

**DISTRIBUTED FEEDBACK LASER**

GaAs Semiconductor Laser Diode  
with integrated grating structure



## PRELIMINARY SPECIFICATION

## DFB Laser

**EYP-DFB-0780-00080-1500-SOT02-0000****General Product Information**

Product	Application
780 nm DFB Laser with TO Housing	Spectroscopy
Monitor Diode	Metrology

**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			200
Reverse Voltage	$V_R$	V			0
Output Power	$P_{opt}$	mW			100

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 reliability and may lead to reduced operational life.

**Recommended Operational Conditions**

	Symbol	Unit	min	typ	max
Temperature at Case	$T_{Chip}$	°C	15		40
Forward Current	$I_F$	mA			180
Output Power	$P_{opt}$	mW	10		80

total output measured with integrated sphere

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

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_C$	nm	779	780	781
Spectral Width (FWHM)	$\Delta\nu$	MHz		2	10
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.06	
Temperature Coefficient of Current	$dI / dI$	nm / mA		0.003	
Output Power @ $I_F = 180$ mA	$P_{opt}$	mW	80		
Slope Efficiency	$S$	W / A	0.6	0.8	1.0

**Measurement Conditions / Comments**

see images on page 4

total output measured with integrated sphere

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**EYP-DFB-0780-00080-1500-SOT02-0000****Characteristics at  $T_{amb}$  25 °C at Begin Of Life**

Parameter	Symbol	Unit	min	typ	max
Threshold Current	$I_{th}$	mA			70
Operational Current @ $P_{opt} = 80$ mW	$I_{op}$	mA			180
Sidemode Supression Ratio	SMSR	dB	30	45	
Cavity Length	L	$\mu$ m		1500	
Divergence parallel	$\Theta_{  }$	°	6	8	10
Divergence perpendicular	$\Theta_{\perp}$	°	18	21	24
Polarization				TM	
Spatial Mode (transversal)				TEM <sub>00</sub>	
Spectral Mode (longitudinal)				Single Mode	

## Measurement Conditions / Comments

 $P_{opt} = 80$  mW

E field perpendicular to Pin 2 - Pin 3 - plane  
fundamental mode

**Monitor Diode**

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	$I_{mon} / P_{opt}$	$\mu$ A / mW	0.5		5
Reverse Voltage Monitor Diode	$U_{R MD}$	V	3		5
Monitor Linearity	$Lin_{MD}$	%	-10		+10

## Measurement Conditions / Comments

 $U_R = 5$  V, target values $P_{opt} = 10 \dots 80$  mW,  $U_R = 5$  V

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## PRELIMINARY SPECIFICATION

## DFB Laser

# EYP-DFB-0780-00080-1500-SOT2-0000

### Package Dimensions

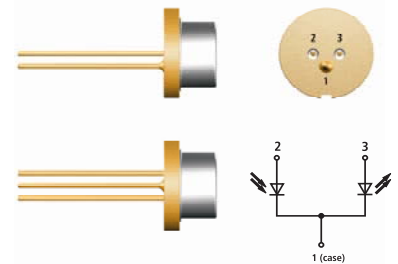
	Symbol	Unit	min	typ	max
Emission Plane	$d_{EP}$	mm		3.65	
Housing Diameter	d	mm		9	
Pin Length	l	mm		14	

reference plane: top side of TO header

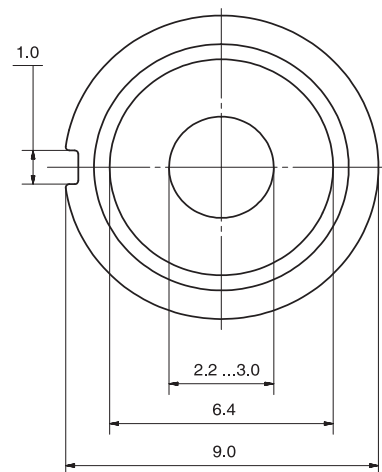
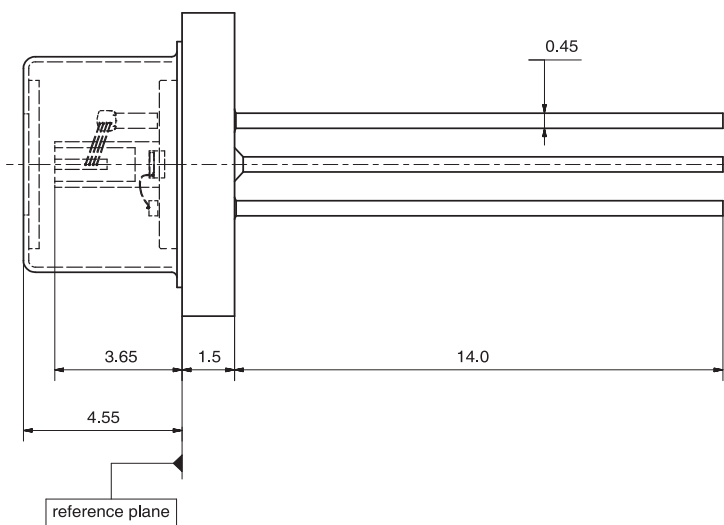
### Package Pinout

### M-Type

Ground	1
Photo Diode (+)	2
Laser (+)	3



### Package Drawings



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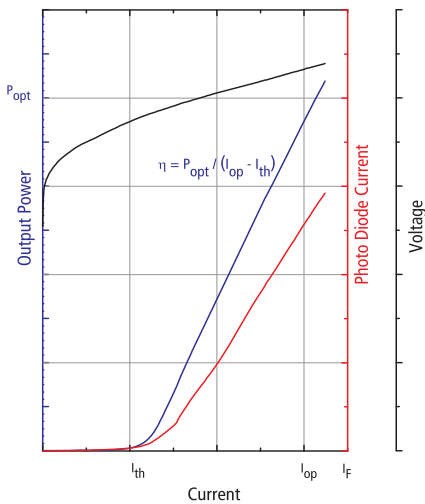
## PRELIMINARY SPECIFICATION

## DFB Laser

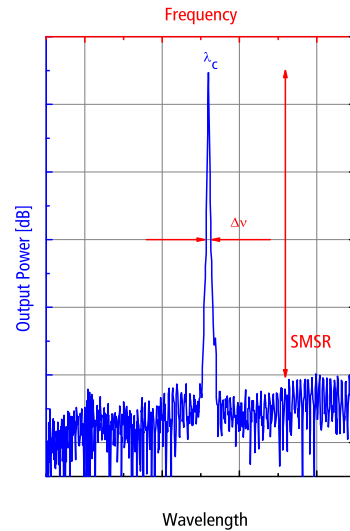
# EYP-DFB-0780-00080-1500-SOT02-0000

### Typical Measurement Results

Output Power vs. Current



Spectra at Specified Optical Output Power



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.

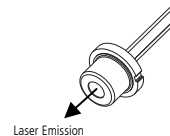
### Unpackaging, Installation and Laser Safety

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 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

