

A ridge waveguide for thermo-optic application

Abstract :

A thermal analysis and structure of a ridge single mode waveguide with a metal heater are presented. The steady-state temperature increases linearly and the thermal response becomes slower at the same power consumption, when the under-etched depth in the lower cladding increases. When the upper cladding thickness decreases, the thermal response becomes faster. This shows that a thinner upper cladding and a deeper etching are preferred to achieve a faster thermal response and lower power consumption, respectively. The numerical simulation also shows the power consumption of the present ridge waveguide is almost third of that for conventional one and the response time is half of that of the conventional one.