ELEC-313
Lab 2: Diode Characterization

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1 Objective

2 Schematics

Circuit Tested

Test Configuration

3 Procedure

4 Results

4.1 Part A

-5.00	-5.000	0.01
-4.50	-4.500	0.01
-4.00	-4.000	0.01
-3.50	-3.500	0.01
-3.00	-3.000	0.01
-2.50	-2.500	0.01
-2.00	-2.000	0.01
-1.50	-1.500	0.01
-1.00	-1.000	0.01
-0.50	-0.500	0.01
0.00	0.277	0.01
0.25	0.254	0.01
0.50	0.461	0.10
0.75	0.536	0.46
1.00	0.570	0.92
1.25	0.591	1.40
1.50	0.606	1.89
1.75	0.618	2.39
2.00	0.627	2.90
2.25	0.635	3.41
2.50	0.642	3.92
2.75	0.648	4.44
3.00	0.653	4.95
3.25	0.658	5.47
3.50	0.662	5.99
3.75	0.666	6.51
4.00	0.670	7.03
4.25	0.673	7.55
4.50	0.676	8.08
4.75	0.679	8.60
5.00	0.682	9.13
5.50	0.687	10.18
6.00	0.692	11.23
6.50	0.696	12.30
7.00	0.699	13.36
7.50	0.703	14.42
8.00	0.706	15.49
8.50	0.709	16.56
9.00	0.712	17.66
9.50	0.714	18.75
10.00	0.717	19.84

5 Conclusion

As shown in Table **??**, the amplifier models do closely represent the amplifier used in the experiment. The greatest difference occurred in the current gain (A_i), largely due to R_o being nearly zero. This also causes G_m to be very large.

6 Appendix

Equations

$$\%_{error} = \frac{|measured - nominal|}{nominal} \times 100\% \tag{1}$$

$$R_o = \frac{V_{noload} - V_{load}}{I_{load}} \tag{2}$$

$$R_i = \frac{V_i}{I_i} \tag{3}$$

$$A_v = \frac{V_o}{V_i} \tag{4}$$

$$A_i = A_v \left(\frac{R_i}{R_o} \right) \tag{5}$$

$$G_m = \frac{A_v}{R_o} \tag{6}$$

$$R_m = A_v R_i \tag{7}$$