

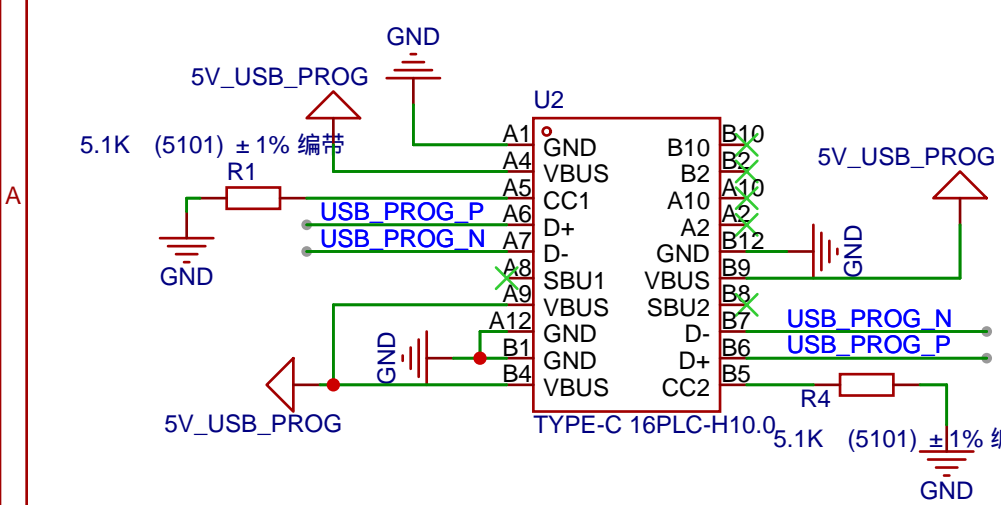
WARNING:

This revision has been manufactured and tested.

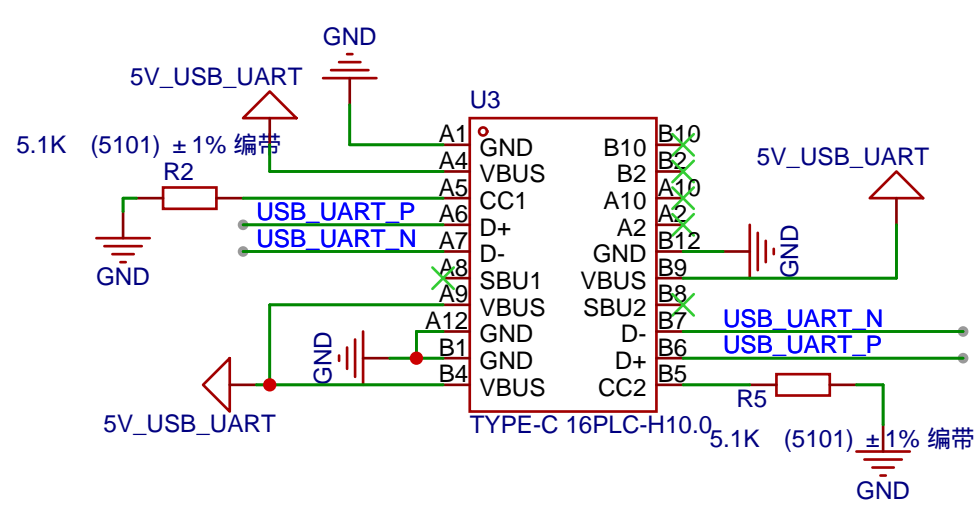
There were some minor bugs. The bugs are annotated in this version

Connectors

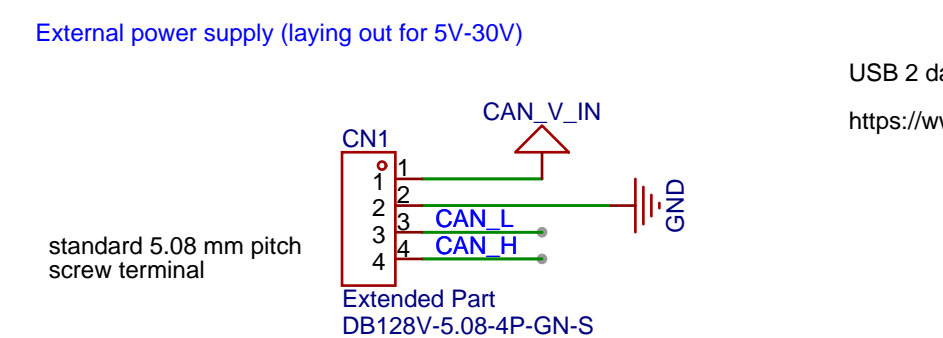
USB C Prog



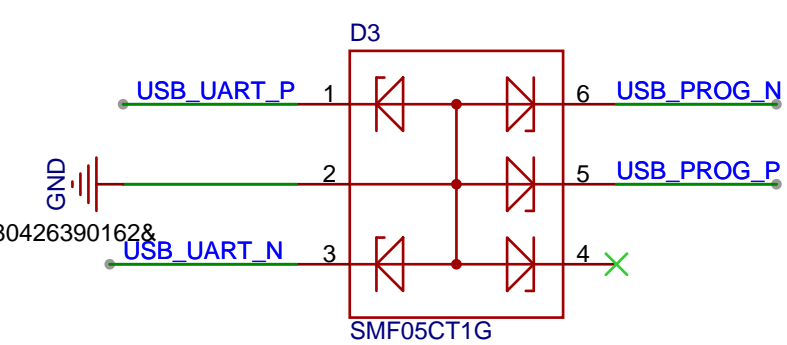
USB C UART



CAN Bus / PWR In



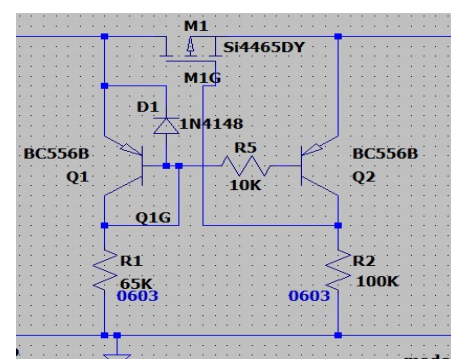
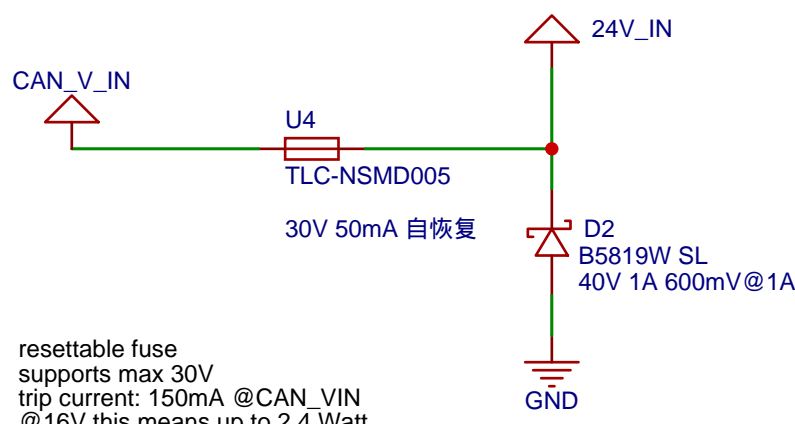
USB 2 data TVS protection
<https://www.ti.com/lit/an/slvaf82a/slvaf82a.pdf?ts=16804263901628>



Power Supply

CAN Bus

reverse polarity & short protection

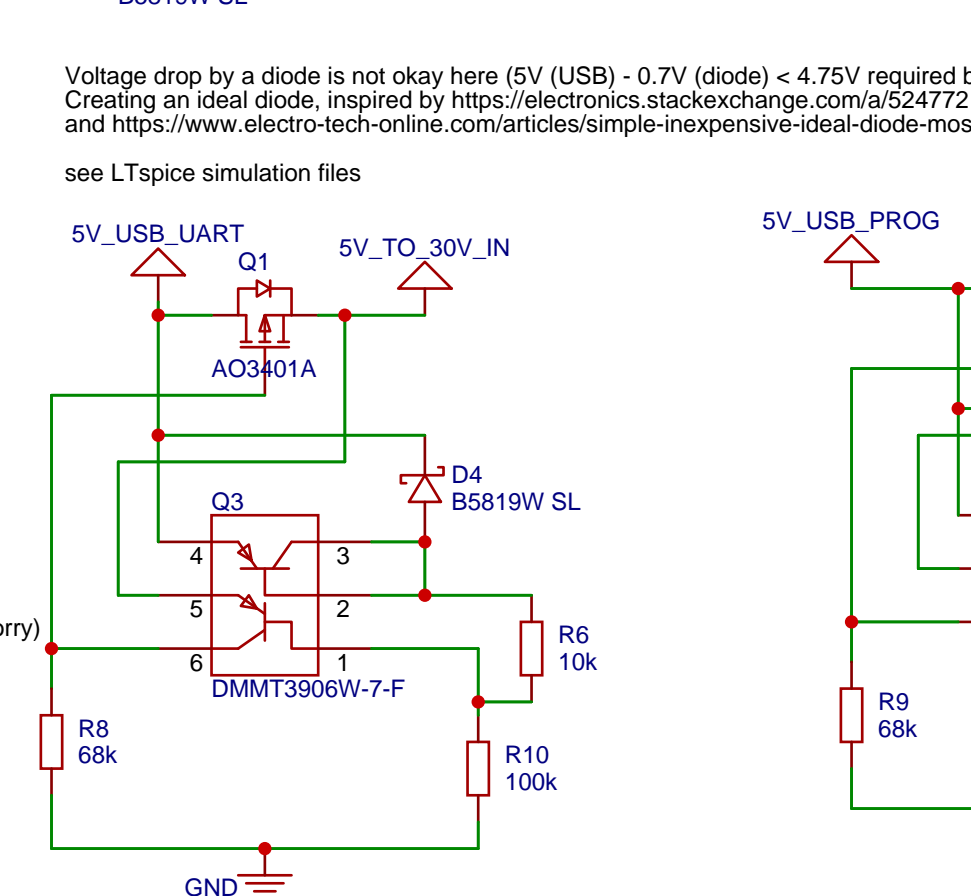


Power multiplexing: CAN OR USB OR USB

CAN Bus reverse current protection.

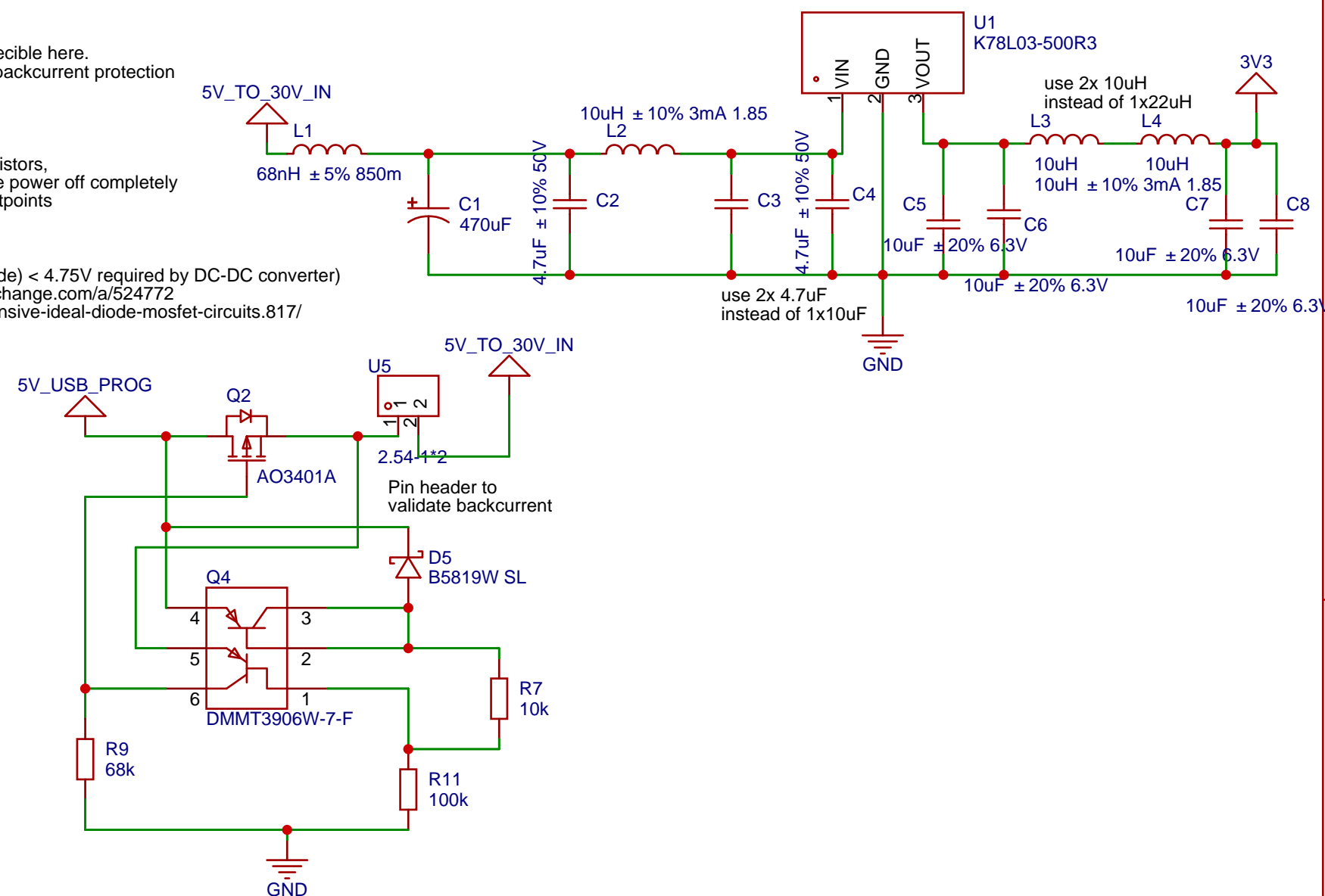
0.7V voltage drop is negligible here.
Simply using a diode for backcurrent protection

Voltage drop by a diode is not okay here (5V (USB) - 0.7V (diode) < 4.75V required by DC-DC converter)
Creating an ideal diode, inspired by <https://electronics.stackexchange.com/a/524772>
and <https://www.electro-tech-online.com/articles/simple-inexpensive-ideal-diode-mosfet-circuits.817/>
see LTspice simulation files

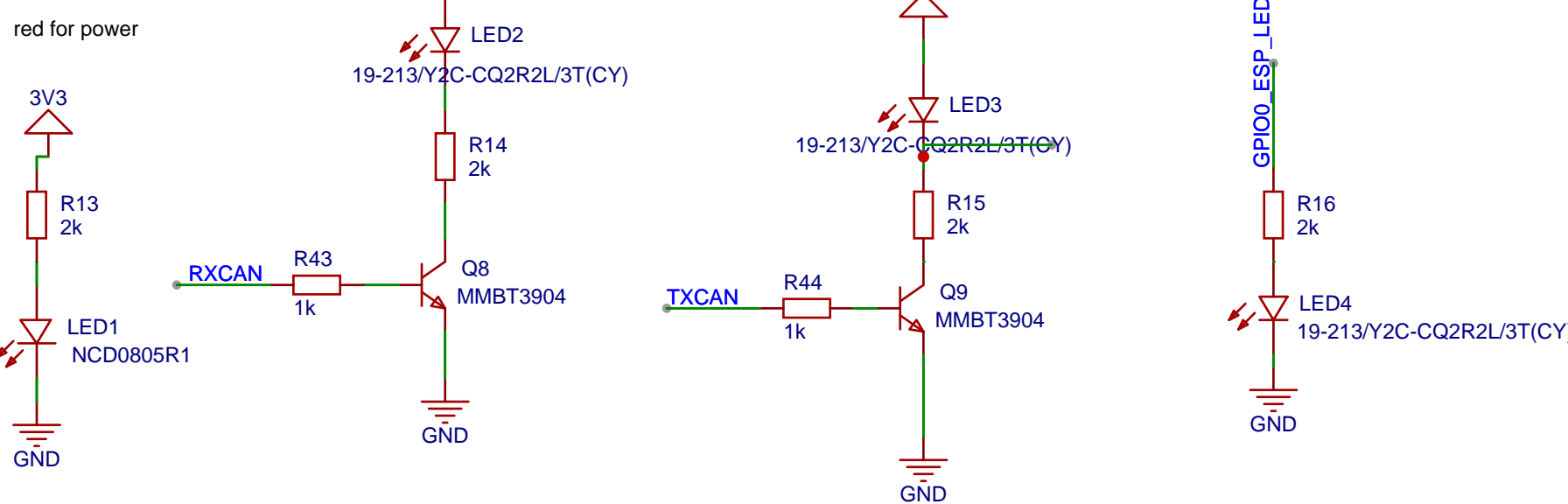


4.75V-36V to 3V3

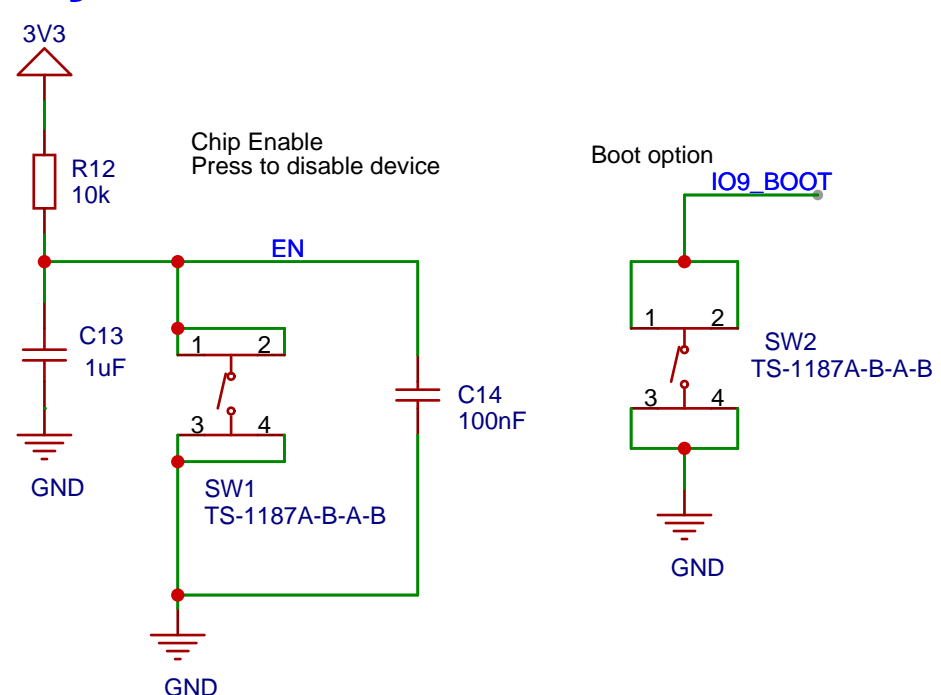
including EMC compliance



LED

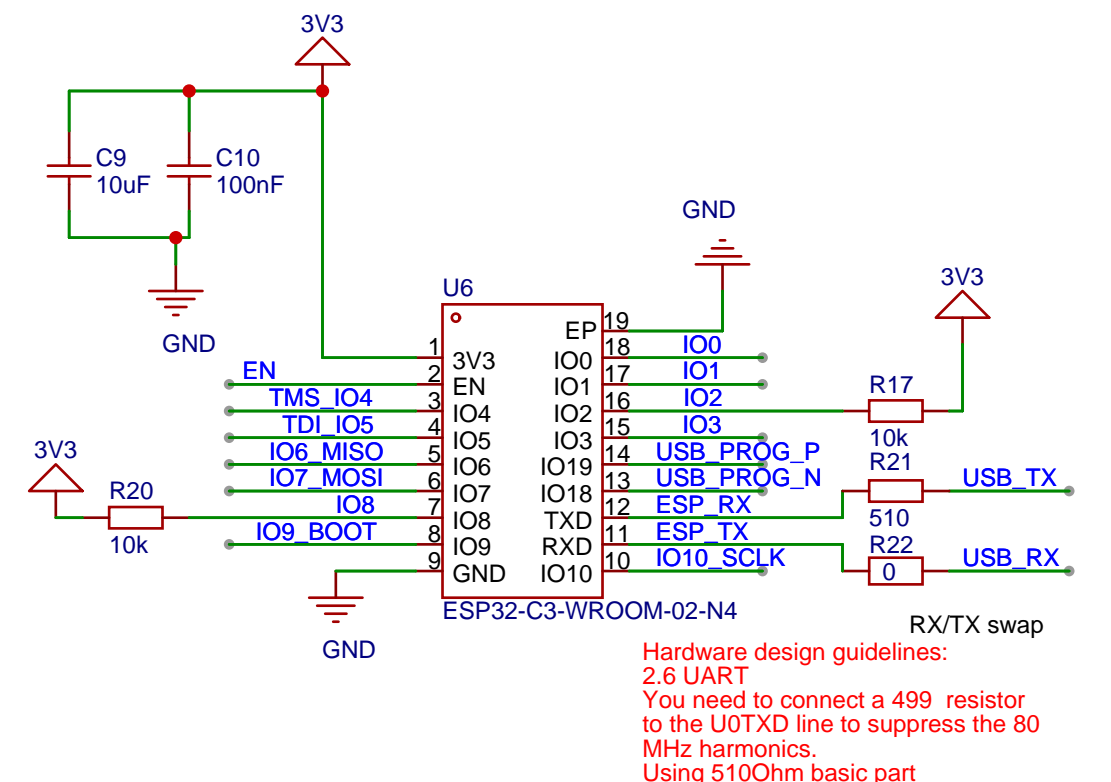


ESP32 C3 as System on Module

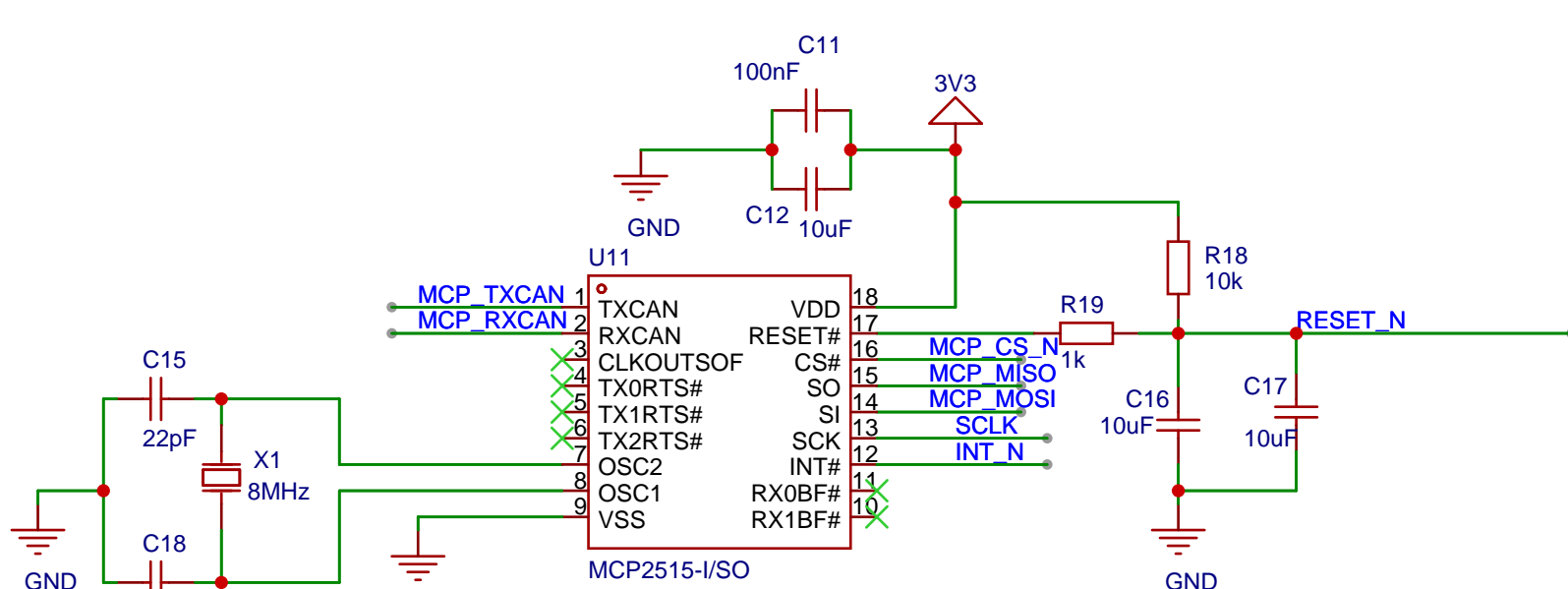


see https://www.espressif.com/sites/default/files/documentation/esp32-c3-wroom-02_datasheet_en.pdf

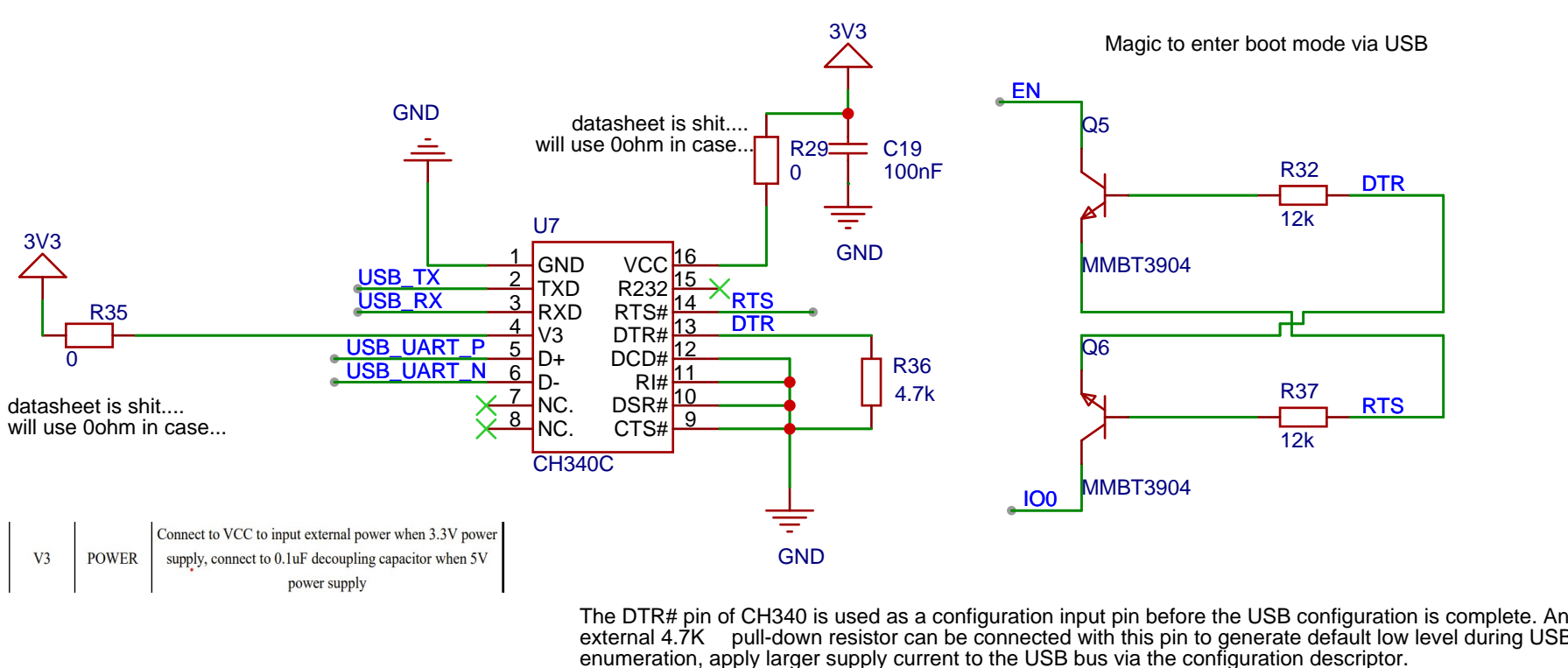
Fig 7 Peripheral Schematics



CAN Controller



USB to UART (backup if native USB fails)



Configuration / multi purpose / Debugging

