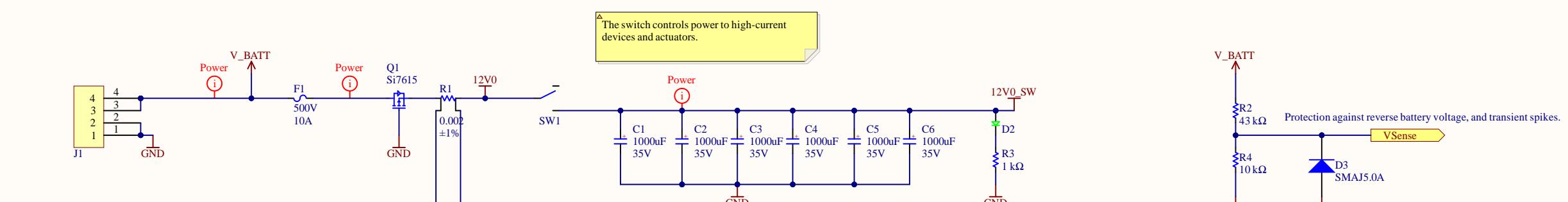
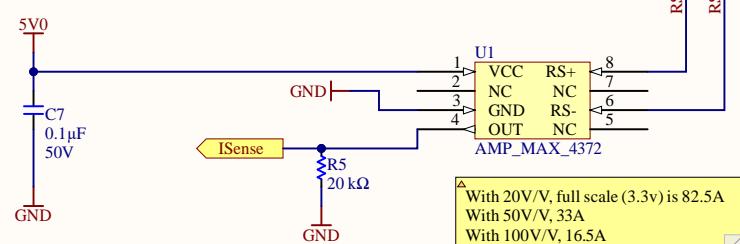


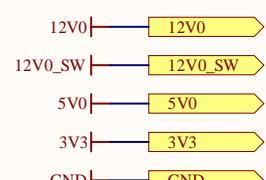
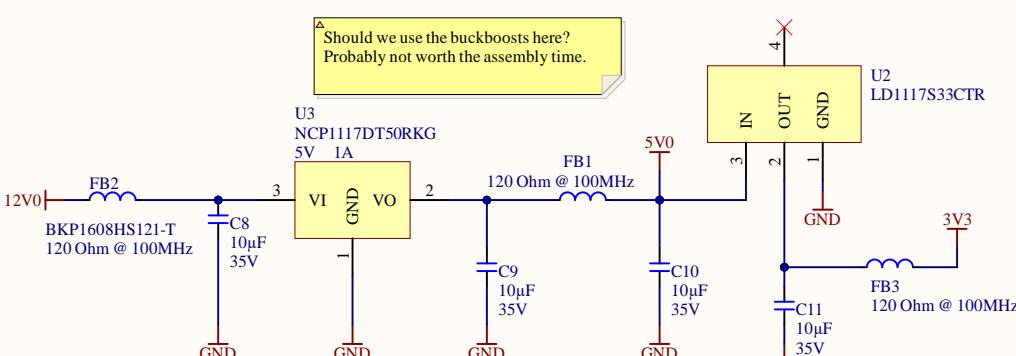
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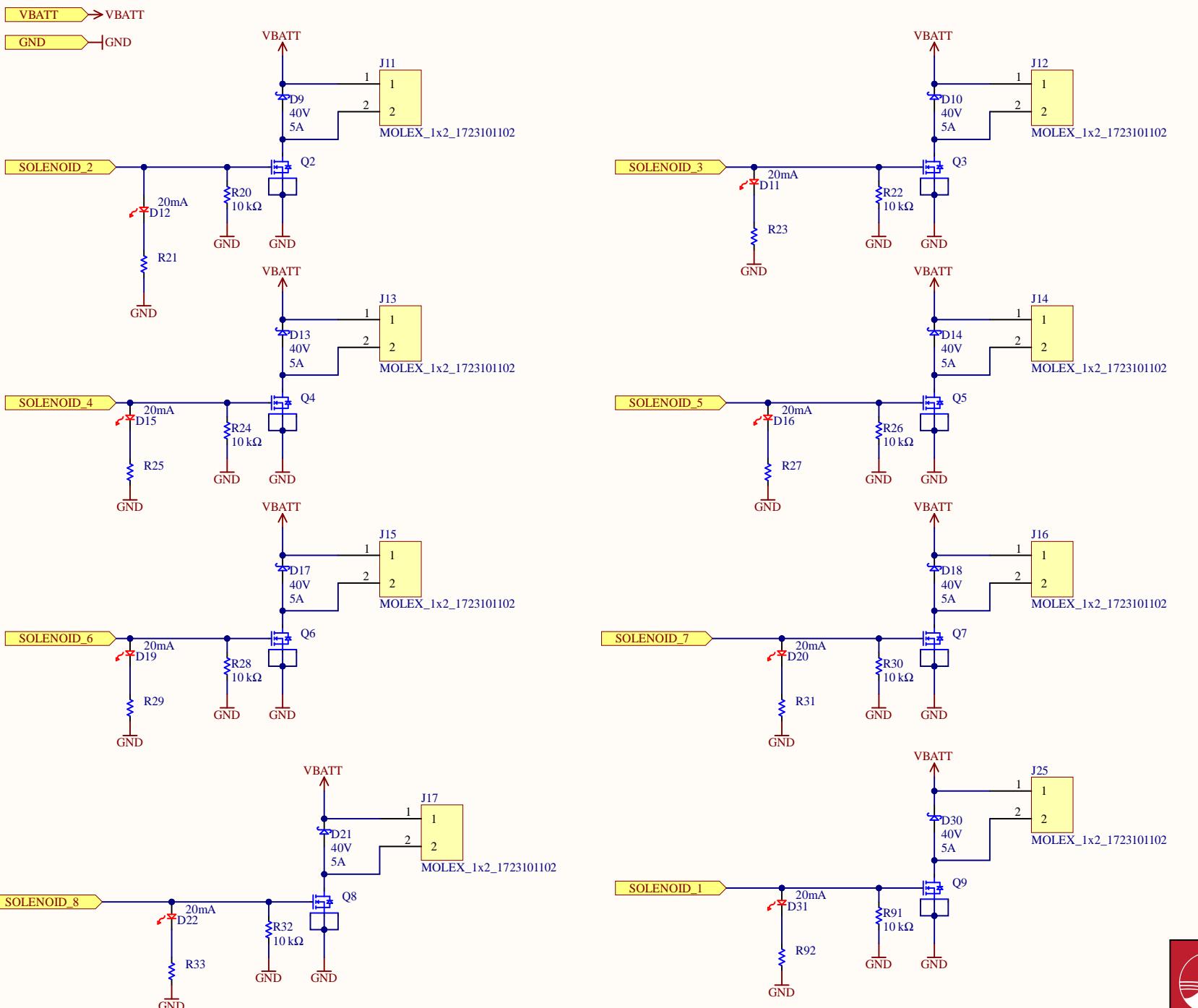


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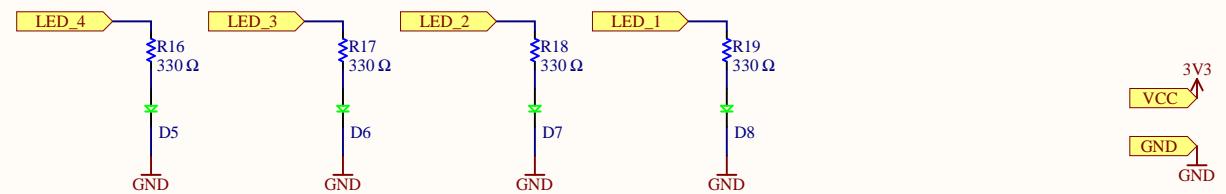
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	SHEET	Power Regulation
	ENGINEER	Tim Vrakas
	ENGINEER	Damian Loya
Powered By <b>Altium</b>	REVISION	3.0
	REVIEWED ON	
	Sheet 3 of 8	



FORD STUDENT  
E INITIATIVE

PROJECT	Quail
SHEET	Solenoids & Pressure Transducers
ENGINEER	Tim Vrakas
ENGINEER	Damian Loya
REVIEWER	
REVIEWED ON	

A



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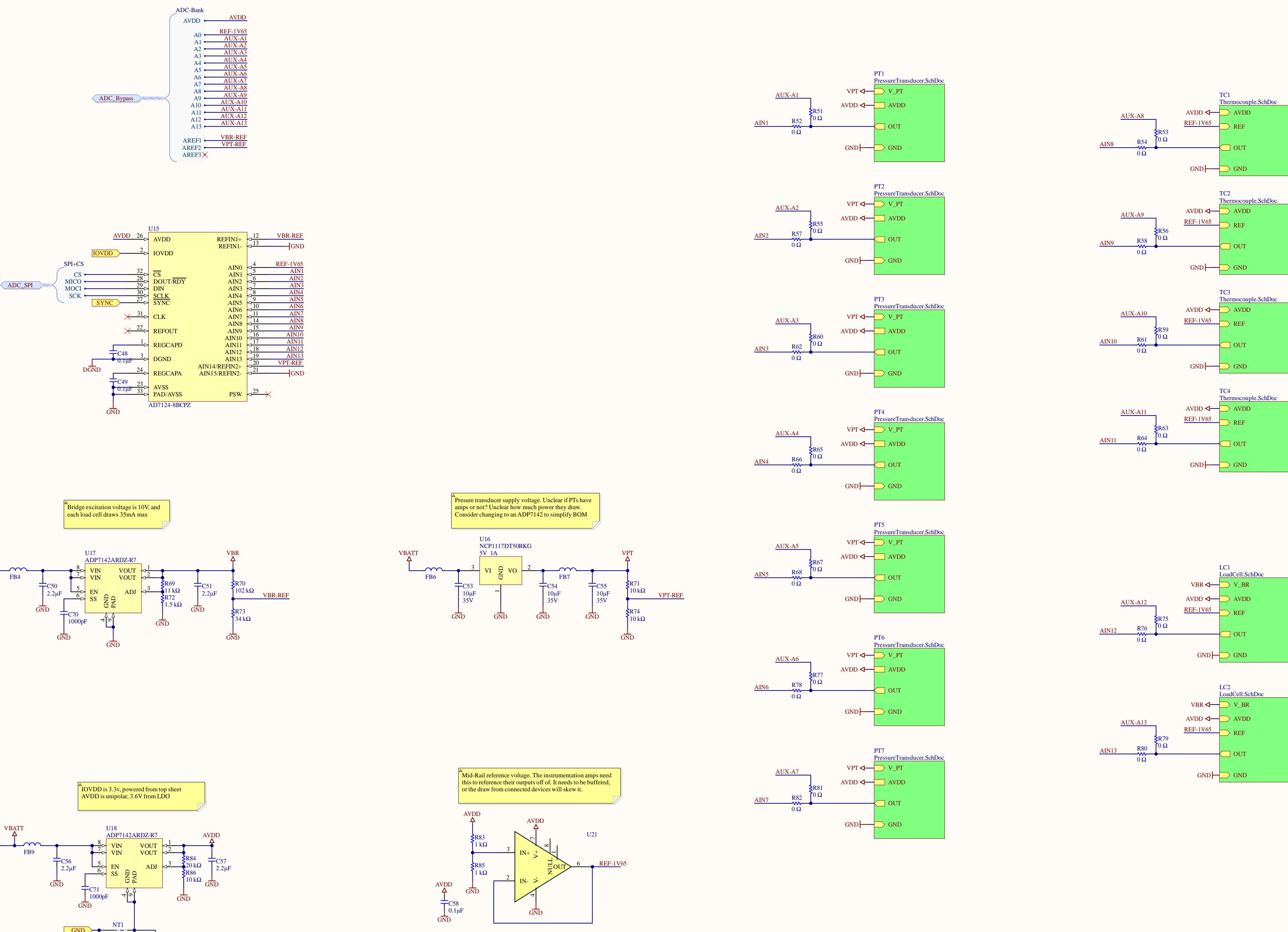
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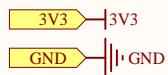
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 <b>STANFORD STUDENT SPACE INITIATIVE</b> <a href="http://ssi.stanford.edu">ssi.stanford.edu</a>	PROJECT	Quail
	SHEET	Blinks and Boops
	ENGINEER	Tim Vrakas
	ENGINEER	Damian Loya
	Powered By	Altium
REVISION 3.0		REVIEWER
Sheet 8 of 8		REVIEWED ON

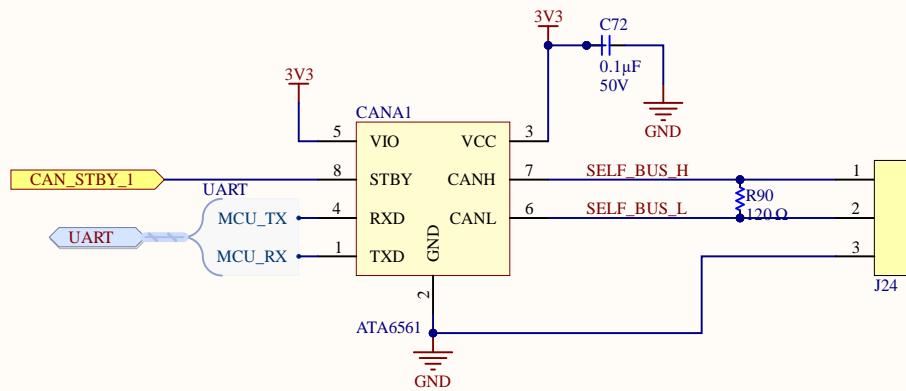


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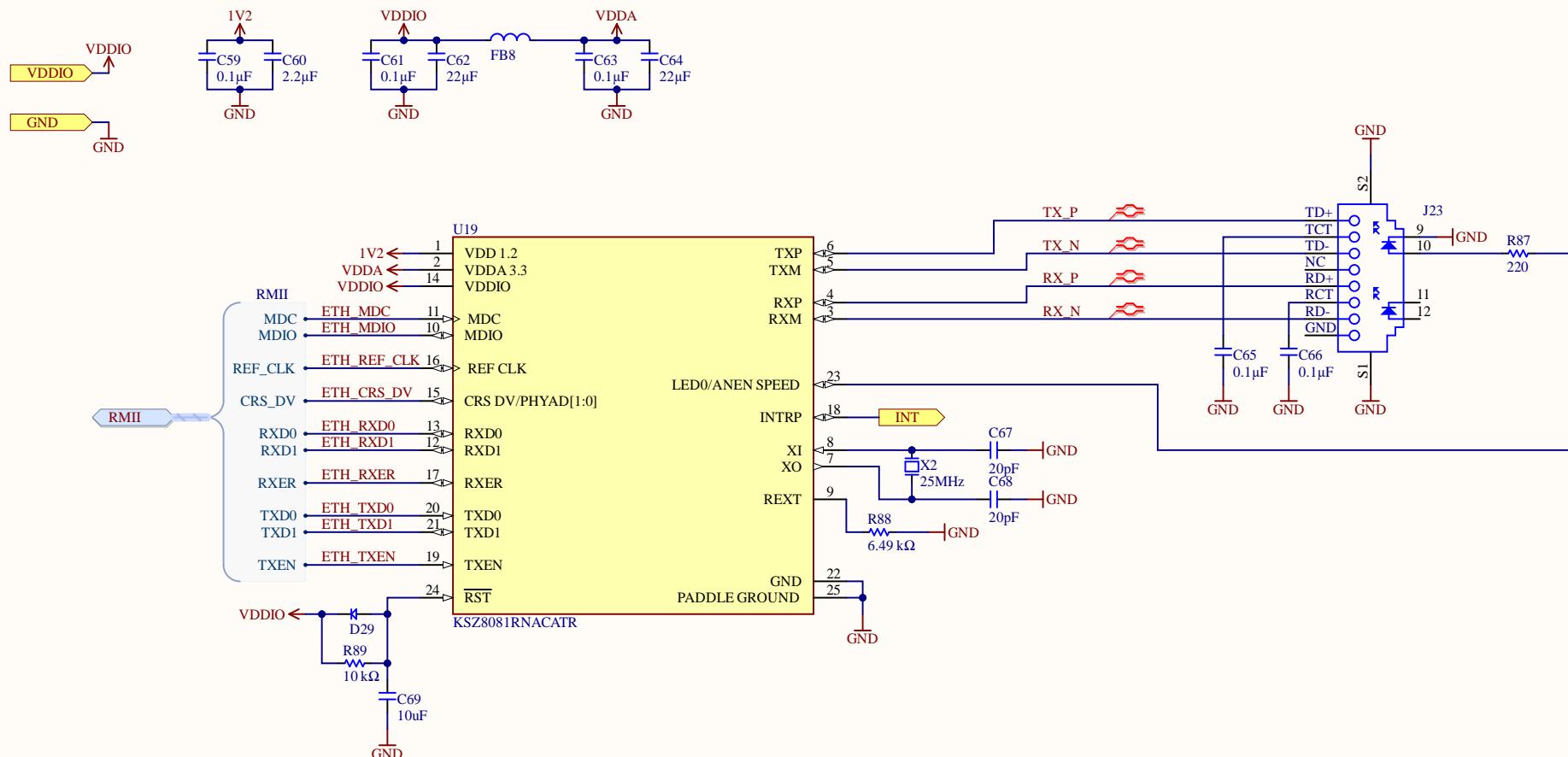


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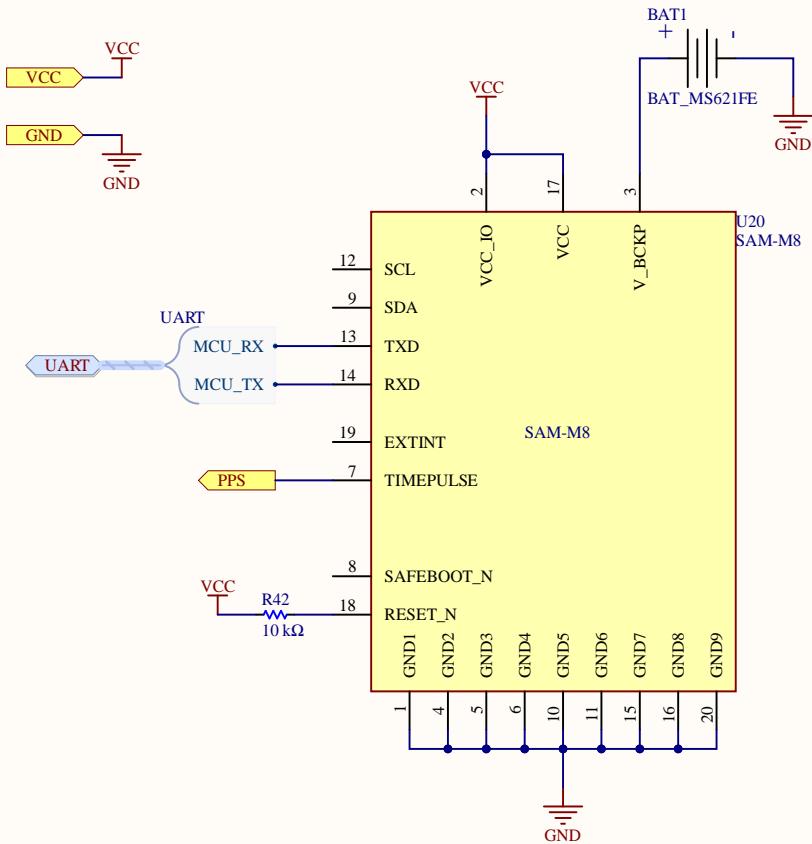
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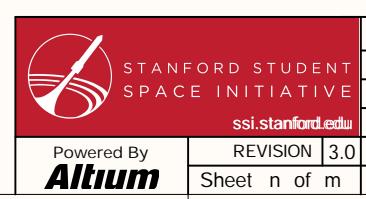
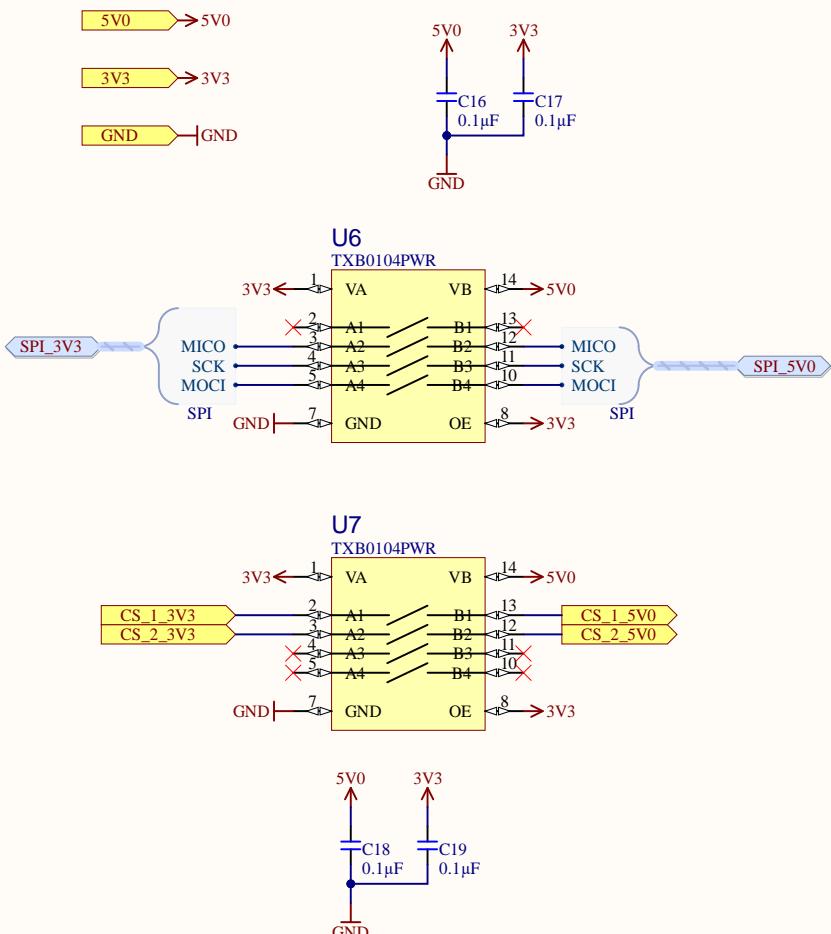
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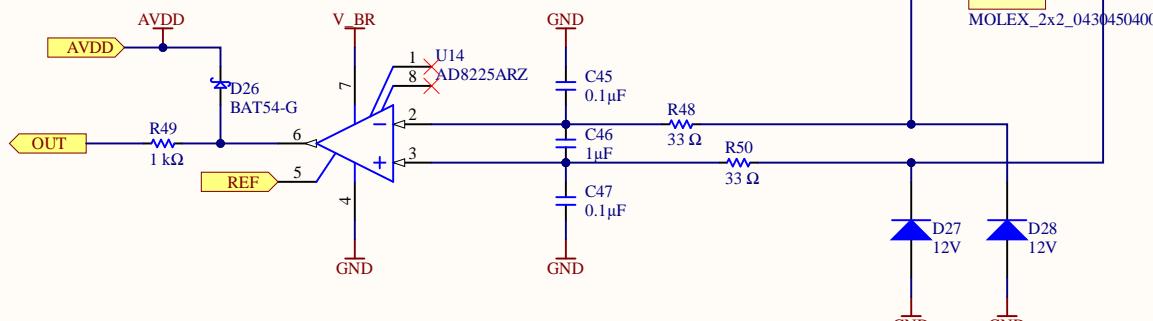
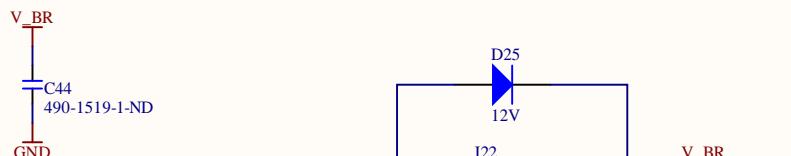
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# Level Shifters

The Squib Drivers operates using 5V logic, the MCU (SAMD51) uses 3.3V so the SPI interface between them needs to be converted



Designed to prevent ADC overvoltage. The diode will cap at AVDD+Vf, which is worst case 450mV. The resistor limits the ADC to 4mA, which shouldn't cause damage.



These TVS diodes prevent transients above 12V from getting to the amp or power rail. However, they'll only survive high current for a short time.

This filter based on:  
<https://electronics.stackexchange.com/questions/177575/capacitor-selection-for-filtering-of-low-level-signal>  
 - Series resistance less than 10% of 350Ω sensor impedance  
 - Differential filter Fc = 4.8kHz  
 - CM filter Fc = 24kHz

It may need to be adjusted to suit a wider variety of load cells. Also, we might need better caps that don't have voltage derating

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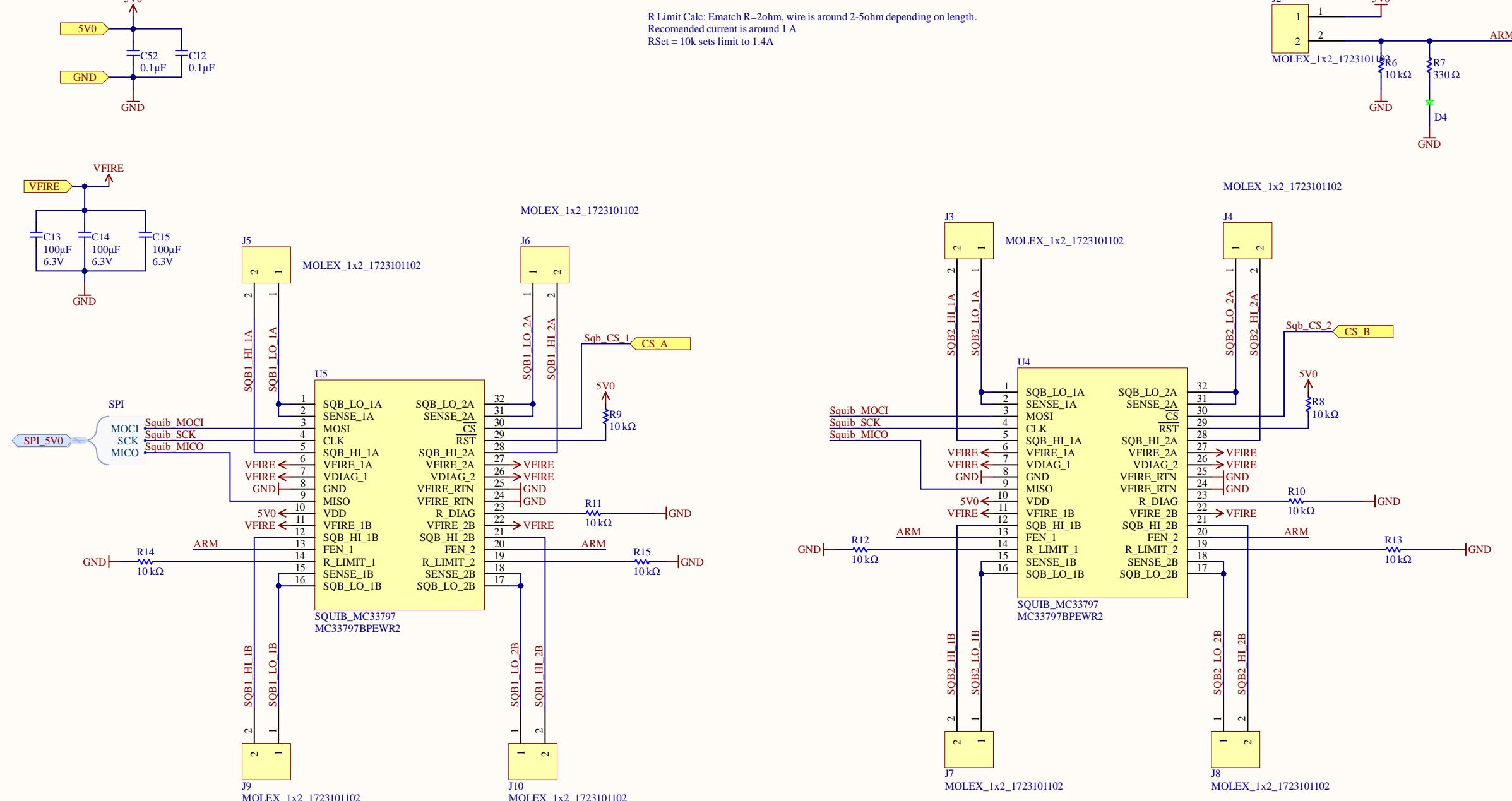
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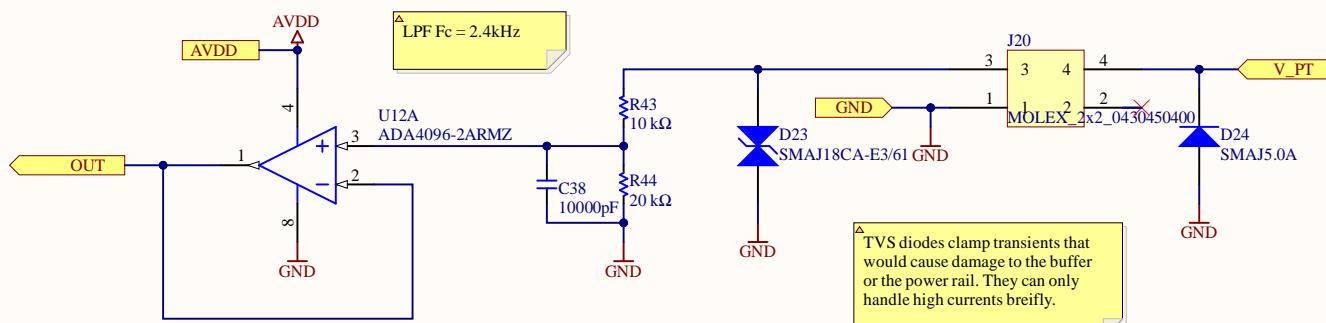
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# Squib Drivers





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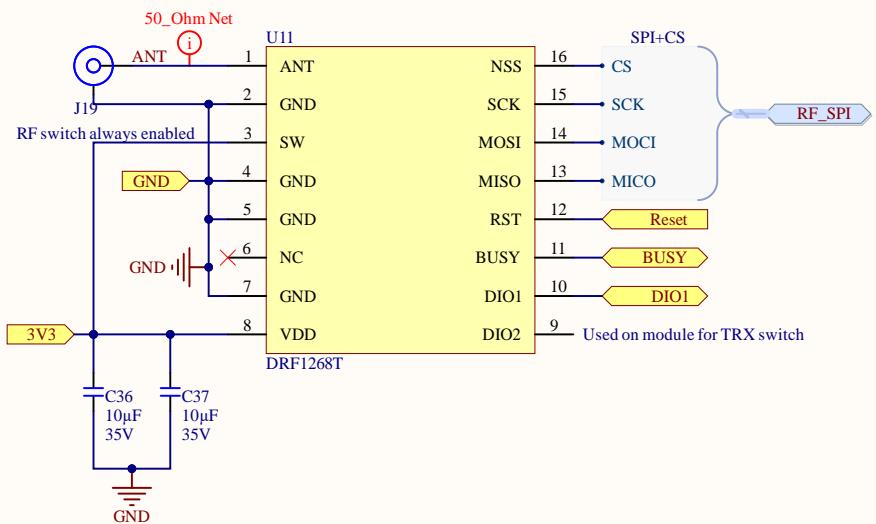
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# Radio Module

**TODO**

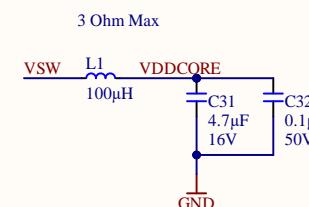
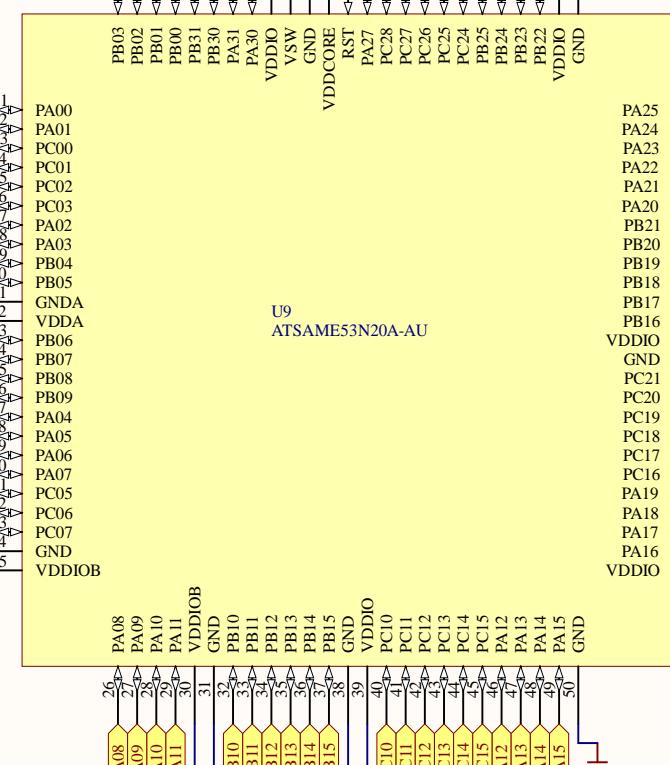
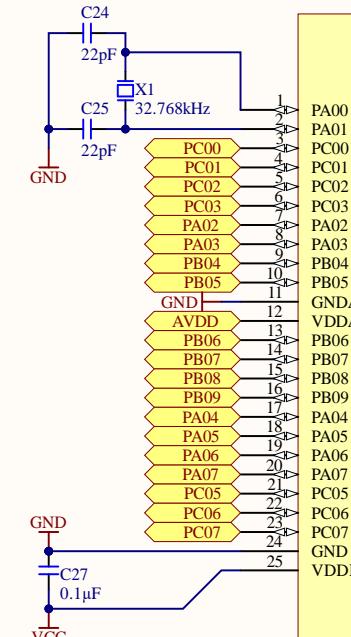
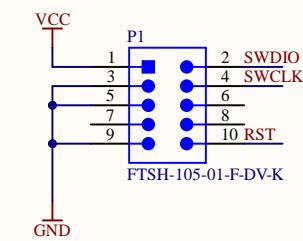
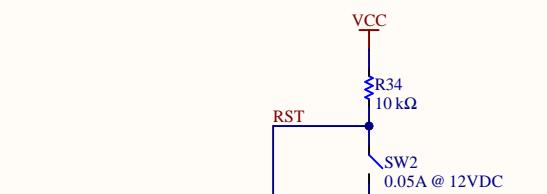
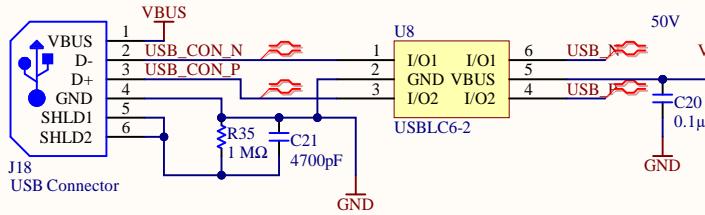
Swap Out with DRF Module

Radio for wireless communications  
Dorji DRF1268T being used  
Mainly on Tims Recomendation



▲ (G)FSK/4(G)FSK/LoRa Modulation  
433Mhz transceiver  
Max.22dBm output power  
-147dBm sensitivity  
Standard SPI interface  
Low RX current: 5.7 mA  
Automatic RF sense and CAD monitor  
Data Rate: <300 kbps  
Standby current: <1uA  
Supply voltage: 3.3V





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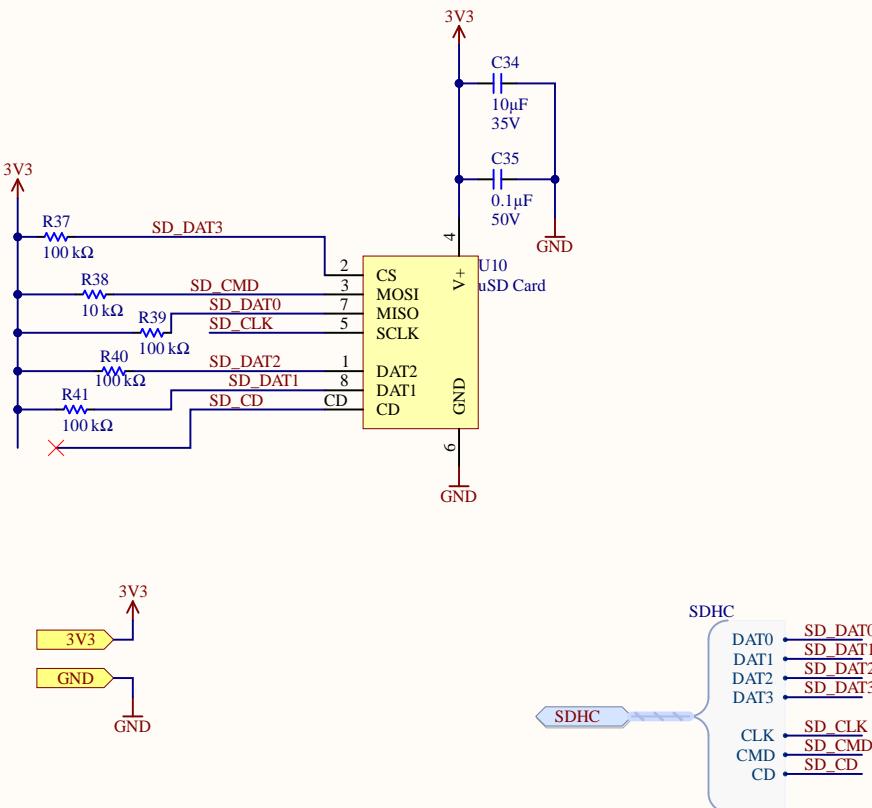
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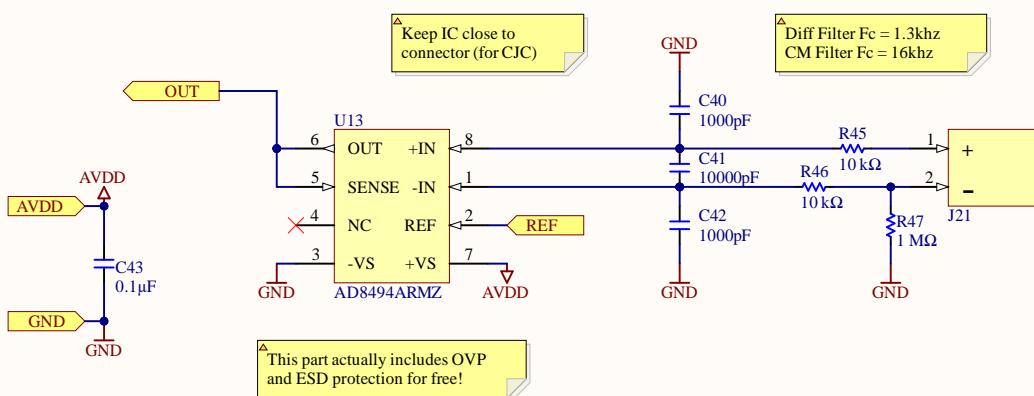
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