Abstracts

Theory and Measurement of Back Bias Voltage in IMPATT Diodes

L.H. Holway, Jr. and S.L.G. Chu. "Theory and Measurement of Back Bias Voltage in IMPATT Diodes." 1983 Transactions on Microwave Theory and Techniques 31.11 (Nov. 1983 [T-MTT]): 916-922.

The derivation of the back bias voltage is shown to require carrying the derivation of the Read equation to one order of approximation higher than that which is necessary to obtain the quasi-static result. A new term is shown to be needed in the expression for the back bias voltage which changes its sign to positive under conditions in which the older analyses indicate a negative back bias. Experimental measurements of V/sub bb/ as a function of V/sub RF/ were made using a network analyzer and are in agreement with the new analysis. At frequencies considerably below the range at which our measurements were made, a strong negative back bias voltage is caused by the saturation current.

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