

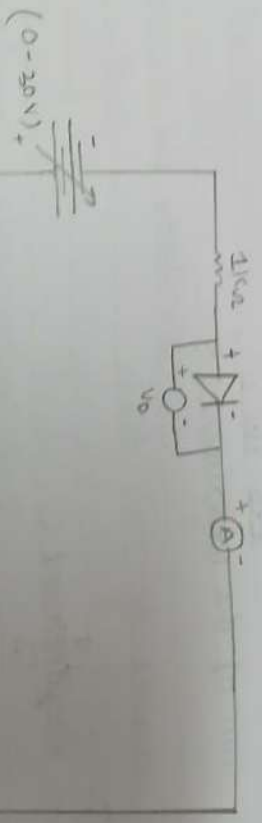
Observation table:
Table 1: For Forward Bias

Voltage supply (V)	V_0 (V)	I_0 (mA)
0.1	0.172	0
0.2	0.291	0.005
0.3	0.392	0.051
0.4	0.486	0.063
0.5	0.495	0.150
0.6	0.532	0.225
0.7	0.550	0.302
0.8	0.564	0.384
0.9	0.575	0.490
1.0	0.581	0.577
1.1	0.596	0.612
1.2	0.609	0.761
1.3	0.609	0.795
1.4	0.614	0.823
1.5	0.619	0.983
1.6	0.624	1.098
1.8	0.632	1.158
1.9	0.632	1.29
2.0	0.635	1.369

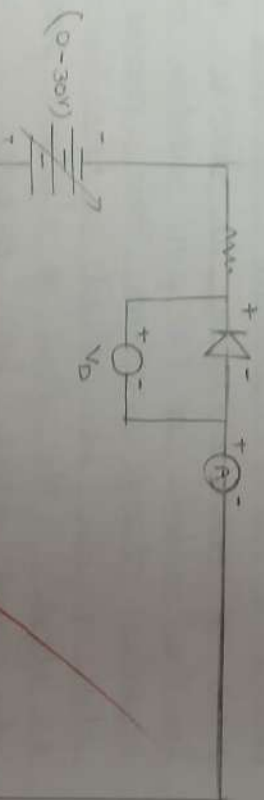
Table 2: For Reverse Bias:

Voltage supply (V)	V_0 (V)	I_0 (mA)
0	0.826	0.0000000000
0.1	1.146	0.0000000000
0.2	1.588	0.0000000000
0.3	2.14	0.0000000000
0.4	2.61	0.0000000000
0.5	3.13	0.0000000000
0.6	4.17	0.0000000000
0.7	4.79	0.0000000000
0.8	5.24	0.0000000000
0.9	6.19	0.0000000000
1.0	7.12	0.0000000000
1.1	7.75	0.0000000000
1.2	8.24	0.0000000000
1.3	8.75	0.0000000000
1.4	9.24	0.0000000000
1.5	9.75	0.0000000000
1.6	10.24	0.0000000000
1.7	10.75	0.0000000000
1.8	11.24	0.0000000000
1.9	11.75	0.0000000000
2.0	12.24	0.0000000000

Circuit Diagram



for Reverse biased



for forward biased



Exp

Diagram for forward bias

Theory

read board

Precaution:

- ① The connections were made right
- ② The connections should be made as per the circuit diagram.

Conclusion:

After conducting the above experiment in lab, we understood the structure and functioning of p-n junction diode and also understood the forward and reverse biased characteristics of a silicon diode. and also found the direction of the

The p-n junction depletion zone breakdown and current begins to flow. usually by either the zone or the avalanche breakdown process.

Procedure:

- ① First, we took the case of forward biased, the circuit was connected as shown in the figure 1.1.
- ② The power supply was switched ON.
- ③ The value of the input DC supply was varied in steps.
- ④ The corresponding voltage and ammeter readings were noted.
- ⑤ Now, we take the case of reverse biased. The circuit was connected as shown in the figure 1.2.
- ⑥ This time, we removed the voltmeter because voltmeter can give readings upto a particular limit. In case of reverse biased.
- ⑦ The power supply was switched ON.
- ⑧ The corresponding voltage and current readings were noted.
- ⑨ The graph of voltage (V_0) vs. current (I_0) was plotted.

determines the amount of current that may flow through the diode.

Function of a p-n junction diode in Reverse Bias

The positive terminal of battery is connected to n-side (cathode) and the negative terminal of battery is connected to the p-side (anode) of a diode. Therefore, very little current will flow through the diode.

Function of a p-n junction diode in Reverse Bias

The positive terminal of battery is connected to n-side (cathode) and the negative terminal of battery is connected to the p-side (anode) of a diode. Therefore, very little current will flow through the diode. The holes in the p-type material are pulled away from the junction, leaving behind charged ions and causing the width of the depletion region to increase like a wire. Because the n-type region is connected to the positive terminal, the electrons will also be pulled away from the junction with similar effect once the electric field intensity increases beyond a critical level.

Reverse Biasing

When p-type semiconductor is connected to the negative terminal and n-type to the positive terminal, nearly zero current flows in this condition.

Function of a p-n junction diode in forward bias

The positive terminal of battery is connected to the p-side and the negative side of the battery is connected to the n-side of the diode. The holes to the p-type region and the electrons in the n-type region are pushed forward. The junction and start is neutralised. The depletion zone reduces its width. The positive potential applied to the p-type material repels the holes while the negative potential applied to the n-type material repels the electrons. The change in potential between the p-side and the n-side decreases with increasing forward bias voltage. The depletion zone eventually becomes thin enough. The amount of minority charge diffusion to the near neutral zones

AIM: To study the V-I characteristics of a p-n junction diode.

Apparatus Required: diode, power supply,

Ammeter (), Voltmeter, connecting cables, resistor, bread board.

Theory:

A p-n junction is known as a semiconductor or diode. an crystal diode. It is the combination of P-type and n-type semiconductor which offers supply nearly zero resistance to current and forward bias and nearly infinite resistance to the flow of current in reverse bias i.e, current is negligible.

Forward biasing:

When p-type semiconductor is connected to the positive terminal of the voltage source and n-type to negative terminal nearly zero resistance is offered to the flow of current.