

## EYP-BAL-0653-01000-0710-CMT02-0000

Version 0.90

2009-04-16

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**BROAD AREA LASER**

GaAs Semiconductor Laser Diode  
Single Emitter Structure

**General Product Information**

Product	Application
653 nm Broad Area Laser	Material Processing
mounted on C-Mount	Medical

**Absolute Maximum Ratings**

	Symbol	Unit	min	typ	max
Storage Temperature	$T_S$	°C	-40		85
Operational Temperature at Case	$T_C$	°C	-20		50
Forward Current	$I_F$	A			2.1
Reverse Voltage	$V_R$	V			0
Output Power	$P_{opt}$	W			1.1

**Recommended Operational Conditions**

	Symbol	Unit	min	typ	max
Operational Temperature at Case	$T_C$	°C	10		25
Forward Current	$I_F$	A			2.0
Output Power	$P_{opt}$	W			1.0

**Characteristics at  $T_{LD} = 20\text{ °C}$  at Begin Of Life**

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_c$	nm	650	653	656
Spectral Width (FWHM)	$\Delta\lambda$	nm		2	
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.3	
Output Power @ $I_F = 2.0\text{ A}$	$P_{opt}$	W	1.0		
Slope Efficiency	$\eta_d$	W / A	0.6	0.9	
Threshold Current	$I_{th}$	A	0.45	0.55	0.65
Operational Current @ $P_{opt} = 1.0\text{ W}$	$I_{op}$	A			2.0
Stripe Width	$W_s$	$\mu\text{m}$		100	
Cavity Length	L	$\mu\text{m}$		750	



non condensing

non condensing

Stress in excess of the Absolute Maximum Ratings can cause permanent damage to the device.

Measurement Conditions / Comments

non condensing

Measurement Conditions / Comments

see images on page 4

total output measured with integrating sphere

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**Characteristics at T<sub>amb</sub> 20 °C at Begin Of Life** **cont'd**

Parameter	Symbol	Unit	min	typ	max
Divergence parallel (FWHM)	$\Theta_{  }$	°		8	
Divergence perpendicular (FWHM)	$\Theta_{\perp}$	°		30	
Spectral Mode (longitudinal)				Multi Mode	
Polarization				TE	

**Measurement Conditions / Comments**

Beam divergence parallel to junction plane

Beam divergence perpendicular to junction plane

Polarization parallel to junction plane

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### Package Dimensions



Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	$h_{EP}$	mm	7.05	7.20	7.35
C-Mount Thickness	d	mm		2.18	

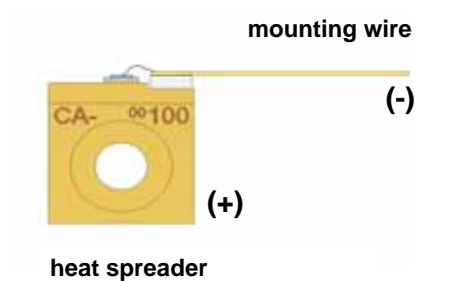
Measurement Conditions / Comments



### Package Pinout

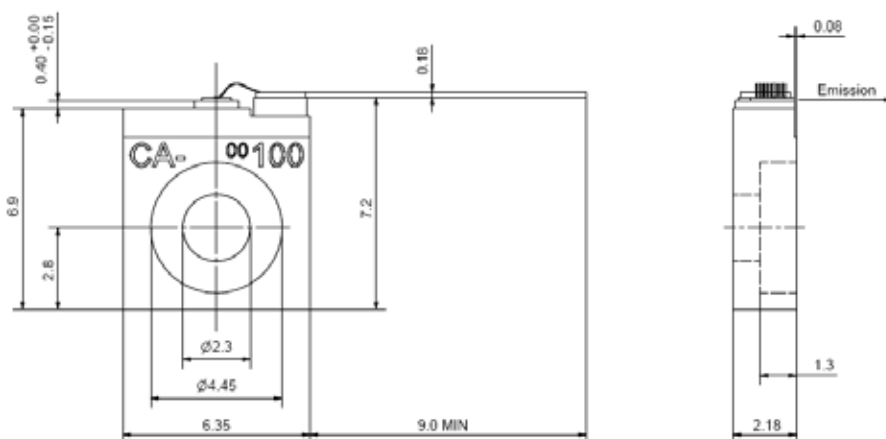


Cathode (-)	Mounting Wire
Anode (+)	Housing



heat spreader

### Package Drawings



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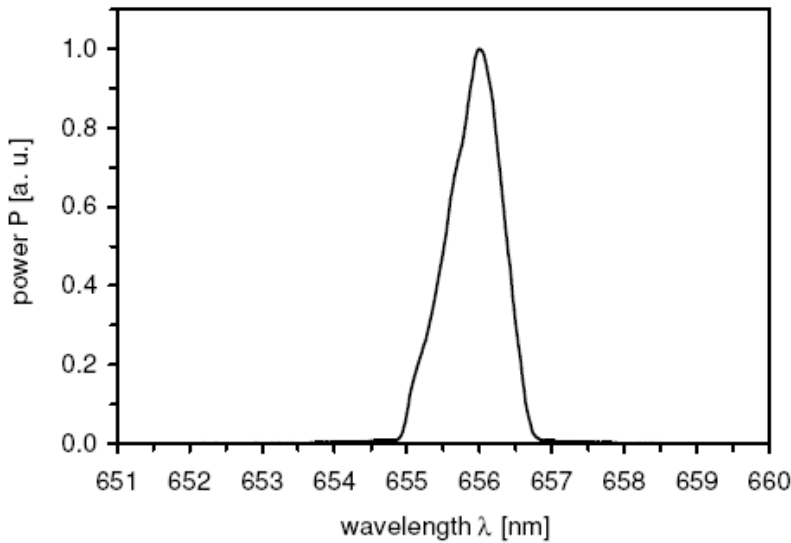
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## Typical Measurement Results

Spectrum



Performance figures, data and any illustrative material provided in this specification are typical and must be specifically confirmed in writing by eagleyard Photonics before they become applicable to any particular order or contract. In accordance with the eagleyard Photonics policy of continuous improvement specifications may change without notice.

## Unpacking, Installation and Laser Safety

Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use. During device installation, ESD protection has to be maintained.

The BAL diode type is known to be sensitive against thermal stress. Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode.

The laser emission from this diode is close to the invisible infrared region of the electromagnetic spectrum. Avoid direct and/or indirect exposure to the free running beam. Collimating the free running beam with optics as common in optical instruments will increase threat to the human eye.

Each laser diode will come with an individual test protocol verifying the parameters given in this document.

