PSG6&9Voices Card for HITACHI BASIC MASTER LEVEL3

Designed by Sasaji 2021 Rev. 0.2

Parts List

The main board

Parts Number	Parts Name	Qty.	Description
C1~C16	Ceramic Capacitor	16	0.1uF (Bypass)
C19	Electrolytic Capacitor	1	1uF, 10V~
C100	Electrolytic Capacitor	1	100uF, 16V~ (Bypass)
C101~C103	Electrolytic Capacitor	3	22uF, 10V~ (Coupling)
C104	Electrolytic Capacitor	1	100uF, 10V~ (Coupling)
R1	Carbon Resistor	1	4.7KΩ, 1/4W~ (Pullup)
R3~R5	Carbon Resistor	3	4.7KΩ, 1/4W~ (Pulldown)
R6~R10	Carbon Resistor	5	3.3KΩ, 1/4W~ (Pulldown)
R11~R19	Carbon Resistor	9	470Ω, 1/4W~ (Analog sound)
R21~R24	Carbon Resistor	4	1KΩ, 1/4W~ (Analog sound)
R31~R32	Carbon Resistor	2	10KΩ, 1/4W~ (Pullup)
U1~U3	PSG (or compatible IC)	3	AY-3-8910, AY-3-8913 or YM2149 DIP40pin or 24pin 600mil * Use the same type IC on U1~U3.
U4	PIA	1	HD6821P or MC6821, DIP40pin 600mil
U5	VIA	1	MCS6522 or R6522, DIP40pin 600mil
U6~U7	CMOS Logic IC	2	74CBT3257C, SOIC16pin
U8	CMOS Logic IC	1	74HC244, SOIC20pin
U9	CMOS Logic IC	1	74HC74, SOIC14pin
U10	CMOS Logic IC	1	74HC139, SOIC16pin
U11	CMOS Logic IC	1	74HC04, SOIC14pin
U12,U14	CMOS Logic IC	2	74HC02, SOIC14pin
U13	CMOS Logic IC	1	74HC00, SOIC14pin
U15,U16	CMOS Logic IC	2	74HC125, SOIC14pin
J1	Jumper	1	Pin header 3pin x1 2.54mm pitch straight
	Jumper Pin	1	To short the J1
J2	Wire cable	3	Connect to button on the sub board (J1)
J3	Wire cable	3	Connect to volume on the sub board (J2)

Optional parts			
J4	Connector	1	Pin header 1pin x1 L angled (PIA/VIA select output)
	IC Socket	5	Use on U1~U5

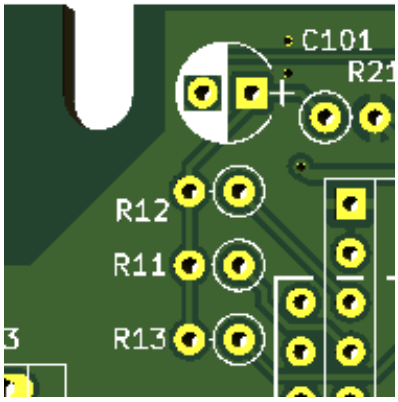
The sub board

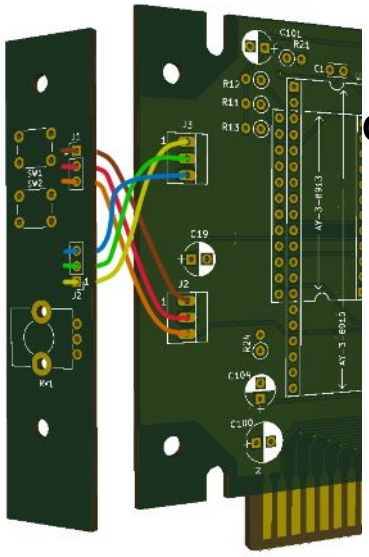
Parts Number	Parts Name	Qty.	Description
SW1,SW2	Push button	2	Tact switch (momentary) Phi is ~3.5mm, and the height of the key top is 4mm or more.
RV1	Volume	1	10KΩ Alpus RK09 Series
J1	Wire cable	3	Connect to J2 on the main board
J2	Wire cable	3	Connect to J3 on the main board

Attention to build the board

The capacitor near screw hole

When attaching the C101, R11, R12, and R13 to the board, bend them slightly to avoid interference with the tapping screw and the adjacent expansion card.



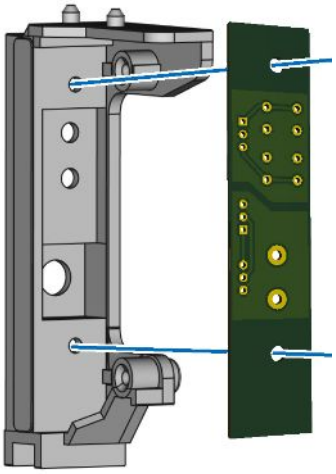


Connect the main and sub board

Connect the main J2 <-> sub J1 and the main J3 <-> sub J2 with electric wires.

Match the main and sub pin numbers. When connected, the wires will cross each other.

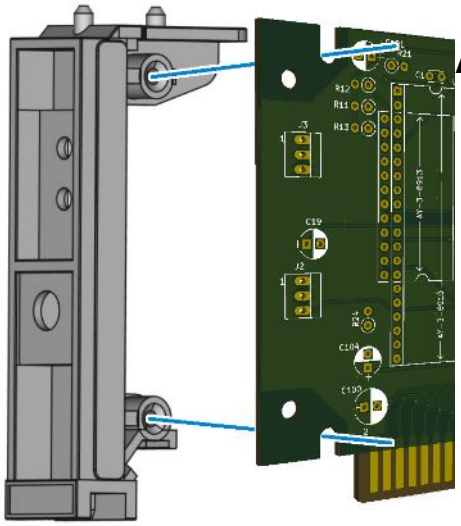
Attach the sub board to the back cover



Before soldering electronic components, temporarily fix the components to the sub-board and check if they can be attached to the back cover in that state.

If the board does not fit all the way into the cover, cut the lower part of the sub board by about 5 mm.

After confirming the mounting of the board, solder it and fix it to the cover with M3 screws.



Attach the main board to the back cover

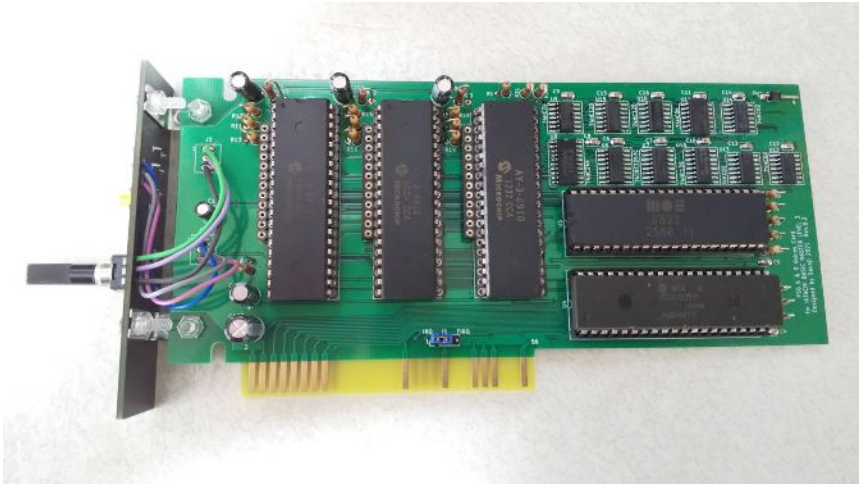
Attach the main board and cover to the positions shown in the figure with tapping screws.

The back cover is fragile, so be careful and do not use too much force when tightening a screw.

[Extra way] Use the black board as a back cover

The black board is used when you want to use it as a back cover as it is.

Connect to the main board using L-angled brackets and screws.



No warranty

We are not responsible for any damage caused by this card.

You use this card at your own risk.

Web

This document and CAD data are opened on the web.

GitHub(https://github.com/bml3mk5/L3PSG6n9Voices)

or

http://s-sasaji.ddo.jp/bml3mk5/l3psg6n9.htm#board

Sasaji (sasaji@s-sasaji.ddo.jp)
http://s-sasaji.ddo.jp/bml3mk5/
(Twitter: https://twitter.com/bml3mk5)