Abstracts

Power and Efficiency of IMPATT Oscillators

W.J. Evans and G.I. Haddad. "Power and Efficiency of IMPATT Oscillators." 1968 G-MTT International Microwave Symposium Digest and Technical Program 68.1 (1968 [MWSYM]): 54-62.

This paper presents results on r-f power output and efficiency of IMPATT oscillators obtained from a large-signal model of these devices. The Large-signal model is obtained by solving the nonlinear equations which relate the current and voltage in a Read-type IMPATT diode subject to the assumption that the transit time of the carriers through the drift region is small compared to the r-f period. The solution gives the current injected by the avalanche into the drift region as a function of the r-f voltage across the diode. From this result the external circuit current at the fundamental frequency of oscillation is found and is used to calculate the diode impedance. The results and conclusions which can be drawn from this analysis are summarized below.

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