Title (en)

A GAIN COUPLED DISTRIBUTED FEEDBACK SEMICONDUCTOR LASER

Title (de)

GEWINNGEKOPPELTER HALBLEITERLASER MIT VERTEILTER RÜCKKUPPLUNG

Title (fr)

LASER A SEMI-CONDUCTEUR A RETROACTION REPARTIE ET A COUPLAGE DE GAIN

Publication

EP 1055272 A1 20001129 (EN)

Application

EP 99973441 A 19991110

Priority

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Abstract (en)

[origin: WO0036717A1] A gain coupled DFB semiconductor laser with a high order grating structure is provided. By varying the order and duty cycle of the grating and shape of grooves, a predetermined ratio of gain to index coupling coefficients is obtained. Beneficially the laser includes a multiple quantum well structure with the grating etched directly through the quantum wells of the active region. Deep etching ensures strong gain coupling in the laser while usage of a high order grating reduces index coupling associated with the etching. As a result, a stable, high yield, high power and single mode operation of the DFB laser is achieved. For gratings of a particular order of diffraction, duty cycle, shape of grooves and depth of etching index coupling may be substantially reduced or eliminated. Correspondingly, a purely gain coupled DFB laser may be obtained. It is also easier to manufacture high order DFB lasers because of the larger period of gratings allowing larger fabrication tolerances. A method of producing a complex coupled DFB semiconductor laser having a predetermined ratio of gain to index coupling, and a method of obtaining a purely gain/loss coupled semiconductor DFB laser are also provided.

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H01S 5/12

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