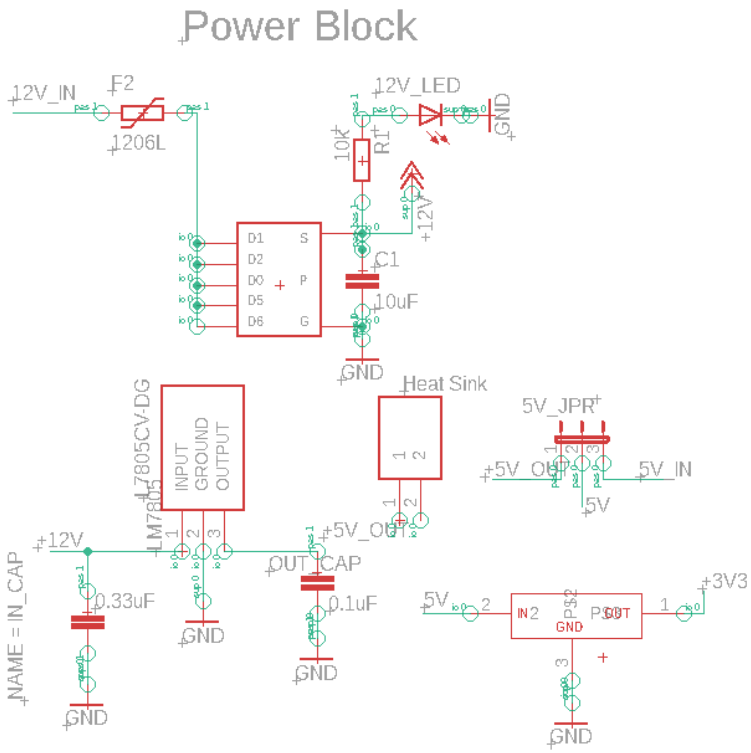
DESCRIPTION

Generic description of the PCB. What is it doing?. Main File Inputs/Outputs.

BLOCKS

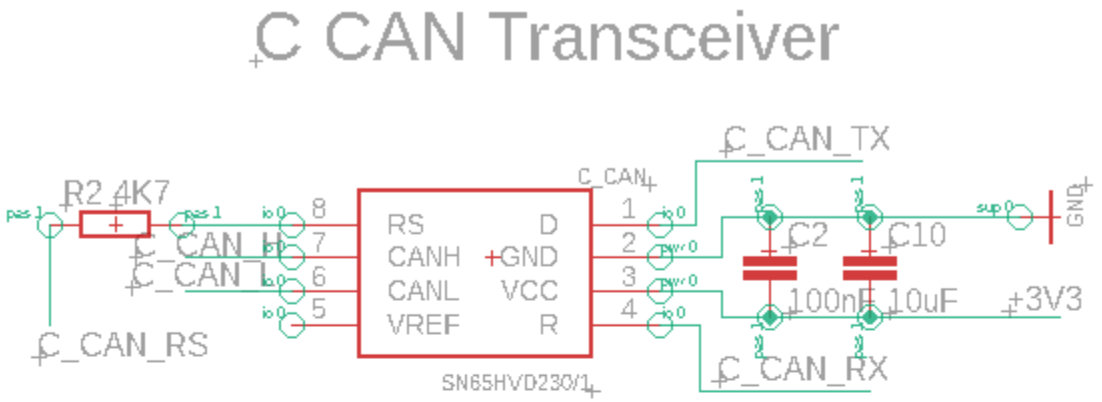
1) Power Block

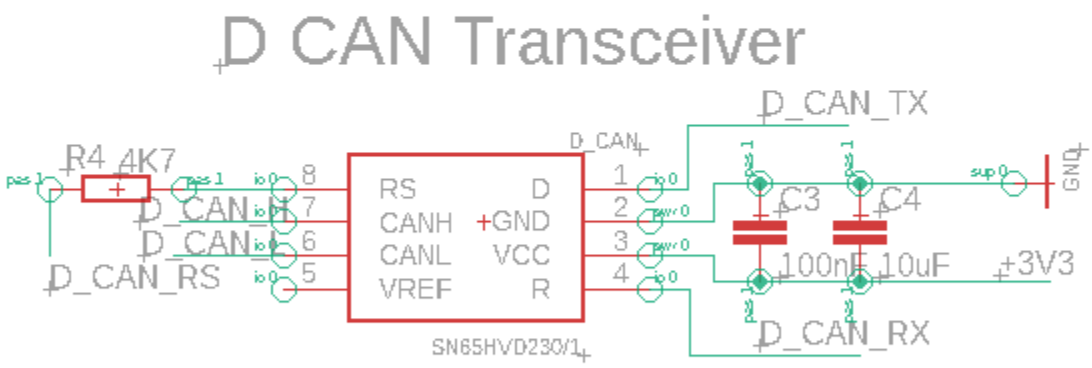
Standard Power Block structure. Reverse current protection is the duty of the PMOS here. 5V_JPR to decide which 5V to use, one coming from on board LM7805 or externally from connector connected to the power board. Heat sink for heat dissipation of LM7805. ZMR330 to convert 5V to 3.3V. Fuse of 1A rating.



2) CAN block:

No termination resistor as bus doesn't end here. The RS pins voltage decides the mode in which the Transceiver works, Dash doesn't usually send data anywhere, so we will give input voltage from teensy according to the state we want the transceiver to work in, i.e switch between High Speed Mode and Sleep/Standby mode for CAN Transceiver using code.

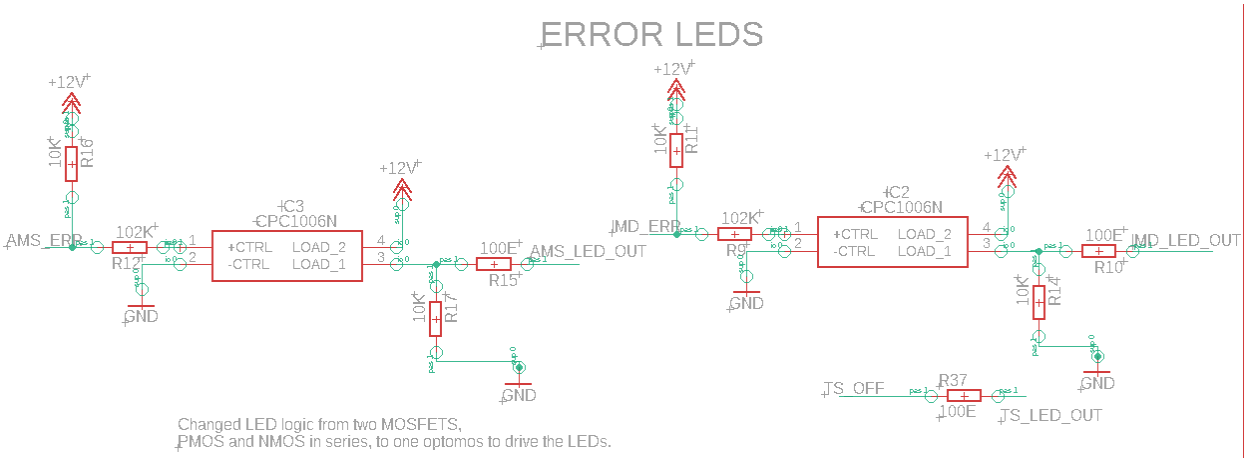




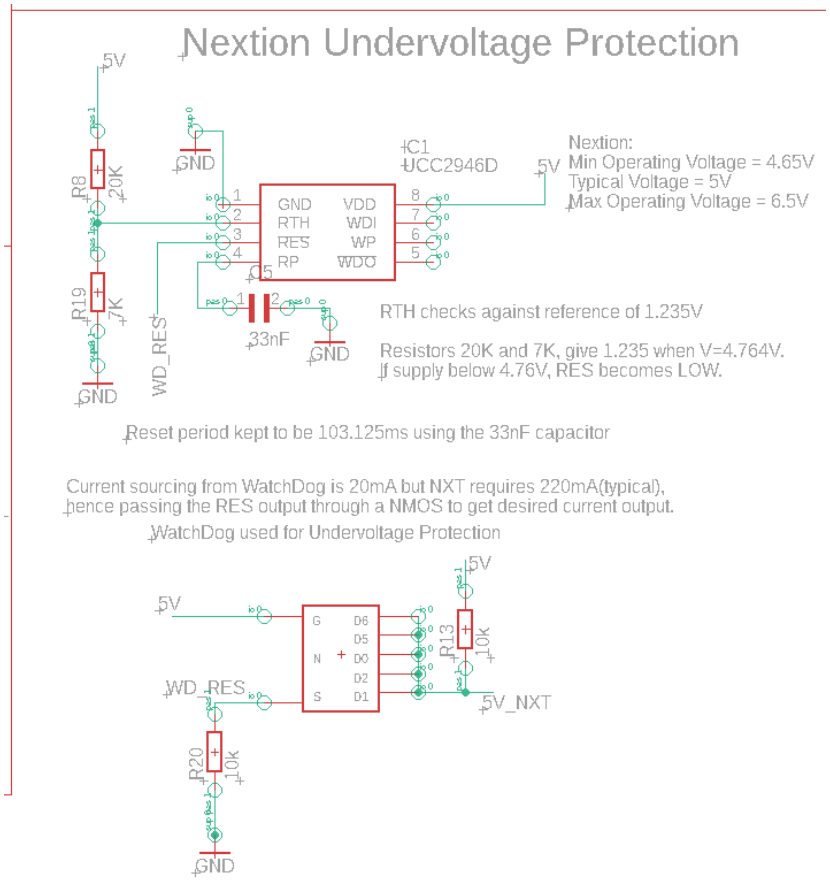
No termination resistor here as its not at the ends of the CAN Bus

3) Error LED block

Optomosfet working - current flows in left side, lighting up an internal LED, which makes the other side conduct. The resistor values are calculated based on the current requirement of the LED.



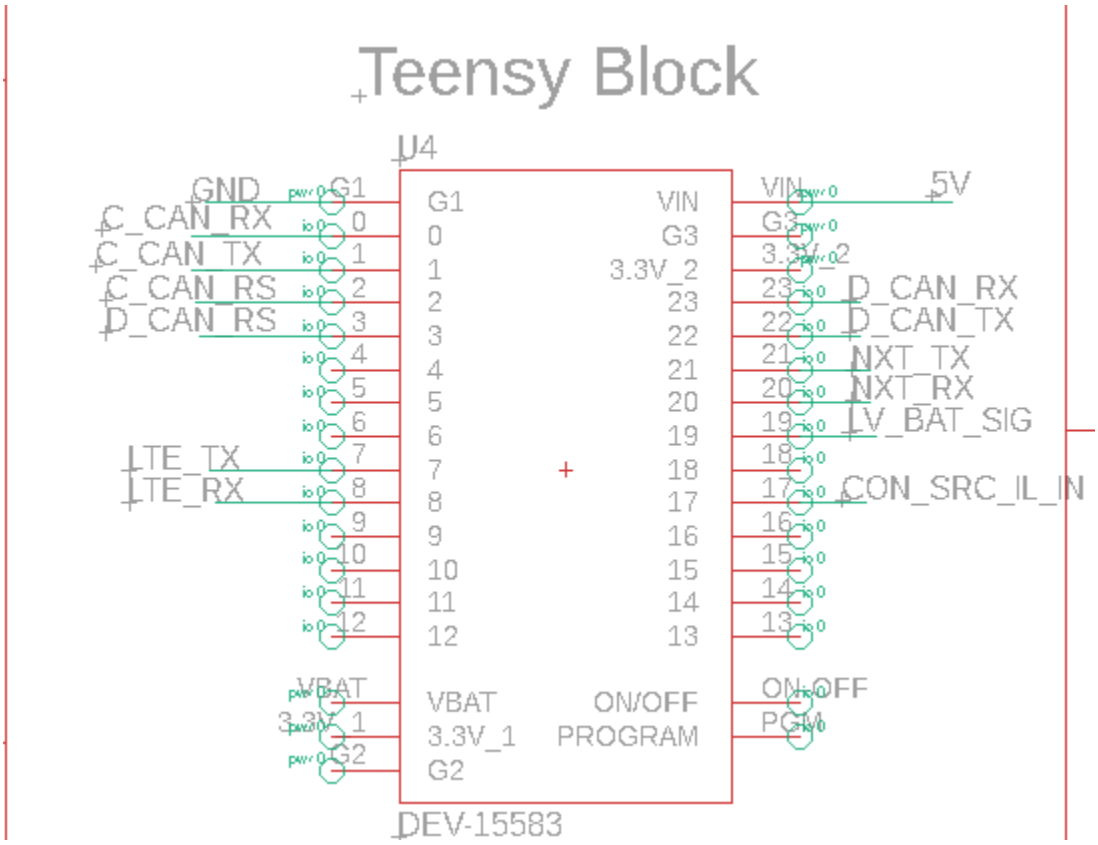
4) Undervoltage Protection



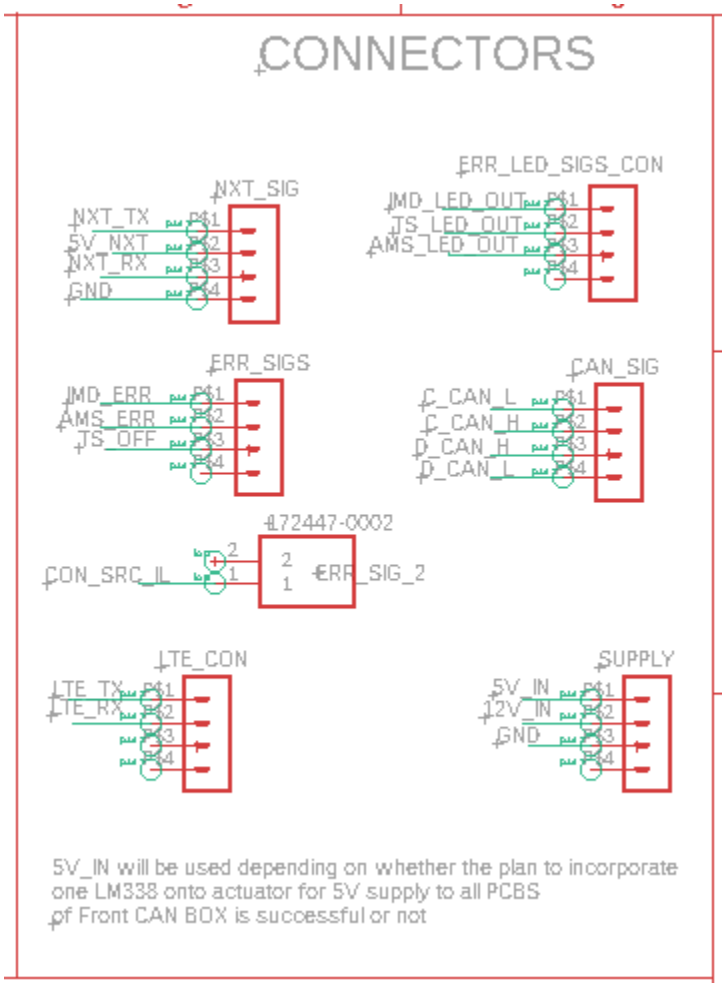
5) Teensy Block

C_CAN - used in CAN2, D_CAN - used in CAN1. LTE_RX,TX(Serial2), and NXT_RX,TX(Serial5) connected with UART/Serial ports. LV_BAT_SIG is analog signal

hence had to use one of pins(14-23) as they support analog input. All pins support digital input so CON_SRC_IL_IN is at pin 17.
C_CAN_RS, D_CAN_RS decide the conduction mode of the CAN transceiver, output pins.

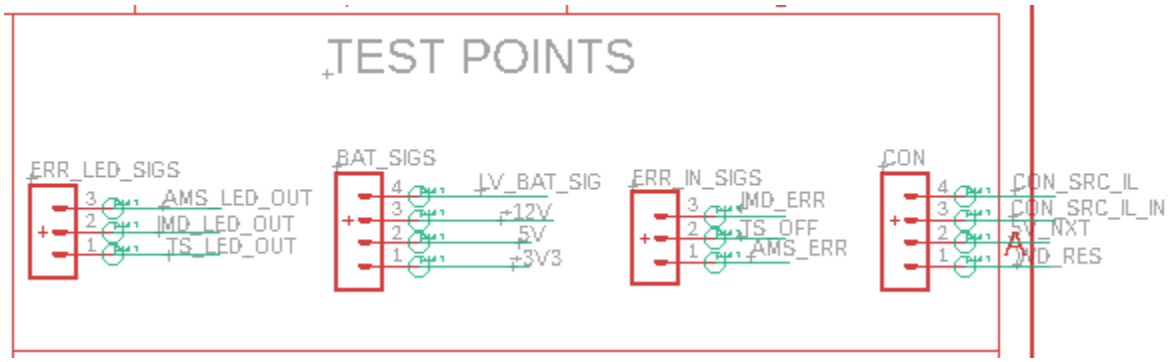


6) Connectors



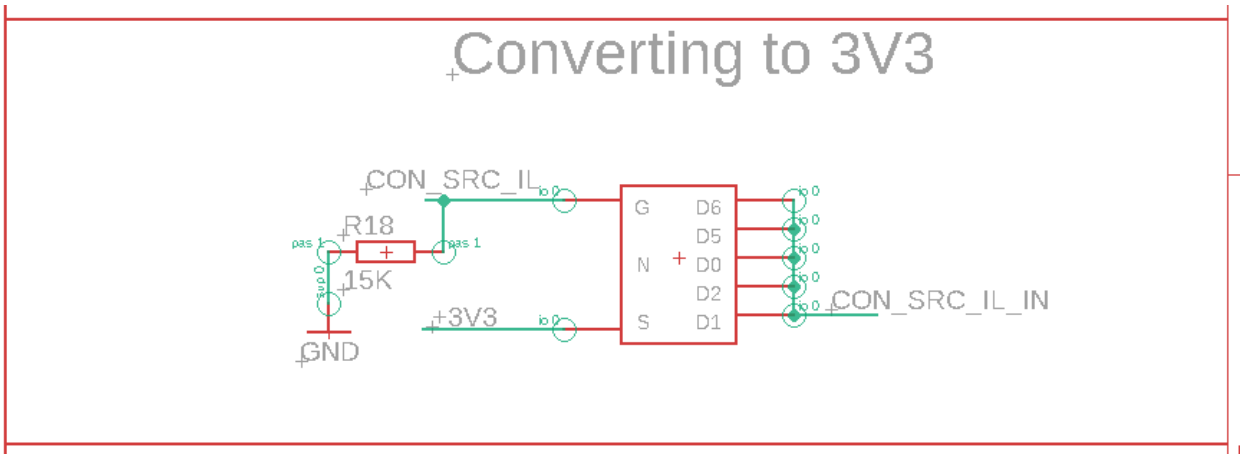
7) Test Points

All potential signals of interest during testing included as test points, for ease of measuring.



8) 12 to 3V3 step down of CON_SRC_IL

CON_SRC_IL is a 12V signal, we are using this signal to display on Nextion display whether it is high or not. Teensy works on 3V3 logic, so this circuitry is used to stepdown the voltage to 3V3. We only need to know whether it is high or not, so it is a digital input to Teensy. Standard NMOS operation. If Vgs>Vth, Source and drain get shorted, making CON_SRC_IL_IN signal = 3V3. If Vgs<Vth, Source and drain not shorted, CON_SRC_IL_IN floating, and we program it to be INPUT_PULLDOWN on the teensy.



9) LV_BAT_SIG

Simple voltage divider to step down 12V to 3.3V logic. LV_BAT_SIG acts as an analog input to Teensy, from which we then calculate the LV Battery level(SOC). Here we didn't use previous method as we didn't just require the knowledge of whether it is high or not, but rather needed the exact values mapped to 3V3 logic.