

عنوان مقاله:

All-Optical XOR and XNOR Logic Gates Based on Photonic Crystal 3-dB Coupler for BPSK Signals

محل انتشار:

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خلاصه مقاله:

We propose a very compact structure for all-optical XOR and XNOR logic gates based on photonic crystal 3-dB coupler in binary-phase-shift-keyed signals. The square lattice of dielectric rods in SiO₂ background has been considered for photonic crystal structure. The photonic band gap and light propagation simulations of proposed logic structure have been accomplished by plane wave expansion and finite difference time domain methods. The proposed structure can achieve logical function when normalized outputs of logic gates are over than 83% for logic 1 and lower than 5% for logic 0 in 1550 nm. The proposed logic functions may potentially be used as key components in all-optical information networks for processing binary-phase-shift-keyed signals.

کلمات کلیدی:

photonic crystal, optical logic gates, 3-dB coupler, BPSK signals

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