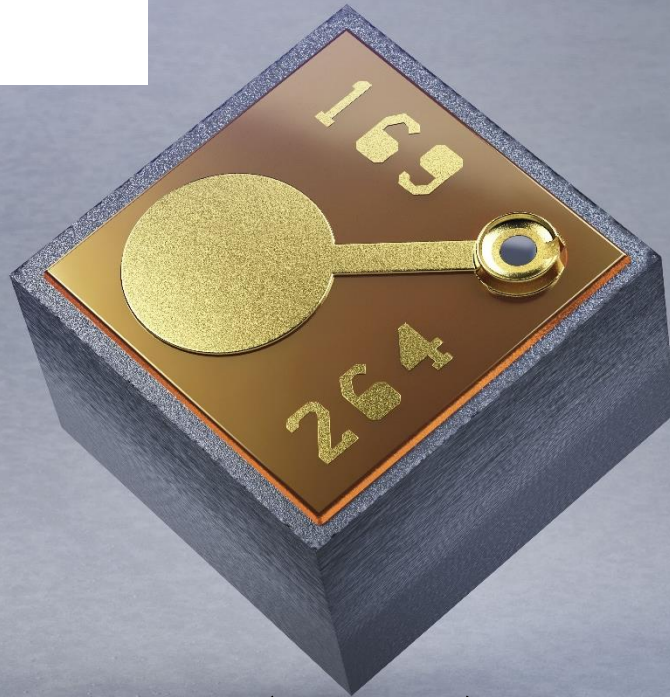


VCSEL

10 Gbps
850 nm



> Vertical Cavity
Surface-Emitting
Laser

> High reliability

> Unsealed 85% r.H.
/ 85°C certified

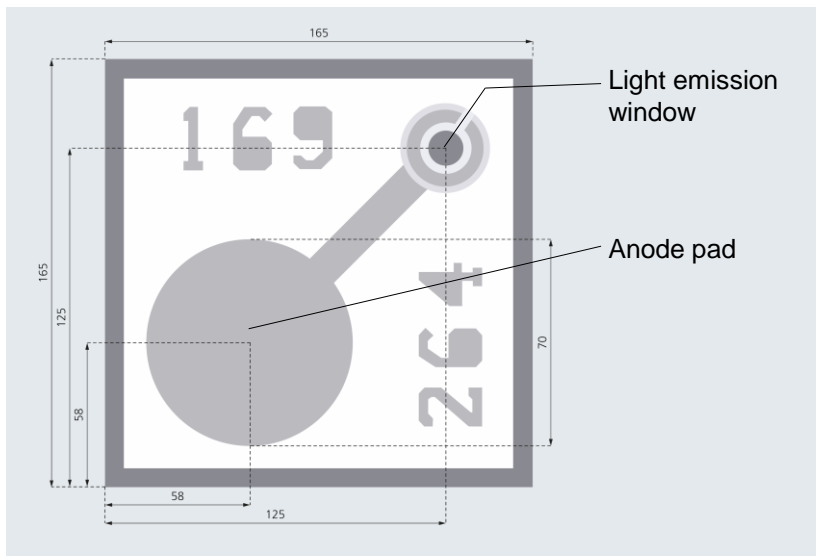
> High speed up to
10 Gbps

Datasheet: 10 Gbps VCSEL

Electro-Optical Characteristics (T = 25°C unless otherwise stated)

Parameter	Symbol	Units	Min	Typ	Max	Test Condition
Emission wavelength	λ_R	nm	830	850	860	$T_{\text{chip}} = 25 \text{ to } 80^\circ\text{C}$
Threshold current	I_{TH}	mA	0.40		1.00	
Slope efficiency	η_S	W/A	0.30		0.65	$T_{\text{chip}} = 25 \text{ to } 80^\circ\text{C}$
Variation of η_S over temp.	$\Delta\eta_S/\eta_S/\Delta T$	%/°C		-0.50		$T_{\text{chip}} = 25 \text{ to } 80^\circ\text{C}$
Optical output power	I_{op}	mW	1.20		3.40	$T_{\text{chip}} = 25^\circ\text{C}, I_{\text{op}} = 5 \text{ mA}$ $T_{\text{chip}} = 80^\circ\text{C}, I_{\text{op}} = 7 \text{ mA}$
Differential series resistance	R_{S_25}	Ω	30	50	75	$T_{\text{chip}} = 25 \text{ to } 80^\circ\text{C}, I_f = 5 \text{ mA}$
3 dB modulation bandwidth	$f_{3\text{dB}}$	GHz	7.50			$I_f = 5 \text{ mA}$
Rise and fall time	t_R/t_F	ps		30/45		$I_{\text{avg}} = 5 \text{ mA}, 20\% \text{ to } 80\%$
Relative intensity noise	RIN	dB/Hz		-130	-120	
Wavelength tuning over current	$\Delta\lambda_1/\Delta I$	nm/mA		0.30		$T_{\text{chip}} = 25 \text{ to } 80^\circ\text{C}$
Wavelength tuning over temp.	$\Delta\lambda_1/\Delta T$	nm/K		0.07		
Beam divergence	Θ	°		25	30	$1/\exp^2, I_f = 5 \text{ mA}$
Spectral bandwidth	$\Delta\lambda$	nm			0.65	$I_f = 6 \text{ mA}$

Dimensions of 10G VCSEL:



Units: μm

Type	Single chip
Part number	TVT-10(1)-850-A0
Ordering number	ULM850-10-TN-N0101T(TB01)
Anode	Bonding pad on front side
Cathode	Backside metallization
Dimensions	$165 \pm 5 \mu\text{m} \times 165 \pm 5 \mu\text{m}$
Thickness	$150 \pm 15 \mu\text{m}$

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

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