

Abstracts

Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)

L.D. Partain, W.A. Cook, H.-F. Huang and L.C. Goodrich. "Absolute Load Detection with Microwave Gunn Oscillators (Short Papers)." 1976 Transactions on Microwave Theory and Techniques 24.10 (Oct. 1976 [T-MTT]): 656-660.

The change in the dc I-V properties of Gunn-flange microwave oscillators with a change in microwave load are shown to provide a method of measuring the physical properties of dielectric samples that only requires the measurement of dc voltages and currents. A phenomenological equivalent-circuit model has been developed that predicts a dependence of detection sensitivity on bias resistance that agrees closely with experiment and that explains the restrictions on such a bias resistor's maximum allowed value. Properties of a prototype system capable of measuring sample size with 8-percent accuracy are presented.

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