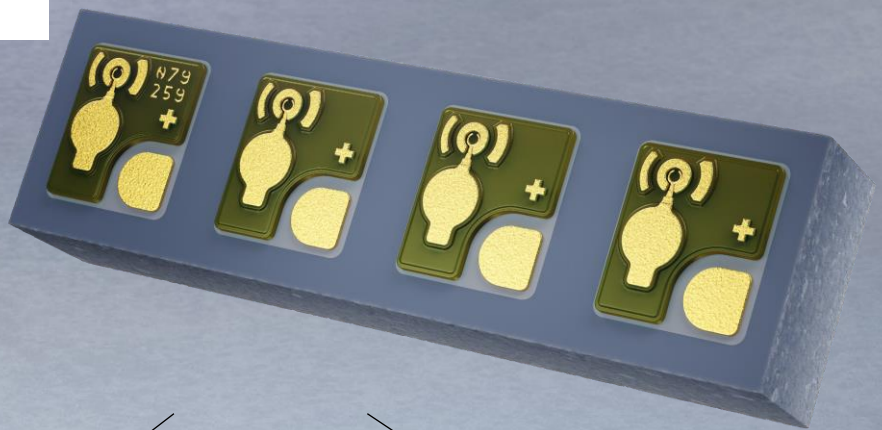


VCSEL

56 Gbps PAM4
850 nm



Vertical-Cavity
Surface-Emitting
Laser

High Speed up to
56 Gbps PAM4

High Reliability

Fully Encapsulated
Chip

Available in
1x1, 1x4

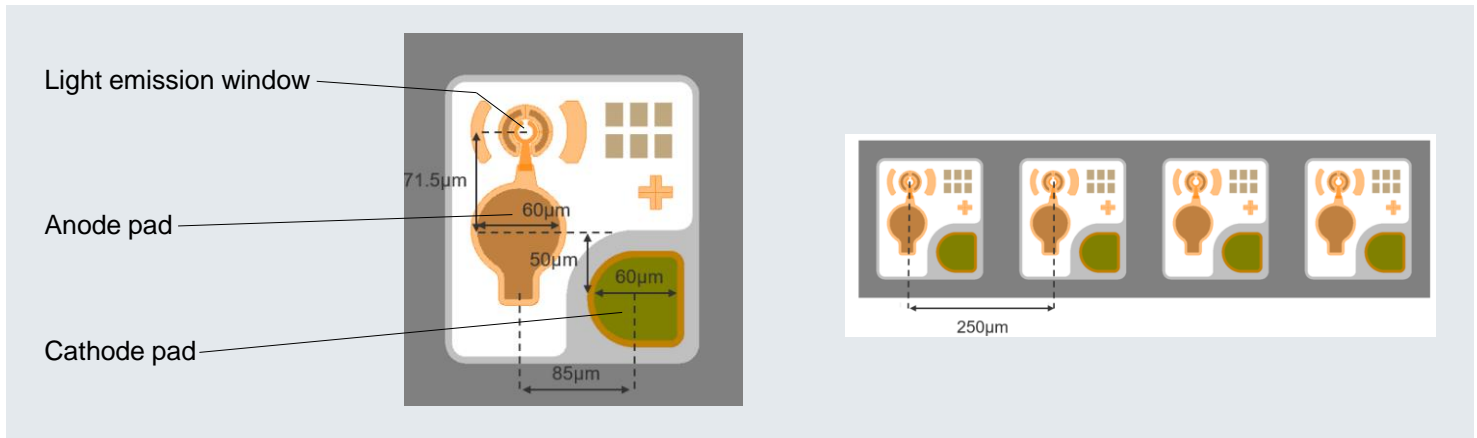
Low Power
Consumption

Datasheet: 56 Gbps VCSEL

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

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Substrate temperature	T _s	25	70	90	°C	
Average operating current	I _f	—	8	—	mA	
Threshold current	I _{th}	—	0.9	2	mA	T _s = 25°C to 90°C
Slope efficiency	SE	—	0.45	—	W/A	T _s = 70°C
Slope efficiency temperature variation	$\Delta SE/S$ $E/\Delta T$	—	-0.3	—	%/°C	T _s = 25°C to 90°C
Output power	LOP	2	3	5.5	mW	
Differential resistance	R _{diff}	—	60	90	Ω	T _s = 25°C to 90°C
Forward voltage	V _f	—	2.1	2.6	V	I _f = 8 mA
Center emission wavelength	λ	840	851	860	nm	
Center emission wavelength temperature variation	Δλ/ΔT	—	0.065	—	nm/°C	
Beam divergence (1/e ² cutoff)	θ	—	23	32	deg	T _s = 25°C to 90°C
Spectral width (RMS)	RMS	—	0.3	0.65	nm	I _f = 8 mA
Relative intensity noise	RIN	—	-140	-130	dB/Hz	
Small signal bandwidth	f _{3dB}	—	16.5	—	GHz	

Dimensions of 56G VCSEL:



Product variants

Type	Single chip	1 x 4 line array
Part number	TVT-56(01)-850-B0	TVT-56(04)-850-B0
Ordering number	ULM850-56-TT-W0101U	ULM850-56-TT-W0104U
Dimensions	250 x 225 x 150 µm	250 x 975 x 150 µm

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

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