

# 850nm 3 aperture VCSEL with output power to 50mW

Part number code: 850M-0000-DP01

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

Model: Multi Mode 3 aperture VCSEL

A single die with three VCSELs is designed for OEM applications with low power consumption.

### Applications

- Position sensing
- Motion control
- Range Detection

### Features:

- Low divergence angle
- Narrow Spectral width
- Low operating current



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	Symbol	Rating	Notes
Storage temperature		-40 to 100 °C	
Operating temperature (VCSEL)	Tv	-20 to 70 °C	
Lead solder temperature		260°C, 10 seconds	
CW current (VCSEL)		70 mA	(Note 1)
Maximum pulsed current		140 mA	20µs pulse width, 10% duty cycle, T=25°C (Vixar specified)

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>)

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.

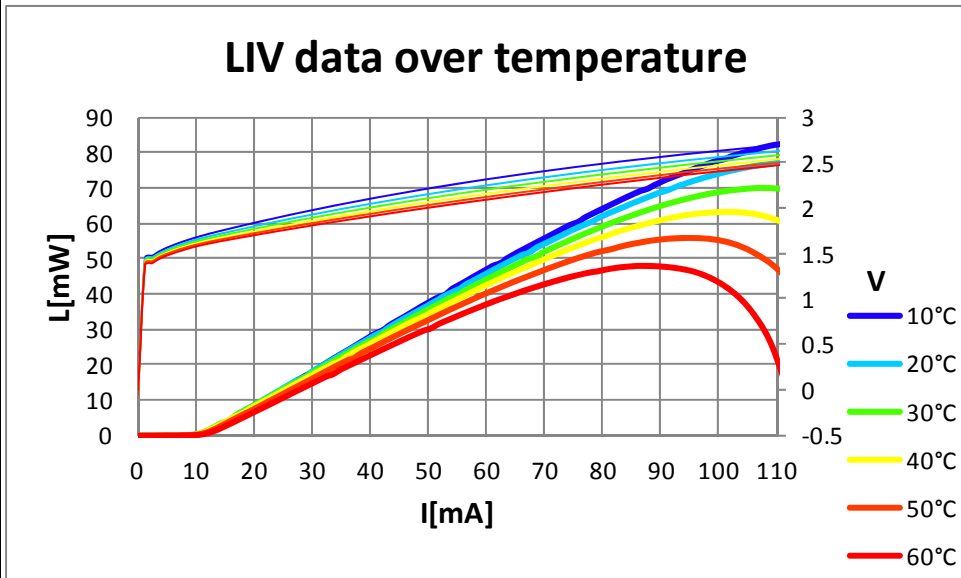
## Electro-Optical Characteristics

VCSEL Operating Temp (Top) =25°C , I<sub>op</sub> =55mA unless otherwise stated

Parameter	Symbol	Units	Minimum	Typical	Maximum	Notes
Threshold current	I <sub>th</sub>	mA	7	10	20	
Operating voltage	V <sub>f</sub>	Volts	--	2.3	2.8	
Wall Plug efficiency	η <sub>WP</sub>	mW/mA	--	0.25	--	
Slope efficiency	η <sub>s</sub>	mW/mA	0.7	0.8	1.3	
Optical output power (CW)	I <sub>op</sub>	mW	30	40		
Pulsed Optical Output Power	Pulse I <sub>op</sub>	mW		70		@ 100mA
Series resistance	R <sub>s</sub>	Ω	6	10	15	
Reverse breakdown voltage		V	10	--	--	I <sub>r</sub> ≤ 1nA
Beam divergence	Full angle	deg	--	20	25	
Operating wavelength	λ <sub>op</sub>	nm	840	850	860	
Wavelength tuning over temperature		nm/°C	--	0.06	--	
Thermal resistance		°C/mW	--	0.58	0.65	
Rise time		ps	--	--	500	20%-80%
Fall time		ps	--	--	500	20%-80%
ESD Survival		V	--	500	--	

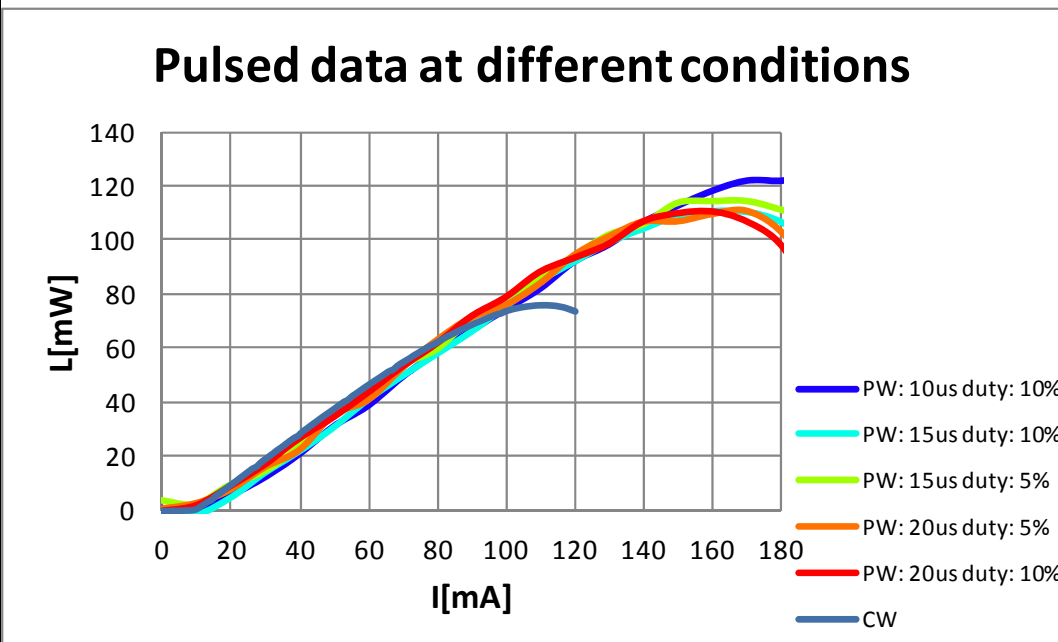


**TYPICAL PERFORMANCE CURVES:**



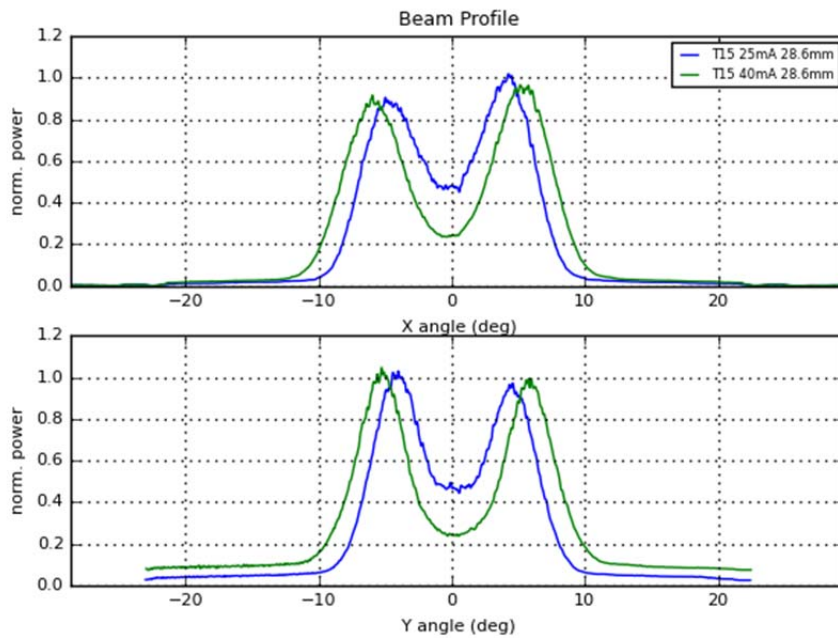
Note: Very minimal I<sub>th</sub> variation over temperature on this VCSEL type

**Pulsed Data**



# Vixar

## Beam Data



## ORDERING INFORMATION

Description	Package	Part Number
850 nm three aperture T15 VCSEL in a PLCC 3020 package with encapsulant	PLCC 3020	I0-0850M-0000-DP01

# Vixar

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