Abstracts

New Insight in Operation Principles and Accurate Design of Fundamental and Harmonic Millimeter-Wave Oscillators

M. Curow. "New Insight in Operation Principles and Accurate Design of Fundamental and Harmonic Millimeter-Wave Oscillators." 1995 MTT-S International Microwave Symposium Digest 95.2 (1995 Vol. II [MWSYM]): 545-548.

A new time-domain simulation method for design and optimization of millimeter-wave oscillators with Gunn and IMPATT devices is presented. The method allows load impedance functions of any complexity as calculated by mode-matching or other techniques to be used as input and is combined with an efficient and accurate hydrodynamic model for the active device. The operation principles of practical oscillator circuits are clarified. Results of this approach are compared with calculations based on impressed voltages and currents in order to determine the real power limits of GaAs Gunn oscillators.

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