

# USBKeyboard for S1 [N]

Designed by Sasaji 2023 Rev. 0.1

## Parts List

Parts Number	Parts Name	Qty.	Description	Usage
C2, C6, C8, C9	Ceramic Capacitor	4	0.1uF	Bypass
C1, C3	Ceramic Capacitor	2	1uF	Bypass
C4	Electrolytic Capacitor	1	10uF 10V~	Bypass
C5, C7	Electrolytic Capacitor	2	47uF 10V~	Bypass
C10	Electrolytic Capacitor	1	100uF 10V~	Bypass
C11, C12	Ceramic Capacitor	2	22pF	For clock
C13 <sup>1</sup>	Ceramic Capacitor	1	22pF	Noise Removal
D1, D3	LED (Red Color)	2	Rectangle 2 x 5 x 7mm	
D2	LED (Green Color)	1	Rectangle 2 x 5 x 7mm	
J2	USB A Connector	1	For circuit board	
R1, R3	Carbon Resistor	2	330Ω 1/4W	For Red LED
R2	Carbon Resistor	1	220Ω 1/4W	For Green LED
R5	Carbon Resistor	1	1kΩ 1/4W	Reset
R4	Carbon Resistor	1	10kΩ 1/4W	Pullup
R6, R7, R8, R9	Carbon Resistor	4	10kΩ 1/4W	Pulldown
SW1	Tact Switch	1	6 x 5mm Momentary	Reset
U1	Pic Microcontroller	1	PIC32MX230F064B <sup>2</sup> DIP 28	
U2	LDO Regurator	1	5V → 3.3V / 100mA (LM2940,LP2950 etc.)	
Y1	Crystal	1	12MHz	
J1	Connector 8pins	1	JST XH 1 x 8pins 2.5mm pitch male	Connect between a cable and the board. * It's not necessary if connect a cable directly.
	Connector 8pins Housing	1	JST XH 1 x 8pins 2.5mm pitch female	
	Pins	8	For XH connector	
J3	Connector 6pins	1	Pinheader 1 x 6pins 2.54mm pitch	For PicKit
	DIN connector 8pins	1	8pins Type A male (MP-018 etc.)	Connect to a PC.
	Multicore Cable	1	8cores AWM24 or 26	

<sup>1</sup> It has no pattern on the board.

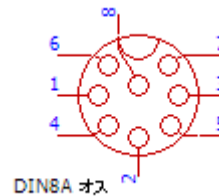
<sup>2</sup> You can use PIC32MX2xxFxxxB series.

			Outer diameter is less than 6mm. <sup>3</sup>	
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### Optional Parts

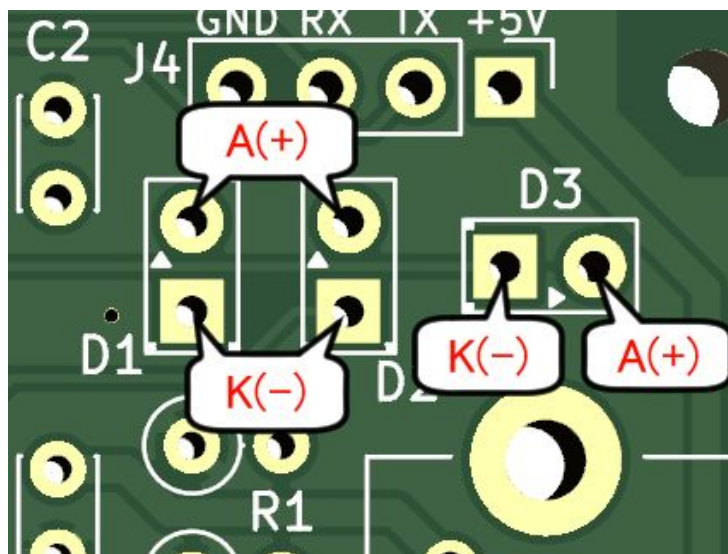
Parts Number	Parts Name	Qty.	Description	Usage
J4	Connector 4pins	1	Pinheader 1 x 4pins 2.54mm pitch	For UART
	IC Socket	1	DIP 28 300mil	
	Case	1	45 x 65mm (TAKACHI SW-65 etc.)	
	Screws	4	M2 x 8mm	
	Nuts	4		
	Washers	4		

DIN8pins male assign:



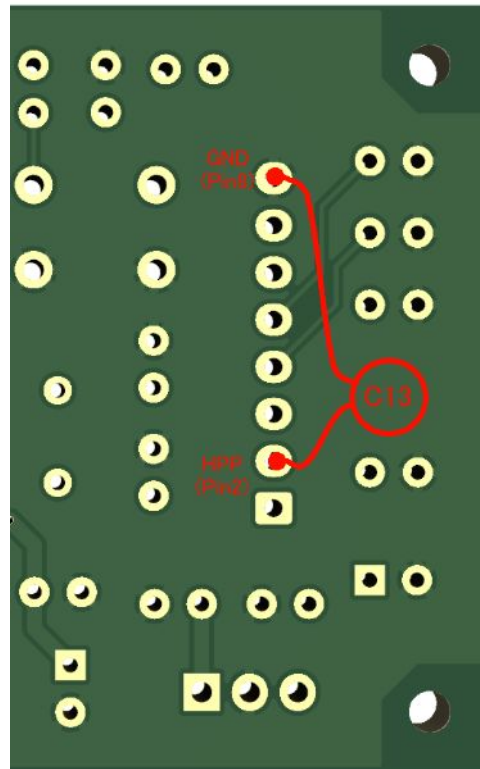
## This board has a design flaw!

1. The polarity of LEDs is reversed. The 1 pin (square land) side is cathode (negative / 'K' in the figure).



<sup>3</sup> If the outer diameter is more than 6mm , it will not pass in a bush of a DIN connector.

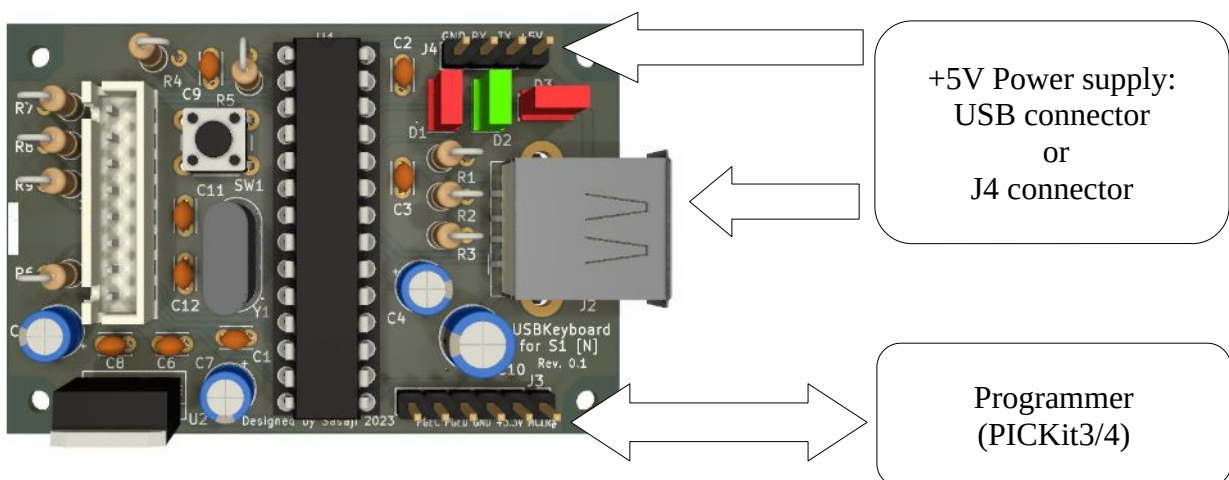
2. A noise countermeasure: attach the capacitor C13 on the back side (solder side) of the board as shown in the figure.



3. The size of the board is slightly tighter than the case SW-65.

## How to Program to The Microcontroller

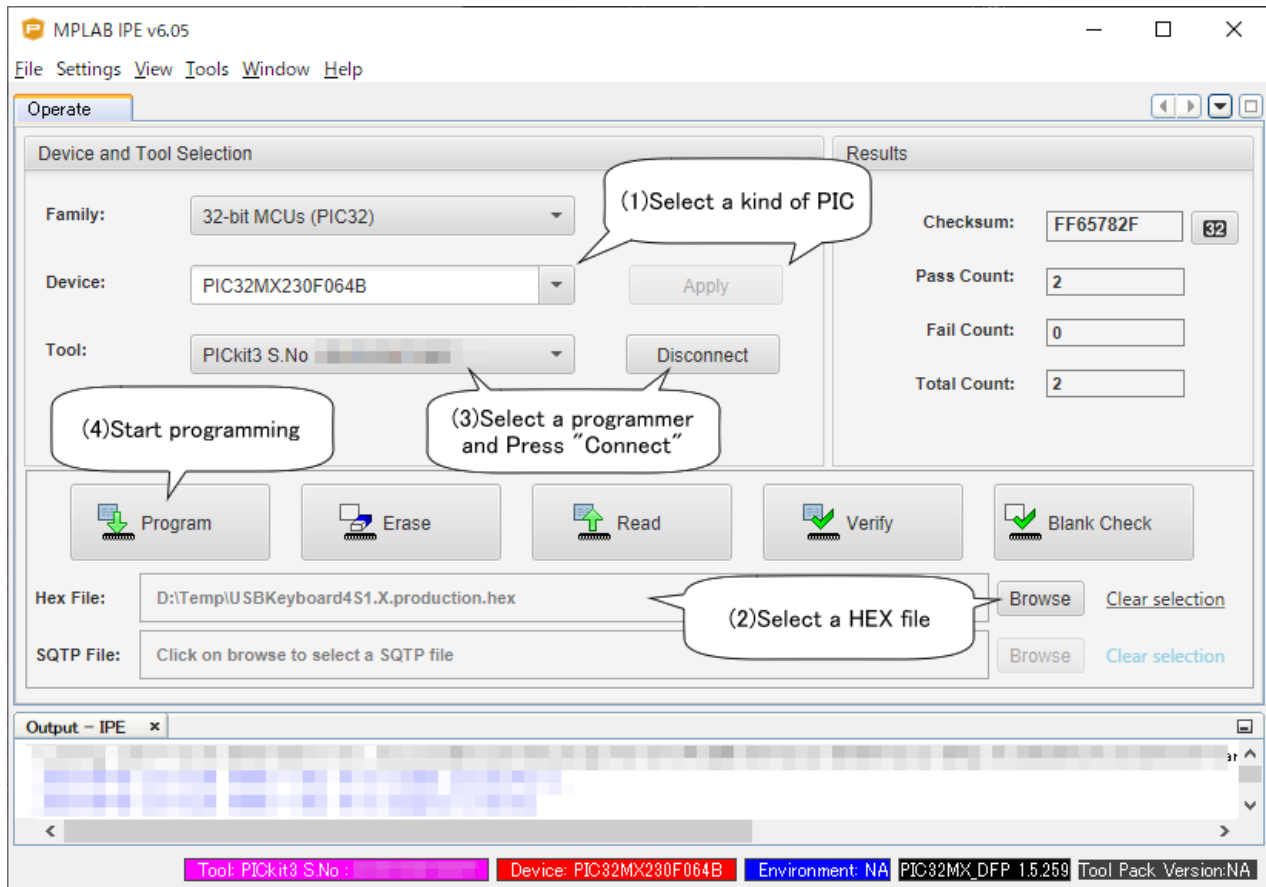
1. Connect a Programmer and Power supply to the circuit board.
  - a) Connect a programmer (PICKit3/4) to J3 on the board.
  - b) Connect a +5V Power supply to J4 or USB connector. When use the USB connector, don't connect to the data line (D+,D-).



## 2. Program to PIC microcontroller using MPLAB IPE.

- Select a Device: PIC32MX230F064B
- Select a HEX file:

USBKeyboard4S1.X\dist\PIC32MX230F064B\production\USBKeyboard4S1.X.production.hex



If succeed the programming, The Red LED(Caps) on the board is brighten.

## Web

There are this document and a CAD data on the web:

<http://s-sasaji.ddo.jp/bml3mk5/s1usbkb.htm#board>

or

<https://github.com/bml3mk5/USBKeyboard4S1>

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