

EYP-DFB-0760-00040-1500-SOT02-0004

Revision 0.71

2018-08-07

SINGLE FREQUENCY LASER DIODES

Distributed Feedback Laser

General Product Information

Product	Application
760 nm DFB Laser	Oxygen Detection
with hermetic TO Package (RoHS compliant)	Laser meets one of the strong
including Monitor Diode	Oxygen Absorption Lines
	(see Target Wavelengths A - E)



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
Forward Current	I_F	mA			130
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			50

Measurement Conditions / Comments

Stress in excess of one of the Absolute Maximum Ratings may damage the laser. Please note that a damaging optical power level may occur although the maximum current is not reached. These are stress ratings only, and functional operation at these or any other conditions beyond those indicated under Recommended Operational Conditions is not implied.

Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max
Operational Temperature at Case	T_{case}	°C	15		35
Forward Current	I_F	mA			120
Output Power	P_{opt}	mW	10		40

Measurement Conditions / Comments

measured with integrating sphere

Characteristics at $T_{case} = 25^\circ\text{C}$ at BOL

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	λ_C	nm	759		765
Target Wavelength (A = 760.66nm or B = 760.80nm or C = 761.14nm or D = 763.42nm or E = 763.84nm)					
Laser Current @ $P_{opt} = 40\text{ mW}$	I_{LD}	mA			120
Slope Efficiency	η	W / A	0.6	0.8	1.2
Threshold Current	I_{th}	mA			70
Linewidth (FWHM)	$\Delta\lambda$	MHz		2	
Mode-hop free Tuning Range	$\Delta\lambda_{tune}$	pm	20		
Temperature Coefficient of Wavelength	$d\lambda / dT$	nm / K		0.06	
Current Coefficient of Wavelength	$d\lambda / dI$	nm / mA		0.003	

Measurement Conditions / Comments

see images on page 4

reached within $T_{LD} = 15^\circ \dots 35^\circ\text{C}$ at 40 mW

$P_{opt} = 40\text{ mW}$

reached by current modulation

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Characteristics at $T_{case} = 25^{\circ} C$ at BOL cont'd

Parameter	Symbol	Unit	min	typ	max
Sidemode Supression Ratio	SMSR	dB	30	50	
Divergence parallel (FWHM)	$\Theta_{ }$	°		8	
Divergence perpendicular (FWHM)	Θ_{\perp}	°		21	
Degree of Polarization	DOP	%		80	

Measurement Conditions / Comments
$P_{opt} = 40$ mW
parallel to Pin 2 - Pin 3 plane (see p. 3)
perpendicular to Pin 2 - Pin 3 plane (see p. 3)
$P_{opt} = 40$ mW

Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	I_{mon} / P_{opt}	$\mu A/mW$	1.5		50

Measurement Conditions / Comments
$U_R = 5$ V

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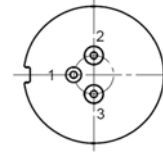
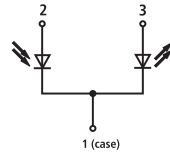
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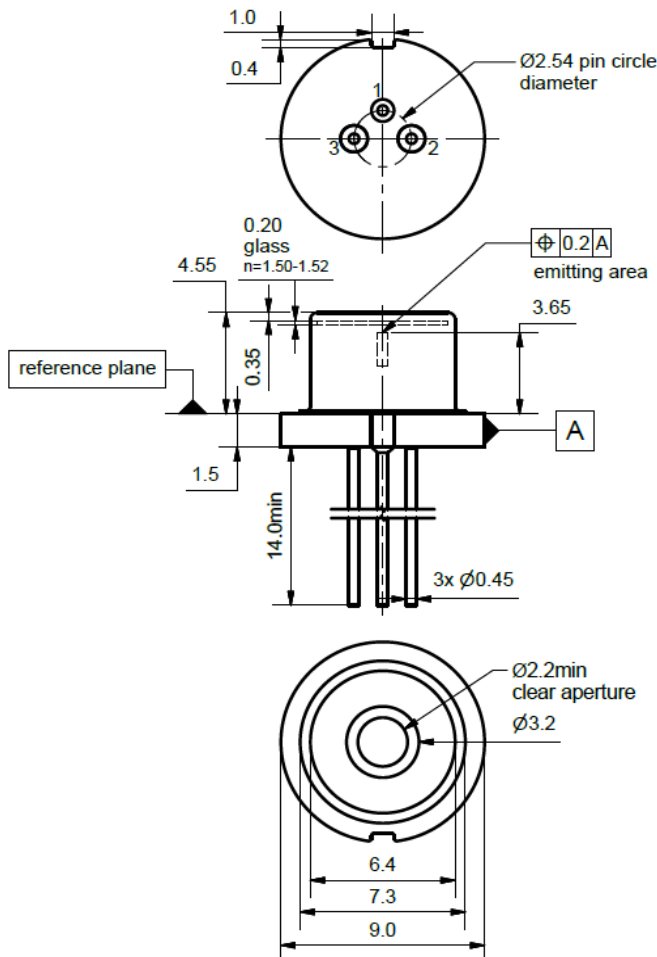
Pin Assignment

M-type

- | | |
|---|--|
| 1 | Laser Diode Cathode, Monitor Diode Cathode, Case |
| 2 | Photo Diode Anode |
| 3 | Laser Diode Anode |



Package Drawings



AIZ-16-0421-1517

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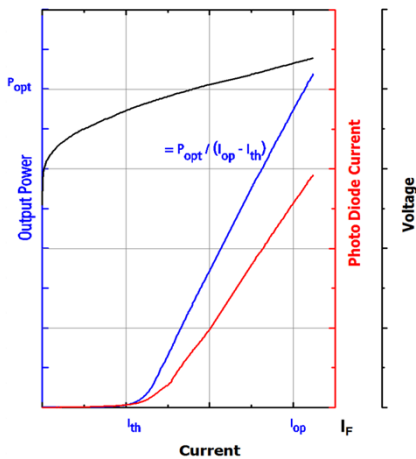
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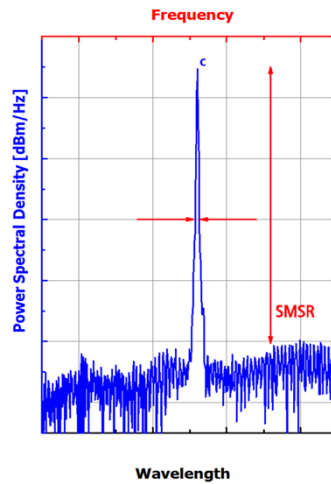
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Typical Measurement Results

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.

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.

The DFB laser is sensitive against optical feedback, so an optical isolator may be required in order to avoid any disturbance of the emission spectrum. Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode.

Avoid direct and/or indirect exposure to the free running beam. Collimating or focussing the free running beam with optics as common in optical instruments will increase threat to the human eye.

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.

The complex block contains several laser safety elements:

- A diagram of a laser diode with an arrow pointing to the right labeled 'Laser Emission'.
- A yellow triangular laser warning symbol.
- A yellow rectangular label with black text: 'INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION CLASS 4 LASER PRODUCT WAVELENGTH 760 nm MAX. OUTPUT POWER 50 mW'. Below the label is the code 'IEC-60825-0'.
- A black triangular warning symbol showing a hand being struck by a laser beam.
- A red rectangular label with a white border and black text: 'DANGER INVISIBLE LASER RADIATION AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION GaAs SEMICONDUCTOR LASER DIODE 10 mW MAX OUTPUT AT 760 nm CLASS IV LASER PRODUCT Complies with 21 CFR 1040.10 and 1040.40'.