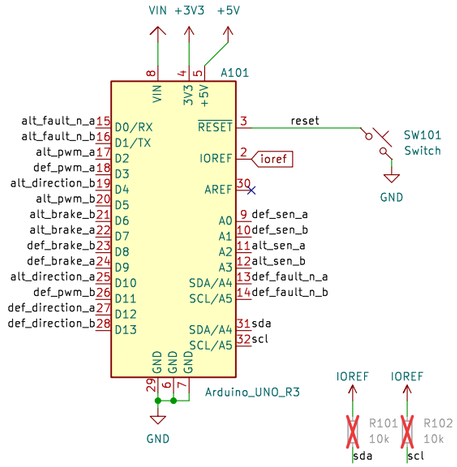
Arduino Header



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)

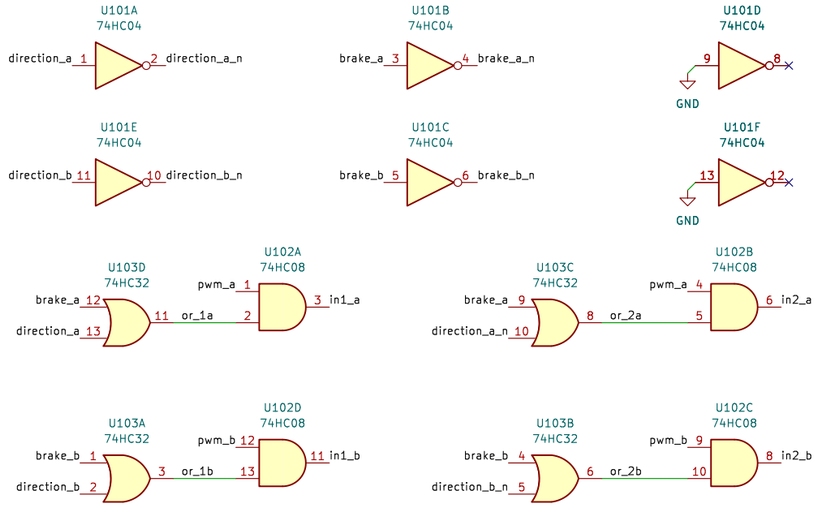
nSleep	EN	PH	out1/2
0	X	X	ZZ
1	0	X	00
1	1	0	01
1	1	1	10

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

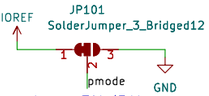
PWM Mode (PMODE High)

nSleep	in1	in2	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)

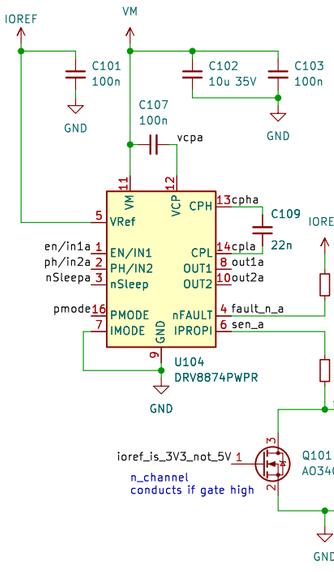


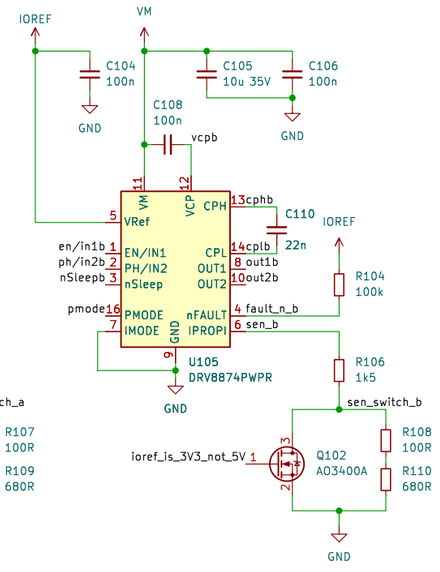
DRV8874 Mode Select



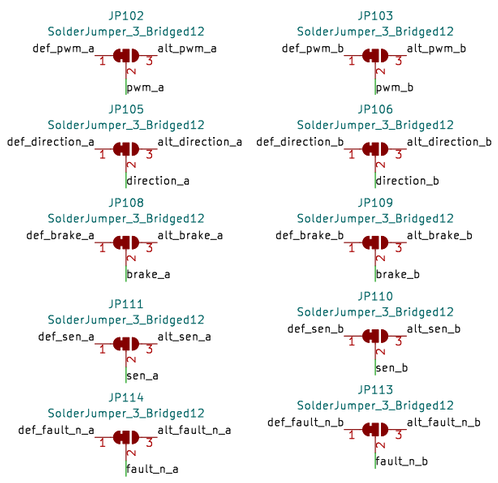
Low: EN/PH
High: PWM
Z: Independent

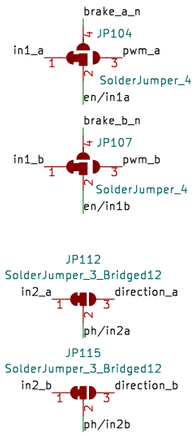
DRV8874 Motor Driver

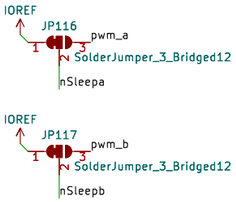




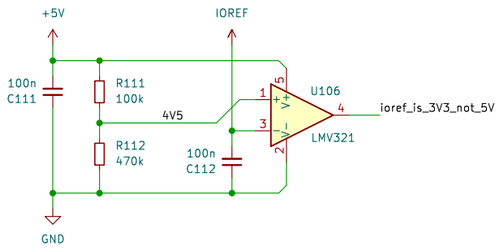
Alternative pinout to allow stacking







OpAmp as IORef Comparator



DRV8874 Current Sensing: V_prop is limited to VRef inside DRV8874

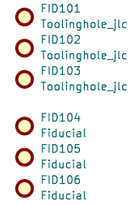
0.000455 A_prop per A
5V = 0.000455*(1500+780)*A => A=4,82
3,3V = 0.000455* 1500 *A => A=4,83

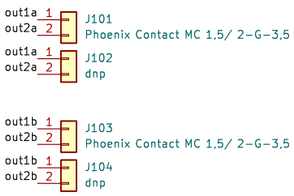
if subbed with DRV8876:
5V = 0.001*(1500+780)*A => A=2,2
3,3V = 0.001* 1500 *A => A=2,2

_ _ _ _ _ _ _ _ _
other value candidates:

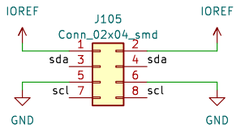
3v3 1k3 5.58
5v 1k3+680 5.55

3v3 1k3 2.54
5v 1k3+680 2.53

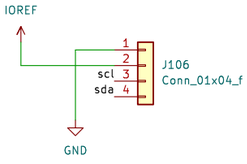




i2c headers



OLED Header



Power Sheet

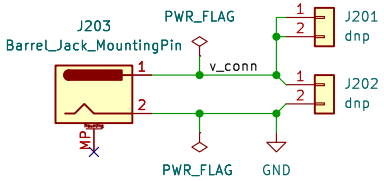
Power

File: power.kicad_sch

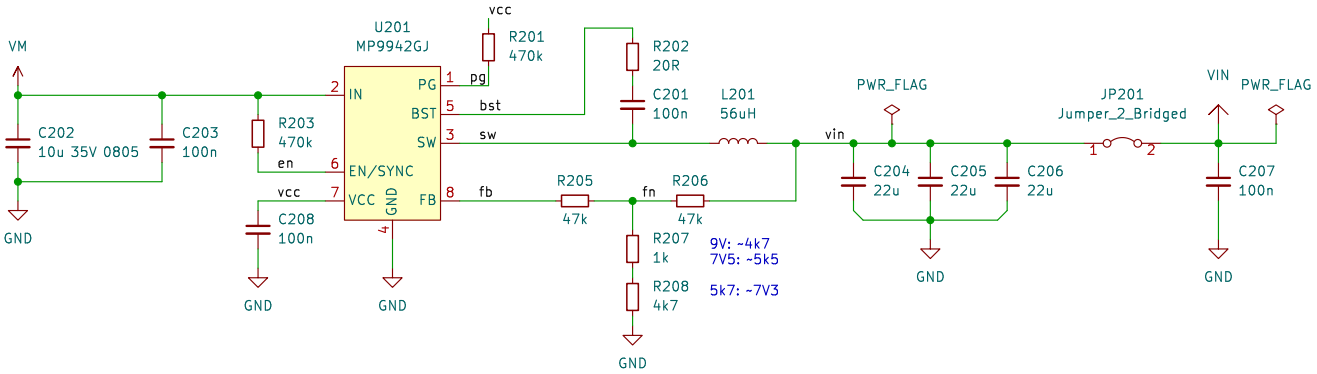
Engineer: Erwin Peterlin
semify-eda.com
Sheet: /
File: motor-shield.kicad_sch
Title: Motor Shield (DCC-EX compatible)

Size: A3	Date: 2023-02-15	**Rev: Prototype B**
KiCad E.D.A. kicad (7.0.0)		Id: 1/2

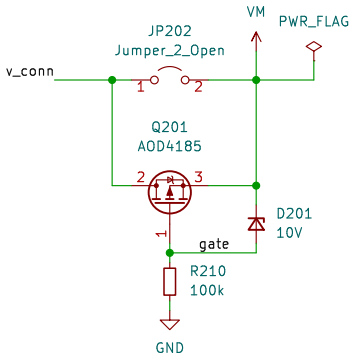
Barrel Jack



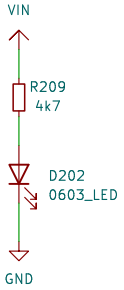
VIN DCDC Buck Converter



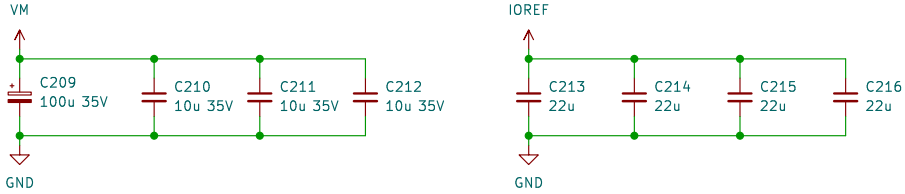
Reverse Polarity Protection



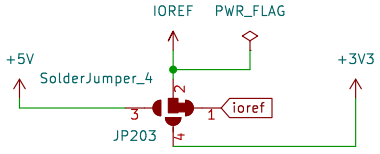
Status LEDs



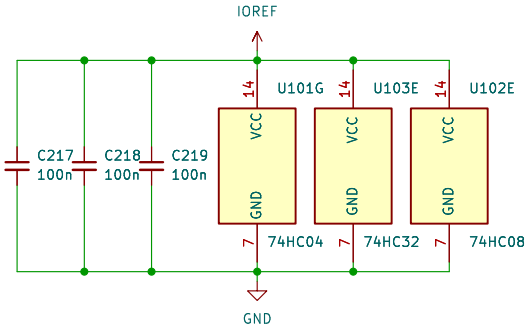
Bulk Caps



IORef Override



Logic IC Power



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

Title: Motor Shield (DCC-EX compatible)

Size: A4	Date: 2023-02-15	**Rev: Prototype A**
KiCad E.D.A. kicad (7.0.0)		Id: 2/2