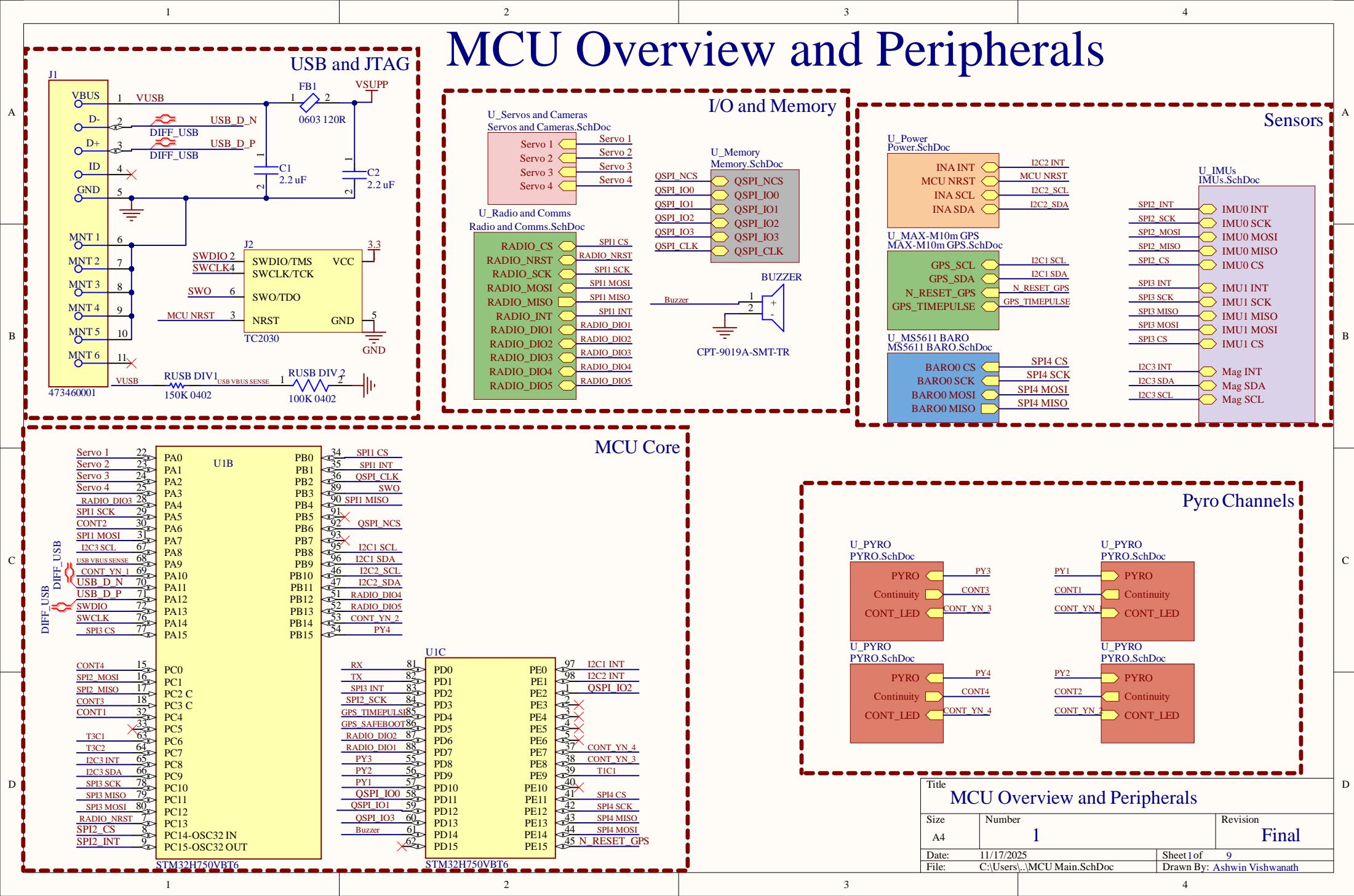
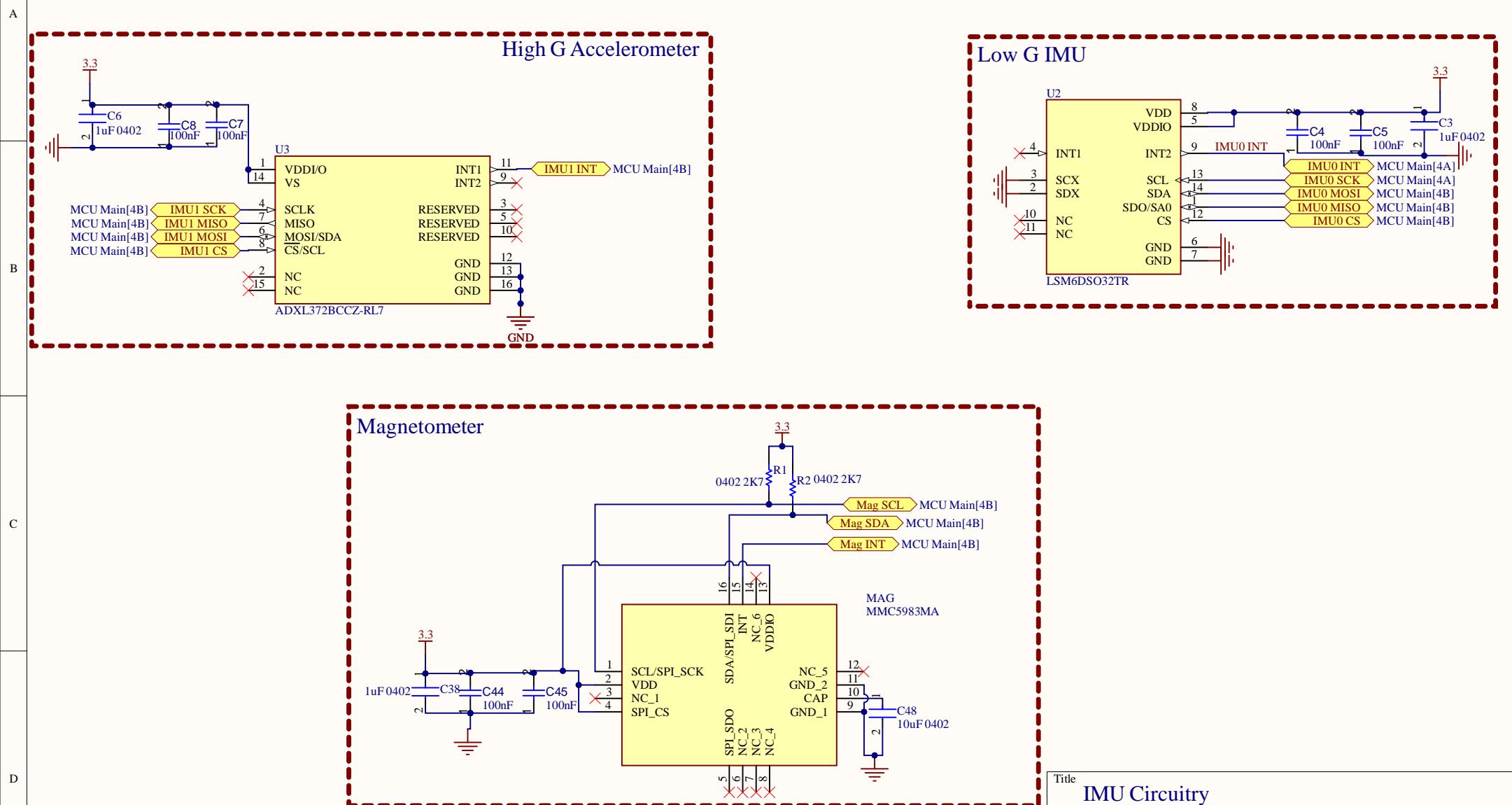


# MCU Overview and Peripherals



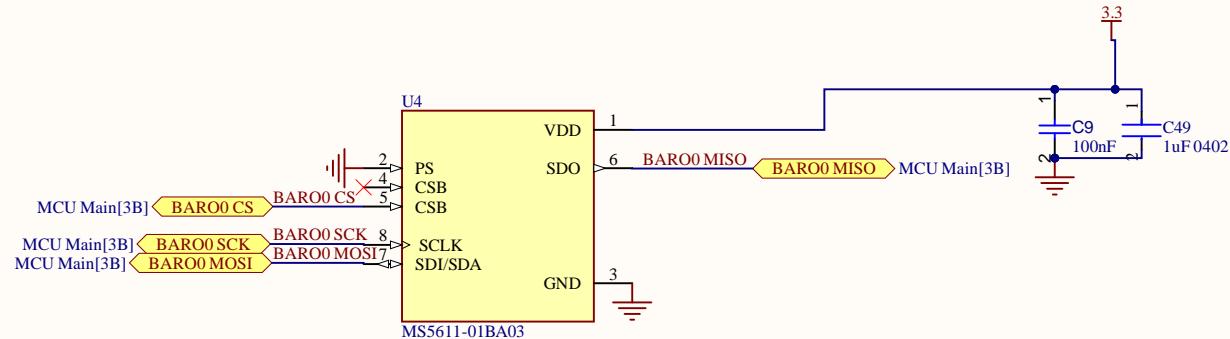
# IMU Circuitry



Title  
**IMU Circuitry**

Size	Number	Revision
A4	2	Final
Date:	11/17/2025	Sheet 2 of 9
File:	C:\Users\...\IMUs.SchDoc	Drawn By: Ashwin Vishwanath

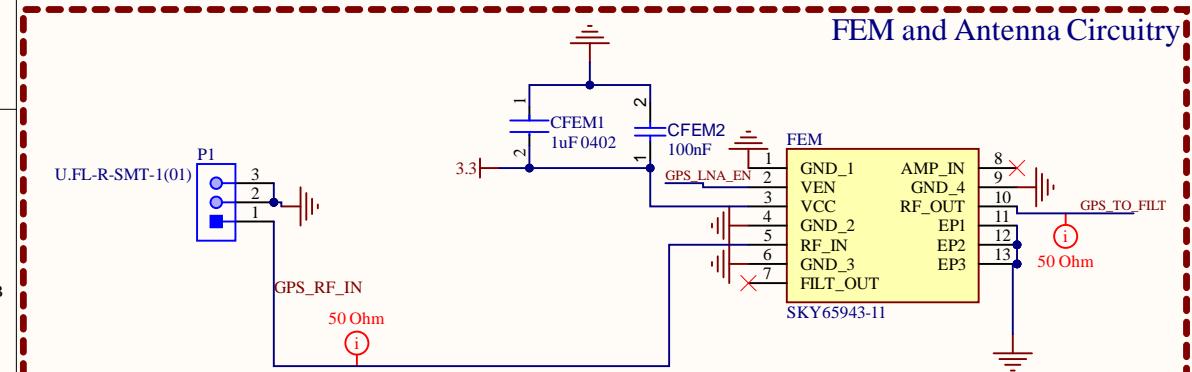
# MS5611 Barometer Circuitry



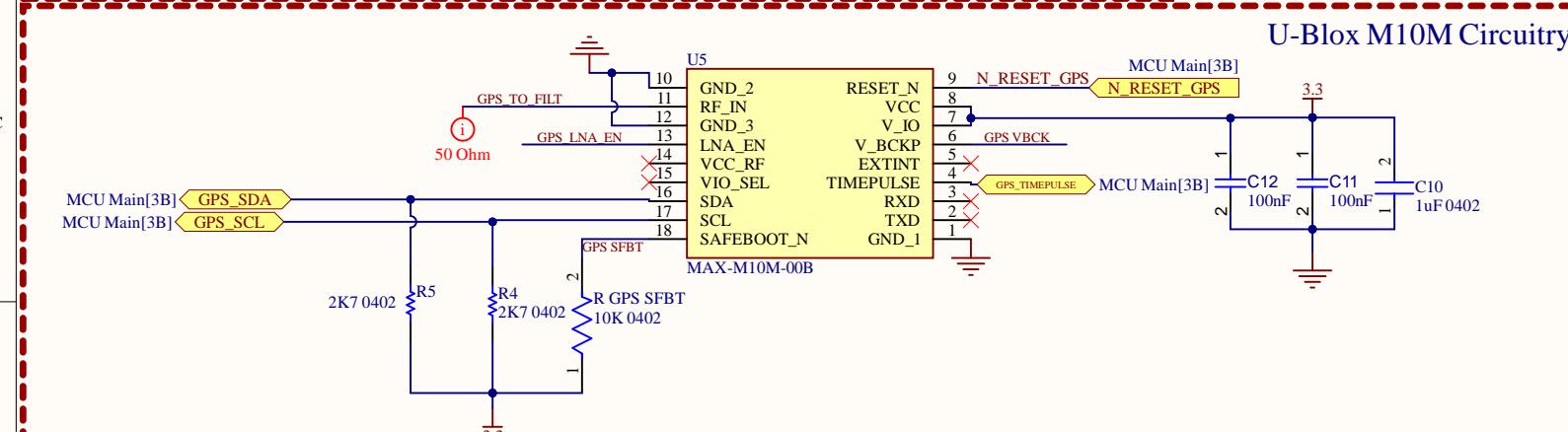
Title		
Size	Number	Revision
A4	3	Final
Date:	11/17/2025	Sheet 3 of 9
File:	C:\Users\...\MS5611 BARO.SchDoc	Drawn By: Ashwin Vishwanath

# GPS MAX M10M Circuitry

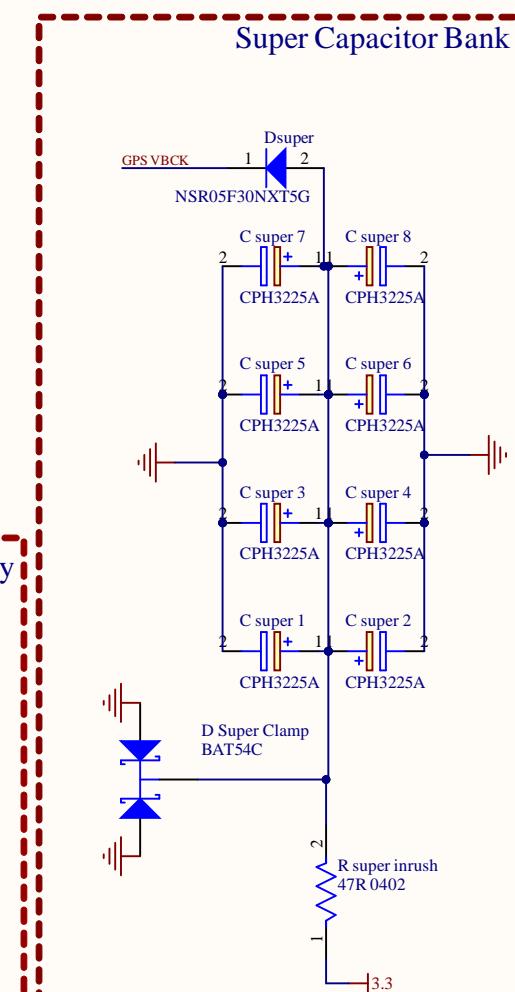
A



B

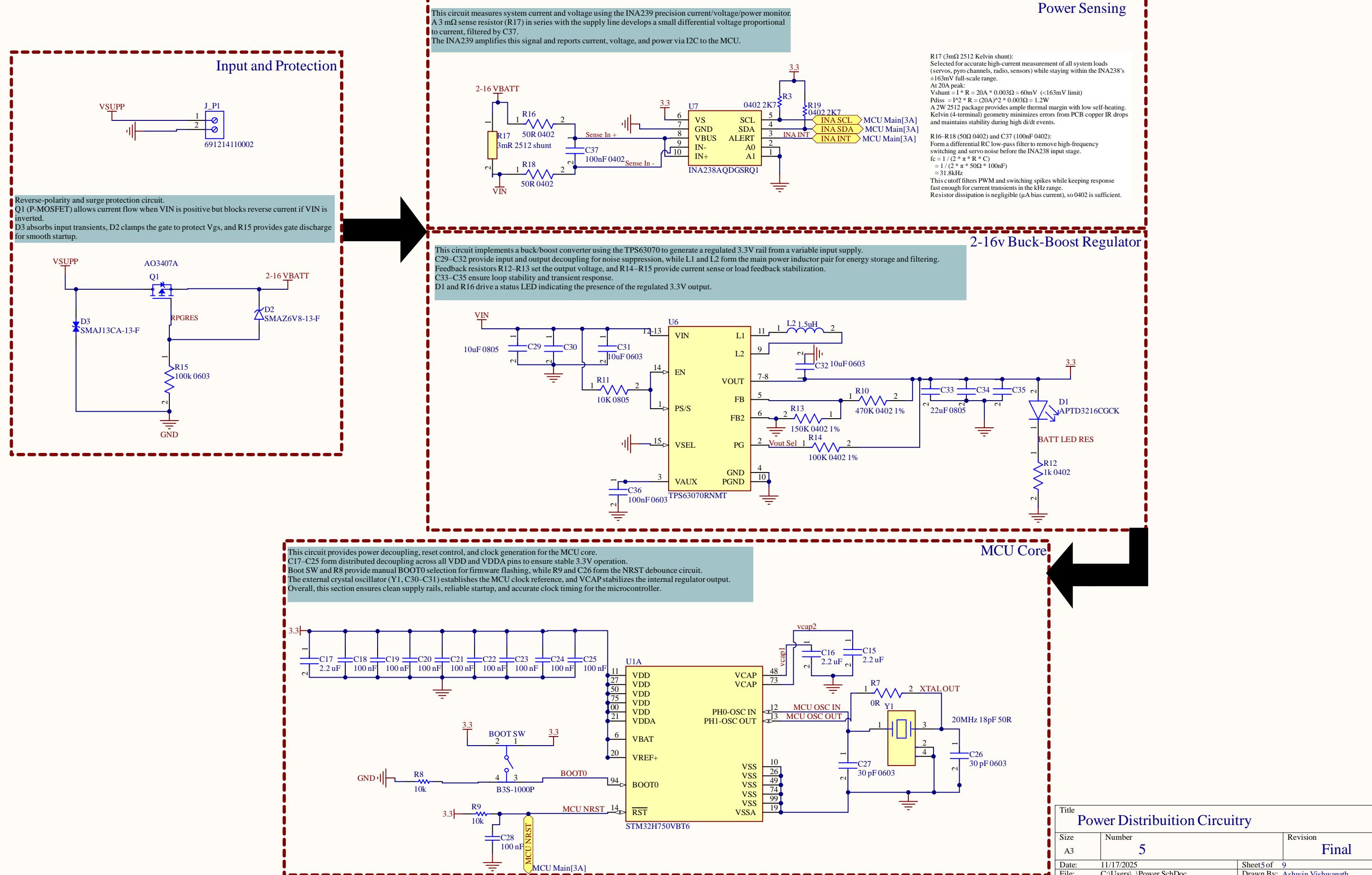


C

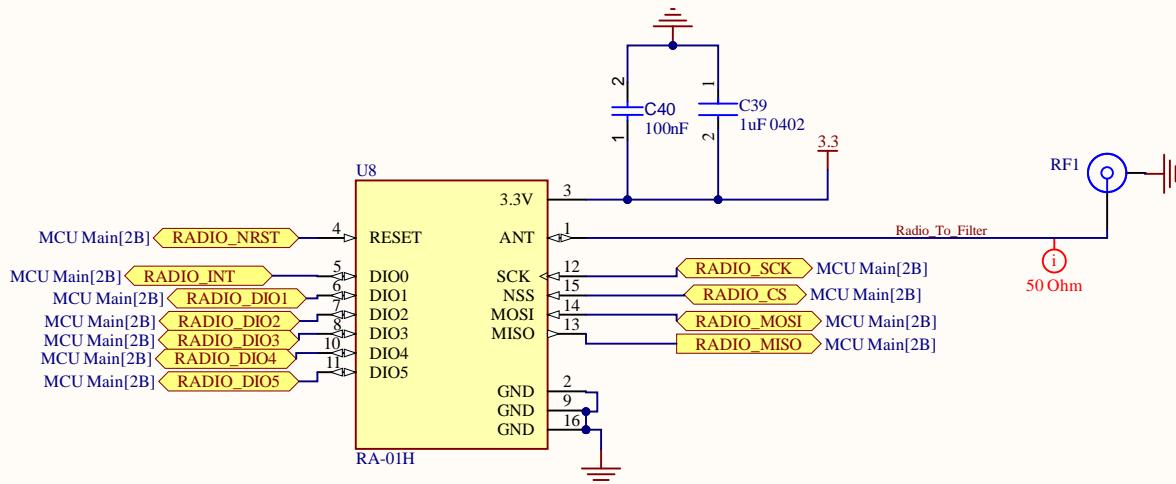


Title GPS MAX M10M circuitry		
Size A4	Number 4	Revision Final
Date: 11/17/2025		Sheet 4 of 9
File: C:\Users...\MAX-M10m GPS.SchDoc		Drawn By: Ashwin Vishwanath

# Power Distribution Circuitry



# Radio Communications Circuitry

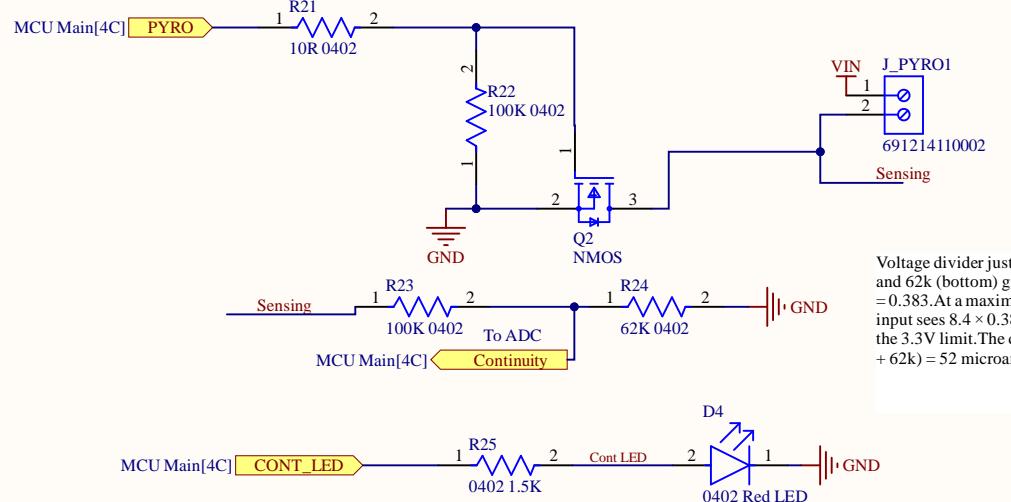


This circuit implements the LoRa radio transceiver interface using the RA-01H module.  
The MCU communicates with the transceiver via SPI (MOSI, MISO, SCK, CS) and digital control lines (NRST, INT, DIO0-DIO5).

C39-C40 provide local power decoupling, while the RF path includes a 50 Ω matching network (C41, L3, L4, C42, C43) to ensure proper impedance matching and minimize signal reflections.  
The filtered RF output connects to an external antenna through a 50 Ω transmission line, maintaining optimal RF performance and low loss.

Title <b>Radio Communications Circuitry</b>		
Size A4	Number <b>6</b>	Revision <b>Final</b>
Date: 11/17/2025	Sheet 6 of 9	
File: C:\Users\...\Radio and Comms.SchDoc	Drawn By: Ashwin Vishwanath	

# Pyro Channel and Continuity Detection Circuitry



Voltage divider justification: Using 100k (top) and 62k (bottom) gives a ratio of  $62 / (100 + 62) = 0.383$ . At a maximum input of 8.4V, the ADC input sees  $8.4 \times 0.383 = 3.22V$ , which is within the 3.3V limit. The divider current is  $8.4 / (100k + 62k) = 52$  microamps.

This circuit drives and monitors a pyro channel. Q2 (P-MOSFET) switches current to the igniter when the MCU asserts the PYRO signal, with R21 limiting gate charge current and R22 pulling the gate low to keep the channel off by default. The “Sensing” line provides a high-impedance continuity check through R23–R24, allowing the MCU to verify igniter presence without firing. D4 and R25 form a status LED circuit driven by CONT\_LED to indicate continuity or armed state.

Title Pyro Channel and Continuity Detection Circuitry		
Size A4	Number 7	Revision Final
Date: 11/17/2025		Sheet 7 of 9
File: C:\Users\...\PYRO.SchDoc		Drawn By: Ashwin Vishwanath

# Servo Header Circuitry

A

A

B

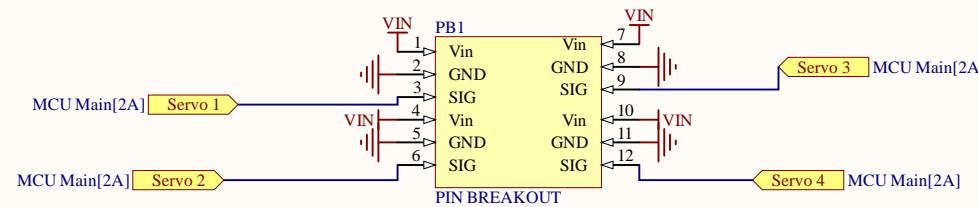
B

C

C

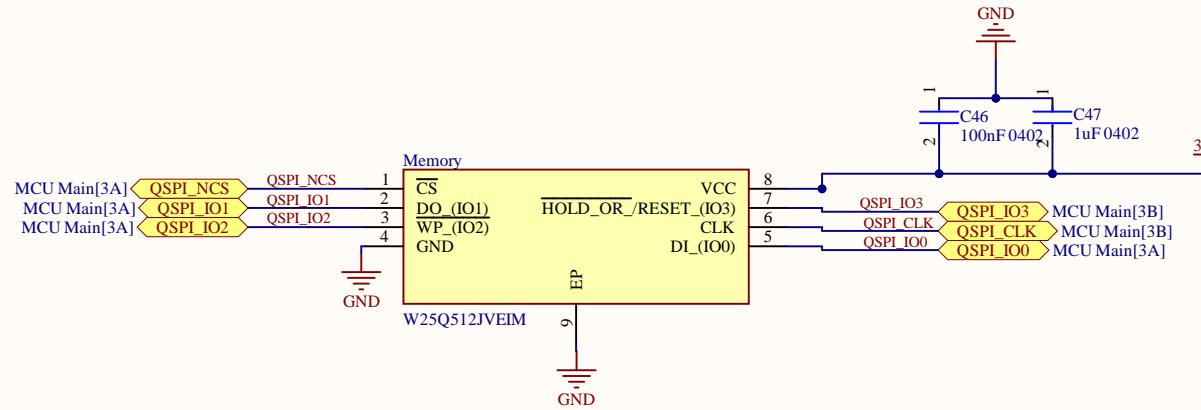
D

D



Title		
<b>Servo Header Circuitry</b>		
Size	Number	Revision
A4	<b>8</b>	<b>Final</b>
Date:	11/17/2025	Sheet 8 of 9
File:	C:\Users\...\Servos and Cameras.SchDoc	Drawn By: <b>Ashwin Vishwanath</b>

# Flash Memory Circuitry



Title <b>Flash Memory Circuitry</b>		
Size A4	Number <b>9</b>	Revision <b>Final</b>
Date: 11/17/2025	Sheet 9 of 9	Drawn By: <b>Ashwin Vishwanath</b>
File: C:\Users\...\Memory.SchDoc		