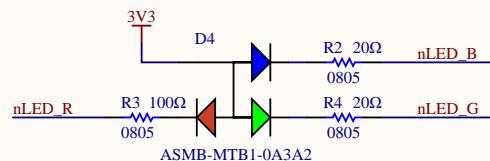


RGB LED

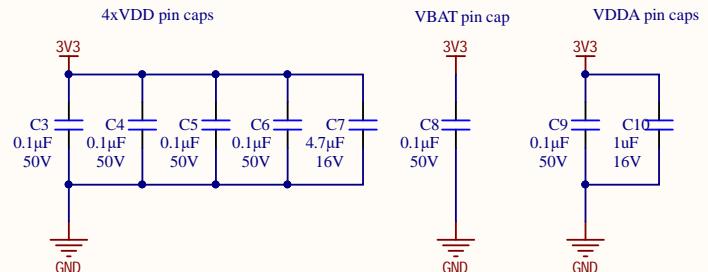


Current Calculations

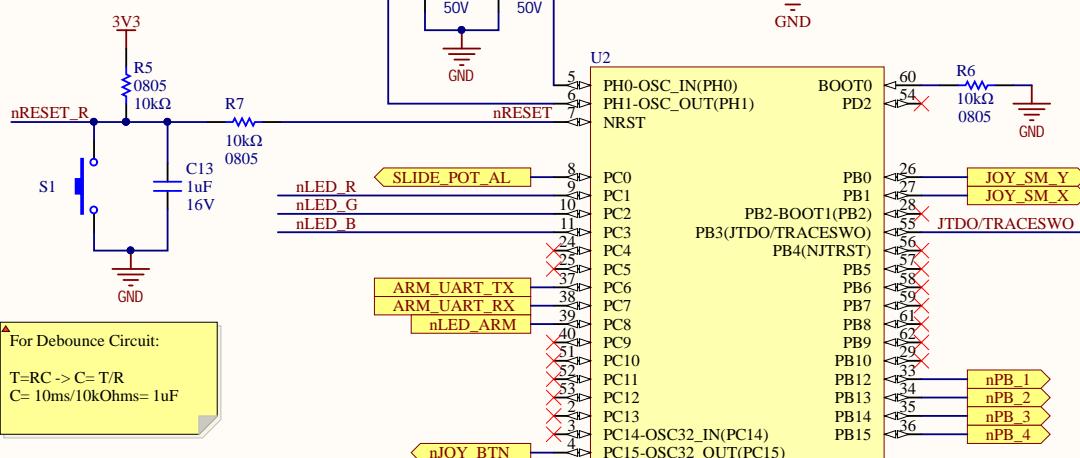
RGB LED voltage drops:

- Red: 2.1V; $I = (3.3-2.1V)/100 = 12mA$
- Blue: 3.1V; $I = (3.3-3.1V)/20 = 10mA$
- Green: 3.1V; $I = (3.3-3.1V)/20 = 10mA$

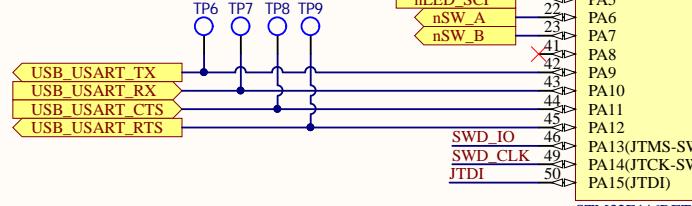
Decoupling Caps



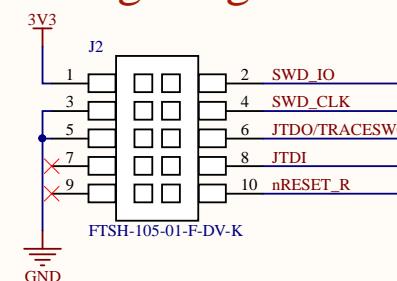
Reset Button



For Debounce Circuit:
 $T=RC \rightarrow C = T/R$
 $C = 10ms/10k\Omega = 1\mu F$



Debug/Programming



A

A

B

B

C

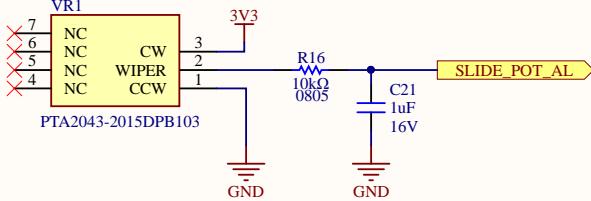
C

D

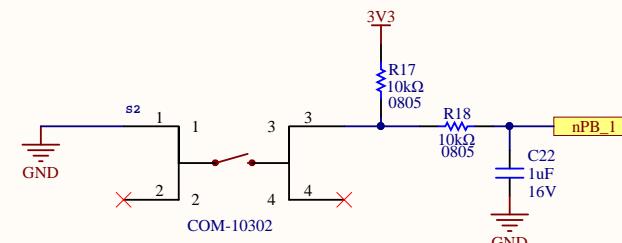
D

| | | |
|--|------------------------|------------------|
| Title: SH1_MCU | | * |
| Size: Letter | Drawn By: Qi nyang Bao | * |
| Date: 2020-11-10 | Sheet1 of 4 | * |
| File: C:\Users\pkmn0\Desktop\Document Archive\Other\Electrical Git Repo\MarsRover2020-PCB\Projects\Robot Controller\ | | UW ROBOTICS TEAM |

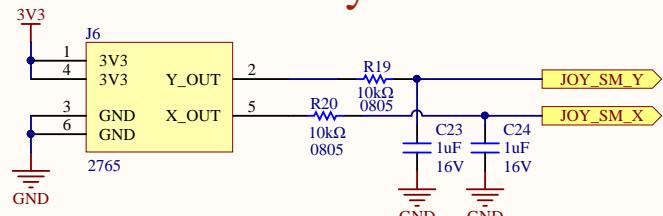
Slide Potentiometer



Pushbuttons



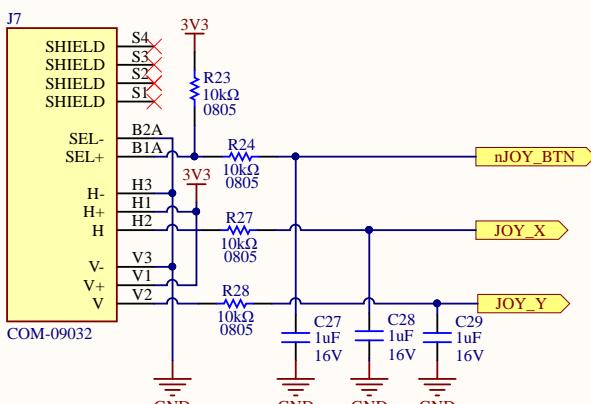
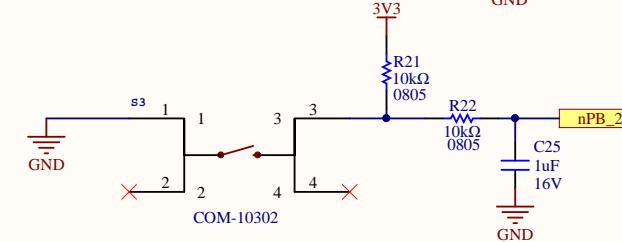
2-Axis Joysticks



For Debounce Circuits:

$$T = RC \rightarrow C = T/R$$

$$C = 10\text{ms}/10\text{kOhms} = 1\mu\text{F}$$



Controls (subject to change)

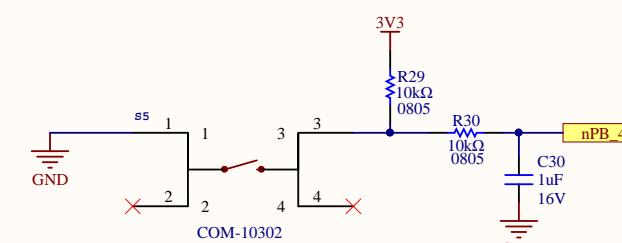
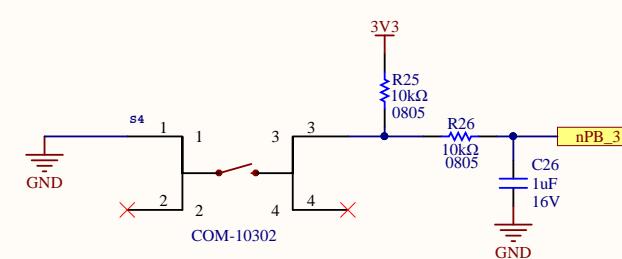
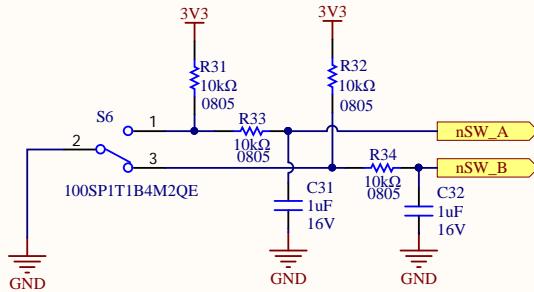
- Joysticks:
 - 1: Large joystick is used for driving
 - 2: Small joystick is used for gimbal

- Potentiometer:
 - Used for driving speed control

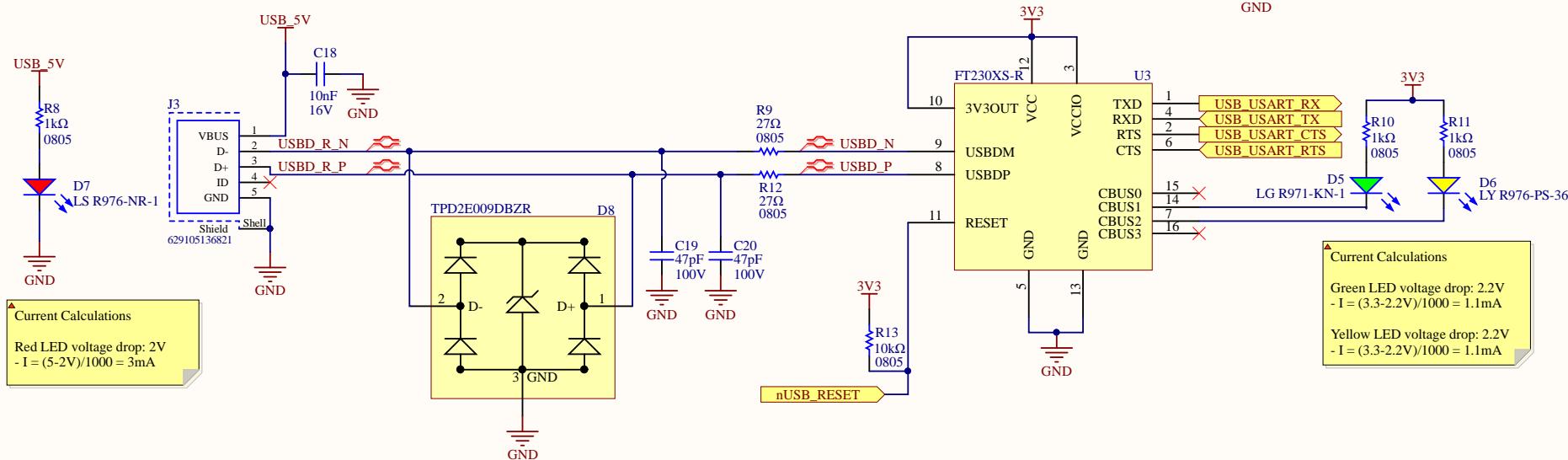
- Switch:
 - Used for reverse-mode toggle

- Buttons:
 - 1: Full-stop (halt all movement immediately)
 - 2-4: Extra, in case additional functionality is requested

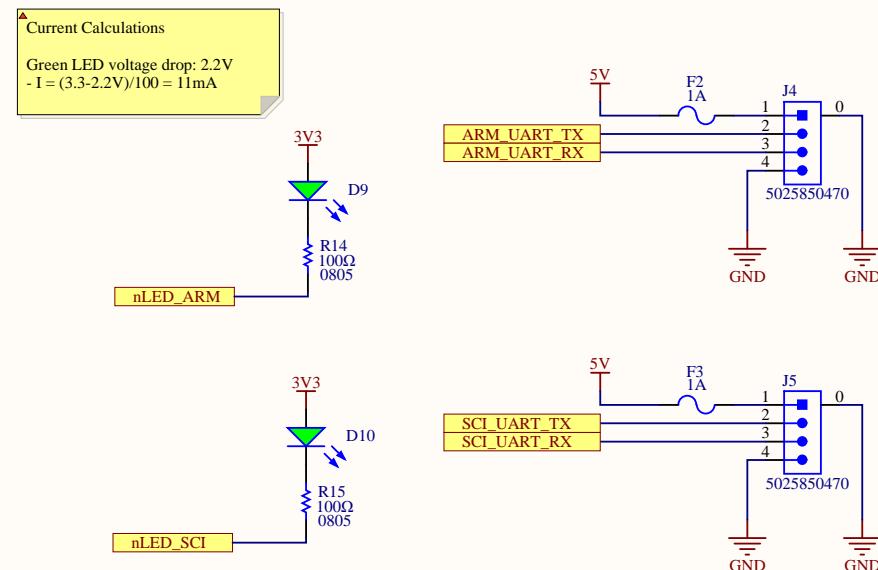
SPDT Switch

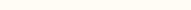


USB Converter



UART Connectors



| | | |
|--|------------------------------|---|
| Title: SH3_FTDI | * |  |
| Size: Letter | Drawn By: Christopher Arjune | |
| Date: 2020-11-10 | Sheet3 of 4 | |
| File: C:\Users\pkmn0\Desktop\ \Document Archive\Other\Electrical Git Repo\MarsRover2020-PCB\Projects | Robot Controller | |
| | | |

A

A

B

B

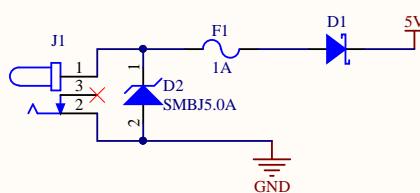
C

C

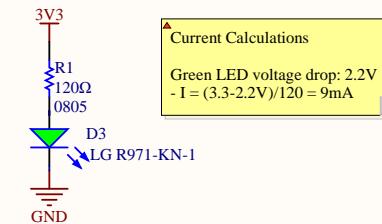
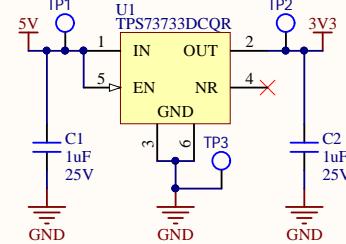
D

D

Power In



5V to 3V3 LDO



Title: SH4-POWER

Size: Letter | Drawn By: Christopher Arjune

Date: 2020-11-10 | Sheet 4 of 4

File: C:\Users\pkmn0\Desktop\Document Archive\Other\Electrical Git Repo\MarsRover2020-PCB\Projects\Robot Controller\

