

## Product Specification

# 860nm 2W CW VCSEL Laser Diode

## LD0860-C002-0120CP

### PRODUCT FEATURES

- -40-+85°C operating temperature
- High Efficiency, 42%@25°C, >35% @50°C
- Large emissio area, low power density, safer
- 200 element array
- Modulation bandwidth >1Gbps
- Relavtively small emission area, easy to collimate
- Long lifetime, >50,000hrs

### APPLICATIONS

- 3D Imaging
- Gesture Recognition
- Laser Illumincation
- Security surveillances
- Medical applications
- Broadband acesss network
- Assisting driving advanced systems
- IR laser curtain
- Li-Fi transmitter
- Range finders
- Lidar
- Free space optical communications
- Military applications

### I. Absolute Maximum Ratings

Parameter	Rating
Storage Temperature	-40 to +85°C
Case Operating Temperature	-40 to 85°C
Relative Humidity	5% to 90%
Reverse Power Supply Voltage	5V
Maximum continuous forward current	3A
ESD Exposure (Human Body Model)	1KV <sup>1</sup>

### Notice

Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operations section for extended periods of time may affect reliability.

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product

## II. Electro-Optical Characteristics (Top 25 deg C unless otherwise stated)

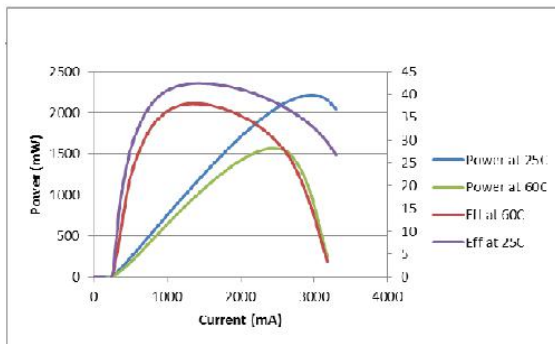
VCSEL Parameters	Test Condition	Symbol	Min.	Typ.	Max	Units	Notes
Optical Power Output		P <sub>O</sub>		2.0	2.2	W	2
Threshold Current		I <sub>TH</sub>		250		mA	
Slope Efficiency	P <sub>O</sub> =2W	η		0.9		mW/mA	3
Wall Plug Efficiency	I <sub>F</sub> =2.4A			40		%	
Emission Area				700x675		um	
Peak Wavelength	I <sub>F</sub> =2.4A	λ <sub>P</sub>	845	860	875	nm	
Laser Forward Voltage	I <sub>F</sub> =2.4A	V <sub>F</sub>		2.2		V	
Series Resistance	I <sub>F</sub> =2.4A	R <sub>S</sub>		0.2		Ohms	
Beam Angle	I <sub>F</sub> =2.4A			20		Degrees	

Notes:

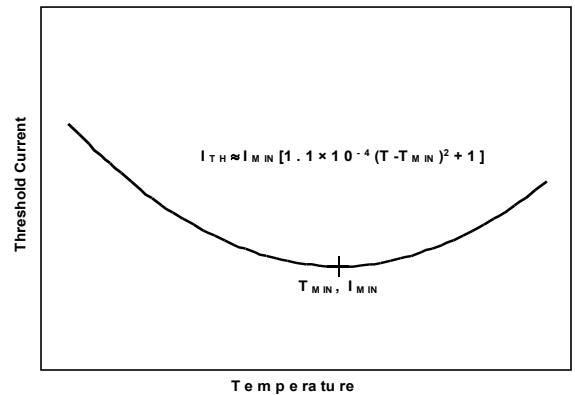
1. Reliability is a function of temperature.
2. For the purpose of these tests, I<sub>F</sub> is DC current.
3. Slope efficiency is defined as ΔP<sub>O</sub>/ΔI<sub>F</sub>.

## III. Typical Performance Curves

**Emitted Power vs. Current:** Power varies approximately linearly with current above threshold.



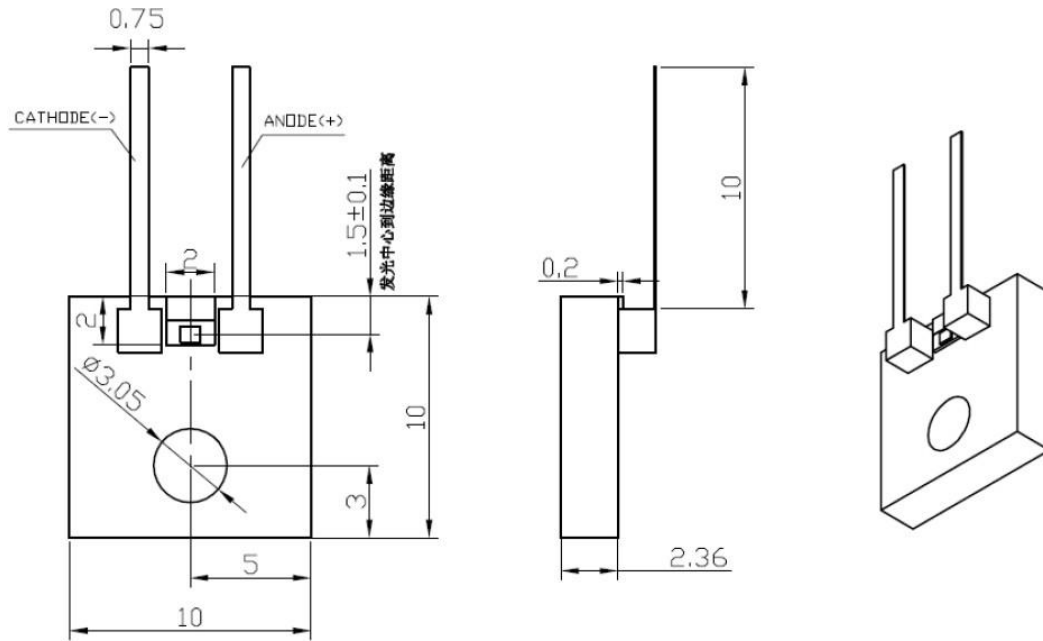
**Threshold Current vs. Temperature:** Threshold current varies parabolically with temperature; thus it can be nearly constant for a limited temperature range.



## IV. Environmental Specifications

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Case Operating Temperature	T <sub>op</sub>	-40		85	°C	
Storage Temperature	T <sub>sto</sub>	-40		85	°C	

## V. Mechanical Specifications



## VI. Revision History

Revision	Date	Description
Rev1	01/07/2014	Official datasheet created.
Rev2	23/11/2014	Revising current and mechanic scheme
Rev3	05/10/2015	Revising features and applications and operating temp.