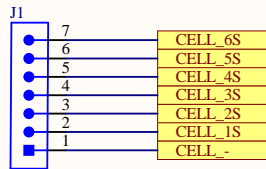
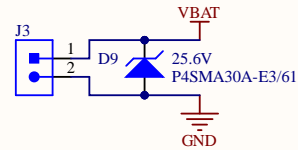


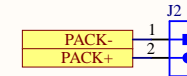
Battery Balancing



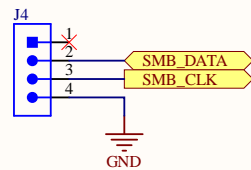
Battery In



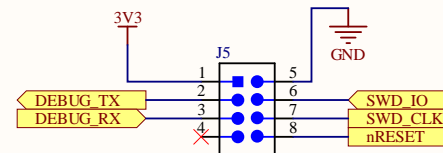
Pack Out



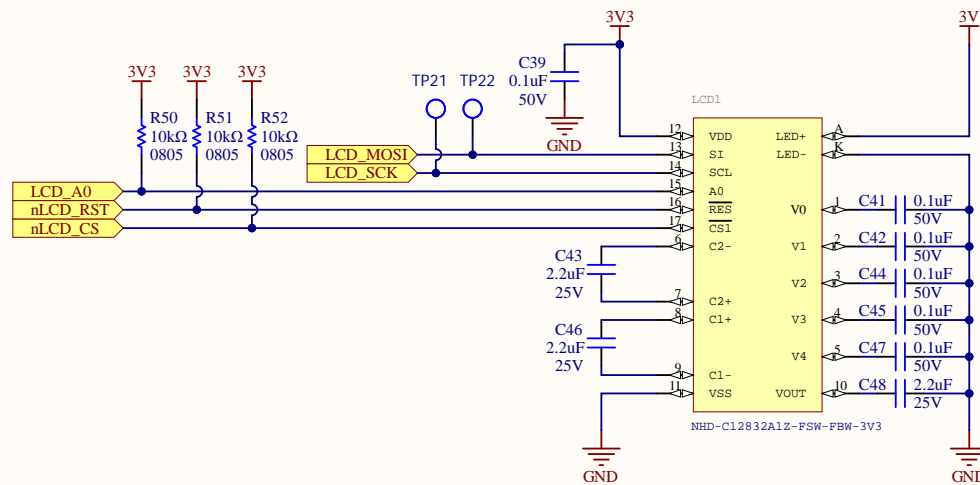
EV2400



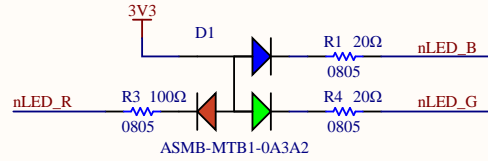
Debug/Programing



LCD



Test LEDs

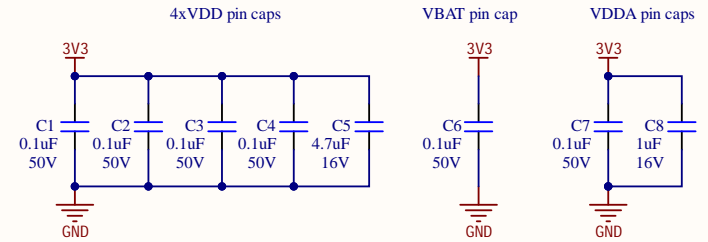


Current Calculations

Green LED voltage drop: 2.2V
 $I = (3.3 - 2.2V) / 100 = 11mA$

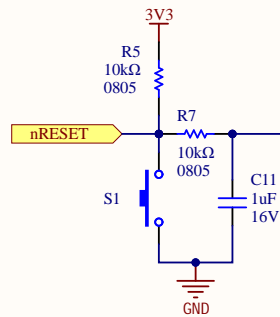
RGB LED voltage drops:
 - Red: 2.1V: $I = (3.3 - 2.1V) / 100 = 12mA$
 - Blue: 3.1V: $I = (3.3 - 3.1V) / 20 = 10mA$
 - Green: 3.1V: $I = (3.3 - 3.1V) / 20 = 10mA$

Decoupling Caps

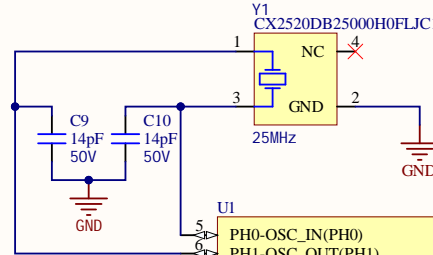


STM32F446RET6

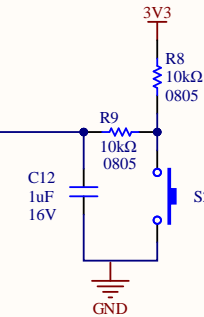
Reset Button



For Debounce Circuit:
 $T = RC \rightarrow C = T/R$
 $C = 10ms / 10kOhms = 1\mu F$



Test Button



For Debounce Circuit:
 $T = RC \rightarrow C = T/R$
 $C = 10ms / 10kOhms = 1\mu F$

GND Test Point



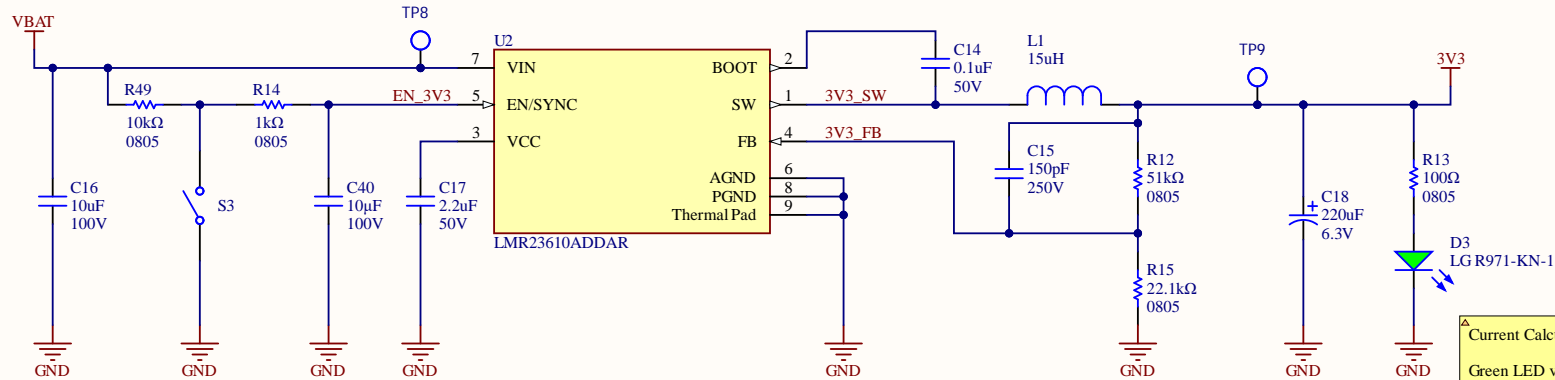
Battery Voltage to 3V3 Buck @ 1A Max

Designed for 15V-25.2V input

Route for 0.5A in

Inductor: SRN6045-150M
15uH, 20%, 95.8mOhm DCR (max)
1.9A (rms), 2.3A (sat), 4.5mm tall

Route for 1A out



For Debounce Circuit:

$$T=RC \rightarrow C= T/R$$

$$C= 10ms/1kOhms= 10uF$$

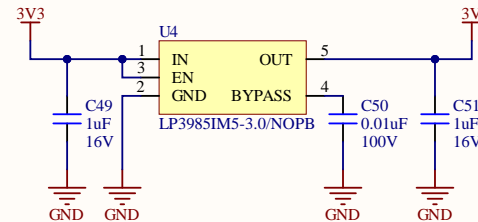
Current Calculations

$$\text{Green LED voltage drop: } 2.2V$$

$$I = (3.3-2.2V)/100 = 11mA$$

Max expected power on output = 1.65W
Max current = 0.5A
Expected Efficiency at 1A > 87.7%

3V3 to 3V LDO @ 150mA Max



Title	Power
Size: Letter	Drawn By: Ayesha Ebrahi m
Date: 2020-06-25	Sheet 5 of 6
File: C:\Users\ayesh\Documents\GitHub\MarsRover2020-PCB\Projects\Battery Management System\Rev1\SH1 - POWER. Sch	

SD Card Connector

