

A

A

B

B

C

C

D

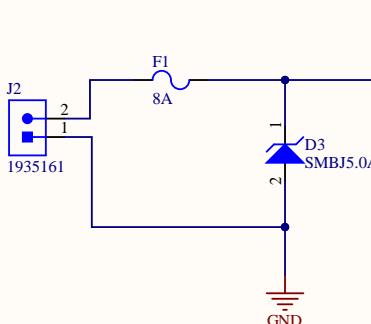
D

5V - 3.3V Buck Converter

Power In

Designed for 3.3V - 5V input

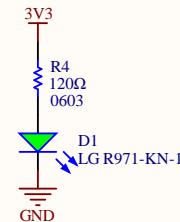
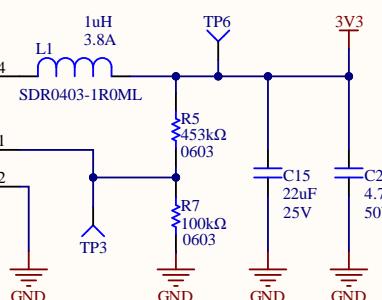
Route for 1A in



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

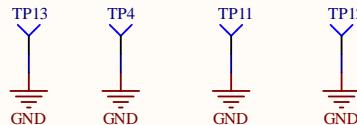
Maximum output current = 2A
Maximum output power = 6.6W
Expected efficiency at 1A = 94.3%

Route for 1A out



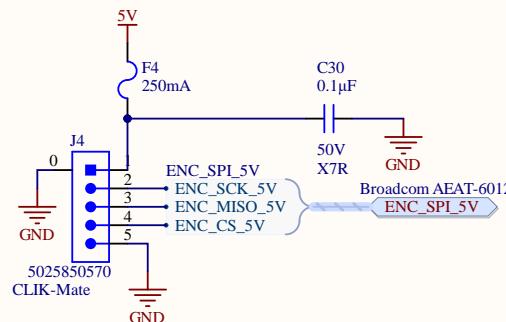
Current Calculations
Green LED voltage drop: 2.2V
- $I = (3.3-2.2V)/120 = 9.17mA$

GND Test Points

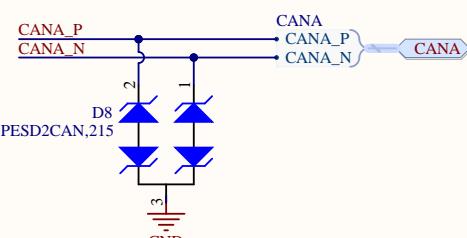
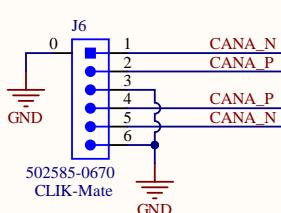


Title Gimbal - Power		UW Robotics
Size: Letter	Drawn By: Aidan Gratton	200 University Avenue Waterloo Ontario Canada N2L 3G6
Date: 2020-10-14	Sheet 1 of 6	
File: C:\Users\lance\GitHub\MarsRover2020-PCB\Projects\Gimbal\Rev2\SH1 - POWER.SchDoc		UW ROBOTICS TEAM

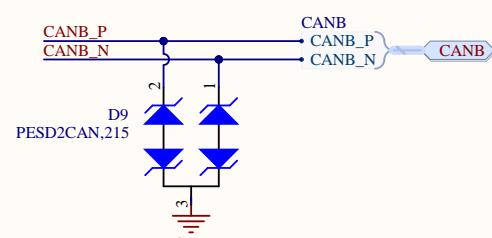
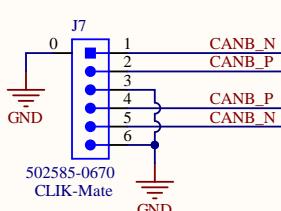
Broadcom AEAT-6012 Encoder



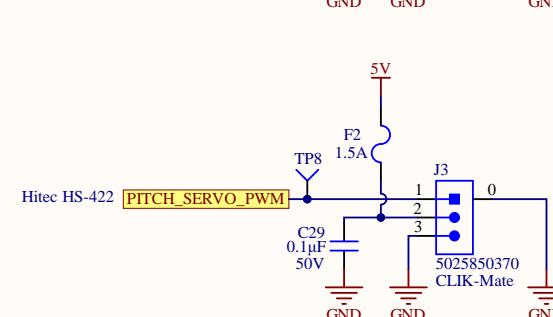
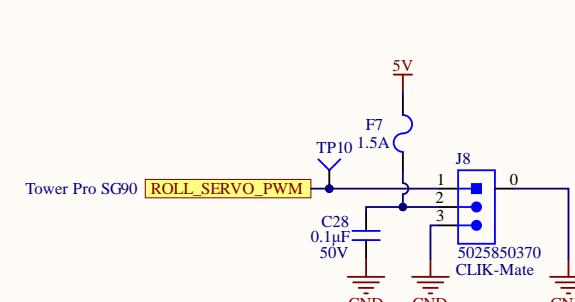
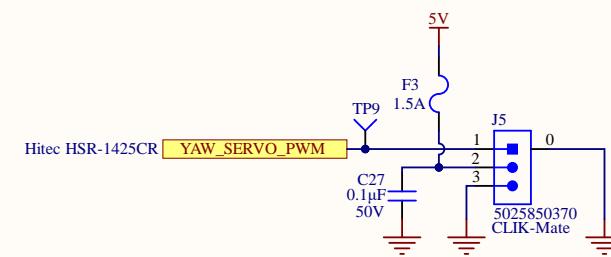
CAN Bus A



CAN Bus B



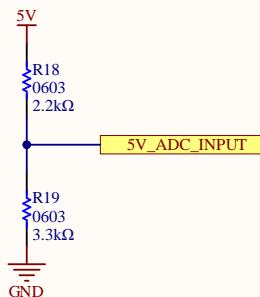
Servos



A

A

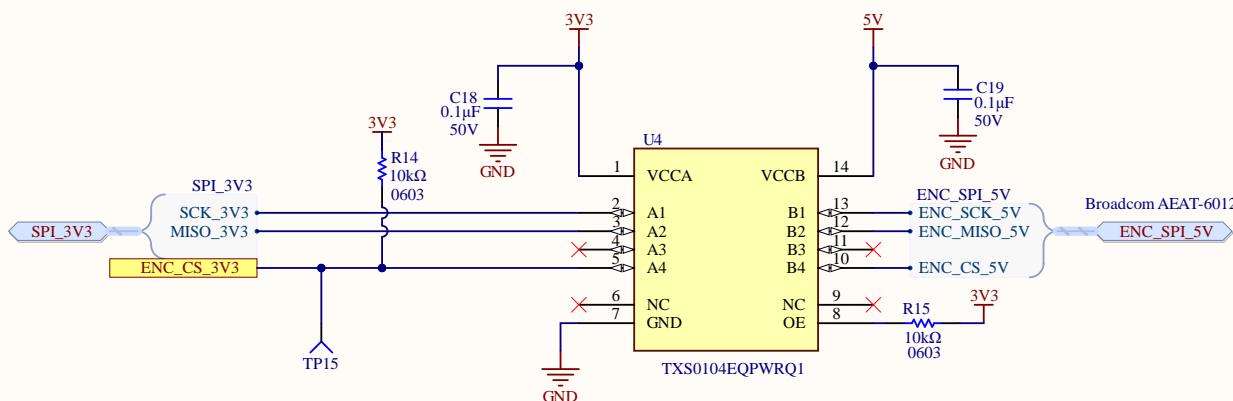
5V Rail Monitoring



B

B

SPI Encoder Level Shifter

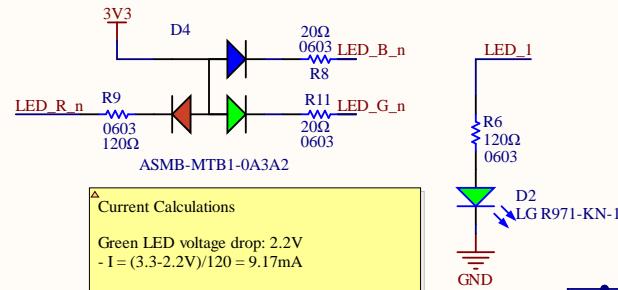


C

C

Title Gimbal - Sensors		UW Robotics
Size: Letter	Drawn By: Aidan Gratton	200 University Avenue Waterloo Ontario Canada N2L 3G6
Date: 2020-10-14	Sheet 6 of 6	
File: C:\Users\lance\GitHub\MarsRover2020-PCB\Projects\Gimbal\Rev2\SH3 - SENSORS.SchDoc		UW ROBOTICS TEAM

Status/Debug LEDs



Current Calculations

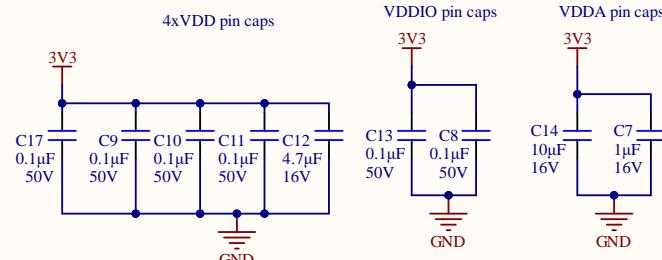
$$\text{Green LED voltage drop: } 2.2V$$

$$- I = (3.3 - 2.2V) / 120 = 9.17mA$$

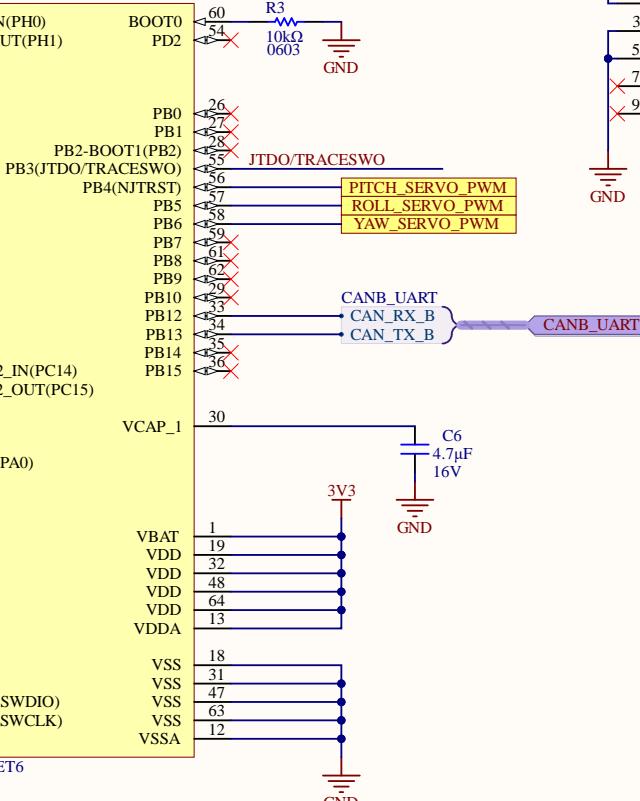
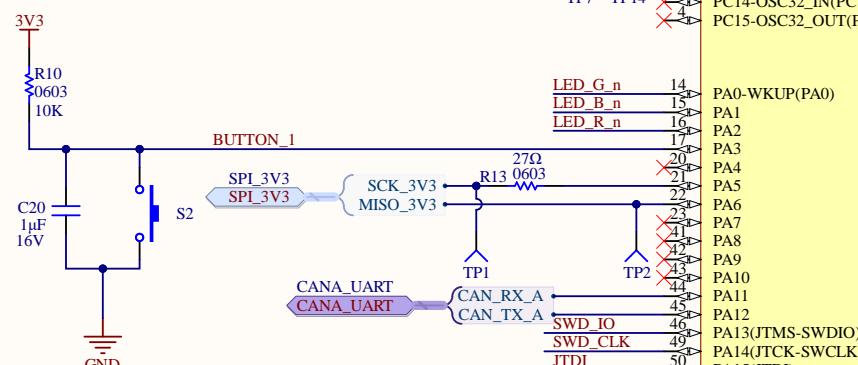
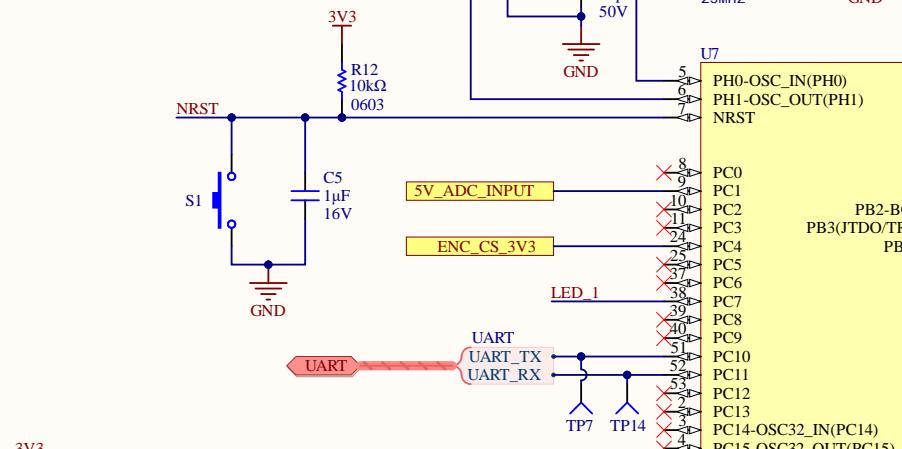
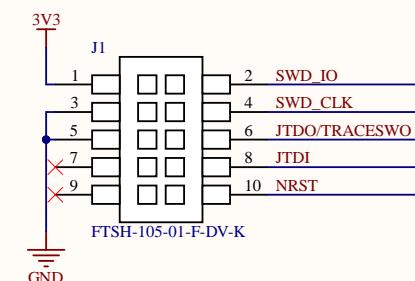
RGB LED voltage drops:

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

STM32F446RET6



Debug/Programming



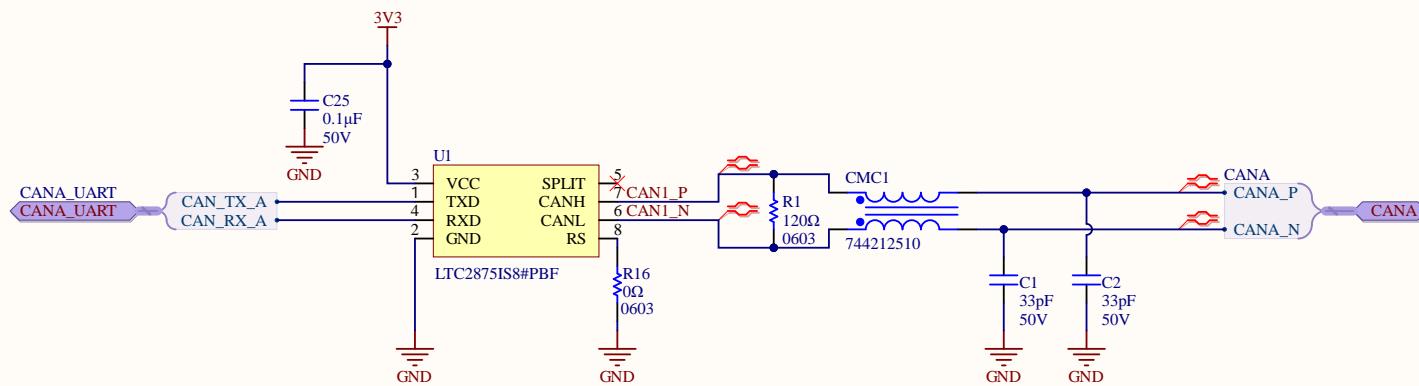
A

A

CAN Transceivers

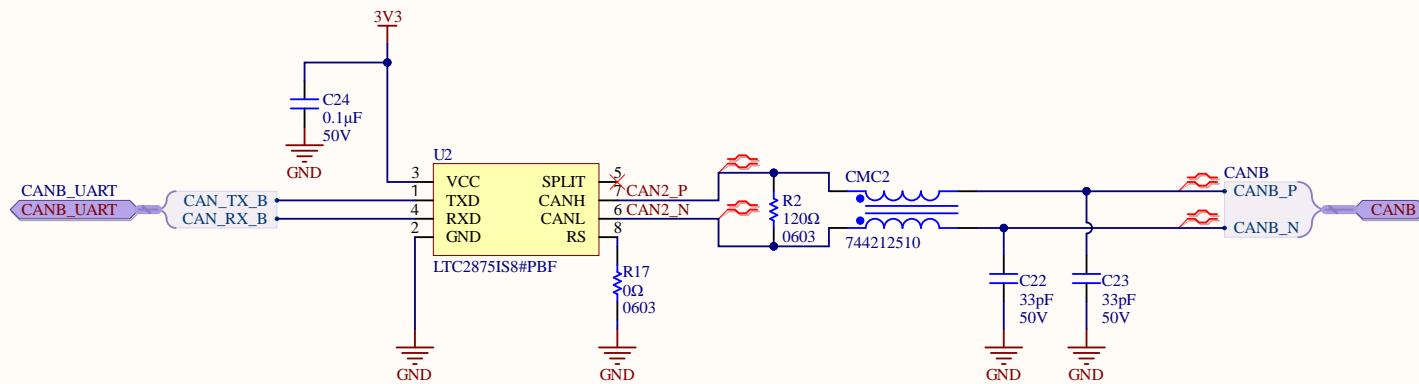
B

B



C

C



D

D

Title Gimbal - CAN		UW Robotics
Size: Letter	Drawn By: Aidan Gratton	200 University Avenue Waterloo Ontario Canada N2L 3G6
Date: 2020-10-14	Sheet 6 of 6	
File: C:\Users\lance\GitHub\MarsRover2020-PCB\Projects\Gimbal\Rev2\SH6 - CAN.SchDoc		UW ROBOTICS TEAM