EYP-RWS-0760-00010-1500-BFY02-0000

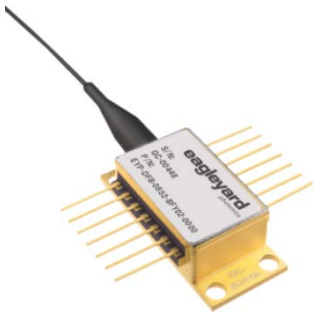
Revision 1.00

15.04.2016

SINGLE FREQUENCY LASER DIODES
Stabilized Ridge Waveguide Laser

General Product Information

Product	Application
760 nm Wavelength Stabilized Laser Butterfly Housing	Metrology
Monitor Diode, Thermoelectric Cooler and Thermistor	
PM Fiber with angle-polished Connector	
ROHS compliant	



Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Storage Temperature	T_S	°C	-40		85	Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device. Please note that a damaging optical power level may occur although the maximum current is not reached.
Operational Temperature at Case	T_C	°C	-40		85	
Operational Temperature at Laser Chip	T_{LD}	°C	10		50	
Forward Current	I_F	mA			130	
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	

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Operational Temperature at Case	T_C	°C	-20		65	
Operational Temperature at Laser Chip	T_{LD}	°C	15		35	measured by integrated Thermistor
Forward Current	I_F	mA			120	
Output Power	P_{opt}	mW	2		10	ex fiber

Characteristics at 25° C at Begin Of Life

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm	757	760	763	tighter wavelength specification available on request
Selectable Line Width	$\Delta\lambda$	pm			0.1	single mode operation (see p. 4)
Overall Line Width	$\Delta\lambda$	nm			0.2	multi mode operation (see p. 4)
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.06		
Current Coefficient of Wavelength	$d\lambda / dI$	nm / mA		0.003		
Output Power @ I_F : 120 mA	P_{opt}	mW	10			ex fiber

eagleyard Photonics GmbH
Rudower Chaussee 29
12489 Berlin GERMANY
fon +49. 30. 6392 4520
fax +49. 30. 6392 4529
info@eagleyard.com
www.eagleyard.com

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Characteristics at 25° C at Begin Of Life cont'd

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Slope Efficiency	η	W / A	0.1	0.4	0.7	
Threshold Current	I_{th}	mA			70	
Sidemode Supression Ratio	SMSR	dB	30	45		under single mode condition

Monitor Diode

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Monitor Detector Responsivity	I_{mon} / P_{opt}	µA/mW	5		200	P_{opt} = 2 … 10 mW, $U_{R\ MD}$ = 5 V

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		T = 25° C
Beta Coefficient	β			3892		$R_1 / R_2 = e^{\beta (1/T_1 - 1/T_2)}$ at T = 0° … 50° C
Steinhart & Hart Coefficient	A			1.1293×10^{-3}		$1/T = A + B(\ln R) + C(\ln R)^3$
Steinhart & Hart Coefficient	B			2.3410×10^{-4}		T: temperature in Kelvin
Steinhart & Hart Coefficient	C			8.7755×10^{-8}		R: resistance at T im Ohm

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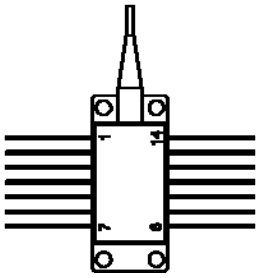
Fiber and Connector Type

		Measurement Conditions / Comments
PM Fiber	900 / 125 / 5.5 µm, UV/Polyester-elastomer Coating (l = 1 +/-0.1 m)	
Connector	FC/APC (narrow key / 2mm)	other connectors on request

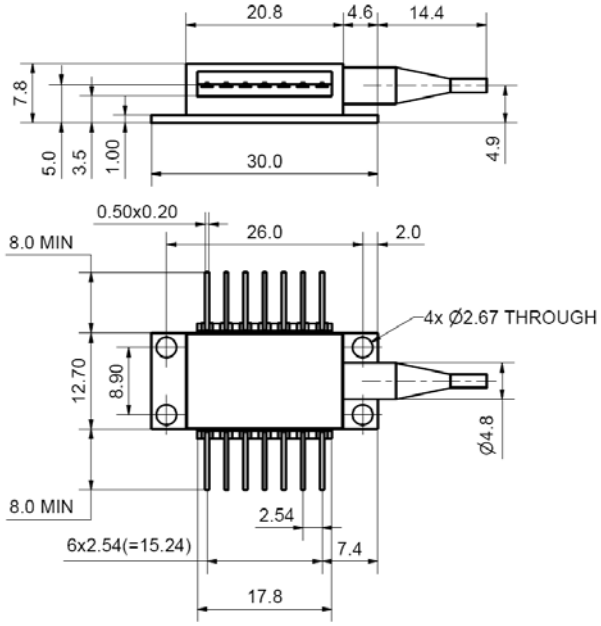
Package Pinout

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



recommended
min. bending radius: 30 mm

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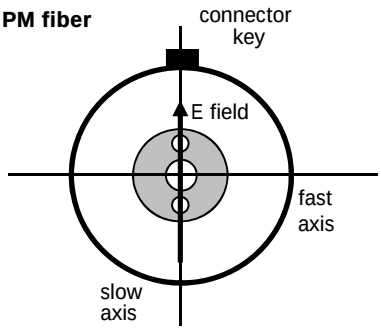

slow axis of the PM fiber aligned to connector key

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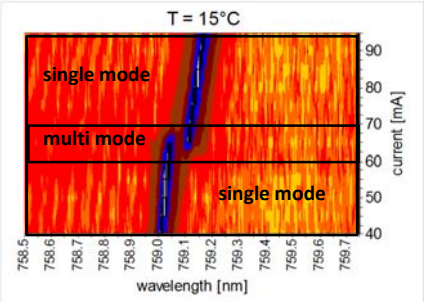
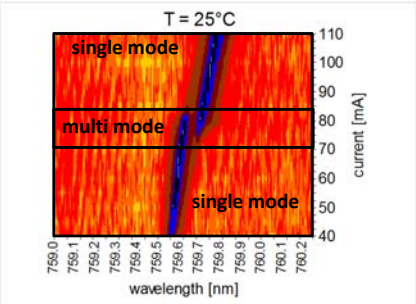
Typical Measurement Results

Spectral maps at 15° C and 25° C





The spectral maps show the power spectral density at different operating modes. The graphs illustrate that the laser exhibits single and multi mode behavior under different operational conditions. The spectral maps may differ from part to part. Single mode operation can be achieved by selecting the appropriate laser current and temperature.

Unpacking, Installation and Laser Safety

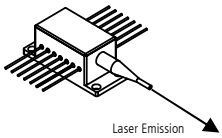
Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use.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

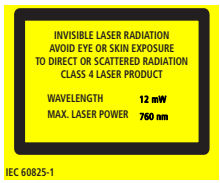
The RWS laser is sensitive against optical feedback, so an optical isolator may be required in order to avoid any disturbance of the emission spectrum. Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode.

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 main parameters given in this document. It does not include the detailed spectral maps which are shown above in order to illustrate the spectral behavior of this laser type.

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.





Complies with 21 CFR 1040.10 and 1040.40

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