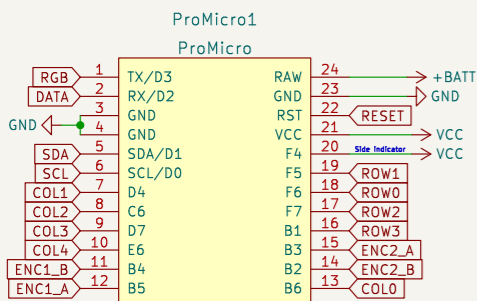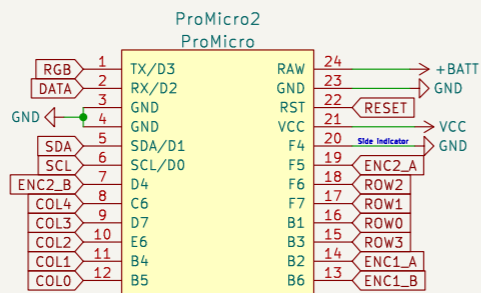## Microcontroller

The Pro Micros form the hearts of each half of the keyboard.
The left and right halves each have a different pinout.

You may of course also use Pro Micro compatible controllers,
such as the Liatris, Elite-C, or nice!nano.

ProMicro1
ProMicro

RGB	TX/D3	RAW	+BATT
DATA	RX/D2	GND	GND
GND	GND	RST	RESET
GND	GND	VCC	VCC
SDA	SDA/D1	F4	Side Indicator
SCL	SCL/D0	F5	ROW1
COL1	D4	F6	ROW0
COL2	C6	F7	ROW2
COL3	D7	B1	ROW3
COL4	E6	B3	ENC2_A
ENC1_B	B4	B2	ENC2_B
ENC1_A	B5	B6	COL0

Left

ProMicro2
ProMicro

| RGB | TX/D3 | RAW | +BATT |
DATA	RX/D2	GND	GND
GND	GND	RST	RESET
GND	GND	VCC	VCC
SDA	SDA/D1	F4	Side Indicator
ENC2_B	SCL/D0	F5	ENC2_A
COL4	D4	F6	ROW2
COL3	C6	F7	ROW1
COL2	D7	B1	ROW0
COL1	E6	B3	ROW3
COL0	B4	B2	ENC1_A
	B5	B6	ENC1_B

Right

The two resistors R1 and R2 should
normally be soldered on both halves.
If you choose to use I2C across halves,
R1 and R2 only need to be soldered on one half.

They are required for proper I2C operation.

VCC

R1 4k7   R2 4k7
SCL   SDA
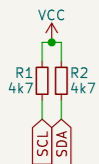
The reset button allows you to flash new
firmware to the keyboard. For most changes,
it's only necessary to flash the side you use
as master. Some changes, like those to
underglow and the OLED display, do need to be
flashed to both sides.

S1
MJTP1117

RESET

GND
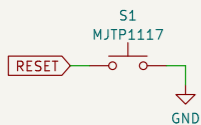
Header for SSD1306 (or compatible) OLED display

J2
SSD1306

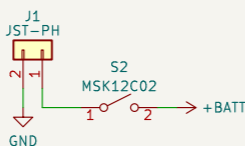| SDA | 4 | SDA |
SCL	3	SCL
VCC	2	VCC
GND	1	GND
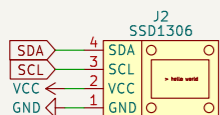
A TRS or TRRS cable connects both halves of the
keyboard. Do not unplug when turned on.

By default, serial is used across halves. This
enables the use of one OLED screen per key-
board half. If you require I2C across halves
(and thus give up using two OLED displays),
you may cut the JP1 jumper and solder wires
from the SDA and SCL pins of the Pro Micro
or I2C breakout to the R1 and R1 pins
respectively — marked RA and RB on the PCB.

The R2 pin may also be used to pass extra data
through to the other side. If R2 is used, you
must use a TRRS cable.

VCC

J3
PJ-320A

DATA

JP1
1   2

R1
R2

T
R1
R2
S

GND
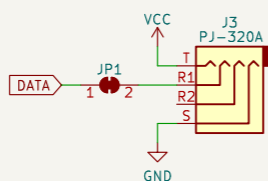
Battery header and power switch
for nice!nano users
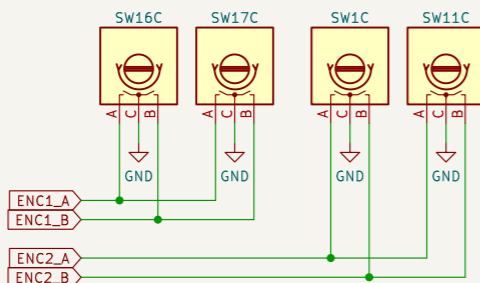
J1
JST-PH

GND

S2
MSK12C02
1   2

+BATT

Encoders

The use of a rotary encoder is optional.
An EC11 encoder or compatible may
be used. When you don't use an encoder,
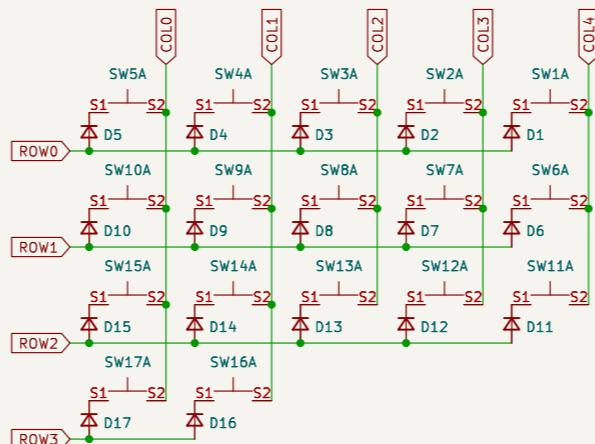the encoder pins become available for
use in modifications.

Note that the SW?B encoder shares the
same physical position as the SW?A switch.

Two encoders may be installed per half:
SW16/SW17 and SW1/SW11

SW16C   SW17C   SW1C   SW11C

A   B   A   B   A   B   A   B

GND   GND   GND   GND
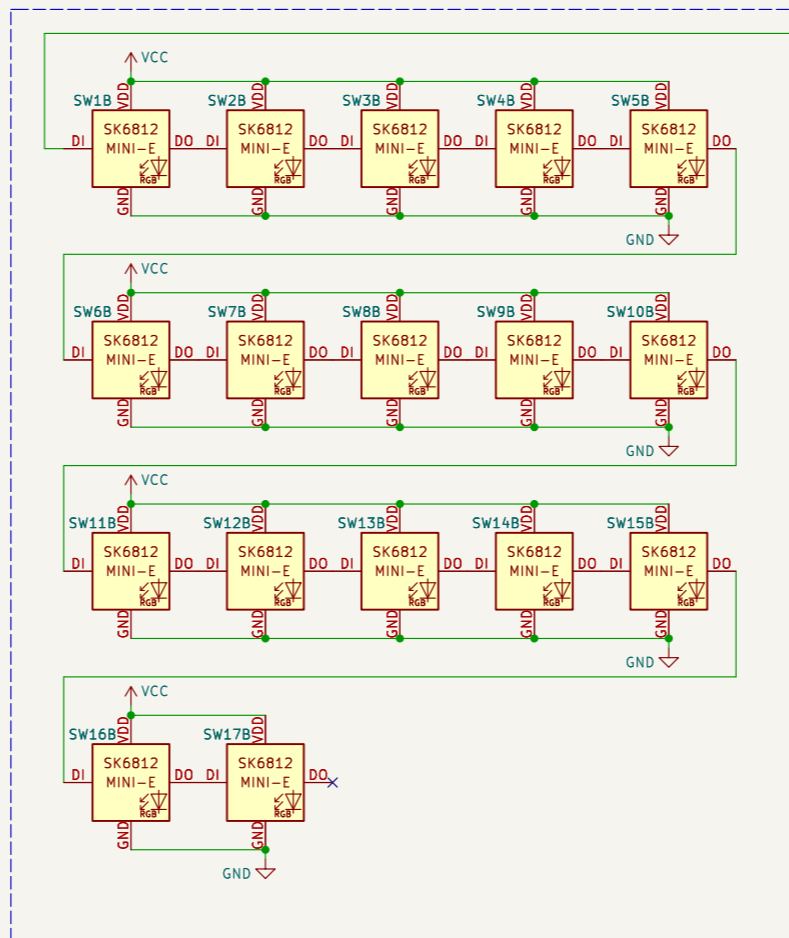
ENC1_A
ENC1_B

ENC2_A
ENC2_B

Switch matrix

The inner and outer thumb cluster keys can be replaced with a rotary encoder.
If the encoder has a button, that button takes the place of SW19 / SW21 in the matrix.

COL0   COL1   COL2   COL3   COL4

	SW5A	SW4A	SW3A	SW2A	SW1A
ROW0	S1 D5 S2	S1 D4 S2	S1 D3 S2	S1 D2 S2	S1 D1 S2
	SW10A	SW9A	SW8A	SW7A	SW6A
ROW1	S1 D10 S2	S1 D9 S2	S1 D8 S2	S1 D7 S2	S1 D6 S2
	SW15A	SW14A	SW13A	SW12A	SW11A
ROW2	S1 D15 S2	S1 D14 S2	S1 D13 S2	S1 D12 S2	S1 D11 S2
	SW17A	SW16A			
ROW3	S1 D17 S2	S1 D16 S2			

RGB Underglow

RGB underglow LEDs are optional and may be
installed using WS2812B LEDs (or compatible).

VCC

RGB1	RGB2	RGB3
DIN DOUT	DIN DOUT	DIN DOUT
VSS	VSS	VSS

RGB

GND

VCC   6x WS2812B

RGB4	RGB5	RGB6
DIN DOUT	DIN DOUT	DIN DOUT
VSS	VSS	VSS

GND

JP2

Underglow bypass
Solder jumper JP2 closed
if you are using per-key rgb
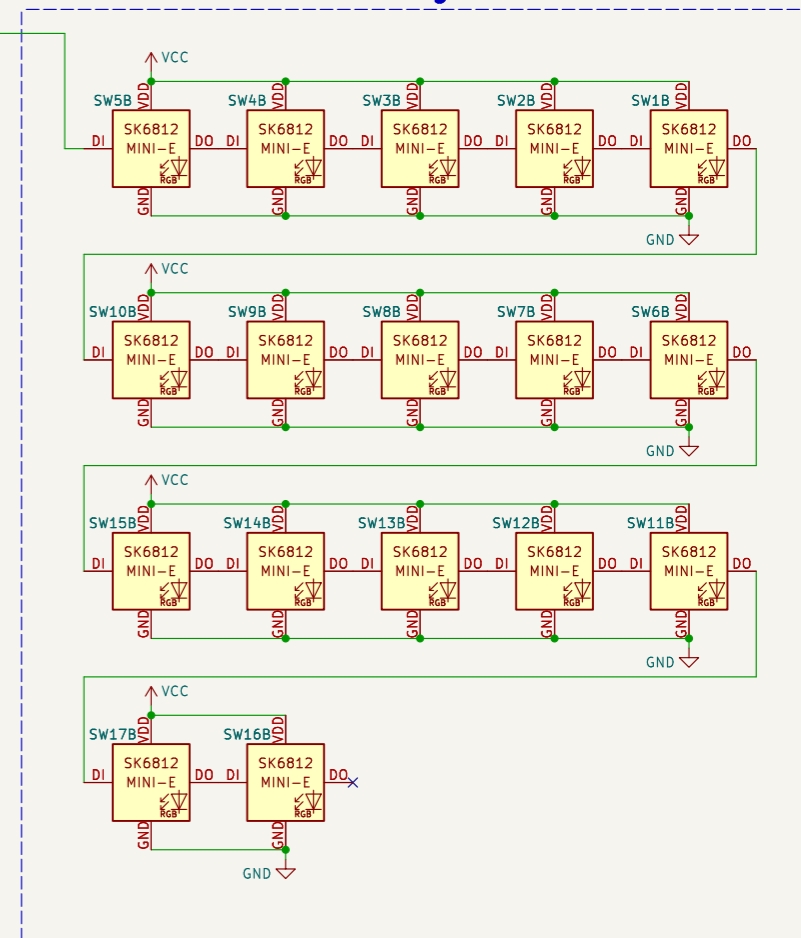without rgb underglow.

Per-key RGB

Per-key RGB LEDs are optional and may be
installed using SK6812MINI-E LEDs (or compatible).
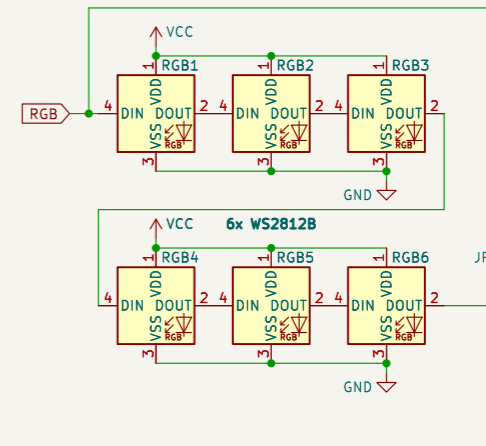The RGB LED chains are in a different order between
the left and right side.

Left

VCC

SW1B	SW2B	SW3B	SW4B	SW5B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND	GND	GND	GND

GND

VCC

SW6B	SW7B	SW8B	SW9B	SW10B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND	GND	GND	GND

GND

VCC

SW11B	SW12B	SW13B	SW14B	SW15B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND	GND	GND	GND

GND

VCC

SW16B	SW17B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND

GND

Right

VCC

SW5B	SW4B	SW3B	SW2B	SW1B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND	GND	GND	GND

GND

VCC

SW10B	SW9B	SW8B	SW7B	SW6B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND	GND	GND	GND

GND

VCC

SW15B	SW14B	SW13B	SW12B	SW11B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND	GND	GND	GND

GND

VCC

SW17B	SW16B
DI SK6812 MINI-E DO	DI SK6812 MINI-E DO
GND	GND

GND