Abstract

Numerical computation has been carried out for theoretical characterization of a p+-InSb/n0-InSb/n+-InSb photodiode at 300 K for operation in 4.0 µm to 4.5 µm wavelength region. The different components of the dark current and the R0A products have been calculated using the theoretical model discussed above. In present work the the R0A product as well as the other major parameters of the p+-InSb/n0-InSb/n+-InSb gas detectors such as quantum efficiency, responsivity and detectivity have been estimated quantitatively. The peak detectivity has been estimated to be ~ 6.8 × 10^7 mHz1/2/W and efficiency obtained on the basis of this model with their peaks at 4.2 µm wavelength, which reveals that this detector is best suited for detection of CO2 gas.
Theoretical Modelling Of Infrared Photodetector for CO2 Gas Detection

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Index Terms

Computer Science  Wireless

Keywords

Detectivity  Responsivity  Efficiency  Gas Detector