

Avionics



File: Avionics.kicad_sch

Connectors



File: Connectors.kicad_sch

Power



File: Power.kicad_sch

Burn Wires



File: Burn_Wires.kicad_sch

RF



File: RF_and_GPS.kicad_sch

Bus Protection



File: Bus_Protection.kicad_sch

Ethan Brinser

Stanford Student Space Initiative

Sheet: /

File: mainboard.kicad_sch

Title: **PyCubed Mainboard**

Size: A4

Date: 2024-05-14

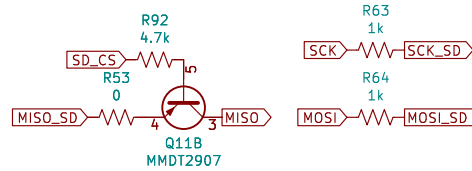
Rev: **v06b**

KiCad E.D.A. eeschema 7.0.2-0

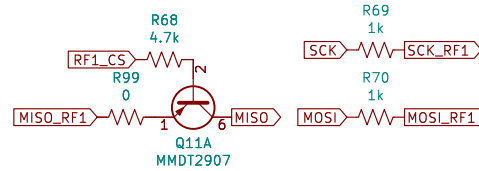
Id: 1/7

PyCubed

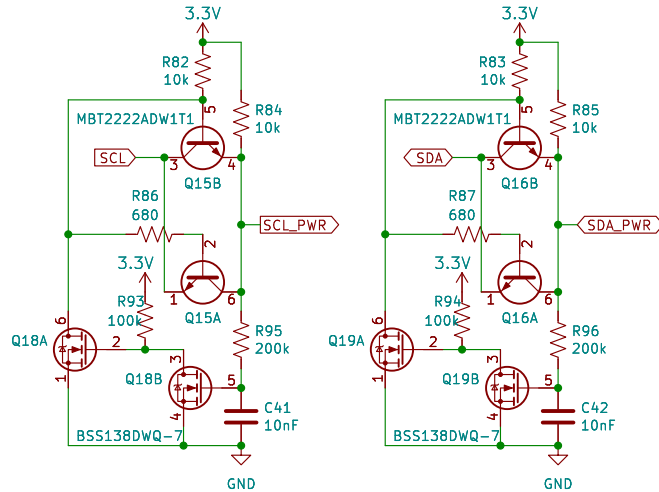
SPI Bus Protection – SD Card and Payloads



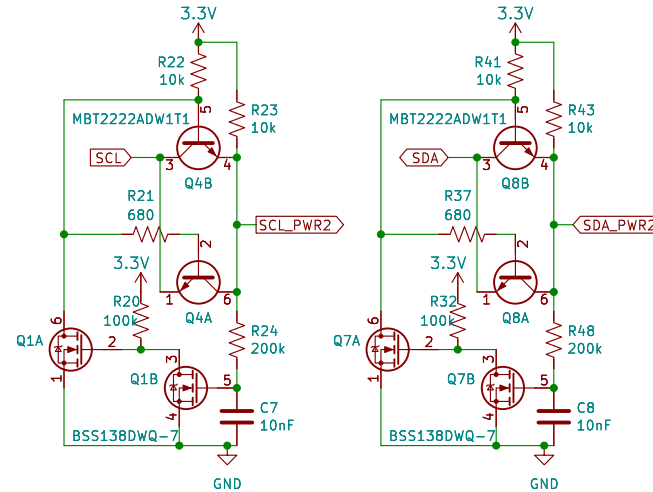
SPI Bus Protection – Radio 1



I2C Bus Protection – Power Monitor



I2C Bus Protection – MPPT Status & USB Charger



NOTE

These novel bus protection circuits prevent traditional I2C/SPI failure modes where a single slave failure can disable the entire bus.

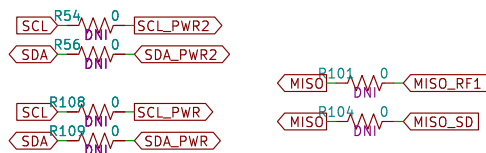
Learn more:
<https://doi.org/10.36227/techrxiv.15166620>

By default, slave clock and/or data lines can be held low and the Master (SAM51) will still be able to communicate with the remainder of the bus.

They can individually be bypassed by removing the transistor(s) and soldering the 0ohm the jumpers below.

NOTE: Components labeled "do not install" (DNI) are not populated by default

Bus Protection – Bypass Jumpers



Bus Protection

Ethan Brinser

Stanford Student Space Initiative

Sheet: /Bus Protection/

File: Bus_Protection.kicad_sch

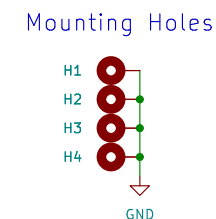
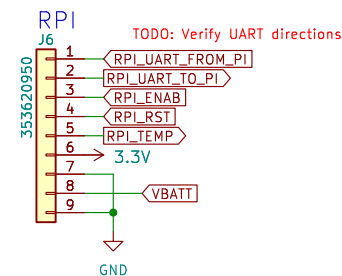
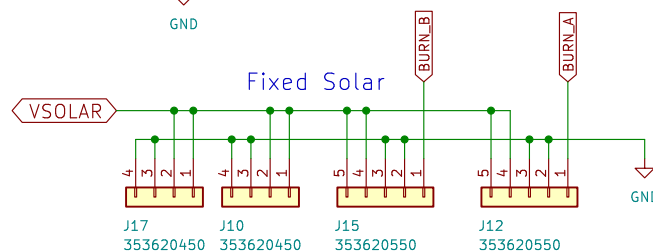
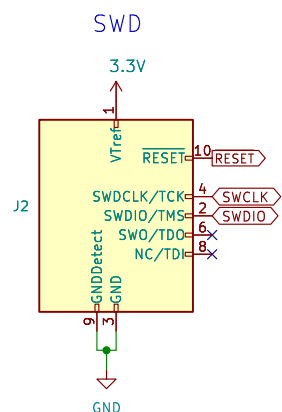
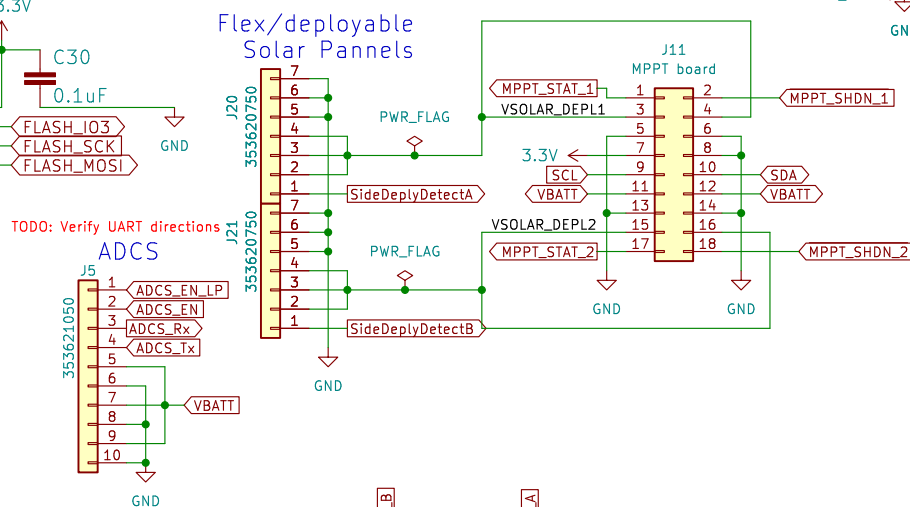
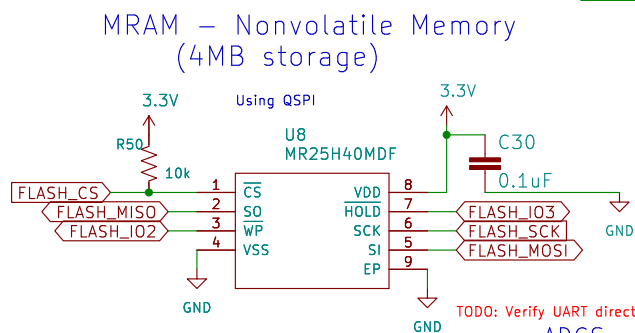
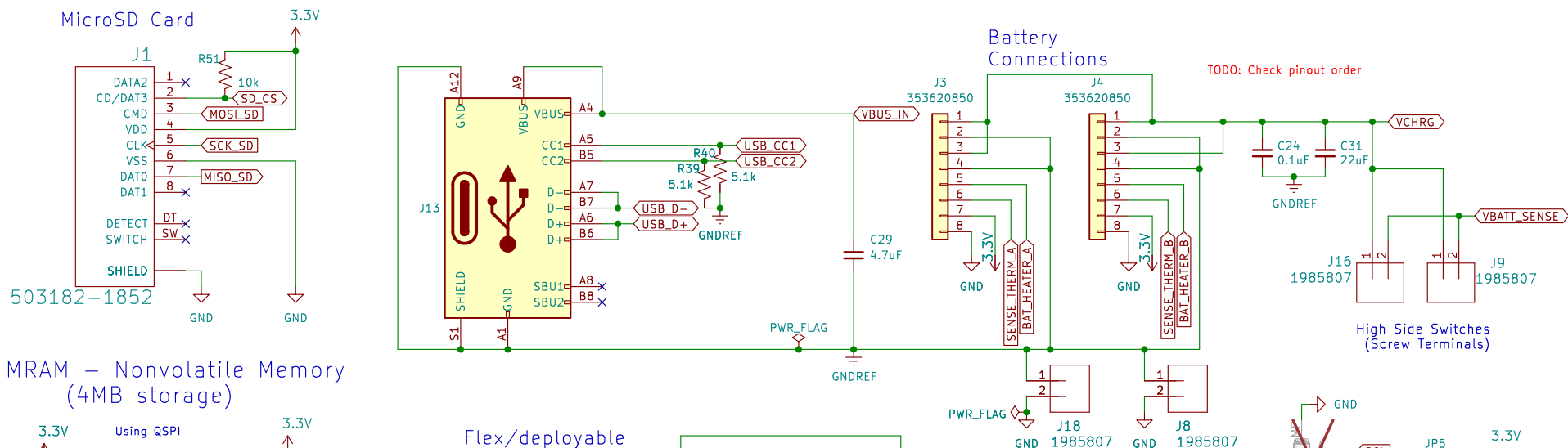
Title: PyCubed Mainboard

Size: A4 Date: 2024-05-14

KiCad E.D.A. eeschema 7.0.2-0

Rev: v06b

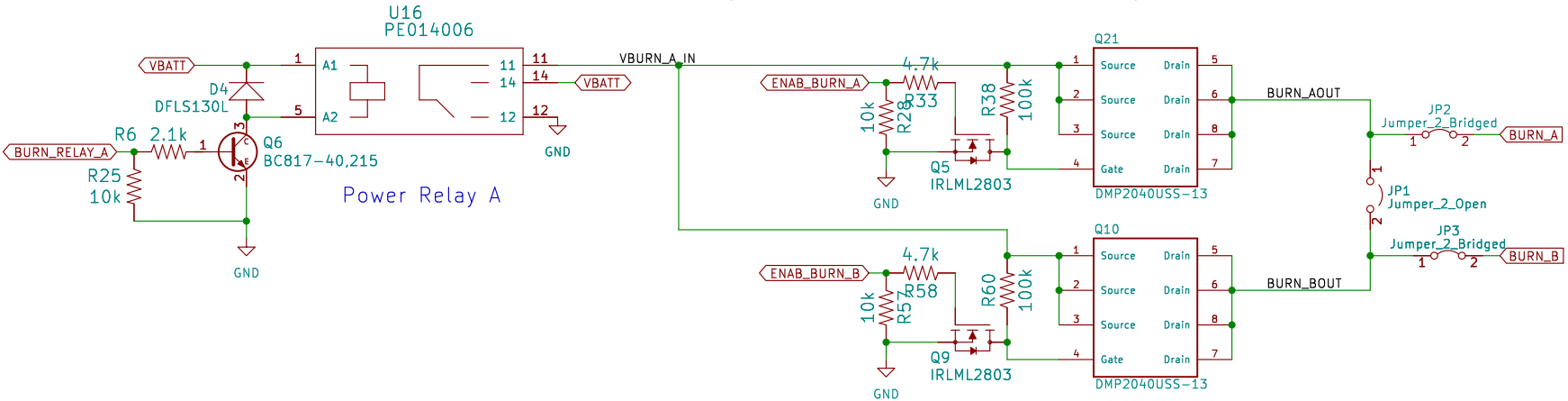
Id: 3/7



Connectors

Rev: v06b
Id: 4/7

Burn Wire Control (Antenna and Flex Solar Deployment)



NOTE: Components labeled "do not install" (DNI) are not populated by default

Burn Wires

Ethan Brinser
Stanford Student Space Initiative

Sheet: /Burn Wires/
File: Burn_Wires.kicad_sch

Title: **PyCubed Mainboard**

Size: A4 Date: 2024-05-14

KiCad E.D.A. eeschema 7.0.2-0

Rev: v06b

Id: 6/7



Radio, GPS, Payloads

Id: 7/7