

A

A

Mounting Holes

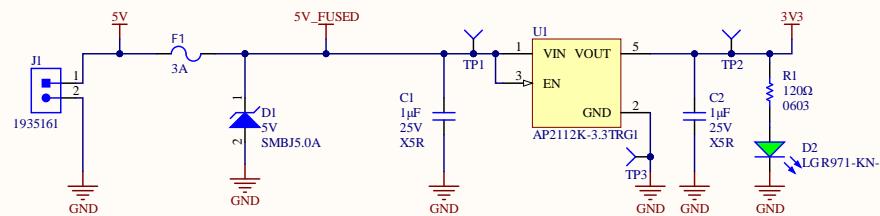
^{H1}
○^{H2}
○^{H3}
○^{H4}
○

Need to make new mounting hole part depending on Andrew's fastener choice

B

B

Add eFuse for Rev 3 5V to 3.3V LDO (Max 600mA)



Current Calculations

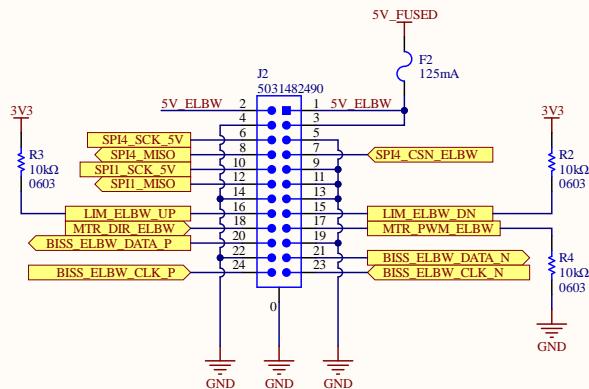
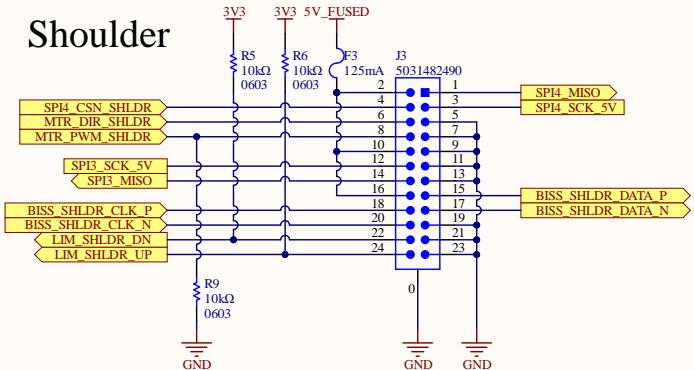
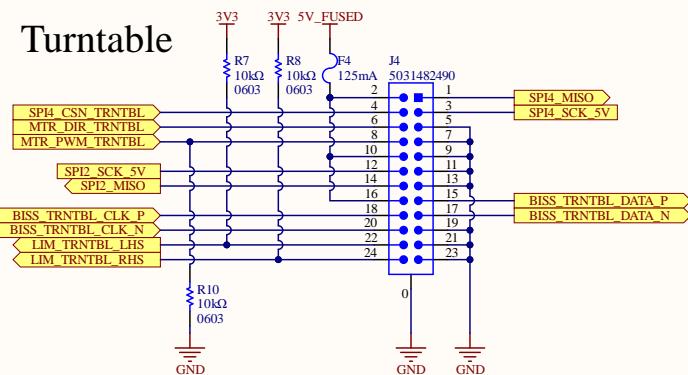
Green LED voltage drop: 2.2V
 $- I = (3.3 - 2.2V) / 120 = 9.17mA$

C

C

Title: Power	
Project: Arm.PjPcb	
Rev: 2	Checker: Lance Bantoto
Engineer: Kyle Hong	
Date: 2020-12-03	Sheet: 1 of 8



Elbow**Shoulder****Turntable**

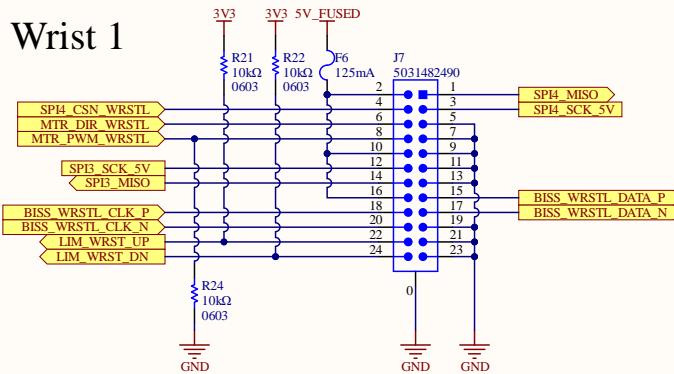
Acronyms

CSN: Chip Select
 MTR: Motor
 ELBW: Elbow
 LIM: Limit Switch
 CLK: Clock
 DN: Down
 FSR: Force Sensitive Resistor
 CLAW: Claw
 WRST: Wrist
 SHLDR: Shoulder
 TRNTBL: Turntable
 DIR: Direction signal for motor controller

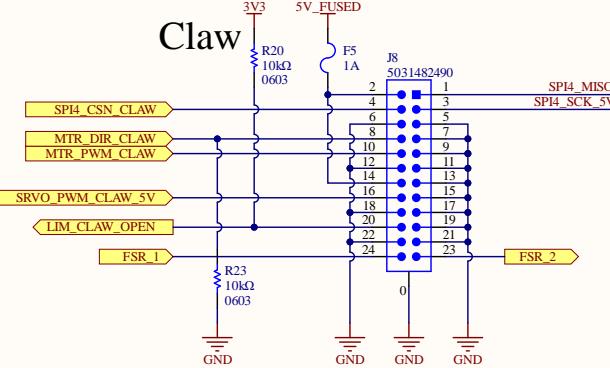
Title: Connectors I	
Project: Arm.PjPcb	
Rev: 2	Checker: Lance Bantoto
Engineer: Kyle Hong	Date: 2020-12-03 Sheet: 2 of 8

A

Wrist 1

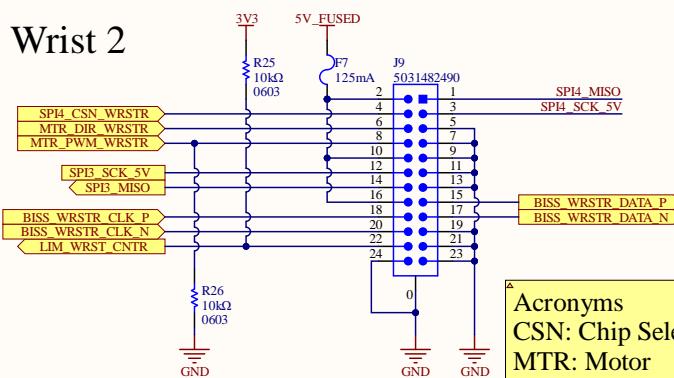


Claw

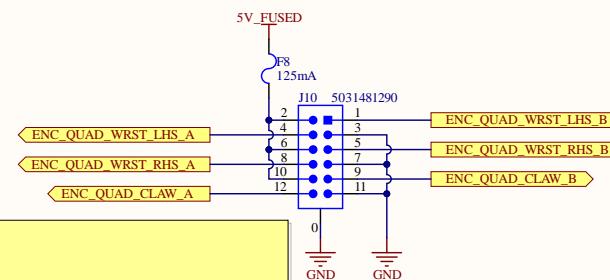


B

Wrist 2



Quadrature Encoders



C

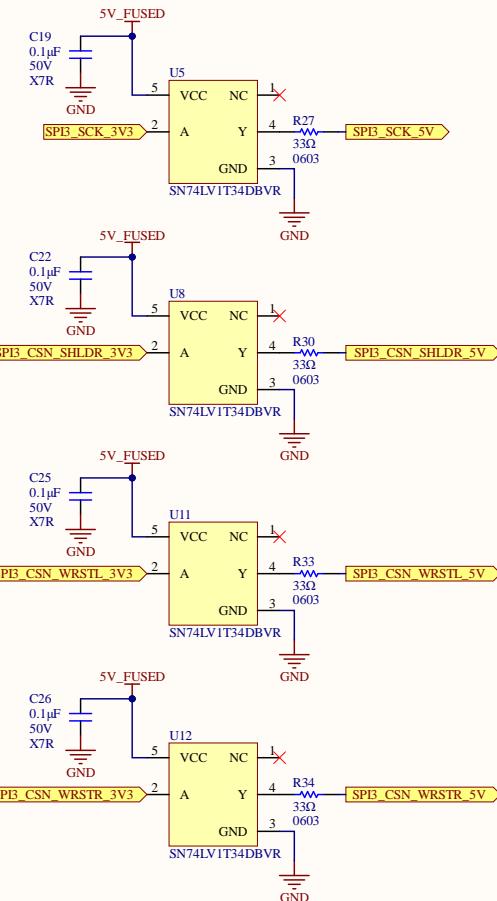
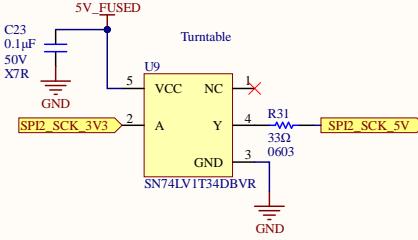
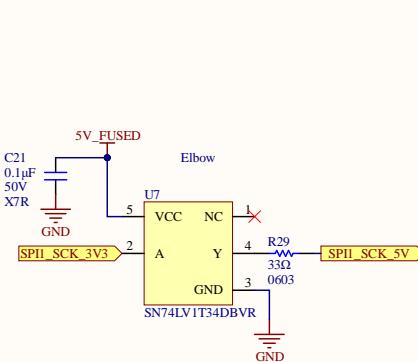
Acronyms

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- CLAW: Claw
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- SHLDR: Shoulder
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- DIR: Direction signal for motor controller

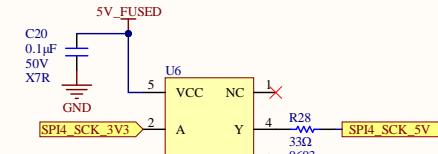
^A
Encoder manufacturer: Broadcom
Encoder part number: AEAT-6012-A06

Did not level shift MISO signals since the STM32 SPI peripheral is 5V tolerant

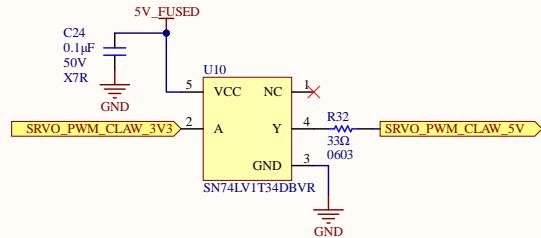
Encoder Level Shifters



Current Sensor Level Shifter



Servo Level Shifter



Title: Level Shifters

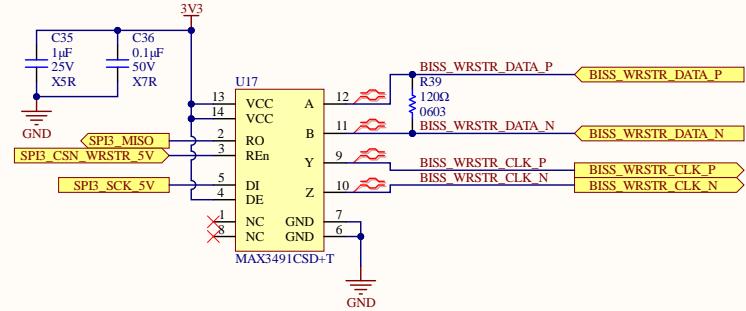
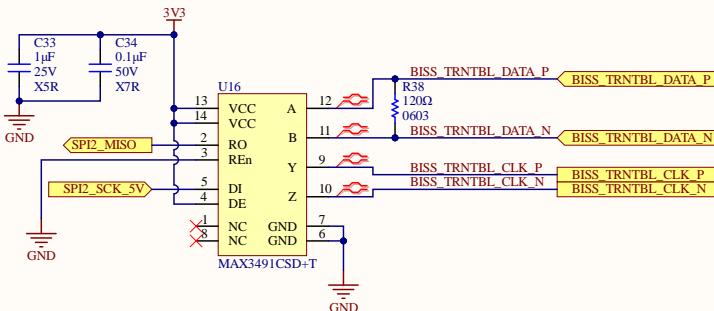
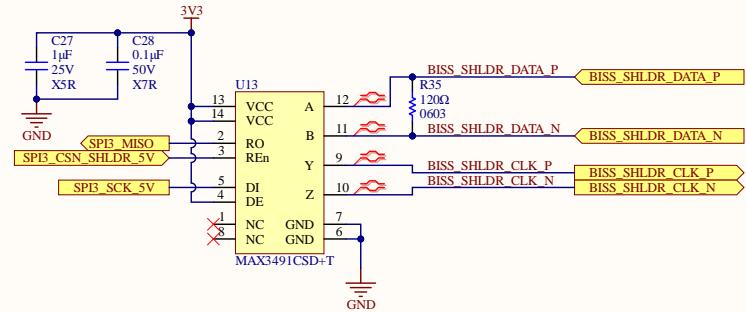
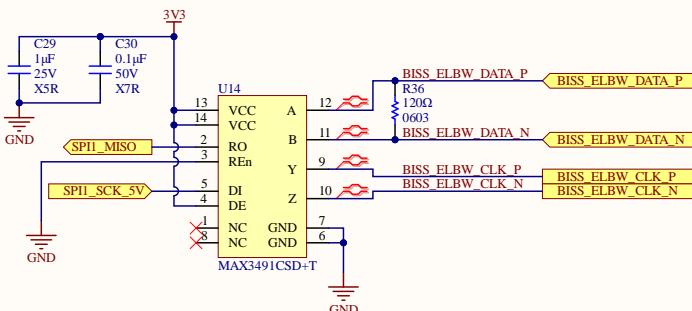
Project: Arm.PjPcb

Rev: 2 Checker: Lance Bantoto

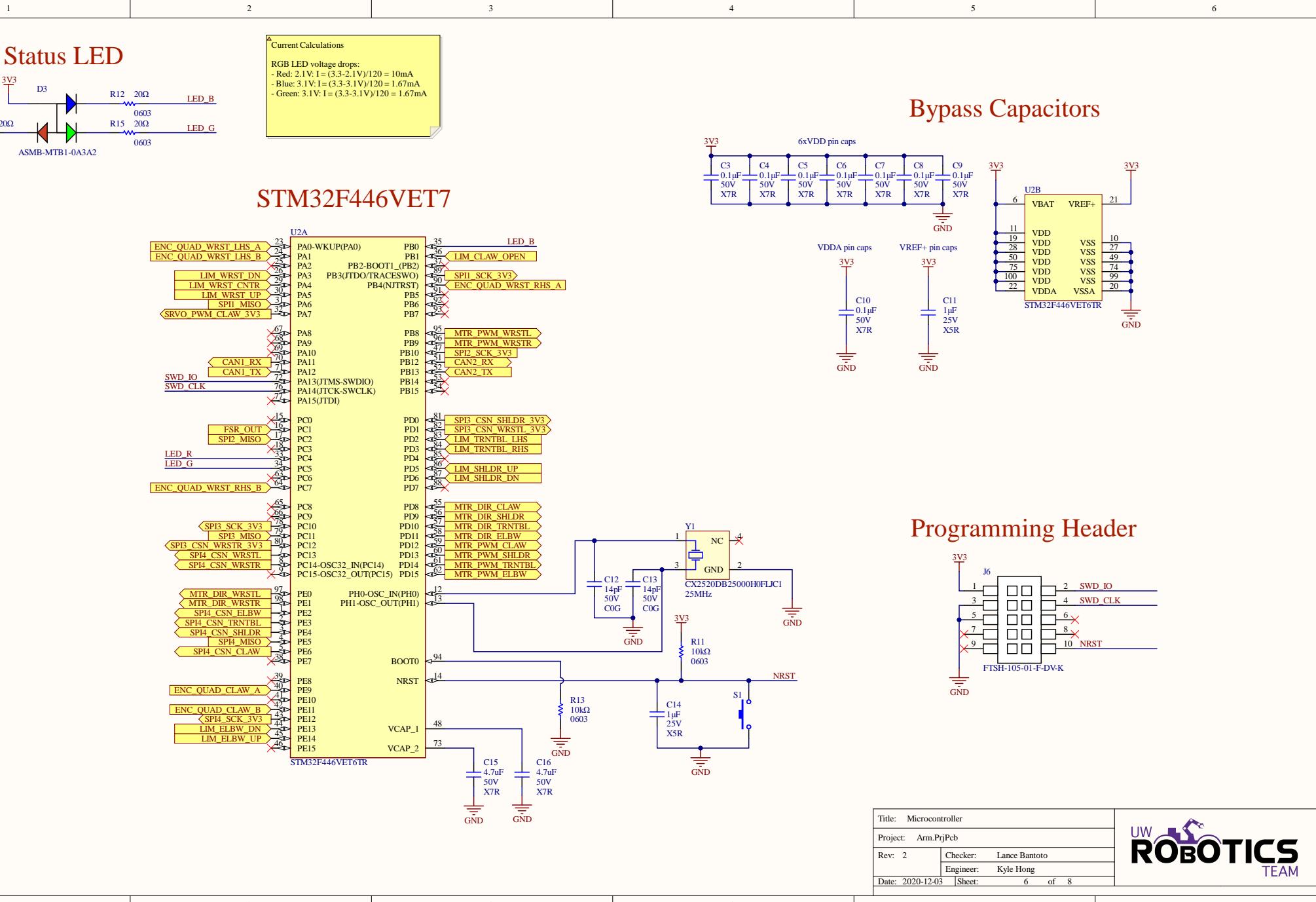
Engineer: Kyle Hong

Date: 2020-12-03 Sheet: 4 of 8

RS-485 Transceivers for Netzer DS-25 Encoders



Title: Netzer Encoders	
Project: Arm.PjPcb	
Rev: 2	Checker: Lance Bantoto
Engineer: Kyle Hong	
Date: 2020-12-03	Sheet: 5 of 8



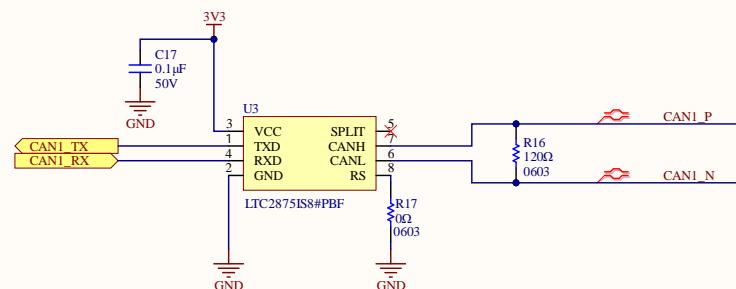
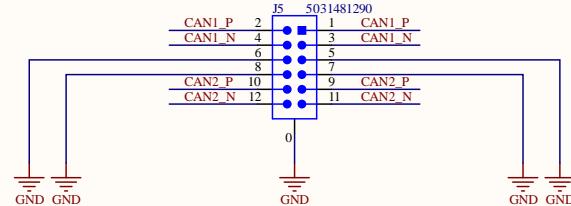
A

A

CAN Transceivers

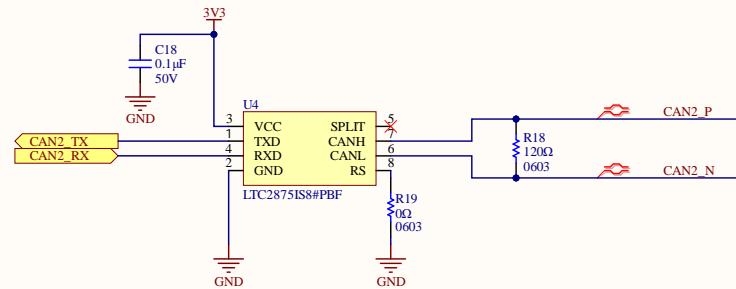
B

B



C

C



Title: CAN Transceivers

Project: Arm.PjPrjPcb

Rev: 2 Checker: Lance Bantoto

Engineer: Kyle Hong

Date: 2020-12-03 Sheet: 7 of 8



A

A

Force Sensitive Resistor

Sensor Manufacturer: Interlink Electronics
 Manufacturer Part Number: 30-81794
 Supplier: Digi-Key
 Supplier Part Number: 1027-1001-ND
<https://cdn.sparkfun.com/assets/8/a/1/2/0/2010-10-26-DataSheet-FSR402-Layout2.pdf>
 Resistance at 20N = 800 ohms
 Resistance at 100N = 250 ohms

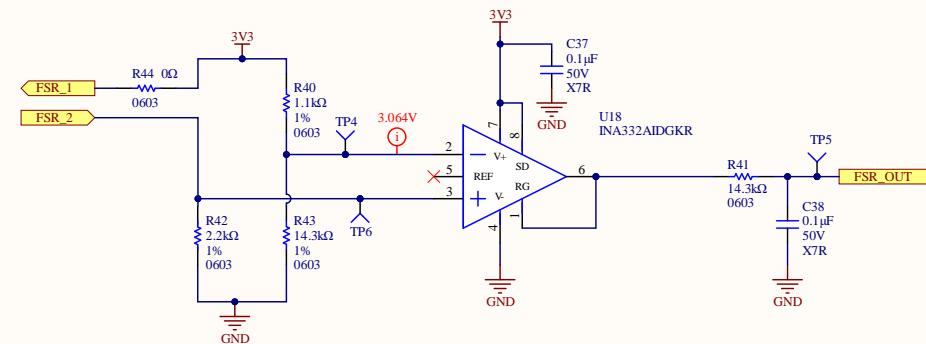
Wheatstone bridge voltage output values:
 At 20N, Vout = 3.2V
 At 100N, Vout = 0.5V

 Low pass filter cutoff frequency:
 $f_c = 1/(2\pi \cdot 14.3k \cdot 0.1\mu F) = 111.30 \text{ Hz}$

B

B

Wheatstone Bridge Instrumentation Amplifier (Gain = 5)



C

C

Title: Force Sensitive Resistor

Project: Arm.PjPcb

Rev: 2 Checker: Lance Bantoto

Engineer: *

Date: 2020-12-03 Sheet: 8 of 8

