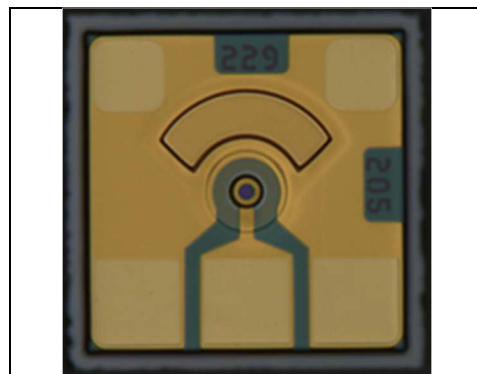


## Up to 112 Gbit/s VCSEL (940nm) 56 GBaud/s PAM-4 modulation

Product Code: VM100-940C1 1x1 chip



Actual product may vary in appearance.

### 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.

### Features

- Up to 112 Gbit/s (PAM-4 modulation)
- Chip size 250 x 250  $\mu\text{m}$
- Suitable for wire bonding

### Applications

- 400G / 800G / 1600G
- Proprietary optical interconnects
- Active Optical Cables (AOC)

Preliminary

Parameter	Typical	Notes
Emission wavelength	940 nm	(available 934 – 948nm)
Data rate	Up to 112 Gbit/s	56 GBaud/s 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](mailto:sales@v-i-systems.com)

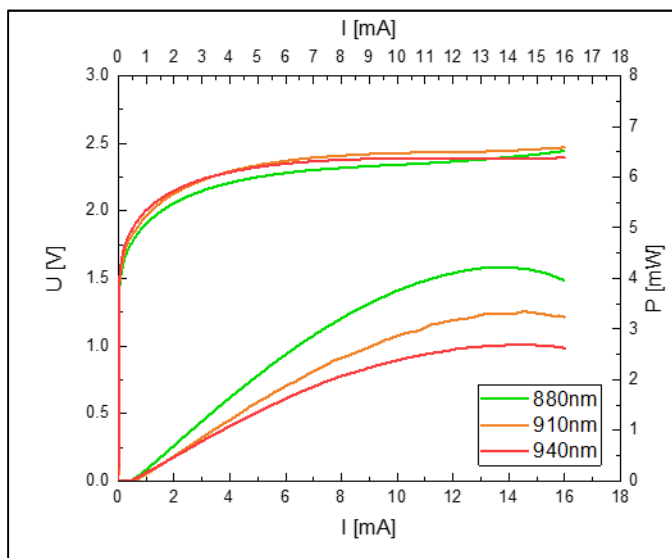
# Datasheet

## VM100-940C1



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### L-I-V Diagram



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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Emission wavelength	$\lambda$		934		948	nm
Data rate	BR	PAM-4		50	56	GBaud/s
Optical bandwidth	BW ( $f_{3dB}$ )	5 mA		28		GHz
Slope efficiency	$\eta$	5-10 mA		0.5		W/A
Threshold current	$I_{th}$				0.5	mA
Differential resistance	$R_d$	5-10 mA		100		$\Omega$
Beam divergence	$\theta$	FWHM		20		°
Peak output power	$P_{max}$				4	mW
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$			0.6	0.8	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	°C
Storage temperature	$T_{st}$		-40	100	°C
Soldering temperature	$T_{sl}$	max 260 sec		150	°C

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[www.v-i-systems.com](http://www.v-i-systems.com)

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# Datasheet

## VM100-940C1

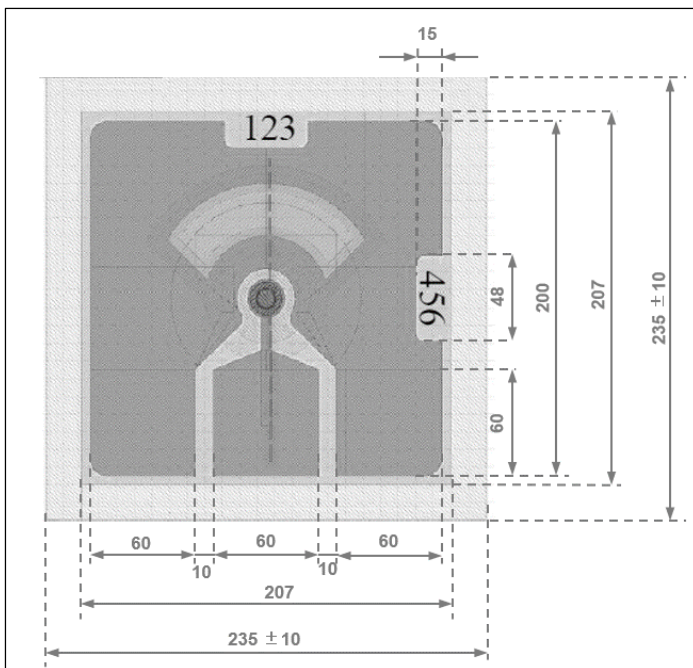


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### Mechanical Dimensions

Parameter	Type	Min	Typ	Max	Unit
Length 1x1 VCSEL chip					$\mu\text{m}$
	VM100-940C1		210	250	$\mu\text{m}$
Height	All	140	150	160	$\mu\text{m}$
Width	All		210	250	$\mu\text{m}$

### Dimensions



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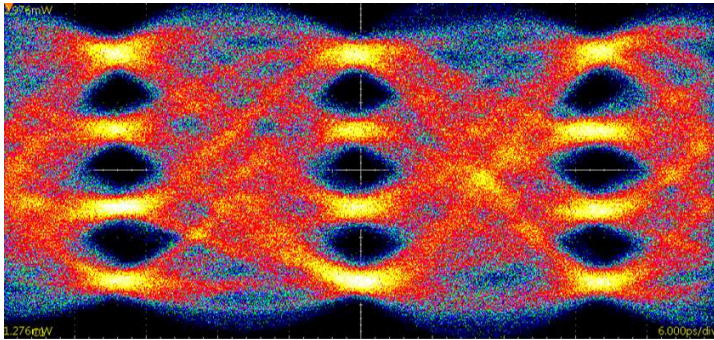
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VM100-940C1



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## Eye diagram at 100 Gbit/s 4-PAM



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

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No. 201007-Rev 1.4

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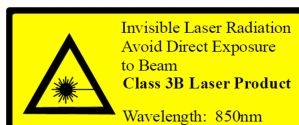
VM100-940C1



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## Qualification Notification

The VM100-940C1 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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