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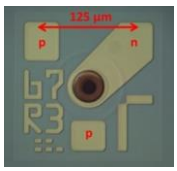


VCSEL: Very High Performance – Ultra Low Power Consumption

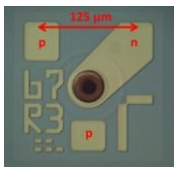
NIR Lasers (VCSEL) for Optical Communications, Sensing and 3D Sensing

We produce innovative laser diodes for optical communications and tunable diode laser spectroscopy (TDLS).

Unique Buried Tunnel Junction (BTJ) laser diode technology offers a wavelength range of 1.3 µm to 2.3 µm. We are one of the leading global providers in the field of **long wavelength Vertical Cavity Surface Emitting Laser diodes** (VCSEL), deploying reliable and cost efficient production methods. Our VCSEL technology has been proven in several applications, including a variety of demanding spectroscopy and communications applications. Furthermore, we have excelled in a range of core competencies for components development and manufacturing, including wafer processing, assembly and test and package design.

Optical Communications | NIR VCSEL | NIR Sensing TDLS (Tunable Diode Laser Spectroscopy) | New: 2D VCSEL Arrays for 3D Sensing

The company is **ISO 9001** certified and has developed a wide range of product solutions to address various markets.

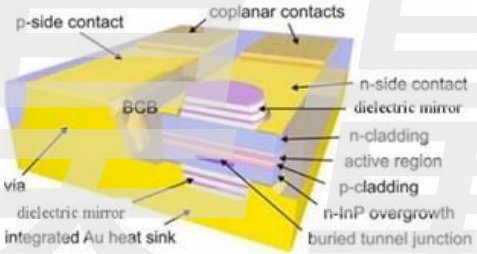


VCSEL: Very High Performance – Ultra Low Power Consumption

1 – 40 Gbps Single Mode VCSELs for Optical Communications

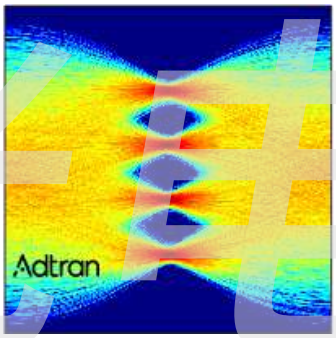
- **1310 nm, 1490 nm, 1550 nm, CWDM, DWDM**
- **1 – 40 Gbps NRZ and 53 Gbaud PAM4 (106 Gbps)**
- **Low power consumption, reduces module power consumption by up to 50%**
- **Standard operating temperature: -20° C to +75° C (extended +85°C)**
- **1xN Array VCSEL for Photonic Integration with SiP**

InP VCSEL for 1.3 µm and 1.55 µm single -mode applica ions:

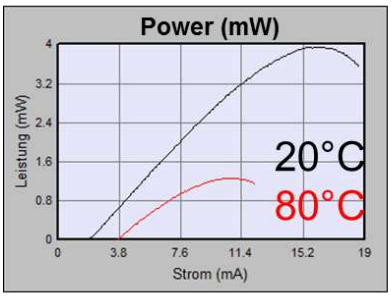


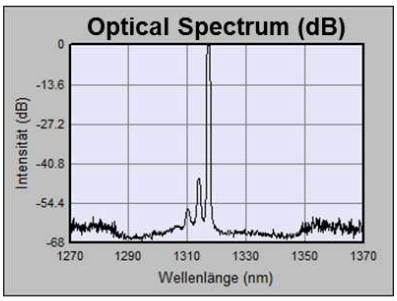
53.125 GBd PAM4

Full complexity NLC



High Data Rate VCSELs: Optical data communications systems for single mode fiber applications realize transmission speeds of 100 Gbps and 200 Gbps by modulating lasers at 25 Gbps or higher. These lasers require a high bandwidth and excellent single mode performance. We developed high data rate lasers by optimizing the InP VCSEL design with a bandwidth up to 17 GHz, high max. optical power of 4 mW and a side mode suppression ratio (SMSR) of 40 dB. Single mode VCSELs for 1.3 µm and 1.55 µm have been demonstrated with a modulation performance of 25 Gbps to 50 Gbps. The graphs in fig. 4 show the electrical, optical, spectral and bandwidth parameters.





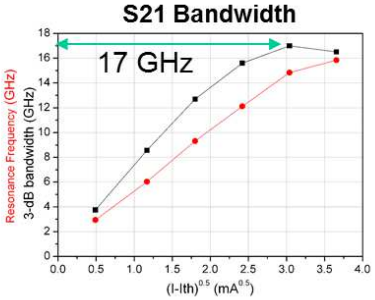


Fig. 4: a) LI curve **b) Spectrum of 1.3µm VCSEL** **c) S21 bandwidth**