

A

A

B

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C

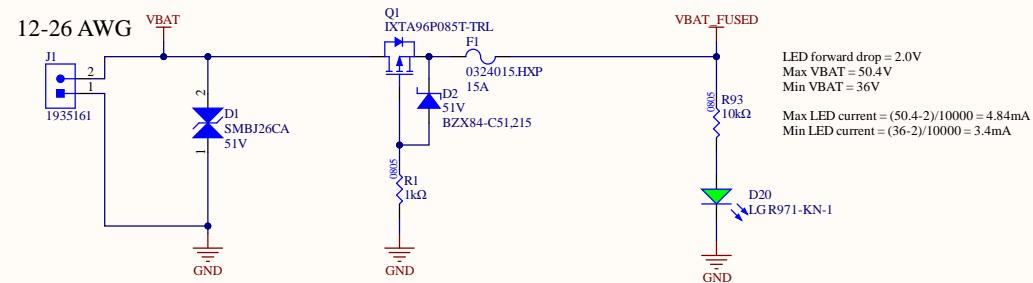
C

D

D

Battery Input (12s1p)

Input voltage range: 36-50.4V

Reverse Polarity Protection

Title: Power	
Project: Power Distribution Board.PnjPcb	
Rev: 3	Reviewer: Cindy Li
Engineer: Farris Matar	
Date: 2021-11-17	Sheet: 1 of 9

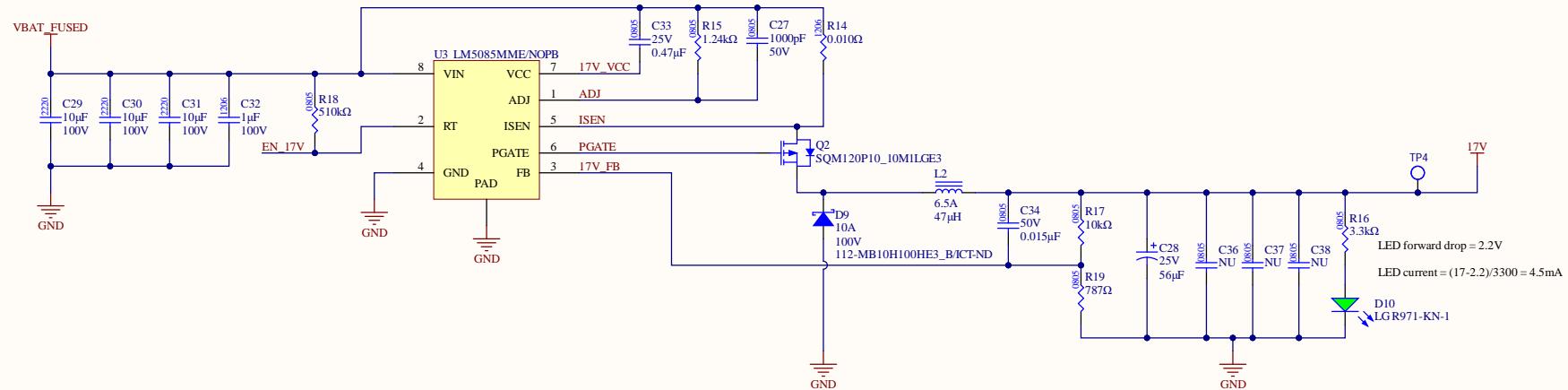


A

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17V Regulator @ 4A Max

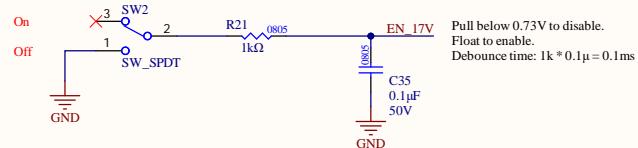
Input voltage range: 36-50.4V



C

C

On/Off Switch



D

D

Title: 17V Buck Converter

Project: Power Distribution Board.PnjPcb

Rev: 3 Reviewer: Cindy Li

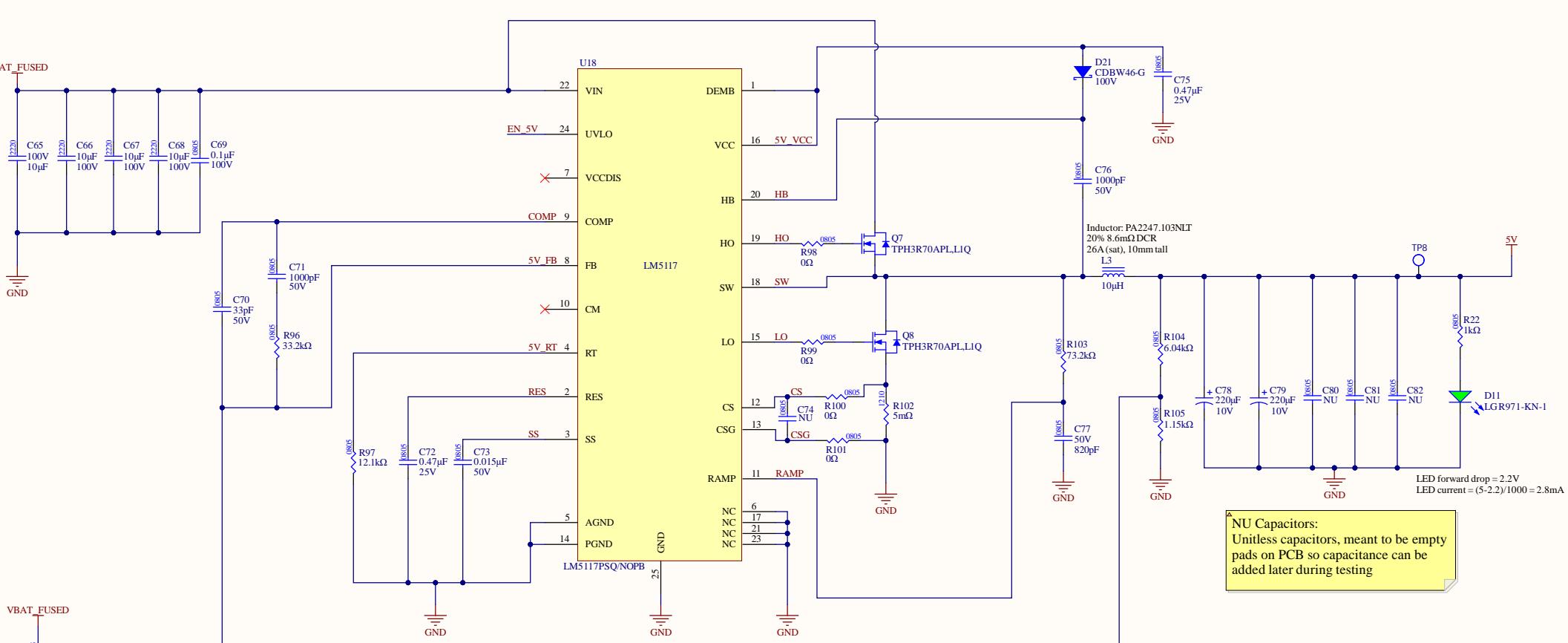
Engineer: Farris Matar

Date: 2021-11-17 Sheet: 2 of 9



48-5V Buck Converter @ 16A Max

Input voltage range: 36-50.4V



Title: 5V Buck Converter	
Project: Power Distribution Board.PnjPcb	
Rev: 3	Reviewer: Cindy Li
Engineer: Farris Matar	
Date: 2021-11-17	Sheet: 3 of 9

A

A

B

B

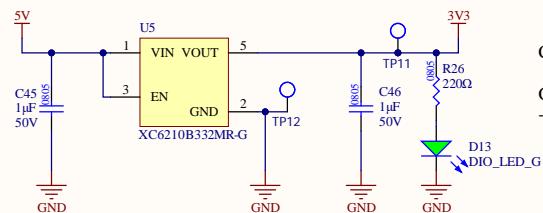
C

C

D

D

3.3V LDO @ 600mA Max

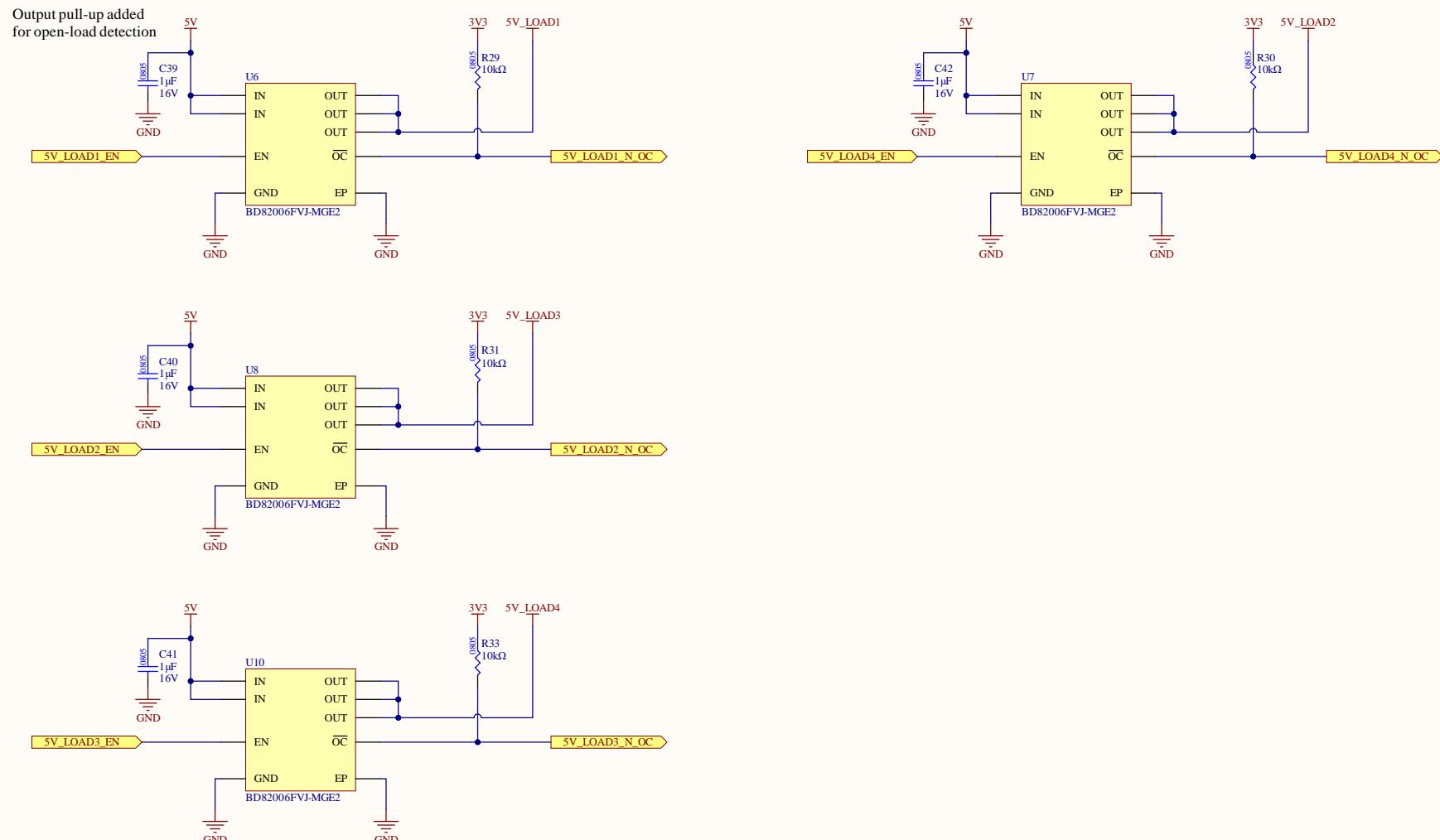


Current Calculations

Green LED voltage drop: 2.2V
 $- I = (3.3 - 2.2V) / 220 = 5mA$

Title: 3.3V Linear Regulator	
Project: Power Distribution Board.PnjPcb	
Rev: 3	Reviewer: Cindy Li
Engineer: Farris Matar	
Date: 2021-11-17	Sheet: 4 of 9

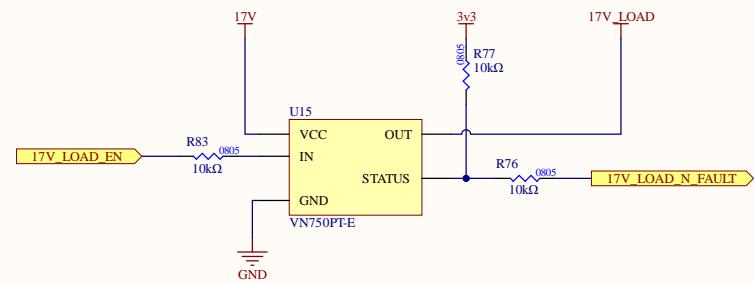
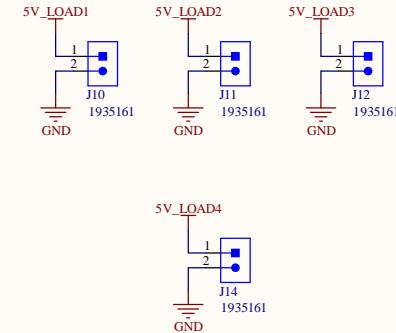
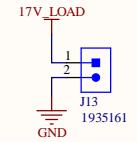
5V Smart High-Side Switches



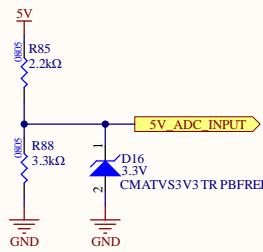
Title: Load Monitoring 1	
Project: Power Distribution Board.PrjPcb	
Rev: 3	Reviewer: Cindy Li
	Engineer: Farris Matar
Date: 2021-11-17	Sheet: 5 of 9



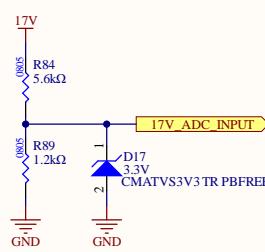
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17V Load Smart Switch**5V Outputs****17V Output**

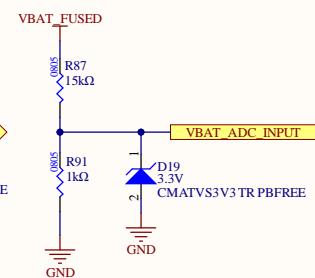
17V power to Nvidia Jetson board

5V power to Science and Gimbal boards
(plus two spare)**Power Rail Voltage Monitoring**

Divides 5V to 3V



Divides 17V to 3V



Divides 48V to 3V

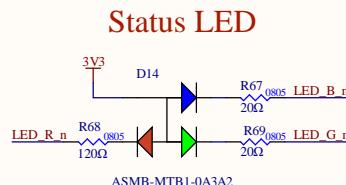
Title: Load Monitoring 2

Project: Power Distribution Board.PnjPcb

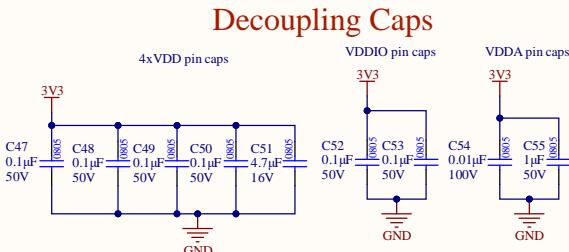
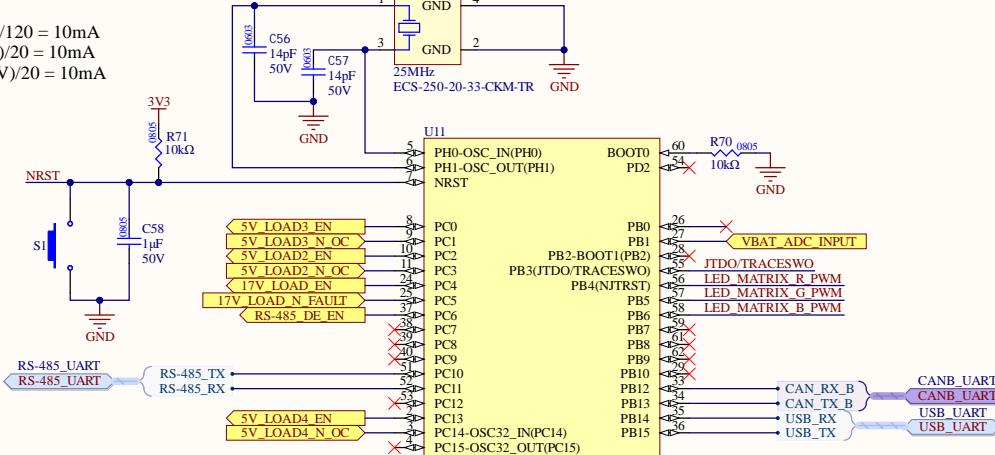
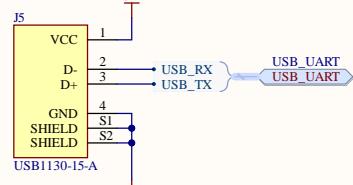
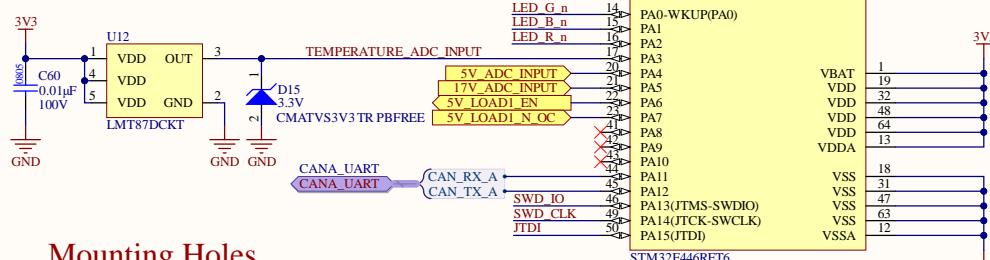
Rev: 3 Reviewer: Cindy Li

Engineer: Farris Matar

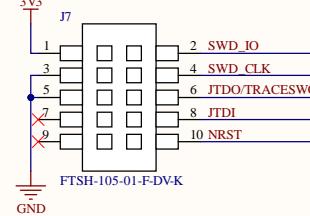
Date: 2021-11-17 Sheet: 6 of 9

**Current Calculations**

RGB LED voltage drops:
 - Red: $2.1V: I = (3.3-2.1V)/120 = 10mA$
 - Blue: $3.1V: I = (3.3-3.1V)/20 = 10mA$
 - Green: $3.1V: I = (3.3-3.1V)/20 = 10mA$

STM32F446RET6**USB Connector****Temperature Sensor****Mounting Holes**

MH1 MOUNTING_HOLE_5/32	MH2 MOUNTING_HOLE_5/32
MH3 MOUNTING_HOLE_5/32	MH4 MOUNTING_HOLE_5/32

LCSC Part #: C69336**Debug/Programming**

Title: Microcontroller	
Project: Power Distribution Board.PjPcb	
Rev: 3	Reviewer: Cindy Li
Engineer: Farris Matar	Date: 2021-11-17
Sheet: 7	of 9

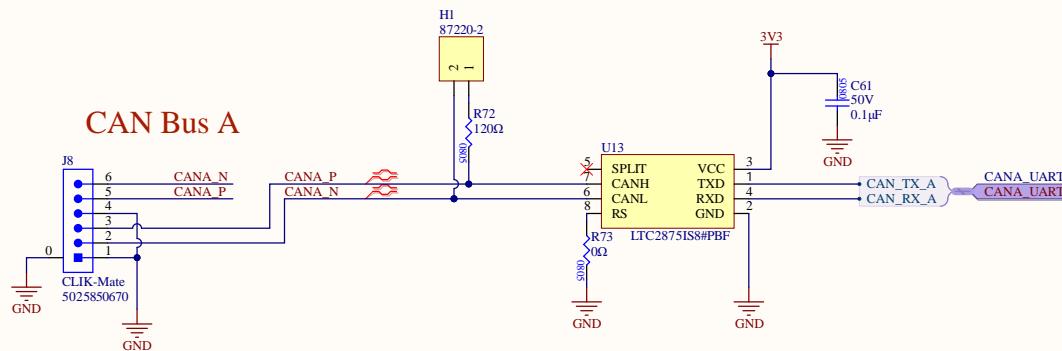
A

A

CAN Transceivers

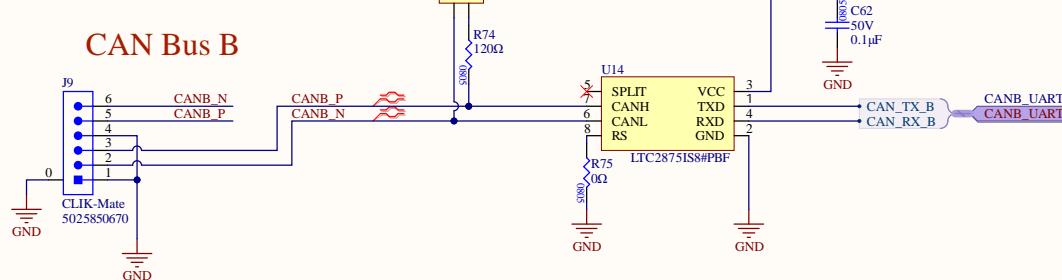
B

B



C

C



D

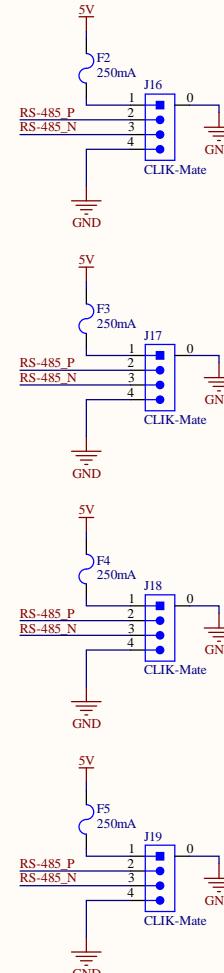
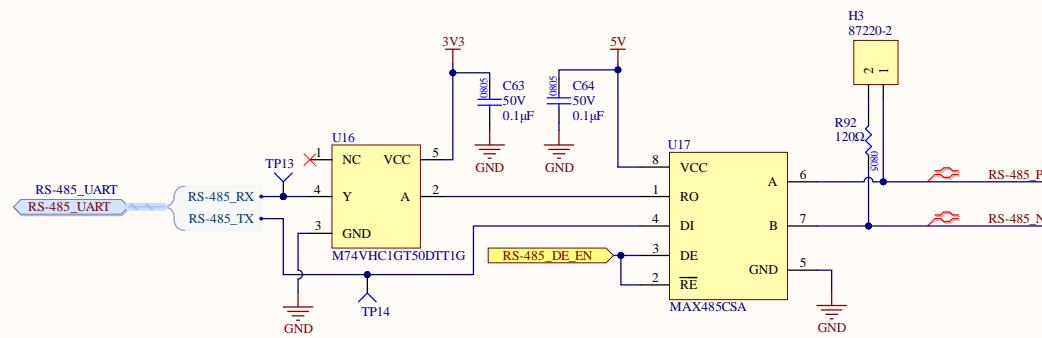
D

Title: CAN	
Project: Power Distribution Board.PjPcb	
Rev: 3	Reviewer: Cindy Li
Engineer: Farris Matar	
Date: 2021-11-17	Sheet: 8 of 9



URM04 Ultrasonic Sensors

RS-485 Transceiver



Title:	RS-485		
Project:	Power Distribution Board.PnjPcb		
Rev:	3	Reviewer:	Cindy Li
Engineer:	Farris Matar		
Date:	2021-11-17	Sheet:	9 of 9

