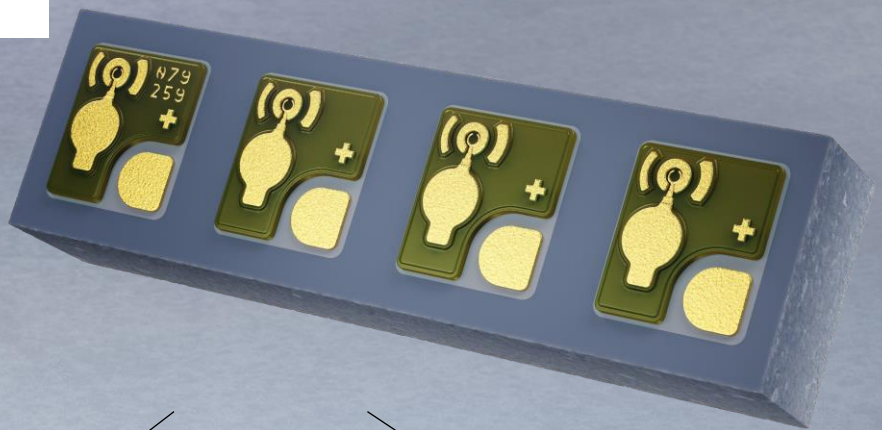


# VCSEL

25 Gbps  
850 nm



Vertical-Cavity  
Surface-Emitting  
Laser

High speed up to  
25 Gbps

High reliability

Fully  
encapsulated chip

Available in  
1x1, 1x4, 1x12

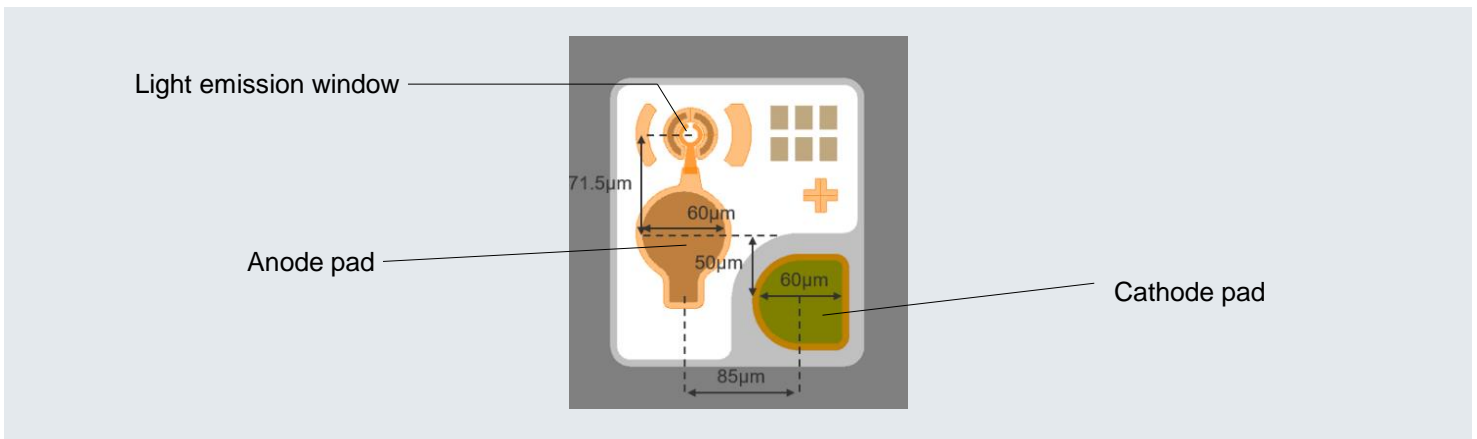
Low power  
consumption

# Datasheet: 25 Gbps VCSEL

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

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Substrate Temperature	T <sub>s</sub>	5	70	90	°C	
Threshold Current	I <sub>th</sub>	0.5	0.9	1.5	mA	T <sub>s</sub> = 70°C
Slope Efficiency	SE	0.3	0.45	0.6	W/A	T <sub>s</sub> = 70°C
Slope Efficiency Temperature Variation	$\Delta SE/S$ $E/\Delta T$	—	-0.3	—	%/°C	T <sub>s</sub> = 0°C to 90°C
Output Power	LOP	2	2.5	3	mW	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA
Differential Resistance	R <sub>diff</sub>	40	60	80	Ω	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA
Average Operating Current	I <sub>f</sub>	—	7	—	mA	
Forward Voltage	V <sub>f</sub>	1.8	2.1	2.3	V	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA
Center Emission Wavelength	λ	845	851	857	nm	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA
Center Emission Wavelength Temperature Variation	$\Delta\lambda/\Delta T$	—	0.065	—	nm/°C	
Beam divergence	θ	16	21	26	deg	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA, 1/e <sup>2</sup> cutoff
Spectral Width (RMS)	RMS	0.2	0.3	0.6	nm	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA
Relative Intensity Noise	RIN	—	-140	-130	dB/Hz	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA
Small Signal Bandwidth	f <sub>3dB</sub>	13	15	—	GHz	T <sub>s</sub> = 70°C, I <sub>f</sub> = 7mA

## Dimensions of 25G VCSEL:



## Product variants

Type	Single chip	1 x 4 line array	1 x 12 line array
Part number	TVT-25(1)-850-B0	TVT-25(04)-850-B0	TVT-25(12)-850-B0
Ordering number	ULM850-25-TT-W0101U	ULM850-25-TT-W0104U	ULM850-25-TT-W0112U
Dimensions	250 x 225 x 150 µm	250 x 975 x 150 µm	235 x 2925 x 150 µm

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

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