

TR-8

RHYTHM PERFORMER

SERVICE NOTES

Issued by RJA



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Cautionary Notes

Before beginning the procedure, please read through this document. The matters described may differ according to the model.

Back Up User Data!

User data may be lost during the course of the procedure. Refer to **Data Backup and Restore Operations** (p. 13) in the Service Notes and save the data. After completing the procedure, restore the backed-up data to the product.

Part Replacement

When replacing components near the power-supply circuit or a heat-generating circuit (such as a circuit provided with a heat sink or including a cement resistor), carry out the procedure according to the instructions with respect to the part number, direction, and attachment position (mounting so as to leave an air gap between the component and the circuit board, etc.).

Parts List

A component whose part code is ***** will not be supplied as a service part because one of the following reasons applies.

- Because it is supplied as an assembled part (under a different part code).
- Because a number of circuit boards are grouped together and supplied as a single circuit board (under a different part code).
- Because supply is prohibited due to copyright restrictions.
- Because reissuance is restricted.
- Because the part is made to order (at current market price).
- Because it is carried in electronic data on the Roland web site.
- Because it is a package or an accessory irrelevant to the function maintenance of the main body.
- Because it can be replaced with an article on the market. (battery or etc.)

Circuit Diagram

In the circuit diagram, "NIU" is an abbreviation for "Not in Use," and "UnPop" is an abbreviation for "Unpopulated." They both mean non-mounted components. The circuit board and circuit board diagram show silk-screened indications, but no components are mounted.

Specifications

Roland TR-8: DRUM SOUND MODULE

User Drum Kits

16

User Patterns

16

Steps per 1 measure

1 – 16 steps x 2 (Variation A/B)

Tempo

40 – 300

Instruments & Controls

BASS DRUM: LEVEL, TUNE, ATTACK, COMP, DECAY, INST SELECT
 SNARE DRUM: LEVEL, TUNE, SNAPPY, COMP, DECAY, INST SELECT
 LOW TOM, MID TOM, HIGH TOM, RIM SHOT, HAND CLAP, CLOSED
 HIHAT, OPEN HIHAT, CRASH CYMBAL, RIDE CYMBAL:
 LEVEL, TUNE, DECAY, INST SELECT

Effects & Controls

ACCENT: LEVEL, STEP
 REVERB: LEVEL, TIME, GATE, STEP
 DELAY: LEVEL, TIME, FEEDBACK, STEP
 EXTERNAL IN: LEVEL, SIDE CHAIN, STEP

Mode

TR-REC, PATTERN SELECT, INST PLAY, INST REC, DRUM KIT SEL,
 DRUM INST SEL

Controllers

VOLUME knob
 SCATTER knob
 TEMPO knob
 FINE knob
 SHUFFLE knob
 PADS: 16
 MODE buttons: 6
 CLEAR button
 VARIATION buttons: A, B
 SCALE button
 LAST STEP button
 START/STOP button
 SCATTER ON button
 SCATTER DEPTH button
 TAP button
 Power Switch (Rear)

Display

7 segments, 4 characters (LED)

Effects

REVERB, DELAY, SIDE CHAIN

Scatter

Types: 10

Nominal Input Level

-10 dBu

Input Impedance

100 kΩ

Nominal Output Level

-10/+4 dBu (Selectable)

Output Impedance

MIX OUT, ASSIGNABLE OUT: 1 kΩ
 PHONES: 130 Ω

Connectors

PHONES jack: 1/4-inch stereo phone type
 MIX OUT (L/MONO, R) jacks: 1/4-inch phone type
 ASSIGNABLE OUT (A, B) jacks: 1/4-inch phone type
 EXTERNAL IN (L, R) jacks: 1/4-inch phone type
 USB port: USB type B (Audio, MIDI)
 DC IN jack

USB

Audio, MIDI

Power Supply

AC adaptor

Current Draw

1000 mA

Dimensions

400 (W) x 260 (D) x 65 (H) mm
 15-3/4 (W) x 10-1/4 (D) x 2-9/16 (H) inches

Weight

1.9 kg
 4 lbs 4 oz

Accessories

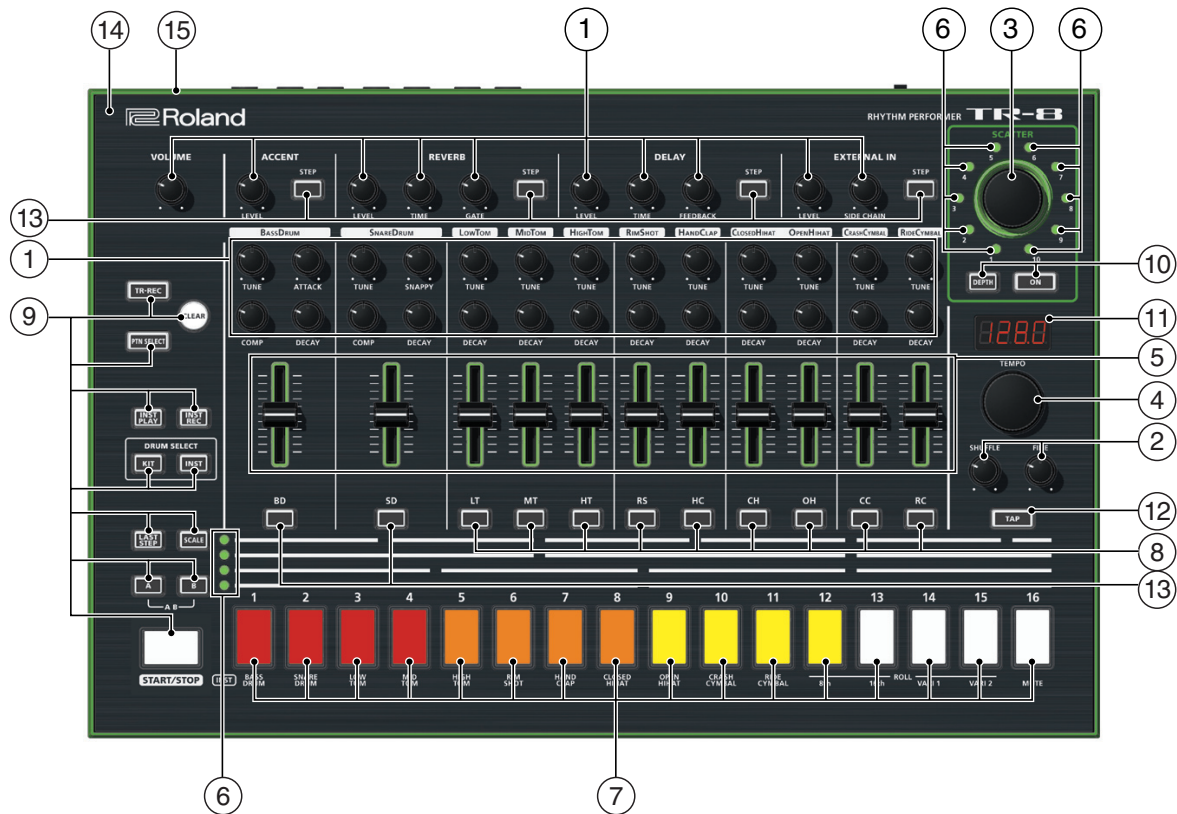
Owner's manual (#5100037158)
 Leaflet "USING THE UNIT SAFELY" (#*****)
 AC adaptor (#5100038307, #5100038306, #5100038308, #5100038309,
 #5100038311, #5100038310, #5100038312)

* 0 dBu = 0.775 Vrms

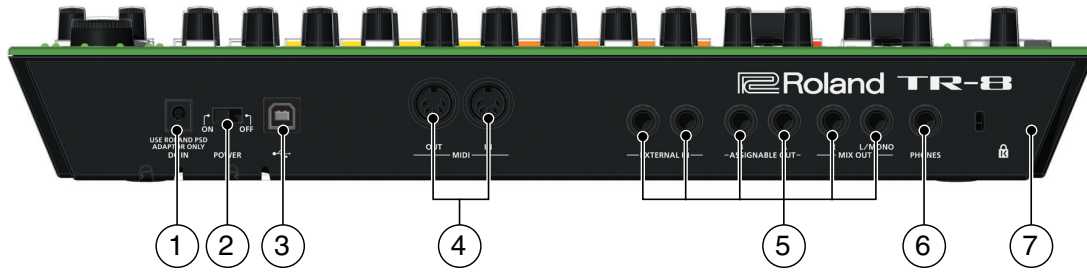
* Printed matters will not be supplied after the end of the production. Then,
 download the electronic file from the Roland web site.

* In the interest of product improvement, the specifications and/or appearance of
 this unit are subject to change without prior notice.

Location of Controls

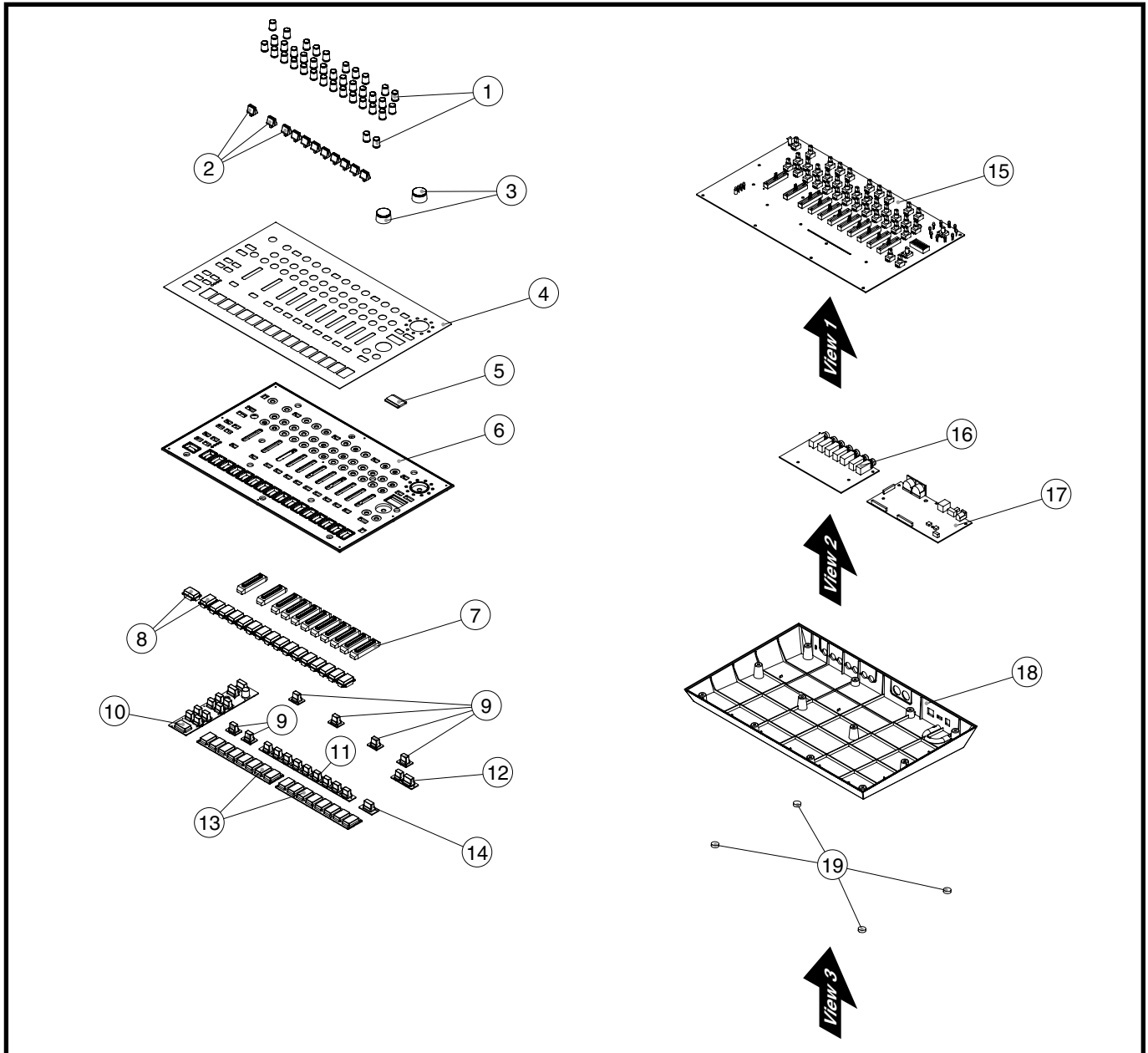


No.	Part Code	Part Name	Description	Q'ty
1	510009822	M R-KNOB(716-10014-01-00)	MF-ELA-A BLK/LCG	36
	5100036841	ROTARY POTENTIOMETER	XV09223NPV20F1B10K/I	36
2	510009822	M R-KNOB(716-10014-01-00)	MF-ELA-A BLK/LCG	2
	5100036842	ROTARY POTENTIOMETER	XV09223NPV20F1B10KCC/I	2
3	5100037190	M R-KNOB	KF-ELA BLK	1
	5100036843	ENCODER	EC12E1220407	1
4	5100037190	M R-KNOB	KF-ELA BLK	1
	5100037130	ENCODER	XRE012505PVB15FINB1-2-24PCEI	1
5	5100037876	S-KNOB ESCUTCHEON	CLR	11
	5100037191	J S-KNOB	M BLK/LCG	11
	5100037657	SLIDE POTENTIOMETER	C3080G1AV1B103BA00B3	11
	5100036498	LED	WW-GIS190TS-G	22
6	5100036511	LED	WW03A3SGQ4-N2	14
	5100037163	LED SPACER	LEDH-7.5	14
7	5100037877	KEY CAP CLR		16
	5100037883	RUBBER SW	8P	2
	5100036746	LED	WW-FCE50TC-Q1(BTF)	16
8	5100037881	RUBBER SW	9P	1
	5100036498	LED	WW-GIS190TS-G	9
9	5100037877	KEY CAP CLR		1
	5100037882	RUBBER SW	12P	1
	5100036498	LED	WW-GIS190TS-G	12
10	5100037880	RUBBER SW	2P	1
	5100036498	LED	WW-GIS190TS-G	2
11	*****	DISPLAY COVER	included in Top Panel Assy	1
	5100036722	LED	A-364SRD	1
12	5100037879	RUBBER SW	1P TAP	1
	5100036498	LED	WW-GIS190TS-G	1
13	5100037878	RUBBER SW	1P	6
	5100036498	LED	WW-GIS190TS-G	6
14	5100040131	TOP CASE ASSY	TOP CASE + PANEL SHEET	1



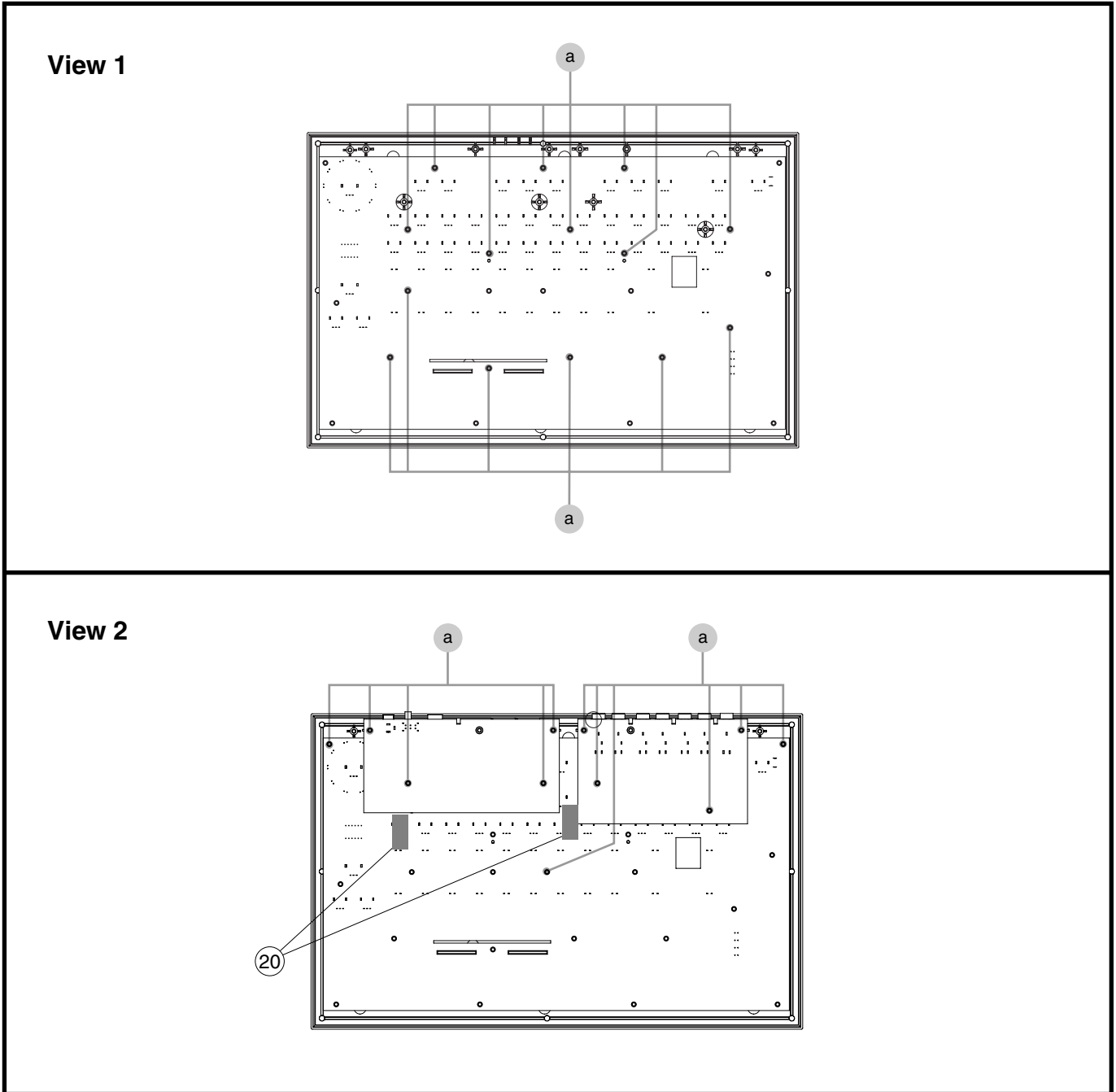
No.	Part Code	Part Name	Description	Q'ty
1	02341634	DC JACK	HTJ-020-05A	1
2	5100036799	SWITCH	SKI-22H07-G9-TS	1
3	5100010665	USB CONNECTOR B TYPE FEMALE	2549A-04G2T(610-02001-04-00)	1
4	02892878	DIN (MIDI) JACK	2DJ-00600003	2
5	13449275	6.5MM JACK	YKB21-5074	6
6	02897334	6.5MM JACK	HTJ-064-10D	1
7	5100037875	BOTTOM CASE		1

Exploded View



No.	Part Code	Part Name	Description	Q'ty
1	510009822	M R-KNOB(716-10014-01-00)	MF-ELA-A BLK/LCG	38
2	5100037191	J S-KNOB	M BLK/LCG	11
3	5100037190	M R-KNOB	KF-ELA BLK	2
	5100040131	TOP CASE ASSY	TOP CASE + PANEL SHEET	1
	* This unit includes the following parts.			
4	*****	PANEL SHEET		1
5	*****	DISPLAY COVER		1
6	*****	TOP CASE		1
7	5100037876	S-KNOB ESCUTCHEON	CLR	11
8	5100037877	KEY CAP CLR		17
9	5100037878	RUBBER SW	1P	6
10	5100037882	RUBBER SW	12P	1
11	5100037881	RUBBER SW	9P	1
12	5100037880	RUBBER SW	2P	1
13	5100037883	RUBBER SW	8P	2
14	5100037879	RUBBER SW	1P TAP	1
15	5100035507	PANEL BOARD ASSY		1
16	5100035510	JACK BOARD ASSY		1
17	5100035503	MAIN BOARD ASSY		1
18	5100037875	BOTTOM CASE		1
19	00340690	FOOT ZULEN (CUSHION)	XCK040 12MM	4

Plane View (View 1, 2)



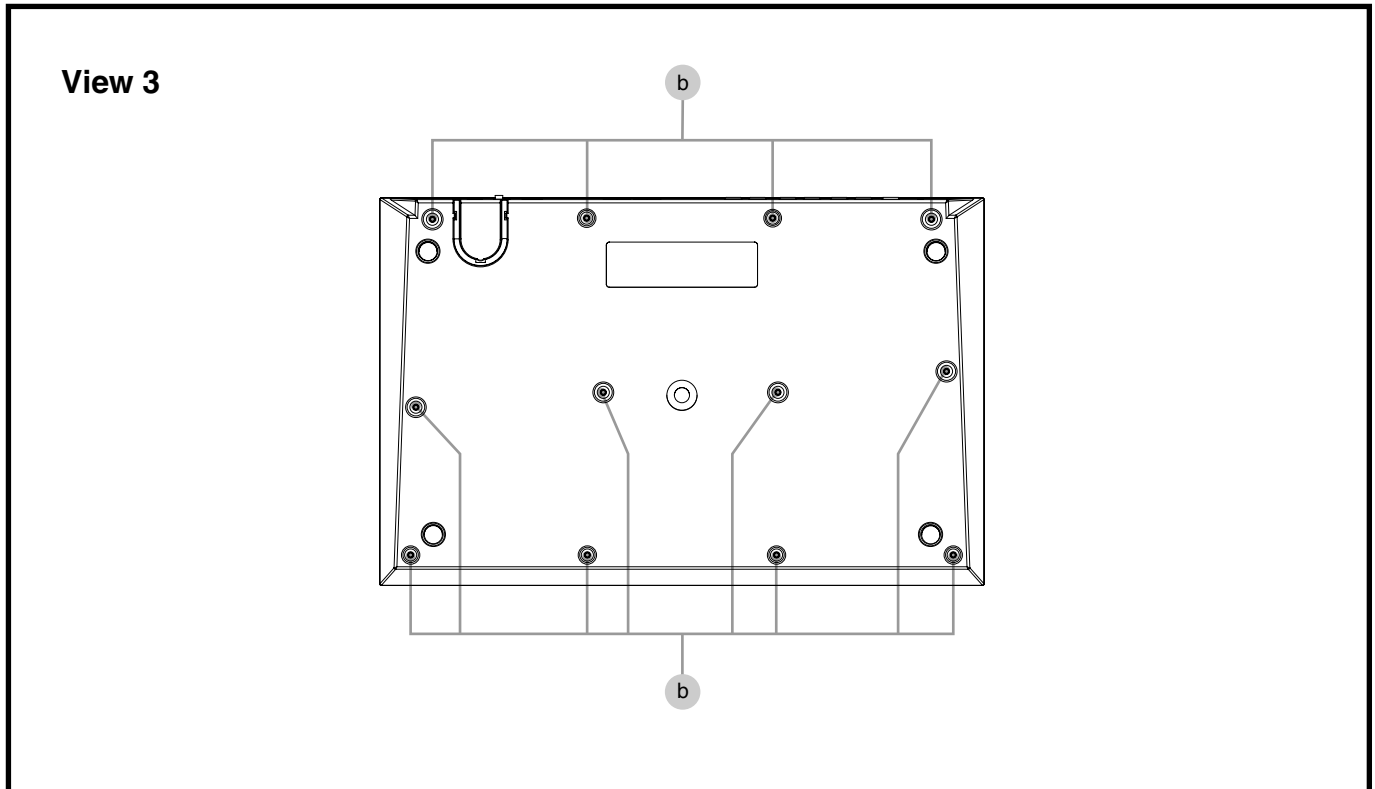
View 1

No.	Part Code	Part Name	Description	Q'ty
a	40011278	SCREW 3X8	BINDING TAPTITE P FE ZC	14

View 2

No.	Part Code	Part Name	Description	Q'ty
20	40122612	ACETATE TAPE	NITTO #5 BLACK W10MM 30M 20P	-
a	40011278	SCREW 3X8	BINDING TAPTITE P FE ZC	11

Plane View (View 3)



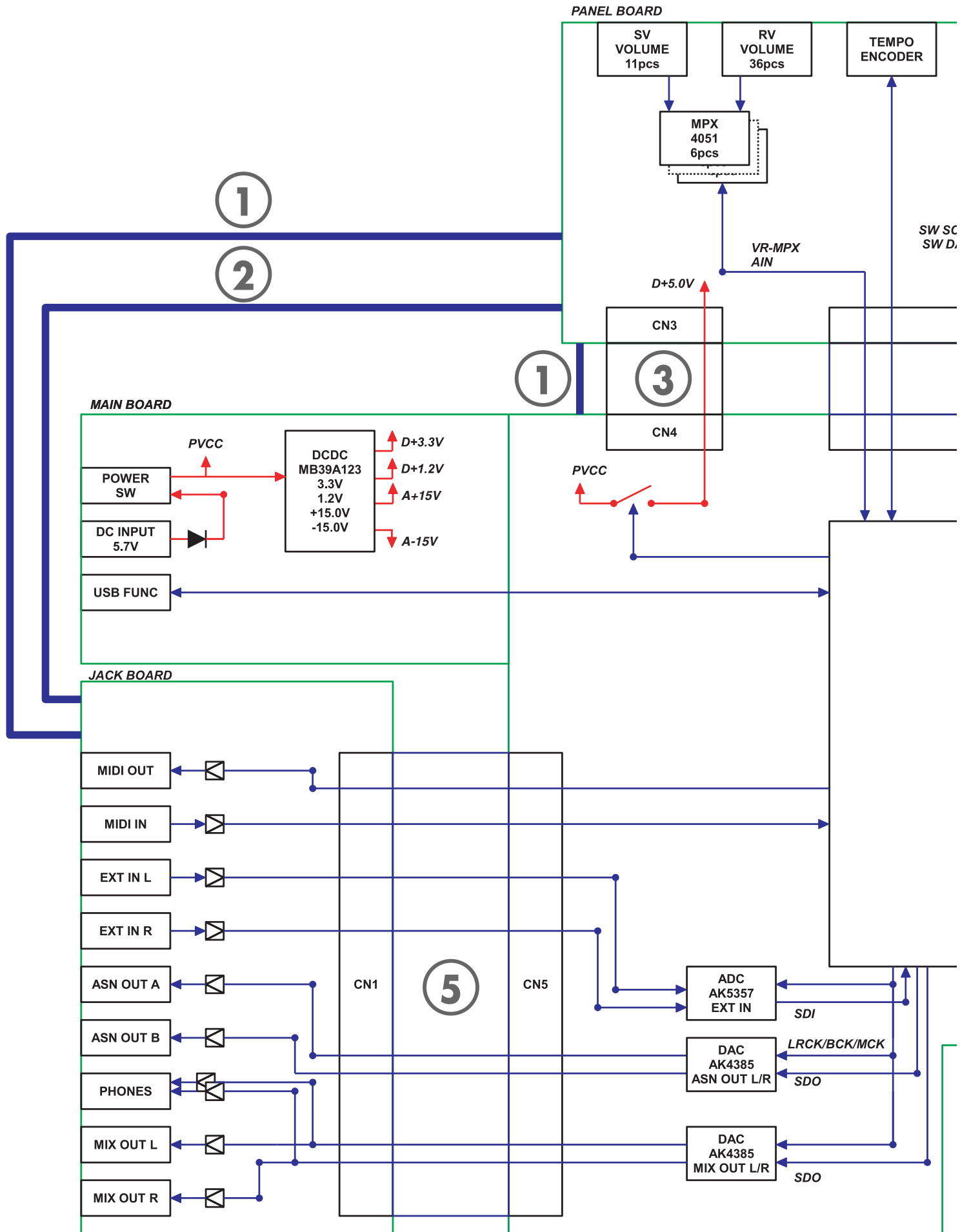
View 3

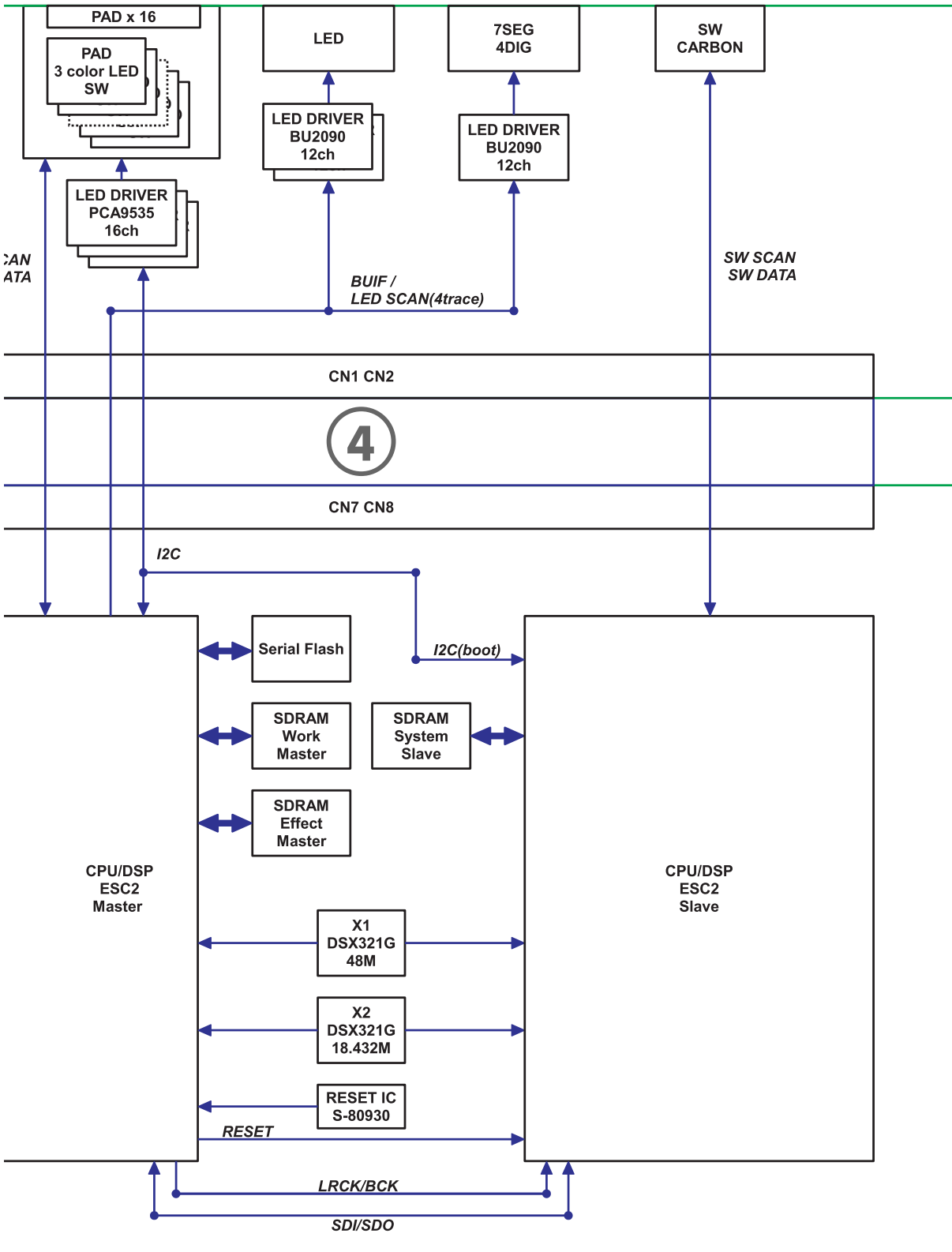
No.	Part Code	Part Name	Description	Q'ty
b	40011323	SCREW 3X10	BINDING TAPTITE P BZC	12

Disassembly Procedure

1. Remove all screws **b** (12) in **Plane View (View 3)** (p. 8).
2. With the unit inverted, raise the front end of the bottom case to disengage it, and detach the bottom case.
When assembling, fit the jacks at the rear into the holes.

Wiring Diagram/Block Diagram





No.	Part Code	Part Name	Description	Q'ty
1	05012067	WIRING	J-1	2
2	5100039172	WIRING	1007#20 1X80 SRA-21T-3	1
3	5100038612	WIRING	1061#24 4X260-PHR-PHR-F	1
4	5100039160	FLAT CABLE	SML2SC-30(2)X120-BDX6(BL)-P1.0	2
5	5100038611	WIRING	1061#28 16X80-PHR-PHR-F	1

Parts List

Safety Precautions:
The parts marked Δ have safety-related characteristics. Use only listed parts for replacement.

Due to one or more of the following reasons, parts with parts code ***** cannot be supplied as service parts.

- Part supplied only as a component in a complete assembly
- Copyright does not permit the part to be supplied
- Part is sold commercially

Note: The parts marked # are new. (initial parts) The description "Q'ty" means a necessary number of the parts per one product.

CASING				
#	5100040131	TOP CASE ASSY	TOP CASE + PANEL SHEET	1
#	5100037875	BOTTOM CASE		1
KNOB, BUTTON				
	5100037191	J S-KNOB	M BLK/LCG	11
	5100037190	M R-KNOB	KF-ELA BLK	2
	5100009822	M R-KNOB(716-10014-01-00)	MF-ELA-A BLK/LCG	38
#	5100037878	RUBBER SW	1P	6
#	5100037879	RUBBER SW	1P TAP	1
#	5100037880	RUBBER SW	2P	1
#	5100037883	RUBBER SW	8P	2
#	5100037881	RUBBER SW	9P	1
#	5100037882	RUBBER SW	12P	1
#	5100037877	KEY CAP CLR		17
SWITCH				
	5100036799	SWITCH	SKI-22H07-G9-TS	1
JACK, EXT TERMINAL				
	02897334	6.5MM JACK	HTJ-064-10D	1
	13449275	6.5MM JACK	YKB21-5074	6
	02341634	DC JACK	HTJ-020-05A	1
	02892878	DIN (MIDI) JACK	2DJ-00600003	2
	5100010665	USB CONNECTOR B TYPE FEMALE	2549A-04G2T(610-02001-04-00)	1
PWB ASSY				
#	5100035503	MAIN BOARD ASSY		1
#	5100035510	JACK BOARD ASSY		1
#	5100035507	PANEL BOARD ASSY		1
DIODE				
#	5100036722	LED	A-364SRD	1
	5100036511	LED	WW03A3SGQ4-N2	14
#	5100036746	LED	WW-FCE50TC-Q1(BTF)	16
	5100036498	LED	WW-GIS190TS-G	52
POTENTIOMETER				
	5100037130	ENCODER	XRE012505PVB15FINB1-2-24PCEI	1
	5100036843	ENCODER	EC12E1220407	1
#	5100036842	ROTARY POTENTIOMETER	XV09223NPV20F1B10KCC/I	2
	5100036841	ROTARY POTENTIOMETER	XV09223NPV20F1B10K/I	36
#	5100037657	SLIDE POTENTIOMETER	C3080G1AV1B103BA00B3	11
WIRING, CABLE				
#	5100039160	FLAT CABLE	SML2SC-30(2)X120-BDX6(BL)-P1.0	2
#	5100039172	WIRING	1007#20 1X80 SRA-21T-3	1
#	5100038612	WIRING	1061#24 4X260-PHR-PHR-F	1
#	5100038611	WIRING	1061#28 16X80-PHR-PHR-F	1
	05012067	WIRING	J-1	2
SCREWS				
	40011278	SCREW 3X8	BINDING TAPTITE P FE ZC	25
	40011323	SCREW 3X10	BINDING TAPTITE P BZC	12

MISCELLANEOUS

#				
	5100037876	S-KNOB ESCUTCHEON	CLR	11
	5100037163	LED SPACER	LEDH-7.5	14
	40122612	ACETATE TAPE	NITTO #5 BLACK W10MM 30M 20P	-
	40122490	DOUBLE-FACED TAPE	#500 W5MM 20M 40P	-
	00340690	FOOT ZULEN (CUSHION)	XCK040 12MM	4

ACCESSORIES (Standard)

#				
	△ 5100038305	AC ADAPTOR (100V)	PSD-100 (NEW DC PLUG)	for 100V 1
	△ 5100038307	AC ADAPTOR (117VBL)	PSD-120Z (NEW DC PLUG)	for 117VBL 1
	△ 5100038306	AC ADAPTOR (117VU TW U/CS)	PSD-120 (NEW DC PLUG)	for 117VU, 117VU/CS 1
	△ 5100038308	AC ADAPTOR (220VCN)	PSD-220 (NEW DC PLUG)	for 220VCNR 1
	△ 5100038309	AC ADAPTOR (220VK)	PSD-220K (NEW DC PLUG)	for 220VK 1
	△ 5100038311	AC ADAPTOR (230VE)	PSD-230E (NEW DC PLUG)	for 230VE 1
	△ 5100038310	AC ADAPTOR (230VEU)	PSD-230 (NEW DC PLUG)	for 230VEU 1
	△ 5100038312	AC ADAPTOR (240VA)	PSD-240 (NEW DC PLUG)	for 240VA 1
#	5100037158	OWNER'S MANUAL	MULTILANGUAGE	1

Verifying the Version

It can be verified in the Test Mode. Follow the procedure described below.

1. Hold down pads **14** and **16** and switch on the power.
START/STOP flashes.
2. Press **START/STOP**.
The system version appears on the 7-segment LED display.
3. Switch off the power.

Data Backup and Restore Operations

User data is of the following three types.

- Pattern
- Kit
- System settings

Pattern and kit

A pattern and kit cannot be backed up onto external media.

Backing Up System Settings

Follow the procedure below to write down on a piece of paper.

1. Hold down **PTN SELECT** and switch on the power.
START/STOP flashes.
2. The values of the following parameters are displayed. Write down on a piece of paper.

Display location	Parameter	Values or Status
7-segment LED display	MIDI channel	OFF, C1 through C16, OMn
Pad 1	MIDI clock source	Auto (lit), Internal (unlit)
Pad 2	MIDI thru	On (lit), Off (unlit)
Pad 3	Boot mode	On (lit), Off (unlit)
Pad 4	EXTERNAL IN select	Stereo (lit), Mono (Unlit)

3. Press and hold Variation **A**, and write down the name of the buttons under the slide controls (**BD** through **RC**) that light up while Variation **A** is depressed.
4. Press and hold Variation **B**, and write down the name of the buttons under the slide controls (**BD** through **RC**) that light up while Variation **B** is depressed.

5. Hold down **TAP** and write down the values of the following parameter.

Display location	Parameter	Values or Status
7-segment LED display	Screen saver start time	Off, 1 through 30

Restoring System Settings

1. Hold down **PTN SELECT** and switch on the power.
START/STOP flashes.
2. Turn the **TEMPO** control to set the MIDI channel (**OFF**, **C1** through **C16**, **OMn**).
3. Press pad **1** to set the MIDI clock source to Auto (lit) or Internal (unlit).
4. Press pad **2** to set the MIDI through to On (lit) or Off (unlit).
5. Press pad **3** to set the BOOST mode to On (lit) or Off (unlit).
6. Press pad **4** to set the EXTERNAL IN select to stereo (lit) or mono (unlit).
7. Hold down Variation **A** and press the buttons (**BD** through **RC**) that you noted down to make it light up.
The setting is made so that the instruments on the buttons pressed are output via **ASSIGNABLE OUT A**.
8. Hold down Variation **B** and press the buttons (**BD** through **RC**) that you noted down to make it light up.
The setting is made so that the instruments on the buttons pressed are output via **ASSIGNABLE OUT B**.
9. Hold down **TAP** and turn the **TEMPO** control to set the time at which the screen saver appears.

Performing a Factory Reset

* Executing a factory reset resets patterns, kits, and all other settings to their factory defaults.

1. Hold down **CLEAR** and switch on the power.
rSt appears on the 7-segment LED display and **START/STOP** flashes.
2. To execute the factory reset, press **START/STOP**. To cancel it, switch off the power.
When the factory reset has finished, the **SCATTER 1** through **10** LED light up.
3. Reset the power.

Updating the System

Items Required

- Computer
- USB cable
- Update program (obtained via Service Net)

Procedure

1. Unarchive the update program inside a folder on the computer.
2. Hold down pad **1** and switch on the power.
BD through **RC** flash.
3. Connect the computer to the USB port.
BD and pad **1** flash.
The **TR-8** folder appears on the computer.
4. Copy the following files in the update program to the **TR-8** folder.
 - TR8_ROM.BIN
 - ROMSUM.TXT
 - ROMINFO.TXT
5. End the USB connection and detach the USB cable.
SD and pad **2** flash.
6. Press pad **2**.
LT and pad **3** flash and the **SCATTER** LEDs flash and light up in sequence, beginning with **1**.

The **SCATTER** LEDs light up from **1** to **10**, and when **BD** through **RC** as well as pads **1** through **16** flash, the update has finished.
7. Switch off the power.

Test Mode

Items Required

- Computer (running Windows or Macintosh)
- Oscillator
- Noise Meter
- * Unless specified otherwise, perform measurement at DIN audio.
- Amp-equipped monitor speakers
- Headphones
- USB cable
- MIDI cable
- Audio cable (for connecting the noise meter and monitor speakers)

Entering the Test Mode

1. Connect the computer to the USB port and connect the **MIDI IN** and **MIDI OUT** connectors using a MIDI cable.
2. Adjust all round controls and slide controls to the minimized positions.
3. Hold down pads **14** and **16** and switch on the power.

Quitting the Test Mode

Switch off the power.

Selecting Test Items

After Entering the Test Mode

1. Turn the **TEMPO** control to select the test item.
The test number appears on the 7-segment LED display.
2. Press **START/STOP**.

Executing Test Items

1. Hold down **TAP** and turn the **TEMPO** control to select the test item.
The test number appears on the 7-segment LED display.
2. Press **START/STOP**.

Test Items

1. **Version Display** (p. 15)
2. **Device Test** (p. 15)
3. **LED and Switch Check** (p. 15)
4. **Pad check** (p. 15)
5. **Encoder and 7-segment LED Check** (p. 15)
6. **Slide Volume Check** (p. 16)
7. **Rotary Volume Check** (p. 16)
8. **Audio Check** (p. 16)
9. **Factory Reset** (p. 17)
10. **Pop Noise Check** (p. 17)

1. Version Display

START/STOP flashes.

1. Press **START/STOP**.

The system version appears on the 7-segment LED display.

Version	Display
1.00	100
1.01	101
1.02	102
1.03	103

2. Press **START/STOP** to advance to the next test item.

2. Device Test

* Before entering this test item, connect the computer to the USB port, and use the MIDI cable to connect the **MIDI IN** and **MIDI OUT** connectors.

The operation of the following devices is checked automatically. If a problem is found, the device number is displayed on the 7-segment LED display.

- (1) Serial ROM
- (2) Serial RAM1
- (3) Effect RAM
- (4) System RAM2
- (5) MIDI connection
- (6) USB connection

If all devices are free of problem, **OK** appears on the 7-segment LED display, and **START/STOP** flashes.

* An error message appears if no driver for the TR-8 is installed and set up on the computer, but if the device check finds no problems, that message can safely be ignored.

Press **START/STOP** to advance to the next test item.

3. LED and Switch Check

All buttons and LEDs except **CLEAR** light up.

1. Verify that the respective LEDs light up in the color shown below.

Lighted location	Color
Pad	White
7-segment LED display	Red
Others	Green

* The slide-control section has one LED each at the top and bottom (front and back), and when only one lights up, the upper half or lower half is dark, so carry out verification with care.

* Verify that the white pad LEDs show no variation in color.

2. Subject the unit to impact and verify that the LEDs do not go dark or disappear.
3. Press **START/STOP**.
All LEDs light up.
4. Press **START/STOP**.
The LED-equipped buttons light up randomly, one at a time.

5. Press the lighted button and verify that they go dark.

* When the 4 LEDs arranged vertically to the right of the **SCALE** button light up, press **CLEAR** (4 times).

* An incorrect press makes all pads flash. In this case, re-enter this test item. (Hold down **TAP** and turn the **TEMPO** control.)

When all buttons have been checked, **OK** appears on the 7-segment LED display and **START/STOP** flashes.

6. Press **START/STOP** to advance to the next test item.

4. Pad check

All pads light up red.

1. Press **START/STOP**.

All pads light up blue.

2. Press **START/STOP**.

All pads light up green.

3. Press **START/STOP**.

The pad lights up white randomly, one at a time.

4. Press the lighted pad and verify that they go dark.

When all pads have been checked, **OK** appears on the 7-segment LED display and **START/STOP** flashes.

5. Press **START/STOP** to advance to the next test item.

5. Encoder and 7-segment LED Check

The **SCATTER 1** LED flashes and the **2** through **10** LED light up.

1. Slowly turn the **SCATTER** control clockwise, one click at a time.

The LED goes dark one at a time, and the next LED flashes.

2. When the **10** LED flashes, turn the control one click further, and verify that the **1** LED flashes.

3. Turn the control one click further, and verify that the **2** LED flashes.

4. Turn the control clockwise by one more click.

The **10** LED flashes and the **1** through **9** LED light up.

5. Slowly turn the **SCATTER** control counterclockwise, one click at a time.

The LED goes dark one at a time, and the next LED flashes.

6. When the **1** LED flashes, turn the control one click further, and verify that the **10** LED flashes.

7. Turn the control one click further, and verify that the **9** LED flashes.

8. Turn the control counterclockwise by one more click.

The **SCATTER** LEDs all go dark, and a single segment in the leftmost digit of the 7-segment LED display lights up.

9. Slowly turn the **TEMPO** control clockwise, one click at a time.

The 7-segment LED display lights up one segment at a time. When one digit lights up fully, it then goes dark and the segments in the next digit begin to light up at a time.

When illumination of the three digits on the left has been verified, one segment in the rightmost digit lights up.

10. Slowly turn the **TEMPO** control counterclockwise, one click at a time.

In the same way, verify the three digits on the right, **OK** appears on the 7-segment LED and **PLAY/STOP** flashes.

11. Press **START/STOP** to advance to the next test item.

6. Slide Volume Check

* Before entering this test item, adjust all slide controls to the minimized positions.

- Operate the lighted slide controls in sequence to maximum. When all slide volumes have been checked, **OK** appears on the 7-segment LED display and **PALY/STOP** flashes.
- Press **START/STOP** to advance to the next test item.

7. Rotary Volume Check

* Before entering this test item, adjust all round controls to the minimized positions.

- Turn the round control in the lighted-button section shown on the 7-segment LED display to maximum.
 - The test starts from the **VOLUME** control at the upper left.
- Turn the **TAP FINE** control to maximum at the end. **TAP** flashes.
- Adjust the **SHUFFLE** control to the center position, then adjust the **FINE** control to the center position. **OK** appears on the 7-segment LED display and **START/STOP** flashes.
- Press **START/STOP** to advance to the next test item.

8. Audio Check

- Connect the oscillator to the **EXTERNAL IN L** and **R** jacks.

MIDI OUT Test

- Connect the noise meter to the **MIX OUT L/MONO** and **R** jacks.
- Press pad 1. Input and output are set as follows. Input: MAX, Boost: OFF, Mute: OFF
- Verify that the residual noise at the **MIX OUT L/MONO** and **R** jacks is as shown below.

Input signal	Output jack	Output signal
None	MIXOUT L	-85 dBm or lower (JIS-A)
None	MIXOUT R	-85 dBm or lower (JIS-A)

* If noise values fluctuation greatly and cannot be measured, change the filters on the noise meter as shown below and carry out measurement.

Input signal	Output jack	Output signal
None	MIX OUT L	-85 dBm or less (DIN audio)
None	MIX OUT R	-55 dBm or less (Flat)

None	MIX OUT R	-85 dBm or less (DIN audio)
None	MIX OUT R	-55 dBm or less (Flat)

- Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	100 Hz, +7 dBm, sine wave	MIX OUT L	+6 ±1 dBm
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	MIX OUT L	+6 ±1 dBm
EXTERNAL IN L	10 kHz, +7 dBm, sine wave	MIX OUT L	+6 ±1 dBm

EXTERNAL IN R	100 Hz, +7 dBm, sine wave	MIX OUT R	+6 ±1 dBm
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	MIX OUT R	+6 ±1 dBm
EXTERNAL IN R	10 kHz, +7 dBm, sine wave	MIX OUT R	+6 ±1 dBm

- Press pad 2. Input and output are set as follows. Input: MAX, Boost: ON, Mute: OFF
- Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	MIX OUT L	+20 ±1 dBm
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	MIX OUT R	+20 ±1 dBm

- Detach the plug from the **MIX OUT R** jack.
- Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	MIX OUT L	+14 ±1 dBm

- Insert the plug to the **MIX OUT R** jack again.
- Press pad 3. Input and output are set as follows. Input: MAX, Boost: OFF, Mute: ON
- Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	MIX OUT L	-30 dBm or lower
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	MIX OUT R	-30 dBm or lower

ASSIGNABLE OUT Test

- Connect the noise meter to the **ASSIGNABLE OUT A** and **B** jacks.
- Press pad 1. Input and output are set as follows. Input: MAX, Boost: OFF, Mute: OFF
- Verify that the residual noise at the **ASSIGNABLE OUT A** and **B** jacks is as shown below.

Input signal	Output jack	Output signal
None	ASSIGNABLE A	-85 dBm or lower (JIS-A)
None	ASSIGNABLE B	-85 dBm or lower (JIS-A)

* If noise values fluctuation greatly and cannot be measured, change the filters on the noise meter as shown below and carry out measurement.

Input signal	Output jack	Output signal
None	ASSIGNABLE A	-85 dBm or less (DIN audio)
None	ASSIGNABLE A	-60 dBm or less (Flat)

None	ASSIGNABLE B	-85 dBm or less (DIN audio)
None	ASSIGNABLE B	-60 dBm or less (Flat)

- Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	100 Hz, +7 dBm, sine wave	ASSIGN-ABLE A	+6 ±1 dBm
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	ASSIGN-ABLE A	+6 ±1 dBm
EXTERNAL IN L	10 kHz, +7 dBm, sine wave	ASSIGN-ABLE A	+6 ±1 dBm

EXTERNAL IN R	100 Hz, +7 dBm, sine wave	ASSIGN-ABLE B	+6 ±1 dBm
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	ASSIGN-ABLE B	+6 ±1 dBm
EXTERNAL IN R	10 kHz, +7 dBm, sine wave	ASSIGN-ABLE B	+6 ±1 dBm

5. Press pad 2.

Input and output are set as follows.

Input: MAX, Boost: ON, Mute: OFF

6. Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	ASSIGN-ABLE A	+20 ±1 dBm
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	ASSIGN-ABLE B	+20 ±1 dBm

7. Press pad 3.

Input and output are set as follows.

Input: MAX, Boost: OFF, Mute: ON

8. Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	ASSIGN-ABLE A	-30 dBm or lower
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	ASSIGN-ABLE B	-30 dBm or lower

PHONES Test

1. Connect the noise meter to the **PHONES** jacks (L and R).

2. Press pad 1.

Input and output are set as follows.

Input: MAX, Boost: OFF, Mute: OFF

3. Verify that residual noise at the **PHONES** jacks (L and R) is at the following value.

Input signal	Output jack	Output signal
None	PHONES L	-75 dBm or lower (JIS-A)
None	PHONES R	-75 dBm or lower (JIS-A)

* If noise values fluctuation greatly and cannot be measured, change the filters on the noise meter as shown below and carry out measurement.

Input signal	Output jack	Output signal
None	PHONES L	-68 dBm or less (DIN audio)
None	PHONES L	-43 dBm or less (Flat)

None	PHONES R	-68 dBm or less (DIN audio)
None	PHONES R	-43 dBm or less (Flat)

4. Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	100 Hz, +7 dBm, sine wave	PHONES L	+18 ±1 dBm
EXTERNAL IN L	1 kHz, +7 dBm, sine wave	PHONES L	+18 ±1 dBm
EXTERNAL IN L	10 kHz, +7 dBm, sine wave	PHONES L	+18 ±1 dBm

EXTERNAL IN R	100 Hz, +7 dBm, sine wave	PHONES R	+18 ±1 dBm
EXTERNAL IN R	1 kHz, +7 dBm, sine wave	PHONES R	+18 ±1 dBm
EXTERNAL IN R	10 kHz, +7 dBm, sine wave	PHONES R	+18 ±1 dBm

5. Press pad 3.

Input and output are set as follows.

Input: MAX, Boost: OFF, Mute: ON

6. Input signals shown in the table below and verify that the corresponding output values are obtained.

Input jack	Input signal	Output jack	Output signal
EXTERNAL IN L	1 kHz sine wave at -20 dBm	PHONES L	-30 dBm or lower
EXTERNAL IN R	1 kHz sine wave at -20 dBm	PHONES R	-30 dBm or lower

START/STOP flashes.

7. Press **START/STOP** to advance to the next test item.

9. Factory Reset

rSt appears on the 7-segment LED display.

1. Press **START/STOP**.

A factory reset is executed and **End** appears on the 7-segment LED display.

2. Switch off the power.

10. Pop Noise Check

1. Connect the headphones to the **PHONES** jack.

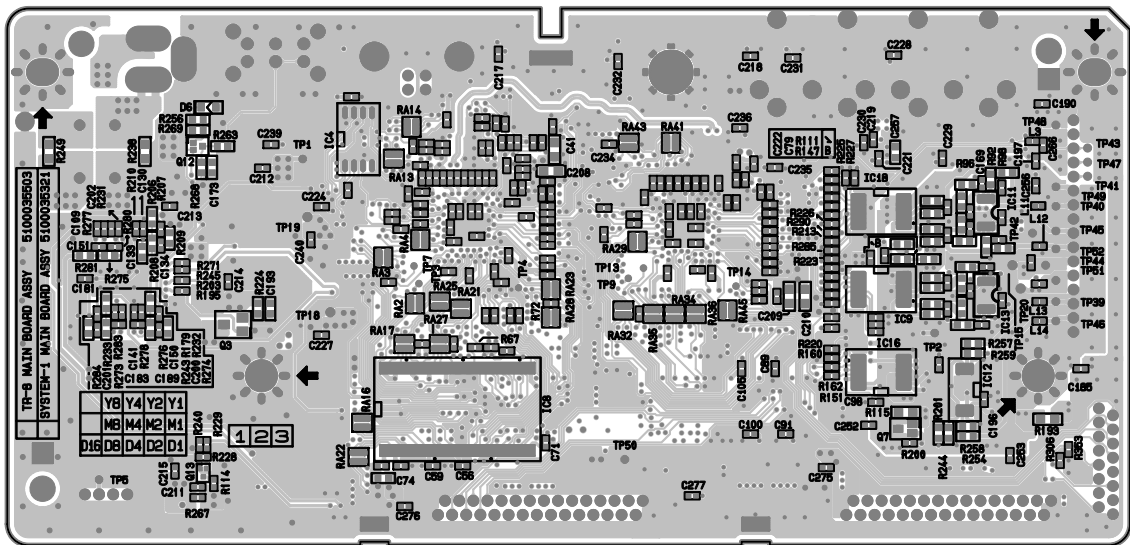
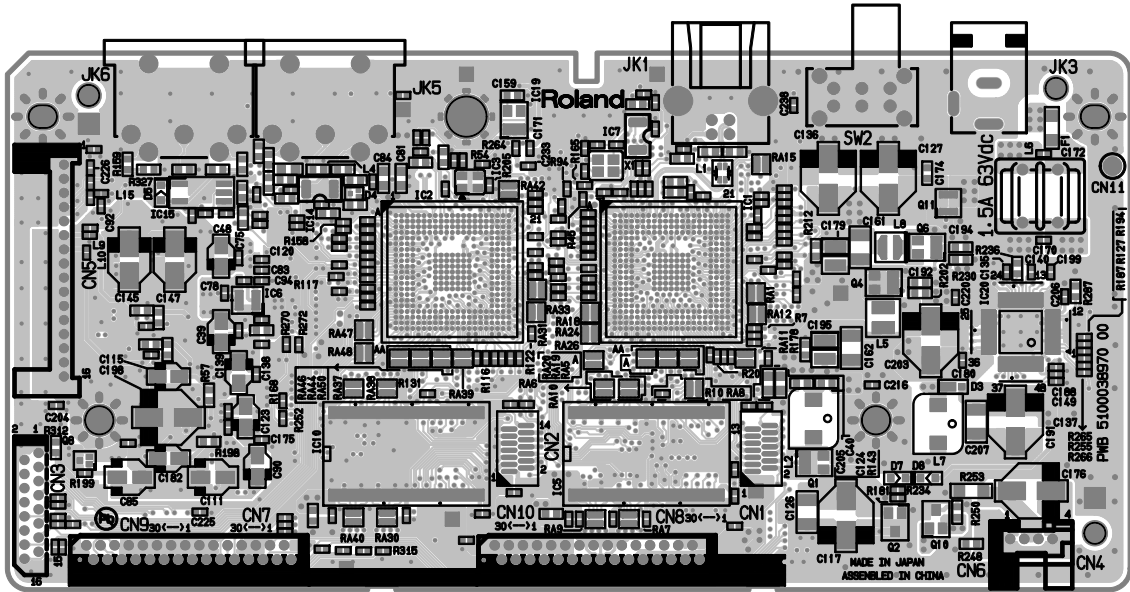
2. Switch the power on and off and verify that no abnormal noise is produced.

3. Connect the amp-equipped monitor speakers to the **MIX OUT L/MONO** and **R** jacks.

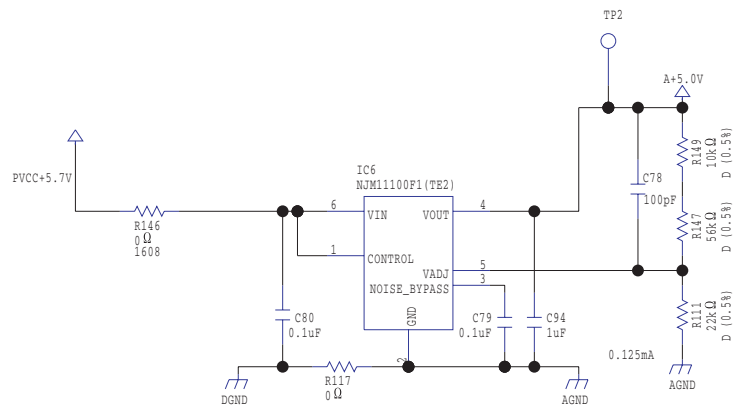
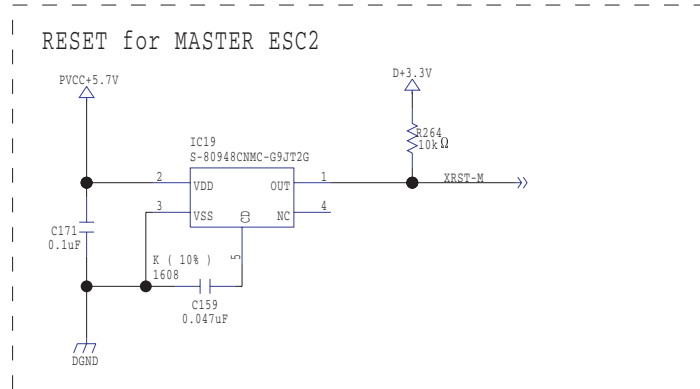
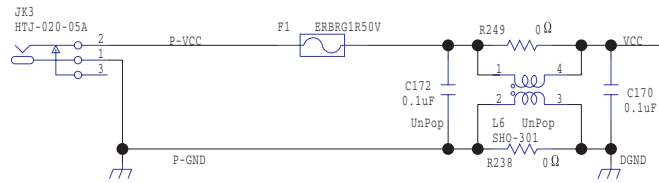
4. Switch the power on and off and verify that no abnormal noise is produced.

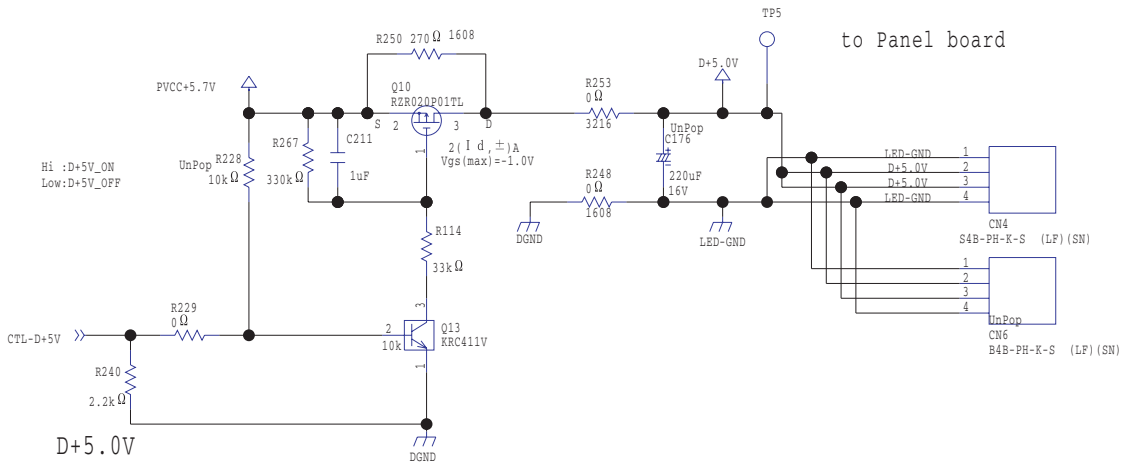
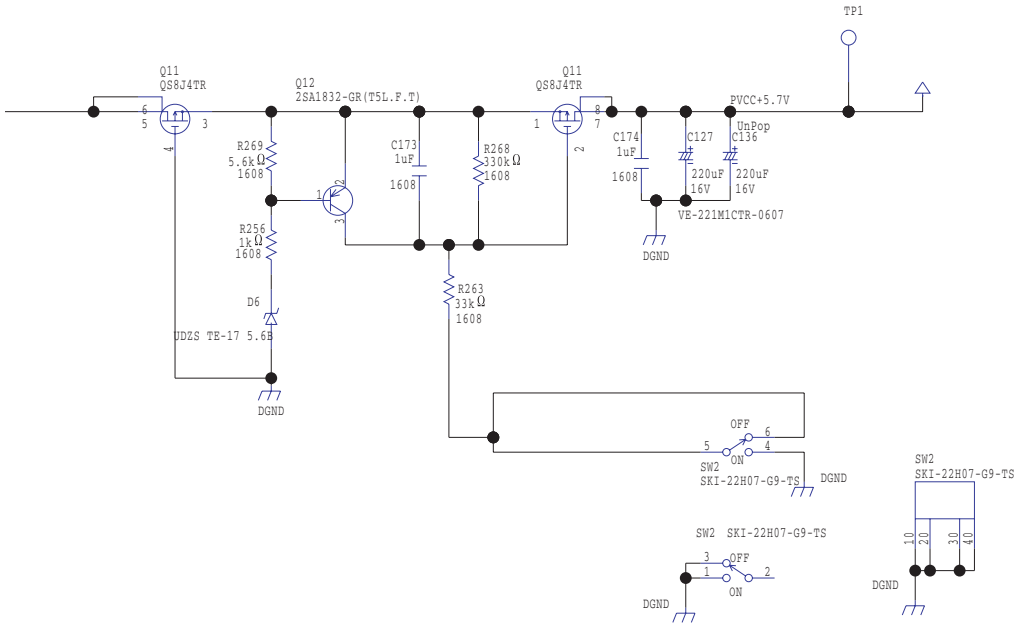
5. Verify the **ASSIGNABLE OUT A** and **B** jacks in the same way.

Circuit Board (Main Board)

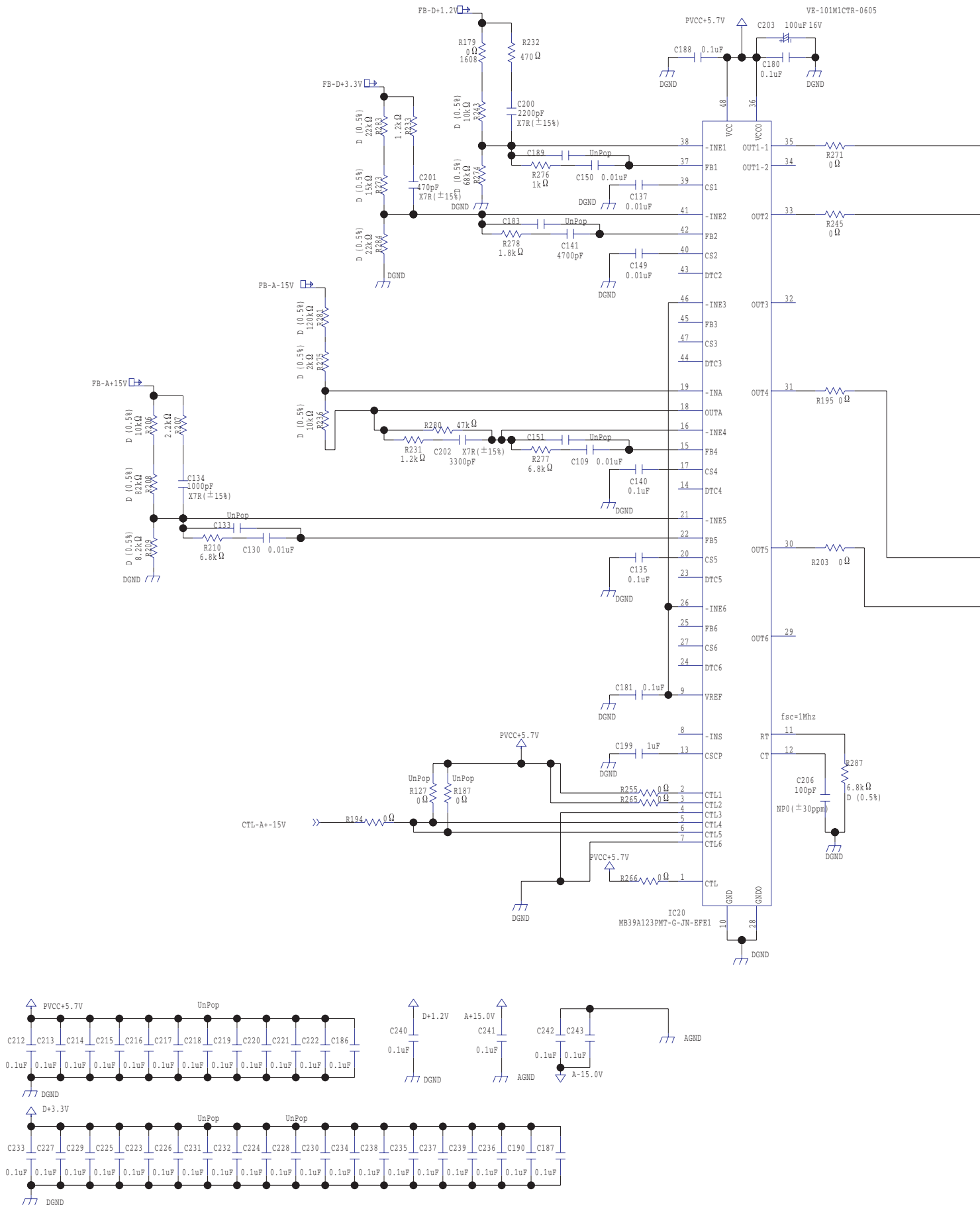


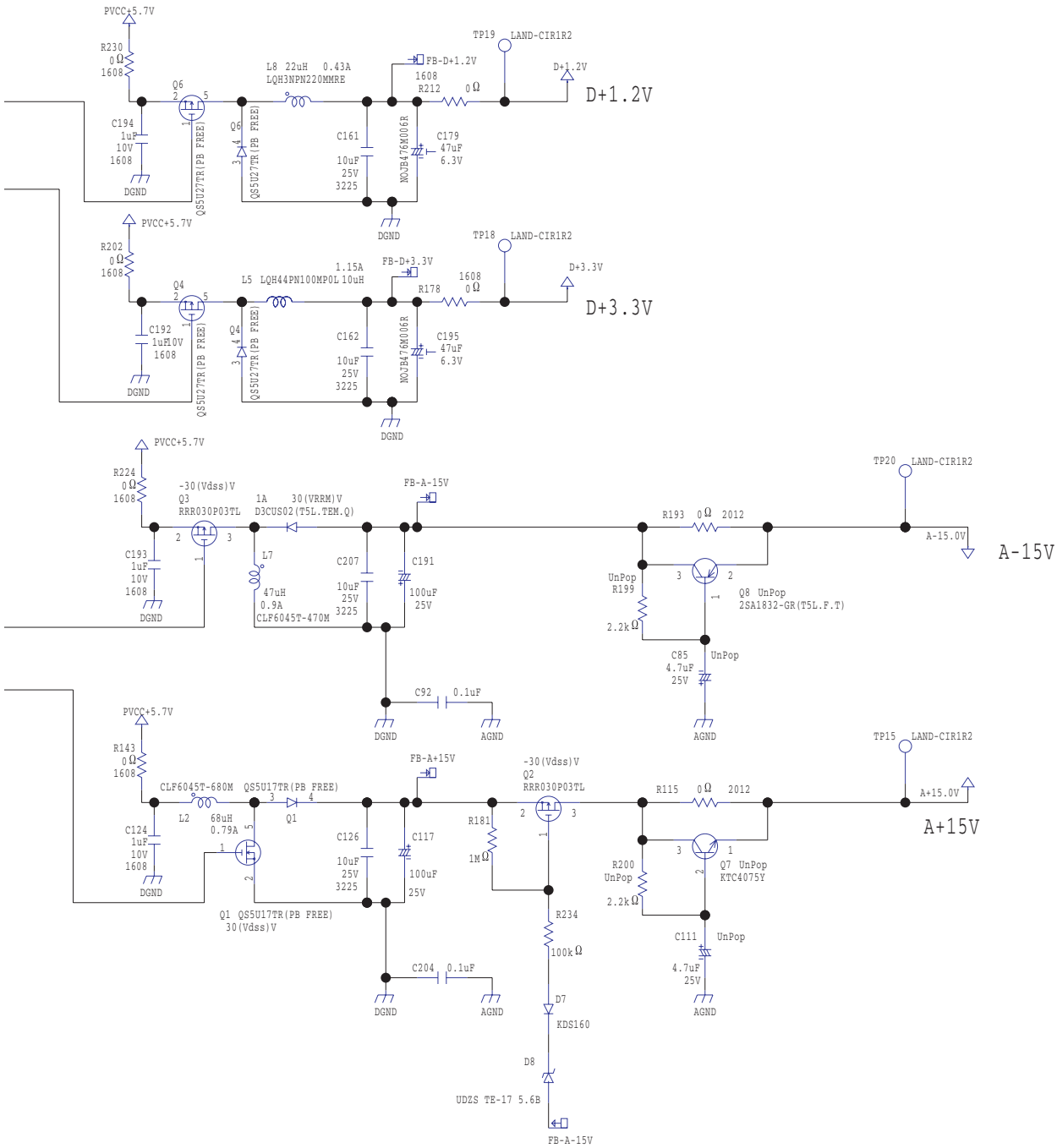
Circuit Diagram (Main Board: 1/7)





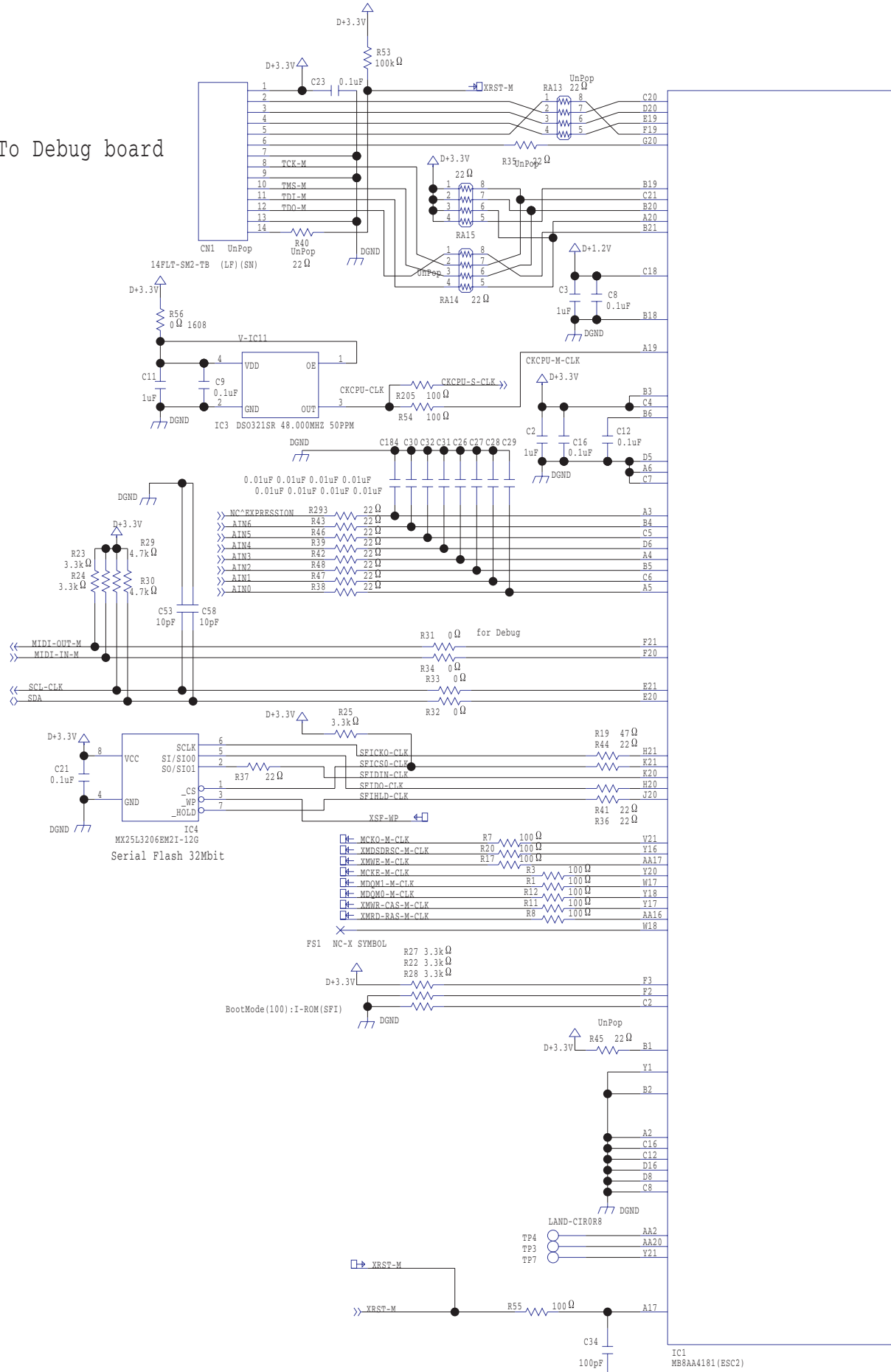
Circuit Diagram (Main Board: 2/7)

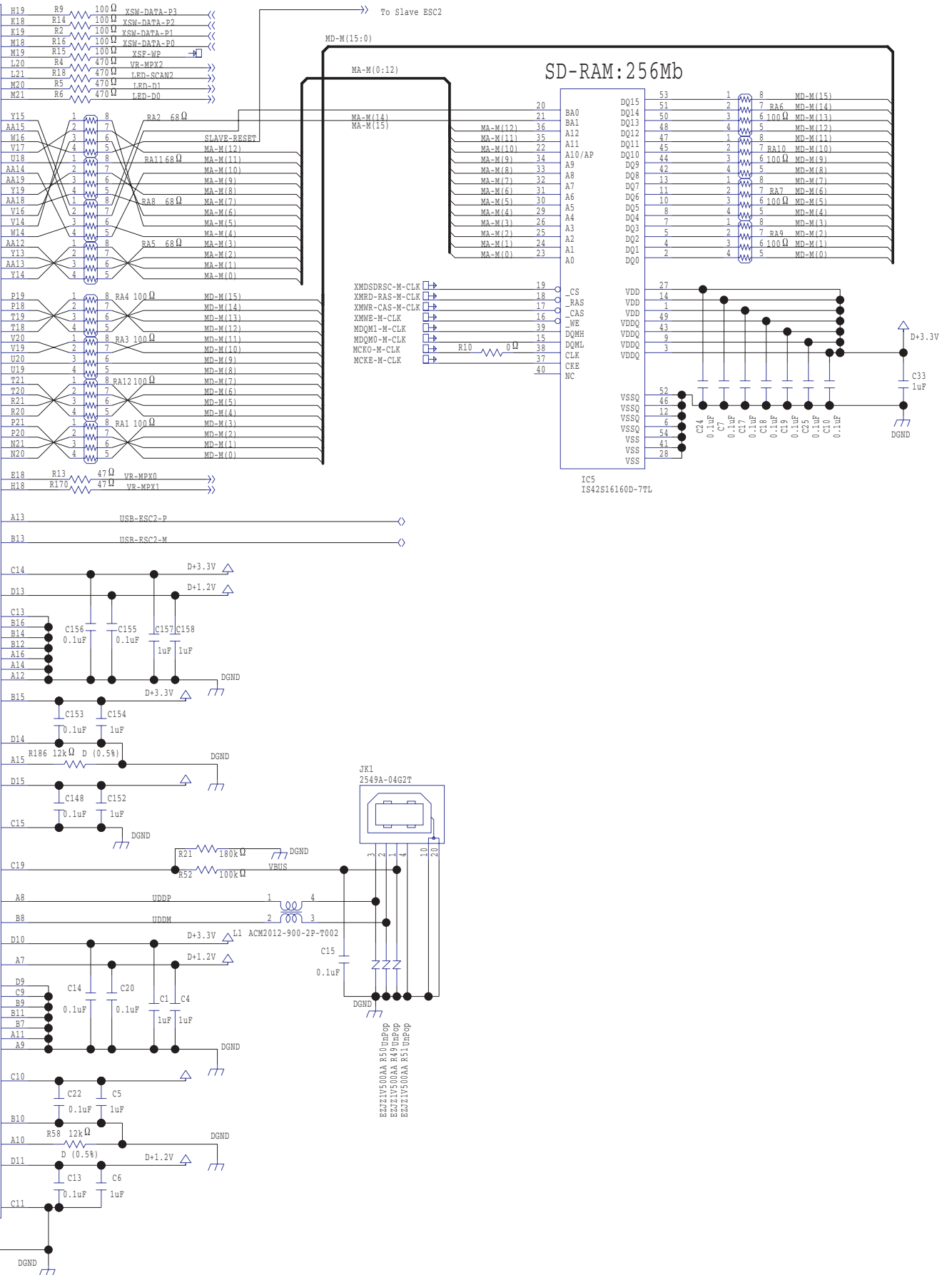




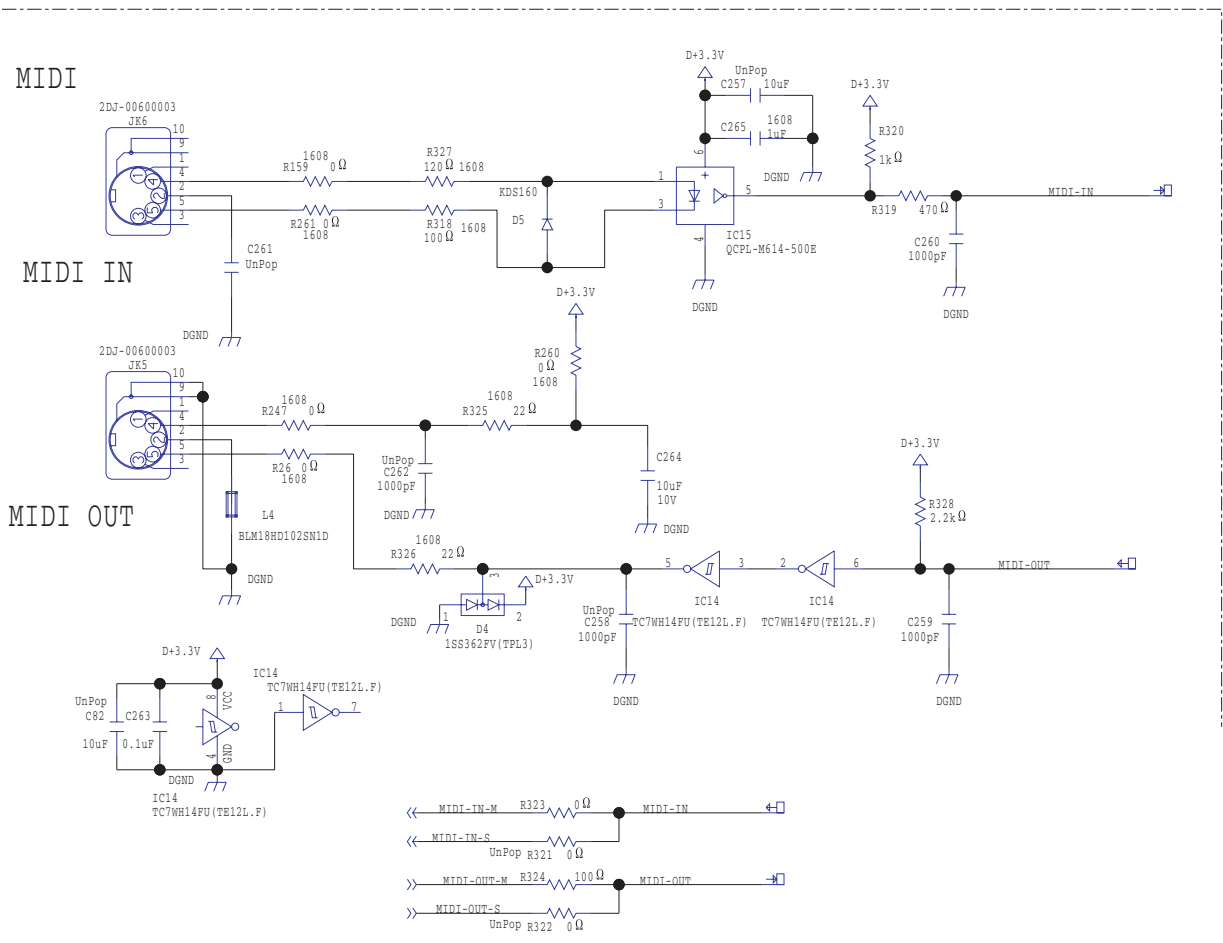
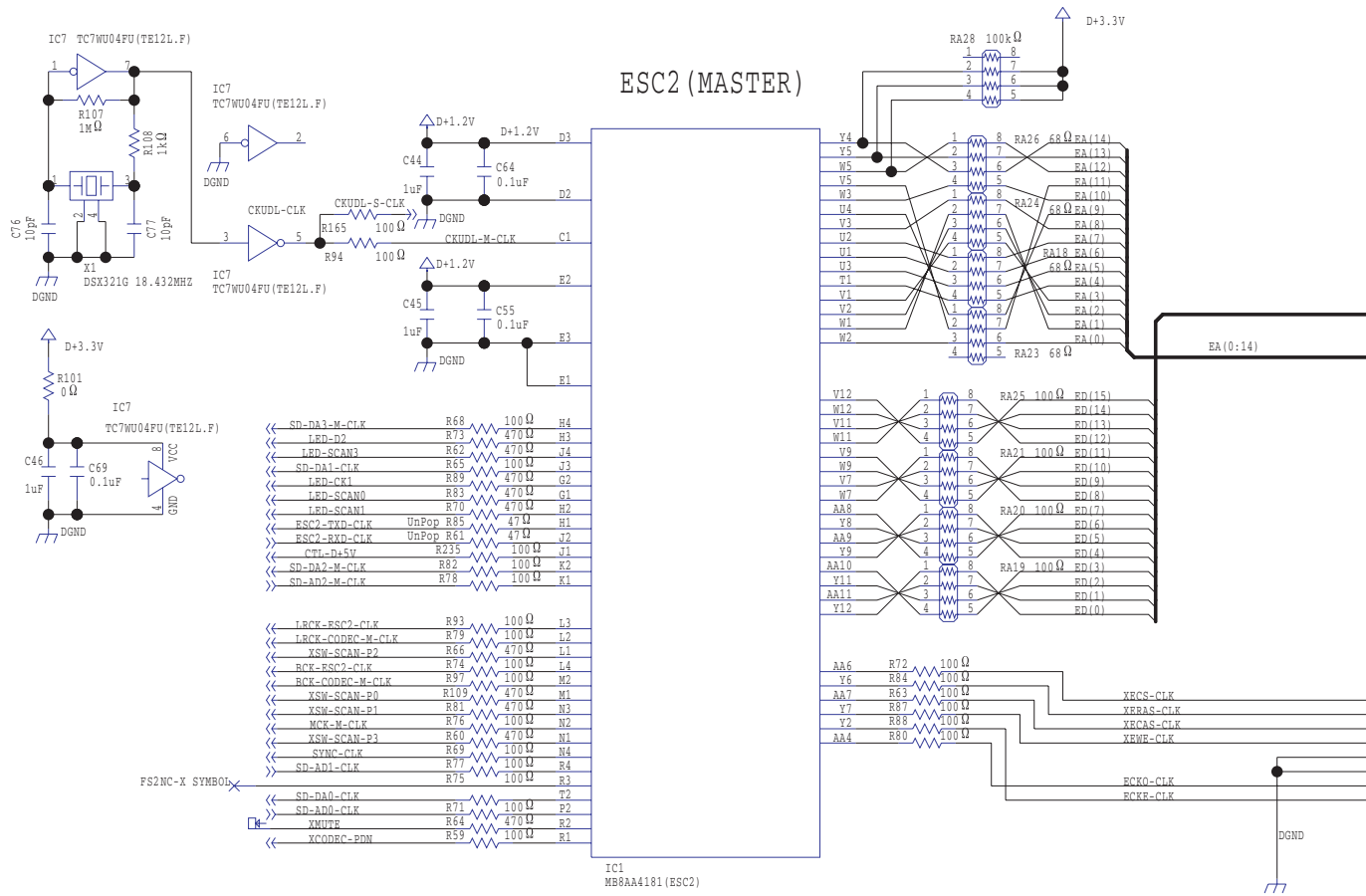
Circuit Diagram (Main Board: 3/7)

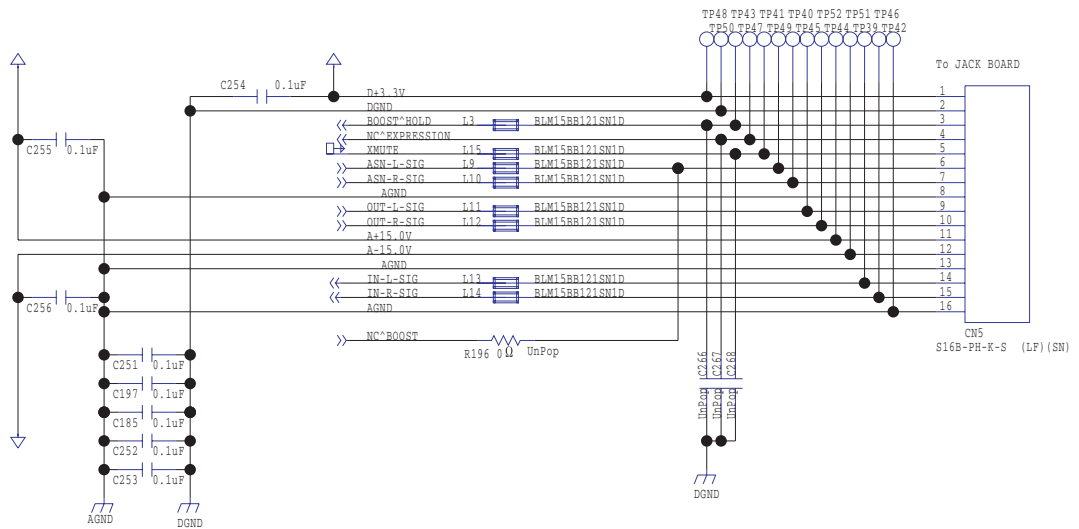
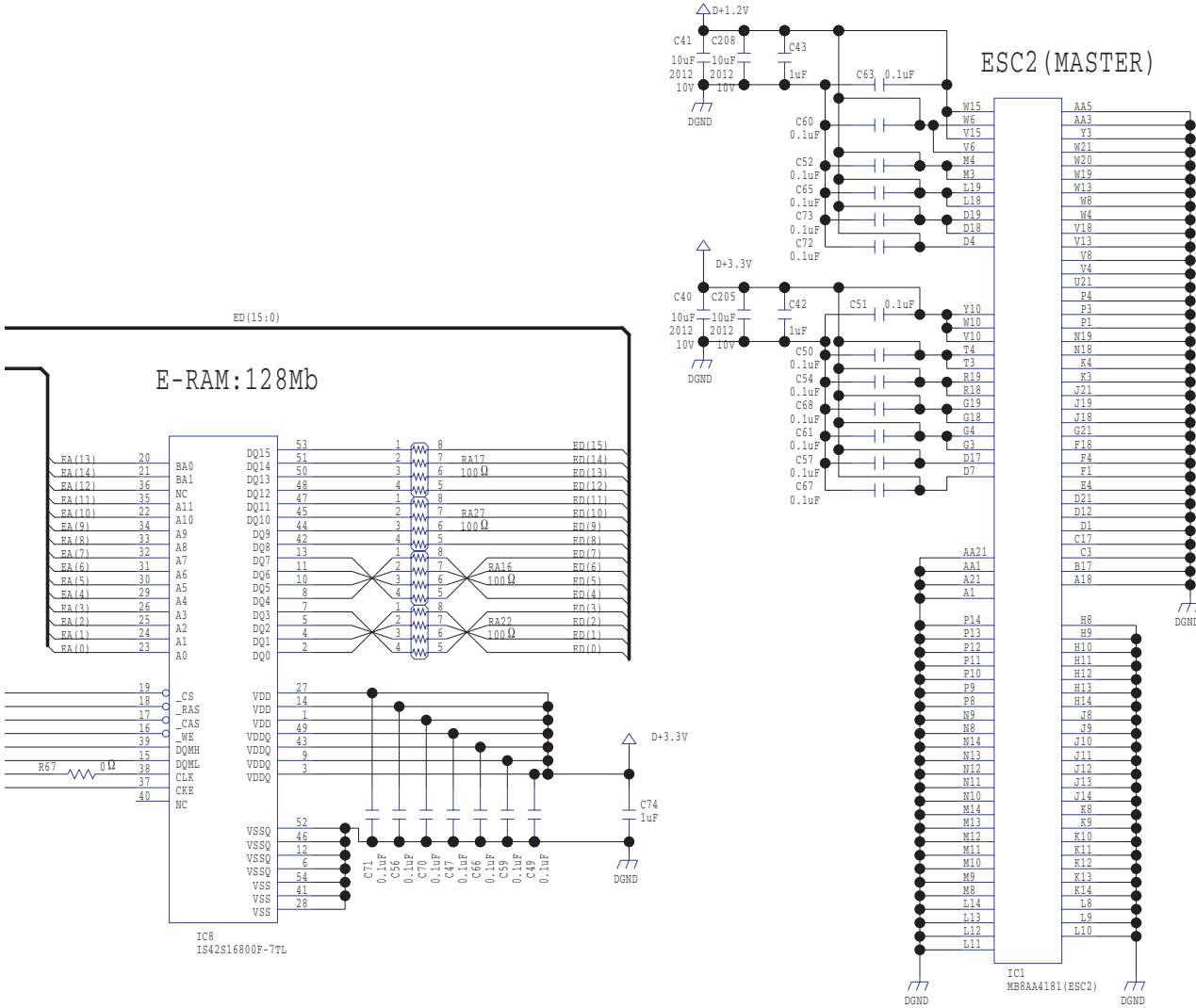
To Debug board





Circuit Diagram (Main Board: 4/7)

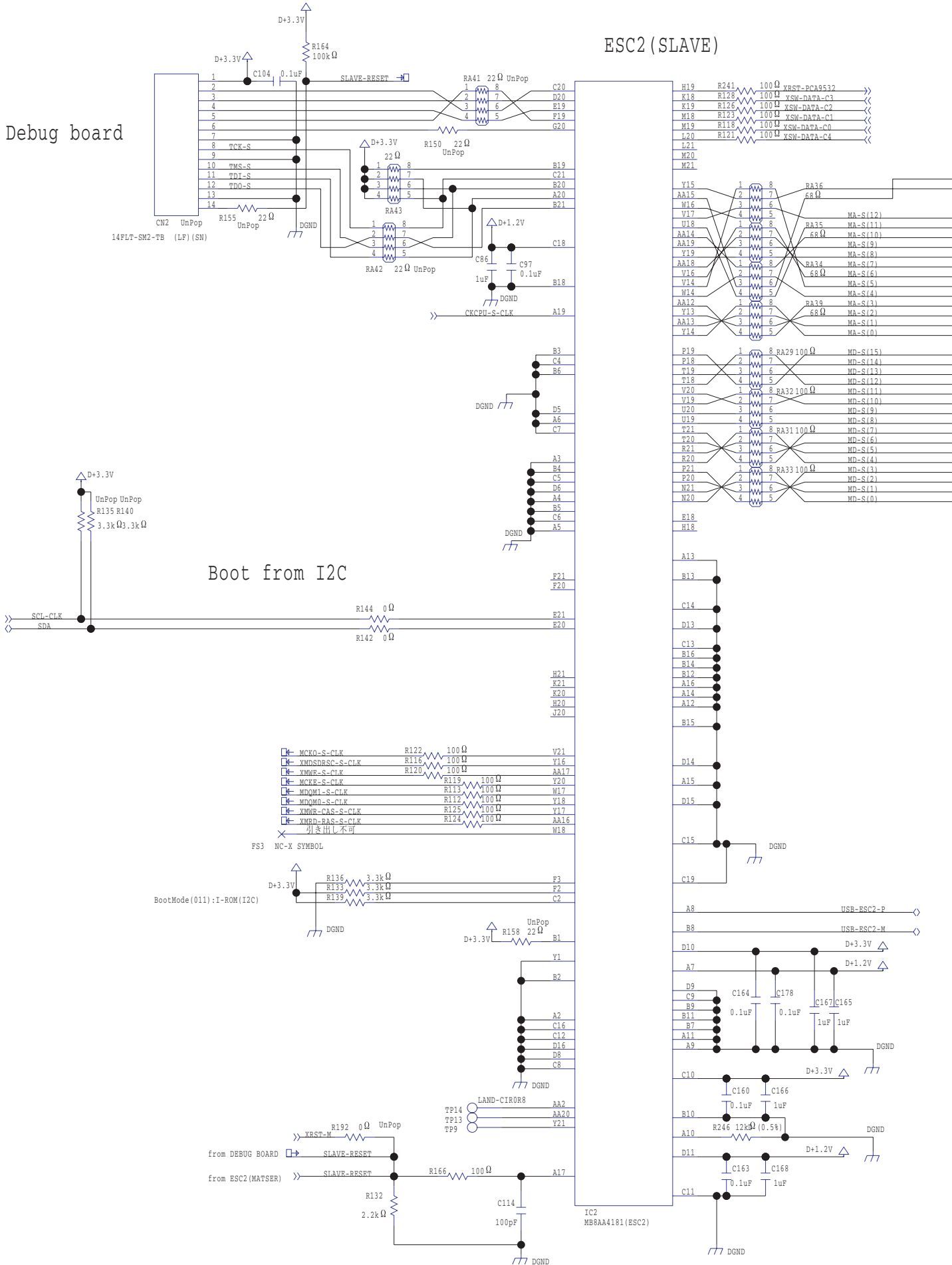


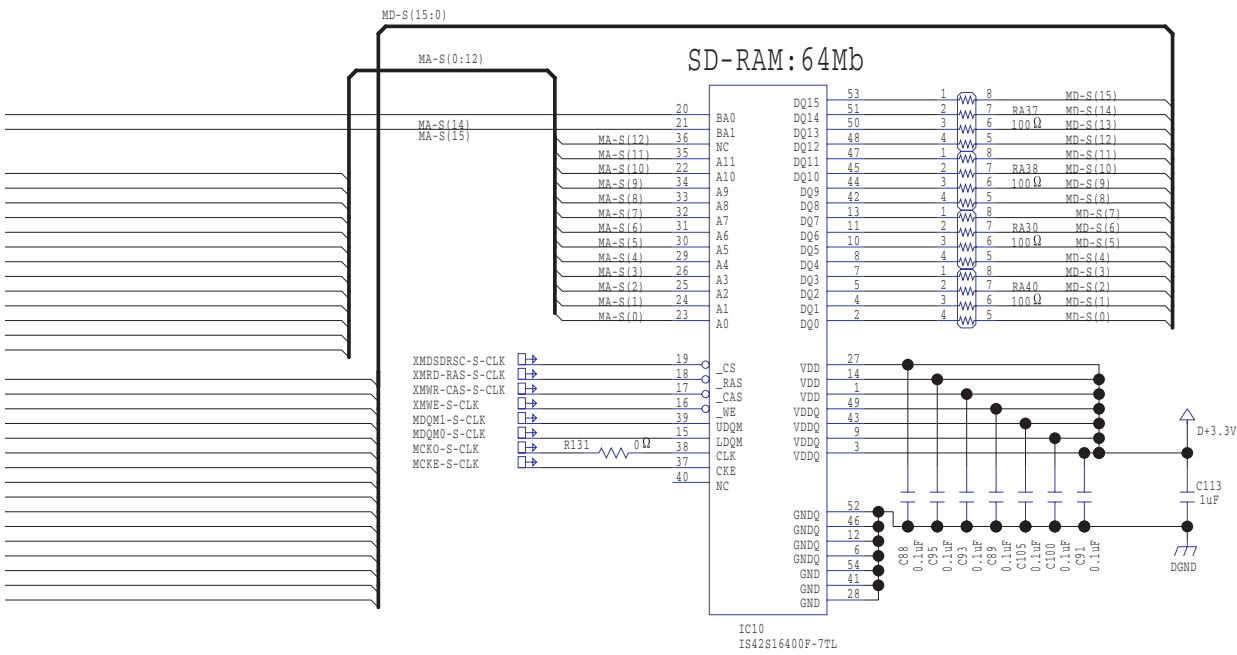


Circuit Diagram (Main Board: 5/7)

To Debug board

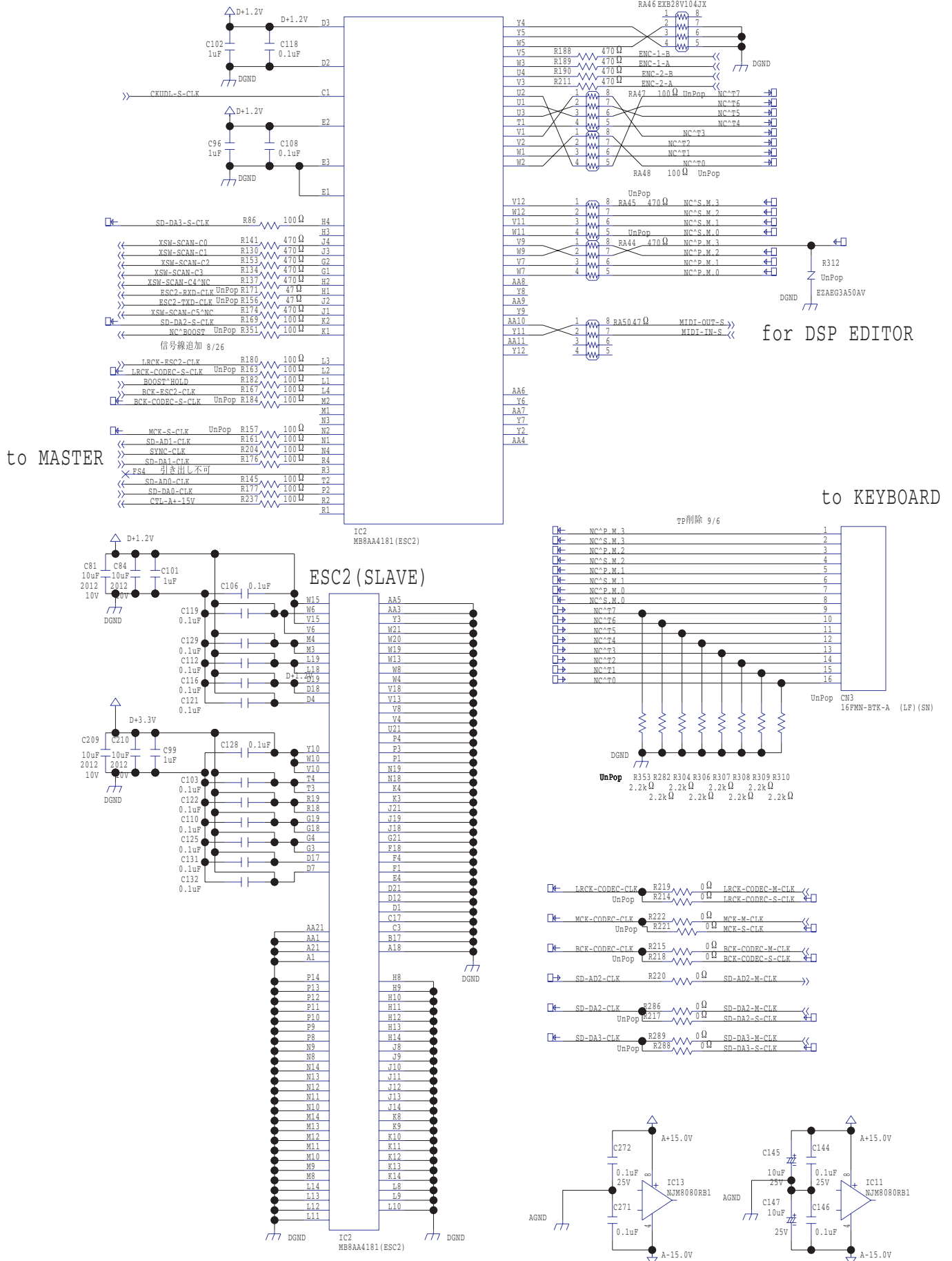
ESC2 (SLAVE)

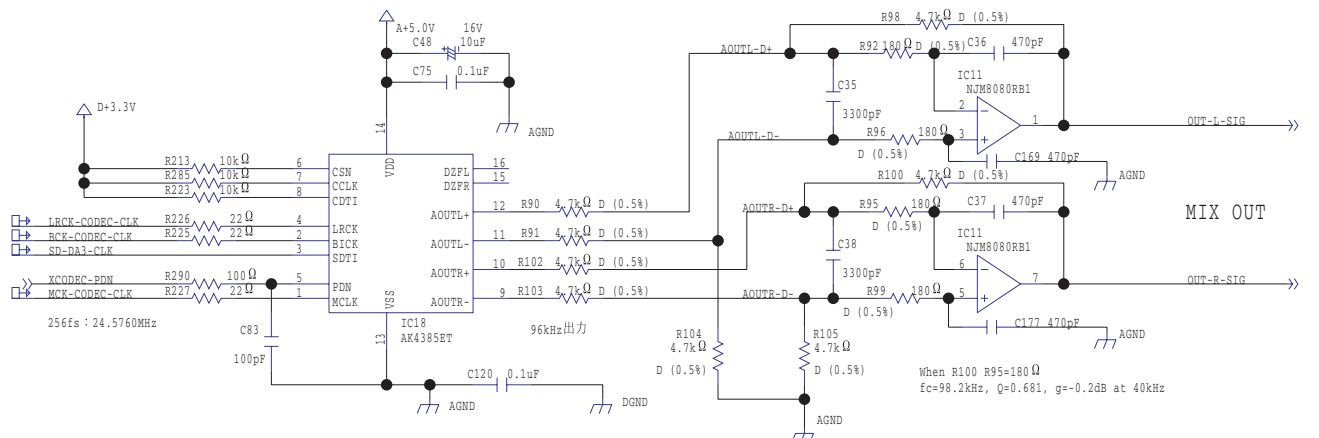
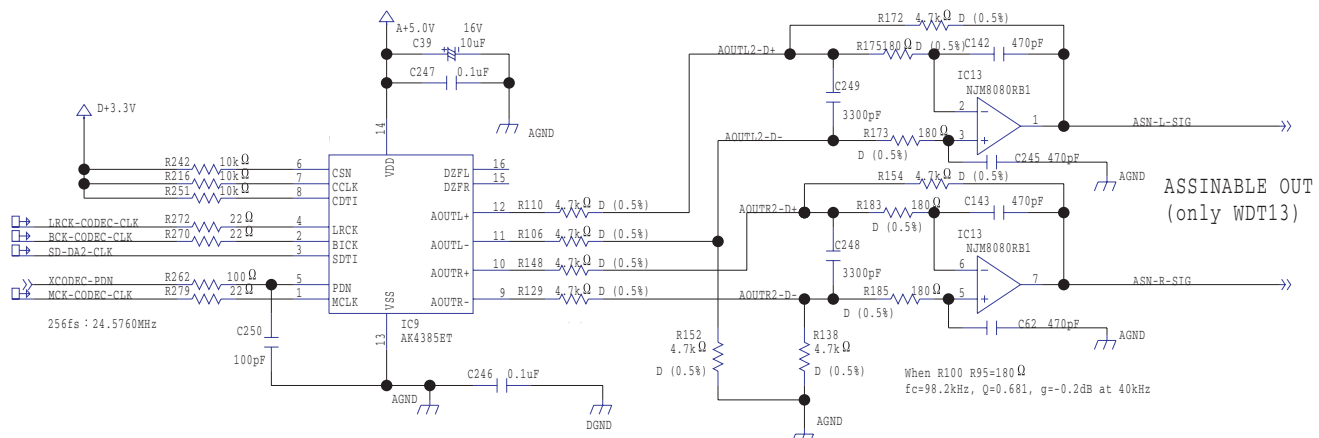
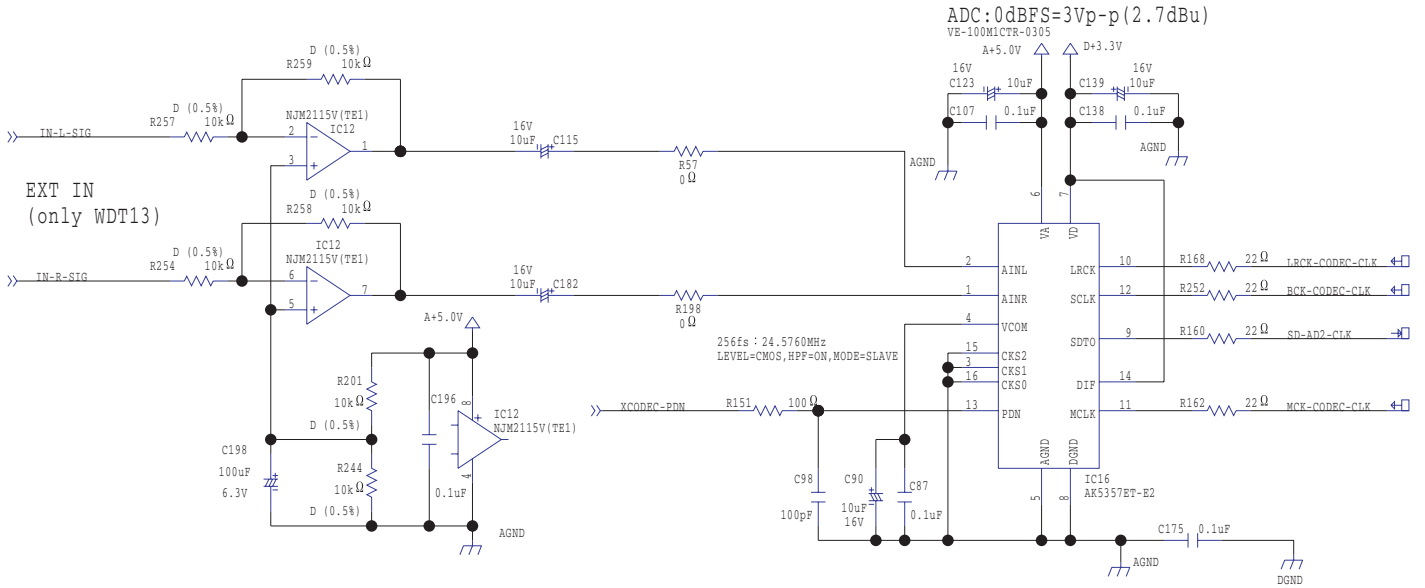




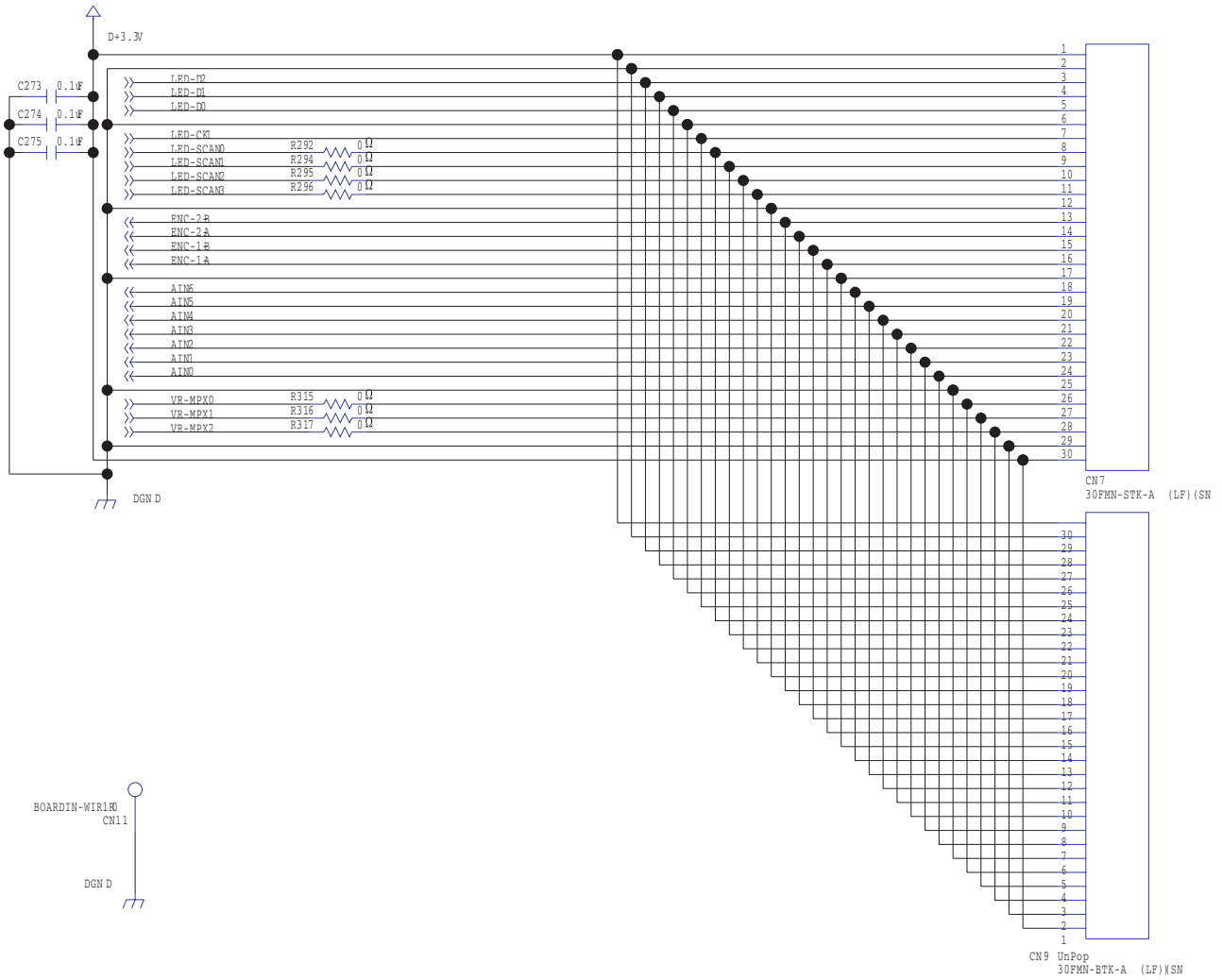
Circuit Diagram (Main Board: 6/7)

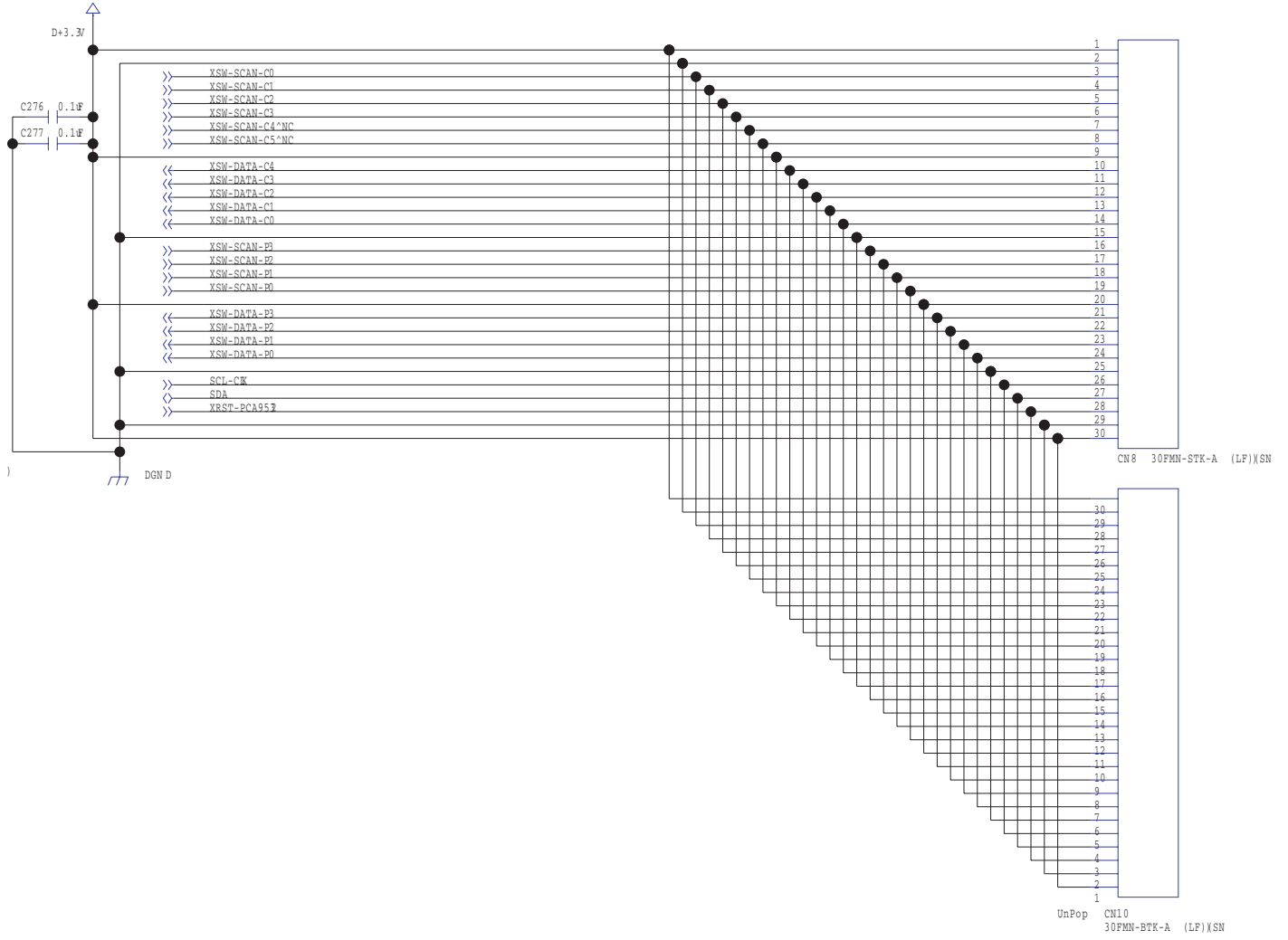
ESC2 (SLAVE)



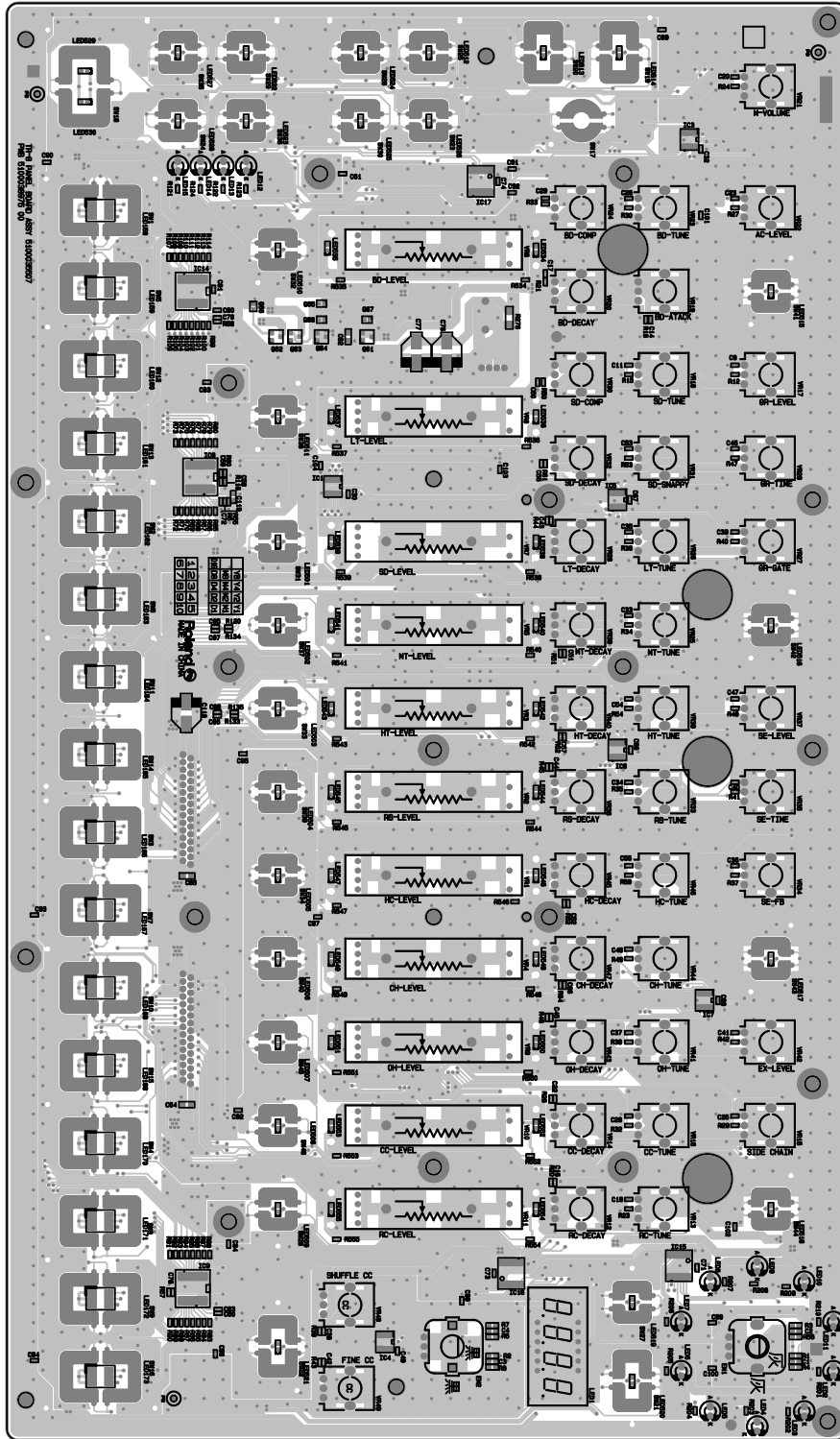


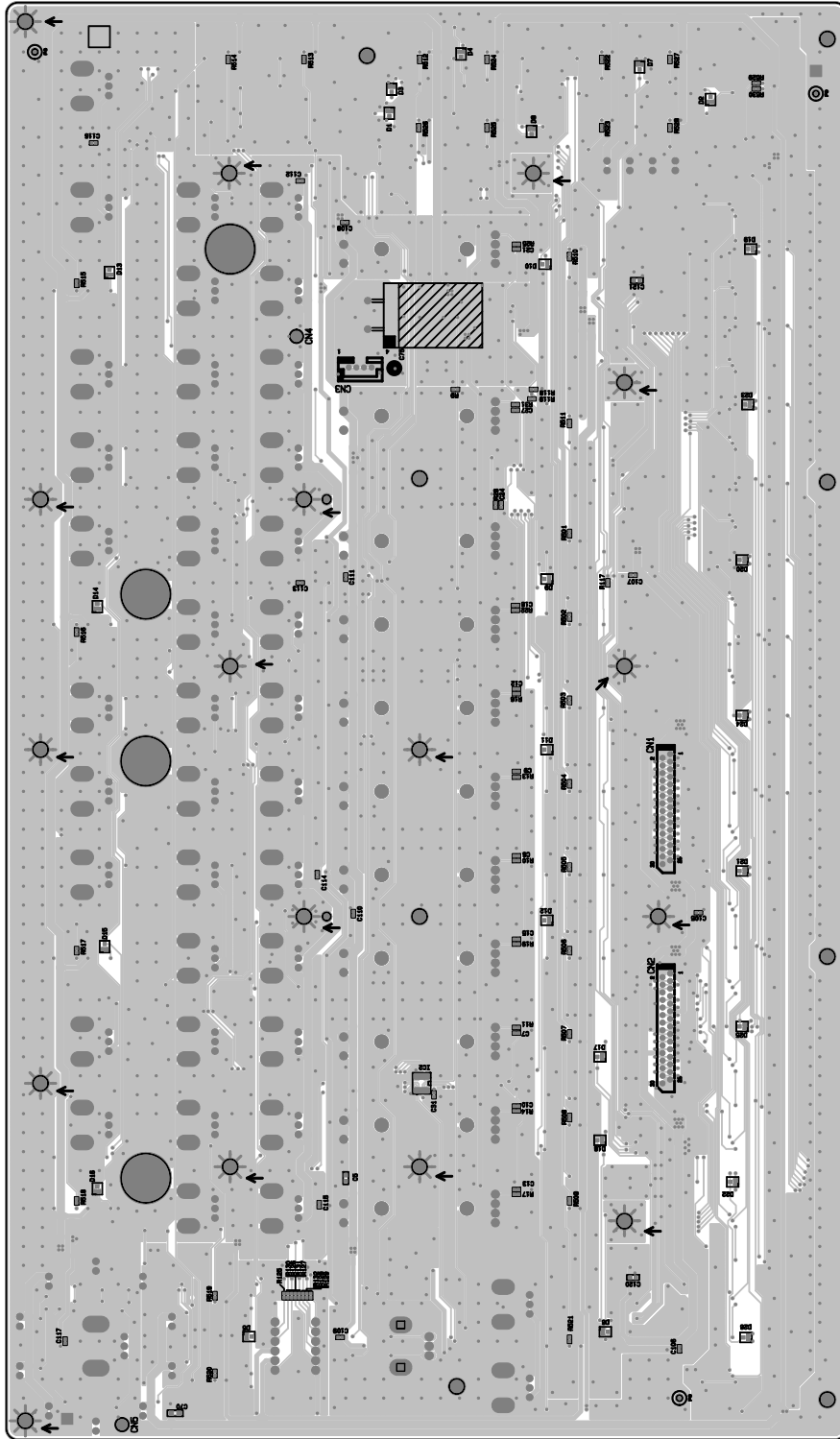
Circuit Diagram (Main Board: 7/7)



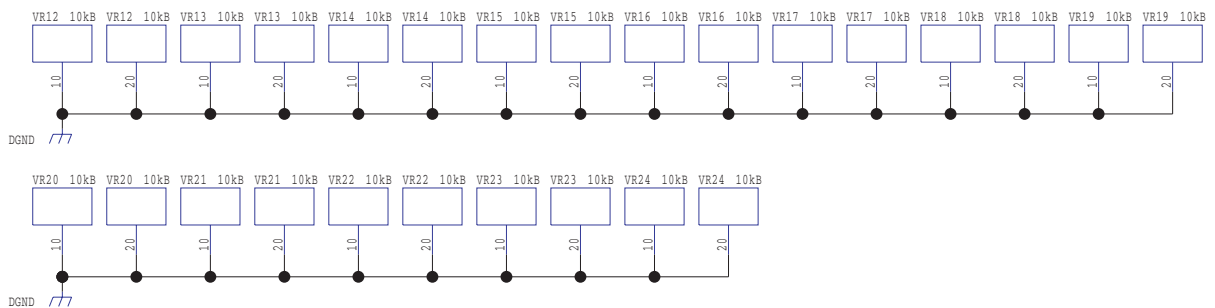
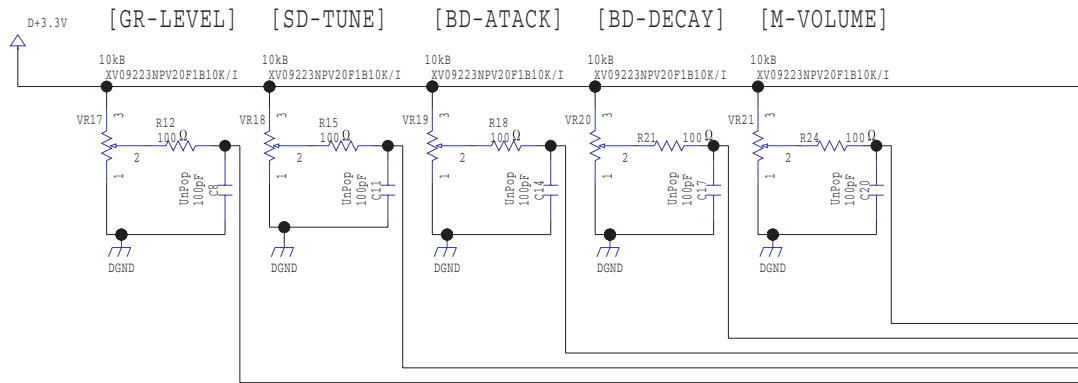
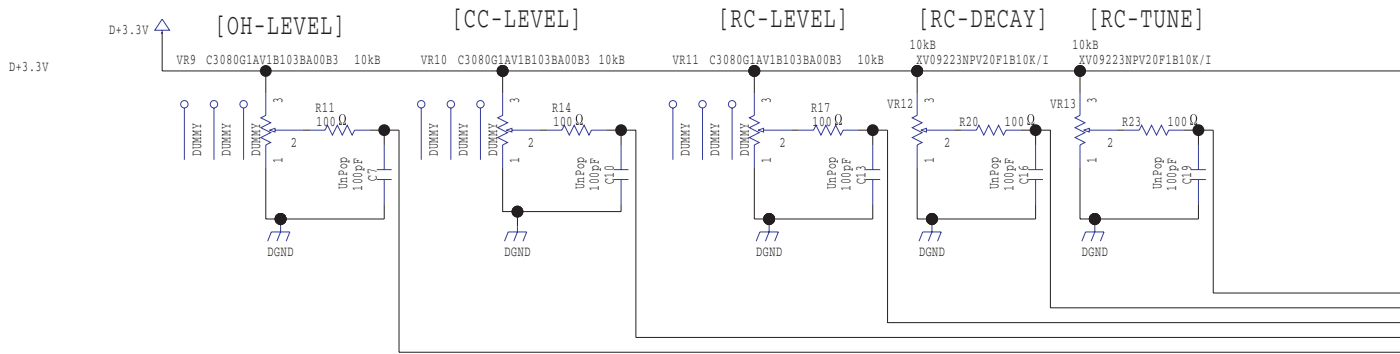
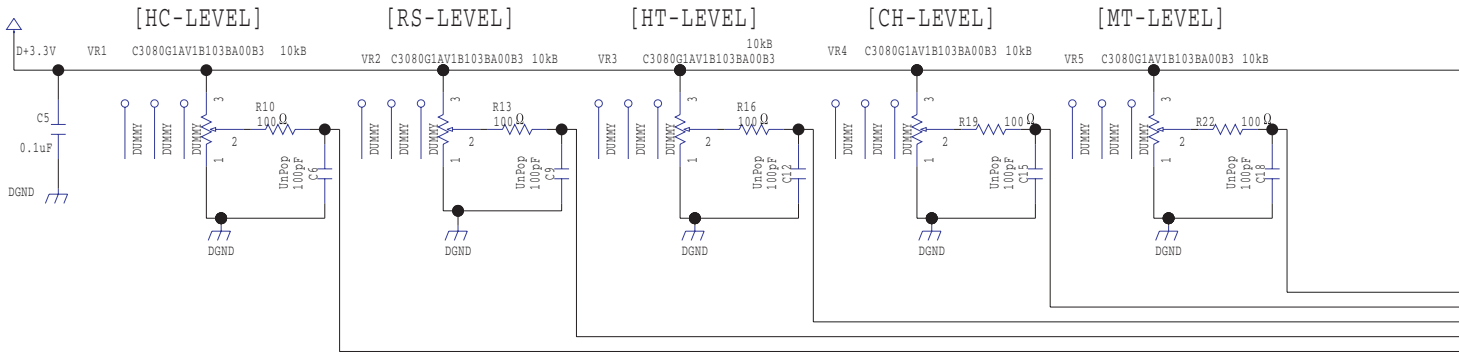


Circuit Board (Panel Board)

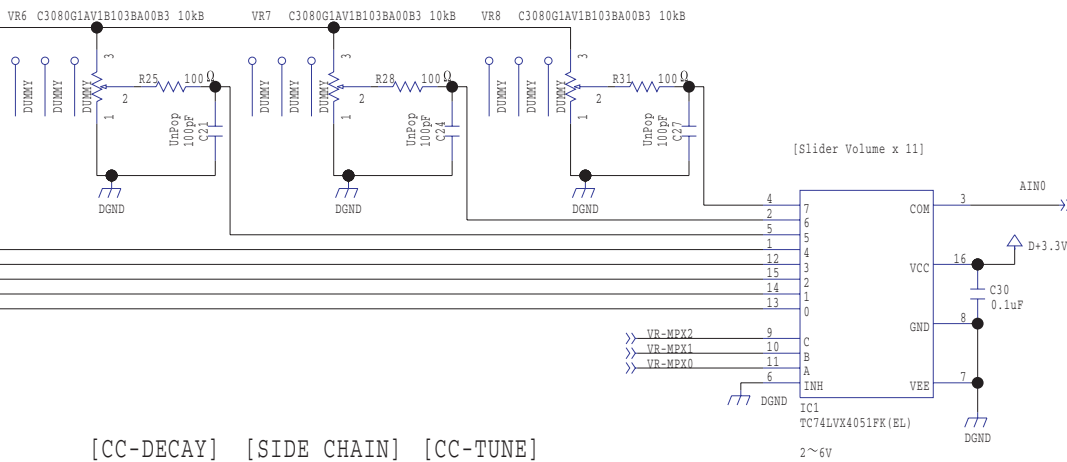




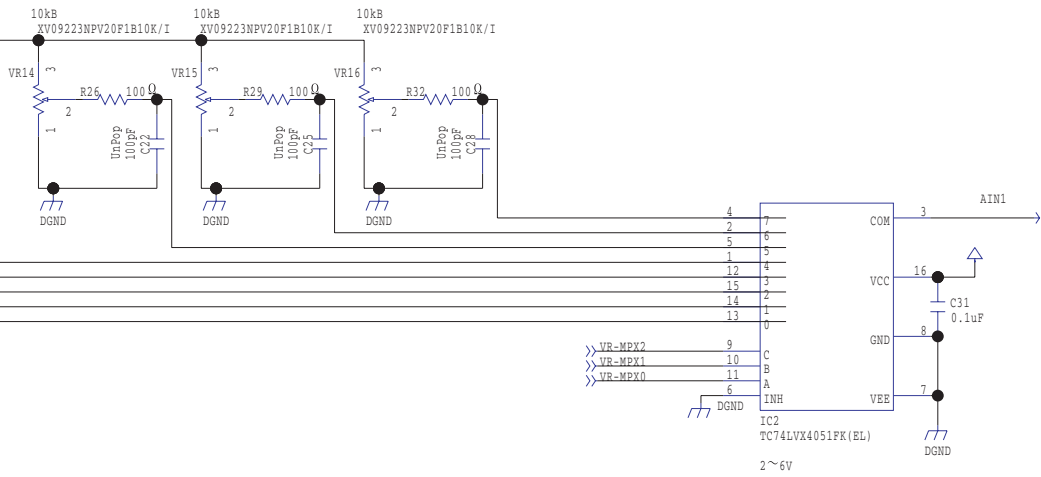
Circuit Diagram (Panel Board: 1/6)



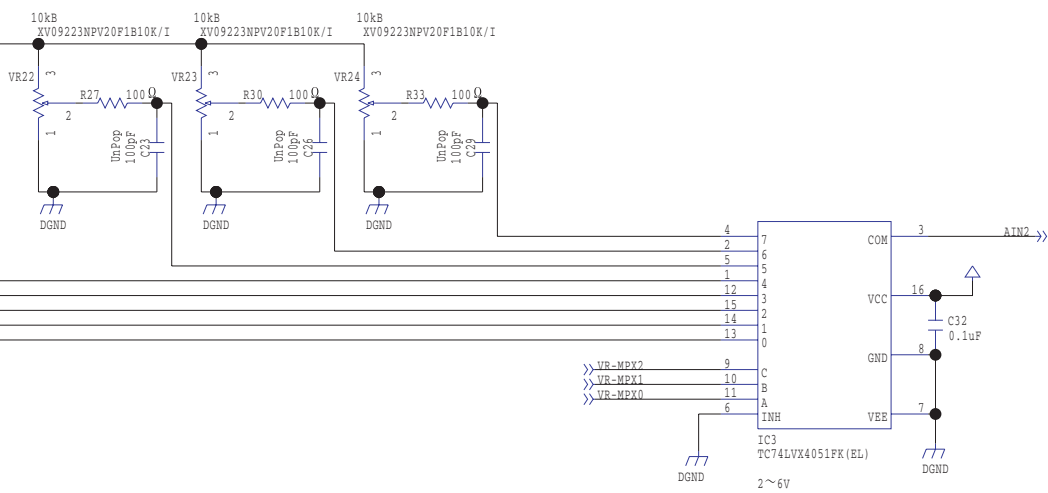
[BD-LEVEL] [SD-LEVEL] [LT-LEVEL]



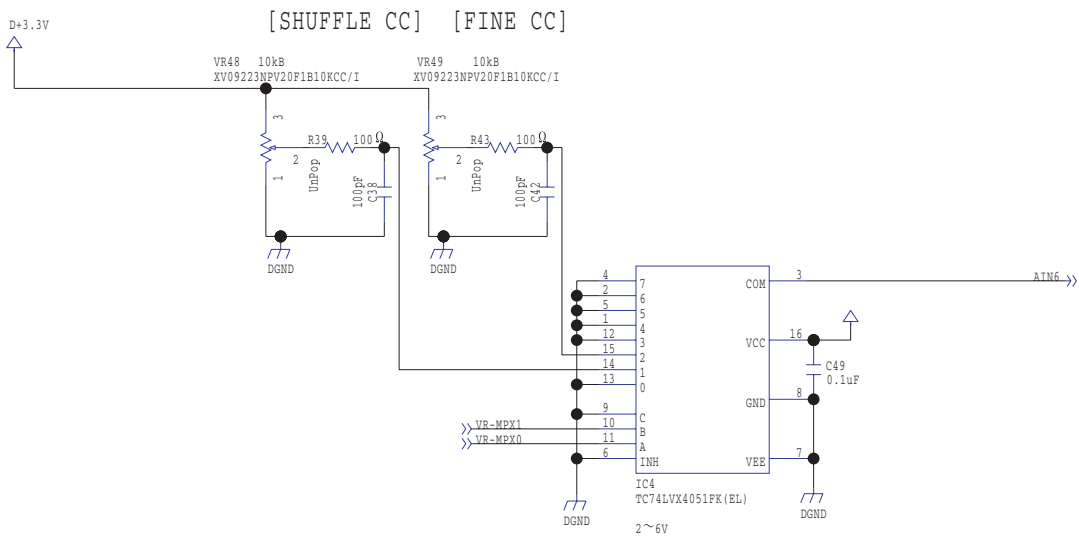
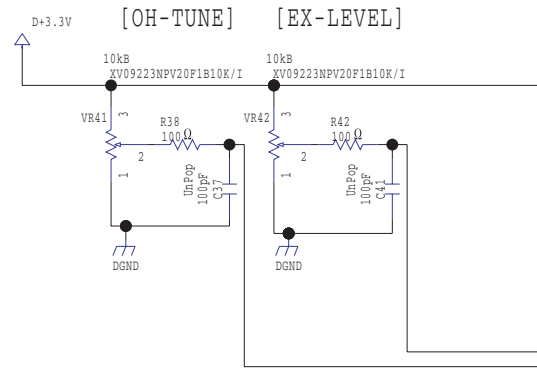
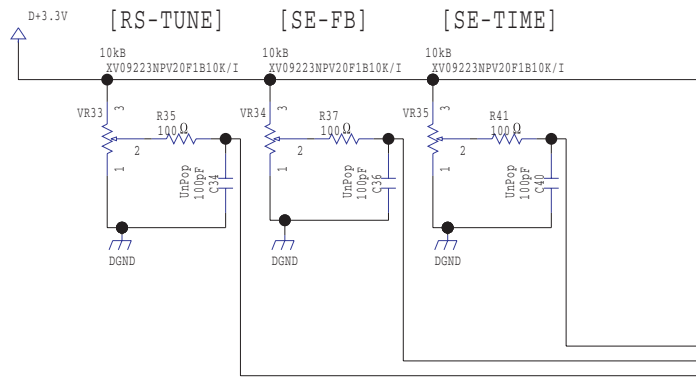
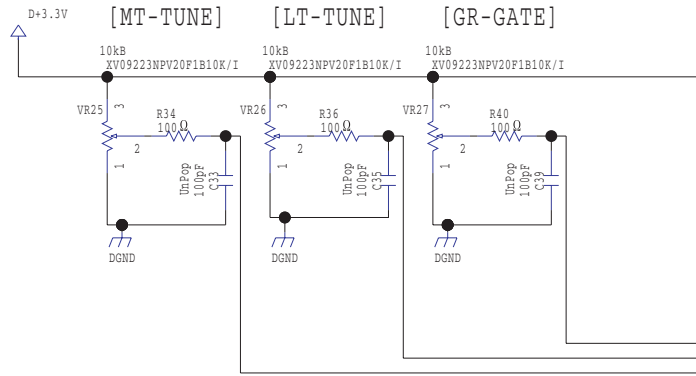
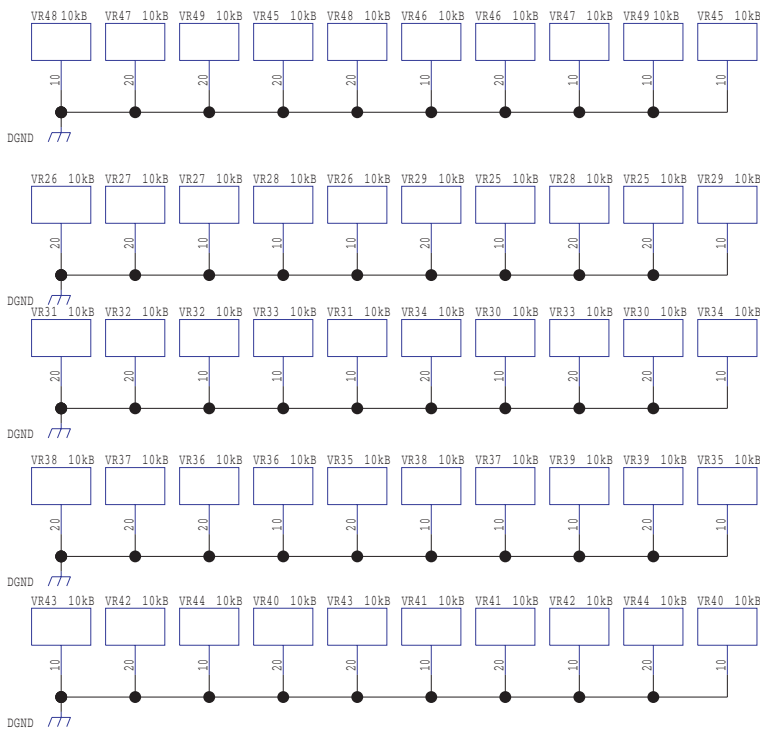
[CC-DECAY] [SIDE CHAIN] [CC-TUNE]



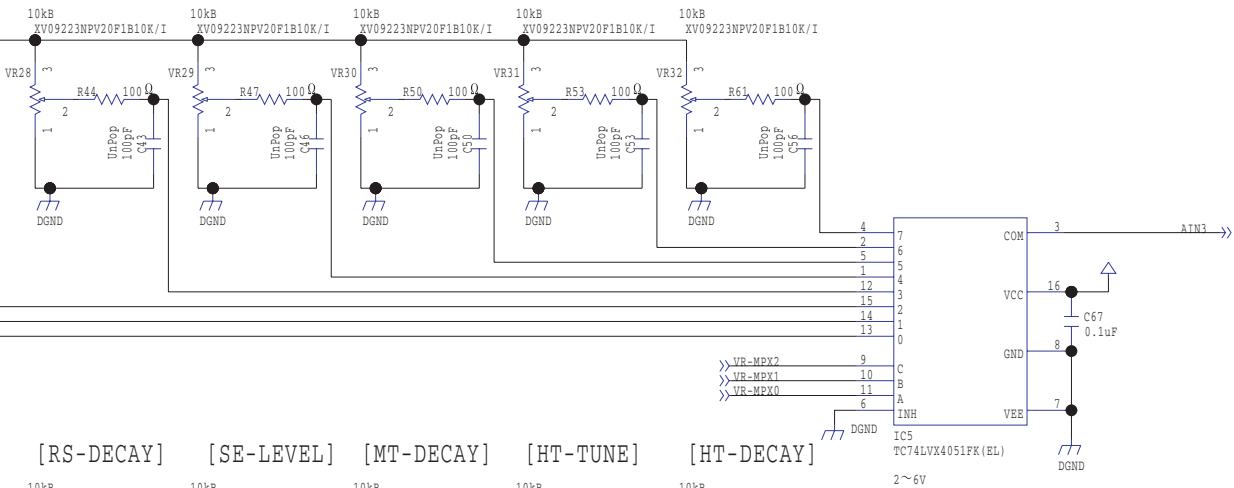
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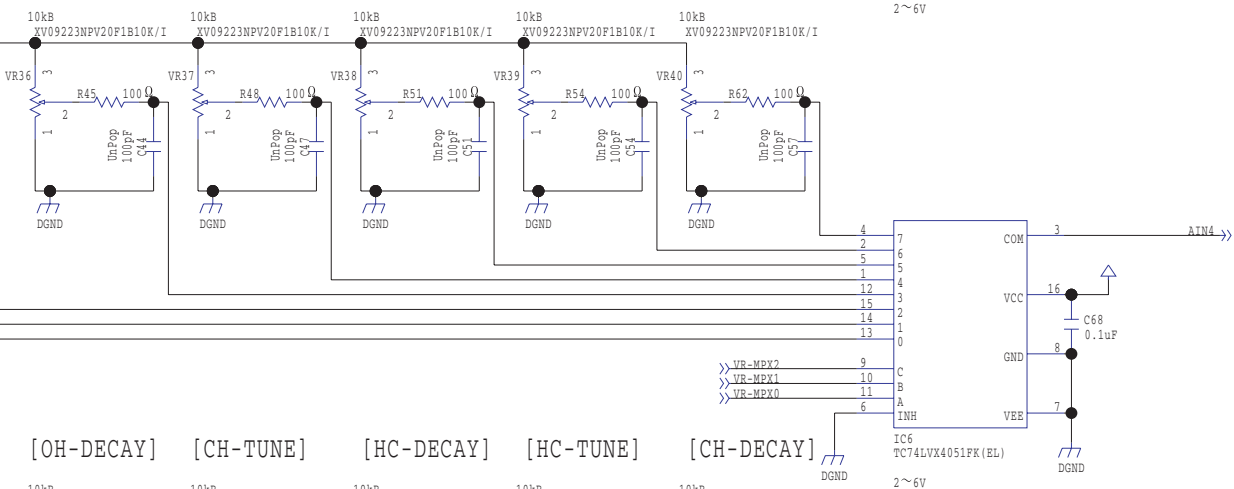
Circuit Diagram (Panel Board: 2/6)



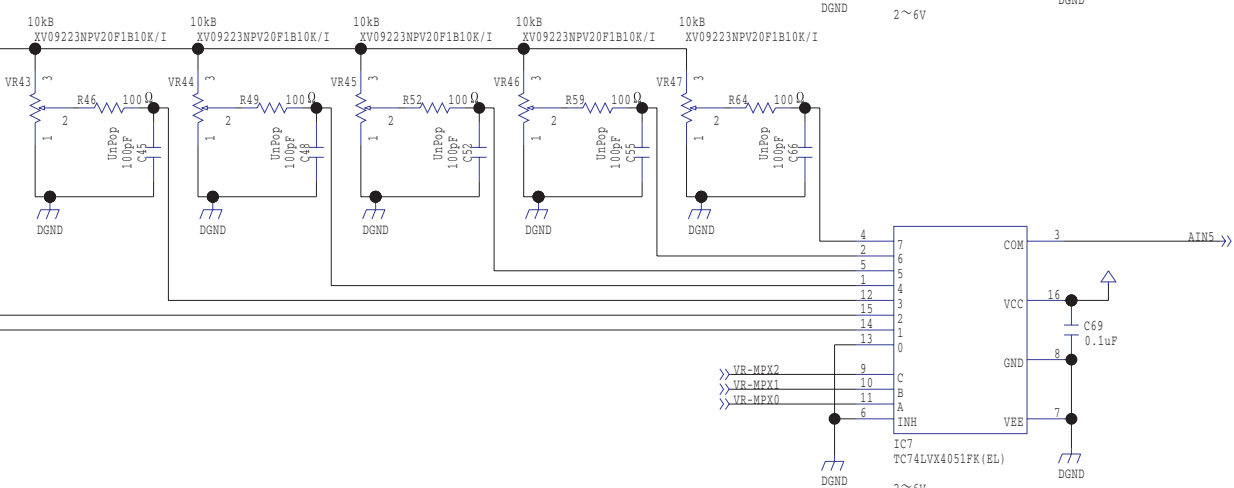
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[RS-DECAY] [SE-LEVEL] [MT-DECAY] [HT-TUNE] [HT-DECAY]

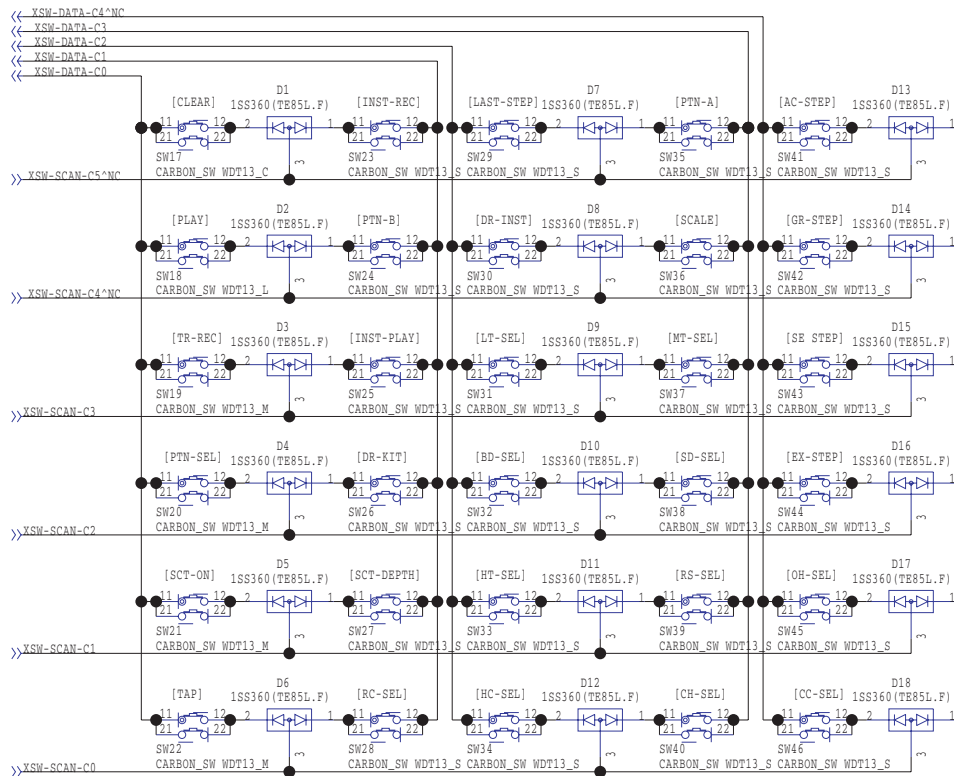


[OH-DECAY] [CH-TUNE] [HC-DECAY] [HC-TUNE] [CH-DECAY]

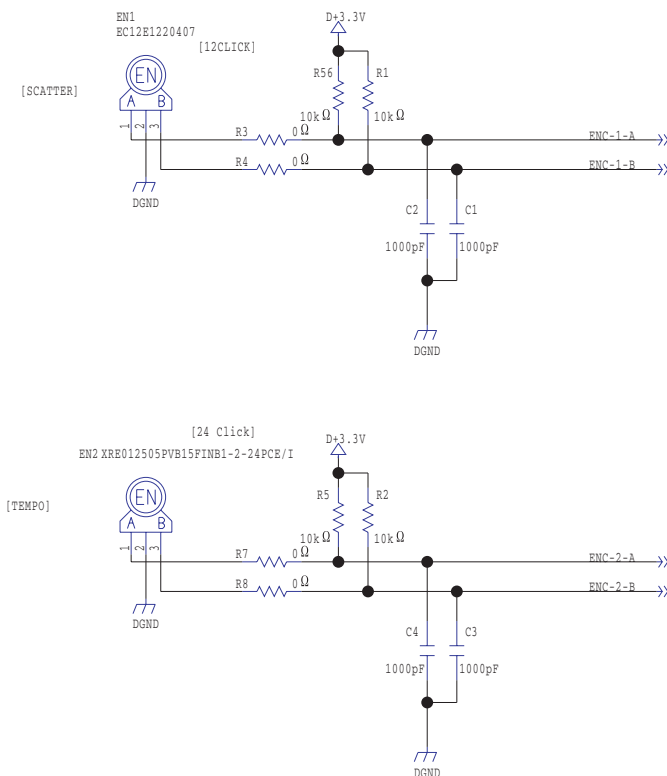


Circuit Diagram (Panel Board: 3/6)

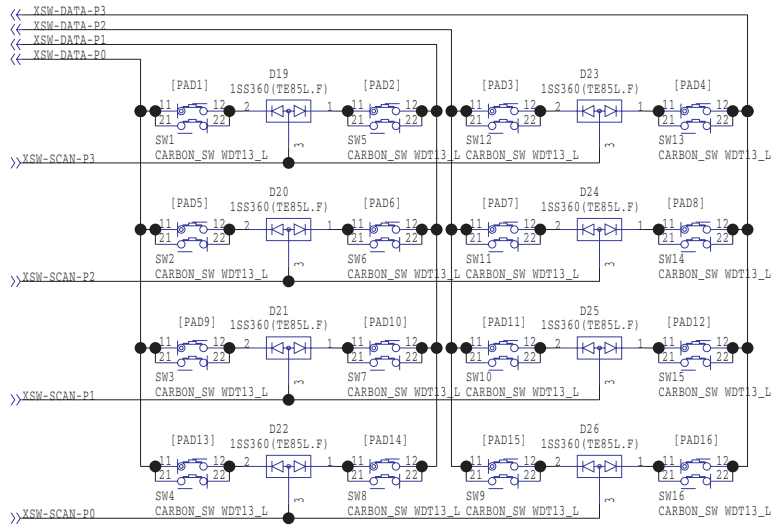
SW Scan
Slave CPU side [FUNCTION]



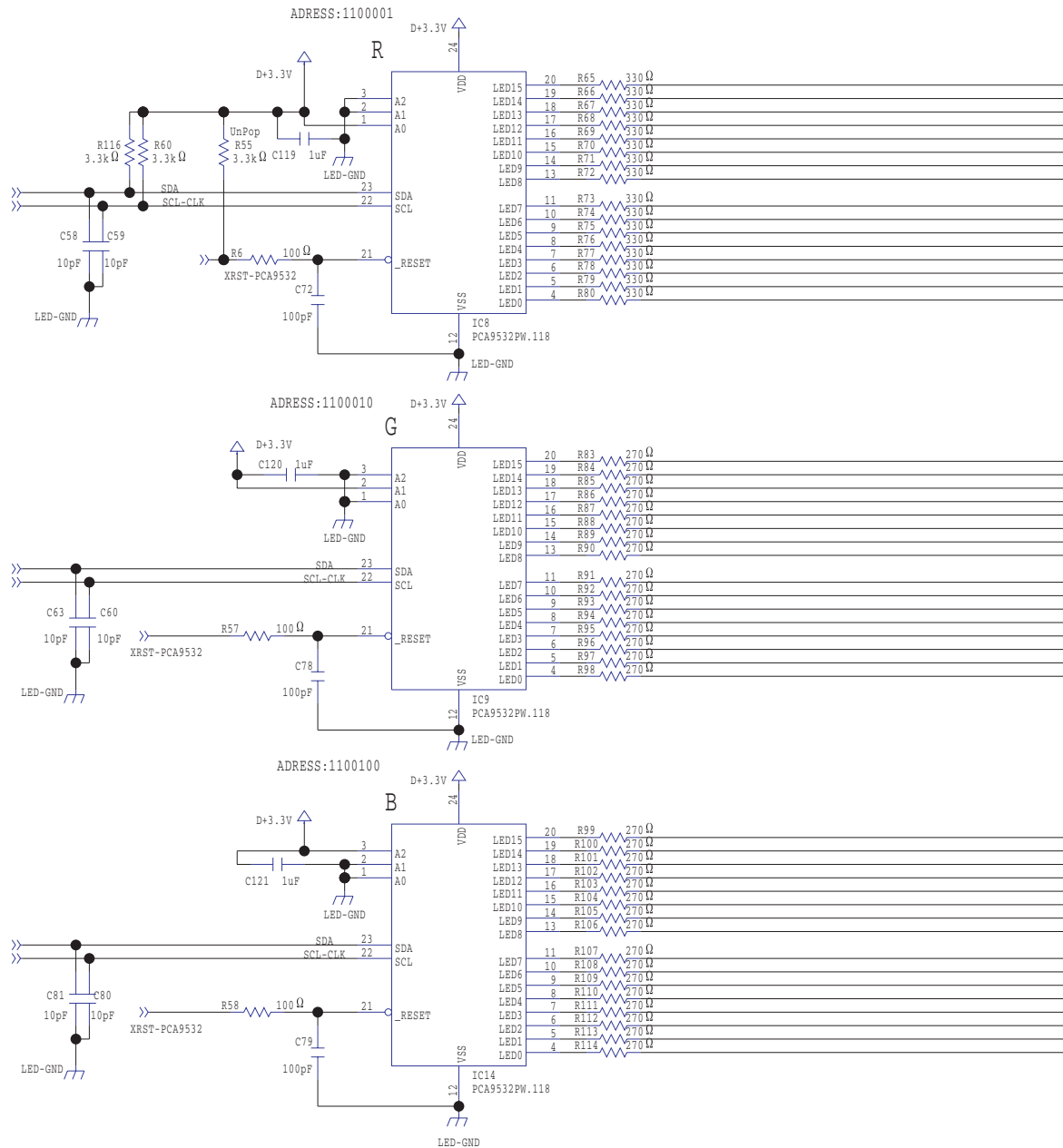
Encoder

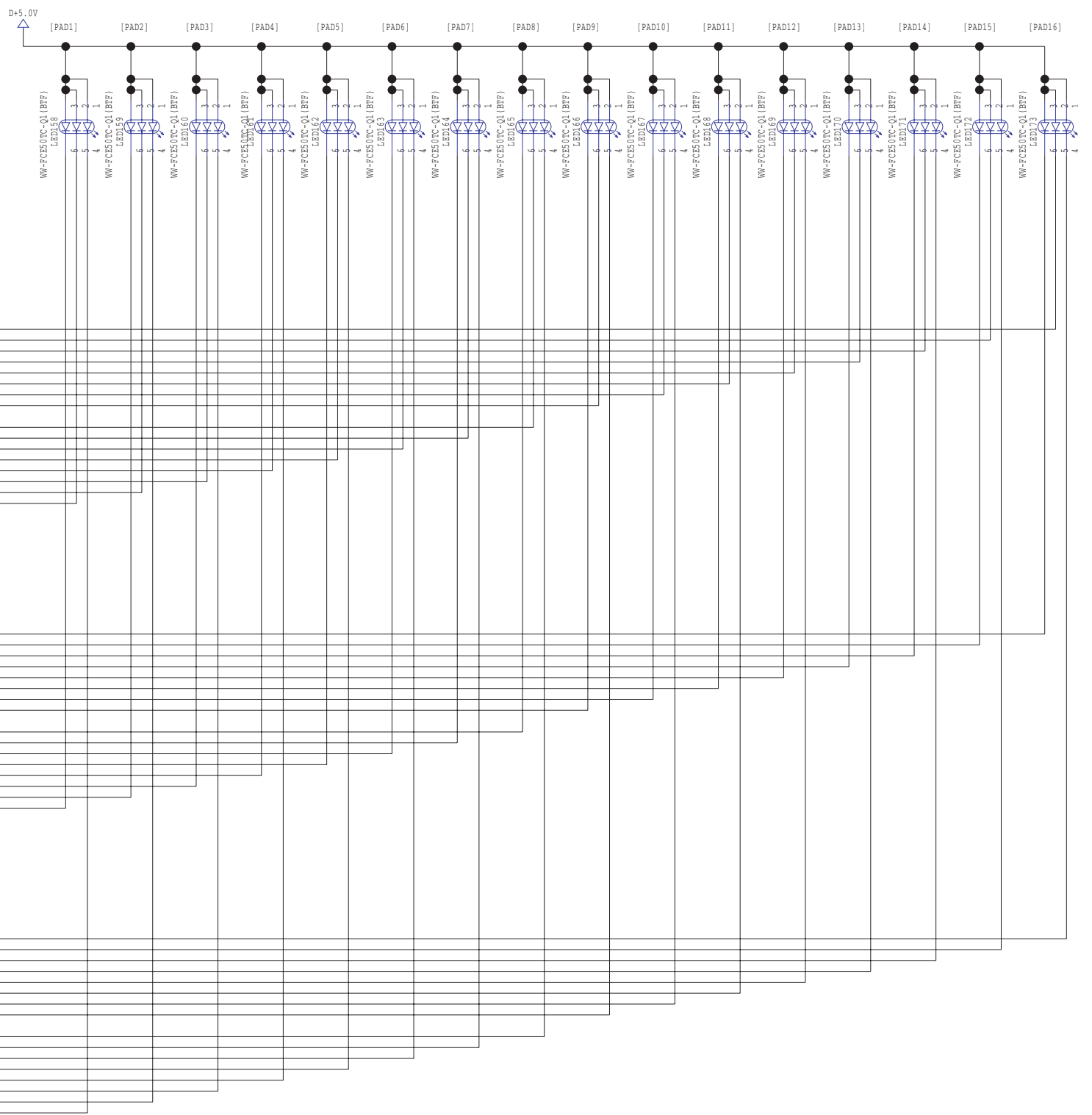


MASTER CPU side [PAD 1]-16

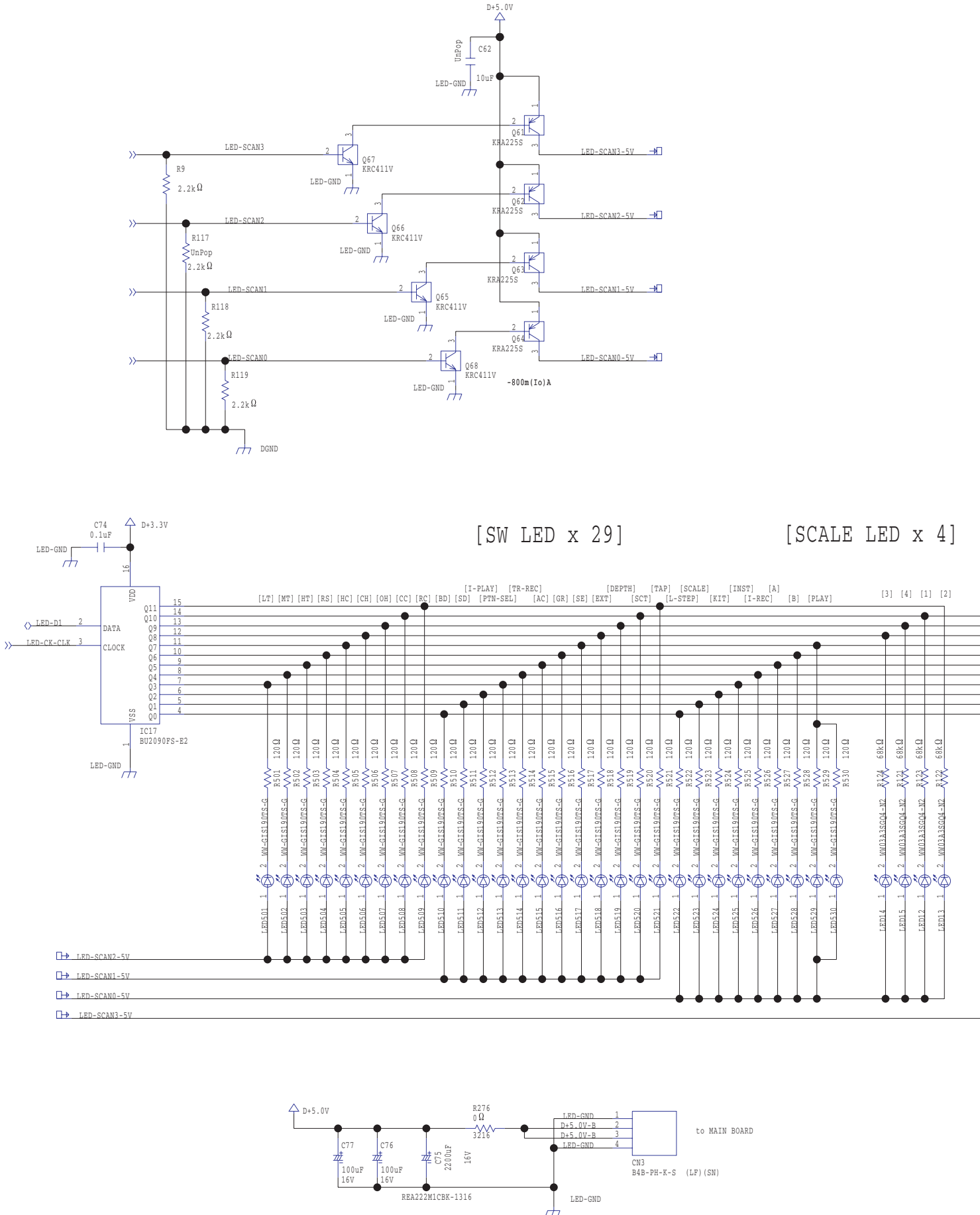


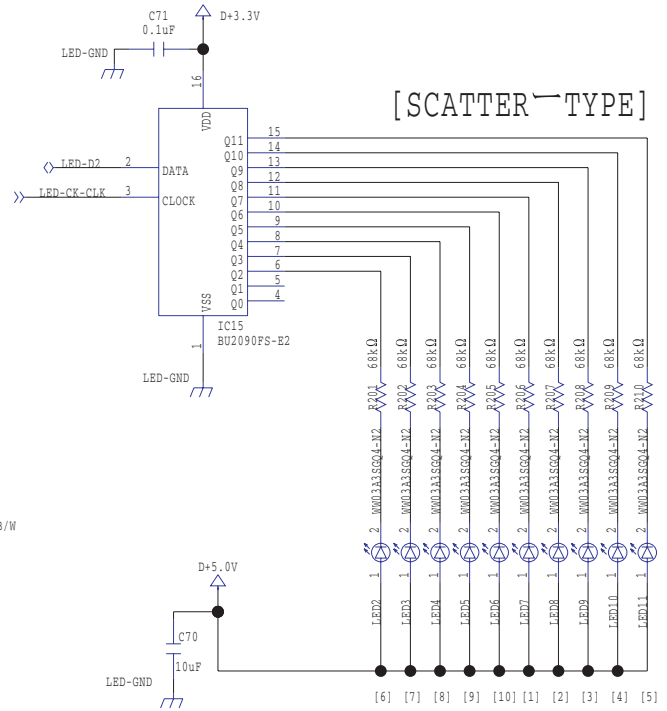
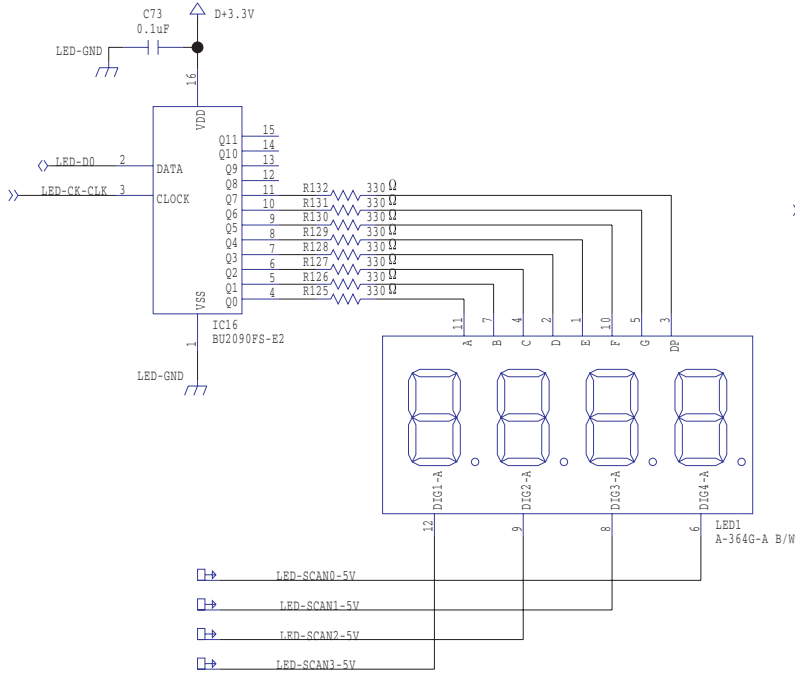
Circuit Diagram (Panel Board: 4/6)



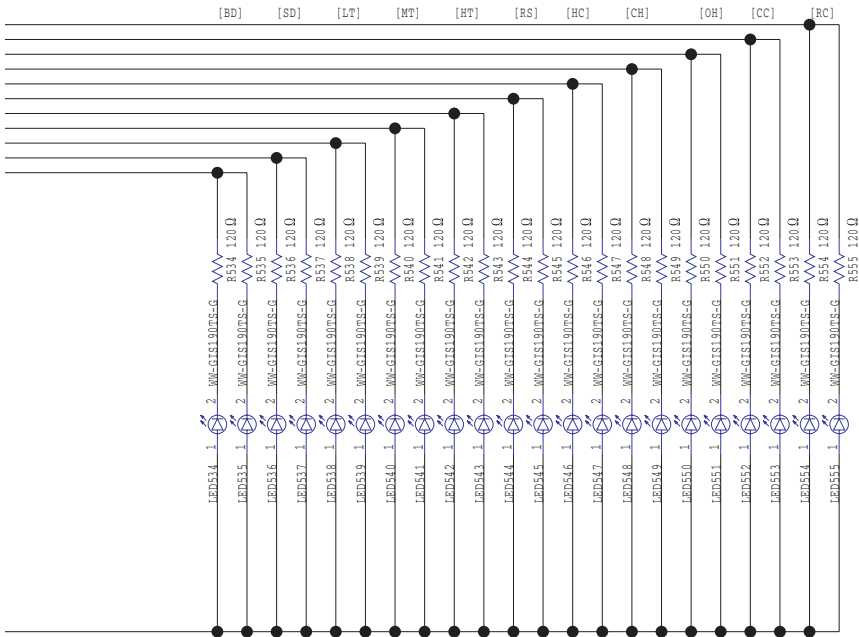


Circuit Diagram (Panel Board: 5/6)

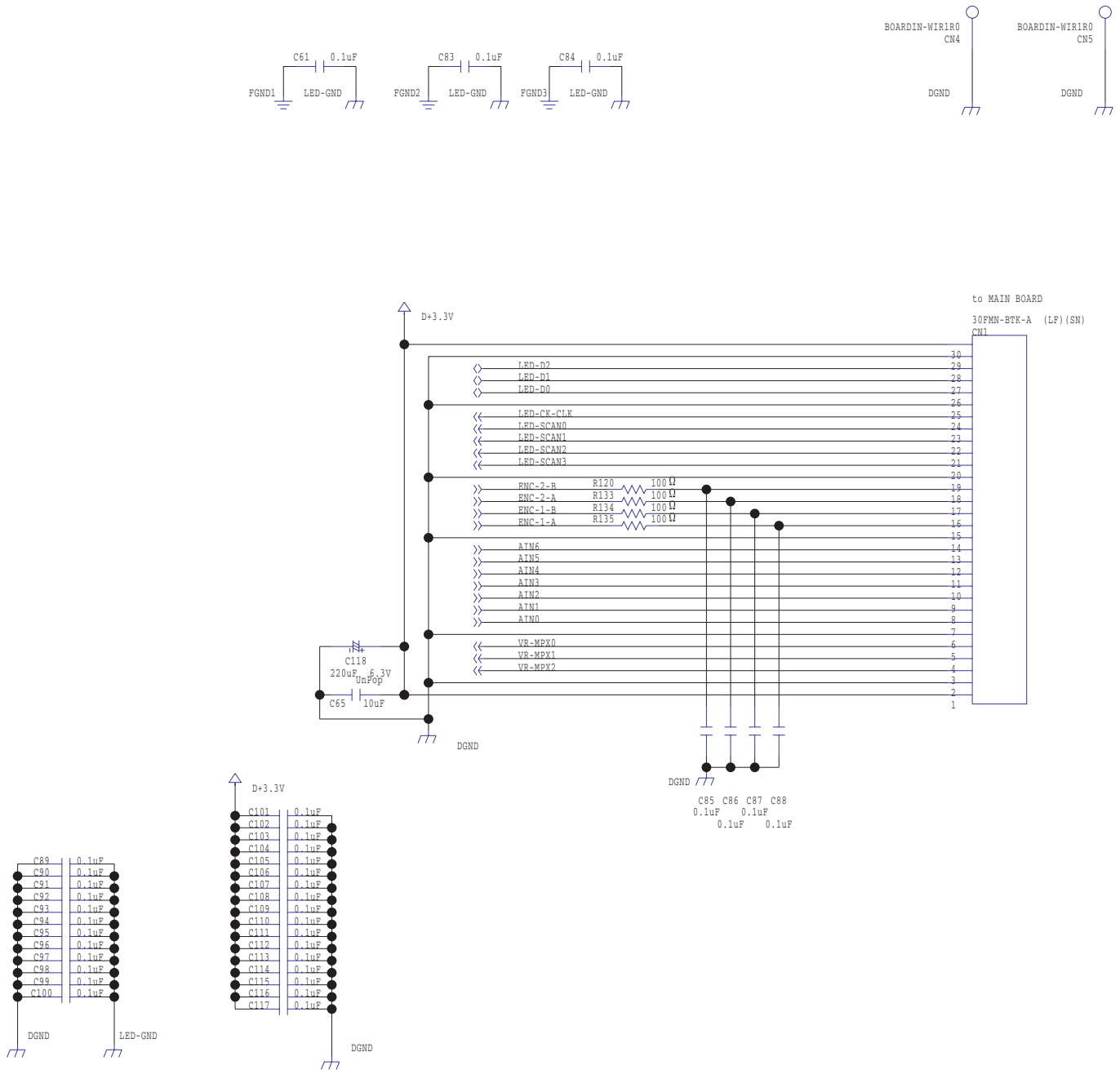


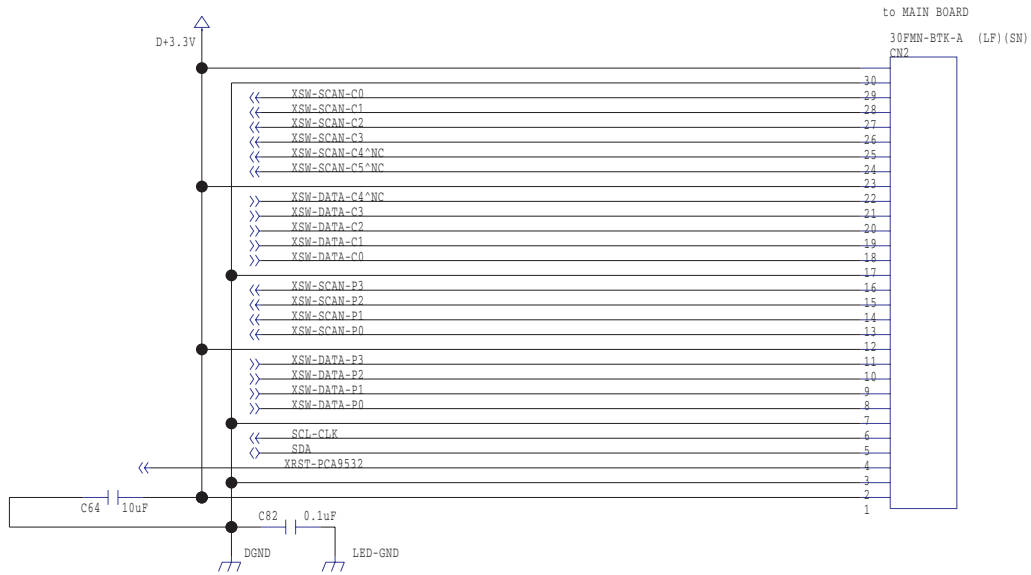


[SLIDER x 11]

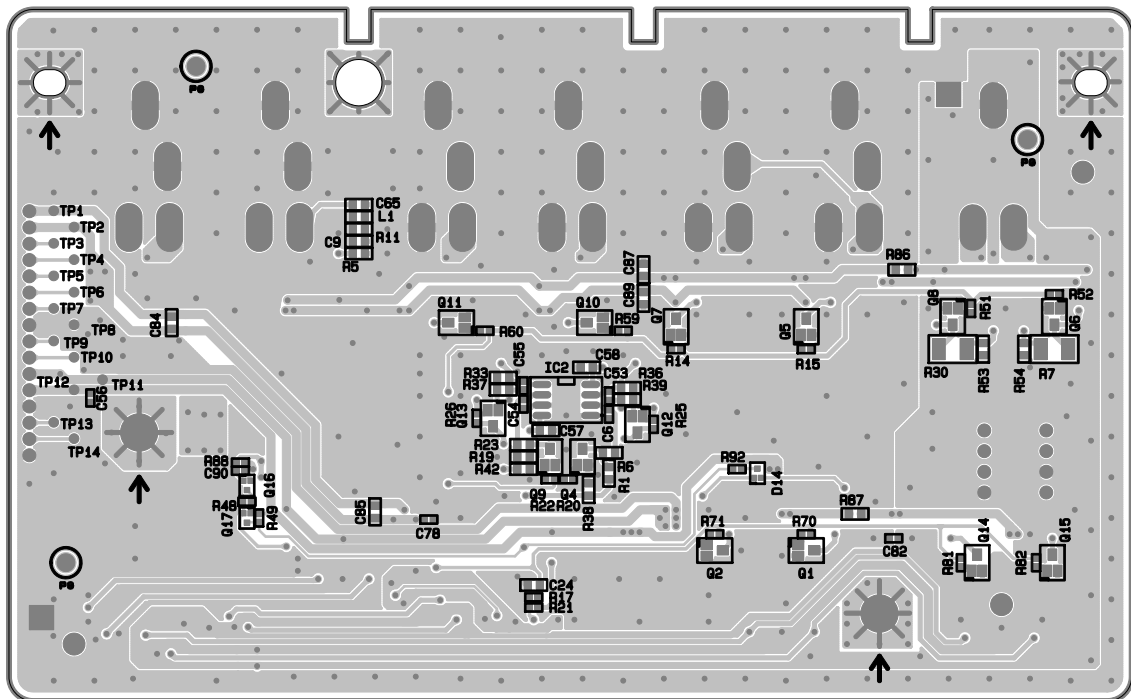
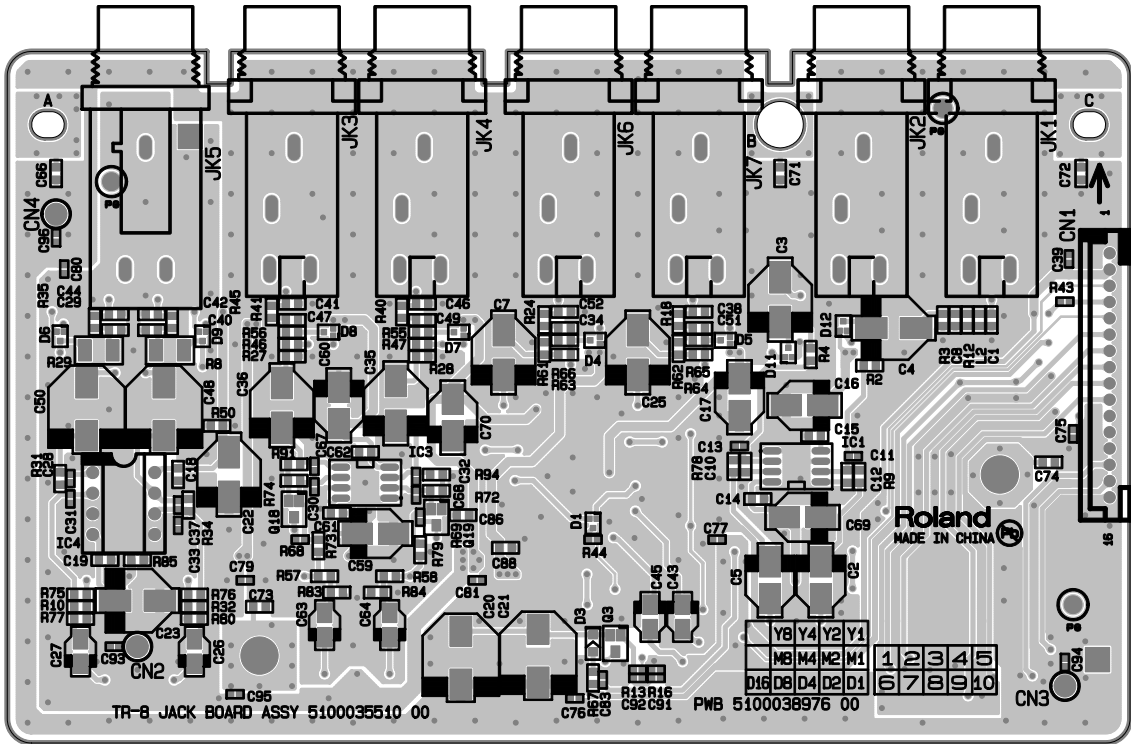


Circuit Diagram (Panel Board: 6/6)

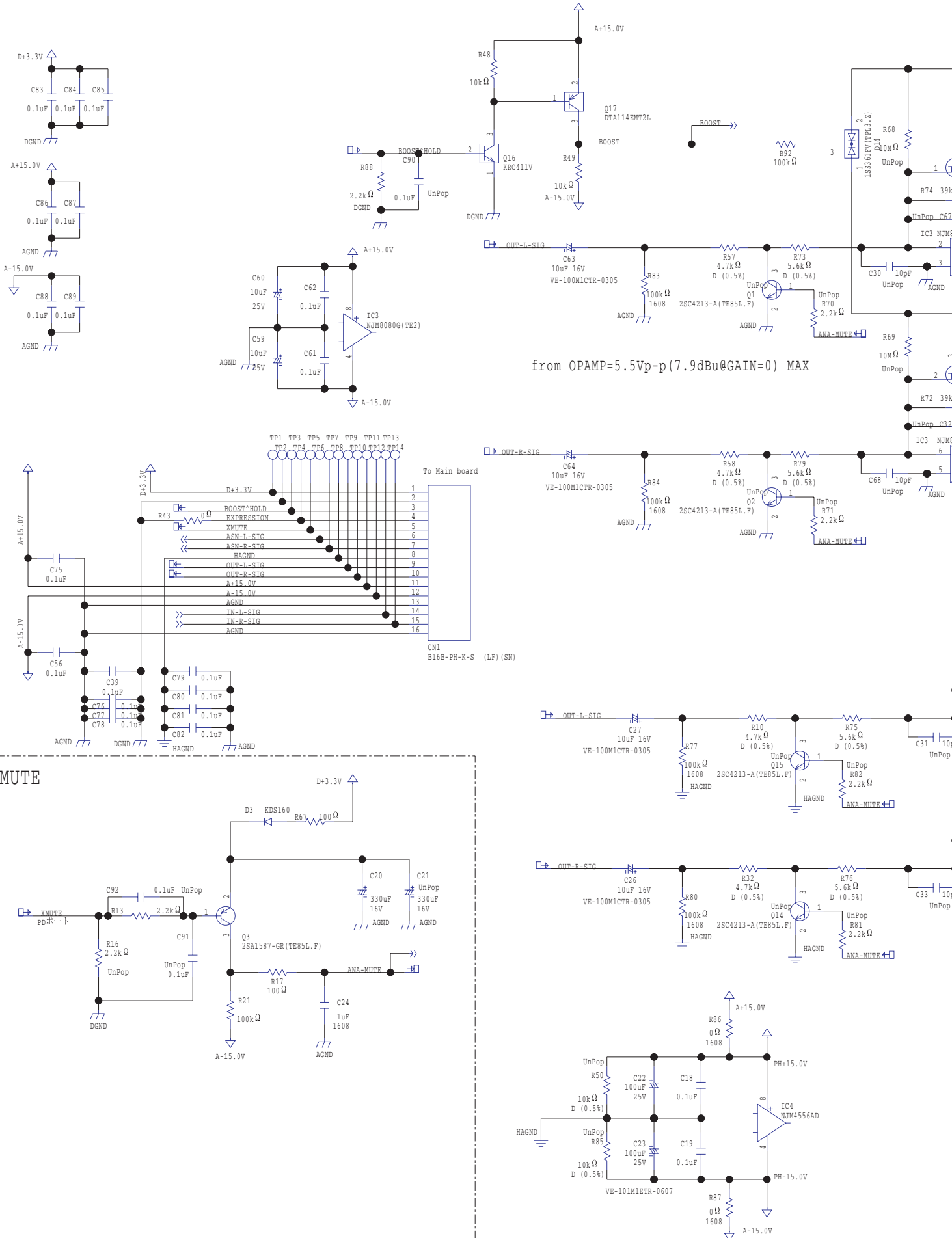


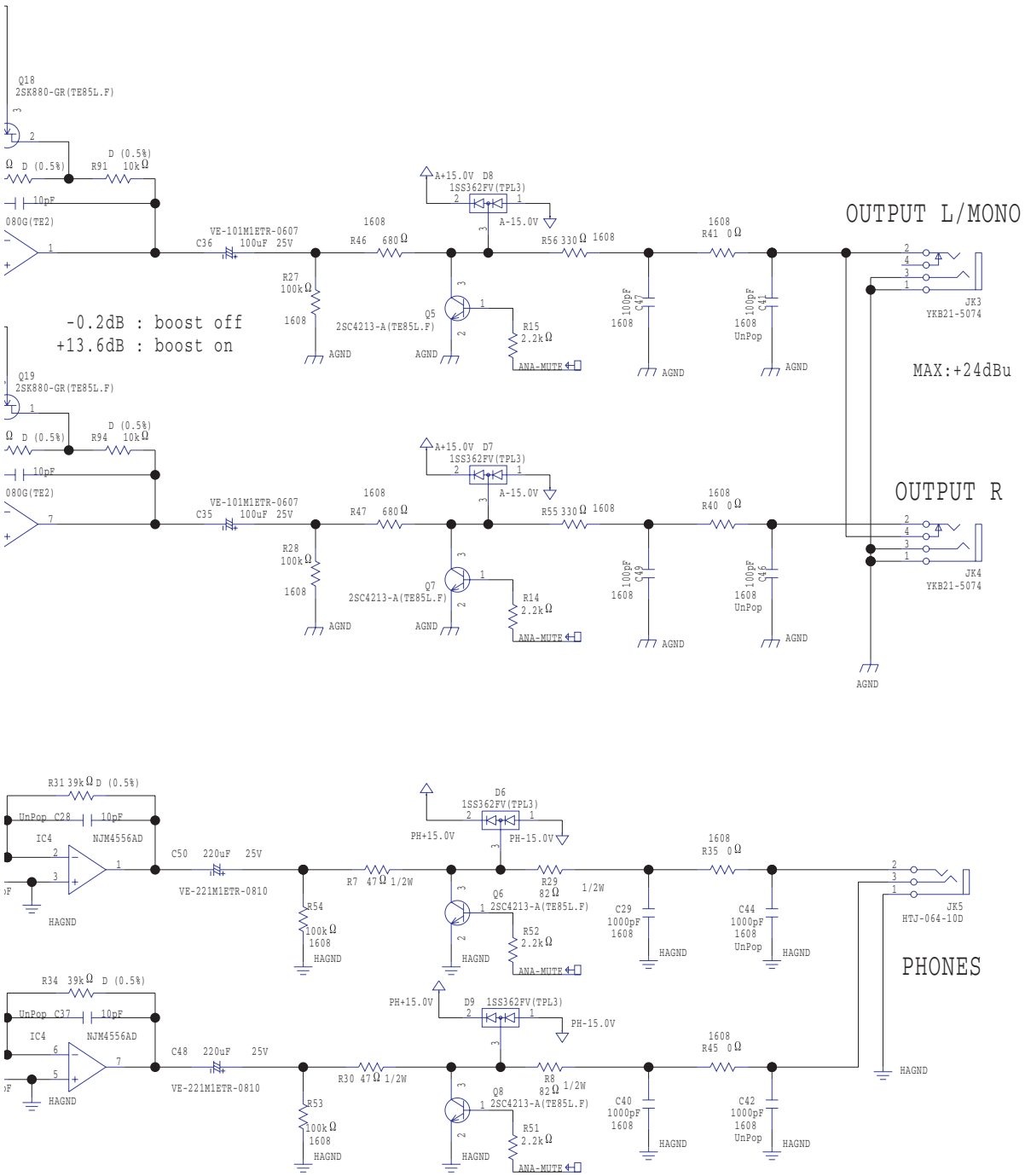


Circuit Board (Jack Board)



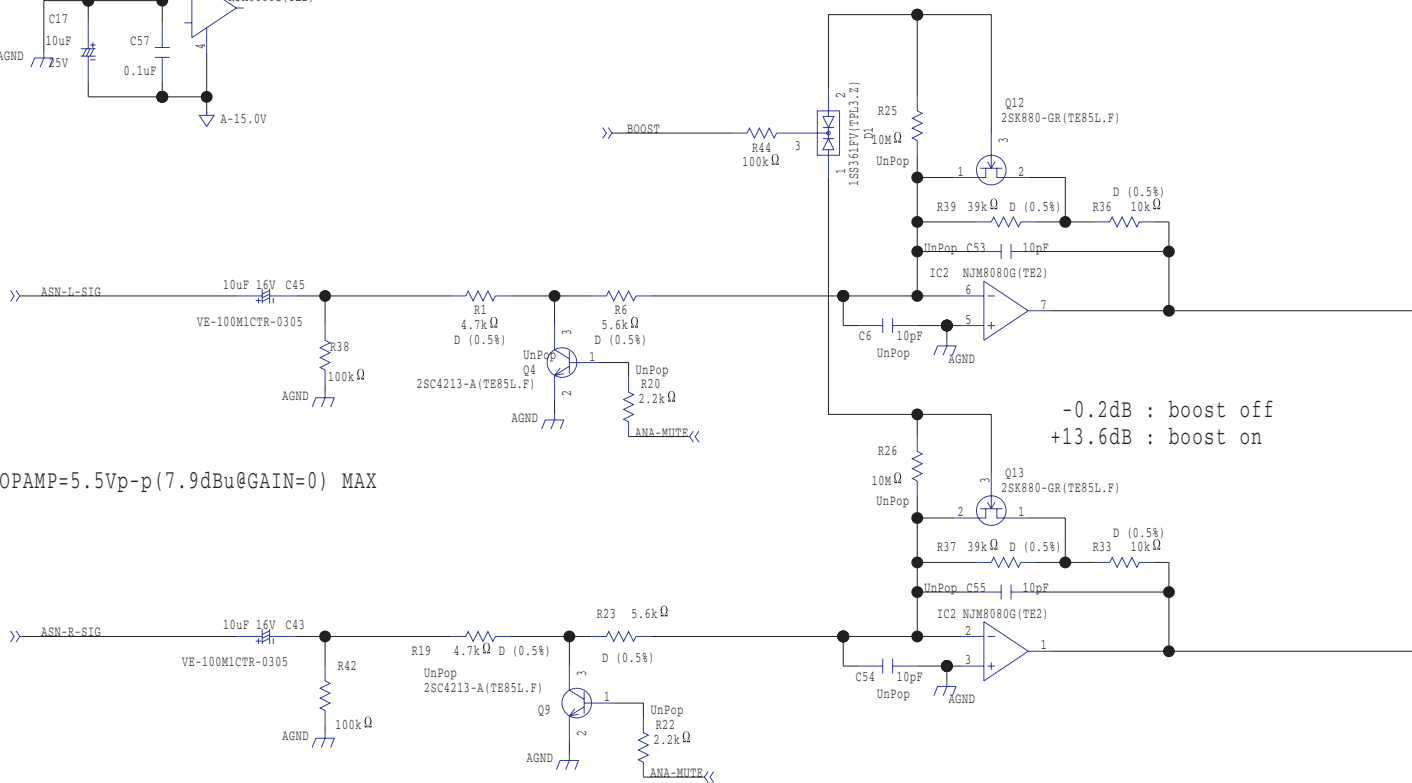
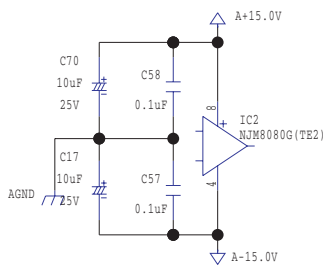
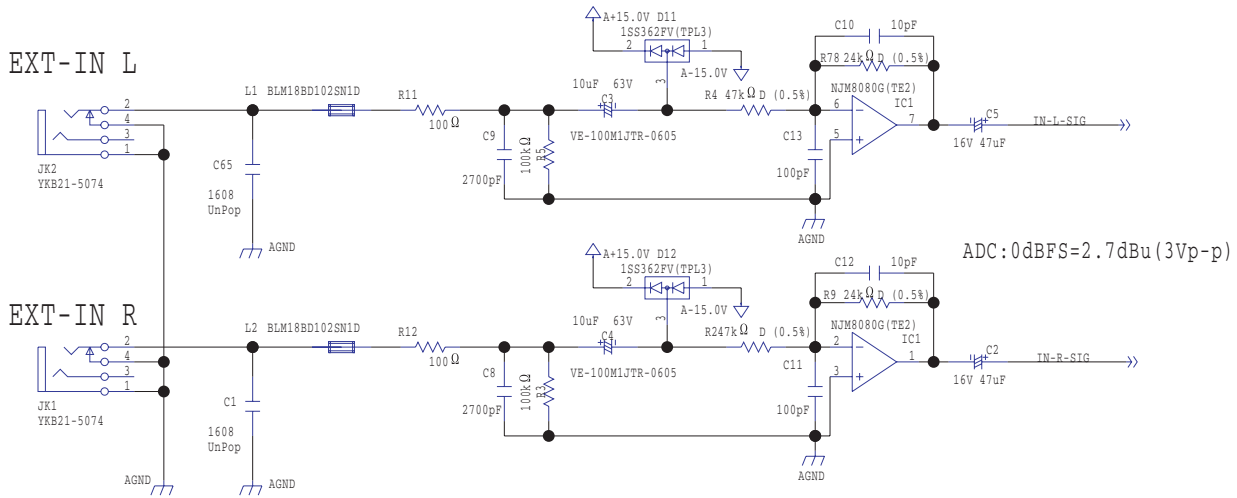
Circuit Diagram (Jack Board: 1/2)





Circuit Diagram (Jack Board: 2/2)

MAX=+8dBu (5.7Vp-p)
typ=-10dBu (0.78Vp-p)



from OPAMP=5.5Vp-p(7.9dBu@GAIN=0) MAX

