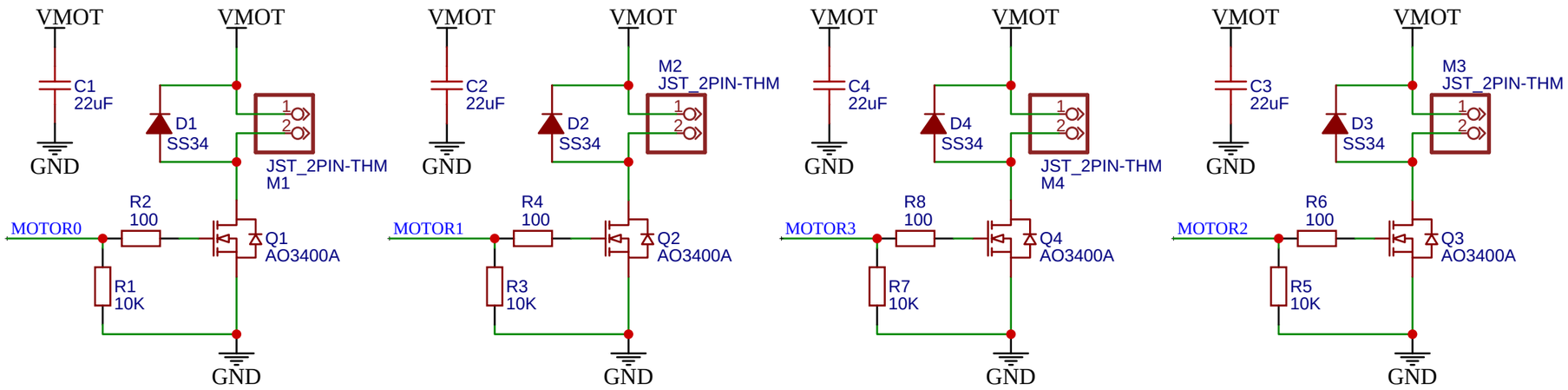
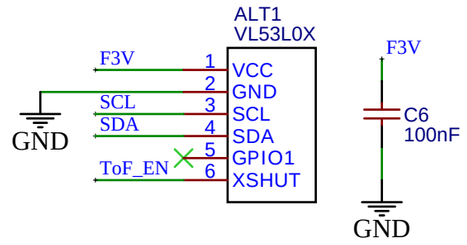
Motor and PWM based MOSFET controllers

Resistor between MOTORX and Gate prevents in-rush currents. The combination of this resistance and gate capacitance will slow down the change current thus removing the power supply ripple. The resistor between Gate and GND guarantees turned off transistors during power-up. Freewheeling snubber diode allows the opposing current from the motor coil to flow when the motors are being turned off. Note the motor connector polarity, which changes for every second motor.



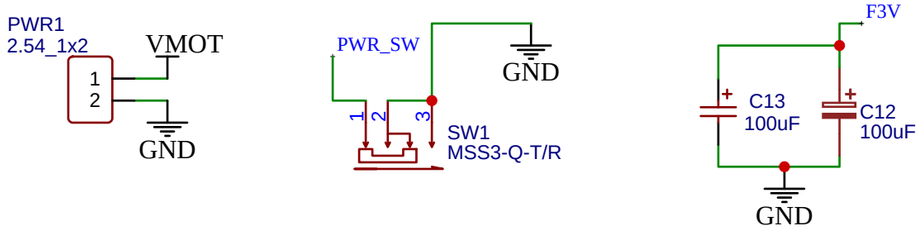
Altitude Sensor

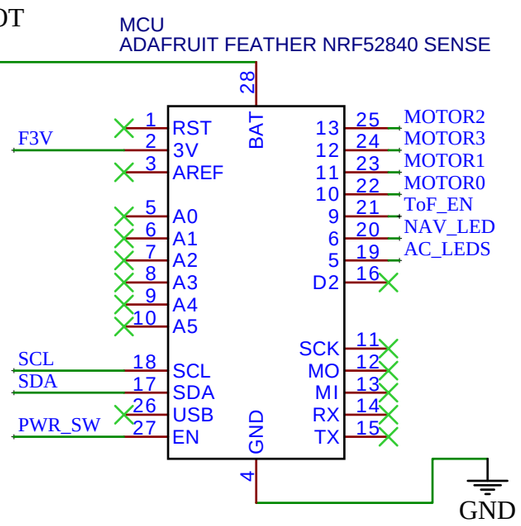
While the TOF sensor VL6180X (distance 0-20cm) would aid at landing and taking off, VL53L0X (distance 5-100cm) could be used for both of these (with some assumptions) and also hovering within up to 1m altitude.



Aux Power Tap, Switch and F3V Filter Caps

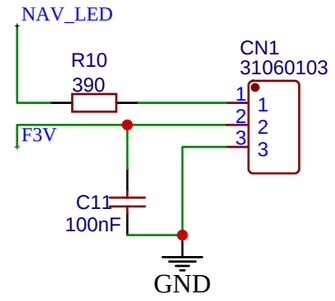
Large 100uF tantalum cap has low ESR to filter out high frequencies while extra through-hole cap and extra JST connector can be soldered optionally.





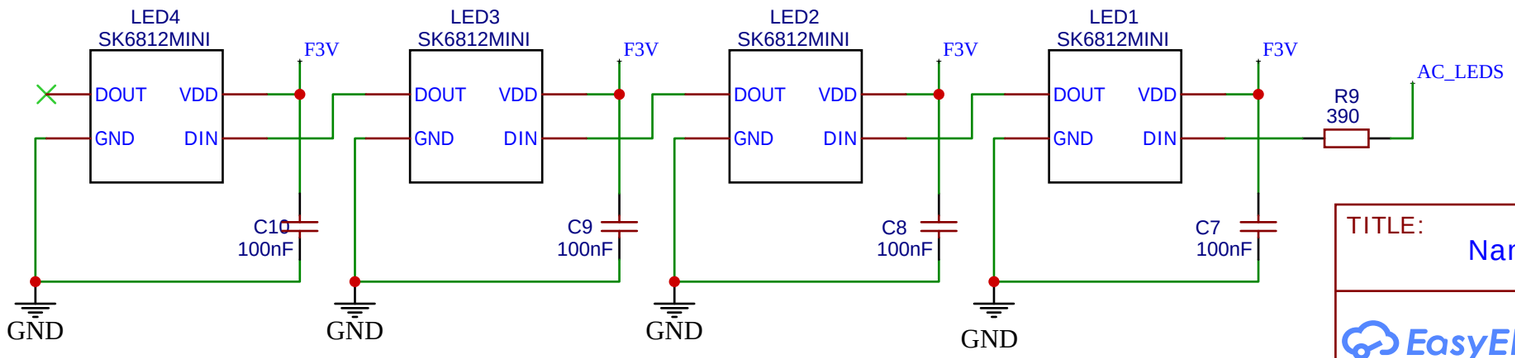
Navigation (NAV) NeoPixels

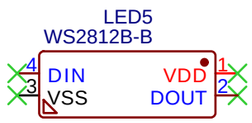
Bulkhead Connector for expanded navigation lighting



Anti-Collision (AC) NeoPixels

According to documentation of WS2812B we need 100nF decoupling capacitors placed next to each pixel. According to Adafruit Guidelines we need to place a resistor of value 300 to 500 Ohm in between Arduino and the input of the first neopixel, it has to be placed close to the Neopixel rather than Arduino. Large decoupling capacitor should be placed next to the supply. One pixel will be place on each side on top and bottom.





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