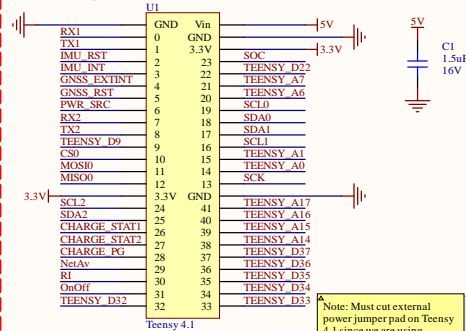


Teensy and IMU

Teensy 4.1



GPIOs:

Outputs:

- IMU_RST (Active Low): Reset, Pull low to reset the sensor
- GNSS_EXTINT: Customizable GNSS module external interrupt
- GNSS_RST (Active Low): Reset, Drive low to reset the GNSS module

Inputs:

- IMU_INT (Active Low): Interrupt/Data Ready. Indicates that the BNO085 needs the host's attention
- PWR_SRC: high = usb pwr, low = bat pwr
- CHARGE_STAT1, CHARGE_STAT2, CHARGE_PG: See datasheet for state diagram
- NetAv (Active High): Iridium Network Available signal
- RI (Active Low): Iridium Ring Indicator signal
- OnOff: Iridium on = high, Iridium off = low

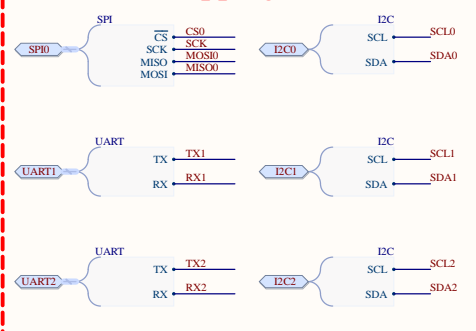
Bidirectional:

Analog Inputs:

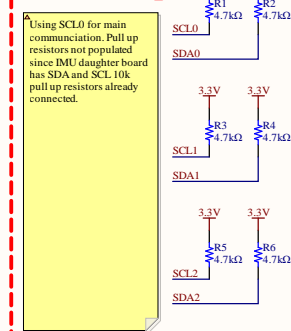
- SOC: 1/2 of real PWR_SEL voltage. Need to map real voltage to % state of battery charge

Note: Must cut external power jumper pad on Teensy 4.1 since we are using external power

Serial I/O Mapping



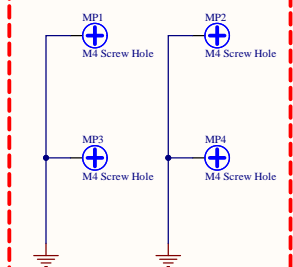
I2C Pullups



Using SCL0 for main communication. Pull up resistors not populated since IMU daughter board has SDA and SCL 10k pull up resistors already connected.

Mechanical

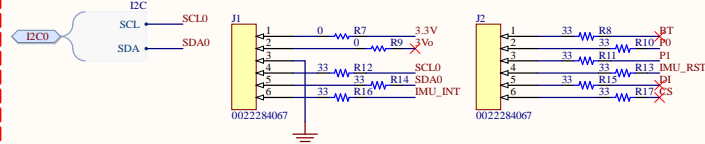
Mounting



Fiducials



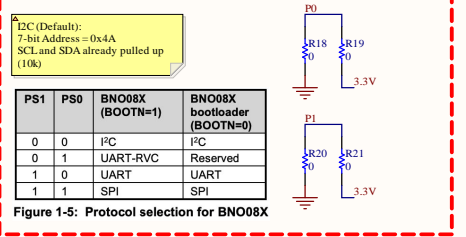
IMU



GPIO Breakout Connector

Need to determine LED and buttons and add GPIO to Teensy

IMU Communication Select



I2C (Default): 7-bit Address = 0x4A
SCL and SDA already pulled up (10k)

PS1	PS0	BNO08X (BOOTN=1)	BNO08X bootloader (BOOTN=0)
0	0	I2C	I2C
0	1	UART-RVC	Reserved
1	0	UART	UART
1	1	SPI	SPI

Figure 1-5: Protocol selection for BNO08X

External Buttons

External LEDs

Project Name: Capstone PCB.PrjPcb

Drawer: Cameron Gordon & Elise Cooke

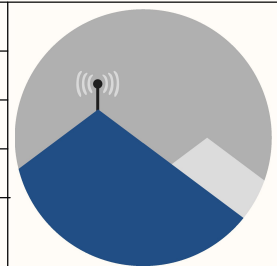
Variant: [No Variations]

Revision: V1.0

Date: 8/30/2023

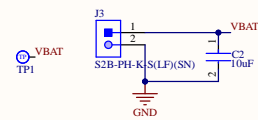
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Capstone 2023

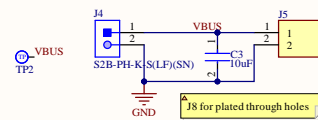


Power Management

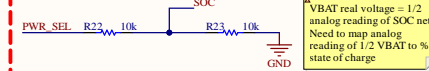
Battery Connector



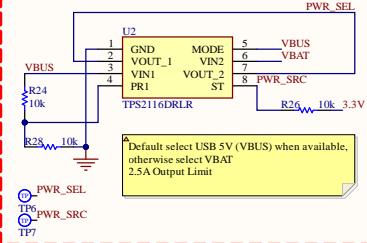
USB 5V Connector



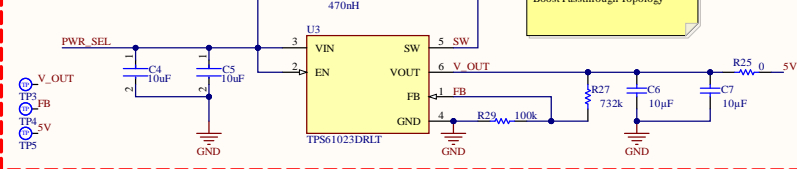
Battery SOC Voltage Divider



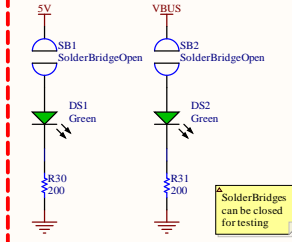
Power MUX



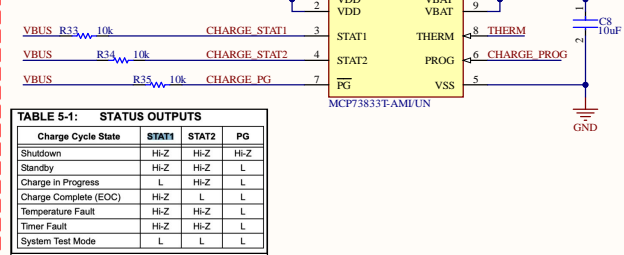
Boost Converter



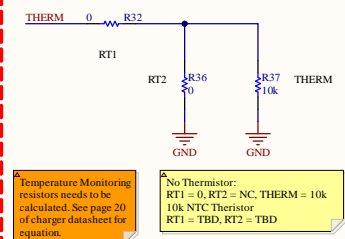
Power LEDs



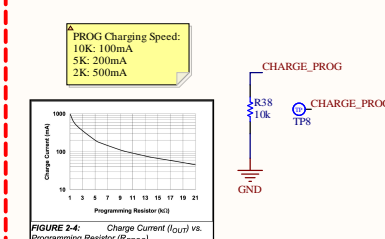
Battery Charger



Charge Temperature Set



Charge Current Set



Project Name: Capstone PCB.PrjPcb

Drawer: Cameron Gordon & Elise Cooke

Variant: [No Variations]

Revision: V1.0

Date: 8/30/2023

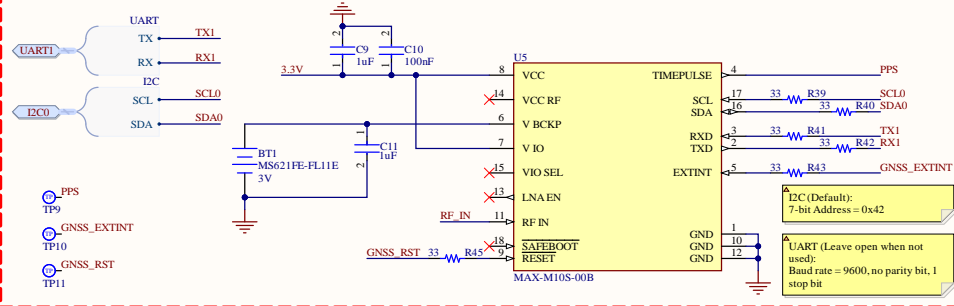
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Capstone 2023

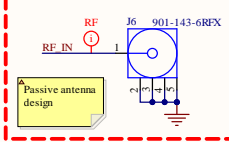


GNSS Module and Iridium Transceiver

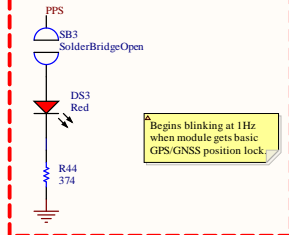
GNSS Module



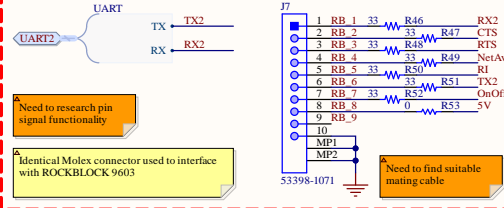
GNSS Antenna



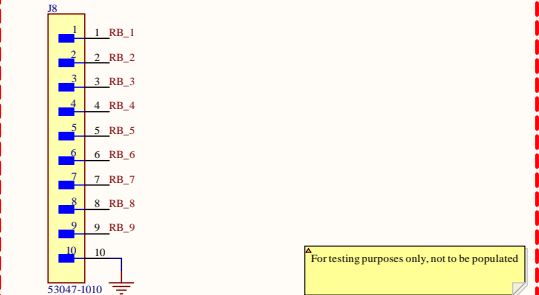
Position Lock LED




ROCKBLOCK 9603 Connector



ROCKBLOCK 9603 Breakout Header



Project Name: Capstone PCB.PrjPcb	
Drawer: Cameron Gordon & Elise Cooke	
Variant: [No Variations]	
Revision: V1.0	
Date: 8/30/2023	
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Capstone 2023	