

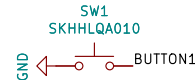
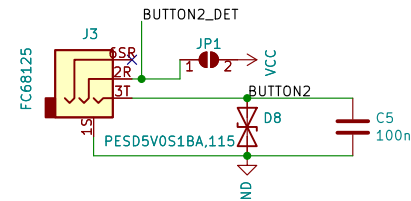
Button 1 (internal)

long button, length: 8.35mm (from pin)

```

graph LR
    SW1[SW1  
SKHHLQA010] --- GND[GND]
    SW1 --- BUTTON1[BUTTON1]
  
```

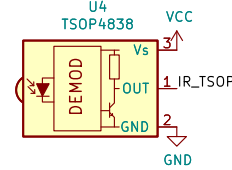
long button, length: 8.35mm (from pin)

[illegible]

D8-9 & C5-6 might be DNP in construction kit

Note: if external power supply is needed (e.g. sensor connected via jack plug), bridge JP1. Via pin D3 (input_pulldown) the voltage can be detected.
Button 2 is connected to D1 (v2 & v3 board) and D15/A1 (v3 board only).

IR (infrared) RX



IR (infrared) TX

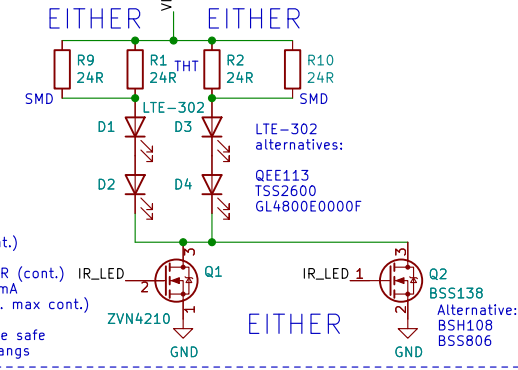
Diagram illustrating the IR (infrared) TX circuit, showing two identical transmitter stages.

Components and Connections:

- Power Input:** VIN
- Ground:** GND
- Resistors:** R9 (24R), R1 (24R), R2 (24R), R10 (24R), R11 (24R), R12 (24R), R13 (24R).
- LEDs:** Q1, Q2 (IR LEDs).
- Diodes:** D1, D2, D3, D4 (Diodes).
- Transistors:** Q1, Q2 (Transistors).
- Labels:** EITHER, SMD, LTE-302, alternatives: QEE113, TSS2600, GL4800E0000F, IR_LED, ZVN4210, BSS138, B5H108, B5S806.

Notes:

- If=40mA (cont.)
- Vf=1.33V
- 58.5R -> 56R (cont.)
- Pulsed to 50mA
- (50mA is abs. max cont.)
- Vf=1.45V
- 39R should be safe
- if firmware hangs



```

If=40mA (cont.)
Vf=-1.33V
58.5R -> 56R (cont.) IR
Pulsed to 50mA
(50mA is abs. max cont.)
Vf=-1.45V
39R should be safe
if firmware hangs

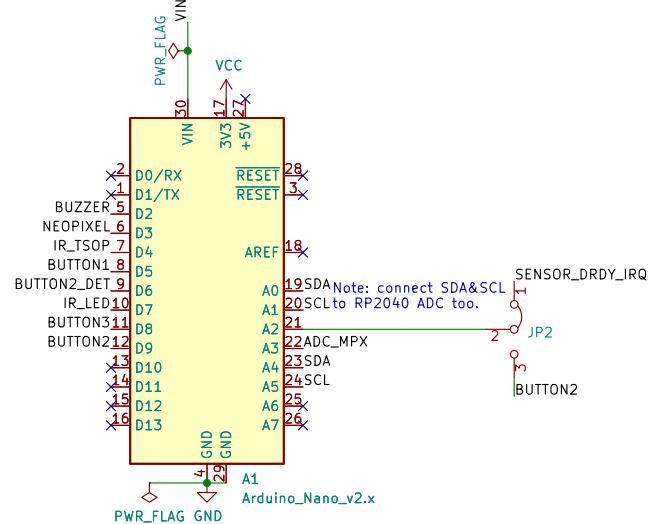
```

Arduino Nano Connect RP2040

The diagram illustrates the connection between an Arduino Nano v2.x and an RP2040 microcontroller. The Arduino Nano is shown on the left, and the RP2040 is on the right. The connections are as follows:

- VIN** (Arduino) to **VCC** (RP2040)
- GND** (Arduino) to **GND** (RP2040)
- D0/RX** (Arduino) to **RESET** (RP2040)
- D1/TX** (Arduino) to **RESET** (RP2040)
- D2** (Arduino) to **RESET** (RP2040)
- D3** (Arduino) to **AREF** (RP2040)
- D4** (Arduino) to **AREF** (RP2040)
- D5** (Arduino) to **AREF** (RP2040)
- D6** (Arduino) to **A0** (RP2040)
- D7** (Arduino) to **A1** (RP2040)
- D8** (Arduino) to **A2** (RP2040)
- D9** (Arduino) to **A3** (RP2040)
- D10** (Arduino) to **A4** (RP2040)
- D11** (Arduino) to **A5** (RP2040)
- D12** (Arduino) to **A6** (RP2040)
- D13** (Arduino) to **A7** (RP2040)
- A0** (RP2040) to **SDA** (Note: connect SDA & SCL to RP2040 ADC too.)
- A1** (RP2040) to **SCL** (Note: connect SDA & SCL to RP2040 ADC too.)
- A2** (RP2040) to **ADC_MPX**
- A3** (RP2040) to **ADC_MPX**
- A4** (RP2040) to **SDA**
- A5** (RP2040) to **SCL**
- A6** (RP2040) to **SCL**
- A7** (RP2040) to **SCL**

A **JP2** jumper is connected between the **SDA** and **SCL** lines. A **SENSOR_DRDY_IRQ** is connected to the **SDA** line. A **BUTTON2** is connected to the **SDA** line.



Sensors

The diagram shows a 01x05 male 90° connector with five pins. The pins are numbered 1 to 5 from bottom to top. Pin 1 is labeled 'SENSOR_DRDY_IRQ'. Pin 2 is labeled 'SCL'. Pin 3 is labeled 'GND'. Pin 4 is labeled 'GND'. Pin 5 is labeled 'SDA'. A green arrow points from pin 2 to pin 3, and another green arrow points from pin 3 to pin 5. A red arrow points from pin 4 to pin 5. The connector is labeled '01x05 male 90° - 2211R-05G' and 'J5'.

01x05 male 90° - 2211R-05G

5 SDA

4 GND

3 GND

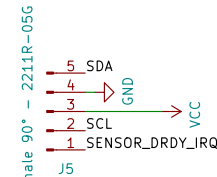
2 SCL

1 SENSOR_DRDY_IRQ

J5

VCC

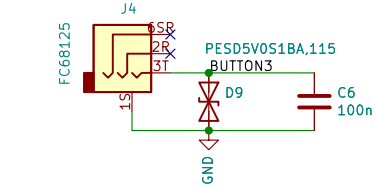
Note: this is a different connector than in FM2!
(short/long edge are different;
this one is much cheaper and
is a better spacer in the case)



Note: this is a different connector than in FM2!
(short/long edge are different; this one is much cheaper and is a better spacer in the case)

Button 3 (external)

Jacks (same as on FABI)
 Cliff FC68125
 RS Pro 805-1655
 Lumberg 1503 19
 Aliexpress: "PJ321C" hard to find, here is a link:
www.aliexpress.com/item/32665420060.html
 Note: might not fit that well!



Jacks (same as on FBI)
Cliff FC68125
RS Pro 805-1655
Lumberg 1503 19
Aliexpress: "PJ321C" hard to find, here is a link:
www.aliexpress.com/item/32665420060.html
Note: might not fit that well!

BUZZER

R7 4k7

THT

EITHER

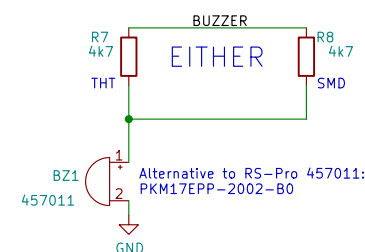
R8 4k7

SMD

BZ1 457011

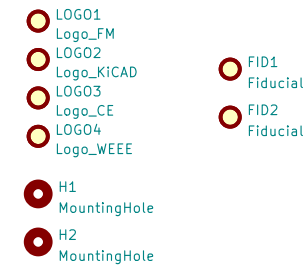
Alternative to R5-Pro 457011: PKM17EPP-2002-B0

GND



Mechanical

- LOG01
Logo_FM
- LOG02
Logo_KICAD
- LOG03
Logo_CE
- LOG04
Logo_WEEE
- H1
MountingHole
- H2
MountingHole
- FID1
Fiducial
- FID2
Fiducial



Pressure sensor

Alternative: DNP MPVX sensor and use the pin header for an external sensor (e.g. hall sensor for FLipPad)

U1

VCC

MPVX7007GP

2

VCC

1

GND

3

GND

Vout

4

ADC_MPX

EITHER

place the sensor board with the pressure sensor here

Conn_01x04_Male

J7

1

2

3

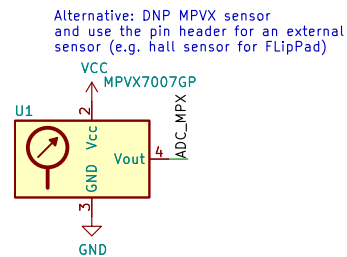
4

VCC

GND

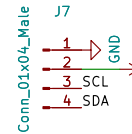
SCL

SDA



EITHER

place the sensor board with the pressure sensor here



Neopixel

VIN — J6-1
NEOPIXEL — J6-2
GND — J6-3

VIN — J7-1
NEOPIXEL — J7-2
GND — J7-3

VIN — J8-1
NEOPIXEL — J8-2
GND — J8-3

Note: place only if necessary
(e.g. NP ring in case)



Note: place only if necessary
(e.g. NP ring in case)

Orders in addition to BOM

- * FlipMouse
- * Silicon tube, 2x4mm, ~5cm length
- * LuerLock with M5 screw
- * Sensor board PCB (see second KICAD project & BOM)
- * screws according to case (4x M2x12; 2x M2x20)
- * Mouthpiece

- * FLIPMouse
- * Silicon tube, 2x4mm, ~5cm length
- * LuerLock with M5 screw
- * Sensor board PCB (see second KiCAD project & BOM)
- * screws according to case (4x M2x12; 2x M2x20)
- * Mouthpiece

- * Silicon tube, 2x4mm, ~5cm length
- * LuerLock with M5 screw
- * Sensor board PCB (see second KiCAD project & BOM)
- * screws according to case (4x M2x12; 2x M2x20)
- * Mouthpiece

FLipPad
* Glide adapter PCB (see addons folder for KiCAD project & BOM)

- * Glide adapter PCB (see addons folder for KiCAD project & BOM)

Both:

- * Neopixel Strip (two LEDs needed)
- * 3D printed case (depending on type)
- * HotShoe Adapter
- * USB cable with magnetic plug
- * Packaging

- * Neopixel Strip (two LEDs needed)
- * 3D printed case (depending on type)
- * HotShoe Adapter
- * USB cable with magnetic plug
- * Packaging

These parts should be placed in the .xls BOM file.

Notes on Button2:

- * D6/GPIO18 can be used to detect if there are 3V3 on button 2
- * If JP1 is closed, a 3pin Jackplug can be connected, which carries 3V3, GND and a GPIO pin
- * If JP2 is switched, button 2 pin is connected to A2 as well (external analog sensors)

- * D6/GPIO18 can be used to detect if there are 3V3 on button 2
- * If JP1 is closed, a 3pin Jackplug can be connected, which carries 3V3, GND and a GPIO pin
- * If JP2 is switched, button 2 pin is connected to A2 as well (external analog sensors)

Notes on pressure sensor:

- * Instead of MPX pressure sensor, a breakout for Honeywell MPR series (I2C) can be connected to J7
- * If the firmware does not detect a MPRLS sensor on I2C, analog values are read

- * Instead of MPX pressure sensor, a breakout for Honeywell MPR series (I2C) can be connected to J7
- * If the firmware does not detect a MPRLS sensor on I2C, analog values are read