Abstracts

Power Amplification with IMPATT Diodes in Stable and Injection-Locked Modes

Y. Takayama. "Power Amplification with IMPATT Diodes in Stable and Injection-Locked Modes." 1972 Transactions on Microwave Theory and Techniques 20.4 (Apr. 1972 [T-MTT]): 266-272.

The behavior of nonlinear power amplifiers using IMPATTdiodes in both stable and injection-locked modes was investigated theoretically and experimentally. A method of graphical interpretation of the characteristics of negative-resistance diode simplifiers, based on the large-signal diode admittance chart, is presented. The characteristics of the simplified model of the reflection-type amplifier using an X-band Read-type IMPATTdiode have been evaluated. The experimental results of power amplification using an X-band Si IMPATTdiode in both stable and injection-locked modes under various circuit conditions are given. It was shown that nonlinearity of the IMPATT diode susceptance causes distortions in the amplification and injection-locking characteristics.

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