

EYP-DFB-0760-00040-1500-BFW01-000x

Revision 0.50

08.07.2015

page 1 from 6

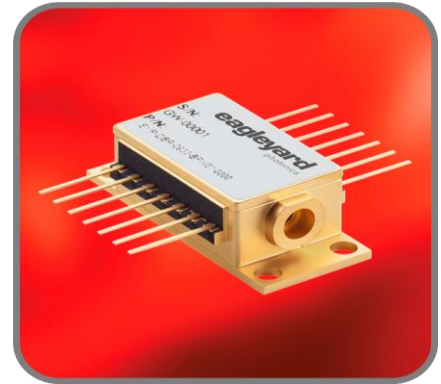
DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode with integrated grating structure



General Product Information

Product	Application
760 nm DFB Laser with hermetic Butterfly Housing	Metrology
Monitor Diode, Thermoelectric Cooler and Thermistor	O ₂ Detection
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	-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			50
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
Operational Temperature at Case	T _C	°C	-20		65
Operational Temperature at Laser Chip	T _{LD}	°C	15		35
Forward Current	I _F	mA			120
Output Power	P _{opt}	mW	10		40

Measurement Conditions / Comments

measured by integrated Thermistor

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

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	λ _C	nm	759	760	761
Spectral Width (FWHM)	Δν	MHz		2	
Temperature Coefficient of Wavelength	dλ / dT	nm / K		0.06	
Current Coefficient of Wavelength	dλ / dI	nm / mA		0.003	
Output Power @ I _F = 120 mA	P _{opt}	mW	40		

Measurement Conditions / Comments

see images on page 4

EYP-DFB-0760-00040-1500-BFW01-000x

Revision 0.50

08.07.2015

page 2 from 6

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode with integrated grating structure



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

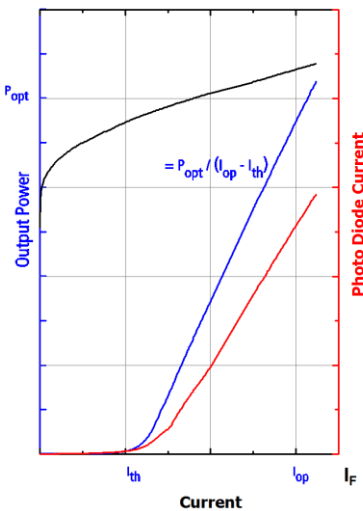
Parameter	Symbol	Unit	min	typ	max
Slope Efficiency	η	W / A	0.6	0.8	1.0
Threshold Current	I_{th}	mA			70
Divergence parallel ($1/e^2$)	$\Theta_{ }$	°		0.1	
Divergence perpendicular ($1/e^2$)	Θ_{\perp}	°		0.1	
Beam Diameter ($1/e^2$)	$d_{ }$	mm		1.0	1.2
Beam Diameter ($1/e^2$)	d_{\perp}	mm		0.8	1.2
Sidemode Supression Ratio	SMSR	dB	30	50	
Mode-hop free Operating Range (SMSR > 30 dB)					
▶ Variant 0	T_{LD}	° C		25	
	P_{opt}	mW		40	
▶ Variant 2	T_{LD}	° C	15		40
	P_{opt}	mW	10		40

Measurement Conditions / Comments

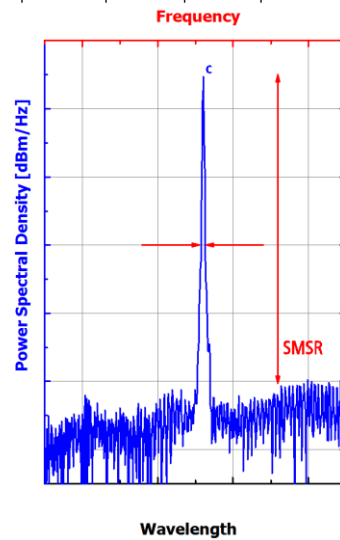
parallel to the base plate of the housing (see p. 3)
 perpendicular to base plate of the housing (see p. 3)
 parallel to the base plate of the housing (see p. 3)
 perpendicular to base plate of the housing (see p. 3)
 $P_{opt} = 40\text{ mW}$
 see order code scheme on p. 5

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.

EYP-DFB-0760-00040-1500-BFW01-000x

Revision 0.50

08.07.2015

page 3 from 6

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure



Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	$I_{\text{mon}}/P_{\text{opt}}$	$\mu\text{A/mW}$		tbd	

Measurement Conditions / Comments

Reverse Voltage $U_{R\text{ MD}} = 5\text{ V}$

Thermoelectric Cooler

Parameter	Symbol	Unit	min	typ	max
Current	I_{TEC}	A		0.4	
Voltage	U_{TEC}	V		0.8	
Power Dissipation (total loss at case)	P_{loss}	W		0.4	
Temperature Difference	ΔT	K			50

Measurement Conditions / Comments

$P_{\text{opt}} = 40\text{ mW}, \Delta T = 20\text{ K}$

$P_{\text{opt}} = 40\text{ mW}, \Delta T = 20\text{ K}$

$P_{\text{opt}} = 40\text{ mW}, \Delta T = 20\text{ K}$

$P_{\text{opt}} = 40\text{ mW}, \Delta T = |T_{\text{case}} - T_{\text{LD}}|$

Thermistor (Standard NTC Type)

Parameter	Symbol	Unit	min	typ	max
Resistance	R	$k\Omega$		10	
Beta Coefficient	β			3892	

Measurement Conditions / Comments

$T = 0^\circ \dots 50^\circ\text{ C}$

EYP-DFB-0760-00040-1500-BFW01-000x

Revision 0.50

08.07.2015

page 4 from 6

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode with integrated grating structure



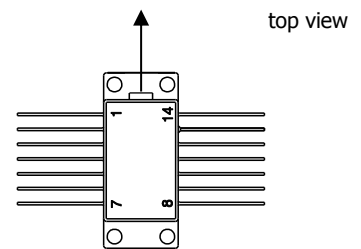
Package Dimensions

Parameter	Symbol	Unit	min	typ	max
Emission Plane	h_{EP}	mm		4.9	

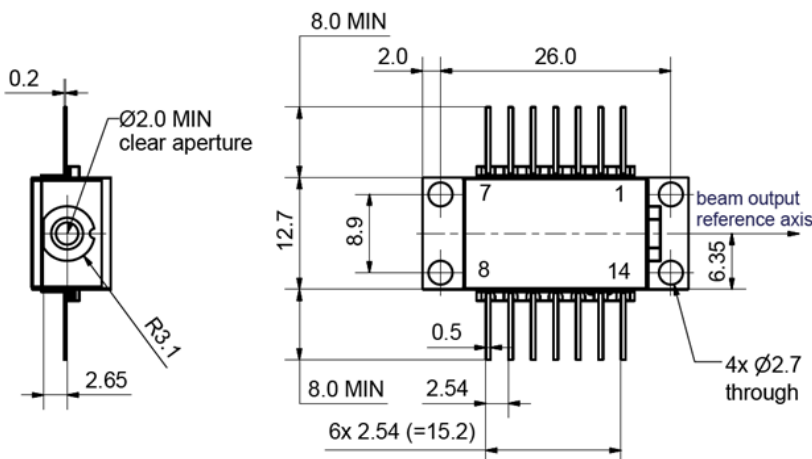
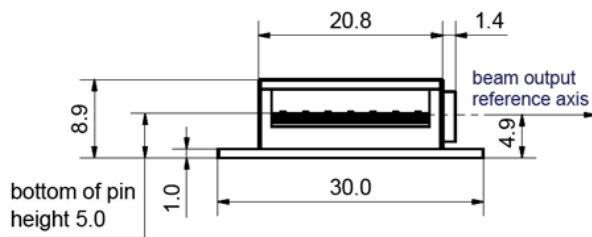
Measurement Conditions / Comments

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



Package Drawings



Z13-0000-BFY32-DBR-0000 Vers. 0.92

Polarization:

E field perpendicular to the base plate

EYP-DFB-0760-00040-1500-BFW01-000x

Revision 0.50

08.07.2015

page 5 from 6

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure



Order Code Scheme

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

$P_{opt} = 40 \text{ mW}$; $T_{LD} = 25 \text{ }^\circ\text{C}$ (Variant 0)

$P_{opt} = 10 \dots 40 \text{ mW}$; $\lambda_c = 15 \dots 40 \text{ }^\circ\text{C}$ (Variant 2)

EYP-DFB-0760-00040-1500-BFW01- 0 0 0 **x**
0
2

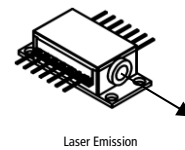
Unpacking, Installation and Laser Safety

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.

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.



Laser Emission



Ordering Information:



800 Village Walk #316
Guilford, CT 06437
Ph: 203-401-8093

Email orders to: sales@xsoptix.com
Fax orders to: 800-878-7282