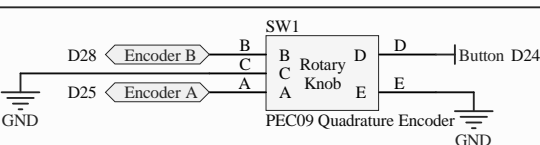
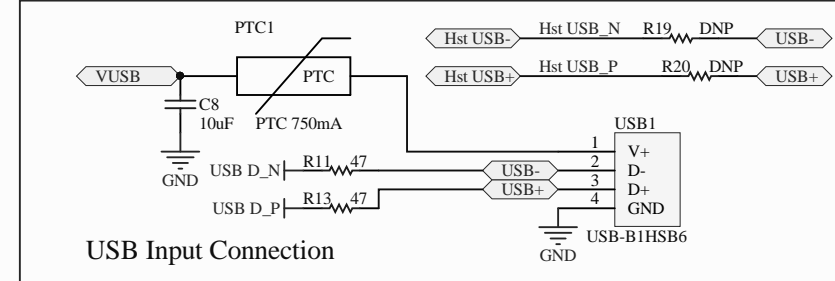
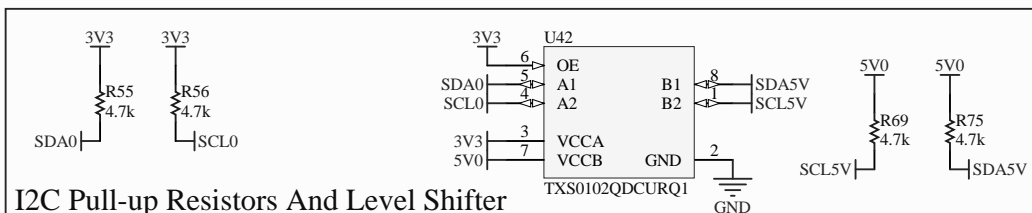
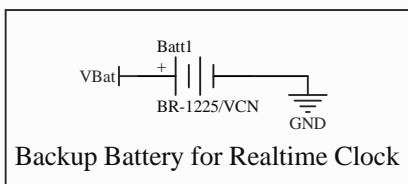


Internal Molex Connector for 9-pin Cable



User Input with Quadrature Knob



Title: **Smart Sensor Simulator 2**

Subtitle: **Teensy 3.6 Connections**

Date: 2/7/2017 Time: 9:29:34 AM Size: Letter Sheet 1 of 7

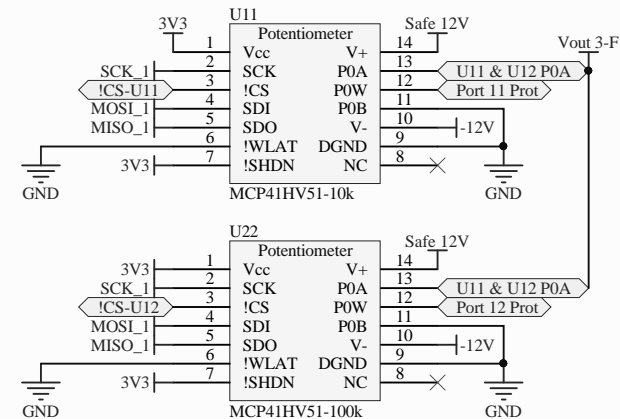
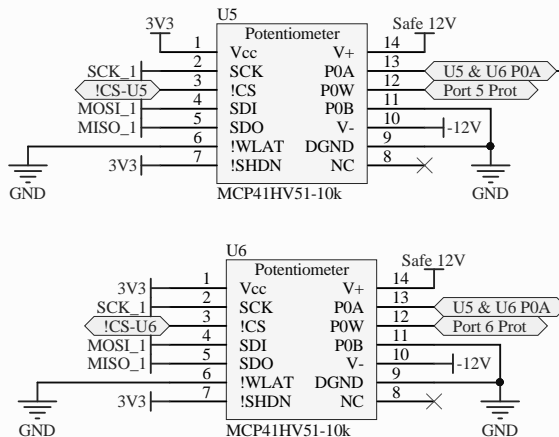
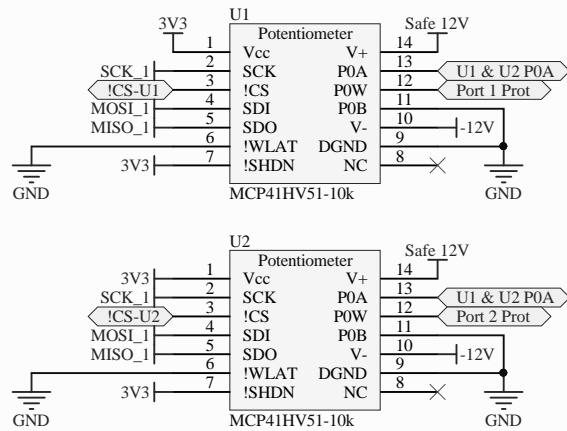
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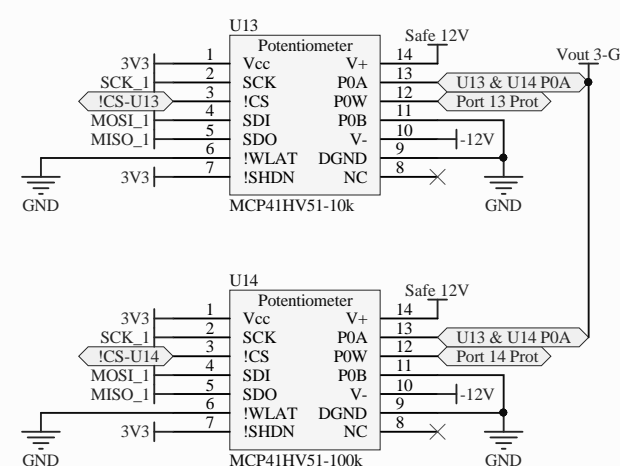
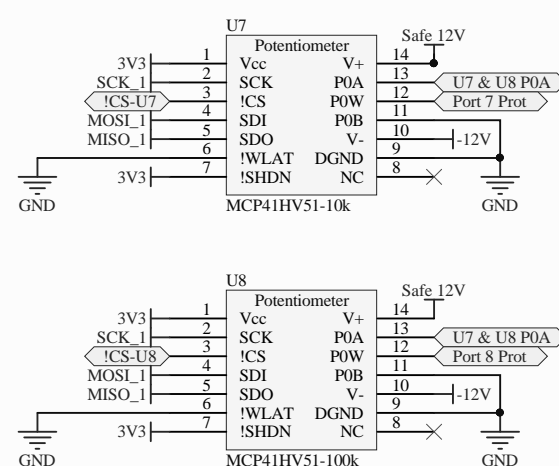
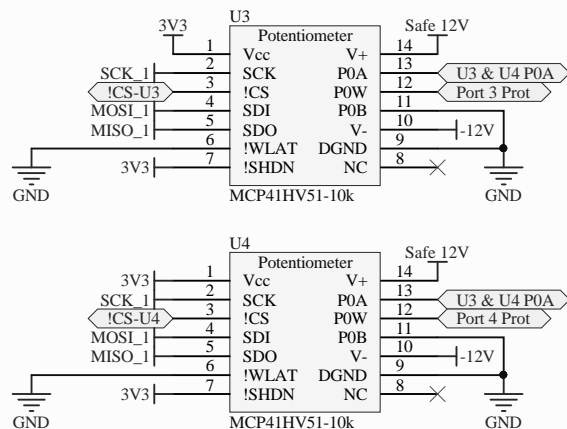
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A



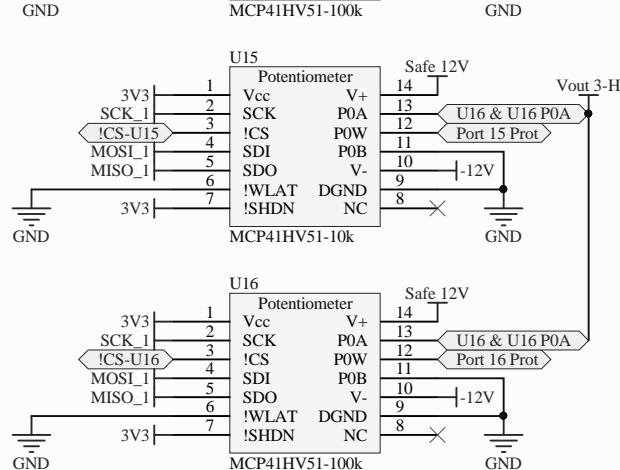
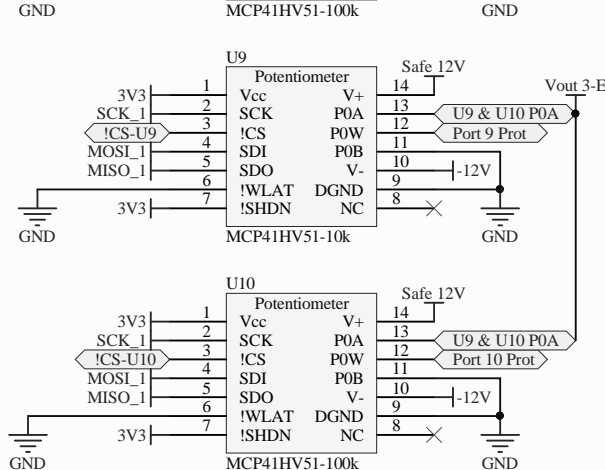
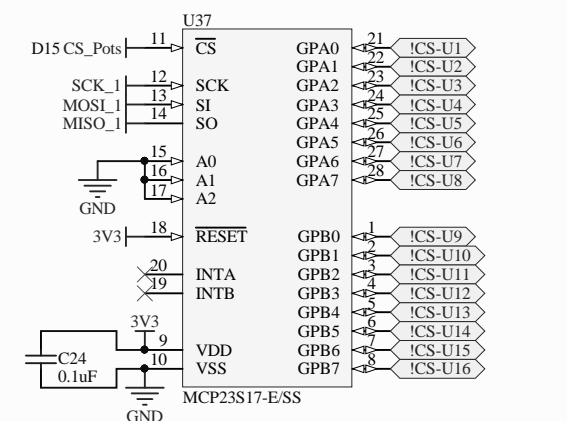
A

B



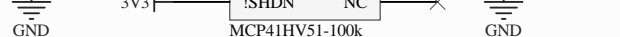
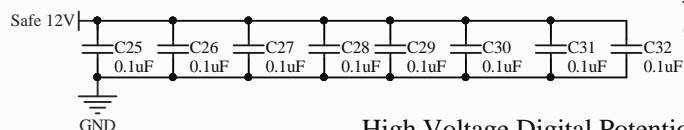
B

C



C

D



D

High Voltage Digital Potentiometers over SPI

Title: **Smart Sensor Simulator 2**

Subtitle: **Digital Potentiometers**

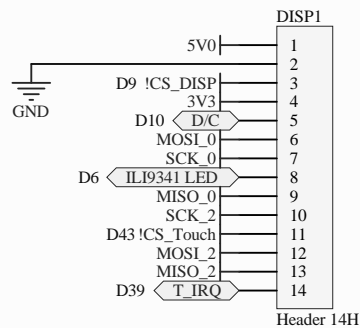
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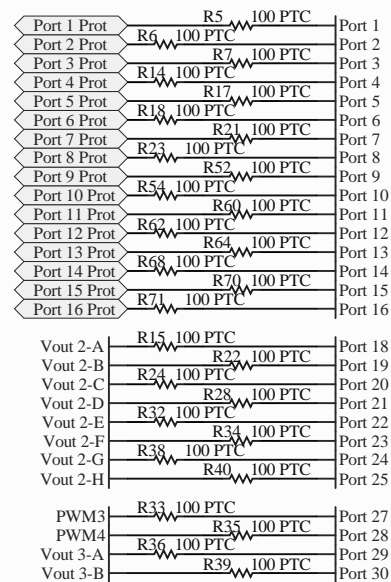
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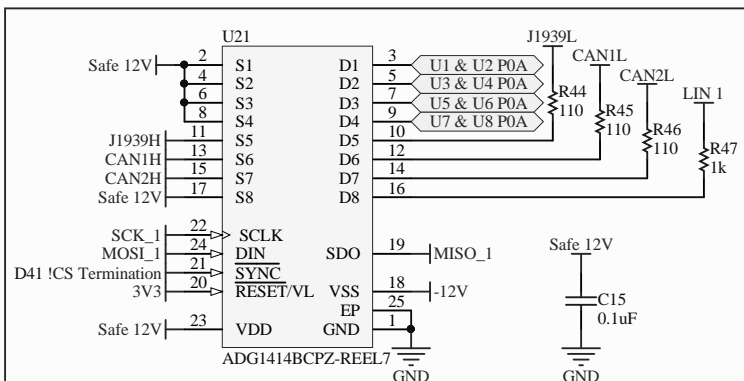




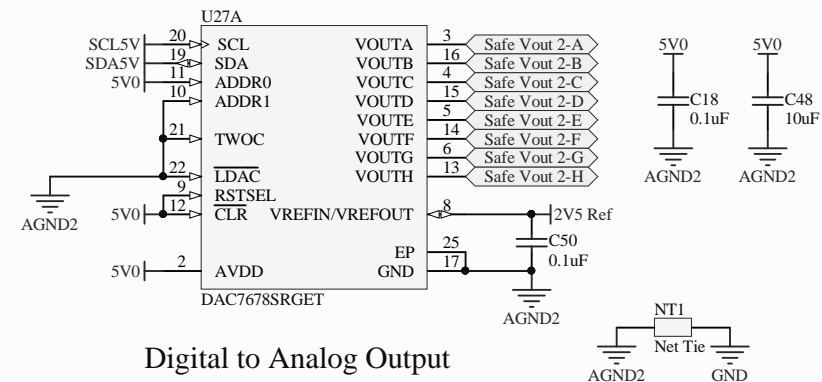
TFT Touchscreen, ILI9341



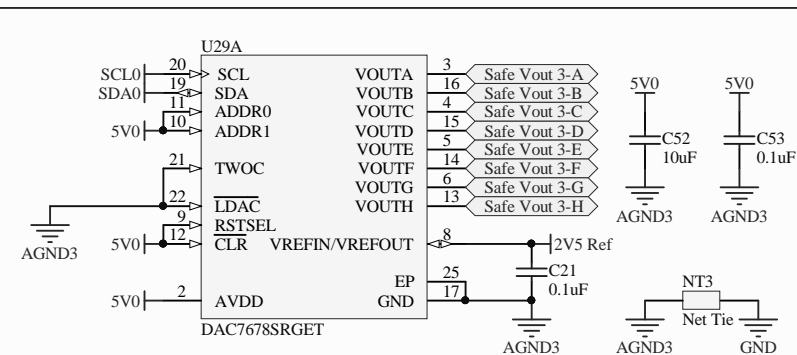
Circuit Protection Resistors



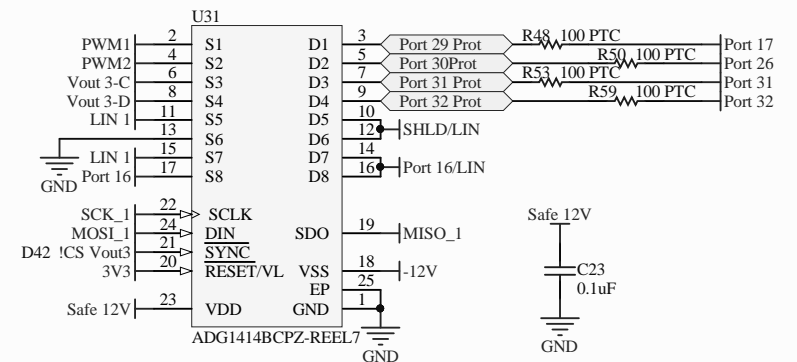
CAN Termination and Configuration Switches



Digital to Analog Output



Digital to Analog Output With Configuration Switch

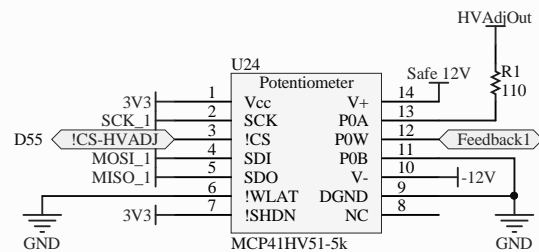
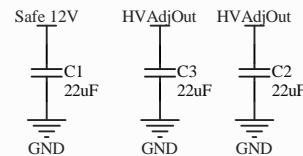
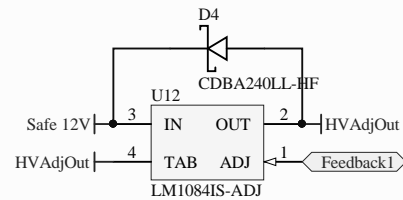
Title: **Smart Sensor Simulator 2**Subtitle: **Analog Out, LIN, J1708, Switches**

Date: 2/7/2017 Time: 9:29:35 AM Size: Letter Sheet 3 of 7

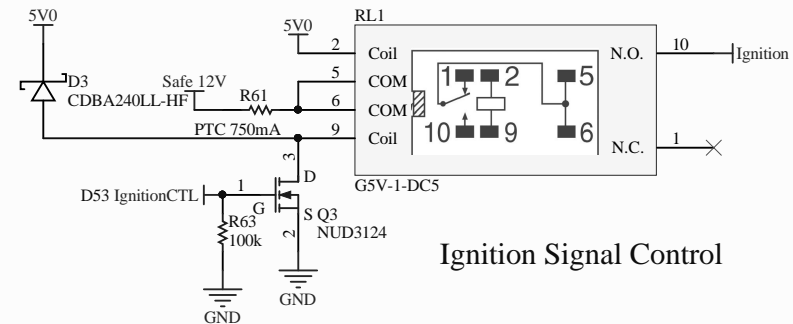
File: C:\Users\jeremy-daily\Dropbox (JHSI)\Electronics\SSS2\Analog Out.SchDoc

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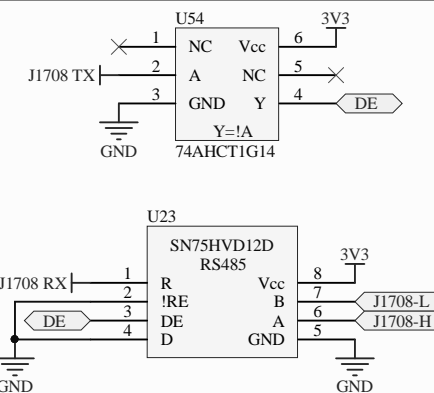




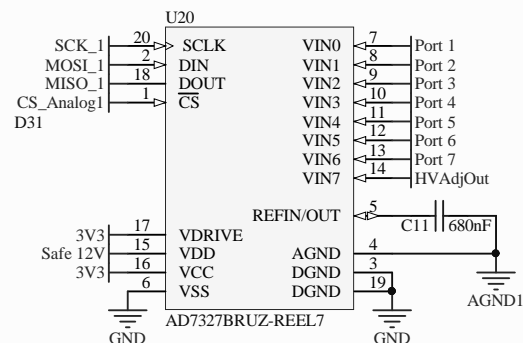
Adjustable High Current Output



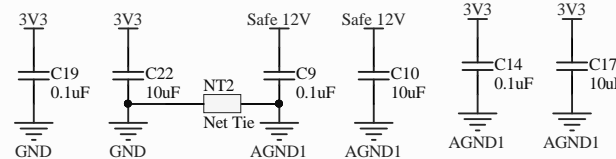
Ignition Signal Control



J1708 Circuit



Analog Voltage Input

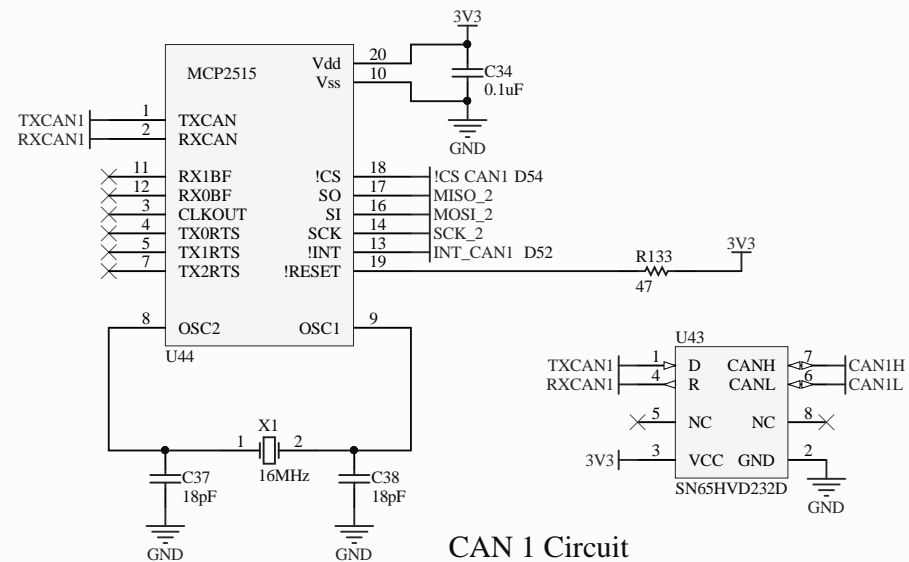
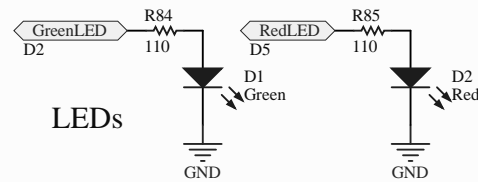
Title: **Smart Sensor Simulator 2**Subtitle: **12V Power, J1708, and Analog In**

Date: 2/7/2017 Time: 9:29:35 AM Size: Letter Sheet 4 of 7

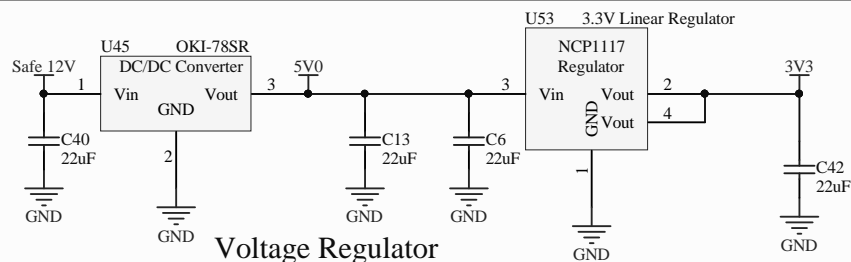
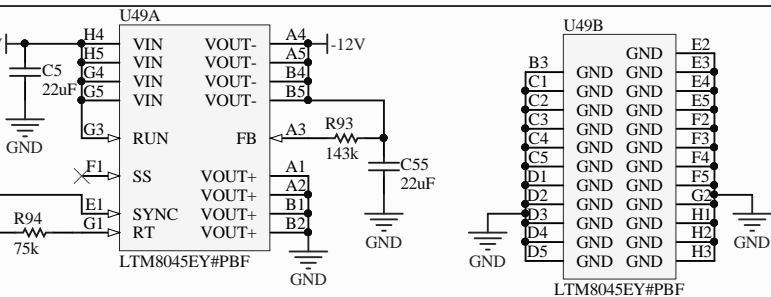
File: C:\Users\jeremy-daily\Dropbox (JHSI)\Electronics\SSS2\Analog Input and Linear Regulator.SchDoc

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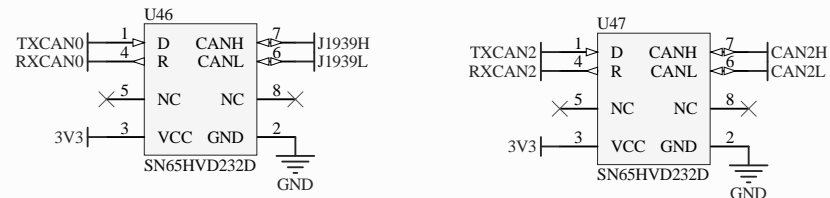
Wi-Fi Breakout Board



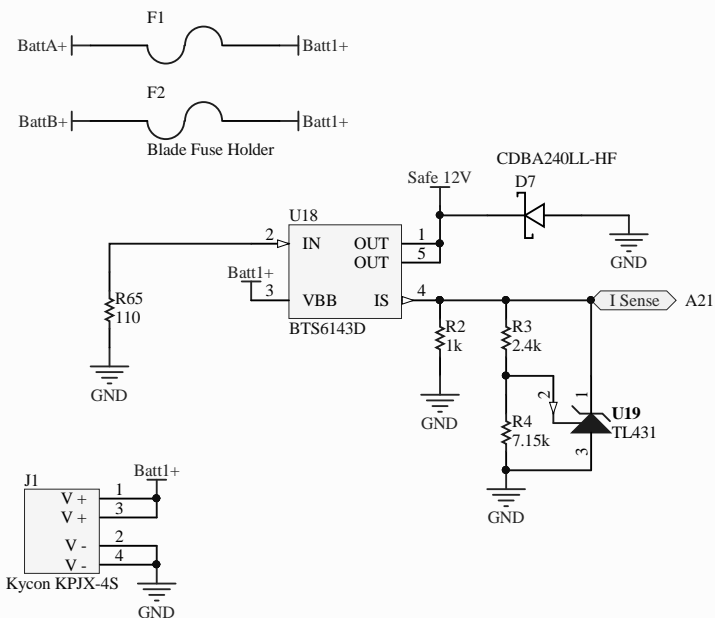
CAN 1 Circuit



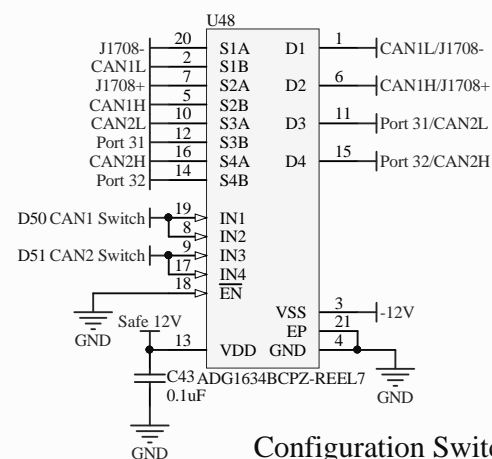
Voltage Regulator



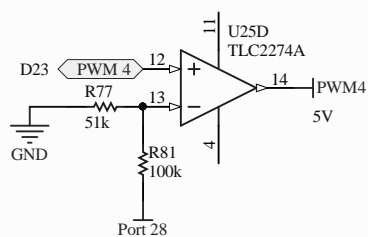
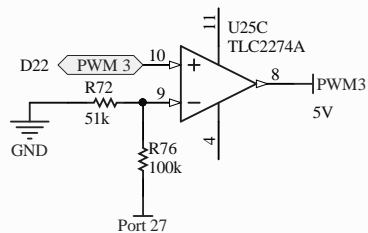
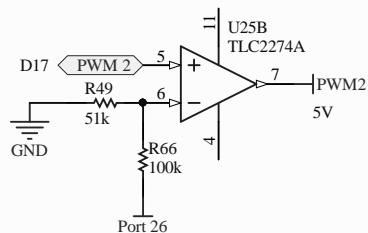
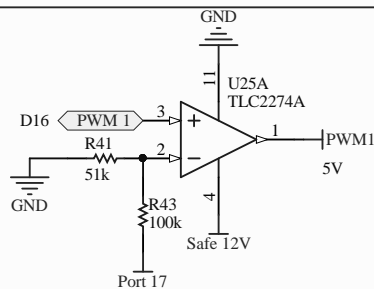
CAN Tranceivers



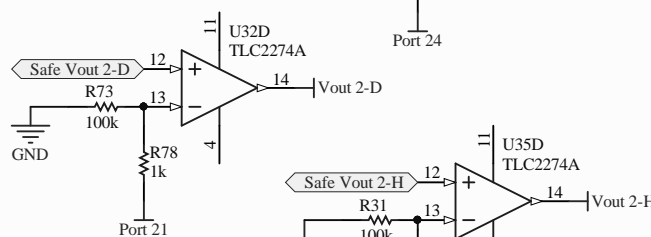
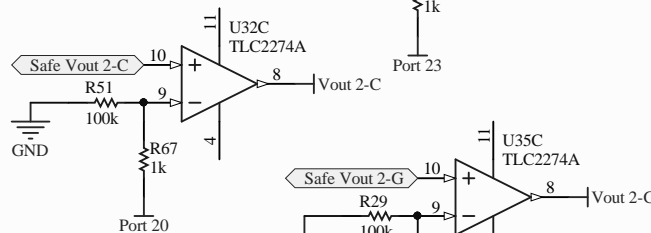
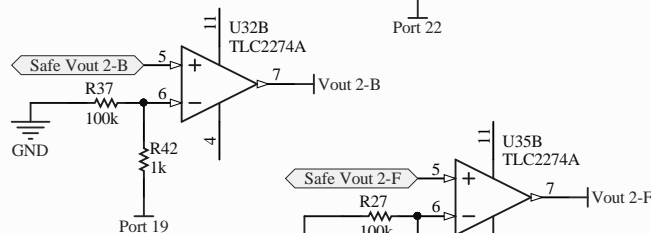
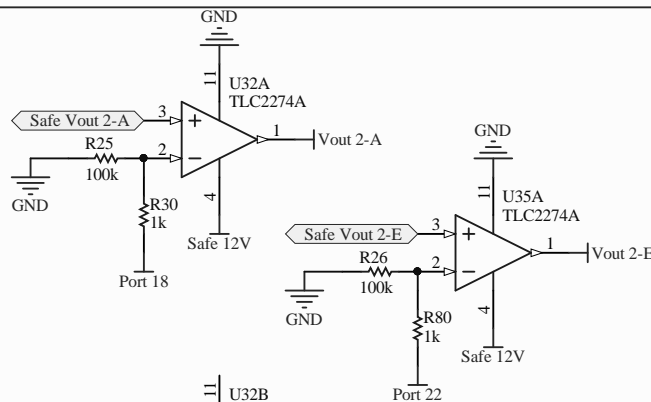
Protected Power Input with Reverse Polarity Protection



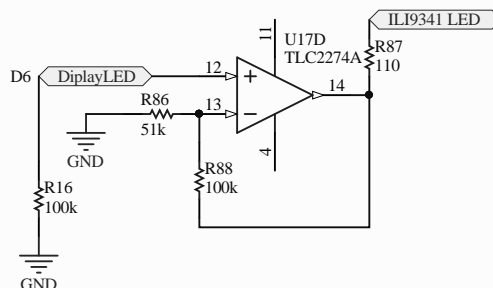
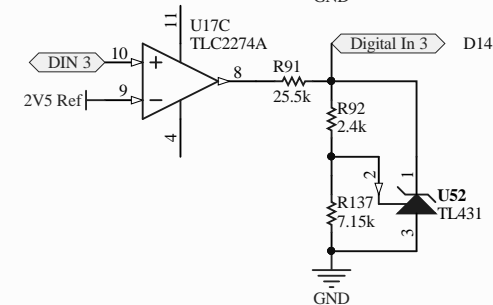
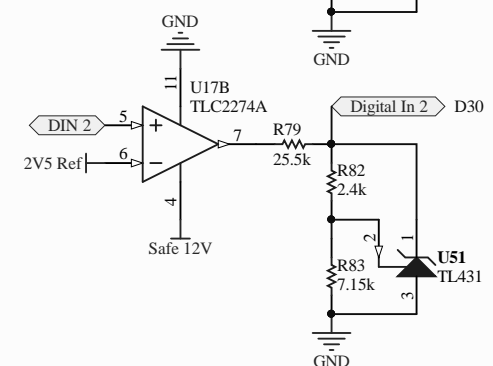
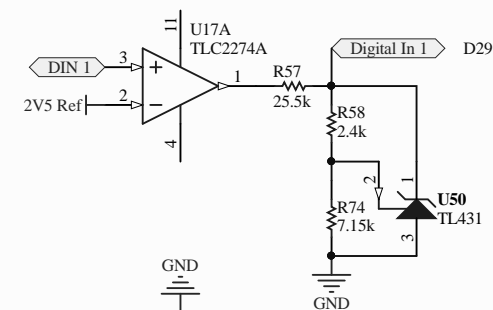
Configuration Switches



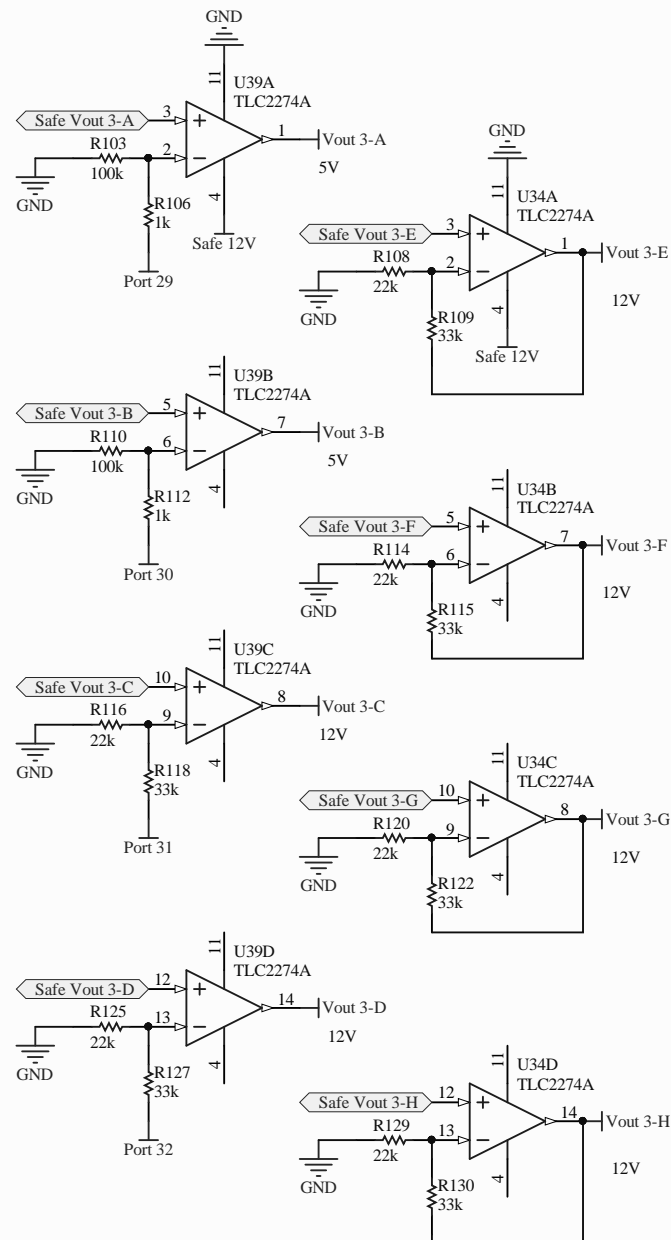
Up to 5V Output Amplifiers



Up to 5V Output Amplifiers

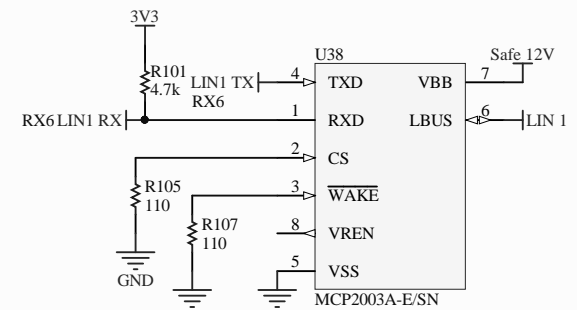


Digital In and Display LED Driver

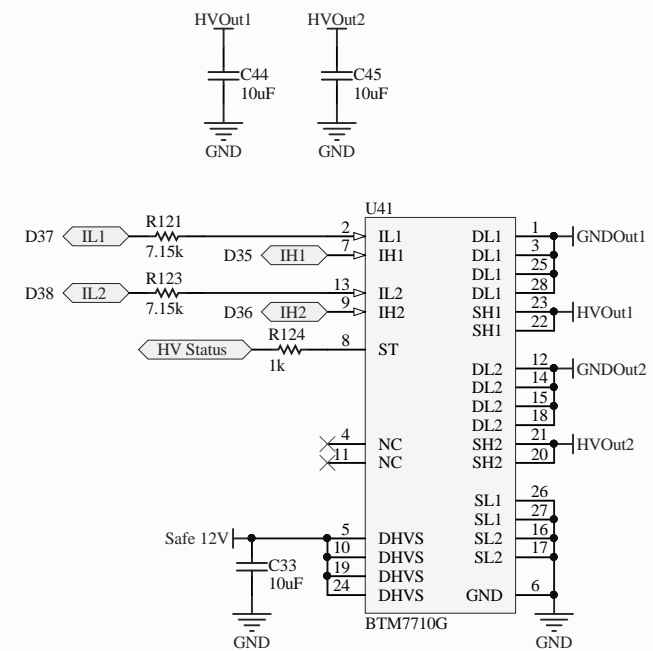


Up to 12V Output Amplifiers

The output from the DACs "Safe Vout" are 0 to 5V. The formula for output is $V_{out} = (1 + R2/R1) * V_{in}$, where R1 is the resistor connected to ground. If the R1 is not populated (or uses a high value, then the system becomes a voltage follower. If R2 is 33k and R1 is 22k, then the gain is 2.5, which can give 12.5V. If V_{in} is 3.3V, such as those PWM signals from the Teensy 3.6, then $R1 = 51k$ and $R2 = 100k$ to give gain of 1.51, which gives an output of 4.98V..



LIN 1 Bus Driver



H-Bridge Driver to provide Switched Power

Title: **Smart Sensor Simulator 2**

Subtitle: **Amplifiers, LIN and H-Bridge**

Date: 2/7/2017 Time: 9:29:36 AM Size: Letter Sheet 7 of 7

File: C:\Users\jeremy-daily\Dropbox (JHSI)\Electronics\SSS2\Analog Out Amplifiers DAC.SchDoc

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