

A

A

B

B

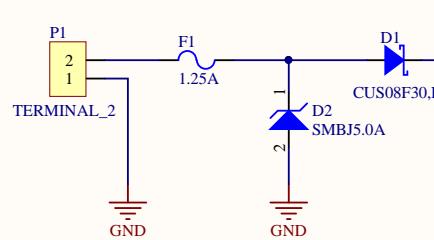
C

C

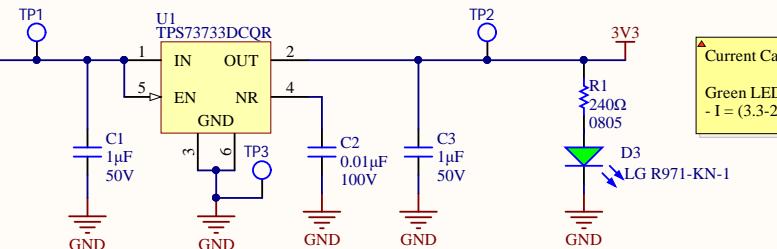
D

D

Power In



5V to 3V3 LDO



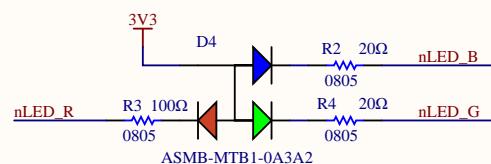
Current Calculations

Green LED voltage drop: 2.2V
 $- I = (3.3 - 2.2V) / 240 = 4.6mA$

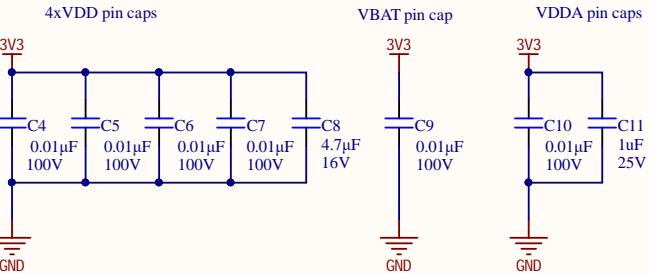
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Size: Letter	Drawn By: *	
Date: 2020-11-27	Sheet of	
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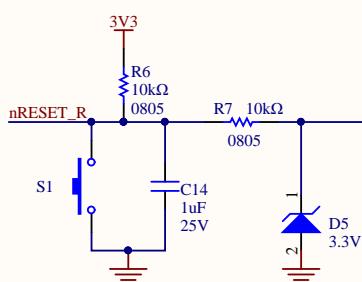
RGB LED



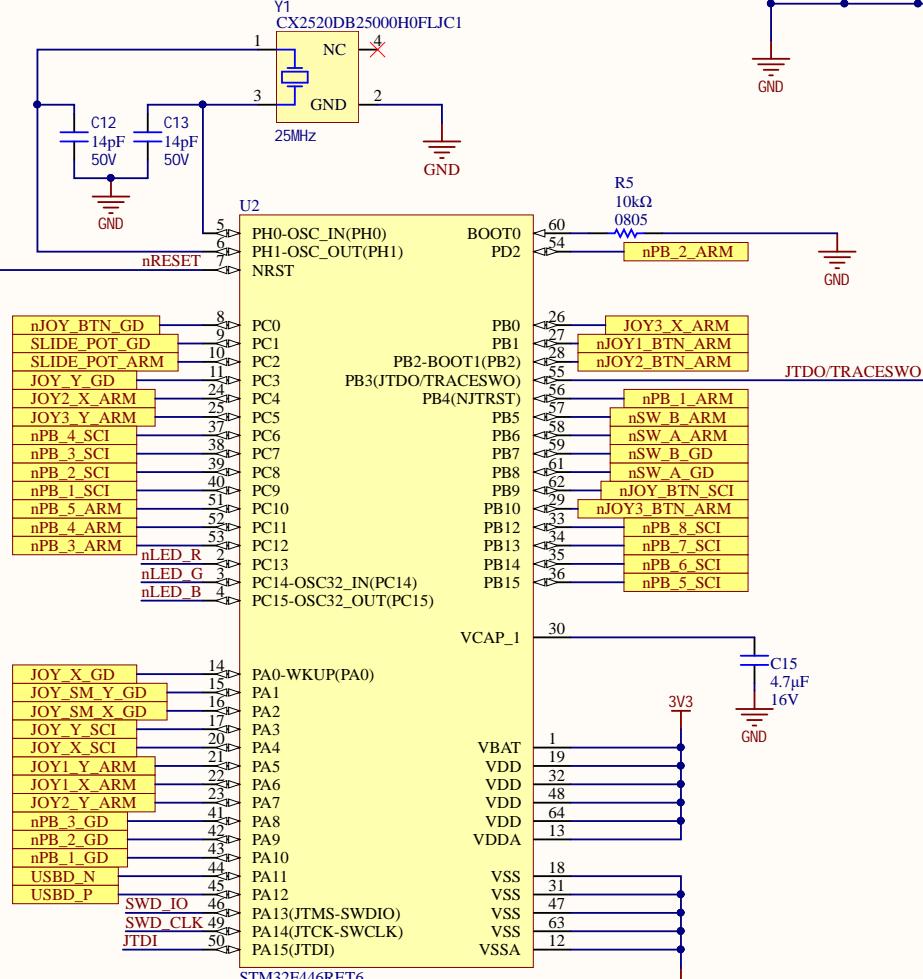
Decoupling Caps



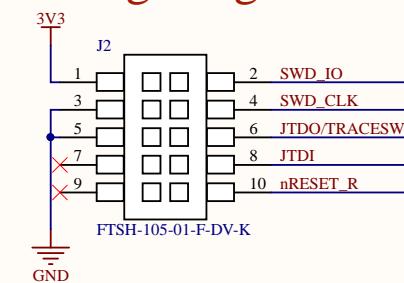
Reset Button



STM32F446RET6



Debug/Programming



A

A

B

B

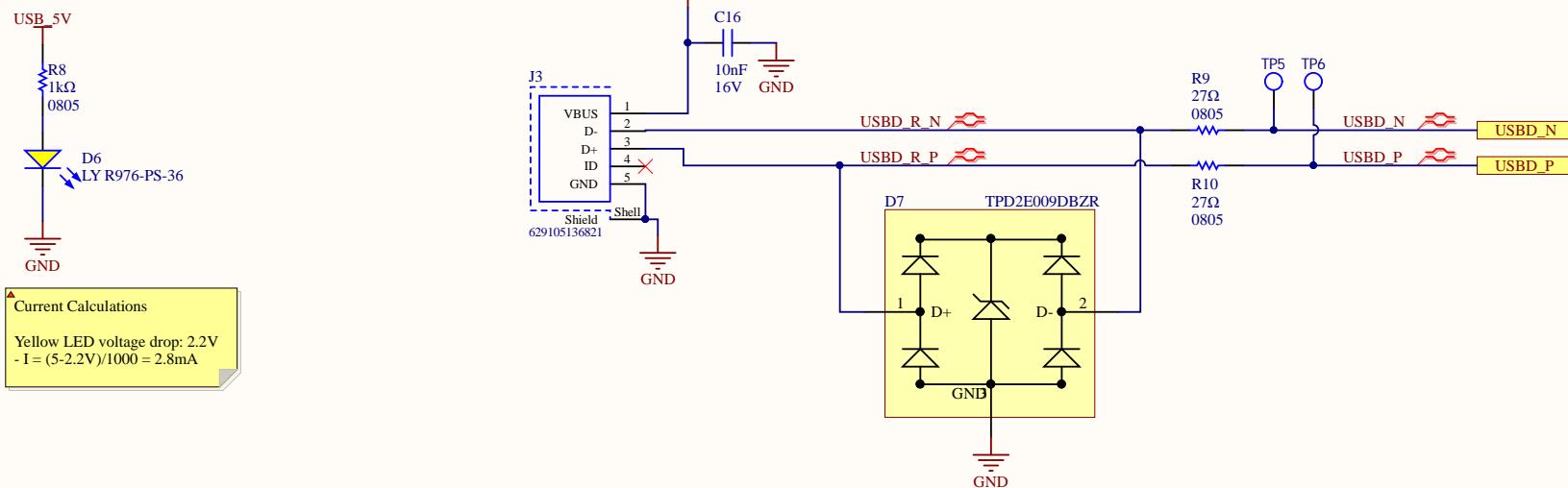
C

C

D

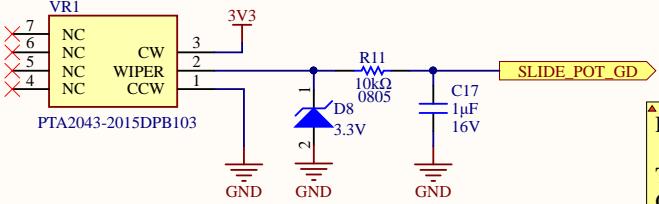
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USB Connector

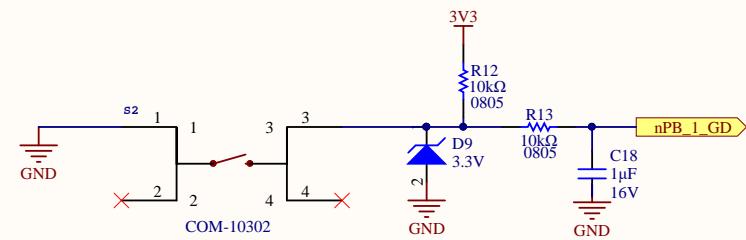


Title		<i>UW Robotics</i>
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Date: 2020-11-27	Sheet of	<i>Waterloo Ontario Canada N2L 3G6</i>
File: C:\Users\pkmn\Desktop\Document Archive\Other\Electrical Git Repo\MarsRover2020-PCB\Projects\Robot Controller\		ROBOTICS TEAM

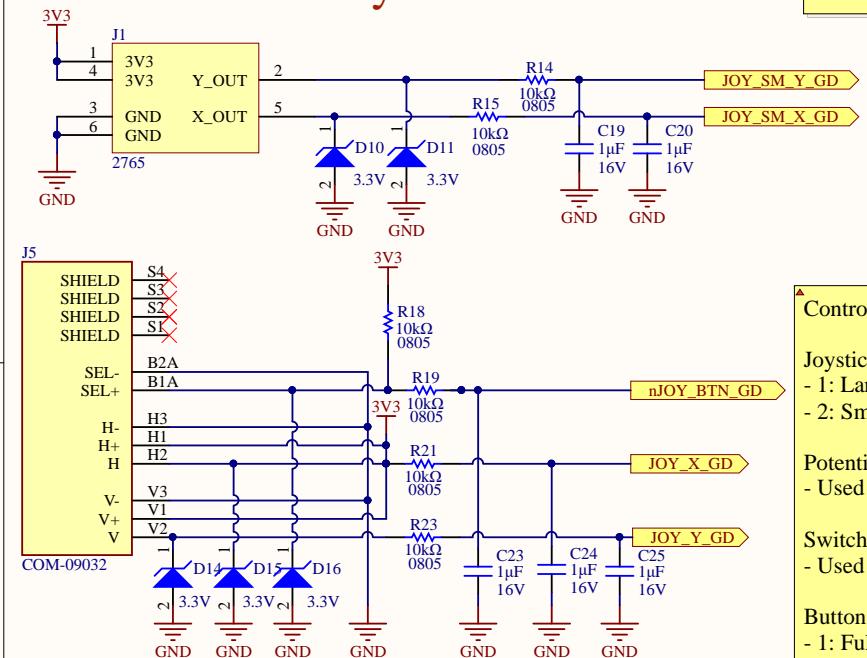
Slide Potentiometer



Pushbuttons



2-Axis Joysticks



Controls (subject to change)

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

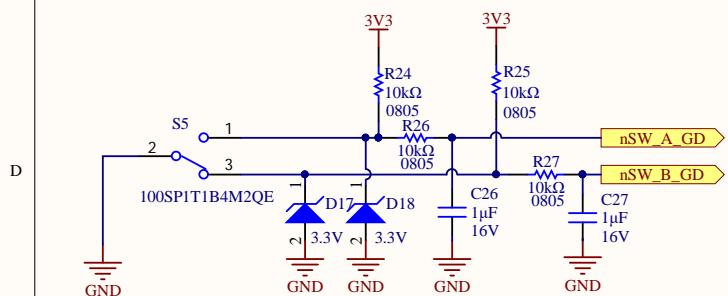
Potentiometer:

- Used for driving speed control
- Switch:
 - Used for reverse-mode toggle

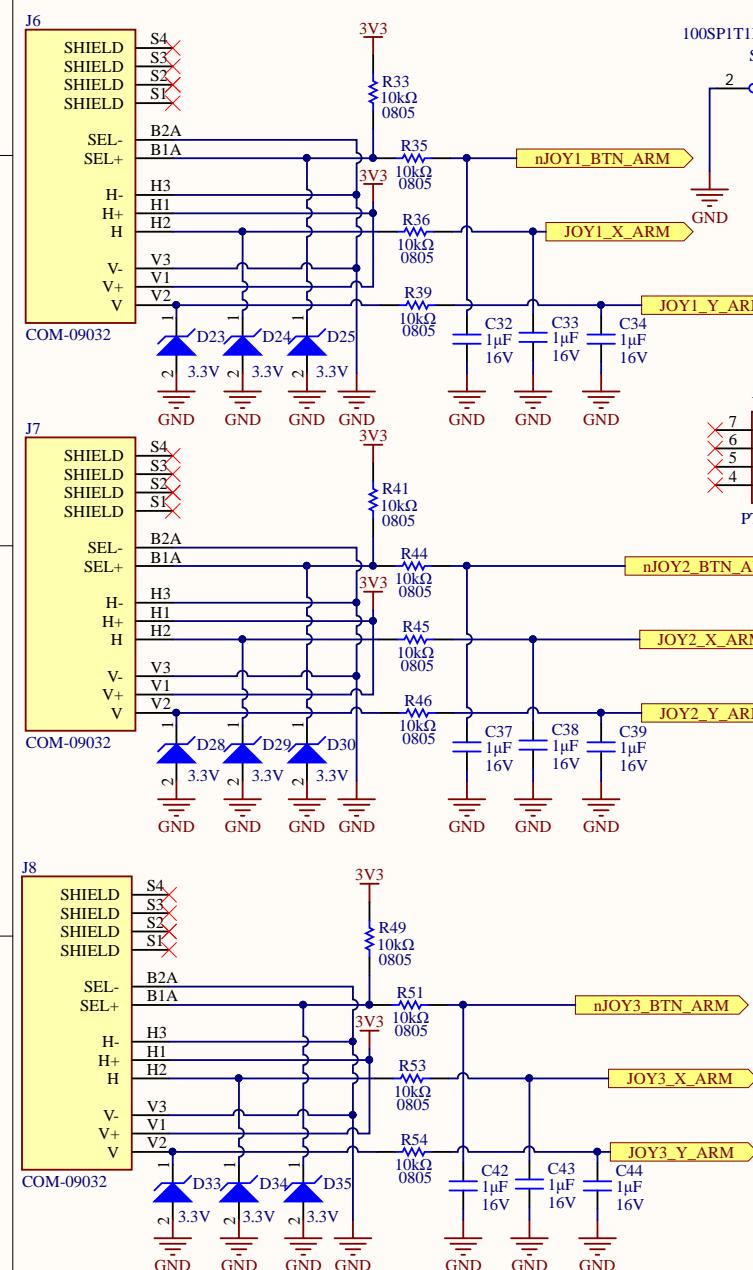
Buttons:

- 1: Full-stop (halt all movement immediately)
- 2-3: Extra, in case additional functionality is requested

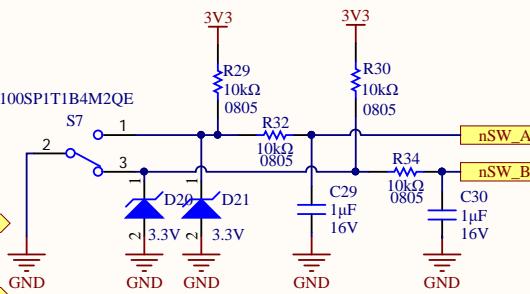
SPDT Switch



2-Axis Joysticks



SPDT Switch

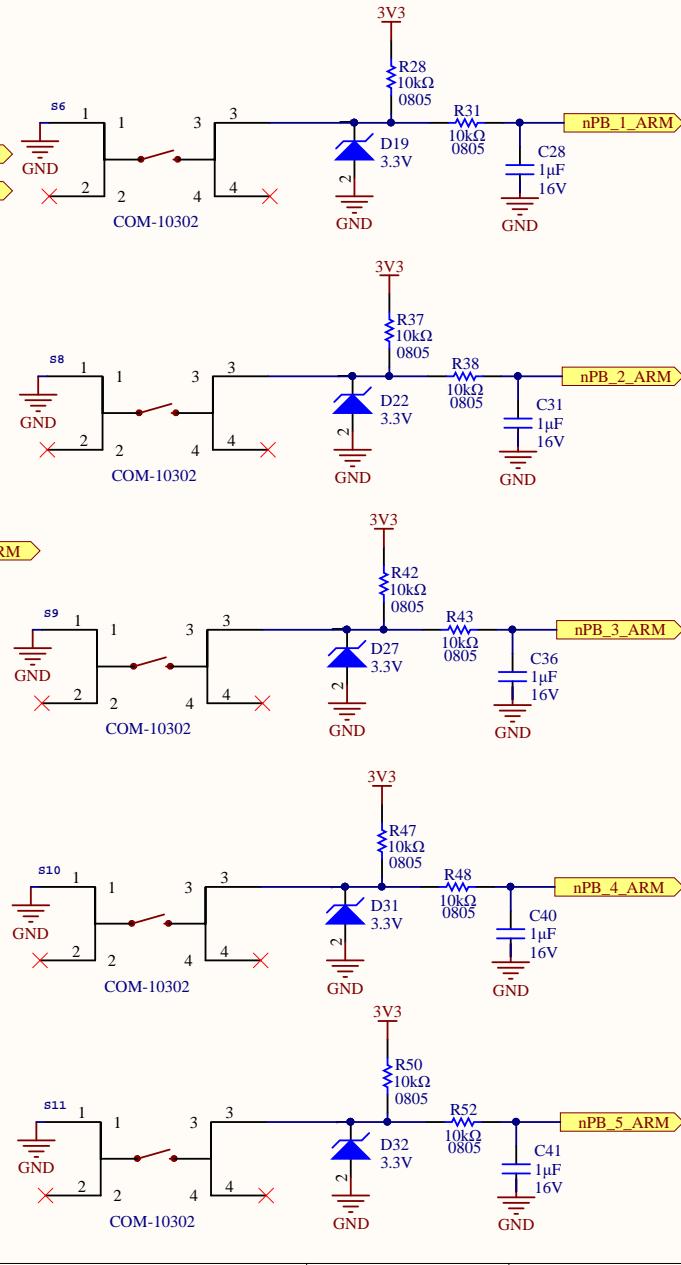


Slide Potentiometer

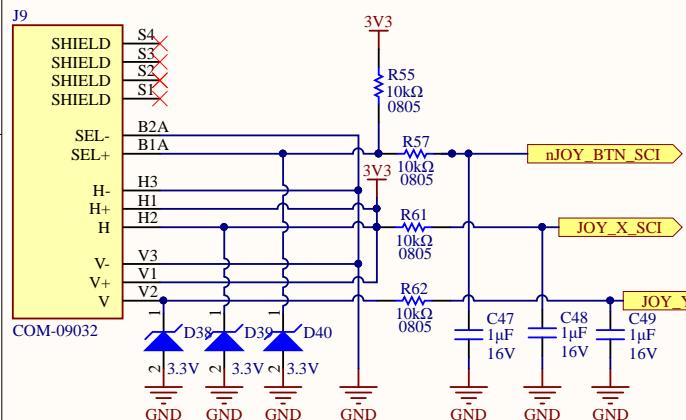
For Debounce Circuits:
 $T = RC \rightarrow C = T/R$
 $C = 10\text{ms}/10\text{kOhms} = 1\mu\text{F}$

Controls
 Joysticks: (in joint-control mode)
 - 1: Up/Down is for shoulder, Left/Right is for turntable
 - 2: Up/Down is for elbow
 - 3: Up/Down is for wrist pitch, Left/Right is for wrist roll
Switch:
 - Used to toggle between joint-control and inverse-kinematics
Potentiometer:
 - Used to adjust movement speed of joints/arm (depending on control mode)
Buttons:
 - 1/2: Open/close claw
 - 3/4: Set/Go to home position
 - 5: Extra, in case extra functionality is requested later

Pushbuttons



2-Axis Joystick



Pushbuttons

For Debounce Circuits:

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

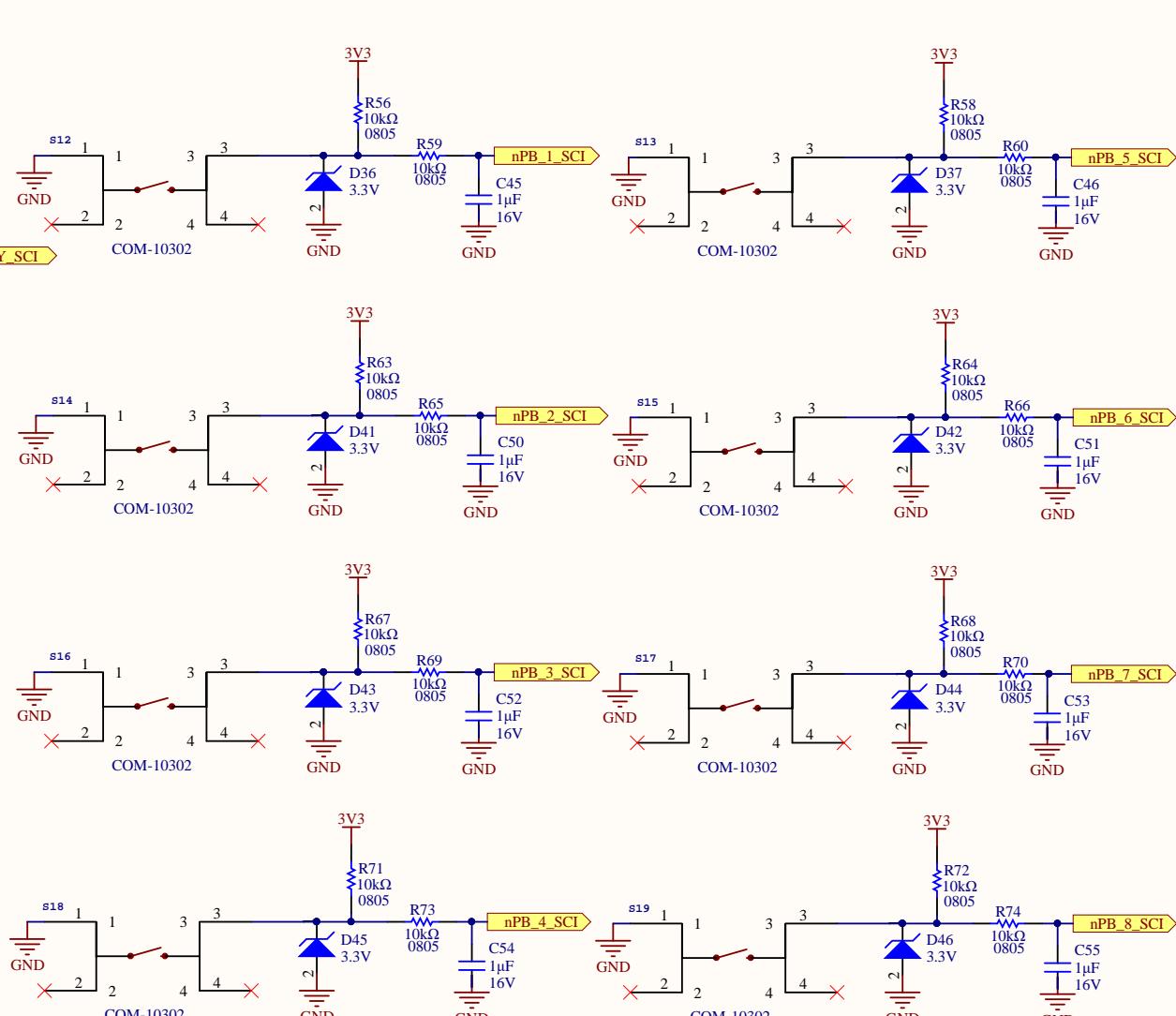
Controls

Joystick:

- Up/Down is for elevator, Left/Right is for opening/closing shovel
- Button should be used to choose between L/R and U/D, since the science mechanism may be damaged if too many things are moving at once

Buttons:

- 1/2: Move left/right 1 index
- 3/4: Move to leftmost/rightmost index
- 5/6: Open/close lid
- 7: Pre-programmed mixing sequence
- 8: Extra, in case additional functionality is requested later



Title

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Sheet of

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1

2

3

4

UW ROBOTICS TEAM

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