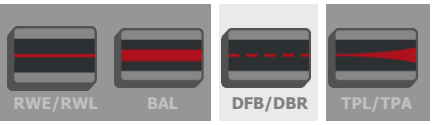
EYP-DBR-0633-00010-2000-BFW01-0000

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 Butterfly Housing	Replacement of HeNe-Lasers
Monitor Diode, Thermoelectric Cooler and Thermistor	Metrology
Collimated beam	
ROHS compliant	

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			200
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			12
TEC Current	I_{TEC}	A			1.1
TEC Voltage	V_{TEC}	V			2.8

Stress in excess 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	10		15	measured by integrated Thermistor
Forward Current	I_F	mA		140	180	
Output Power	P_{opt}	mW	2		10	

Characteristics at T_{LD} = 15°C, P_{opt} = 10 mW

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm	632.0	633.0	634.0	
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		

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Characteristics at T_{LD} = 15°C, P_{opt} = 10 mW

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Forward Current @ P_{opt} = 10 mW	I_F	mA			180	
Threshold Current	I_{th}	mA			120	
Slope Efficiency	η	W / A	0.15	0.4		
Sidemode Supression Ratio	SMSR	dB	30			
Degree of Polarization	DOP	%		90		E field perpendicular to base plate (see p. 4)
Divergence parallel (full angle, 1/e2)	$\Theta_{\parallel}$	°		0.1		parallel to base plate (see p. 4)
Divergence perpendicular (full angle, 1/e2)	$\Theta_{\perp}$	°		0.1		perpendicular to base plate (see p. 4)
Beam Width parallel ($1/e^2$)	$d_{\parallel}$	mm		0.7	1.0	at window, parallel to base plate (see p. 4)
Beam Width perpendicular ($1/e^2$)	$d_{\perp}$	mm		0.6	1.0	at window, perpendicular to base plate (see p. 4)
Beam Propagation Factor	M^2		1	1.2	tbd	

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Monitor Diode

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Monitor Detector Current	I_{mon}	µA	10		2000	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		0.7	1.1	P_{opt} = 10 mW, ΔT = 40 K
Voltage	U_{TEC}	V		1.7	2.8	P_{opt} = 10 mW, ΔT = 40 K
Power Dissipation (total loss at case)	P_{loss}	W		0.4	0.5	P_{opt} = 10 mW, ΔT = 40 K
Temperature Difference	ΔT	K			60	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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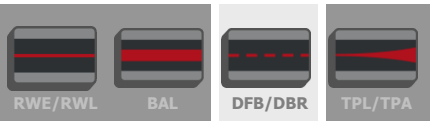


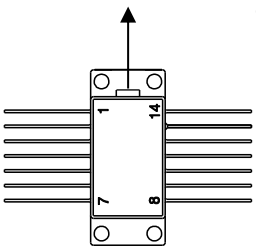
Package Dimensions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Emission Plane	h_{EP}	mm		4.9		

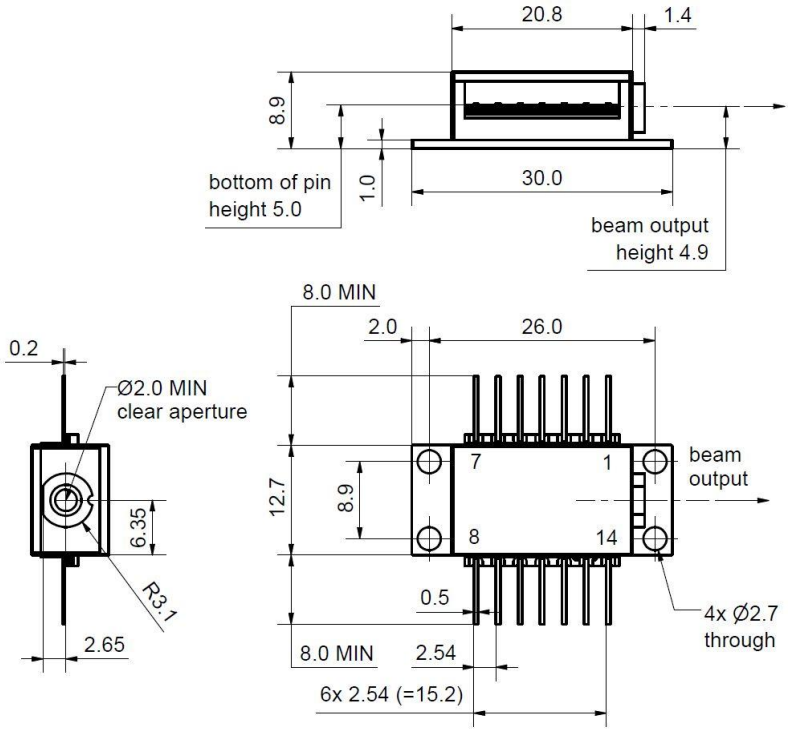
Package Pinout

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

top view



Package Drawings



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Polarization:

E field perpendicular to base plate

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GL Systems Certification

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DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
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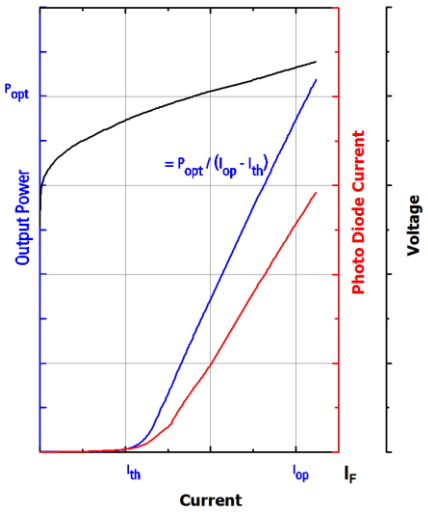
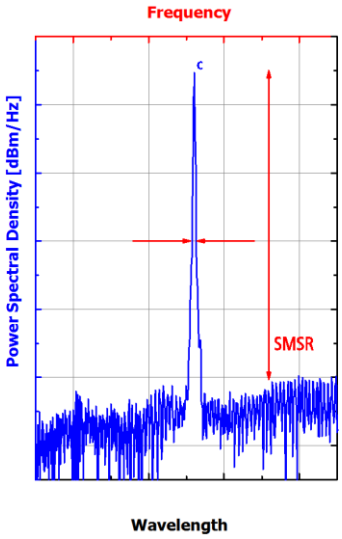
RWE/RWL BAL DFB/DBR TPL/TPA

Typical Measurement Results

Output Power vs. Current



Spectra at Specified Optical Output Power



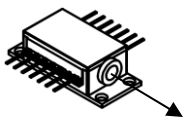
Pictures and the illustrative graphs (on the left hand side) provided in this specification are typical and must be specifically confirmed in writing by eagleyard Photonics before they become applicable to any particular order or contract.

Ordering Information:

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

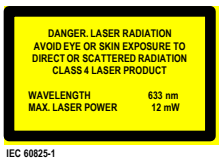
Unpacking, Installation and Laser Safety

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.



Laser Emission

Operating at moderate temperatures on proper heat sinks willl contribute to a long lifetime of the diode.



IEC 60825-1

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.

Complies with 21 CFR 1040.10 and 1040.40

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