

A

A

B

B

C

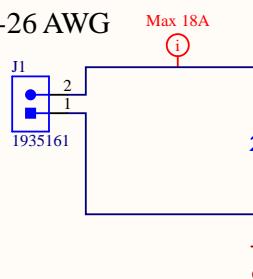
C

D

D

## Battery Input (6s1p)

12-26 AWG



Max 18A

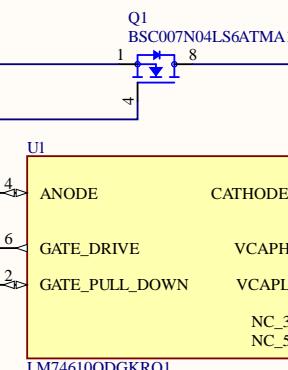
i

V<sub>BAT</sub>

GND

GND

## Ideal Diode Controller



Q1  
BSC007N04LS6ATMA1

U1  
LM74610QDGKRQ1

ANODE  
CATHODE  
GATE\_DRIVE  
GATE\_PULL\_DOWN  
VCAPH  
VCAPL  
NC\_3  
NC\_5

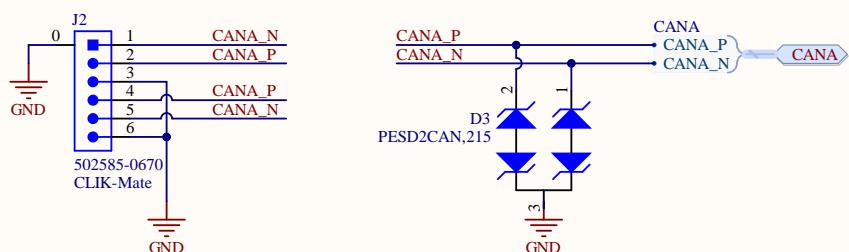
LED forward drop = 2.0V  
Max V<sub>BAT</sub> = 24V  
Min V<sub>BAT</sub> = 18V

Max LED current = (24-2)/4700 = 4.7mA  
Min LED current = (18-2)/4700 = 3.4mA

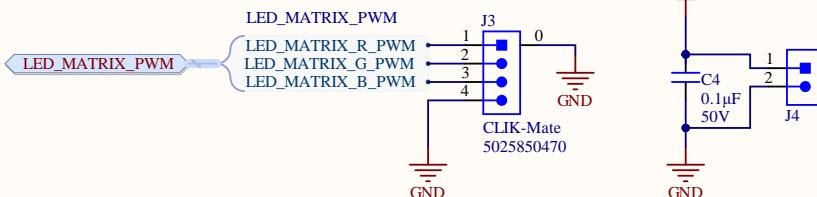
Title	Power Distribution Board Rev2 - Power	Altium Limited
Size:	Letter	Drawn By: Cindy Li
Date:	2020-11-02	Sheet of 12
File:	C:\UWRT\MarsRover2021-hardware\Projects\Power Distribution Board\Rev2\SH1 - POWER.SchDoc	Australia 2086



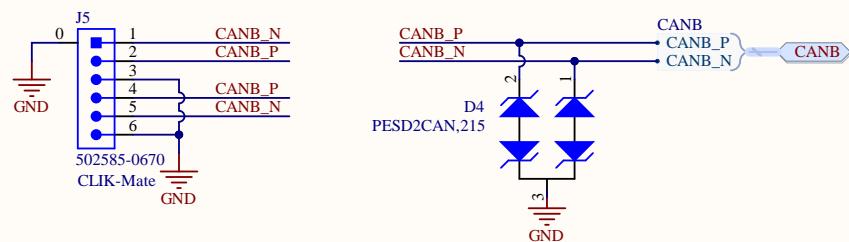
## CAN BUS A



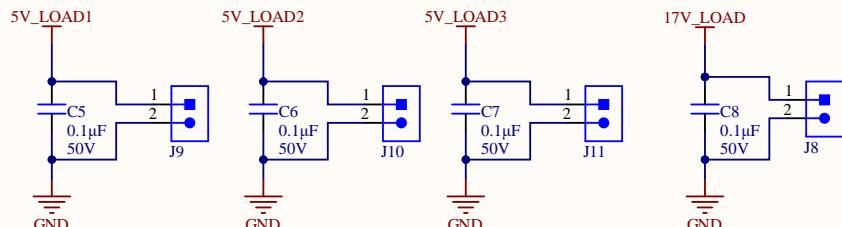
## LED Matrix



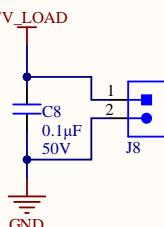
## CAN BUS B



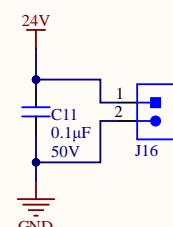
## 5V Output



## 17V Output

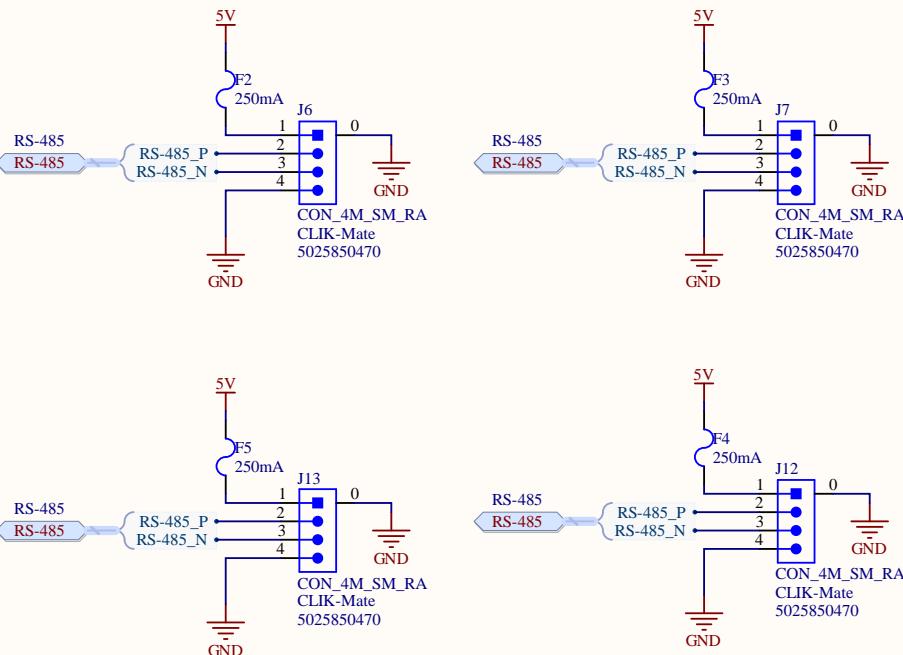


## 24V Output



Can use 12-26AWG

## URM04 Ultrasonic Sensors



Title Power Distribution Board Rev2 - Connectors

Size: Letter Drawn By: Cindy Li

Date: 2020-11-02 Sheet 1 of 12

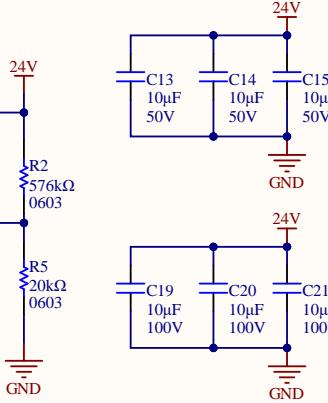
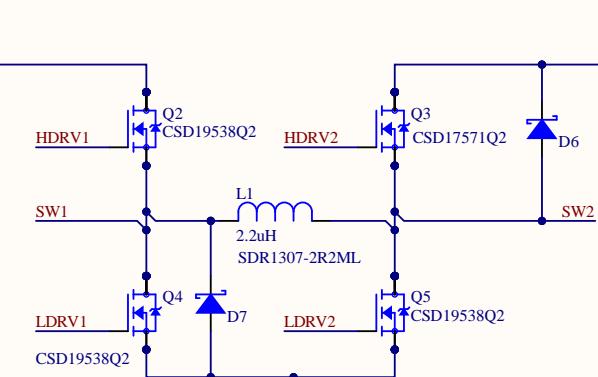
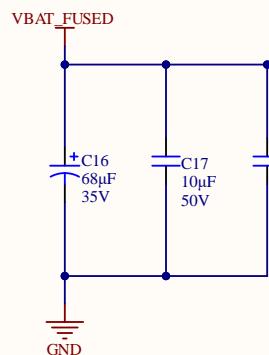
File: C:\UWRT\MarsRover2021-hardware\Projects\Power Distribution Board\Rev2\SH2 - CONNECTORS.SchDoc

Altium Limited  
L3, 12a Rodborough Rd  
Frenchs Forest  
NSW Australia 2086

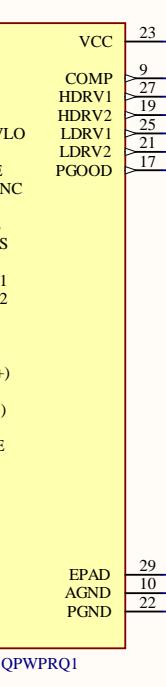
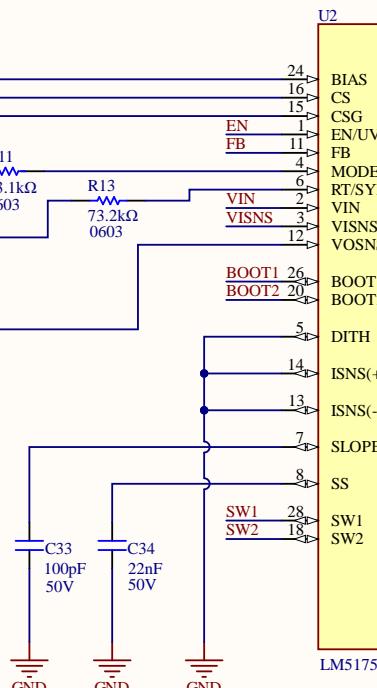
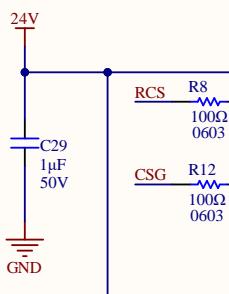
**UW ROBOTICS**  
TEAM

Input voltage range: 18-25.8V

## 24V Buck-Boost Converter @ 3A Max



**TODO:**  
- add appropriate comments



Title PDB Rev2 - 24V Buck-Boost Converter

Size: Letter Drawn By: Cindy Li

Date: 2020-11-02 Sheet 8 of 12

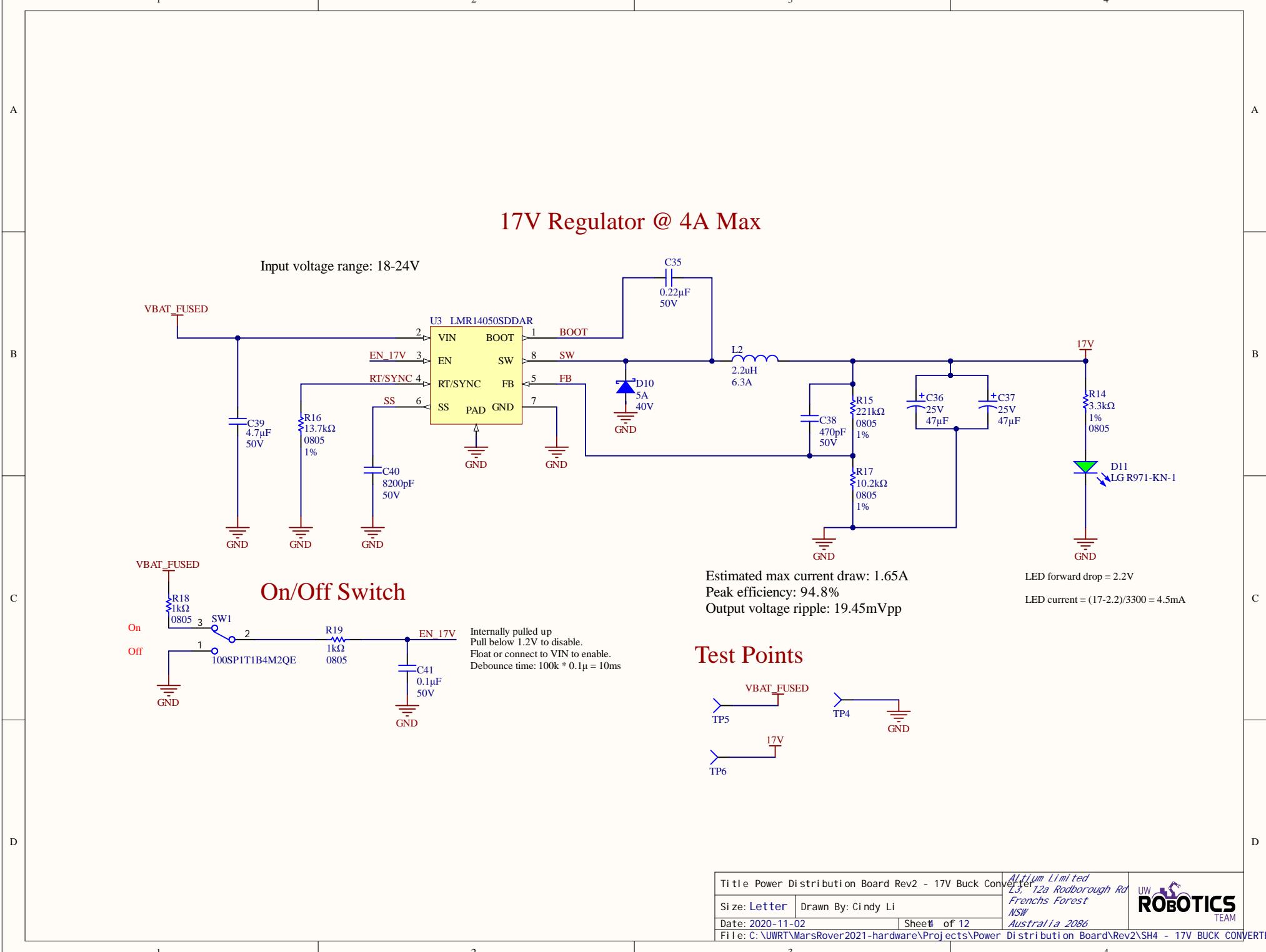
File: C:\UWRT\MarsRover2021-hardware\Projects\Power

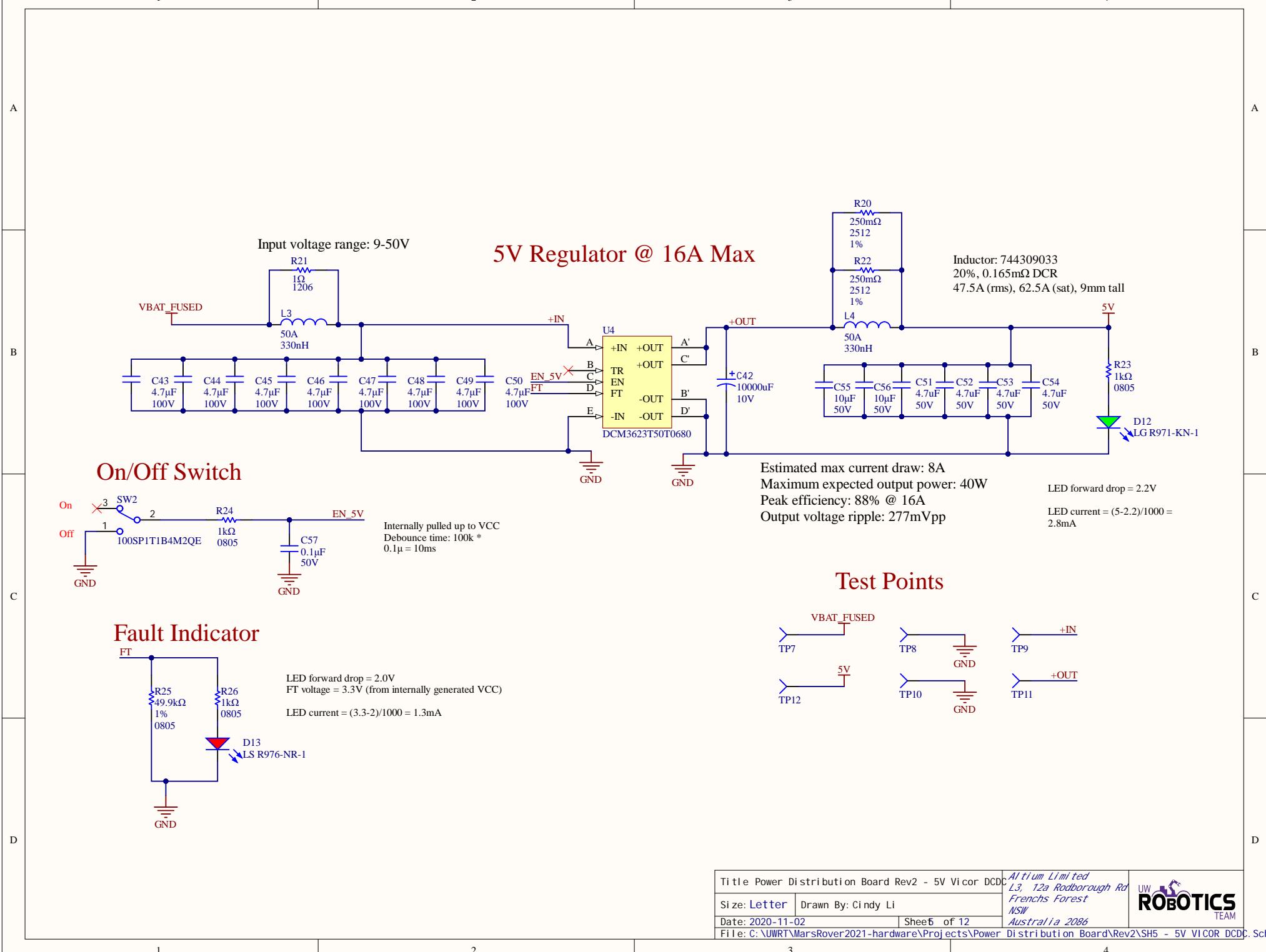
Altium Limited  
L3, 12a Rodborough Rd  
Frenchs Forest  
NSW Australia 2086

UW ROBOTICS TEAM

## Test Points







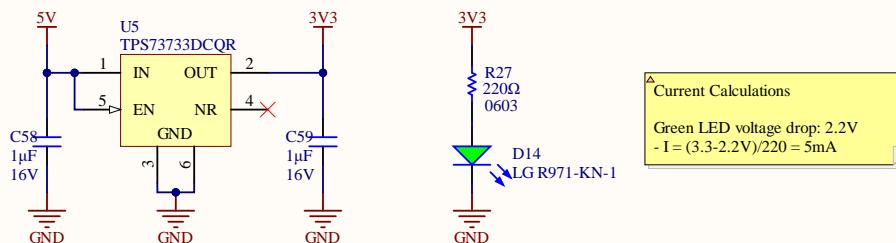
A

A

B

B

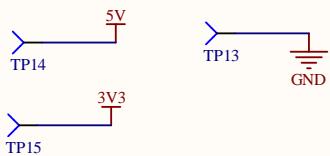
## 5V to 3.3V LDO



C

C

## Test Points

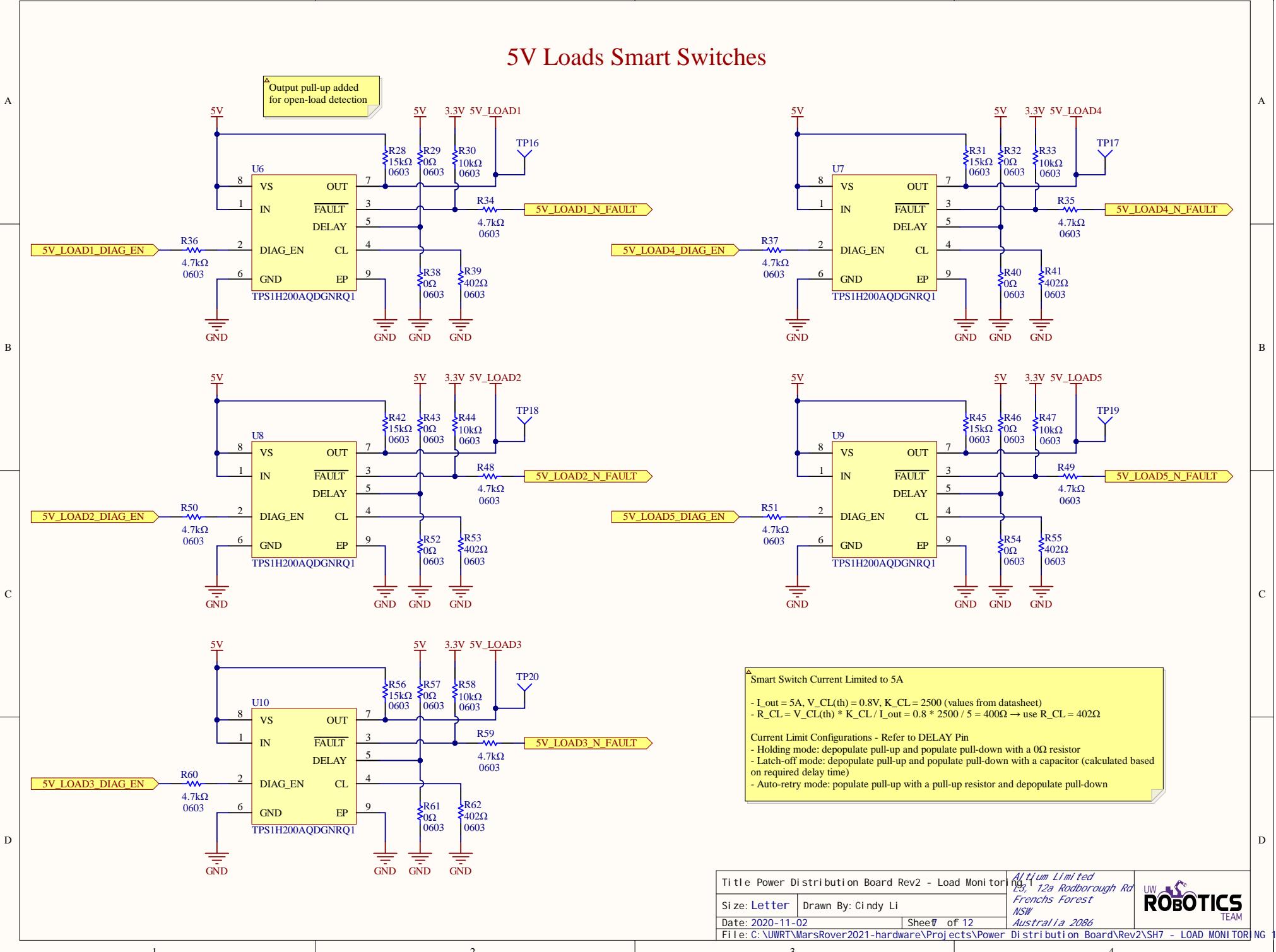


D

D

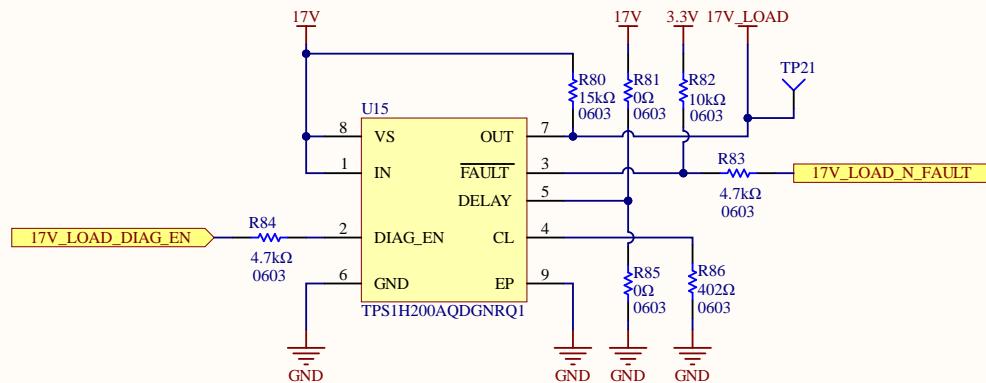
Title Power Distribution Board Rev2 - 3.3V Linear		Altium Limited 23/728 Rodborough Rd Frenchs Forest NSW Australia 2086
Size: Letter	Drawn By: Cindy Li	
Date: 2020-11-02	Sheet 6 of 12	
File: C:\UWRT\MarsRover2021-hardware\Projects\Power Distribution Board\Rev2\SH6 - 3.3V LINEAR REGULATOR.SchDoc		UW ROBOTICS TEAM

## 5V Loads Smart Switches



A

## 17V Load Smart Switch

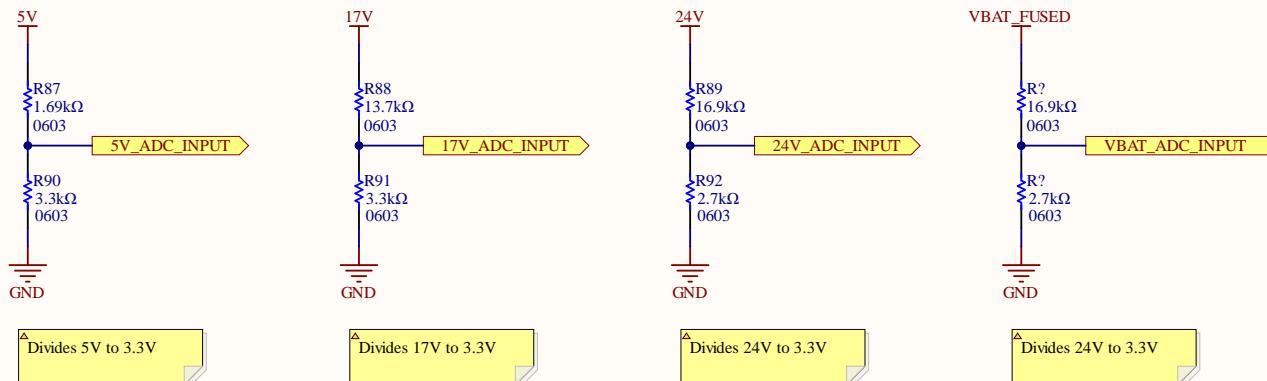


A

B

B

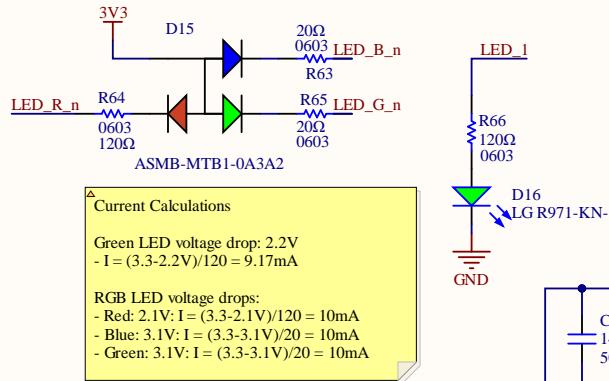
## Power Rail Voltage Monitoring



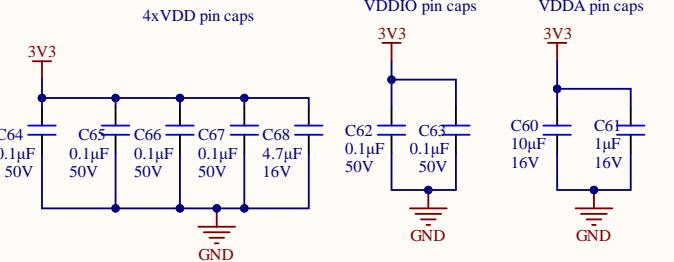
D

D

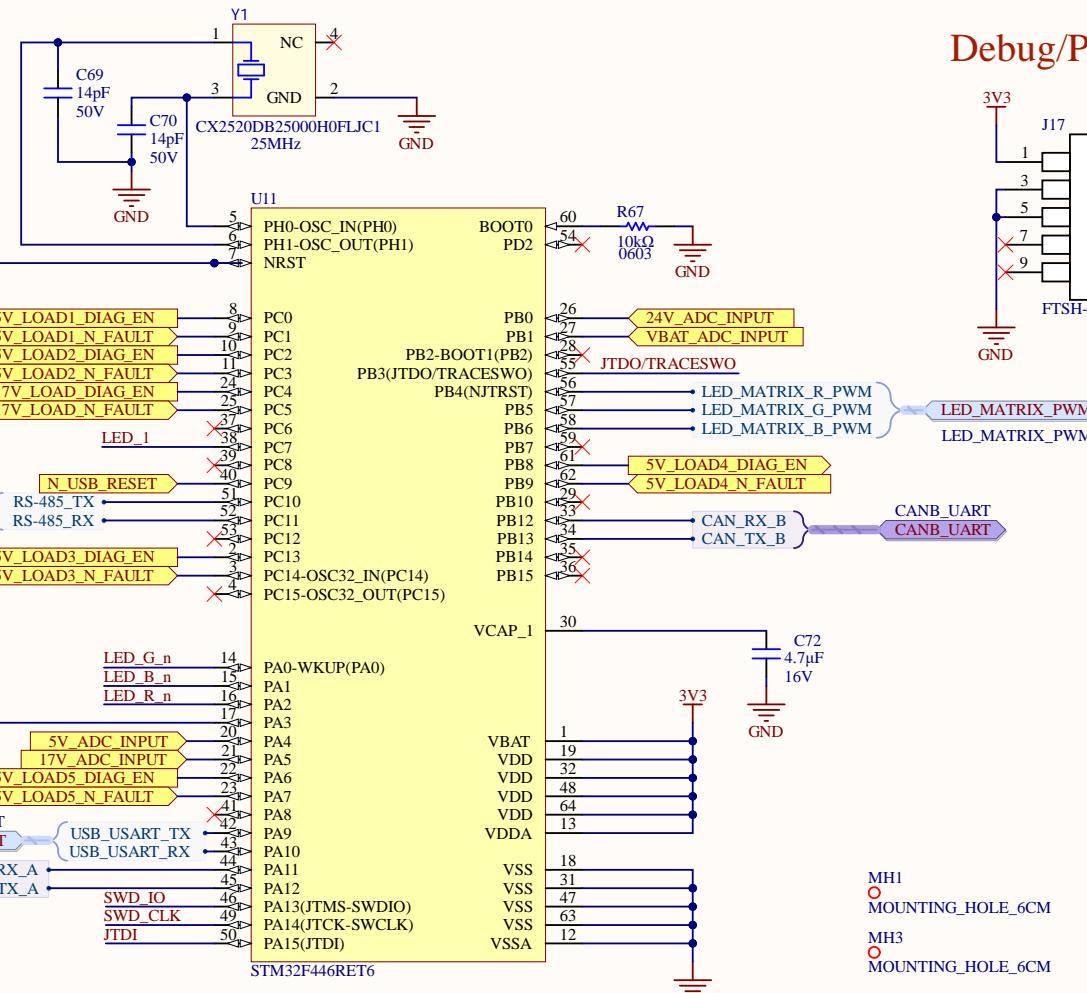
## Status/Debug LEDs



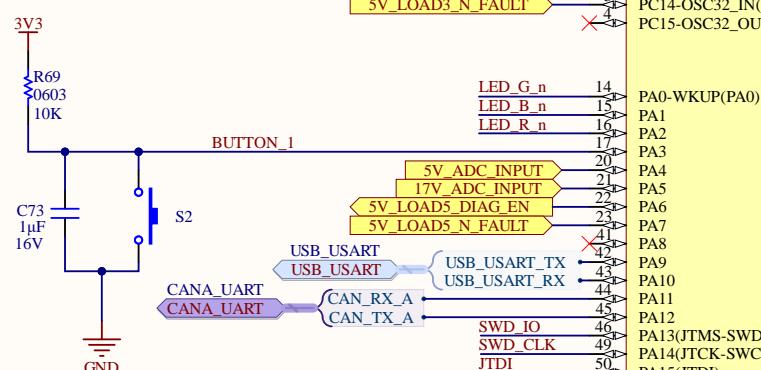
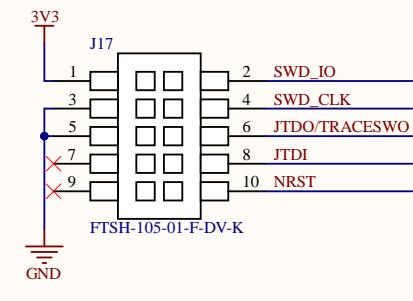
## Decoupling Caps

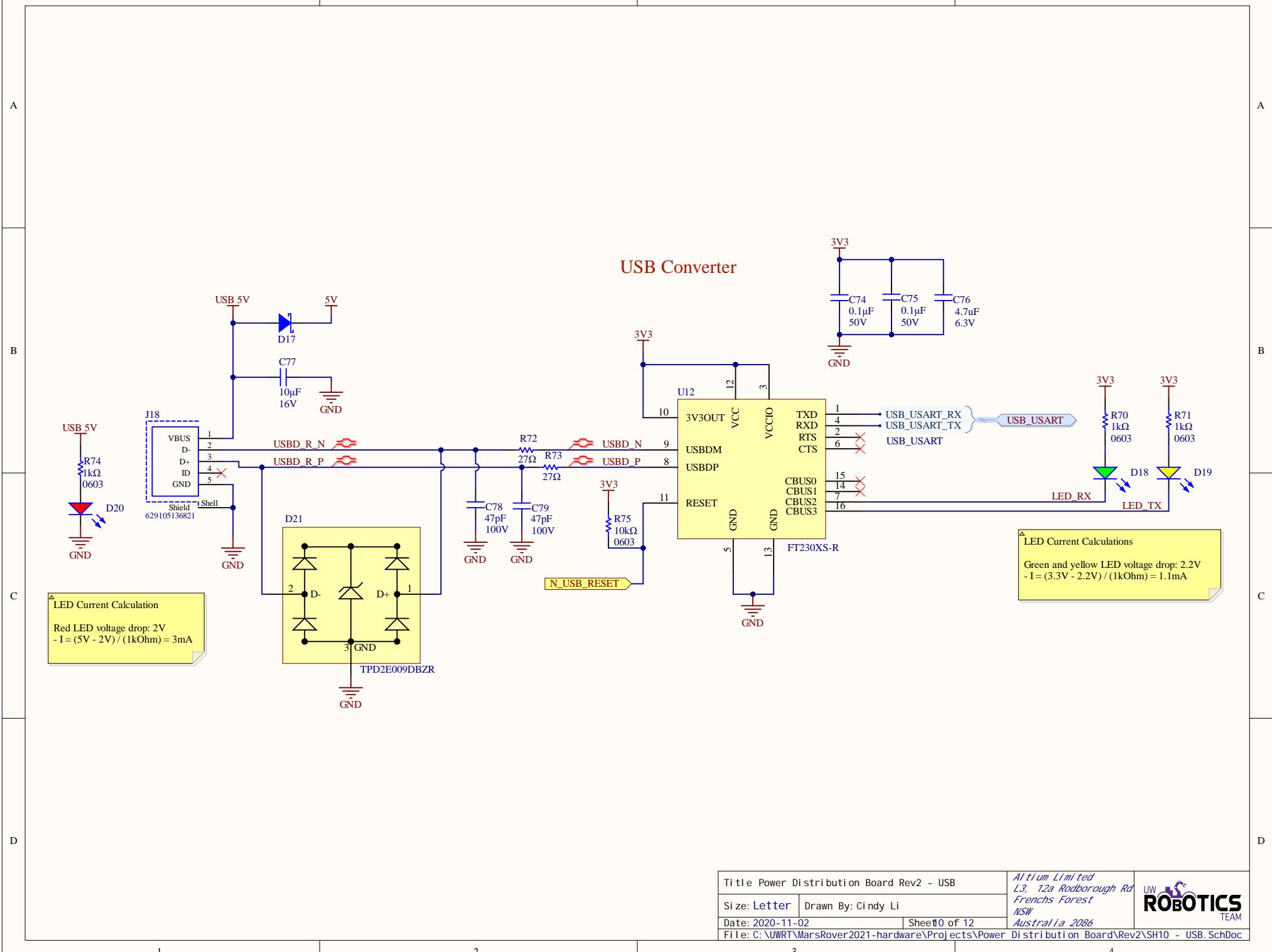


## STM32F446RET6



## Debug/Programming

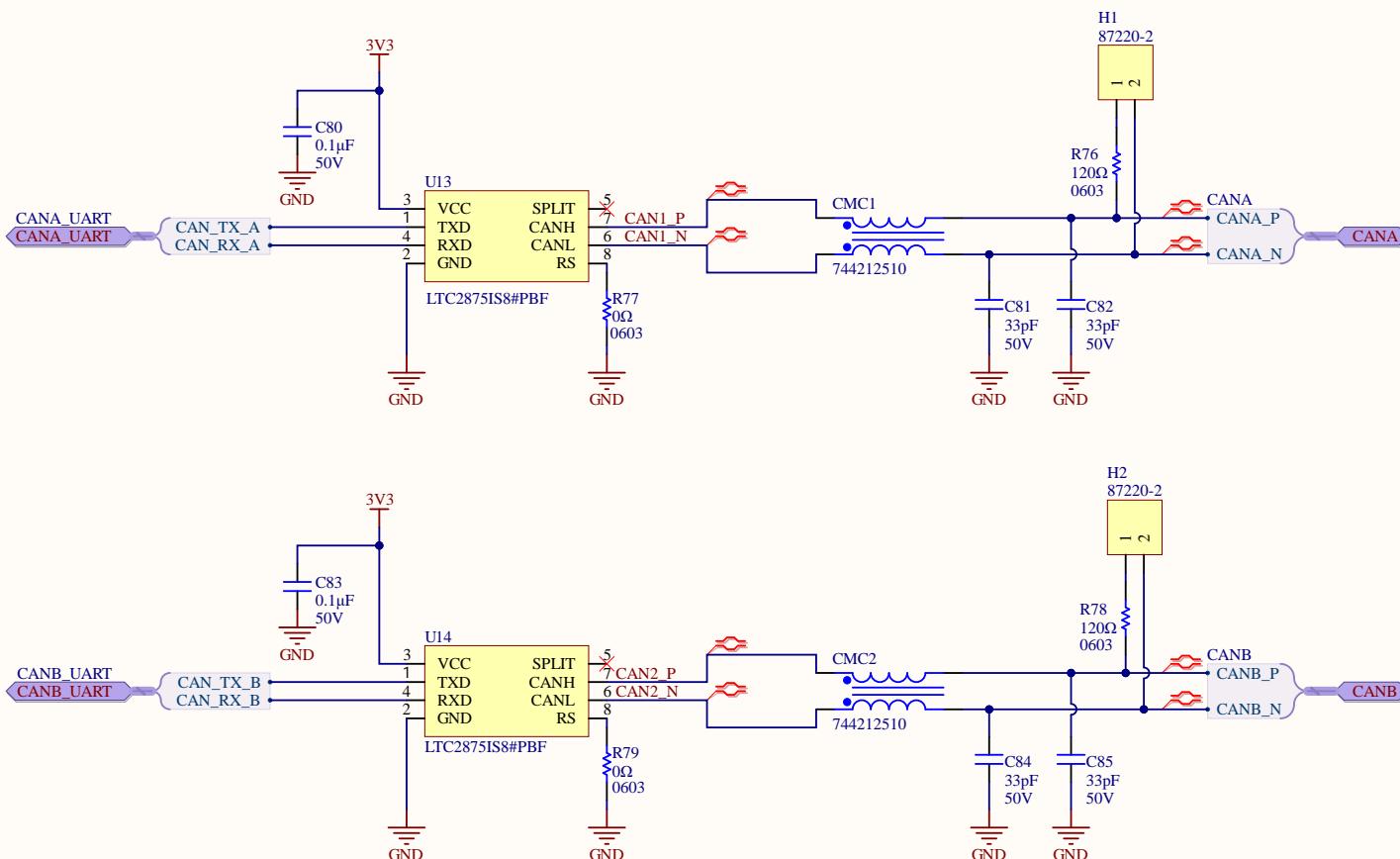




A

A

## CAN Transceivers



Title Power Distribution Board Rev2 - CAN Transceivers		Altium Limited 13/12a Rodborough Rd Frenchs Forest NSW Australia 2086
Size: Letter	Drawn By: Cindy Li	
Date: 2020-11-02	Sheet 1 of 12	
File: C:\UWRT\MarsRover2021-hardware\Projects\Power Distribution Board\Rev2\SH11 - CAN.SchDoc		

A

A

B

B

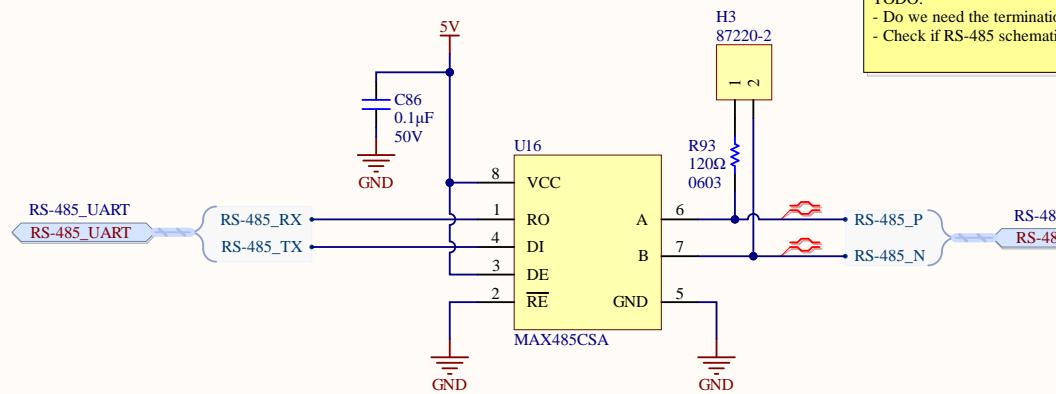
C

C

D

D

## RS-485 Transceiver



Title Power Distribution Board Rev2 - RS-485		Altium Limited L3, 12a Rodborough Rd Frenchs Forest NSW Australia 2086
Size: Letter	Drawn By: Cindy Li	
Date: 2020-11-02	Sheet 12 of 12	
File: C:\UWRT\MarsRover2021-hardware\Projects\Power Distribution Board\Rev2\SH12 - RS-485.SchDoc		UW ROBOTICS TEAM