Abstracts

Inductance and Resistance Computations for Three-Dimensional Multiconductor Interconnection Structures

R.-B. Wu, C.-N. Kuo and K.K. Chang. "Inductance and Resistance Computations for Three-Dimensional Multiconductor Interconnection Structures." 1992 Transactions on Microwave Theory and Techniques 40.2 (Feb. 1992 [T-MTT]): 263-271.

A computer-aided analysis system has been established to calculate the equivalent inductance and resistance matrices for three-dimensional multiconductor interconnection structures. Based on the theory of partial element equivalent circuit, the interconnection structures are first decomposed into many straight segments which are of circular or rectangular cross sections but can be in arbitrary orientation. The resistances and partial inductances between all these segments are calculated using analytical integration and quadrature formulae. They are finally assembled into the desired equivalent impedance matrix by general network theory. Illustrative examples include the analysis for nonuniformly coupled transmission lines and the calculation for skin-effect impedances of transmission lines and three-dimensional structures. The numerical results are in good agreement with the measurement data and the available results in the literature.

❑ Return to main document.