

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

Revision 1.11

2019-03-01

## 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 popular wavelengths between 810 and 860 nm |
| sealed SOT Housing                               |   |
| 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 the Absolute Maximum Ratings can cause permanent damage to the device.

### Recommended Operational Conditions

| Parameter                       | Symbol | Unit | min | typ | max |
|---------------------------------|--------|------|-----|-----|-----|
| Operational Temperature at Case | $T_C$  | °C   | 15  |     | 40  |
| Forward Current                 | $I_F$  | mA   |     |     | 180 |

#### Measurement Conditions / Comments

### Characteristics at $T_{LD} = 25\text{ °C}$ at BOL, with external cavity under recommended working condition

| Parameter                  | Symbol                | Unit | min | typ   | max |
|----------------------------|-----------------------|------|-----|-------|-----|
| Center Wavelength          | $\lambda_c$           | nm   |     | 840   |     |
| Tuning Range               | $\Delta\lambda_{tun}$ | nm   | 810 |       | 860 |
| Output Power               | $P_{opt}$             | mW   |     | 50    |     |
| Polarization               |                       |      |     | TE    |     |
| Output Power               | $P_{opt}$             | W    |     | 50    |     |
| Spatial Mode (transversal) |                       |      |     | TEM00 |     |

#### Measurement Conditions / Comments

The actual achieved wavelength and power are strongly influenced by the external cavity. eyP gives no guarantee on these parameters.

E field parallel to Pin 2 - Pin 3 - plane

Fundamental Mode

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### Amplified Spontaneous Emission (ASE) without external cavity



| Parameter                       | Symbol              | Unit       | min | typ | max |
|---------------------------------|---------------------|------------|-----|-----|-----|
| Divergence parallel (FWHM)      | $\Theta_{  }$       |            |     | 10  |     |
| Divergence perpendicular (FWHM) | $\Theta_{\perp}$    |            |     | 23  |     |
| Monitor Detector Responsivity   | $I_{mon} / P_{ASE}$ | $\mu A/mW$ | 1   |     | 40  |

| Measurement Conditions / Comments               |
|---|
| parallel to Pin 2 - Pin 3 plane (see p. 3)      |
| perpendicular to Pin 2 - Pin 3 plane (see p. 3) |
| $U_{R, MD} = 5 V$                               |

### Chip Parameter



| Parameter                   | Symbol   | Unit    | min | typ               | max               |
|-----------------------------|----------|---------|-----|-------------------|-------------------|
| Cavity Length               | L        | $\mu m$ |     | 1500              |                   |
| Reflectivity at Front Facet | $R_{ff}$ |         |     | $3 \cdot 10^{-4}$ | $1 \cdot 10^{-3}$ |

| Measurement Conditions / Comments |
|-----------------------------------|
|                                   |
|                                   |
|                                   |

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### Package Dimensions

| Parameter                       | Symbol           | Unit | min  | typ  | max  |
|---------------------------------|------------------|------|------|------|------|
| Height of Emission Plane        | h                | mm   | 3.50 | 3.65 | 3.70 |
| Excentricity of Emission Center | R                | mm   |      |      | 0.12 |
| Pin Length                      | L <sub>PIN</sub> | mm   |      | 14   |      |

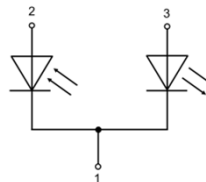
### Measurement Conditions / Comments

reference plane: top side of TO header

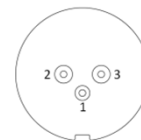
reference: center of outer diameter of header

### Package Pinout

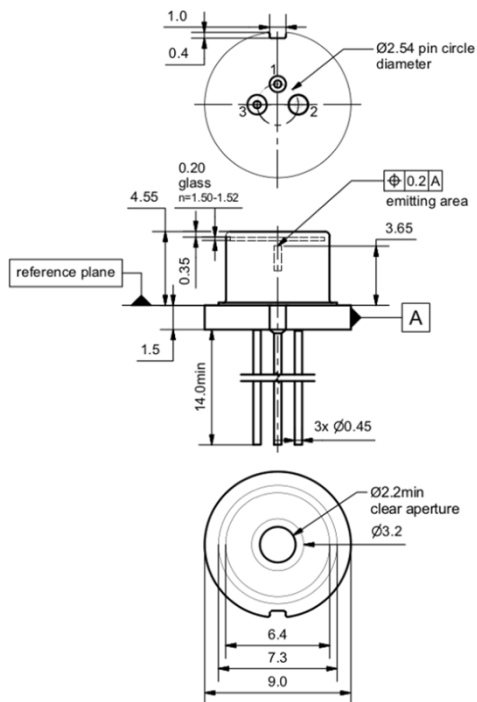
- 1 Laser Diode Cathode, Monitor Diode Cathode, Case
- 2 Photo Diode Anode
- 3 Laser Diode Anode



Bottom View



### Package Drawings



AIZ-16-0421-1517



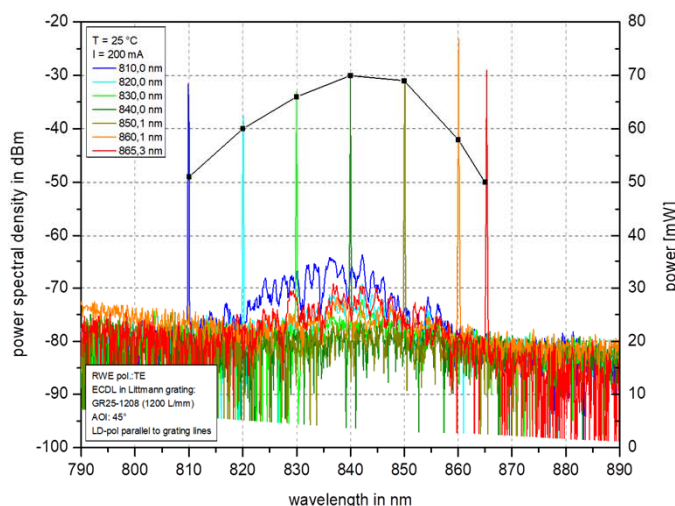
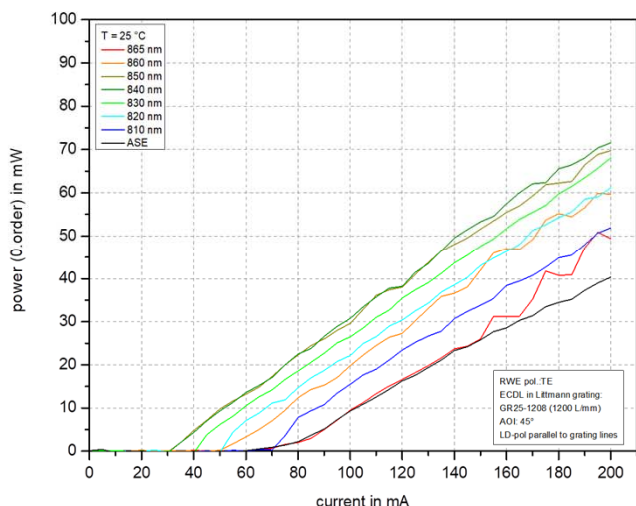
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### Typical Measurement Results



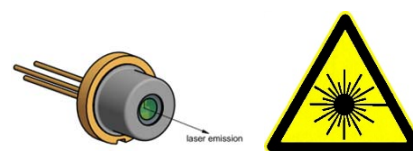
### Unpacking, Installation and Laser Safety

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 TPA diode type is known to be sensitive against thermal stress. It should not be operated without appropriate injection from a seed laser. Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode. The chip should be protected against moisture. A water vapor content below 5000 ppm is recommended for applications with high reliability requirements.

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.



IEC-60825-0

