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#### VCSELS : fundamentals, technology and applications of ...

A vertical-cavity surface-emitting laser (VCSEL) is a semiconductor-based laser diode that emits a highly efficient optical beam vertically from its top surface. VCSELS differ from other common semiconductor optical sources such as Edge Emitting Lasers (EEL) that emit light from the side and Light Emitting Diodes (LED) that emit light from all directions.

#### Technology | MyVCSEL

Vertical Cavity Surface Emitting Lasers (VCSELS) are single-longitudinal mode (SLM) lasers. This is because of the extremely short optical cavity in the direction of oscillation. Consider the typical VCSEL structure in Figure 1. In this example, the gain region consists of three quantum wells placed in a one- wavelength thick spacer region.

#### Optical Modes In VCSELS

ISBN: 9783642249853 364224985X: OCLC Number: 766342919: Description: xix, 558 pages : illustrations ; 24 cm. Contents: VCSELS : a research review / Rainer Michalzik --VCSEL fundamentals / Rainer Michalzik --Three-dimensional modeling of VCSELS / Pierluigi Debernardi --Single-mode VCSELS / Anders Larsson and Johan S. Gustavsson --Polarization control of VCSELS / Johannes Michael Ostermann and ...

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Vertical-cavity surface-emitting lasers (VCSELS) with single-mode, single-polarization emission at a wavelength of 894.6 nm have been fabricated for Cs-based atomic clock applications.

#### VCSEL Fundamentals - ResearchGate

Due to the short resonator round-trip time, VCSELS can be modulated with frequencies well in the gigahertz range. This makes them useful as transmitters for optical fiber communications and for free-space optical communications. For short-range communications, 850-nm VCSELS are used in combination with multimode fibers. A data rate of e.g. 10 Gbit/s can be reached over a distance of a few hundred meters.

#### RP Photonics Encyclopedia - consulting on laser technology ...

The huge progress which has been achieved in the field is covered here, in the first comprehensive monograph on vertical-cavity surface-emitting lasers (VCSELS) since eight years. Apart from chapters reviewing the research field and the laser fundamentals, there are comprehensive updates on red and blue emitting VCSELS, telecommunication VCSELS, optical transceivers, and parallel-optical links ...

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#### Laser Measurement Technology Fundamentals And Applications ...

Also, VCSELS are commonly used for a wide variety of applications in the consumer electronics market. These applications range from laser mice to three-dimensional (3D) sensing and imaging,...

#### (PDF) Vertical-cavity surface-emitting lasers for data ...

The basic treatment of laser dynamics and noise behavior is presented in terms of the small-signal modulation response as well as the relative intensity noise. Finally we give some examples of VCSEL applications in fiber-based optical interconnects, i.e., optical data transmission over short distances.