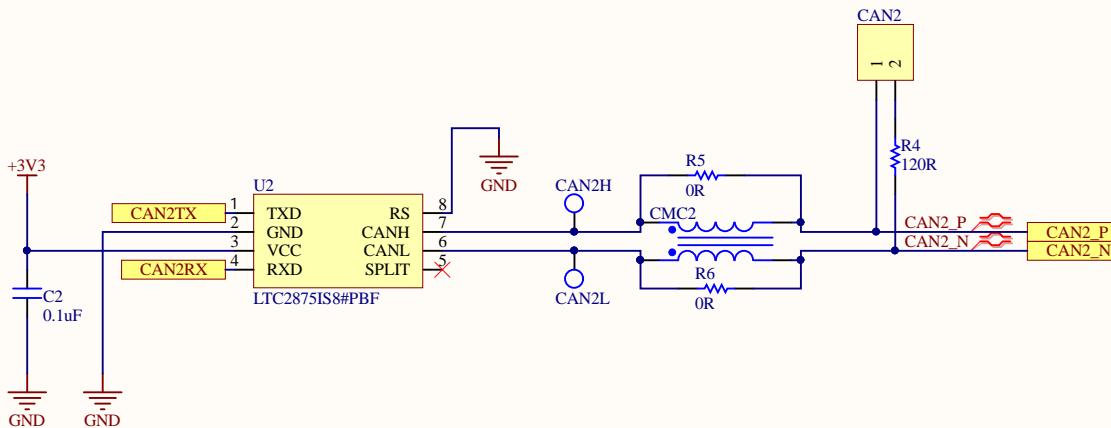
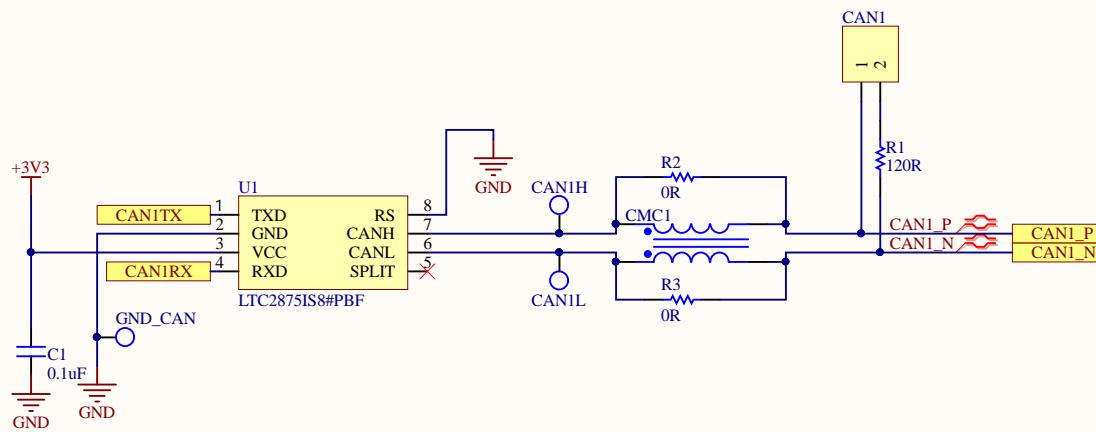
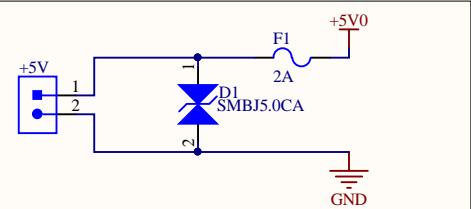


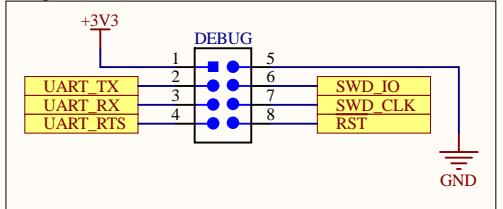
CAN Transceivers



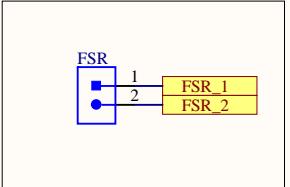
Power Connector



Debug Connector



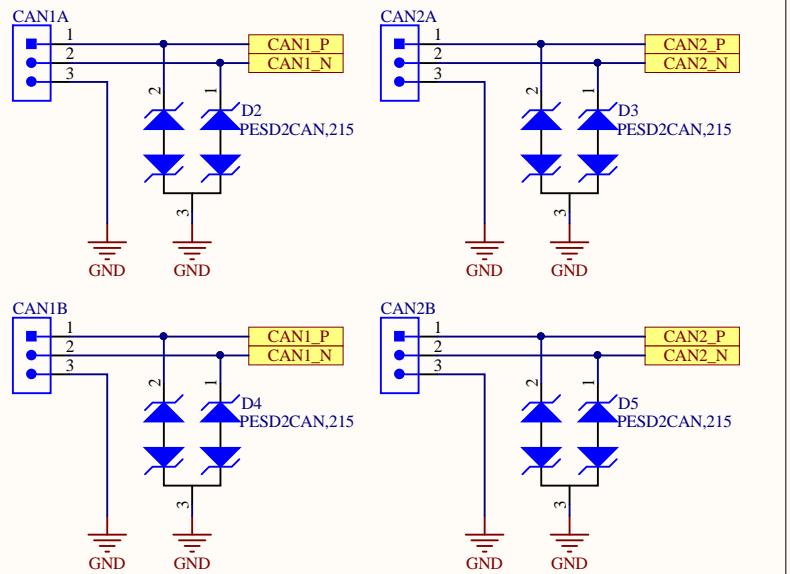
FSR



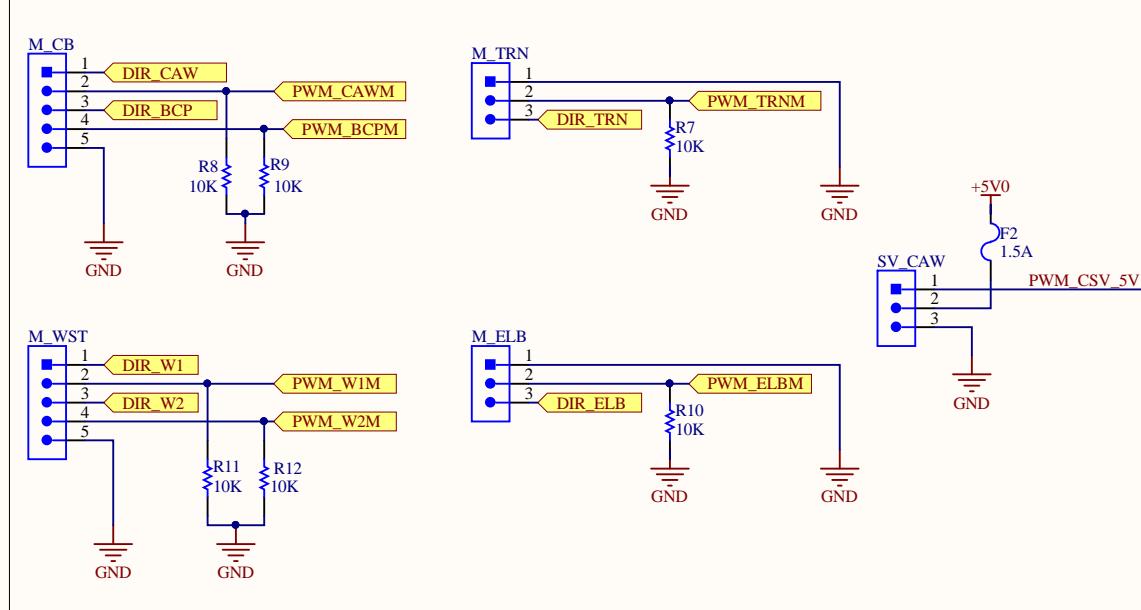
Acronyms Explained

FSR: Force Sensitive Resistor
CAW: Claw
WST: Wrist
BCP: Bicep (Shoulder)
ELB: Elbow
TRN: Turntable
DIR: Direction for motors

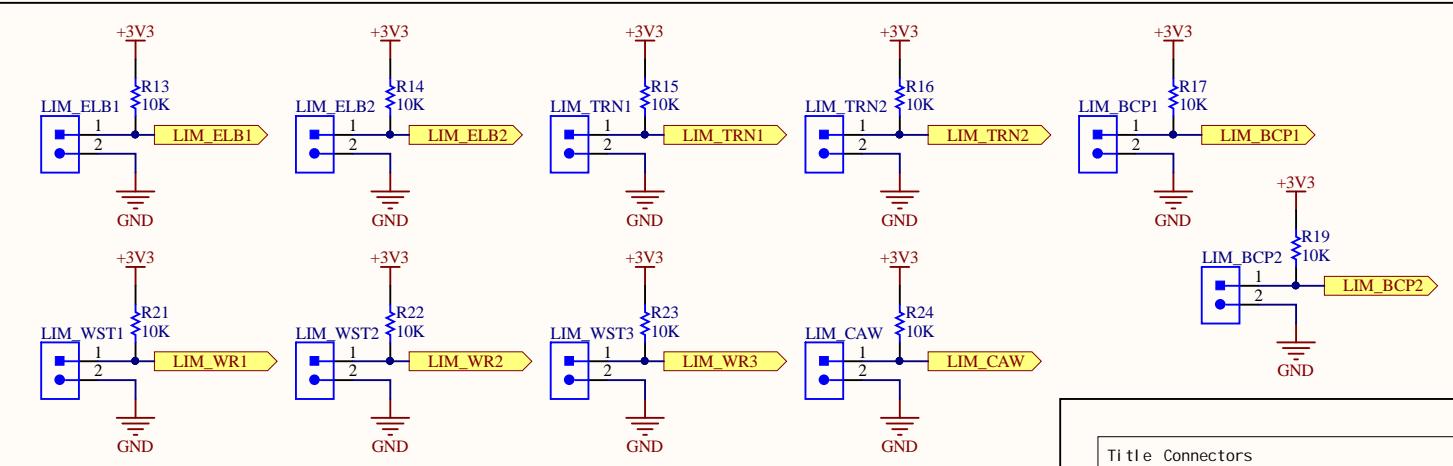
CAN Connections



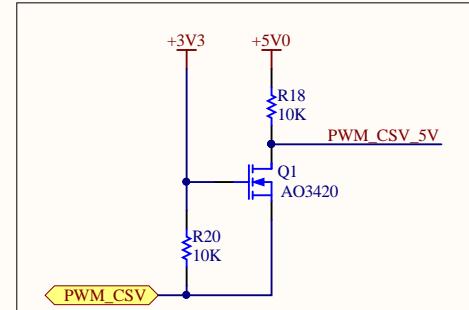
Motors



Limit Switches



Servo Level Shifter



Title Connectors

Size: Letter | Drawn By: Kyle Hong, Noah Chapman

Date: 1/26/2020 | Sheet of

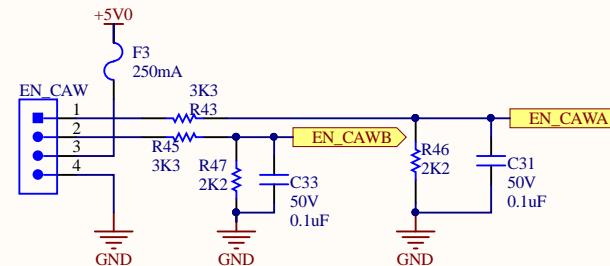
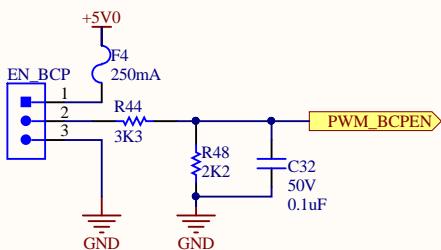
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200 University Avenue
Waterloo
Ontario
Canada N2L 3G6

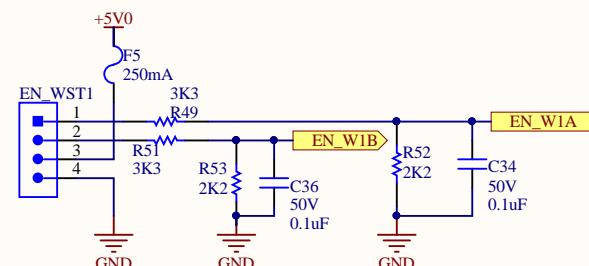
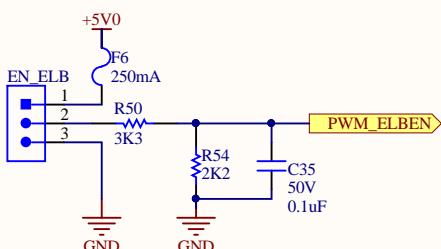


Encoders

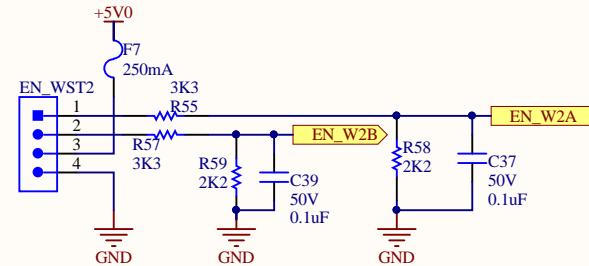
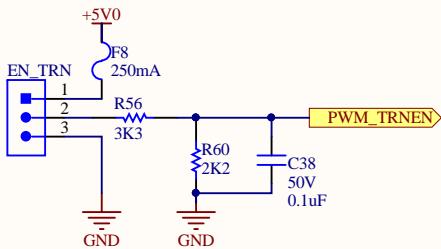
A



B



C



▲ Cut-off Frequency Calculation
 $f = 1/(2\pi \cdot 3.3k \cdot 0.1\mu) = 482.29 \text{ Hz}$

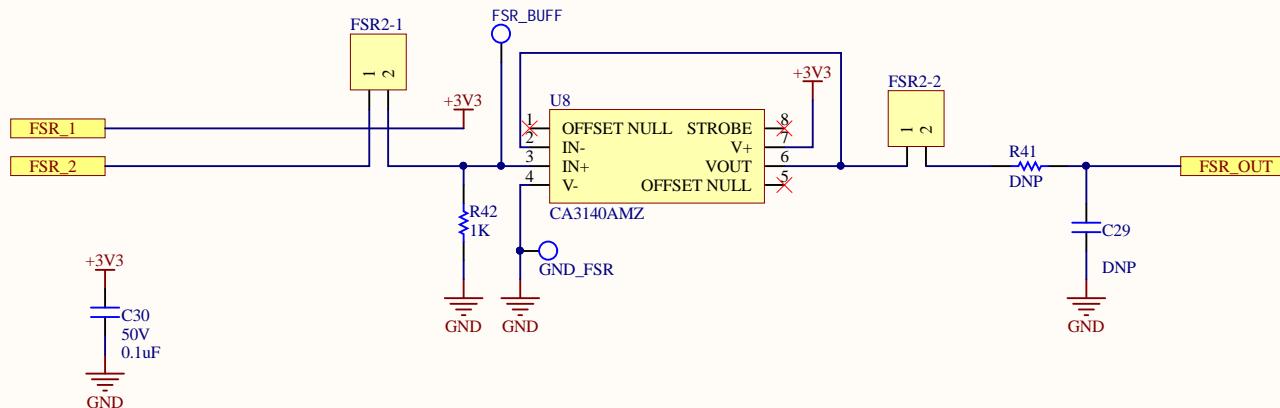
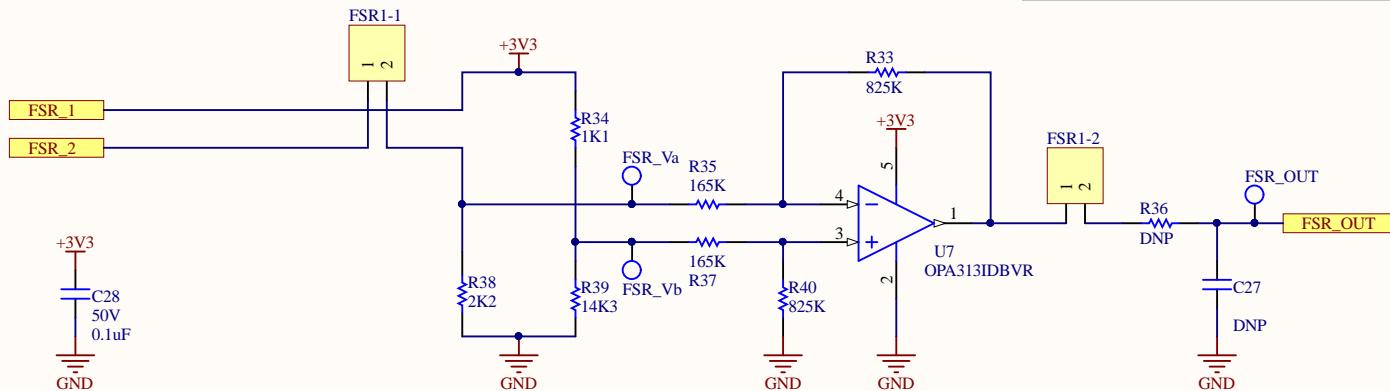
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Date: 1/26/2020	Sheet# of *	*	*
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Force Sensitive Resistor

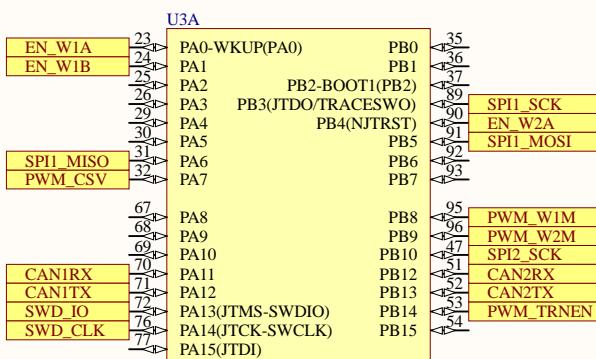
Links to calculations and documentation

<https://docs.google.com/document/d/1rw19DyF2suYmOmllnorCrfqnUpDln50-sqe5KjQKnCs/edit>

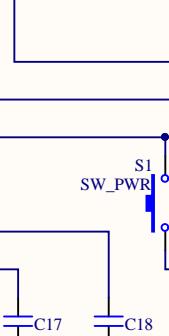
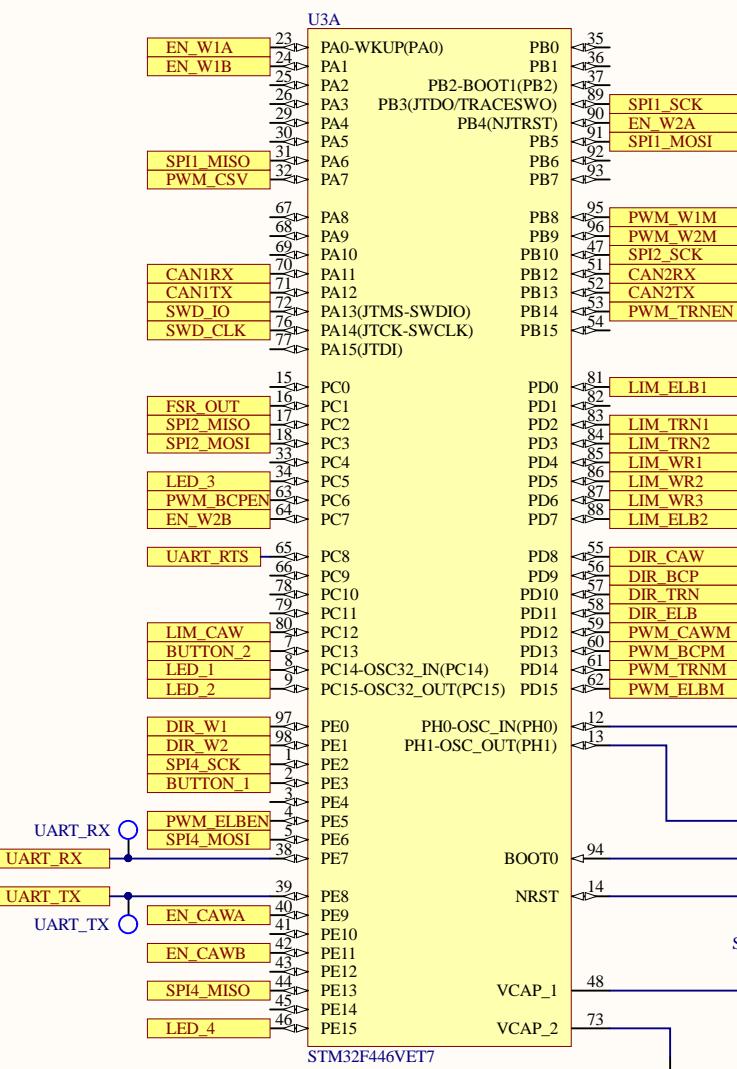
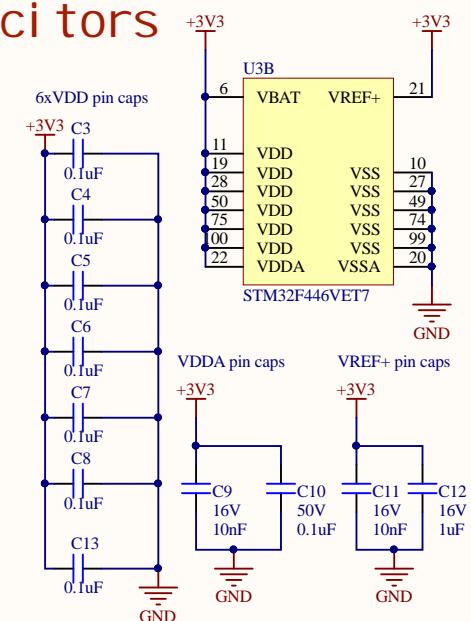
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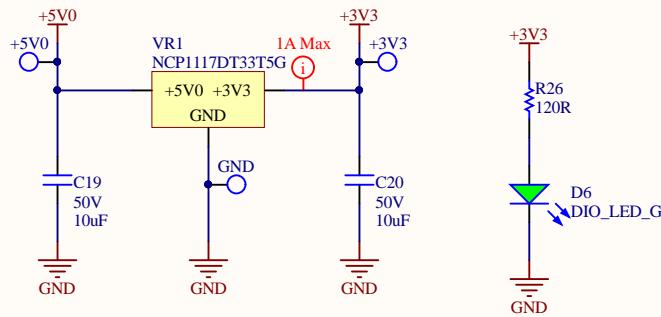
STM32F446VET7



Bypass Capacitors



5V-3.3V LDO

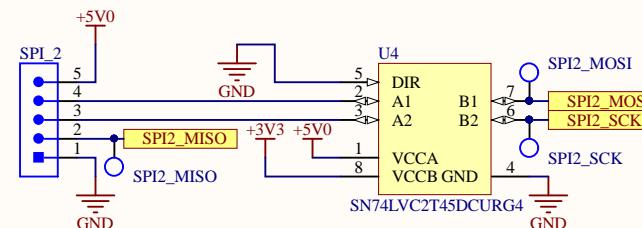
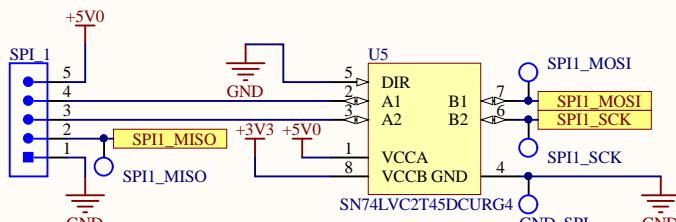


Current Calculations

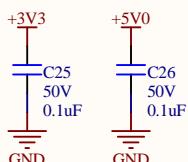
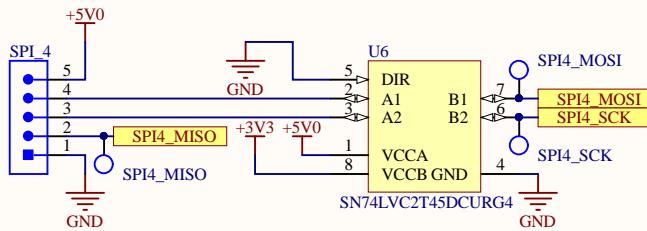
Green LED voltage drop: 2.2V
 $I = (3.3 - 2.2V)/120 = 10.83mA$

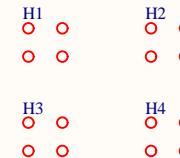
Title Power		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6	UW ROBOTICS TEAM
Size: Letter Drawn By: Kyle Hong			
Date: 1/26/2020 Sheet of			
File: C:\Users\kyleh\Desktop\Works\UWRT\MarsRover2020-PCB\Projects\Arm\Rev1\sch\POWER.SchDoc			

SPI Encoders



Used level shifter because MCU SPI connectors are 5V tolerant and registers voltages greater than 3V3 as high. Didn't shift MISO because SPI can handle that level of input.

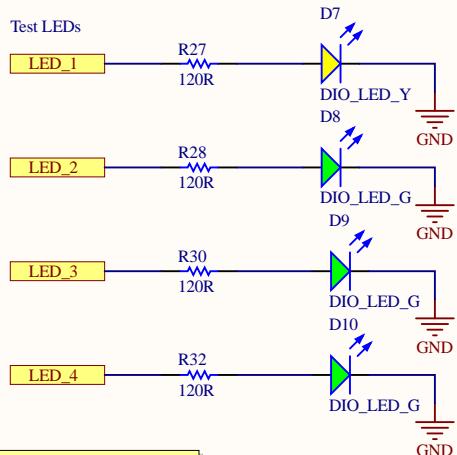




A

A

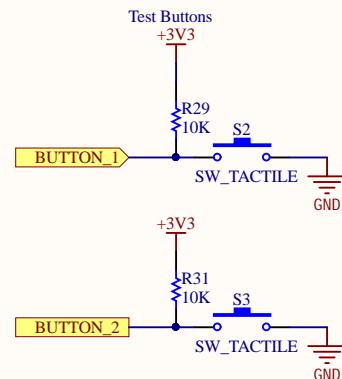
Test LEDs



B

B

Test Buttons



C

C

Current Calculations

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

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

D

D

Title Support

Size: Letter | Drawn By: Noah Chapman

Date: 1/26/2020 | Sheet of

File: C:\Users\kyleh\Desktop\Works\UWRT\MarsRover2020-PCB\Projects\Arm\Rev1\sch\Support.SchDoc

UW Robotics
 200 University Avenue
 Waterloo
 Ontario
 Canada N2L 3G6

