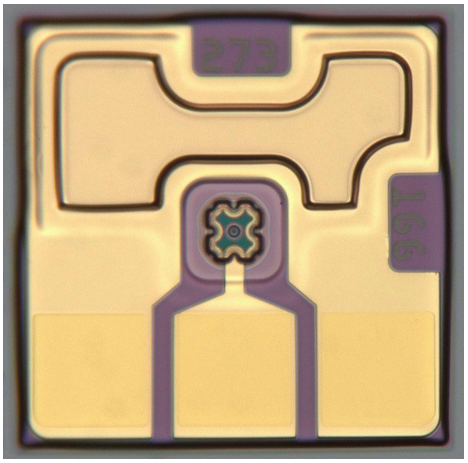
Datasheet

VM100-940-GSG-MA-SM-C1

Vertically Integrated Systems

100 Gbit/s VCSEL SM (940 nm)
Contact type: GSG
Chip type: Multi-aperture



Sample image only. Actual product may vary.

Product Code:
V50-940-GSG-MA-SM -C1 1x1

Engineering Samples

Product Description

These compact and very high modulation rate top-emitting GaAs-based vertical cavity surface emitting laser (VCSEL) chips 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-ground (GSG) microprobes or wire bonds.

New multi-aperture design enables single mode emission and high-speed operation at high output power.

Equivalent optical aperture diameter: ~6µm

Features	Applications
· Up to 112 Gbit/s (PAM4) · Single chip size 250 x 250 µm · Suitable for wire bonding	· 200G / 400G in SWDM · Proprietary optical interconnects · Active Optical Cables (AOC)

Parameter	Typical	Notes
Emission wavelength	940 nm	(range 930 – 950 nm)
Data rate	Up to 112 Gbit/s	56 GBaud/s PAM-4
RMS	< 0.1 nm	
Peak output power	4 mW	

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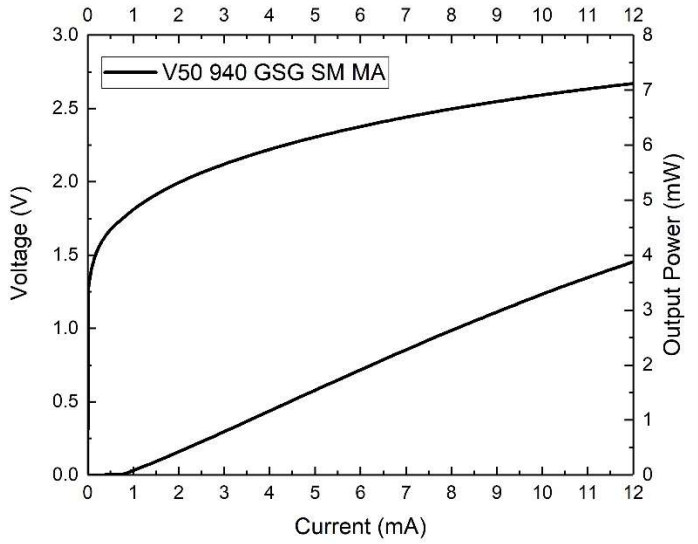
Vertically Integrated Systems

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

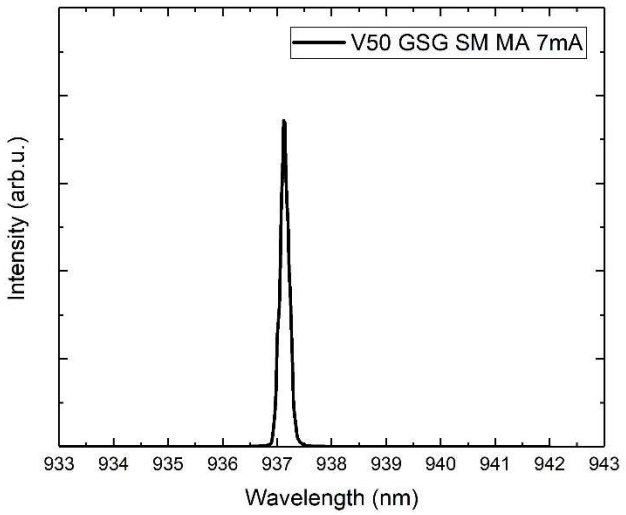
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Emission wavelength	λ		930		950	nm
Data rate	BR	PAM-4		50	56	GBaud/s
Optical bandwidth	BW (f3dBo)	6 mA		20	23	GHz
Slope efficiency	η	5-10 mA		0.35		W/A
Threshold current	Ith				1	mA
Differential resistance	Rd	5-10 mA		60		Ω
Beam divergence	Θ	86%		20		°
Peak output power	Pmax				4	mW
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$			0.1	0.2	nm

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

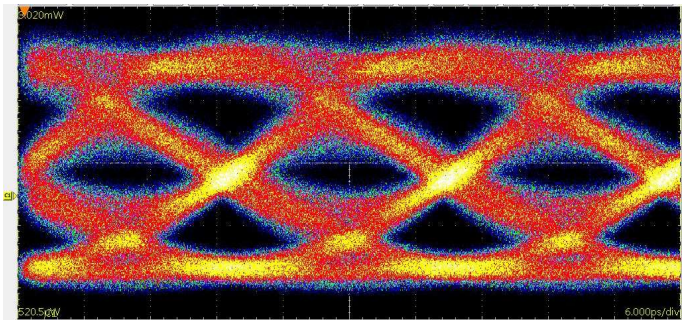
LIV Characteristics



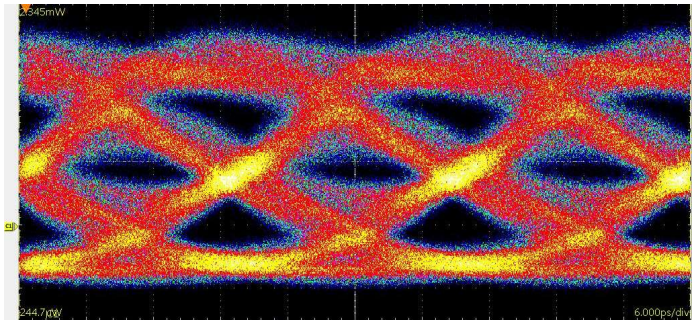
Optical Spectrum



50 Gbit/s NRZ 8 mA 500 mVpp 25°C

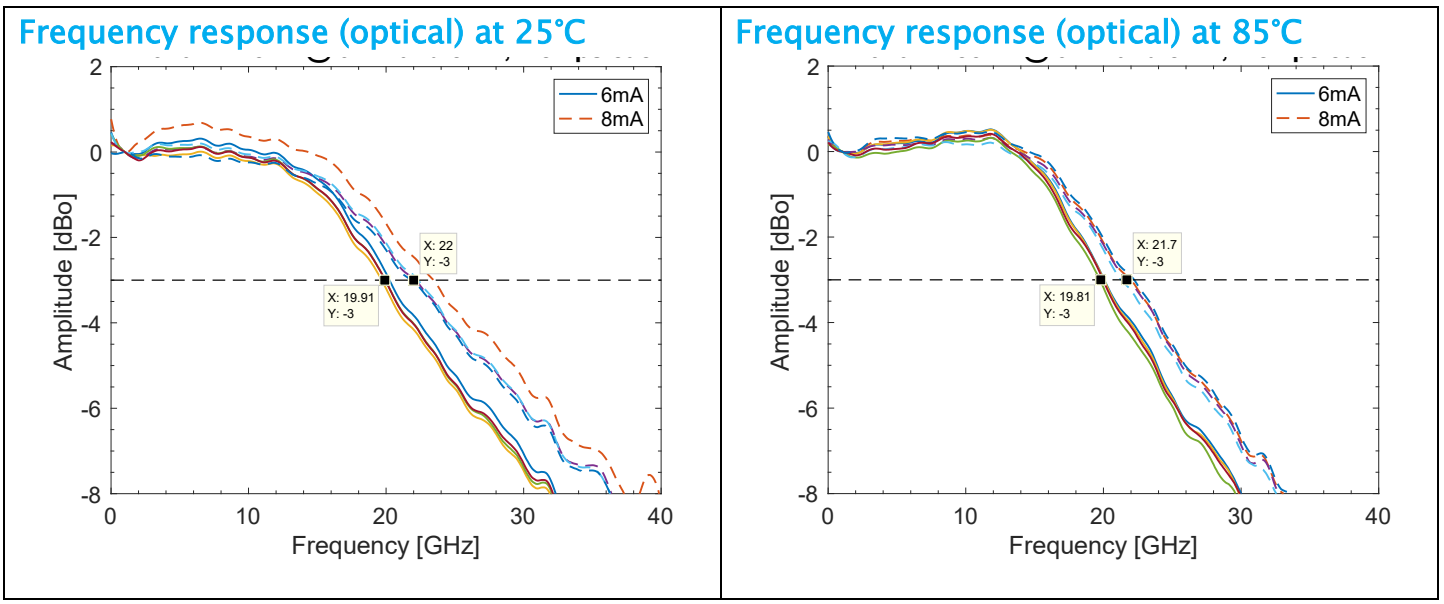


50 Gbit/s NRZ 8 mA 400 mVpp 85°C



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

Eye diagrams show intrinsic performance of the chip. No equalization or signal processing was applied.



Test Equipment: Keysight VNA

Absolute Maximum Ratings

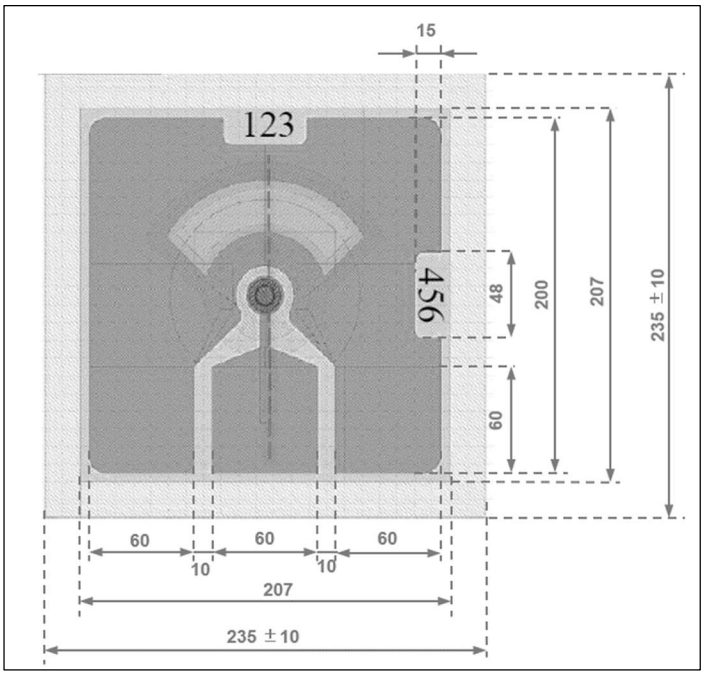
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Peak forward current	I_f				8	mA
Maximum reverse voltage	V_{rv}				5	V
Operating temperature	T_{op}				85	°C
Storage temperature	T_{st}		-40		100	°C
Soldering temperature	T_{sl}	max 260 sec			150	°C

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			250		µm
Length			210	250	µm
Height		140	150	160	µm
Width			210	250	µm

Dimensions of V50-940-GSG-C1



Qualification Notification

The V50-940-SM-MA-GSG-C1 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

ATTENTION
Observe Precautions for Handling
Electrostatic Sensitive Device

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