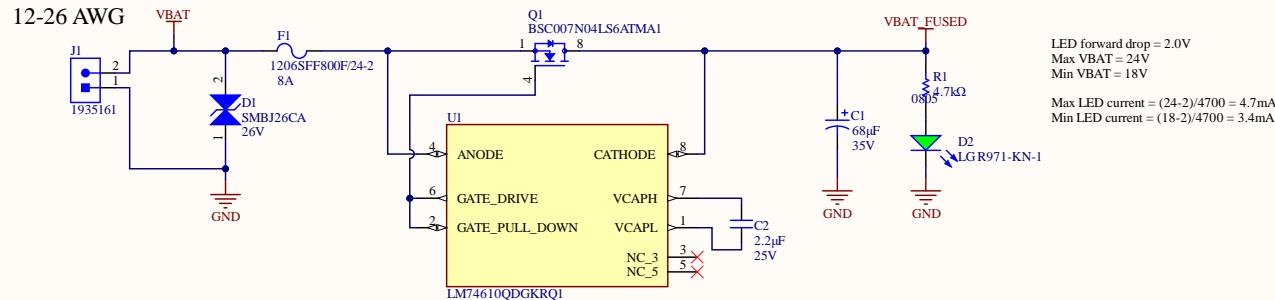
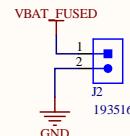
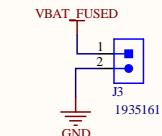
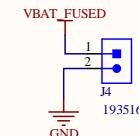


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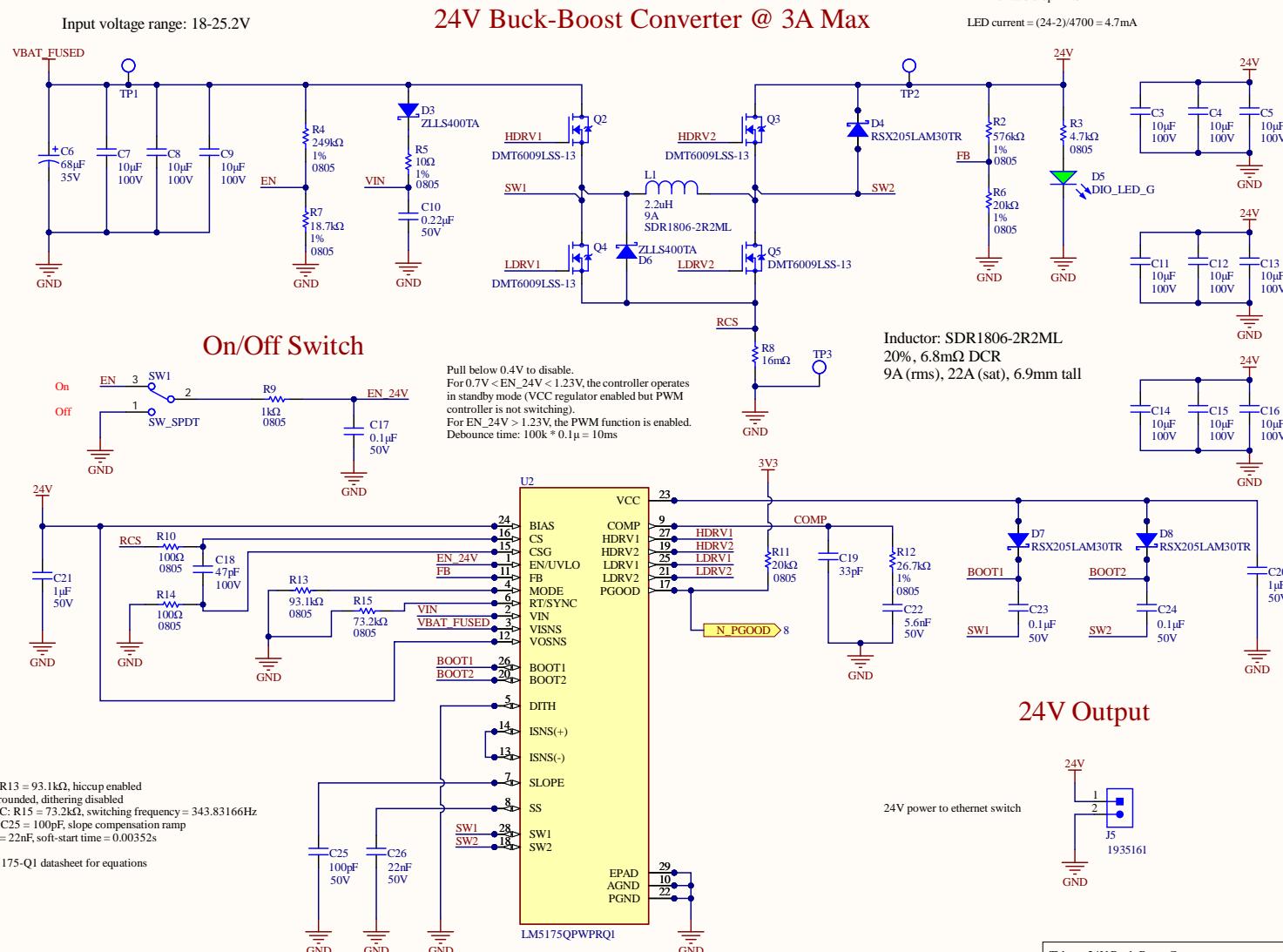
**Battery Input (6s1p)**

Input voltage range: 18-25.2V

**Ideal Diode Controller****V<sub>Bat</sub> (24V) Outputs**V<sub>Bat</sub> (24V) power to LED Matrix boardV<sub>Bat</sub> (24V) power to Arm, Science, Gimbal, or Localization boards (to be decided in Rev3)

Title: Power	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18





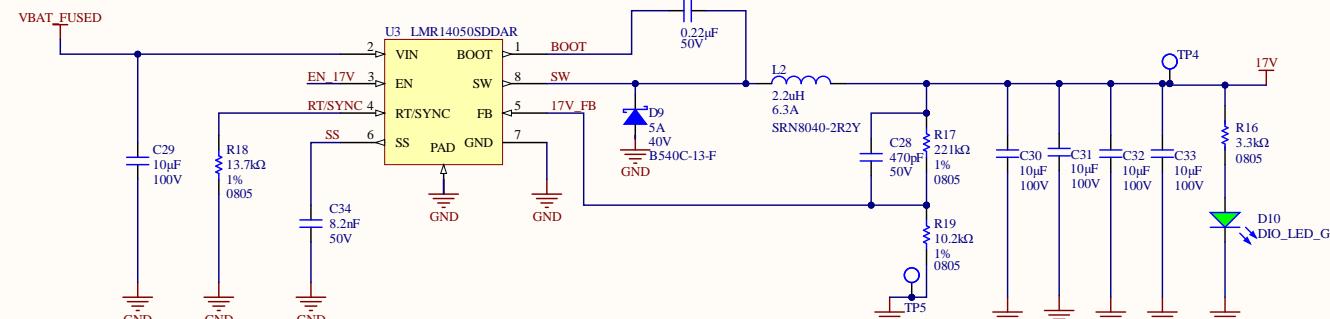
Title: 24V Buck-Boost Converter	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18 Sheet: 2 of 10

A

A

## 17V Regulator @ 4A Max

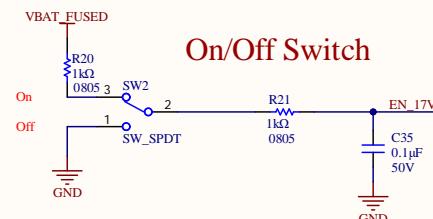
Input voltage range: 18-25.2V



Estimated max current draw: 1.65A  
Peak efficiency: 94.8%  
Output voltage ripple: 19.45mVpp

LED forward drop = 2.2V  
LED current =  $(17-2.2)/3300 = 4.5\text{mA}$

## On/Off Switch



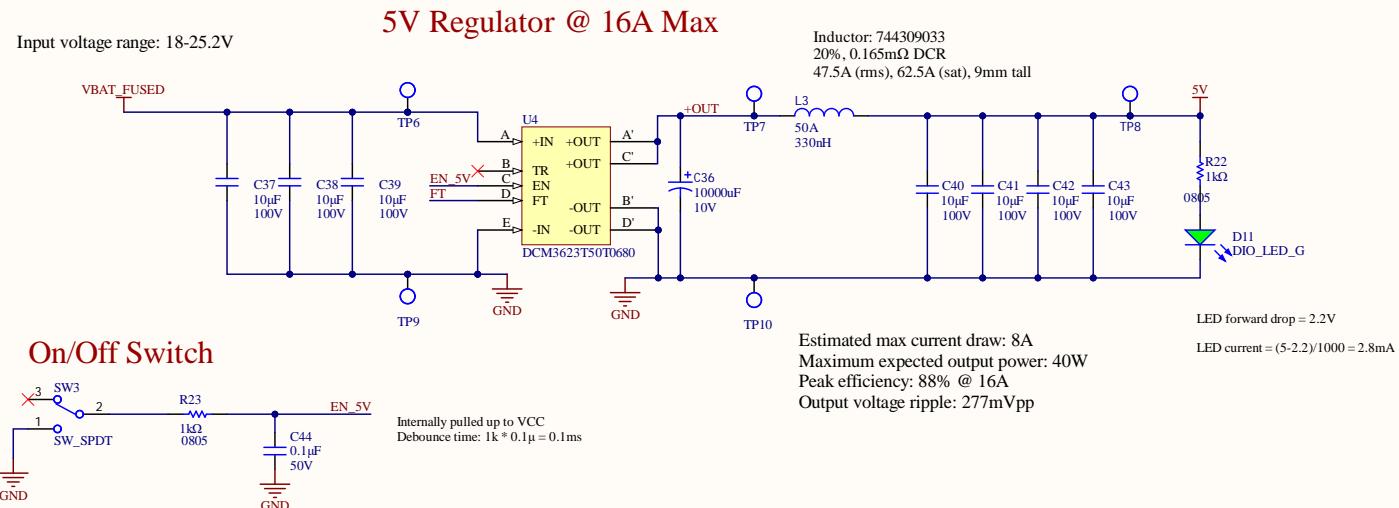
Internally pulled up  
Pull below 1.2V to disable.  
Float or connect to VIN to enable.  
Debounce time:  $1k \cdot 0.1\mu = 0.1\text{ms}$

Title: 17V Buck Converter	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18
Sheet: 3	of 10



A

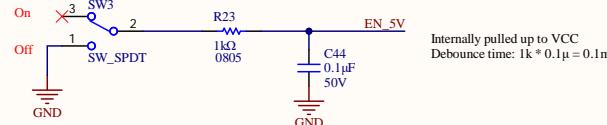
A



B

B

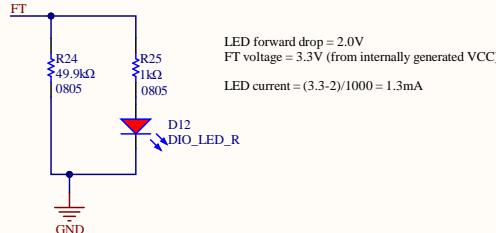
### On/Off Switch



C

C

### Fault Indicator



D

D

Title: 5V Vicor DCDC	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18
Sheet: 4	of 10



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A

B

B

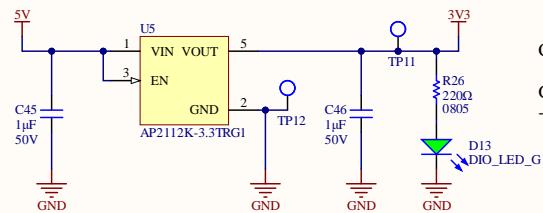
C

C

D

D

### 3.3V LDO @ 600mA Max



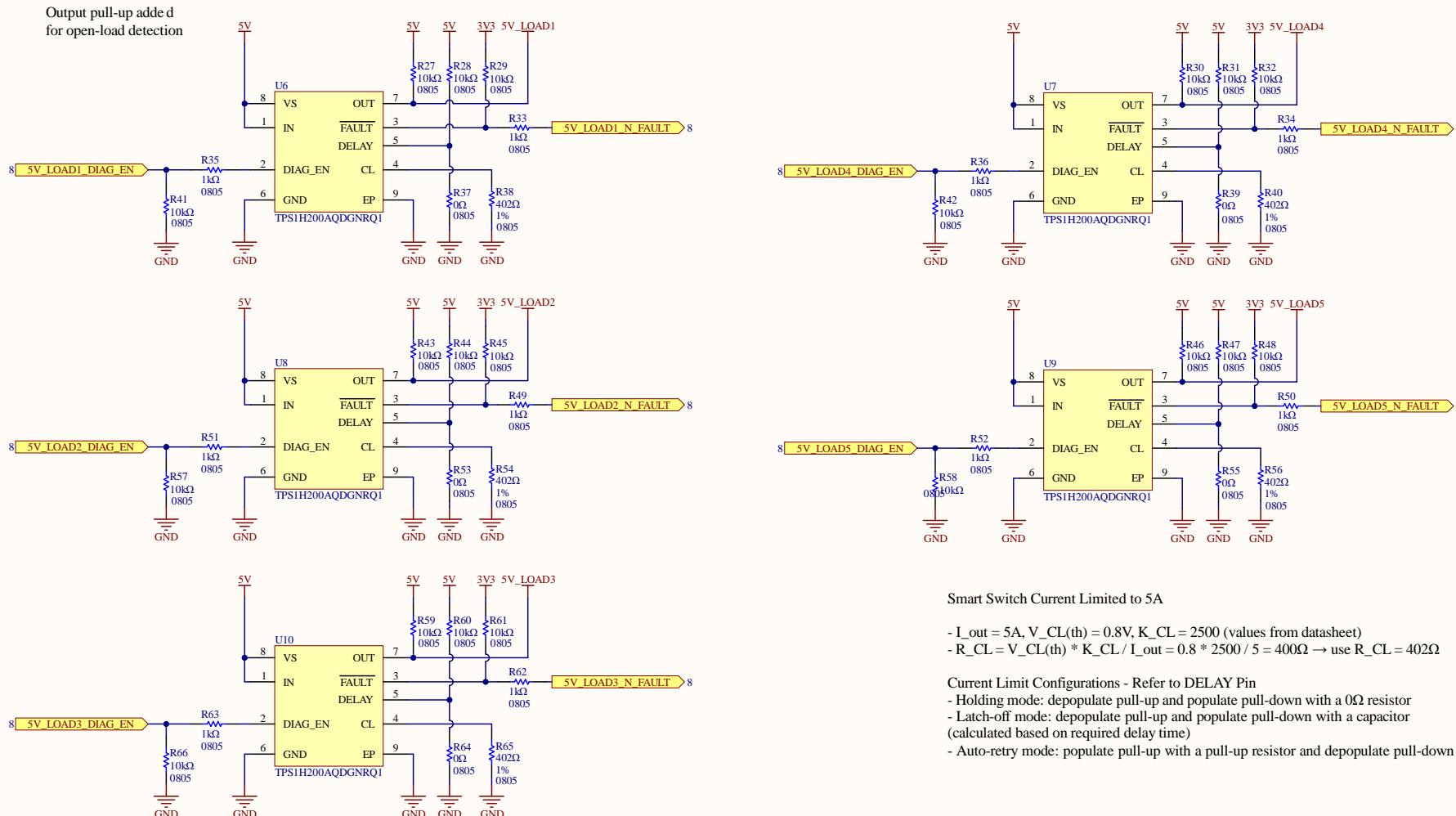
#### Current Calculations

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

Title: 3.3V Linear Regulator	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	
Date: 2020-12-18	Sheet: 5 of 10



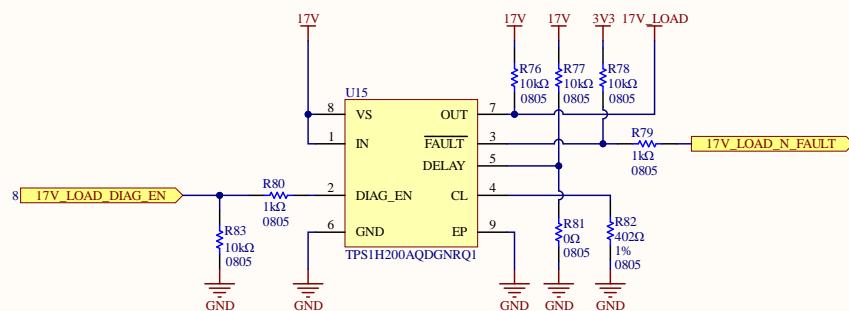
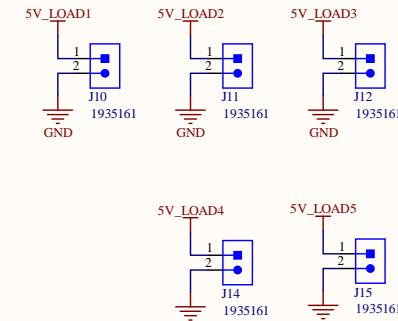
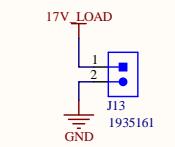
# 5V Smart High-Side Switches



Title: Load Monitoring 1	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18 Sheet: 6 of 10

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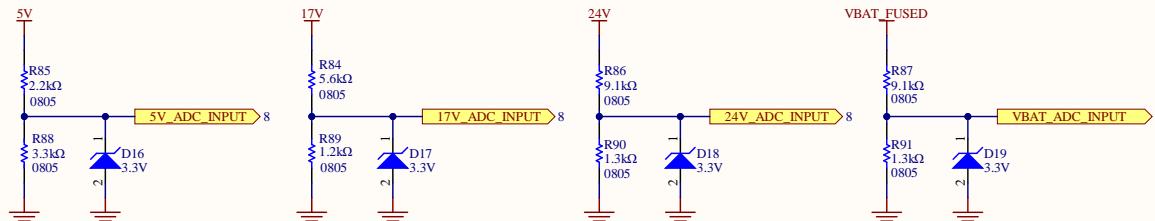
**17V Load Smart Switch****5V Outputs****17V Output**

17V power to Nvidia Jetson board

5V power to Arm, Science, Gimbal, and Localization boards (plus one spare)

B

B

**Power Rail Voltage Monitoring**

Divides 5V to 3V

Divides 17V to 3.3V

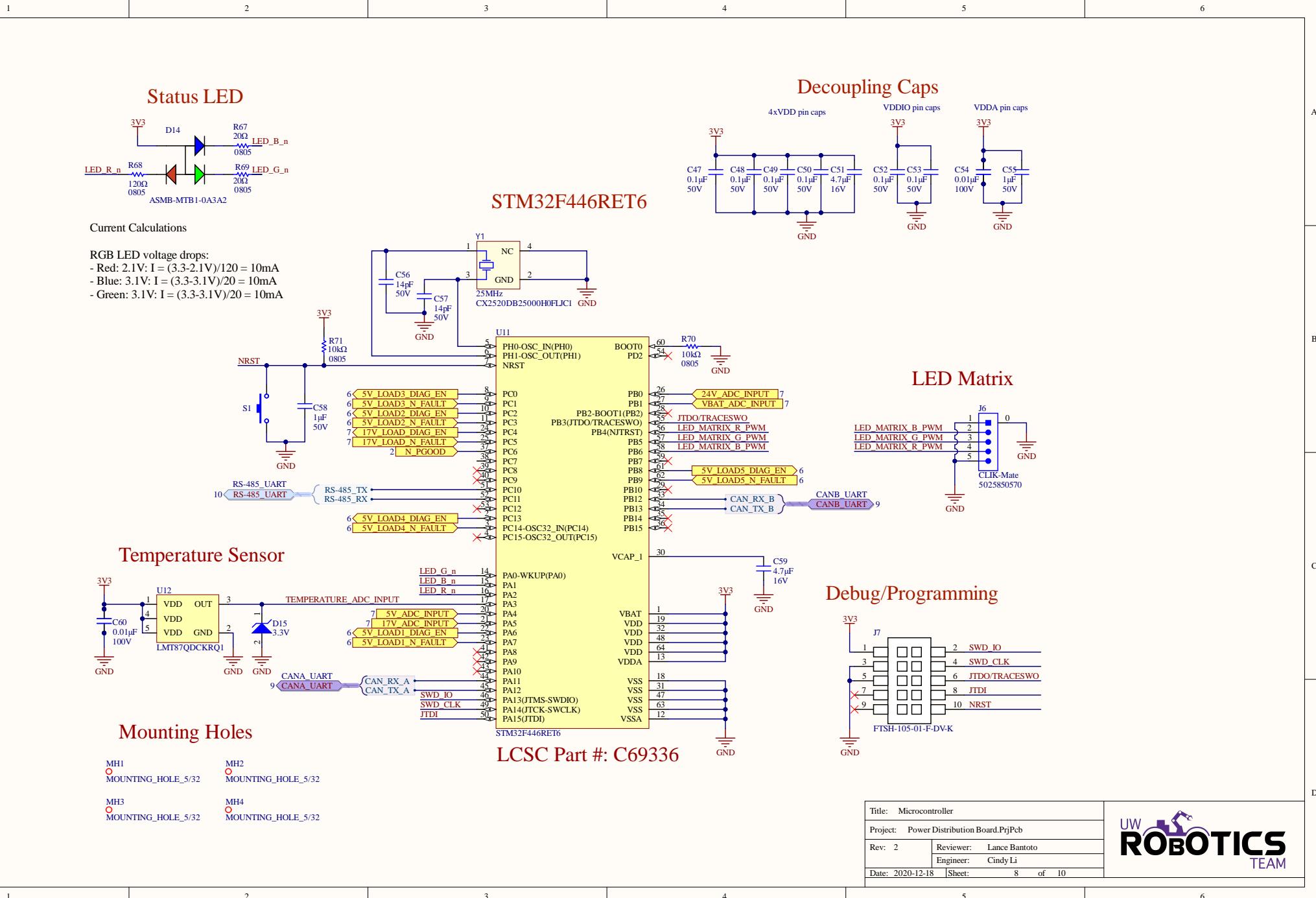
Divides 24V to 3.3V

Divides 24V to 3.3V

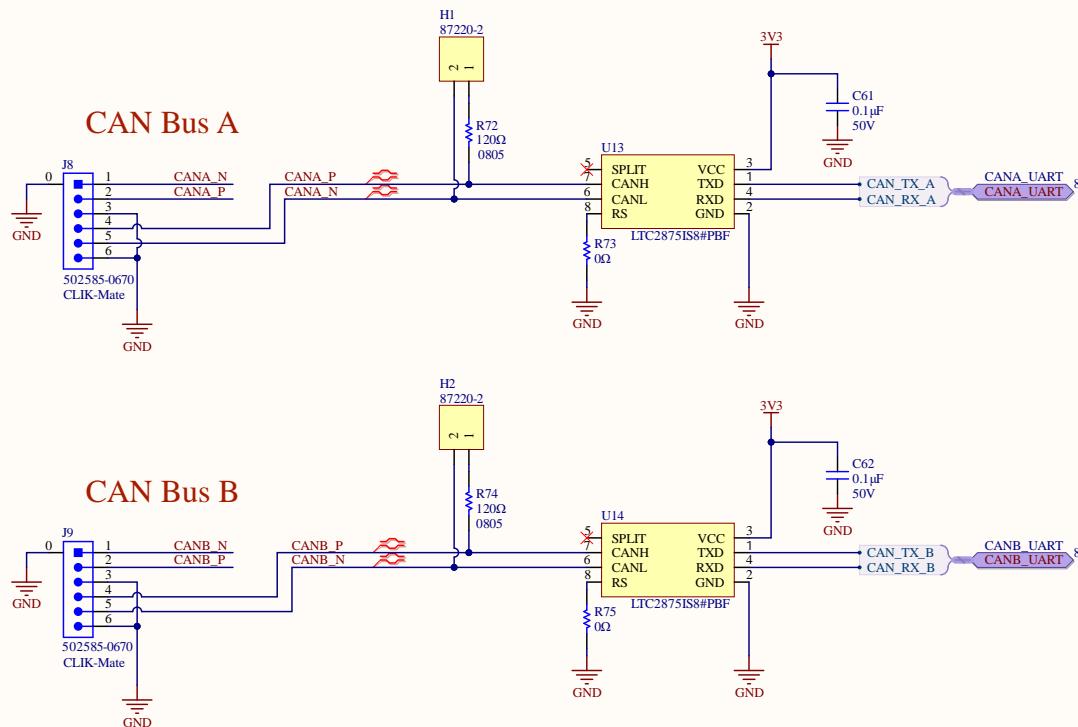
C

C

Title: Load Monitoring 2	
Project: Power Distribution Board.PpjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18
Sheet: 7	of 10

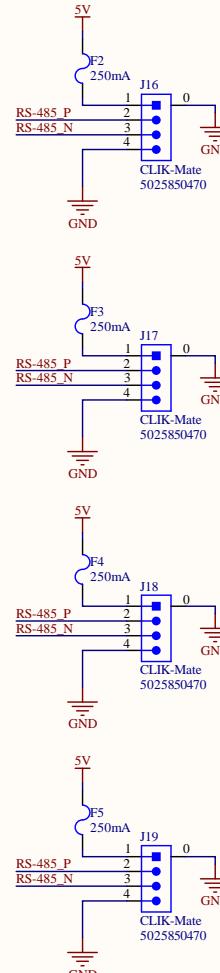
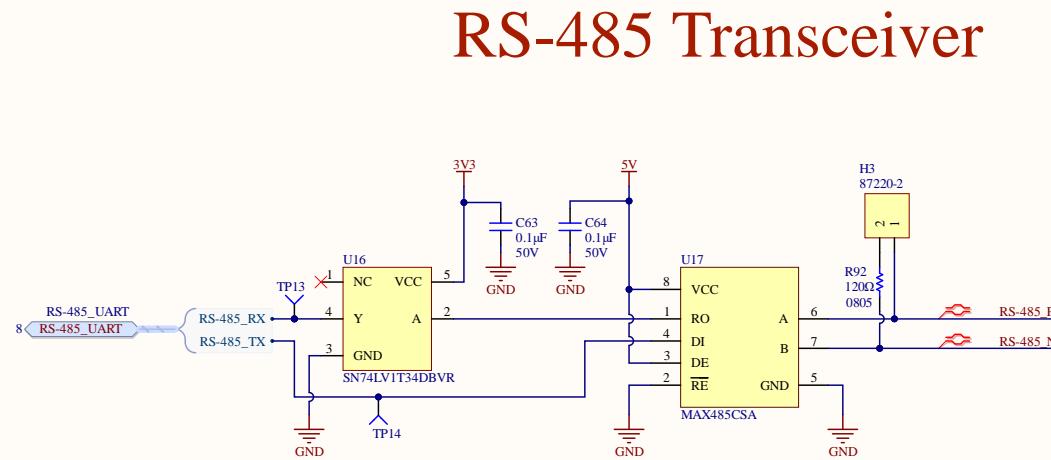


# CAN Transceivers



Title: CAN	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-18

# URM04 Ultrasonic Sensors



Title: RS-485	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	
Date: 2020-12-18	Sheet: 10 of 10



