BME 212 Electronics Laboratory

Experiment #1 Examination of Diode Characteristics

Objective

The objective of this experimet is to examine the forward and reverse polarity properties of diodes, to obtain current-voltage (I-V) graphs.

Preliminary Work

1- For circuit given in Figure 1 below, calculate the I_D and V_o for two sets of V_i voltage values given below. Use the approximate diode model for Si where $r_{av} = 40\ \Omega$.

- V_i = 0 V, 0.1 V, 0.2 V, 0.3 V, 0.4 V, 0.6 V, 0.8 V , 1 V, 2 V, 3 V
- V_i = -1V, -2V, -3V, -4 V

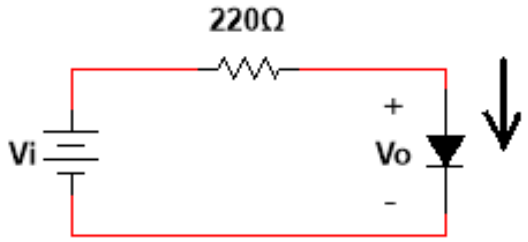
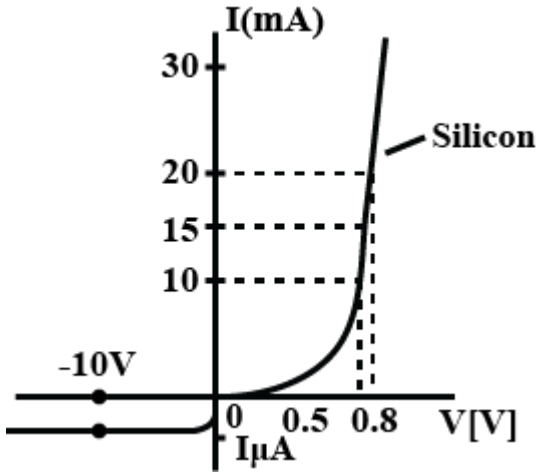


Figure 1.

Preliminary Work (Cont.)

2- Plot the V_0 vs. I_D graphs using the values calculated in Part 1.



Example of graph

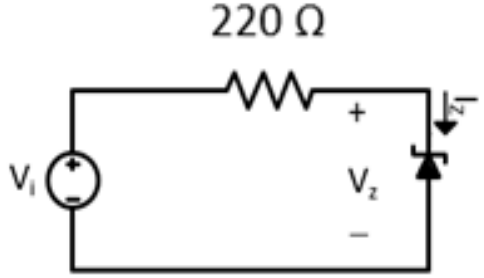
Procedure

CHECK ALL THE DIODES USING MULTIMETER BEFORE START.

1) For the circuit given in Preliminary Work (Figure 1) measure and tabulate I_D and V_o for each voltage value and compare the results with Preliminary Work. Repeat the measurements for **two different** diodes (Silicon and Germanium Diode).

2) Plot the V_D vs. I_D graphs of **both** diodes.

3) For the circuit given below measure and tabulate I_z and V_z for each voltage value and Plot the V_Z vs. I_z graph (V_Z = 6.2 V)



V_i = 1 V, 3 V, 5 V, 7 V, 9 V

V_i = -0.1 V, -0.3 V, -0.5 V, -0.7 V, -0.9 V

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Results

1) Obtaining diode characteristics for forward and reverse bias cases.

V_i		0 V	0.1 V	0.2 V	0.3 V	0.4 V	0.6 V	0.8 V	1 V	2V	3V
D1	V_D										
	I_D										
D2	V_D										
	I_D										

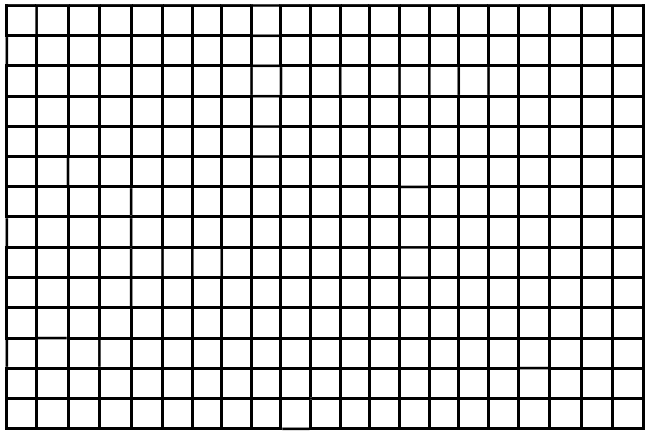
V_i		-1 V	-2 V	-3 V	-4 V
D1	V_D				
	I_D				
D2	V_D				
	I_D				

Comment:

BME212 Report#1
Results (Cont.)

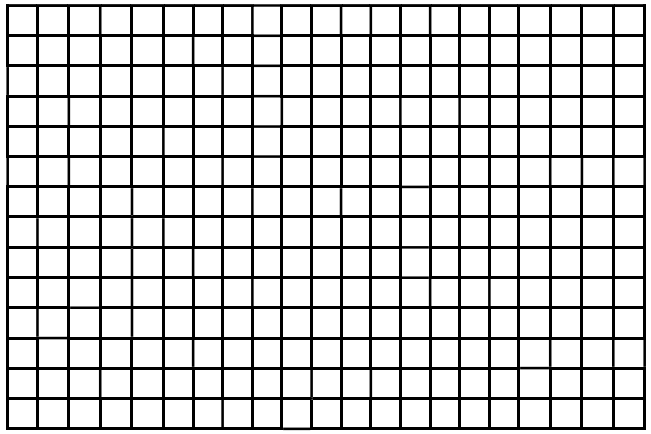
2) Plot diode characteristics

Silicon Diode:



Comment:

Germanium Diode:

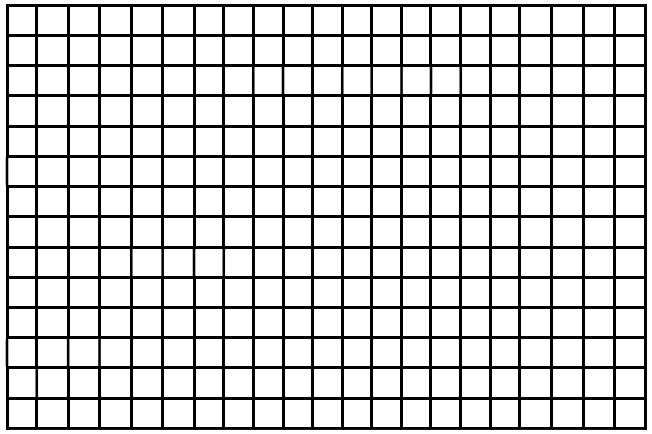


Comment:

BME212 Report#1
Results (Cont.)

3) Obtaining and plotting of zener diode characteristics for forward and reverse bias cases.

V_i	0.1 V	0.3 V	0.5 V	0.7 V	0.9 V
V_z					
I_z					
V_i	-1 V	-3 V	-5 V	-7 V	-9 V
V_z					
I_z					



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