Silicon Photonics for Signal Processing of Tbit/s Serial Data Signals

In this paper, we describe our recent work on signal processing of terabit per second optical serial data signals using pure silicon waveguides. We employ nonlinear optical signal processing in nanoengineered silicon waveguides to perform demultiplexing and optical waveform sampling of 1.28-Tbit/s data signals as well as wavelength conversion of up to 320-Gbit/s data signals. We demonstrate that the silicon waveguides are equally useful for amplitude and phase-modulated data signals.

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