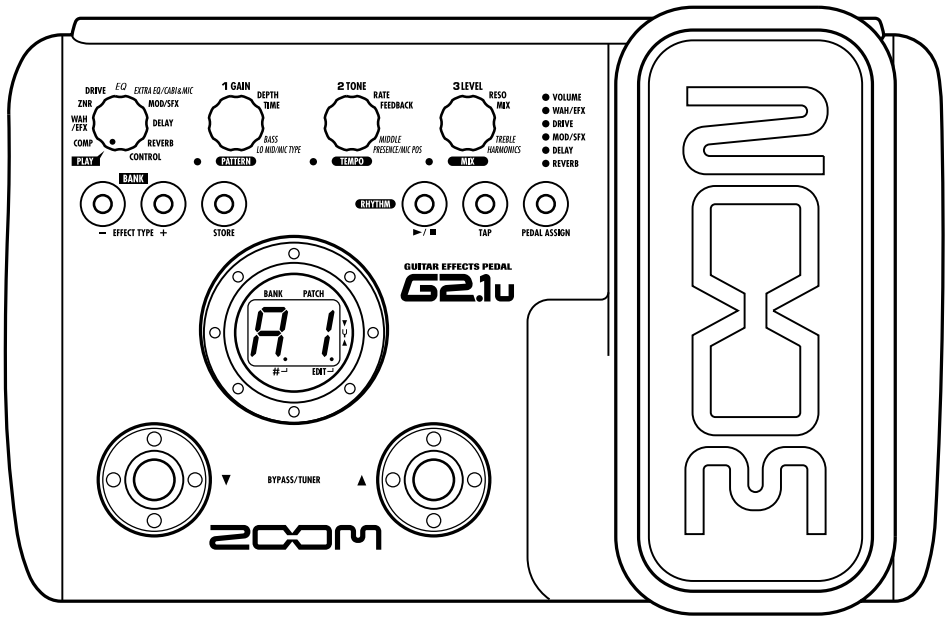
Service Manual

GUITAR EFFECTS PEDAL

G2.1u



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Introduction

The G2.1u is a multieffect processor with the following features and functions.

●Latest processing technology for outstanding performance

96 kHz / 24 bit sampling (with 32 bit internal processing) assures excellent sound quality. Frequency response remains flat up to 40 kHz, and input-converted signal-to-noise ratio is an amazing 120 dB, demonstrating the high level of performance achieved by the G2.1u. The G2.1u also has a USB connection and can be used as a direct guitar/computer interface.

●Versatile palette of effects including new creations

Out of a total of 54 effects, up to nine (including ZNR) can be used simultaneously. The high-quality choices provided by the G2.1u include distortion effects that simulate the tones of famous amps and effects pedals, 6-band guitar EQ and delay effects with "hold" control operated by foot switch.

●Great for live performances and direct recording

The distortion effect module provides two different algorithms for each of its 17 effect types, one for live performance and one for direct recording. Depending on the on/off setting of the CABINET & MIC effect which simulates amp cabinet sound and mic characteristics, the most suitable algorithm is automatically selected, giving you the best sound for any application.

●Integrated rhythm functions and auto-chromatic tuner

A number of rhythm patterns using realistic PCM drum sounds are provided. This is convenient for use as a metronome during individual practice or to provide a simple rhythm part for a quick session. An auto-chromatic tuner for guitar is also built right into the unit, allowing you to easily tune your instrument also at home or on stage.

●Sophisticated user interface

The combination of a rotary type selector and three parameter knobs make the effect editing process intuitive and quick. The mute interval when switching patches has been reduced to less than 5 milliseconds. Seamless patch changing is now a reality.

●Dual power supply principle allows use anywhere

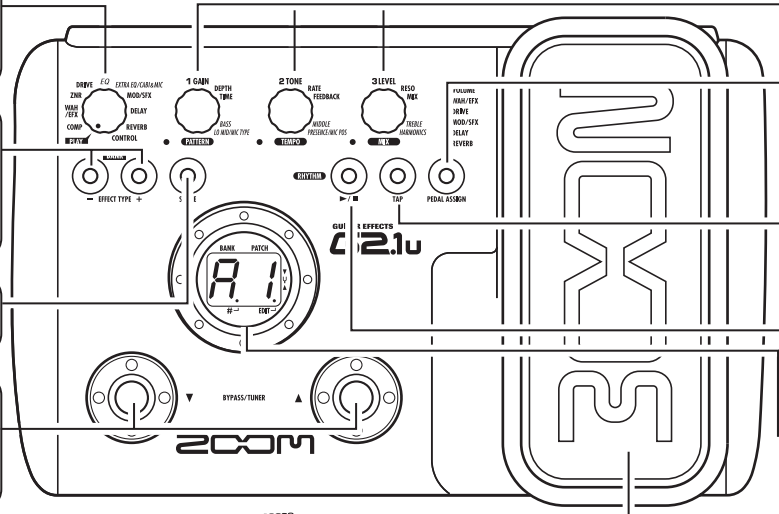
The G2.1u can be powered from four IEC R6 (size AA) batteries or an AC adapter. Continuous operating time on batteries is approximately 7.5 hours with alkaline batteries.

●Easy operation with expression pedal and foot switch

The expression pedal on the top panel lets you adjust the tonal quality of an effect or the volume in real time.
An optional expression pedal (FP01/FP02) or foot switch (FS01) can be connected to the CONTROL IN jack. The external expression pedal is used for controlling the volume. The foot switch is convenient for quickly toggling effect programs or for setting the tempo of the rhythm function.
Please take the time to read this manual carefully so as to get the most out of the unit and to ensure optimum performance and reliability.

Controls and Connections

Top Panel



Module selector
Switches between play mode and edit mode. In edit mode, the knob selects the module for operation.

BANK [-]/[+] keys
In play mode, the keys serve for directly switching to the next lower or higher bank.
In edit mode, the keys switch the effect type for the currently selected module.

[STORE] key
Serves for storing edited patches in memory.

[▼]/[▲] foot switches
These switches are used for selecting patches, switching effect modules on and off, controlling the tuner, and other functions.

Parameter knobs 1 - 3
These knobs allow changing the level of effect parameters or of the overall patch. During rhythm playback, the knobs let you select a pattern, set the tempo, and adjust the rhythm volume.

[PEDAL ASSIGN] key
This key lets you select the function of the built-in expression pedal. The currently selected function is shown by a lit LED.

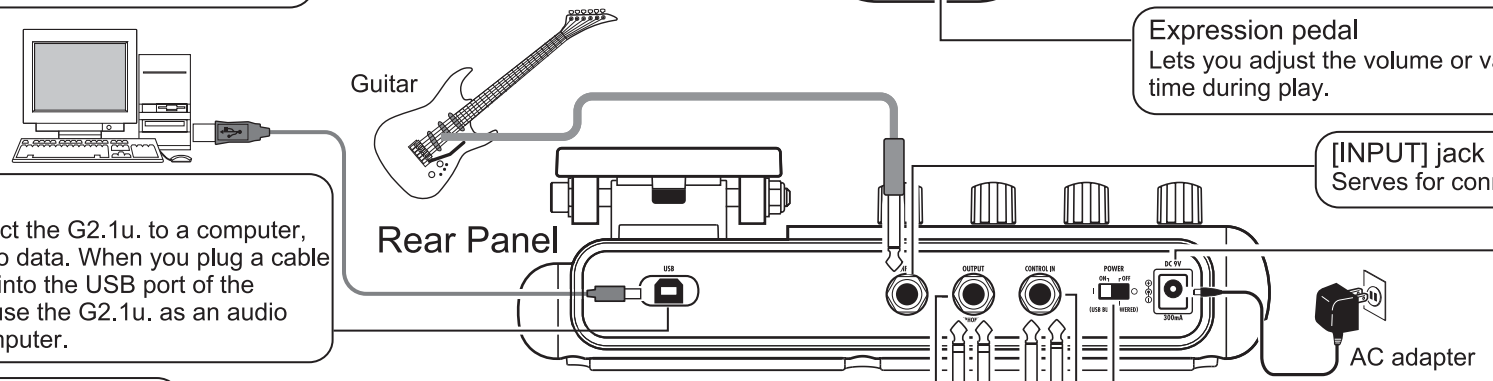
[TAP] key
Allows manual input of time related effect parameter values such as delay time, and rhythm pattern tempo.

RHYTHM [▶ / ■] key
Serves to start/stop rhythm playback.

Display
Shows patch numbers, setting values, and other information about operating the G2.1u.

Expression pedal
Lets you adjust the volume or various effect parameters in real time during play.

Rear Panel



Computer

Guitar

[USB] connector
Allows you to connect the G2.1u. to a computer, for exchanging audio data. When you plug a cable from this connector into the USB port of the computer, you can use the G2.1u. as an audio interface for the computer.

[INPUT] jack
Serves for connecting the guitar.

[DC IN] jack
An AC adapter (ZOOM AD-0006) with a rated output of 9 volts DC, 300 mA (center minus plug) can be plugged into this jack.

AC adapter

[POWER] switch
Turns the unit on and off.

[OUTPUT/PHONES] jack
This stereo phone jack serves for connection to a guitar amplifier or recorder. It is also possible to use a Y cable for sending the output to two amplifiers, or to plug a pair of stereo headphones into this jack.

Guitar amplifiers

Headphones

[CONTROL IN] jack
Serves for connection of the optional foot switch (FS01) or expression pedal (FP01/FP02).

MTR
(multitrack recorder)

FP01/FP02

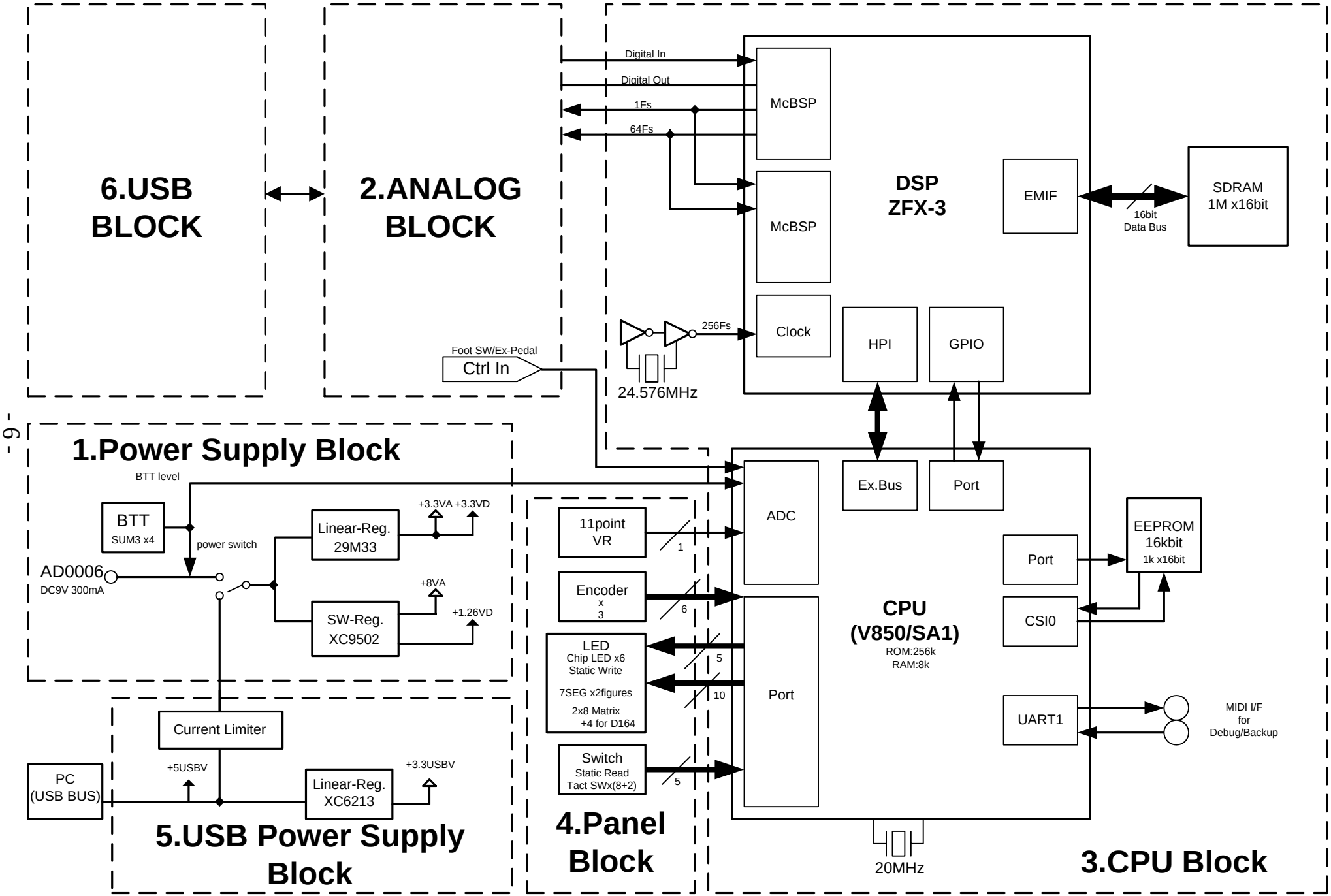
FS01

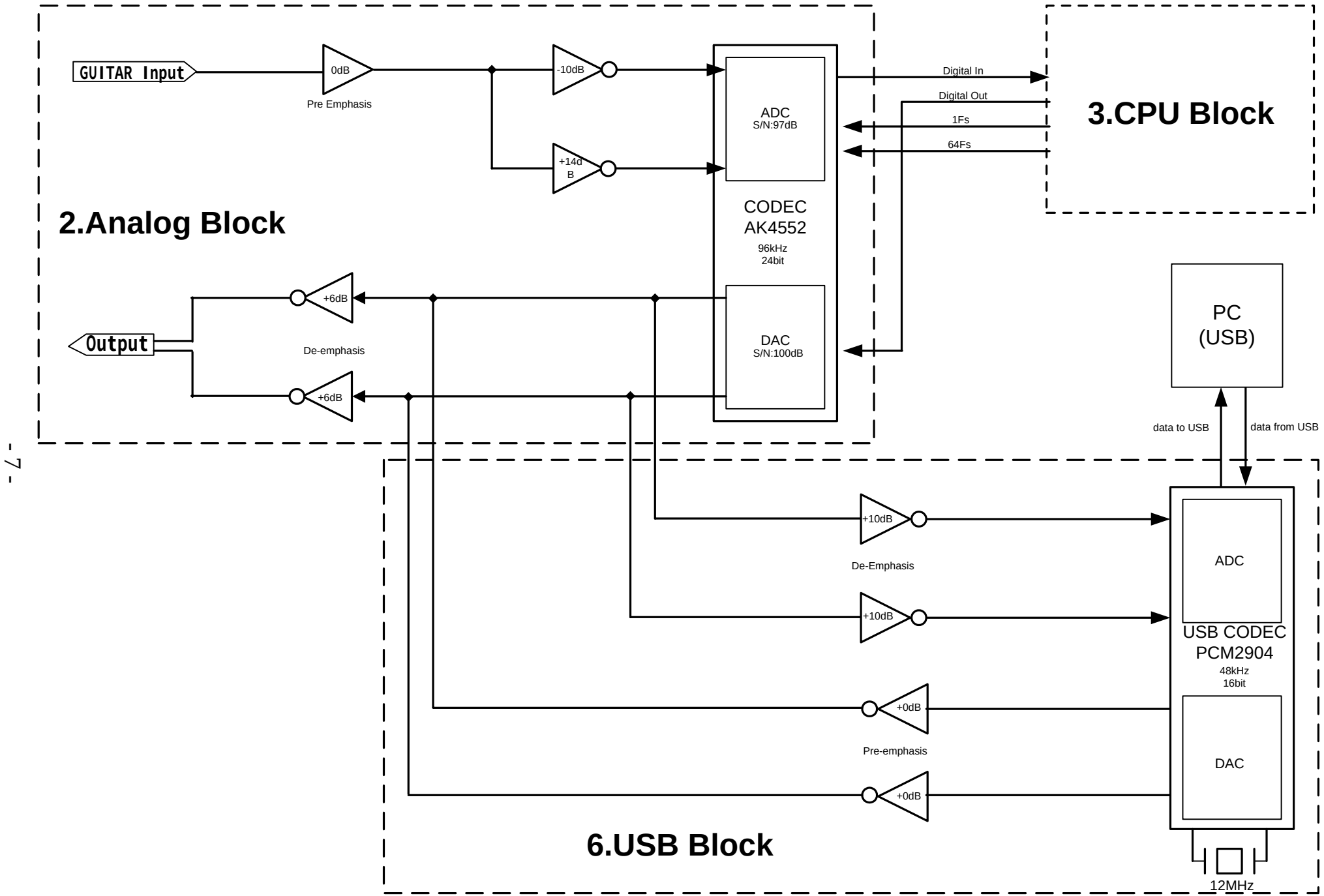
Specifications

Effect types	54 types
Effect modules	Max. 9 simultaneous modules
Patches	User area: 10 patches x 4 banks Preset area: 10 patches x 4 banks
Sampling frequency	96 kHz
A/D converter	24 bit, 64 times oversampling
D/A converter	24 bit, 128 times oversampling
Signal processing	32 bit
Frequency response	20 Hz - 40 kHz +1 dB -3 dB (with 10 kilohms load)
Display	2-digit 7-segment LED Parameter LEDs, Pedal assign LEDs
Input	Standard mono phone jack
Rated input level	-20 dBm
Input impedance	1 megohm
Output	Standard stereo phone jack (doubles as line and headphone jack)
Maximum output level	Line: +5 dBm (output load impedance 10 kilohms or more) Phones: 20 mW + 20 mW (into 32 ohms load)
Control input	For FP01, FP02, and FS01
USB interface	
PC interface:	16-bit (stereo configuration for recording/playback)
Sampling frequency:	32kHz, 44.1kHz, 48kHz
Power requirements	
AC adapter	9V DC, 300 mA (center minus plug) (ZOOM AD-0006)
Batteries	Four IEC R6 (size AA) batteries, Approx. 7.5 hours continuous operation (alkaline batteries)
Dimensions	165 mm (D) x 255 mm (W) x 79 mm (H)
Weight	1100 g (without batteries)
Options	Expression pedal FP02/ Foot switch FS01

• 0 dBm = 0.775 Vrms
• Design and specifications subject to change without notice.

BLOCK DIAGRAM




GUITAR Input
0dB
Pre Emphasis
-10dB
+14dB
ADC
S/N:97dB
CODEC
AK4552
96kHz
24bit
Digital In
Digital Out
1Fs
64Fs
3.CPU Block
2.Analog Block
+6dB
Output
De-emphasis
+6dB
DAC
S/N:100dB
PC
(USB)
data to USB
data from USB
+10dB
De-Emphasis
+10dB
ADC
USB CODEC
PCM2904
48kHz
16bit
+0dB
Pre-emphasis
+0dB
DAC
6.USB Block
12MHz

Description of Block Diagram

1. Power supply block

Power supply

AC Adaptor AD-0006

· +3.3 VD for the CPU, DSP, SDRAM, LEDs including the 7-segment LEDs, and peripherals.
· +1.26 VD for the DSP.
· +3.3 VA for the Analog block.
· +8.0 VA for the Analog block.

2. Analog block

1) Guitar input

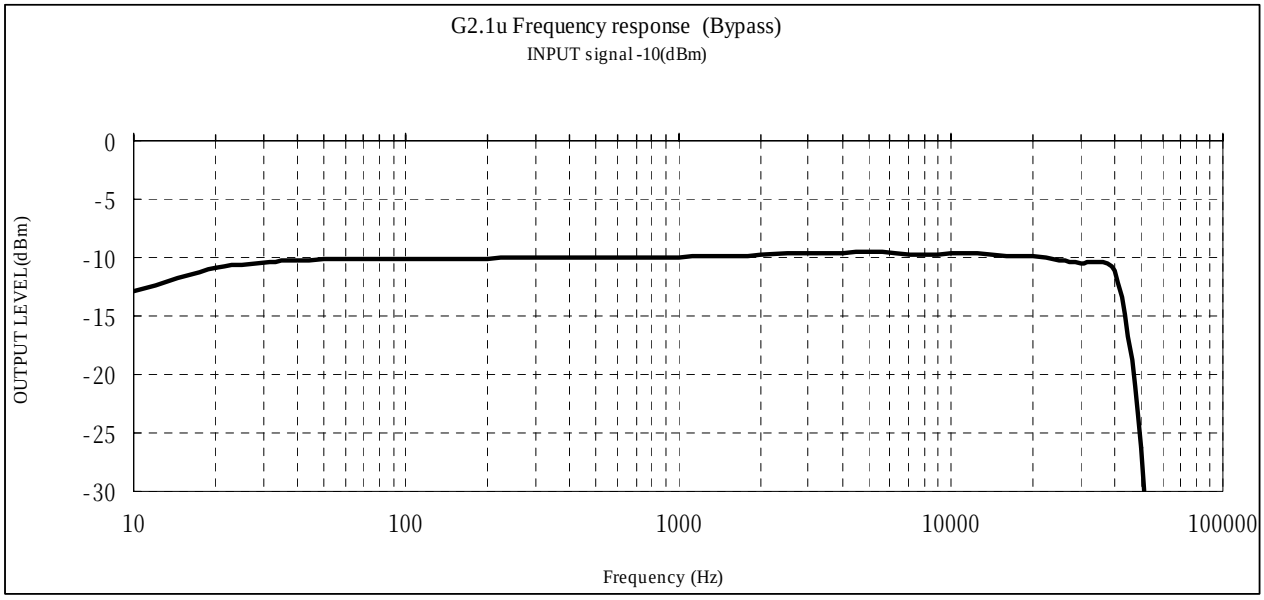
The signal from [INPUT] jack is sent to the DSP and processed there.

· Rated input level -20 dBm
· Input impedance 1 megohm
· pre-emphasis +16dB in 40kHz or higher

2) Output

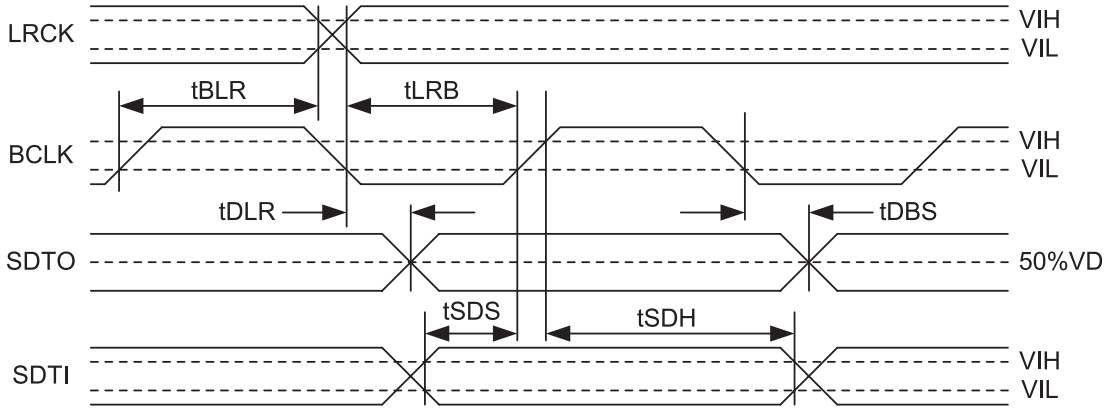
Output (For line/headphones)

· Output load impedance
  For line: 10 kilohms or higher
  For headphone: 20 mW + 20 mW into 32-ohm load
· Maximum output level +5 dBm
· de-emphasis -16dB in 40kHz or higher
· Frequency response Refer to the following figure.



4) AD/DA converter:

AK4552VT-E2	Sampling frequency 96 kHz
	System Clock (256fs) 24.576 MHz
	A/D 2-channel
	64-times oversampling
	24-bit resolution, MSB justified
	D/A 2-channel
	128-times oversampling
	24-bit resolution, LSB justified



Audio Data Input/Output Timing

3. CPU block

1) CPU

uPD703015BYGC-A29-8EU	32-bit processing microprocessor
(D163-0003)	Internal ROM 128 Kbyte
	A/D converter 10-bit resolution, 8-channel
	Master clock 20 MHz

2) EEPROM:

M93C86-WMN6	16kbit 3-wire

3) DSP: ZFX-3L	32-bit processing
	Master clock 24.576 MHz
	Bit clock 6.144 MHz (64 fs)
	L/R clock 96 kHz (1 fs)

4) SDRAM

IS42S16100C1-7TL	512 K x 16 bit x 2banks, as external memory of the ZFX-3L

4. Panel block

STATIC KEY (x 7)
STATIC LED (x 5)
DINAMIC LED (x 6)
ROTARY ENCODER (x3)
11 click VOLUME (x1)
7segment LED (x 1)
All LEDs are lit under the control of the CPU.

5. USB Power Supply block

USB Power Supply

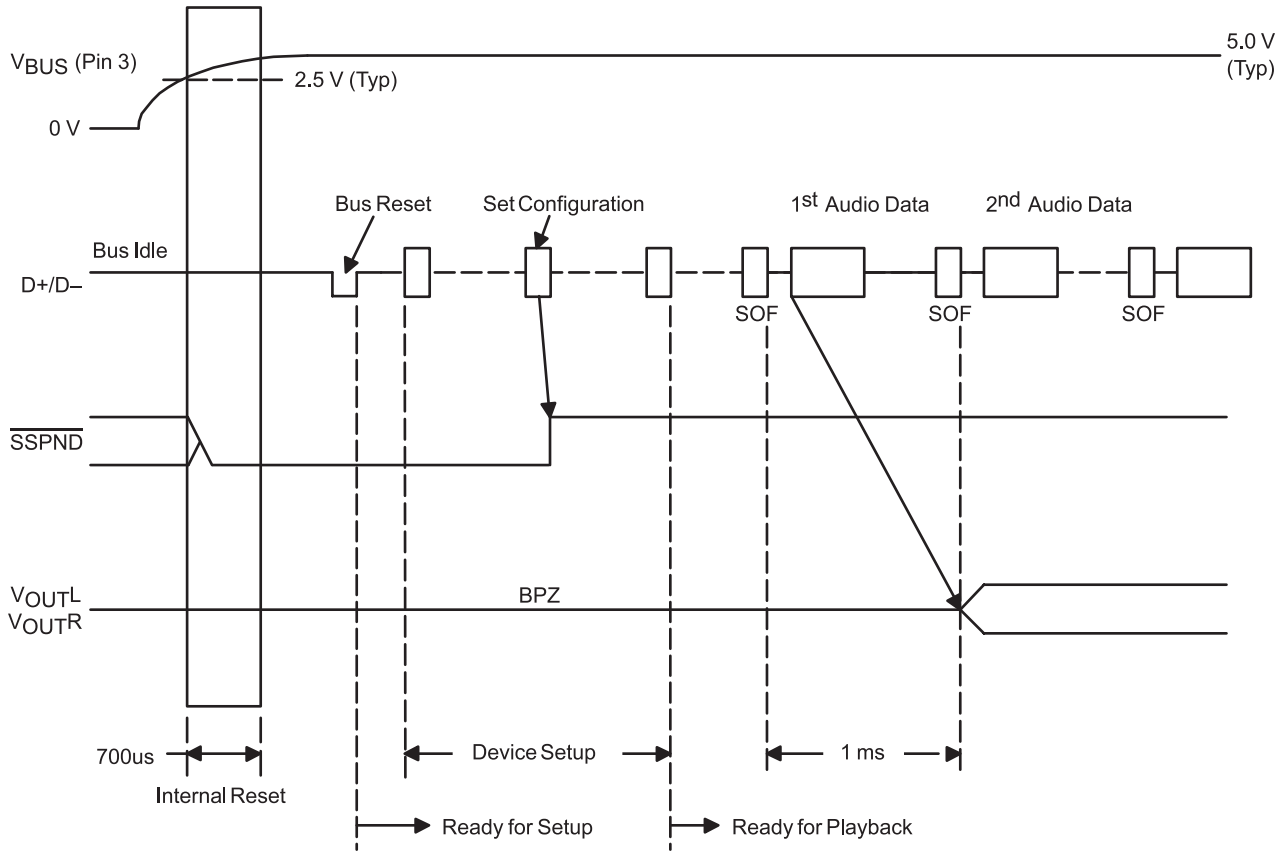
USB BUS Power

· +5.0 USBV for the Power supply block.
· +3.3 USBV for the USB block.
· +5.0 VO for the USB block.

6. USB block

AK4552VT-E2

Sampling frequency 48 kHz
System Clock 12 MHz
A/D 2-channel
16-Bit Delta-Sigma ADC and DAC
D/A 2-channel



Back Up User's Data

If necessary, back up the user's effect patch data to avoid an accidental erasing.

Required

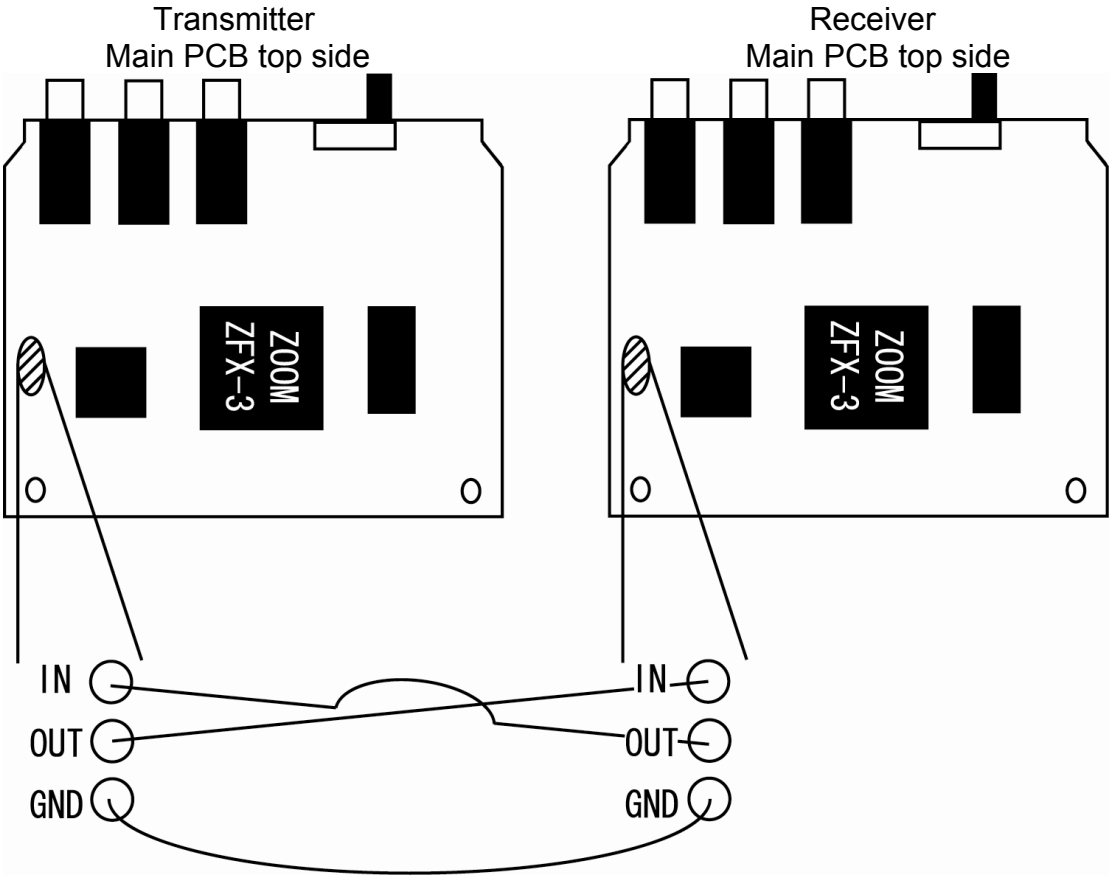
· User's G2.1u as a transmitter (hereinafter referred to as "the transmitter")
· Another G2.1u as a receiver (hereinafter referred to as "the receiver")
· Jumper wires

1. Remove the bottom plate.

2. Connect "IN" terminal of the transmitter and "OUT" terminal of the receiver.

3. Connect "OUT" terminal of the transmitter and "IN" terminal of the receiver.

4. Connect their ground terminals on the top side of the main PCB, using jumper wires (See below).



5. Turn the power of both transmitter and receiver on while holding the [STORE] and the [RHYTHM] keys.
   Make sure that the both 7segment LED lit "tr".

6. Press the [TYPE -] key of the receiver, and make sure that the 7 segment LED lit "rx". The receiver is ready to receive the data.

7. Press the [TYPE +] key of the transmitter and make sure that the 7 segment LED lit “tx”. The indication flashes on and off at once. And the transmitter starts to send the data. When sending and receiving finish successfully, and hexadecimals including two dots such as [x.x.] appears on the display. This displayed [x] depends on User’s patch conditions.
   If [E1] or [E2] or [E3] appear on the display, these mean sending and receiving are error. In this case, confirm conditions of the transmitter and receiver, and try to back up again.

8. Turn the both transmitter and receiver off.

9. Take the wires away and attach the bottom plate.

Function Test

After repairing, the inspection should be performed with the built-in program for inspection.
※ Equipment required
· AC voltage meter (audio analyzer would be better)
· IHF-A filter (audio analyzer might include it)
· Oscillator
· AC adapter (AD-0006)
· Four batteries: R6 [SUM-3] or "AA" size (alkaline batteries are recommended)
· Cables

1. Starting Built-in Inspection Program

Connect the AC-adapter.
Turn on the power holding [TYPE +], [TYPE -], and [RHYTHM] keys.
Starting with TEST-mode, 7segment LED is displayed [8.8.], and all LEDs (except [TYPE +], [TYPE -], and [STORE] keys) are light up.

2. PLAY / EDIT VOLUME check

Turn the [PLAY] dial clockwise and anticlockwise.
Make sure that the indications "00 -> 01 -> 02 -> 03 -> 04 -> 05 -> 06 -> 07 -> 08 -> 09 -> 0A" display on the 7segment LED when the dial is turned clockwise.
Make sure that the indications "0A -> 09 -> 08 -> 07 -> 06 -> 05 -> 04 -> 03 -> 02 -> 01 -> 00" display on the 7segment LED when the dial is turned anticlockwise.
And make sure that only 7segment LED turns on then.

3. DIAL / LED check

Turn the [GAIN] dial, and make sure that the [PATTERN] LED lights up.
Turn the [TONE] dial, and make sure that the [TEMPO] LED lights up.
Turn the [LEVEL] dial, and make sure that the [MIX] LED lights up.
And make sure that the indications "01 ->02 -> 03 ... ->Fd ->FE ->FF" appear on the 7segment LED display when the dial is turned clockwise, and that "FF ->FE ->Fd ... 02 -> 01 -> 00" when turned anticlockwise.

4. DSP-MUTE check

Press the [TYPE -] key, and make sure that all LEDs go out and output sound is mute.
Press the [TYPE -] key once more, and all LEDs turn on and output sound is emitted.

5. SRAM check

Press the [TYPE +] key, and make sure that the 7segment LED is displayed [2.P] and the delayed signal is output from the left channel of [OUTPUT] jack.

6. BATTERY check

Press the [STORE] key, and make sure the 7segment LED is displayed the surveillance level of battery voltage.

7. SWITCH / LED check

Press the [RHYTHM] key, and make sure that the 7segment LED is displayed [r h].
The [RHYTHM] key turn on and off by pressing the [RHYTHM] key.
Press the [TAP] key, and make sure that the 7segment LED is displayed [t P].
The [TAP] key turn on and off by pressing the [TAP] key.

8. PEDAL ASSIGN check

Press the PEDAL ASSIGN key, and make sure that the 7segment LED is displayed [SL].
And make sure that the PEDAL ASSIGN LED turns on in the order of "VOL ->WAH -> DRY ->MOD ->DLY ->REV -> turns off", whenever the key is pressed.

9. ANALOG-MUTE check

Press the FOOT SWITCH [▼], and make sure that the 7segment LED is displayed as [mt].
The 7segment LED turns on and off by pressing the FOOT SWITCH [▼].
When the 7segment LED turns on, output sound is extremely low.

10. EEPROM check

Press the FOOT SWITCH [▲], and the status of EEPROM is displayed as the following.
[ok]・・・This indication means that default patch data in the EEPROM is correct.
[E0]・・・This indication means that there are some defective soldering on the EEPROM.
[E1]・・・This indication means that patch data in the EEPROM is false.

11. EX PEDAL check

The 7segment LED is displayed EX PEDAL's AD value if the PEDAL is moved.
Make sure that this EX PEDAL's AD value is the same as below table.

Expression pedal	Values
MIN(raise)	07 or more
MAX(down)	E0 or less
Pushed all the way	PEDAL SW ON

Make sure that difference between MIN and MAX is 60 or more in hex and this value doesn't decrease if EX PEDAL is pressed down.
Make sure that all PEDAL ASSIGN LEDs are turn on and off by pressing down the EX PEDAL stronger.

11-1. Adjusting of the Trimmer potentiometer (VR 400)

Open the bottom cover.
With the EX PEDAL fully down, and adjust the value to the range of CE to D2 by rotating the trimmer potentiometer.

11-2. PEDAL setting

Turn on the power holding the PEDAL ASSIGN key, and the indication “dn” appears on the 7segment LED. With the EP PEDAL fully raised, press the [STORE] key, and the indication “UP” appears on the 7segment LED.
And the EP PEDAL fully down and then lift your foot off the pedal, then press the [STORE] key.
And the unit returns to the play mode after the indication [Ok] appears the 7segment LED.
After this setting, make sure that the EX PEDAL’s AD value again.

12. FOOT PEDAL check

Plug the cable from the expression pedal (FP-01/FP-02) to the [CONTROL IN] jack. Make sure that the 7segment LED is displayed as range [06] to [09] when the FOOT PEDAL is pressed backward, and make sure that the 7segment LED is displayed as range [E3] to [FF] when the FOOT PEDAL is pressed forward.

13. FOOT SWITCH (optional) check

Plug the cable from the FS-01 to the [CONTROL IN] jack. Make sure that the 7segment LED is displayed as range [06] to [09] when the FS-01 is turned on, and make sure that the 7segment LED is displayed as [00] when the FS-01 is turned off.

14. Battery Warning Check

Set the power supply voltage to 6V. Make sure that the 7segment LED is displayed as [A0] then. And then set the power supply voltage to 3.9V. Make sure that the 7segment LED is displayed as [bt].

15. Restoring Factory Defaults

Turn the G2.1u on while holding down the [STORE] key, and the indication “AL” appears on the 7segment LED.
Then press the [STORE] key once more, and All Initialize is carried out.

16. TUNER Check

Press both [▼]/[▲] foot switches together briefly and release, and start the tuner mode and the bypass state. Make sure that then the 7segment LED is displayed as [bp] and the G2.1u is available as the tuner.

17 USB interface operation Check

Connect the unit to PC with USB cable and start up USB inspection software.
In the BYPASS mode, Input sin wave (440Hz/-20dBm) to INPUT jack and monitor the waveform on PC. And output sin wave (440Hz/-20dBm) from PC, monitor the output from OUTPUT jack (L/MONO, R, Phones) with speakers and oscilloscope.

*Make sure there are no defects (abnormal noise, output trouble, etc…)

*Refer to “How to use USB inspection software” about the how to use inspection software.

After this function test, carry out all initialization (Refer to page 17).

Special Start-up

There are some methods to start up the G2.1u for service.
To start up the unit, set the [POWER] switch to “ON” while holding any keys.
The following table shows which keys are held down.

	Keys held down	Purposes
Play Mode	None	Normal operation
Initialization	[STORE]	Recovering factory default
Test Mode	[TYPE +] + [TYPE -] + [RHYTHM]	Function test
Data transfer	[STORE] + [RHYTHM]	Backing up user’s data
Version	[UP]	Checking software version
Revision	[DOWN]	Checking software revision

● Play Mode

Normal operation.
See the operation manual.

● Initialization

This startup recovers the factory default condition.
Refer to page 17.

● Test Mode

This startup is used for the function Test.
Refer to page 13-15.

● Data transfer

This startup backs up the user’s effect patch data.
Refer to page 11, 12.

● Version

This startup indicates the software version number.
The indication “0003” appears on the display. (depend on circuit versions)

● Revision

This startup indicates the software revision number.
The indication “9005” appears on the display. (As of October, 2005)

Recovering the Factory Default

In the factory default condition, the patches of the user area (A0-d9) contain the same settings as the patches of the preset area (00-39). Even after overwriting the user patches, their original content can be restored in a single operation (“All Initialize” function).
If necessary, back up the user’s patch data. Refer to page 11, 12 for details of the back up.

1. Turn the power on while holding the [STORE] key.
   The indication “AL” appears on the display.

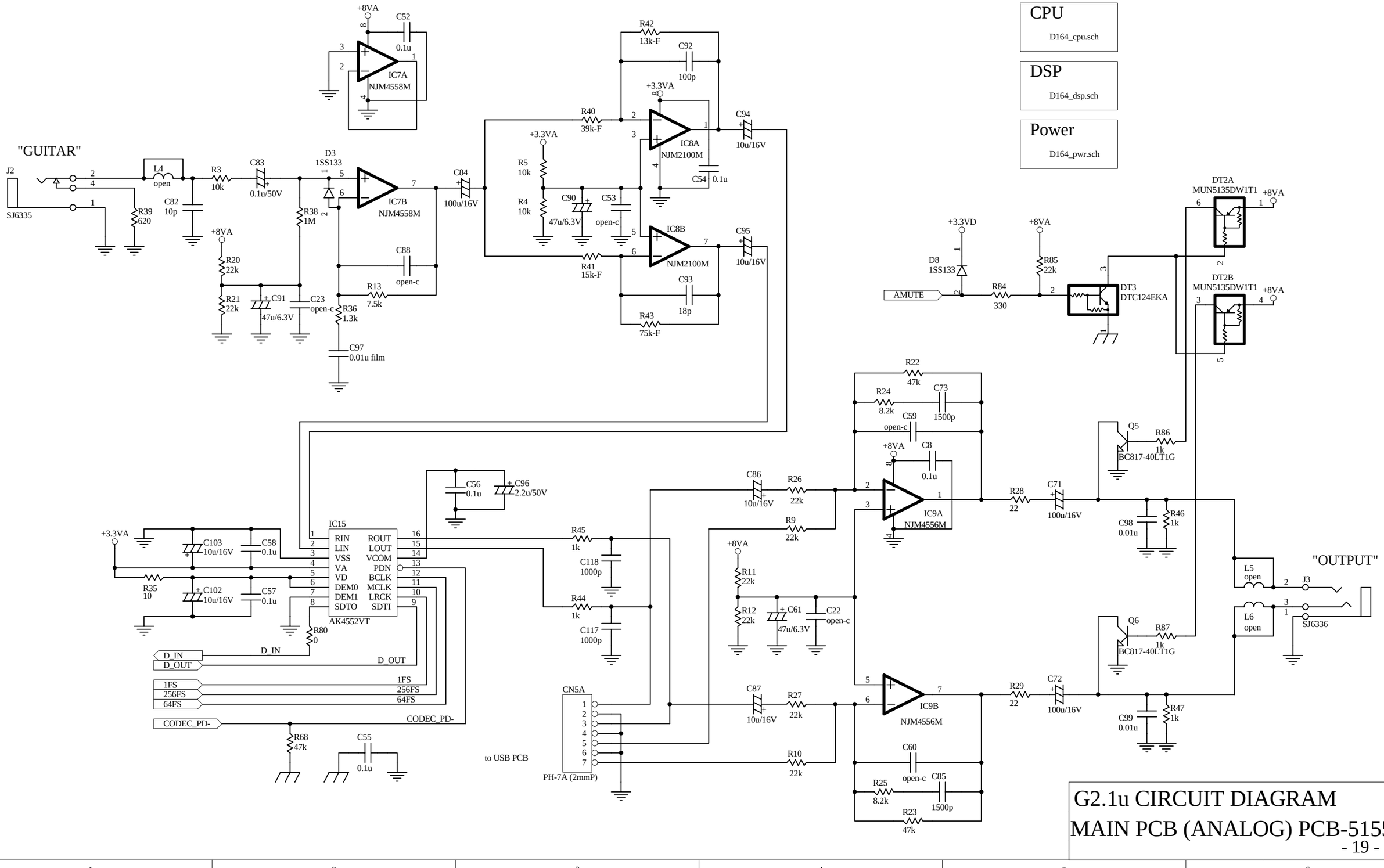
2. To carry out the All Initialize function, press the [STORE] key once more.
   All patch settings are returned to the factory default condition, and the unit switches to play mode. To cancel All Initialize, press the [RHYTHM] key instead of the [STORE] key.

G2.1u Circuit Check Specification

No.	Items	Ch	Specifications	Inputs	Conditions/notes	Display and Indicator	Keys pressed in "Test mode"
1	Current consumption		190mA±20mA (FLASH uPU)	Short	Immediately after Test mode starts All LEDs are lit.	All lit	None (Start up)
			180mA±20mA (MASK uPU)	Short	Immediately after Test mode starts All LEDs are lit.	All lit	None(Start up)
2	Power supply voltage 3.3VA		3.3V±0.15V	Short	Immediately after Test mode starts All LEDs are lit.	All lit	None(Start up)
	+3.3VD		3.3V±0.15V	Short	Immediately after Test mode starts All LEDs are lit.	All lit	None(Start up)
	+1.26VD		1.26V±0.05V	Short	Immediately after Test mode starts All LEDs are lit.	All lit	None(Start up)
	+8VA		8.74V±1.0V	Short	Immediately after Test mode starts All LEDs are lit.	All lit	None(Start up)
3	Output level	(L)	-1.5dBm±1.5dB	440Hz -20dBm	Load=32ohms / Output waveform is not clipped.	All lit	None(Start up)
	(Load: 32ohms)	(R)	-4.5dBm±1.5dB	440Hz ±0dBm	Load=32ohms / Output waveform is not clipped.	All lit	None(Start up)
4	Frequency response	(L)	+2.5dBm±1.5dB	20Hz -20dBm	Output waveform is not clipped.	All lit	None(Start up)
	(No Load)	(R)	-1.0dBm±1.5dB	20Hz ±0dBm	Output waveform is not clipped.	All lit	None(Start up)
		(L)	-16.5dBm±1.5dB	20kHz -40dBm	Output waveform is not clipped.	All lit	None(Start up)
		(R)	-20.0dBm±1.5dB	20kHz -20dBm	Output waveform is not clipped.	All lit	None(Start up)
5	Noise level	(L)	-80.0dBm or less	Short	Insert IHF-A	All lit	None(Start up)
	(No Load)	(R)	-90.0dBm or less	Short	Insert IHF-A	All lit	None(Start up)
6	Harmonic distortion	(L)	0.1% or less	440Hz -5dBm	Delay Mode / Insert 20KHz-LPF.	"2.P"	"Type+" key(SW5)
	(No Load)	(R)	0.1% or less	440Hz -5dBm	Delay Mode / Insert 20KHz-LPF.	"2.P"	"Type+" key(SW5)
7	Function of D-MUTE	(L)	Check function of Mute	440Hz -20dBm	Press ”Type-” key and check muting on/off.	None	”Type-” key(SW4)
	(DSP Mute)	(R)	Check function of Mute	440Hz -20dBm	Press ”Type-” key and check muting on/off.	None	”Type-” key(SW4)
8	Function of A-MUTE	(L)	Check function of Mute	440Hz -20dBm	Press ”Down” key and check muting on/off.	"mt"	"Down" key(SW9)
	(Analog Mute)	(R)	Check function of Mute	440Hz -20dBm	Press ”Down” key and check muting on/off.	"mt"	"Down" key(SW9)
9	Battery warning voltage		4.0V or less (Warning voltage)		Make sure that "bt" on display is blinked at 3.9V.	"bt" blinked	
			4.6V or more (released warning)		Make sure that the warning is released at 4.7V.	Return to normal status	
10	Control input Foot sw_OFF		0	FS-01	Make sure that "0" is displayed.		
	Foot sw_ON		6-9	FS-01	Make sure that value of "6-9" is displayed.		
	Foot pedal_MIN		6-9	FP-01	Make sure that value of "6-9" is displayed.		
	Foot pedal_MAX		E3-FF	FP-01	Make sure that value of "E3-ff" is displayed by hexadecimal.		
11	System operation		Make sure that keys, dial(11click), knobs, pedals, EEPROM, and LEDs including display and indicator normally operate.				

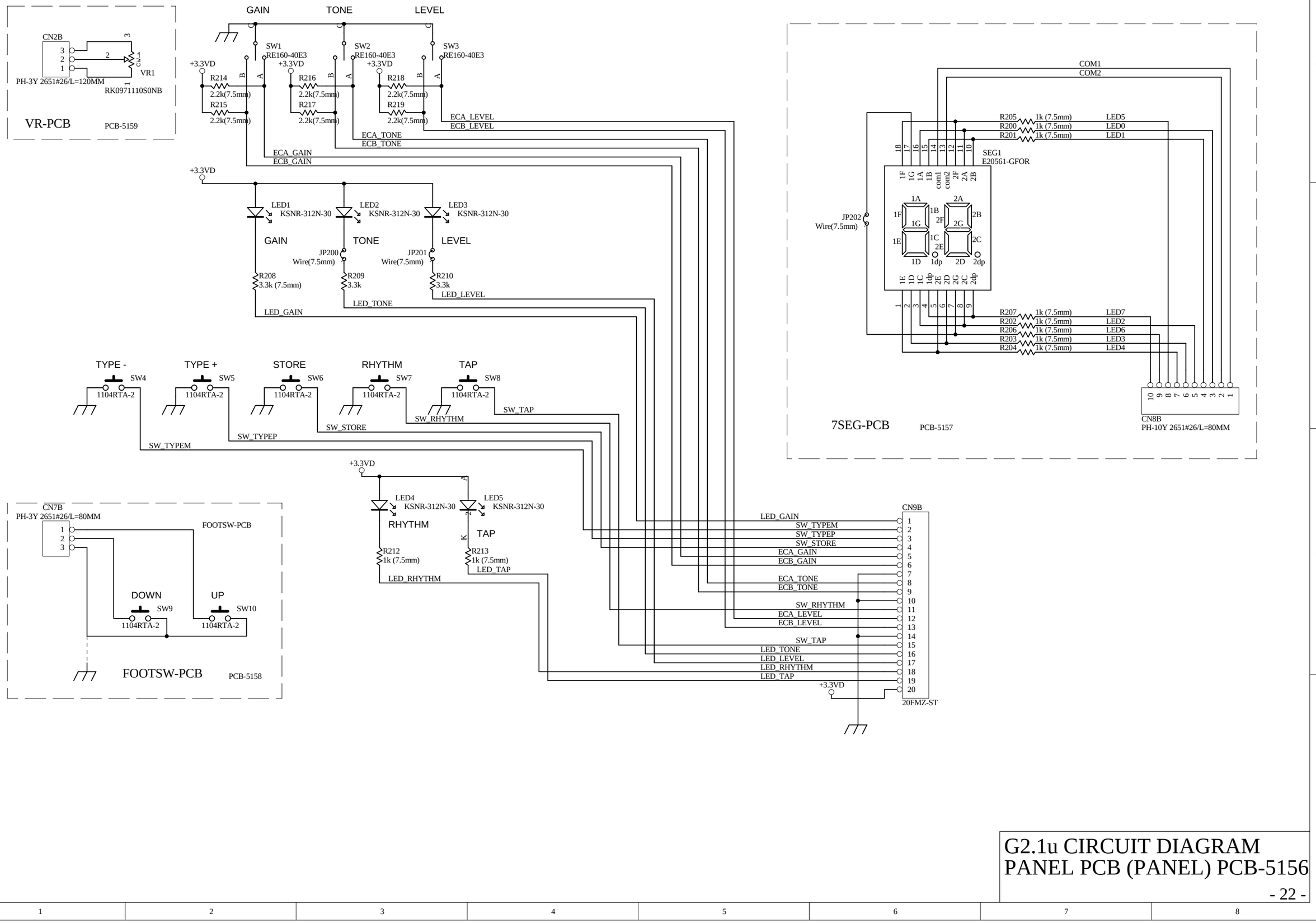
* Conditions (if there is no note)

Power supply	AC adaptor AD-0006
Input signal	Sine wave to [INPUT] jack
Output load	None (100 kilohms or more)
	PHONES: 32 ohms


CPU
D164_cpu.sch
DSP
D164_dsp.sch
Power
D164_pwr.sch
"GUITAR"
J2
SJ6335
L4
open
R3
10k
C83
0.1u/50V
C82
10p
R39
620
D3
1SS133
R38
1M
IC7A
NJM4558M
IC7B
NJM4558M
C84
100u/16V
+8VA
C52
0.1u
R20
22k
R21
22k
C91
47u/6.3V
C23
open-c
R36
1.3k
C97
0.01u film
C88
open-c
R13
7.5k
R42
13k-F
C92
100p
+3.3VA
R40
39k-F
IC8A
NJM2100M
C94
10u/16V
C54
0.1u
R5
10k
R4
10k
C90
47u/6.3V
C53
open-c
IC8B
NJM2100M
C95
10u/16V
R41
15k-F
C93
18p
R43
75k-F
+3.3VD
D8
1SS133
AMUTE
R84
330
R85
22k
DT3
DTC124EKA
DT2A
MUN5135DW1T1
DT2B
MUN5135DW1T1
+8VA
R22
47k
R24
8.2k
C73
1500p
C59
open-c
C8
0.1u
Q5
BC817-40LT1G
R86
1k
C98
0.01u
R46
1k
Q6
BC817-40LT1G
R87
1k
C99
0.01u
R47
1k
L5
open
L6
open
J3
SJ6336
"OUTPUT"
+3.3VA
C103
10u/16V
C58
0.1u
R35
10
C102
10u/16V
C57
0.1u
IC15
RIN
LIN
VSS
VA
VD
DEM0
DEM1
SDTO
ROUT
LOUT
VCOM
PDN
BCLK
MCLK
LRCK
SDTI
AK4552VT
R80
0
C56
0.1u
C96
2.2u/50V
R45
1k
C118
1000p
R44
1k
C117
1000p
D_IN
D_OUT
1FS
256FS
64FS
CODEC_PD-
R68
47k
C55
0.1u
CN5A
PH-7A (2mmP)
to USB PCB
C86
10u/16V
R26
22k
R9
22k
C87
10u/16V
R27
22k
R10
22k
IC9A
NJM4556M
IC9B
NJM4556M
R28
22
C71
100u/16V
R29
22
C72
100u/16V
C60
open-c
R25
8.2k
C85
1500p
R23
47k
G2.1u CIRCUIT DIAGRAM
MAIN PCB (ANALOG) PCB-5155A
- 19 -

G2.1u CIRCUIT DIAGRAM
MAIN PCB (CPU) PCB-5155A

G2.1u CIRCUIT DIAGRAM
MAIN PCB (DSP) PCB-5155

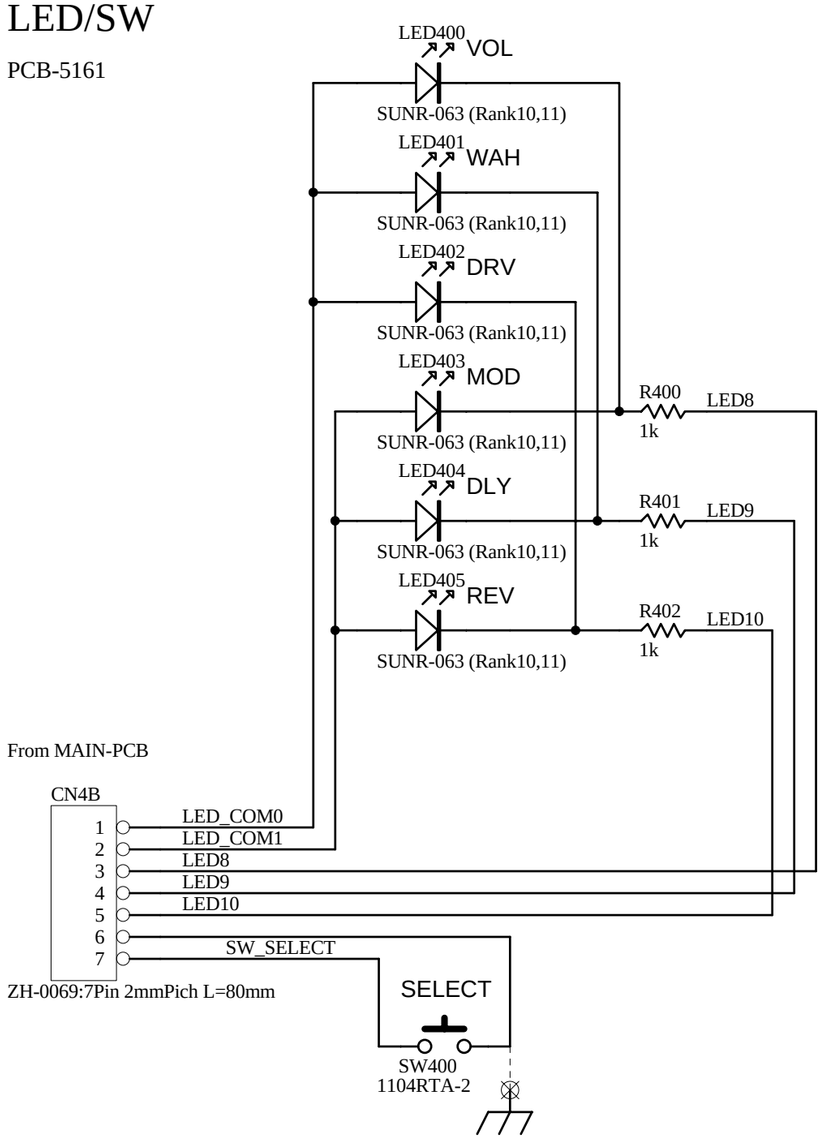


G2.1u CIRCUIT DIAGRAM
PANEL PCB (PANEL) PCB-5156

USB-Audio
D164CS_USB.SCH

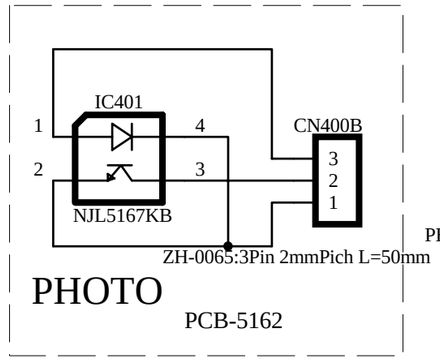
LED/SW

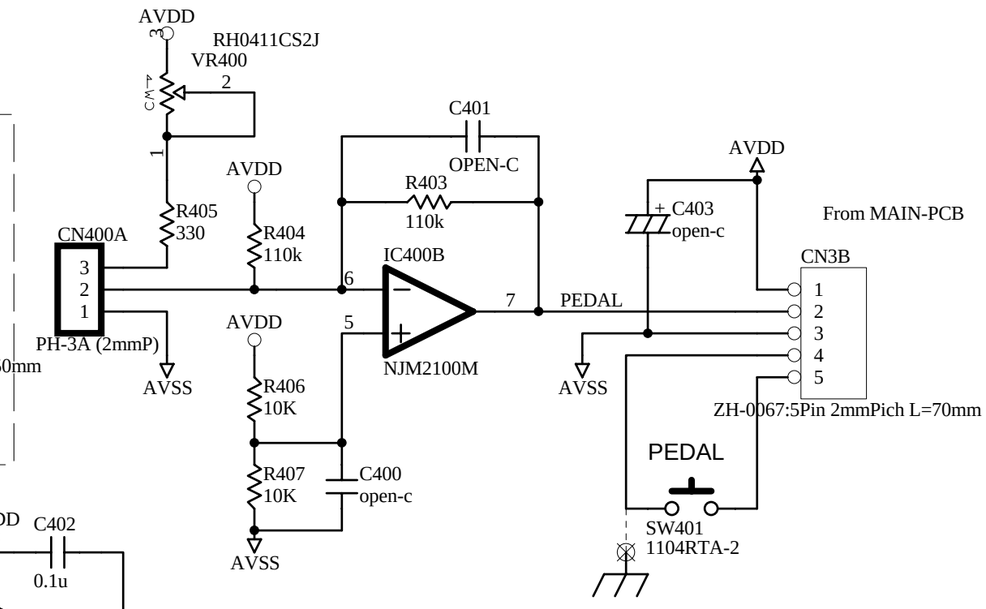
PCB-5161

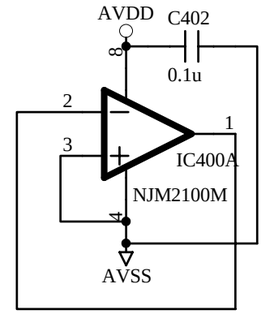


PHOTO

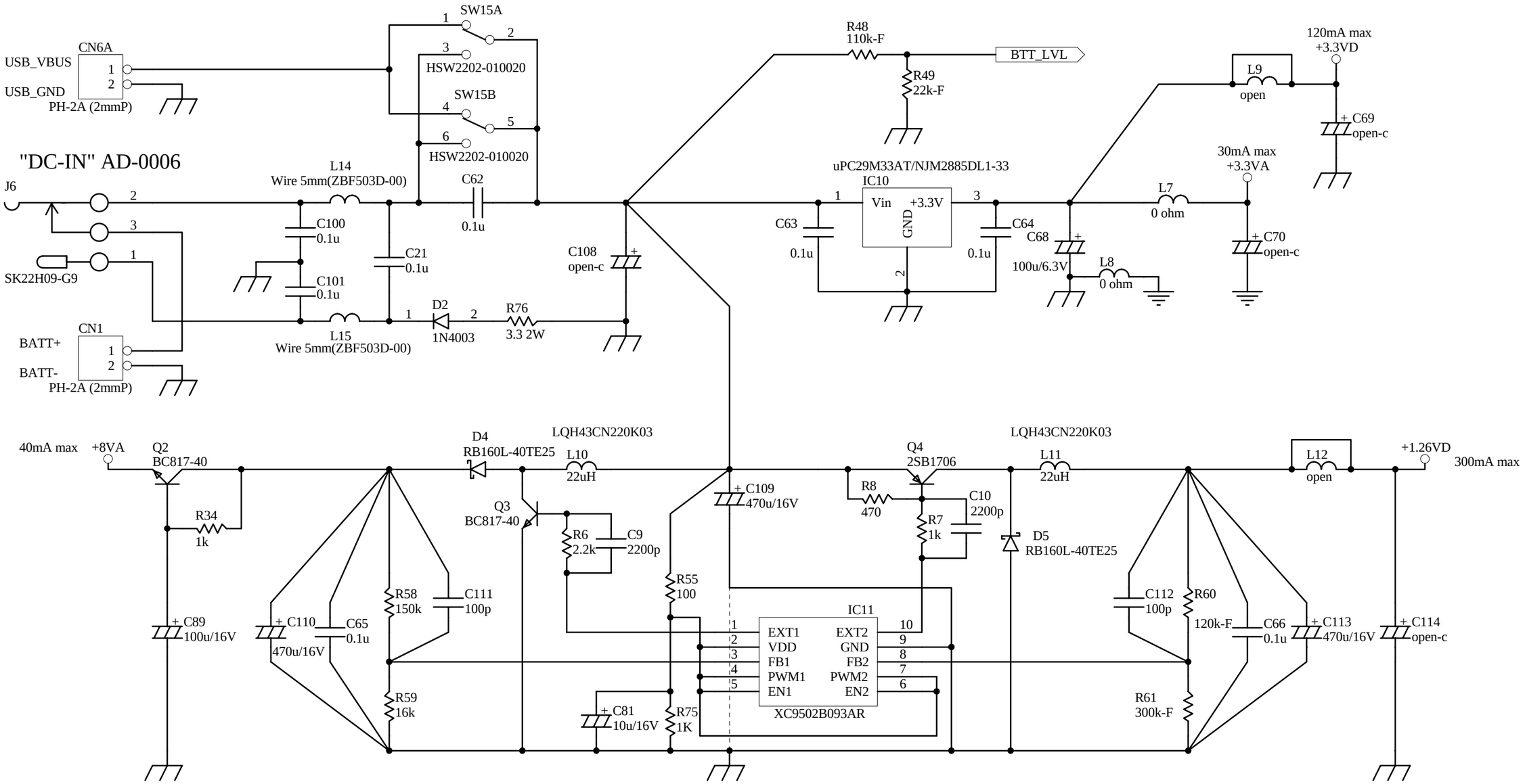
PCB-5162



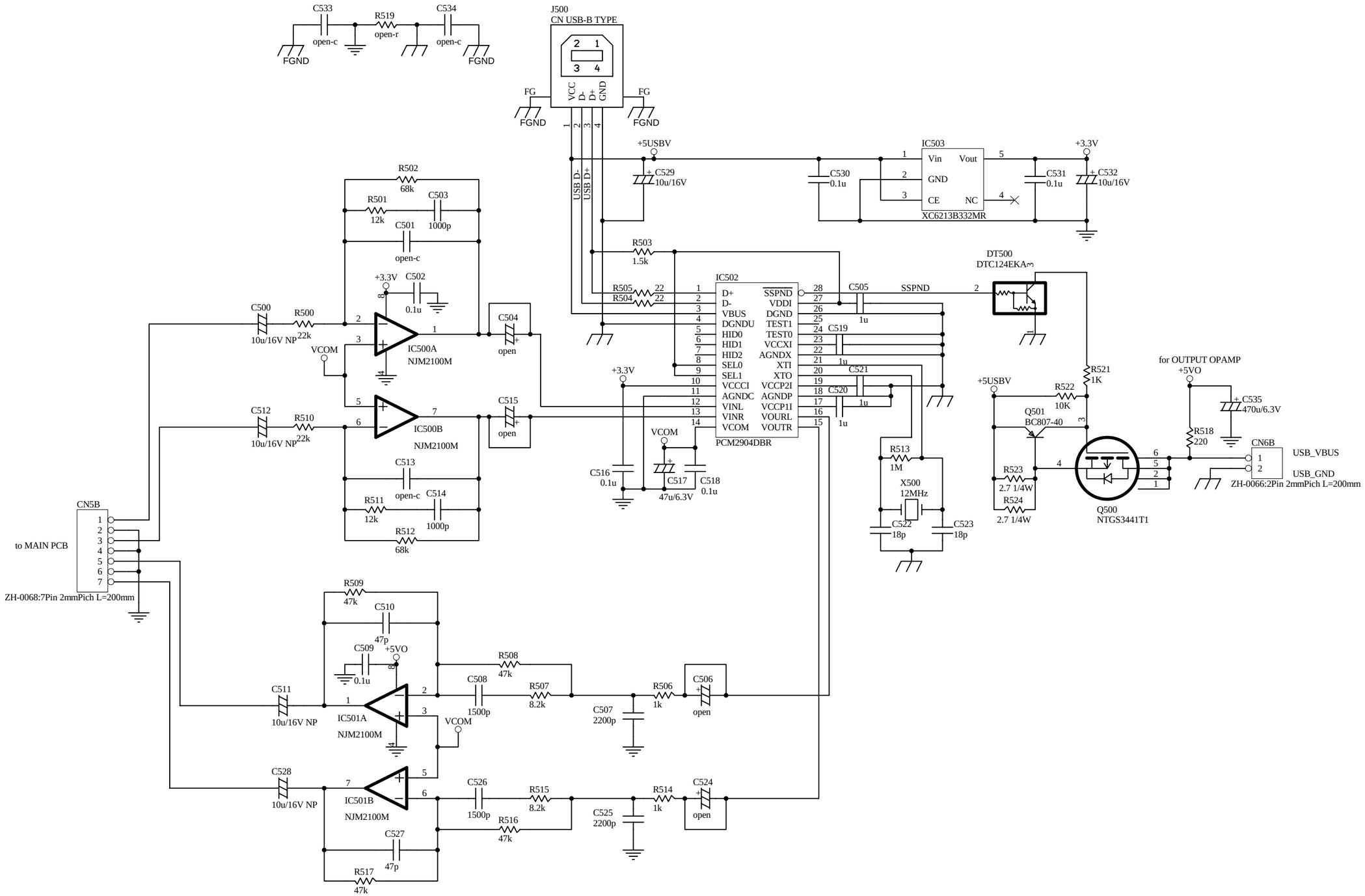




G2.1u CIRCUIT DIAGRAM
USB PCB (PEDAL) PCB-5160

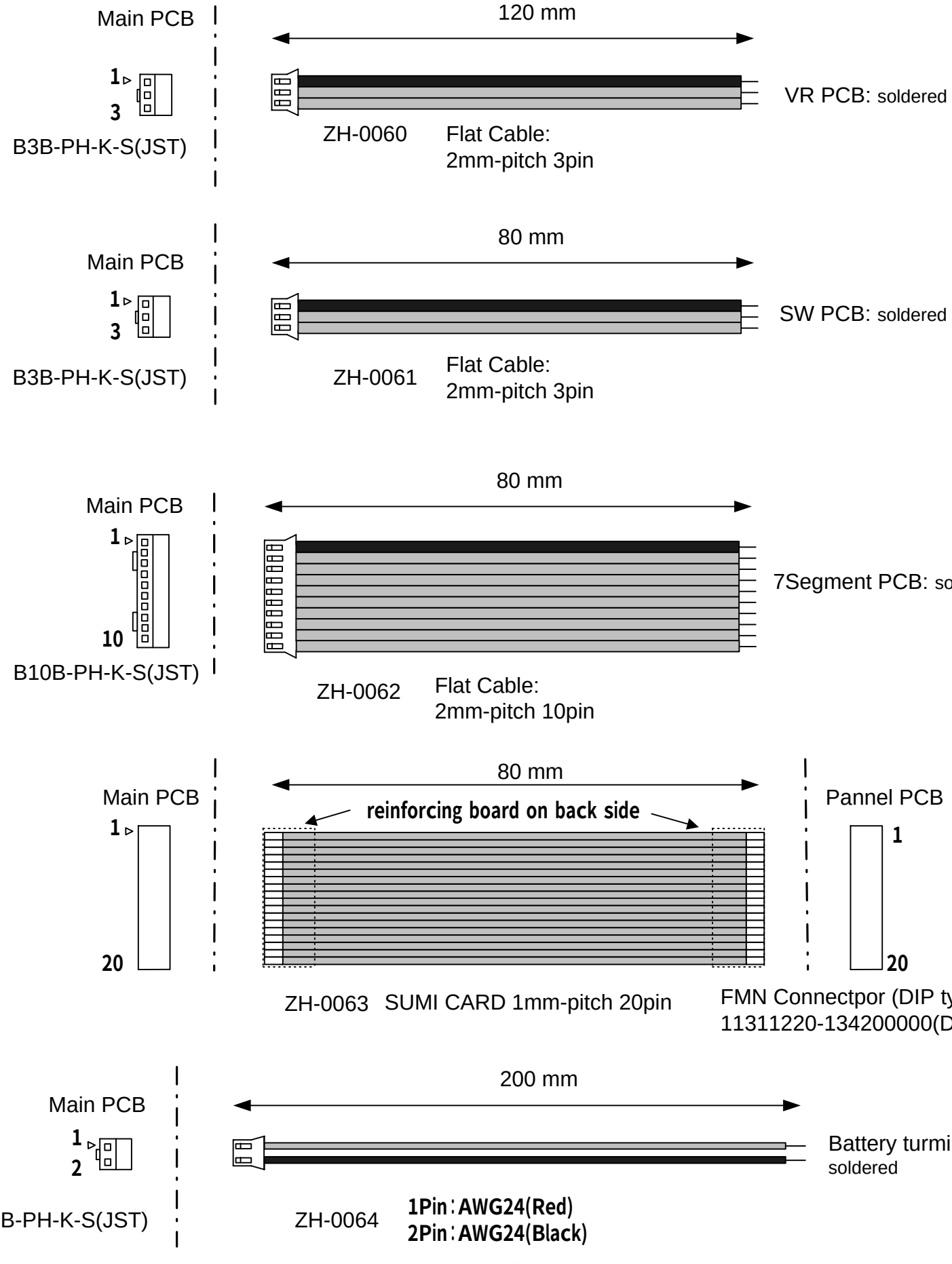


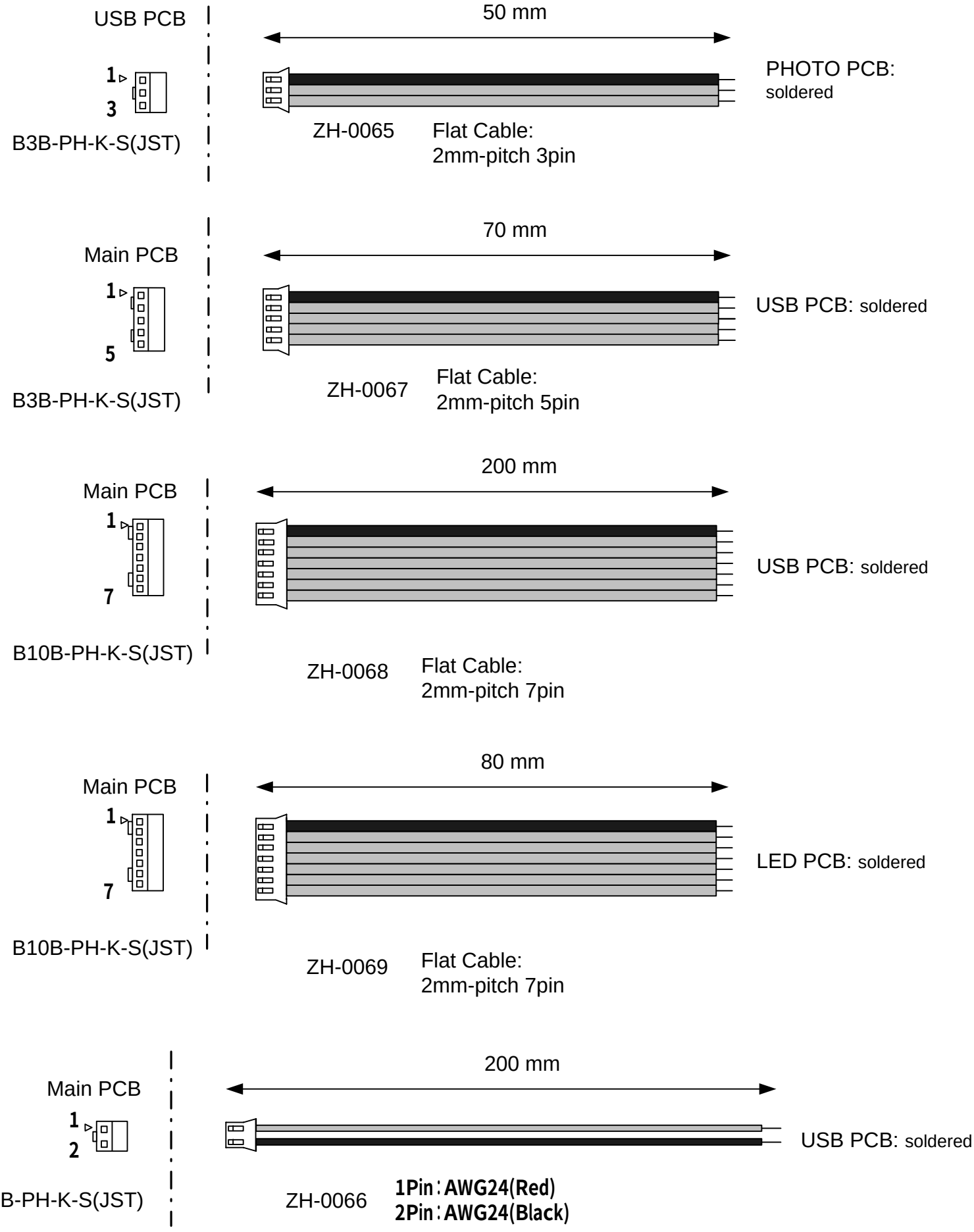
G2.1u CIRCUIT DIAGRAM
MAIN PCB (POWER) PCB-5155A



G2.1u CIRCUIT DIAGRM
USB PCB (USB) PCB-5160

Harness

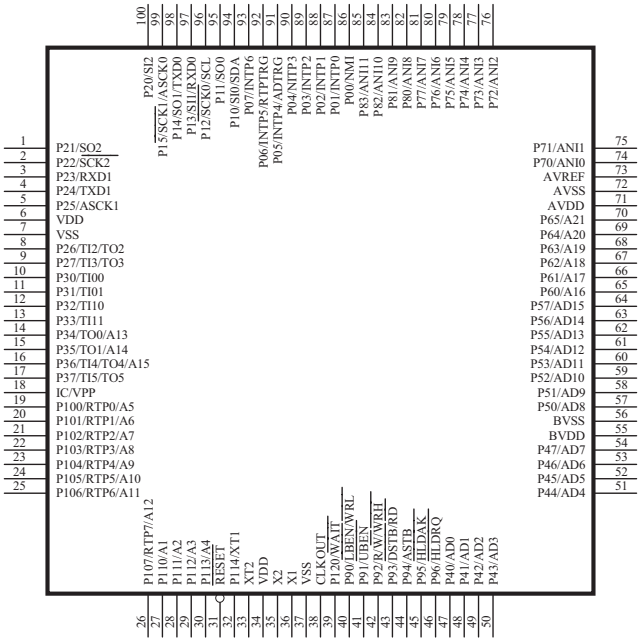

Main PCB
1
3
B3B-PH-K-S(JST)
120 mm
VR PCB: soldered
ZH-0060
Flat Cable:
2mm-pitch 3pin
Main PCB
1
3
B3B-PH-K-S(JST)
80 mm
SW PCB: soldered
ZH-0061
Flat Cable:
2mm-pitch 3pin
Main PCB
1
10
B10B-PH-K-S(JST)
80 mm
7Segment PCB: soldered
ZH-0062
Flat Cable:
2mm-pitch 10pin
Main PCB
1
20
80 mm
reinforcing board on back side
Pannel PCB
1
20
ZH-0063 SUMI CARD 1mm-pitch 20pin
FMN Connectpor (DIP type)
11311220-134200000(DNS)
Main PCB
1
2
B2B-PH-K-S(JST)
200 mm
Battery turminal:
soldered
ZH-0064
1Pin：AWG24(Red)
2Pin：AWG24(Black)


USB PCB
1
3
B3B-PH-K-S(JST)
50 mm
PHOTO PCB:
soldered
ZH-0065
Flat Cable:
2mm-pitch 3pin
Main PCB
1
5
B3B-PH-K-S(JST)
70 mm
USB PCB: soldered
ZH-0067
Flat Cable:
2mm-pitch 5pin
Main PCB
1
7
B10B-PH-K-S(JST)
200 mm
USB PCB: soldered
ZH-0068
Flat Cable:
2mm-pitch 7pin
Main PCB
1
7
B10B-PH-K-S(JST)
80 mm
LED PCB: soldered
ZH-0069
Flat Cable:
2mm-pitch 7pin
Main PCB
1
2
B2B-PH-K-S(JST)
200 mm
USB PCB: soldered
ZH-0066
1Pin：AWG24(Red)
2Pin：AWG24(Black)

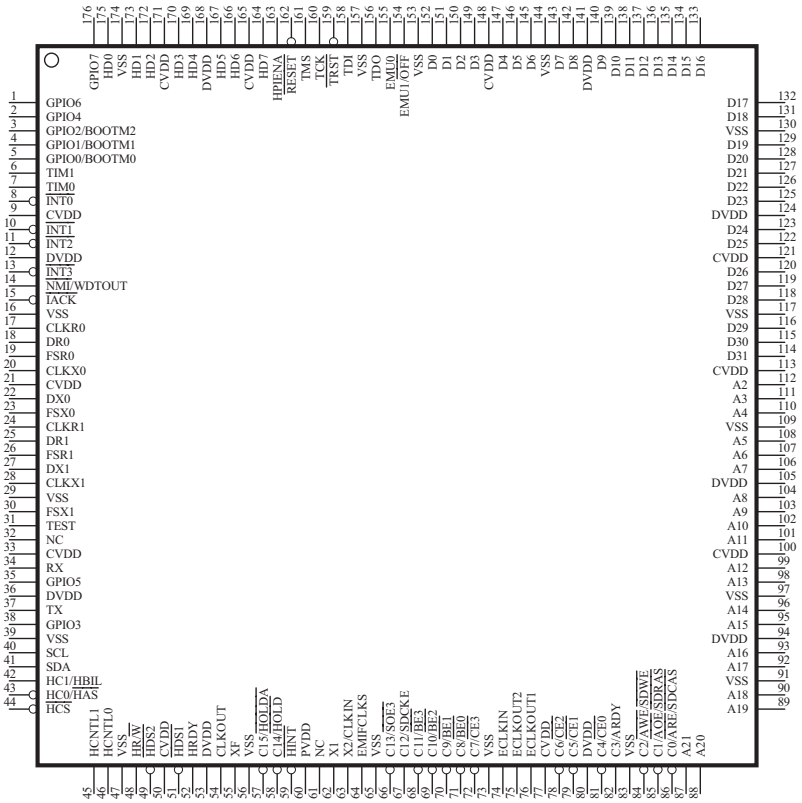
IC Pin Assignment

*Common IC with the G2

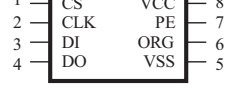
*CPU
/uPD703015BGC-A29-8EU
/NEC
/100P LQFP
/IC1



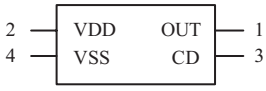
*DSP
/ZFX-3(1.26V, 3.3V)
/ZOOM
/176P LQFP
/IC2



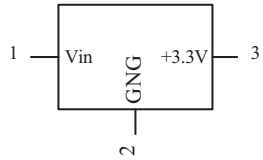
*EEPROM
/IS93C86A-3GRLI
/ISSI
/8P SOP
/IC14



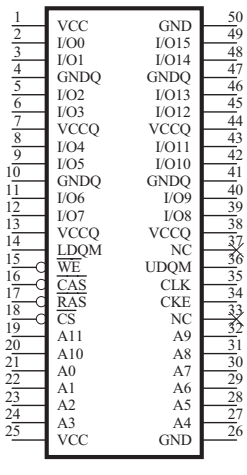
*Reset IC
/R3112Q291A-TR
/Ricoh
/4P SC-82
/IC4



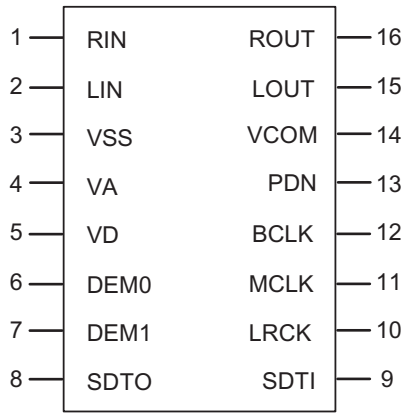
*Voltage Regulator
/uPC29M33AT-E1
/NEC
/SC63
/IC10



*SDRAM
/IS42S16100C1-7TL
/ISSI
/50P TSOP
/IC3

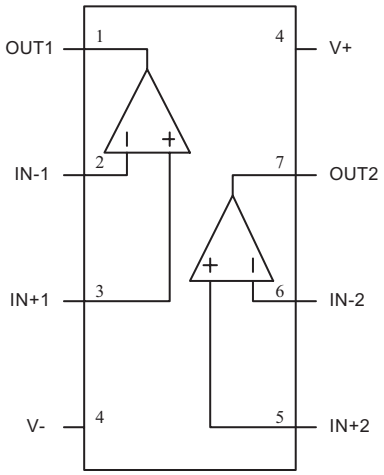


*AD/DA Converter
/AK4552VT-E2
/AKM
/16P TSSOP
/IC15

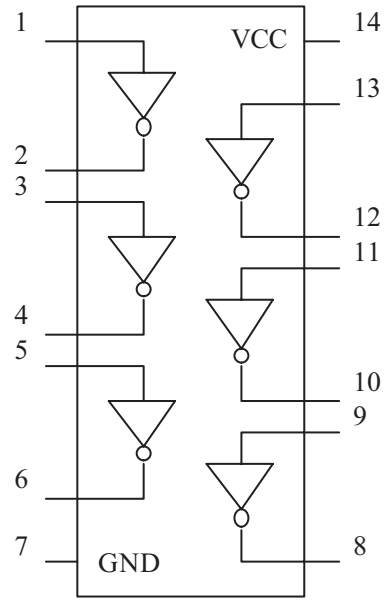


*OP-AMP IC

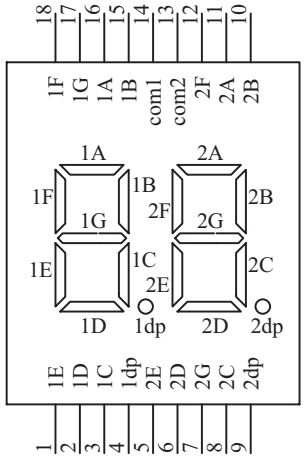
/NJM2100M-TE1	/NJM4556M-TE1	/NJM4558M-TE1
/JRC	/JRC	/JRC
/8P SOP	/8P SOP	/8P SOP
/IC8	/IC9	/IC7



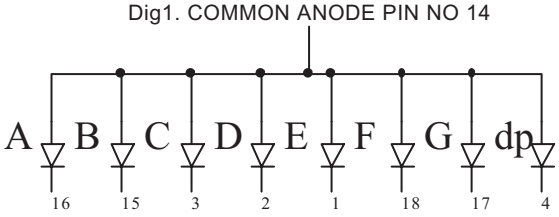
*Logic IC
/SN74HCU04ANS
/Texas Instruments
/14P SOP
/IC5



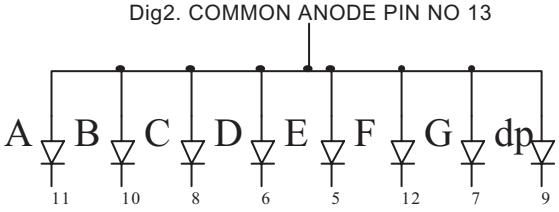
*7segment LED
/E20561-GFOR
/Kindwin
/18P DIP
/SEG1



Dig1. COMMON ANODE PIN NO 14

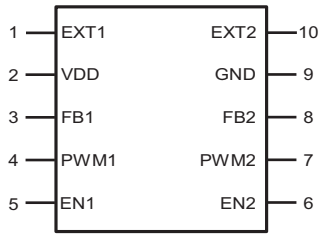


Dig2. COMMON ANODE PIN NO 13



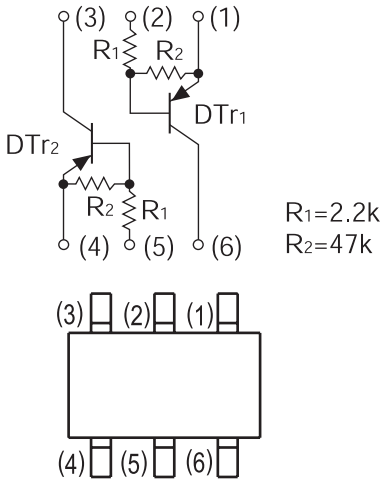
*DC/DC Converter

/TOREX
/XC9502B093AR
/10P MSOP
/IC11

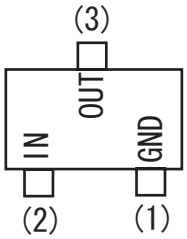


*D-Transistor

/ONSEMI
/MUN5135DW1T1
/SC88
/DT1,DT2

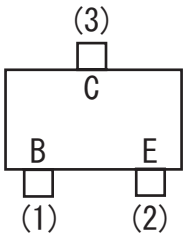


/ROHM
/DTC124EKA
/SC59
/DT3

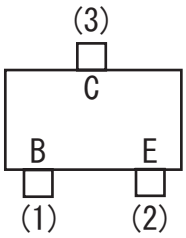


*Transistor

/Infineon
/BC807-40 (PNP)
/SC59
/Q4

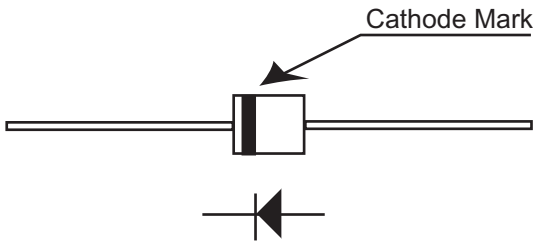


/Infineon
/BC817-40 (NPN)
/SC59
/Q2,Q3,Q5,Q6

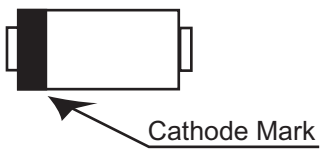


*Diode

/ROHM	/RECTRON
/1SS133T-77	/1N4003
/Pitch=7.5mm	/Picth=7.5mm
/D3,D8	/D2



*Chip Shottky Diode
/ROHM
/RB160L-40TE25
/PMDS
/D4,D5



Added IC for G2.1u

*USB Codec
/Texas Instruments
/PCM2904
/28P SSOP
/IC502

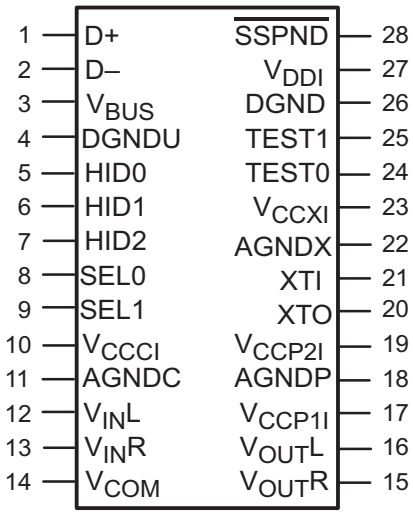
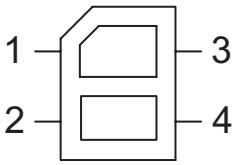
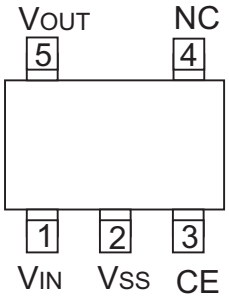


*Photo Reflector
/JRC
/NJL5167KB
/4P DIP
/IC401

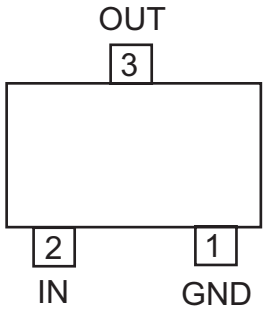


1 : anode
2 : emitter
3 : collector
4 : cathode

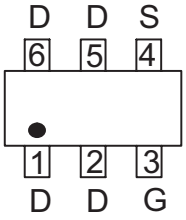
*Voltage Regulator
/TOREX
/XC6213B332MR
/SOT-23-5
/IC503



*Digital Transistor
/ROHM
/DTC124EKA
/SC59
/DT3

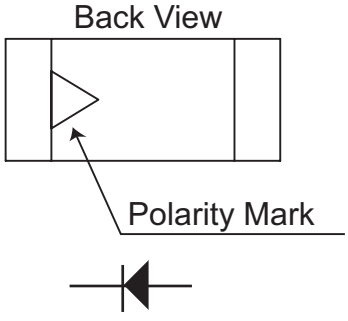


*FET
/Onsemi
/NTGS3441T1
/TSOP-6pin
/Q500



D : Drain
S : Source
G : Gate

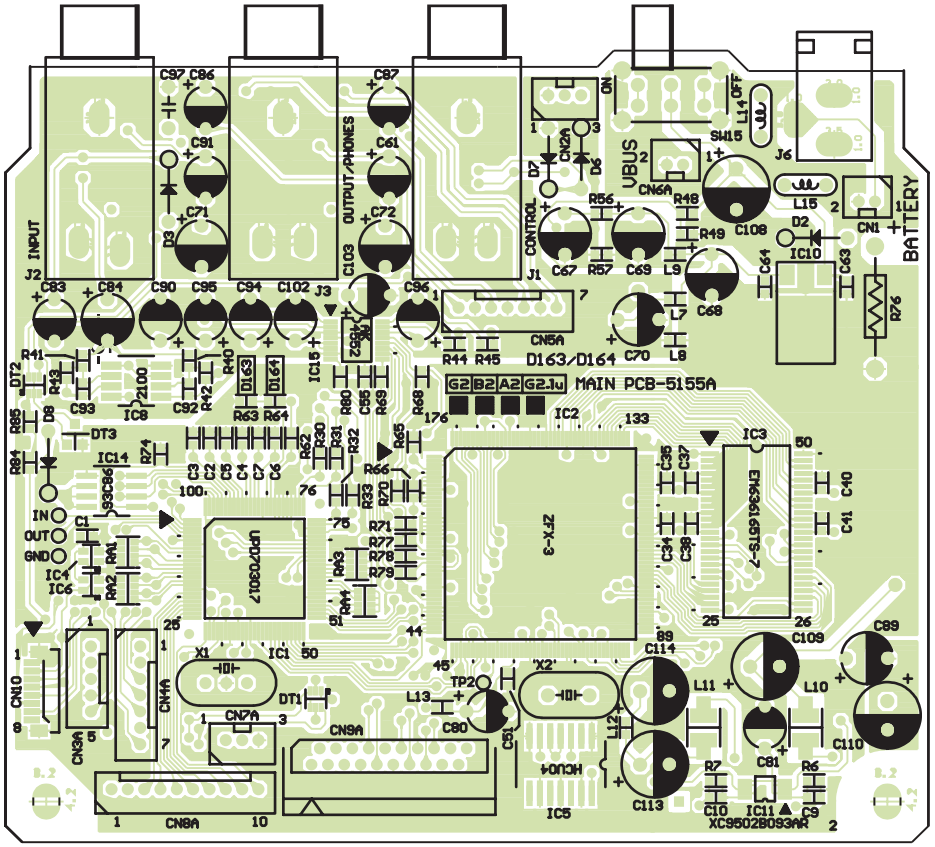
*Chip LED
/Kindwin
/SUNR-063
/1608
/LED400 - LED405



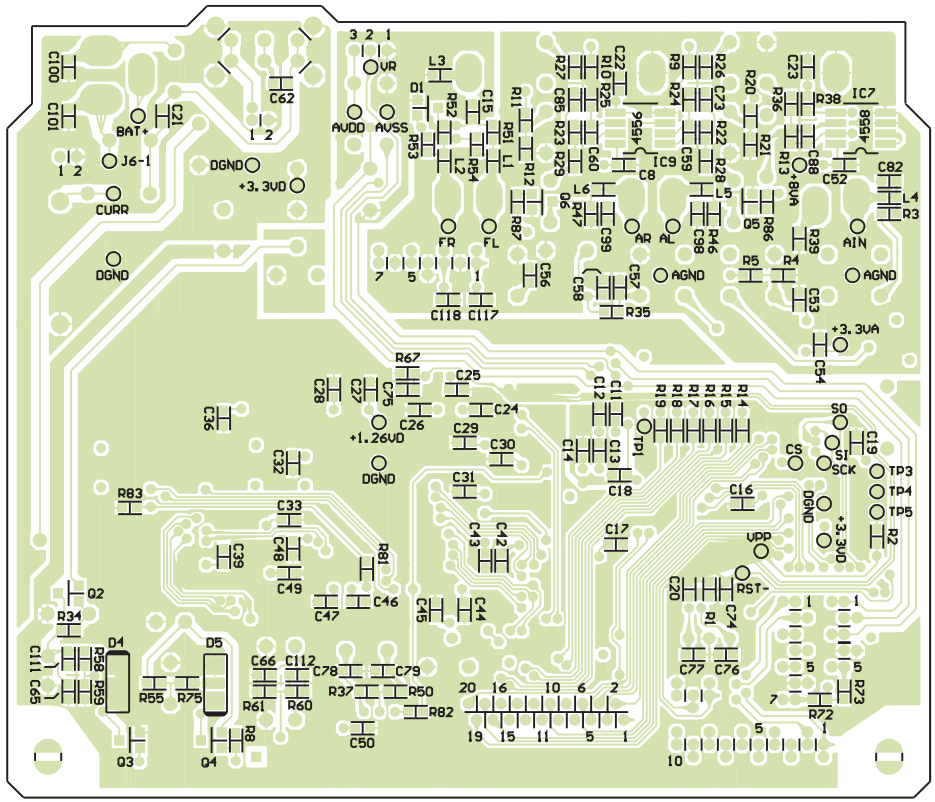
PCB Parts Layout and Pattern

PCB-5155A

Top Layer

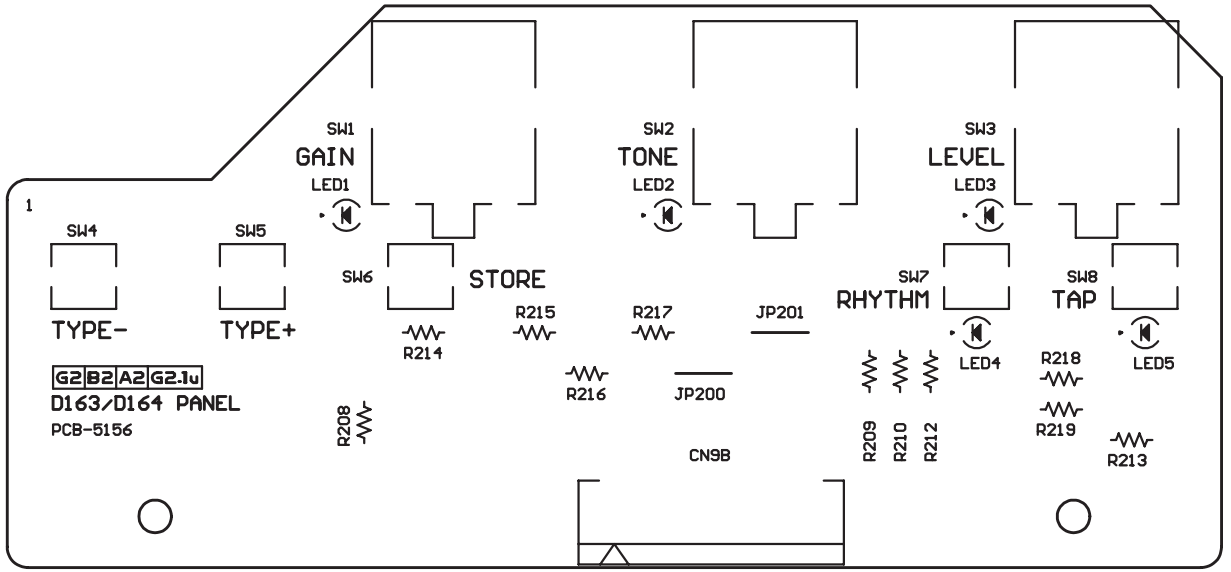


Bottom Layer

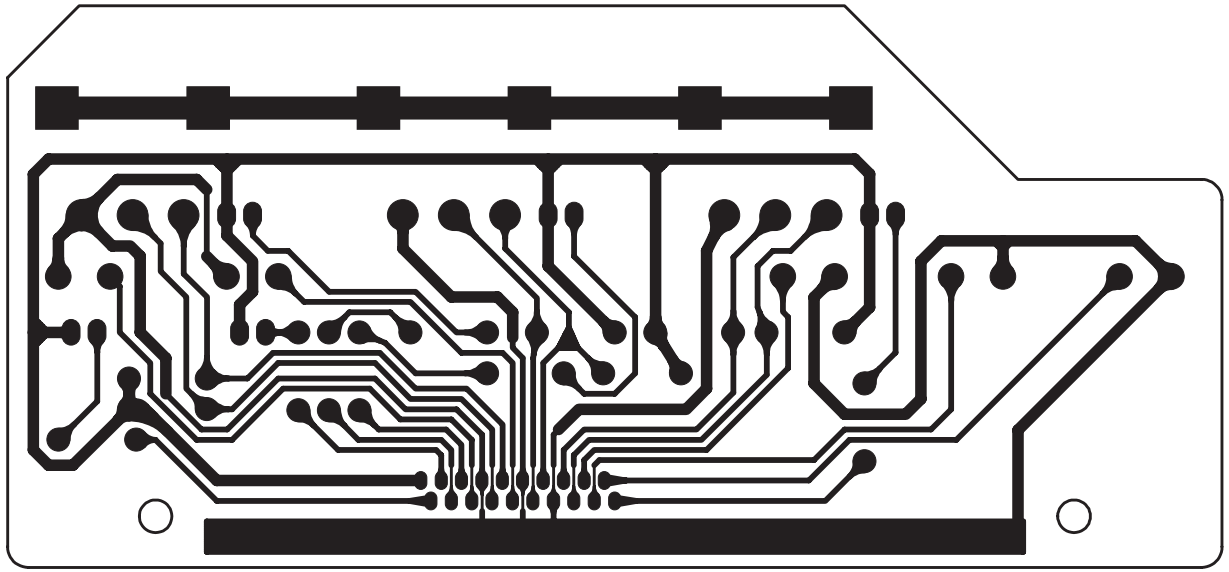


PCB-5156

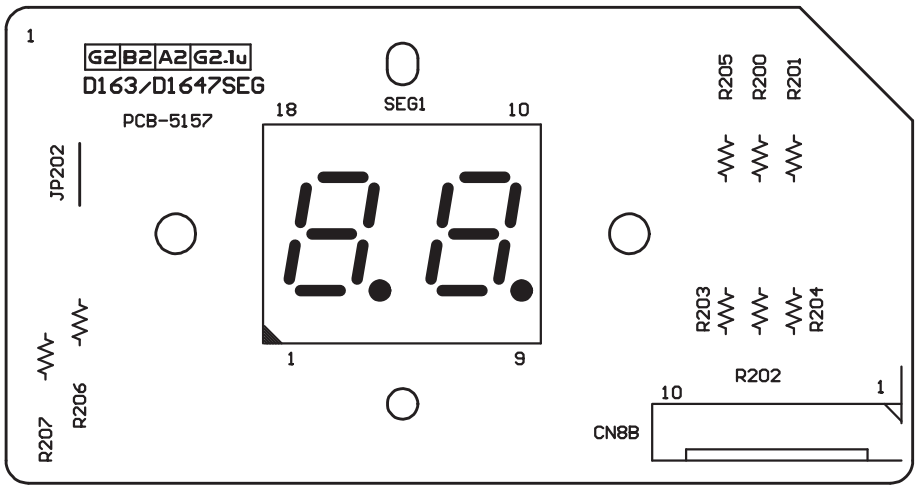
Top Layer



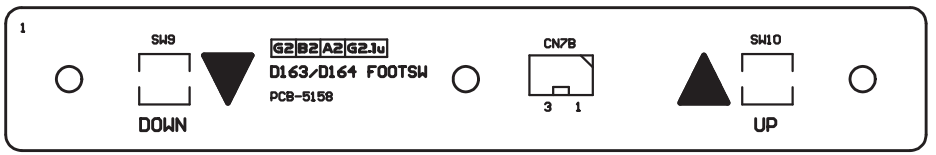
Bottom Layer



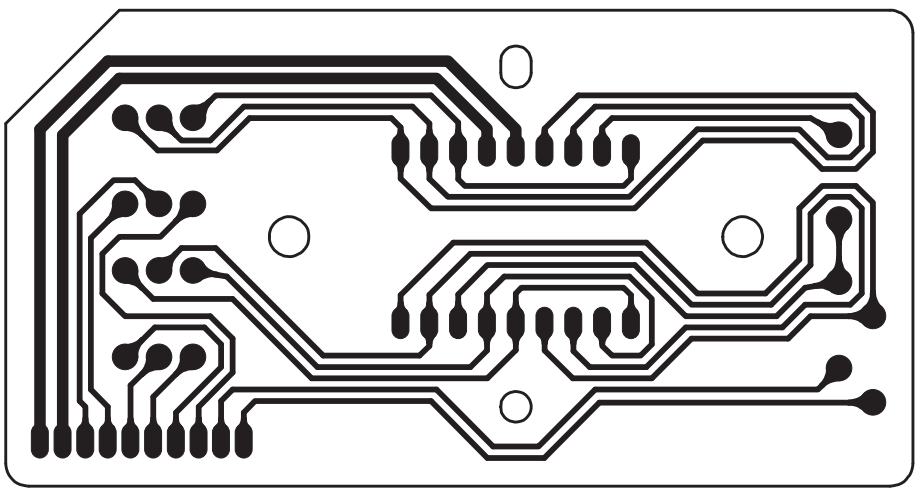
PCB-5157
Top Layer



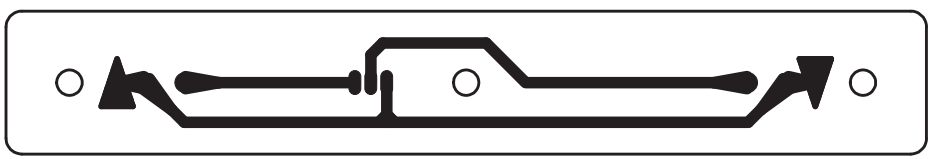
PCB-5158
Top Layer



Bottom Layer

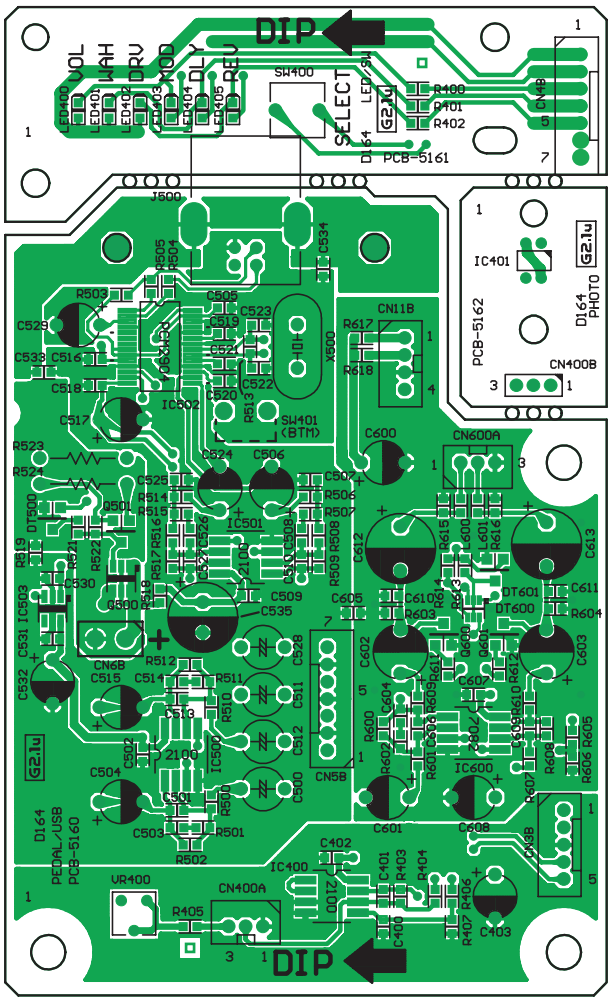


Bottom Layer

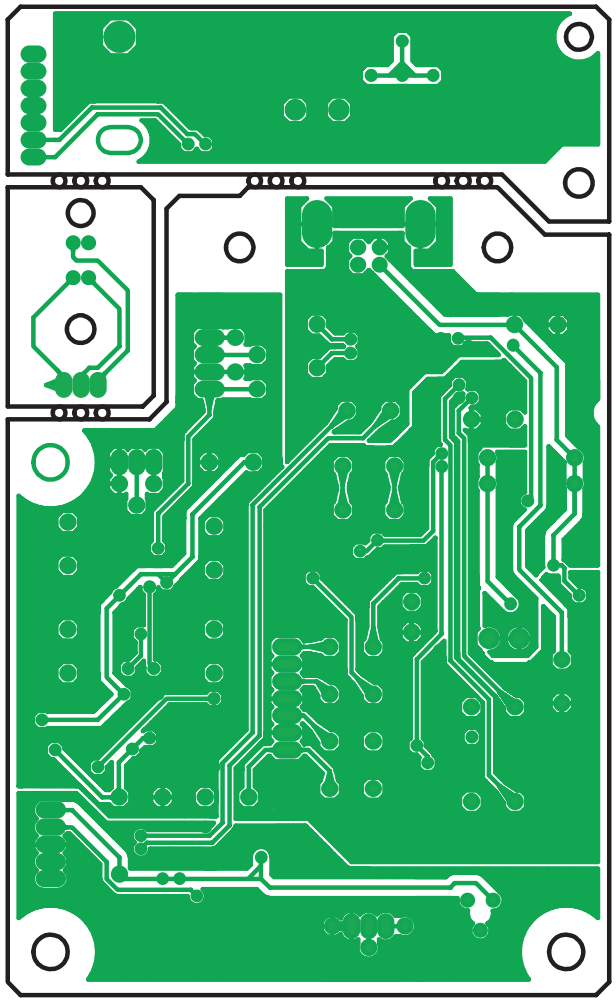


PCB-5160,PCB-5161,PCB-5162

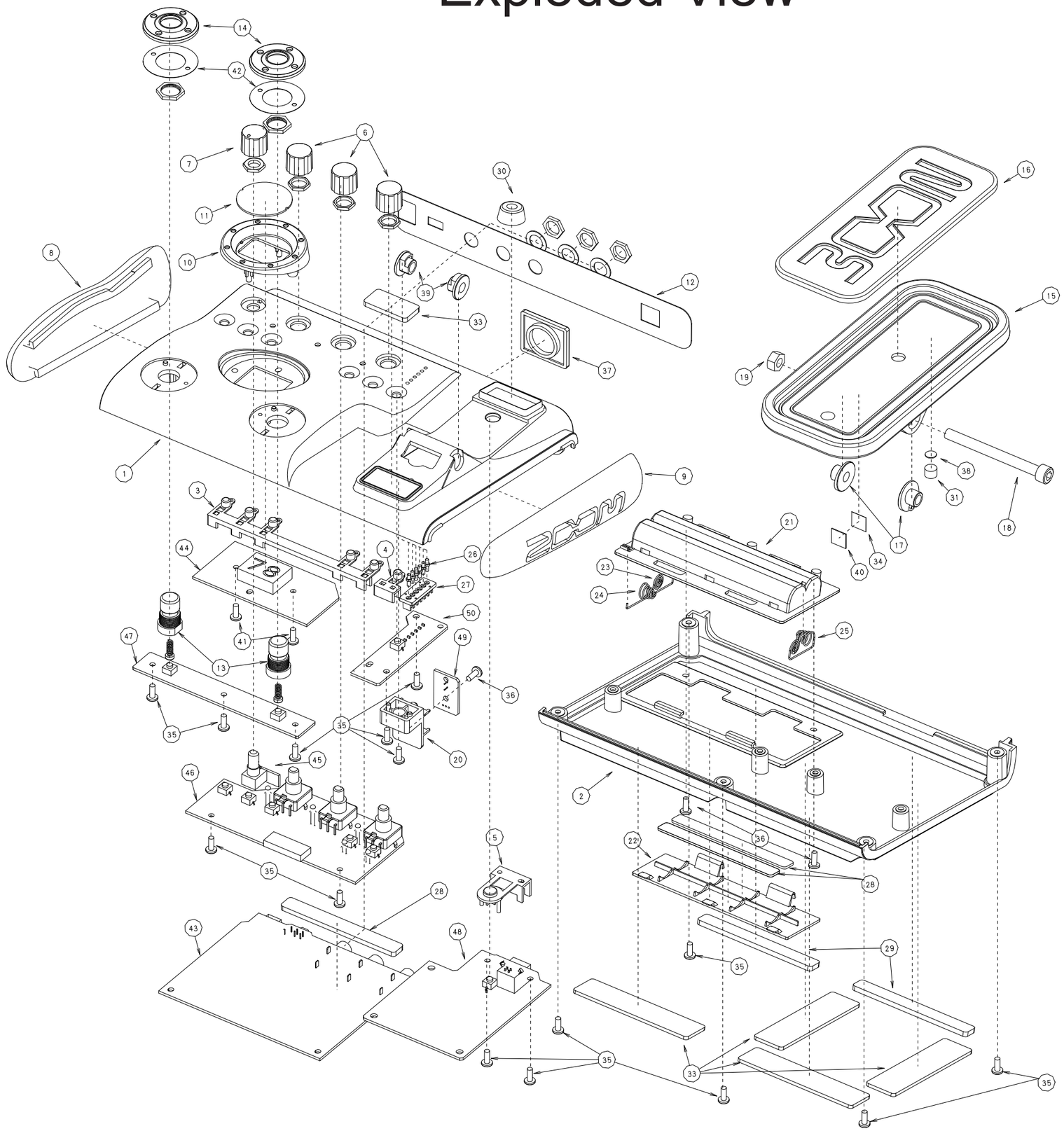
TOP LAYER



BOTTOM LAYER



Exploded View



No.	PART NAME	DROWING No.	Q'ty
1	G2.1u_TOP_COVER	Z2B-0170	1
2	G2.1u_BOTTOM_COVER	Z2B-0171	1
3	G2 SWITCH BUTTON	Z2B-0158	1
4	G2.1u SWITCH BUTTON R	Z2B-0172	1
5	EX PEDAL SW BUTTON	Z2B-0173	1
6	VR KNOB 1	Z2B-0160	3
7	VR KNOB 2	Z2B-0161	1
8	G2 SIDE COVER L	Z2B-0162	1
9	G2.1u SIDE COVER R	Z2B-0174	1
10	G2 DISPLAY COVER	Z2B-0164	1
11	G2 DISPLAY SHEET	Z2E-0188	1
12	G2.1u REAR SHEET	Z2E-0195	1
13	FOOT SW UNIT	Z2A-0089	2
14	FOOT SW DLESS PLATE	Z2B-0165	2
15	EX PEDAL BASE	Z2B-0175	1
16	EX PEDAL RUBBER	Z2D-0048	1
17	EX PEDAL SHAFT GUIDE	Z2B-0176	2
18	CAP SCREW (M6*65)		1
19	HEXAGON U NUT (M6)		1
20	BKT PWB_PHOT	Z2B-0178	1
21	BATTERY CASE	Z2B-0166	1
22	BATTERY CASE COVER	Z2B-0167	1
23	BATTERY SPRING (+)	Z2A-0082	1
24	BATTERY SPRING (-)	Z2A-0083	1
25	BATTERY SPRING (+/-)	Z2A-0084	1
26	G2.1u LED LENS A	Z2B-0179	6
27	G2.1u LED LENS HOLDER	Z2B-0180	1
28	BATTERY CUSHIION	Z2E-0190	2
29	CUSHION_UNDER_R	Z2D-0052	3
30	EX PEDAL RUBBER 1	Z2D-0042	1
31	EX PEDAL RUBBER 2	Z2D-0054	1
32	EX PEDAL RUBBER 3	Z2D-0055	1
33	CUSHION UNDER EX	Z2D-0056	4
34	REFLECT SEAL	Z2E-5032	1
35	TAPPING SCREWS (M3*6 S TIGHT)		15
36	TAPPING SCREWS (M3*8 P TIGHT)		3
37	CAP	Z2B-0183	1
38	EX PEDAL SPACER	Z2E-0203	1
39	EX PEDAL SHAFT GUIDE B	Z2B-0185	2
40	G2.1u PHOTO SPACER	Z2E-0204	1
41	TAPPING SCREWS (M3*10 P TIGHT)		2
42	DOWBLE FACE (TAPE)	Z2E-191	2
43	MAIN PCB	PCB-5155A	1
44	7SEG PCB	PCB-5157	1
45	VR PCB	PCB-5159	1
46	PANEL PCB	PCB-5156	1
47	FOOT SW PCB	PCB-5158	1
48	USB PCB	PCB-5160	1
49	REFLECTER PCB	PCB-5162	1
50	LED PCB	PCB-5161	1

Parts List

ELECTRONIC PARTS LIST

Main PCB PCB-5155A

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	MPU	uPD703015BGC-A29-8EU	LQFP-100pin Built in mask ROM for G2/4 (163-0002)	IC1	1
2	DSP	ZFX-3	LQFP-176pin	IC2	1
3	SDRAM	IS42S16100C1-7TL	TSOP-50pin	IC3	1
		EM636165TS-7G	TSOP-50pin	IC3	0
		K4S161622H-UC60	TSOP-50pin	IC3	0
4	AD/DA	AK4552VT-E2	TSSOP-16pin	IC15	1
5	EEPROM	IS93C86A-3GRLI	SOP-8pin 16kbit	IC14	1
		M93C86-WMN6P	SOP-8pin 16kbit	IC14	0
		S93C86BD4H-J8V2	SOP-8pin 16kbit	IC14	0
6	Logic IC	SN74HCU04ANS	SOP-14pin	IC5	1
		SN74HCU04DR	SOIC-14pin	IC5	0
		MC74HCU4ADR	SOIC-14pin	IC5	0
		SN74LVU04ANSR	SOP-14pin	IC5	0
		SN74HCU04NSR	SOP-14pin	IC5	0
7	OPAMP	NJM2100M-TE1	SOP-8pin	IC8	1
8	OPAMP	NJM4558M-TE1	SOP-8pin	IC7	1
9	OPAMP	NJM4556M-TE1	SOP-8pin	IC9	1
10	Voltage Regulator	uPC29M33AT-E1	SC63	IC10	1
		NJM2885DL1-33-TE1	SC63	IC10	0
11	DC-DC Converter	XC9502B093AR	MSOP-10pin	IC11	1
12	Reset-IC	R3112Q291A-TR	SC82 2.9V	IC4	1
		S-80929CNNB-B8P-T2	SC82 2.9V	IC6	0
13	D-Transistor	MUN5135DW1T1	SC88	DT1 DT2	2
		UMB10N	SC88	DT1 DT2	0
14	D-Transistor	DTC-124EKA	SC59	DT3	1
		MUN2212T1G	SC59	DT3	0
15	Transistor	2SB1706	SC59	Q4	1
16	Transistor	BC817-40LT1G	SC59	Q2 Q3 Q5 Q6	4
		2SD1781K	SC59	Q2 Q3 Q5 Q6	0
		BC817-40	SC59	Q2 Q3 Q5 Q6	0
		2SD596	SC59	Q2 Q3 Q5 Q6	0
17	Diode	1N4003	Pitch=7.5mm	D2	1
18	Diode	1SS133T-77	Pitch=7.5mm	D3 D8	2
19	OPEN (Unmounting)		Pitch=7.5mm	D6 D7	0
20	OPEN (Unmounting)		SC59	D1	0
21	Chip Shottky Diode	RB160L-40TE25	SMD	D4 D5	2
		MBRS130LT3	SMD	D4 D5	0
		MBRS140T3	SBD	D4 D5	0
22	Ceramic Oscillator	EFOMC2005T4	20MHz Built in capacitor	X1	1
		CSTLS20M0X53-A0	20MHz Built in capacitor	X1	0
23	Crystal Oscillator	HC49U/S3 24.576MHz		X2	1
		HC49U/S 24.576MHz		X2	0
24	Chip Inductor	LQH43CN220K03	SMD 4532	L10 L11	2
25	Chip Inductor	BLM18AG102SN1	1608(0603)	L13	1
26	OPEN (Unmounting)	OPEN-L(Chip Inductor)		L4 L5 L6 L9 L12	0
27	OPEN (Unmounting)	OPEN-C	D=4.0mm H=7.0-11.5mm Pitch=5mm	C69 C70 C108 C114	0
28	Capacitor	0.1u/50V	D=4.0mm H=7.0-11.5mm Pitch=5mm	C83	1
29	Capacitor	2.2u/50V	D=4.0mm H=7.0-11.5mm Pitch=5mm	C96	1
30	Capacitor	10u/16V	D=4.0mm H=7.0-11.5mm Pitch=5mm	C86 C87 C94 C95 C102 C103 C80 C81	8
31	Capacitor	47u/6.3V (10V)	D=4.0-6.3mm H=7.0-11.5mm Pitch=5mm	C61 C90 C91	3
32	Capacitor	100u/6.3V (16V)	D=4.0-6.3mm H=7.0-11.5mm Pitch=5mm	C67 C68 C71 C72 C84	5
33	Capacitor	100u/16V	D=4.0-6.3mm H=7.0-11.5mm Pitch=5mm	C89	1
34	Capacitor	470u/16V	D=8mm H=11.5mm Pitch=3.5mm	C109 C110 C113	3
35	Film Capacitor	0.01u-J 100V (50V)	Radial Pitch=5mm	C97	1
36	OPEN (Unmounting)	OPEN-C(Chip Inductor)	1608(0603)	C22 C23 C35 C53 C59 C60 C76 C77 C88	0
37	Chip Capacitor	10p-D CH 50V (25V)	1608(0603)	C82	1
38	Chip Capacitor	15p-J CH 50V (25V)	1608(0603)	C78 C79	2
39	Chip Capacitor	18p-J CH 50V (25V)	1608(0603)	C93	1
40	Chip Capacitor	100p-J CH 50V (25V)	1608(0603)	C111 C112 C92	3
41	Chip Capacitor	470p-J CH 50V (25V)	1608(0603)	C74 C75	2
42	Chip Capacitor	1000p-K B 50V (25V)	1608(0603)	C117 C118	2
43	Chip Capacitor	1500p-K B 50V (25V)	1608(0603)	C73 C85	2
44	Chip Capacitor	2200p-K B 50V (25V)	1608(0603)	C9 C10	2
45	Chip Capacitor	0.01u-K B 16V	1608(0603)	C1 C11 C12 C13 C14 C98 C99	7
46	Chip Capacitor	0.027u-K B 16V	1608(0603)	C3 C5 C7	3
47	Chip Capacitor	0.039u-K B 16V	1608(0603)	C2 C4 C6	3
48	Chip Capacitor	0.1u-Z F 25V	1608(0603)	C8 C15 C16 C17 C18 C19 C20 C21 C24 C25 C26 C27 C28 C29 C30 C31 C32 C33 C34 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C51 C52 C54 C55 C56 C57 C58 C62 C63 C64 C65 C66 C100 C101	48
49	Resistor	3.3-J 2W MOF	Lead-form: Floated type pitch=15mm	R76	1
50	OPEN (Unmounting)	open-r	1608(0603)	R56 R57 R63 R83	0
51	Chip Resistor	0 ohm	1608(0603)	R2 R77 R78 R79 R80 R81 R82 L1 L2 L3 L7 L8	12
52	Chip Resistor	10-J	1608(0603)	R35	1
53	Chip Resistor	22-J	1608(0603)	R28 R29	2
54	Chip Resistor	100-J	1608(0603)	R55	1
55	Chip Resistor	220-J	1608(0603)	R50	1

56	Chip Resistor	330-J	1608(0603)	R84	1
57	Chip Resistor	470-J	1608(0603)	R8	1
58	Chip Resistor	620-J	1608(0603)	R39	1
59	Chip Resistor	1k-J	1608(0603)	R7 R30 R31 R32 R33 R34 R44 R45 R46 R47 R54 R75 R86 R87	14
60	Chip Resistor	1.3k-J	1608(0603)	R36	1
61	Chip Resistor	2.2k-J	1608(0603)	R6	1
62	Chip Resistor	7.5k-J	1608(0603)	R13	1
63	Chip Resistor	8.2k-J	1608(0603)	R24 R25	2
64	Chip Resistor	10k-J	1608(0603)	R1 R3 R4 R5 R52	5
65	Chip Resistor	13k-F	1608(0603)	R42	1
66	Chip Resistor	15k-F	1608(0603)	R41	1
67	Chip Resistor	16k-J	1608(0603)	R59	1
68	Chip Resistor	22k-J	1608(0603)	R9 R10 R11 R12 R14 R15 R16 R17 R18 R19 R20 R21 R26 R27 R85	15
69	Chip Resistor	22k-F	1608(0603)	R49	1
70	Chip Resistor	39k-F	1608(0603)	R40	1
71	Chip Resistor	47k-J	1608(0603)	R22 R23 R62 R64 R65 R66 R67 R68 R69 R70 R71 R72 R73 R74	14
72	Chip Resistor	75k-F	1608(0603)	R43	1
73	Chip Resistor	110k-F	1608(0603)	R48	1
74	Chip Resistor	120k-F	1608(0603)	R60	1
75	Chip Resistor	150k-J	1608(0603)	R58	1
76	Chip Resistor	300k-F	1608(0603)	R61	1
77	Chip Resistor	330k-J	1608(0603)	R51	1
78	Chip Resistor	470k-J	1608(0603)	R53	1
79	Chip Resistor	1M-J	1608(0603)	R37 R38	2
80	Resistor Network	47k*4-J	RAC1608 4Element	RA1 RA2 RA3 RA4	4
81	Wire Jumper	Φ0.5 Pitch=5mm		L14 L15	2
82	Stereo Phone Jack	SJ6336	with Nut/Washer	J1 J3	2
		HTJ-064-12D	with Nut/Washer	J1 J3	0
83	Phone Jack	SJ6335	with Nut/Washer	J2	1
		HTJ-064-12I	with Nut/Washer	J2	0
84	DC Jack	DC-05G Φ2.0		J6	1
		DC-208		J6	0
		HEC2305-01-250		J6	0
		SCD438CCS033000		J6	0
85	Slide SW	SK22H09-G9	Length of lever=9mm	SW15	1
		SSH-2H19-G9	Length of lever=9mm	SW15	0
		HSW2022-010020	Length of lever=9mm	SW15	0
		SK22H04-G 9 NS	Length of lever=9mm	SW15	0
86	FPC Connector	11311120-13420000	20pin To Panel PCB DIP 180deg	CN9A	1
		20FMZ-ST	20pin To Panel PCB Right angle	CN9A	0
87	Connector	PH10A	10pin To 7seg PCB	CN8A	1
		JS1125-10	10pin To 7seg PCB	CN8A	0
		B10B-PH-K-S	10pin To 7seg PCB	CN8A	0
88	Connector	PH-3A	3pin To VOL PCB/SW PCB	CN2A CN7A	2
		JS1125-3	3pin To VOL PCB/SW PCB	CN2A CN7A	0
		B3B-PH-K-S	3pin To VOL PCB/SW PCB	CN2A CN7A	0
89	Connector	PH-2A	2pin To Battery case	CN1	1
		JS1125-2	2pin To Battery case	CN1	0
		B2B-PH-K-S	2pin To Battery case	CN1	0
90	Harness	PH-2P 1007#24/L=200MM	ZH-0064: to Battery case 2Pin AWG 24 200mm	CN1-Battery	1
		PH2P L=200mm	ZH-0064: to Battery case 2Pin AWG 24 200mm	CN1-Battery	0
91	Connector	PH-2A	2pin to USB PCB	CN6A	1
		JS1125-2	2pin to USB PCB	CN6A	0
		B2B-PH-K-S	2pin to USB PCB	CN6A	0
92	Connector	PH-5A	5pin to USB PCB	CN3A	1
		JS1125-5	5pin to USB PCB	CN3A	0
		B5B-PH-K-S	5pin to USB PCB	CN3A	0
93	Connector	PH-7A	7pin to USB PCB / LED PCB	CN4A CN5A	2
		JS1125-7	7pin to USB PCB / LED PCB	CN4A CN5A	0
		B7B-PH-K-S	7pin to USB PCB / LED PCB	CN4A CN5A	0
94	PCB	PCB-5155A	4 LAYER FR-4 113X95mm		1

Panel PCB PCB-5156

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	Rotary Encoder	RE160-40E3-15A-24P-0017	16mm Vertical type with Nut(11mm)	SW1 SW2 SW3	3
		REB161PVB15FHINA1-2-24PCE	16mm Vertical type with Nut(11mm)	SW1 SW2 SW3	0
2	TACT SW	1104RTA-2		SW4 SW5 SW6 SW7 SW8	5
		SKQNAED010		SW4 SW5 SW6 SW7 SW8	0
3	LED	KSNR-312N-30	Radial Color : Red 3Φ	LED1 LED2 LED3 LED4 LED5	5
4	LED Holder (Spacer)	NYLON ZYTEL H=6mm		LED1 LED2 LED3	3
5	Resistor	1k-J 1/8W	Pitch=7.5mm	R212 R213	2
6	Resistor	2.2k-J 1/8W	Pitch=7.5mm	R214 R215 R216 R217 R218 R219	6
7	Resistor	3.3k-J 1/8W	Pitch=7.5mm	R208 R209 R210	3
8	Wire Jumper	Φ0.5 Pitch 7.5mm	Pitch=7.5mm	JP200 JP201	2
9	FPC Connector	11311220-113420000	20pin To Main PCB Right angle DIP 90deg	CN9B	1
		20FMZ-ST	20pin To Main PCB Right angle	CN9B	0
10	FPC Cable	1.0-20P-80MM	ZH-0063: to Main PCB	CN9A-CN9B	1
		SUMI CARD:1mmPitch 20pin L=80mm	ZH-0063: to Main PCB	CN9A-CN9B	0
		TFCAC20 20pin 80mm	ZH-0063: to Main PCB	CN9A-CN9B	0
11	PCB	PCB-5156	FR-1 Attached with 7seg/VR/Foot SW PCB		1

7seg PCB PCB-5157

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	7SEGMENT LED	E20561-GFOR	DIP-18pin	SEG1	1
		TOD-5261BH-D-K	DIP-18pin	SEG1	0
2	Resistor	1K-J 1/8W	Pitch=7.5mm	R200 R201 R202 R203 R204 R205 R206 R207	8
3	Harness	PH-10Y 2651#26/L=80MM	ZH-0062: to Main PCB 10Pin 2mmPitch 80mm	CN8B-CN8A	1
		PH10P L=80mm	ZH-0062: to Main PCB 10Pin 2mmPitch 80mm	CN8B-CN8A	0
4	Wire Jumper	Φ0.5 Pitch 7.5mm		JP202	1
5	PCB	PCB-5157	FR-1 A part of Panel PCB		1

FOOT SW PCB PCB-5158

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	TACT SW	1104RTA-2		SW9 SW10	2
		SKQNAED010		SW9 SW10	0
2	Harness	PH-3Y 2651#26/L=80MM	ZH-0061: to Main PCB 3Pin 2mmPich 80mm	CN7B-CN7A	1
		PH3P L=80mm	ZH-0061: to Main PCB 3Pin 2mmPich 80mm	CN7B-CN7A	0
3	PCB	PCB-5158	FR-1A part of Panel PCB		1

VR PCB PCB-5159

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	Potentiometer	RK0971110S0NB	10K-B 11detent with Nut(11mm)	VR1	1
		F-09115N-11CB10K-Y0L15FCx7(D)	10K-B 11detent with Nut Nut(11mm)	VR1	0
2	Harness	PH-3Y 2651#26/L=120MM	ZH-0060: to Main PCB3Pin 2mmPitch 120mm	CN2B-CN2A	1
		PH3P L=120mm	ZH-0060: to Main PCB3Pin 2mmPitch 120mm	CN2B-CN2A	0
3	PCB	PCB-5159	FR-1 A part of Panel PCB		1

USB PCB PCB-5160

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFRENCE No.	Q'ty
1	USB CODEC	PCM2904DBR	SSOP-28pin	IC502	1
2	OPAMP	NJM2100M-TE1	SOP-8pin	IC400 IC500 IC501	3
3	Voltage Regulator	XC6213B332MR	SOT-23-5	IC503	1
4	Transistor	BC807-40LT1G	SC-59	Q501	1
		BC807-40	SC-59	Q501	0
5	FET	NTGS3441T1	TSOP-6pin	Q500	1
		uPA1915TE	TSOP-6pin	Q500	0
6	D-Transistor	DTC124EKA	SC-59	DT500	1
7	Crystal Oscillator	HC49/S3 12MHz		X500	1
		HC49/U 12MHz		X500	0
8	OPEN (Unmounting)	open-C		C403 C504 C506 C515 C524	0
9	Capacitor	10u/16V Non-polar	D=4.0_6.3mm H=7.0_11.5mm Pitch=5mm	C500 C511 C512 C528	4
10	Capacitor	10u/16V	D=4.0_6.3mm H=7.0_11.5mm Pitch=5mm	C529 C532	2
11	Capacitor	47u/6.3V	D=4.0_6.3mm H=7.0_11.5mm Pitch=5mm	C517	1
12	Capacitor	470u/16V (6.3V)	D=8mm H=11.5mm Pitch=3.5mm	C535	1
13	Chip Capacitor	open-chip C	1608(0603)	C400 C401 C501 C513 C533 C534	0
14	Chip Capacitor	18p-J CH (25V)	1608(0603)	C522 C523	2
15	Chip Capacitor	47p-J CH (25V)	1608(0603)	C510 C527	2
16	Chip Capacitor	1000p-K B (25V)	1608(0603)	C503 C514	2
17	Chip Capacitor	1500p-K B (25V)	1608(0603)	C508 C526	2
18	Chip Capacitor	2200p-K B (25V)	1608(0603)	C507 C525	2
19	Chip Capacitor	0.1u-Z F (25V)	1608(0603)	C402 C502 C509 C516 C518 C530 C531	7
20	Chip Capacitor	GRM188B11A105KA61D (1.0u-K B)	1608(0603)	C505 C519 C520 C521	4
21	Resistor	2.7 J 1/4W	pitch=10mm	R523 R524	2
22	OPEN (Unmounting)	open-r	1608(0603)	R519	0
23	Chip Resistor	22-J	1608(0603)	R504 R505	2
24	Chip Resistor	220-J	1608(0603)	R518	1
25	Chip Resistor	330-J	1608(0603)	R405	1
26	Chip Resistor	1k-J	1608(0603)	R506 R514 R521	3
27	Chip Resistor	1.5k-J	1608(0603)	R503	1
28	Chip Resistor	8.2k-J	1608(0603)	R507 R515	2
29	Chip Resistor	10k-J	1608(0603)	R406 R407 R522	3
30	Chip Resistor	12k-J	1608(0603)	R501 R511	2
31	Chip Resistor	22k-J	1608(0603)	R500 R510	2
32	Chip Resistor	47k-J	1608(0603)	R508 R509 R516 R517	4
33	Chip Resistor	68k-J	1608(0603)	R502 R512	2
34	Chip Resistor	110k-J	1608(0603)	R403 R404	2
35	Chip Resistor	1M-J	1608(0603)	R513	1
36	Trimmer potentiometer	RH0411CS2J	470ohm B	VR400	1
37	TACT SW	1104RTA-2		SW401	1
		SKQNAED010		SW401	0
38	USB Connector	57112201-2110000		J500	1
		USB-B-002		J500	0
		YKF45-0023		J500	0
39	Connector	PH-3A	3pin to Reflector PCB	CN400A	1
		JS1125-3	3pin to Reflector PCB	CN400A	0
		B3B-PH-K-S	3pin to Reflector PCB	CN400A	0
40	Harness	ZH-0066:2Pin 2mmPich L=200mm	To Main PCB	CN6B-CN6A	1
41	Harness	ZH-0067:5Pin 2mmPich L=70mm	To Main PCB	CN3B-CN3A	1
42	Harness	ZH-0068:7Pin 2mmPich L=200mm	To Main PCB	CN5B-CN5A	1
43	PCB	PCB-5160	FR-4 attached LED,Refrectoer PCB		1

LED PCB PCB-5161

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	Chip Resistor	1k-J	1608(0603)	R400 R401 R402	3
2	Chip LED	SUNR-063 (Rank10,11)	1608(0603) Color : Red 70 or 90 mcd	LED400 LED401 LED402 LED403 LED404 LED405	6
3	TACT SW	1104RTA-2		SW400	1
		SKQNAED010		SW400	0
4	Harness	ZH-0069:7Pin 2mmPich L=80mm	To Main PCB	CN4B-CN4A	1
5	PCB	PCB-5161	FR-4 part of USB PCB		1

Reflector PCB PCB-5162

No.	NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	Photo Reflector	NJL5167KB	DIP-4	IC401	1
2	Harness	ZH-0065:3Pin 2mmPich L=50mm	To USB PCB	CN400A-CN400B	1
3	PCB	PCB-5162	FR-4 part of USB PCB		1

MECHANICAL PARTS LIST

No.	PART NAME	SPECIFICATIONS	DESCRIPTION	REFERENCE No.	Q'ty
1	G2.1u TOP COVER	Z2B-0170	ADC12, Painted : black, silk 1 color : white	(1)	1
2	G2.1u BOTTOM COVER	Z2B-0171	ADC12, Painted : black	(2)	1
3	G2 SWITCH BUTTON	Z2B-0158	ABS(CLEAR)	(3) Same as G2	1
4	G2.1u SW BUTTON R	Z2B-0172	ABS(CLEAR)	(4)	1
5	EX PEDAL SW BUTTON	Z2B-0173	ABS(BLACK)	(5)	1
6	VR KNOB 1	Z2B-0160	ABS, Chromium coatings	(6) Same as G2	3
7	VR KNOB 2	Z2B-0161	ABS, Chromium coatings with indicator (color : black)	(7) Same as G2	1
8	G2 SIDE COVER L	Z2B-0162	ABS+TPE, CASE LEFT SIDE	(8) Same as G2	1
9	G2.1u SIDE COVER R	Z2B-0174	ABS+TPE, CASE RIGHT SIDE	(9)	1
10	G2 DISPLAY COVER	Z2B-0164	ABS, Chromium coatings	(10) Same as G2	1
11	G2 DISPLAY SHEET	Z2E-0188	PCV / with adhesive tape, φ40mm t=1.0mm, with silk print : 3 colors	(11) Same as G2	1
12	G2.1u REAR SHEET	Z2E-0195	PCV / with adhesive tape, 110X15, with silk print : 2 colors	(12)	1
13	FOOT SW UNIT	Z2A-0089		(13) Same as G2	2
14	FOOT SW DLESS PLATE	Z2B-0165	ABS, Chromium coatings	(14) Same as G2	2
15	EX PEDAL BASE	Z2B-0175	ADC12, Paint	(15)	1
16	EX PEDAL RUBBER	Z2D-0048	TPE	(16)	1
17	EX PEDAL SHAFT GUIDE	Z2B-0176	POM	(17)	2
18	CAP SCREW		HEXAGON SOCKET HEAD, M6x65, BLACK CHROMATE	(18)	1
19	HEXAGON U NUT		M6, BLACK CHROMATE	(19) Same as GFX-3	1
20	BKT PWB_PHOT	Z2B-0178	ABS(BLACK)	(20)	1
21	BATTERY CASE	Z2B-0166	ABS(BLACK)	(21) Same as G2	1
22	BATTERY CASE COVER	Z2B-0167	ABS(BLACK)	(22) Same as G2	1
23	BATTERY SPRING (+)	Z2A-0082	SWIC-F d=0.7mm	(23) Same as G2	1
24	BATTERY SPRING (-)	Z2A-0083	SWIC-F d=0.7mm	(24) Same as G2	1
25	BATTERY SPRING (+/-)	Z2A-0084	SWIC-F d=0.7mm	(25) Same as G2	1
26	G2.1u LED LENS A	Z2B-0179	ABS(CLEAR)	(26)	6
27	G2.1u LED LENS HOLDER	Z2B-0180	ABS(BLACK)	(27)	1
28	BATTERY CUSHION	Z2E-0190	sponge 73.4x10.2 T=7, with adhesive tape	(28) Same as G2	2
29	CUSHION_UNDER_R	Z2D-0052	Sponge rubber (BLACK) , Hardness=40 80X10X3, 2 pieces for BOTTOM COVER, 1piece for PCB spacer	(29)	3
30	EX PEDAL RUBBER 1	Z2D-0042-A4	KH-3 65(BLACK)	(30) Same as GFX-3	1
31	EX PEDAL RUBBER 2	Z2D-0054	Sponge rubber (BLACK), Hardness=60 7X5t	(31)	1
32	EX PEDAL RUBBER 3	Z2D-0055	CR60, 30X15X3t	(32)	1
33	CUSHION UNDER EX	Z2D-0056	CR60, 80X20X2t	(33)	4
34	REFLECT SEAL	Z2E-5032-A4	10x10x0.05mm , for PHOTO REFLECTOR	(34) Same as GFX-3	1
35	TAPPING SCREWS	M3×6L S-TIGHT	SWCH(Fe), Black Chromate S Tight, Cross Binding Head, M3X6L, PCB X2, BOTTOM PLATE X5, FOOT_PCB X3, USB_PCB X2, PH PCB X1, LED PCB X2	(35)	15
36	TAPPING SCREWS	M3x8L P-TIGHT	SWCH(Fe), Black Chromate P Tight, BATT CASE X2, PH PCB X1	(36)	3
37	FILAMENT TAPE for ZH-0064	tape 3M 8915	Scotch 8915 Filament Tape, 12mm width, L=50mm	Same as GFX-3	1
38	CAP	Z2B-0183	ABS(BLACK)	(37)	1
39	EX PEDAL SPACER	Z2E-0203	PVC φ6.5mm t=0.5mm	(38)	1
40	EX PEDAL SHAFT GUIDE-B	Z2B-0185	POM	(39)	2
41	G2.1u PHOTO SPACER	Z2E-0204	PVC 10X10X0.5	(40)	1
42	FILAMENT TAPE for ZH-0068	tape 3M 8915	Scotch 8915 Filament Tape, 12mm width, L=25mm	Same as GFX-3	1
43	TAPPING SCREWS	M3x10L P-TIGHT	SWCH(Fe), Chromate P Tight, 7SEG PCB X2	(41)	2
44	DOUBLE FACE (Tape)	Z2E-0191	adhesive tape, for FOOT SW DRESS PLATE	(42)	2
45	Lubricant	For EX PEDAL SHAFT GUIDE	Molycote E Paste (White), Specific gravity : 1.16g per cubic cm		1
46	Glue	For EX PEDAL RUBBER	SL518		1

Spare Parts Order List

ELECTRONIC PARTS

The parts with "*" are available from G2.1u.

Main PCB : PCB-5155A (PCB-5155)

CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
MICRO PROCESSOR				
SP02032	MPU	uPD703015BGC-A29-8EU(D163-0003)	1	
SIGNAL PROCESSOR				
SP02033	DSP	ZFX-3	1	
MEMORY				
SP02034	SDRAM	IS42S16100C1-7TL	1	
SP02035	EEPROM	IS93C86A-3GRLI	1	
DIGITAL IC				
SP02036	Logic IC	SN74HCU04ANS	1	
SP02037	Reset IC	R3112Q291A-TR	1	
A/D,D/A CONVERTER				
SP00878	AD/DA Converter	AK4552VT-E2	1	510
ANALOG				
SP00071	OPAMP	NJM2100M-TE1	1	50
SP00070	OPAMP	NJM4558M-TE1 (Same as BA4558F)	1	40
SP00078	OPAMP	NJM4556M-TE1	1	50
POWER SUPPLY				
SP01945	Voltage Regulator	uPC29M33AT-E1	1	90
SP02038	DC/DC Converter	XC9502B093AR	1	
TRANSISTOR				
SP00628	Digital Transistor	MUN5135DW1T1 (Same as UMB10N)	5	
SP00110	Digital Transistor	DTC-124EKA	5	100
SP02039	Transistor	BC807-40	5	
SP02040	Transistor	BC817-40	5	
SP02081	Transistor	2SB1706	5	
DIODE				
SP00123	Diode	1N4003	5	100
SP00352	Diode	1SS133T-77	5	100
SP00704	Chip Shottky Diode	RB160L-40TE25	5	150
OSCILLATOR				
SP02041	Ceramic Oscillator	EFOMC2005T4	1	
SP02042	Crystal Oscillator	HC49U/S 24.576MHz	1	
INDUCTOR				
SP02043	Chip Inductor	LQH43CN220K03	1	
SP01762	Chip Inductor	BLM18AG102SN1	10	200
RESISTOR				
SP00582	Resistor	3.3-J 2W MOF	1	200
SP00740	Resistor Network	47k*4-J	10	200
JACK, SOKET				
SP00590	Stereo Phone Jack	SJ6336 (Same as HTJ-064-12D)	1	100
SP00589	Phone Jack	SJ6335 (Same as HTJ-064-12I)	1	100
SP01500	DC Jack	DC-05G Φ2.0	1	60
OTHER PARTS				
SP00910	Slide SW	SK22H09-G9 (Same as HSW2022-010020)	1	30
SP00931	FPC Connector	11311120-13420000 (Same as 20FMZ-ST)	1	90
SP02044	Connector	PH10A	1	
SP02006	Connector	PH-3A (Same as JS-1125-3)	1	30
SP01951	Connector	PH-2A (Same as JS-1125-2)	1	30
SP02045	Harness	PH-2P 1007#24/L=200MM	1	

PANEL PCB : PCB-5156

CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
ROTARY ENCODER				
SP01435	Rotary Encoder	RE160-40E3-15A-24P-017 (same as REB161PVB15FHINA1-2-24PCE)	1	
SWITCH				
SP01949	Tact SW	1104RTA-2	10	100
DISPLAY DEVICE				
SP02049	LED	KSNR-312N-30	5	
OTHER PARTS				
SP02050	LED Holder (Spacer)	NYLON ZYTEL H=6m	5	
SP02051	FPC Connector	11311220-113420000	1	
SP02052	FPC Cable	1.0-20P-80MM	1	

7seg PCB : PCB-5157

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
DISPLAY DEVICE					
	SP02046	7segment LED	E20561-GFOR	1	
OTHER PARTS					
	SP02047	Harness	PH-10Y 2651#26/L=80MM	1	

FOOT SW PCB : PCB-5158

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
SWITCH					
	SP01949	Tact SW	1104RTA-2	10	100
OTHER PARTS					
	SP02053	Harness	PH-3Y 2651#26/L=80MM	1	

VR PCB : PCB-5159

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
POTENTIOMETER					
	SP00149	potentiometer	RK0971110S0NB (Same as SP02029 RK0971110S0P)	1	110
OTHER PARTS					
	SP02048	Harness	PH-3Y 2651#26/L=120MM	1	

USB PCB : PCB-5160

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
USB CODEC					
*		USB CODEC	PCM2904DBR	1	
ANALOG					
	SP00071	OPAMP	NJM2100M-TE1	1	
*		Trimmer potentiometer	RH0411CS2J	1	
POWER SUPPLY					
*		Voltage Regulator	XC6213B332MR	1	
TRANSISTOR					
	SP02039	Transistor	BC807-40LT1G	5	
*		FET	NTGS3441T1	1	
OSCILLATOR					
*		Crystal Oscillator	HC49/S3 12MHz	1	
SWITCH					
	SP01949	Tact SW	1104RTA-2	10	100
OTHER PARTS					
*		USB Connector	57112201-2110000	1	
	SP02006	Connector	PH-3A (Same as JS-1125-3)	1	30
*		Harness	PH-2P 2Pin 2mmPich L=200mm	1	
*		Harness	PH-5P 5Pin 2mmPich L=70mm	1	
*		Harness	PH-7P 7Pin 2mmPich L=200mm	1	

LED (for EX PANEL) PCB : PCB-5161

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
SWITCH					
	SP01949	Tact SW	1104RTA-2	10	100
DISPLAY DEVICE					
*		Chip LED	SUNR-063 (Rank10,11)	1	
OTHER PARTS					
*		Harness	PH7P 7Pin 2mmPich L=80mm	1	

Reflector PCB : PCB-5162

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
PHOTO REFLECTOR					
	SP00457	Photo reflector	NJL5167KB	1	
*		Harness	PH3P 3Pin 2mmPich L=50mm	1	

PCB

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
PCB ASSEMBLY					
*		G2.1u MAIN PCB Assy	FR-4 Double side pattern (PCB-5155Awith Harness)	1	
*		G2.1u PANEL PCB Assy	FR-1 One side pattern (PCB-5156, PCB-5157, PCB-5158, PCB-5159 with Harness)	1	
*		G2.1u USB PCB Assy	FR-4 Double side pattern (PCB-5160, PCB-5161, PCB-5162 with Harness)	1	

Mechanical Parts

	CODE No.	NAME	SPECIFICATIONS	Q'ty	PRICE(Japanese yen)
	TOP COVER				
*		G2.1u TOP COVER	Z2B-0170	1	
	LOWER PANEL				
*		G2.1u BOTTOM_COVER	Z2B-0171	1	
	SIDE COVER				
	SP02057	G2 SIDE COVER L	Z2B-0162	1	
*		G2.1u SIDE COVER R	Z2B-0174	1	
	FOOT PEDAL				
*		EX PEDAL BASE	Z2B-0175	1	
*		EX PEDAL SHAFT GUIDE	Z2B-0176	1	
*		BKT PWB_PHOT	Z2B-0178	1	
*		EX PEDAL SPACER	Z2E-0203	1	
*		EX PEDAL SHAFT GUIDE-I	Z2B-0185	1	
	BUTTON, KNOB				
	SP02059	G2 SWITCH BUTTON	Z2B-0158	1	
	SP02060	VR_KNOB 1	Z2B-0160	1	
	SP02061	VR_KNOB 2	Z2B-0161	1	
*		G2.1u SW BUTTON R	Z2B-0172	1	
*		EX PEDAL SW BUTTON	Z2B-0173	1	
	OTHER MOULDING PARTS				
	SP02062	G2 DISPLAY COVER	Z2B-0164	1	
	SP02063	FOOT SW UNIT	Z2A-0089	1	
	SP02064	FOOT SW DRESS PLATE	Z2B-0165	1	
	SP02065	DOUBLE FACE (Tape)	Z2E-0191	1	
	SP02066	BATTERY_CASE	Z2B-0166	1	
	SP02067	BATTERY_CASE COVER	Z2B-0167	1	
	SP02068	BATTERY CUSHION	Z2E-0190	1	
*		D164 LED LENS A	Z2B-0179	1	
*		D164 LED LENS HOLDER	Z2B-0180	1	
*		D164 PHOTO SPACER	Z2E-0204	1	
*		CAP	Z2B-0183	1	
	RUBBER, SPRING				
	SP02069	FOOT RUBBER (REAR)	Z2D-0045	1	
	SP02072	BATTERY SPRING (+)	Z2A-0082	1	
	SP02073	BATTERY SPRING (-)	Z2A-0083	1	
	SP02074	BATTERY SPRING (+/-)	Z2A-0084	1	
*		EX PEDAL RUBBER	Z2D-0048	1	
*		CUSHION_UNDER_R	Z2D-0052	1	
	SP02025	EX PEDAL RUBBER 1	Z2D-0042	1	
*		EX PEDAL RUBBER 2	Z2D-0054	1	
*		EX PEDAL RUBBER 3	Z2D-0055	1	
*		CUSHION UNDER EX	Z2D-0056	1	
	SCREW, WASHER, NUT				
	SP00621	TAPPING SCREWS	M3×6L, S Tight, Black Chromate, SWCH(Fe)	10	20
	SP01185	TAPPING SCREWS	M3×8L, P Tight, Black Chromate, SWCH(Fe)	10	20
	SP02075	TAPPING SCREWS	M3×10L, P Tight, Chromate ,SWCH(Fe)	10	20
*		CAP SCREW	M6x65	1	
	SP01548	HEXAGON U NUT	M6	1	
	SHEET, COLOR FILTER				
	SP02076	G2 DISPLAY SHEET	Z2E-0188	1	
*		G2.1u REAR SHEET	Z2E-0195	1	
	SP01535	REFLECT SEAL	Z2E-5032	1	

To: ZOOM Corp. Overseas Sales Group

Parts Order Sheet page of

Code No.	Product name	Parts name	Specifications	Unit price	Qty
SP				¥	
SP				¥	
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Memo:

Company: ____________________

Signature: ____________________

Name: ____________________

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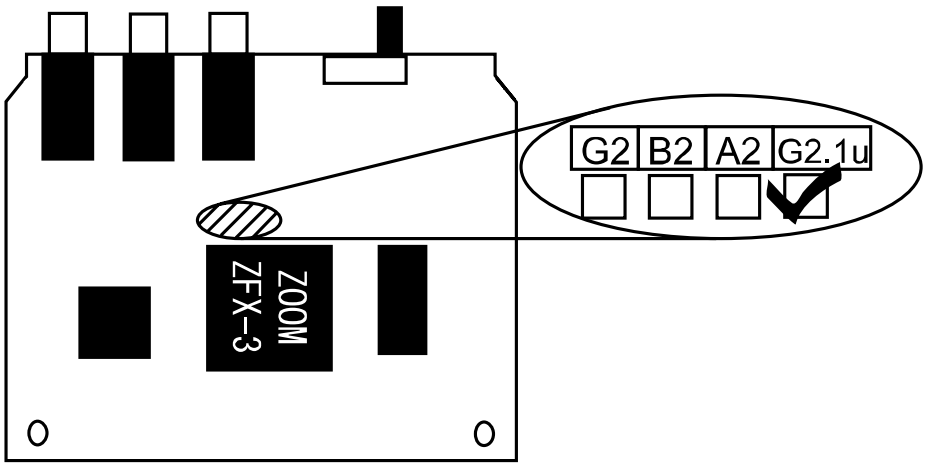
Supplement: Identification of main PCB

Main PCB is common use for other production. Therefore, this main PCB has check box to identify which production will be used for.
See below figure, it shows check box location on the main PCB (As of September, 2005).



Check box on the main PCB