

# Spartan Racing BMS Master Board

Version 1, Revision B

STM32F105

B.S. Senior Project SP23-FA23

Vincent Saw, Vincent Pham, Josh Samoy, Abegail Palad

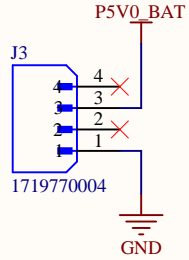
Advisor: Preetpal Kang

**Designer: Vincent Saw**

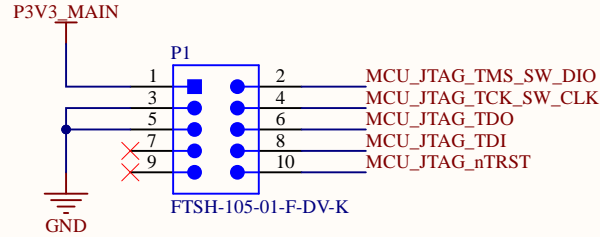
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Size	Number		Revision
A			B
Date:	12/08/2023		Sheet of Spartan Racing & SJSU
File:	C:\Users\...\bmsMaster_cover.SchDoc		Drawn By: Vincent Saw



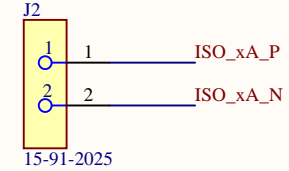
## Power Connector



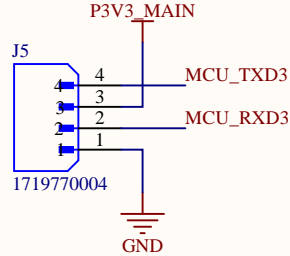
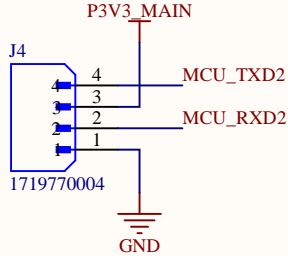
## JTAG Debug Connector



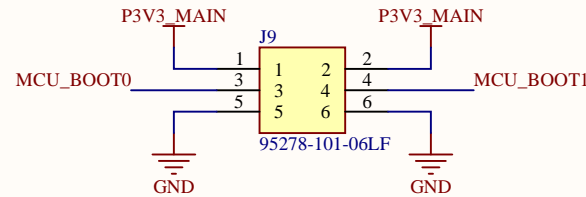
## isoSPI Connector (to 1st Slave)



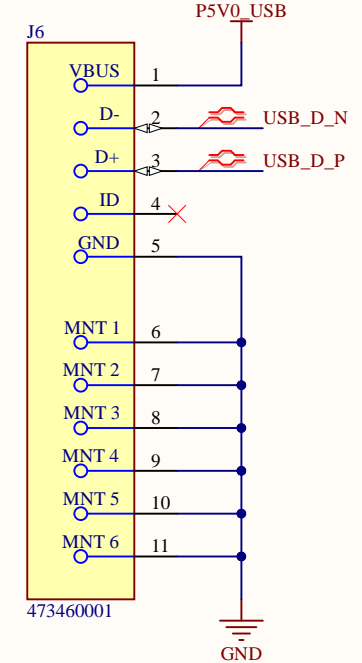
## UART/Serial Connectors



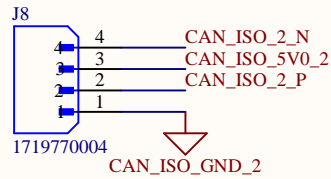
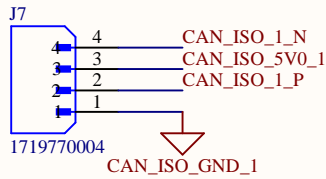
## STM32 BOOT Select



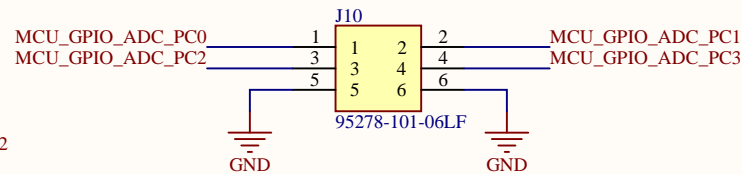
## microUSB Type B Connector



## CAN Connectors



## Extra GPIO Header



Title		
BMS Master Connector Sheet		
Size	Number	Revision
A		B
Date:	12/08/2023	Sheet of Spartan Racing & SJSU
File:	C:\Users\...\bmsMaster_conn.SchDoc	Drawn By: Vincent Saw







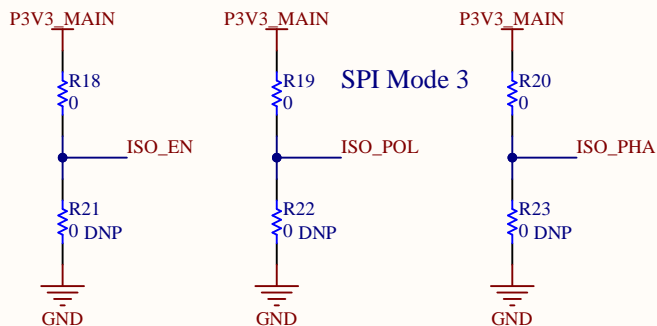
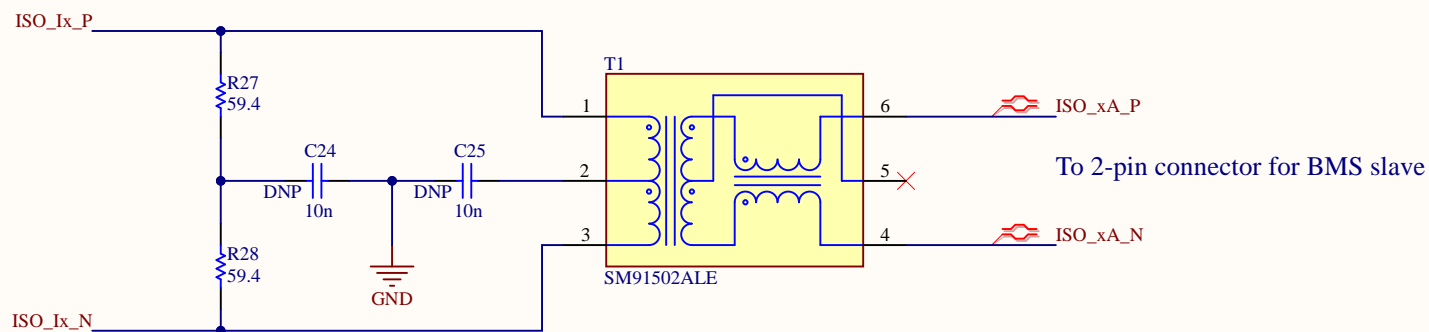
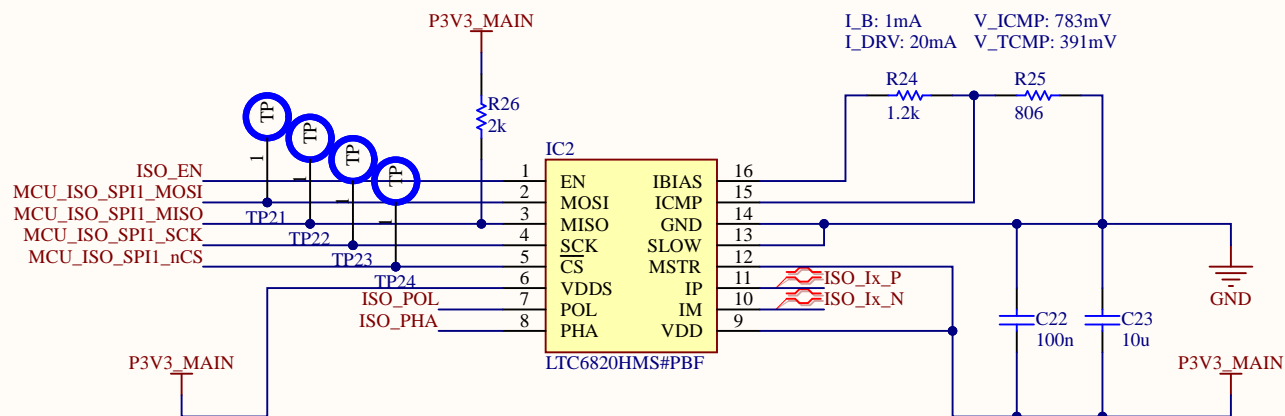


Table 4. SPI Modes

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

## BMS Master isoSPI Sheet

Size

A

Number

Revision

B

Date:

12/08/2023

Sheet

of

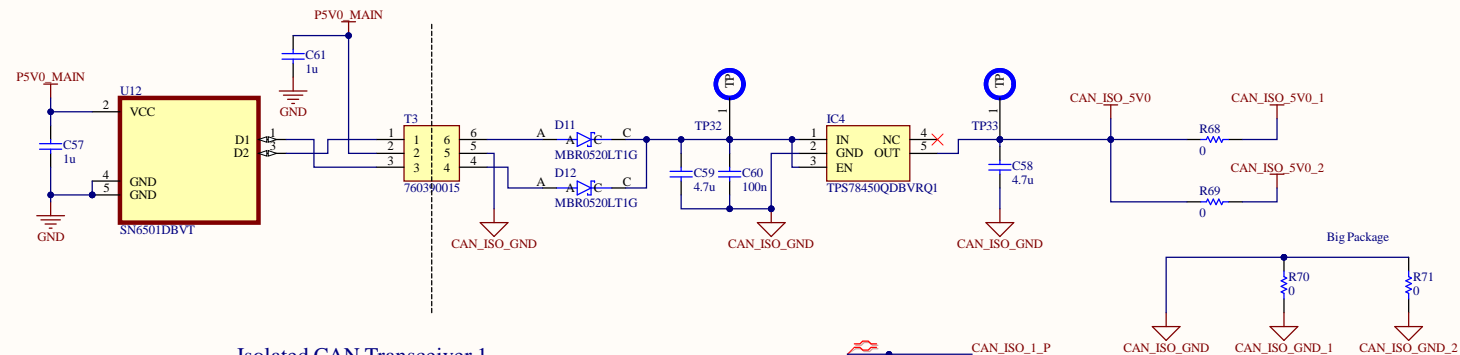
Spartan Racing &amp; SJSU

File:

C:\Users\...\bmsMaster\_isospi.SchDoc

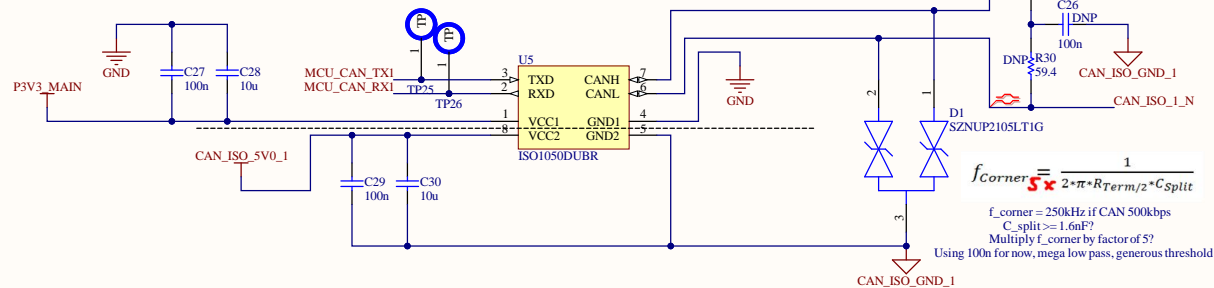
Drawn By:

Vincent Saw



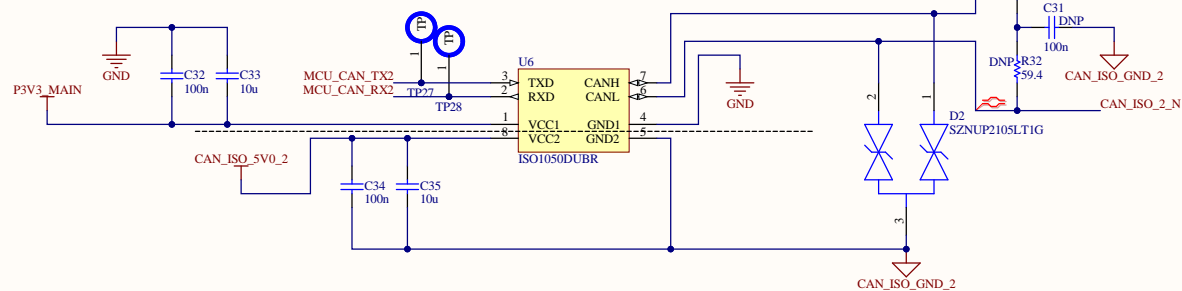
## Isolated CAN Transceiver 1

Requires external 5V and GND for isolation purposes  
TODO: Add on-board isolated power for VCC2/GND2



## Isolated CAN Transceiver 2

Requires external 5V and GND for isolation purposes  
TODO: Add on-board isolated power for VCC2/GND2



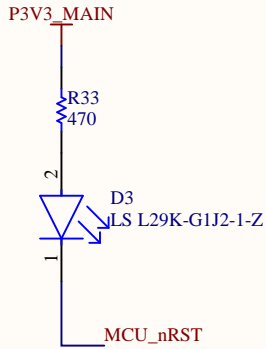
## CAN Bus Sheet

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Vincent Saw

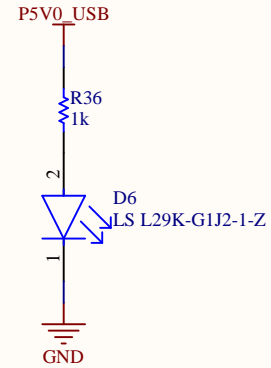
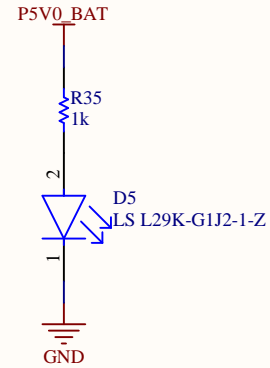
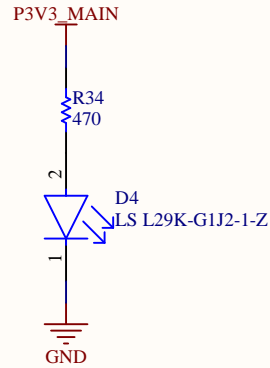
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Size B	Number	Revision <b>B</b>
Date: 12/08/2023	Sheet of	
File: C:\Users\...\bmsMaster_can.SchDoc	Drawn By:	



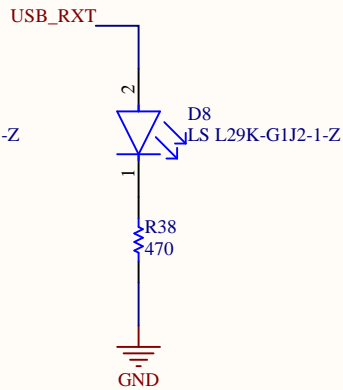
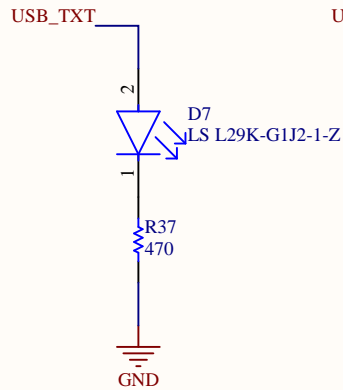
Reset Indicator LED (nRSTOUT)



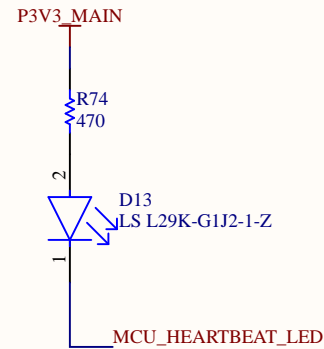
Power Debug LEDs



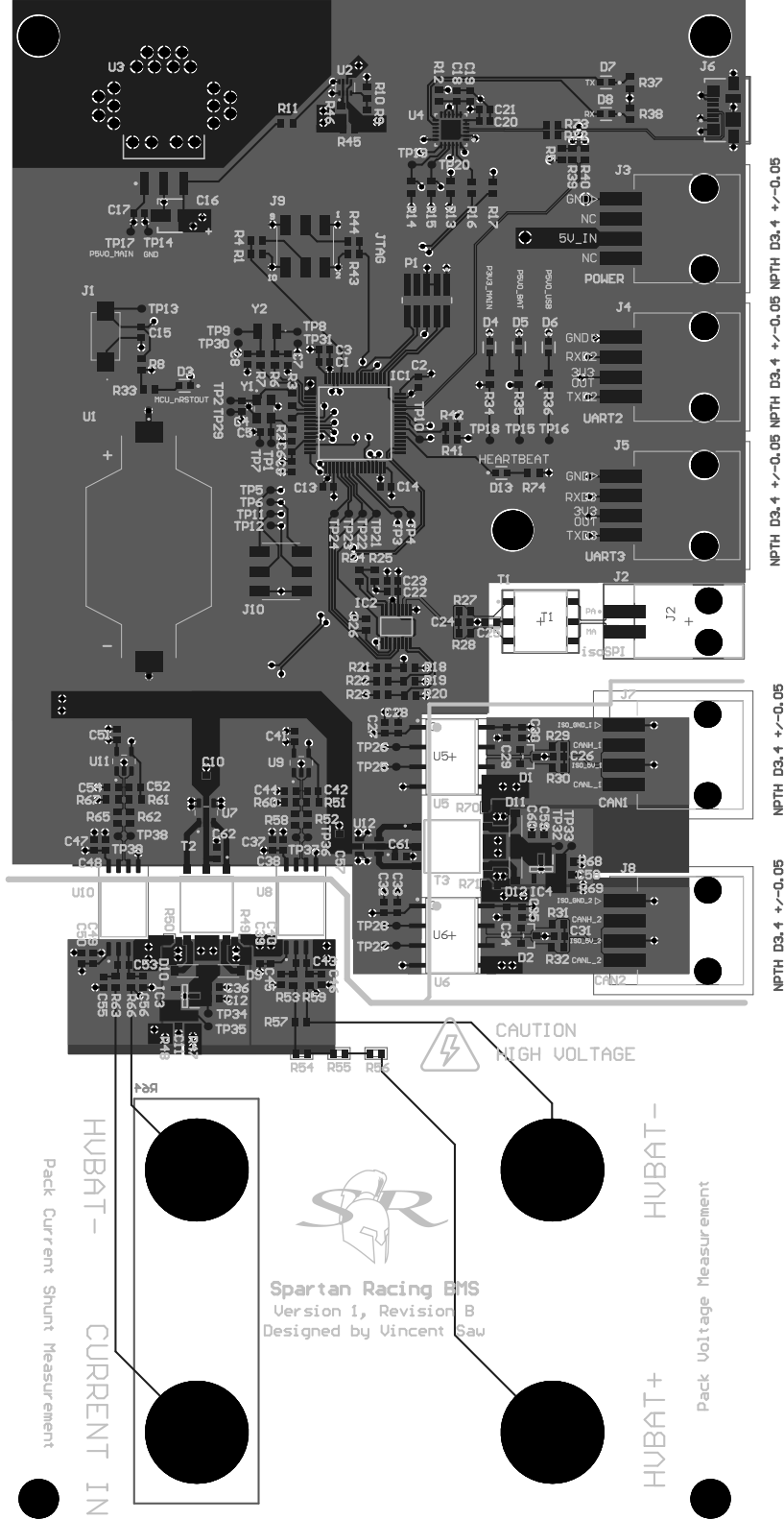
USB/UART0 Activity Indication LEDs



HEARTBEAT LED



Title			Revision
BMS Master LED Sheet			
Size	Number		B
A			
Date:	12/08/2023	Sheet of	Spartan Racing & JSU
File:	C:\Users\...\bmsMaster_led.SchDoc	Drawn By:	Vincent Saw



  
Spartan Racing EMS  
Version 1, Revision B  
Designed by Vincent Gau

# Board Stack Report