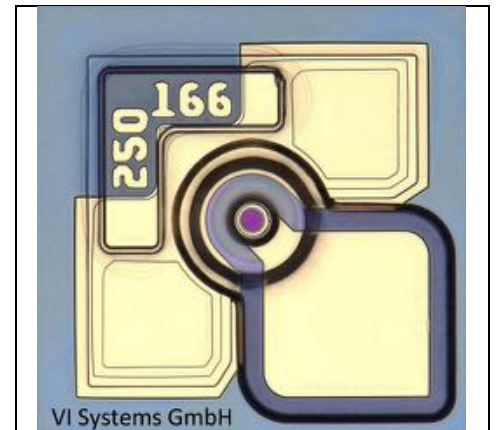


Up to 56 GBaud/s VCSEL (850nm)

Product Code:	V50-850C1	1x1 chip
	V50-850C4	1x4 array
	V50-850C12	1x12 array



Actual product may vary in appearance.

Preliminary

Product Description

These compact and very high modulation rate top-emitting GaAs-based vertical cavity surface emitting laser (VCSEL) chips and 1xN (N=4,12) arrays are available as engineering samples for use in the development and evaluation of optical interconnections, optical backplanes and integrated waveguides, and next-generation optical data communications systems. The VCSELs are contacted on the top-surface individually using ground-source (GS) microprobes, wire bonds, or flip-chip bonds.

Features

- Up to 12 parallel channels
- Up to 56 Gbit/s NRZ per channel or
- Up to 112 Gbit/s PAM-4
- Device-to-device pitch of 250 μ m
- Suitable for wire or flip-chip bonding

Applications

- Ethernet
- Proprietary optical interconnects
- Active Optical Cables (AOC)
- Short-reach 50G/100G/200G Ethernet
- Short-reach 400G Ethernet

Parameter	Typical	Notes
Emission wavelength	850 nm (available 835 - 865 nm)	
Data rate	Up to 56 GBaud/s	NRZ/PAM-4
Threshold current	< 0.5 mA	
Peak output power	4 mW	

All product specifications and descriptions are subject to change without notice.

Please contact our sales department for additional information and to receive a quotation: sales@v-i-systems.com

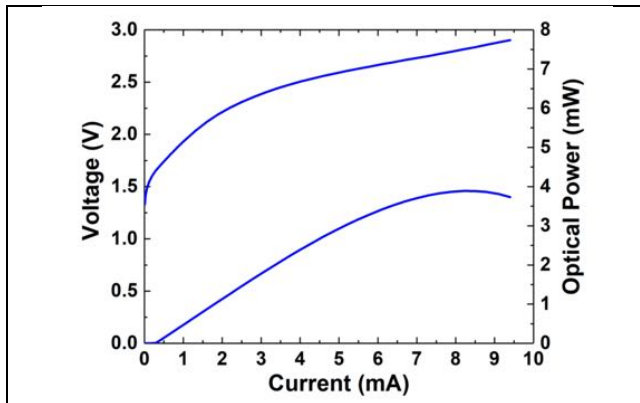
Datasheet

V50-850C

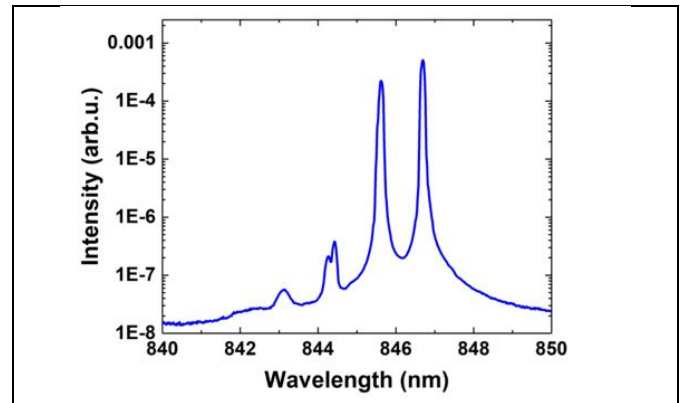


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L-I-V Diagram



Optical spectrum



Electro-optical characteristics (T = 0 to 85 °C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Emission wavelength	λ		835		865	nm
Data rate	BR			50	56	GBaud/s
Optical bandwidth	BW (f_{3dB})	5 mA		28		GHz
Slope efficiency	η	5-10 mA		0.65		W/A
Threshold current	I_{th}				0.5	mA
Differential resistance	R_d	5-10 mA		100		Ω
Beam divergence	θ	FWHM		20		$^\circ$
Peak output power	P_{max}				4	mW
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$			0.5	0.7	nm

Absolute Maximum Ratings

Parameter	Symbol	Test Condition	Min	Max	Unit
Peak forward current	I_f			8	mA
Maximum reverse voltage	V_{rv}			5	V
Operating temperature	T_{op}			85	$^\circ\text{C}$
Storage temperature	T_{st}		-40	100	$^\circ\text{C}$
Soldering temperature	T_{sl}	max 260 sec		150	$^\circ\text{C}$

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Datasheet

V50-850C

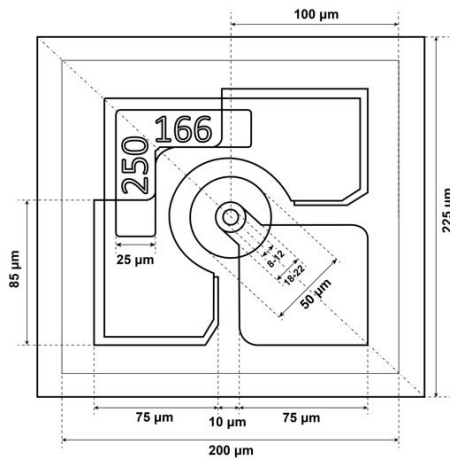


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Mechanical Dimensions

Parameter	Type	Min	Typ	Max	Unit
VCSEL pitch	All		250		μm
Length 1x1 VCSEL chip	V50-850C1		210	250	μm
Length 1x4 VCSEL array	V50-850C4		960	1000	μm
Length 1x12 VCSEL array	V50-850C12		2960	3000	μm
Height	All	140	150	160	μm
Width	All		210	250	μm

Dimensions



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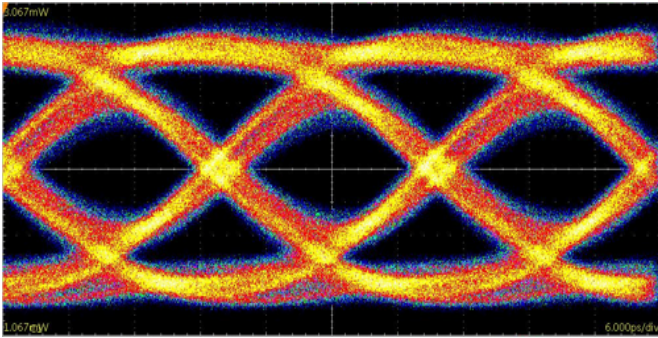
V50-850C



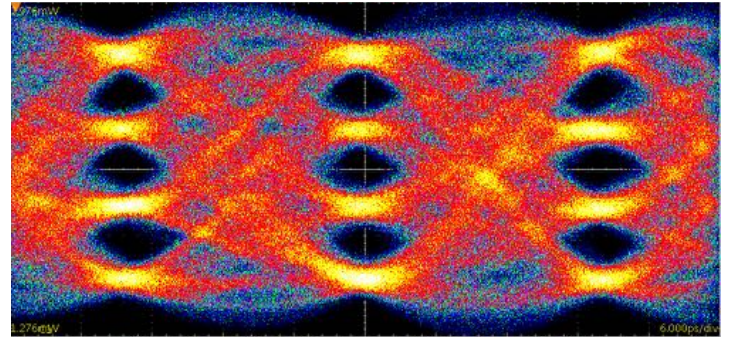
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Eye diagram at 50 Gbit/s NRZ

Eye diagram at 100 Gbit/s 4-PAM



Receiver: Textronix 80C15-32 GHz
Without pre-emphasis or equalization



Receiver: Textronix 80C15-32 GHz
With 6-tap FFE pre-emphasis

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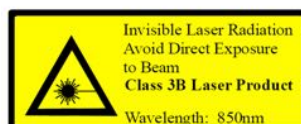
V50-850C



Vertically Integrated Systems

Qualification Notification

The V50-850Cx has been tested to meet specifications outlined in this data sheet at room temperature. However, it has not undergone full qualification testing or characterization and therefore may not meet the performance specifications over all extremes.



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