

# EXPERIMENT NO: 1

## Aim of the Experiment:

To Draw and Design PCB layout of Half wave Rectifier.

## Theory:

The main function of half wave rectifier is to change the AC (Alternating Current) into DC (Direct Current). However, the acquired output DC is not pure and it is an exciting DC. This DC is not constant and varies with time. Whenever this changing DC is given to any type of electronic device, then it may not function correctly, and that may get damaged. Due to this reason, it will not be applicable in most of the applications. Thus, we require a DC that does not change with time. To overcome this problem and to get a smooth DC, there will be solutions namely filter. The energetic DC mainly includes both AC & DC components. So here filter is used to remove or reduce the AC components at the output. The filter can be built with components like resistors and capacitors. The circuit diagram of half wave rectifier using a capacitor filter is shown above. This circuit is built with a resistor and capacitor. Here, the connection of the capacitor 'C' is in shunt with the 'RL' load resistor.

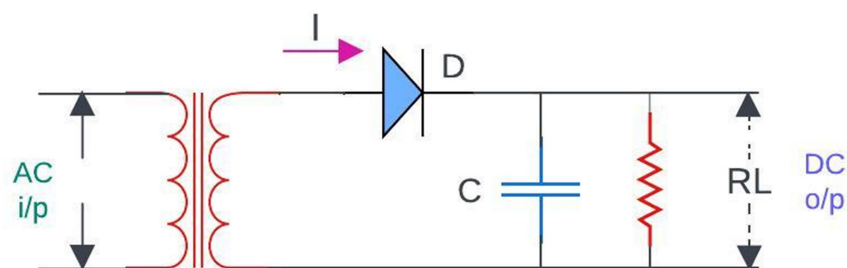


Fig.1 Circuit Diagram

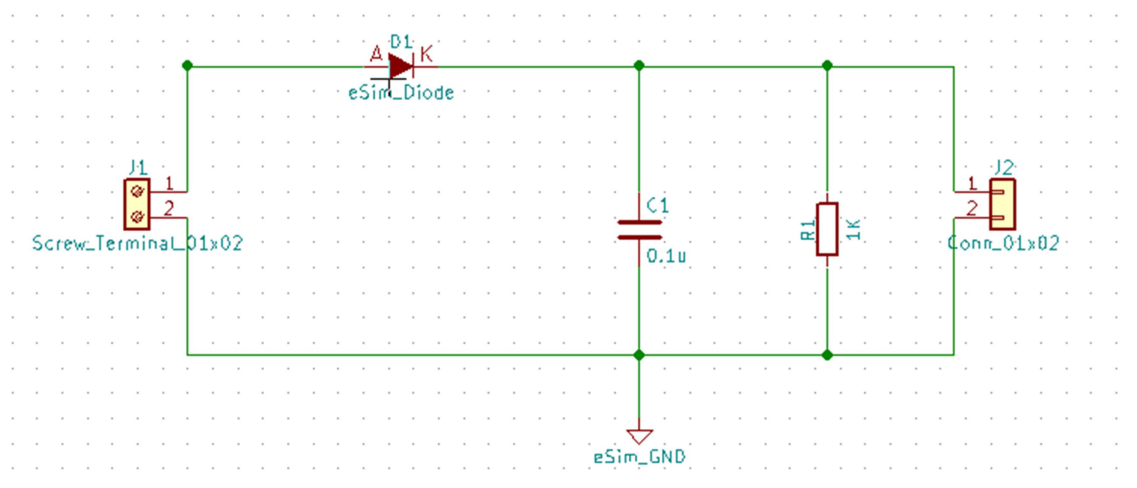


Fig.2 Schematic for PCB

1	C1 -	0.1u : Capacitors_THT:C_Axial_L3.8mm_D2.6mm_P7.50mm_Horizontal
2	D1 -	eSim_Diode : Diodes_THT:D_T-1_P5.08mm_Horizontal
3	J1 -	Screw_Terminal_01x02 : Connectors_Terminal_Blocks:TerminalBlock_Altech_AK300-2_
4	J2 -	Conn_01x02 : Pin_Headers:Pin_Header_Straight_1x02_Pitch2.54mm
5	R1 -	1K : Resistors_THT:R_Axial_DIN0207_L6.3mm_D2.5mm_P15.24mm_Horizon

Fig.3 Components Footprint for PCB

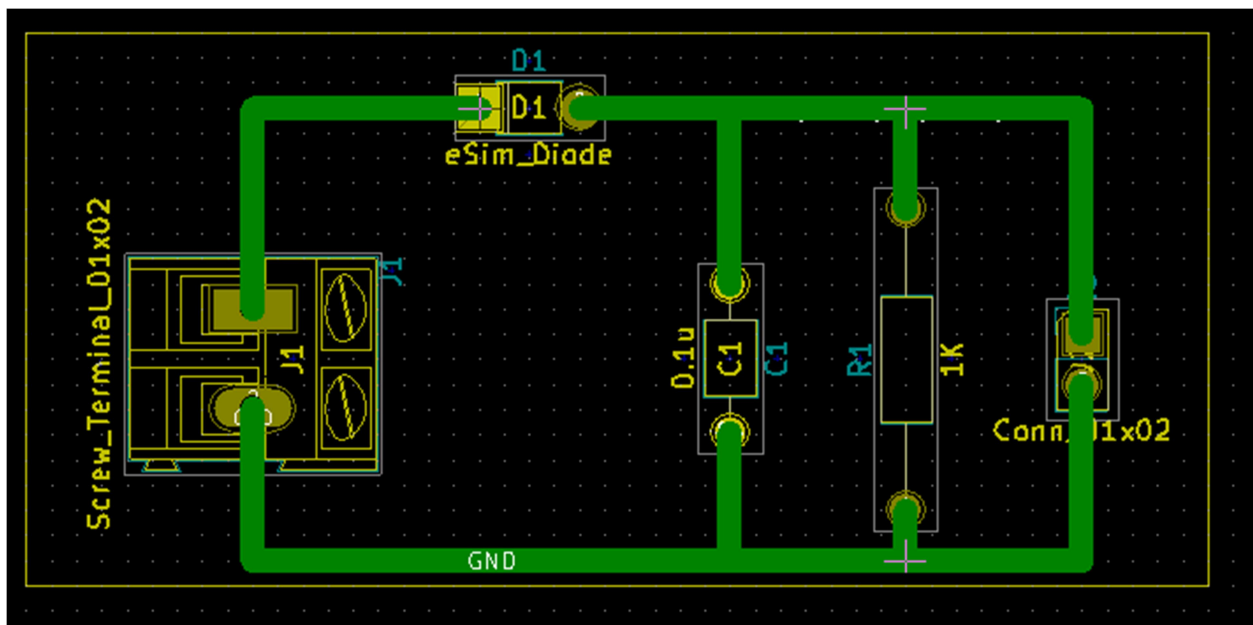


Fig.4 Layout B.Cu

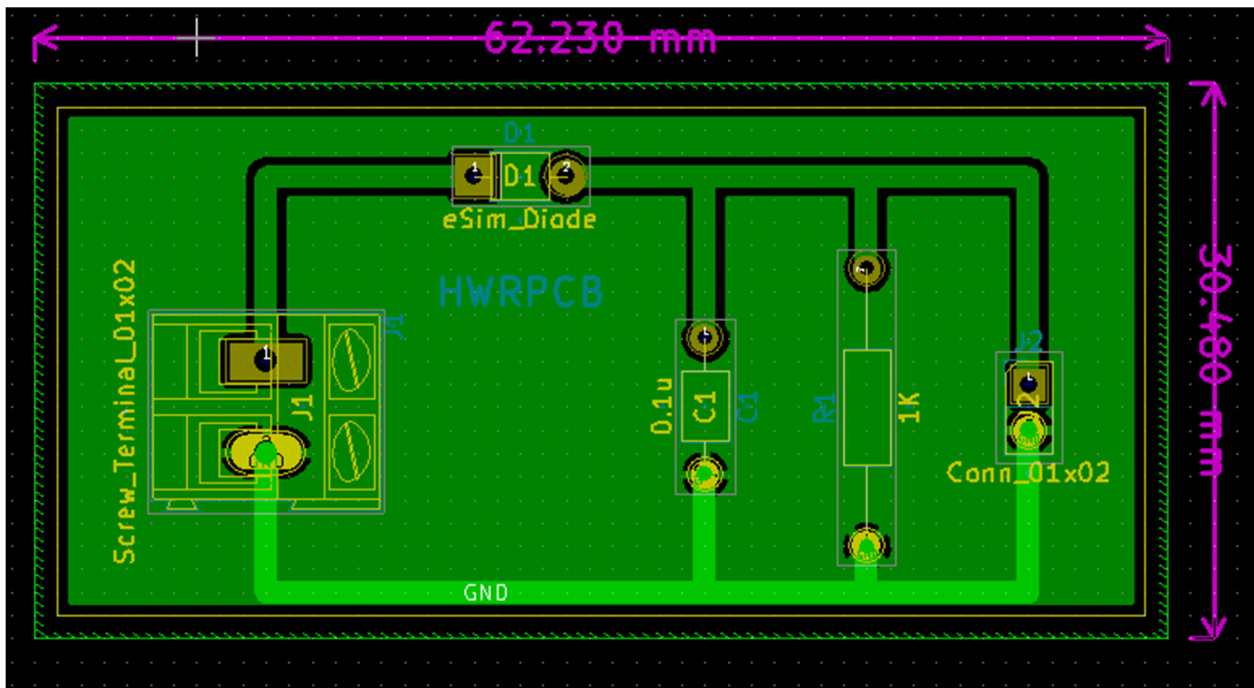


Fig.5 Layout B.Cu with GND Plane

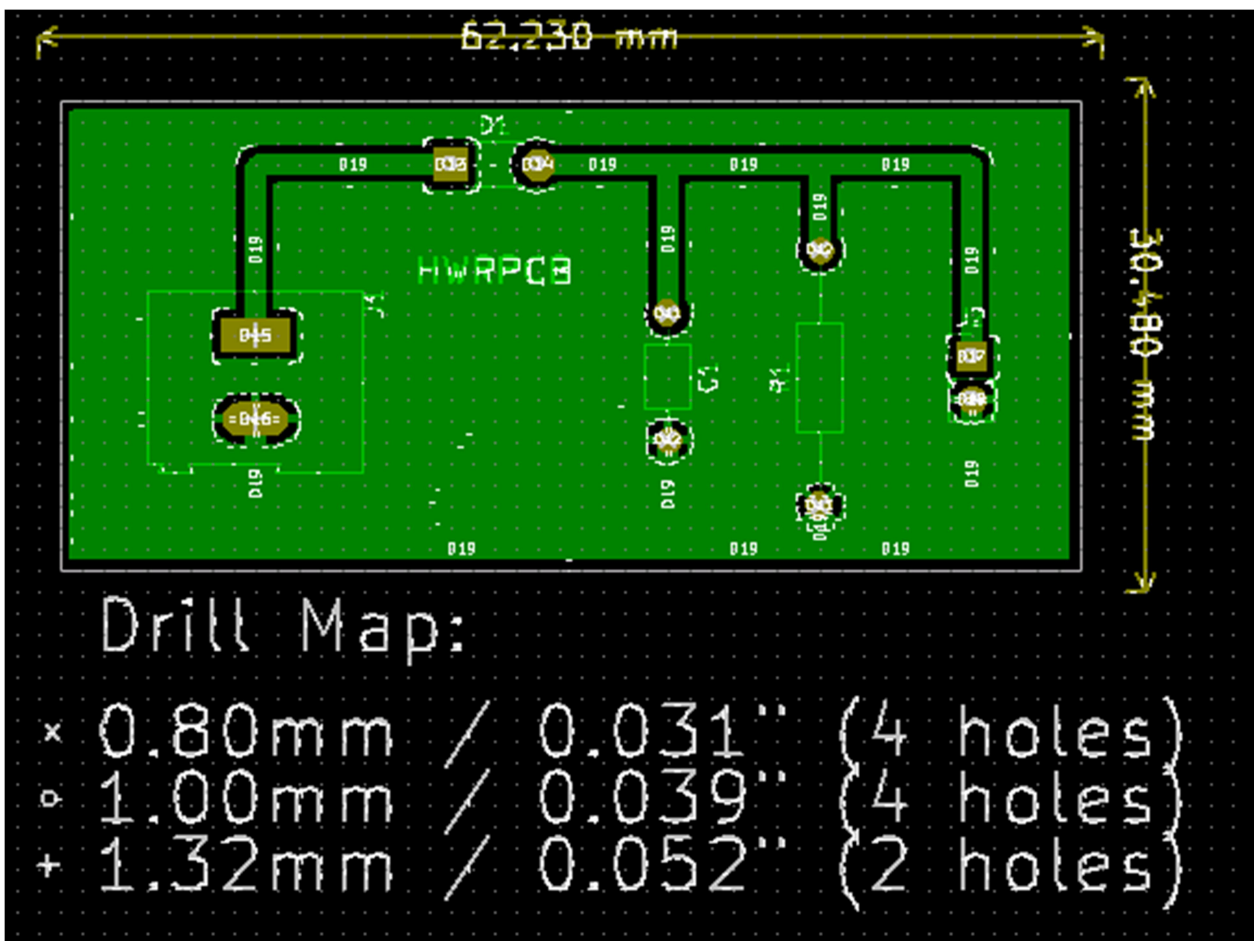


Fig.6 GerbView B.Cu

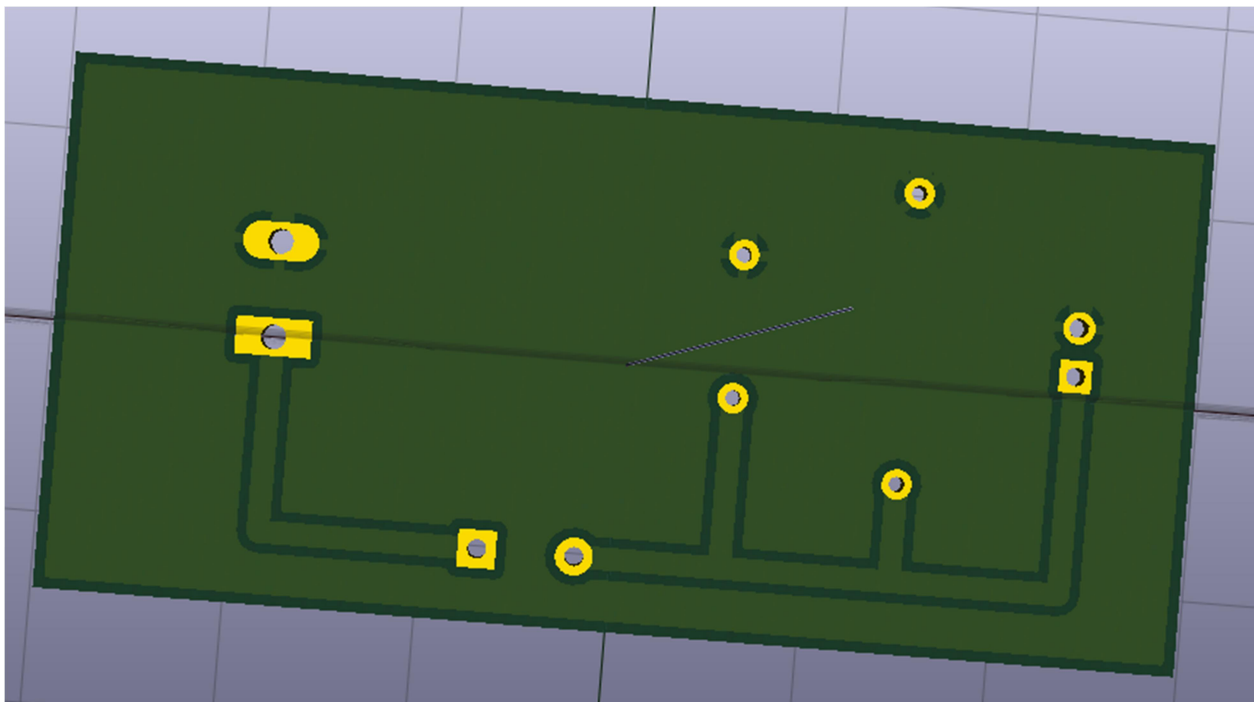
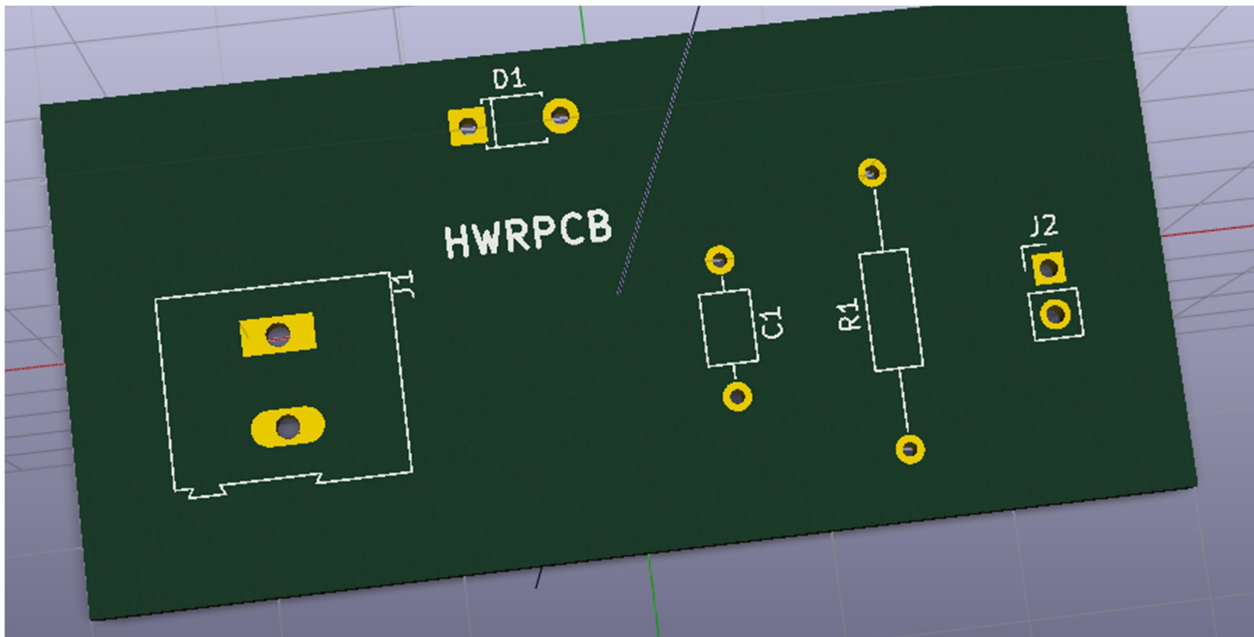


Fig.7 3D View

Reference: <https://electronicsdesk.com/half-wave-rectifiers.html>

Conclusion: We have design the PCB layout of Halfwave Rectifier.

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