

Title (en)
Semiconductor laser device.

Title (de)
Halbleiterlaser.

Title (fr)
Laser à semi-conducteur.

Publication
EP 0000557 A1 19790207 (EN)

Application
EP 78100461 A 19780720

Priority
• JP 3691278 U 19780324
• JP 9136877 A 19770801

Abstract (en)
A novel semiconductor laser device in which a longitudinal and transverse mode is stabilized and in which any excess optical noise for a modulated signal is not generated by mode competition is provided. The fundamental construction of the semiconductor laser device comprises at least a structure wherein a first semiconductor layer (3) is sandwiched between second and third semiconductor layers (2, 4) which are greater in the band gap and lower in the refractive index than the first semiconductor layer. That region of at least one of the second and third semiconductor layers (2, 4) which is remote from the first semiconductor layer (3) is made a semiconductor layer which corresponds substantially to a radiation region and which serves as a light non-absorptive region in the shape of a stripe (9). A semiconductor layer (1) is disposed which has portions lying on both sides of the semiconductor layer (9) remote from the first semiconductor layer (3) and which makes an effective complex refractive-index for laser light discontinuous at both the ends of the semiconductor layer remote from the first semiconductor layer (3). Periodic corrugations (8) which intersect orthogonally to the lengthwise direction of the stripe-shaped light non-absorptive region are formed in at least one interface of the aforementioned semiconductor layers in a manner to include at least a region corresponding to the light non-absorptive region.

IPC 1-7
H01S 3/19; **H01S 3/06**

IPC 8 full level
H01S 5/12 (2021.01); **H01S 5/223** (2006.01)

CPC (source: EP US)
H01S 5/12 (2013.01 - EP US); **H01S 5/2232** (2013.01 - EP US); **H01S 5/2234** (2013.01 - EP US)

Citation (search report)
• US 3978428 A 19760831 - BURNHAM ROBERT D, et al
• US 4023993 A 19770517 - SCIFRES DONALD R, et al
• [P] FR 2348589 A1 19771110 - HITACHI LTD [JP]
• APPLIED PHYSICS LETTERS, vol. 30, no. 10, 15 May 1977, New York (USA) W.T. TSANG et al: "Lateral current confinement by reverse-biased junctions in GaAs-Alx Ga1-xAs DH lasers", pages 538-540.
• IEEE JOURNAL OF QUANTUM ELECTRONICS, vol. QE 13, no. 4, April 1977, New York (USA) AMMON YARIV et al: "Periodic structures for integrated optics", pages 233-253

Cited by
US4329658A; US4302729A; EP0125608A3; EP0334209A3; DE3809609A1; EP0178134A3; US4726031A; WO9214286A1

Designated contracting state (EPC)
DE FR GB NL

DOCDB simple family (publication)
EP 0000557 A1 19790207; **EP 0000557 B1 19811230**; CA 1105598 A 19810721; DE 2861465 D1 19820218; US 4257011 A 19810317

DOCDB simple family (application)
EP 78100461 A 19780720; CA 307988 A 19780724; DE 2861465 T 19780720; US 92901378 A 19780728