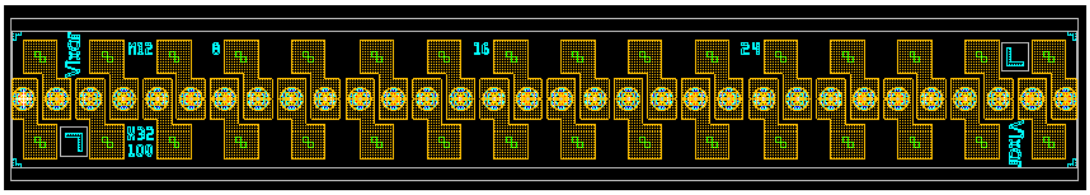
680nm Multi-Mode VCSEL

680M-0000-AA01



PRODUCT DESCRIPTION
1X32 680nm VCSEL array which can be individually addressed using individual bond pad
All the data provided is a **single** VCSEL data.

Visible Vertical Cavity Surface Emitting Laser (VCSEL)
This coherent optical source is designed for OEM applications such as position sensing, motion control, medical devices, printing, and bar code scanners. The red wavelength is ideal for:

- Applications requiring beam visibility, such as sensors that must be aligned
- Absorptive or spectroscopic sensors requiring a particular wavelength
- High resolution applications requiring a small spot size

Features:
- Low divergence angle
- Low operating current
- Circular beam profile
- Narrow spectral width

Package Details: See separate packages datasheet at http://www.vixarinc.com/pdf/PackagesDS.pdf .

RoHS Compliant

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Absolute Maximum Ratings

Parameter	Symbol	Rating	Notes
Storage temperature		-40 to 125 °C	
Operating temperature (VCSEL)	Tv	-20 to 70 °C	
Lead solder temperature		260°C, 10 seconds	
CW current (VCSEL)		12 mA	(Note 1)
Maximum pulsed current		35 mA	<1µs pulse width, 1% duty cycle, T=30°C (Note 2)
Laser reverse voltage		5 V	(Note 3)

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may affect device reliability.

Electro-Optical Characteristics

VCSEL Operating Temp (Tv) =30°C & Operating Current=10mA unless otherwise stated)

Parameter	Symbol	Units	Minimum	Typical	Maximum	Notes
Threshold current	Ith	mA	1.2	2.5	4	
Operating voltage	Vf	Volts	--	2.4	2.8	
Series resistance (VCSEL)	Rs	Ohms	--	60	100	
Slope efficiency	SE	mW/mA	--	0.4	--	
Optical output power	Lop	mW	5	5.5	6	T=30°C
Optical output power	Lop	mW	--	3.5	--	T=50°C
Reverse breakdown voltage		V	10	--	--	Ir ≤ 1nA
Operating wavelength	λop	nm	670	680	690	
Spectral width (RMS)	Δλ	nm	--	--	3	
Beam divergence 1/e2		deg	--	27	--	Whole angle
Beam divergence FWHM	FWHM	deg	--	20	--	Whole angle
Wavelength temp. coefficient		nm/°C	--	0.045	--	
Rise time		ps	--	--	150	20%-80%
Fall time		ps	--	--	150	20%-80%
Modulation bandwidth (-3 dB)	BW	GHz	2	--	--	
ESD Survival		V	1000	--	--	(Notes 3, 4)

Note 1: The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the top of this table; however, the maximum CW laser current decreases with increasing temperature. Contact Vixar for maximum CW laser current values at other temperatures.

Note 2: For details refer to the Vixar Application Note "Operation of VCSELs Under Pulsed Conditions". (http://www.vixarinc.com/technology/applicationnotes.html)

Note 3: For details refer to the Vixar Application Note "VCSEL EOS/ESD Considerations and Lifetime Optimization". (http://www.vixarinc.com/technology/applicationnotes.html)

Note 4: Applies only to parts that include an ESD diode. ESD diodes cannot be used if the device is being modulated at rates higher than ~ 35MHz. VCSEL shall survive 3 ESD events applied in both the positive and negative polarity. ESD failures are defined as more than a 15% drop in output power or a 10% increase in reverse leakage current. This test is considered destructive and shall not be conducted on prototype or production parts that are shipped for use by the customer.

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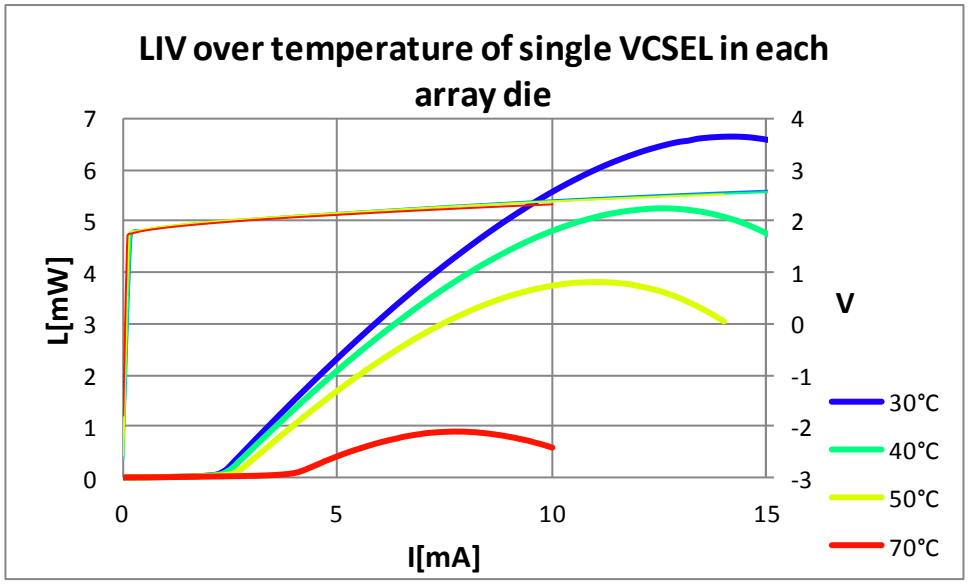
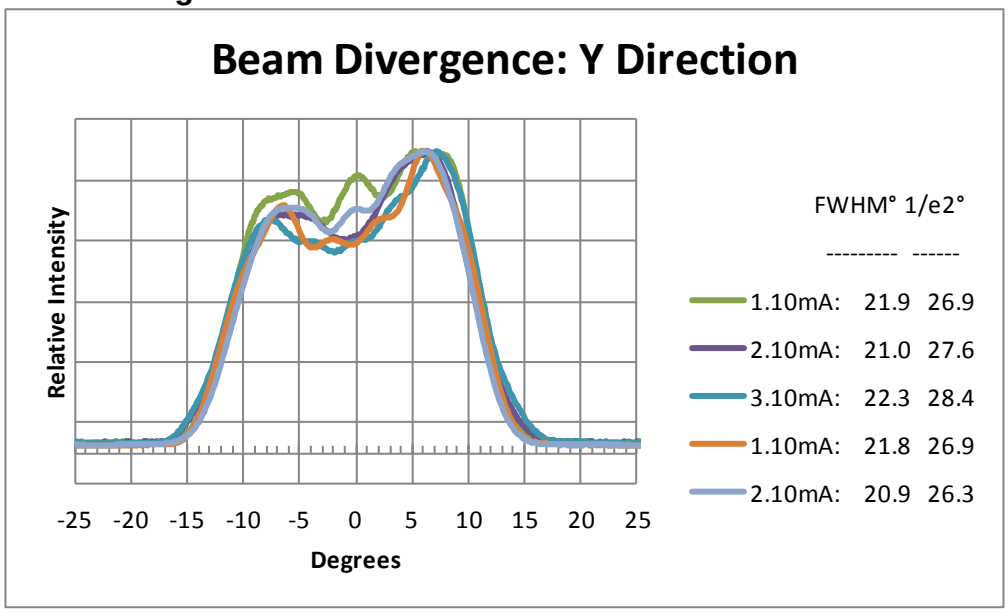
TYPICAL PERFORMANCE CURVES:

Light vs. Current over Temperature



Beam Divergence



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ORDERING INFORMATION

Description	Package	Operating Temperature	Part Number
680 nm multi-mode VCSEL	Die	-20°C to 70°C	680M-0000-AA01

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