Abstracts

A 3-D Mode Matching Technique for the Efficient Analysis of Coplanar MMIC Discontinuities with Finite Metallization Thickness

F. Alessandri, G. Baini, M. Mongiardo and R. Sorrentino. "A 3-D Mode Matching Technique for the Efficient Analysis of Coplanar MMIC Discontinuities with Finite Metallization Thickness." 1993 Transactions on Microwave Theory and Techniques 41.8 (Sep. 1993 [T-MTT] (Special Issue on Modeling and Design of Coplanar Monolithic Microwave and Millimeter-Wave Integrated Circuits)): 1625-1629.

A technique is proposed for the efficient analysis of CPW discontinuities including finite metallization thickness. The transverse resonance technique (TRT) is modified by introducing an impressed source that allows a cavity of fixed, instead of variable, dimensions to be analyzed (impressed source technique, IST). At the same time, as with TRT, the field analysis of only homogeneously filled waveguides is required so avoiding the computation of frequency dependent as well as complex modes as with the conventional mode matching technique. On this basis, an extremely efficient code for the analysis of CPW discontinuities, applicable also to interacting discontinuities, is obtained. The same code, which incorporates the modal spectrum of L-shaped waveguide, can be used to compute a large class of CPW discontinuities including steps, gaps, open ends, etc. Computed results are shown to be in remarkable agreement with the experiments and confirm that the finite metallization thickness may significantly affect the electrical characteristics of CPW circuits.

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