

SPOT-SIZE CONVERTER FOR COUPLING SINGLE-MODE FIBER TO SOI WAVEGUIDE

ABSTRACT

The present disclosure relates to a photonic edge coupler or spot-size converter (SSC) comprising multiple juxtaposed layers of auxiliary waveguides with an underneath silicon-on-insulator (SOI) waveguide. In an embodiment, an SSC comprises two waveguide layers each having four auxiliary waveguides including two inner auxiliary waveguides interposed between two outer auxiliary waveguides. The waveguide layers collectively include at least two sections. In a first section, each auxiliary waveguide widens in a light propagation direction. In a second section, each outer auxiliary waveguide converges towards each other. The SOI waveguide partially overlaps the first section, fully overlaps the second section, and extends therebeyond. The SSC facilitates coupling of light from a flat-cleaved standard single-mode fiber with mode-field diameter of 10.4 μm at 1550 nm to an SOI waveguide with low loss and flat band response in the C-band and L-band telecommunication wavelengths.

Figure 1