Abstracts

An Analytical Equivalent Circuit Representation for Waveguide-Mounted Gunn Oscillators

C.P. Jethwa and R.L. Gunshor. "An Analytical Equivalent Circuit Representation for Waveguide-Mounted Gunn Oscillators." 1972 Transactions on Microwave Theory and Techniques 20.9 (Sep. 1972 [T-MTT]): 565-572.

A lumped equivalent circuit is used to represent the impedance presented to the device terminals for a waveguide-mounted Gunn oscillator. Analytic expressions are used for all the lumped elements. This circuit model is used to predict tuning curves which are compared to experimental tuning curves obtained for iris coupling, for full- and reduced-height waveguides, and for various post diameters. Iris-controlled nontunable modes are reported and explained by the model. The real part of the load impedance presented at the device terminals is found to agree with Copeland's prediction for optimum loading. Experimentally observed mode switching is explained with reference to variations in device parameters.

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