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Service Manual

DV-696AV-S

ORDER NO.
RRV3451

DVD PLAYER

DV-696AV-S

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	Remarks
DV-696AV-S	DXZTRA	AC110 to 127 V / 220 to 240 V	1	
DV-696AV-S	RLFXZT	AC110 to 127 V / 220 to 240 V	3	
DV-696AV-S	RPWXZT	AC110 to 127 V / 220 to 240 V	4	
DV-696AV-S	RTXZT	AC110 to 127 V / 220 to 240 V	3	

For details, refer to "Important Check Points for Good Servicing" .

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SAFETY INFORMATION

This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trainedto properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING !

THE AEL (ACCESSIBLE EMISSION LEVEL) OF THE LASER POWER OUTPUT IS LESS THAN CLASS 1 BUT THE LASER COMPONENT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1.
A SPECIALLY INSTRUCTED PERSON SHOULD DO SERVICING OPERATION OF THE APPARATUS.

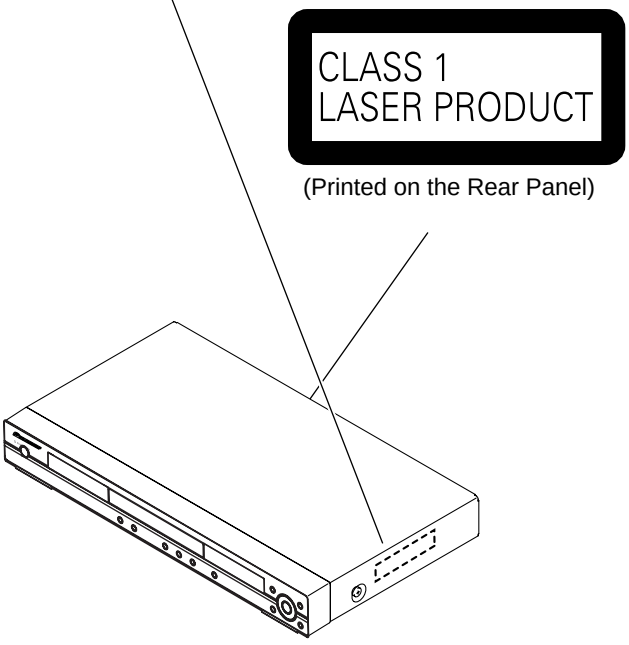
LASER DIODE CHARACTERISTICS

FOR DVD :	MAXIMUM OUTPUT POWER	: 5 mW
	WAVELENGTH	: 650 nm
FOR CD :	MAXIMUM OUTPUT POWER	: 5 mW
	WAVELENGTH	: 780 nm

LABEL CHECK

Location: inside of the unit

726000A140



(Printed on the Rear Panel)

Additional Laser Caution

1.
- Laser diode is driving with Q2303,Q2305(650 nm LD) and Q2302, Q2304(780 nm LD)on the DVD MT PCB Assy.
Therefore, when short-circuit between the emitter and collector of these transistors or the base voltage is supplied for transistors turn on, the laser oscillates. (failure mode)
- In the test mode ∗ , there is the mode that the laser oscillates except for the disc judgment and playback. LD ON mode in the test mode oscillates with the laser forcibly.

2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to the laser beam.

∗ : See page 55.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

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1. SPECIFCATIONS

Specifications

General

System . . . . . DVD player
Power requirements
. . AC 110 V to 127 V / 220 V to 240 V, 50 Hz / 60 Hz
Power consumption . . . . . 8 W
Power consumption (standby) . . . . . 0.8 W
Weight . . . . . 1.7 kg
Dimensions
. . . . .420 (W) mm x 49.5 (H) mm x 215.5 (D) mm
Operating temperature . . . . . +5 °C to +35 °C
Operating humidity . . . . . 5 % to 85 %
(no condensation)

Component video output

Y (luminance) - Output level . . . . . 1 Vp-p (75 Ω)
P_B (color) - Output level . . . . . 0.7 Vp-p (75 Ω)
P_R (color) - Output level . . . . . 0.7 Vp-p (75 Ω)
Jack. . . . . RCA

S-video output

Y (luminance) - Output level . . . . . 1 Vp-p (75 Ω)
C (color) - Output level . . . . . 286 mVp-p (75 Ω)
Jack. . . . . S-video

Video output

Output level . . . . . 1 Vp-p (75 Ω)
Jack. . . . . RCA

Audio output (1 stereo pair)

Output level . . . . . During audio output
200 mVrms (1 kHz, –20 dB)
Number of channels 2
Jacks . . . . . RCA

HDMI output

HDMI output . . . . . 19 pin

Audio output (multi-channel / L, R, C, SW, SL, SR)

Output level. . . . . During audio output
200 mVrms (1 kHz, –20 dB)
Number of channels 6
Jacks . . . . . RCA jack

Digital audio characteristics

Frequency response . . . . . 4 Hz to 44 kHz
(DVD fs: 96 kHz)
4 Hz to 48 kHz (DVD-Audio fs: 192 kHz)
S/N ratio . . . . . 115 dB
Dynamic range . . . . . 100 dB
Total harmonic distortion. . . . . 0.0025 %
Wow and flutter . . . . . .Limit of measurement
(±0.001 % W. PEAK) or lower

Digital output

Coaxial digital output . . . . . RCA jack
Optical digital output . . . . . Optical digital jack

Accessories

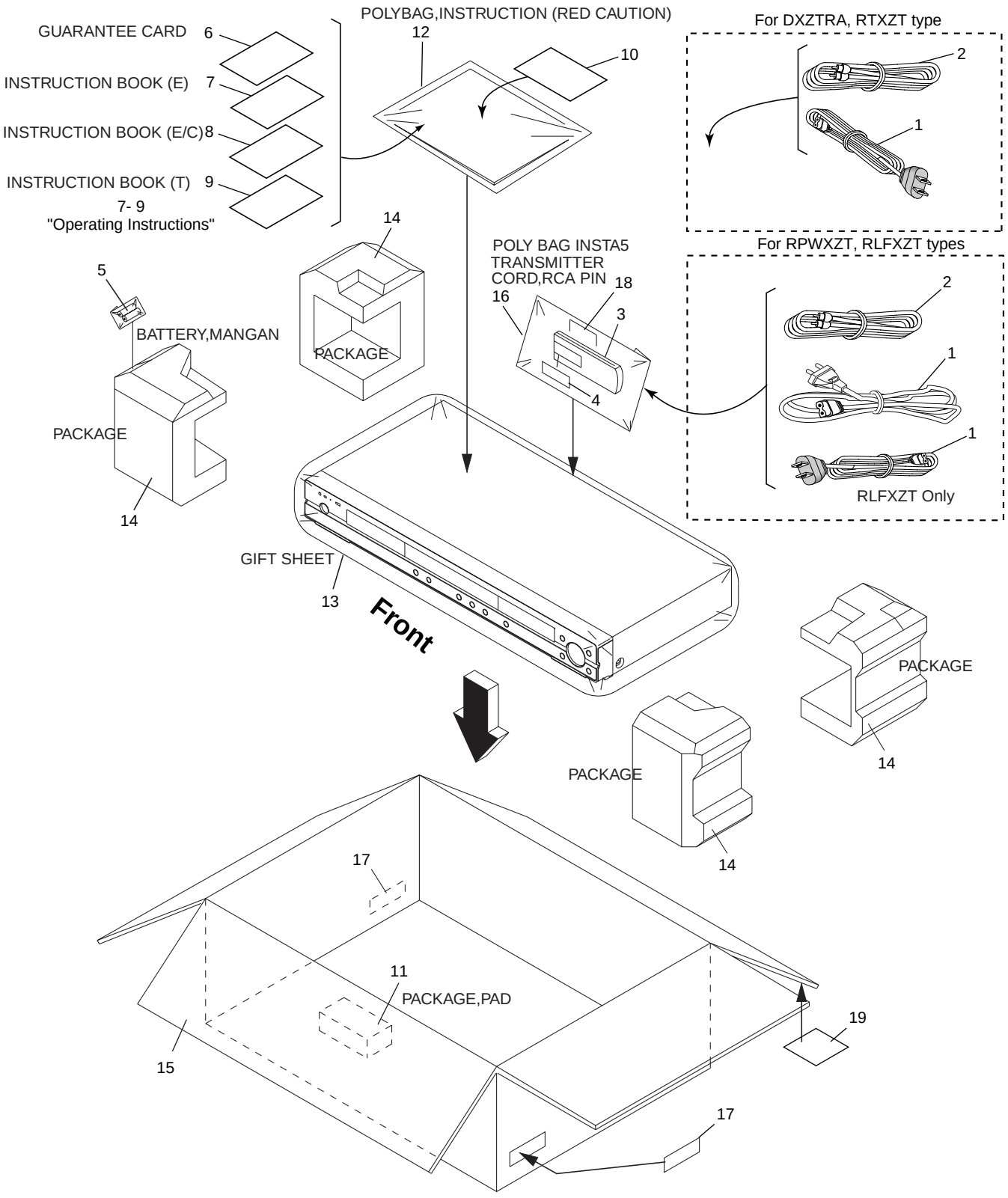
Audio/video cable 1
Power cable
Singapore and Taiwan model 2
Others 1
Remote control 1
AA/R6P dry cell batteries 2
Front panel button names sticker
(Singapore/Taiwan models only) 1
Remote control overlay
(Singapore/Taiwan models only) 1
Operating Instructions

The specifications and design of this product are subject to change without notice, due to improvement.

2. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING SECTION



PACKING SECTION parts List

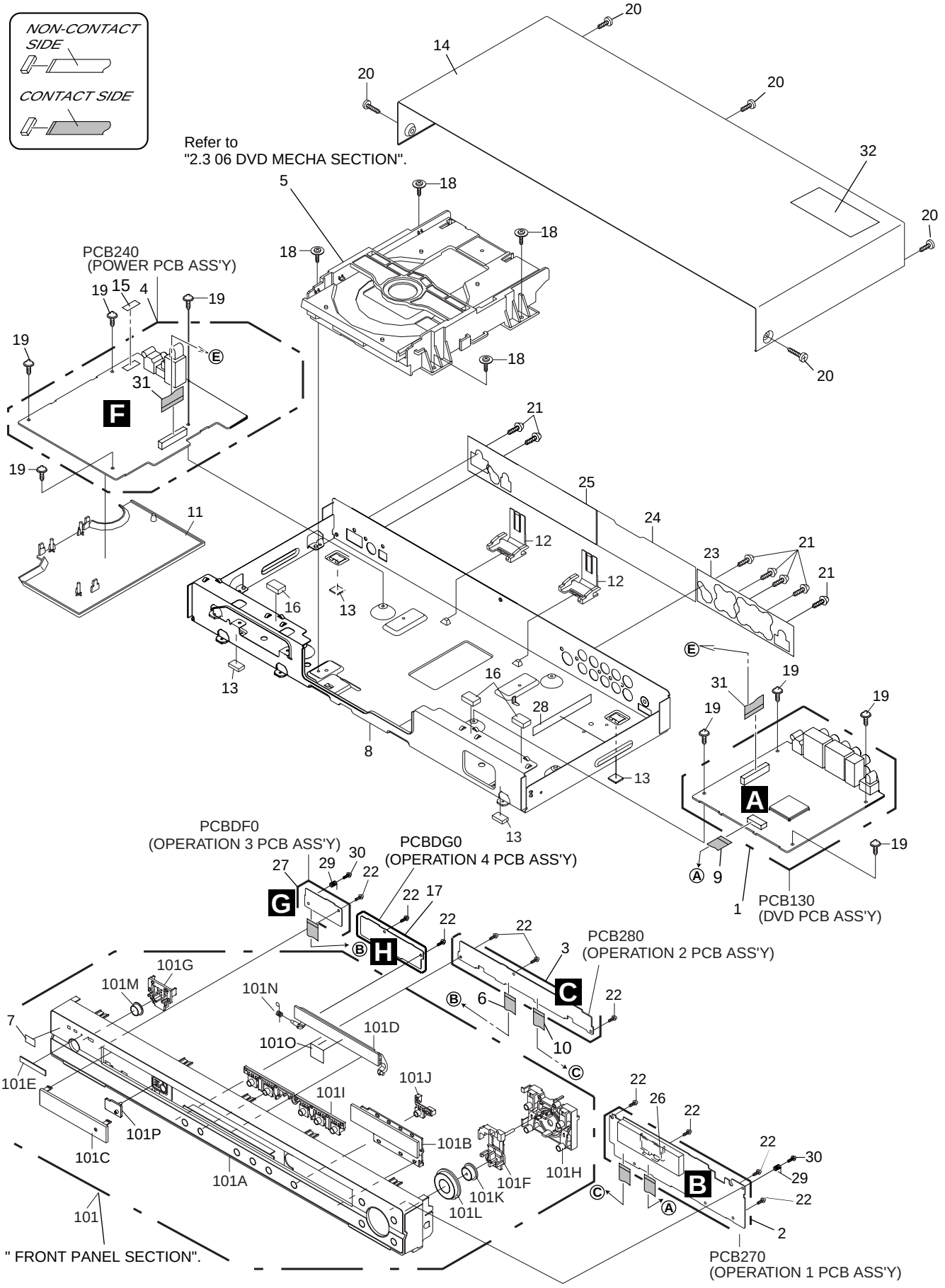
Mark	No.	Description	Part No.
⚠	1	Cord Set AC	See Contrast table (2)
	2	Cord, RCA Pin	06CPBA2006
	3	Remote Control	07650KY010
	4	Battery Cover	VNK4998
NSP	5	Battery,Mangan (AR, R6P)	• • • •
NSP	6	Guarantee Card	See Contrast table (2)
	7	Instruction Book	See Contrast table (2)
	8	Instruction Book	See Contrast table (2)
	9	Instruction Book	See Contrast table (2)
	10	Sheet FP Name	See Contrast table (2)
	11	Package, Pad	792WHA0604
	12	Polyethylene Bag,Instruction	See Contrast table (2)
	13	Gift Sheet	791WHA0100
	14	Package	See Contrast table (2)
	15	Gift Box	See Contrast table (2)
	16	Poly, Bag	791WHAA040
	17	Carton Label	See Contrast table (2)
	18	Remote Sheet	See Contrast table (2)
NSP	19	Label Safefy	See Contrast table (2)

(2) CONTRAST TABLE

DV-696AV-S/RLFXZT, /RPWXZT, DV-696AV-S/RTXZT and DV-696AV-S/DXZTRA are constructed the same except for the following :

Mark	No.	Symbol and Description	DV-696AV-S/ DXZTRA	DV-696AV-S/ RLFXZT	DV-696AV-S/ RPWXZT	DV-696AV-S/ RTXZT
⚠	1	Cord Set AC	1209198901	120S198902	120G168801	1206158802
⚠	1	Cord Set AC	Not used	1206158802	Not used	Not used
NSP	6	Guarantee Card	J2I83002A	Not used	Not used	J2I81292A
	7	Instruction Book (English)	J2J00901A	Not used	J2J00901A	Not used
	8	Instruction Book (English, Chinese)	Not used	J2J00910B	Not used	Not used
	9	Instruction Book (Thai)	Not used	Not used	Not used	J2J01001A
	10	Sheet FP Name	Not used	723000D345	Not used	Not used
	12	Polyethylene Bag,Instruction	JB5UD200	JB5UD200	JB5UD100	JB5UD100
	14	Package	792WHAA190	792WHAA190	792WHAA191	792WHAA190
	15	Gift Box	793WCDD221	793WCDD221	793WCDD246	793WCDD221
	17	Carton Label	723000D381	Not used	Not used	723000D377
	18	Remote Sheet	Not used	7230007993	Not used	Not used
NSP	19	Label Safety	Not used	Not used	Not used	723000D372

2.2 EXTERIOR SECTION



EXTERIOR SECTION parts List

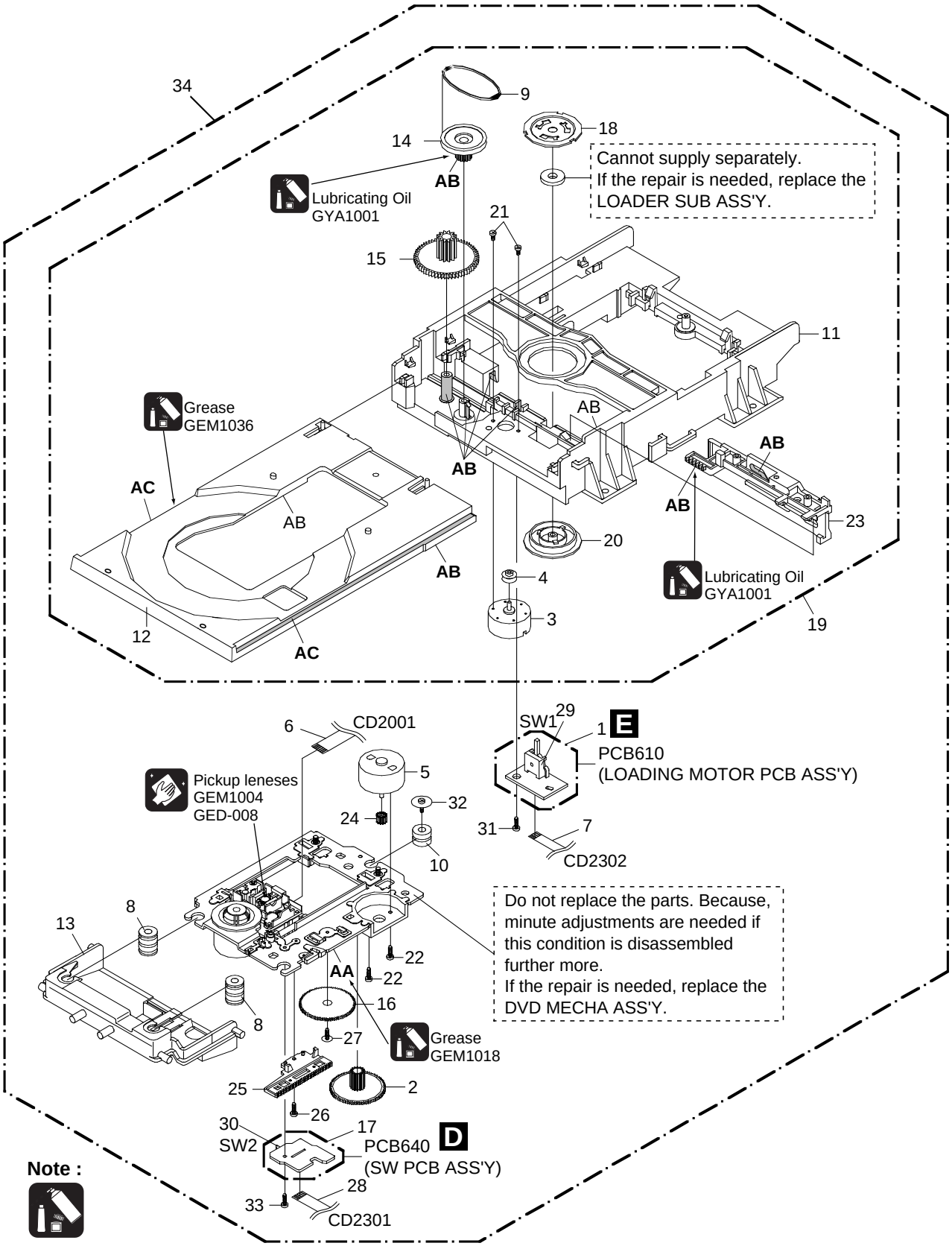
Mark	No.	Description	Part No.
	1	DVD MT PCB Assy	See Contrast table (2)
	2	OPERATION PCB Assy	See Contrast table (2)
	3	OPERATION 2 PCB Assy	A2I802A280
⚠	4	POWER PCB Assy	A2J012A240
	5	DVD MECHA ASSY	A2I802A650
	6	Cord Jumper(CD604)	122H051706
NSP	7	Energy Star Label	See Contrast table (2)
NSP	8	Plate,Bottom	702WSA0291
	9	Cord Jumper(CD601)	122H0B1003
	10	Cord Jumper(CD602)	122H091303
	11	Plate,Cover power	755WPAA031
	12	Holder,FFC	761WPA0396
	13	Cushion,Leg	VEB1349
	14	Cabinet,Top	702WSB0114
NSP	15	Sheet, Fuse	7240001122
	16	Cushion (15x20x16)	8965TS101B
	17	OPERATION 4 PCB Assy	A2I903ADG0
	18	Screw,Tap Tite(S)-Bind Wash.	816423063U
	19	Screw,Tap Tite(S) (3x5.5)	8107D3055U
	20	Screw,Tap Tite(B) (3x6.0)	8109K3060U
	21	Screw,Tap Tite(B)Pan (3x6)	810913060U
	22	Screw,Tap Tite(P) (2.6x8)	811022680U
NSP	23	Sheet,Jack 1	722631A155
NSP	24	Sheet,Jack 2	See Contrast table (2)
NSP	25	Sheet,Jack 3	See Contrast table (2)
NSP	26	Double,Face-Tape	7290000156
	27	OPERATION 3 PCB Assy	A2I903ADF0
NSP	28	Sheet Caution	See Contrast table (2)
	29	Spring Earth	743WKAA015
	30	Screw PAN	810213060U
	31	Cord Connector (CD502)	06CU2E3301
NSP	32	Sheet Caution	See Contrast table (2)
	101	Front Cabi Assy	7A701A754A
NSP	101A	Cabinet, Front	701WPQA005
NSP	101B	Plate, Display	711WPA0253
NSP	101C	Plate, Cover	711WPD0697
	101D	Flap, DVD	712WPA0249
NSP	101E	Badge,Brand	7236310014
NSP	101F	Button,Frame 1	735WPA0874
NSP	101G	Button,Frame 4	735WPA0879
NSP	101H	Button,Frame 2	735WPB0328
NSP	101I	Button,Frame 5	735WPB0329
NSP	101J	Button,Frame 3	735WPB0330
NSP	101K	Button, Cap	735WPE0043
NSP	101L	Button, Cap 2	735WPE0044
NSP	101M	Button, Cap 1	735WPN0001
	101N	Spring,Flap-DVD	743WKA0052
	101O	SHEET DVD	7236740001
NSP	101P	Glass LED	713WPA0385

(2) CONTRAST TABLE

DV-696AV-S/RLFXZT, /RPWXZT, DV-696AV-S/RTXZT and DV-696AV-S/DXZTRA are constructed the same except for the following :

Mark	No.	Symbol and Description	DV-696AV-S/ DXZTRA	DV-696AV-S/ RLFXZT	DV-696AV-S/ RPWXZT	DV-696AV-S/ RTXZT
	1	DVD MT PCB Assy	A2J009A130	A2J009A130	A2J012A130	A2J012A130
NSP	2	OPERATION PCB Assy	A2I813A270	A2I813A270	A2I813A270	A2I812A270
	7	Energy Star Label	Not used	Not used	7230007965	Not used
NSP	24	Sheet, Jack 2	722631A146	722631A143	722631A146	722631A121
NSP	25	Sheet, Jack 3	722631A158	722631A144	722631A147	722631A122
NSP	28	Sheet, Caution	726000A140	726000A142	726000A140	726000A140
NSP	32	Sheet, Caution	725000A089	Not used	725000A089	Not used

2.3 06 DVD MECHA SECTION



Note :

CLASS	PART NO.	PART NAME	MARK
GREASE	GEM1018	G-555G	**AA**
	GYA1001	G-313Y	**AB**
	GEM1036	FL-78A	**AC**

NOTE: Applying positions AA, AB and AC for the grease are displayed for this section. Check if the correct grease is applied for each position.

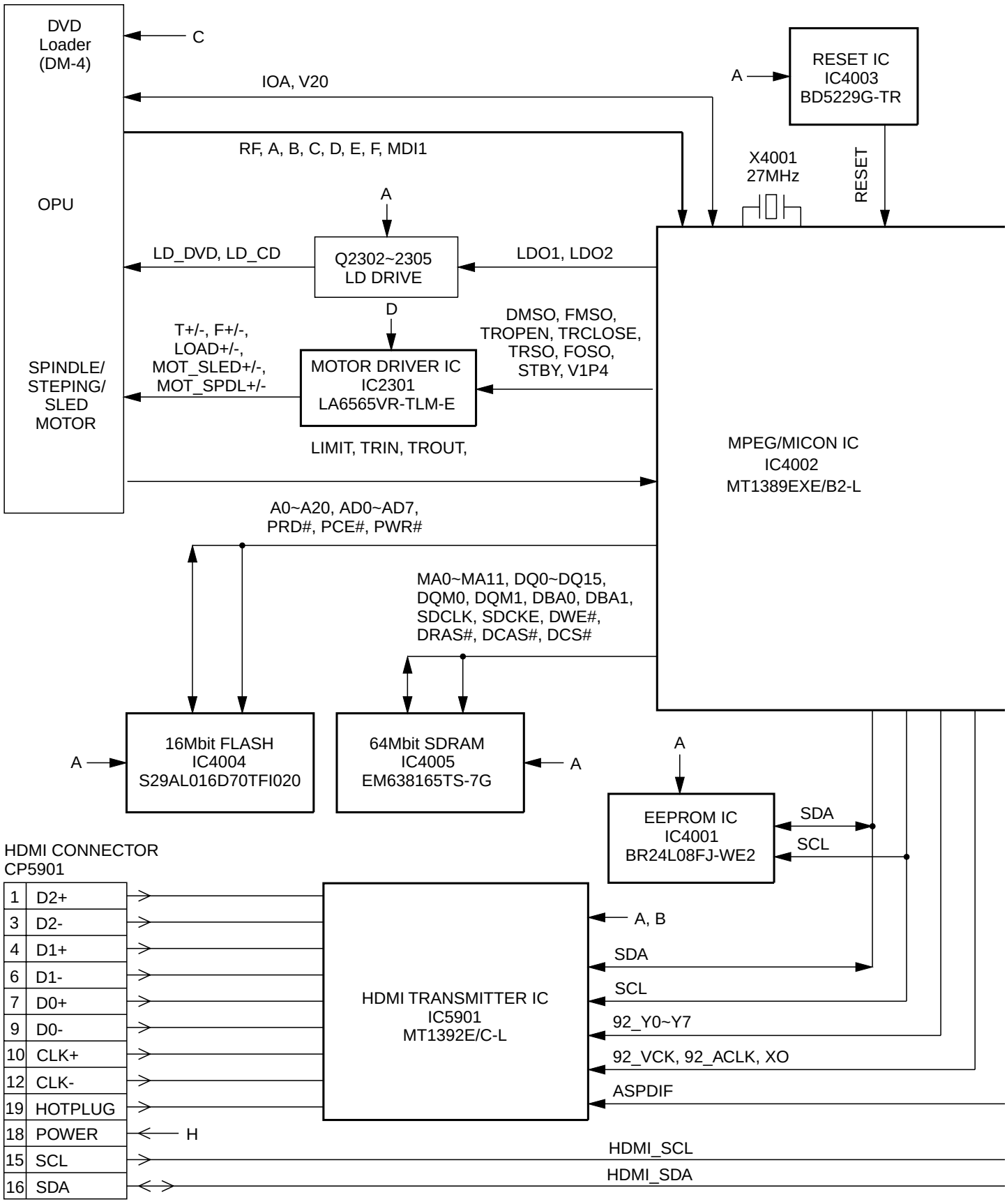
06 DVD MECHA SECTION parts List

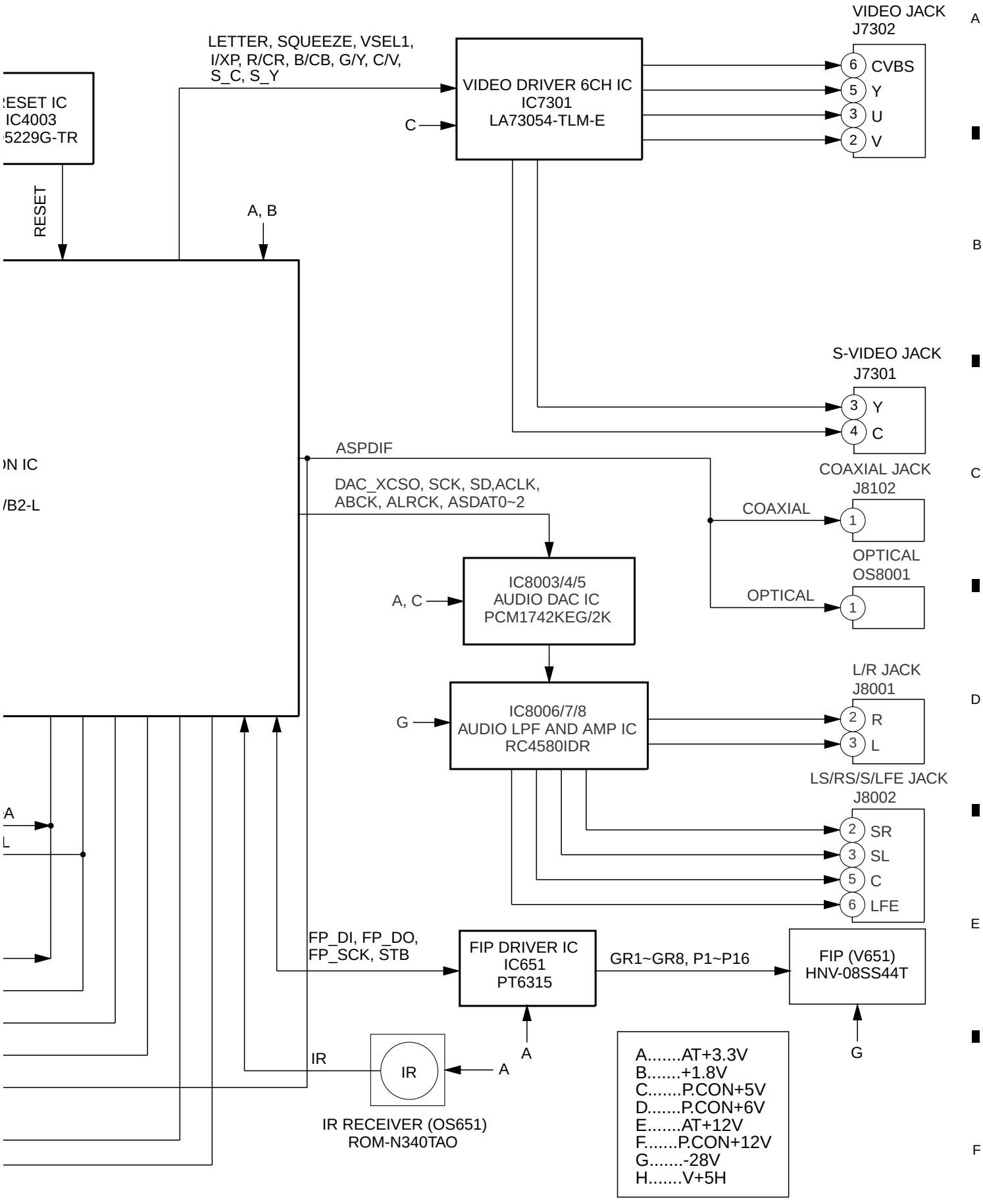
Mark	No.	Description	Part No.
NSP	1	Loading Motor PCB Assy	A2F101A610
	2	Gear,Middle	92P100117A
	3	Loading Motor	1515S98004
	4	Pulley,Motor	92P100097A
	5	FEED Motor	1515S98004
	6	Cord Jumper (24P)(CD2001)	122J402202
	7	Cord Jumper (CD2302)	122H051602
	8	Insulator (F)	92P200013A
	9	Belt,Loading	92P200015A
	10	Insulator (R)	92P200016A
	11	Frame,main	92P100119A
	12	Tray (B)	92P100127B
	13	Holder ,Traverse	92P100125A
	14	Gear,Pulley	92P100123A
	15	Gear,Main	92P100124A
	16	Gear,Feed	92P100116A
NSP	17	SW PCB Assy (PCB640)	A2F101A640
	18	Plate, Clamper	92P000023A
	19	LOADER SUB ASSY (B)	92AAA0019B
	20	Clamper	92P100122A
	21	Screw,Pan (M1.7x3 P3)	814011730U
	22	Screw,Pan (M1.7x2.3 P3)	814011723U
	23	Rack,Loading	92P100121A
	24	Gear,Motor	92P100088A
	25	Feed Rack Assy	92AAA0017A
	26	Screw,T-Tite(B) (M1.7x5.0 P3)	813381750U
	27	Screw,Gear Feed	92P700007A
	28	Cord Jumper (CD2301)	122H061605
	29	Switch (SW1)	0515S32003
	30	Push Switch (SW2)	0500101036
	31	Screw,Tap Tite(P) (2.6x8)	811022680U
	32	Sems.Tap Tite(P) (2x8)	816112080U
	33	Screw,Tap Tite(P) BI	811022080U
	34	DVD MECHA ASSY	A2I802A650

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

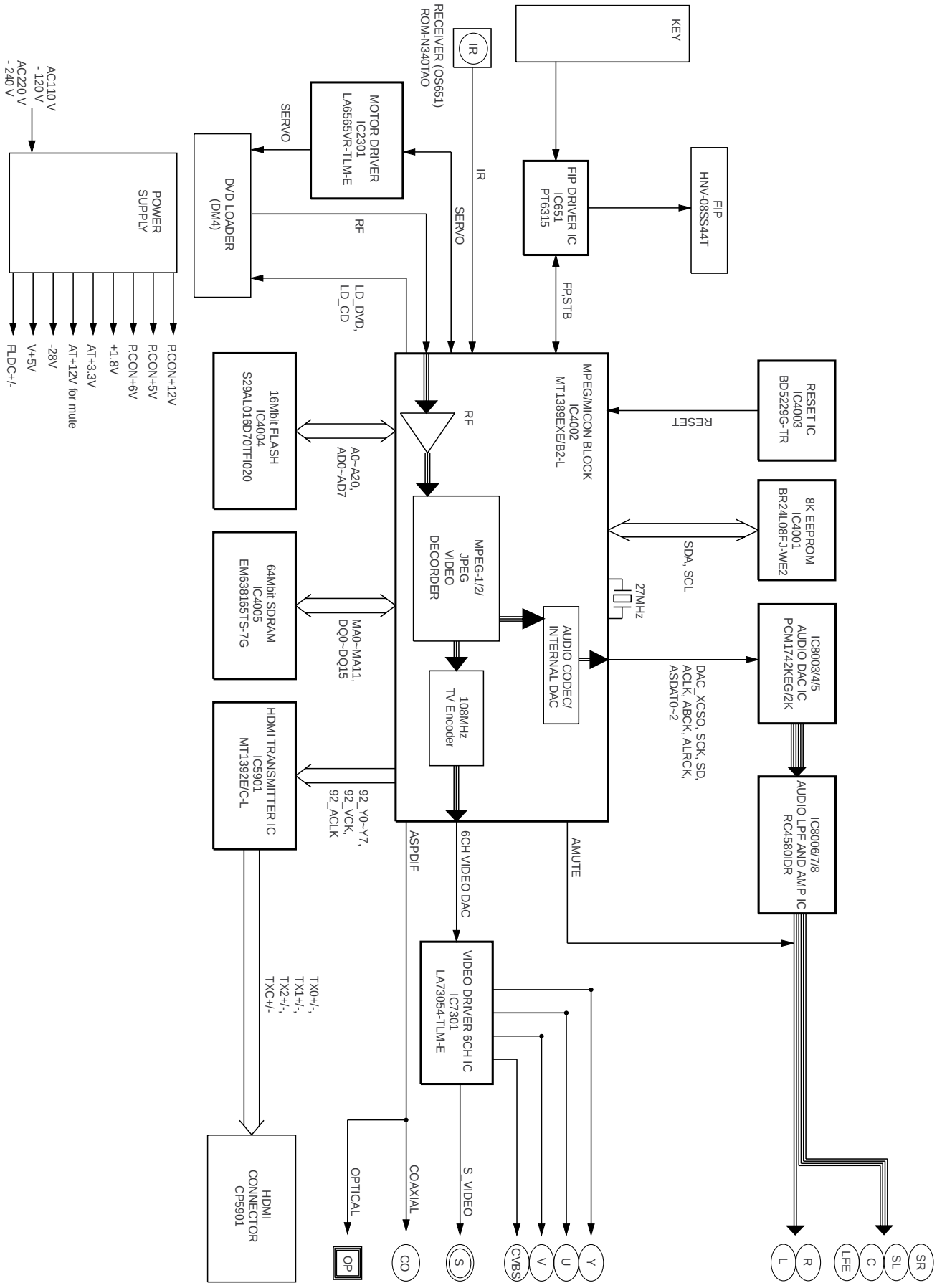
DVD LOADER/MPEG BLOCK DIAGRAM



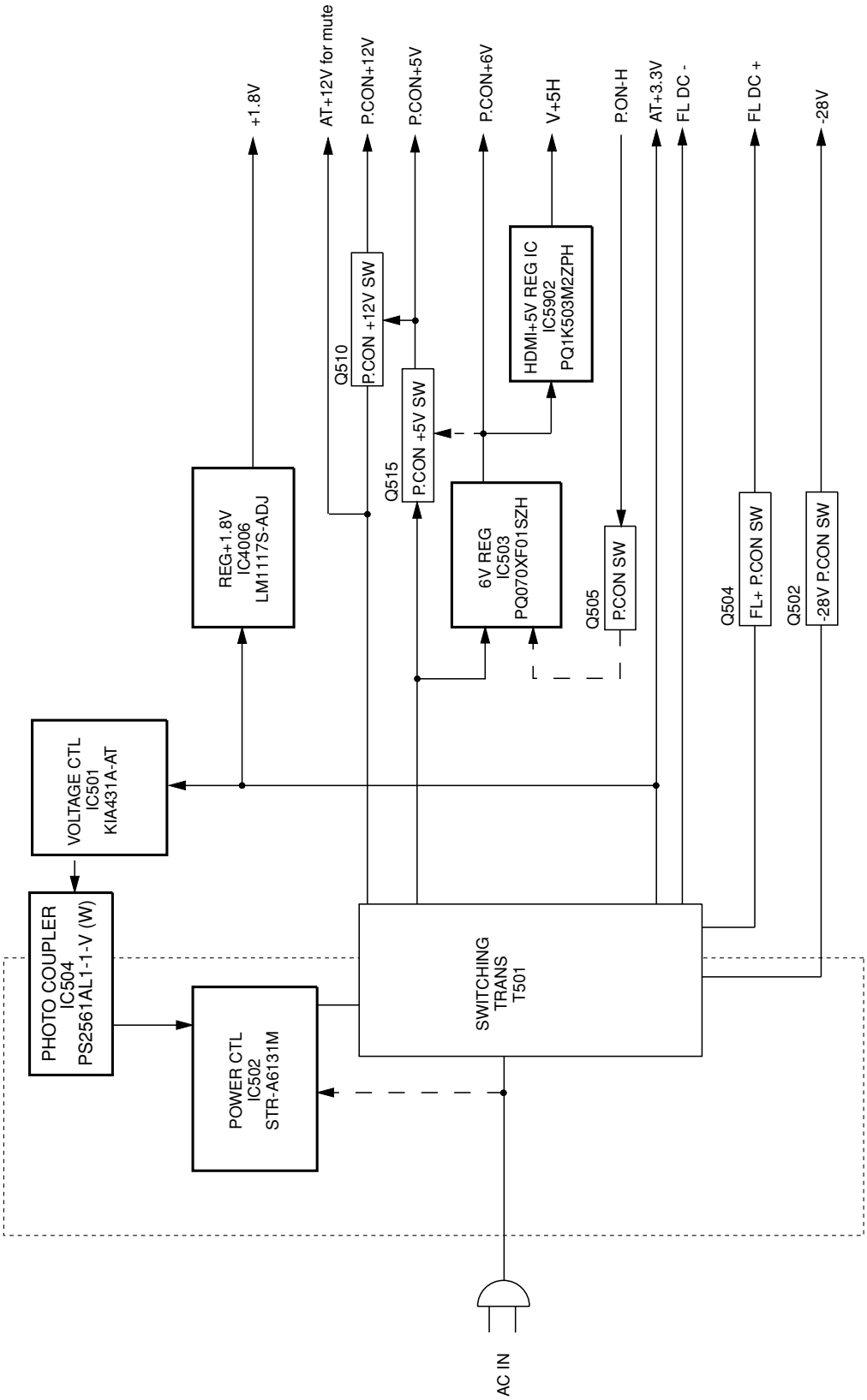

VIDEO JACK
J7302
6 CVBS
5 Y
3 U
2 V
LETTER, SQUEEZE, VSEL1,
I/XP, R/CR, B/CB, G/Y, C/V,
S_C, S_Y
VIDEO DRIVER 6CH IC
IC7301
LA73054-TLM-E
C
ESET IC
IC4003
5229G-TR
RESET
A, B
S-VIDEO JACK
J7301
3 Y
4 C
ASPDIF
N IC
/B2-L
DAC_XCSO, SCK, SD,ACLK,
ABCK, ALRCK, ASDAT0~2
COAXIAL JACK
J8102
COAXIAL
1
OPTICAL
OS8001
OPTICAL
1
A, C
IC8003/4/5
AUDIO DAC IC
PCM1742KEG/2K
L/R JACK
J8001
G
IC8006/7/8
AUDIO LPF AND AMP IC
RC4580IDR
2 R
3 L
LS/RS/S/LFE JACK
J8002
A
L
2 SR
3 SL
5 C
6 LFE
FP_DI, FP_DO,
FP_SCK, STB
FIP DRIVER IC
IC651
PT6315
GR1~GR8, P1~P16
FIP (V651)
HNV-08SS44T
A
G
IR
IR
A
IR RECEIVER (OS651)
ROM-N340TAO
A.....AT+3.3V
B.....+1.8V
C.....P.CON+5V
D.....P.CON+6V
E.....AT+12V
F.....P.CON+12V
G.....-28V
H.....V+5H

3.2 OVERALL and POWER BLOCK DIAGRAM

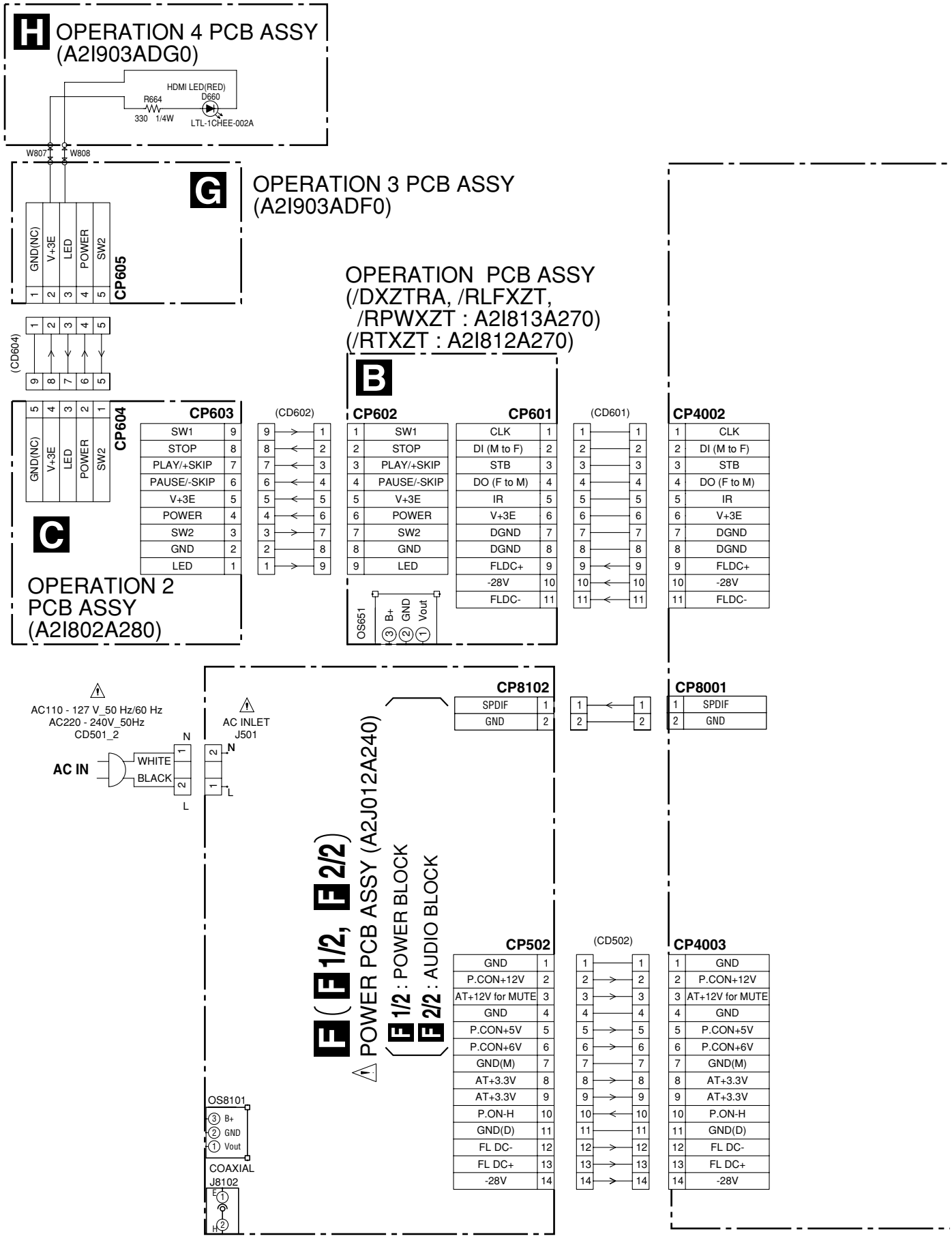
• OVERALL BLOCK DIAGRAM



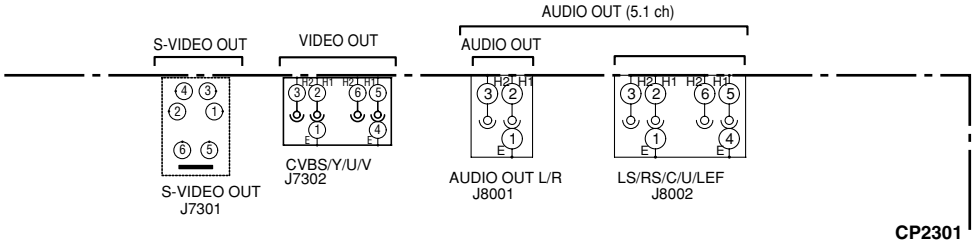
• POWER BLOCK DIAGRAM



3.3 OVERALL WIRING CONNECTION DIAGRAM



- When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- : The power supply is shown with the marked box.



A (A 1/7- A 7/7)

DVD MT PCB ASSY
(/DXZTRA, /RLFXZT : A2J009A130)
(/RPWXZT, /RTXZT : A2J012A130)

- A 1/7 : MPEG/MICON/RF-AMP BLOCK
- A 2/7 : MEMORY BLOCK
- A 3/7 : LOADER/MOTOR DRIVE BLOCK
- A 4/7 : AUDIO JACK BLOCK
- A 5/7 : VIDEO JACK BLOCK
- A 6/7 : HDMI BLOCK
- A 7/7 : POWER PORT BLOCK

DVD MECHA ASSY (A2I802A650)

CP2301

F RTN	24	24 → 24		F RTN
F DRV	23	23 → 23		F DRV
T RTN	22	22 → 22		T RTN
T DRV	21	21 → 21		T DRV
NC	20	20 — 20		NC
GND	19	19 — 19		GND
LD(DVD)	18	18 → 18		LD(DVD)
PD/GND	17	17 → 17		PD/GND
LD(CD)	16	16 → 16		LD(CD)
GND	15	15 — 15		GND
VR(CD)	14	14 ← 14		VR(CD)
VR COM	13	13 → 13		VR COM
VR(DVD)	12	12 ← 12		VR(DVD)
A	11	11 ← 11		A
B	10	10 ← 10		B
VRF(RF_OUT)	9	9 ← 9		VRF(RF_OUT)
SW1(DVD/CD)	8	8 → 8		SW1(DVD/CD)
C	7	7 ← 7		C
D	6	6 → 6		D
E	5	5 → 5		E
VCC	4	4 ← 4		VCC
VS	3	3 ← 3		VS
F	2	2 ← 2		F
GND	1	1 — 1		GND

⚠ DVD DRIVE DM-4PB

OPTICAL PICK-UP

D SW PCB ASSY (A2F101A640)

CD2301

CP2303

SP1+	1	1 → 1		SP1+
SP1-	2	2 → 2		SP1-
SLD+	3	3 → 3		SLD+
SLD-	4	4 → 4		SLD-
LIMIT SW	5	5 ← 5		LIMIT SW
SW(GND)	6	6 — 6		SW(GND)

M2601 JCV9B12 SPINDLE MOTOR
M2602 BCZ3B05 SLED MOTOR
SW2 ESE22MH22

E LOADING MOTOR PCB ASSY (A2F101A610)

CD2302

CP2302

CLOSE	1	←	SW-2(CLOSE)
GND(D)	2	—	GND(SW)
OPEN	3	←	SW-1(OPEN)
LD+	4	→	LD+
LD-	5	→	LD-

SW1 SSS-28-5
M2603 BCZ3B05
LOADING MOTOR

HDMI CONNECTOR CP5901

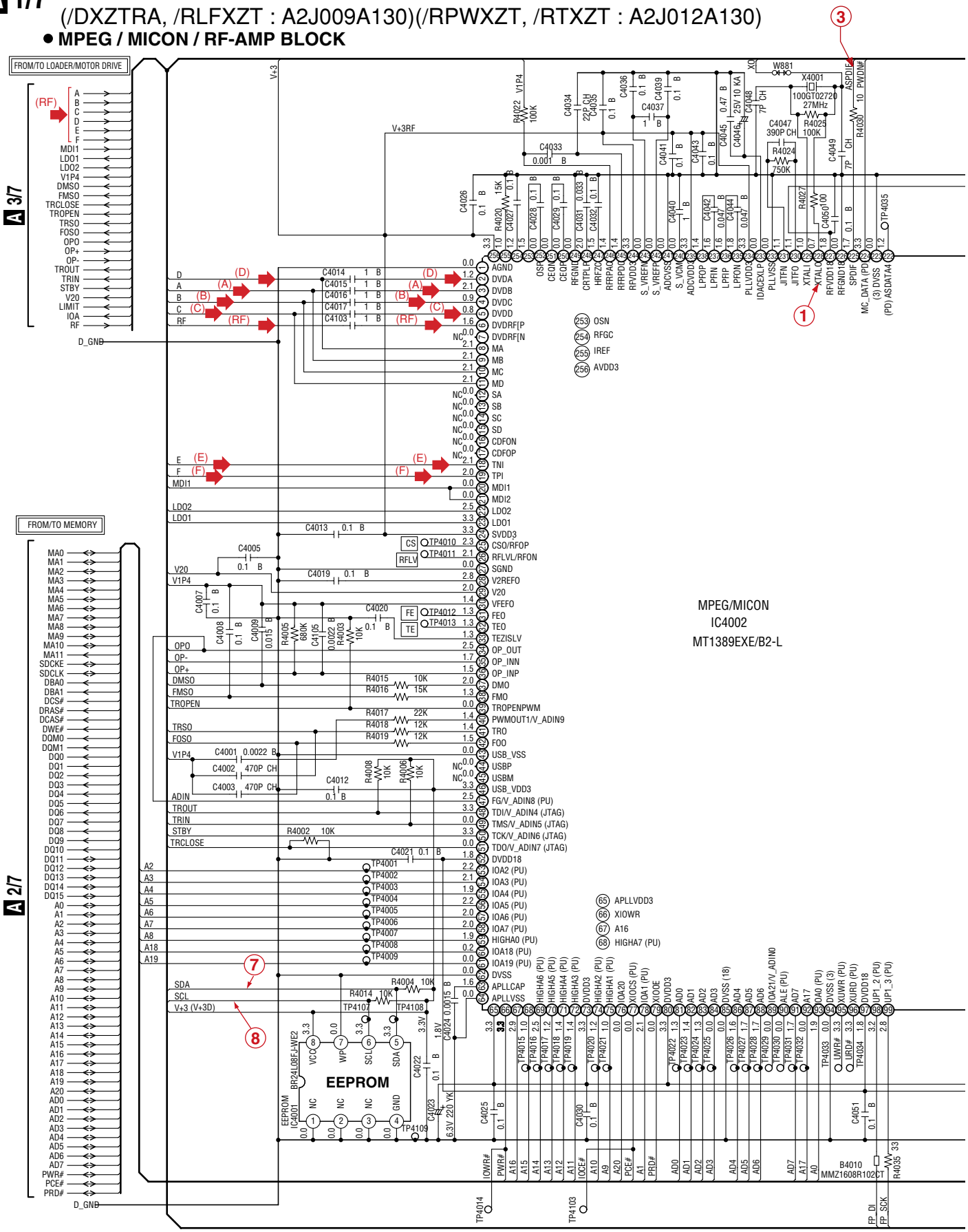
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
D2+	D2-S	D2-	D1+	D1-S	D1-	D0+	D0-S	D0-	CLK+	CLK-S	CLK-	CEC	NC	SCL	SDA	GND	POWER	HOTPLUG

D E

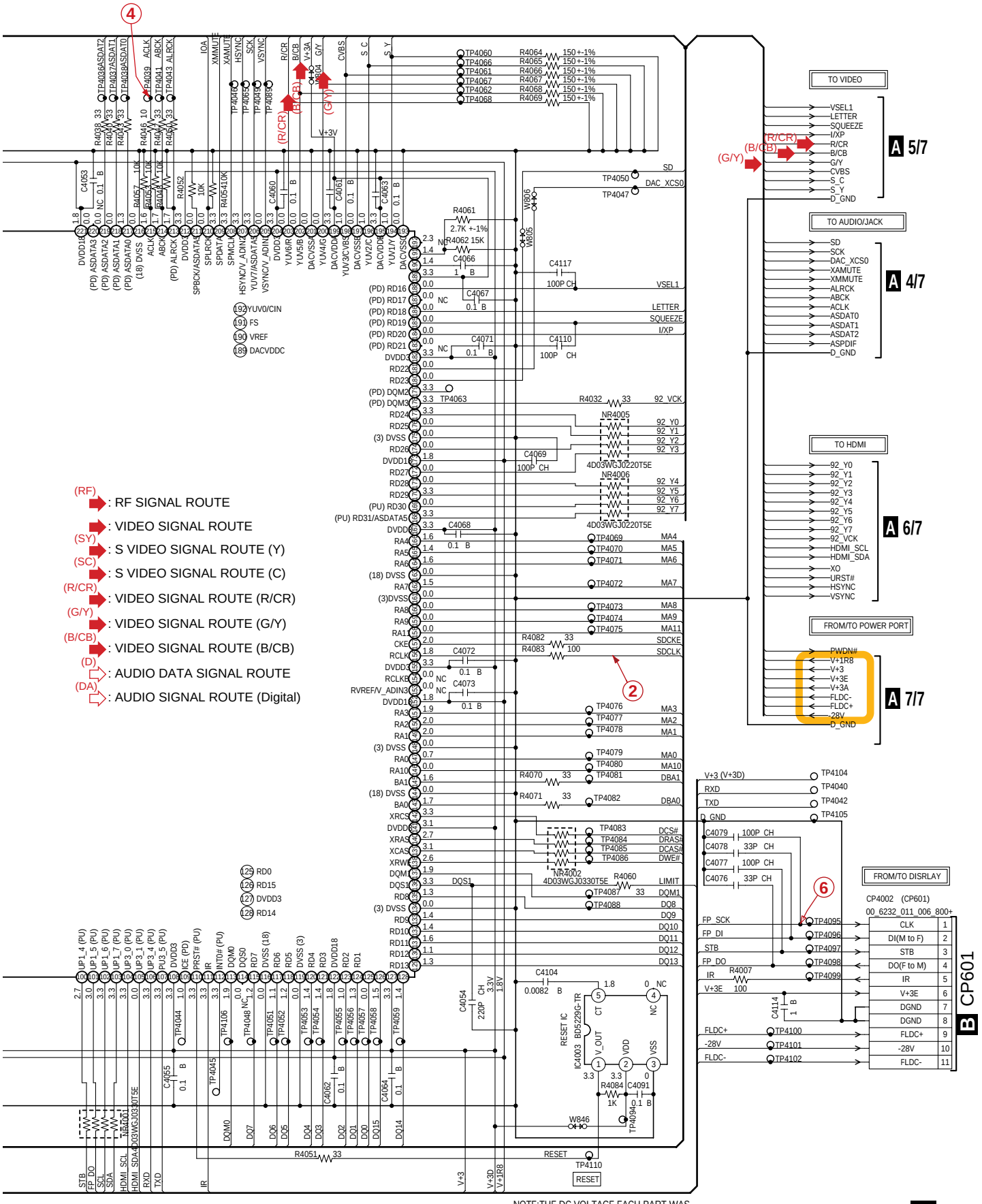
3.4 DVD MT PCB ASSY (1/7)

A 1/7 DVD MT PCB ASSY
(/DXZTRA, /RLFXZT : A2J009A130)(/RPWXZT, /RTXZT : A2J012A130)

- **MPEG / MICON / RF-AMP BLOCK**



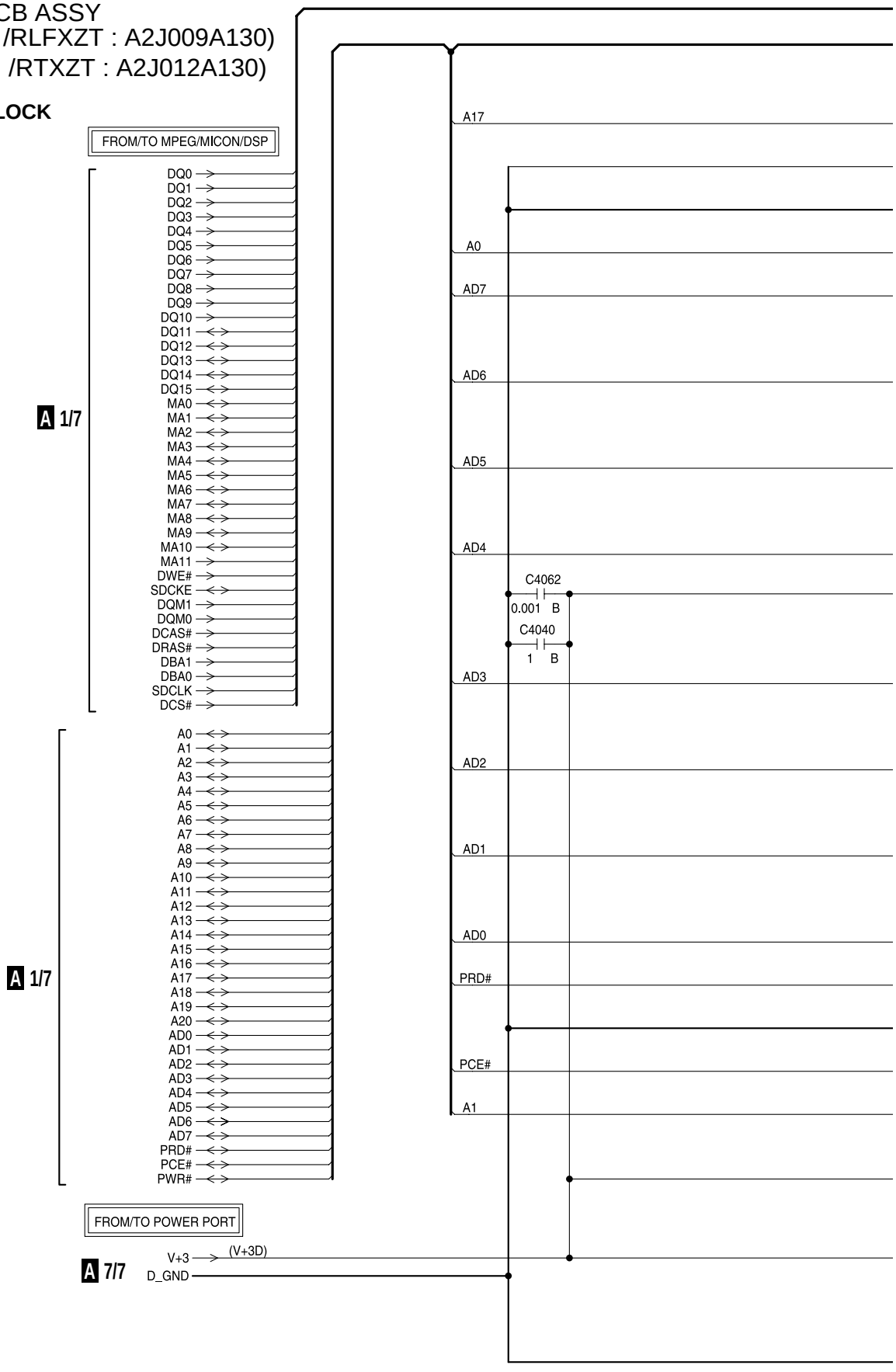
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

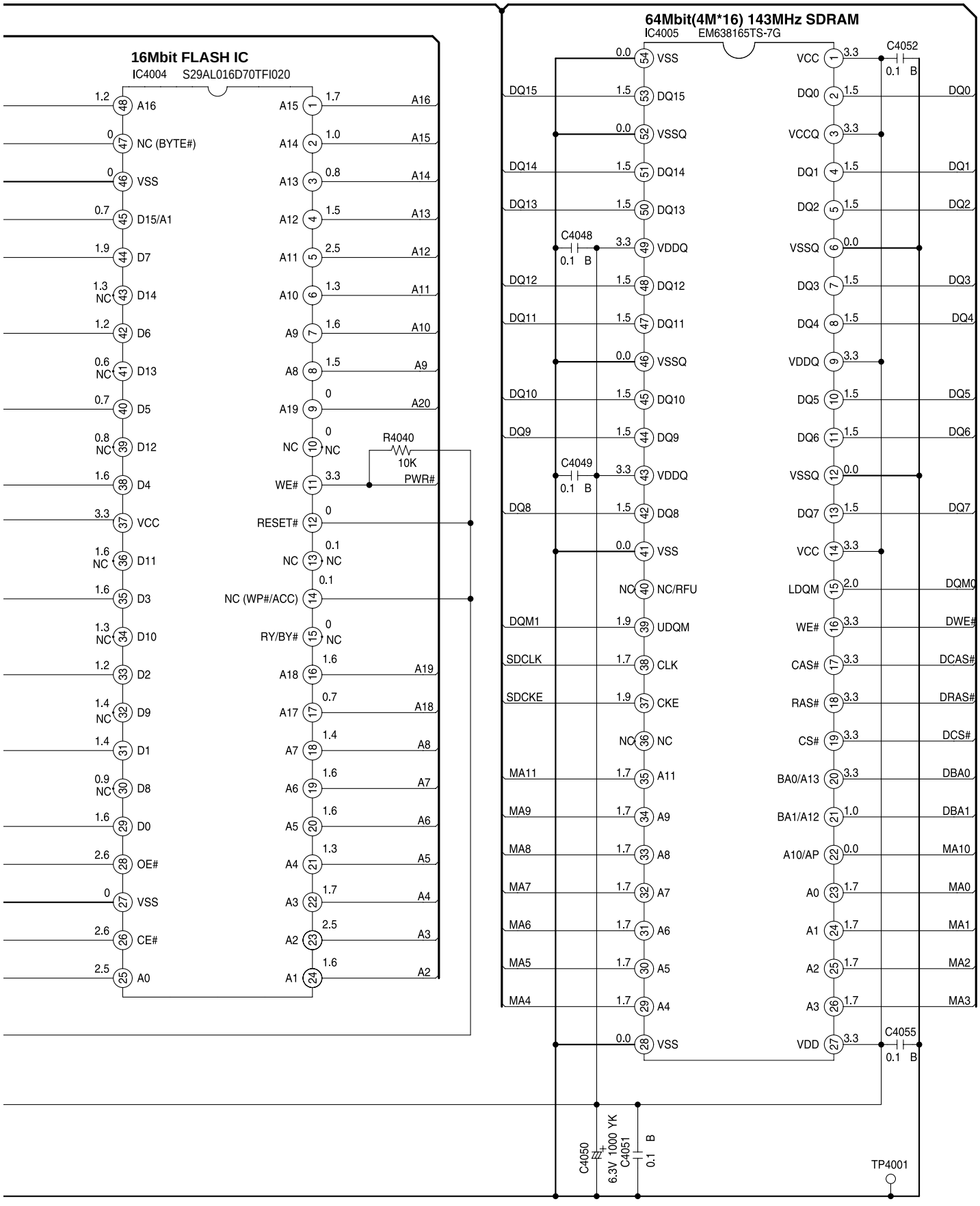

(RF): RF SIGNAL ROUTE
: VIDEO SIGNAL ROUTE
(SY): S VIDEO SIGNAL ROUTE (Y)
(SC): S VIDEO SIGNAL ROUTE (C)
(R/CR): VIDEO SIGNAL ROUTE (R/CR)
(G/Y): VIDEO SIGNAL ROUTE (G/Y)
(B/CB): VIDEO SIGNAL ROUTE (B/CB)
(D): AUDIO DATA SIGNAL ROUTE
(DA): AUDIO SIGNAL ROUTE (Digital)
TO VIDEO
TO AUDIO/JACK
TO HDMI
FROM/TO POWER PORT
FROM/TO DISRLAY
A 5/7
A 4/7
A 6/7
A 7/7
B CP601
A 1/7
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

3.5 DVD MT PCB ASSY(2/7)

A 2/7 DVD MT PCB ASSY
(/DXZTRA, /RLFXZT : A2J009A130)
(/RPWXZT, /RTXZT : A2J012A130)

● **MEMORY BLOCK**





NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

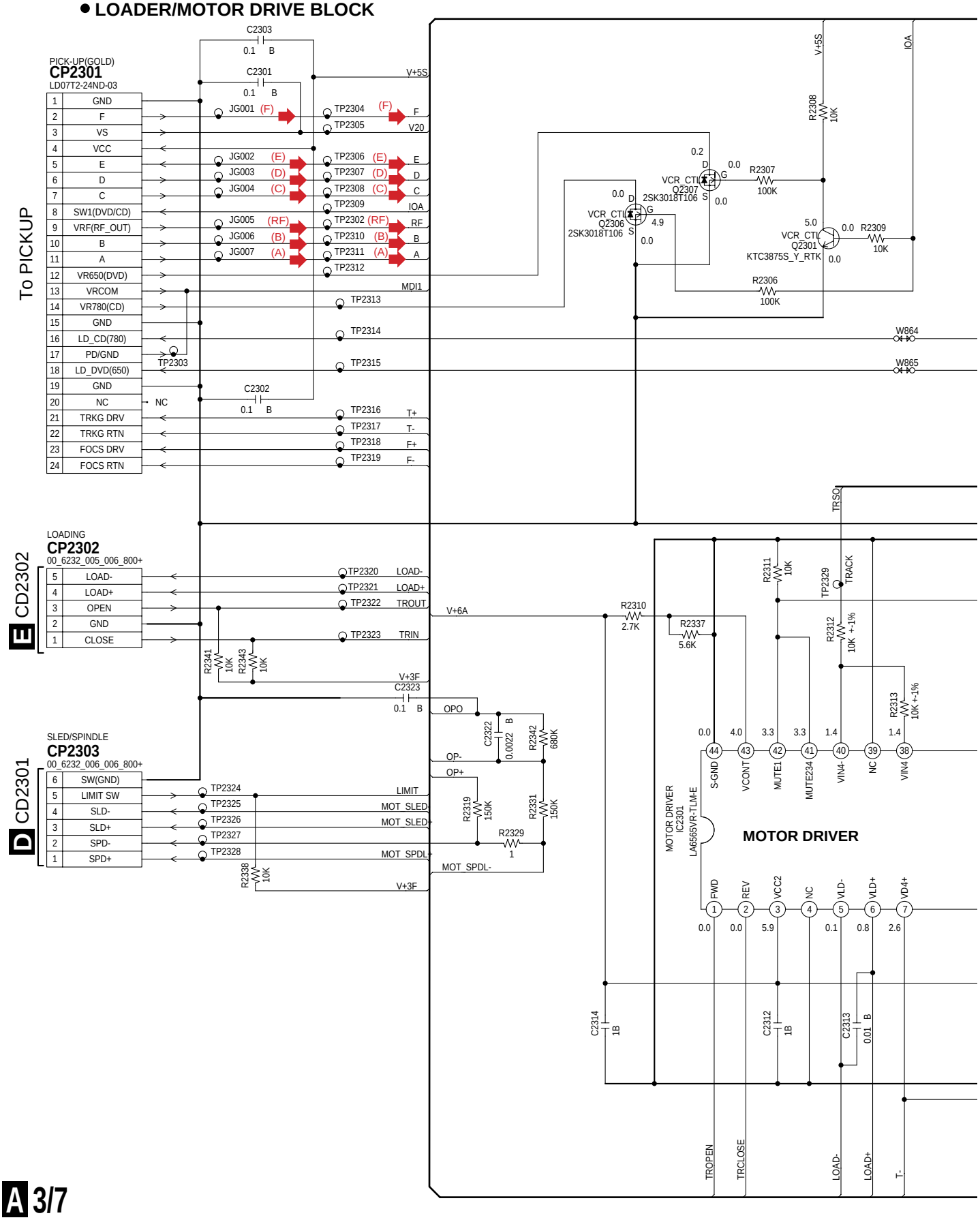
NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

3.6 DVD MT PCB ASSY(3/7)

A 3/7 DVD MT PCB ASSY

(/DXZTRA, /RLFXZT : A2J009A130)(/RPWXZT, /RTXZT : A2J012A130)

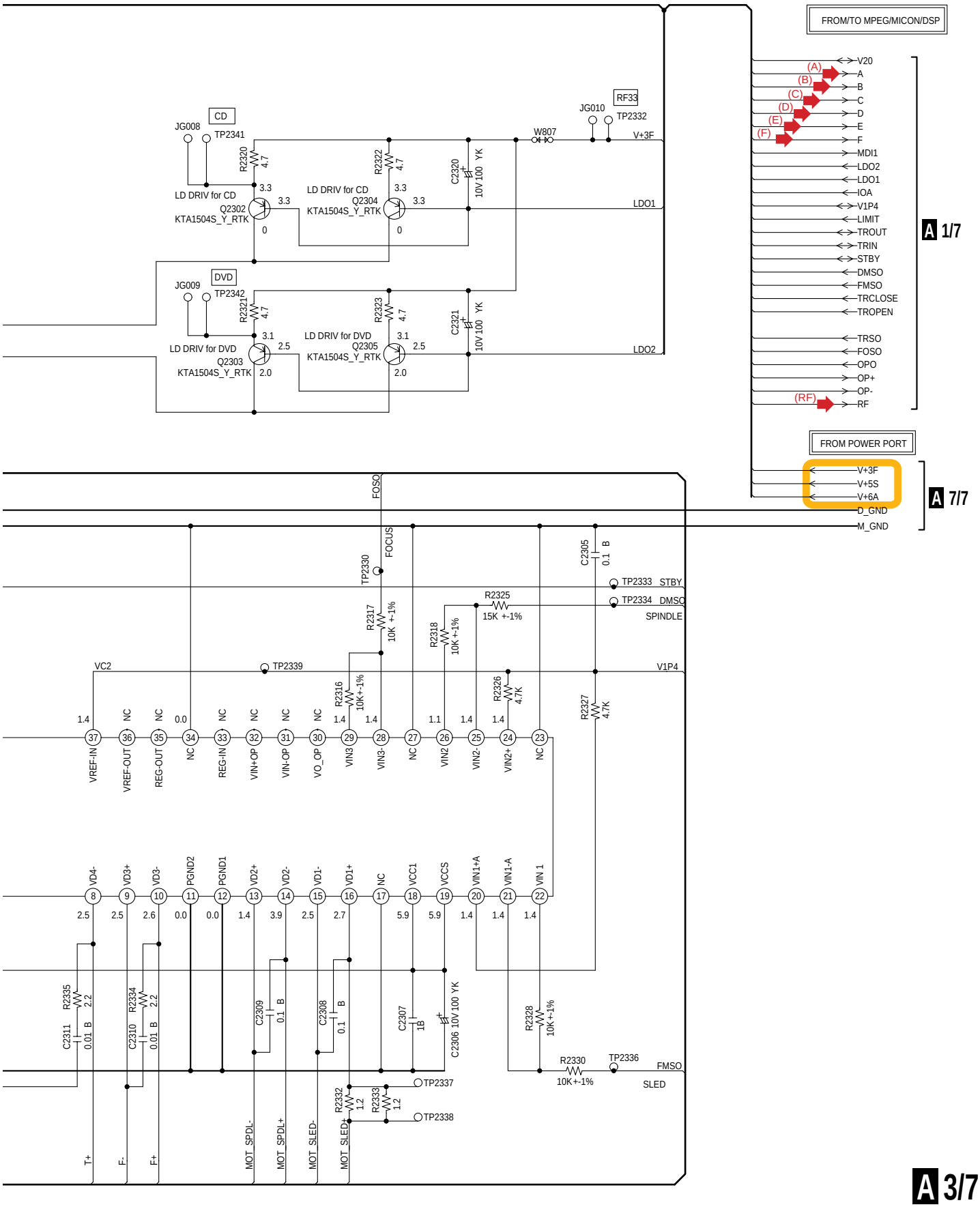
- **LOADER/MOTOR DRIVE BLOCK**



NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

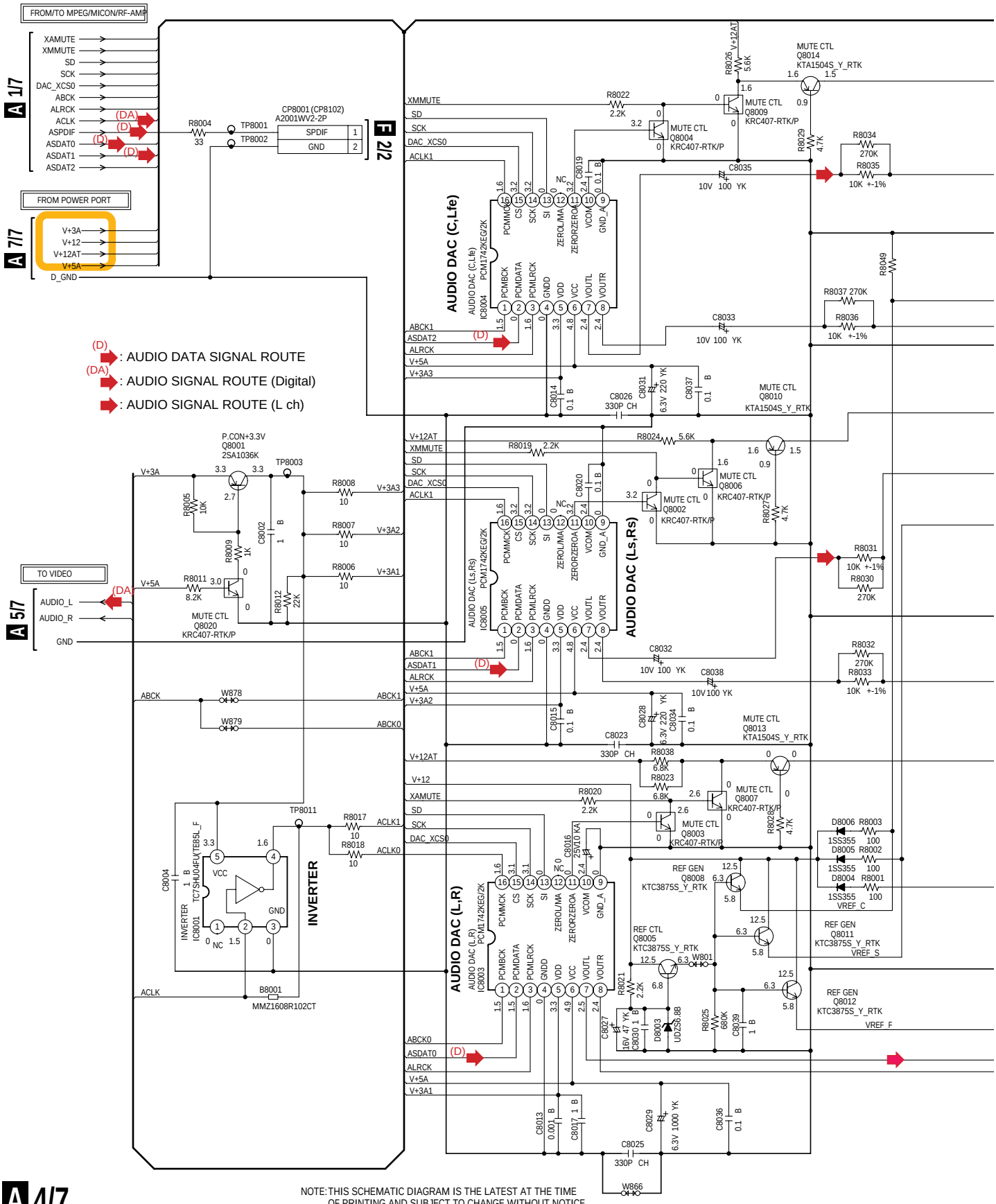
(RF) : RF SIGNAL ROUTE



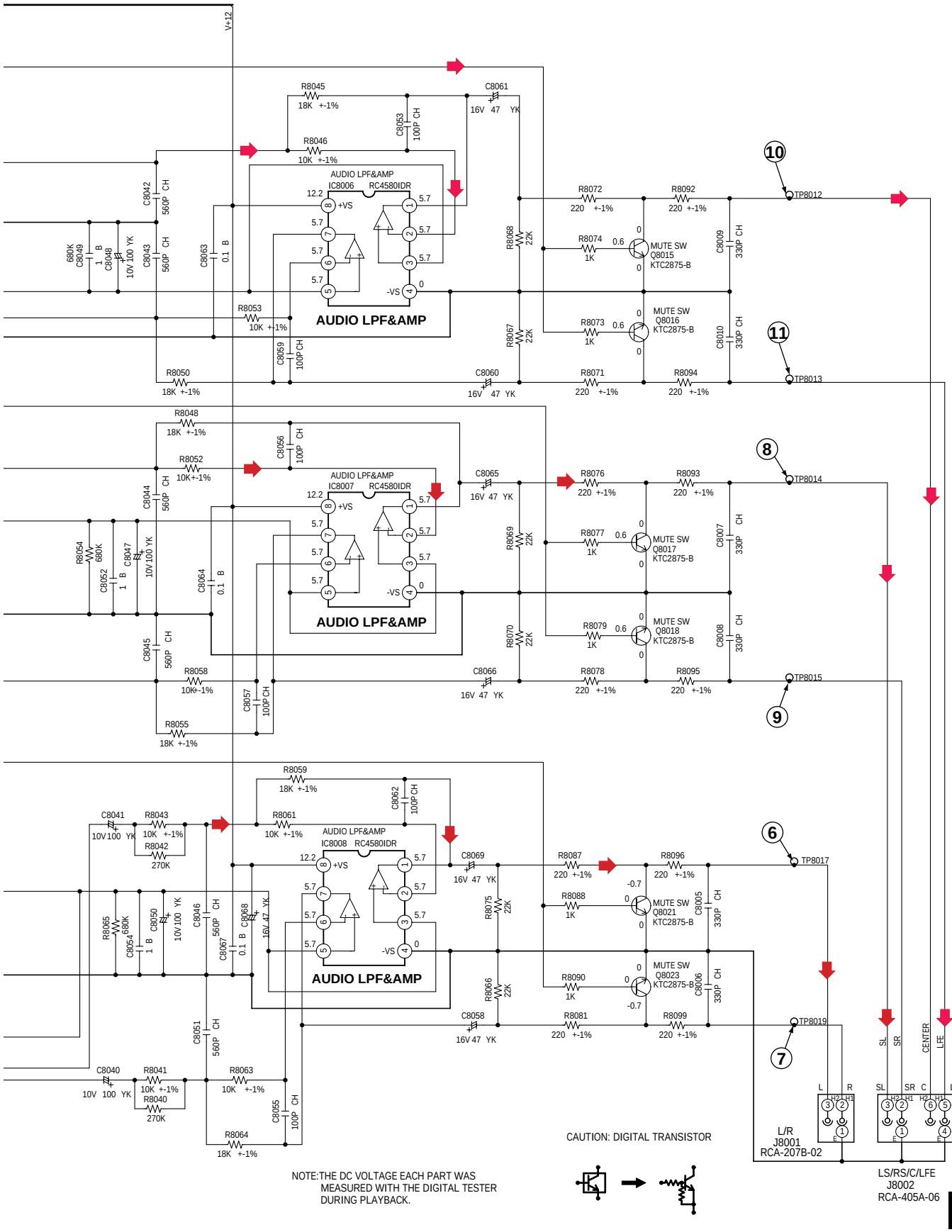
A 4/7 DVD MT PCB ASSY

(/DXZTRA, /RLFXZT : A2J009A130)(/RPWXZT, /RTXZT : A2J012A130)

● **AUDIO JACK BLOCK**



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.



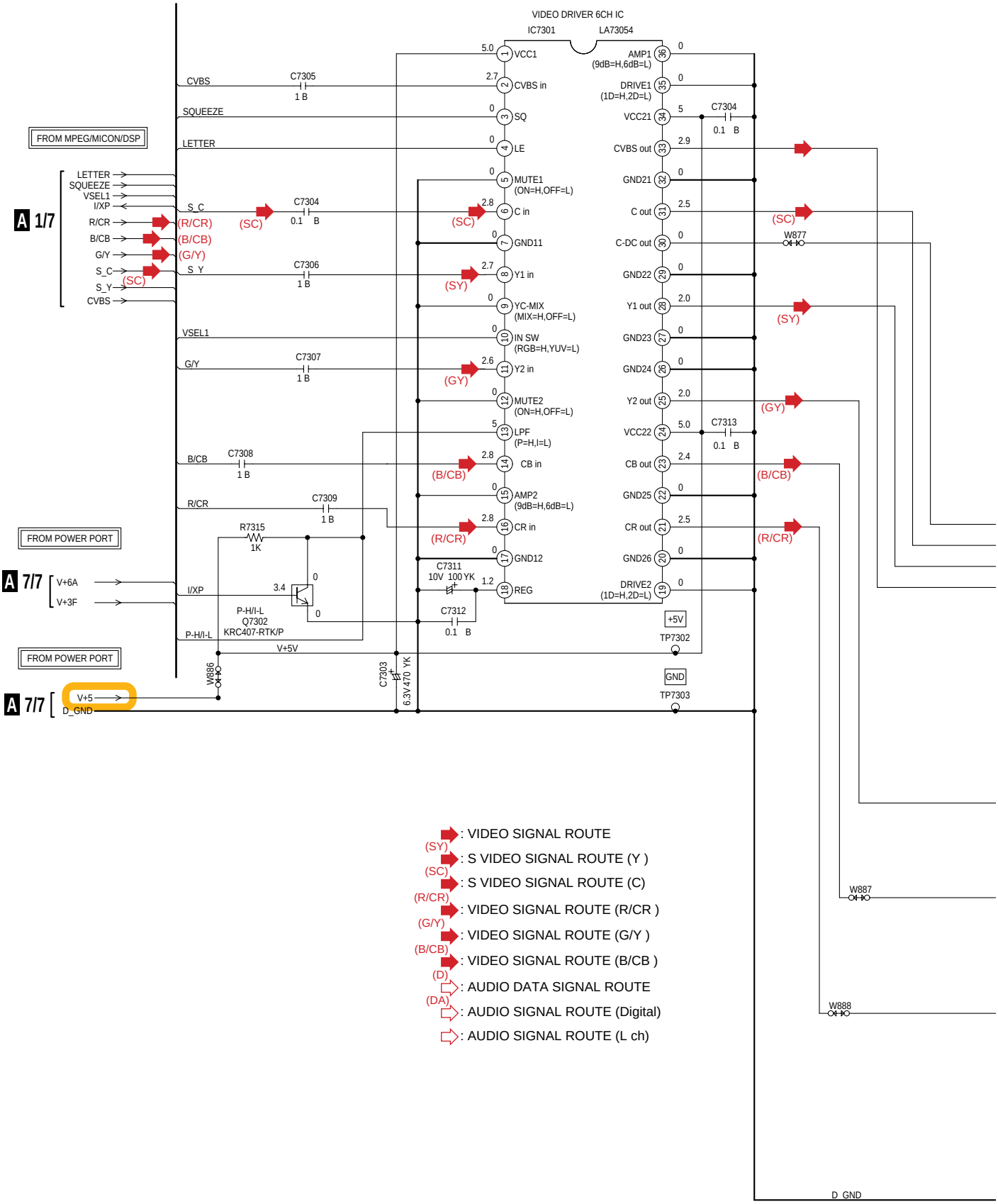
CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

3.8 DVD MT PCB ASSY(5/7)

A 5/7 DVD MT PCB ASSY
(/DXZTRA, /RLFXZT : A2J009A130)(/RPWXZT, /RTXZT : A2J012A130)

● **VIDEO JACK BLOCK**

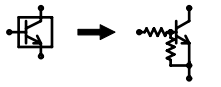


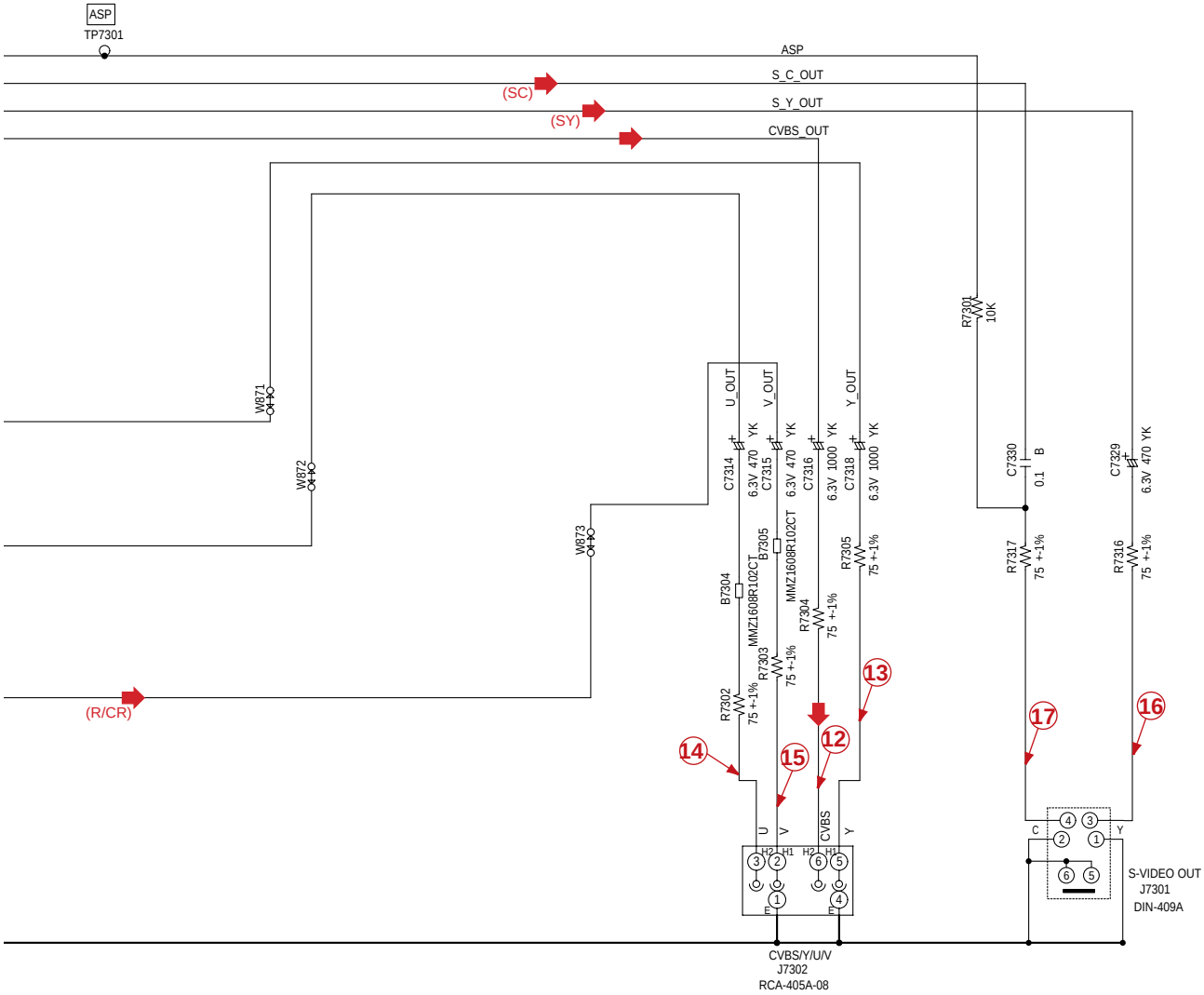
A 5/7

NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

CAUTION: DIGITAL TRANSISTOR

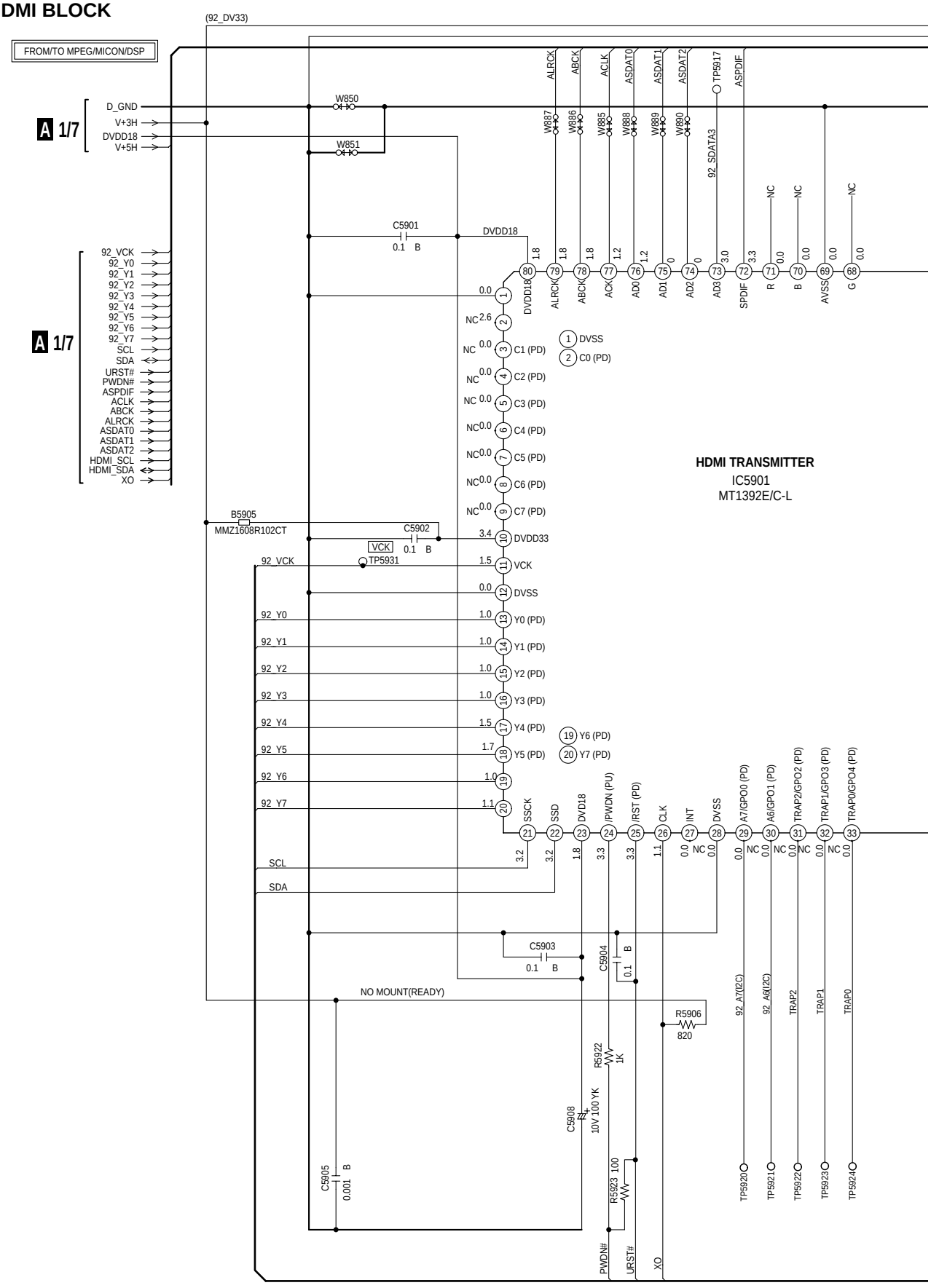


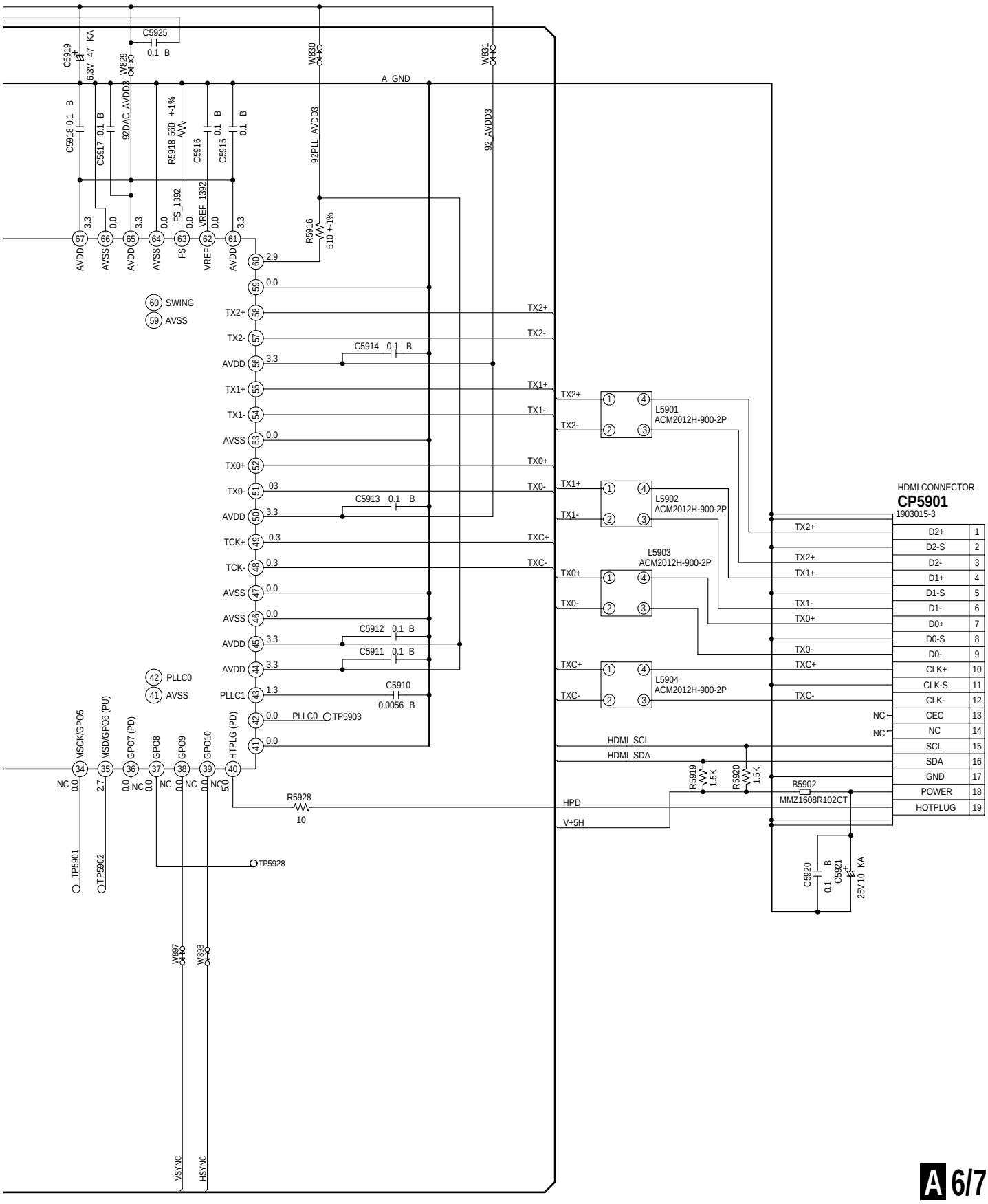


3.9 DVD MT PCB ASSY(6/7)

A 6/7 DVD MT PCB ASSY
(/DXZTRA, /RLFXZT : A2J009A130)(/RPWXZT, /RTXZT : A2J012A130)

- **HDMI BLOCK**

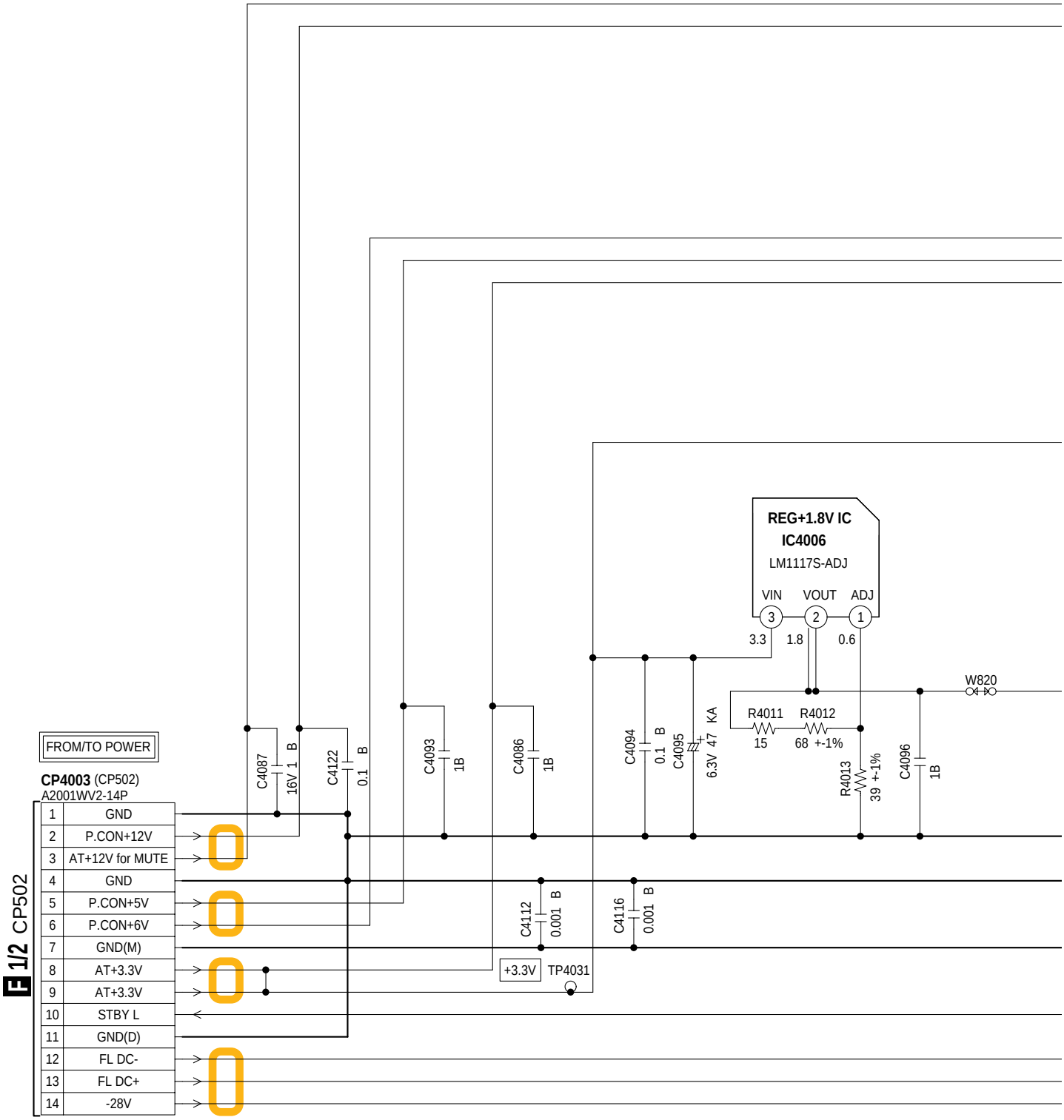



C5925 0.1 B
C5919 47 6.3V KA
W829
W830
W831
A_GND
C5918 0.1 B
C5917 0.1 B
92DAC_AVDD3
R5918 560 +-1%
C5916
C5915 0.1 B
0.1 B
92PLL_AVDD3
92_AVDD3
FS 1392
VREF 1392
R5916 510 +-1%
AVDD 67 3.3
AVSS 66 0.0
AVDD 65 3.3
AVSS 64 0.0
FS 63 0.0
VREF 62 0.0
AVDD 61 3.3
60 2.9
59 0.0
60 SWING
59 AVSS
TX2+ 58
TX2- 57
C5914 0.1 B
AVDD 56 3.3
TX1+ 55
TX1- 54
AVSS 53 0.0
TX0+ 52
TX0- 51 03
C5913 0.1 B
AVDD 50 3.3
TCK+ 49 0.3
TCK- 48 0.3
AVSS 47 0.0
AVSS 46 0.0
C5912 0.1 B
AVDD 45 3.3
C5911 0.1 B
AVDD 44 3.3
42 PLLC0
41 AVSS
PLLC1 43 1.3
C5910 0.0056 B
42 0.0 PLLC0 TP5903
41 0.0
MSCK/GPO5 34 NC 0.0
MSD/GPO6 (PU) 35 2.7
GPO7 (PD) 36 0.0 NC
GPO8 37 0.0 NC
GPO9 38 0.0 NC
GPO10 39 0.0 NC
HTPLG (PD) 40 5.0
R5928 10
TP5901
TP5902
TP5928
W897
W898
VSYNC
HSYNC
L5901 ACM2012H-900-2P
L5902 ACM2012H-900-2P
L5903 ACM2012H-900-2P
L5904 ACM2012H-900-2P
TXC+
TXC-
HDMI_SCL
HDMI_SDA
HPD
V+5H
R5919 1.5K
R5920 1.5K
B5902 MMZ1608R102CT
C5920 0.1 B
C5921 25V10 KA
HDMI CONNECTOR
CP5901
1903015-3
D2+ 1
D2-S 2
D2- 3
D1+ 4
D1-S 5
D1- 6
D0+ 7
D0-S 8
D0- 9
CLK+ 10
CLK-S 11
CLK- 12
CEC 13
NC 14
SCL 15
SDA 16
GND 17
POWER 18
HOTPLUG 19

3.10 DVD MT PCB ASSY(7/7)

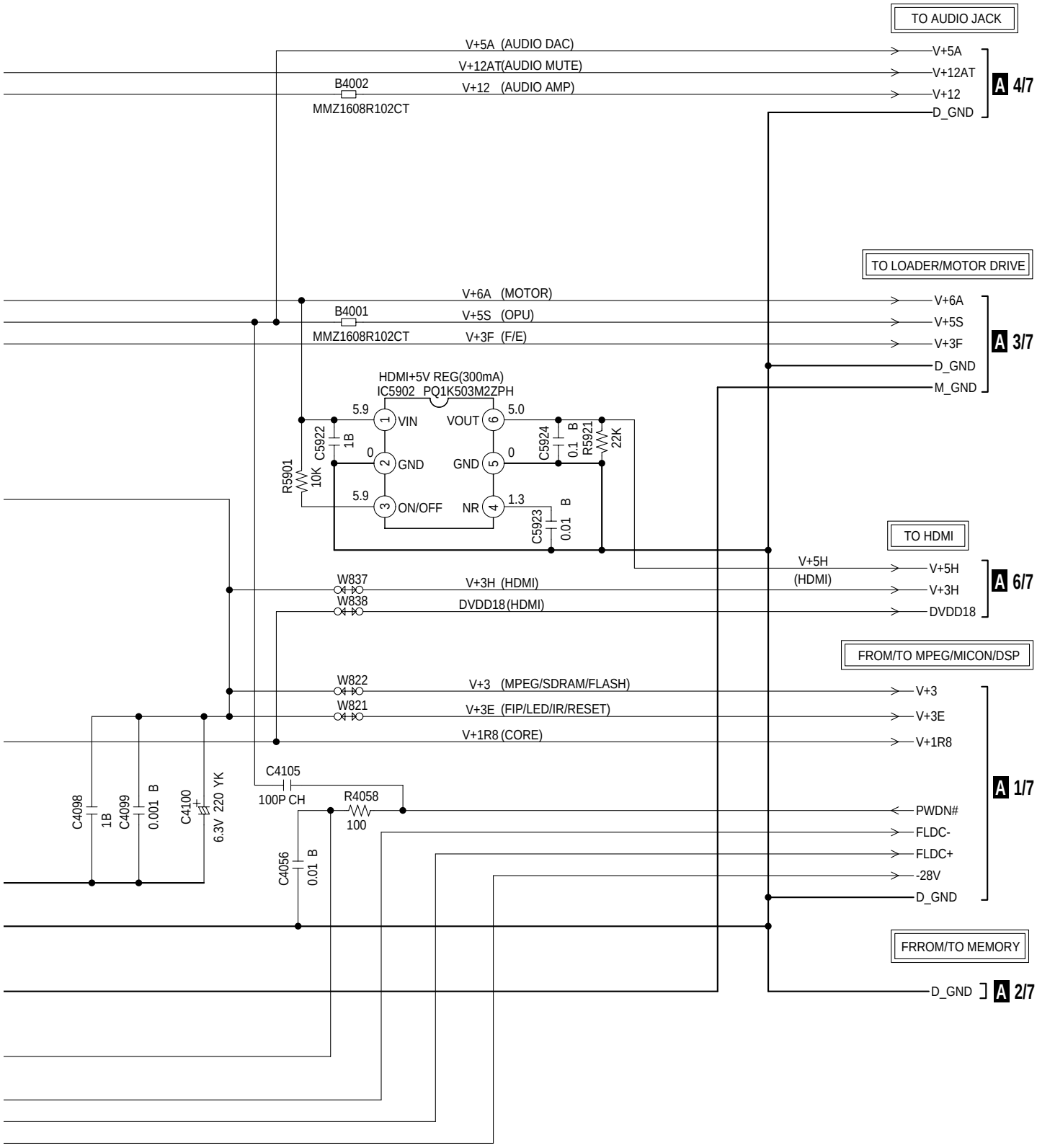
A 7/7 DVD MT PCB ASSY
(/DXZTRA, /RLFXZT : A2J009A130)(/RPWXZT, /RTXZT : A2J012A130)

- **POWER PORT BLOCK**



NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

A 7/7



NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

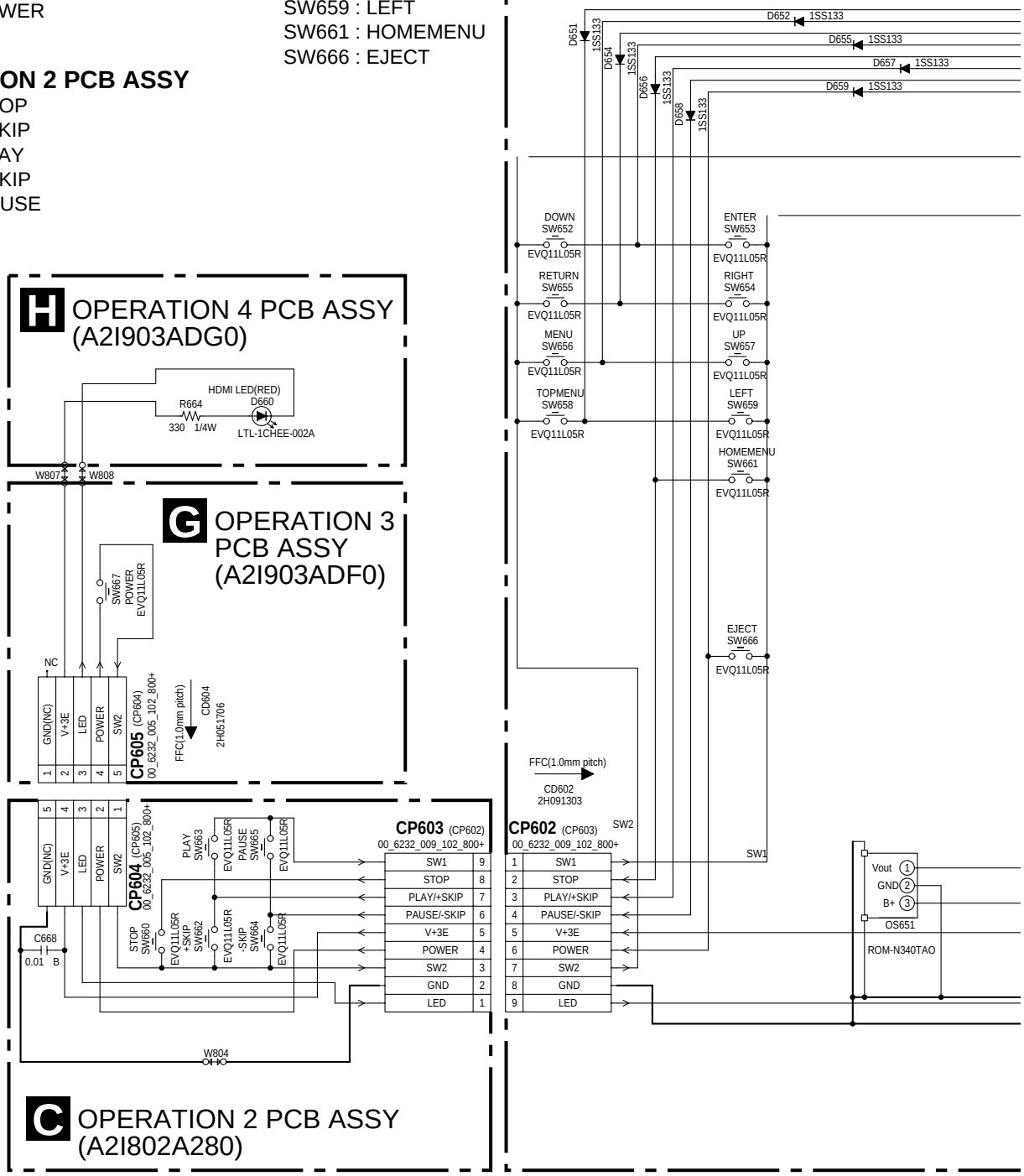
A 7/7

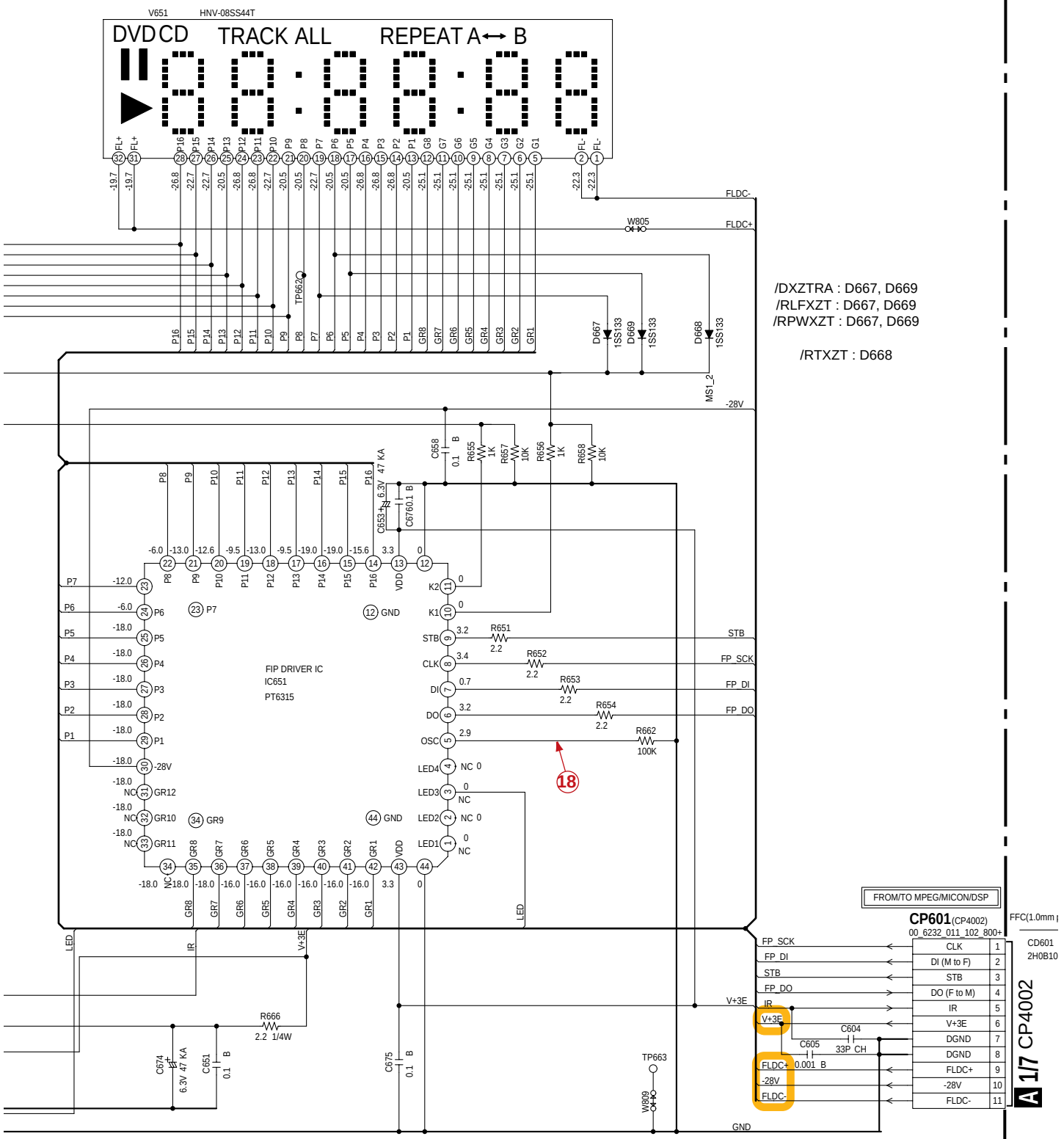
3.11 OPERATION, OPERATION 2 and OPERATION 3, 4 PCB ASSYS

OPERATION PCB ASSY
SW652 : DOWN
SW653 : ENTER
SW654 : RIGHT
SW655 : RETURN
SW656 : MENU
SW657 : UP
SW658 : TOPMENU
SW659 : LEFT
SW661 : HOMEMENU
SW666 : EJECT

OPERATION 3 PCB ASSY
SW667 : POWER

OPERATION 2 PCB ASSY
SW660 : STOP
SW662 : +SKIP
SW663 : PLAY
SW664 : - SKIP
SW665 : PAUSE





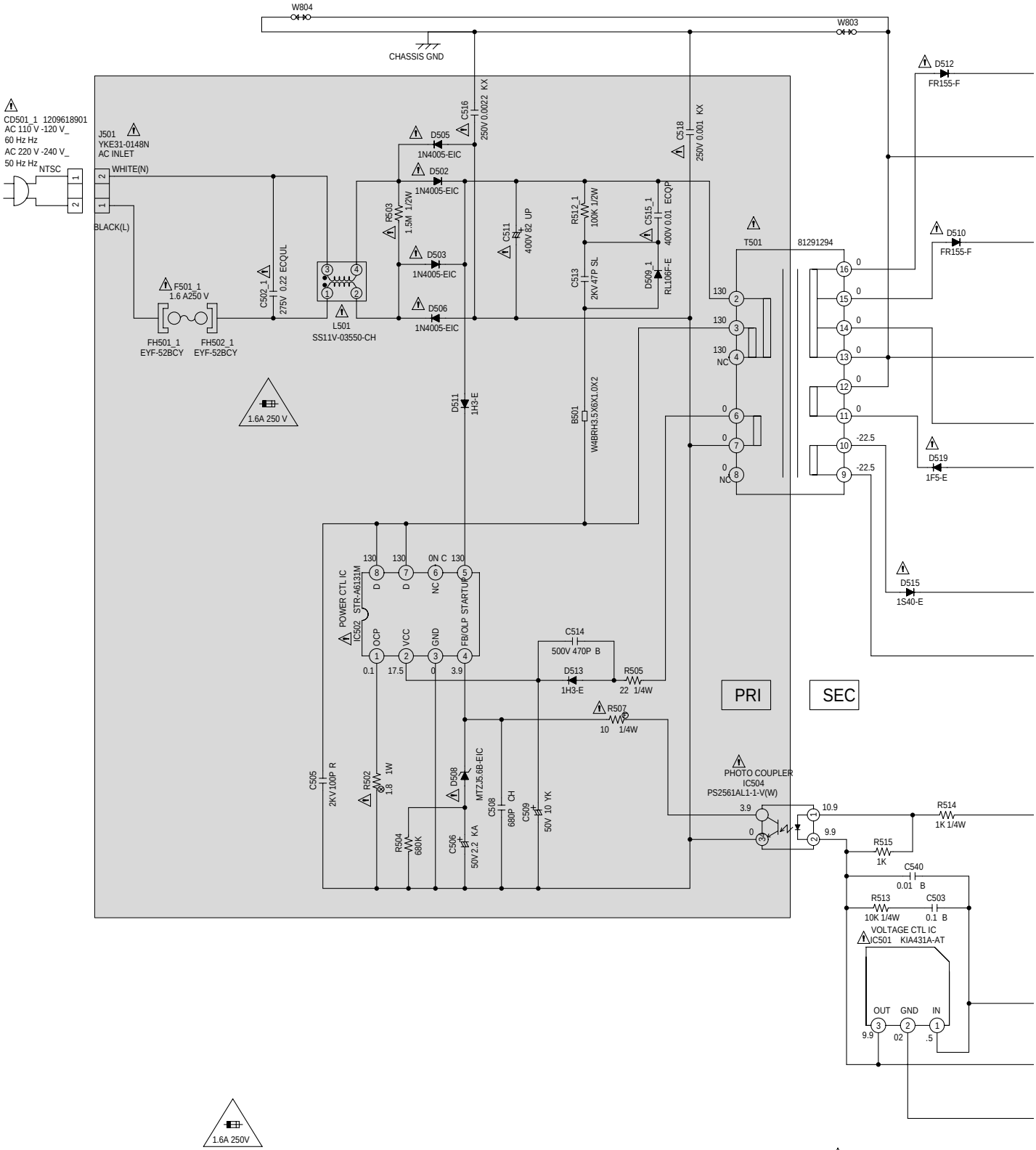
NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

3.12 POWER PCB ASSY (1/2)

F 1/2 POWER PCB ASSY (A2J012A240)

● **POWER BLOCK**

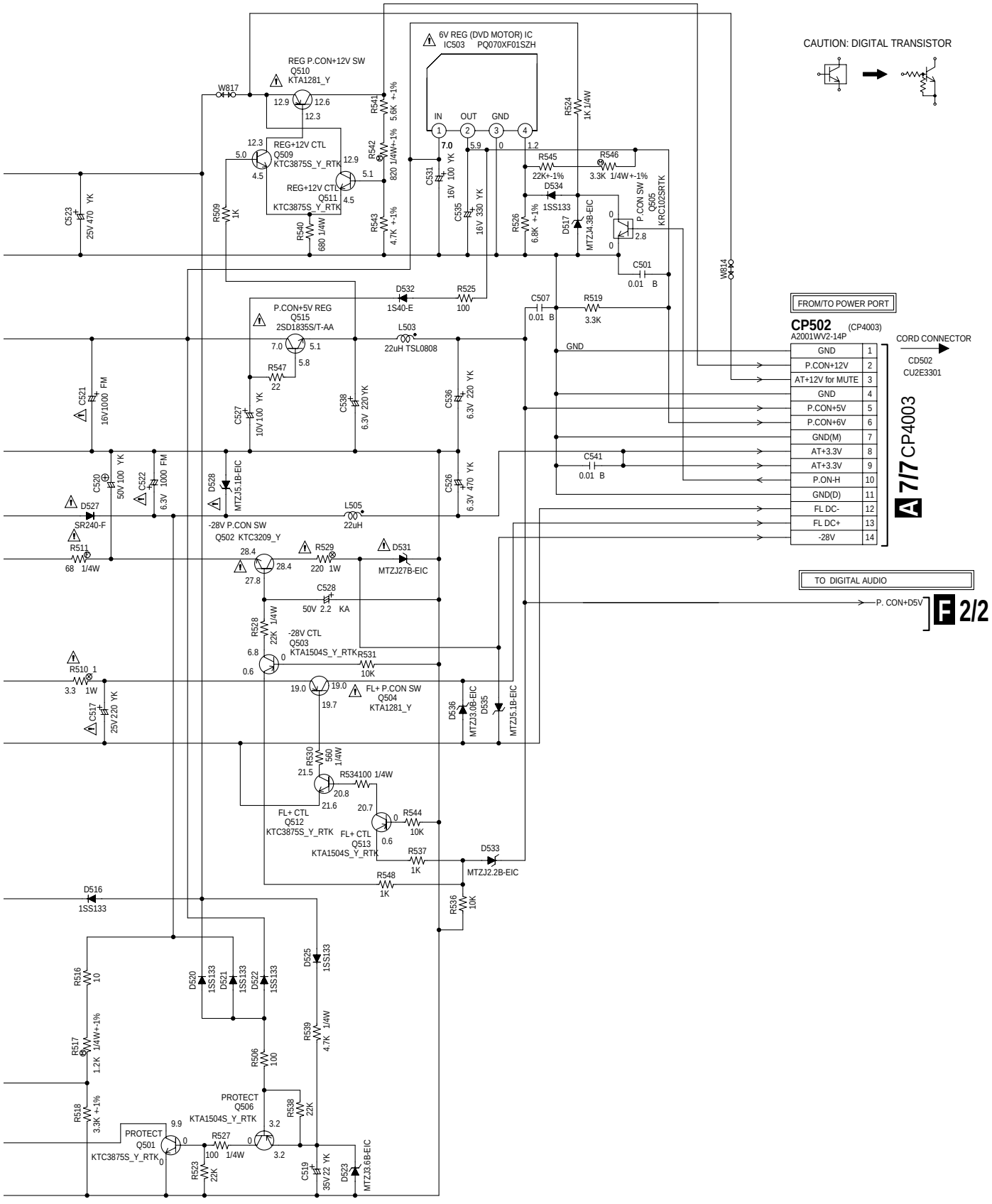


CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 1.6A 125V{F501}

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 1.6A 125V{F501}

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES



NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

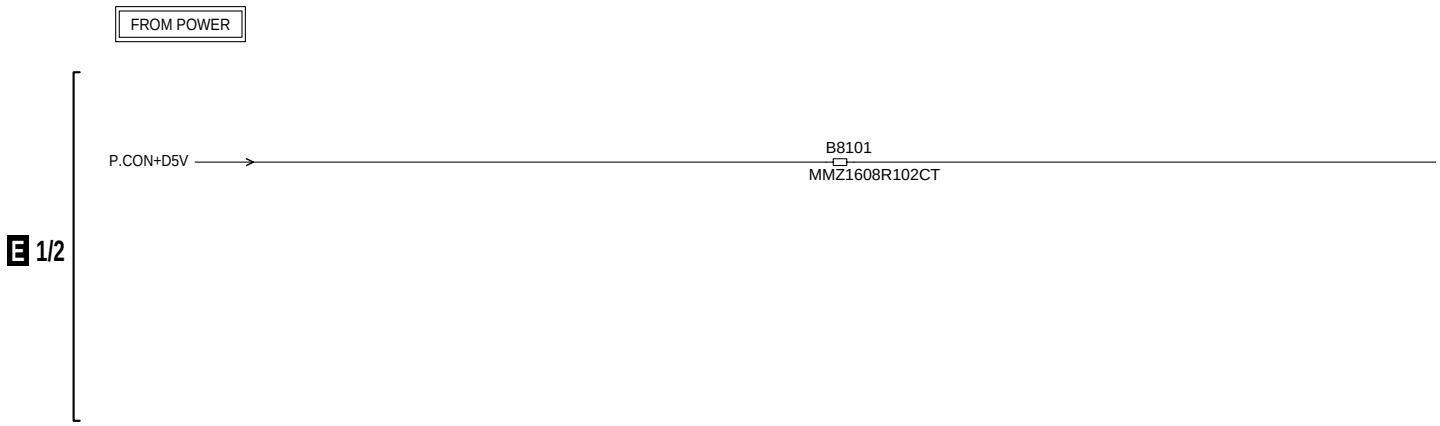
NOTE :THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

F 1/2

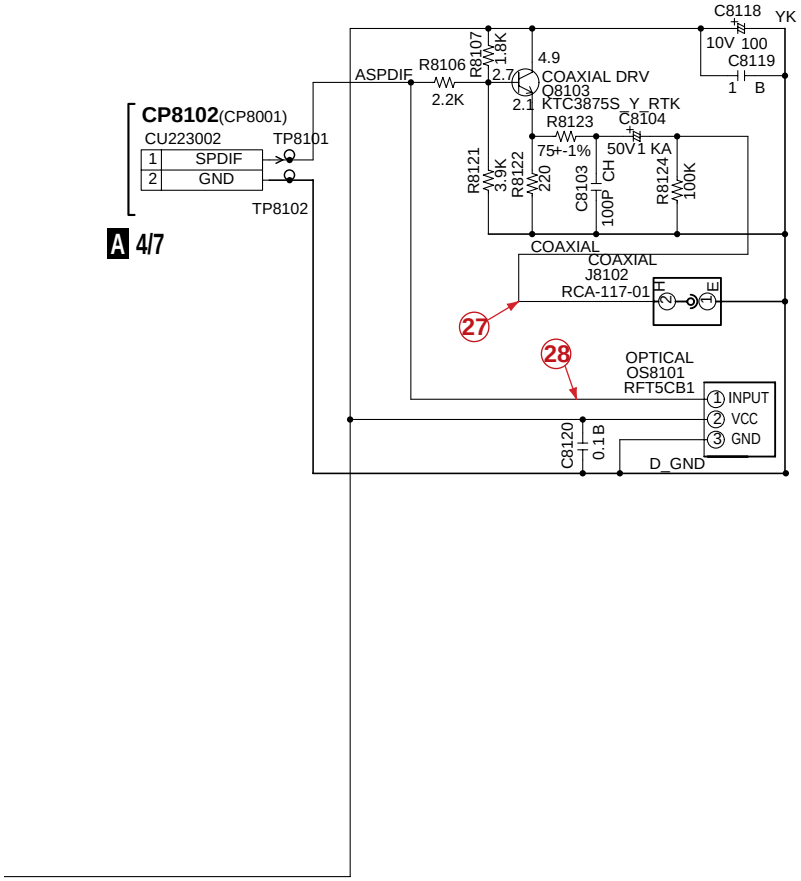
3.13 POWER PCB ASSY (2/2)

F 2/2 ⚠ POWER PCB ASSY (A2J012A240)

- **DIGITAL AUDIO BLOCK**



F 2/2



NOTE : THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE : THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

F 2/2

3.14 WAVE FORMS

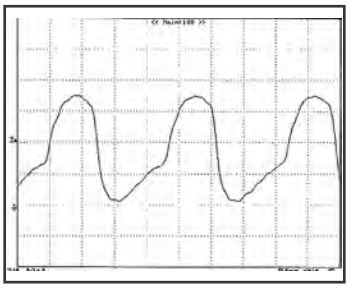
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram

A DVD MT PCB ASSY

IC4002 - pin 228 (XTAL)

10 ns
500 mV

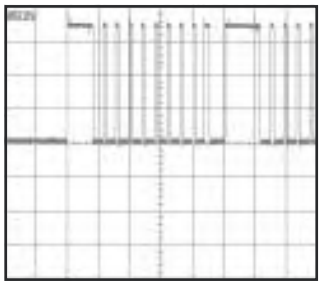
①



IC4001 - pin 6 (SDCL)

50µs
1.0V

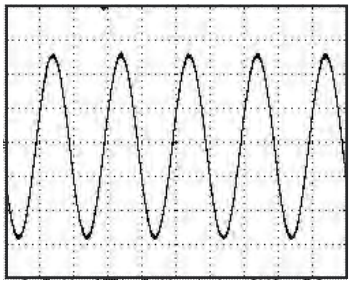
⑧



TP8015- (SR)

500 µs
1.0 V

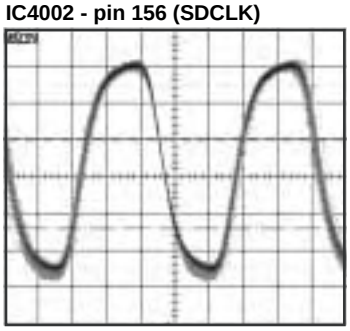
⑨



IC4002 - pin 156 (SDCLK)

2 ns
500 mV

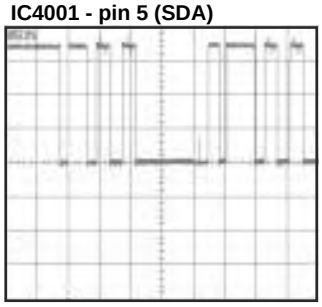
②



IC4001 - pin 5 (SDA)

50µs
1.0V

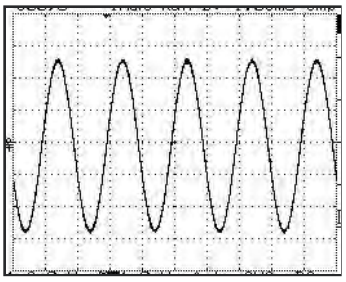
⑦



TP8012- (CENTER)

500 µs
1.0 V

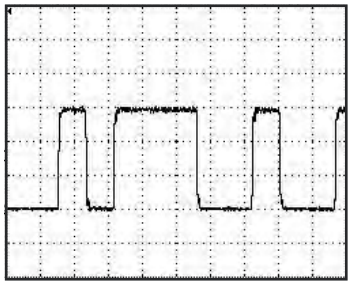
⑩



IC4002 - pin 225 (ASPDIF)

200 ns
1.0 V

③

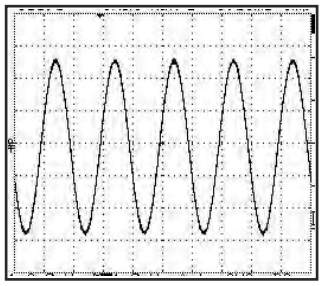


AUDIO JACK

TP8017 (L)

500 µs
1.0 V

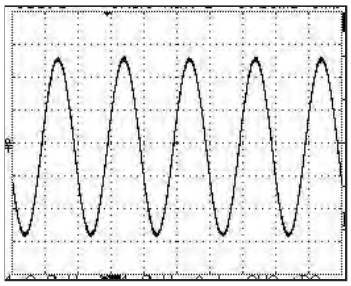
⑥



TP8013- (LFE)

500 µs
1.0 V

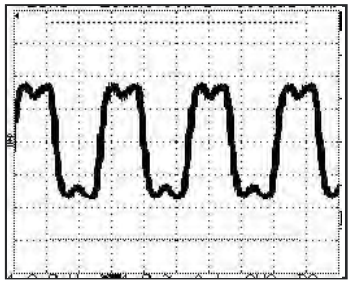
⑪



TP4039 (ACLK)

20 µs
1.0 V

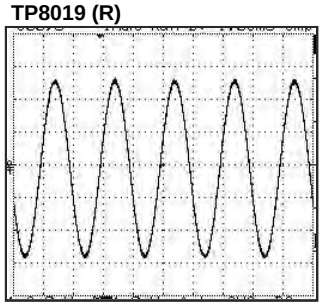
④



TP8019 (R)

500 µs
1.0 V

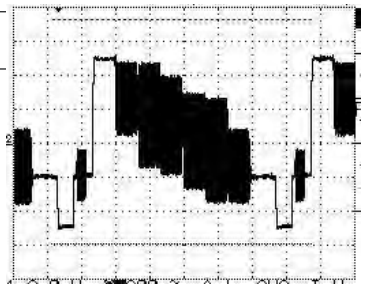
⑦



VIDEO JACK J7302 -pin 6 (CVBS)

10 µs
200 mV

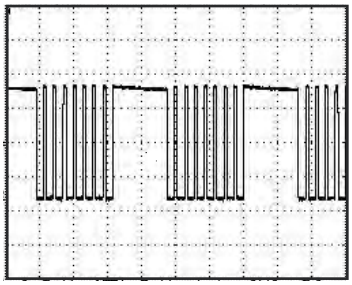
⑫



TP4095 (FP-SCK)

20 µs
1.0 V

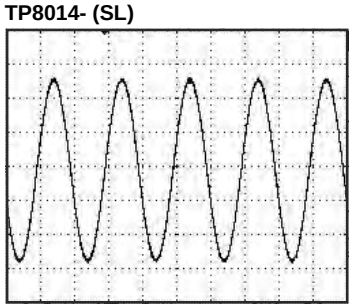
⑥



TP8014- (SL)

500 µs
1.0 V

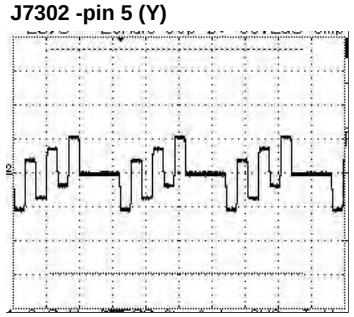
⑧



J7302 -pin 5 (Y)

10 µs
500 mV

⑬



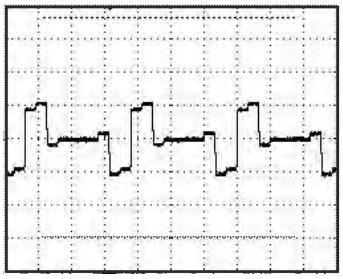
VIDEO JACK (DVD PCB)

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram

J7302 -pin 3 (U)

20 µs
500 mV

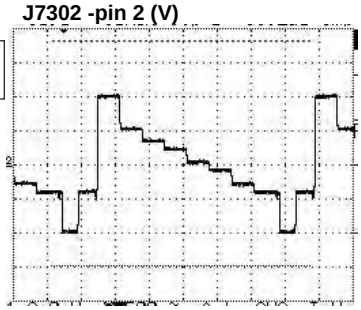
⑭



J7302 -pin 2 (V)

20 µs
500 mV

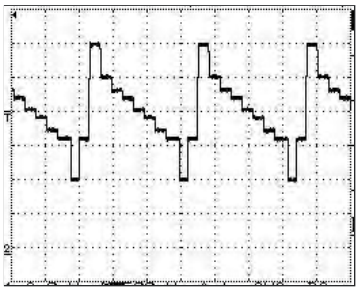
⑮



J7301-pin 3 (Y)

20 µs
500 mV

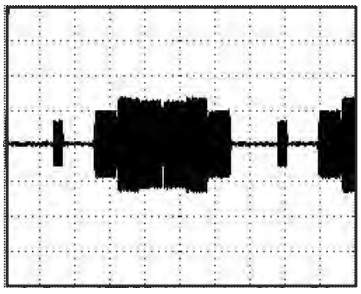
⑯



J7301-pin 4 (C)

10 µs
500 m V

⑰

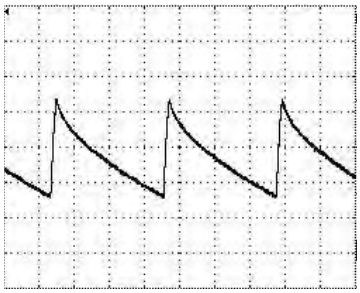


B OPERATION PCB ASSY

IC651 -pin 5 (OSC)

1µs
500mV

⑱



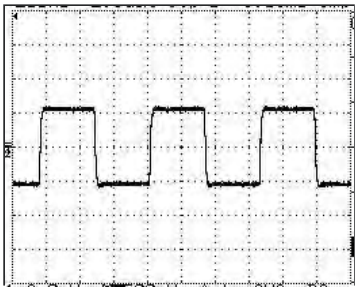
E POWER PCB ASSY

DIGITAL AUDIO

J8102-pin 2 (COAXIAL OUT)

200 µs
500 mV

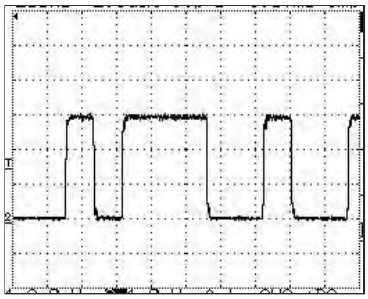
㉗



OS8101-pin 1 (OPTICAL 0UT)

200 ns
1.0 V

㉘



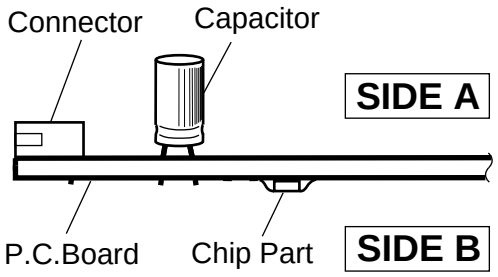
4. PCB CONNECTION DIAGRAM
4.1 LOADING and SW PCB ASSYS

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

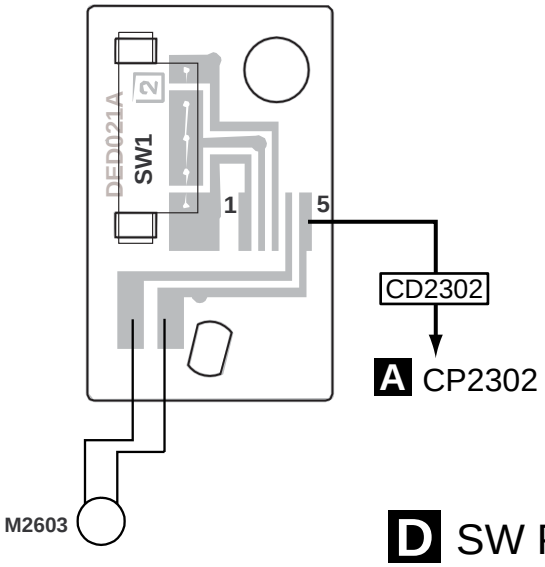
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



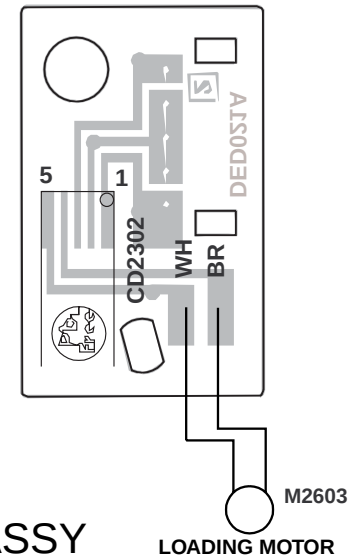
E LOADING MOTOR PCB ASSY
(INSERTED PARTS)

SIDE A

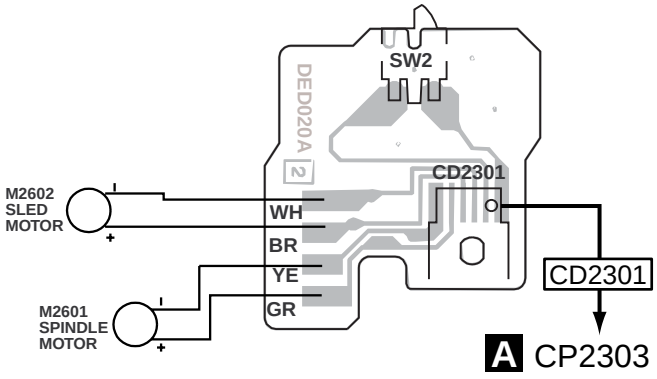


E LOADING MOTOR PCB ASSY
(CHIP MOUNTED PARTS)

SIDE B



D SW PCB ASSY



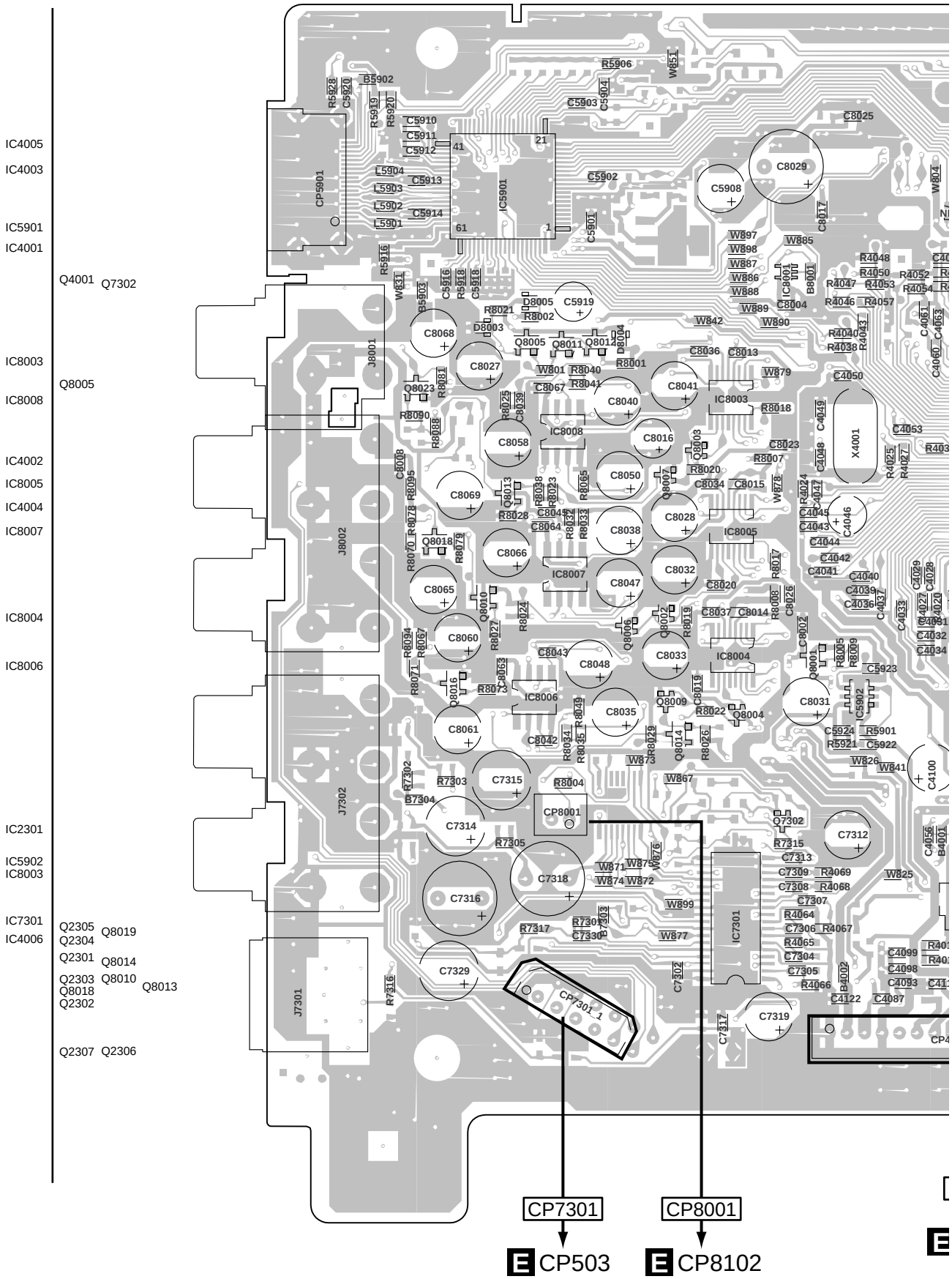
D E

D E

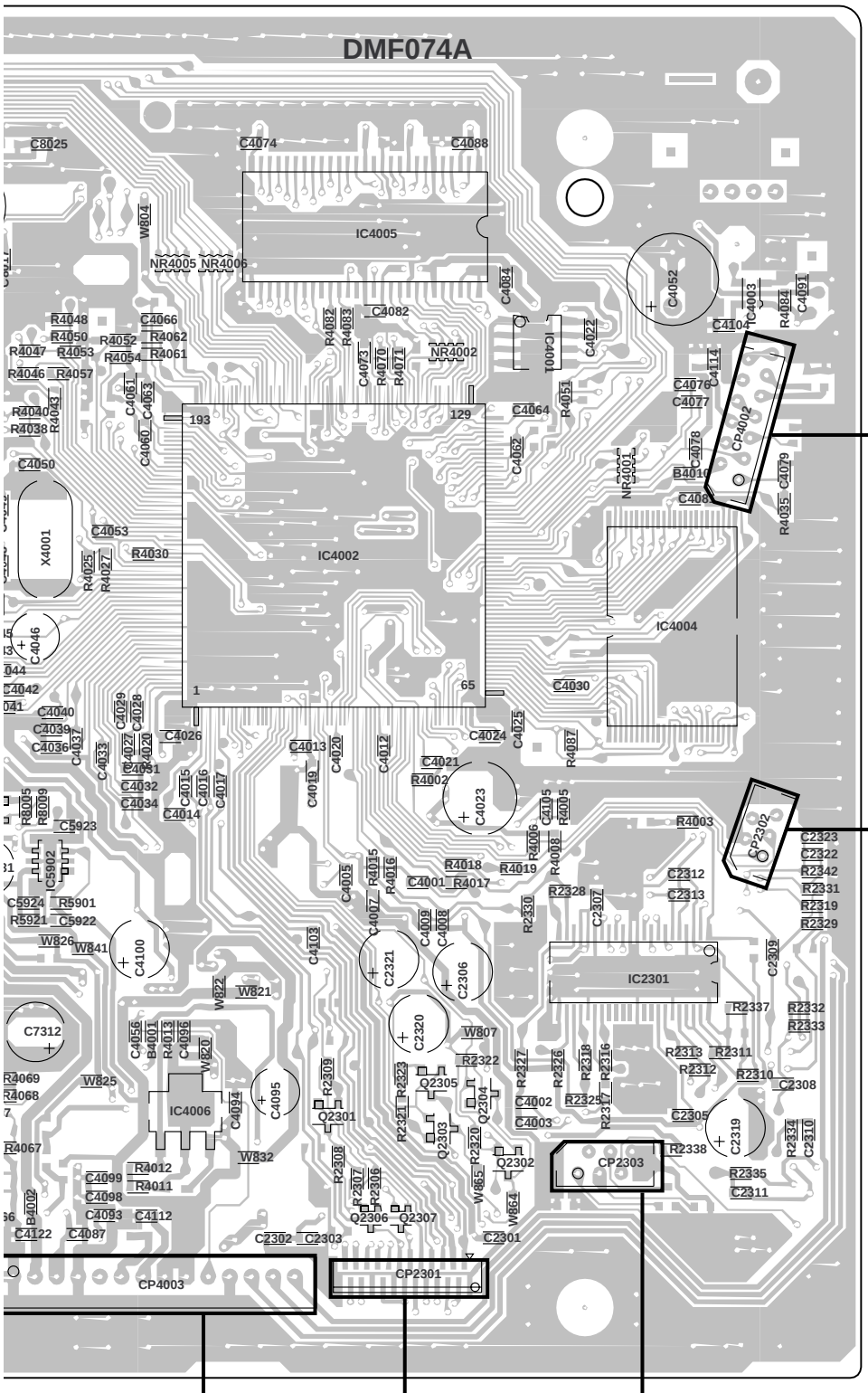
4.2 DVD MT PCB ASSY

A **SIDE A**

A DVD MT PCB ASSY

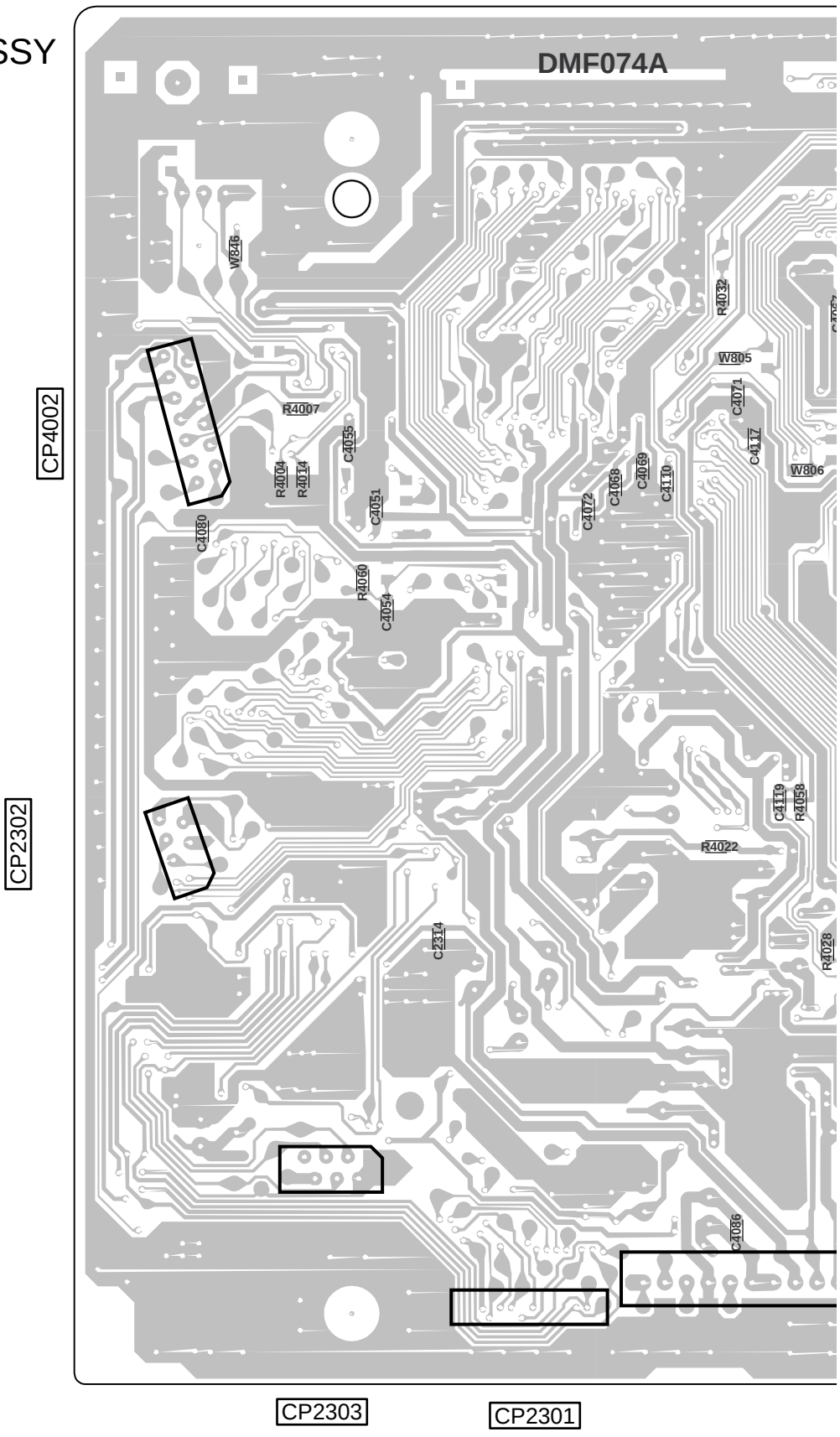


SIDE A

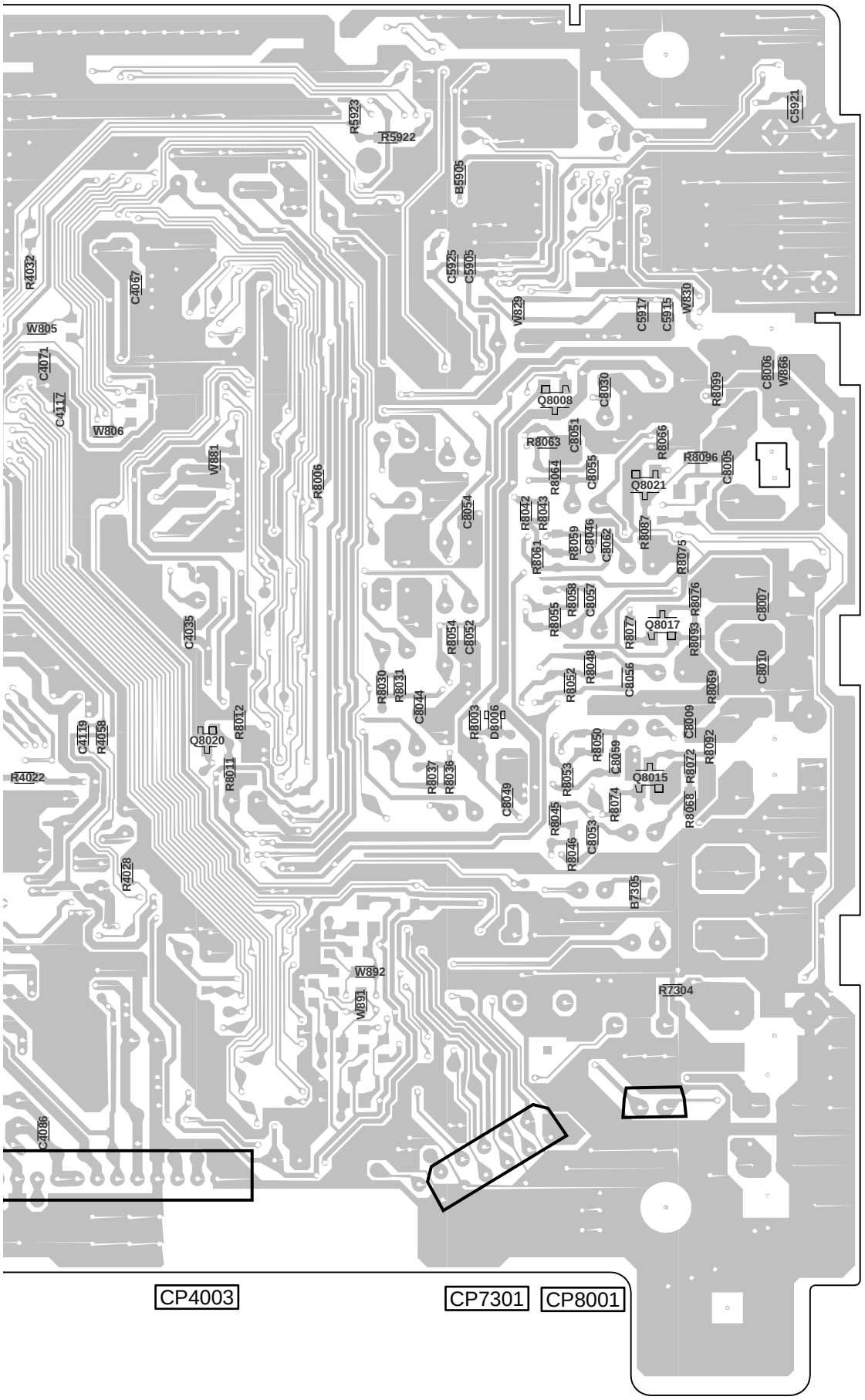

DMF074A
CP4002
B CP601
CP2302
DVD MECHA ASSY
CP2301
CP4003
DVD MECHA ASSY
CP2303
E CP502
DVD MECHA ASSY

SIDE B

A DVD MT PCB ASSY



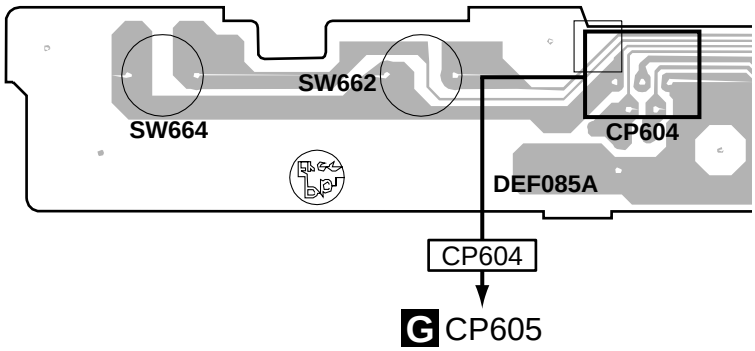
SIDE B


R5923
R5922
B5905
C5921
C5925
C5905
R4032
C4067
W829
C5917
C5915
W830
W805
C4071
C8030
R8099
C8006
W866
Q8008
C4117
W806
R8063
C8051
R8066
R8096
C8005
W881
R8006
C8055
R8064
Q8021
C8054
R8042
R8043
C8046
C8062
R8087
R8059
R8061
R8075
C4035
R8055
R8058
C8057
R8076
C8007
Q8017
R8077
R8093
R8054
C8052
C8010
R8030
R8031
R8048
R8052
C8056
R8069
C8044
R8003
D8006
C8009
C4119
R4058
Q8020
R8012
R8050
C8059
R8092
R8072
R4022
R8011
R8053
Q8015
R8037
R8036
R8074
C8049
R8045
R8068
C8053
R8046
R4028
B7305
W892
R7304
W891
C4086
CP4003
CP7301
CP8001

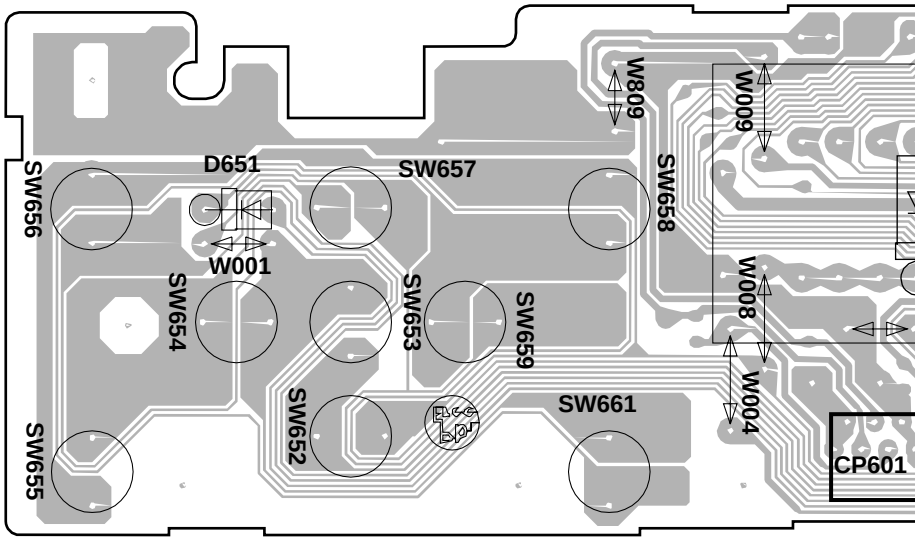
4.3 OPERATION, OPERATION 2 and OPERATION 3, 4 PCB ASSYS

SIDE A

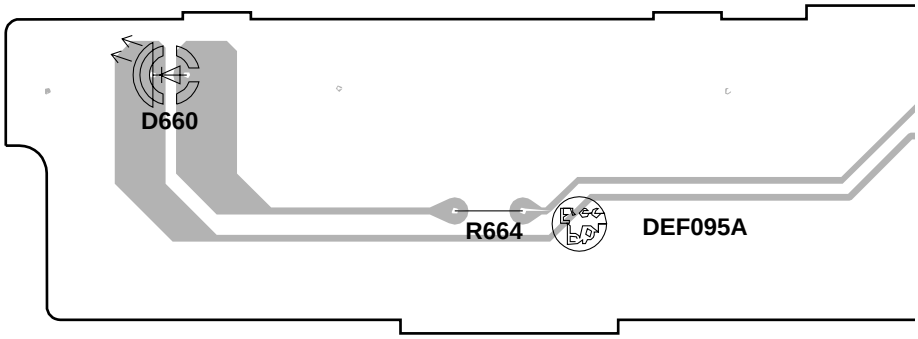
C OPERATION 2 PCB ASSY



B OPERATION PCB ASSY

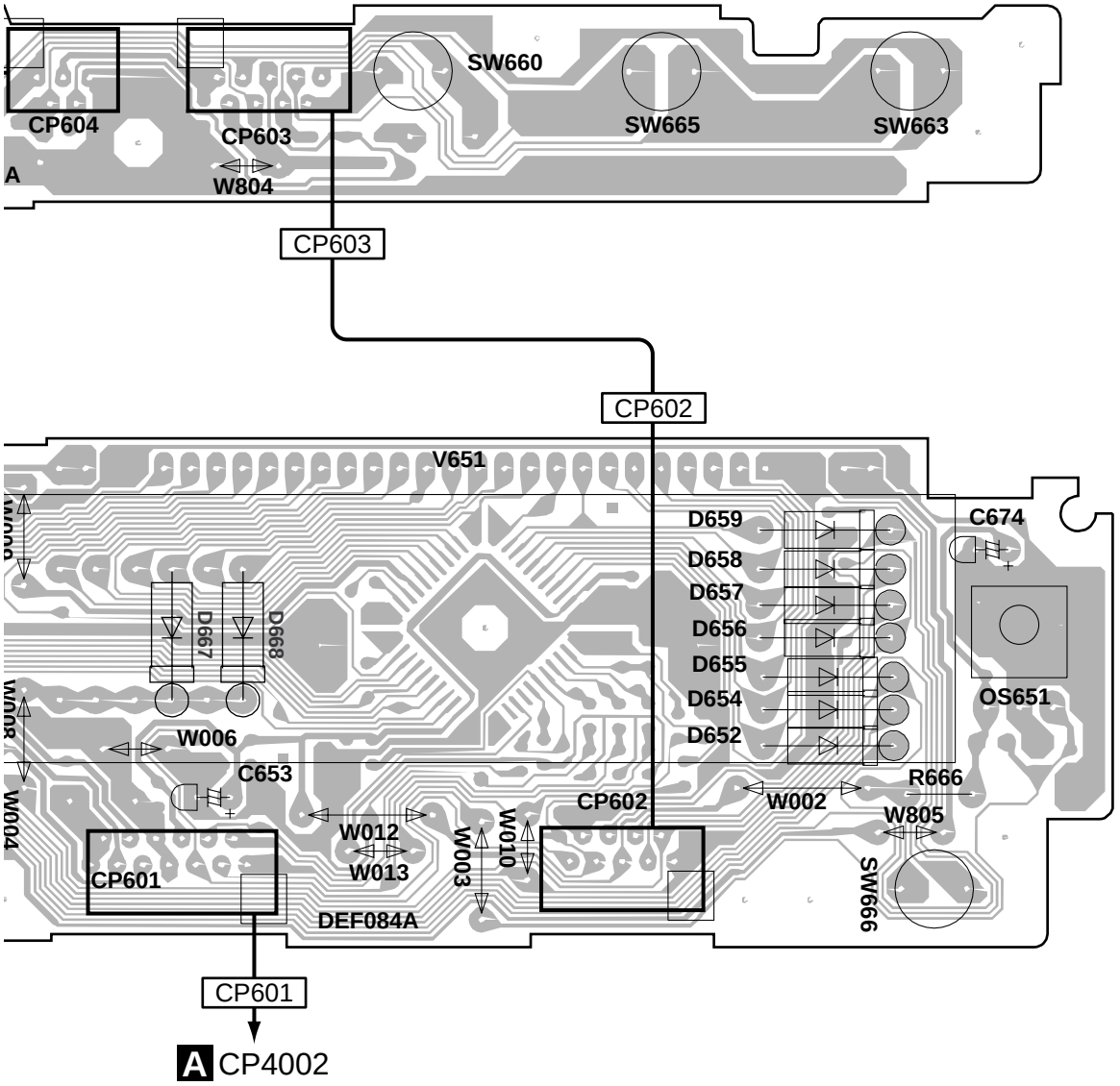


H OPERATION 4 PCB ASSY

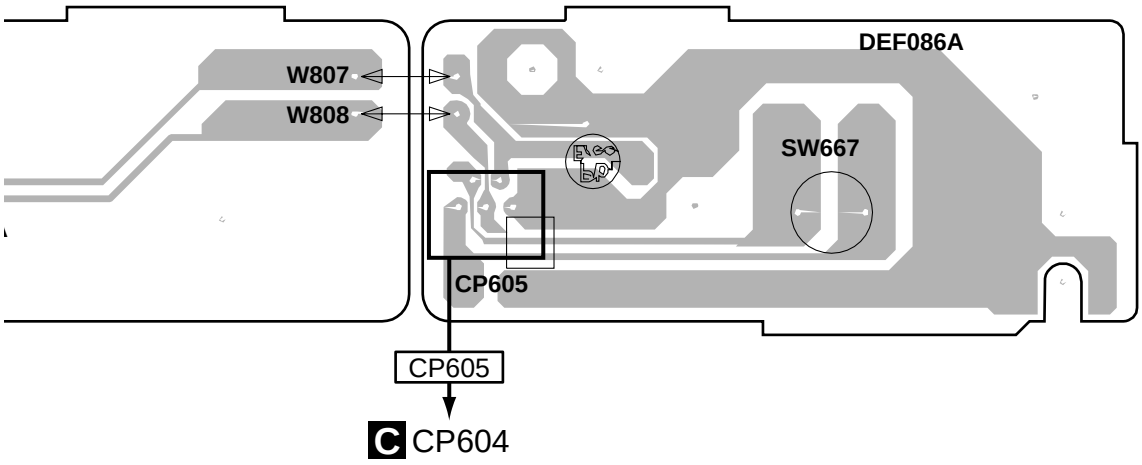


B C H

SIDE A



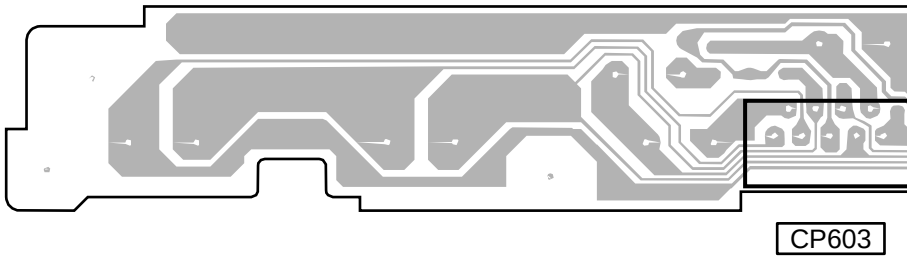
G OPERATION 3 PCB ASSY



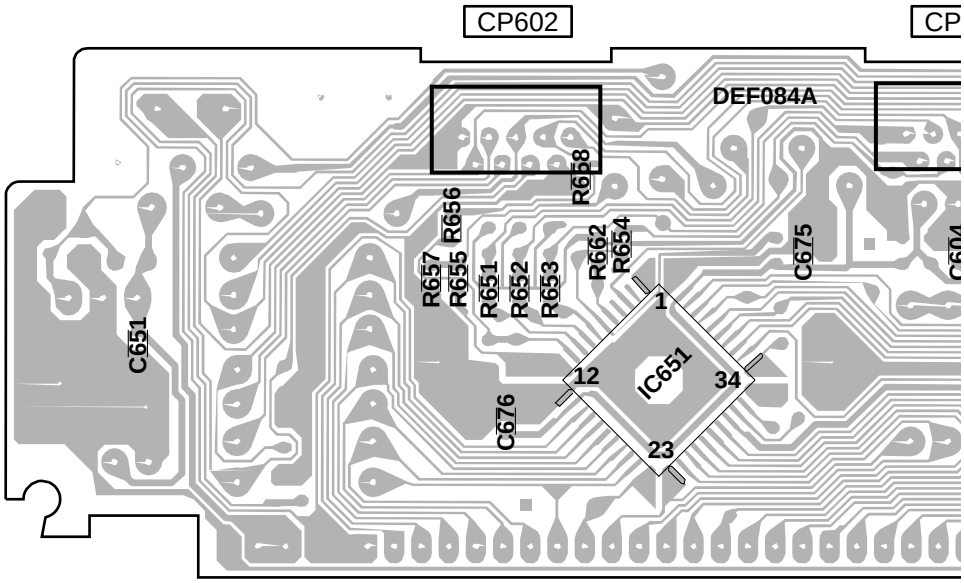
B C G

SIDE B

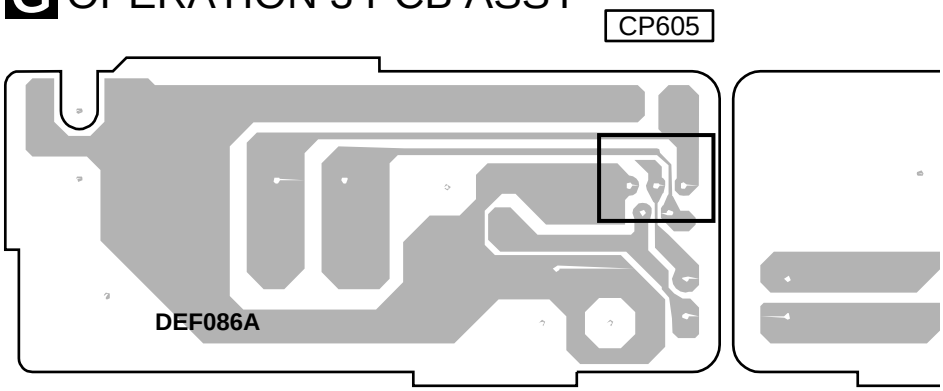
C OPERATION 2 PCB ASSY



B OPERATION PCB ASSY

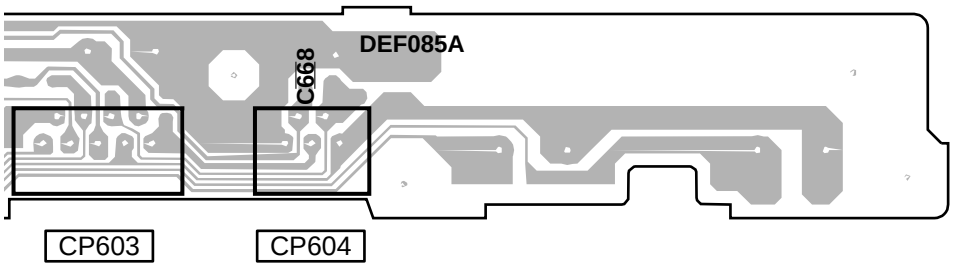


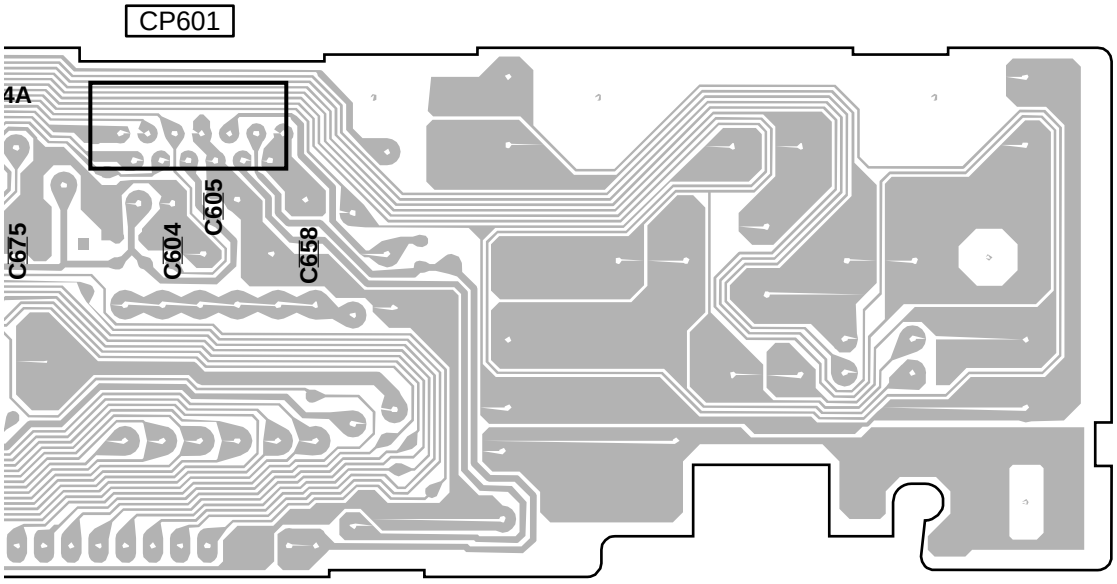
G OPERATION 3 PCB ASSY



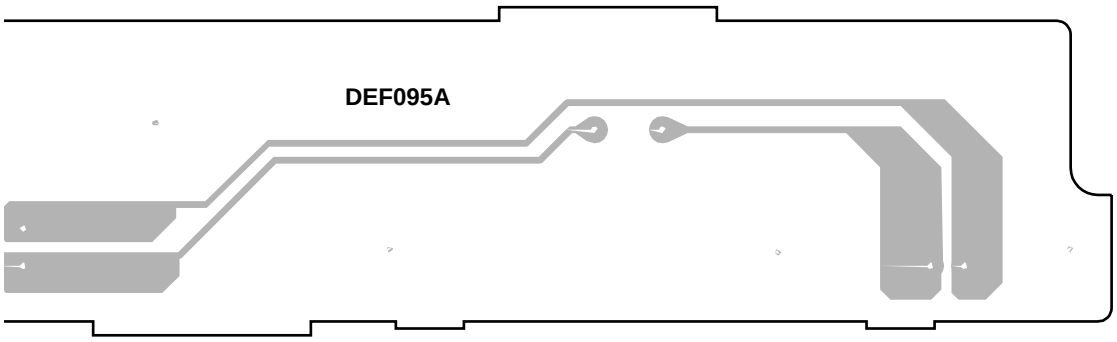
B C G

SIDE B





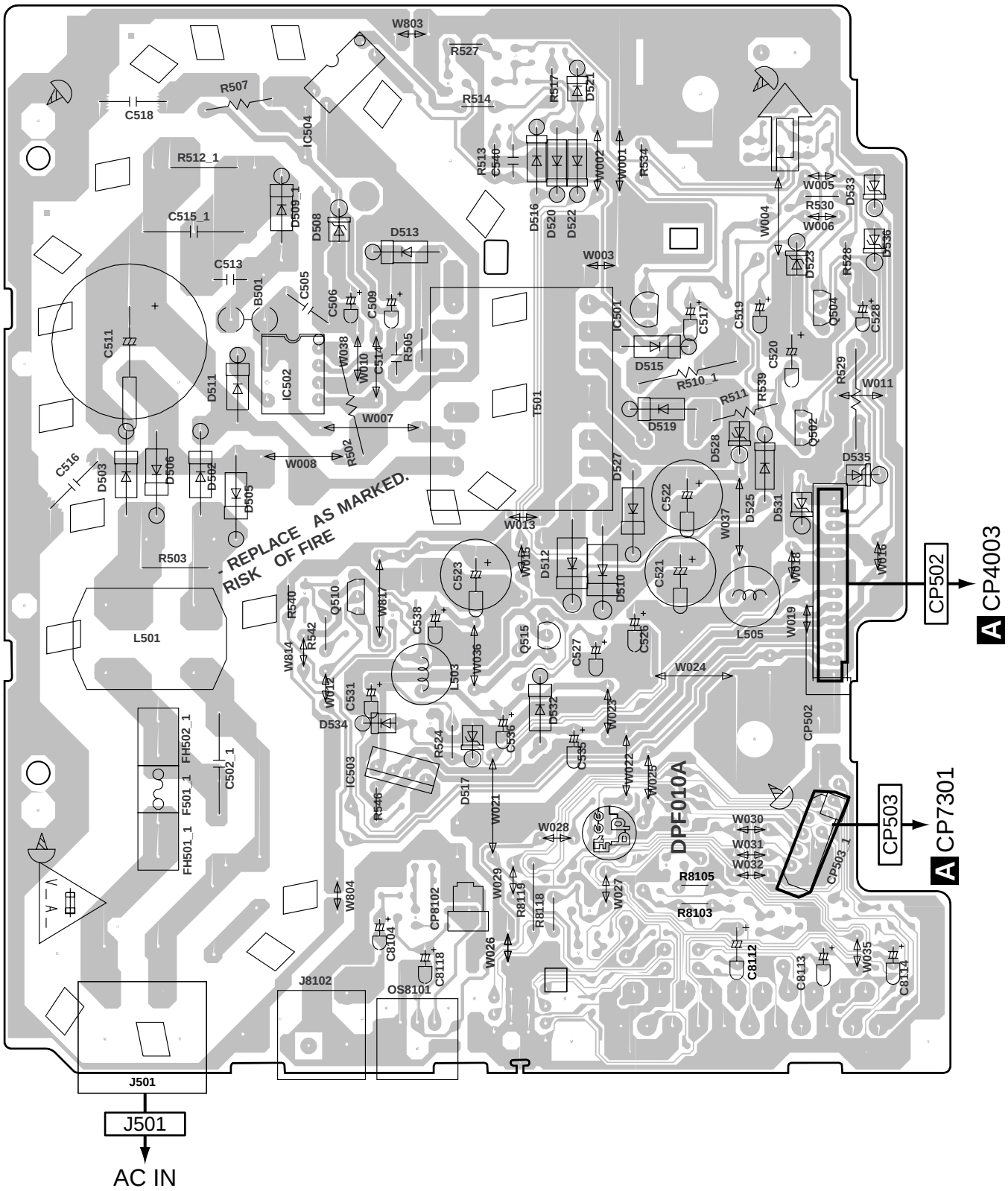
H OPERATION 4 PCB ASSY



4.4 POWER PCB ASSY

SIDE A

F POWER PCB ASSY

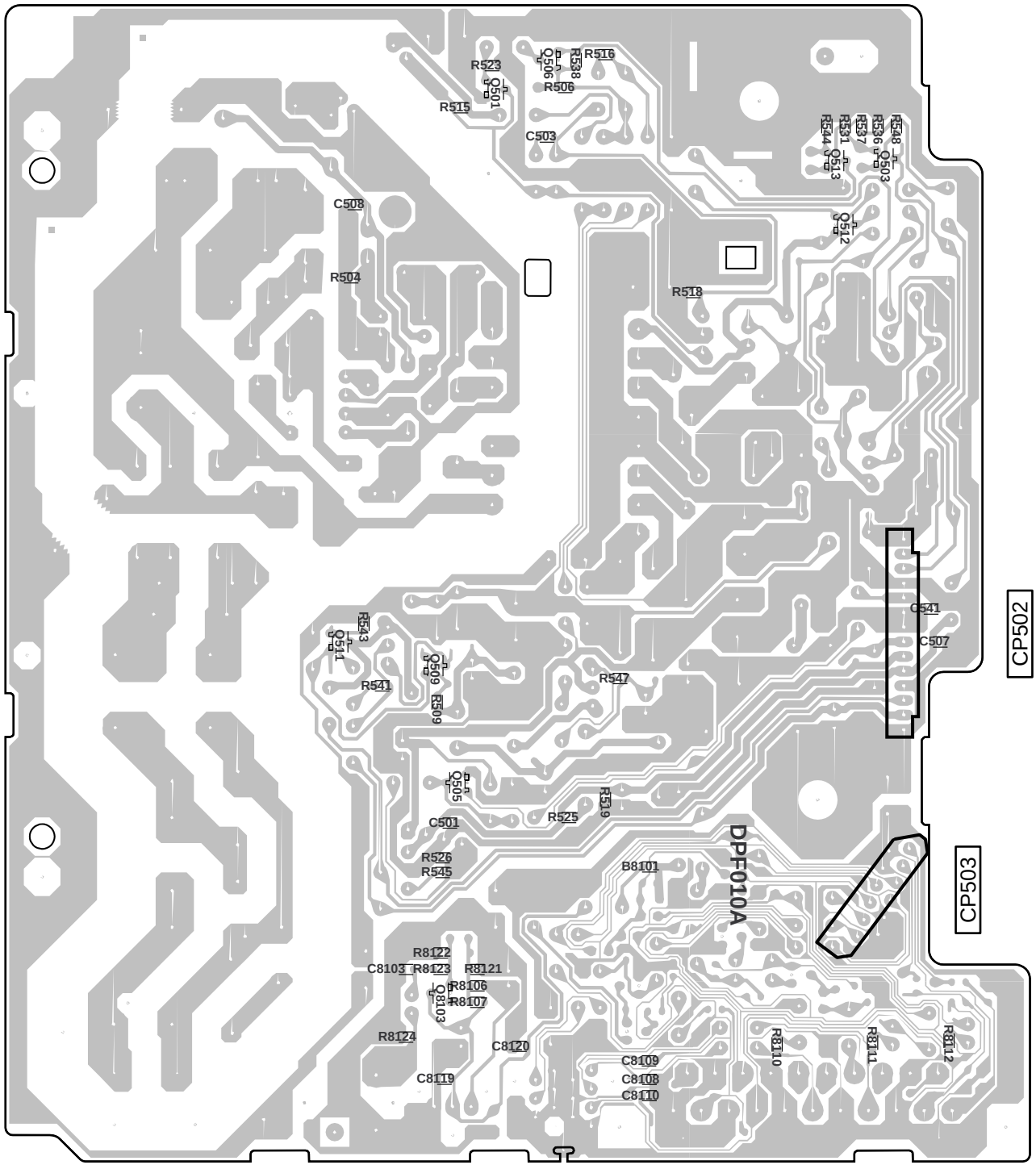


IC502 Q510 Q515 IC501 Q502
IC504 IC503 Q504

F

SIDE B

F POWER PCB ASSY



Q511 Q509 Q505 Q501 Q506 Q8104 Q8105 Q8101 Q8102 Q512 Q513 Q503

F

5. PCB PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω	→	*56 x 10¹*	→ *561*	*RD1/4PU 561 J*
47k Ω	→	*47 x 10³*	→ *473*	*RD1/4PU 473 J*
0.5 Ω	→	*R50*		*RN2H R50 K*
1 Ω	→	*1R0*		*RS1P 1R0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω	→	*562 x 10¹*	→ *5621*	*RN1/4PC 5621 F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
	1	DVD MT PCB ASSY (: DXZTRA, RLFXZT_Only)	A2J009A130
	1	DVD MT PCB ASSY (: RPWXZT, RTXZT_Only)	A2I012A130
	1	OPERATION PCB ASSY	A2I813A270
	1	OPERATION PCB ASSY (: RTXZT_Only)	A2I812A270
	1	OPERATION 2 PCB ASSY	A2I802A280
	1	OPERATION 3 PCB ASSY	A2I903ADF0
	1	OPERATION 4 PCB ASSY	A2I903ADG0
⚠	1	POWER PCB ASSY	A2J012A240
	1	DVD MECHA ASSY	A2I802A650
NSP	2	LOADING MOTOR PCB ASSY	A2F101A610
NSP	2	SW PCB ASSY	A2F101A640

A DVD MT PCB ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC2301	IC LA6565VR-TLM-E	I03FV65650
	IC4002	IC MT1389EXE/B2-L	IC8K0389BX
	IC4001	IC BR24L08FJ-WE2	I57F04L080
	IC4003	IC BD5229G-TR	I97F052290
	IC4004	IC S29AL016D70TFI020	S2J003AF03
	IC4005	IC EM638165TS-7G	IG2J081657
	IC4006	IC LM1117S-ADJ	I1TF911170
	IC5901	IC MT1392E/C-L	IC8K013920
	IC5902	IC PQ1K503M2ZPH	I0GF9K5030
	IC7301	IC LA73054-TLM	I03FG30540
	IC7302	IC SN74CBT3257PWR	I5CJ032570
	IC8001	IC TC7SHU04FU	I55F004FU0
	IC8003	IC PCM1742KEQ/2K	I17F02KEG0
	IC8007	IC RC4580IDR	I04J045800

OTHERS

Mark	No.	Description	Part No.
	J8001	RCA JACK	060R451009
	J7301	RCA JACK	063R700013
	J7302	RCA JACK	060R451010
	CP5901	CONNECTOR	0694YJ3018
	X4001	CRYSTAL (27MHz)	100GT02720
	J8002	RCA JACK	060R451011

B OPERATION PCB ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC651	IC PT6315	IF4K063150

SWITCHES AND RELAYS

Mark	No.	Description	Part No.
	SW652 - SW659	SWITCH TACT	0504R01T38
	SW661, SW666	SWITCH TACT	0504R01T38

OTHERS

Mark	No.	Description	Part No.
	V651	TUBE FLUORESCENT	096F82R601
	V651	TUBE FLUORESCENT	096782R603
	OS651	REMOTE RECEIVER	077A040001

C OPERATION 2 PCB ASSY

SWITCHES AND RELAYS

Mark	No.	Description	Part No.
	SW660-SW665	SWITCH TACT	0504R01T38

F POWER PCB ASSY

RESISTORS

Mark	No.	Description	Part No.
⚠	R511	R,FUSE 68 OHM 1/4W	R65584680J

OTHERS

Mark	No.	Description	Part No.
	CP8102	CORD, CONNECTOR	06CU223002
	J8102	RCA, JACK	060R401122
	OS8101	OPTICAL, DEVICE	07AA000011

G OPERATION 3 PCB ASSY

SWITCHES AND RELAYS

Mark	No.	Description	Part No.
	SW667	SWITCH TACT	0504R01T38

H OPERATION 4 PCB ASSY

There is no Service Parts

D SW PCB ASSY

There is no Service Parts

E LOADING MOTOR PCB ASSY

There is no Service Parts

6. ADJUSTMENT

6.1 WHEN REPLACING DVD DECK

WHEN REPLACING DVD DECK

[Removing the DVD Deck]

Before removing Pick Up PCB and DVD PCB connector, short circuit the position shown in **Fig. 1** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.

[Installing the DVD Deck]

Remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

NOTE

- Before your operation, please read “PREPARATION OF SERVICING” .
- Use the Lead Free solder.
- Manual soldering conditions
  - Soldering temperature: 320 ± 20˚C
  - Soldering time: Within 3 seconds
  - Soldering combination: Sn-3.0Ag-0.5Cu
- When Soldering/Removing of solder, use the draw in equipment over the Pick Up Unit to prevent the Flux smoke from it.

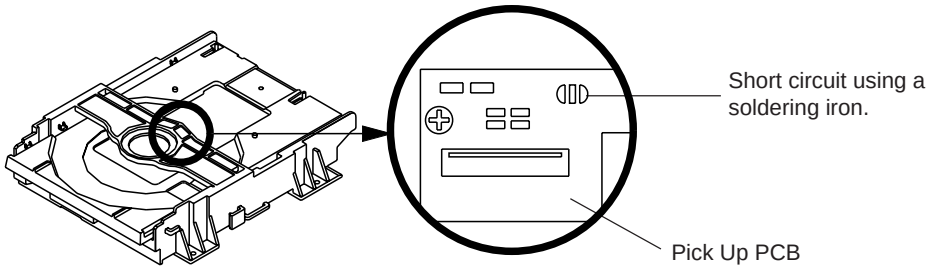
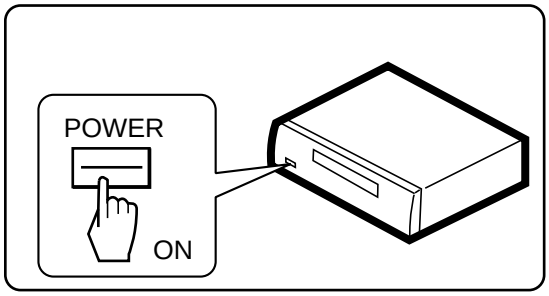


Fig. 1

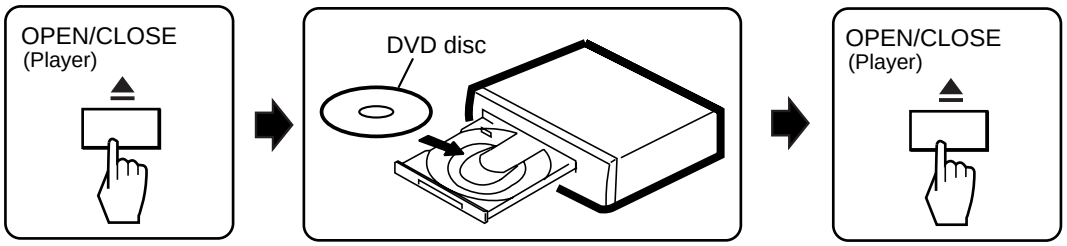
6.2 TEST MODE

POWER ON



DISC SET

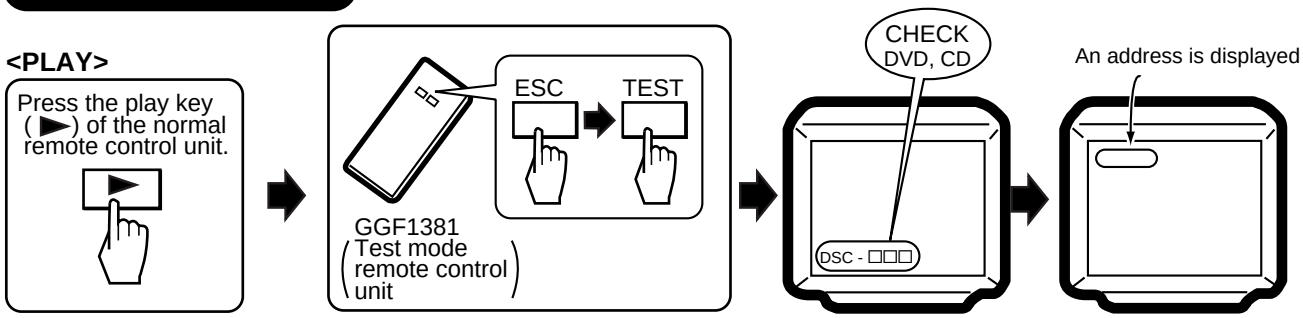
<TRAY OPEN>



<TRAY CLOSE>

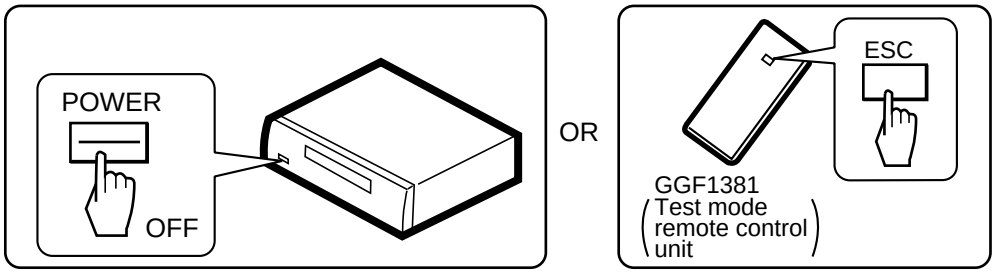
TEST MODE: PLAY

<PLAY>



Notes:
- After going into test mode, if you play back the disc, "DISC-NON" is displayed.
- The video signal and the audio signal are outputted during the test mode.
- The SKIP key and the SCAN key are effective during the test mode.

TEST MODE: OFF



6.3 TEST MODE IN

Test Mode Functional Specification

① Test mode entry

In the power ON state, press the [ESC] (A8-5F) key and [TEST / RANDOM] (A8-5E) key in order of the Test mode remote control unit.

- Light the all FL and LEDs.
- OSD displays test mode.

Note:

* When pressing the keys of something, the FL displays "NO DISC" and the LED lighting disappears.

② Release the Test mode

- Turn off the power.
- Press the [ESC] (A8-5F) key of the remote control unit.

③ LD ON

DVD : Press the [TEST] (A8-5E) and [1] (A8-01) keys in order, and turn on the laser diode (650 nm).
CD : Press the [TEST] (A8-5E) and [4] (A8-04) keys in order, and turn on the laser diode (780 nm).

6.4 DISC REMOVAL METHOD

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Rotate the Main Gear in the direction of the arrow by hand.
   (Refer to Fig. 1, Fig.2)
3. Draw the Tray.

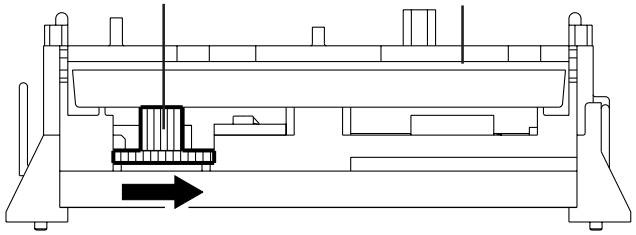


Fig. 1

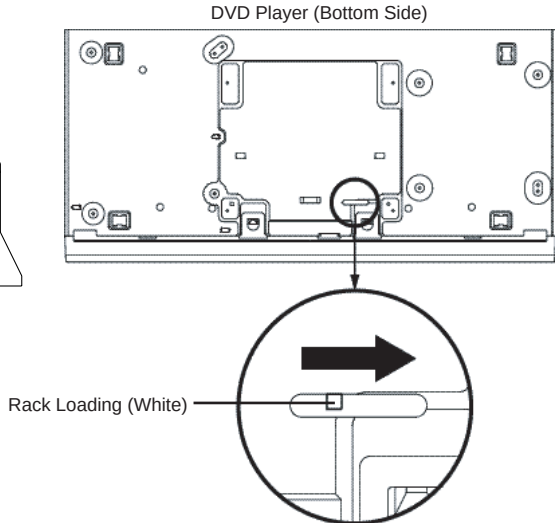


Fig. 2

PREPARATION OF SERVICING

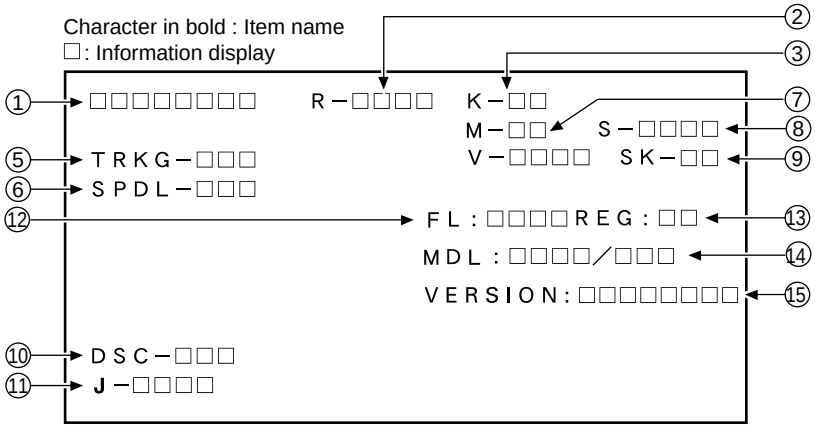
The laser diode used for a pickup head may be destroyed with external static electricity. Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, the life of the product may be shortened.
Please perform the following measure against static electricity, be careful of destruction of a laser diode at the time of repair.

- Place the unit on a workstation equipped to protect against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISPLAY SPECIFICATION OF THE TEST MODE



① **Address indication**
The address being traced is displayed in number.
(as for the DVD, indication of decimal number is possible.)
DVD : ID indication (hexadecimal number, 8 digits)
[＊＊＊＊＊＊＊＊]
CD : ID indication [＊＊＊＊＊＊＊＊]

② **Code indication of remote control unit [R – ＊＊＊＊]**
In case of double code, display a 2nd code.

③ **Main unit keycode indication [K – ＊＊]**

⑤ **Tracking status [TRKG – ＊＊＊]**
Tracking on : [ON]
Tracking off : [OFF]

⑥ **Spindle status [SPDL – ＊＊＊]**
[OFF], [CLV]

⑦ **Mechanism (loading) position value [M – ＊＊]**
Unknown : [01] or [41]
Open state : [04]
Close state : [08]
During opening : [12]
During closing : [22]

⑧ **Slider position [S – ＊＊＊＊]**
In Side Switch ON : [01]
In Side Switch OFF : [00]

⑨ **Output video system [V – ＊＊＊＊]**
NTSC system : [NTSC]
PAL system : [PAL]
Automatic setting : [AUTO]

Scart terminal output [SK – ＊＊]
(Display only the WY model which can do the output setting of scart terminal.)
VIDEO : [00]
S-VIDEO : [01]
RGB : [02]

⑩ **Disc sensing [DSC – ＊＊＊]**
The type of discs loaded is displayed.
[DVD], [CD], [VCD], [ ]

⑪ **Jitter value [J – ＊＊＊＊]** Note:Don't use it.

⑫ **Version of the FL controller [FL: ＊＊＊＊]**

⑬ **Region setting of the player [REG: ＊]**
Setting value : [1] to [6]

⑭ **Destination setting of the FL controller [MDL: ＊＊＊＊ / ＊＊＊]**
Four characters in the front represent code 01.
Three characters in the back represent the destination code.
J: /J, K: /KU, /KC, /KU/KC, R: /RL/RD, RAM : /RAM, LB: /LB, WY: /WY

⑮ **Version of the flash ROM [VERSION: ＊＊＊＊＊＊＊＊]**

7.1.2 FUNCTIONAL SPECIFICATION OF THE SHORTCUT KEY

Only during normal playback, the following shortcut keys can be assigned by pressing a required key after pressing the ESC key of the remote control unit. To quit, press the ESC key

Command Contents	Conditions	Remote Control Key Name	Remote Control Code
Memory clear and region / revision indication		CLEAR (∗1)	A8-45
Average value measurement of DVD error rate		5 (∗1)	A8-05
CD error rate measurement		5 (∗1)	A8-05
Scart terminal output : VIDEO	WY, models equipped with Scart terminal	AUDIO	AF-BE
Scart terminal output : S-VIDEO		SUBTITLE	AF-36
Scart terminal output : RGB		ANGLE	AF-B5
Progressive OFF	Only for progressive models	R_SKIP	A3-9D
Progressive ON		F_SKIP	A3-9C
ZOOM ON (X2 -> X4 -> x1)		ZOOM	AF-37
Service mode indication (error rate indication, etc.)		CHP/TIM (∗1)	A8-13
Model information indication		CHAP (∗1)	A8-40
Title search Input mode IN Title No. input Search execution		SIDE A (∗1) Numbers (∗1) PLAY (∗1)	A8-4D A8-00 to A8-09 A8-17
Region confimation mode		A.MON (∗1) Numbers (∗1)	A8-1E A8-01 to A8-08

∗1 : Test mode remote control unit

• Service mode indication (ESC + CHP/TIM keys)

ID Address
The error rate is always displayed in exponential notation, e.g., ∗.∗ ∗ e - ∗, for both DVDs and CDs.
EDC/ID/AV 1 error history (ID Address, EDC/ID Error, last eight errors)

• Calculation of the average error rate (ESC + "5" [Test mode remote control unit] keys)

The average of the last eight error rates is calculated and indicated in exponential notation. After the calculation is completed, "OK" or "NG" is displayed. If "NG" is displayed, the disc tray will open (for both DVDs and CDs)
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

• Indication of model information (ESC + CHAP keys)

The items from 12 to 15 of the TEST MODE Indications are displayed. However, in the indications, S in the standard test mode is changed to CHIP VERSION, and M is changed to FL VERSION. For details, see 7.1.3.

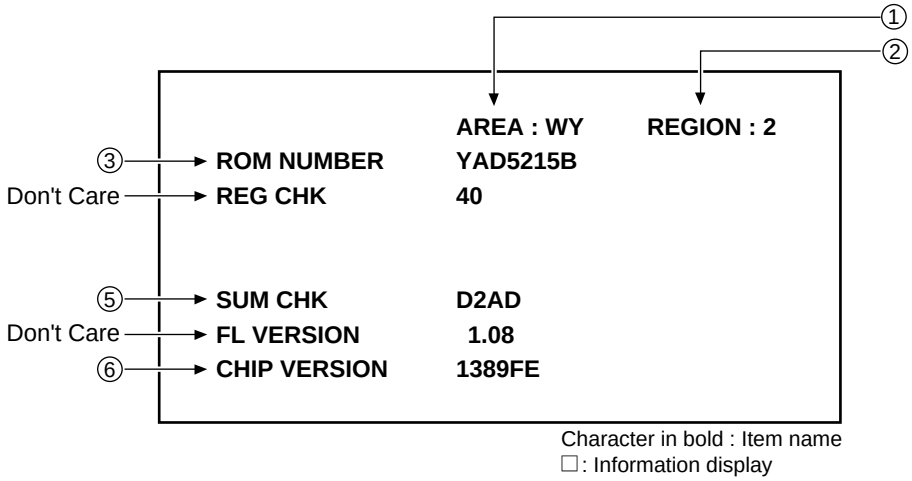
• Region confirmation mode (ESC + A.MON [Test mode remote control unit] + "1"-"8" [Test mode remote control unit] keys)

After you press the A.MON key while holding the ESC key pressed and then input the region number, if the number is different from that set in the unit, an error message is displayed, and the tray opens.

7.1.3 SPECIFICATION OF MODEL INFORMATION DISPLAY

To display model information : Press the ESC key then the CHAP key.
To close the model information display : Press the ESC key.

• **Display contents**



Character in bold : Item name
☐: Information display

① **Destination indication**
Display it according to model information set from the FL Driver IC.
② **Region No.**

③ **ROM number**

④ **REG CHK**

⑤ **SUM CHK**

⑥ **CHIP VERSION**

7.1.4 FUNCTIONAL SPECIFICATION OF THE SERVICE MODE

• Display during Service Mode

To enter Service Mode, press the CHP/TIM key while holding the ESC key pressed.
To quit, press the ESC key.

Service mode display

① ID Address
② Error rate (always displayed), in exponential notation

ERROR RATE : ＊＊＊＊＊＊＊
(＊＊＊＊)
Number of error

• Calculation of the average error rate
For DVDs: OK with 5.0e-4 or less, for CDs: OK with 7.6e-3 or less

ex) For DVDs

• Step 1

△△e -□

△△e -6	: OK
△△e -5	: OK
△△e -4	: Refer to Step 2
△△e -3	: NG
△△e -2	: NG

• Step 2

△△e -4

3.0e -4	: OK
4.0e -4	: OK
5.0e -4	: OK
6.0e -4	: NG
7.0e -4	: NG

③ EDC/ID error history (ID Address, EDC/ID errors, last eight errors)

Note:
＊ Error of AV1 is not supported in this player.

Indication plan contents

Character in bold : Item name
□: Information display

7.1.5 METHOD FOR DIAGNOSING DEGRADATION OF THE LDS ON THE PICKUP ASSY

Case when this diagnosis is required :
When playback of any disc, including a test disc (DVD: GGV1025, CD: STD-905), cannot be performed

How to diagnose

In the case mentioned above, degradation of the laser diodes (LDs) mounted on the PICKUP Assy is suspected.
Measure the voltage between the two ends of one of the resistors mentioned below.

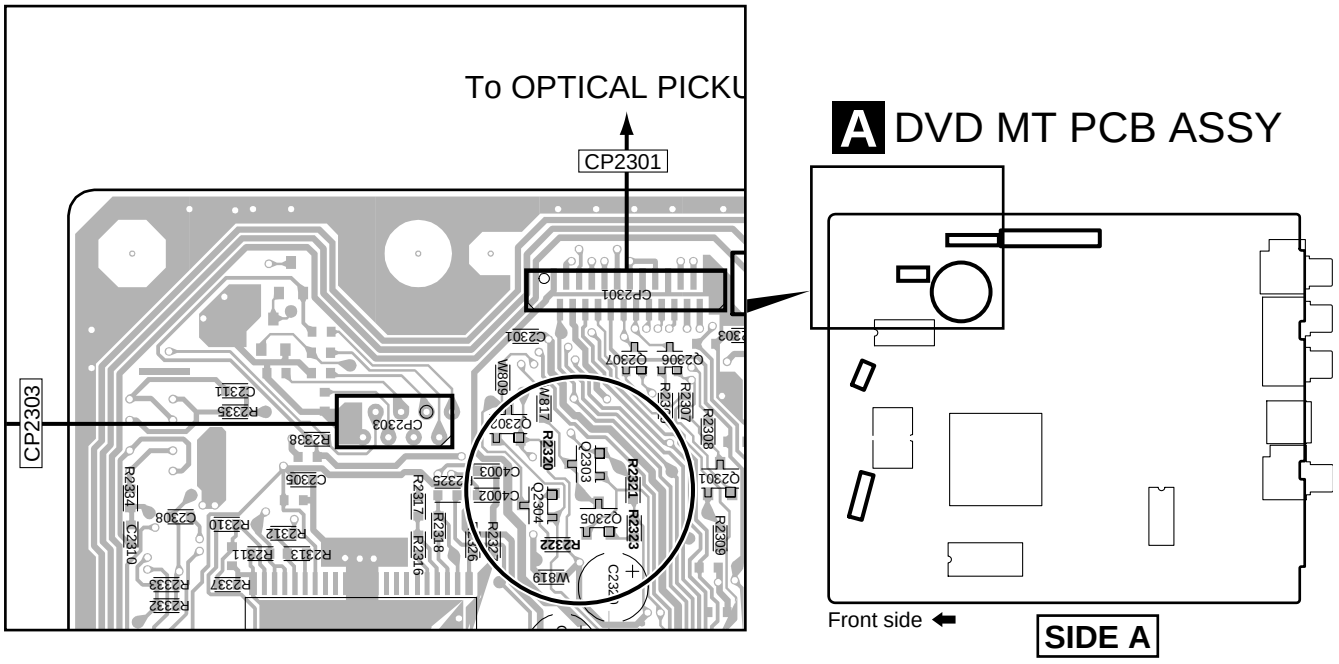
- **No playback of a DVD :**

  Measure the voltage between the two ends of R2321 or R2323 on the DVD MT PCB Assy. If the voltage is 0.4 V or higher, the 650-nm LD is degraded.

- **No playback of a CD :**

  Measure the voltage between the two ends of R2320 or R2322 on the DVD MT PCB Assy. If the voltage is 0.4 V or higher, the 780-nm LD is degraded.

If the measurements show degradation of an LD, replace the PICKUP Assy.



7.1.6 TROUBLE SHOOTING

No.	Symptoms	Diagnosis Contents	Possible Defective Points
1	The power is not turned on.	Check the voltage of AT+3.3 V, –28 V and FLDC on the POWER SUPPLY Unit.	**POWER PCB ASSY**
		Are wires of output connector (POWER PCB ASSY) and CP4003 (DVDM Assy) disconnected or damaged ?	Connector / cable
		Check that the voltage at IC651-pin 10 (K 1) on the FLKY Assy becomes about 2.7 V when the POWER key is pressed and 0 V when it is released.	**OPERATION 2 Assy** Tact SW (when operation of only the POWER key on the main unit is not accepted)
		Check that the voltage at OS651-pin 1 (IR) on the OPERATION1 Assy is in the range between 0 and 3.3 V while receiving signals from the remote control unit when any key on it is pressed.	**OPERATION Assy** Remote receiver section (when operation of only the POWER key on the remote control unit is not accepted)
2	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	• Check the voltage of E+6.8 V and SW+3.3 V on the POWER PCB ASSY. • Check the voltage of P.ON-H is about 2.8 V on the POWER PCB ASSY.	**POWER PCB Assy**
		Check that the following voltage are output : IC4006-pin 5 : 1.8 V, on the DVD MT PCB Assy.	**DVD MT PCB Assy** 1.8 V Regulator IC (IC4006)
		Is a resonator (X4001 : 27 MHz) on the DVD MT Assy oscillating ?	**DVD MT PCB Assy** Crystal resonator (X4001)
		• Are the signals input into IC4005-pin 16 (DWE#), pin 19 (DCS#) and pin 38 (SDCLK) on the DVD MT Assy ? (Is a signal fluctuating ?) → Communication with SDRAM	**DVD MT PCB Assy** DVD IC (IC4002) Flash ROM (IC4004) SDRAM (IC4005)
		Is a signal output from IC4004-pin 28 (PRD#) on the DVD MT Assy? (Is a signal fluctuating for several hundred mS after the power is turned on ?)	**DVD MT PCB Assy** Flash ROM (IC4004)
		Are the signals of IC4003-pin 5(SDA) and pin 6(SCL) on the DVD MT Assy fluctuating for one or two seconds after the power is turned ?	**DVD MT PCB Assy** EEPROM (IC4001)
3	An opening screen is not displayed on the monitor (The FL display lights. The mechanism does not work.)	Check the video signal path between DVD IC (DVD MT Assy IC4002) and video-out terminal (see the block diagram)	**DVD MT PCB Assy** Video circuit after DVD IC (IC4002)

No.	Symptoms	Diagnosis Contents	Possible Defective Points
4	A tray cannot be opened. (An opening screen is displayed on the monitor)	Does the voltage of CP2302-pin 3 and pin 1 on the DVD MT Assy change normally ? Pin 5 (SW2(TRIN)): Tray is fully closed: "L" Pin 3 (SW1(TROUT)): Tray is fully opened: "L"	Tray SW
		Is a LOAD-DRV signal reaching ?	**DVD MT PCB Assy** DVD IC (IC4002)
		Are the signals output from IC2301-pin 5 and pin 6 (CP2302-pin 4 and pin 5) on the DVD MT Assy ? Pin 5: Approx. 4.5 V during opening tray approx. 0 V during closing tray. Pin 4: Approx. 0 V during opening tray approx. 4.5 V during closing tray.	**DVD MT PCB Assy** FTS Driver IC (IC2301)
		Are wires of CP2302 and CP2303 on the DVD MT Assy disconnected or damaged ?	Connector / cable
		Does the voltage of CP2303-pin 5 change by pressing the Inside switch.	Inside switch
5	Playback impossible (no focusing)	Are the signals output from IC2301-pin 9 (F+) and pin 8 (F–) on the DVD MT Assy ?	**DVD MT PCB Assy** FTS Driver IC (IC2301)
		Does 650-nm LD emit light ? Does a pickup lens move up / down ? Does an actuator spring bend ?	Pickup
		Are plastic parts damaged ? Or is a shaft detached ? Is the turntable detached or tilted ?	Mechanism section (motor)
		Is flexible cable of CP2301 on the DVD MT Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC4002-pin 42 (FOSO) on the DVD MT Assy ? (Device control of about 1.4 V is output usually. It is fluctuated by about ± 250 mV with focus up / down.)	**DVD MT PCB Assy** DVD IC (IC4002)
6	Playback impossible (Spindle does not turn)	Are the signals output from IC2301-pin 13 (MOT SPDL–), and pin 14 (MOT SPDL+) on the DVD MT Assy ? Is pin 41, 42 (STBY) fixed LOW?	**DVD MT PCB Assy** FTS Driver IC (IC2301)
		Is there any part detached from the spindle motor ? Or Is there any foreign object lodged in it ?	Mechanism section (Spindle motor)
		Are wires of CP2303 on the DVD MT Assy disconnected or damaged ?	Flexible cable / connector
		Is signal output from IC4002-pin 37 (DMSO) on the DVD MT Assy ?	**DVD MT PCB Assy** DVD IC (IC4002)
7	Playback impossible (Playback stops)	Does 650-nm LD deteriorate ? If the voltage at each both ends of R2321 and R2323 on the DVD MT Assy is 0.4 V or more, the 650-nm LD is definitely deteriorated.	650-nm LD deteriorated. (When playback of a DVD is impossible)
		Does 780-nm LD deteriorate ? If the voltage at each both ends of R2320 and R2322 on the DVD MT Assy is 0.4 V or more, the 780-nm LD is definitely deteriorated.	780-nm LD deteriorated. (When playback of a CD is impossible)
		Are there scratches or dirt on the disc ?	Disc
8	Picture disturbance during playback (block noise, freeze, other)	Are there scratches or dirt on the disc ? Is there a problem with the format of the disc ?	Disc
9	No sound (Picture is normal)	Is signal output from IC8003, 8004, 8005-pin 7 and pin 8 on the DVD MT Assy ?	**DVD MT PCB Assy** Audio DAC IC (IC8003, 8004, 8005)

● Symptoms That May Occur When Any Of The Following ICs Is In Failure

IC	Symptoms
EEP ROM (DVD MT PCB Assy : IC4001)	User's data cannot be stored in memory. The ID number is lost.
16M Flash ROM (DVD MT PCB Assy : IC4004)	The power cannot be turned on. Downloading of the firmware cannot be performed.
DVD IC (DVD MT PCB Assy : IC4002)	Any kind of symptoms (no power, a failure in any of the servo, video and audio systems, etc.) may be generated, because the DVD processing is performed by a single chip.
64M SDRAM (DVD MT PCB Assy : IC4005)	No power. Block noise is generated during playback.

7.2 DISASSEMBLY

■ REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET/FRONT CABINET/OPERATION 1/2/3/4 PCB (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connector: (CP4002).
4. Unlock the 4 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 10 screws ③.
7. Remove the 2 screws ④.
8. Remove the Operation 1/2/3 PCB in the direction of arrow(C).

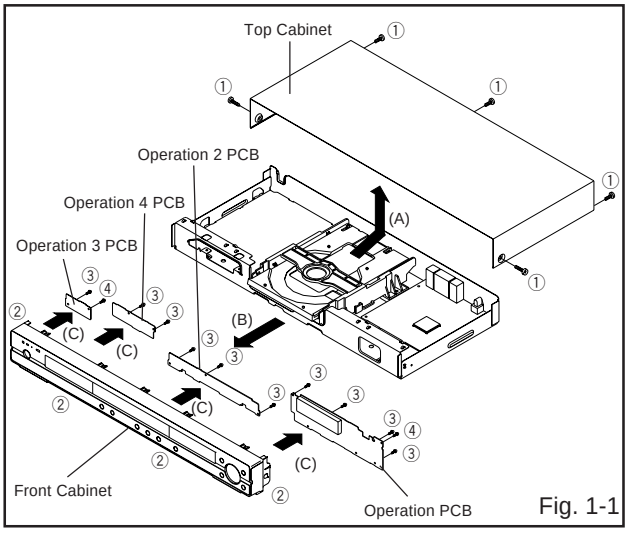


Fig. 1-1

1-2: POWER PCB (Refer to Fig. 1-2)

1. Disconnect the following connectors: (CP502, CP503, CP8001).
2. Remove the 3 screw ①.
3. Remove the 4 screws ②.
4. Remove the Power PCB in the direction of arrow.

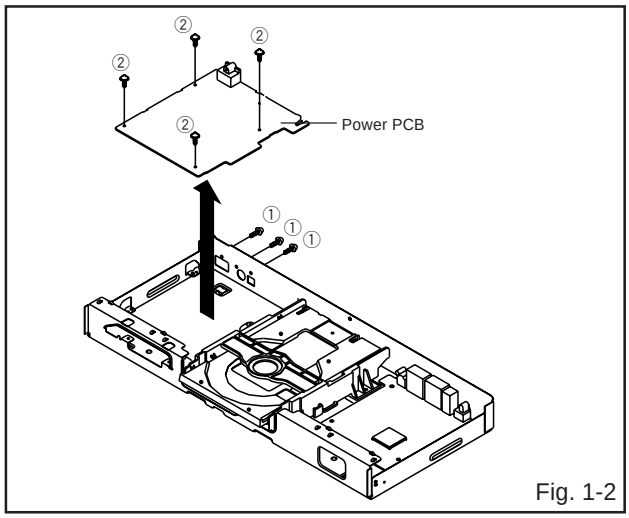


Fig. 1-2

1-3: DVD DECK (Refer to Fig. 1-3)

1. Short circuit the position shown in **Fig. 1-3** using a soldering iron. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Disconnect the following connectors: (CP2301, CP2302, CP2303).
3. Remove the 4 screws ①.
4. Remove the DVD Deck in the direction of arrow.

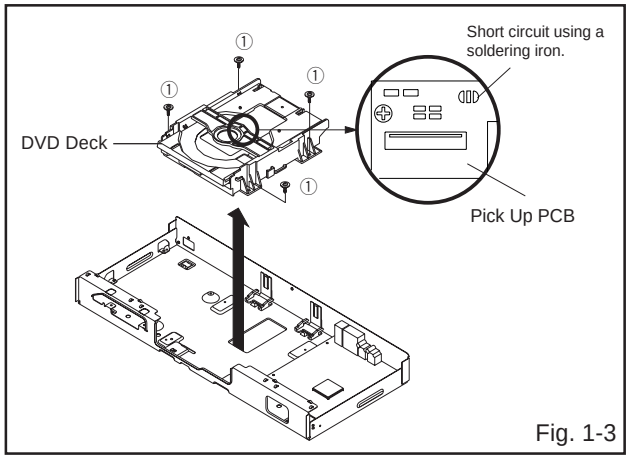


Fig. 1-3

NOTE

1. Before your operation, please read “PREPARATION OF SERVICING”.
2. Use the Lead Free solder.
3. Manual soldering conditions
   - Soldering temperature: 320 ± 20 ˚C
   - Soldering time: Within 3 seconds
   - Soldering combination: Sn-3.0Ag-0.5Cu
4. When Soldering/Removing of solder, use the drawing equipment over the Pick Up Unit to prevent the Flux smoke from it.
5. When installing the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

1-4: DVD PCB (Refer to Fig. 1-4)

1. Remove the 5 screws ①.
2. Remove the screws ② .
3. Remove the 4 screws ③.
4. Remove the DVD PCB in the direction of arrow.

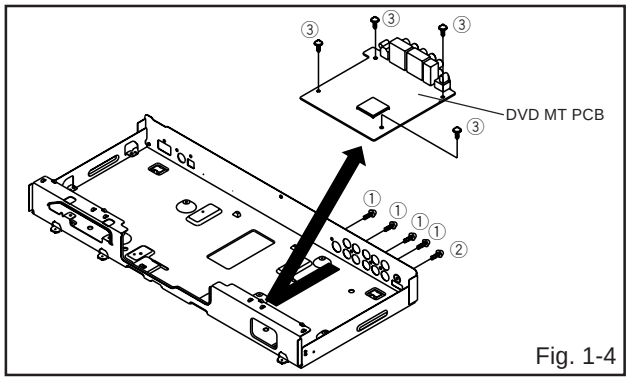


Fig. 1-4

7.3 DVD DECK SECTION

■ REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

2-1: TRAY (Refer to Fig. 2-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the 2 supports ① and draw it while sagging the Tray.

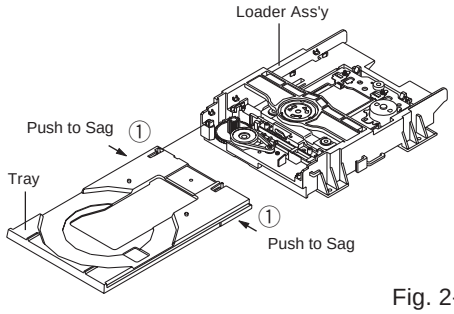


Fig. 2-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 2-1-B so that the each markers are met.

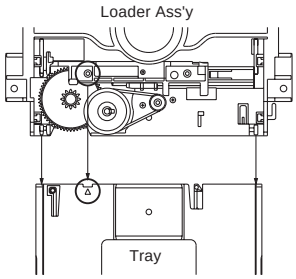


Fig. 2-1-B

2-2: TRAVERSE ASS'Y (Refer to Fig. 2-2-A)

1. Remove the screw ①.
2. Unlock the 2 supports ②.
3. Remove the Insulator (R) from the Loader Sub Ass'y.
4. Remove the Traverse Ass'y.

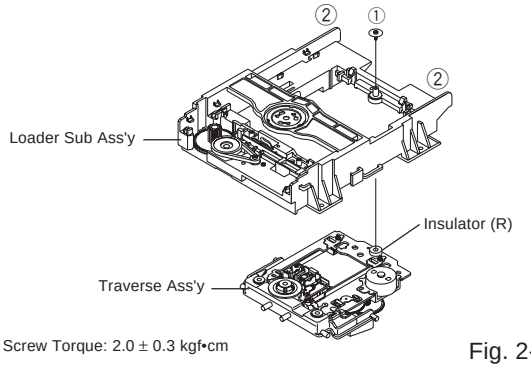


Fig. 2-2-A

NOTE

1. In case of the Traverse Ass'y, install it from ① to ④ in order. **(Refer to Fig. 2-2-B)**
2. In case of the Traverse Ass'y installation, hook the wire on the Loader Ass'y as shown Fig. 2-2-C.

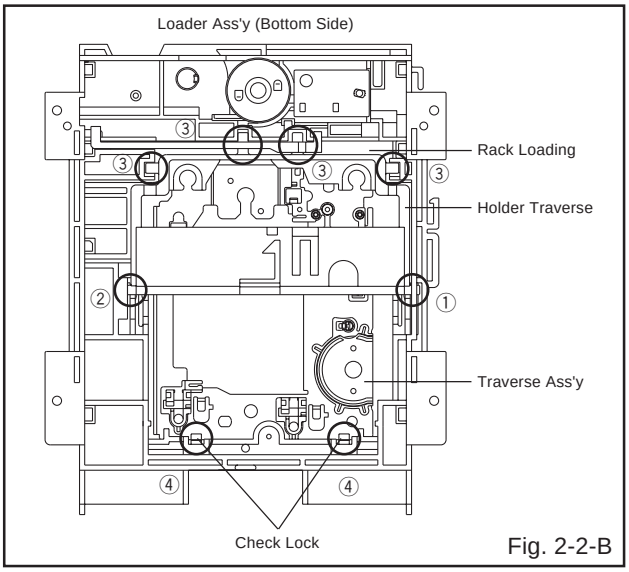


Fig. 2-2-B

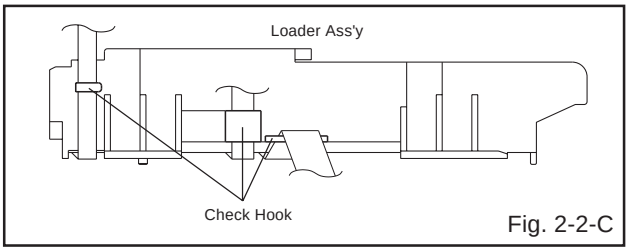


Fig. 2-2-C

2-3: LOADING MOTOR PCB ASS'Y/ LOADING BELT (Refer to Fig. 2-3-A)

1. Remove the Loading Belt.
2. Remove the screw ①.
3. Remove the Loading Motor PCB Ass'y.
4. Remove the 2 screws ②.
5. Remove the Loading Motor.
6. Remove the Gear Pulley.

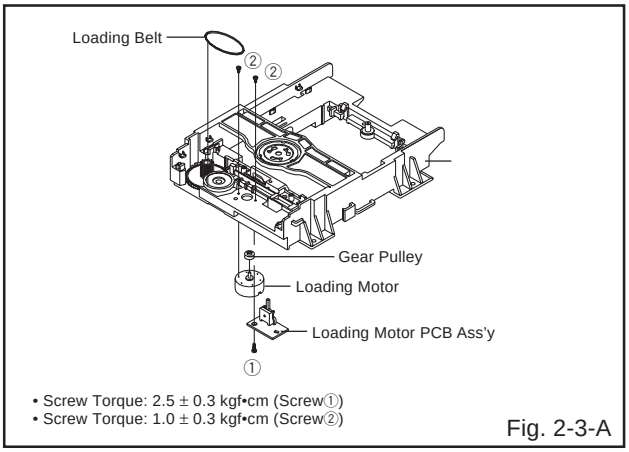


Fig. 2-3-A

NOTE

1. In case of the Pulley Motor installation, check if the value of the Fig. 2-3-B is correct.
2. When installing the wire of the Loading Motor PCB Ass'y, install it correctly as Fig. 2-3-C.
   Manual soldering conditions
   • Soldering temperature: 320 ± 5 ℃
   • Soldering time: Within 4 seconds
   • Soldering combination: Sn-3.0Ag-0.5Cu
3. When installing the Loading Motor PCB Ass'y, install it correctly as Fig. 2-3-D.
4. In case of the Loading Motor PCB Ass'y installation, hook the wire on the Loader Sub Ass'y as shown Fig. 2-3-E.

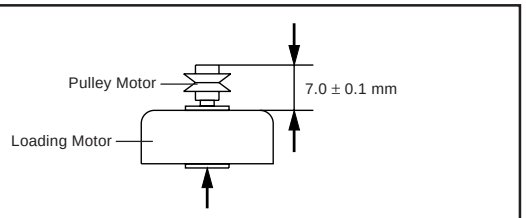


Fig. 2-3-B

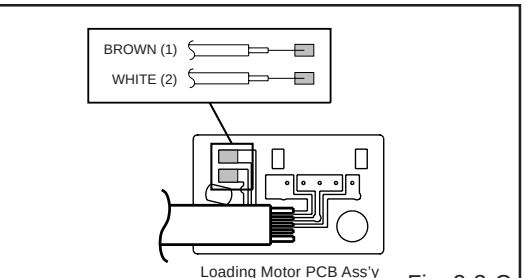


Fig. 2-3-C

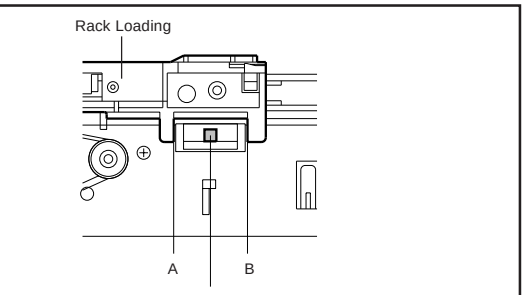


Fig. 2-3-D

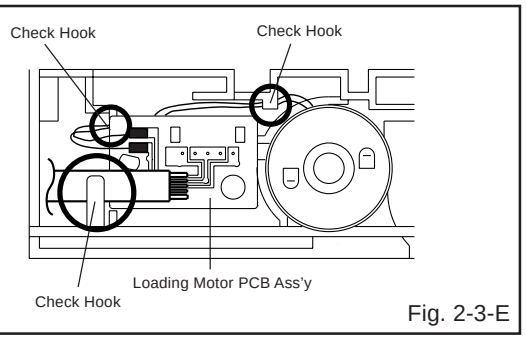


Fig. 2-3-E

2-4: RACK LOADING/MAIN GEAR/PULLEY GEAR (Refer to Fig. 2-4-A)

1. Unlock the support ① and remove the Gear Pulley.
2. Remove the Gear Main.
3. Press down the catcher ② and slide the Rack Loading.

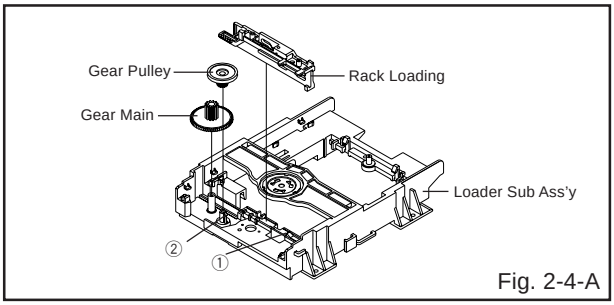


Fig. 2-4-A

NOTE

1. In case of the Rack Loading installation, hook the Rack Loading on the Loader Sub Ass'y as shown Fig. 2-4-B.
2. When installing the Gear Main, take care the direction of up or down as shown Fig. 2-4-C.

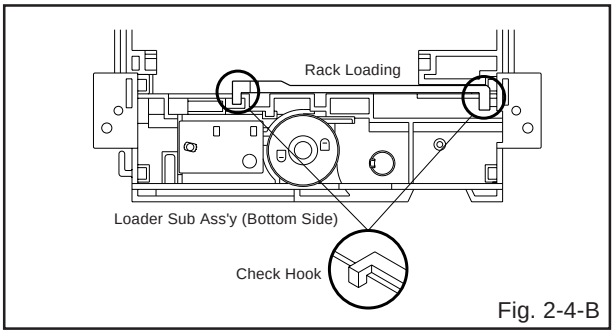


Fig. 2-4-B

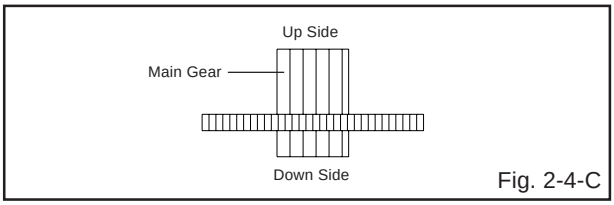


Fig. 2-4-C

2-5: CLAMPER ASS'Y (Refer to Fig. 2-5-A)

1. Press the Clamper and rotate the Plate Clamper clockwise, then unlock the 3 supports ①.
2. Remove the Plate Clamper, Magnet Clamper and Clamper.

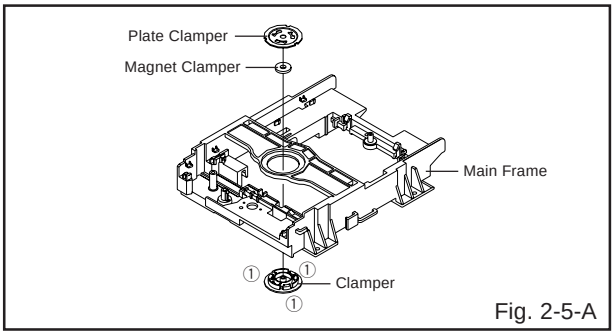


Fig. 2-5-A

NOTE

1. In case of the Clamper Ass'y installation, install correctly as Fig. 2-5-B.

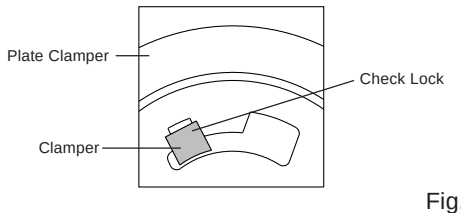


Fig. 2-5-B

2-6: HOLDER TRAVERSE/INSULATOR (F)/INSULATOR (R) (Refer to Fig. 2-6-A)

1. Remove the Holder Traverse.
2. Remove the 2 Insulator (F).
3. Remove the Insulator (R).

Pickup leneses
GEM1004
GED-008

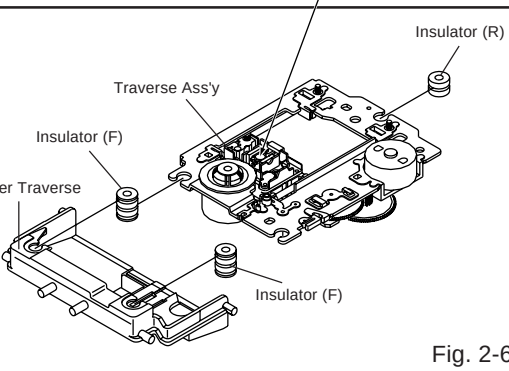


Fig. 2-6-A

NOTE

1. In case of the Insulator (F) installation, install correctly as Fig. 2-6-B.

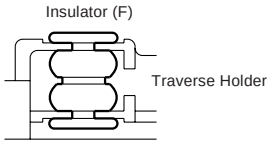


Fig. 2-6-B

2-7: SWITCH PCB ASS'Y/GEAR MIDDLE/GEAR FEED/RACK FEED ASS'Y/FEED MOTOR (Refer to Fig. 2-7-A)

1. Unlock the support ①.
2. Remove the Gear Middle.
3. Remove the screw ②.
4. Remove the Rack Feed Ass'y.
5. Remove the screw ③.
6. Remove the Switch PCB Ass'y.
7. Remove the screw ④.
8. Remove the Gear Feed.
9. Remove the 2 screws ⑤.
10. Remove the Feed Motor.
11. Remove the Gear Motor.

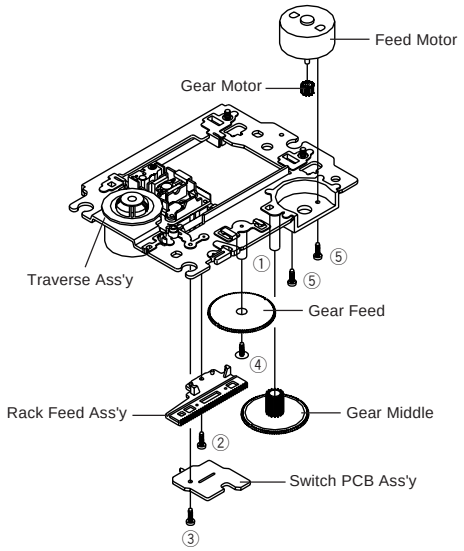


Fig. 2-7-A

NOTE

1. When installing the Rack Feed Ass'y, push both ends to align the teeth as shown Fig. 2-7-B. Then install it.
2. In case of the Gear Motor installation, check if the value of the Fig. 2-7-C is correct.
3. When installing the wire of the Switch PCB Ass'y, install it correctly as Fig. 2-7-D.
   Manual soldering conditions
   • Soldering temperature: 320 ± 5 ˚C
   • Soldering time: Within 4 seconds
   • Soldering combination: Sn-3.0Ag-0.5Cu
4. After the assembly of the Traverse Ass'y, hook the wire on the Traverse Ass'y as shown Fig. 2-7-E.

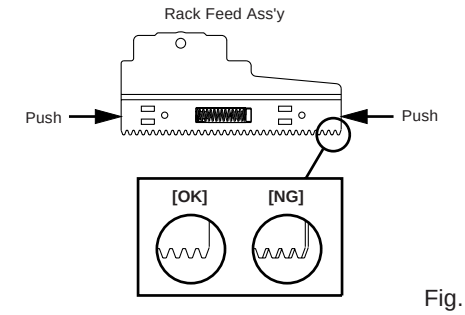


Fig. 2-7-B

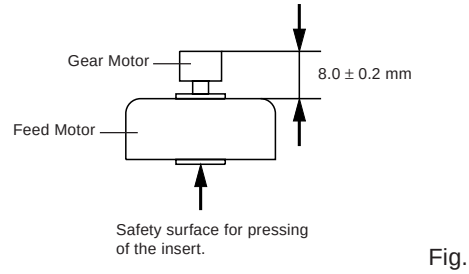


Fig. 2-7-C

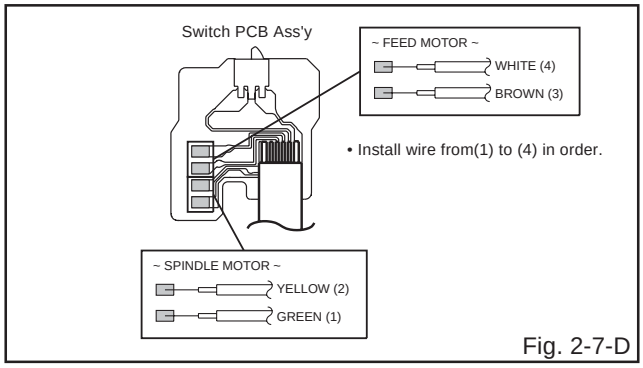


Fig. 2-7-D

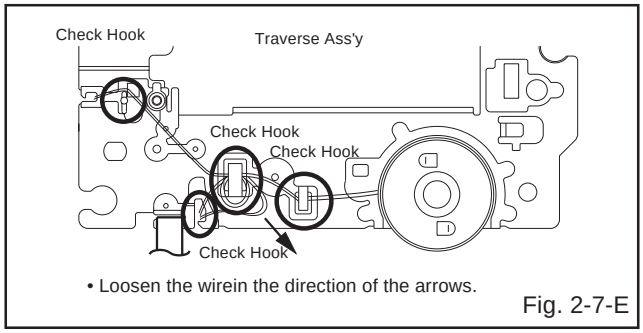


Fig. 2-7-E

2-8: FFC WIRE HANDLING

1. When installing the FFC, fold it correctly and install it as shown from Fig. 2-8.

NOTE

1. Do not make the folding lines except the specified positions for the FFC.

[24 pin FFC]

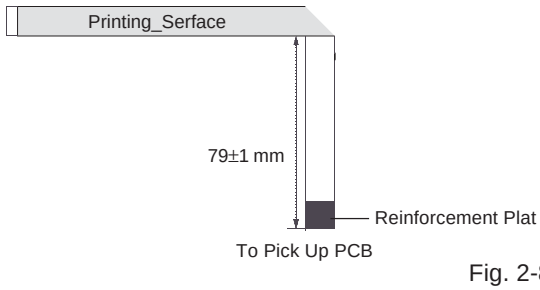


Fig. 2-8

7.4 IC INFORMATION

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

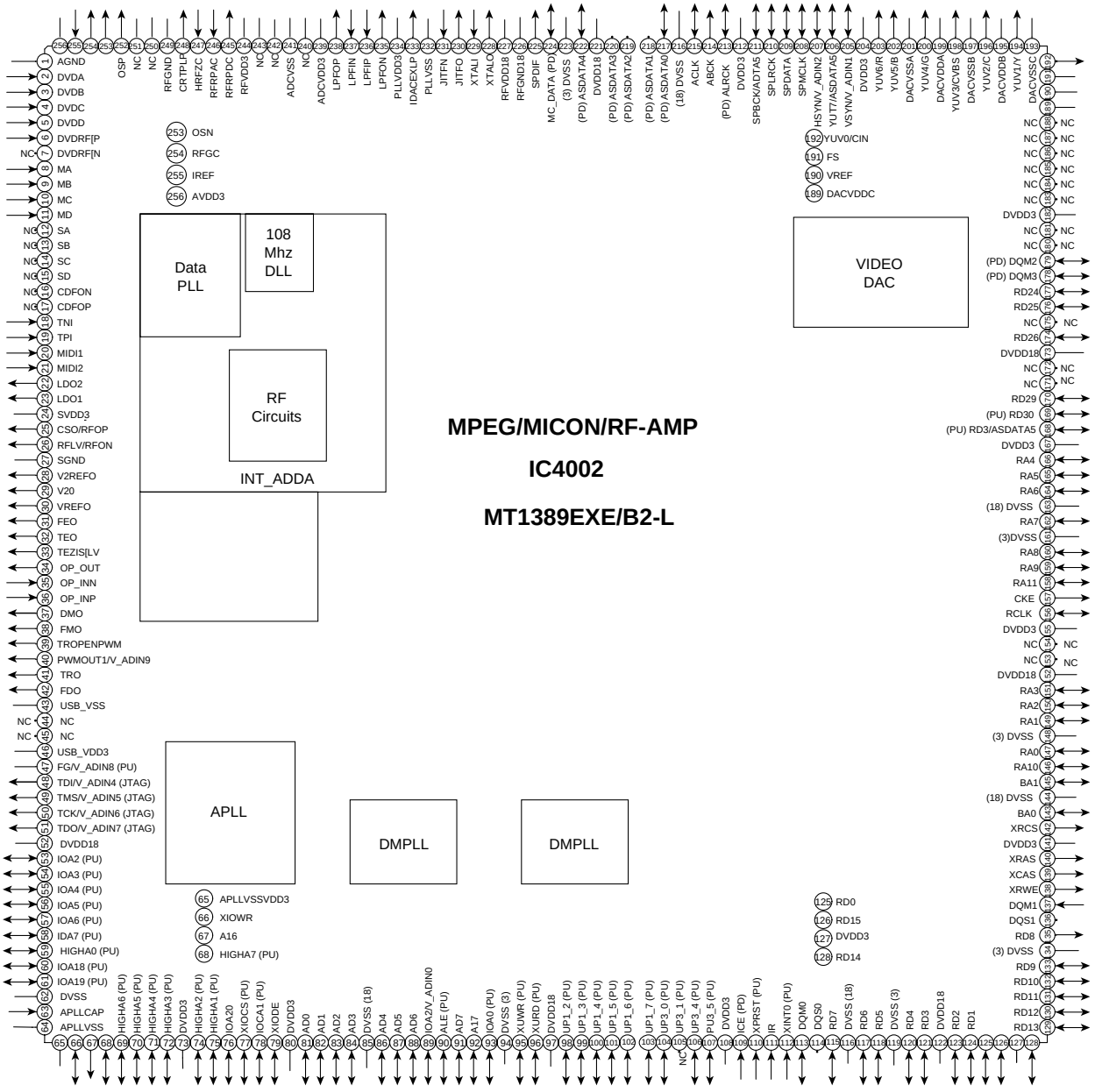
● **List of IC**

MT1389EXE/B2-L

■ MT1389EXE/B2-L (DVD MT ASSY: IC4002)

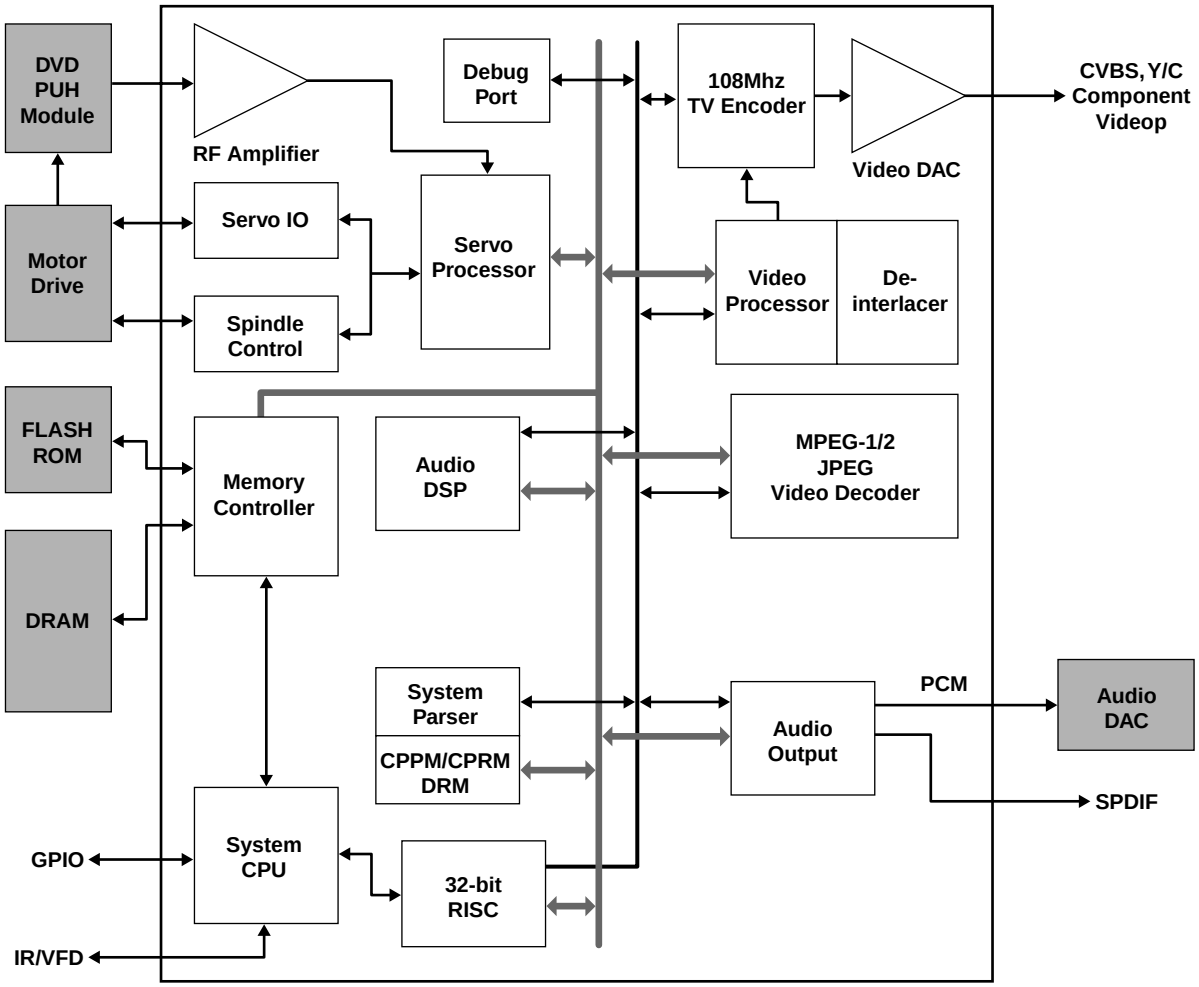
• MPEG / MICON / RF-AMP

● **Pin Arrangement (Top view)**



• MPEG / MICON / RF-AMP Microcomputer

● Block Diagram



MT1389EXE/B2-L (DVD MT ASSY : IC4002)

• MPEG/MICON/RF-AMP CPU

● Pin Function

No.	Pin Name	I/O	Pin Function	No.	Pin Name	I/O	Pin Function
1	AGND	–	Analog ground	48	TDI	I	Serial interface port 3 data-out Version AD input port 4 GPIO
2	DVDA	I	AC coupled input path A				
3	DVDB	I	AC coupled input path B	49	TMS	I	Serial interface port 3 data-in Version AD input port 5 GPIO
4	DVDC	I	AC coupled input path C				
5	DVDD	I	AC coupled input path D	50	TCK	I	Serial interface port 3 clock pin Version AD input port 6 GPIO
6	DVDRFIP	I	AC coupled DVD RF signal input RFIP				
7	DVDRFIN	I	AC coupled DVD RF signal input RFIN	51	TDO	I	Serial interface port 3 chip-select Version AD input port 7 GPO
8	MA	I	DC coupled main-beam RF signal input A				
9	MB	I	DC coupled main-beam RF signal input B	52	DVDD18	–	1.8 V power pin for internal digital circuitry
10	MC	I	DC coupled main-beam RF signal input C	53	IOA2	I/O	Microcontroller address 2/IO
11	MD	I	DC coupled main-beam RF signal input D	54	IOA3	I/O	Microcontroller address 3/IO
12	SA	I	DC coupled sub-beam RF signal input A	55	IOA4	I/O	Microcontroller address 4/IO
13	SB	I	DC coupled sub-beam RF signal input B	56	IOA5	I/O	Microcontroller address 5/IO
14	SC	I	DC coupled sub-beam RF signal input C	57	IOA6	I/O	Microcontroller address 6/IO
15	SD	I	DC coupled sub-beam RF signal input D	58	IOA7	I/O	Microcontroller address 7/IO
16	CDFON	I	CD focusing error negative input	59	HIGHA0	I/O	Microcontroller address 8
17	CDFOP	I	CD focusing error positive input	60	IOA18	I/O	Flash address 18/IO
18	TNI	I	3 beam satellite PD signal negative input	61	IOA19	I/O	Flash address 19/IO
19	TPI	I	3 beam satellite PD signal positive input	62	DVSS	–	3.3 V Ground pin for internal digital circuitry
20	MDI1	I	Laser power monitor input	63	APLLCAP	I	APLL External Capacitance connection
21	MDI2	I	Laser power monitor input	64	APLLVSS	–	Ground pin for sudio clock circuitry
22	LDO2	O	Laser driver output	65	APLLVDD3	–	3.3 V Power pin for audio clock circuity
23	LDO1	O	Laser driver output	66	IOWR#	I/O	Flash write enable, active low/IO
24	SVDD3	–	Analog power 3.3 V	67	A16	O	Flash adress 16
25	CSO	O	Central servo/Positive main beam summing output	68	HIGHA7	I/O	Microcontroller address 15
26	RFLVL	O	RFRP low pass, or Negative main beam summing output	69	HIGHA6	I/O	Microcontroller address 14
27	SGND	–	Analog ground	70	HIGHA5	I/O	Microcontroller address 13
28	V2REFO	–	Reference voltage 2.8 V	71	HIGHA4	I/O	Microcontroller address 12
29	V20	I/O	Reference voltage 2.0 V	72	HIGHA3	I/O	Microcontroller address 11
30	VREFO	I/O	Reference voltage 1.4 V	73	DVDD3	–	3.3 V power pin for internal digital circuitry
31	FEO	O	Focus error monitor output	74	HIGHA2	I/O	Microcontroller adress 10
32	TEO	O	Tracking error monitor output	75	HIGHA1	I/O	Microcontroller adress 9
33	TEZISLV	I/O	TE Slicing Level	76	IOA20	I/O	Flash adress 20/IO
34	OP_OUT	O	Op amp output	77	IOCS#	I/O	Flash chip select, active low/IO
35	OP_INN	I	Op amp negative input	78	IOA1	I/O	Microcontroller adress 1/IO
36	OP_INP	I	Op amp positive input	79	IOOE#	I/O	Flash output enable, active low/IO
37	DMO	O	Disk motor control output. PWM output	80	DVDD3	–	3.3 V power pin for internal digital circuitry
38	FMO	O	Feed motor control. PWM output	81	AD0	I	Microcontroller address/data 0
39	TROPENP/WM	O	Tray PWM output/Tray open output	82	AD1	I	Microcontroller address/data 1
40	PWMOUT1	O	1st General PWM output, or Version AD input9	83	AD2	I	Microcontroller address/data 2
41	TRO	O	Tracking servo output. PDM output of tracking servo compensator.	84	AD3	I	Microcontroller address/data 3
				85	DVSS	–	1.8 V Ground pin for internal digital circuitry
42	FOO	O	Focus servo output. PDM output of focus servo compensator	86	AD4	I	Microcontroller address/data 4
				87	AD5	I	Microcontroller address/data 5
43	DVSS	–	1.8 V Ground pin for internal digital	88	AD6	I	Microcontroller address/data 6
44	NC	–	–	89	IOA21	I/O	Flash address 21/IO While External FLASH size <= 2MB: Version AD input port 0, or GPIO
45	NC	–	–				
46	DVDD3	–	3.3 V power pin for internal digital circuitry				
47	FG(Diogital pin)	–	Motor Hall sensor input, or Version AD input 8	90	ALE	I/O	Microcontroller address latch enable

No.	Pin Name	I/O	Pin Function	No.	Pin Name	I/O	Pin Function
91	AD7	I	Microcontroller address/data 7	137	DQM1	I/O	Data mask 1
92	A17	O	Flash address 17	138	RWE#	O	DRAM Write enable, active low
93	IOA0	I/O	Microcontroller address 0/IO	139	CAS#	O	DRAM column address strobe, active low
94	DVSS	–	3.3 V Ground pin for internal digital circuitry	140	RAS#	O	DRAM row address strobe, active low
95	UWR#	I	Microcontroller write strobe, active low	141	DVDD3	–	3.3 V power pin for internal digital circuitry
96	URD#	I	Microcontroller read strobe, active low	142	RCS#	O	DRAM chip select, active low
97	DVDD18	–	1.8 V power pin for internal digital circuitry	143	BA0	I/O	DRAM bank address 0
98	UP1_2	I/O	Microcontroller port 1-2	144	DVSS	–	1.8 V Ground pin for internal digital circuitry
99	UP1_3	I/O	Microcontroller port 1-3	145	BA1	I/O	DRAM bank address 1
100	UP1_4	I/O	Microcontroller port 1-4	146	RA10	I/O	DRAM address 10
101	UP1_5	I/O	Microcontroller port 1-5	147	RA0	I/O	DRAM address 0
102	UP1_6	I/O	Microcontroller port 1-6 I^2C clock pin	148	DVSS	–	3.3 V Ground pin for internal digital circuitry
				149	RA1	I/O	DRAM address 1
103	UP1_7	I/O	Microcontroller port 1-7 I^2C data pin	150	RA2	I/O	DRAM address 2
				151	RA3	I/O	DRAM address 3
104	UP3_0	I/O	Microcontroller port 3-0 8032 RS232 RXD	152	DVDD18	–	1.8 V power pin for internal digital circuitry
				153	NC	–	–
105	UP3_1	I/O	Microcontroller port 3-1 8032 RS232 TXD	154	NC	–	–
				155	DVDD3	–	3.3 V power pin for internal digital circuitry
106	UP3_4	I/O	Microcontroller port 3-4 Hardwired RD232 RXD I^2C clock pin	156	RCLK	I/O	Dram clock
				157	CKE	O	DRAM clock enable
107	UP3_5	I/O	Microcontroller port 3-5 Hardwired RD232 TXD I^2C data pin	158	RA11	I/O	DRAM address bit 11
				159	RA9	I/O	DRAM address 9
108	DVDD3	–	3.3 V power pin for internal digital circuitry	160	RA8	I/O	DRAM address 8
109	ICE	I	Microcontroller ICE mode enable	161	DVSS	–	3.3 V Ground pin for internal digital circuitry
110	PRST#	I	Power on reset input, active low	162	RA7	I/O	DRAM address 7
111	IR	I	IR control signal input	163	DVSS	–	1.8 V Ground pin for internal digital
112	INT0#	I/O	Microcontroller external interrupt 0, active low	164	RA6	I/O	DRAM address 6
113	DQM0	I/O	Data mask 0	165	RA5	I/O	DRAM address 5
114	DQS0	I/O	GPIO	166	RA4	I/O	DRAM address 4
115	RD7	I/O	DRAM data 7	167	DVDD3	–	3.3 V power pin for internal digital circuitry
116	DVSS	–	1.8 V Ground pin for internal digital circuitry	168	RD31	I/O	GPIO
117	RD6	I/O	DRAM data 6	169	RD30	I/O	GPIO
118	RD5	I/O	DRAM data 5	170	RD29	I/O	GPIO
119	DVSS	–	3.3 V Ground pin for internal digital circuitry	171	NC	–	–
120	RD4	I/O	DRAM data 4	172	NC	–	–
121	RD3	I/O	DRAM data 3	173	DVDD18	–	1.8 V power pin for internal digital circuitry
122	DVDD18	–	1.8 V power pin for internal digital circuitry	174	RD26	I/O	GPIO
123	RD2	I/O	DRAM data 2	175	NC	–	–
124	RD1	I/O	DRAM data 1	176	RD25	I/O	GPIO
125	RD0	I/O	DRAM data 0	177	RD24	I/O	GPIO
126	RD15	I/O	DRAM data 15	178	DQM3	I/O	GPIO
127	DVDD3	–	3.3 V power pin for internal digital circuitry	179	DQM2	I/O	GPIO
128	RD14	I/O	DRAM data 14	180	NC	–	–
129	RD13	I/O	DRAM data 13	181	NC	–	–
130	RD12	I/O	DRAM data 12	182	DVDD3	–	3.3 V power pin for internal digital circuitry
131	RD11	I/O	DRAM data 11	183	NC	–	–
132	RD10	I/O	DRAM data 10	184	NC	–	–
133	RD9	I/O	DRAM data 9	185	NC	–	–
134	DVSS	–	3.3 V Ground pin for internal digital circuitry	186	NC	–	–
135	RD8	I/O	DRAM data 8	187	NC	–	–
136	DQS1	I/O	GPIO	188	NC	–	–

No.	Pin Name	I/O	Pin Function
189	DACVDDC	–	3.3 V power pin for VIDEO DAC circuitry
190	VREF	–	Bandgap reference voltage
191	FS	–	Full scale adjustment
192	YUV0	O	Video data output bit 0 Compensation capacitor
193	DACVSSC	–	Ground pin for VIDEO DAC circuitry
194	YUV1	O	Video data output bit 1 Analog Y output
195	DACVDDB	–	3.3 V power pin for VIDEO DAC circuitry
196	YUV2	O	Video data output bit 2 Analog chroma output
197	DACVSSB	–	Ground pin for VIDEO DAC circuitry
198	YUV3	O	Video data output bit 3 Analog composite output
199	DACVDDA	–	3.3 V power pin for VIDEO DAC circuitry
200	YUV4	O	Video data output bit 4 Green or Y
201	DACVSSA	–	Ground pin for VIDEO DAC circuitry
202	YUV5	O	Video data output bit 5 Blue or CB
203	YUV6	O	Video data output bit 6 Red or CR
204	DVDD3	–	3.3 V power pin Video DAC digital circuitry only
205	VSYN	I/O	Vertical sync input/output While no External TV-encoder: Vertical sync for video-input Version AD input port 1 GPIO
206	YUV7	I/O	Video data output bit 7 While no External TV-encoder: Microcontroller external interrupt 3 Audio serial data 5 part II:DSD data sub-woofer channel or Microphone output GPIO
207	HSYN	I/O	Horizontal sync input/output While no External TV-encoder: Horizontal sync for video-input Microcontroller external interrupt 4 Version AD input port 2 GPIO
208	SPMCLK	I/O	Audio DAC master clock of SPDIF input While SPDIF input is not used: Serial interface port 0 clock pin GPIO
209	SPDATA	I/O	Audio data of SPDIF input While SPDIF input is not used: Serial interface port 0 data-in GPIO
210	SPLRCK	I/O	Audio left/right channel clock of SPDIF input While SPDIF input is not used: Serial interface port 0 data-out GPIO
211	SPBCK	I/O	Audio bit clock of SPDIF input While SPDIF input is not used: Serial interface port 0 chip select Audio serial data 5 part I:DSD data sub-woofer channel or Microphone output GPIO
212	DVDD3	–	3.3 V power pin for internal digital circuitry

No.	Pin Name	I/O	Pin Function
213	ALRCK	I/O	Audio left/right channel clock Trap value in power-on reset: 1:use external 373 0:use internal 373
214	ABCK	O	Audio bit clock Phase de-modulation
215	ACLK	I/O	Audio DAC master clock
216	DVSS	–	1.8 V Ground pin for internal digital
217	ASDATA0	I/O	Audio serial data 0 (Front-Left/Front-Right) DSD data left channel Trap value in power-on reset: 1:manufactory test mode 0:normal operation
218	ASDATA1	I/O	Audio serial data 1 (Left-Surround/Right-Surround) DSD data right channel Trap value in power-on reset: 1:manufactory test mode 0:normal operation While only 2 channels output: GPO
219	ASDATA2	I/O	Audio serial data 2 (Center/LFE) DSD data left surround channel Trap value in power-on reset: 1:manufactory test mode 0:normal operation While only 2 channels output: GPO
220	ASDATA3	I/O	Audio serial data 3 (Center-back/Center-left-back/Center-right-back, in 6.1 or 7.1 mode) DSD data right surround channel Trap value in power-on reset: 1:manufactory test mode 0:normal operation While only 2 channels output: GPIO
221	DVDD18	–	1.8V power pin for internal digital circuitry
222	ASDATA4	I/O	Audio serial data 4 (Down-mixed Left/Right) DSD data center channel Trap value in power-on reset: 1:manufactory test mode 0:normal operation While only 2 channels output: Microcontroller external interrupt 1 GPIO
223	DVSS	–	3.3 V Ground pin for internal digital circuitry
224	MC_DATA	I/O	Microphone serial input While not support Microphone: Microcontroller external interrupt 2 GPIO
225	SPDIF	O	SPDIF output
226	RFGND18	–	Analog ground
227	RFVDD18	–	Analog power 1.8V
228	XTALO	O	27 M crystal out
229	XTALI	I	27 M crystal in
230	JITFO	O	The output terminal of RF jitter meter
231	JITFN	I	The input terminal of RF jitter meter
232	PLLVSS	–	Ground pin for data PLL and related analog circuitry
233	IDACEXLP	O	Data PLL DAC Low-pass filter
234	PLLVDD3	–	Power pin for data PLL and related analog circuitry
235	LPFON	O	The negative output of loop filter amplifier
236	LPFIP	I	The positive input terminal of loop filter amplifier
237	LPFIN	I	The negative input terminal of loop filter amplifier
238	LPFOP	O	The positive output of loop filter amplifier

No.	Pin Name	I/O	Pin Function	No.	Pin Name	I/O	Pin Function
239	ADCVDD3	–	Analog 3.3 V Power for ADC	249	RFGND	–	Analog Power
240	NC	–	–	250	NC	–	–
241	ADCVSS	–	Analog ground for ADC	251	NC	–	–
242	NC	–	–	252	OSP	O	RF Offset cancellation capacitor connecting
243	NC	–	–	253	OSN	O	RF Offset cancellation capacitor connecting
244	RFVDD3	–	Analog Power	254	RFGC	O	RF AGC loop capacitor connecting for DVD-ROM
245	RFRPDC	O	RF ripple detect output	255	IREF	I	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS
246	RFRPAC	I	RF ripple detect input (through AC-coupling)				
247	HRFZC	I	High frequency RF ripple zero crossing				
248	CRTPLP	O	Defect level filter capacitor connecting	256	AVDD3	–	Analog power 3.3 V

7.5 DISC / CONTENT FORMAT PLAYBACK COMPATIBILITY

Disc / content format playback compatibility

This player is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the following logos on the disc and/or disc packaging. Note however that some disc types, such as recordable CD and DVD, may be in an unplayable format—see below for further compatibility information.

Pleasealso note that recordable discs cannot be recorded using this player.

DVD-Video DVD-R DVD-RW

Audio CD Video CD CD-R CD-RW

Fujicolor CD

- This unit will play DVD+R/+RW discs.
- DVD is a trademark of DVD Format/Logo Licensing Corporation.
- is a trademark of Fuji Photo Film Co. Ltd.
- Also compatible with KODAK Picture CD

This player supports the IEC's Super VCD standard. Compared to the Video CD standard, Super VCD offers superior picture quality, and allows two stereo soundtracks to be recorded. Super VCD also supports the widescreen size.

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content video, audio, etc. while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD Audio specification and therefore may not play.

The DVD side of a DualDisc plays in this product.

Formore detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

CD-R/RW compatibility

- Compatible formats: CD-Audio, Video CD , ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX video files
  * ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this player.
- Multi-session playback: No
- Unfinalized disc playback: No
- Filestructure (may differ): Up to 299 folders on a disc; up to 648 folders and files (combined) within each folder

DVD+R/DVD+RW compatibility

Only DVD+R/DVD+RW discs recorded in 'Video Mode (DVD Video Mode)' which have been finalized, can be played back. However, some editing made during the recording may not be played back accurately.

DVD-R/RW compatibility

- Compatible formats: DVD-Video, Video Recording (VR)*
  * Editpoints may not play exactly as edited; screen may go momentarily blank at edited points.
- Unfinalized playback: No
- WMA/MP3/JPEG file playback on DVD-R/RW: No

Compressed audio compatibility

- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)
- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 Kbps or higher recommended)
- VBR (variable bit rate) MP3 playback: No
- VBR WMA playback: No
- WMA lossless encoding compatible: No
- DRM (Digital Rights Management) compatible: Yes (DRM-protected audio files will not play in this player—see also DRM in the Glossary)
- Fileextensions: .mp3, .wma (these must be used for the player to recognize MP3 and WMA files – do not use for other file types)

About WMA

The Windows Media ® logo printed on the box indicates that this player can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. WMA content can be encoded by using Windows Media® Player version 7, 7.1, Windows Media ® Player for Windows ® XP, or Windows Media ® Player 9 Series.

Microsoft, Windows Media, and the Windows logo are trademarks, or registered trademarks of *Microsoft Corporation in the United States and/* or other countries.

About DivX

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc.This player can play DivX video files burned on CD-R/RW/ROM discs. Keeping the same terminology as DVD-Video, individual DivX video files are called "Titles". When naming files/titles on a CD-R/RW disc prior to burning, keep in mind that by default they will be played in alphabetical order.

Displaying DivX subtitle files

The font sets listed below are available for DivX external subtitle files. You can see the proper font set on-screen by setting the Subtitle Language to match the subtitle file.

This player supports the following language groups:

Group 1: Albanian (sq), Basque (eu), Catalan (ca), Danish (da), Dutch (nl), English (en), Faroese (fo), Finnish (fi), French (fr), German (de), Icelandic (is), Irish (ga), Italian (it), Norwegian (no), Portuguese (pt), Rhaeto-Romanic (rm), Scottish (gd), Spanish (es), Swedish (sv)
Group 2: Albanian (sq), Croatian (hr), Czech (cs), Hungarian (hu), Polish (pl), Romanian (ro), Slovak (sk), Slovenian (sl)
Group 3: Bulgarian (bg), Byelorussian (be), Macedonian (mk), Russian (ru), Serbian (sr), Ukrainian (uk)
Group 4: Hebrew (iw), Yiddish (ji)
Group 5: Turkish (tr)

- Some external subtitle files may be displayed incorrectly or not at all.
- For external subtitle files the following subtitle format filename extensions are supported (please note that these files are not shown within the disc navigation menu): .srt, .sub, .ssa, .smi
- The filename of the movie file has to be repeated at the beginning of the filename for the external subtitle file.
- The number of external subtitle files which can be switched for the same movie file is limited to a maximum of 10.

DivX video compatibility

- Official DivX® Certified product.
- Playsall versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the player to recognize DivX video files). Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this player.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF2.2* still image files up to a resolution of 3072 x 2048.
  *File format used by digital still cameras
- Progressive JPEG compatible: No
- File extensions: .jpg (must be used for the player to recognize JPEG files – do not use for other file types)

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

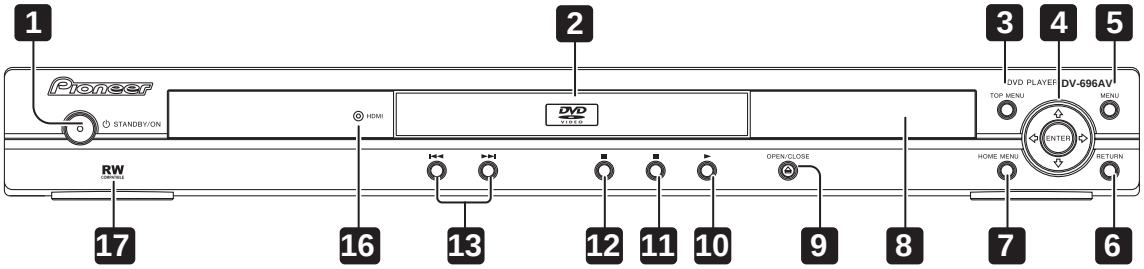
Discs recorded in packet write mode (UDF format) are not compatible with this player.

Check the DVD-R/RW or CD-R/RW software disc boxes for additional compatibility information.

8. PANEL FACILITIES

8.1 FRONT PANEL SECTION

Front panel



1 ⏻ STANDBY/ON
Press to switch the player on or into standby.

2 Disc tray

3 TOP MENU
Displays the 'top menu' of a DVD disc—this varies with the disc.

4 ENTER & cursor buttons
Selects the current menu option.

5 MENU
Displays a DVD disc menu—this varies with the disc and may be the same as the 'top menu'.

6 RETURN
Returns to the previously dis-played menu screen.

7 HOME MENU

8 Display
Description of the display.

9 ⏏ OPEN/CLOSE
Press to open or close the disc tray.

10 ►
Press to start or resume playback.

11 II
Press to pause playback. Press again to restart.

12 ■
Press to stop the disc (you can resume playback by pressing ► (play)).

13 I◄◄ and ►►I
- Press and hold for fast reverse/forward scanning.
- Press to jump to the previous/next chapter or track.

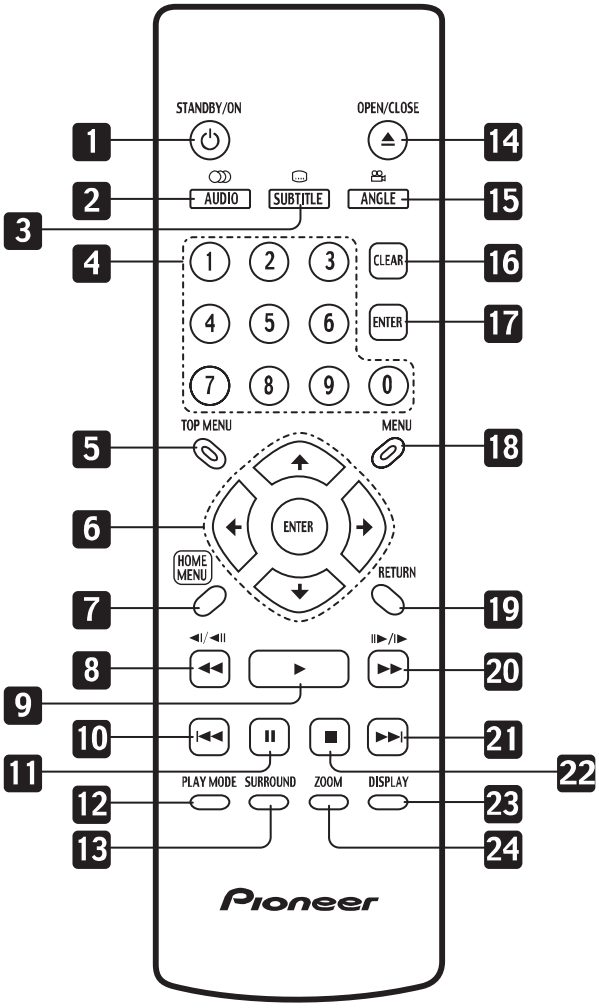
16 HDMI indicator
Lights when this player is recognized by another HDMI or DVI/HDCP compatible component.

17 RW COMPATIBLE Compatible

This mark indicates compatibility with DVD-RW discs recorded on a DVD recorder in Video Recording mode.

8.2 REMOTE CONTROL

Remote control



1 ⏻ STANDBY/ON

Press to switch the player on or into standby.

2 AUDIO

Press to select the audio channel or language.

3 SUBTITLE

Press to select a subtitle display.

4 Number buttons

5 TOP MENU

Press to display the top menu of a DVD disc.

6 ENTER & cursor buttons

Use to navigate on-screen displays and menus. Press **ENTER** to select an option or execute a command.

7 HOME MENU

Press to display (or exit) the on-screen display.

8 ◄◄ and ◄I/◄II

Use for reverse slow motion playback, frame reverse and reverse scanning.

9 ►

Press to start or resume playback.

10 I◄◄

chapter or track, then to previous chapters/ tracks.

11 II

Press to pause playback; press again to restart.

12 PLAY MODE

Press to display the Play Mode menu. (You can also get to the Play Mode menu by pressing **HOME MENU** and selecting Play Mode).

Press to jump to the beginning of the current

Remote control 2

13 SURROUND
Press to activate/switch off DD V/SRS TruSurround.

14 ⏏ OPEN/CLOSE
Press to open or close the disc tray.

15 ANGLE
Press to change the camera angle during DVD multi-angle scene playback.

16 CLEAR
Press to clear a numeric entry.

17 ENTER
Use to select menu options, etc.

18 MENU
Press to display a DVD disc menu, or the Disc Navigator if a VR format DVD-RW, CD, Video CD , MP3, WMA or JPEG disc is loaded.

19 RETURN
Press to return to a previous menu screen.

20 ►► and I►/II►
Use for forward slow motion playback, frame advance and forward scanning.

21 ►►I
Press to jump to the next chapter or track.

22 ■
Press to stop the disc (you can resume playback by pressing ► (play)).

23 DISPLAY
Press to display information about the disc playing.

24 ZOOM
Press to change the zoom level.

A

B

C

D

E

F

■ Jigs list

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	diagnosis
DVD Test Disc (DVD-Video,NTSC)	GGV1025	Operation Check
CD Test Disc	STD-905	Operation Check

■ Lubricants and Glues list 

Name	Lubricants and Glues No.	Remark
Daifree	GEM1036 (ZLX-ME413A)	Refer to "2.3 06 DVD MECHA SECTION"
Grease	GYA1001 (ZLB-PN397B)	Refer to "2.3 06 DVD MECHA SECTION"
Grease	GYA1018	Refer to "2.3 06 DVD MECHA SECTION"

■ Cleaning 

• Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools	Remark
Pickup leneses	Cleaning liquid : GEM1004	Refer to "2.3 06 DVD MECHA SECTION" and
	Cleaning paper : GED-008	Refer to "7.3 DVD DECK SECTION"