Abstracts

Interconnect Characterization Using Time-Domain Reflectometry

An approach is presented for modeling board-level, package-level, and multichip module substrate-level interconnect circuitry based on measured time-domain reflectometry data. The scattering poles and residues of a multiport system are extracted and used as a model that can be evaluated in linear time by recursive convolution in a SPICE-based simulator. This allows any linear or nonlinear circuits to be connected to the model ports, and the entire circuit may be simulated in a SPICE-based simulator. Two-port and four-port example microstrip circuits are characterized, and the simulation results are compared with measured data. Delay, reflection, transmission, and crosstalk are shown to be accurately modeled in each case.

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