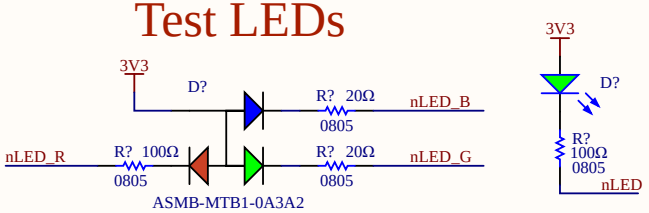
Test LEDs

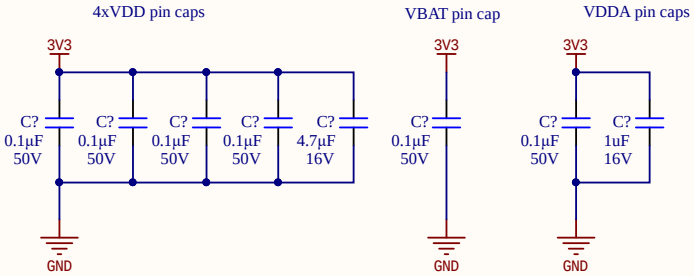


Current Calculations

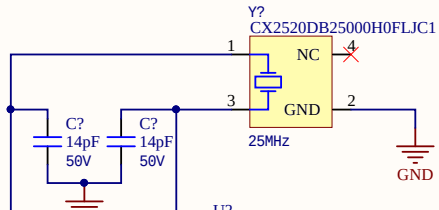
Green LED voltage drop: 2.2V
- I = (3.3-2.2V)/100 = 11mA

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

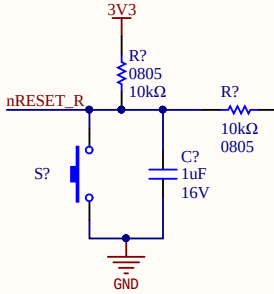
Decoupling Caps



STM32F446RET6

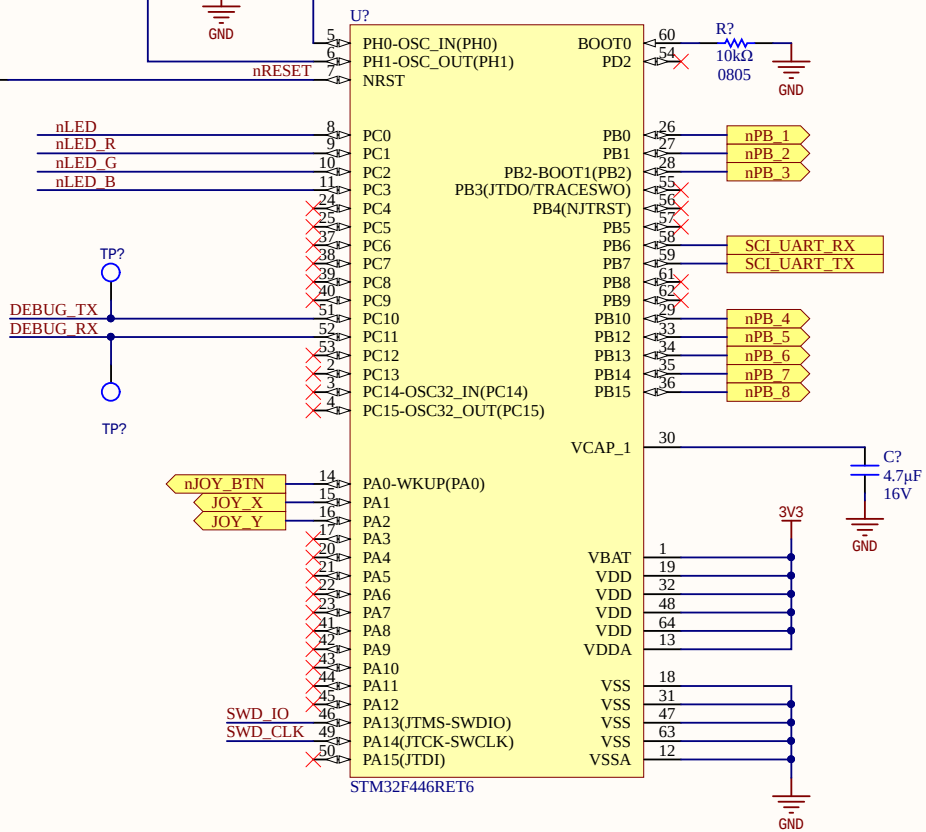


Reset Button

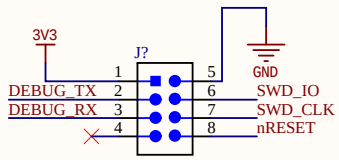


For Debounce Circuit:

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



Debug/Programming



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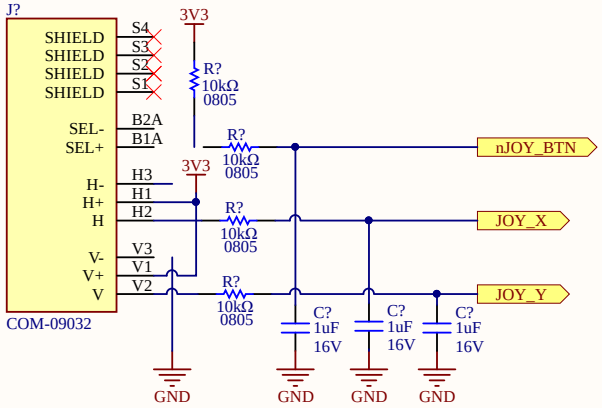
2-Axis Joysticks

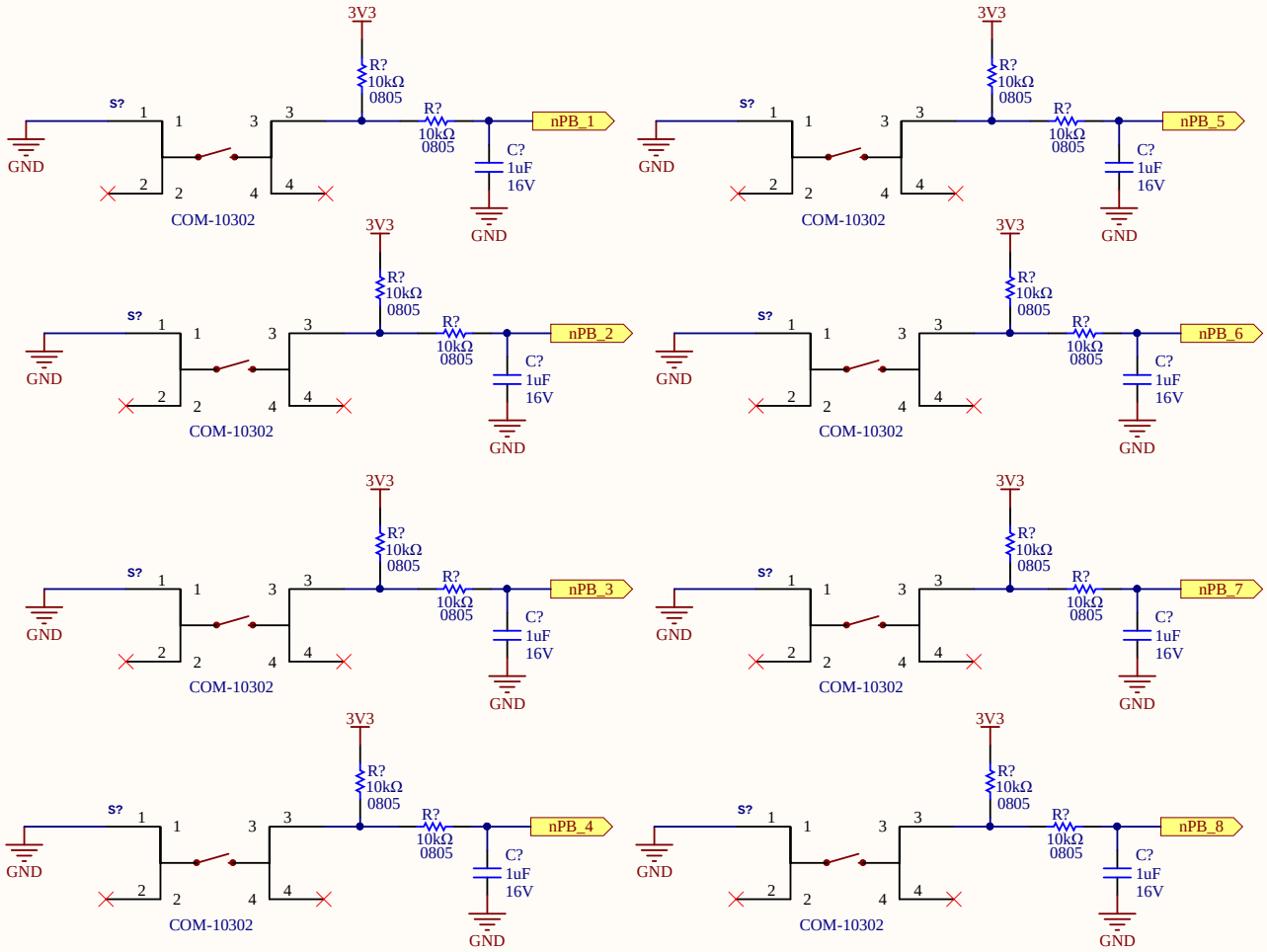


Controls

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

Pushbuttons



For Debounce Circuits:

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

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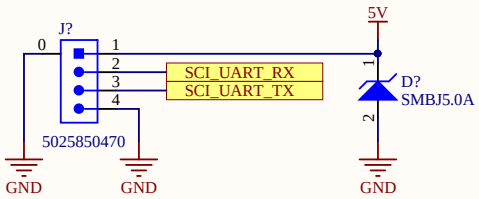
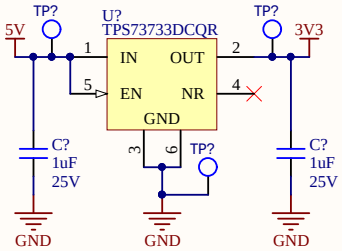
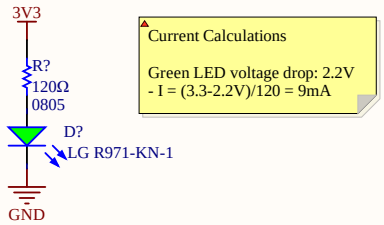
Power In



5V to 3V3 LDO





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