PRELIMINARY

850nm Power Array VCSEL

850M-0000-AP01

Near Infra-Red Vertical Cavity Surface Emitting Laser (VCSEL)
This single spectral and spatial mode VCSEL is designed for OEM applications such as position sensing, motion control, medical devices, printing, measurement, and spectroscopic sensing (e.g. atomic clocks). The product is specifically designed for low power dissipation, and polarization and spectral stability.

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		-20 to 125 °C	
Operating temperature (VCSEL)	Tv	-20 to 90 °C	
Lead solder temperature		260°C, 10 seconds	
CW current (VCSEL)		1500 mA	(Note 1)
Maximum pulsed current		2200 mA	<20µs pulse width, 0.04% duty cycle, T=25°C (Note 2)

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) =25°C & Operating Current=1000mA unless otherwise stated)

Parameter	Symbol	Units	Minimum	Typical	Maximum	Notes
Threshold current	Ith	mA	--	110	--	
Operating voltage	Vf	Volts	--	2.7	--	
Slope efficiency	SE	mW/mA	--	0.76	--	
Optical output power	Lop	mW	--	650	--	T=25°C
Reverse breakdown voltage		V	10	--	--	Ir ≤ 1nA
Operating wavelength	λop	nm	840	850	860	
Beam divergence 1/e2		deg	--	--	--	Whole angle
Beam divergence FWHM	FWHM	deg	--	--	--	Whole angle
Rise time		ps	--	--	500	20%-80%
Fall time		ps	--	--	500	20%-80%
ESD Survival		V	1000	--	--	(Notes 3, 5)

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: For customers with a product application that is polarization sensitive, Vixar recommends an epoxy curing process of 85°C for 3 hours to ensure the polarization stability is not altered. (Higher temperatures and shorter cure times can change the polarization stability.)

Note 5: 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:

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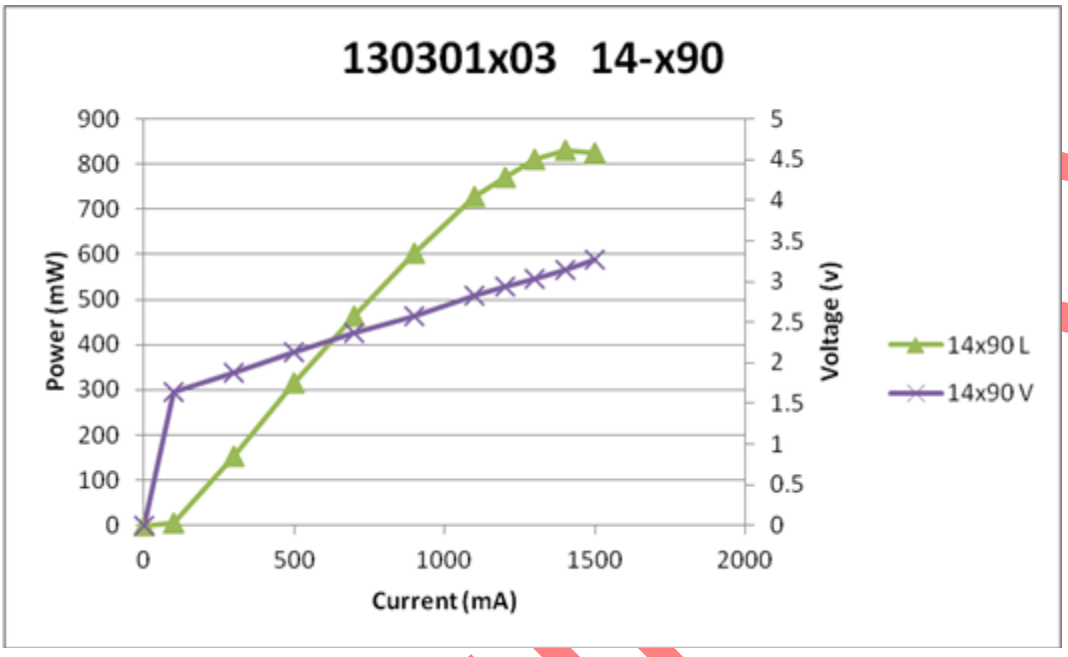

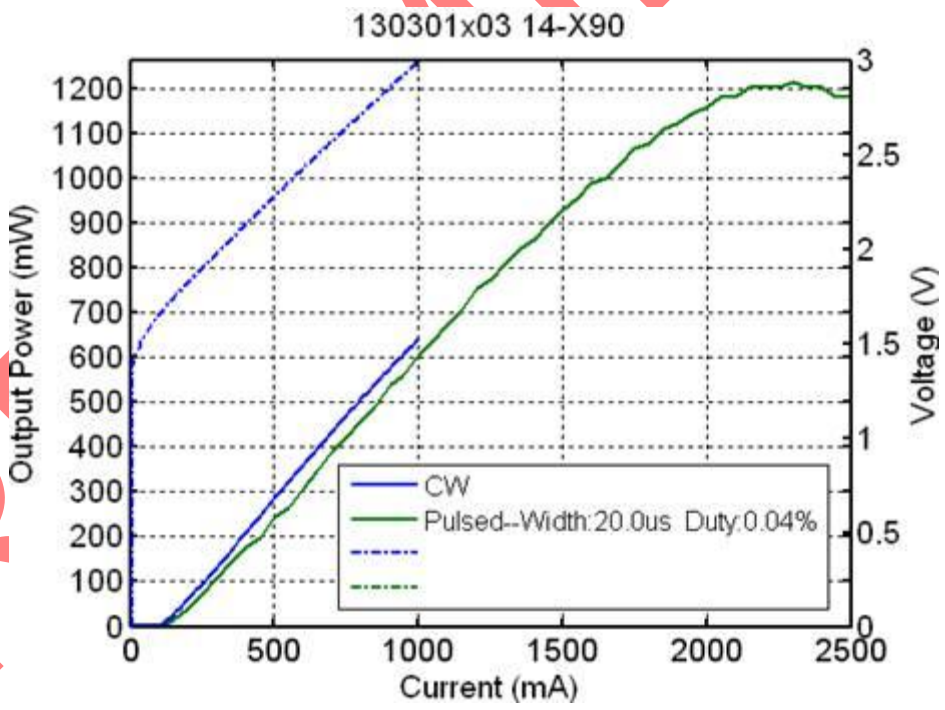

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ORDERING INFORMATION

Description	Package	Part Number
850 nm Power array VCSEL,	Die	850M-0000-AP01

Additional notes about bare die

- This array die needs to have good thermal conductivity for the best performance
  For Instance, Vixar suggests solder attach instead of silver epoxy attachment of die to a package

PRELIMINARY

Vixar
2950 Xenium Lane, Suite 104
Plymouth, MN 55441
763-746-8045
email:info@vixarinc.com
website: www.vixarinc.com
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