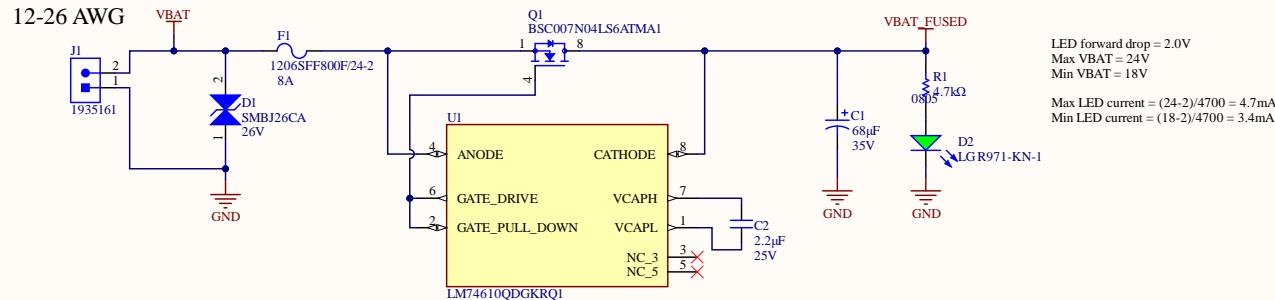


A

A

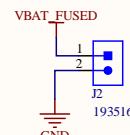
Battery Input (6s1p)

Input voltage range: 18-25.2V

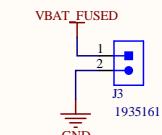


B

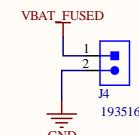
B

VBat (24V) Outputs

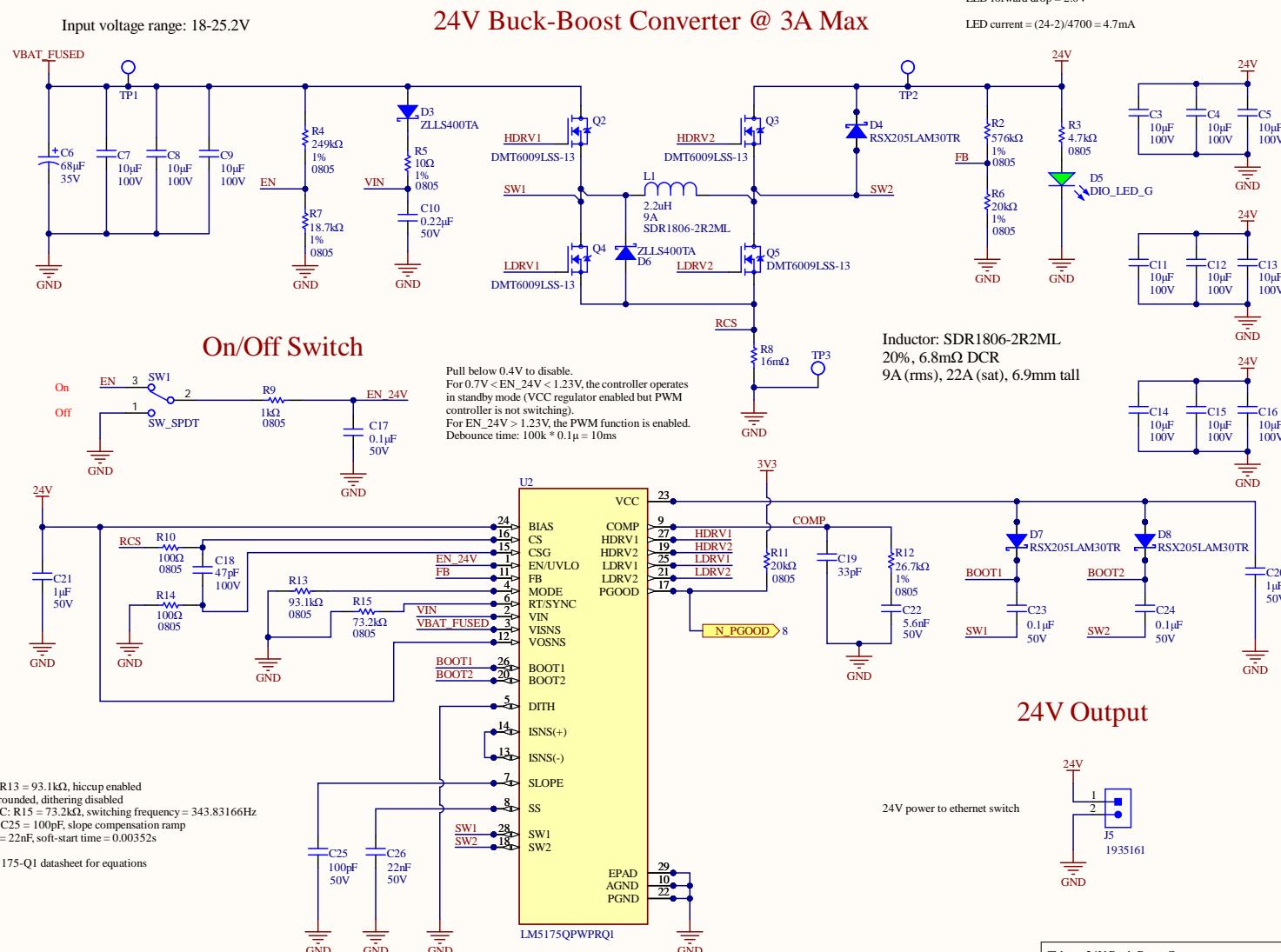
VBat (24V) power to LED Matrix board



VBat (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: 2020-12-21 Sheet: 1 of 10



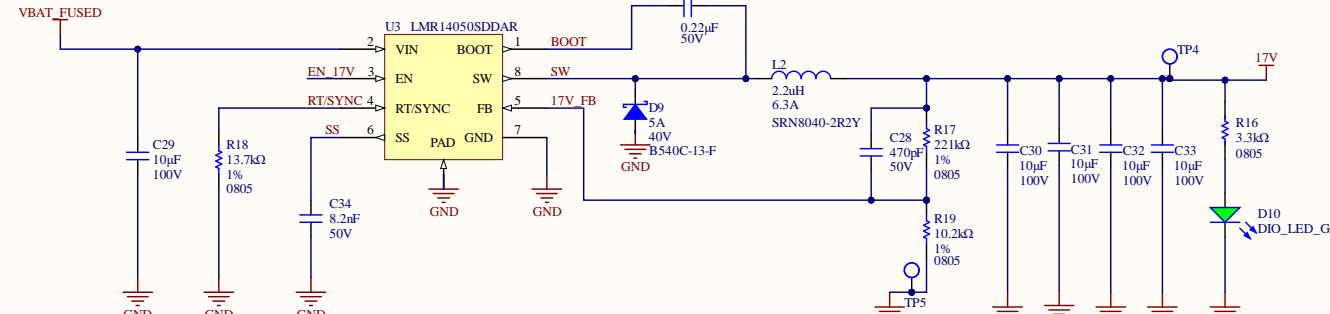
Title: 24V Buck-Boost Converter	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-21 Sheet: 2 of 10

A

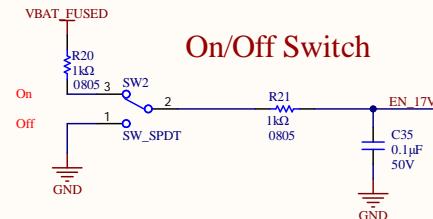
A

17V Regulator @ 4A Max

Input voltage range: 18-25.2V



On/Off Switch



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

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

Title: 17V Buck Converter	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-21 Sheet: 3 of 10

A

A

B

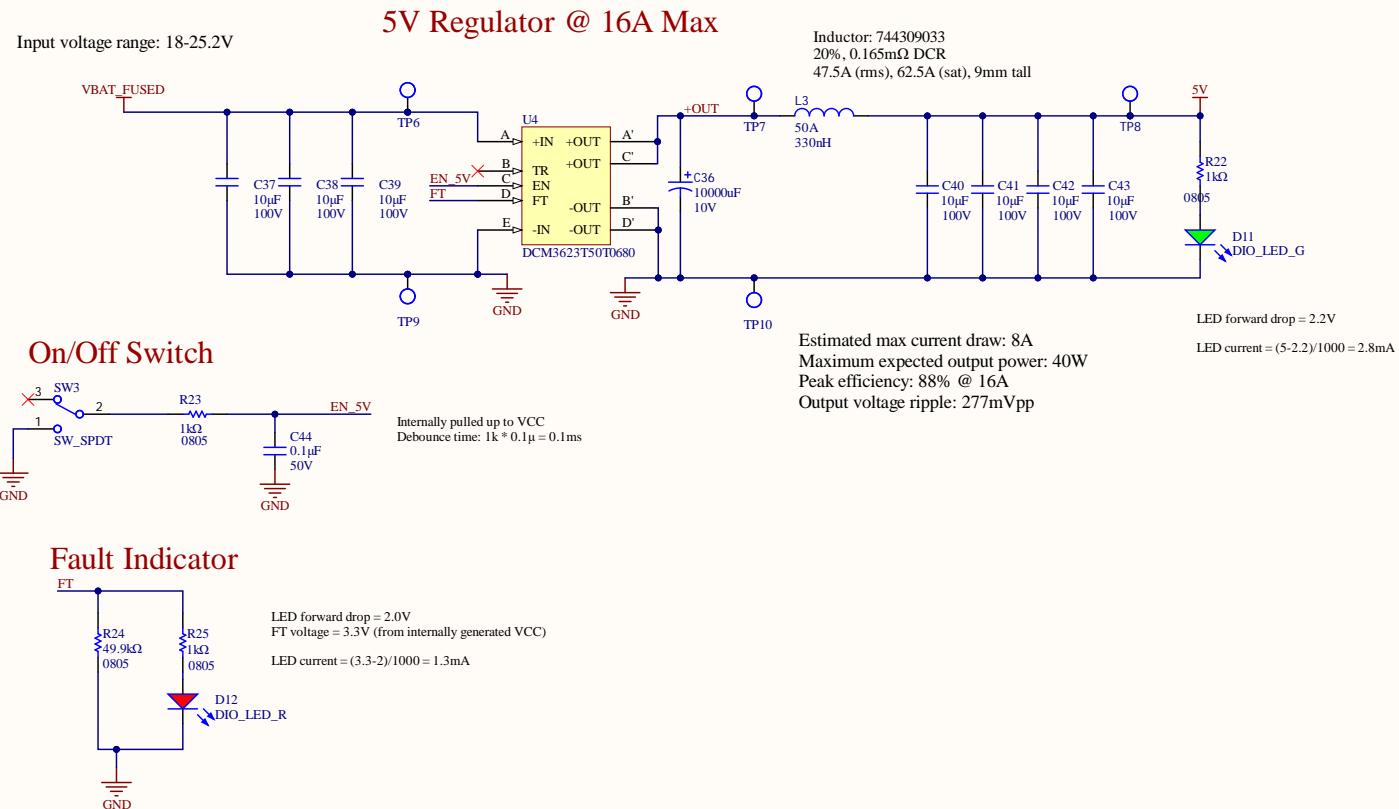
B

C

C

D

D



Title: 5V Vicor DCDC	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-21 Sheet: 4 of 10



A

A

B

B

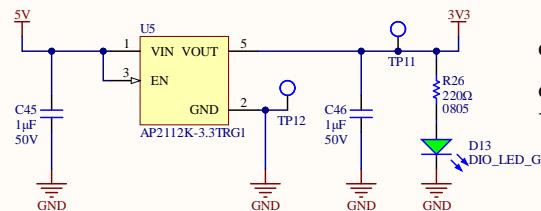
C

C

D

D

3.3V LDO @ 600mA Max



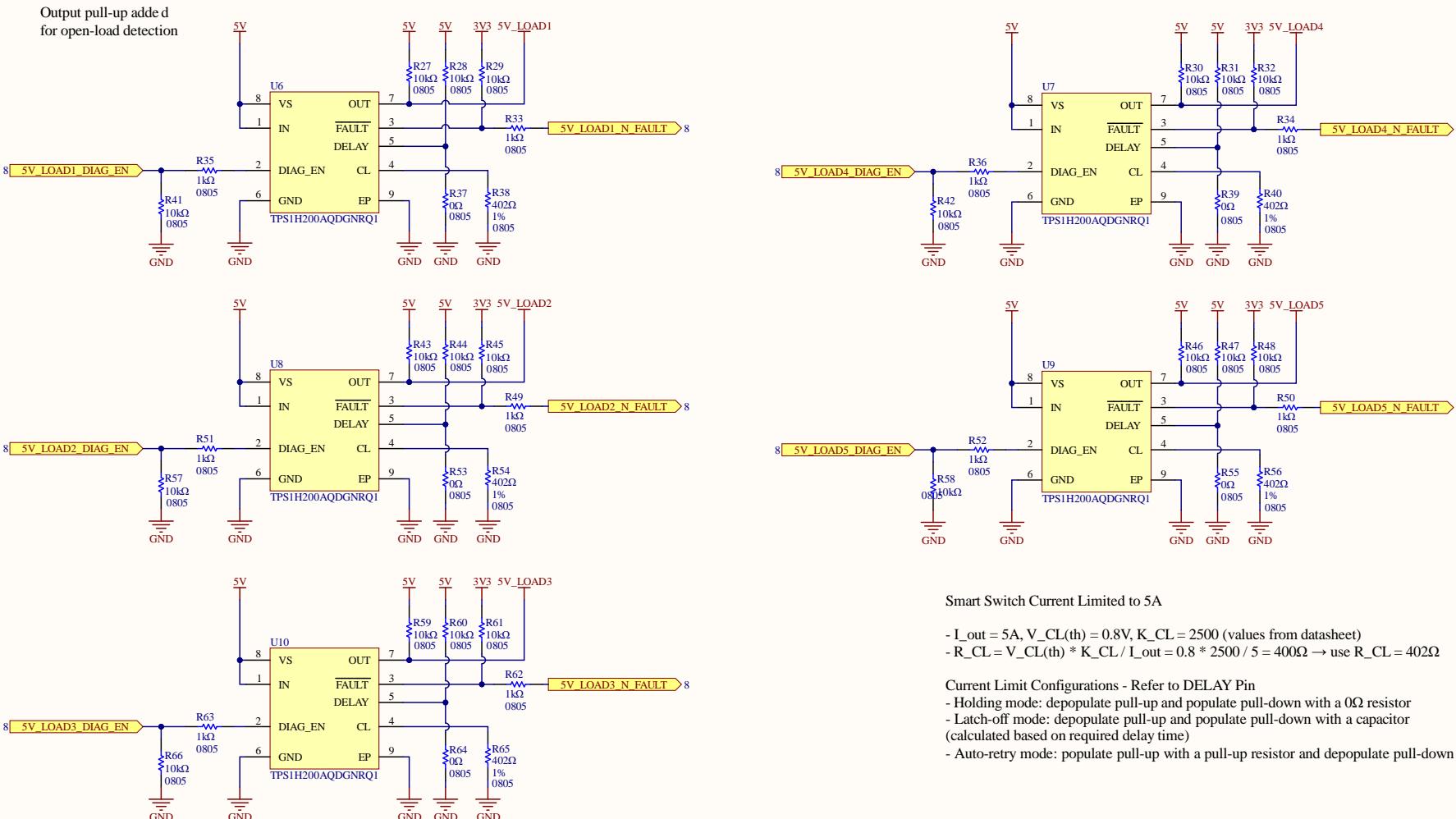
Current Calculations

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

Title: 3.3V Linear Regulator	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	
Date: 2020-12-21	Sheet: 5 of 10



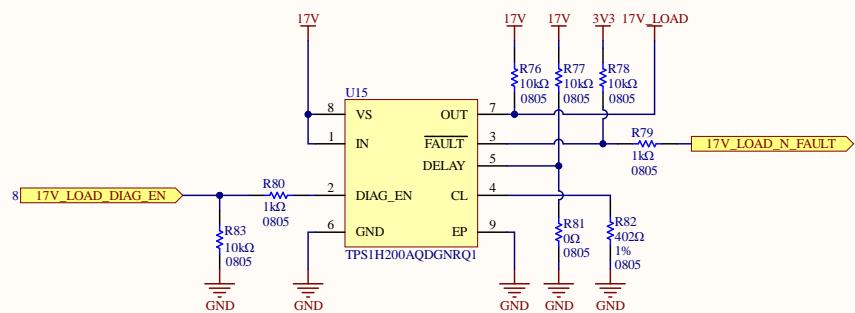
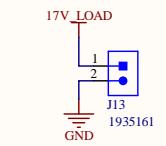
5V Smart High-Side Switches



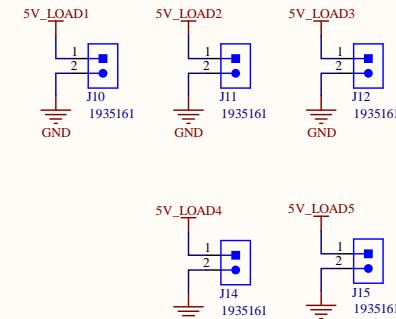
Title: Load Monitoring 1	
Project: Power Distribution Board.PnjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-21 Sheet: 6 of 10

A

A

17V Load Smart Switch**17V Output**

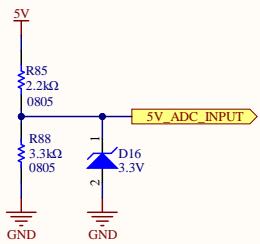
17V power to Nvidia Jetson board

5V Outputs

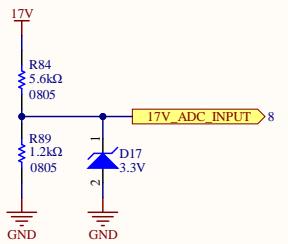
5V power to Arm, Science, Gimbal, and Localization boards (plus one spare)

B

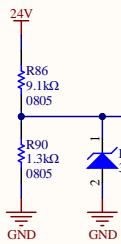
B

Power Rail Voltage Monitoring

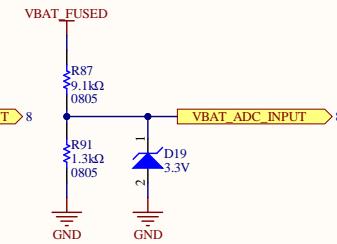
Divides 5V to 3V



Divides 17V to 3V



Divides 24V to 3V

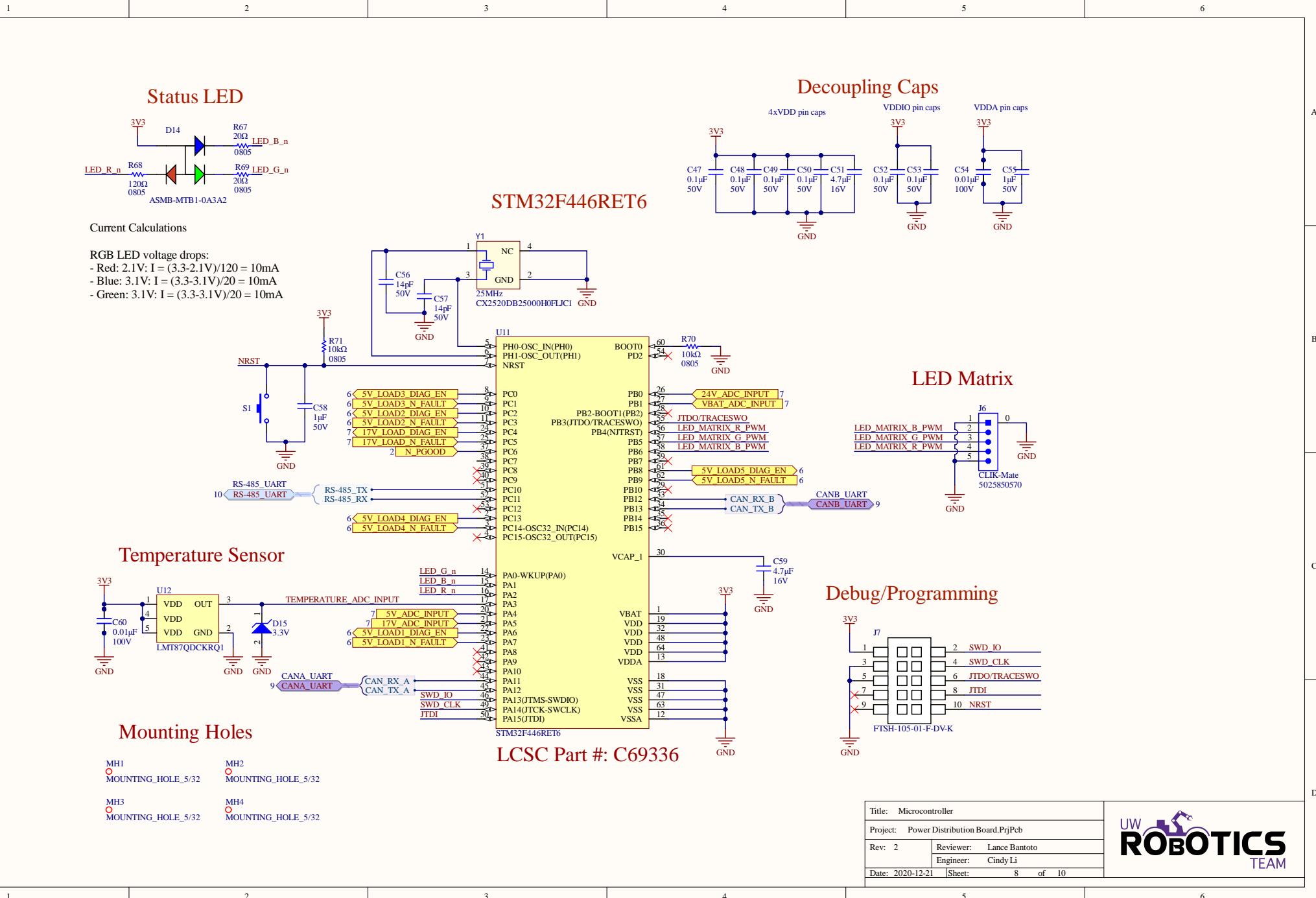


Divides 24V to 3V

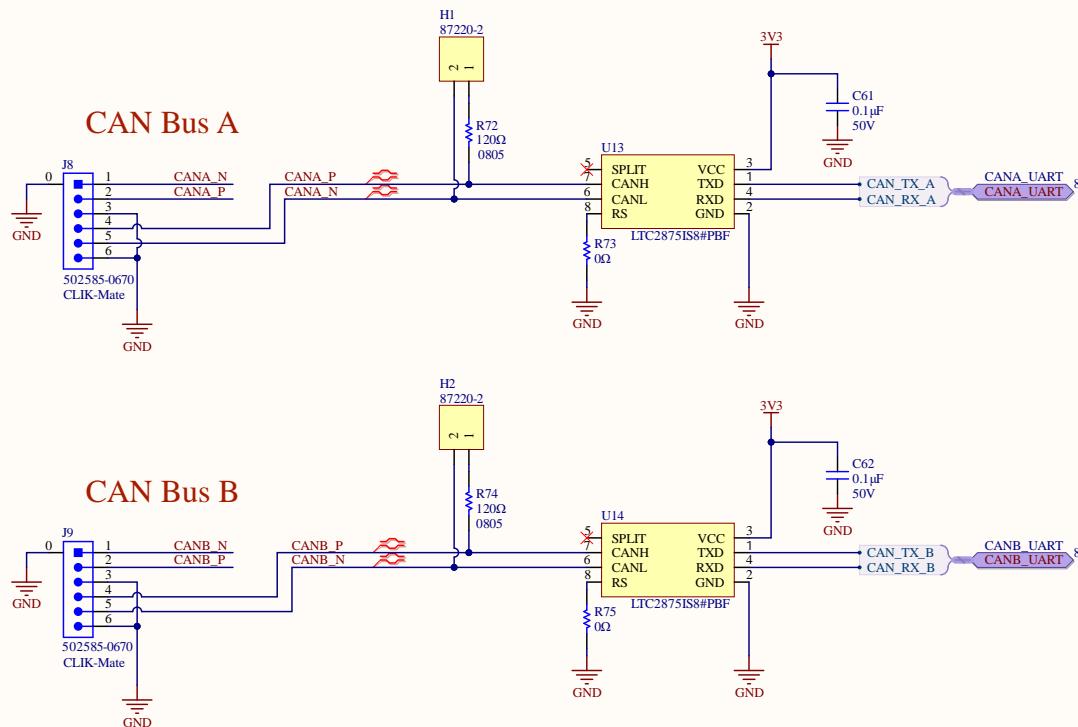
C

C

Title: Load Monitoring 2	
Project: Power Distribution Board.PpjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-21 Sheet: 7 of 10



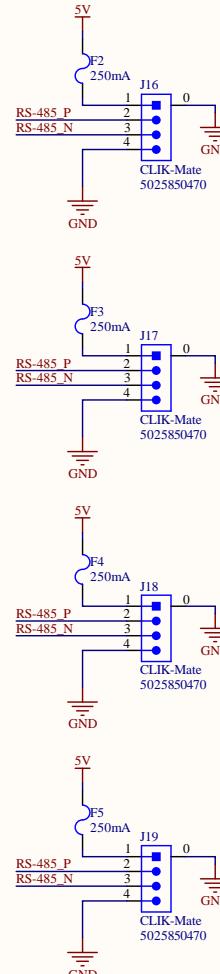
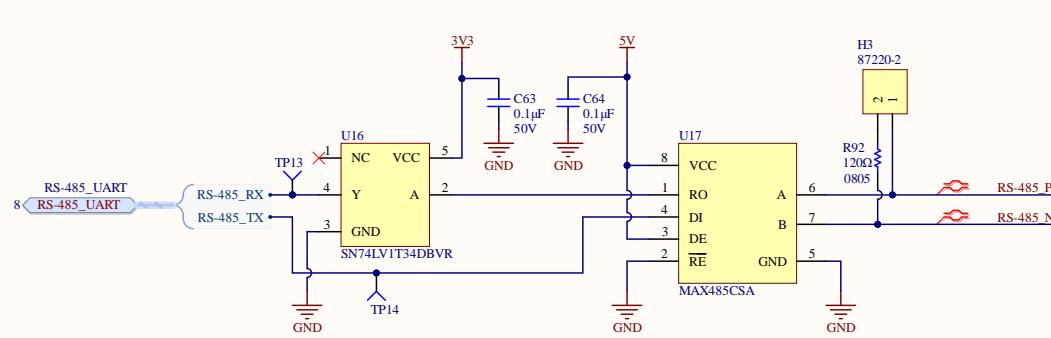
CAN Transceivers



Title: CAN	
Project: Power Distribution Board.PrjPcb	
Rev: 2	Reviewer: Lance Bantoto
Engineer: Cindy Li	Date: 2020-12-21

URM04 Ultrasonic Sensors

RS-485 Transceiver



Title:	RS-485
Project: Power Distribution Board.PjxPcb	
Rev: 2	Reviewer: Lance Bantoto
	Engineer: Cindy Li
Date: 2020-12-21	Sheet: 10 of 10



