

# EYP-BAL-0653-01000-1510-CMT02-0000

Revision 0.90

2014-06-16

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## BROAD AREA LASER

GaAs Semiconductor Laser Diode  
Single Emitter Structure



## General Product Information

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



## Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	$T_S$	°C	-40		85
Operating Temperature at Case	$T_C$	°C	-20		30
Forward Current	$I_F$	A			2.7
Reverse Voltage	$V_R$	V			2
Output Power	$P_{opt}$	W			1.2

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

## Recommended Operational Conditions

	Symbol	Unit	min	typ	max
Operating Temperature at Case	$T_C$	°C	10		25
Forward Current	$I_F$	A			2.5
Output Power	$P_{opt}$	W			1.0

Measurement Conditions / Comments  
non condensing

## Characteristics at $T_{LD} = 25\text{ °C}$ at Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_C$	nm	648	653	658
Spectral Width (FWHM)	$\Delta\lambda$	nm		2	
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.3	
Output Power @ $I_F = 2.5\text{ A}$	$P_{opt}$	W	1.0		
Slope Efficiency	$\eta_d$	W / A		0.7	
Threshold Current	$I_{th}$	A		0.75	0.85
Operating Current @ $P_{opt} = 1.0\text{ W}$	$I_{op}$	A			2.5
Operating Voltage @ $P_{opt} = 1.0\text{ W}$	$V_{op}$	V		2.2	

Measurement Conditions / Comments  
see images on page 4

total output measured with integrating sphere

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RWE/RWL



BAL



DFB/DBR



TPL/TPA

### Characteristics at $T_{amb}$ 25 °C at Begin Of Life cont'd

Parameter	Symbol	Unit	min	typ	max
Stripe Width	$W_s$	$\mu\text{m}$		100	
Cavity Length	L	$\mu\text{m}$		1500	
Divergence parallel (FWHM)	$\Theta_{  }$	$^\circ$		8	
Divergence perpendicular (FWHM)	$\Theta_{\perp}$	$^\circ$		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



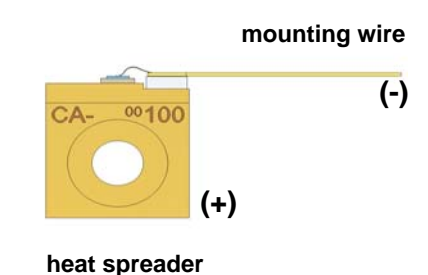
Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	$h_{EP}$	mm	7.05	7.20	7.35
C-Mount Thickness	d	mm		2.18	

### Measurement Conditions / Comments

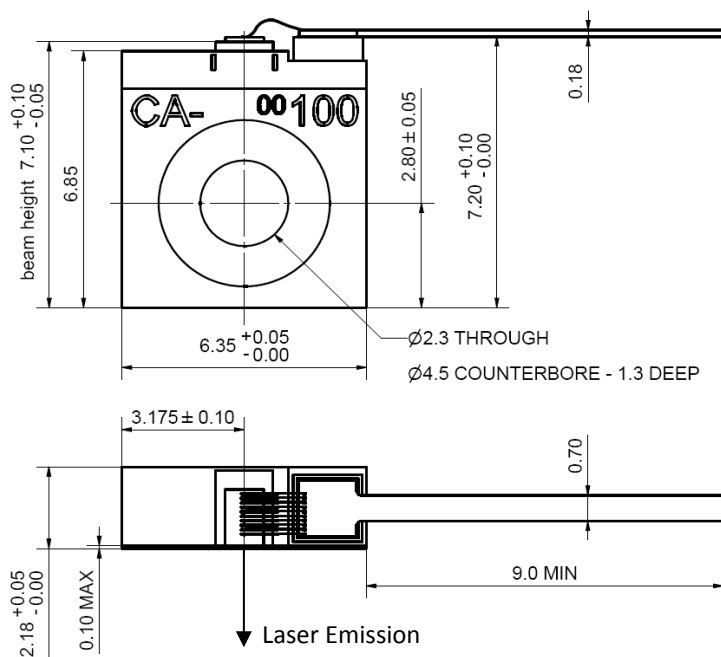

### Package Pinout



Cathode (-)	Mounting Wire
Anode (+)	Housing



### Package Drawings



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We focus on power.

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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 chip should be protected against moisture. A water vapor content below 5000 ppm is recommended for applications with high reliability requirements.

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.

**Ordering Information:**



800 Village Walk #316  
Guilford, CT 06437  
Ph: 203-401-8093  
Email orders to: [sales@xsoptix.com](mailto:sales@xsoptix.com)  
Fax orders to: 800-878-7282



Laser Emission

