DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure

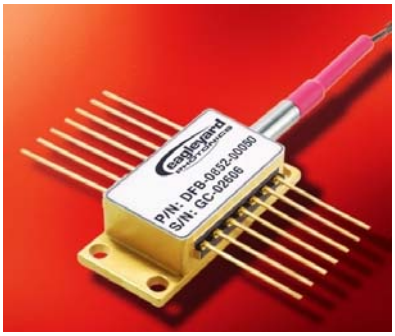
PRELIMINARY SPECIFICATION

DFB/DBR Laser

EYP-DFB-0785-00040-1500-BFY02-0000

General Product Information

Product	Application
785 nm DFB Laser with Butterfly Housing	Spectroscopy
Monitor Diode, Thermoelectric Cooler and Thermistor	Metrology
PM Fiber (900 / 125 / 5.5 µm, UV/Polyamide Coating)	
FC/APC connector (narrow key / 2mm)	



Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-40		85
Operational Temperature at Case	T_C	°C	-20		75
Forward Current	I_F	mA			300
Reverse Voltage	V_R	V			0
Output Power	Popt	mW			170

Stress in excess of the Absolute Maximum Ratings can cause permanent damage to the device. Operation at the Absolute Maximum Rating for extended periods of time can adversely affect the device realibility and may lead to reduced operational life.

Recommended Operational Conditions

	Symbol	Unit	min	typ	max
Forward Current	I_F	mA			280
Output Power	P_{opt}	mW			40

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm	784	785	786	see images on page 4
Spectral Width (FWHM)	$\Delta\nu$	MHz		2	10	measured in interferometric setup
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.06		
Temperature Coefficient of Current	$d\lambda / dI$	nm / mA		0.003		
Output Power @ I_{op} max	P_{opt}	mW	40			ex fiber
Slope Efficiency	S	W / A	0.15	0.3	0.5	

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Threshold Current	I_{th}	mA		60	80	
Operational Current @ P_{opt} min	I_{op}	mA		240	280	
Sidemode Supression Ratio	SMSR	dB	30	45		
Cavity Length	L	µm		1500		
Polarization				TM		parallel to key
Polarization Extinction Ratio	PER	dB	20			target value, to be verified
Spatial Mode (transversal)				TEM_{00}		Fundamental Mode
Spectral Mode (longitudinal)				Single Mode		

Monitor Diode

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Monitor Detector Responsivity	I_{mon} / P_{opt}	µA / mW		t.b.d.		U_R = 5 V, target values
Reverse Voltage Monitor Diode	$U_{R\ MD}$	V		t.b.d.		
Monitor Linearity	$Lin_{\ MD}$	%		t.b.d.		P_{opt} = 10 … 40 mW, U_R = 5 V

Thermoelectric Cooler

	Symbol	Unit	min	typ	max	
Current	I	A			1.8	
Voltage	U	V			4.5	
Thermal Load	Q_c	W			3.2	
Temperature Difference	dT	K			50	T_{chip} = 25°C

Thermistor (Standard NTC Type)

	Symbol	Unit	min	typ	max
Resistance	R	kOhm		10	
Beta Coefficient	β			3892	

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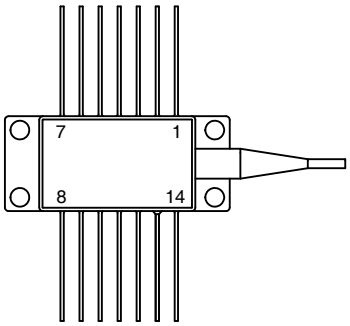
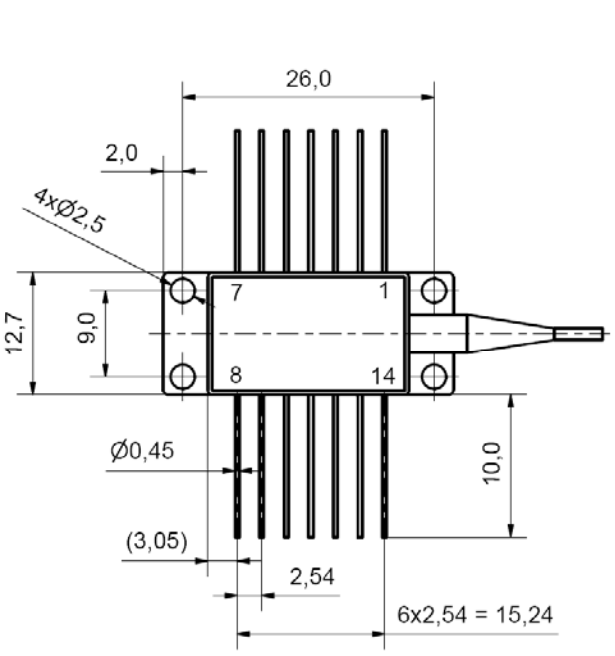
Package Dimensions

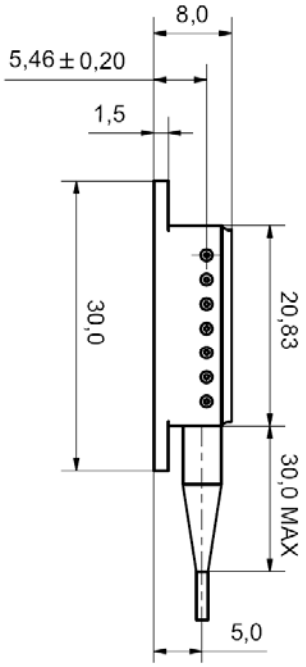
	Symbol	Unit	min	typ	max
Fiber Height	l	mm		5.0	
Housing Dimension	l x w x h	mm^3		30 x 12.7 x 8	
Fiber Length	L	m		1	

Package Pinout

Thermoelectric Cooler	1 (+)	14 (-)
Thermistor	2	5
Photodiode	3 (Anode)	4 (Cathode)
Laser Diode	10 (Anode)	11 (Cathode)
Case	13	
nc	6	7
nc	8	9
nc	12	







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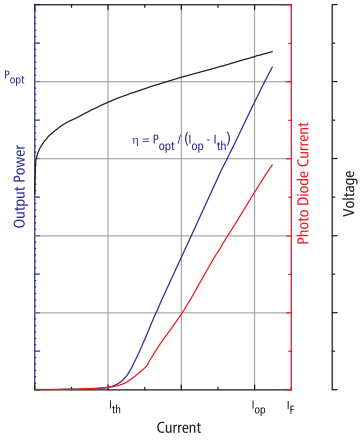
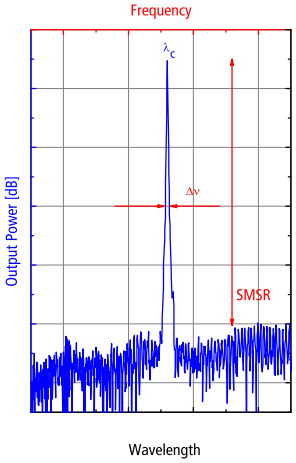
Typical Measurement Results

Output Power vs. Current



Spectra at Specified Optical Output Power



Ordering Information:

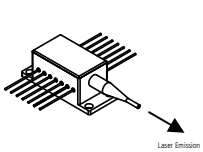
XSoptix
800 Village Walk #316
Guilford, CT 06437
Ph: 203-401-8093
Email orders to: sales@xsoptix.com
Fax orders to: 800-878-7282

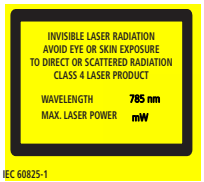
Performance figures, data and any illustrative material provided in this specification are typical and must be specifically confirmed in writing by eagleyard Photonics before they become applicable to any particular order or contract. In accordance with the eagleyard Photonics policy of continuous improvement specifications may change without notice.

Unpackaging, Installation and Laser Safety

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

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 DFB 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 propper 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 thread to the human eye.