Abstracts

Experimentally Observed Frequency Variation of the Attenuation of Millimeter-Wave Coplanar Transmission Lines with Thin Metallization

W.H. Haydl. "Experimentally Observed Frequency Variation of the Attenuation of Millimeter-Wave Coplanar Transmission Lines with Thin Metallization." 1992 Microwave and Guided Wave Letters 2.8 (Aug. 1992 [MGWL]): 322-324.

The attenuation of small coplanar transmission lines on insulating InP and GaAs has been investigated experimentally over the frequency range 0-60 GHz by on-wafer probing. The ground to ground spacing d, the center line width w, and the metal thickness t were varied. For thin (0.25-1 µm) gold metallization, the variation of the attenuation with frequency was found to be dependent on the geometry of the line. A good fit to the experimental data was obtained when the attenuation a was modeled as a = a/sub 0/f/sup n/, where a/sub 0/ and n are geometry dependent. The exponent n was found to be in the range 0.15-0.35, and to increase with increasing w/d ratio, which is interpreted to be due to a correspondingly varying frequency dependent resistance and current distribution.

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