

EYP-DBR-0633-00005-2000-BFY02-0000



We focus on power.

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DISTRIBUTED BRAGG REFLECTOR LASER

GaAs Semiconductor Laser Diode with integrated grating structure



General Product Information

Product	Application
633 nm DFB Laser with hermetic Butterfly Housing	HeNe Laser Replacement,
Monitor Diode, Thermoelectric Cooler and Thermistor	Metrology, Spectroscopy
SM Fiber with angle-polished Connector	Please note: The use of the laser with 3D trackers is protected by patents



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	0		25
Forward Current	I_F	mA			220
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			6
TEC Current	I_{TEC}	A			1.8
TEC Voltage	V_{TEC}	V			3.2

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

Recommended Operational Conditions

	Symbol	Unit	min	typ	max
Operational Temperature at Case	T_C	°C	0		50
Operational Temperature at Laser Chip	T_{LD}	°C	10	15	18
Forward Current	I_F	mA		160	200
Output Power	P_{opt}	mW		5	

Measurement Conditions / Comments

measured by integrated Thermistor

ex fiber

Characteristics at $T_{LD} = 15\text{ °C}$ at Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	λ_C	nm	632	633	634
Spectral Width (FWHM)	$\Delta\nu$	MHz		1	
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.045	
Current Coefficient of Wavelength	$d\lambda / dI$	nm / mA		0.001	
Output Power	P_{opt}	mW		5	

Measurement Conditions / Comments

see images on page 4

ex fiber

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Characteristics at T_{amb} 15 °C at Begin Of Life cont'd

Parameter	Symbol	Unit	min	typ	max
Slope Efficiency	S	W / A		0.2	
Threshold Current	I_{th}	mA		80	
Sidemode Supression Ratio	SMSR	dB	30		

Measurement Conditions / Comments

Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	I_{mon} / P_{opt}	$\mu A / mW$	5		200
Reverse Voltage Monitor Diode	U_{RMD}	V	3		5

Measurement Conditions / Comments

$U_R = 5 V$

Thermoelectric Cooler

Parameter	Symbol	Unit	min	typ	max
Current	I_{TEC}	A		0.4	
Voltage	U_{TEC}	V		0.8	
Power Dissipation (total loss at case)	P_{loss}	W		0.5	
Temperature Difference	ΔT	K			50

Measurement Conditions / Comments

$P_{opt} = 5 mW, \Delta T = 20 K$

$P_{opt} = 5 mW, \Delta T = 20 K$

$P_{opt} = 5 mW, \Delta T = 20 K$

$P_{opt} = 5 mW, \Delta T = |T_{case} - T_{LD}|$

Thermistor (Standard NTC Type)

Parameter	Symbol	Unit	min	typ	max
Resistance	R	$k\Omega$		10	
Beta Coefficient	β			3892	

Measurement Conditions / Comments

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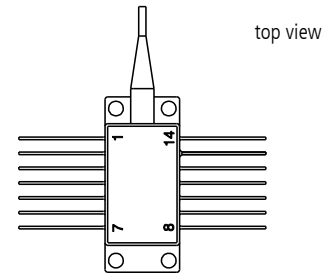
Fiber and Connector Type

SM Fiber	125 / 4.5 μm (l = 1 +/-0.1 m)
Connector	FC/APC (narrow key / 2mm) other types on request

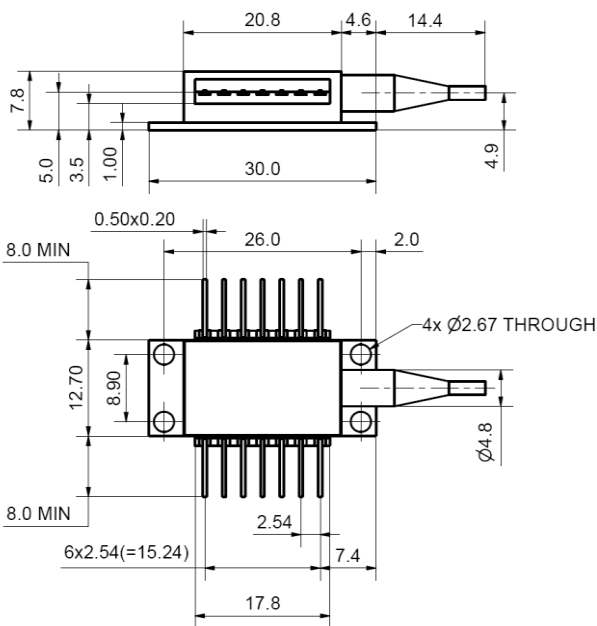
Measurement Conditions / Comments

Package Pinout

1	Thermoelectric Cooler (+)	14	Thermoelectric Cooler (-)
2	Thermistor	13	Case
3	Photodiode (Anode)	12	not connected
4	Photodiode (Cathode)	11	Laser Diode (Cathode)
5	Thermistor	10	Laser Diode (Anode)
6	not connected	9	not connected
7	not connected	8	not connected



Package Drawings



recommended
min. bending radius: 30 mm

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hermetically sealed Package:

Leak Rate <math>< 5 \cdot 10^{-8}</math> atm.cc./s
acc. MIL-STD-883E

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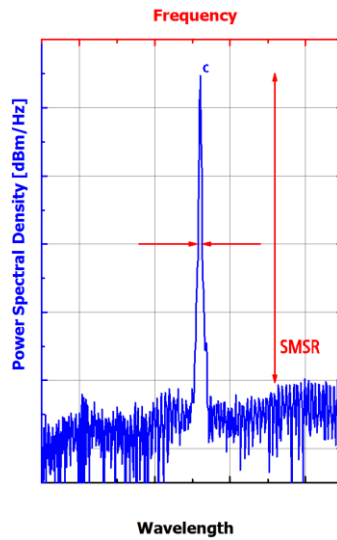
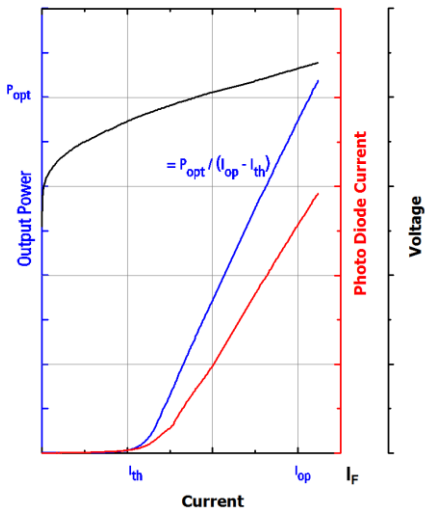
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Typical Measurement Results

Output Power vs. Current

Spectra at Specified Optical Output Power



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.

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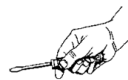
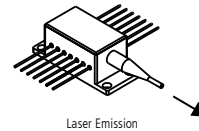
Unpacking, Installation and Laser Safety

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 a proper metal heat sinks will contribute to stable operation and 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.



Ordering Information:



800 Village Walk #316
Guilford, CT 06437
Ph: 203-401-8093

Email orders to: sales@xsoptix.com
Fax orders to: 800-878-7282