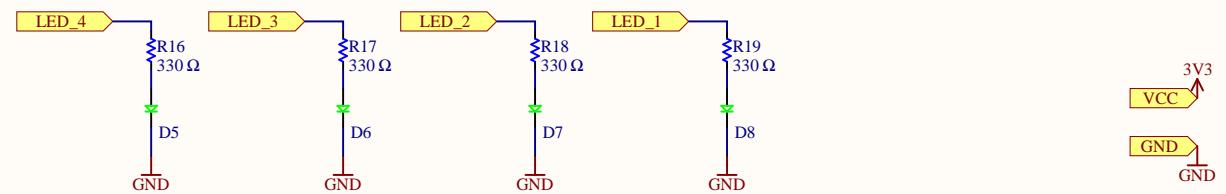


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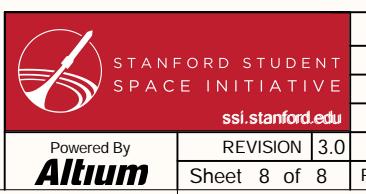
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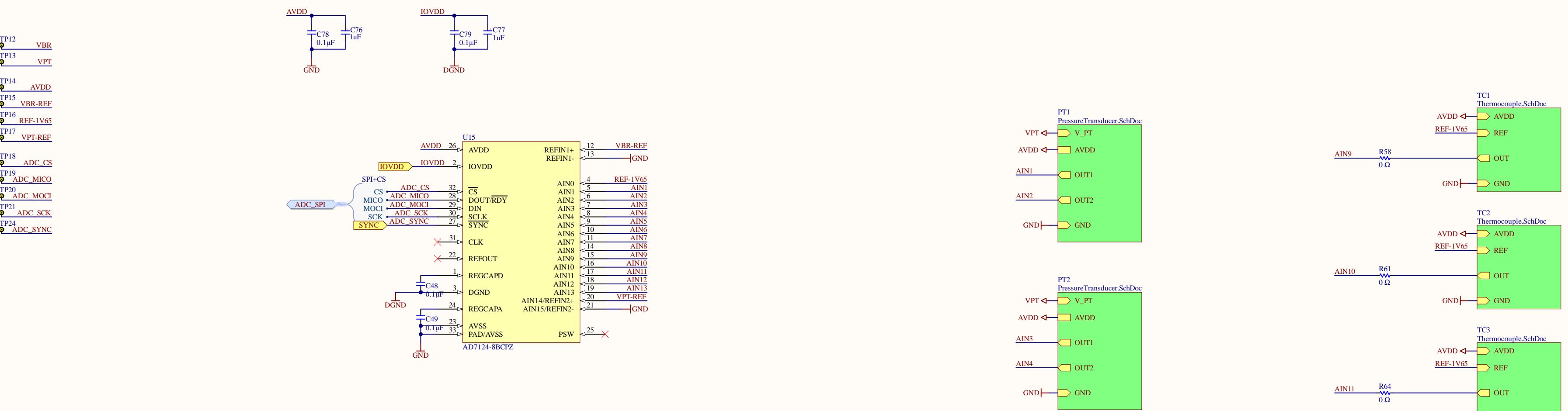
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Bridge excitation voltage is 10V, and each load cell draws 35mA max

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

```

    graph TD
        PT[PT] --> V_PT[V_PT]
        PT --> AVDD[AVDD]
        PT --> GND[GND]
        V_PT --> OUT1[OUT1]
        AIN7[AIN7] --> OUT1
        AIN8[AIN8] --> OUT2[OUT2]
        GND --> OUT1
        GND --> OUT2
    
```

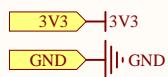
△ IOVDD is 3.3V, powered from top sheet
AVDD is unipolar, 3.6V from LDO

▲ 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.

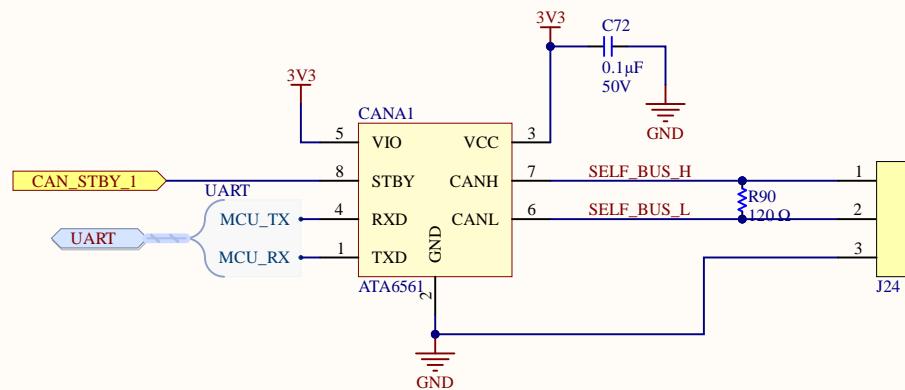
The diagram shows the pin connections for the AD7606 chip. Pin 12 is labeled AIN12. Pin 1 is labeled AVDD. Pin 2 is labeled REF-1V65. Pin 3 is labeled OUT. Pin 4 is labeled GND. Pin 5 is labeled REF.

Title		
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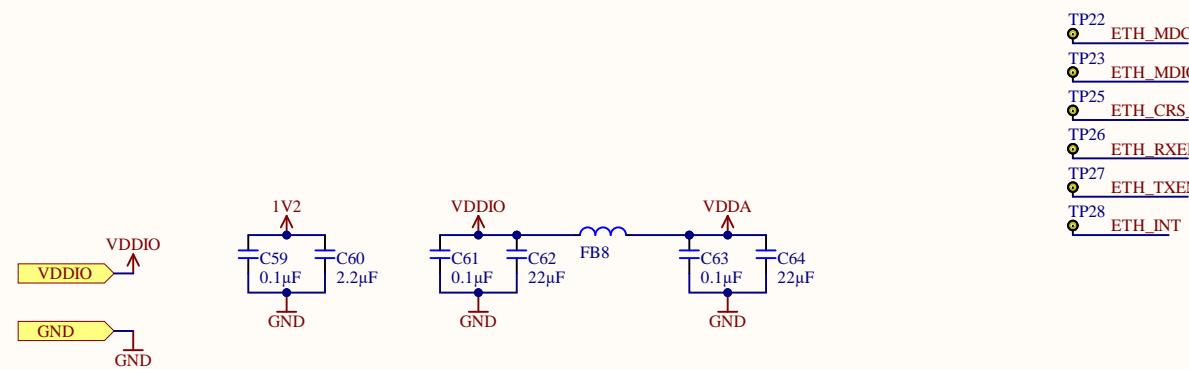
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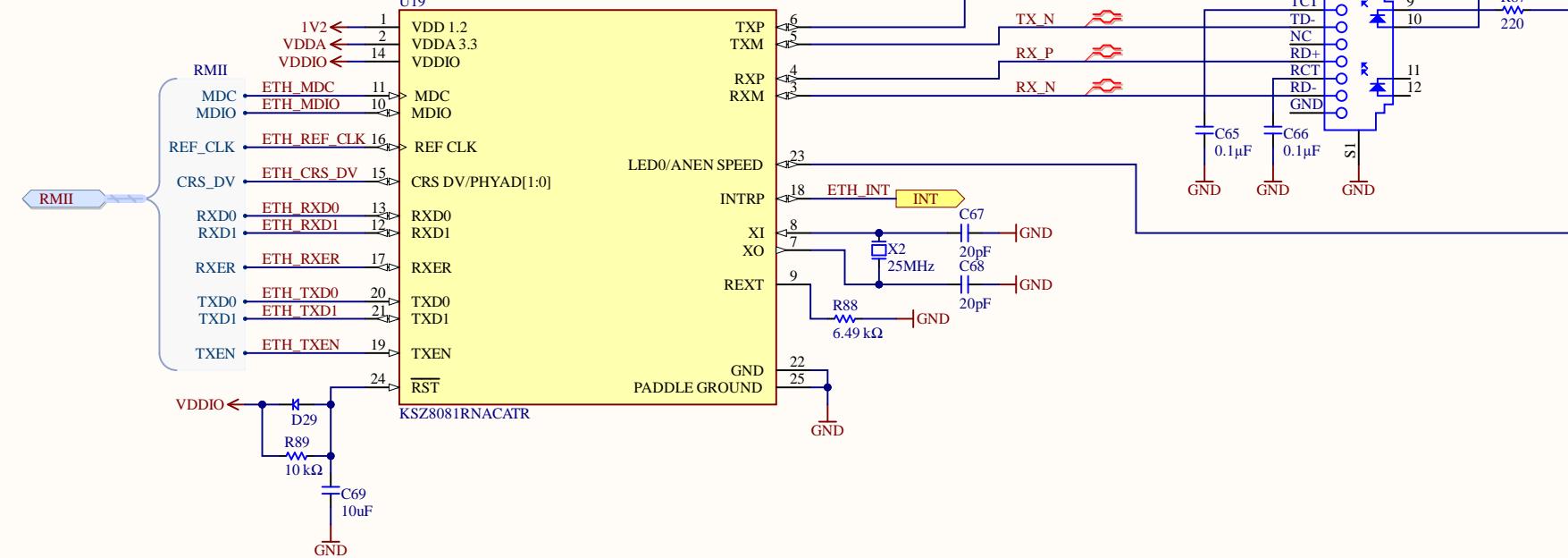
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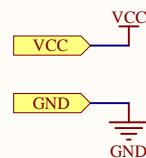


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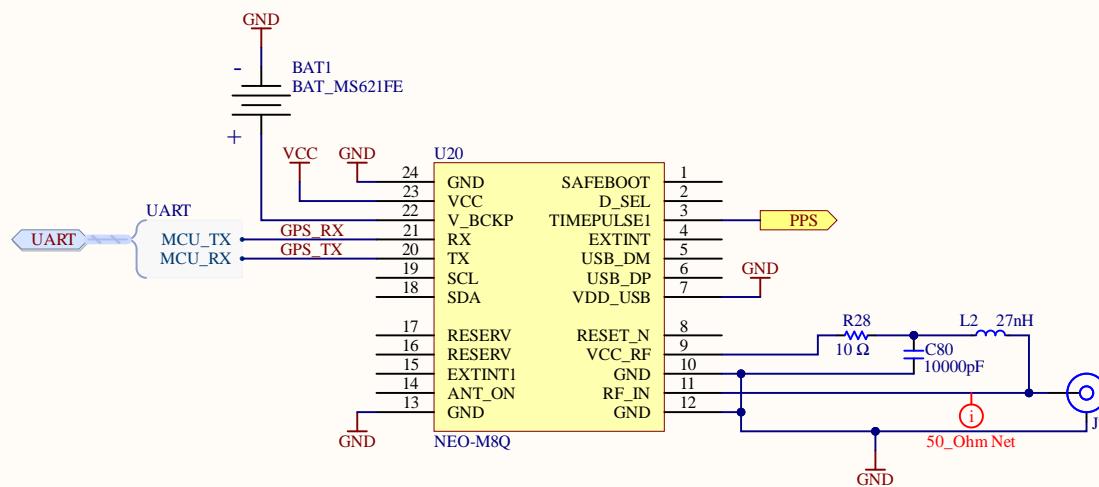
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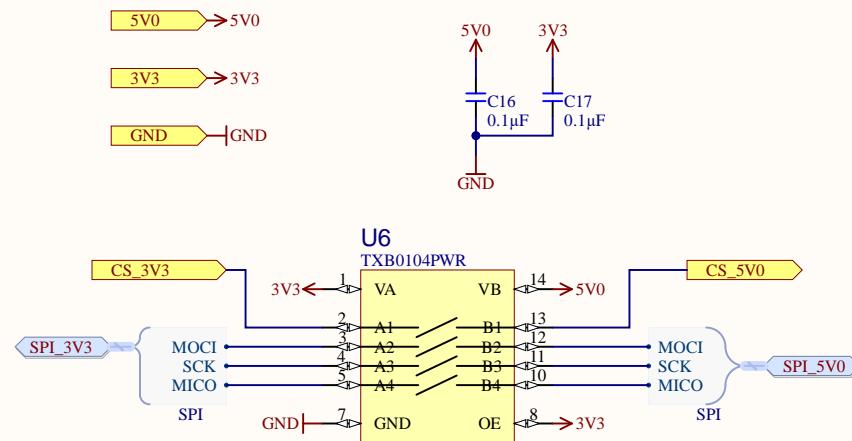
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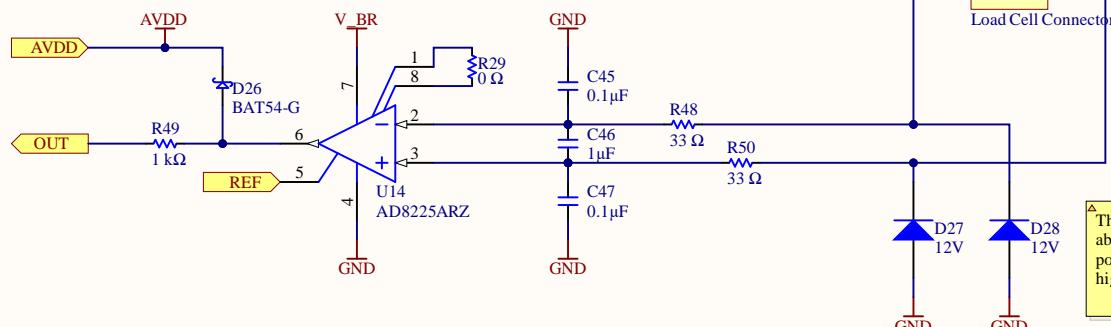
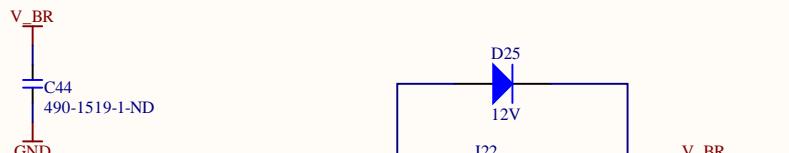
Level Shifters

The Squib Drivers operate 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
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△ Designed to prevent ADC overvoltage. The diode will clip 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

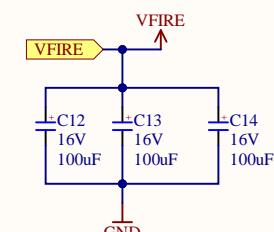
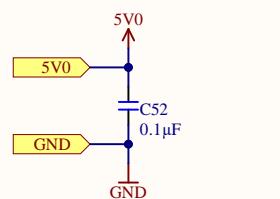
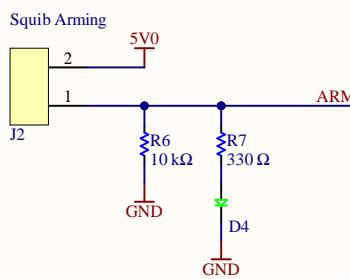
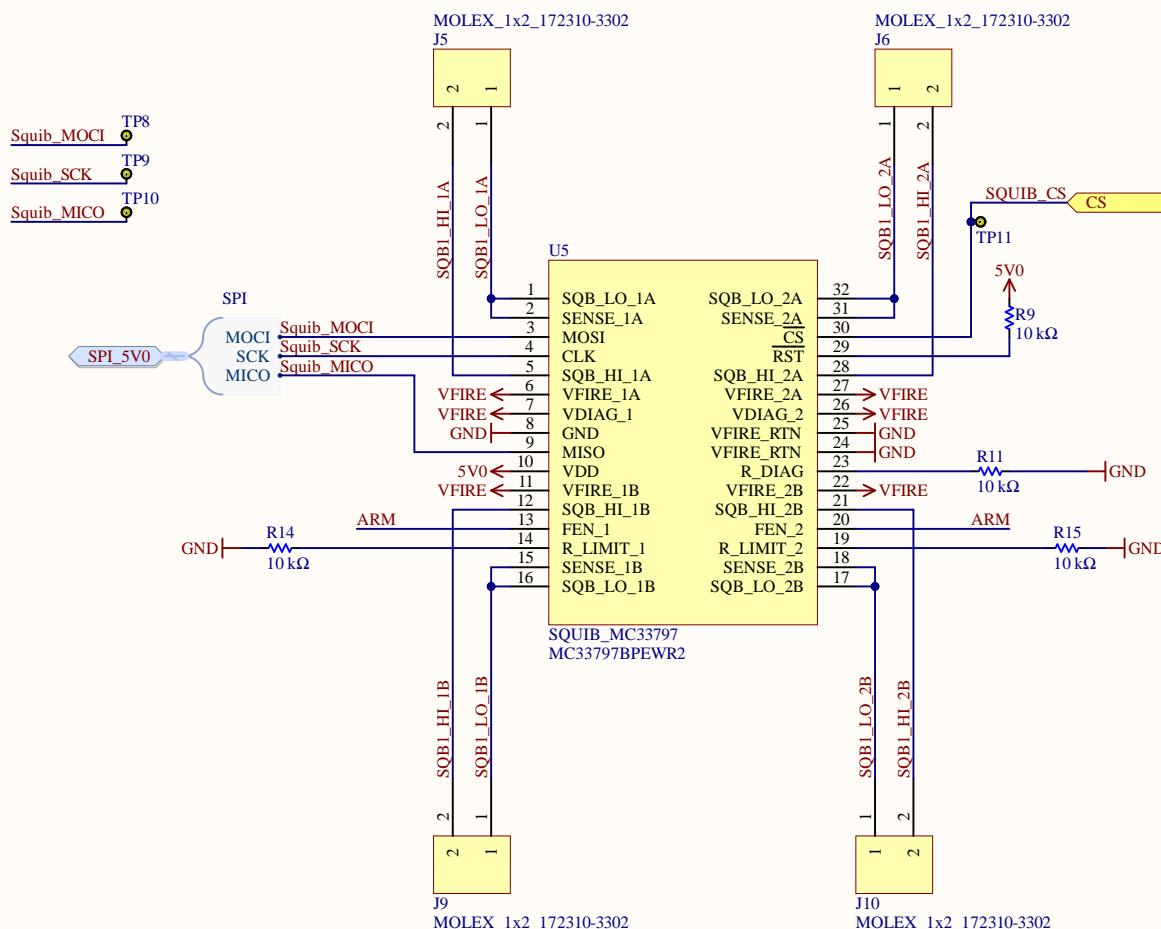
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Squib Drivers

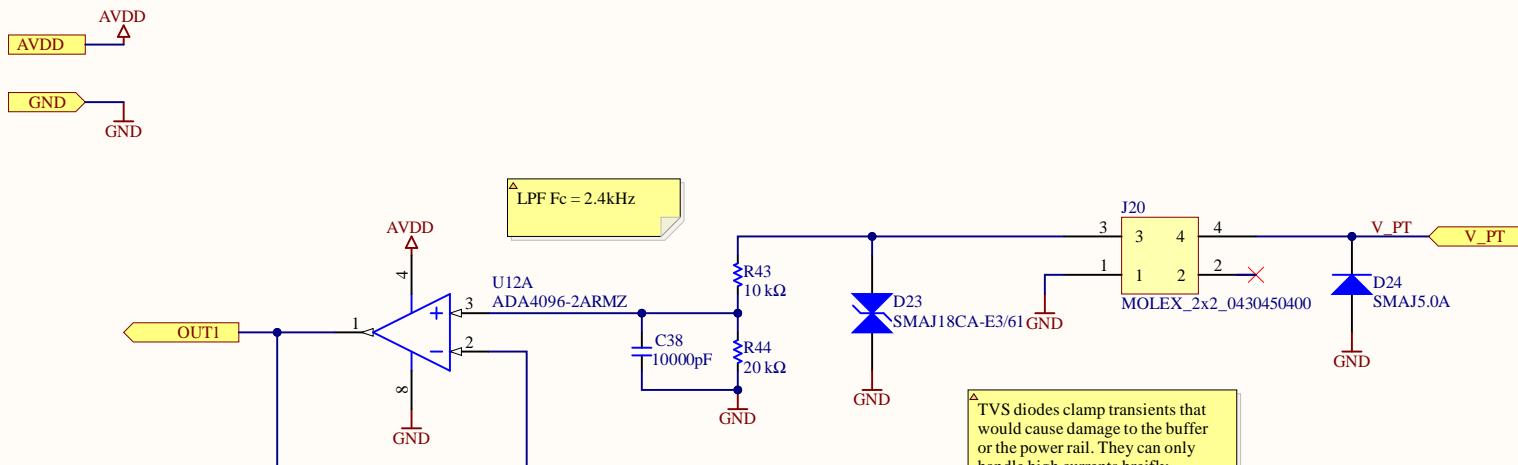
Pin 2 is Lo and Pin 1 is High on all connectors

R Limit Calc: Ematch R=20hm, wire is around 2-5ohm depending on length.
Recommended current is around 1A
RSet = 10k sets limit to 1.4A

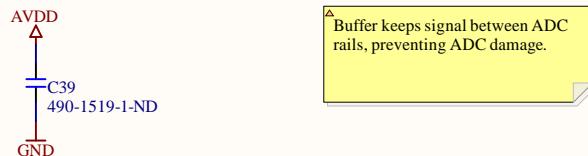


 STANFORD STUDENT SPACE INITIATIVE ssi.stanford.edu	PROJECT	Quail
	SHEET	Squibs
	ENGINEER	Tim Vrakas
	ENGINEER	
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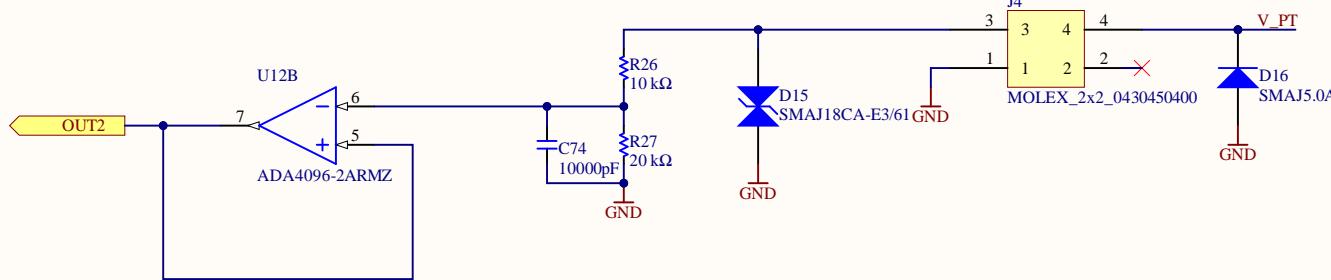
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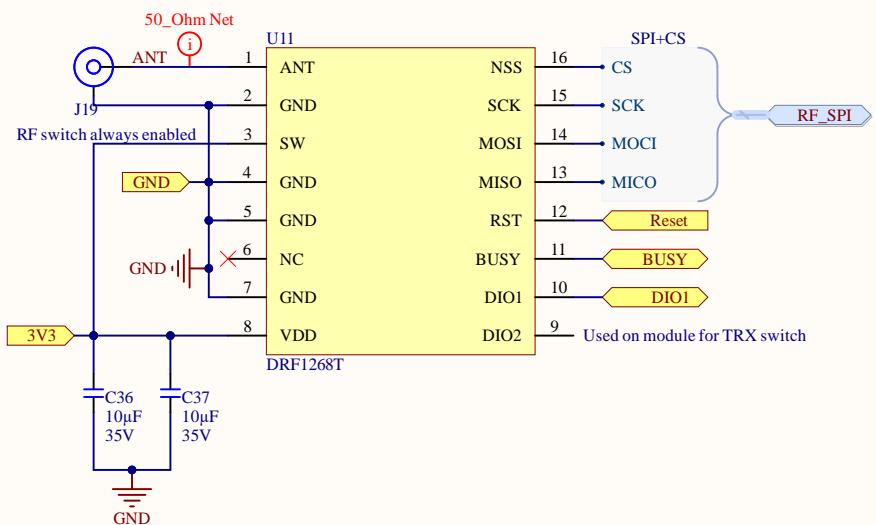
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Radio Module

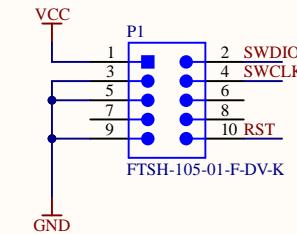
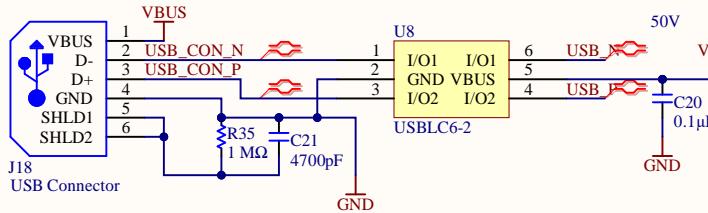
A
Radio for wireless communications
Dorji DRF1268T being used



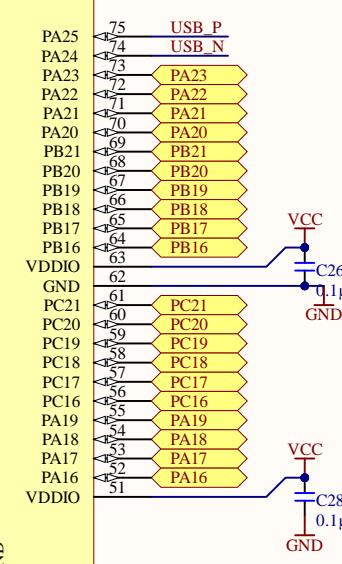
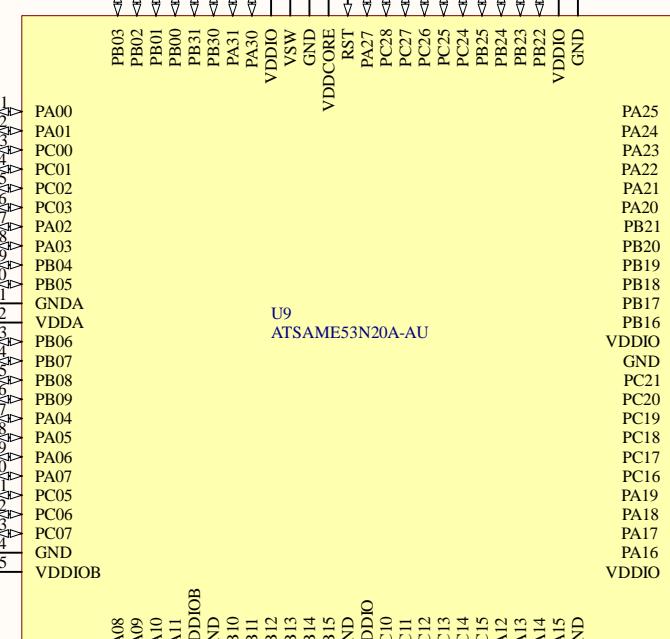
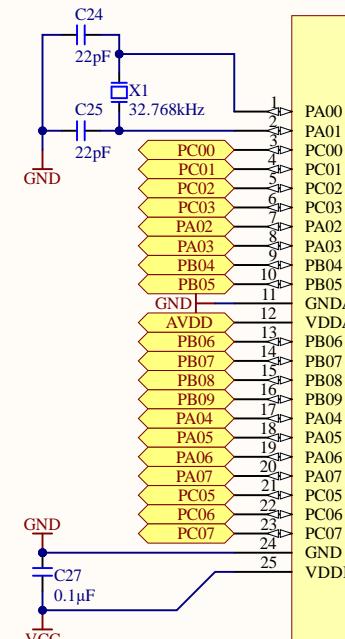
B
DRF1268T
(G)FSK/4(G)FSK/LoRa Modulation
433Mhz transceiver
Max.22dBm output power
-147dBm sensitivity
Standard SPI interface
Low RX current: 5.7 mA
Automatic RF sense and CAD monitor
Data Rate: <300 kbps
Standby current: <1uA
Supply voltage: 3.3V

C
PROJECT Quail
SHEET *
ENGINEER Tim Vrakas
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REVISION 3.0 REVIEWER
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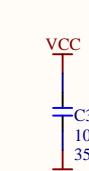
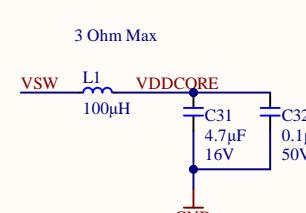
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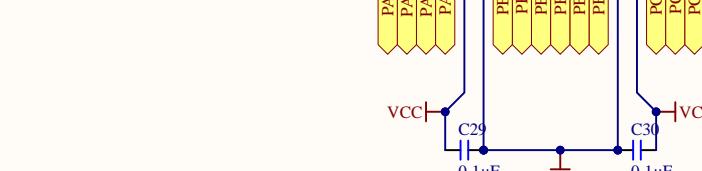
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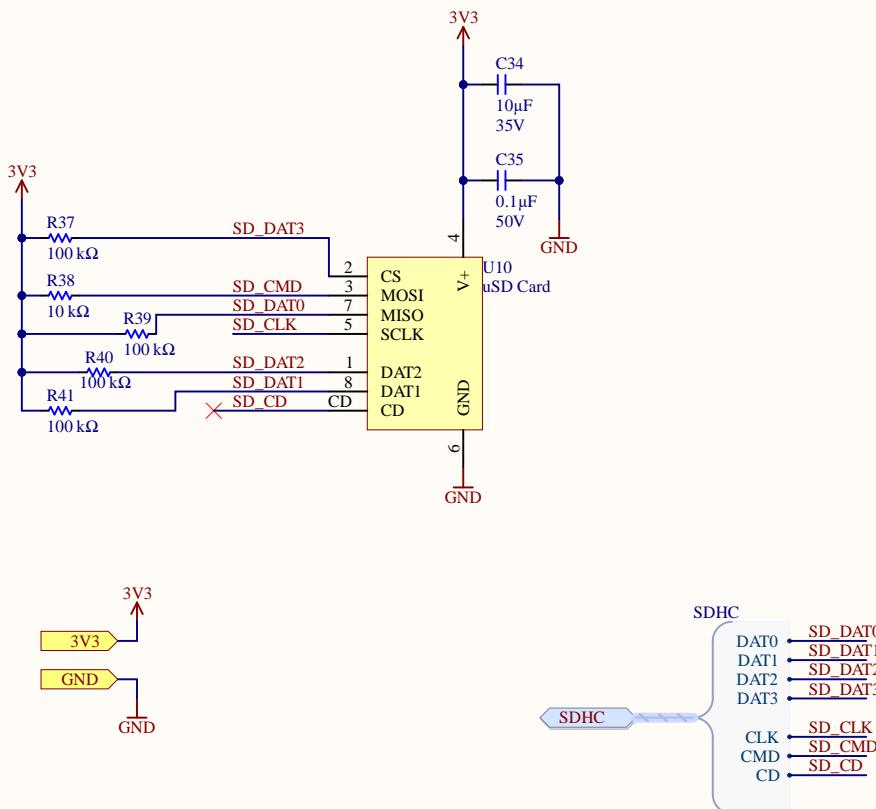
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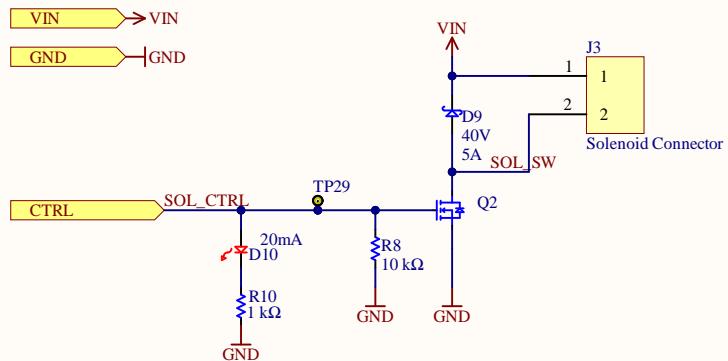
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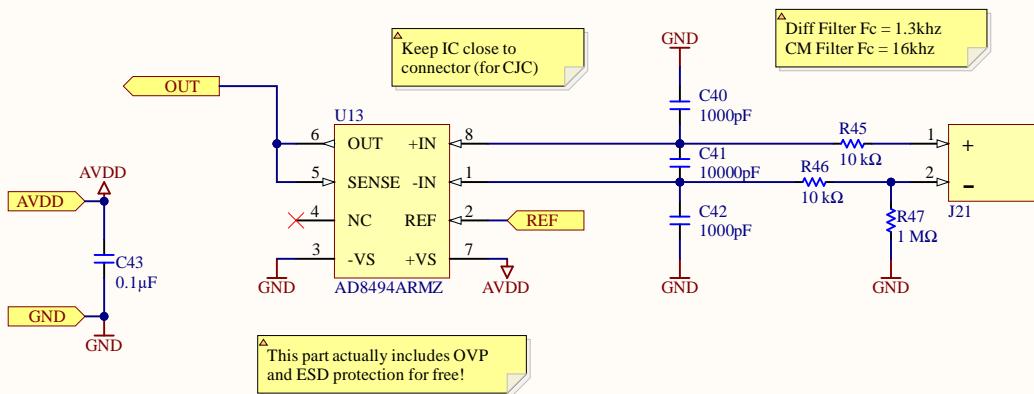
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