Abstracts

Investigation of microstrip and coplanar transmission lines on lossy silicon substrates without backside metallization

W. Durr, U. Erben, A. Schuppen, H. Dietrich and H. Schumacher. "Investigation of microstrip and coplanar transmission lines on lossy silicon substrates without backside metallization." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 712-715.

Silicon circuits, now penetrating well into the microwave frequency range, use lossy silicon substrates. Consequently, the microwave performance of transmission lines on this substrate becomes increasingly important and has been investigated here up to 20 GHz. It is shown that transmission lines on 20-/spl Omega//spl middot/cm substrates have no need for backside metallization and backside via holes. Two models for different line types are derived from measurements and verified against them. A coplanar waveguide (CPW) with an overall width of less than 30 /spl mu/m was fabricated with an attenuation of 0.5 dB/mm at 20 GHz, which is acceptable for monolithic microwave integrated circuit (MMIC) design.

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