Abstracts

Spectral-Domain Analysis of Coplanar Waveguide Traveling-Wave Electrodes and Their Applications to Ti:LiNbO/sub 3/ Mach--Zehnder Optical Modulators

K. Kawano, T. Kitoh, H. Jumonji, T. Nozawa, M. Yanagibashi and T. Suzuki. "Spectral-Domain Analysis of Coplanar Waveguide Traveling-Wave Electrodes and Their Applications to Ti:LiNbO/sub 3/ Mach--Zehnder Optical Modulators." 1991 Transactions on Microwave Theory and Techniques 39.9 (Sep. 1991 [T-MTT] (Special Issue on Microwave Applications of Superconductivity)): 1595-1601.

Hybrid-mode and quasi-TEM analyses are carried out for coplanar waveguide traveling-wave electrodes applicable to z-cut Ti:LiNbO/sub 3/ optical modulators. The analyses are based on the spectral-domain approach. The microwave effective index and the characteristic impedance are clarified, together with the microwave conductor loss. These are incorporated to accurately predict the modulator characteristics. It is shown that these characteristics can be greatly improved by employing a thicker buffer layer. High-speed and low-driving-power Ti:LiNbO/sub 3/ optical modulators are realized at a 1.52 μm wavelength. Agreement between the calculated and measured results is good.

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