

ECEn 450, Winter 2009
Homework # 8
Due March 3, 5:00 pm

From the text Semiconductor Devices, Physics and Technology, do the following problems:

Chapter 4, problems 1, 2, 7

Chapter 13, problems 12, 13

Also complete the following problem:

8.1 A silicon pn junction is to be designed which meets the following specifications at $T=300\text{K}$. At a reverse bias voltage of 1.2 V, 10 percent of the total space charge region is to be in the n region and the total junction capacitance is to be 3.5×10^{-12} F with a cross-sectional area of 5.5×10^{-4} cm². Determine (a) N_A , (b) N_D , and (c) V_{bi} .

Homework Helps and Hints:

13.12 Refer to Fig. 17

13.13 Refer to Fig. 17