EYP-DFB-1083-00080-1500-BFW01-0000

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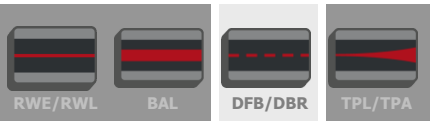
DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure



General Product Information

Product	Application
1083 nm DFB Laser with hermetic Butterfly Housing	Spectroscopy
Monitor Diode, Thermoelectric Cooler and Thermistor	Metrology
Collimated beam	Magnetometer
ROHS compliant	

Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-40		85
Operational Temperature at Case	T_C	°C	-40		85
Operational Temperature at Laser Chip	T_{LD}	°C	10		50
Forward Current	I_F	mA			200
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			90
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	-20		65	measured by integrated Thermistor
Operational Temperature at Laser Chip	T_{LD}	°C	15		40	
Forward Current	I_F	mA			190	
Output Power	P_{opt}	mW	20		80	

Characteristics at T_{LD} = 25 °C at Begin Of Life

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm	1082	1083	1084	see images on page 4
Spectral Width (FWHM)	$\Delta\nu$	MHz		2		
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 = 190 mA	P_{opt}	mW	80			

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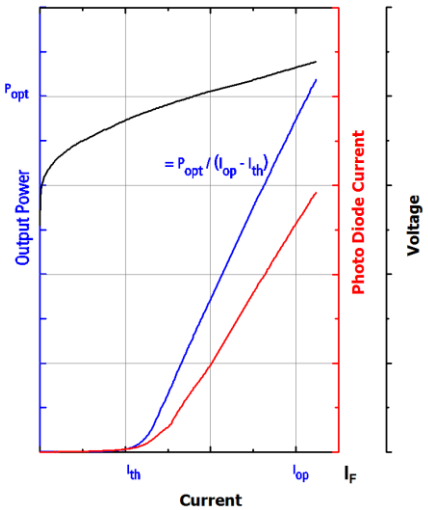
Characteristics at T_{amb} 25 °C at Begin Of Life cont'd

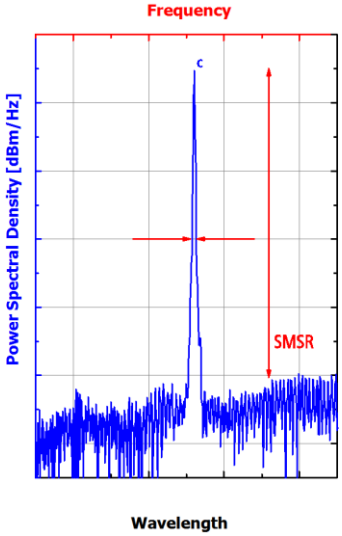
Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Slope Efficiency	η	W / A	0.6	0.8	1.0	
Threshold Current	I_{th}	mA			70	
Divergence parallel ($1/e^2$)	$\Theta_{\parallel}$	°		0.1		parallel to the base plate of the housing (see p. 3)
Divergence perpendicular ($1/e^2$)	$\Theta_{\perp}$	°		0.1		perpendicular to base plate of the housing (see p. 3)
Beam Diameter ($1/e^2$)	$d_{\parallel}$	mm		1.0	1.2	parallel to the base plate of the housing (see p. 3)
Beam Diameter ($1/e^2$)	$d_{\perp}$	mm		0.8	1.2	perpendicular to base plate of the housing (see p. 3)
Degree of Polarization	DOP	%		90		P_{opt} = 80 mW; E field parallel to the base plate
Sidemode Supression Ratio	SMSR	dB	30	50		P_{opt} = 80 mW
Mode-hop free Operating Range (SMSR > 30 dB)						see order code scheme on p. 5
▸ Variant 0	T_{LD}	° C		25		
	P_{opt}	mW		80		
▸ Variant 2	T_{LD}	° C	15		40	
	P_{opt}	mW	20		80	

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.

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Monitor Diode

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

Thermoelectric Cooler

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Current	I_{TEC}	A		0.4		P_{opt} = 80 mW, ΔT = 20 K
Voltage	U_{TEC}	V		0.8		P_{opt} = 80 mW, ΔT = 20 K
Power Dissipation (total loss at case)	P_{loss}	W		0.4		P_{opt} = 80 mW, ΔT = 20 K
Temperature Difference	ΔT	K			50	P_{opt} = 80 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			3892		T = 0° … 50° C

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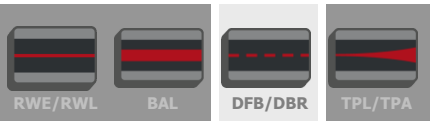


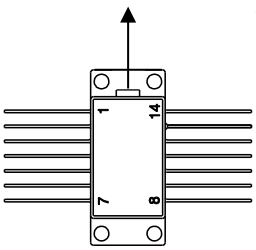
Package Dimensions

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

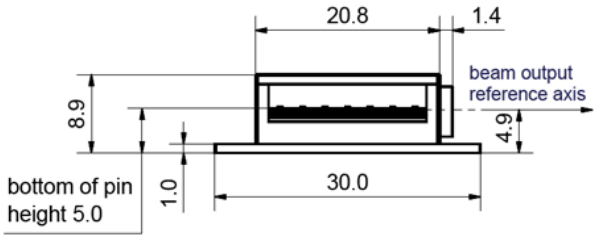
Package Pinout

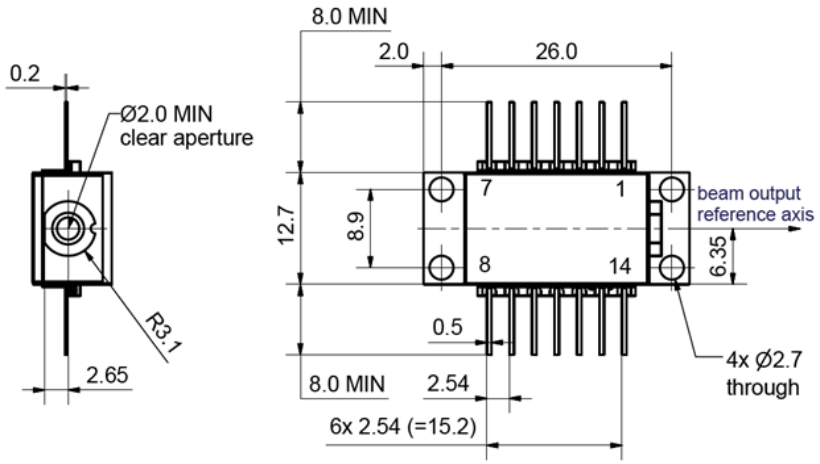
1	Thermoelectric Cooler (+)	14	Thermoelectric Cooler (-)
2	Thermistor	13	Case
3	Photodiode (Anode)	12	not connected
4	Photodiode (Cathode)	11	Laser Diode (Cathode)
5	Thermistor	10	Laser Diode (Anode)
6	not connected	9	not connected
7	not connected	8	not connected

top view



Package Drawings





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Polarization:
E field parallel to the base plate

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GL Systems Certification

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Order Code Scheme

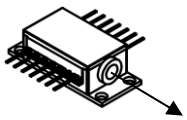
EYP-DFB-1083-00080-1500-BFW01- 0 0 0 x

Mode-hop free Operating Range (Minimum Side Mode Suppression Ratio > 30 dB)

P_{opt} = 80 mW;	T_{LD} = 25 ° C	(Variant 0)	0
P_{opt} = 20 … 80 mW;	T_{LD} = 15 … 40 ° C	(Variant 2)	2

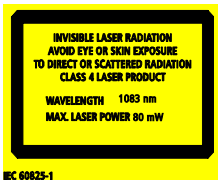
Unpacking, Installation and Laser Safety

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.



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.

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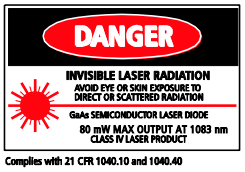

Each laser diode will come with an individual test protocol verifying the parameters given in this document.

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