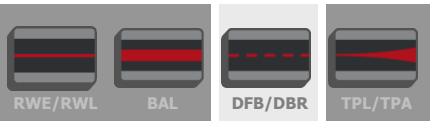
EYP-DFB-0852-00150-1500-TOC03-000x

We focus on power.

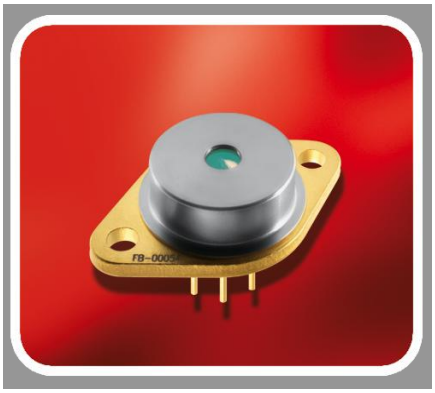
DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure



General Product Information

Product	Application
852 nm DFB Laser with hermetic TO Housing	Spectroscopy
Monitor Diode, Thermoelectric Cooler and Thermistor	Metrology
	THz Generation
	Cs Spectroscopy (Variant ...-0005)



Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	T_S	°C	-40		85
Operational Temperature at Case	T_C	°C	-20		75
Operational Temperature at Laser Chip	T_{LD}	°C	10		50
Forward Current	I_F	mA			270
Reverse Voltage	V_R	V			2
Output Power	P_{opt}	mW			160
TEC Current	I_{TEC}	A			1.8
TEC Voltage	V_{TEC}	V			3.2

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			250	
Output Power	P_{opt}	mW	30		150	

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Center Wavelength	λ_C	nm	851	852	853	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 = 250 mA	P_{opt}	mW	150			
Slope Efficiency	η	W / A	0.6	0.8	1.0	

eagleyard Photonics GmbH
Rudower Chaussee 29
12489 Berlin GERMANY
fon +49. 30. 6392 4520
fax +49. 30. 6392 4529
info@eagleyard.com
www.eagleyard.com

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure

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

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Threshold Current	I_{th}	mA			70	
Divergence parallel (FWHM)	$\Theta_{\|\|}$	°		8		parallel to short axis of the housing (see p. 3)
Divergence perpendicular (FWHM)	$\Theta_{\perp}$	°		21		parallel to long axis of the housing (see p. 3)
Degree of Polarization	DOP	%		90		P_{opt} = 150 mW; E field parallel to short axis of housing
Sidemode Supression Ratio	SMSR	dB	30	45		P_{opt} = 150 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		150		
▸ Variant 1	T_{LD}	° C		25		
	P_{opt}	mW	30		150	
▸ Variant 2	T_{LD}	° C	15		40	
	P_{opt}	mW	30		150	
▸ Variant 5	λ_C	nm		852.347		wavelength reached within T_{LD} = 15 ° and 40° C
	P_{opt}	mW		150		

Monitor Diode

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Monitor Detector Responsivity	I_{mon}/P_{opt}	µA/mW	0.5		10	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} = 150 mW, ΔT = 20 K
Voltage	U_{TEC}	V		0.8		P_{opt} = 150 mW, ΔT = 20 K
Power Dissipation (total loss at case)	P_{loss}	W		0.5		P_{opt} = 150 mW, ΔT = 20 K
Temperature Difference	ΔT	K			50	P_{opt} = 150 mW, $\Delta T = \| T_{case} - T_{LD} \|$

Thermistor (Standard NTC Type)

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Resistance	R	kOhm		10		
Beta Coefficient	β			3976		

eagleyard Photonics GmbH
Rudower Chaussee 29
12489 Berlin GERMANY
fon +49. 30. 6392 4520
fax +49. 30. 6392 4529
info@eagleyard.com
www.eagleyard.com

EYP-DFB-0852-00150-1500-TOC03-000x

We focus on power.

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure

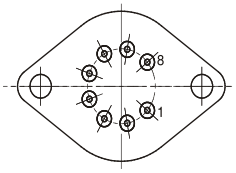
Package Dimensions

Parameter	Symbol	Unit	min	typ	max	Measurement Conditions / Comments
Height of Laser Output above Header	H_L	mm		5.1		
Housing Dimension	l x w x h	mm^3		38.9 x 25.4 x 9.3		
Pin Length	L	mm	10.8			

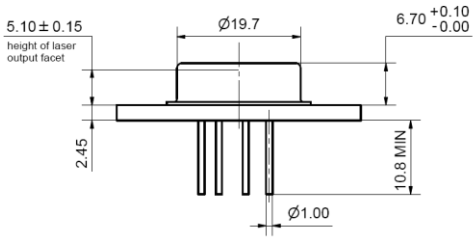
Package Pinout

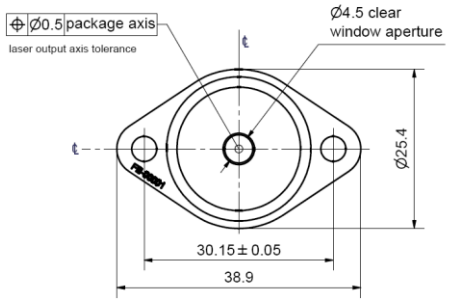
1	Thermoelectric Cooler (+)	5	Laser Diode (Anode)
2	Thermistor	6	Photo Diode (Anode)
3	Thermistor	7	Photo Diode (Cathode)
4	Laser Diode (Cathode)	8	Thernoelectric Cooler (-)

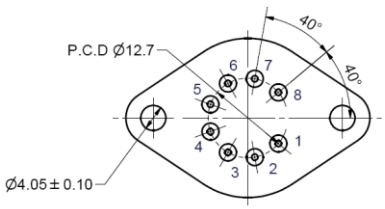
bottom view



Package Drawings

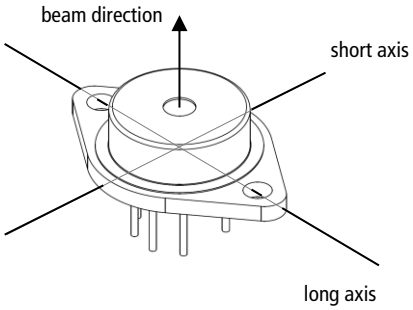






Z11-SPEC-TOC03-DFB-0000

Polarization:
E field parallel to short axis of housing



hermetically sealed Package:
Leak Rate < 5 · 10^{-8} atm.cc./s
acc. MIL-STD-883E

eagleyard Photonics GmbH
Rudower Chaussee 29
12489 Berlin GERMANY
fon +49. 30. 6392 4520
fax +49. 30. 6392 4529
info@eagleyard.com
www.eagleyard.com

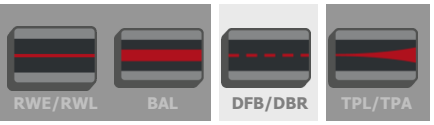
GL Systems Certification

EYP-DFB-0852-00150-1500-TOC03-000x

We focus on power.

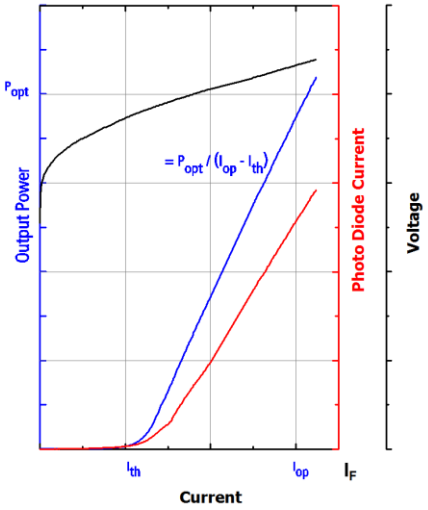
DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure

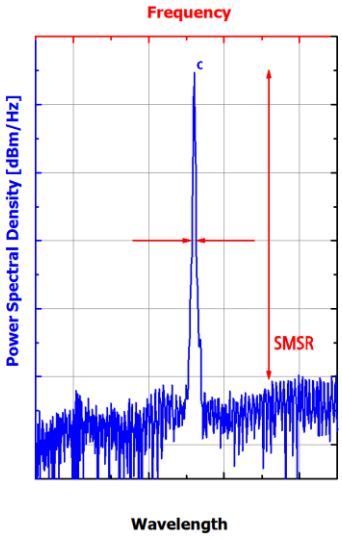


Typical Measurement Results

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.

eagleyard Photonics GmbH
Rudower Chaussee 29
12489 Berlin GERMANY
fon +49. 30. 6392 4520
fax +49. 30. 6392 4529
info@eagleyard.com
www.eagleyard.com

EYP-DFB-0852-00150-1500-TOC03-000x

We focus on power.

DISTRIBUTED FEEDBACK LASER

GaAs Semiconductor Laser Diode
with integrated grating structure

Order Code Scheme

EYP-DFB-0852-00150-1500-TOC03- 0 0 0 x

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

P_{opt} = 150 mW;	T_{LD} = 25°	(Variant 0)	0
P_{opt} = 30 … 150 mW;	T_{LD} = 25°	(Variant 1)	1
P_{opt} = 30 … 150 mW;	T_{LD} = 15° … 40° C	(Variant 2)	2
P_{opt} = 150 mW;	λ_c = 852.347 nm	(Variant 5)	5

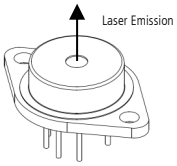
Unpacking, Installation and Laser Safety

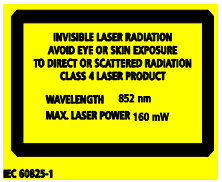
Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use. During device installation, ESD protection has to be maintained.

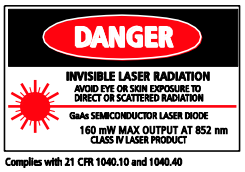
The DFB diode type is known to be sensitive against optical feedback, so an optical isolator may be required in some cases. Operating at moderate temperatures on proper heat sinks willl contribute to a long lifetime of the diode.

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.

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







eagleyard Photonics GmbH
Rudower Chaussee 29
12489 Berlin GERMANY
fon +49. 30. 6392 4520
fax +49. 30. 6392 4529
info@eagleyard.com
www.eagleyard.com

GL Systems Certification