5V - 3.3V Buck Converter

Power In

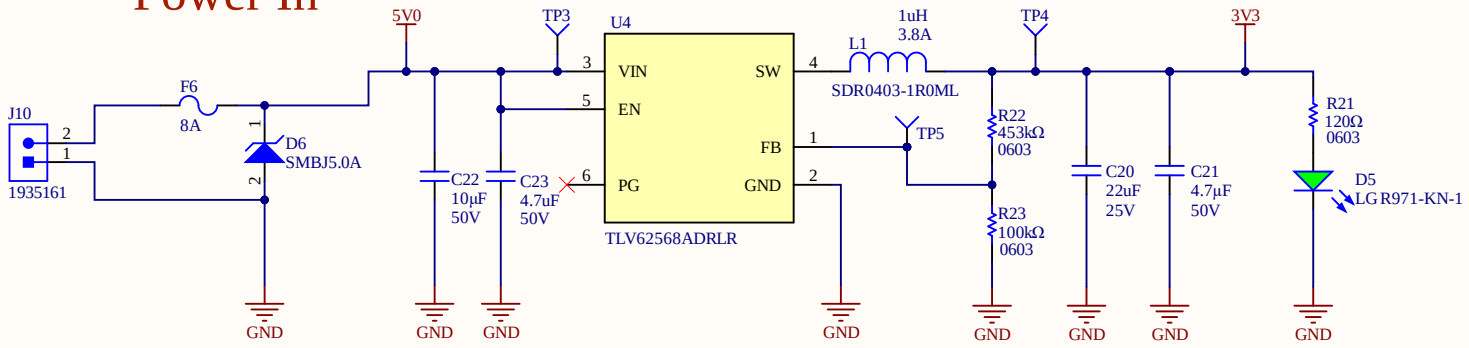
Designed for 3.3V - 5V input

Route for 1A in

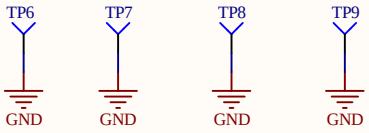
Inductor: SDR0403-1R0ML
1uH, 20%, 33mOhm DCR (max)
3.8A (rms), 5.5A (sat), 3.2mm tall

Maximum output current = 2A
Maximum output power = 6.6W
Expected efficiency at 1A = 94.3%

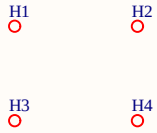
Route for 1A out



GND Test Points



Mounting Holes



Current Calculations

Green LED voltage drop: 2.2V
- I = (3.3-2.2V)/120 = 9.17mA

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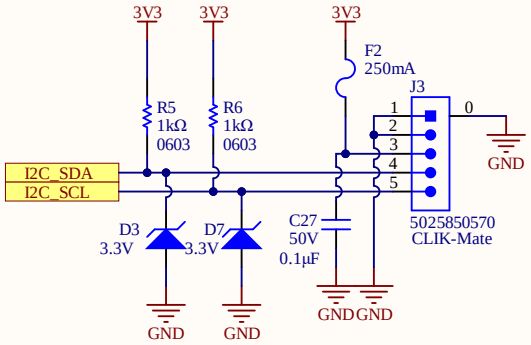
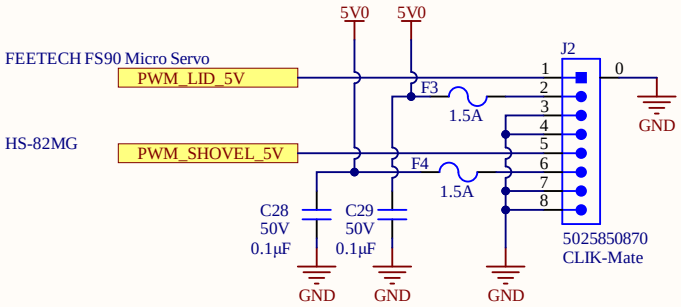
STEMMA Moisture Sensor

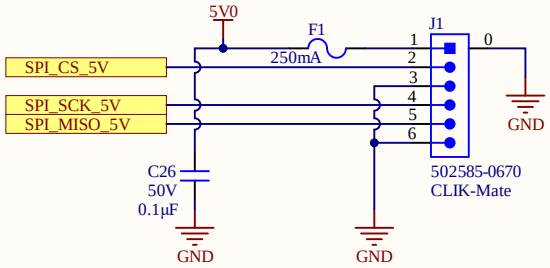


Stemma has internal pullups; these may not be necessary but will be left for now.

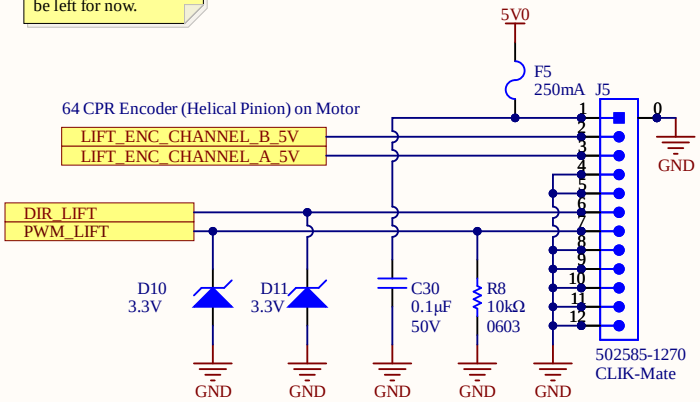
Servos



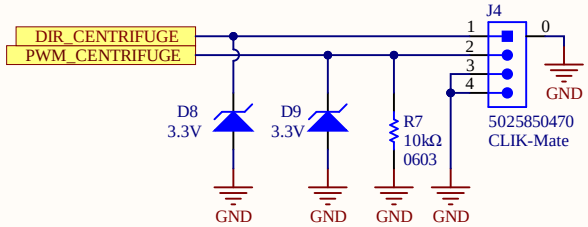
Broadcom AEAT6012 Encoder



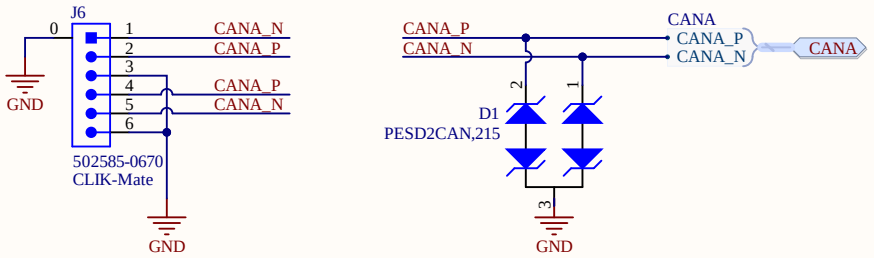
Pololu 4693 Motor



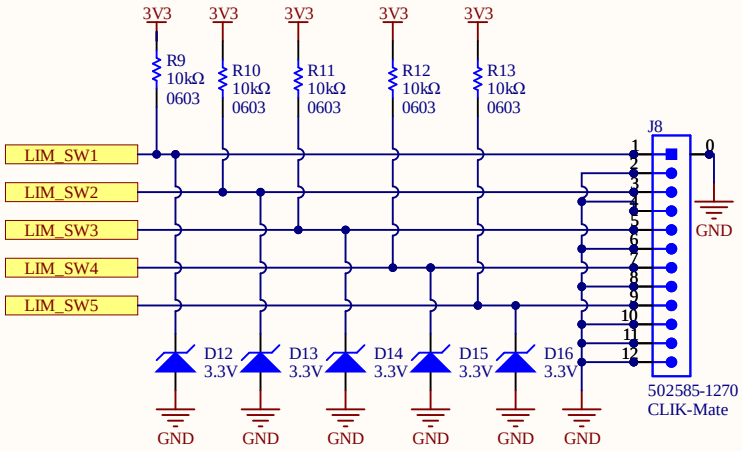
Pololu 4685 Motor



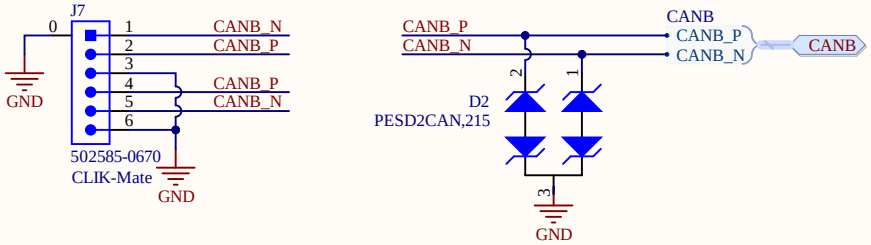
CAN BUS A



Limit Switches



CAN BUS B



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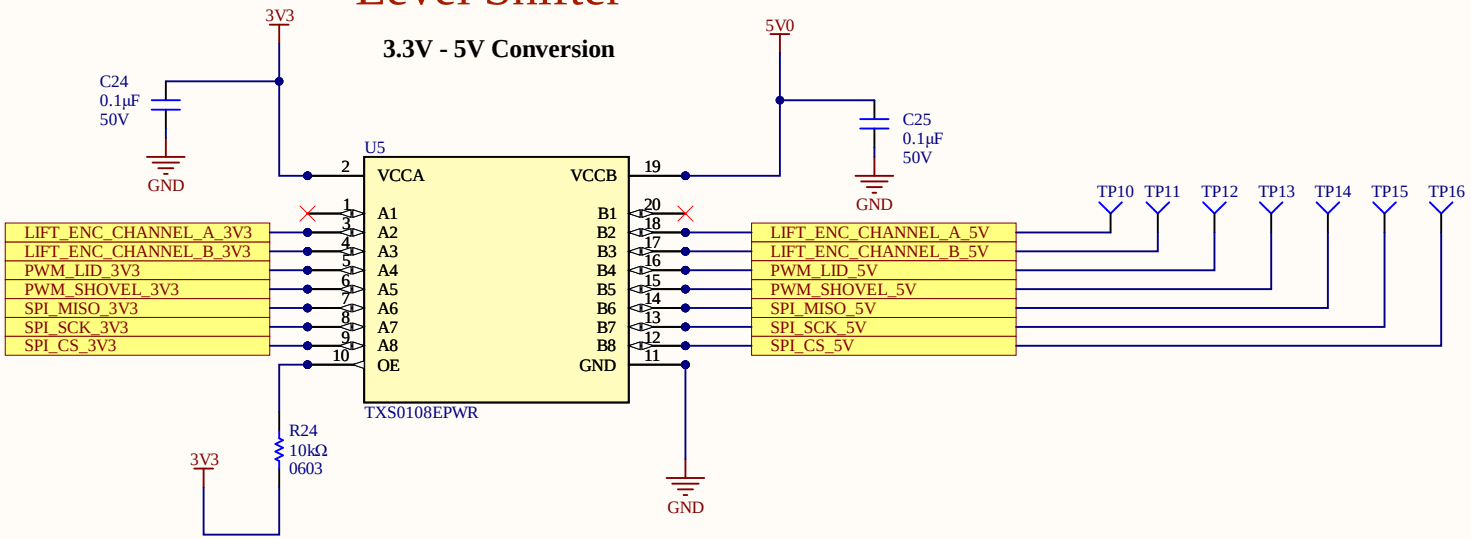
Level Shifter

3.3V - 5V Conversion



Title Science - Level_Shifter		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
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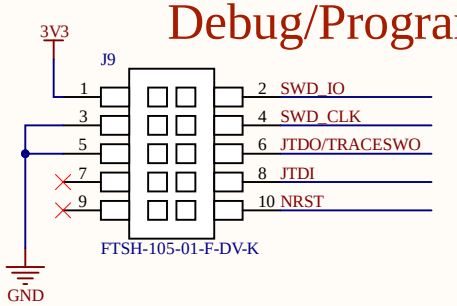
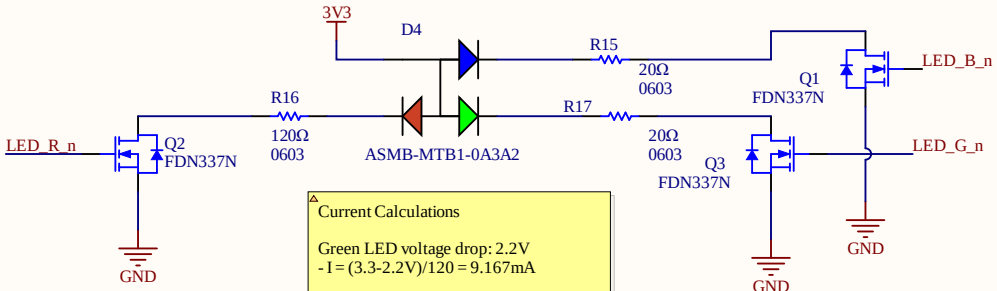
File: C:\Users\Wolfgang Windholtz\altium_projects\MarsRover2021-hardware\Projects\Science\Rev2\SH3 - LE		

Debug/Programming



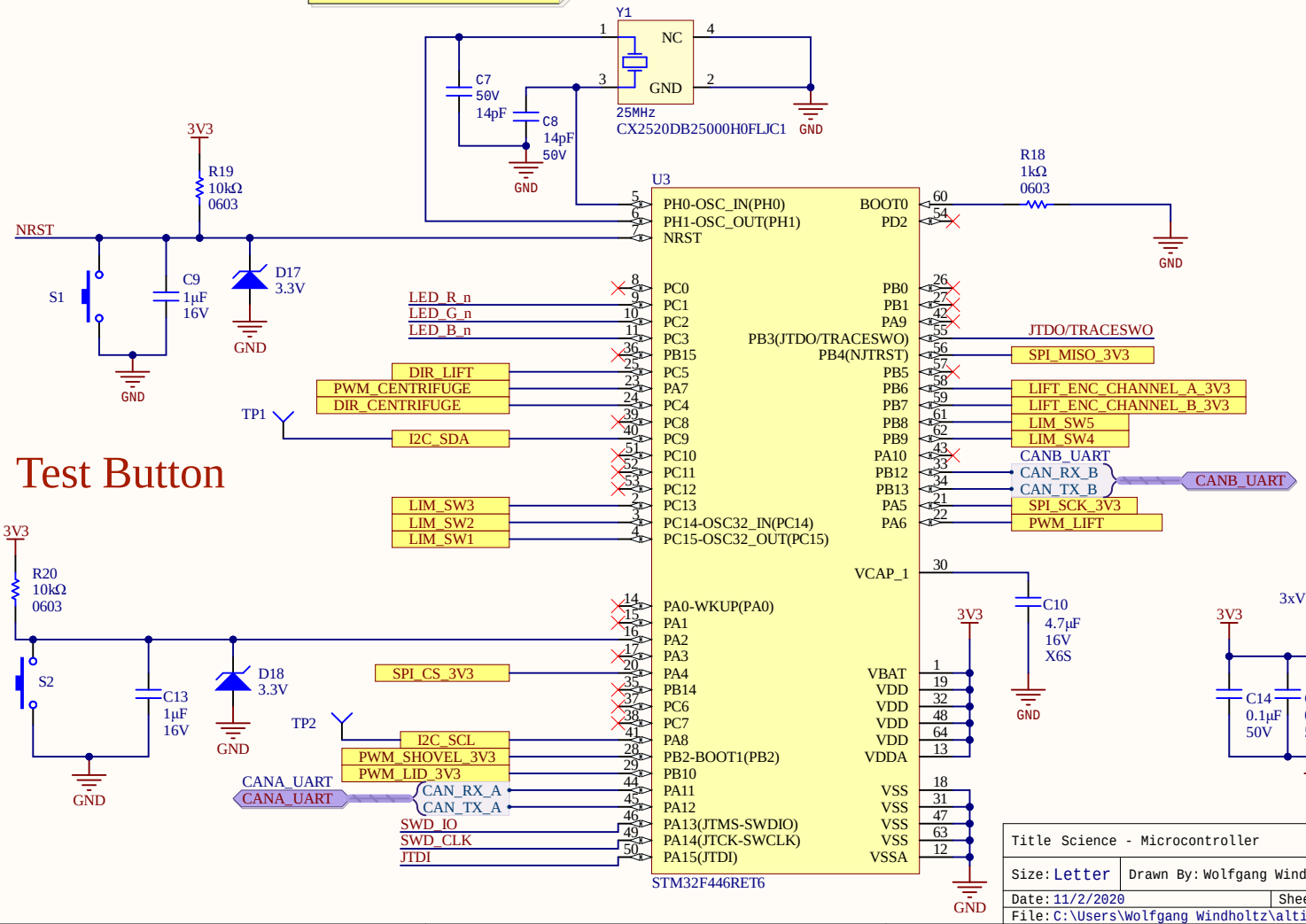


Current Calculations

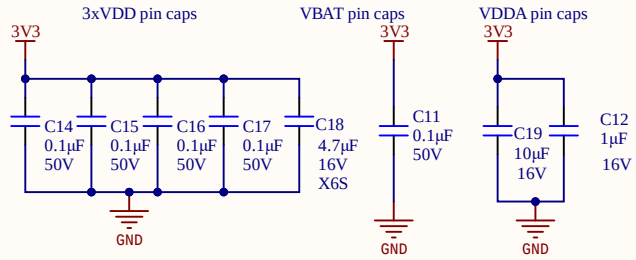
Green LED voltage drop: 2.2V
- I = (3.3-2.2V)/120 = 9.167mA

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

STM32



Test Button



Title Science - Microcontroller		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
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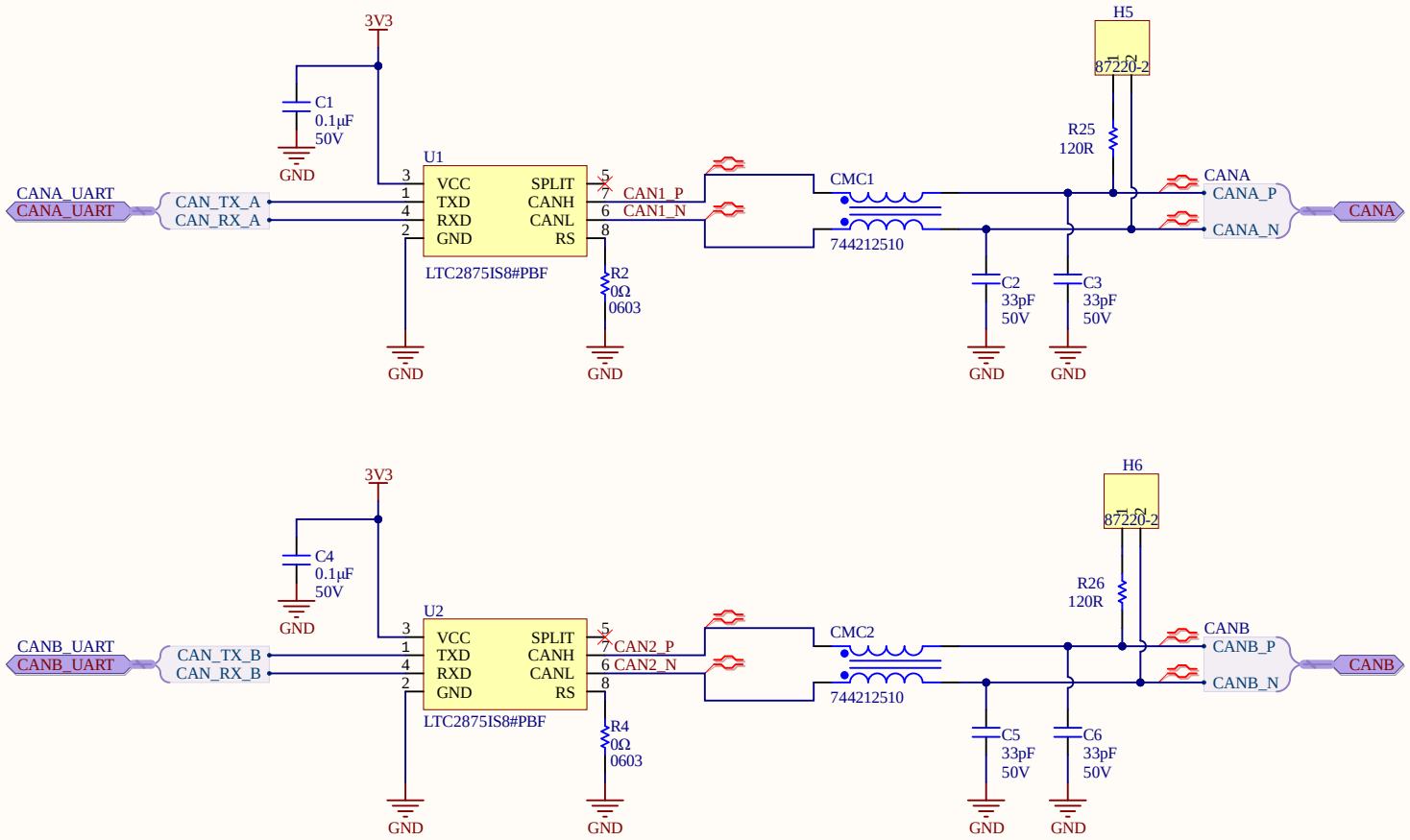
CAN Transceivers



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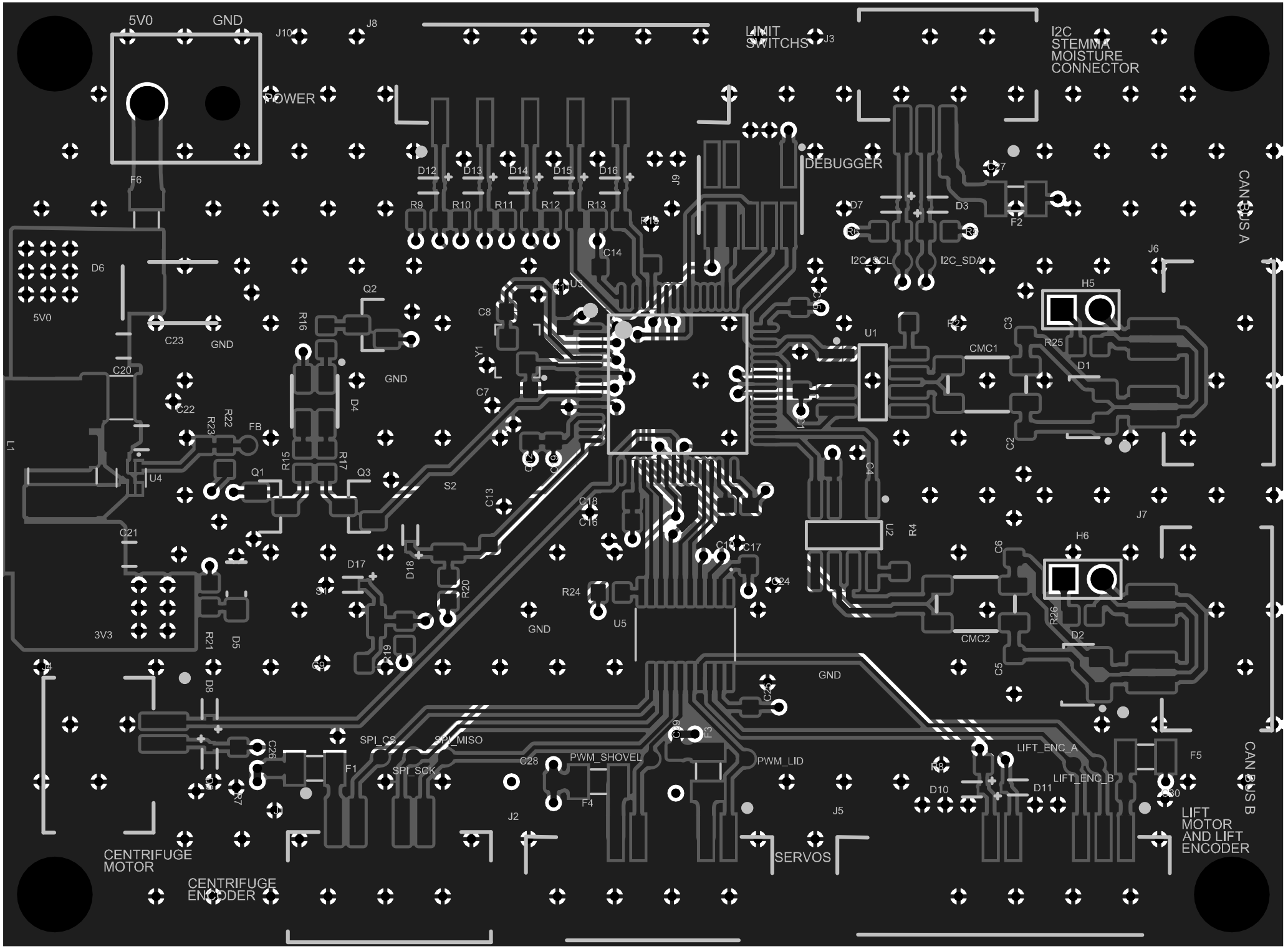
5V0
GND
J10
J8
POWER
LIMIT SWITCHS
J3
I2C STEMMA MOISTURE CONNECTOR
DEBUGGER
CAN BUS A
F6
D12
D13
D14
D15
D16
J9
R9
R10
R11
R12
R13
R14
C14
D7
D3
F2
I2C_SCL
I2C_SDA
J6
H5
D6
5V0
C23
GND
Q2
R16
C8
U3
C11
U1
CMC1
R25
D1
C3
C20
C22
R22
R23
FB
D4
C7
Y1
C1
C2
L1
U4
Q1
R15
R17
Q3
S2
C13
C18
C16
C4
J7
C21
D17
D18
R20
R24
U5
C15
C17
C24
U2
R4
C6
H6
R26
CMC2
D2
3V3
R21
D5
D8
C19
C9
C12
C5
SPI_CS
SPI_MISO
SPI_SCK
C26
F1
R7
C28
PWM_SHOVEL
PWM_LID
F4
J2
J5
R8
D10
D11
LIFT_ENC_A
LIFT_ENC_B
F5
J30
CAN BUS B
LIFT MOTOR AND LIFT ENCODER
CENTRIFUGE MOTOR
CENTRIFUGE ENCODER
SERVOS