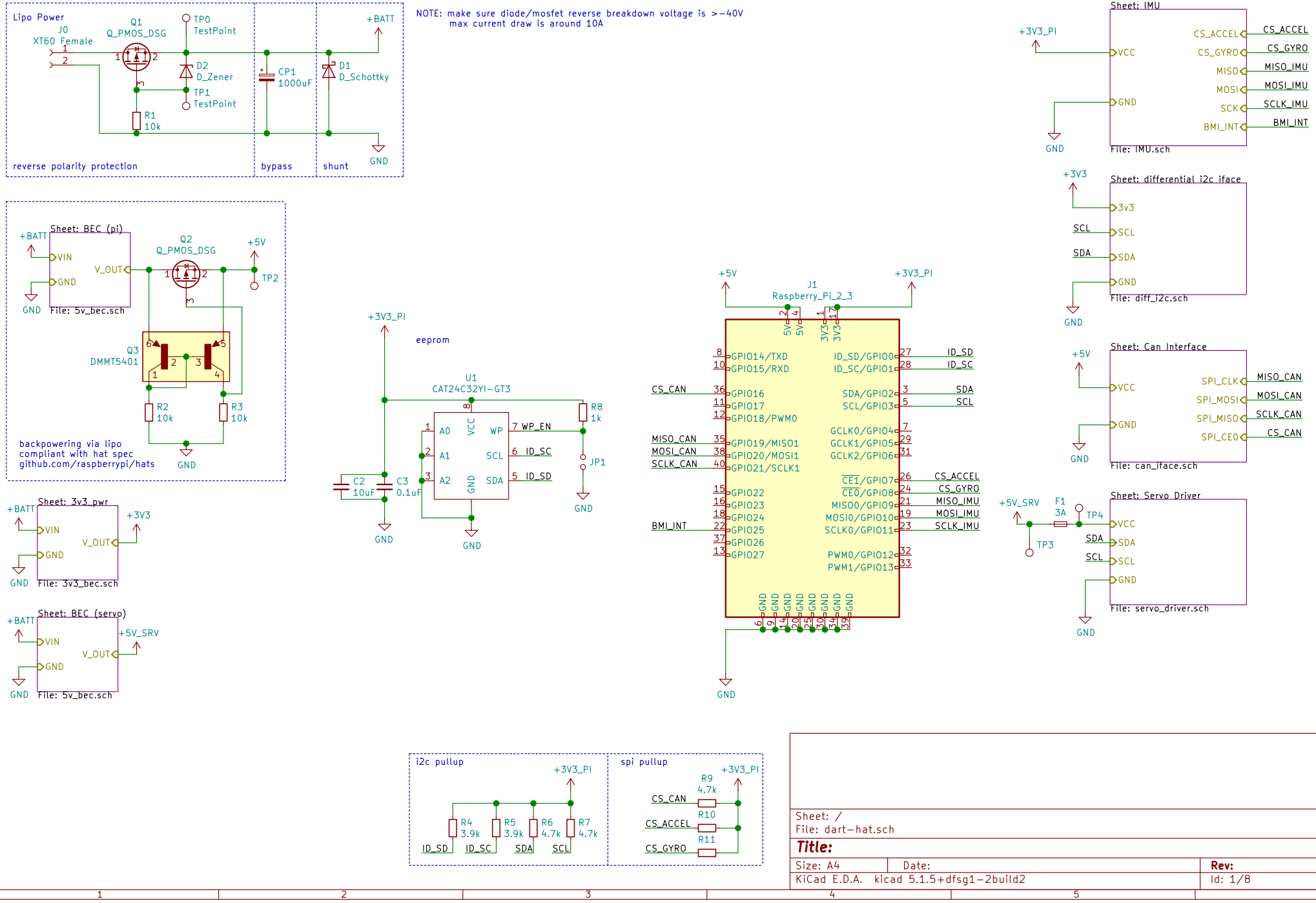
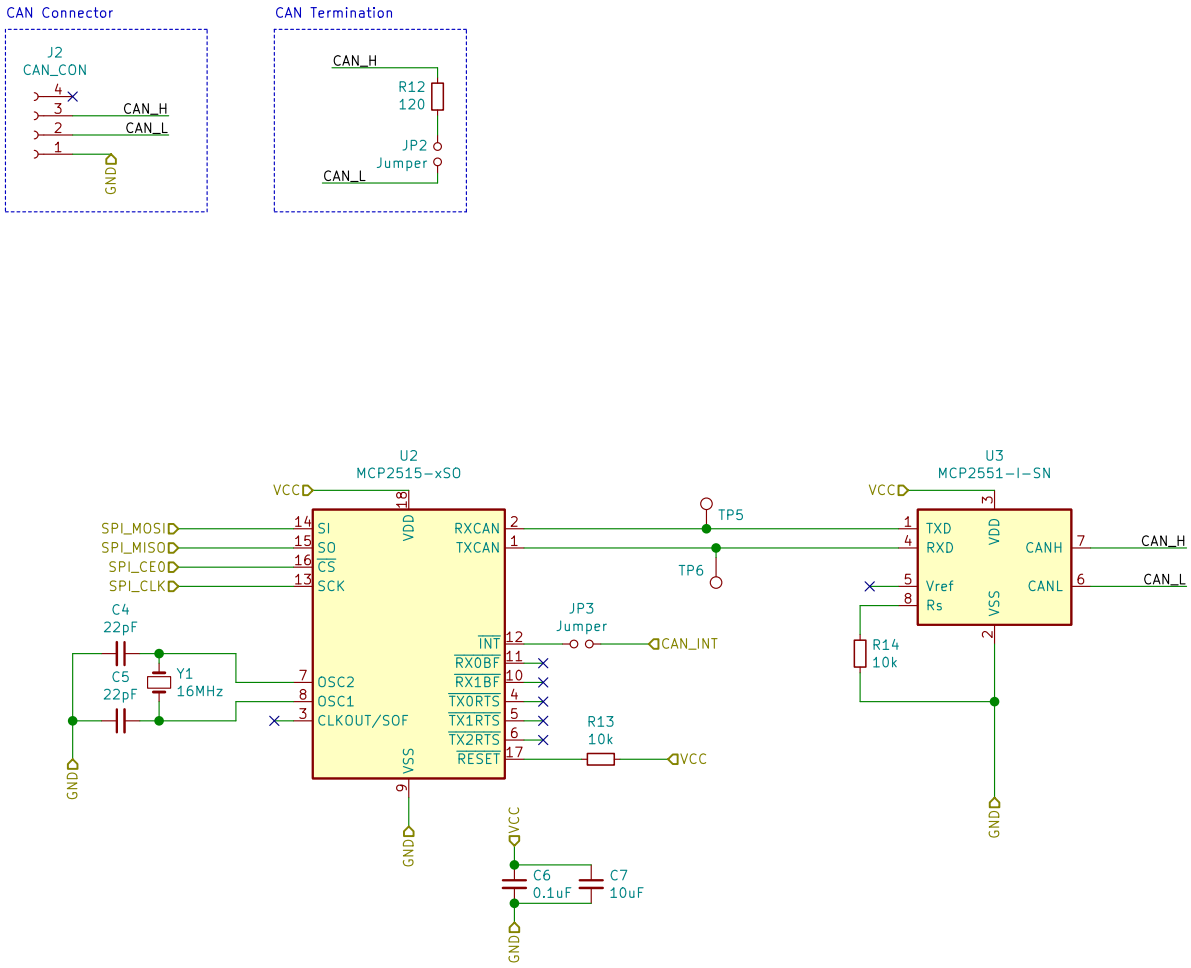
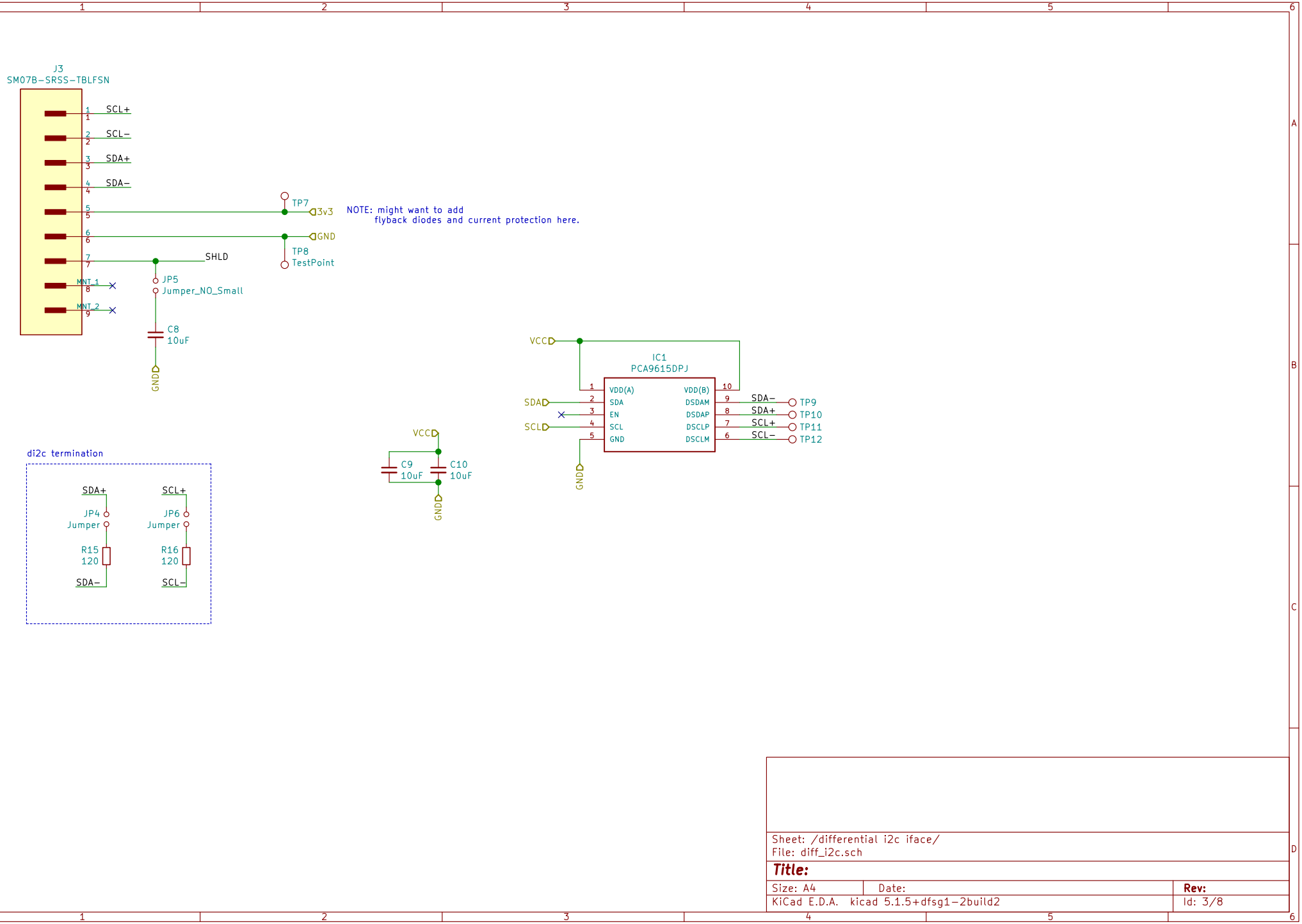

Lipo Power
J0
XT60 Female
Q1
Q_PMOS_DSG
TP0
TestPoint
D2
D_Zener
TP1
TestPoint
R1
10k
CP1
1000uF
D1
D_Schottky
+BATT
GND
reverse polarity protection
bypass
shunt
NOTE: make sure diode/mosfet reverse breakdown voltage is >-40V
max current draw is around 10A
Sheet: BEC (pi)
File: 5v_bec.sch
Q2
Q_PMOS_DSG
+5V
TP2
Q3
DMMT5401
R2
10k
R3
10k
backpowering via lipo
compliant with hat spec
github.com/raspberrypi/hats
Sheet: 3v3_pwr
File: 3v3_bec.sch
Sheet: BEC (servo)
File: 5v_bec.sch
+5V_SRV
+3V3_PI
eeprom
U1
CAT24C32YI-GT3
R8
1k
JP1
C2
10uF
C3
0.1uF
WP_EN
ID_SC
ID_SD
J1
Raspberry_Pi_2_3
CS_CAN
MISO_CAN
MOSI_CAN
SCLK_CAN
BMI_INT
ID_SD
ID_SC
SDA
SCL
CS_ACCEL
CS_GYRO
MISO_IMU
MOSI_IMU
SCLK_IMU
Sheet: IMU
File: IMU.sch
CS_ACCEL
CS_GYRO
MISO_IMU
MOSI_IMU
SCLK_IMU
BMI_INT
Sheet: differential i2c iface
File: diff_i2c.sch
Sheet: Can Interface
File: can_iface.sch
MISO_CAN
MOSI_CAN
SCLK_CAN
CS_CAN
Sheet: Servo Driver
File: servo_driver.sch
F1
3A
TP3
TP4
i2c pullup
R4
3.9k
R5
3.9k
R6
4.7k
R7
4.7k
spi pullup
R9
4.7k
R10
R11
Sheet: /
File: dart-hat.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2
Id: 1/8



Sheet: /Can Interface/		
File: can_iface.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 2/8



Sheet: /differential i2c iface/		
File: diff_i2c.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 3/8

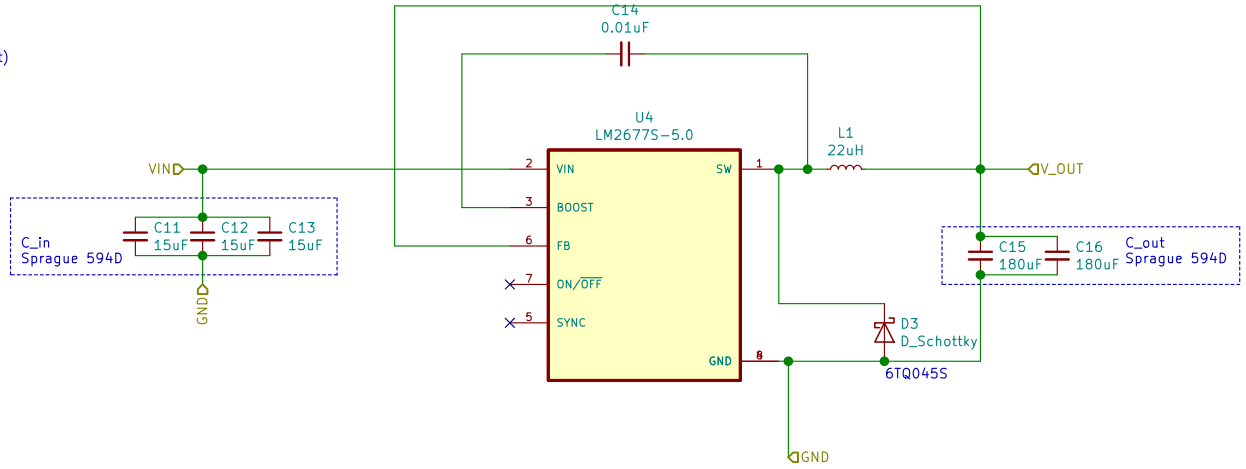
TODO: reread the datasheet and get the right specs.
At the moment i do not have the time nor patience to
complete the power side of things so i'm gonna move
this into a hierarchical sheet and forget about it for now

Inductors (L41, 22uH, 5.22A max)
- Pulse Engineering P0841

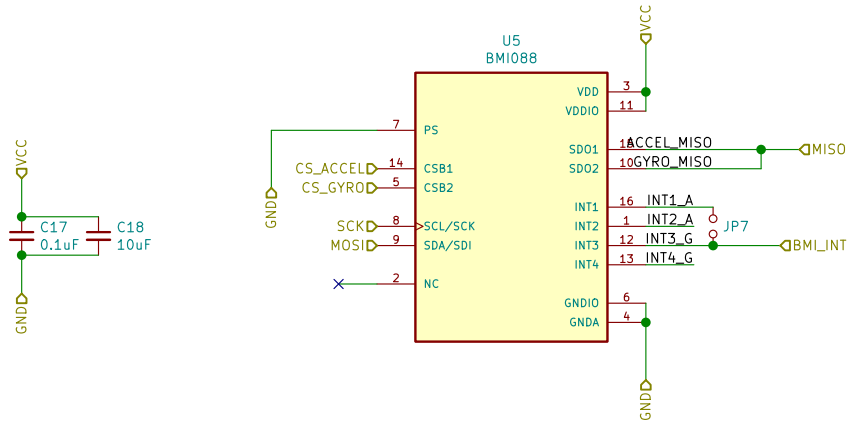
C_out:
- 3xC2 (AVX), 2xC7 (Sprague), 3xC4 (kemet)

C_in:
- 3xC13 (sprague), 4xC12(kemet)

Diode:
- MBRB1545CT
- 6TQ045S



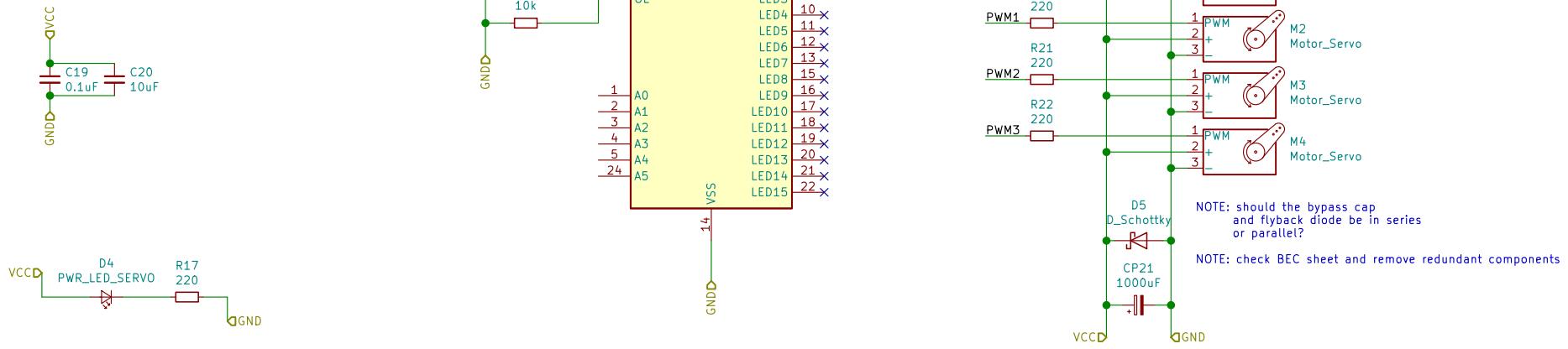
Sheet: /BEC (pi)/		
File: 5v_bec.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 4/8



NOTES: bmi088 driver has DRDY wired to gpio26 (pin 6 on wiringpi)
- i2c should be easier but i'm going for SPI since the old implementation works
- shuttle has interrupt pin jumper
- might want to not only expose the jumper for this,
  but also tie in 2 separate GPIO pins with the 2.54mm
  headers on each interrupt so i can manually connect
  interrupt pins?

IMPORTANT: review the SPI initialization behavior (6.1, p45, bmi088 datasheet)
- looks like GND on PS sets gyro to SPI mode
- giving a rising edge on the CS pin for the accel switches it to spi mode. this can be done via a dummy read/write oper

Sheet: /IMU/		
File: IMU.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 5/8



Sheet: /Servo Driver/		
File: servo_driver.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 6/8

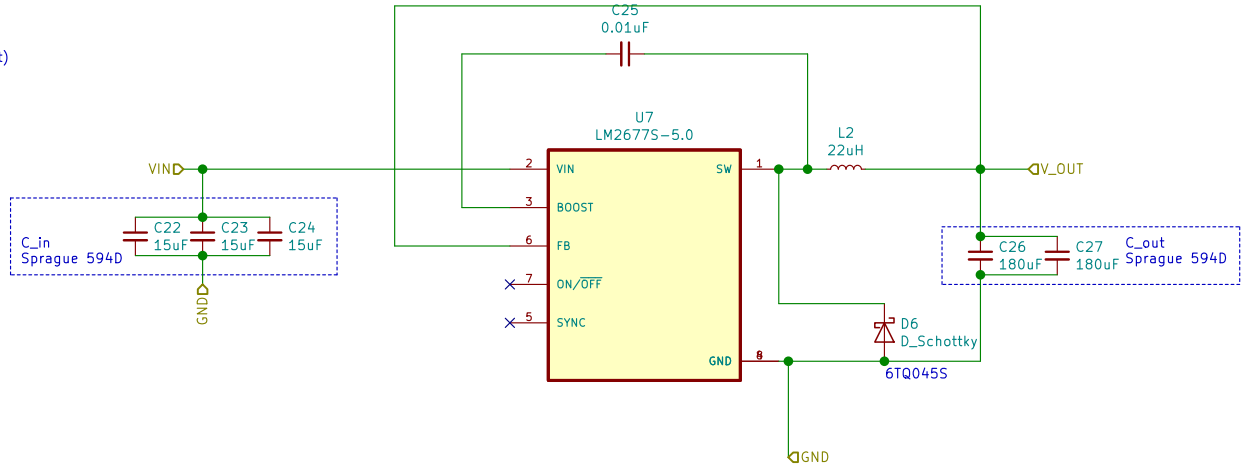
TODO: reread the datasheet and get the right specs.
At the moment i do not have the time nor patience to
complete the power side of things so i'm gonna move
this into a hierarchical sheet and forget about it for now

Inductors (L41, 22uH, 5.22A max)
- Pulse Engineering P0841

C_out:
- 3xC2 (AVX), 2xC7 (Sprague), 3xC4 (kemet)

C_in:
- 3xC13 (sprague), 4xC12(kemet)

Diode:
- MBRB1545CT
- 6TQ045S



Sheet: /BEC (servo)/		
File: 5v_bec.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad 5.1.5+dfsg1-2build2		Id: 7/8

TODO: reread the datasheet and get the right specs.
At the moment i do not have the time nor patience to
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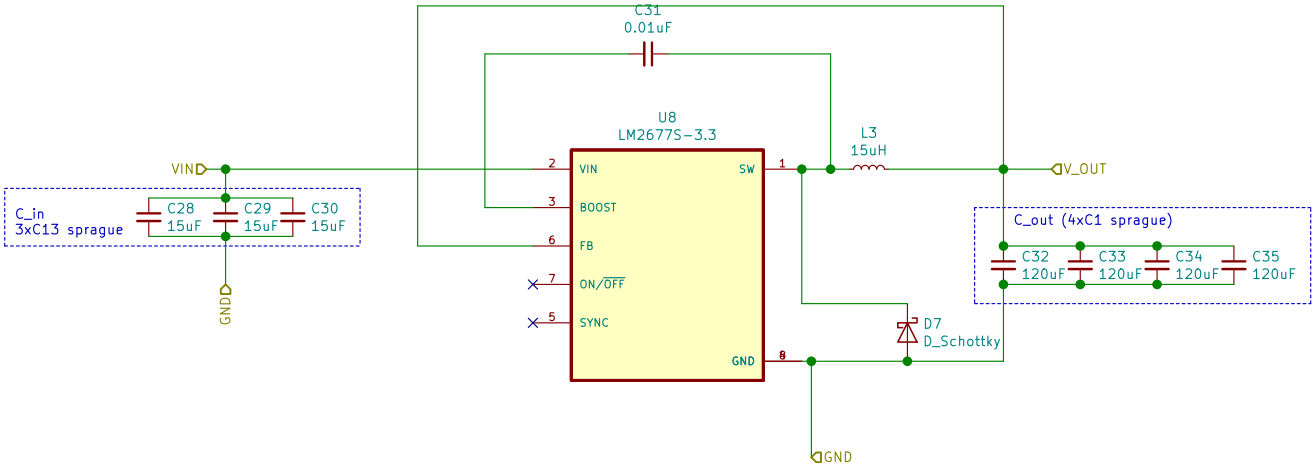
this into a hierarchical sheet and forget about it for now



Inductors (L46, 15uH, 5.6A max)
- Pulse Engineering P0846
- Coilcraft DO5022P-153HC

C_out:
- 4xC1(avx tps), 4xC1 (sprague), 4xC3 (kemet)

C_in:
- 3xC13 (sprague), 4xC12(kemet)

Diode:
- 6TQ045S

Sheet: /3v3_pwr/
File: 3v3_bec.sch

Title:

Size: A4 | Date: | **Rev:**

KiCad E.D.A. kicad 5.1.5+dfsg1-2build2 | Id: 8/8