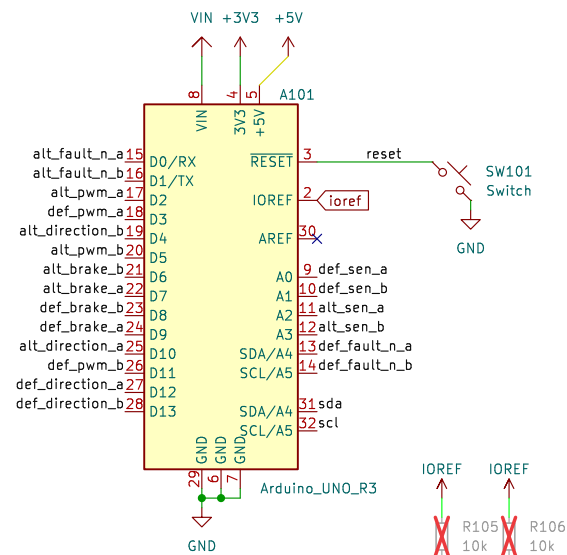


Arduino Header



Standard Motorshield Assignments:

Channel A:
D12 – Direction
D3 – PWM (work duty)
D9 – Brake
A0 – current sensing.

Channel B:

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

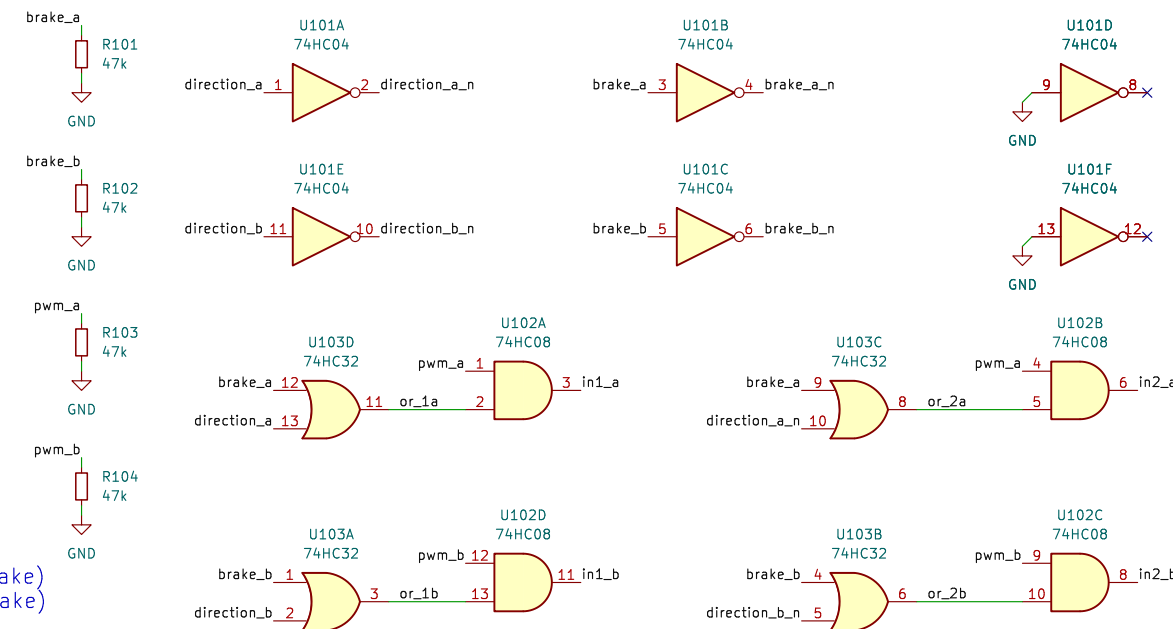
DRV8874 control logic:

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

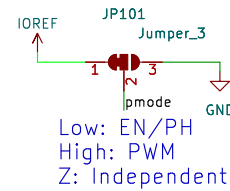
nSleep = high / pwm
EN = not brake / pwm
PH = dir

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

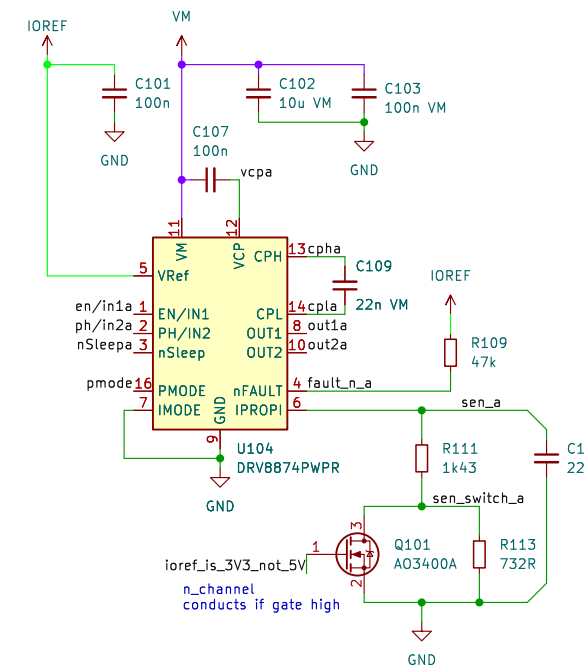
nSleep = high
in1 = pwm and (dir or brake)
in2 = pwm and (not dir or brake)



DRV8874 Mode Select



DRV8874 Motor Driver



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

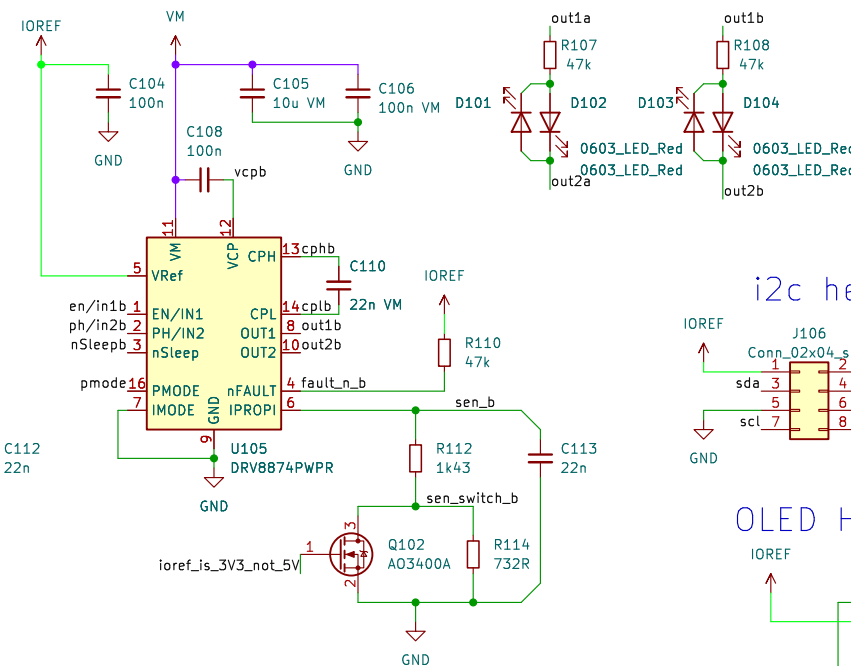
$$5V = 0.000455 \cdot (1430 + 732) \cdot A \Rightarrow A = 5.08$$

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

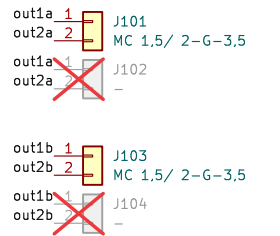
if subbed with DRV8876 (max 3.5A):
 $5V = 0.001 \cdot (x + y) \cdot A \Rightarrow A =$
 $3.3V = 0.001 \cdot x \cdot A \Rightarrow A =$

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%

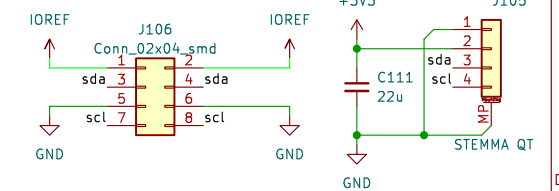
Track LEDs



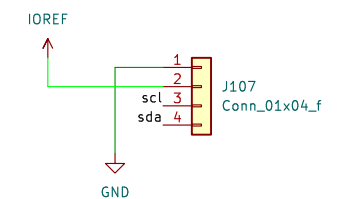
Track Connector



i2c headers



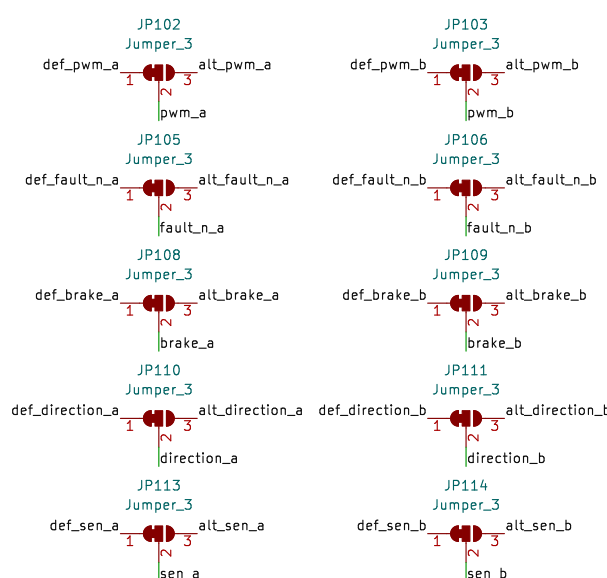
OLED Header



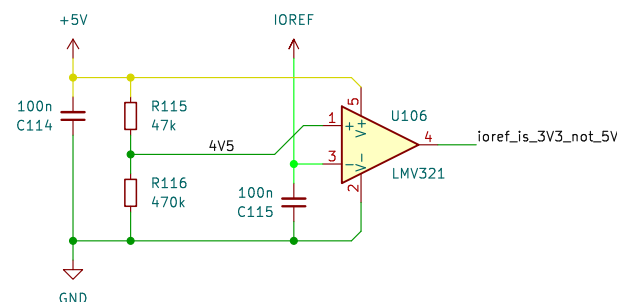
Power Sheet



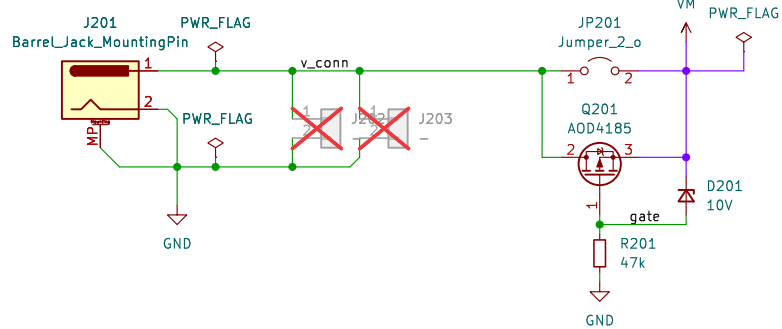
Alternative pinout to allow stacking



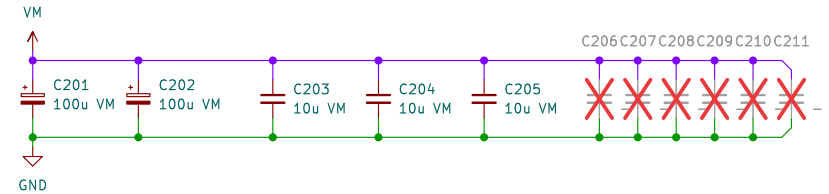
OpAmp as IORef Comparator



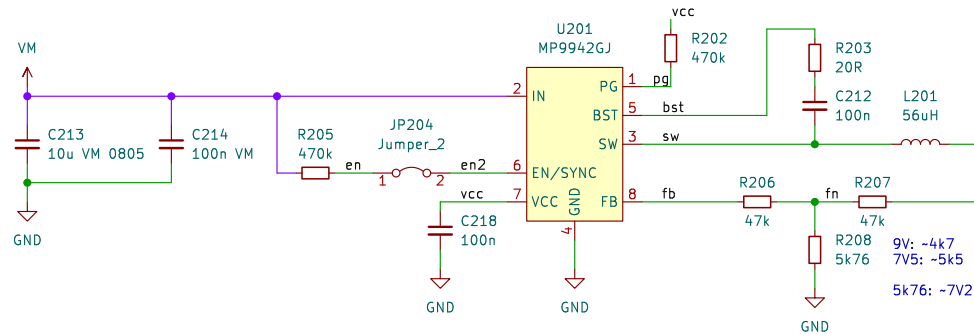
Barrel Jack



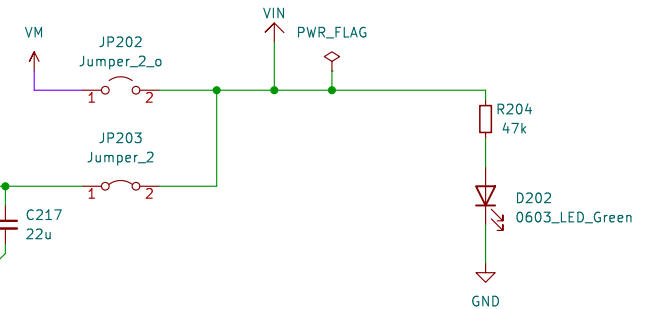
Reverse Polarity Protection



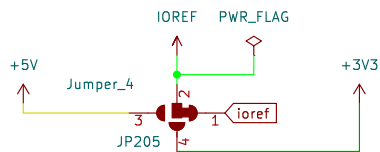
VIN DCDC Buck Converter



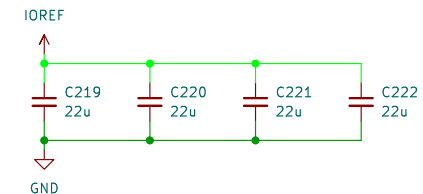
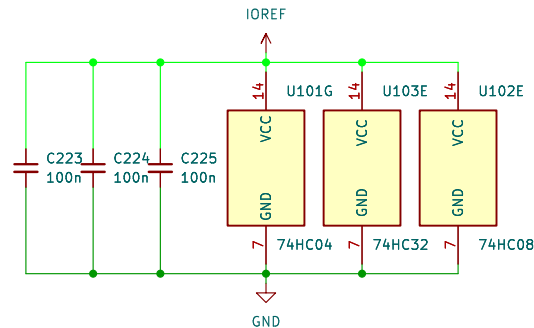
Status LED



IORef Override



Logic IC Power



Licensed under
CERN-OHL-W v2 or later

Engineer: Erwin Peterlin
semify-edu.com

Sheet: /Power/
File: power.kicad_sch

Title: EX-Motorshield8874

Size: A4 Date: 2023-02-23

KiCad E.D.A. eeschema 7.0.6

Rev: RevA

Id: 2/2

