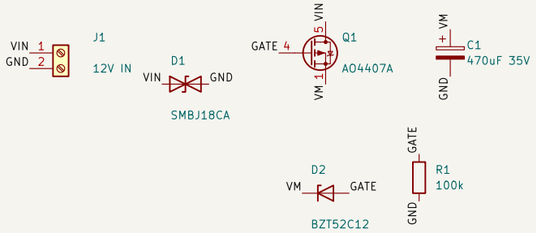
MaxxFan FOC board: MCF8316D sensorless FOC fan driver + ESP32-C3 SuperMini + DRV8871 lid driver + 12->5 V buck

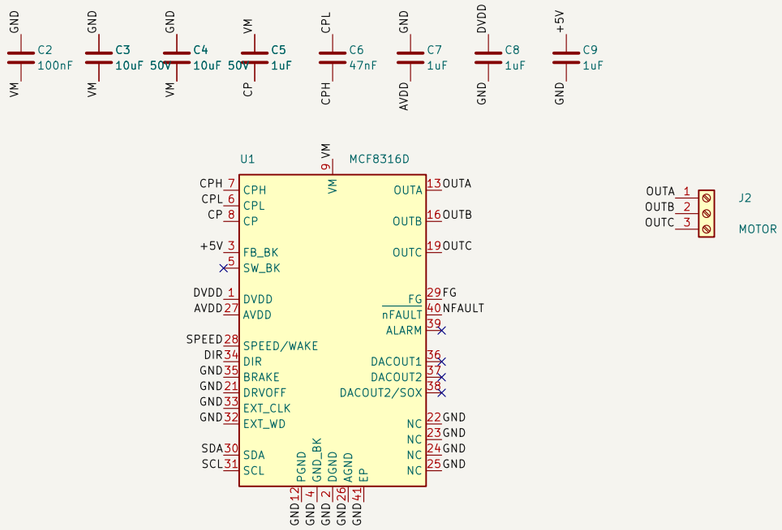
Net labels join pins with the same name. ESP pins: G0 SCL, G1 SDA, G3 FG, G4 knob+SPEED, G5/G6 lid IN2/IN1, G7 dir+DIR, G10 nFAULT, G20 lid button, G21 DS18B20.

12 V in: SMBJ18CA clamp, AO4407A reverse-polarity FET (12 V zener on its gate), 470 uF bulk

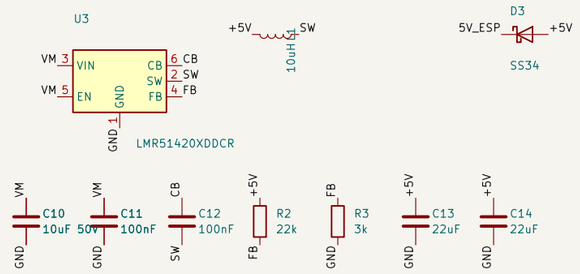


MCF8316D (SLLSFX9A table 10-1). FB_BK on the board 5 V with BUCK_DIS = 1 (SLLA643 3.5); unused inputs to GND

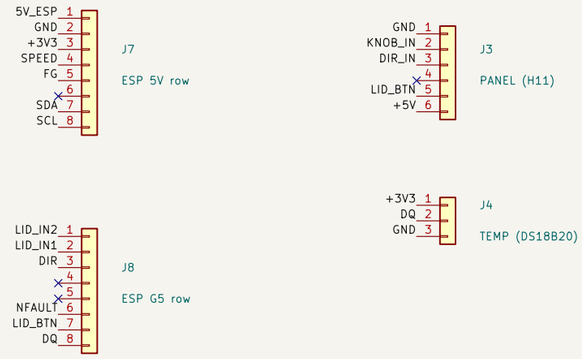
EEPROM: analog SPEED + DEV_MODE standby, so the knob drives the fan with the ESP dead; the ESP takes over over I2C (RAM)



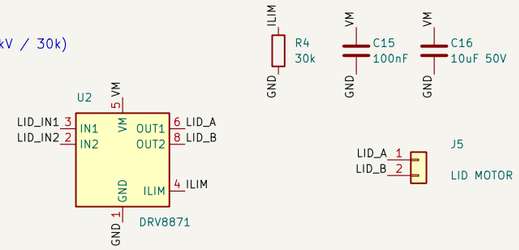
LMR51420X buck, 500 kHz forced PWM: 5 V for the panel, FB_BK and (through SS34) the SuperMini



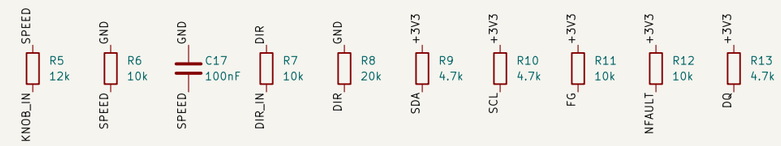
SuperMini sockets (pin 1 = USB-C end) and off-board connectors



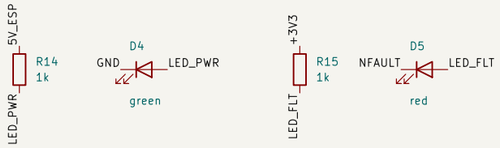
Lid motor: DRV8871, 2.1 A limit (64 kV / 30k)



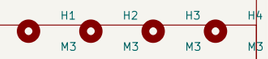
Panel dividers (knob 12k/10k + 100 nF, switch 10k/20k), I2C / FG / nFAULT / DS18B20 pull-ups to the ESP 3V3



LEDs: green = SuperMini 5 V, red = MCF8316D fault







MCF8316D FOC + ESP32-C3 SuperMini + DRV8871 + LMR51420

MaxxFan BLDC retrofit

Sheet: /

File: foc_board.kicad_sch

Title: MaxxFan FOC board

Size: A3	Date: 2026-10-27	**Rev: A**
KiCad E.D.A. 10.0.6		Id: 1/1