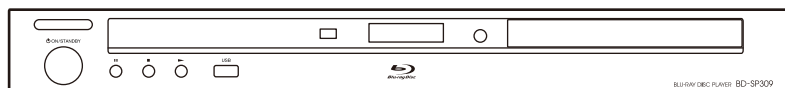


ONKYO® SERVICE MANUAL

NO Repair Parts Availability.

BLU-RAY DISC PLAYER MODEL BD-SP309(B)/(S)



RC-825DV
(CDC only)




RC-826DV
(except CEC)

Black and Silver models

B CUP2BP	100~240V AC, 50/60Hz	EU
B CUA4BP		AUSTRALIA/NEW ZEALAND
B CUR6CP		RUSSIA
B CUT3AP		HONG KONG/SINGAPORE/MALAYSIA/THAILAND/KOREA
B CDC1AN	120V AC, 60Hz	US/CANADA
S CUP2BP	100~240V AC, 50/60Hz	EU
S CUR6CP		RUSSIA

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 SOUND & VISION CORPORATION
Service Department

SERVICE PROCEDURE - 1

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

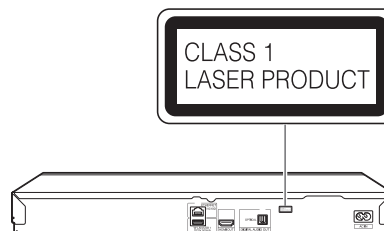
CAUTION:

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

AS THE LASER BEAM USED IN THIS UNIT IS HARMFUL TO THE EYES, DO NOT ATTEMPT TO DISASSEMBLE THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

This Player is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT label is located on the rear cover.

This product contains a low power laser device. To ensure continued safety do not remove any cover or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.



Precautions for using lead-free solder

■Employing lead-free solder

- "All PWBs" of this model employs lead-free solder. The LF symbol indicates lead-free solder, and is attached on the PWBs and service manuals. The alphabetical character following LF shows the type of lead-free solder.

Example:

LFa
Sn-Ag-Cu

Indicates lead-free solder of tin, silver and copper.

LFa/a
Sn-Ag-Cu

Indicates lead-free solder of tin, silver and copper.

■Using lead-free wire solder

- When fixing the PWB soldered with the lead-free solder, apply lead-free wire solder. Repairing with conventional lead wire solder may cause damage or accident due to cracks.

As the melting point of lead-free solder (Sn-Ag-Cu) is higher than the lead wire solder by 40 °C, we recommend you to use a dedicated soldering bit, if you are not familiar with how to obtain lead-free wire solder or soldering bit, contact our service station or service branch in your area.

■Soldering

- As the melting point of lead-free solder (Sn-Ag-Cu) is about 220 °C which is higher than the conventional lead solder by 40 °C, and as it has poor solder wettability, you may be apt to keep the soldering bit in contact with the PWB for extended period of time. However, Since the land may be peeled off or the maximum heat-resistance temperature of parts may be exceeded, remove the bit from the PWB as soon as you confirm the steady soldering condition.

Lead-free solder contains more tin, and the end of the soldering bit may be easily corroded. Make sure to turn on and off the power of the bit as required.

If a different type of solder stays on the tip of the soldering bit, it is alloyed with lead-free solder. Clean the bit after every use of it.

When the tip of the soldering bit is blackened during use, file it with steel wool or fine sandpaper.

- Be careful when replacing parts with polarity indication on the PWB silk.

SERVICE PROCEDURE - 2

■ Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:

■WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.

CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE REPLACE ONLY WITH SAME TYPE FUSE.

F101, F102 (250V 2A)

■BEFORE RETURNING THE BD PLAYER (Fire & Shock Hazard)

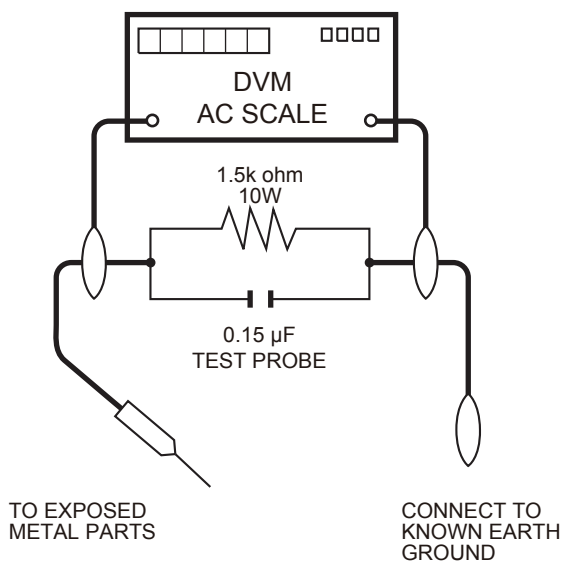
Before returning the BD player to the user, perform the following safety checks:

3. Inspect all lead dress to make certain that leads are not pinched, and check that hardware is not lodged between the chassis and other metal parts in the receiver.
4. Inspect all protective devices such as non-metallic control knobs, insulation materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
5. To be sure that no shock hazard exists, check for leakage current in the following manner.
 - Plug the AC cord directly into a 230 volt AC outlet.
 - Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to an earth ground.

- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity or measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor.

All checks must be repeated with the AC cord plug connection reversed. (If necessary, a nonpolarized adaptor plug must be used only for the purpose of completing these checks.)

Any reading of 0.75 Vrms (this corresponds to 0.5 mA rms AC.) or more is excessive and indicates a potential shock hazard which must be corrected before returning the monitor to the owner.



SAFETY NOTICE

Many electrical and mechanical parts in BD player have special safety-related characteristics.

These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage, etc.

Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts List and Schematic Diagrams.

For continued protection, replacement parts must be identical to those used in the original circuit.

The use of a substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire or other hazards.

IMPORTANT SERVICE NOTICE

1. When replacing the main PWB, update its software using a CD or USB memory.
2. The IC2501, IC7201, IC8501 and IC8502 have the software already written and cannot be replaced by new ones.
3. The IC7801-4 (DDR) are of BGA (Ball Grid Array) type and can only be replaced using a specific device.

UPGRADE FIRMWARE

Consult with your Services Company as we cannot provide the upgrading software.

1. Procedure with a CD

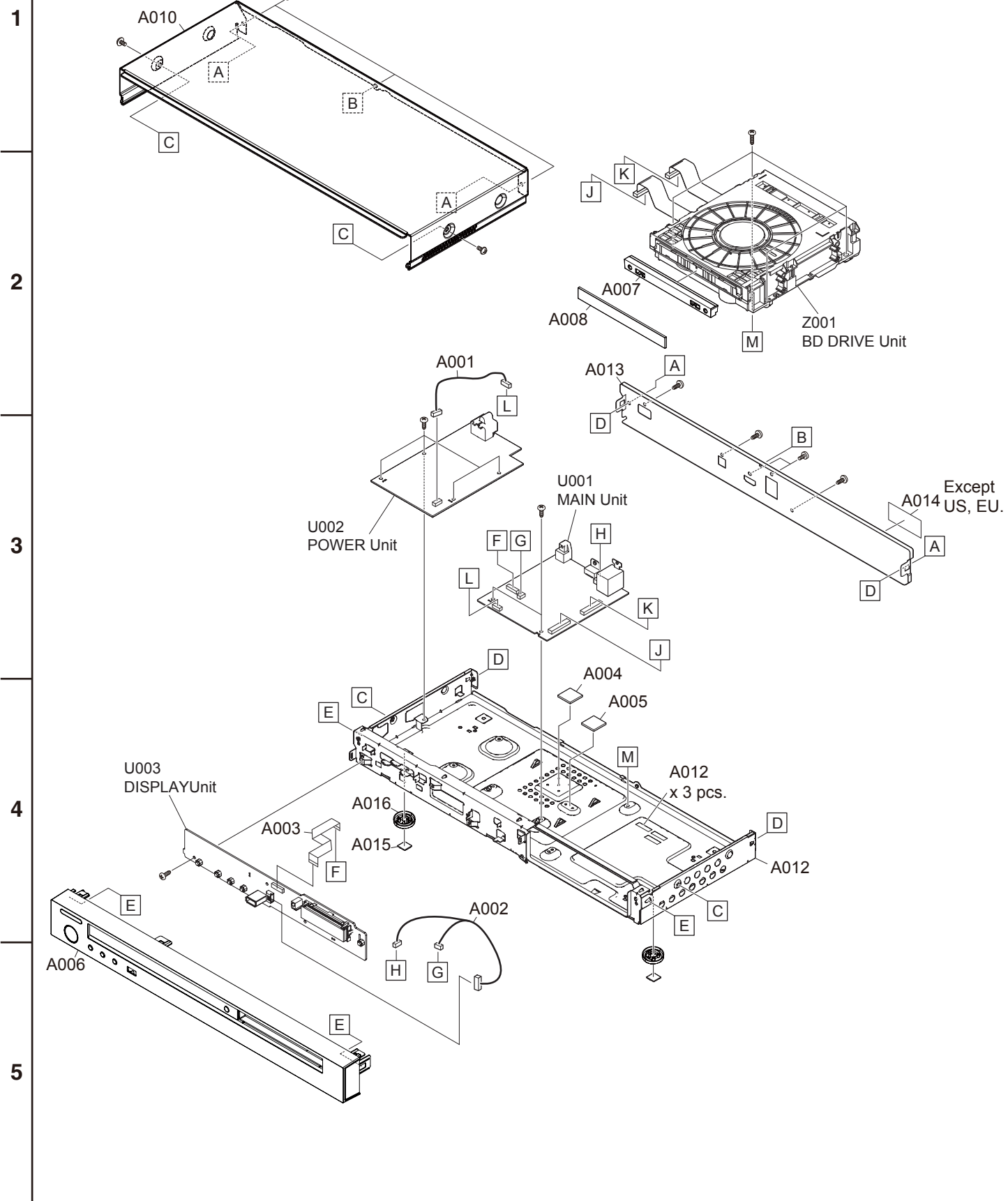
1. Write the updated software on a CD to prepare the version-upgrading CD.
2. Connect the set to the monitor with an HDMI cable. (Keep the HDMI cable connected until the version-upgrading has been completed.)
3. Using the "POWER" key (on the set itself or on the remote controller), turn on the power.
 - * Do not turn on the power with the "EJECT" key.
4. Press the "EJECT" key to open the tray. Place the upgrading CD on the tray and press the "EJECT" key again to close the tray.
5. The CD is opened and the power turns off itself.
6. The power turns on itself and the upgrading gets started.
 - LCD display: V-UP blinking → V-UP kept on
 - Mode display: Blue LED blinking → Blue LED kept on
 - Monitor screen: Upgrading progress displayed
7. When the software has been 100% overwritten, the tray opens itself and the power turns off itself.
8. Take the CD out of the tray and press the "POWER" key to turn on the power again.
9. When the wallpaper shows up, hold down the "POWER" key to do the resetting. (Keep the "POWER" key depressed until the RESET message appears on the LCD. (About 10 seconds))
10. Press the "POWER" key again to turn on the power.
11. When the wallpaper shows up again, move from [Settings] to [Version] to make sure the software is upgraded.
12. When the upgrading has been successfully made, close the [Version] confirm screen and turn off the power. If it has failed, take the procedure over again from Step 3 above.

2. Procedure with a USB memory

1. Write the updated software on a USB memory to prepare the version-upgrading USB memory.
2. Connect the set to the monitor with an HDMI cable. (Keep the HDMI cable connected until the version-upgrading has been completed.)
3. Using the "POWER" key (on the set itself or on the remote controller), turn on the power.
 - * Do not turn on the power with the "EJECT" key.
4. Insert the upgrading USB memory into the USB port.
5. When the USB memory has been recognized (the "x" mark on the USB icon disappears and the USB recognition on-screen display appears), move from [Settings], [Software Update Settings], [Manual Update] to [USB Memory], and then press the "ENTER" or "▶" key.
6. Press "OK" on the USB recognition confirm screen.
7. The power turns on itself and the upgrading gets started.
 - LCD display: V-UP blinking → V-UP kept on
 - Mode display: Blue LED blinking → Blue LED kept on
 - Monitor screen: Upgrading progress displayed
8. When the software has been 100% overwritten, the power turns off itself.
9. Draw the USB memory out of the USB port and press the "POWER" key to turn on the power again.
10. When the wallpaper shows up, hold down the "POWER" key to do the resetting. (Keep the "POWER" key depressed until the RESET message appears on the LCD. (About 10 seconds))
11. Press the "POWER" key again to turn on the power.
12. When the wallpaper shows up again, move from [Settings] to [Version] to make sure the software is upgraded.
13. When the upgrading has been successfully made, close the [Version] confirm screen and turn off the power. If it has failed, take the procedure over again from Step 3 above.

A B C D

EXPLODED VIEW



SCHEMATIC DIAGRAMS - 1 BLOCK DIAGRAM (MAIN)

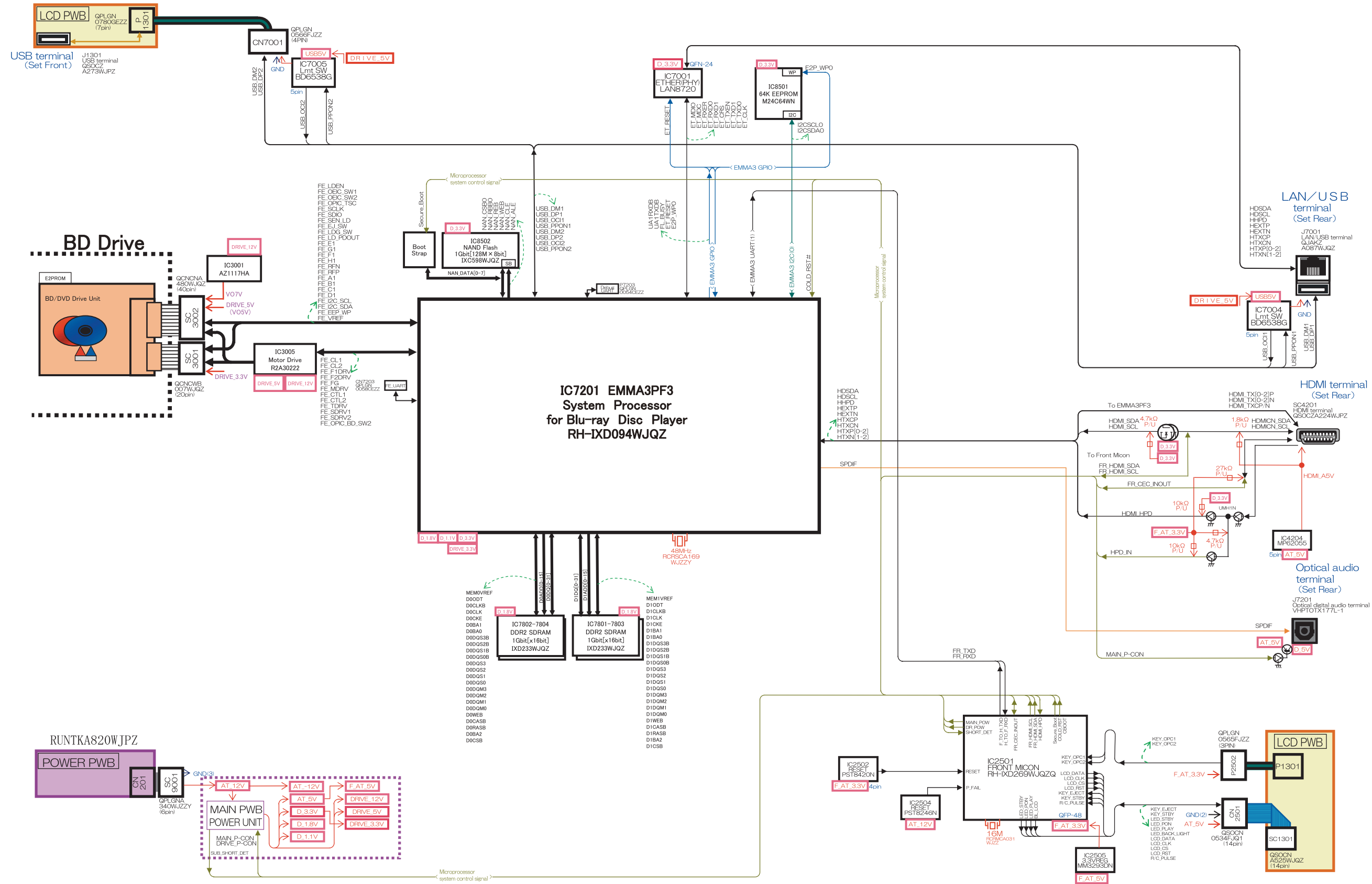
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SCHEMATIC DIAGRAMS - 2
MAIN1

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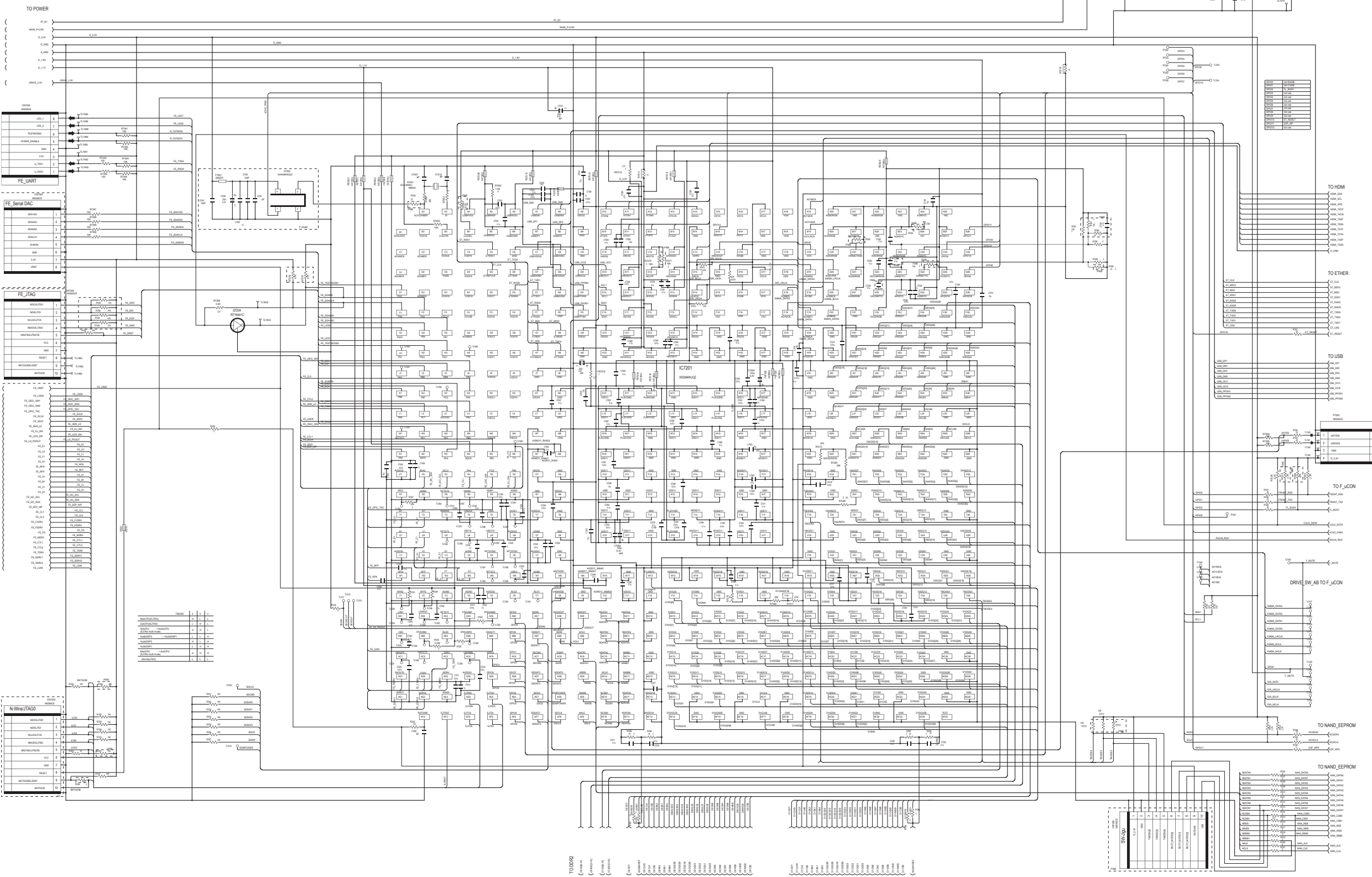
3

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EMMA3PF3

Note: [] NOT USE



FUNCTION	NAME	U1	U2	U3
FE_UART1	FE_UART1	U1	U2	U3
FE_UART2	FE_UART2	U4	U5	U6
FE_UART3	FE_UART3	U7	U8	U9
FE_UART4	FE_UART4	U10	U11	U12
FE_Serial_DAC1	FE_Serial_DAC1	U13	U14	U15
FE_Serial_DAC2	FE_Serial_DAC2	U16	U17	U18
FE_Serial_DAC3	FE_Serial_DAC3	U19	U20	U21
FE_Serial_DAC4	FE_Serial_DAC4	U22	U23	U24
FE_JTAG1	FE_JTAG1	U25	U26	U27
FE_JTAG2	FE_JTAG2	U28	U29	U30
FE_JTAG3	FE_JTAG3	U31	U32	U33
FE_JTAG4	FE_JTAG4	U34	U35	U36
N-Wire/JTAG1	N-Wire/JTAG1	U37	U38	U39
N-Wire/JTAG2	N-Wire/JTAG2	U40	U41	U42
N-Wire/JTAG3	N-Wire/JTAG3	U43	U44	U45
N-Wire/JTAG4	N-Wire/JTAG4	U46	U47	U48

TO USB

NAME	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100	

NAME	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100	

NAME	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100	

NAME	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19	U20	U21	U22	U23	U24	U25	U26	U27	U28	U29	U30	U31	U32	U33	U34	U35	U36	U37	U38	U39	U40	U41	U42	U43	U44	U45	U46	U47	U48	U49	U50	U51	U52	U53	U54	U55	U56	U57	U58	U59	U60	U61	U62	U63	U64	U65	U66	U67	U68	U69	U70	U71	U72	U73	U74	U75	U76	U77	U78	U79	U80	U81	U82	U83	U84	U85	U86	U87	U88	U89	U90	U91	U92	U93	U94	U95	U96	U97	U98	U99	U100	

SCHEMATIC DIAGRAMS - 3
MAIN2

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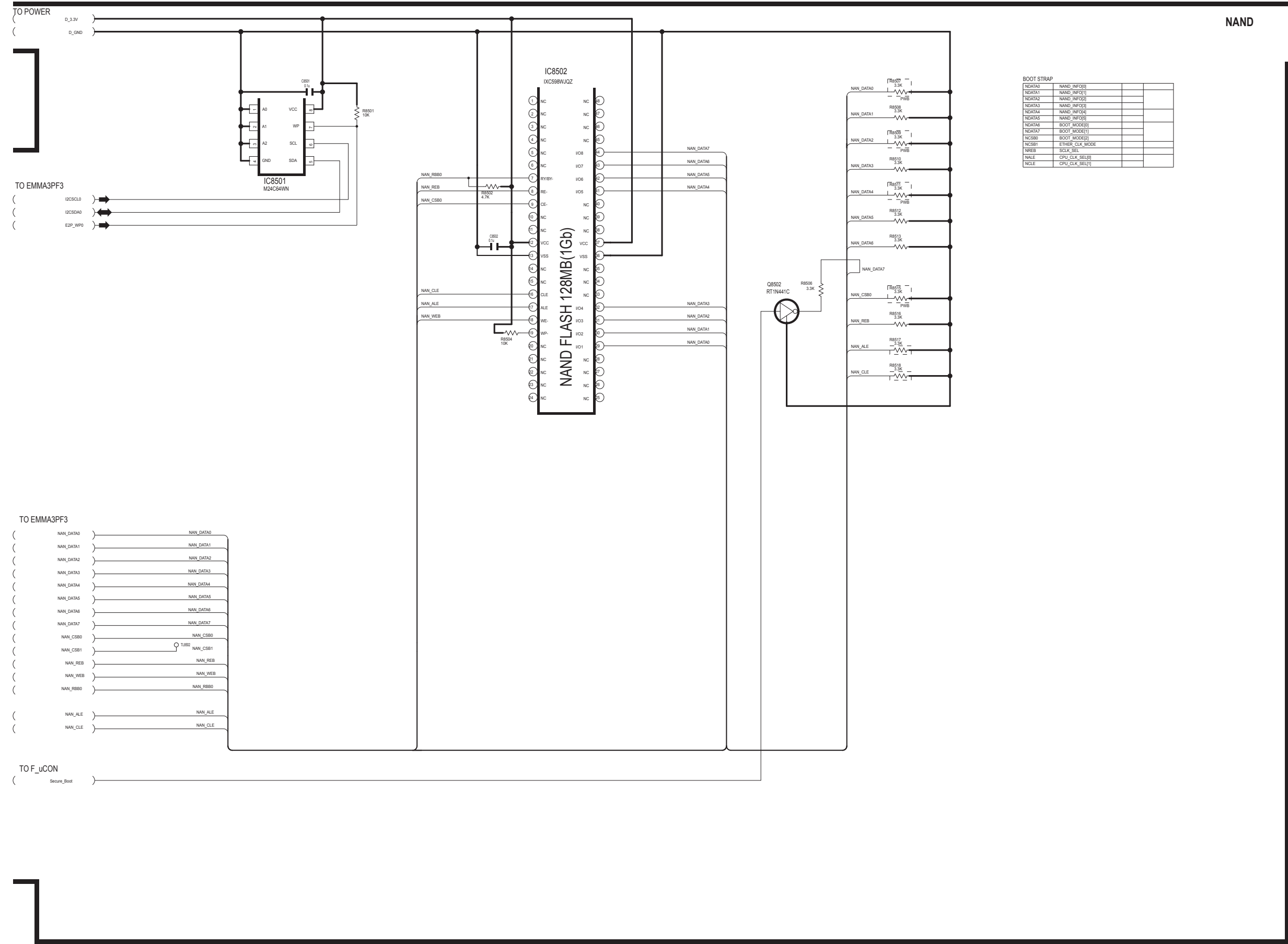
Note : [] NOT USE

SCHEMATIC DIAGRAMS - 4
MAIN3

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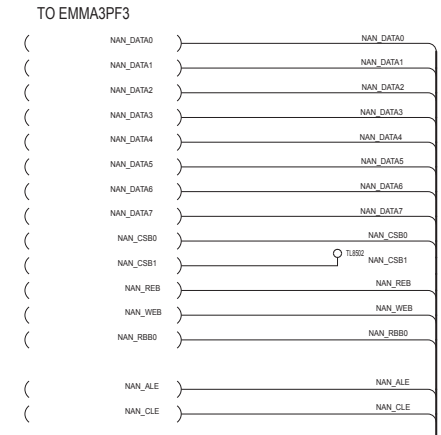
NAND

Note : NOT USE



BOOT STRAP

NDATA0	NAND_INFO[0]		
NDATA1	NAND_INFO[1]		
NDATA2	NAND_INFO[2]		
NDATA3	NAND_INFO[3]		
NDATA4	NAND_INFO[4]		
NDATA5	NAND_INFO[5]		
NDATA6	BOOT_MODE[0]		
NDATA7	BOOT_MODE[1]		
NCSB0	BOOT_MODE[2]		
NCSB1	ETHER_CLK_MODE		
NREB	SLCK_SEL		
NMLE	CPU_CLK_SEL[0]		
NCLE	CPU_CLK_SEL[1]		



SCHEMATIC DIAGRAMS - 5 MAIN4

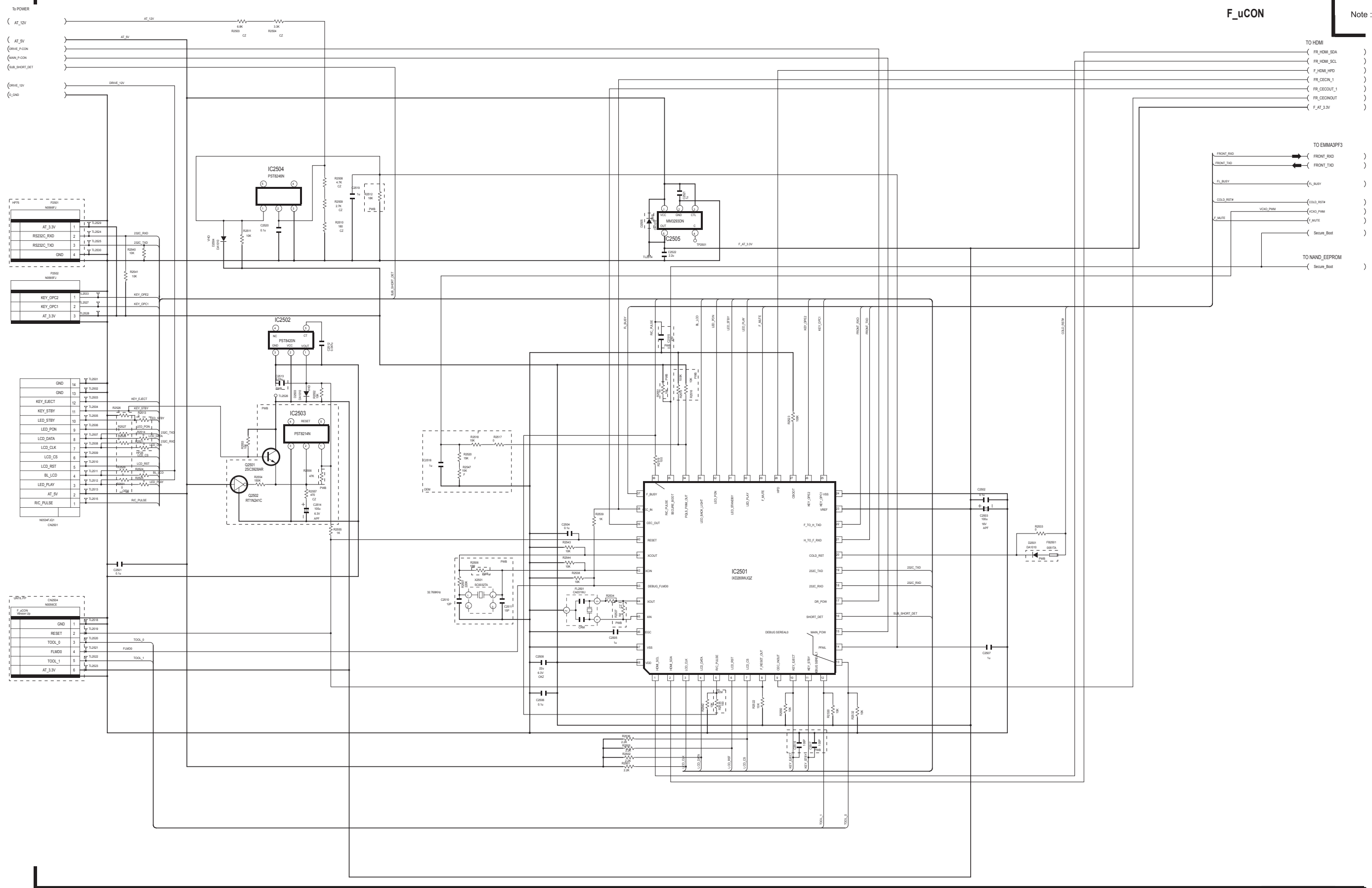
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F_uCON

Note: NOT USE

- TO HDMI
- FR_HDMI_SDA
- FR_HDMI_SCL
- F_HDMI_HPD
- FR_CECIN_1
- FR_CECOUT_1
- FR_CECINOUT
- F_AT_3.3V

- TO EMMA3PF3
- FRONT_RXD
- FRONT_TXD
- FRONT_TXD
- FL_BUSY
- COLD_RSTW
- VCDD_PPM
- F_MUTE
- Secure_Boot

- TO NAND_EEPROM
- Secure_Boot

TO POWER

AT_12V	AT_12V
AT_5V	AT_5V
DRIVE_P_CON	
MAIN_P_CON	
SUB_SHORT_DET	
DRIVE_12V	DRIVE_12V
GND	GND

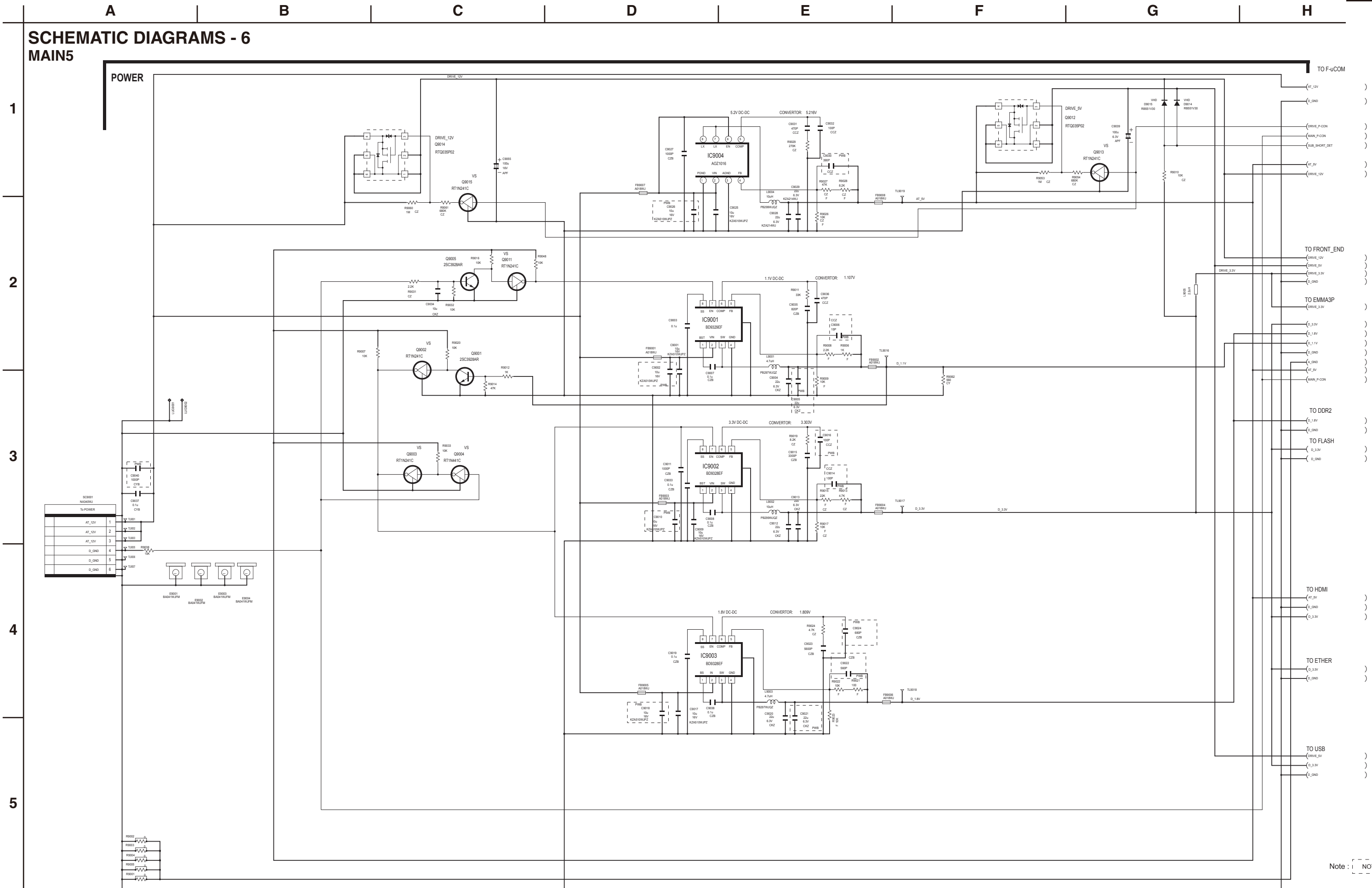
AT_3.3V	1	U2504
RS232C_RXD	2	U2504
RS232C_TXD	3	U2504
GND	4	U2504

KEY_OPC2	1	U2502
KEY_OPC1	2	U2502
AT_3.3V	3	U2502

GND	14	U2501
GND	13	U2501
KEY_ELECT	12	U2501
KEY_STBY	11	U2501
LED_STBY	10	U2501
LED_PON	9	U2501
LCD_DATA	8	U2501
LCD_CLK	7	U2501
LCD_CS	6	U2501
LCD_RST	5	U2501
BL_LCD	4	U2501
LED_PLAY	3	U2501
AT_5V	2	U2501
RC_PULSE	1	U2501

GND	1	U2504
RESET	2	U2504
TOOL_0	3	U2504
FLM00	4	U2504
TOOL_1	5	U2504
AT_3.3V	6	U2504

SCHEMATIC DIAGRAMS - 6
MAIN5



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IC9001	MAXIMUM	2xPOWER
AT_1.2V	1	
AT_1.2V	2	
AT_1.2V	3	
O_GND	4	
O_GND	5	
O_GND	6	

Note : NOT USE

SCHEMATIC DIAGRAMS - 7 MAIN6

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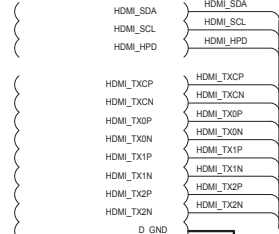
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HDMI

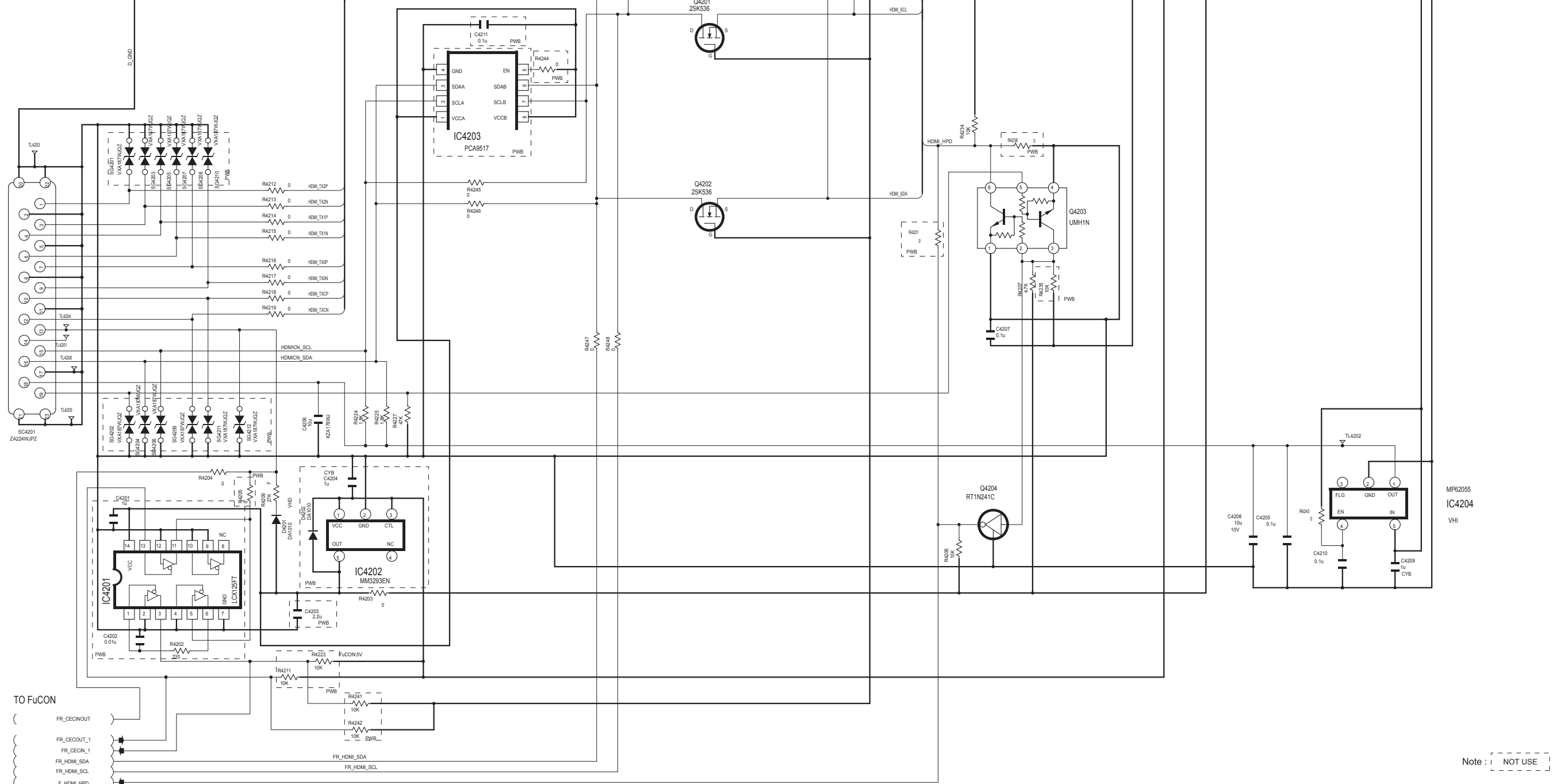
TO EMMA3PF3



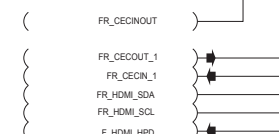
TO POWER



TO FuCON



TO FuCON



MP62055
IC4204
VHI

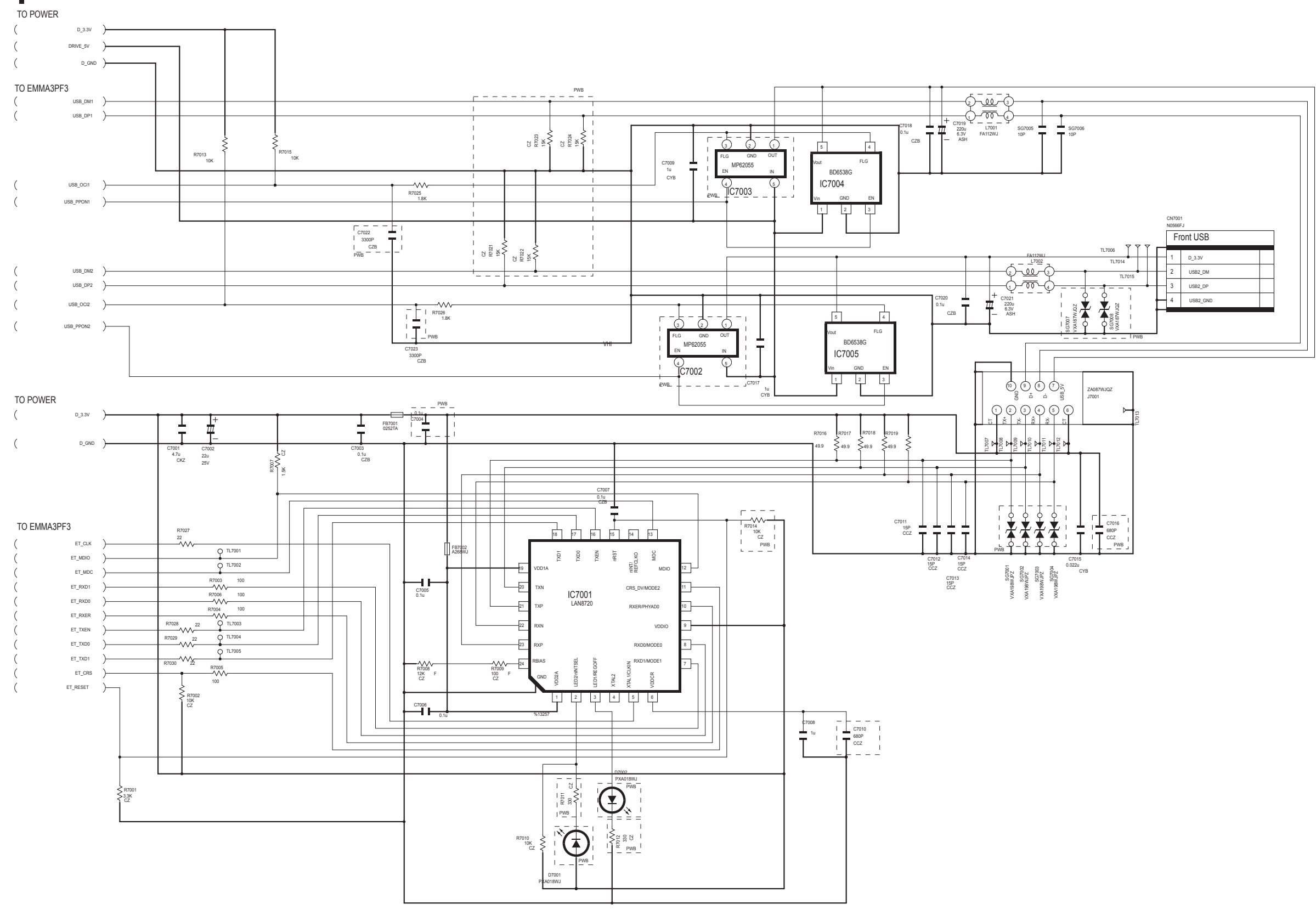
Note : [NOT USE]

SCHEMATIC DIAGRAMS - 8 MAIN7

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USB_Ether

Note : NOT USE



SCHEMATIC DIAGRAMS - 9 MAIN8

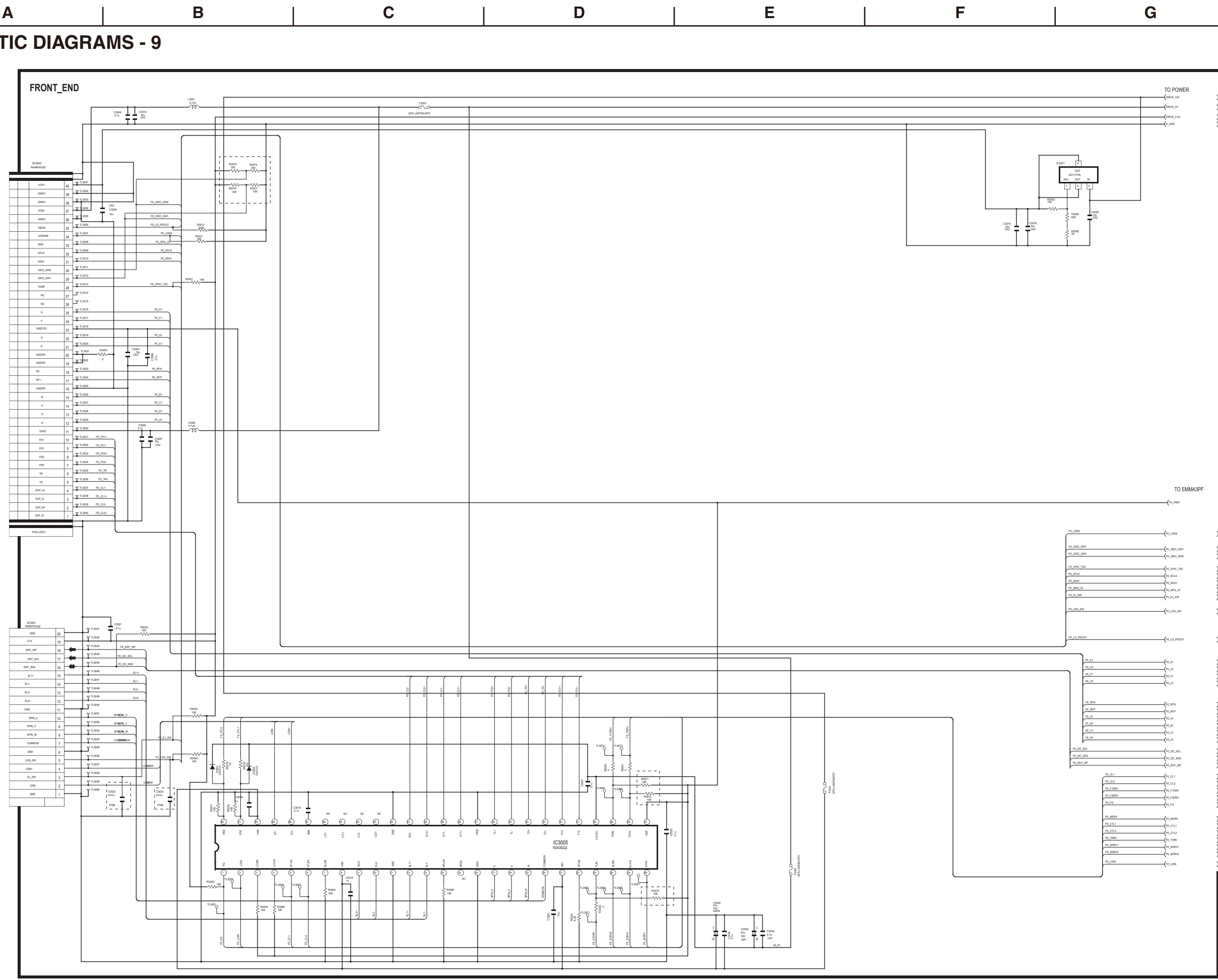
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Note: NOT USE

SCHEMATIC DIAGRAMS - 10 DISPLAY CIRCUIT

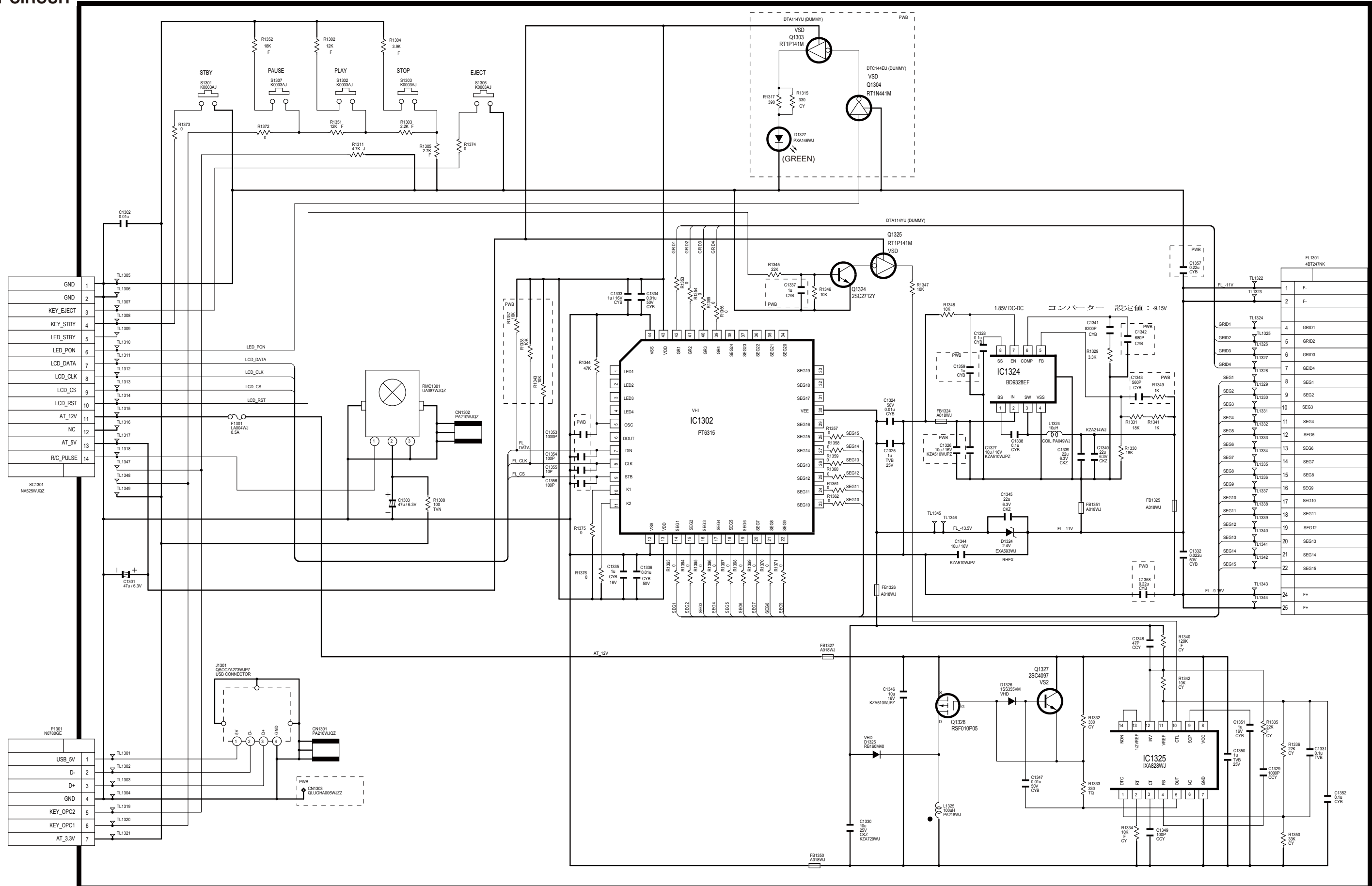
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GND	1
GND	2
KEY_EJECT	3
KEY_STBY	4
LED_STBY	5
LED_PON	6
LCD_DATA	7
LCD_CLK	8
LCD_CS	9
LCD_RST	10
AT_12V	11
NC	12
AT_5V	13
RIC_PULSE	14

USB_5V	1
D-	2
D+	3
GND	4
KEY_OPC2	5
KEY_OPC1	6
AT_3.3V	7

FL-11V	1	F-
TL1322	2	F-
TL1324	4	GRID1
TL1325	5	GRID2
TL1326	6	GRID3
TL1327	7	GRID4
TL1328	8	SEG1
TL1329	9	SEG2
TL1330	10	SEG3
TL1331	11	SEG4
TL1332	12	SEG5
TL1333	13	SEG6
TL1334	14	SEG7
TL1335	15	SEG8
TL1336	16	SEG9
TL1337	17	SEG10
TL1338	18	SEG11
TL1339	19	SEG12
TL1340	20	SEG13
TL1341	21	SEG14
TL1342	22	SEG15
FL-9.5V	24	F+
TL1344	25	F+

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