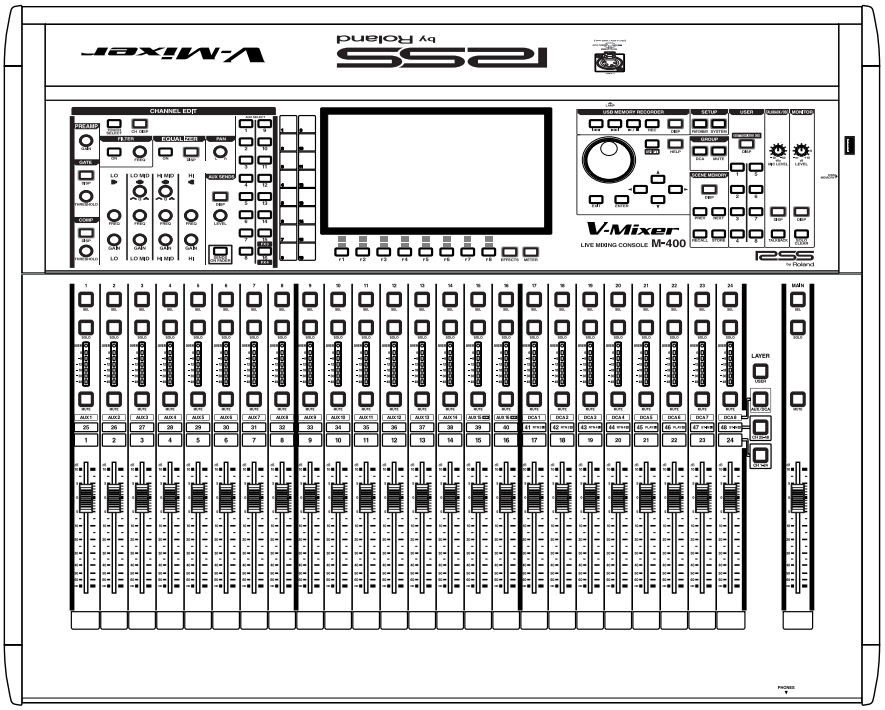
V-Mixer

M-400

LIVE MIXING CONSOLE

SERVICE NOTES
Issued by RJA



Roland

17058512E0

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Cautionary Notes

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

Important Notes When Replacing the Circuit Board

The M-400 saves a variety of data in the flash ROM, SRAM, and RTC on the Main Board. Before replacement, be sure to refer to "**Saving Data**" (p. 27) and **"Loading Data**" (p. 28) in this Service Notes to save the data, then load it back into the unit after replacing the circuit board.

The unit is also provided with an internal-clock feature, so remember also to set the date and time according to the procedures in "**Setting the Internal Clock**" (p. 30).

How the MAC Address Is Saved

The M-400's REAC uses Ethernet technology, so each unit must be assigned a unique MAC address.

The MAC address is saved in a serial EEPROM on the Main Board, and an appropriate MAC address is assigned when the unit is shipped from the factory.

When the Main Board is replaced in servicing, a suitable MAC address matched to the product type and serial number must be saved on the Main Board.

For details on the task flow for generating a MAC address and how to save it on the unit, refer to "**Setting the MAC Address**" (p. 29) in this Service Notes document.

Important Notes When Replacing the Lithium Battery

The M-400 uses SRAM to perform read/write access for some of the parameters required for operation. Removing the lithium battery causes the data in the SRAM to be lost.

The internal clock is also powered by the lithium battery.

Before replacing the lithium battery, be sure to refer to "**Saving Data**" (p. 27) and "**Loading Data**" (p. 28) in this Service Notes to save the data and then load it back into the unit after replacement.

Also, after replacement, set the internal clock according to the procedure described in "**Setting the Internal Clock**" (p. 30).

Startup Modes

The M-400 has the two startup modes described below.

Factory Test Mode

This mode is for checking the version, conducting various tests, saving the MAC address, and the like.

Startup method: Hold down the [F6] and [F8] function buttons and the [METER] button and switch on the power.

Normal Mode

This is the mode for performing normal operation.

Startup method: Switch on the power without holding down any other buttons.

Back Up User Data!

User data may be lost during the course of the procedure. Refer to "Users Data Save and Load" in the Service Notes and save the data. After completing the procedure, restore the backed-up data to the product.

USB Memory Devices

For the USB memory device used to update the M-400 and for saving and loading data, be sure to use a device that has been formatted on the M-400. For information on how to perform formatting, refer to the section entitled "**Formatting a USB Memory Device**" (p. 27).

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 ******** cannot 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).

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

M-400: LIVE MIXING CONSOLE

Number of Channels

48 in, 18 BUS, 58 out

AD/DA Conversion

Sample Rate: 48.0 kHz or 44.1 kHz
Signal Processing: 24 bits

Internal processing

56 bits

Frequency Response

CONSOLE OUTPUT jacks (1 to 8):
-2 dB/+0 dB (20kΩ load, +4 dBu)
PHONES jack: -3 dB/+0 dB (40Ω load, 150 mW)

* *Sample Rate: 48.0 kHz or 44.1 kHz*

* *Input Connector: CONSOLE INPUT*
(Pad: ON, Input gain: +4 dBu, 20 Hz to 20 kHz)

Total Harmonic Distortion + Noise

CONSOLE OUTPUT jacks (1 to 8):
0.05% (typ., +4 dBu)
PHONES jack: 0.05% (typ., 40Ω load, 150 mW)

* *Sample Rate: 48.0 kHz or 44.1 kHz*

* *Input Connector: CONSOLE INPUT*
(Pad: ON, Input gain: +4 dBu, 20 Hz to 20 kHz)

Dynamic Range

CONSOLE OUTPUT jacks (1 to 8): 110 dB (typ.)

* *Sample Rate: 48.0 kHz or 44.1 kHz*

* *Input Connector: CONSOLE INPUT*
(Pad: ON, Input gain: +4 dBu)

Crosstalk@ 1 kHz

CONSOLE INPUT jacks (1 to 8): -80dB
(Pad: ON, Input gain: +10 dBu, typ.)
CONSOLE OUTPUT jacks (1 to 8): -100 dB (typ.)

* *Sample Rate: 48.0 kHz or 44.1 kHz*

Nominal Input Level (Variable)

CONSOLE INPUT jacks (1 to 8): -65 to -10 dBu (Pad: OFF) or
-45 to +10 dBu (Pad: ON)
STEREO IN jacks (L/R): -18 to 0 dBu
TALKBACK MIC IN jack: -50 to -10 dBu

Pad

20 dB ON/OFF

Input Impedance

CONSOLE INPUT jacks (1 to 8): 14 kΩ
STEREO IN jacks (L/R): 10 kΩ
TALKBACK MIC IN jack: 41 kΩ

Non Clip Maximum Input level

CONSOLE INPUT jacks (1 to 8): +8 dBu (Pad: OFF) or
+28 dBu (Pad: ON)
STEREO IN jacks (L/R): +18 dBu
TALKBACK MIC IN jack: +8 dBu

Nominal Output Level

CONSOLE OUTPUT jacks (1 to 8): +4 dBu
(Load impedance: 10 kΩ)

Output Impedance

CONSOLE OUTPUT jacks (1 to 8): 600 Ω
PHONES jack: 100 Ω

Recommended Load Impedance

CONSOLE OUTPUT jacks (1 to 8): 10 kΩ or greater
PHONES jack: 8 Ω or greater

Non Clip Maximum Output level

CONSOLE OUTPUT jacks (1 to 8): +22 dBu (1 kHz, 10 kΩ load)
PHONES jack: 150 mW + 150 mW
(1 kHz, 40Ω load)

Residual Noise Level (IHF-A, typ.)

-88 dBu (All faders: Min)
-80 dBu (Main Fader: Unity, Channel faders: Unity only one CONSOLE IN channel, Preamp gain: Min)
-61 dBu (Main Fader: Unity, Channel faders: Unity only one CONSOLE IN channel, Preamp gain: Max)
-73 dBu (All faders: Unity, Preamp gain: Min, S-1608 + S-4000S-3208, Total 48CH)
-41 dBu (All faders: Unity, Preamp gain: Max, S-1608 + S-4000S-3208, Total 48CH)

* *Input 150 Ω terminate*

* *Output Connector: CONSOLE OUTPUT jacks (1 to 8)*

* *Sample Rate: 48.0 kHz or 44.1 kHz*

Equivalent Input Noise Level (E.I.N.)

-126 dBu (Main Fader: Unity, Channel faders: Unity only one CONSOLE IN channel, Preamp gain: Max)

* *Output Connector: CONSOLE OUTPUT jacks (1 to 8)*

* *Sample Rate: 48.0 kHz or 44.1 kHz*

Network Latency

2.8 mS (typ.) *1

* *Total System Latency of audio signal from S-1608 inputs to outputs via M-400's REAC ports (A or B).*
* *Sample Rate: 48.0 kHz*
* *Effects: No insert effects*

Connectors

CONSOLE INPUT jacks (1 to 8): XLR-3-31 type (balanced, phantom power)
TALKBACK MIC IN jack: XLR-3-31 type (balanced, phantom power)

STEREO IN jacks (L/R):	RCA phono type
CONSOLE OUTPUT jacks (1 to 8):	XLR-3-32 type (balanced)
PHONES jack:	Stereo 1/4 inch phone type
DIGITAL OUT jacks x 2:	Optical type, Coaxial type
REAC ports x 3:	RJ-45 EtherCon type
RS-232C connector:	9-pin D-sub type
MIDI connectors (OUT/THRU, IN):	5-pin DIN type
USB connectors:	USB Type A and Type B
LAMP connector:	XLR-4-31 type
Grounding terminal	
AC INPUT connector	

* *XLR type: 1 GND, 2 HOT, 3 COLD*
* *phantom power:DC+48V/14mA (All XLR type inputs)*
* *LAMP power:DC+12V/500mA*

Display

800 x 480 dots Wide VGA backlit TFT, 260 thousand color screen

Power Supply

AC 115 V, AC 117 V, AC 220 V, AC 230 V, AC 240 V (50/60 Hz)

Power Consumption

95 W

Dimensions

749.0 (W) x 626.0 (D) x 229.0 (H) mm
29-1/2(W) x 24-11/16(D) x 9-1/16(H) inches

Weight

19.8 kg
43 lbs 11 oz

Operation Temperature

+5 to +40 degrees Celsius
+41 to +104 degrees Fahrenheit

Accessories

Power Cord 120V (#00894378)
230V (#00894389)
240VE (#00907001)
240VA (#23495124)
220VCN (#00894389)
REAC Connector Covers (#04126434) x 3
Ferrite Core (#03128223) x 3
Cover (#04893689)
Owner's Manual English (#73674090)
Channel Number Sticker (#********)

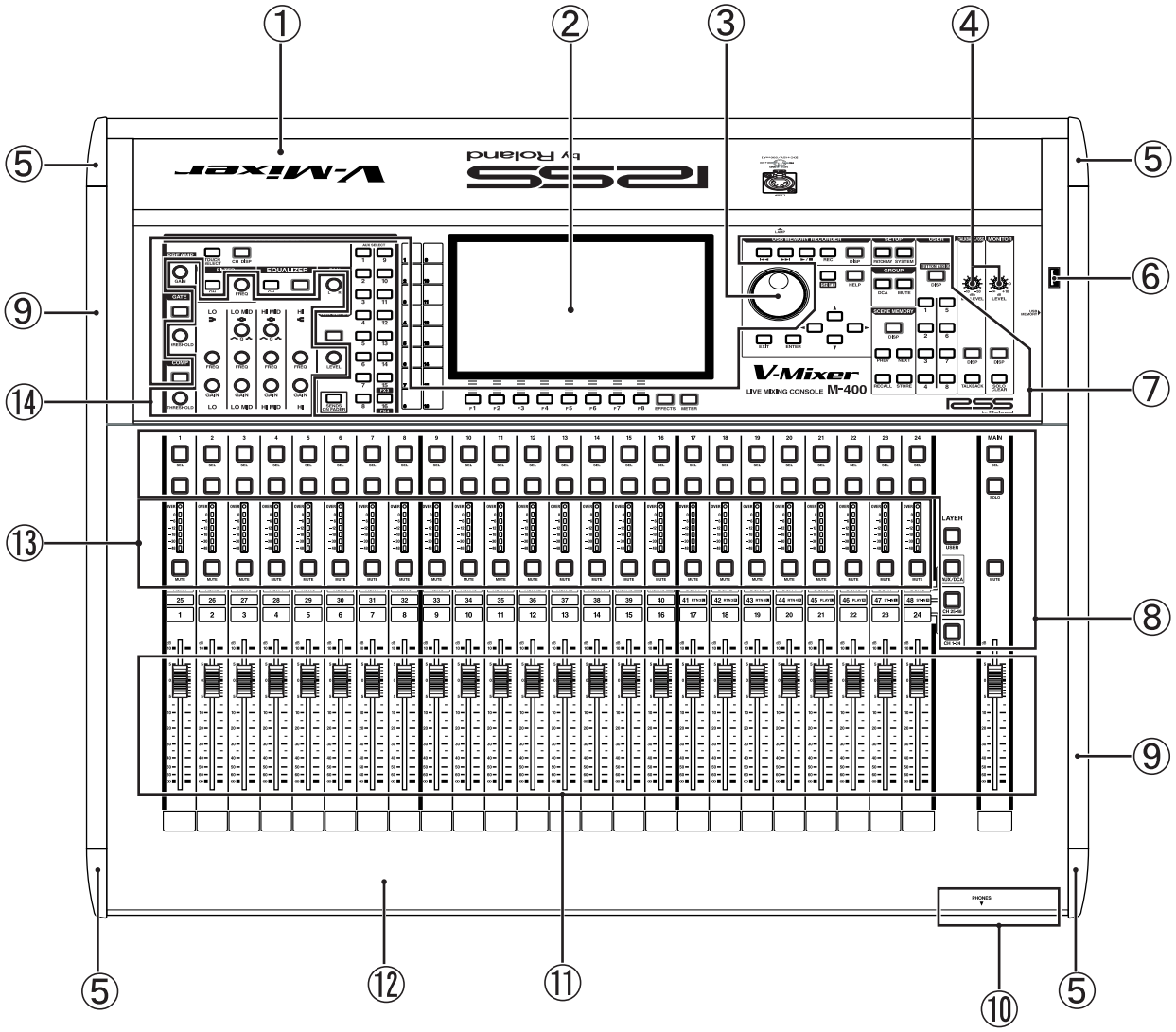
Options

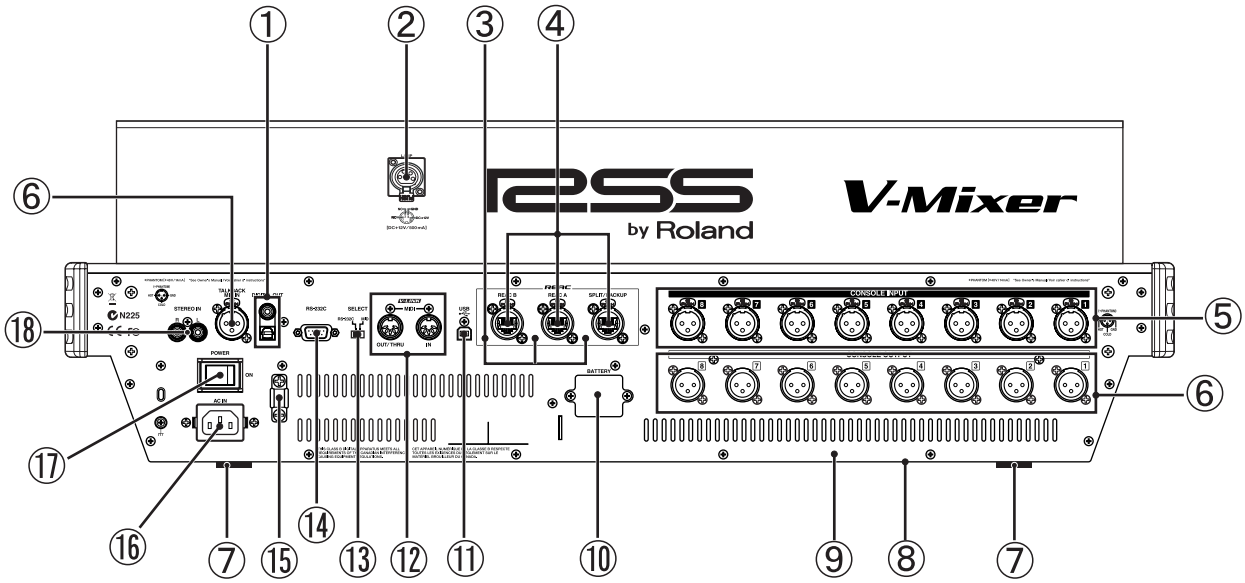
Stage unit: S-1608
Stage unit: S-4000S-3208
FOH unit: S-0816
REAC Splitter: S-4000-SP
REAC Optical Converter: S-OPT
Cat5e Ethernet Crossover Cable with Neutrik(R) EtherCon(R) Plug: SC-W100S (100 m)
Cat5e Ethernet Crossover Cable with Neutrik(R) EtherCon(R) Plug and reel: W100S-R (100 m)

* *0dBu = 0.775Vrms*
* *In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.*

*1 *When a REAC Splitter S-4000-SP or a switching hub is used in-line with REAC cables, the network latency will increase by the amount of processing delay introduced by the splitting device itself. The actual delay is dependant upon the specifications of the splitting device, though the maximum delay amount for a single splitting device should be about 200 microseconds.*

Location of Controls





Location of Controls Parts List

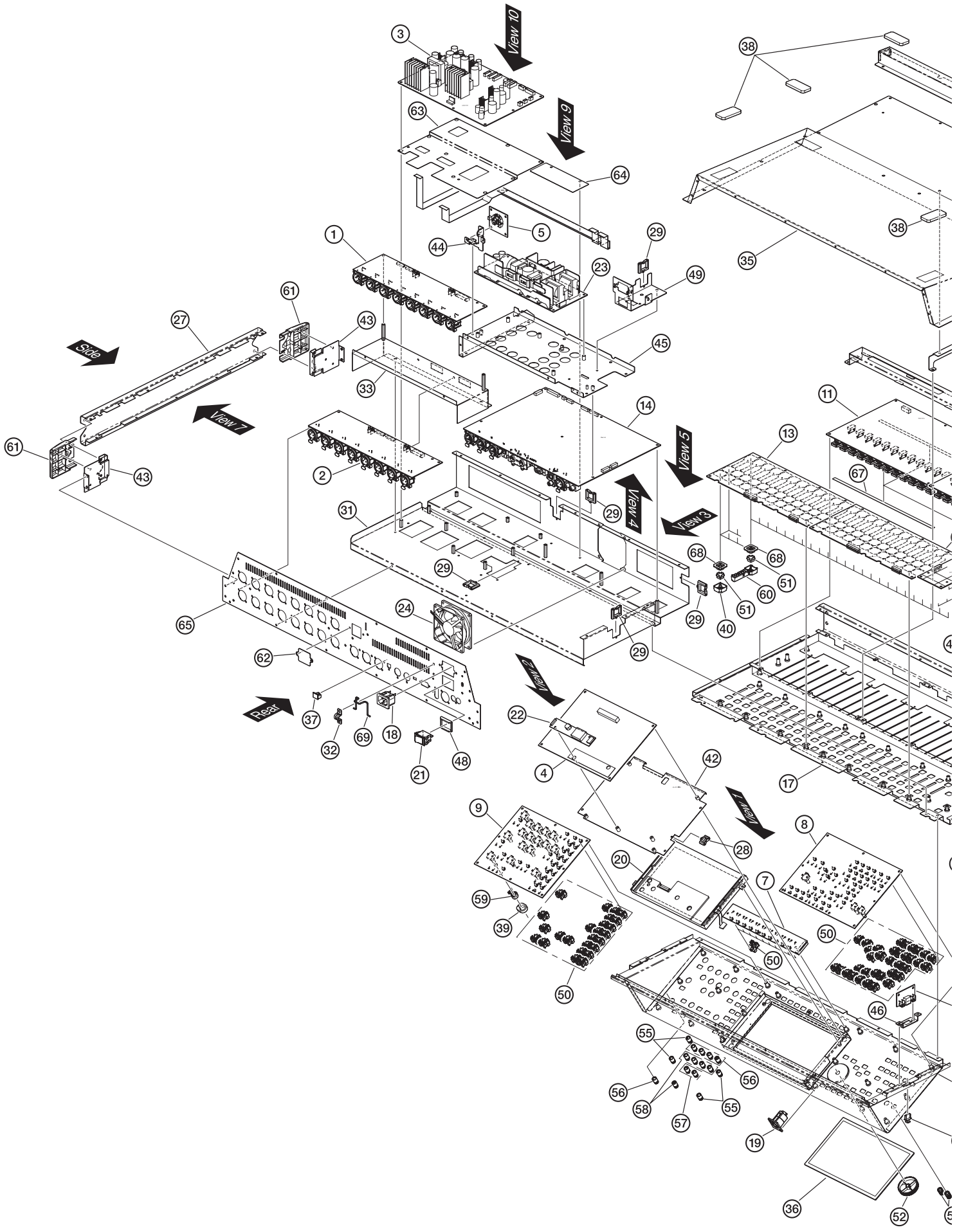
Front

No.	Part Code	Part Name	Description	Q'ty
1	73781345	CONSOLE PANEL ASSY		1
2	04783501	DISPLAY COVER		1
	04781334	LCD	LTA085C185F	1
3	22485303	D R-KNOB(ALPHA-DIAL)	L BLK 248-303	1
	02345734	ROTARY ENCODER	EVE LA1 F20 24B	1
4	01891801	U R-KNOB	S1 LCG BLK	2
	01787545	9M/M ROTARY POTENTIOMETER	EVUF2KFK3B14 10KB	2
5	04781745	CORNER COVER	(M450002)	4
6	03786745	USB CONNECTOR A TYPE FEMALE	YKF45-0027	1
7	03126856	D S-KEYTOP	SX2H-B CLR	35
	02891789	TACT SWITCH	SKRGADD010 H=5.0	70
	04890401	LED	SLI-325DUT31W	53
	03012001	LED	SML72423C TP15 D RANK	17
8	04455634	KEYTOP L		55
	04890501	RUBBER SW CLR	4 pcs/1 set	55/4
	04455612	SW ESCUTCHEON L	4 pcs/1 set	55/4
9	04783512	SIDE ANGLE		2
10	01891801	U R-KNOB	S1 LCG BLK	1
	02125778	9M/M ROTARY POTENTIOMETER	RK09L12B0	1
	13449148	JACK	YKB21-5009	1
11	04455590	FADER KNOB		25
	04780389	SLIDE POTENTIOMETER	RSA0N11M9A07	25
12	73781367	TOP CASE ASSY		1
13	04455634	KEYTOP L		24
	04783689	BAR LENS ASSY		24
	04890501	RUBBER SW CLR	4 pcs/1 set	6
14	03010956	VS KNOB S BLK		4
	04891467	VS KNOB S RED		5
	04891478	VS KNOB S LBU		2
	04891489	VS KNOB S GRN		5
	04782034	COLLAR	(M450001)	16
	04894012	BLIND CUSHION		16
	02345734	ROTARY ENCODER	EVE LA1 F20 24B	16

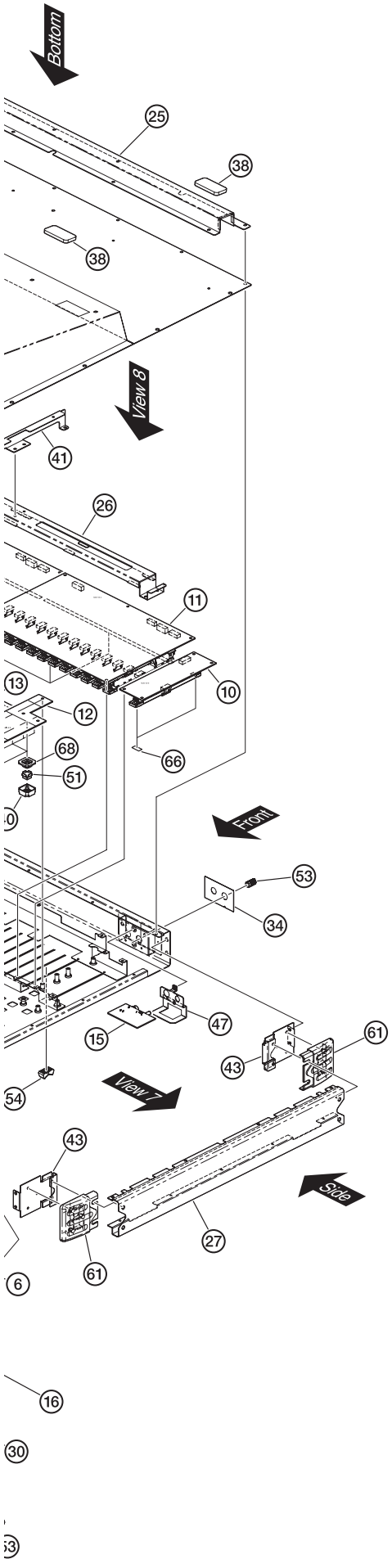
Rear

No.	Part Code	Part Name	Description	Q'ty
1	04780334	CONNECTOR	LAF1011-0102F	1
2	73786723	LAMP CONNECTOR ASSY		1
3	02015623	LED	SLR-342MG3F	3
	12169381	LED SPACER	LDS-90K	3
4	04121078	EXT CONNECTOR	NE8FBH	3
	04909356	ALUMINUM TAPE	AL-19T L7	3
5	01902645	XLR CONNECTOR	NC3FAH2 W/LOCK PIN	8
6	00679767	XLR CONNECTOR	NC3MAH	9
7	04890523	RUBBER CUSHION		6
8	04783590	BOTTOM COVER		1
9	04787267	REAR PANEL		1
10	04783667	BATTERY PANEL		1
	02567234	LITHIUM BATTERY	CR2032	1
11	02781101	USB CONNECTOR B TYPE FEMALE	YKF45-0020N	1
12	13429676	MIDI CONNECTOR	YKF51-5048N (TWIN)	1
13	02451689	SLIDE SWITCH	SSSF121900	1
14	04018401	D-SUB CONNECTOR(W/O BOSS NUT)	XM2C-0942-502L(9PIN)?	1
15	04569045	CORD HOOK		1
16	73786712	AC WIRING ASSY		1
	12449445	FERRITE-CORE	ESD-R-16C	2
17	01786012	SEESAW STITCH	JW-M11RKK	1
	01786045	SW HOLDER	AT-217K	1
18	03234590	RCA(PIN) JACK	YKC21-3503	1

Exploded View (Total)

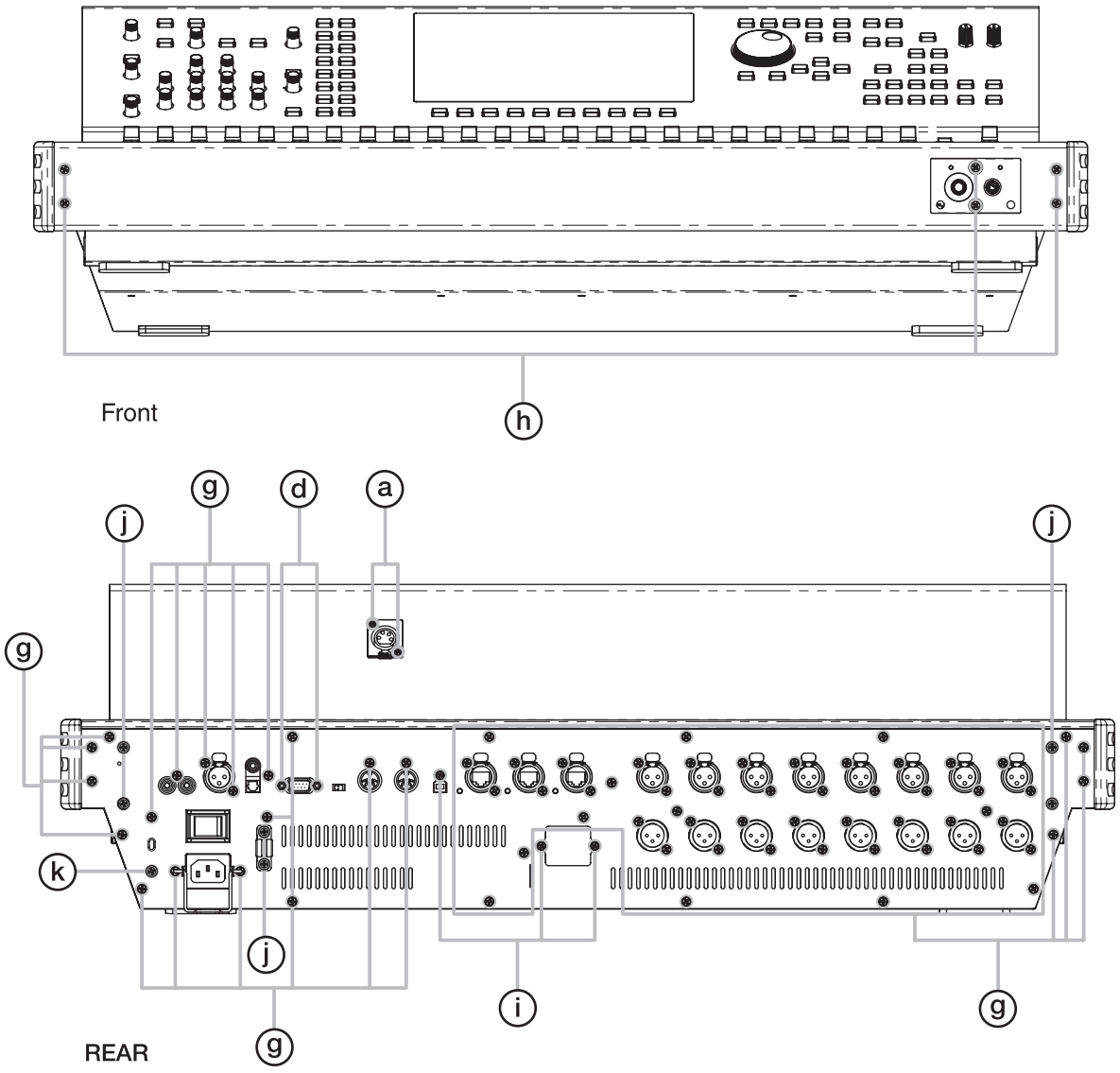


Exploded View Parts List



No.	Part Code	Part Name	Description	Q'ty
1	73673612	OUTPUT BOARD ASSY		1
2	73673623	INPUT BOARD ASSY		1
3	73673634	POWER BOARD ASSY		1
4	73673645	PANEL CPU BOARD ASSY		1
5	73673656	BATTERY BOARD ASSY		1
6	73673667	USB BOARD ASSY		1
7	73673678	FUNCTION BOARD ASSY		1
8	73673689	VOLUME BOARD ASSY		1
9	73673690	ENCODER BOARD ASSY		1
10	73673701	FADER B BOARD ASSY		1
11	73673712	FADER A BOARD ASSY		2
12	73673723	PANEL B BOARD ASSY		1
13	73673734	PANEL A BOARD ASSY		2
14	73673745	MAIN BOARD ASSY		1
15	73676190	PHONES BOARD ASSY		1
16	73781345	CONSOLE PANEL ASSY		1
17	73781367	TOP CASE ASSY		1
18	73786712	AC WIRING ASSY		1
19	73786723	LAMP CONNECTOR ASSY		1
20	04781334	LCD	LTA085C185F	1
21	01786012	SEESAW SWITCH	JW-M11RKK	1
22	04673767	EL-INVERTOR TRANS	CXA-0490	1
23	04125167	SWITCHING REGULATOR	LEP240F-24-SXRLD	1
24	04674290	MOTOR	9A0812L4D031	1
25	04783601	BASE ANGLE		1
26	04787190	FADER ANGLE		1
27	04783512	SIDE ANGLE		2
28	00902790	CORD BUSHING	EDS-1208U	1
29	01455523	CORD BUSHING	EDS-1717U	5
30	04891345	USB CONNECTOR CAP	(TK-UCAP)	1
31	04783589	SUB CHASSIS		1
32	04569045	CORD HOOK		1
33	04787245	INPUT BD COVER		1
34	04787345	PHONES COVER		1
35	04783590	BOTTOM COVER		1
36	04783501	DISPLAY COVER		1
37	04891367	DUST COVER	SWING TAB (DCMJST)	1
38	04890523	RUBBER CUSHION		6
39	04894012	BLIND CUSHION		16
40	04455612	SW ESCUTCHEON L		2
41	04787334	FADER RIB		1
42	04783567	CPU BOARD HOLDER		1
43	04783578	CORNER HOLDER		4
44	04787189	BATTERY HOLDER		1
45	04787256	MAIN BOARD HOLDER		1
46	04787278	USB HOLDER		1
47	04787289	VOLUME HOLDER		1
48	01786045	SW HOLDER	AT-217K	1
49	04787356	POWER SW HOLDER		1
50	03126856	D S-KEYTOP	SX2H-B CLR	3
51	04455634	KEYTOP L		3
52	22485303	D R-KNOB(ALPHA-DIAL)	L BLK 248-303	1
53	01891801	U R-KNOB	S1 LCG BLK	2
54	04455590	FADER KNOB		1
55	03010956	VS KNOB S BLK		2
56	04891467	VS KNOB S RED		2
57	04891478	VS KNOB S LBU		1
58	04891489	VS KNOB S GRN		1
59	04782034	COLLAR	(M450001)	1
60	04783689	BAR LENS ASSY		1
61	04781745	CORNER COVER	(M450002)	4
62	04783667	BATTERY PANEL		1
63	04787290	SHIELD PANEL A		1
64	04787301	SHIELD PANEL B		1
65	04787267	REAR PANEL		1
66	04896812	FADER PLATE A		2
67	04896823	FADER PLATE B		4
68	04890501	RUBBER SW CLR		3
69	04230823	CABLE LOCK SPRING-J	100V only	1
69	04015278	CABLE LOCK SPRING		1

Exploded View (1)



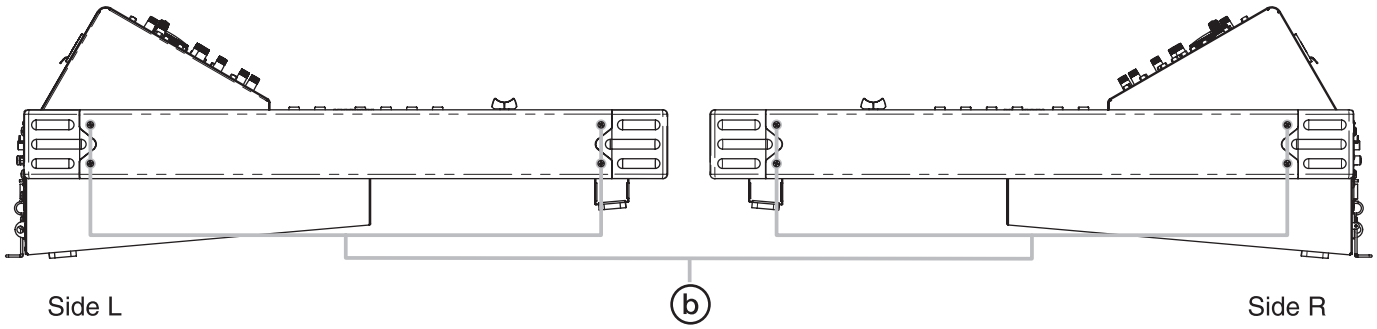
Front

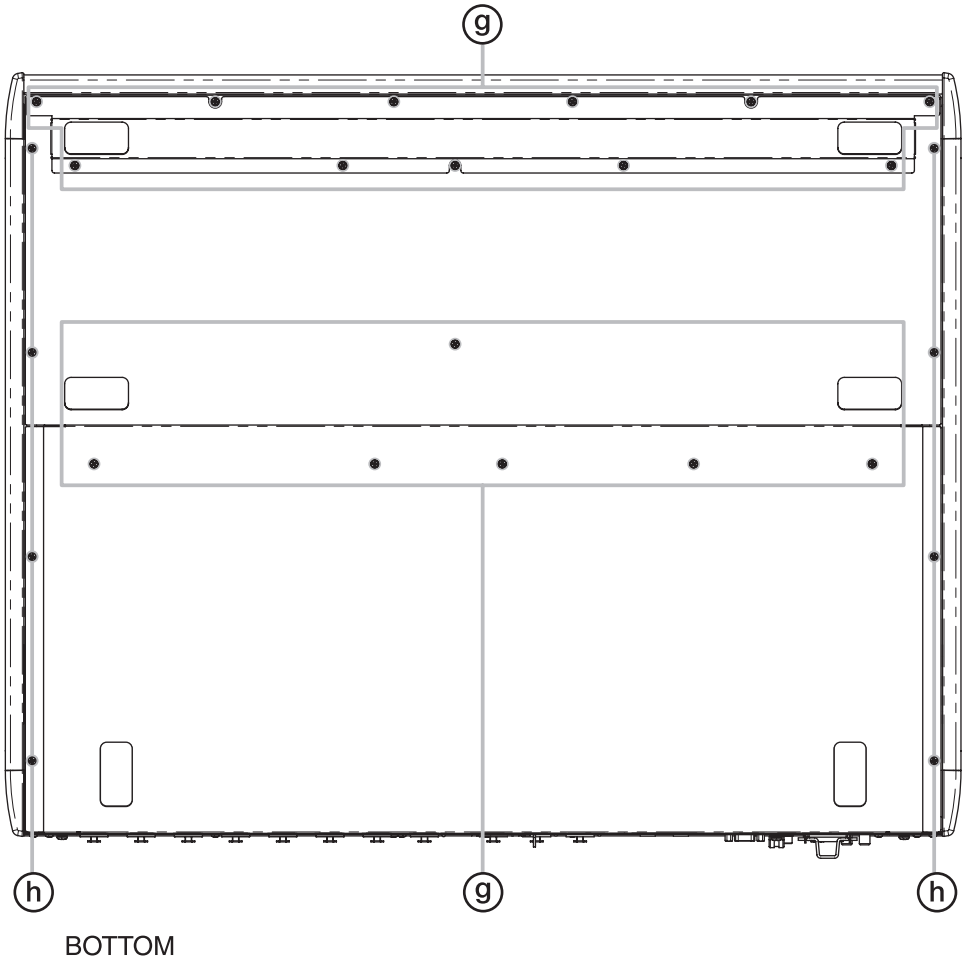
No.	Part Code	Part Name	Description	Q'ty
h	40011145	SCREW 3X6	FLAT TAPTITE B BZC	6

Rear

No.	Part Code	Part Name	Description	Q'ty
a	40782689	SCREW 2.6X6	PAN B-TITE NI	2
d	40344134	SCREW M4-40X7.9	HEX SOCKET NI	2
g	40011101	SCREW 3X8	BINDING TAPTITE B BZC	71
i	40342712	SCREW M3X6	PAN MACHINE W/SW+SMALL PW BZC	3
j	40345767	SCREW M4X10	PAN MACHINE W/SW+PW BZC	6
k	40458345	SCREW M4X8	PAN MACHINE W/SW+SMALL PW NI	1

Exploded View (2)





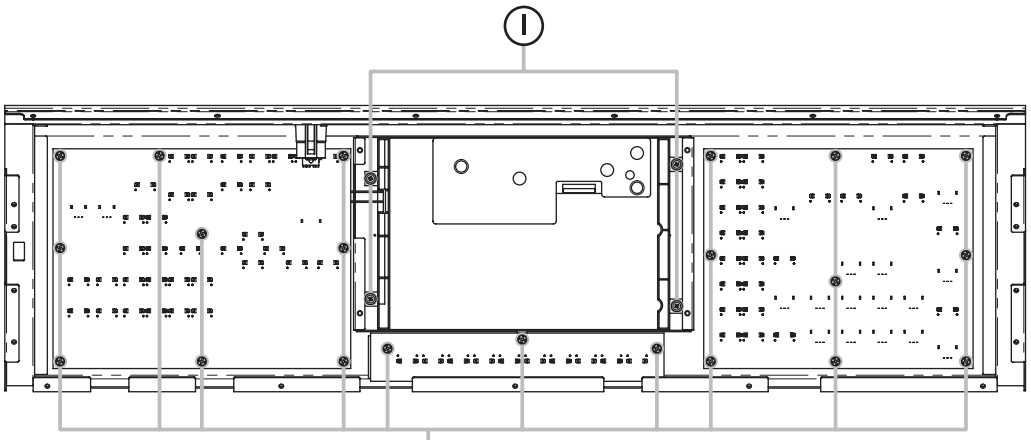
Side L/R

No.	Part Code	Part Name	Description	Q'ty
b	40679301	SCREW M3X6	FLAT MACHIN NI	8

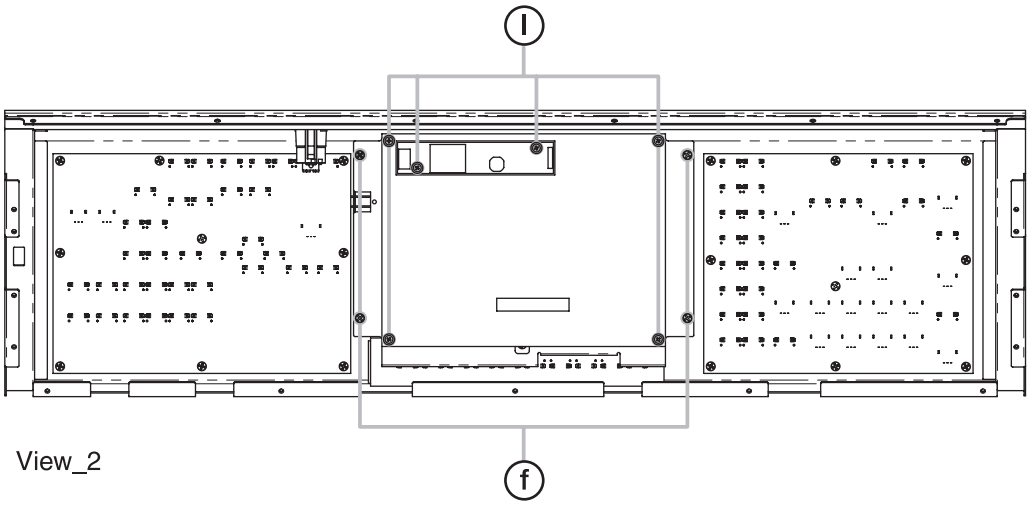
Bottom

No.	Part Code	Part Name	Description	Q'ty
g	40011101	SCREW 3X8	BINDING TAPTITE B BZC	17
h	40011145	SCREW 3X6	FLAT TAPTITE B BZC	8

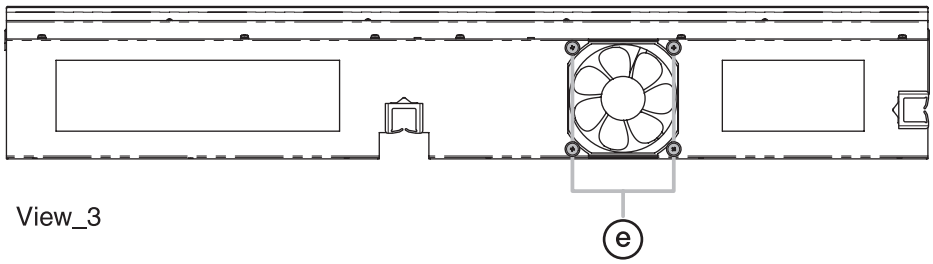
Exploded View (3)



View_1



View_2



View_3

View. 1

No.	Part Code	Part Name	Description	Q'ty
f	40011056	SCREW 3X6	BINDING TAPTITE B ZC	21
l	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	4

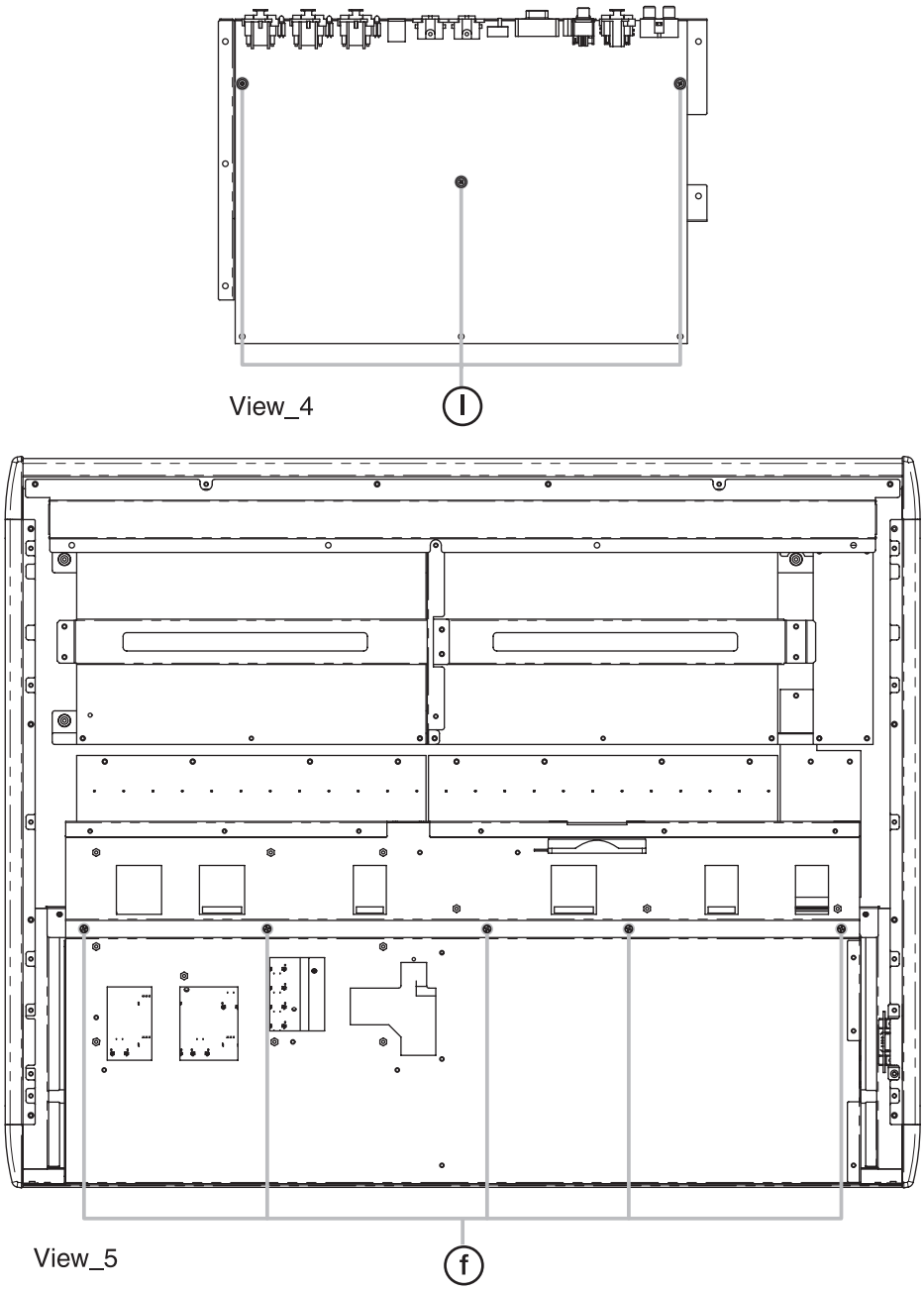
View. 2

No.	Part Code	Part Name	Description	Q'ty
f	40011056	SCREW 3X6	BINDING TAPTITE B ZC	4
l	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	6

View. 3

No.	Part Code	Part Name	Description	Q'ty
e	40561745	SCREW 5X10	BINDING TAPPING B1 BZC	4

Exploded View (4)



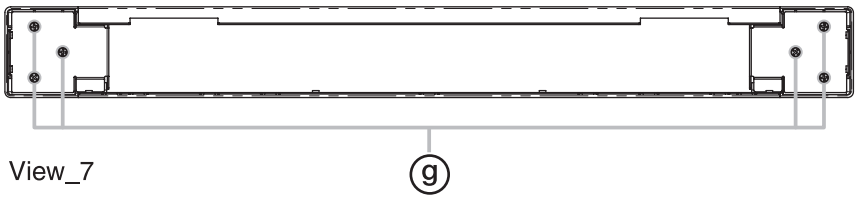
View. 4

No.	Part Code	Part Name	Description	Q'ty
l	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	3

View. 5

No.	Part Code	Part Name	Description	Q'ty
f	40011056	SCREW 3X6	BINDING TAPTITE B ZC	5

Exploded View (5)



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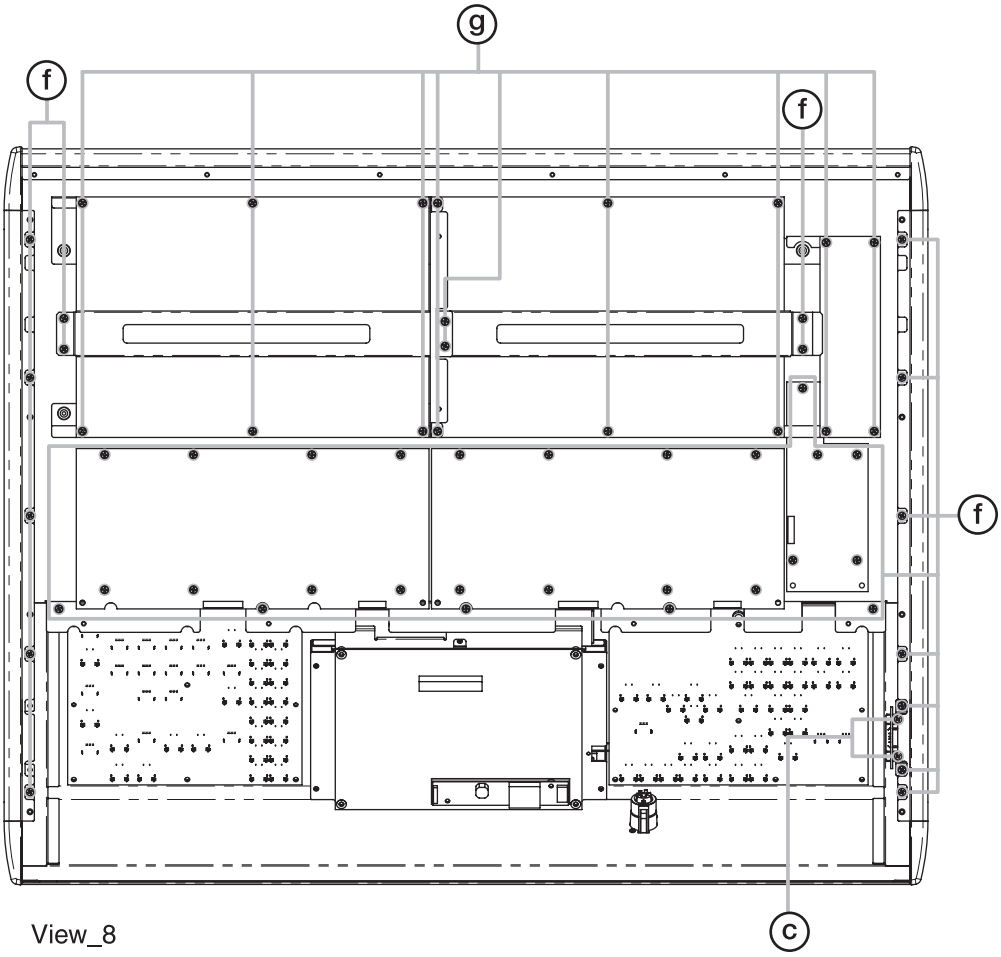


View_8

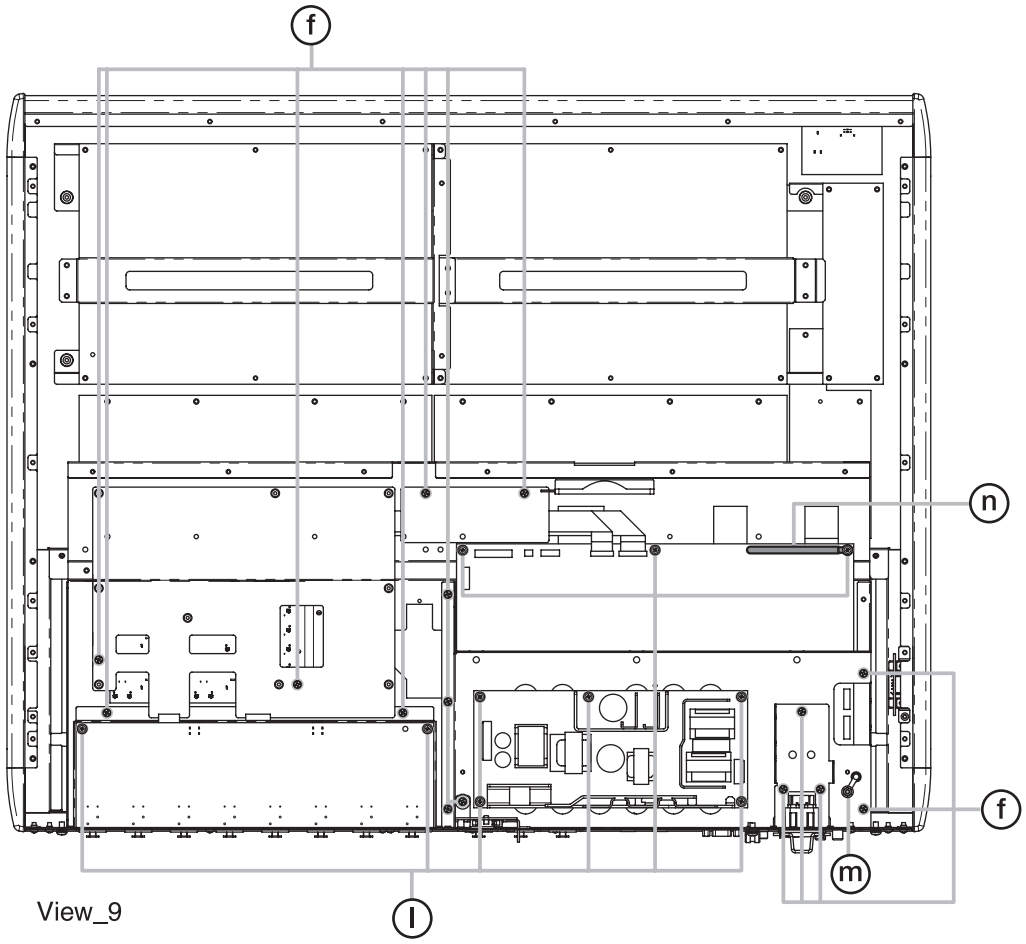
View. 7

No.	Part Code	Part Name	Description	Q'ty
g	40011101	SCREW 3X8	BINDING TAPTITE B BZC	6

View. 8

No.	Part Code	Part Name	Description	Q'ty
c	40782667	SCREW 3X5	FLAT MACHINE ZC	2
f	40011056	SCREW 3X6	BINDING TAPTITE B ZC	42
g	40011101	SCREW 3X8	BINDING TAPTITE B BZC	18

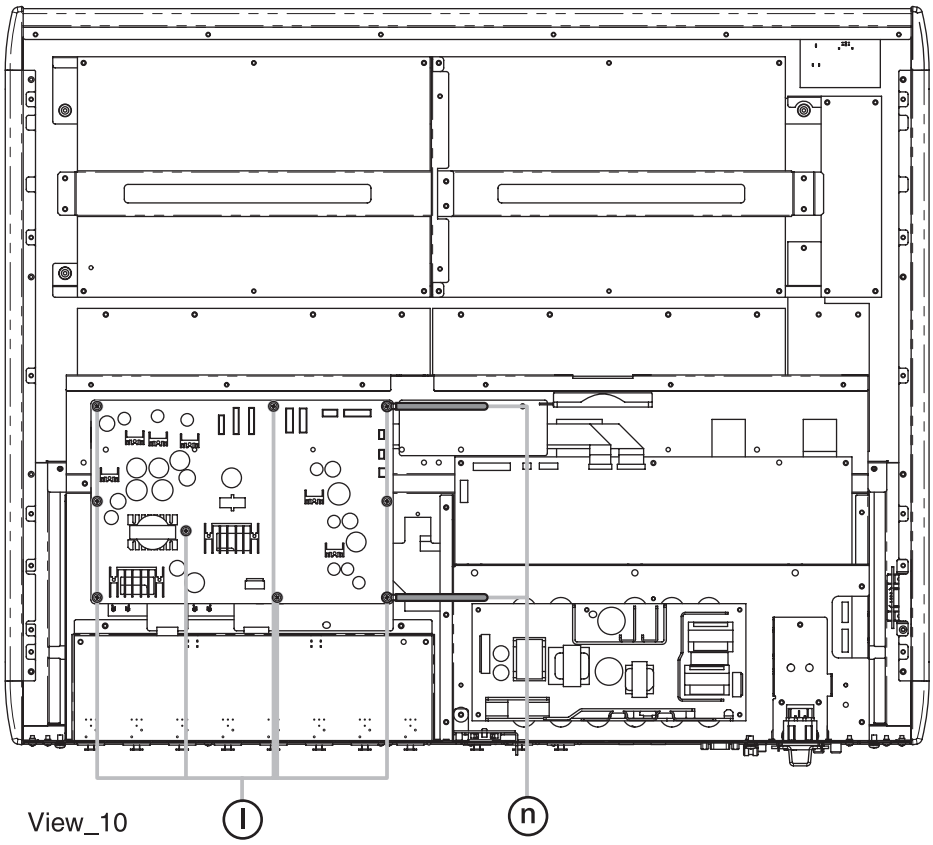
Exploded View (6)



View. 9

No.	Part Code	Part Name	Description	Q'ty
f	40011056	SCREW 3X6	BINDING TAPTITE B ZC	15
l	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	10
m	40011745	HEX NUT M4	SPRING NUT FE ZC	1
n	40017401	COATING CLIP CS-7U		1

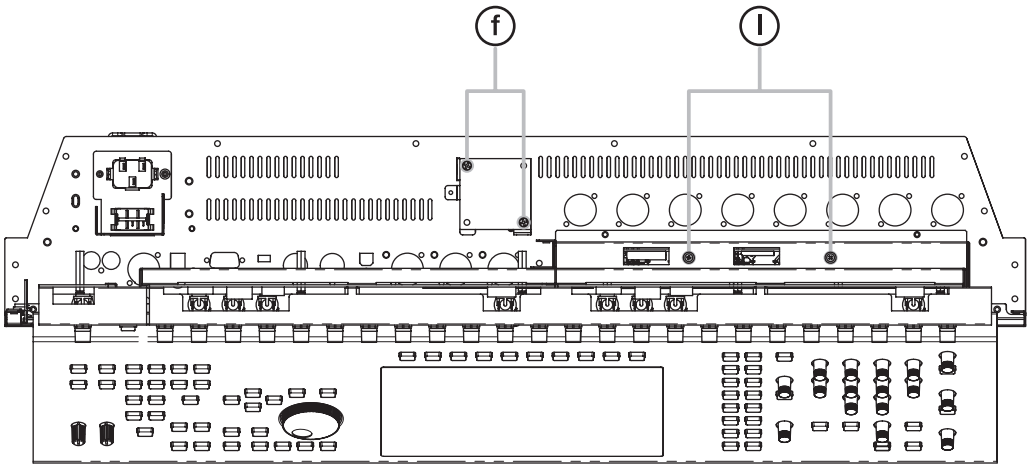
Exploded View (7)



View_10

View. 10

No.	Part Code	Part Name	Description	Q'ty
l	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	9
n	40017401	COATING CLIP CS-7U		2



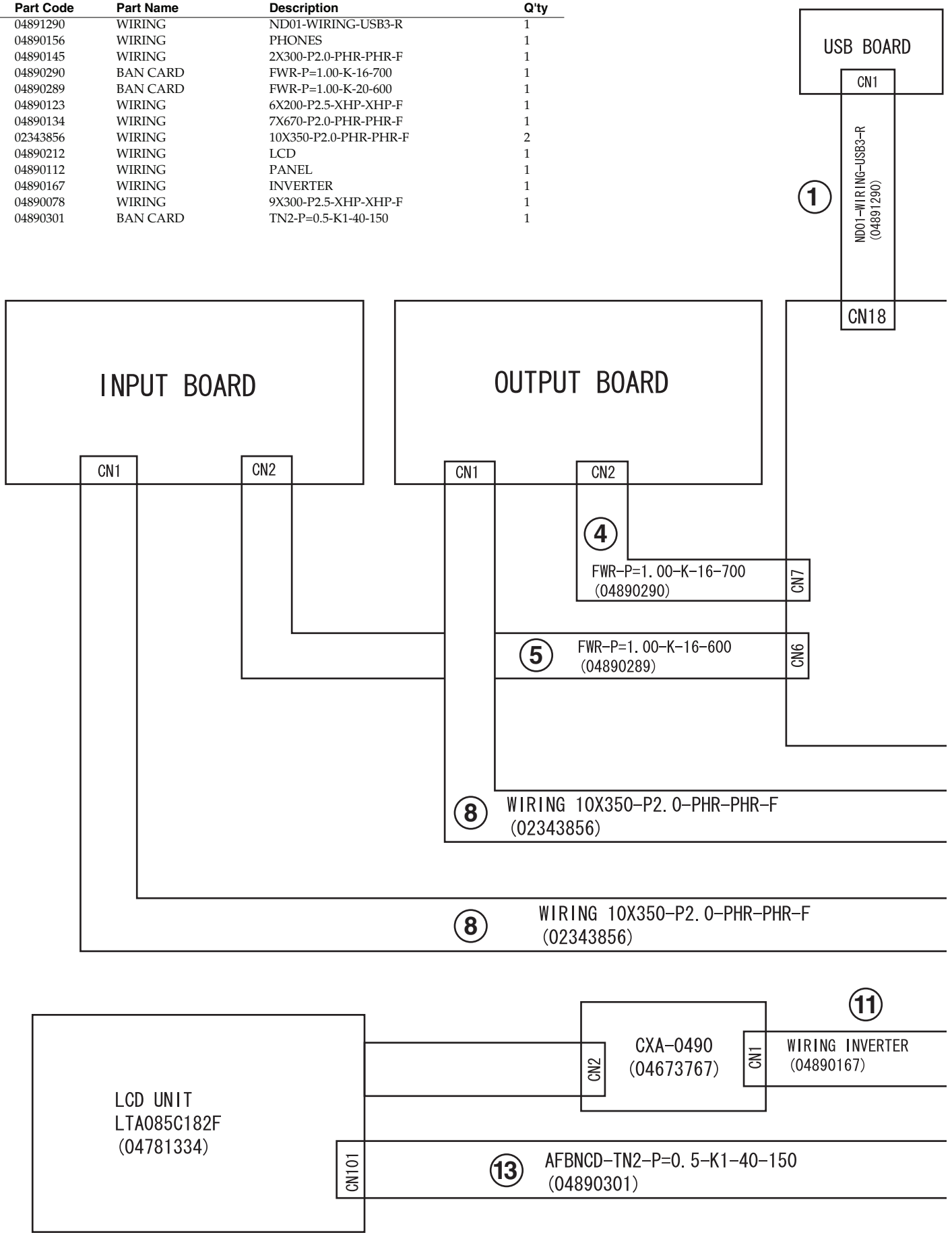
View_6

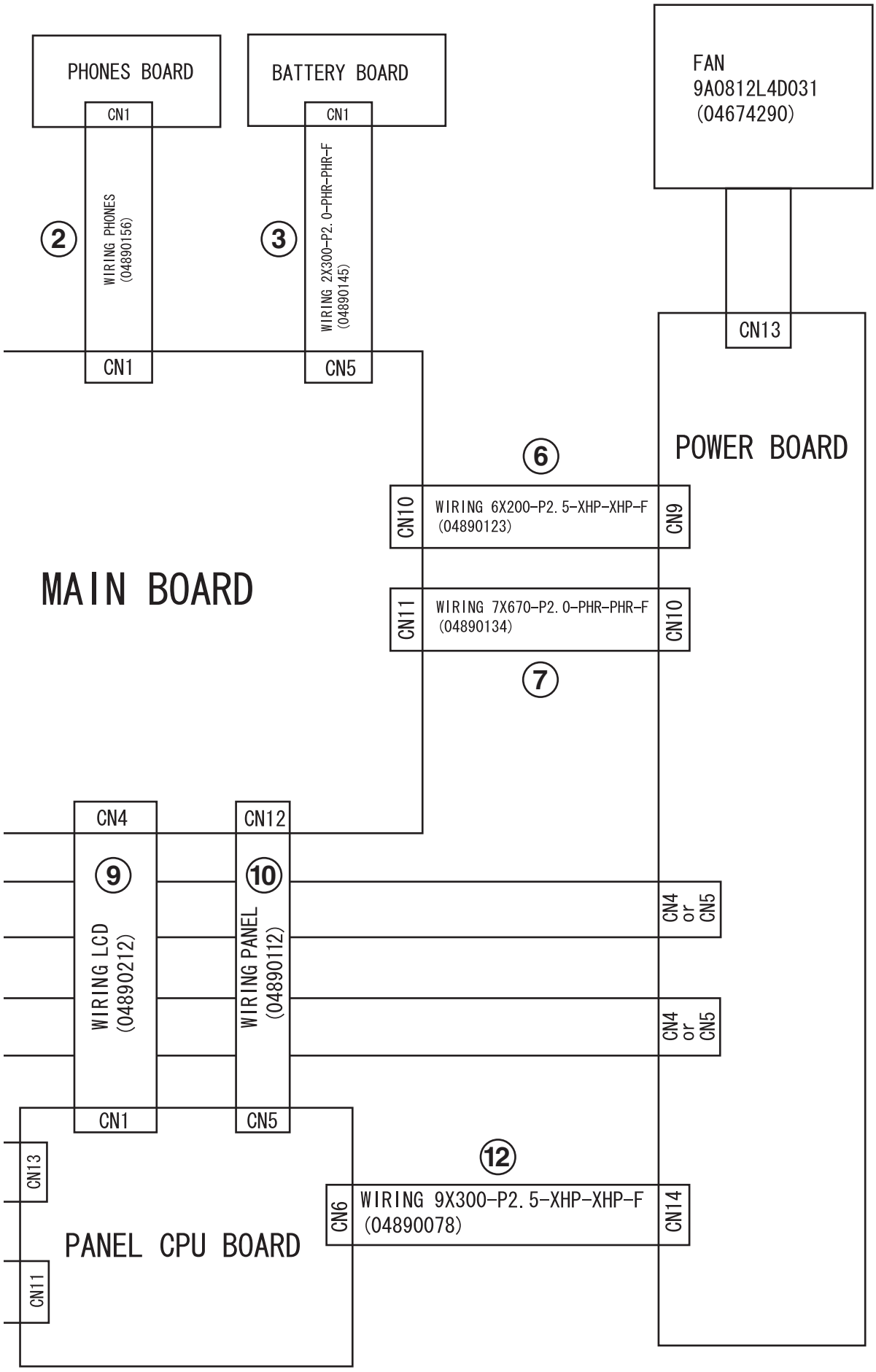
View. 6

No.	Part Code	Part Name	Description	Q'ty
f	40011056	SCREW 3X6	BINDING TAPTITE B ZC	2
l	40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC	2

Wiring Diagram (Main Board)

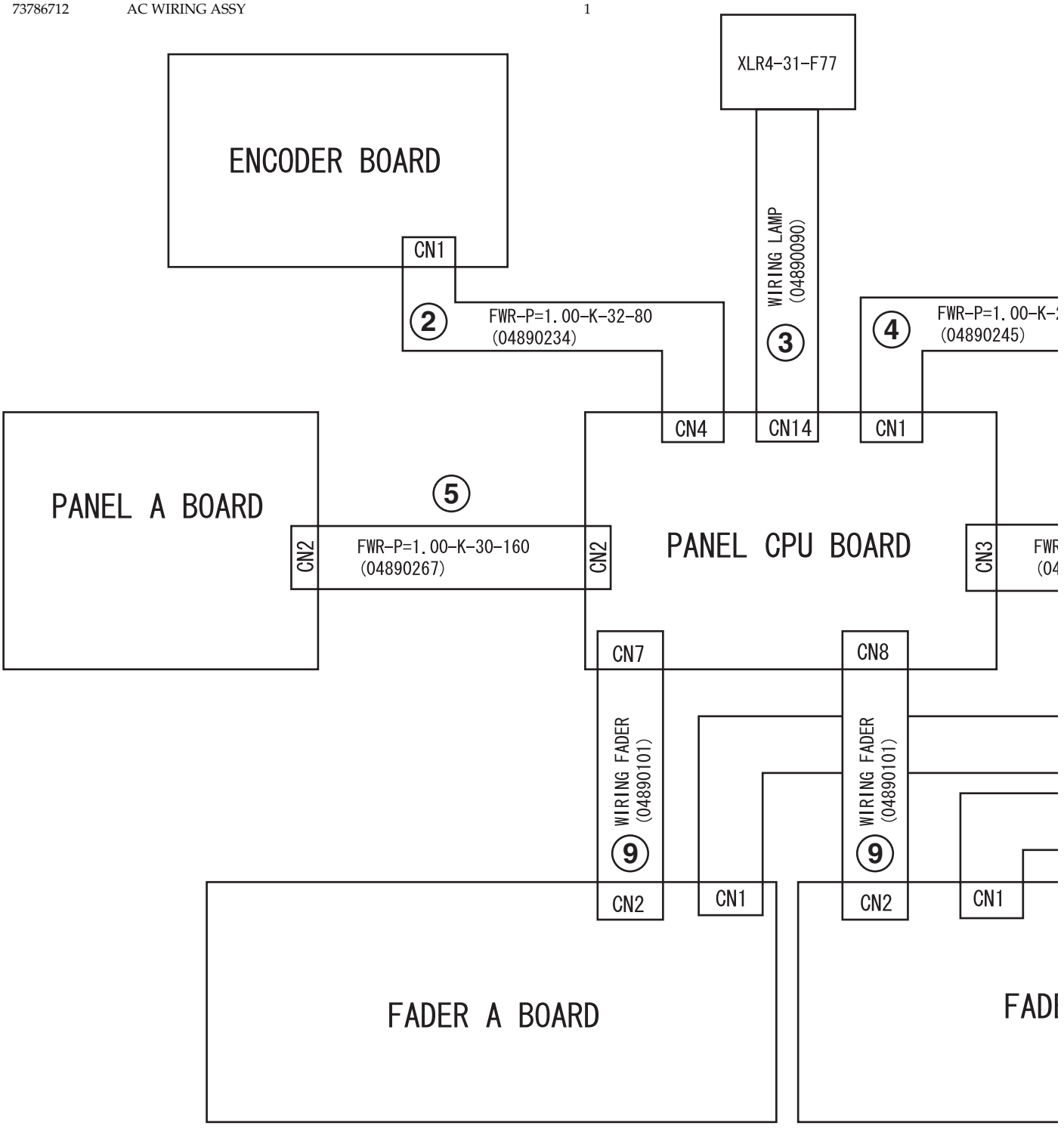
No.	Part Code	Part Name	Description	Q'ty
1	04891290	WIRING	ND01-WIRING-USB3-R	1
2	04890156	WIRING	PHONES	1
3	04890145	WIRING	2X300-P2.0-PHR-PHR-F	1
4	04890290	BAN CARD	FWR-P=1.00-K-16-700	1
5	04890289	BAN CARD	FWR-P=1.00-K-20-600	1
6	04890123	WIRING	6X200-P2.5-XHP-XHP-F	1
7	04890134	WIRING	7X670-P2.0-PHR-PHR-F	1
8	02343856	WIRING	10X350-P2.0-PHR-PHR-F	2
9	04890212	WIRING	LCD	1
10	04890112	WIRING	PANEL	1
11	04890167	WIRING	INVERTER	1
12	04890078	WIRING	9X300-P2.5-XHP-XHP-F	1
13	04890301	BAN CARD	TN2-P=0.5-K1-40-150	1

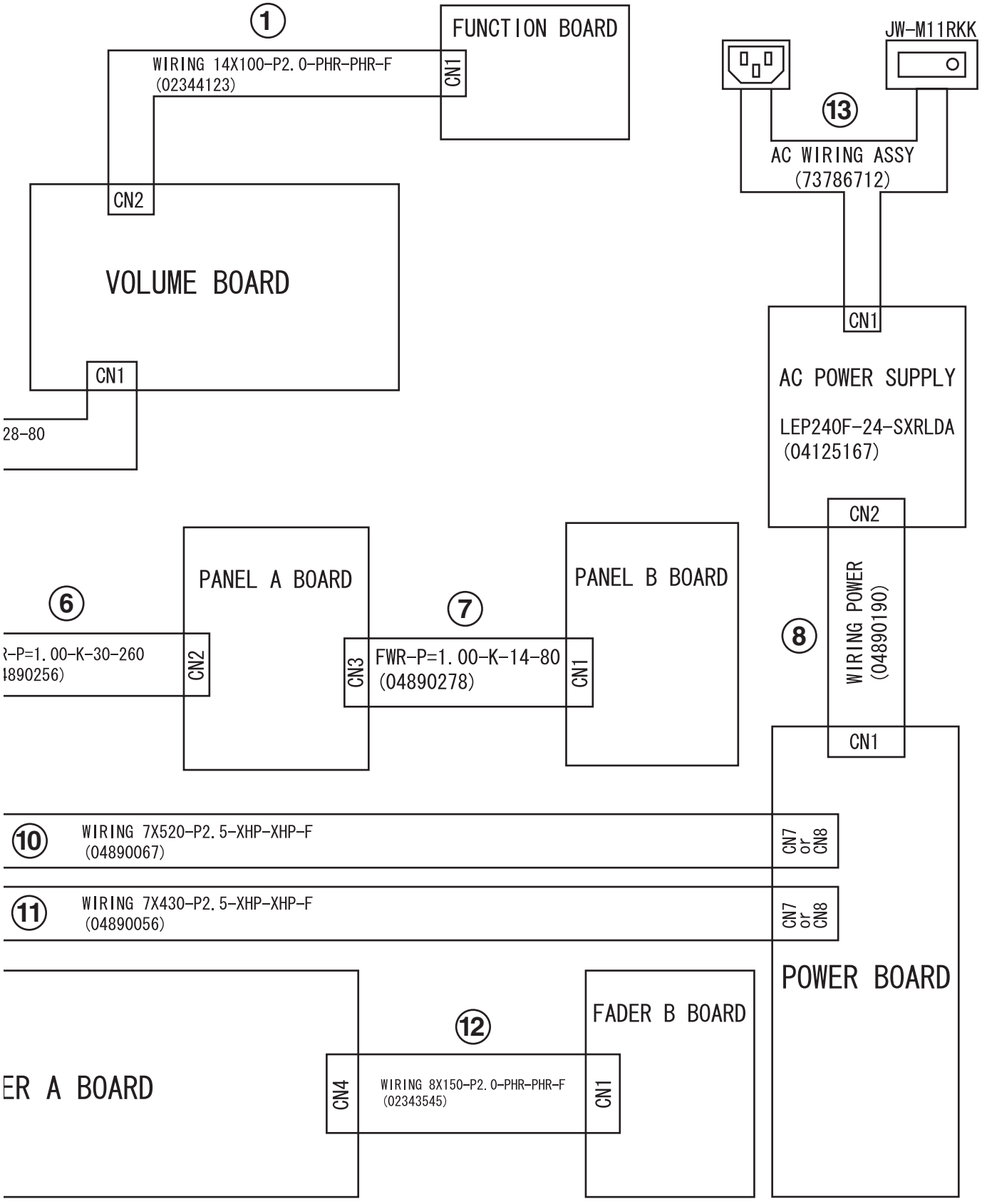



PHONES BOARD
CN1
BATTERY BOARD
CN1
FAN
9A0812L4D031
(04674290)
2
WIRING PHONES
(04890156)
3
WIRING 2X300-P2.0-PHR-PHR-F
(04890145)
CN1
CN5
CN13
POWER BOARD
6
CN10
WIRING 6X200-P2.5-XHP-XHP-F
(04890123)
CN9
MAIN BOARD
CN11
WIRING 7X670-P2.0-PHR-PHR-F
(04890134)
CN10
7
CN4
CN12
9
10
WIRING LCD
(04890212)
WIRING PANEL
(04890112)
CN4
or
CN5
CN4
or
CN5
CN1
CN5
CN13
12
CN6
WIRING 9X300-P2.5-XHP-XHP-F
(04890078)
CN14
PANEL CPU BOARD
CN11

Wiring Diagram (Panel Board)

No.	Part Code	Part Name	Description	Q'ty
1	02344123	WIRING	14X100-P2.0-PHR-PHR-F	1
2	04890234	BAN CARD	FWR-P=1.00-K-32-80	1
3	04890090	WIRING	LAMP	1
4	04890245	BAN CARD	FWR-P=1.00-K-28-80	1
5	04890267	BAN CARD	FWR-P=1.00-K-30-160	1
6	04890256	BAN CARD	FWR-P=1.00-K-30-260	1
7	04890278	BAN CARD	FWR-P=1.00-K-14-80	1
8	04890190	WIRING	POWER	1
9	04890101	WIRING	FADER	2
10	04890067	WIRING	7X520-P2.5-XHP-XHP-F	1
11	04890056	WIRING	7X430-XHP-XHP-F	1
12	02343545	WIRING	8X150-P2.0-PHR-PHR-F	1
13	73786712	AC WIRING ASSY		1




①
FUNCTION BOARD
WIRING 14X100-P2.0-PHR-PHR-F
(02344123)
CN1
CN2
VOLUME BOARD
CN1
28-80
JW-M11RKK
⑬
AC WIRING ASSY
(73786712)
CN1
AC POWER SUPPLY
LEP240F-24-SXRLDA
(04125167)
CN2
WIRING POWER
(04890190)
CN1
⑧
PANEL A BOARD
⑥
R-P=1.00-K-30-260
4890256)
CN2
⑦
CN3
FWR-P=1.00-K-14-80
(04890278)
CN1
PANEL B BOARD
⑩
WIRING 7X520-P2.5-XHP-XHP-F
(04890067)
CN7 or CN8
⑪
WIRING 7X430-P2.5-XHP-XHP-F
(04890056)
CN7 or CN8
POWER BOARD
ER A BOARD
⑫
CN4
WIRING 8X150-P2.0-PHR-PHR-F
(02343545)
CN1
FADER B BOARD

Parts List

Safety Precautions:
The parts marked ⚠ 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

#	04891367	DUST COVER	SWING TAB (DCMJST)	3
#	04891345	USB CONNECTOR CAP	(TK-UCAP)	1
#	04782034	COLLAR	(M450001)	16
#	04783689	BAR LENS ASSY		24
#	04783667	BATTERY PANEL		1
#	04783590	BOTTOM COVER		1
#	04783523	CONSOLE PANEL		1
#	73781345	CONSOLE PANEL ASSY		1
#	04783501	DISPLAY COVER		1
#	04787245	INPUT BD COVER		1
#	73786723	LAMP CONNECTOR ASSY		1
#	04787345	PHONES COVER		1
#	04783478	PHONES PANEL		1
#	04787267	REAR PANEL		1
#	04787290	SHIELD PANEL A		1
#	04787301	SHIELD PANEL B		1
#	04783512	SIDE ANGLE		2
#	04783490	SIDE COVER L		1
#	04783489	SIDE COVER R		1
#	04455612	SW ESCUTCHEON L		55
#	04783656	TOP CASE		1
#	73781367	TOP CASE ASSY		1

CHASSIS

	01786045	SW HOLDER	AT-217K	1
#	04783601	BASE ANGLE		1
#	04787189	BATTERY HOLDER		1
#	04783578	CORNER HOLDER		1
#	04783567	CPU BOARD HOLDER		1
#	04787190	FADER ANGLE		1
#	04787223	FADER HOLDER A		1
#	04787234	FADER HOLDER B		1
#	04787334	FADER RIB		1
#	04787256	MAIN BOARD HOLDER		1
#	04787356	POWER SW HOLDER		1
#	04783589	SUB CHASSIS		1
#	04787278	USB HOLDER		1
#	04787289	VOLUME HOLDER		1
#	73781356	LCD HOLDER ASSY		1
#	04896812	FADER PLATE A		2
#	04896823	FADER PLATE B		4

KNOB, BUTTON

	03126856	D S-KEYTOP	SX2H-B CLR	35
	01891801	U R-KNOB	S1 LCG BLK	3
#	04891467	VS KNOB S RED		5
#	04891478	VS KNOB S LBU		2
	22485303	D R-KNOB(ALPHA-DIAL)	L BLK 248-303	1
#	04891489	VS KNOB S GRN		5
	03010956	VS KNOB S BLK		4
#	04455590	FADER KNOB		25
#	04455634	KEYTOP L		79
#	04455601	RUBBER SW		79

SWITCH

		02451689	SLIDE SWITCH	SSSF121900	SW4 on Main Board	1
		02891789	TACT SWITCH	SKRGADD010 H=5.0	SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW10, SW11, SW12, SW13, SW14, SW15, SW16, SW17, SW18, SW19, SW20, SW21, SW22, SW23, SW24, SW25 on Encoder Board, SW1 on Fader-A Board, SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW10 on Function Board, SW1, SW2, SW3 on Main Board, SW1 on Panel CPU Board, SW1, SW2, SW3, SW4, SW5, SW6, SW7, SW8, SW9, SW10, SW11, SW12, SW13, SW14, SW15, SW16, SW17, SW18, SW19, SW20, SW21, SW22, SW23, SW24, SW25, SW26, SW27, SW28, SW29, SW30, SW31, SW32, SW33, SW34, SW35 on Volume Board	73
		01786012	SEESAW SWITCH	JW-M11RKK		1
#		04890501	RUBBER SW CLR		4 pcs/1 set	79/4

JACK, EXT TERMINAL

		13429676	MIDI CONNECTOR	YKF51-5048N (TWIN)	JK5 on Main Board	1
		03786745	USB CONNECTOR A TYPE FEMALE	YKF45-0027	JK1 on USB Board	1
		02781101	USB CONNECTOR B TYPE FEMALE	YKF45-0020N	JK4 on Main Board	1
		03234590	RCA(PIN) JACK	YKC21-3503	JK2 on Main Board	1
		13449148	JACK	YKB21-5009	JK1 on Phones Board	1
		04018401	D-SUB CONNECTOR(W/O BOSS NUT)	XM2C-0942-502L(9PIN)	CN9 on Main Board	1
#		04890390	XLR CONNECTOR	XLR-4-31-F77		1
		04121078	EXT CONNECTOR	NE8FBH	JK6, JK7, JK8 on Main Board	3
		00679767	XLR CONNECTOR	NC3MAH	JK101, JK201, JK301, JK401, JK501, JK601, JK701, JK801 on Output Board	8
		01902645	XLR CONNECTOR	NC3FAH2 W/LOCK PIN	JK1 on Main Board, JK101, JK201, JK301, JK401, JK501, JK601, JK701, JK801 on Input Board	9
#		04780334	CONNECTOR	LAF1011-0102F	JK3 on Main Board	1

DISPLAY UNIT

#	⚠	04781334	LCD	LTA085C185F		1

POWER SUPPLY UNIT

	⚠	04125167	SWITCHING REGULATOR	LEP240F-24-SXRLD		1

PWB ASSY

#		73673656	BATTERY BOARD ASSY			1
#		73673690	ENCODER BOARD ASSY			1
#		73673712	FADER A BOARD ASSY			2
#		73673701	FADER B BOARD ASSY			1
#		73673678	FUNCTION BOARD ASSY			1
#		73673623	INPUT BOARD ASSY			1
#		73673745	MAIN BOARD ASSY			1
#		73673612	OUTPUT BOARD ASSY			1
#		73673734	PANEL A BOARD ASSY			2
#		73673723	PANEL B BOARD ASSY			1
#		73673645	PANEL CPU BOARD ASSY			1
#		73676190	PHONES BOARD ASSY			1
#		73673634	POWER BOARD ASSY			1
#		73673667	USB BOARD ASSY			1
#		73673689	VOLUME BOARD ASSY			1

IC

	⚠	15199556	IC	NJM79M15FA	IC3 on Power Board	1
	⚠	15199555	IC	NJM78M15FA	IC4 on Power Board	1
	⚠	02898567	REGULATOR	NJM78M05FA	IC2 on Power Board	1
	⚠	15199209	IC(V.RGL)	NJM7815FA	IC5 on Power Board	1
		02346123	IC (OP AMP)	NJM4556AD	IC1 on Phones Board	1
		02344912	IC (GATE ARRAY)	M7G1120-0104FP	IC1 on Encoder Board	1

DIODE

		03012001	LED	SML72423C TP15 D RANK	LED42, LED43, LED44, LED45, LED46 on Encoder Board, LED11, LED12 on Function Board, LED38, LED39, LED40, LED41, LED42, LED43, LED44, LED45, LED46, LED47 on Volume Board	17
		02015623	LED	SLR-342MG3F	LED1, LED2, LED11 on Main Board	3
#		04890401	LED	SLI-325DUT31W	LED1, LED2, LED3, LED8, LED9, LED12, LED13, LED14, LED17, LED19, LED22, LED23, LED28, LED29, LED33, LED34, LED35, LED37, LED38, LED39 on Encoder Board, LED1, LED2, LED3, LED5, LED6, LED7, LED9, LED10 on Function Board, LED3, LED4, LED5, LED9, LED12, LED13, LED14, LED15, LED16, LED17, LED18, LED19, LED20, LED21, LED22, LED23, LED24, LED25, LED26, LED27, LED28, LED29, LED35, LED36, LED37 on Volume Board	53

POTENTIOMETER

#		04780389	SLIDE POTENTIOMETER	RSA0N11M9A07	VR1, VR2, VR3, VR4, VR5, VR6, VR7, VR8, VR9, VR10, VR11, VR12 on Fader-A Board, VR1 on Fader-B Board	13
		02125778	9M/M ROTARY POTENTIOMETER	RK09L12B0	VR1 on Phones Board	1
		01787545	9M/M ROTARY POTENTIOMETER	EVUF2KFK3B14 10KB	VR1, VR2 on Volume Board	2

INDUCTOR, COIL, FILTER

		12449445	FERRITE-CORE	ESD-R-16C		2

ENCODER

		02345734	ROTARY ENCODER	EVE LA1 F20 24B	EN1, EN2, EN3, EN4, EN5, EN6, EN7, EN8, EN9, EN10, EN11, EN12, EN13, EN14, EN15, EN16 on Encoder Board, EN1 on Volume Board	17

FUSE, FUSE HOLDER

	⚠	03670512	FUSE	5ST 5-R 5A/250V		1

CONNECTOR

		04121623	CONNECTOR	IMSA-9210B-2-14Z554-PT1	CN14 on Main Board	1
		02012056	CONNECTOR	28FMN-STK-A (LF)(SN)	CN1 on Panel CPU Board	1
		03452945	CONNECTOR	28FMN-STK-A (LF)(SN)	CN1 on Volume Board	1

WIRING, CABLE

#		04890301	BAN CARD	TN2-P=0.5-K1-40-150		1
#	⚠	04890190	WIRING	POWER		1
#		04890156	WIRING	PHONES		1
#		04890112	WIRING	PANEL		1
#		04891290	WIRING	ND01-WIRING-USB3-R		1
#		04890212	WIRING	LCD		1
#	⚠	04890090	WIRING	LAMP		1
#		04890167	WIRING	INVERTER		1
#		04890234	BAN CARD	FWR-P=1.00-K-32-80		1
#		04890256	BAN CARD	FWR-P=1.00-K-30-260		1
#		04890267	BAN CARD	FWR-P=1.00-K-30-160		1
#		04890245	BAN CARD	FWR-P=1.00-K-28-80		1
#		04890289	BAN CARD	FWR-P=1.00-K-20-600		1
		04890290	BAN CARD	FWR-P=1.00-K-16-700		1
#		04890278	BAN CARD	FWR-P=1.00-K-14-80		1
#		04890101	WIRING	FADER		2
#		04890545	WIRING	AC1		1
#		04890567	WIRING	AC2		1
#		04890578	WIRING	AC3		1
#		04890078	WIRING	9X300-P2.5-XHP-XHP-F		1
#		02343545	WIRING	8X150-P2.0-PHR-PHR-F		1
#		04890134	WIRING	7X670-P2.0-PHR-PHR-F		1
#		04890067	WIRING	7X520-P2.5-XHP-XHP-F		1
#		04890056	WIRING	7X430-XHP-XHP-F		1
#		04890123	WIRING	6X200-P2.5-XHP-XHP-F		1
#		04890145	WIRING	2X300-P2.0-PHR-PHR-F		1
		02344123	WIRING	14X100-P2.0-PHR-PHR-F		1
		02343856	WIRING	10X350-P2.0-PHR-PHR-F		2

SCREWS

		40782689	SCREW 2.6X6	PAN B-TITE NI		2
		40679301	SCREW M3X6	FLAT MACHIN NI		8
		40782667	SCREW 3X5	FLAT MACHINE ZC		2
		40344134	SCREW M4-40X7.9	HEX SOCKET NI		2
		40561745	SCREW 5X10	BINDING TAPPING B1 BZC		4
		40011056	SCREW 3X6	BINDING TAPTITE B ZC		89
		40011101	SCREW 3X8	BINDING TAPTITE B BZC		112
		40011145	SCREW 3X6	FLAT TAPTITE B BZC		14
		40342712	SCREW M3X6	PAN MACHINE W/ SW+SMALL PW BZC		3
		40345767	SCREW M4X10	PAN MACHINE W/SW+PW BZC		6
		40458345	SCREW M4X8	PAN MACHINE W/ SW+SMALL PW NI		1
		40012867	SCREW M3X8	PAN MACHINE W/SW+PW ZC		34
		40011745	HEX NUT M4	SPRING NUT FE ZC		1
		40017401	COATING CLIP CS-7U			3

TRANSFORMER

		04568967	TRANSFORMER	H1102NLT	T3, T2, T1 on Main Board	3
#	⚠	04673767	CXA-0490	EL-INVERTOR TRANS		1
		02019478	PULSE TRANS	(7KQ5) 19832A	L5 on Main Board	1
#	⚠	04784112	PWR TRANS		T1 on Power Board	1

AC INLET, OUTLET

#	⚠	73786712	AC WIRING ASSY			1
	⚠	01347623	AC INLET	NC-176-1.0		1

PACKING

#		04783434	PACKING PAD	R		1
#		04783423	PACKING PAD	L		1
#		04781745	CORNER COVER	(M450002)		4
#		04783456	ACCESSORY CASE			1
		04564256	CONTACT SPRING			1
#		04783412	PACKING CASE			1

MISCELLANEOUS

#		04458667	HEATSINK	PC2444B-50-PB-P19-SN		2
		04450089	HEATSINK	PC1115-25-PB-SN		6
		12199584	GROUNDING TERMINAL	M1698	TER1, TER2 on Input Board, TER1 on Output Board, TER1, TER2 on USB Board	5
	⚠	02567234	LITHIUM BATTERY	CR2032		1
#		04784890	FUSE CLIP	CNT41-0015		2
		04123956	RADIATION SHEET	BFG20 D-1		2
	⚠	04674290	MOTOR	9A0812L4D031		1
		04015278	CABLE LOCK SPRING			1
		04230823	CABLE LOCK SPRING-J			1
		04569045	CORD HOOK			1
#		04890523	RUBBER CUSHION			6
#		04894012	BLIND CUSHION			16
#		04909356	ALUMINUM TAPE	AL-19T L7		3
		12169381	LED SPACER	LDS-90K		3
		00902790	CORD BUSHING	EDS-1208U		1
		01455523	CORD BUSHING	EDS-1717U		5

ACCESSORIES (Standard)

#		73673578	OWNER'S MANUAL SET	JAPANESE		1
#		73674090	OWNER'S MANUAL SET	ENGLISH		1
		40232334	WARRANTY CARD	MOCHIKOMI JAPAN ONLY		1
	⚠	00907001	AC CORD SET	240VE SP-60+IS-14		1
	⚠	23495124	AC CORD SET	240VA SC-144-JO1 ES303-10HMA		1
	⚠	00894389	AC CORD SET	230V SP22+IS14 H05VV-F3G1.0		1
	⚠	00894378	AC CORD SET	120V SP301+IS14 SJT18/3		1
	⚠	03340956	AC CORD SET PSE	100V YA-101/YP-3NB/YC-13		1
#		04893689	COVER			1
		03128223	FERRITE-CORE	SFT-36SN		3
		04126434	REAC CONNECTOR COVER			3

Supply Units

The following parts are supplied as a unit (indicated by a circle). The parts can also be purchased individually, but installation on the product requires soldering.

○	73786712	AC WIRING ASSY
	01347623	AC INLET NC-176-1.0
	04890545	AC WIRING AC1
	04890567	AC WIRING AC2
	04890578	AC WIRING AC3
	12449445	FERRITE-CORE ESD-R-16C
○	73786723	LAMP CONNECTOR ASSY
	04890390	CANNON XLR-4-31-F77
	04890090	WIRING LAMP

The following parts are supplied as a unit (indicated by a circle). The parts can also be purchased individually, but installation on the product requires welding.

○	73781345	CONSOLE PANEL ASSY
	73781356	LCD HOLDER ASSY
	04783489	SIDE COVER R
	04783490	SIDE COVER L
	04783523	CONSOLE PANEL
○	73781367	TOP CASE ASSY
	04783656	TOP CASE
	04787223	FADER HOLDER A
	04787234	FADER HOLDER B
	04783478	PHONES PANEL

The following parts are supplied in sets of four. Break up the set when using single parts.

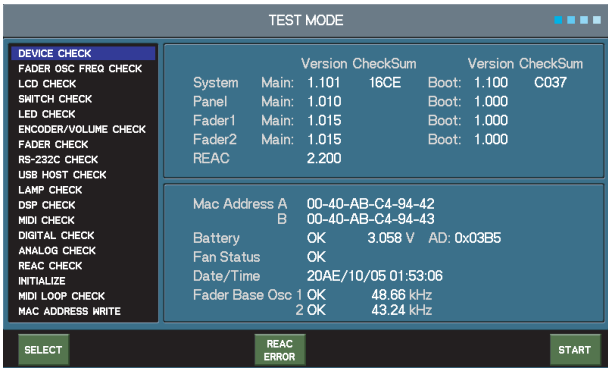
	04455612	SW ESCUTCHEON L
	04890501	RUBBER SW CLR

The following parts are supplied in sets of two. Break up the set when using single parts.

	03126856	D S-KEYTOP SX2H-B CLR

Checking the Version Number

Hold down the unit's [F6] and [F8] function buttons and the [METER] button and switch on the power.
The root screen for the Test Mode appears.
You can verify the firmware version at this screen.



System Main: Version number and checksum for the Main Board's main program

System Boot: Version number and checksum for the Main Board's boot program

Panel Main: Version number of the main program for the Panel CPU Board

Panel Boot: Version number of the boot program for the Panel CPU Board

Fader1 Main: Version number of the main program for the Fader Board (CH1 through CH12)

Fader1 Boot: Version number of the boot program for the Fader Board (CH1 through CH12)

Fader2 Main: Version number of the main program for the Fader Board (CH13 through CH24)

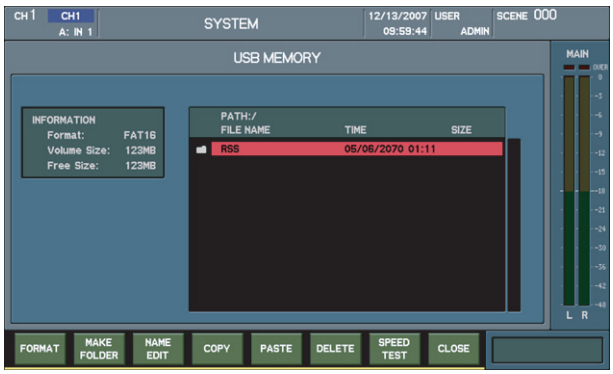
Fader2 Boot: Version number of the boot program for the Fader Board (CH13 through CH24)

* *No program checksum exists for the panel CPU board or the fader boards.*

Formatting a USB Memory Device

For system-update and Test-mode use, be sure to use a USB memory device that has been formatted according to the procedure described below.

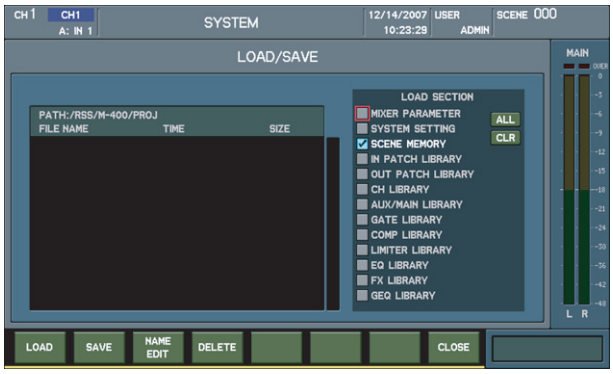
1. Prepare a USB memory device that works with the M-400.
2. Start the M-400 in the normal mode.
3. Insert the USB memory device into the unit.
4. Press the [SYSTEM] button in the **SETUP** section.
5. Press the [F6 (USB MEMORY)] function button.



6. Press the [F1 (FORMAT)] function button.
   The message **Are you sure you want to format?** is displayed.
7. Press the [F8 (FORMAT)] function button.
   * *To cancel, press [F7 (CANCEL)].*
   Formatting is executed.
   When **Completed** is displayed, formatting has finished.

Saving Data

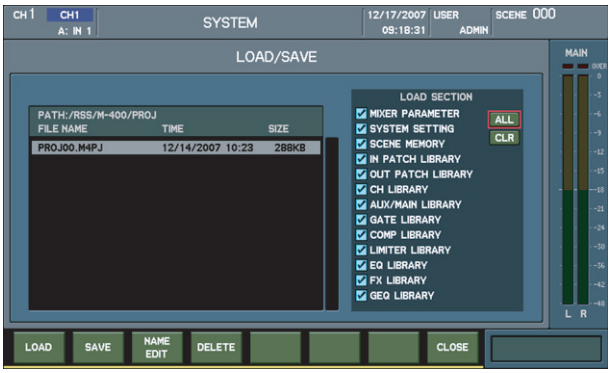
1. Format the USB memory device according to "**Formatting a USB Memory Device**" (p. 27).
2. Start the M-400 in the normal mode.
3. Insert the USB memory device into the unit.
4. Press the [SYSTEM] button in the **SETUP** section.
5. Press the [F3 (LOAD/SAVE)] function button.



6. Press the [F2 (SAVE)] function button.
   The message **Are you sure you want to save project file?** is displayed.
7. Press the [F8 (SAVE)] function button.
   * *To cancel, press [F7 (CANCEL)].*
   The project file is saved.
   When saving is finished, the display returns to the LOAD/SAVE screen.
8. Check the screen to verify that a new project file named **PROJ**.M4PJ** (where ** is a number) has been added.

Loading Data

1. Start the M-400 in the normal mode.
2. Insert the USB memory device on which the project file is saved into the unit.
3. Press the [SYSTEM] button in the **SETUP** section.
4. Press the [F3 (LOAD/SAVE)] function button.



5. In the **LOAD SECTION** on the right side of the screen, move the cursor to the **ALL** switch and press [ENTER].
   This selects the check boxes for all parameters in the **LOAD SECTION**.
6. Press the [F1 (LOAD)] function button.
   The message **Are you sure you want to load project file?** is displayed.
7. Press the [F8 (OK)] function button.
   Loading takes approximately 1 minute to finish.

   * *To cancel, press [F7 (CANCEL)].*

   The project file is loaded back onto the M-400.
   When loading finishes, the display returns to the LOAD/SAVE screen.

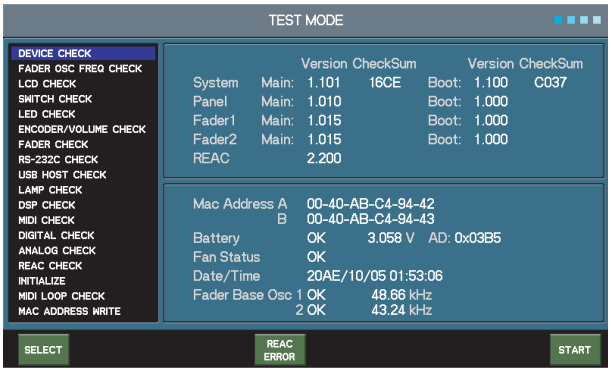
Performing a Factory Reset

Executing the procedure described below returns the unit to its factory-default state, except for some parameters.

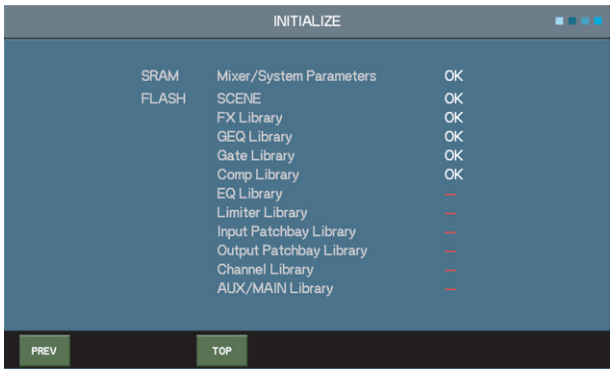
Parameters Not Returned to Their Factory Defaults

- Time information (Set this as described in "**Setting the Internal Clock**" (p. 30).)
- MAC address (Set this as described in "**Setting the MAC Address**" (p. 29).)

1. Hold down the unit's [F6] and [F8] function buttons and the [METER] button and switch on the power.
   The root screen for the Test Mode appears.



2. At the Test Mode menu, use the cursor buttons to choose **INITIALIZE**.
3. Press the [F1 (SELECT)] function button.
   The factory reset starts. When **OK** is displayed for all items, the factory reset has finished.



4. Press the [F4 (TOP)] function button.
   The display returns to the root screen for the Test Mode.

Updating the System

Using this system-update procedure, you can update not only the main system but also the panel and fader systems at the same time.

* *The details of the systems updated differ according to the version of the update.*

1. Format the USB memory device according to "**Formatting a USB Memory Device**" (p. 27).
2. Use a computer to copy the update-use software to the root directory of a USB memory device.
3. Start the M-400 in the normal mode.
4. Insert the USB memory device into the unit.
5. Press the [SYSTEM] button in the **SETUP** section.

6. Press the [F7 (SYSTEM UPDATE)] function button.
   The message **Are you sure you want to update?** is displayed.
7. Press the [F8 (SYSTEM UPDATE)] function button.

   * *To cancel the update, press [F7 (CANCEL)].*
   The update starts automatically.

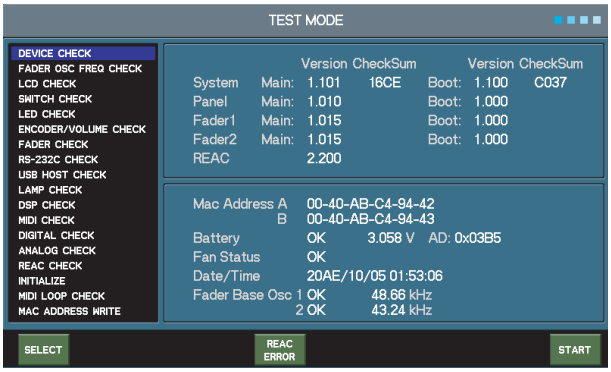
   * *The time that the update requires varies according to the content updated.*
   When the update finishes, the message **Update completed. Please reboot.** is displayed.
8. Switch off the unit and remove the USB memory device.

Setting the MAC Address

When the Main Board has been replaced, set the MAC address using the procedure described below.

* *Failure to set the MAC address correctly may impede normal system operation.*

1. Hold down the unit's [F6] and [F8] function buttons and the [METER] button and switch on the power.
The root screen for the Test Mode appears.



2. At the Test Mode menu, use the cursor buttons to choose **MAC ADDRESS WRITE**.

3. Press the [F1 (SELECT)] function button.
The MAC Address Write screen appears.

4. Use the cursor buttons and the value dial to enter the unit's serial number.

* *No entry is required for the area displayed as* ***.*

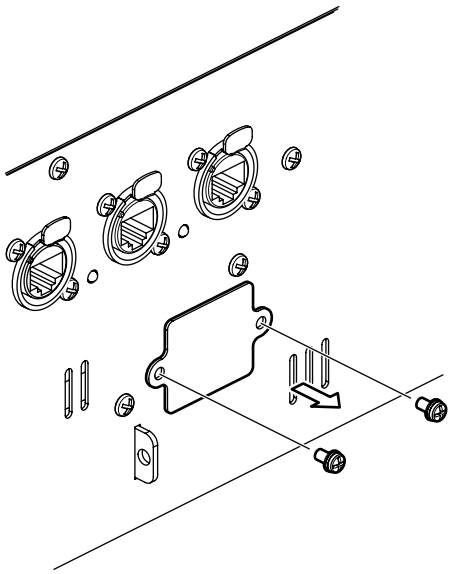
5. Press the [F8 (WRITE MAC)] function button.
The MAC address is written to the serial EEPROM on the Main Board.

6. Press the [F4 (TOP)] function button.
The display returns to the root screen for the Test Mode.

Replacing the Lithium Battery

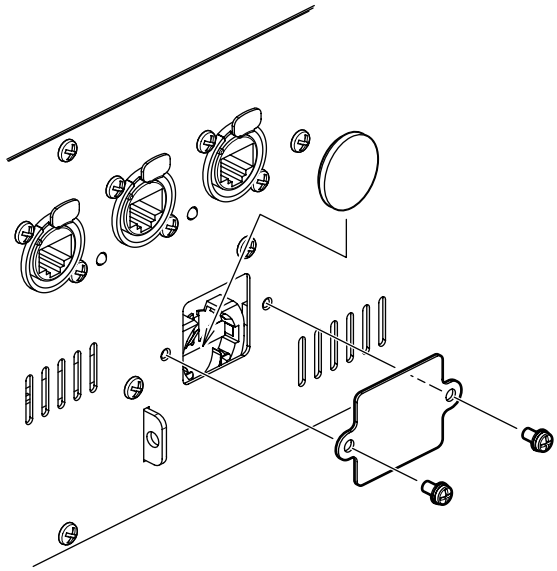
1. Refer to "**Saving Data**" (p. 27) and save user data on a USB memory device.

2. Remove the two screws and detach the battery panel.



3. Remove the battery and replace with a fresh battery.

4. Attach the battery panel as shown in the figure, using the two screws removed in step **2**.



5. Refer to **"Setting the Internal Clock**" (p. 30) and set the date and time on the unit.

6. Refer to "**Loading Data**" (p. 28) and load the user data back into the unit.

Setting the Internal Clock

1. Start the M-400 in the normal mode.
2. Press the [SYSTEM] button in the **SETUP** section.
3. Press the [F5 (DATE/TIME)] function button.

4. Use the cursor buttons and the value dial to adjust the date and time settings.
5. Press the [F6 (SET)] function button.

* *To cancel, press [F8 (CLOSE)].*

The date and time are set.

6. Verify that the date and time displayed at the top of the screen are the values you set.

Test Mode

Required Equipment

- Monitor speaker (MA-15D, etc.: equipped with a digital IN jack)
- CD player, etc.
- Audio cable
- Condenser microphone (DR-80C, etc.)
- Headphones
- Coaxial cable
- Optical cable
- MIDI cable
- Mixing-console light (Littlite 12X-HI-4, etc.: 4-pin XLR type)
- Computer equipped with a USB connector
- USB cable
- RS-232C inspection tool (D-SUB9 female connector with pins 2 and 3 shorted)
- USB memory device
- REAC cable (Category 5e Ethernet cross cable)

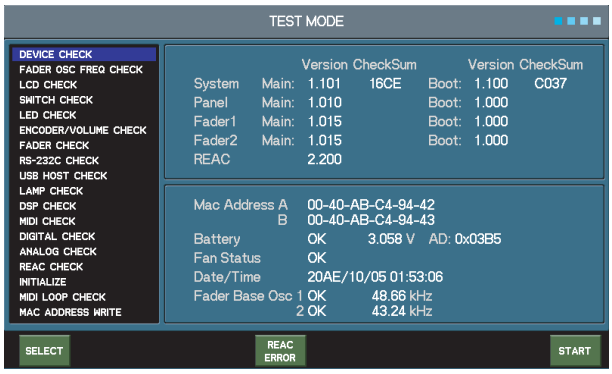
NOTE

Before executing the Test Mode, be sure to save user data using the procedure described in "**Saving Data**" (p. 27), and after ending the Test Mode, restore the user data using the procedure described in "**Loading Data**" (p. 28).

Entering the Test Mode

Hold down the unit's [F6] and [F8] function buttons and the [METER] button and switch on the power.

The root screen for the Test Mode appears.



Test Items

1. **Verification of Battery Voltage** (p. 30)
2. **Verification of Cooling-fan Operation** (p. 30)
3. **Verification of the Fader Base Oscillator** (p. 30)
4. **Device Check** (p. 31)
5. **Fader Oscillator Check** (p. 31)
6. **LCD Check** (p. 31)
7. **Switch Check** (p. 32)
8. **LED Check** (p. 32)
9. **Encoder/Volume Check** (p. 33)
10. **Fader Check** (p. 33)
11. **RS-232C Interface Check** (p. 34)
12. **USB Host Check** (p. 34)
13. **Lamp Check** (p. 34)
14. **DSP Check** (p. 34)
15. **Digital Check** (p. 35)
16. **Analog Check** (p. 35)
17. **REAC Check** (p. 36)
18. **MIDI Loop Check** (p. 36)
19. **USB Connector (Rear) Operation Check** (p. 36)
20. **INITIALIZE** (p. 36)

1. Verification of Battery Voltage

Use the **Battery** item at the root screen in the Test Mode to verify the voltage of the battery.

If **NG** (not OK) is displayed, replace the battery as described in "**Replacing the Lithium Battery**" (p. 29).

2. Verification of Cooling-fan Operation

Use the **Fan Status** item at the root screen in the Test Mode to verify the operation of the cooling fan.

If **NG** (not OK) is displayed, a problem may be present in the cooling fan or the fan's control circuitry (Power Board or Panel CPU Board).

3. Verification of the Fader Base Oscillator

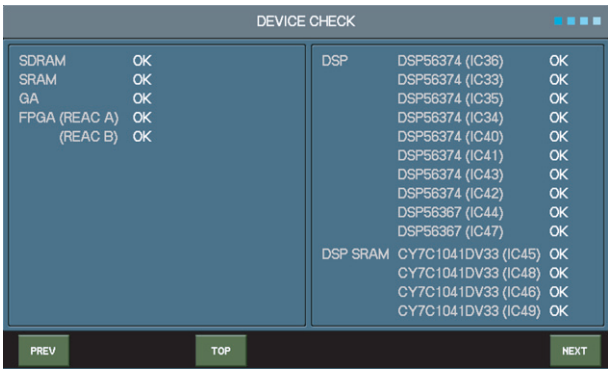
Use the **Fader Base Osc** item at the root screen in the Test Mode to verify the frequency of the base oscillator on the Fader Board.

If NG (not OK) is displayed, a problem may be present in a Fader Board.

Here, **1** corresponds to one Fader Board (CH1 through CH12), and **2** to the other fader board (CH13 through CH24).

4. Device Check

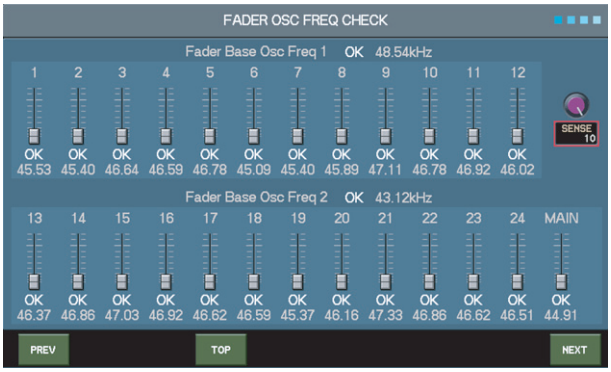
1. At the Test Mode menu, use the cursor buttons to choose **DEVICE CHECK**.
2. Press the [F1 (SELECT)] function button.
   The **DEVICE CHECK** screen appears.



3. Verify that **NG** (not OK) is not displayed for any of the items.
   * *The devices you can verify via this item are limited to those on the Main Board.*
4. When verification has been finished, press the [F4 (TOP)] function button.
   * *You can also advance to the next test item by pressing [METER (NEXT)].*

5. Fader Oscillator Check

1. At the Test Mode menu, use the cursor buttons to choose **FADER OSC FREQ CHECK**.
2. Press the [F1 (SELECT)] function button.
   The **FADER OSC FREQ CHECK** screen appears.



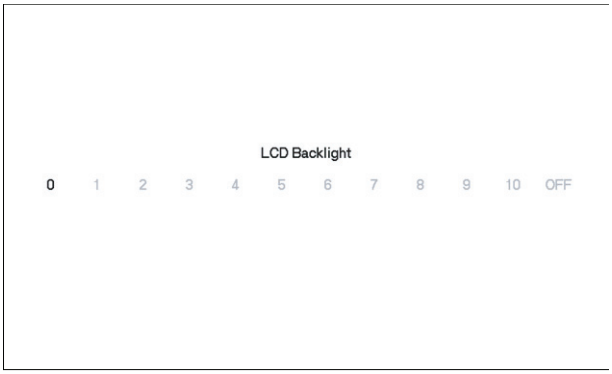
3. Without touching the fader controls, verify that **OK** is displayed for all faders.
4. When verification has been finished, press the [F4 (TOP)] function button.
   * *You can also advance to the next test item by pressing [METER (NEXT)].*

6. LCD Check

This performs verification for the LCD screen and the backlight circuit.

1. At the Test Mode menu, use the cursor buttons to choose **LCD CHECK**.
2. Press the [F1 (SELECT)] function button.
   The entire LCD screen turns white.
3. Press [METER] to make the display on the LCD screen change from black to a color pattern, and then to a text display, and verify that the display is free of video artifacts, uneven color, bleeding, or other such abnormalities.

4. Press the [METER] button.
   The display changes to the screen for checking the luminance of the LCD backlight.

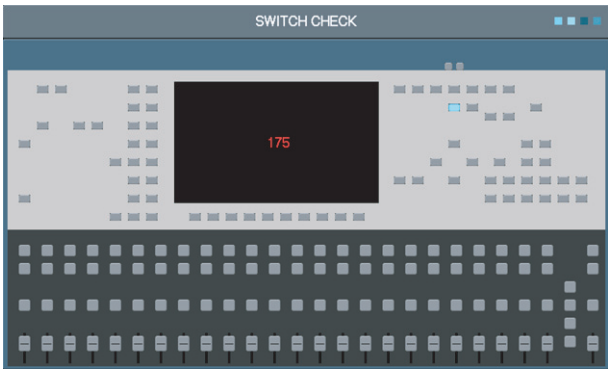


5. Press the [METER] button to change the value from **0** to **10**, and verify that the backlighting become progressively brighter.
6. Change the setting to **OFF** and verify that the backlight goes dark.
7. When verification has been finished, press the [F4 (TOP)] function button.
   * *You can also advance to the next test item by pressing [METER (NEXT)].*

7. Switch Check

This performs verification of the operation of the switches, the touch-sense faders, and the slider switches on the rear panel.

1. At the Test Mode menu, use the cursor buttons to choose **SWITCH CHECK**.
2. Press the [F1 (SELECT)] function button.
   The **SWITCH CHECK** screen appears.

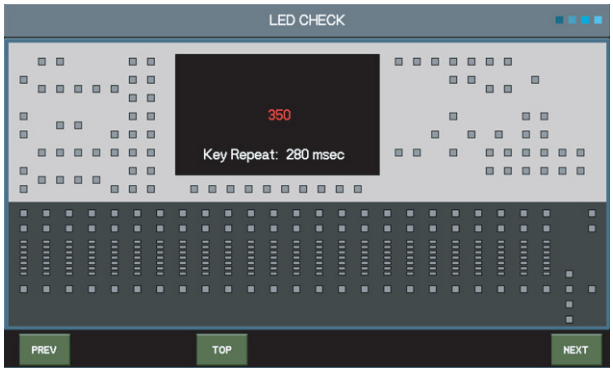


3. Press the switches on the panel, touch the fader controls with the bare hand, and operate the slider switches on the rear panel, and verify that the on-screen switches all turn blue.
   * *When two or more switches are pressed simultaneously, all LEDs flash. If this happens, a problem may be present in the switch circuitry.*
4. When all switches have been detected as operating normally, **OK** is displayed.
5. When **OK** is displayed, turn the Preamp Gain control at the upper left rapidly.
   The display returns to the root screen for the Test Mode.
   * *You can also advance to the next test item by turning the value dial rapidly.*

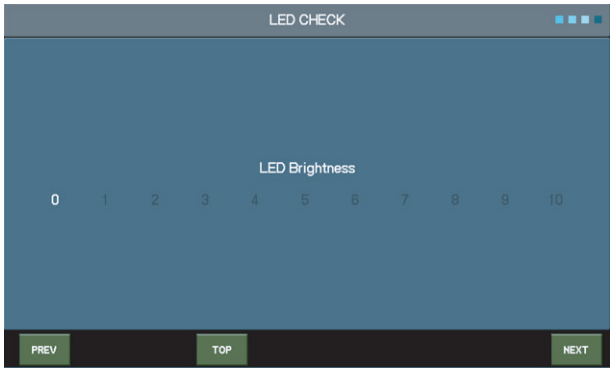
8. LED Check

This verifies whether all LEDs light up correctly.

1. At the Test Mode menu, use the cursor buttons to choose **LED CHECK**.
2. Press the [F1 (SELECT)] function button.
   The **LED CHECK** screen appears.



3. Press [METER (NEXT)] and verify that the LED at the upper left lights up.
4. Press [METER (NEXT)] repeatedly and verify that the LEDs light up in succession.
   * *Two-color LEDs light up first in green, then in red.*
   * *The operator is to visually verify whether the LEDs light up.*
   When all the LEDs down to the one at the lower left have been made to light up, **OK** is displayed.
5. Press [METER (NEXT)].
   The display changes to the screen for checking the luminance of the LEDs.

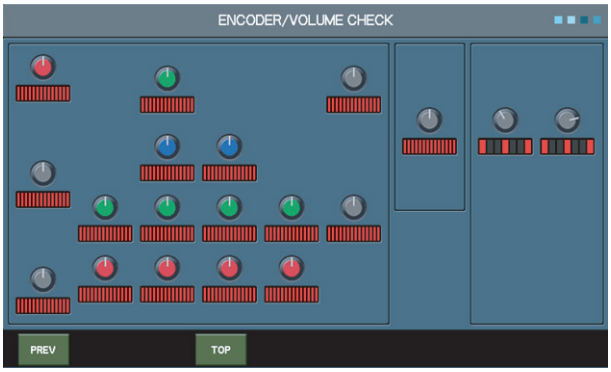


6. Press the [METER] button to change the value from **0** to **10**, and verify that the luminance of all LEDs becomes progressively brighter.
7. When verification has been finished, press the [F4 (TOP)] function button.
   * *You can also advance to the next test item by pressing [METER (NEXT)].*

9. Encoder/Volume Check

This verifies that all controls (except the headphones volume knob) and encoders are operating correctly.

1. At the Test Mode menu, use the cursor buttons to choose **ENCODER/ VOLUME CHECK**.
2. Press the [F1 (SELECT)] function button.
   The **ENCODER/VOLUME CHECK** screen appears.



3. Slowly turn all the control knobs and encoders clockwise and counterclockwise.
4. Verify that no malfunction occurs and that the red areas displayed on the LCD screen disappear.
5. Turn the [TALKBACK/OSC MIC LEVEL] and [MONITOR LEVEL] controls all the way clockwise and counterclockwise, and verify that the volume level can be read out correctly.
6. When verification has been finished, press the [F4 (TOP)] function button.

* *You can also advance to the next test item by pressing [METER (NEXT)].*

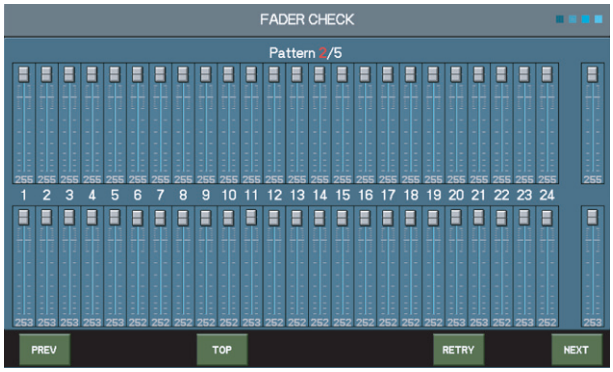
10. Fader Check

This verifies whether the 25 motor faders are operating correctly.
The upper part of the screen displays the target destinations for movement, and the lower part shows the actual locations moved to.
When all on-screen faders are displayed in gray, execution advances to the next test. Press [METER (NEXT)] to advance to the next test item.
If any fader remains displayed in red, the fader may have a problem. Press [F8 (RETRY)] to reverify.
If any red fader remains even after redoing the operation several times, repair the Fader Board.

1. At the Test Mode menu, use the cursor buttons to choose **FADER CHECK**.
2. Press the [F1 (SELECT)] function button.
   The **FADER CHECK** screen appears.
   First, this tests whether the faders move all the way down.

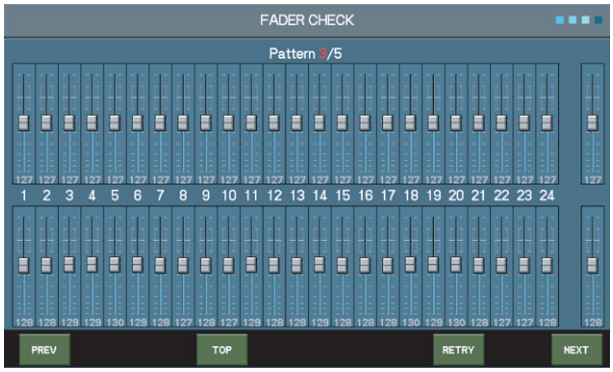
3. When **NEXT** is displayed at the bottom right of the screen, press [METER (NEXT)] to advance to the next test.

This tests whether the faders move all the way up.



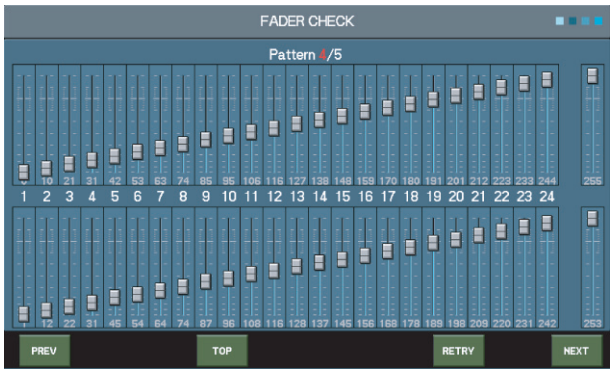
4. When **NEXT** is displayed at the bottom right of the screen, press [METER (NEXT)] to advance to the next test.

This tests whether the faders move to the middle.



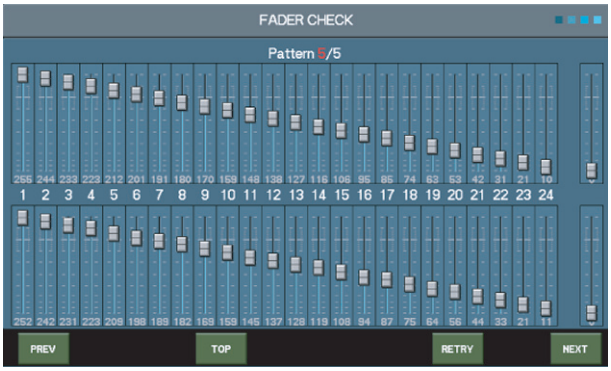
5. When **NEXT** is displayed at the bottom right of the screen, press [METER (NEXT)] to advance to the next test.

This tests whether the faders move successively higher, going from left to right.



6. When **NEXT** is displayed at the bottom right of the screen, press [METER (NEXT)] to advance to the next test.

This tests whether the faders move successively lower, going from left to right.



7. When verification has been finished, press the [F4 (TOP)] function button.

* *You can also advance to the next test item by pressing [METER (NEXT)].*

11. RS-232C Interface Check

This verifies the operation of the RS-232C connector on the rear panel.

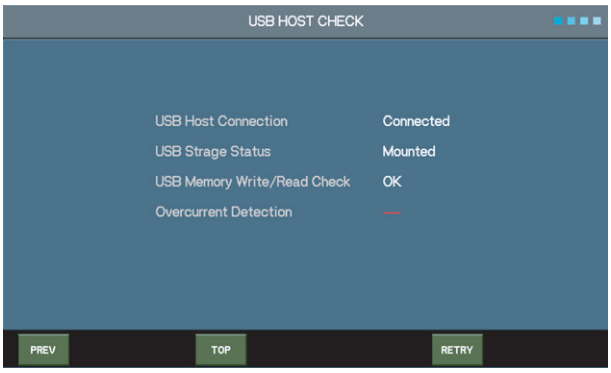
1. Insert the RS-232C inspection tool into the RS-232C connector on the rear panel.
2. At the Test Mode menu, use the cursor buttons to choose **RS-232C CHECK**.
3. Press the [F1 (SELECT)] function button.
   Testing starts automatically.
   If **OK** appears on the screen, operation is correct.
   If **Timeout Error** is displayed, a problem may be present in the RS-232C circuit.
4. When verification has been finished, press the [F4 (TOP)] function button.

* *You can also advance to the next test item by pressing [METER (NEXT)].*

12. USB Host Check

This verifies the operation of the USB MEMORY connector.

1. Insert a USB memory device into the USB MEMORY connector.
2. At the Test Mode menu, use the cursor buttons to choose **USB HOST CHECK**.
3. Press the [F1 (SELECT)] function button.
   Read and write operations are performed automatically, and the results are displayed on the screen.



4. Verify that **OK** is displayed for the **USB Memory Write/Read Check** item.

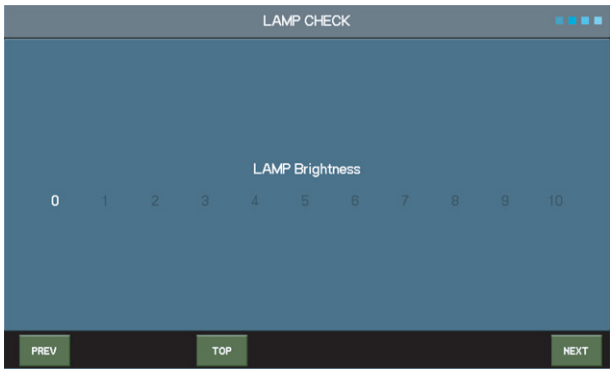
* *If **NG** (not OK) is displayed, press [F8 (RETRY)] to perform checking again. If OK fails to appear even after checking several times, a problem may be present in the USB-host circuit.*

5. When verification has been finished, press the [F4 (TOP)] function button.

13. Lamp Check

This verifies the operation of the LAMP connector on the rear panel.

1. Insert the mixing-console light into the LAMP connector.
2. At the Test Mode menu, use the cursor buttons to choose **LAMP CHECK**.
3. Press the [F1 (SELECT)] function button.



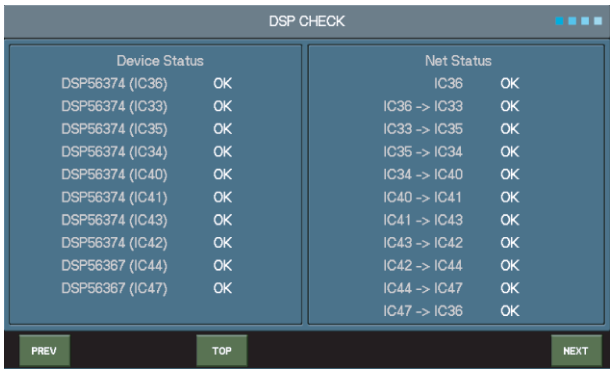
4. Press [METER (NEXT)] and verify that the brightness of the mixing-console light changes from **0** to **10**.
   (At **0**, it goes dark.)
5. When verification has been finished, press the [F4 (TOP)] function button.

* *You can also advance to the next test item by pressing [METER (NEXT)].*

14. DSP Check

This verifies the operation of the ten DSP devices and gate arrays.

1. At the Test Mode menu, use the cursor buttons to choose **DSP CHECK**.
2. Press the [F1 (SELECT)] function button.
   The test is performed automatically, and the results are displayed on the screen.

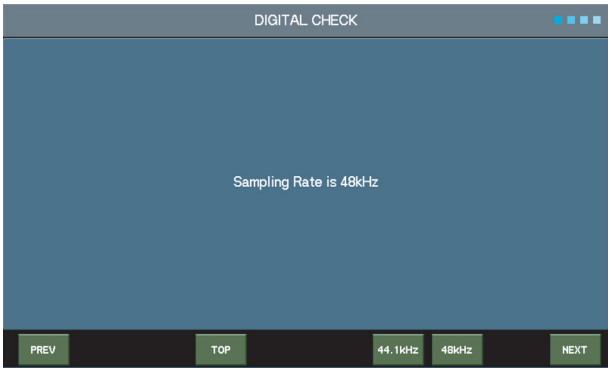


3. Verify that **OK** is displayed for all devices.
   Any IC for which **NG** (not OK) is displayed may have a problem.
4. When verification has been finished, press the [F4 (TOP)] function button.

15. Digital Check

This verifies the operation of DIGITAL OUT on the rear panel.

1. Connect a CD player or the like to the **STEREO IN** jack on the rear panel.
2. Connect the monitor speaker to the **DIGITAL OUT** COAXIAL connector.
3. At the Test Mode menu, use the cursor buttons to choose **DIGITAL CHECK**.
4. Press the [F1 (SELECT)] function button.



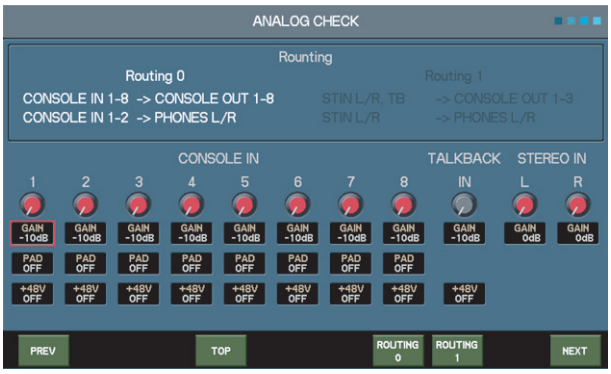
5. Verify that the audio from **STEREO IN** is output to the monitor speaker.
6. Press the [F7 (44.1kHz)] function button.
7. Verify that the audio from **STEREO IN** is output to the monitor speaker.
8. Detach the cable connecting the monitor speaker to the **DIGITAL OUT** COAXIAL connector, and connect the monitor speaker to the OPTICAL connector.
9. Verify that the audio from **STEREO IN** is output to the monitor speaker.
10. Press the [F8 (48kHz)] function button.
11. Verify that the audio from **STEREO IN** is output to the monitor speaker.
12. When verification has been finished, press the [F4 (TOP)] function button.

* *You can also advance to the next test item by pressing [METER (NEXT)].*

16. Analog Check

This verifies the operation of the **INPUT 1 through 8** jacks, the **STEREO IN** jacks, the **TALKBACK MIC IN** jack and the **OUTPUT 1** through **8** jacks on the rear panel.

1. At the Test Mode menu, use the cursor buttons to choose **ANALOG CHECK**.
2. Press the [F1 (SELECT)] function button.



3. Connect the condenser mic to **INPUT 1**.
4. Connect the monitor speaker to **OUTPUT 1**.
5. Verify that no sound is produced from the condenser mic.
6. Move the cursor to **+48V** for **CH 1** and turn the value dial clockwise. The phantom power comes on and the condenser mic is activated.
7. Verify that approximately 3 seconds after activation of the mute circuit following the phantom power coming on, sound picked up by the condenser mic is heard from the monitor speaker.
8. Move the cursor to **PAD** for **CH 1** and turn the value dial clockwise. The PAD circuit comes on and the volume level is lowered by **20 dB**.
9. Verify that the volume of the sound from the condenser mic is lowered.
10. Move the cursor to **GAIN** for **CH 1** and turn the value dial clockwise.
11. Verify that the volume of the sound from the condenser mic increases as the gain changes.
12. Connect the condenser mic to **INPUT 2** and the monitor speaker to **OUTPUT 2**, and carry out steps **5** through **11** for **CH 2**.
13. Connect the condenser mic to **INPUT 3** and the monitor speaker to **OUTPUT 3**, and carry out steps **5** through **11** for **CH 3**.
14. Connect the condenser mic to **INPUT 4** and the monitor speaker to **OUTPUT 4**, and carry out steps **5** through **11** for **CH 4**.
15. Connect the condenser mic to **INPUT 5** and the monitor speaker to **OUTPUT 5**, and carry out steps **5** through **11** for **CH 5**.
16. Connect the condenser mic to **INPUT 6** and the monitor speaker to **OUTPUT 6**, and carry out steps **5** through **11** for **CH 6**.
17. Connect the condenser mic to **INPUT 7** and the monitor speaker to **OUTPUT 7**, and carry out steps **5** through **11** for **CH 7**.
18. Connect the condenser mic to **INPUT 8** and the monitor speaker to **OUTPUT 8**, and carry out steps **5** through **11** for **CH 8**.
19. Press the [F8 (ROUTING 1)] function button.
20. Connect the condenser mic to **TALKBACK MIC IN** and the monitor speaker to **OUTPUT 3**, and carry out steps **5**, **6**, **7**, **10**, and **11** for **TALKBACK**.
21. Connect the CD player to **STEREO IN** and the headphones to the headphones jack.
22. Turn the volume knob for the headphones and verify that the volume level of the headphones changes.
23. For **STEREO IN**, at **L**, move the cursor to **GAIN**, then turn the value dial and verify that the left-side headphones volume level changes.
24. For **STEREO IN**, at **R**, move the cursor to **GAIN**, then turn the value dial and verify that the right-side headphones volume level changes.
25. When verification has been finished, press the [F4 (TOP)] function button.

* *You can also advance to the next test item by pressing [METER (NEXT)].*

17. REAC Check

This verifies REAC operation.

1. Connect a CD player or the like to the **STEREO IN** jack on the rear panel.
2. Connect headphones to the headphones jack.
3. Adjust the headphones volume to a setting near the middle.
4. Connect the **REAC A** and **REAC B** connectors using a REAC cable.
5. At the Test Mode menu, use the cursor buttons to choose **REAC CHECK**.
6. Press the [F1 (SELECT)] function button.
7. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
   REAC A/B LOOP CHECK
   Routing STIN L/R -> REAC A I8S0 -> REAC B I8S0 -> PHONES I/R
   REAC MODE REAC A = MASTER
   REAC MODE REAC B = SLAVE
8. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
   Routing STIN L/R -> REAC A I8S1 -> REAC B I8S1 -> PHONES I/R
9. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
   Routing STIN L/R -> REAC A I8S2 -> REAC B I8S2 -> PHONES I/R
10. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC A I8S3 -> REAC B I8S3 -> PHONES I/R
11. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC A I8S4 -> REAC B I8S4 -> PHONES I/R
12. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC B I8S5 -> REAC A I8S5 -> PHONES I/R
13. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC B I8S6 -> REAC A I8S6 -> PHONES I/R
14. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC B I8S7 -> REAC A I8S7 -> PHONES I/R
15. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC B I8S8 -> REAC A I8S8 -> PHONES I/R
16. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC B I8S9 -> REAC A I8S9 -> PHONES I/R
17. Press the [F8 (CHECK +)] function button, make the settings as shown below, then verify that the CD audio is heard through the headphones.
    Routing STIN L/R -> REAC A I8S0 -> REAC B I8S0 -> PHONES I/R
    REAC MODE REAC A = SLAVE
    REAC MODE REAC B = MASTER
18. Connect the **REAC SPLIT** and **REAC B** connectors using the REAC cable, then carry out steps **7** through **17**.
19. When verification has been finished, press the [F4 (TOP)] function button.

18. MIDI Loop Check

This verifies MIDI sending and receiving operations.

1. Connect the **MIDI IN** and **MIDI OUT** jacks on the rear panel using a MIDI cable.
2. At the Test Mode menu, use the cursor buttons to choose **MIDI LOOP CHEK**.
3. Press the [F1 (SELECT)] function button.
   The test is executed automatically, and the results are displayed on the screen.
4. Verify that **OK** is displayed on the screen.
   If **Timeout Error** is displayed, a problem may be present in the MIDI circuit, or the MIDI cable may have a broken wire.

19. USB Connector (Rear) Operation Check

This verifies the operation of the USB connector on the rear panel.

1. While at the root screen for the Test Mode, connect the **USB** connector and the computer using a USB cable.
2. Verify that the computer responds and the **Found New Hardware wizard** is started.
   If this wizard appears, operation is correct.

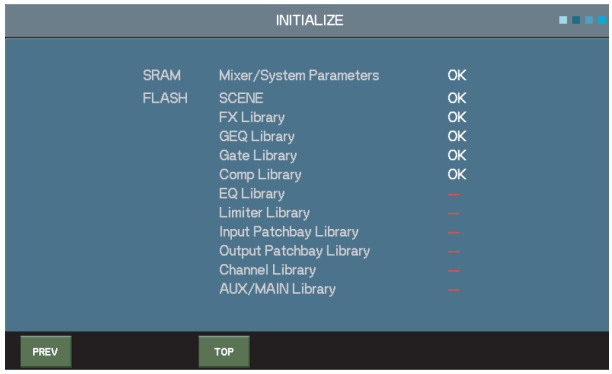
3. Click the **Cancel** button for the wizard to close the window for the wizard.
4. Disconnect the USB cable.

20. INITIALIZE

This returns the unit to its factory defaults.

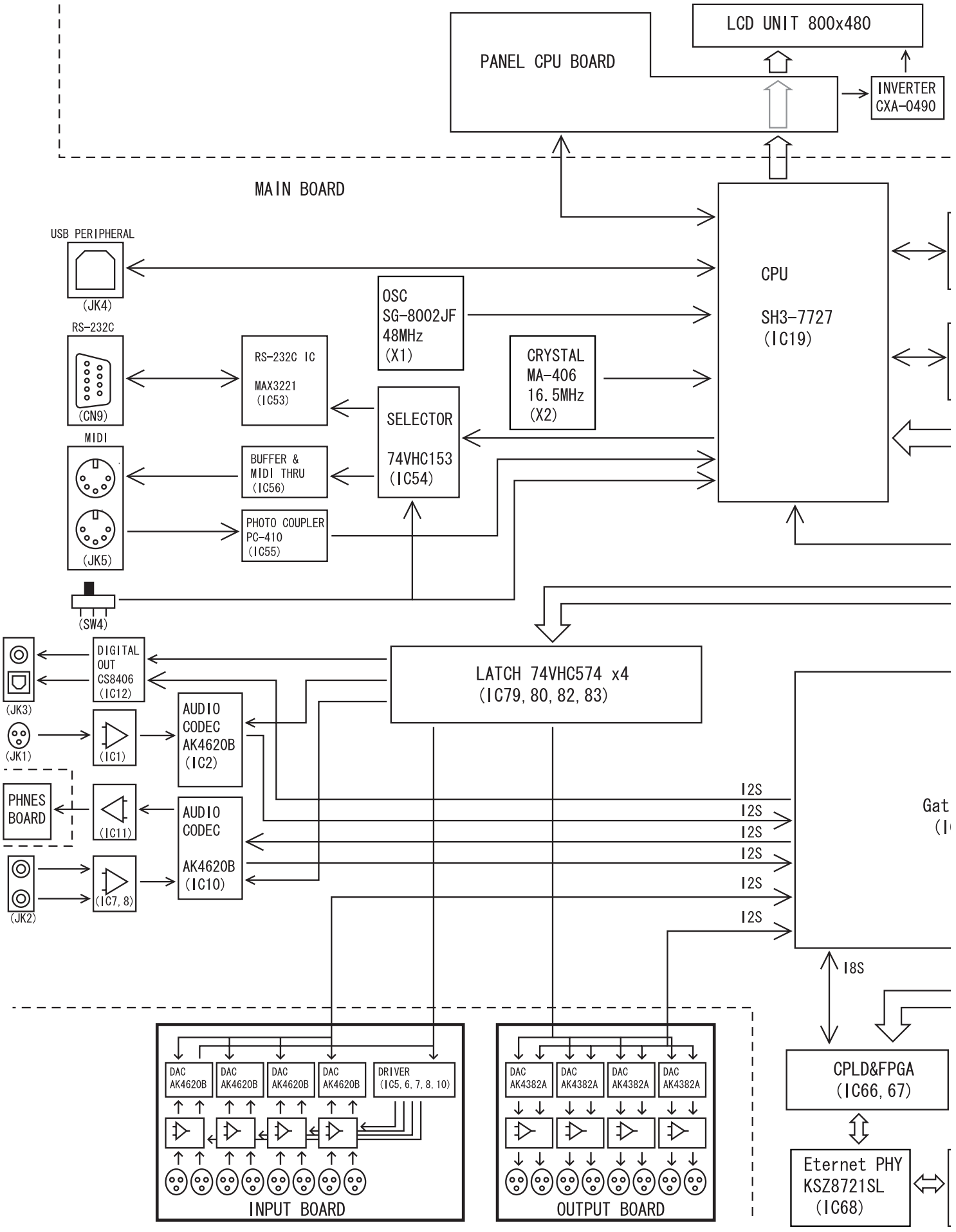
* *After performing this operation, save the user data back onto the unit using the procedure described in "**Loading Data**" (p. 28).*

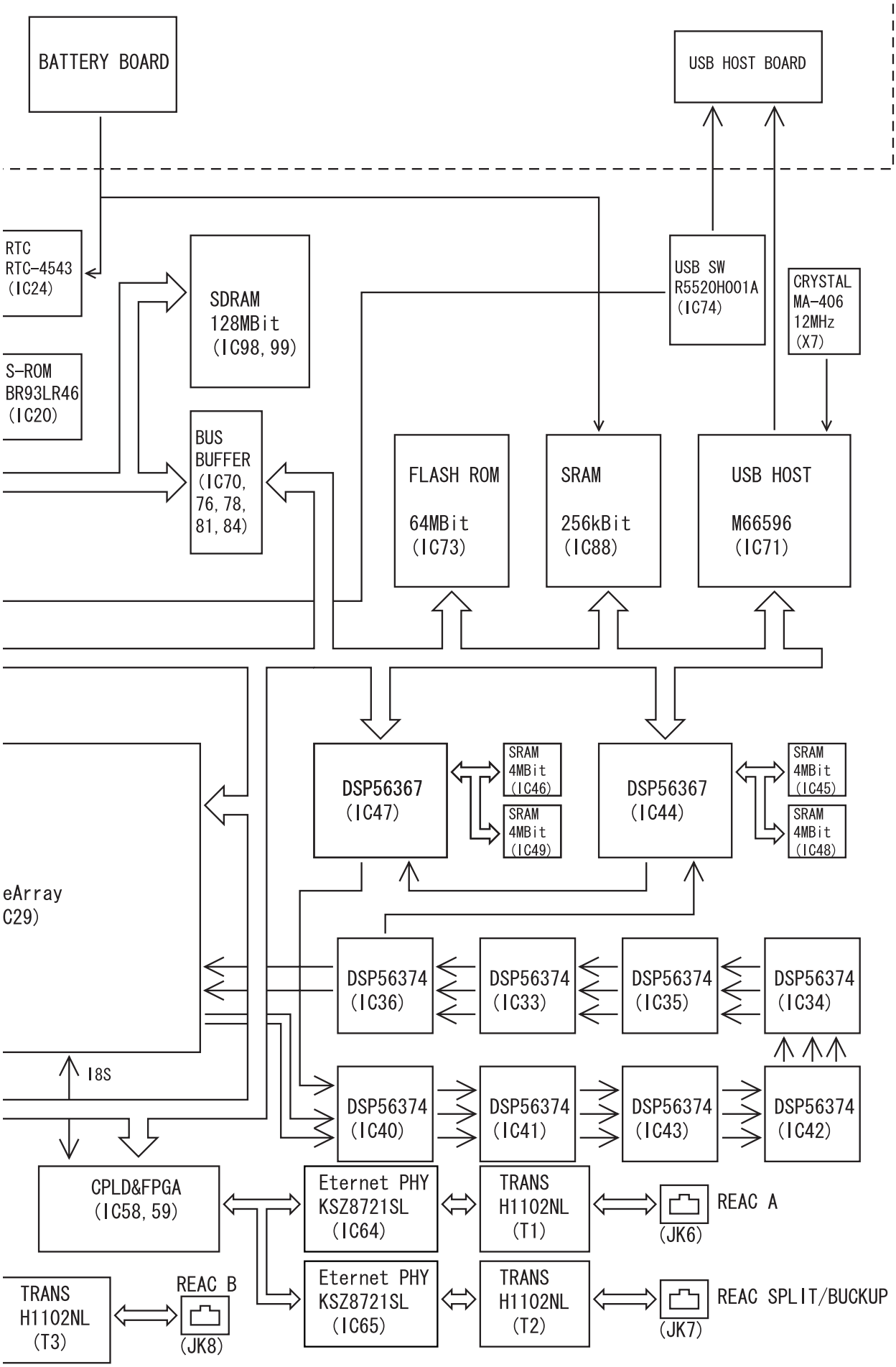
5. At the Test Mode menu, use the cursor buttons to choose **INITIALIZE**.
6. Press the [F1 (SELECT)] function button.
   Initialization is performed automatically.



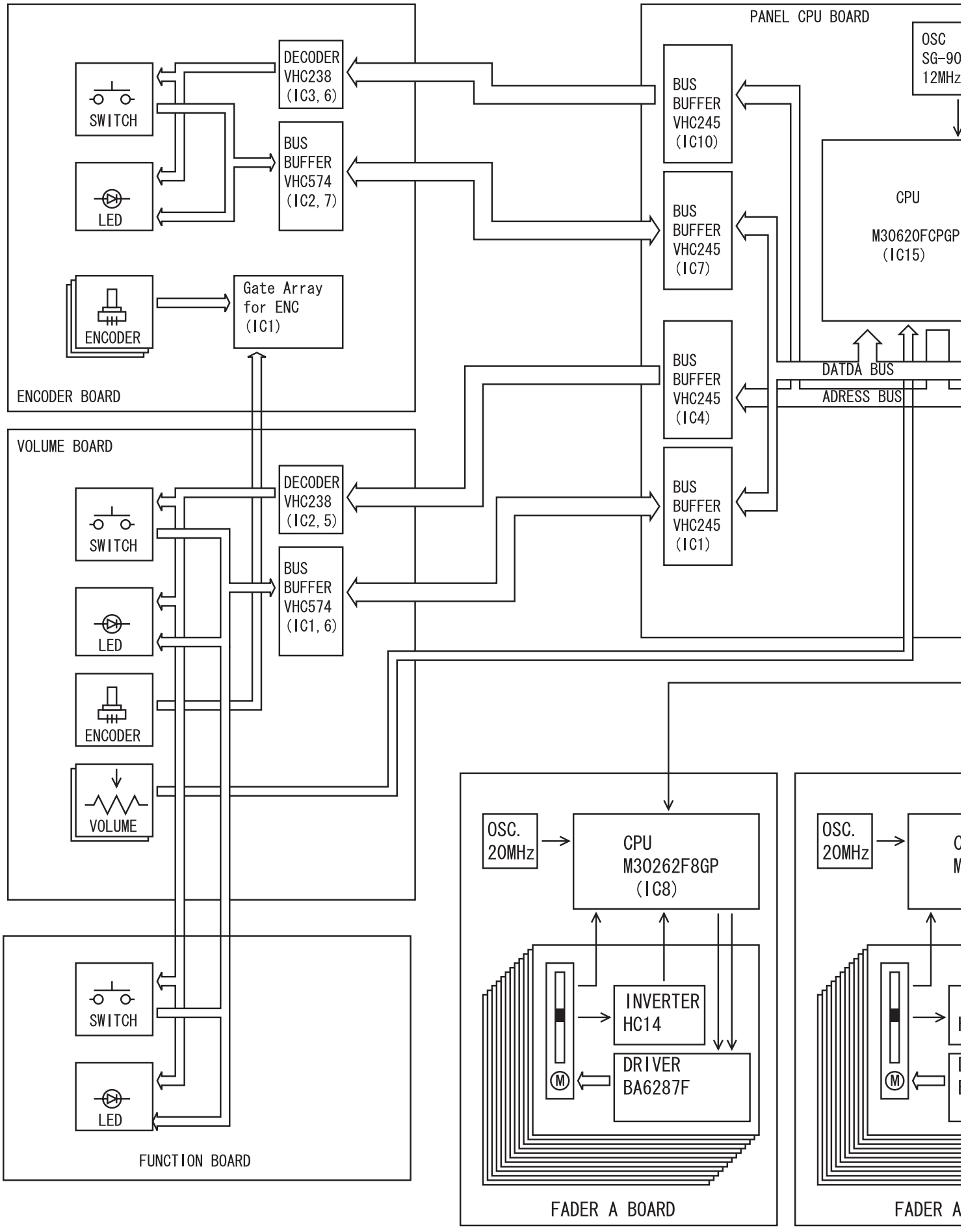
When the screen displays **OK** for all items, initialization is complete.
Switch off the power to the unit.

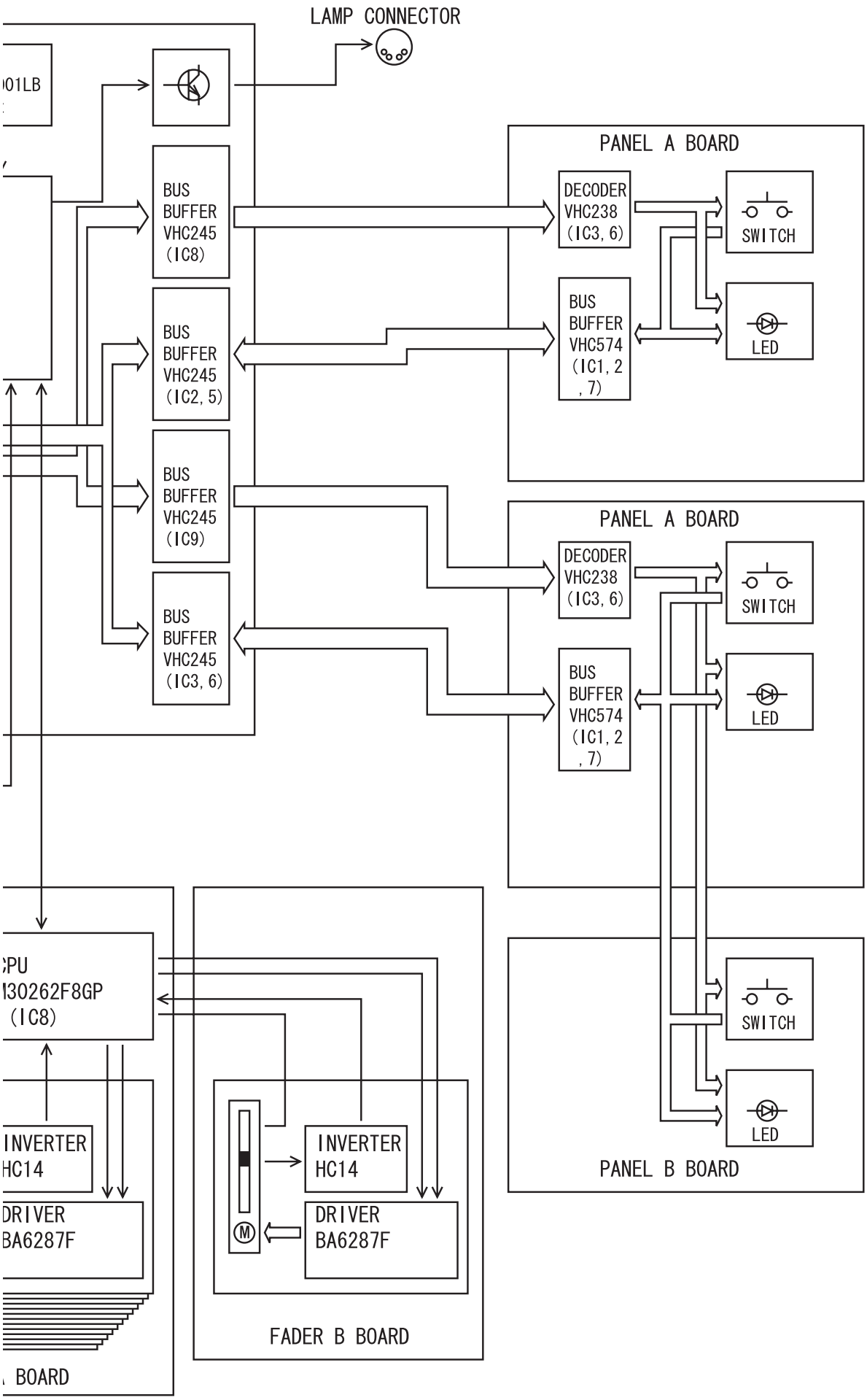
Block Diagram (Main Board)



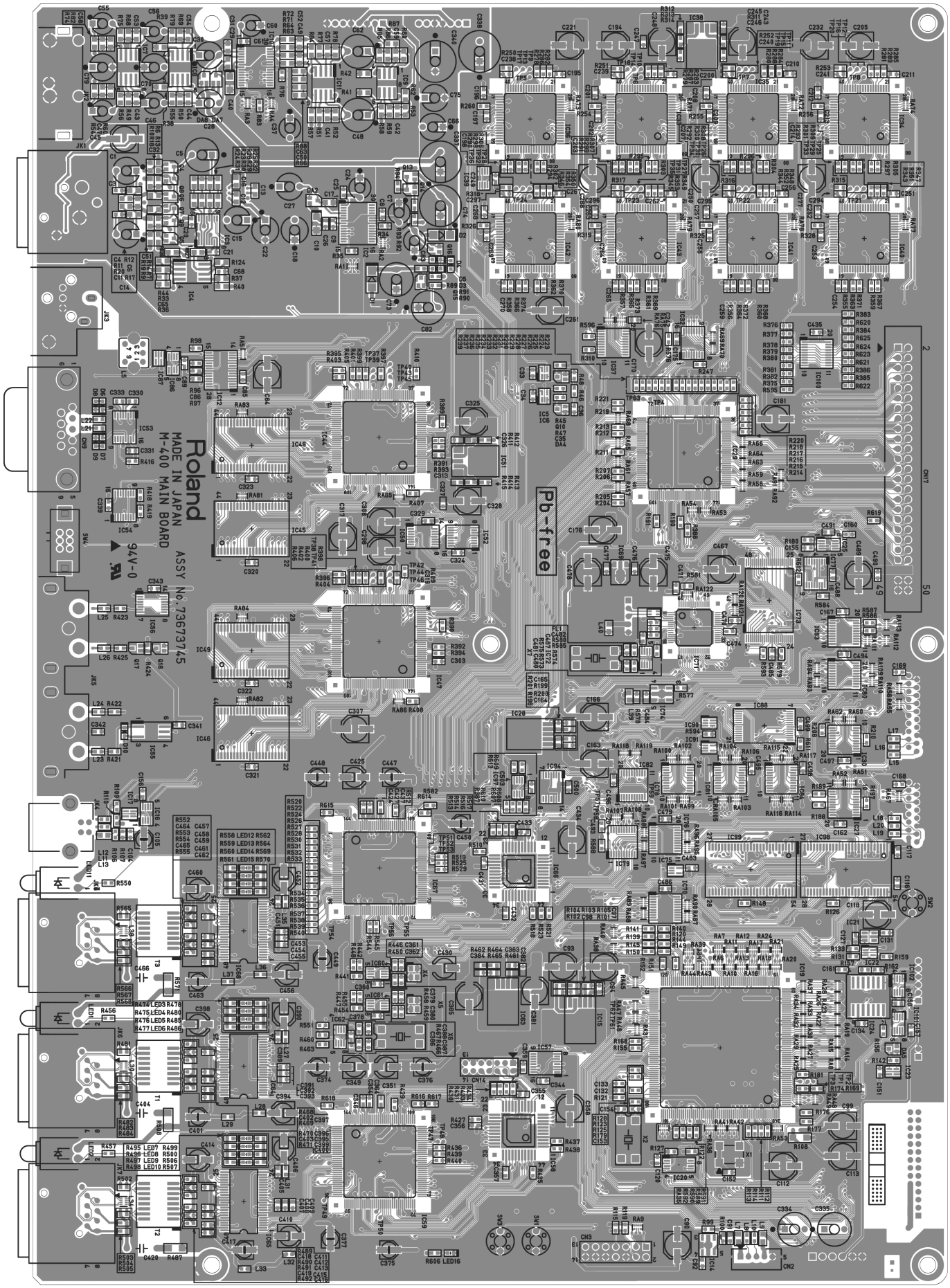

BATTERY BOARD
USB HOST BOARD
RTC
RTC-4543
(IC24)
SDRAM
128MBit
(IC98, 99)
USB SW
R5520H001A
(IC74)
CRYSTAL
MA-406
12MHz
(X7)
S-ROM
BR93LR46
(IC20)
BUS
BUFFER
(IC70,
76, 78,
81, 84)
FLASH ROM
64MBit
(IC73)
SRAM
256kBit
(IC88)
USB HOST
M66596
(IC71)
DSP56367
(IC47)
SRAM
4MBit
(IC46)
SRAM
4MBit
(IC49)
DSP56367
(IC44)
SRAM
4MBit
(IC45)
SRAM
4MBit
(IC48)
eArray
C29)
DSP56374
(IC36)
DSP56374
(IC33)
DSP56374
(IC35)
DSP56374
(IC34)
I8S
DSP56374
(IC40)
DSP56374
(IC41)
DSP56374
(IC43)
DSP56374
(IC42)
CPLD&FPGA
(IC58, 59)
Eternet PHY
KSZ8721SL
(IC64)
TRANS
H1102NL
(T1)
REAC A
(JK6)
TRANS
H1102NL
(T3)
REAC B
(JK8)
Eternet PHY
KSZ8721SL
(IC65)
TRANS
H1102NL
(T2)
REAC SPLIT/BUCKUP
(JK7)

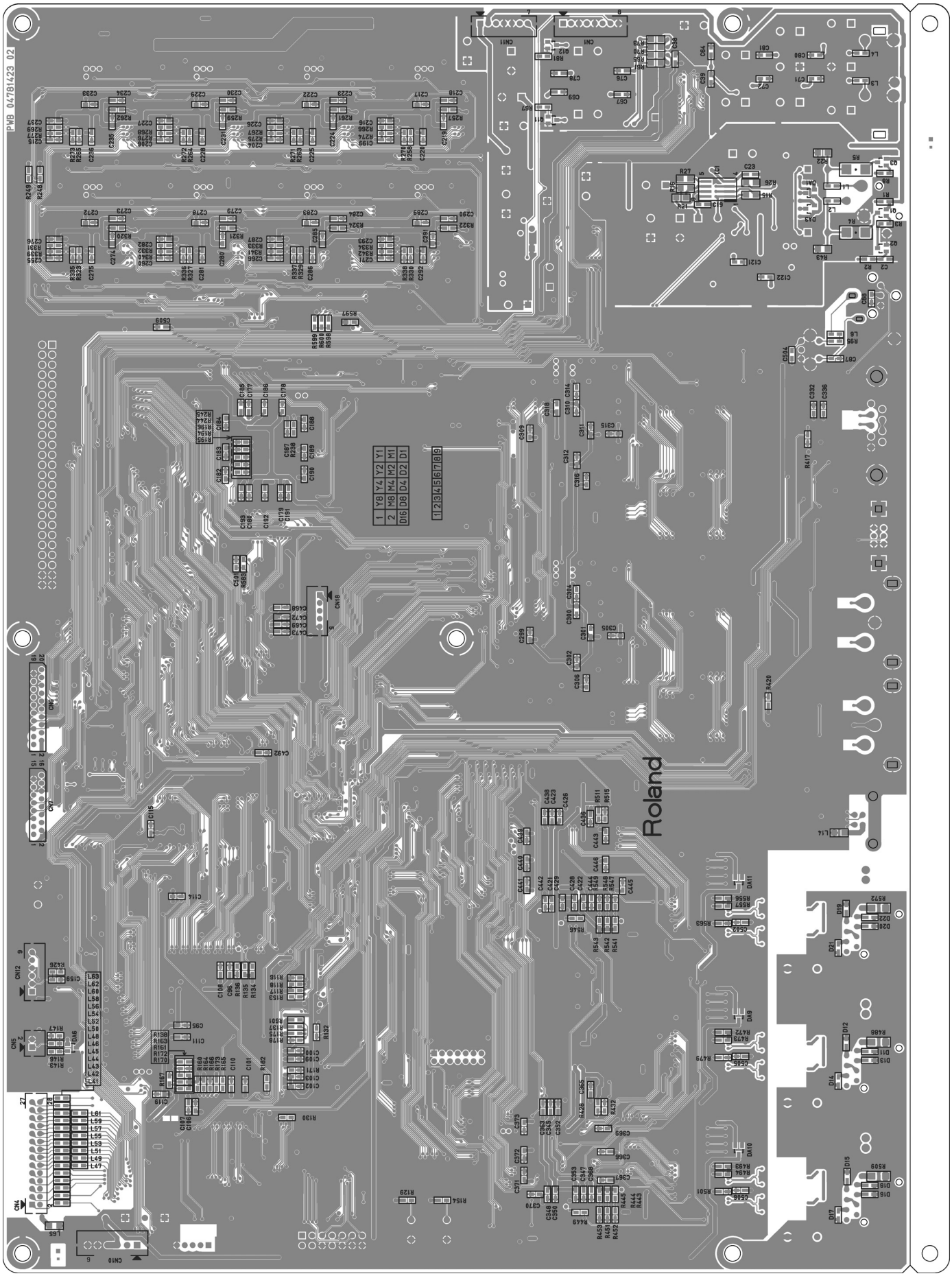
Block Diagram (Panel Board)



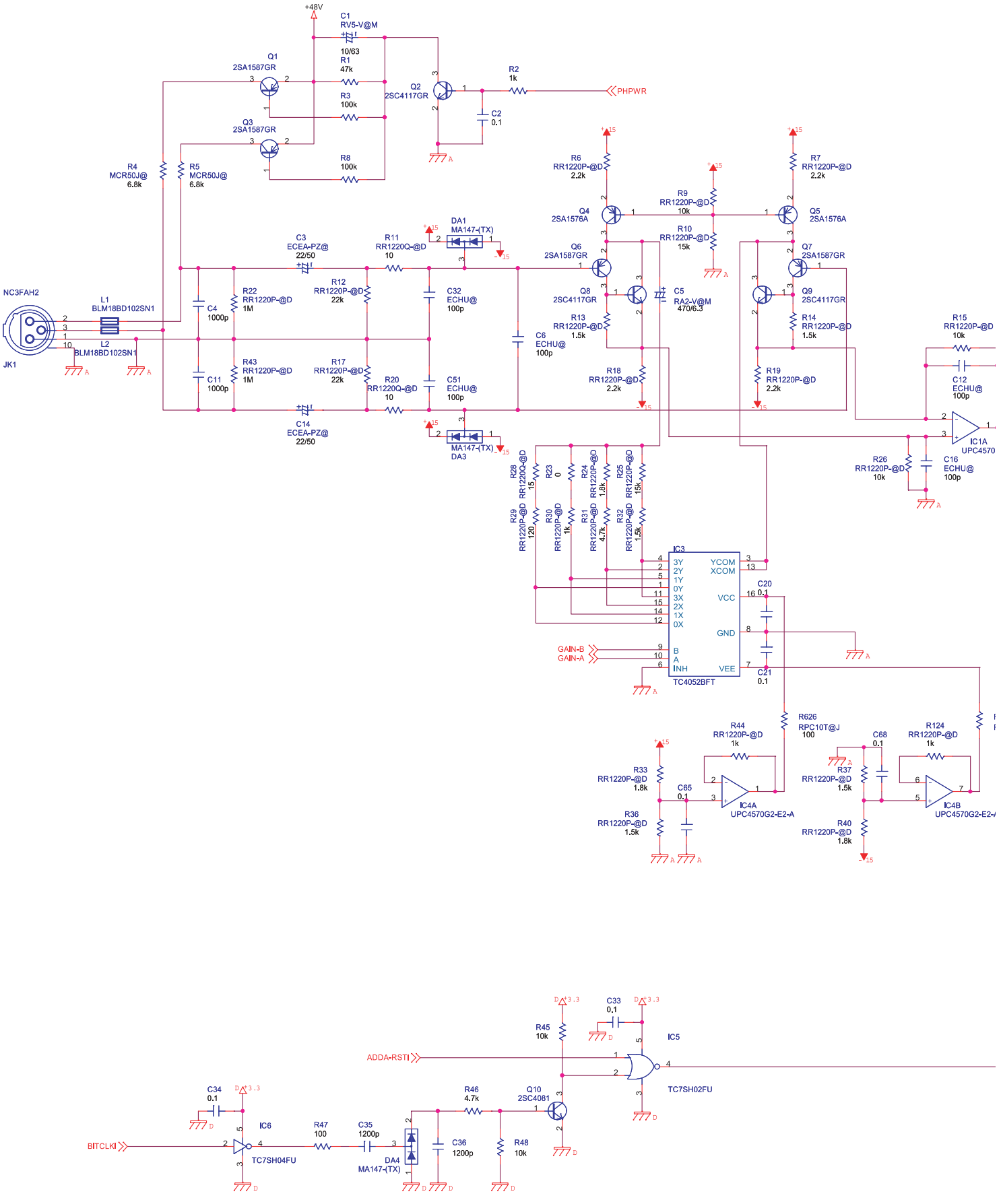

LAMP CONNECTOR
01LB
BUS
BUFFER
VHC245
(IC8)
BUS
BUFFER
VHC245
(IC2, 5)
BUS
BUFFER
VHC245
(IC9)
BUS
BUFFER
VHC245
(IC3, 6)
PANEL A BOARD
DECODER
VHC238
(IC3, 6)
SWITCH
BUS
BUFFER
VHC574
(IC1, 2
, 7)
LED
PANEL A BOARD
DECODER
VHC238
(IC3, 6)
SWITCH
BUS
BUFFER
VHC574
(IC1, 2
, 7)
LED
SWITCH
LED
PANEL B BOARD
CPU
M30262F8GP
(IC8)
INVERTER
HC14
DRIVER
BA6287F
INVERTER
HC14
DRIVER
BA6287F
M
FADER B BOARD
BOARD

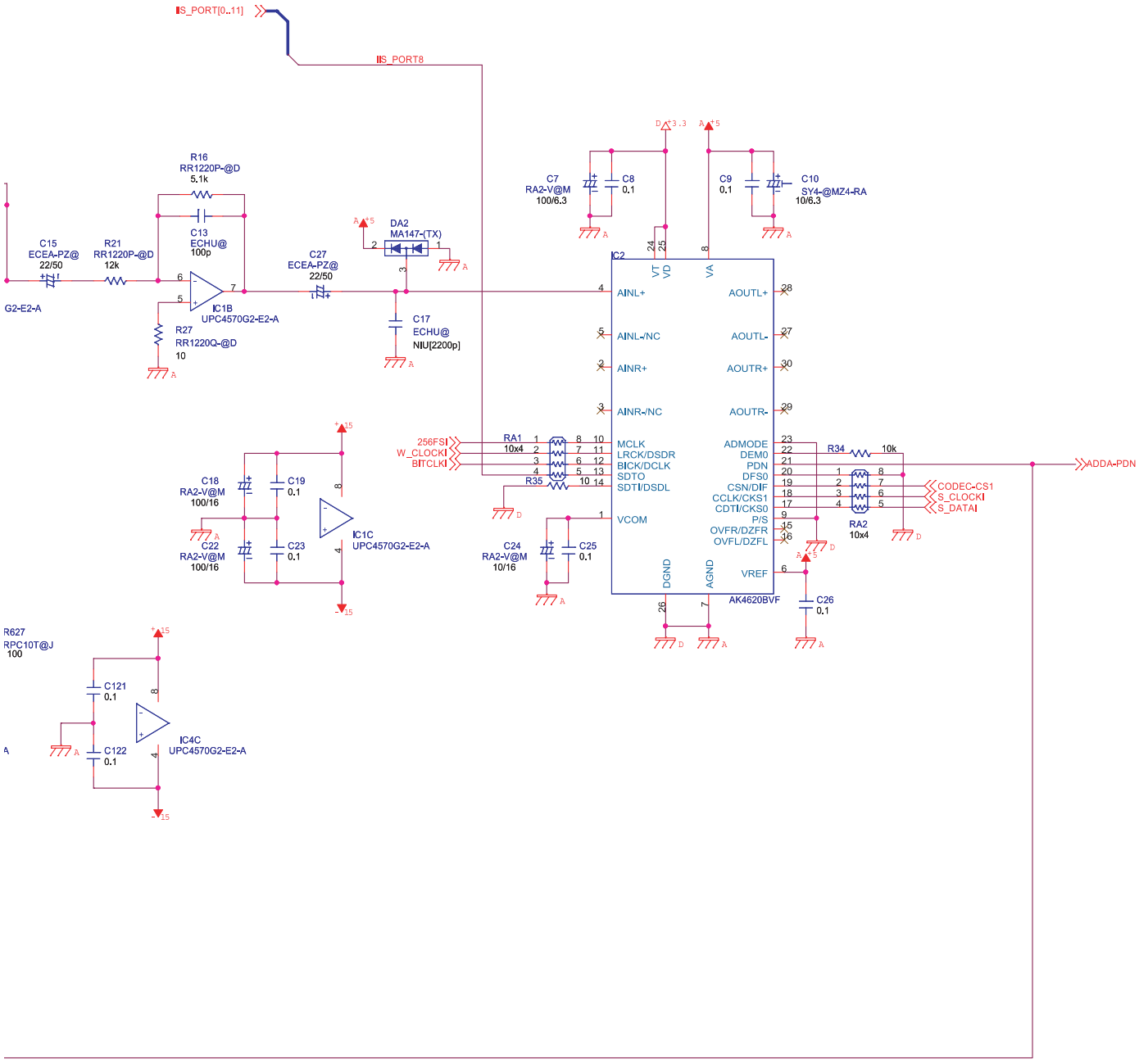
Circuit Board (Main Board)




PWB 04781423 02
Roland

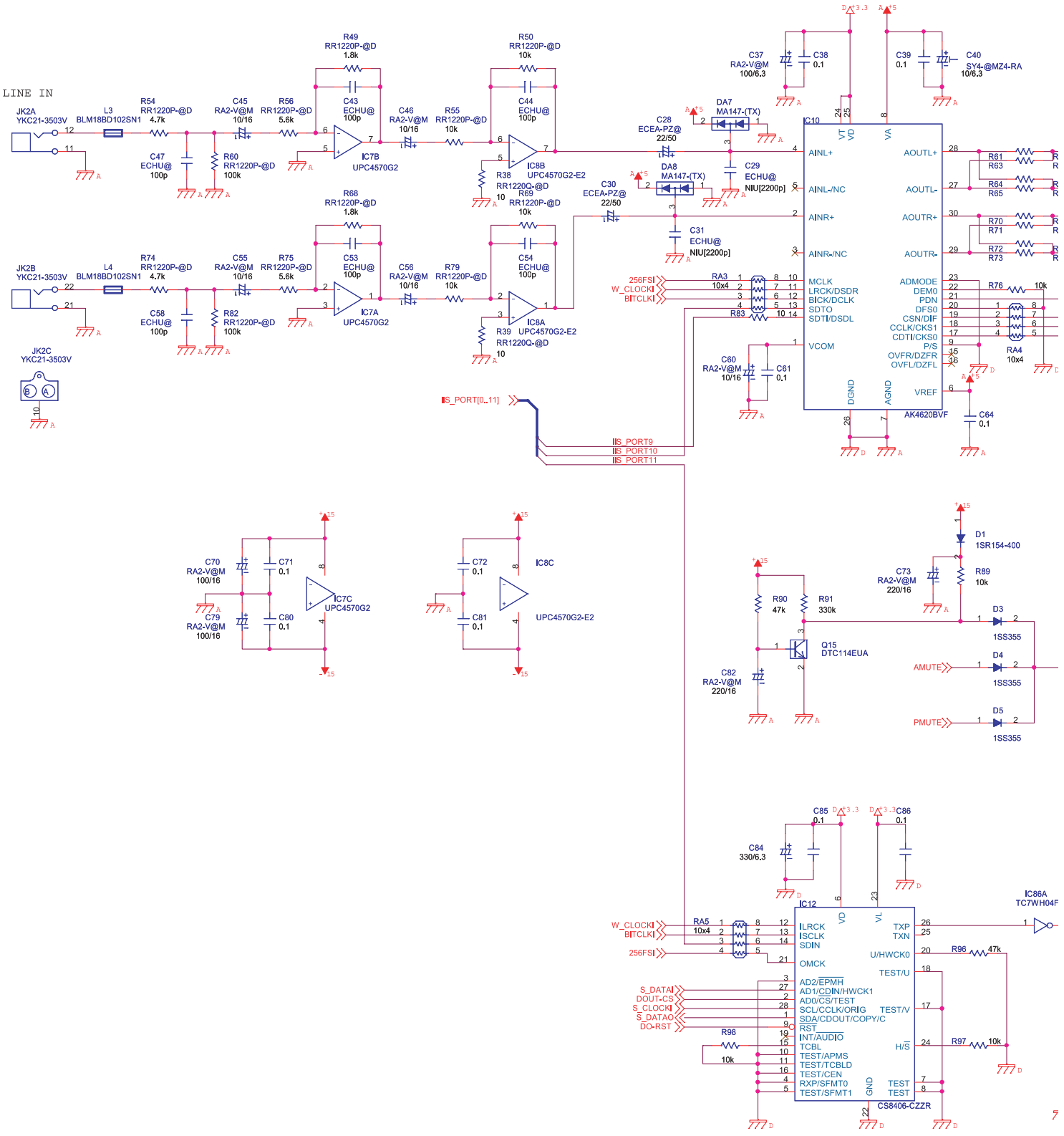
Circuit Diagram (Main Board: 1/13)

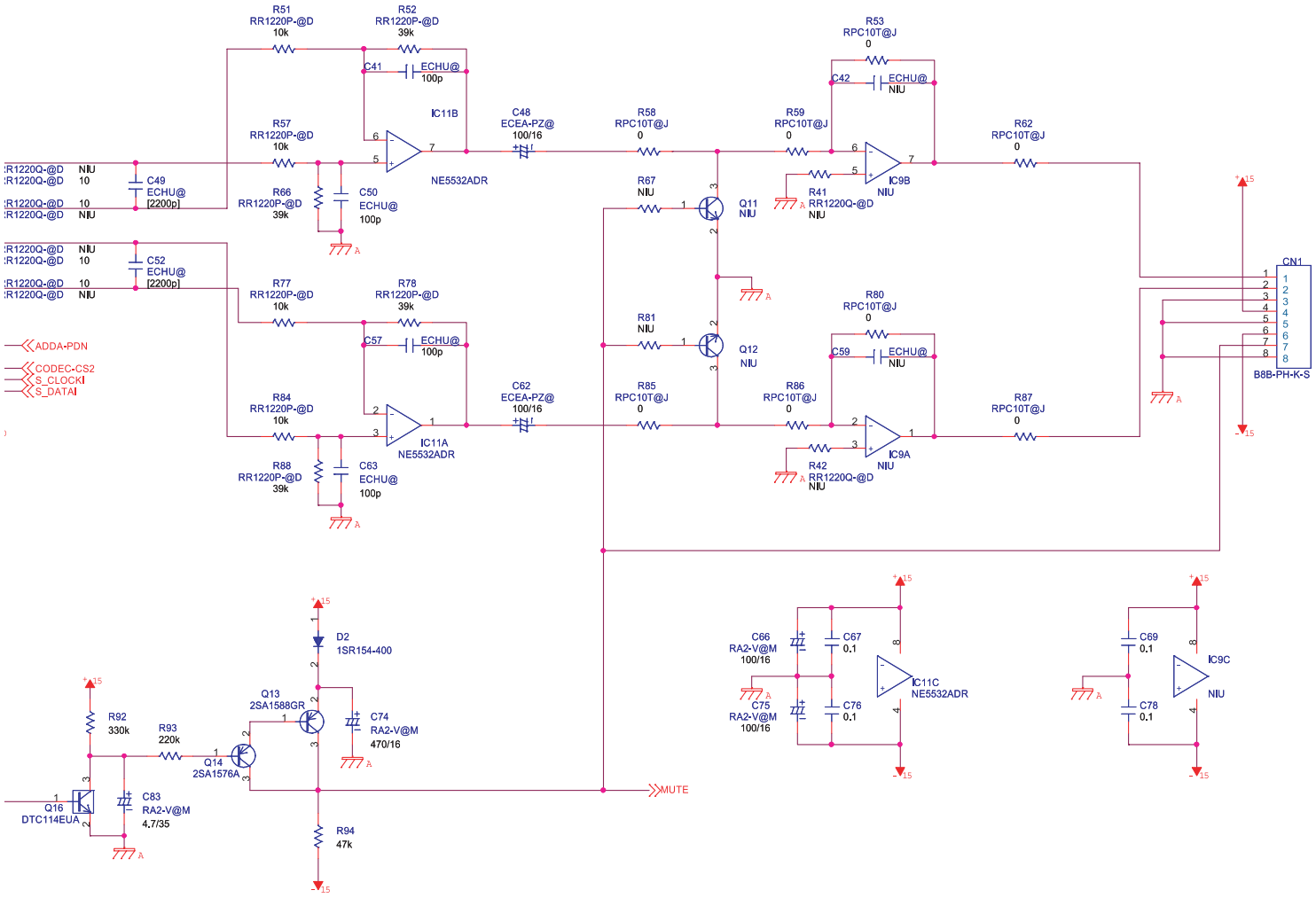


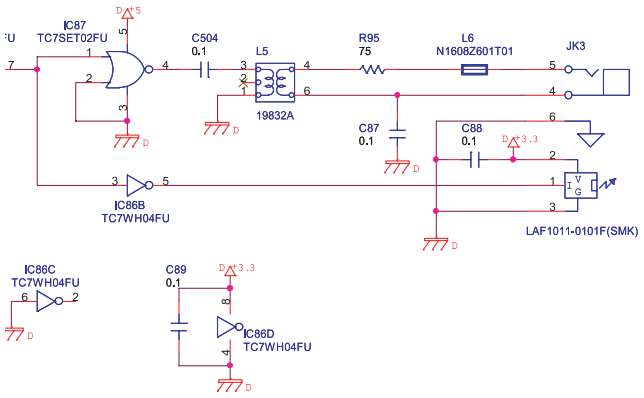

IIS_PORT[0..11]
IIS_PORT8
R16
RR1220P-@D
5.1k
C13
ECHU@
100p
C15
ECEA-PZ@
22/50
R21
RR1220P-@D
12k
G2-E2-A
IC1B
UPC4570G2-E2-A
R27
RR1220Q-@D
10
DA2
MA147-(TX)
C27
ECEA-PZ@
22/50
C17
ECHU@
NIU[2200p]
C7
RA2-V@M
100/6.3
C8
0.1
C9
0.1
C10
SY4-@MZ4-RA
10/6.3
IC2
AINL+
AINL-/NC
AINR+
AINR-/NC
MCLK
LRCK/DSDR
BICK/DCLK
SDTO
SDTI/DSDL
VCOM
VT
VD
VA
DGND
AGND
VREF
AOUTL+
AOUTL-
AOUTR+
AOUTR-
ADMODE
DEM0
PDN
DFS0
CSN/DIF
CCLK/CKS1
CDTI/CKS0
P/S
OVFR/DZFR
OVFL/DZFL
AK4620BVF
256FSI
W_CLOCKI
BITCLKI
RA1
10x4
R35
C18
RA2-V@M
100/16
C19
0.1
C22
RA2-V@M
100/16
C23
0.1
IC1C
UPC4570G2-E2-A
C24
RA2-V@M
10/16
C25
0.1
C26
0.1
R34
10k
RA2
10x4
CODEC-CS1
S_CLOCKI
S_DATAI
ADDA-PDN
R627
RPC10T@J
100
C121
0.1
C122
0.1
IC4C
UPC4570G2-E2-A

AUDIO-1

Circuit Diagram (Main Board: 2/13)



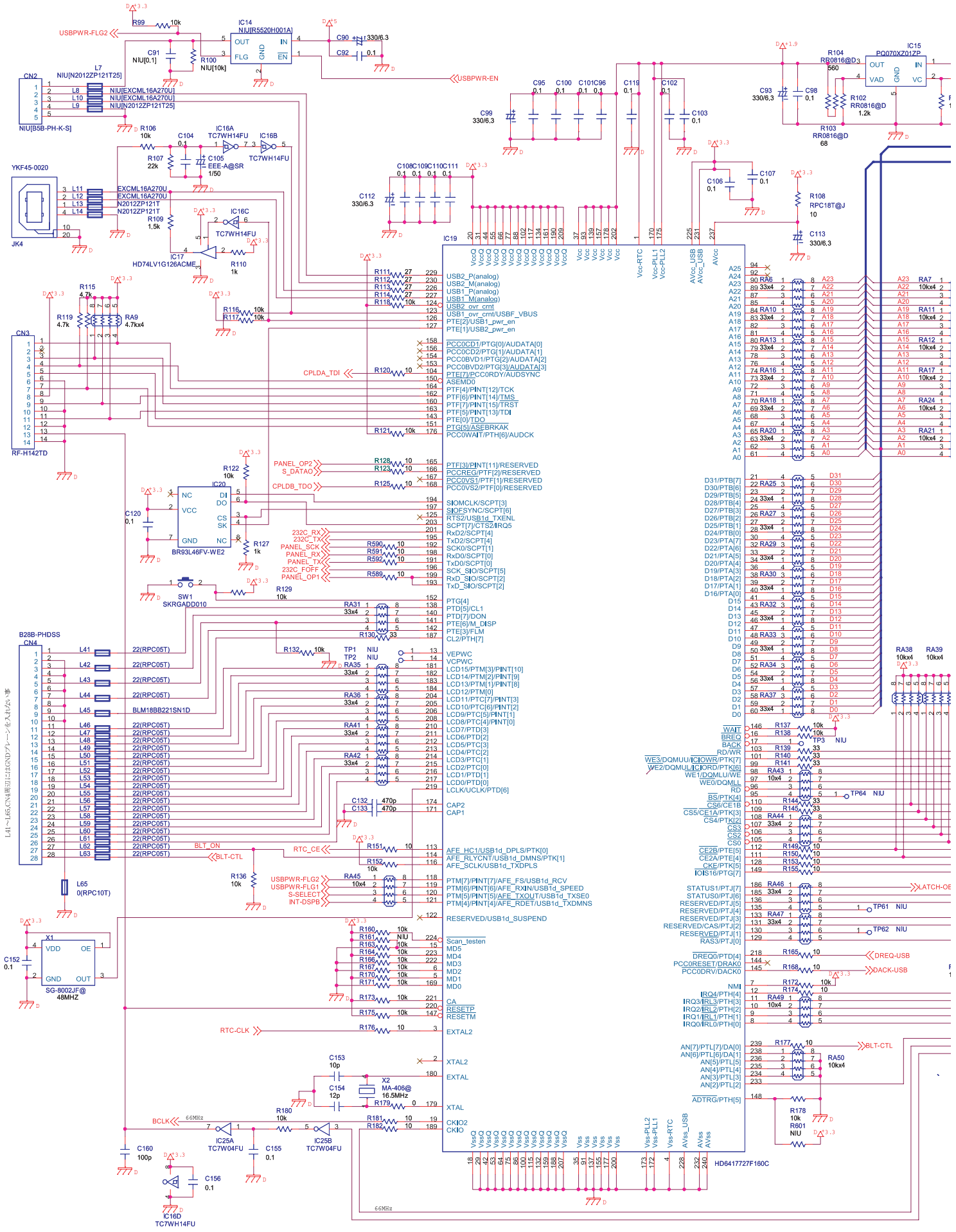

R51
RR1220P-@D
10k
R52
RR1220P-@D
39k
C41
ECHU@
100p
IC11B
NE5532ADR
R57
RR1220P-@D
10k
R66
RR1220P-@D
39k
C50
ECHU@
100p
C49
ECHU@
[2200p]
C48
ECEA-PZ@
100/16
R58
RPC10T@J
0
R53
RPC10T@J
0
C42
ECHU@
NIU
R59
RPC10T@J
0
IC9B
NIU
R41
RR1220Q-@D
NIU
R62
RPC10T@J
0
R67
NIU
Q11
NIU
R77
RR1220P-@D
10k
R78
RR1220P-@D
39k
C57
ECHU@
100p
IC11A
NE5532ADR
R84
RR1220P-@D
10k
R88
RR1220P-@D
39k
C63
ECHU@
100p
C52
ECHU@
[2200p]
C62
ECEA-PZ@
100/16
R81
NIU
Q12
NIU
R85
RPC10T@J
0
R80
RPC10T@J
0
C59
ECHU@
NIU
R86
RPC10T@J
0
IC9A
NIU
R42
RR1220Q-@D
NIU
R87
RPC10T@J
0
CN1
B8B-PH-K-S
ADDA-PDN
CODEC-CS2
S_CLOCKI
S_DATAI
D2
1SR154-400
Q13
2SA1588GR
R92
330k
R93
220k
Q14
2SA1576A
C74
RA2-V@M
470/16
Q16
DTC114EUA
C83
RA2-V@M
4.7/35
R94
47k
MUTE
C66
RA2-V@M
100/16
C67
0.1
C75
RA2-V@M
100/16
C76
0.1
IC11C
NE5532ADR
C69
0.1
C78
0.1
IC9C
NIU

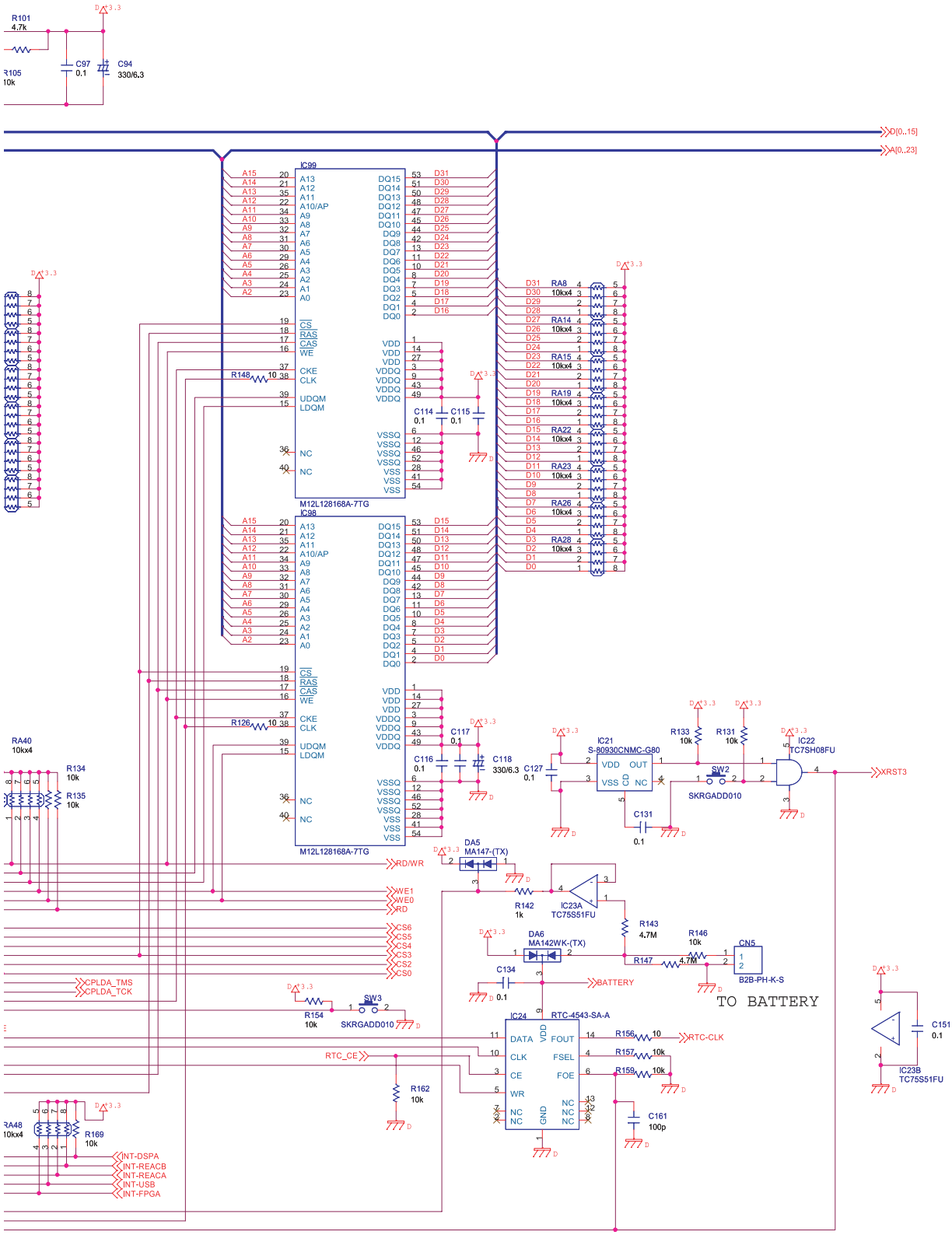

IC87
TC7SET02FU
C504
0.1
L5
19832A
R95
75
L6
N1608Z601T01
JK3
C87
0.1
C88
0.1
IC86B
TC7WH04FU
LAF1011-0101F(SMK)

IC86C
TC7WH04FU
C89
0.1
IC86D
TC7WH04FU

AUDIO-2

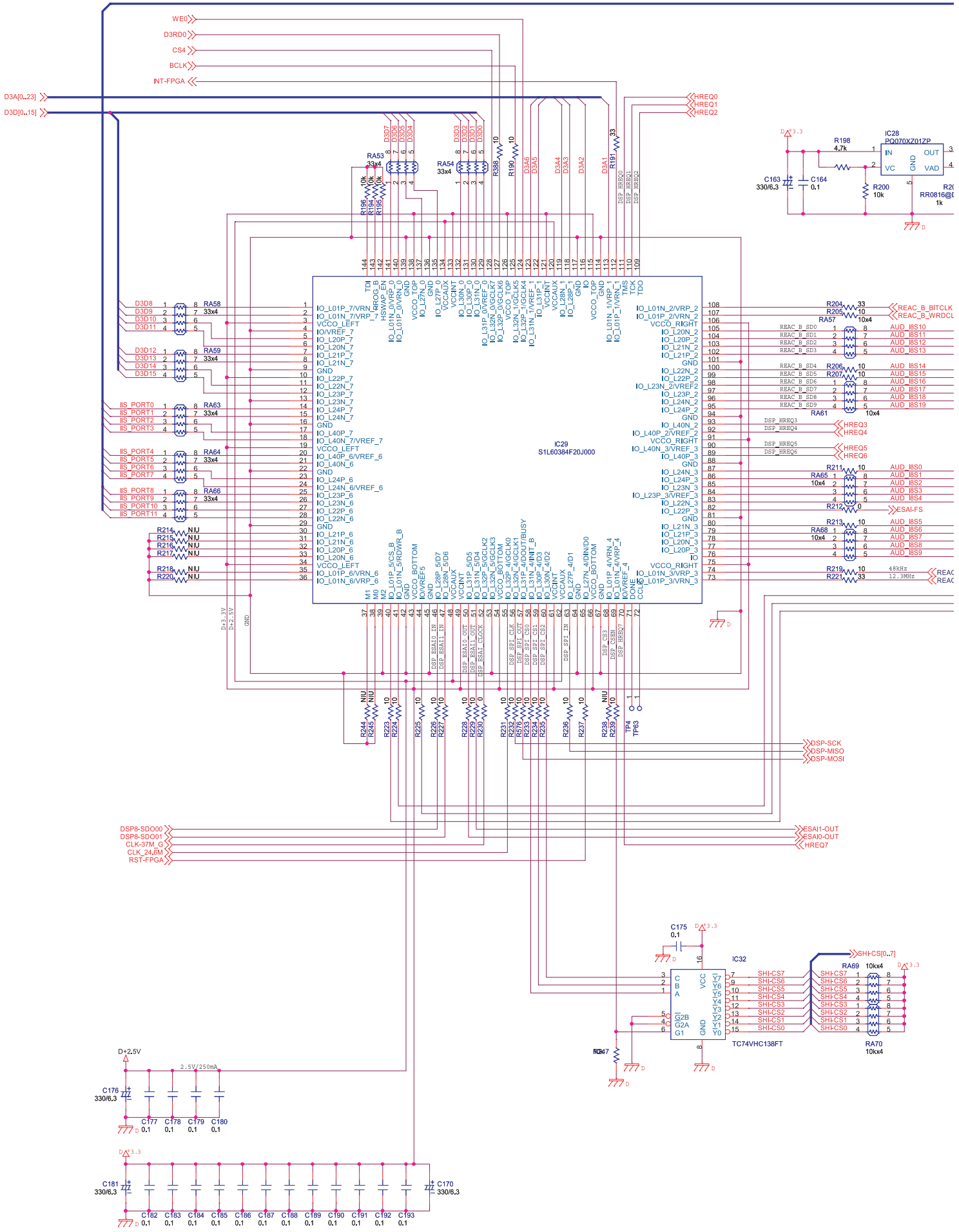
Circuit Diagram (Main Board: 3/13)

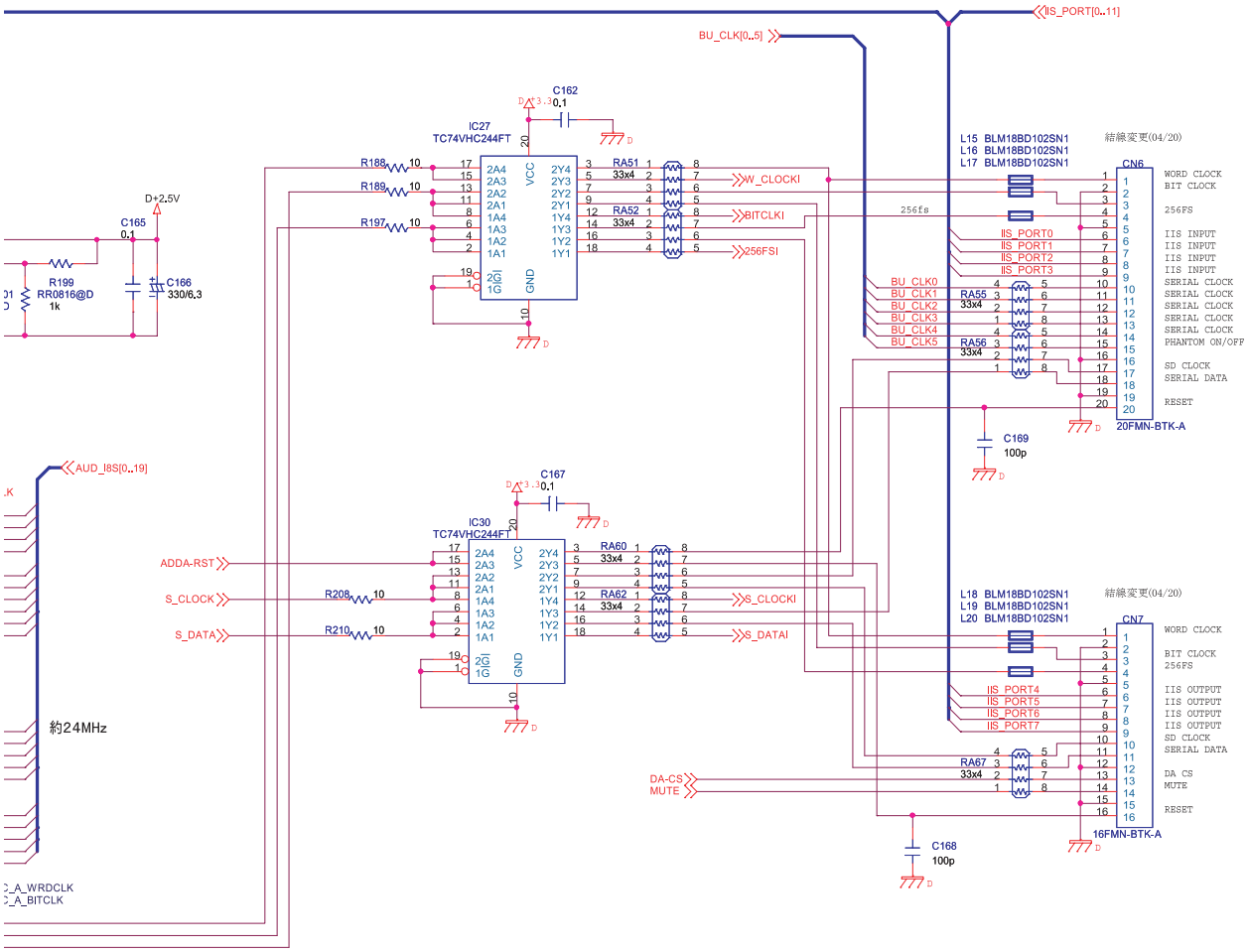



R101
4.7k
R105
10k
C97
0.1
C94
330/6.3
D[0..15]
A[0..23]
IC99
M12L128168A-7TG
IC98
M12L128168A-7TG
RA8
10kx4
RA14
10kx4
RA15
10kx4
RA19
10kx4
RA22
10kx4
RA23
10kx4
RA26
10kx4
RA28
10kx4
R148
10
R126
10
C114
0.1
C115
0.1
C117
0.1
C116
0.1
C118
330/6.3
C127
0.1
C131
0.1
IC21
S-80930CNMC-G80
R133
10k
R131
10k
IC22
TC7SH08FU
SW2
SKRGADD010
XRST3
RA40
10kx4
R134
10k
R135
10k
DA5
MA147-(TX)
RD/WR
WE1
WE0
RD
R142
1k
IC23A
TC75S51FU
R143
4.7M
R146
10k
R147
4.7M
CN5
B2B-PH-K-S
DA6
MA142WK-(TX)
C134
0.1
BATTERY
TO BATTERY
CS6
CS5
CS4
CS3
CS2
CS0
CPLDA_TMS
CPLDA_TCK
SW3
R154
10k
SKRGADD010
IC24
RTC-4543-SA-A
RTC_CE
R156
10
RTC-CLK
R157
10k
R159
10k
R162
10k
C161
100p
C151
0.1
IC23B
TC75S51FU
RA48
10kx4
R169
10k
INT-DSPA
INT-REACB
INT-REACA
INT-USB
INT-FPGA

CPU

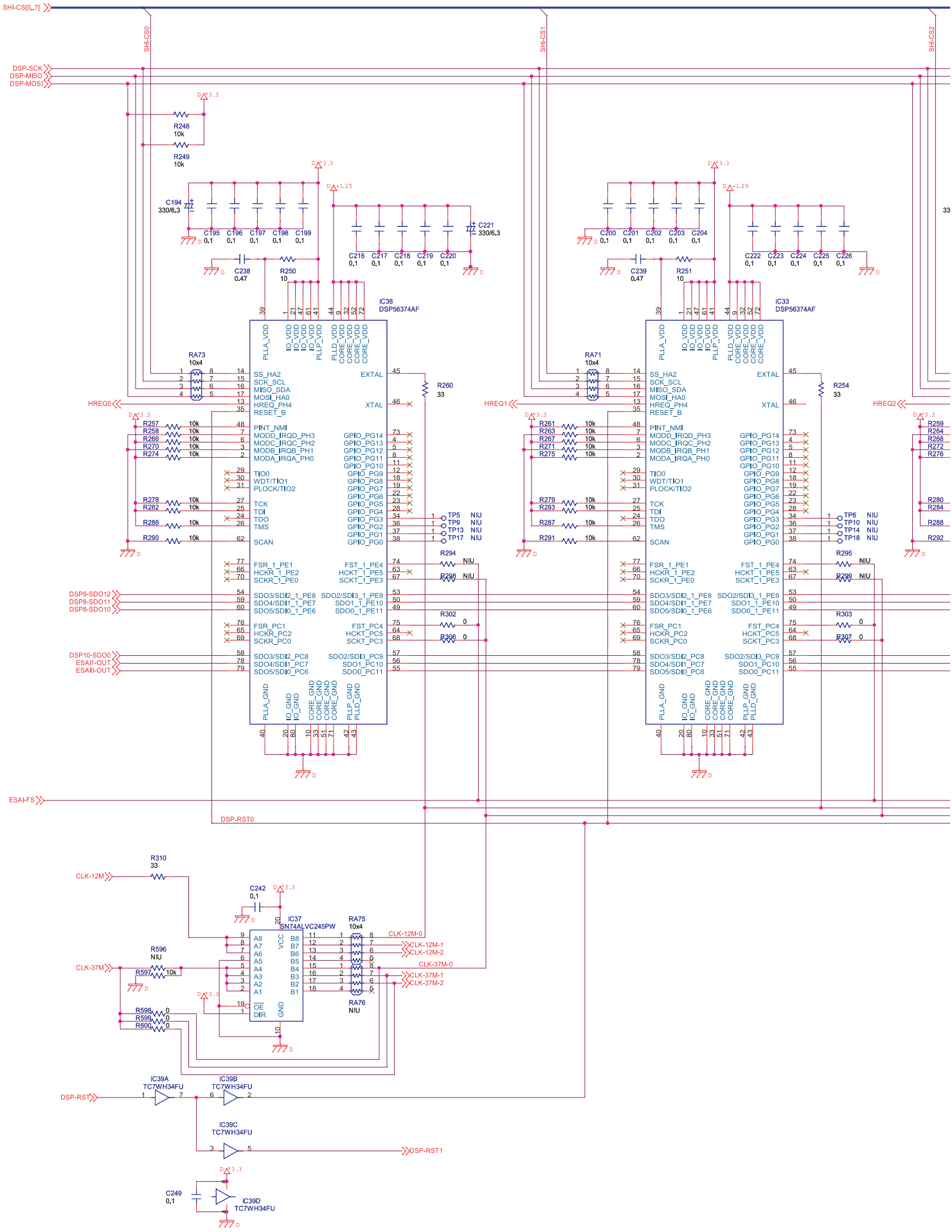
Circuit Diagram (Main Board: 4/13)

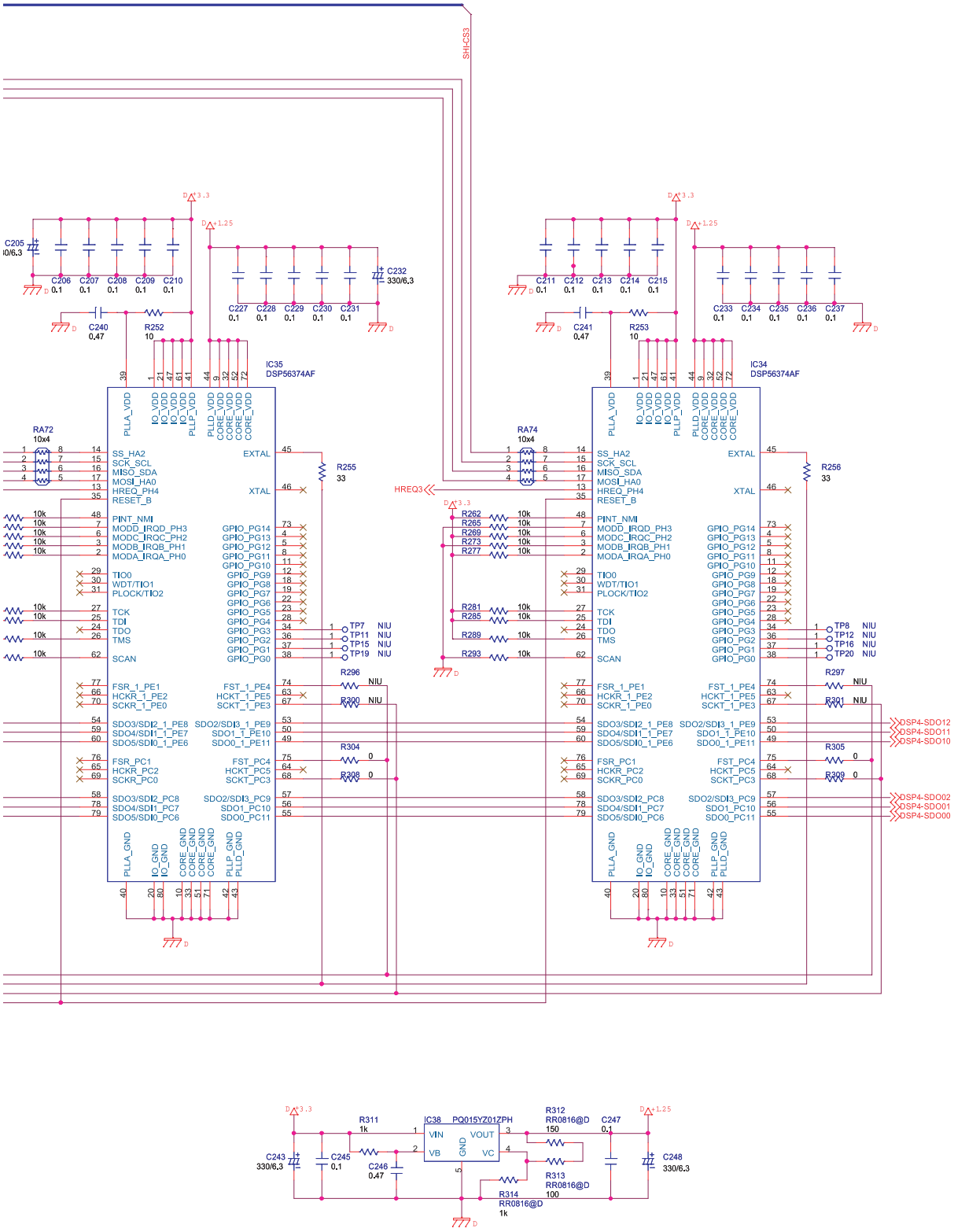



IIS_PORT[0..11]
BU_CLK[0..5]
AUD_I8S[0..19]
IC27
TC74VHC244FT
IC30
TC74VHC244FT
C162
0.1
C165
0.1
C166
330/6.3
R199
RR0816@D
1k
D+2.5V
C167
0.1
C169
100p
C168
100p
R188
R189
R197
R208
R210
10
RA51
RA52
RA55
RA56
RA60
RA62
RA67
33x4
W_CLOCKI
BITCLKI
256FSI
S_CLOCKI
S_DATAI
ADDA-RST
S_CLOCK
S_DATA
DA-CS
MUTE
256fs
L15 BLM18BD102SN1
L16 BLM18BD102SN1
L17 BLM18BD102SN1
L18 BLM18BD102SN1
L19 BLM18BD102SN1
L20 BLM18BD102SN1
結線変更(04/20)
CN6
20FMN-BTK-A
CN7
16FMN-BTK-A
IIS_PORT0
IIS_PORT1
IIS_PORT2
IIS_PORT3
IIS_PORT4
IIS_PORT5
IIS_PORT6
IIS_PORT7
BU_CLK0
BU_CLK1
BU_CLK2
BU_CLK3
BU_CLK4
BU_CLK5
WORD CLOCK
BIT CLOCK
256FS
IIS INPUT
IIS INPUT
IIS INPUT
IIS INPUT
SERIAL CLOCK
SERIAL CLOCK
SERIAL CLOCK
SERIAL CLOCK
SERIAL CLOCK
PHANTOM ON/OFF
SD CLOCK
SERIAL DATA
RESET
WORD CLOCK
BIT CLOCK
256FS
IIS OUTPUT
IIS OUTPUT
IIS OUTPUT
IIS OUTPUT
SD CLOCK
SERIAL DATA
DA CS
MUTE
RESET
約24MHz
C_A_WRDCLK
C_A_BITCLK

AUDIO G/A

Circuit Diagram (Main Board: 5/13)

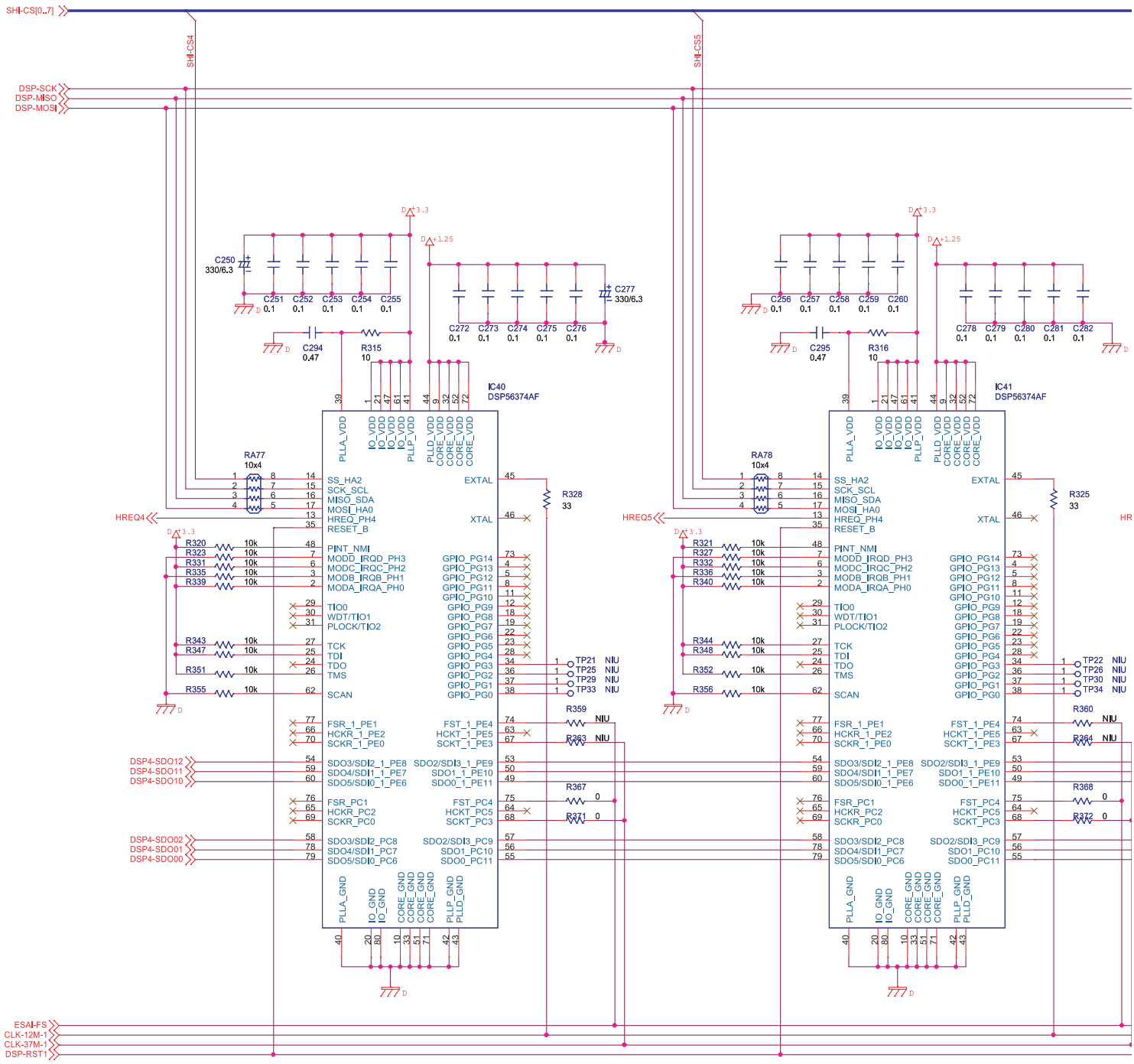


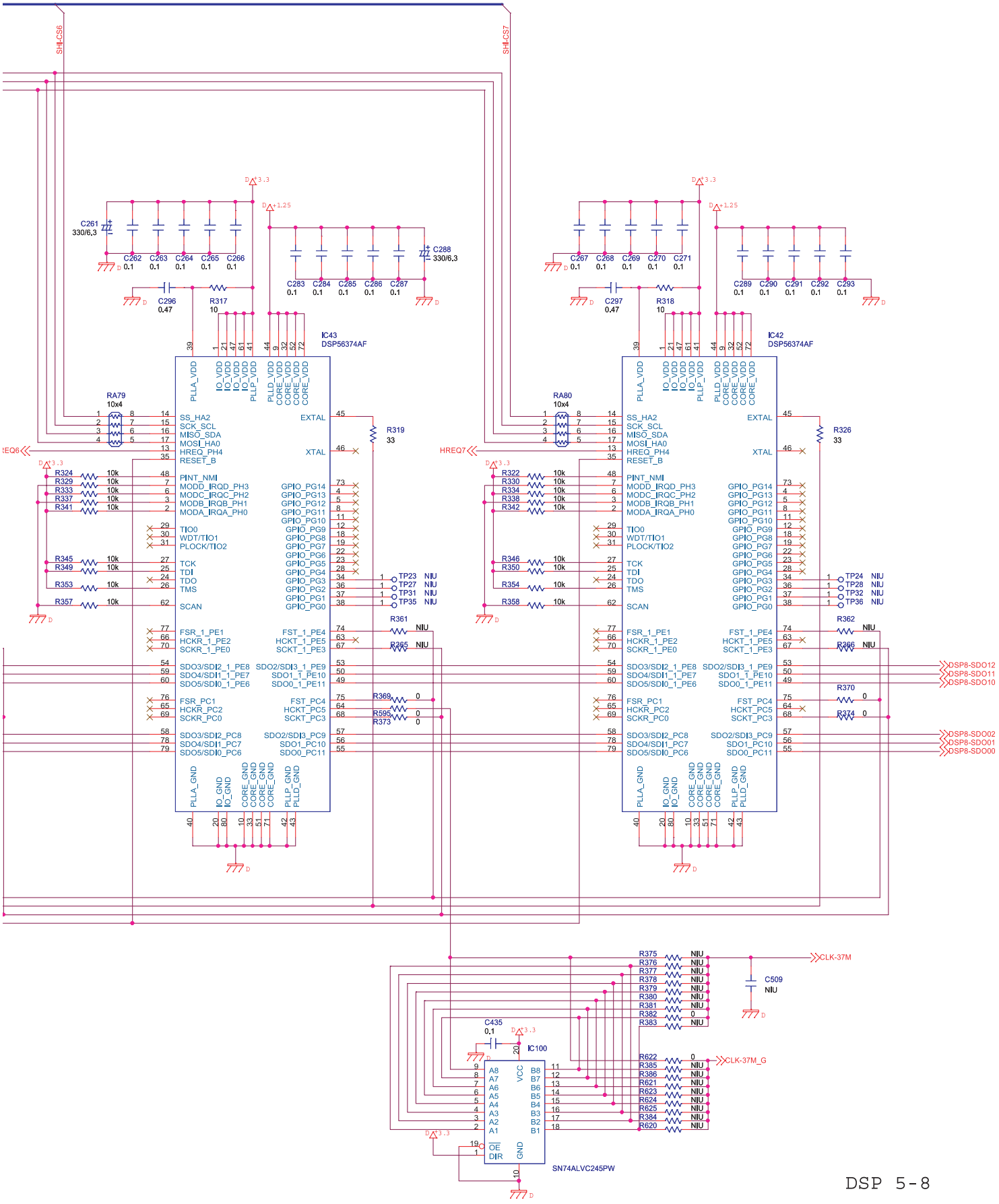

SHI-CS3
HREQ3
IC35
DSP56374AF
IC34
DSP56374AF
RA72
10x4
RA74
10x4
R255
33
R256
33
R296
NIU
R297
NIU
R300
NIU
R301
NIU
R304
0
R305
0
R308
0
R309
0
TP7 NIU
TP11 NIU
TP15 NIU
TP19 NIU
TP8 NIU
TP12 NIU
TP16 NIU
TP20 NIU
DSP4-SDO12
DSP4-SDO11
DSP4-SDO10
DSP4-SDO02
DSP4-SDO01
DSP4-SDO00

IC38 PQ015YZ01ZPH
VIN
VOUT
VB
VC
GND
R311
1k
R312
RR0816@D
150
R313
RR0816@D
100
R314
RR0816@D
1k

DSP 1-4

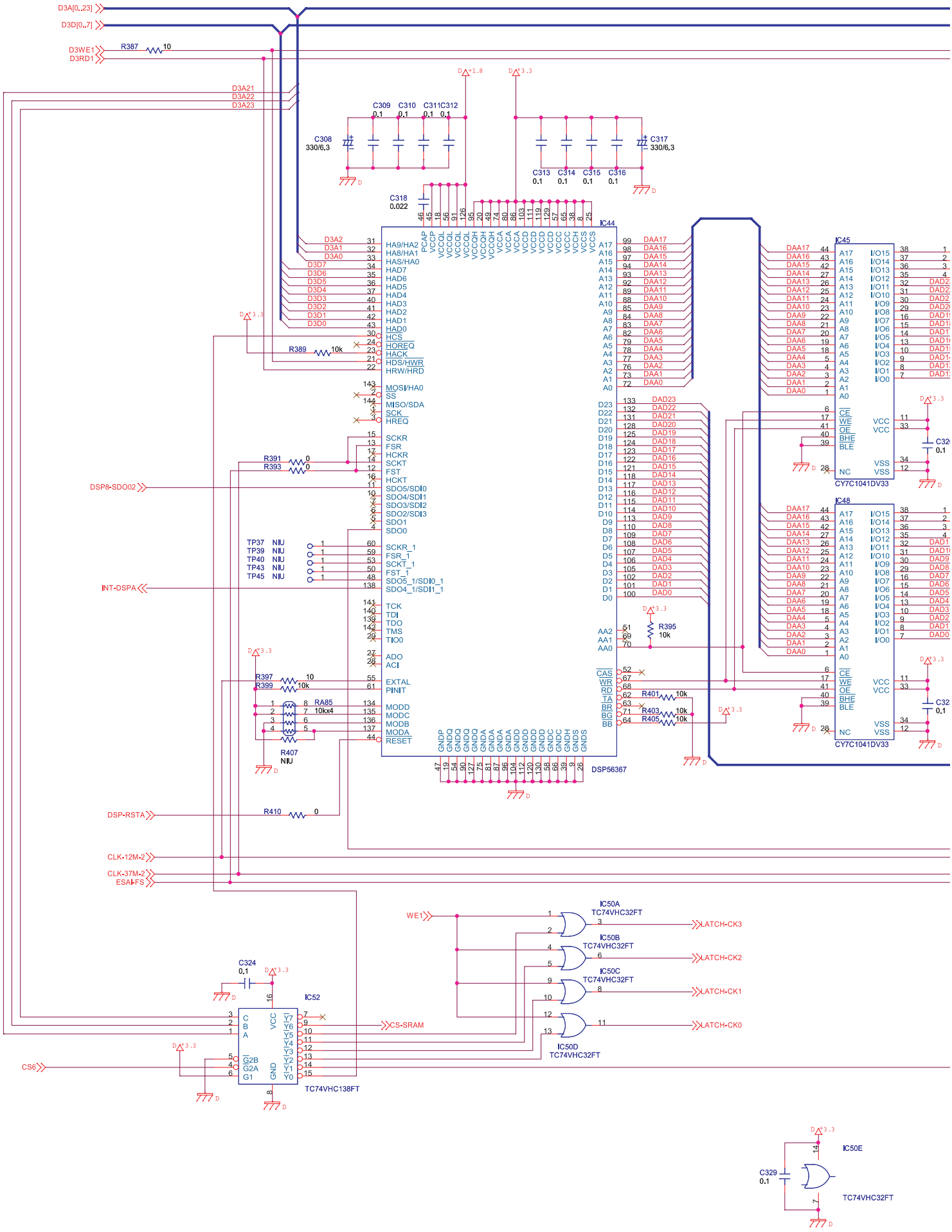
Circuit Diagram (Main Board: 6/13)

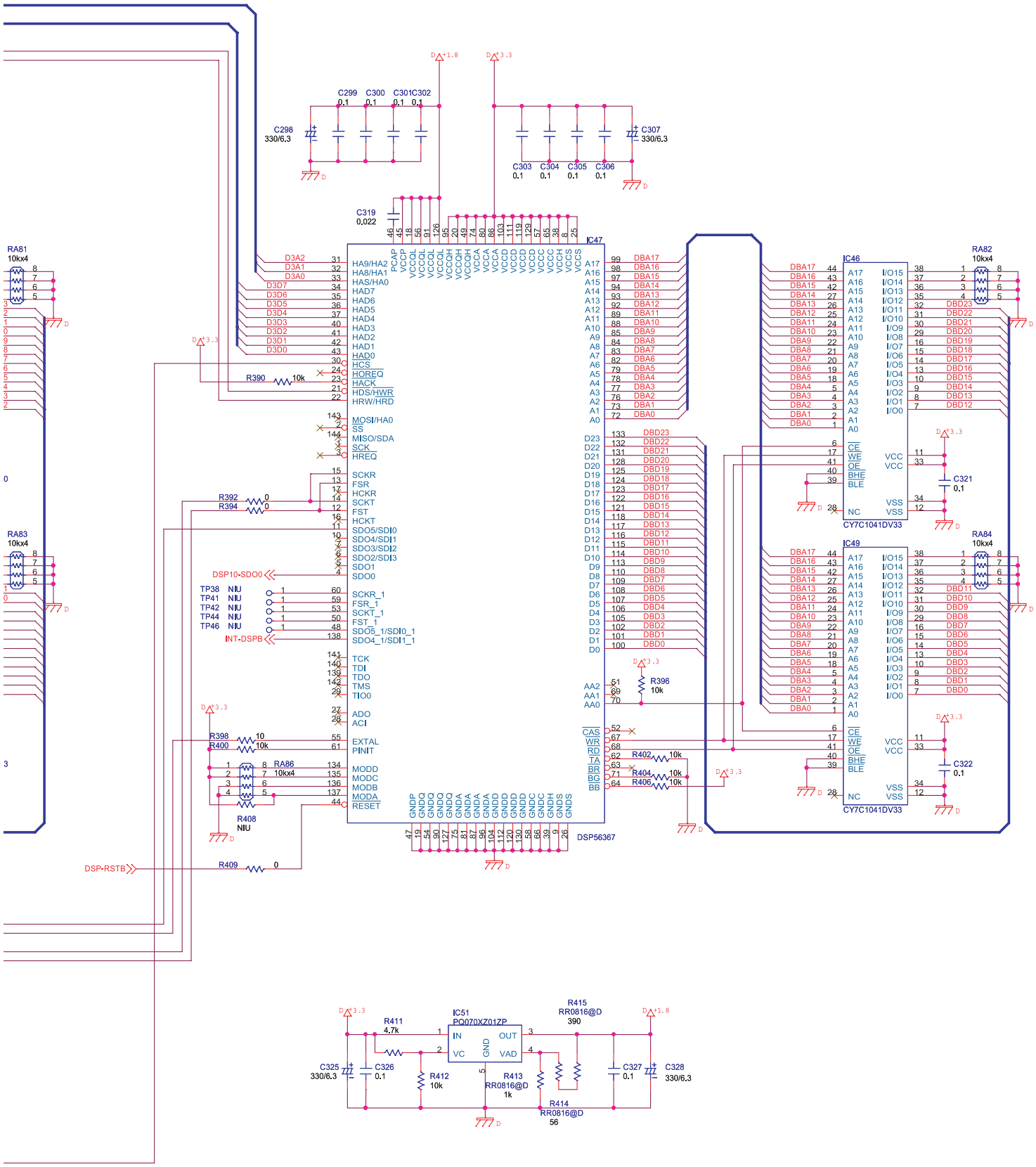



SHI-CS6
SHI-CS7
IC43
DSP56374AF
IC42
DSP56374AF
RA79
10x4
RA80
10x4
R319
33
R326
33
R317
10
R318
10
C261
330/6.3
C288
330/6.3
C296
0.47
C297
0.47
R361
NIU
R362
NIU
R365
NIU
R366
NIU
R369
0
R595
0
R373
0
R370
0
R374
0
TP23
TP27
TP31
TP35
TP24
TP28
TP32
TP36
DSP8-SDO12
DSP8-SDO11
DSP8-SDO10
DSP8-SDO02
DSP8-SDO01
DSP8-SDO00
R375
R376
R377
R378
R379
R380
R381
R382
R383
C509
NIU
CLK-37M
C435
0.1
IC100
R622
R385
R386
R621
R623
R624
R625
R384
R620
CLK-37M_G
SN74ALVC245PW

DSP 5-8

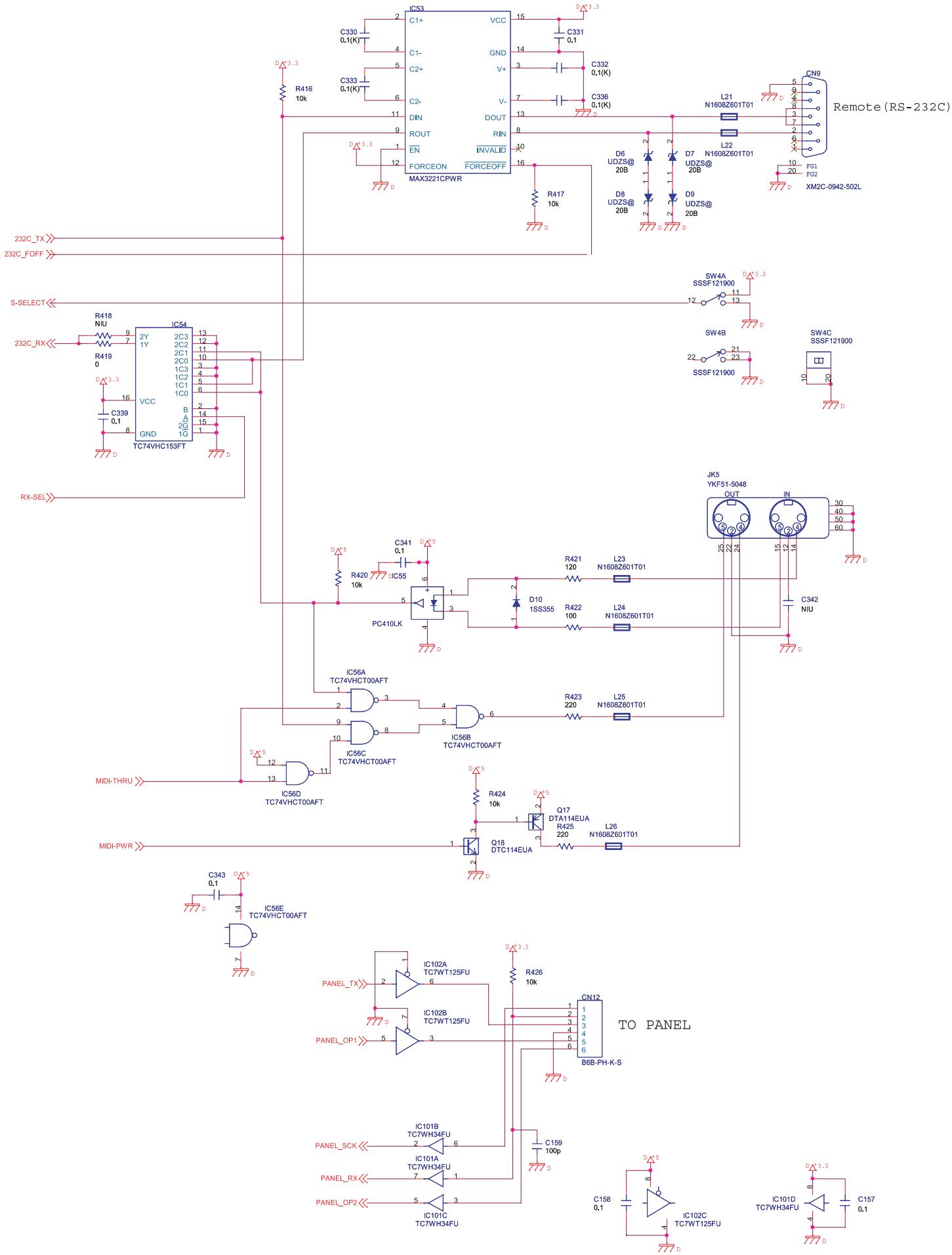
Circuit Diagram (Main Board: 7/13)



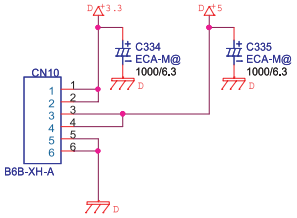

C299 C300 C301 C302
0.1 0.1 0.1 0.1
C298
330/6.3
C303 C304 C305 C306
0.1 0.1 0.1 0.1
C307
330/6.3
C319
0.022
IC47
DSP56367
IC46
IC49
CY7C1041DV33
RA81
RA82
RA83
RA84
10kx4
R390 10k
R392 0
R394 0
R396 10k
R398 10
R400 10k
R402 10k
R404 10k
R406 10k
R408 NIU
R409 0
RA86 10kx4
C321 0.1
C322 0.1
DSP10-SDO0
INT-DSPB
DSP-RSTB
TP38 NIU
TP41 NIU
TP42 NIU
TP44 NIU
TP46 NIU
IC51
PQ070XZ01ZP
R411 4.7k
R412 10k
R413 RR0816@D 1k
R414 RR0816@D 56
R415 RR0816@D 390
C325 330/6.3
C326 0.1
C327 0.1
C328 330/6.3

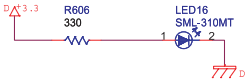
DSP9-10

Circuit Diagram (Main Board: 8/13)

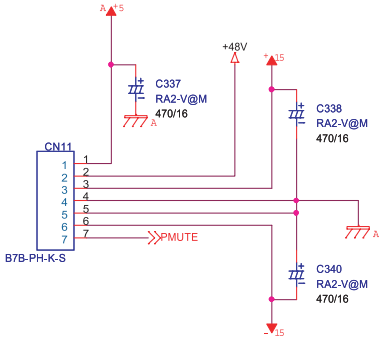


FROM POWER BOARD



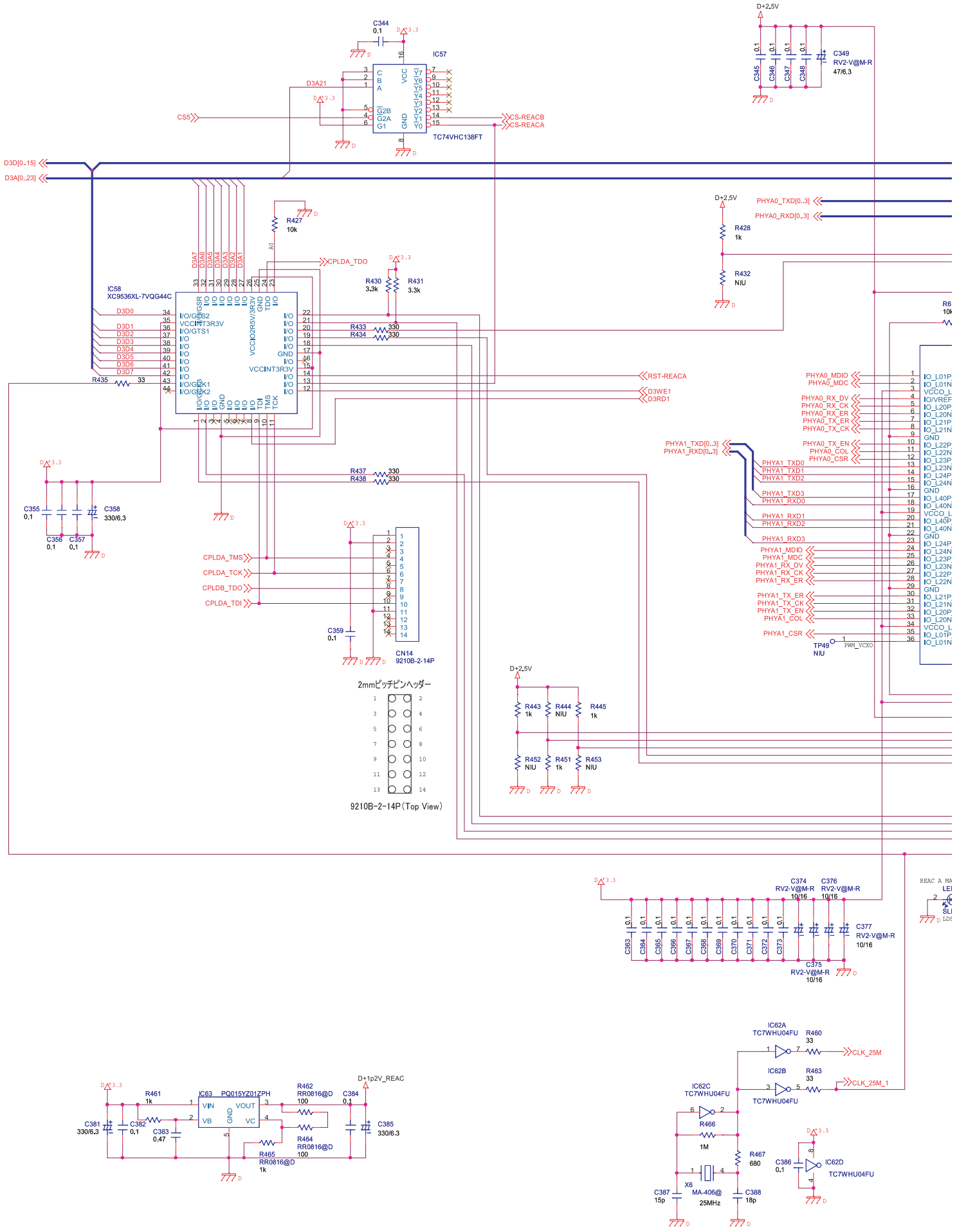


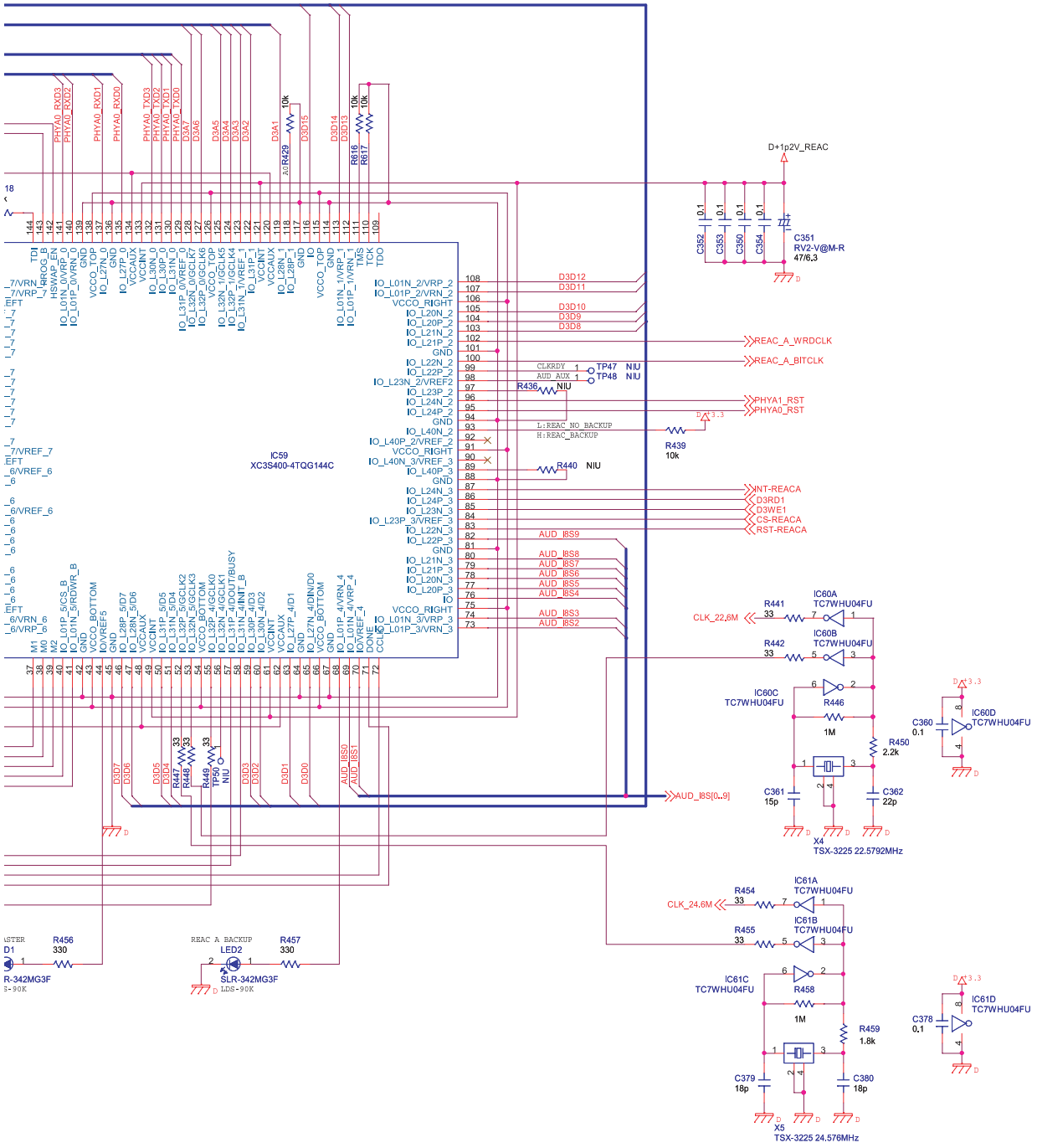
FROM POWER BOARD



IO

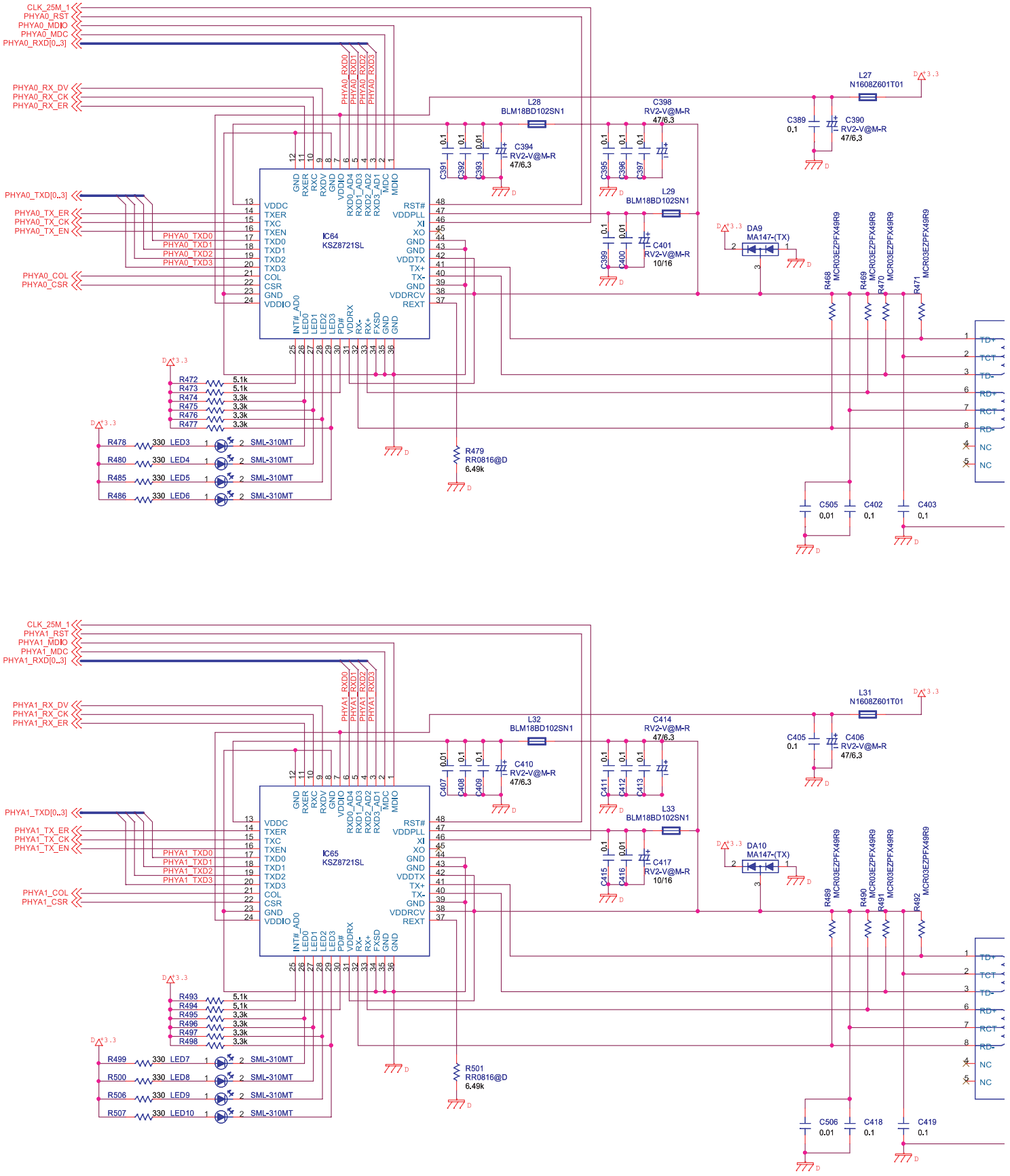
Circuit Diagram (Main Board: 9/13)



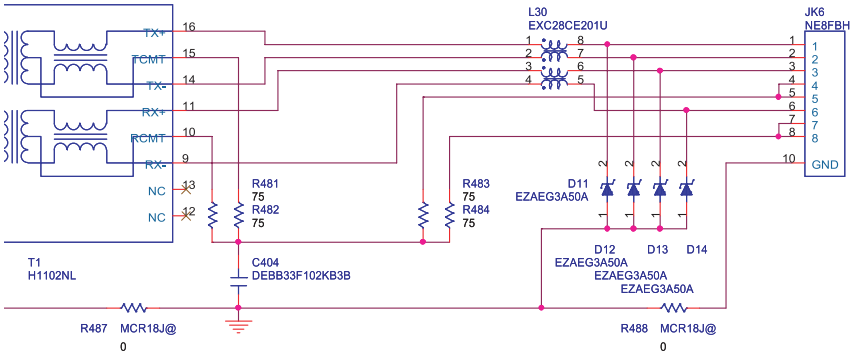

IC59
XC3S400-4TQG144C
D+1p2V_REAC
C351
RV2-V@M-R
47/6,3
C352
C353
C350
C354
REAC_A_WRDCLK
REAC_A_BITCLK
PHYA1_RST
PHYA0_RST
INT-REACA
D3RD1
D3WE1
CS-REACA
RST-REACA
AUD_I8S[0..9]
IC60A
IC60B
IC60C
IC60D
TC7WHU04FU
CLK_22,6M
R441
R442
R446
R450
2.2k
1M
C360
0.1
C361
15p
C362
22p
X4
TSX-3225 22.5792MHz
IC61A
IC61B
IC61C
IC61D
CLK_24,6M
R454
R455
R458
R459
1.8k
C378
0,1
C379
18p
C380
X5
TSX-3225 24.576MHz
R456
330
R457
LED2
SLR-342MG3F
REAC A BACKUP
R439
10k
R440
NIU
R436
TP47
TP48
TP50

REAC A FPGA

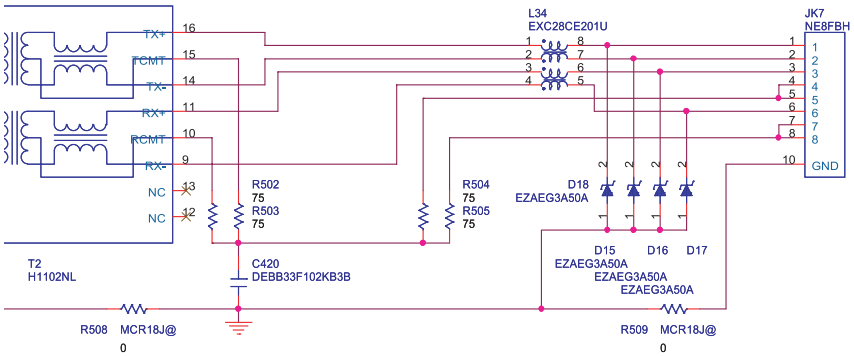
Circuit Diagram (Main Board: 10/13)



REAC A MASTER

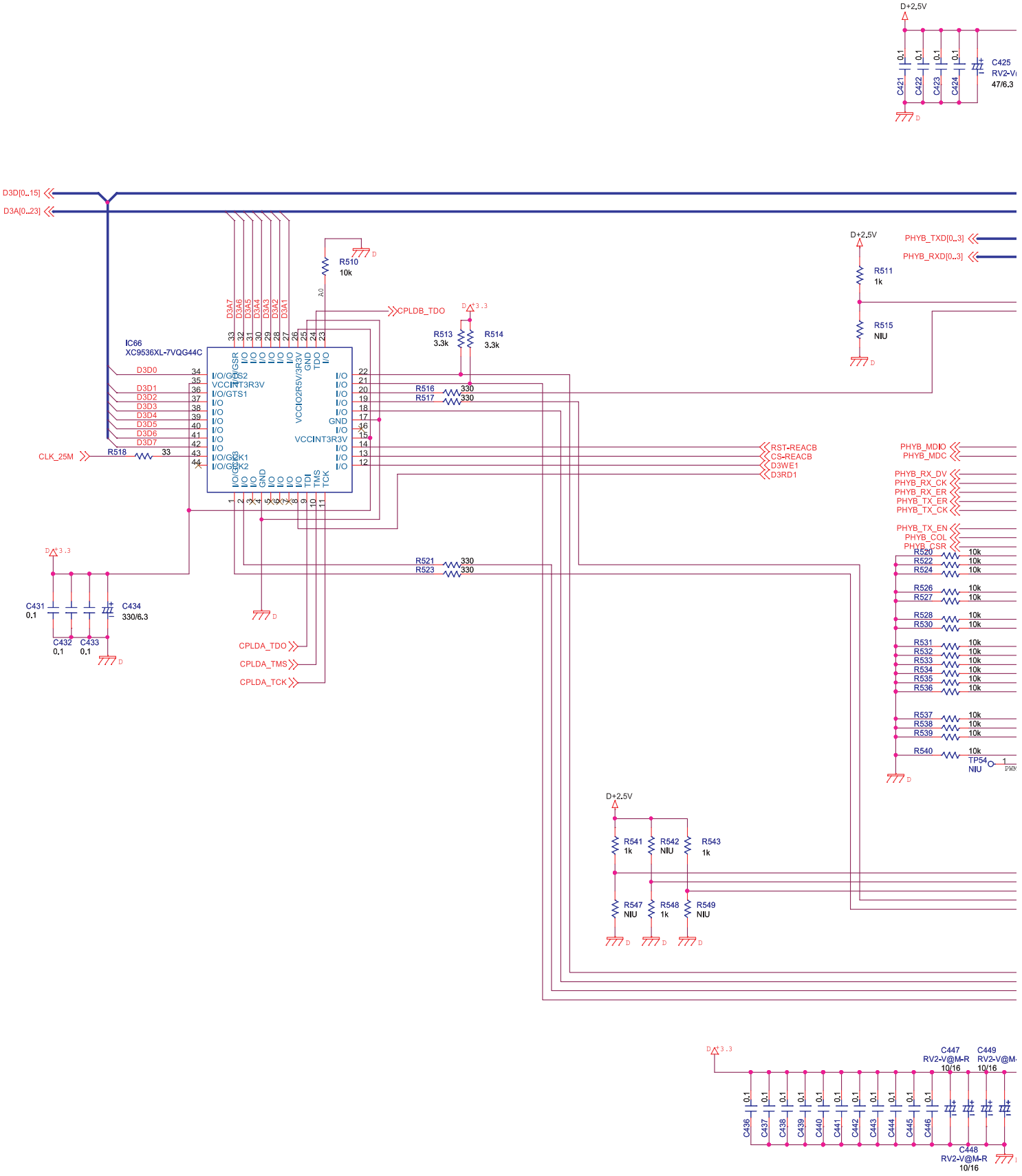


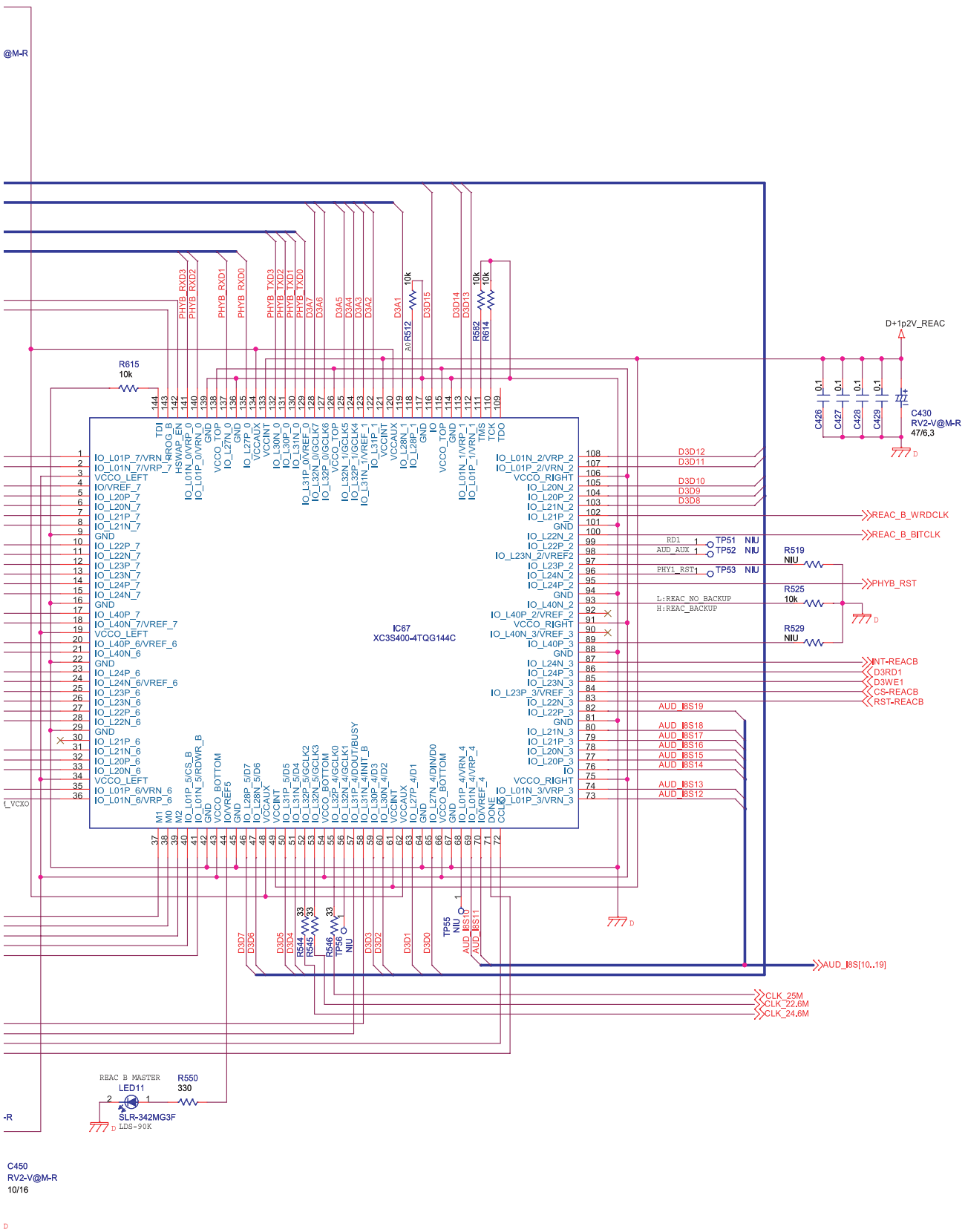
REAC A BACKUP



REAC A PHY

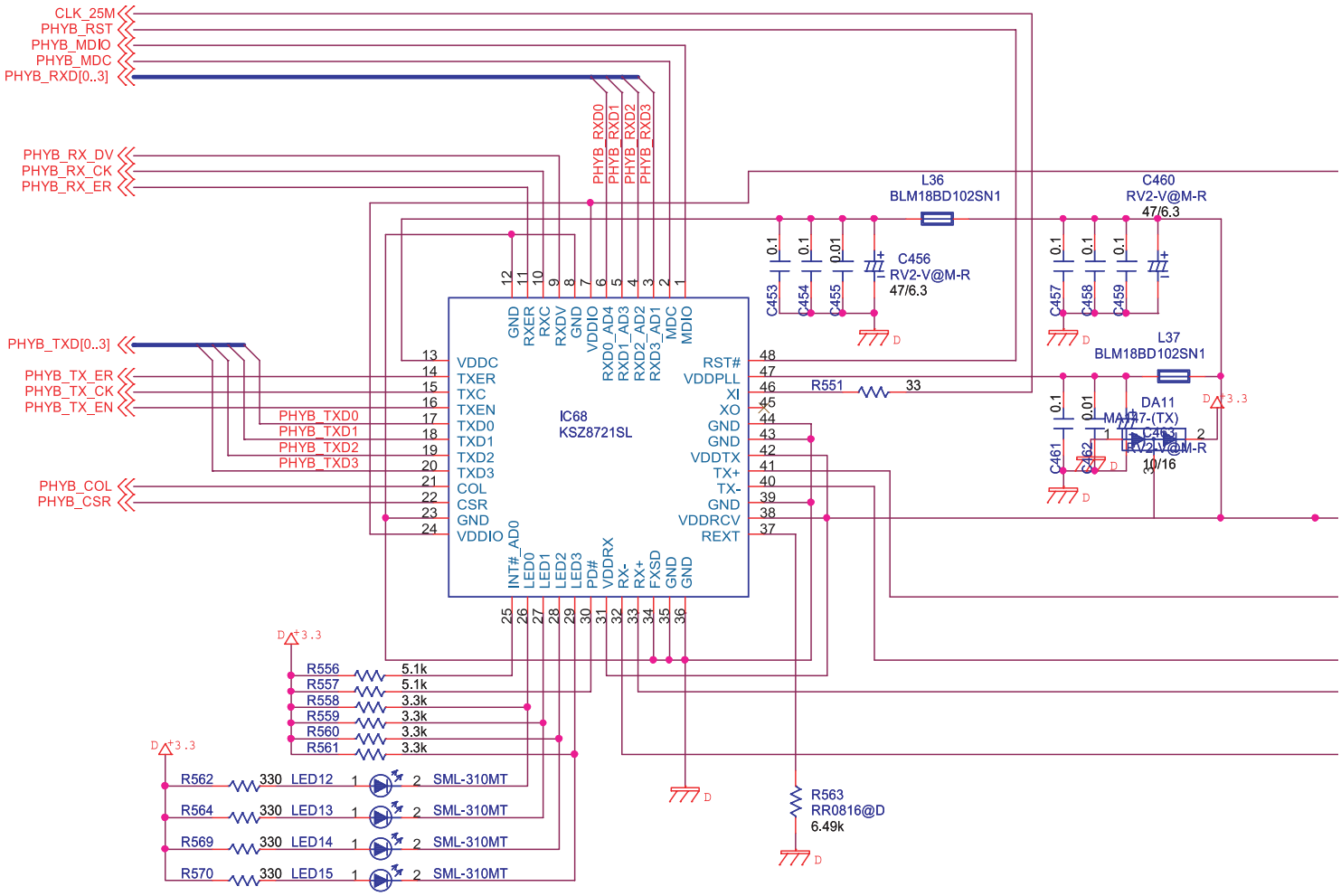
Circuit Diagram (Main Board: 11/13)

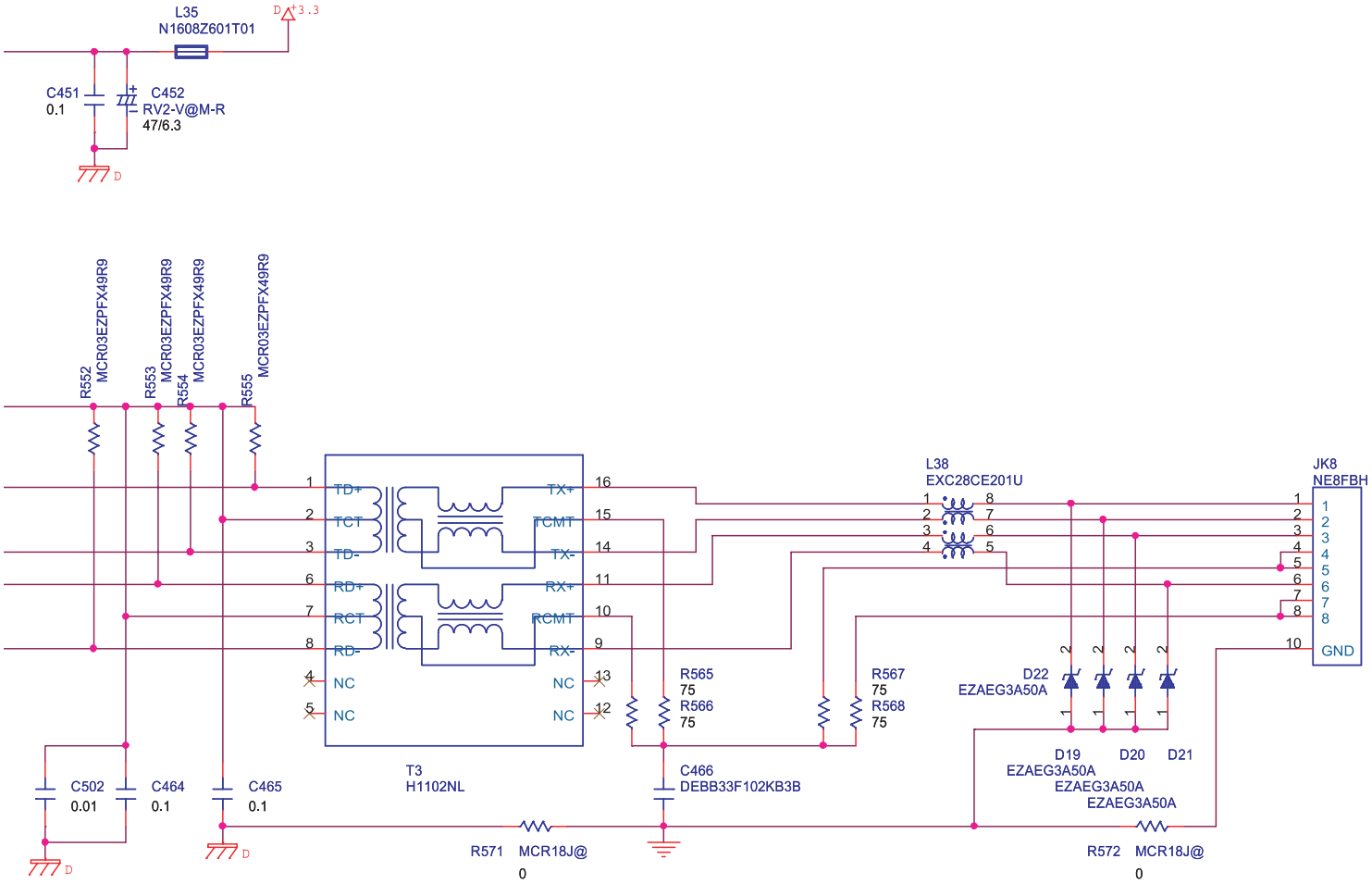



IC67
XC3S400-4TQG144C
R615
10k
D+1p2V_REAC
C426
C427
C428
C429
0.1
C430
RV2-V@M-R
47/6,3
R512
10k
R582
10k
R614
10k
PHYB_RXD3
PHYB_RXD2
PHYB_RXD1
PHYB_RXD0
PHYB_TXD3
PHYB_TXD2
PHYB_TXD1
PHYB_TXD0
D3A7
D3A6
D3A5
D3A4
D3A3
D3A2
D3A1
D3D15
D3D14
D3D13
D3D12
D3D11
D3D10
D3D9
D3D8
REAC_B_WRDCLK
REAC_B_BITCLK
PHYB_RST
INT-REACB
D3RD1
D3WE1
CS-REACB
RST-REACB
AUD_I8S19
AUD_I8S18
AUD_I8S17
AUD_I8S16
AUD_I8S15
AUD_I8S14
AUD_I8S13
AUD_I8S12
AUD_I8S[10..19]
CLK_25M
CLK_22.6M
CLK_24.6M
TP51 NIU
TP52 NIU
TP53 NIU
TP55 NIU
TP56 NIU
R519 NIU
R525 10k
R529 NIU
R544 33
R545 33
R546 33
L:REAC_NO_BACKUP
H:REAC_BACKUP
REAC B MASTER
LED11
SLR-342MG3F
R550
330
C450
RV2-V@M-R
10/16

REAC B FPGA

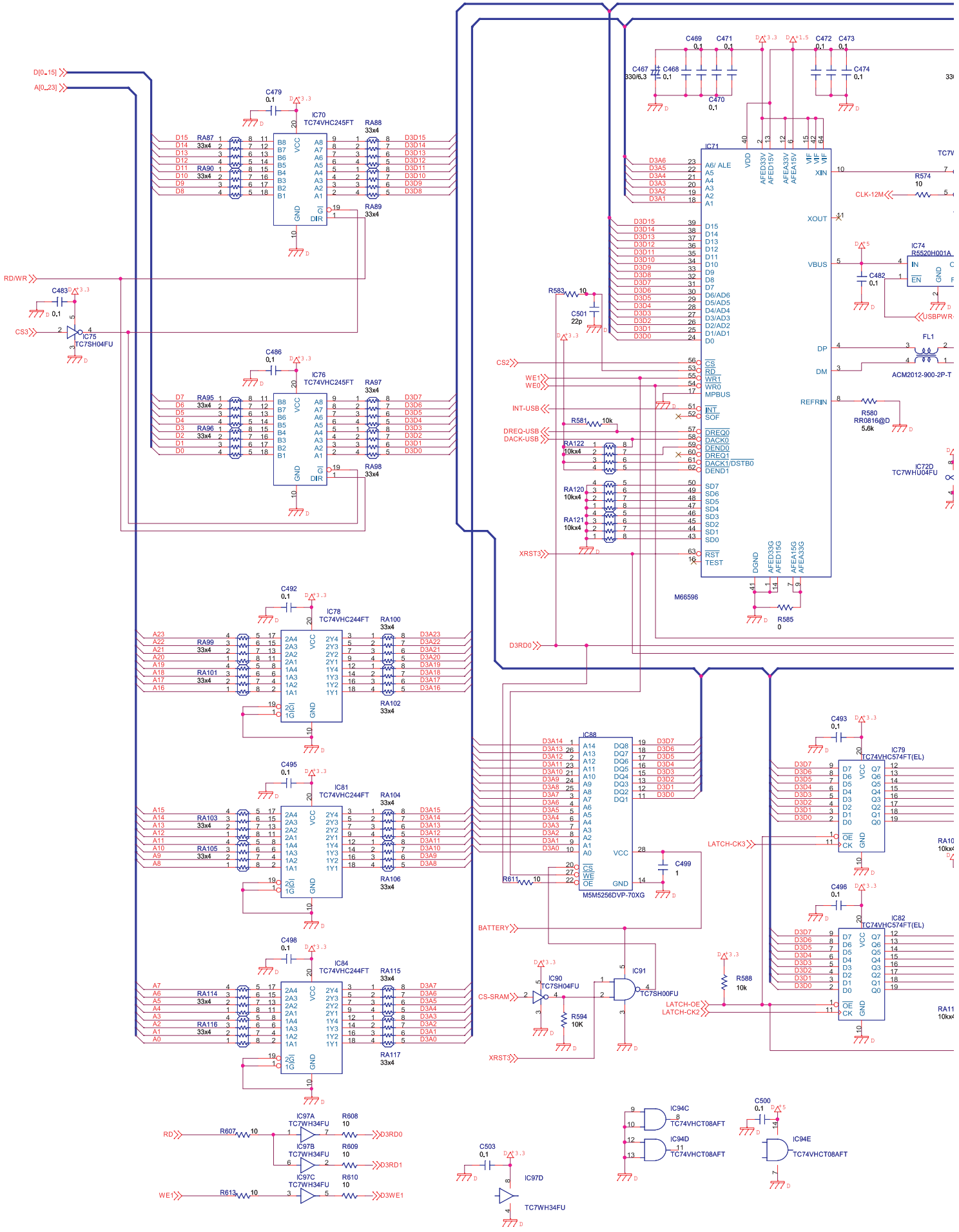
Circuit Diagram (Main Board: 12/13)

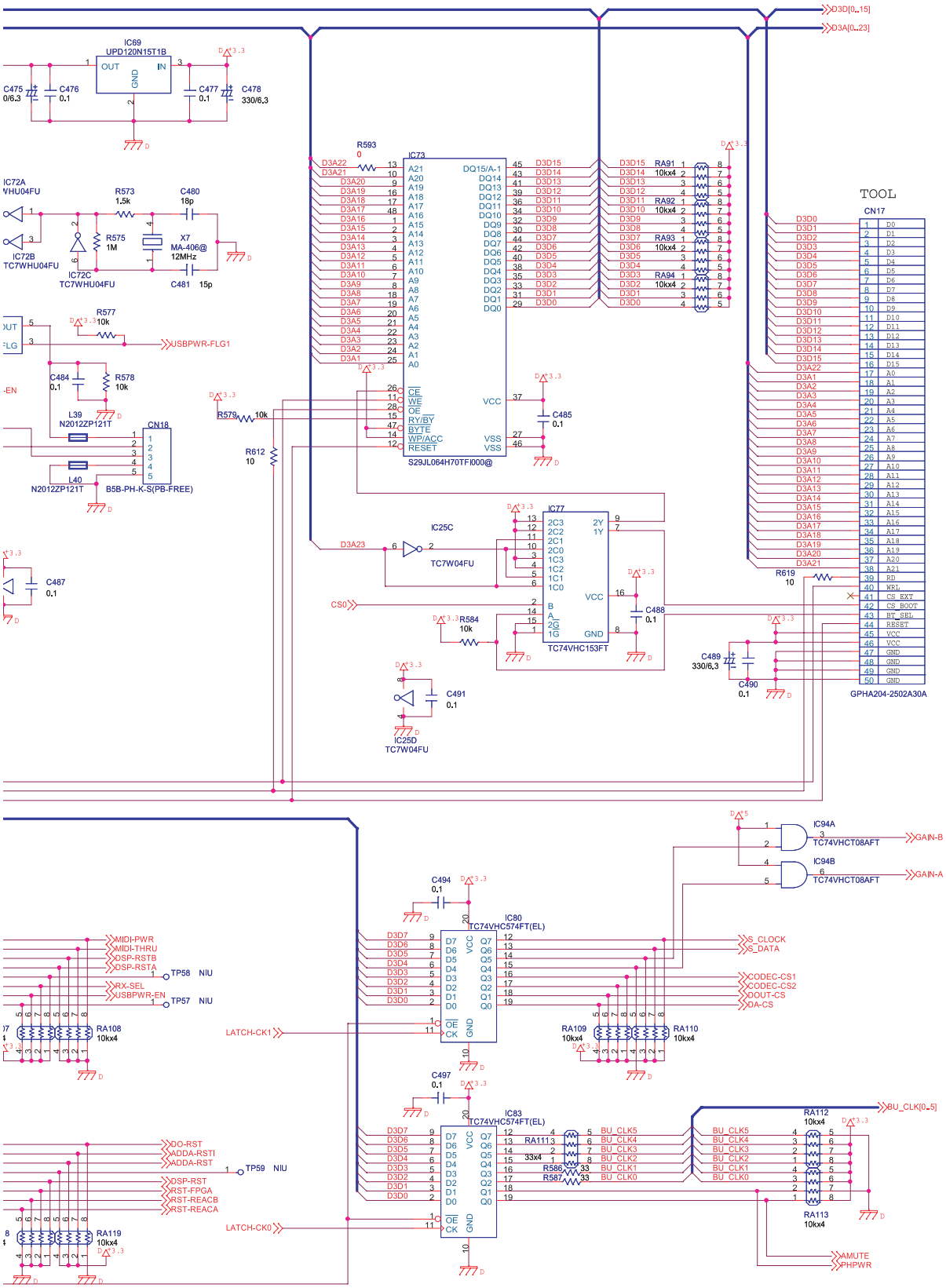



L35
N1608Z601T01
+3.3
C451
0.1
C452
RV2-V@M-R
47/6.3
R552 MCR03EZPFX49R9
R553 MCR03EZPFX49R9
R554 MCR03EZPFX49R9
R555 MCR03EZPFX49R9
TD+
TCT
TD-
RD+
RCT
RD-
NC
NC
TX+
TCMT
TX-
RX+
RCMT
RX-
NC
NC
T3
H1102NL
L38
EXC28CE201U
JK8
NE8FBH
GND
D22
EZAEG3A50A
D19
EZAEG3A50A
D20
EZAEG3A50A
D21
EZAEG3A50A
R565
75
R566
75
R567
75
R568
75
C466
DEBB33F102KB3B
C502
0.01
C464
0.1
C465
0.1
R571 MCR18J@
0
R572 MCR18J@
0

REAC B PHY

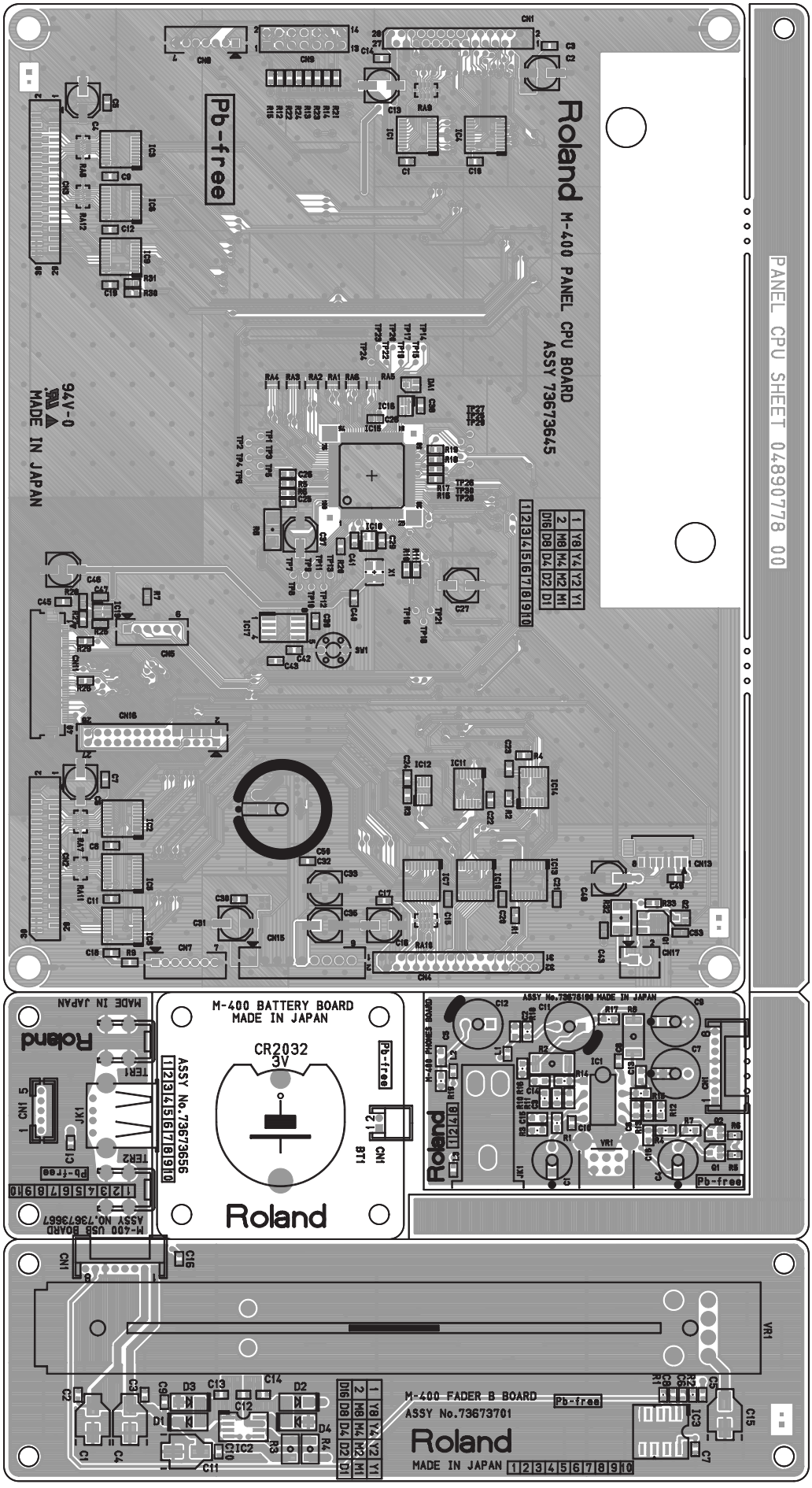
Circuit Diagram (Main Board: 13/13)

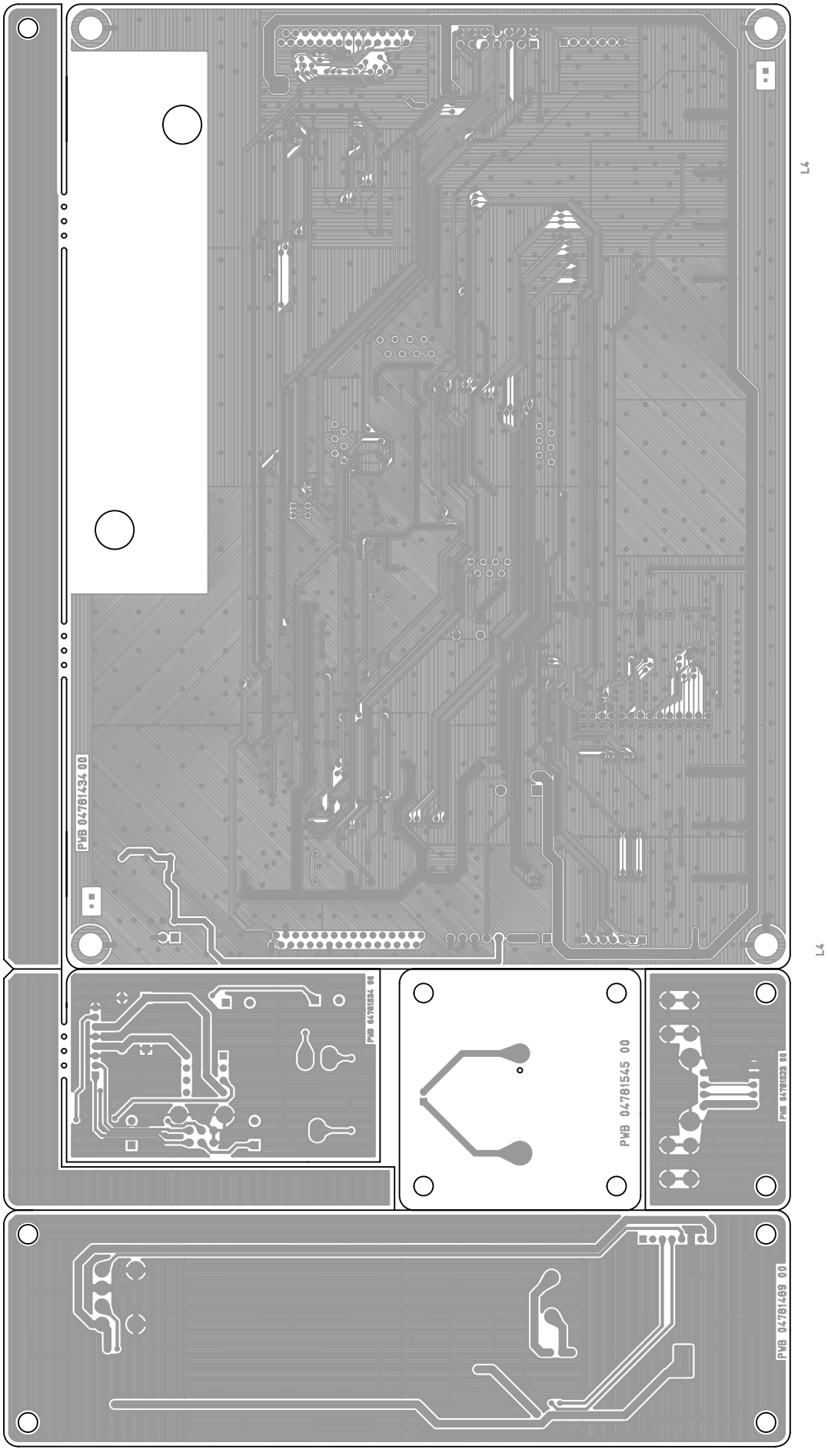




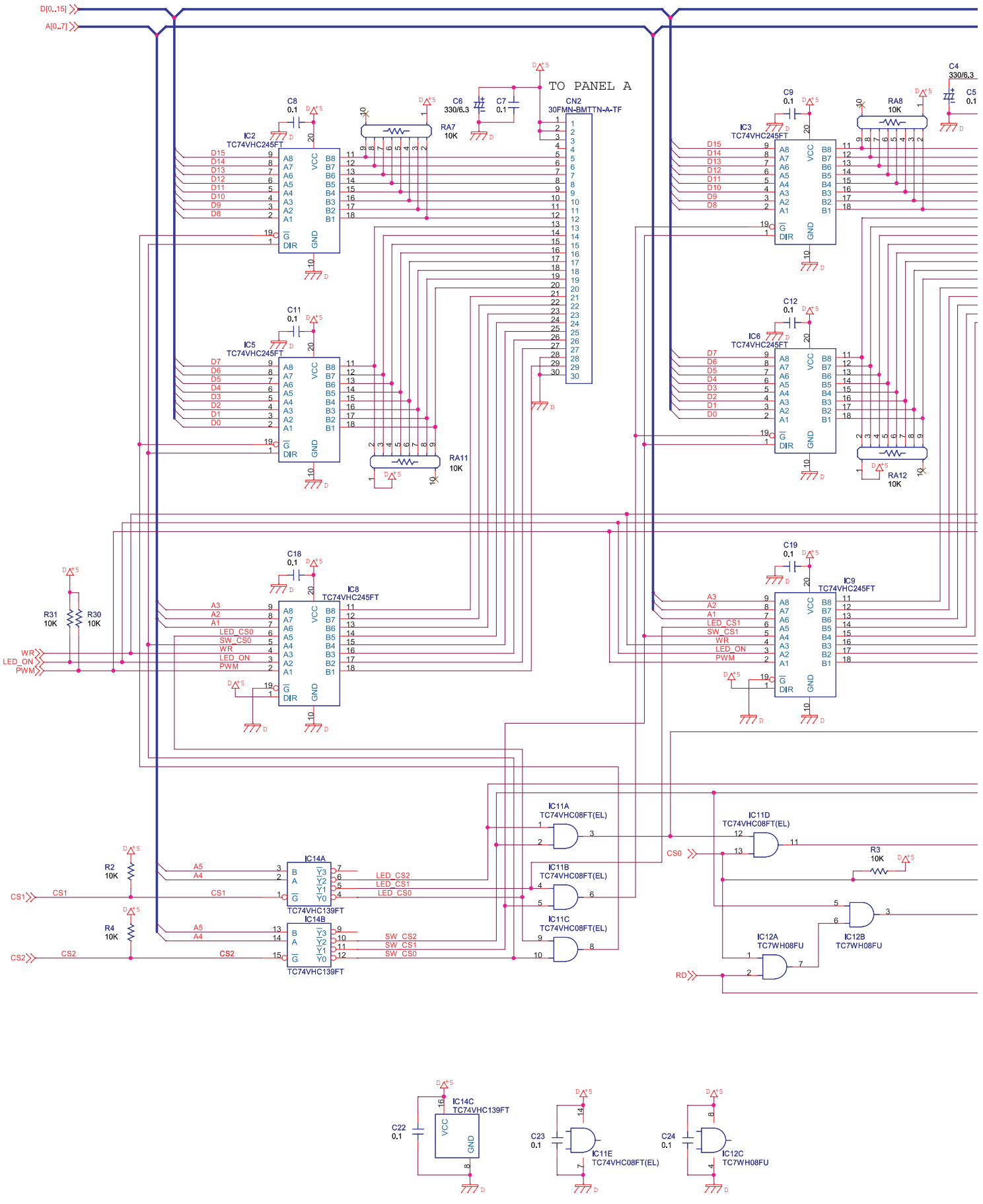
USB&FLASH&LATCH

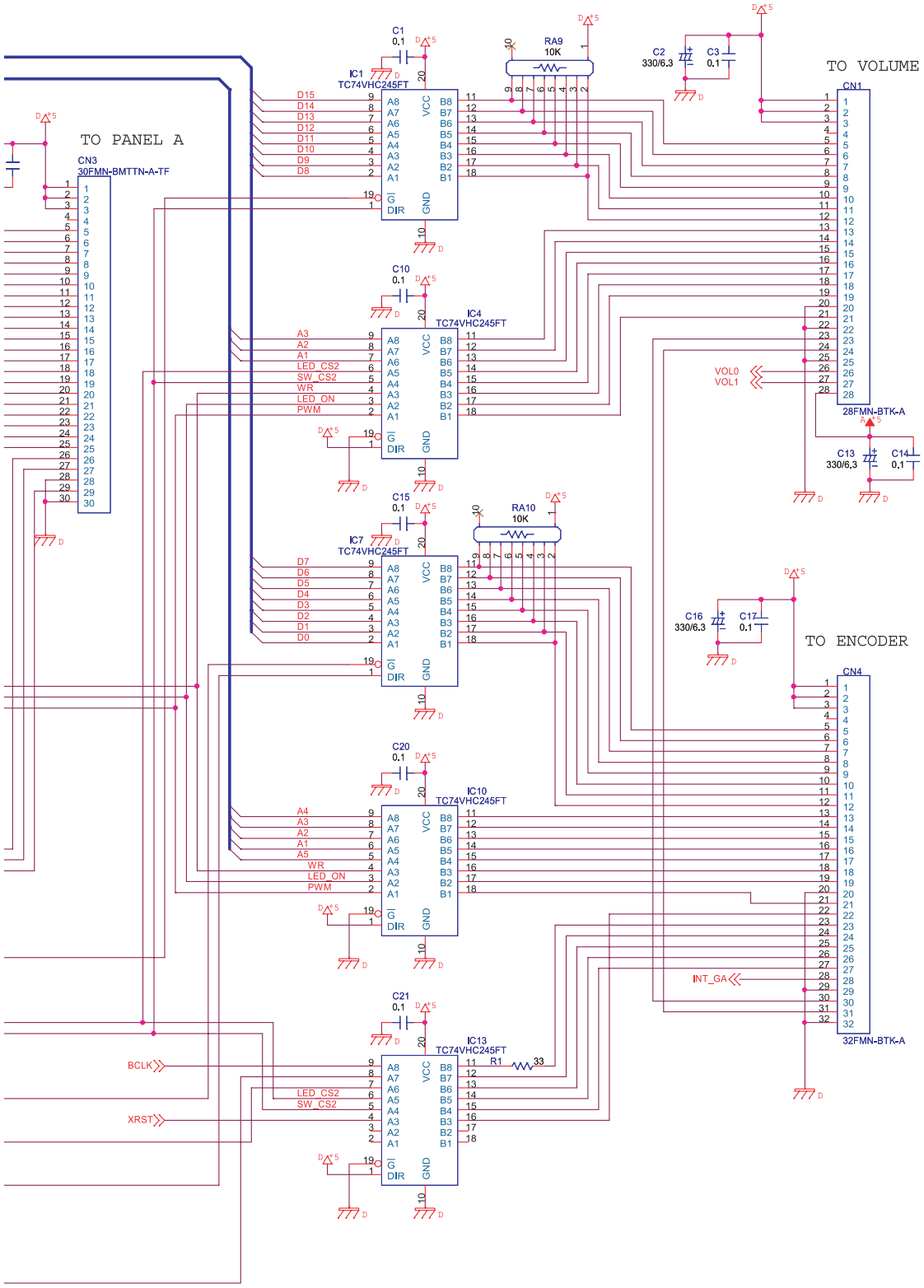
Circuit Board (Panel CPU, Fader B, USB, Battery, Phones Board)



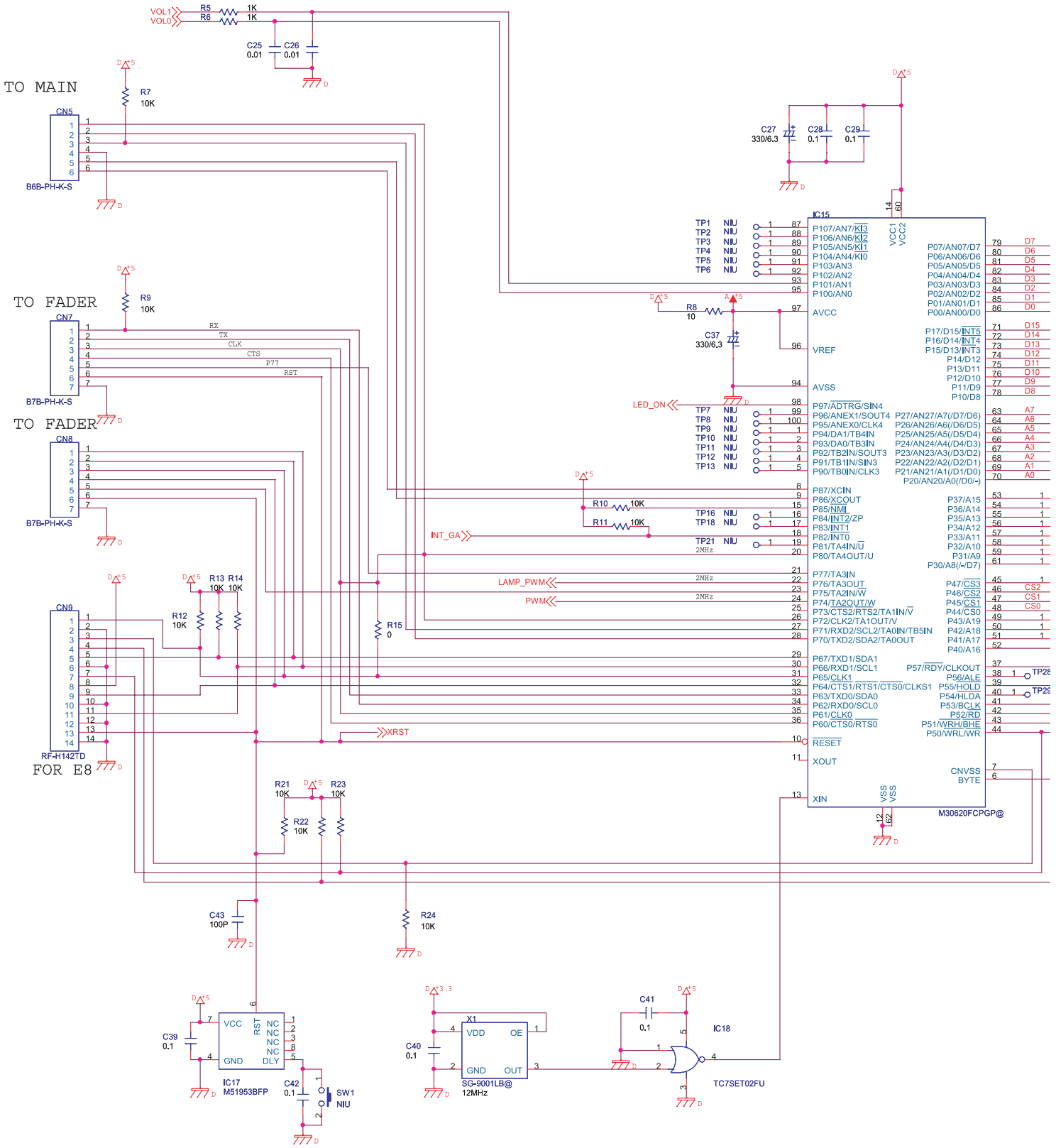

L4
L4
PWB 04781434 00
PWB 04781545 00

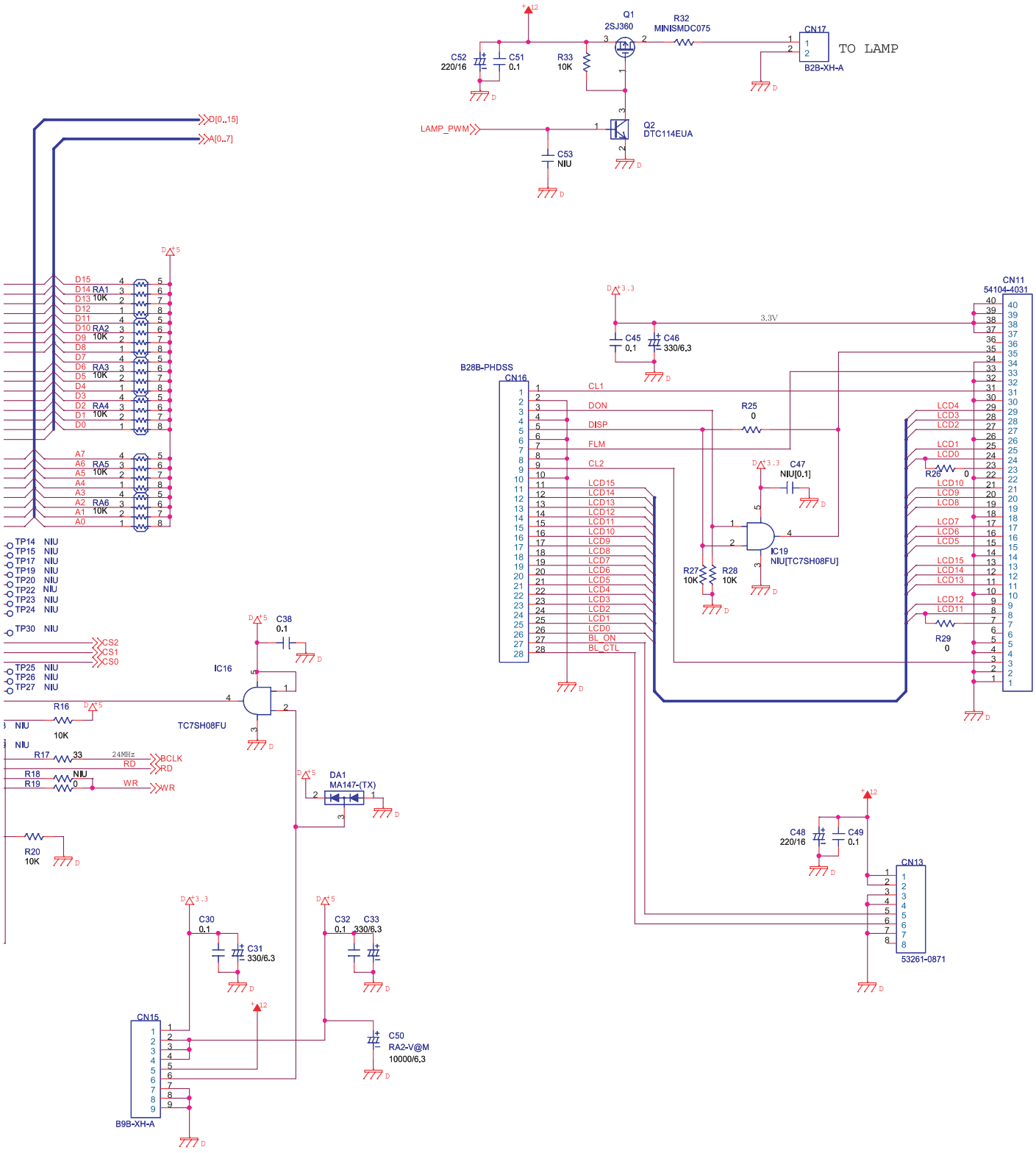
Circuit Diagram (Panel CPU Board: 1/2)



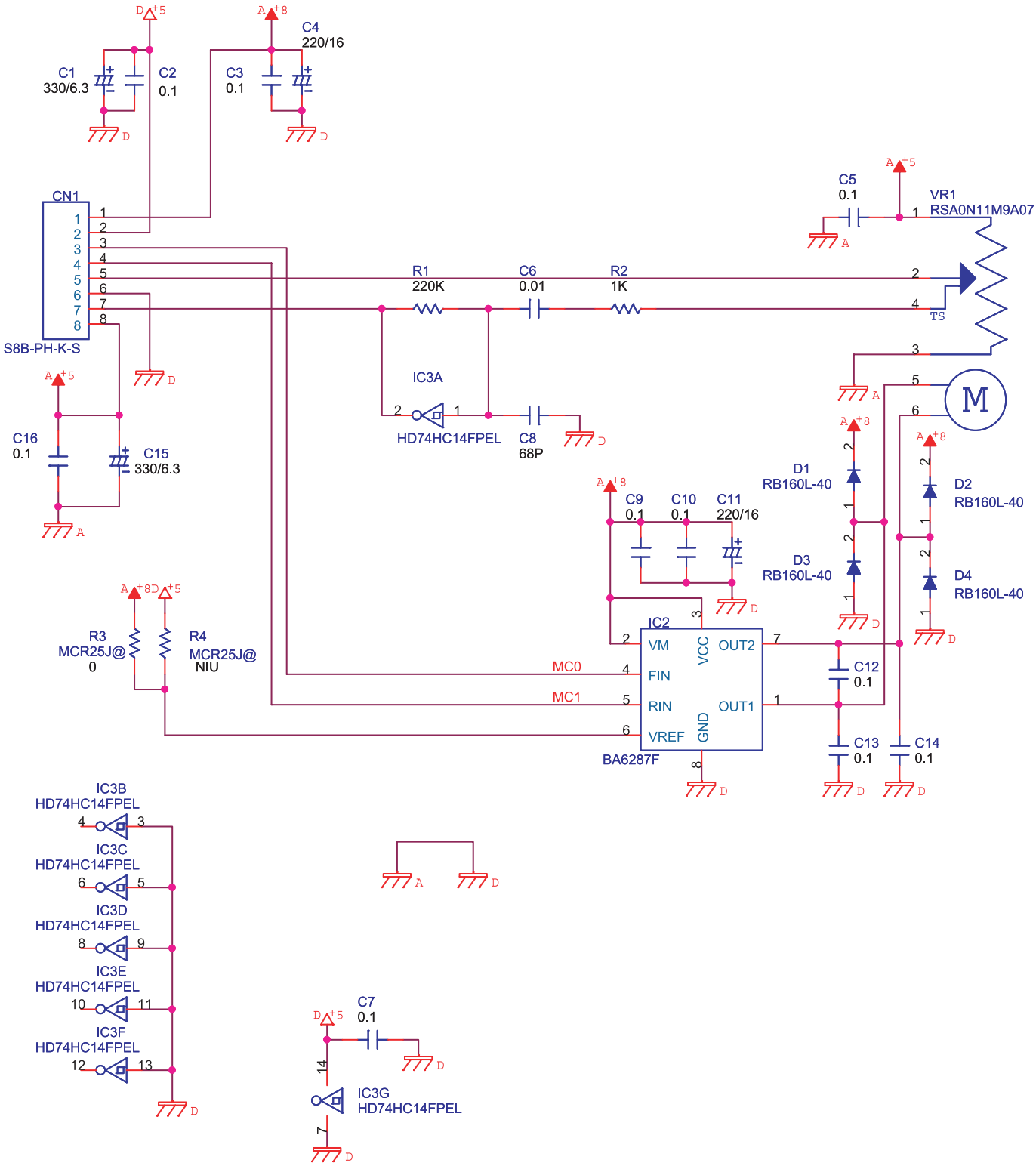

TO PANEL A
CN3
30FMN-BMTTN-A-TF
TO VOLUME
CN1
28FMN-BTK-A
TO ENCODER
CN4
32FMN-BTK-A
IC1
IC4
IC7
IC10
IC13
TC74VHC245FT
RA9
RA10
10K
C1
C2
C3
C10
C13
C14
C15
C16
C17
C20
C21
0.1
330/6.3
R1
33
D15
D14
D13
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
A3
A2
A1
A4
A5
LED_CS2
SW_CS2
WR
LED_ON
PWM
VOL0
VOL1
INT_GA
BCLK
XRST

Circuit Diagram (Panel CPU Board: 2/2)

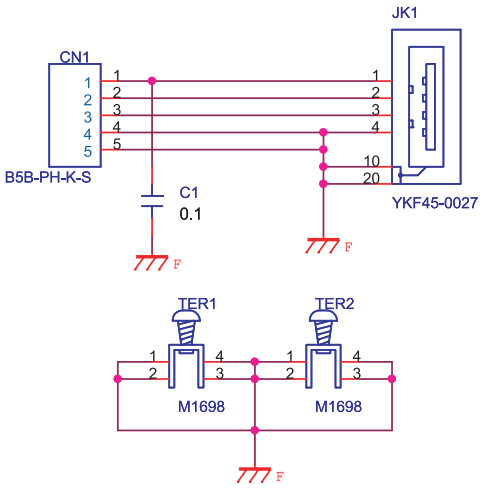



Q1
2SJ360
R32
MINISMDC075
CN17
TO LAMP
B2B-XH-A
C52
220/16
C51
0.1
R33
10K
LAMP_PWM
Q2
DTC114EUA
C53
NIU
D[0..15]
A[0..7]
RA1 10K
RA2 10K
RA3 10K
RA4 10K
RA5 10K
RA6 10K
TP14 NIU
TP15 NIU
TP17 NIU
TP19 NIU
TP20 NIU
TP22 NIU
TP23 NIU
TP24 NIU
TP30 NIU
TP25 NIU
TP26 NIU
TP27 NIU
CS2
CS1
CS0
IC16
TC7SH08FU
C38
0.1
R16
10K
R17 33
24MHz
BCLK
RD
R18 NIU
R19 0
WR
R20
10K
DA1
MA147-(TX)
C30
0.1
C31
330/6.3
C32
0.1
C33
330/6.3
CN15
B9B-XH-A
C50
RA2-V@M
10000/6.3
B28B-PHDSS
CN16
CL1
DON
DISP
FLM
CL2
LCD15
LCD14
LCD13
LCD12
LCD11
LCD10
LCD9
LCD8
LCD7
LCD6
LCD5
LCD4
LCD3
LCD2
LCD1
LCD0
BL_ON
BL_CTL
C45
0.1
C46
330/6.3
3.3V
R25
0
C47
NIU[0.1]
IC19
NIU[TC7SH08FU]
R27
10K
R28
10K
R26
0
R29
0
CN11
54104-4031
C48
220/16
C49
0.1
CN13
53261-0871

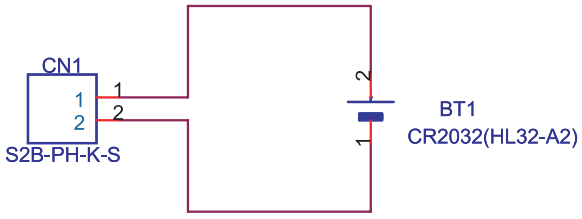
Circuit Diagram (Fader B Board)



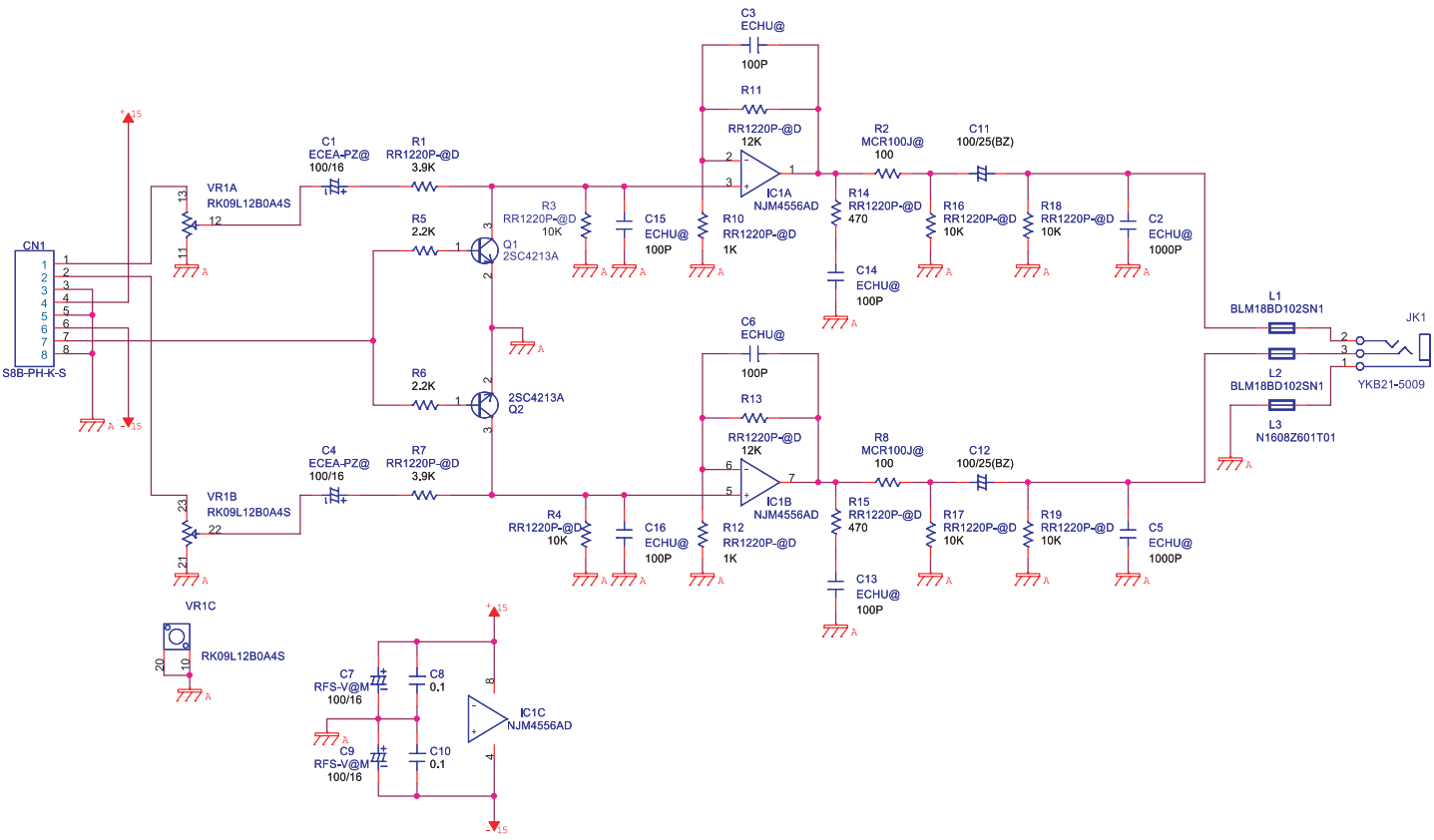
Circuit Diagram (USB Board)



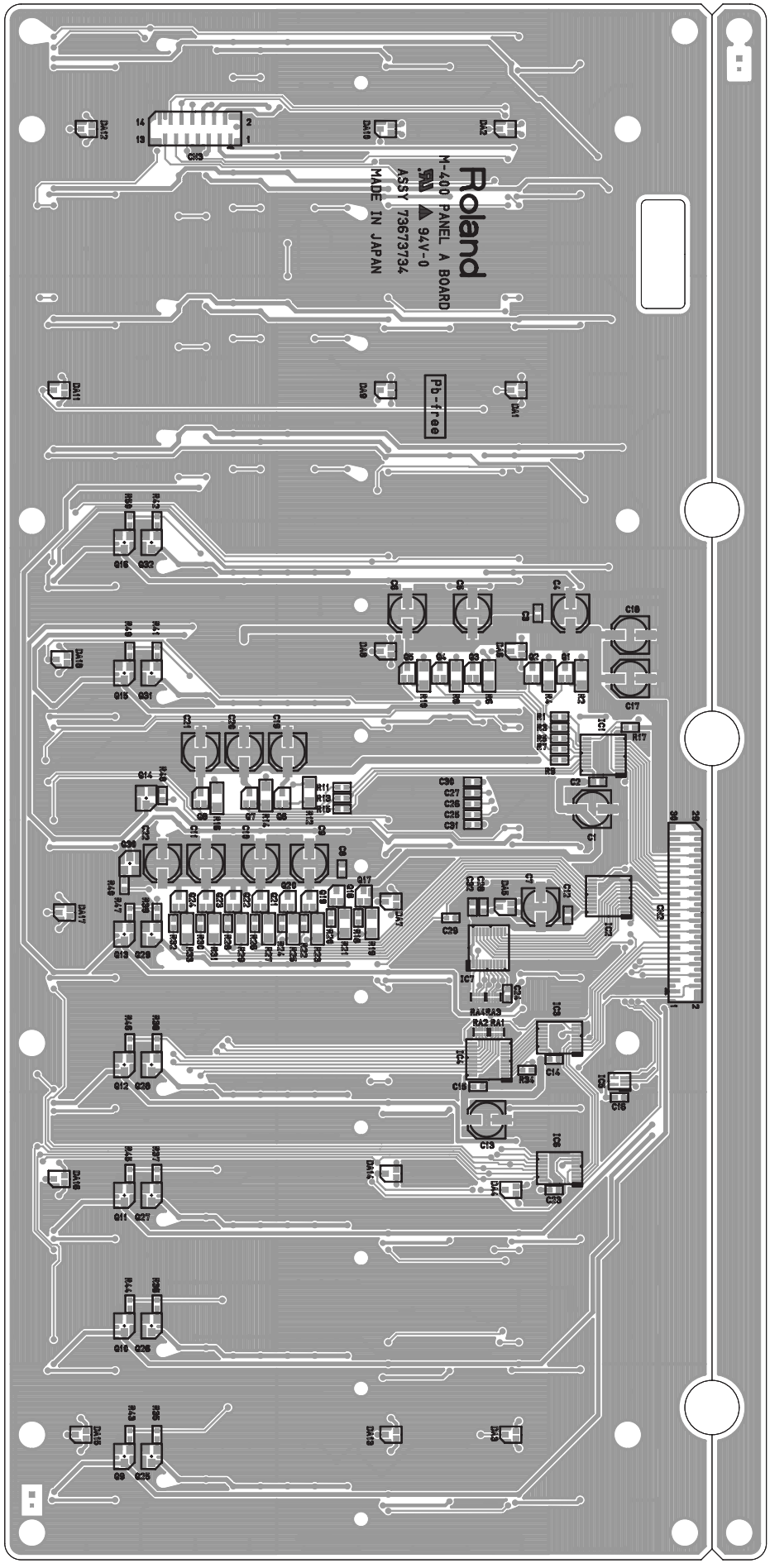
Circuit Diagram (Battery Board)

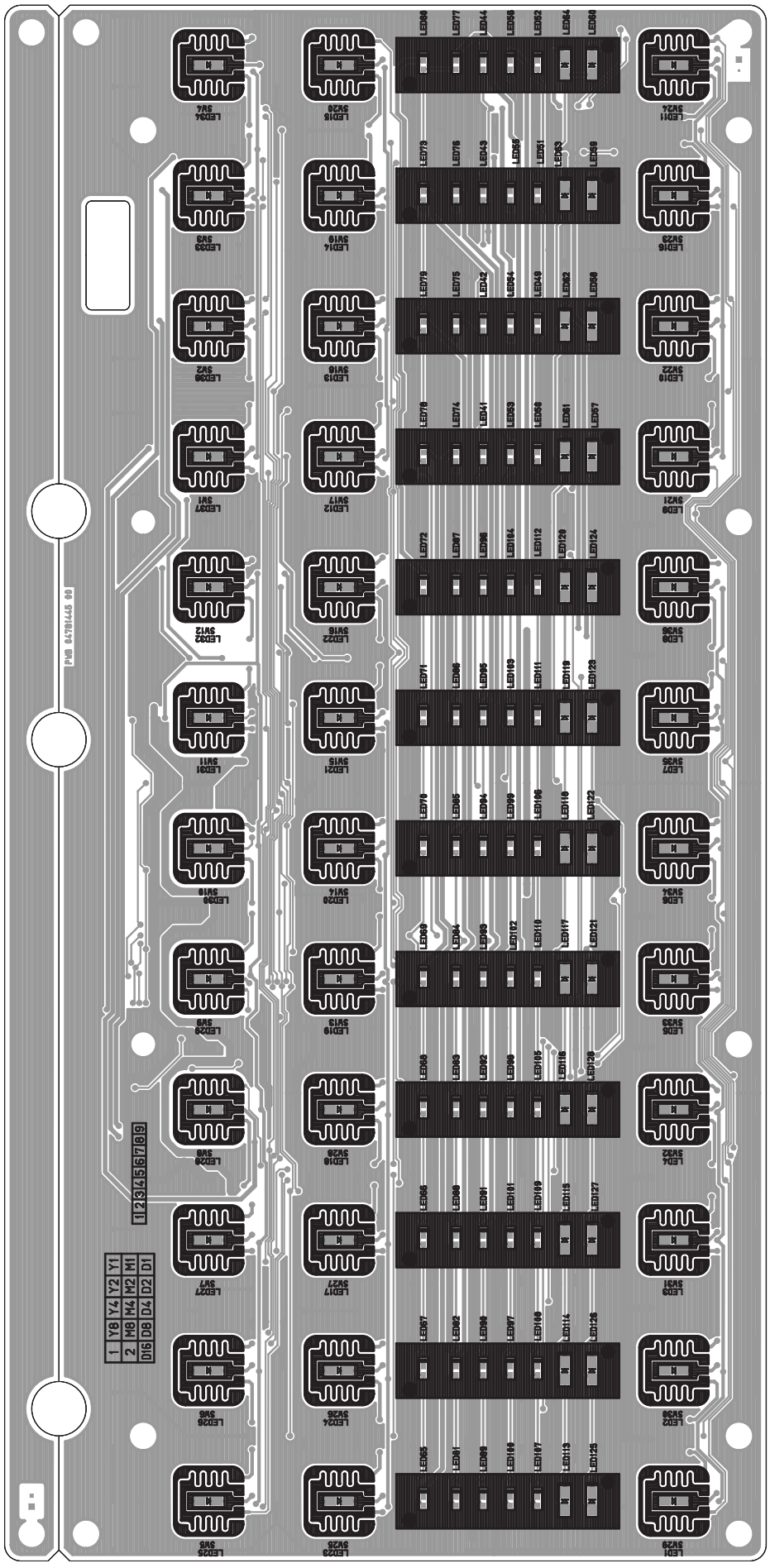


Circuit Diagram (Phones Board)

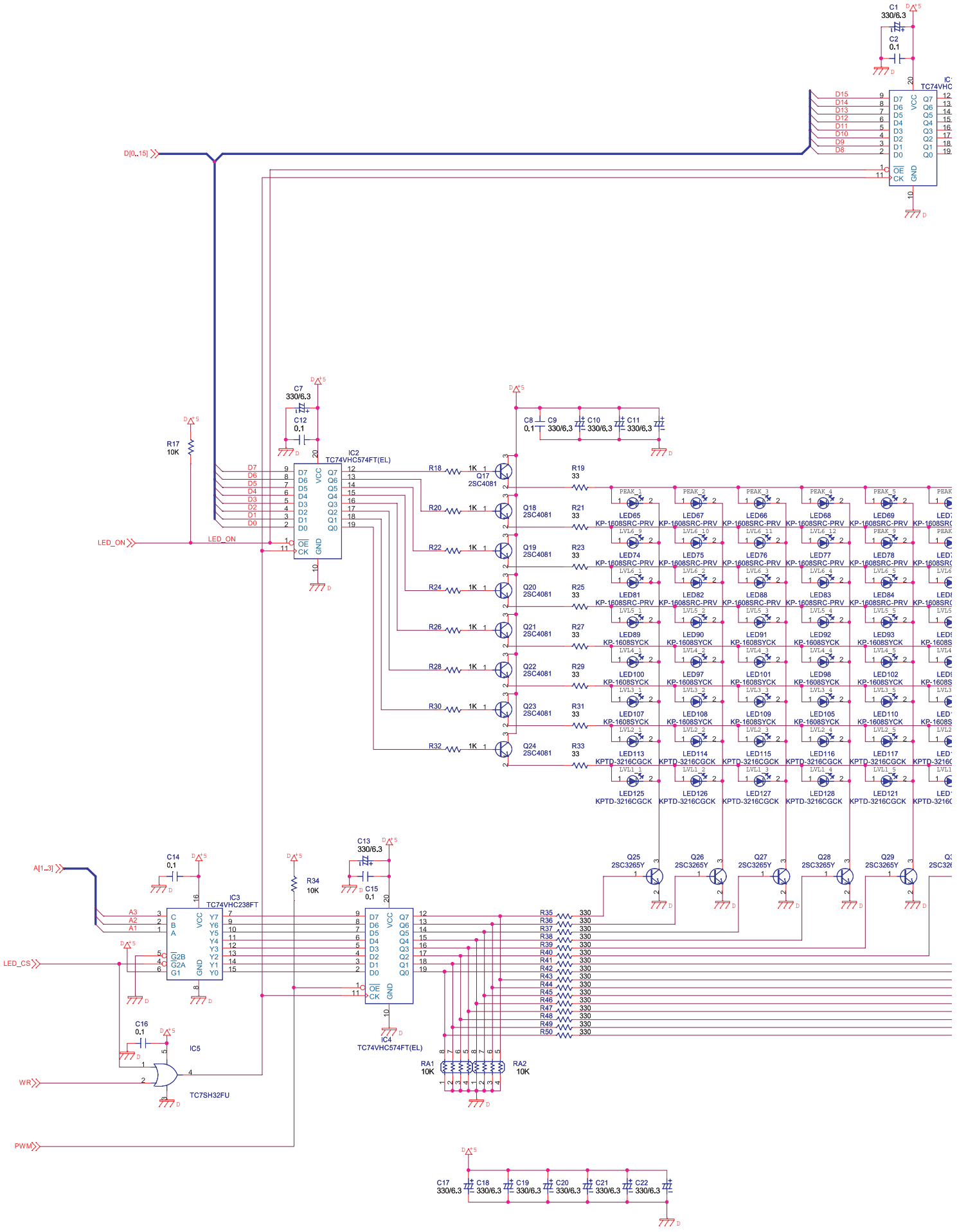


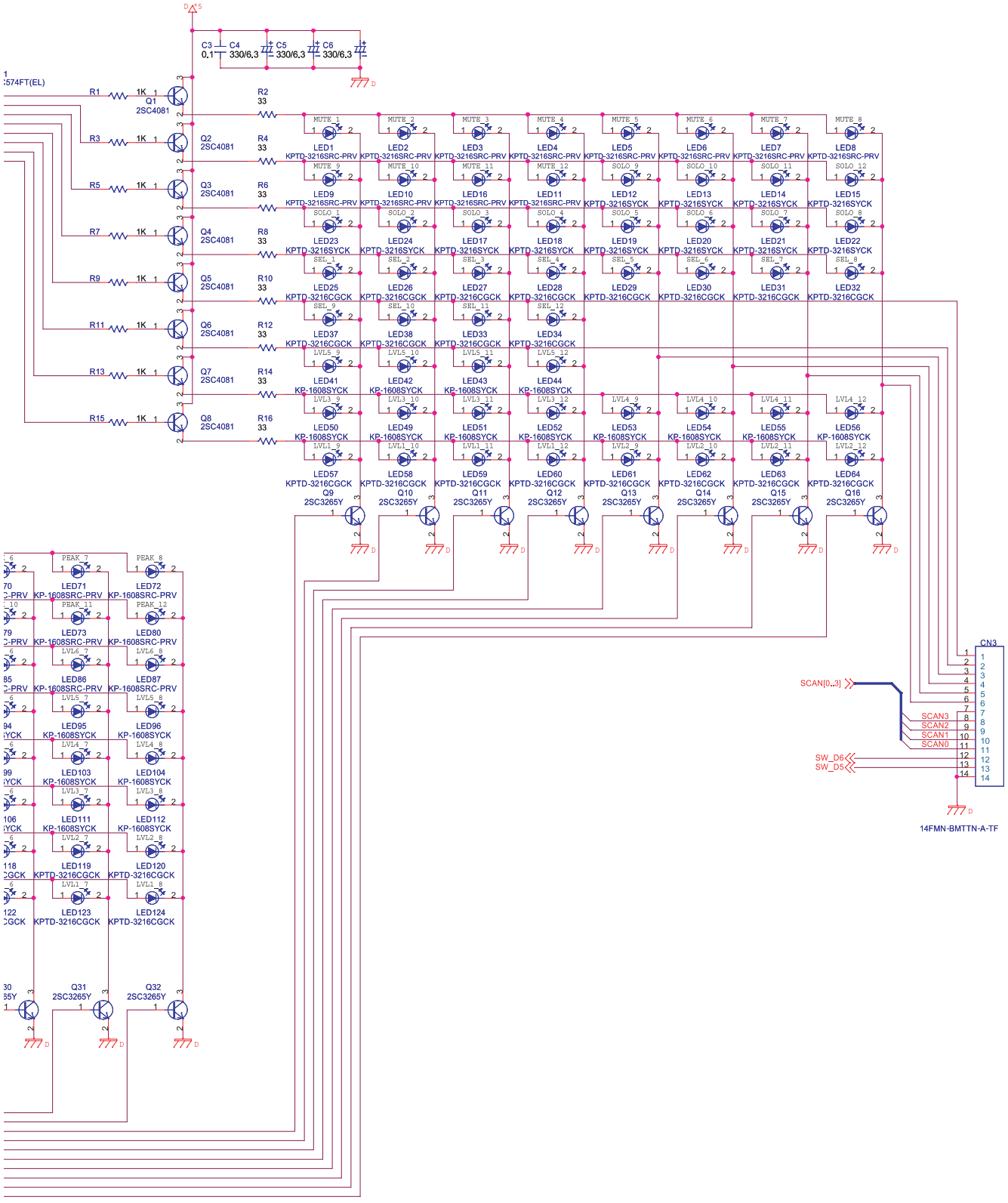
Circuit Board (Panel A Board)



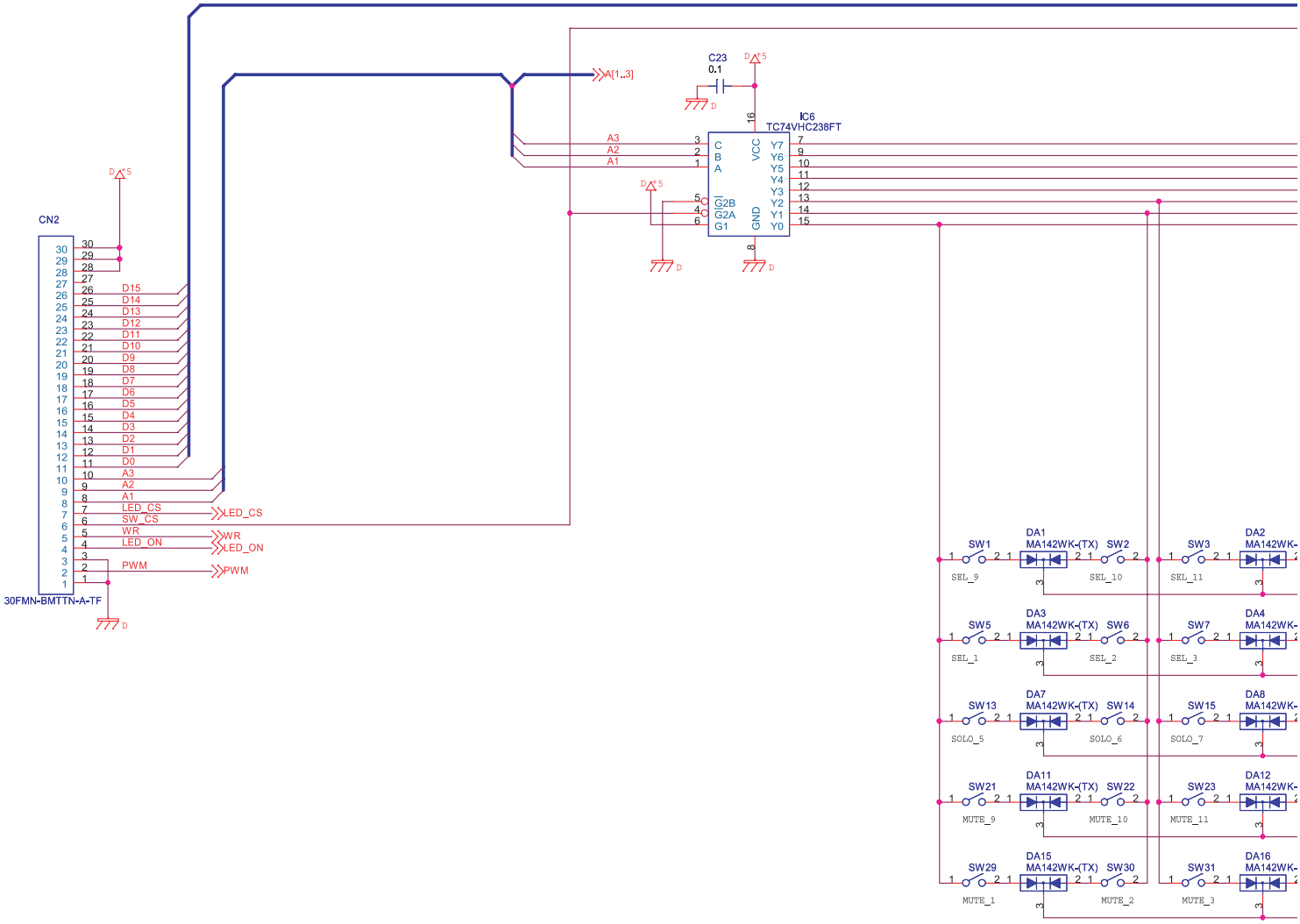


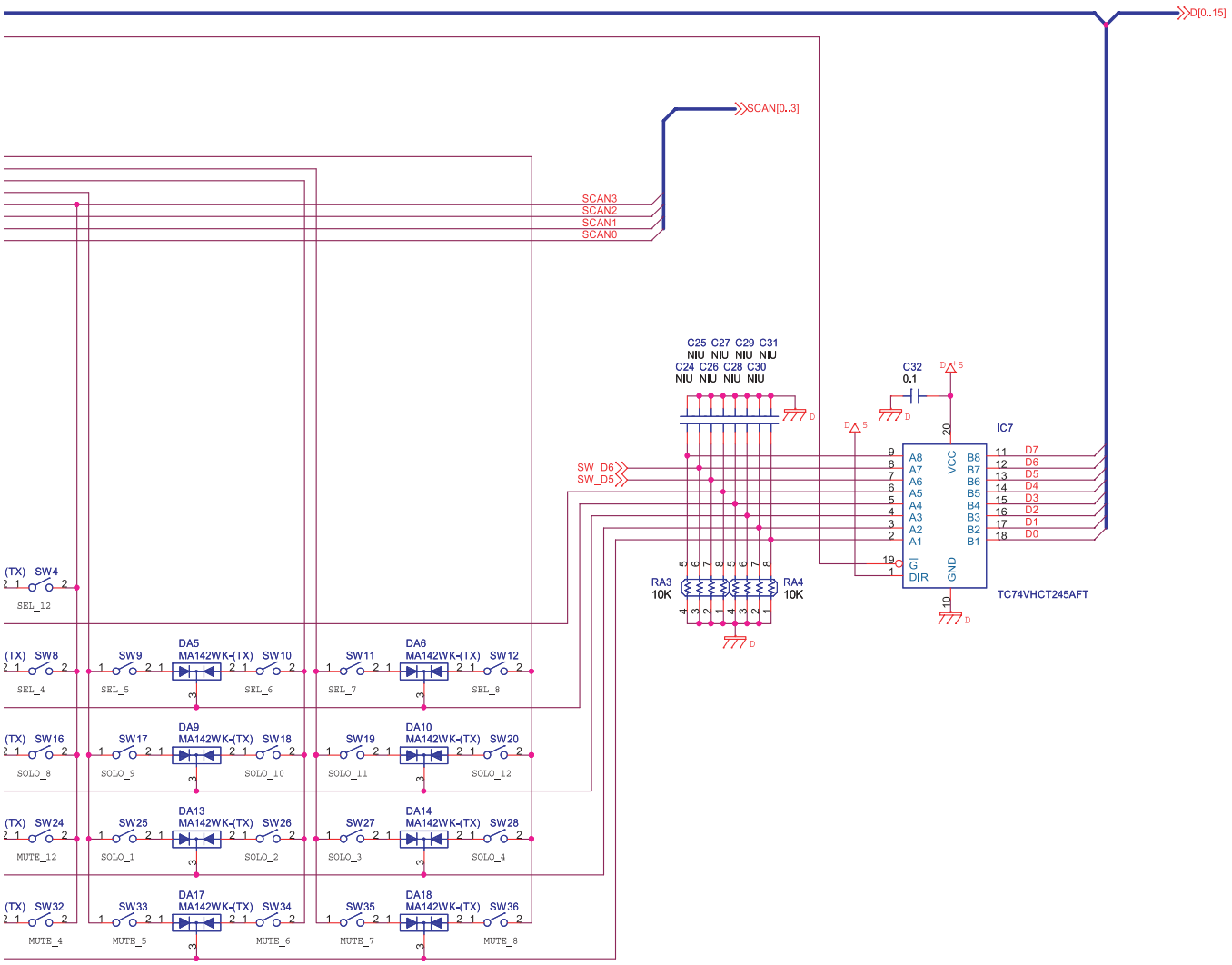
Circuit Diagram (Panel A Board: 1/2)



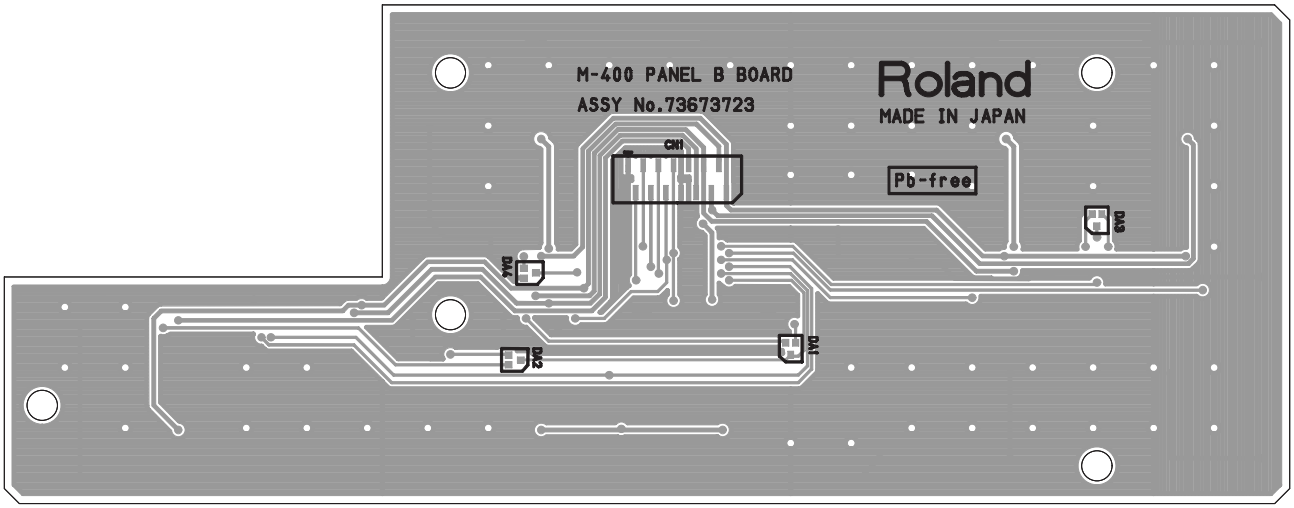

C3 0.1
C4 330/6.3
C5 330/6.3
C6 330/6.3
R1 1K
R2 33
R3 1K
R4 33
R5 1K
R6 33
R7 1K
R8 33
R9 1K
R10 33
R11 1K
R12 33
R13 1K
R14 33
R15 1K
R16 33
Q1 2SC4081
Q2 2SC4081
Q3 2SC4081
Q4 2SC4081
Q5 2SC4081
Q6 2SC4081
Q7 2SC4081
Q8 2SC4081
LED1 KPTD-3216SRC-PRV
LED2 KPTD-3216SRC-PRV
LED3 KPTD-3216SRC-PRV
LED4 KPTD-3216SRC-PRV
LED5 KPTD-3216SRC-PRV
LED6 KPTD-3216SRC-PRV
LED7 KPTD-3216SRC-PRV
LED8 KPTD-3216SRC-PRV
LED9 KPTD-3216SRC-PRV
LED10 KPTD-3216SRC-PRV
LED16 KPTD-3216SRC-PRV
LED11 KPTD-3216SRC-PRV
LED12 KPTD-3216SYCK
LED13 KPTD-3216SYCK
LED14 KPTD-3216SYCK
LED15 KPTD-3216SYCK
LED23 KPTD-3216SYCK
LED24 KPTD-3216SYCK
LED17 KPTD-3216SYCK
LED18 KPTD-3216SYCK
LED19 KPTD-3216SYCK
LED20 KPTD-3216SYCK
LED21 KPTD-3216SYCK
LED22 KPTD-3216SYCK
LED25 KPTD-3216CGCK
LED26 KPTD-3216CGCK
LED27 KPTD-3216CGCK
LED28 KPTD-3216CGCK
LED29 KPTD-3216CGCK
LED30 KPTD-3216CGCK
LED31 KPTD-3216CGCK
LED32 KPTD-3216CGCK
LED37 KPTD-3216CGCK
LED38 KPTD-3216CGCK
LED33 KPTD-3216CGCK
LED34 KPTD-3216CGCK
LED41 KP-1608SYCK
LED42 KP-1608SYCK
LED43 KP-1608SYCK
LED44 KP-1608SYCK
LED50 KP-1608SYCK
LED49 KP-1608SYCK
LED51 KP-1608SYCK
LED52 KP-1608SYCK
LED53 KP-1608SYCK
LED54 KP-1608SYCK
LED55 KP-1608SYCK
LED56 KP-1608SYCK
LED57 KPTD-3216CGCK
LED58 KPTD-3216CGCK
LED59 KPTD-3216CGCK
LED60 KPTD-3216CGCK
LED61 KPTD-3216CGCK
LED62 KPTD-3216CGCK
LED63 KPTD-3216CGCK
LED64 KPTD-3216CGCK
Q9 2SC3265Y
Q10 2SC3265Y
Q11 2SC3265Y
Q12 2SC3265Y
Q13 2SC3265Y
Q14 2SC3265Y
Q15 2SC3265Y
Q16 2SC3265Y
LED71 KP-1608SRC-PRV
LED72 KP-1608SRC-PRV
LED73 KP-1608SRC-PRV
LED80 KP-1608SRC-PRV
LED86 KP-1608SRC-PRV
LED87 KP-1608SRC-PRV
LED95 KP-1608SYCK
LED96 KP-1608SYCK
LED103 KP-1608SYCK
LED104 KP-1608SYCK
LED111 KP-1608SYCK
LED112 KP-1608SYCK
LED119 KPTD-3216CGCK
LED120 KPTD-3216CGCK
LED123 KPTD-3216CGCK
LED124 KPTD-3216CGCK
Q31 2SC3265Y
Q32 2SC3265Y
CN3
SCAN[0..3]
SCAN3
SCAN2
SCAN1
SCAN0
SW_D6
SW_D5
14FMN-BMTTN-A-TF

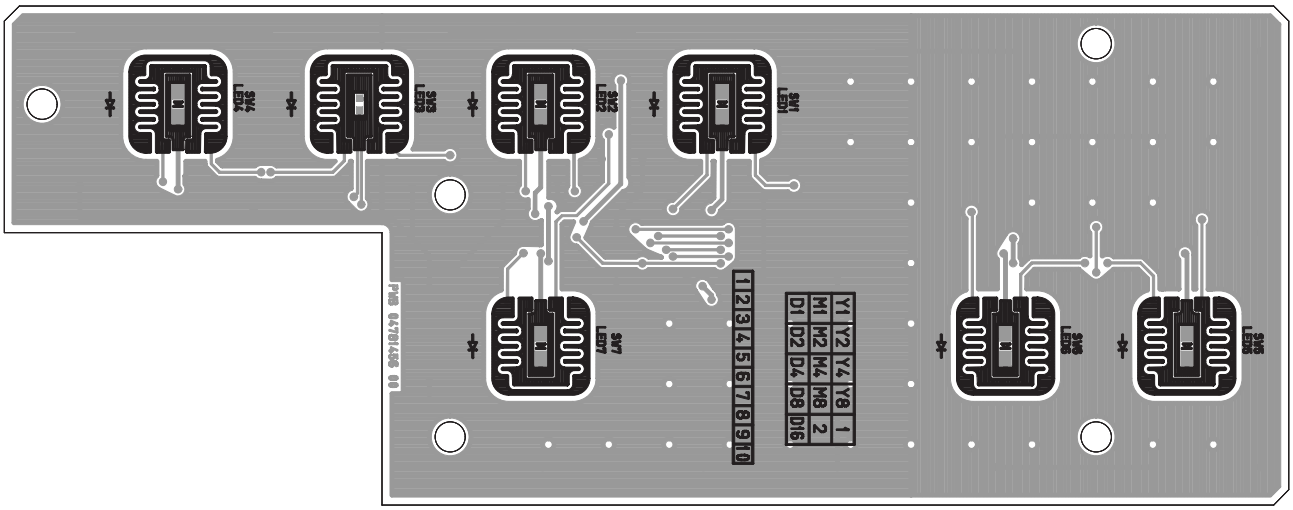
Circuit Diagram (Panel A Board: 2/2)



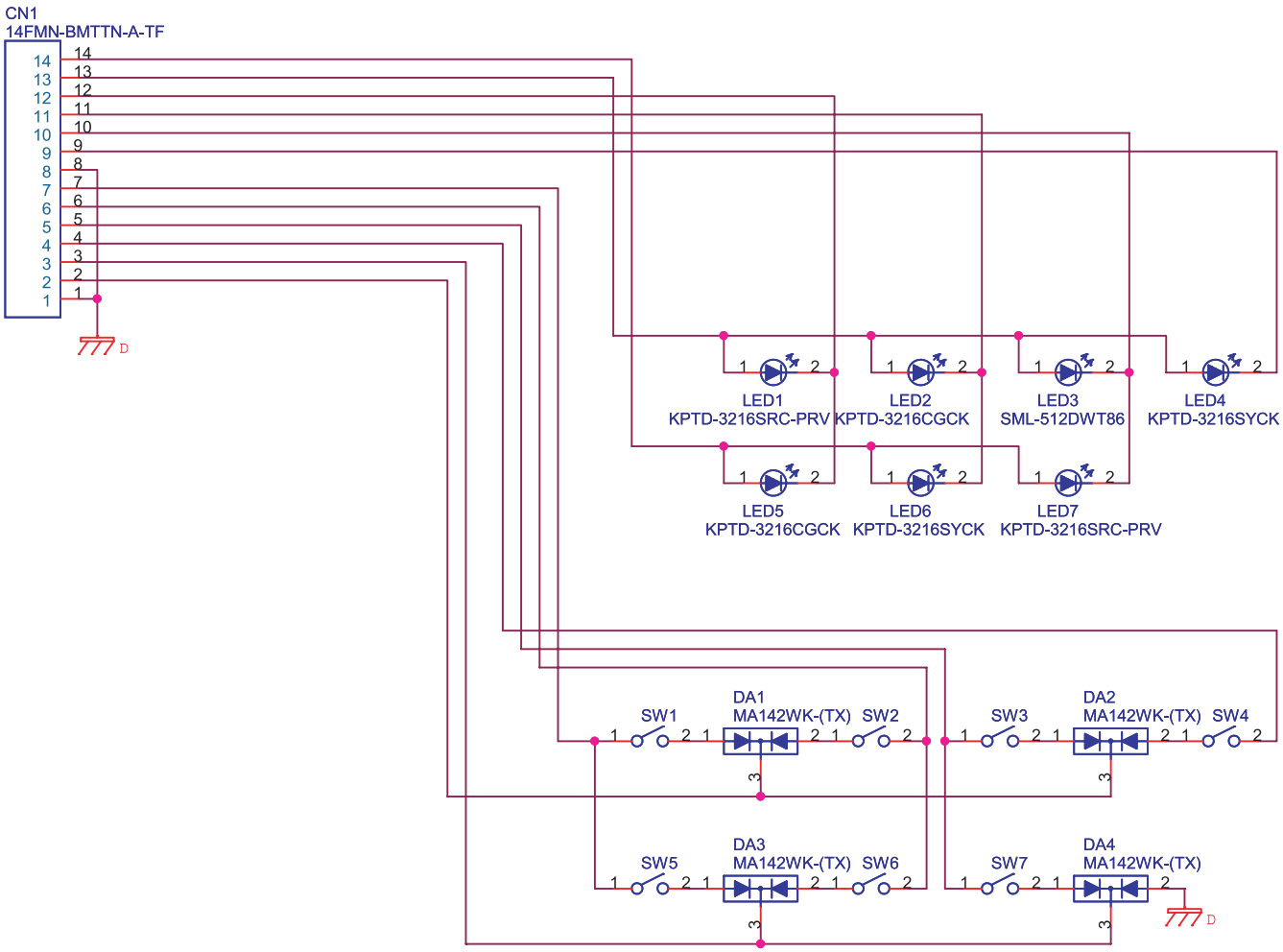

D[0..15]
SCAN[0..3]
SCAN3
SCAN2
SCAN1
SCAN0
C25 C27 C29 C31
NIU NIU NIU NIU
C24 C26 C28 C30
NIU NIU NIU NIU
C32
0.1
IC7
SW_D6
SW_D5
RA3
10K
RA4
10K
TC74VHCT245AFT
A8 A7 A6 A5 A4 A3 A2 A1
B8 B7 B6 B5 B4 B3 B2 B1
VCC
GND
OE
DIR
D7 D6 D5 D4 D3 D2 D1 D0
(TX) SW4
SEL_12
DA5
MA142WK-(TX)
SW8 SW9 SW10 SW11 SW12
SEL_4 SEL_5 SEL_6 SEL_7 SEL_8
DA6
DA9
SW16 SW17 SW18 SW19 SW20
SOLO_8 SOLO_9 SOLO_10 SOLO_11 SOLO_12
DA10
DA13
SW24 SW25 SW26 SW27 SW28
MUTE_12 SOLO_1 SOLO_2 SOLO_3 SOLO_4
DA14
DA17
SW32 SW33 SW34 SW35 SW36
MUTE_4 MUTE_5 MUTE_6 MUTE_7 MUTE_8
DA18

Circuit Board (Panel B Board)

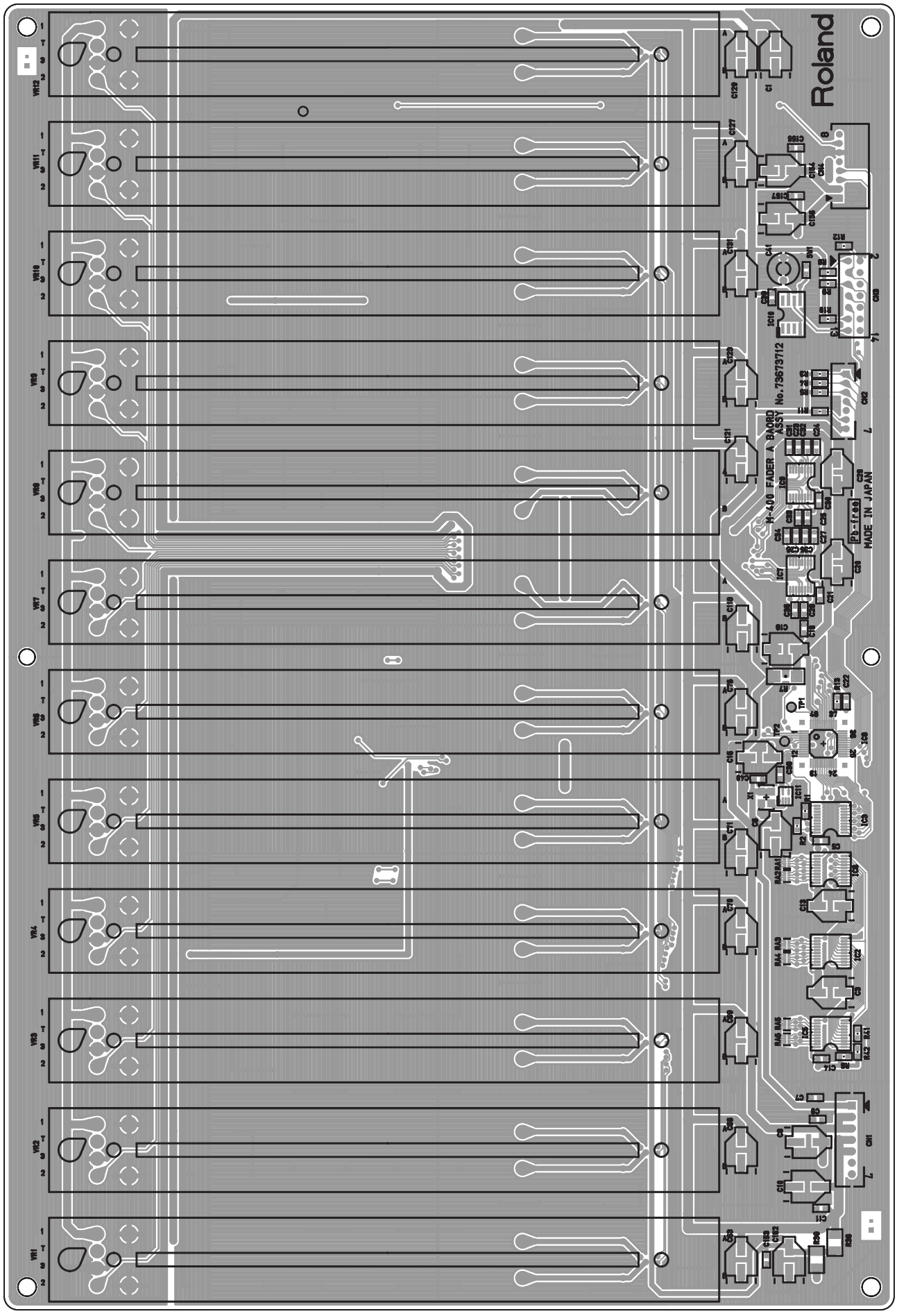


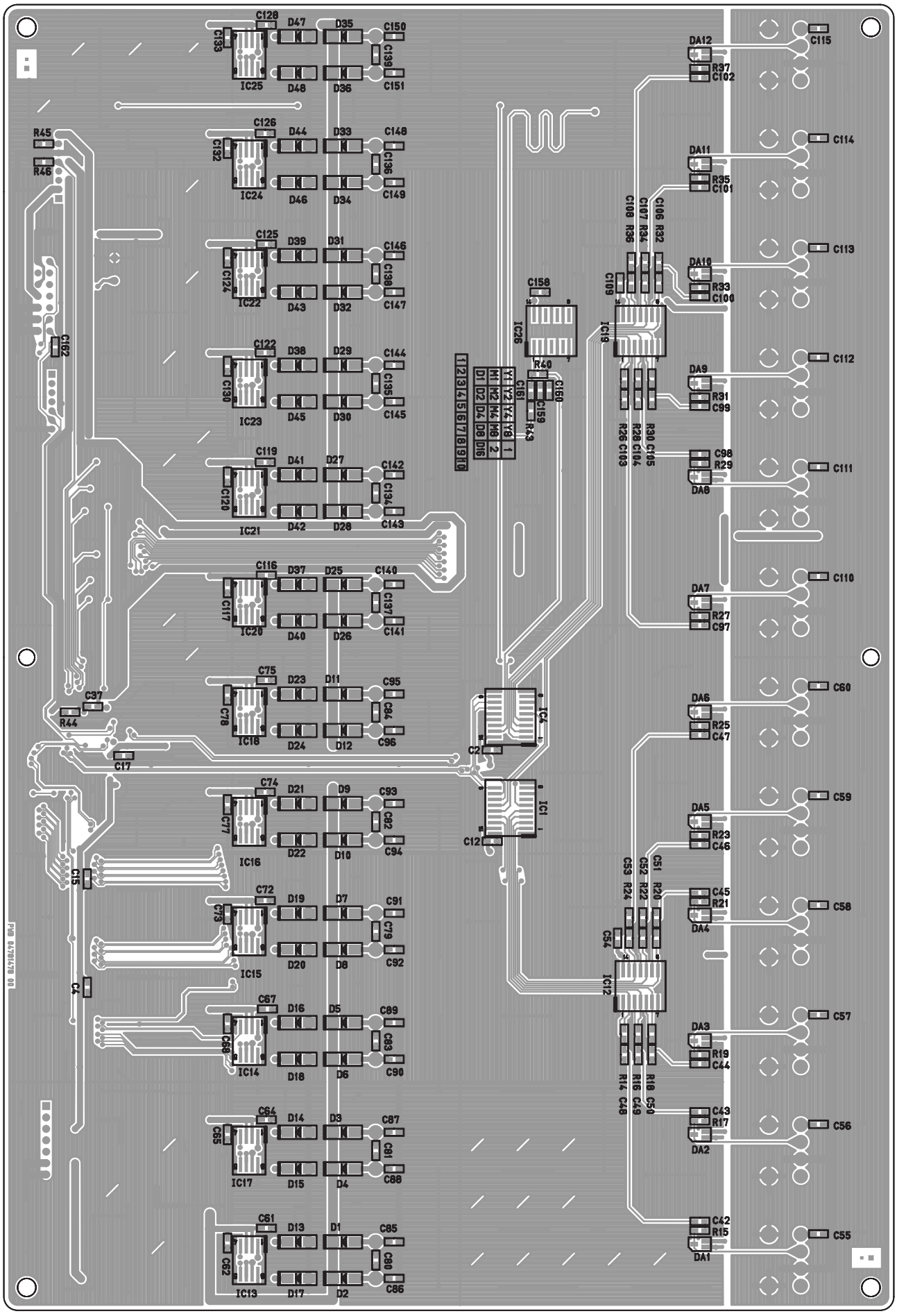


Circuit Diagram (Panel B Board)

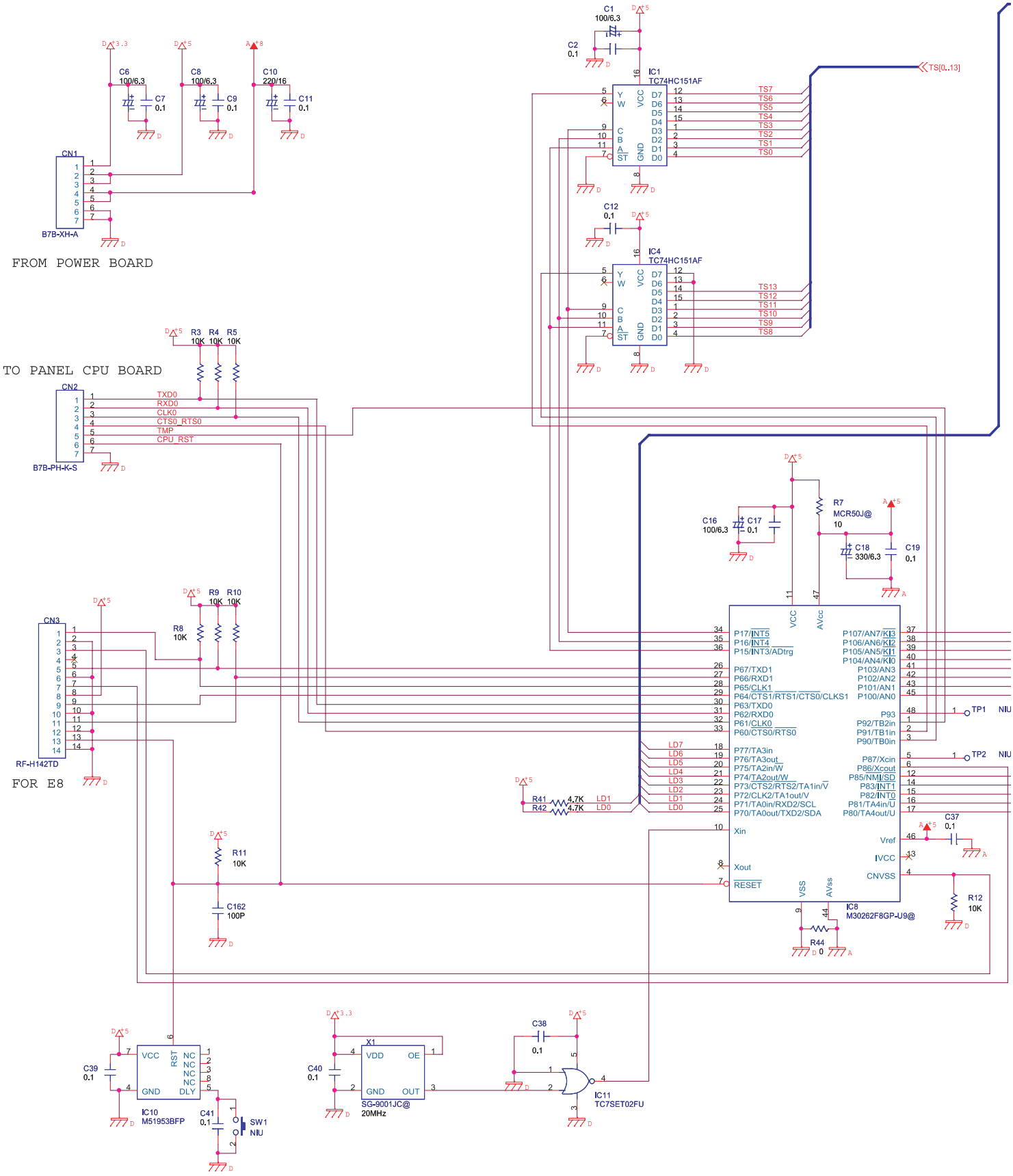


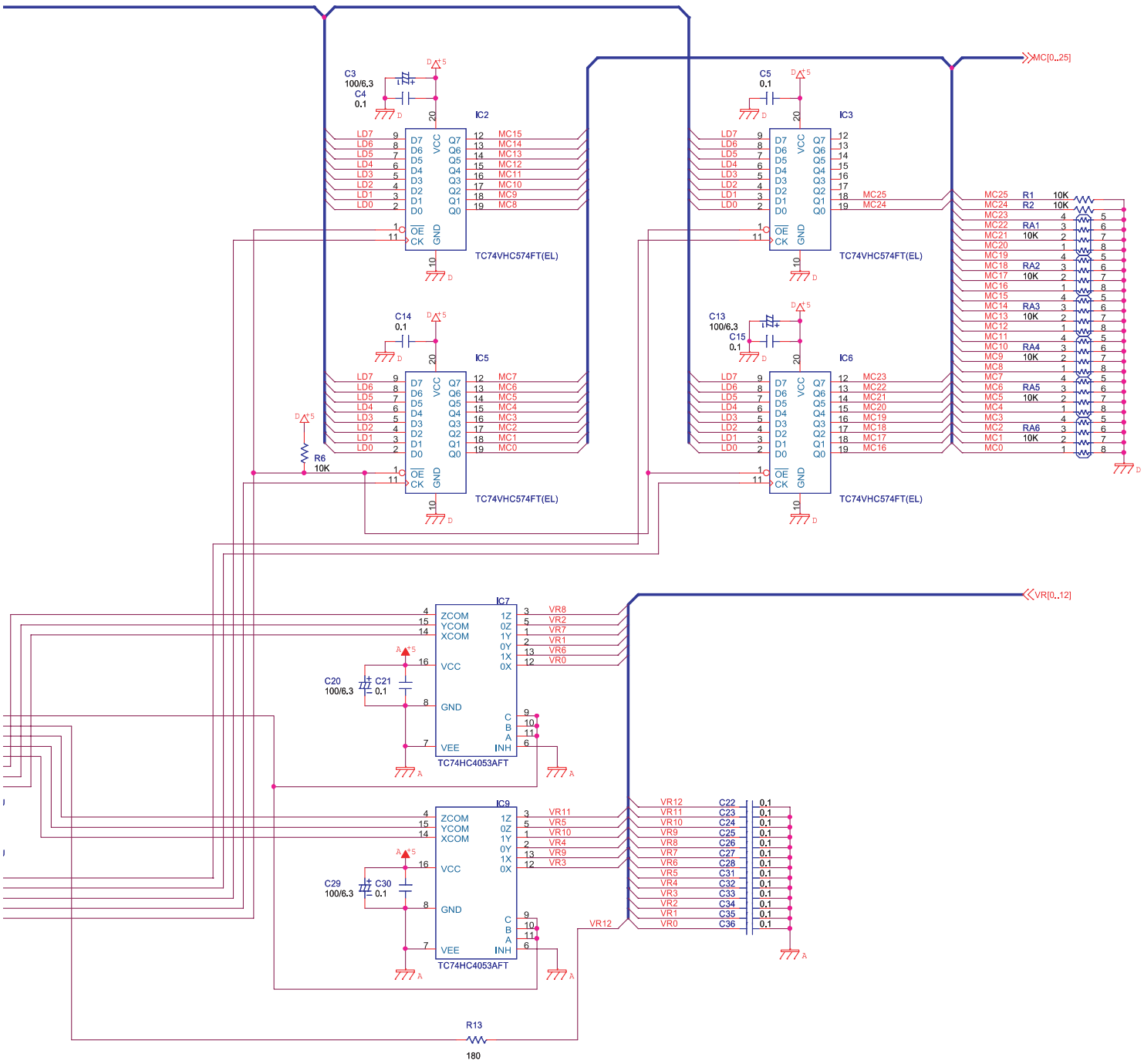
Circuit Board (Fader A Board)



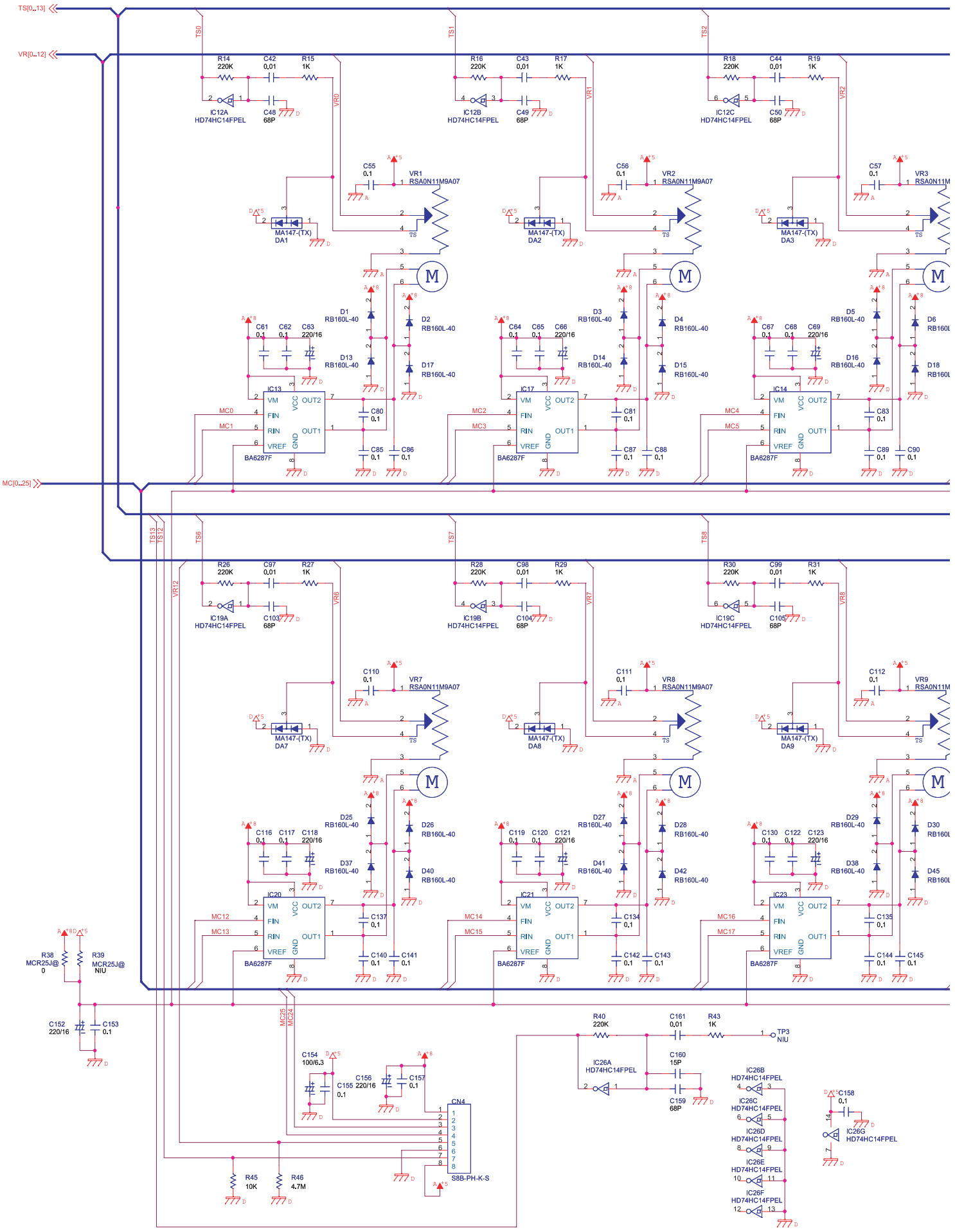


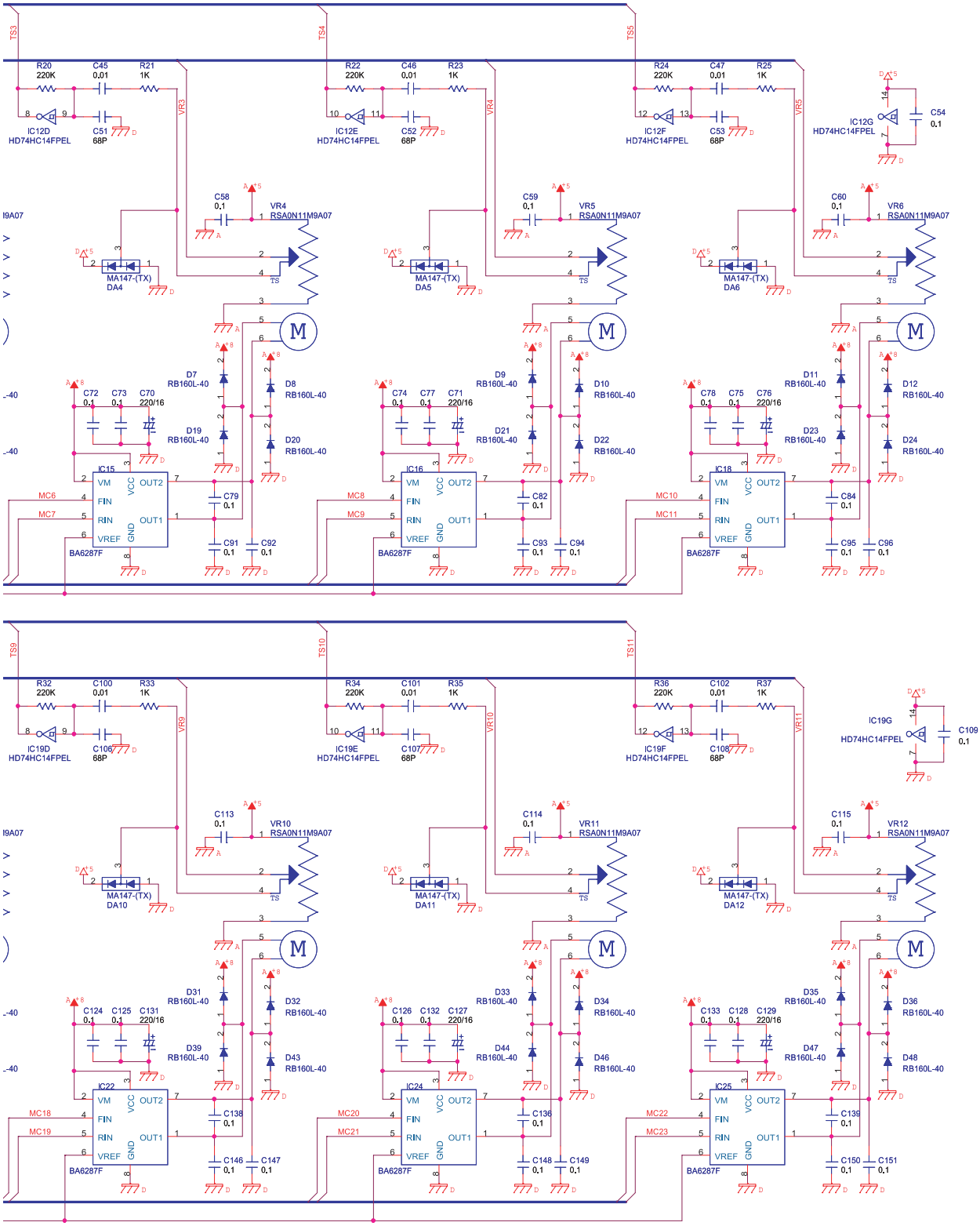
Circuit Diagram (Fader A Board: 1/2)



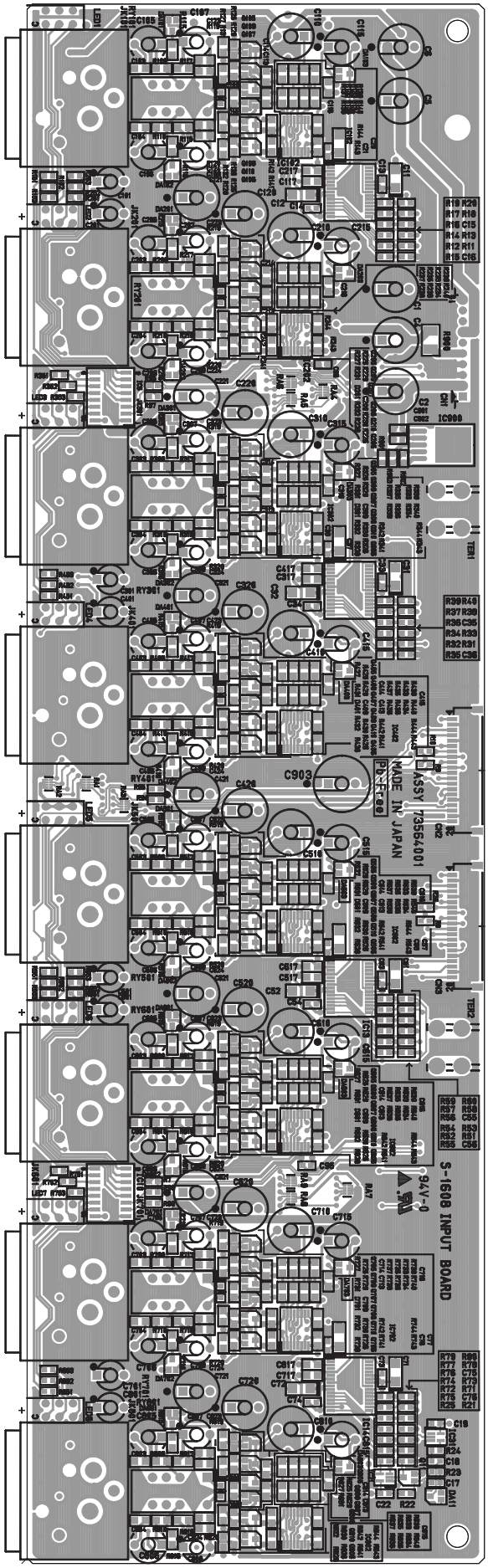

MC[0..25]
VR[0..12]
IC2
IC3
IC5
IC6
IC7
IC9
TC74VHC574FT(EL)
TC74HC4053AFT
C3
100/6.3
C4
0.1
C5
0.1
C13
100/6.3
C14
0.1
C15
0.1
C20
100/6.3
C21
0.1
C29
100/6.3
C30
0.1
R6
10K
R13
180
R1
R2
RA1
RA2
RA3
RA4
RA5
10K

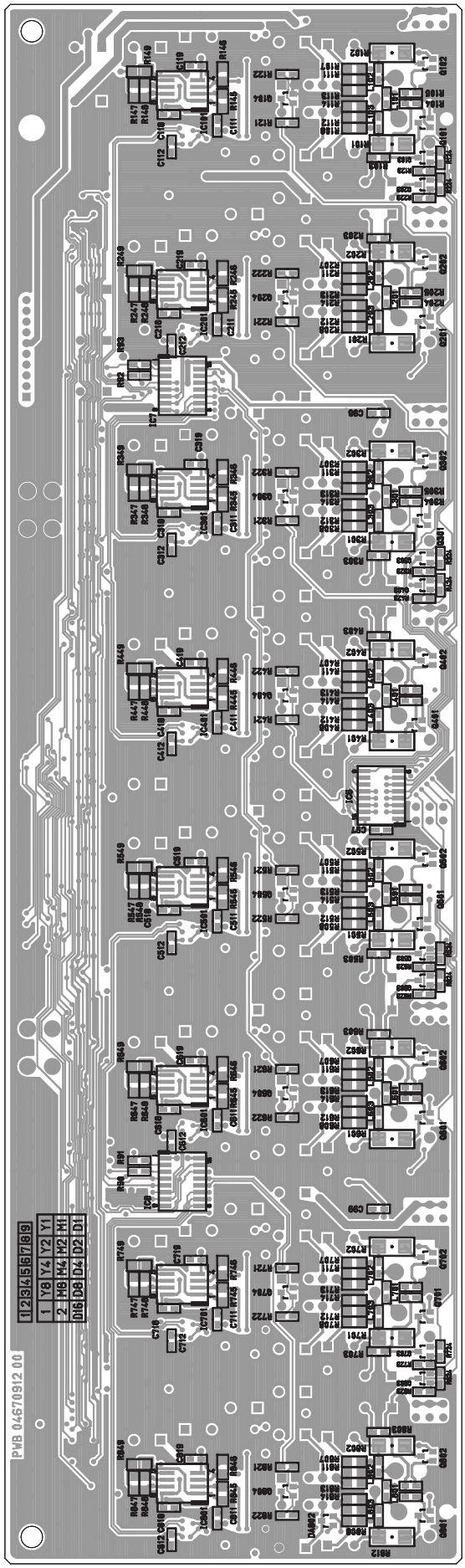
Circuit Diagram (Fader A Board: 2/2)



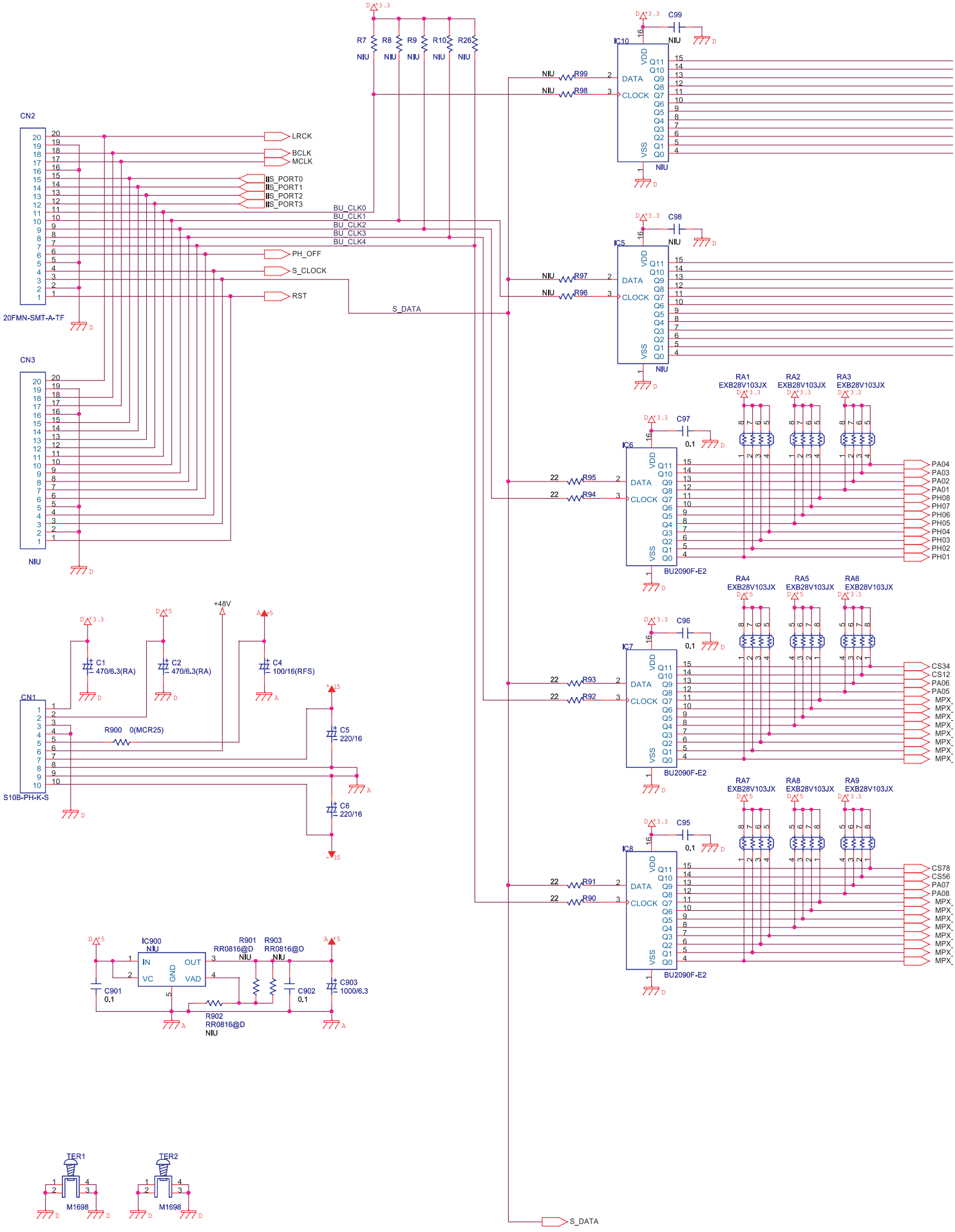

TS3
TS4
TS5
R20 220K
C45 0.01
R21 1K
IC12D HD74HC14FPEL
C51 68P
VR3
R22 220K
C46 0.01
R23 1K
IC12E HD74HC14FPEL
C52 68P
VR4
R24 220K
C47 0.01
R25 1K
IC12F HD74HC14FPEL
C53 68P
VR5
IC12G HD74HC14FPEL
C54 0.1
C58 0.1
VR4 RSA0N11M9A07
MA147-(TX) DA4
C59 0.1
VR5 RSA0N11M9A07
MA147-(TX) DA5
C60 0.1
VR6 RSA0N11M9A07
MA147-(TX) DA6
M
D7 RB160L-40
D8 RB160L-40
D19 RB160L-40
D20 RB160L-40
D9 RB160L-40
D10 RB160L-40
D21 RB160L-40
D22 RB160L-40
D11 RB160L-40
D12 RB160L-40
D23 RB160L-40
D24 RB160L-40
C72 0.1
C73 0.1
C70 220/16
C74 0.1
C77 0.1
C71 220/16
C78 0.1
C75 0.1
C76 220/16
IC15
IC16
IC18
VM
FIN
RIN
VREF
VCC
GND
OUT1
OUT2
BA6287F
MC6
MC7
MC8
MC9
MC10
MC11
C79 0.1
C82 0.1
C84 0.1
C91 0.1
C92 0.1
C93 0.1
C94 0.1
C95 0.1
C96 0.1
TS9
TS10
TS11
R32 220K
C100 0.01
R33 1K
IC19D HD74HC14FPEL
C106 68P
VR9
R34 220K
C101 0.01
R35 1K
IC19E HD74HC14FPEL
C107 68P
VR10
R36 220K
C102 0.01
R37 1K
IC19F HD74HC14FPEL
C108 68P
VR11
IC19G HD74HC14FPEL
C109 0.1
C113 0.1
VR10 RSA0N11M9A07
MA147-(TX) DA10
C114 0.1
VR11 RSA0N11M9A07
MA147-(TX) DA11
C115 0.1
VR12 RSA0N11M9A07
MA147-(TX) DA12
M
D31 RB160L-40
D32 RB160L-40
D39 RB160L-40
D43 RB160L-40
D33 RB160L-40
D34 RB160L-40
D44 RB160L-40
D46 RB160L-40
D35 RB160L-40
D36 RB160L-40
D47 RB160L-40
D48 RB160L-40
C124 0.1
C125 0.1
C131 220/16
C126 0.1
C132 0.1
C127 220/16
C133 0.1
C128 0.1
C129 220/16
IC22
IC24
IC25
VM
FIN
RIN
VREF
VCC
GND
OUT1
OUT2
BA6287F
MC18
MC19
MC20
MC21
MC22
MC23
C138 0.1
C136 0.1
C139 0.1
C146 0.1
C147 0.1
C148 0.1
C149 0.1
C150 0.1
C151 0.1

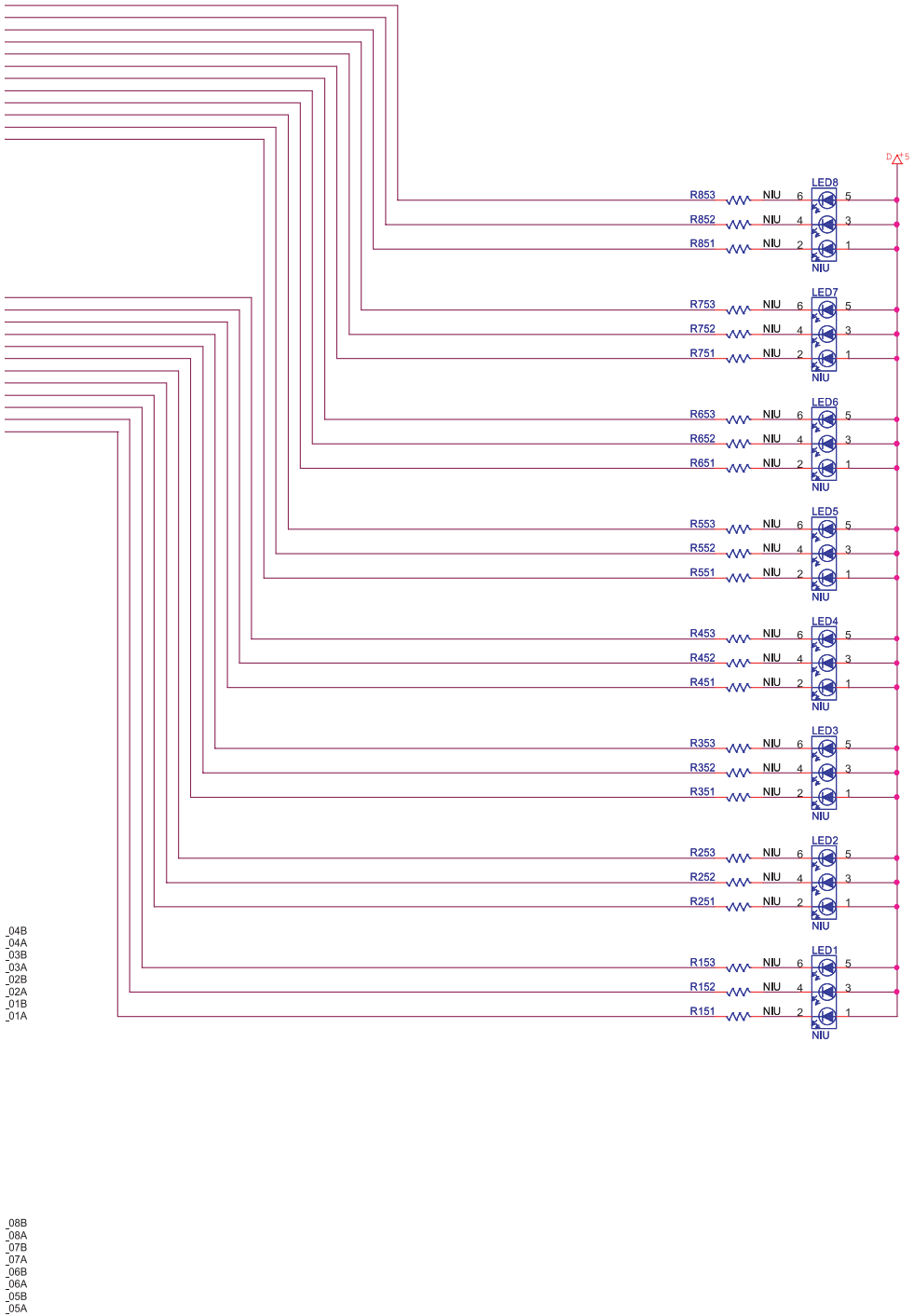
Circuit Board (Input Board)



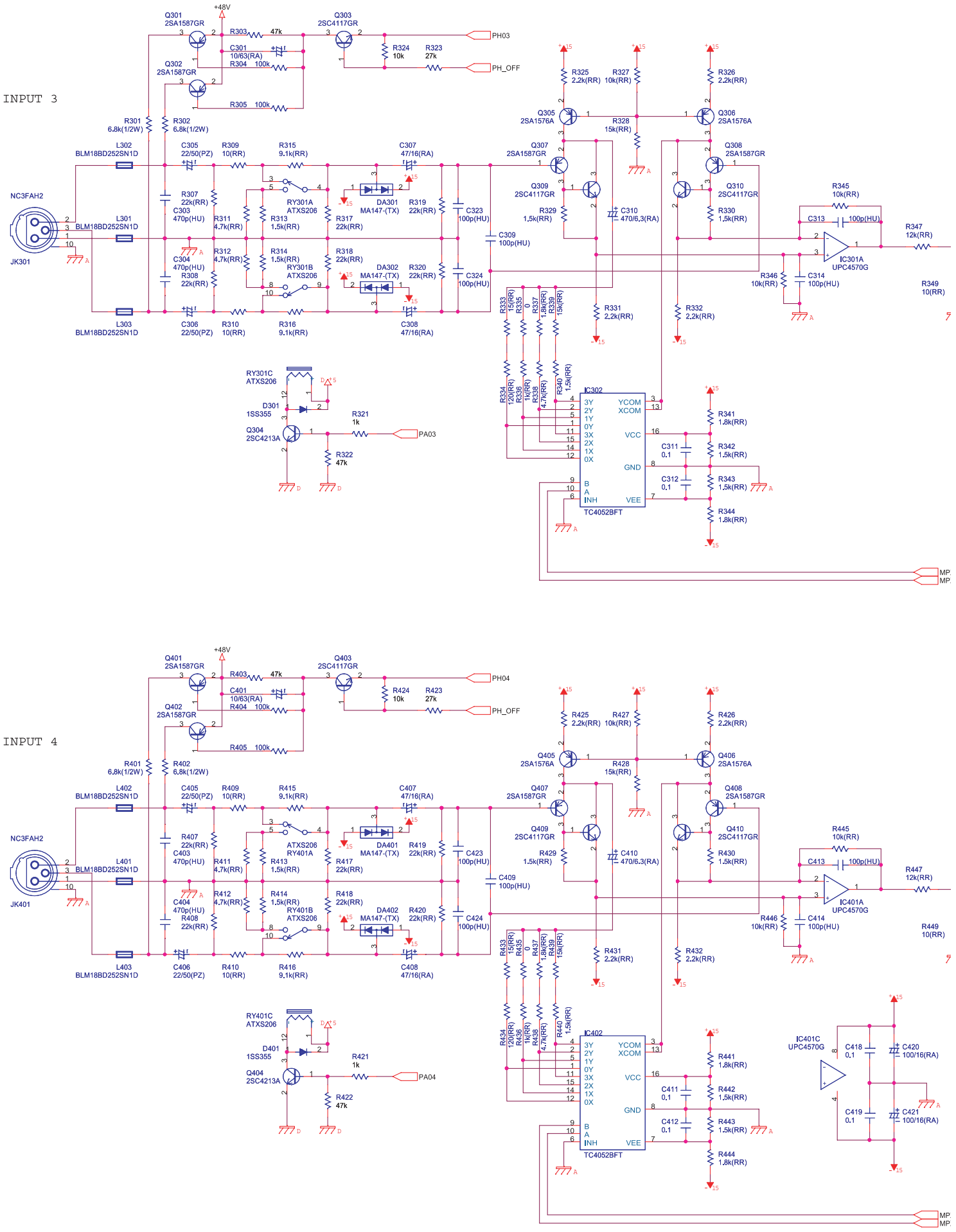

PWB 0467091200
1 Y8 Y4 Y2 Y1
2 H8 H4 H2 H1
D16 D8 D4 D2 D1

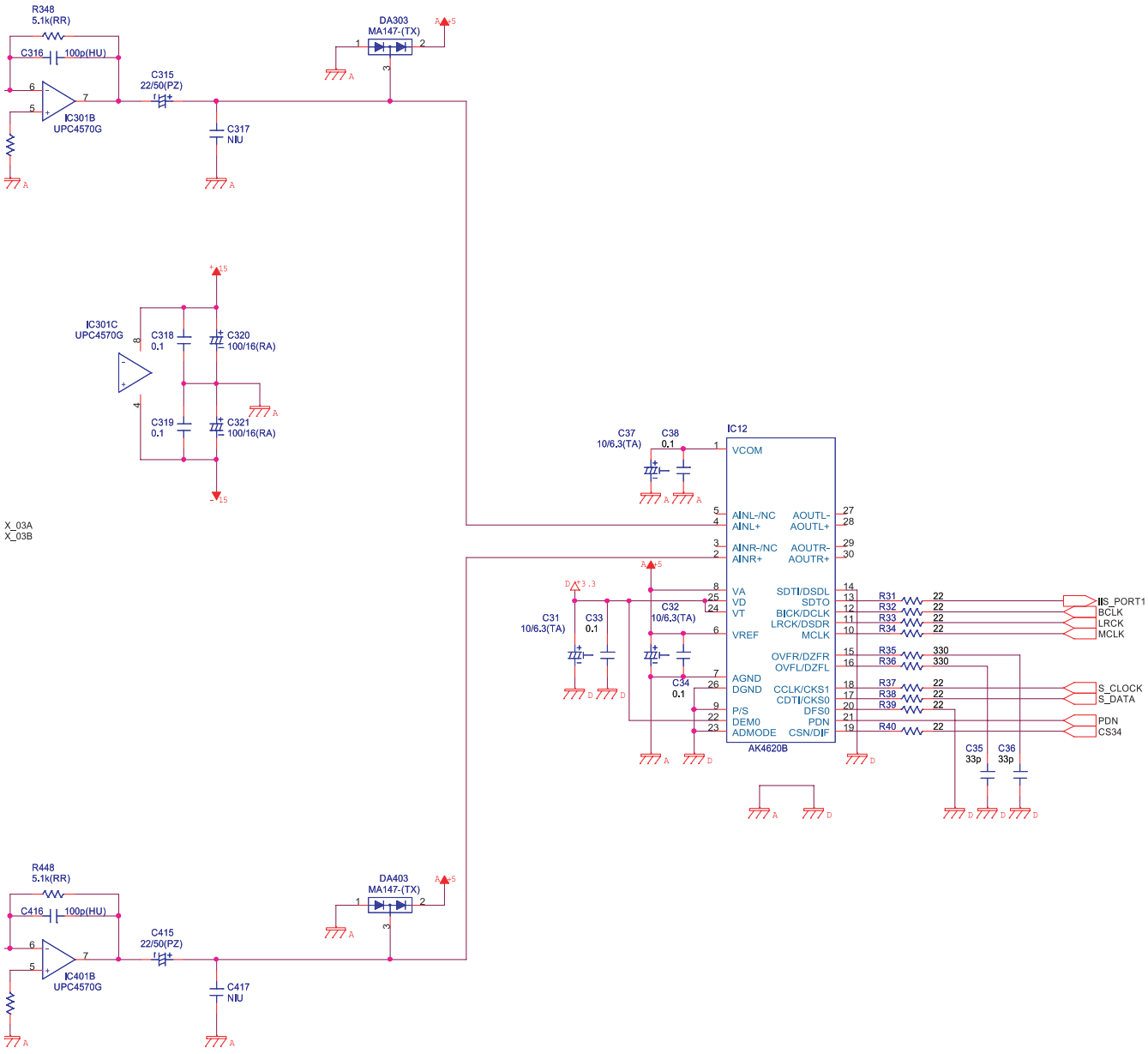
Circuit Diagram (Input Board: 1/5)



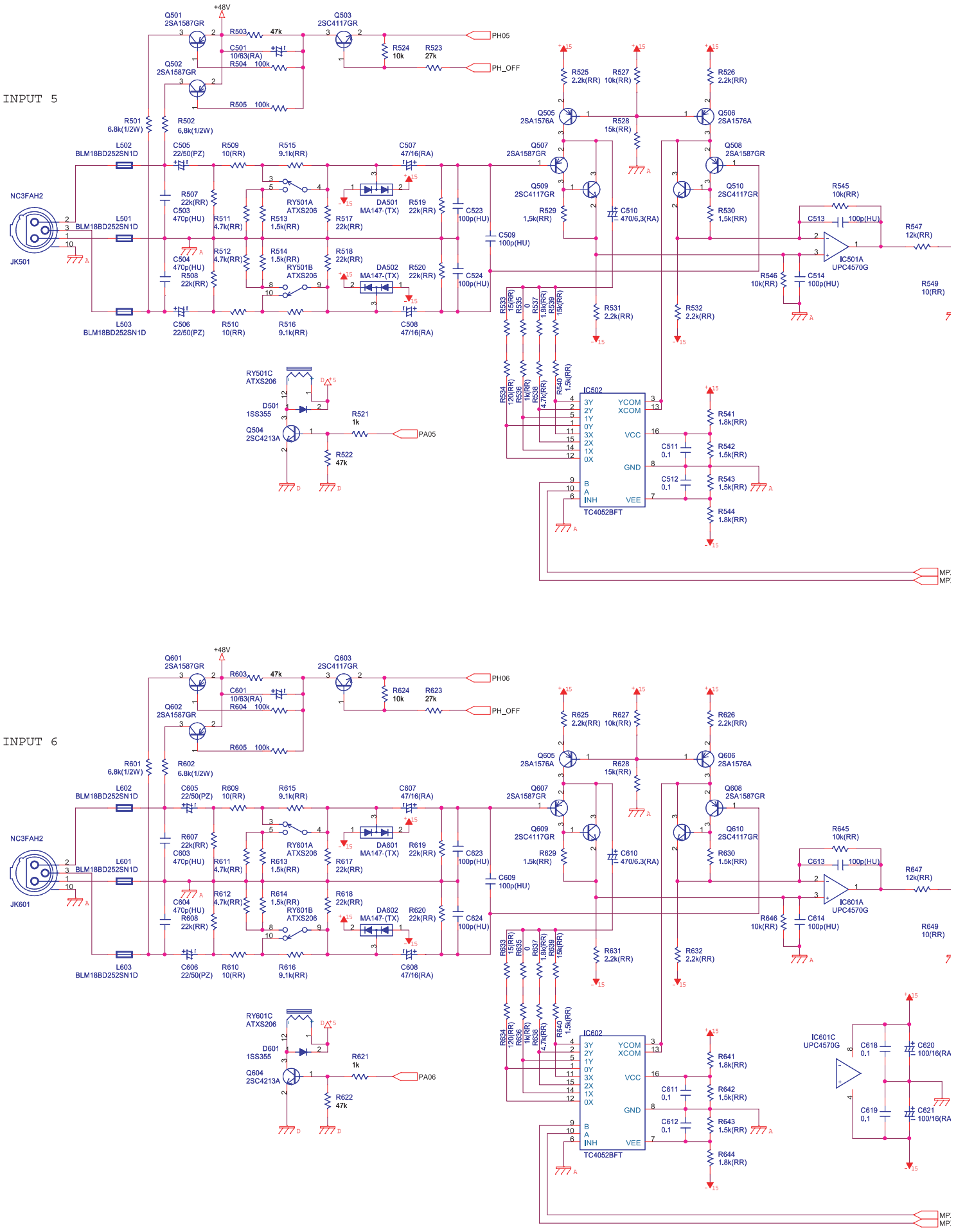

+5
LED8
R853 NIU 6 5
R852 NIU 4 3
R851 NIU 2 1
NIU
LED7
R753 NIU 6 5
R752 NIU 4 3
R751 NIU 2 1
NIU
LED6
R653 NIU 6 5
R652 NIU 4 3
R651 NIU 2 1
NIU
LED5
R553 NIU 6 5
R552 NIU 4 3
R551 NIU 2 1
NIU
LED4
R453 NIU 6 5
R452 NIU 4 3
R451 NIU 2 1
NIU
LED3
R353 NIU 6 5
R352 NIU 4 3
R351 NIU 2 1
NIU
LED2
R253 NIU 6 5
R252 NIU 4 3
R251 NIU 2 1
NIU
LED1
R153 NIU 6 5
R152 NIU 4 3
R151 NIU 2 1
NIU
_04B
_04A
_03B
_03A
_02B
_02A
_01B
_01A
_08B
_08A
_07B
_07A
_06B
_06A
_05B
_05A

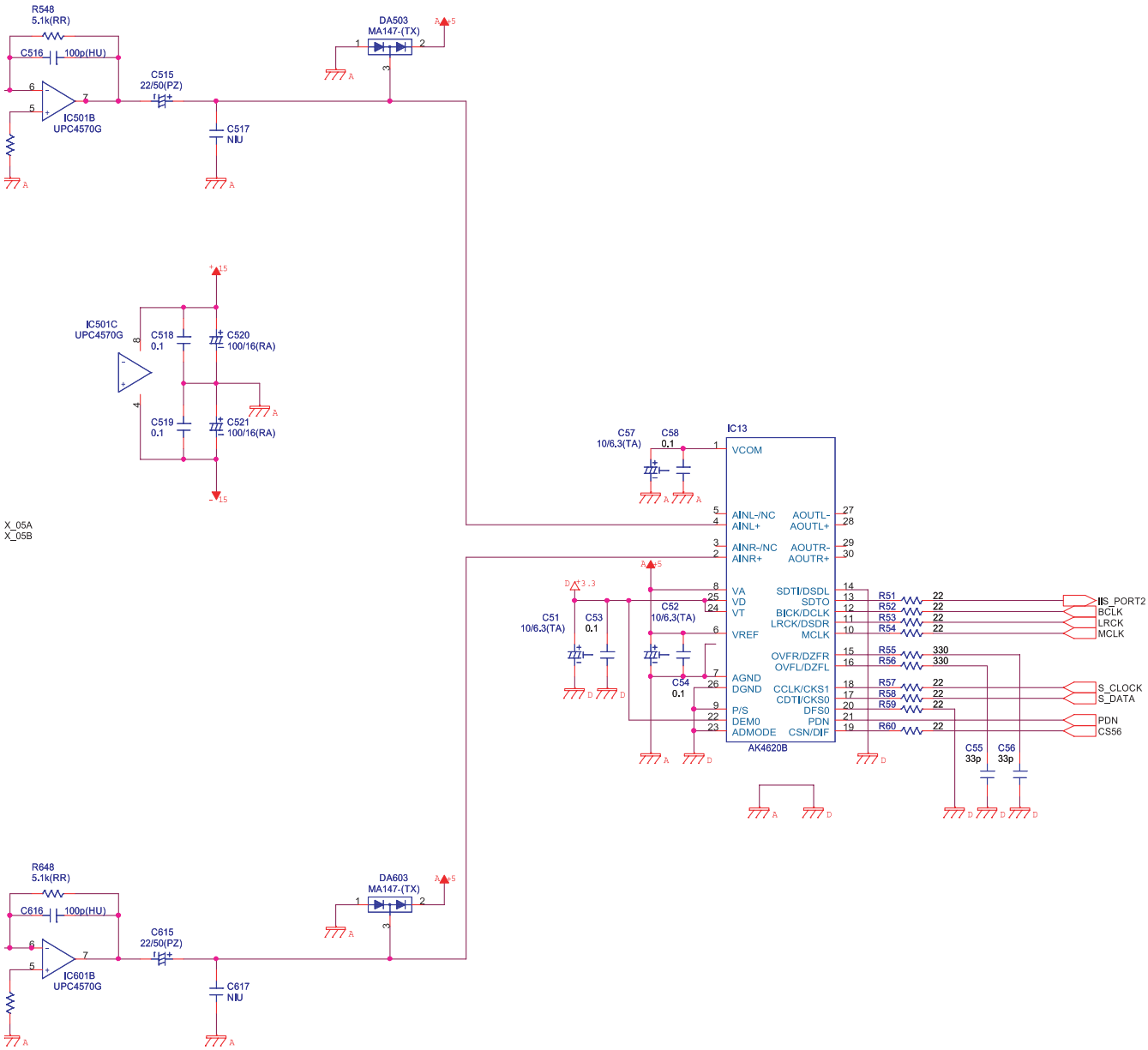
Circuit Diagram (Input Board: 2/5)




R348
5.1k(RR)
C316
100p(HU)
C315
22/50(PZ)
IC301B
UPC4570G
C317
NIU
DA303
MA147-(TX)
IC301C
UPC4570G
C318
0.1
C319
0.1
C320
100/16(RA)
C321
100/16(RA)
X_03A
X_03B
C37
10/6.3(TA)
C38
0.1
IC12
VCOM
AINL-/NC
AINL+
AINR-/NC
AINR+
VA
VD
VT
VREF
AGND
DGND
P/S
DEM0
ADMODE
AOUTL-
AOUTL+
AOUTR-
AOUTR+
SDTI/DSDL
SDTO
BICK/DCLK
LRCK/DSDR
MCLK
OVFR/DZFR
OVFL/DZFL
CCLK/CKS1
CDTI/CKS0
DFS0
PDN
CSN/DIF
AK4620B
C31
10/6.3(TA)
C33
0.1
C32
10/6.3(TA)
C34
0.1
R31
R32
R33
R34
R35
R36
R37
R38
R39
R40
22
330
IIS_PORT1
BCLK
LRCK
MCLK
S_CLOCK
S_DATA
PDN
CS34
C35
33p
C36
33p
R448
5.1k(RR)
C416
100p(HU)
C415
22/50(PZ)
IC401B
UPC4570G
C417
NIU
DA403
MA147-(TX)
X_04A
X_04B

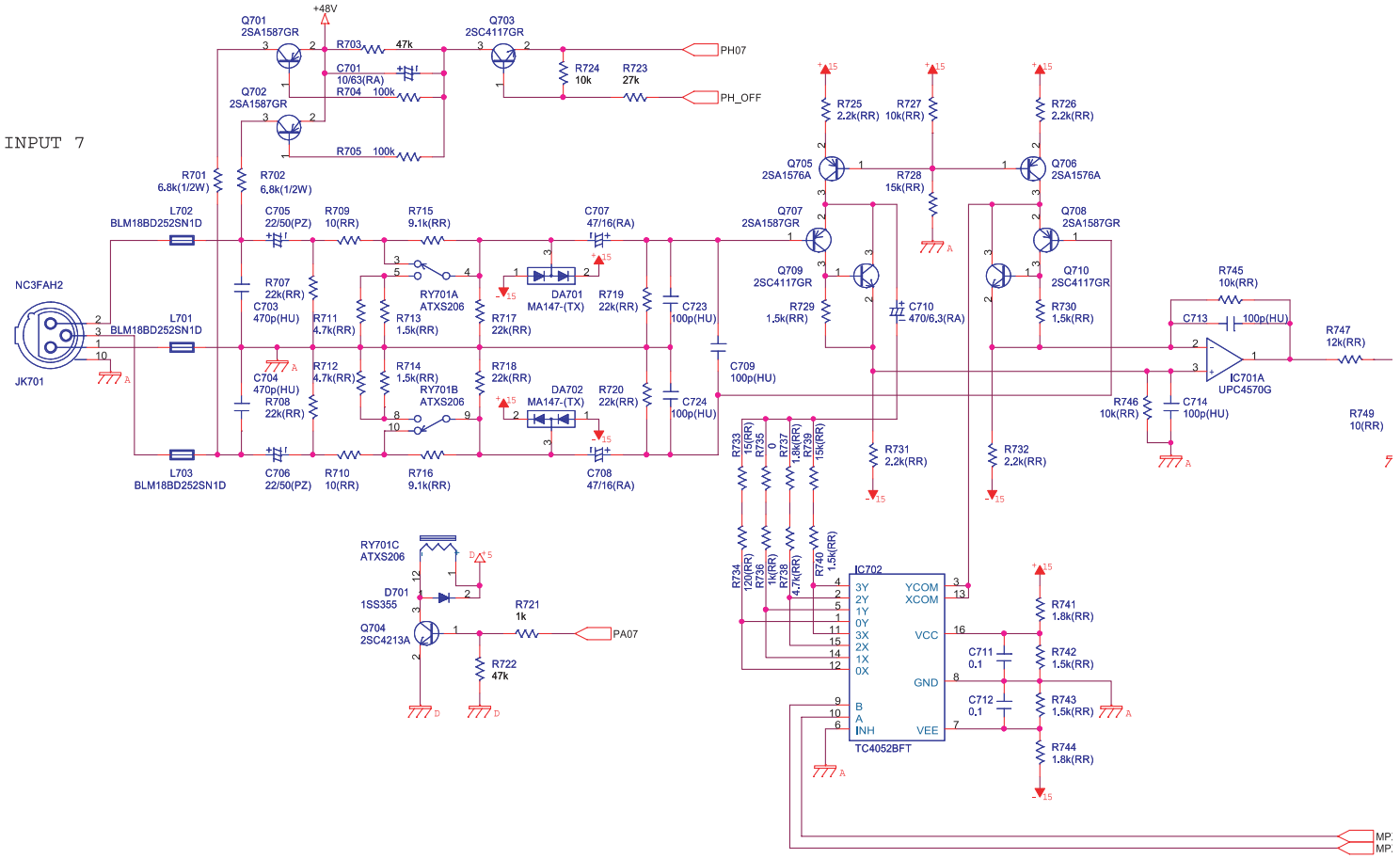
Circuit Diagram (Input Board: 3/5)



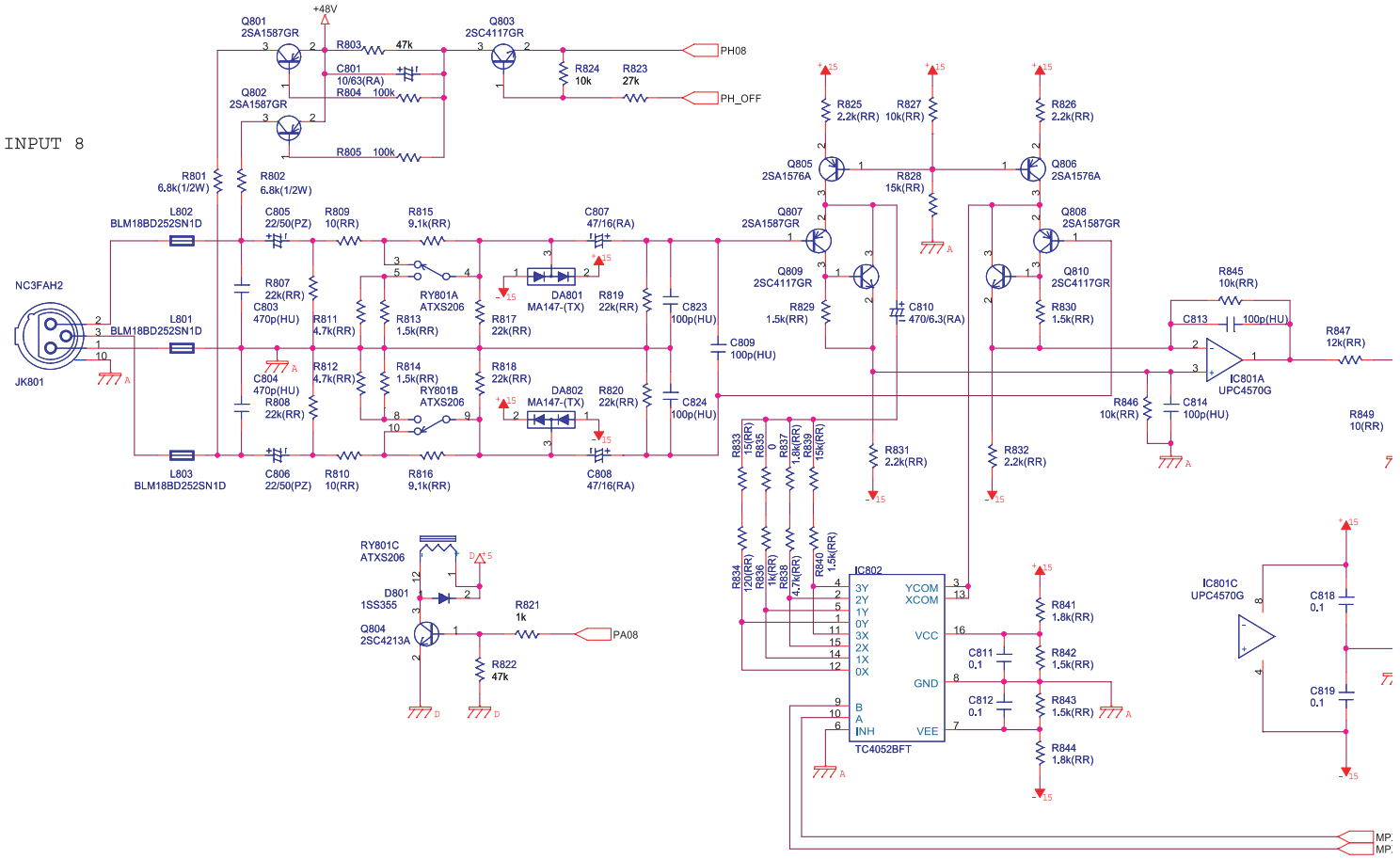

R548
5.1k(RR)
C516
100p(HU)
IC501B
UPC4570G
C515
22/50(PZ)
C517
NIU
DA503
MA147-(TX)
IC501C
UPC4570G
C518
0.1
C520
100/16(RA)
C519
0.1
C521
100/16(RA)
X_05A
X_05B
IC13
C57
10/6.3(TA)
C58
0.1
VCOM
AINL-/NC
AINL+
AINR-/NC
AINR+
AOUTL-
AOUTL+
AOUTR-
AOUTR+
VA
VD
VT
VREF
AGND
DGND
P/S
DEM0
ADMODE
SDTI/DSDL
SDTO
BICK/DCLK
LRCK/DSDR
MCLK
OVFR/DZFR
OVFL/DZFL
CCLK/CKS1
CDTI/CKS0
DFS0
PDN
CSN/DIF
AK4620B
C51
10/6.3(TA)
C53
0.1
C52
10/6.3(TA)
C54
0.1
R51
R52
R53
R54
R55
R56
R57
R58
R59
R60
22
330
IIS_PORT2
BCLK
LRCK
MCLK
S_CLOCK
S_DATA
PDN
CS56
C55
33p
C56
33p
R648
5.1k(RR)
C616
100p(HU)
IC601B
UPC4570G
C615
22/50(PZ)
C617
NIU
DA603
MA147-(TX)
X_06A
X_06B

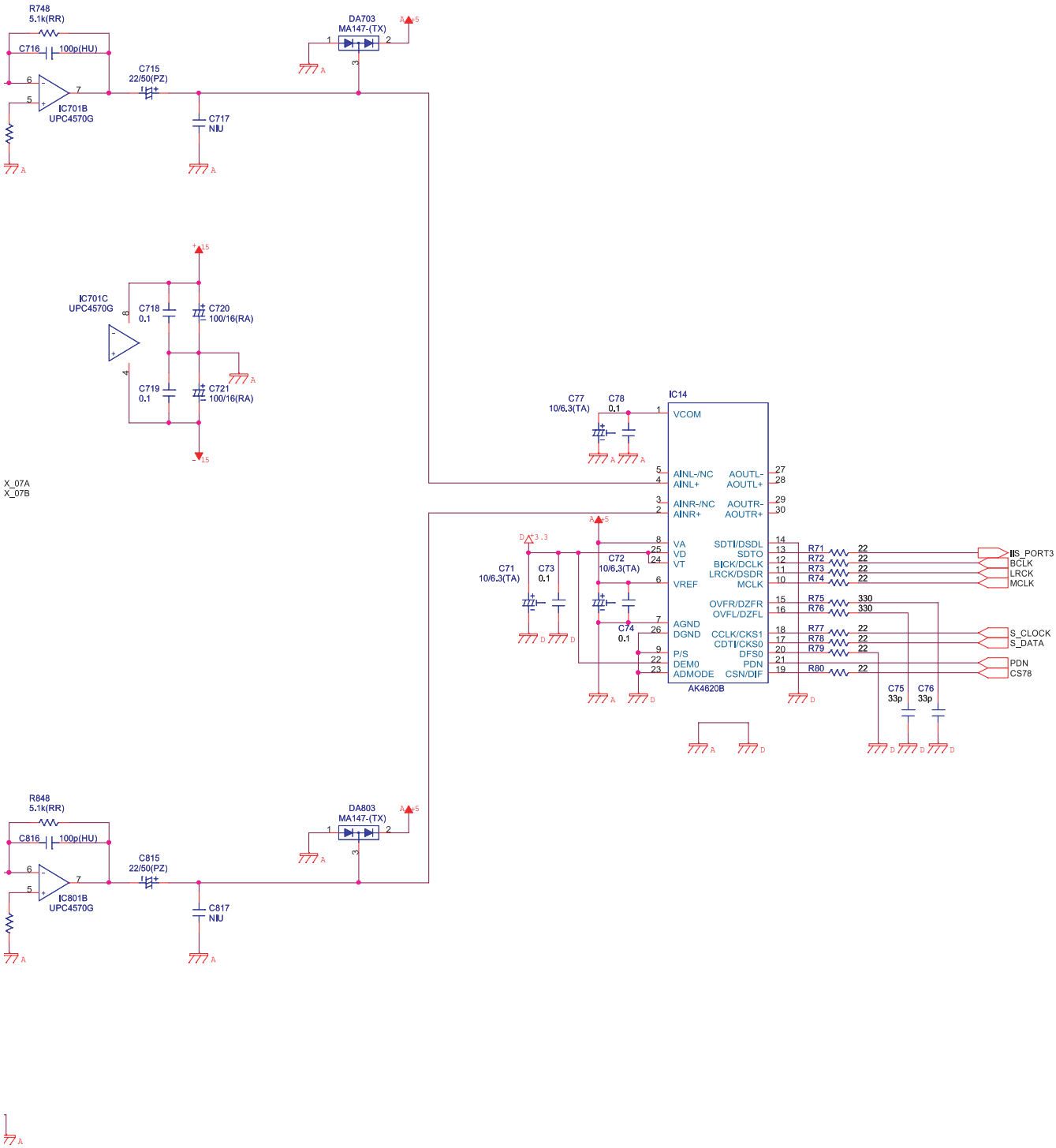
Circuit Diagram (Input Board: 4/5)

INPUT 7

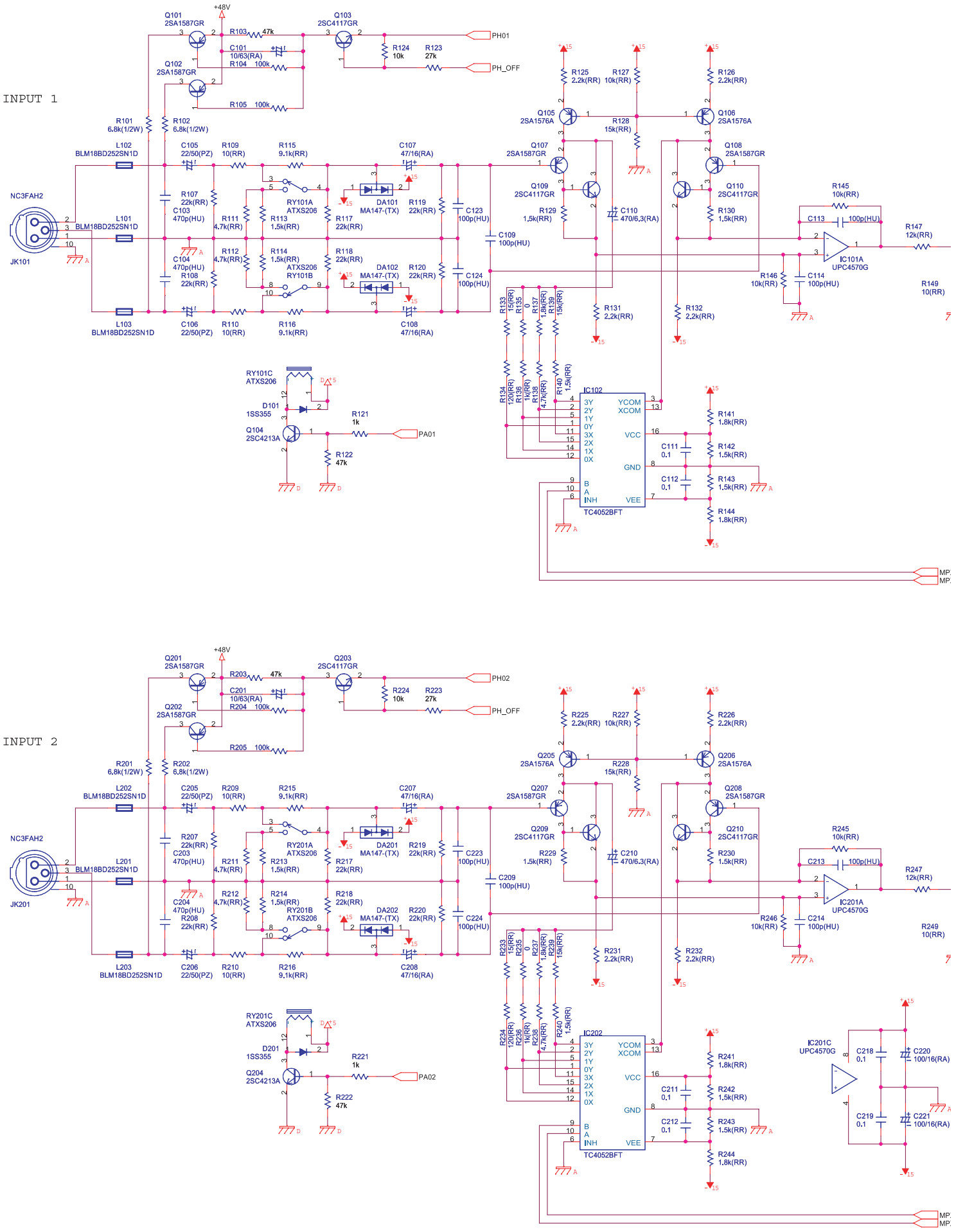


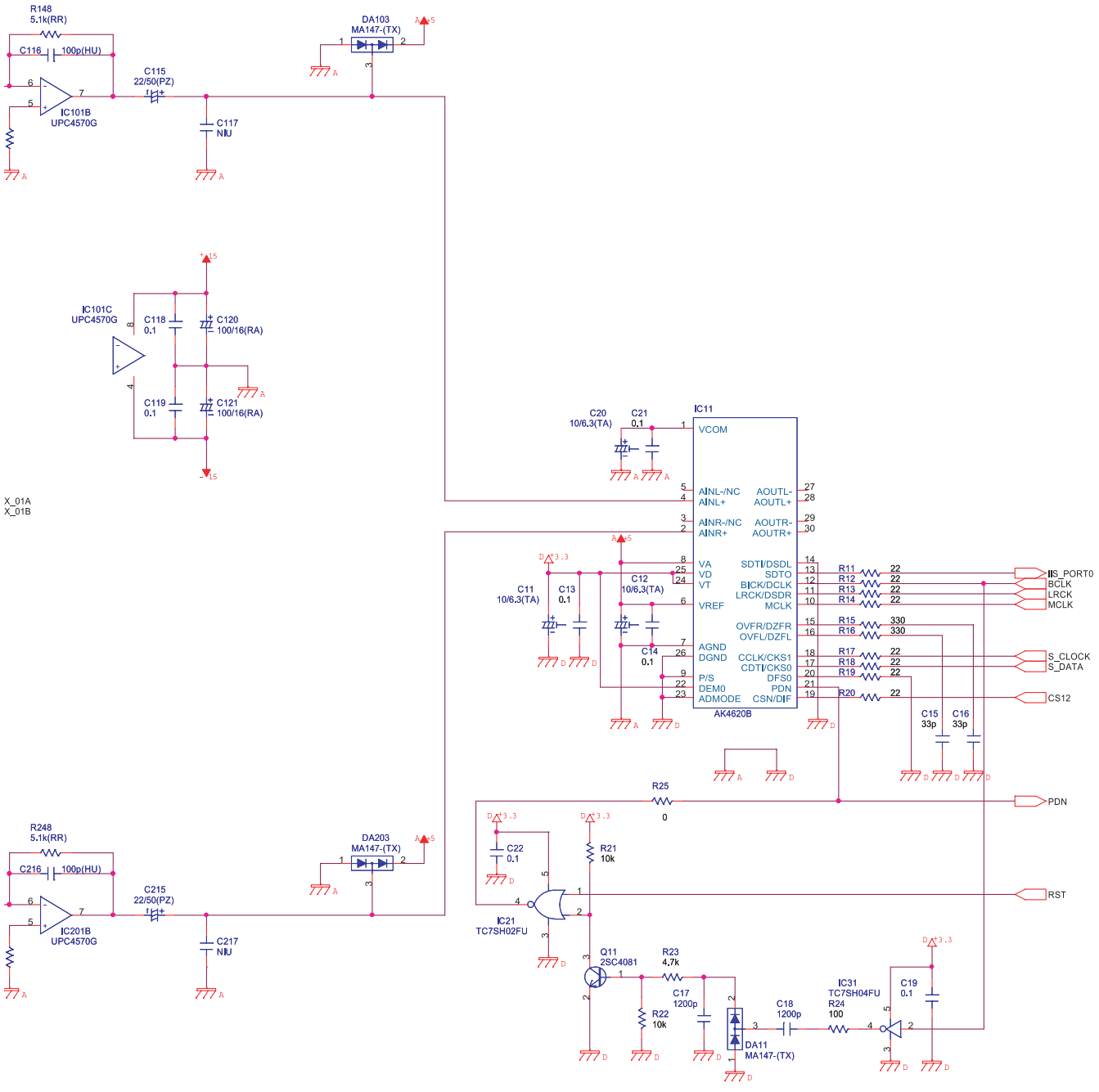
INPUT 8



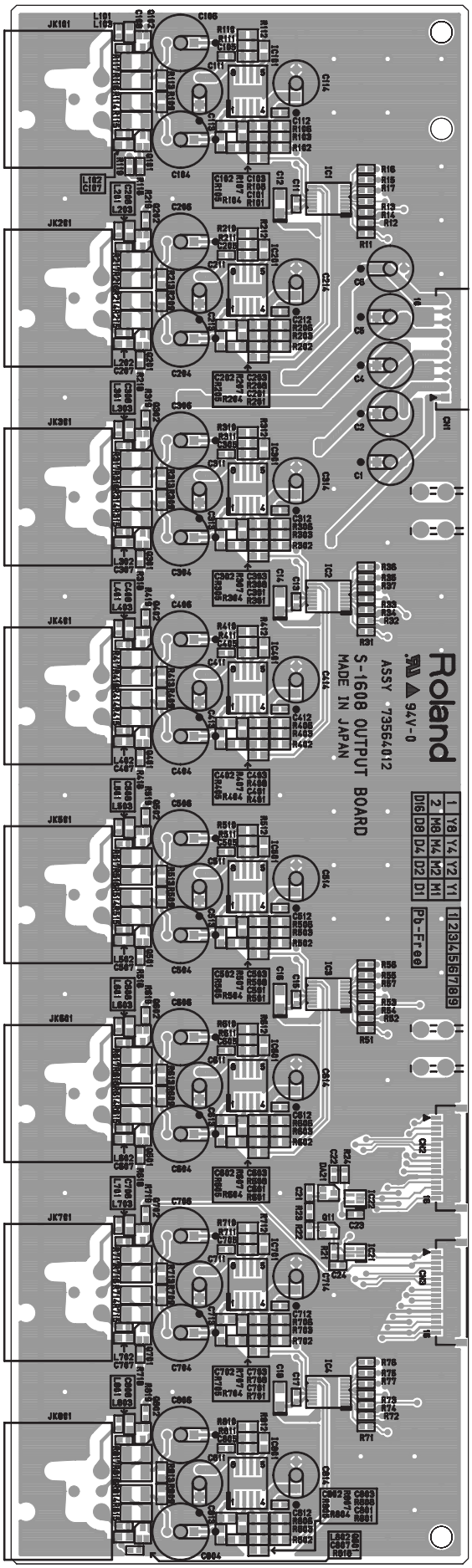

R748
5.1k(RR)
C716
100p(HU)
C715
22/50(PZ)
IC701B
UPC4570G
DA703
MA147-(TX)
C717
NIU
IC701C
UPC4570G
C718
0.1
C720
100/16(RA)
C719
0.1
C721
100/16(RA)
X_07A
X_07B
IC14
C77
10/6.3(TA)
C78
0.1
VCOM
AINL-/NC
AINL+
AINR-/NC
AINR+
AOUTL-
AOUTL+
AOUTR-
AOUTR+
VA
VD
VT
VREF
AGND
DGND
P/S
DEM0
ADMODE
SDTI/DSDL
SDTO
BICK/DCLK
LRCK/DSDR
MCLK
OVFR/DZFR
OVFL/DZFL
CCLK/CKS1
CDTI/CKS0
DFS0
PDN
CSN/DIF
AK4620B
C71
10/6.3(TA)
C73
0.1
C72
10/6.3(TA)
C74
0.1
R71
R72
R73
R74
R75
R76
R77
R78
R79
R80
22
330
IIS_PORT3
BCLK
LRCK
MCLK
S_CLOCK
S_DATA
PDN
CS78
C75
33p
C76
33p
R848
5.1k(RR)
C816
100p(HU)
C815
22/50(PZ)
IC801B
UPC4570G
DA803
MA147-(TX)
C817
NIU
X_08A
X_08B

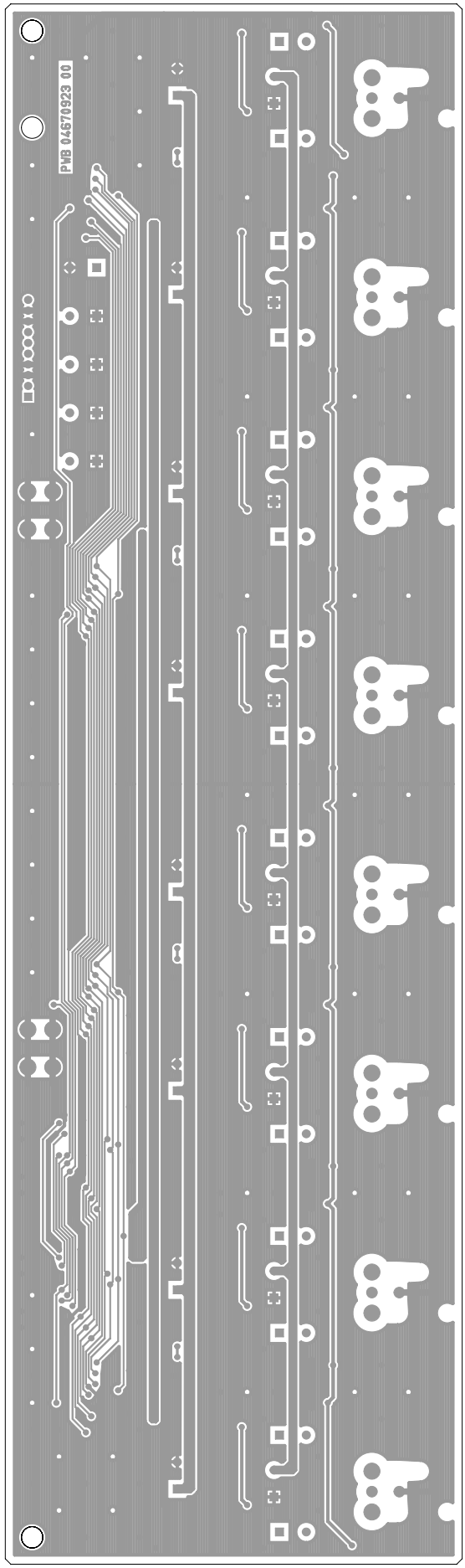
Circuit Diagram (Input Board: 5/5)



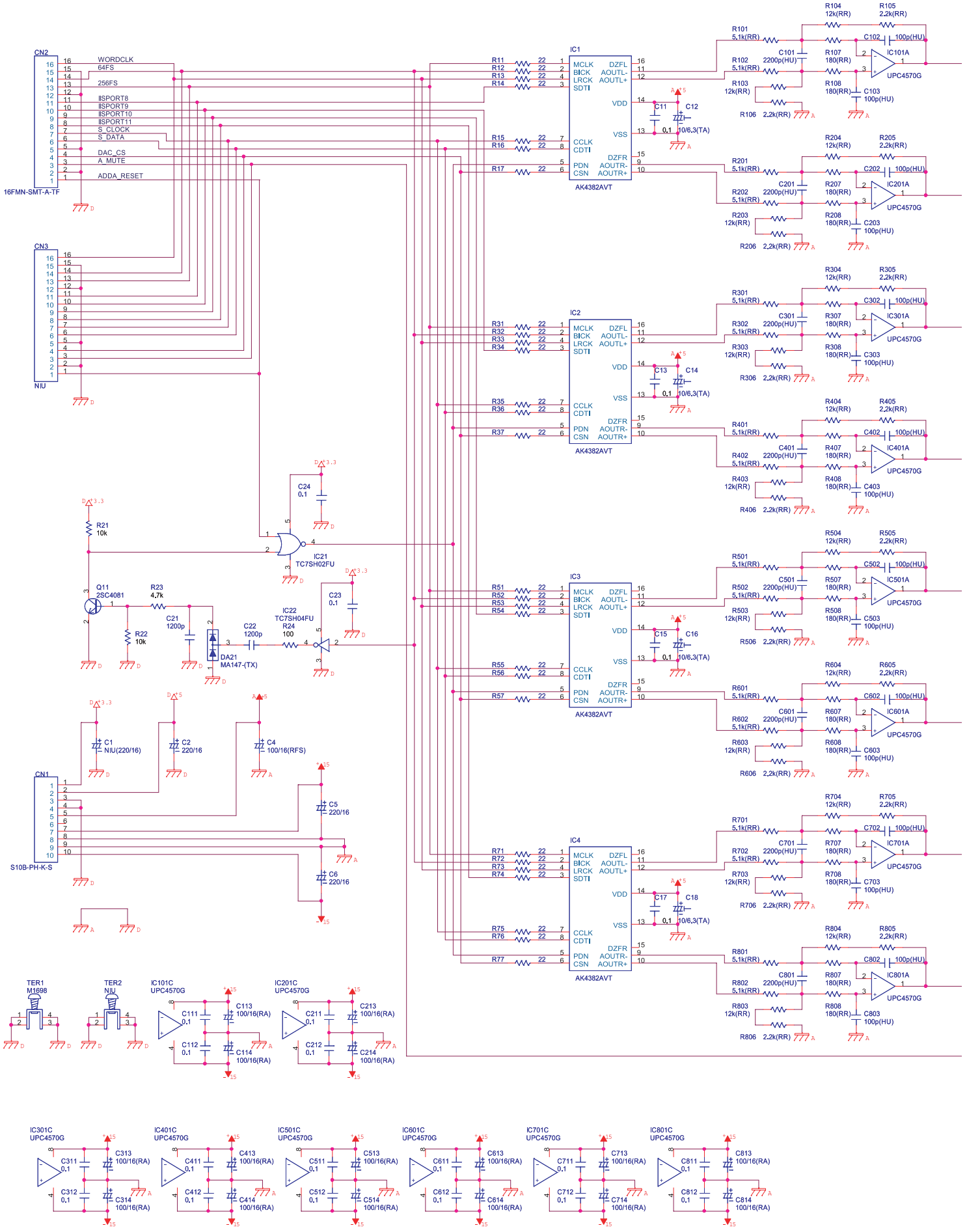

R148
5.1k(RR)
C116
100p(HU)
IC101B
UPC4570G
C115
22/50(PZ)
C117
NIU
DA103
MA147-(TX)
IC101C
UPC4570G
C118
0.1
C120
100/16(RA)
C119
0.1
C121
100/16(RA)
X_01A
X_01B
IC11
VCOM
AINL-/NC
AINL+
AINR-/NC
AINR+
VA
VD
VT
VREF
AGND
DGND
P/S
DEM0
ADMODE
AOUTL-
AOUTL+
AOUTR-
AOUTR+
SDTI/DSDL
SDTO
BICK/DCLK
LRCK/DSDR
MCLK
OVFR/DZFR
OVFL/DZFL
CCLK/CKS1
CDTI/CKS0
DFS0
PDN
CSN/DIF
AK4620B
C20
10/6.3(TA)
C21
0.1
C11
10/6.3(TA)
C13
0.1
C12
10/6.3(TA)
C14
0.1
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
22
330
IIS_PORT0
BCLK
LRCK
MCLK
S_CLOCK
S_DATA
CS12
C15
33p
C16
33p
R25
0
PDN
RST
R248
5.1k(RR)
C216
100p(HU)
IC201B
UPC4570G
C215
22/50(PZ)
C217
NIU
DA203
MA147-(TX)
C22
0.1
R21
10k
IC21
TC7SH02FU
Q11
2SC4081
R23
4.7k
R22
10k
C17
1200p
C18
1200p
DA11
MA147-(TX)
IC31
TC7SH04FU
R24
100
C19
0.1
X_02A
X_02B

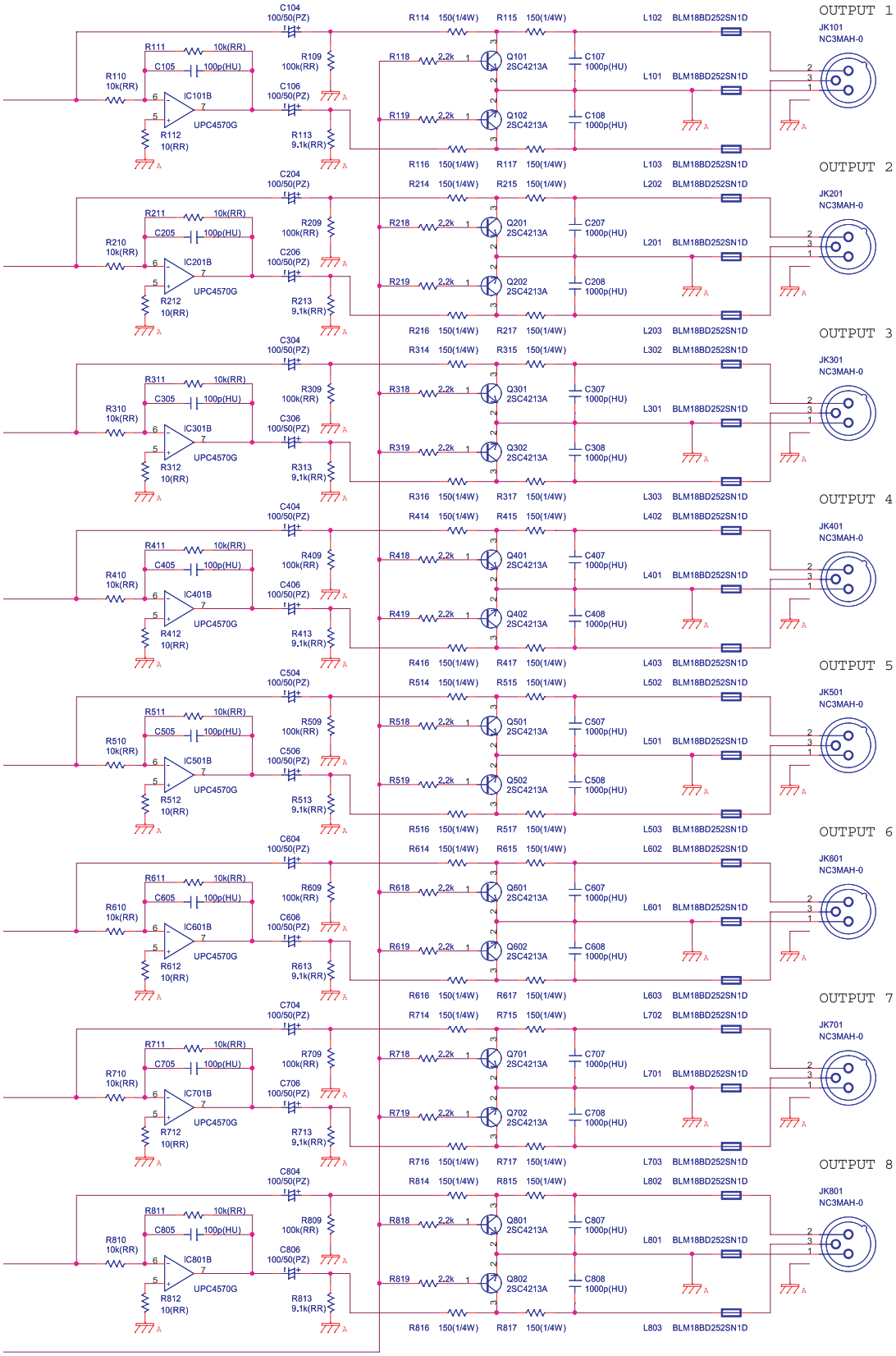
Circuit Board (Output Board)



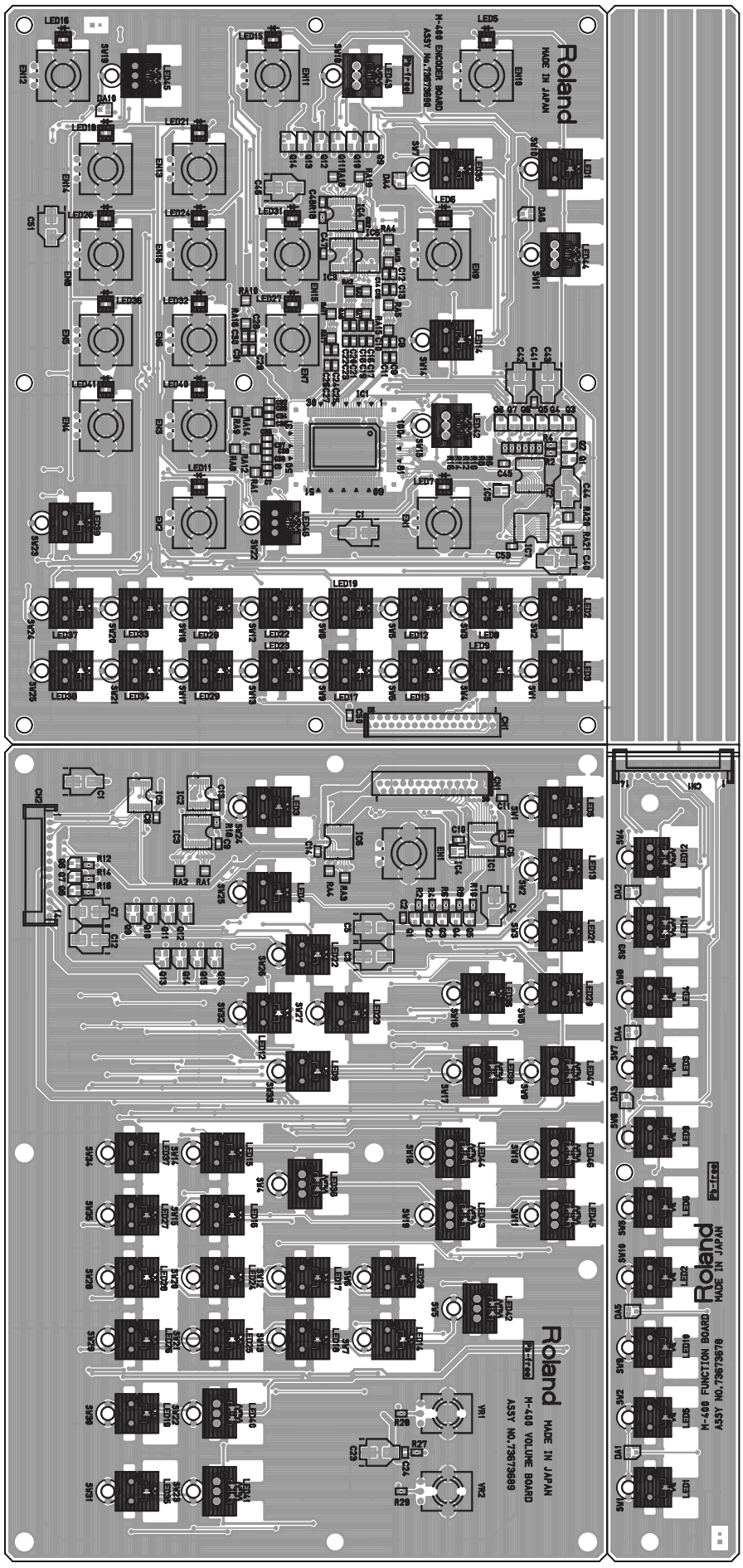

PWB 04670923 00

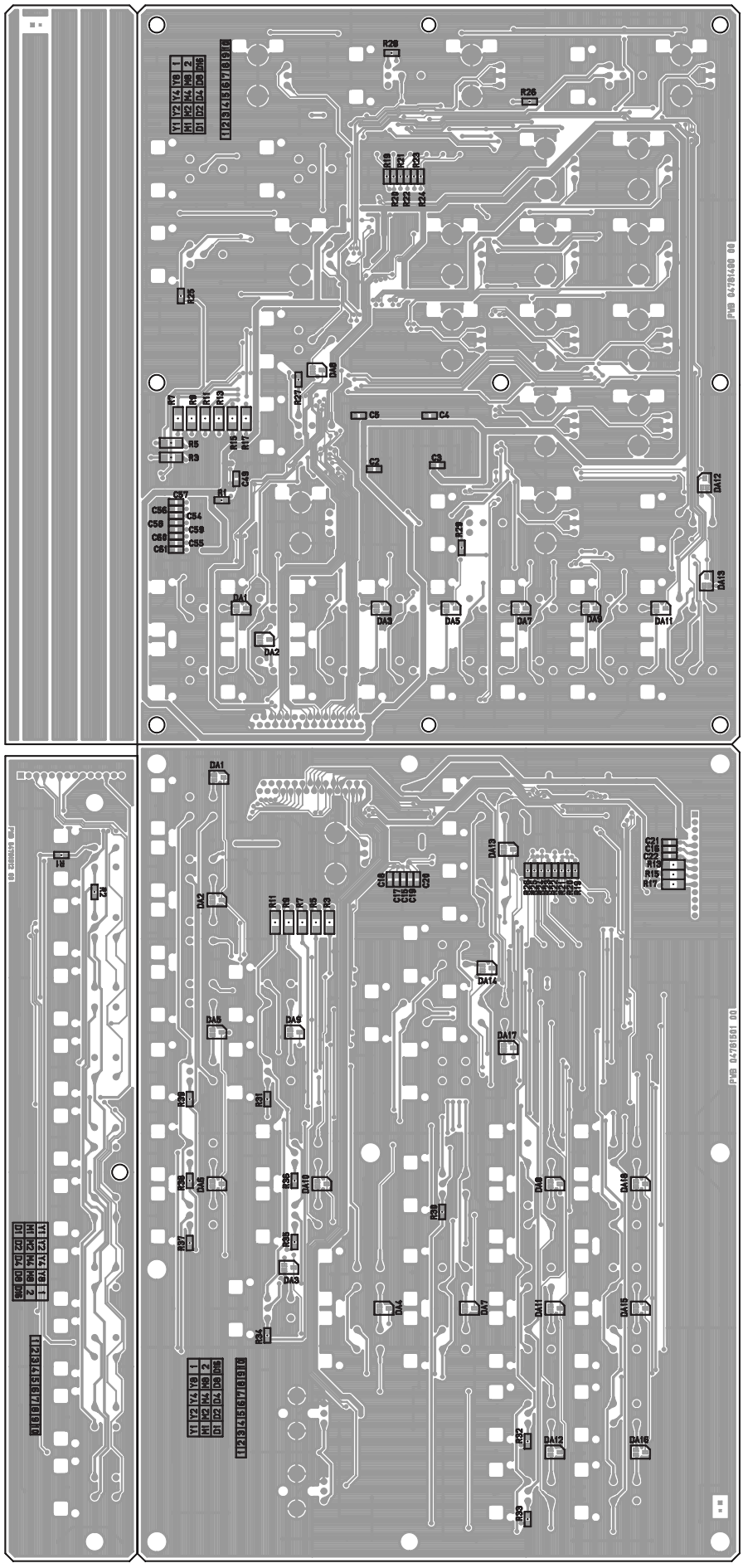
Circuit Diagram (Output Board)



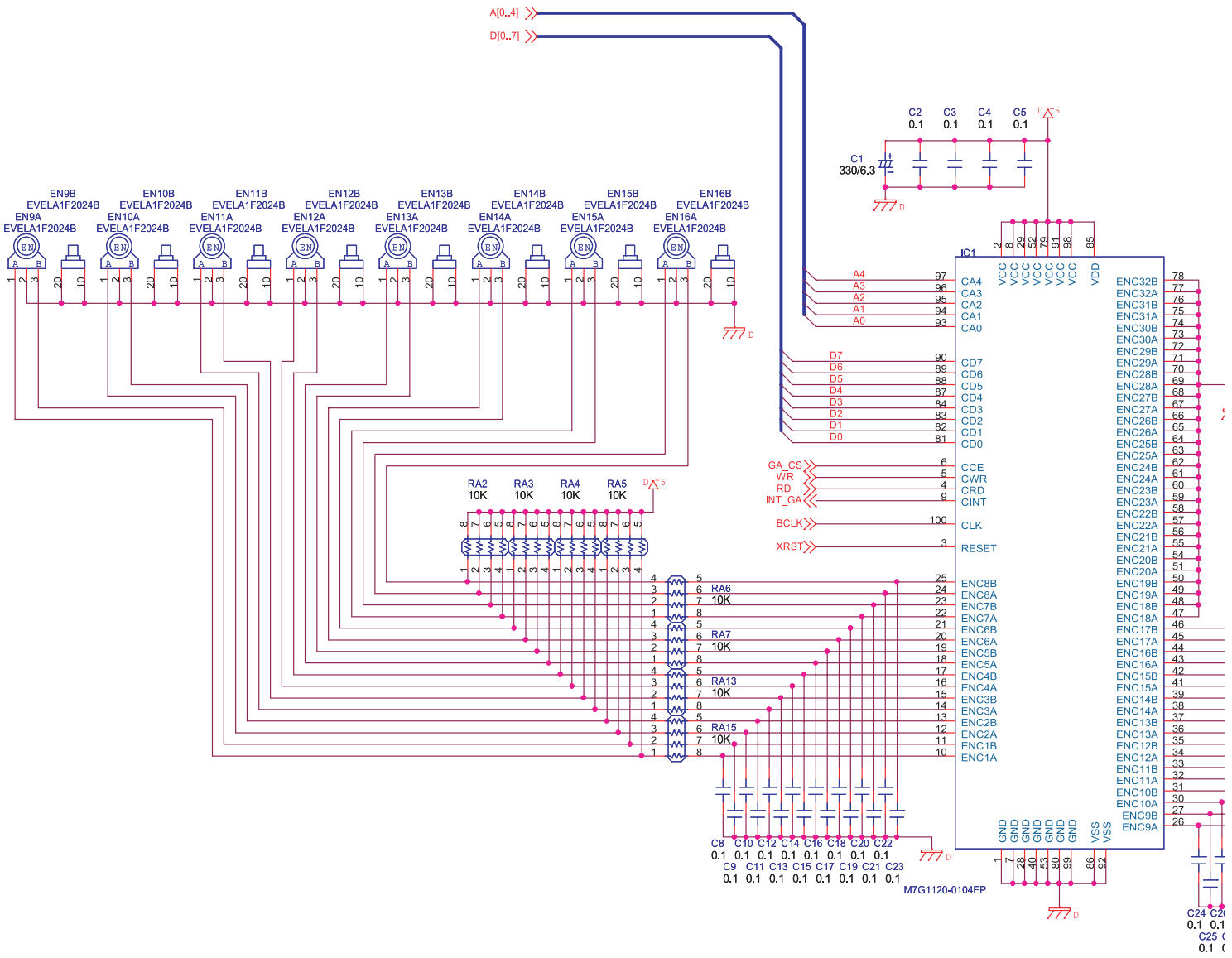

OUTPUT 1
OUTPUT 2
OUTPUT 3
OUTPUT 4
OUTPUT 5
OUTPUT 6
OUTPUT 7
OUTPUT 8
IC101B
IC201B
IC301B
IC401B
IC501B
IC601B
IC701B
IC801B
UPC4570G
Q101 2SC4213A
Q102 2SC4213A
Q201 2SC4213A
Q202 2SC4213A
Q301 2SC4213A
Q302 2SC4213A
Q401 2SC4213A
Q402 2SC4213A
Q501 2SC4213A
Q502 2SC4213A
Q601 2SC4213A
Q602 2SC4213A
Q701 2SC4213A
Q702 2SC4213A
Q801 2SC4213A
Q802 2SC4213A
JK101 NC3MAH-0
JK201 NC3MAH-0
JK301 NC3MAH-0
JK401 NC3MAH-0
JK501 NC3MAH-0
JK601 NC3MAH-0
JK701 NC3MAH-0
JK801 NC3MAH-0
L101 BLM18BD252SN1D
L102 BLM18BD252SN1D
L103 BLM18BD252SN1D
L201 BLM18BD252SN1D
L202 BLM18BD252SN1D
L203 BLM18BD252SN1D
L301 BLM18BD252SN1D
L302 BLM18BD252SN1D
L303 BLM18BD252SN1D
L401 BLM18BD252SN1D
L402 BLM18BD252SN1D
L403 BLM18BD252SN1D
L501 BLM18BD252SN1D
L502 BLM18BD252SN1D
L503 BLM18BD252SN1D
L601 BLM18BD252SN1D
L602 BLM18BD252SN1D
L603 BLM18BD252SN1D
L701 BLM18BD252SN1D
L702 BLM18BD252SN1D
L703 BLM18BD252SN1D
L801 BLM18BD252SN1D
L802 BLM18BD252SN1D
L803 BLM18BD252SN1D

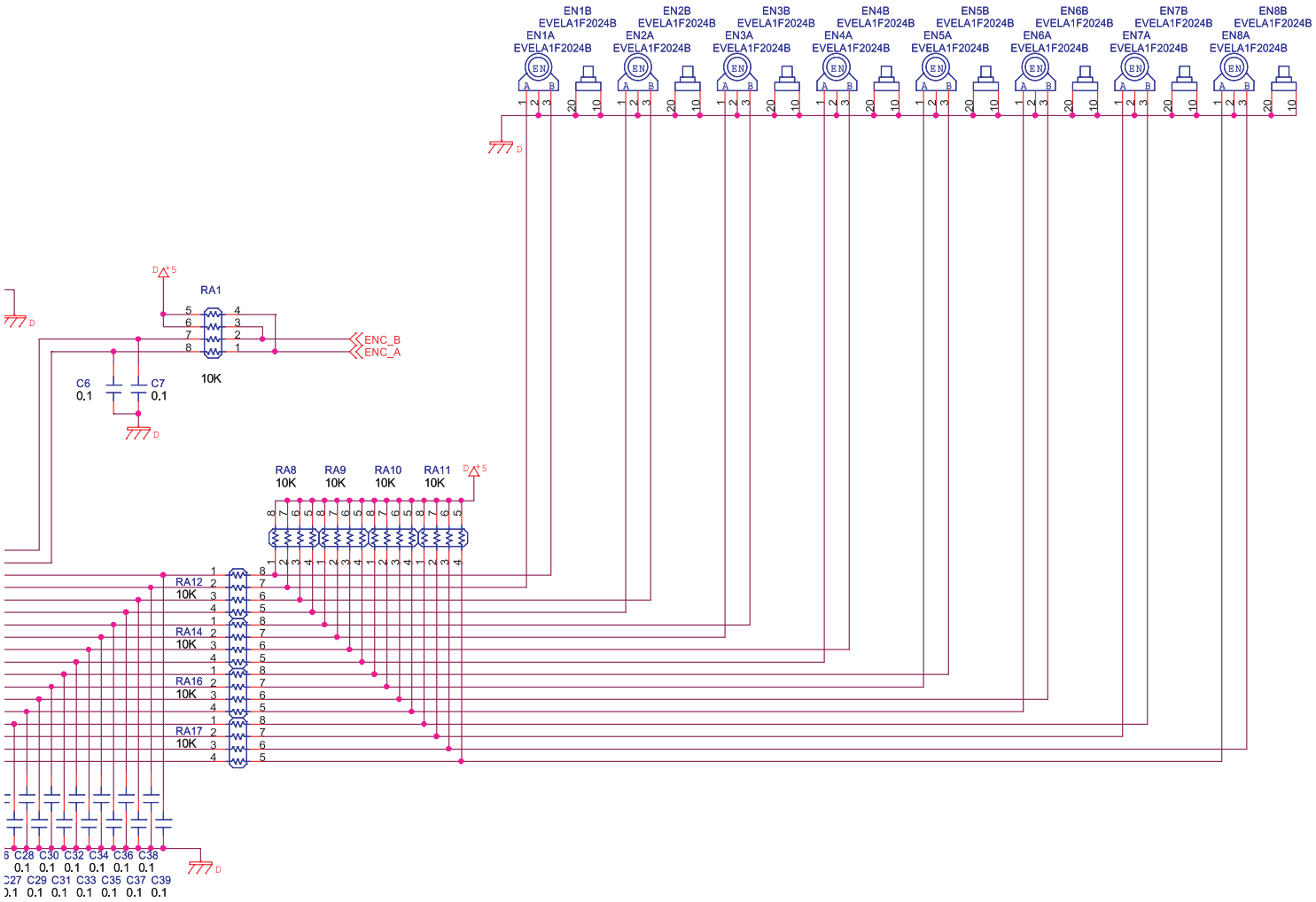
Circuit Board (Encoder, Volume, Function Board)



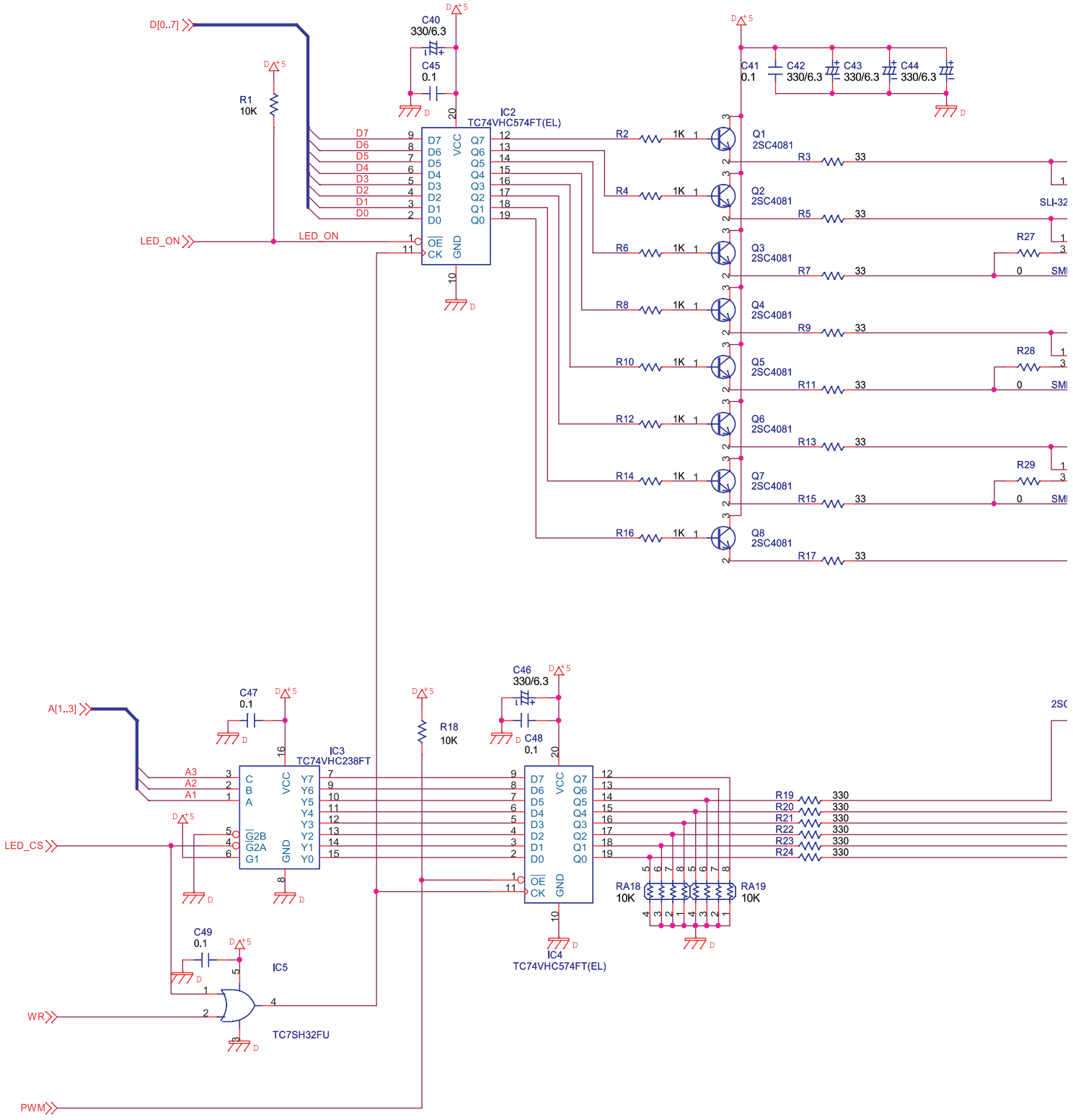


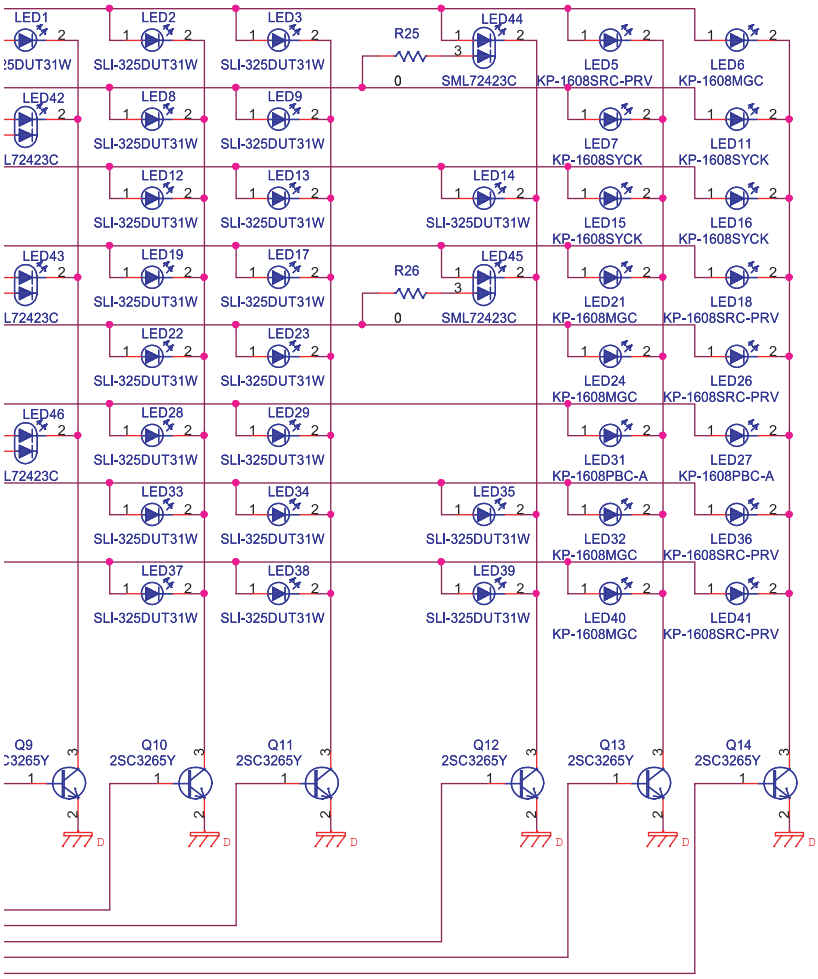
Circuit Diagram (Encoder Board: 1/3)



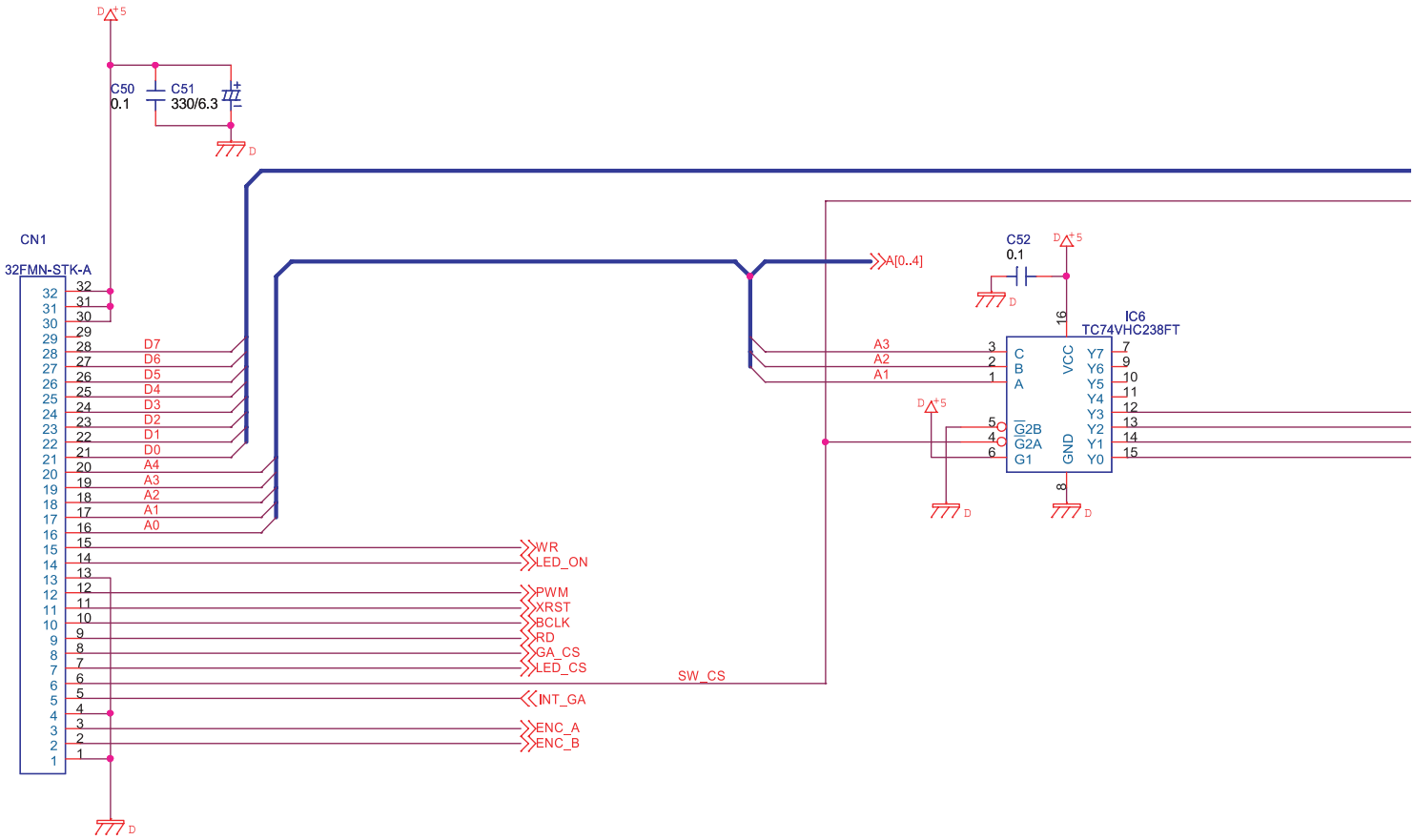

EN1B
EVELA1F2024B
EN1A
EVELA1F2024B
EN2B
EVELA1F2024B
EN2A
EVELA1F2024B
EN3B
EVELA1F2024B
EN3A
EVELA1F2024B
EN4B
EVELA1F2024B
EN4A
EVELA1F2024B
EN5B
EVELA1F2024B
EN5A
EVELA1F2024B
EN6B
EVELA1F2024B
EN6A
EVELA1F2024B
EN7B
EVELA1F2024B
EN7A
EVELA1F2024B
EN8B
EVELA1F2024B
EN8A
EVELA1F2024B
RA1
10K
ENC_B
ENC_A
C6
0.1
C7
0.1
RA8
10K
RA9
10K
RA10
10K
RA11
10K
RA12
10K
RA14
10K
RA16
10K
RA17
10K
C28 C30 C32 C34 C36 C38
C27 C29 C31 C33 C35 C37 C39
0.1

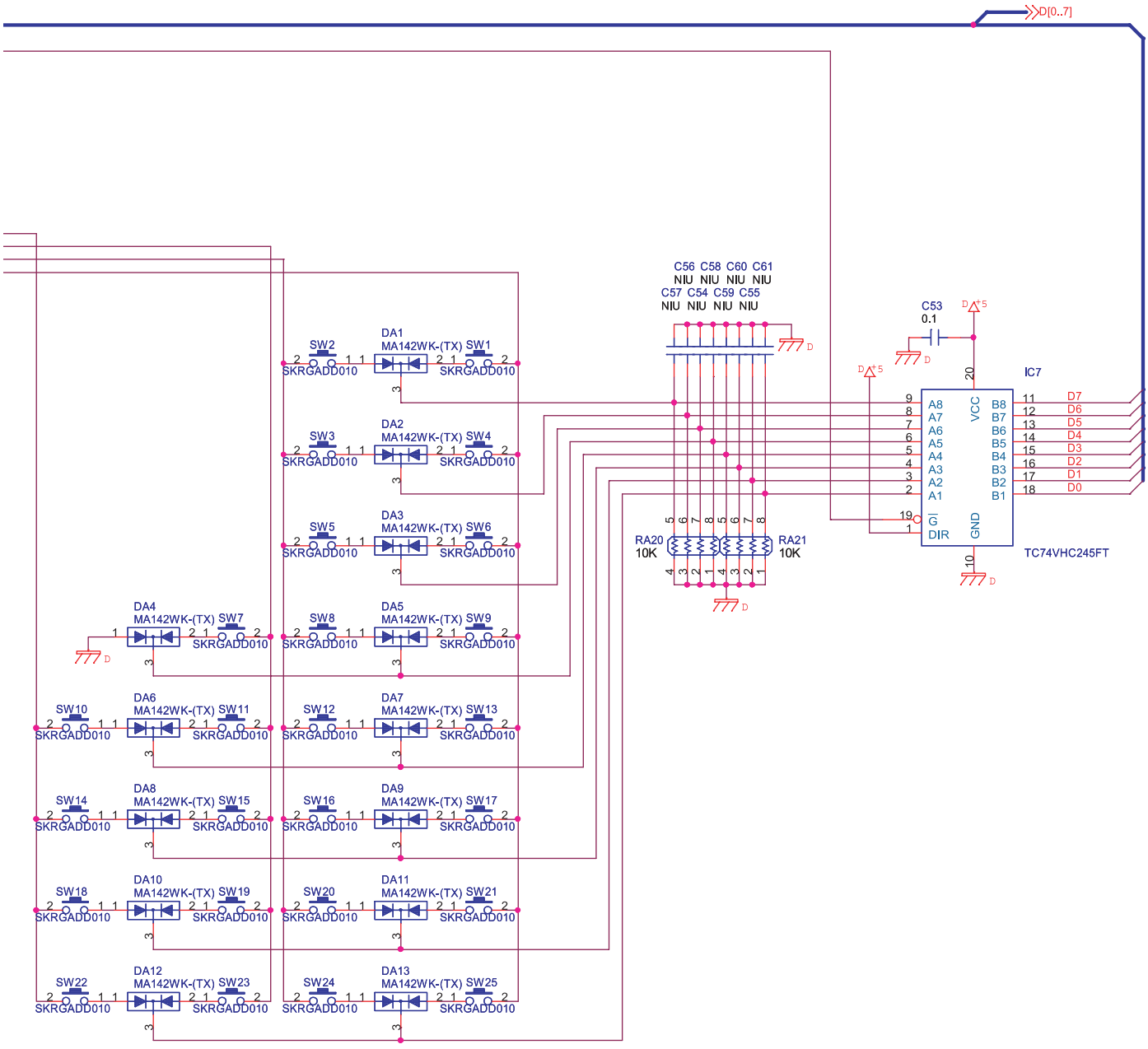
Circuit Diagram (Encoder Board: 2/3)



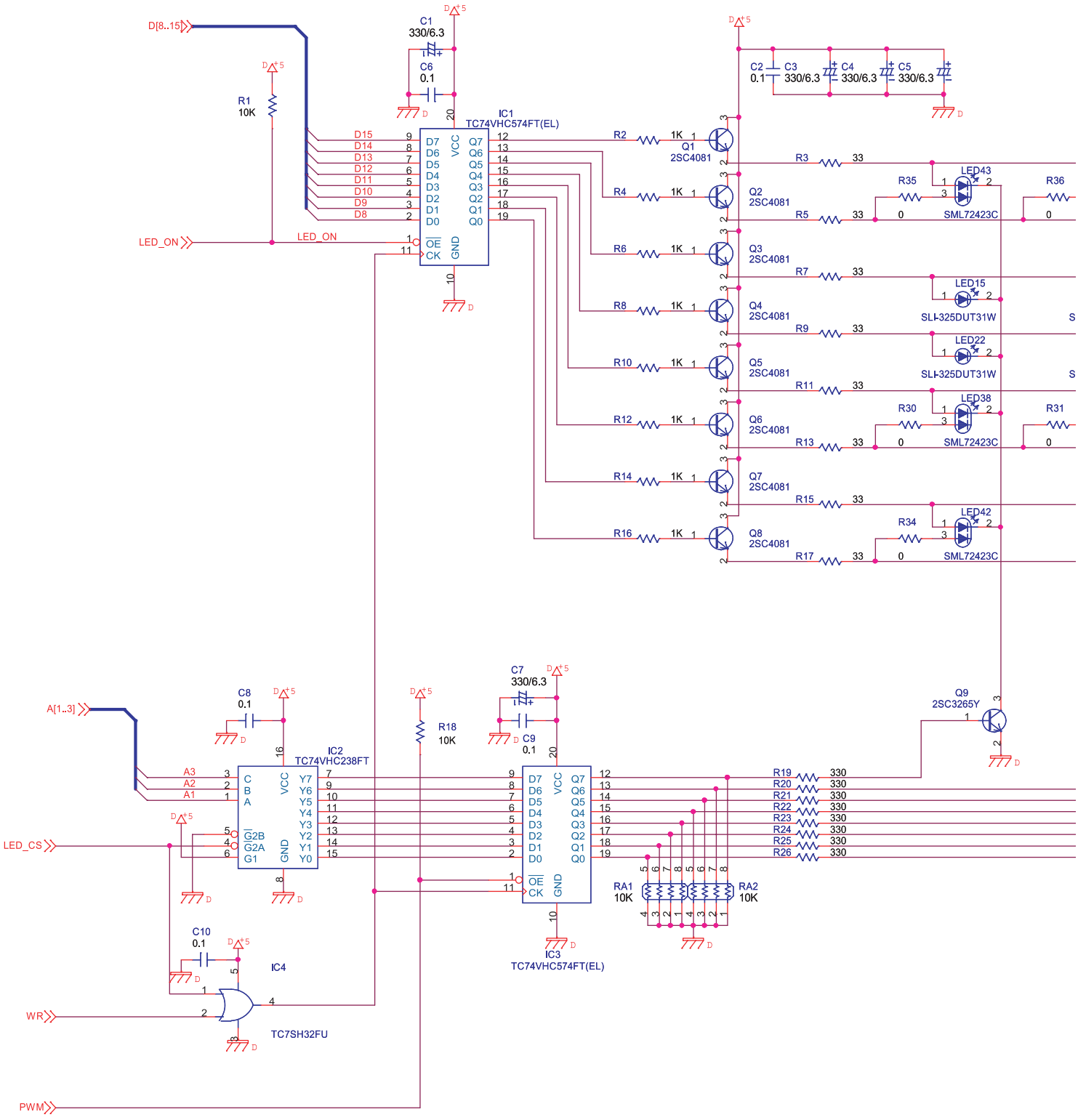

LED1
LED2
SLI-325DUT31W
LED3
SLI-325DUT31W
R25
0
LED44
SML72423C
LED5
KP-1608SRC-PRV
LED6
KP-1608MGC
LED42
L72423C
LED8
SLI-325DUT31W
LED9
SLI-325DUT31W
LED7
KP-1608SYCK
LED11
KP-1608SYCK
LED12
SLI-325DUT31W
LED13
SLI-325DUT31W
LED14
SLI-325DUT31W
LED15
KP-1608SYCK
LED16
KP-1608SYCK
LED43
L72423C
LED19
SLI-325DUT31W
LED17
SLI-325DUT31W
R26
0
LED45
SML72423C
LED21
KP-1608MGC
LED18
KP-1608SRC-PRV
LED22
SLI-325DUT31W
LED23
SLI-325DUT31W
LED24
KP-1608MGC
LED26
KP-1608SRC-PRV
LED46
L72423C
LED28
SLI-325DUT31W
LED29
SLI-325DUT31W
LED31
KP-1608PBC-A
LED27
KP-1608PBC-A
LED33
SLI-325DUT31W
LED34
SLI-325DUT31W
LED35
SLI-325DUT31W
LED32
KP-1608MGC
LED36
KP-1608SRC-PRV
LED37
SLI-325DUT31W
LED38
SLI-325DUT31W
LED39
SLI-325DUT31W
LED40
KP-1608MGC
LED41
KP-1608SRC-PRV
Q9
Q10
2SC3265Y
Q11
2SC3265Y
Q12
2SC3265Y
Q13
2SC3265Y
Q14
2SC3265Y

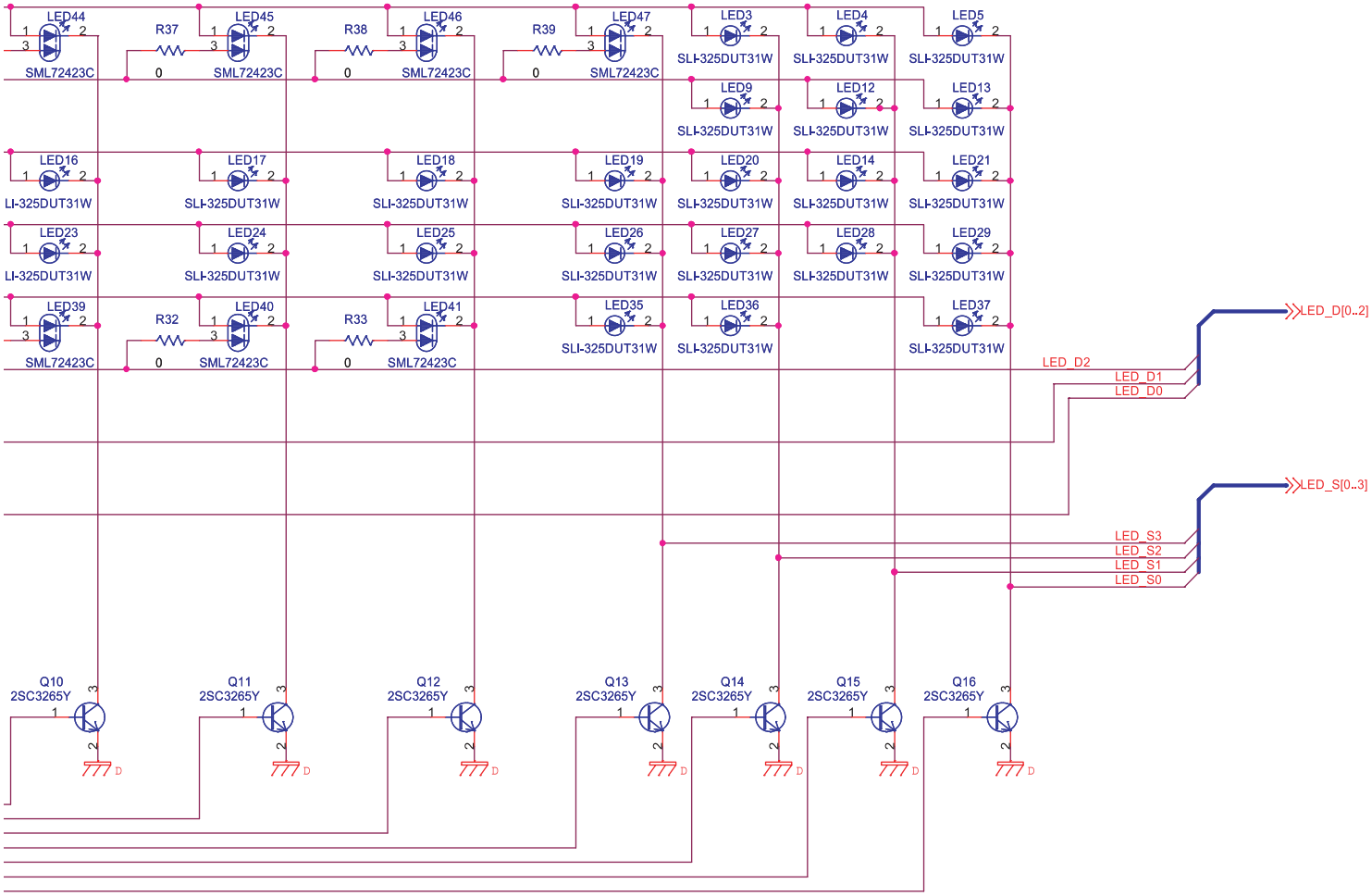
Circuit Diagram (Encoder Board: 3/3)



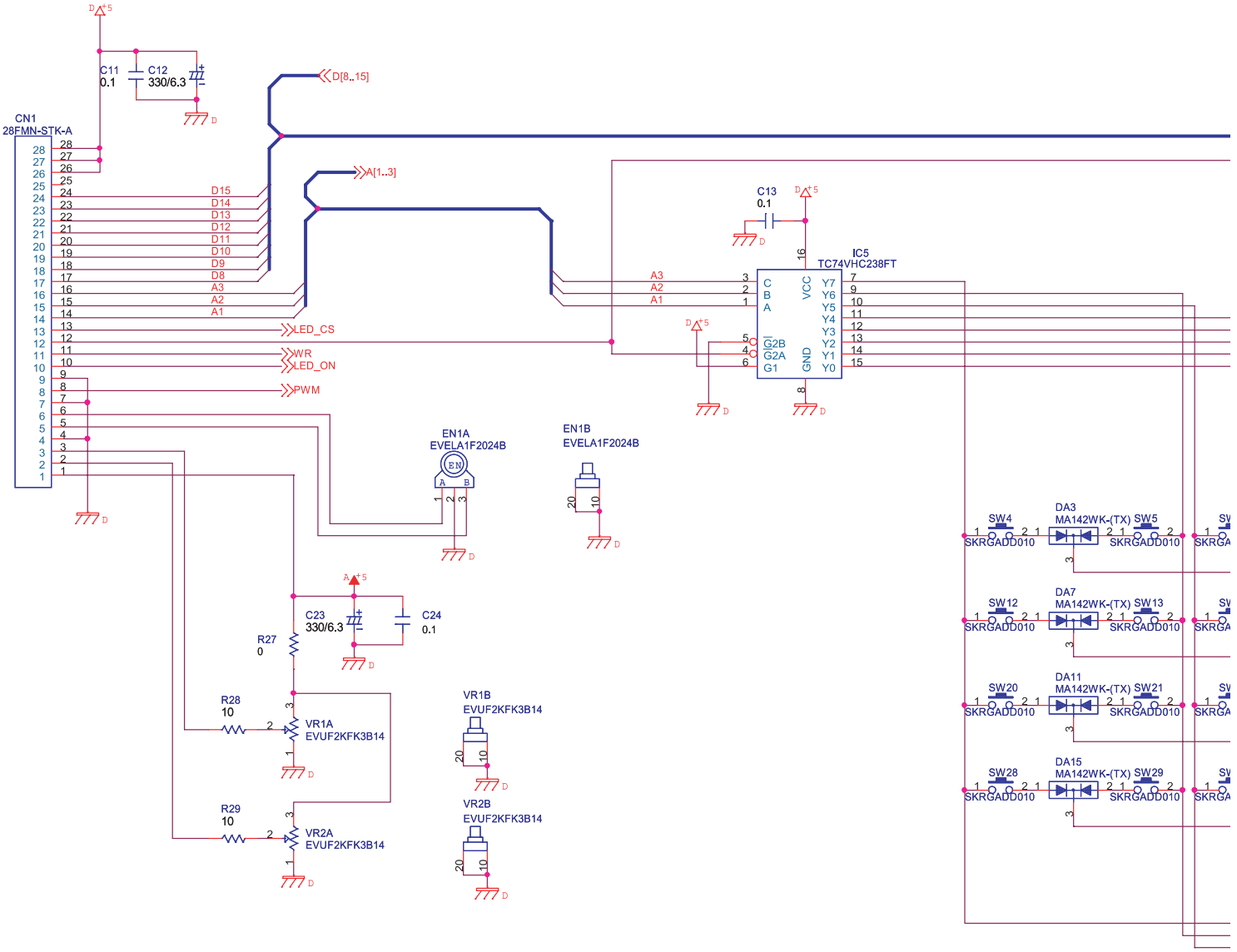

D[0..7]
C56 C58 C60 C61
NIU NIU NIU NIU
C57 C54 C59 C55
NIU NIU NIU NIU
C53
0.1
+5
IC7
A8 A7 A6 A5 A4 A3 A2 A1
B8 B7 B6 B5 B4 B3 B2 B1
VCC
GND
G
DIR
D7 D6 D5 D4 D3 D2 D1 D0
TC74VHC245FT
RA20
10K
RA21
10K
DA1 MA142WK-(TX) SW1
DA2 MA142WK-(TX) SW4
DA3 MA142WK-(TX) SW6
DA4 MA142WK-(TX) SW7
DA5 MA142WK-(TX) SW9
DA6 MA142WK-(TX) SW11
DA7 MA142WK-(TX) SW13
DA8 MA142WK-(TX) SW15
DA9 MA142WK-(TX) SW17
DA10 MA142WK-(TX) SW19
DA11 MA142WK-(TX) SW21
DA12 MA142WK-(TX) SW23
DA13 MA142WK-(TX) SW25
SW2 SW3 SW5 SW8 SW10 SW12 SW14 SW16 SW18 SW20 SW22 SW24
SKRGADD010

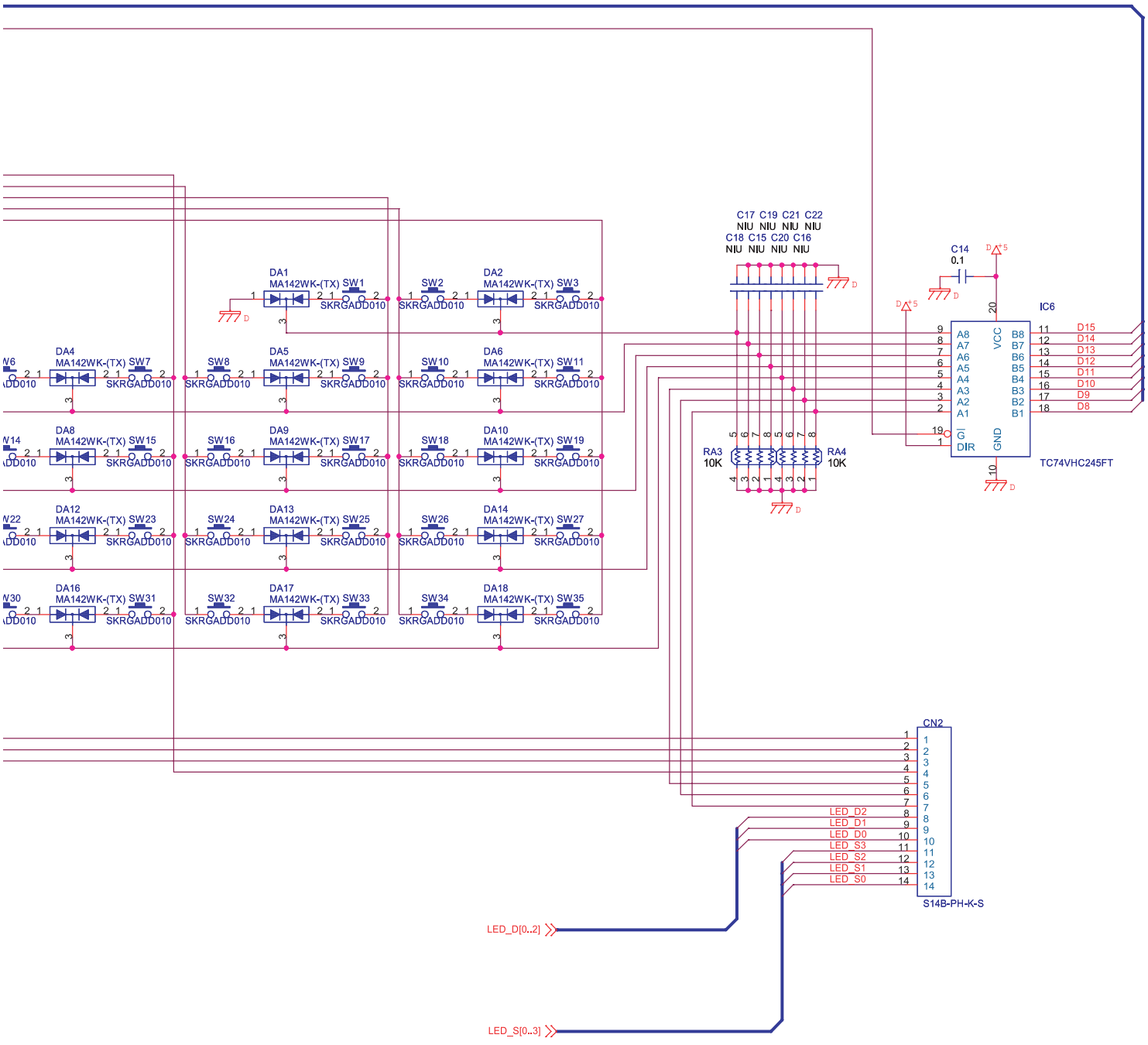
Circuit Diagram (Volume Board: 1/2)



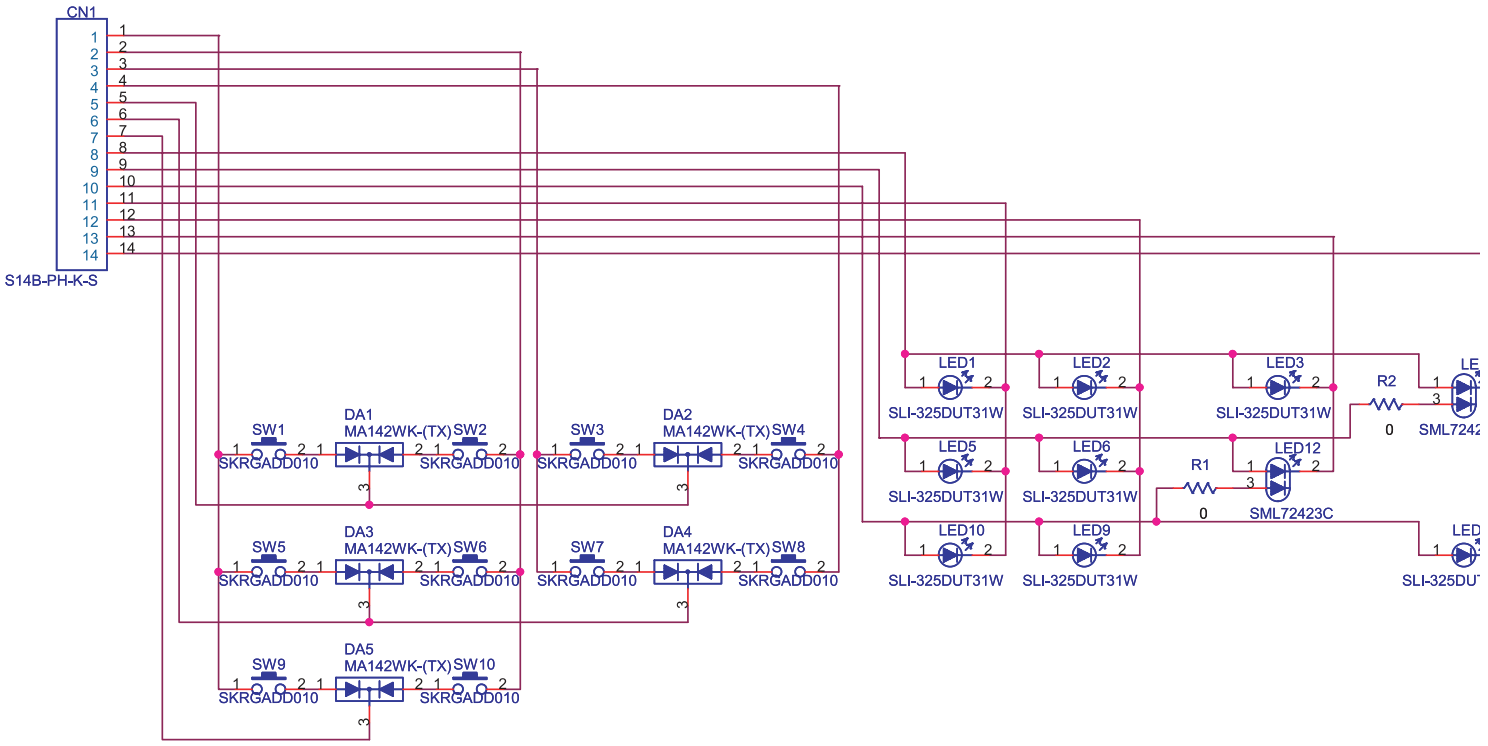

LED44
SML72423C
R37
0
LED45
SML72423C
R38
0
LED46
SML72423C
R39
0
LED47
SML72423C
LED3
LED4
LED5
LED9
LED12
LED13
SLI-325DUT31W
LED16
LED17
LED18
LED19
LED20
LED14
LED21
LED23
LED24
LED25
LED26
LED27
LED28
LED29
LED39
SML72423C
R32
0
LED40
SML72423C
R33
0
LED41
SML72423C
LED35
LED36
LED37
LED_D[0..2]
LED_D2
LED_D1
LED_D0
LED_S[0..3]
LED_S3
LED_S2
LED_S1
LED_S0
Q10
2SC3265Y
Q11
2SC3265Y
Q12
2SC3265Y
Q13
2SC3265Y
Q14
2SC3265Y
Q15
2SC3265Y
Q16
2SC3265Y

Circuit Diagram (Volume Board: 2/2)

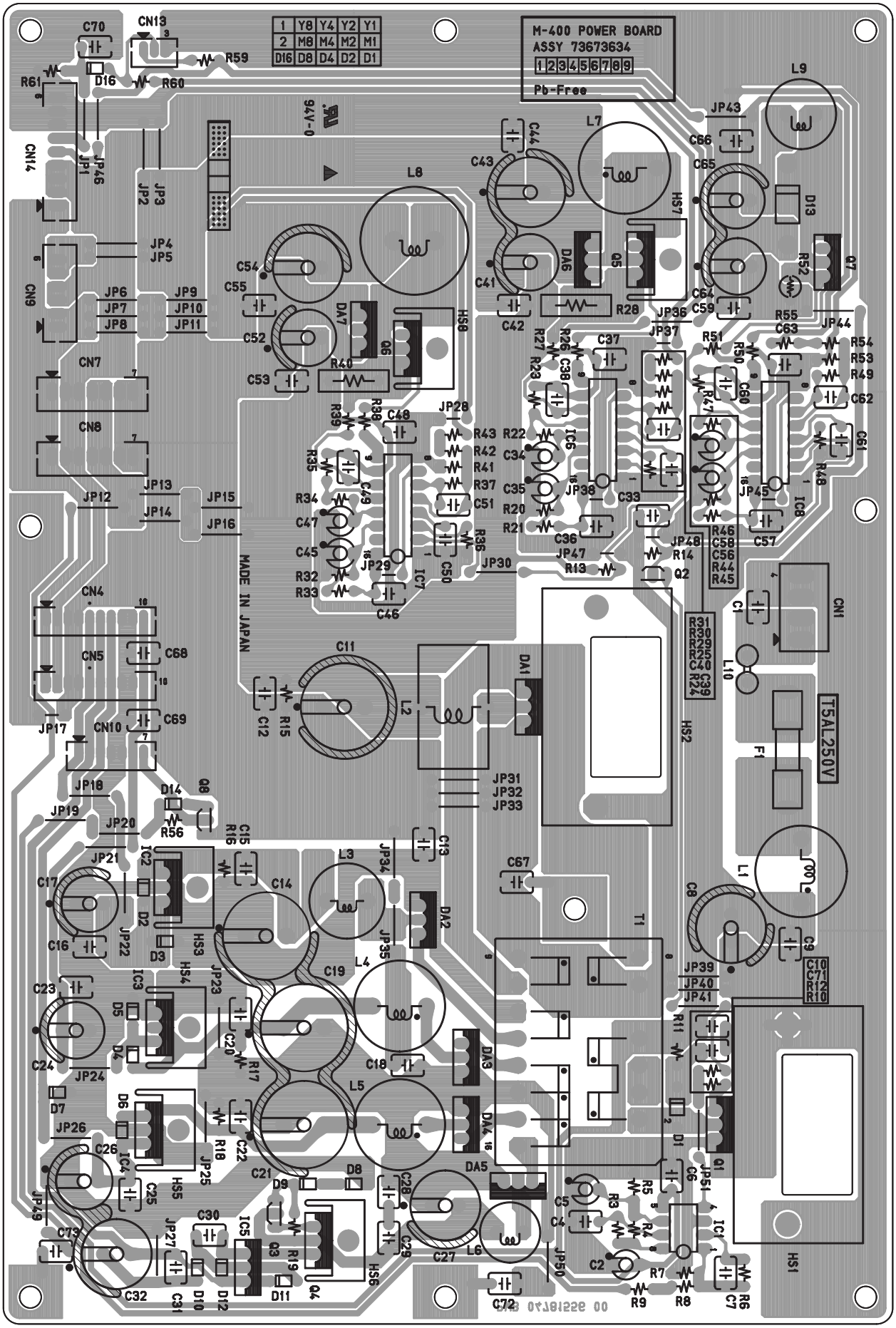



C17 C19 C21 C22
NIU NIU NIU NIU
C18 C15 C20 C16
NIU NIU NIU NIU
C14
0.1
IC6
DA1
MA142WK-(TX) SW1
SW2
DA2
MA142WK-(TX) SW3
SKRGADD010
DA4
MA142WK-(TX) SW7
SW8
DA5
MA142WK-(TX) SW9
SW10
DA6
MA142WK-(TX) SW11
DA8
MA142WK-(TX) SW15
SW16
DA9
MA142WK-(TX) SW17
SW18
DA10
MA142WK-(TX) SW19
DA12
MA142WK-(TX) SW23
SW24
DA13
MA142WK-(TX) SW25
SW26
DA14
MA142WK-(TX) SW27
DA16
MA142WK-(TX) SW31
SW32
DA17
MA142WK-(TX) SW33
SW34
DA18
MA142WK-(TX) SW35
RA3
10K
RA4
10K
A8 A7 A6 A5 A4 A3 A2 A1
B8 B7 B6 B5 B4 B3 B2 B1
VCC
GND
G
DIR
D15 D14 D13 D12 D11 D10 D9 D8
TC74VHC245FT
CN2
S14B-PH-K-S
LED_D2
LED_D1
LED_D0
LED_S3
LED_S2
LED_S1
LED_S0
LED_D[0..2]
LED_S[0..3]

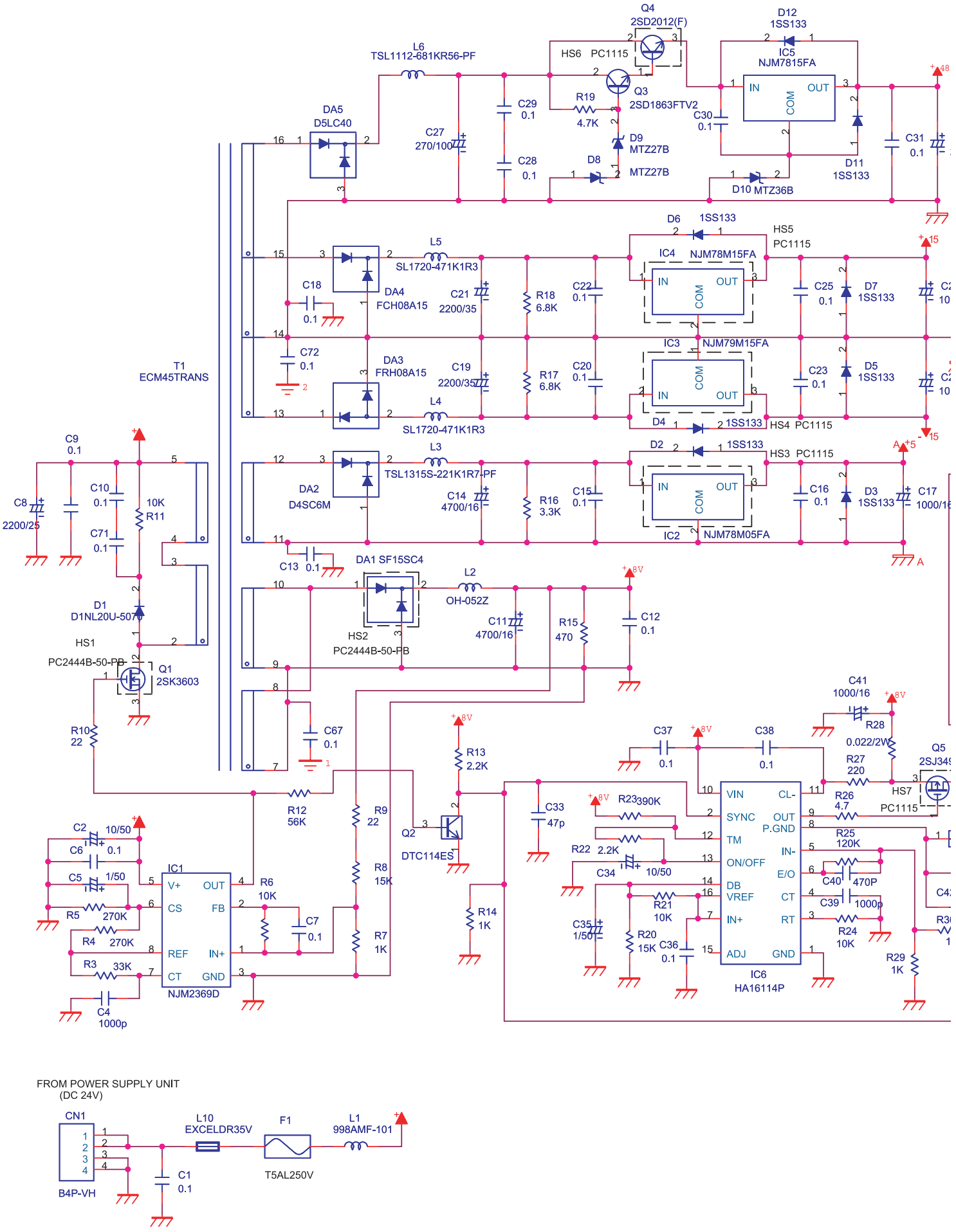
Circuit Diagram (Function Board)

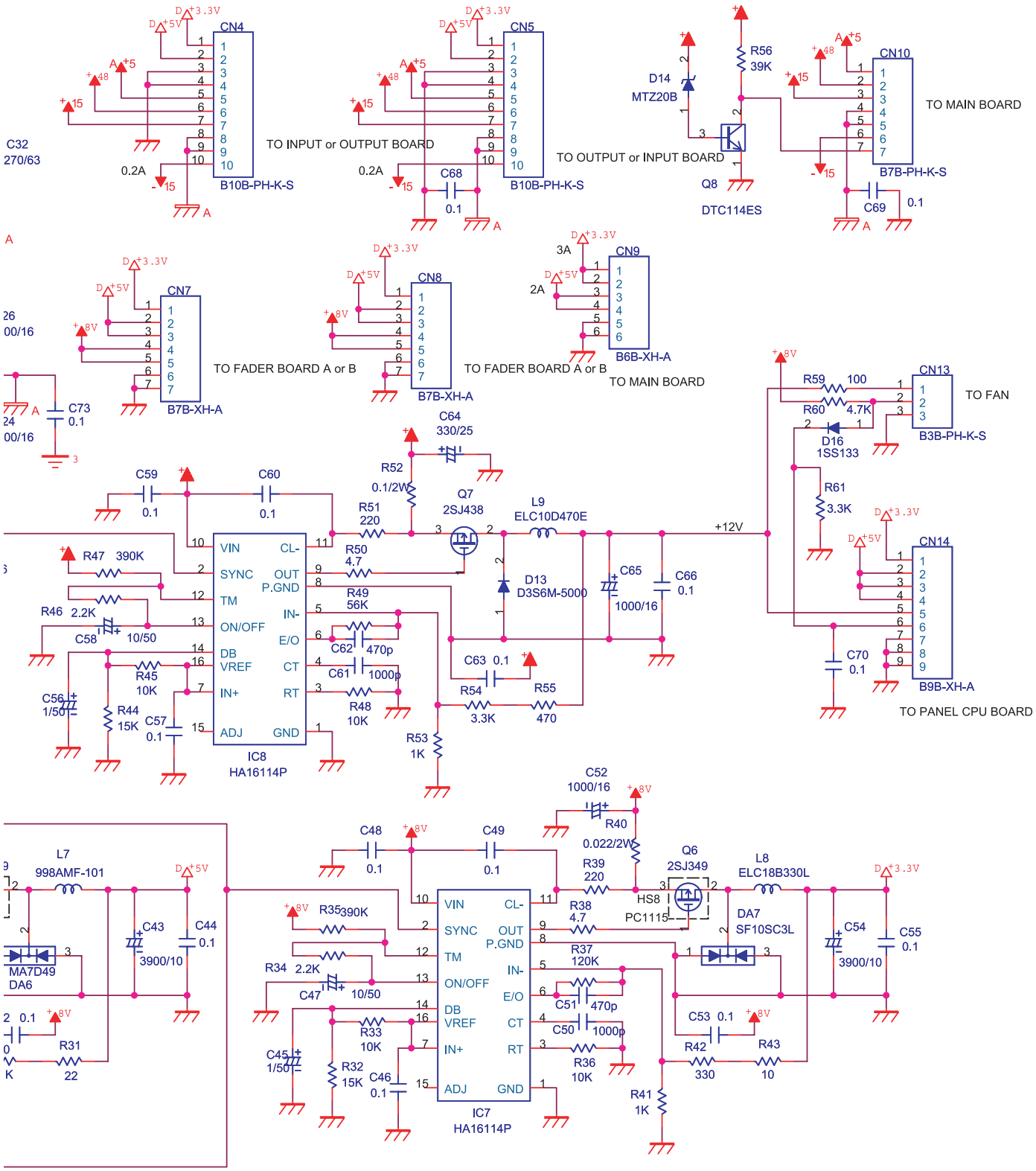


Circuit Board (Power Board)



Circuit Diagram (Power Board)




CN4
B10B-PH-K-S
TO INPUT or OUTPUT BOARD
CN5
B10B-PH-K-S
TO OUTPUT or INPUT BOARD
D14
MTZ20B
R56
39K
Q8
DTC114ES
CN10
B7B-PH-K-S
TO MAIN BOARD
C69
0.1
C32
270/63
0.2A
C68
0.1
CN7
B7B-XH-A
TO FADER BOARD A or B
CN8
B7B-XH-A
TO FADER BOARD A or B
CN9
B6B-XH-A
TO MAIN BOARD
C73
0.1
C64
330/25
R52
0.1/2W
Q7
2SJ438
L9
ELC10D470E
+12V
R59
100
R60
4.7K
D16
1SS133
CN13
B3B-PH-K-S
TO FAN
R61
3.3K
CN14
B9B-XH-A
TO PANEL CPU BOARD
C70
0.1
C59
0.1
C60
0.1
R51
220
R50
4.7
R49
56K
D13
D3S6M-5000
C65
1000/16
C66
0.1
R47 390K
R46 2.2K
C58
10/50
C62
470p
C61
1000p
C63 0.1
R54
3.3K
R55
470
R45
10K
R44
15K
C56
1/50
C57
0.1
R48
10K
R53
1K
IC8
HA16114P
VIN
SYNC
TM
ON/OFF
DB
VREF
IN+
ADJ
CL-
OUT
P.GND
IN-
E/O
CT
RT
GND
C52
1000/16
R40
0.022/2W
Q6
2SJ349
L8
ELC18B330L
HS8
PC1115
DA7
SF10SC3L
C54
3900/10
C55
0.1
C48
0.1
C49
0.1
R39
220
R38
4.7
R35 390K
R34 2.2K
C47
10/50
C51
470p
C50
1000p
R37
120K
R36
10K
R33
10K
R32
15K
C46
0.1
C45
1/50
R41
1K
C53 0.1
R42
330
R43
10
IC7
HA16114P
L7
998AMF-101
MA7D49
DA6
C43
3900/10
C44
0.1
R31
22

MEMO