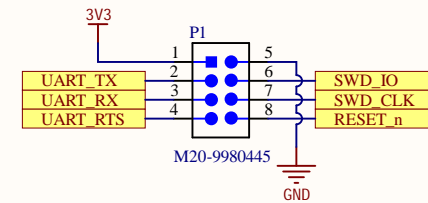


Debug/Programming

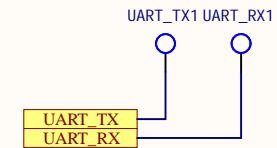


Current Calculations

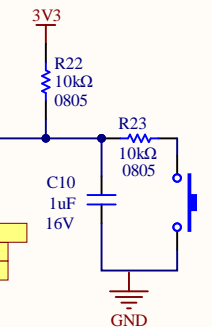
Green LED voltage drop: 2.2V
 $I = (3.3 - 2.2V) / 120 = 10.83mA$

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: $I = (3.3 - 3.1V) / 20 = 10mA$

Testpoints

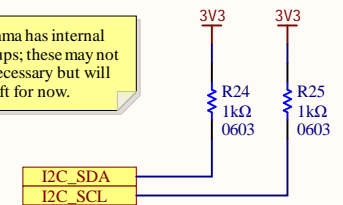


Test Button



I²C Pullups

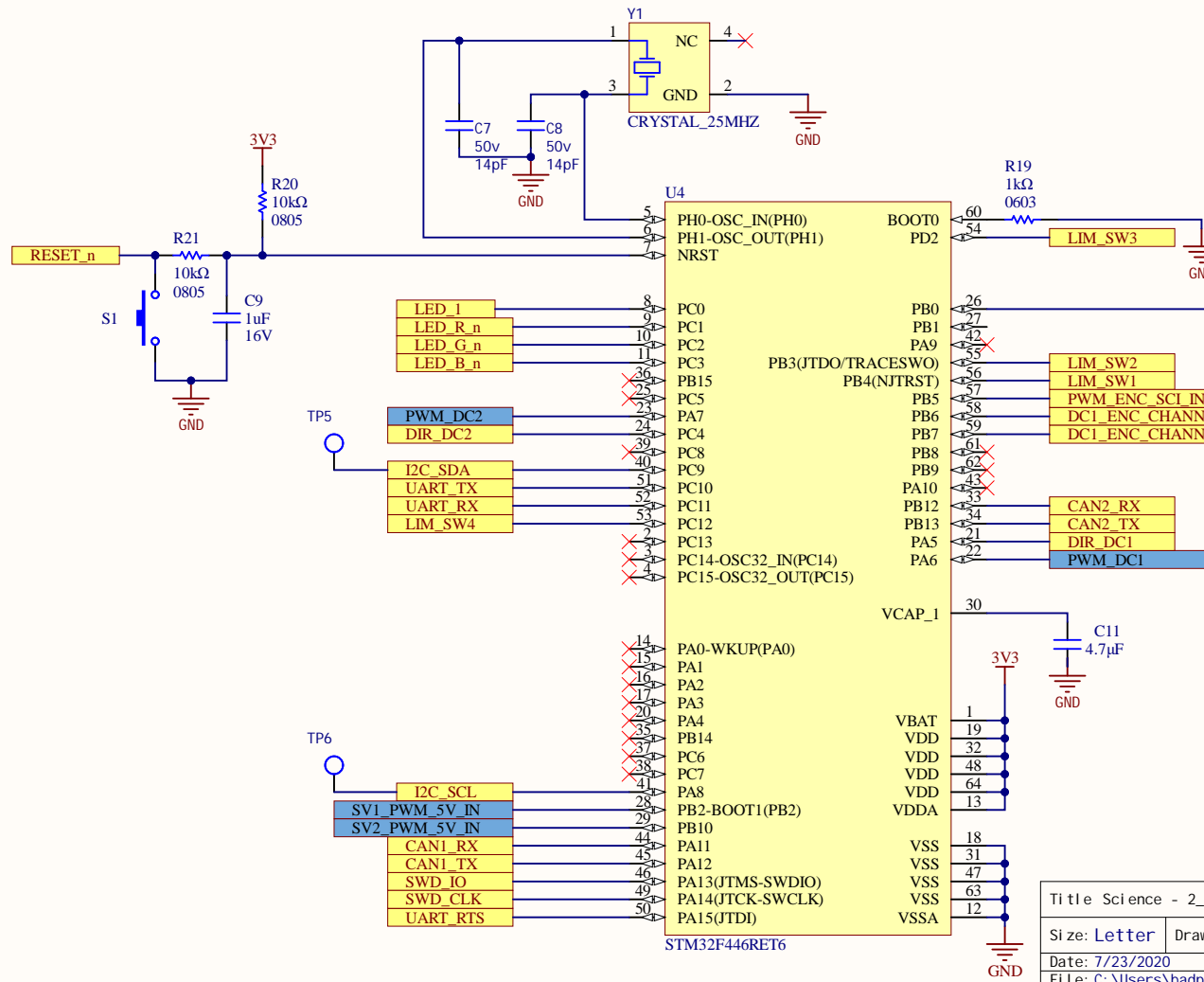
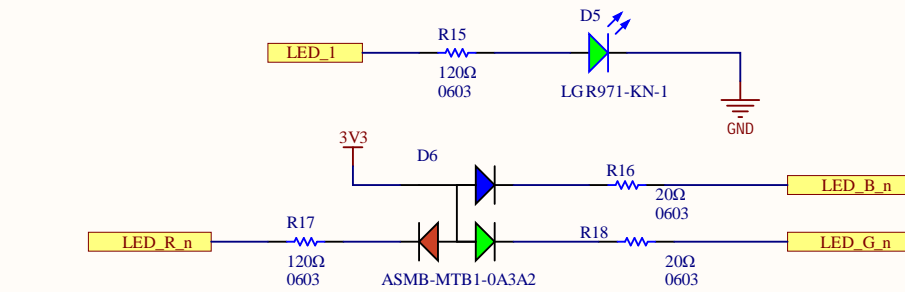
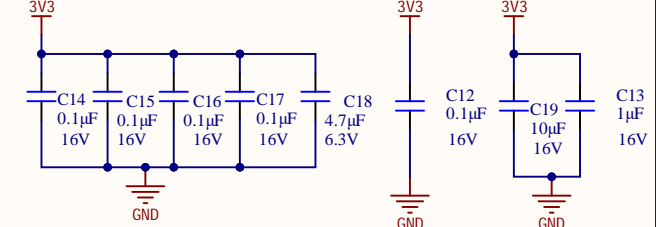
Stemma has internal pullups; these may not be necessary but will be left for now.



3xVDD pin caps

VBAT pin caps

VDDA pin caps



Title Science - 2_MCU

Size: Letter

Drawn By: Christopher Arjune

Date: 7/23/2020

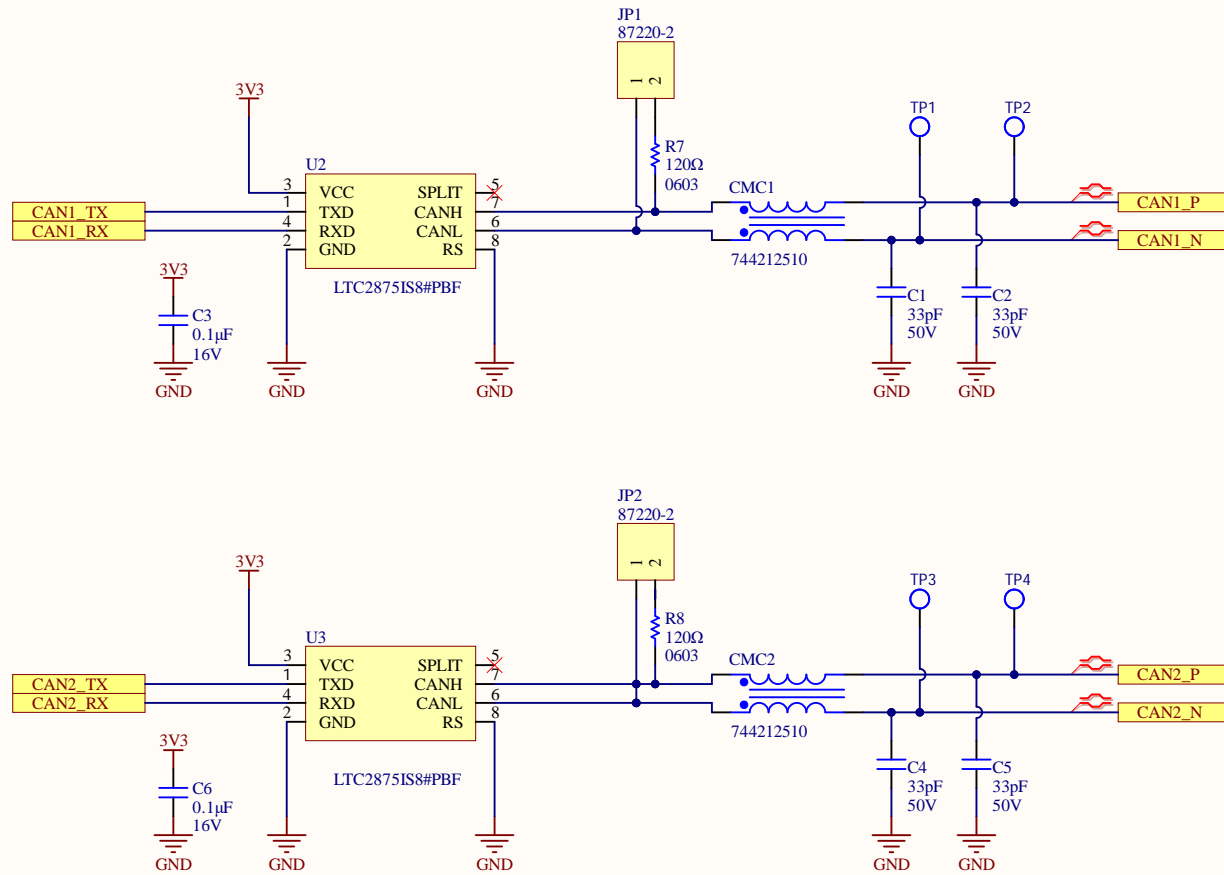
Sheet 2 of 6

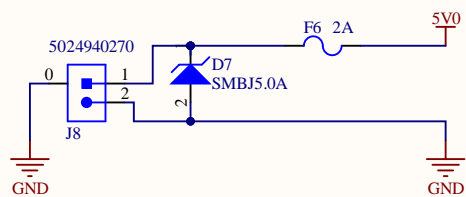
File: C:\Users\badpr\ai\ti\um_projects\MarsRover2020-PCB\Projects\Science\Rev2\SH4 - MICROCONTROLLER.Sch

UW Robotics
 200 University Avenue
 Waterloo
 Ontario
 Canada N2L 3G6



CAN Transceivers





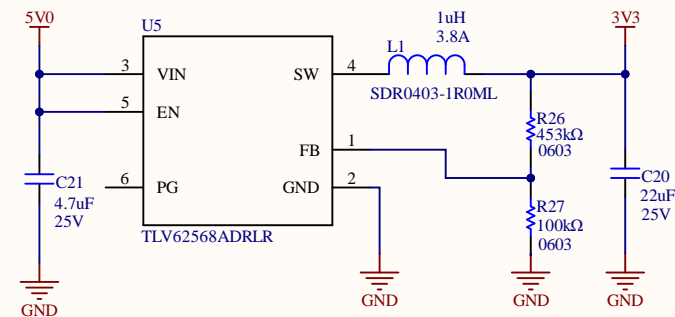
5V - 3.3V Buck Converter

Designed for 3.3V - 5V input

Route for 1A in

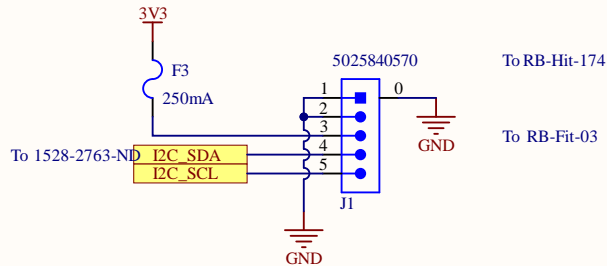
Inductor: SDR0403-1R0ML
1uH, 20%, 33mOhm DCR (max)
3.8A (rms), 5.5A (sat), 3.2mm tall

Route for 3A out

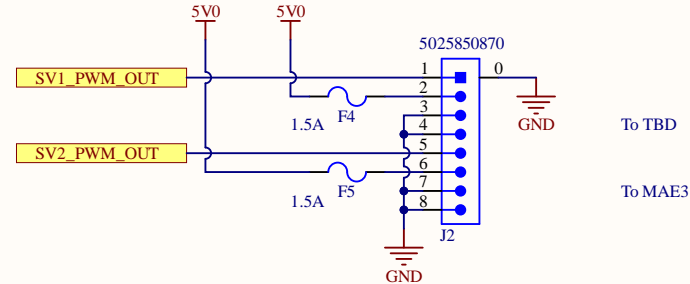


Maximum output power = 6.6W
Expected efficiency at 1A = 94.3%

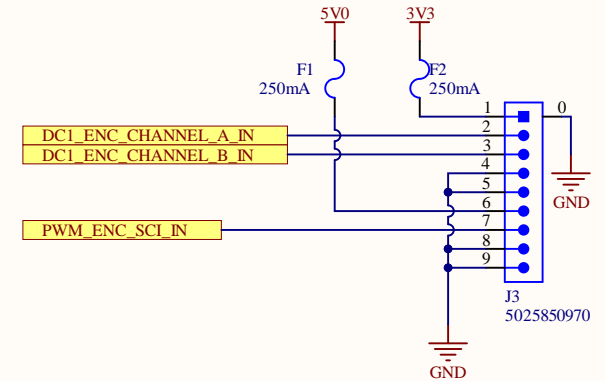
I²C Sensors



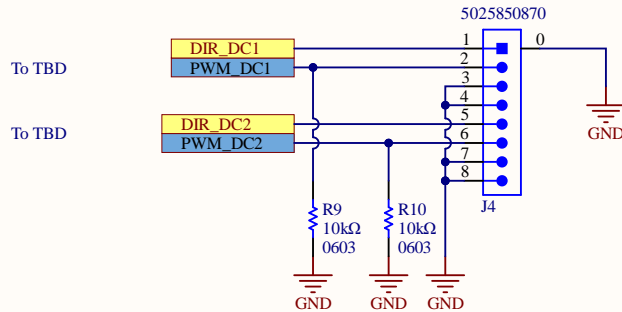
Servos



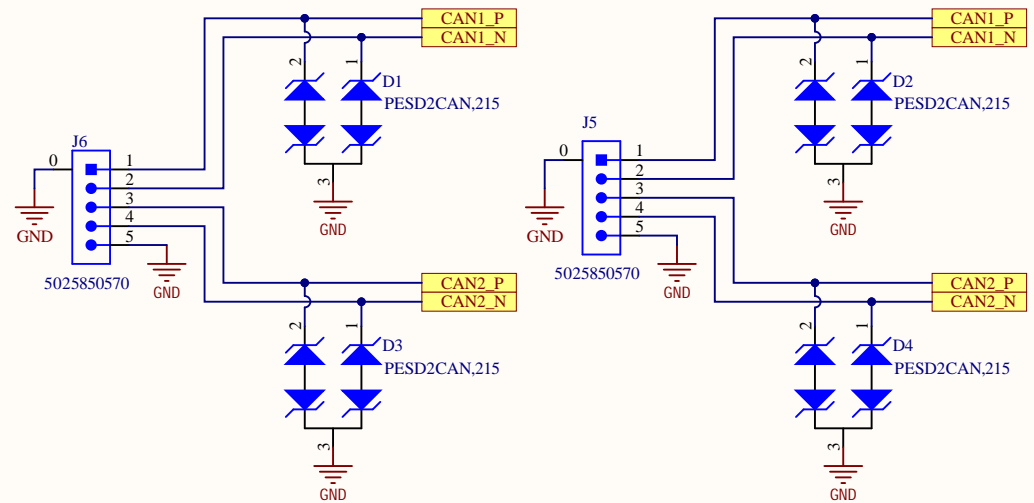
Encoders



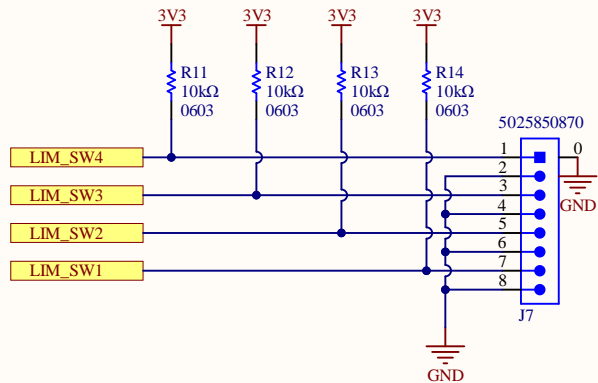
DC Motors



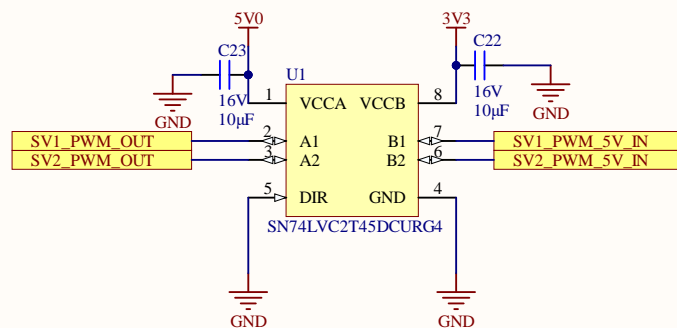
CAN



Limit Switches



Servo Level Shifters



Decoupling values may need to be changed

Encoder Voltage Dividers

5V - 3V Conversion

