Abstracts

Spectral Dependence of Light-Induced Microwave Reflection Coefficient from Optoelectronic Waveguide Gratings

W. Platte. "Spectral Dependence of Light-Induced Microwave Reflection Coefficient from Optoelectronic Waveguide Gratings." 1995 Transactions on Microwave Theory and Techniques 43.1 (Jan. 1995 [T-MTT]): 106-111.

After a short description of the method of operation of optoelectronic microwave filters, a detailed analysis of the spectral dependence of light-induced microwave reflection coefficient from an optoelectronically generated distributed Bragg reflection waveguide grating is reported. The theory is based on an improved stepped-impedance model utilizing a diffusion-controlled abrupt-profile approach of photoconductivity along with a conformal mapping technique for the quasi-static evaluation of the spectral performance of photoinduced wave attenuation. The validity of theory is clarified and the calculated results are compared with experimental results. As a useful result for future applications, an optimum excitation wavelength of about 825 nm for a fiber-optically controlled lab-tested 50Omega full-substrate silicon coplanar waveguide has been obtained.

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