

EYP-RWE-0840-06010-1500-SOT02-0000

Revision 1.10

26.01.2018

GAIN CHIPS AR coated Fabry-Perot Laser



General Product Information

| Product | Application |
|--------------------------------------------------|------------------------|
| tunable 840 nm Fabry-Perot Laser | Spectroscopy |
| for use in an External Cavity Diode Laser (ECDL) | covering wavelengths |
| sealed SOT Housing | between 810 and 860 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 | | | 200 |
| Reverse Voltage | V_R | V | | | 0 |
| Output Power (extracavity) | P_{opt} | mW | | | 100 |

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 | | | 180 |
| Output Power (extracavity) | P_{opt} | mW | | | 80 |

Measurement Conditions / Comments

Characteristics at 25° C at Begin Of Life

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------------|-----------------------|---------------|-----|-------------------|-------------------|
| Center Wavelength | λ_C | nm | | 840 | |
| Tuning Range | $\Delta\lambda_{tun}$ | nm | 810 | | 860 |
| 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 | |
| Spatial Mode (transversal) TEM_{00} | | | | | |
| Spectral Mode (longitudinal) | | | | Single/Multi Mode | |
| Divergence parallel (FWHM) | $\Theta_{ }$ | ° | | 10 | |
| Divergence perpendicular (FWHM) | Θ_{\perp} | ° | | 23 | |

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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Monitor Diode

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

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

Package Dimensions

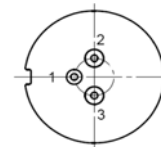
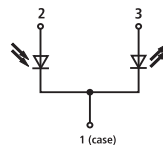
| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------|-----------|------|------|------|------|
| Height of Emission Plane | d_{EP} | mm | 3.50 | 3.65 | 3.70 |
| Excentricity of Emission Center | R | mm | | | 0.12 |
| Pin Length | l_{PIN} | mm | | 14 | |

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

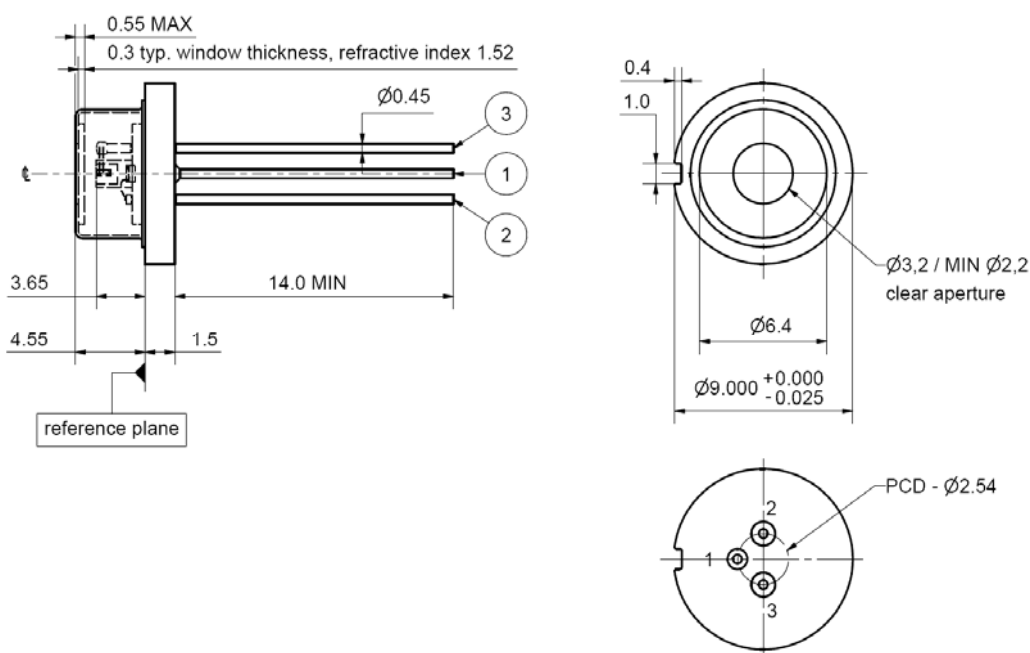
Package Pinout

M-type

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



Package Drawings



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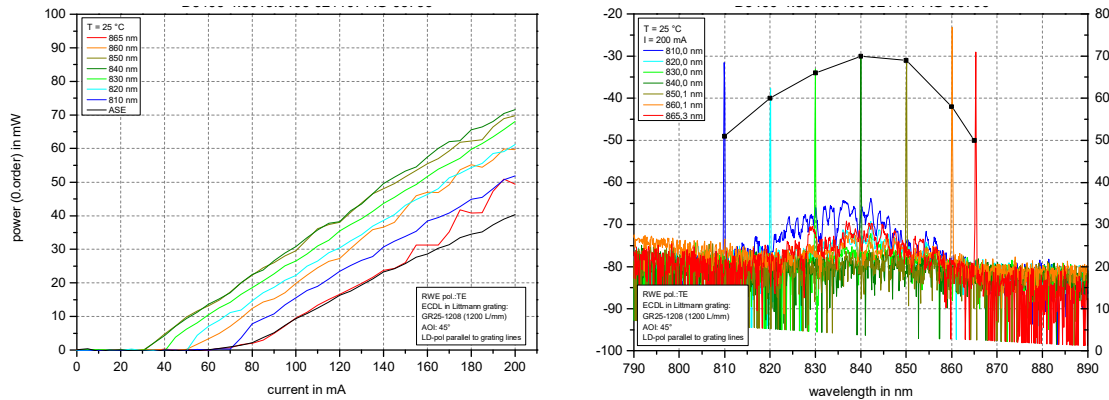
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Typical Measurement Results ex cavity



Unpacking, Installation and Laser Safety

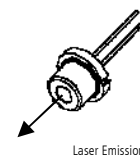
Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electro static discharge (ESD) is implemented in the laser package, charges may occur at surfaces. Please store this product in its original package at a dry, clean place until final use.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



Laser Emission

