Abstracts

Analysis of Electromagnetic Wave Propagation on Coplanar Waveguides on Doped Semiconductor Substrates

T.R. LaRocca, A.C. Reyes and S.M. El-Ghazaly. "Analysis of Electromagnetic Wave Propagation on Coplanar Waveguides on Doped Semiconductor Substrates." 1996 MTT-S International Microwave Symposium Digest 96.1 (1996 Vol. I [MWSYM]): 295-298.

High resistivity silicon substrates demonstrated strong potential for applications as a microwave and millimeter wave substrate. A method to simulate a coplanar waveguide (CPW) on a doped semiconductor substrate is presented. Its salient point is the inclusion of a voltage dependent depletion width and built-in voltage due to the metal-semiconductor (Schottky) contact. The attenuation, effective dielectric constant, and characteristic impedance are determined for different modes and applied biases.

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