Abstracts

Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications

B. Bhat and S.K. Koul. "Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 433-439.

A detailed analysis of lumped capacitance, open-circuit end effects, and edge-capacitance of finite-length strip conductors embedded in multilayer, isotropic dielectrics without sidewalls is presented. The analysis uses the well-known variational technique, in conjunction with the transverse transmission-line technique. The lumped capacitances of square and rectangular conductor patches in sandwiched microstrip, inverted microstrip, and suspended microstrip are computed. Further, extensive data on the open-circuit end effects and edge-capacitances of finite-length strip conductors in these rnicrostrip-like transmission lines are generated. Using the method presented, the analysis of lumped capacitance, open-circuit end effects, and edge-capacitances of finite-length strip conductors in various microstrip-like structures reduces to the determination of a single admittance parameter. This parameter can be simply obtained from the transmissionline equivalent circuit.

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