Abstracts

Propagation Characteristics of Coplanar-Type Transmission Lines with Lossy Media

T. Kitazawa and T. Itoh. "Propagation Characteristics of Coplanar-Type Transmission Lines with Lossy Media." 1991 Transactions on Microwave Theory and Techniques 39.10 (Oct. 1991 [T-MTT]): 1694-1700.

Lossy coplanar-type transmission lines are analyzed based on the hybrid-mode formulation by combining the spectral-domain approach with the perturbation method. Introducing a finite thickness of metallization and choosing the proper basis functions for the thick conductor model prevent the integrals used for calculating the conductor losses from becoming singular when evaluated at the conductor edge. Also, advantage is taken of an orthogonality relation which is used to reduce the double infinite or semi-infinite integral to a single integral, thus reducing the computation labor drastically. Numerical computations by new basis functions for the thick conductor show convergence rates as fast as those for the zero-thickness cases. Numerical results include the effective dielectric constants, characteristic impedances, and total losses (conductor and dielectric losses) for slot lines and symmetrical and asymmetrical coplanar waveguides.

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