Abstracts

The Nature of the Charges, Currents, and Fields in and About Conductors Having Cross-Sectional Dimensions of the Order of a Skin Depth

G.L. Matthaei, K. Kiziloglu, N. Dagli and S.I. Long. "The Nature of the Charges, Currents, and Fields in and About Conductors Having Cross-Sectional Dimensions of the Order of a Skin Depth." 1990 Transactions on Microwave Theory and Techniques 38.8 (Aug. 1990 [T-MTT]): 1031-1036.

The nature of the charge, current, and field patterns is investigated in and about transmission line conductors operating in a frequency range where one or more of the cross-sectional dimensions of the conductors is of the order of a skin depth. Questions are addressed concerning whether quasi-TEM approximations can be used. Examples are considered which simulate the relatively lossy, longer on-chip interconnects in high-speed digital circuits. For comparison, approximations to MMIC line examples, which usually have larger cross-sectional dimension and hence are less lossy, are also examined.

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