Abstracts

Analysis and Synthesis of Coplanar Coupled Lines on Substrates of Finite Thicknesses (Short Papers)

K.-K.M. Cheng. "Analysis and Synthesis of Coplanar Coupled Lines on Substrates of Finite Thicknesses (Short Papers)." 1996 Transactions on Microwave Theory and Techniques 44.4 (Apr. 1996 [T-MTT]): 636-639.

This paper presents two sets of newly developed CAD-oriented formulas for the evaluation of the quasi-static even- and odd-mode characteristics of coplanar coupled lines on substrates of finite thicknesses. The first set of expressions is derived based on the conformal mapping method. Numerical results show that both the even- and odd-mode characteristic impedances and effective dielectric constants computed by these expressions are in good agreement with the results generated by the spectral domain method. The second set of formulas is derived based on a seminumerical approach and can be used to calculate the geometrical parameters of coplanar coupled lines directly from the given electrical parameters, without using an iterative approach. These seminumerical formulas give maximum error in impedance calculation of about 2.0% (c/h<2), over a wide range of impedance and dielectric constant values.

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