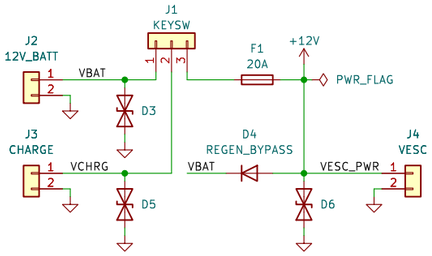
Power Supply

Mating Connectors

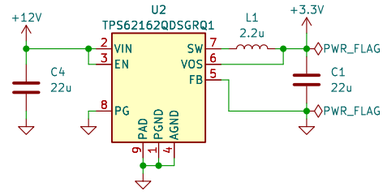
J1: Molex 50841030
J2, J3, J4: Molex 50841020
Terminals: Molex 366640002

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



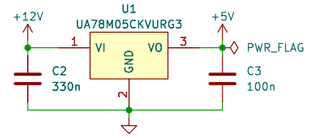
3.3V Regulator

1A max current output
Components draw <200mA
3.3V * 0.2A = 0.66W max
Eff. = 85% est.
P = 0.66 / 0.85 = 0.78W Total
Ploss = 0.12W
Tr = 65.5 C/W
T = 0.12 * 65.5 = 7.9C rise

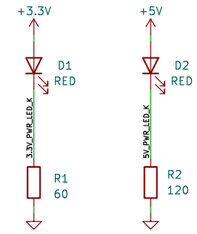


5V Regulator

500mA max current output
Components draw 150mA
7V * 0.135A = 1.05W max
Tr = 30.3 C/W
T = 1.05 * 30.3 = 40.5C rise



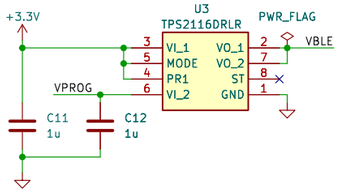
Power-On LED's



Bluetooth

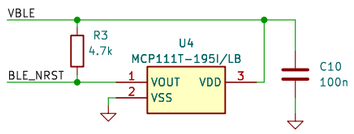
Power Mux

Prevents VPROG (J1) from powering entire +3.3V rail
Input 1 takes priority until voltage <1V

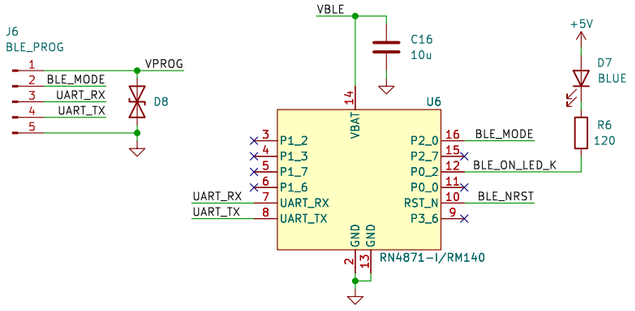


Power Drop Protection

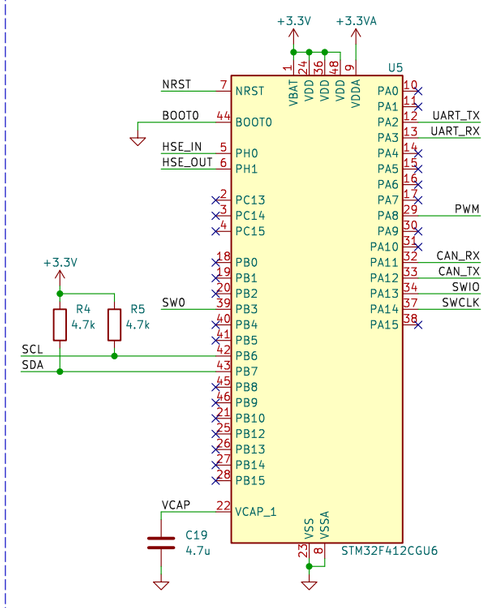
Resets chip once VDD drops below threshold voltage
Threshold voltage = 1.95V



UART BLE Module

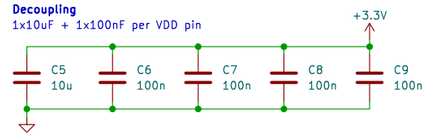


Microcontroller

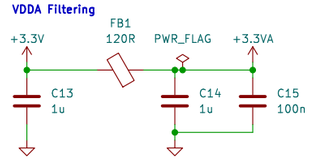


Decoupling

1x10uF + 1x100nF per VDD pin

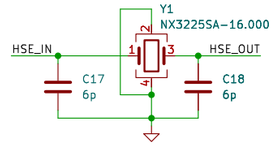


VDDA Filtering

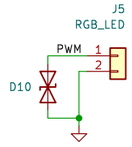


Crystal Oscillator

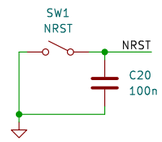
CL = 2*(CLO-Cs) = 2*(8-5)pF = 6pF



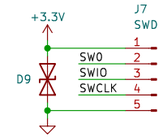
LED Signal



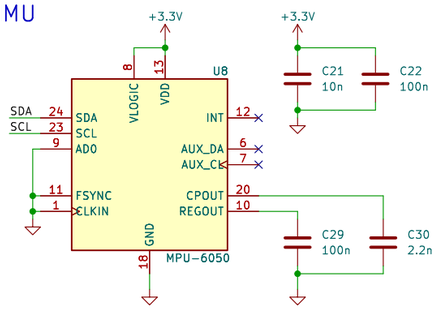
NRST Switch



Prog/Debug

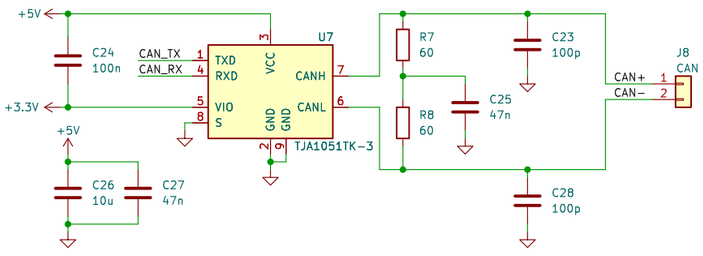


IMU



CAN

TJA1051 incorporates internal ESD protection for CAN high/low



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. kicad 7.0.10-7.0.10-ubuntu22.04.1		Id: 1/1