5V - 3.3V Buck Converter

Power In

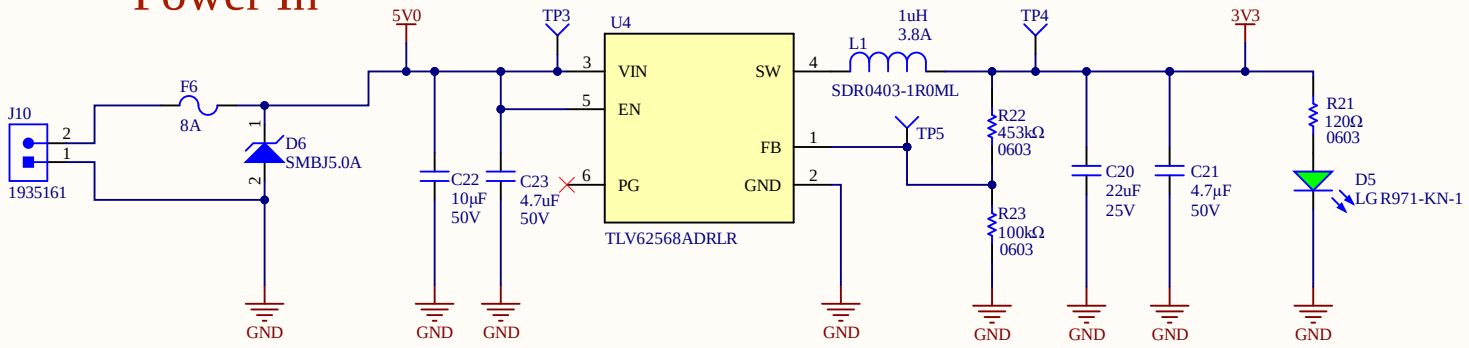
Designed for 3.3V - 5V input

Route for 1A in

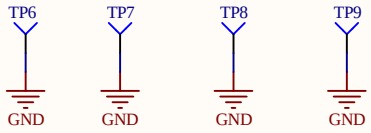
Inductor: SDR0403-1R0ML
1uH, 20%, 33mOhm DCR (max)
3.8A (rms), 5.5A (sat), 3.2mm tall

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

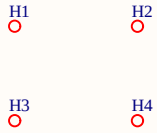
Route for 1A out



GND Test Points



Mounting Holes



Current Calculations

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

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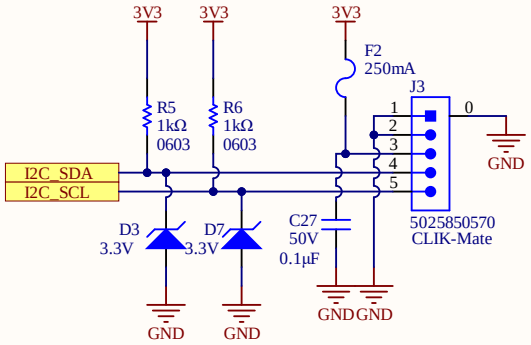
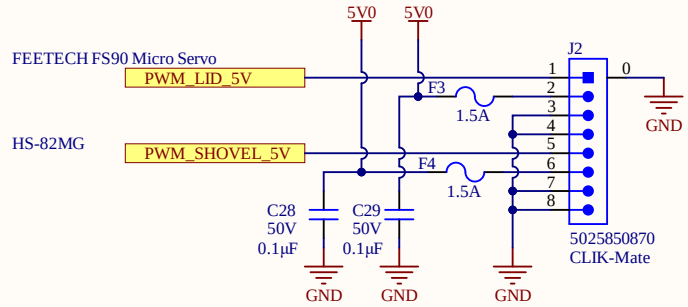
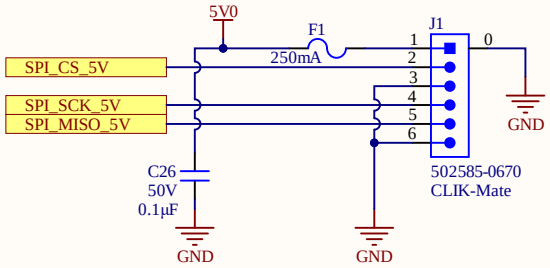
STEMMA Moisture Sensor



Servos

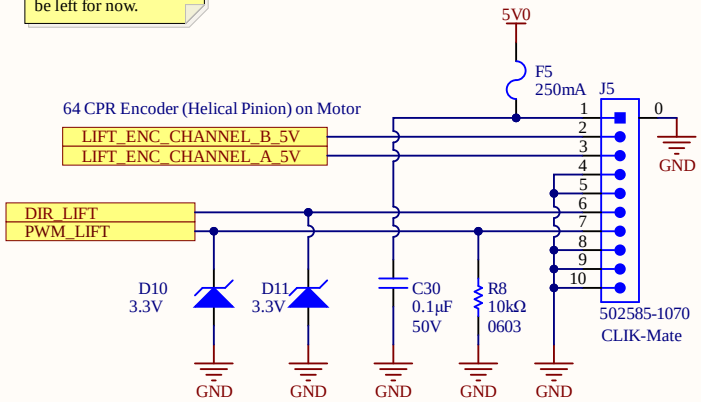


Broadcom AEAT6012 Encoder

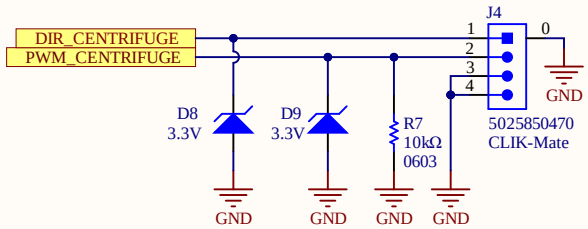


Stemma has internal pullups; these may not be necessary but will be left for now.

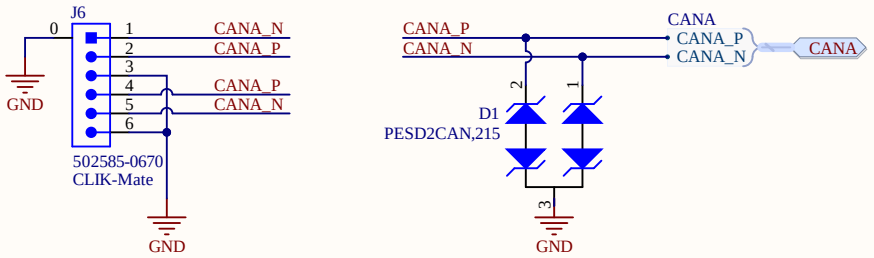
Pololu 4693 Motor



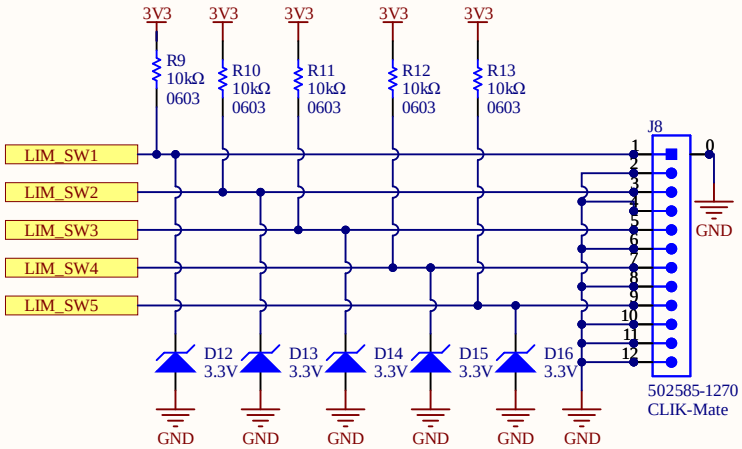
Pololu 4685 Motor



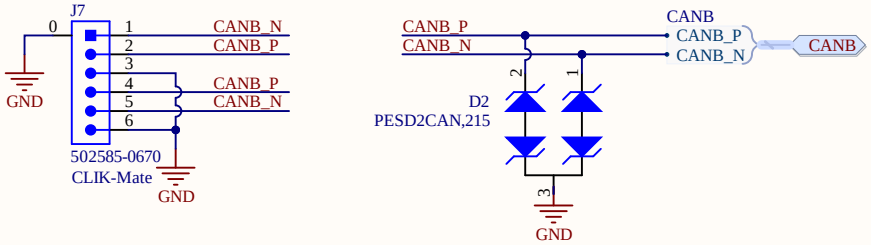
CAN BUS A



Limit Switches



CAN BUS B



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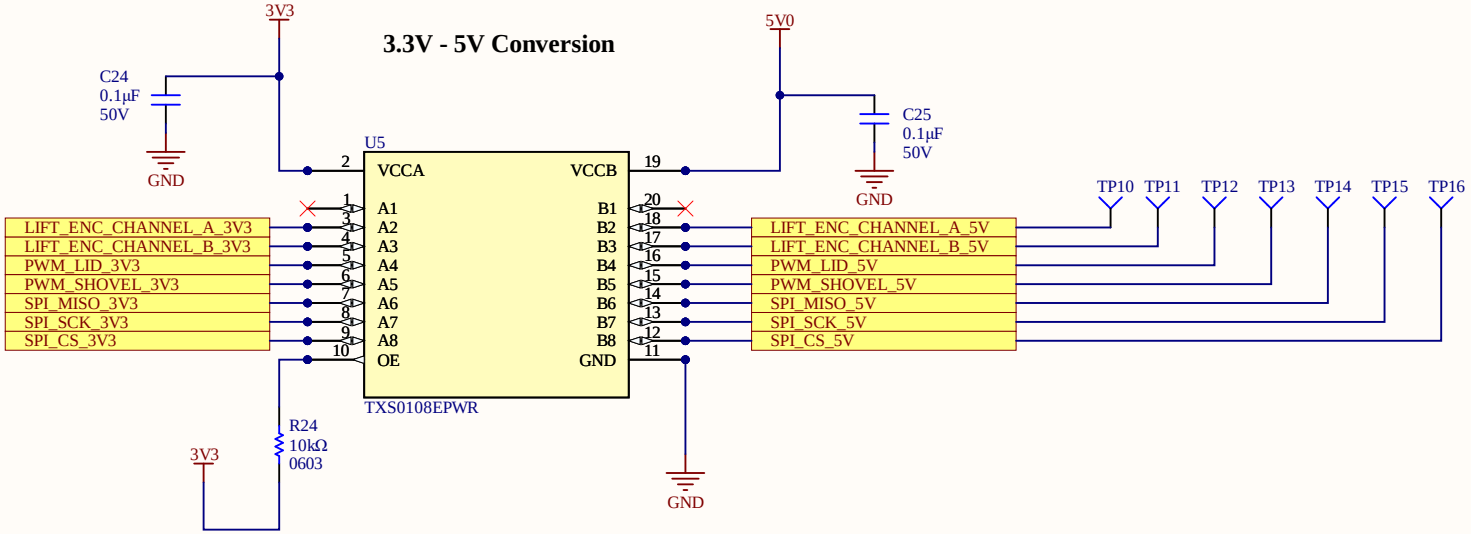
Level Shifter

3.3V - 5V Conversion



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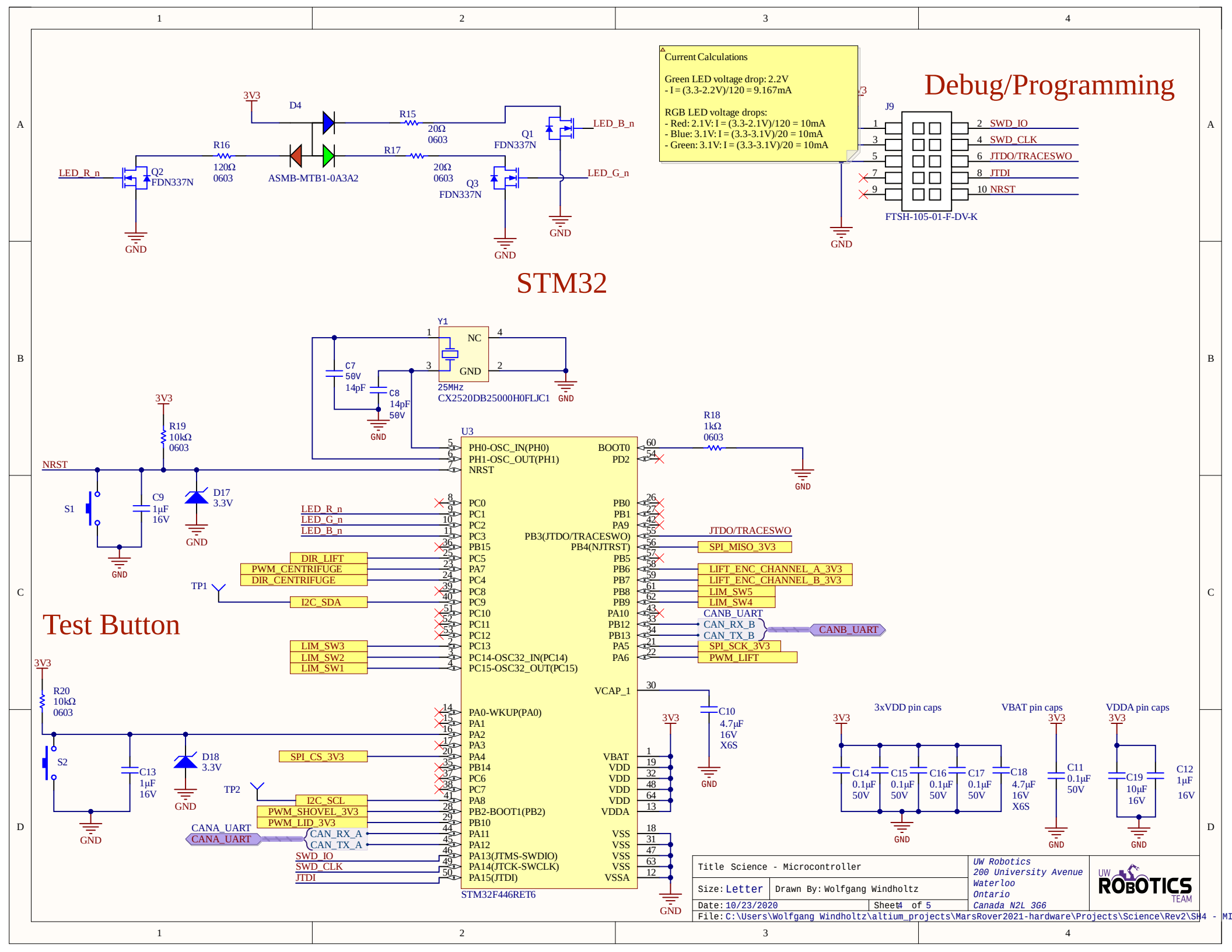
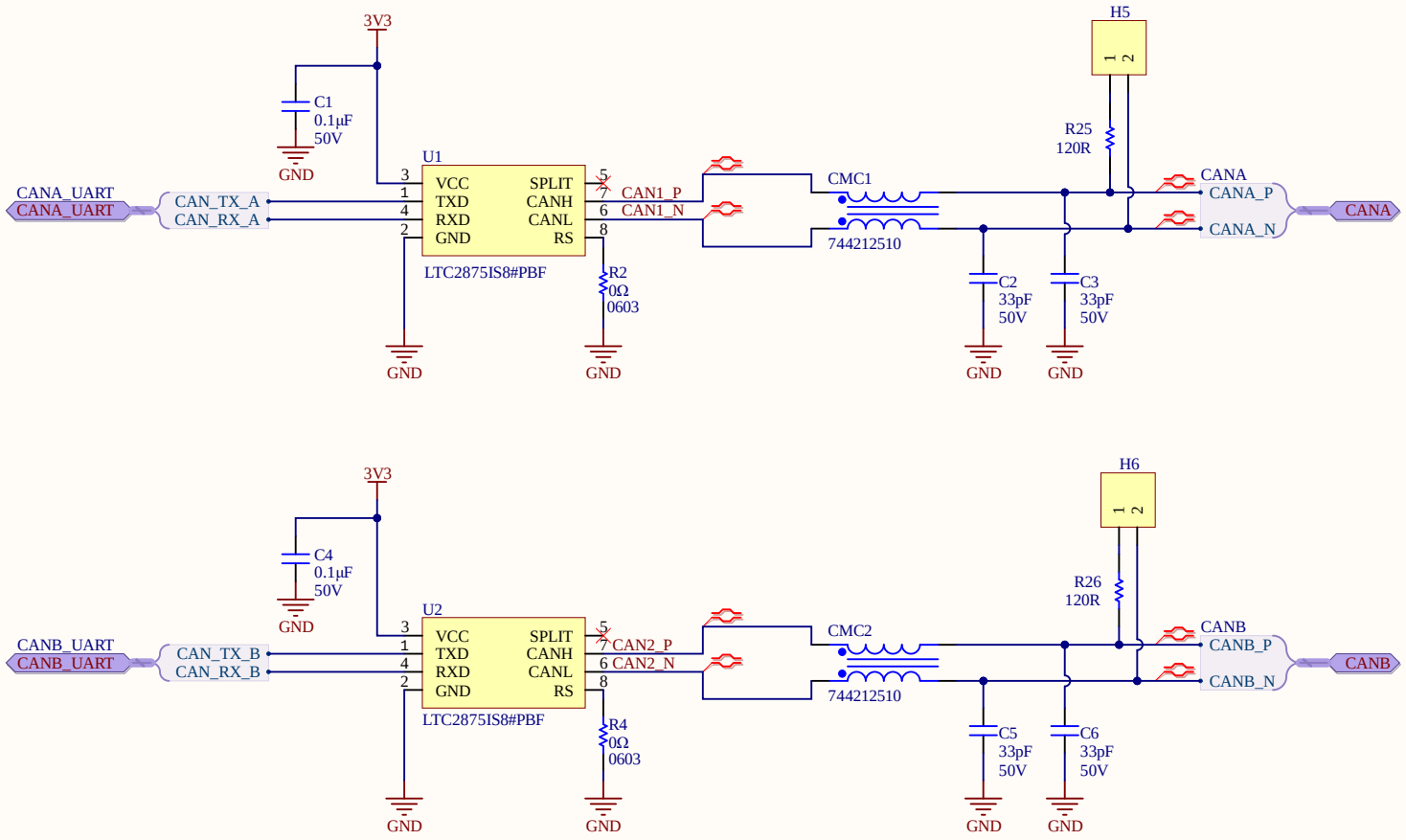

Current Calculations
Green LED voltage drop: 2.2V
- I = (3.3-2.2V)/120 = 9.167mA
RGB LED voltage drops:
- Red: 2.1V: I = (3.3-2.1V)/120 = 10mA
- Blue: 3.1V: I = (3.3-3.1V)/20 = 10mA
- Green: 3.1V: I = (3.3-3.1V)/20 = 10mA
Debug/Programming
J9
SWD_IO
SWD_CLK
JTDO/TRACESWO
JTDI
NRST
FTSH-105-01-F-DV-K
STM32
Y1
CX2520DB25000H0FLJC1
25MHz
U3
STM32F446RET6
Test Button
3xVDD pin caps
VBAT pin caps
VDDA pin caps
Title Science - Microcontroller
Size: Letter
Drawn By: Wolfgang Windholtz
Date: 10/23/2020
Sheet 4 of 5
File: C:\Users\Wolfgang Windholtz\altium_projects\MarsRover2021-hardware\Projects\Science\Rev2\SH4 - MI
UW Robotics
200 University Avenue
Waterloo
Ontario
Canada N2L 3G6

CAN Transceivers



Title Science - CAN			UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
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