

ECSE-2210 Microelectronics Technology
Class Activity 18

1. Why cannot the detectors for 1.55 μm IR light be made from Si?
2. GaAs has a bandgap of 1.4 eV. If an LED is made from GaAs, what will be the approximate wavelength of the light output?
3. Consider the p-n junction diode detector shown below. A laser with a photon energy greater than the bandgap of the detector is focused such that illuminated area on the detector is very small (about $1\mu\text{m}$ in diameter). The hole and electron diffusion lengths are $10\mu\text{m}$ and $20\mu\text{m}$ respectively. Plot the photo-response you will expect when you scan the laser beam from $x = -100\mu\text{m}$ to $x = +100\mu\text{m}$. Make a qualitative plot.

