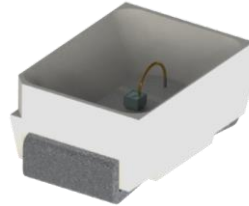


V00002

Assy; 2222; 680; M; 3R; M15; 5.5mW; 0.22X0.22; PLCC; 3020; 2L; Encaps; ESD



PRODUCT DESCRIPTION

A Multi- transverse mode 680nm VCSEL designed for applications that requires efficient optical power source along with visible range of light. This product can create a small sized spot with high resolution.

Major Applications:

- Point of care medical devices
- Biometric sensors
- Low light laser therapy
- Industrial sensors
- Pulse oximetry

Features:

- Low divergence angle
- Narrow Spectral width
- Low operating current
- Linear polarization orientated along chip edge



COMPLIES WITH IEC 60825-1, 2nd 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 (VCSEL)	-40 to 125 °C	
Operating temperature (VCSEL)	-20°C to 50 °C	
Lead solder temperature	260°C, 10 seconds	
CW current (VCSEL)	12 mA	(Note 1)
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 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 "VCSEL EOS/ESD Considerations and Lifetime Optimization".

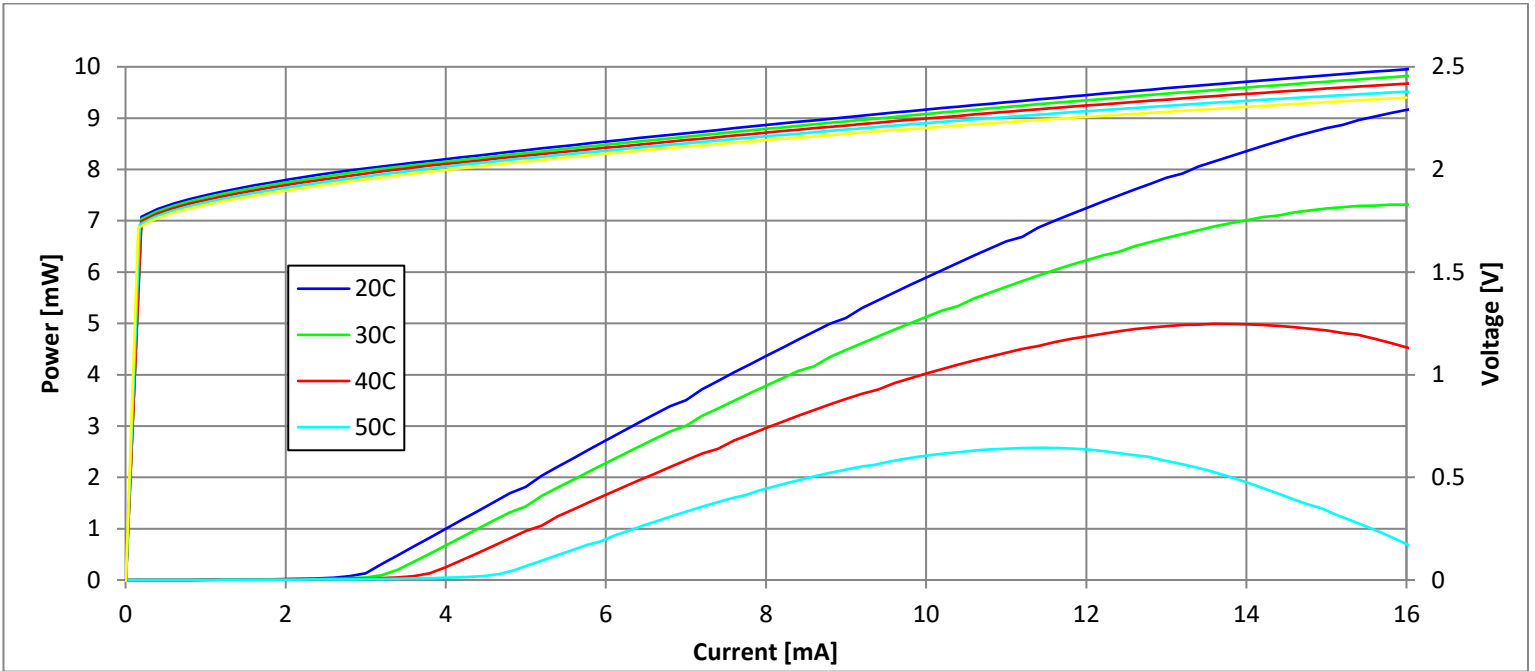
Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated for extended periods of time may affect device reliability.

Electro-Optical Characteristics

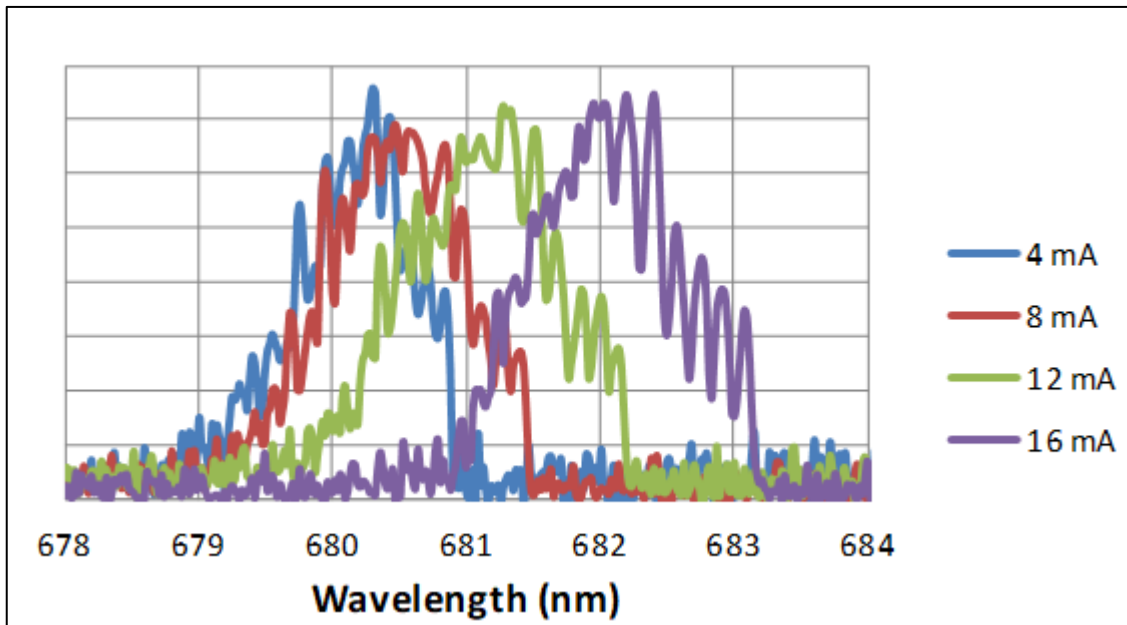
VCSEL Operating Temp (Tv) = CW, 30°C & Operating Current=11mA unless otherwise stated)

Parameter	Symbol	Units	Minimum	Typical	Maximum	Notes
Threshold current	I _{th}	mA	--	2.5	4.0	
Operating voltage	V _f	Volts	--	2.5	3.0	
Series resistance (VCSEL)	R _s	Ohms	--	40	--	
Slope efficiency	SE	mW/mA	--	0.7	--	
Optical output power	L _{op}	mW	--	5.5	--	T=30°C
Optical output power	L _{op}	mW	--	1.7	--	T=50°C
Reverse breakdown voltage		V	10	--	--	I _r ≤ 1nA
Operating wavelength	λ _{op}	nm	670	680	690	
Beam divergence 1/e ²		deg	23	25	27	Whole angle
Beam divergence FWHM	FWHM	deg	18	21	23	Whole angle
Wavelength temp. coefficient		nm/°C		0.045		

Typical Performance

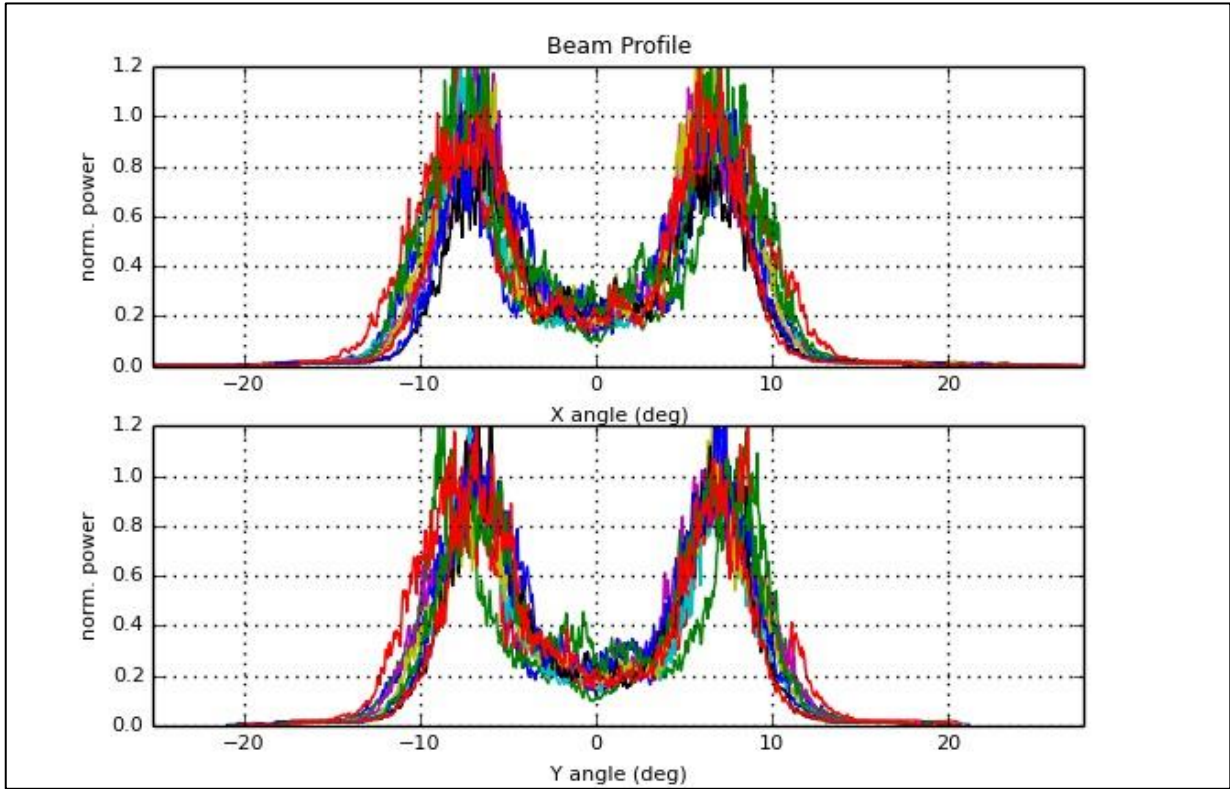


L-I-V of V0002 vs Temperature



Spectral wavelength vs Current

Beam Profile



Beam Divergence of many VCSELs at 11mA 30°C

Ordering Information

Description	Part Number
Assy; 2222; 680; M; 3R; M15; 5.5mW; 0.22X0.22; PLCC; 3020; 2L; Encaps; ESD	V00002

⁽¹⁾ Do not include an ESD diode if the part will be modulation frequency ≥ 35 MHz.

Notes:

For some applications, a burn-in period for VCSEL die is recommended to stabilize the output power. Please contact Vixar for a recommendation.



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