Abstracts

V-Grooved Substrate Buried Heterostructure InGaAsP/InP Laser Emitting at 1.3 µm Wavelength

H. Ishikawa, H. Imai, T. Tanahashi, K.-I. Hori and K. Takahei. "V-Grooved Substrate Buried Heterostructure InGaAsP/InP Laser Emitting at 1.3 µm Wavelength." 1982 Transactions on Microwave Theory and Techniques 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1692-1699.

Details of the fabrication, optimization of the dimensions of the active region, characteristics, and the aging results of the V-grooved substrate buried heterostructure (VSB) InGaAsP/InP laser are described. It is shown that the VSB laser can be fabricated in one-step epitaxy as well as two-step epitaxy. The active region width below 2.5 µm and the thickness of 0.15-0.2 µm are shown to give stable fundamental mode operation and good temperature characteristics. The fundamental mode operation up to the optical output of 20 mW/facet at 25°C and the CW operation above 100°C are obtained. The pulse response showed the strongly damped relaxation oscillation with a frequency as high as 4.5 GHz. The spectral width under the modulation of 400 Mbit/s RZ single is as narrow as 25 Å in full width at half maximum. Highly stable aging characteristics at an elevated temperature of 50°C are obtained in both two-step epitaxy lasers and one-step epitaxy lasers.

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