

Abstracts

An Analytic Theory for the Evans Circuit for Avalanche Diodes (Correspondence)

J.E. Carroll. "An Analytic Theory for the Evans Circuit for Avalanche Diodes (Correspondence)." 1970 Transactions on Microwave Theory and Techniques 18.11 (Nov. 1970 [T-MTT] (Special Issue on Microwave Circuit Aspects of Avalanche-Diode and Transferred Electron Devices)): 977-979.

An analytic theory is outlined for the operation of avalanche diodes in the circuit first analyzed by Evans. This consists of a low-pass filter situated approximately one-half wavelength from the diode. The magnitude and rate of rise of the voltage for a given charge pulse are estimated, and expressions for the efficiency and diode impedance are developed. It is shown for this model, where the filter acts as a short circuit at all frequencies other than the fundamental, how efficiencies around 30-40 percent can be achieved. The theory is compared with Evans' experimental results and shows fair agreement.

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