Abstracts

Efficient MPIE approach for the analysis of three-dimensional microstrip structures in layered media

A full-wave space-domain method is presented for the rigorous and fast investigation of printed circuit structures of arbitrary shape on uniaxial anisotropic layered substrates including three dimensional (3-D) metallizations. The electromagnetic (EM) fields are described in terms of a mixed-potential-integral-equation (MPIE) formulation, Two different techniques-the matrix pencil (MP) technique and a cross-sectional eigenvalue (CSEV) approach-are employed to extract the S-parameters of the circuit under consideration. The usage of a triangular mesh allows the convenient modeling of arbitrarily shaped structures. Therefore, the main advantage of this method is its generality, which allows a large variety of printed circuit structures to be characterized. The flexibility of the method is demonstrated for the example of spiral inductors including air-bridges with finite-metallization thickness.

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