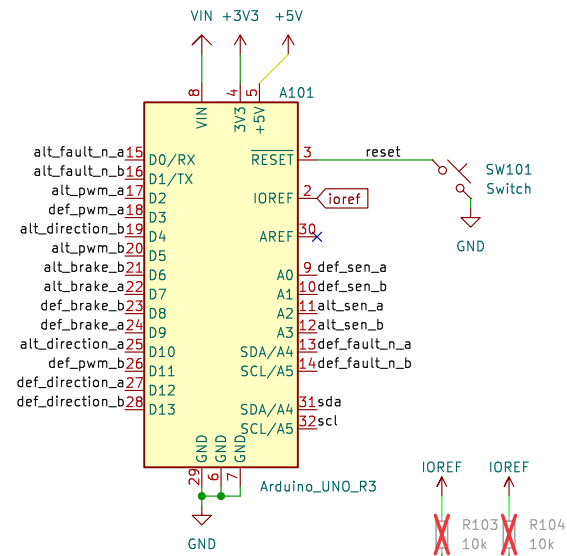


Arduino Header



Standard Motorshield Assignments:

Channel A:
D12 – Direction
D9 – PWM (work duty)
D8 – Brake
A0 – current sensing.

Channel B:

D13 – Direction
D11 – PWM (work duty)
D8 – Brake
A1 – current sensing

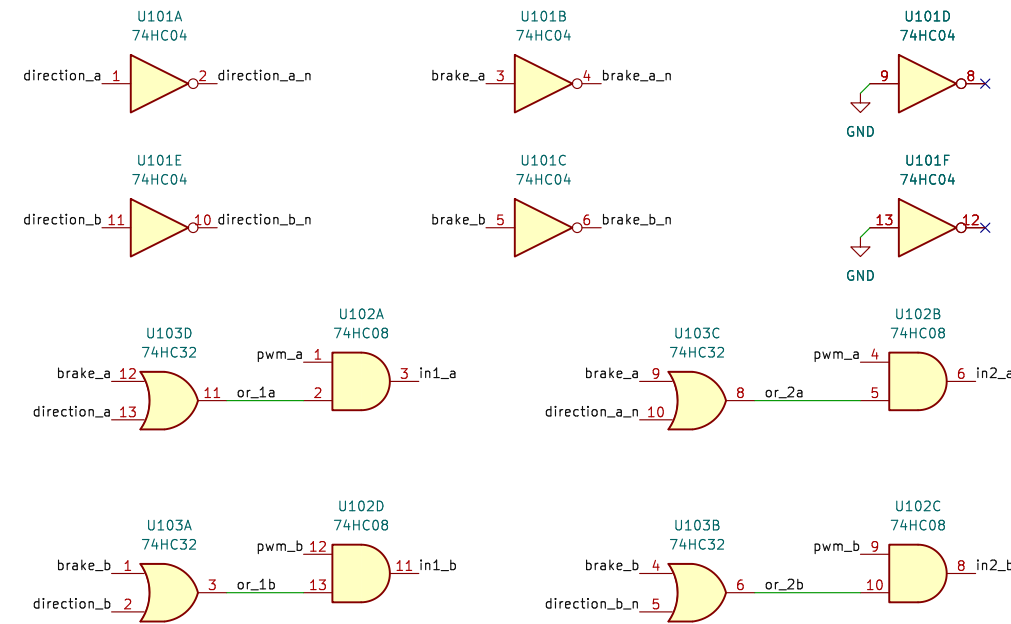
DRV8874 control logic:

PH/EN Mode (PMODE Low)
nSleep/EN/PH out1/2
0 X X ZZ
1 0 X 00
1 1 0 01
1 1 1 10

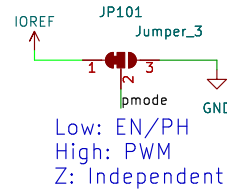
nSleep = high / pwm
EN = not brake / pwm
PH = dir

PWM Mode (PMODE High)
nSleep/in1/2 out1/2
0 X X ZZ
1 0 0 ZZ
1 0 1 01
1 1 0 10
1 1 1 00

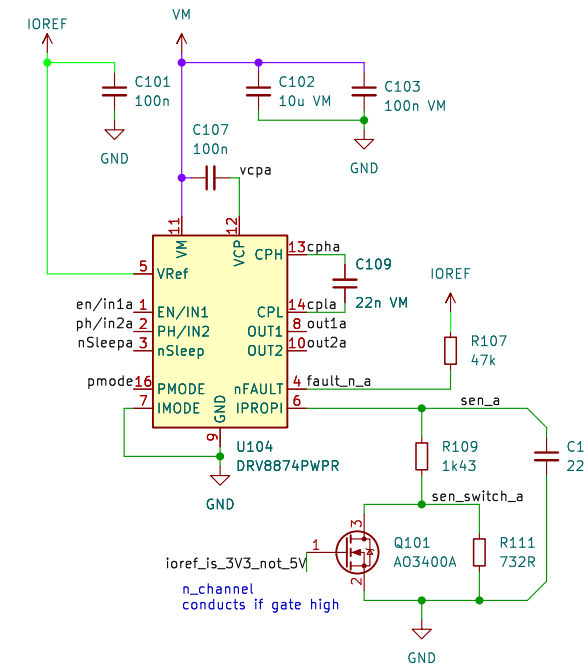
nSleep = high
in1 = pwm and (dir or brake)
in2 = pwm and (not dir or brake)



DRV8874 Mode Select



DRV8874 Motor Driver



DRV8874 (max 6A) Current Sensing:
V_{prop} is limited to V_{Ref} inside DRV8874

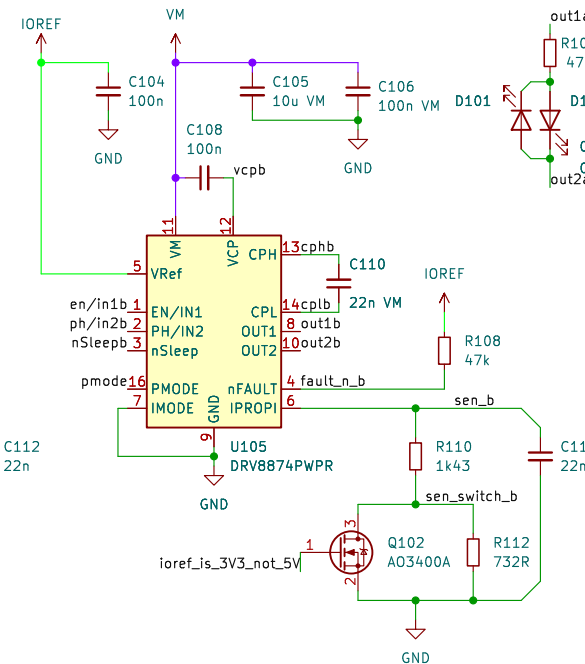
$$5V = 0.000455 \cdot (1430 + 732) \cdot A \Rightarrow A = 5.08$$

$$3.3V = 0.000455 \cdot 1430 \cdot A \Rightarrow A = 5.07$$

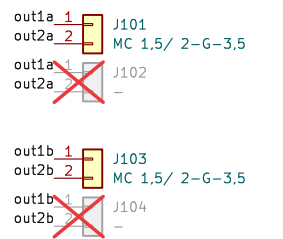
if subbed with DRV8876 (max 3.5A):
 $5V = 0.001 \cdot (x + y) \cdot A \Rightarrow A =$
 $3.3V = 0.001 \cdot x \cdot A \Rightarrow A =$

candidate values:
2k+1k 3.63/1.65 1%
1k8+(680+220) 4.0/1.83 1%
1k5+(680+100) 4.8/2.2 0.2%
1k43+732(extend.) 5.08 0.1% <-- USED HERE
(1k2+120)+680 5.5/2.5 0.0%
1k2+(470+180) 5.9/2.7 2%
1k2+620(extend.) 5.9/2.7 0.1%
1k1+560 (0603) 6.6/3.0 0.4%

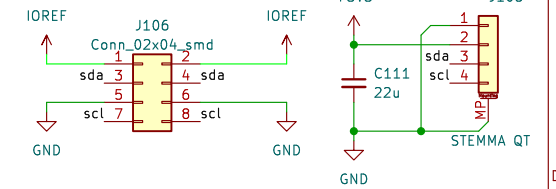
Track LEDs



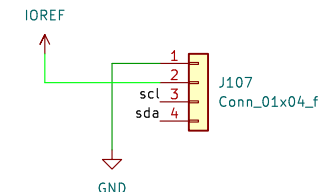
Track Connector



i2c headers



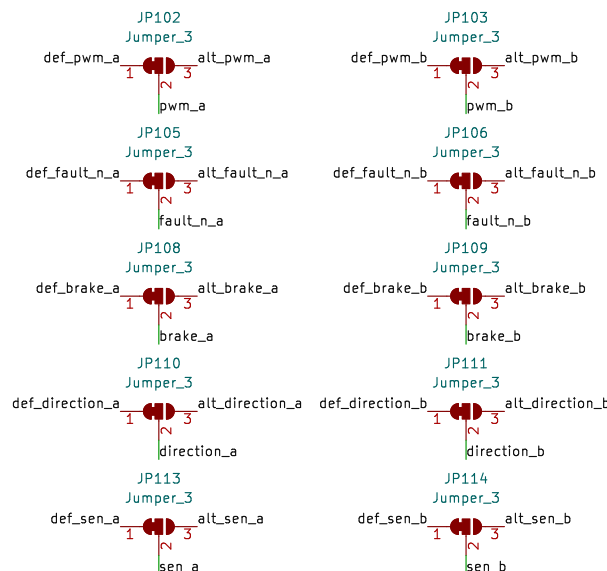
OLED Header



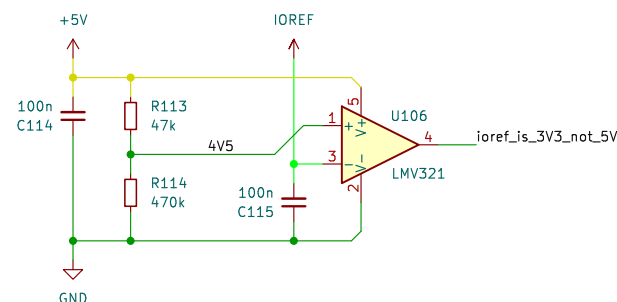
Power Sheet



Alternative pinout to allow stacking



OpAmp as IORef Comparator



- FID101 Toolinghole_jlc
- FID102 Toolinghole_jlc
- FID103 Toolinghole_jlc
- FID104 Fiducial
- FID105 Fiducial
- FID106 Fiducial

Engineer: Erwin Peterlin
semify-eda.com

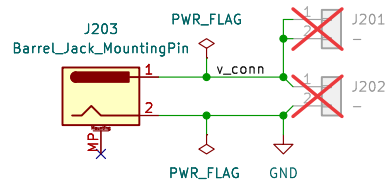
Sheet: /
File: motor-shield.kicad_sch

Title: Motor Shield

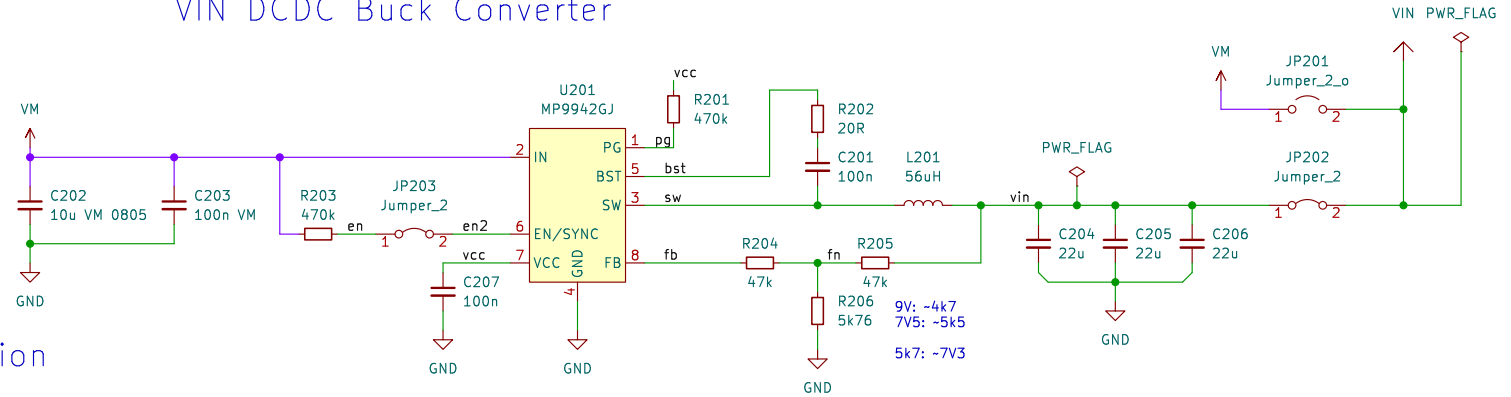
Size: A3 Date: 2023-02-23
KiCad E.D.A. kicad 7.0.1

Rev: RevA
Id: 1/2

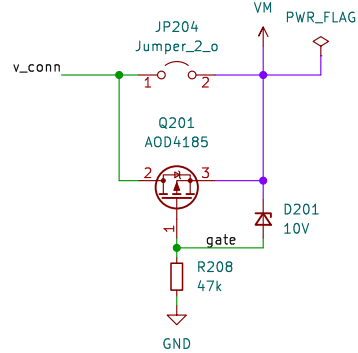
Barrel Jack



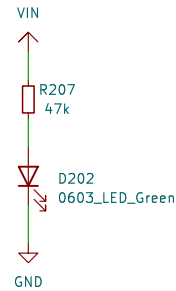
VIN DCDC Buck Converter



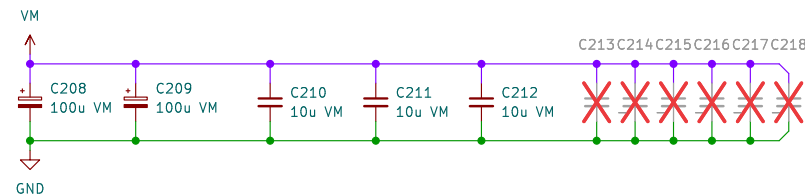
Reverse Polarity Protection



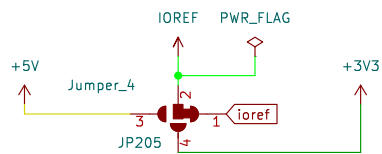
Status LED



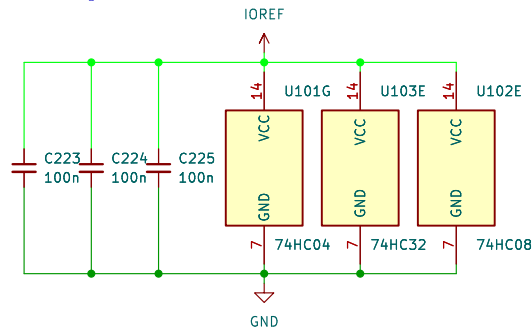
Bulk Caps



IOLef Override



Logic IC Power



Engineer: Erwin Peterlin
semify-eda.com
Sheet: /Power/
File: power.kicad_sch

Title: Motor Shield

Size: A4 Date: 2023-02-23

KiCad E.D.A. kicad 7.0.1

Rev: RevA

Id: 2/2