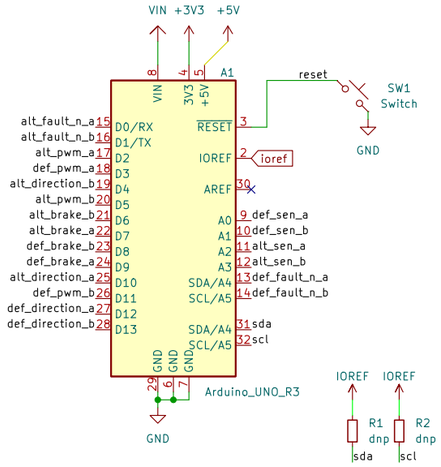
Arduino Header



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

New Additions:
D4 – fault_n_a
D10 – fault_n_b

DRV8874 control logic:

PH/EN Mode (PMODE Low)

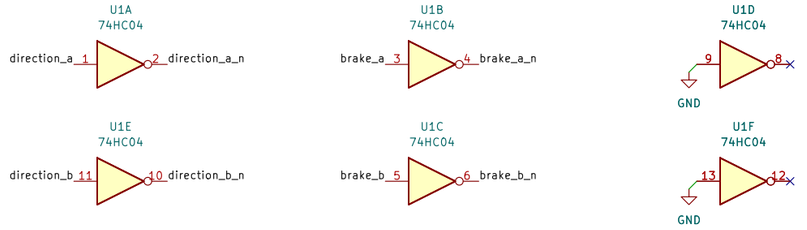
nSleep	EN	PH	out1/2
0	X	X	ZZ
1	0	X	00
1	1	0	01
1	1	1	10

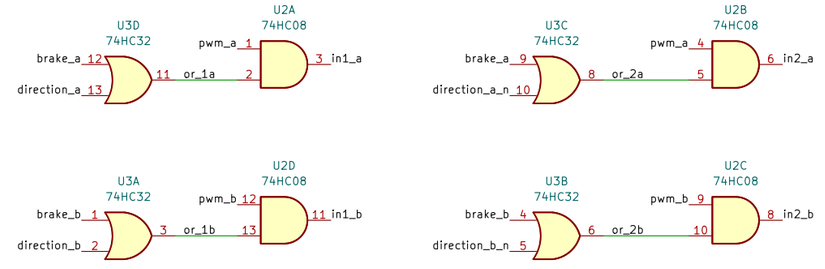
nSleep = high / pwm
EN = not brake / pwm
PH = dir

PWM Mode (PMODE High)

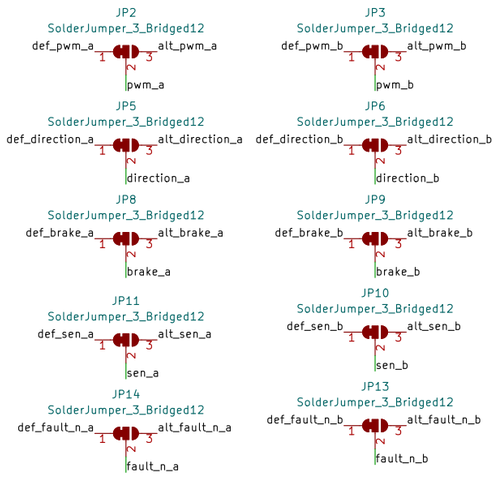
nSleep	in1/2		out1/2
0	X	X	ZZ
1	0	0	ZZ
1	0	1	01
1	1	0	10
1	1	1	00

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

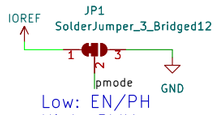




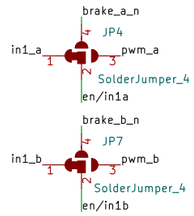
Alternative pinout to allow stacking

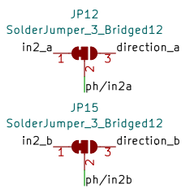


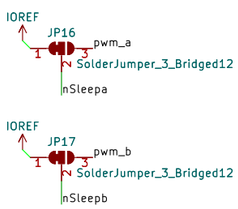
DRV8874 Mode Select



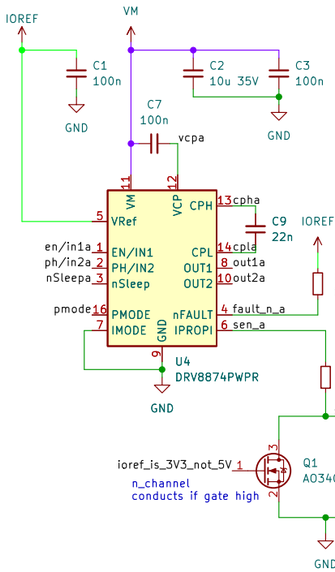
Low: EN/PH
High: PWM
Z: Independent

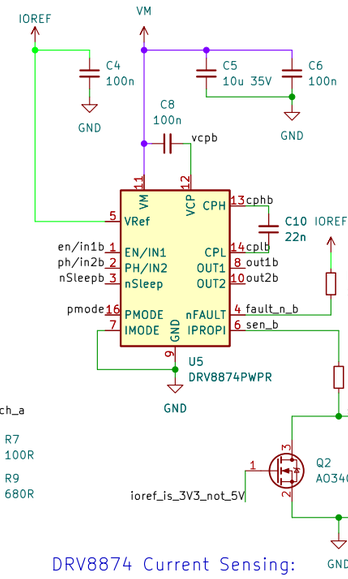




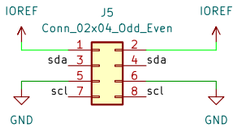


DRV8874 Motor Driver

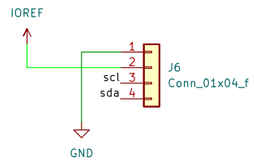




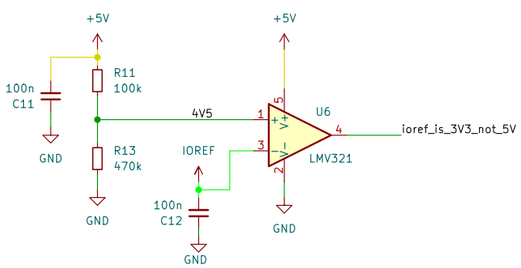
i2c headers



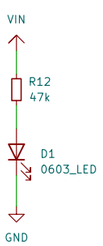
OLED Header



OpAmp as IORef Comparator



Status LEDs



DRV8874 Current Sensing:

0.000455 A_prop per A

5V = 0.000455*(1500+780)*A => A=4,82
3,3V = 0.000455* 1500 *A => A=4,83

V_prop is limited to VRef inside DRV8874

Power Sheet

FID1 Toolinghole_jlc
FID2 Toolinghole_jlc
FID3 Toolinghole_jlc

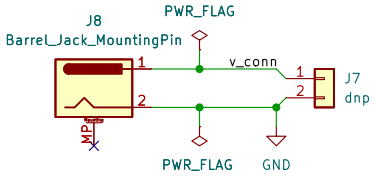
Engineer: Erwin Peterlin
semify-eda.com

Sheet: /
File: motor-shield.kicad_sch

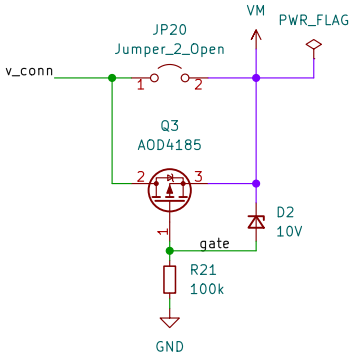
Title: Motor Shield (DCC-EX compatible)

Size: A3	Date: 2023-02-06	Rev: Prototype A
KiCad E.D.A. kicad (6.0.11)		Id: 1/2

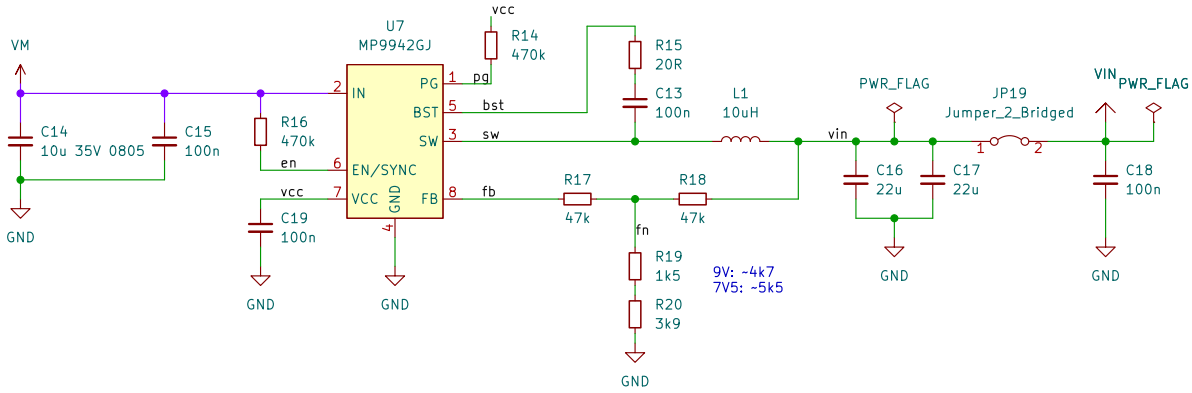
Barrel Jack



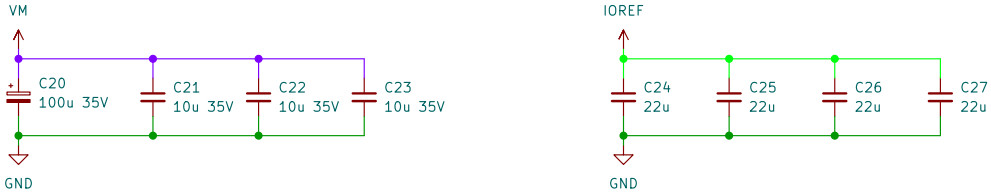
Reverse Polarity Protection

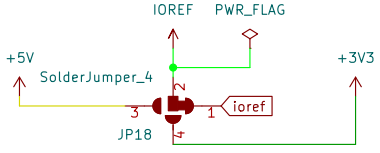


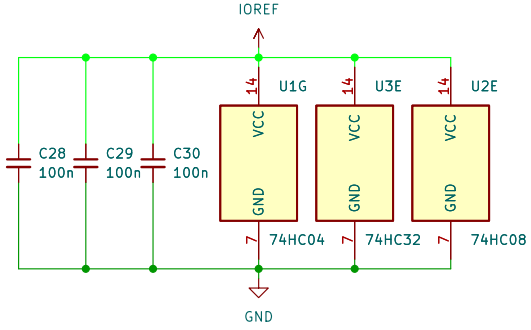
VIN DCDC Buck Converter



Bulk Caps







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

Title: Motor Shield (DCC-EX compatible)

Size: A4	Date: 2023-02-06	**Rev: Prototype A**
KiCad E.D.A. kicad (6.0.11)		Id: 2/2