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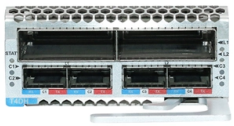
Silicon Photonics Fiber Optic Couplers



Overview

Due to the small waveguide mode field on a silicon chip, ordinary SM fiber coupling will cause a big loss for the mismatching of mode field diameter (MFD). The scheme is to fuse a small section of fiber with small mode field diameter (MFD) to th. Due to the small waveguide mode field on a silicon chip, ordinary SM fiber coupling will cause a big loss for the mismatching of mode field diameter (MFD). The scheme is to fuse a small section of fiber with small mode field diameter (MFD) to the single-mode fiber array, converting the larger MFD in the fiber to the smaller MFD that can be coupled. In this coupling scheme, the end face of the silicon chip is etched to form a V groove arrayfor placing the fiber array, as shown in Figure. The green cuboid is polymer Lid, which is pressed on the fiber array so the fibers can fall perfectly into the grooves. The position of each fiber can be further adjusted to make the fiber fall into the V-groo. As shown in Figure 3, the polymer waveguide acts as a bridge between the single-mode fiber array and the silicon waveguide. Light is coupled from the single-mode fiber array into the polymer waveguide, which is then coupled into the silicon waveguide. Figure 3Polymer waveguide couplingLensed fiber arrays are an efficient coupling light from photonic integrated chips. Lensed fiber is used for coupling in this scheme. The MFD of Lensed fiberis only about 3um, which can be effectively coupled to the silicon waveguide, as shown in figure 5. Figurelensed fiber array Zhongshan MEISU offers custom lensed fiber array, the number of ch. First, a vertically coupled waveguide is etched on a photonic chip, and then couple it by using a fiber array with a 45 degrees polished facet to realize vertical coupling in the grating, as shown in figure 6. Figure Based on the coupling scheme of 45-degree fiber array, Zhongshan MEISU has developed various types of 45-degree fiber array for diff.

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X. Chen, C. Li, and H. K. Tsang, “Fabrication-tolerant waveguide chirped grating coupler for coupling to a perfectly vertical optical fiber,” IEEE Photonics Technology Letters, vol. 20, no. 23, pp. 1914–1916,

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