Abstracts

Analysis of coplanar waveguide-to-coplanar stripline transitions

Shau-Gang Mao, Chieh-Tsao Hwang, Ruey-Beei Wu and Chun Hsiung Chen. "Analysis of coplanar waveguide-to-coplanar stripline transitions." 2000 Transactions on Microwave Theory and Techniques 48.1 (Jan. 2000 [T-MTT]): 23-29.

The coplanar waveguide (CPW)-to-coplanar stripline (CPS) transition is analyzed theoretically and experimentally in this paper. To characterize this transition in the lower frequency band, a simple equivalent-circuit model that consists of uniform and nonuniform transmission lines is established. The elements of this model can all be obtained by the closed-form formulas; hence, this model is suitable for computer-aided-design application. This model is then applied to design and analyze the CPW-to-CPS transitions with various structure parameters. In the higher frequency band, the partially prism-gridded finite-difference time-domain (FDTD) method is employed to take into account the bond-wire effect as well as the surface-wave leakage and space-wave radiation associated with the transition. In this study, results based on equivalent-circuit model, FDTD simulation, and measurement are compared. Good agreement among these results supports the usefulness of the proposed equivalent-circuit model and also validates the FDTD method. By using the equivalent-circuit model to optimize the transition configuration, the CPW-to-CPS transition with broad bandwidth and low insertion loss may be achieved.

❑ Return to main document.