

# Spartan Racing BMS Master Board

Version 1, Revision B (STM32F105)

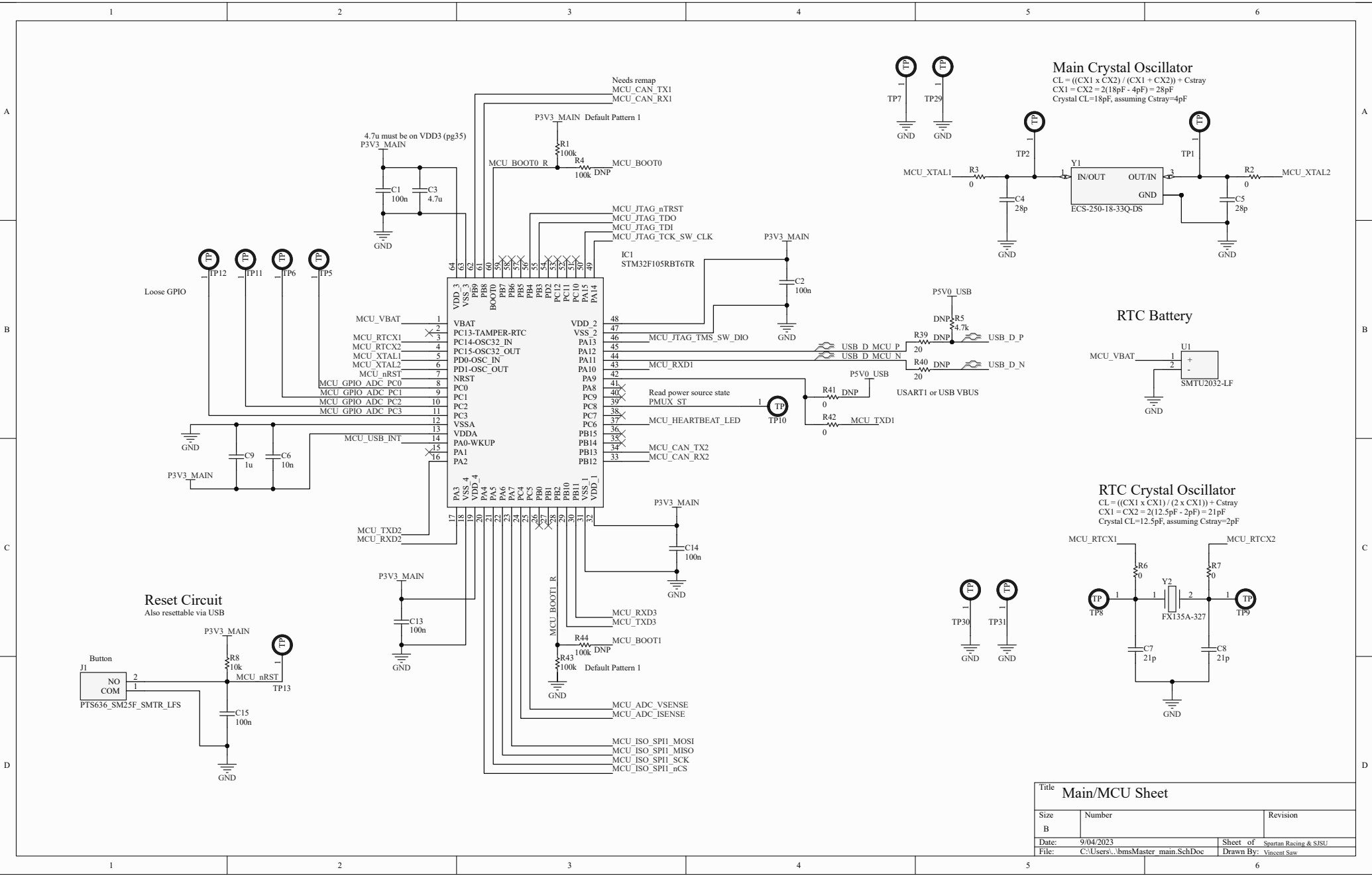
B.S. Senior Project SP23-FA23

Vincent Saw, Vincent Pham, Josh Samoy, Abegail Palad

Advisor: Preetpal Kang

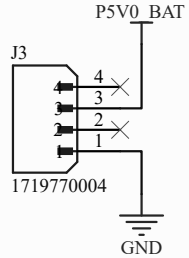
**Designer: Vincent Saw**

Title			Cover Sheet		
Size	Number			Revision	
A					
Date:	9/04/2023			Sheet of	Spartan Racing & SJSU
File:	C:\Users\...\bmsMaster_cover.SchDoc			Drawn By:	Vincent Saw

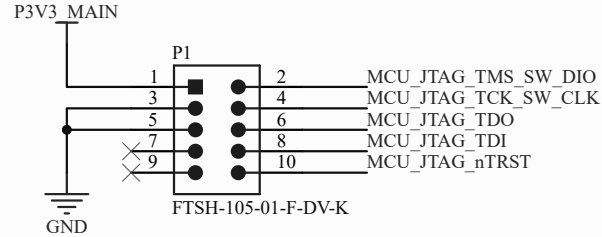


Title Main/MCU Sheet		
Size B	Number	Revision
Date: 9/04/2023	Sheet of Spartan Racing & SJSU	
File: C:\Users\lmsMaster\main.SchDoc	Drawn By: Vincent Saw	

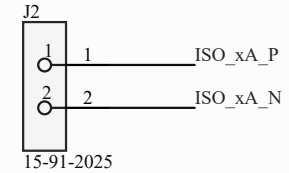
## Power Connector



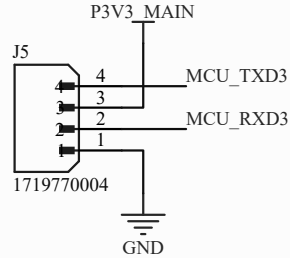
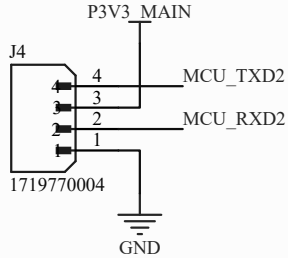
## JTAG Debug Connector



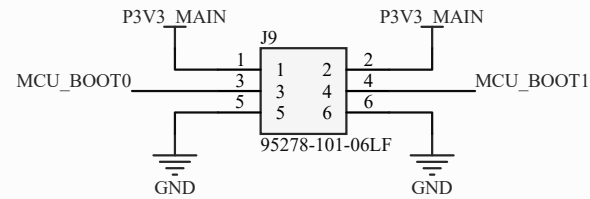
## isoSPI Connector (to 1st Slave)



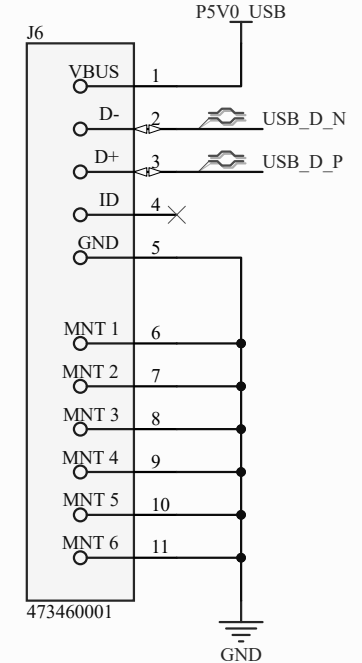
## UART/Serial Connectors



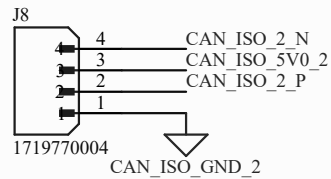
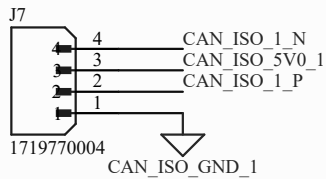
## STM32 BOOT Select



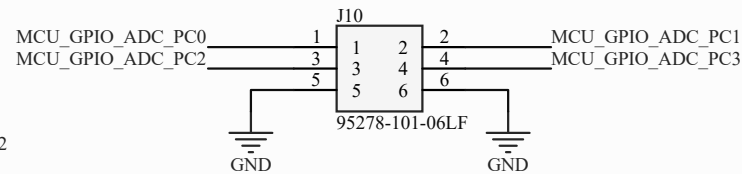
## microUSB Type B Connector



## CAN Connectors

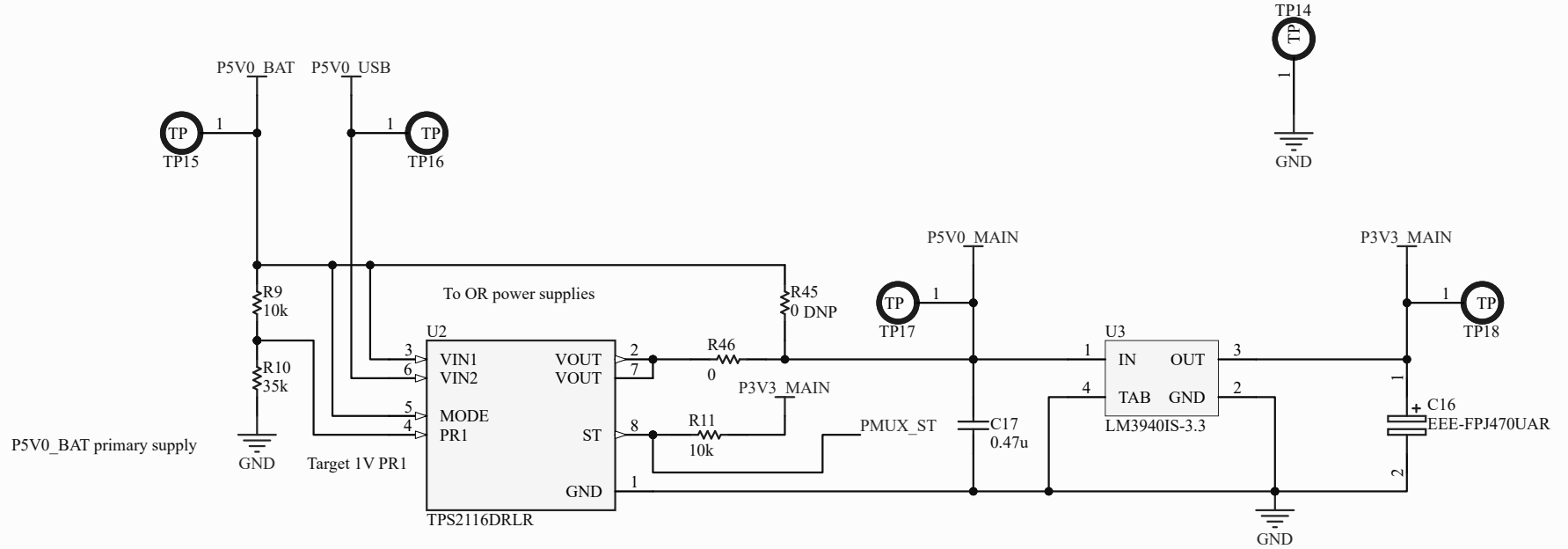


## Extra GPIO Header



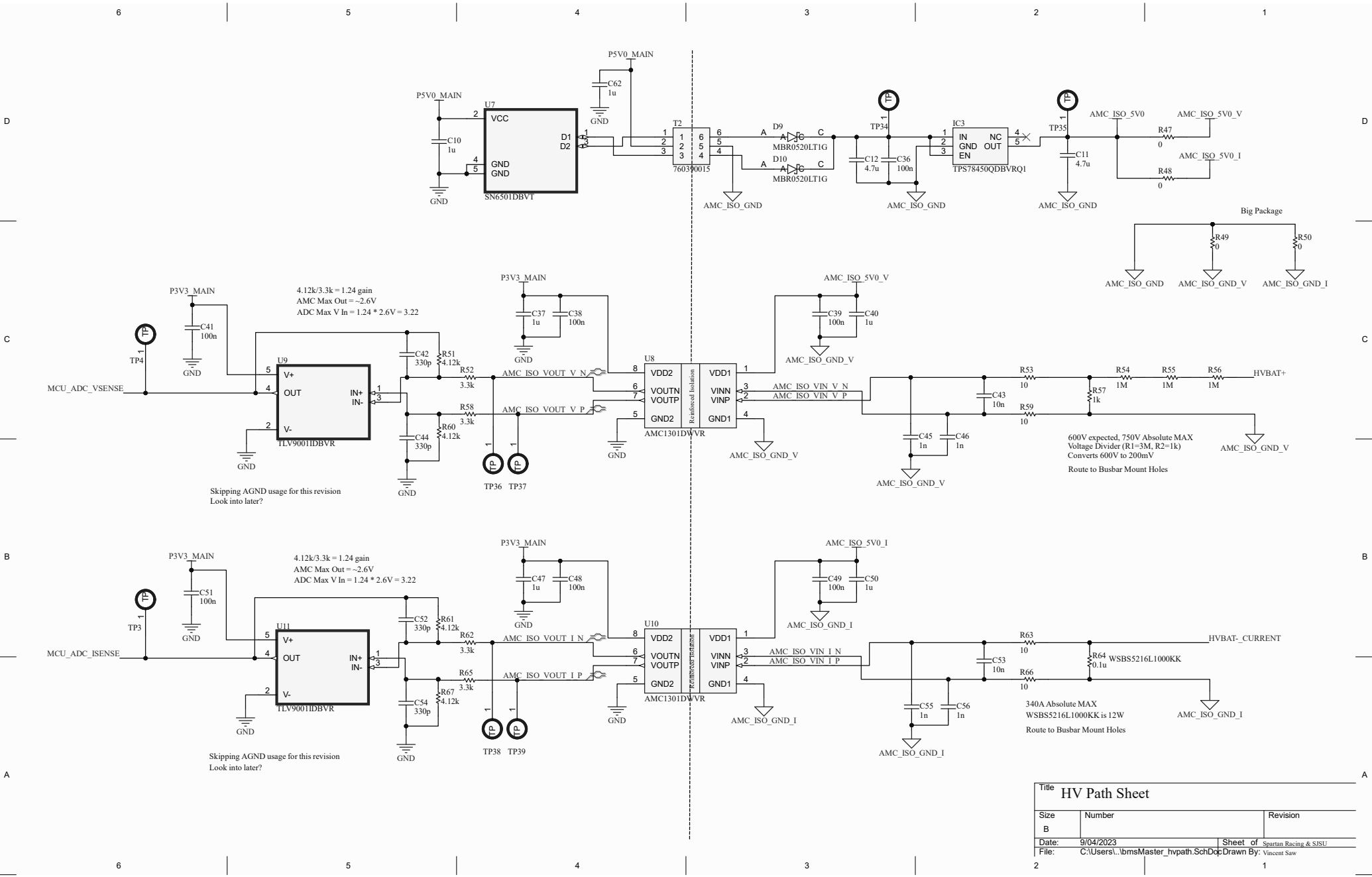
## Connector Sheet

Size	Number	Revision
A		
Date:	9/04/2023	Sheet of Spartan Racing & SJSU
File:	C:\Users\...\bmsMaster_conn.SchDoc	Drawn By: Vincent Saw

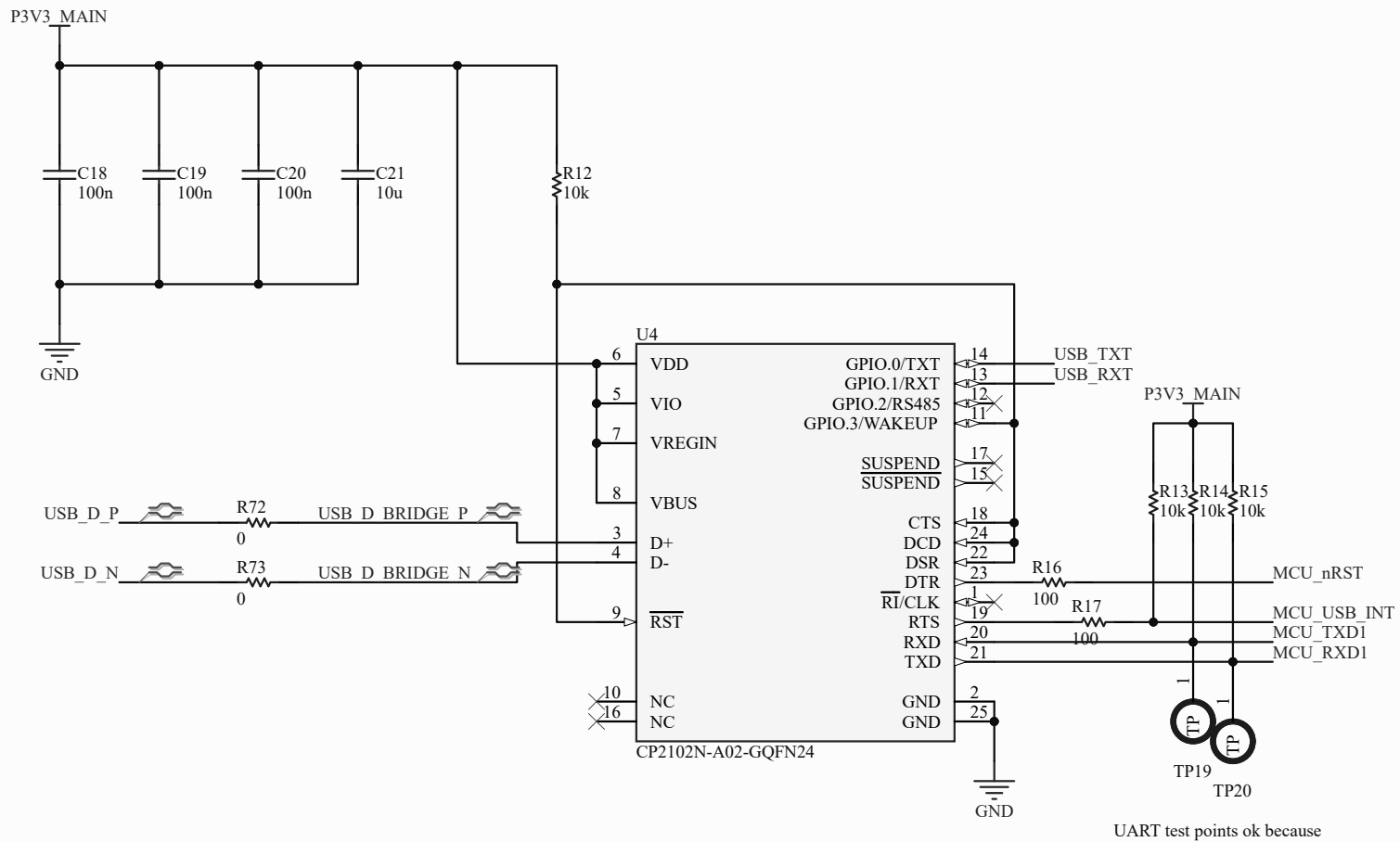


V <sub>REF</sub>	PR1 reference voltage	1.08	-40°C to 105°C	0.92	1	1.08	V
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Title LV Power Sheet			
Size A	Number		Revision
Date:	9/04/2023		Sheet of Spartan Racing & SJSU
File:	C:\Users\...\bmsMaster_lvpower.SchDoc		Drawn By: Vincent Saw



Title HV Path Sheet		
Size B	Number	Revision
Date: 9/04/2023	Sheet of 1	
File: C:\Users\l.bms\Master_hvpath.SchDoc	Drawn By: Vincent Saw	



Title <b>USB Sheet</b>		
Size A	Number	Revision
Date: 9/04/2023	Sheet of 4	Spartan Racing & SJSU
File: C:\Users\...\bmsMaster usb.SchDoc	Drawn By: Vincent Saw	

A

B

C

D

A

B

C

D

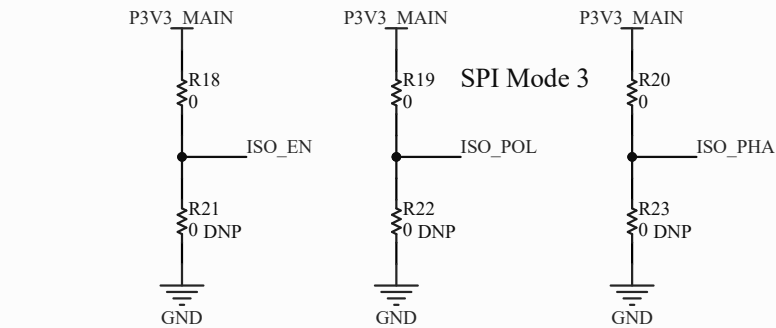
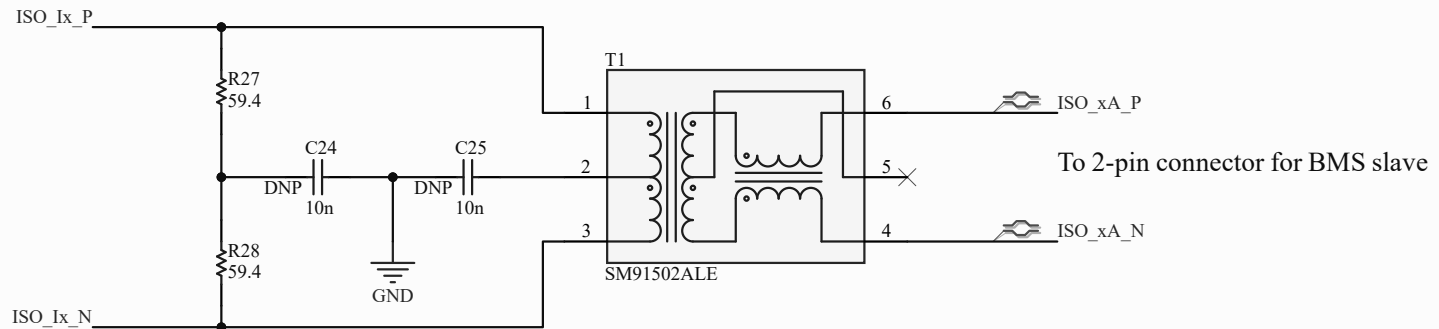
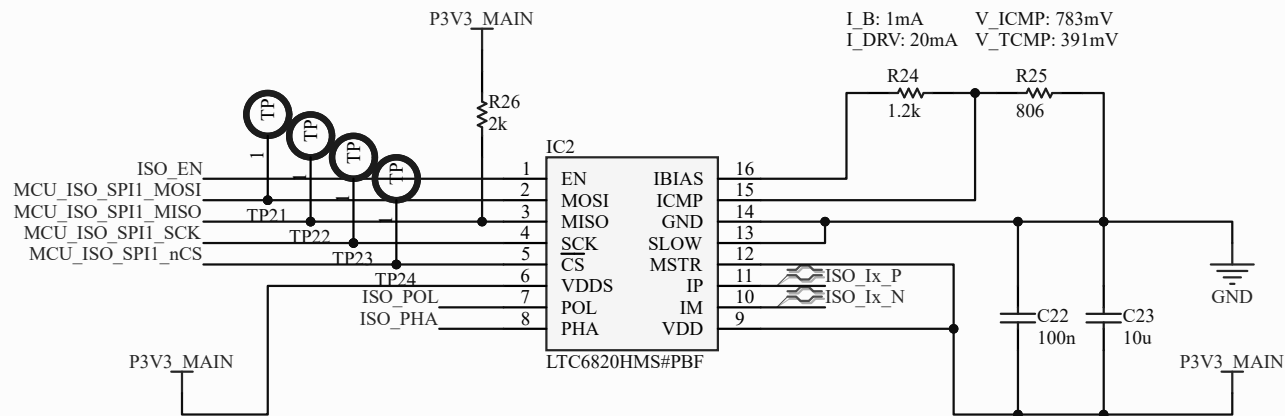


Table 4. SPI Modes

MODE	POL	PHA	DESCRIPTION
0	0	0	SCK Idles Low, Latches on Rising (1st) Edge
1	0	1	SCK Idles Low, Latches on Falling (2nd) Edge
2	1	0	SCK Idles High, Latches on Falling (1st) Edge
3	1	1	SCK Idles High, Latches on Rising (2nd) Edge

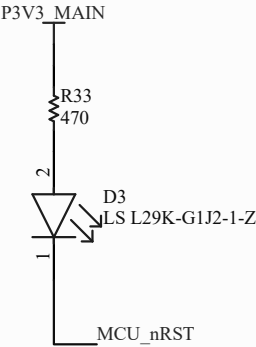


Title IsoSPI Sheet		
Size A	Number	Revision
Date: 9/04/2023	Sheet of	Spartan Racing & SJSU
File: C:\Users\...\bmsMaster_isospi.SchDoc	Drawn By: Vincent Saw	

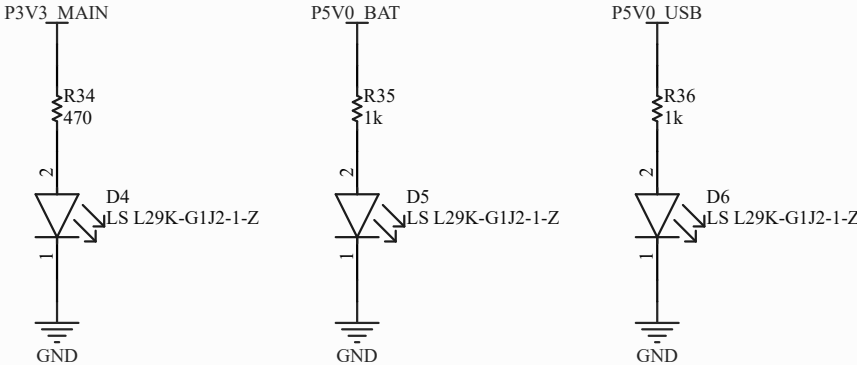




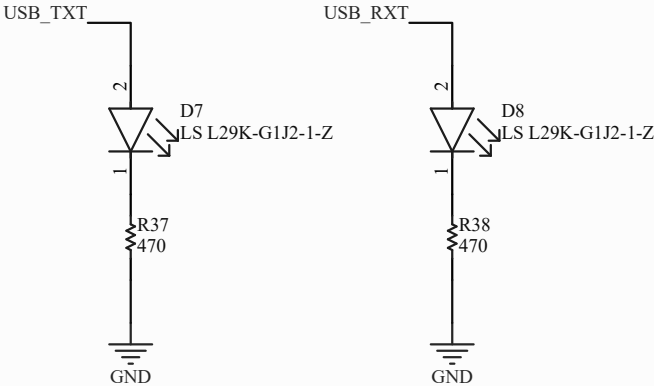
Reset Indicator LED (nRSTOUT)



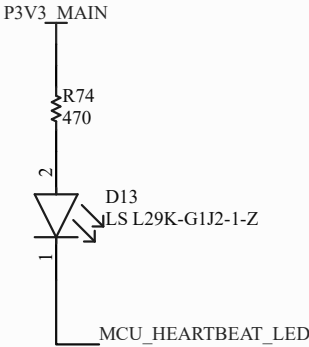
Power Debug LEDs



USB/UART0 Activity Indication LEDs



HEARTBEAT LED



Title LED Sheet		
Size A	Number	Revision
Date: 9/04/2023	Sheet of Spartan Racing & SJSU	
File: C:\Users\...\bmsMaster led.SchDoc	Drawn By: Vincent Saw	