Abstracts

The Influence of Finite Conductor Thickness and Conductivity on Fundamental and Higher-Order Modes in Miniature Hybrid MIC's (MHMIC's) and MMIC's

K. Wu, R. Vahldieck, J.L. Fikart and H. Minkus. "The Influence of Finite Conductor Thickness and Conductivity on Fundamental and Higher-Order Modes in Miniature Hybrid MIC's (MHMIC's) and MMIC's." 1993 Transactions on Microwave Theory and Techniques 41.3 (Mar. 1993 [T-MTT]): 421-430.

This paper presents a rigorous analysis of the effect of finite metallization thickness and finite conductivity on the propagation characteristics of conductor-backed CPW on thin substrate. A self-consistent approach is used together with the method of lines (MoL) to determine the propagation constant, losses and field distribution of the fundamental and first two higher-order modes in CPW's with finite metallization thickness and lossy backmetallization. The method used is general and can be applied to miniature MIC's (MHMIC) and MMIC's including lossy semiconductor substrate. It is shown that the onset of higher order modes limits the usable frequency range of conductor backed CPW. The analysis includes also microstrip transmission lines on thin substrate material. It is demonstrated that a resistive strip embedded into the microstrip groundplane may potentially be useful in the design of integrated planar attenuators.

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