Abstracts

An Analytical Solution of the Lateral Current Spreading and Diffusion Problem in Narrow Oxide Stripe (GaAl)As/GaAs DH Lasers

G. Lengyel, P. Meissner and K.-H. Zschauer. "An Analytical Solution of the Lateral Current Spreading and Diffusion Problem in Narrow Oxide Stripe (GaAl)As/GaAs DH Lasers." 1982 Transactions on Microwave Theory and Techniques 30.4 (Apr. 1982 [T-MTT] (Joint Special Issue on Optical Guided Wave Technology)): 464-471.

An exact solution is presented to the problem of lateral current spreading in the resistive layer of oxide stripe geometry DH lasers. The two-dimensional Laplace equation was solved by conformal mapping using the Schwarz-Christoffel transformation. The diffusion equation containing nonlinear recombination terms was solved numerically. Computed examples demonstrate that the customary one-dimensioned treatment of the resistive layer or the assumption of constant current density under the stripe contact are not always justified, particularly for narrow stripe widths and low specific resistivities. This region of low values of the resistivity and stripe width, however, is of great practical interest in the design of oxide stripe lasers having high thermal stability and kink-free characteristics.

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