Abstracts

Extending the Three-Dimensional Spectral-Domain Approach to Hybrid Microwave Integrated Circuits with Passive and Active Lumped Elements

T.-S. Horng. "Extending the Three-Dimensional Spectral-Domain Approach to Hybrid Microwave Integrated Circuits with Passive and Active Lumped Elements." 1994 MTT-S International Microwave Symposium Digest 94.2 (1994 Vol. II [MWSYM]): 709-712.

This paper extends the spectral-domain approach (SDA) to rigorously analyze hybrid microwave integrated circuits (HMIC) with lumped elements such as resistors, inductors, capacitors, diodes and transistors. Via-holes and air-bridges are used to connect these elements and attach them to the planar metallization structures. Under this scheme, the electric field integral equations that include linear elements are derived and solved through the method of moments. In addition, an iterative technique for assistance in modeling nonlinear elements is described. Comparison of SDA results with MWSPICE and TOUCHSTONE calculations for several practical circuit configurations illustrates the accuracy of this extended SDA method.

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