USBKeyboard for S1 [S]

Designed by Sasaji 2023 Rev. 0.1

Parts List

| Parts Number	Parts Name	Qty.	Description	Usage
C1, C6, C8, C9	Ceramic Capacitor	4	0.1uF 0603mil	Bypass
C2, C3	Ceramic Capacitor	2	1uF 0603mil	Bypass
C4	Ceramic Capacitor	1	10uF 10V~ 0603mil	Bypass
C5, C7	Ceramic Capacitor	2	47uF 10V~ 0805mil	Bypass
C10	Ceramic Capacitor	1	100uF 10V~ 1206mil	Bypass
C11, C12	Ceramic Capacitor	2	22pF 0603mil	For clock
C13 [1]	Ceramic Capacitor	1	22pF small size with lead wire	Noise Removal
D1, D3	LED (Red Color)	2	0805mil	
D2	LED (Green Color)	1	0805mil	
J2	USB A Connector	1	For circuit board	
R1, R3	Carbon Resistor	2	330Ω 1/6W~ 0603mil	For Red LED
R2	Carbon Resistor	1	220Ω 1/6W~ 0603mil	For Green LED
R5	Carbon Resistor	1	1kΩ 1/6W~ 0603mil	Reset
R4	Carbon Resistor	1	10kΩ 1/6W~ 0603mil	Pullup
R6, R7, R8, R9	Carbon Resistor	4	10kΩ 1/6W~ 0603mil	Pulldown
SW1	Tact Switch	1	4pins 3.4 x 3.4mm Momentary	Reset
U1	Pic Microcontroller	1	PIC32MX230F064D-I/PT TQFP 44	
U2	LDO Regurator	1	5V to 3.3V SOT-23	
Y1	Crystal	1	12MHz 4pins 3.2 x 2.5mm	
J1	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 Outer diameter is less than 6mm. [2]	

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1   It has no pattern on the board.
2   If the outer diameter is more than 6mm , it will not pass in a bush of a DIN connector.

Optional Parts
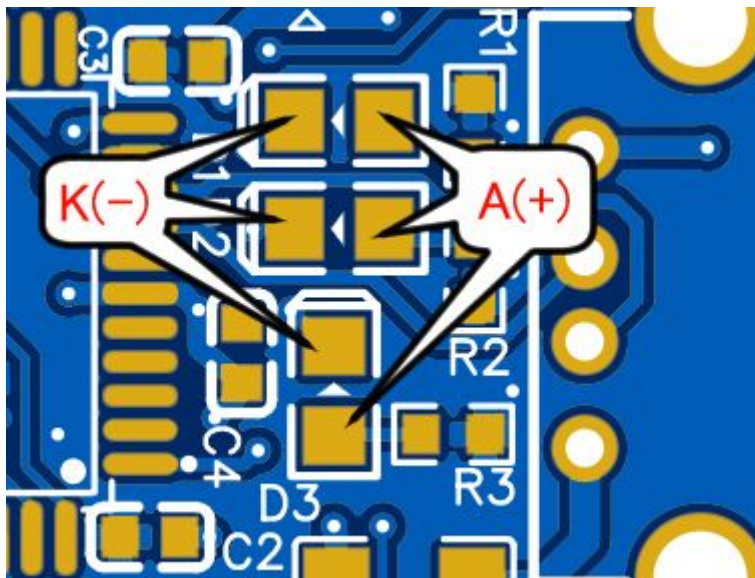
| Parts Number	Parts Name	Qty.	Description	Usage
J2	Connector 4pins	1	Pinheader 1 x 4pins 2.54mm pitch	For UART
	Case	1	53 x 24 x 14mm (AK-N-12)	

DIN8pins male assign:
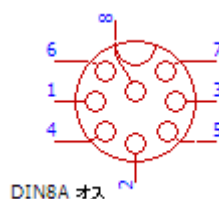
This board has a design flaw!

1. The polarity of the LED is as shown in the figure. Be careful when you request assembling parts to a PCB maker.

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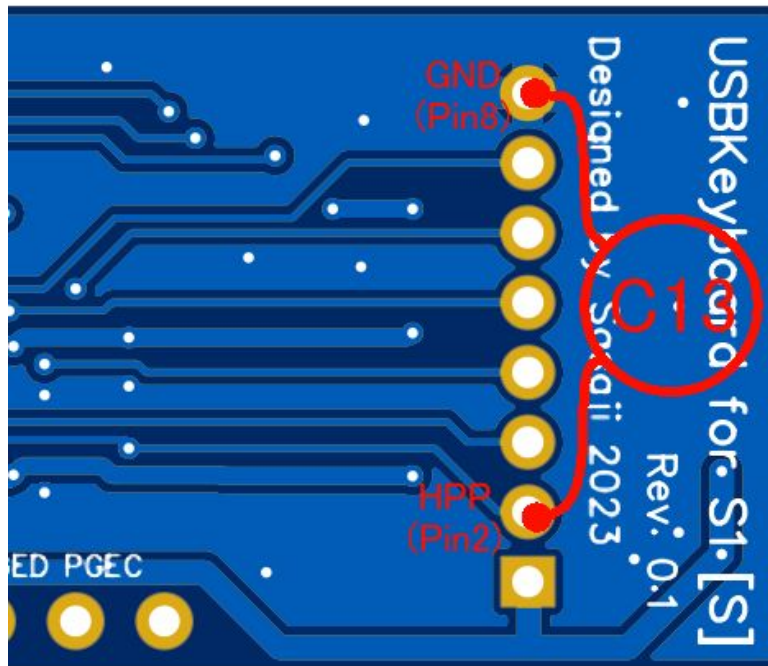

Warnings when housing the board in a case

1. If the board does not fit in the case, cut off the slanted part a little.
2. You must connect the multicore cable directly to the board. If you use a PH connector, it will not fit in a case due to its height.
3. The height of the component side of the board should be about 8.5mm, and the height of the solder side should be about 1.5mm. (When thickness of the board is 1.6mm)
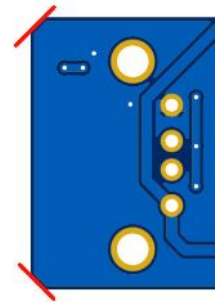
How to Program to The Microcontroller

1. Connect a Programmer and Power supply to the circuit board.
   a) Connect a programmer (PICKit3/4) to J1 on the board.
   b) Connect a +5V Power supply to J2 or USB connector. When use the USB connector, don't connect to the data line (D+,D-).
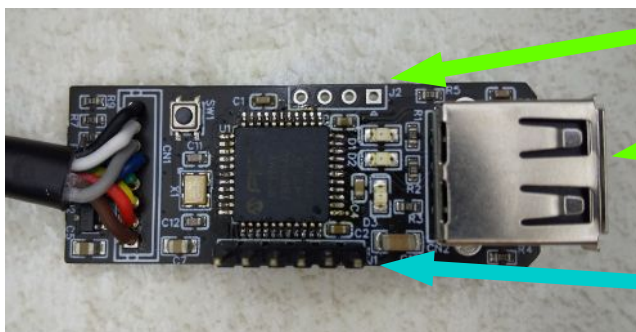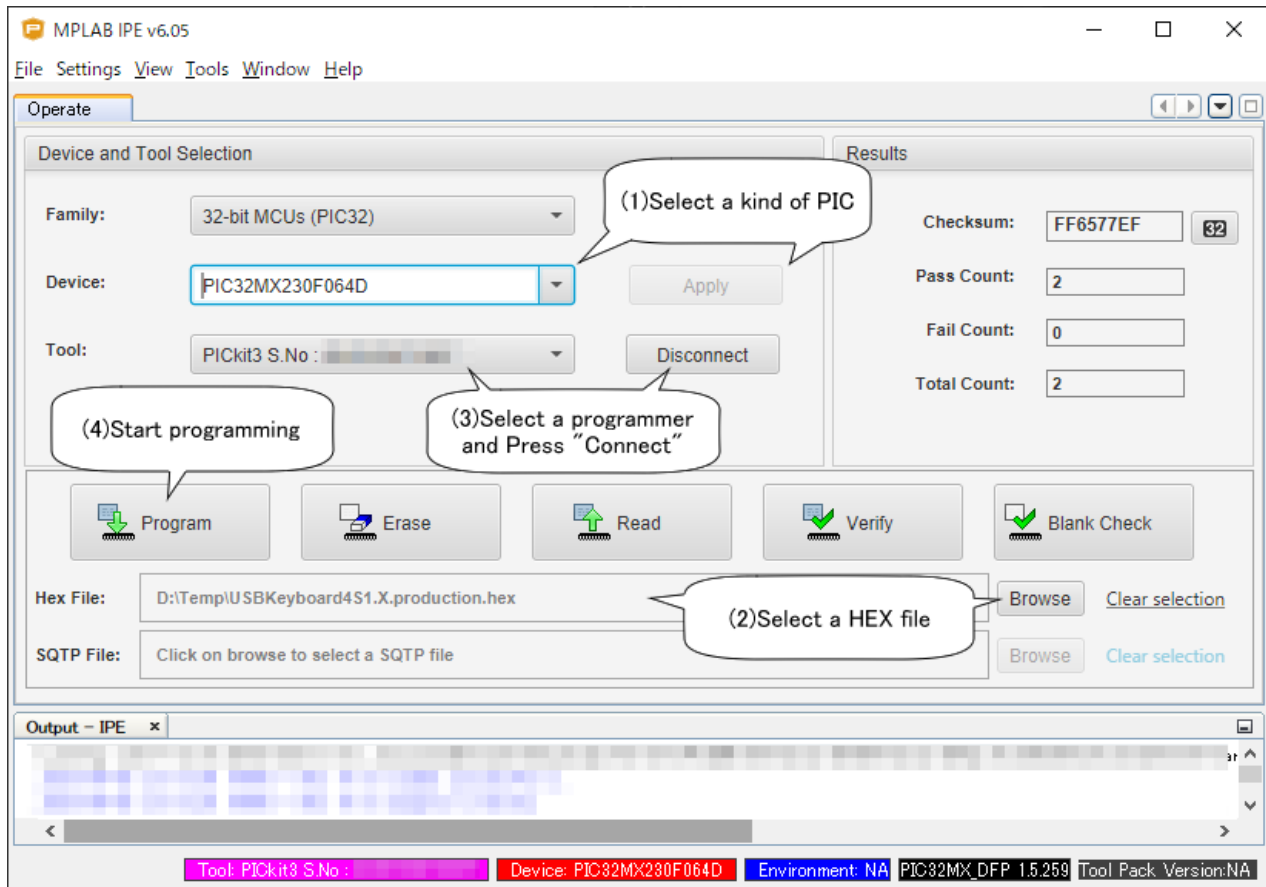

+5V Power Supply:
USB Connector
or
J2 Connector

Programmer
(PICKit3/4)

2. Program to PIC microcontroller using MPLAB IPE.
   - Select a Device: PIC32MX230F064D
   - Select a HEX file:

   USBKeyboard4S1.X\dist\PIC32MX230F064D_I\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#smd
or
https://github.com/bml3mk5/USBKeyboard4S1

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