KORG
Analogue Bass Machine
volca bass
(volca-bass)
SERVICE MANUAL

TABLE OF CONTENTS

KORG
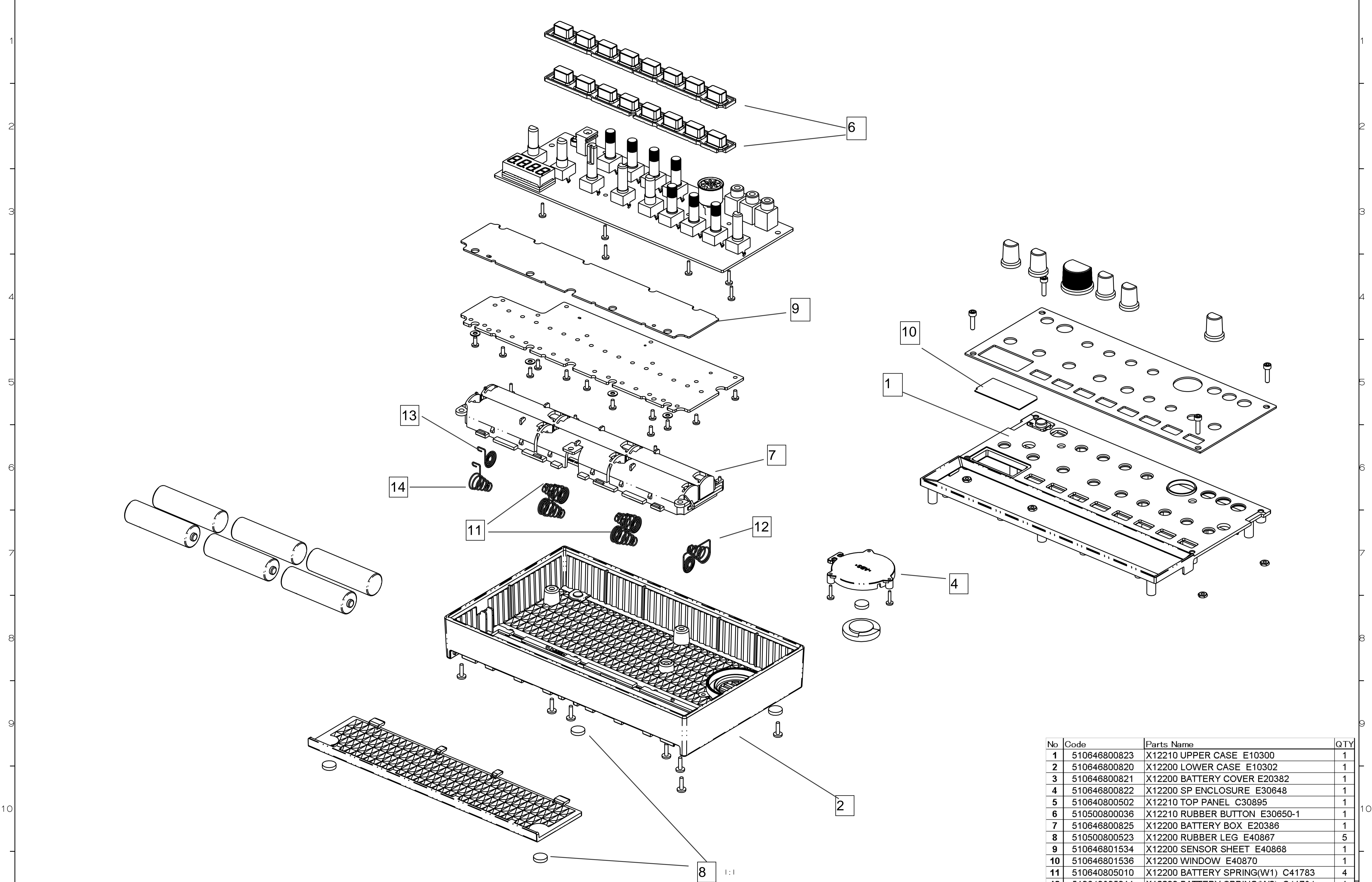
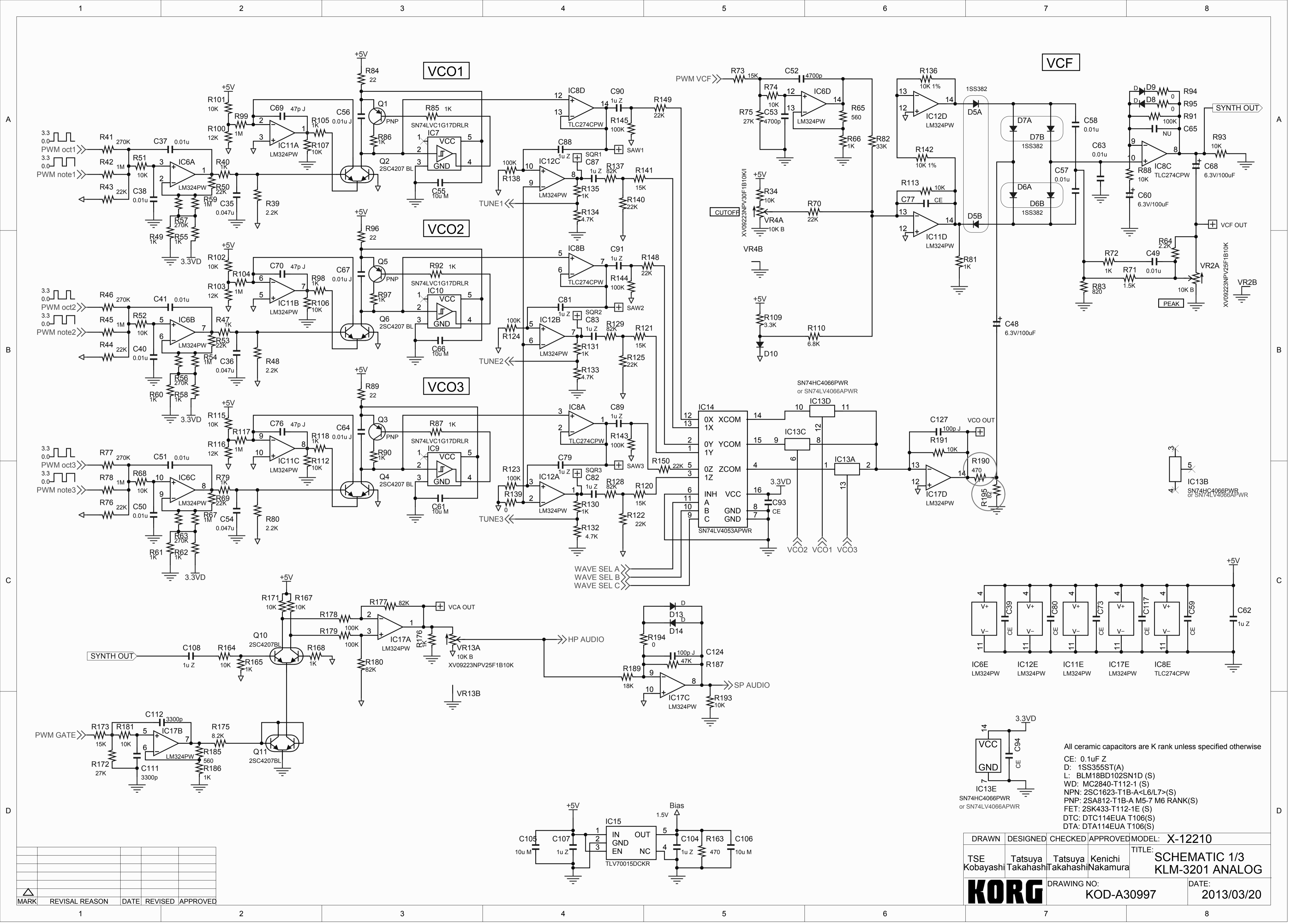| No	Code	Parts Name	QTY
1	510646800823	X12210 UPPER CASE E10300	1
2	510646800820	X12200 LOWER CASE E10302	1
3	510646800821	X12200 BATTERY COVER E20382	1
4	510646800822	X12200 SP ENCLOSURE E30648	1
5	510640800502	X12210 TOP PANEL C30895	1
6	510500800036	X12210 RUBBER BUTTON E30650-1	1
7	510646800825	X12200 BATTERY BOX E20386	1
8	510500800523	X12200 RUBBER LEG E40867	5
9	510646801534	X12200 SENSOR SHEET E40868	1
10	510646801536	X12200 WINDOW E40870	1
11	510640805010	X12200 BATTERY SPRING(W1) C41783	4
12	510640805011	X12200 BATTERY SPRING(W2) C41784	1
13	510640805012	X12200 BATTERY SPRING(+) C41785	1
14	510640805013	X12200 BATTERY SPRING(-) C41786	1
15	510646502392	X-1200/10 VR-KNOB-L(V) KOC-E30313	1
16	510646502393	X-1200/10 VR-KNOB-S(V) KOC-E30312	5

COMMERCIAL TOLERANCE

REVISAL MARK REVISAL REASON REVISAL DATE REVISED BY APPROVED

この図面 及び この図面にて作製された物品に対しての機密事項を厳守して下さい Do not disclose this drawing and goods based on this drawing to 3rd parties.

Column headers: A B C D E F G H
Row numbers: 4 3 2 1

touch sense panel

touch sense	16
LED	40
rubber SW	8
SN74LV138	1

3.3V

PSoC
CY8C20436A-24LQXI
RESET SCL,SDA

16
3 LED SCAN
5 SW SCAN
2

I/O SCL,SDA

RXD
TXD MIDI OUT (hidden)
INT
2
AD
I/O
I/O
I/O
I/O 4 LED SCAN

SERIAL
BOOT BOOT
TXD TXD
RXD RXD
3.3V

MCU
TMPM330

PRODUCT ID: 0 X → 2 IO

PWM 7

I/O
I/O
I/O
INT
INT
INT
I/O
I/O
I/O
PWM
I/O

10.000MHz CRYSTAL

BU4227G-TR
RESET
3.3V → RESET

AD
AD I/O I/O

LED x12

🮲.🮲.🮲.🮲.

I/O 11

7CH LOW PASS FILTER
2-pole butterworth
pitch3 2
pitch2 2
pitch1 2
cutoff

VCO3
VCO2
VCO1
pitch
gate
tune
tune
tune
wave select
wave
wave
gate
gate

MIDI IN
MIDI INTERFACE

SYNC
SYNC INTERFACE connector detect
SYNC IN
SYNC CN
SYNC OUT

SYNC in
out

HP out
TPA6111A2DR

ITAK-S-YDH23-06-08

VCF (700S)
peak off
in
cutoff
CUTOFF PEAK

VCA

VOLUME

LOW CUT, LIMITER
TPA2006D1

VR x10

PWR SW
power control
battery voltage detect

Buck converter
TPS62112RSAR

KA350
(not included)

AA x6

LDO
TLV70015DCK → 1.5V ANALOG

5.0V

LDO
TLV70033DCK → 3.3V DIGITAL

LDO
TLV70033DCK → 3.3V LED

PSoC

LED MATRIX

All ceramic capacitors are K rank unless specified otherwise

CE: 0.1uF Z
D: 1SS355ST(A)
L: BLM18BD102SN1D (S)
WD: MC2840-T112-1 (S)
NPN: 2SC1623-T1B-A<L6/L7>(S)
PNP: 2SA812-T1B-A M5-7 M6 RANK(S)
FET: 2SK433-T112-1E (S)
DTC: DTC114EUA T106 (S)
DTA: DTA114EUA T106(S)

	DRAWN	DESIGNED	CHECKED	APPROVED	MODEL: X-12210
	TSE Kobayashi	Tatsuya Takahashi	Tatsuya Takahashi	Kenichi Nakamura	TITLE: PANEL SCHEMATIC 1/1 KLM-3200

KORG

DRAWING NO: KOD-A30996

DATE: 2013/03/20

MARK | REVISAL REASON | DATE | REVISED | APPROVED

VCO1

VCO2

VCO3

VCF

PWM oct1
PWM note1
PWM oct2
PWM note2
PWM oct3
PWM note3
PWM VCF
PWM GATE

TUNE1
TUNE2
TUNE3

CUTOFF
CUTOFF

SAW1
SAW2
SAW3
SQR1
SQR2
SQR3

SYNTH OUT
VCF OUT
VCO OUT
VCA OUT
HP AUDIO
SP AUDIO
PEAK

WAVE SEL A
WAVE SEL B
WAVE SEL C

VCO2 VCO1 VCO3

Bias
1.5V

All ceramic capacitors are K rank unless specified otherwise

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WD: MC2840-T112-1 (S)
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FET: 2SK433-T112-1E (S)
DTC: DTC114EUA T106(S)
DTA: DTA114EUA T106(S)

IC6E LM324PW
IC12E LM324PW
IC11E LM324PW
IC17E LM324PW
IC8E TLC274CPW
IC13E SN74HC4066PWR or SN74LV4066APWR

DRAWN	DESIGNED	CHECKED	APPROVED	MODEL: X-12210
TSE Kobayashi	Tatsuya Takahashi	Tatsuya Takahashi	Kenichi Nakamura	TITLE: SCHEMATIC 1/3 KLM-3201 ANALOG

KORG
DRAWING NO: KOD-A30997
DATE: 2013/03/20

MARK | REVISAL REASON | DATE | REVISED | APPROVED

MICROPROCESSOR

SP EN
HP CN
TUNE2
PWM oct1
PWM note1

RSD-10000F202000
HC-49US 10.000MHZ SMD

X1
C28 22p J
C27 22p J
R27 22

3.3VD
3.3VD
3.3VD

3.3VD
R30 10K R29 10K
SWDIO
SWCLK
SWV

CN1
6 5 4 3 2 1
3.3VD
DEBUG
RESET hand wire
NU A2001WV-6P

3.3VD
R200 10K
R18 4.7K
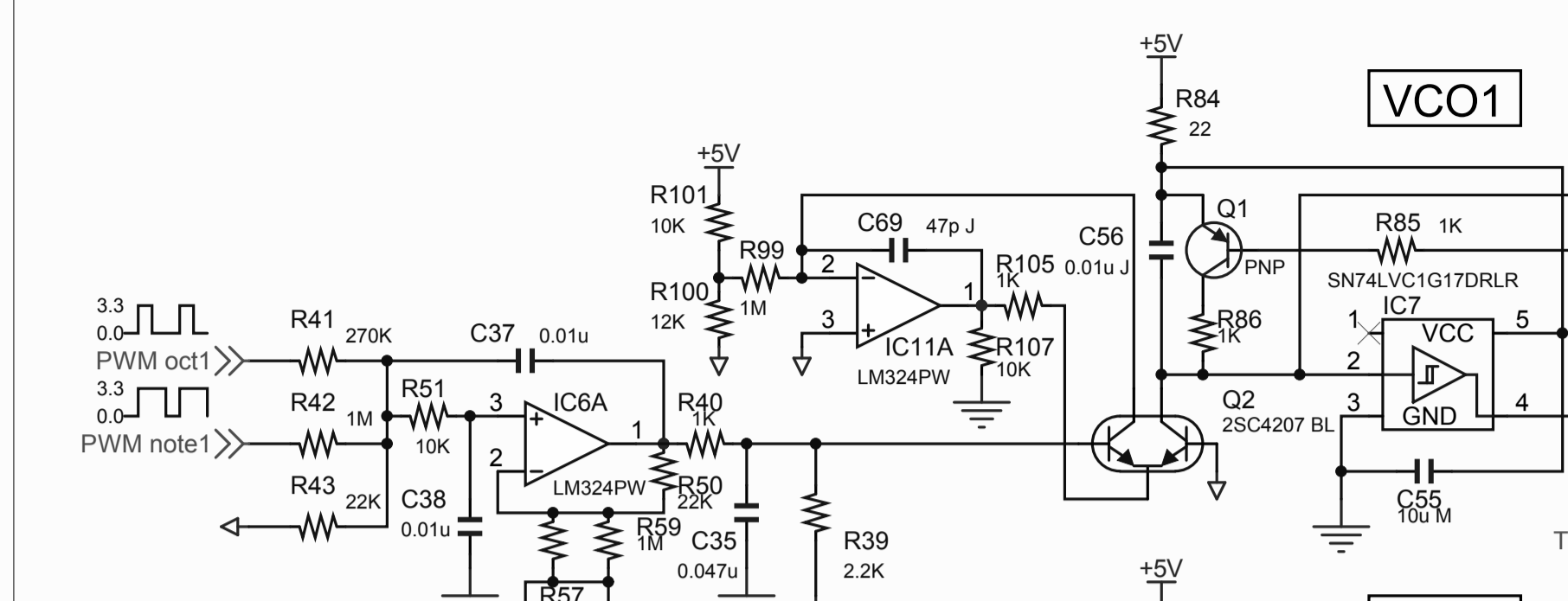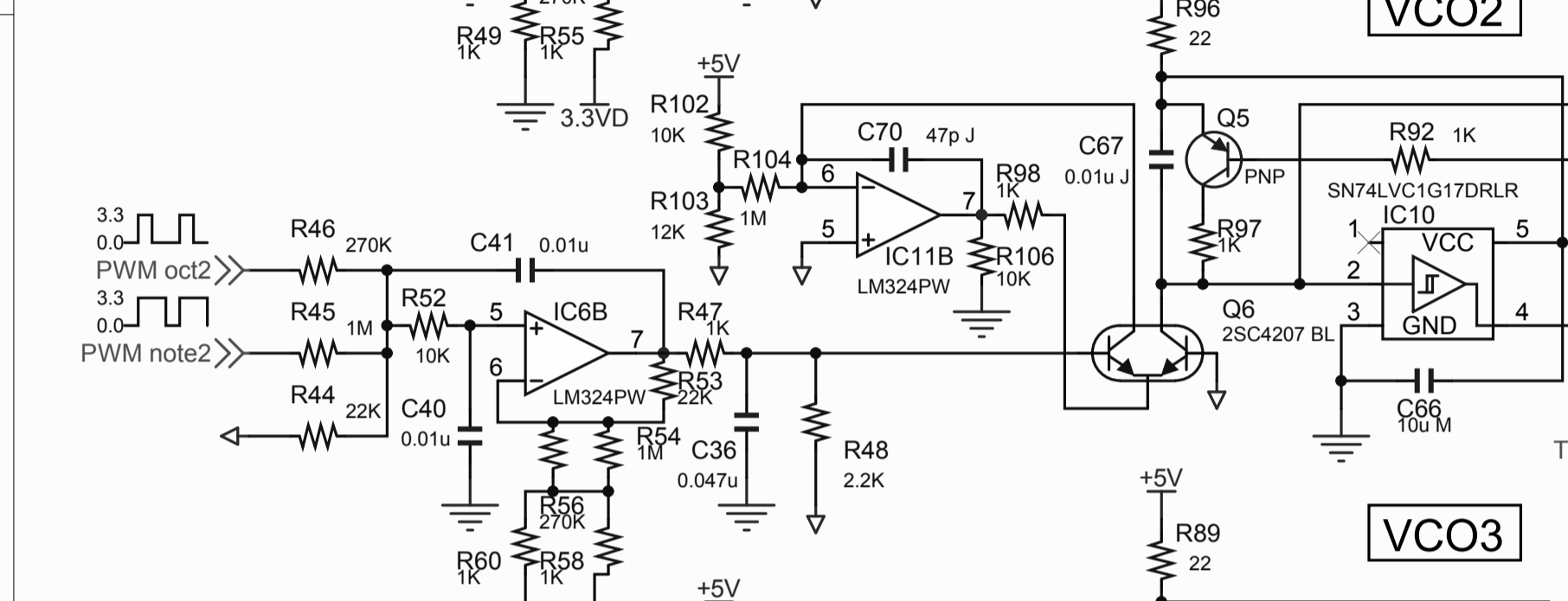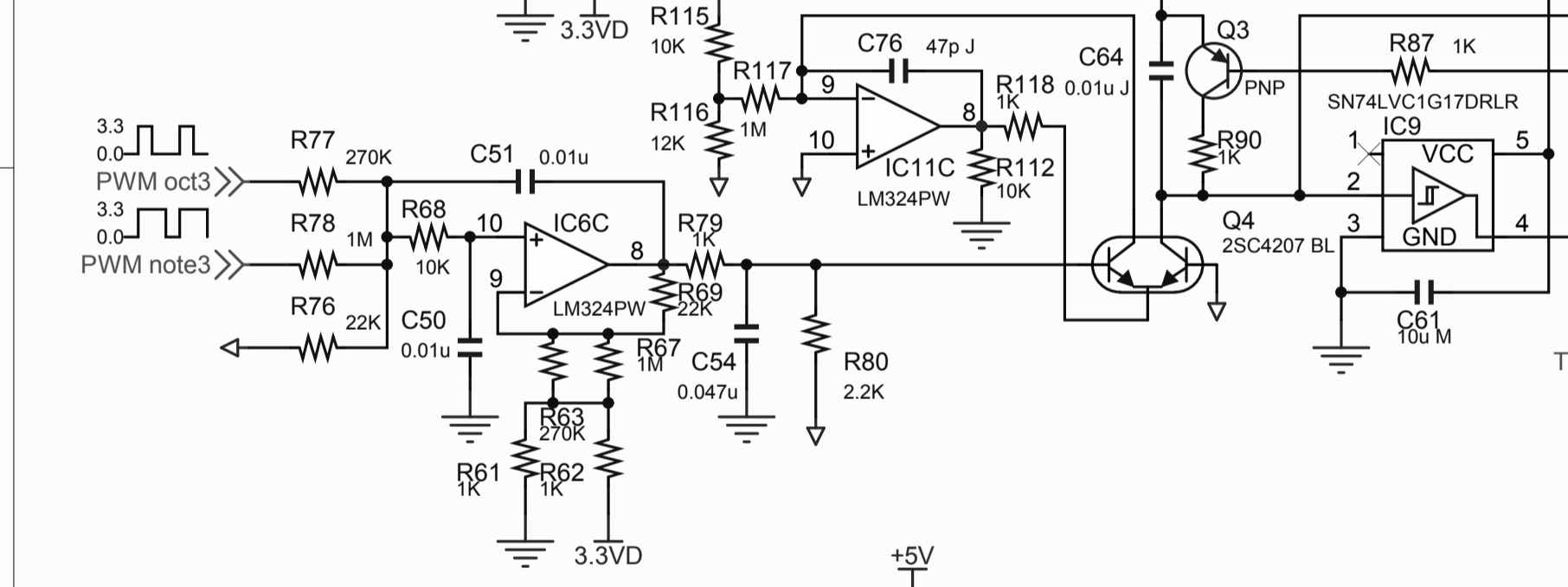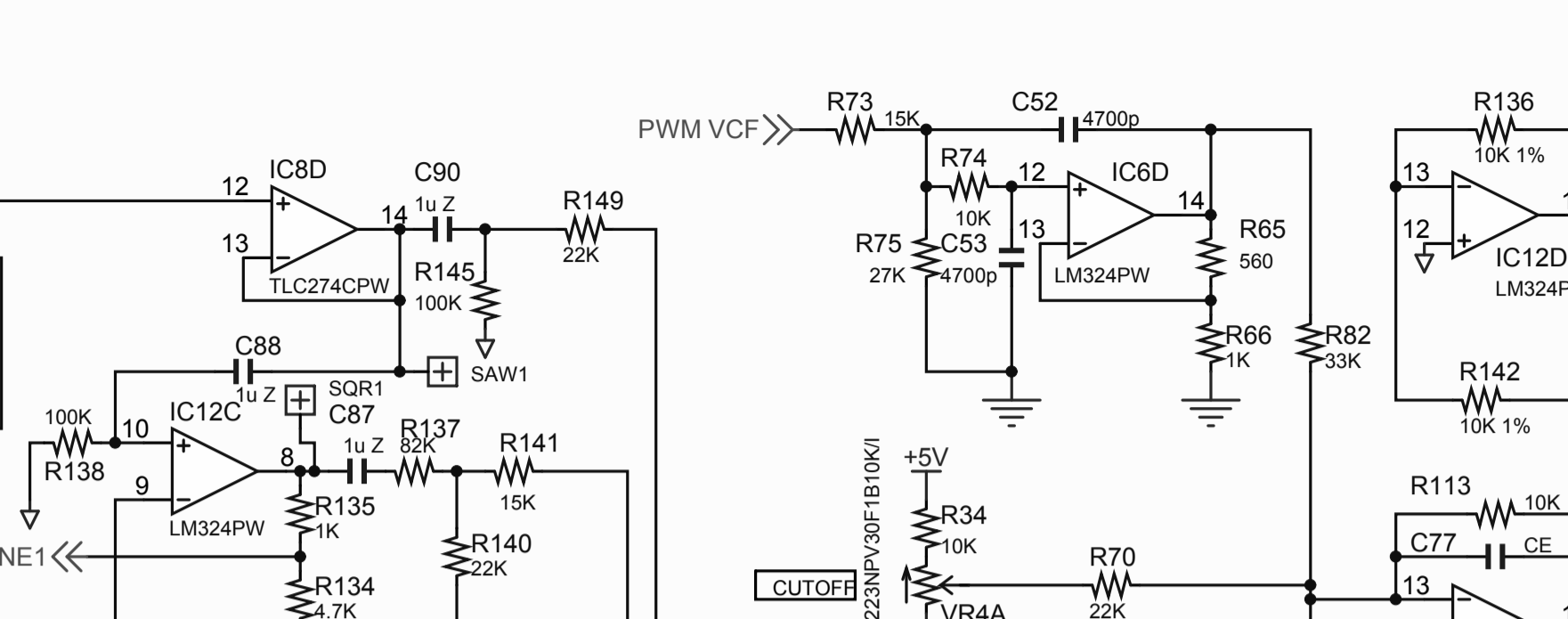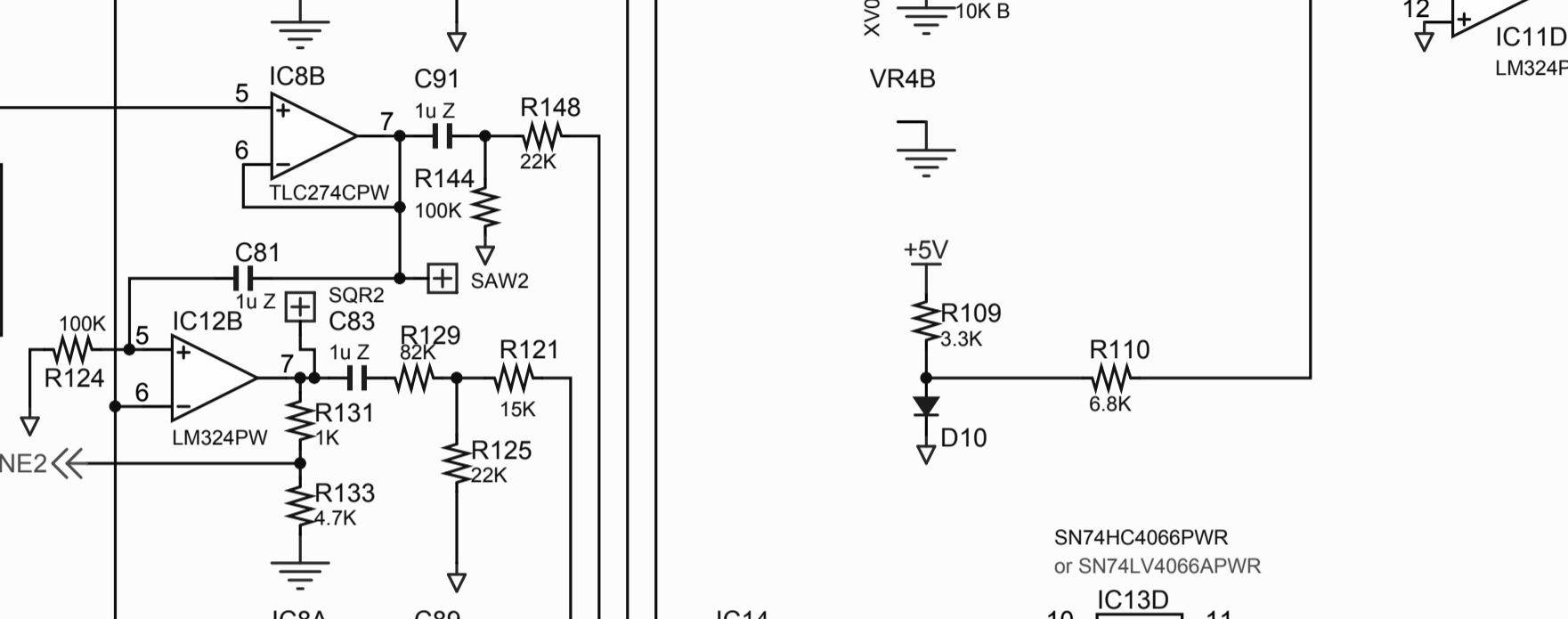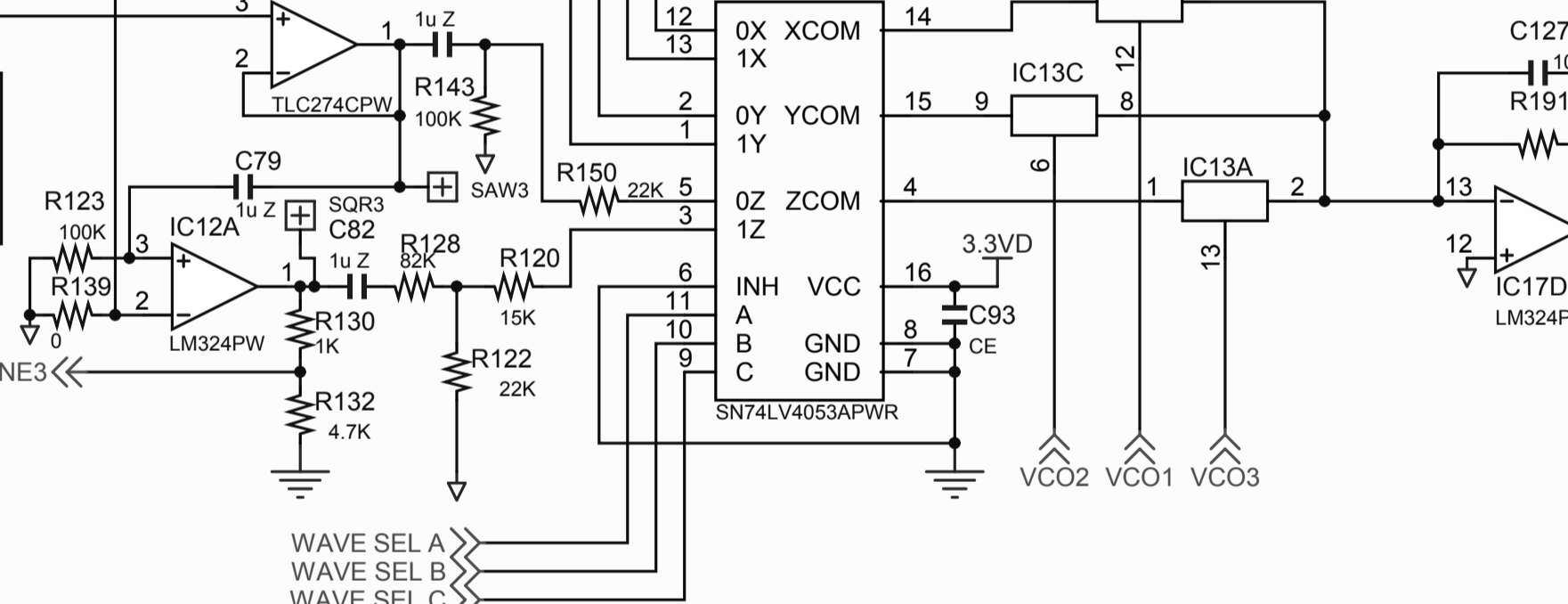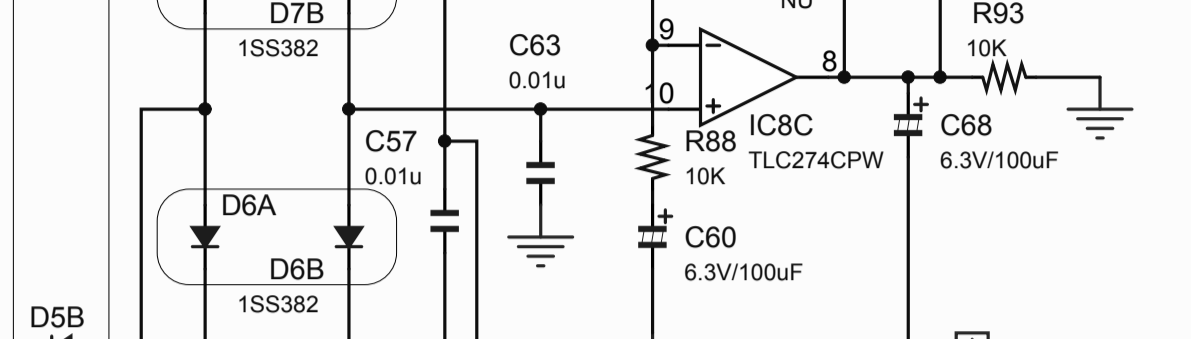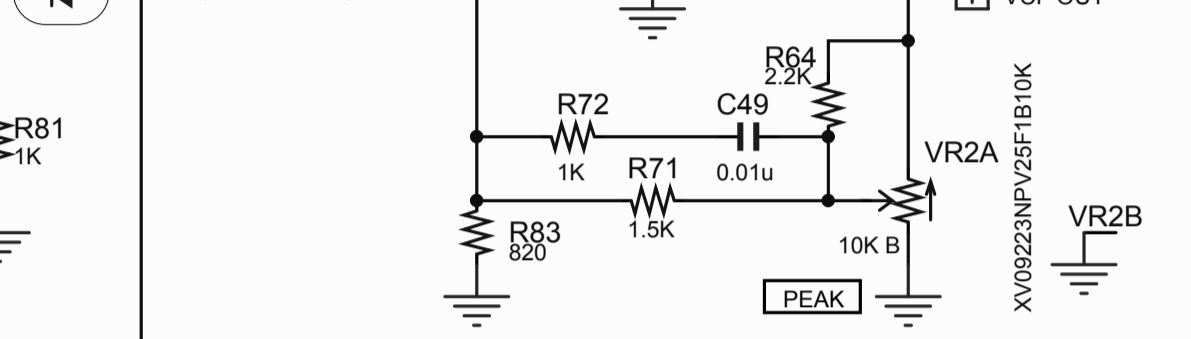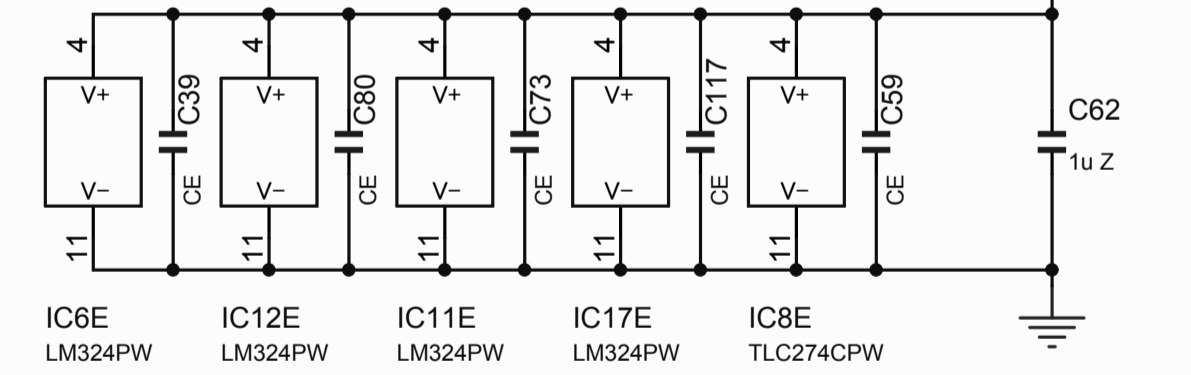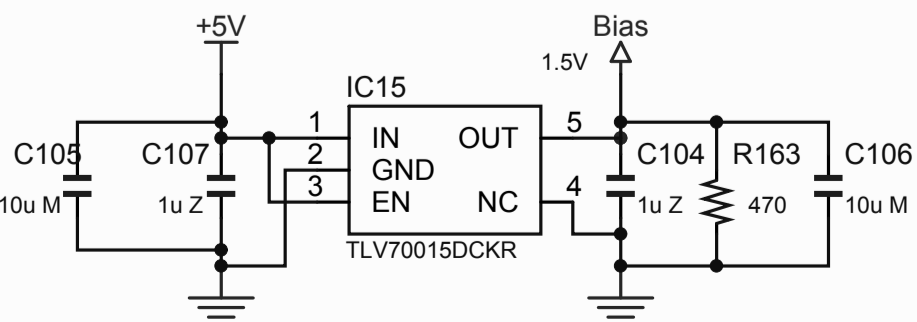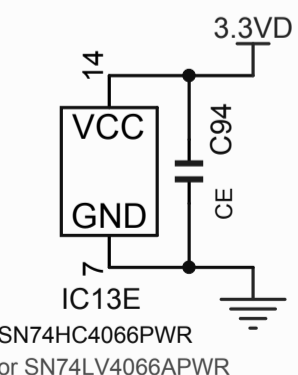
product ID

	PI6	PI7
RHYTHM	1	0
BASS	0	X
POLY	1	1

IC4
TMPM330FWFG(C)

RVSS
DVSS
DVDD3
PJ0/INT0
PA7
PA6/TRACEDATA3
PA5/TRACEDATA2
PA4/TRACEDATA1
PA3/TRACEDATA0
PA2/TRACECLK
PF3/RXIN1
PB2/TRST
PB1/TDI
PJ7/INT7
TEST3
PA1/TCK/SWCLK
PA0/TMS/SWDIO
PB0/TDO/SWV
PI5/TB5OUT
PI4/TB4OUT
PK1/SCOUT/ALARM

R37 10K
R38 10K
R36 10K
R35 10K
R33 470
R26 10K
R25 10K
R31 1K
R28 1K

3.3VD
RESET
C34 84
4700p 85
SYNC OUT

RVDD3 76
XT1 77
XT2 78
TB4IN0/PI6 79
NMI 80
MODE 81
RESET 82
TB4IN1/PI7 83
TB3IN0/PH6 84
TB3IN1/PH7 85
INT2/PJ2 86
INT3/PJ3 87
TB6OUT/PJ4 88
RXIN0/PE3 89
TEST4 90
AIN0/PC0 91
AIN1/PC1 92
AIN2/PC2 93
AIN3/PC3 94
TB5IN0/AIN4/PD0 95
TB5IN1/AIN5/PD1 96
TB6IN0/AIN6/PD2 97
TB6IN1/AIN7/PD3 98
AIN8/PD4 99
AIN9/PD5 100

SYNC OUT
SYNC RISE
SYNC FALL
PWM VCF
PEAK SW

VR9 VR8 VR7 VR6 VR5 VR4 VR3 VR2 VR1 VR0

PK0/CEC 50 HP disable → HP disable
PJ1/INT1 49 TUNE1 → TUNE1
PI3/TB3OUT 48 PWM oct3 → PWM oct3
PB7 47 WAVE SEL A → WAVE SEL A
PF6/SCK1 46 VCO3 → VCO3
PF5/SI1/SCL1 45 VCO2 → VCO2
PF4/SO1/SDA1 44 VCO1 → VCO1
PB6 43 WAVE SEL B → WAVE SEL B
PI2/TB2OUT 42 PWM note3 → PWM note3
PB5 41 WAVE SEL C → WAVE SEL C
PI1/TB1OUT 40 PWM oct2 → PWM oct2
PJ6/INT6 39 TUNE3 → TUNE3
PI0/TB0OUT 38 PWM note2 → PWM note2
PB4 37 SS3 → SS3
PH3/TB1IN1 36 LD5 → LD5
PF2/SCLK2/CTS2 35 SS2 → SS2
PF1/RXD2 34 SS1 → SS1
PF0/TXD2 33 SS0 → SS0
PH2/TB1IN0 32 LD4 → LD4
PH1/TB0IN1 31 PWM LED2 → PWM LED2
PH0/TB0IN0/BOOT 30
PB3 29
PG2/SCK0 28 PSoC RST
PG1/SI0/SCL0 27 R20 0 PSoC SCL
PG0/SO0/SDA0 26 R19 0 PSoC SDA

GND_LED
3.3VLED
R23 NU
R22 4.7K
3.3VD

CN2
TO PANEL
A2001WR-7P

BOOT
RXD
TXD

TP16
brown
red
orange
yellow
green
SERIAL

3.3VD

AIN10/PD6
AIN11/PD7
AVSS
VREFH
AVDD3
INT4/PG3
TB9OUT/PK2
TB7OUT/PJ5
TB2IN0/PH4
TB2IN1/PH5
TB8OUT/PG7
TEST2
DVSS
DVDD3
SDA2/SO2/PG4
SCL2/SI2/PG5
SCK2/PG6
TEST1
INT5/PF7
TXD0/PE0
RXD0/PE1
CTS0/SCLK0/PE2
TXD1/PE4
RXD1/PE5
CTS1/SCLK1/PE6

3.3VD
R15 100K

BAT LO
SYNC CN
LD0
PWM LED0
PWM LED1
LD6
LD7
PWM GATE
LD1
LD2
LD3
PWR SW
PWR CTRL
TxD MIDI
RxD MIDI

C24 0.01u
C22 1000p
PWM GATE

PWR SW
PWR CTRL
TxD MIDI
RxD MIDI
R24 10K
3.3VD

3.3VD 3.3VD
C32 C25 C26 C18 C23
1u Z 1u Z 1u Z 1u Z 1u Z
R14 10
C17 0.047u

LED MATRIX

3.3VLED
R8 22
C7 10u M
GND_LED

SS0 SS1 SS2 SS3

DT11 DT10 DT13 DT12

red: SML-E12UWT86   red: KPTR-3216SURCK

R10 100 TEMPO LED2   (spare) LED10   BAT3 LED4
R11 100 ATTACK LED3   VCO1 LED11   BAT2 LED5
R12 100 DECAY LED7   VCO2 LED12   BAT1 LED6
R13 100 EG INT LED9   VCO3 LED13   BAT0 LED8

DT15 DT16 DT14

PWM LED0
PWM LED1
PWM LED2
GND_LED

LED1 TOF-3461BH-B12
R4 100 12 D1 A
R3 100 9 D2
R1 100 8 D3
R5 100 6 D4

A B C D E F G DP
11 7 4 2 1 10 5 3

DT1 DT3 DT7 DT5 DT4 DT2 DT8 DT6

LD0 LD1 LD2 LD3 LD4 LD5 LD6 LD7
GND_LED

OCTAVE | LFO RATE | TEMPO | ATTACK | DECAY/RELEASE | CUTOFF INT | LFO INT. | PITCH1 | PITCH2 | PITCH3

VR0 VR1 VR2 VR3 VR4 VR5 VR6 VR7 VR8 VR9

3.3VD
XV09223NPV25F1B10K XV09223NPV25F1B10K XV09211YNPV25U(NC)1B10K ...
C2 C43 C29 C42 C47 C75 C71 C86 C101 C119
VR1A VR3A VR5A VR7A VR9A VR10A VR11A VR12A
C5 C45 C30 C31 C46 C44 C72 C85 C100 C118
10K B CE
VR1B VR6B VR3B VR5B VR7B VR8B VR9B VR10B VR11B VR12B
frame grounds

All ceramic capacitors are K rank unless specified otherwise

CE: 0.1uF Z
D: 1SS355ST(A)
L: BLM18BD102SN1D (S)
WD: MC2840-T112-1 (S)
NPN: 2SC1623-T1B-A<L6/L7>(S)
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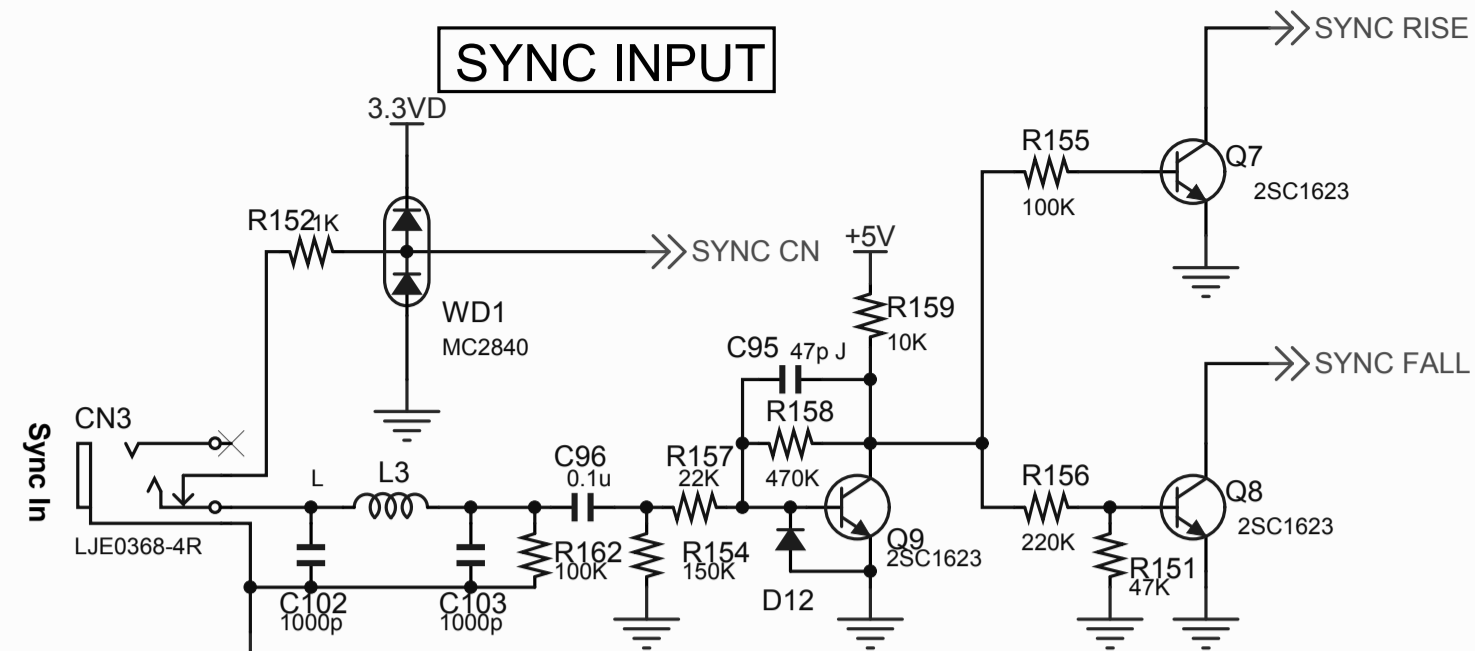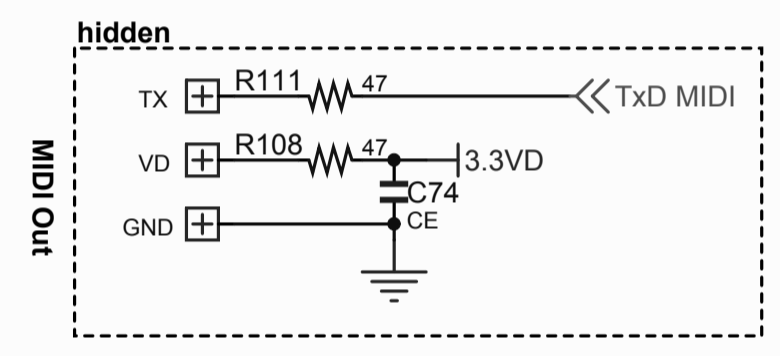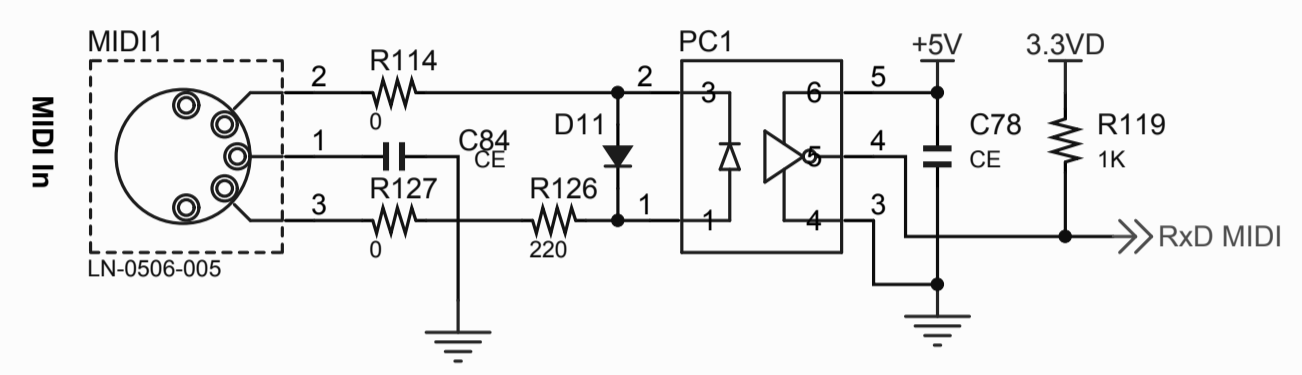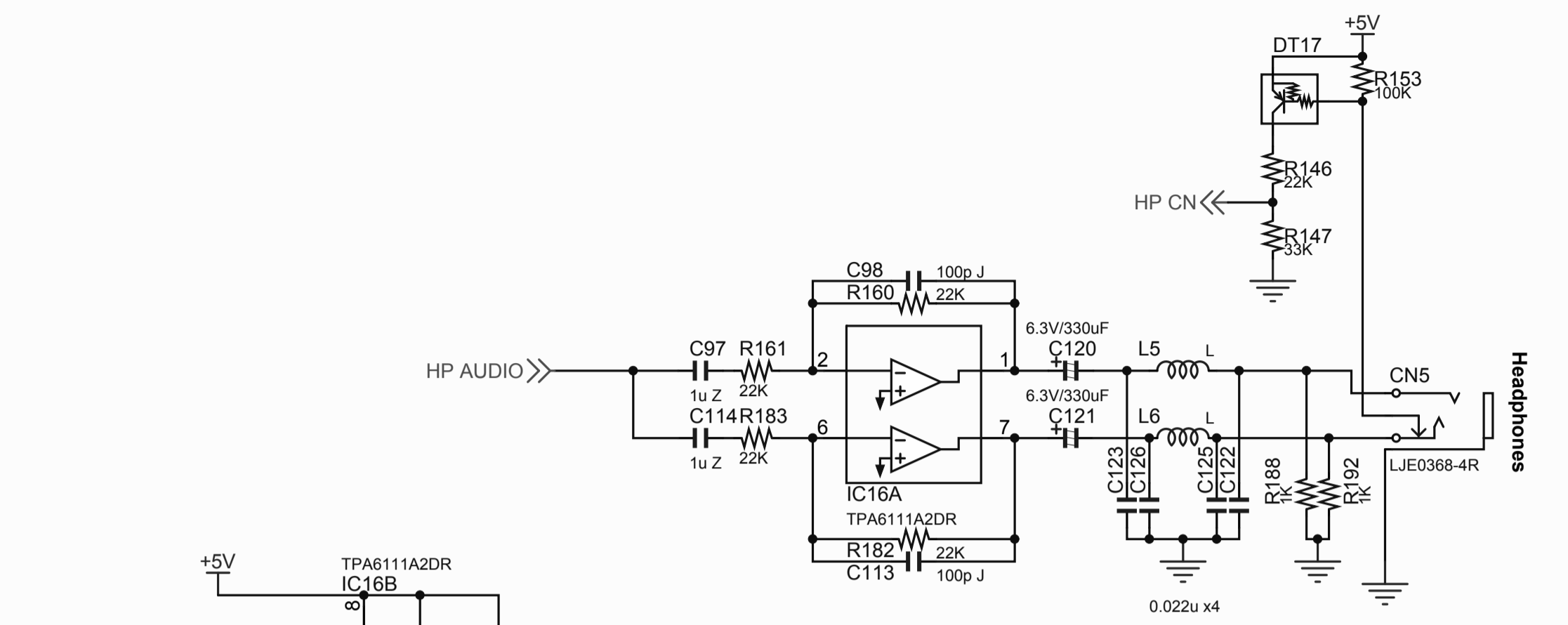FET: 2SK433-T112-1E (S)
DTC: DTC114EUA T106(S)
DTA: DTA114EUA T106(S)

+5V
IC1 TLV70033DCKR
IN OUT
GND NC
EN
C4 1u Z
C1 1u Z
C3 10u M
3.3VD digital

+5V R6 22
IC2 TLV70033DCKR
IN OUT
GND NC
EN
C6 10u M C8 1u Z
R2 0
GND_LED
C9 1u Z
3.3VLED LED

3.3VD
IC5 BU4227G-TR
VDD OUT
NC
GND CT
R32 10K
C33 1000p
RESET

SYNC INPUT

3.3VD
R152 1K
WD1 MC2840
SYNC CN
+5V
R159 10K
R155 100K
Q7 2SC1623
SYNC RISE
C95 47p J
R157 22K
R158 470K
Q9 2SC1623
SYNC FALL
R156 220K
Q8 2SC1623
R151 47K
CN3
Sync In
L L3
C96 0.1u
R162 100K
R154 150K
D12
C102 1000p
C103 1000p
LJE0368-4R

MIDI INPUT

MIDI1
MIDI In
R114 0
R127 0
C84 CE
D11
R126 220
PC1
+5V
C78 CE
R119 1K
RxD MIDI
LN-0506-005

hidden
MIDI Out
TX R111 47 TxD MIDI
VD R108 47 3.3VD
GND
C74 CE

5V POWER SUPPLY

DJ1
C20 CE
L2
C21 CE
RB051L-40TE25 (S) D2
BAT LO
ACP3225-102-2P-T000
or ACM3225-601-2P-T001
C19 NU
C10 NU
LD-0214C-1.65
RB051L-40TE25 (S) D1
R17 470K
R16 100K
C16 16V/100uF
C15
C14 CE
10u M
IC3 TPS62112RSAR
R12A163EA C6-K3.0L R12W228EA
2 VIN
3 VIN
5 SYNC
4 VINA
15 SW
14 SW
10 FB
13 PG
LBO
9 AGND
7 LBI
8 EN
GND GND PWPD PGND PGND
11
12 17 16 18
L1
R9 1M
C13 CE
C12 10u M
for current check
R7 0
+5V
C11 6.3V/330uF
hi if good
lo if lo
bat(+)
FU1 TF16AT 1.25 T TD
bat(-)
SW1A SKRGADD010
POWER SW
high min = 1.3V
R21 100K
D4
PWR CTRL
D3
DT9
PWR SW

HP AMP

DT17
+5V
R153 100K
R146 22K
R147 33K
HP CN
HP AUDIO
C97 1u Z
R161 22K
C114 R183 1u Z 22K
R160 22K
C98 100p J
IC16A TPA6111A2DR
R182 22K
C113 100p J
6.3V/330uF C120
6.3V/330uF C121
L5 L
L6 L
C123 C126
C125 C122
R188 1K
R192 1K
CN5
Headphones
LJE0368-4R
0.022u x4

TPA6111A2DR IC16B
+5V
HP disable
5 SHTDN
VDD
BYPASS
GND
C99 CE
C110 CE
C92 6.3V/100uF

SYNC OUTPUT

+5V
R166 4.7K
C109 1u Z
R169 470
R184 1K
L4 L
CN4
Sync Out
SYNC OUT
R170 10K
R174 100K
Q12 2SC1623
R198
C116 1000p
C115 1000p
LJE0368-4R

SP AMP

SP EN
SP AUDIO
R196 100K
C129 0.01u
+5V
R199
shutdown for <0.35v
R197 220K
R198 220K
1 EN
2 NC
3 IN+
4 IN-
IC18 TPA2006D1DRBR
8 OUT-
GND
7 OUT+
VDD
5
C131 6.3V/330uF
C132 1000p
C135
L7
C136
C134 1000p
C128 0.01u
R201 10
C130 0.047u
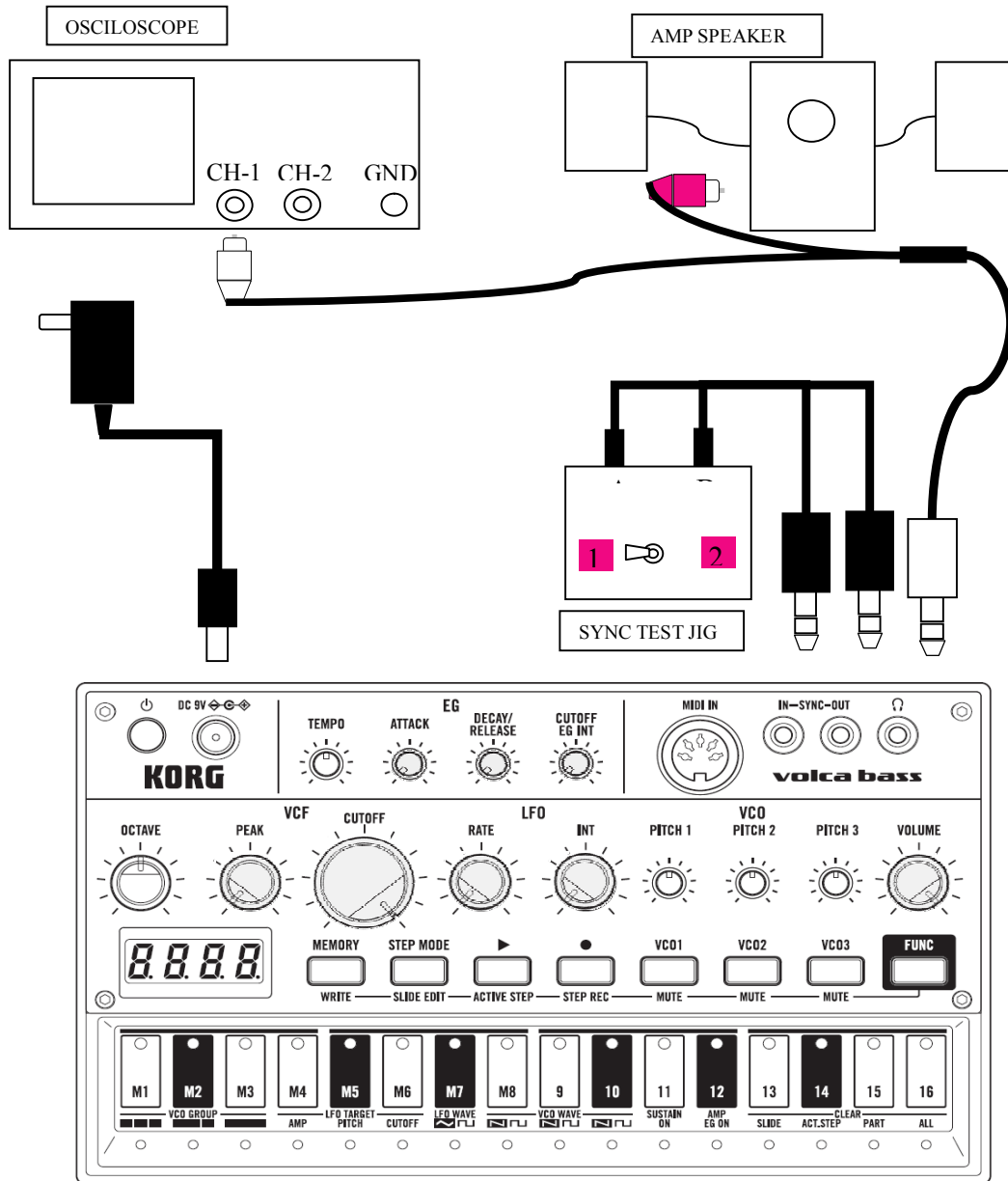L8
C133 1000p
HNS-4270 black
HNS-4269 red
Internal Speaker
SP-
SP+

CE: 0.1uF Z
D: 1SS355ST(A)
L: BLM18BD102SN1D (S)
WD: MC2840-T112-1 (S)
NPN: 2SC1623-T1B-A<L6/L7>(S)
PNP: 2SA812-T1B-A M5-7 M6 RANK(S)
FET: 2SK433-T112-1E (S)
DTC: DTC114EUA T106(S)
DTA: DTA114EUA T106(S)

| DRAWN	DESIGNED	CHECKED	APPROVED	MODEL: X-12210
TSE Kobayashi	Tatsuya Takahashi	Tatsuya Takahashi	Kenichi Nakamura	TITLE: SCHEMATIC 3/3 KLM-3201 JACK

KORG
DRAWING NO: KOD-A30999
DATE: 2013/03/20

MARK | REVISAL REASON | DATE | REVISED | APPROVED

TEST MODE
Setting

OSCILOSCOPE

CH-1   CH-2   GND

AMP SPEAKER

SYNC TEST JIG

1   2

KORG   volca bass

EG
TEMPO   ATTACK   DECAY/RELEASE   CUTOFF EG INT

MIDI IN   IN→SYNC→OUT   ⌂

VCF   LFO   VCO
OCTAVE   PEAK   CUTOFF   RATE   INT   PITCH 1   PITCH 2   PITCH 3   VOLUME

DC 9V

MEMORY   STEP MODE   ▶   ●   VCO1   VCO2   VCO3   FUNC
WRITE   SLIDE EDIT   ACTIVE STEP   STEP REC   MUTE   MUTE   MUTE

M1   M2   M3   M4   M5   M6   M7   M8   9   10   11   12   13   14   15   16
VCO GROUP   AMP   LFO TARGET PITCH   CUTOFF   LFO WAVE   VCO WAVE   SUSTAIN ON   AMP EG ON   SLIDE   ACT.STEP   PART   ALL
CLEAR

Use equipment
   SYNC TEST JIG (see schematic bellow)
   Oscilloscope
   Amp speaker

   AC Adaptor KA350
   Battery LR6 x6

   MIDI control Keyboard
   AC Adaptor (USB 5V/500mA)
   MIDI cable

SYNC TEST JIG SCHEMATIC
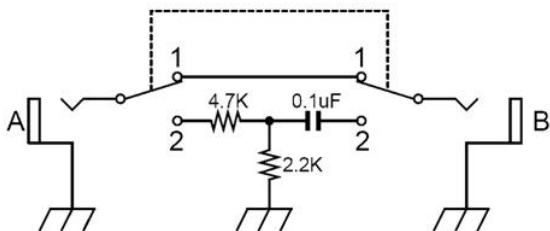
Oscilloscope setting.
VERTICAL: CH1 500mV/DIV, DC coupling
HORIZONTAL: 2.5mS/DIV

How to start test mode
Turn on the power while holding down the [Play],[Rec] and [VCO2] button.

Summary of the test mode
There is a [stand-by state] and [test execution state] state at the time of inspection.
Usually it is in [test execution state], but it is in standby mode by interrupting the test all the LED blinks when an error occurs during the inspection.
With the exception of the error display and LED inspection, inspection number is displayed on the 7-segment LED.

Test Mode Introduction

Inspection Number	Display	inspection item	
0	0. *	Internal inspection(Pin,ROM,Panel)	
1	1. *	LED and button check	
2	2. *	Rotary switch check	*1)
3	3. *	AD and knob inspection	
4	4. *	Synchronization function inspection	
5	5. *	Audio check	*1)
6	6. *	Audio PCB inspection	*1)
7	7. *	Battery inspection	*1)
8	8. *	Checking the tuner function	*1)
14	14. *	Electrostatic sensor display	*1)
15	15. *	Power off test	*1)

*1) This test is not required.

Test Mode Operation
Operation in the [test execution state] state

[VCO1]+[VCO3] button	Exiting the test running and return to the previous inspection.
[VCO1]+[FUNC] button	Exiting the test running and proceed to the next inspection.
[VCO1]+[VCO2] button	Exiting the test running and change to standby mode
[VCO3] button	Return to the previous step.
[FUNC] button	Skip to the next step.

.
Operation in the standby state

[VCO3] button	It returns to the previous inspection keep standby.
[FUNC] button	It proceeds to the next inspection keep standby.
[VCO2] button	To start the inspection in stand-by state
[VCO1]+[VCO2]button	error contents display

1.The appearance inspection
   (1) Place on a flat surface, make sure that there is no wobble.
   (2) Make sure that no scratch, cracks in the case and knob.
   (3) Make sure that the interruption of the silk printing, there is no bleeding.
   (4) Make sure that the lifting of the Volume,LED,Jack and Button etc., there is no slope.
   (5) Make sure that there is no other visible damage.

2. Launch Test mode
   Connect the jig and products as setting figure.
   Please do not connect the cable still in the [SYNC IN] and [SYNC OUT] terminal.
   Please set the knob of products as shown in the following figure.
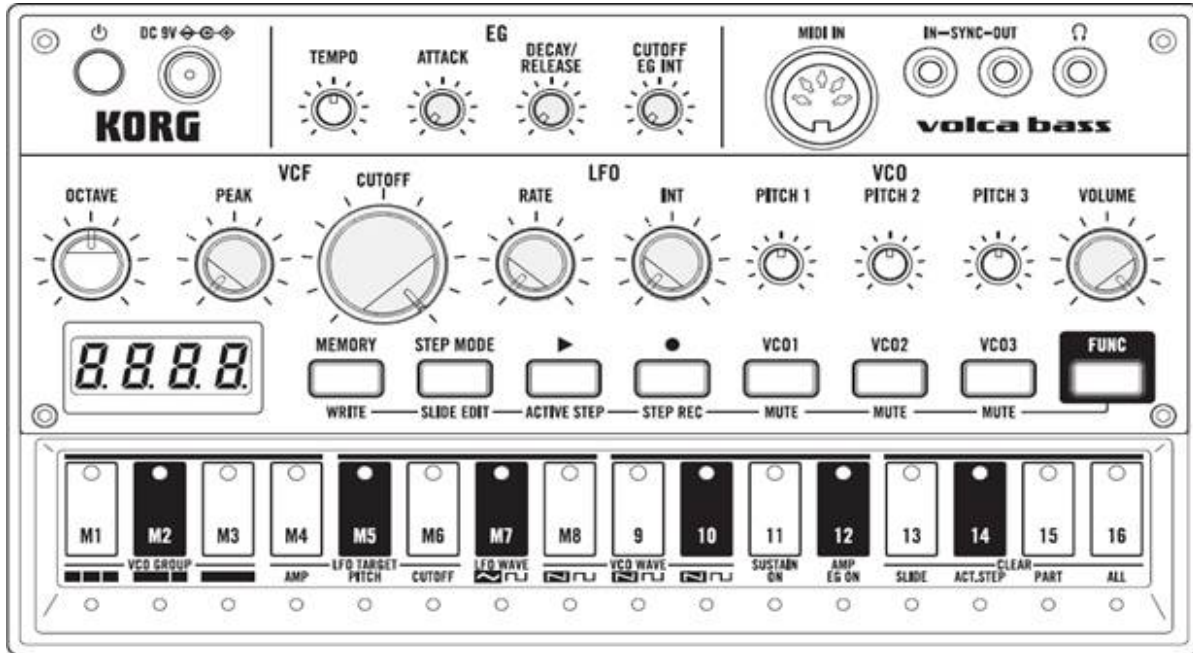
PEAK	CUTOFF	VOLUME
min	MAX	MAX

   Turn on the power while holding down the [Play] and [Rec] button.
   Release the button after displaying "tESt" in 7segLED.

3. Internal inspection. (inspection No. 0)
   The following checks are executed.
   (1) Pin check inspection
   (2) ROM check sum
   (3) Panel check sum
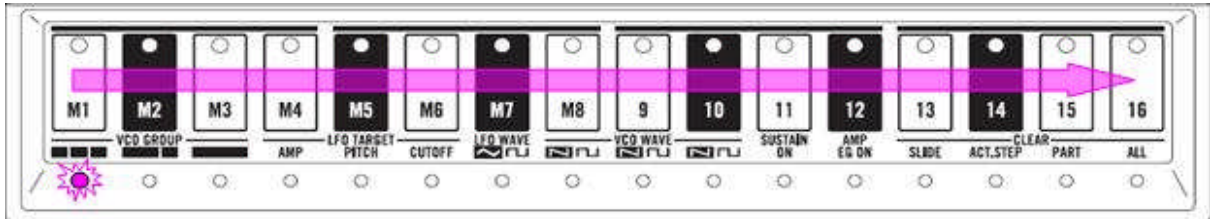   (4) Self tuning inspection
   Proceed to the next inspection automatically if the inspection passed.
   It change stand-by state and NG state is displayed if the inspection NG
   Please refer to the list of errors at the end of the "test mode description" about the error contents.

4. LED and button check (inspection number 1)

4-1. Confirmation of system version
   Remains of 7-segment of "tESt" display, please wait a few seconds.

Each version will be displayed in sequence the 7segLED.
The following is displayed in the case of version 1.00.

```
1.00 : System Version
P1.00 : Panel Version
```

Check each version.
Push [FUNC] button to proceed next inspection after checking version

4-2. Check the LED lights of all

Make sure that each LED is the following colors and that the LED is lit all.
Make sure that there is no not light LED, the brightness of LED is uniform, and there is no difference in color tone.
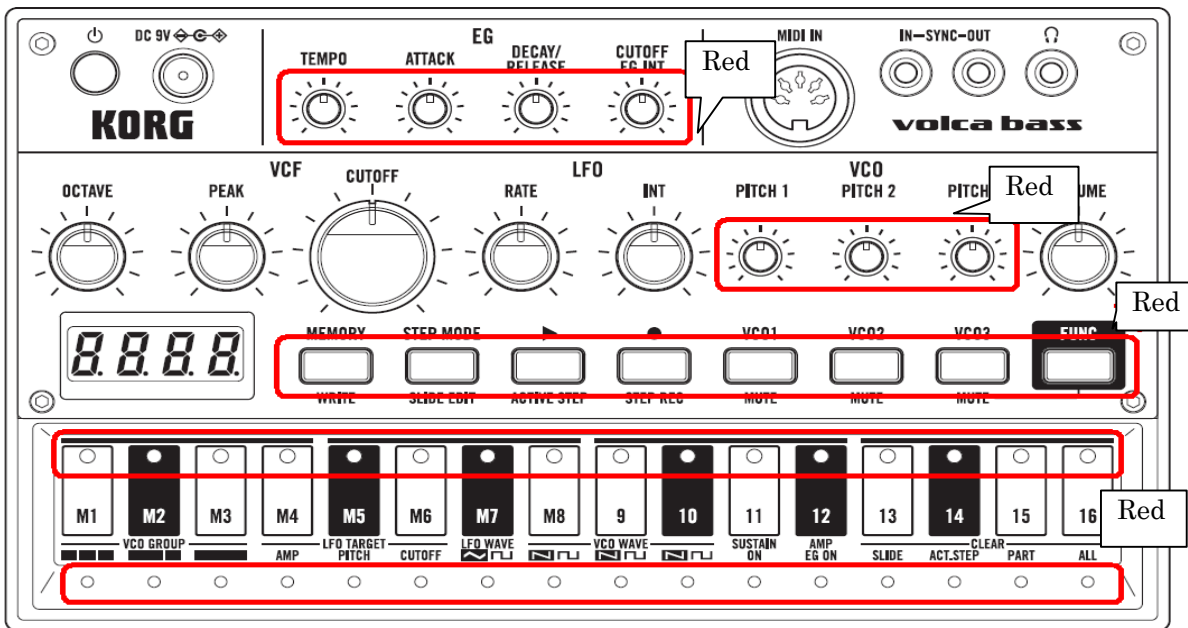
knob&7seg	Red	Button & Battery	Yellow	Rear LED x4	Red

Proceed to the next inspection by pushing [FUNC] button if the inspection passed.

4-3. LED and button check

Following table is the order of inspection.
Please press the button on the cell to the right of the lit LED.

LED	Operation button
MEMORY	MEMORY
STEP	STEP
PLAY	PLAY
REC	REC
VCO1	VCO1
VCO2	VCO2
VCO3	VCO3
FUNC	FUNC

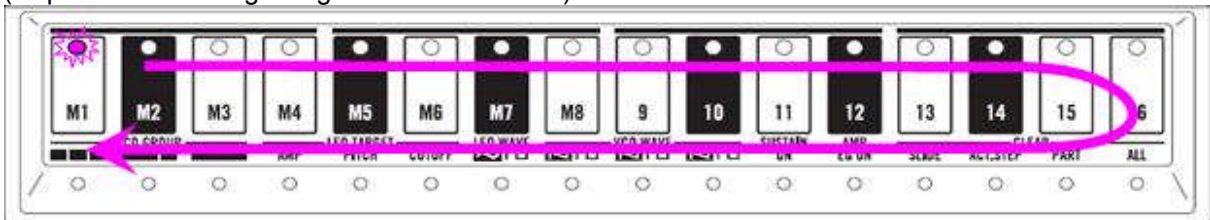Proceed to the next inspection if the inspection passed.
It change stand-by state and NG state is displayed if the inspection NG by pushing the button that is different from the target
Please refer to the list of errors at the end of the "test mode description" about the error contents.

4-4 .Touch switch inspection

LED on the lower left touch switch is lit. Touch the left edge of the touch switch, by sliding your finger while the touch as it is to the right edge, and release your finger across the right edge.

Upper LED of the touch position lights and lower LED the next position lights.

Proceed to the next inspection if the inspection passed.
It change stand-by state and NG state is displayed if the inspection NG by pushing the button that is different from the target
Please refer to the list of errors at the end of the "test mode description" about the error contents.

4-5.Inspection sequential lighting touch switch LED

LED touch switch lights in order. Make sure to light in order one by one.

If you touch to the right edge, make sure that the LED of the touch switch is lit one by one in order.
(Repeat from the beginning it is lit until the end)

Proceed to the next inspection by pushing [REC] button if the inspection passed.

4-6 Inspection sequential lighting 7segLED

1 to each digit, 7-segment LED lights in the order shown on the right figure.
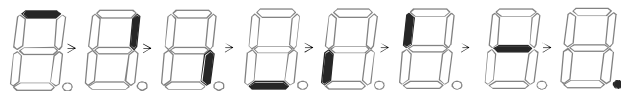
After verifying the 7-segment LED on the 4-digit, and then proceed to the next test by pressing the [FUNC] button.

5. AD and knob inspection (inspection number 3)

Operate in the order of the following description inspection target knob.
Turn the knob full right rotation and turn it full left rotation. If the knob is turned to the right edge already,

turn to the right after you turn to the left a little.

Inspection target	operation	lighting
TEMPO	Right edge to Left edge	ON
ATTACK	Right edge to Left edge	ON
DECAY/RELEASE	Right edge to Left edge	ON
CUTOFF EG INT	Right edge to Left edge	ON
OCTAVE	Right edge to Left edge	
LFO RATE	Right edge to Left edge	
LFO INT	Right edge to Left edge	
PITCH 1	Right edge to Left edge	ON
PITHC 2	Right edge to Left edge	ON
PITCH 3	Right edge to Left edge	ON

A/D value of target knob is displayed on the LED of bottom of the touch switch.
Make sure that the value which is displayed on the LED of bottom of the touch switch   change smoothly .
Make sure that there is no catch and rub when you move the knob.
Knob to light up, make sure at the same time that it is lit.

Proceed to the next inspection automatically if the inspection passed.
It change stand-by state and NG state is displayed if the inspection NG
Please refer to the list of errors at the end of the "test mode description" about the error contents.

6. Synchronization function inspection (inspection number 4)
Make sure the following points, please start the inspection.
The Sync. Cable is not connected.
Setting the sync. test jig is set to [1]

(1)   In a state where cable is not connected [SYNC IN] terminal is checked.
If it detects connecting cable, the result is NG..
It is displayed as ""4.2"" in the 7-segment in the case of a pass.
It change stand-by state and NG state is displayed.

(2) Connect the sync. Cable.
It is displayed as "4.3" in the 7-segment if it detect the cable is connected.
It is a failed inspection in case it does not appear as "4.3" in the 7-segment.

(3)   Push [VCO2] button, it start loop check and display "4.4" in the 7-segment.
It is displayed as "4.2" in the 7-segment in the case of a pass.
It change stand-by state and NG state is displayed if the inspection NG

(4)   Change setting to [2] of the sync. test jig .
Push [STEP] button, it restart loop check.
Proceed to the next inspection automatically if the inspection passed.   Do not use the inspection here.
It change stand-by state and NG state is displayed if the inspection NG

Please refer to the list of errors at the end of the "test mode description" about the error contents.

It appears the "5.1" to 7-segment, to turn off the power.
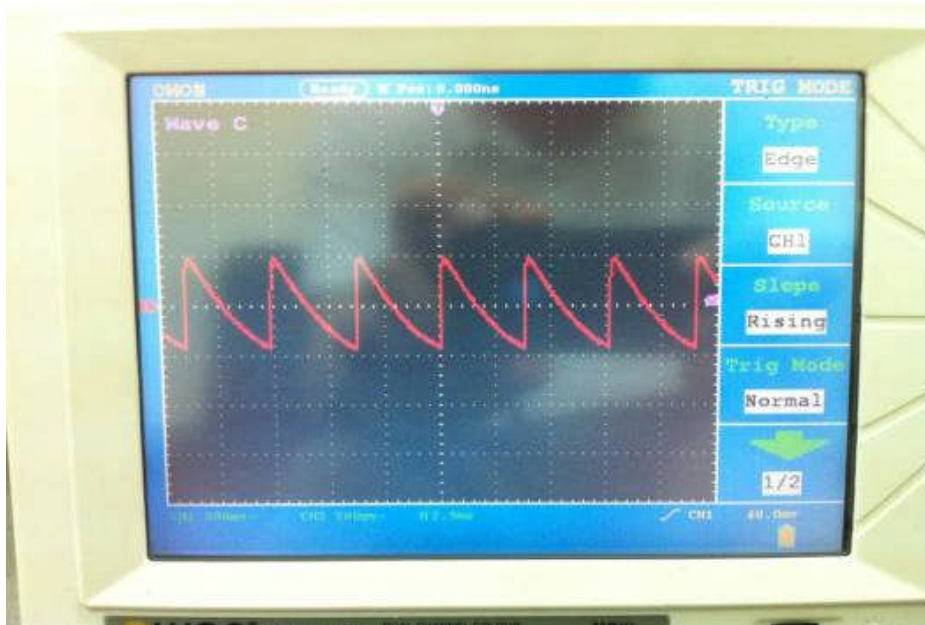Release the power switch appears as "OOFF" the 7-segment.

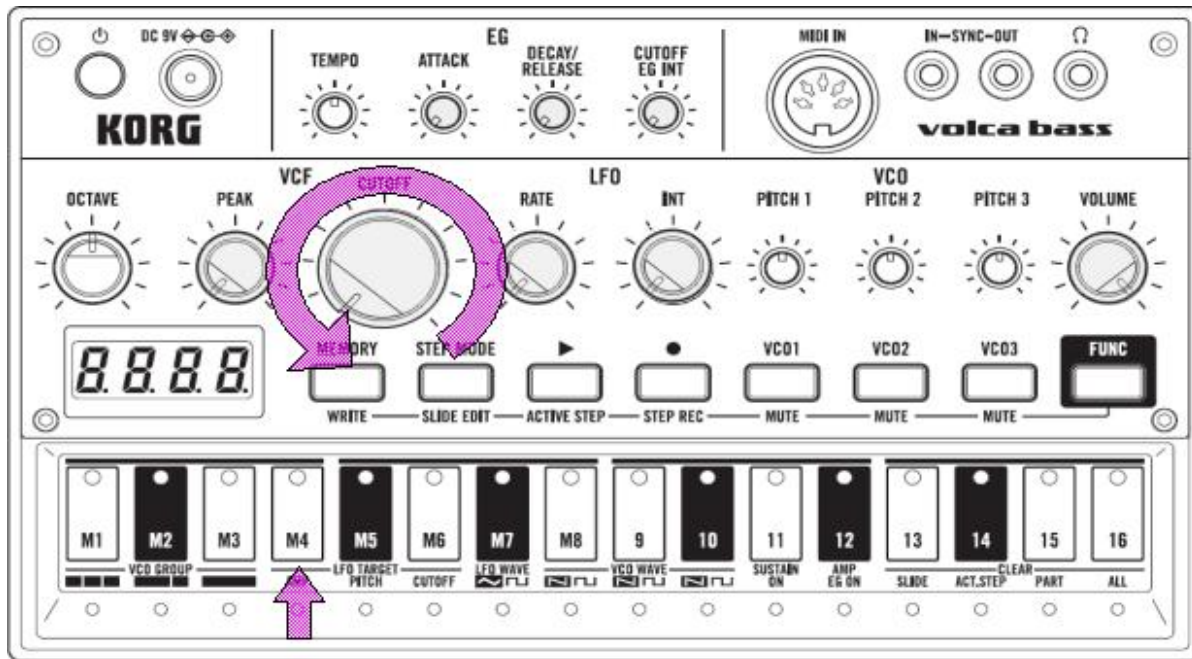## 7. Sound check (In a state in which the user uses)
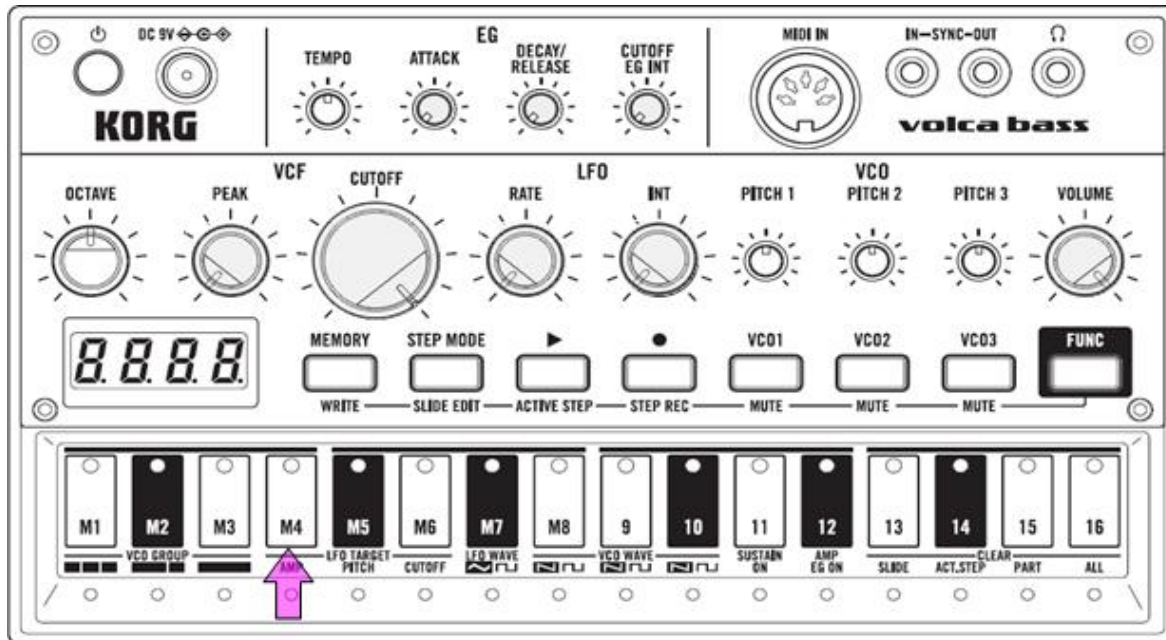
The display will indicate ""oFF"" when you hold down the power button.
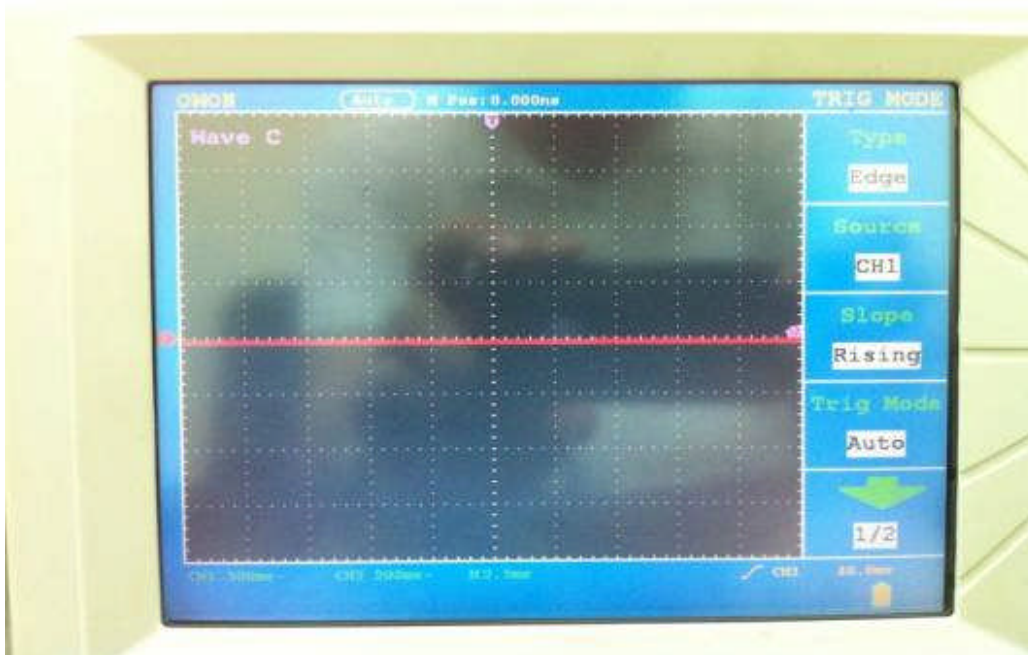Please release it appears.
Touching the "M4" of touch pad, sound comes out from the amplifier. Please check the waveform on an oscilloscope.
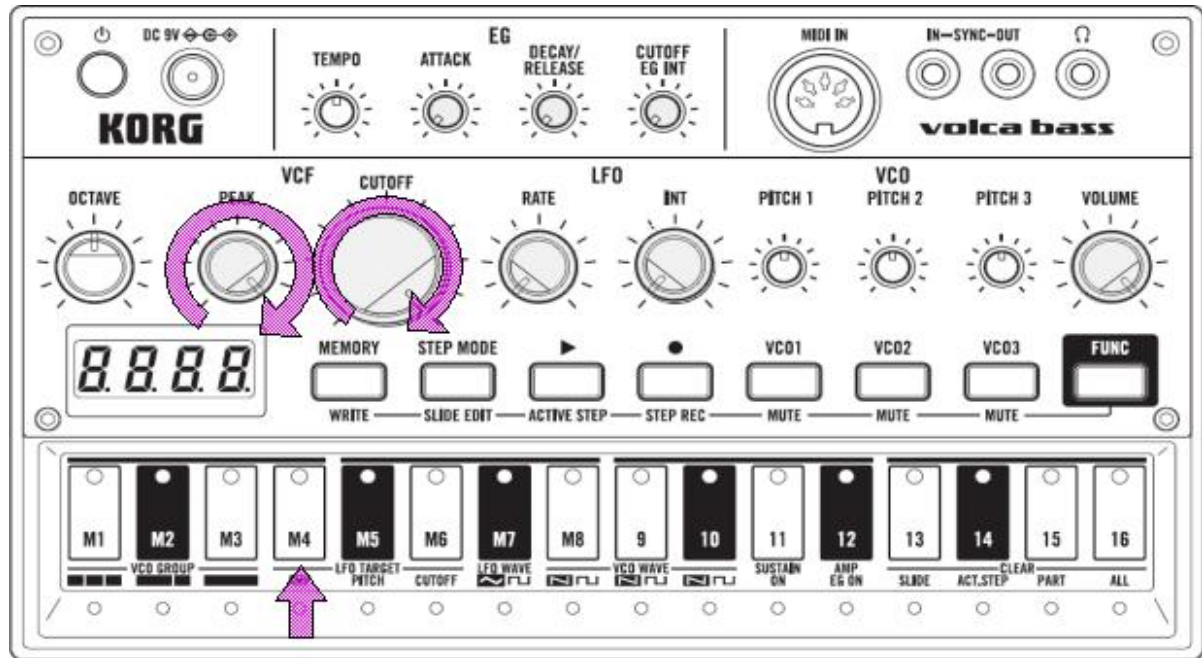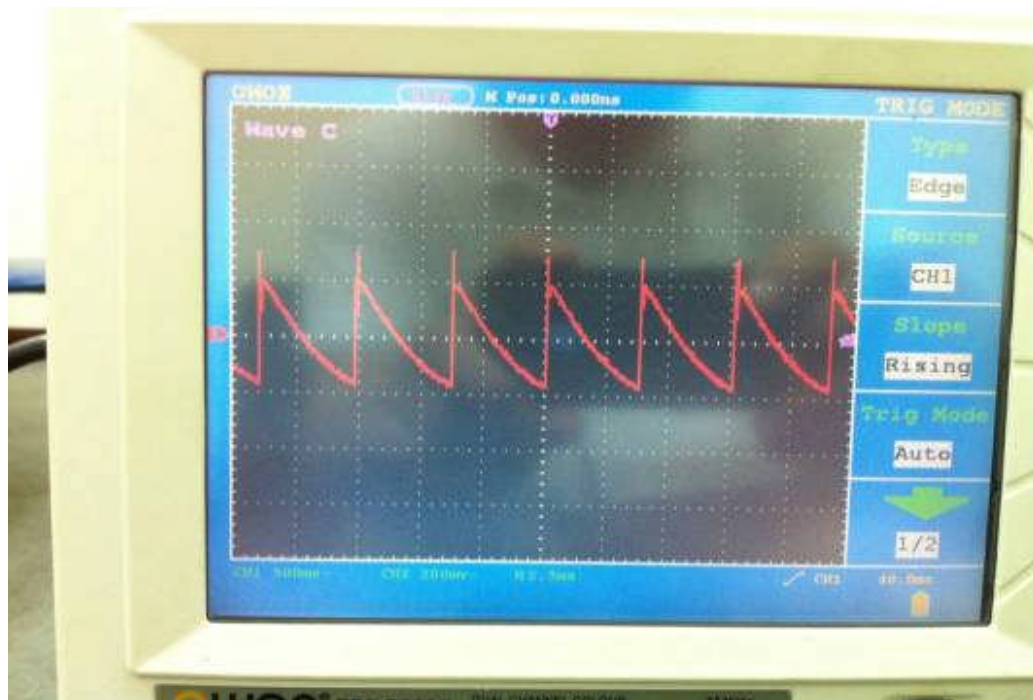
Please turn to MIN as follows: [CUTOFF] knob.

Touching the "M4" of touch pad, sound comes out from the amplifier. Please check the waveform on an oscilloscope
There is no sound from the speakers and waveform does not appear to oscilloscope
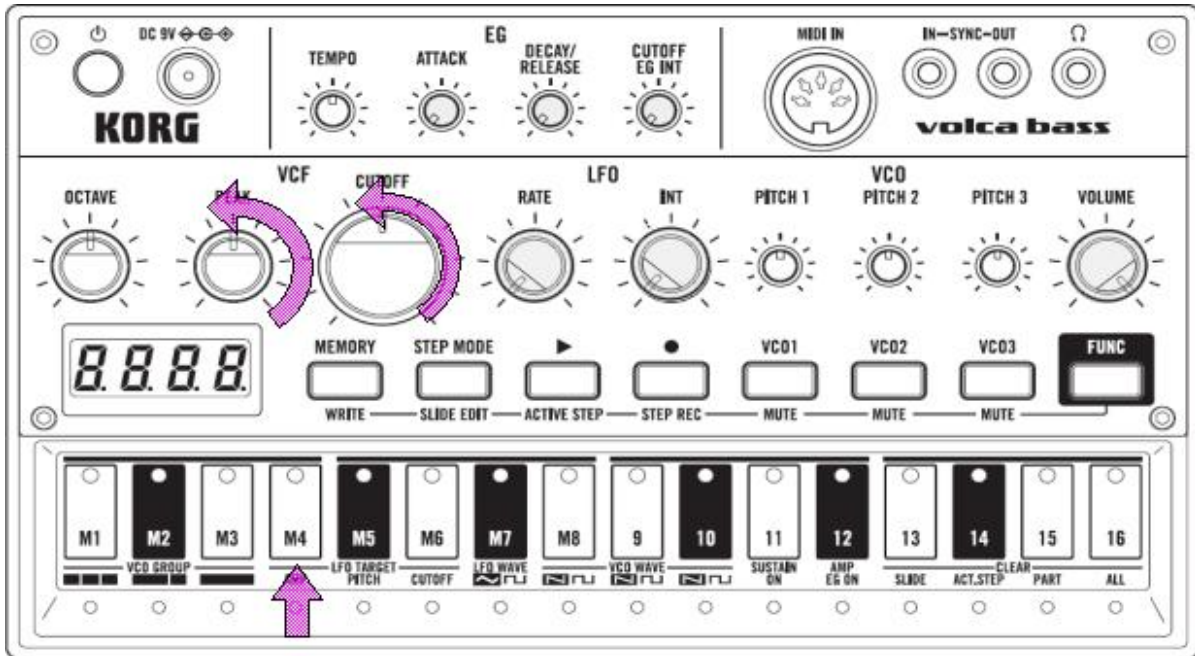
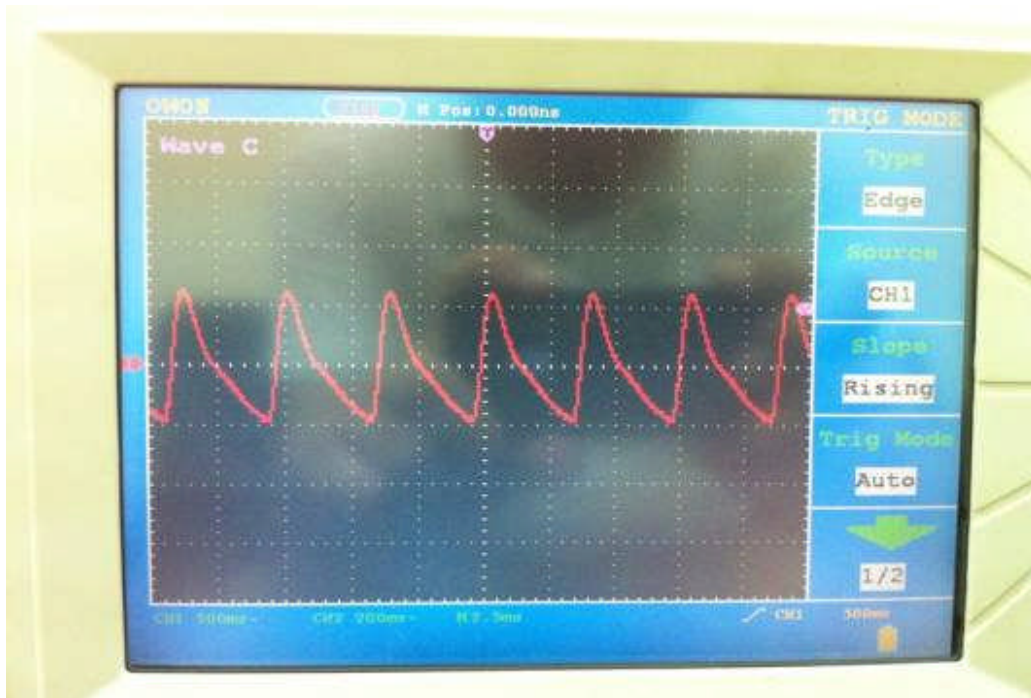Turn "CUTOFF" knob and "PEARK" knob to MAX position.

Touching the "M4" of touch pad, sound comes out from the amplifier. Please check the waveform on an oscilloscope.

Turn "CUTOFF" knob and "PEARK" knob to MID position.

Touching the "M4" of touch pad, sound comes out from the amplifier. Please check the waveform on an oscilloscope.
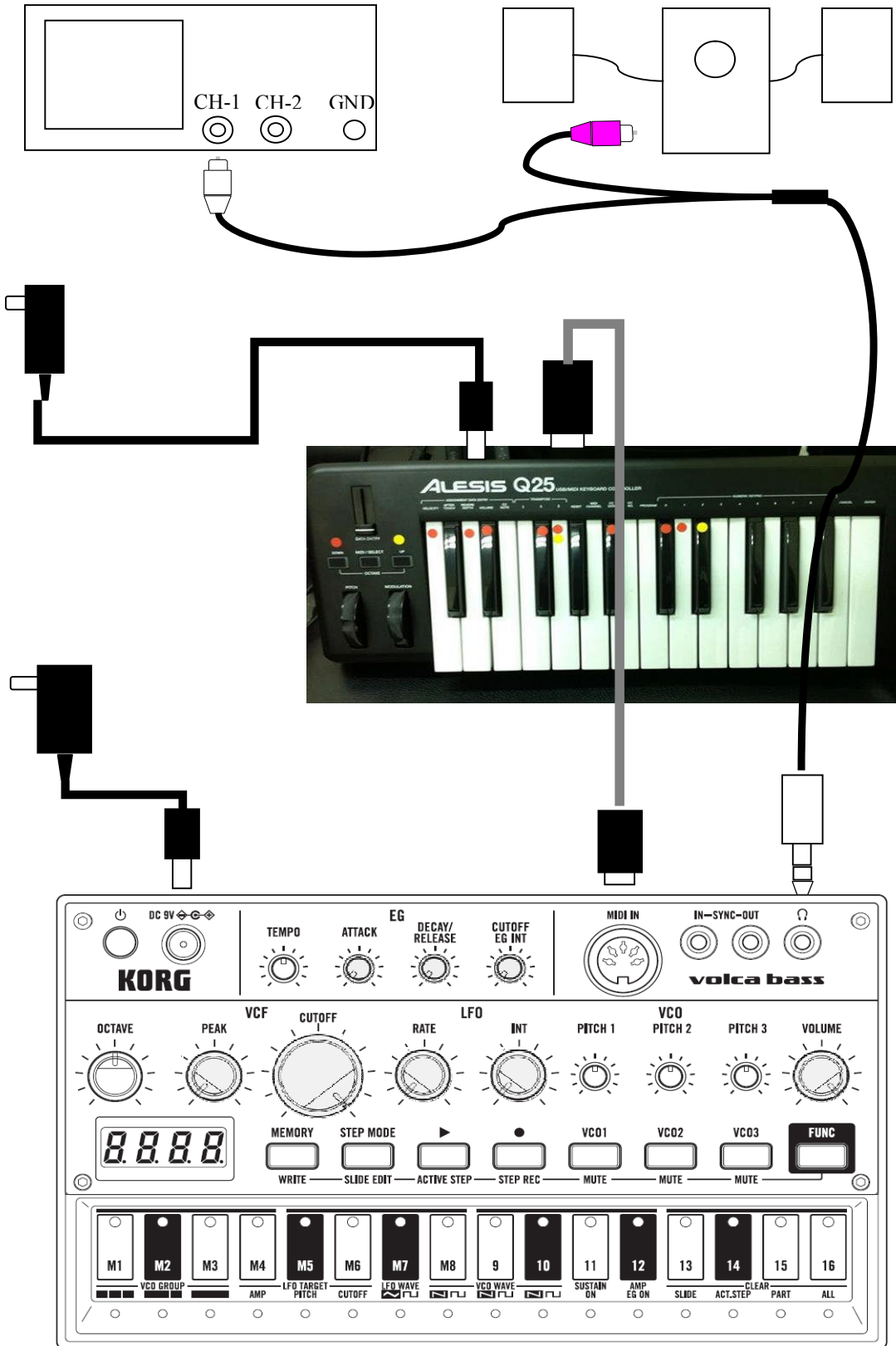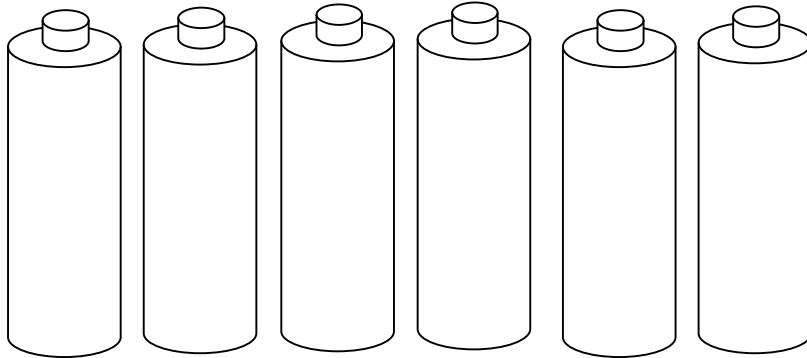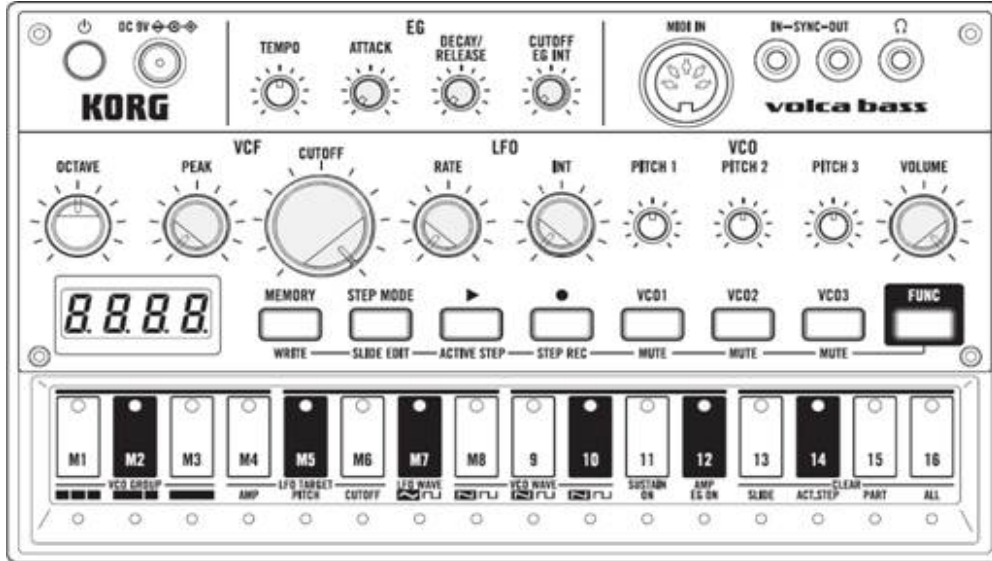
MIDI CONTOROL KEYBOARD initialize setting
Setting

OSCILOSCOPE   AMP SPEAKER

CH-1   CH-2   GND

PConnect USB cabel to the MIDI control keyboard
Make sure that you play the MIDI CONTROL KEYBOARD, volca bass will sound.

Confirmation of speaker sound in battery drive
Setting

Check speaker sound in battery drive

Put six LR6 batteries in the battery box to unplug all the cables as shown above.
Turn on the power by pressing the power button.
Push PLAY[▷] button to start DEMO.
Make sure that the DEMO performance is sounding from the speakers.
Connect the headphones, make sure that the sound from the speakers disappear.
Make sure that the sound is coming from both sides of the headphones.
If there is no problem, turn off the power by pressing the power button.
Set to ship setting the knobs, remove the batteries, test is complete.
Return the battery cover, make sure that there is no dirt on the surface appearance, to return to packing.
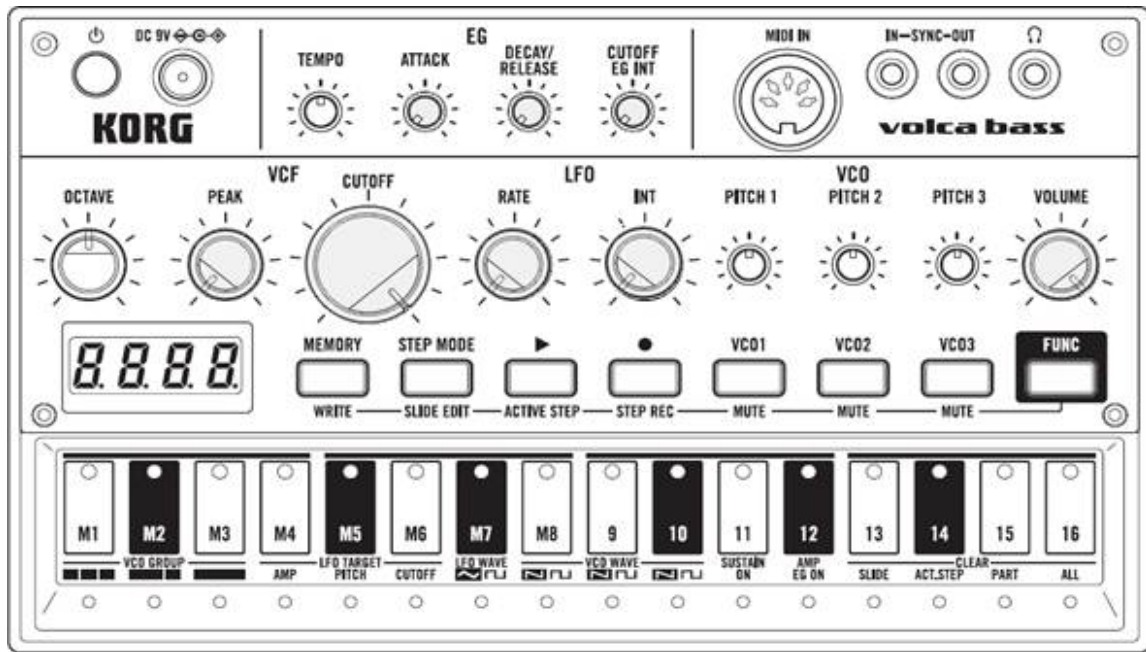
Appendix error list

The common subject matter about the error display

If an error occurs during the inspection, all LED flashes, waiting to be entered.

At this time, you can check the error content by simultaneously pressing the [MEMORY] button the [STEP] button.

Each time it is pressed, appears inspection number "*. *", 1 error information "10 **", error information 2 "20 **" is visited at the same time the [VCO1] key + [VCOP] key.

Content of the information will vary depending on the inspection number, please refer to the error table of another inspection.

For operations other than those described here, please refer to "Operation in the standby state" and "test mode operation".

Error Display list of internal inspection

(A) If "10F*" is displayed on the seven-segment
    (A-1) If "10Fd" is displayed on the seven-segment, the main ROM checksum error.
    (A-2) If "10FE" is displayed on the seven-segment, the panel ROM checksum error.
    (A-3) If "10FF" is displayed on the seven-segment, self tuning error.
        Please check the (PIN 38,39,40,42,48,49,52,53,58 etc. CPU) where relevant.

(B) Case except (A)
    7-segment "10 **" display indicates the pin that detected the anomaly.
    7-segment "20 **" display indicates the abnormal cause.
    (B-1) If "20FF" is displayed on the seven-segment
    State of the pin that detected the abnormality is invalid.
    (B-2) If the "FF" other messages of "20 **" is displayed in "**" the 7-segment.
    The status is invalid between pin that was adjacent to the "**".
Correspondence table of Pin number displayed as "**" is shown below.

Display	Pin	Display	Pin	Display	Pin	Display	Pin	Display	Pin	Display	Pin
00	55	14	37	50	33	65	16	80	38	94	88
01	56	15	41	51	34	66	17	81	40	95	8
02	64	16	43	52	35	67	11	82	42	97	58
03	65	17	47	53	61	70	30	83	48	A0	50
04	66	37	2	54	44	71	31	85	53	A1	51

05	67	40	20	55	45	72	32	86	79	A2	7
06	68	41	21	56	46	73	36	87	83		
07	69	43	89	60	26	74	9	90	70		
10	54	44	23	61	27	75	10	91	49		
12	60	45	24	63	6	76	84	92	86		
13	29	46	25	64	15	77	85	93	87		

Please check the CPU pins in question is not a short and adjacent Pin or Open,.

Error Display List of LED / button test(inspection number [1.3])
Error Display List of Touch pad check(inspection number [1.4])

※ message content is exactly the same inspection of the above two.
Please refer to the error display the following table also inspection of both.
When it detects the pressing of the button that is different from the assumption, it is an error.
"10**": "**" is expected button number.
"20**": "**" is detected button number.
The following is a table of correspondence inspection button and display value.

Display	Type	Name		Display	Type	Name
00	touch	M1		0C	touch	13
01	touch	M2		0d	touch	14
02	touch	M3		0E	touch	15
03	touch	M4		0F	touch	16
04	touch	M5		10	rubber	MEMORY
05	touch	M6		11	rubber	STEP
06	touch	M7		12	rubber	PLAY
07	touch	M8		13	rubber	REC
08	touch	9		14	rubber	VCO1
09	touch	10		15	rubber	VCO2
0A	touch	11		16	rubber	VCO3
0b	touch	12		17	rubber	FUNC

Error Display List of A/D (knob) inspection(inspection number [3.#])
(A) If "108*" is displayed on the seven-segment
It is error value (jump value of unexpected) to be tested A / D.
The following is a table of correspondence inspection A / D and display value.

Display(A)	Display(B)	knob name	CPU pin No.
1087	1007	TEMPO	98
1086	1006	ATTACK	97
1085	1005	DECAY/RELEASE	96
1084	1004	CUTOFF EG INT	95
1089	1009	OCRAVE	100
1088	1008	LFO RATE	99
1083	1003	LFO INT	94
1082	1002	PITCH 1	93
1081	1001	PITCH 2	92
1080	1000	PITCH 3	91

(A)-1 If "2001" is displayed on the seven-segment, Increase or decrease of the A / D is reversed.
(A)-2 If "2002" is displayed on the seven-segment, A/D value is jumpy.

(B) If "100*" is displayed on the seven-segment
Value change except target A/D has been detected.

Please check the CPU pin or knob around the target A/D or the A/D to change is detected.
About correspondence to be tested A/D display, please refer to the above table.
A/D a change is detected is indicated 7-segment display in the "20 **".
Correspondence between the A/D of "**" see table below.
"**" Is a bit pattern."

bit pattern	knob name	CPU pin No.	knob name	CPU pin No.
_____*	PITCH 3	91	LFO RATE	99
_____*_	PITCH 2	92	OCTABE	100
_____*__	PITCH 1	93	BATTERY	1
____*___	LFO INT	94	SYNC CN	2
___*____	CUTOFF EG INT	95		
__*_____	DECAY/RELEASE	96		
_*_____	ATTACK	97		
*_____	TEMPO	98		

Synchronization function inspection error table.(Inspection Number[4,*])
If the error occurs in this test, please check A / D and the corresponding SYNC IN terminal and SYNC OUT terminal, and, (2, 85, 86, 87 CPU PIN) interrupt.
Error number table is shown below.

7segment Display[100#]	error contents	7segment Display [20##]
1001	Connecting to SyncIn terminal is detected at the time of entering the test	
1002	Change of A / D except terminal of SyncIn is detected.	Interference A/D number. Please refer to the table number A/D of (knob) inspection.
1003	An error has occurred in the loop test for the first time.	The meaning of each digit in the binary representation (Bit0) Rise undetected during Rise inspection
1004	An error has occurred in the loop test for the second time.	(Bit1) Fall undetected during Fall inspection. (Bit2) Rise detected during Fall inspection. (Bit3) Fall detected during Rise inspection.

Error Display a list of power-off test(inspection number [15.#]
(note) (*)After pressing the button, if the LED flashes
It can not complete the power-off operation.
Please check power switch, control pin (CPU PIN 22) etc..

KORG volca-bass Parts List

Part Number	Category	Part Name	Location	Reference	QTY
510410523002	LOUD SPEAKER	ITAK-S-YDH23-06-08	Assembly		1
510C90843200	CIRCUIT ASS'Y BOARD	KLM-3200/1	Assembly		1
510476800534	HARNESS	HNS-4267(Bat+)	Assembly		1
510476800535	HARNESS	HNS-4268(Bat-)	Assembly		1
510476800536	HARNESS	HNS-4269(SP+)	Assembly		1
510476800537	HARNESS	HNS-4270(SP-)	Assembly		1
510312511525	LED	KPTR-3216SURCK	KLM-3200	[KLM-3200][TOP]LED300, LED301, LED302, LED303, LED304, LED305, LED306, LED307, LED308, LED309, LED310, LED311, LED312, LED313, LED314, LED315, LED316, LED317, LED318, LED319, LED320, LED321, LED322, LED323, LED324, LED325, LED326, LED327, LED328, LED329,	40
510470524627	HARNESS	HNS-4272	KLM-3200	[KLM-3200][TOP]CN300	1
510100521007	FUSE	TF16AT 1.25 T TD	KLM-3201	[KLM-3201][TOP]FU1	1
510310511506	SCHOTTKY DIODE	RB051L-40TE25 (S)	KLM-3201	[KLM-3201][TOP]D1, D2	2
510312511525	LED	KPTR-3216SURCK	KLM-3201	[KLM-3201][TOP]LED4, LED5, LED6, LED8	4
510312512017	Chip LED	SML-E12UWT86	KLM-3201	[KLM-3201][TOP]LED2, LED3, LED7, LED9, LED10, LED11, LED12, LED13	8
510316521502	SEGMENT LED	TOF-3461BH-B12	KLM-3201	[KLM-3201][TOP]LED1	1
510320514030	RESET IC	BU4227G-TR	KLM-3201	[KLM-3201][TOP]IC5	1
510320516125	AUDIO ASSP	TPA6111A2DR	KLM-3201	[KLM-3201][TOP]IC16	1
510320516126	DC-DC Converter	TPS62112RSAR	KLM-3201	[KLM-3201][TOP]IC3	1
510320516168	OPAMP	LM324PWR	KLM-3201	[KLM-3201][TOP]IC6, IC11, IC12, IC17	4
510320516169	OPAMP	TLC274CPWR	KLM-3201	[KLM-3201][TOP]IC8	1
510320516170	LDO IC	TLV70015DCKR	KLM-3201	[KLM-3201][TOP]IC15	1
510320516175	LDO IC	TLV70033DCKR	KLM-3201	[KLM-3201][TOP]IC1, IC2	2
510320516176	POWER AMP IC	TPA2006D1DRBR	KLM-3201	[KLM-3201][TOP]IC18	1
510320520029	PHOTO COUPLER	PS9117A-F3-AX(M)	KLM-3201	[KLM-3201][TOP]PC1	1
510335522028	CRYSTAL	RSD-10000F202000	KLM-3201	[KLM-3201][TOP]X1	1
510360525003	ROTARY VR	XV09211YNPV25U(NC)1B10K	KLM-3201	[KLM-3201][TOP]VR3, VR5, VR7, VR8, VR10, VR11, VR12	7
510360525009	ROTARY VR	XV09223NPV25F1B10K	KLM-3201	[KLM-3201][TOP]VR1, VR2, VR6, VR9, VR13	5
510360525013	ROTARY VR	XV09223NPV30F1B10K/I	KLM-3201	[KLM-3201][TOP]VR4	1
510374520020	TACT SW	SKRGADD010	KLM-3201	[KLM-3201][TOP]SW1	1
510402510501	INDUCTOR	R12A163EA C6-K3.0L R12W228EA	KLM-3201	[KLM-3201][TOP]L1	1
510450524517	DIN PLUG/JACK	LD-0214C-1.65	KLM-3201	[KLM-3201][TOP]DJ1	1
510450524518	DIN JACK	LN-0506-005	KLM-3201	[KLM-3201][TOP]MIDI1	1
510450524519	PHONE JACK	LJE0368-4R	KLM-3201	[KLM-3201][TOP]CN3, CN4, CN5	3
510646800823		X12210 UPPER CASE E10300	HOOKUP 1		1
510646800820		X12200 LOWER CASE E10302	HOOKUP 2		1
510646800821		X12200 BATTERY COVER E20382	HOOKUP 3		1
510646800822		X12200 SP ENCLOSURE E30648	HOOKUP 4		1
510640800502		X12210 TOP PANEL C30895	HOOKUP 5		1
510500800036		X12210 RUBBER BUTTON E30650-1	HOOKUP 6		1
510646800825		X12200 BATTERY BOX E20386	HOOKUP 7		1
510500800523		X12200 RUBBER LEG E40867	HOOKUP 8		5
510646801534		X12200 SENSOR SHEET E40868	HOOKUP 9		1
510646801536		X12200 WINDOW E40870	HOOKUP 10		1
510640805010		X12200 BATTERY SPRING(W1) C41783	HOOKUP 11		4
510640805011		X12200 BATTERY SPRING(W2) C41784	HOOKUP 12		1
510640805012		X12200 BATTERY SPRING(+) C41785	HOOKUP 13		1
510640805013		X12200 BATTERY SPRING(-) C41786	HOOKUP 14		1
510646502392		X-1200/10 VR-KNOB-L(V) KOC-E30313	HOOKUP 15		1
510646502393		X-1200/10 VR-KNOB-S(V) KOC-E30312	HOOKUP 16		5
510470524501	HARNESS	HNS-4147			1