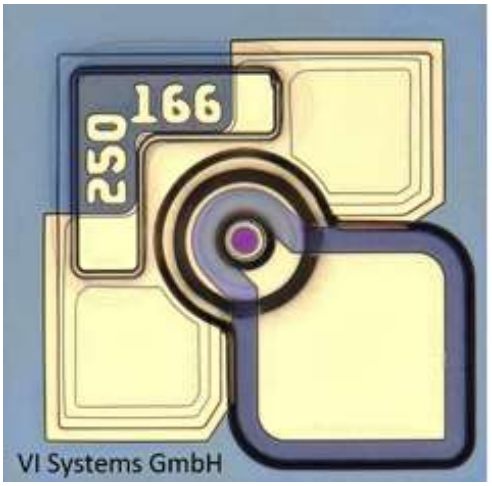
Datasheet

VM100-850-SG-qSM-Cxx

Vertically Integrated Systems

100 Gbit/s VCSEL (850 nm)
Chip version: quasi single mode
Contact type: GS/SG



Sample image only. Actual product may vary.

Product Code:

VM100-850-SG-qSM-C1 1x1

VM100-850-SG-qSM-C4 4x1

Engineering Samples

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.

Optical aperture: ~3µm

Features

- Single chips and 4-ch arrays
- Up to 112 Gbit/s per channel
- Device-to-device pitch of 250 µm
- Suitable for wire or flip-chip bonding

Applications

- Ethernet
- Proprietary optical interconnects
- Active Optical Cables (AOC)
- 25G and 100G Ethernet

Parameter	Typical	Notes
Emission wavelength	850 nm	
Data rate	~112 Gbit/s	PAM-4
Threshold current	~ 0.5 mA	
Peak output power	~3 mW @85°C	

VI Systems GmbH Hardenbergstrasse 7 D-10623 Berlin

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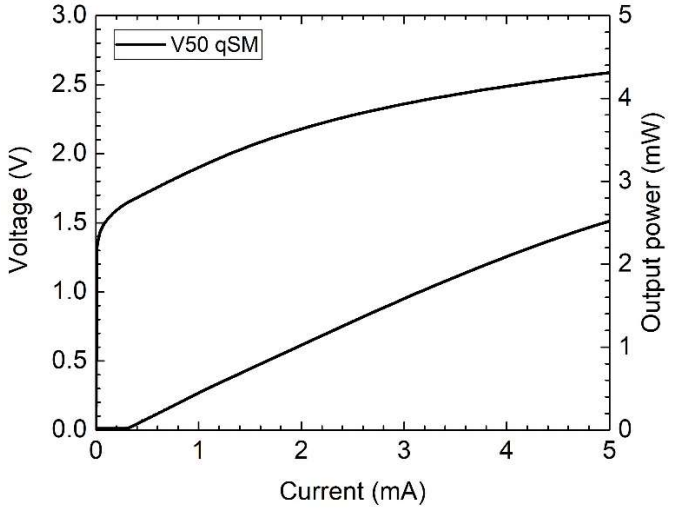
Electro-Optical Specifications (T = 0 to 85°C)

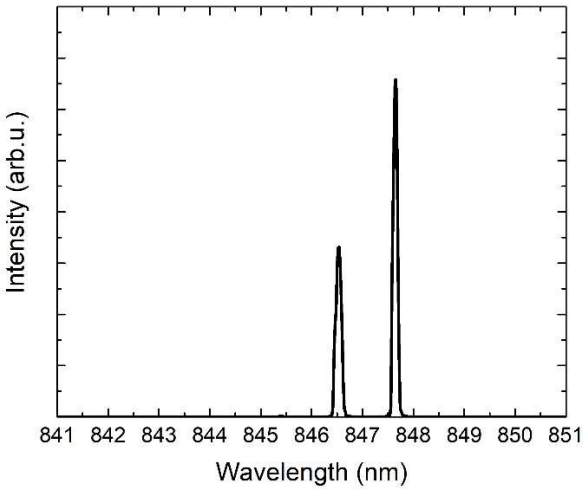
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Emission wavelength	λ		840		860	nm
Maximum data rate	BR			50	56	GBaud/s
Optical bandwidth	BW (f3dBo)			25	33	GHz
Slope efficiency	η	3 mA	0.3		0.5	W/A
Threshold current	Ith	25-85°C			0.5	mA
Differential resistance	Rd	5 mA		80	100	Ω
Beam divergence	Θ	FWHM		10		°
Peak output power	Pmax			3	5	mW
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$	5 mA			0.5	nm

**anti-reflection coating is optimized for <1% reflectivity within the range 840 nm - 960 nm*

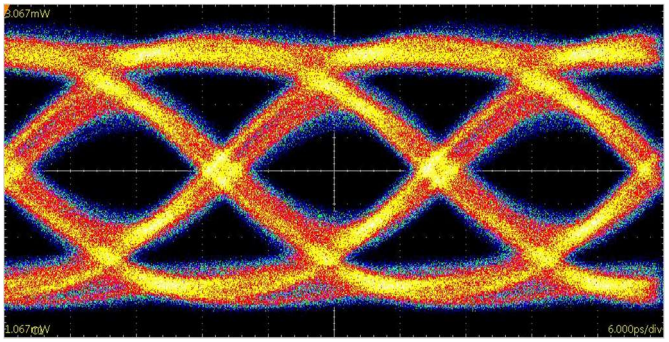
LIV Characteristics



Optical Spectrum

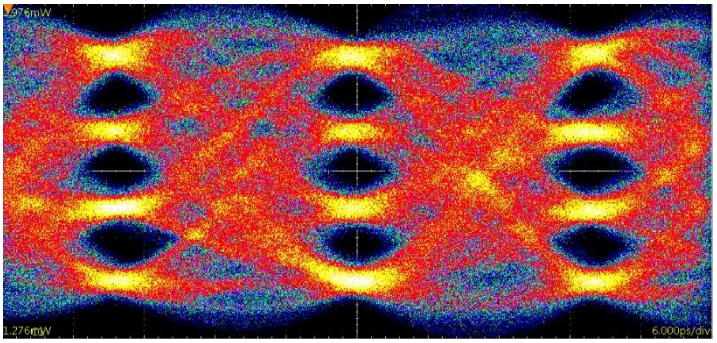


50 Gbit/s NRZ 25°C



Without pre-emphasis or equalization

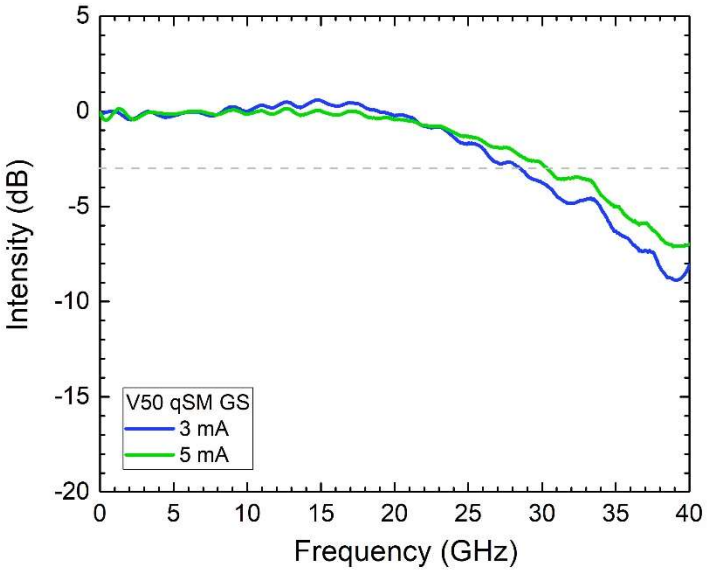
100 Gbit/s PAM4 25°C



With 6-tap FFE pre-emphasis

Transmitter: SHF BPG 12104A. Receiver: Tektronix DSA8300 w. 80C15 Optical Sampling Module.

Frequency response (optical)



Test Equipment: Keysight VNA

Absolute Maximum Ratings

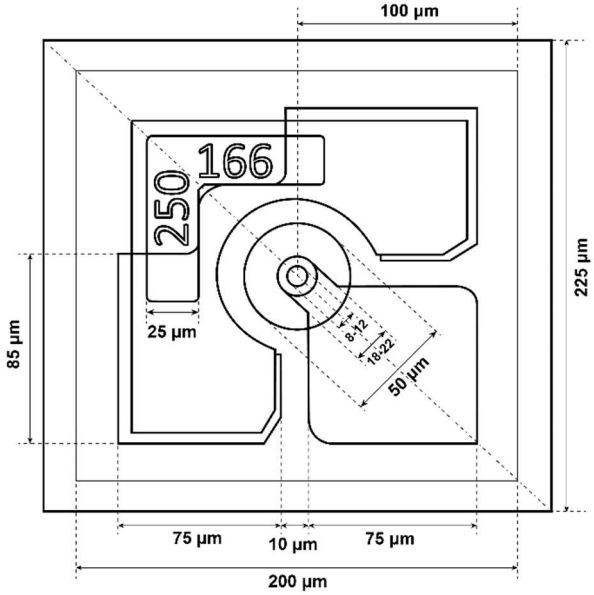
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Peak forward current	I_f				9	mA
Maximum reverse voltage	V_{rv}				5	V
Operating temperature	T_{op}				85	°C
Storage temperature	T_{st}		-40		100	°C
Soldering temperature	T_{sl}	max 260 sec			150	°C

Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate irreversible damage to the component even if all other parameters are within the electro-optical specifications. Exposure to any of the Absolute Maximum Ratings for extended periods can adversely affect the reliability of these chips.

Mechanical Dimensions

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

Dimensions



Qualification Notification

The VM100-850Cx-qSM 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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