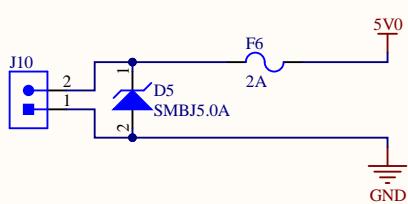


5V - 3.3V Buck Converter

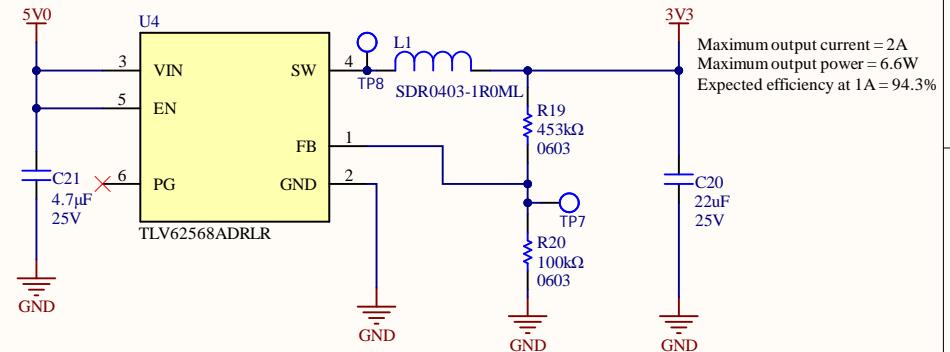


Designed for 3.3V - 5V input

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

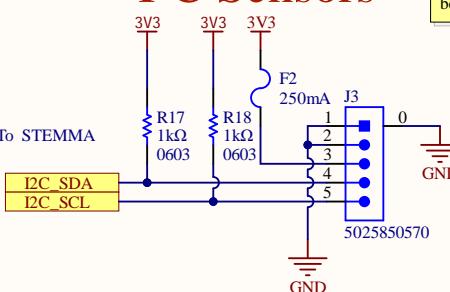


Maximum output current = 2A
Maximum output power = 6.6W
Expected efficiency at 1A = 94.3%

A

I²C Sensors

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

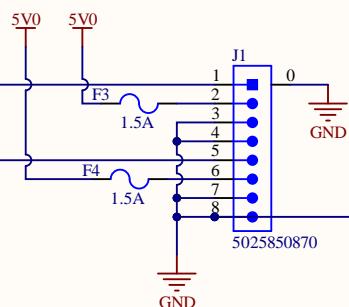
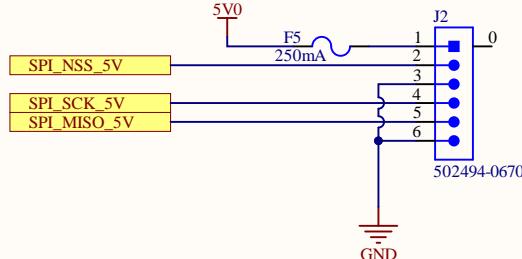
**Servos**

To FEETECH FS90 Micro Servo

PWM_LID_5V

To HS-82MG

PWM_SHOVEL_5V

**Encoders****DC Motors**

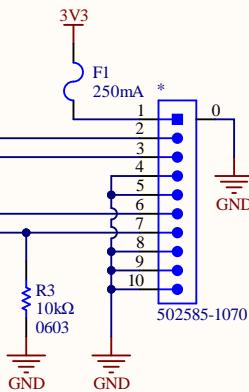
64 CPR Encoder (Helical Pinion) on Motor

LIFT_ENC_CHANNEL_B_5V

LIFT_ENC_CHANNEL_A_5V

DIR_CENTRIFUGE

PWM_CENTRIFUGE

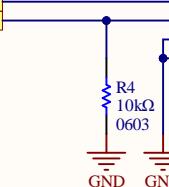
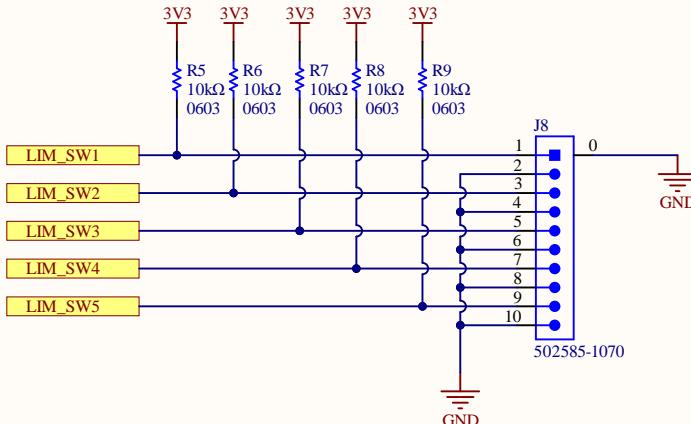
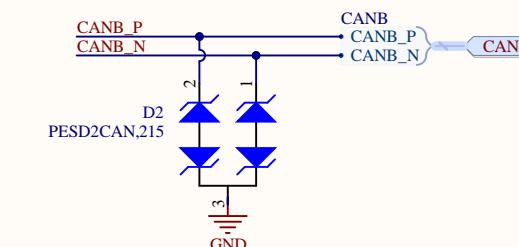
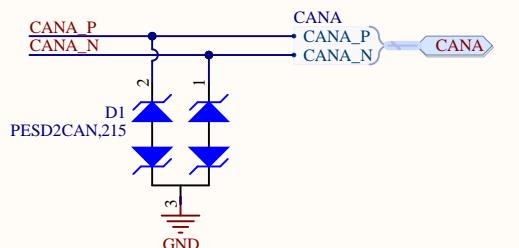
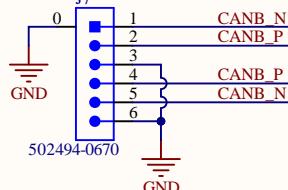


To AEAT6012

Pololu 4685

DIR_LIFT

PWM_LIFT

**Limit Switches****CAN BUS A****CAN BUS B**

A

A

B

B

C

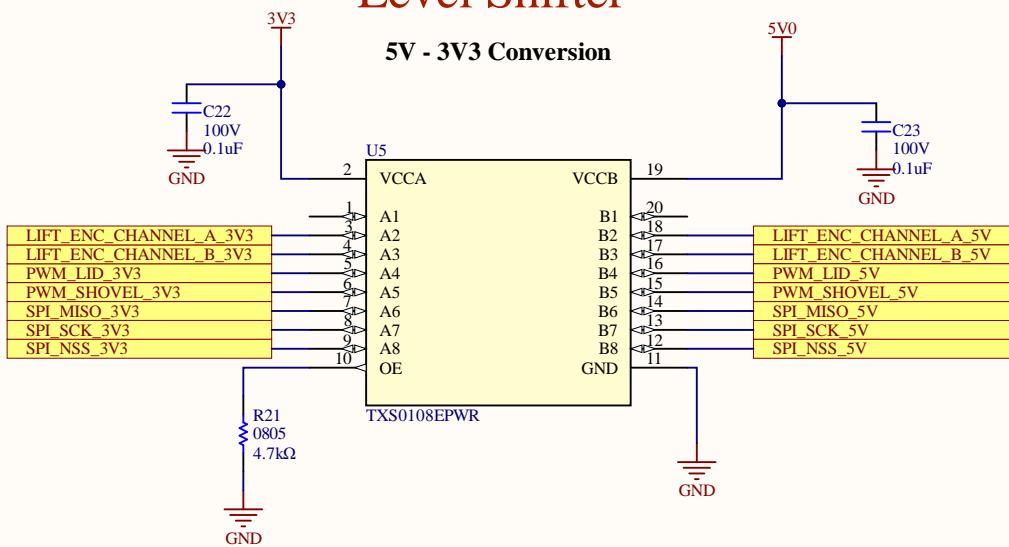
C

D

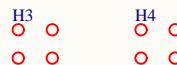
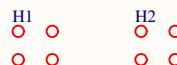
D

Level Shifter

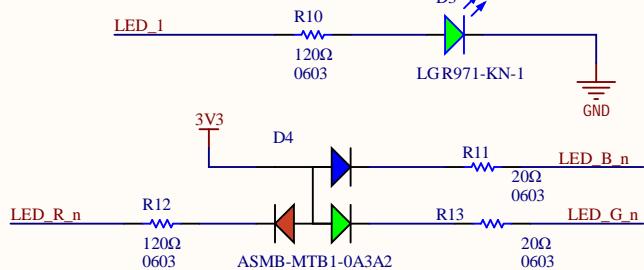
5V - 3V3 Conversion



Mounting Holes



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

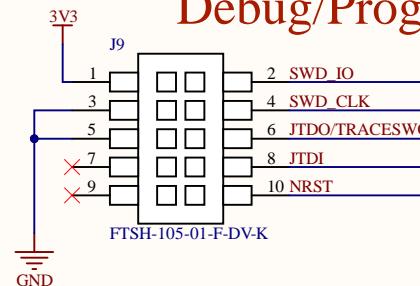


Current Calculations

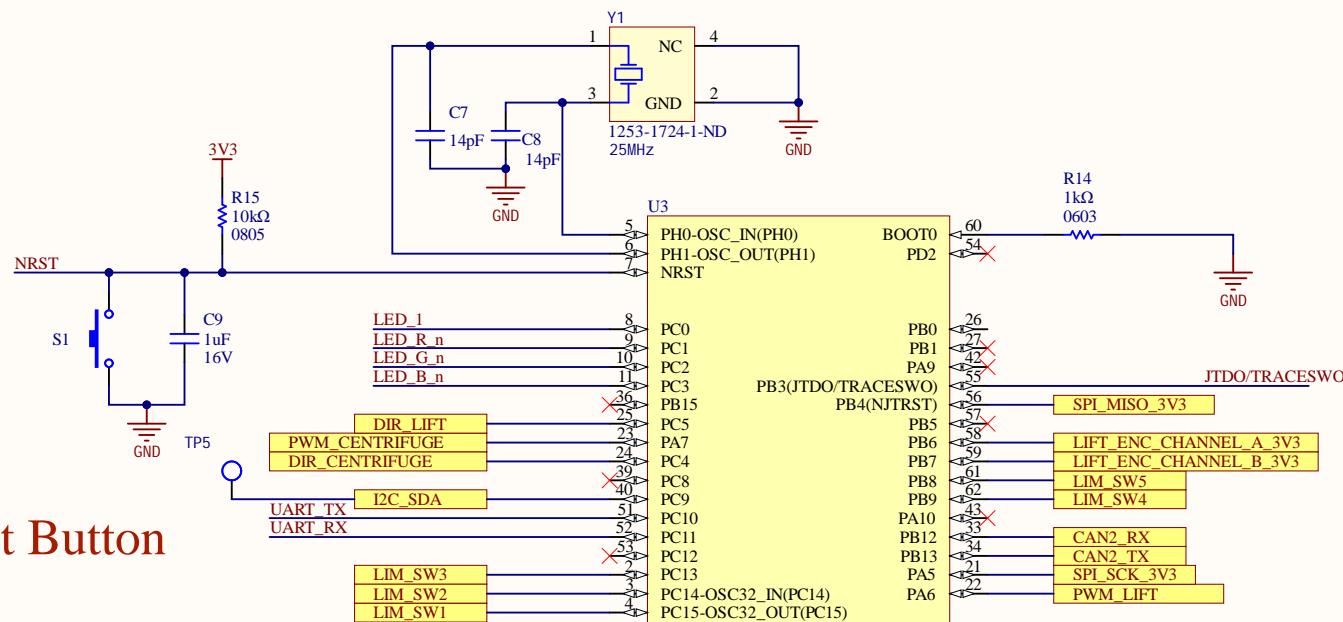
Green LED voltage drop: 2.2V
 $I = (3.3 - 2.2)/120 = 10.83\text{mA}$

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: $I = (3.3 - 3.1)/20 = 10\text{mA}$

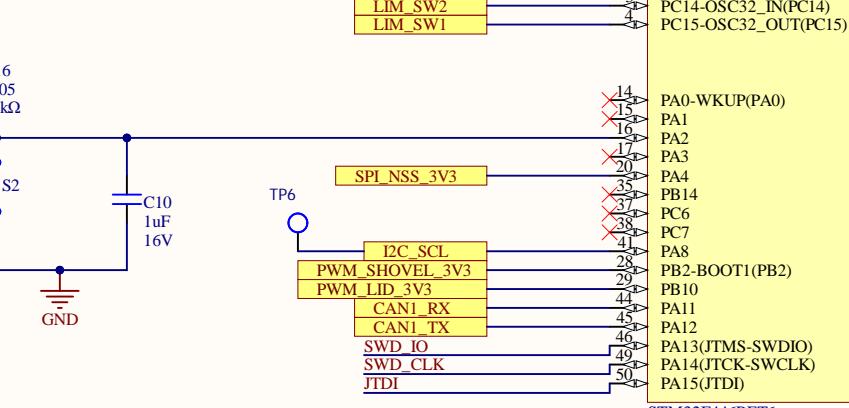
Debug/Programming



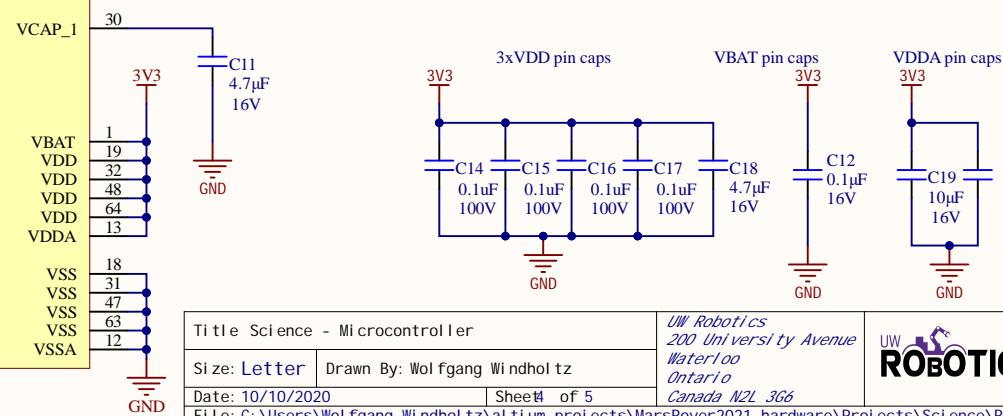
STM32



Test Button



STM32F446RET6



Title: Science - Microcontroller

Size: Letter | Drawn By: Wolfgang Wiedholz

UW Robotics
200 University Avenue
Waterloo
Ontario
Canada N2L 3G6



Date: 10/10/2020

Sheet 4 of 5

File: C:\Users\Wolfgang.Wiedholz\Documents\MarsRover2021-hardware\Projects\Science\Rev2\SH4 - M

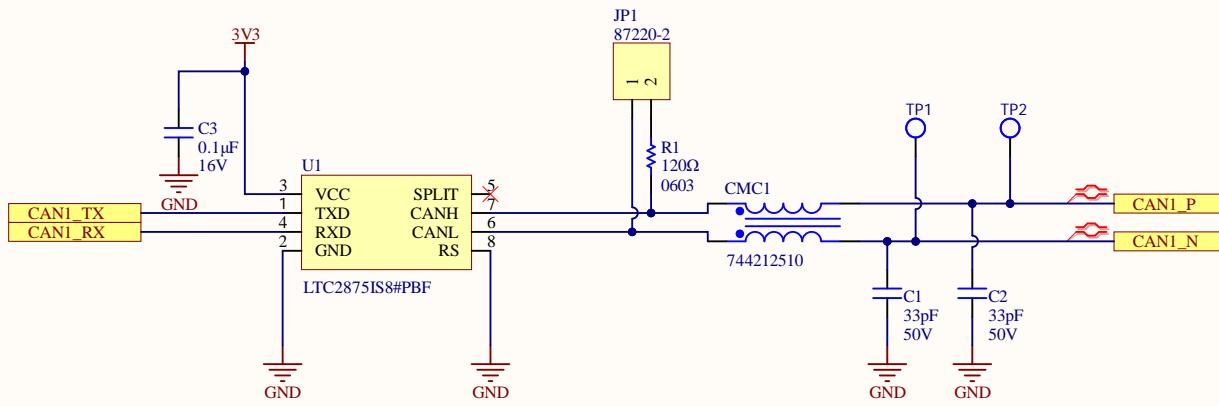
A

A

CAN Transceivers

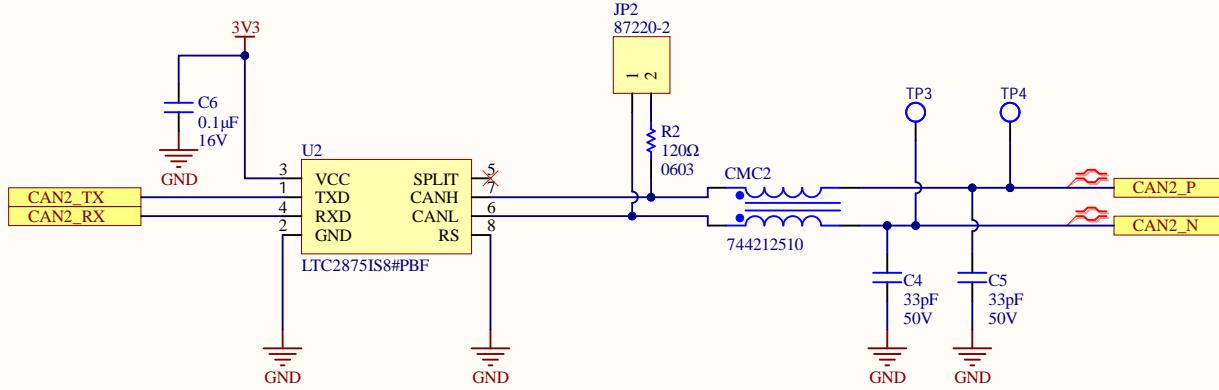
B

B



C

C



D

D

Title: Science - CAN

Size: Letter | Drawn By: Wolfgang Windholz

Date: 10/10/2020 | Sheet 5 of 5

File: C:\Users\Wolfgang\Windholz\altilium_projects\MarsRover2021-hardware\Projects\Science\Rev2\SH5 - CAN

