

5V - 3.3V Buck Converter

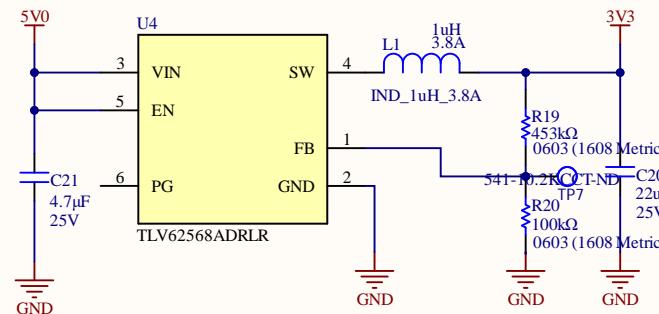
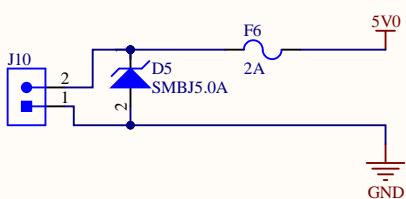
Designed for 3.3V - 5V input

Route for 1A in

Inductor: SDR0403-1R0ML
1uH, 20%, 33mOhm DCR (max)
3.8A (rms), 5.5A (sat), 3.2mm tall

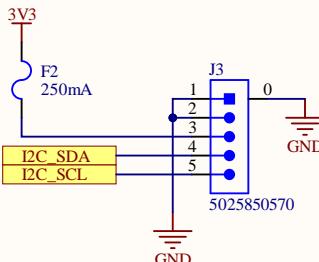
Route for 3A out

Maximum output current = 2A
Maximum output power = 6.6W
Expected efficiency at 1A = 94.3%

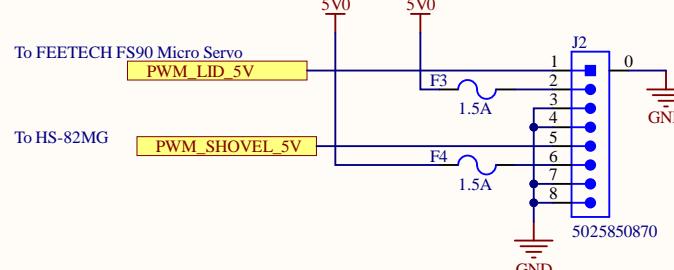


Encoders

I²C Sensors

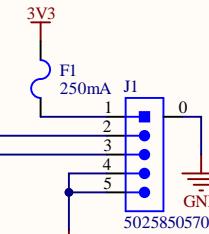


Servos



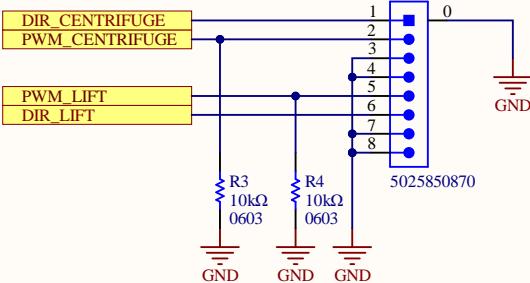
64 CPR Encoder (Helical Pinion) on Motor

LIFT ENC CHANNEL_B 5V
LIFT ENC CHANNEL_A 5V



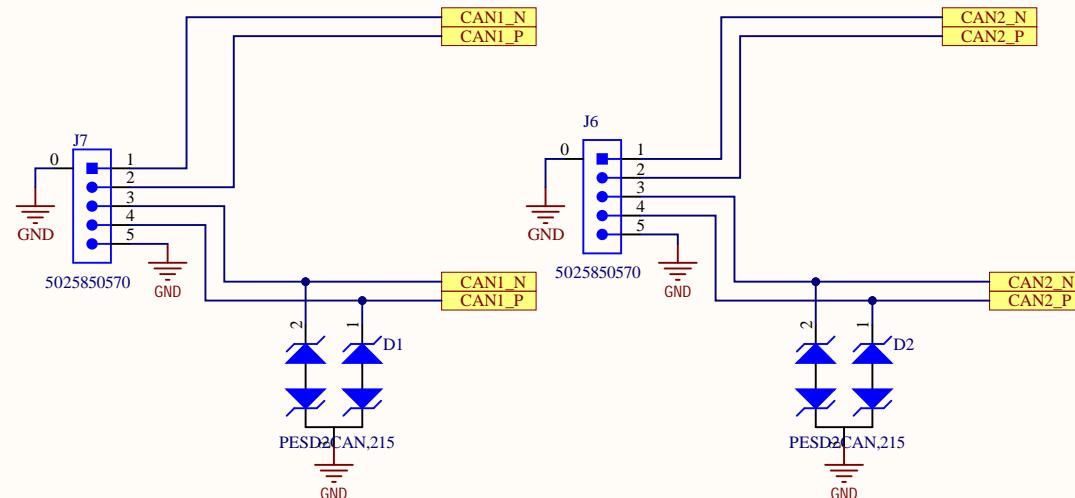
DC Motors

Pololu 4693 with encoder

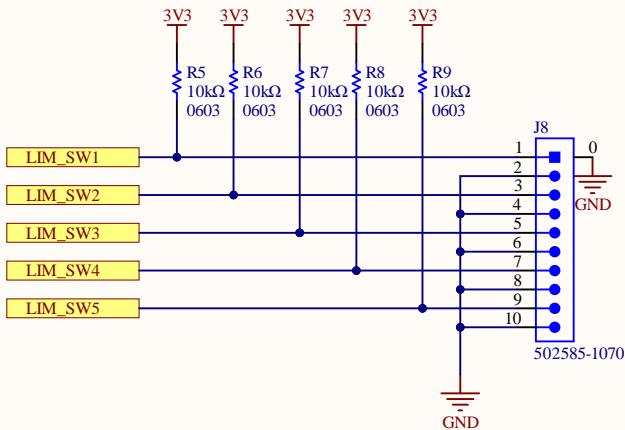


Pololu 4685

CAN



Limit Switches



Title: Science - Integrated-Connectors

Size: Letter Drawn By: Wolfgang Windholz

Date: 10/3/2020

Sheet 2 of 5

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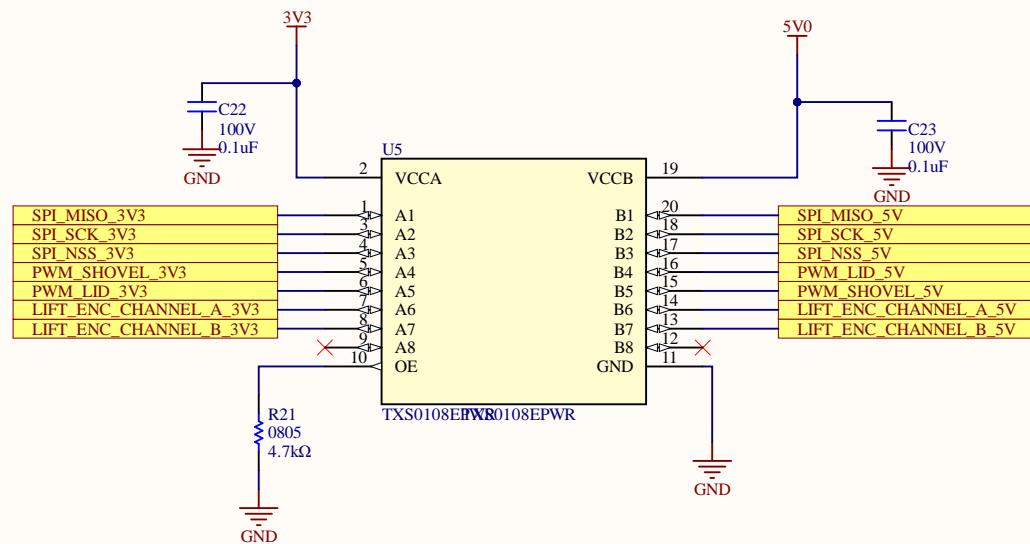
A

Decoupling values may
need to be changed

Level Shifter

5V - 3V3 Conversion

B



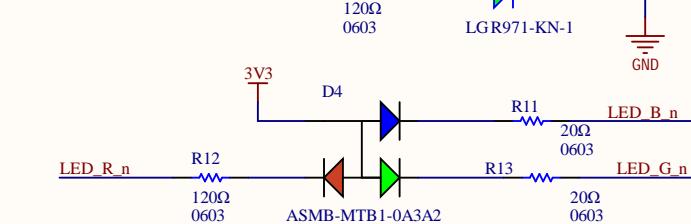
C

Mounting Holes



D

Title: Science - Level_Shifter		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: Wolfgang Windholz	
Date: 10/3/2020	Sheet 3 of 5	
File: C:\Users\Wolfgang.Windholz\ati\um_projects\MarsRover2021-hardware\Projects\Science\Rev2\SH3 - LE		UW ROBOTICS TEAM

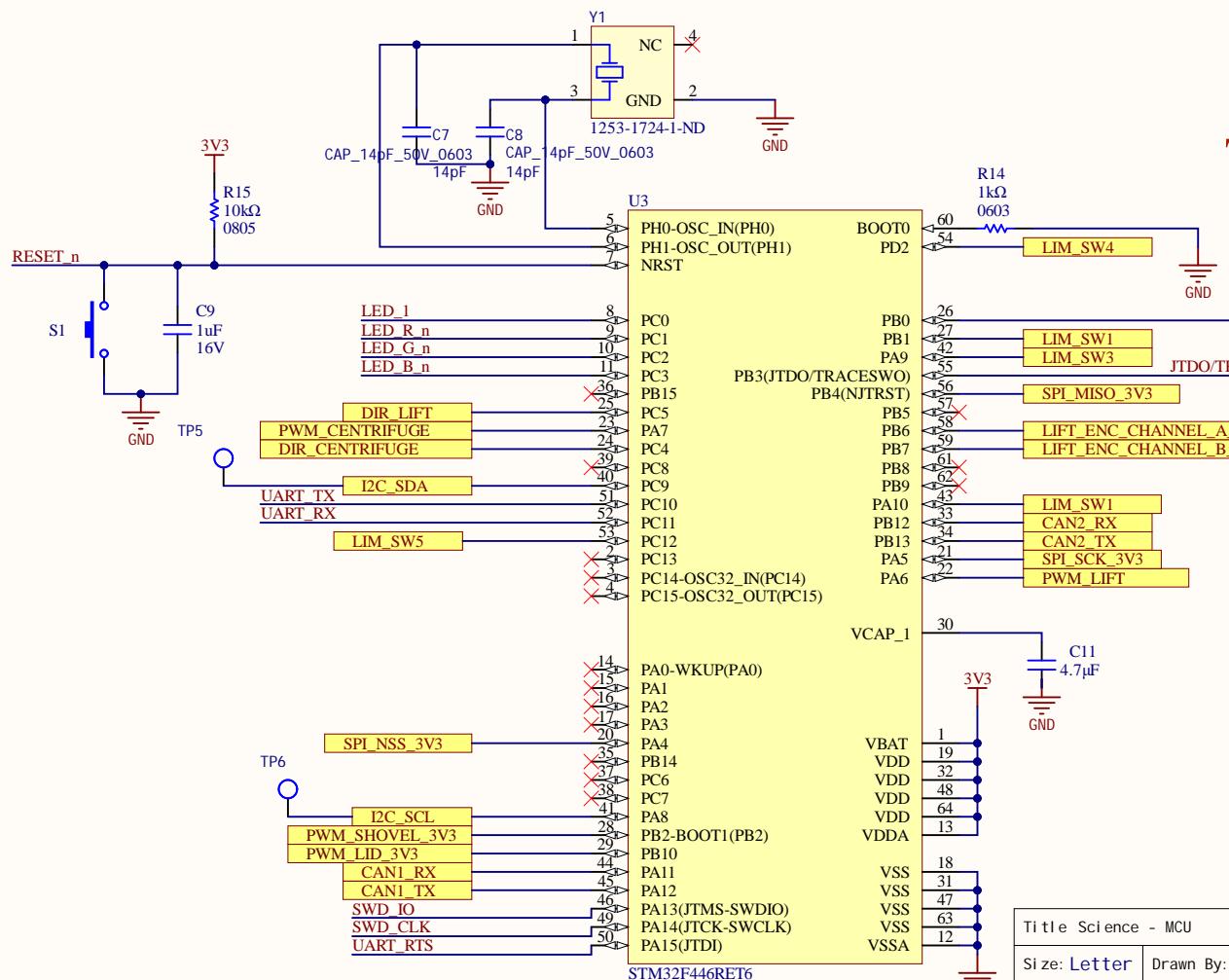
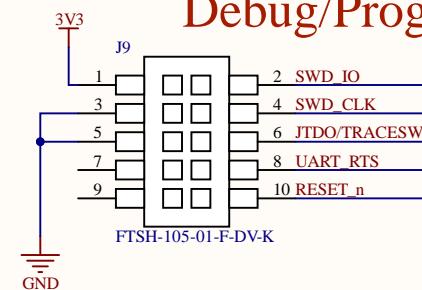


Current Calculations

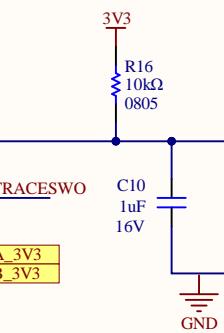
Green LED voltage drop: 2.2V
 $I = (3.3 - 2.2)/120 = 10.83\text{mA}$

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

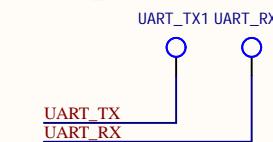
Debug/Programming



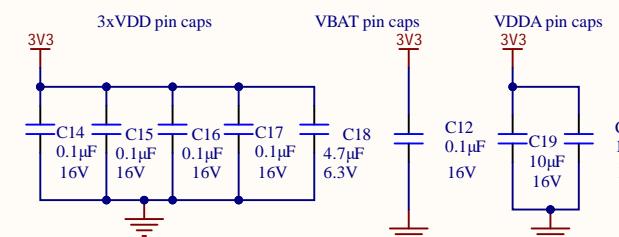
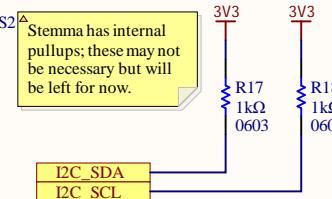
Test Button



Testpoints

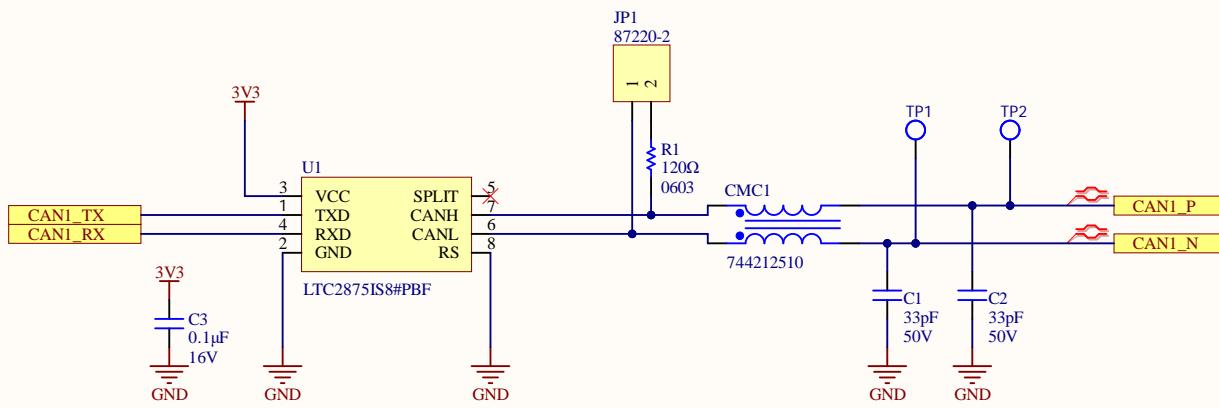


I²C Pullups



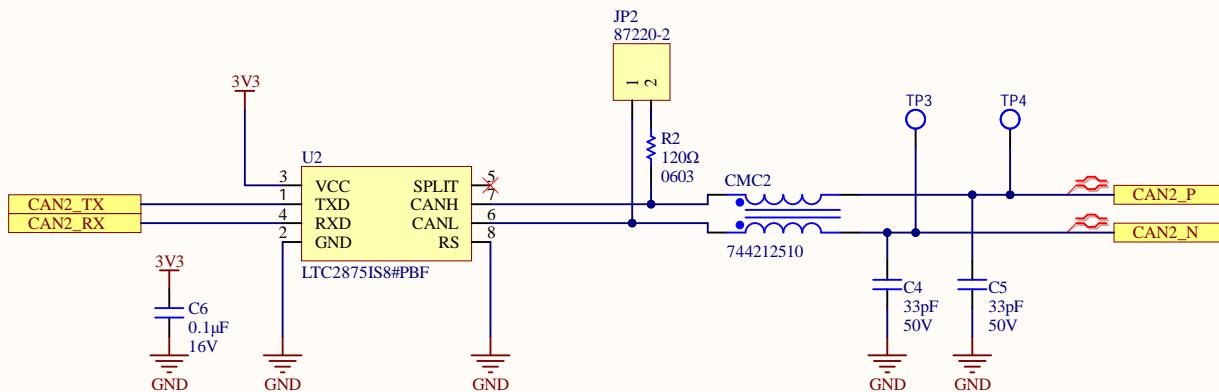
CAN Transceivers

B



B

C



C

D

