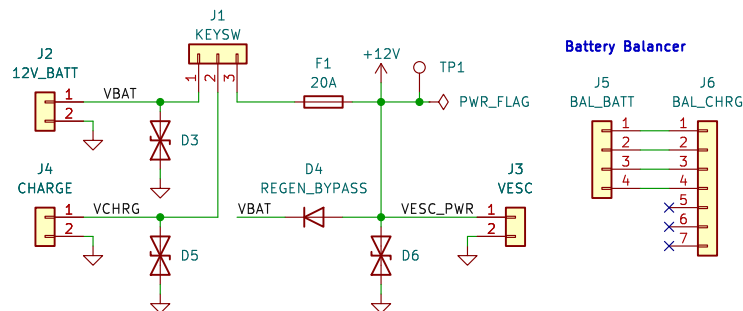


Power Supply

Mating Connectors

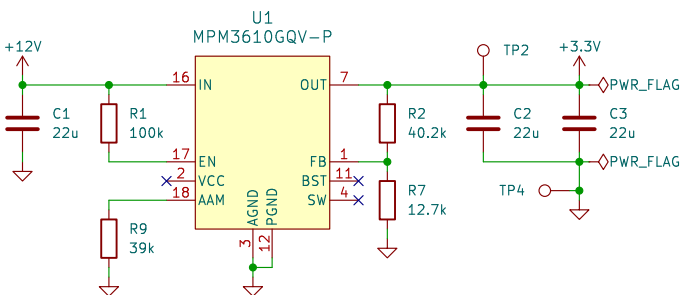
J4: XT60-M
J1: Molex 50841030
J2, J3: Molex 50841020
Terminals: Molex 366640002

J1 acts as e-stop/charge mode select
Connects to external SPDT switch (VBAT = COM)



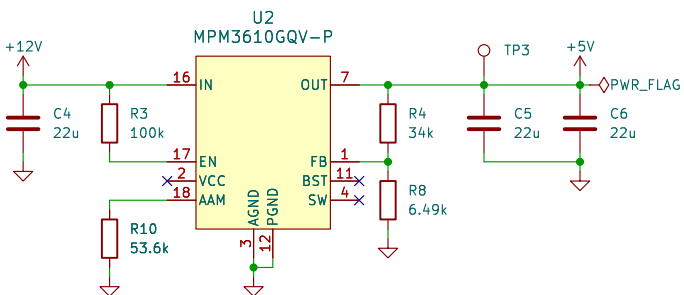
3.3V Regulator

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

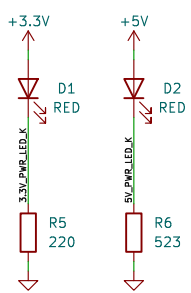


5V Regulator

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



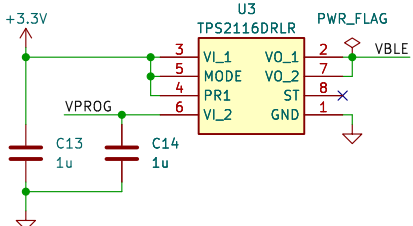
Power-On LED's



Bluetooth

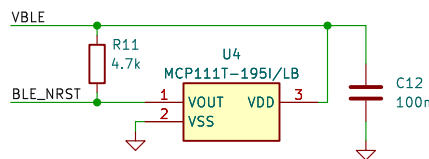
Power Mux

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

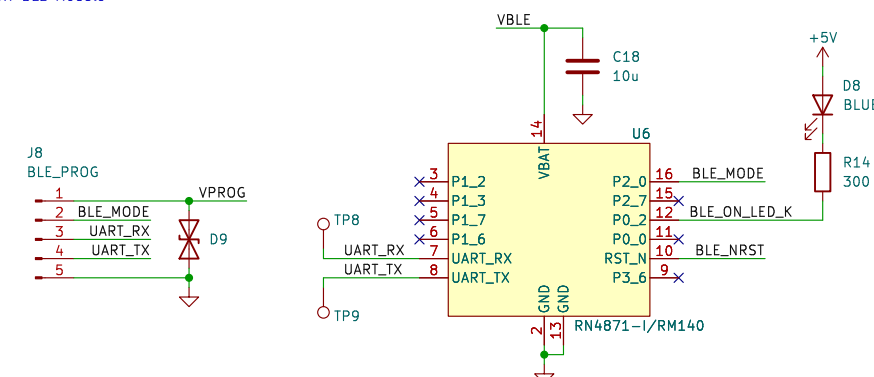


Power Drop Protection

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



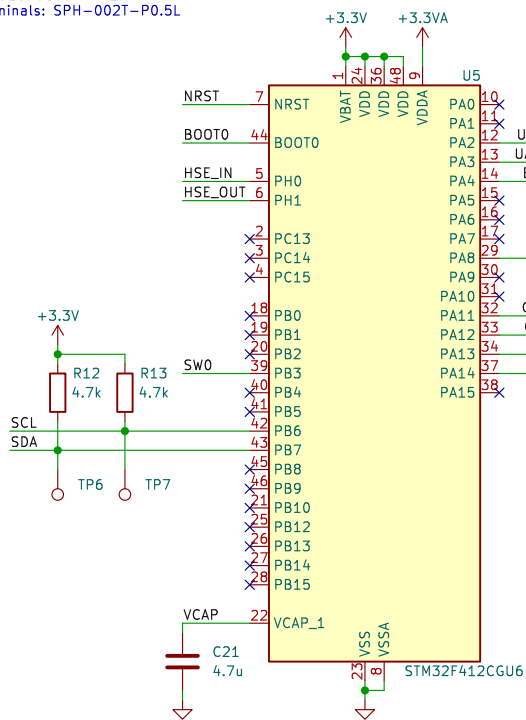
UART BLE Module



Microcontroller

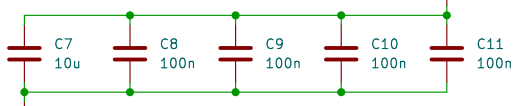
Mating Connectors

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

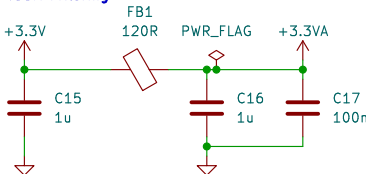


Decoupling

1x10uF + 1x100nF per VDD pin

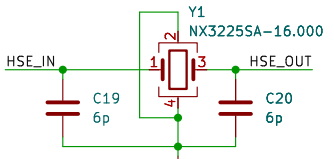


VDDA Filtering

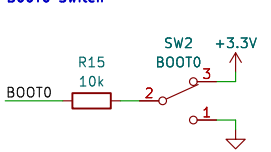


Crystal Oscillator

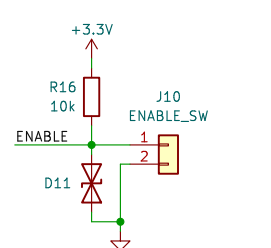
CL = 2*(CLO-Cs) = 2*(8-5)pF = 6pF



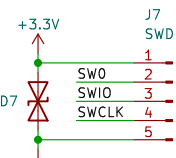
BOOT0 Switch



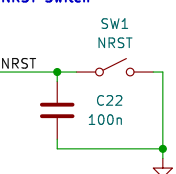
Enable Switch



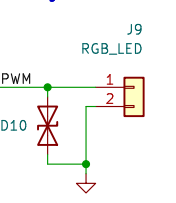
Prog/Debug



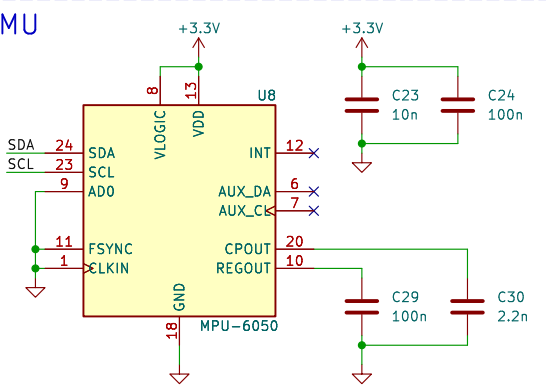
NRST Switch



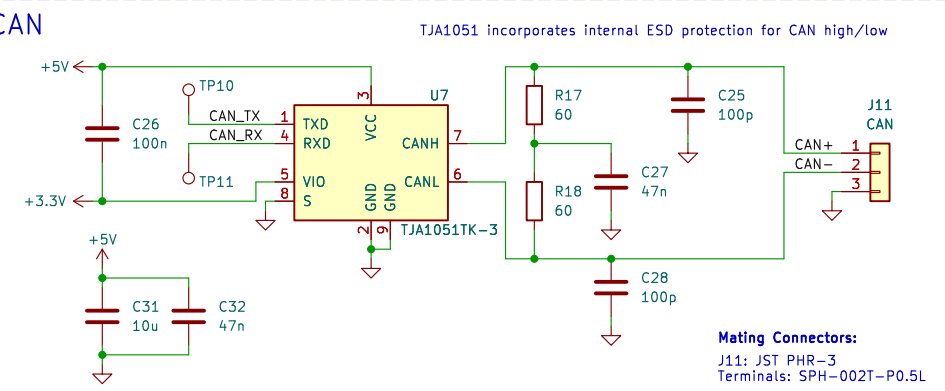
LED Signal



IMU



CAN



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

Created By: Austyn Loehr

Sheet: /
File: PCB.kicad_sch

Title: Reaction Wheel Controller

Size: A3 Date: 2023-12-26
KiCad E.D.A. kicad 7.0.10-7.0.10-ubuntu22.04.1

Rev: A
Id: 1/1