Abstracts

High Accuracy Formulas for Calculation of the Characteristic Impedance of Microstrip Lines

An analytical formula for determination of the characteristic impedance of a microstrip line assuming the quasi-TEM mode of propagation is presented. The new form of the final formulas contains only integrals which can be numerically performed by means of the Gauss-Laguerre quadrature. The method can be applied to multilayer lines and also to the case of anistropic dielectrics. By using some suitable conformal mappings the formulas obtained can be used to determine the characteristic impedance of some cylindrical microstrip lines. We have compared the results given by the proposed formulas with the finite analytical solution available in a particular case and also with results obtained by the substrip method. All the performed tests indicate that the proposed formulas are highly accurate and efficient relations for determining the characteristic impedance of microstrip lines.

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