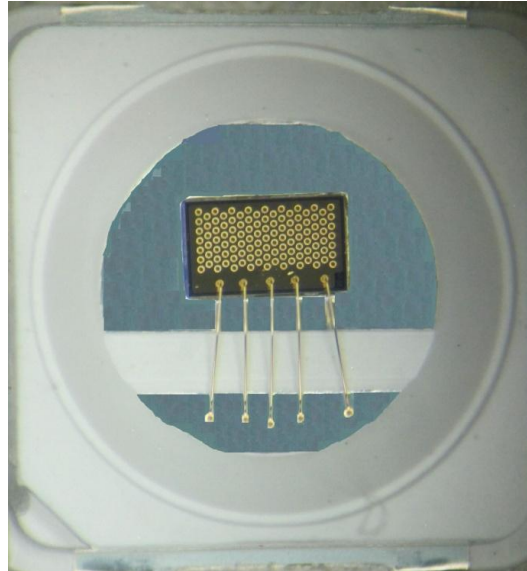


## 850nm Power Array VCSEL with power emission of 1W to 2W



### Near Infra-Red Vertical Cavity Surface Emitting Laser (VCSEL)

Model: Multi Mode Array VCSEL

Specifically designed for high power multi mode applications above 1 Watt optical operating power.

#### Applications

- Automotive Sensing
- 3D Scanning
- Motion Control
- Time of Flight
- Gesture Recognition
- IR illumination for Security

**Package Details:** This VCSEL array is delivered in a PLCC 5054 package (shipped in tape on reel for minimum quantities of 1000 pcs), or bare die, or can be delivered on a test board for easy evaluation of VCSEL and package performance. The PLCC package is compatible with standard SMT solder reflow processing.

**Additional packaging option:** Vixar can attach a diffuser to broaden the divergence. The customer can choose a diffuser with angles of 20, 30, 40, 60, 80, and 90 degree (custom angles are available upon request).



COMPLIES WITH IEC 60825-1, 2<sup>nd</sup> Edition 2007.

COMPLIES WITH 21 CFR 1040.10 AND 1040-10.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO.50 DATED 27 MAY 2001.



## Absolute Maximum Ratings

Parameter	Rating	Notes
Storage temperature	-40 to 100 °C	
Operating temperature (VCSEL)	-20 to 60 °C	
Maximum package SMT solder reflow temperature	250°C, 10 seconds	
CW current (VCSEL)	3 A	(Note 1)
Maximum pulsed current	5 A	20µs pulse width, 1% duty cycle, T=25°C (Note 2)

Note 1: The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the table above. 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>)

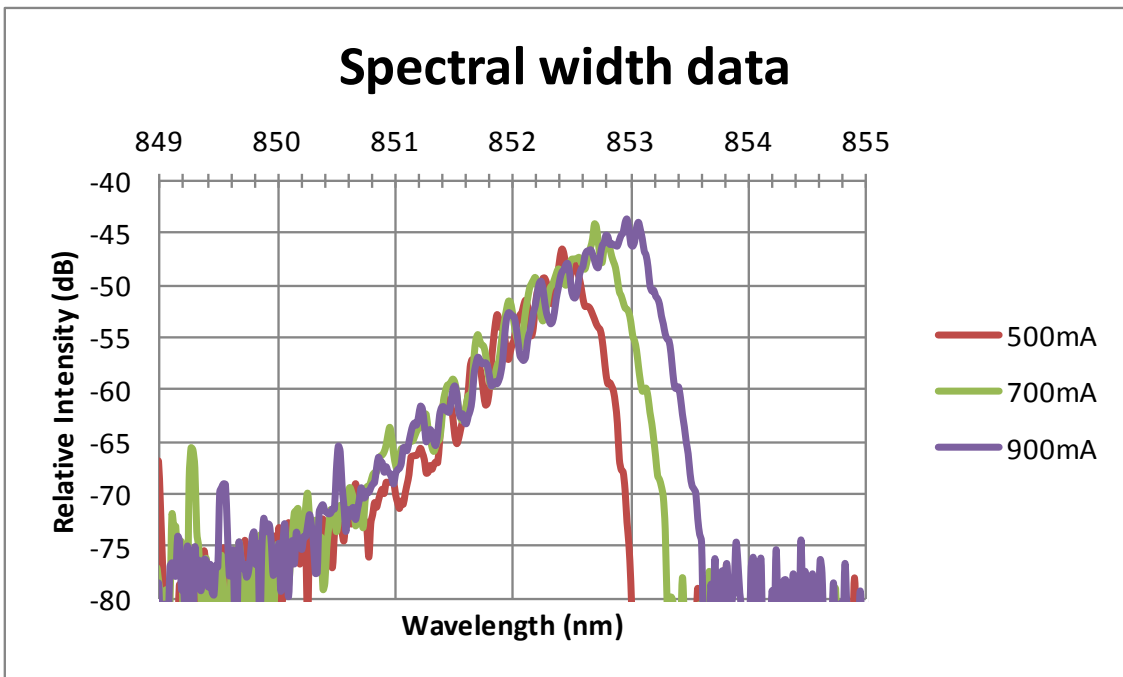
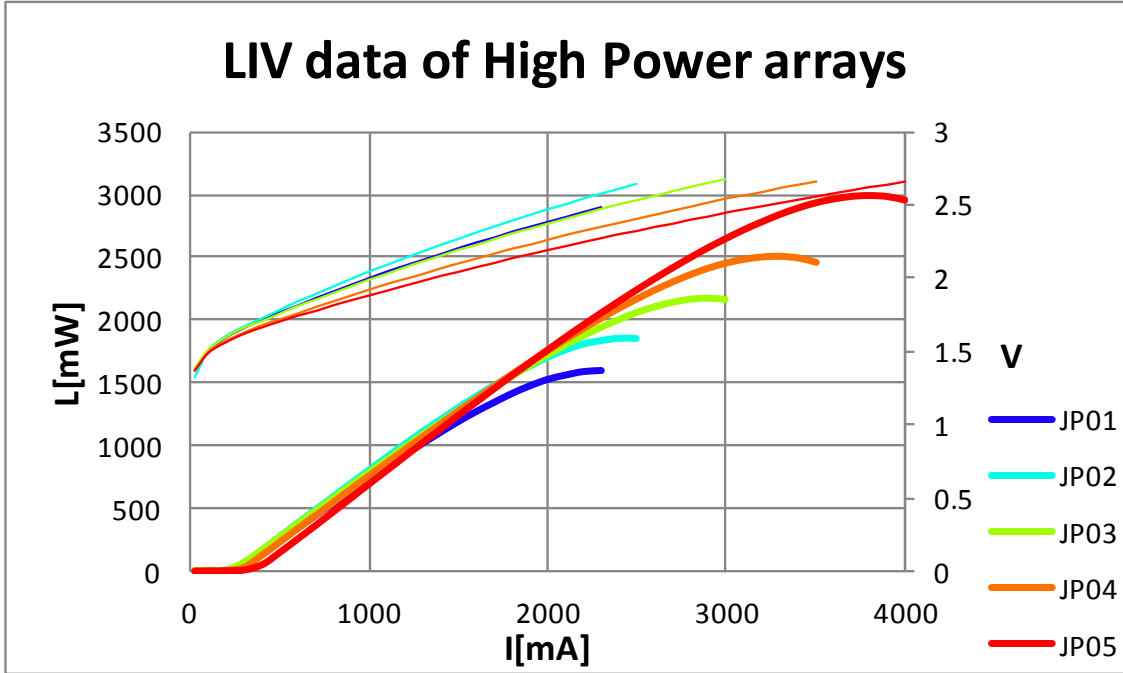
Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may affect device reliability.

## CW Typical Electro-Optical Characteristics

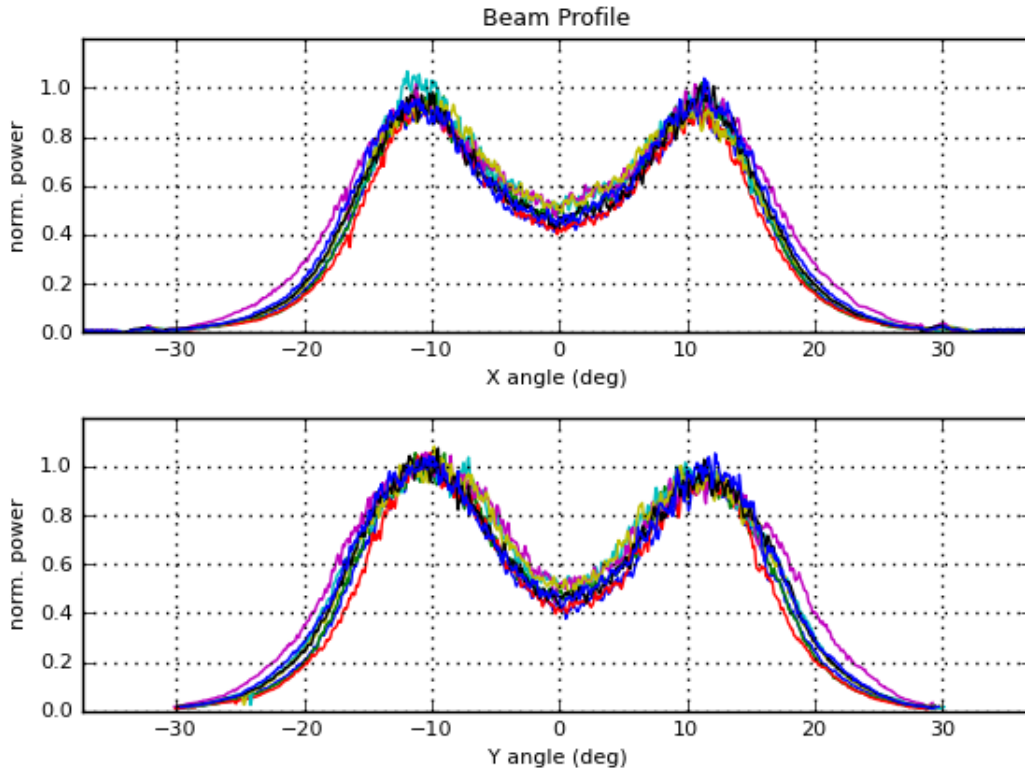
VCSEL Operating Temp (T<sub>v</sub>) =25°C

Product ID			JP01	JP02	JP03	JP04	JP05
Parameter	Symbol	Units					
Threshold current	I <sub>th</sub>	mA	200	250	300	350	400
Operating voltage	V <sub>f</sub>	Volts	2.1	2.2	2.25	2.0	2.0
Optical Operating power	L <sub>op</sub>	mW	1000	1200	1500	1700	2000
Optical Operating power	L <sub>op</sub>	W	1.0	1.2	1.5	1.7	2.0
			Minimum	Typical	Maximum	Notes	
Slope efficiency	SE	W/A	--	0.95	--		
Power conversion efficiency	PCE	%	--	40	--		
Reverse breakdown voltage		V	10	--	--	I <sub>r</sub> ≤ 1nA	
Beam divergence	FWHM	deg	--	34	--		
Operating wavelength	λ <sub>op</sub>	nm	840	850	860		
Rise time		ps	--	--	500	20%-80%	
Fall time		ps	--	--	500	20%-80%	

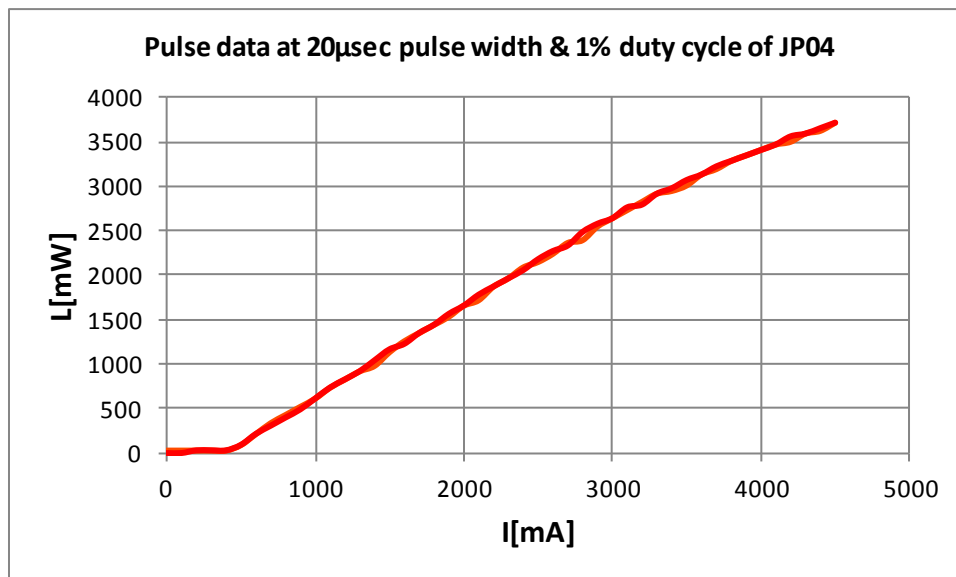
## TYPICAL PERFORMANCE CURVES AT 25°C:



## Beam divergence data



## Sampled pulse data

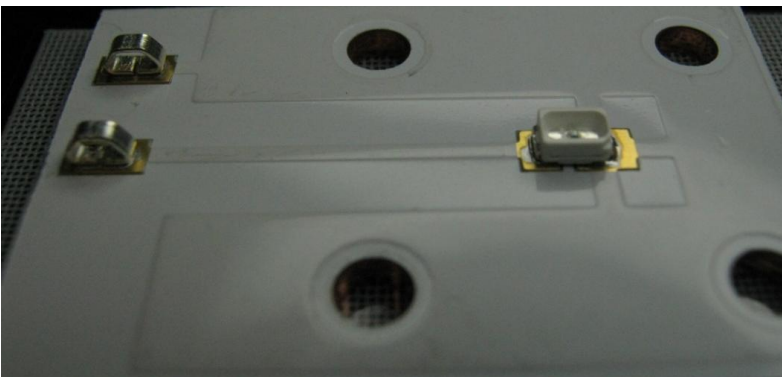


## ORDERING INFORMATION

Description	Package	Part Number
1 Watt 850 nm Power array VCSEL on a PLCC package	PLCC 5054	850M-0000-JP01
1.2 Watt 850 nm Power array VCSEL on a PLCC package	PLCC 5054	850M-0000-JP02
1.5 Watt 850 nm Power array VCSEL on a PLCC package	PLCC 5054	850M-0000-JP03
1.7 Watt 850 nm Power array VCSEL on a PLCC package	PLCC 5054	850M-0000-JP04
2 Watt 850 nm Power array VCSEL on a PLCC package	PLCC 5054	850M-0000-JP05
1 Watt 850 nm Power array VCSEL on a PLCC package with an evaluation board	PLCC 5054 & Evaluation board	850M-0000-NP01
1.2 Watt 850 nm Power array VCSEL on a PLCC package with an evaluation board	PLCC 5054 & Evaluation board	850M-0000-NP02
1.5 Watt 850 nm Power array VCSEL on a PLCC package with an evaluation board	PLCC 5054 & Evaluation board	850M-0000-NP03
1.7 Watt 850 nm Power array VCSEL on a PLCC package with an evaluation board	PLCC 5054 & Evaluation board	850M-0000-NP04
2 Watt 850 nm Power array VCSEL on a PLCC package with an evaluation board	PLCC 5054 & Evaluation board	850M-0000-NP05

### Additional Packing Information:

Sample photo of an Evaluation Board for PLCC 5054 Packages



Please refer Vixar Packaging datasheet page 13 for more information on the test board dimension  
Please contact Vixar for Bare die samples and Optics alignment options

Vixar

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