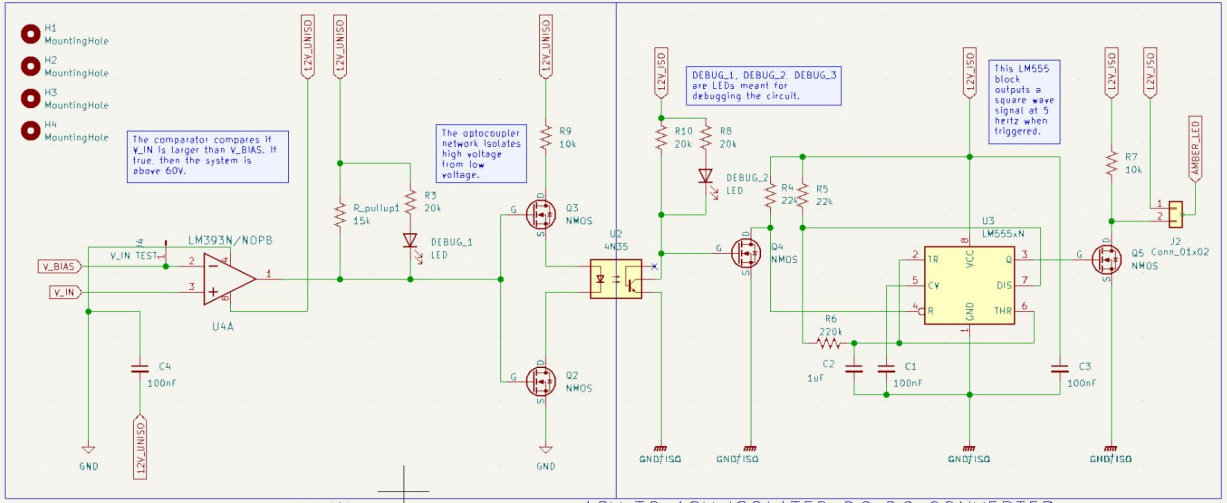
FSAE EV @ UCI
Anteater Electric Racing

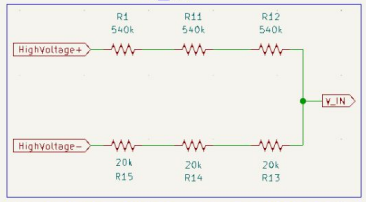
Ready To Move PCB (RTM)

Andy Li
Anushree Godbole

TRACTIVE SYSTEM READY TO MOVE



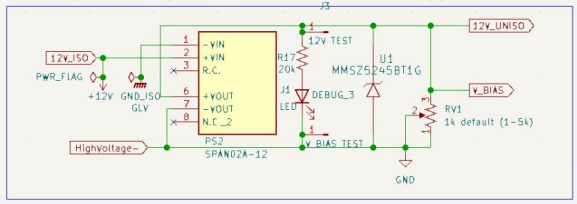
V_IN



The high voltage is converted down through a voltage divider network to form V_IN.

These resistors are rated for at least 0.25w to ensure proper performance at high voltages.

12V TO 12V ISOLATED DC DC CONVERTER

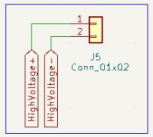


This DC DC isolated converter separates galvanically high voltage and low voltage.

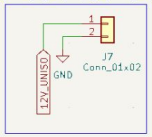
V_BIAS is a tunable voltage that affects when the amber LED flashes.

The Grounds of HV and this unisolated LV is tied together to ensure proper operation of the comparator.

HV CONNECTOR



LV CONNECTOR



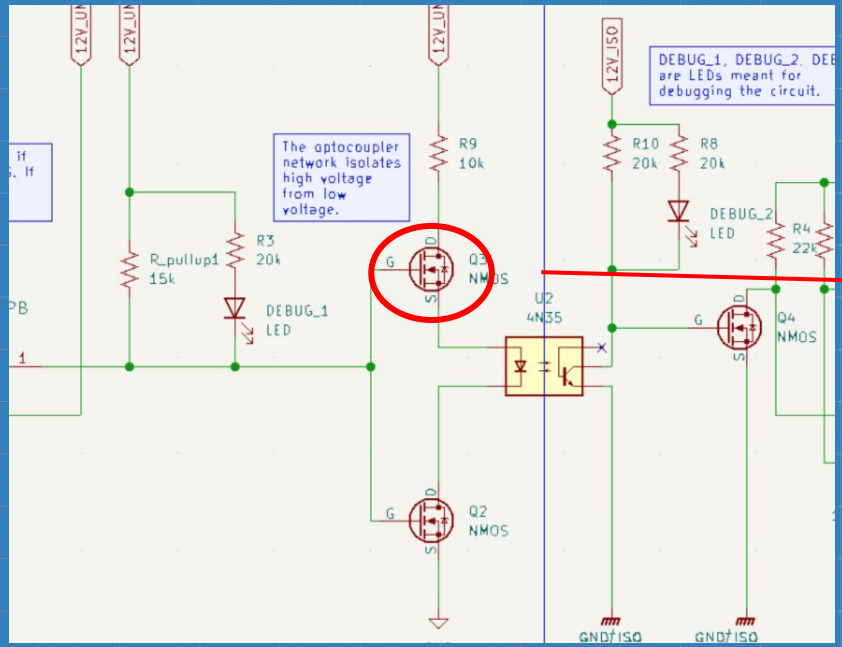
Designed By: Albert Huang
Modeled By: Avadi Seneviratne

Sheet: /
File: TS_READY_TO_MOVE (1).kicad_sch

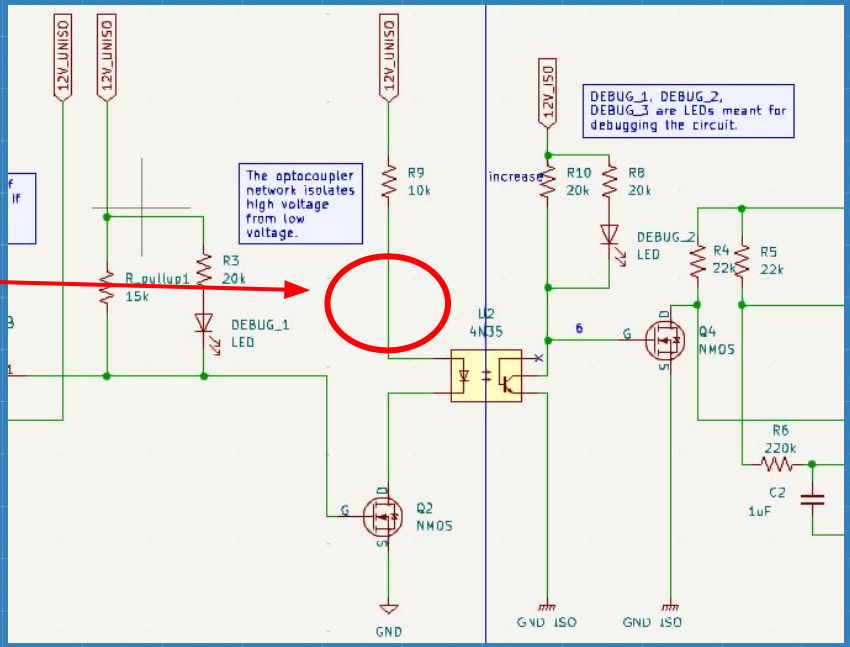
Title: TRACTIVE SYSTEM READY TO MOVE

Size: A4 | Date: | **Rev:**
KiCad E.D.A. 8.0.5 | Id: 1/1

Modification 1: Remove Q3; Redundant



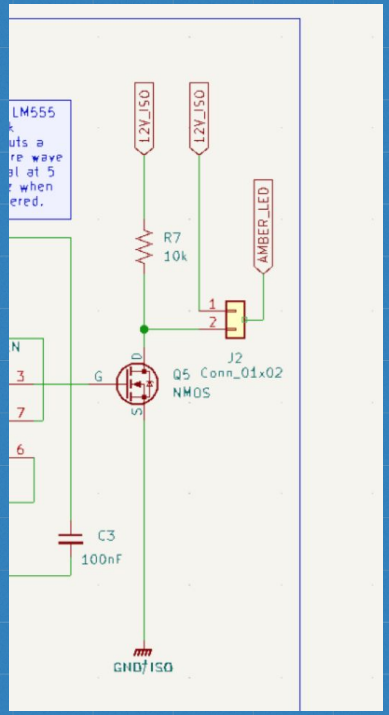
Before



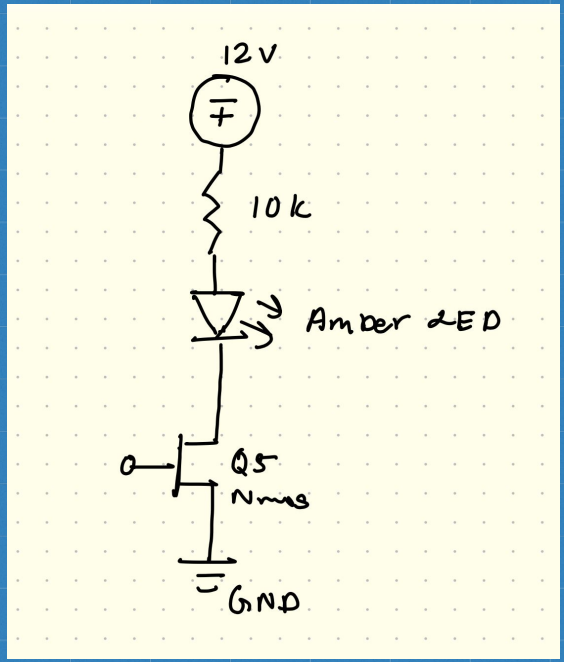
After

- Remove redundant MOSFET
- Not necessary for the circuit to work

Modification 2: Change LED Connection

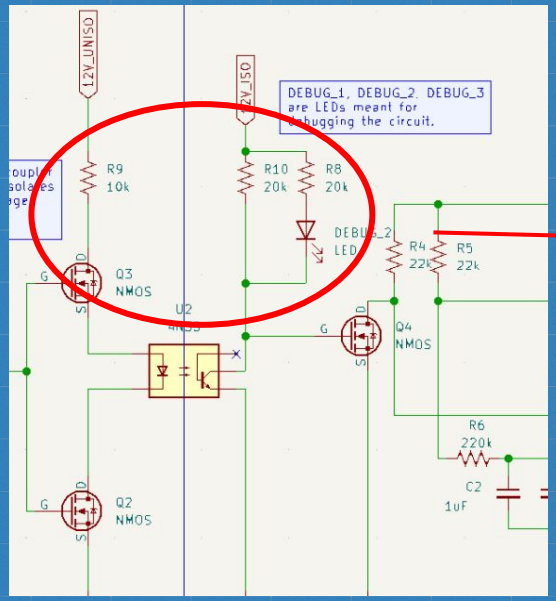


Before

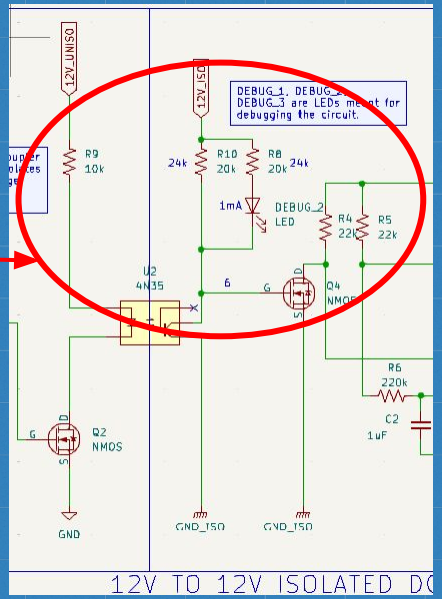


After

Modification 3: Increase R10



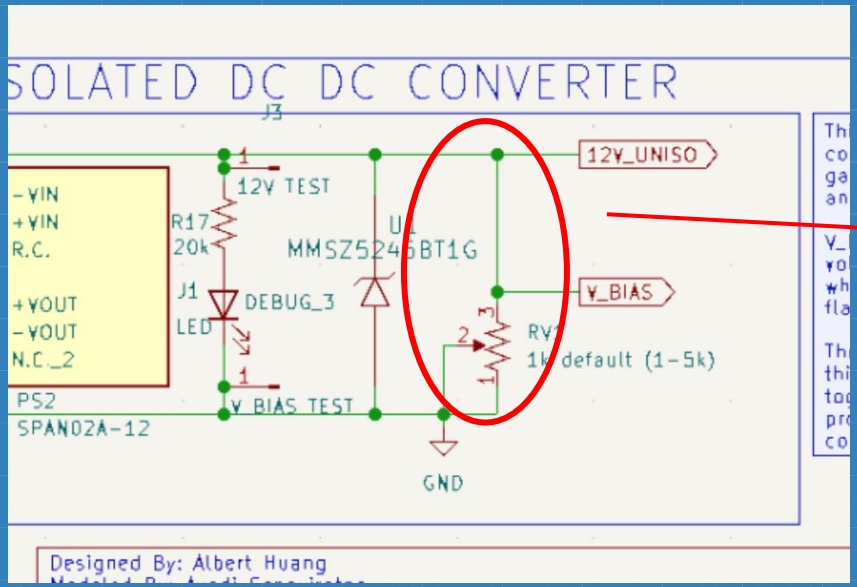
Before



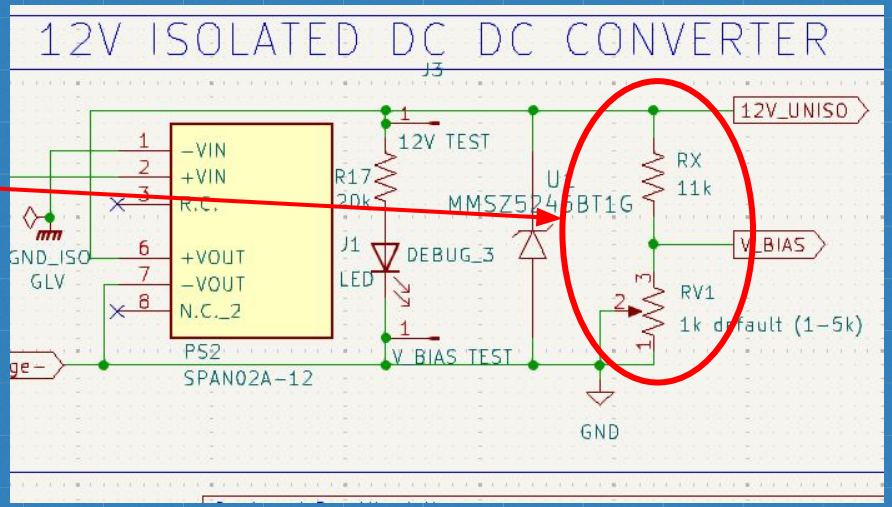
After

- Current setup only drops voltage at gate to ~6V. Since NMOS V_{GS} = 3V, this will cause the circuit to not work properly
- Solution: Increase R10 and R8 to 24k. This creates $V_G \approx 0V$. DEBUG_2 needs to work for 1mA current.

Modification 4: Add Resistor to 12V DCDC Converter



Before



After

- V_Bias is always 12V with current setup
- Needs to turn on when V_in is 60V. Needs setup as shown on right (potentiometer assumed as 2.5k)

Other Comments

- Need part numbers for NMOS and potentiometer