ELEC-313
Lab 2: Diode Characterization

September 19, 2013

Date Performed:	September 18, 2013
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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

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

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

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

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

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

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

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