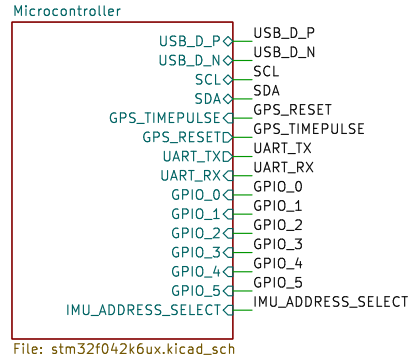


Requirements:

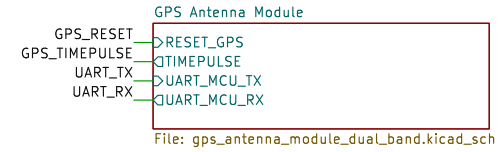
- Handle 200g peak acceleration for 10 seconds
- record GPS, IMU, altitude, pressure, humidity, temperature
- LiPo powered
- grab data via USB
- LiPo charging via USB
- integrated antenna on GPS

- H1 MountingHole
- H2 MountingHole
- H3 MountingHole
- H4 MountingHole

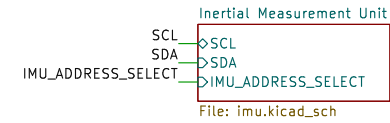
Microcontroller



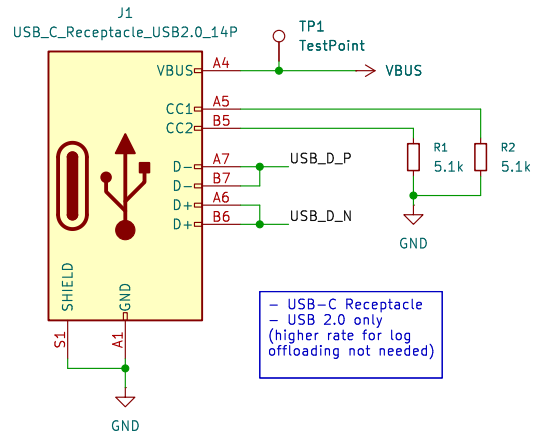
Dual-band GPS



Accelerometer & IMU Module



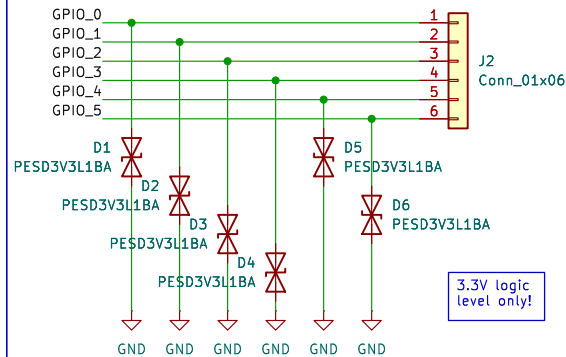
Power Supply



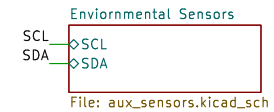
3.3V Buck-Boost Regulator

File: buck_boost_3v3_output_5v_input.kicad_sch

Auxillary GPIO Connector



Enviornmental Sensors



Brian Glen

Sheet: /
File: rocket_datalogger.kicad_sch

Title: Rocket Datalogger

Size: A4 Date: 2025-08-18

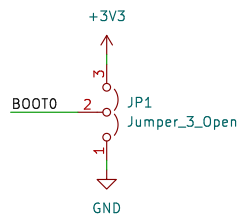
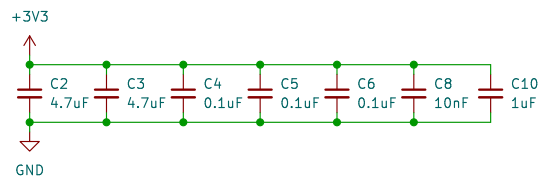
KiCad E.D.A. 9.0.1

Rev: 1

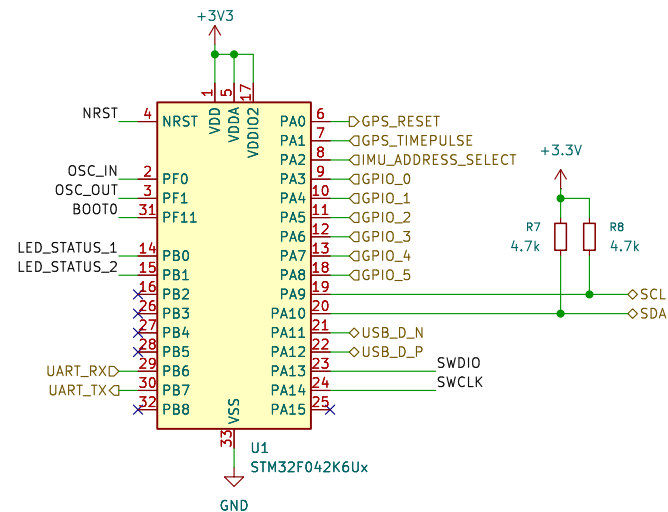
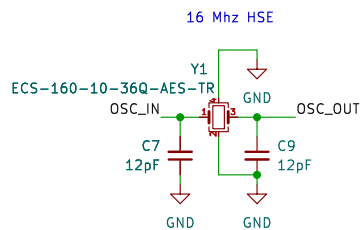
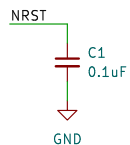
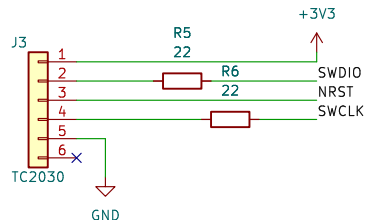
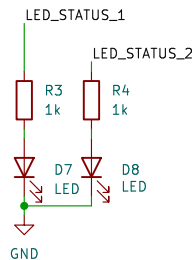
Id: 1/7

Microcontroller

- power supply de-coupling
- TC2030 programming
- boot select switch
- 16 Mhz HSE oscillator
- status LEDs



BOOT0 to 3V3: Boot to system memory
BOOT0 to GND: Boot to flash memory



Sheet: /Microcontroller/
File: stm32f042k6ux.kicad_sch

Title:

Size: A4

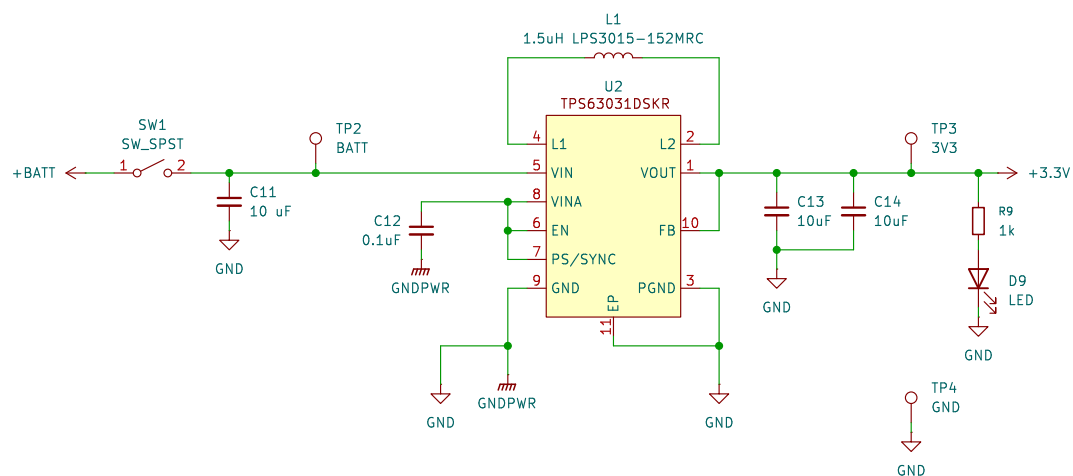
Date:

Rev:

KiCad E.D.A. 9.0.1

Id: 2/7

Note:
- The GNDPWR plane should only be connected to GND in one location.
- LiPo gnd and the regulated output gnd are the same. There is a separate ground plane to handle ground-shift from high switching currents marked GNDPWR



Sheet: /3.3V Buck-Boost Regulator/
File: buck_boost_3v3_output_5V_input.kicad_sch

Title:

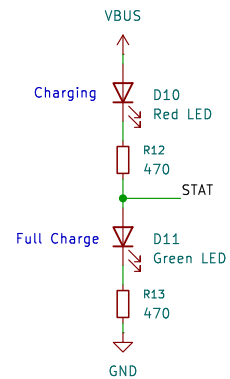
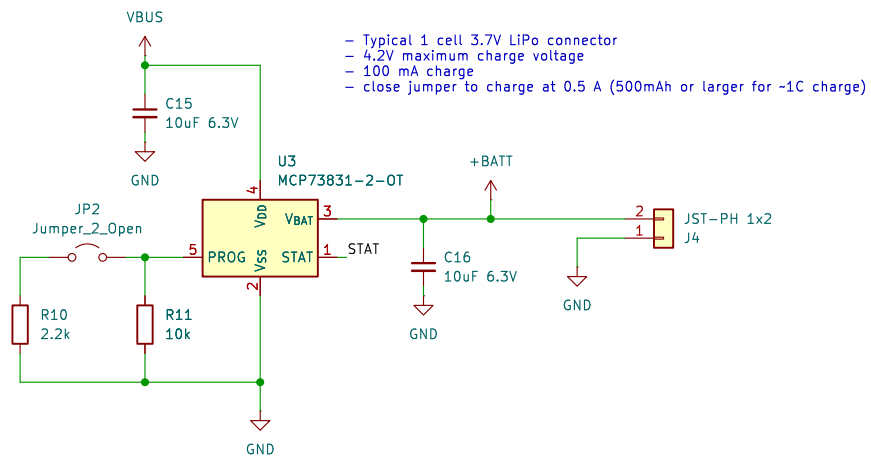
Size: A4

Date:

Rev:

KiCad E.D.A. 9.0.1

Id: 4/7



Sheet: /USB-C LiPo Charging/
File: usb-c_lipo_charing.kicad_sch

Title:

Size: A4

Date:

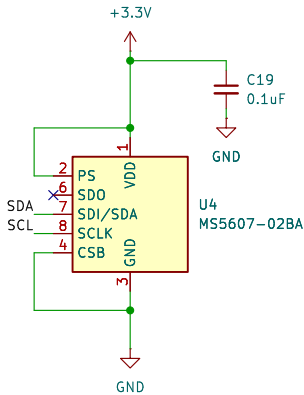
KiCad E.D.A. 9.0.1

Rev:

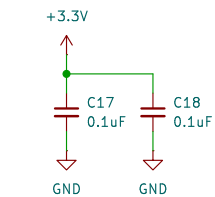
Id: 5/7

Primary High Precision Pressure Sensor for altituide estimation

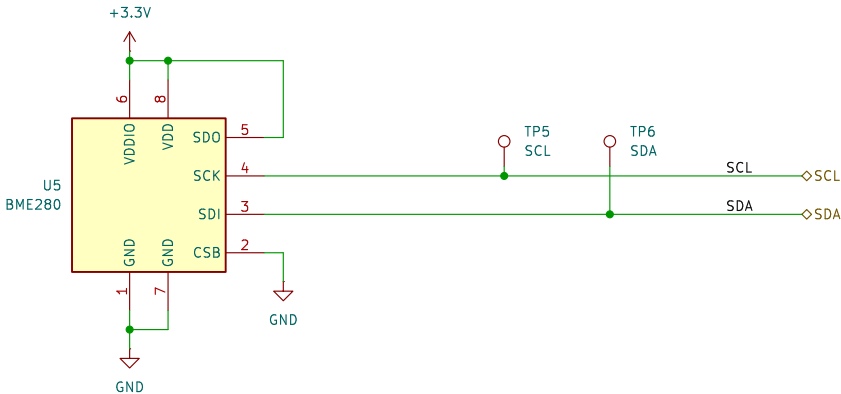
- I2C Address:
0x76 (CSB is low)



Secondary Temp, Humidity, Pressure Sensor



- I2C Address:
0x76 (CSB is low)



Sheet: /Enviornmental Sensors/
File: aux_sensors.kicad_sch

Title:

Size: A4

Date:

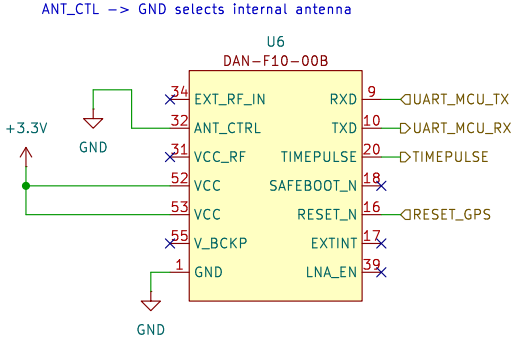
KiCad E.D.A. 9.0.1

Rev:

Id: 5/7

Note:

- Place a 70 x 70 mm² ground plane around the module as part of the integrated antenna design. Module should be centered.
- ANT_CTL -> GND selects internal antenna
- GPS should be configured for Airborne <4G. This gives 80km max altitude, 20 km/s max vertical velocity, 500 m/s max horizontal velocity.
- Generally, use software reset over UART command. RESET_N triggers the RAM to clear and the firmware reloaded from flash



Sheet: /GPS Antenna Module/
File: gps_antenna_module_dual_band.kicad_sch

Title:

Size: A4

Date:

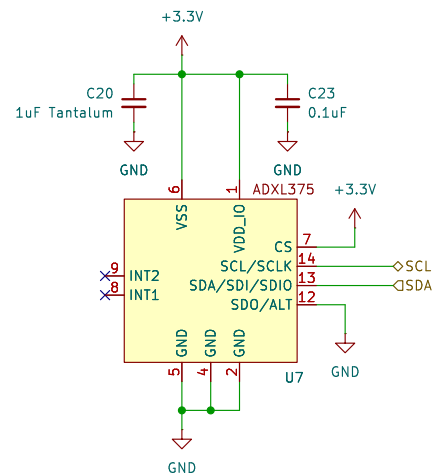
KiCad E.D.A. 9.0.1

Rev:

Id: 6/7

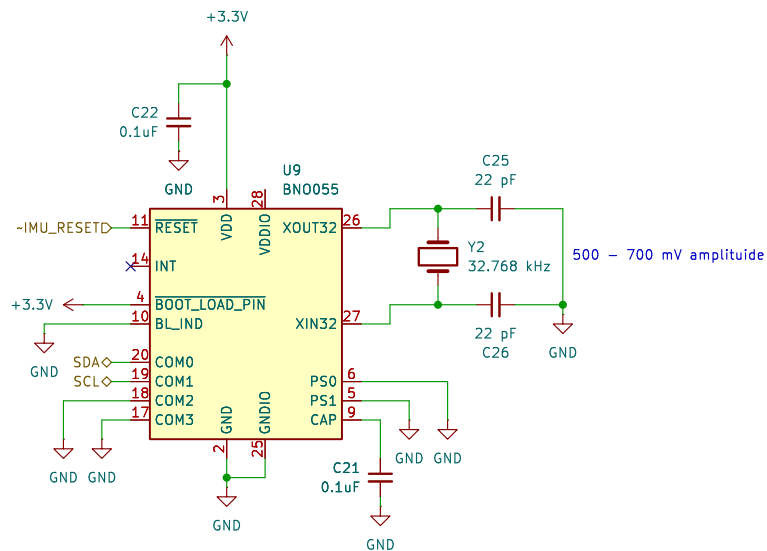
High G Accelerometer

- For peak acceleration measurement
- place near mounting hole
- I2C Address: 0x53



9-DOF IMU

- For rocket orientation
- I2C: PS1 & PS2 to GND
- I2C Address: 0x28 (COM3 low)



Sheet: /Inertial Measurement Unit/
File: imu.kicad_sch

Title:

Size: A4

Date:

KiCad E.D.A. 9.0.1

Rev:

Id: 7/7