Abstracts

FDTD Simulation of Signal Degradation in Lossy and Dispersive Coplanar Waveguides for High-Speed Digital Circuits

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The signal degradation stemming from the conductor loss and the substrate dispersion of coplanar waveguides for the high-speed digital circuits is analyzed by a. combination of the original and frequency-dependent versions of the FDTD method. The metallic strips with the ftite thickness are described by the equivalent Z-parameters. The backed conductor, if any, is modelled by the surface impedance. The dispersive property of the GaAs substrate is formulated by using the Kronig-Kramers relationship. The simulation results demonstrate the signal degradation due to modal dispersion, conductor loss, substrate dispersion and leakage effects in a conductor backed CPW structure.

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