Abstracts

Analytically and Accurately Determined Quasi-Static Parameters of Coupled Microstrip Lines

C. Wan. "Analytically and Accurately Determined Quasi-Static Parameters of Coupled Microstrip Lines." 1996 Transactions on Microwave Theory and Techniques 44.1 (Jan. 1996 [T-MTT]): 75-80.

Using modified conformal mapping technique and magnetic-wall approximation, closed-form expressions for quasi-static parameters of coupled microstrip lines are determined accurately in this paper. They are found to be very accurate when compared with the well-recognized numerical solutions in the literature. Specifically, the present effective permittivities for both modes are accurate to within 0.4%, the even-mode characteristic impedance is accurate to within 1.2%, and the odd-mode impedance is accurate to within 1.8% for w/h >= 0.4 and 3.8% for 0.4 > w/h >= 0.1. They are believed to be the most accurate closed-form formulas for coupled microstrip lines and should find applications in microstrip computer-aided design. In addition, two sets of existing equations have been checked against exact values or accurate results. According to the comparisons, they are either unacceptable or partially acceptable. Three data tables instead of figures are given for clarity.

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