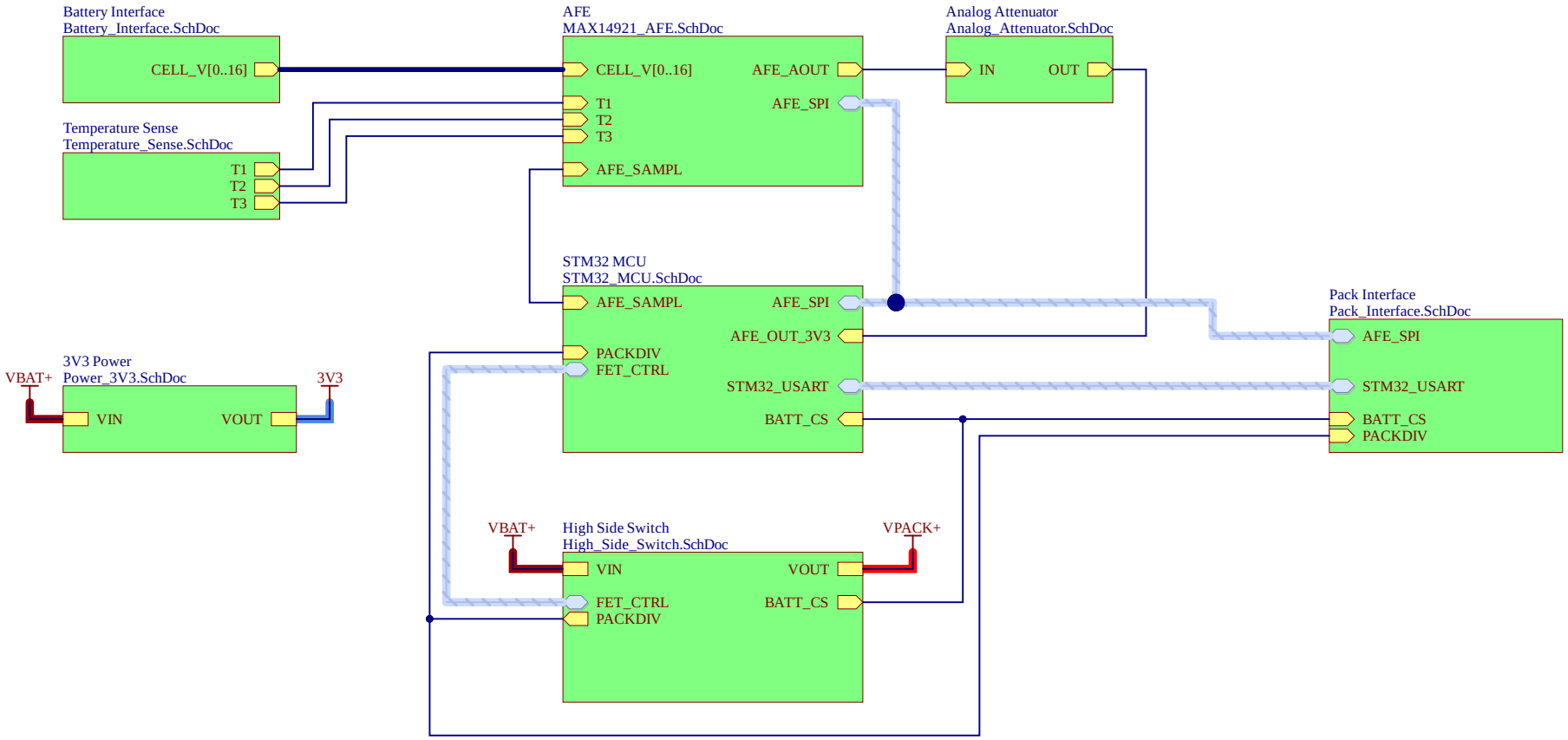

Mounting Holes

MH1 MH2

MH3 MH4

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DOCUMENT Top.SchDoc		MODIFIED 2023-05-19
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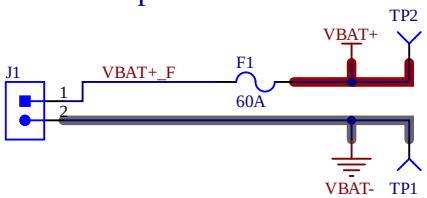
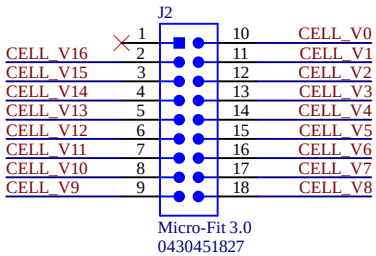
BATTERY INTERFACE

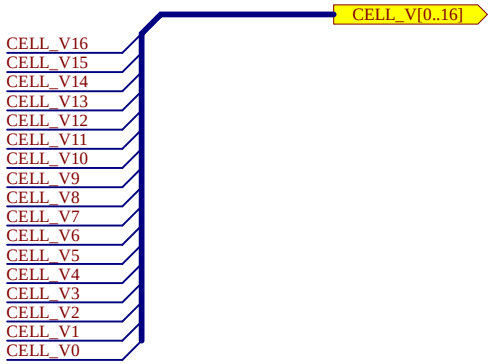
Battery specs:
- 16s1p 20Ah LTO battery
- 1.5V - 2.7V cell voltage range, 2.3V nominal

Power Input



Cell Sensing Inputs





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PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT Battery_Interface.SchDoc		MODIFIED 2023-06-15
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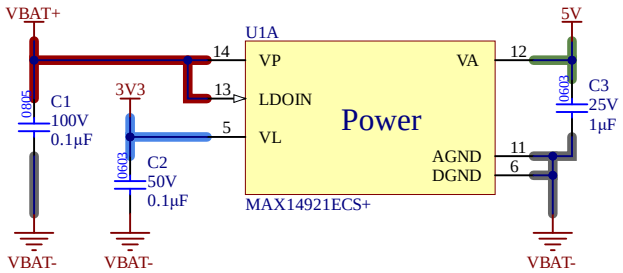
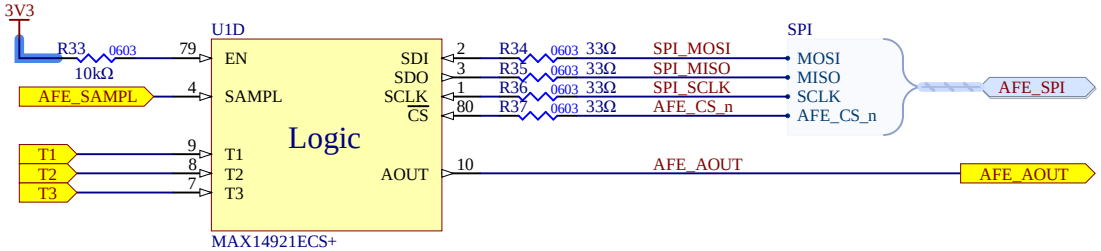
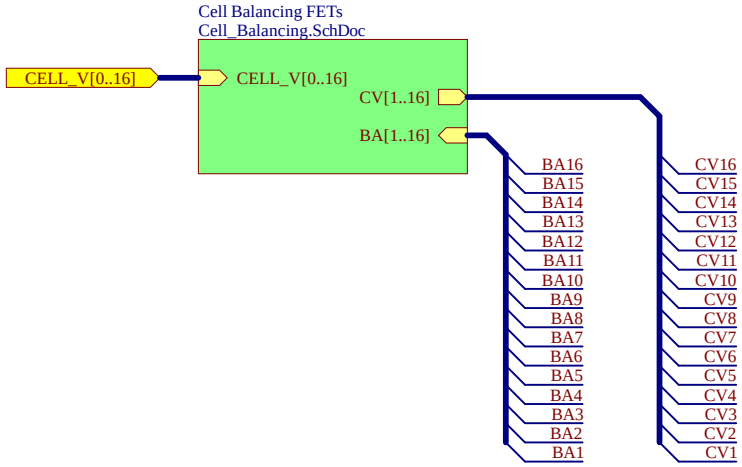
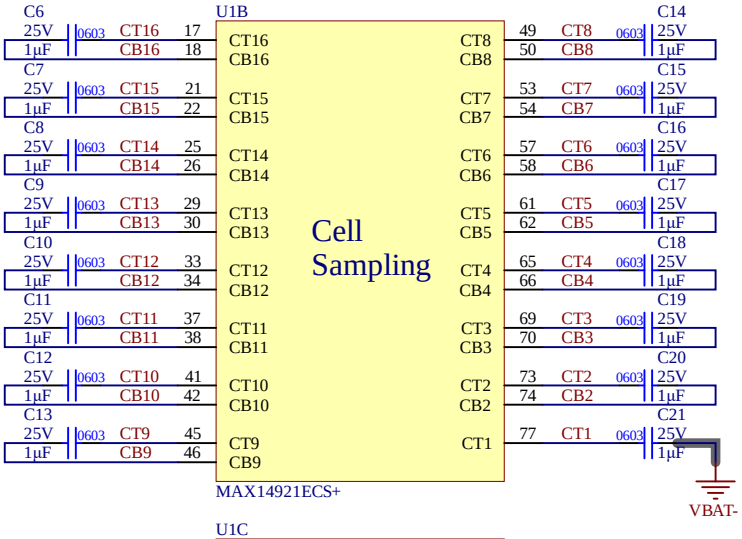
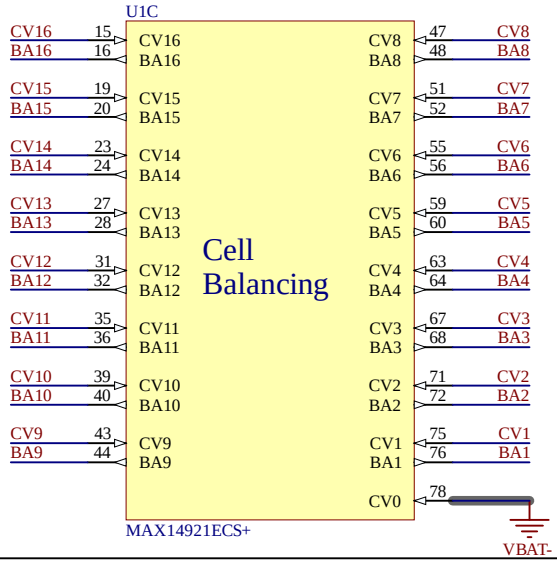
MAX19421 AFE











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REV 1.0

PROJECT: LTO 16S BMS.PrjPcb, [No Variations]

DOCUMENT: MAX14921_AFE.SchDoc

MODIFIED: 2023-06-15

ENGINEER: Farris Matar

REVIEWER: *

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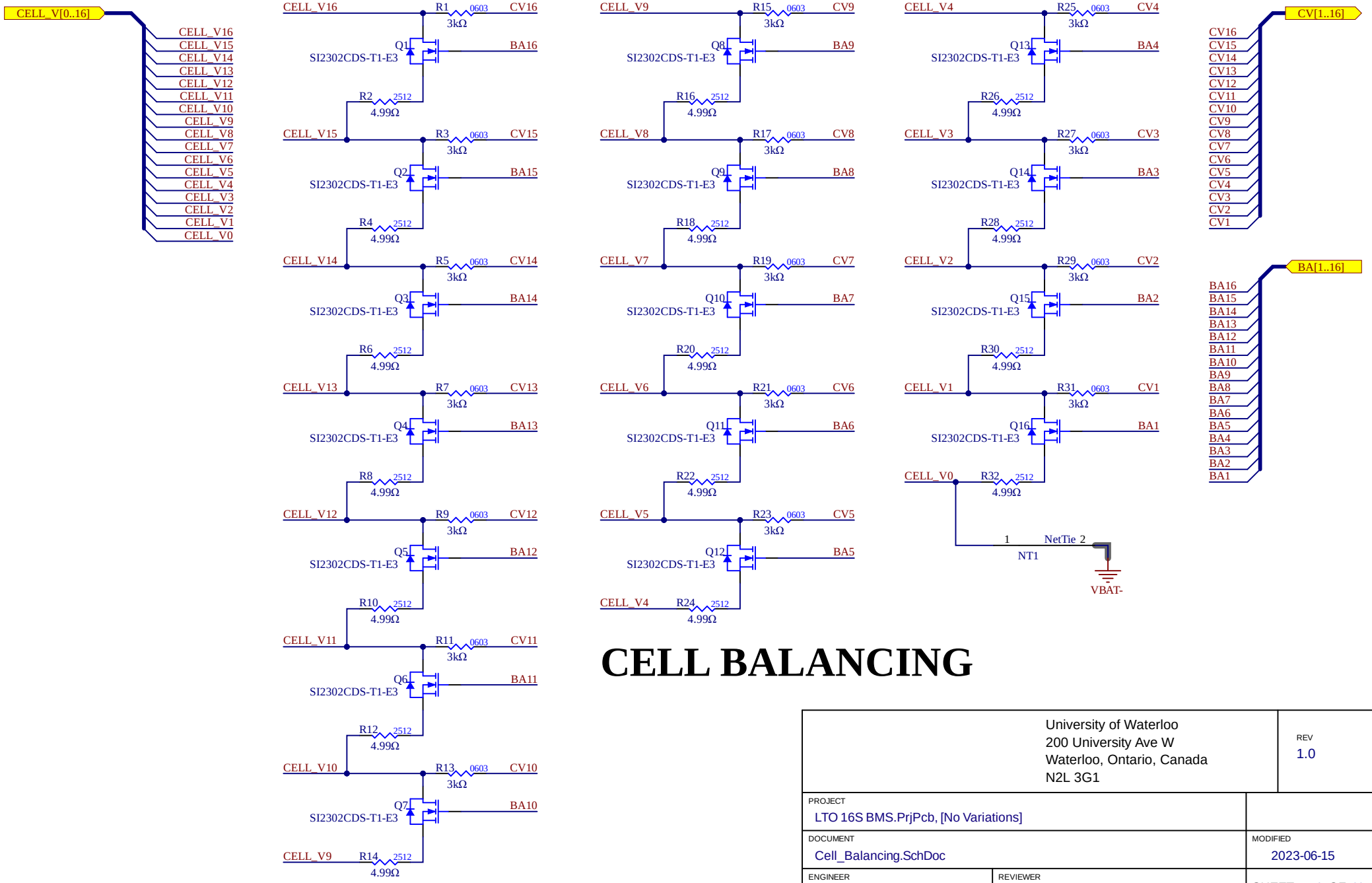

CELL BALANCING

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PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT Cell_Balancing.SchDoc		MODIFIED 2023-06-15
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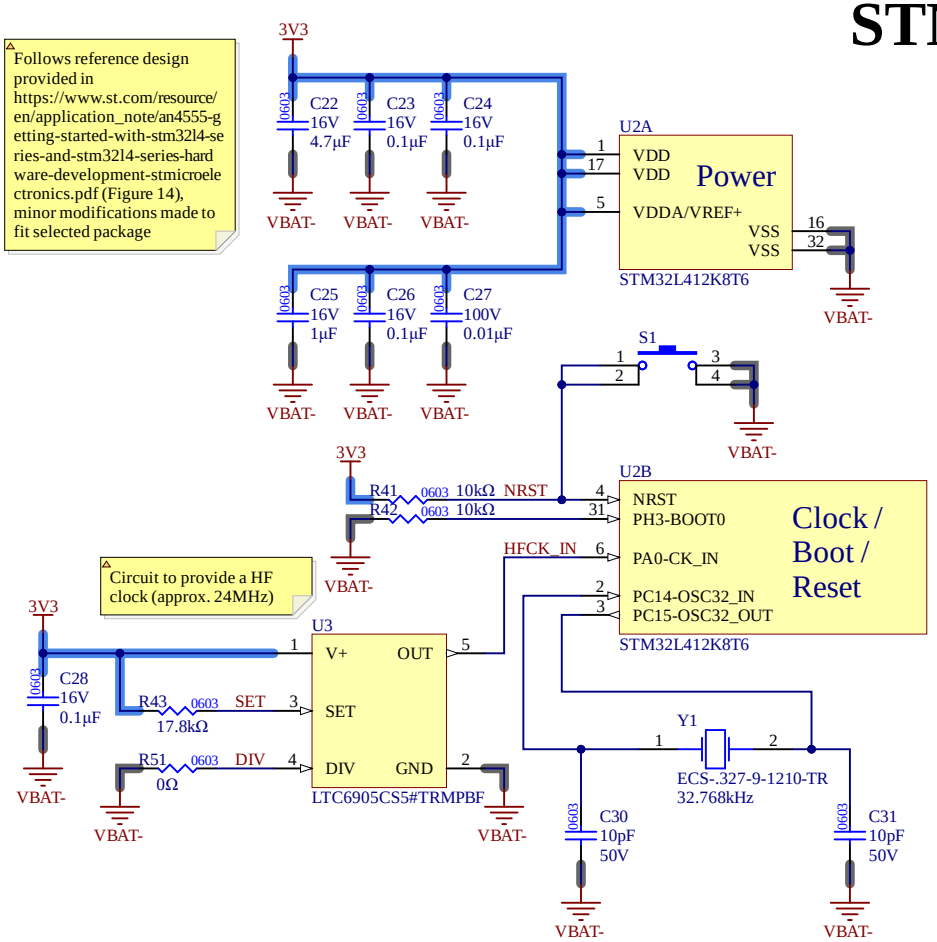
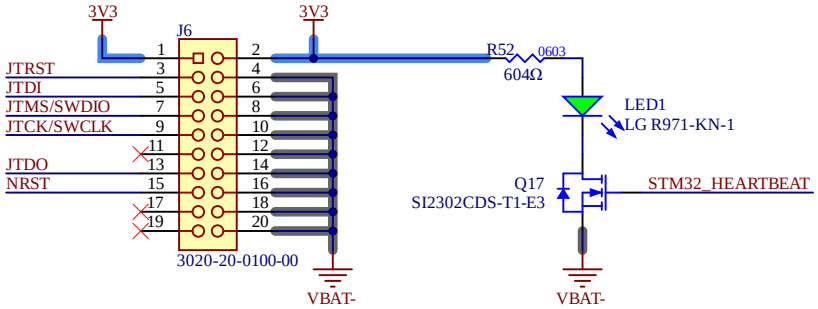
STM32 MCU

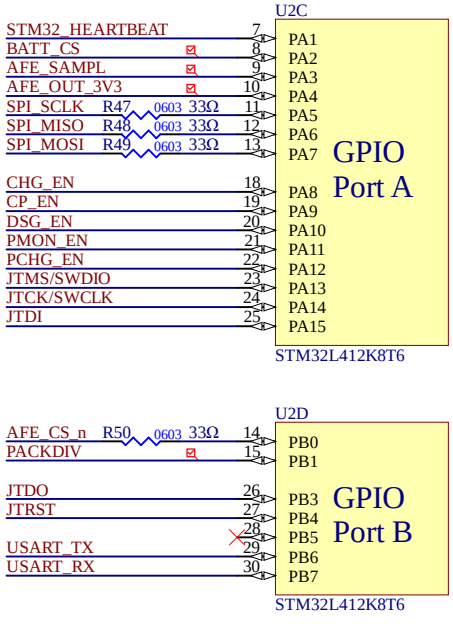
Follows reference design provided in https://www.st.com/resource/en/application_note/an4555-getting-started-with-stm32l4-series-and-stm32l4-series-hardware-development-stmicroelectronics.pdf (Figure 14), minor modifications made to fit selected package

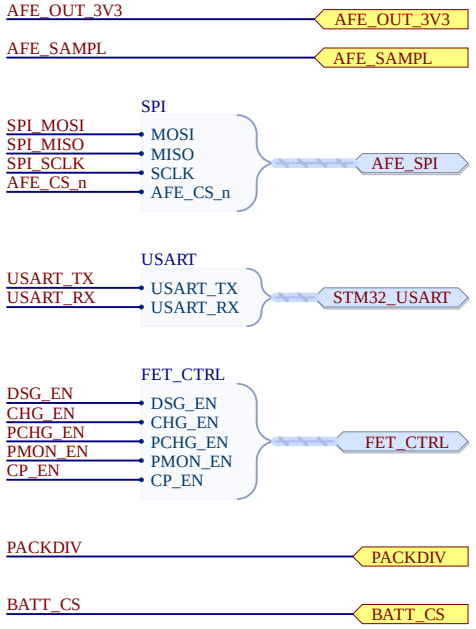


Debug / Programming Connector



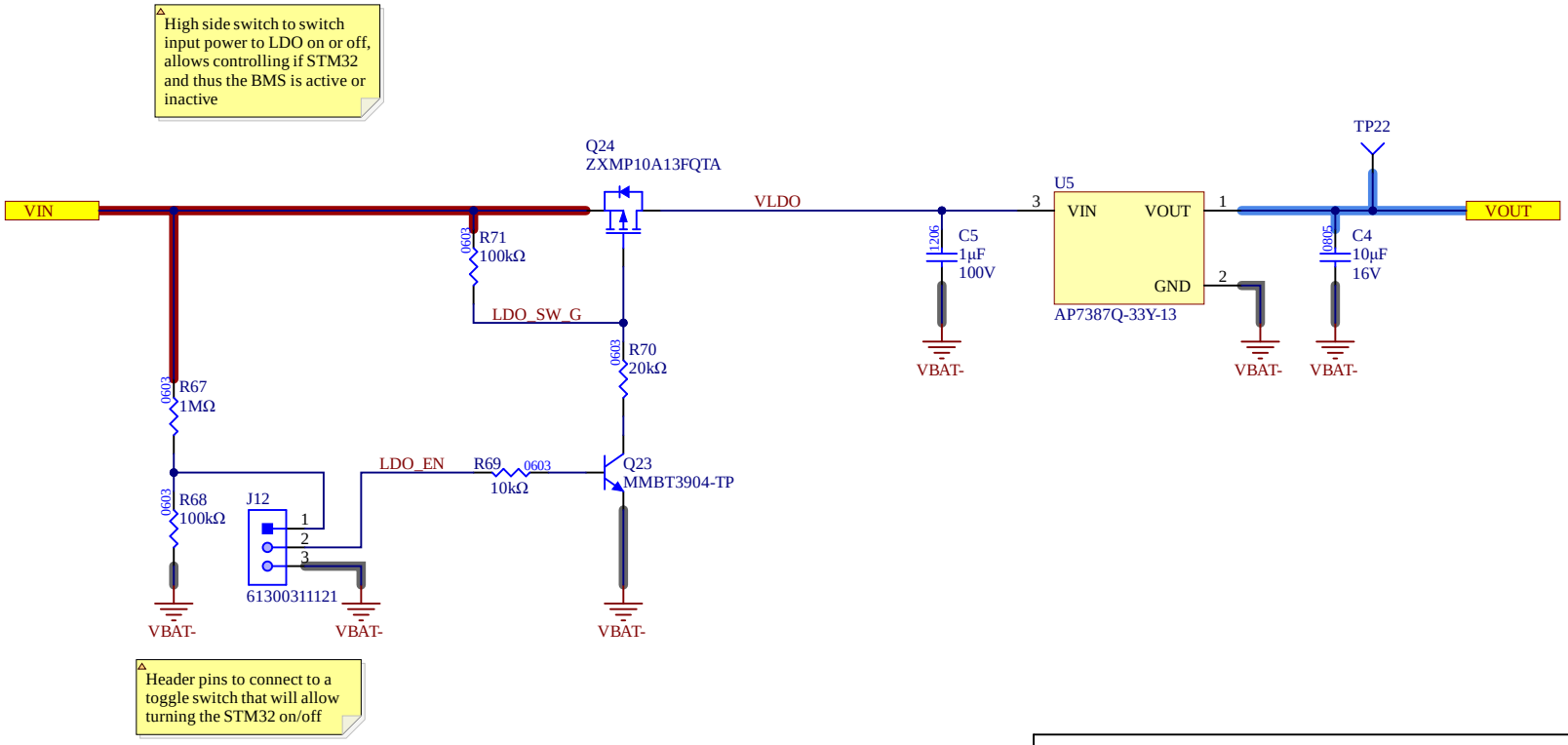
Header to choose between a debug heartbeat signal and the pushbutton startup signal





University of Waterloo 200 University Ave W Waterloo, Ontario, Canada N2L 3G1		REV 1.0
PROJECT: LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT: STM32_MCU.SchDoc		MODIFIED: 2023-06-15
ENGINEER: Farris Matar	REVIEWER: *	SHEET 5 OF 11

3.3V POWER



University of Waterloo 200 University Ave W Waterloo, Ontario, Canada N2L 3G1		REV 1.0
PROJECT: LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT: Power_3V3.SchDoc		MODIFIED: 2023-06-15
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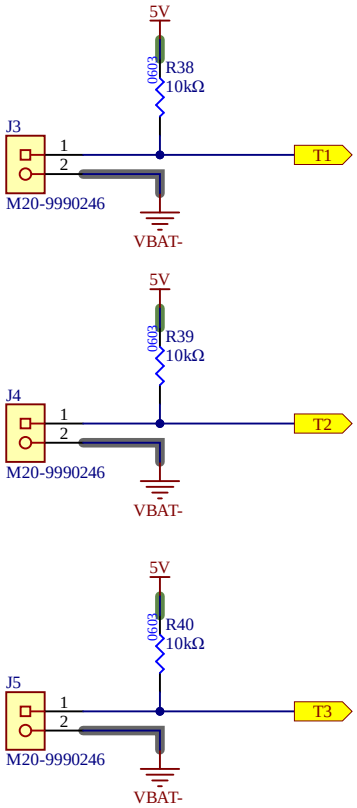
TEMPERATURE SENSING



University of Waterloo 200 University Ave W Waterloo, Ontario, Canada N2L 3G1		REV 1.0
PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT Temperature_Sense.SchDoc		MODIFIED 2023-06-15
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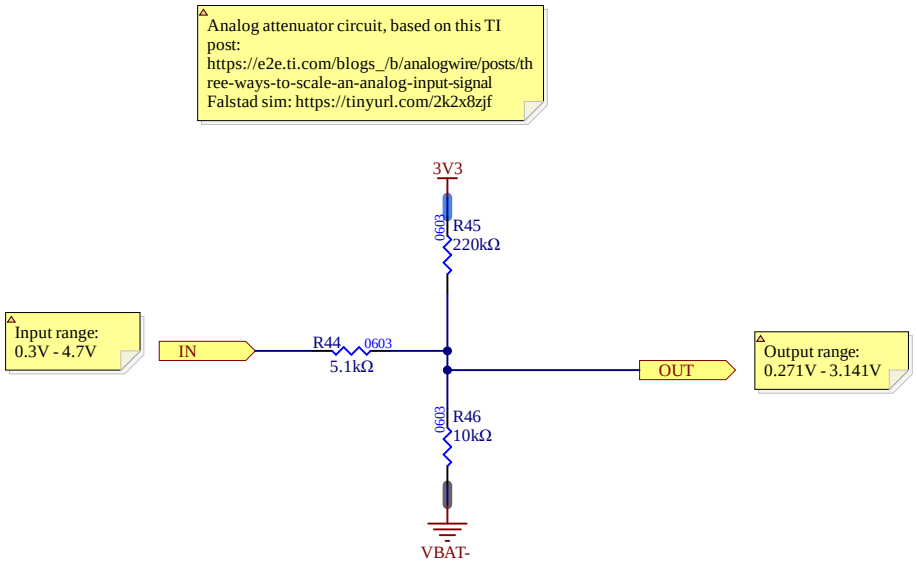
ANALOG ATTENUATOR



University of Waterloo 200 University Ave W Waterloo, Ontario, Canada N2L 3G1		REV 1.0
PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT Analog_Attenuator.SchDoc		MODIFIED 2023-06-15
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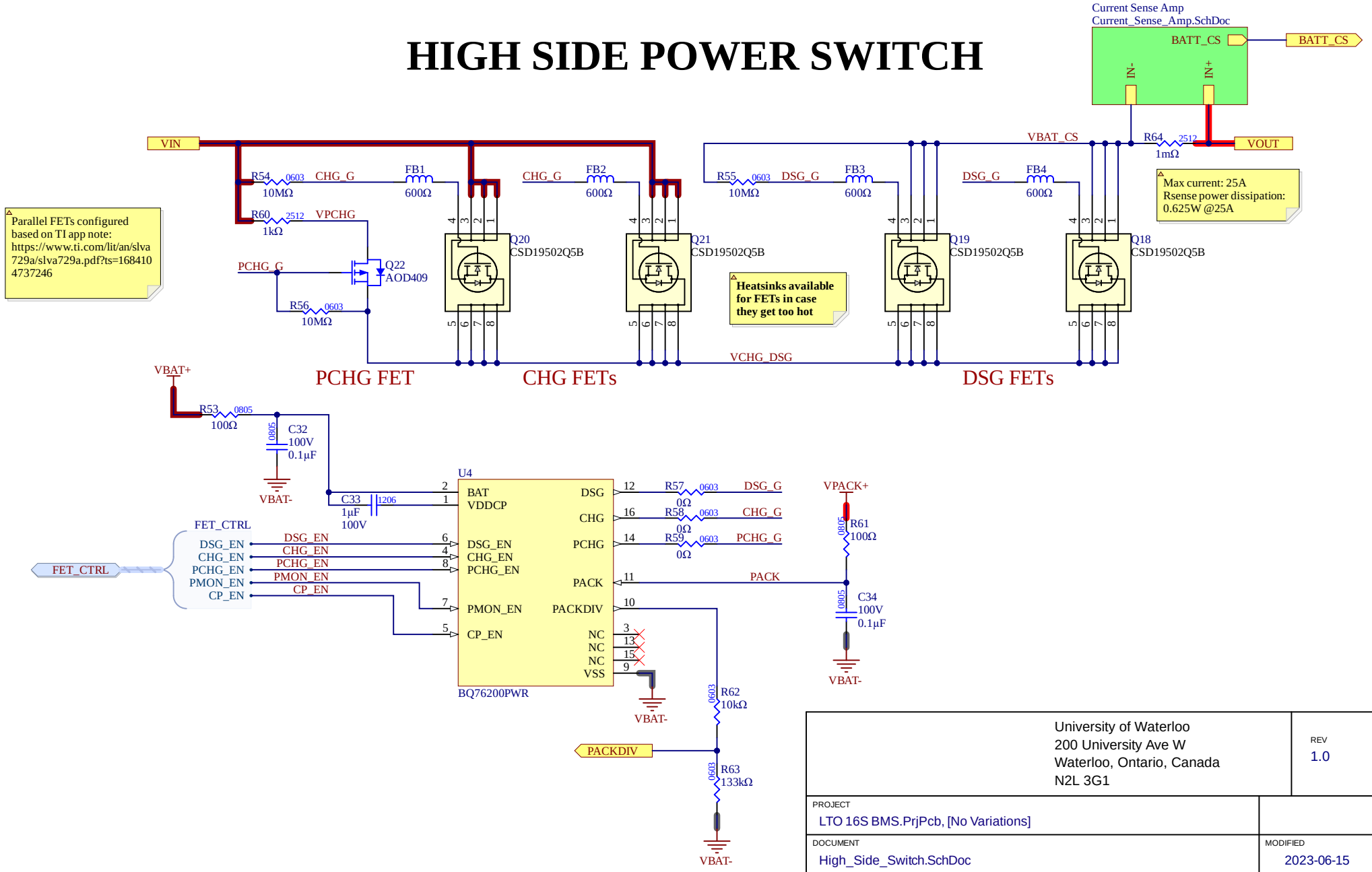
HIGH SIDE POWER SWITCH



	University of Waterloo 200 University Ave W Waterloo, Ontario, Canada N2L 3G1	REV 1.0
PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT High_Side_Switch.SchDoc		MODIFIED 2023-06-15
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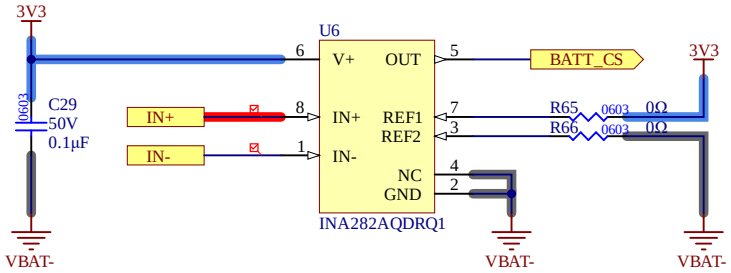
CURRENT SENSE AMP

Amplifier gain: 50V/V
Output at 0A: 1.65V
Output at 25A (CHG): 2.9V
Output at 25A (DSG): 0.4V



University of Waterloo 200 University Ave W Waterloo, Ontario, Canada N2L 3G1		REV 1.0
PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT Current_Sense_Amp.SchDoc		MODIFIED 2023-06-15
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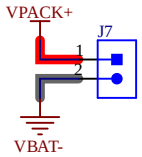
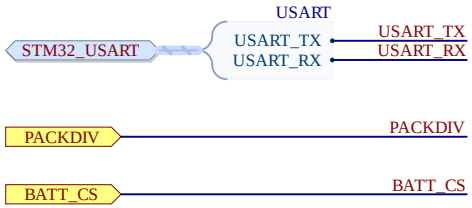
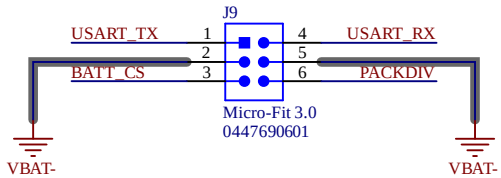
Power Output



Data Output

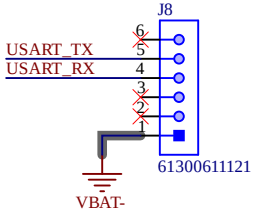




UART will be used to interface with the main control board, sending battery info & state and receiving any commands from the main control board/user

SPI Debug

FTDI USB to UART Debug



Breakout headers for debugging/testing

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PROJECT LTO 16S BMS.PrjPcb, [No Variations]		
DOCUMENT Pack_Interface.SchDoc		MODIFIED 2023-06-15
ENGINEER Farris Matar	REVIEWER *	SHEET 11 OF 11