Abstracts

Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application

J.S. Joshi and J.A.F. Cornick. "Analysis of a Waveguide Mounting Configuration for Electronically Tuned Transferred-Electron-Device Oscillators and its Circuit Application." 1976 Transactions on Microwave Theory and Techniques 24.9 (Sep. 1976 [T-MTT]): 573-584.

Theoretical analysis of a waveguide-post mounting configuration employed for high electronic (varactor) tuning of a transferred-electron-device oscillator is presented. The resulting two-port-coupling network representation is also used to derive the impedance of the post structure as an obstacle to the dominant TE/sub 10/ mode in the waveguide. Obstacle measurements conducted on the post structure for the incident TE/sub 10/ mode are found to be in very good agreement with the theory. This network representation is then applied to a practical transferred-electron-device oscillator reported elsewhere. It has been able to successfully explain the characteristic features of the oscillator. It is observed that the main source of discrepancy between the theoretical and experimental characteristics could be attributed to a lack of knowledge of the precise values of the package parasitic elements. The nature of the theoretical varactor-tuning characteristic predicted by the model is discussed and indicated for a particular configuration.

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