

EYP-RWS-0852-00100-1500-SOT02-0000

Revision 1.01

2017-03-02

SINGLE FREQUENCY LASER DIODES Stabilized Ridge Waveguide Laser

General Product Information

| Product | Application |
|--|-------------|
| 852 nm Wavelength Stabilized Laser with hermetic TO Package (RoHS compliant) including Monitor Diode | Metrology |

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 | | | 220 |
| Reverse Voltage | V_R | V | | | 2 |
| Output Power | P_{opt} | mW | | | 120 |

Recommended Operational Conditions

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------|------------|------|-----|-----|-----|
| Operational Temperature at Case | T_{case} | °C | 15 | | 40 |
| Forward Current | I_F | mA | | | 200 |
| Output Power | P_{opt} | mW | 20 | | 100 |

Characteristics at $T_{LD} = 25^\circ$ at BOL

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------------|-------------------------|---------|-----|-------|-----|
| Center Wavelength | λ_c | nm | 849 | 852 | 856 |
| Laser Current @ $P_{opt} = 100$ mW | I_F | mA | | | 200 |
| Slope Efficiency | η | W / A | 0.6 | 0.8 | 1.1 |
| Threshold Current | I_{th} | mA | | | 70 |
| Selectable Linewidth | $\Delta\lambda$ | pm | | | 0.1 |
| Overall Linewidth | $\Delta\lambda_{total}$ | nm | | | 0.2 |
| 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

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.

Measurement Conditions / Comments

measured with integrating sphere

Measurement Conditions / Comments

tighter wavelength specification available on request

single mode operation (see p. 4)

multi mode operation (see p. 4)

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

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------|------------------|------|-----|-----|-----|
| Sidemode Supression Ratio | SMSR | dB | 30 | 45 | |
| Divergence parallel (FWHM) | $\Theta_{ }$ | ° | | 8 | |
| Divergence perpendicular (FWHM) | Θ_{\perp} | ° | | 21 | |
| Degree of Polarization | DOP | % | | 90 | |

Measurement Conditions / Comments

under single mode condition
 parallel to Pin 2 - Pin 3 plane (see p. 3)
 perpendicular to Pin 2 - Pin 3 plane (see p. 3)
 100 mW; E field parallel to Pin 2 - Pin 3 - plane

Monitor Diode

| Parameter | Symbol | Unit | min | typ | max |
|-------------------------------|---------------------|------------|-----|-----|-----|
| Monitor Detector Responsivity | I_{mon} / P_{opt} | $\mu A/mW$ | 2 | | 30 |

Measurement Conditions / Comments

$U_R = 5 V$

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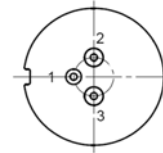
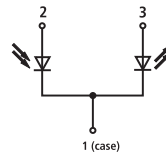
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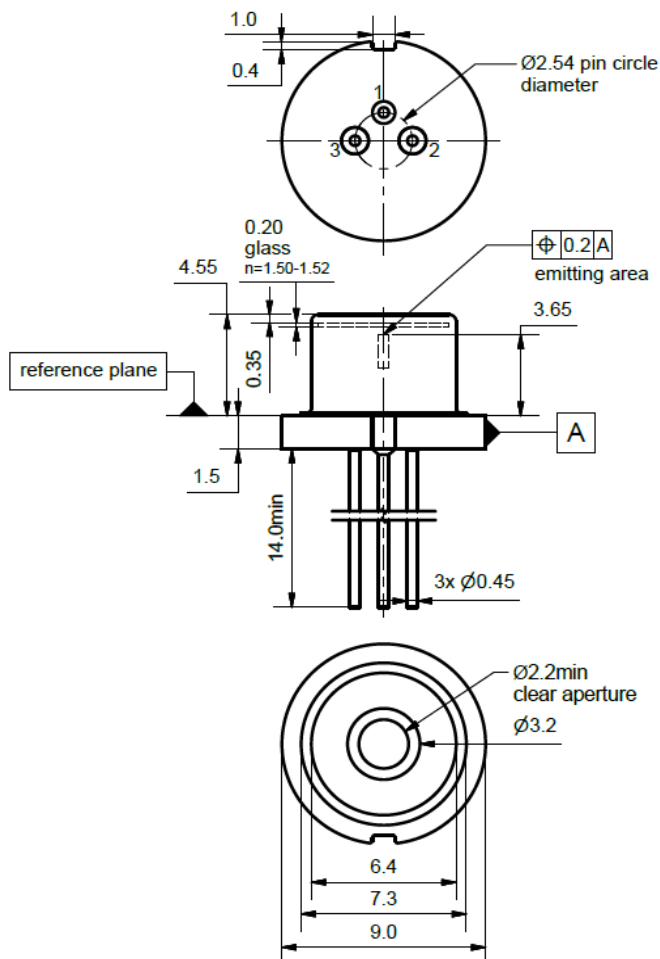
Pin Assignment

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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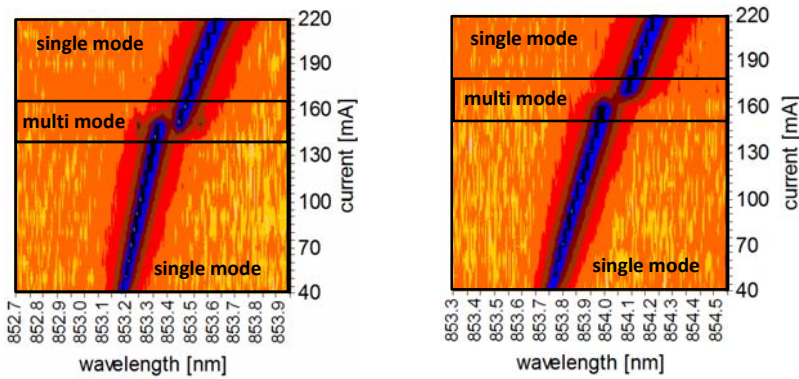
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Typical Measurement Results

Spectral maps at 25° C and 35° C



The spectral maps show the power spectral density at different operating modes. The graphs illustrate that the laser exhibits single and multi mode behavior under different operational conditions. The spectral maps may differ from part to part. Single mode operation can be achieved by selecting the appropriate laser current and temperature.

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 RWS 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 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 main parameters given in this document. It does not include the detailed spectral maps which are shown above in order to illustrate the spectral behavior of this laser type.

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

INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE
TO DIRECT OR SCATTERED RADIATION
CLASS 4 LASER PRODUCT
WAVELENGTH 852 nm
MAX. OUTPUT POWER 120 mW
IEC-60825-0

DANGER
INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION
GaAs SEMICONDUCTOR LASER DIODE
120 mW MAX OUTPUT AT 852 nm
CLASS IV LASER PRODUCT
Complies with 21 CFR 1040.10 and 1040.40