Abstracts

MIS Slow-Wave Structures Over a Wide Range of Parameters (Dec. 1992 [T-MTT])

J.P.K. Gilb and C.A. Balanis. "MIS Slow-Wave Structures Over a Wide Range of Parameters (Dec. 1992 [T-MTT])." 1992 Transactions on Microwave Theory and Techniques 40.12 (Dec. 1992 [T-MTT] (1992 Symposium Issue)): 2148-2154.

The high dielectric losses of the semiconducting substrates used in MMIC's and VLSI interconnects can strongly affect all of the characteristics of these lines. No single approximate formulation is accurate over a wide range of substrate parameters or over a large frequency range; thus it is necessary to use a full-wave approach. Multi-conductor MIS structures are analyzed with the spectral domain approach over a wide range of frequency and substrate loss. The modal attenuation and propagation constants are presented for two and four conductor structures as a function of the substrate loss tangent. Single conductor structures are characterized with contour plots showing the complex effective dielectric constant as a function of both frequency and conductivity. MIS slow-wave structures are analyzed for both Si-SiO/sub 2/ and GaAs configurations.

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