Abstracts

Quasi-Static Analysis of a Microstrip Via Through a Hole in a Ground Plane

T. Wang, R.F. Harrington and J.R. Mautz. "Quasi-Static Analysis of a Microstrip Via Through a Hole in a Ground Plane." 1988 Transactions on Microwave Theory and Techniques 36.6 (Jun. 1988 [T-MTT]): 1008-1013.

The equivalent circuit of a via which connects two semi-infinitely long transmission lines through a circular hole in a ground plane is considered. The pi-type equivalent circuit consists of two excess capacitances and an excess inductance. They are quasi-static quantities and thus are computed statically by the method of moments from the integral equations. The integral equations are established by introducing a sheet of magnetic current in the electrostatic case and a layer of magnetic charge in the magnetostatic case. Parametric plots of the excess capacitances, the excess inductance, and the characteristic admittance of the via are given for reference.

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