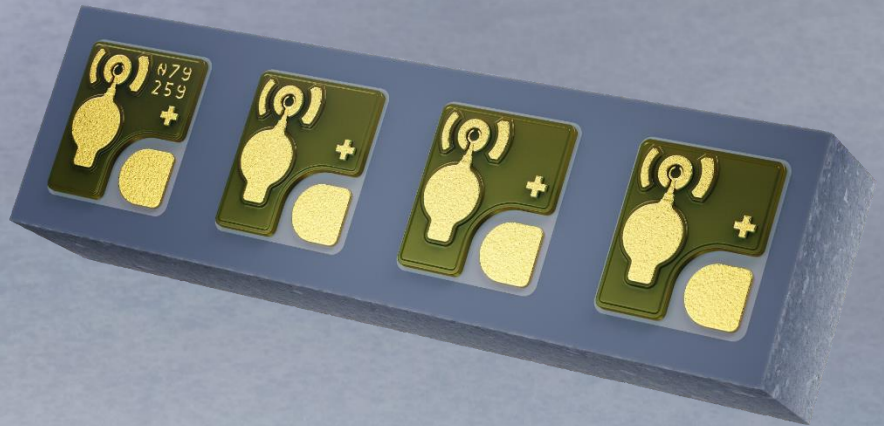


VCSEL

56 Gbps PAM4
850 nm



› Vertical-Cavity
Surface-Emitting
GaAs Laser

› High Speed up to
56 Gbps PAM4

› High Reliability

› Fully Encapsulated
Chip

› Low Spectral
Width

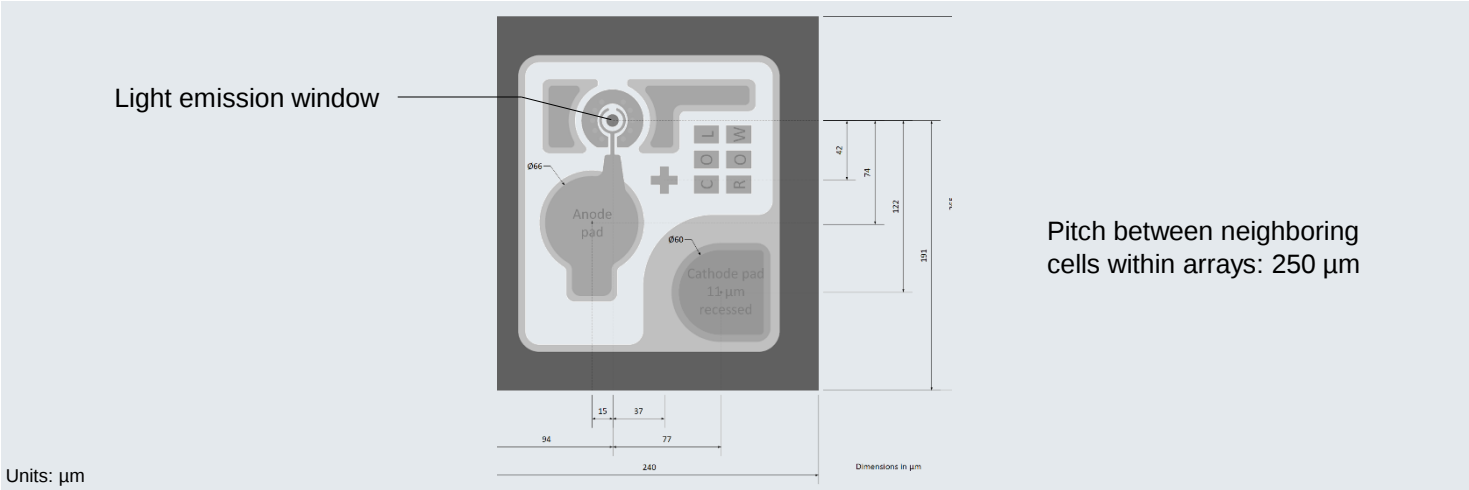
› Available in
1x1 and 1x4

Datasheet: 56 Gbps PAM4 850 nm VCSEL

Electro-Optical Characteristics (If = 7.5 mA, Ts= 70°C unless stated otherwise)

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Backside chip temperature	Ts	0	70	105	°C	
Average operating current	If	—	7.5	—	mA	Ts = 0°C to 105°C
Threshold current	Ith	—	—	1.4	mA	
Slope efficiency	SE	0.43	—	—	W/A	
Slope efficiency temperature variation	$\Delta SE/SE/\Delta T$	—	0.465	—	%/°C	
Output power	LOP	2.3	3.8	5.5	mW	Ts = 0°C to 105°C
Differential resistance	Rdiff	—	78	—	Ω	Ts = 25°C to 105°C
Forward voltage	Vf	—	2.2	2.55	V	
Center emission wavelength	λ_0	840	853	860	nm	Ts = 0°C to 105°C
Center emission wavelength temperature variation	$\Delta \lambda/\Delta T$	—	0.065	—	nm/°C	
Beam divergence (1/e ² cutoff)	θ	—	23	32	deg	
Spectral width (RMS)	RMS	—	0.22	0.35	nm	Ts = 0°C to 105°C
Relative intensity noise	RIN _{CW}	—	-143	-138	dB/Hz	Ts = 25°C to 105°C
Small signal bandwidth	f _{3dB}	16.3	17	—	GHz	Ts = 0°C to 85°C

Dimensions



Product Variants*

Type	1 x 1 single chip	1 x 4 array
Part number	TVT-56(01)-850-A2	TVT-56(04)-850-A2
Dimensions	265 x 240 x 150 µm	265 x 965 x 150 µm

Artist impression on cover page can deviate from actual product design

* 1x2, 1x8 and 1x12 array available upon request

For more information visit
www.trumpf.com/s/datacommunication

Safety information:
 Invisible laser radiation / avoid beam exposure / class 3B laser product
 Electrostatic sensitive devices / observe precautions for handling

