

EYP-RWL-0808-00400-4000-BFY02-0000

Revision 0.70

2022-04-19

SINGLE MODE LASER DIODES Fabry-Perot Laser



General Product Information

Product	Application
808 nm Fabry-Perot Laser with hermetic Butterfly Package	Pumping
Monitor Diode, Thermoelectric Cooler and Thermistor with PM fiber and APC	Communication Optical tweezer



Absolute Maximum Ratings

Parameter	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	10		40
Forward Current	I_F	A			1.3
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			500
TEC Current	I_{TEC}	A			1.5
TEC Voltage	V_{TEC}	V			5.5

Measurement Conditions / Comments

Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device. Do not exceed the maximum optical output power or maximum forward current, whichever occurs first.

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max
Operational Temperature at Case	T_C	°C	0		40
Operational Temperature at Laser Chip	T_{LD}	°C	15		35
Forward Current	I_F	A		0.8	1.2
Output Power	P_{opt}	mW		400	450

Measurement Conditions / Comments

Characteristics at $T_{LD} = 25^\circ\text{C}$ at Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	λ_C	nm	804	808	812
Spectral Width (FWHM)	$\Delta\lambda$	nm		1	2
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.28	
Threshold Current	I_{th}	A			0.15
Output Power @ $I_F = 1.0\text{ A}$	P_{opt}	mW	400		450
Polarization Extinction Ratio	PER	dB		18	

Measurement Conditions / Comments

$P_{opt} = 400\text{ mW}$, multi frequency mode emission

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Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	I_{mon}	μA	10		1000

Measurement Conditions / Comments

$U_R = 5 V$;

Thermoelectric Cooler

Parameter	Symbol	Unit	min	typ	max
Current	I_{TEC}	A	0.3	0.9	1.5
Voltage	U_{TEC}	V	1.0	4	5.5
Power Dissipation (total loss at case)	P_{loss}	W	1.8	2.1	2.5
Temperature Difference	ΔT	K			30

Measurement Conditions / Comments

$P_{opt} = 400 mW, \Delta T = 30 K$

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$P_{opt} = 400 mW, \Delta T = I T_{case} - T_{LD} I$

Thermistor (Standard NTC Type)

Parameter	Symbol	Unit	min	typ	max
Resistance	R	$k\Omega$		10	
Beta Coefficient	β			3892	
Steinhart & Hart Coefficient	A			1.1293×10^{-3}	
Steinhart & Hart Coefficient	B			2.3410×10^{-4}	
Steinhart & Hart Coefficient	C			8.7755×10^{-8}	

Measurement Conditions / Comments

$T = 25^\circ C$

$R_1 / R_2 = e^{\beta(1/T_1 - 1/T_2)}$ at $T = 0^\circ \dots 50^\circ C$

$1/T = A + B(\ln R) + C(\ln R)^3$

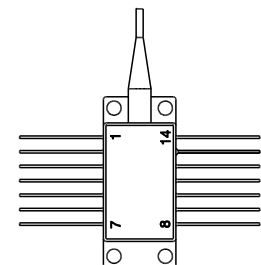
T: temperature in Kelvin

R: resistance at T im Ohm

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

Pins are isolated from case unless noted otherwise.



Top View

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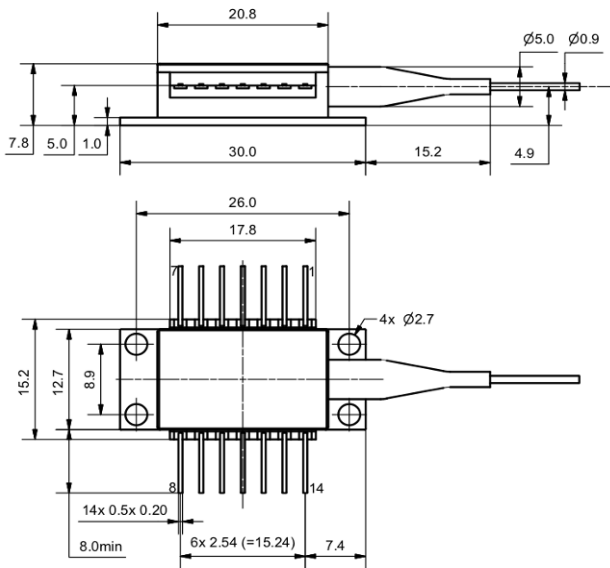
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Package Drawings



Caution. Excessive mechanical stress on the package can lead to a damage of the laser.

See instruction manual on www.toptica-eagleyard.com

AIZ-16-0222-14

Fiber and Connector Type

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

Measurement Conditions / Comments

other connectors on request

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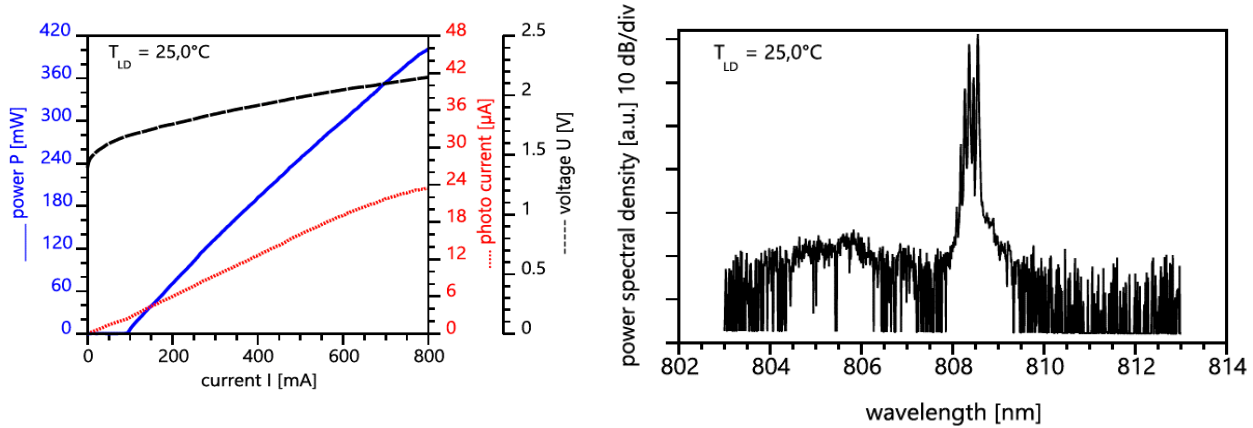
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Typical Measurement Results



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.

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.

