

# CUBE-ST CUBE-ST-R

## SERVICE NOTES *Issued by RJA*

### Table of Contents

Cautionary Notes .....	3	Test Mode .....	14
Specifications .....	4	Block Diagram .....	16
Difference between CUBE-ST and CUBE-ST-R .....	4	Circuit Board (Main, Jack, Input, Mic Board) .....	18
Location of Controls .....	6	Circuit Diagram (Main Board: 1/3, Jack Board) .....	20
Location of Controls Parts List .....	7	Circuit Diagram (Main Board: 2/3) .....	22
Exploded View .....	8	Circuit Diagram (Main Board: 3/3) .....	24
Exploded View Parts List .....	10	Circuit Diagram (Input, Mic Board) .....	26
Parts List .....	12	Circuit Board (Panel, Pedal Board) .....	28
Checking the Version .....	14	Circuit Diagram (Panel, Pedal Board) .....	30

#### Revise Information

Jan. 25, 2008	p. 10	Added $\Delta$ symbols.
May 5, 2008	p. 3, p. 11	Added AC cord for Taiwan and China.
Apr. 4, 2012	p. 8	Changed supply units.
May 30	p. 8, p. 10	Changed supply units.
Jan. 23, 2013	p. 5, p. 8, p. 11	Corrected errors.
Dec. 24, 2013	p. 13	Corrected errors.
Jan. 21, 2015	p. 3	Changed description.
Jan. 30, 2015	p. 12, p. 13	Added words.



**Copyright © 2007 Roland Corporation**

All rights reserved. No part of this publication may be reproduced in any form without the written permission of Roland Corporation.

**Roland**

17058510E0

Printed in Japan (0370) (SC-KWS)

---

## Cautionary Notes

---

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

### No User Data

This product cannot save user data. Backing up user data during servicing is not required.

### 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." The circuit board and circuit board diagram show silk-screened indications, but no components are mounted.

# Specifications

## CUBE-ST, CUBE-ST-R

### Rated Power Output

STEREO 5 W (2.5 W + 2.5 W)

### Nominal Input Level (1 kHz)

MIC/LINE Channel: -50/-10 dBu  
 GUITAR/INSTRUMENT Channel: -10 dBu  
 STEREO AUX IN: -10 dBu

\* 0 dBu = 0.775 V rms

### Speakers

16 cm (6.5 inches) x 2

### Controls

POWER Switch

<MIC/LINE Channel>

SELECT Switch (MIC/LINE)

VOLUME Knob

EQUALIZER Knobs (BASS, TREBLE)

DELAY/REVERB Knob

<GUITAR/INSTRUMENT Channel>

TUNER Switch

TYPE Switch

GAIN Knob

VOLUME Knob

EQUALIZER Knobs (BASS, MIDDLE, TREBLE)

EFX Knob

DELAY/REVERB Knob

### Indicators

TUNER

POWER

### Connectors

<MIC/LINE Channel>

Input Jacks (XLR type, 1/4-inch phone type)

Foot Switch Jack (1/4-inch TRS phone type, TIP: mute, RING: DELAY/REVERB)

<GUITAR/INSTRUMENT Channel>

Input Jack (1/4-inch phone type)

Foot Switch Jack (1/4-inch TRS phone type, TIP: EFX, RING: DELAY/REVERB)

AUX IN Jack (Stereo miniature phone type)

PHONES Jack (Stereo 1/4-inch phone type)

AC Adaptor Jack

### Power Supply

DC 9 V: AC Adaptor or Dry Battery (LR6 (AA) type) (optional) x 6

### Current Draw

235 mA

### Dimensions

415 (W) x 295 (D) x 250 (H) mm

16-3/8 (W) x 11-5/8 (D) x 9-7/8 (H) inches

### Weight

5.2 kg (~~including Battery~~) (~~excluding Battery~~)

11 lbs 8 oz (~~including Battery~~) (~~excluding Battery~~)

### Accessories

AC Cord for 117V (#01903345)

for 115V TW (#02562456)

for 220V CN (#05121389)

for 230V (#01903356)

for 240V (#03785590)

AC Adaptor (#04236101)

Owner's Manual English (#SD001041)

### Options

Carrying Case: CB-CS1

Foot Switch: FS-5U (BOSS), FS-6(BOSS)

Connection Cable: PCS-31

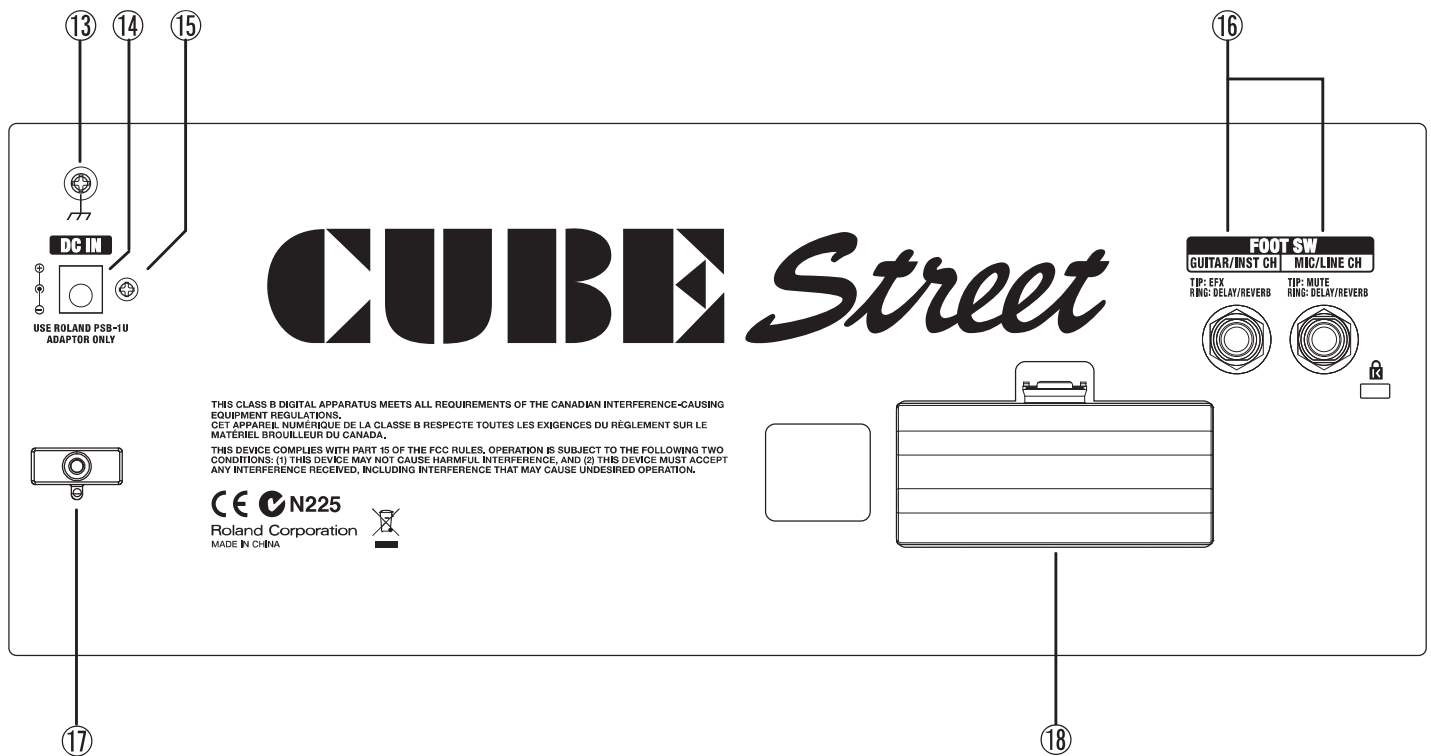
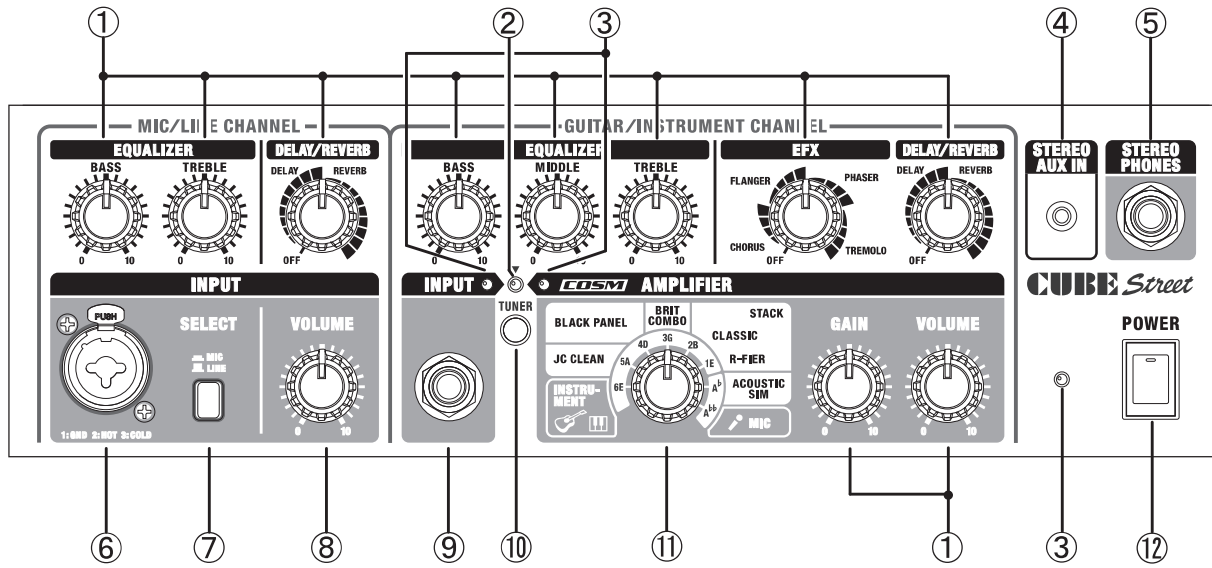
\* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

## Difference between CUBE-ST and CUBE-ST-R

CUBE-ST-R is different from CUBE-ST in the following parts. Other specifications are all same.

CUBE-ST			CUBE-ST-R		
Part Code	Part Name	Description	Part Code	Part Name	Description
SD001030	CABINET ASSY	Black	SD001031	CABINET ASSY	Red
SD001028	GRILL	Silver	SD001029	GRILL	Bright Silver
SD001042	PACKING CASE		SD001043	PACKING CASE	

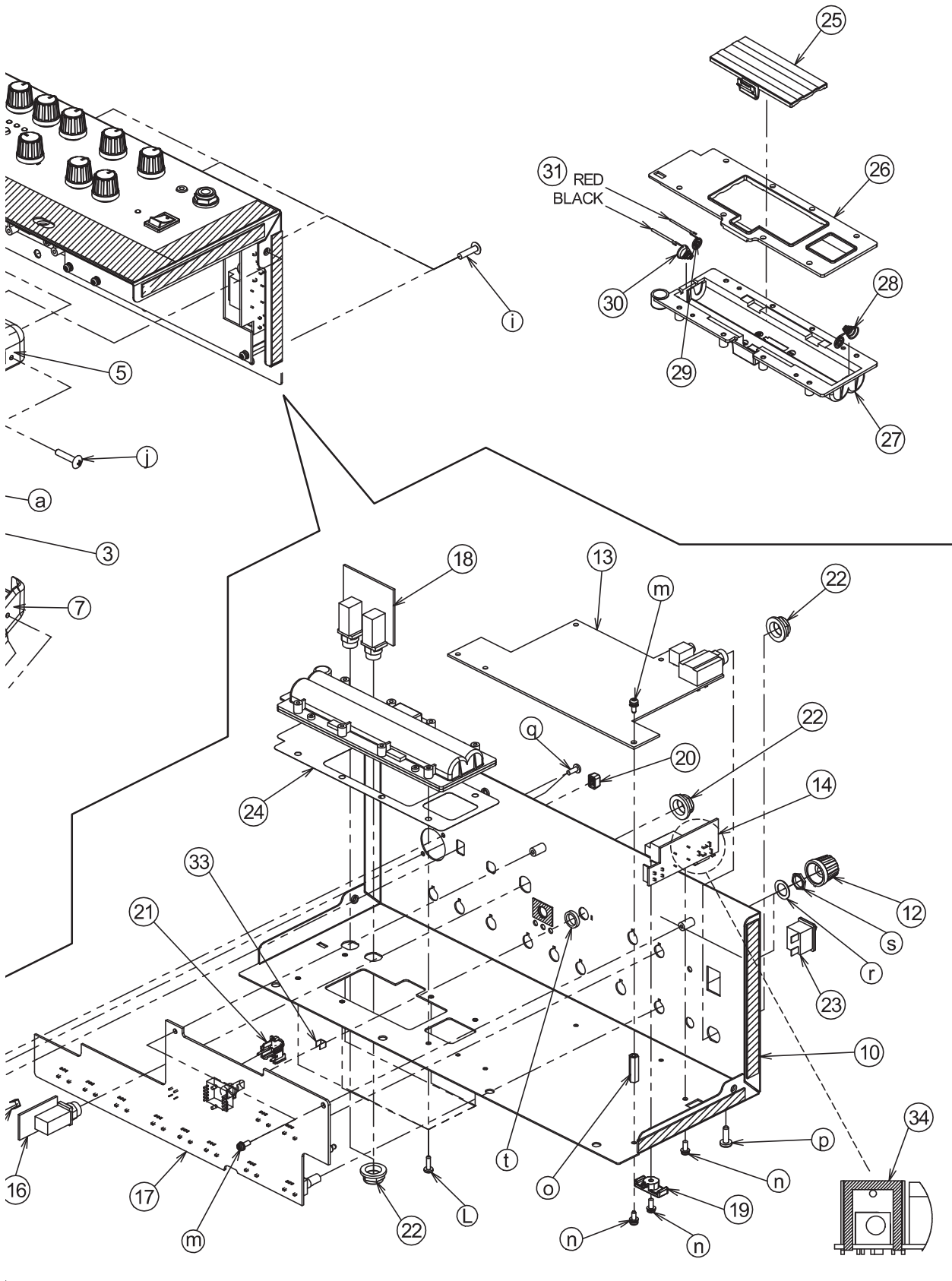
# Location of Controls



## Location of Controls Parts List

No.	Part Code	Part Name	Description	Q'ty
1	SD000911	POTENTIOMETER	RD901F-40E1-15F-0B10K-00DM8	10
	SD000043	R-KNOB	W/HOT STAMP	10
	17048630	VR ACCESSORY NUT M9		10
	40452178	VR WASHER M9		10
2	SD001038	LED GREEN	L-710XVGD-E-SZ	1
3	SD001037	LED RED	L-710XSURD-E-SZ	3
4	02456390	3.5MM JACK	STEREO YKB21-5290	1
5	13449252	6.5MM JACK	YKB21-5006 (STEREO W/SW)	1
	<del>22150756</del>	JACK NUT 2	PLASTIC/BLK	1
	5100023941			
6	01901001	XLR CONNECTER	NCJ9FI-H	1
	40011101	SCREW 3X8	BINDING TAPTITE B BZC	2
7	SD000082	PUSH BUTTON		1
	01348745	SWITCH (PUSH)	SPUP192700LF	1
8	SD000043	R-KNOB	W/HOT STAMP	1
	SD001036	POTENTIOMETER	RV110F-20E1-15A-B100K-0061	1
	17048630	VR ACCESSORY NUT M9		1
	40452178	VR WASHER M9		1
9	13449146	6.5MM JACK	YKB21-5012 (W/SW)	1
	<del>22150756</del>	JACK NUT 2	PLASTIC/BLK	1
	5100023941			
10	SD000906	KEY TOP		2
	SD001037	LED RED	L-710XSURD-E-SZ	1
11	SD000907	ROTARY SWITCH	SR1712F-0108-175F0A-N9-N-008	1
	SD000043	R-KNOB	W/HOT STAMP	1
	17048630	VR ACCESSORY NUT M9		1
	40452178	VR WASHER M9		1
12	02897801	SEESAW SWITCH	SDDJE13200 94V-0	1
13	40454856	SCREW M4X10	BINDING NI	1
14	13449717	ADAPTOR JACK	HEC2392-0101509	1
15	40237101	SCREW M3X8	PAN MACHINE W/SW+SMALL PW BZC	1
16	13449252	6.5MM JACK	YKB21-5006 (STEREO W/SW)	2
	<del>22150756</del>	JACK NUT 2	PLASTIC/BLK	1
	5100023941			
17	22365714	CORD HOOK		1
	40237101	SCREW M3X8	PAN MACHINE W/SW+SMALL PW BZC	1
18	SD001033	BATTERY COVER ASSY		1





# Exploded View Parts List

## Parts

No.	Part Code	Part Name	Description	Q'ty
1	SD000017	BADGE		1
2	SD001028	GRILL	SILVER (for CUBE-ST)	1
	SD001029	GRILL	BRIGHT SILVER (for CUBE-ST-R)	1
3	<del>SD001030</del> 5100025837	CABINET ASSY	BLACK (for CUBE-ST)	1
	<del>SD001031</del> 5100025838	CABINET ASSY	RED (for CUBE-ST-R)	1
	* The CABINET ASSY includes the following parts.			
4	<del>SD001026</del> 5100027111	TRIM SASH		1
5	<del>SD001023</del> 5100027098	CORNER PROTECTOR	TOP	2
6	<del>SD001024</del> 5100027096	CORNER PROTECTOR	BOTTOM L	1
7	<del>SD001025</del> 5100027097	CORNER PROTECTOR	BOTTOM R	1
<del>8</del>	<del>SD001027</del>	<del>RUBBER FOOT</del>	<del>D30.5XT10.5</del>	<del>4</del>
8	5100027159	RUBBER FOOT	D30.5XT9.5	4
9	SD001032	SPEAKER	W6504-436A	2
10	<del>SD001022</del> 5100025829	<del>CHASSIS ASSY</del>	W/CUSHION	1
	* The CHASSIS ASSY includes the following parts.			
	*****	EVA PACKING 370x40x1t W/ADH		1
	*****	EVA PACKING 100x20x1t W/ADH		2
	*****	EVA PACKING 120x10x1t W/ADH		4
	*****	EVA PACKING 19x15x0.5t W/ADH		4
11	<del>SD000035</del>	HANDLE WITH ESCUTCHEON		1
	*****			
	* This unit includes the following parts.			
	5100011381	HANDLE		1
	5100011382	HANDLE PLATE		1
	5100011383	HANDLE HOLDER		1
12	SD000043	R-KNOB	W/HOT STAMP	12
13	SD000993	MAIN BOARD ASSY		1
	* The MAIN BOARD ASSY includes the following parts.			
14	*****	JACK BOARD ASSY		1
15	*****	MIC BOARD ASSY		1
16	*****	INPUT BOARD ASSY		1
17	SD000995	PANEL BOARD ASSY		1
	* The PANEL BOARD ASSY includes the following parts.			
18	*****	PEDAL BOARD ASSY		1
19	22365714	CORD HOOK		1
20	SD000082	PUSH BUTON	BLACK	1
21	SD000906	KEYTOP	ROUND,WHITE	1
22	<del>22150756</del>	JACK NUT 2	PLASTIC/BLK	4
	5100023941			
23	02897801	SEESAW SWITCH	SDDJE13200 94V-0	1
24	SD000422	BATTERY SHEET		1
25	SD001033	BATTERY COVER ASSY		1
	* The BATTERY COVER ASSY includes the following parts.			
	*****	EVA PACKING 28x2x0.5t W/ADH		2
	*****	BATTERY CUSHION		1
26	SD000421	BATTERY PLATE		1
27	SD000418	BATTERY CASE		1
28	SD000427	BATTERY SPRING +-		1
29	SD000426	BATTERY SPRING +		1
30	SD000425	BATTERY SPRING -		1
31	SD001035	BATTERY WIRING		1
32	SD000464	HIMERON W/ADH	6 x 50 x t0.5	3
33	SD000446	HIMERON W/ADH	4x15xt0.25	2
34	SD001047	DC JACK HOLDER		1

\* The following unit includes all the parts from No.10 to 34 mentioned above.

#SD001022 CHASSIS ASSY



## Screws

No.	Part Code	Part Name	Description	Q'ty
a	SD000067	SCREW 3X12	TRUSS TAPTITE A1 BZC	23
b	40010134	SCREW M4X20	BINDING MACHINE BZC	8
c	40010567	SCREW M4X35	SPECIAL TRUSS BZC	4
d	SD000069	WASHER M4 11FAI	ADDITIONAL WASHER	4
e	40230789	SCREW 3X10	OVALHEAD MACHINE BZC	2
f	40011689	SPEED NUT M3	F-TYPE	2
g	40010689	SCREW 4X25	TRUSS TAPTITE A1 BZC	4
h	SD000370	PLATE WASHER	4.2X10X0.5T FEBC	4
i	40010667	SCREW 4X16	TRUSS TAPTITE A1 BZC	4
j	40010534	SCREW 4X20	ORIGINAL TRUSS MACHINE BZC	2
k	40564601	SCREW M5X35	OVALHEAD MACHINE BZC	2
L	40011323	SCREW 3X10	BINDING TAPTITE P BZC	6
m	40013067	SCREW M3x8	PAN MACHINE W/SW+SMALL PW ZC	7
n	40237101	SCREW M3x8	PAN MACHINE W/SW+SMALL PW BZC	7
o	SD001046	STANDOFF	HEX.BOSS 5.5x20 M3	5
p	40454856	SCREW M4x10	BINDING MACHINE Ni	1
q	40011312	SCREW 3X8	BINDING TAPTITE P BZC	2
r	40452178	VR WASHER M9		12
s	17048630	VR ACCESSORY NUT M9		12
t	SD000916	WASHER	M9 T=2.5	1

# Parts List

**SAFETY PRECAUTIONS:**  
The parts marked  $\Delta$  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.

<b>CASING</b>					
#	SD001023	CORNER PROTECTOR	TOP		2
#	SD001027	RUBBER FOOT	D30.5XT10.5		4
#	SD001025	CORNER PROTECTOR	BOTTOM R		1
#	SD001024	CORNER PROTECTOR	BOTTOM L		1
	SD000017	BADGE			1
#	SD001033	BATTERY COVER ASSY			1
#	SD001030	CABINET ASSY		BLACK (for CUBE-ST)	1
#	SD001031	CABINET ASSY		RED (for CUBE-ST-R)	1
#	SD001022	CHASSIS ASSY			1
	5100025829	CHASSIS	W/CUSHION		1
	22365714	CORD HOOK			1
#	SD001028	GRILL		SILVER (for CUBE-ST)	1
#	SD001029	GRILL		BRIGHT SILVER (for CUBE-ST-R)	1
	SD000035	HANDLE WITH ESCUTHEON			1
#	SD001026	TRIM SASH			1
<b>KNOB, BUTTON</b>					
	SD000043	R-KNOB	W/HOT STAMP		11
	SD000096	KEYTOP			1
	SD000082	PUSH BUTTON			1
<b>SWITCH</b>					
	SD000907	ROTARY SWITCH	SR1712F-0108-175F0A-N9-N-008	SW1 on Panel Board	1
	01348745	SWITCH (PUSH)	SPUP192700LF	SW1 on MIC Board	1
	02897801	SEESAW SWITCH	SDDJE13200 94V-0		1
<b>JACK, EXT TERMINAL</b>					
	13449146	6.5MM JACK	YKB21-5012 (W/SW)	JK3 on Input Board	1
	13449252	6.5MM JACK	YKB21-5006 (STEREO W/SW)	JK1 on Main Board, JK4, JK5 on Pedal Board	3
	02456390	3.5MM JACK	STEREO YKB21-5290	JK2 on Main Board	1
	01901001	XLR CONNECTER	NCJ9FI-H	JK4 on MIC Board	1
	13449717	ADAPTOR JACK	HEC2392-0101509	JK6 on Jack Board	1
<b>SPEAKER, BUZZER</b>					
#	$\Delta$ SD001032	SPEAKER	W6504-436A		2
<b>PWB ASSY</b>					
#	SD000993	MAIN BOARD ASSY			1
#	SD000995	PANEL BOARD ASSY			1
<b>DIODE</b>					
#	SD001038	LED (GREEN)	L-710XVGD-E-SZ	LED3 on Panel Board	1
#	SD001037	LED (RED)	L-710XSURD-E-SZ	LED1, LED2, LED4, LED5 on Panel BORD	4
<b>POTENTIOMETER</b>					
#	SD001036	POTENTIOMETER	RV110F-20E1-15A-B100K-0061	VR1 on MIC Board	1
	SD000911	POTENTIOMETER	RD901F-40E1-15F-0B10K-00DM8	VR1-VR10 on Panel Board	10
<b>FUSE, FUSE HOLDER</b>					
#	$\Delta$ SD001039	FUSE	MRT160/250V	F2 on Main Board	1
	$\Delta$ F2559306R0	FUSE	MRT 1.6A/250V	F1 on Jack Board	1
<b>WIRING, CABLE</b>					
#	$\Delta$ SD001035	BATTERY WIRING			1

SCREWS					
	SD000067	SCREW 3X12	TRUSS TAPTITE A1 BZC	for Corner Protector, Trim Sash	23
	40010667	SCREW M4X16	TRUSS TAPPING-A FE BZC	for CHASSIS	4
	40010689	SCREW 4X25	TRUSS TAPPING A1 FE BZC	for Foot	4
	40010134	SCREW M4X20	TRUSS MACHINE BZC	for Speaker	8
	40010534	SCREW M4X20	SPECIAL TRUSS BZC	for CHASSIS	2
	<del>22150756</del>	JACK NUT 2	PLASTIC/BLK		4
	5100023941				
	40013067	SCREW M3X8	PAN MACHINE W/ SW+SMALL PW ZC	for PCB	7
	40237101	SCREW M3X8	PAN MACHINE W/ SW+SMALL PW BZC	for PCB, JACKHOLDER, Cord HOOK	7
	40564601	SCREW M5X35	OVALHEAD MACHINE BZC	for Handle	2
	40230789	SCREW 3X10	OVAL MACHINE BZC	for Badge	2
	40010567	SCREW M4X35	ORIGINAL TRUSS FE BZC	for Grill	4
#	SD001046	STANDOFF	HEX.BOSS 5.5X20 M3	for PCB	5
	40011689	SPEED NUT M3	F-TYPE	for Badge	2
	SD000430	PLANE WASHER	D11 D4.1 T1 BLACK	for Grill	4
	40011101	SCREW 3X8	BINDING TAPTITE B BZC	for XLR Connector	2
	40454856	SCREW M4X10	BINDING NI	for CHASSIS	1
	SD000370	PLATE WASHER	4.2X10X0.5T FEBC	for Foot	4
	17048630	VR ACCESSORY NUT M9		for VR, ROTARY SW	12
	40452178	VR WASHER M9		for VR, ROTARY SW	12
	40011112	SCREW 3X10	BINDING TAPTITE B BZC	for Battery Box	6
	40011312	SCREW 3X8	BINDING TAPTITE P BZC		2
	40011323	SCREW 3X10	BINDING TAPTITE P BZC		6
	SD000069	WASHER M4 11FAI	ADDITIONAL WASHER		4
	SD000916	WASHER	M9 T=2.5		1
PACKING					
#	SD001044	PACKING PAD	UPPER		6
#	SD001045	PACKING PAD	LOWER		2
#	SD001042	PACKING CASE		for CUBE-ST	1
#	SD001043	PACKING CASE		for CUBE-ST-R	1
MISCELLANEOUS					
	SD000446	HIMERON	87-YP5-228-01 4X15XT0.25	VR	2
	SD000464	HIMERON W/ADH	6 X 50 X 0.5T	BADGE	2
	SD000418	BATTERY CASE			1
	SD000421	BATTERY PLATE			1
	SD000422	BATTERY SHEET			1
	SD000426	TERMINAL SPRING +			1
	SD000427	TERMINAL SPRING +-			1
	SD000425	TERMINAL SPRING -			1
	SD001047	DC JACK HOLDER			1
ACCESSORIES (Standard)					
#	SD001040	OWNER'S MANUAL	JAPANESE		1
#	SD001041	OWNER'S MANUAL	ENGLISH		1
	40232334	WARRANTY CARD	MOCHIKOMI JAPAN ONLY		1
△	04236101	AC ADAPTOR WITHOUT AC CORD	PSB-1U (S) UNIVERSAL		1
△	01903334	AC CORD SET PSE	100V 1.0M FOR PSB-1U		1
△	02562456	AC CORD SET	120V 1.0M (NON POLAR)		1
△	01903345	AC CORD SET	120V 1.0M FOR PSB		1
△	05121389	AC CORD SET	VM0350-R 220V 1.0M		1
△	01903356	AC CORD SET	230V 1.0M FOR PSB		1
△	03785590	AC CORD SET	SC-078-NA05 240VA		1

## Checking the Version

### Required Items

- Foot Switch (BOSS FS-5U x 2 or FS-6)
- Connection Cable for Foot Switch (PCS-31 or PCS-33)

### Procedure

1. Connect the Foot Switch to FOOT SW [MIC/LINE CH].  
\* Set the polarity switch of FS-5 to the jack side.
2. Set each switch of the panel as follows.  
POWER SW:OFF  
INPUT SELECT:LINE  
AMP TYPE: INSTRUMENT  
All knobs: Minimum (0 or OFF)
3. Hold down the pedal of FS-5U which is connected to [TIP: MUTE] of the FOOT SW jack.  
All LEDs on the panel light for about one second. Hold down the FS-5U while the LEDs is lighting.
4. Release your hand immediately after the LEDs go off, and then press it two times.  
After the all LEDs blink for a while, the version number is displayed as follows.

Version	Left (RED)	Center (GREEN)	Right (RED)
1.00	*	-	-
1.01	-	*	-
1.02	-	-	*
1.03	*	*	-
1.04	*	-	*
1.05	-	*	*

\*: blinks, -: goes off

5. Turn off the power of the CUBE-ST.

## Test Mode

### Required Items

- Foot Switch (BOSS FS-5U x 2 or FS-6)
- Connection Cable for Foot Switch (PCS-31 or PCS-33)
- Dummy Plug

### Entering Test Mode

Execute the step 1-4 of ?Checking the Version? (p. 12).  
After checking the version number, press FS-5U connected [TIP: MUTE] of the FOOT SW jack. Then you'll enter ?1. DSP Test? for the first test item.

### Exiting Test Mode

Turn off the power.

### Skipping Test Items

You can't skip test items.

## Details for Test Items

### 1. DSP Test

DSP Test starts automatically as soon as you enter the Test Mode.  
In DSP Test, the LED of Left, Center and Right will light in this order corresponding to the progress of the test.

#### When the result of test is OK:

LEDs of Left, Center and Right blink.

#### When the result of test is NG:

LED of TUNER blinks.

If the test is OK, press FOOT SW [TIP: MUTE] to advance to the next test item.

## 2. Switch Test

When entering Switch Test, all LEDs go off temporarily.

Operate buttons, rotary switches, plugs and foot switches as the order in the following table.

LEDs with "o" in the table will light, LEDs with "\*" in the table will blink, and LEDs with "-" will go off.

\* If you mistake the order of operations or operate more than one item at a time, LEDs of Left and Right will blink.

Operation	Lighting LED			
	Left	Center	Right	TUNER

Press button					
1	SELECT	o	o	o	-
2	TUNER	o	o	o	o

Rotate rotary switch					
	INSTRUMENT	o	o	o	o
3	JC CLEAN	o	-	-	-
4	BLACK PANEL	-	-	o	-
5	BRIT COMBO	o	-	-	-
6	CLASSIC STACK	-	-	o	-
7	R-FIER STACK	o	-	-	-
8	ACOUSTIC SIM	-	-	o	-
9	MIC	o	-	-	-
10	ACOUSTIC SIM	-	-	o	-
11	R-FIER STACK	o	-	-	-
12	CLASSIC STACK	-	-	o	-
13	BRIT COMBO	o	-	-	-
14	BLACK PANEL	-	-	o	-
15	JC CLEAN	o	-	-	-
16	INSTRUMENT	o	o	o	-

Pull out/Insert plug, Press Foot Switch					
17	Insert into PHONES	o	-	-	-
18	Pull Out from PHONES	o	o	-	-
19	Press FOOT SW [RING: DELAY/REVERB]	o	o	o	-
20	Pull Out from FOOT SW	-	-	-	-
21	Insert into FOOT SW GUITAR/INST CH	o	-	-	-
22	Press FOOT SW [TIP: EFX]	o	o	-	-
23	Press FOOT SW [RING: DELAY/REVERB]	o	o	o	-
24	Pull Out from FOOT SW	-	-	-	-
25	Insert into FOOT SW MIC/LINE CH	*	*	*	-

o: lights, \*: blinks, -: goes off

If the test is OK, press FOOT SW [TIP: MUTE] to advance to the next test item.

## 3. Volume Test

When entering Volume Test, all LEDs go off temporarily.

Operate the following knobs minimum-center-maximum and confirm the all knobs work correctly with its LED.

\* If you mistake the order, the knob will not response.

\* After detecting all of the minimum, center and the maximum value, test program advances to test of the next knob.

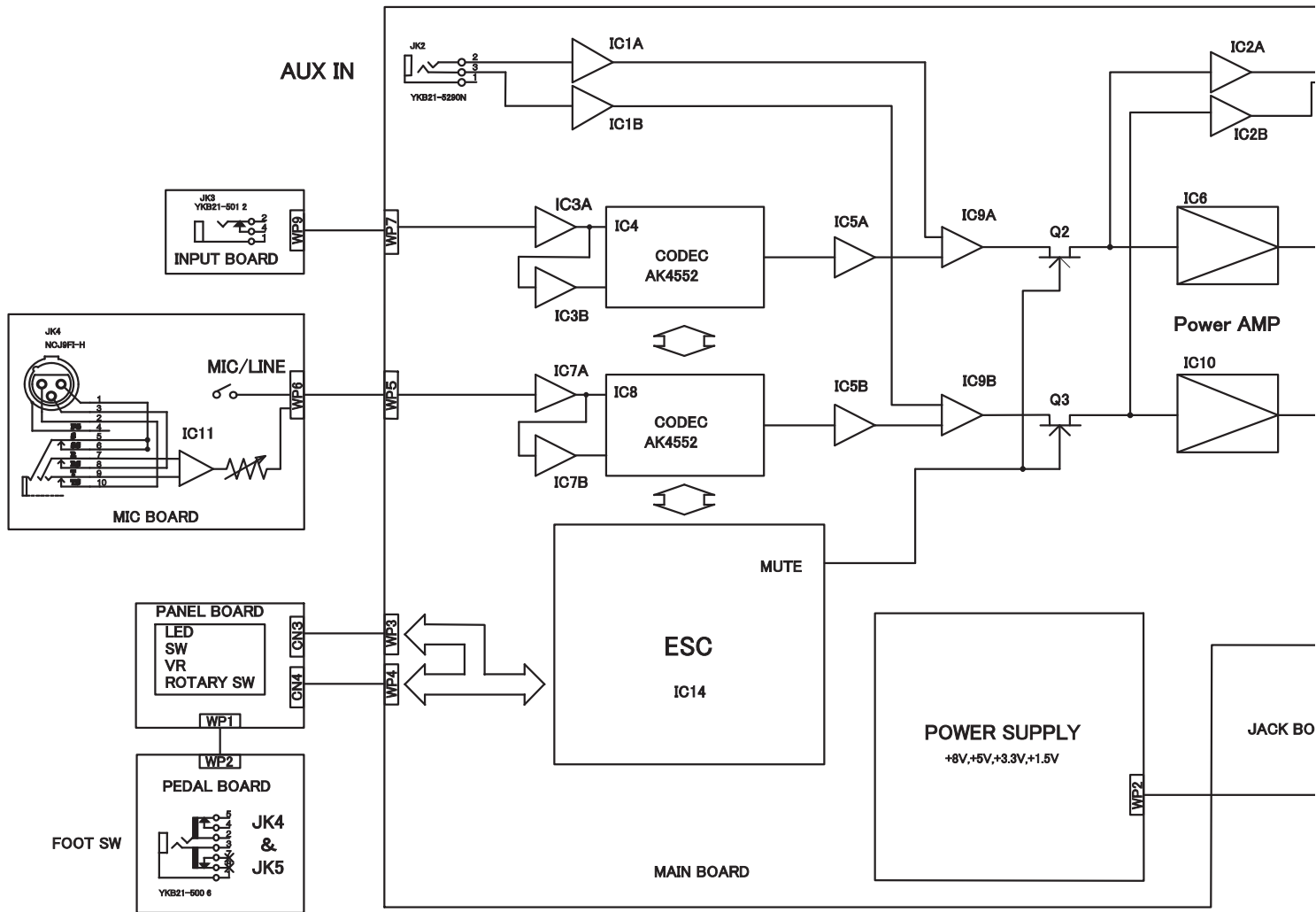
- MIC/LINE CHANNNEL BASS
- MIC/LINE CHANNNEL TREBLE
- MIC/LINE CHANNNEL DELAY/REVERB
- GUITAR/INSTRUMENT CHANNNEL BASS
- GUITAR/INSTRUMENT CHANNNEL MIDDLE
- GUITAR/INSTRUMENT CHANNNEL TREBLE
- GUITAR/INSTRUMENT CHANNNEL EFX
- GUITAR/INSTRUMENT CHANNNEL DELAY/REVERB
- GUITAR/INSTRUMENT CHANNNEL VOLUME
- GUITAR/INSTRUMENT CHANNNEL GAIN

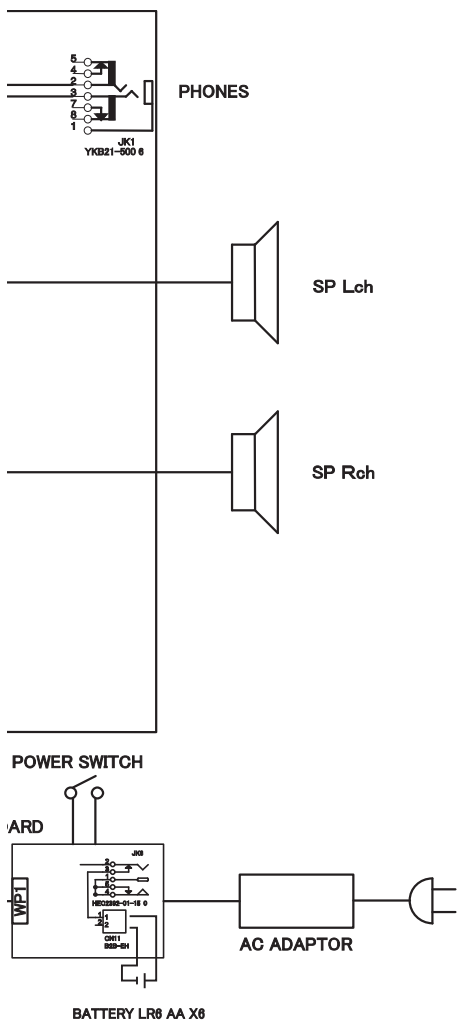
Position of Knob	Lighting LED
<b>0 or OFF</b>	Left
Center	Left, Center
<b>10 or maximum</b>	Left, Center, Right

When the test of all volume is completed, LEDs of Left, Center and Right will blink.

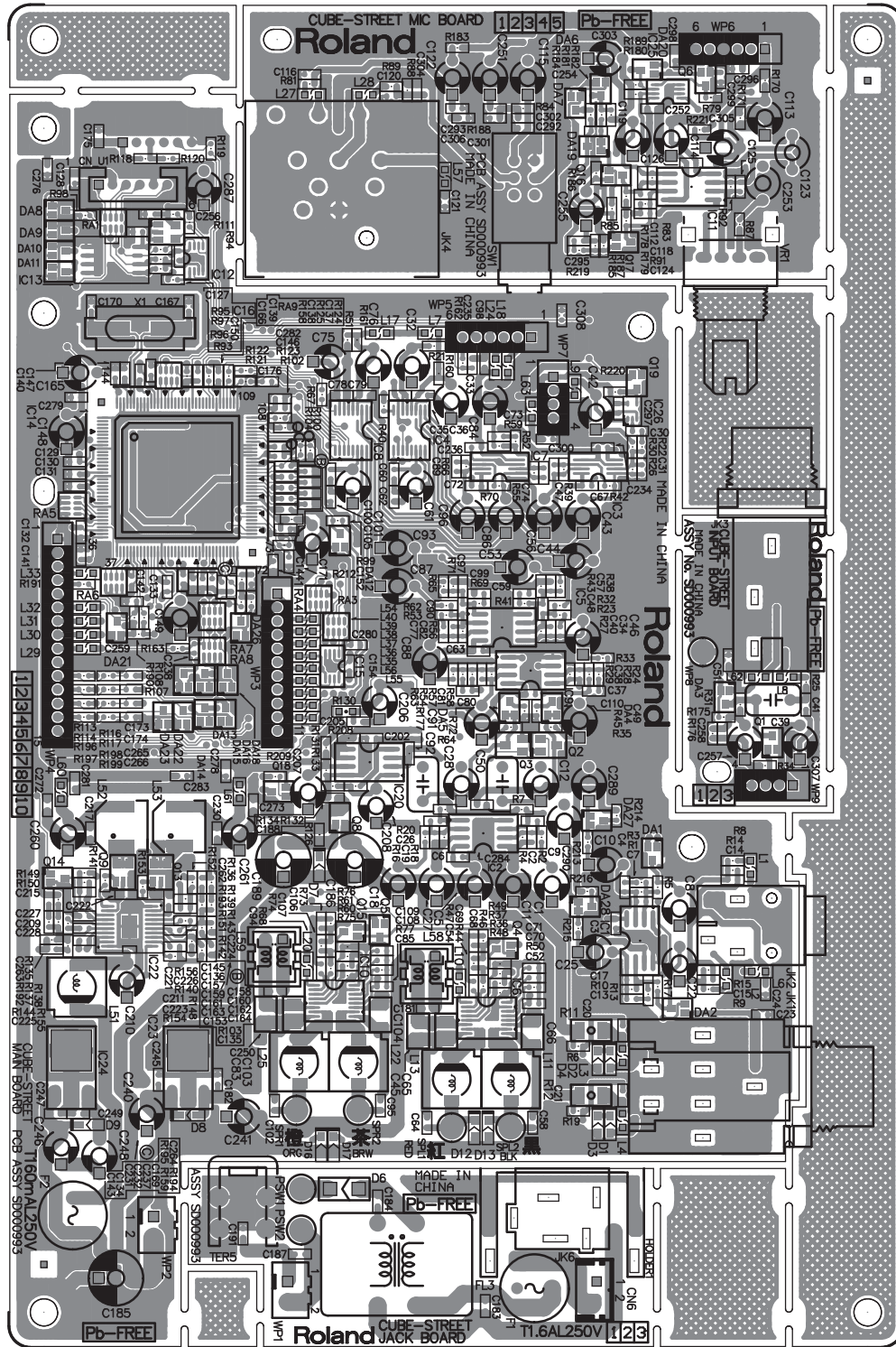
Then, test is finished.

# Block Diagram

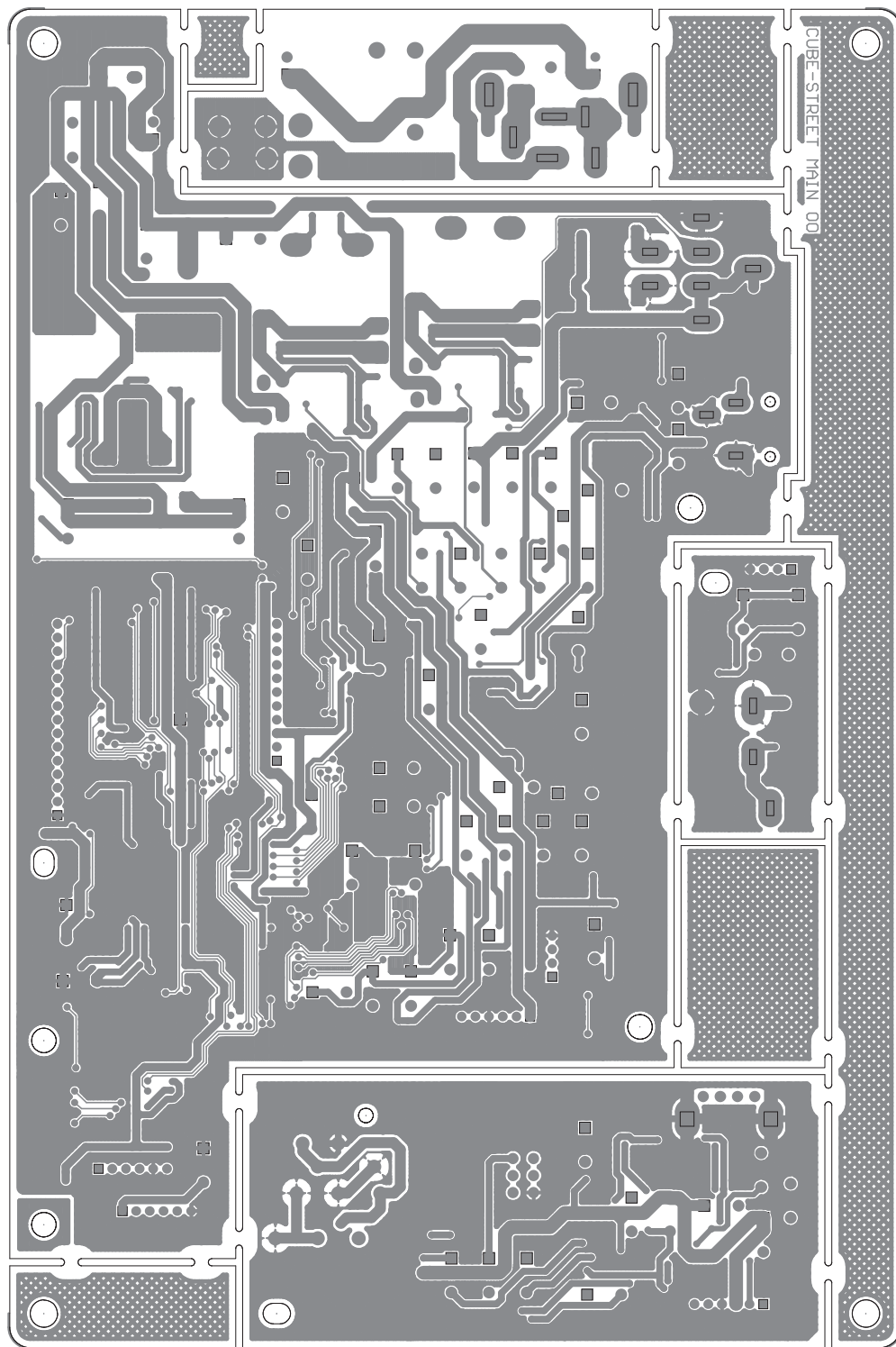




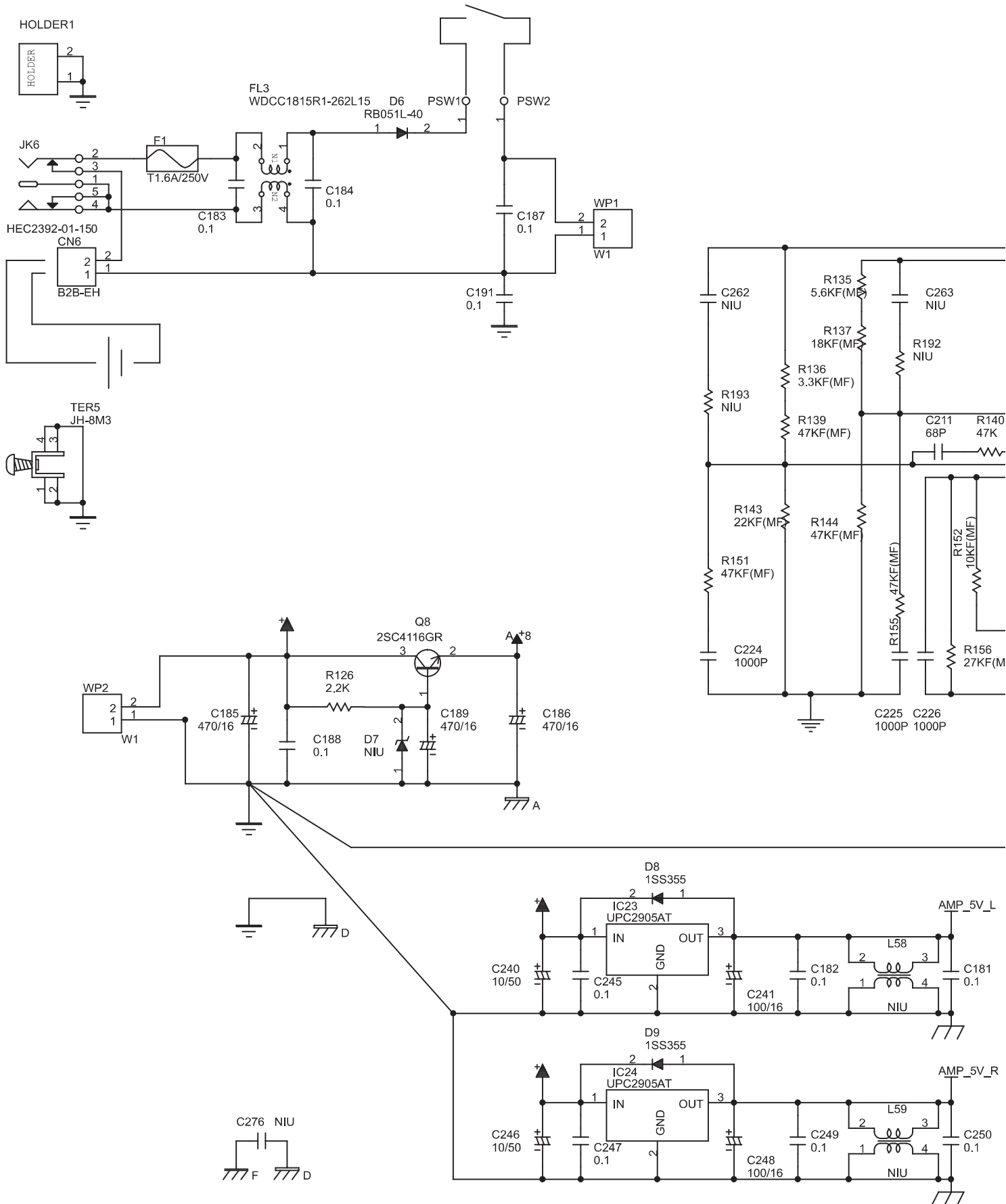
# Circuit Board (Main, Jack, Input, Mic Board)

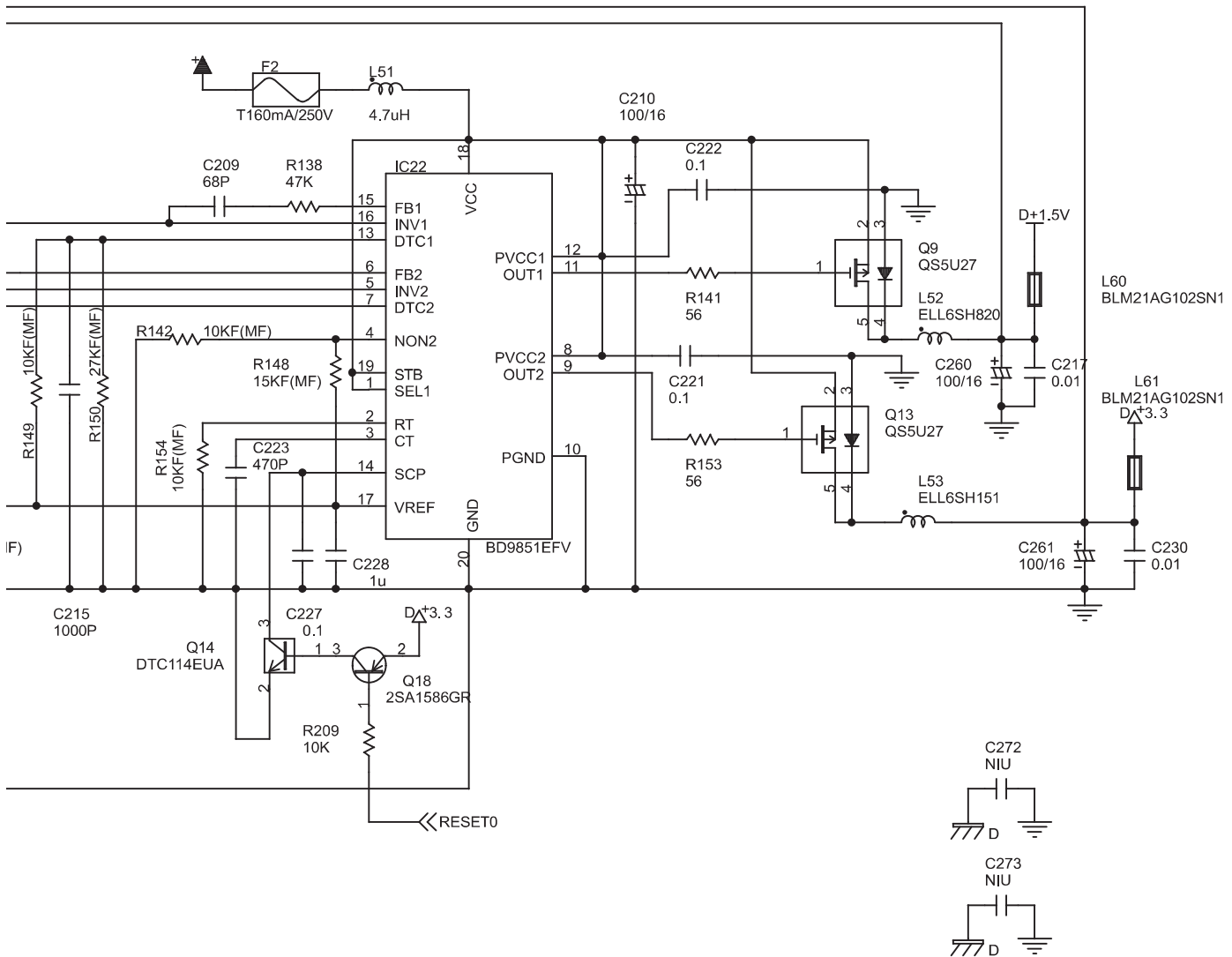




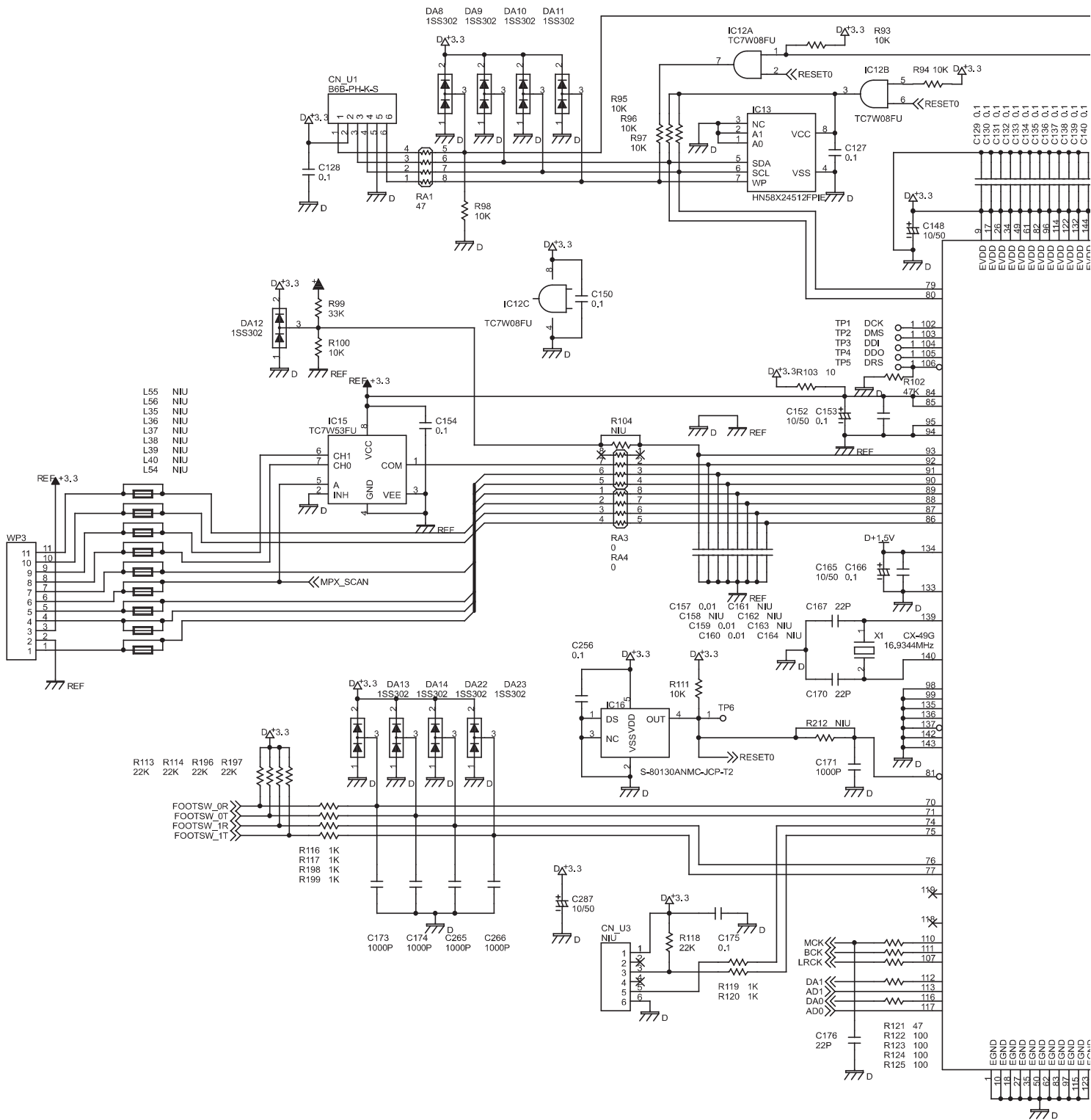


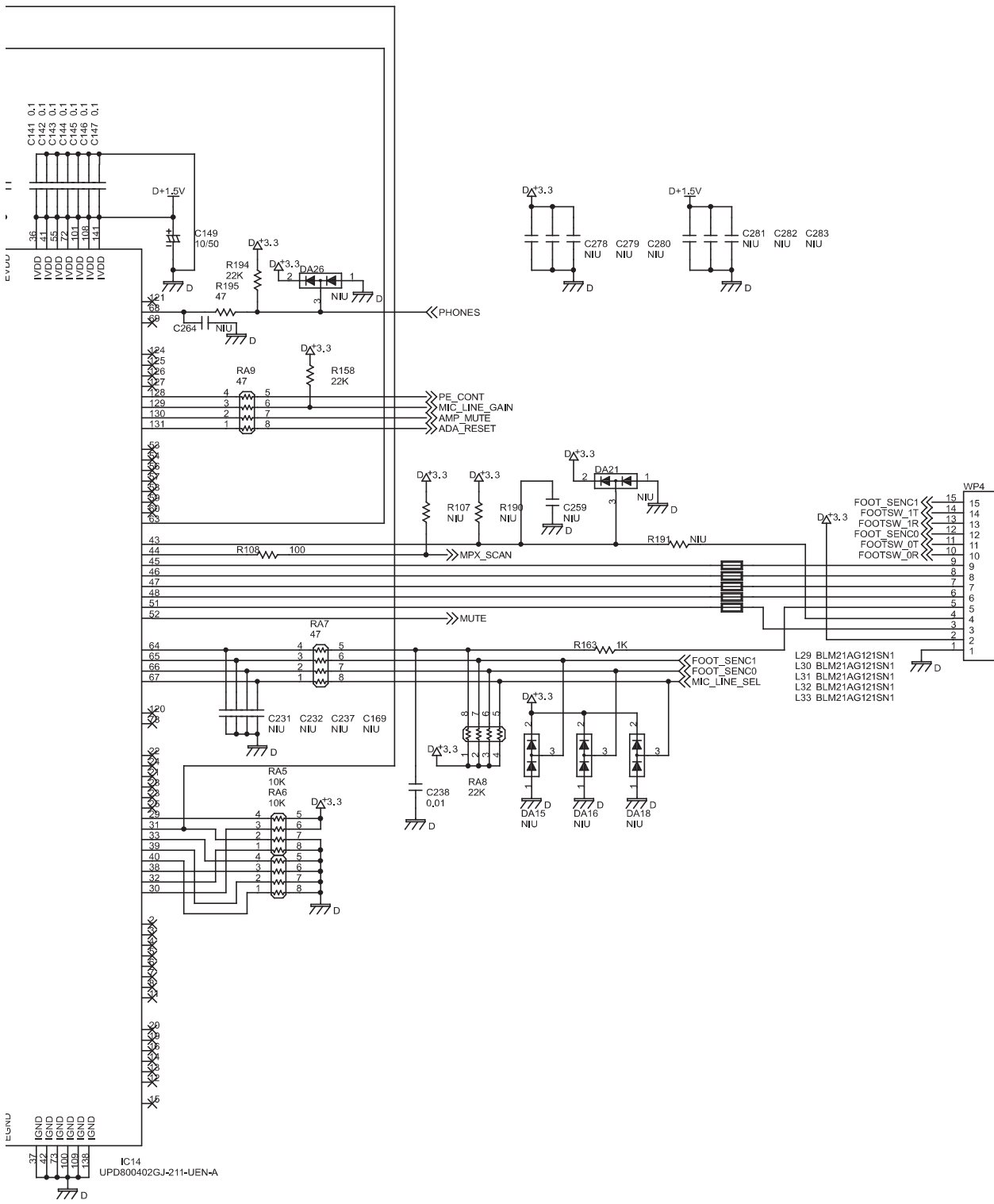
# Circuit Diagram (Main Board: 1/3, Jack Board)



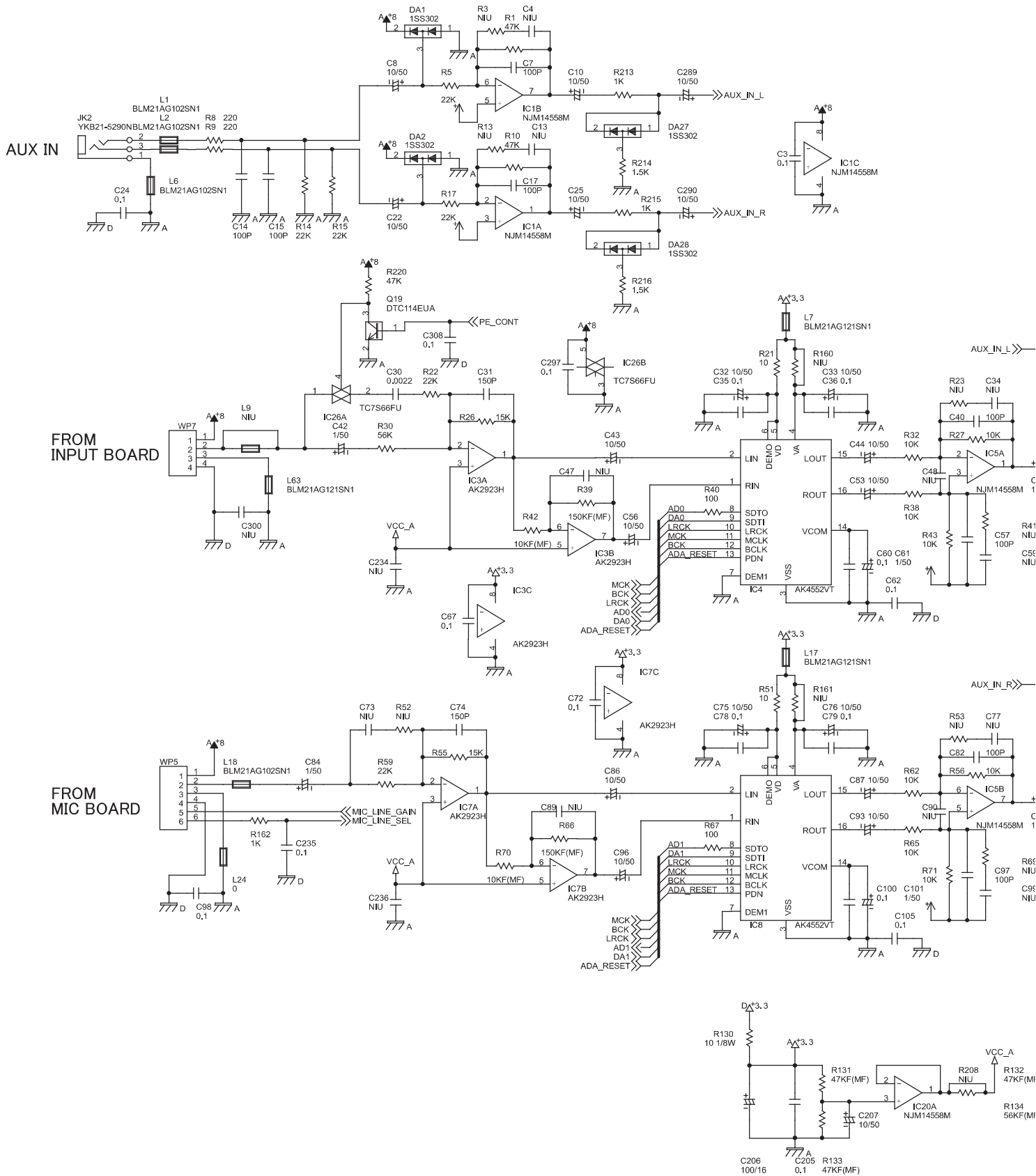


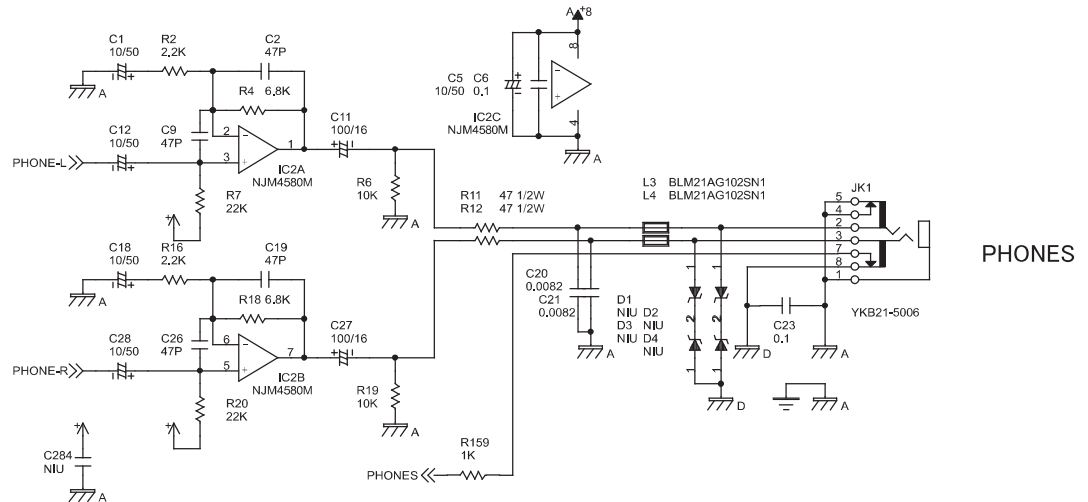
# Circuit Diagram (Main Board: 2/3)



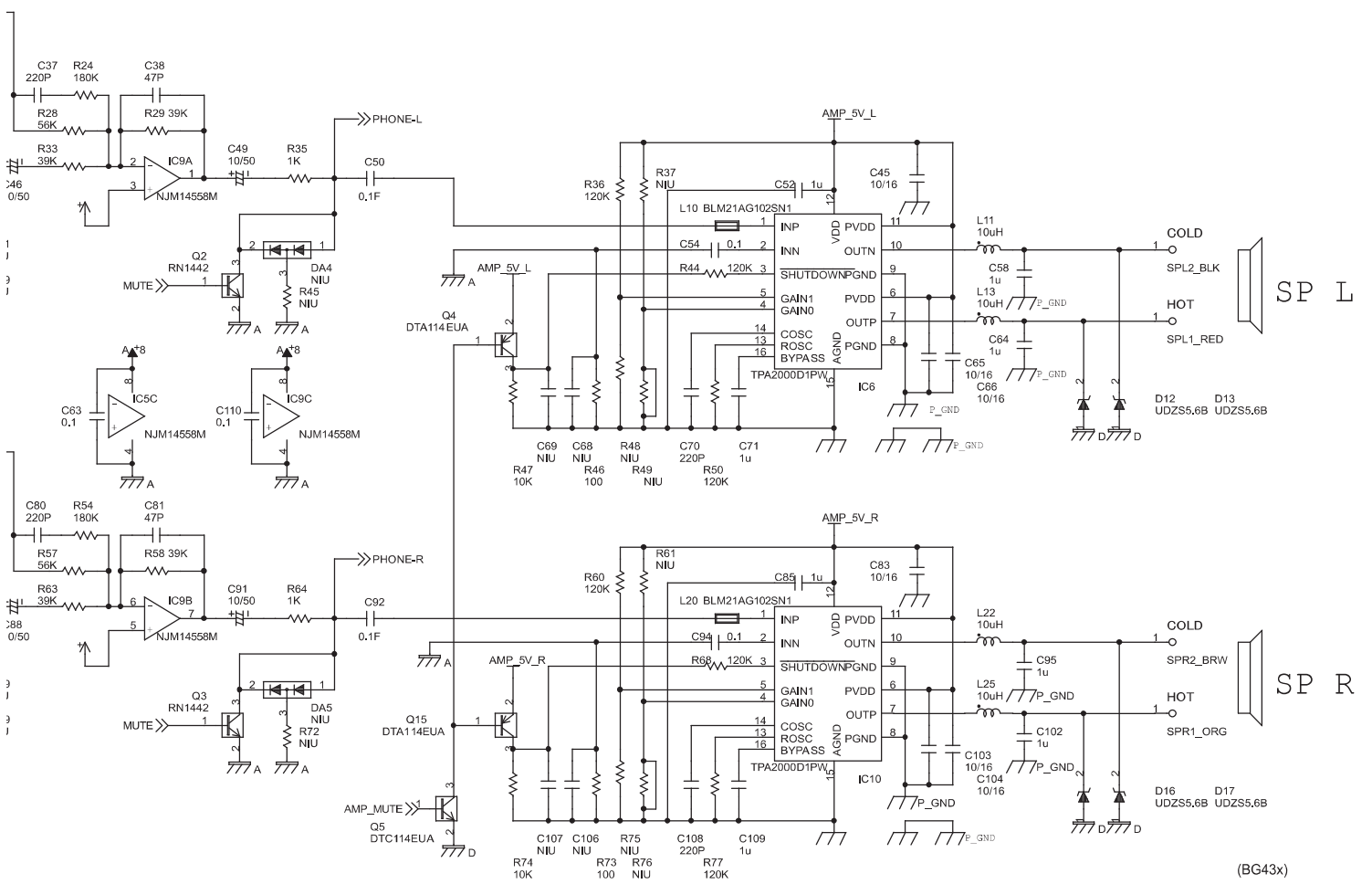


# Circuit Diagram (Main Board: 3/3)





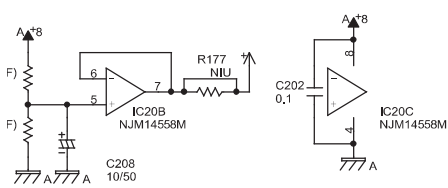
PHONES



SP L

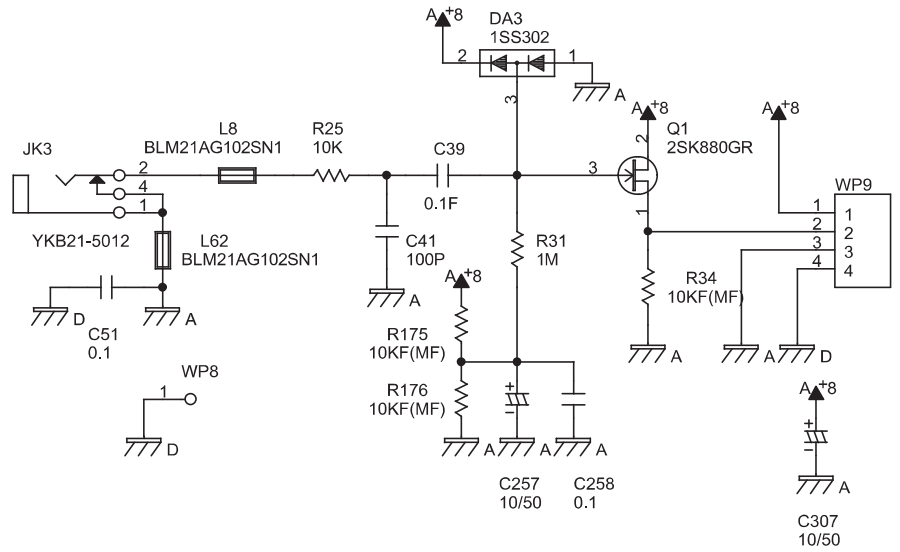
SP R

(BG43x)

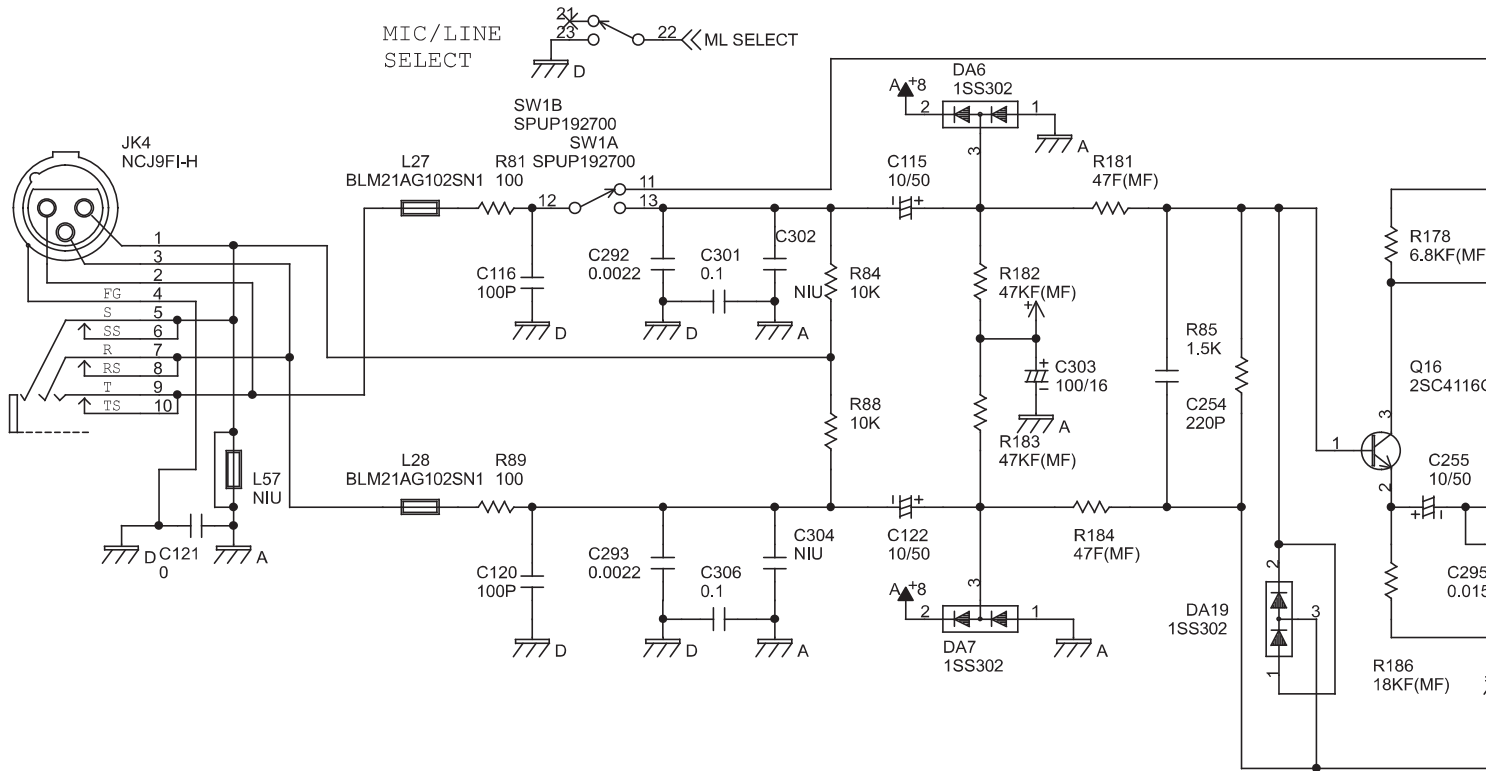


# Circuit Diagram (Input, Mic Board)

INPUT BOARD

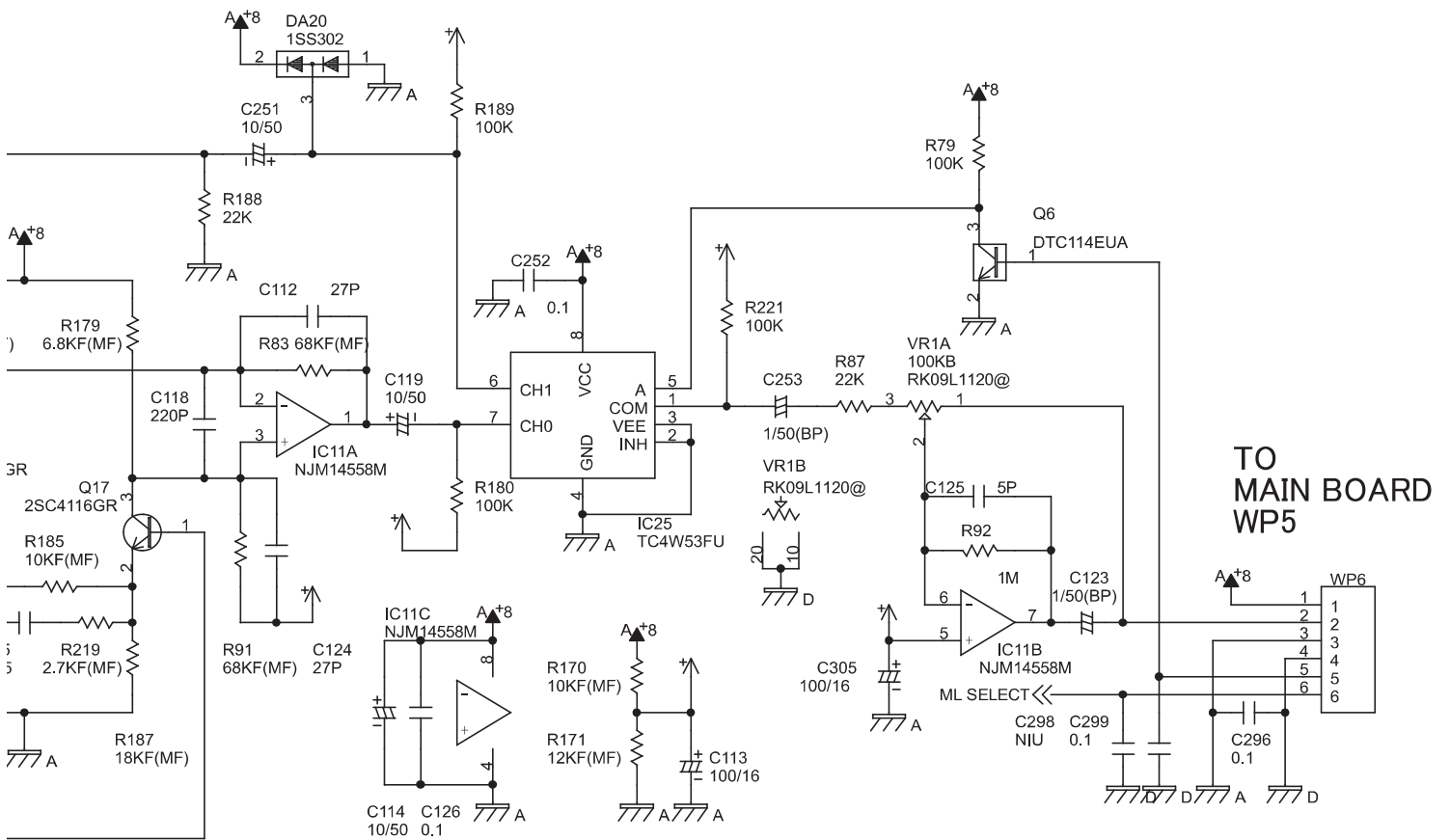


MIC BOARD

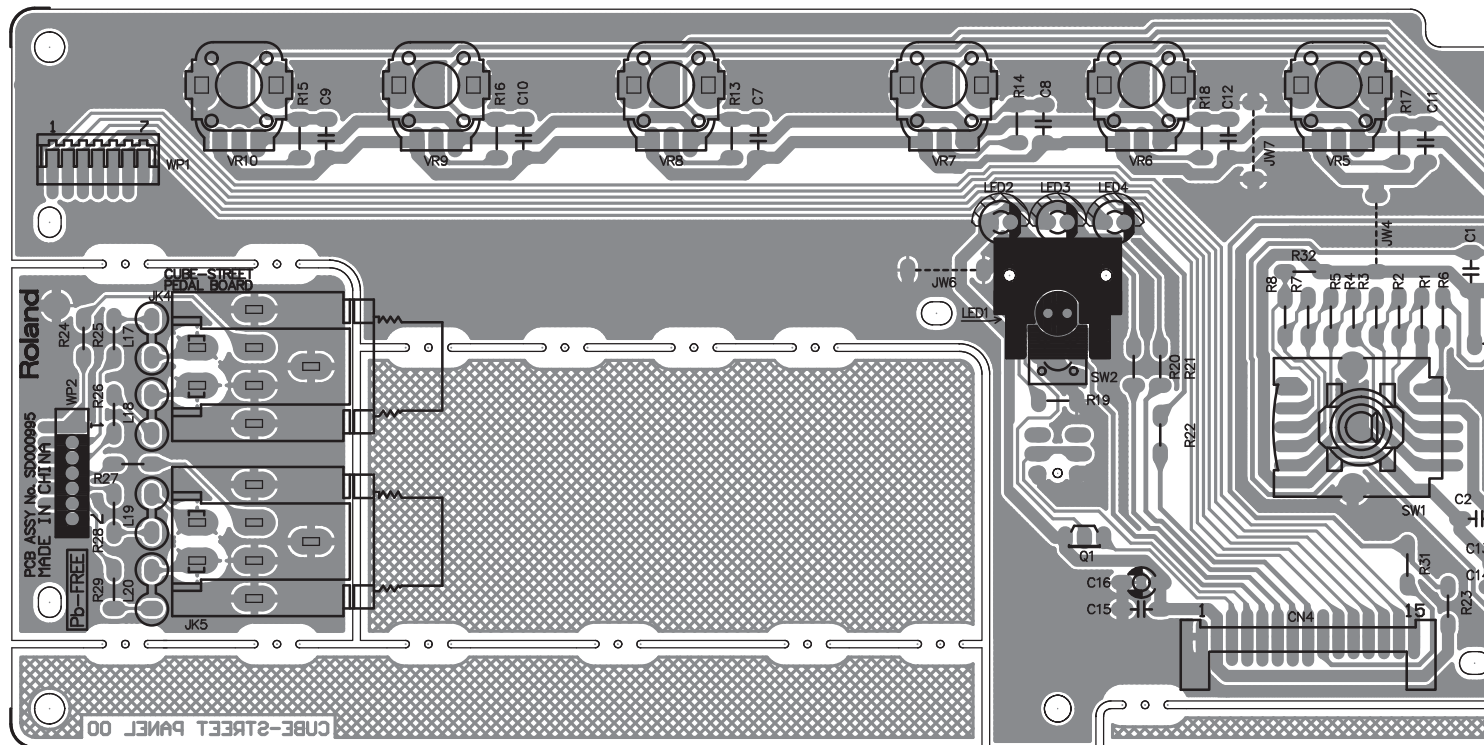


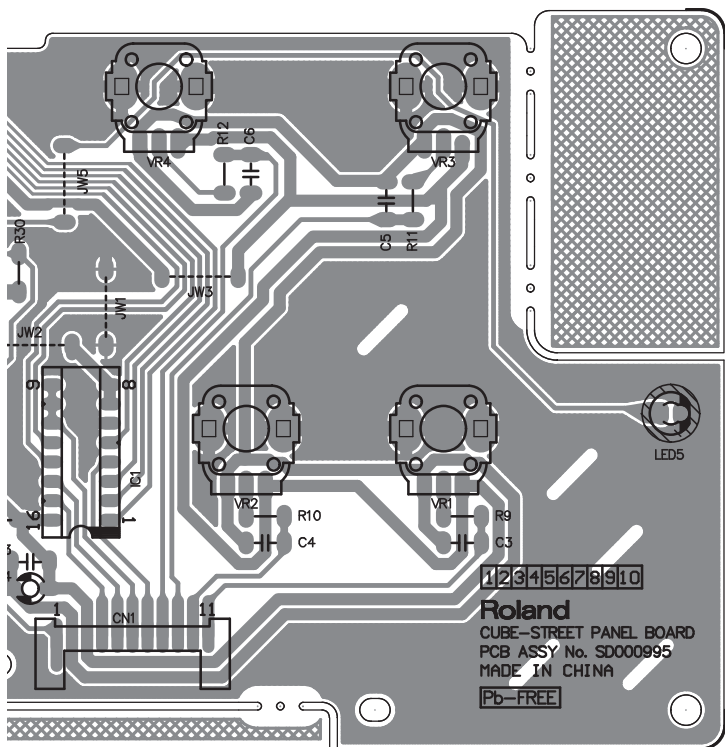


TO  
MAIN BOARD  
WP7



# Circuit Board (Panel, Pedal Board)





# Circuit Diagram (Panel, Pedal Board)

