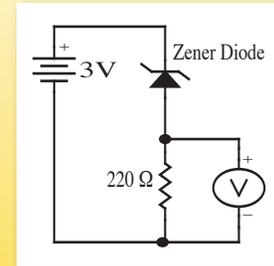
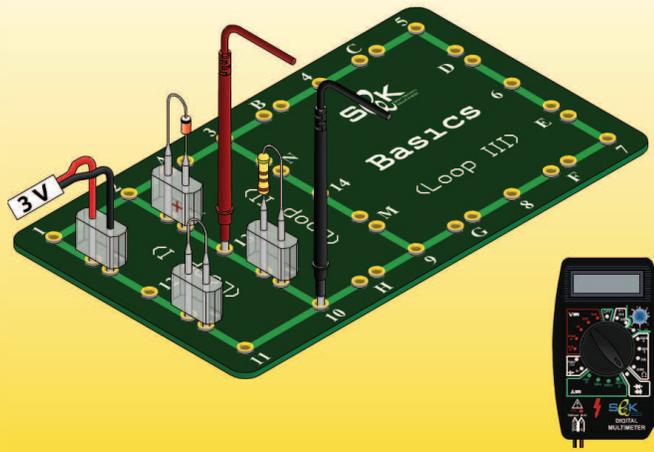


Experiment No. (27) Zener Diode



Objectives:

1. The student will investigate the characteristics of a zener diode.

Apparatus:

- Basics Board
- Connection wire
- Resistor 220Ω
- DMM
- Voltage Source (PSB Board)
- Zener Diode
- Jumpers

Procedure and Conclusions:

1. Use Loop I on the Basics Board to set up a circuit by inserting a resistor 220Ω at the pair (L), a zener diode at the pair (K) in a way that its positive terminal will be towards the point (13), a jumper at the pair (I).
2. Turn the selection dial of the DMM to DCV mode (range 20 V), insert the probes at the points (13) and (10) to measure the voltage drop across the resistor.
3. Connect (1.5 volt) from PSB board to the pair (J) using a connection wire in a way that the positive terminal (red wire) will be towards the point (1). Record the voltmeter reading.
4. Take the connection wire off the outlet socket 1.5V and insert it at the outlet socket 3V on PSB board. Record the Voltmeter reading.

5. Repeat step 4, connect different voltages from the PSB Board (4.5 volt, 6 volt, 7.5 volt). Record the corresponding Voltmeter readings.
 - Table for the voltage drop (V_L) across the resistor 220Ω corresponding to the voltage source (V_{in}):

V_{in} (volt)	1.5	3	4.5	6	7.5
V_L (volt)					

- From the table we observe that the zener diode does not allow current to pass through it when the voltage source is less than volt.
- From the table we observe that the zener diode starts allowing current to pass through it when the voltage source is between and volt, this is called the breakdown voltage, compare this result with the breakdown voltage of the zener used in the experiment which is 3.6 volt.



Notes:

- The Zener diode used in this kit has a reverse voltage breakdown of 3.6V



Discussion

1. Discuss the key difference between a Zener diode and a normal diode.