Abstracts

Theory and Measurement of Back Bias Voltage in IMPATT Diodes (Comments)

S.C. Tiwari. "Theory and Measurement of Back Bias Voltage in IMPATT Diodes (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 72-74.

In the above paper; back bias voltage in IMPATT diodes has been discussed in detail; however, some previous work on this problem has gone unnoticed. Bracket first pointed out that RF-induced negative resistance was responsible for low-frequency instability which was ten times or so higher in GaAs as compared to Si diodes. Using sinusoidal RF voltage, he considered rectification in the avalanche region which showed that the dc operating voltage decreased with increasing RF voltage amplitude. Lee et al. first discussed anomalous rectification in dc current when second-order terms in voltage were considered in their analysis. We have also independently found the existence of abnormal rectification in our self-consistent nonlinear avalanche region analysis. It is the purpose of this paper to briefly report relevant results.

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