

# 940nm Power Array VCSEL with power emission ~0.5W at CW in a PLCC 2835 package

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

Model: 940nm Multi Mode Array VCSEL

### 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 2835 package (shipped in tape on reel for minimum quantities of 3000 pcs) with an encapsulant. The PLCC package is compatible with standard SMT solder reflow processing.



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 85 °C	
Maximum package SMT solder reflow temperature	260°C, 10 seconds	
CW current (VCSEL)	1.2 A	(Note 1)
Maximum pulsed current	1.8 A	100µs pulse width, 10% 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.

## Electro-Optical Characteristics

VCSEL Operating Temp (Tv) =25°C,

Operating current: 0.7 Amps

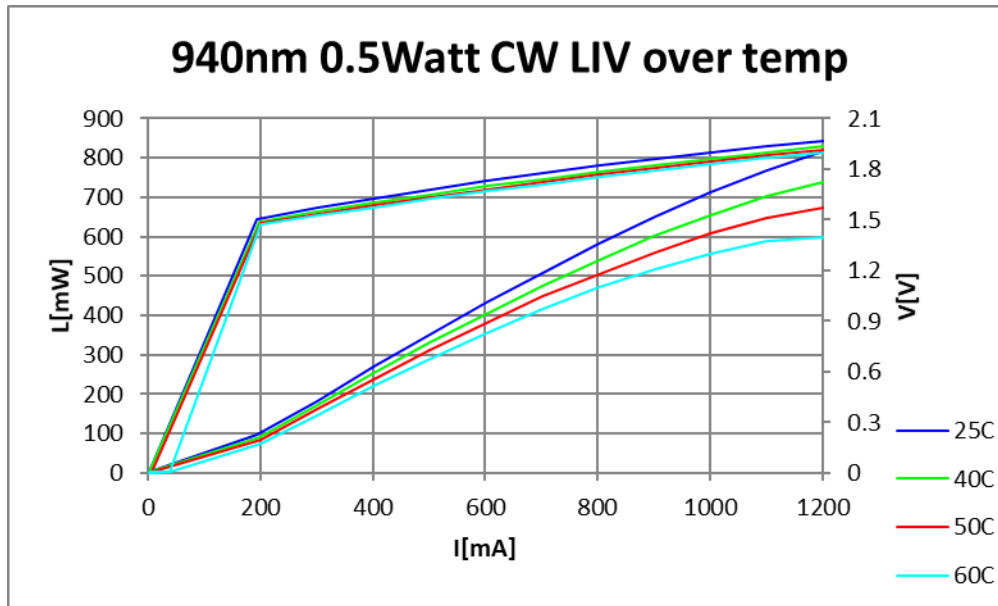
Test condition: CW

Product ID			Minimum	Typical	Maximum	Notes
Parameter	Symbol	Units				
Threshold current	I <sub>th</sub>	mA	40	75	100	
Operating voltage	V <sub>f</sub>	Volts		1.8	2.3	
Optical Operating power	L <sub>op</sub>	mW	425	500	--	
Slope efficiency	SE	W/A	--	0.75	--	
Power conversion efficiency	PCE	%	37	40	--	
Reverse breakdown voltage		V		--	6	I <sub>r</sub> ≤ 1µA
Beam divergence	1/e <sup>2</sup>	deg	--	24	30	
	FWHM	deg		20	25	
Operating wavelength	λ <sub>op</sub>	nm	930	940	950	

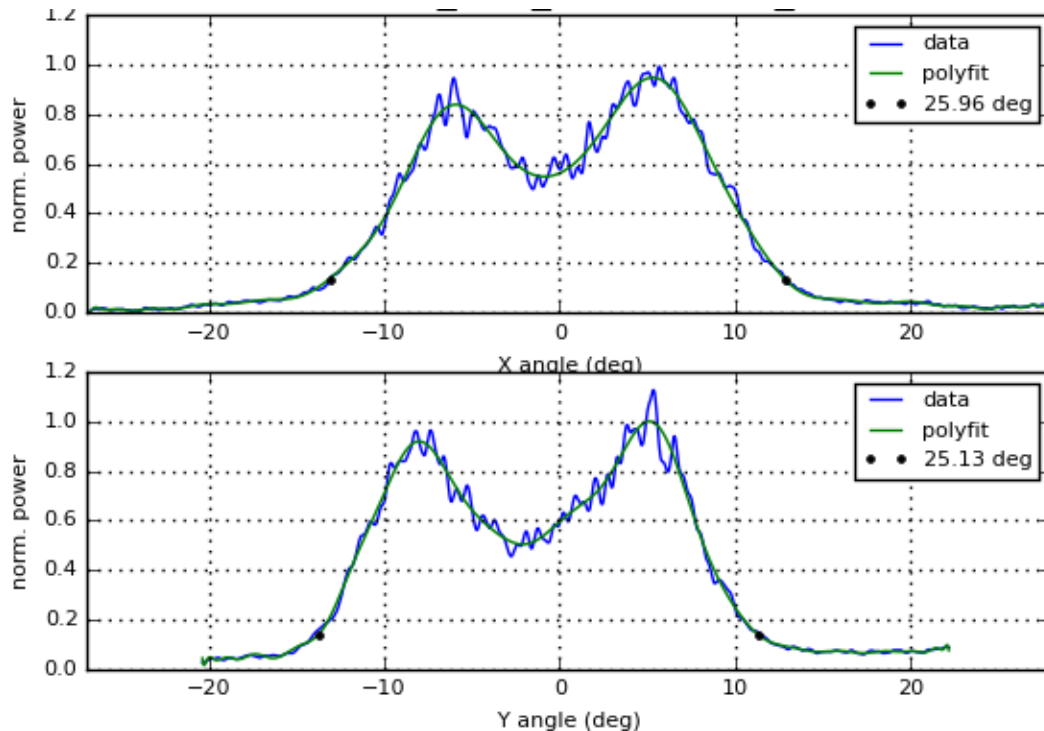


**TYPICAL PERFORMANCE CURVES:**

**Output Power vs. Current over Temperature**



**Beam divergence data over temp**



**ORDERING INFORMATION**

<b>Description</b>	<b>Package</b>	<b>Part Number</b>
0.5 Watt 940 nm Power array VCSEL on a PLCC package with encapsulant	PLCC 2835	IO-0940M-0000-KP03
0.5 Watt 940 nm Power array VCSEL bare die		IO-0940M-0000-AP03



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