Abstracts

Load Dependence of Gunn-Oscillator Performance

H. Pollmann, R. Engelmann, W. Frey and B.G. Bosch. "Load Dependence of Gunn-Oscillator Performance." 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)): 817-827.

A detailed analysis of an experimental resonator as a basis for determining the output power and the tuning range of Gunn oscillators as functions of the fundamental resonant-load resistance. Differing n/sub 0/L products (1.2 and 4.8x10/sup 12/ cm/sup -2/) lead to strikingly different results which are related to the delayed-and quenched-domain resonant modes, respectively. Variations of the second-harmonic frequency termination cause the fundamental output power of Gunn oscillators to change by a factor of up to 5, this change being accompanied by a frequency pulling of a few percent. From detailed impedance measurements it is concluded that the maximum fundamental power occurs if the second-harmonic circuit is tuned near an open-circuit resonance, the total circuit susceptance being somewhat capacitive.

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