Abstracts

Coupled Mode Analysis of a Finline

J. Mazur and M. Mrozowski. "Coupled Mode Analysis of a Finline." 1989 Transactions on Microwave Theory and Techniques 37.2 (Feb. 1989 [T-MTT] (Special Issue on Quasi-Planar Millimeter-Wave Components and Subsystems)): 281-288.

A theoretical analysis of a unilateral finline loaded with arbitrary inhomogeneous lossy dielectric material is presented. The rigorous coupled mode approach is used. The electromagnetic field in the line is expressed in terms of the modes of a ridged waveguide and the problem is transformed to a matrix eigenvalue equation. Approximate expressions are derived for investigating the properties of the fundamental mode in finlines loaded with dielectric slabs. Dispersion characteristics, the characteristic impedance, and the attenuation due to dielectric losses and the finite conductivity of metal coating are computed for various line configurations. The numerical results are compared with data obtained by means of the spectral-domain method, proving the validity and usefulness of the proposed approach.

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