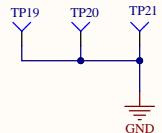


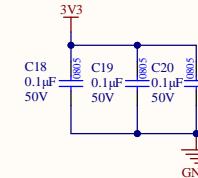
Microcontroller

STM32F446RET6

GND Test Points



Decoupling Caps

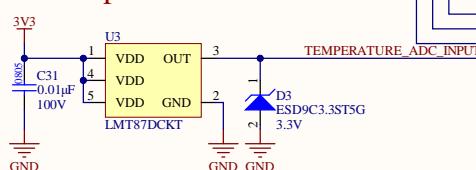


Status LED

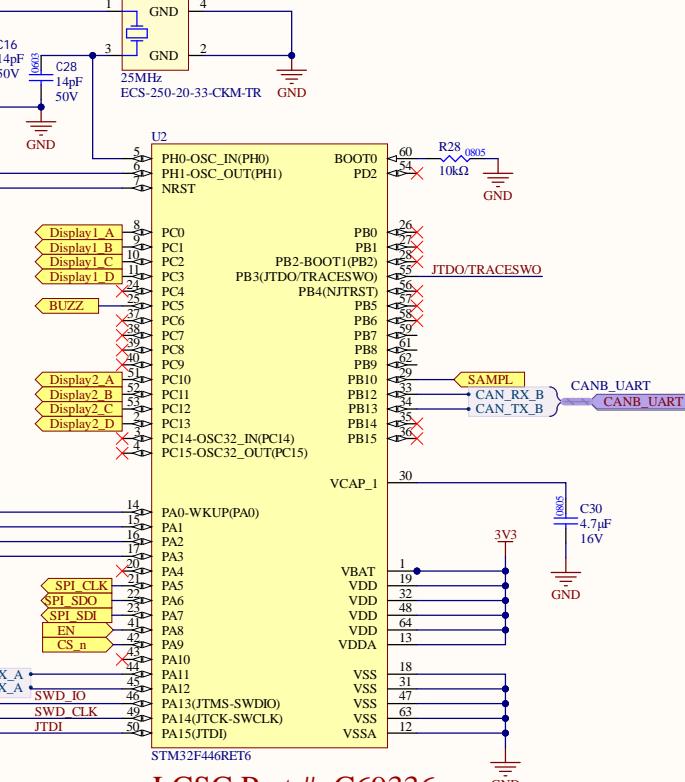
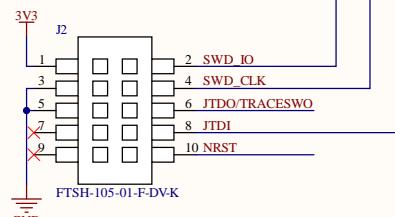
Current Calculations

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

Temperature Sensor



Debug/Programming



LCSC Part #: C69336

Mounting Holes

- | | |
|-----|--------------------|
| MH1 | MOUNTING_HOLE_5/32 |
| MH2 | MOUNTING_HOLE_5/32 |
| MH3 | MOUNTING_HOLE_5/32 |
| MH4 | MOUNTING_HOLE_5/32 |

Title: Microcontroller	
Project: Battery Management System Rev3.PjPcb	
Rev: 3	Reviewer: Logan Hartford
Engineer: Josh Harper	Date: 2022-10-10
Sheet: 1 of 6	

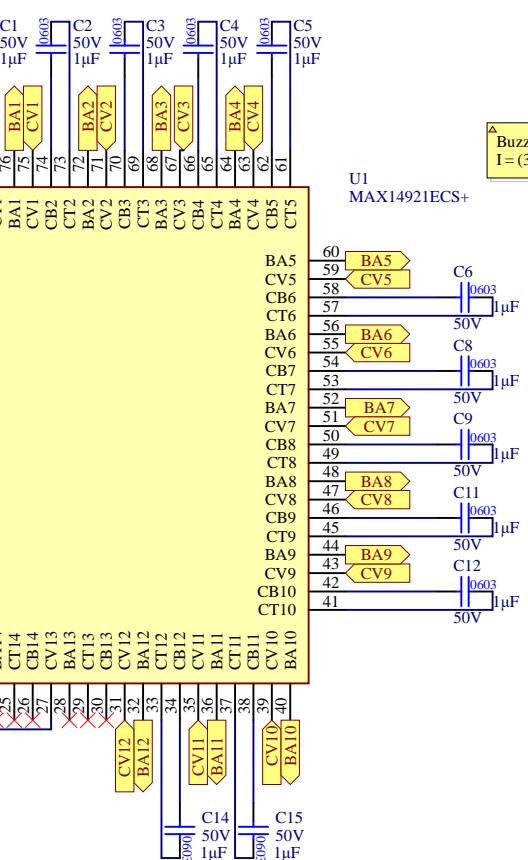


BMS

CUSTOM BATTERY CONNECTION

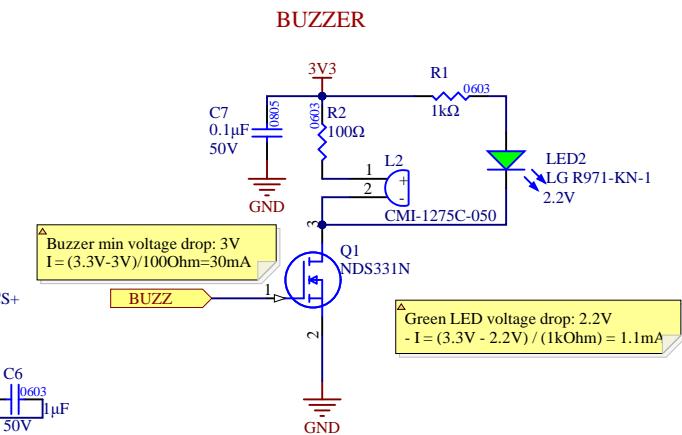


BMS IC

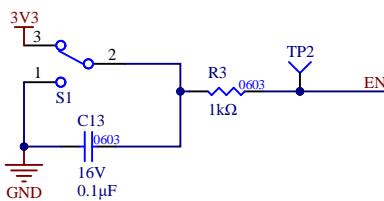


CV_ voltages are tracked when SAMPL is high

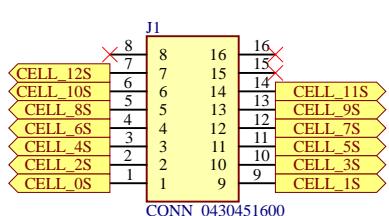
Set EN to low to put device into shutdown and reset SPI registers



RESET SWITCH



BATTERY CONNECTOR



University of Waterloo Robotics Team
200 University Ave W
Waterloo, Ontario, Canada
N2L 3G1

REV
3

PROJECT
Battery Management System Rev3.PjrPcb, [No Variations]

DOCUMENT
BMSRev3.SchDoc

MODIFIED
2022-10-04

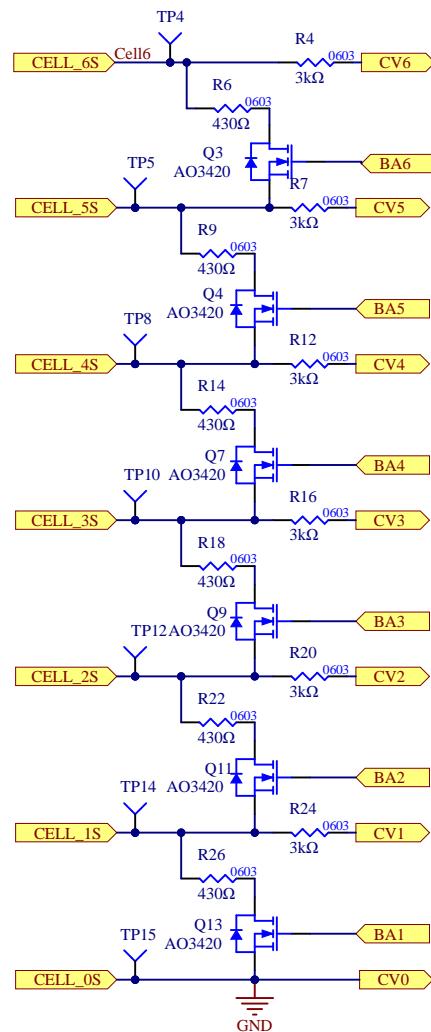
ENGINEER
Josh Harper

REVIEWER
Farris Matar

SHEET 2 OF 6

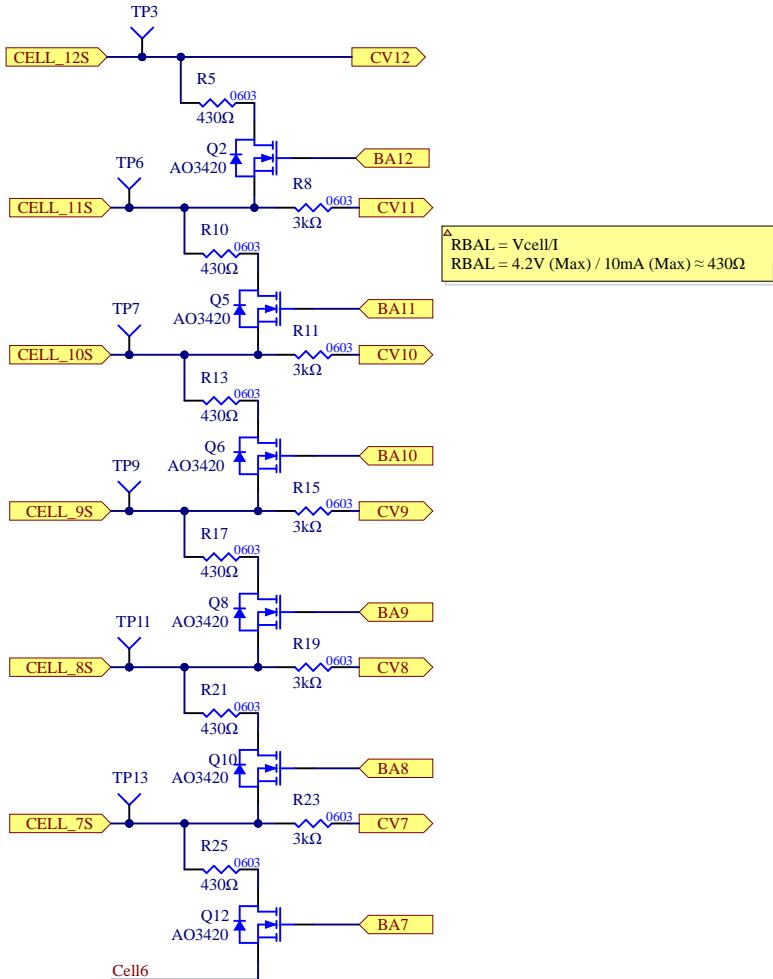
Passive Cell Balancing Circuit

A



A

B



B

C



University of Waterloo Robotics Team
200 University Ave W
Waterloo, Ontario, Canada
N2L 3G1

REV
3

PROJECT
Battery Management System Rev3.PjrPcb, [No Variations]

DOCUMENT
BatteryBalancingRev3.SchDoc

MODIFIED
2022-09-28

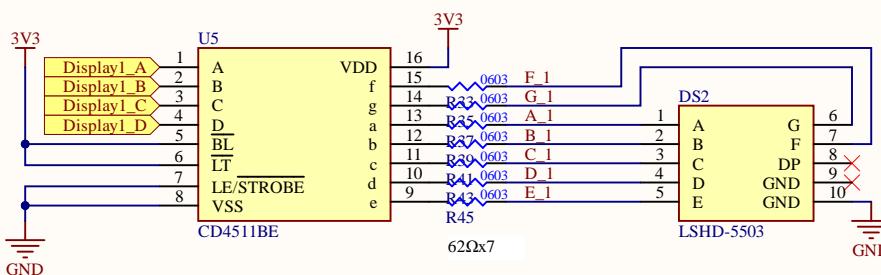
ENGINEER
Josh Harper

REVIEWER
*

SHEET 3 OF 6

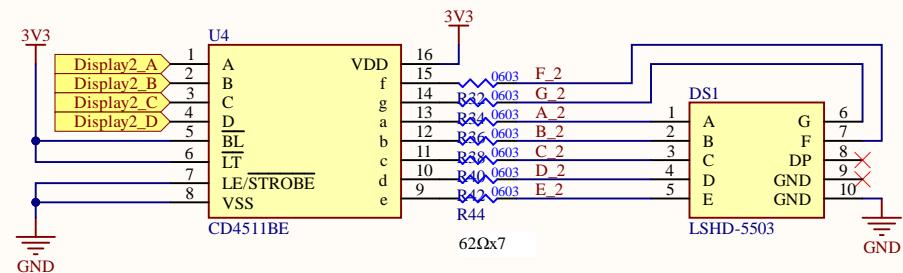
Display

DISPLAY 1

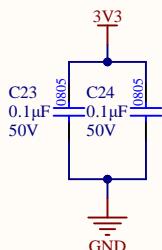


Resistor Calculations
 $(3.3V - 2.1V) / 20mA = 60\text{Ohms}$
 (62Ω based on availability)

DISPLAY 2



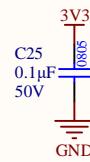
Decoupling Caps



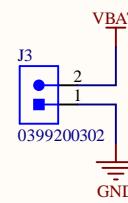
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Size	Number	Revision
A4		
Date: 10-10-2022	Sheet of	
File: C:\Users\.\Display.SchDoc		Drawn By:

Power

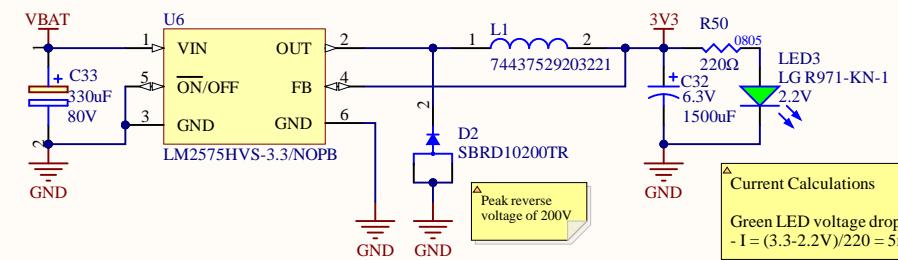
DECOUPLING CAP



POWER CONNECTOR

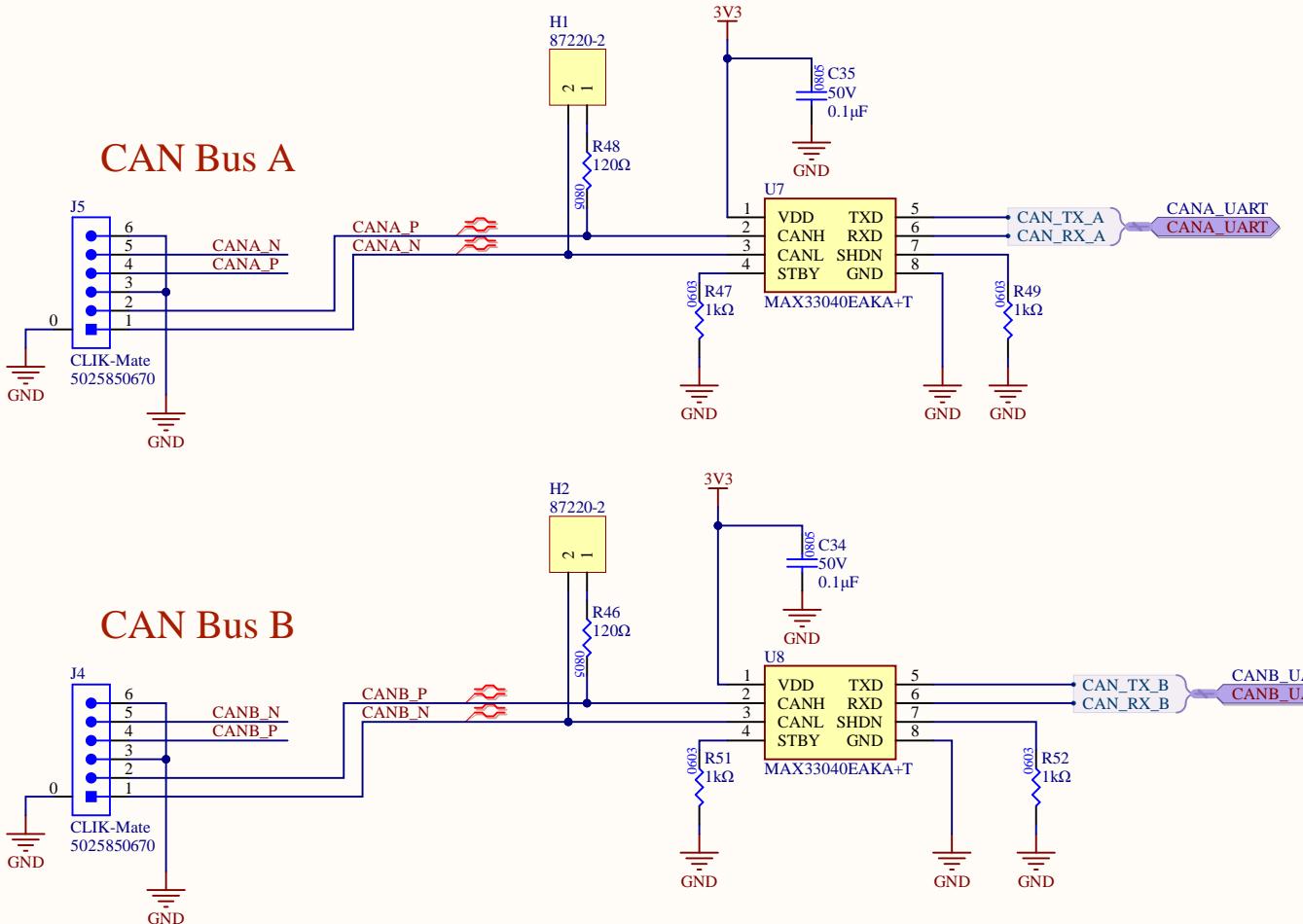


3.3V BUCK CONVERTER



Title		
Size	Number	Revision
A4		
Date: File:	10-10-2022 C:\Users\.\Power.SchDoc	Sheet of Drawn By:

CAN Transceivers



Title		
Size	Number	Revision
A4		
Date: 10-10-2022	Sheet of	
File: C:\Users\.\CAN.SchDoc		Drawn By:

