Abstracts

Modeling of Cascaded Coplanar Waveguide Discontinuities by the Mode-Matching Approach

R. Schmidt and P. Russer. "Modeling of Cascaded Coplanar Waveguide Discontinuities by the Mode-Matching Approach." 1995 Transactions on Microwave Theory and Techniques 43.12 (Dec. 1995, Part II [T-MTT] (1995 Symposium Issue)): 2909-2916.

Cascaded coplanar waveguide discontinuities with transverse dimensions in the order of some micrometers are analyzed by the mode-matching and generalized scattering matrix method. This approach permits a full-wave analysis of the electromagnetic field also in the metallic regions. Compared with full-wave analysis assuming perfect conductors and a subsequent loss computation based on the surface impedance model the accuracy is considerably enhanced. The mode-matching method is revisited in the context of a network representation of discontinuities. The implications of Tellegen's general network theorem on the mode-matching method, particularly on the testing functions, are investigated. Furthermore, the mode-matching method is related to the equivalence principle applied to discontinuites and to the continuity condtion of voltage and current of quasi-TEM waves in the static approximation.

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