

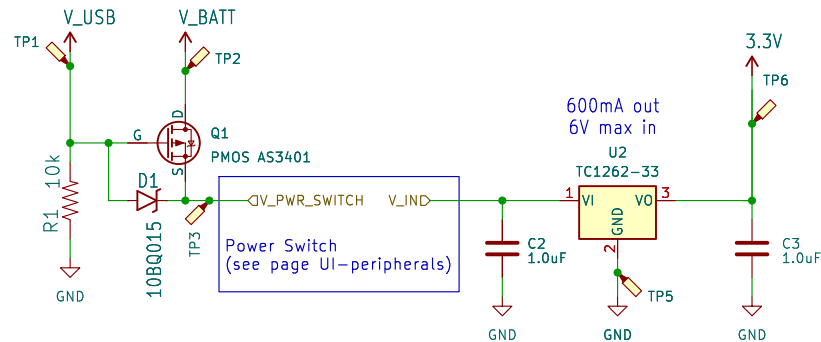
<beni@asterics-foundation.org>  
Supervisor: Benjamin Aigner  
Author: Vanessa Prankl  
**AsTeRICS Foundation**

Sheet: /  
File: HM\_mainboard.kicad\_sch

**Title: HeadMouse Mainboard**

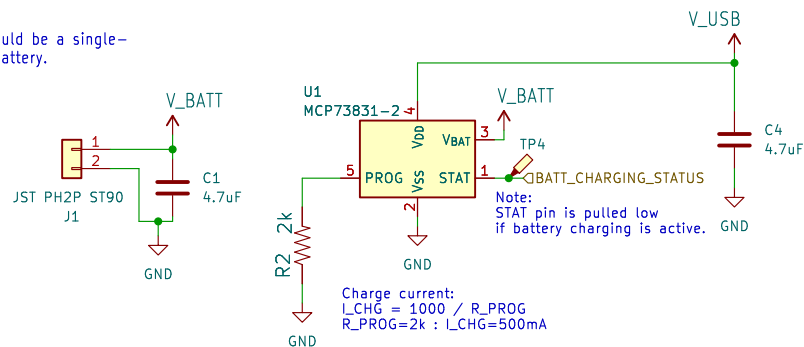
Size: A4	Date: 2023-11-9	Rev: 1
KiCad E.D.A. kicad 7.0.8		Id: 1/5

## Voltage Regulator

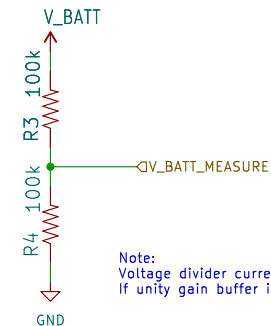


## Lithium-Polymer Battery Charger (1-cell)

V\_BATT should be a single-cell LiPo battery.



## Battery Charge Level Measurement



Note:  
Voltage divider currently consumes 165 uA.  
If unity gain buffer is used in addition, this can be reduced.

Sheet: /Battery\_and\_Power\_Managment/  
File: untitled.kicad\_sch

### Title: Battery and Power Management

Size: A4

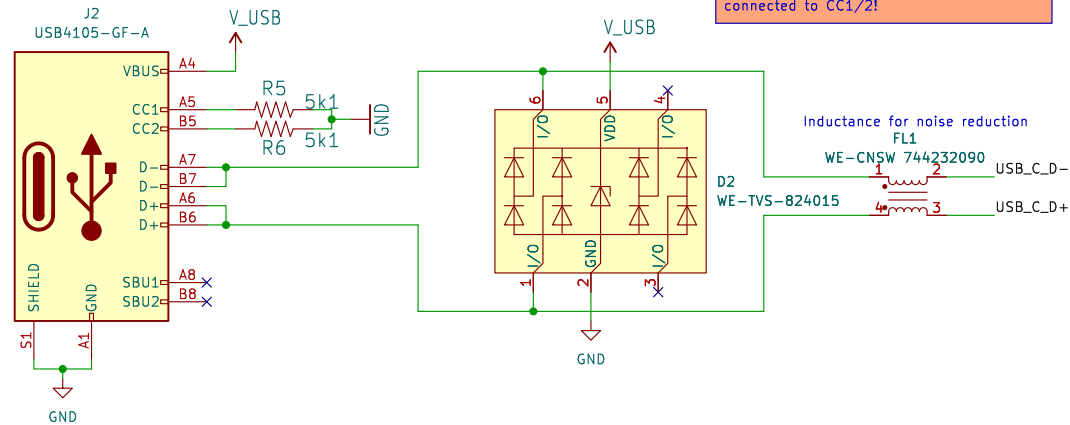
Date:

KiCad E.D.A. kicad 7.0.8

Rev: V1

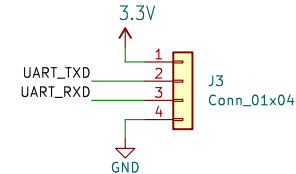
Id: 2/5

### USB-C Plug for flashing and battery charging



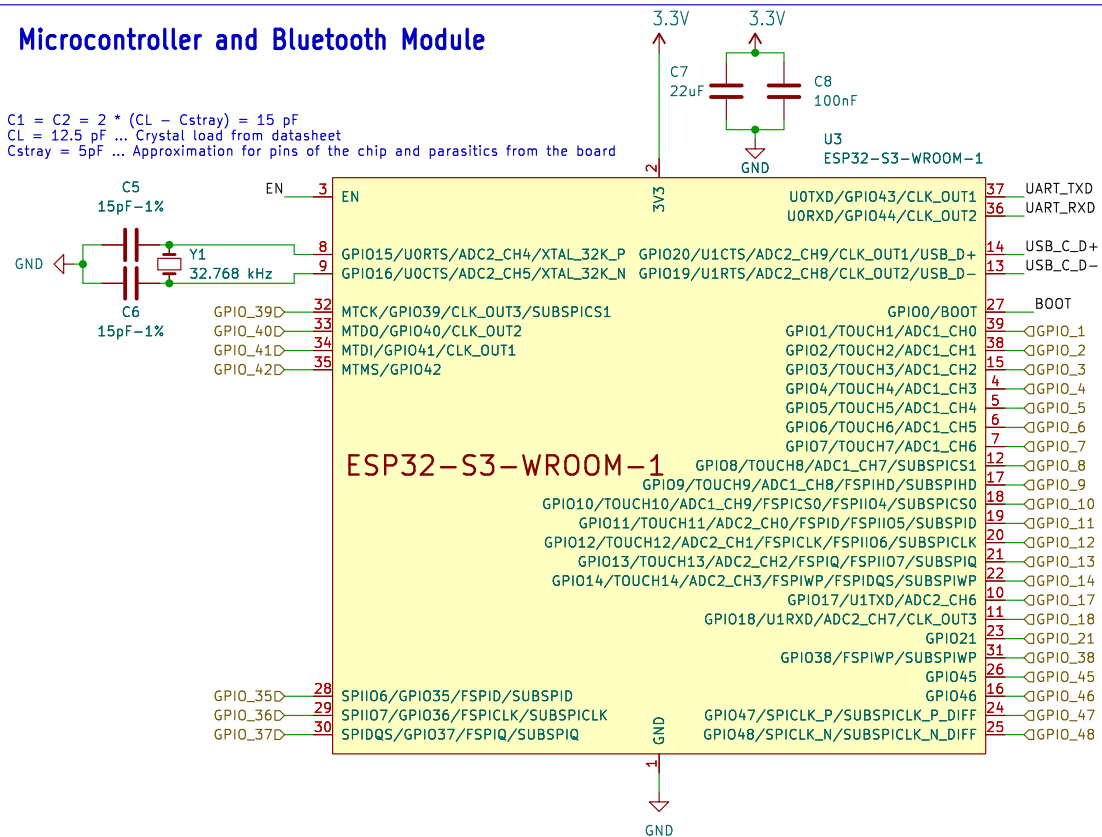
NOTE  
USB-C supply max. 2,5 W (= 5V, 500 mA)  
Otherwise PD-Controller needs to be  
connected to CC1/2!

## UART Pin-Header



## Microcontroller and Bluetooth Module

C1 = C2 = 2 \* (CL - Cstray) = 15 pF  
CL = 12.5 pF ... Crystal load from datasheet  
Cstray = 5pF ... Approximation for pins of the chip and parasitics from the board

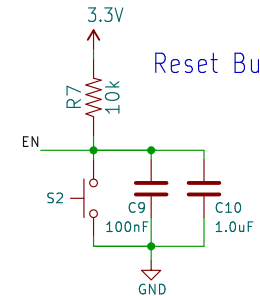


## Manual-Reset

## Boot Button



## Reset Button



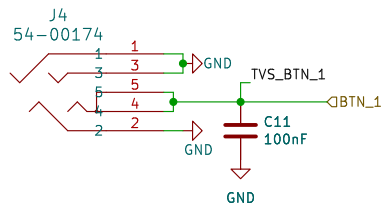
Sheet: /Microcontroller - ESP32-S3-WROOM/  
File: Microcontroller.kicad\_sch

Title: Microcontroller and USB-C Connector

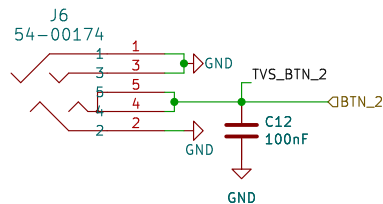
Size: A4	Date:
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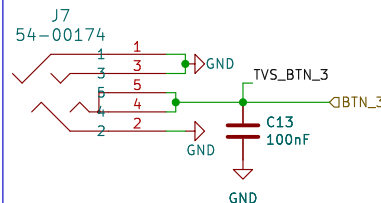
### Button 1 (external)



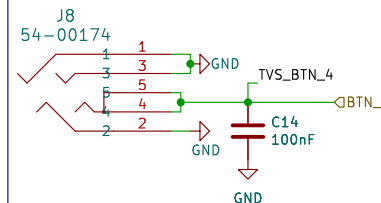
### Button 2 (external)



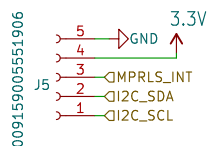
### Button 3 (external)



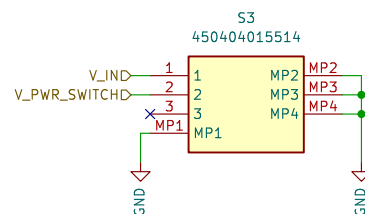
### Button 4 (external)



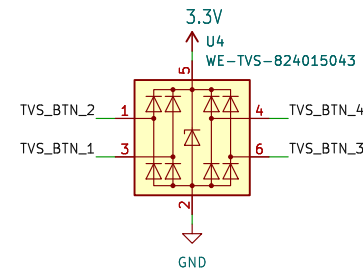
### MPRLS (sip&puff sensor) connector



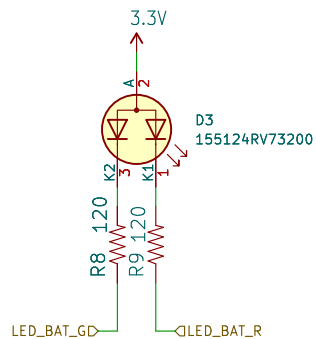
### Power Switch



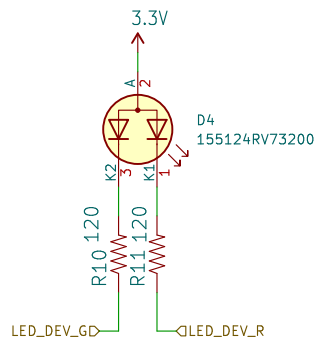
### TVS Diodes for Button Jacks



### Battery Status LED (bi-color red-green)



### Device Status LED (bi-color red-green)



Sheet: /UI\_Peripherals/  
File: UI\_Peripherals.kicad\_sch

**Title: User\_Interface\_Peripherals**

Size: A4  
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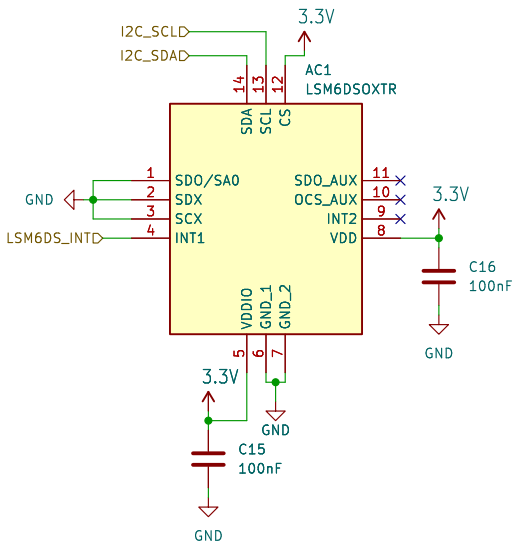
Date:

Rev:

Id: 4/5

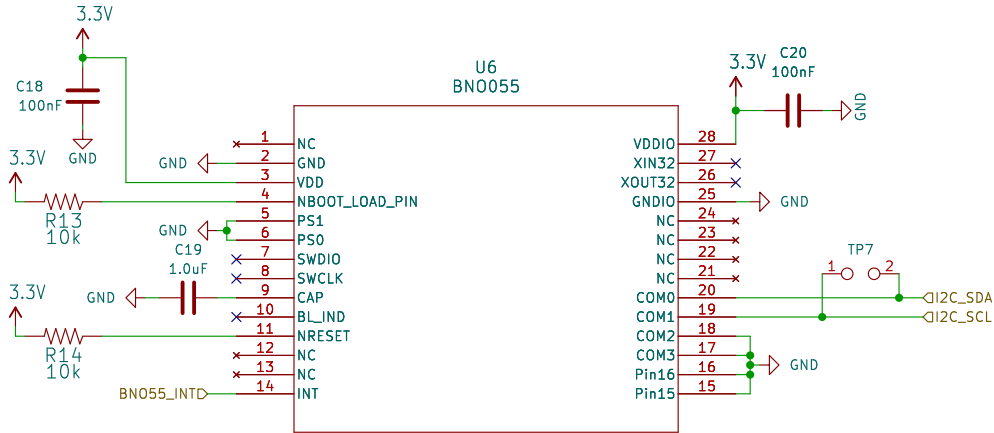
6-Axis IMU

I2C slave addr.: 0b1101010 = 0x6a = 0d106



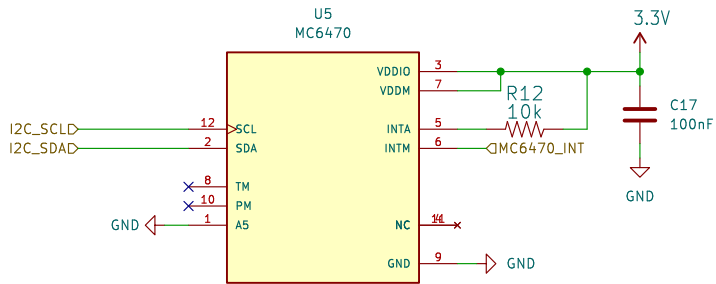
9-Axis IMU

I2C slave addr.: 0b101000 = 0x28 = 0d40



6-Axis IMU

I2C slave addr.: 0b1001100 = 0x4c = 0d76



Sheet: /IMU/	
File: IMU.kicad_sch	
Title: Inertia_Measurement_Unit	
Size: A4	Date:
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