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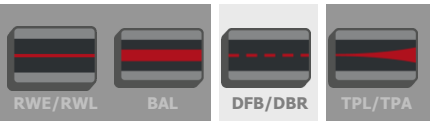
We focus on power.

DISTRIBUTED BRAGG REFLECTOR LASER

GaAs Semiconductor Laser Diode
with integrated grating structure



General Product Information

Product	Application
633 nm DBR Laser with hermetic TO Housing	Replacement of HeNe-Lasers
Monitor Diode, Thermoelectric Cooler and Thermistor	Metrology
Emission exactly at HeNe laser wavelength 632.991 nm	

Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-40		85
Operational Temperature at Case	T_C	°C	-20		75
Operational Temperature at Laser Chip	T_{LD}	°C	-5		30
Forward Current	I_F	mA			200
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			12
TEC Current	I_{TEC}	A			1.8
TEC Voltage	V_{TEC}	V			3.2

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	Measurement Conditions / Comments
Operational Temperature at Case	T_C	°C	0		50	
Operational Temperature at Laser Chip	T_{LD}	°C	0		20	measured by integrated Thermistor
Forward Current	I_F	mA		140	180	
Output Power	P_{opt}	mW	2		10	

Characteristics at Begin of Life

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm		632.991		reached at one temperature T_{LD} between 0 and 20 ° C
Spectral Width (FWHM)	$\Delta\nu$	MHz		1		λ_C = 632.991 nm, P_{opt} =10 mW
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.045		
Current Coefficient of Wavelength	$d\lambda / dI$	nm / mA		0.001		
Output Power @ I_F = 180 mA	P_{opt}	mW	10			λ_C = 632.991 nm

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Characteristics at T_{LD} = 15°C at Begin of Life

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Slope Efficiency	η	W / A	0.15	0.4		
Threshold Current	I_{th}	mA		80		
Divergence parallel (FWHM)	$\Theta_{\parallel}$	°		6		parallel to short axis of housing (see p. 3)
Divergence perpendicular (FWHM)	$\Theta_{\perp}$	°		31		parallel to long axis of housing (see p. 3)
Sidemode Supression Ratio	SMSR	dB	30			
Degree of Polarization @ P_{opt} = 10 mW	DOP	dB		10		E field parallel to long axis of housing (see p. 3)

Monitor Diode

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Monitor Detector Responsivity	I_{mon} / P_{opt}	µA / mW	10		200	U_R = 5 V
Reverse Voltage Monitor Diode	$U_{R\ MD}$	V	3		5	

Thermoelectric Cooler

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Current	I_{TEC}	A		0.4		P_{opt} = 10 mW, ΔT = 20 K
Voltage	U_{TEC}	V		0.8		P_{opt} = 10 mW, ΔT = 20 K
Power Dissipation (total loss at case)	P_{loss}	W		0.5		P_{opt} = 10 mW, ΔT = 20 K
Temperature Difference	ΔT	K			50	P_{opt} = 10 mW, $\Delta T = I\, T_{case} - T_{LD} I$

Thermistor (Standard NTC Type)

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Resistance	R	kΩ		10		
Beta Coefficient	β			3976		

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GL Systems Certification

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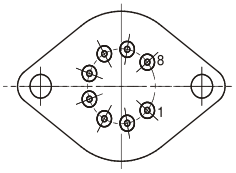
Package Dimensions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Height of Laser Output above Header	H_L	mm		5.1		
Housing Dimension	l x w x h	mm^3		38.9 x 25.4 x 9.3		
Pin Length	L	mm	10.8			

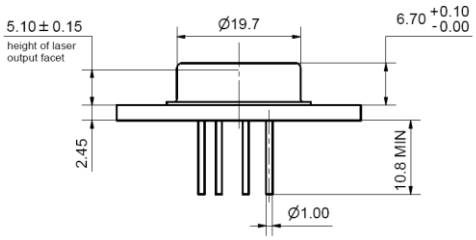
Package Pinout

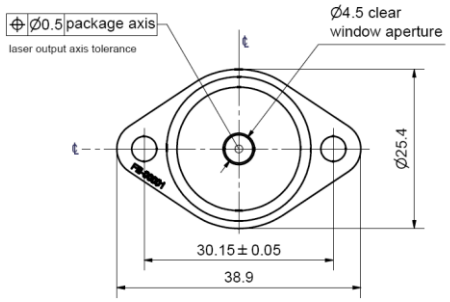
1	Thermoelectric Cooler (+)	5	Laser Diode (Anode)
2	Thermistor	6	Photo Diode (Anode)
3	Thermistor	7	Photo Diode (Cathode)
4	Laser Diode (Cathode)	8	Thernoelectric Cooler (-)

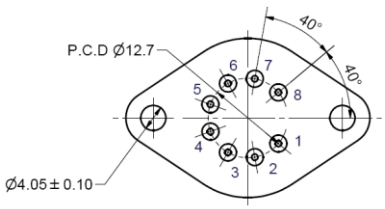
bottom view



Package Drawings

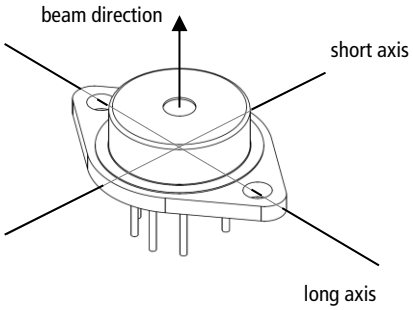






Polarization:

E field parallel to long axis of housing



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GL Systems Certification

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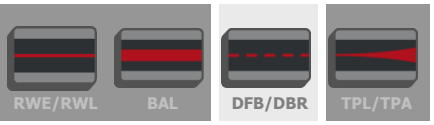
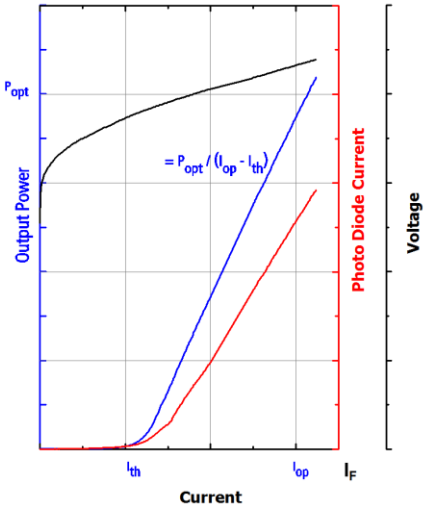
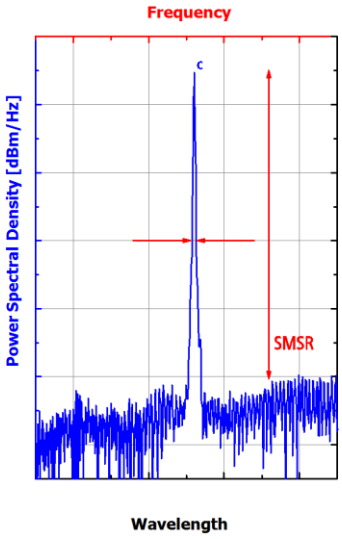


Typical Measurement Results

Output Power vs. Current



Spectra at Specified Optical Output Power



Pictures and the illustrative graphs (on the left hand side) 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.

Ordering Information:

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

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DISTRIBUTED FEEDBACK LASER

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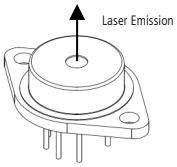
Unpacking, Installation and Laser Safety

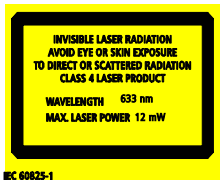
Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use.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

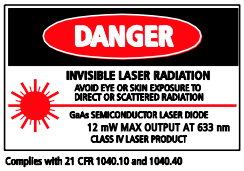
The DBR diode type is known to be sensitive against optical feedback, so an optical isolator may be required in some cases. Operating at moderate temperatures on proper heat sinks willl contribute to a long lifetime of the diode.

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.







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