#### Arduino Header VIN +3V3 +5V SW101 Switch alt\_fault\_n\_a<u>15</u> DO/RX RESET alt\_fault\_n\_b16 D1/TX alt\_pwm\_a<mark>17</mark> GND IOREF 2 ioref def\_pwm\_a18 D3 alt\_direction\_b19 D4 AREF 30 alt\_pwm\_b A0 9 def\_sen\_a A1 10def\_sen\_b A2 11 alt\_sen\_a A3 12 alt\_sen\_b A3 13 def fault n alt brake b2 alt\_brake\_a22 def\_brake\_b23 D8 def\_brake\_a24 D9 alt\_direction\_a25 D10 SDA/A4 SCL/A5 14def\_fault\_n\_b def\_pwm\_b26 D11 def\_direction\_a27 D12 def\_direction\_b28 D13 SDA/A4 31 sda

Arduino\_UNO\_R3

R101 R102 10k R102 10k sda scl

#### Standard Motorshield Assignments: Channel A:

D12 - Direction D3 - PWM (work duty) D9 - Brake AO - 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 00 1 0 X 1 1 0 01 1 1 1 10

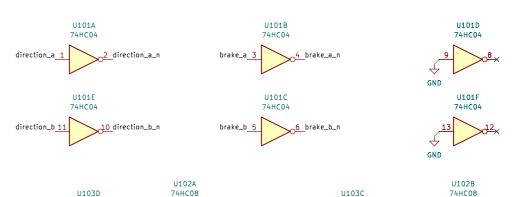
nSleep = high / pwm EN = not brake / pwm = dir

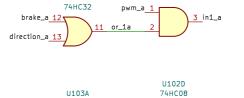
PWM Mode (PMODE High) nSleep/in1/2 out1/2 0 X X ZZ ZZ 1 0 0 1 0 1 01 1 1 0 10

1 1 1

nSleep = highin1 = pwm and ( dir or brake) in2 = pwm and (not dir or braké)

00





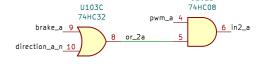
pwm\_b\_12\_

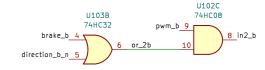
11 in1\_b

74HC32

brake\_b 1 v

direction b 2

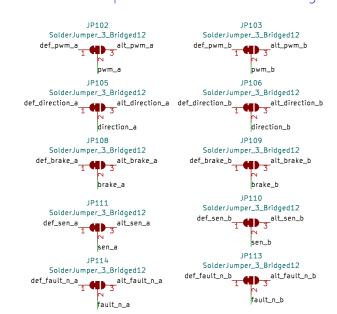




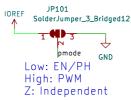
# Alternative pinout to allow stacking

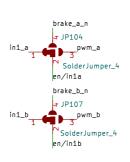
29

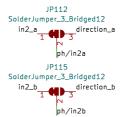
GND

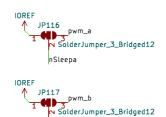


# DRV8874 Mode Select



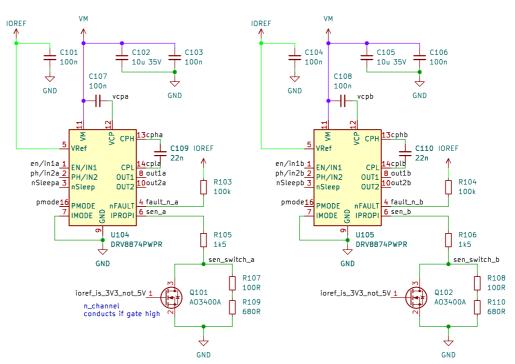






nSleepb

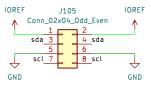
## DRV8874 Motor Driver



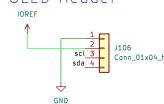




### i2c headers



# OLED Header



## DRV8874 Current Sensing:

#### 0.000455 A\_prop per A

5V = 0.000455\*(1500+780)\*A => A=4,823.3V = 0.000455\*1500\*A => A=4.83

V\_prop is limited to VRef inside DRV8874

# Power Sheet

File: power.kicad\_sch

Rev: Prototype A

Engineer: Erwin Peterlin

## semify-eda.com

Sheet: / File: motor—shield.kicad\_sch

O FID101
Toolinghole\_jlc
O FID102
Toolinghole\_jlc
O FID103
Toolinghole\_jlc

O FID104 Fiducial

O FID105 Fiducial

O FID106 Fiducial

# Title: Motor Shield (DCC-EX compatible) Size: A3 Date: 2023-02-06 KiCad E.D.A. kicad (7.0.0)

# OpAmp as IORef Comparator

