

EYP-BAL-0905-00010-1040-TOE02-0010

Version 1.00

2010-11-12

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BROAD AREA LASER

GaAs Semiconductor Laser Diode
Single Emitter Structure



General Product Information

Product	Application
905 nm Broad Area Laser (Single Emitter)	Sensing
for Pulse Mode Operation	Metrology
sealed TO-18 Housing (MIL qualified)	



Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-45		90
Operational Temperature at Case	T_C	°C	-45		90
Peak Current	$I_{F Peak}$	A			25
Reverse Voltage	V_R	V			1
Peak Output Power	$P_{opt Peak}$	W			15
Forward Voltage at Peak	V_F	V			12

Measurement Conditions / Comments
Every condition of the Absolute Maximum Ratings has to be kept during operation
see Pulse Mode Conditions
f/1.7
see Pulse Mode Conditions

Recommended Operational Conditions (Pulse Mode)

	Symbol	Unit	min	typ	max
Operational Temperature at Case	T_C	°C	-40		80
Forward Current	$I_{F Peak}$	A		17	
Output Power	$P_{opt Peak}$	W			10

Measurement Conditions / Comments
under max. Pulse Mode Conditions
f/1.7

Characteristics at $T_{amb} 25\text{ °C}$, Pulse Mode, Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	λ_C	nm	850	905	920
Spectral Width (FWHM)	$\Delta\lambda$	nm		10	
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.3	
Output Power	P_{ave}	mW		7	
Peak Output Power @ $I_F = 17\text{ A}$	$P_{opt Peak}$	W	10		
Threshold Current	I_{th}	A		1.5	
Cavity Length	L	µm			1000

Measurement Conditions / Comments
f/1.7, under max.Pulse Mode Conditions
under Pulse Mode Conditions

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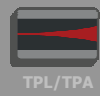
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Characteristics at T_{amb} 25 °C, Pulse Mode, Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Stripe width	W_s	μm		400	
Divergence parallel (FWHM)	$\Theta_{ }$	$^\circ$	7	10	13
Divergence perpendicular (FWHM)	Θ_{\perp}	$^\circ$	25	30	35
Polarization				TE	
Spectral Mode (longitudinal)				Multi Mode	

Measurement Conditions / Comments
one emitter only
E field perpendicular to plane B (see drawing on p. 3)

Pulse Mode Conditions

Parameter	Symbol	Unit	min	typ	max
Pulse Length	t_p	ns	50		200
Pulse Repetition Rate	RR	s^{-1}	1		3000
Duty Cycle	D	%			0.06

Measurement Conditions / Comments

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Package Dimensions

Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	d_{EP}	mm		2.4	
Excentricity of Emission Center	R	mm			0.2
Pin Length	l	mm		19.0	

Measurement Conditions / Comments

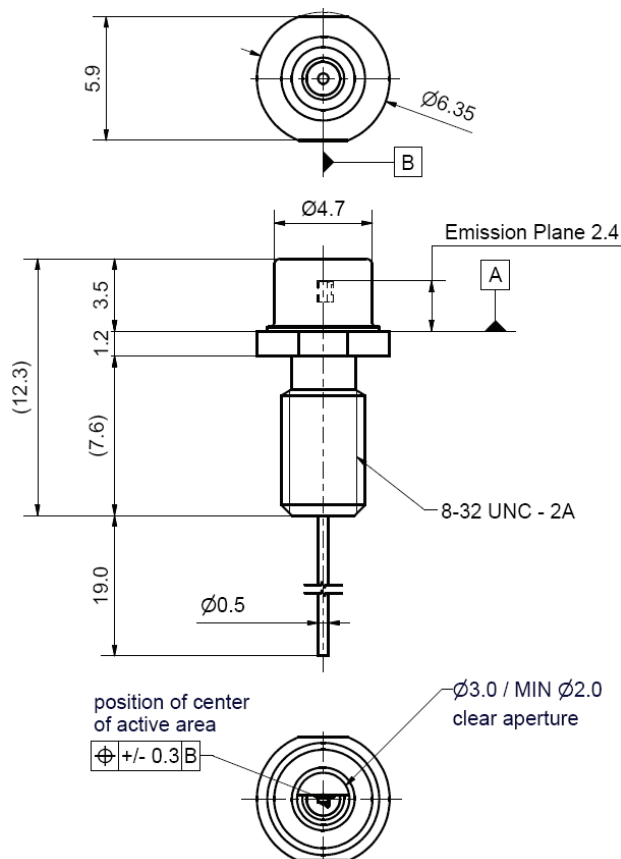
reference plane A: top side of TO header

reference B: center of outer diameter of header

Package Pinout

Laser Anode (+)	Pin
Laser Cathode (-)	Case

Package Drawings



hermetically sealed Package:

Leak Rate $< 5 \cdot 10^{-8}$ atm.cc./s

acc. MIL-STD-883E

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We focus on power.

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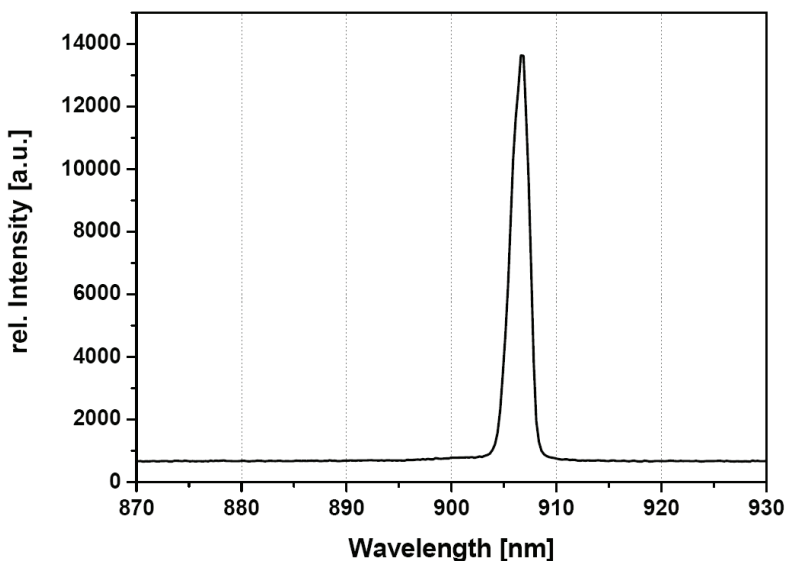
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Typical Measurement Results

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.

