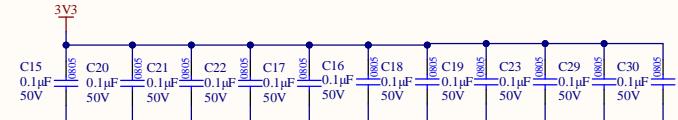


Microcontroller

STM32F446RET6

Decoupling Caps

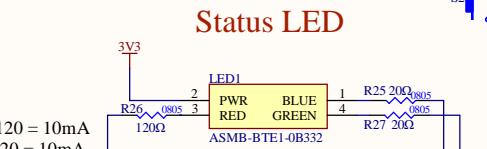


Status LED

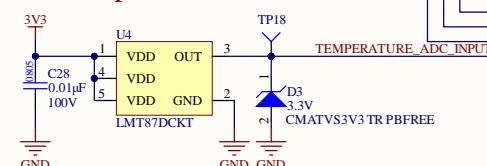
Current Calculations

RGB LED voltage drops:

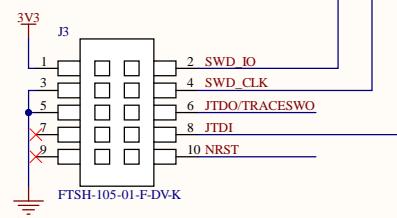
- Red: 2.1V: $I = (3.3 - 2.1V) / 120 = 10\text{mA}$
 - Blue: 3.1V: $I = (3.3 - 3.1V) / 20 = 10\text{mA}$
 - Green: 3.1V: $I = (3.3 - 3.1V) / 20 = 10\text{mA}$



Temperature Sensor



Debug/Programming



This diagram shows the pinout for pins PB0 through PB15. The connections are as follows:

- PB0: Connected to PB1
- PB1: Connected to PB2
- PB2: Connected to PB3 (labeled PB2-BOOT1(PB2))
- PB3: Connected to PB4 (labeled PB3(JTDO/TRACESWO))
- PB4: Connected to PB5 (labeled PB4(NJTRST))
- PB5: Connected to PB6
- PB6: Connected to PB7
- PB7: Connected to CLK (yellow box)
- PB8: Connected to PB9
- PB9: Connected to SDI (yellow box)
- PB10: Connected to PB11
- PB11: Connected to SDO (yellow box)
- PB12: Connected to PB13
- PB13: Connected to SAMPL (yellow box)
- PB14: Connected to CAN_RX_B (blue box)
- PB15: Connected to CAN_TX_B (blue box)
- PC0: Connected to PC1
- PC1: Connected to PC2
- PC2: Connected to PC3
- PC3: Connected to PC4
- PC4: Connected to PC5
- PC5: Connected to PC6
- PC6: Connected to PC7
- PC7: Connected to PC8
- PC8: Connected to PC9
- PC9: Connected to PC10
- PC10: Connected to PC11
- PC11: Connected to PC12
- PC12: Connected to PC13
- PC13: Connected to PC14
- PC14: Connected to PC15
- PC15: Connected to PC14

LCSC Part #: C69336

Mounting Holes

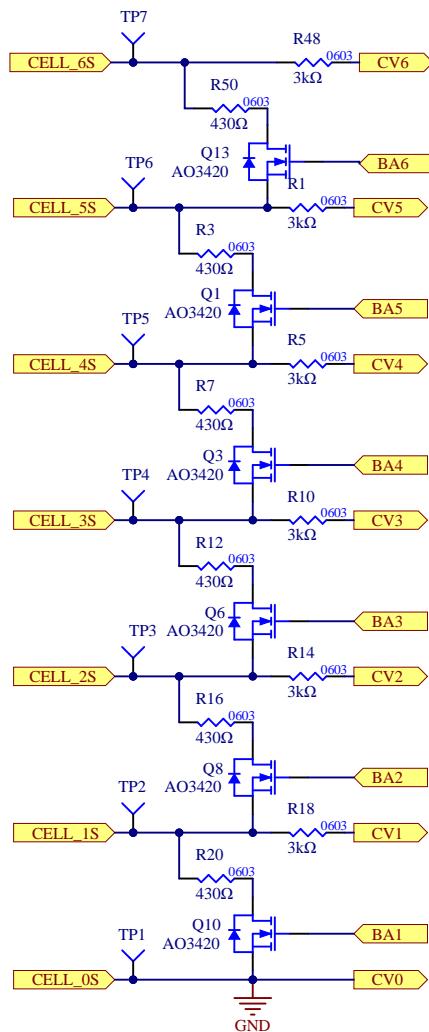
MH1 MOUNTING_HOLE_5/32 MH2 MOUNTING_HOLE_5/32
MH3 MOUNTING_HOLE_5/32 MH4 MOUNTING_HOLE_5/32

Title: Microcontroller
Project: Battery Management System Rev3.PjrPcb
Rev: 3 Reviewer: Logan Hartford
Engineer: Josh Harper
Date: 2022-09-22 Sheet: 1 of 6

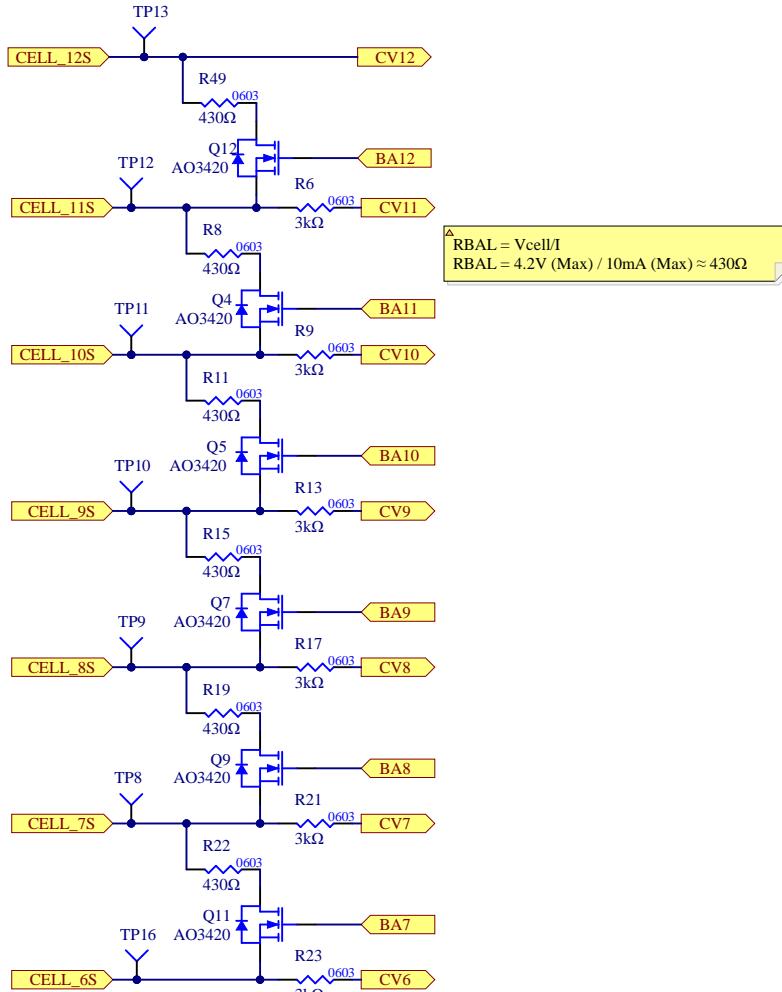


Passive Cell Balancing Circuit

A



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
2022-09-23

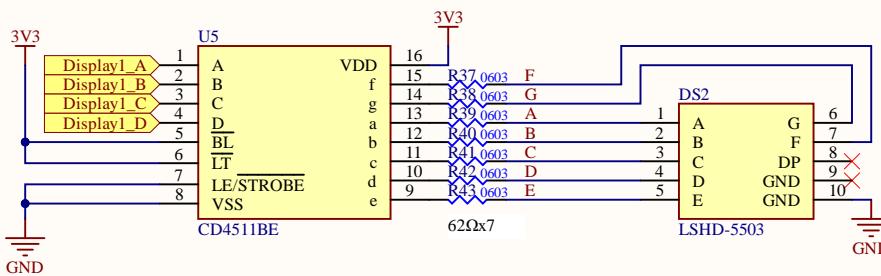
ENGINEER
Josh Harper

REVIEWER
*

SHEET 3 OF 6

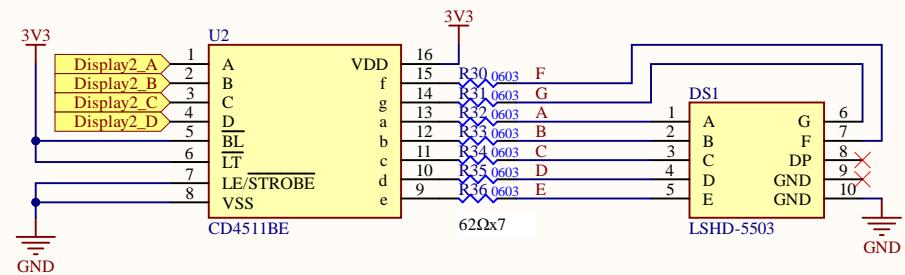
Display

DISPLAY 1



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

DISPLAY 2



Title

Size

A4

Number

Revision

Date: 9-22-2022

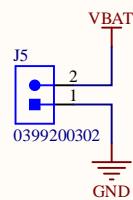
Sheet of

File: C:\Users.\Display.SchDoc

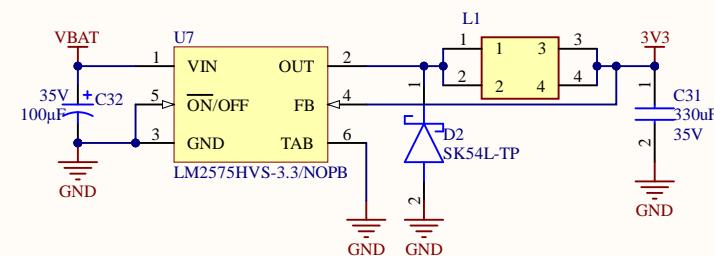
Drawn By:

Power

POWER CONNECTOR

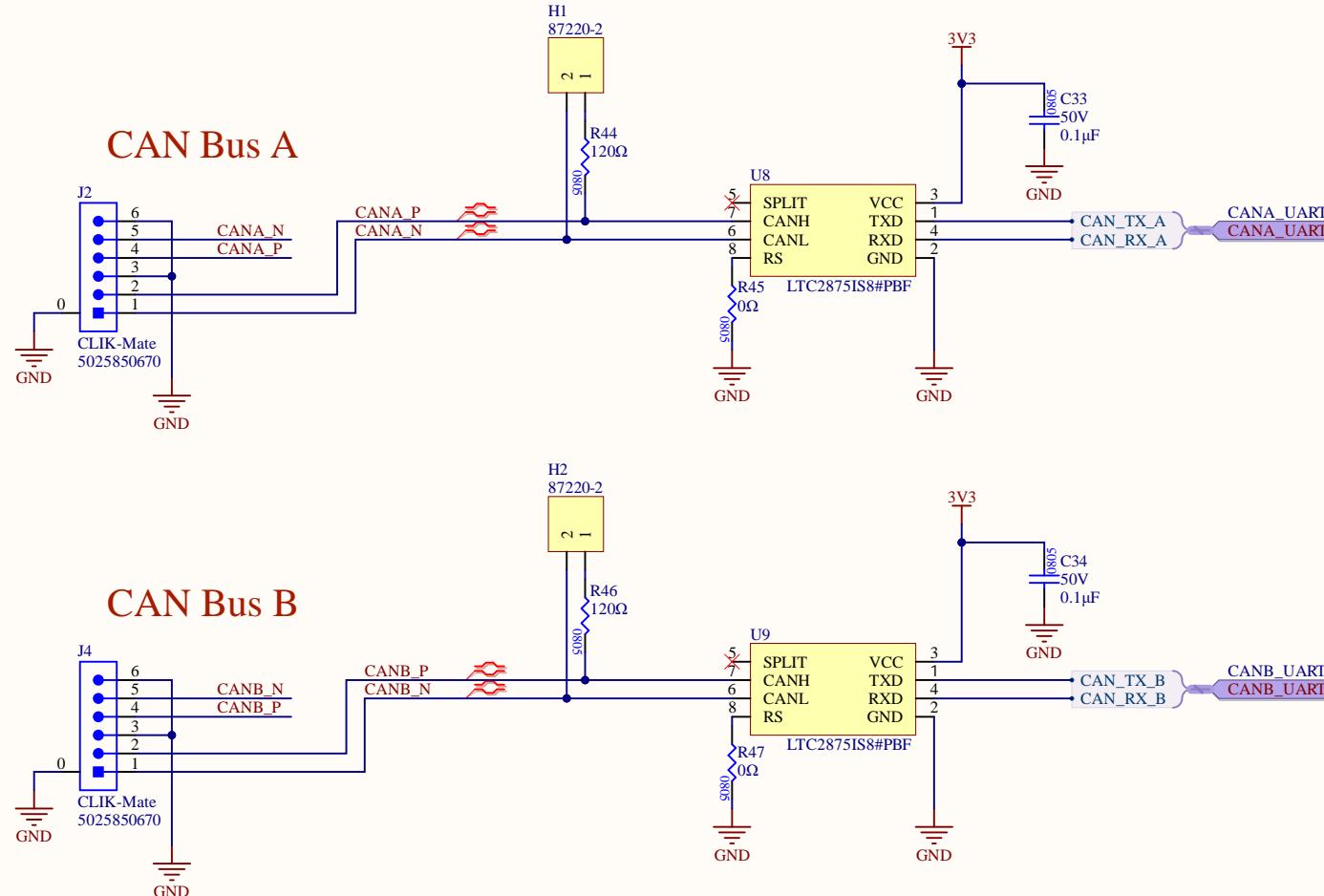


3.3V BUCK CONVERTER



Title		
Size	Number	Revision
A4		
Date: File:	9-22-2022 C:\Users\.\Power.SchDoc	Sheet of Drawn By:

CAN Transceivers



Title		
Size A4	Number	Revision
Date:	9-22-2022	Sheet of
File:	C:\Users\.\CAN.SchDoc	Drawn By:

R11 R5 R9

