

عنوان مقاله:

A new structural design of an optical AWG multiplexer/demultiplexer

محل انتشار:

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خلاصه مقاله:

In this paper Array Waveguide Grating (AWG) was optimized for its applications in Wavelength Division Multiplexing (WDM) networks, wavelength selective switch as multiplexer/demultiplexer. With the new method of optimization proposed here, higher bandwidth and better crosstalk and insertion loss can be achieved. The procedure of optimization for finding the best parameters such as the waveguide separation at output circle, a new structure for tapered waveguide and displacement of foci from the foci of the standard Rowland circle construction are presented and the results are discussed. As we know the bandwidth is an important parameter in optical communication. In this paper we design a new structure for the conjunction of array waveguide and free propagation region. We have used commercial software BeamPROP to design a silica-based 8 channel AWGs with the channel spacing of 1.6 nm and the central wavelength 1550 nm. The occupied area of the phased arrayed waveguide is $2.2 \times 1.3 \text{ cm}^2$, and the total device size is $3.6 \times 1.6 \text{ cm}^2$. The 3-dB bandwidth of AWG is $4.3 \times 10^{-4} \mu\text{m}$, which is about $6.25 \times 10^{-4} \mu\text{m}$ for the design without the tapered waveguide at the conjunction. The insertion loss of the side channels (1 and 8) is about 3.66 dB for this design.

کلمات کلیدی:

Array waveguide grating, Optical multiplexer/demultiplexer

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