Abstracts

Characterization of Via Connections in Silicon Circuit Boards

J.P. Quine, H.F. Webster, H.H. Glascock, II and R.O. Carlson. "Characterization of Via Connections in Silicon Circuit Boards." 1988 Transactions on Microwave Theory and Techniques 36.1 (Jan. 1988 [T-MTT]): 21-27.

Conducting vias isolated by silicon dioxide from a bulk silicon wafer and used to interconnect stripline transmission lines on opposite surfaces of the wafer are analyzed. The net VSWR and insertion loss for a single via and the crosstalk or coupling between two nearby vias are determined as a function of geometry, frequency, and silicon resistivity. For reasonable dimensions (geometries as mils and frequency to 1 GHz), the analysis predicts low VSWR and low insertion loss, provided the silicon resistivity is greater than about 100 Omega·cm. It is shown that crosstalk can be small, and is mostly due to inductive coupling.

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