



TECHNOLOGY

Cavity-less Vertical Semiconductor Optical Amplifier

OVERVIEW

Optical communication has emerged as one of the most powerful driving forces in present digital systems. The increasing demand for wider bandwidth and the quest for speedier transmission have led to extensive deployment of optical fiber networks for data and voice communication and the concept of parallel optical architecture. As a result, vertical cavity surface emitting lasers (VCSEL) are being actively researched and are used in this type of parallel optical architecture.

Problems arise in using VCSELs of the prior art. These problems include a narrow gain bandwidth. This is usually overcome by multiple recirculating of the light beam within the resonant cavity. Thus, a Q cavity is needed which is obtained by growing thick distributed Bragg reflector mirrors on both sides of the cavity. These mirrors are wavelength selective which means that they reflect the light recirculating within the resonant cavity over a very narrow band of wavelength.

The present invention is a cavity-less vertical semiconductor optical amplifier which, due to its specific structure and the use of a unique approach of the amplification of an optical signal, is free of the disadvantages of the prior art vertical surface emitting lasers. The subject amplifier provides a much higher bandwidth gain and it is well suited for large parallel interconnect, two dimensional optical signal processing in nano-second time scale, and for implementing a free-space cross connect switch or a spatial modulator with gain as well as other multi-dimensional architectural structures.

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For additional information, please contact the Office of Technology Commercialization, University of Maryland, College Park, MD 20742. Telephone (301) 405-3947 or e-mail, otc@umd.edu.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Microelectronics

EXTERNAL RESOURCES

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