Abstracts

Impact of light illumination and passivation layer on silicon finite-ground coplanar-waveguide transmission-line properties

S.J. Spiegel and A. Madjar. "Impact of light illumination and passivation layer on silicon finite-ground coplanar-waveguide transmission-line properties." 2000 Transactions on Microwave Theory and Techniques 48.10 (Oct. 2000 [T-MTT]): 1673-1679.

The modeling of silicon finite-ground coplanar-waveguide (FGCPW) transmission lines is presented in this paper. It is shown that the effective substrate conductivity increases in the presence of illumination and in the presence of a passivation layer in the slot regions independently. As a result, the losses of trenched FGCPW are lower than conventional FGCPW transmission lines. The strong dependence of the substrate conductivity on illumination suggests that optically controlled attenuators can be implemented with FGCPW transmission lines exhibiting practically no phase change between the different attenuation states. A new contrast ratio for optically controlled transmission lines is derived.

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