The circuit uses the 555 IC as the PWM generator and hence the whole circuit is based around the same. The connections of all 8 pins are mentioned below.

Pin 1 is connected to the ground rail.

Pin 2 and pin 6, with the ground through a 1nF capacitor.

Pin 3 is connected to the gate of the mosfet. This pin sends the pwm output to the gate of the MOSFET.

Pin 4 is connected to the +ve input rail.

Pin 5 is connected to the ground with a 100nF capacitor. It helps in stabilizing the output and provide immunity against electrical noises.

Pin 7 is connected to the +ve input with a 1k resistor and is also connected to the inverted diode setup.

Pin 8 is connected to the +ve rail.

In the circuit above, the N-channel MOSFET, IRFZ44N is used as a switch, driven by the faint signal from IC 555. The Drain of this Mosfet is providing the negative switching control to the circuit. It has the following specifications.

A computer screen shot of a circuit board

Description automatically generated

Building and Testing our Buck Regulator circuit

I used KiCad to design the schematics. The image attached below shows the screenshot of the KiCad screen. After designing the schematics, we assigned the proper footprints for all the components and arranged the components in the PCB editor tool. After laying out all the components in a satisfactory manner, the next step was to take a printout of the design in order to etch the PCB.