Abstracts

Skin-Effect Current Distribution of a Unilateral Finline with Finite Conductivity

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This paper presents an accurate full-wave approach to the analyses of current distribution on a unilateral finline containing finite metal conductivity and thickness. The electromagnetic fields are rigorously represented in terms of a complete set of modes, and this allows the classification of the current distributions as edge currents and surface currents contributed by the air modes and the metal modes, respectively. Such an approach provides a clear physical picture for understanding of the cross-sectional current distributions throughout the metal strips, whereby the skin-effect in every direction can be explained. Finally the full-wave analysis establishes a solid basis on which the applicability of the perturbation method can be judged.

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