Abstracts

Coupling between microstrip lines with finite width ground plane embedded in polyimide layers for 3D-MMICs on Si

G.E. Ponchak, E. Dalton, E.M. Tentzeris and J. Papapolymerou. "Coupling between microstrip lines with finite width ground plane embedded in polyimide layers for 3D-MMICs on Si." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 2221-2224 vol.3.

Three-dimensional circuits built upon multiple layers of polyimide are required for constructing Si/SiGe monolithic microwave/millimeter-wave integrated circuits on CMOS (low resistivity) Si wafers. Thin film microstrip lines (TFMS) with finite width ground planes embedded in the polyimide are often used. However, the closely spaced TFMS lines are susceptible to high levels of coupling, which degrades circuit performance. In this paper, Finite Difference Time Domain (FDTD) analysis and experimental measurements are used to show that the ground planes must be connected by via holes to reduce coupling in both the forward and backward directions.

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