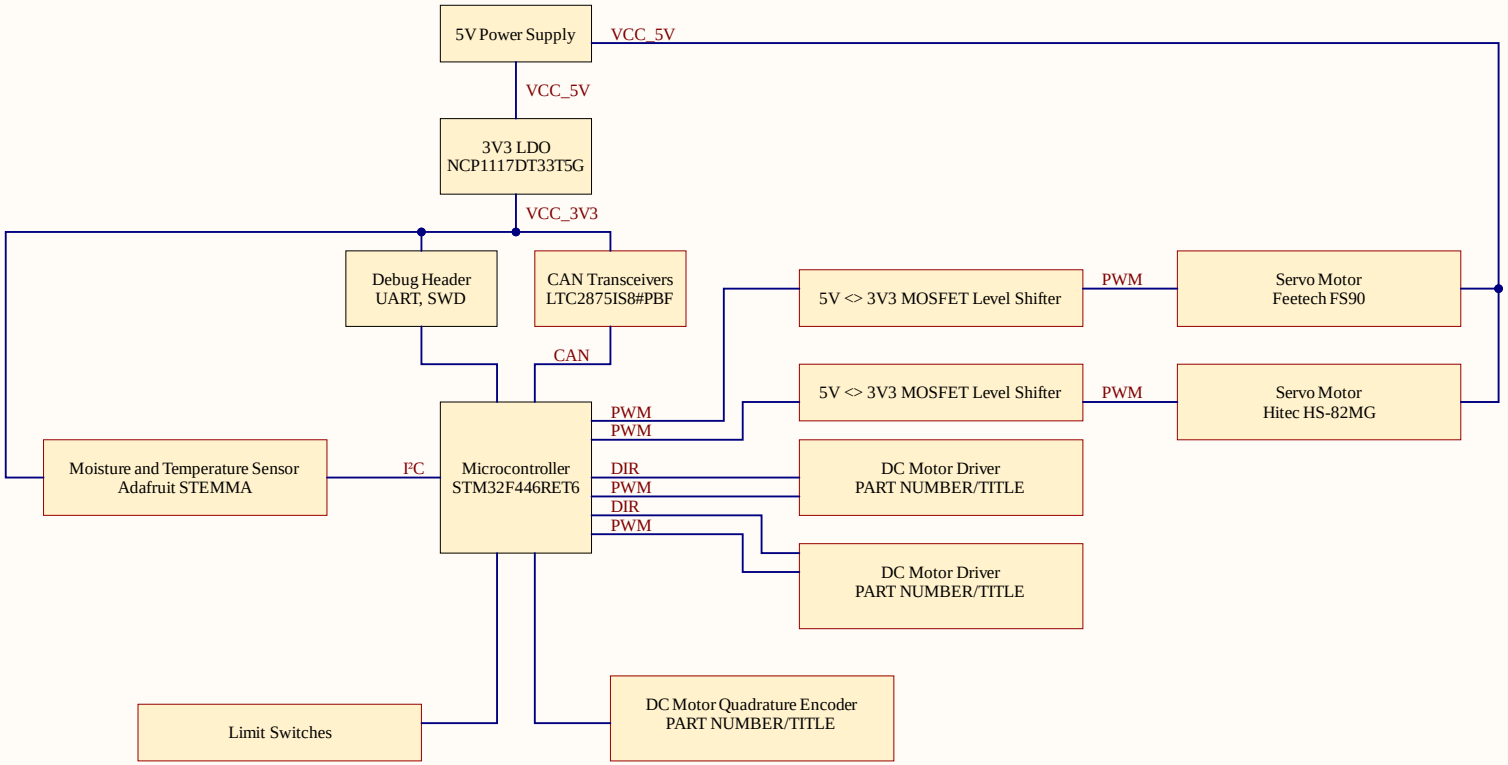
Mounting Holes

H1 H2 H3 H4



Title Science - 1_Block-Diagram		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: Christopher Arjune	
Date: 6/2/2020	Sheet 1 of 6	
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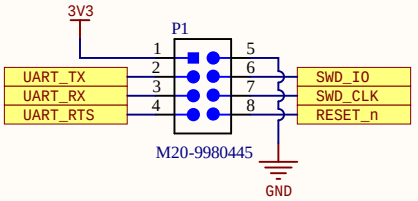
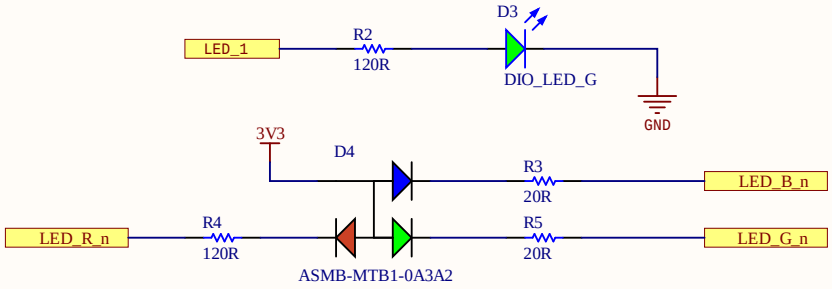
Debug/Programming



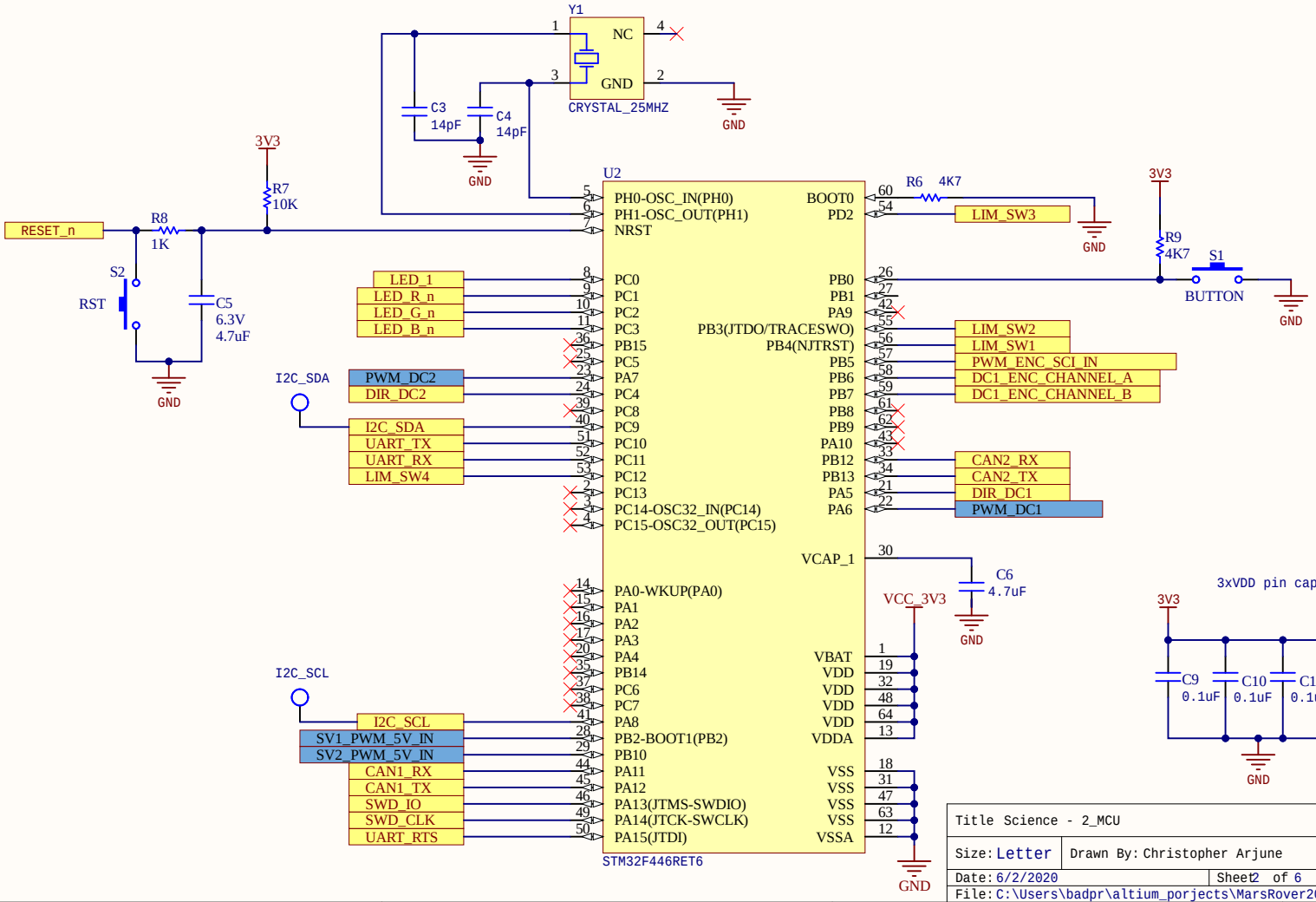


Current Calculations

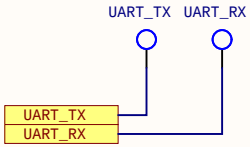
Green LED voltage drop: 2.2V
- I = (3.3-2.2V)/120 = 10.83mA

RGB LED voltage drops:
- Red: 2.1V: I = (3.3-2.1V)/120 = 10mA
- Blue: 3.1V: I = (3.3-3.1V)/20 = 10mA
- Green: 3.1V: I = (3.3-3.1V)/20 = 10mA

STM32F446RET6

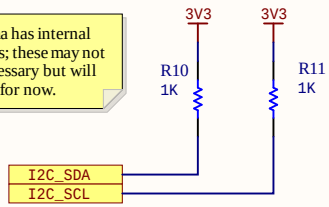


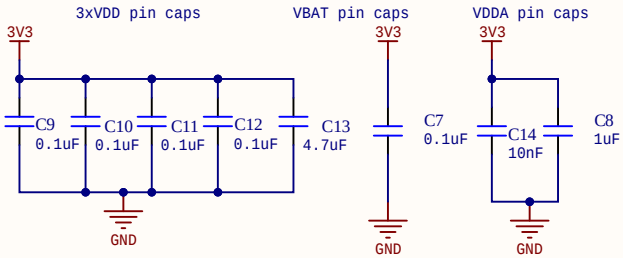
Testpoints



I²C Pullups

Stemma has internal pullups; these may not be necessary but will be left for now.





Title Science - 2_MCU		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
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Date: 6/2/2020	Sheet 2 of 6	
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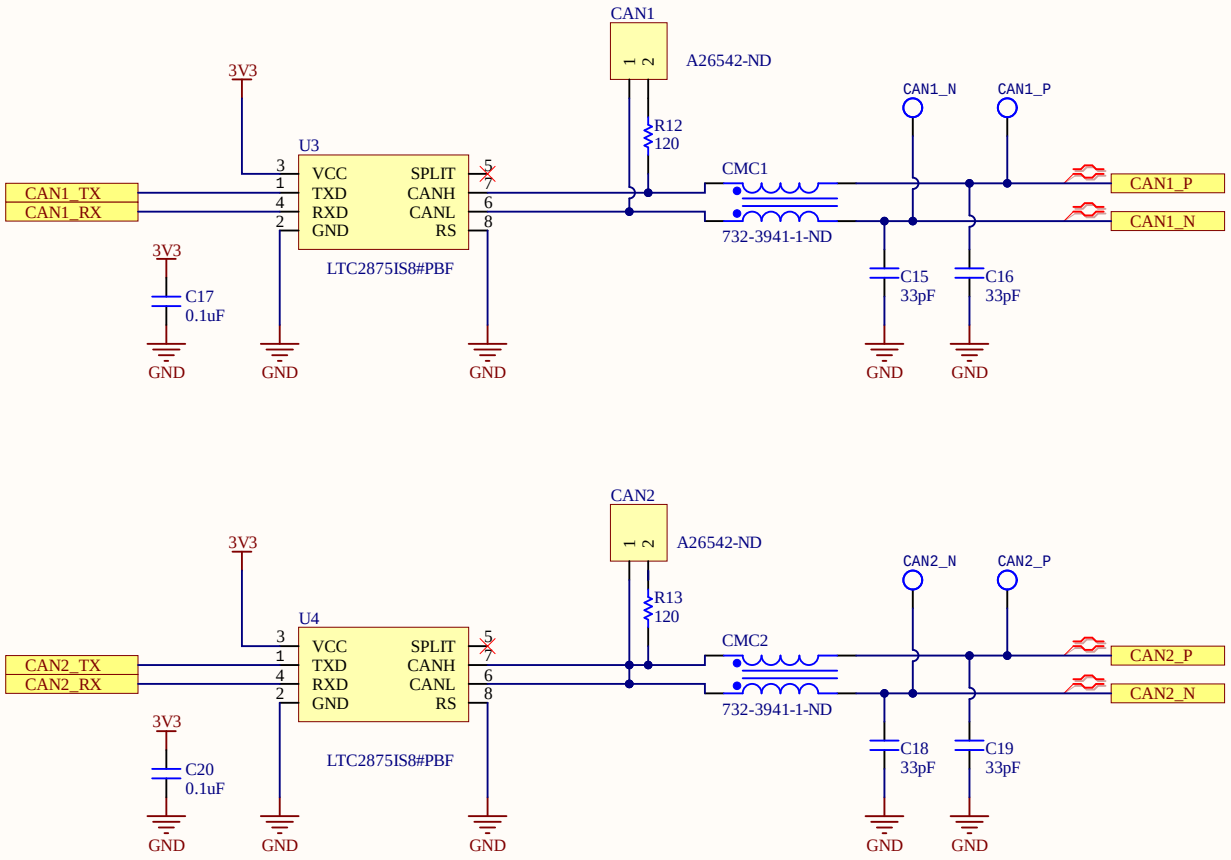
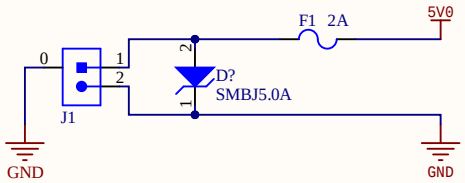
CAN Transceivers

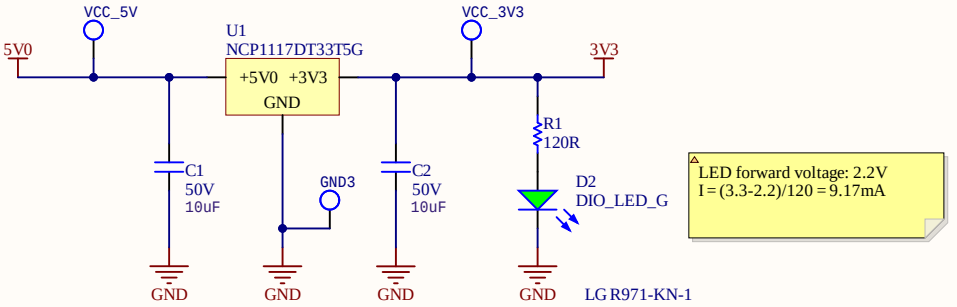


Title Science - 3_CAN		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: Christopher Arjune	
Date: 6/2/2020	Sheet 3 of 6	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\CAN.SchDoc		

Power In



5V -> 3V3 LDO



LED forward voltage: 2.2V
I = (3.3-2.2)/120 = 9.17mA

- V2: Replace LDO with an LDO with less ESR requirements
- Explore adding bulk capacitor

Title Science - 4_Power		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: Christopher Arjune	
Date: 6/2/2020	Sheet 4 of 6	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\POWER.SchDoc		

Title	Science - Support
Size	Letter
Drawn By	C.Arjune, K.Hong
Date	6/2/2020
Sheet	5 of 5
File	C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\Support.SchDoc

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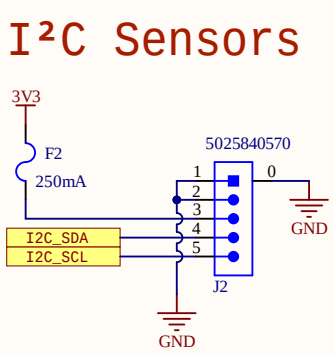
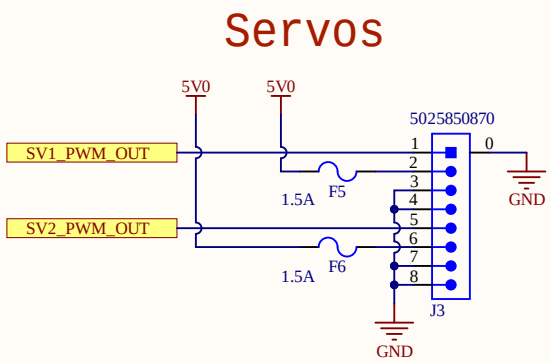
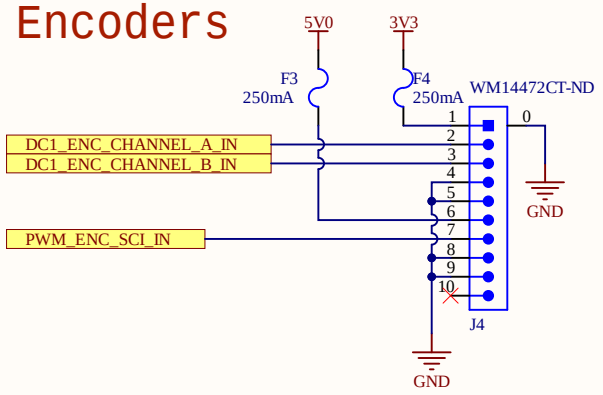
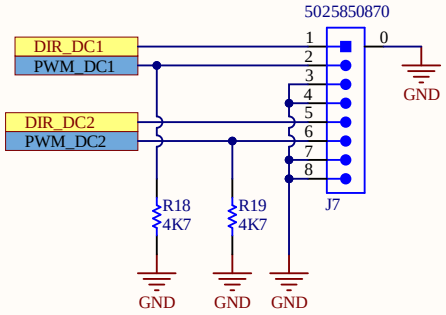
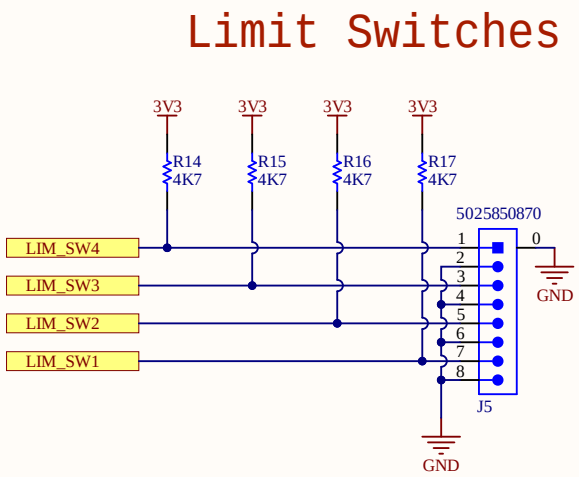
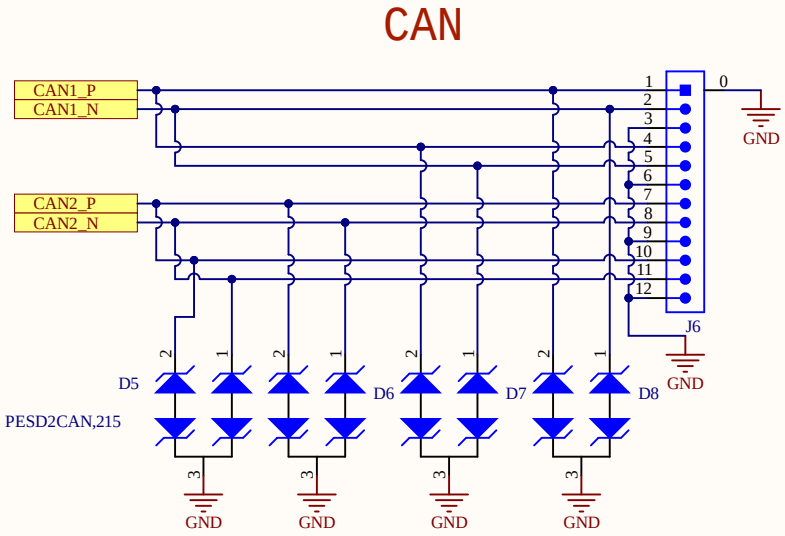






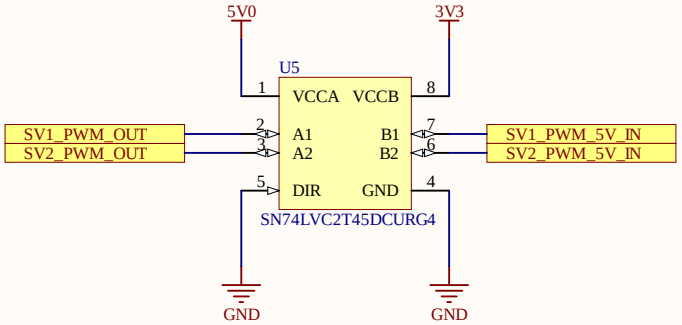




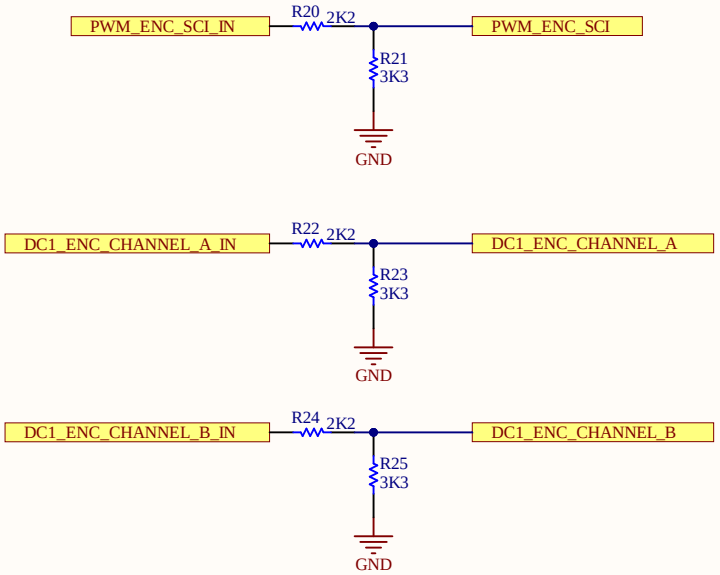


Title Science - 5_Integrated-Connectors		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: Wolfgang Windholtz	
Date: 6/2/2020	Sheet 5 of 6	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\IntegratedConnectors.SchDo		

Servo Level Shifters



Encoder Voltage Dividers



Low-pass filter cutoff frequency:
fc = 1 / (2*PI*3.3k*?)
= ? Hz

Voltage Division:
Vout = 5 * 3.3k / (2.2k + 3.3k)

Title Science - 6_Servo_and_Encoders		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
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File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\Servo and Encoders.SchDoc		