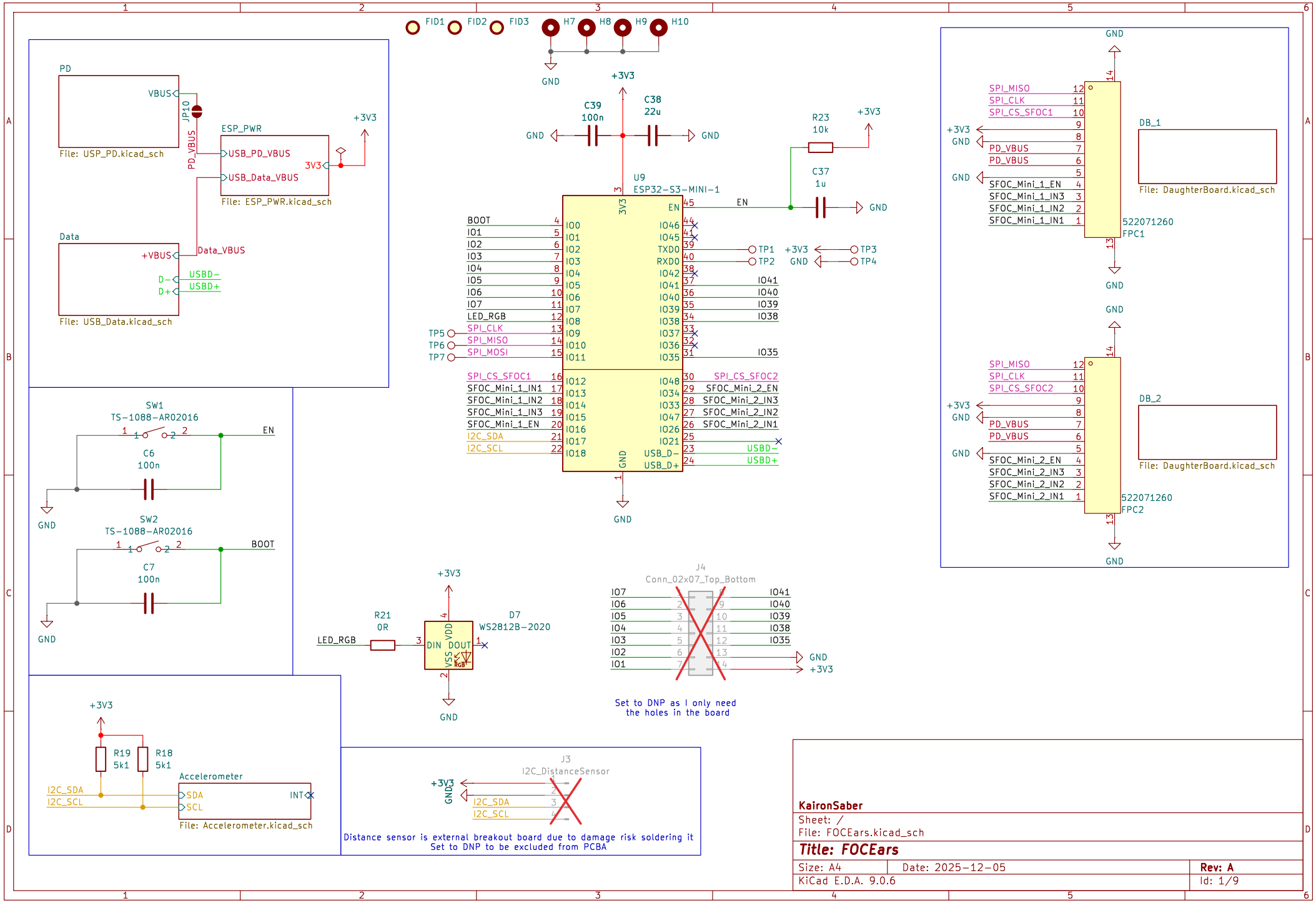
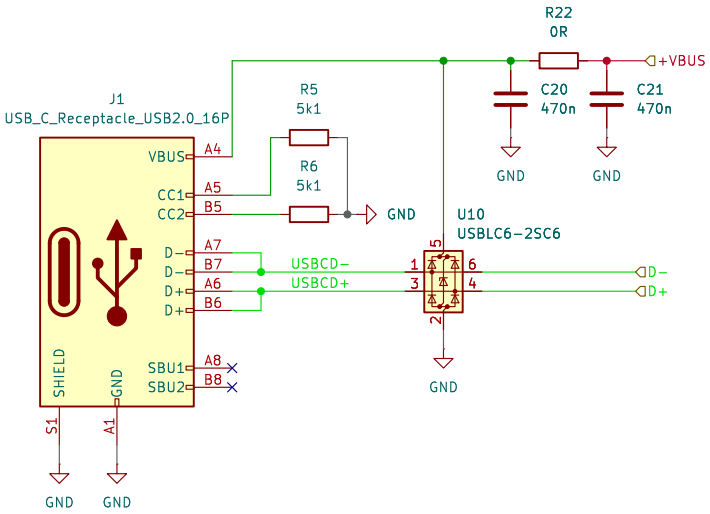

FID1
FID2
FID3
H7
H8
H9
H10
GND
PD
VBUS
JP10
PD_VBUS
File: USP_PD.kicad_sch
ESP_PWR
USB_PD_VBUS
USB_Data_VBUS
3V3
+3V3
File: ESP_PWR.kicad_sch
Data
+VBUS
Data_VBUS
D-
D+
USBD-
USBD+
File: USB_Data.kicad_sch
C39
100n
C38
22u
U9
ESP32-S3-MINI-1
R23
10k
C37
1u
EN
BOOT
LED_RGB
SPI_CLK
SPI_MISO
SPI_MOSI
TP1
TP2
TP3
TP4
TP5
TP6
TP7
I2C_SDA
I2C_SCL
SPI_CS_SFOC1
SPI_CS_SFOC2
SFOC_Mini_1_IN1
SFOC_Mini_1_IN2
SFOC_Mini_1_IN3
SFOC_Mini_1_EN
SFOC_Mini_2_EN
SFOC_Mini_2_IN3
SFOC_Mini_2_IN2
SFOC_Mini_2_IN1
DB_1
DB_2
File: DaughterBoard.kicad_sch
522071260
FPC1
FPC2
SW1
TS-1088-AR02016
C6
100n
SW2
C7
R21
0R
D7
WS2812B-2020
J4
Conn_02x07_Top_Bottom
Set to DNP as I only need
the holes in the board
R19
5k1
R18
Accelerometer
SDA
SCL
INT
File: Accelerometer.kicad_sch
J3
I2C_DistanceSensor
Distance sensor is external breakout board due to damage risk soldering it
Set to DNP to be excluded from PCBA
KaironSaber
Sheet: /
File: FOCEars.kicad_sch
Title: FOCEars
Size: A4
Date: 2025-12-05
Rev: A
KiCad E.D.A. 9.0.6
Id: 1/9

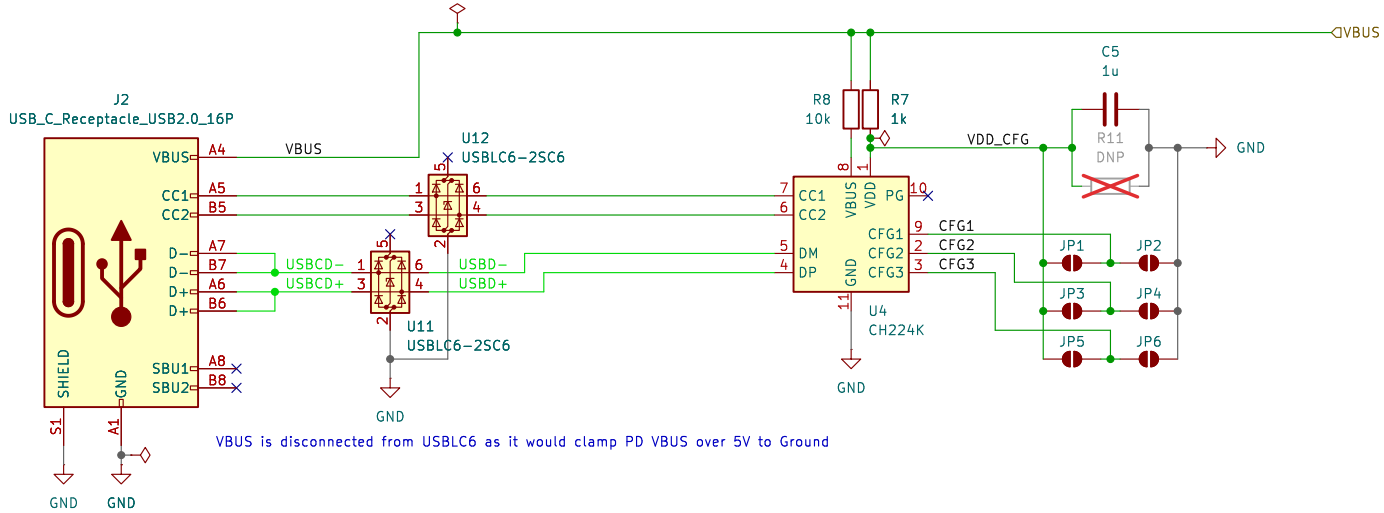
USB Data



KaironSaber		
Sheet: /Data/		
File: USB_Data.kicad_sch		
Title: FOCEars		
Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 3/9

USB Power Delivery (Configurable)

Expected voltage configuration is either 12V or 15V



VBUS is disconnected from USBLC6 as it would clamp PD VBUS over 5V to Ground

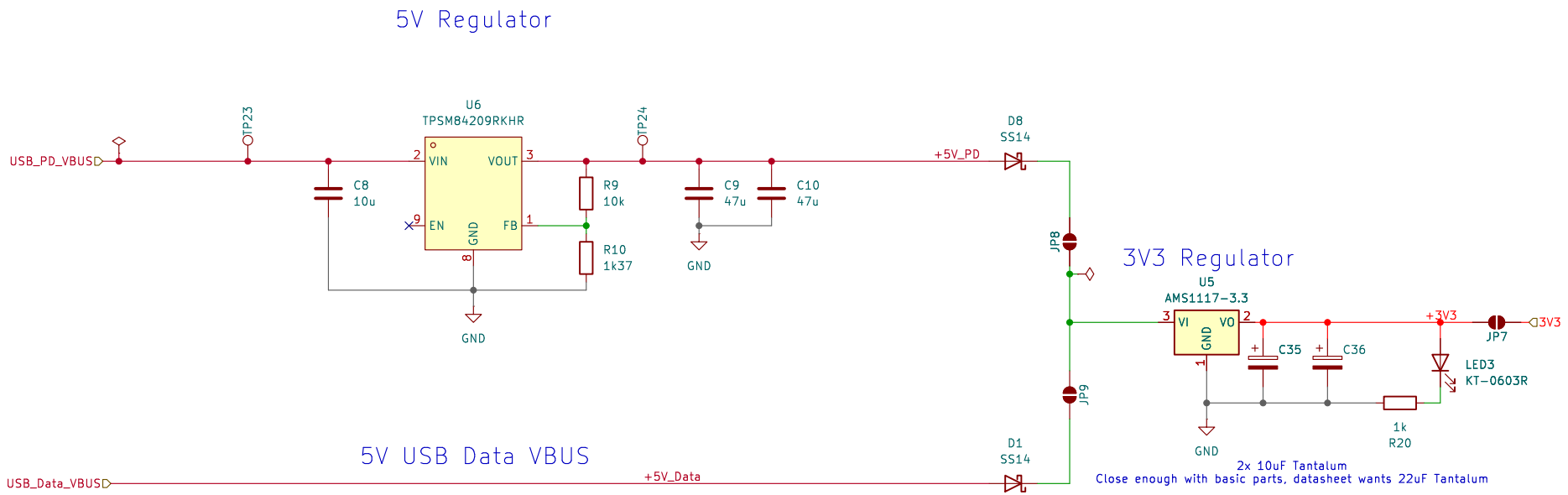
CFG1	CFG2	CFG3	Voltage Out
1	–	–	5V
0	0	0	9V
0	0	1	12V
0	1	1	15V
0	1	0	20V

KaironSaber

Sheet: /PD/
File: USP_PD.kicad_sch

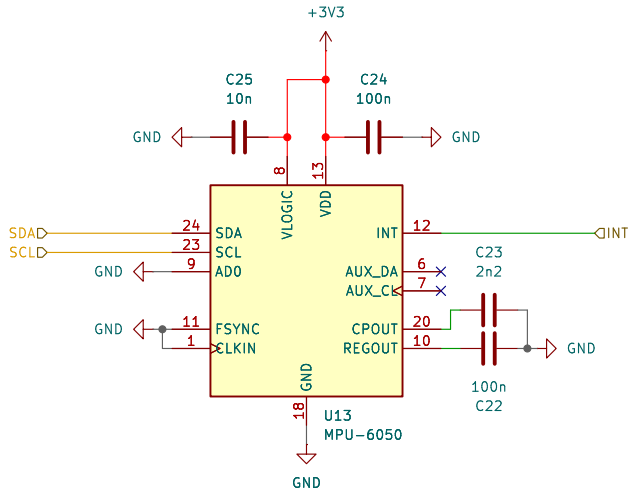
Title: FOCEars

Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 4/9



KaironSaber		
Sheet: /ESP_PWR/		
File: ESP_PWR.kicad_sch		
Title: FOCEars		
Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 5/9

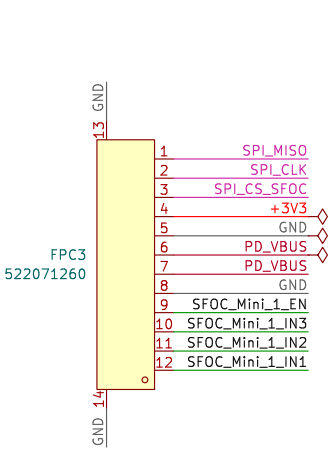
MPU6050 Accelerometer/Gyroscope

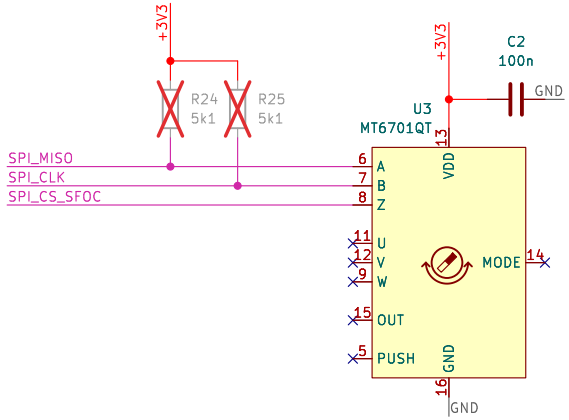


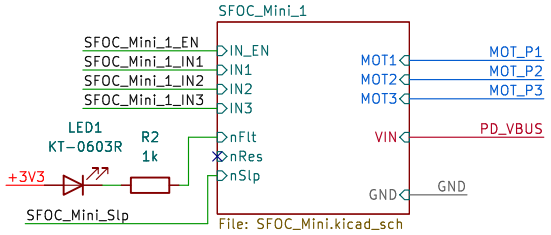
Address 0x68 set by AD0 low

KaironSaber		
Sheet: /Accelerometer/		
File: Accelerometer.kicad_sch		
Title: FOCEars		
Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 7/9

Daughterboard with MT6701 Magnetic Encoder and Header for Motor







Set to DNP as I only need the holes in the board

H1 MountingHole
H2 MountingHole
H3 MountingHole

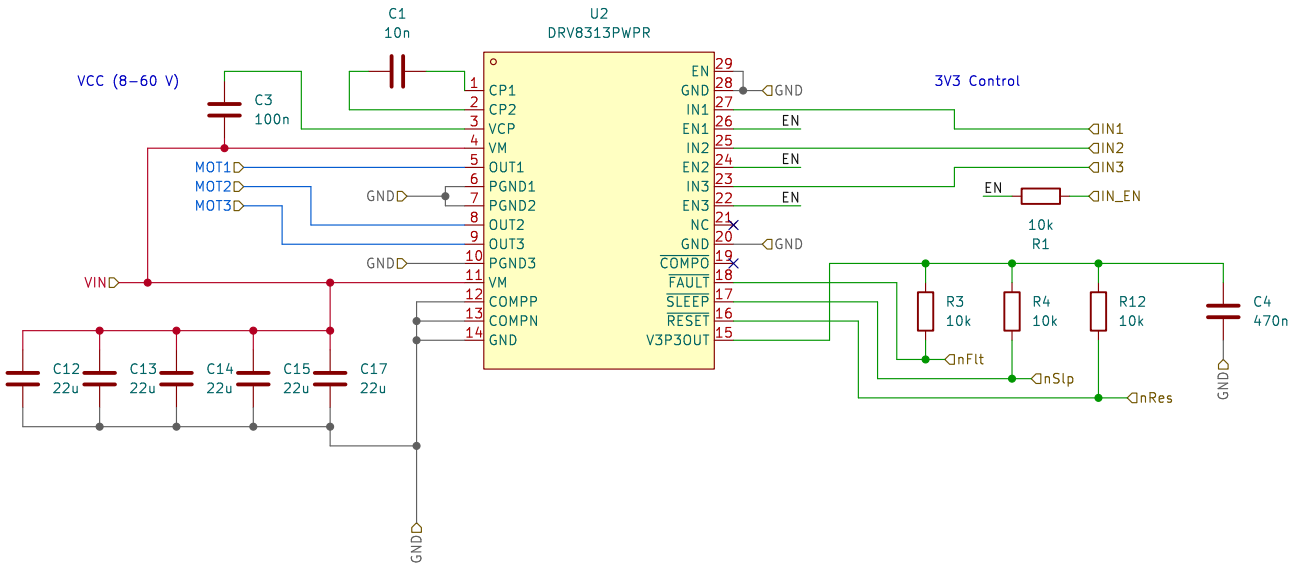
KaironSaber

Sheet: /DB_1/
File: DaughterBoard.kicad_sch

Title: FOCEars

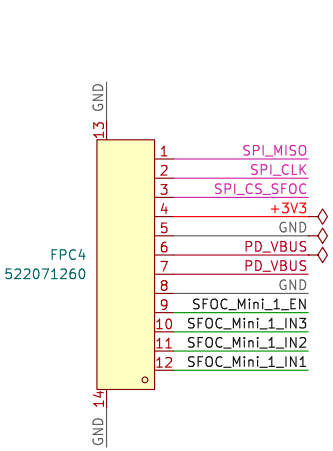
Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 8/9

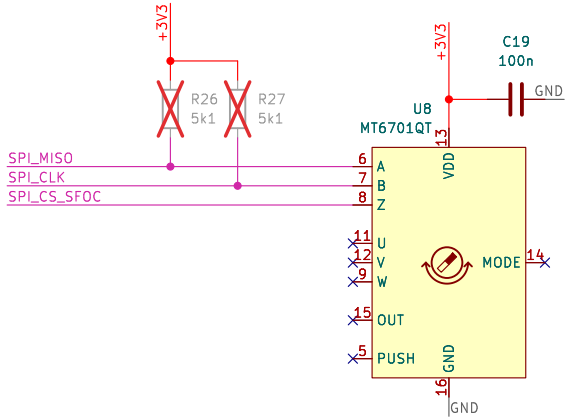
DRV8313 Motor Driver, SimpleFOC Mini 1.1 Implementation

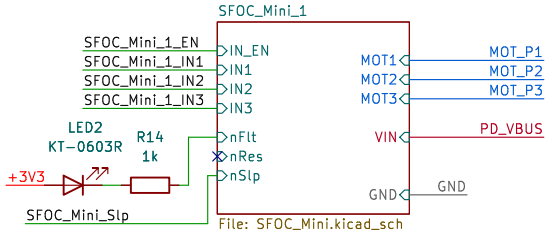


KaironSaber		
Sheet: /DB_1/SFOC_Mini_1/		
File: SFOC_Mini.kicad_sch		
Title: FOCEars		
Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 8/9

Daughterboard with MT6701 Magnetic Encoder and Header for Motor







Set to DNP as I only need the holes in the board

H4 MountingHole
H5 MountingHole
H6 MountingHole

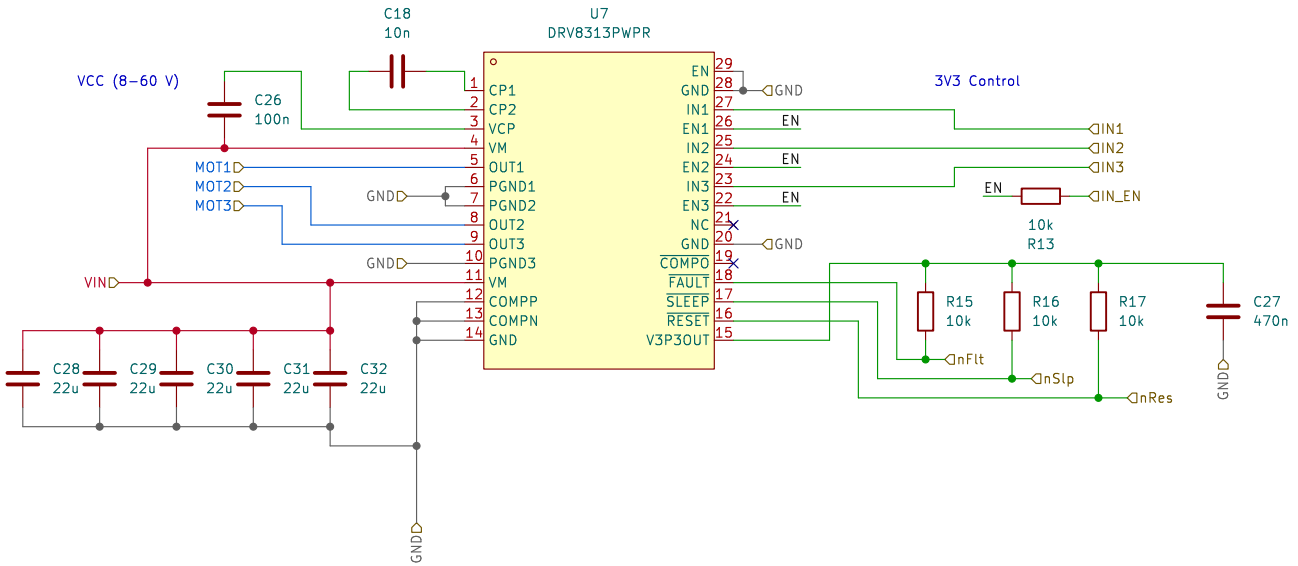
KaironSaber

Sheet: /DB_2/
File: DaughterBoard.kicad_sch

Title: FOCEars

Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 9/9

DRV8313 Motor Driver, SimpleFOC Mini 1.1 Implementation



KaironSaber		
Sheet: /DB_2/SFOC_Mini_1/		
File: SFOC_Mini.kicad_sch		
Title: FOCEars		
Size: A4	Date: 2025-12-05	**Rev: A**
KiCad E.D.A. 9.0.6		Id: 9/9