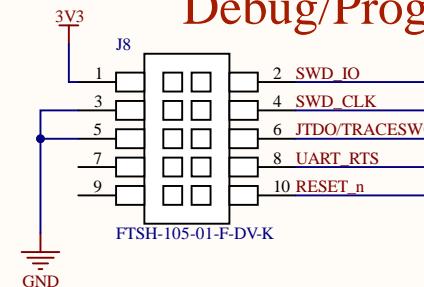


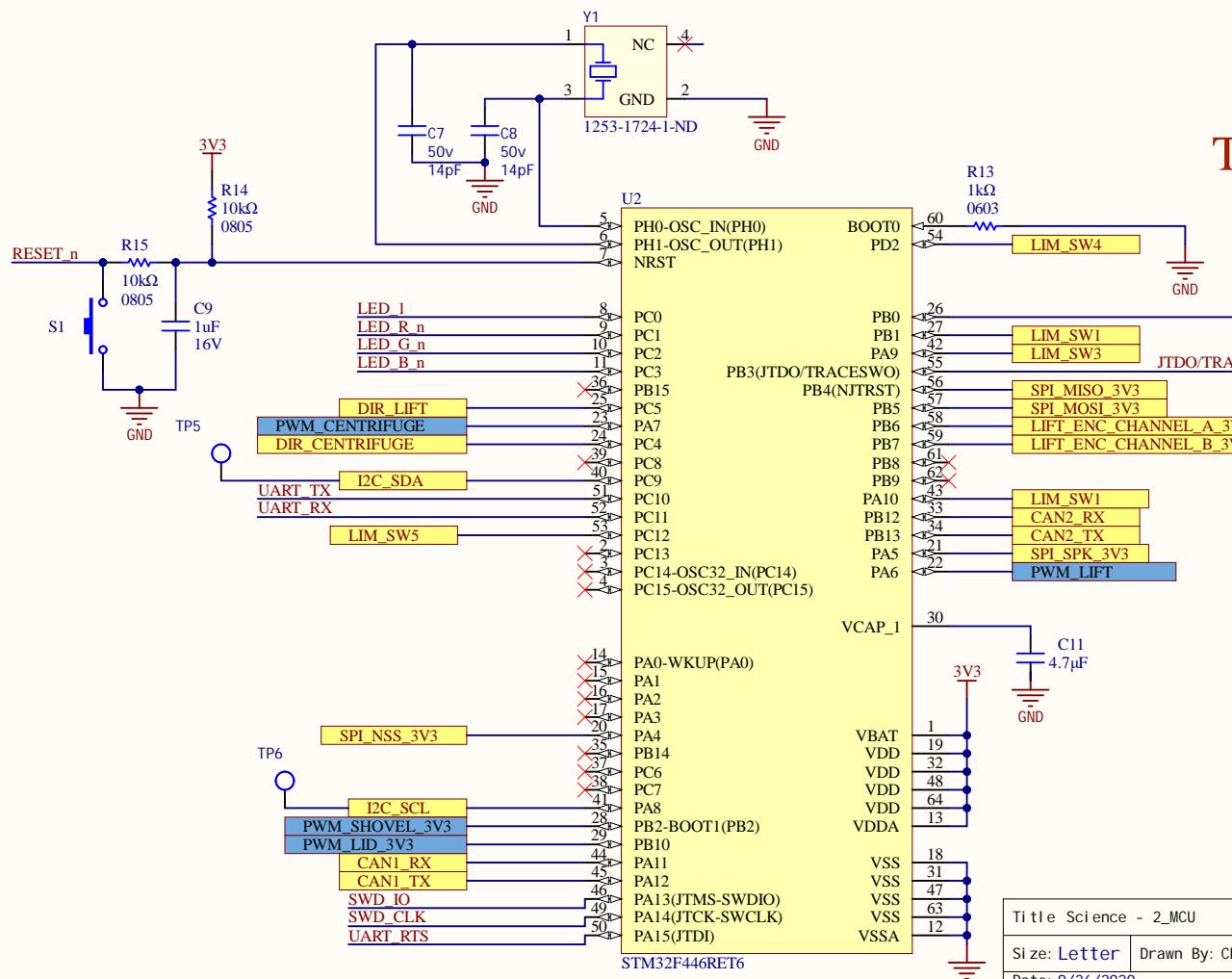
Current Calculations

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

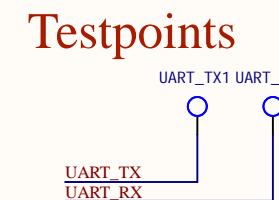
RGB LED voltage drops:
 - Red: 2.1V: $I = (3.3 - 2.1)/120 = 10\text{mA}$
 - Blue: 3.1V: $I = (3.3 - 3.1)/20 = 10\text{mA}$
 - Green: 3.1V: $I = (3.3 - 3.1)/20 = 10\text{mA}$



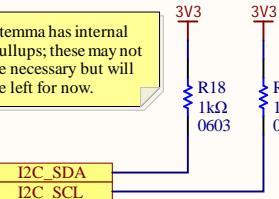
Debug/Programming



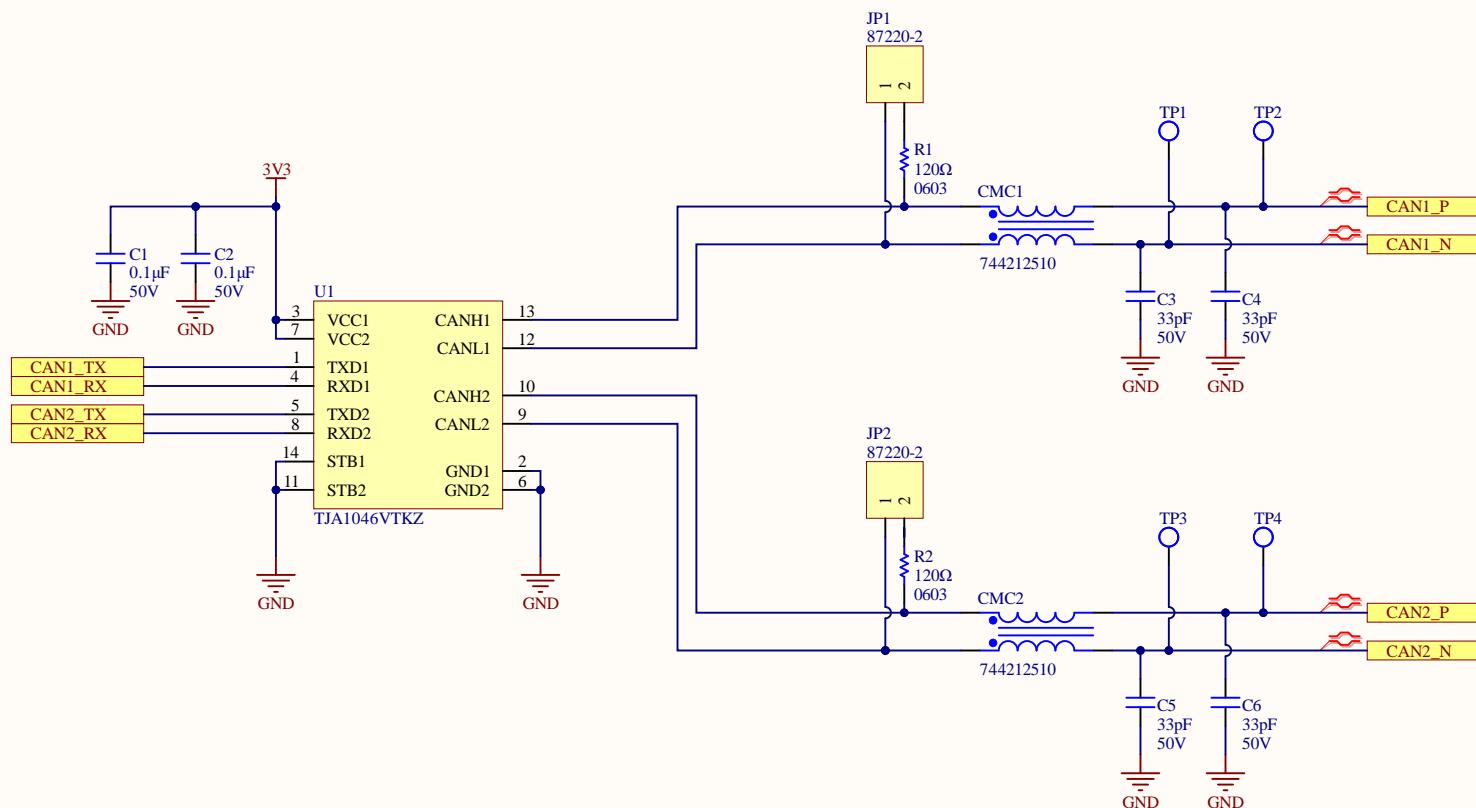
Test Button



I²C Pullups



CAN Transceivers



5V - 3.3V Buck Converter

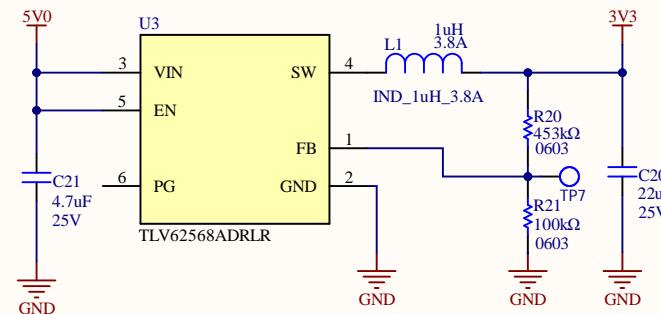
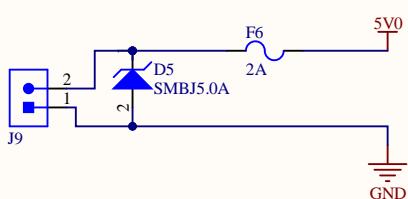
Designed for 3.3V - 5V input

Route for 1A in

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

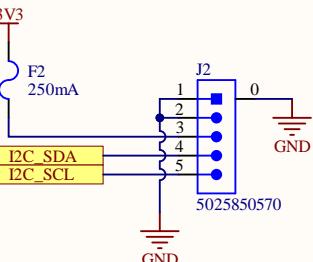
Route for 3A out

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

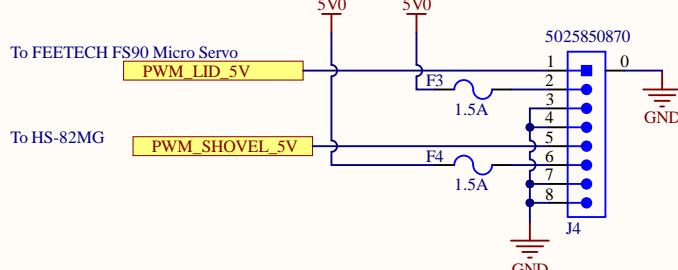


Encoders

I²C Sensors



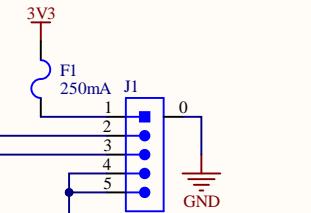
Servos



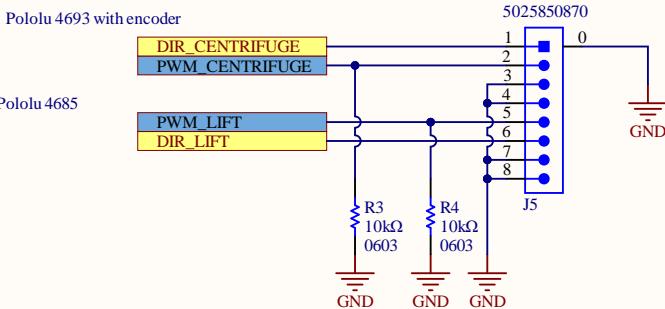
64 CPR Encoder (Helical Pinion) on Motor

LIFT ENC CHANNEL B 5V

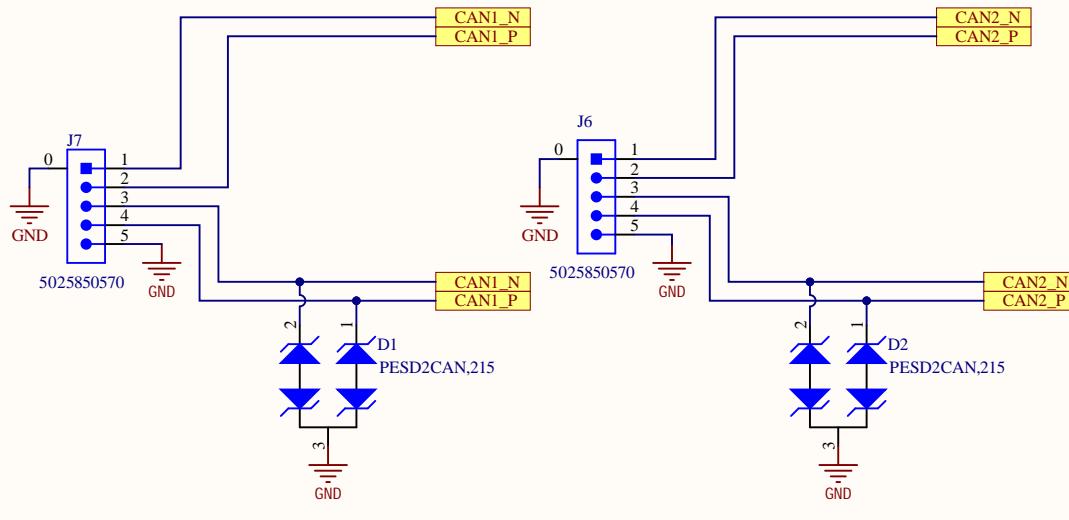
LIFT ENC CHANNEL A 5V



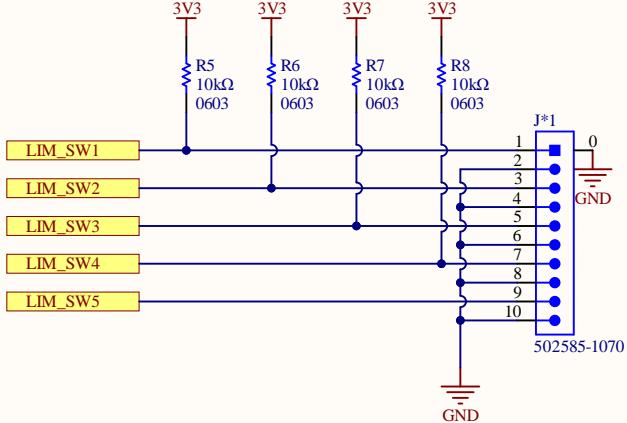
DC Motors



CAN



Limit Switches



Title: Science - 5_Integrated-Connectors

Size: Letter Drawn By: Wolfgang Wiedholz

Date: 9/26/2020 Sheet 15 of 6

File: C:\Users\badpr\altium_ports\MarsRover2021-hardware\Projects\Science\Rev2\SH2 - CONNECTORS.SchD

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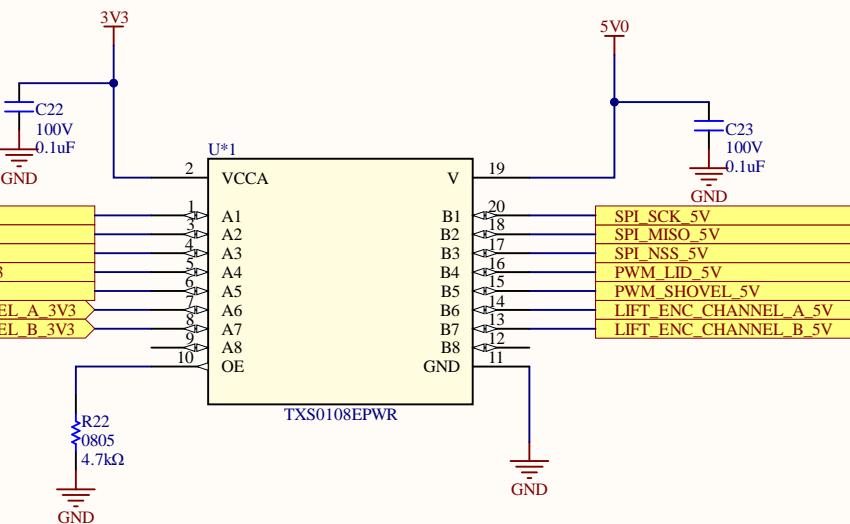


A

Decoupling values may
need to be changed

Level Shifter

5V - 3V3 Conversion



B

A

B

C

C

Mounting Holes



D

D

Title: Science - 6_Servo_and_Encoders

Size: Letter | Drawn By: Wolfgang Windholz

Date: 9/26/2020 | Sheet 6 of 6

File: C:\Users\badmin\altium_projects\MarsRover2021-hardware\Projects\Science\Rev2\SH3 - LEVEL SHIFTER.SCH

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