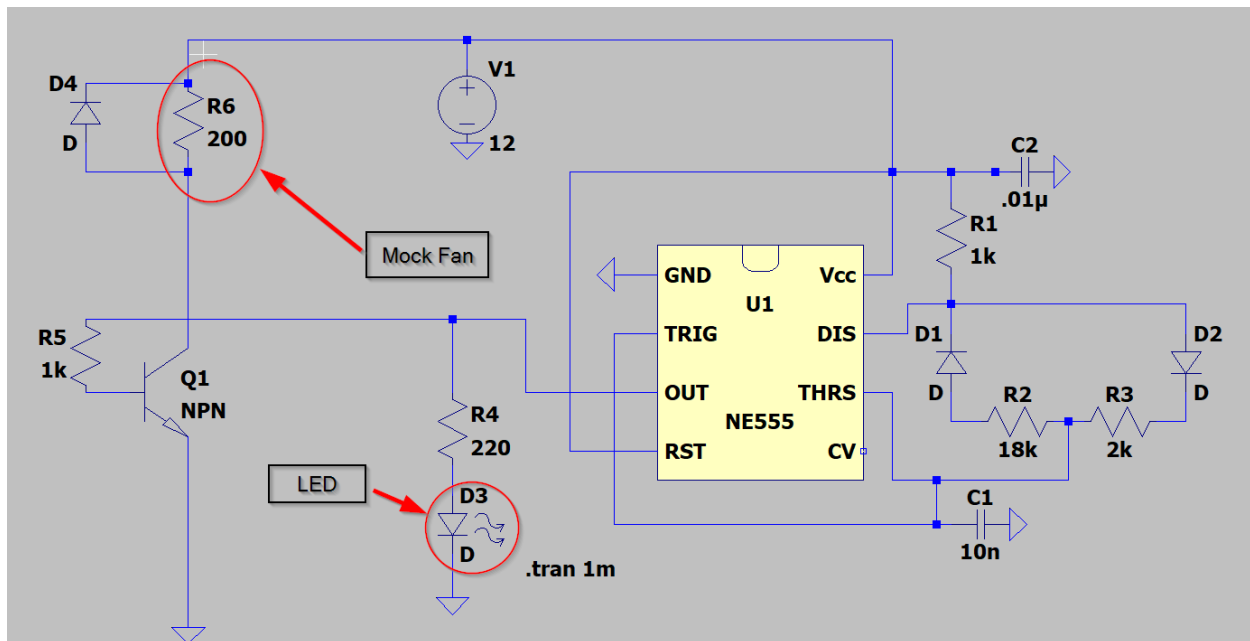
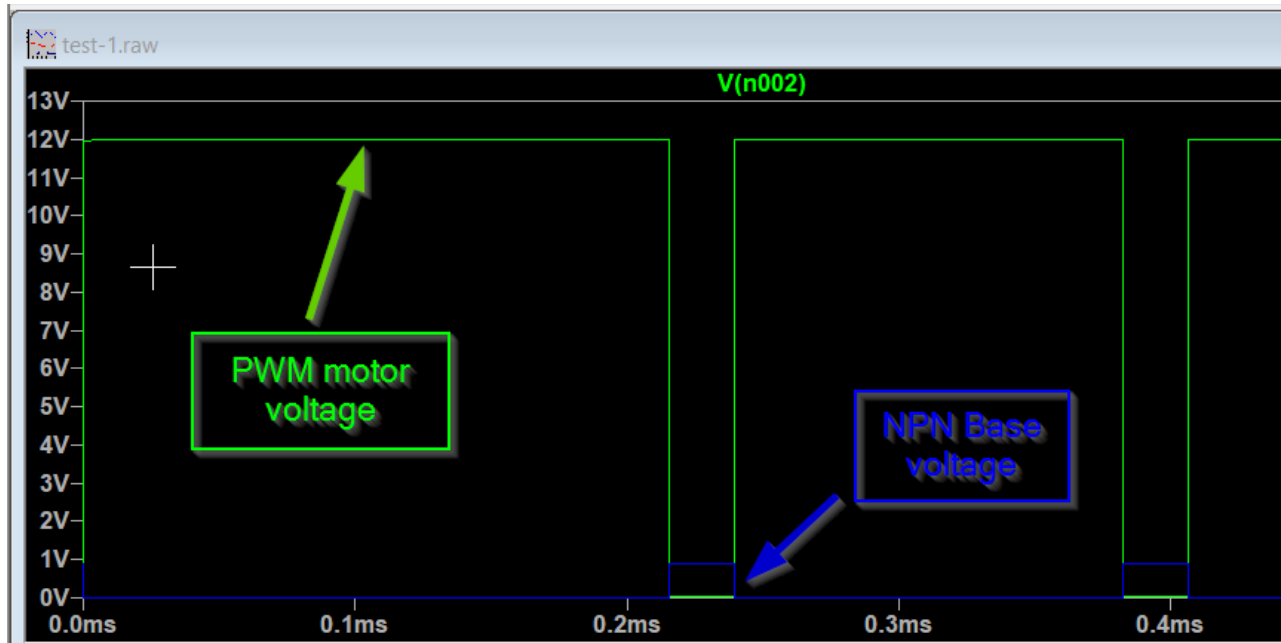


Simulation

LTSPICE Schematic

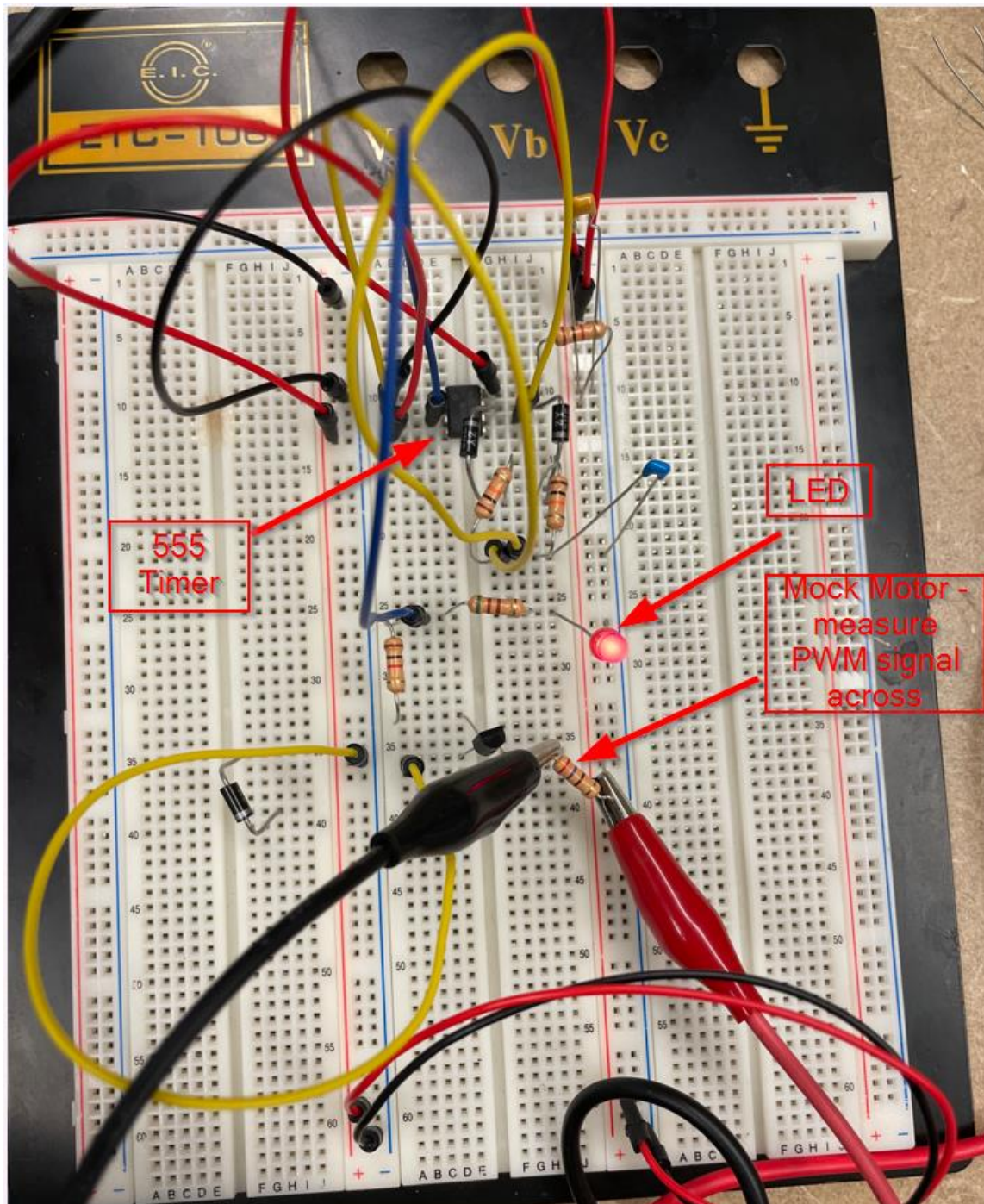


LTSPICE Waveform

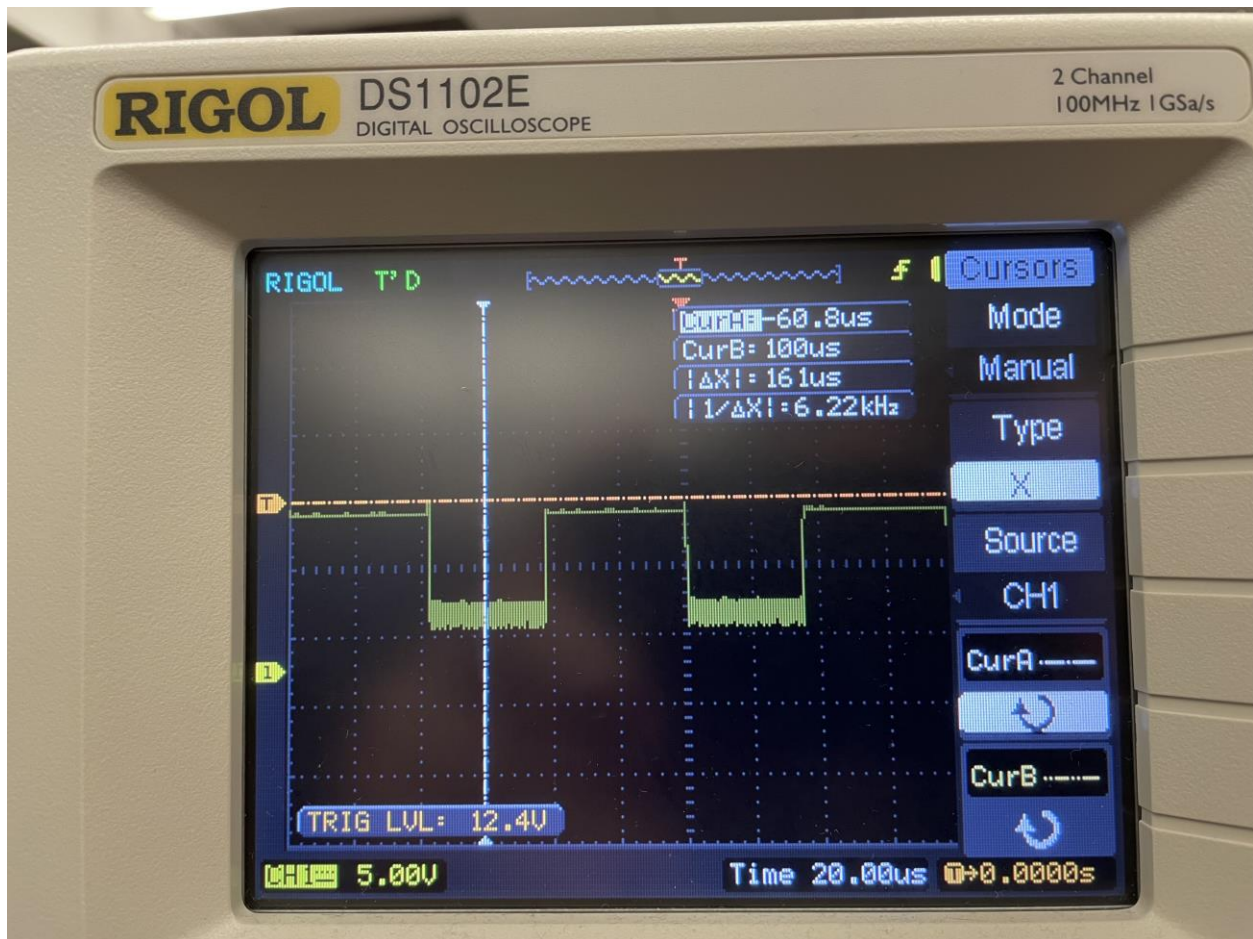


Breadboard Prototype

Breadboard hookup



Oscilloscope Output



Waveform shows that the PWM signal will modulate between 12V and 0V.

Conclusion

I made two changes: adding a capacitor between pin 5 and ground, and placing the motor in series before the BJT instead of after, as there was a big voltage drop across the BJT when it came before the motor.