

**Part Number: IO-670Q-0000-A002****Desc: Die; 670; Q; S6AP, BP, CP; 1mW; 0.24mm X 0.17mm****PRODUCT DESCRIPTION**

A Quasi-single mode (Gaussian beam shape; with a Multimode spectral profile) 670nm VCSEL, with linear polarized emission. The red wavelength is ideal for applications requiring beam visibility such as aligning sensors & high resolution applications requiring a small spot size.

**Major Applications:**

- Laser Printing
- Medical devices
- Bar code scanners
- Holography

**Features:**

- Low operating current
- Low divergence angle
- Circular beam profile
- Linear polarization orientated along chip edge



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 +125 °C	
Operating temperature (VCSEL)	-20 to 50 °C	
Lead solder temperature	260°C, 10 seconds	
CW current (VCSEL)	3 mA	(Note 1) at room temperature
Laser reverse voltage	5 V	

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Functional operation of the device beyond the Absolute Maximum Ratings for extended periods of time may affect device reliability.

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.

Note 2: For some applications, a burn-in period for VCSEL die is recommended to stabilize the output power. Please contact Vixar for a recommendation.

## Electro-Optical Characteristics

VCSEL Operating Temp (Tv) =25°C & Operating Current=3mA unless otherwise stated)

Parameter	Symbol	Units	Minimum	Typical	Maximum	Notes
Threshold current	I <sub>th</sub>	mA	--	0.7	--	
Operating voltage	V <sub>f</sub>	Volts	--	2.6	3.0	
Series resistance (VCSEL)	R <sub>s</sub>	Ohms	--	175	--	
Slope efficiency	SE	mW/mA	--	0.5	--	
Quasi Single mode behavior		mA			3.0	For Gaussian beam
Optical output power	L <sub>op</sub>	mW	--	1.0	--	T=25°C
Optical output power	L <sub>op</sub>	mW	--	0.8	--	T=50°C
Reverse breakdown voltage		V	10	--	--	I <sub>r</sub> ≤ 1nA
Operating wavelength	λ <sub>op</sub>	nm	660	670	680	
Beam divergence 1/e <sup>2</sup>		deg	14	16	20	Whole angle
Beam divergence FWHM	FWHM	deg	6	10	14	Whole angle
Wavelength current coefficient		nm/mA	0.25	0.40	0.55	
Wavelength temp. coefficient		nm/°C	0.044	0.045	0.05	

Typical Performance

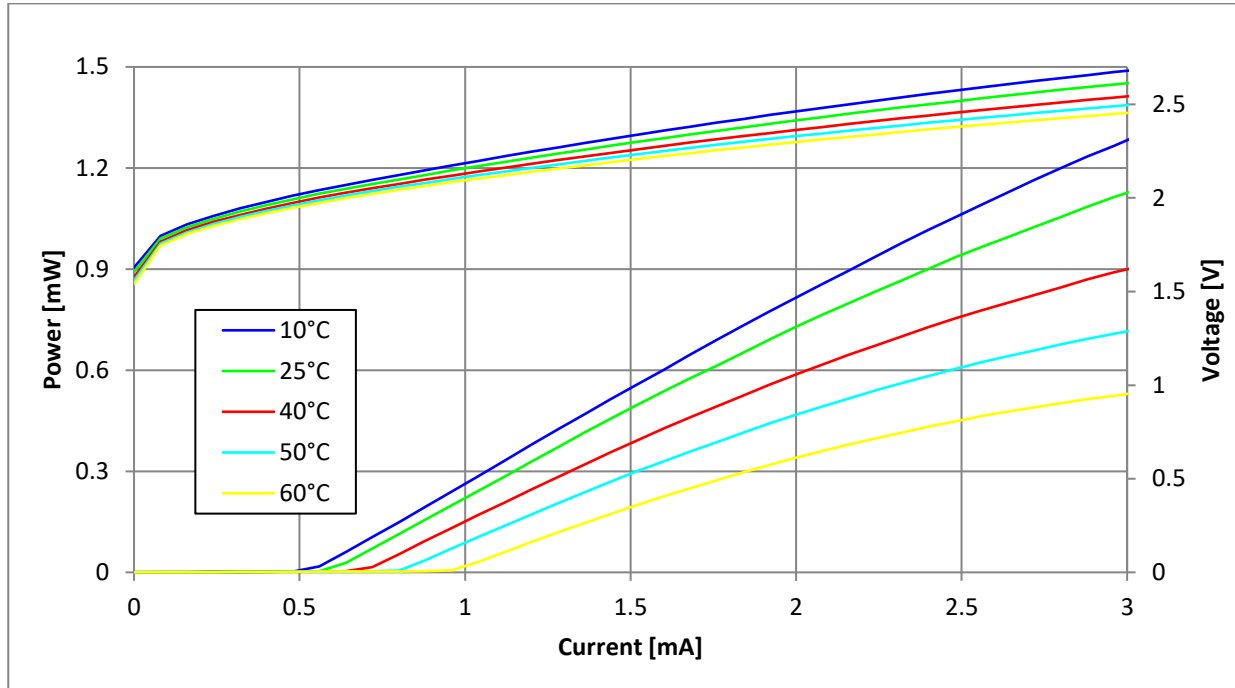


Figure 1 L-I-V of IO-0670Q-0000-X002 vs Temperature

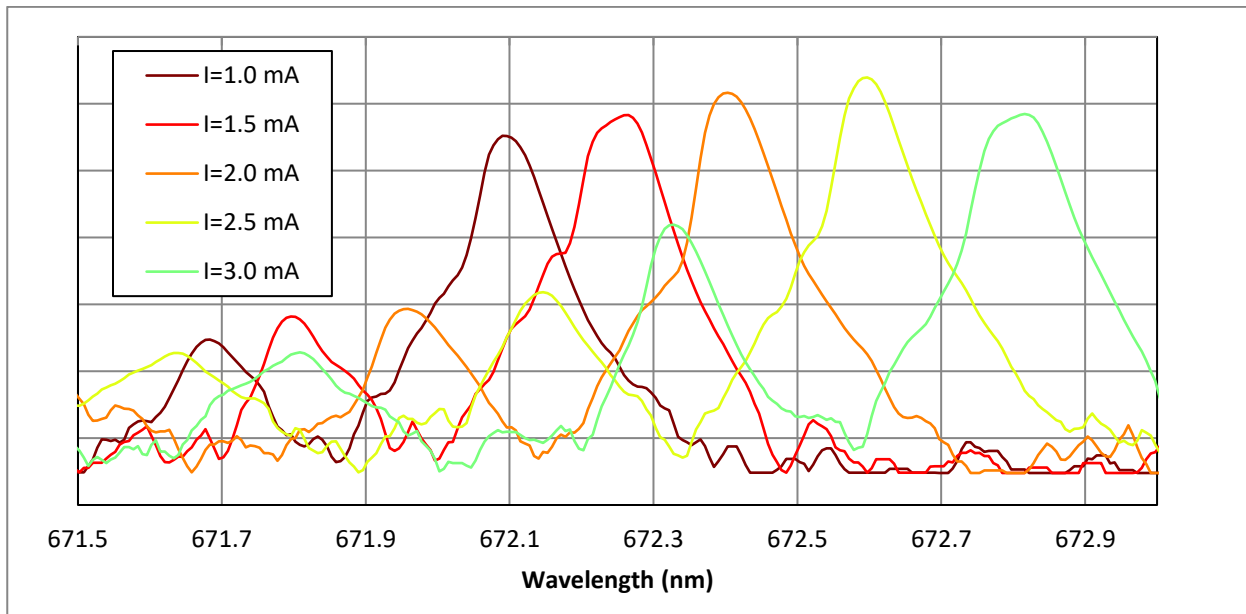


Figure 2 Spectral Wavelength of IO-0670Q-0000-X002 vs Current

## Beam Profile

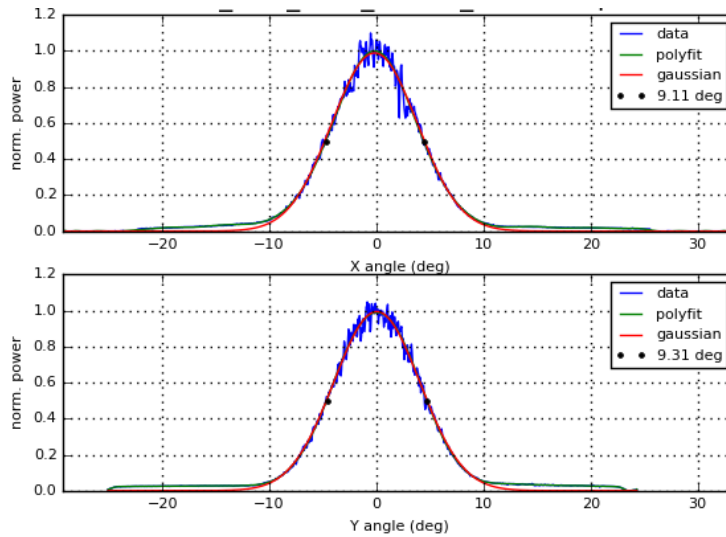


Figure 3 Beam Divergence at 3mA 25°C

## ORDERING INFORMATION

Description	Part Number
Die; 670; Q; S6AP,BP,CP; 1mW; .24mm X 0.17mm;	670Q-0000-A002



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