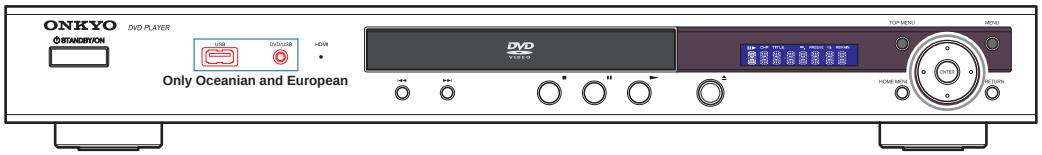
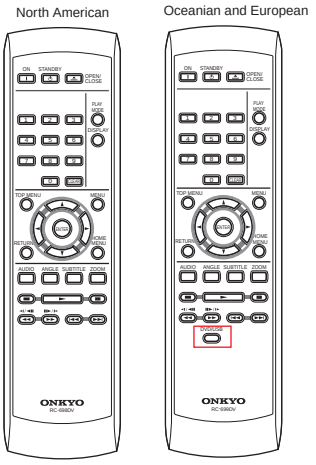
Ref. No. 4005
072007

ONKYO SERVICE MANUAL

DVD PLAYER

MODEL DV-SP405





Black and Silver models

BTDD, STDD	120V AC, 60Hz
BTPP, STPP	220-240V AC, 50/60Hz
STUA, BTUA	110-240V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO®
IMAGINATIVE SIGHT & SOUND

SPECIFICATIONS

Signal System		NTSC (North American model) PAL/NTSC (Oceanian and European models)
Composite Video Output/Impedance		1.0 V (p-p)/75 ohm negative sync, RCA
S-Video Output/Impedance (not European model)		Y: 1.0 V (p-p)/75 ohm negative sync, 4-pin mini DIN C: 0.286 V (p-p)/75 ohm
Component Video Output/Impedance		Y: 1.0 V (p-p)/75 ohm PB/PR: 0.7 V (p-p)/75 ohm RCA
HDMI Out		19 pin connector
AV Connector (European model only)		1.0 V (p-p)/75 ohm, Scart
Component Video Frequency Response		5 Hz–13 MHz
Frequency Response	DVD Linear Sound	4 Hz–44 kHz (96 kHz) 4 Hz–22 kHz (48 kHz)
	Audio CD	4 Hz–20 kHz (44.1 kHz)
Signal to Noise Ratio		90 dB
Audio Dynamic Range		100 dB
THD (Total Harmonic Distortion)		0.0065 % (1 kHz)
Wow and Flutter		Below threshold of measurability
Audio Output (Digital Optical) (Oceanian model only)		–22.5 dBm
Audio Output/Impedance (Digital Coaxial)		0.5 V (p-p)/75 ohm
Audio Output/Impedance (Analog)		2.0 V (rms)/440 ohm

■ General

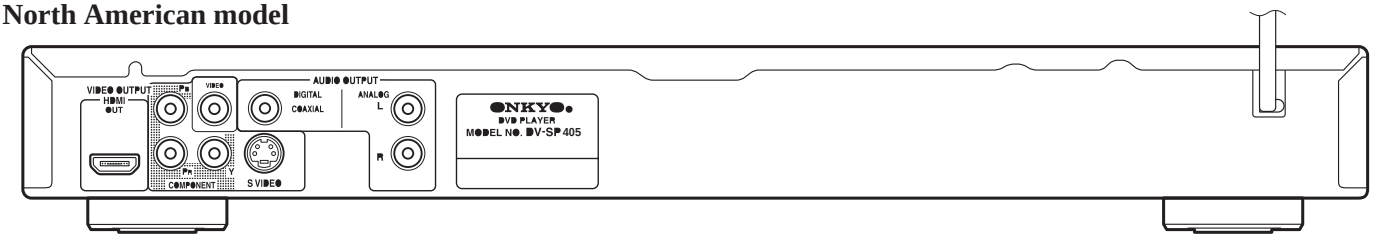
Power Supply	AC 120 V, 60 Hz (North American model) AC 110–240 V, 50 Hz/60 Hz (Oceanian model) AC 220–240 V, 50 Hz/60 Hz (European model)
Power Consumption	8 W (North American model) 11 W (Oceanian and European model)
Stand-by Power Consumption	0.9 W
Dimensions (W x H x D)	435 W x 60.5 H x 208 D mm
Weight	1.9 kg
Operation Condition Temperature/Humidity	+5 °C to +40 °C (41 °F to 95 °F) / 5 % to 80 %
Disc Compatibility	DVD-VIDEO, CD-DA, CD-R/RW, VCD, DVD-R/RW, DVD+R/+RW (W/O VCPS), DVD-R/+R DL, DVD-R/RW (VR), DVD-R DL (VR) Disc that have not been property finalized may only be partially playable or not playable at all

Specifications and features subject to change without notice.

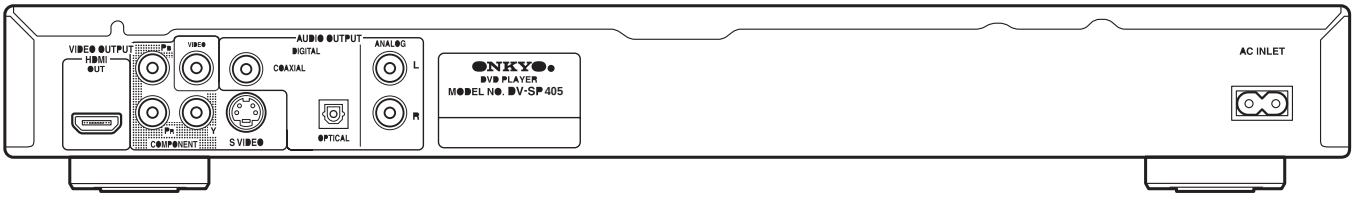
PANEL VIEW

Rear Panel

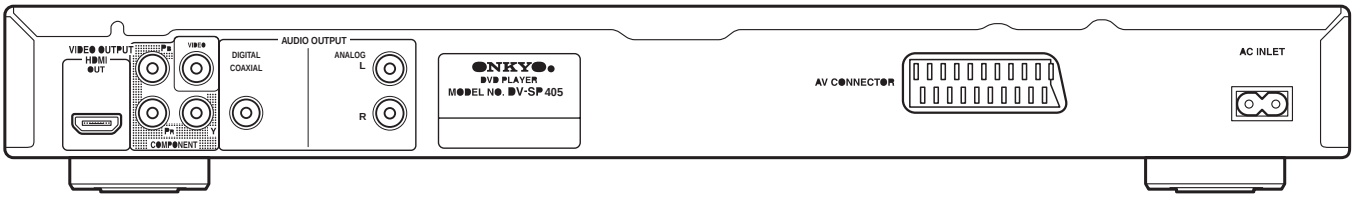
North American model



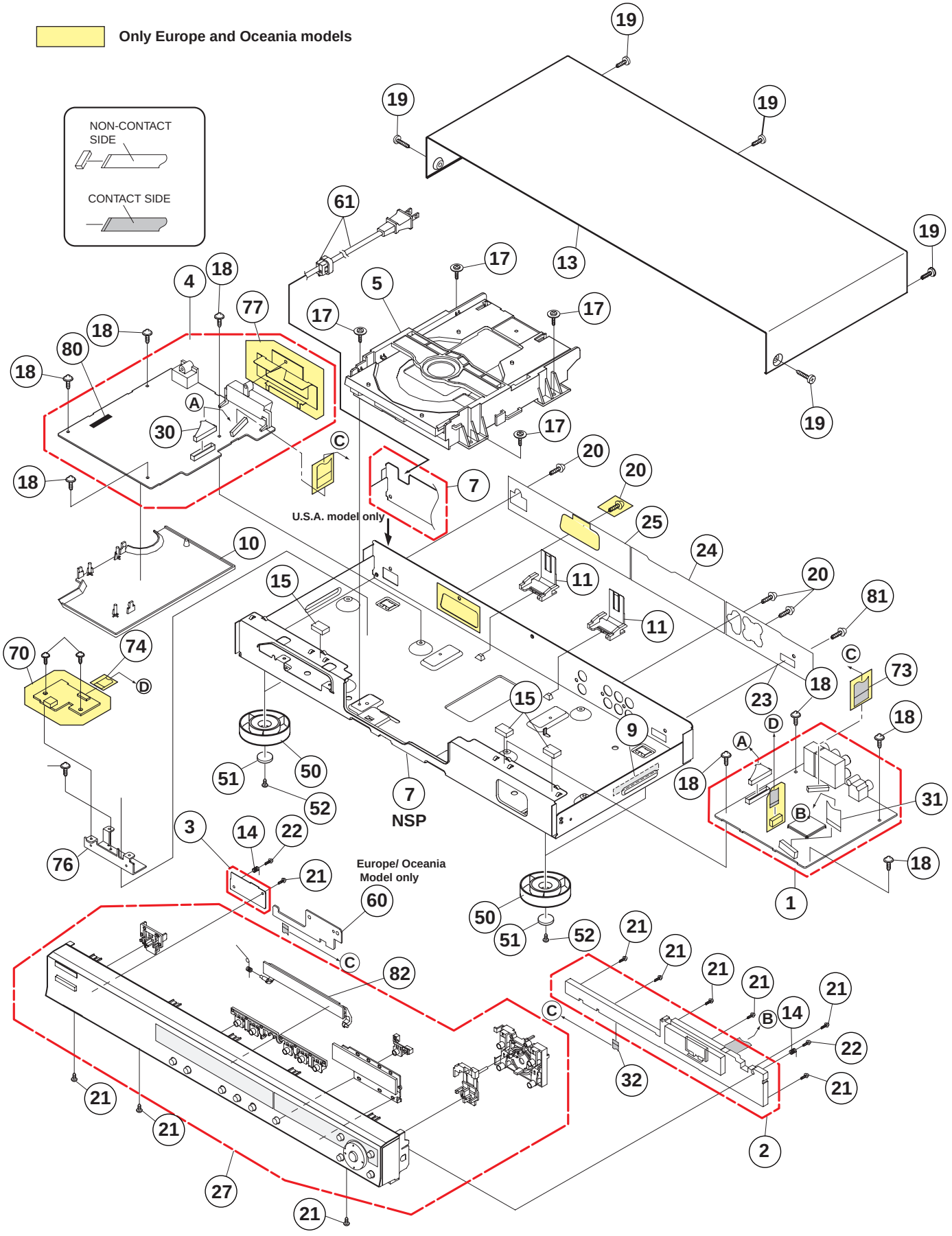
Oceanian model



European model

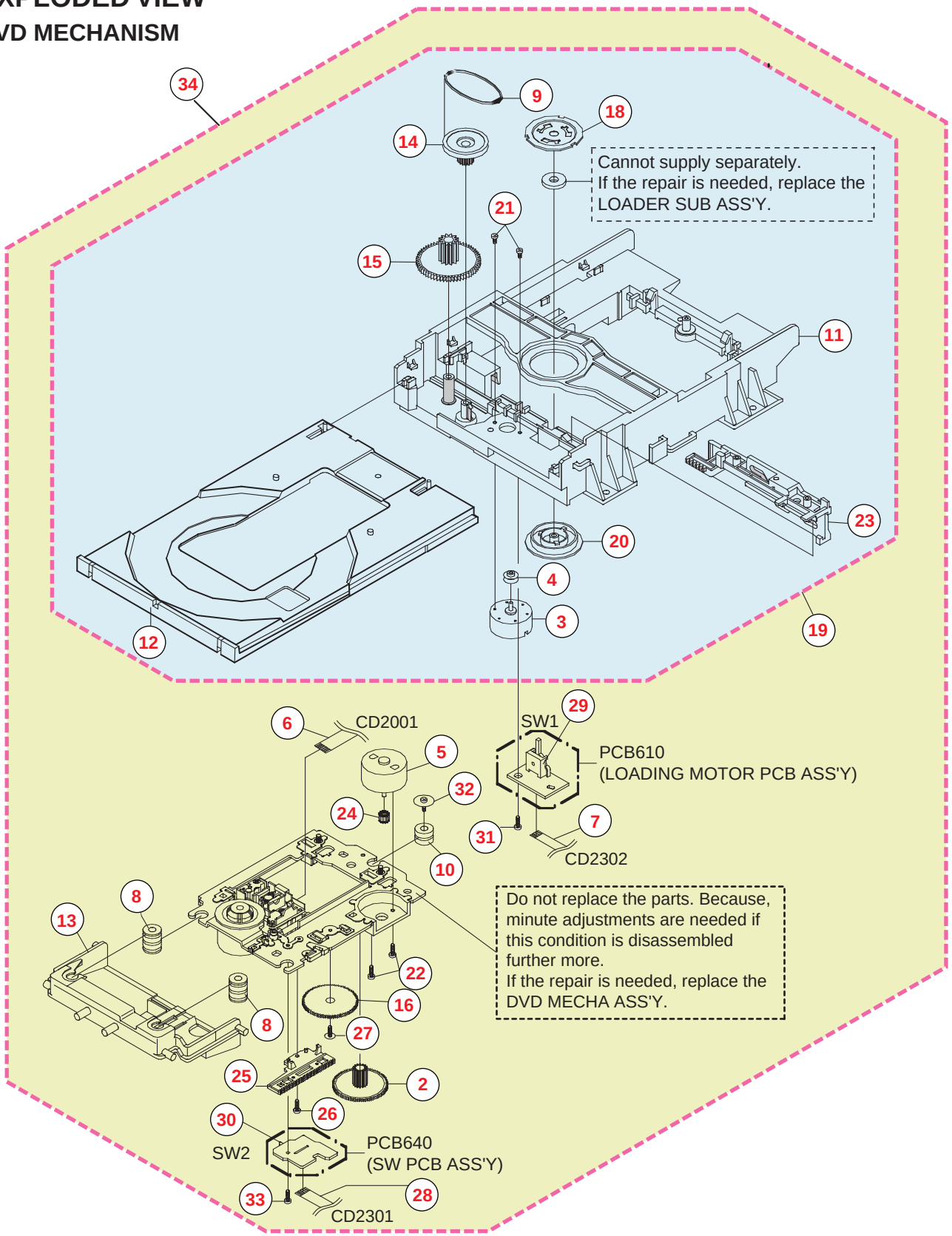


EXPLODED VIEW



EXPLODED VIEW

DVD MECHANISM



REMOVAL OF DVD MECHA. PARTS-1

NOTE

1. Disassemble only the DVD DECK PARTS parts listed here. Minute adjustments are needed if the disassembly 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 supports① and draw it while sagging the Tray.

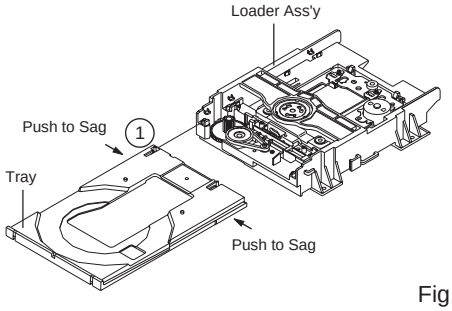


Fig. 2-1-A

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.

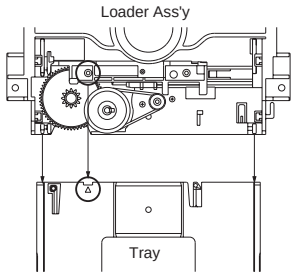
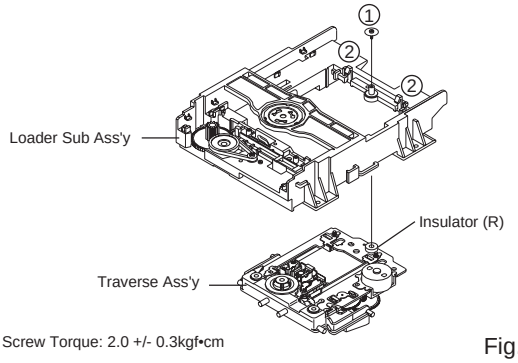


Fig. 2-1-B

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

1. Remove the screw①.
2. Unlock the 2 supports②.
3. Remove the Insulator (R) from the Loader Sub Ass'y.
4. Remove the Traverse Ass'y.



• Screw Torque: 2.0 +/- 0.3kgf•cm

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.

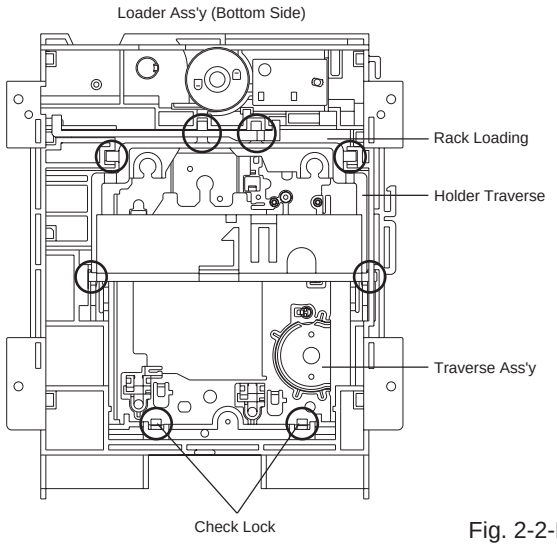


Fig. 2-2-B

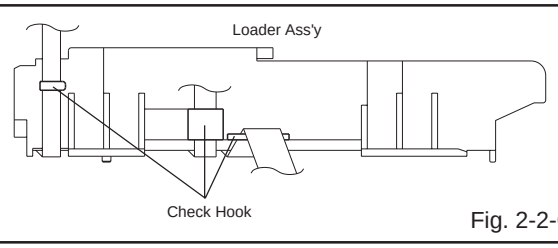
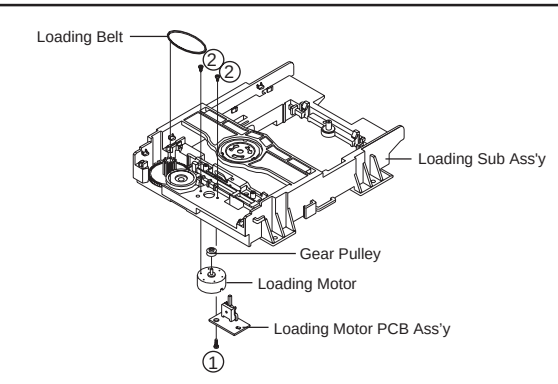


Fig. 2-2-C

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

1. Remove the Loading Belt.
2. Remove the screw①.
3. Remove the Loading Motor PCB Ass'y.
4. Remove the 2 screws②.
5. Remove the Loading Motor.
6. Remove the Gear Pulley.



• Screw Torque: 2.5 +/- 0.3kgf•cm (Screw1)
• Screw Torque: 1.0 +/- 0.3kgf•cm (Screw2)

Fig. 2-3-A

REMOVAL OF DVD MECHA. PARTS-2

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 +/- 20˚C
   • Soldering time: Within 3 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.

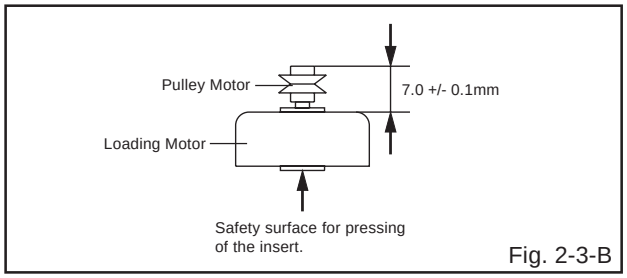


Fig. 2-3-B

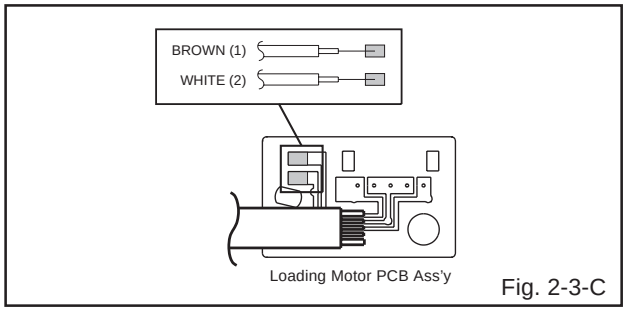


Fig. 2-3-C

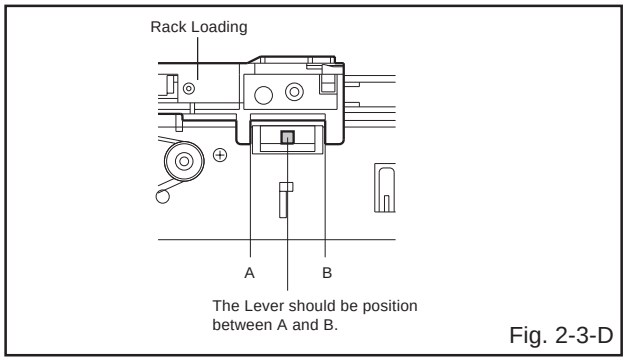


Fig. 2-3-D

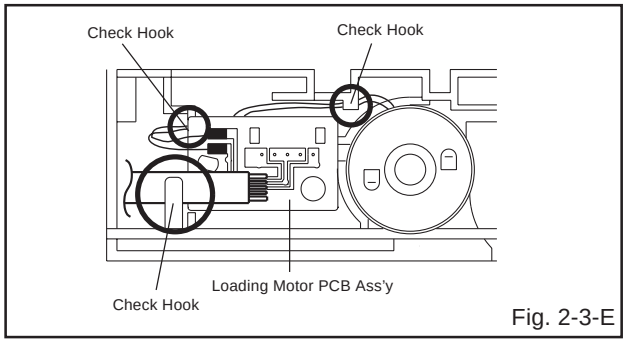


Fig. 2-3-E

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

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

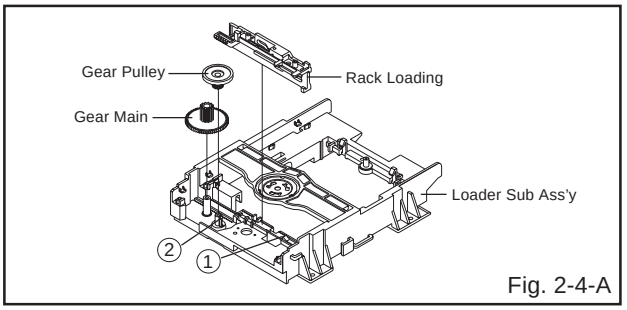


Fig. 2-4-A

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.

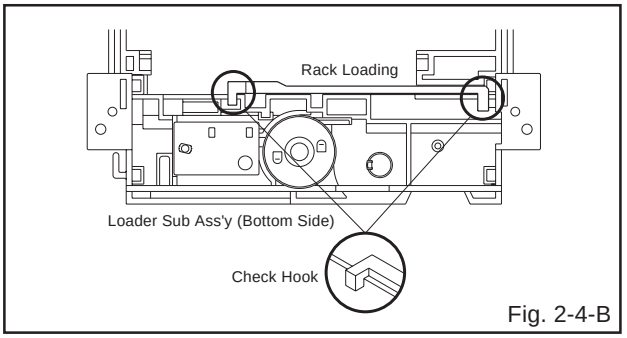


Fig. 2-4-B

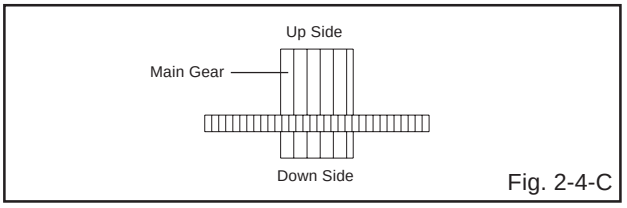


Fig. 2-4-C

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.

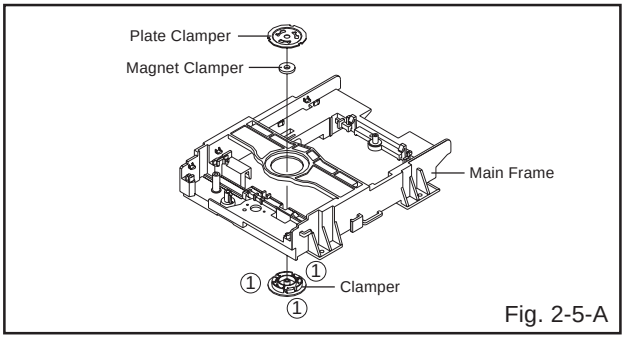


Fig. 2-5-A

REMOVAL OF DVD MECHA. PARTS-3

NOTE

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

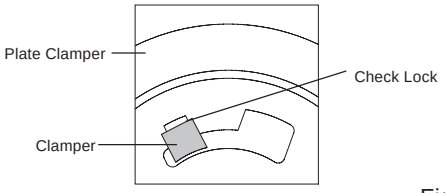


Fig. 2-5-B

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).

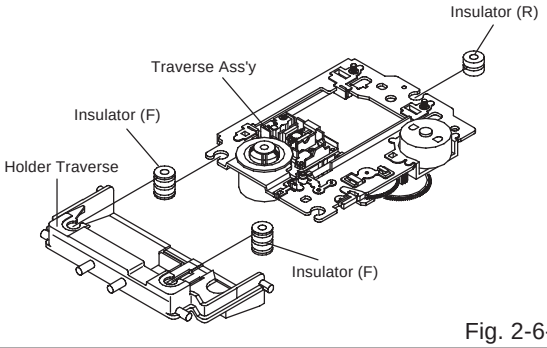


Fig. 2-6-A

NOTE

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

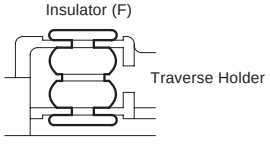
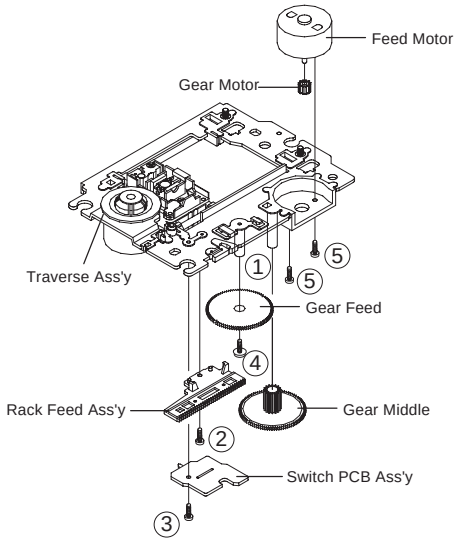


Fig. 2-6-B

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.



- Screw Torque: 1.3 +/- 0.3kgf•cm (Screw ②)
- Screw Torque: 3.0 +/- 0.3kgf•cm (Screw ③)
- Screw Torque: 1.0 +/- 0.3kgf•cm (Screw ④ ⑤)

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 +/- 20˚C
   - Soldering time: Within 3 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.

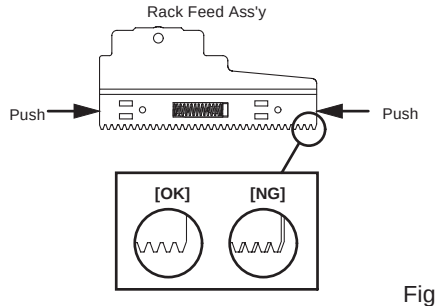


Fig. 2-7-B

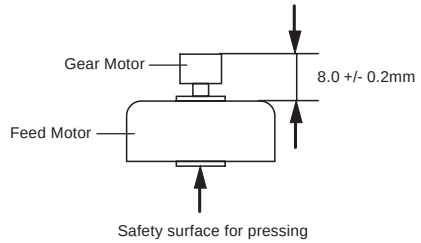
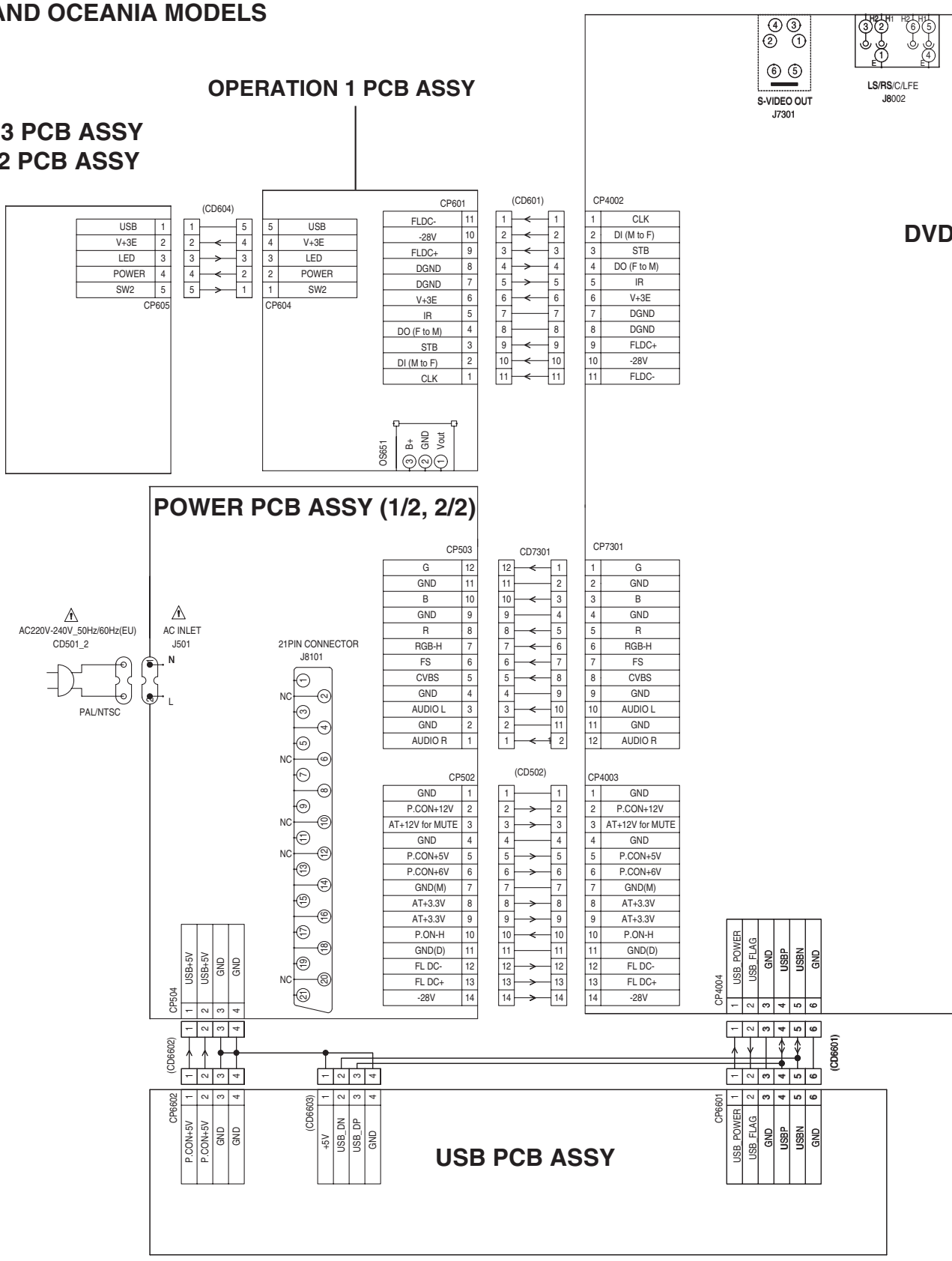


Fig. 2-7-C

WIRING VIEW

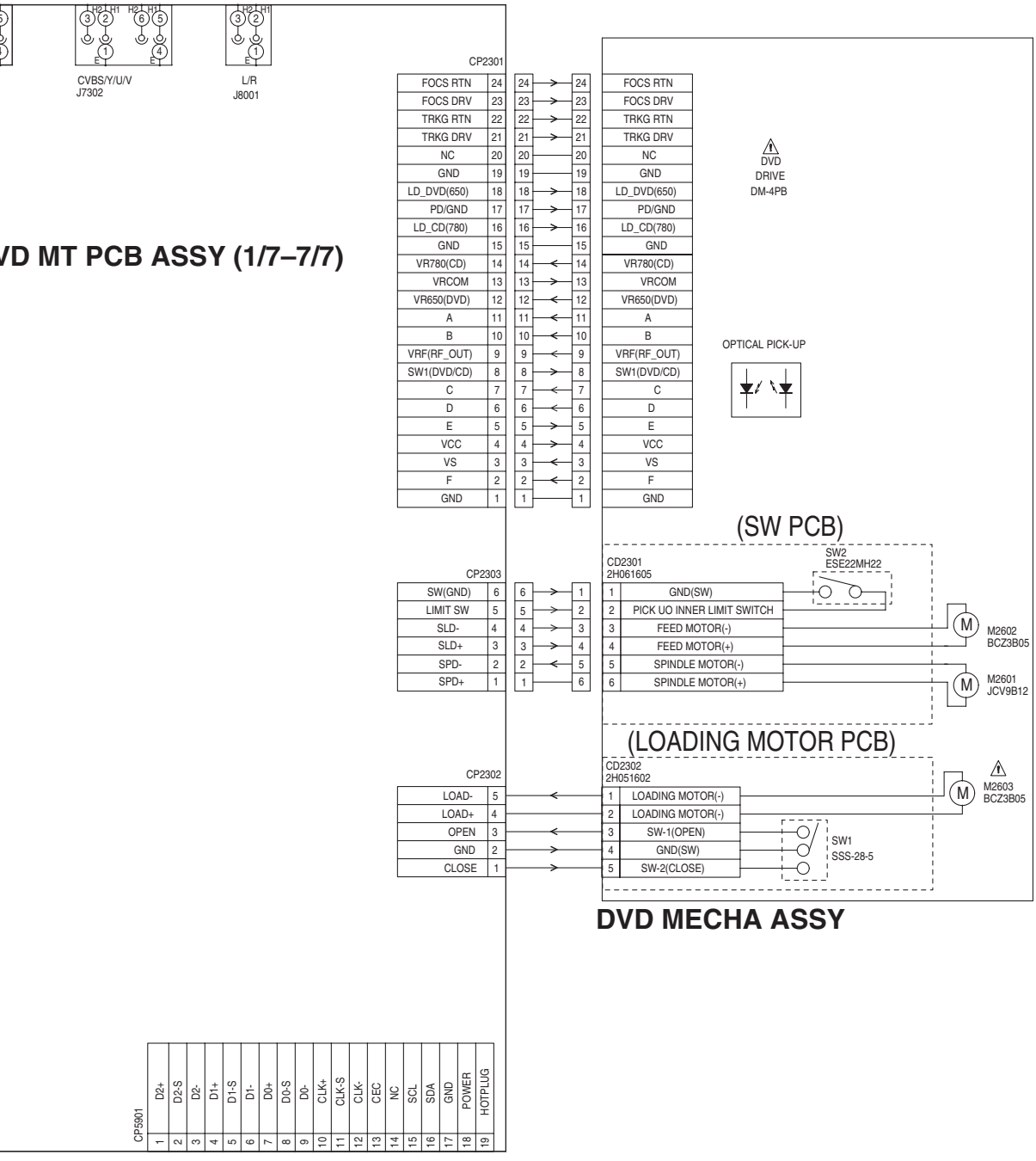
EUROPEAN AND OCEANIA MODELS



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

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

E F G H



VD MT PCB ASSY (1/7–7/7)

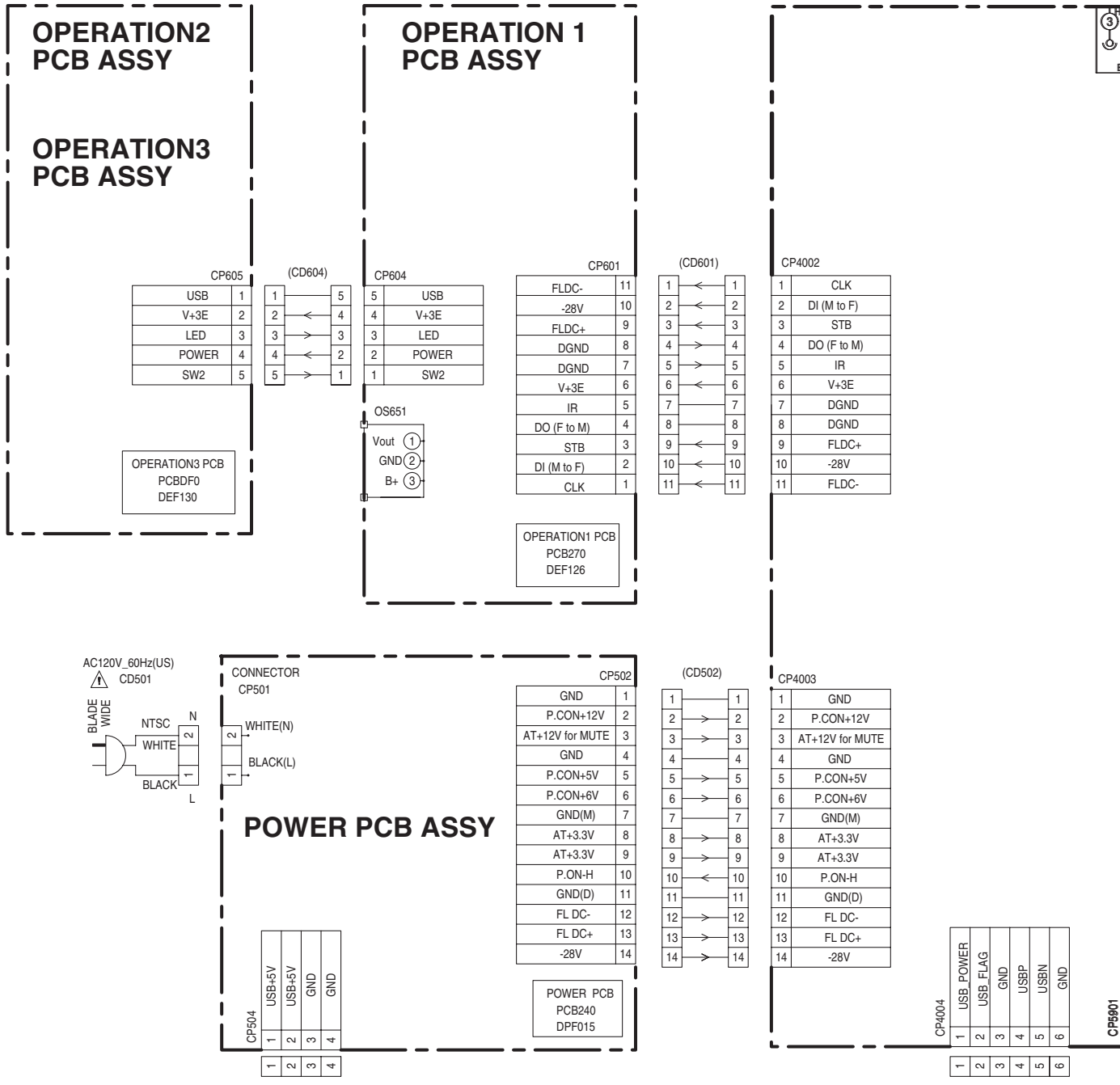
DVD MECHA ASSY

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

WIRING VIEW

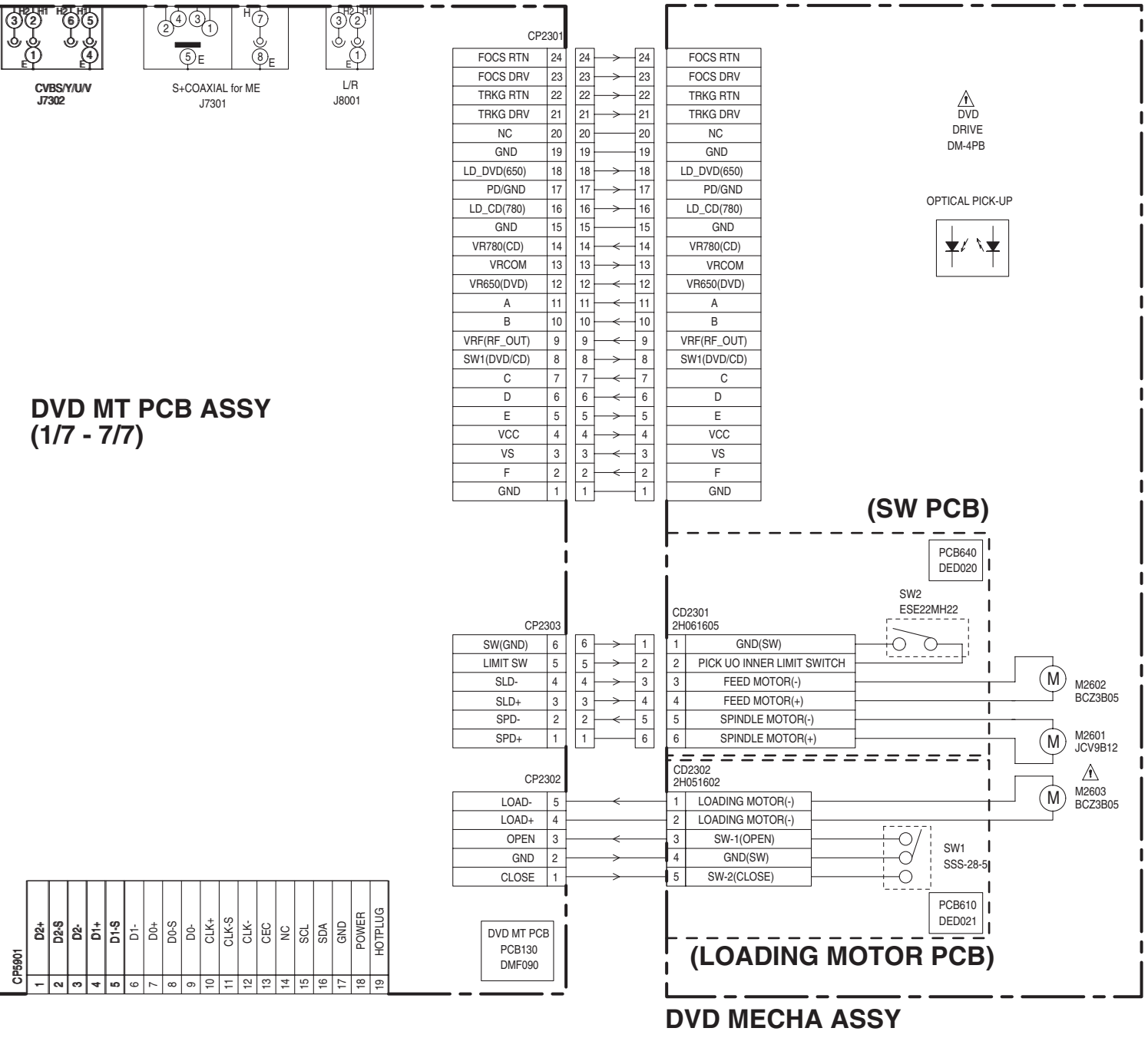
NORTH AMERICAN MODEL

OVERALL WIRING CONN



E F G H

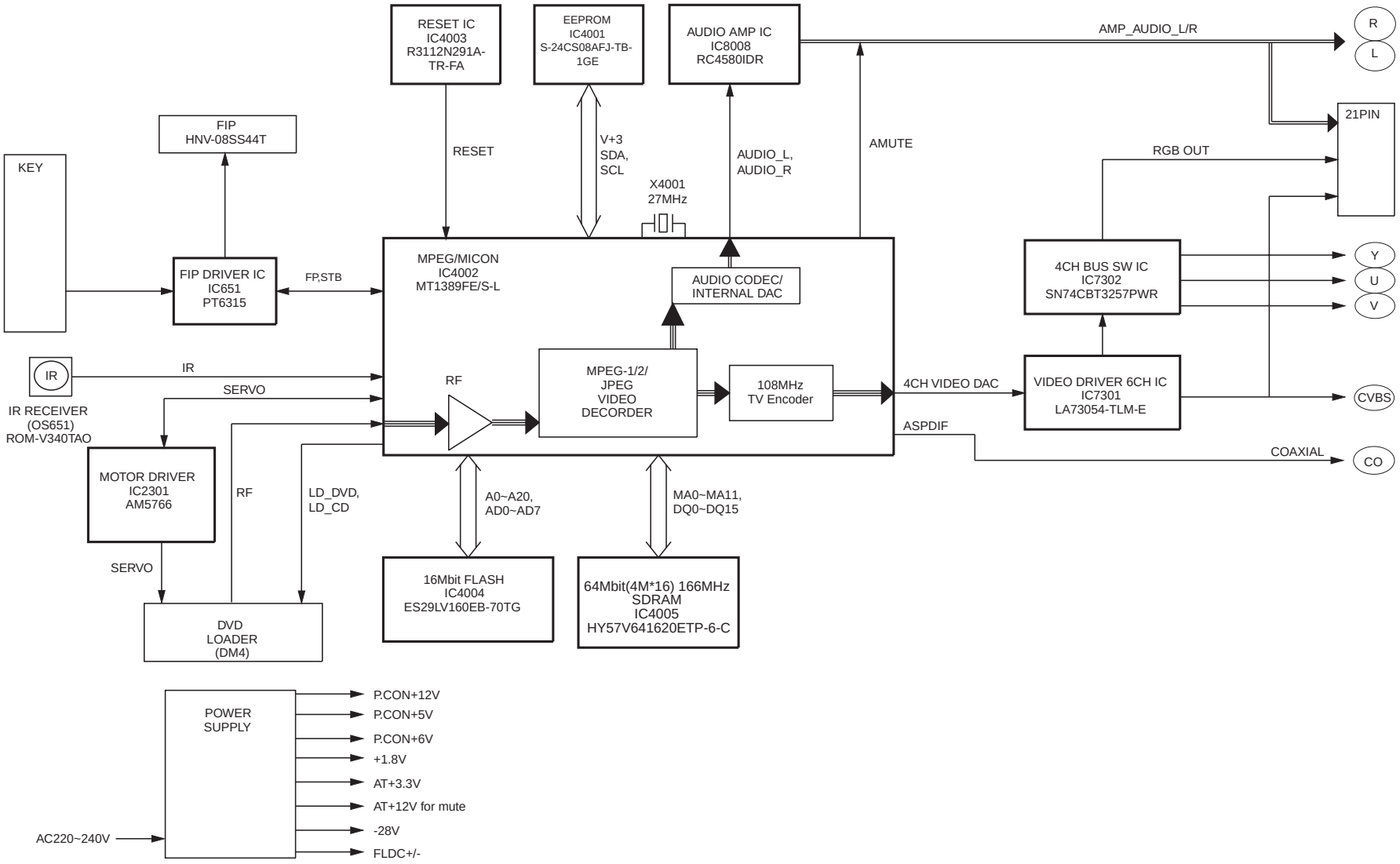
NNECTION DIAGRAM



BLOCK DIAGRAM-1EU

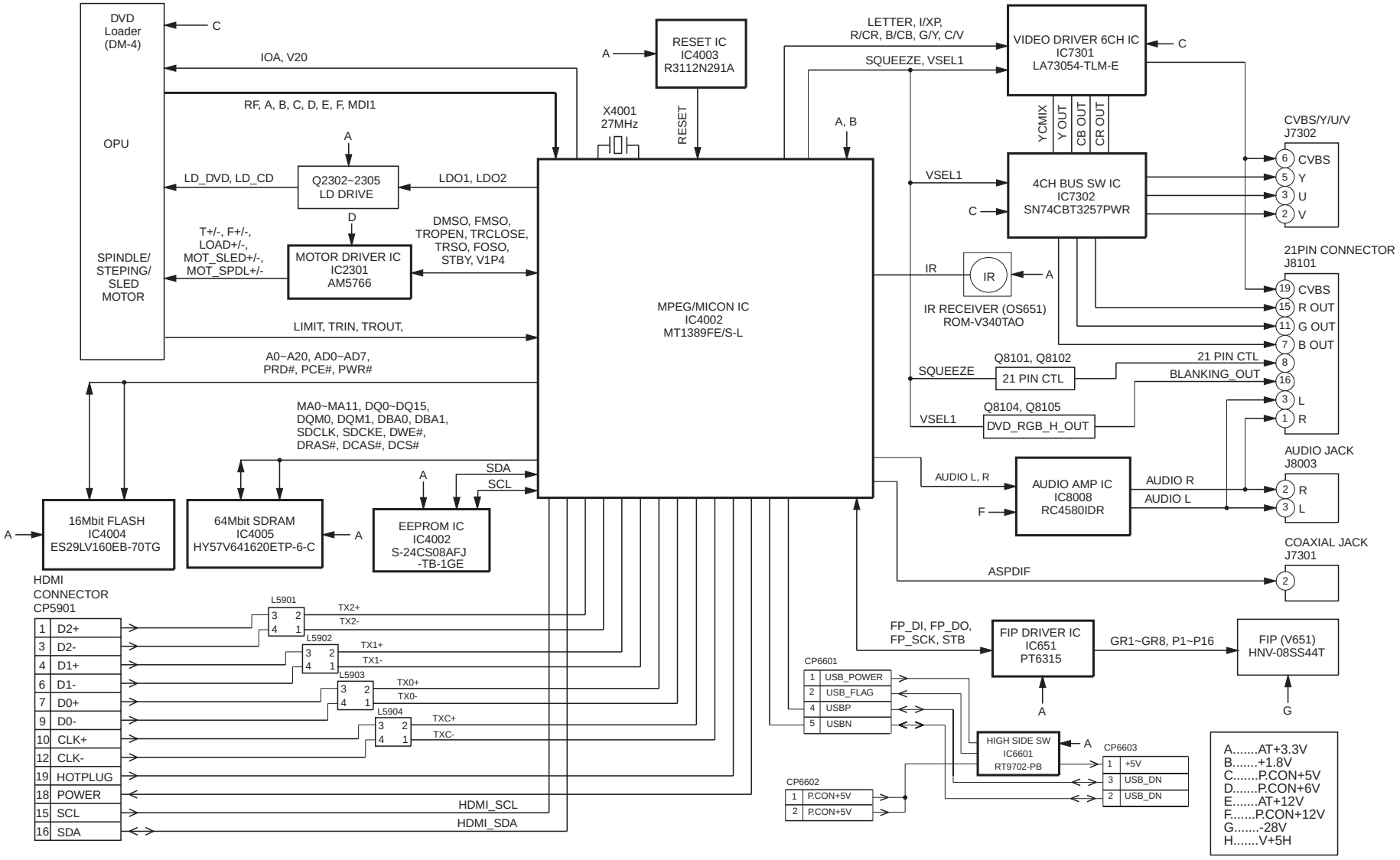
OVERALL BLOCK DIAGRAM

EUROPEAN MODEL



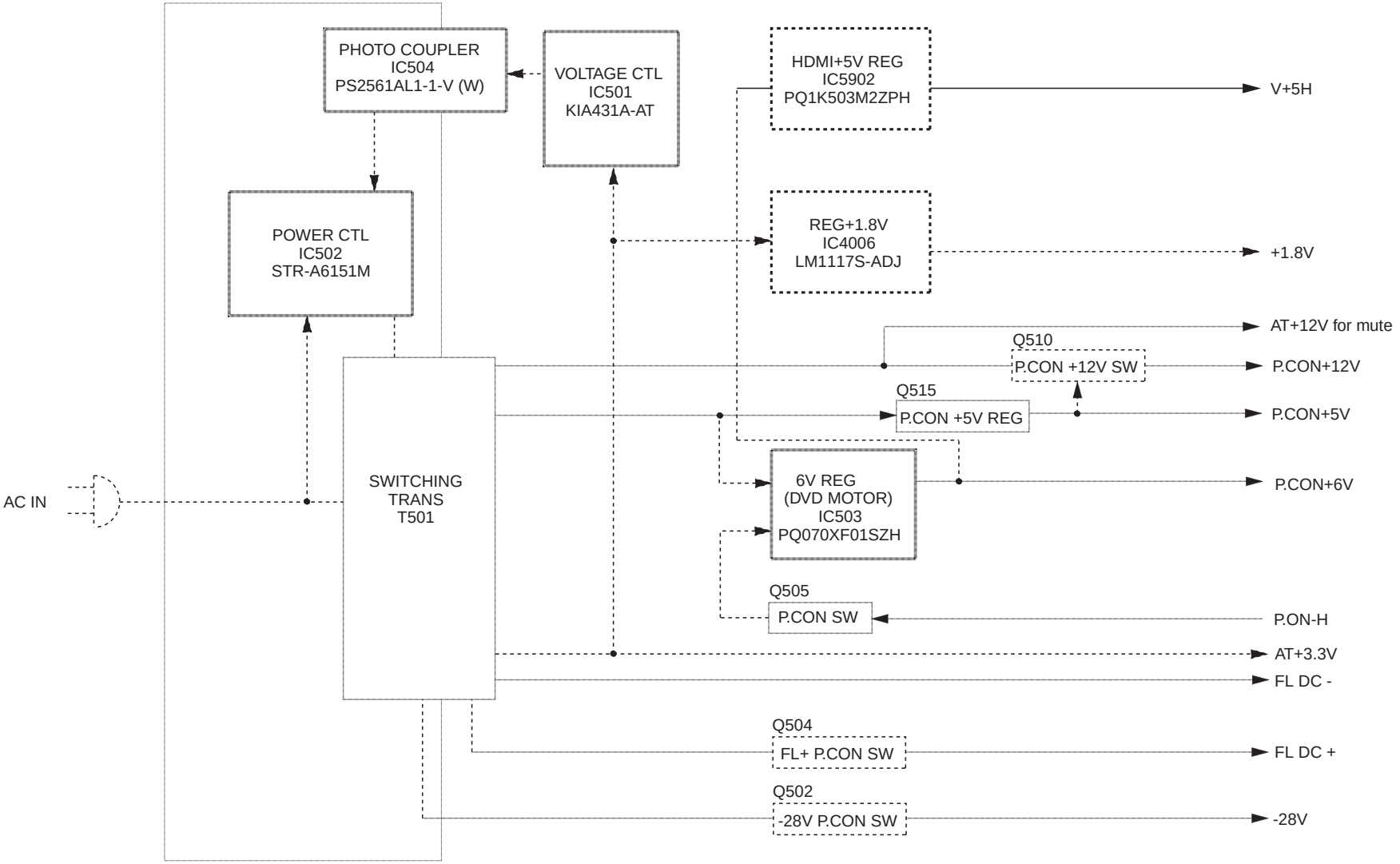
BLOCK DIAGRAM-2EU

DVD LOADER/MPEG BLOCK DIAGRAM



BLOCK DIAGRAM-3EU

POWER BLOCK DIAGRAM

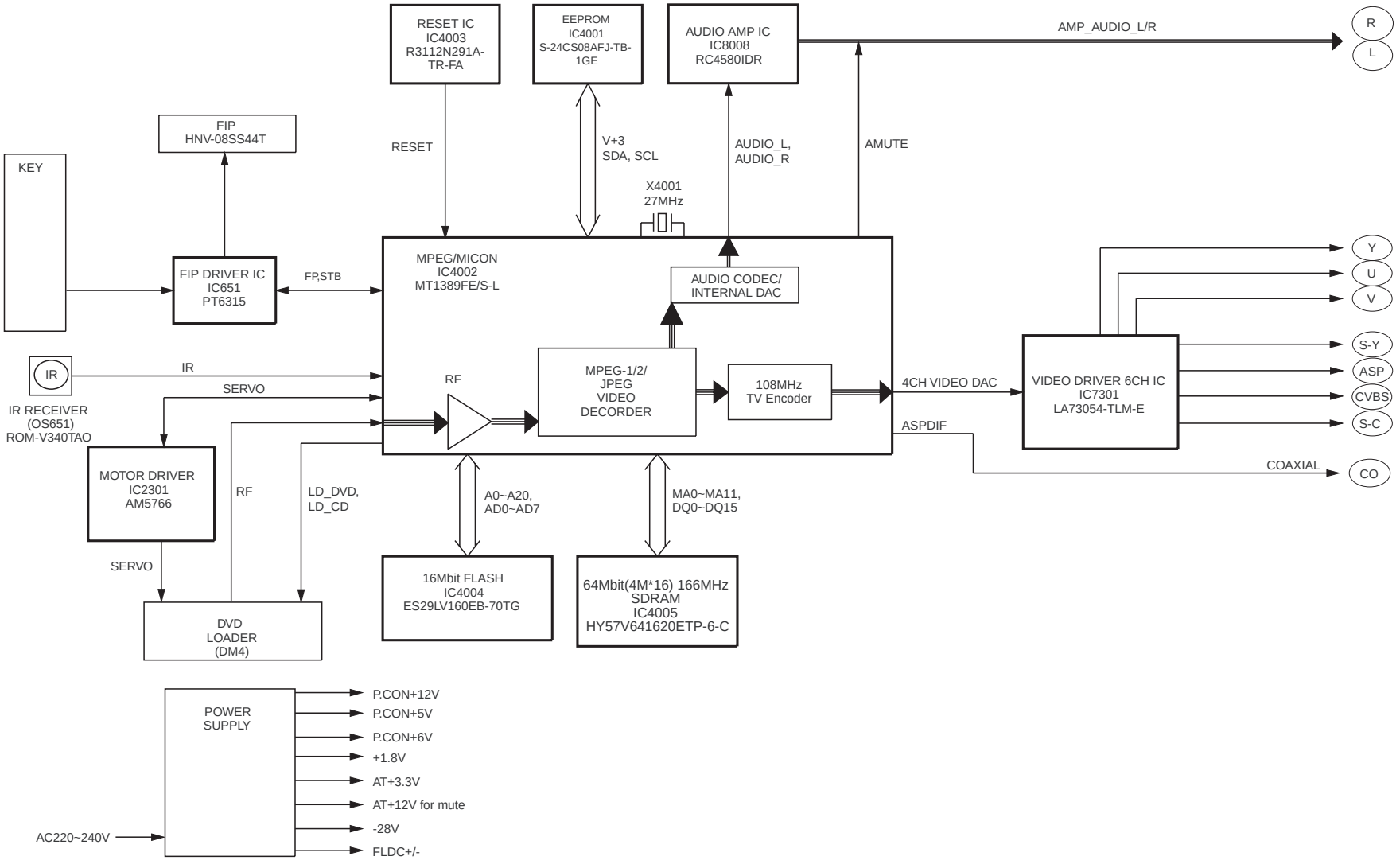


DV-SP405

BLOCK DIAGRAM-1

NORTH AMERICAN MODEL

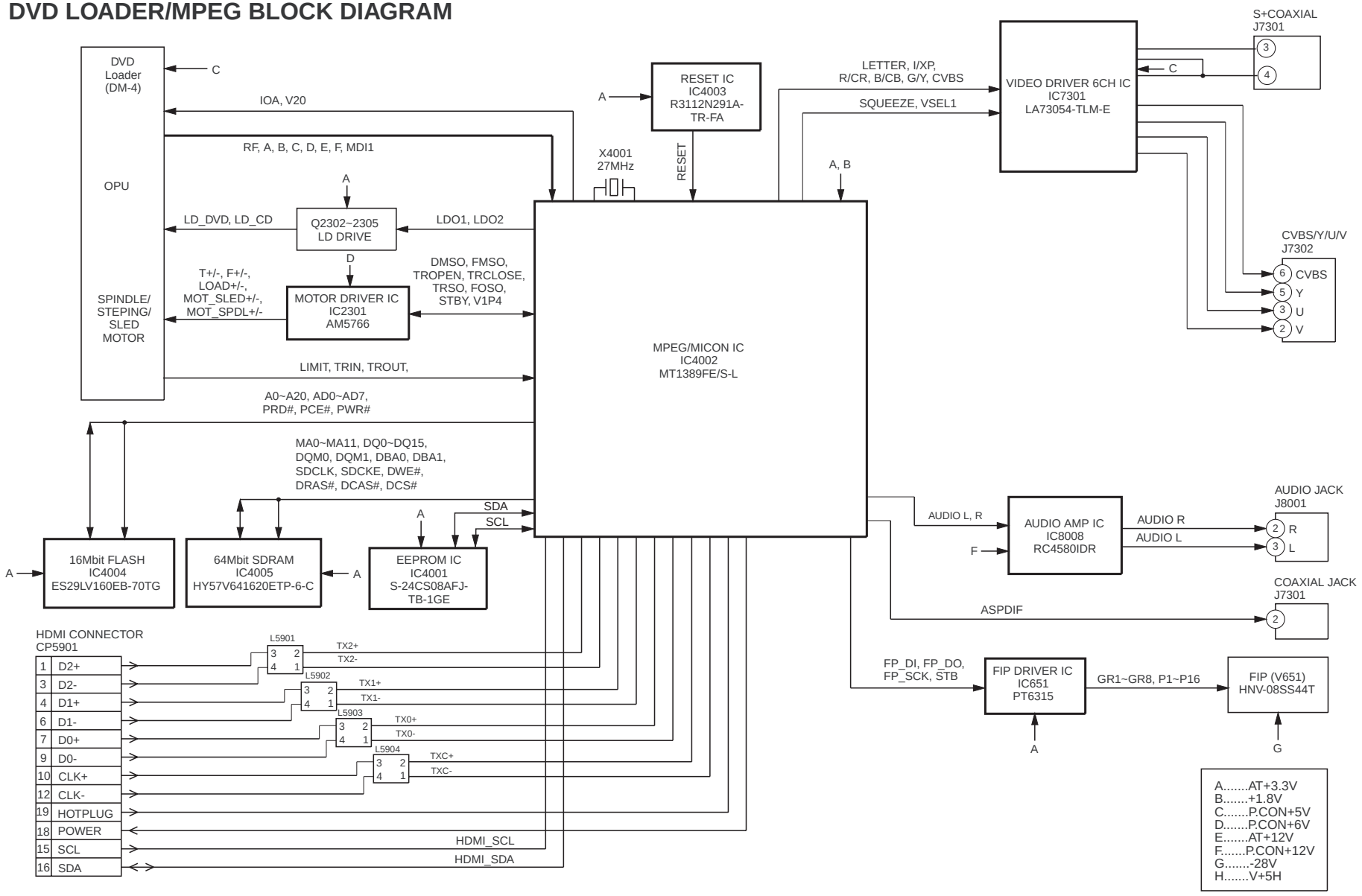
OVERALL BLOCK DIAGRAM



DV-SP405

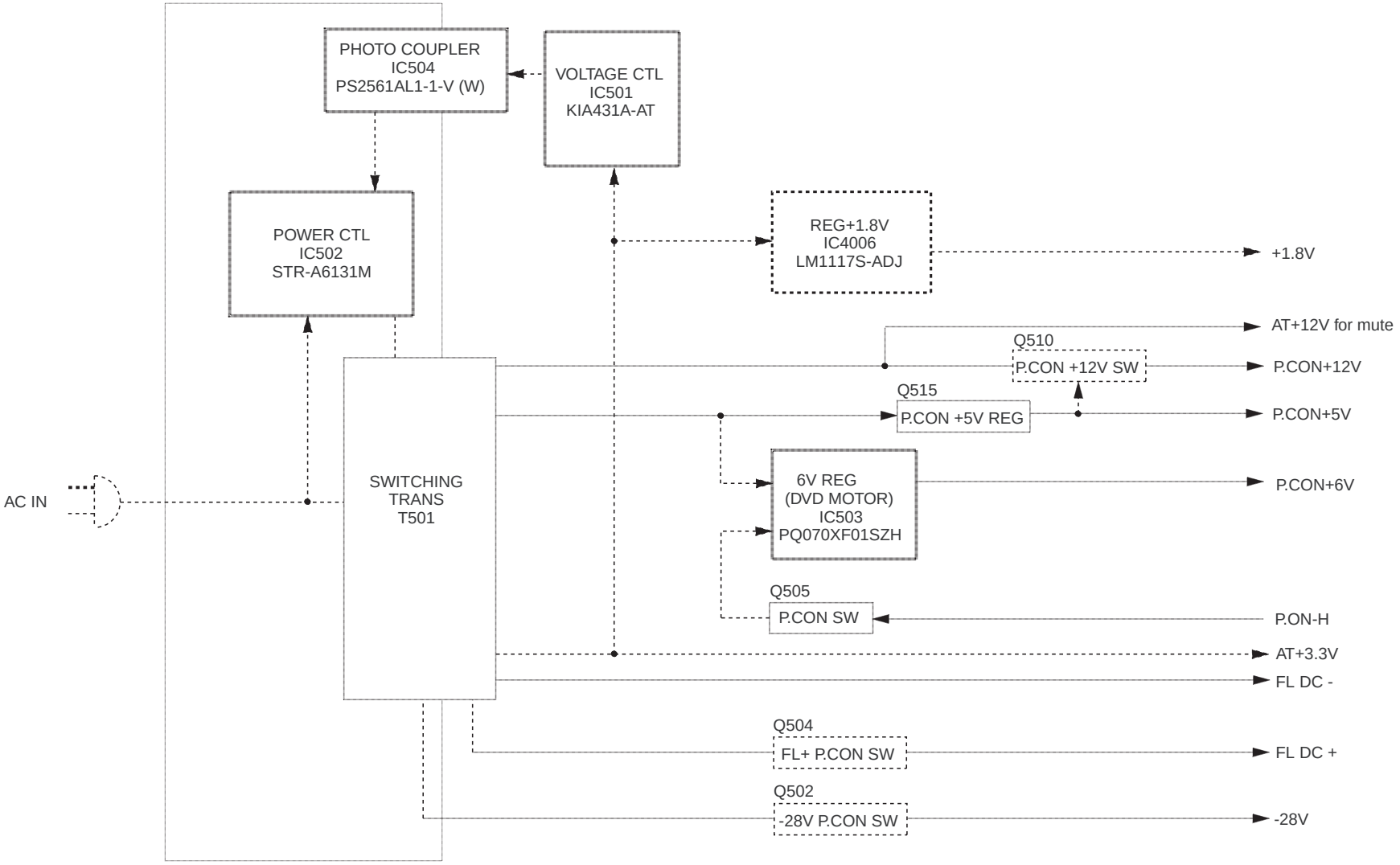
BLOCK DIAGRAM-2US

DVD LOADER/MPEG BLOCK DIAGRAM



BLOCK DIAGRAM-3US

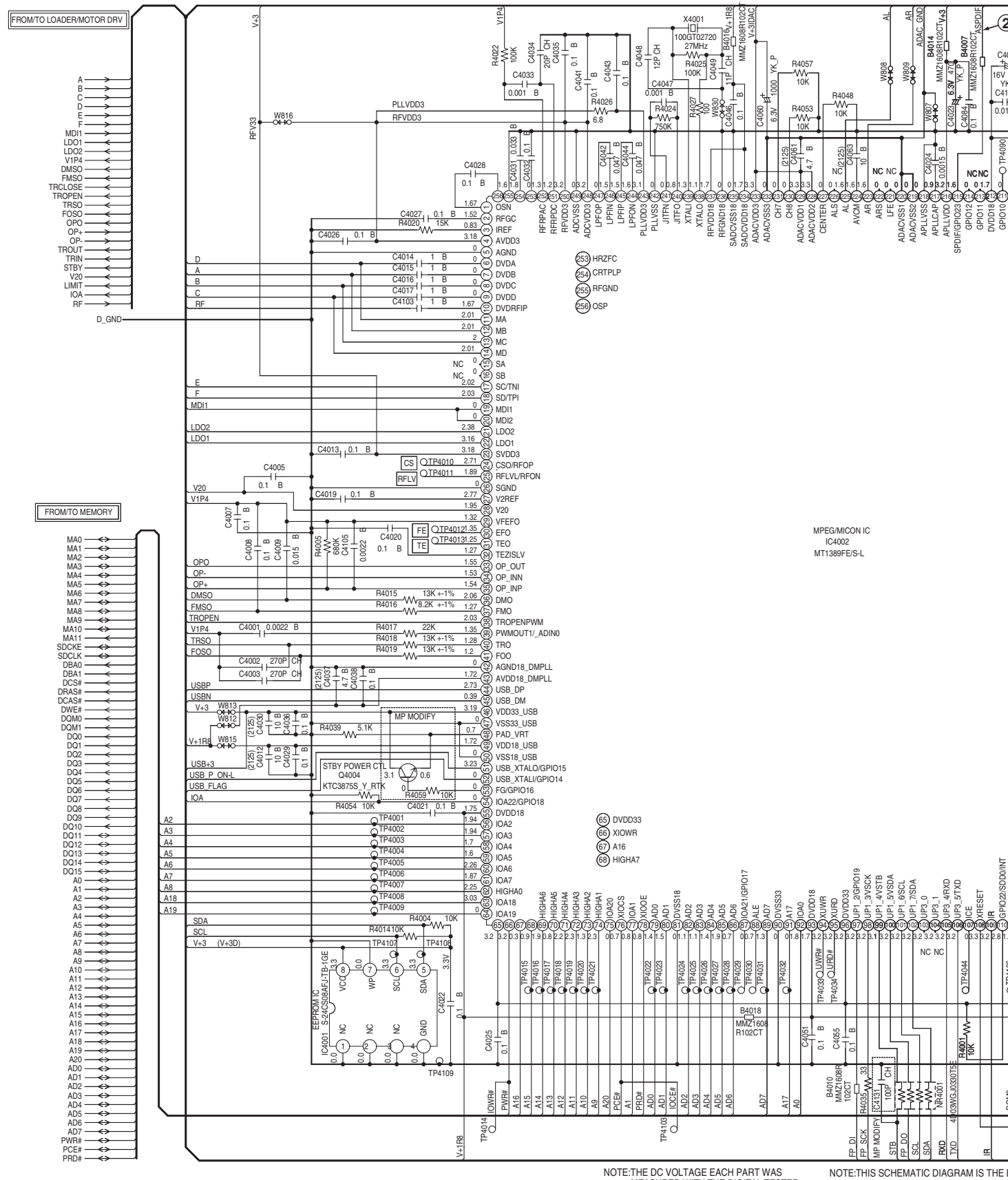
POWER BLOCK DIAGRAM



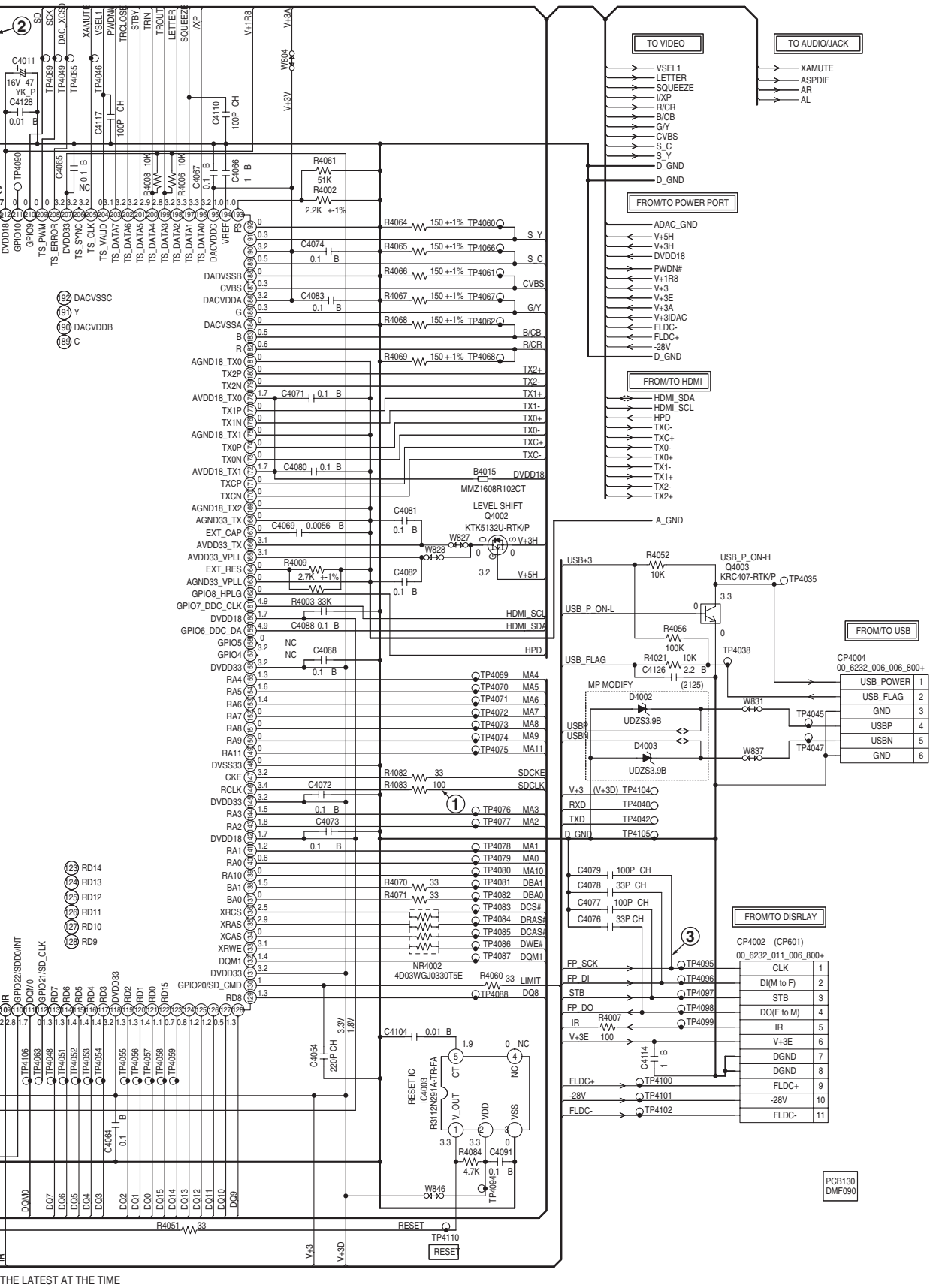
SCHEMATIC DIAGRAM-1 EU

DVD MT PCB ASSY (1/7)

MPEG/MICON/RF-AMP BLOCK

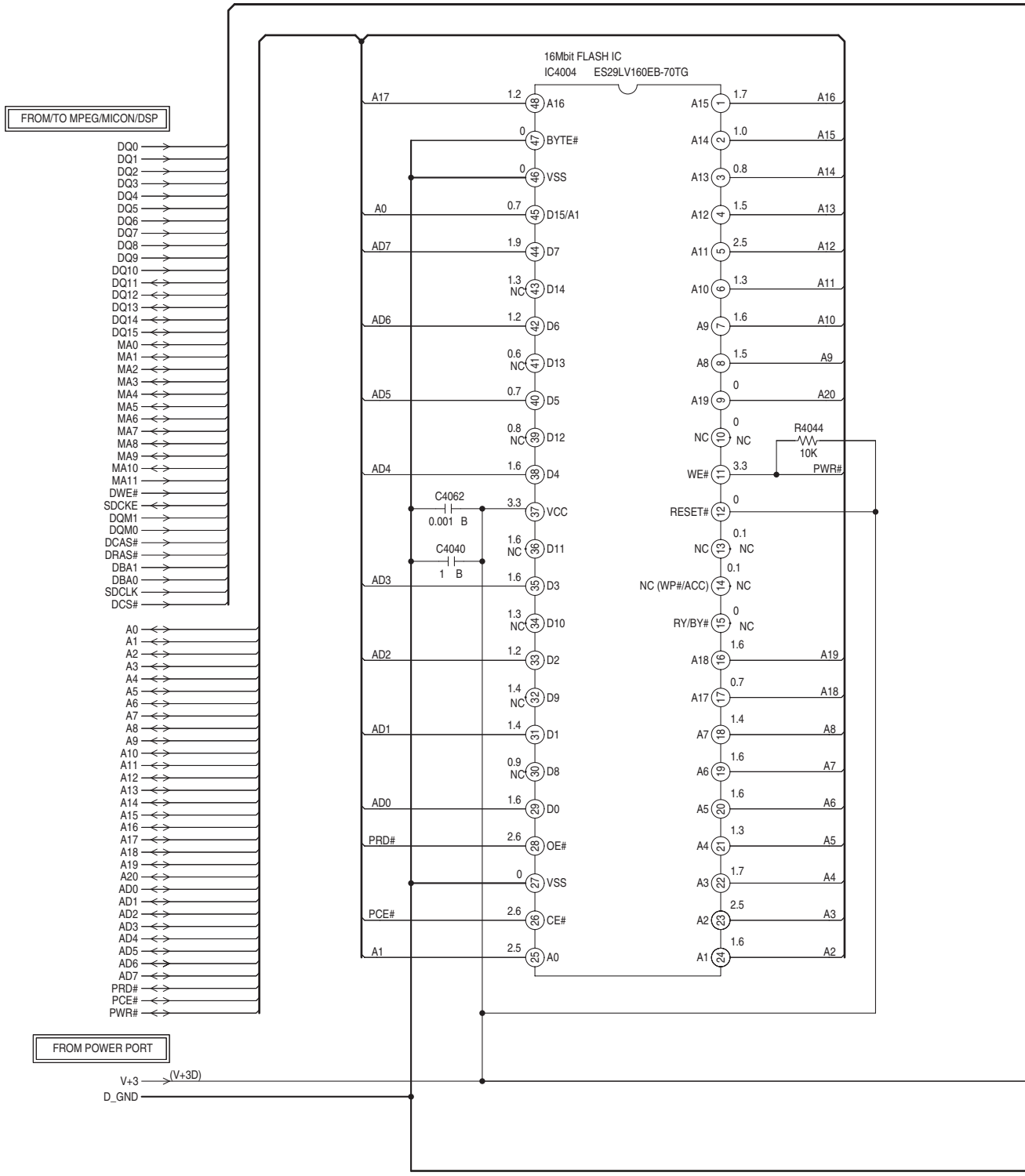


E F G H


TO VIDEO
VSEL1
LETTER
SQUEEZE
I/XP
R/CR
B/CB
G/Y
CVBS
S_C
S_Y
D_GND
D_GND
TO AUDIO/JACK
XAMUTE
ASPDIF
AR
AL
FROM/TO POWER PORT
ADAC_GND
V+5H
V+3H
DVDD18
PWDN#
V+1R8
V+3
V+3E
V+3A
V+3IDAC
FLDC-
FLDC+
-28V
D_GND
FROM/TO HDMI
HDMI_SDA
HDMI_SCL
HPD
TXC-
TXC+
TX0-
TX0+
TX1-
TX1+
TX2-
TX2+
A_GND
FROM/TO USB
CP4004
00_6232_006_006_800+
USB_POWER
USB_FLAG
GND
USBP
USBN
GND
FROM/TO DISRLAY
CP4002 (CP601)
00_6232_011_006_800+
CLK
DI(M to F)
STB
DO(F to M)
IR
V+3E
DGND
DGND
FLDC+
-28V
FLDC-
PCB130
DMF090
RESET IC
IC4003
R3112N291A-TR-FA
RESET
THE LATEST AT THE TIME
CHANGE WITHOUT NOTICE

SCHEMATIC DIAGRAM-2 EU

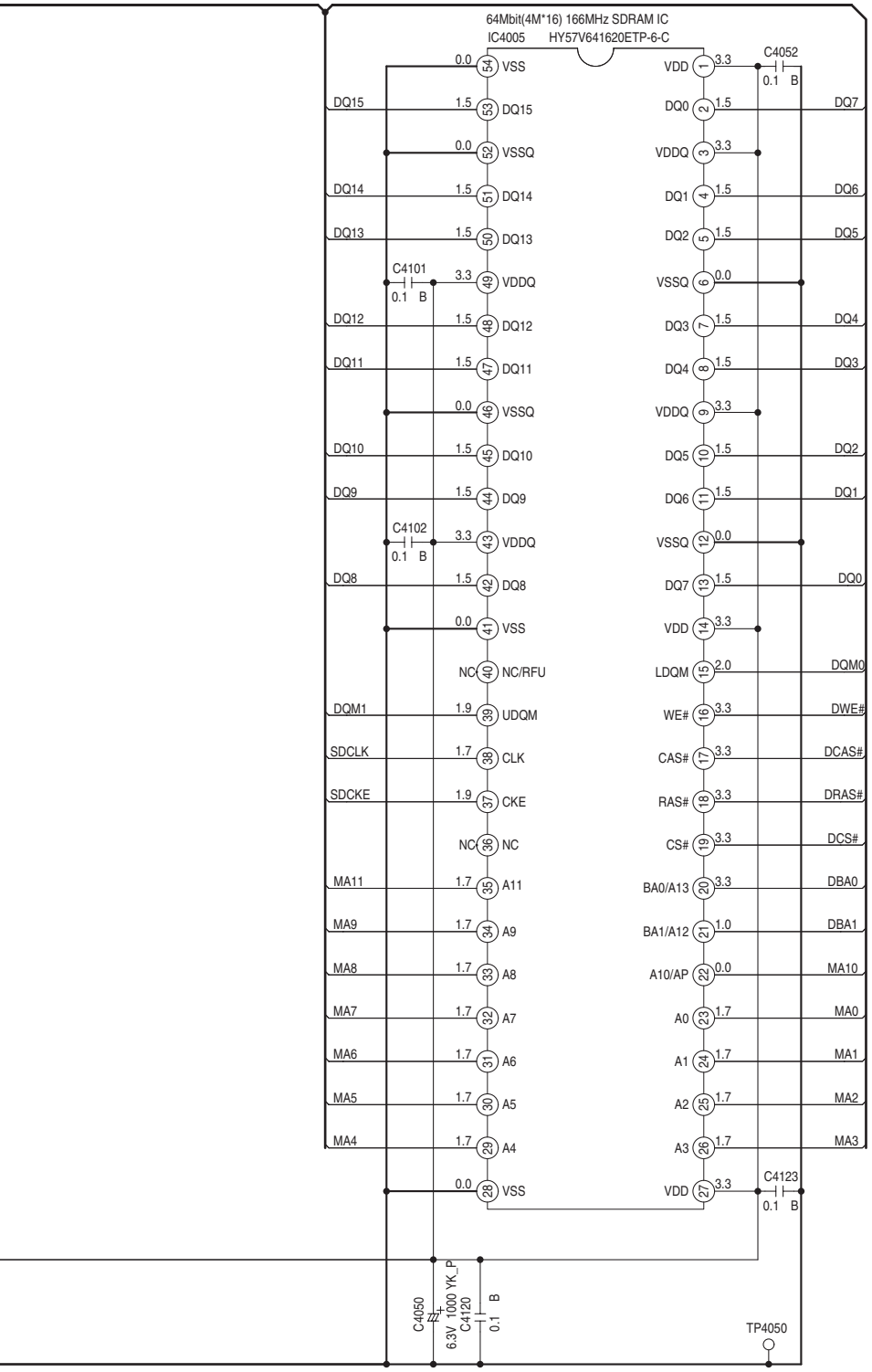
DVD MT PCB ASSY (2/7) MEMORY BLOCK



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

E F G H

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.

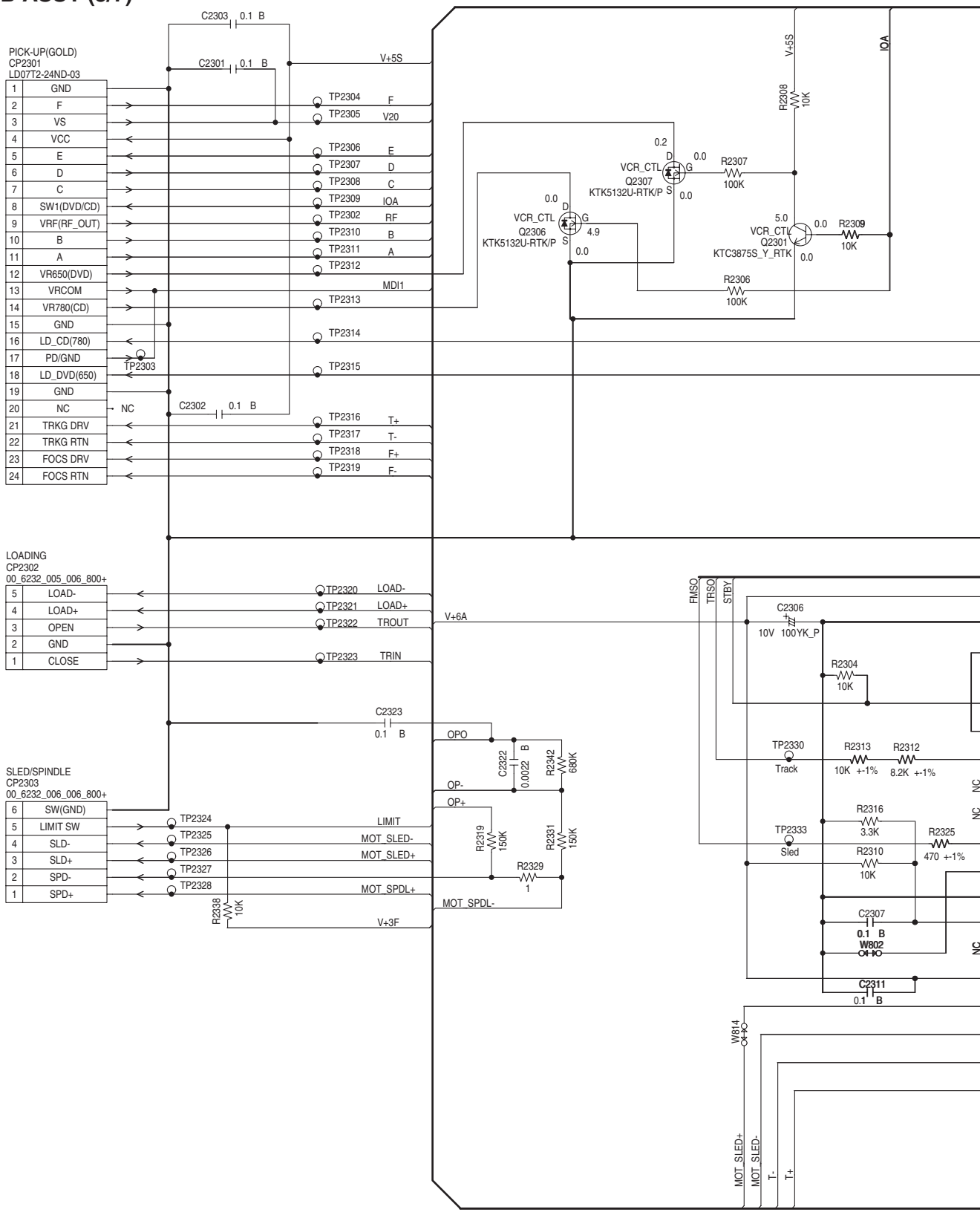


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

SCHEMATIC DIAGRAM-3 EU

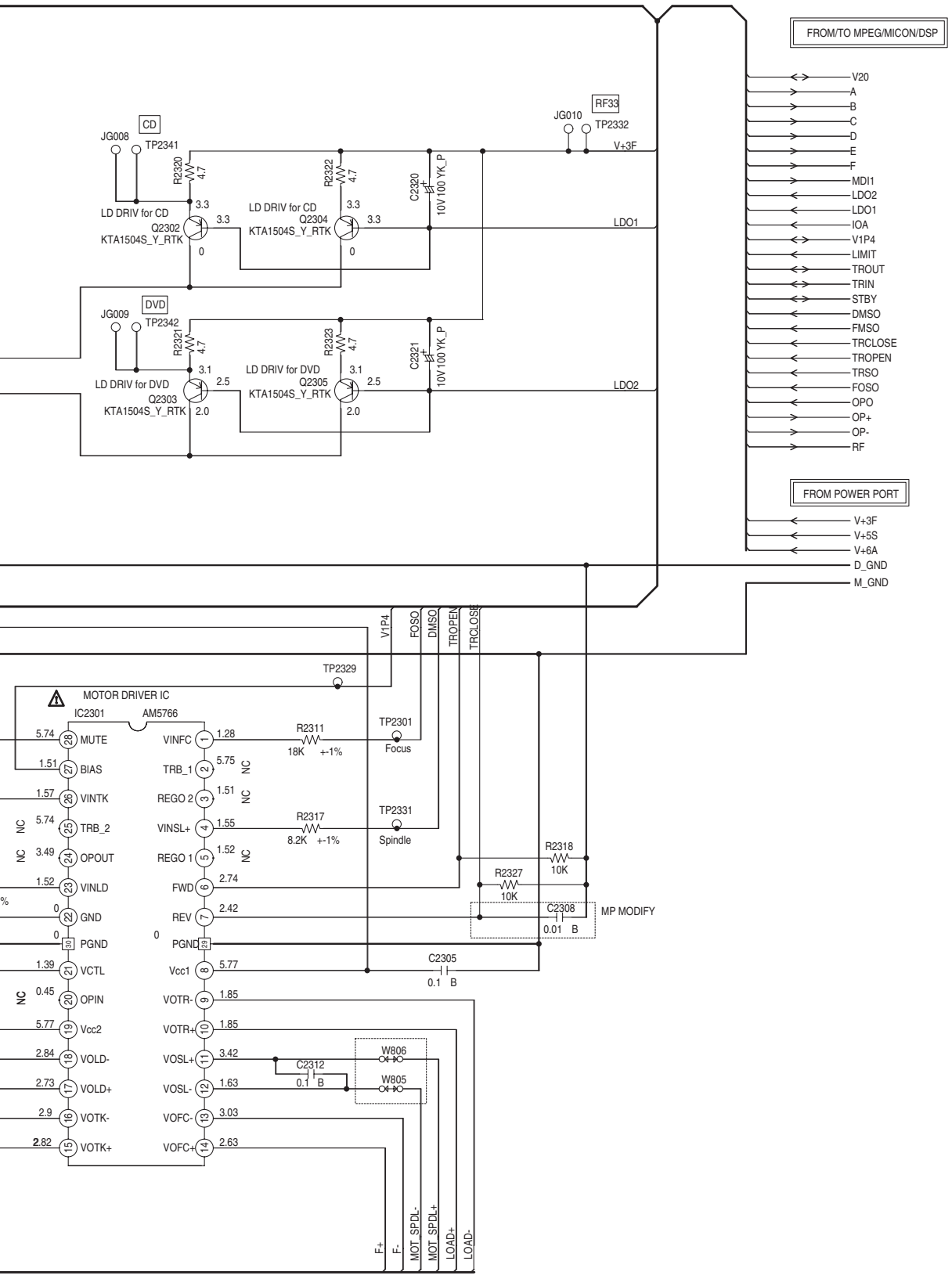
DVD MT PCB ASSY (3/7)

LOADER/MOTOR DVR BLOCK



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

E F G H



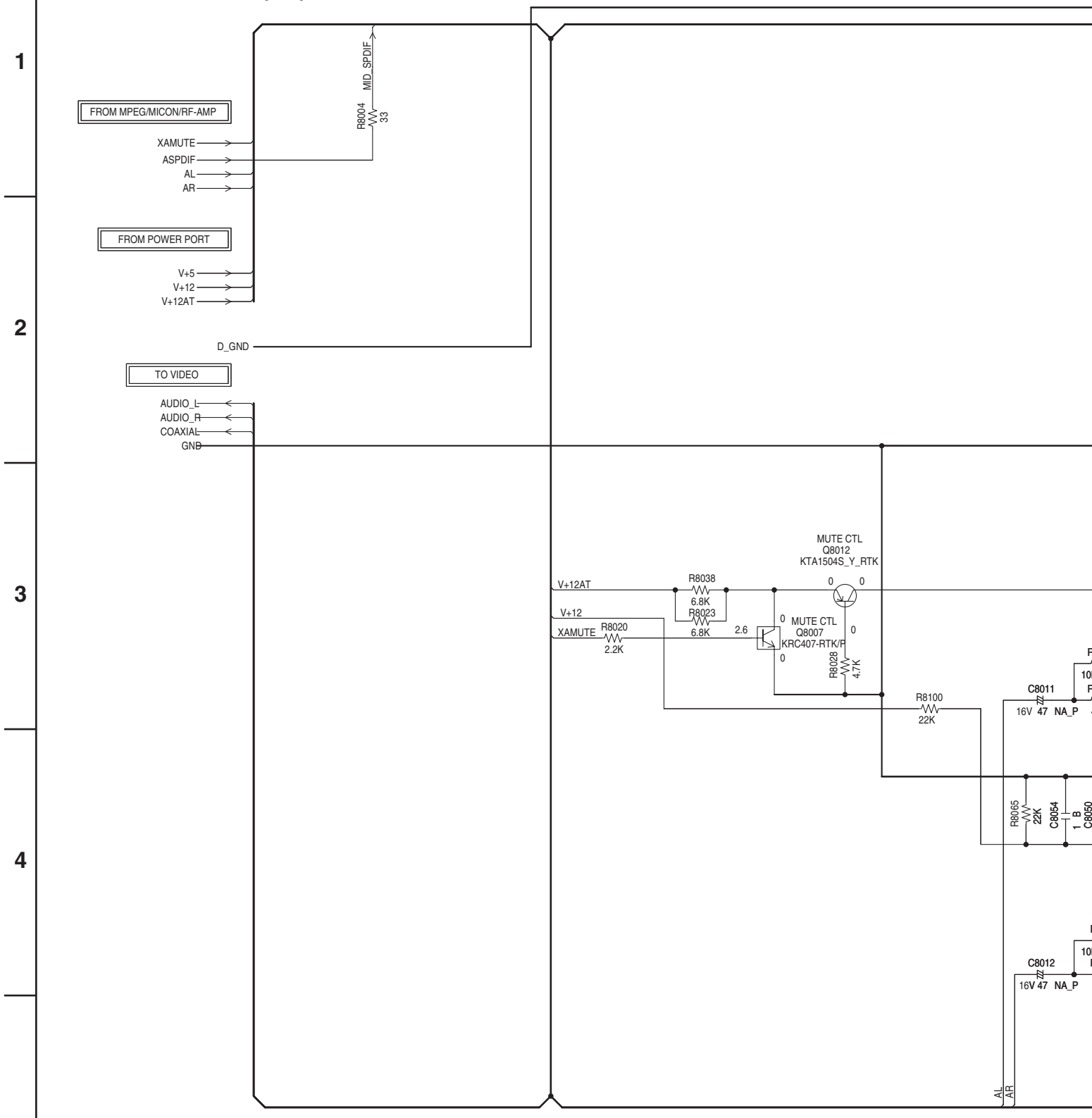
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

PCB130
DMF090

SCHEMATIC DIAGRAM-4 EU

DVD MT PCB ASSY (4/7)

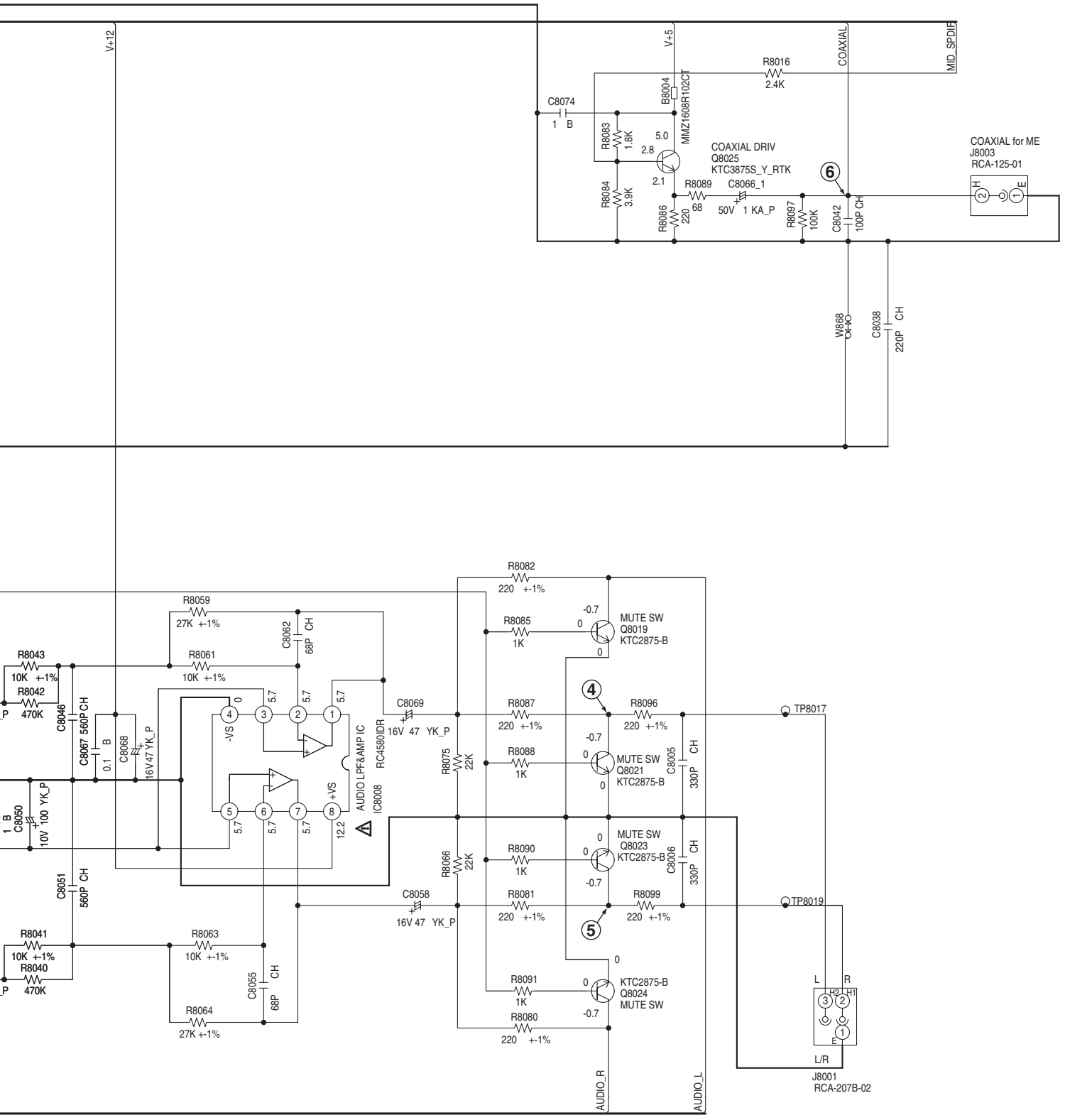
AUDIO/JACK BLOCK



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

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST OF PRINTING AND SUBJECT TO CHANGE W

E F G H



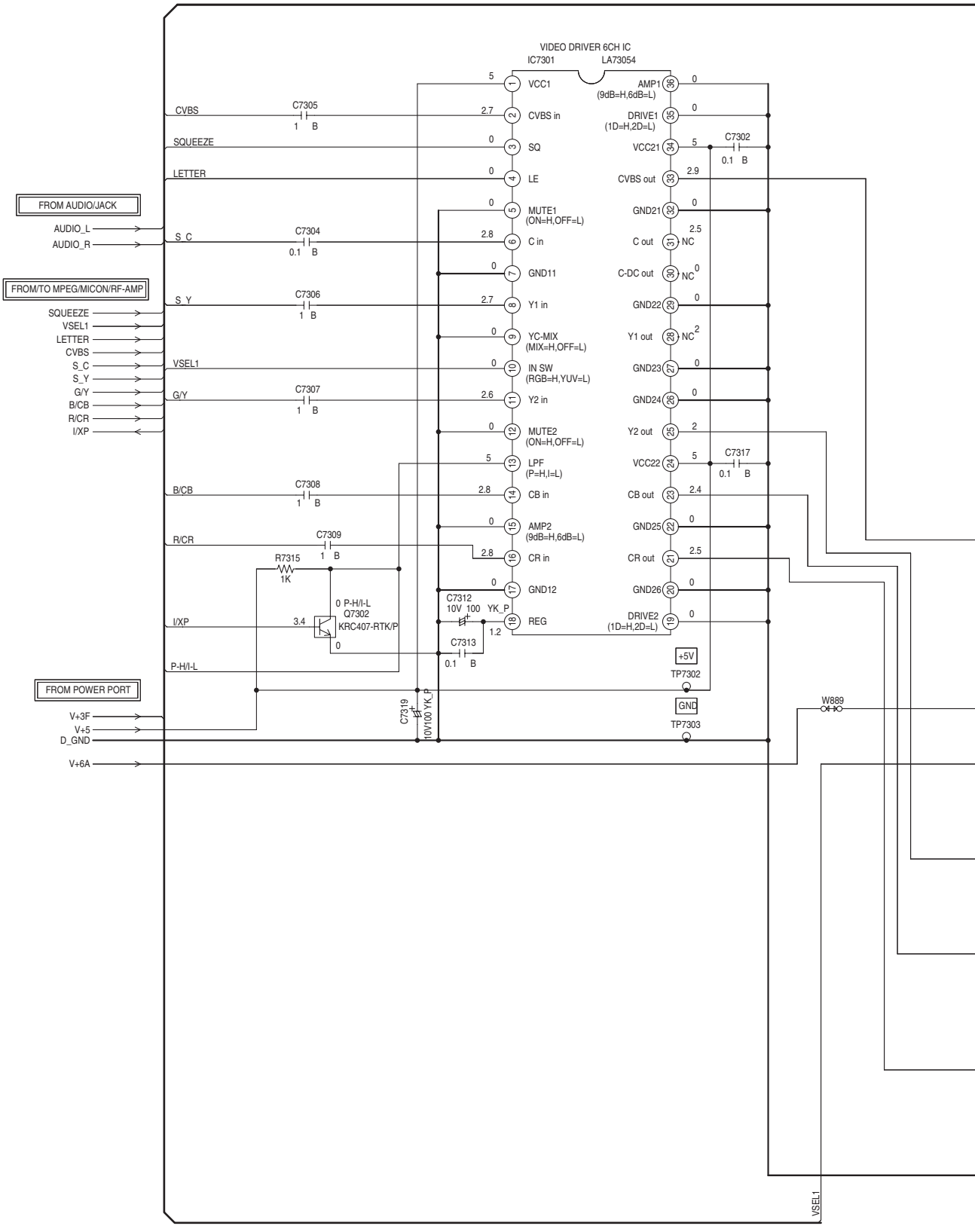
TEST AT THE TIME
GE WITHOUT NOTICE。

CAUTION: DIGITAL TRANSISTOR

SCHEMATIC DIAGRAM-5 EU

DVD MT PCB ASSY (5/7)

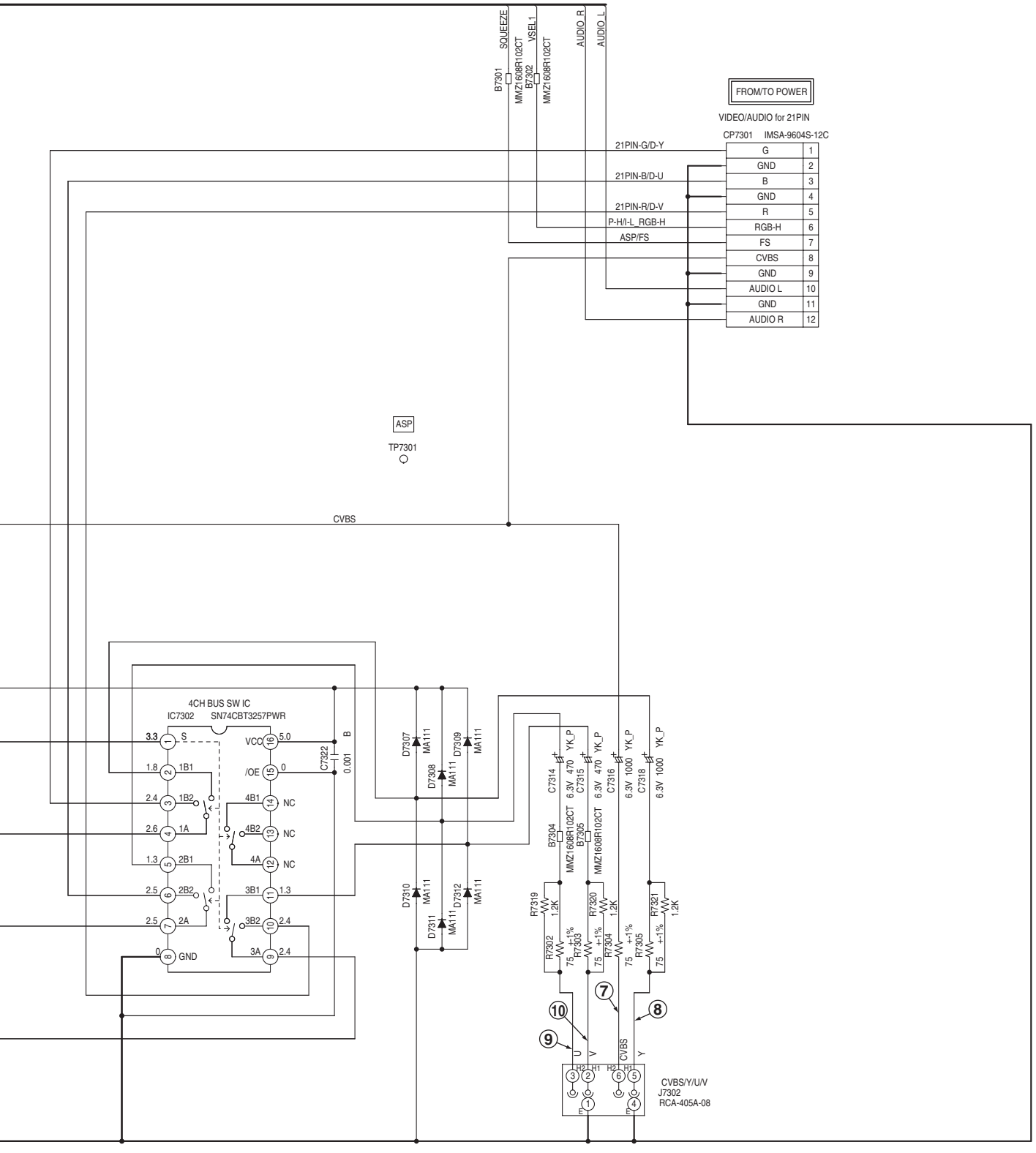
VIDEO BLOCK



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

E F G H

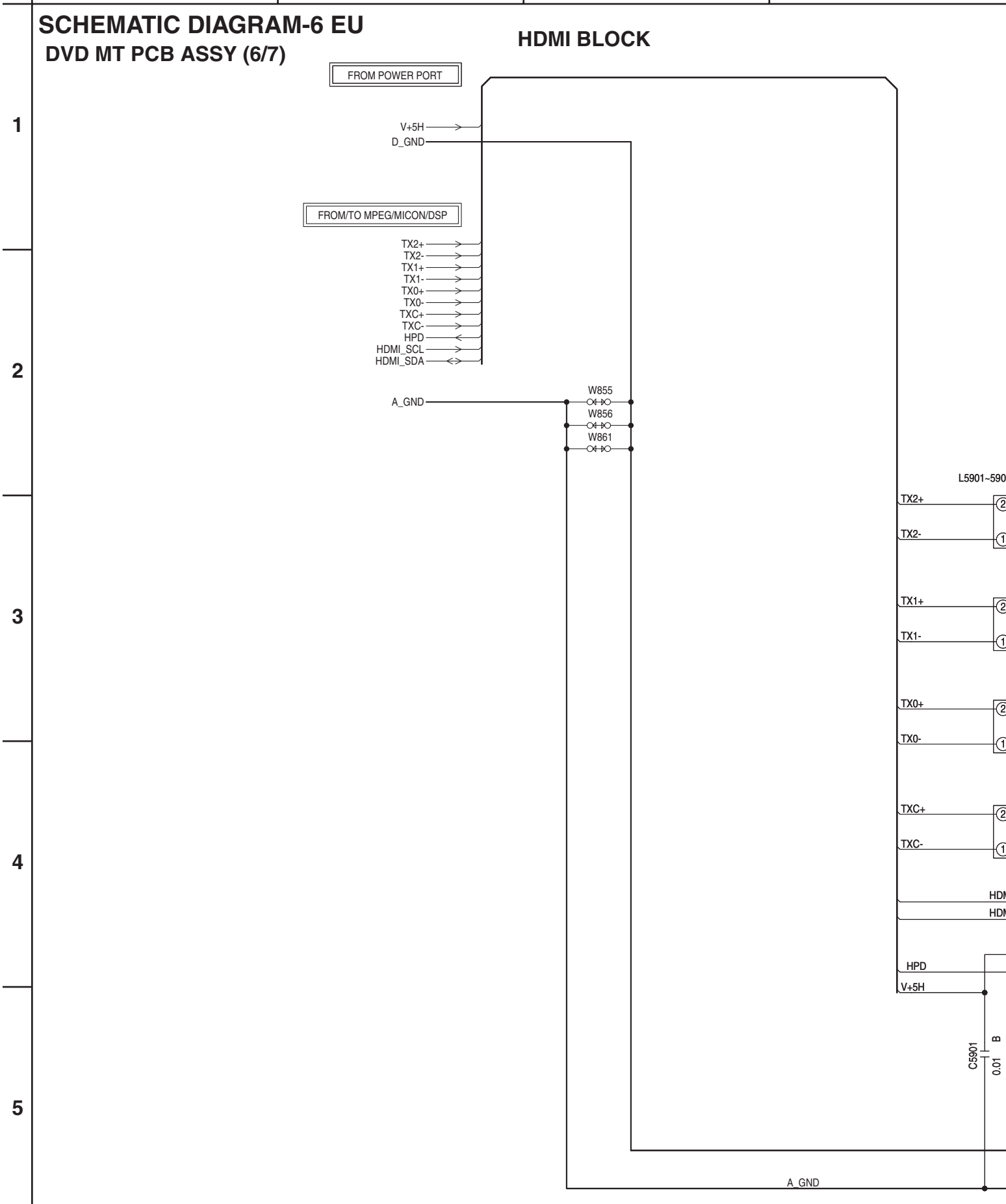


CAUTION: DIGITAL TRANSISTOR

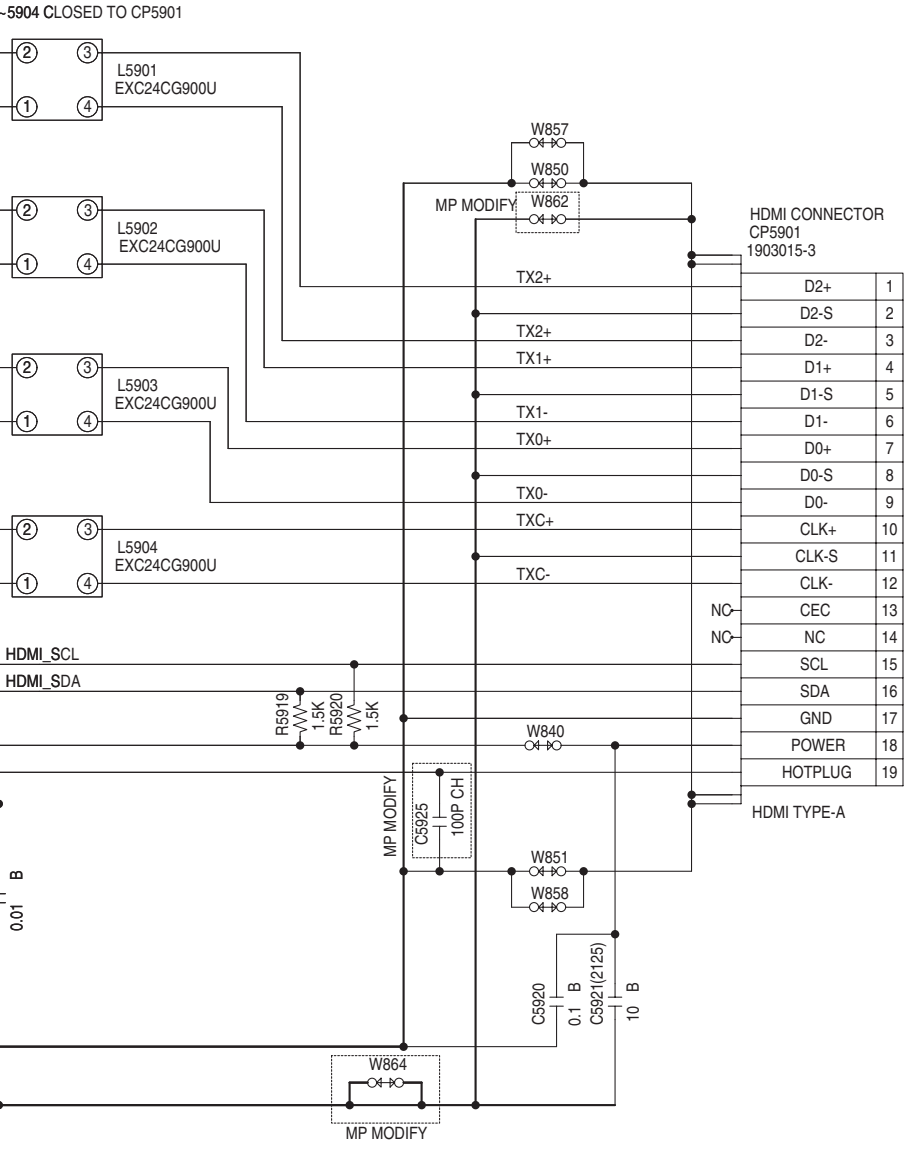
SCHEMATIC DIAGRAM-6 EU

DVD MT PCB ASSY (6/7)

HDMI BLOCK



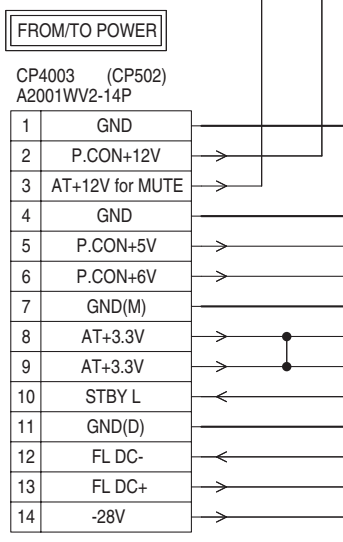
E F G H


~5904 CLOSED TO CP5901
L5901
EXC24CG900U
L5902
EXC24CG900U
L5903
EXC24CG900U
L5904
EXC24CG900U
W857
W850
MP MODIFY
W862
HDMI CONNECTOR
CP5901
1903015-3
TX2+
TX2+
TX1+
TX1-
TX0+
TX0-
TXC+
TXC-
HDMI_SCL
HDMI_SDA
R5919
1.5K
R5920
1.5K
W840
MP MODIFY
C5925
100P CH
W851
W858
C5920
0.1 B
C5921(2125)
10 B
W864
MP MODIFY
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
NC CEC 13
NC NC 14
SCL 15
SDA 16
GND 17
POWER 18
HOTPLUG 19
HDMI TYPE-A

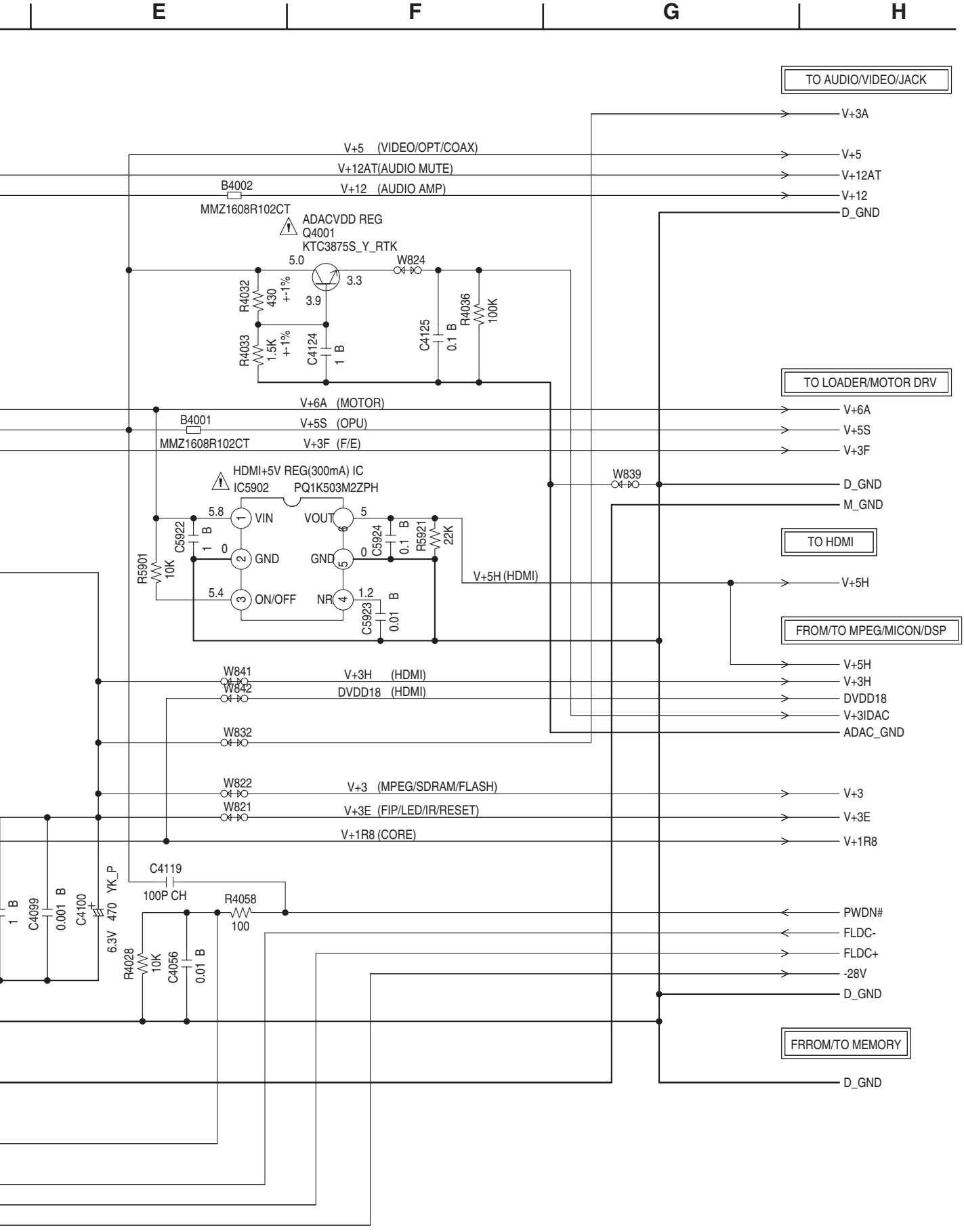
SCHEMATIC-DIAGRAM-7 EU

DVD MT PCB ASSY (7/7)

POWER PORT BLOCK

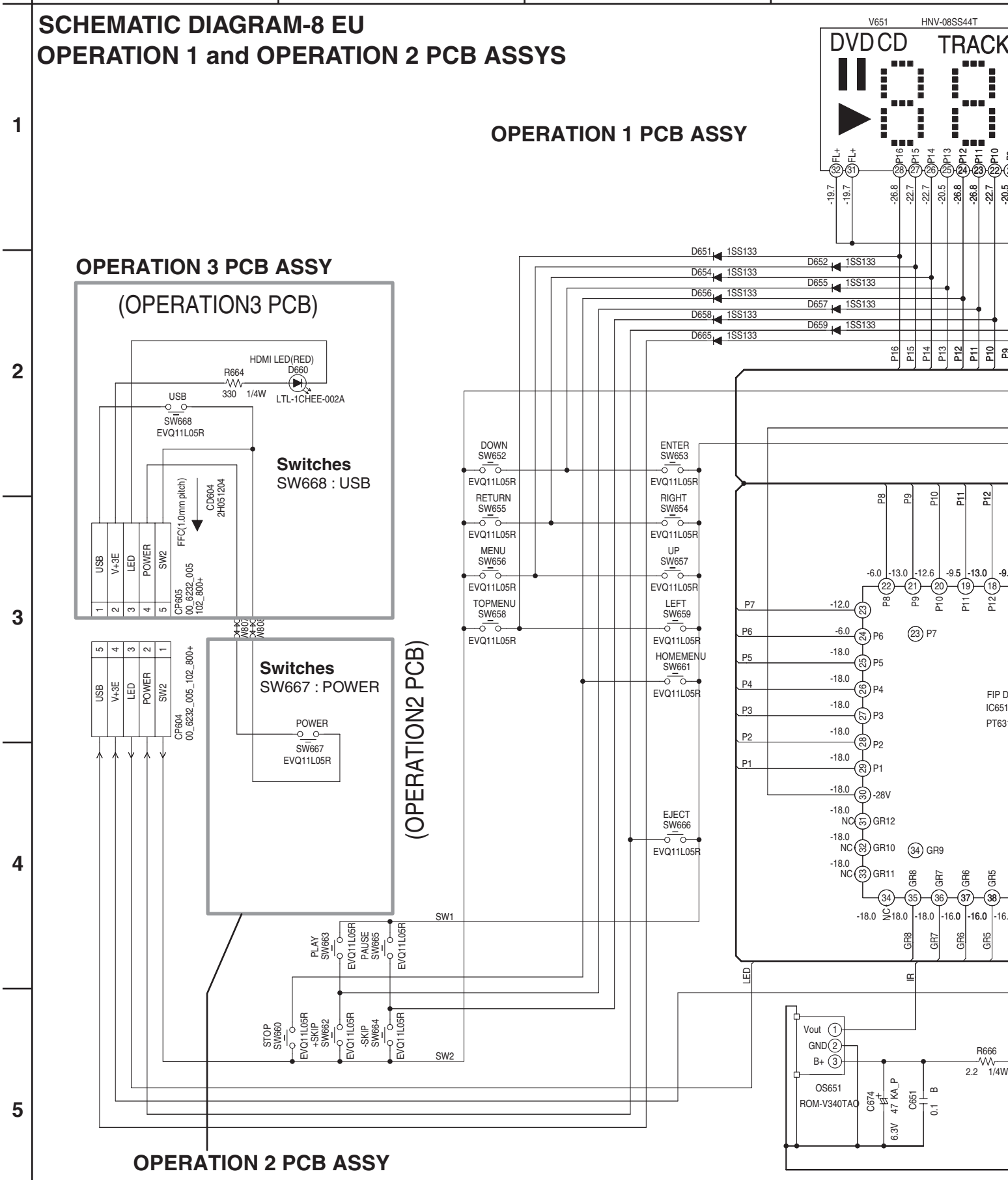


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.



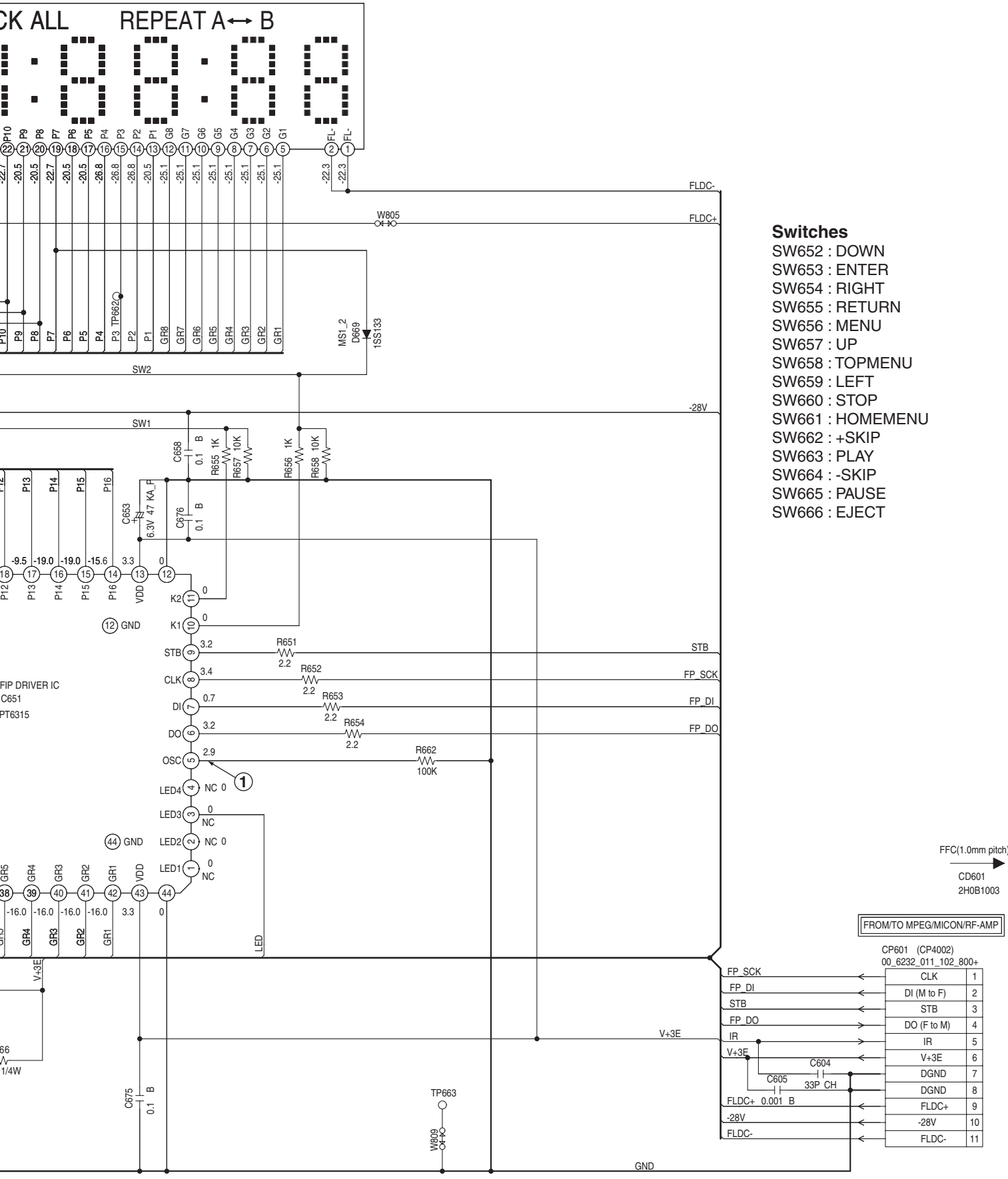
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

SCHEMATIC DIAGRAM-8 EU
OPERATION 1 and OPERATION 2 PCB ASSYS



NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST A
OF PRINTING AND SUBJECT TO CHANGE WI

E F G H



Switches
SW652 : DOWN
SW653 : ENTER
SW654 : RIGHT
SW655 : RETURN
SW656 : MENU
SW657 : UP
SW658 : TOPMENU
SW659 : LEFT
SW660 : STOP
SW661 : HOMEMENU
SW662 : +SKIP
SW663 : PLAY
SW664 : -SKIP
SW665 : PAUSE
SW666 : EJECT

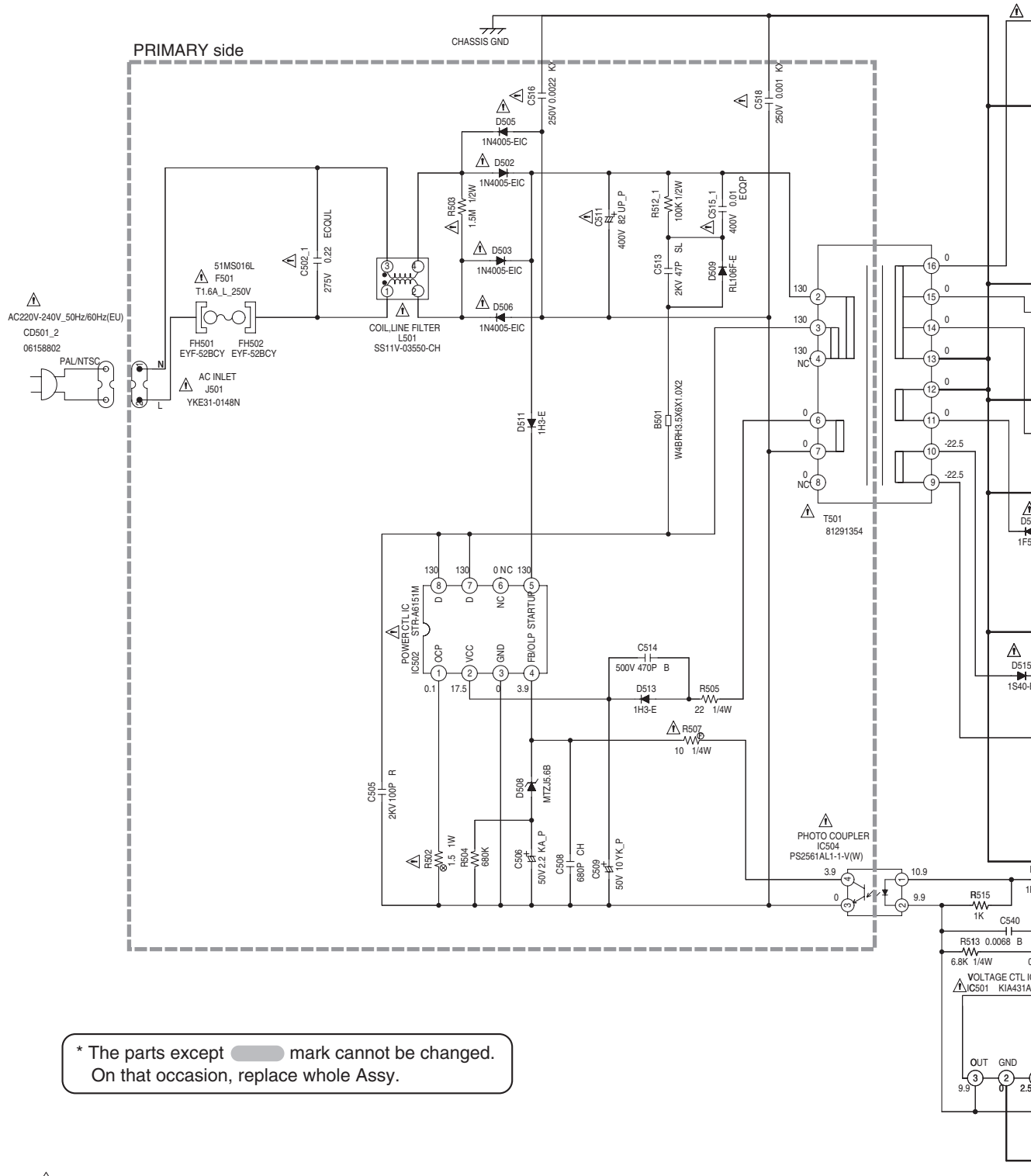
EST AT THE TIME
E WITHOUT NOTIC

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

SCHEMATIC DIAGRAM-9 EU

POWER PCB ASSY (1/2)

POWER BLOCK



* The parts except ▭ mark cannot be changed.
On that occasion, replace whole Assy.

1.6A 125V

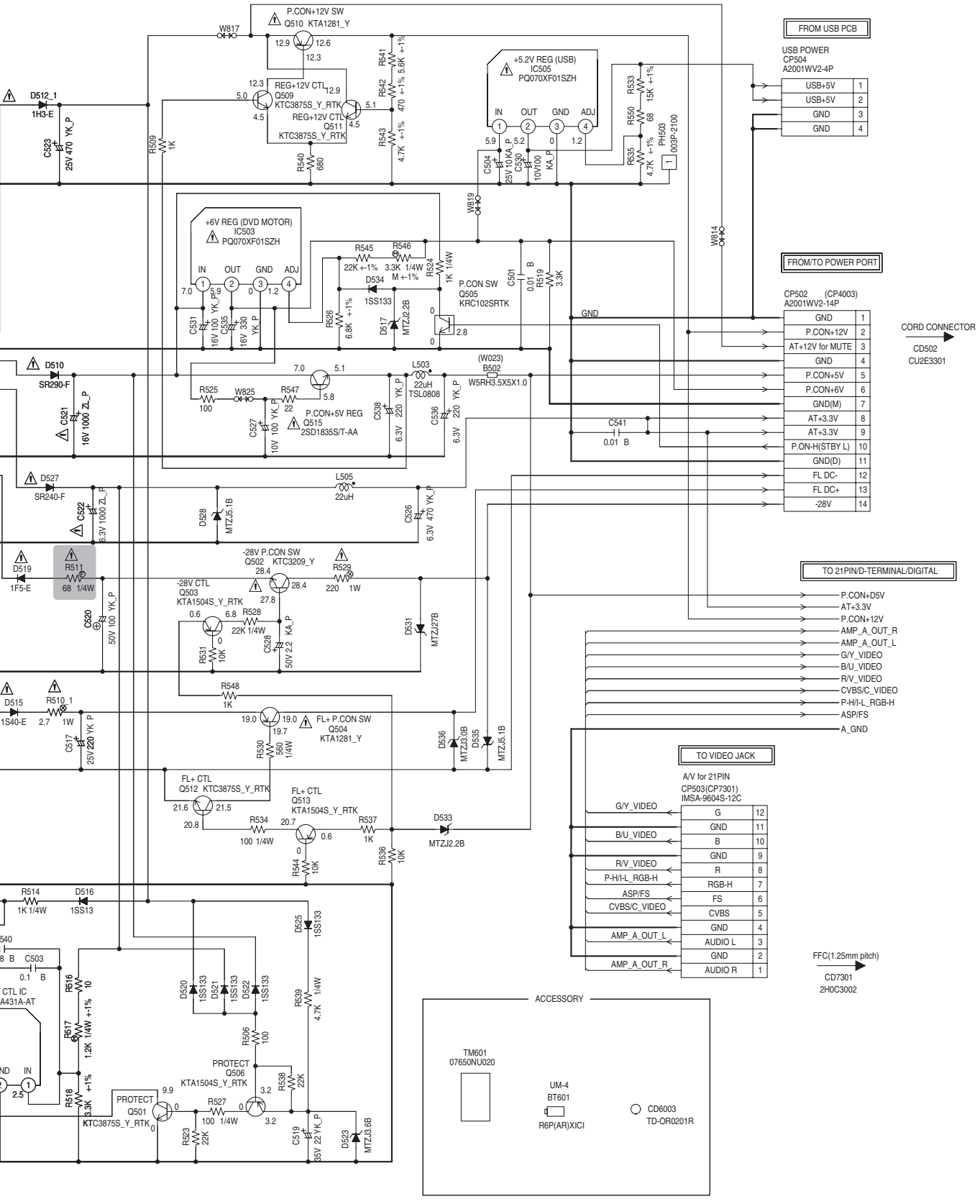
CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 1.6A 125V{F501}

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

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

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

E F G H

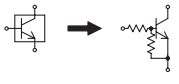


UN ⚠ ETANT
E VUE SECURITE
RITES
ES PIECES

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

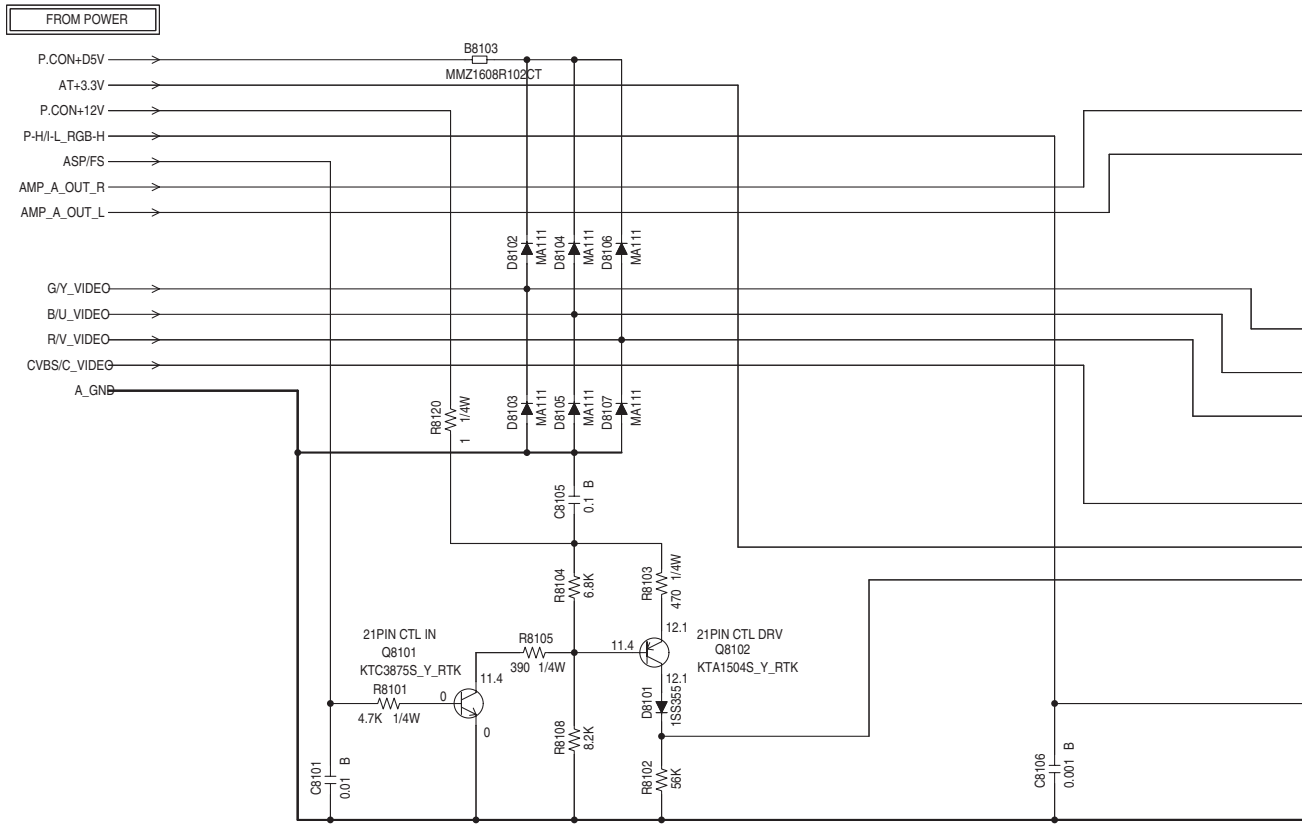
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

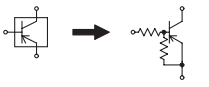


SCHEMATIC DIAGRAM-10 EU

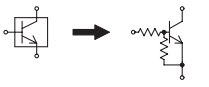
POWER PCB ASSY (2/2) 21 PIN/D-TERMINAL/DIGITAL BLOCK



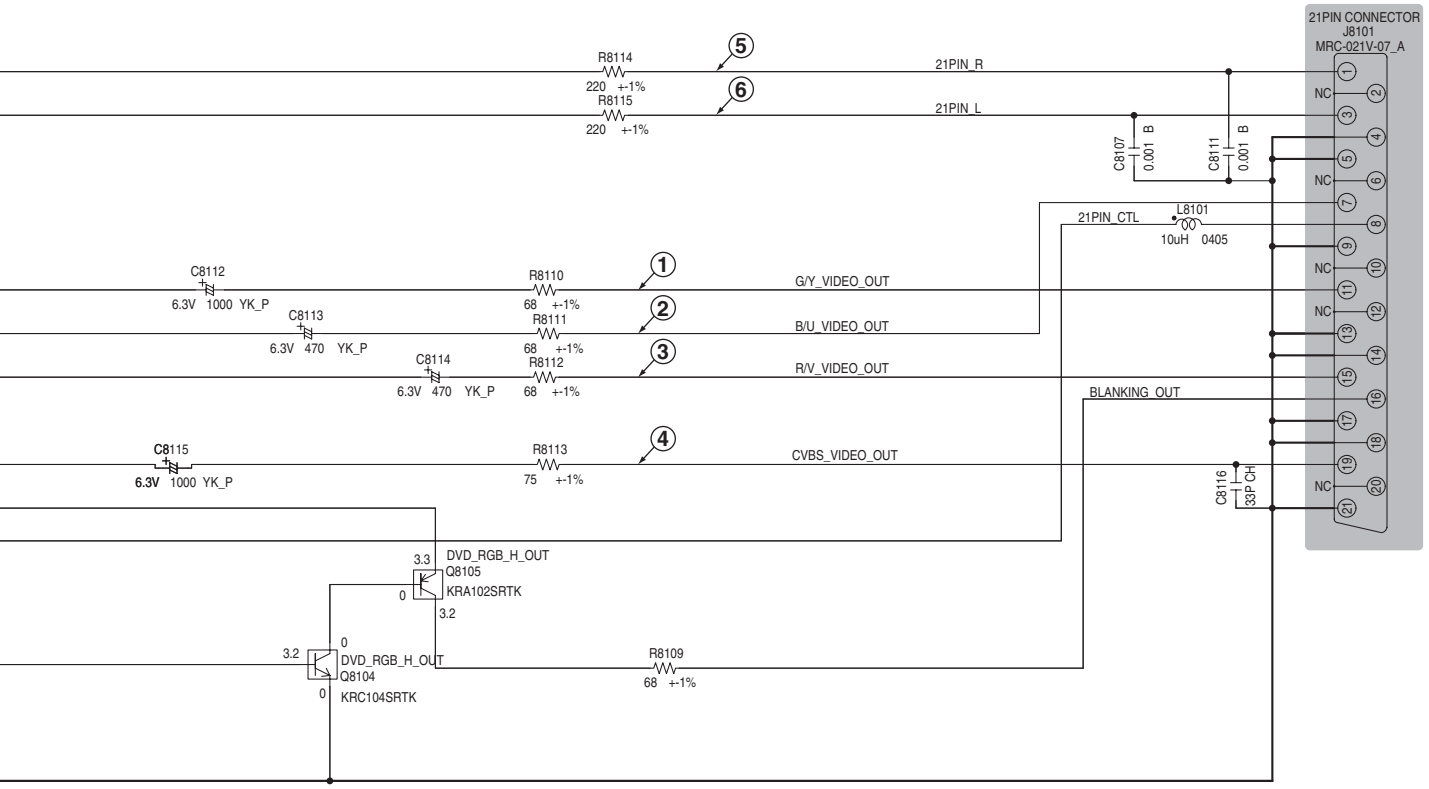
CAUTION: DIGITAL TRANSISTOR



CAUTION: DIGITAL TRANSISTOR



E F G H



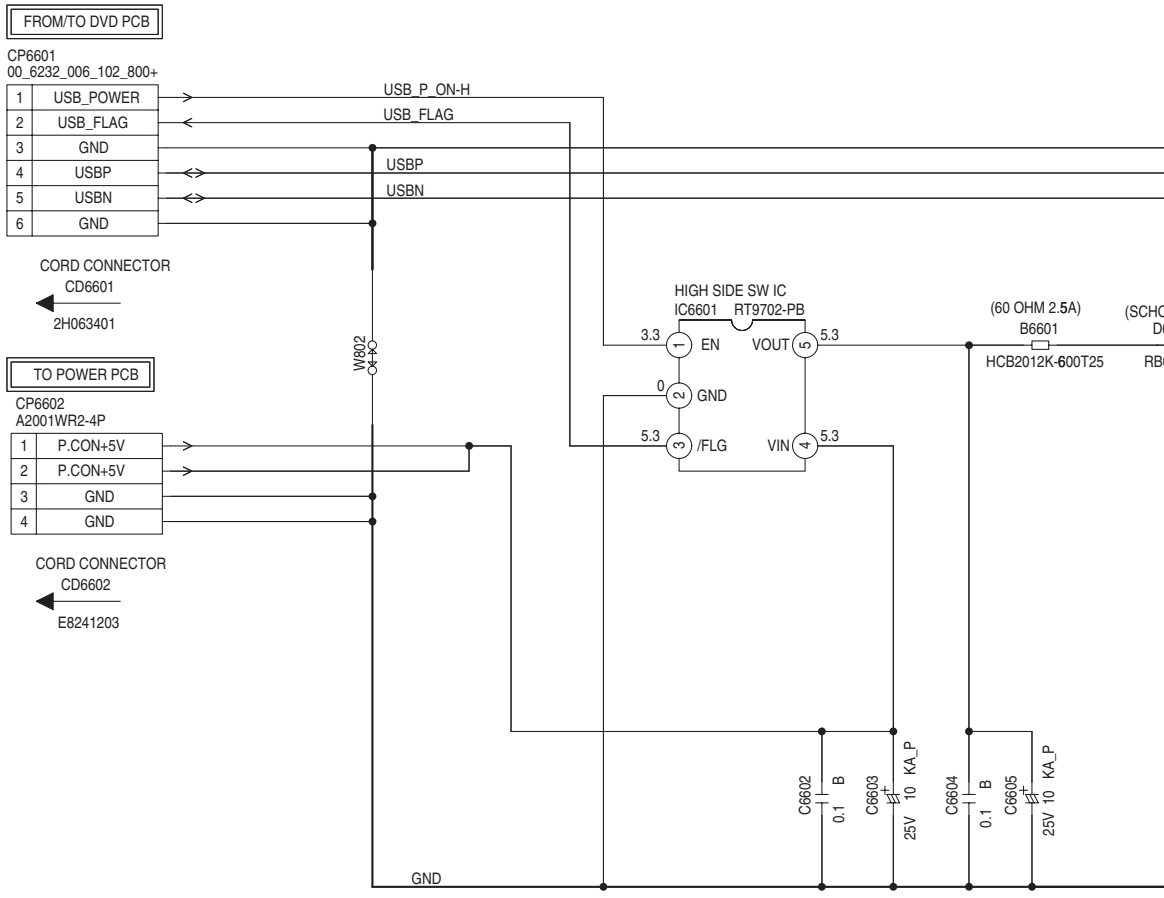
* The parts except ▭ mark cannot be changed.
On that occasion, replace whole Assy.

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.

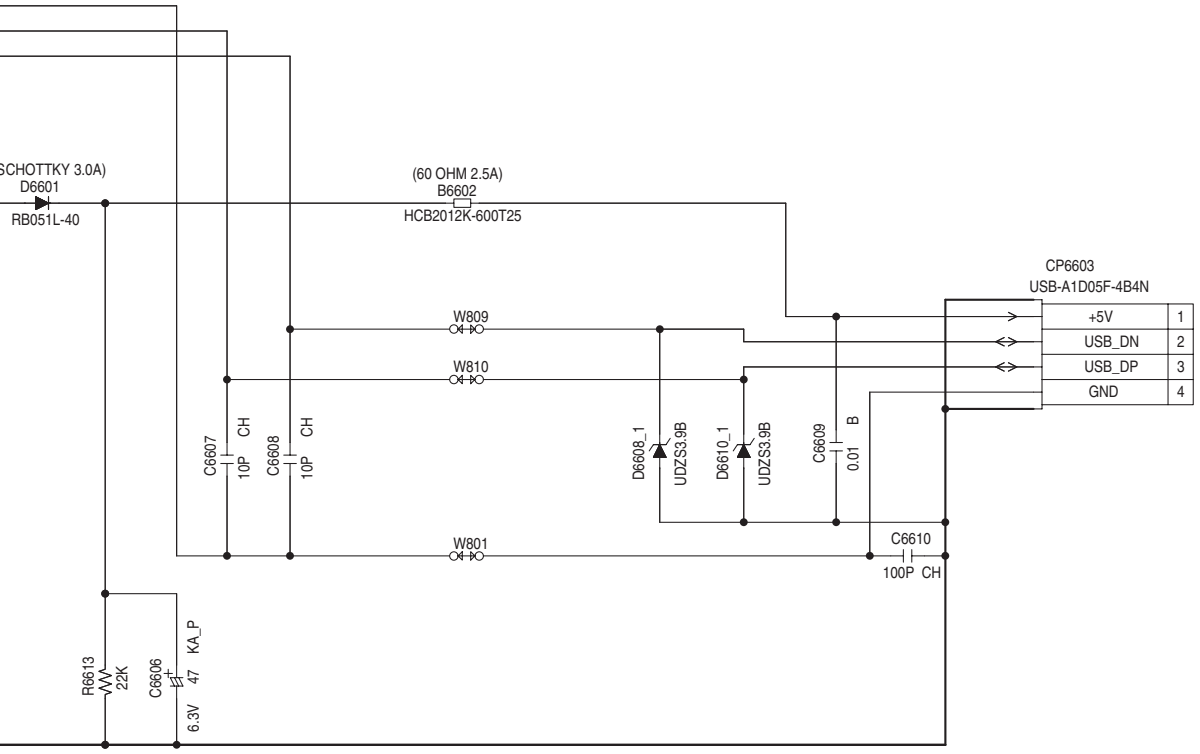
SCHEMATI DIAGRAM-11 EU

USB PCB ASSY



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

E F G H

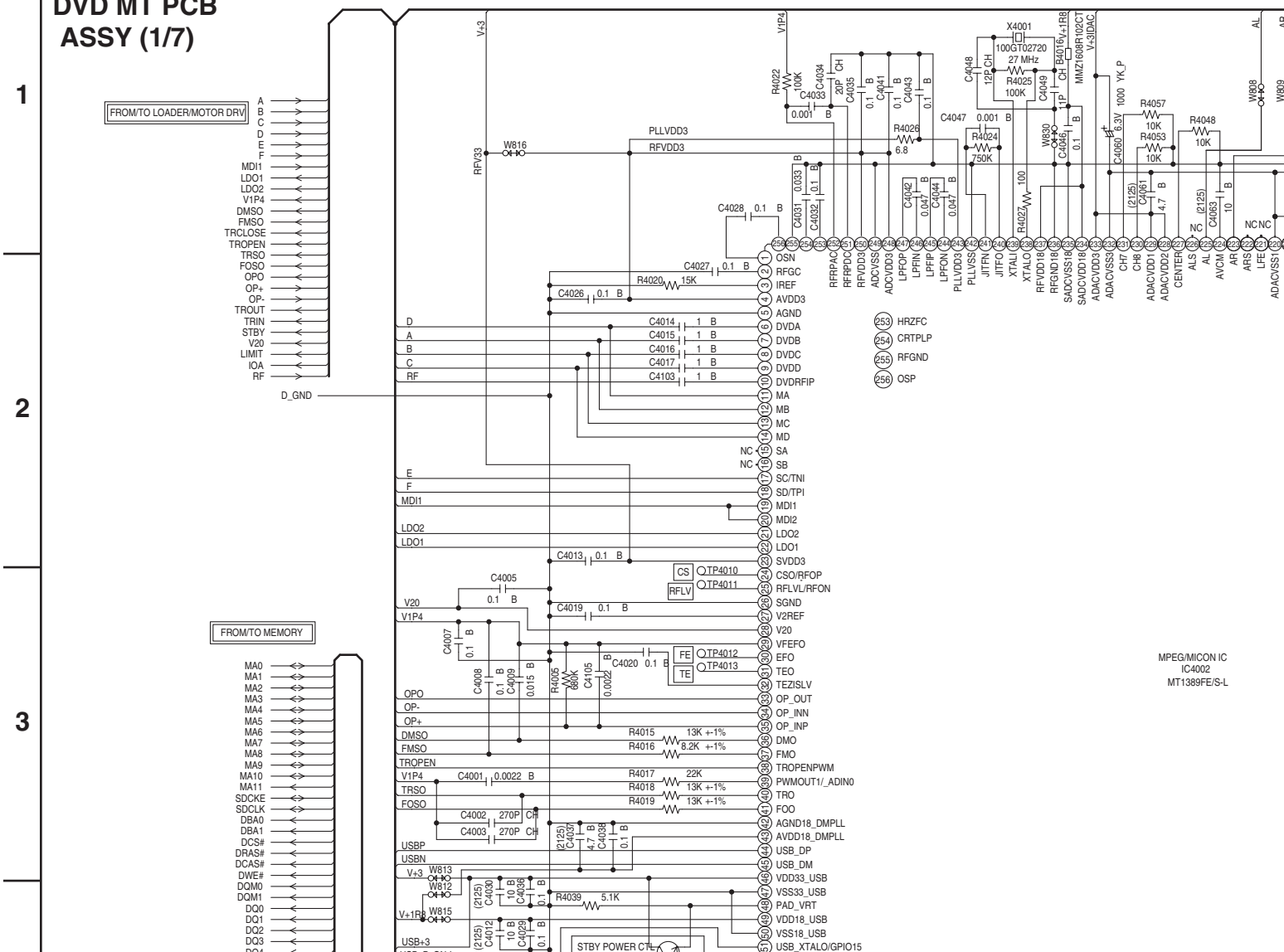


NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED
WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST
WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

SCHEMATIC DIAGRAM-1 US

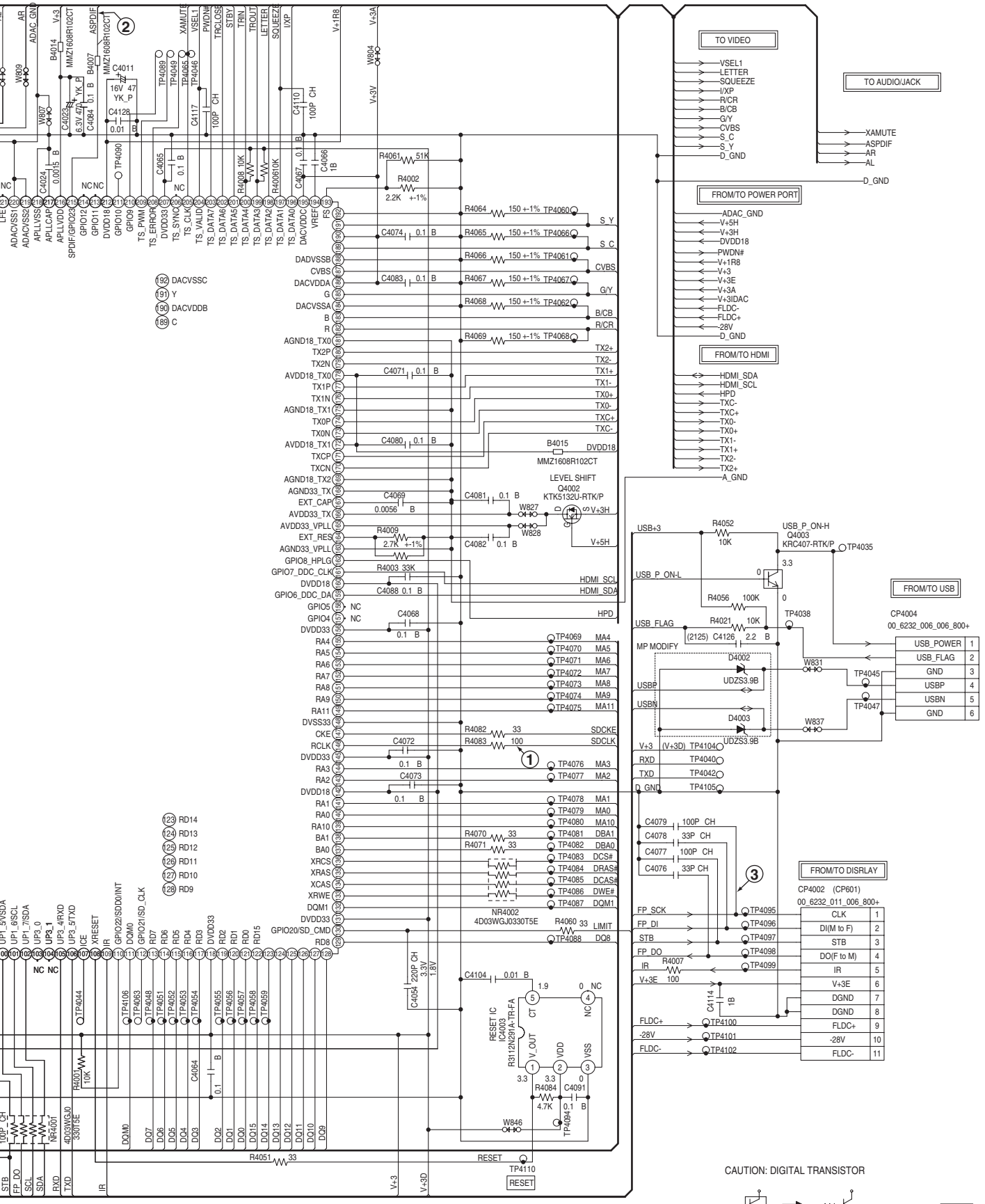
DVD MT PCB ASSY (1/7)

MPEG/MICON/RF-AMP



E F G H

MPEG/MICON/RF-AMP



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

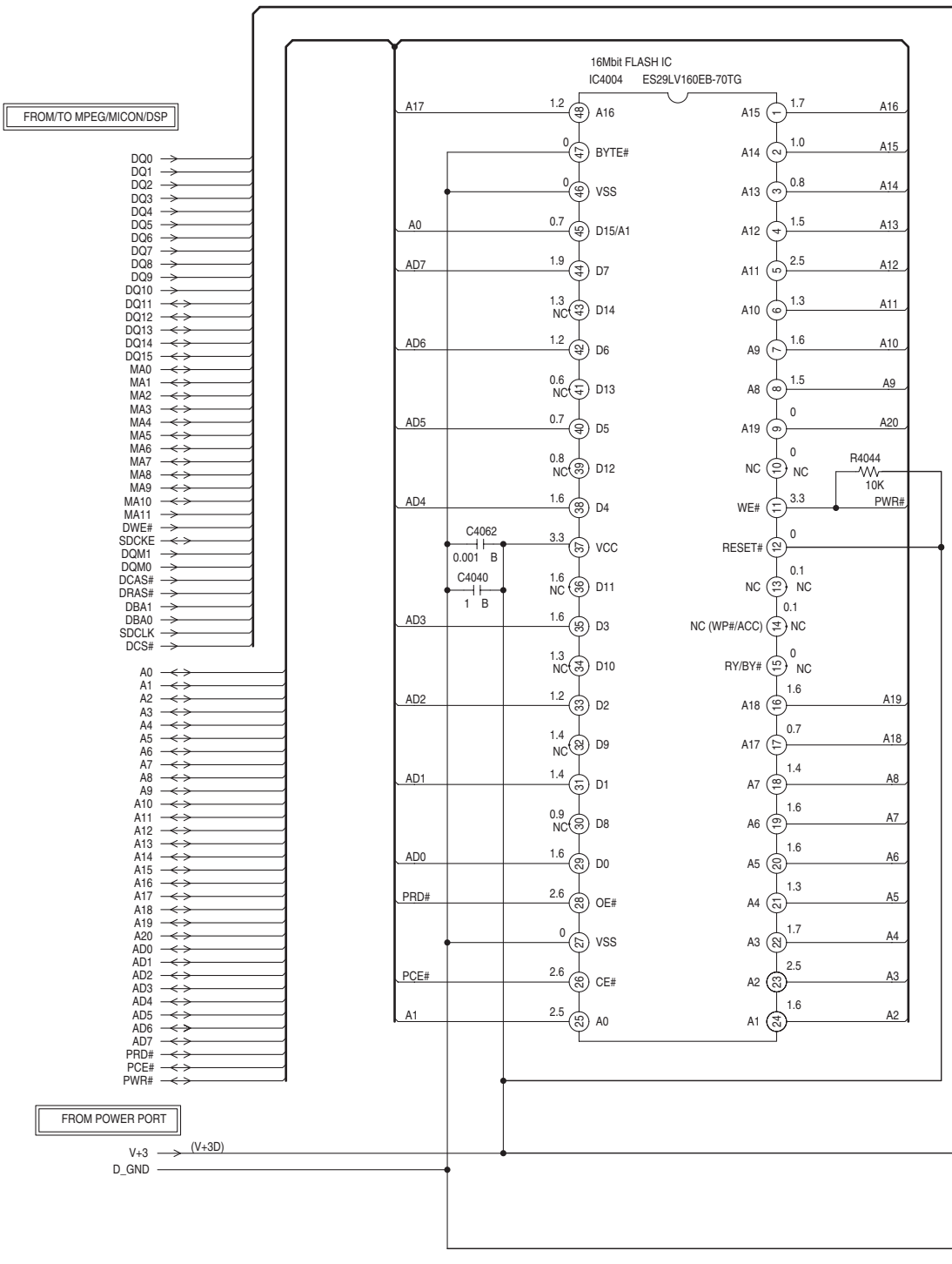
PCB130
DMF090

SCHEMATIC DIAGRAM-2 US

DVD MT PCB ASSY (2/7)

MEMORY SCHEMATIC DIAGRAM

(DVD MT PCB)

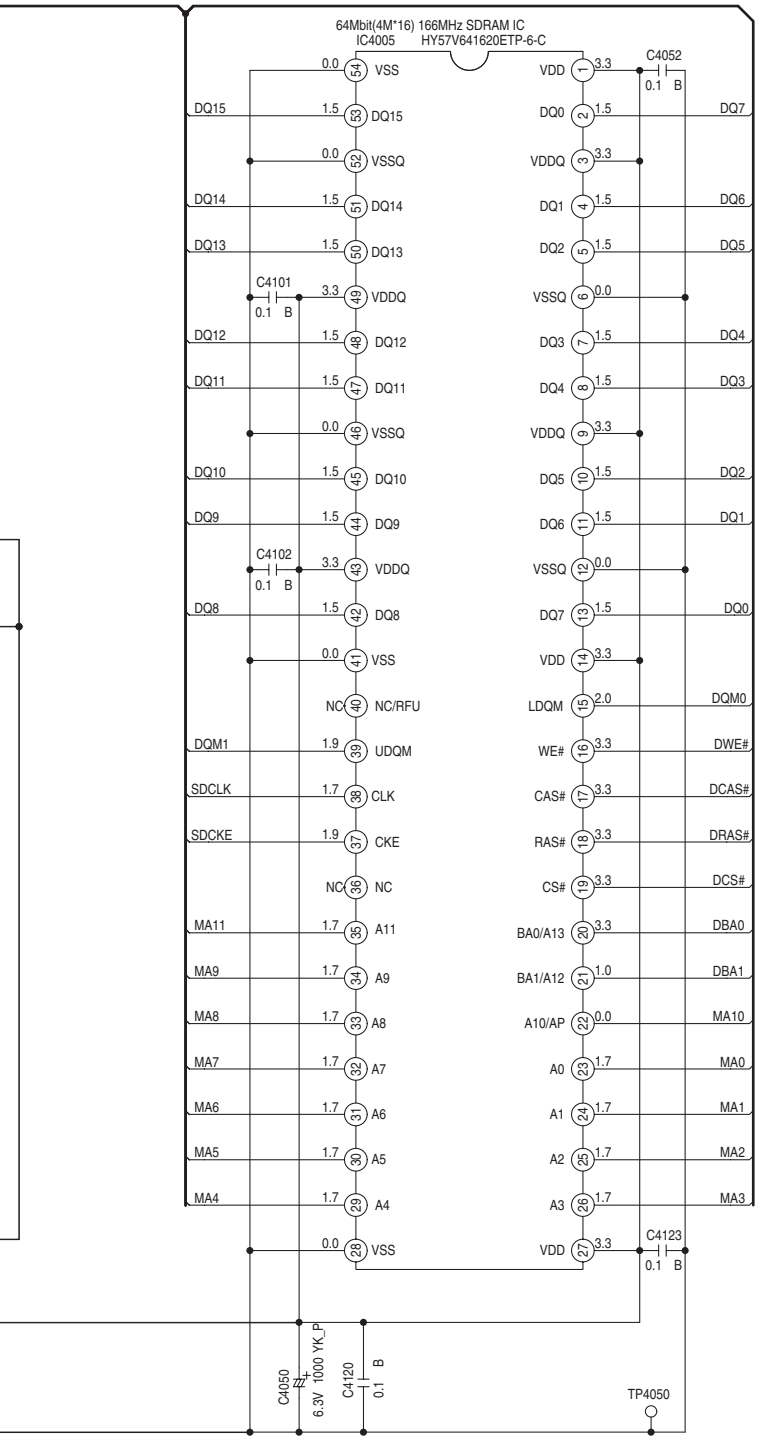


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIM
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NO

E F G H

÷ 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.

CB)

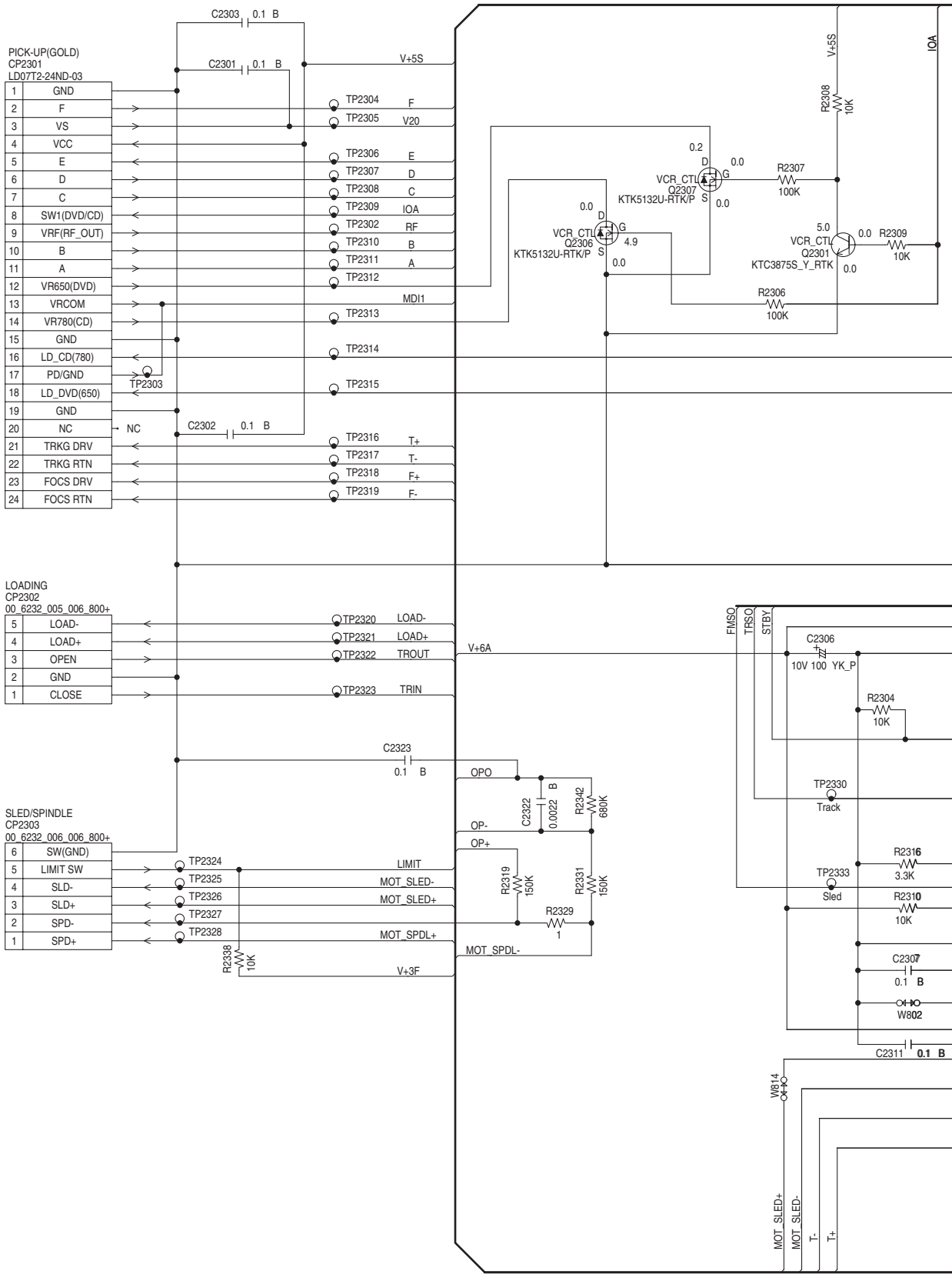


E TIME
F NOTICE

SCHEMATIC DIAGRAM-3 US

LOADER/MOTOR DRIVE

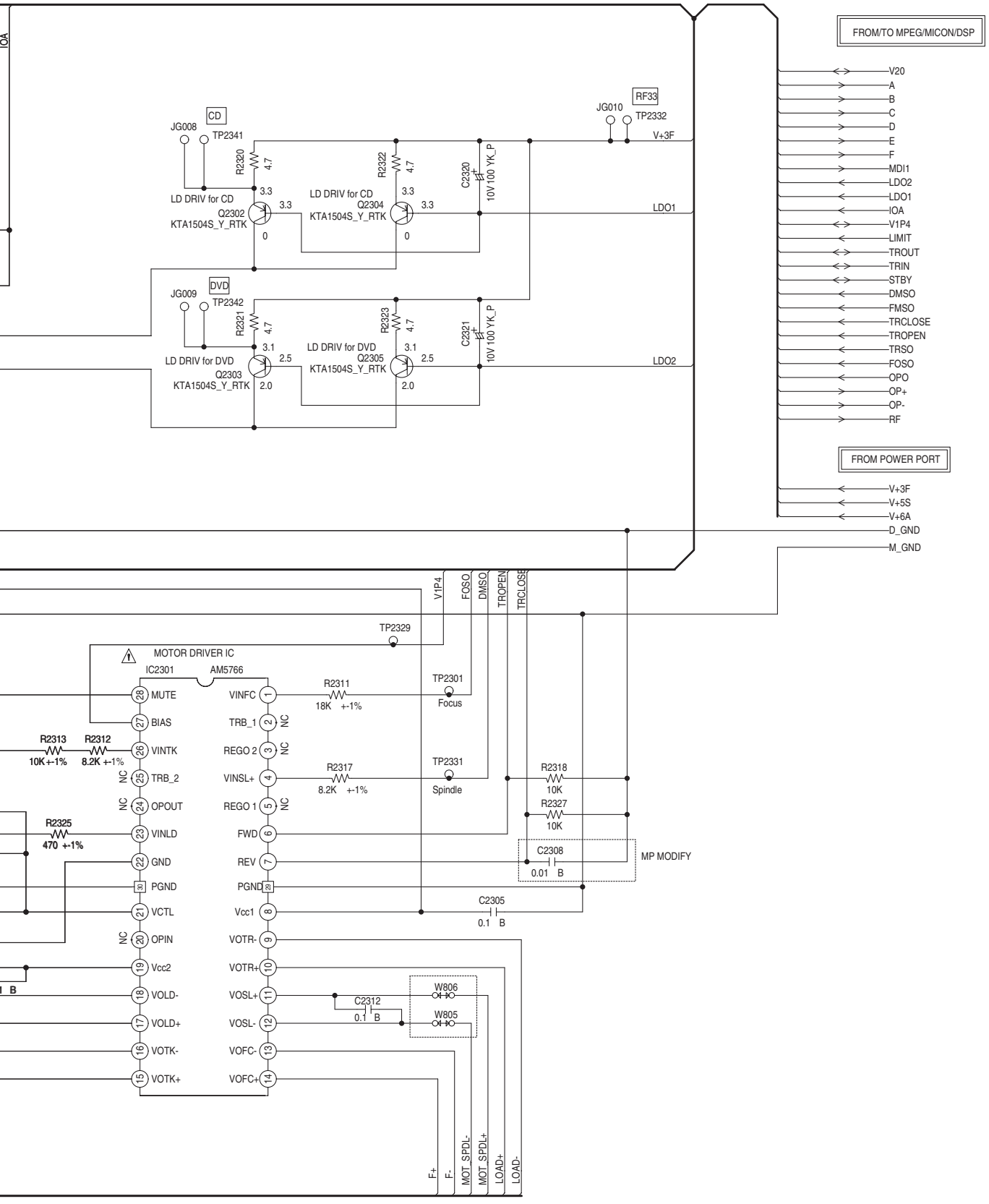
DVD MT PCB
ASSY (3/7)



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

E F G H

(DVD MT PCB)

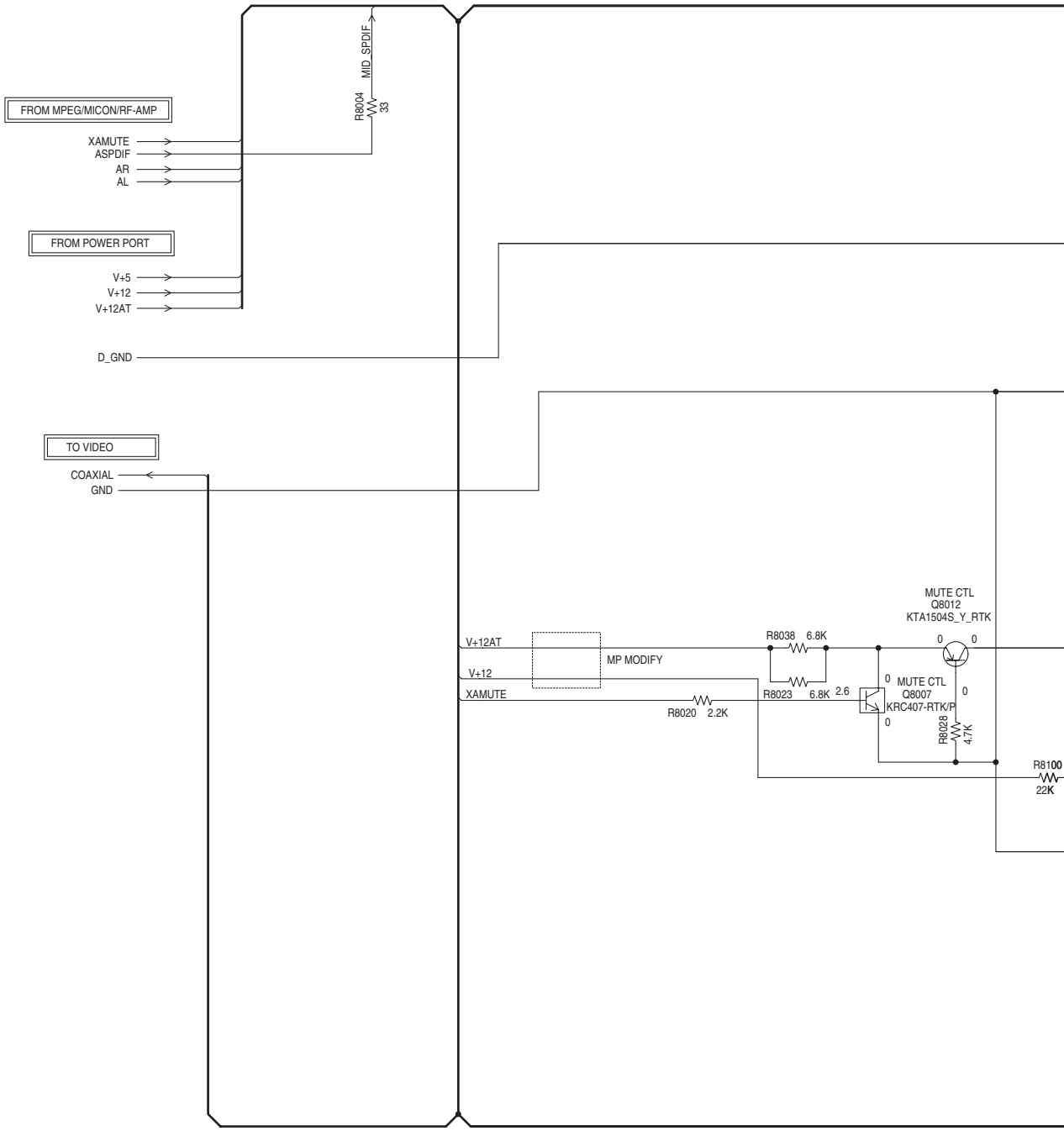


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

SCHEMATIC DIAGRAM-4 US

DVD MT PCB ASSY (4/7)

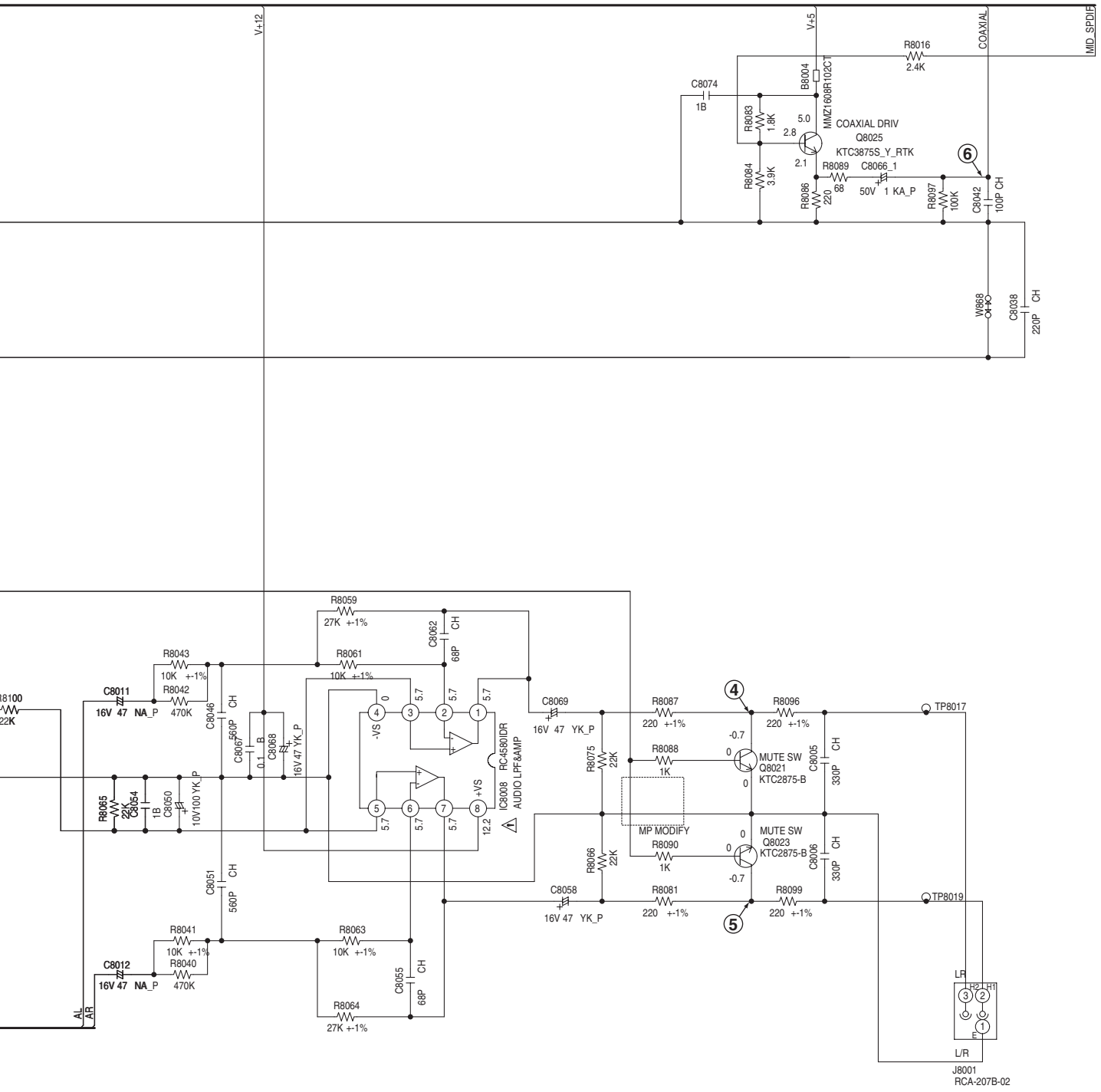
AUDIO/JACK SCHEMATIC DIAGRAM



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

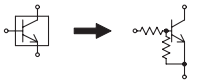
E F G H

(DVD MT PCB)



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

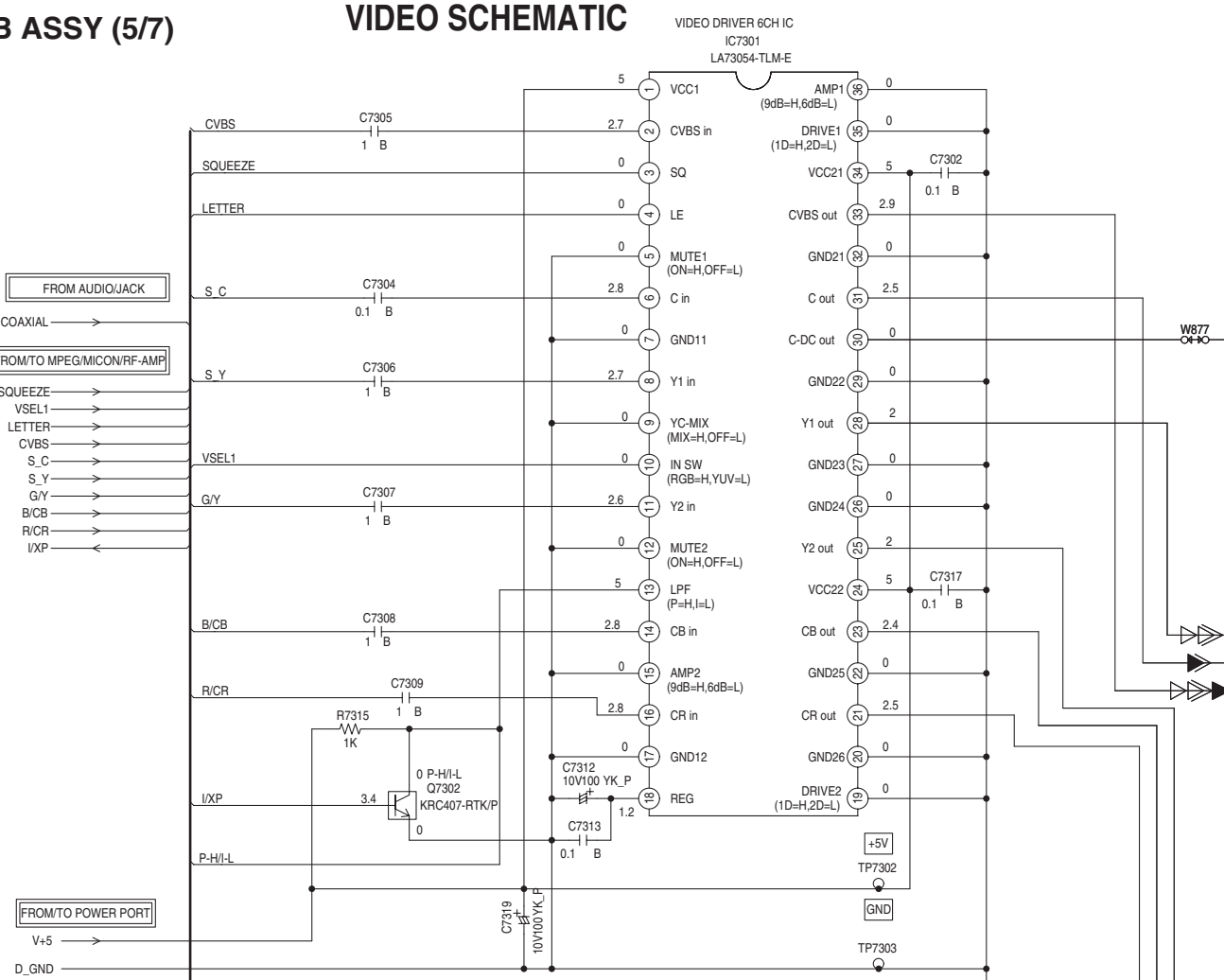
CAUTION: DIGITAL TRANSISTOR



SCHEMATIC DIAGRAM-5 US

DVD MT PCB ASSY (5/7)

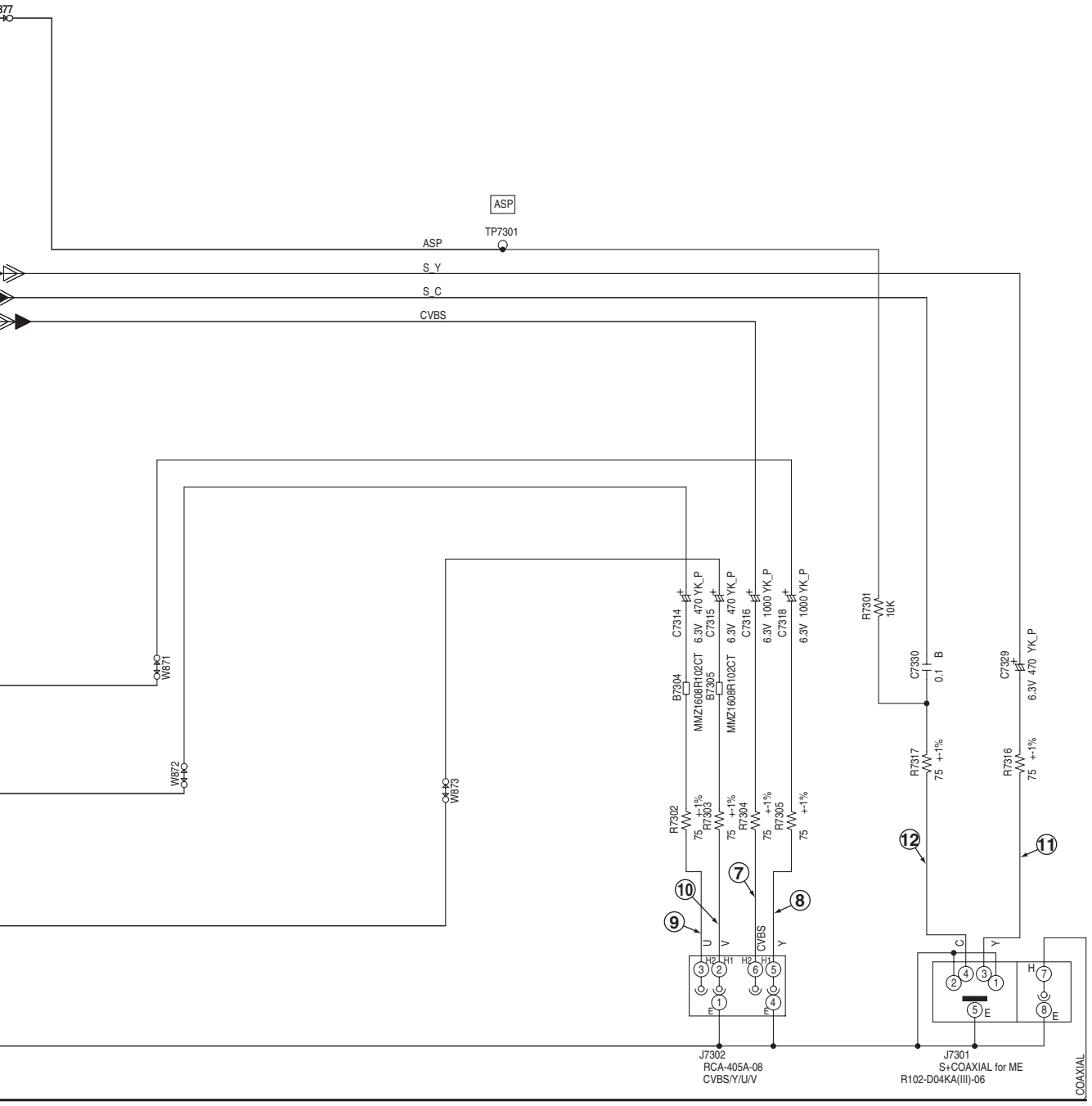
VIDEO SCHEMATIC



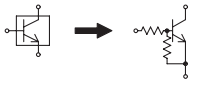
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

E F G H

(DVD MT PCB)



CAUTION: DIGITAL TRANSISTOR

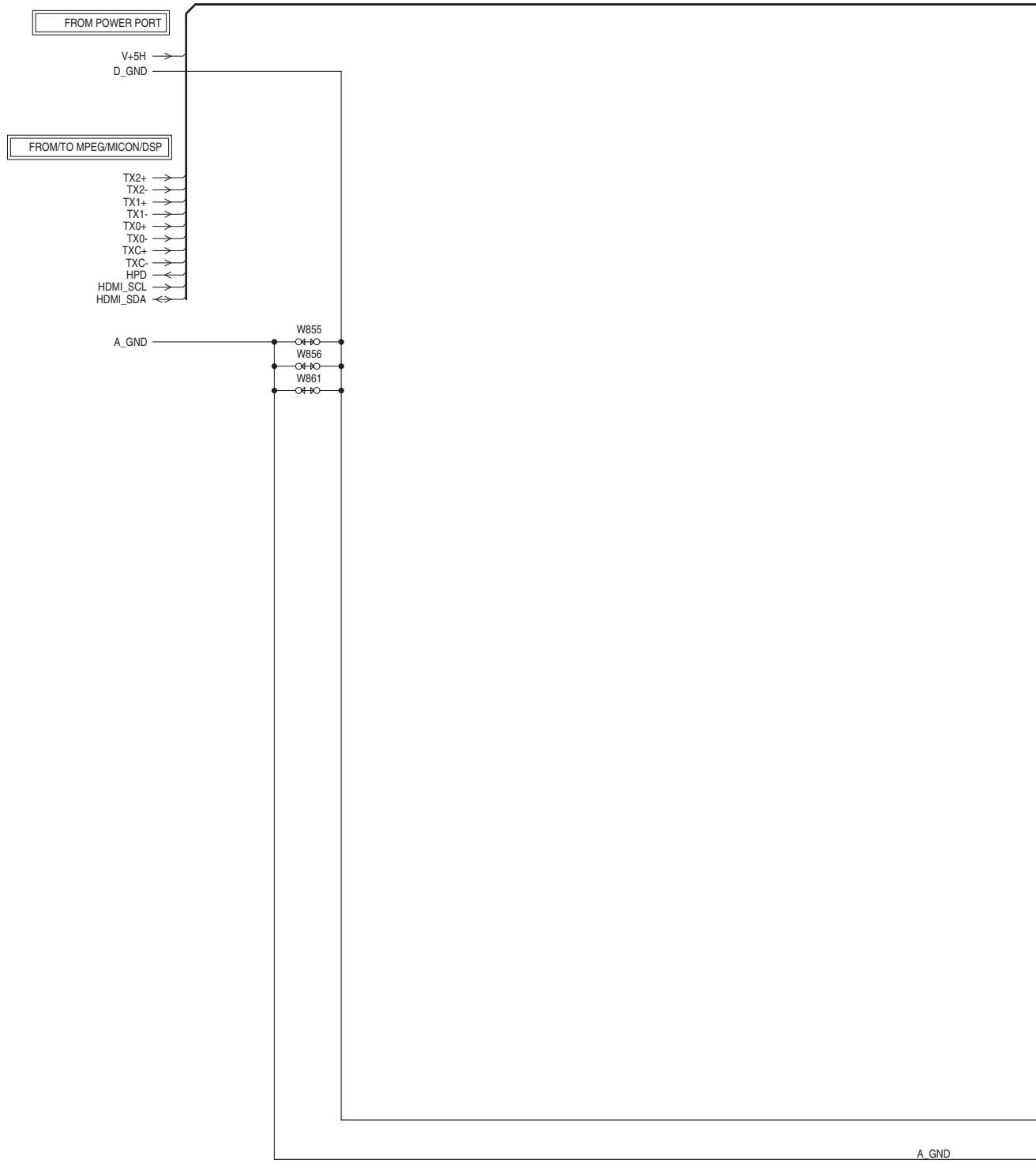


SCHEMATIC DIAGRAM-6 US

DVD MT PCB ASSY (6/7)

HDMI SCHEMATIC

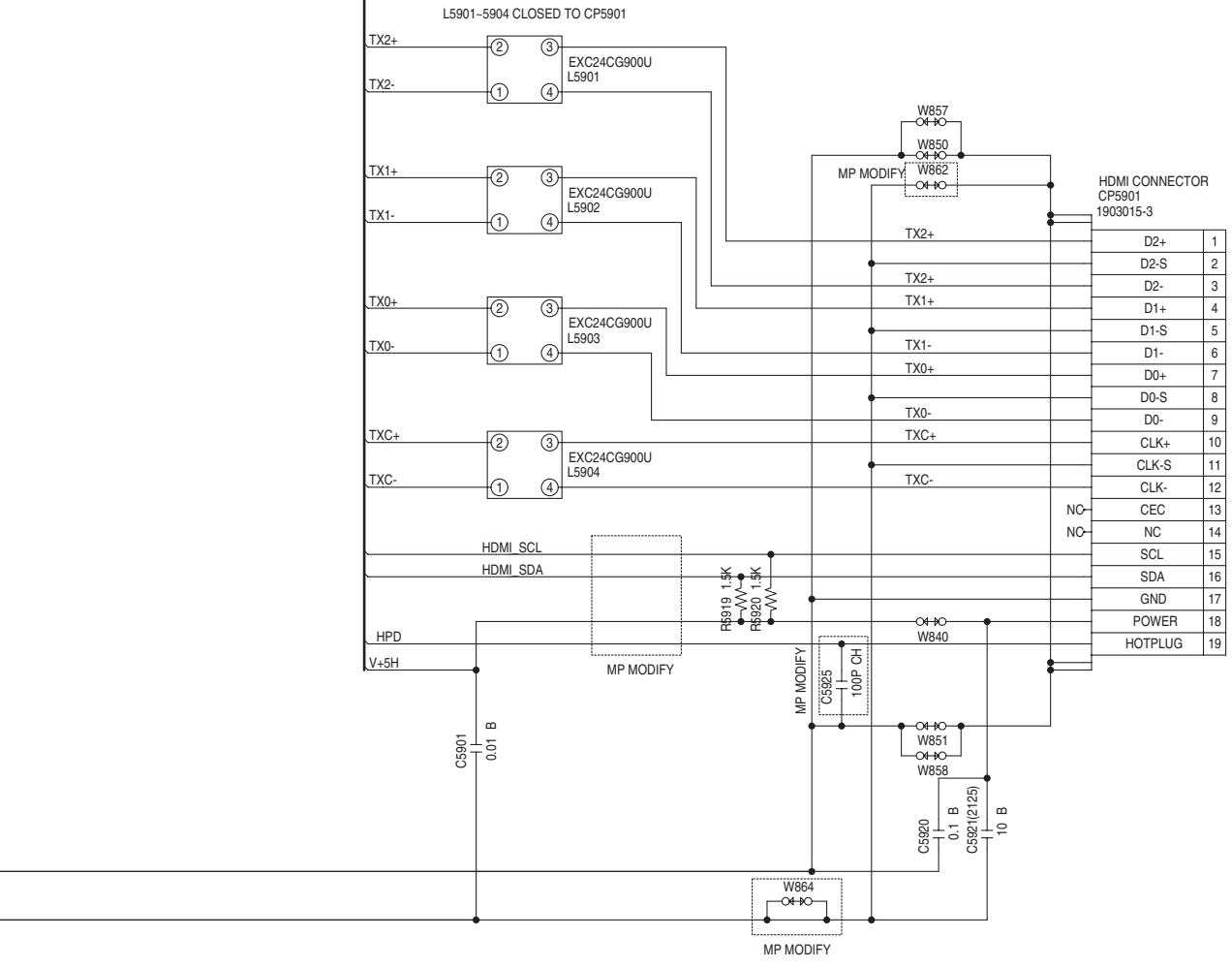
(DVD M



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

E F G H

MT PCB)



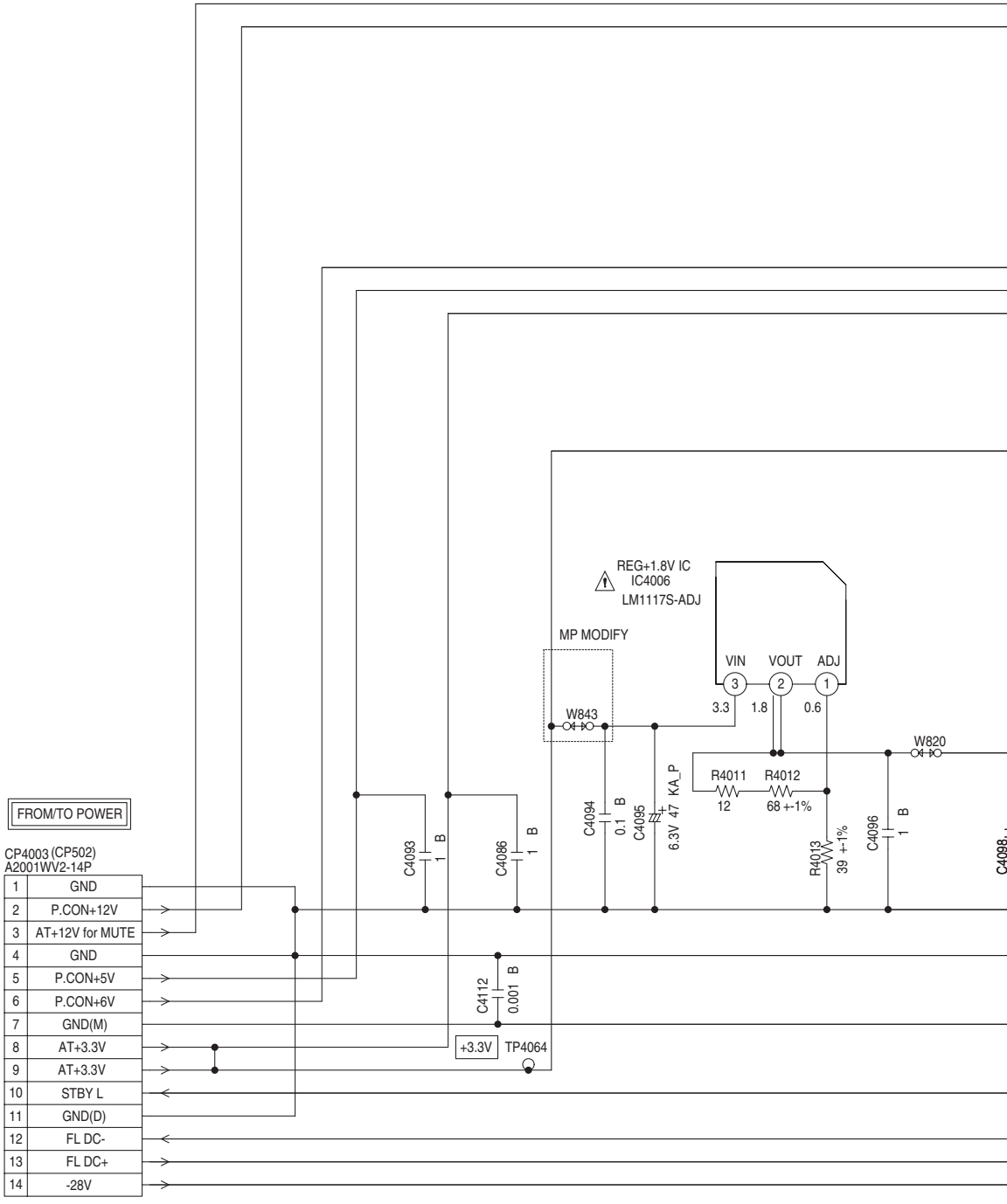
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

SCHEMATIC DIAGRAM-7 US

DVD MT PCB ASSY (7/7)

POWER PORT SCHEMATIC

(DVD MT PCB)

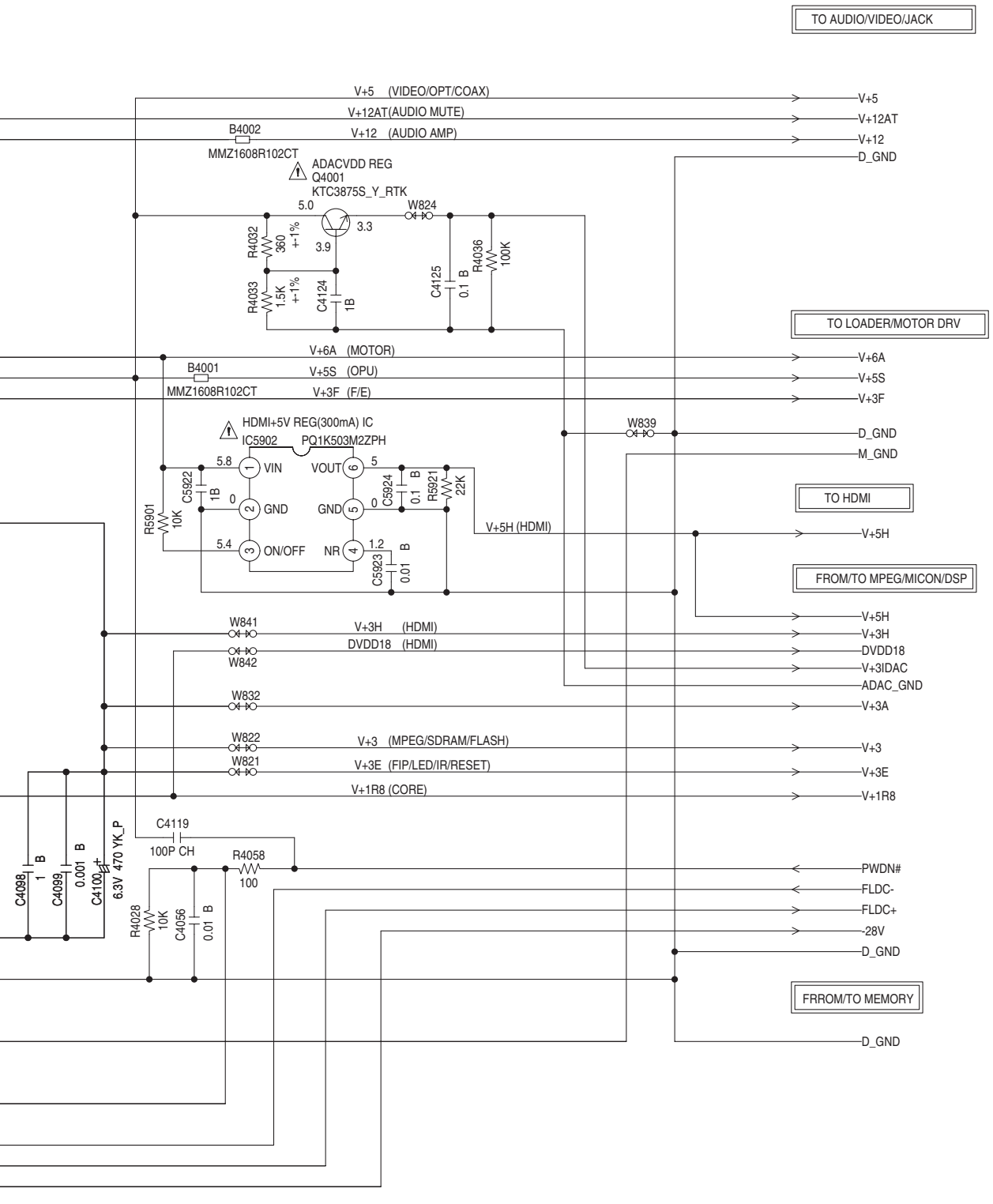


NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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

CAUTIO

E F G H



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

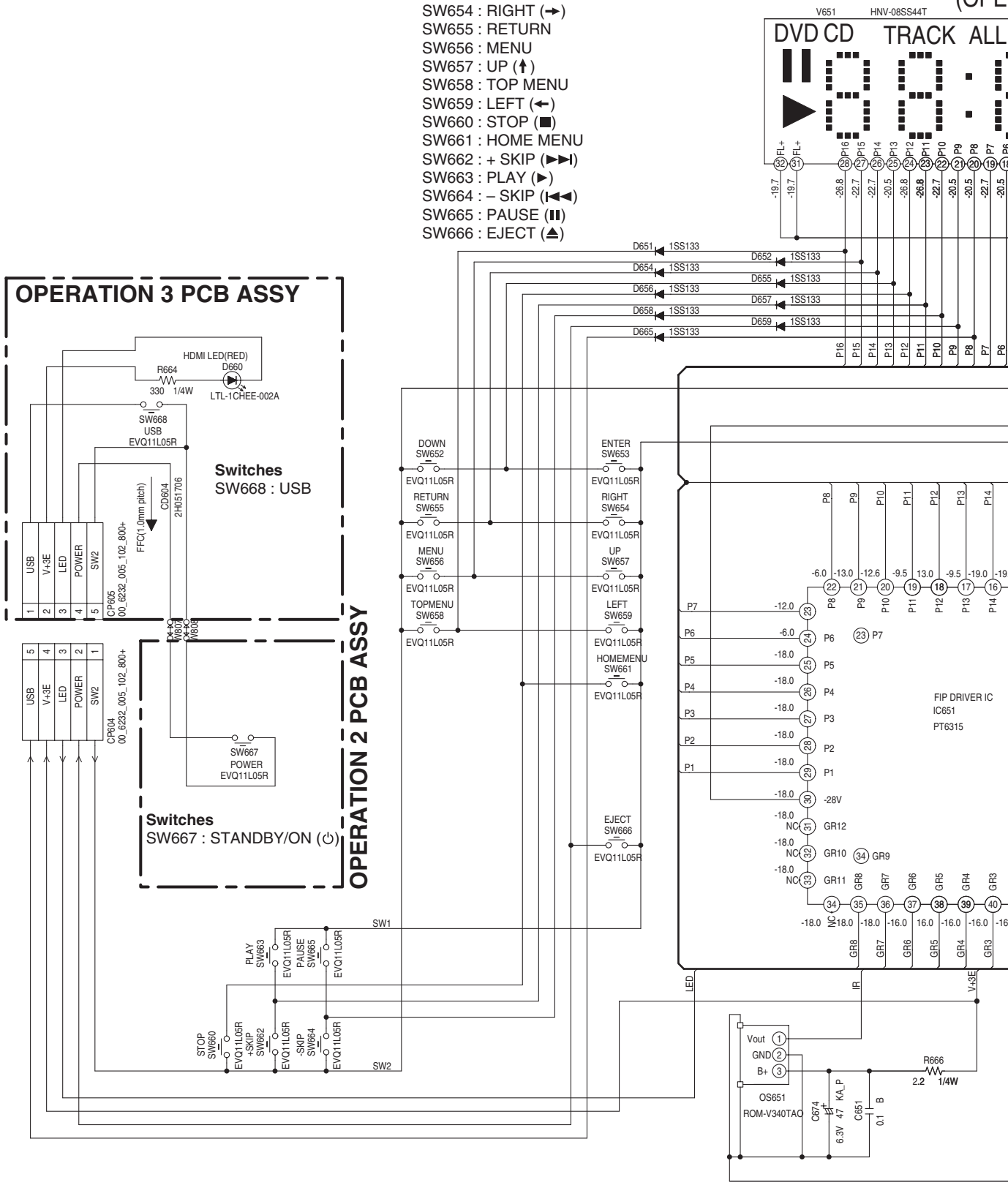
ATTENTION :LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

SCHEMATIC DIAGRAM-8 US

OPERATION 1 and OPERATION 2 and OPERATION 3 PCB ASSYS

OPERATION 1 PCB ASSY

Switches
SW652 : DOWN (🡻)
SW653 : ENTER
SW654 : RIGHT (🡺)
SW655 : RETURN
SW656 : MENU
SW657 : UP (🡹)
SW658 : TOP MENU
SW659 : LEFT (🡸)
SW660 : STOP (■)
SW661 : HOME MENU
SW662 : + SKIP (►►I)
SW663 : PLAY (►)
SW664 : – SKIP (I◄◄)
SW665 : PAUSE (❚❚)
SW666 : EJECT (⏏)

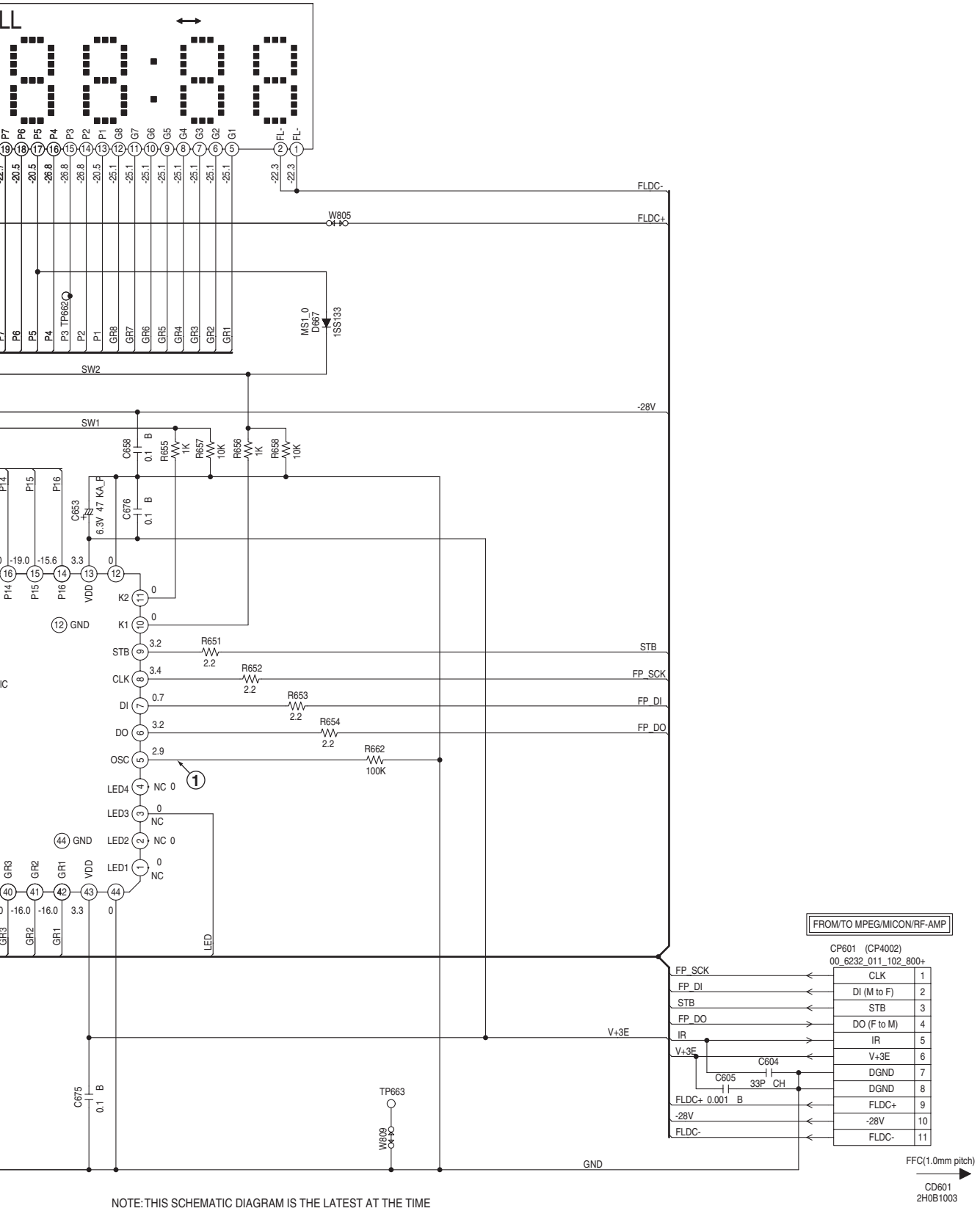


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

E F G H

DISPLAY SCHEMATIC DIAGRAM

(OPERATION PCB)

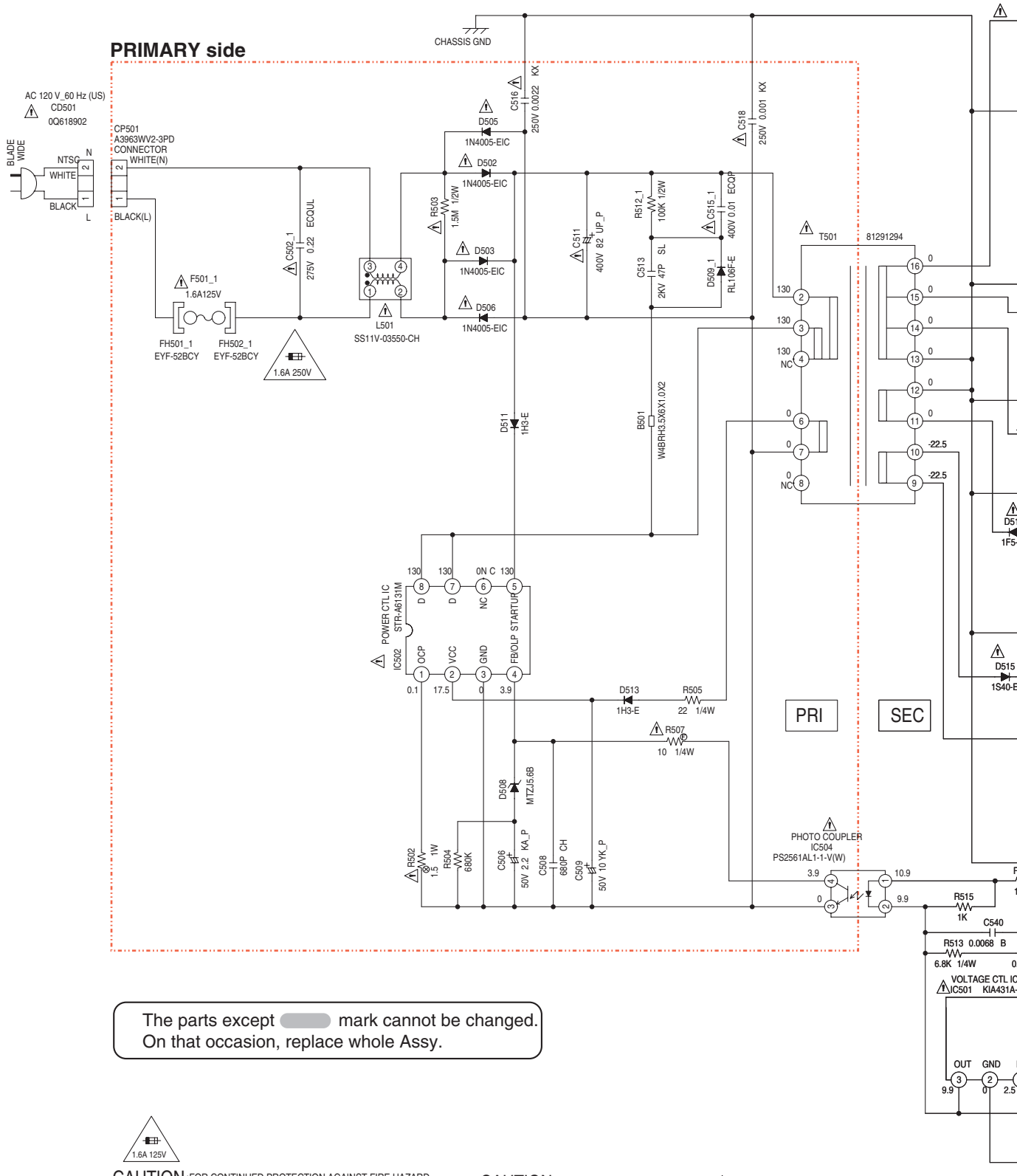


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

SHEMATIC DIAGRAM-9 US

POWER SCHEMATIC DIAGRAM (POWER

POWER PCB ASSY



The parts except ▭ mark cannot be changed.
On that occasion, replace whole Assy.

1.6A 125V

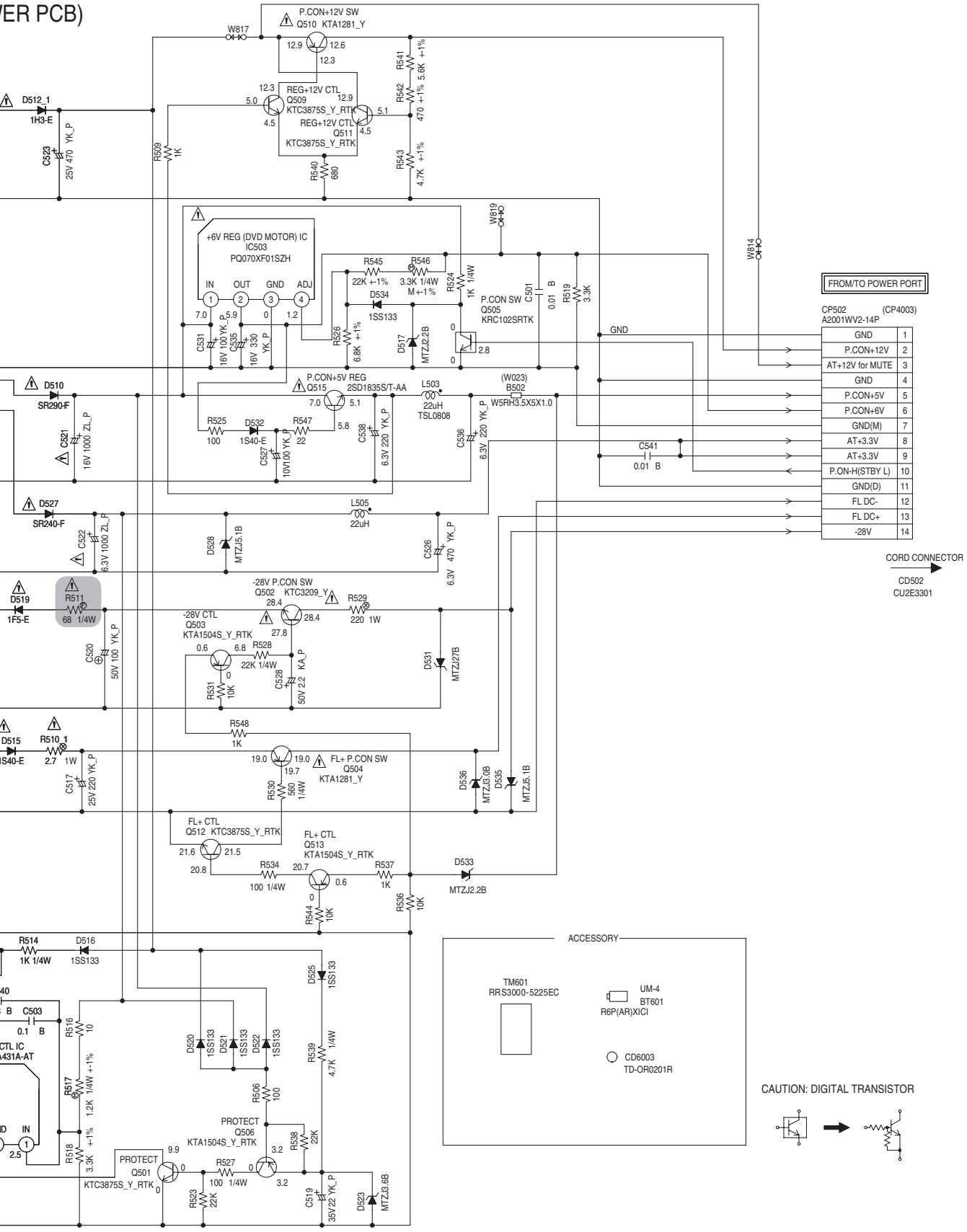
CAUTION :FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 1.6A 125V{F501}

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

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

E F G H

VER PCB)



CAUTION: DIGITAL TRANSISTOR

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.

WAVE FORMS-1 EU

European and Oceania models

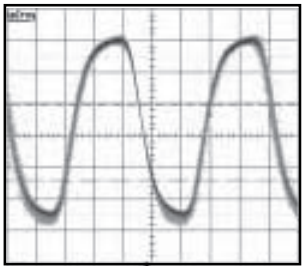
Note : The encircled numbers denote measuring point in the schematic diagram.

DVD MT PCB ASSY

MPEG/MICON/RF AMP

IC4002-pin146 (RCLK)
V:1.0V/div. H:2nsec/div.

①

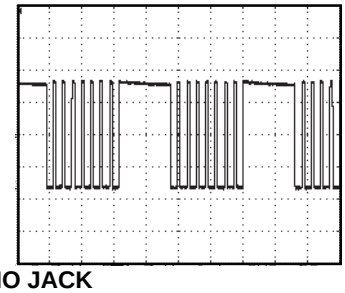


IC4002-pin15 (ASPDIF)
V:1.0V/div. H:200nsec/div.

②

CP4002-pin1 (FP_SCK)
V:1.0V/div. H:20µsec/div.

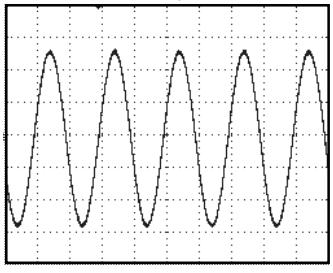
③



AUDIO JACK

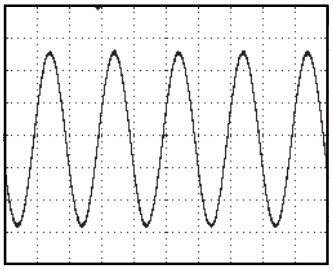
J8001-pin3 (Lch_Out)
V:1.0V/div. H:500µsec/div.

④



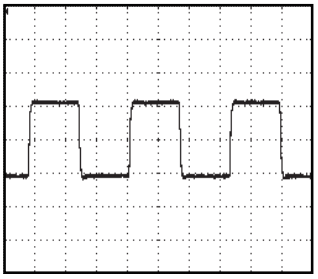
J8001-pin2 (Rch_Out)
V:1.0V/div. H:500µsec/div.

⑤



J8003-pin2 (Coaxial_Out)
V:500mV/div. H:200nsec/div.

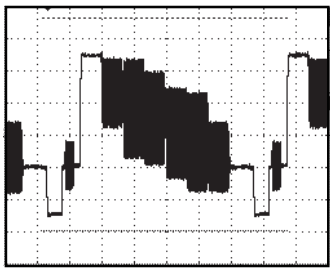
⑥



VIDEO

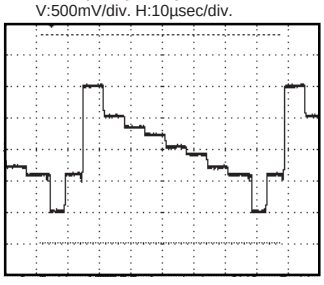
J7302-pin6 (CVBS_Out)
V:200mV/div. H:10µsec/div.

⑦



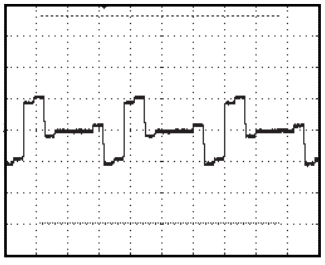
J7302-pin5 (Y_Out)
V:500mV/div. H:10µsec/div.

⑧



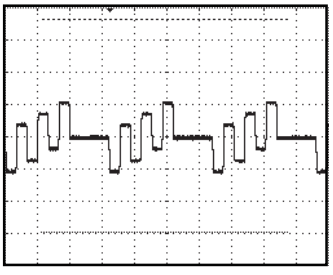
J7302-pin3 (U_Out)
V:500mV/div. H:20µsec/div.

⑨



J7302-pin2 (V_Out)
V:500mV/div. H:20µsec/div.

⑩

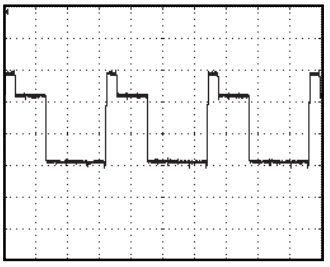


POWER PCB ASSY

21PIN/D-TERMINAL/DIGITAL AUDIO

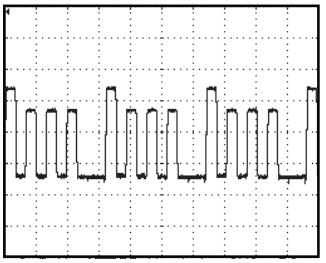
J8101-pin11 (G/Y_Video_Out)
V:500mV/div. H:20µsec/div.

①



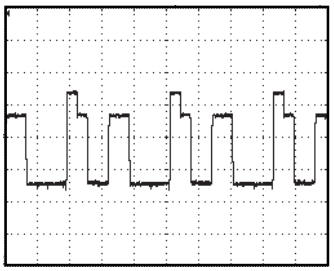
J8101-pin7 (B/U_Video_Out)
V:500mV/div. H:20µsec/div.

②



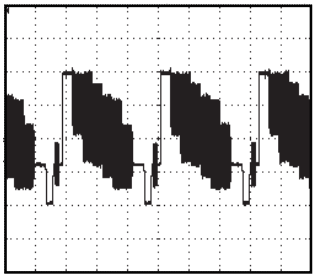
J8101-pin15 (R/V_Video_Out)
V:500mV/div. H:20µsec/div.

③



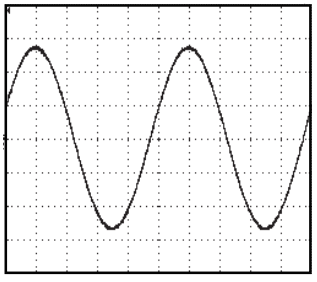
J8101-pin19 (CVBS_Video_Out)
V:500mV/div. H:20µsec/div.

④



J8101-pin1 (AMP_A_Out_R))
V:1.0V/div. H:200µsec/div.

⑤



WAVE FORMS-2 EU

European and Oceania models

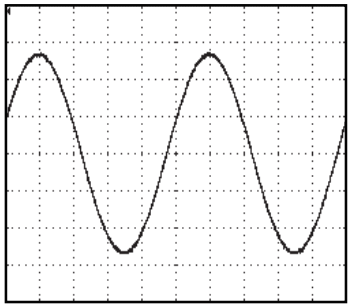
Note : The encircled numbers denote measuring point in the schematic diagram.

POWER PCB ASSY

21PIN/D-TERMINAL/DIGITAL AUDIO

J8101-pin3 (AMP_A_Out_L))
V:1.0V/div. H:200µsec/div.

⑥

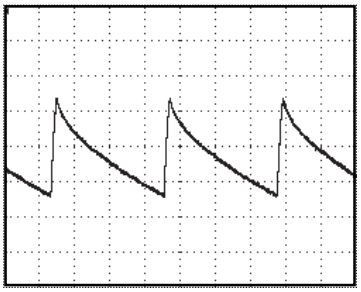


OPERATION 1 PCB ASSY

DISPLAY

IC651-pin5 (OSC)
V:500mV/div. H:1µsec/div.

①



WAVE FORMS-US

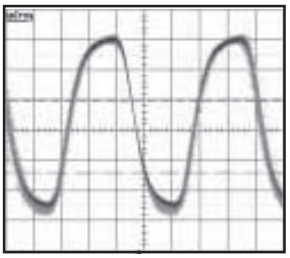
North American model

Note : The encircled numbers denote measuring point in the schematic diagram.

DVD MT PCB ASSY

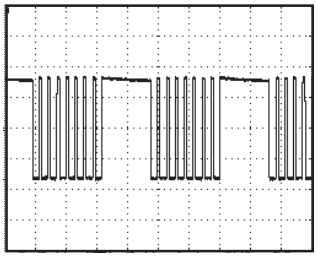
MPEG/MICON/DSP

① **IC4002-pin136 (RCLK)**
V:1.0V/div. H:2nsec/div.

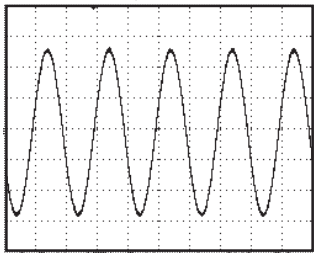


② **IC4002-pin215 (ASPDIF)**
V:1.0V/div. H:2nsec/div.

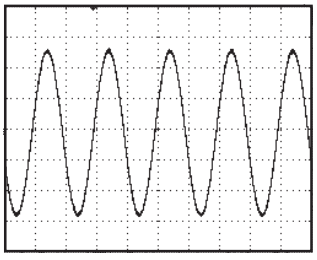
③ **CP4002-pin1 (FP_SCK)**
V:1.0V/div. H:20µsec/div.



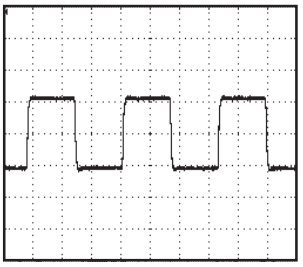
④ **J8003-pin3 (Lch_Out)**
V:1.0V/div. H:500µsec/div.



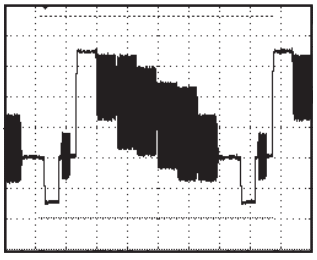
⑤ **J8003-pin2 (Rch_Out)**
V:1.0V/div. H:500µsec/div.



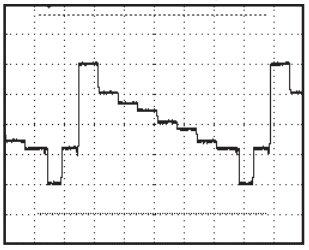
⑥ **J8002-pin2 (Coaxial_Out)**
V:500mV/div. H:200nsec/div.



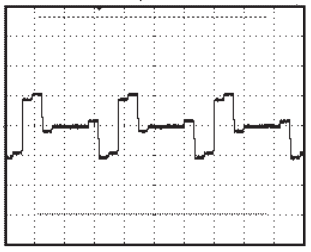
⑦ **J7302-pin6 (CVBS_Out)**
V:200mV/div. H:10µsec/div.



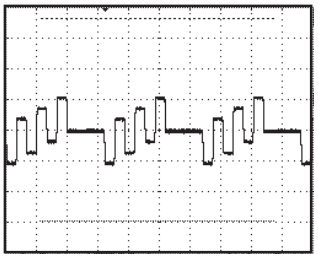
⑧ **J7302-pin5 (Y_Out)**
V:500mV/div. H:10µsec/div.



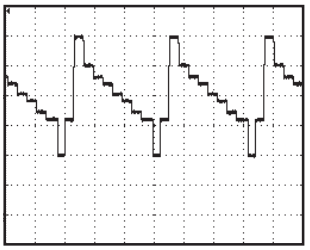
⑨ **J7302-pin3 (U_Out)**
V:500mV/div. H:20µsec/div.



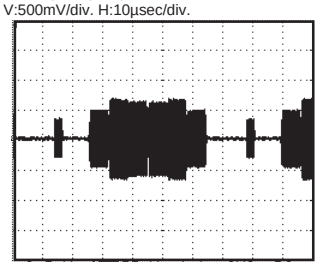
⑩ **J7302-pin2 (V_Out)**
V:500mV/div. H:20µsec/div.



⑪ **J7301-pin3 (S_Y)**
V:500mV/div. H:20µsec/div.



⑫ **J7301-pin4 (S_C)**
V:500mV/div. H:10µsec/div.



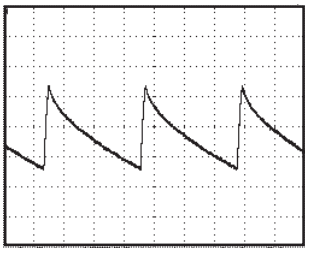
VIDEO JACK

AUDIO JACK

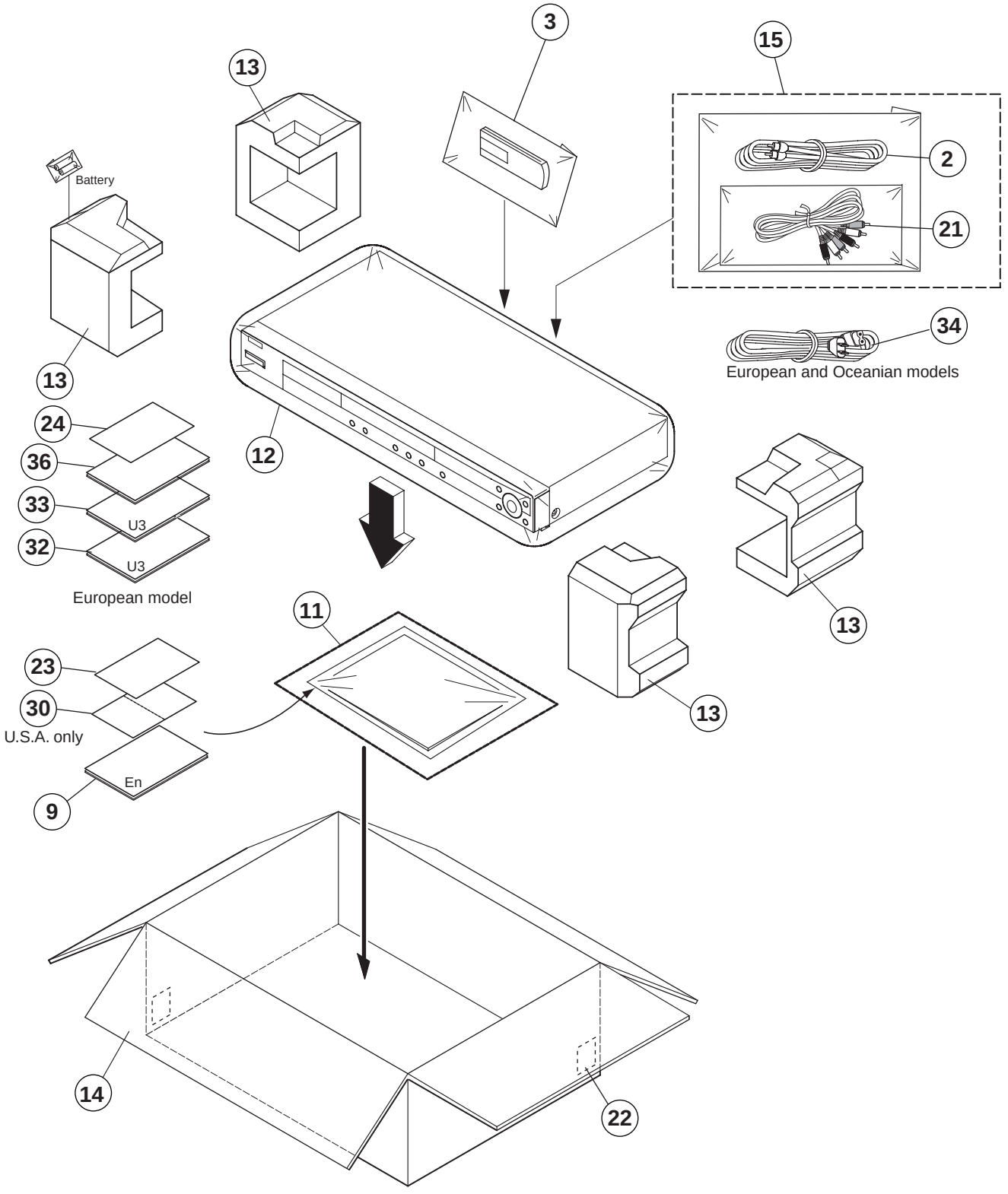
OPERATION 1 PCB ASSY

DISPLAY

① **IC651-pin5 (OSC)**
V:500V/div. H:1nsec/div.



PACKING VIEW



A B C D

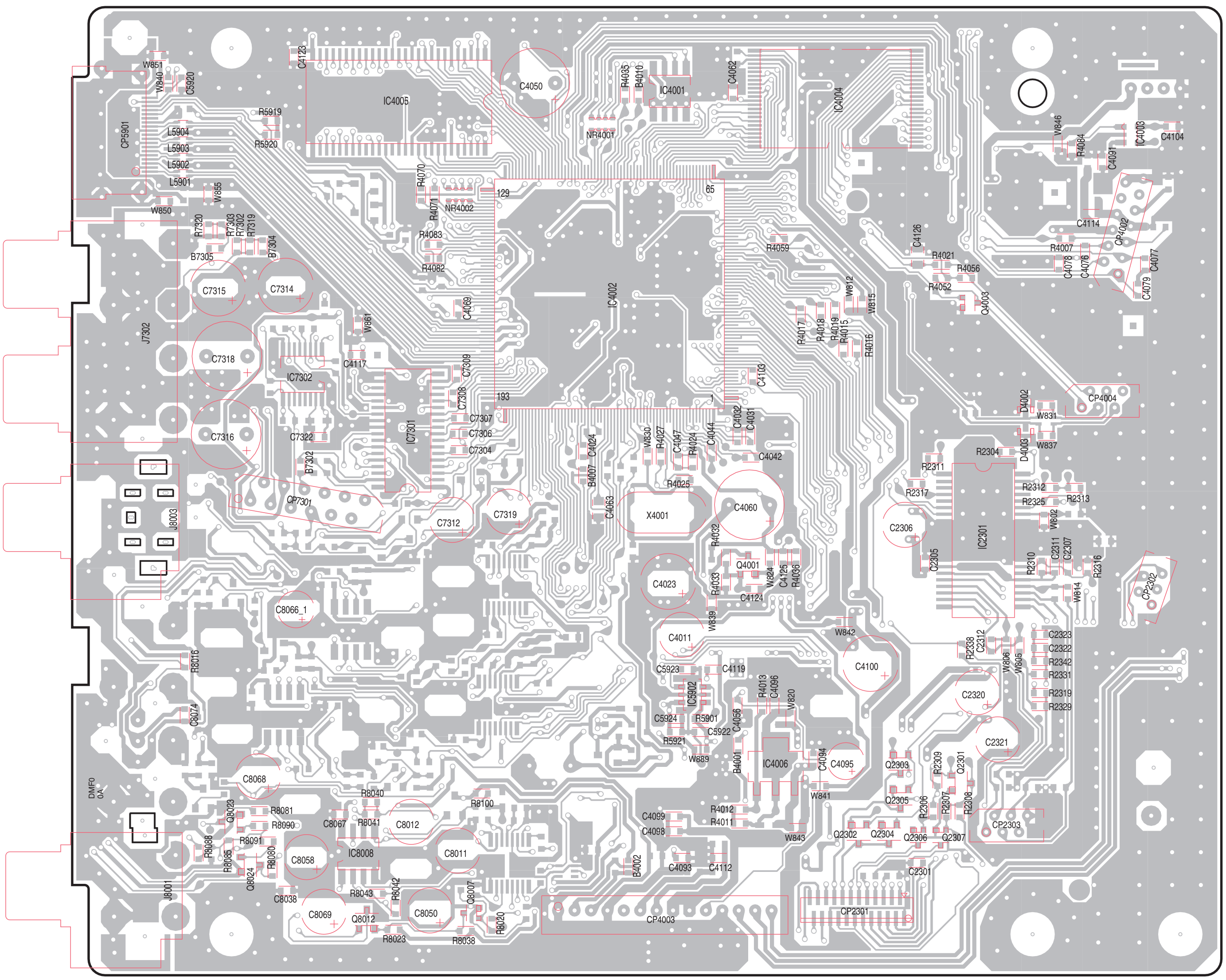
PRINTED CIRCUIT BPARD VIEW-1

DVD MT PCB ASSY

SIDE A

SIDE A

DVD MT PCB ASSY (TOP SIDE)



A B C D

PRINTED CIRCUIT BPARD VIEW-2

DVD MT PCB ASSY

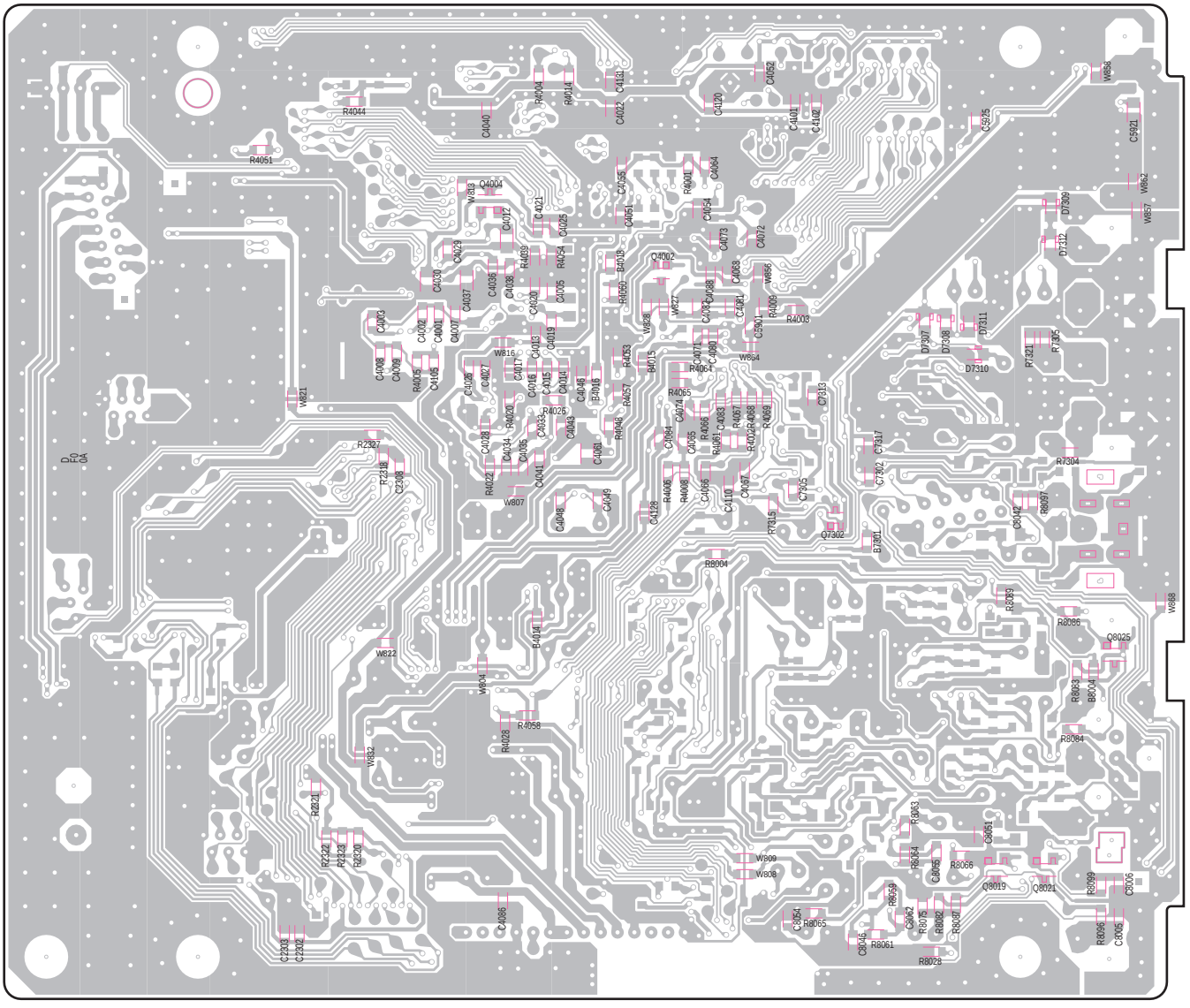
1

SIDE B

SIDE B

DVD MT PCB ASSY
(BOTTOM SIDE)

2

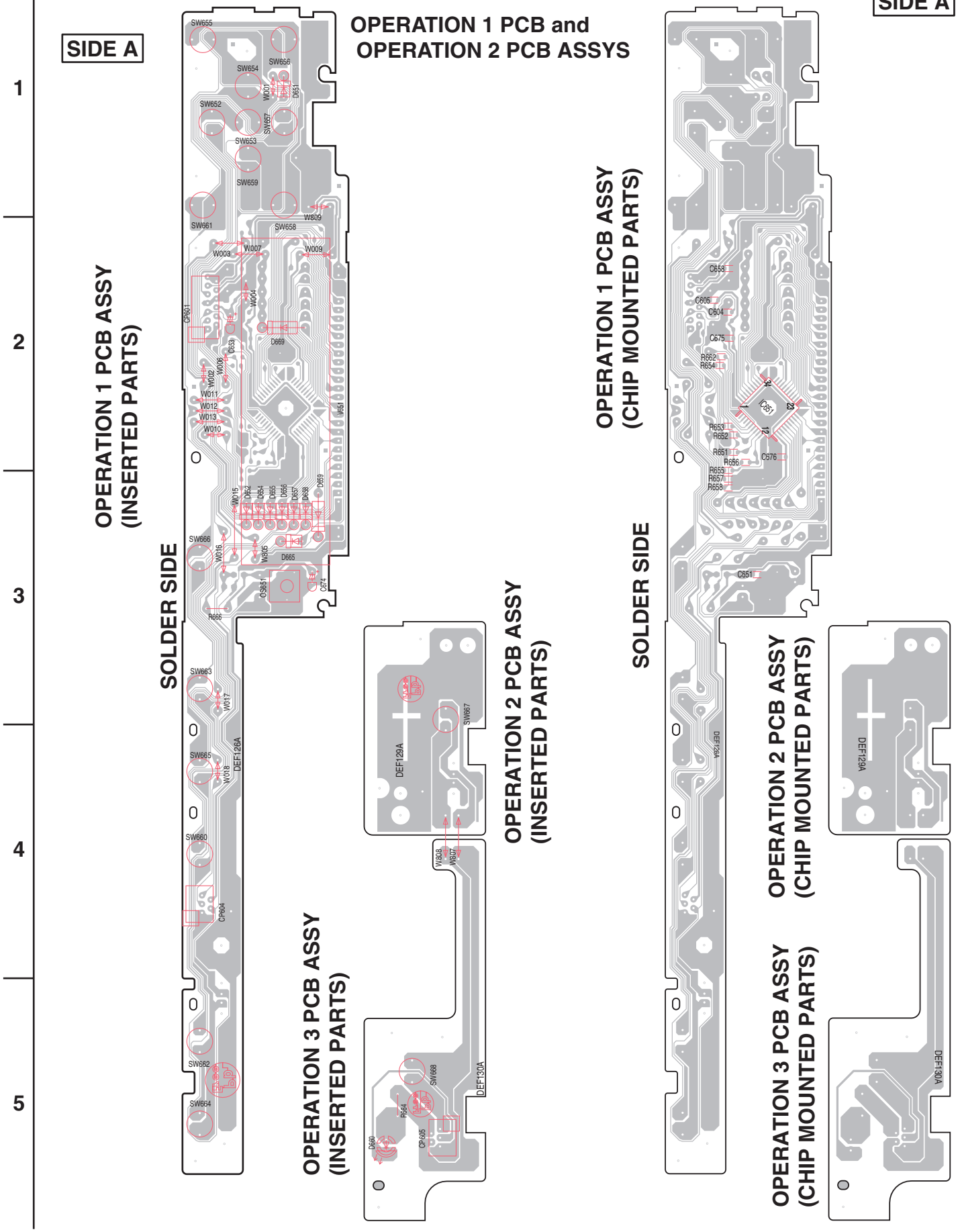


3

4

5

PRINTED CIRCUIT BOARD VIEW-3



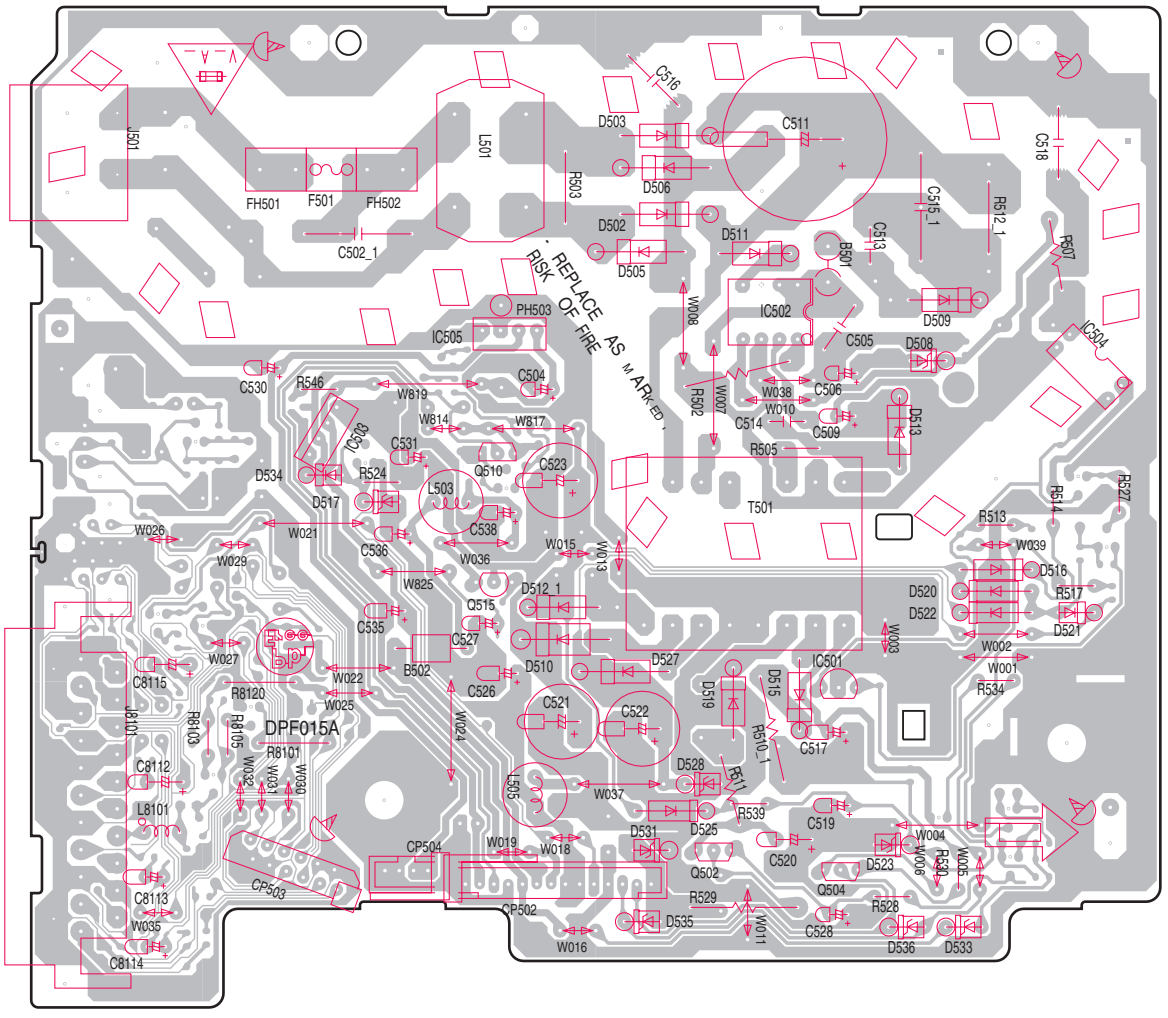
PRINTED CIRCUIT BOARD VIEW-4

POWER PCB ASSY

SIDE A

SIDE A

POWER PCB ASSY (INSERTED PARTS)
SOLDER SIDE



A B C D

1 2 3 4 5

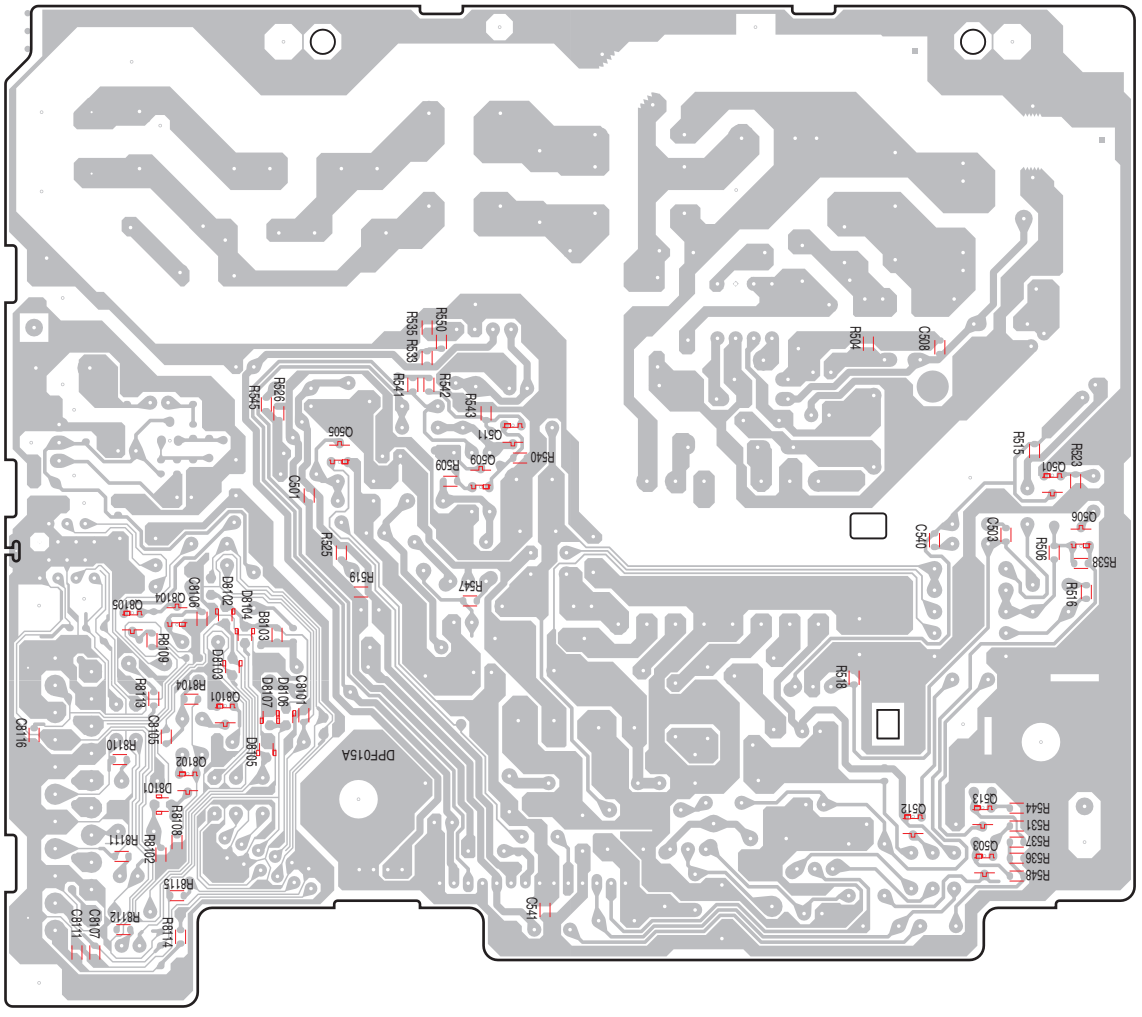
PRINTED CIRCUIT BOARD VIEW-5

POWER PCB ASSY

SIDE A

SIDE A

POWER PCB ASSY (CHIP MOUNTED PARTS)
SOLDER SIDE



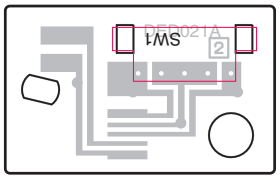
PRINTED CIRCUIT BOARD VIEW-6

USB PCB, LOADING MOTOR and SW ASSYS

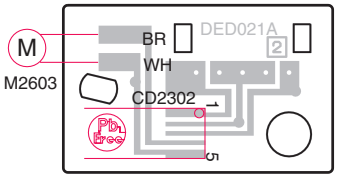
SIDE A

SIDE A

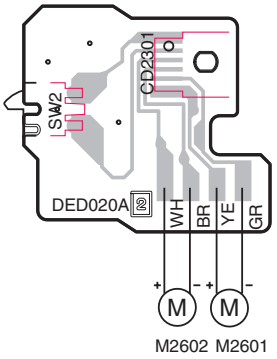
LOADING MOTOR (INSERTED PARTS) SOLDER SIDE



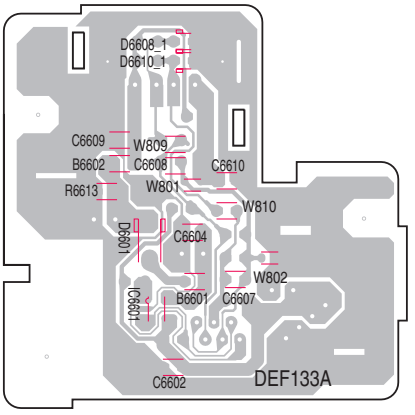
LOADING MOTOR (CHIP MOUNTED PARTS) SOLDER SIDE



SW SOLDER SIDE

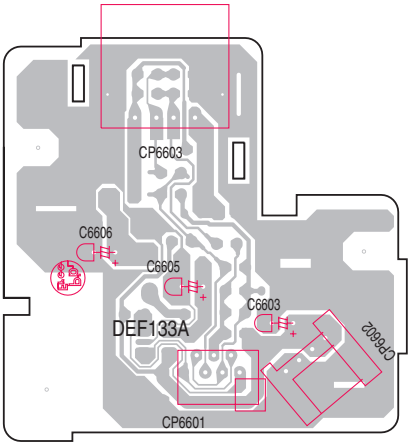


USB (CHIP MOUNTED PARTS) SOLDER SIDE



Except North American

USB (INSERTED PARTS) SOLDER SIDE



Except North American

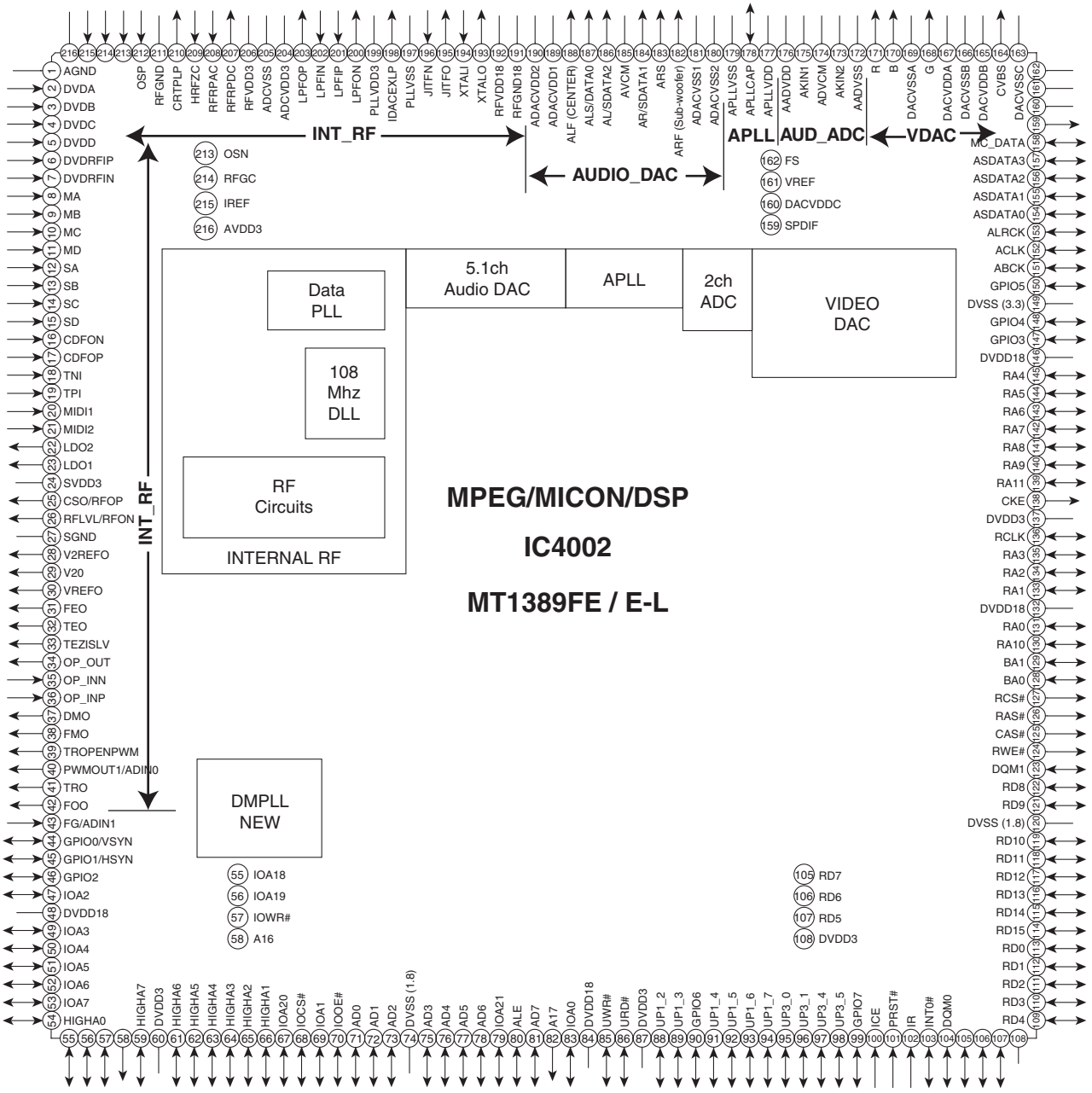
IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-1

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

MT1389FE/E-L (DVD MT PCB ASSY: IC4002)

• MPEG / MICON / DSP

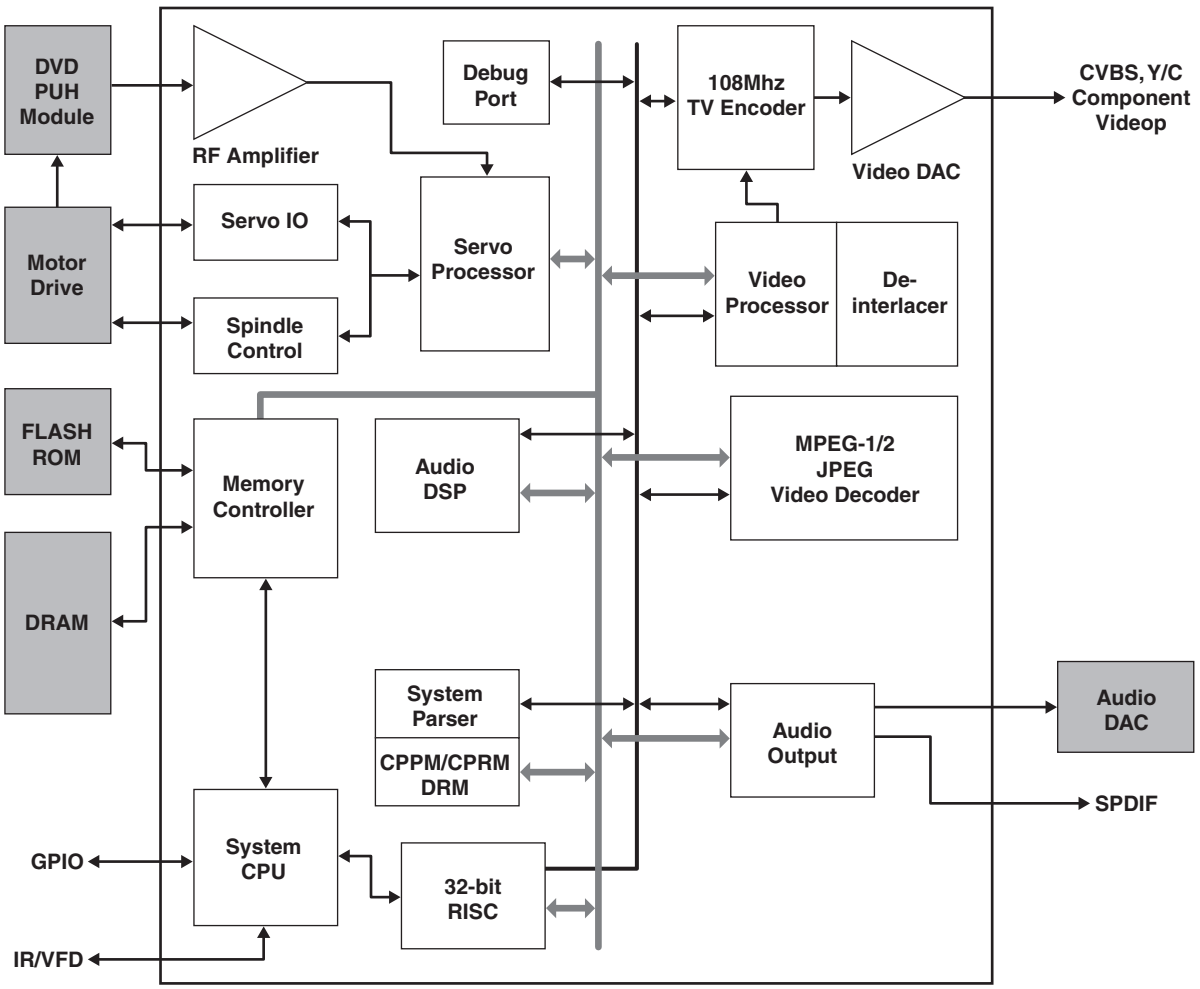
• Pin Arrangement (Top view)



IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-2

• MPEG / MICON / DSP Microcomputer

• Block Diagram



IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-3

• Pin Function

Abbreviations:

- SR: Slew Rate
- PU: Pull Up
- PD: Pull Down
- SMT: Schmitt Trigger
- 4mA~16mA: Output buffer driving strength.

Pin	Main	Alt.	Type	Description
RF Interface (26)				
191	RFGND18		Ground	Analog ground
192	RFVDD18		Power	Analog power 1.8V
212	OSP		Analog output	RF Offset cancellation capacitor connecting
213	OSN		Analog output	RF Offset cancellation capacitor connecting
214	RFGC		Analog output	RF AGC loop capacitor connecting for DVD-ROM
215	IREF		Analog Input	Current reference input. It generates reference current for RF path. Connect an external 15K resistor to this pin and AVSS
216	AVDD3		Power	Analog power 3.3V
1	AGND		Ground	Analog ground
2	DVDA		Analog Input	AC coupled input path A
3	DVDB		Analog Input	AC coupled input path B
4	DVDC		Analog Input	AC coupled input path C
5	DVDD		Analog Input	AC coupled input path D
6	DVDRFIP		Analog Input	AC coupled DVD RF signal input RFIP
7	DVDRFIN		Analog Input	AC coupled DVD RF signal input RFIN
8	MA		Analog Input	DC coupled main-beam RF signal input A
9	MB		Analog Input	DC coupled main-beam RF signal input B
10	MC		Analog Input	DC coupled main-beam RF signal input C
11	MD		Analog Input	DC coupled main-beam RF signal input D
12	SA		Analog Input	DC coupled sub-beam RF signal input A
13	SB		Analog Input	DC coupled sub-beam RF signal input B
14	SC		Analog Input	DC coupled sub-beam RF signal input C
15	SD		Analog Input	DC coupled sub-beam RF signal input D
16	CDFON		Analog Input	CD focusing error negative input
17	CDFOP		Analog Input	CD focusing error positive input
18	TNI		Analog Input	3 beam satellite PD signal negative input
19	TPI		Analog Input	3 beam satellite PD signal positive input
ALPC (4)				
20	MDI1		Analog Input	Laser power monitor input

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-4

Pin	Main	Alt.	Type	Description
21	MDI2		Analog Input	Laser power monitor input
22	LDO2		Analog Output	Laser driver output
23	LDO1		Analog Output	Laser driver output
Reference Voltage (3)				
28	V2REFO		Analog output	Reference voltage 2.8V
29	V20		Analog output	Reference voltage 2.0V
30	VREFO		Analog output	Reference voltage 1.4V
Analog Monitor Output (7)				
24	SVDD3		Power	Analog power 3.3V
25	CSO	RFOP	Analog output	1) Central servo 2) Positive main beam summing output
26	RFLVL	RFON	Analog output	1) RFRP low pass, or 2) Negative main beam summing output
27	SGND		Ground	Analog ground
31	FEO		Analog output	Focus error monitor output
32	TEO		Analog output	Tracking error monitor output
33	TEZISLV		Analog output	TE slicing Level
Analog Servo Interface (8)				
204	ADCVDD3		Power	Analog 3.3V power for ADC
205	ADCVSS		Ground	Analog ground for ADC
206	RFVDD3		Power	Analog power
207	RFRPDC		Analog output	RF ripple detect output
208	RFRPAC		Analog Input	RF ripple detect input (through AC-coupling)
209	HRFZC		Analog Input	High frequency RF ripple zero crossing
210	CRTPLP		Analog output	Defect level filter capacitor connecting
211	RFGND		Ground	Analog Power
RF Data PLL Interface (9)				
195	JITFO		Analog output	Output terminal of RF jitter meter
196	JITFN		Analog Input	Input terminal of RF jitter meter
197	PLLVSS		Ground	Ground pin for data PLL and related analog circuitry
198	IDACEXLP		Analog output	Data PLL DAC Low-pass filter
199	PLLVDD3		Power	Power pin for data PLL and related analog circuitry
200	LPFON		Analog Output	Negative output of loop filter amplifier
201	LPFIP		Analog Input	Positive input terminal of loop filter amplifier
202	LPFIN		Analog Input	Negative input terminal of loop filter amplifier
203	LPFOP		Analog Output	Positive output of loop filter amplifier
Motor and Actuator Driver Interface (10)				

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-5

Pin	Main	Alt.	Type	Description
34	OP_OUT		Analog output	Op amp output
35	OP_INN		Analog input	Op amp negative input
36	OP_INP		Analog input	Op amp positive input
37	DMO		Analog Output	Disk motor control output. PWM output
38	FMO		Analog Output	Feed motor control. PWM output
39	TROPENPWM		Analog Output	Tray PWM output/Tray open output
40	PWMOUT1	ADIN0	Analog Output	1) 1st General PWM output 2) AD input 0
41	TRO		Analog Output	Tracking servo output. PDM output of tracking servo compensator
42	FOO		Analog Output	Focus servo output. PDM output of focus servo compensator
43	FG (Digital pin)	ADIN1 GPIO	LVTTL 3.3V Input, Schmitt Input, pull up, with analog input path for ADIN1	1) Motor Hall sensor input 2) AD input 1 3) GPIO
General Power/Ground (11)				
48,84, 132, 146	DVDD18		Power	1.8V power pin for internal digital circuitry
74, 120	DVSS		Ground	1.8V Ground pin for internal digital circuitry
60,87, 108,137	DVDD3		Power	3.3V power pin for internal digital circuitry
149	DVSS		Ground	3.3V Ground pin for internal digital circuitry
Micro Controller and Flash Interface (48)				
54	HIGHA0		InOut 4~16mA, SR PU	Microcontroller address 8
66	HIGHA1		InOut 4~16mA, SR PU	Microcontroller address 9
65	HIGHA2		InOut 4~16mA, SR PU	Microcontroller address 10
64	HIGHA3		InOut 4~16mA, SR PU	Microcontroller address 11
63	HIGHA4		InOut 4~16mA, SR PU	Microcontroller address 12
62	HIGHA5		InOut 4~16mA, SR PU	Microcontroller address 13
61	HIGHA6		InOut 4~16mA, SR PU	Microcontroller address 14

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-6

Pin	Main	Alt.	Type	Description
59	HIGHA7		InOut 4~16mA, SR PU	Microcontroller address 15
81	AD7		InOut 4~16mA, SR	Microcontroller address/data 7
78	AD6		InOut 4~16mA, SR	Microcontroller address/data 6
77	AD5		InOut 4~16mA, SR	Microcontroller address/data 5
76	AD4		InOut 4~16mA, SR	Microcontroller address/data 4
75	AD3		InOut 4~16mA, SR	Microcontroller address/data 3
73	AD2		InOut 4~16mA, SR	Microcontroller address/data 2
72	AD1		InOut 4~16mA, SR	Microcontroller address/data 1
71	AD0		InOut 4~16mA, SR	Microcontroller address/data 0
83	IOA0		InOut 4~16mA, SR PU	Microcontroller address 0 / IO
69	IOA1		InOut 4~16mA, SR PU	Microcontroller address 1 / IO
47	IOA2		InOut 4~16mA, SR PU	Microcontroller address 2 / IO
49	IOA3		InOut 4~16mA, SR PU	Microcontroller address 3 / IO
50	IOA4		InOut 4~16mA, SR PU	Microcontroller address 4 / IO
51	IOA5		InOut 4~16mA, SR PU	Microcontroller address 5 / IO
52	IOA6		InOut 4~16mA, SR PU	Microcontroller address 6 / IO
53	IOA7		InOut 4~16mA, SR PU	Microcontroller address 7 / IO
58	A16		Output 4~16mA, SR PU	Flash address 16

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-7

Pin	Main	Alt.	Type	Description
82	A17		Output 4~16mA, SR PU	Flash address 17
55	IOA18		InOut 4~16mA, SR PD, SMT	Flash address 18 / IO
56	IOA19		InOut 4~16mA, SR PD, SMT	Flash address 19 / IO
67	IOA20	YUV0	InOut 4~16mA, SR PD, SMT	1) Flash address 20 / IO 2) While External Flash size <= 1MB: I) Alternate digital video YUV output 0
79	IOA21	YUV7 GPIO	InOut 4~16mA, SR PD, SMT	1) Flash address 21 / IO 2) While External Flash size <= 2MB: I) Digital video YUV output 7 II) GPIO
80	ALE		InOut 4~16mA, SR PU, SMT	Microcontroller address latch enable
70	IOOE#		InOut 4~16mA, SR SMT	Flash output enable, active low / IO
57	IOWR#		InOut 4~16mA, SR PU, SMT	Flash write enable, active low / IO
68	IOCS#		InOut 4~16mA, SR SMT	Flash chip select, active low / IO
85	UWR#		InOut 4~16mA, SR PU, SMT	Microcontroller write strobe, active low
86	URD#		InOut 4~16mA, SR PU, SMT	Microcontroller read strobe, active low
88	UP1_2		InOut 4mA, SR PU, SMT	Microcontroller port 1-2
89	UP1_3		InOut 4mA, SR PU, SMT	Microcontroller port 1-3
91	UP1_4		InOut 4mA, SR PU, SMT	Microcontroller port 1-4
92	UP1_5		InOut 4mA, SR PU, SMT	Microcontroller port 1-5

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-8

Pin	Main	Alt.	Type	Description
93	UP1_6	SCL	InOut 4mA, SR PU, SMT	1) Microcontroller port 1-6 2) I^2C clock pin
94	UP1_7	SDA	InOut 4mA, SR PU, SMT	1) Microcontroller port 1-7 2) I^2C data pin
95	UP3_0	RXD	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-0 2) 8032 RS232 RxD
96	UP3_1	TXD	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-1 2) 8032 RS232 TxD
97	UP3_4	RXD SCL	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-4 2) Hardwired RD232 RxD 3) I^2C clock pin
98	UP3_5	TXD SDA	InOut 4mA, SR PU, SMT	1) Microcontroller port 3-5 2) Hardwired RD232 TxD 3) I^2C data pin
102	IR		Input SMT	IR control signal input
103	INT0#		InOut 4~16mA, SR PU, SMT	Microcontroller external interrupt 0, active low
Audio interface (28)				
153	ALRCK	YUV1 GPO	InOut 4mA, PD, SMT	1) Audio left/right channel clock 2) Trap value in power-on reset: I) 1: use external 373 II) 0: use internal 373 3) While internal audio DAC used: I) Digital video YUV output 1 II) GPO
151	ABCK	YUV0 GPIO	InOut 4mA	1) Audio bit clock 2) While internal audio DAC used: I) Digital video YUV output 0 II) GPIO
152	ACLK	YUV0 GPIO	InOut 4mA SMT	1) Audio DAC master clock 2) While internal audio DAC used: I) Alternate digital video YUV output 0 II) GPIO

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-9

Pin	Main	Alt.	Type	Description
154	ASDATA0	YUV2 GPO	InOut 4mA PD SMT	1) Audio serial data 0 (Front-Left/Front-Right) 2) Trap value in power-on reset: I) 1: manufactory test mode II) 0: normal operation 3) While internal audio DAC used: I) Digital video YUV output 2 II) GPO
155	ASDATA1	YUV4 GPO	InOut 4mA PD SMT	1) Audio serial data 1 (Left-Surround/Right-Surround) 2) Trap value in power-on reset: I) 1: manufactory test mode II) 0: normal operation 3) While only 2 channels output: I) Digital video YUV output 4 II) GPO
156	ASDATA2	YUV5 GPO	InOut 4mA PD SMT	1) Audio serial data 2 (Center/LFE) 2) Trap value in power-on reset: I) 1: manufactory test mode II) 0: normal operation 3) While only 2 channels output: I) Digital video YUV output 5 II) GPO
157	ASDATA3	YUV6 GPIO	InOut 4mA PD SMT	1) Audio serial data 3 (Center-back/ Center-left-back/Center-right-back, in 6.1 or 7.1 mode) 2) While only 2 channels output: I) Digital video YUV output 6 II) GPIO
158	MC_DATA	INT2# YUV0 GPIO	InOut 2mA	1) Microphone serial input 2) While not support Microphone: I) Microcontroller external interrupt 2 II) Digital video YUV output 0 III) GPIO
159	SPDIF		Output 4~16mA, SR: ON/OFF	S/PDIF output
172	AADVSS		Ground	Ground pin for 2ch audio ADC circuitry
173	AKIN2		Analog	Audio ADC input 2
174	ADVCM		Analog	2ch audio ADC reference voltage
175	AKIN1		Analog	Audio ADC input 1
176	AADVDD		Power	3.3V power pin for 2ch audio ADC circuitry
177	APLLVDD3		Power	3.3V Power pin for audio clock circuitry
178	APLLCAP		Analog InOut	APLL external capacitance connection
179	APLLVSS		Ground	Ground pin for audio clock circuitry
180	ADACVSS2		Ground	Ground pin for audio DAC circuitry
181	ADACVSS1		Ground	Ground pin for audio DAC circuitry
182	ARF	GPIO	Output	1) Audio DAC sub-woofer channel output 2) While internal audio DAC not used: GPIO

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-10

Pin	Main	Alt.	Type	Description
183	ARS	GPIO	Output	1) Audio DAC right Surround channel output 2) While internal audio DAC not used: GPIO
184	AR	GPIO	Output	1) Audio DAC right channel output 2) While internal audio DAC not used: a. SDATA1 b. GPIO
185	AVCM		Analog	Audio DAC reference voltage
186	AL	GPIO	Output	1) Audio DAC left channel output 2) While internal audio DAC not used: a. SDATA2 b. GPIO
187	ALS	GPIO	Output	1) Audio DAC left Surround channel output 2) While internal audio DAC not used: a. SDATA0 b. GPIO
188	ALF	GPIO	Output	1) Audio DAC center channel output 2) While internal audio DAC not used: GPIO
189	ADACVDD1		Power	3.3V power pin for audio DAC circuitry
190	ADACVDD2		Power	3.3V power pin for audio DAC circuitry
Video Interface (12)				
160	DACVDDC		Power	3.3V power pin for video DAC circuitry
161	VREF		Analog	Bandgap reference voltage
162	FS		Analog	Full scale adjustment
163	DACVSSC		Ground	Ground pin for video DAC circuitry
164	CVBS		Output 4mA, SR	Analog composite output
165	DACVDDB		Power	3.3V power pin for video DAC circuitry
166	DACVSSB		Ground	Ground pin for video DAC circuitry
167	DACVDDA		Power	3.3V power pin for video DAC circuitry
168	Y/G		Output 4mA, SR	Green, Y, SY, or CVBS
169	DACVSSA		Ground	Ground pin for video DAC circuitry
170	B/CB/PB		Output 4mA, SR	Blue, CB/PB, or SC
171	R/CR/PR		Output 4mA, SR	Red, CR/PR, CVBS, or SY
MISC (12)				
101	PRST#		Input PU, SMT	Power on reset input, active low
100	ICE		Input PD, SMT	Microcontroller ICE mode enable
193	XTALO		Output	27MHz crystal output

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-11

Pin	Main	Alt.	Type	Description
194	XTALI		Input	27MHz crystal input
44	GPIO0	VSYN YUV1	InOut 4mA, SR SMT	1) General purpose IO 0 2) Vertical sync for video input 3) Digital video YUV output 1
45	GPIO1	HSYN INT4# YUV2	InOut 4mA, SR SMT	1) General purpose IO 1 2) Horizontal sync for video input 3) Microcontroller external interrupt 4 4) Digital video YUV output 2
46	GPIO2	SPMCLK	InOut 2mA	1) General purpose IO 2 2) Audio S/PDIF SPMCLK input
147	GPIO3	INT1# SPDATA	InOut 2mA	1) General purpose IO 3 2) Microcontroller external interrupt 1 3) Audio S/PDIF SPDATA input
148	GPIO4	SPLRCK	InOut 2mA	1) General purpose IO 4 2) Audio S/PDIF SPLRCK input
150	GPIO5	INT3# SPBCK	InOut 2mA	1) General purpose IO 5 2) Microcontroller external interrupt 3 3) Audio S/PDIF SPBCK input
90	GPIO6	YUVCLK	InOut 4mA, SR PD, SMT	1) General purpose IO 6 2) Digital video clock output
99	GPIO7	YUV3	InOut 4mA, PD, SMT	1) General purpose IO 7 2) Digital video YUV output 3
Dram Interface (38) (Sorted by position)				
145	RA4		InOut	DRAM address 4
144	RA5		InOut	DRAM address 5
143	RA6		InOut	DRAM address 6
142	RA7		InOut	DRAM address 7
141	RA8		InOut	DRAM address 8
140	RA9		InOut	DRAM address 9
139	RA11		InOut Pull-Down	DRAM address bit 11
138	CKE		Output	DRAM clock enable
136	RCLK		InOut	Dram clock
135	RA3		InOut	DRAM address 3
134	RA2		InOut	DRAM address 2
133	RA1		InOut	DRAM address 1
131	RA0		InOut	DRAM address 0
130	RA10		InOut	DRAM address 10
129	BA1		InOut	DRAM bank address 1
128	BA0		InOut	DRAM bank address 0
127	RCS#		Output	DRAM chip select, active low
126	RAS#		Output	DRAM row address strobe, active low

IC BLOCK DIAGRAM/ TERMINAL DESCRIPTIONS-12

Pin	Main	Alt.	Type	Description
125	CAS#		Output	DRAM column address strobe, active low
124	RWE#		Output	DRAM Write enable, active low
123	DQM1		InOut	Data mask 1
122	RD8		InOut	DRAM data 8
121	RD9		InOut	DRAM data 9
119	RD10		InOut	DRAM data 10
118	RD11		InOut	DRAM data 11
117	RD12		InOut	DRAM data 12
116	RD13		InOut	DRAM data 13
115	RD14		InOut	DRAM data 14
114	RD15		InOut	DRAM data 15
113	RD0		InOut	DRAM data 0
112	RD1		InOut	DRAM data 1
111	RD2		InOut	DRAM data 2
110	RD3		InOut	DRAM data 3
109	RD4		InOut	DRAM data 4
107	RD5		InOut	DRAM data 5
106	RD6		InOut	DRAM data 6
105	RD7		InOut	DRAM data 7
104	DQM0		InOut	Data mask 0

Note:

1. The Main column is the main function, Alt. means alternative function.
2. The external TV encoder mode only supports CCIR-656 mode.

SERVICE PROCEDURES-1

NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
  Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 ºC.
  Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 ºC in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

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

- 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.

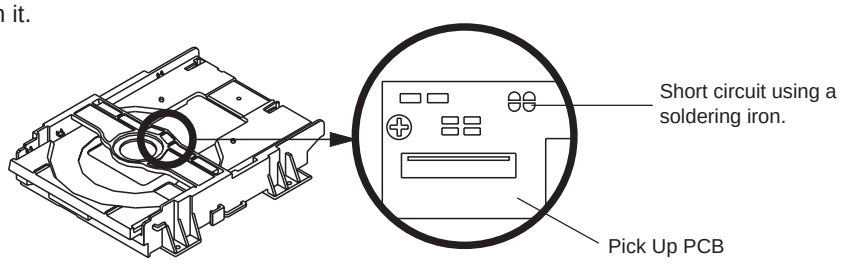


Fig. 1

The following lead-free solders are available as service parts:
Parts numbers of lead-free solder:

Part No.	
2603010	0.6Φ
2603011	1.0Φ

SERVICE PROCEDURES-2

DISC REMOVAL METHOD

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Slide the Rack Loading (White) toward the arrow direction by using a minus driver to release the lock. **(Refer to Fig. 1)**
2. Manually open the Tray.

NOTE: Please strongly pushing Rack Loading (White) to release the lock because the tray doesn't go out easily.

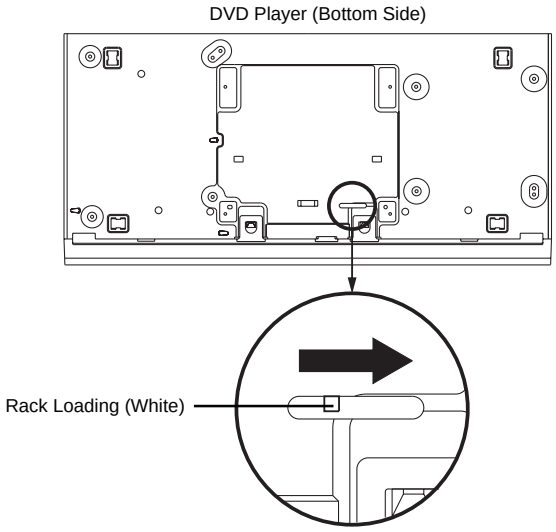


Fig. 1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Set the DVD to the Stand-by Mode.
2. Press and hold the 'STOP' key on the front panel.
3. Simultaneously press and hold the POWER key on the front panel.
4. The 4 digit password has now been cleared.

NOTE: The above procedure will reset ALL of the player's settings to the default factory state.

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.

SERVICE PROCEDURES-3

RESETTING THE PLAYER. (Factory default)

1. Switch the player into standby.
2. Using the front panel buttons, fold down the ■ (stop) button and press ⏻ STANDBY/ON to switch the player back on.

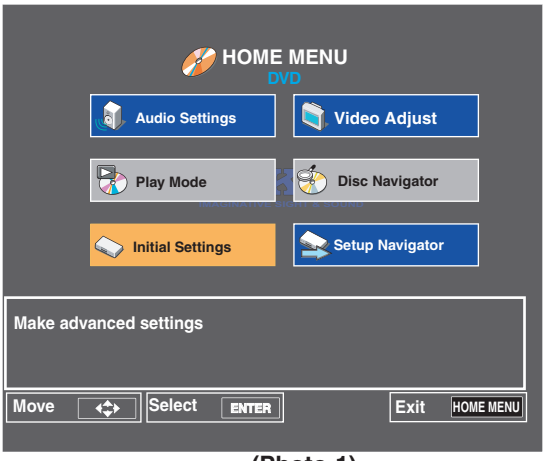
TRAY LOCK MODE

1. While standby on, press “SKIP +”, “SKIP -” and “STOP” key at the same time. (Front panel key only)
2. Operate one again when you make clear this mode.

FIRMWARE DOWN LOADING

• Confirm the Regional code and Firmware version.

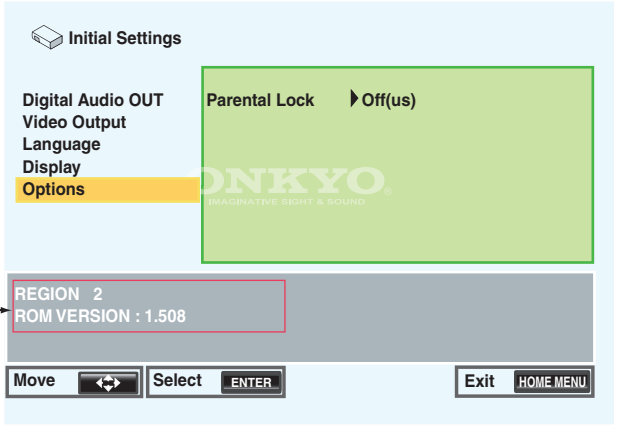
1. Connect the TV monitor to the DV-SP405.
2. Turn ON the standby switch ON. (No Disc)
3. Press "SET UP" key of remote controller (RC-574DV).
   Appear a HOME MENU. (Photo-1)
4. Select "**Initial Settings**" menu and press "**ENTER**".
5. Select "**Options**" menu, and press the "**DISPLAY**" button.
6. Appear regional code and firmware ROM number.
   Confirm the regional cord and firmware version.
   When close the menu, press "RETURN" button of the unit. (Photo-2)



(Photo-1)

• Down load the firmware

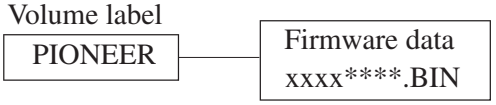
1. Newest FW is written in CD-R with a personal computer.
2. Prees "**Standby**" ⏻ button and "**Disc Tray**" button ⏏.
3. Set the CD-R on the Disc tray and press "**Play**" button.
   Waiting 2 seconds and open the tray automatically.
   DISC TRAY waits for about 2 minutes in the tray open condition.
   Cautions: Do not close the disc tray.
   Do not pull out AC cord.
   Close the tray automatically.
4. Press "Standby" button. (Off)
5. Press "Standby" button (On).
   Confirm the regional code and firmware version at above method.



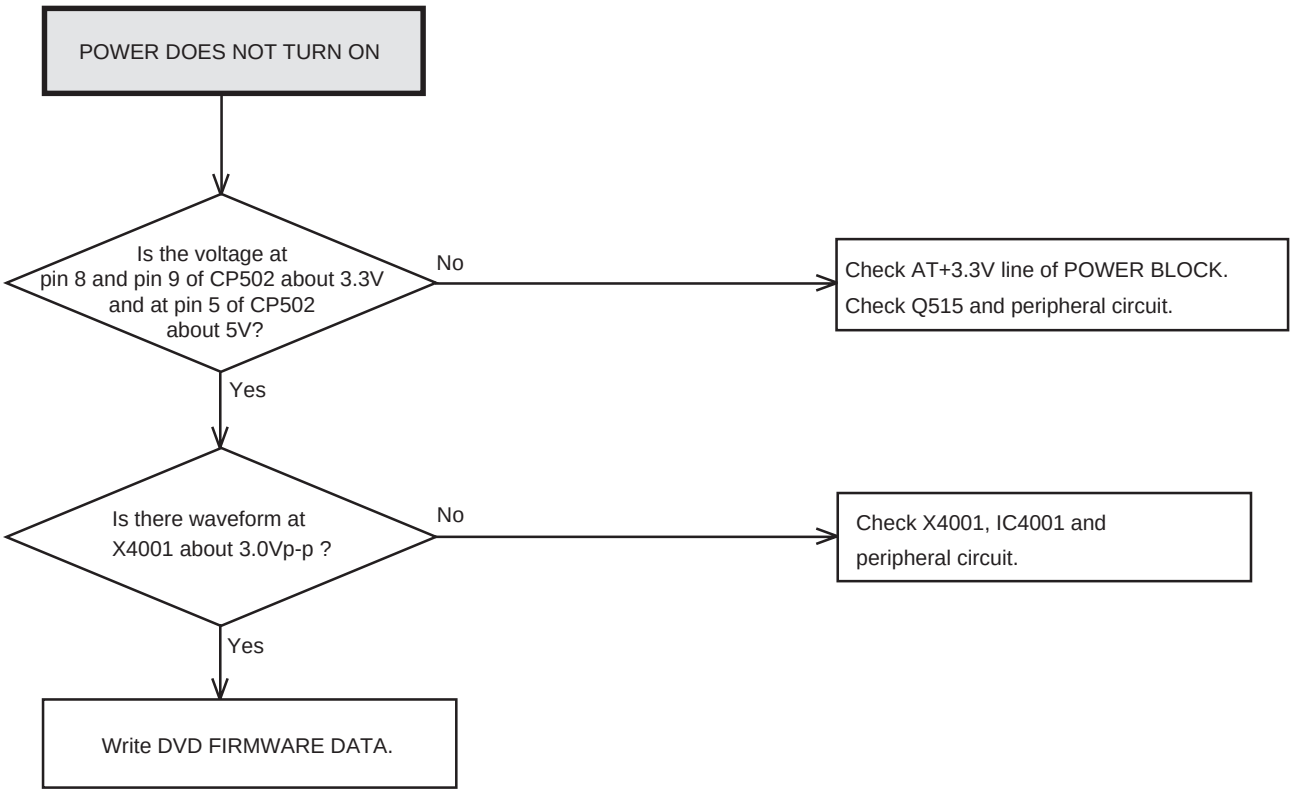
(Photo-2)

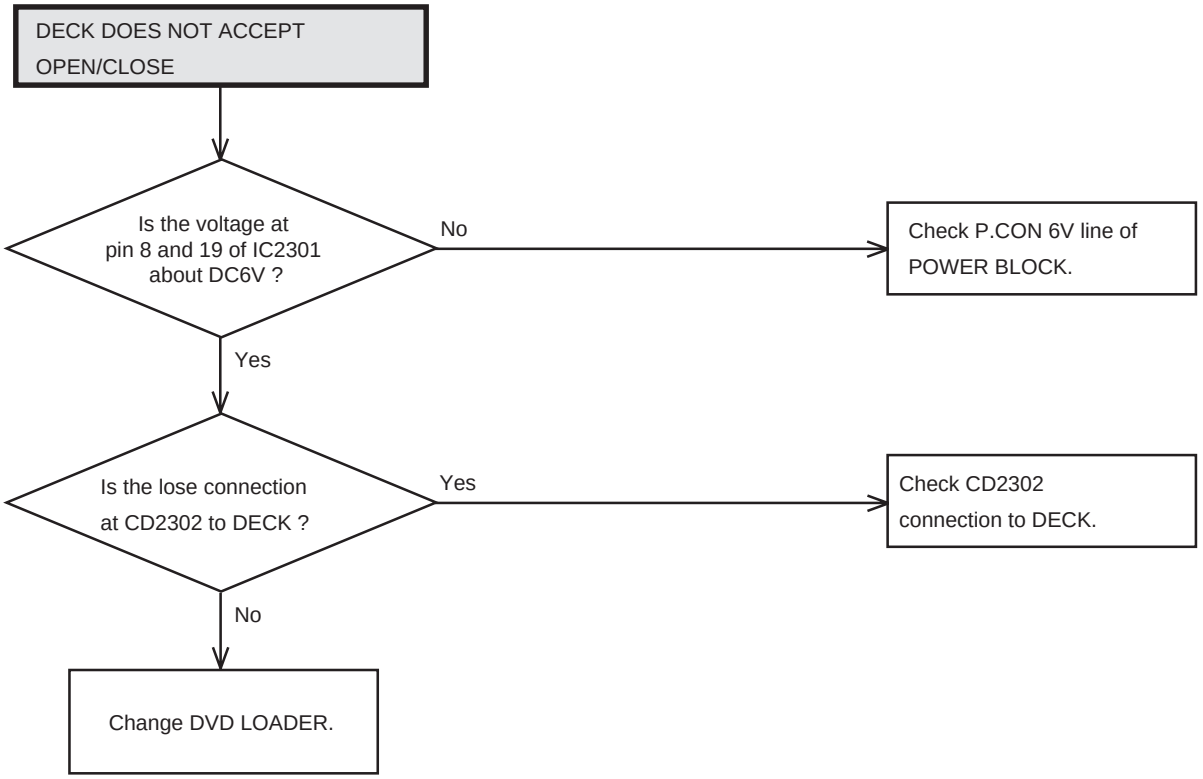
Writing CD-R or CD-RW of upgraded FW.

1. Download the newest firmware.
   ex: xxxx****.BIN
2. Volume label name is "PIONEER"

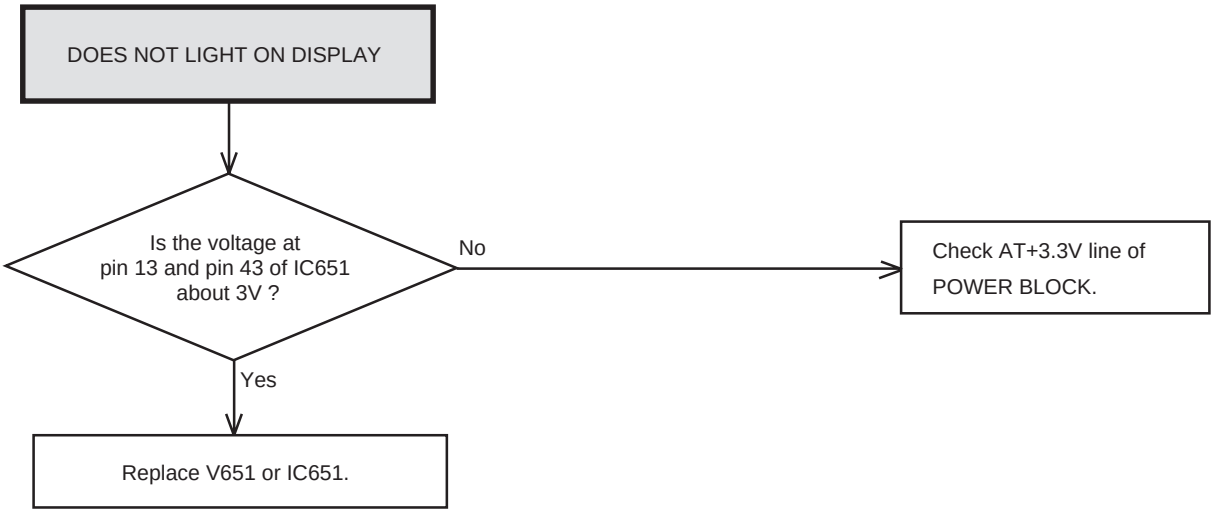


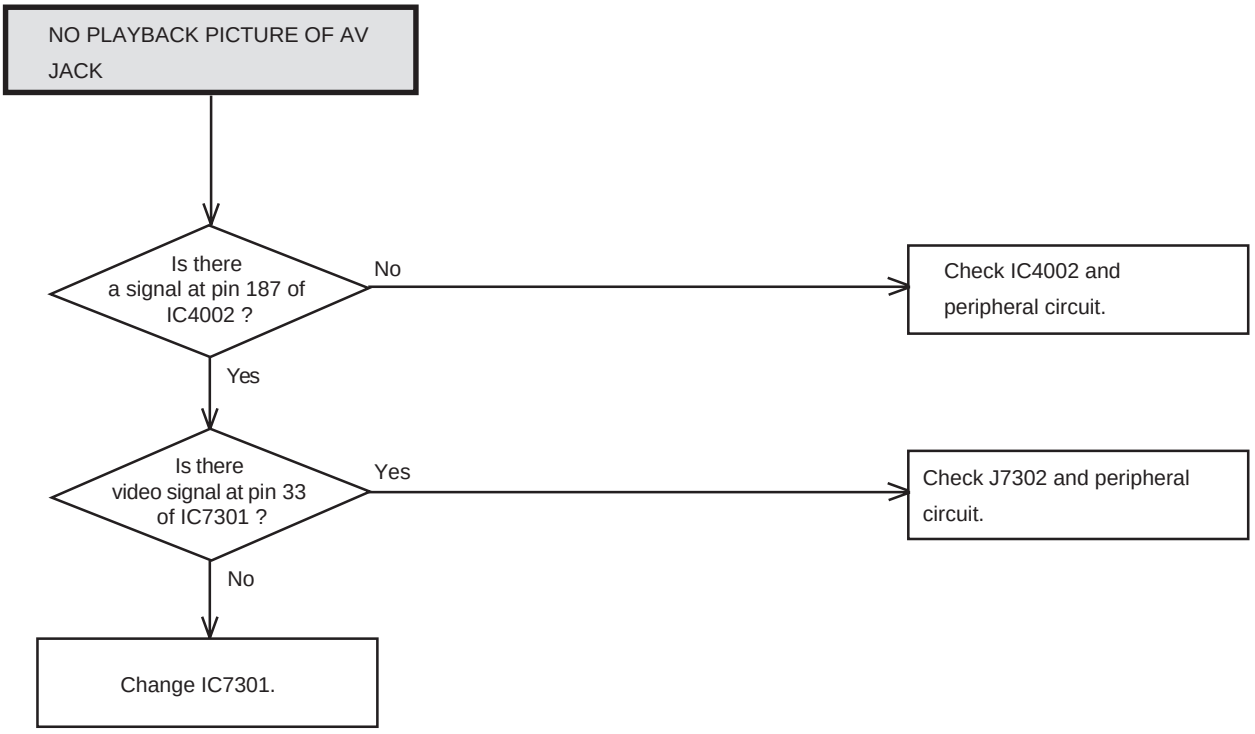
TROUBLE SHOOTING-1



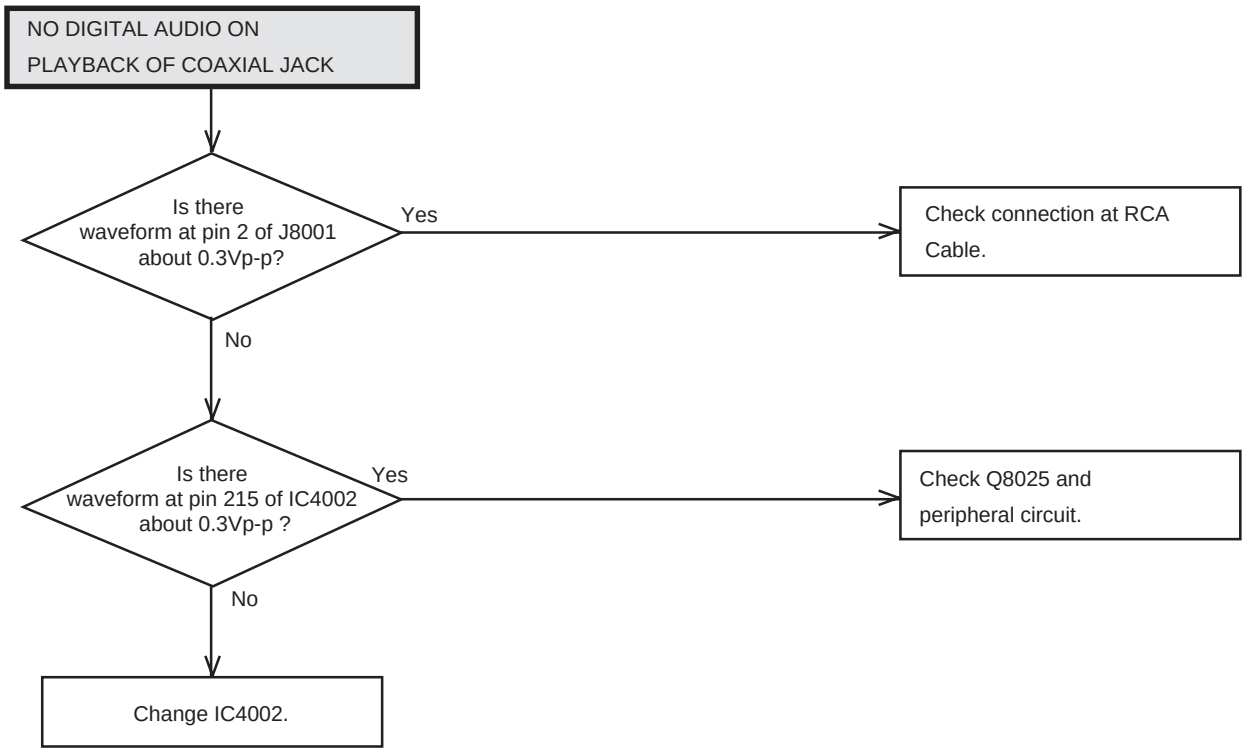


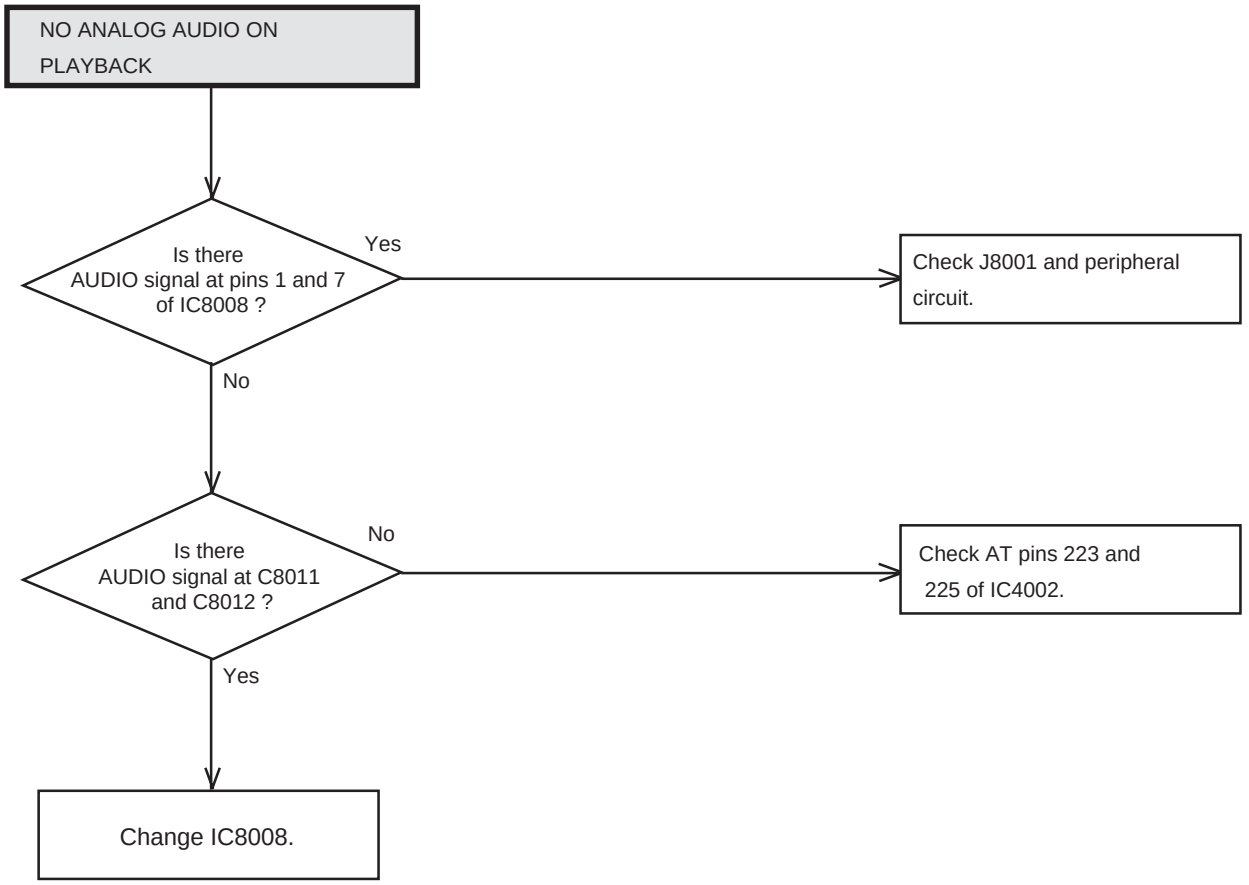
TROUBLE SHOOTING-2





TROUBLE SHOOTING-3





TROUBLE SHOOTING-4

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

IC	Symptoms
EEPROM (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.

NOTE: **NSP**: Not service parts
<STDD>: Silver/U.S.A. model
<BTDD>: Black/U.S.A. model
<STPP>: Silver/ European model
<BTPP>: Black/ European model
<B>: Black color
<S>: Silver color
! : Safety parts

EXPLODED VIEW PARTS LIST

NO.	PARTS NAME	PART NO.	REMARKS
1	DVD MT PCB ASS'Y	A2K417A130	**<TDD>**
1	DVD MT PCB ASS'Y	A2K419A130	**<TPP>**
1	DVD MT PCB ASS'Y	A2K421A130	**<TUA>**
2	OPERATION PCB ASS'Y	A2K417A270	**<TDD>**
2	OPERATION PCB ASS'Y	A2K419A270	**<TPP>**
2	OPERATION PCB ASS'Y	A2K421A270	**<TUA>**
3	OPERATION2 PCB ASS'Y	A2K401A280	
4	POWER PCB ASS'Y	A2K417A240	**<TDD>** !
4	POWER PCB ASS'Y	A2K401A240	**<TPP>** !
4	POWER PCB ASS'Y	A2K410A240	**<TUA>** !
5	DVD MECHA ASS'Y	A2K001A650	
7	PLATE, BOTTOM	702WSAA206	**<TDD> NSP**
7	PLATE, BOTTOM	702WSAA207	**<TPP> NSP**
7	PLATE, BOTTOM	702WSAA208	**<TUA> NSP**
9	SHEET CAUTION	726000A140	
10	PLATE,COVER POWER	755WPAA031	
11	HOLDER,FFC	761WPA0396	
13	CABINET,TOP	702WSBA071	**Top cover <B>**
13	CABINET,TOP	702WSBA070	**Top cover <S>**
14	SPRING EARTH	743WKAA015	
15	CUSHION 65TS10-5	8965TS1015	
17	SCREW,TAP TITE(S)-R	816423063U	
18	SCREW,TAP TITE(S)R	8107D3055U	
19	SCREW,TAP TITE(B)	8109K3060S	**For Top cover <S>**
19	SCREW,TAP TITE(B)	8109K3060U	**For Top cover <B>**
21	SCREW,TAP TITE(P)	811022680U	
23	SHEET,JACK 1	722656A034	**<TDD>**
23	SHEET,JACK 1	722656A025	**<TPP>**
23	SHEET,JACK 1	722656A028	**<TUA>**
24	SHEET,JACK 2	722656A035	**<TDD>**
24	SHEET,JACK 2	722656A026	**<TPP>**
24	SHEET,JACK 2	722656A029	**<TUA>**
25	SHEET,JACK 3	722656A036	**<TDD>**
25	SHEET,JACK 3	722656A027	**<TPP>**
25	SHEET,JACK 3	722656A030	**<TUA>**
27	FRONT,CABI ASS'Y	7A701A897A	**Front panel assy <BTDD>**
27	FRONT,CABI ASS'Y	7A701A989A	**Front panel assy <STDD>**
27	FRONT,CABI ASS'Y	7A701A953A	**Front panel assy <BTPP><TUA>**
27	FRONT,CABI ASS'Y	7A701A990A	**Front panel assy <STPP><TUA>**
30	CORD CONNECTOR	06CU2E3301	CD502
31	CORD JUMPER	122H0B1003	CD601
32	CORD JUMPER	122H051204	CD604
50	LEG	704WPA0054	
51	CUSHION LEG	800WR0A028	
52	SCREW,TAP TITE(B)	810923070U	
60	OPERATION3 PCB ASS'Y	A2K417ADF0	**<TDD>**
60	OPERATION3 PCB ASS'Y	A2K401ADF0	**<TPP> <TUA>**
61	CORD AC BUSH	120Q618902	**<TDD>** !
70	USB PCB ASSY	A2K401ADD0	**<TPP>**
71	FLAT CABLE	W9L6020038	**<TPP> <TUA>**
72	CORD CONNECTOR	06E8241203	**<TPP> <TUA>**
73	CORD JUMPER	122H0C3002	**<TPP> <TUA>**
74	CORD JUMPER	122H063401	**<TPP> <TUA>**
76	ANGLE PCB	761WSAA085	**<TPP>**
77	SHIELD, 21PIN	761WSA0237	**<TPP>**

80	SHEET FUSE	7240001122	**<TUA>**
81	SCREW PAN	810213060U	
82	FLAP DVD	712WPDA081	Door, Revision (08/JAN/17)

PACKING VIEW PARTS LIST — DV-SP405

NO.	PARTS NAME	PART NO.	REMARKS
2	RCA PIN CABLE	06CPBA2006	
3	TRANSMITTER	07660LP020	**Remote controller <TDD>**
3	TRANSMITTER	07660LP030	**Remote controller <TPP><TUA>**
9	INSTRUCTION BOOK	J2K41701A	
11	POLYBAG,INSTRUCTION	JB5KD300	**<TDD>**
11	POLYBAG,INSTRUCTION	JB5KD600	**<TPP>**
11	POLYBAG,INSTRUCTION	JB5KD200	**<TUA>**
12	GIFT SHEET	791WHA0113	
13	PACKAGE	792WHAA169	**<TDD>**
13	PACKAGE	792WHAA170	**<TPP> <TUA>**
14	GIFT BOX	793WCDD509	**<BTDD>**
14	GIFT BOX	793WCDD510	**<STDD>**
14	GIFT BOX	793WCDD504	**<BTPP>**
14	GIFT BOX	793WCDD503	**<STPP>**
14	GIFT BOX	793WCDD505	**<BTUA>**
14	GIFT BOX	793WCDD506	**<STUA>**
15	POLY,BAG	791WHAA040	
21	RCA PIN CABLE	06CPBA2007	
22	CARTON LABEL	723000D596	**<BTDD>**
22	CARTON LABEL	723000D597	**<STDD>**
22	CARTON LABEL	723000D591	**<BTPP> <BTUA>**
22	CARTON LABEL	723000D590	**<STPP>**
22	CARTON LABEL	723000D593	**<STUA>**
23	INFORMATION SHEET	J2K02829A	
24	INFORMATION SHEET	J2G53429A	**<TPP>**
30	GUARANTEE CARD	J2K41702A	**<TDD>** only
31	INSTRUCTION BOOK	J2K41701A	**<TDD> <TUA> En**
32	INSTRUCTION BOOK	J2K41932A	**<TPP> U3**
33	INSTRUCTION BOOK	J2K41933A	**<TPP> U3**
34	CORD SET AC	1206158802	**! <TPP>**
34	CORD SET AC	1206158801	**! <TUA>**
36	INSTRUCTION BOOK	J2K41910A	**<TPP> Russia**

DVD MECHANISM PARTS LIST — DV-SP405

NO.	PARTS NAME	PART NO.	REMARKS
2	GEAR,MIDDLE	92P100117A	
3	LOADING MOTOR	1515S98004	
4	PULLEY,MOTOR	92P100097A	
5	MOTOR	1515S98004	
6	CORD JUMPER	122J4O2202	24P, CD2001
7	CORD JUMPER	122H051602	CD2302
8	INSULATOR(F)	92P200013A	
9	BELT,LOADING	92P200015A	
10	INSULATOR(R)	92P200016A	
11	FRAME,MAIN	92P100119A	
12	TRAY(R)	92P100151A	
13	HOLDER,TRAVERSE	92P100125A	
14	GEAR,PULLEY	92P100123A	
15	GEAR,MAIN	92P100124A	
16	GEAR,FEED	92P100116A	
18	PLATE,CLAMPER	92P000023A	
19	LOADER SUB ASS'Y(R)	92AAA0024A	
20	CLAMPER	92P100122A	

21	SCREW,PAN	814011730U	M1.7 x 3, P3
22	SCREW,PAN	814011723U	M1.7 x 2.3, P3
23	RACK,LOADING	92P100121A	
24	GEAR,MOTOR	92P100088A	
25	FEED RACK ASS'Y	92AAA0017A	
26	SCREW,T-TITE(B)CAMER	813381750U	M1.7 x 5.0, P3
27	SCREW,GEAR FEED	92P700007A	
28	CORD JUMPER	122H061605	CD2301
29	SWITCH	0515S32003	
30	SWITCH	500101036	
31	SCREW,TAP TITE(P)	811022680U	2.6 x 8
32	SEMS.TAP TITE(P) PAN	816112080U	2 x 8
33	SCREW,TAP TITE(P) BI	811022080U	2 x 8
34	DVD MECHA. ASSY	A2K001A650	

PRINTED CIRCUIT BOARD PARTS LIST

DV-SP405

NO.	PARTS NAME	PART NO.	REMARKS
	DVD MT PCB	A2K417A130	**<TDD>**
		A2K419A130	**<TPP>**
		A2K421A130	**<TUA>**
IC4005	IC	ICLJ0TP6C0	HY57V641620ETP-6
IC4002	IC	IC8K0389S0	MT1389FE/S-L
IC4003	IC	IE1F0291A0	R3112N291A-TR-FA
IC5902	IC	I0GF9K5030	PQ1K503M2ZPH
IC7301	IC	I03FG30540	LA73054-TLM
IC8008	IC	I04J045800	RC4580IDR
IC4006	IC	I1TF911170	I1TF911170
IC2301	IC	I1UFV5766S	AM5766
IC4001	IC	I5HJ0S08A0	S-24CS08AFJ-TB-1GE
IC4004	IC	S2K417AF01	ES29LV160EB-70TG
J8001	RCA JACK	060R451009	
J7302	RCA JACK	060R451010	
J7301	JACK PLATE	063Y000081	**<TPP>** only
CP5901	CONNECTOR PCB SIDE	0694YJ3018	
X4001	X'TAL	100GT02720	27MHz
	POWER SUPPLY UNIT	A2K417A240	**<TDD>**
		A2K401A240	**<TPP>**
		A2K410A240	**<TUA>**
R511	R.FUSE	R65584680J	! 68 ohm 1/4W
	OPERATION BOARD	A2K417A270	**<TDD>**
		A2K419A270	**<TPP><TUA>**
IC651	IC	IF4K063150	PT6315
SW652-SW	TACT SWITCH	0504R01T38	
OS651	REMOTE RECEIVER	077A033001	
V651	TUBE FLUORESCENT DIS	096F82R601	
	OPERATION BOARD 2	A2K401A280	
SW667	TACT SWITCH	0504R01T38	
	OPERATION BOARD 3	A2K417ADF0	**<TDD>**
		A2K401ADF0	**<TPP> <TUA>**
	USB PCB ASSY	A2K401ADD0	**<TPP><TUA>**

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