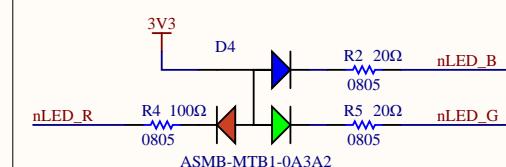
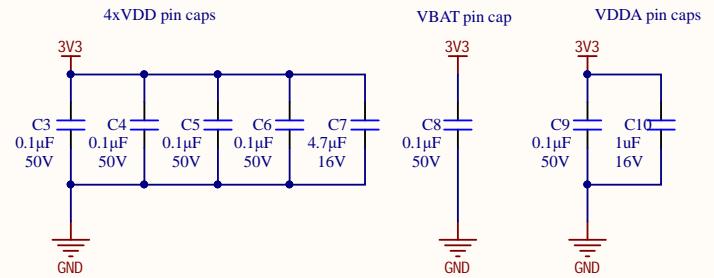


Test LEDs

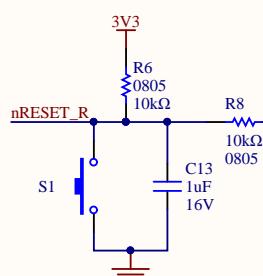


Current Calculations
RGB LED voltage drops:
- Red: $2.1V: I = (3.3-2.1V)/100 = 12mA$
- Blue: $3.1V: I = (3.3-3.1V)/20 = 10mA$
- Green: $3.1V: I = (3.3-3.1V)/20 = 10mA$

Decoupling Caps

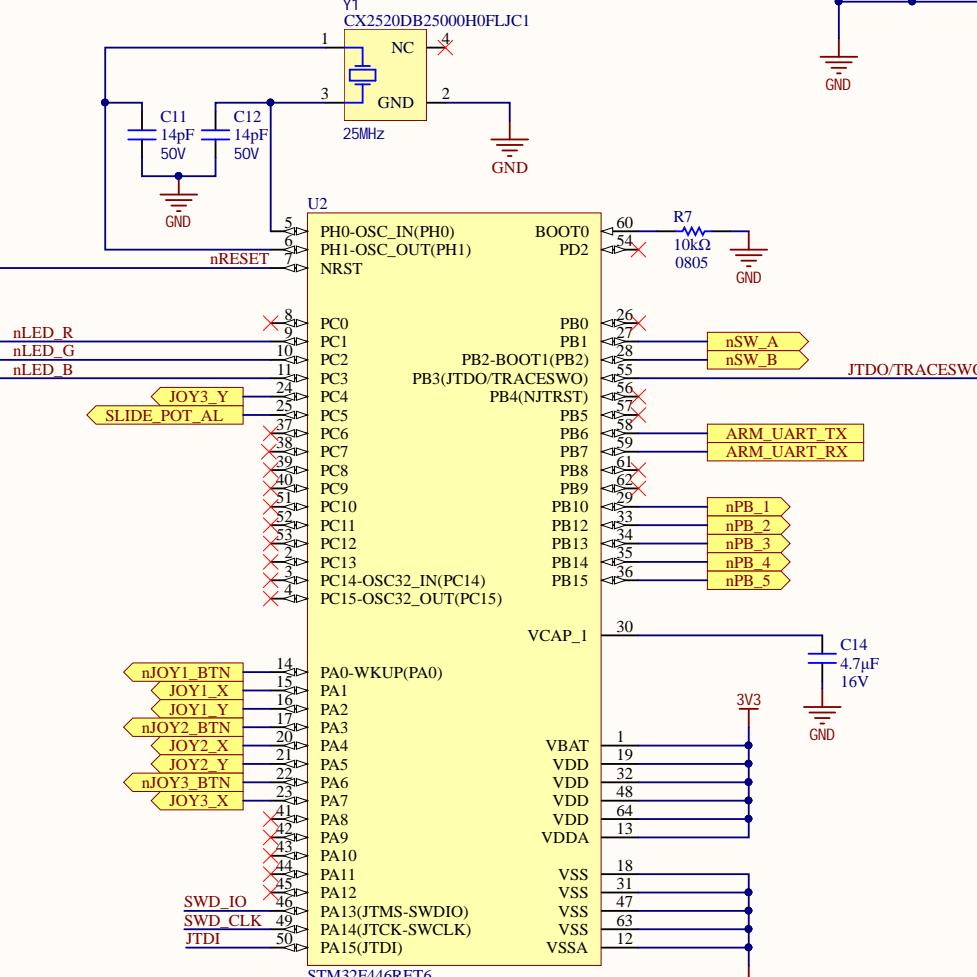


Reset Button

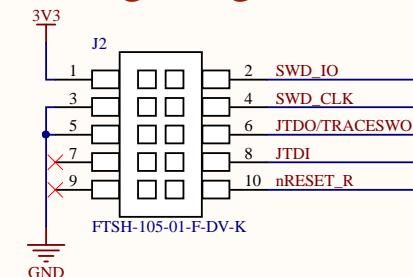


For Debounce Circuit:
 $T=RC \rightarrow C = T/R$
 $C = 10ms/10k\Omega = 1\mu F$

STM32F446RET6



Debug/Programming



Title: SH1_MCU

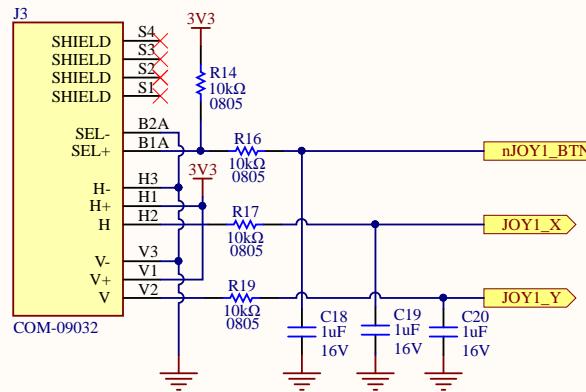
Size: Letter Drawn By: Qi nyang Bao

Date: 2020-11-10

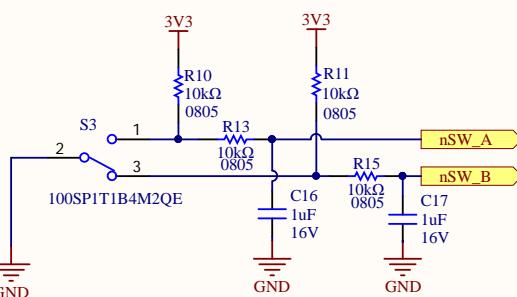
Sheet1 of 4

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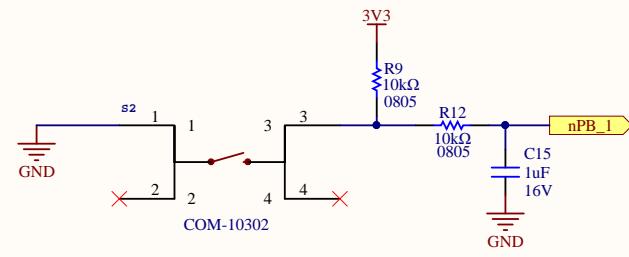
2-Axis Joysticks



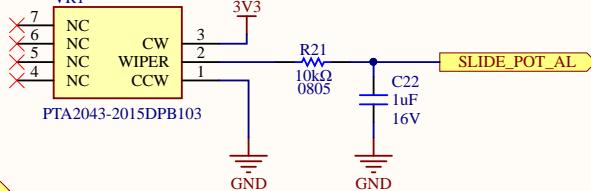
SPDT Switch



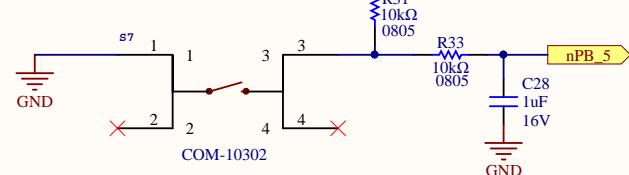
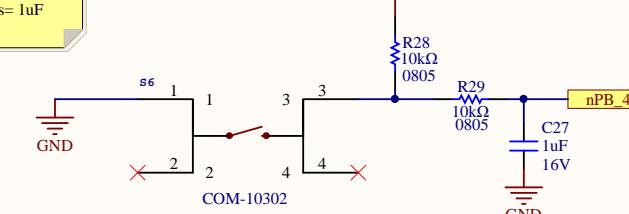
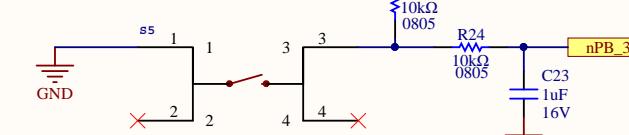
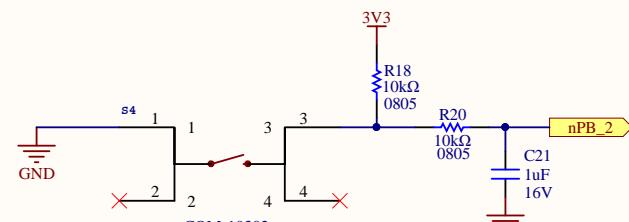
Pushbuttons



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:

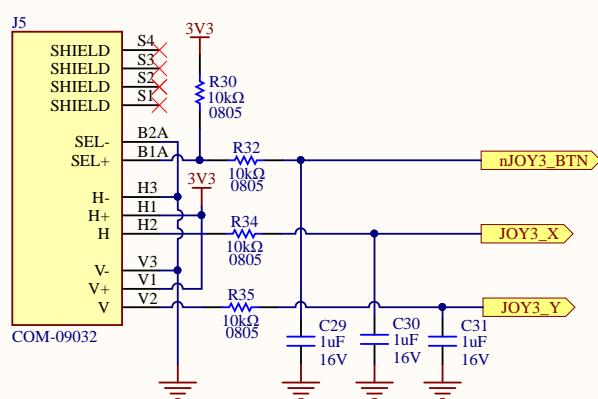
- Used to toggle between joint-control and inverse-kinematics

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



Title SH2-CONTROLS

Size: Letter Drawn By: Qi nyang Bao

Date: 2020-11-10 Sheet 2 of 4

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A

A

B

B

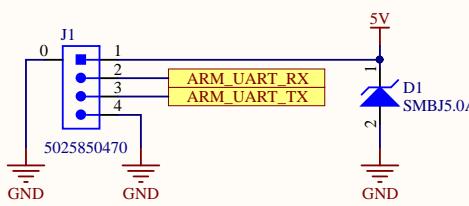
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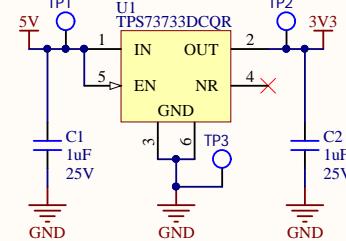
D

D

Power In



5V to 3V3 LDO



Current Calculations

Green LED voltage drop: 2.2V
 $- I = (3.3 - 2.2V) / 120\Omega = 9mA$

