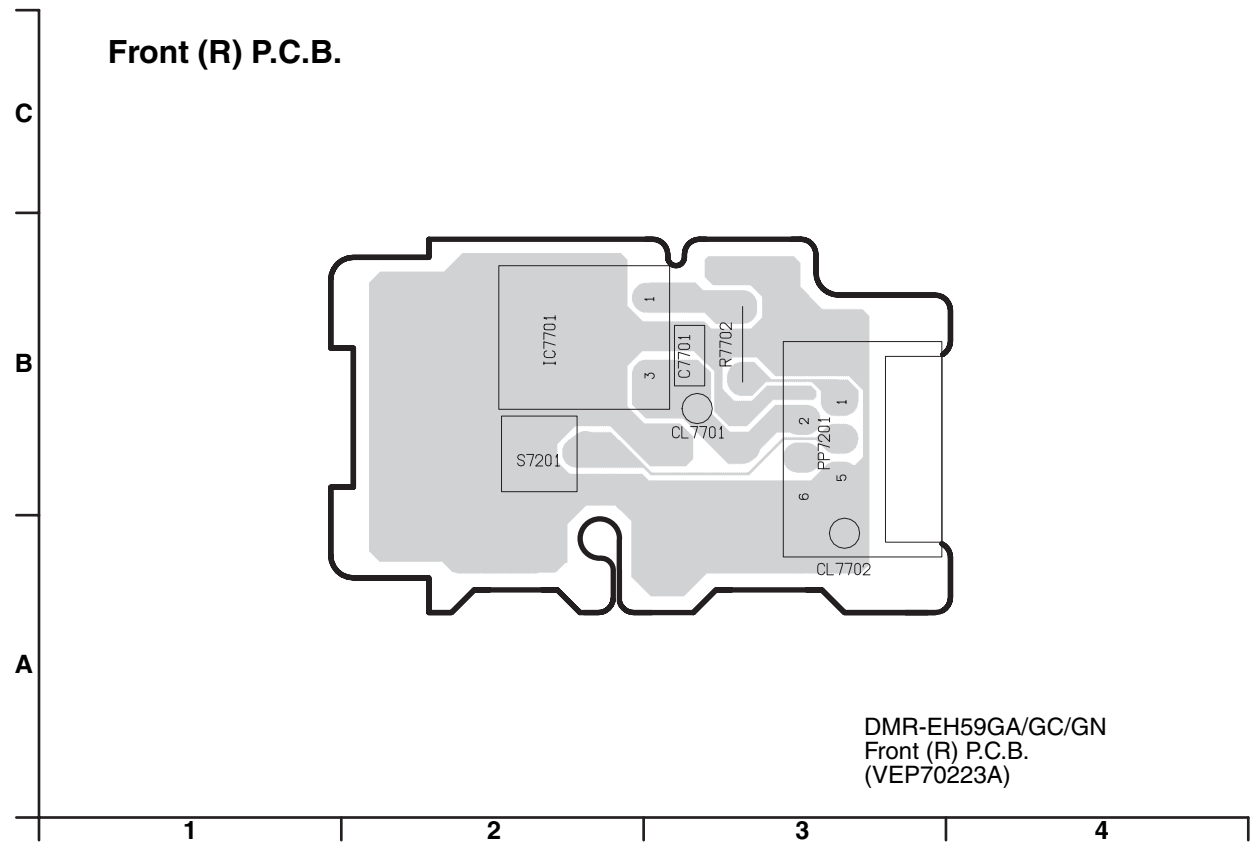
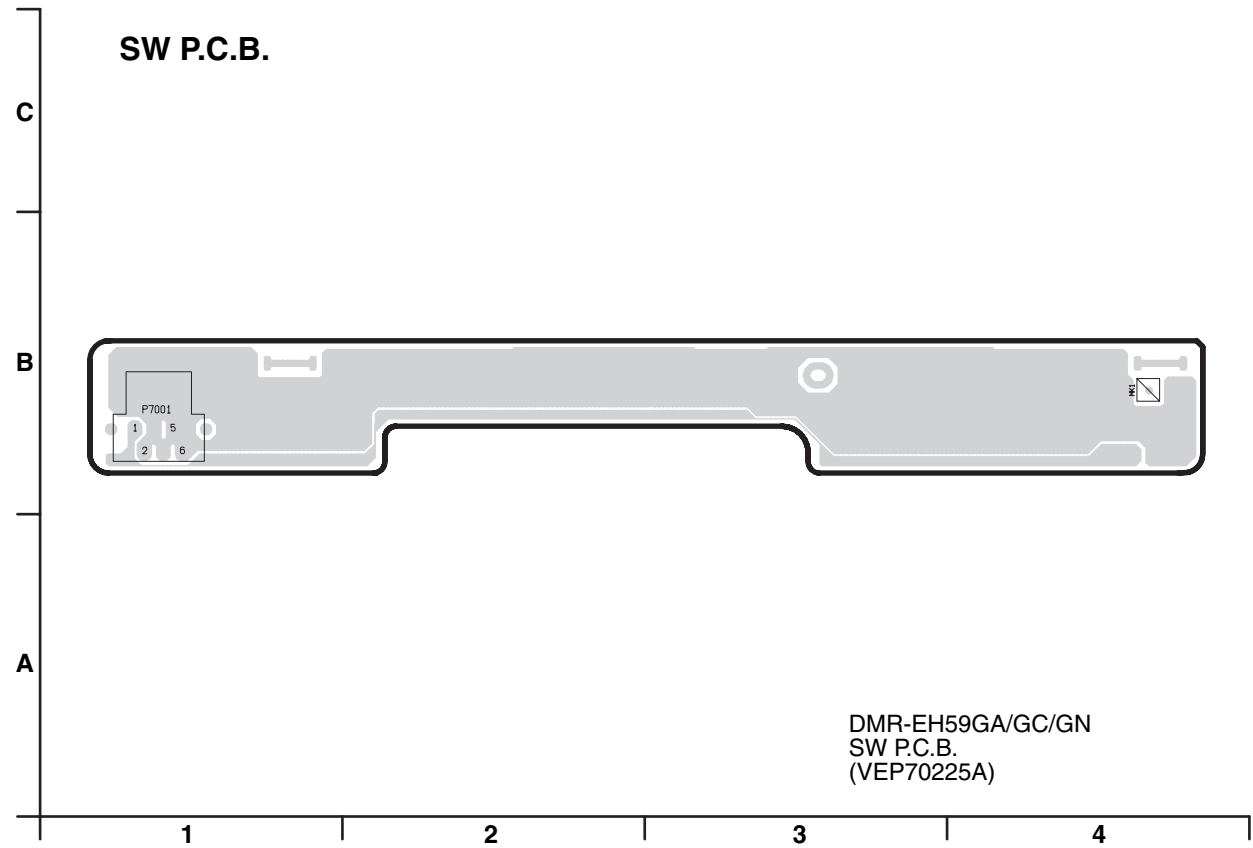
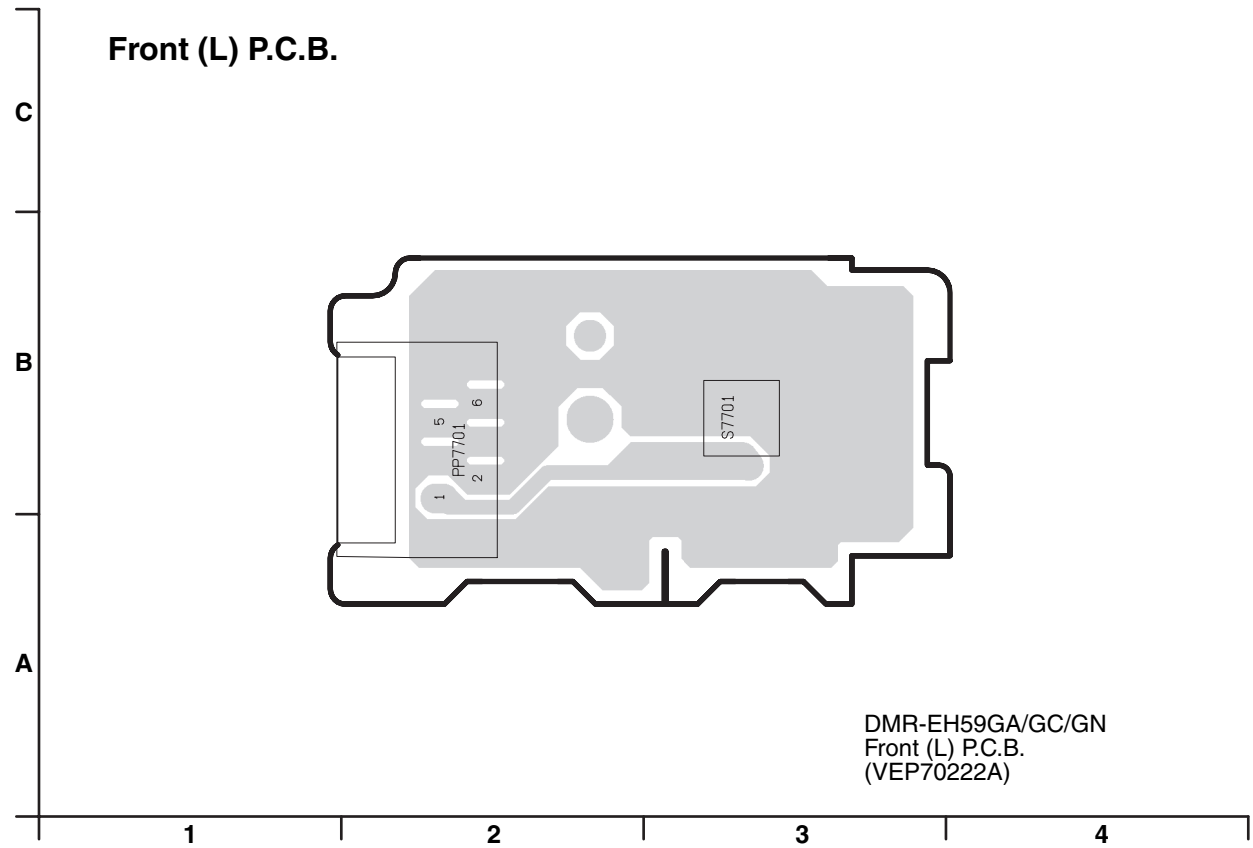
13.3. HDMI P.C.B.



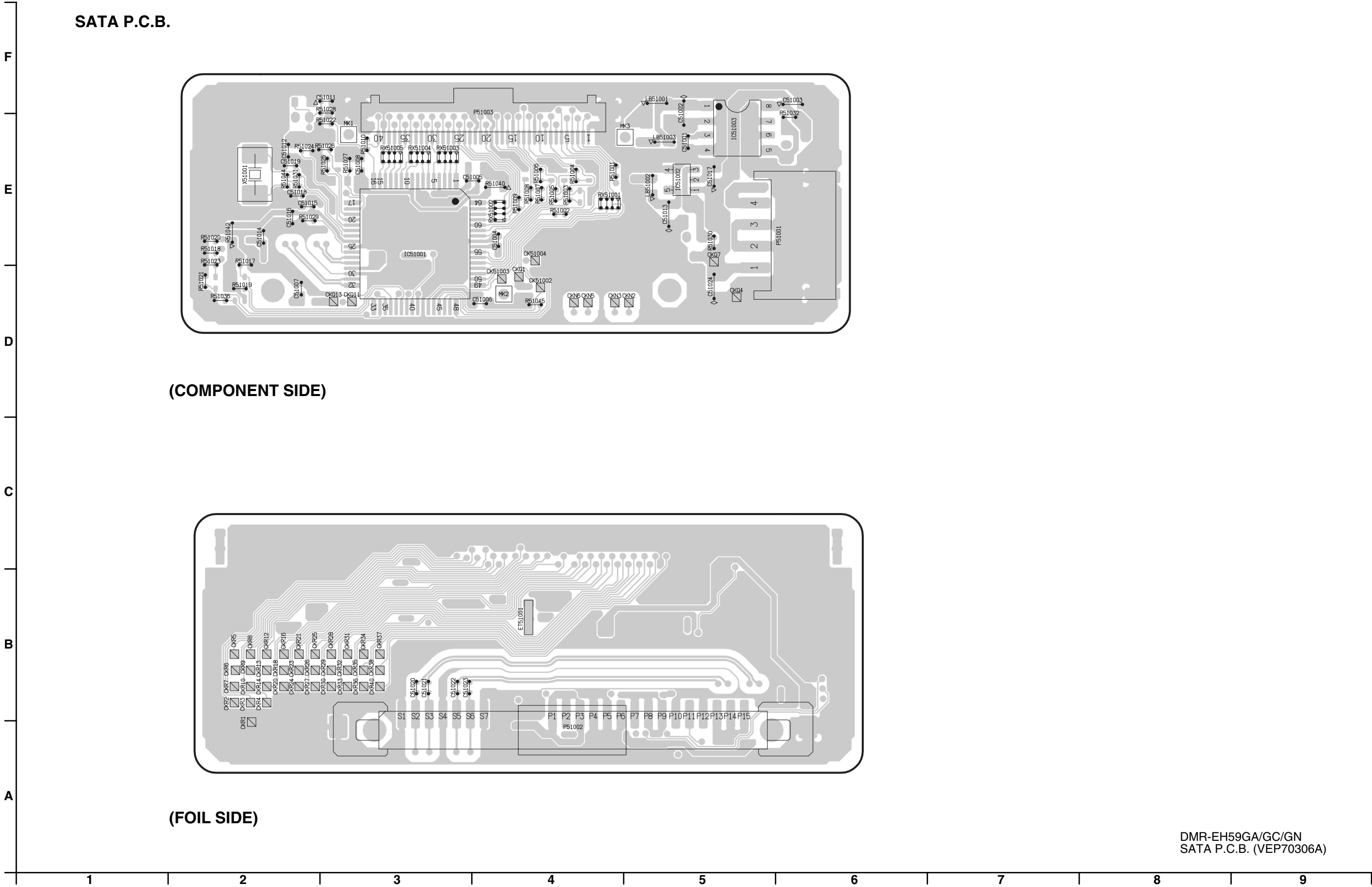
13.4. USB SD P.C.B.



13.5. Front (L) P.C.B., Front (R) P.C.B., SW P.C.B. and DV Jack P.C.B.



13.6. SATA P.C.B.



14 Appendix for Schematic Diagram

14.1. Voltage and Waveform Chart

NOTE:

Circuit voltage and waveform described herein shall be regarded as reference information when probing defect point, because it may differ from an actual measuring value due to difference of Measuring instrument and its measuring condition and product itself.

14.1.1. Power P.C.B.

Ref.No.	IC1150									IC1200									
MODE	1	2	3	4	5	6	7	8	9	1	2	3							
REC	3.0	1.5	0	11.6	0	-	-	-	-	8.3	2.5	0							
PLAY	3.0	1.5	0	11.6	0	-	-	-	-	8.3	2.5	0							
STOP	3.0	1.5	0	11.6	0	-	-	-	-	8.3	2.5	0							
Ref.No.	IC1601																		
MODE	1	2	3	4	5	6	7	8											
REC	12.3	4.5	1.2	1.3	0.8	0	7.2	12.3											
PLAY	12.3	4.5	1.2	1.3	0.8	0	7.2	12.3											
STOP	12.3	4.5	1.2	1.3	0.8	0	7.2	12.3											
Ref.No.	Q1200					Q1600													
MODE	1	2	3	4		1	2	3	4	5	6	7	8						
REC	9.3	8.3	0	1.5		12.3	12.3	12.3	7.2	6.1	6.1	6.1	6.1						
PLAY	9.3	8.3	0	1.5		12.3	12.3	12.3	7.2	6.1	6.1	6.1	6.1						
STOP	9.3	8.3	0	1.5		12.3	12.3	12.3	7.2	6.1	6.1	6.1	6.1						

14.1.2. Main P.C.B.

Ref.No. MODE	IC1501						IC1506						IC1510								
	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5				
REC	-	0	0	5.1	5.5		4.8	6.1	0	5.2	5.2		5.0	0	4.8	6.1	5.0				
PLAY	-	0	0	5.1	5.5		4.8	6.1	0	5.2	5.2		5.0	0	4.8	6.1	5.0				
STOP	-	0	0	5.1	5.5		4.8	6.1	0	5.2	5.2		5.0	0	4.8	6.1	5.0				
Ref.No.	IC3001																				
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
REC	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	0	1.7	1.7	1.6	0.4	0	1.7	1.7	
PLAY	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	0.3	1.6	0.4	0	1.7	1.7	1.6	0.4	0	1.7	1.7	
STOP	2.0	2.5	1.6	0	1.6	5.0	1.6	5.0	0.4	1.6	1.6	0.4	0	1.7	1.7	1.6	0.4	0	1.7	1.7	
Ref.No.	IC3001																				
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
REC	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	2.1	0	1.6	0	1.6	5.0	
PLAY	0	1.7	1.7	1.7	5.0	1.4	0.1	1.4	0	2.1	1.6	0	1.6	0	2.1	0	1.6	0	1.6	5.0	
STOP	0	1.7	1.6	1.7	5.0	1.4	0.2	1.4	0	2.1	1.6	0	1.6	0	2.1	0	1.6	0	1.6	5.0	
Ref.No.	IC3001																				
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
REC	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	4.5	4.5	9.1	4.4	4.4	4.5	
PLAY	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.4	4.4	4.0	4.5	4.5	4.5	4.5	9.1	4.4	4.4	4.5	
STOP	1.6	5.1	2.0	0	2.0	11.6	1.6	2.0	4.5	4.5	4.0	4.5	4.5	4.4	4.5	3.9	9.1	4.0	4.3	3.7	
Ref.No.	IC3001																				
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
REC	4.5	4.5	4.5	4.5	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	9.5	4.5	4.5	0	
PLAY	4.5	4.5	4.5	4.5	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	9.5	4.5	4.5	0	
STOP	3.7	3.7	3.7	3.8	9.0	0	0	0	0	0	4.5	4.5	4.5	4.5	0	-	0.3	4.5	4.5	0	
Ref.No.	IC3001																				
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
REC	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5	
PLAY	2.1	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.0	2.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5	
STOP	4.7	5.0	1.5	5.1	2.1	4.5	3.6	4.8	4.6	5.1	5.0	2.8	2.1	5.1	2.0	0	2.1	0	2.0	2.5	

RefNo.	IC4001						IC4009																		
MODE	1	2	3	4	5		1	2	3	4	5	6	7	8											
REC	3.4	0	4.8	6.1	5.0		5.8	5.8	5.8	0	5.8	5.8	5.8	11.6											
PLAY	3.4	0	4.8	6.1	5.0		5.8	5.8	5.8	0	5.8	5.8	5.8	11.6											
STOP	3.4	0	4.8	6.1	5.0		5.8	5.8	5.8	0	5.8	5.8	5.8	11.6											
RefNo.	IC4012						IC4901																		
MODE	1	2	3	4	5	6	7	8		1	2	3													
REC	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0													
PLAY	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0													
STOP	5.8	5.8	5.8	0	5.8	5.8	5.8	11.6		1.7	5.0	0													
RefNo.	IC7301																								
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20					
REC	3.3	1.7	0	1.7	3.3	3.3	1.7	0	1.7	3.3	1.7	1.7	3.3	1.3	1.5	1.3	1	1.3	0	3.3					
PLAY	3.3	1.7	0	1.7	3.3	3.3	1.7	0	1.7	3.3	1.7	1.7	3.3	1.3	1.5	1.3	1	1.3	0	3.3					
STOP	3.3	1.7	0	1.7	3.3	3.3	1.7	0	1.7	3.3	1.7	1.7	3.3	1.3	1.5	1.4	1	1.3	0	3.3					
RefNo.	IC7301																								
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40					
REC	3.3	0	1.5	0	0	1.5	1.5	3.3	0	1.5	3.3	4.2	3.7	3.3	3.3	0	0	0	0	0					
PLAY	3.3	0	1.5	0	0	1.5	1.5	3.3	0	1.5	3.3	4.2	3.7	3.3	3.3	0	0	0	0	0					
STOP	3.3	0	1.5	0	0	1.5	1.5	3.3	0	1.5	3.3	4.2	3.7	3.3	3.3	0	0	0	0	0					
RefNo.	IC7301																								
MODE	41	42	43	44																					
REC	0	0	0	0																					
PLAY	0	0	0	0																					
STOP	0	0	0	0																					
RefNo.	IC7302					IC7303					IC7304														
MODE	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5								
REC	0	0	-	3.3	3.3		4.5	0	5	-	3.3		1.3	0	5	4.7	1.5								
PLAY	0	0	-	3.3	3.3		4.5	0	5	-	3.3		1.3	0	5	4.7	1.5								
STOP	0	0	-	3.3	3.3		4.5	0	5	-	3.3		1.3	0	5	4.5	1.5								
RefNo.	IC7401					IC7402					IC7403														
MODE	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5								
REC	12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1		6.1	0	4.2	-	5.0								
PLAY	12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1		6.1	0	4.2	-	5.0								
STOP	12.4	4.2	11.6	2.6	0		6.1	0	6.1	-	5.1		6.1	0	4.2	-	5.0								
RefNo.	IC7404																								
MODE	1	2	3	4	5	6	7	8																	
REC	0	0	0	0	3.3	3.3	0	3.3																	
PLAY	0	0	0	0	3.3	3.3	0	3.3																	
STOP	0	0	0	0	3.3	3.3	0	3.3																	
RefNo.	IC7501																								
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20					
REC	0	0	5	1.5	1.8	5	4.8	0	0	1.2	1.2	5	1.5	0	2	-	5	3.3	3.3	3.3					
PLAY	0	0	5	1.5	1.8	5	4.8	0	0	1.2	1.2	5	1.5	0	2	-	5	3.3	3.3	3.3					
STOP	0	0	5	1	1	5	4.8	0	0	0.7	1.2	5	1.5	0	2	-	5	3.3	3.3	3.3					
RefNo.	IC7501																								
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40					
REC	3.3	1.4	3.3	0	0	0	0	0	4.2	3.7	0.1	3.3	0	3.3	0.1	3.3	3.3	0	0	5.1					
PLAY	3.3	1.4	3.3	0	0	0	0	0	4.2	3.7	0.1	3.3	0	3.3	0.1	3.3	3.3	0	0	5.1					
STOP	3.3	1.4	3.3	0	0	0	0	0	4.2	3.7	0	3.3	0	3.3	0.1	3.3	3.3	0	0	5.1					
RefNo.	IC7501																								
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60					
REC	5	5	5	5	4.3	5	5	5	0	0	0	0	0	5	0	0	0	5	0	5					
PLAY	5	5	5	5	4.3	5	5	5	0	0	0	0	0	5	0	0	0	5	0	5					
STOP	5	5	5	5	4.3	5	5	5	0	0	0	0	0	5	0	0	0	5	0	5					
RefNo.	IC7501																								
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80					
REC	0	5	0	0	5	5.1	0	0	5	0	5	0	0	4.1	5	0	0	0	0	0					
PLAY	0	5	0	0	5	5.1	0	0	5	0	5	0	0	4.1	5	0	0	0	0	0					
STOP	0	5	0	0	5	5.1	0	0	5	0	5	0	0	4.1	5	0	0	0	0	0					
RefNo.	IC7501																								
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100					
REC	0	0	0	5	0	5	5	5	3	5	0	0	2.5	1.6	1.2	0	0	1.9	5	0					
PLAY	0	0	0	5	0	5	5	5	3	5	0	0	2.5	1.6	1.2	0	0	1.9	5	0					
STOP	0	0	0	5	0	5	5	5	3	5	0	0	2.5	1.6	1.2	0	0	1.9	5	0					
RefNo.	IC7503																								
MODE	1	2	3	4	5	6	7	8																	
REC	0	0.2	5.0	4.2	5.0	5.0	5.4	5.0																	
PLAY	0	0.2	5.0	4.2	5.0	5.0	5.4	5.0																	
STOP	0	0.2	5.0	4.2	5.0	5.0	5.4	5.0																	
RefNo.	IC7504																								
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20					
REC	0	0	0	0	2.9	0.3	0.3	4.8	4.3	0.1	0.1	0	4.7	-17.8	-17.8	-9.3	-17.8	-20.7	-17.9	-6.5					
PLAY	0	0	0	0	2.9	0.3	0.3	4.8	4.3	0.1	0.1	0	4.7	-17.8	-17.8	-9.3	-17.8	-20.7	-17.9	-6.5					
STOP	0	0	0	0	2.9	0.2	0.2	4.8	4.3	0.1	0.1	0	4.8	-20.7	-20.7	-20.7	-17.9	-20.7	-20.7	-20					
RefNo.	IC7504																								
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40					
REC	-15.0	0	-9.4	-9.3	-17.8	-20.7	-20.7	-20.7	-12.2	-21.4	-20.9	-20.9	-20.9	-20.9	-20.9	-18.4	-18.1	-18.1	-18.1	-18.1					
PLAY	-15.0	0	-9.4	-9.3	-17.8	-20.7	-20.7	-20.7	-12.2	-21.4	-20.9	-20.9	-20.9	-20.9	-20.9	-18.4	-18.1	-18.1	-18.1	-18.1					
STOP	-17.9	-15.1	12.2	-20.7	-20.7	-20.7	-20.7	-20.8	-20.8	-21.4	-21.0	-20.8	-21.0	-21.0	-21.0	-18.4	-18.2	-18.2	-18.2	-18.2					
RefNo.	IC7504																								
MODE	41	42	43	44																					
REC	-18.1	-18.1	5.0	0																					
PLAY	-18.1	-18.1	5.0	0																					
STOP	-18.2	-18.2	0	0																					
RefNo.	IC7701																								
MODE	1	2	3																						
REC	5	0	5																						
PLAY	5	0	5																						
STOP	5	0	5																						

Ref No.	Q1501						Q1502												
MODE	1	2	3	4	5	6	E	C	B										
REC	5.1	5.1	2.6	5.2	5.1	5.1	3.3	4.1	3.9										
PLAY	5.1	5.1	2.6	5.2	5.1	5.1	3.3	4.1	3.9										
STOP	5.1	5.1	2.6	5.2	5.1	5.1	3.3	4.1	3.9										
Ref No.	Q1509								Q4006			Q4007			Q4008				
MODE	1	2	3	4	5	6	7	8	E	C	B	E	C	B	E	C	B		
REC	12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3	0	0	-0.1	0	0	-0.1	0	0	-0.1		
PLAY	12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3	0	0	-0.1	0	0	-0.1	0	0	-0.1		
STOP	12.4	12.4	12.4	6.2	12.3	12.3	12.3	12.3	0	0	-0.1	0	0	-0.1	0	0	-0.1		
Ref No.	Q4009			Q4060			Q7403			Q7501			Q7502						
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
REC	0	0	-0.1	0	5.1	0	0	0	4.9	3.2	0	2.9	3	5	1.6				
PLAY	0	0	-0.1	0	5.1	0	0	0	4.9	3.2	0	2.9	3	5	1.6				
STOP	0	0	-0.1	0	5.1	0	0	0	4.9	3.2	0	2.9	3	5	1.6				
Ref No.	Q7503			Q7504			Q7505			Q7509			Q7510						
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
REC	3.3	0	2.7	1.9	5	1.6	1.1	11.3	1.6	4.5	3.3	3.3	0	9.1	-0.2				
PLAY	3.3	0	2.7	1.9	5	1.6	1.1	11.3	1.6	4.5	3.3	3.3	0	9.3	-0.1				
STOP	3.3	0	2.7	1.9	5	1.6	1.1	11.3	1.6	4.5	3.3	3.3	0	9.1	-0.2				
Ref No.	Q7511			Q7514			Q7515			Q7516			Q7517						
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B				
REC	12.1	5	11.6	-18.5	5.0	-18.4	0	5.0	0	0	0	4.6	0	4.6	0				
PLAY	12.1	5	11.6	-18.5	5.0	-18.4	0	5.0	0	0	0	4.6	0	4.6	0				
STOP	12.2	5.1	11.6	-18.5	5.0	-18.4	0	5.0	0	0	0	5.1	0	5.1	0.1				
Ref No.	QR1501			QR1503			QR4002												
MODE	E	C	B	E	C	B	E	C	B										
REC	0	0	4.9	0	0	4.9	5.1	-0.1	5.1										
PLAY	0	0	4.9	0	0	4.9	5.1	-0.1	5.1										
STOP	0	0	4.9	0	0	4.9	5.1	-0.1	5.1										
Ref No.	QR7401			QR7402															
MODE	E	C	B	E	C	B													
REC	0	4.2	0	38.1	38.0	0													
PLAY	0	4.2	0	38.1	38.0	0													
STOP	0	4.2	0	38.1	38.0	0													
Ref No.	QR7507			QR7508															
MODE	E	C	B	E	C	B													
REC	0	0	4.9	0	-0.2	0													
PLAY	0	0	4.9	0	-0.1	0													
STOP	0	0	4.9	0	-0.2	0													

14.1.3. HDMI P.C.B.

RefNo.	IC56103																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	-	-	-	-	1.2	-	0	2.8	3.3	0	0	0	3.3	0	0	0	3.3	0	0	0
PLAY	-	-	-	-	1.2	-	0	2.8	3.3	0	0	0	3.3	0	0	0	3.3	0	0	0
STOP	-	-	-	-	1.2	-	0	2.8	3.3	0	0	0	3.3	0	0	0	3.3	0	0	0
RefNo.	IC56103																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.3	0	0	0	3.3	1.2	0	3.3	-	-	-	-	1.5	3.3	1.3	0	0	1.3	0	3.3
PLAY	3.3	0	0	0	3.3	1.2	0	3.3	-	-	-	-	1.5	3.3	1.3	0	0	1.3	0	3.3
STOP	3.3	0	0	0	3.3	1.2	0	3.3	-	-	-	-	1.5	3.3	1.3	0	0	1.3	0	3.3
RefNo.	IC56103																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	1.7	1.2	1.6	0	1.6	0	1.2	0	0	0	0	3.3	0	0	1.2	0	0	0	0	0
PLAY	1.7	1.2	1.6	0	1.6	0	1.2	0	0	0	0	3.3	0	0	1.2	0	0	0	0	0
STOP	1.7	1.2	1.6	0	1.6	0	1.2	0	0	0	0	3.3	0	0	1.2	0	0	0	0	0
RefNo.	IC56103																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	0	0	-	-	0	0	0	0	3.3	0	0	0	0	1.2	0	0	0	0	0
PLAY	0	0	0	-	-	0	0	0	0	3.3	0	0	0	0	1.2	0	0	0	0	0
STOP	0	0	0	-	-	0	0	0	0	3.3	0	0	0	0	1.2	0	0	0	0	0
RefNo.	IC56103																			
MODE	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
REC	0	0	0	3.3	1.2	0	1.8	0.9	1.1	1.4	0	0.8	0.9	0.9	0.9	-	-	-	3.3	3.3
PLAY	0	0	0	3.3	1.2	0	1.8	0.9	1.1	1.4	0	0.8	0.9	0.9	0.9	-	-	-	3.3	3.3
STOP	0	0	0	3.3	1.2	0	1.8	0.9	1.1	1.4	0	0.8	0.9	0.9	0.9	-	-	-	3.3	3.3
RefNo.	IC56103																			
MODE	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
REC	0	1.2	0	0	0	3.3	3.3	3.3	1.2	0	1.5	0	3.3	3.3	3.3	1.2	0	0	0	0.1
PLAY	0	1.2	0	0	0	3.3	3.3	3.3	1.2	0	1.5	0	3.3	3.3	3.3	1.2	0	0	0	0.1
STOP	0	1.2	0	0	0	3.3	3.3	3.3	1.2	0	1.5	0	3.3	3.3	3.3	1.2	0	0	0	0.1
RefNo.	IC56103								IC56104					IC56105						
MODE	121	122	123	124	125	126	127	128	1	2	3	4	5	1	2	3	4	5		
REC	0.1	0	1.2	3.3	0	-	-	-	4.6	0	3.3	-	3.3	5.7	0	4.8	-	5.0		
PLAY	0.1	0	1.2	3.3	0	-	-	-	4.6	0	3.3	-	3.3	5.7	0	4.8	-	5.0		
STOP	0.1	0	1.2	3.3	0	-	-	-	4.6	0	3.3	-	3.3	5.7	0	4.8	-	5.0		
RefNo.	IC56106								IC56107											
MODE	1	2	3	4	5	6	7	8	1	2	3	4	5							
REC	1.2	0	0	0	3.3	0	0	1.9	-	1.6	0	1.5	3.3							
PLAY	1.2	0	0	0	3.3	0	0	1.9	-	1.6	0	1.5	3.3							
STOP	1.2	0	0	0	3.3	0	0	1.9	-	1.6	0	1.5	3.3							
RefNo.	Q56001				Q56002				Q56101				Q56102				Q56103			
MODE	E	C	B		E	C	B		E	C	B		S	D	G		S	D	G	
REC	0	4.5	0		0	0	0.6		0	3.2	0		3.1	5	3.3		3.1	4.8	3.1	
PLAY	0	4.5	0		0	0	0.6		0	3.2	0		3.1	5	3.3		3.1	4.8	3.1	
STOP	0	4.5	0		0	0	0.6		0	3.2	0		3.1	5	3.1		3.1	4.8	3.1	
RefNo.	Q56104				Q56105															
MODE	E	C	B		E	C	B													
REC	3.4	3.0	3.4		0	3.0	0													
PLAY	3.4	3.0	3.4		0	3.0	0													
STOP	3.4	3.0	3.4		0	3.0	0													

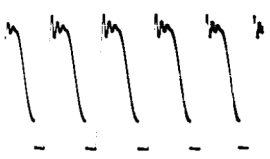
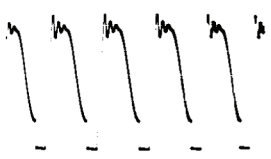
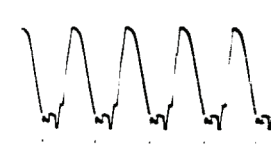
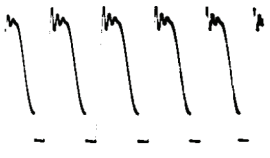
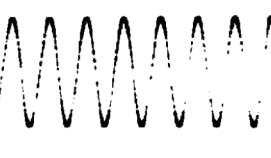
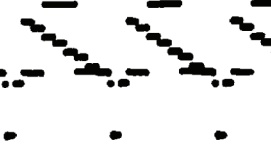
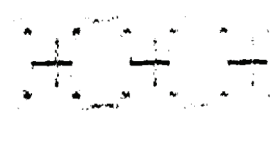
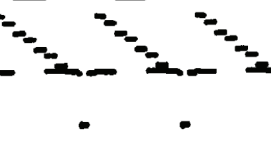
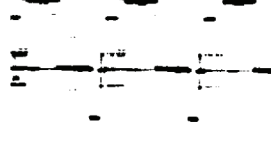
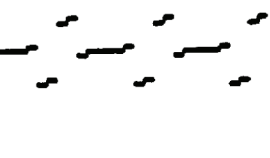
14.1.4. USB SD P.C.B.

RefNo.	IC38001																			
MODE	1	2	3	4	5															
REC	5.6	3.3	5	1.1	0															
PLAY	5.6	3.3	5	1.1	0															
STOP	5.6	3.3	5	1.1	0															
RefNo.	IC38002																			
MODE	1	2	3	4	5															
REC	0	0	3.3	5	1															
PLAY	0	0	3.3	5	1															
STOP	3.3	0	3.3	5	0.3															

14.1.5. P7402

Ref No.	P7402																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
REC	3.3	0	0	0	3.3	0	0	0	0	0	0	0	3.3	12.3	3.3	12.3	3.3	0	3.3	0
PLAY	3.3	0	0	0	3.3	0	0	0	0	0	0	0	3.3	12.3	3.3	12.3	3.3	0	3.3	0
STOP	3.3	0	0	0	3.3	0	0	0	0	0	0	0	3.3	12.3	3.3	12.3	3.3	0	3.3	0
Ref No.	P7402																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
REC	3.3	5.1	3.3	5.1	5	3.3	3.3	3.3	2.5	5	2.5	0	0	3.3	0	3.3	0	3.3	2.4	0
PLAY	3.3	5.1	3.3	5.1	5	3.3	3.3	3.3	2.5	5	2.5	0	0	3.3	0	3.3	0	3.3	2.4	0
STOP	3.3	5.1	3.3	5.1	5	3.3	3.3	3.3	2.5	5	2.5	0	0	3.3	0	3.3	0	3.3	2.4	0
Ref No.	P7402																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
REC	2.4	0	0	1.6	0	0	0	3.3	0	3.3	0.5	5.5	0	0	0.8	0	0	0	0.9	4.5
PLAY	2.4	0	0	1.6	0	0	0	3.3	0	3.3	0.5	5.5	0	0	0.8	0	0	0	0.9	4.5
STOP	2.4	0	0	1.6	0	0	0	3.3	0	3.3	0.5	5.5	0	0	0.8	0	0	0	0.9	4.5
Ref No.	P7402																			
MODE	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
REC	0	4.5	0.4	12.3	0	12.3	0	12.3	0	12.3	1	12.3	0	12.3	2.1	5	0	0	0	0
PLAY	0	4.5	0.4	12.3	0	12.3	0	12.3	0	12.3	1	12.3	0	12.3	2.1	5	0	0	0	0
STOP	0	4.5	0.4	12.3	0	12.3	0	12.3	0	12.3	1	12.3	0	12.3	2.1	5	0	0	0	0
Ref No.	P7402																			
MODE	81	82	83	84	85	86	87	88												
REC	0	0	0	0	0	0	0	0												
PLAY	0	0	0	0	0	0	0	0												
STOP	0	0	0	0	0	0	0	0												

14.1.6. Waveform Chart

 T1150-4 STOP 8.6Vp-p (50 μ sec.div)	 T1150-5,12 STOP 34Vp-p (50 μ sec.div)	 T1150-6 STOP 26Vp-p (5m sec.div)	 IC1150-1 STOP 8.0Vp-p (50 μ sec.div)
 IC1150-9 STOP 580Vp-p (50 μ sec.div)	 P7402-29,31 REC/PLAY 0.8Vp-p (1m sec.div)	 P7402-51 REC/PLAY 1.0Vp-p (20 μ sec.div)	 P7402-55 REC/PLAY 0.8Vp-p (20 μ sec.div)
 P7402-59 REC/PLAY 0.6Vp-p (20 μ sec.div)	 P7402-63 REC/PLAY 1.0Vp-p (20 μ sec.div)	 P7402-67 REC/PLAY 0.6Vp-p (20 μ sec.div)	 P7402-71 REC/PLAY 1.0Vp-p (20 μ sec.div)
 JK3903-2 REC/PLAY 1.0Vp-p (20 μ sec.div)	 JK3903-3,4 REC/PLAY 1.0Vp-p (20 μ sec.div)		

14.1.7. Abbreviations

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

INITIAL/LOGO	ABBREVIATIONS
E	EC ERROR TORQUE CONTROL ECR ERROR TORQUE CONTROL REFERENCE ENCSSEL ENCODER SELECT ETMCLK EXTERNAL M CLOCK (81MHz/40.5MHz) ETSCLK EXTERNAL S CLOCK (54MHz)
F	FBAL FOCUS BALANCE FCLK FRAME CLOCK FE FOCUS ERROR FFI FOCUS ERROR AMP INVERTED INPUT FEO FOCUS ERROR AMP OUTPUT FG FREQUENCY GENERATOR FSC FREQUENCY SUB CARRIER FSCK FS (384 OVER SAMPLING) CLOCK
G	GND COMMON GROUNDING (EARTH)
H	HA0~UP HOST ADDRESS HD0~UP HOST DATA HINT HOST INTERRUPT HRXW HOST READ/WRITE

INITIAL/LOGO	ABBREVIATIONS
I	IECOUT IEC958FORMATDATAOUTPUT IPFRAG INTERPOLATIONFLAG IREF I(CURRENT)REFERENCE ISEL INTERFACEMODESELECT
L	LDON LASERDIODECONTROL LPC LASERPOWERCONTROL LRCK LCH/RCHDISTINCTIONCLOCK
M	MA0~UP MEMORYADDRESS MCK MEMORYCLOCK MCKI MEMORYCLOCKINPUT MCLK MEMORYSERIALCOMMANDCLOCK MDATA MEMORYSERIALCOMMANDDATA MDQ0~UP MEMORYDATAINPUT/OUTPUT MDQM MEMORYDATA/OMASK MLD MEMORYSERIALCOMMANDLOAD MPEG MOVINGPICTUREEXPERTSGROUP
O	ODC OPTICALDISCCONTROLLER OFTR OFFTRACKING OSCI OSCILLATORINPUT OSCO OSCILLATOROUTPUT OSD ONSCREENDISPLAY
P	P1~UP PORT PCD CDTRACKINGPHASEDIFFERENCE PCK PLLCLOCK PDVD DVDTRACKINGPHASEDIFFERENCE PEAK CAP.FORPEAKHOLD PLLCLK CHANNELPLLLOCK PLLCK PLLLOCK PWMCTL PWMOUTPUTCONTROL PWMDA PULSEWAVEMOTORDRIVEA PWMOA,B PULSEWAVEMOTOROUTA,B

INITIAL/LOGO	ABBREVIATIONS
R	RE READENABLE RFENV RFENVELOPE RFO RFPHASEDIFFERENCEOUTPUT RS (CD-ROM)REGISTERSELECT RSEL RFPOLARITYSELECT RST RESET RSV RESERVE
S	SBI0,1 SERIALDATAINPUT SBO0 SERIALDATAOUTPUT SBT0,1 SERIALCLOCK SCK SERIALDATAACLOCK SCKR AUDIOSERIALCLOCKRECEIVER SCL SERIALCLOCK SCLK SERIALCLOCK SDA SERIALDATA SEG0~UP FLSEGMENTOUTPUT SELCLK SELECTCLOCK SEN SERIALPORTENABLE SIN1,2 SERIALDATAIN SOUT1,2 SERIALDATAOUT SPDI SERIALPORTDATAINPUT SPDO SERIALPORTDATAOUTPUT SPEN SERIALPORTR/WENABLE SPRCLK SERIALPORTREADCLOCK SPWCLK SERIALPORTWRITECLOCK SQCK SUBCODEQCLOCK SQCX SUBCODEQDATAREADCLOCK SRDATA SERIALDATA SRMADR SRAMADDRESSBUS SRMDT0~7 SRAMDATABUS0~7 SS START/STOP STAT STATUS STCLK STREAMDATAACLOCK STD0~UP STREAMDATA STENABLE STREAMDATAINPUTENABLE STSEL STREAMDATAPOLARITYSELECT STVALID STREAMDATAVALIDITY SUBC SUBCODESERIAL SBCK SUBCODECLOCK SUBQ SUBCODEQDATA SYSCLK SYSTEMCLOCK

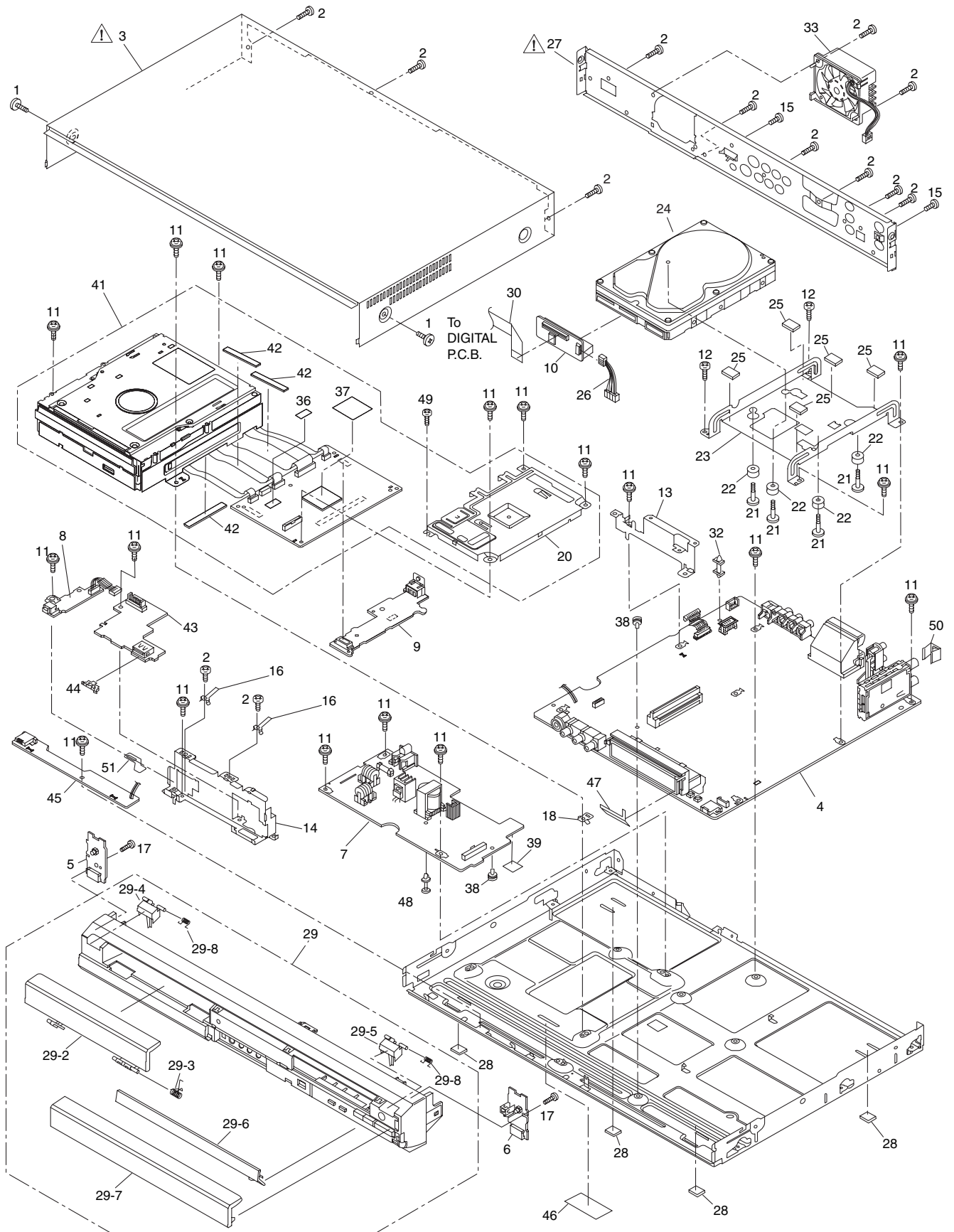
INITIAL/LOGO		ABBREVIATIONS
T	TE	TRACKING ERROR
	TIBAL	BALANCE CONTROL
	TID	BALANCE OUTPUT 1
	TIN	BALANCE INPUT
	TIP	BALANCE INPUT
	TIS	BALANCE OUTPUT 2
	TPSN	OP AMP INPUT
	TPSO	OP AMP OUTPUT
	TPSP	OP AMP INVERTED INPUT
	TRCRS	TRACK CROSS SIGNAL
	TRON	TRACKING ON
	TRSON	TRAVERSE SERVO ON

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

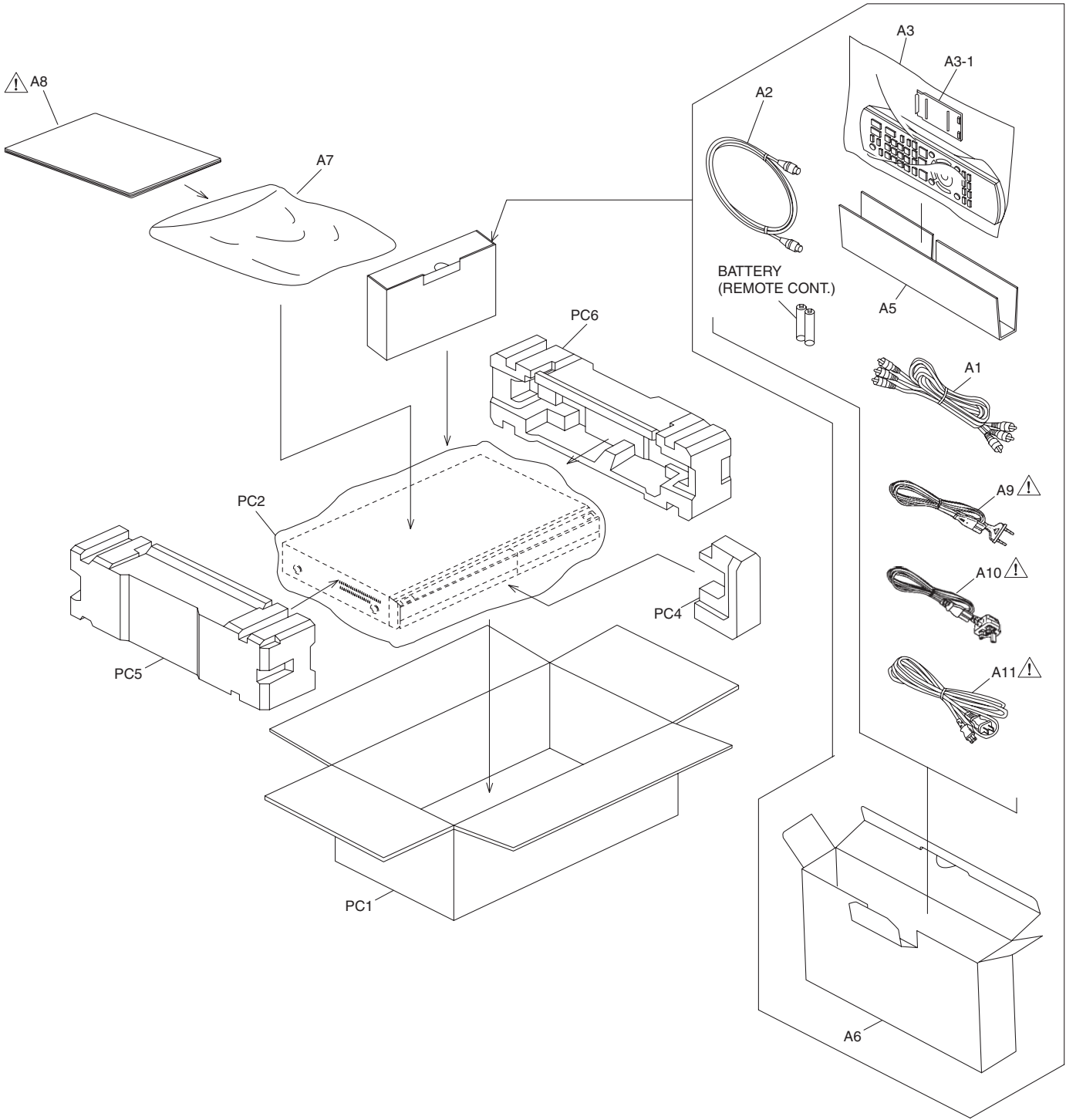
15 Exploded View and Replacement Parts List

15.1. Exploded Views

15.1.1. Casing Parts & Mechanism Section



15.1.2. Packing & Accessories Section



15.1.3. Mechanical Replacement Parts List

Notes:

*Important safety notice:

Components identified by  mark have special characteristics important for safety.

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

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

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

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

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

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

*"(IA)-(IC)" marks in Remarks indicate languages of instruction manuals. [(IA): Chinese (Traditional); (IB): Arabic; (IC): English]

*Parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVC-CSG.

*All parts except parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVCSG.

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
			CASING/ACCESSORY/ PACKING		
	1	RHD30113-1K	SCREW	2	
	2	RHD30119-L	SCREW	13	
	3	RKM0552A-K	TOP COVER	1	
	4	RFKB79183AA	MAIN P.C.B.	1	(RTL)
	5	VEP70222A	FRONT (L) P.C.B.	1	(RTL)
	6	VEP70223A	FRONT (R) P.C.B.	1	(RTL)
	7	VEP71138A	POWER P.C.B.	1	(RTL)
	8	VEP73162A	DV P.C.B.	1	(RTL)
	9	VEP73160A	HDMI P.C.B.	1	(RTL)
	10	VEP70306A	SATA P.C.B.	1	(RTL)
	11	RHD30111-31	SCREW	18	
	12	RHD30102-1	SCREW	2	
	13	RMA2051	REAR ANGLE B	1	
	14	RMA2093	FRONT ANGLE	1	
	15	XSN3+4FJ	SCREW	2	
	16	RMC0728	EARTH SPRING	2	
	17	RHD26045-J	SCREW	2	
	18	RMA2052	DRIVE SPACER	1	
	20	RSC0805	DIGITAL SHIELD	1	
	21	RHD34001	SCREW	4	
	22	RMG0739-K	FLOATING RUBBER	4	
	23	RMN0874A-2	HDD BRACKET	1	
	24	RFKV0183HDKT	HDD	1	
	25	RMG0740-K1	HDD SHEET	5	
	26	VEE1F84	WIRE WITH CONNECTOR	1	
	27	RGR0365K-Y1	REAR PANEL	1	(GA)
	27	RGR0365K-Z1	REAR PANEL	1	(GC)
	27	RGR0365K-X1	REAR PANEL	1	(GN)
	28	RKA0144-K	FOOT RUBBER	4	
	29	RYP1426J-K	FRONT PANEL ASS'Y	1	(GA) (GC)
	29	RYP1426H-K	FRONT PANEL ASS'Y	1	(GN)
	29-2	RKF0797-K	TRAY DOOR	1	
	29-3	RMB0877	TRAY DOOR SPRING	1	
	29-4	RGU2553A-K	POWER BUTTON	1	
	29-5	RGU2554-K	OPEN BUTTON	1	

	29-6	RKF0796V-K	DOOR	1	(GA) (GC)
	29-6	RKF0796T-K	DOOR	1	(GN)
	29-7	RYF0830E-Q	FL WINDOW ASS'Y	1	
	29-8	RMB0876	SPRING	2	
	30	VWJ2093	FFC	1	
	32	RMX0286	PCB SPACER	1	
	33	L6FAKDAH0002	FAN MOTOR	1	
	36	RMQ1612	HEAT TRANSFER SHEET	1	
	37	RMQ1614	HEAT TRANSFER SHEET	1	
	38	VMX1336	MINI CARD SPACER	2	
	39	RMX0361-J	PCB SPACER	1	
	41	RFKNEH59GA	RAM/DIGITAL P.C.B. MODULE	1	(GA)
	41	RFKNEH59GC	RAM/DIGITAL P.C.B. MODULE	1	(GC)
	41	RFKNEH59GN	RAM/DIGITAL P.C.B. MODULE	1	(GN)
	42	RMV0334	SEPARATE CUSHION	3	
	43	VEP73161A	SD USB P.C.B.	1	(RTL)
	44	RMC0742	USB EARTH PLATE	1	
	45	VEP70225A	SW P.C.B.	1	(RTL)
	46	RMV0335	CHASSIS SHEET	1	
	47	RMZ0957	FL SHEET	1	
	48	VKC0392	PCB SUPPORT	1	
	49	XTN3+6JFJ	SCREW	1	
	50	RMC0625	TUNER END	1	
	51	RMZ0995	DV SHEET	1	
	A1	K2KA6BA00004	AV CORD	1	
	A2	K1TYYYY00056	COAXIAL CABLE	1	
	A3	N2QAYB000342	REMOTE CONTROL ASS'Y	1	(GA) (GC)
	A3	N2QAYB000341	REMOTE CONTROL ASS'Y	1	(GN)
	A3-1	100300037800	BATTERY COVER	1	
	A5	RPHC0085	PAD (C)	1	
	A6	RPQF0254	ACCESSORY CASE	1	
	A7	RPFC0031-B	POLYETHYLENE BAG	1	
	A8	RQT9275-K	OPERATING INSTRUCTIONS	1	(GA) (IA)
	A8	RQT9276-A	OPERATING INSTRUCTIONS	1	(GC) (IB)
	A8	RQT9274-L	OPERATING INSTRUCTIONS	1	(GN) (IC)
	A9	K2CP2CA00001	AC CORD	1	(GA)
	A9	K2CR2DA00004	AC CORD	1	(GA) (GC)
	A10	K2CT3CA00004	AC CORD	1	(GC)
	A11	K2CJ2DA00008	AC CORD	1	(GN)
	PC1	RPG8753	PACKING CASE	1	(GA)
	PC1	RPG8754	PACKING CASE	1	(GC)
	PC1	RPG8752	PACKING CASE	1	(GN)
	PC2	RPF0460	POLYETHYLENE BAG	1	
	PC4	RPN1985	FRONT PAD	1	
	PC5	RPN2032A-J	CUSHION (A)	1	
	PC6	RPN2032B-J	CUSHION (B)	1	

15.2. Electrical Replacement Parts List

Notes:

*Important safety notice:

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

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

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

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

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

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

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

*Parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVC-CSG.

*All parts except parts indicated with (PAVC-CSG) in the Remarks column are supplied by PAVCSG.

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
		RFBK79183AA	MAIN P.C.B.		(RTL)
		C1501	ECJ2FB1A225K	10V 2.2U	1
		C1502	ECJ1VB1H103K	50V 0.01U	1
		C1503	F2A1A101A868	10V 100U	1
		C1504	F2A1C101B110	16V 100U	1
		C1505	ECJ1VC1H221J	50V 220P	1
		C1506	F1H1A105A028	10V 1U	1
		C1511	F1H1A105A028	10V 1U	1
		C1516	F2A1H1510006	50V 150U	1
		C1521	F2A1C121A453	16V 120U	1
		C1523	F2A1A470A388	10V 47U	1
		C1524	F2A1A101A389	10V 100U	1
		C1525	F1H1C104A090	16V 0.1U	1
		C1526	F1H1A105A028	10V 1U	1
		C1527	F1H1A105A028	10V 1U	1
		C1528	F1K1C105A026	16V 1U	1
		C1529	F2A1A470A388	10V 47U	1
		C1535	F1H1A105A028	10V 1U	1
		C1536	F1J0J106A014	6.3V 10U	1
		C1541	F2A1E1010067	25V 100U	1
		C1545	F2A1C470B110	16V 47U	1
		C1548	F2A1C121A453	16V 120U	1
		C1549	F2A1C121A453	16V 120U	1
		C1560	F2A0J101A825	6.3V 100U	1
		C3001	F1H1C104A090	16V 0.1U	1
		C3002	ECJ1VB1H103K	50V 0.01U	1
		C3003	F1H1C104A090	16V 0.1U	1
		C3004	F1H1C104A090	16V 0.1U	1
		C3005	F2A0J471A832	6.3V 470U	1
		C3006	F2A0J471A832	6.3V 470U	1
		C3007	F2A1A471A869	10V 470U	1
		C3008	F2A1A101A868	10V 100U	1
		C3009	F2A1A471A869	10V 470U	1
		C3010	F2A1A101A868	10V 100U	1
		C3011	F1H1C104A090	16V 0.1U	1
		C3012	F2A1A471A869	10V 470U	1
		C3013	F2A1A101A868	10V 100U	1
		C3014	F1H1C104A090	16V 0.1U	1
		C3015	F1H1C104A090	16V 0.1U	1
		C3016	F1H1C104A090	16V 0.1U	1
		C3017	F1H1C104A090	16V 0.1U	1

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
		C3018	F1H1C104A090	16V 0.1U	1
		C3019	F1H1C104A090	16V 0.1U	1
		C3020	F1H1C104A090	16V 0.1U	1
		C3021	F1H1C104A090	16V 0.1U	1
		C3022	F1H1C104A090	16V 0.1U	1
		C3023	ECJ1VC1H330J	50V 33P	1
		C3025	F1H1C104A090	16V 0.1U	1
		C3026	ECJ1VB0J105K	6.3V 1U	1
		C3027	F1H1C104A090	16V 0.1U	1
		C3028	ECJ1VB0J105K	6.3V 1U	1
		C3029	F1H1C104A090	16V 0.1U	1
		C3030	ECJ1VB0J105K	6.3V 1U	1
		C3031	ECJ1VB1H103K	50V 0.01U	1
		C3032	F2A0J101A167	6.3V 100U	1
		C3033	ECJ1VB1H103K	50V 0.01U	1
		C3034	ECJ1VB1H103K	50V 0.01U	1
		C3035	F2A0J101A167	6.3V 100U	1
		C3038	F1H1C104A090	16V 0.1U	1
		C3039	F1H1C104A090	16V 0.1U	1
		C3043	F1H1H472A798	50V 4700P	1
		C3057	ECJ1VC1H471J	50V 470P	1
		C3058	ECJ1VC1H471J	50V 470P	1
		C3059	ECJ1VC1H471J	50V 470P	1
		C3060	ECJ1VC1H471J	50V 470P	1
		C3064	F1H1C104A090	16V 0.1U	1
		C3065	ECJ1VB0J105K	6.3V 1U	1
		C3910	F2A1H100A236	50V 10U	1
		C3911	F2A1H100A236	50V 10U	1
		C3914	F2A1H100A236	50V 10U	1
		C3915	F2A1H100A236	50V 10U	1
		C3916	F2A1H1R0A236	50V 1U	1
		C3917	F2A1H1R0A236	50V 1U	1
		C3918	F2A1H100A236	50V 10U	1
		C3919	F2A1H100A236	50V 10U	1
		C3928	F2A1H1R0A638	50V 1U	1
		C3929	F2A1H1R0A638	50V 1U	1
		C3935	F2A1E2210050	25V 220U	1
		C3951	F1H1H470A799	50V 47P	1
		C3952	F1H1H470A799	50V 47P	1
		C3953	ECJ1VC1H471J	50V 470P	1
		C3954	ECJ1VC1H471J	50V 470P	1
		C3955	ECJ1VC1H101J	50V 100P	1
		C3956	ECJ1VC1H101J	50V 100P	1
		C3957	ECJ1VC1H471J	50V 470P	1
		C3958	ECJ1VC1H471J	50V 470P	1
		C3959	F1H1H470A799	50V 47P	1
		C3960	F1H1H470A799	50V 47P	1
		C3961	ECJ1VC1H101J	50V 100P	1
		C3962	ECJ1VC1H101J	50V 100P	1
		C4002	ECJ1VB1H102K	50V 1000P	1
		C4004	ECJ1VB1H102K	50V 1000P	1
		C4005	F2A1H100A236	50V 10U	1
		C4006	F2A1H100A236	50V 10U	1
		C4008	F2A1E1010067	25V 100U	1
		C4019	F2A1C101A637	16V 100U	1
		C4021	F2A1C101A637	16V 100U	1
		C4023	F2A1H1R0A236	50V 1U	1
		C4024	F2A1E1010067	25V 100U	1
		C4025	F2A1H1R0A236	50V 1U	1
		C4027	F2A1H100A236	50V 10U	1
		C4028	F2A1H100A236	50V 10U	1
		C4033	F2A1C220B173	16V 22U	1
		C4034	F2A1C220B173	16V 22U	1
		C4055	ECJ1VF1C104Z	16V 0.1U	1
		C4056	F2A1A471A550	10V 470U	1
		C4057	F1J1H330A688	50V 33U	1
		C4059	ECQV1H104JL3	50V 0.1U	1
		C4060	F1J1H330A688	50V 33U	1
		C4061	ECJ1VF1C104Z	16V 0.1U	1
		C4062	F2A1A471A550	10V 470U	1
		C4063	F2A1C220B173	16V 22U	1

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	C4064	F2A1C220B173	16V 22U	1	
	C4065	ECJ1VF1C104Z	16V 0.1U	1	
	C4067	F2A1E2210050	25V 220U	1	
	C4070	F2A1A471A550	10V 470U	1	
	C4072	F2A1C101A637	16V 100U	1	
	C4082	ECJ2VC1H102J	50V 1000P	1	
	C4083	ECJ2VC1H102J	50V 1000P	1	
	C4092	F2A1C221A637	16V 220U	1	
	C4902	ECJ1VF1C104Z	16V 0.1U	1	
	C4903	F2A0J470A599	6.3V 47U	1	
	C4904	F1H1C104A090	16V 0.1U	1	
	C7304	F1H1H472A798	50V 4700P	1	
	C7305	F1H1C104A090	16V 0.1U	1	
	C7306	F1H1C104A090	16V 0.1U	1	
	C7307	F1H1C104A090	16V 0.1U	1	
	C7308	F1H1C104A090	16V 0.1U	1	
	C7309	F1H1C104A090	16V 0.1U	1	
	C7310	F1H1C104A090	16V 0.1U	1	
	C7313	F2A0J470A824	6.3V 47U	1	
	C7314	F2A0J470A824	6.3V 47U	1	
	C7315	F2A0J470A824	6.3V 47U	1	
	C7316	F1H1H472A798	50V 4700P	1	
	C7317	F1H1C104A090	16V 0.1U	1	
	C7318	F1H1C104A090	16V 0.1U	1	
	C7319	F1H1C104A090	16V 0.1U	1	
	C7320	F1H1C104A090	16V 0.1U	1	
	C7321	F1H1C104A090	16V 0.1U	1	
	C7322	F1H1C104A090	16V 0.1U	1	
	C7323	F1H1C104A090	16V 0.1U	1	
	C7324	F1H1C104A090	16V 0.1U	1	
	C7325	ECJ1VC1H331J	50V 330P	1	
	C7326	F2A0J470A824	6.3V 47U	1	
	C7329	F1H1C104A090	16V 0.1U	1	
	C7330	F1H1C104A090	16V 0.1U	1	
	C7331	ECJ1VC1H270J	50V 27P	1	
	C7332	ECJ1VC1H270J	50V 27P	1	
	C7333	F1H1C104A090	16V 0.1U	1	
	C7336	ECJ1VB0J105K	6.3V 1U	1	
	C7337	F1J0J106A014	6.3V 10U	1	
	C7338	ECJ1VB0J105K	6.3V 1U	1	
	C7339	ECJ1VB0J105K	6.3V 1U	1	
	C7401	F2A1C471A628	16V 470U	1	
	C7402	F2A0J1010063	6.3V 100U	1	
	C7403	F1H1C104A090	16V 0.1U	1	
	C7404	F1H1A105A028	10V 1U	1	
	C7406	F1H1A105A028	10V 1U	1	
	C7407	ECJ1VC1H270J	50V 27P	1	
	C7408	ECJ1VB1H102K	50V 1000P	1	
	C7409	ECJ1VB1H102K	50V 1000P	1	
	C7410	ECJ1VB1H102K	50V 1000P	1	
	C7412	F1H1A105A028	10V 1U	1	
	C7413	F1H1A105A028	10V 1U	1	
	C7415	F1K1C105A026	16V 1U	1	
	C7417	F1H1C104A090	16V 0.1U	1	
	C7439	F1H1C104A090	16V 0.1U	1	
	C7449	ECJ1VB1H102K	50V 1000P	1	
	C7506	ECJ1VC1H221J	50V 220P	1	
	C7508	ECJ1VC1H221J	50V 220P	1	
	C7509	ECJ1VB1H104K	50V 0.1U	1	
	C7510	F1H1C104A090	16V 0.1U	1	
	C7511	F1H1C104A090	16V 0.1U	1	
	C7512	F1H1C104A090	16V 0.1U	1	
	C7514	ECJ1VB1H103K	50V 0.01U	1	
	C7515	ECJ1VC1H101J	50V 100P	1	
	C7516	ECJ1VC1H180J	50V 18P	1	
	C7517	ECJ1VC1H180J	50V 18P	1	
	C7518	F1H1H220A799	50V 22P	1	
	C7519	ECJ1VC1H180J	50V 18P	1	
	C7520	F1H1C104A090	16V 0.1U	1	
	C7521	F2A0J470A824	6.3V 47U	1	
	C7522	ERJ3GEY0R00V	1/10W 0	1	
	C7523	F1H1A105A028	10V 1U	1	
	C7524	F1H1C104A090	16V 0.1U	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	C7528	ECJ1VB0J105K	6.3V 1U	1	
	C7531	ECJ1VC1H100D	50V 10P	1	
	C7532	ECJ1VC1H100D	50V 10P	1	
	C7533	ECJ1VC1H100D	50V 10P	1	
	C7534	ECJ1VB1H103K	50V 0.01U	1	
	C7535	ECJ1VC1H100D	50V 10P	1	
	C7539	ECJ1VB1H103K	50V 0.01U	1	
	C7540	F1J1H392A687	50V 3900P	1	
	C7547	F1H1A105A028	10V 1U	1	
	C7554	ERJ3GEY0R00V	1/10W 0	1	
	C7556	ECJ1VB1H102K	50V 1000P	1	
	C7557	ECJ1VB1H102K	50V 1000P	1	
	C7558	ECJ1VB1H102K	50V 1000P	1	
	C7565	F2A1C2210095	16V 220U	1	
	C7570	F2A1V560A387	35V 56U	1	
	C7571	F2A1H100A454	50V 10U	1	
	C7572	F2A1C121A453	16V 120U	1	
	C7573	F2A1H100B034	50V 10U	1	
	C7578	F2A0J470A824	6.3V 47U	1	
	C7584	F4D55473A013	5.5V 0.047U	1	
	C7585	F2A1A101A864	10V 100U	1	
	C7587	ECJ1VB0J105K	6.3V 1U	1	
	C7801	F2A0J470A824	6.3V 47U	1	
	C7802	ECJ1VB1H103K	50V 0.01U	1	
	C7803	F2A1H1R0B032	50V 1U	1	
	C7804	ECJ1VB1H103K	50V 0.01U	1	
	C7807	ECJ1VC1H330J	50V 33P	1	
	C7808	ECJ1VC1H330J	50V 33P	1	
	C7809	F2A0J470A824	6.3V 47U	1	
	C7810	ECJ1VB1H103K	50V 0.01U	1	
	C7811	F2A0J470A824	6.3V 47U	1	
	C7812	ECJ1VB1H103K	50V 0.01U	1	
	C7813	F1H1H222A798	50V 2200P	1	
	C7821	ECJ1VC1H271J	50V 270P	1	
	C7823	F1H1H220A799	50V 22P	1	
	C7824	F1J1H220A688	50V 22U	1	
	C7826	F1H1H222A798	50V 2200P	1	
	D1502	MAZ40390HF	DIODE	1	
	D3901	MA2C165001VT	DIODE	1	
	D4005	MA3Z142D0LG	DIODE	1	
	D4006	MA3Z142D0LG	DIODE	1	
	D7501	B0BA03600021	DIODE	1	
	D7504	MAZ4220NLF	DIODE	1	
	D7505	B0AADM000003	DIODE	1	
	D7506	B0AADM000003	DIODE	1	
	D7507	B0JAMD000026	DIODE	1	
	D7508	MAZ4180NHF	DIODE	1	
	D7510	MA2C165001VT	DIODE	1	
	D7511	B0ACCK000005	DIODE	1	
	D7801	B0BA03000015	DIODE	1	
	DP7501	A2BB00000173	DISPLAY TUBE	1	
	FC7001	VWJ02H6080VV		1	
	IC1501	C0EBJ0000143	IC	1	
	IC1506	C0DAEYH00002	IC	1	
	IC1510	C0DBEHE00005	IC	1	
	IC3001	C1AB00002379	IC	1	
	IC4001	C0DBAHD00013	IC	1	
	IC4009	C0ABBB000216	IC	1	
	IC4012	C0ABBB000230	IC	1	
	IC4901	B3ZAZ0000017	IC	1	
	IC7301	C1AB00002844	IC	1	
	IC7302	C0EBE0000366	IC	1	
	IC7303	C0CBCBC00174	IC	1	
	IC7304	C0DBEHE00005	IC	1	
	IC7401	C0CBCY000004	IC	1	
	IC7402	C0CBCDC00052	IC	1	
	IC7403	C0CBCDC00052	IC	1	
	IC7404	RFKFM4016KT	IC	1	
	IC7501	C2CBYY000697	IC	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	IC7503	C5HBZHC00001	IC	1	
	IC7504	C0HBB0000057	IC	1	
△	IP1501	ERBSE3R00U	IC PROTECTOR	1	
△	IP7501	K5H751Z00003	IC PROTECTOR	1	
	JK3001	K2HE219B0004	JACK, OUT/IN1	1	
	JK3002	K2HA107B0001	JACK, IN2	1	
	JK3003	K2HZ106B0008	JACK	1	
	JK3901	K1FB242B0007	JACK	1	
	JK3903	K2HA304B0007	JACK, COMPONENT VIDEO OUT	1	
	K3001	ERJ3GEY0R00V	1/10W 0	1	
	K3002	ERJ3GEY0R00V	1/10W 0	1	
	K3003	ERJ3GEY0R00V	1/10W 0	1	
	K3007	ERJ3GEY0R00V	1/10W 0	1	
	K7302	ERJ3GEY0R00V	1/10W 0	1	
	K7305	ERJ6GEY0R00V	1/10W 0	1	
	K7506	ERJ3GEY0R00V	1/10W 0	1	
	K7509	ERJ3GEY0R00V	1/10W 0	1	
	K7512	ERJ3GEY0R00V	1/10W 0	1	
	K7513	ERJ3GEY0R00V	1/10W 0	1	
	K7522	ERJ3GEY0R00V	1/10W 0	1	
	K7801	ERJ3GEY0R00V	1/10W 0	1	
	K7803	ERJ3GEY0R00V	1/10W 0	1	
	K7804	ERJ3GEY0R00V	1/10W 0	1	
	L1504	G0A220GA0026	COIL 22UH	1	
	L1505	G0A100HA0023	COIL 10UH	1	
	L4901	G0C220JA0019	COIL 22UH	1	
	L7301	G0C2R2JA0019	COIL 2.2UH	1	
	L7401	G0A220GA0026	COIL 22UH	1	
	L7501	G0C390JA0055	COIL 39UH	1	
	L7502	G0C220JA0019	COIL 22UH	1	
	LB1502	J0JKB0000003	COIL	1	
	LB1503	J0JKB0000003	COIL	1	
	LB1504	J0JKB0000003	COIL	1	
	LB1507	J0JHC0000032	COIL	1	
	LB1510	J0JKB0000003	COIL	1	
	LB3001	J0JGC0000020	COIL	1	
	LB3002	J0JGC0000020	COIL	1	
	LB3003	J0JGC0000020	COIL	1	
	LB3005	J0JBC0000011	COIL	1	
	LB3006	J0JGC0000020	COIL	1	
	LB3007	J0JBC0000011	COIL	1	
	LB3008	J0JGC0000020	COIL	1	
	LB3009	ERJ3GEY0R00V	1/10W 0	1	
	LB3010	ERJ3GEY0R00V	1/10W 0	1	
	LB3011	ERJ3GEY0R00V	1/10W 0	1	
	LB3907	J0JCC0000103	COIL	1	
	LB3908	J0JCC0000103	COIL	1	
	LB3911	J0JGC0000020	COIL	1	
	LB3912	J0JCC0000103	COIL	1	
	LB3913	J0JCC0000103	COIL	1	
	LB4001	J0JCC0000103	COIL	1	
	LB4002	J0JCC0000103	COIL	1	
	LB7301	ERJ6GEY0R00V	1/10W 0	1	
	LB7302	J0JCC0000124	COIL	1	
	LB7303	J0JCC0000080	COIL	1	
	LB7304	J0JCC0000124	COIL	1	
	LB7305	J0JCC0000080	COIL	1	
	LB7306	J0JCC0000124	COIL	1	
	LB7402	J0JKB0000012	COIL	1	
	LB7403	J0JHC0000032	COIL	1	
	LB7404	J0JKB0000012	COIL	1	
	LB7405	J0JKB0000012	COIL	1	
	LB7406	J0JKB0000012	COIL	1	
	LB7411	J0JCC0000164	COIL	1	
	LB7412	J0JCC0000164	COIL	1	
	LB7413	J0JCC0000164	COIL	1	
	LB7414	J0JCC0000164	COIL	1	
	LB7415	J0JCC0000103	COIL	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	LB7416	J0JCC0000164	COIL	1	
	LB7417	J0JCC0000103	COIL	1	
	LB7418	J0JCC0000103	COIL	1	
	LB7419	J0JCC0000103	COIL	1	
	LB7420	J0JCC0000164	COIL	1	
	LB7421	J0JCC0000103	COIL	1	
	LB7422	J0JDC0000092	COIL	1	
	LB7509	J0JCC0000060	COIL	1	
	LB7801	J0JHC0000032	COIL	1	
	LB7802	J0JHC0000032	COIL	1	
	LB7803	J0JHC0000032	COIL	1	
	LB7804	J0JCC0000103	COIL	1	
	P1501	K1KY15AA0606	CONNECTOR	1	
	P1503	K1KA04AA0180	CONNECTOR (4P)	1	
	P7401	K1KB05A00047	CONNECTOR (5P)	1	
	P7402	K1KA88A00002	CONNECTOR (88P)	1	
	P7501	K1KA08A00427	CONNECTOR (8P)	1	
	P7502	K1KA03AA0180	CONNECTOR	1	
	P7503	K1KB06B00033	CONNECTOR (FEMALE) (6P)	1	
	Q1501	B1DHDC000027	TRANSISTOR	1	
	Q1502	2SD1819A0L	TRANSISTOR	1	
	Q1509	B1DHED000008	TRANSISTOR	1	
	Q4006	2SD132800L	TRANSISTOR	1	
	Q4007	2SD132800L	TRANSISTOR	1	
	Q4008	2SD132800L	TRANSISTOR	1	
	Q4009	2SD132800L	TRANSISTOR	1	
	Q4060	2SD1819A0L	TRANSISTOR	1	
	Q7403	2SD1819A0L	TRANSISTOR	1	
	Q7505	2SD1819A0L	TRANSISTOR	1	
	Q7506	2SD0601A0L	TRANSISTOR	1	
	Q7507	B1CFHC000003	TRANSISTOR	1	
	Q7508	B1CFHC000003	TRANSISTOR	1	
	Q7510	2SC43910R1VT	TRANSISTOR	1	
	Q7511	B1ADGG000004	TRANSISTOR	1	
	Q7512	2SD0601A0L	TRANSISTOR	1	
	Q7513	2SD0601A0L	TRANSISTOR	1	
	Q7514	2SD0601A0L	TRANSISTOR	1	
	Q7515	2SD1819A0L	TRANSISTOR	1	
	Q7516	2SD1819A0L	TRANSISTOR	1	
	Q7517	2SD1819A0L	TRANSISTOR	1	
	QR1501	UNR521300L	TRANSISTOR	1	
	QR1503	UNR521300L	TRANSISTOR	1	
	QR4002	UNR511100L	TRANSISTOR	1	
	QR7401	UNR521300L	TRANSISTOR	1	
	QR7402	UNR511200L	TRANSISTOR	1	
	QR7508	UNR521400L	TRANSISTOR	1	
	R1502	ERJ3GEYJ103V	1/10W 10K	1	
	R1503	ERJ3GEYJ331V	1/10W 330	1	
	R1505	ERJ3GEYJ823V	1/10W 82K	1	
	R1506	ERJ3GEYJ222V	1/10W 2.2K	1	
	R1507	ERJ3GEYJ822V	1/10W 8.2K	1	
	R1509	ERJ3RBD393V	1/16W 39K	1	
	R1510	ERJ3RBD113V	1/16W 11K	1	
	R1511	ERJ3RBD152V	1/16W 1.5K	1	
	R1518	ERJ3GEYJ223V	1/10W 22K	1	
	R1519	ERJ3GEYJ223V	1/10W 22K	1	
	R1535	ERJ3RBD103V	1/16W 10K	1	
	R1536	ERJ3RBD273V	1/16W 27K	1	
	R1537	ERJ3RBD392V	1/16W 3.9K	1	
	R3001	ERJ3GEYJ102V	1/10W 1K	1	
	R3002	ERJ3GEYJ750V	1/10W 75	1	
	R3003	ERJ3GEYJ750V	1/10W 75	1	
	R3004	ERJ3GEYJ750V	1/10W 75	1	
	R3005	ERJ3GEYJ102V	1/10W 1K	1	
	R3006	ERJ3GEYJ562V	1/10W 5.6K	1	
	R3007	ERJ3GEYJ330V	1/10W 33	1	
	R3008	ERJ3GEYJ102V	1/10W 1K	1	
	R3009	ERJ3GEYJ102V	1/10W 1K	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	R3037	ERJ3GEYJ104V	1/10W 100K	1	
	R3054	ERJ3GEYJ750V	1/10W 75	1	
	R3055	ERJ3GEYJ750V	1/10W 75	1	
	R3056	ERJ3GEYJ750V	1/10W 75	1	
	R3057	ERJ3GEYJ750V	1/10W 75	1	
	R3058	ERJ3GEYJ750V	1/10W 75	1	
	R3059	ERJ3GEYJ750V	1/10W 75	1	
	R3901	ERJ3GEYF750V	1/10W 75	1	
	R3902	ERJ3GEYF750V	1/10W 75	1	
	R3903	ERJ3GEYF750V	1/10W 75	1	
	R3905	ERJ3GEYJ153V	1/10W 15K	1	
	R3906	ERJ3GEYJ223V	1/10W 22K	1	
	R3912	ERJ3GEYJ103V	1/10W 10K	1	
	R3913	ERJ3GEYJ103V	1/10W 10K	1	
	R3914	ERJ3GEYJ471V	1/10W 470	1	
	R3918	ERJ3GEYJ471V	1/10W 470	1	
	R3919	ERJ3GEYF750V	1/10W 75	1	
	R3920	ERJ3GEYF750V	1/10W 75	1	
	R3921	ERJ3GEYF750V	1/10W 75	1	
	R3922	ERJ3GEYJ471V	1/10W 470	1	
	R3923	ERJ3GEYJ471V	1/10W 470	1	
	R3924	ERDS2TJ471T	1/4W 470	1	
	R3925	ERJ3GEYF750V	1/10W 75	1	
	R3926	ERJ3GEYF750V	1/10W 75	1	
	R3927	ERJ3GEYF750V	1/10W 75	1	
	R3928	ERJ3GEYJ750V	1/10W 75	1	
	R3929	ERJ3GEYJ750V	1/10W 75	1	
	R3930	ERJ3GEYJ750V	1/10W 75	1	
	R3932	ERJ3GEYJ750V	1/10W 75	1	
	R3934	ERJ3GEYJ750V	1/10W 75	1	
	R3935	ERJ3GEYJ750V	1/10W 75	1	
	R3975	ERJ3GEYJ101V	1/10W 100	1	
	R3976	ERJ3GEYJ101V	1/10W 100	1	
	R3983	ERJ3GEYJ103V	1/10W 10K	1	
	R3984	ERJ3GEYJ103V	1/10W 10K	1	
	R3987	ERJ3GEYJ473V	1/10W 47K	1	
	R3988	ERJ3GEYJ102V	1/10W 1K	1	
	R3989	ERJ3GEYJ102V	1/10W 1K	1	
	R3990	ERJ3GEYJ473V	1/10W 47K	1	
	R3991	ERJ3GEYJ473V	1/10W 47K	1	
	R3992	ERJ3GEYJ102V	1/10W 1K	1	
	R3993	ERJ3GEYJ102V	1/10W 1K	1	
	R3994	ERJ3GEYJ473V	1/10W 47K	1	
	R4003	ERJ3GEY0R00V	1/10W 0	1	
	R4005	ERJ3GEY0R00V	1/10W 0	1	
	R4006	ERJ3GEYJ823V	1/10W 82K	1	
	R4007	ERJ3GEYJ823V	1/10W 82K	1	
	R4008	ERJ3GEYJ823V	1/10W 82K	1	
	R4010	ERJ3GEYJ473V	1/10W 47K	1	
	R4011	ERJ3GEYJ473V	1/10W 47K	1	
	R4013	ERJ3GEYJ823V	1/10W 82K	1	
	R4046	D0HB912ZA002	1/10W 9.1K	1	
	R4047	D0HB912ZA002	1/10W 9.1K	1	
	R4055	D0HB153ZA002	1/10W 15K	1	
	R4057	D0HB153ZA002	1/10W 15K	1	
	R4066	D0HB103ZA002	1/10W 10K	1	
	R4067	D0HB103ZA002	1/10W 10K	1	
	R4071	ERJ3GEYJ473V	1/10W 47K	1	
	R4074	ERJ3GEYJ473V	1/10W 47K	1	
	R4076	ERJ3GEYJ821V	1/10W 820	1	
	R4077	ERJ3GEYJ101V	1/10W 100	1	
	R4078	ERJ3GEYJ272V	1/10W 2.7K	1	
	R4079	ERJ3GEYJ272V	1/10W 2.7K	1	
	R4080	ERJ3GEYJ101V	1/10W 100	1	
	R4081	ERJ3GEYJ821V	1/10W 820	1	
	R4088	ERJ3GEYJ272V	1/10W 2.7K	1	
	R4089	ERJ3GEYJ272V	1/10W 2.7K	1	
	R4090	ERJ3GEYJ121V	1/10W 120	1	
	R4093	ERJ3GEYJ121V	1/10W 120	1	
	R4094	ERJ3GEYJ223V	1/10W 22K	1	
	R4102	ERJ3GEYJ103V	1/10W 10K	1	
	R4104	ERJ3GEYJ223V	1/10W 22K	1	
	R4105	ERJ3GEYJ473V	1/10W 47K	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	R7302	ERJ3GEYJ102V	1/10W 1K	1	
	R7303	ERJ3GEYJ102V	1/10W 1K	1	
	R7304	ERJ3GEYJ103V	1/10W 10K	1	
	R7305	ERJ3GEYJ102V	1/10W 1K	1	
	R7306	ERJ3GEYJ103V	1/10W 10K	1	
	R7307	ERJ3GEYJ101V	1/10W 100	1	
	R7308	ERJ3GEYJ101V	1/10W 100	1	
	R7309	ERJ3GEYJ105V	1/10W 1M	1	
	R7310	ERJ3GEYJ222V	1/10W 2.2K	1	
	R7311	ERJ3GEYJ681V	1/10W 680	1	
	R7313	ERJ3RBD112V	1/16W 1.1K	1	
	R7314	ERJ3RBD102V	1/16W 1K	1	
	R7315	ERJ3RBD103V	1/16W 10K	1	
	R7401	ERJ3GEYJ104V	1/10W 100K	1	
	R7402	ERJ3GEYJ103V	1/10W 10K	1	
	R7403	ERJ3RBD272V	1/16W 2.7K	1	
	R7404	ERJ3RBD222V	1/16W 2.2K	1	
	R7405	ERJ3GEY0R00V	1/10W 0	1	
	R7408	ERJ3GEY0R00V	1/10W 0	1	
	R7410	ERJ3GEY0R00V	1/10W 0	1	
	R7411	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7412	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7414	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7444	ERJ3RED300V	1/16W 30	1	
	R7445	ERJ3RBD682V	1/16W 6.8K	1	
	R7446	ERJ3RBD202V	1/16W 2K	1	
	R7503	ERJ3GEY0R00V	1/10W 0	1	
	R7509	ERJ3GEYJ331V	1/10W 330	1	
	R7510	ERJ3GEYJ331V	1/10W 330	1	
	R7513	ERJ3GEYJ101V	1/10W 100	1	
	R7514	ERJ3GEYJ101V	1/10W 100	1	
	R7515	ERJ3GEYJ101V	1/10W 100	1	
	R7516	ERJ3GEYJ220V	1/10W 22	1	
	R7517	ERJ3GEYJ101V	1/10W 100	1	
	R7520	ERJ3GEYJ103V	1/10W 10K	1	
	R7525	ERJ3GEYJ474V	1/10W 470K	1	
	R7528	ERJ3GEYJ101V	1/10W 100	1	
	R7530	ERJ3RBD104V	1/16W 100K	1	
	R7531	ERJ3GEYJ104V	1/10W 100K	1	
	R7532	ERJ3GEYJ563V	1/10W 56K	1	
	R7533	ERJ3GEY0R00V	1/10W 0	1	
	R7534	ERJ3GEYJ103V	1/10W 10K	1	
	R7535	ERJ3GEYJ101V	1/10W 100	1	
	R7536	ERJ3GEYJ101V	1/10W 100	1	
	R7537	ERJ3GEYJ101V	1/10W 100	1	
	R7538	ERJ3GEYJ102V	1/10W 1K	1	
	R7539	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7540	ERJ6GEY0R00V	1/10W 0	1	
	R7542	ERJ3GEYJ101V	1/10W 100	1	
	R7543	ERJ3GEYJ103V	1/10W 10K	1	
	R7544	ERJ3GEYJ473V	1/10W 47K	1	
	R7545	ERJ3GEYJ223V	1/10W 22K	1	
	R7546	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7547	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7548	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7549	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7552	ERJ3GEYJ104V	1/10W 100K	1	
	R7557	ERJ3GEYJ101V	1/10W 100	1	
	R7560	ERJ3GEYJ101V	1/10W 100	1	
	R7561	ERJ3GEYJ473V	1/10W 47K	1	
	R7563	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7565	ERJ3GEYJ101V	1/10W 100	1	
	R7566	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7568	ERJ3GEYJ473V	1/10W 47K	1	
	R7571	ERJ3GEYJ153V	1/10W 15K	1	
	R7572	ERJ3GEYJ101V	1/10W 100	1	
	R7573	ERJ3GEYJ273V	1/10W 27K	1	
	R7574	ERJ3GEYJ223V	1/10W 22K	1	
	R7575	ERJ3GEYJ101V	1/10W 100	1	
	R7576	ERJ3GEYJ102V	1/10W 1K	1	
	R7577	ERJ3GEYJ103V	1/10W 10K	1	
	R7578	ERJ3GEYJ224V	1/10W 220K	1	
	R7579	ERJ3GEYJ223V	1/10W 22K	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	R7580	ERJ3GEYJ225V	1/10W 2.2M	1	
	R7582	ERJ3GEYJ104V	1/10W 100K	1	
	R7583	ERJ6GEY0R00V	1/10W 0	1	
	R7586	ERJ3GEYJ101V	1/10W 100	1	
	R7587	ERJ3GEYJ103V	1/10W 10K	1	
	R7588	ERJ3GEYJ104V	1/10W 100K	1	
	R7589	ERJ3GEYJ221V	1/10W 220	1	
	R7593	ERJ3GEYJ223V	1/10W 22K	1	
	R7597	ERJ3GEYJ822V	1/10W 8.2K	1	
	R7598	ERJ3GEYJ822V	1/10W 8.2K	1	
	R7599	ERJ3GEYJ822V	1/10W 8.2K	1	
	R7600	ERJ3GEYJ103V	1/10W 10K	1	
	R7601	ERJ3GEYJ102V	1/10W 1K	1	
	R7606	ERJ3GEYF393V	1/10W 39K	1	
	R7607	ERJ3GEYJ331V	1/10W 330	1	
	R7608	ERJ3GEYF433V	1/10W 43K	1	
	R7612	ERJ3GEYJ562V	1/10W 5.6K	1	
	R7614	ERJ3GEYJ470V	1/10W 47	1	
	R7615	ERJ3GEYJ473V	1/10W 47K	1	
	R7617	ERDS2TJ271T	1/4W 270	1	
	R7623	ERJ3GEYJ181V	1/10W 180	1	
	R7639	ERJ3GEYJ272V	1/10W 2.7K	1	
	R7640	ERJ3GEYJ272V	1/10W 2.7K	1	
	R7642	ERJ3GEYJ562V	1/10W 5.6K	1	
	R7644	ERJ3GEYJ562V	1/10W 5.6K	1	
	R7660	ERJ3GEYJ103V	1/10W 10K	1	
	R7668	ERJ3GEYJ101V	1/10W 100	1	
	R7669	ERJ3GEYJ472V	1/10W 4.7K	1	
	R7802	ERDS2TJ102T	1/4W 1K	1	
	R7803	ERJ3GEYJ221V	1/10W 220	1	
	R7804	ERJ3GEYJ471V	1/10W 470	1	
	R7805	ERJ3GEYJ471V	1/10W 470	1	
	R7811	ERJ3GEYJ472V	1/10W 4.7K	1	
	S7501	EVQ11A04M	SWITCH	1	
	S7503	EVQ11A04M	SWITCH	1	
	S7504	EVQ11A04M	SWITCH	1	
	S7506	EVQ11A04M	SWITCH	1	
	S7507	EVQ11A04M	SWITCH	1	
	T7501	G4D1A0000117	TRANSFORMER	1	
	TU7802	ENG7602GF	TUNER	1	
	W700	ERJ6GEY0R00V	1/10W 0	1	
	W701	ERJ6GEY0R00V	1/10W 0	1	
	W702	ERJ3GEY0R00V	1/10W 0	1	
	W703	ERJ6GEY0R00V	1/10W 0	1	
	W704	ERJ6GEY0R00V	1/10W 0	1	
	W705	ERJ6GEY0R00V	1/10W 0	1	
	W706	ERJ6GEY0R00V	1/10W 0	1	
	W708	ERJ6GEY0R00V	1/10W 0	1	
	W709	ERJ6GEY0R00V	1/10W 0	1	
	W711	ERJ3GEY0R00V	1/10W 0	1	
	W712	ERJ3GEY0R00V	1/10W 0	1	
	W713	ERJ3GEY0R00V	1/10W 0	1	
	W714	ERJ6GEY0R00V	1/10W 0	1	
	W715	ERJ6GEY0R00V	1/10W 0	1	
	W716	ERJ3GEY0R00V	1/10W 0	1	
	W717	ERJ6GEY0R00V	1/10W 0	1	
	W718	ERJ6GEY0R00V	1/10W 0	1	
	W720	ERJ6GEY0R00V	1/10W 0	1	
	W722	ERJ3GEY0R00V	1/10W 0	1	
	W723	ERJ3GEY0R00V	1/10W 0	1	
	W724	ERJ3GEY0R00V	1/10W 0	1	
	W725	ERJ3GEY0R00V	1/10W 0	1	
	W726	ERJ3GEY0R00V	1/10W 0	1	
	W727	ERJ3GEY0R00V	1/10W 0	1	
	W728	ERJ3GEY0R00V	1/10W 0	1	
	W729	ERJ3GEY0R00V	1/10W 0	1	
	W730	ERJ3GEY0R00V	1/10W 0	1	
	W731	ERJ3GEY0R00V	1/10W 0	1	
	W732	ERJ3GEY0R00V	1/10W 0	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	W733	ERJ3GEY0R00V	1/10W 0	1	
	W734	ERJ3GEY0R00V	1/10W 0	1	
	W735	ERJ3GEY0R00V	1/10W 0	1	
	W736	ERJ6GEY0R00V	1/10W 0	1	
	W737	ERJ6GEY0R00V	1/10W 0	1	
	W738	ERJ3GEY0R00V	1/10W 0	1	
	W739	ERJ3GEY0R00V	1/10W 0	1	
	W740	ERJ3GEY0R00V	1/10W 0	1	
	W741	ERJ3GEY0R00V	1/10W 0	1	
	W742	ERJ6GEY0R00V	1/10W 0	1	
	W743	ERJ3GEY0R00V	1/10W 0	1	
	W744	ERJ3GEY0R00V	1/10W 0	1	
	W745	ERJ3GEY0R00V	1/10W 0	1	
	W746	ERJ6GEY0R00V	1/10W 0	1	
	W747	ERJ6GEY0R00V	1/10W 0	1	
	W748	ERJ6GEY0R00V	1/10W 0	1	
	W749	ERJ6GEY0R00V	1/10W 0	1	
	W750	ERJ6GEY0R00V	1/10W 0	1	
	X7301	H0H184500008	CRYSTAL OSCILLATOR	1	
	X7501	H0D100500018	CRYSTAL OSCILLATOR	1	
	X7502	H0A327200170	OSCILLATOR	1	
	ZB7501	RMN0872A	FL HOLDER (A)	1	
	ZB7502	RMN0873A-1	FL HOLDER (B)	1	
	ZJ7401	K9ZZ00001279	EARTH PLATE	1	
	ZJ7402	K9ZZ00001279	EARTH PLATE	1	
	ZJ7403	K9ZZ00001279	EARTH PLATE	1	
	ZJ7404	K9ZZ00001279	EARTH PLATE	1	
	ZJ7405	K9ZZ00001279	EARTH PLATE	1	
	ZJ7406	K9ZZ00001279	EARTH PLATE	1	
	ZJ7423	K9ZZ00001279	EARTH PLATE	1	
	ZJ7501	K9ZZ00001279	EARTH PLATE	1	
	■	VEP70222A	FRONT (L) P.C.B.		(RTL)
	PP7701	K1KA06B00150	CONNECTOR	1	
	S7701	EVQ11G07K	SWITCH	1	
	■	VEP70223A	FRONT (R) P.C.B.		(RTL)
	C7701	ECJ1VF1A105Z	10V 1U	1	
	IC7701	PNA4618M13VT	IC	1	
	PP7201	K1KA06B00150	CONNECTOR	1	
	R7702	ERDS2TJ470T	1/4W 47	1	
	S7201	EVQ11G07K	SWITCH	1	
	■	VEP70306A	SATA P.C.B.		(RTL)
	C51001	F1G1C1030008	16V 0.01U	1	
	C51002	F1J0J106A014	6.3V 10U	1	
	C51003	F1H1A105A028	10V 1U	1	
	C51004	F1G1A104A012	10V 0.1U	1	
	C51005	F1G1A104A012	10V 0.1U	1	
	C51006	F1G1A104A012	10V 0.1U	1	
	C51007	F1G1A104A012	10V 0.1U	1	
	C51008	F1G1A104A012	10V 0.1U	1	
	C51011	F1G1A104A014	10V 0.1U	1	
	C51012	F1G1A104A012	10V 0.1U	1	
	C51013	F1J0J106A014	6.3V 10U	1	
	C51014	F1G1A104A012	10V 0.1U	1	
	C51015	F1G1C1030008	16V 0.01U	1	
	C51016	F1G1A104A012	10V 0.1U	1	
	C51017	F1H1A105A028	10V 1U	1	
	C51018	ECJ0EC1H150J	50V 15P	1	
	C51019	ECJ0EC1H150J	50V 15P	1	
	C51020	F1G1C1030008	16V 0.01U	1	
	C51021	F1G1C1030008	16V 0.01U	1	
	C51022	F1G1C1030008	16V 0.01U	1	
	C51023	F1G1C1030008	16V 0.01U	1	
	C51024	F1J0J106A014	6.3V 10U	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	ET51001	K4CZ01000046	EARTH TERMINAL	1	
	IC51001	C1CB00003102	IC	1	
	IC51002	C0CBCBC00174	IC	1	
	IC51003	C0CBCAD00082	IC	1	
	LB51001	J0JHC0000032	COIL	1	
	LB51002	J0JHC0000032	COIL	1	
	LB51003	J0JHC0000032	COIL	1	
	P51001	K1KA04BA0050	CONNECTOR (4P)	1	
	P51002	K1KY22A00009	CONNECTOR	1	
	P51003	K1MN40AA0082	CONNECTOR	1	
	R51001	ERJ2GEJ220X	1/16W 22	1	
	R51002	ERJ2GEJ220X	1/16W 22	1	
	R51003	ERJ2GEJ220X	1/16W 22	1	
	R51004	ERJ2GEJ220X	1/16W 22	1	
	R51005	ERJ2GEJ220X	1/16W 22	1	
	R51006	ERJ2GEJ220X	1/16W 22	1	
	R51007	ERJ2GEJ220X	1/16W 22	1	
	R51008	ERJ2GEJ220X	1/16W 22	1	
	R51009	ERJ2GEJ220X	1/16W 22	1	
	R51010	ERJ2GEJ220X	1/16W 22	1	
	R51017	ERJ2GEOR00X	1/16W 0	1	
	R51018	ERJ2GEOR00X	1/16W 0	1	
	R51019	ERJ2GEOR00X	1/16W 0	1	
	R51020	ERJ2GEOR00X	1/16W 0	1	
	R51021	ERJ2GEOR00X	1/16W 0	1	
	R51022	ERJ2GEJ472X	1/16W 4.7K	1	
	R51023	ERJ2GEOR00X	1/16W 0	1	
	R51024	ERJ2GEOR00X	1/16W 0	1	
	R51025	ERJ2GEOR00X	1/16W 0	1	
	R51026	ERJ2GEOR00X	1/16W 0	1	
	R51027	ERJ2GEOR00X	1/16W 0	1	
	R51028	ERJ2GEJ103X	1/16W 10K	1	
	R51029	D1BA1132A005	1/32W 11.3K	1	
	R51030	ERJ2GEJ332X	1/16W 3.3K	1	
	R51031	ERJ2GEJ105X	1/16W 1M	1	
	R51032	ERJ2GEJ562X	1/16W 5.6K	1	
	R51036	ERJ2GEOR00X	1/16W 0	1	
	R51040	ERJ3GEY0R00V	1/10W 0	1	
	R51042	ERJ3GEY0R00V	1/10W 0	1	
	R51044	ERJ2GEOR00X	1/16W 0	1	
	R51045	ERJ2GEOR00X	1/16W 0	1	
	RX51001	D1H82204A024	RESISTOR-RESISTOR	1	
	RX51002	D1H88204A024	RESISTOR-RESISTOR	1	
	RX51003	D1H88204A024	RESISTOR-RESISTOR	1	
	RX51004	D1H88204A024	RESISTOR-RESISTOR	1	
	RX51005	D1H88204A024	RESISTOR-RESISTOR	1	
	X51001	H0J250500089	OSCILLATOR	1	
	■	VEP71138A	POWER P.C.B.		(RTL)
⚠	C1120	ECQU2A683MLC	100V 0.068U	1	
⚠	C1121	ECQU2A223MLC	0.022U	1	
⚠	C1122	ECKWNA471MBV	250V 470P	1	
⚠	C1123	ECKWNA471MBV	250V 470P	1	
⚠	C1125	ECKWNA102MEV	250V 1000P	1	
	C1129	F1B3A2220009	1000V 2200U	1	
	C1143	F2B2W4700003	450V 47U	1	
	C1150	F2A1V6800002	35V 68U	1	
	C1151	F1B3D101A011	100U	1	
	C1152	F1J1H101A688	50V 100P	1	
	C1153	ECJGVB1H222K	50V 2200P	1	
	C1154	ECJGVB1H102K	50V 1000P	1	
	C1200	F1H1C104A090	16V 0.1U	1	
	C1201	ECJ2VB1E473K	25V 0.047U	1	
	C1270	F2A1C1820005	16V 1800U	1	
	C1271	F2A1C1820005	16V 1800U	1	
	C1272	F2A1C5610006	16V 560U	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	C1601	F2A1E2210067	25V 220	1	
	C1602	F1H1C104A090	16V 0.1U	1	
	C1603	F1H1C104A090	16V 0.1U	1	
	C1604	F1H1C104A090	16V 0.1U	1	
	C1605	ECJ1VC1H181J	50V 180P	1	
	C1606	ECJGVB1H103K	50V 0.01U	1	
	C1607	F2A1A6810022	10V 680U	1	
	C1608	F1H1C104A090	16V 0.1U	1	
	D1140	B0EDKT000009	DIODE	1	
	D1141	B0HADV000001	DIODE	1	
	D1142	B0HADV000001	DIODE	1	
	D1151	B0HAGM000006	DIODE	1	
	D1152	MAZ4100NLF	DIODE	1	
	D1155	MAZ73000BC	DIODE	1	
	D1156	MA2C165001VT	DIODE	1	
	D1157	B0HADV000001	DIODE	1	
	D1158	MAZ4160NMF	DIODE	1	
	D1270	B0JBSG000048	DIODE	1	
	D1601	B0JCPD000021	DIODE	1	
	D1602	B0JCPD000021	DIODE	1	
	D1701	MA22D3900L	DIODE	1	
	D1702	MA22D3900L	DIODE	1	
	D1703	MA22D3900L	DIODE	1	
⚠	F1101	K5D202BK0005	FUSE	1	
	IC1150	C0DACZH00017	IC	1	
	IC1200	C0DAEMZ00001	IC	1	
	IC1601	C0DBAZZ00132	IC	1	
⚠	L1120	G0B233D00001	COIL	1	
⚠	L1121	G0B233D00001	COIL	1	
	L1270	G0A100K00003	COIL	1	
	L1600	G0A100HA0023	COIL	1	
	L1601	G0A100K00003	COIL	1	
	LB1125	J0JHC0000048	FILTER	1	
	LB1126	ERJ6GEY0R00V	1/10W 0	1	
	LB1600	J0JHC0000048	FILTER	1	
⚠	P1101	K2AA2H000007	AC INLET	1	
	P1102	K1KB15AA0032	CONNECTOR (15P)	1	
⚠	Q1200	B3PBA0000454	TRANSISTOR	1	
	Q1600	B1DHED000008	TRANSISTOR	1	
	R1122	ERG1SJ222E	1W 2.2K	1	
	R1124	ERG1SJ473E	1W 47K	1	
	R1125	ERG1SJ473E	1W 47K	1	
	R1150	ERJ6GEYJ680V	1/10W 68	1	
	R1151	ERJ6GEYJ222V	1/10W 2.2K	1	
	R1152	ERJ6GEYJ103V	1/10W 10K	1	
	R1153	ERJ6GEYJ680V	1/10W 68	1	
	R1154	ERJ6GEYJ103V	1/10W 10K	1	
	R1155	ERJ6GEYJ471V	1/8W 470	1	
	R1156	ERJ6GEYJ223V	1/10W 22K	1	
	R1157	ERJ6GEYJ821V	1/8W 820	1	
	R1158	ERX2SJR27E	2W 27	1	
	R1159	ERDS2TJ471T	1/4W 470	1	
	R1200	ERJ3GEYF122V	1/10W 1.2K	1	
	R1201	ERJ3GEYF822V	1/10W 8.2K	1	
	R1205	ERJ3GEYJ224V	1/10W 220K	1	
	R1206	ERJ3GEYF242V	1/10W 2.4K	1	
	R1207	ERJ3GEYJ103V	1/10W 10K	1	
	R1208	ERJ3GEYJ222V	1/10W 2.2K	1	
	R1209	ERJ3GEYJ102V	1/10W 1K	1	
	R1210	ERJ3GEYJ102V	1/10W 1K	1	
	R1601	D1BFR0240001	1/2W 0.024U	1	
	R1602	ERJ3GEYJ513V	1/10W 51K	1	
	R1603	ERJ6RBD561V	1/10W 560	1	
	R1604	ERJ6RBD912V	1/10W 9.1K	1	
	R1605	ERJ6RBD272V	1/10W 2.7K	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
⚠	T1150	G4D2A0000296	TRANSFORMER	1	
⚠	VA1110	ERZV10D471C2	VARISTOR	1	
	ZA1103	EYF52BCY	FUSE HOLDER	1	
	ZA1104	EYF52BCY	FUSE HOLDER	1	
	ZA1105	K9ZZ00001279	EARTH PLATE	1	
	ZA1106	K9ZZ00001279	EARTH PLATE	1	
	ZA1107	K9ZZ00001279	EARTH PLATE	1	
	ZA1152	VSC5603-A	HEAT SINK	1	
	ZA1153	XYN3+J8FJ	SCREW	1	
	ZA1270	VSC5606-A	HEAT SINK	1	
	ZA1271	XYN3+J8FJ	SCREW	1	
	■	VEP73160A	HDMI P.C.B.		(RTL)
	C56001	ECJ0EC1H221J	50V 220P	1	
	C56103	F1G1A104A014	10V 0.1U	1	
	C56104	F1G1A104A014	10V 0.1U	1	
	C56105	F1G1A104A014	10V 0.1U	1	
	C56106	F1G1A104A014	10V 0.1U	1	
	C56107	F1G1A104A014	10V 0.1U	1	
	C56108	F1G1A104A014	10V 0.1U	1	
	C56109	F1G1A104A014	10V 0.1U	1	
	C56110	F1G1A104A014	10V 0.1U	1	
	C56111	F1G1A104A014	10V 0.1U	1	
	C56112	F1G1A104A014	10V 0.1U	1	
	C56113	F1G1A104A014	10V 0.1U	1	
	C56114	F1G1A104A014	10V 0.1U	1	
	C56115	F1G1A104A014	10V 0.1U	1	
	C56116	F1G1A104A014	10V 0.1U	1	
	C56117	F1G1A104A014	10V 0.1U	1	
	C56118	F1G1A104A014	10V 0.1U	1	
	C56119	F1G1A104A014	10V 0.1U	1	
	C56120	F1G1A104A014	10V 0.1U	1	
	C56121	F1G1A104A014	10V 0.1U	1	
	C56122	F1G1A104A014	10V 0.1U	1	
	C56123	F1G1A104A014	10V 0.1U	1	
	C56124	F1G1A104A014	10V 0.1U	1	
	C56125	F1G1A104A014	10V 0.1U	1	
	C56126	F1G1A104A014	10V 0.1U	1	
	C56127	F1H1A105A028	10V 1U	1	
	C56128	F1J1A2250011	10V 2.2U	1	
	C56129	ECJ0EC1H221J	50V 220P	1	
	C56130	F1H1A105A028	10V 1U	1	
	C56131	F1H1A105A028	10V 1U	1	
	C56133	F1H1A105A028	10V 1U	1	
	C56134	F1H1A105A028	10V 1U	1	
	C56135	F1G1A104A014	10V 0.1U	1	
	C56140	F1G1A104A014	10V 0.1U	1	
	D56101	MA2J7280GL	DIODE	1	
	FL56104	F1H0J1050025	FILTER	1	
	FL56105	F1H0J1050025	FILTER	1	
	FL56106	F1H0J1050025	FILTER	1	
	FL56107	F1H0J1050025	FILTER	1	
	FL56110	F1H0J1050025	FILTER	1	
	IC56103	MN864702A	IC	1	
	IC56104	C0CBCBC00174	IC	1	
	IC56105	C0CBCDC00052	IC	1	
	IC56106	C0DBGFD00024	IC	1	
	IC56107	C0JBAB000604	IC	1	
	JK56101	K1FA119E0004	JACK, HDMI	1	
	L56101	J0MAB0000225	COIL	1	
	L56102	J0MAB0000225	COIL	1	
	L56103	J0MAB0000225	COIL	1	
	L56104	J0MAB0000225	COIL	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	LB56104	J0JCC0000119	COIL	1	
	LB56105	J0JCC0000119	COIL	1	
	LB56106	J0JCC0000119	COIL	1	
	LB56107	J0JCC0000119	COIL	1	
	LB56108	J0JHC0000032	COIL	1	
	LB56109	J0JHC0000032	COIL	1	
	LB56110	J0JHC0000032	COIL	1	
	LB56111	J0JHC0000032	COIL	1	
	LB56112	J0JHC0000032	COIL	1	
	LB56113	J0JHC0000032	COIL	1	
	LB56115	J0JHC0000032	COIL	1	
	LB56116	J0JHC0000032	COIL	1	
	P56101	K1KB08A00084	CONNECTOR	1	
	P56103	K1KC30A00003	CONNECTOR	1	
	Q56001	2SD1819A0L	TRANSISTOR	1	
	Q56002	2SD1819A0L	TRANSISTOR	1	
	Q56101	2SD1819A0L	TRANSISTOR	1	
	Q56102	B1CFHA000002	TRANSISTOR	1	
	Q56103	B1CFHA000002	TRANSISTOR	1	
	Q56104	2SD1819A0L	TRANSISTOR	1	
	Q56105	2SD1819A0L	TRANSISTOR	1	
	R56001	ERJ2GEJ472X	1/16W 4.7K	1	
	R56002	ERJ2GEJ473X	1/16W 47K	1	
	R56003	ERJ2GEJ225X	1/16W 2.2M	1	
	R56004	ERJ2GEJ104X	1/16W 100K	1	
	R56101	ERJ2GE0R00X	1/16W 0	1	
	R56102	ERJ2GE0R00X	1/16W 0	1	
	R56103	ERJ2GE0R00X	1/16W 0	1	
	R56104	ERJ2GE0R00X	1/16W 0	1	
	R56105	ERJ2GE0R00X	1/16W 0	1	
	R56106	ERJ2GE0R00X	1/16W 0	1	
	R56107	ERJ2GE0R00X	1/16W 0	1	
	R56108	ERJ2GE0R00X	1/16W 0	1	
	R56110	ERJ2GE0R00X	1/16W 0	1	
	R56111	ERJ2GE0R00X	1/16W 0	1	
	R56112	ERJ2GE0R00X	1/16W 0	1	
	R56114	ERJ2GE0R00X	1/16W 0	1	
	R56119	ERJ2GE0R00X	1/16W 0	1	
	R56123	ERJ2GEJ511X	1/16W 510	1	
	R56124	ERJ2GEJ103X	1/16W 10K	1	
	R56125	ERJ2GEJ202X	1/16W 2K	1	
	R56126	ERJ2GEJ202X	1/16W 2K	1	
	R56127	ERJ2GEJ103X	1/16W 10K	1	
	R56128	ERJ2GEJ202X	1/16W 2K	1	
	R56129	ERJ2GEJ202X	1/16W 2K	1	
	R56130	ERJ2GEJ273X	1/16W 27K	1	
	R56131	ERJ2GEJ221X	1/16W 220	1	
	R56132	ERJ2GEJ224X	1/16W 220K	1	
	R56133	ERJ2GEJ104X	1/16W 100K	1	
	R56135	ERJ2GEJ470X	1/16W 47	1	
	R56142	ERJ2GEJ330X	1/16W 33	1	
	R56143	ERJ2GEJ330X	1/16W 33	1	
	R56158	ERJ2GEJ152X	1/16W 1.5K	1	
	R56159	ERJ2GEJ332X	1/16W 3.3K	1	
	R56160	ERJ2GEJ223X	1/16W 22K	1	
	R56161	ERJ2GEJ470X	1/16W 47	1	
	R56162	ERJ2GEJ103X	1/16W 10K	1	
	R56163	ERJ2GEJ103X	1/16W 10K	1	
	RX56101	D1H8R0040009	RESISTOR-RESISTOR	1	
	RX56102	D1H8R0040009	RESISTOR-RESISTOR	1	
	■	VEP73161A	SD USB P.C.B.		(RTL)
	C38001	F1H1C104A090	16V 0.1U	1	
	C38002	F1J0J106A014	6.3V 10U	1	
	C38003	F1H1C104A090	16V 0.1U	1	
	C38004	F1H1C104A090	16V 0.1U	1	
	C38008	F1H1C104A090	16V 0.1U	1	
	C38009	ECJ1VB1H102K	50V 1000P	1	

Safety	Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
	IC38001	C0DBEYG00002	IC (POWER)	1	
	IC38002	C0DBZHE00025	IC (POWER)	1	
	LB38001	J0JGC0000020	COIL	1	
	LB38002	J0JGC0000020	COIL	1	
	LB38003	ERJ3GEY0R00V	1/10W 0	1	
	LB38005	J0JDC0000092	COIL	1	
	P38001	K1KA18AA0699	CONNECTOR (18P)	1	
	P38003	K1FY104B0011	USB CONNECTOR	1	
	R38001	ERJ3RBD273V	1/16W 27K	1	
	R38002	ERJ3RBD822V	1/16W 8.2K	1	
	R38003	ERJ3RBD103V	1/16W 10K	1	
	■	VEP73162A	DV P.C.B.		(RTL)
	P37001	K1KA05A00479	CONNECTOR (5P)	1	
	P37002	K1FY104B0006	CONNECTOR (4P)	1	
	ZJ37001	K9ZZ00001279	EARTH PLATE	1	
	■	VEP70225A	SW P.C.B.		(RTL)
	P7001	K1KB06B00033	CONNECTOR (6P)	1	

16 Schematic Diagram for printing with A4 size

11 Block Diagram

11.1. Power Supply Block Diagram

