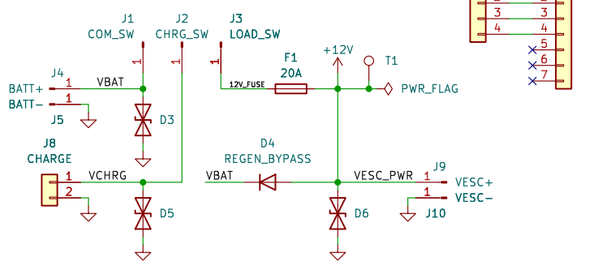
Power Supply

Mating Connectors
J8: XT60-M

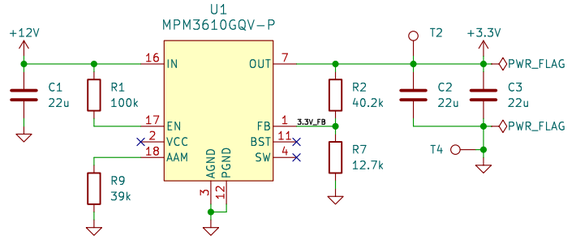
J1-J3 act as e-stop/charge mode select
Connect to external SPDT switch (VBAT = COM)



Battery Balancer

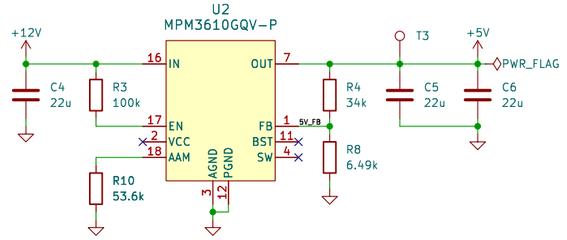
3.3V Regulator

1.2A max current output
Components draw <200mA
3.3V * 0.2A = 0.66W max
Eff. = 70% est.
P = 0.66 / 0.70 = 0.94W Total
Ploss = 0.28W
Tr = 46 C/W
T = 0.28 * 46 = 12.9C rise

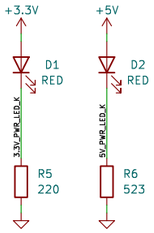


5V Regulator

1.2A max current output
Components draw <150mA
5V * 0.15A = 0.75W max
Eff. = 70% est.
P = 0.75 / 0.70 = 1.07W Total
Ploss = 0.32W
Tr = 46 C/W
T = 0.32 * 46 = 14.7C rise



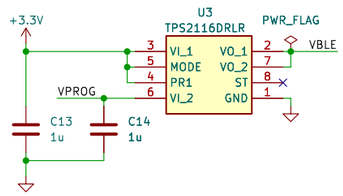
Power-On LED's



Bluetooth

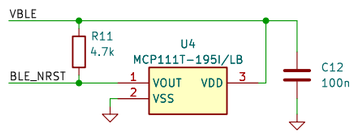
Power Mux

Prevents VPROG (J8) from powering entire +3.3V rail
Input 1 takes priority until voltage <1V



Power Drop Protection

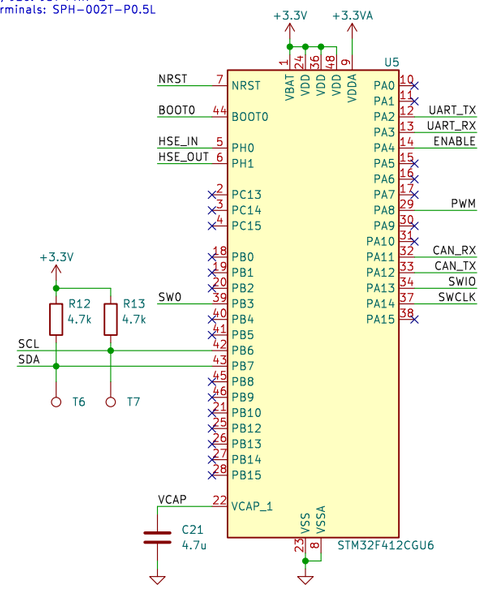
Resets chip once VDD drops below threshold voltage
Threshold voltage = 1.95V



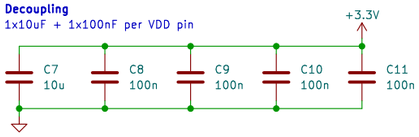
UART BLE Module

Microcontroller

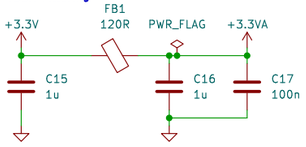
Mating Connectors
J9, J10: JST PHR-2
Terminals: SPH-002T-P0.5L



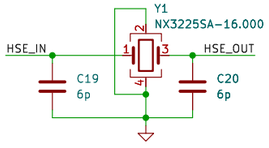
Decoupling
1x10uF + 1x100nF per VDD pin



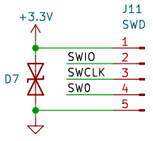
VDDA Filtering



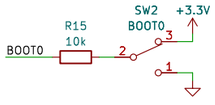
Crystal Oscillator
CL = 2*(CLO-Cs) = 2*(8-5)pF = 6pF



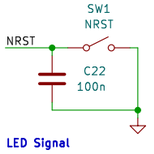
Prog/Debug



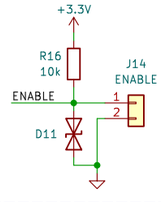
BOOT0 Switch



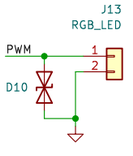
NRST Switch



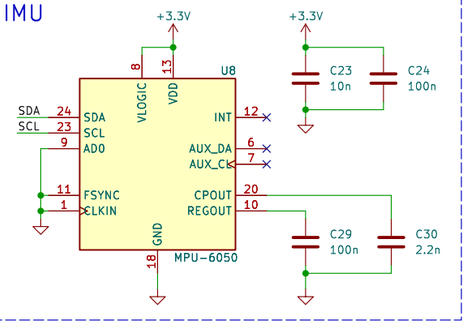
Enable Switch



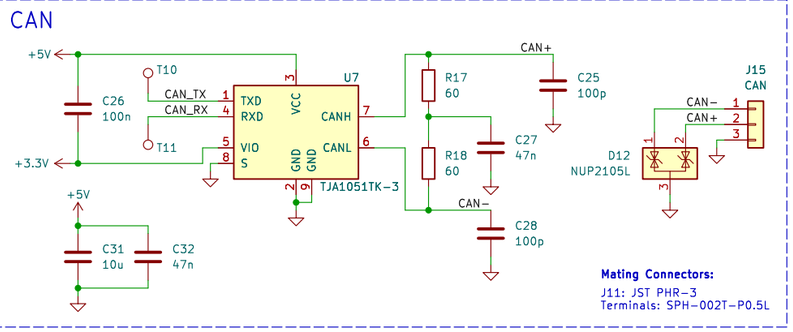
LED Signal



IMU

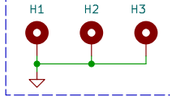


CAN



Mating Connectors:
J11: JST PHR-3
Terminals: SPH-002T-P0.5L

M3 Mounting Holes



Created By: Austyn Loehr

Sheet: /
File: PCB.kicad_sch

Title: Reaction Wheel Controller

Size: A3	Date: 2023-12-26	**Rev: A**
KiCad E.D.A. eeschema 7.0.10-7.0.10-ubuntu22.04.1		Id: 1/1