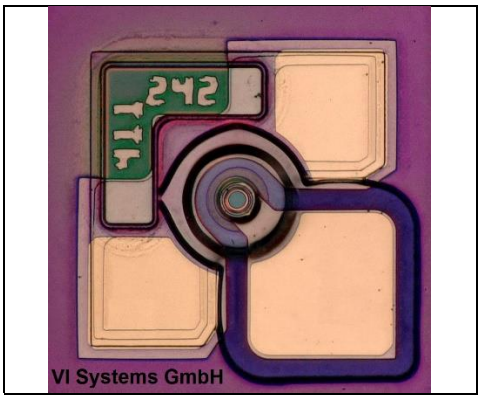
Datasheet

V25HT-850C

Vertically Integrated Systems

Up to 25 GBaud/s VCSEL (850nm) for high temperature applications



Actual product may vary in appearance.

Product Code:	V25HT-850C1	1x1 chip
	V25HT-850C4	1x4 array
	V25HT-850C12	1x12 array

Preliminary

Product Description

These compact and high modulation rate high temperature top-emitting GaAs-based vertical cavity surface emitting laser (VCSEL) chips and 1xN (N=4) 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. This VCSEL revision characterizes with very high temperature stability and can operate from 25°C to 125°C.

Features

- Up to 4 parallel channels
- Up to 28 Gbit/s NRZ per channel
- High temperature stability
- Device-to-device pitch of 250 µm
- Suitable for wire or flip-chip bonding

Applications

- Ethernet
- Automotive applications
- Active Optical Cables (AOC)
- Short-reach 50G/100G/200G/400G Ethernet
- On-board signalling

Parameter	Typical	Notes
Emission wavelength	850 nm (available 835 – 865 nm)	
Data rate	Up to 28 Gbit/s	NRZ
Threshold current	< 0.6 mA	25-125°C
Peak output power	6 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

VI Systems GmbH Hardenbergstrasse 7 D-10623 Berlin
No. 190110-Rev 1.2 January 2020

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Electro-optical characteristics (T = 0 to 125 °C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Emission wavelength	λ		835		865	nm
Maximum data rate	BR	NRZ		28		Gbit/s
Optical bandwidth	BW (f_{3dB})	7 [mA]/25°C		18		GHz
Slope efficiency	η	25°C 125°C	0.5	0.6 0.4	0.7	W/A
Threshold current	I_{th}	25-125°C			0.6	mA
Differential resistance	R_d	25-125°C		100		Ω
Beam divergence	θ	FWHM		20		°
Peak output power	P_{max}	25°C 125°C	2 1		6 3	mW
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$			0.5		nm

Absolute Maximum Ratings

Parameter	Symbol	Test Condition	Min		Max	Unit
Peak forward current	I_f	25°C			10	mA
Maximum reverse voltage	V_{rv}				5	V
Operating temperature	T_{op}				180	°C
Storage temperature	T_{st}		-40		200	°C
Soldering temperature	T_{sl}	max 260 sec			250	°C

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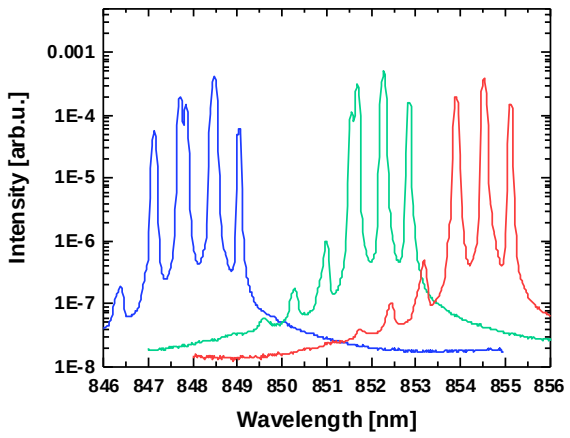
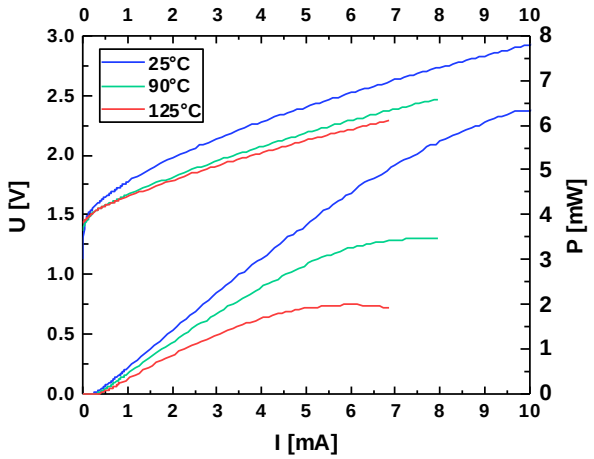
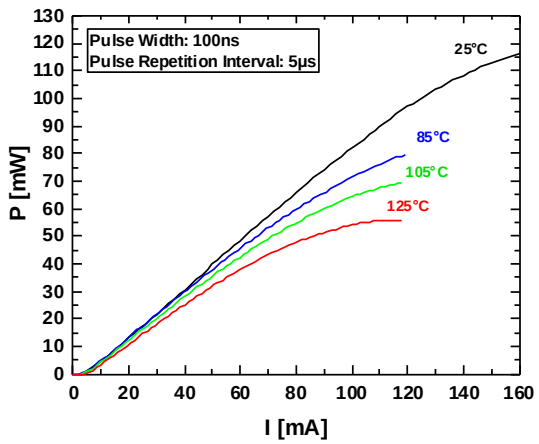
Optical spectrum



L-I-V Diagram



Pulsed L-I Diagram



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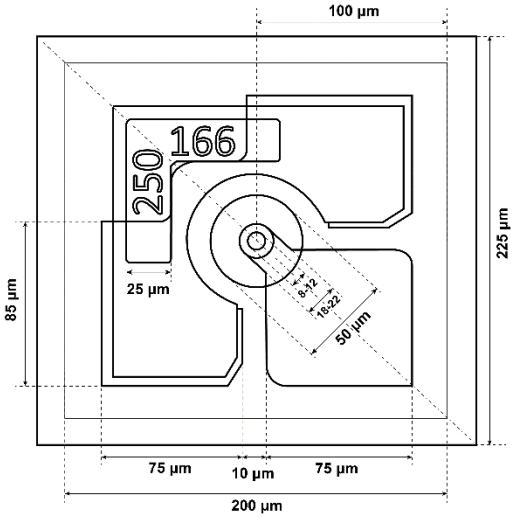
Mechanical Dimensions

Parameter	Type	Min	Typ	Max	Unit
VCSEL pitch	All		250		µm
Length 1x1 VCSEL chip	V25HT-850CHT1		210	250	µm
Length 1x4 VCSEL array	V25HT-850CHT4		960	1000	µm
Length 1x12 VCSEL array	V25HT-850CHT12		2960	3000	µm
Height	All	140	150	160	µm
Width	All		210	250	µm

Dimensions



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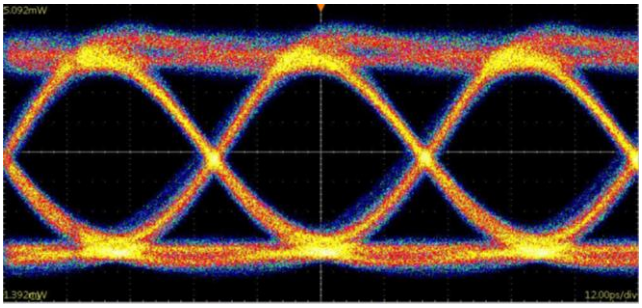
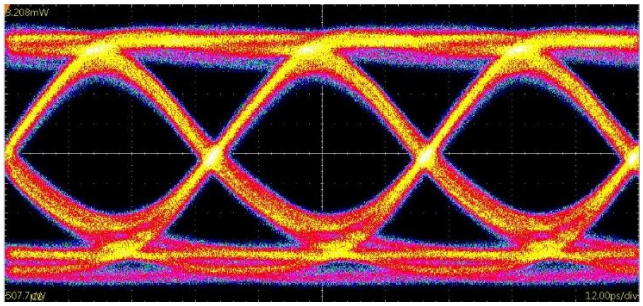
Eye diagram at 25 Gbit/s NRZ 25°C



Receiver: Textronix 80C15-32 GHz (no DSP)

Eye diagram at 25 Gbit/s NRZ 125°C

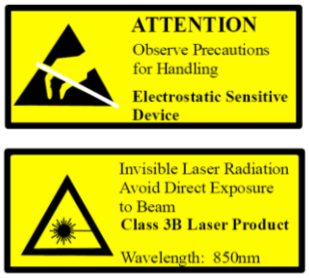


Receiver: Textronix 80C15-32 GHz (no DSP)

Qualification Notification

The V25HT-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.

RoHS Compliant



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