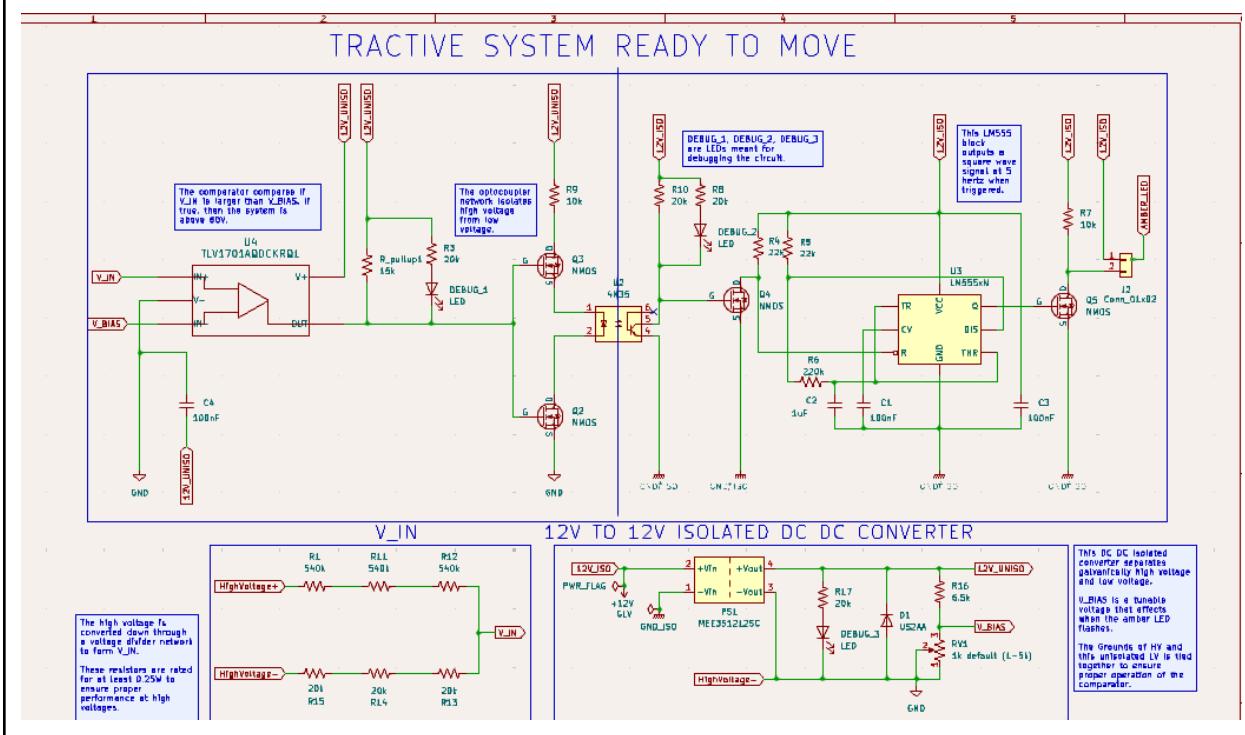
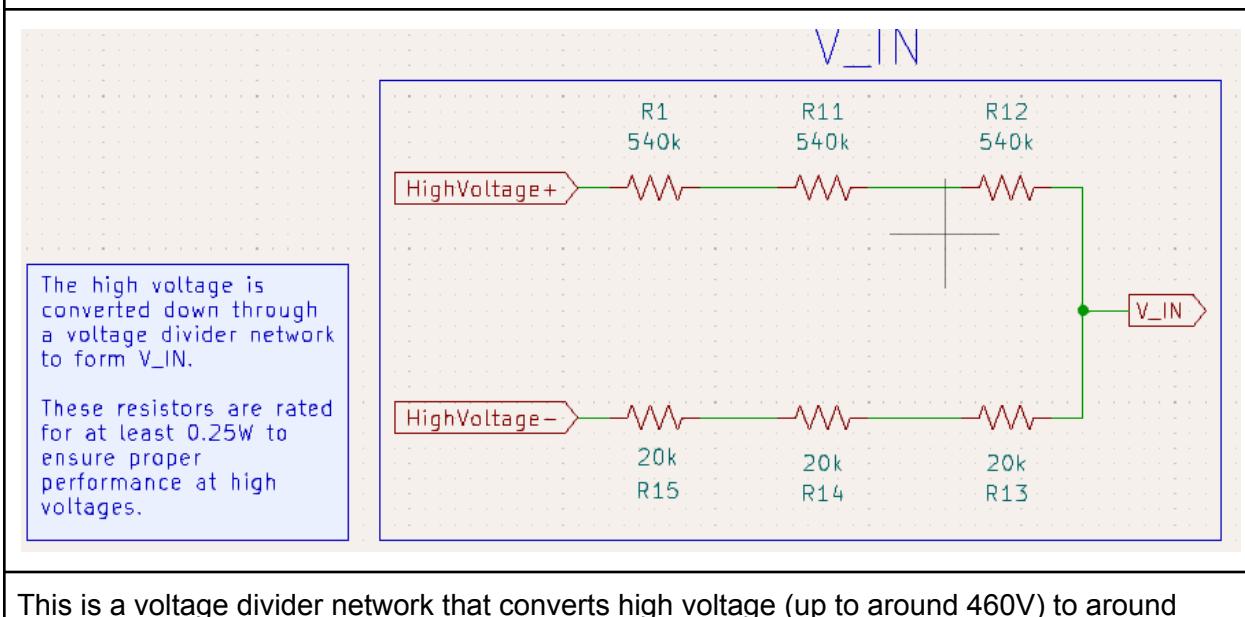


# Schematic



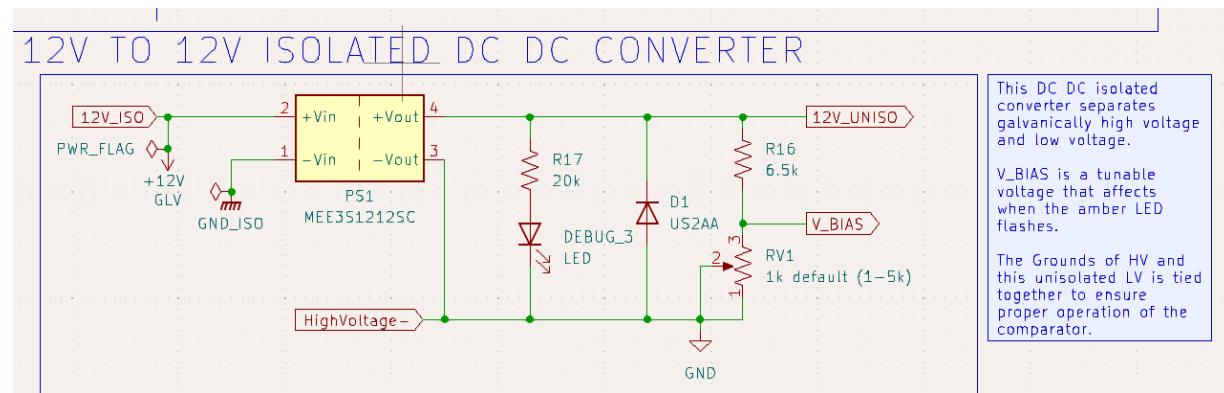
## High Voltage Input



12V.

Make sure the resistors chosen are rated for at least 0.25W or higher.

## 12V-12V Isolated DC-DC Converter

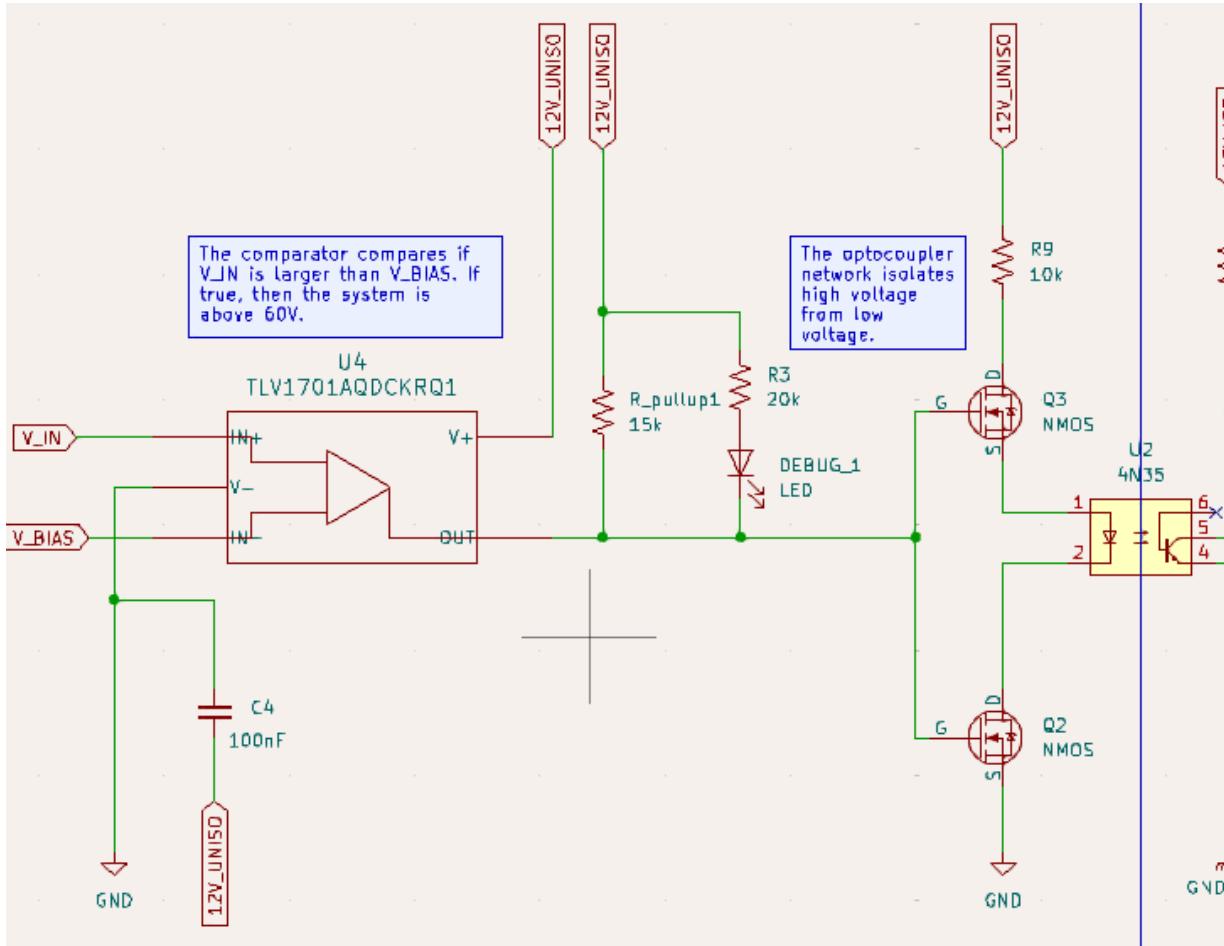


A 12V to 12V Isolated DC-DC Converter ensures that high voltage and low voltage are sufficiently isolated. Make sure to choose one with a voltage isolation of over 500V.

The Zener diode D1 is used as an ESD protection diode. Make sure it triggers at 15V to prevent excessive voltage.

There is a potentiometer (from 1 to 5k) that will be used to vary the bias voltage.

## Input Stage: Comparator

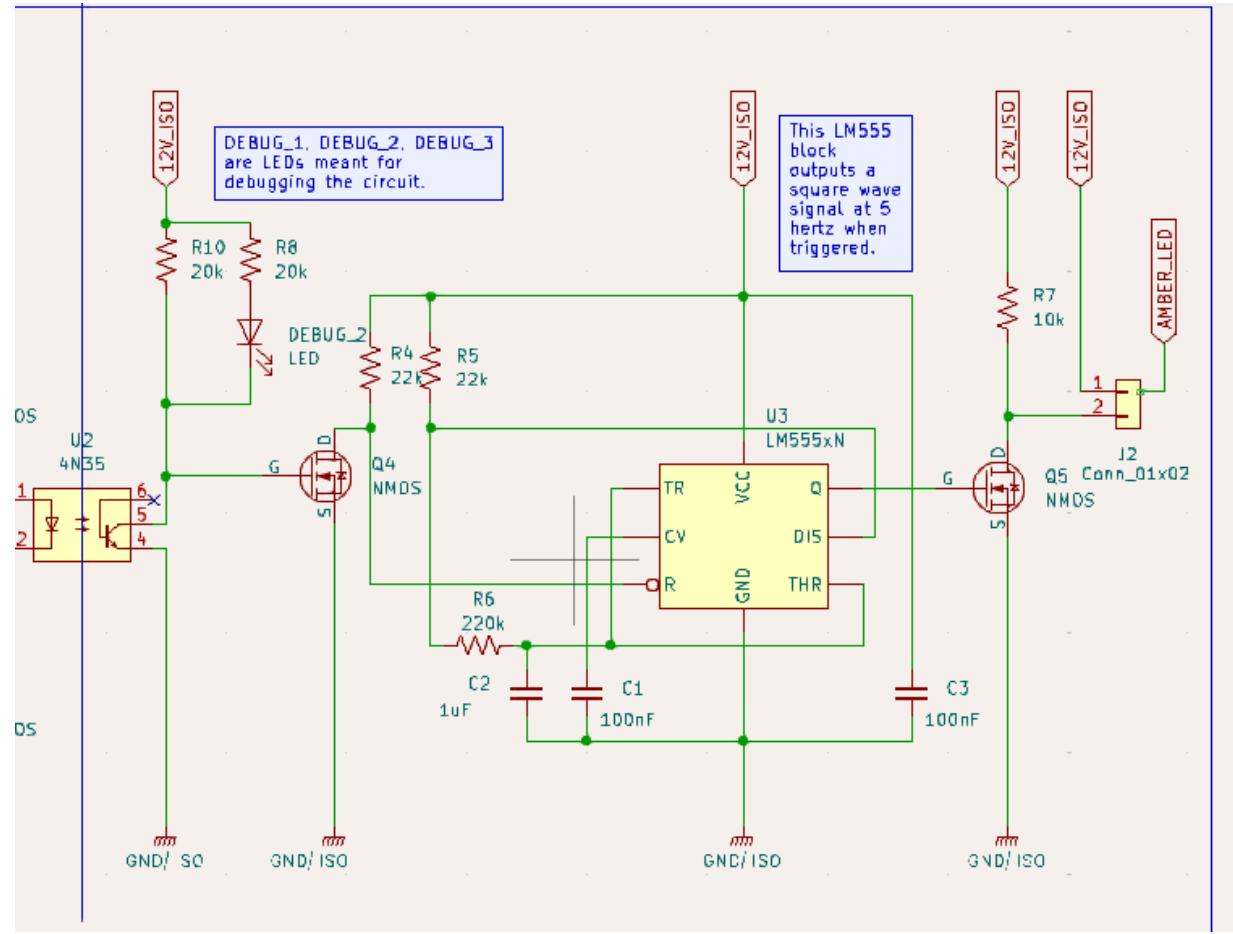


If  $V_{IN}$  is higher than  $V_{BIAS}$ , then it means that the high voltage is larger than 60 volts. Thus, this comparator will produce a high signal and turn on NMOS Q3 and NMOS Q2, which will turn on the optocoupler.

This NMOS Q2 and Q3 network helps to isolate the optocoupler when HV is floating, off, and on.

Resistor values (10k, 15k, 20k) can all be set to 22k (or any other **larger value**) for convenience.

## Output Stage: Amber LED



The 555 timer block produces a 5 Hz signal to trigger the AMBER LED.

Note that the AMBER LED is configured assuming the ground switching configuration.

Capacitor values must be EXACT to produce a 5 Hz signal.