Abstracts

The Traveling Wave IMPATT Mode: Part II -- The Effective Wave Impedance and Equivalent Transmission Line

M. Franz and J.B. Beyer. "The Traveling Wave IMPATT Mode: Part II -- The Effective Wave Impedance and Equivalent Transmission Line." 1980 Transactions on Microwave Theory and Techniques 28.3 (Mar. 1980 [T-MTT]): 215-218.

The coupling between a microstrip and a distributed IMPATT diode was investigated in a field analysis. An effective wave impedance in the traveling wave diode can be defined as the ratio of the space-average transverse electric and magnetic fields. This impedance is related to an effective characteristic impedance by a geometry factor. Thus the coupling question is reduced to the coupling between two transmission lines. In addition the diode is modeled in an equivalent transmission line. The equivalent series impedance and shunt admittance are found. The shunt admittance is approximately equal to the admittance (per unit length) of a discrete diode of identical doping profile. The coupling analysis presented here seems applicable to microstrip interfaces to traveling wave structures other than the IMPATT diode.

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