

Abstract

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Analysis and Design of an Electro-Optic 2x2 Switch Using Ti: KNbO₃ as a Waveguide Based on MZI at 1.3 μm

This work describes an approach to design a 2×2 optoelectronic switch based on the Mach–Zehnder interferometer with a channel profile of Titanium (Ti) diffused in Potassium niobate (KNbO₃) at a wavelength of 1.3 μm . The evaluation parameters used are the ion loss and the extinction ratio. The originality of this work is introducing the KNbO₃ crystal as a host while optimizing the Ti strip thickness to provide a remarkable switching performance. Optimization leads to a lower switching voltage of 4V, an ion loss of 0.0261dB and extinction ratio of 29.4 dB. The designed switch has a high switching capability and degree of reliability.