Abstract

Optoelectronic is one of the thrust areas for the recent research activity. One of the key components of the optoelectronic family is photo detector to be widely used in broadband communication, optical computing, optical transformer, optical control etc. Present paper includes the investigation carried on the basis of the Multiplication measurements on GaAs, InP, InGaAs, GaInP, p+-i-n+s with –region thicknesses, with investigation of applicability of the local ionization theory. A local ionization coefficient to be increasingly unrepresentative of the position dependent values in the device as is reduced below 1 um. The success of the local model in predicting multiplication is therefore attributed to the dead-space information already
being contained within the experimentally determined values of local coefficients. This suggested that these should therefore be thought of as effective coefficients, which, despite the presence of dead-space effects, can be, still be used with the existing local theory for efficiently quantifying multiplication and breakdown voltages.

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Index Terms

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