Abstracts

A Design Consideration for Optical Power Dividers Composed of Three Coupled Waveguides

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In the present paper, we propose a design consideration for optical power dividers utilizing the distributed coupling among three adjacent slab waveguides. This type of power divider can easily be fabricated by means of the process of ion-exchange. However, being large in scale is a serious problem. We clarify that the size of the device can be remarkably reduced by introducing nonuniformly distributed coupling which is caused by step-like gap variations between the waveguides. In order to obtain wide separations at the output end, we also introduce the low-loss bent structure which is designed by the method of suppression of the optical wave undulation along the waveguide. The numerical results show that low-loss wide separations of optical waves are possible and over a 35% reduction in device length can be achieved. The numerical analysis is based on the two-dimensional Finite Difference Method.

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