

## Characterization of the in 0.53 Ga 0.47 as n+nn+ Photodetectors

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**Abstract :** We present an analytical model for the calculation of the sensitivity, the spectral current noise and the detectivity for an optically illuminated In<sub>0.53</sub>Ga<sub>0.47</sub>As n+nn+ diode. The photocurrent due to the excess carrier is obtained by solving the continuity equation. Moreover, the current noise level is evaluated at room temperature and under a constant voltage applied between the diode terminals. The analytical calculation of the current noise in the n+nn+ structure is developed. The responsivity and the detectivity are discussed as functions of the doping concentrations and the emitter layer thickness in one-dimensional homogeneous n+nn+ structure.

**Keywords :** detectivity, photodetectors, continuity equation, current noise

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