Abstracts

Integrated-Circuit Structures on Anisotropic Substrates

N.G. Alexopoulos. "Integrated-Circuit Structures on Anisotropic Substrates." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 847-881.

This paper addresses the problem of anisotropy in substrate materials for microwave integrated-circuit applications. It is shown that in modeling the circuit characteristics, a serious error is incurred which becomes larger with increasing frequency when the substrate anisotropy is neglected. Quasi-static, dynamic, and empirical methods employed to obtain the propagation characteristics of microstrip, coplanar waveguides, and slotlines on anisotropic substrates are presented. Numerical solutions such as the method of moments and the transmission-line matrix technique are outlined. The modified Wiener-Hopf, the Fourier series techniques, and the method of lines are also discussed. A critique of the aforementioned methods and suggestions for future research directions are presented. The paper includes new results as well as a review of established methods.

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