

3D Sensing
Industrial Sensing

Single-Mode
VCSEL Solutions



Innovative single-mode VCSEL light sources for sensor applications

Single-mode VCSELs are the perfect choice for demanding sensor applications due to their improved optical characteristics. Higher-order longitudinal and transversal modes are suppressed by the innovative chip design. At the same time, the polarization is linearly stable.

Which application fields?

In the field of automotive, consumer electronics or industrial sensing there are various applications. Some examples for the single-mode VCSEL solutions are oxygen spectroscopy sensing, high precision depth sensing or optical encoder for high precision positioning.

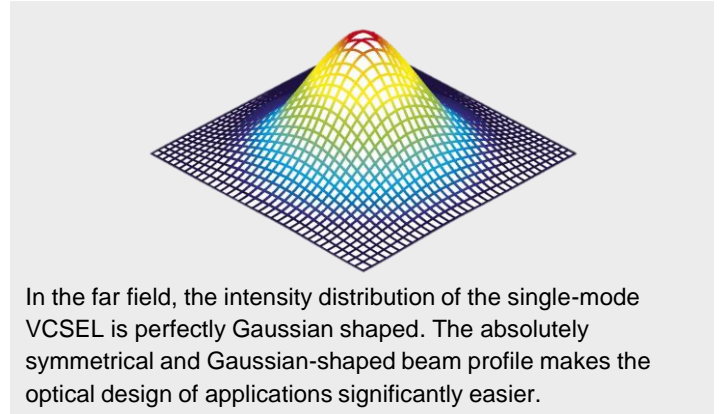
Why TRUMPF?

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 application. 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.

Single-mode VCSEL light sources offer excellent and reliable performance over a wide range of conditions

Features:

- TRUMPF proprietary VCSEL technology
- Wavelengths: 760 - 764 nm, 850 nm, 940 nm
- Narrow 2 nm spectral width
- Precise wavelength tunability
- High frequency modulation up to 100 MHz
- Sub ns single pulses
- Wide range of duty cycles
- Gaussian beam profile
- Hermetically sealed package
- Integrated TEC and thermistor
- Easy application to system
- Small footprint
- High reliability

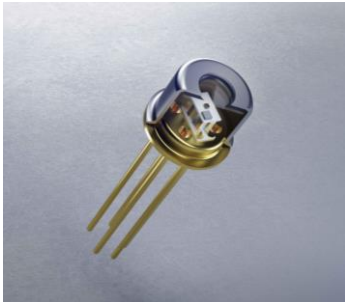


Product Specifications					
Product	Part number*	Dimensions (l x w x h)	CW optical output power	Emission wavelength	Number of VCSEL
TO5 with TEC and thermistor	TTO-002-764-A	5.84 Ø x 6 mm	0.2 mW	764 nm	1
VCSEL Chip 850 nm	TVT-006-850-A	200 x 200 x 99 µm	2 mW	850 nm	1
VCSEL Chip 940 nm	TVT-007-940-B	187 x 187 x 99 µm	18 mW	940 nm	12
VCSEL with integrated photodiode	TVP-001-850-A	165 x 165 x 130 µm	0.5 mW	850 nm	1

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

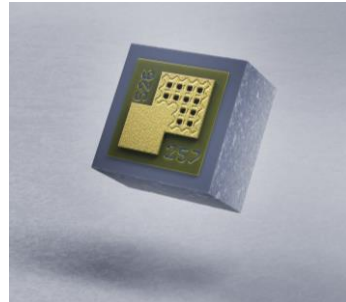
Product variants of single-mode VCSEL



TO5 - VCSELs in a hermetically sealed TO5 housing, also available without TEC





Chip die - 2 mW 850 nm VCSEL for high-volume applications and highly integrated sensors





Chip die - 18 mW 940 nm VCSEL array for high-volume time-of-flight proximity sensing in camera auto-focus sensors with short distance linearity



Chip die – two 850 nm VCSELs with single integrated photodiode for high-volume self-mixing interferometry sensing applications and integrated speed sensors


For more information visit
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 · Homepage: www.trumpf.com/s/VCSEL-solutions

January 2022

