Abstracts

Capacitance computation for CPW discontinuities with finite metallization thickness by hybrid finite-element method

Chien-Wen Chiu and Ruey-Beei Wu. "Capacitance computation for CPW discontinuities with finite metallization thickness by hybrid finite-element method." 1997 Transactions on Microwave Theory and Techniques 45.4 (Apr. 1997 [T-MTT]): 498-504.

A variational equation is derived for the capacitances of coplanar waveguide (CPW) structures with finite metallization thickness. The equation is expressed in terms of the static potential in the slot region and is solved by applying the hybrid finite-element method (FEM). In the case of small metallization thickness, it is reduced to a perturbation formula for the incremental capacitances. Numerical results for the equivalent capacitances of various discontinuities with finite metallization thickness are presented and compared with measured data. The reasonable agreement between the measured data and the theoretical results validates the present approach. Being simple and computationally efficient, the method is suitable for dealing with extensive CPW discontinuity problems where the metallization thickness is not negligible.

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