

**RIDGE WAVEGUIDE LASER with AR-COATING**

GaAs Semiconductor Laser Diode

Tunable Fabry-Perot Laser for External Cavity Operation

**General Product Information**

Product	Application
tunable 920 nm Fabry-Perot Laser	Spectroscopy
for use in an External Cavity Diode Laser (ECDL)	
sealed SOT Housing	
Monitor Diode	

**Absolute Maximum Ratings**

	Symbol	Unit	min	typ	max
Storage Temperature	$T_S$	°C	-20		85
Operational Temperature at Case	$T_C$	°C	-20		50
Forward Current	$I_F$	mA			180
Reverse Voltage	$V_R$	V			0
Output Power (extracavity)	$P_{opt}$	mW			50

**Recommended Operational Conditions**

	Symbol	Unit	min	typ	max
Operational Temperature at Case	$T_C$	°C	15		40
Forward Current	$I_F$	mA			160

**Characteristics at  $T_{LD} = 25\text{ °C}$  at Begin Of Life**

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_C$	nm		920	
Tuning Range	$\Delta\lambda_{tun}$	nm	880		930
Output Power (extracavity)	$P_{opt}$	mW		15	
Cavity Length	$L$	$\mu\text{m}$		1500	
Reflectivity at Front Facet	$R_{ff}$			$3 \cdot 10^{-4}$	$1 \cdot 10^{-3}$
Polarization				TE	
Spatial Mode (transversal)				TEM <sub>00</sub>	
Spectral Mode (longitudinal)				Single/Multi Mode	



Stress in excess of the Absolute Maximum Ratings can cause permanent damage to the device.

**Measurement Conditions / Comments****Measurement Conditions / Comments**

Tuning range and output power are estimated from the gain profile of the laser. The actual achieved wavelength and power are strongly influenced by the external cavity. Therefore eagleyard Photonics will give no guarantee on these parameters.

E field parallel to Pin 2 - Pin 3 - plane

Fundamental Mode

depending on operating conditions



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RIDGE WAVEGUIDE LASER with AR-COATING

GaAs Semiconductor Laser Diode  
Tunable Fabry-Perot Laser for External Cavity Operation



Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	$I_{mon} / P_{opt}$	$\mu A / mW$	2		40
Reverse Voltage Monitor Diode	$U_{RMD}$	V	3		5



Measurement Conditions / Comments
$U_R = 5 V$ ; $P_{opt}$ intracavity

EYP-RWE-0920-04010-1500-SOT02-0000

RIDGE WAVEGUIDE LASER with AR-COATING

GaAs Semiconductor Laser Diode  
Tunable Fabry-Perot Laser for External Cavity Operation



Package Dimensions

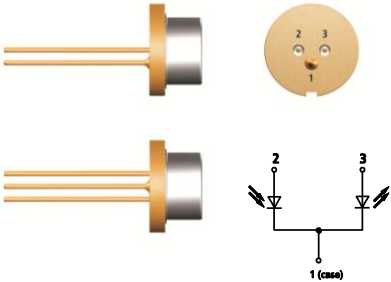
Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	$d_{EP}$	mm	3.50	3.65	3.70
Excentricity of Emission Center	R	mm			0.12
Pin Length	$l_{PIN}$	mm		14	

Measurement Conditions / Comments

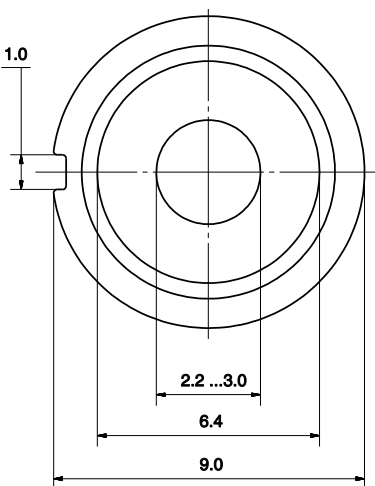
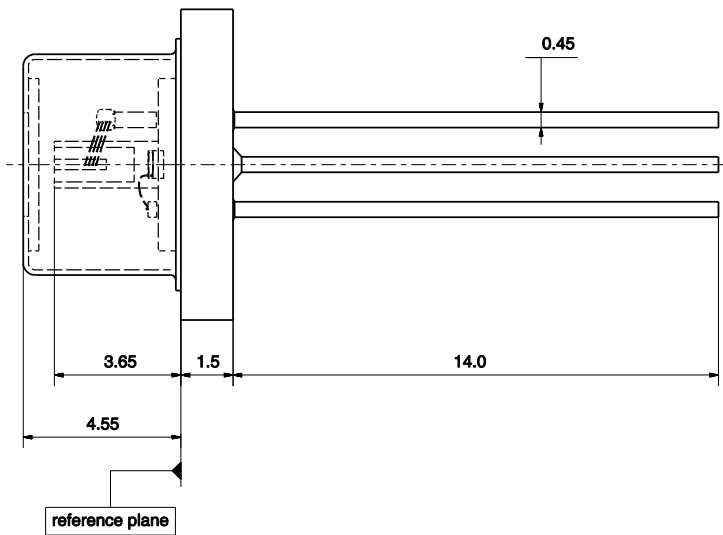
reference plane: top side of TO header  
reference: center of outer diameter of header

Package Pinout

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



Package Drawings



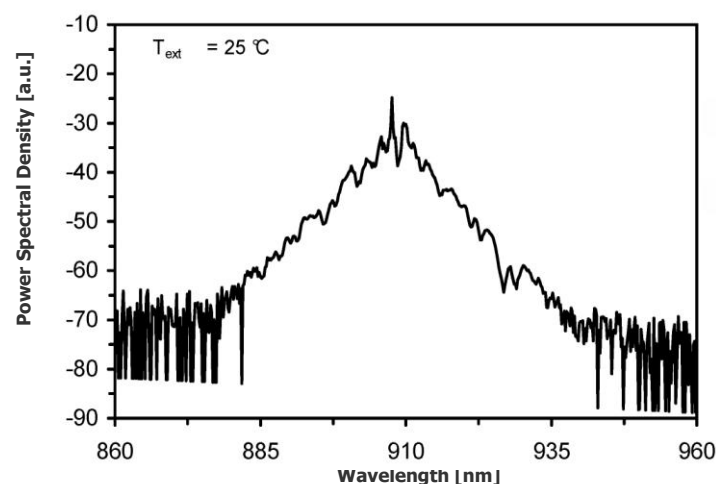
**RIDGE WAVEGUIDE LASER with AR-COATING**

GaAs Semiconductor Laser Diode

Tunable Fabry-Perot Laser for External Cavity Operation

**Typical Measurement Results**

Emission Spectrum measured without external feedback



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.

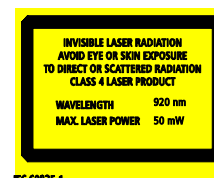
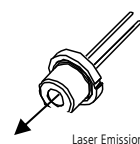
**Unpacking, Installation and Laser Safety**

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 RWE diode type is known to be sensitive against thermal stress. It should not be operated without appropriate optical feedback from an external cavity. 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.



# RIDGE WAVEGUIDE LASER with AR-COATING

GaAs Semiconductor Laser Diode

Tunable Fabry-Perot Laser for External Cavity Operation



## PRELIMINARY SPECIFICATION

## RWE Laser

# EYP-RWE-0980-08020-1500-SOT02-0000

## General Product Information

Product	Application
tunable 980 nm Fabry-Perot Laser	Spectroscopy
for use in an External Cavity Diode Laser (ECDL)	
sealed SOT Housing	
Monitor Diode	

## Absolute Maximum Ratings

	Symbol	Unit	min	typ	max
Storage Temperature	$T_S$	°C	-20		85
Operational Temperature at Case	$T_C$	°C	-20		50
Forward Current	$I_F$	mA			120
Reverse Voltage	$V_R$	V			0

## Recommended Operational Conditions

	Symbol	Unit	min	typ	max
Operational Temperature at case	$T_C$	°C	15		40
Forward Current	$I_F$	mA			100

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

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_C$	nm		980	
Tuning Range	$\Delta\lambda_{tun}$	nm	900		1000
Output Power (extracavity)	$P_{opt}$	mW		50	
Cavity Length	$L$	μm		1500	
Reflectivity at Front Facet	$R_{ff}$			$3 \cdot 10^{-4}$	$1 \cdot 10^{-3}$
Polarization				TE	



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.

## Measurement Conditions / Comments

Tuning range and output power are estimated from the gain profile of the laser. The actual achieved wavelength and power are strongly influenced by the external cavity. Therefore eagleyard Photonics will give no guarantee on these parameters.

Polarization parallel to Pin 2 - Pin 3 -plane

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**RIDGE WAVEGUIDE LASER with AR-COATING**

GaAs Semiconductor Laser Diode  
Tunable Fabry-Perot Laser for External Cavity Operation



**PRELIMINARY SPECIFICATION**

**RWE Laser**

**EYP-RWE-0980-08020-1500-SOT02-0000**

**Monitor Diode**



Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity	$I_{mon} / P_{opt ic}$	$\mu A / mW$	1		10
Reverse Voltage Monitor Diode	$U_{R MD}$	V	3		5

Measurement Conditions / Comments
$U_{R MD} = 5 V$ , $P_{opt ic}$ : intracavity power of the ECDL

## RIDGE WAVEGUIDE LASER with AR-COATING

GaAs Semiconductor Laser Diode

Tunable Fabry-Perot Laser for External Cavity Operation



### PRELIMINARY SPECIFICATION

### RWE Laser

**EYP-RWE-0980-08020-1500-SOT02-0000**

#### Package Dimensions

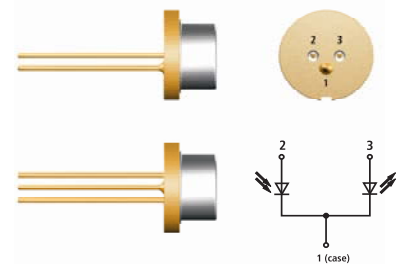
	Symbol	Unit	min	typ	max
Emission Plane	$d_{EP}$	mm	3.50	3.65	3.70
Housing Diameter	d	mm		9.0	
Pin Length	l	mm		14.0	

reference plane: top side of TO header

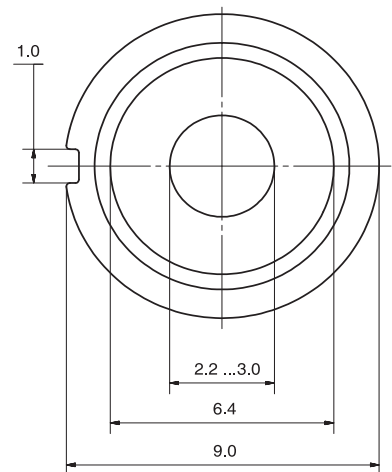
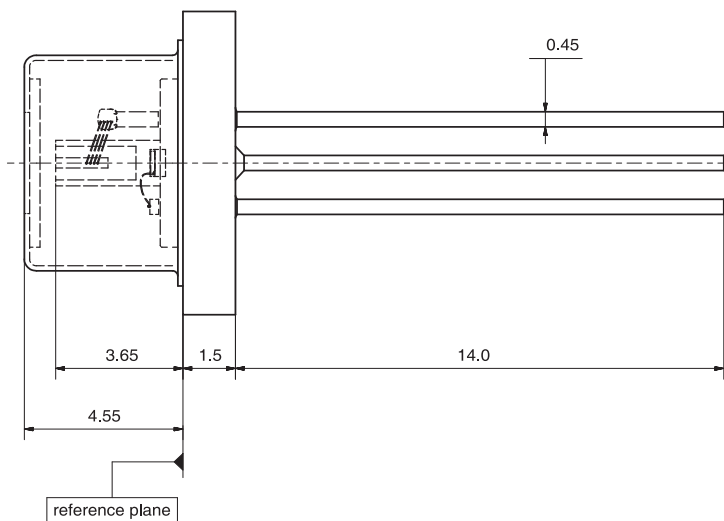
#### Package Pinout

#### M-Type

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



#### Package Drawings



## RIDGE WAVEGUIDE LASER with AR-COATING

GaAs Semiconductor Laser Diode

Tunable Fabry-Perot Laser for External Cavity Operation



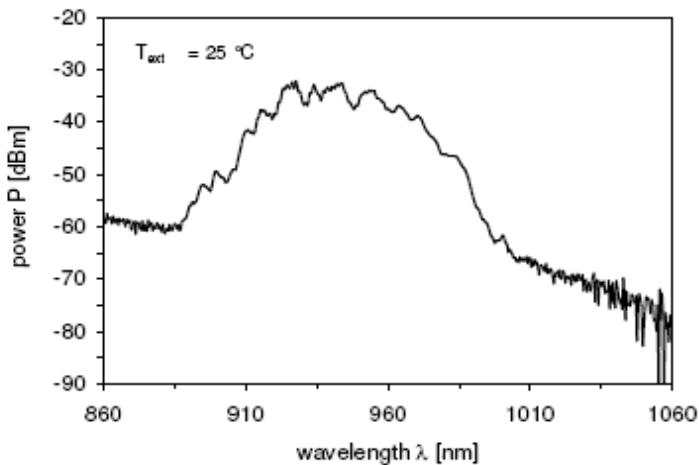
### PRELIMINARY SPECIFICATION

### RWE Laser

## EYP-RWE-0980-08020-1500-SOT02-0000

### Typical Measurement Results

Emission Spectrum measured without external feedback



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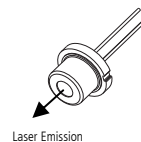
### Unpacking, Installation and Laser Safety

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.

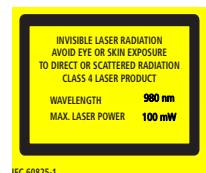
The RWE diode type is known to be sensitive against thermal stress. It should not be operated without appropriate optical feedback from an external cavity. Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode.

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



IEC 60825-1



Complies with 21 CFR 1040.10 and 1040.40



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## EYP-RWE-1060-10020-1500-SOT02-0000

Revision 1.00

## GAIN CHIPS

### AR coated Fabry-Perot Laser

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#### General Product Information

Product	Application
tunable 1060 nm Fabry-Perot Laser	Spectroscopy
for use in an External Cavity Diode Laser (ECDL)	covering wavelengths
sealed SOT Housing	between 980 and 1090 nm
Monitor Diode	



#### Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max
Storage Temperature	$T_S$	°C	-40		85
Operational Temperature at Case	$T_C$	°C	-20		50
Forward Current	$I_F$	mA			220
Reverse Voltage	$V_R$	V			0
Output Power (extracavity)	$P_{opt}$	mW			120

#### Measurement Conditions / Comments

Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device. Please note that a damaging optical power level may occur although the maximum current is not reached.

#### Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max
Operational Temperature at Case	$T_C$	°C	15		40
Forward Current	$I_F$	mA			200
Output Power (extracavity)	$P_{opt}$	mW			100

#### Measurement Conditions / Comments

#### Characteristics at 25° C at Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_C$	nm		1060	
Tuning Range	$\Delta\lambda_{tun}$	nm	980		1090
Output Power (extracavity)	$P_{opt}$	mW		80	
Cavity Length	$L$	μm		1500	
Reflectivity at Front Facet	$R_{ff}$			$3 \cdot 10^{-4}$	$1 \cdot 10^{-3}$
Polarization				TE	
Spatial Mode (transversal) TEM <sub>00</sub>					
Spectral Mode (longitudinal)				Single/Multi Mode	
Divergence parallel (FWHM)	$\Theta_{  }$	°		10	
Divergence perpendicular (FWHM)	$\Theta_{\perp}$	°		24	

#### Measurement Conditions / Comments

Tuning range and output power are estimated from the gain profile of the laser. The actual achieved wavelength and power are strongly influenced by the external cavity. Therefore eagleyard Photonics will give no guarantee on these parameters.

E field parallel to Pin 2 - Pin 3 - plane

Fundamental Mode

depending on operating conditions

parallel to Pin 2 - Pin 3 plane (see p. 3)

perpendicular to Pin 2 - Pin 3 plane (see p. 3)

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Revision 1.00

19.09.2017

## GAIN CHIPS AR coated Fabry-Perot Laser

### Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity ( $U_{RMD} = 5\text{ V}$ )	$I_{mon} / P_{opt}$	$\mu\text{A} / \text{mW}$		20	

Measurement Conditions / Comments  
depends on the intracavity power of the ECDL setup

### Package Dimensions

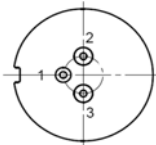
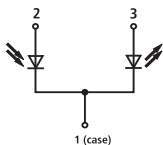
Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	$d_{EP}$	mm	3.50	3.65	3.70
Excentricity of Emission Center	R	mm			0.12
Pin Length	$l_{PIN}$	mm		14	

Measurement Conditions / Comments  
reference plane: top side of TO header  
reference: center of outer diameter of header

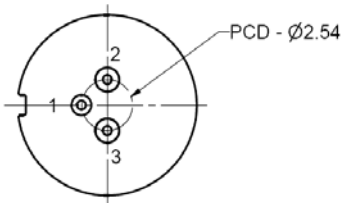
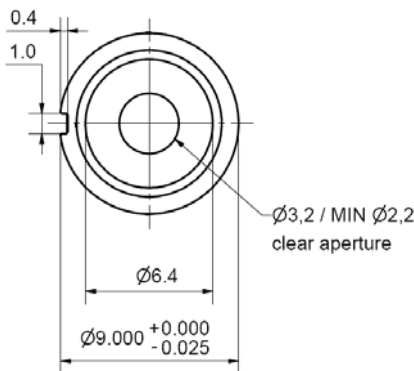
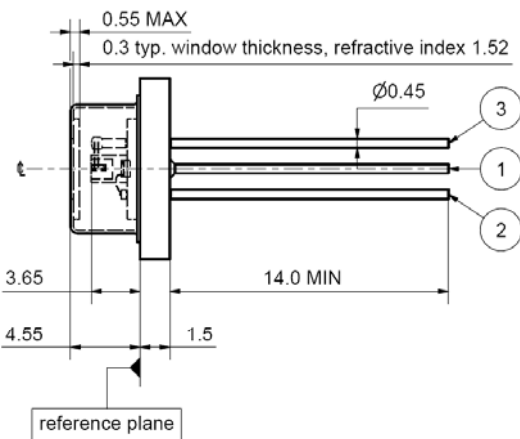
### Package Pinout

#### M-type

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



### Package Drawings



opt power [a.u.]

## EYP-RWE-1060-10020-1500-SOT02-0000

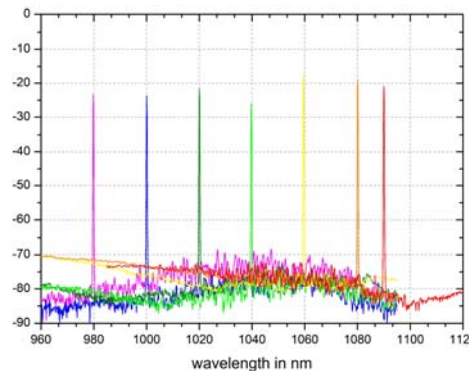
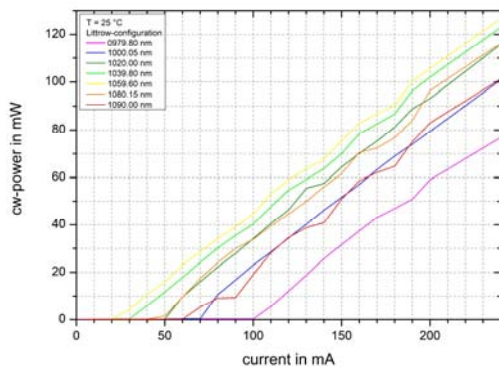
Revision 1.00

19.09.2017

## GAIN CHIPS

### AR coated Fabry-Perot Laser

#### Typical Measurement Results ex cavity



#### Unpacking, Installation and Laser Safety

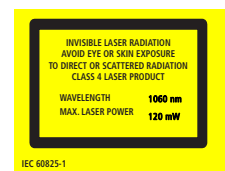
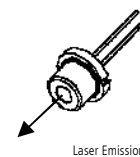
Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use.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

The RWE diode type is known to be sensitive against thermal stress. It should not be operated without appropriate optical feedback from an external cavity. 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.

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.



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Revision 1.00

## GAIN CHIPS

### AR coated Fabry-Perot Laser

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#### General Product Information

Product	Application
widely tunable 1060 nm modified Fabry-Perot Laser	Spectroscopy
for use in an External Cavity Diode Laser (ECDL)	covering wavelengths
sealed SOT Housing	between 960 and 1100 nm
Monitor Diode	



#### Absolute Maximum Ratings

Parameter	Symbol	Unit	min	typ	max
Storage Temperature	$T_S$	°C	-40		85
Operational Temperature at Case	$T_C$	°C	-20		50
Forward Current	$I_F$	mA			220
Reverse Voltage	$V_R$	V			0
Output Power (extracavity)	$P_{opt}$	mW			120

#### Measurement Conditions / Comments

Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device. Please note that a damaging optical power level may occur although the maximum current is not reached.

#### Recommended Operational Conditions

Parameter	Symbol	Unit	min	typ	max
Operational Temperature at Case	$T_C$	°C	15		40
Forward Current	$I_F$	mA			200
Output Power (extracavity)	$P_{opt}$	mW			100

#### Measurement Conditions / Comments

#### Characteristics at 25° C at Begin Of Life

Parameter	Symbol	Unit	min	typ	max
Center Wavelength	$\lambda_C$	nm		1060	
Tuning Range	$\Delta\lambda_{tun}$	nm	960		1100
Output Power (extracavity)	$P_{opt}$	mW		80	
Cavity Length	$L$	μm		1500	
Reflectivity at Front Facet	$R_{ff}$			$3 \cdot 10^{-4}$	$1 \cdot 10^{-3}$
Polarization				TE	
Spatial Mode (transversal) TEM <sub>00</sub>					
Spectral Mode (longitudinal)				Single/Multi Mode	
Divergence parallel (FWHM)	$\Theta_{  }$	°		10	
Divergence perpendicular (FWHM)	$\Theta_{\perp}$	°		24	

#### Measurement Conditions / Comments

Tuning range and output power are estimated from the gain profile of the laser. The actual achieved wavelength and power are strongly influenced by the external cavity. Therefore eagleyard Photonics will give no guarantee on these parameters.

E field parallel to Pin 2 - Pin 3 - plane

Fundamental Mode

depending on operating conditions

parallel to Pin 2 - Pin 3 plane (see p. 3)

perpendicular to Pin 2 - Pin 3 plane (see p. 3)

## EYP-RWE-1060-10525-1500-SOT02-0000

Revision 1.00

24.01.2018

## GAIN CHIPS

### AR coated Fabry-Perot Laser

#### Monitor Diode

Parameter	Symbol	Unit	min	typ	max
Monitor Detector Responsivity ( $U_{RMD} = 5\text{ V}$ )	$I_{mon} / P_{opt}$	$\mu\text{A} / \text{mW}$		20	

#### Measurement Conditions / Comments

depends on the intracavity power of the ECDL setup

#### Package Dimensions

Parameter	Symbol	Unit	min	typ	max
Height of Emission Plane	$d_{EP}$	mm	3.50	3.65	3.70
Excentricity of Emission Center	R	mm			0.12
Pin Length	$l_{PIN}$	mm		14	

#### Measurement Conditions / Comments

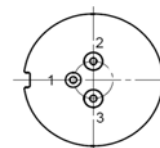
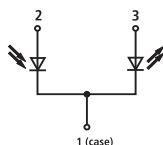
reference plane: top side of TO header

reference: center of outer diameter of header

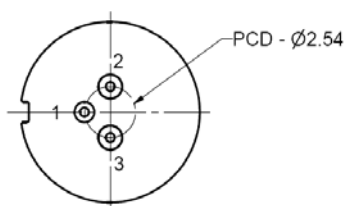
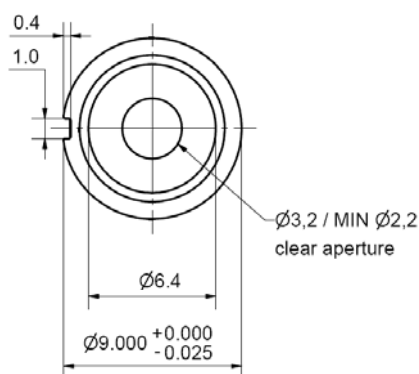
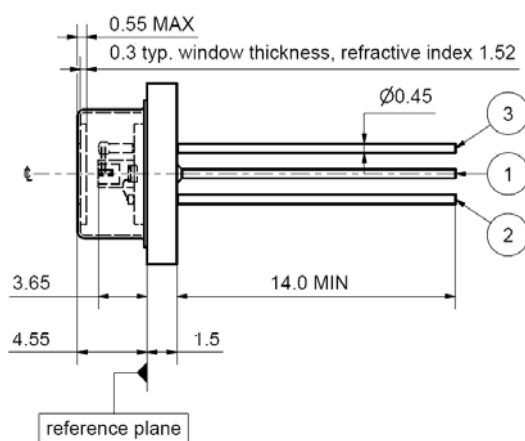
#### Package Pinout

#### M-type

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



#### Package Drawings



## EYP-RWE-1060-10525-1500-SOT02-0000

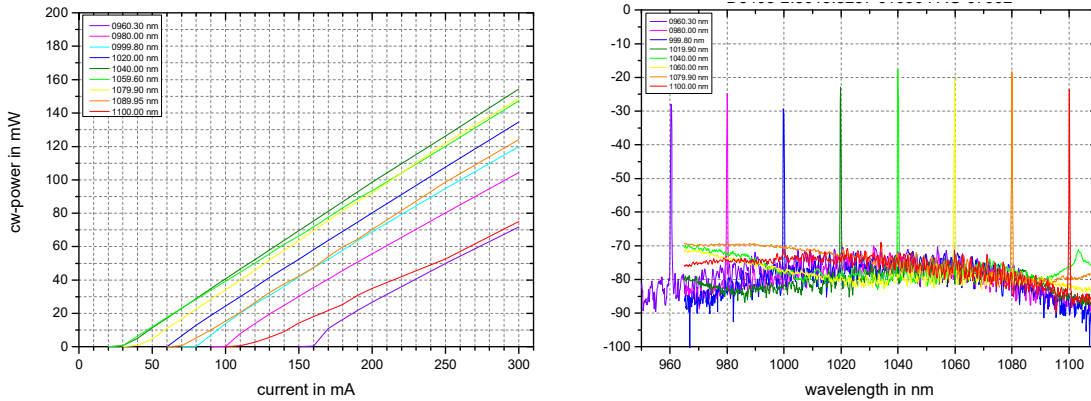
Revision 1.00

24.01.2018

## GAIN CHIPS

### AR coated Fabry-Perot Laser

#### Typical Measurement Results ex cavity



#### Unpacking, Installation and Laser Safety

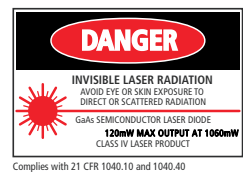
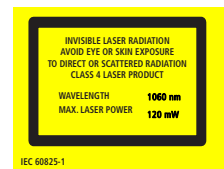
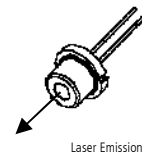
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