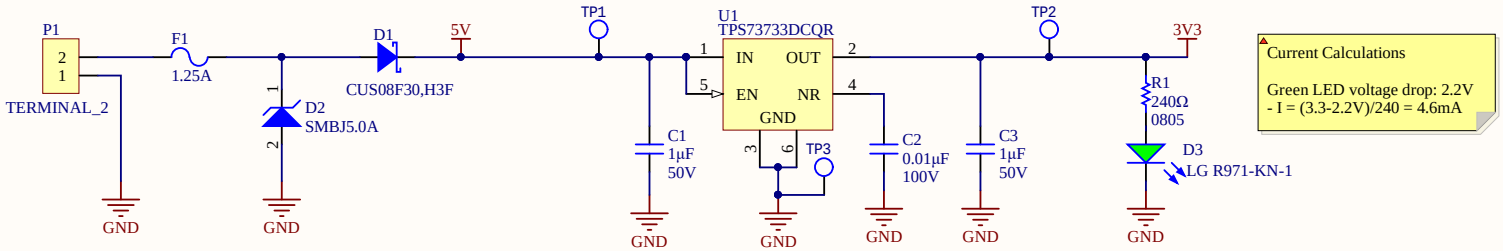
Power In

5V to 3V3 LDO



Current Calculations

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

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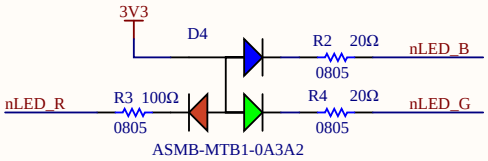
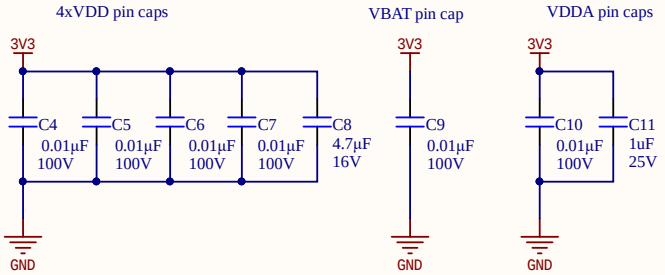
RGB LED



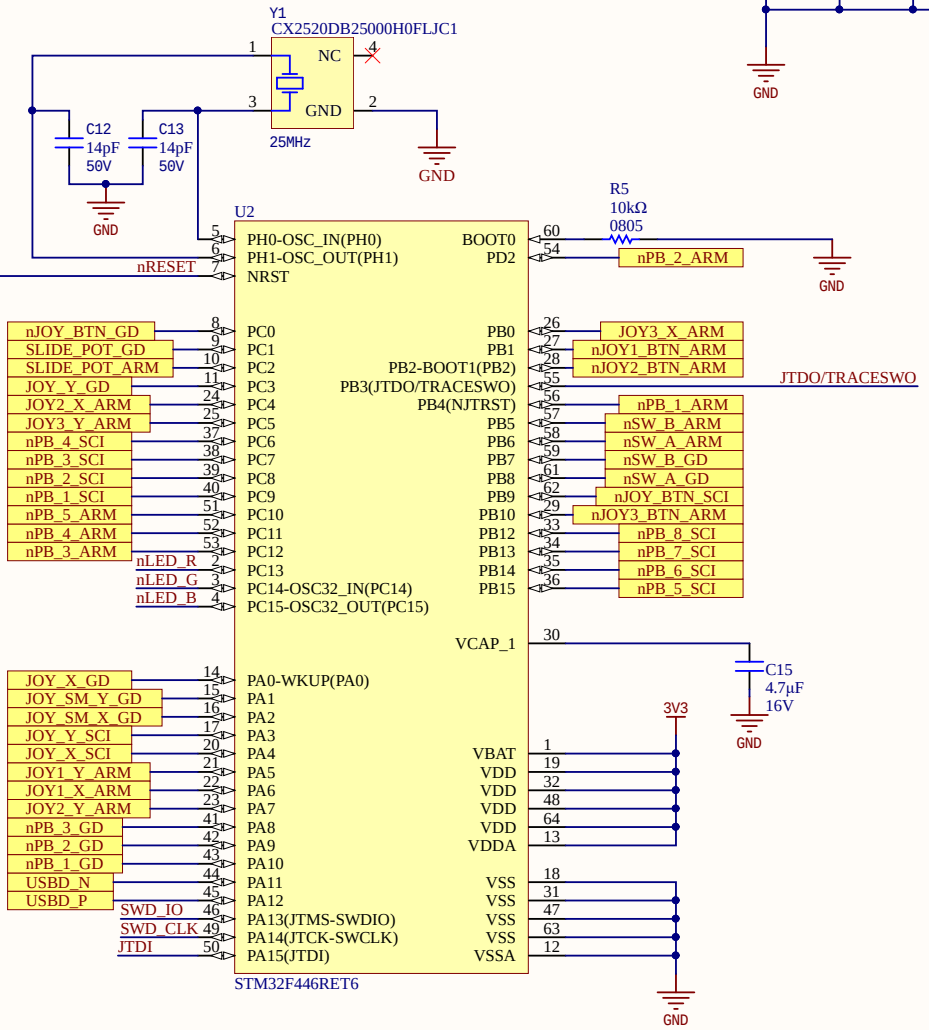
Current Calculations

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

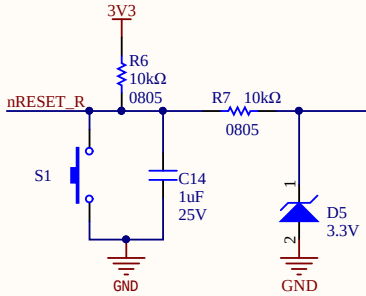
Decoupling Caps



STM32F446RET6



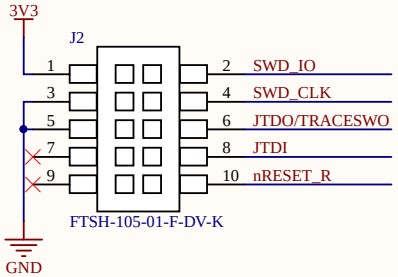
Reset Button



For Debounce Circuit:

T=RC -> C= T/R
C= 10ms/10kOhms= 1uF

Debug/Programming



MOUNTING_HOLES

TP4

GND

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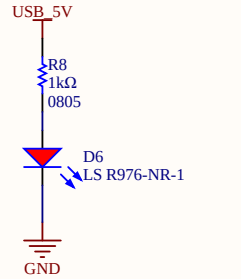
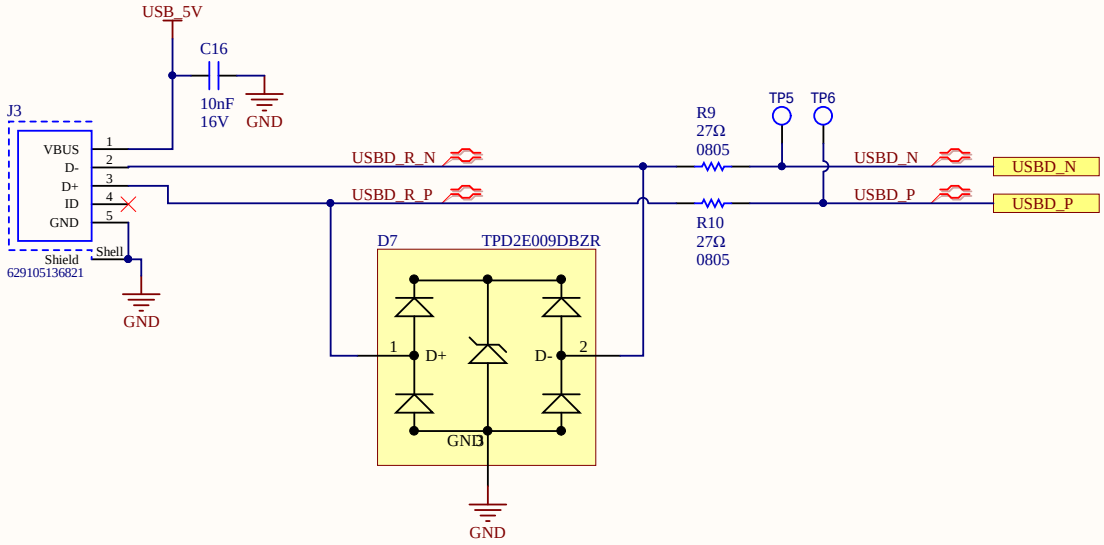
USB Connector



Current Calculations

Red LED voltage drop: 2V
- I = (5-2V)/1000 = 3mA



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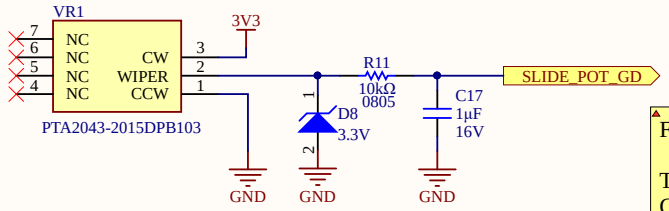
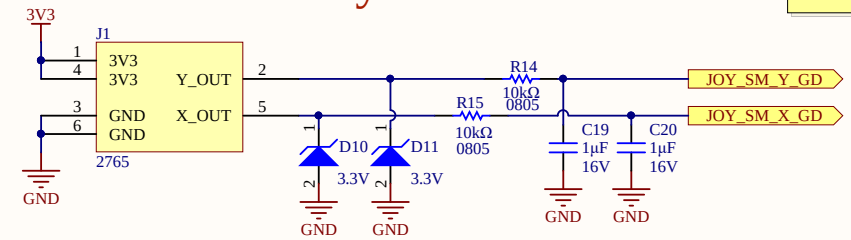
Slide Potentiometer

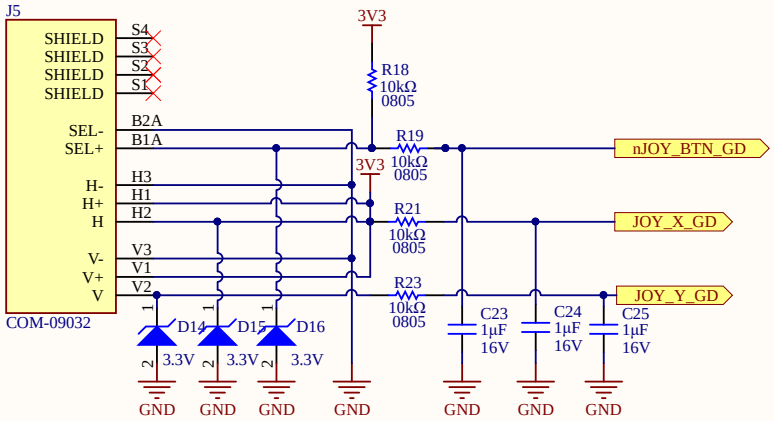


For Debounce Circuits:

T=RC -> C= T/R
C= 10ms/10kOhms= 1uF

2-Axis Joysticks





Controls (subject to change)

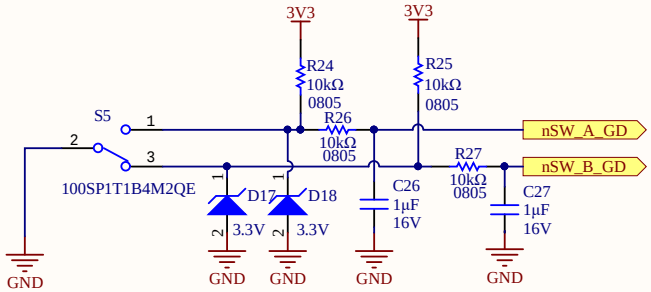
Joysticks:
- 1: Large joystick is used for driving
- 2: Small joystick is used for gimbal

Potentiometer:
- Used for driving speed control

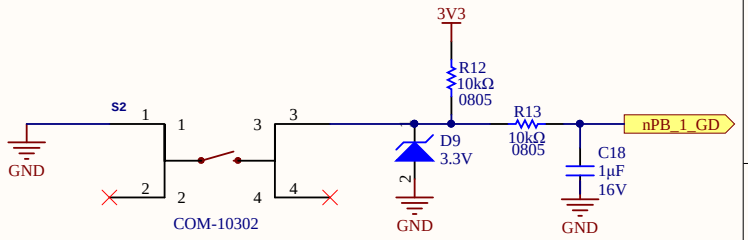
Switch:
- Used for reverse-mode toggle

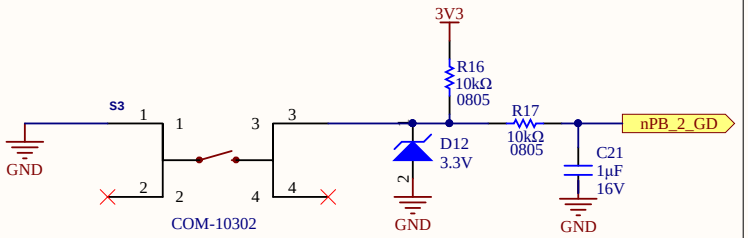
Buttons:
- 1: Full-stop (halt all movement immediately)
- 2-4: Extra, in case additional functionality is requested

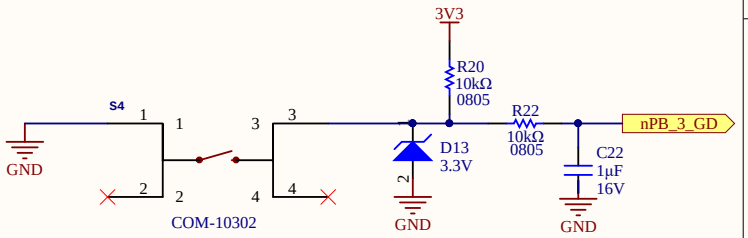
SPDT Switch



Pushbuttons







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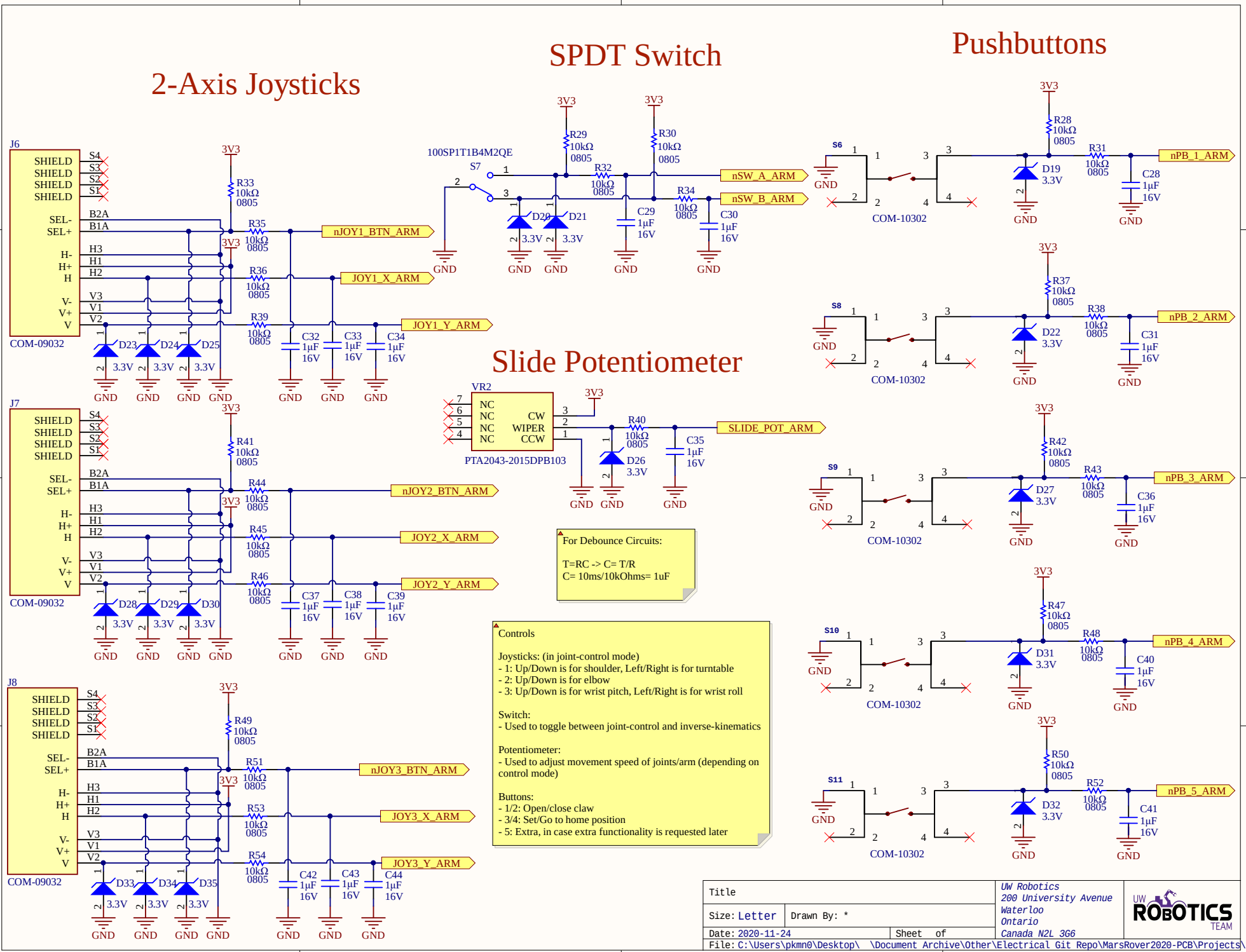
2-Axis Joysticks
SPDT Switch
Pushbuttons
Slide Potentiometer
J6
J7
J8
COM-09032
100SP1T1B4M2QE
S7
VR2
PTA2043-2015DPB103
COM-10302
nJOY1_BTN_ARM
JOY1_X_ARM
JOY1_Y_ARM
nJOY2_BTN_ARM
JOY2_X_ARM
JOY2_Y_ARM
nJOY3_BTN_ARM
JOY3_X_ARM
JOY3_Y_ARM
nSW_A_ARM
nSW_B_ARM
SLIDE_POT_ARM
nPB_1_ARM
nPB_2_ARM
nPB_3_ARM
nPB_4_ARM
nPB_5_ARM
3V3
GND
3.3V
For Debounce Circuits:
T=RC -> C= T/R
C= 10ms/10kOhms= 1uF
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
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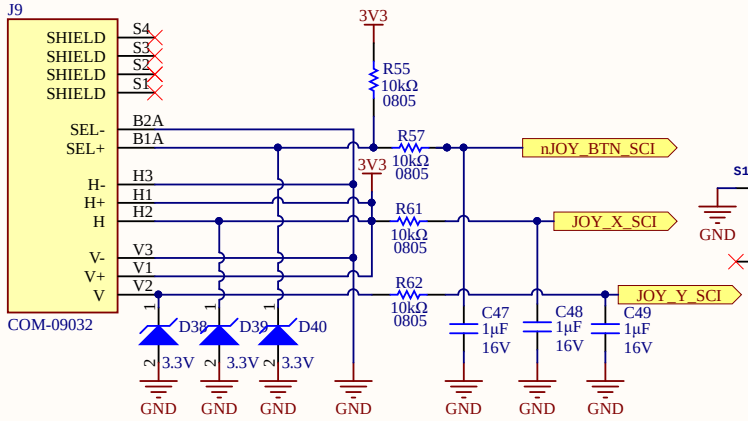
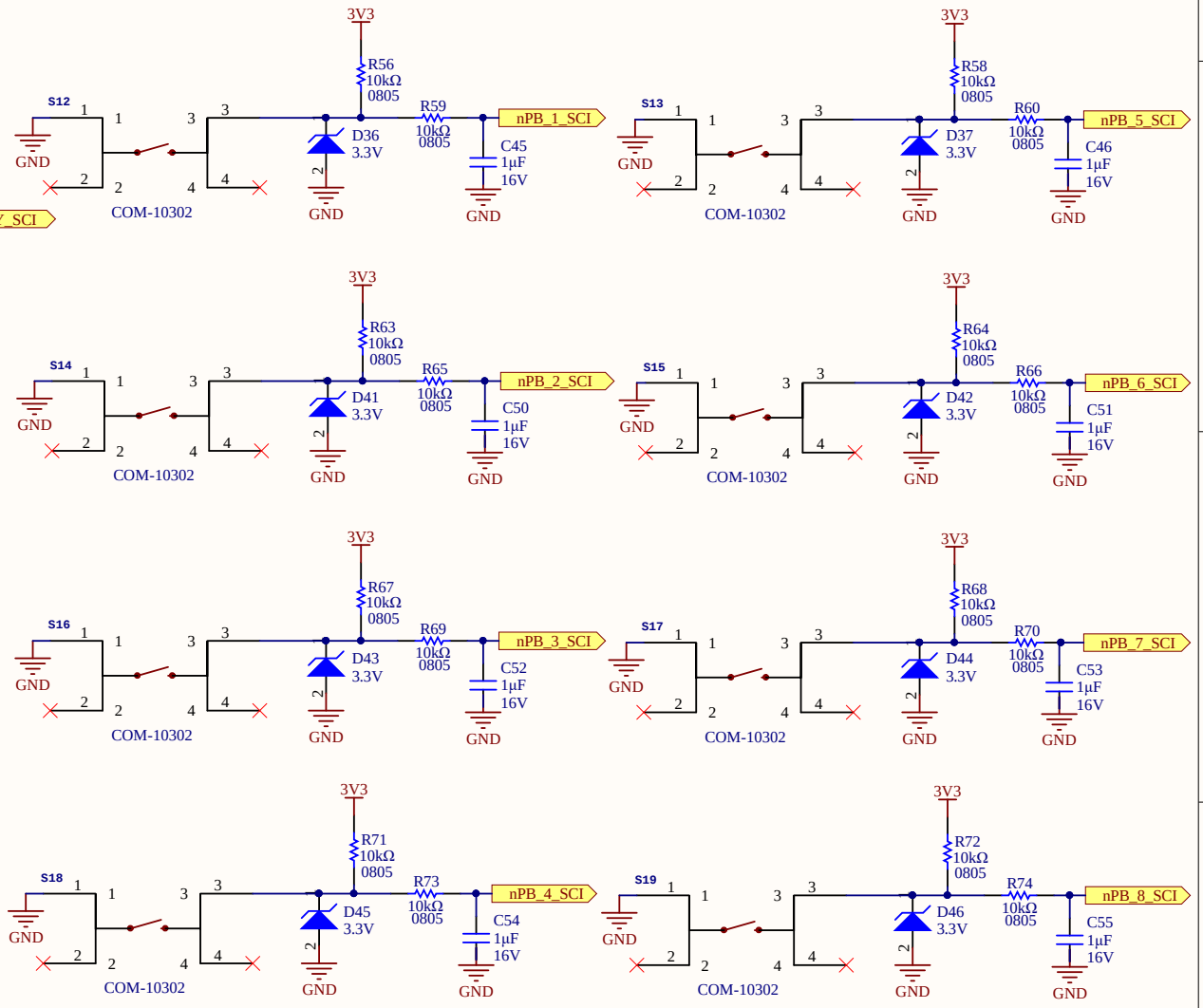
UW ROBOTICS TEAM

2-Axis Joystick



Pushbuttons



For Debounce Circuits:

T=RC -> C= T/R
C= 10ms/10kOhms= 1uF

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

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