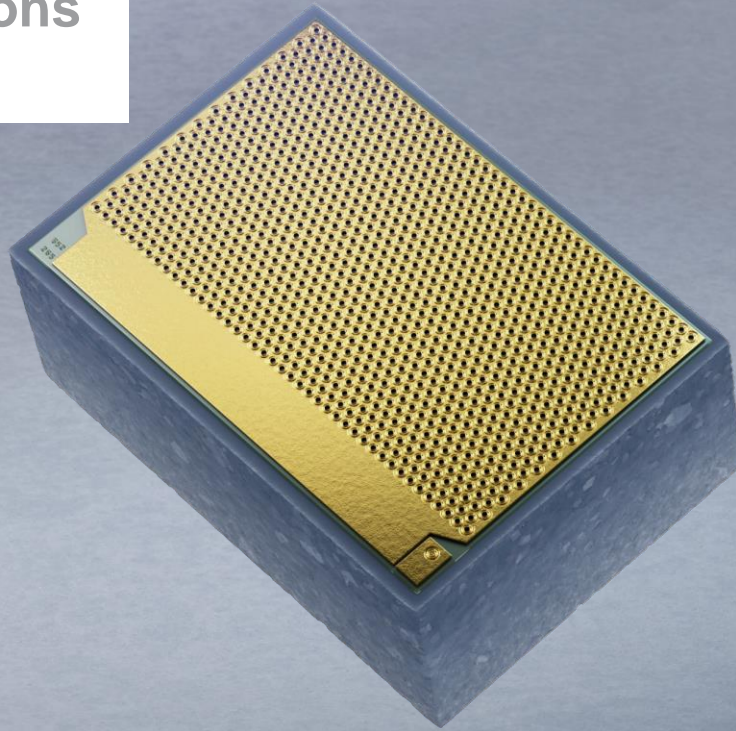


3D sensing

## Multimode VCSEL Solutions



>1.5 billion  
multimode  
VCSELs in the  
field without any  
failure

### Innovative multimode VCSEL light sources for consumer electronics

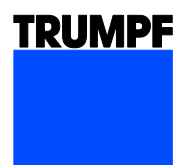
Multimode VCSEL is an infrared light source for various optical 3D sensing technologies used in applications like consumer mobile, industrial cameras and automotive interior sensing. Its compact dimensions allow use of the VCSEL in highly integrated sensors. This laser diode is ideally suited for time-of-flight distance sensors due to its power class and radiation characteristics.

#### Which application fields?

In advanced mobile consumer applications, the multimode VCSEL support distance sensing, structured light or flash illumination. Also in automotive and autonomous driving scenarios these VCSEL solutions support LiDAR applications or in-cabin sensing and driver monitoring.

#### Why TRUMPF?

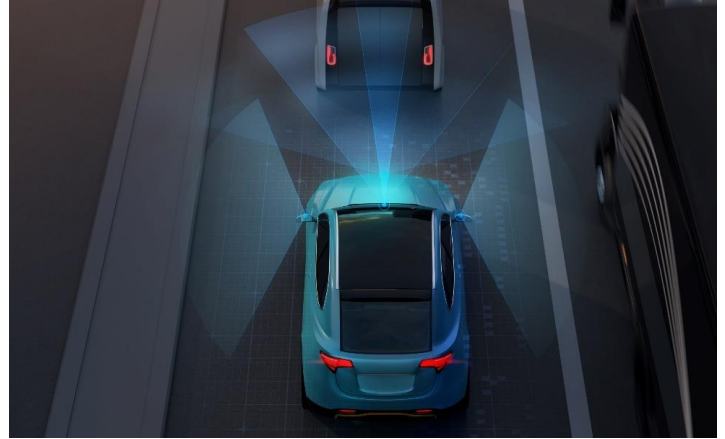
TRUMPF Photonic Components is a family-owned global leader in VCSEL technology. We design, manufacture and sell VCSEL-based light sources. Our solutions support the growing demand of 3D sensing applications. With over 20 years of VCSEL technology development and offering VCSEL products to the market, being the leading VCSEL supplier to smartphone customers, TRUMPF has proven to be your VCSEL partner for 3D sensing applications.



# Multimode VCSEL light sources offer excellent and reliable performance over a wide range of conditions

## Features:

- TRUMPF proprietary VCSEL technology
- Wavelength: 850nm, 940 nm, others available upon request
- Narrow 2 nm spectral width
- High frequency modulation up to 100 MHz
- Sub ns single pulses
- Wide range of duty cycles
- Integrated optics to support customized field-of-view
- Random dot pattern
- High conversion efficiency
- High reliability
- Easy application to system



## Product Specifications

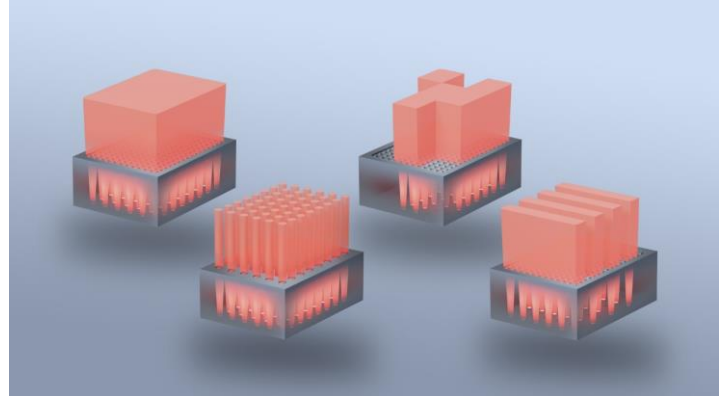
Product	Part number*	Dimensions (l x w x h)	Optical output power	Emission wavelength	Beam profile
VCSEL array with random dot pattern	TVT-001-940-B	784 x 704 x 100 $\mu\text{m}$	2 W @200 $\mu\text{s}$ 10%	940 nm	Radom dot pattern
Multimode VCSEL array	TVT-003-940-B	1775 x 1225 x 100 $\mu\text{m}$	6.5 W @200 $\mu\text{s}$ 1%	940 nm	Parallel light source
Multimode VCSEL array	TVT-005-980-B	1971 x 1888 x 104 $\mu\text{m}$	4 W CW	980 nm	Parallel light source
Multimode VCSEL array	TVT-008-940-A	150 x 150 x 150 $\mu\text{m}$	10 mW CW	940 nm	Parallel light source
ViBO	TVB-001-940-B	1241 x 938 x 190 $\mu\text{m}$	9 W @200 $\mu\text{s}$ 10%	940 nm	Flat hat irradiance 80° x 60°
ViBO	TVB-002-940-B	1241 x 938 x 190 $\mu\text{m}$	9 W @200 $\mu\text{s}$ 10%	940 nm	Cos <sup>4</sup> irradiance 60° x 45°

Product specifications in this overview are typical values under defined operating conditions. Table shows a selection of products, information on other products on request.

\*Some of these are new part numbers for existing parts, check with your local sales

## New product platform ViBO

**ViBO** stands for **VCSEL integrated Backside Optics**. The new VCSEL array technology is based on TRUMPF high-performance VCSELs but comes with unique, patented lens forms that are directly etched into the GaAs-substrate. 3D sensing solution providers get unprecedented benefits in creating tailored illumination profiles needed in advanced 3D sensing applications, as micro-optical elements are monolithically integrated in ViBO. Furthermore, the new design of ViBO reduces the form factor over present hybrid VCSEL package solutions and supports for instance easier integration under smartphone displays.



ViBO can create various illumination profiles from flood, to spot to individual field of interest illumination or addressable lines.

For more information visit  
[www.trumpf.com/s/VCSEL-solutions](http://www.trumpf.com/s/VCSEL-solutions)



## Safety information:

- ⚠ Invisible laser radiation / avoid beam exposure / class 3B laser product
- ⚠ Electrostatic sensitive devices / observe precautions for handling

TRUMPF Photonic Components GmbH

Lise-Meitner-Straße 13 · 89081 Ulm · Germany

E-mail: [photonic.components@trumpf.com](mailto:photonic.components@trumpf.com) · Homepage: [www.trumpf.com/s/VCSEL-solutions](http://www.trumpf.com/s/VCSEL-solutions)

January 2022

