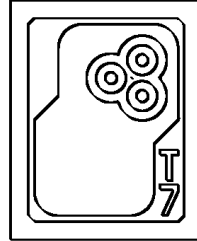


# V00101

Die; 2222; 940; M; 3B; T07; 10mW; 0.16 X 0.20



## PRODUCT DESCRIPTION

A multi-transverse mode 940nm VCSEL designed for applications that requires efficient optical power source along. Beam divergence is reduced with three small apertures while increasing die output power.

### Major Applications:

- Proximity sensors
- Biometric sensors
- Industrial sensors

### Features:

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



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
VCSEL Die Storage temperature	-40 to 125 °C	
Operating temperature (VCSEL only)	-20 to 85 °C	
Junction temperature increase of VCSEL	+16°C	Applicable at 15mA, 10mW, 1.9V, DC mode, Note 3
Lead solder temperature (VCSEL only)	260°C, 10 seconds	
CW current (VCSEL)	20mA	(Note 1) in Air
Laser reverse voltage	5 V	(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 "VCSEL EOS/ESD Considerations and Lifetime Optimization".

Note 3: Junction temperature value need to be added to VCSEL back side temperature. For example, if VCSEL back side temperature is 85°C, then junction temperature is 101°C.

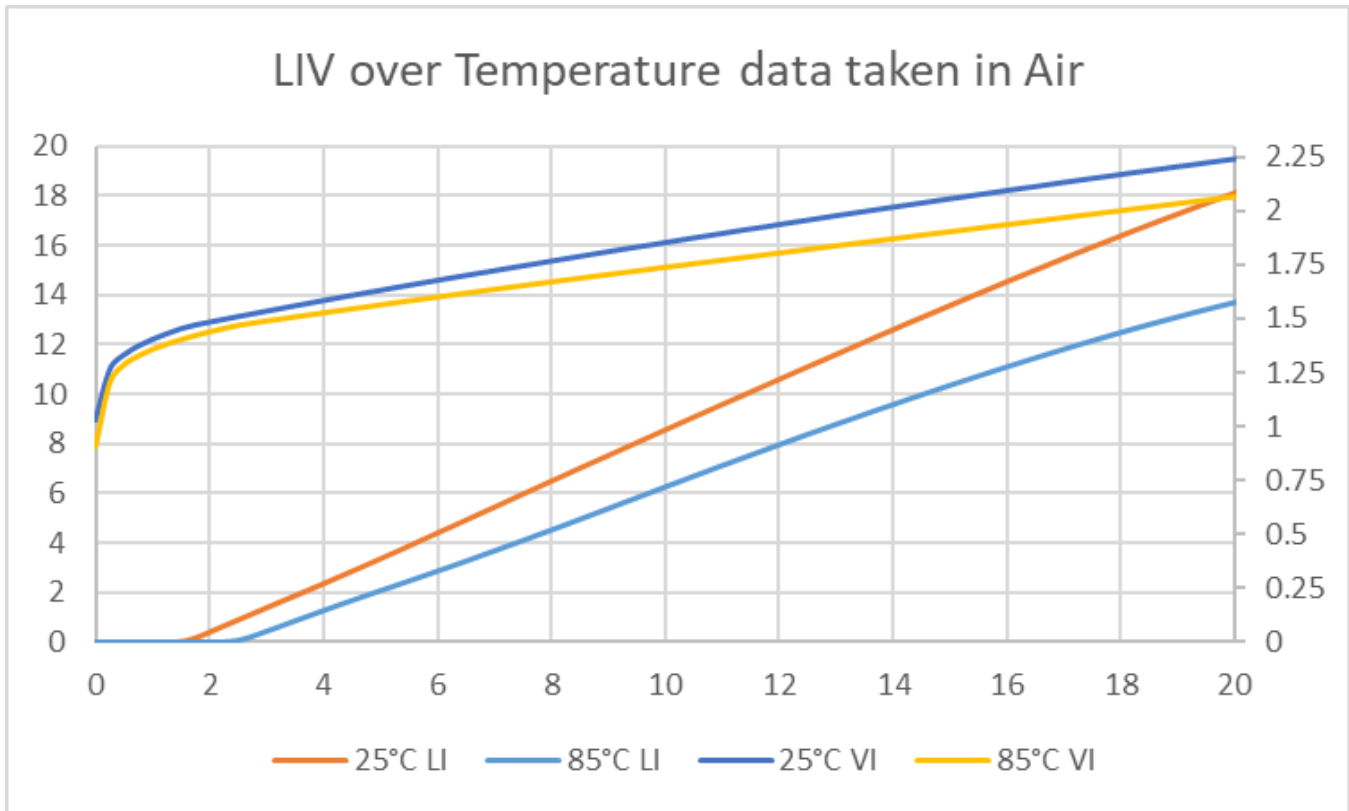
**Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may affect device reliability.**

## ELECTRO-OPTICAL CHARACTERISTICS

VCSEL Temp (Tv) = 40 °C, Test current: 15mA. Test condition: CW-DC mode in Air unless otherwise noted.

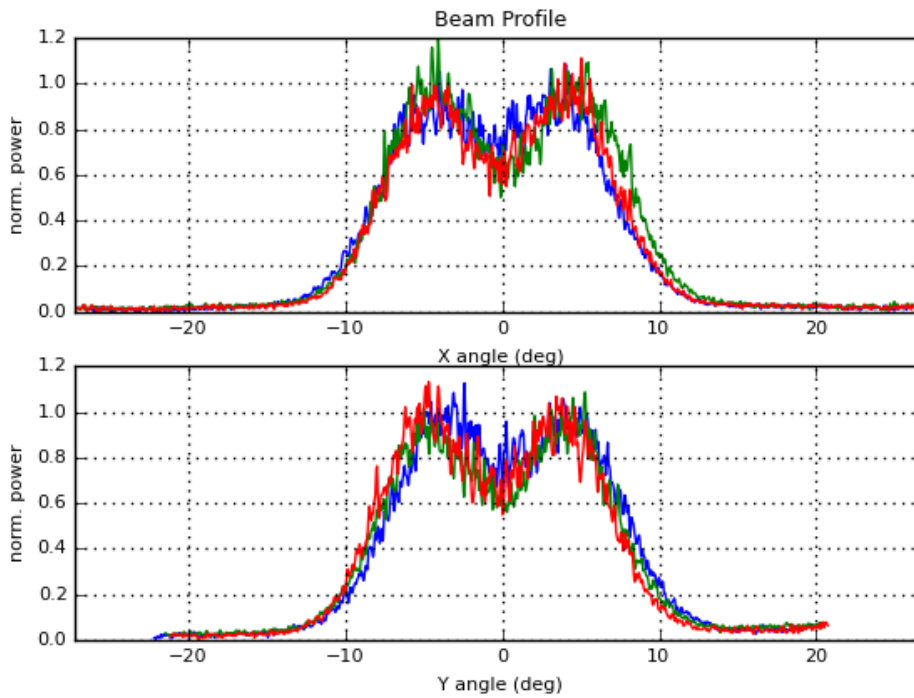
Parameter	Symbol	Units	Min	Typ.	Max	Notes
Threshold current	I <sub>th</sub>	mA	--	1.8	2.5	In Air Medium
Differential resistance	R <sub>s</sub>	Ω	--	40	--	In Air Medium
Operating voltage	V <sub>f</sub>	V		2.0	2.4	In Air Medium
Optical operating power	L <sub>op</sub>	mW	10.0	12.0	--	In Air Medium
Slope efficiency	SE	W/A	--	0.95	--	In Air Medium
Beam divergence	1/e <sup>2</sup>	deg	--	21.5	25	In Air Medium
Operating wavelength	λ <sub>op</sub>	nm	930	940	950	In Air Medium

Typical Performances



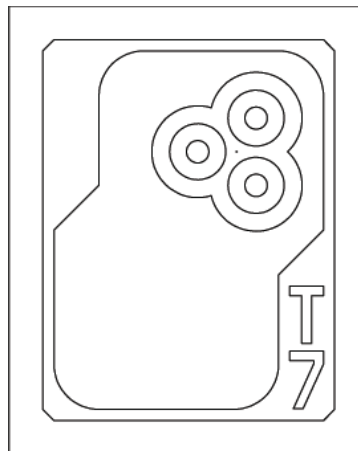
L-I-V Performance of Bare Die. Operational Mode CW.

## Beam Profile



Beam profile at 15mA, 25°C. Operational mode CW.

## VCSEL Mechanical Specification



Parameter	Specification
Die size (x / y) final	0.16 mm X 0.20 mm
Number of Apertures	3
Die thickness	100µm

## Ordering Information

Description	Part Number
Die; 2222; 940; M; 3B; T07; 10mW; 0.16 X 0.20	V00101



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