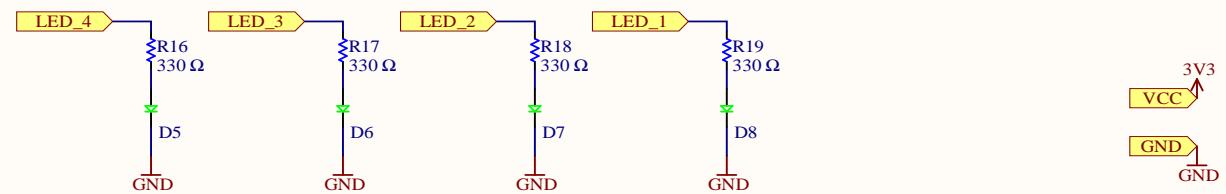


A



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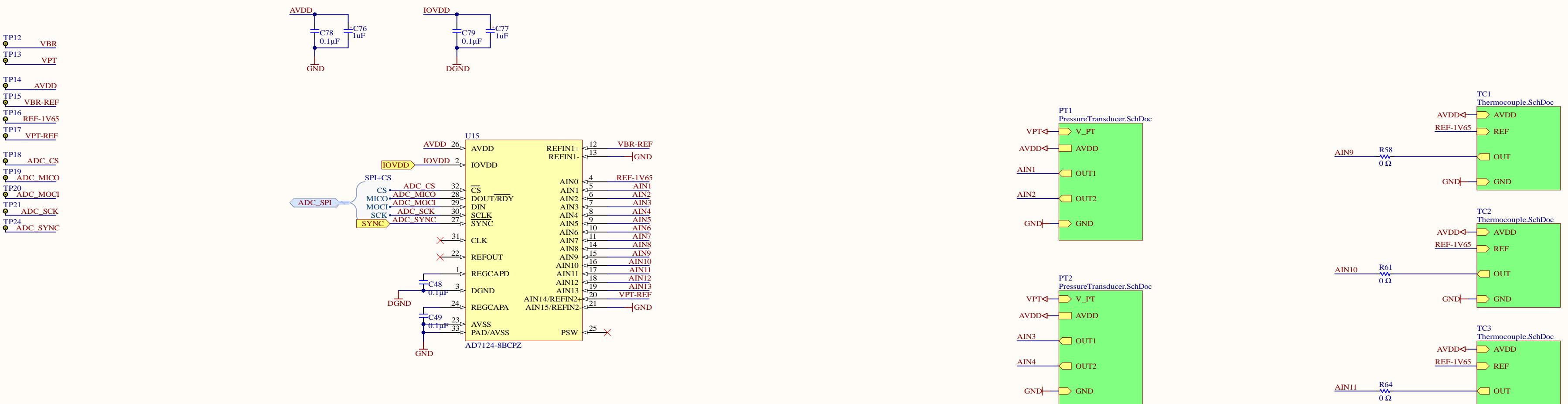
C

C

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D

	PROJECT	Quail
SHEET	Blinks and Boops	
ENGINEER	Tim Vrakas	
ssi.stanford.edu	ENGINEER	
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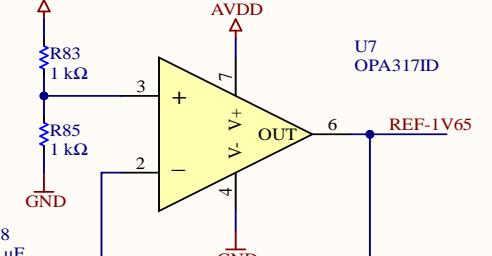


Bridge excitation voltage is 10V, and each load cell draws 35mA max

Pressure transducer supply voltage. Unclear if PTs have amps or not? Unclear how much power they draw. Consider changing to an ADP7142 to simplify ROM.



△ Mid-Rail reference voltage. The instrumentation amps need this to reference their outputs off of. It needs to be buffered or the draw from connected devices will skew it.



The diagram illustrates the connection of three thermocouple inputs (AIN9, AIN10, AIN11) to a Schottky Diode (SchDo) module. Each input is connected through a resistor (R58, R61, R64) in series with the positive lead. The negative lead is connected to GND. The outputs are labeled OUT, REF, AVDD, and GND.

- TC1 Thermocouple.SchDo:**
  - AIN9
  - R58
  - 0 Ω
  - OUT
  - REF
  - AVDD
  - GND
- TC2 Thermocouple.SchDo:**
  - AIN10
  - R61
  - 0 Ω
  - OUT
  - REF
  - AVDD
  - GND
- TC3 Thermocouple.SchDo:**
  - AIN11
  - R64
  - 0 Ω
  - OUT
  - REF
  - AVDD
  - GND

The diagram shows the pin connections for the AD7606 chip. Pin 1 (AVDD) is connected to a yellow power source. Pin 2 (REF) is connected to a yellow reference voltage source. Pin 3 (AIN12) is connected to a blue input signal labeled 'AIN12'. Pin 4 (OUT) is connected to a yellow output signal labeled 'OUT'. Pin 5 (GND) is connected to a yellow ground connection.

LC2  
LoadCell.SchDoc

VBR<4> V\_BR

AVDD<4> AVDD

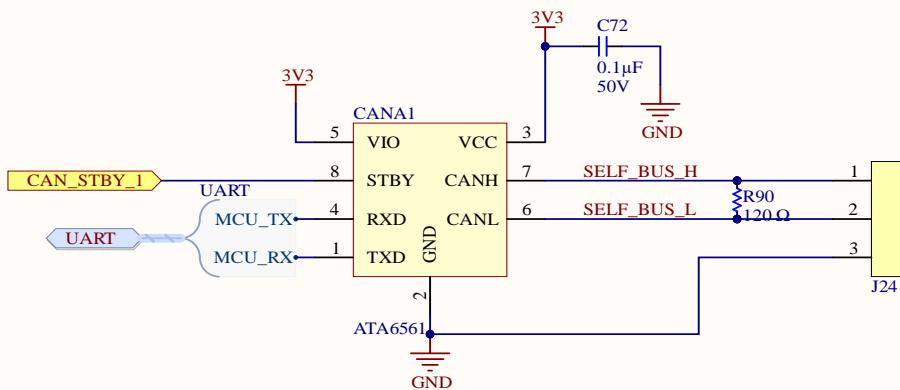
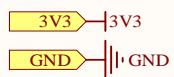
REF<1V65> REF

AIN13

OUT

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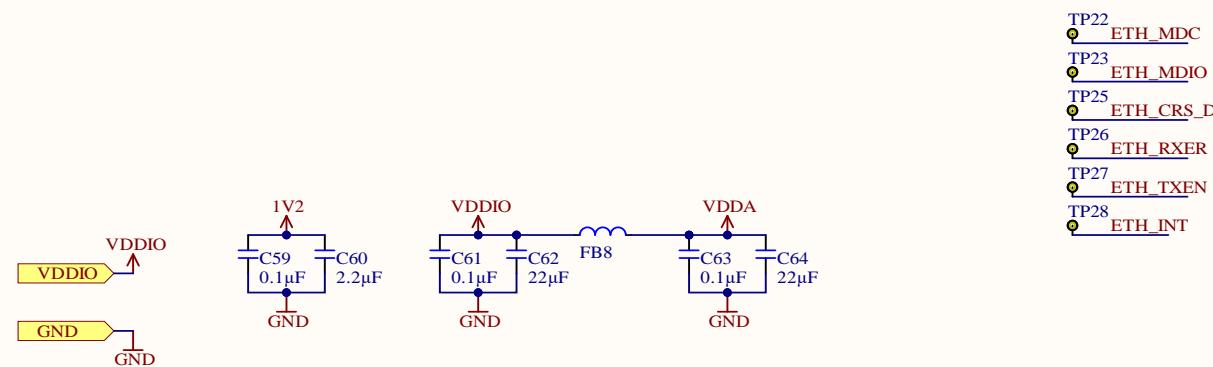
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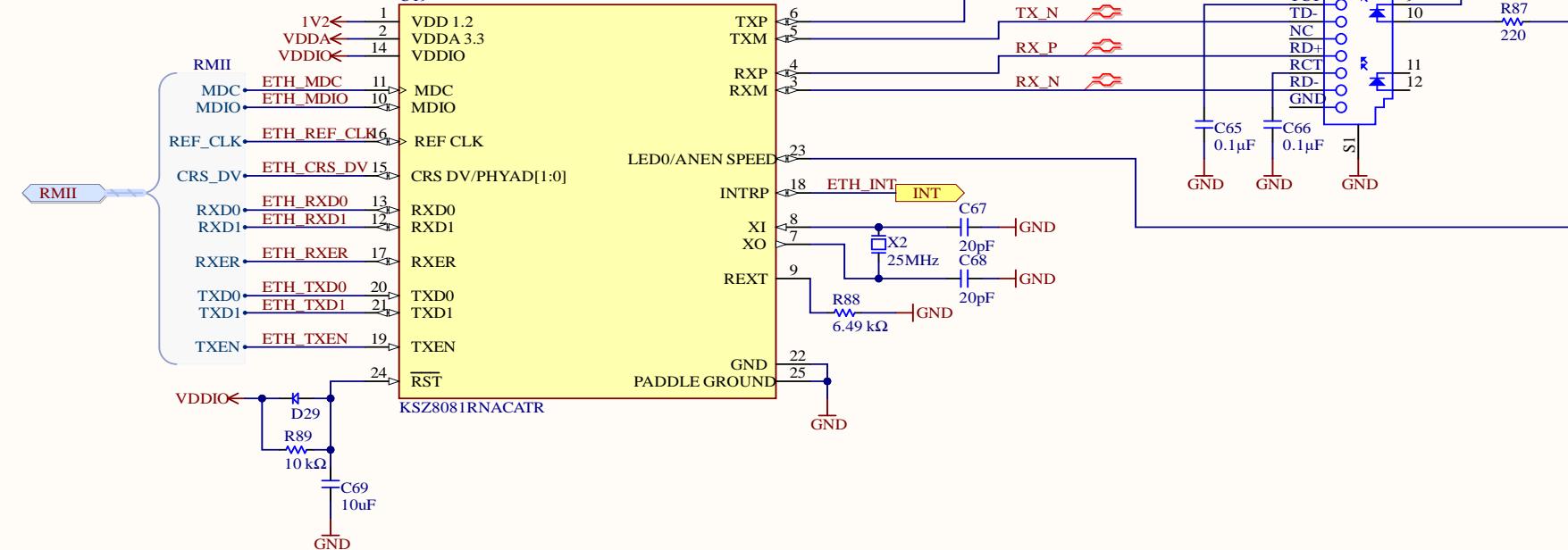
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TP22 ETH\_MDC  
 TP23 ETH\_MDIO  
 TP25 ETH\_CRS\_DV  
 TP26 ETH\_RXER  
 TP27 ETH\_TXEN  
 TP28 ETH\_INT

B

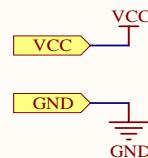


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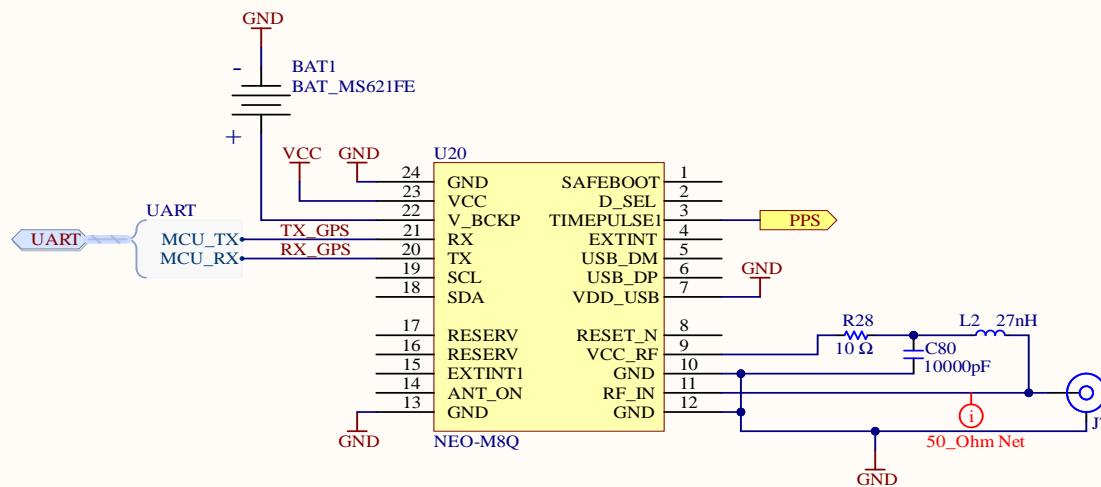
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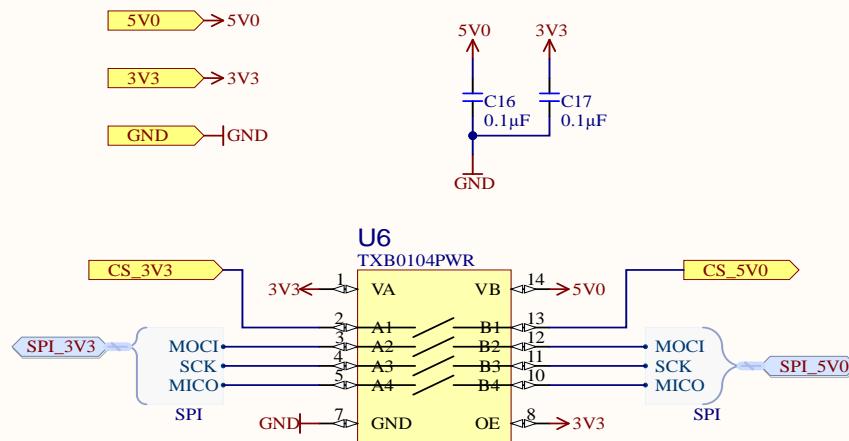
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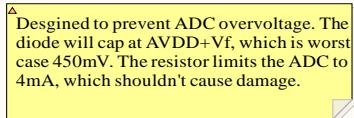
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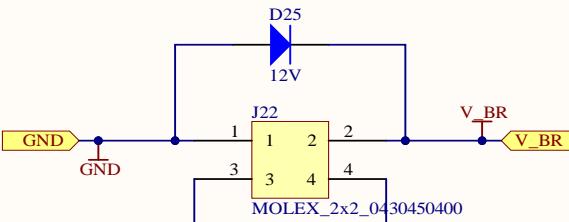
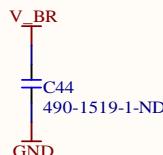
# Level Shifters

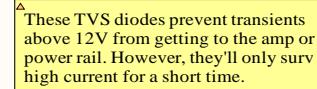
The Squib Drivers operates using 5V logic, the MCU (SAMD51) uses 3.3V so the SPI interface between them needs to be converted

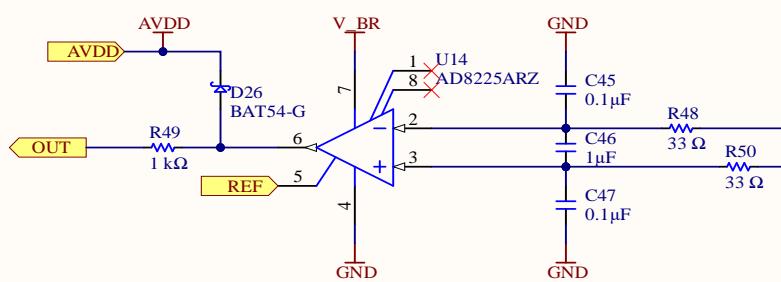


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	SHEET	Misc
	ENGINEER	Tim Vrakas
	ENGINEER	
	REVIEWER	
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 ▲ Designed to prevent ADC overvoltage. The diode will cap at AVDD+Vf, which is worst case 450mV. The resistor limits the ADC to 4mA, which 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-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

Title

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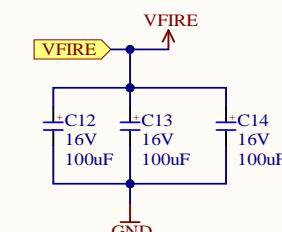
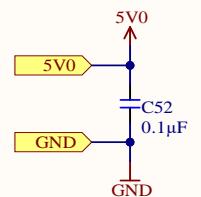
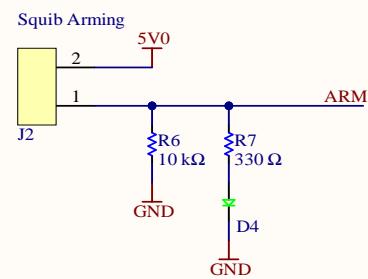
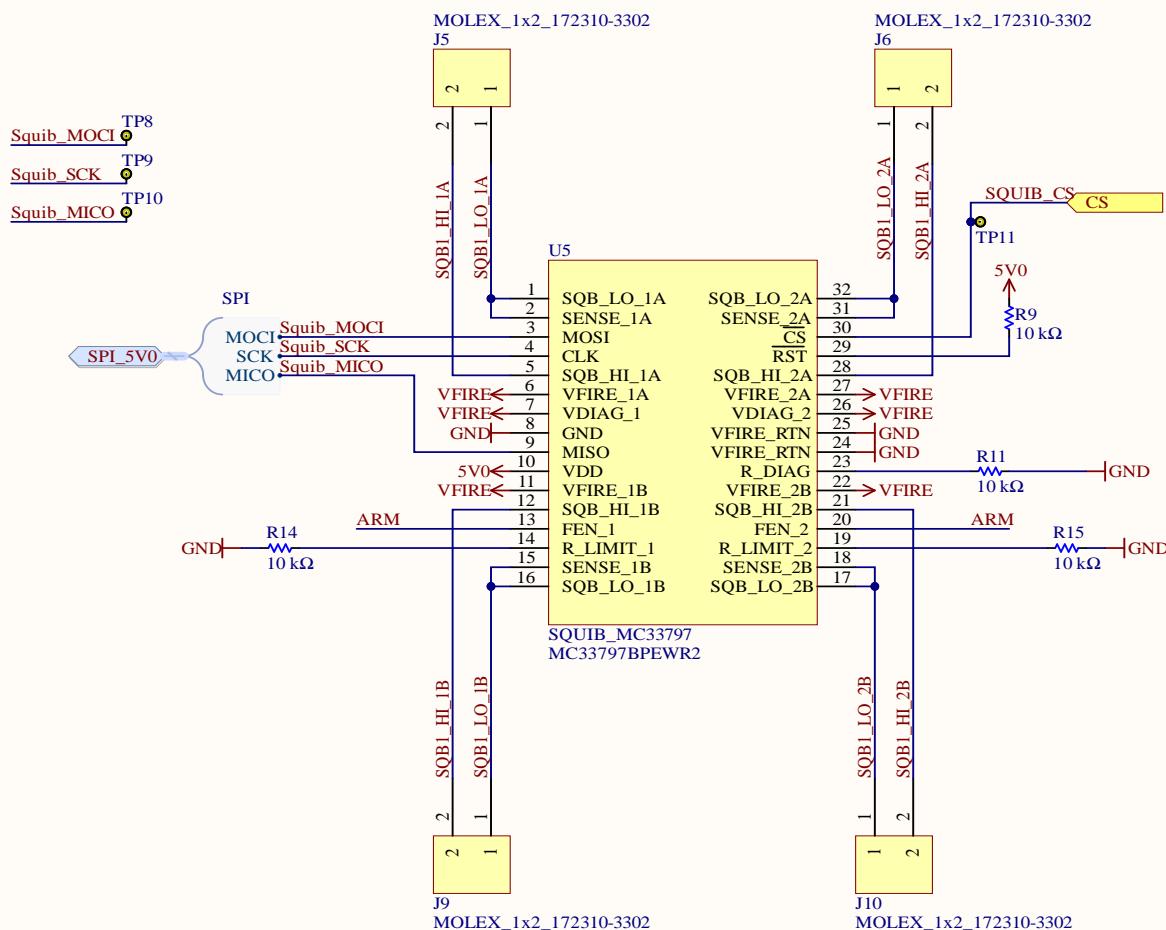
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# Squib Drivers

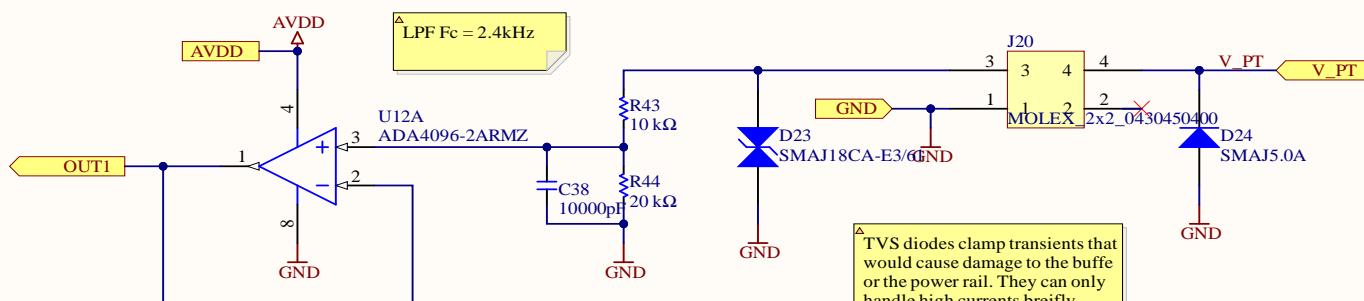
Pin 2 is Lo and Pin 1 is High on all connectors

R Limit Calc: Ematch R=2ohm, wire is around 2-5ohm depending on length.  
Recomended current is around 1 A  
RSet = 10k sets limit to 1.4A

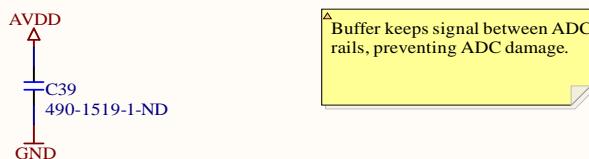


PROJECT	Quail
SHEET	Squibs
ENGINEER	Tim Vrakas
ENGINEER	
REVISION	3.0
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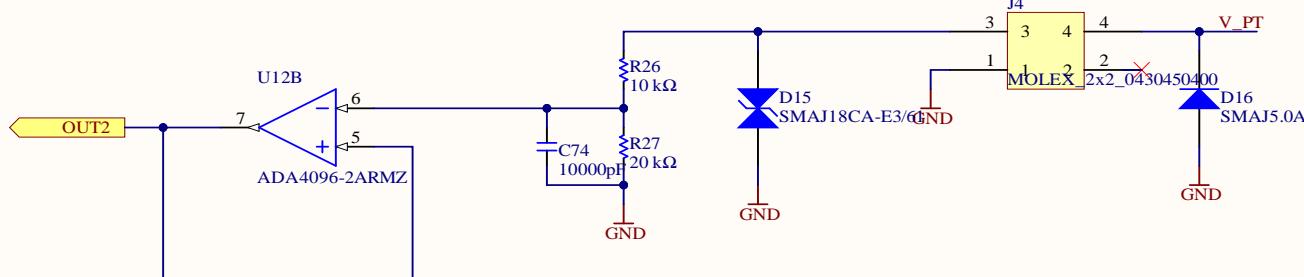
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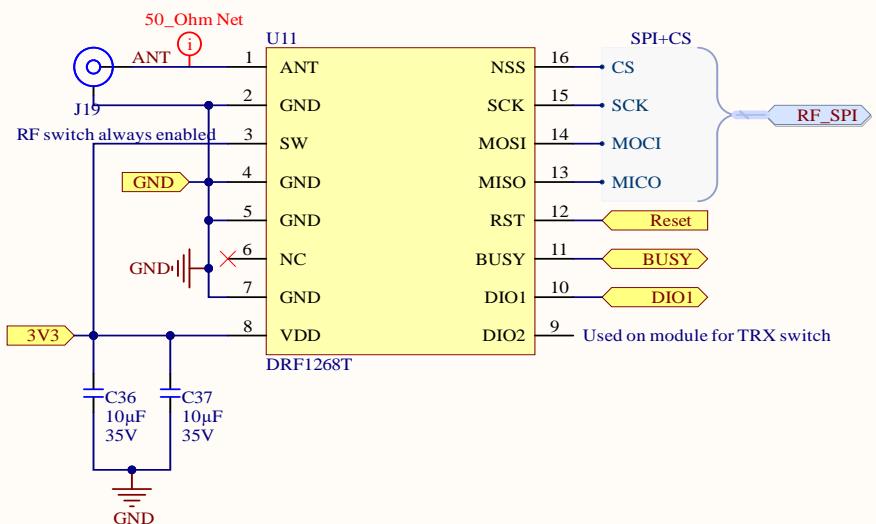
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# Radio Module

**TODO**

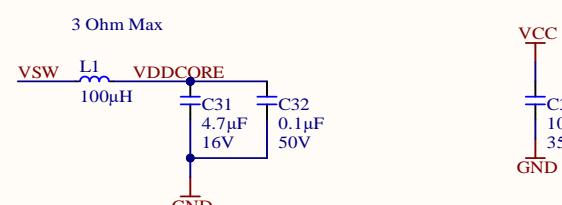
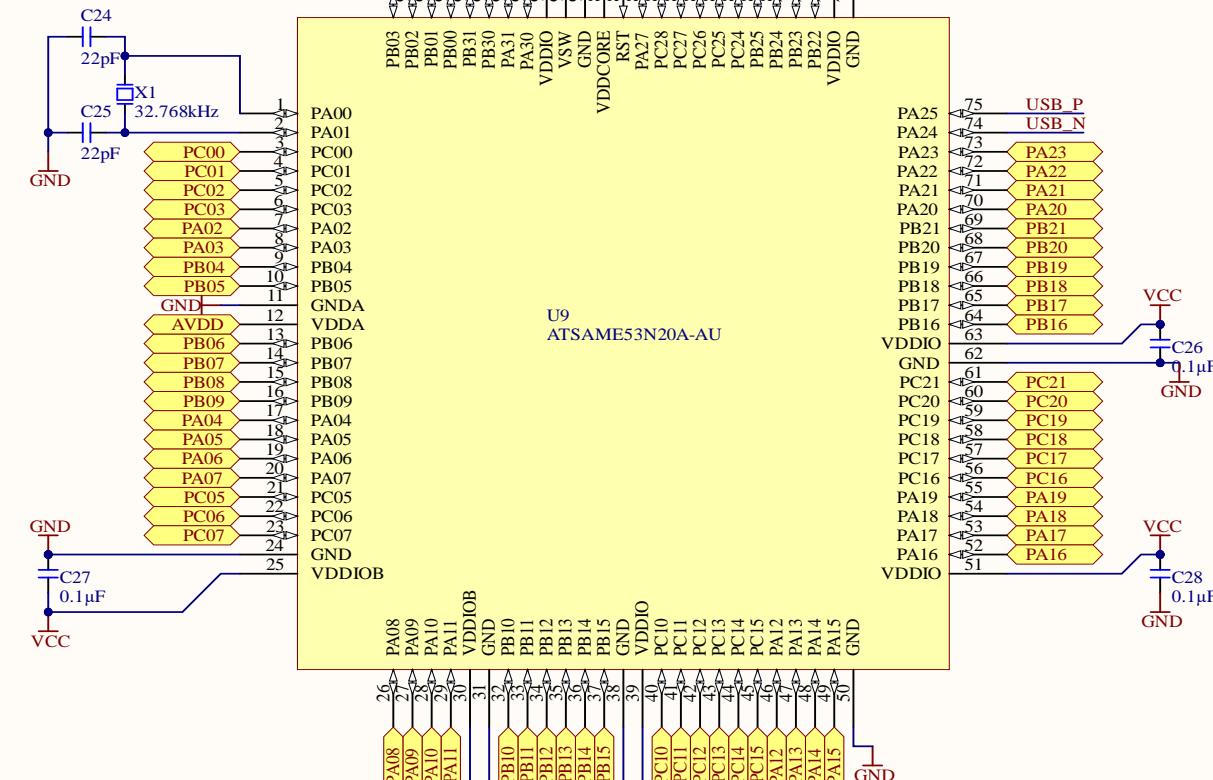
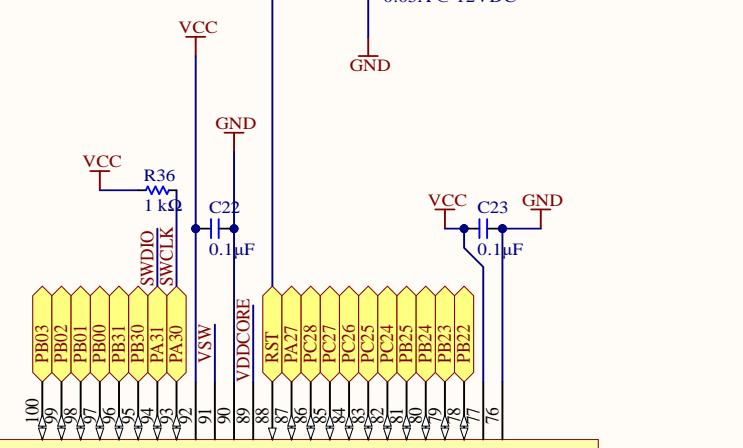
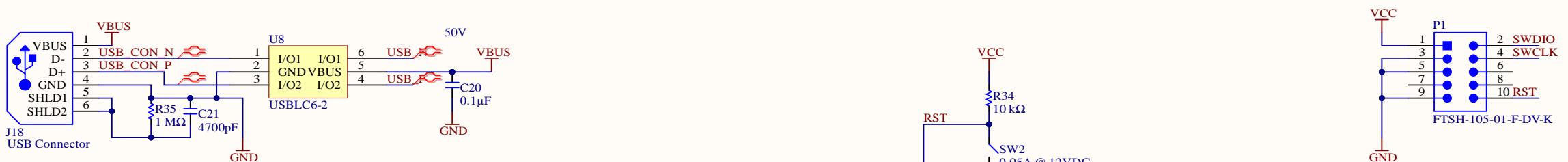
Swap Out with DRF Module

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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	SHEET	*
	ENGINEER	Tim Vrakas
	ENGINEER	
Powered By <b>Altium</b>	REVISION	3.0
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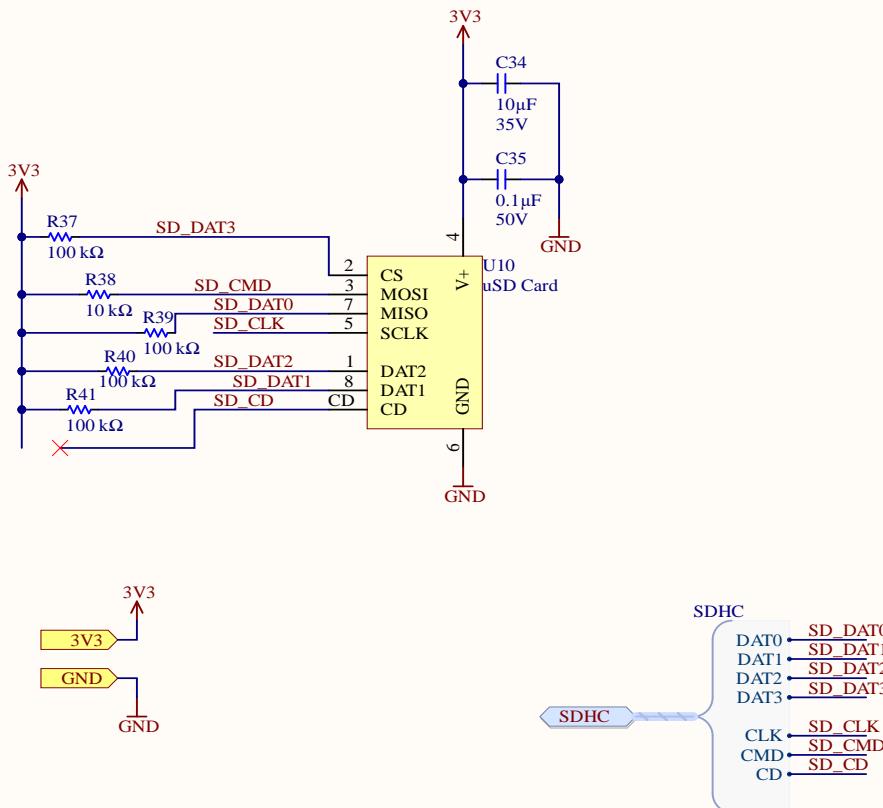
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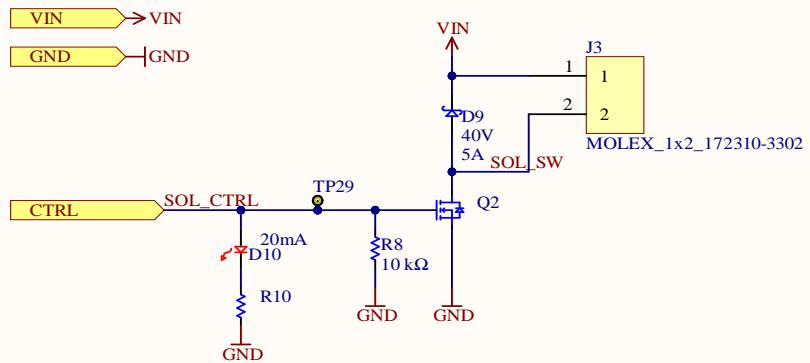
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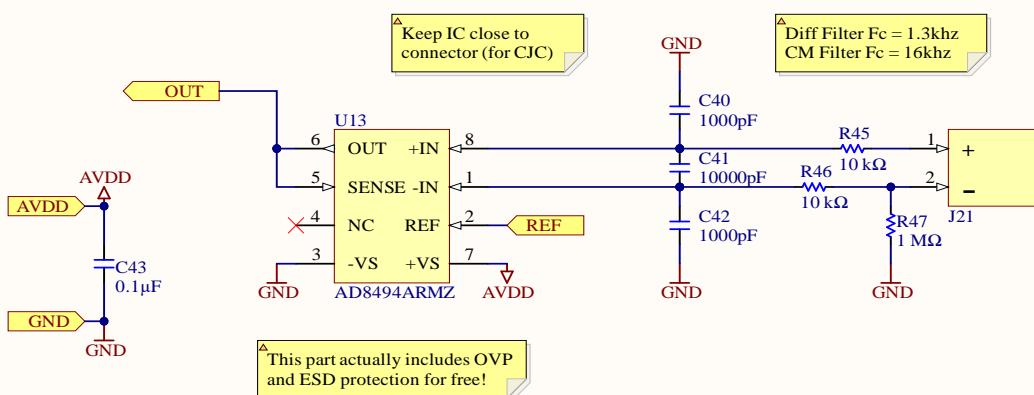
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