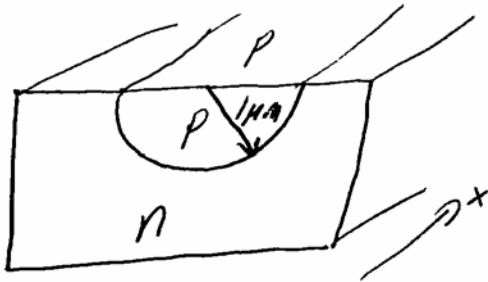


Recitation 3
EE 3161 – Spring 2008

- 1) For a germanium crystal at room temperature what is the position of the intrinsic Fermi level? Intuitively, why is it closer to E_v or E_c ? (Germanium data is on pages 32 and 34 of Pierret).

- 2) For the diffused resistor below, what is the resistance? The resistor is 100 μm long. Acceptors at a concentration of $N_a = 10^{17} \text{ cm}^{-3}$ have been implanted over the area shown. The entire block of silicon has been doped with donors to $N_d = 4 \times 10^{16} \text{ cm}^{-3}$. (Use $\mu_p = 350 \text{ cm}^2/\text{V}\cdot\text{s}$).



The p-implant
along x is the
resistor