Abstracts

CAD-oriented equivalent-circuit modeling of on-chip interconnects on lossy silicon substrate

A new, comprehensive CAD-oriented modeling methodology for single and coupled interconnects on an Si-SiO/sub 2/ substrate is presented. The modeling technique uses a modified quasi-static spectral domain electromagnetic analysis which takes into account the skin effect in the semiconducting substrate. Equivalent-circuit models with only ideal lumped elements, representing the broadband characteristics of the interconnects, are extracted. The response of the proposed SPICE compatible equivalent-circuit models is shown to be in good agreement with the frequency-dependent transmission line characteristics of single and general coupled on-chip interconnects.

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