Abstracts

A Theoretical Study of an Integrated Quantum-Well Resonant Tunneling Oscillator Initiated by an IMPATT Diode

C.C. Yang and D.-S. Pan. "A Theoretical Study of an Integrated Quantum-Well Resonant Tunneling Oscillator Initiated by an IMPATT Diode." 1995 Transactions on Microwave Theory and Techniques 43.1 (Jan. 1995 [T-MTT]): 112-118.

A novel initiation scheme, utilizing the new pulsed IMPATT to generate millimeter-wave oscillations in a series-integrated quantum-well resonant tunneling diode (RTD), is proposed and theoretically investigated for the first time. To facilitate transient analysis, a generalized impedance is defined and adopted in this work. The detailed investigation of a two-RTD oscillator is carried out at 100 GHz. The maximum oscillator output power versus the minimum initial input power required of initiation is about 50%. The duration of only a few RF cycles is needed for such initiation.

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