Abstracts

3-D FEM/BEM-hybrid modeling of surface mounted devices within planar circuits

Three-dimensional (3-D) finite-element (FE) meshes of surface-mounted devices (SMDs) are combined with the surface-current models of planar circuits in multilayered media. This is accomplished on the basis of Huygens' principle via the introduction of equivalent electric and magnetic surface-current densities on a surface enclosing the 3-D parts of the SMDs. The fields in the layered media are described by a surface integral equation based on the dyadic Green's function of the layered media. Special attention is directed to a proper interface of the surface and 3-D parts of the models. Numerical results for a homogeneous and a multilayered capacitor in a microstrip circuit are presented.

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