Abstracts

A CAD-Oriented Analytical Model for the Losses of General Asymmetric Coplanar Lines in Hybrid and Monolithic MICs

G. Ghione. "A CAD-Oriented Analytical Model for the Losses of General Asymmetric Coplanar Lines in Hybrid and Monolithic MICs." 1993 Transactions on Microwave Theory and Techniques 41.8 (Sep. 1993 [T-MTT] (Special Issue on Modeling and Design of Coplanar Monolithic Microwave and Millimeter-Wave Integrated Circuits)): 1499-1510.

New analytical approximations are derived for the conductor losses of asymmetric coplanar waveguides (ACPW) and coplanar striplines (ACPS) on a finite-thickness dielectric substrate. The expressions hold for lines whose metallizations have thickness much smaller than the slot and strip widths, but suitably larger than the skin penetration depth at the operating frequency. The derivation is based on an extension of the conformal mapping approach formerly proposed by Owyang and Wu for symmetric lines in air. Comparisons with published data from quasistatic or full-wave numerical analyses are presented to validate the expressions derived for both the symmetric and the asymmetric case. The analytical characterization presented in the paper is well suited for inclusion into CAD codes for MMIC design.

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