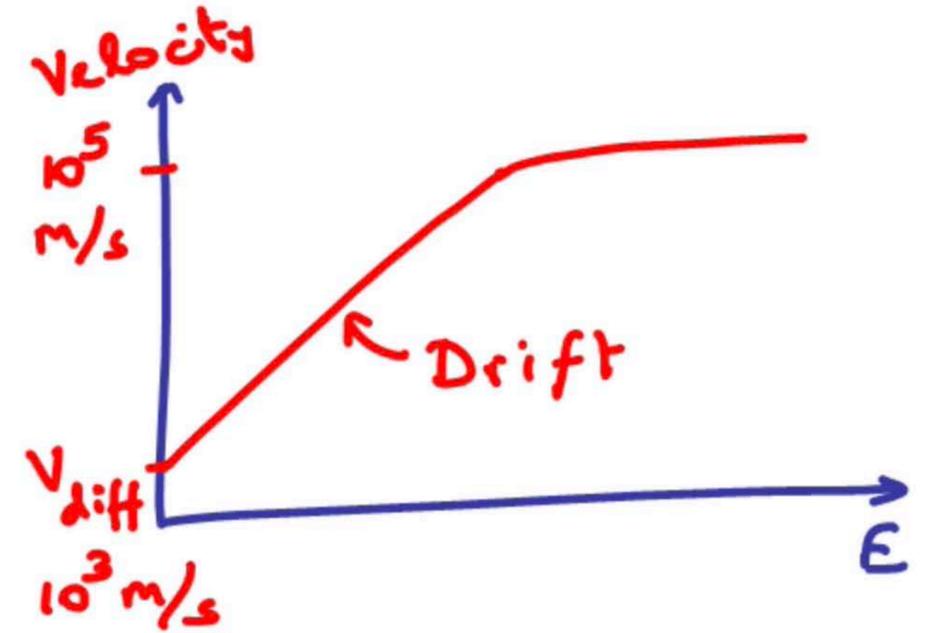
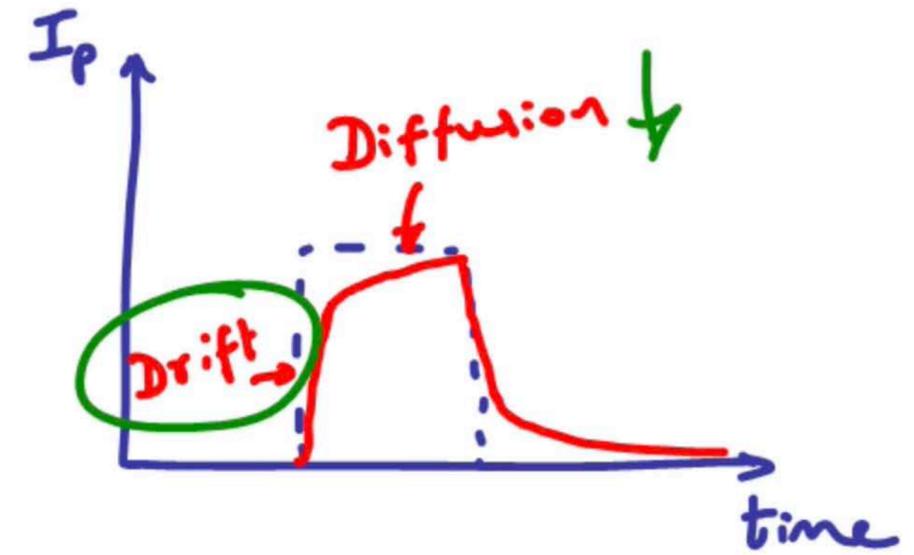
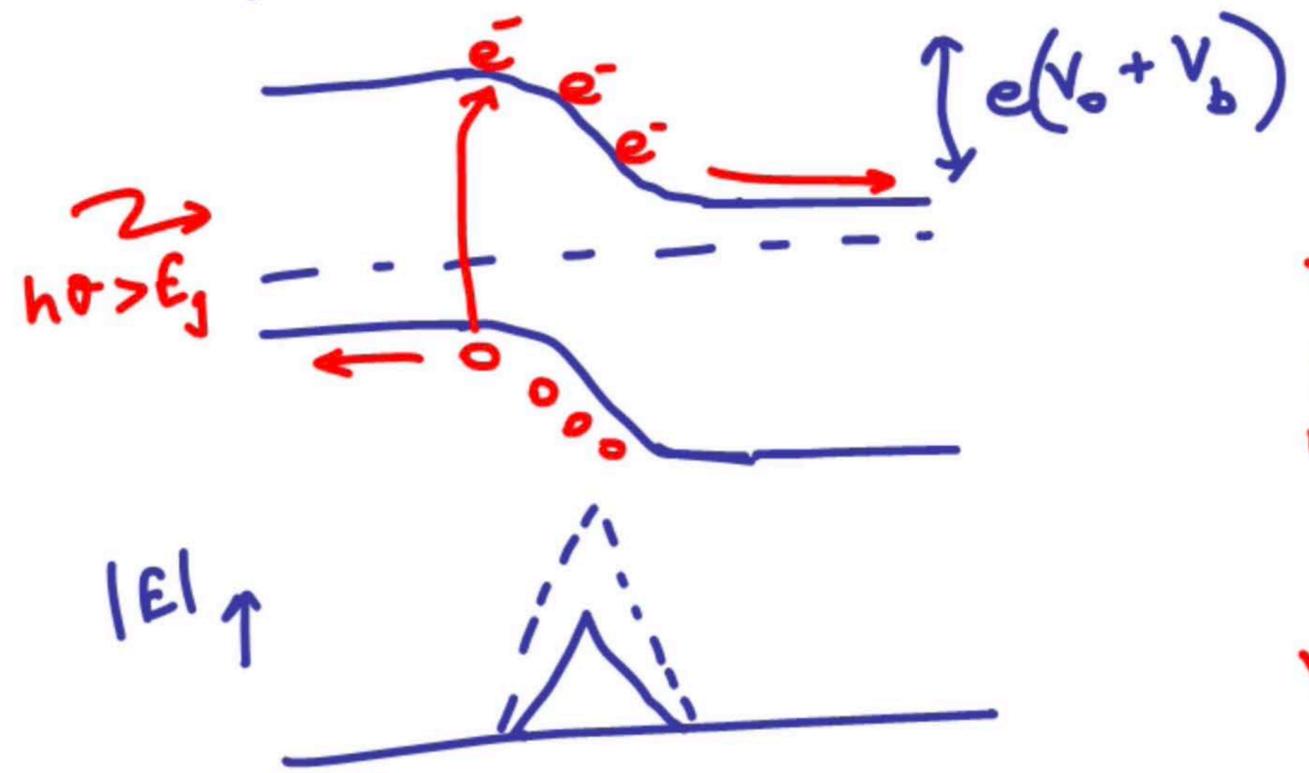
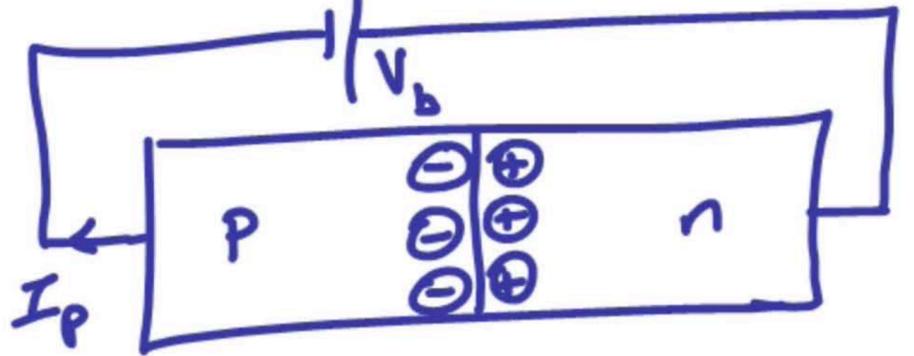
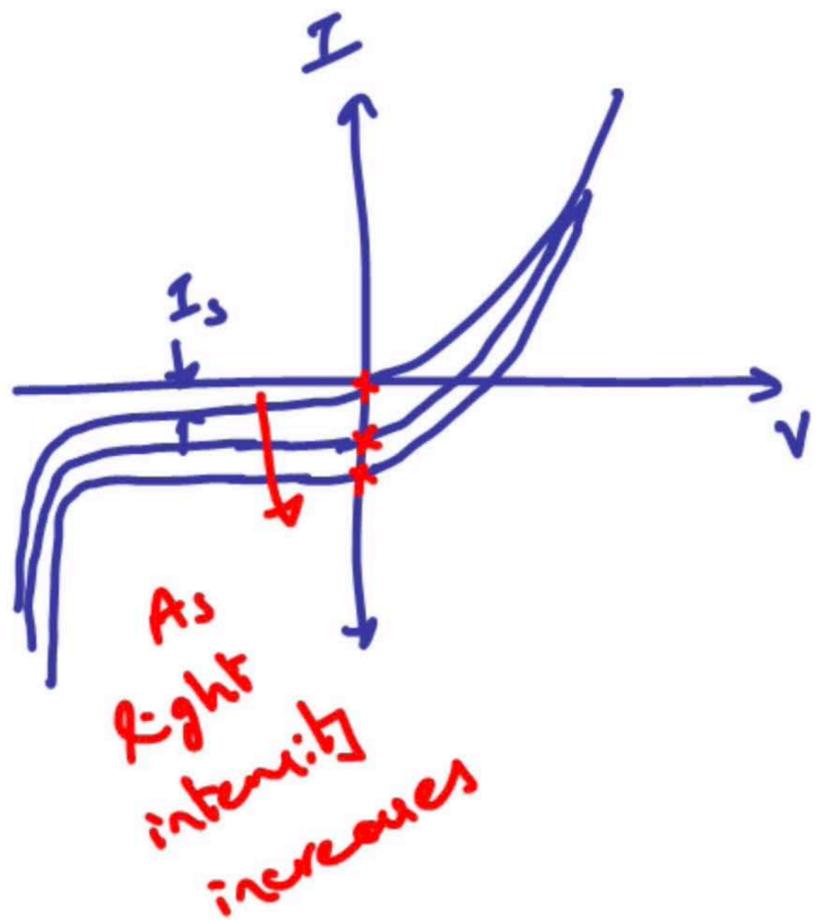
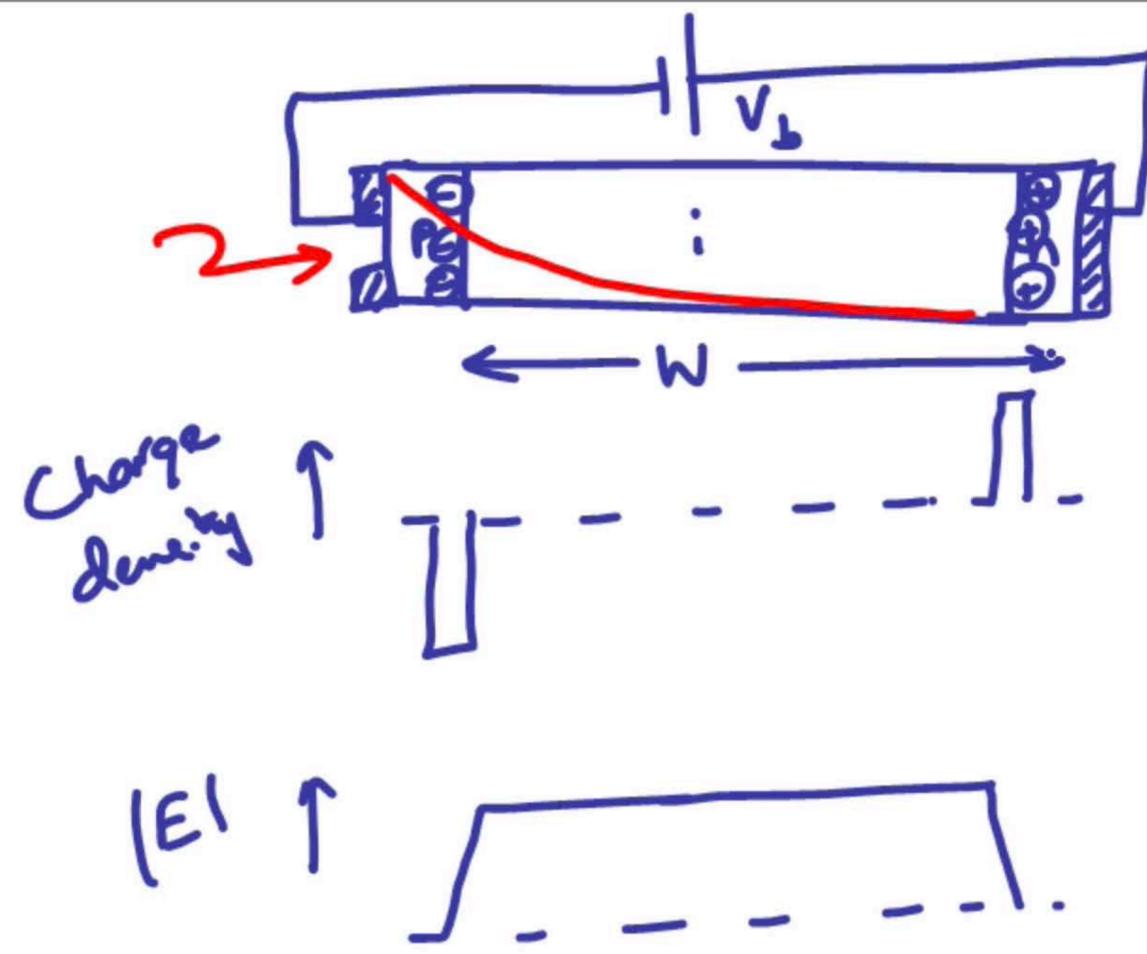


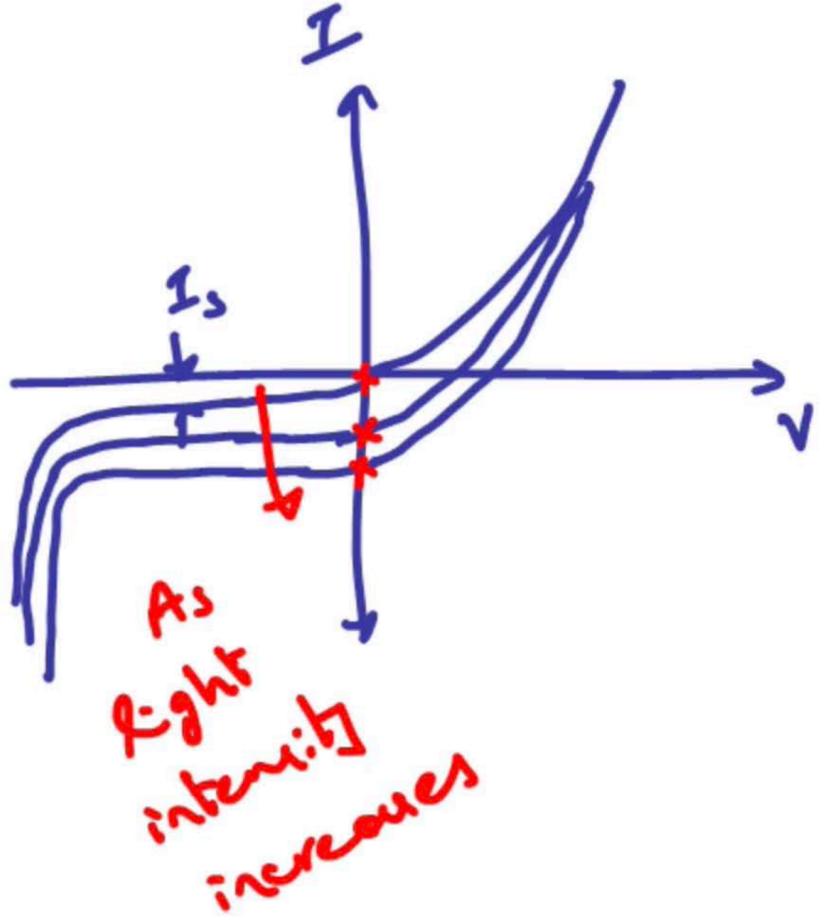
Semiconductor

Light Detectors:

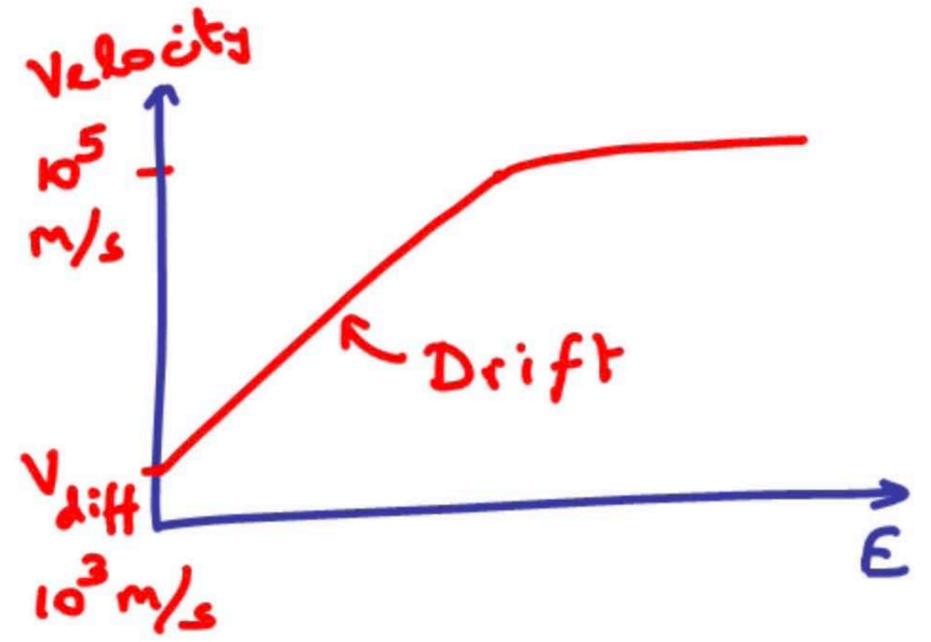
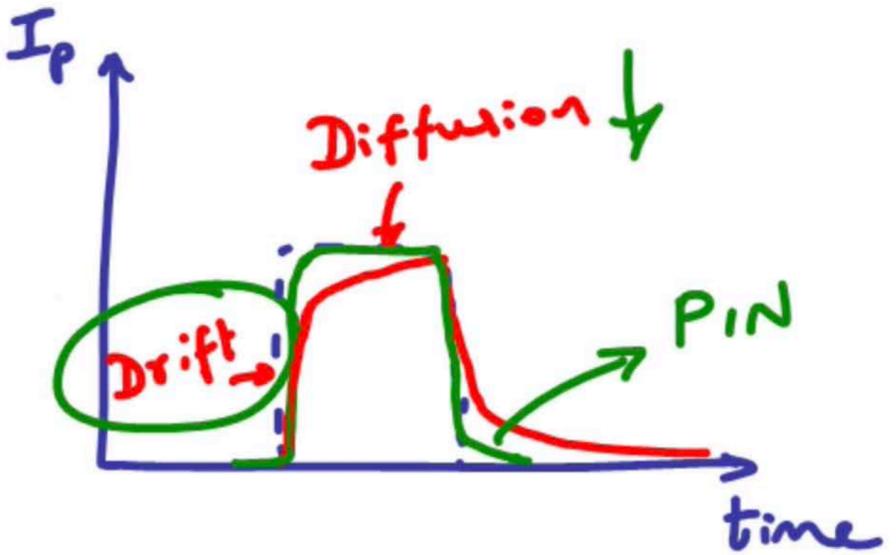
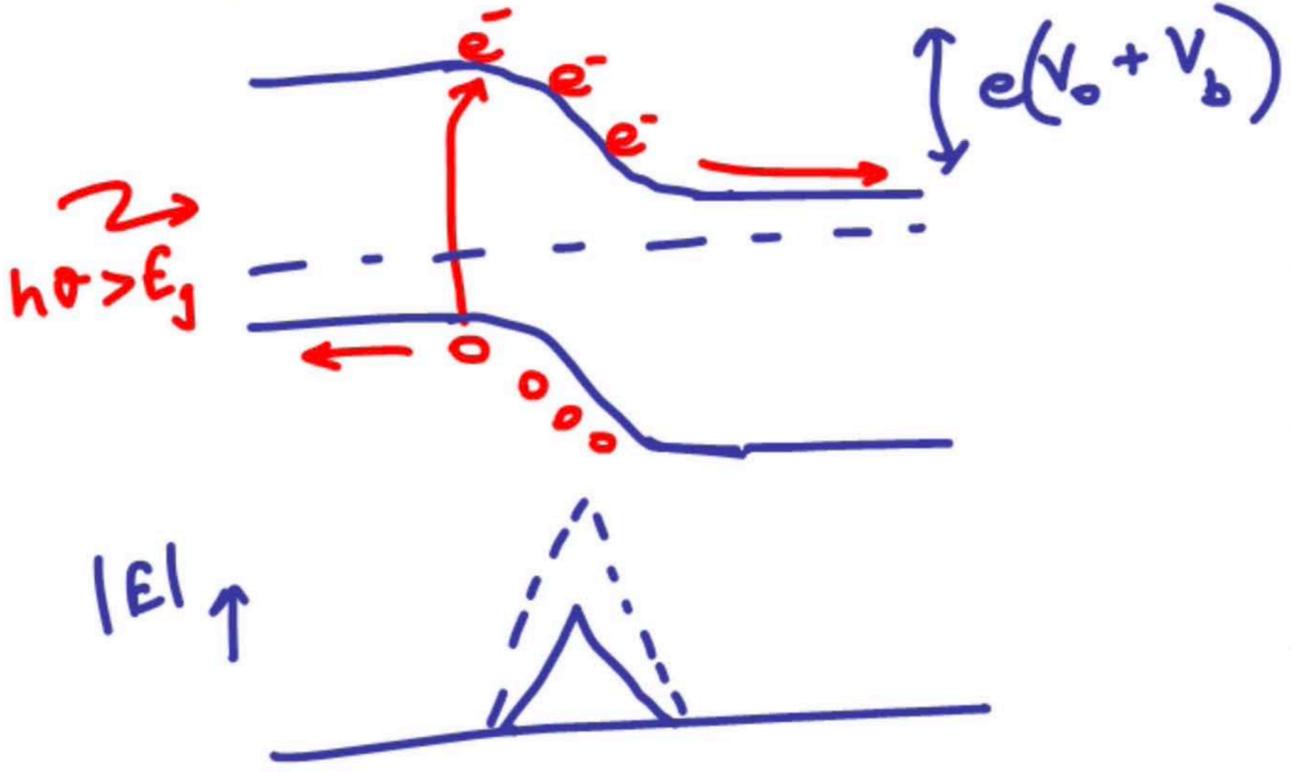
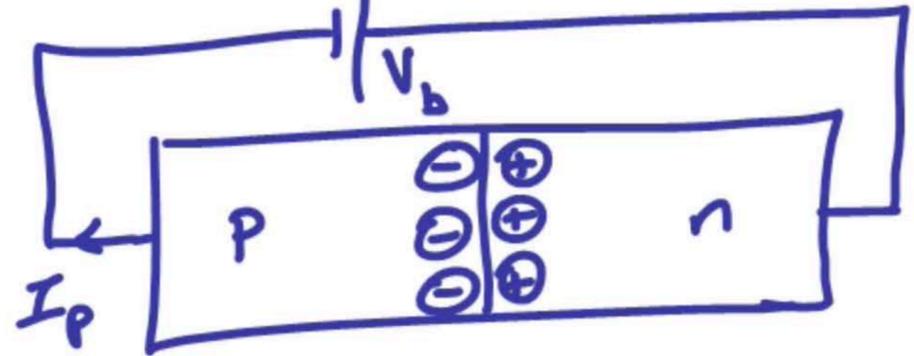


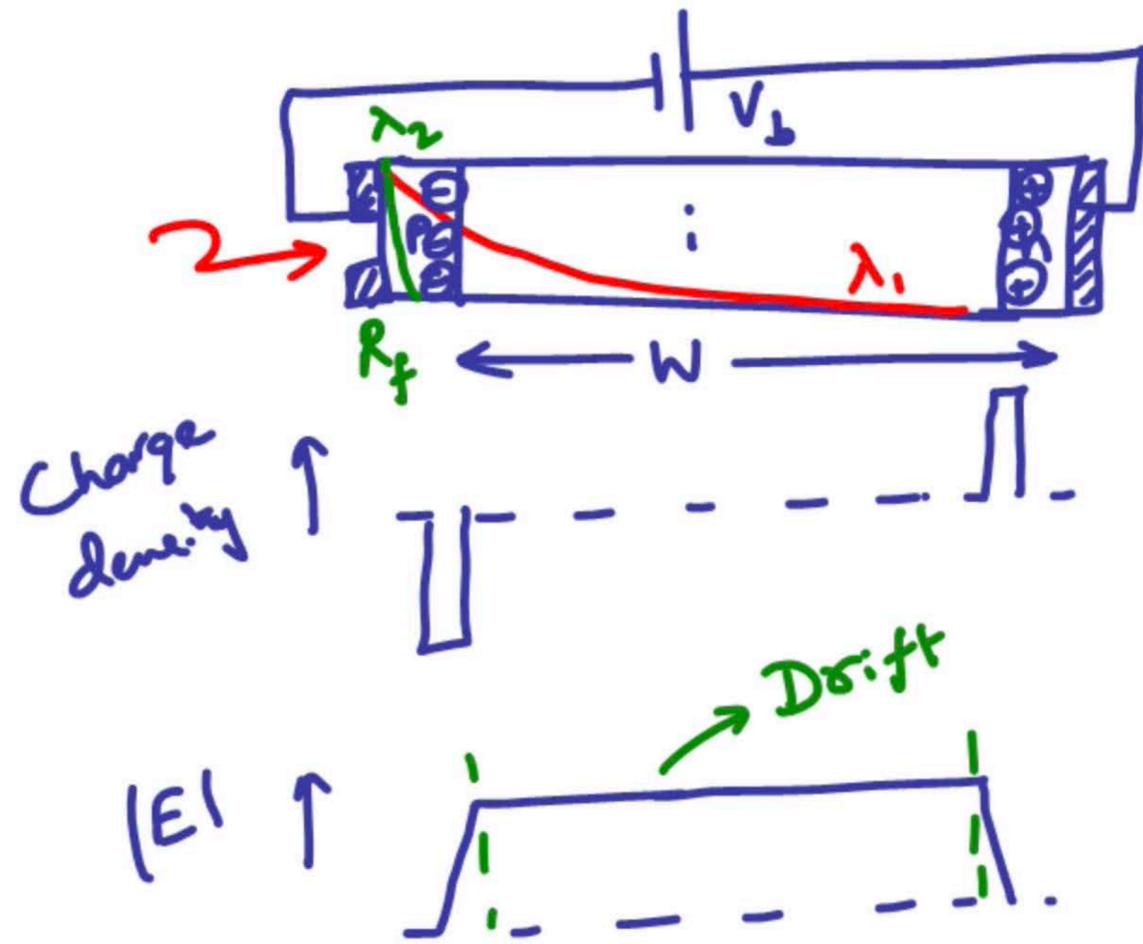
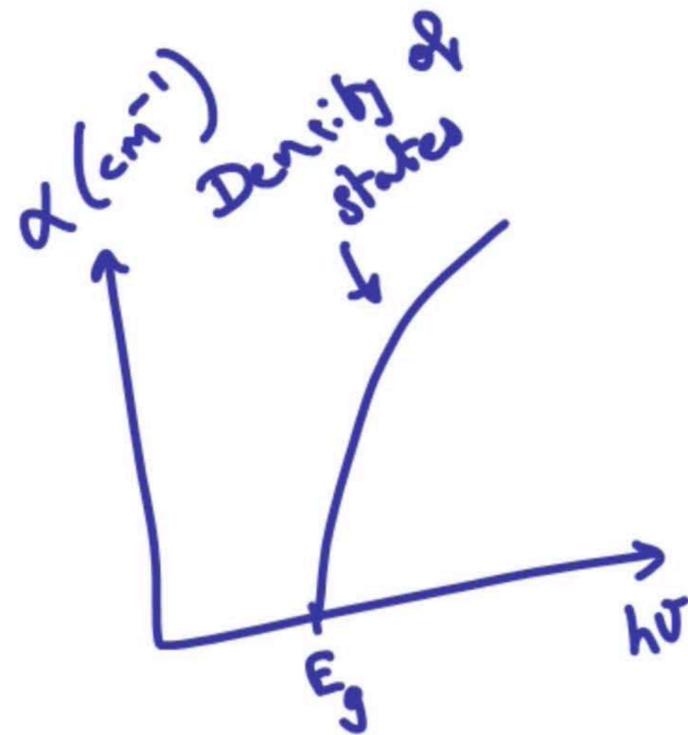


Semiconductor



Light Detector:





$$\lambda_2 \ll \lambda_1$$

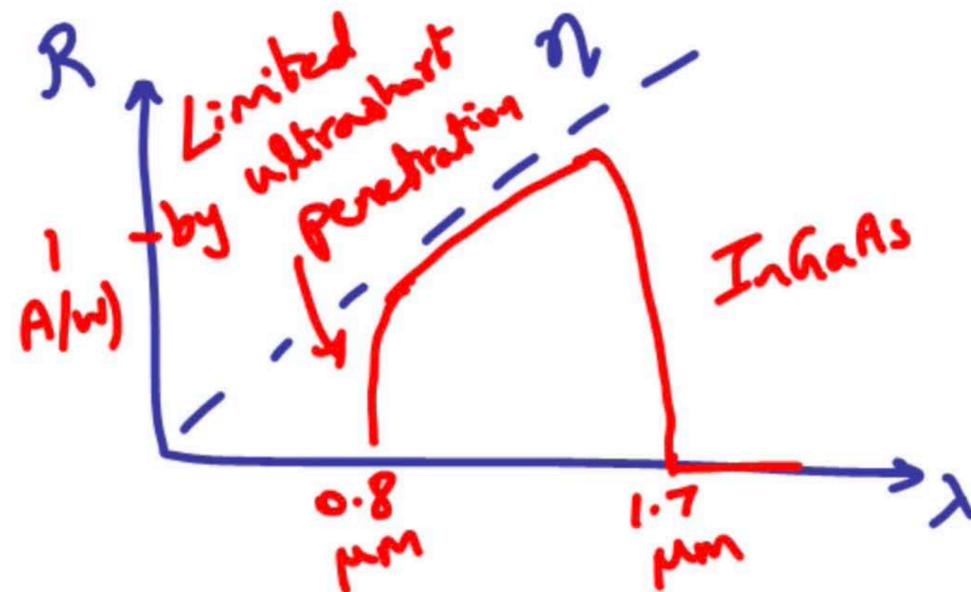
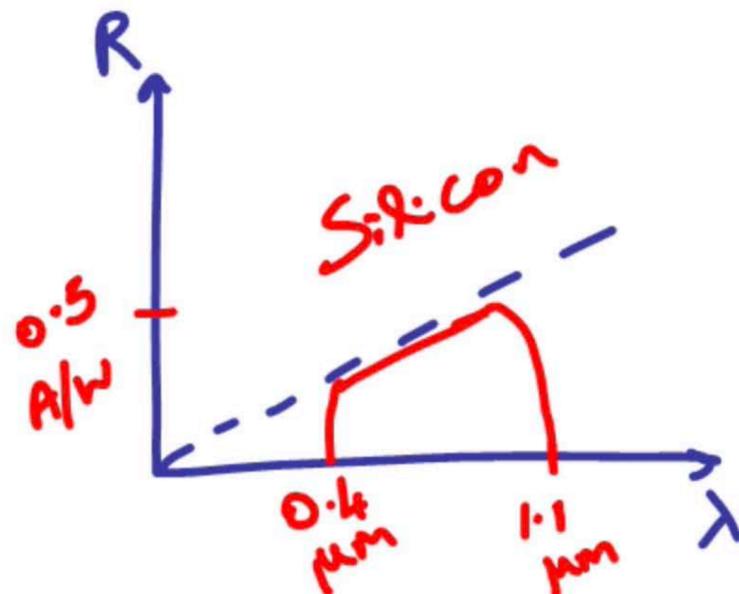
Responsivity, $\mathcal{R} = \frac{I_p}{P_{in}} \text{ (A/W)}$

$$I_p = \frac{P_{in}}{h\nu} (1 - R_f) \eta e (1 - e^{-\alpha w})$$

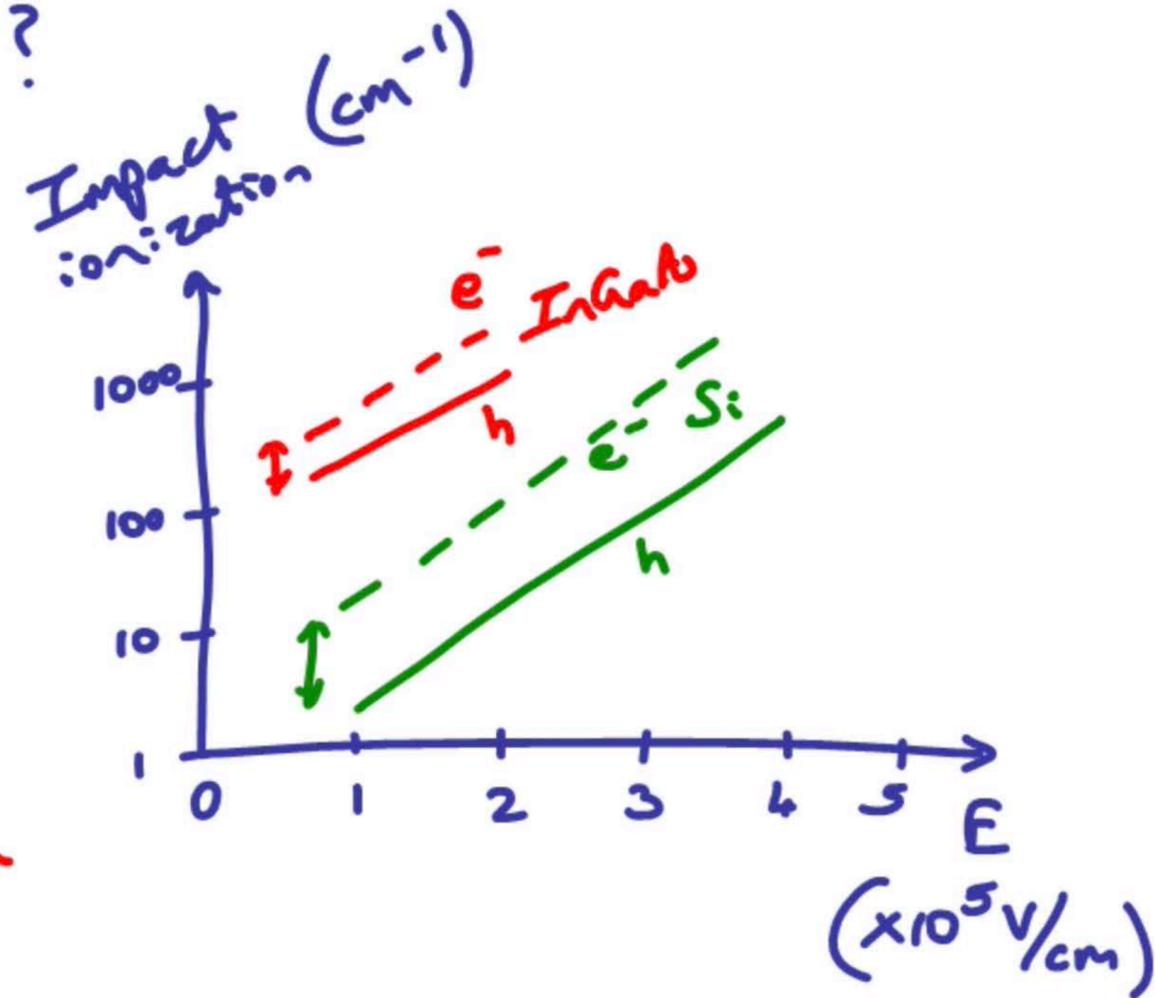
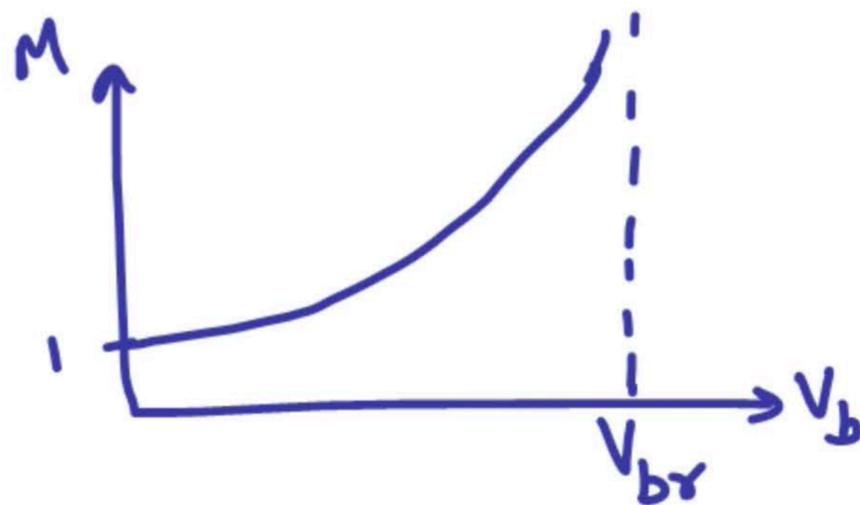
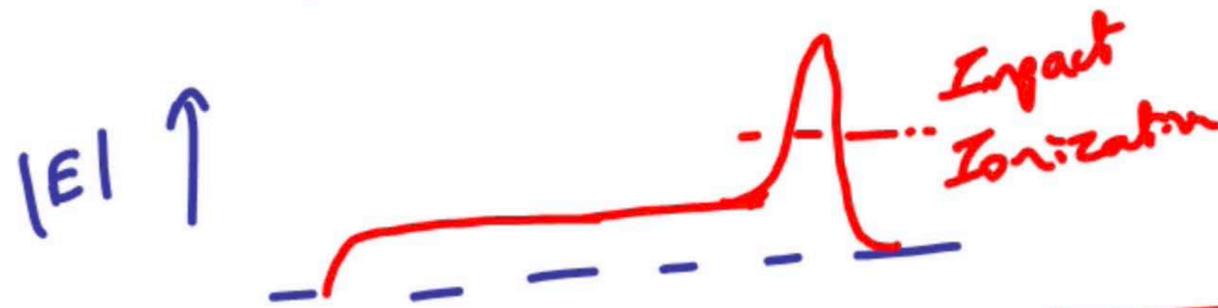
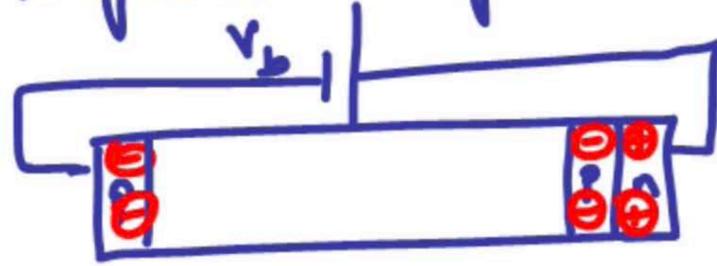
0.9 for InGaAs
0.7 for Si

$$\mathcal{R} = \frac{\eta e}{h\nu} \text{ (A/W)}$$

$$= \frac{\eta \lambda (\mu\text{m})}{1.24}$$



How to improve responsivity (R)?



$$R_{APD} = M \cdot R_{PIN}$$