Abstracts

Generalized Coupled Interconnect Transfer Function and High-Speed Signal Simulations

Y. Eo and W.R. Eisenstadt. "Generalized Coupled Interconnect Transfer Function and High-Speed Signal Simulations." 1995 Transactions on Microwave Theory and Techniques 43.5 (May 1995 [T-MTT]): 1115-1121.

A new expression for the coupled interconnect system transfer function has been derived under general linear generator and uncoupled load conditions, i.e., without any restrictions in circuit load impedance. High-speed signals on coupled interconnects have been simulated using this transfer function. The simulation uses generalized interconnect circuit model parameters in which all line parameters are frequency dependent. The validity of the interconnect circuit parameters was confirmed previously usings-parameter measurements. High-speed signal simulation using this novel interconnect transfer function has been verified with time-domain measurements using an HP54121T high-speed sampling oscilloscope. This work accurately predicts coupled interconnect circuit responses. With this transfer function, signal integrity problems of high-performance VLSI circuits can be predicted in the design stage.

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