Abstracts

Design and Optimization of Millimeter-Wave IMPATT Oscillators

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An efficient frequency-domain nonlinear circuit analysis for the design of IMPATT oscillators is presented. A nonlinear circuit model for the active device which is valid up to millimeter-wave frequencies is combined with the load impedance function of a radial-line resonator waveguide mount calculated by mode-matching. Results for a 140 GHz GaAs IMPATT diode oscillator demonstrate that the method is well suited to investigate the influence of resonator dimensions and parasitic elements on the oscillator performance systematically.

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