

EYP-RWL-0808-00800-4000-BFW42-0000

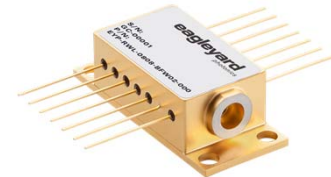
Revision 0.79

23.01.2018

SINGLE MODE LASER DIODES Fabry-Perot Laser

General Product Information

| Product | Application |
|--|-------------|
| 808 nm Fabry-Perot Laser with hermetic Butterfly Package | Metrology |
| Monitor Diode, Thermoelectric Cooler and Thermistor | |
| Beam Collimation | |
| RoHS compliant | |



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 |
| Operational Temperature at Laser Chip | T_{LD} | °C | 10 | | 40 |
| Forward Current | I_F | A | | | 1.6 |
| Reverse Voltage | V_R | V | | | 2 |
| Output Power | P_{opt} | mW | | | 900 |
| TEC Current | I_{TEC} | A | | | 1.5 |
| TEC Voltage | V_{TEC} | V | | | 5.5 |

Measurement Conditions / Comments

Stress in excess of one of the Absolute Maximum Ratings can cause permanent damage to the device. Do not exceed the maximum optical output power or maximum forward current, whichever occurs first.

Recommended Operational Conditions

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------------|-----------|------|-----|-----|-----|
| Operational Temperature at Case | T_C | °C | 0 | | 40 |
| Operational Temperature at Laser Chip | T_{LD} | °C | 20 | 25 | 30 |
| Forward Current | I_F | A | | 1.0 | 1.5 |
| Output Power | P_{opt} | mW | | | 800 |

Measurement Conditions / Comments

Characteristics at $T_{LD} = 25^\circ\text{C}$ at Begin Of Life

| Parameter | Symbol | Unit | min | typ | max |
|---|--------------------------------|--------|------|------|------|
| Center Wavelength | λ_c | nm | 796 | 808 | 816 |
| Spectral Width (FWHM) | $\Delta\lambda$ | nm | | 1 | 3 |
| Temperature Coefficient of Wavelength | $d\lambda / dT$ | nm / K | | 0.28 | |
| Threshold Current | I_{th} | A | | | 0.3 |
| Forward Current @ $P_{opt} = 800\text{ mW}$ | I_F | A | | | 1.5 |
| Divergence parallel ($1/e^2$) | $\Theta_{ }$ | ° | | 0.1 | 0.15 |
| Divergence perpendicular ($1/e^2$) | Θ_{\perp} | ° | | 0.1 | 0.15 |
| Divergence Ratio | $\Theta_{\perp} / \Theta_{ }$ | | 0.66 | | 1.5 |

Measurement Conditions / Comments

$P_{opt} = 800\text{ mW}$, multi mode emission

full angle, parallel to base plate (see p. 3)

full angle, perpendicular to base plate (see p. 3)

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Characteristics at $T_{LD} = 25^{\circ} \text{C}$ at Begin Of Life

| Parameter | Symbol | Unit | min | typ | max |
|---|----------------------|------|------|-----|-----|
| Beam Diameter parallel ($1/e^2$) | $d_{ }$ | mm | | 1 | 1.5 |
| Beam Diameter perpendicular ($1/e^2$) | d_{\perp} | mm | | 1 | 1.5 |
| Aspect Ratio of Beam Diameters | $d_{ } / d_{\perp}$ | | 0.66 | | 1.5 |
| Beam propagation factor | M^2 | | | 1.2 | 1.5 |
| Polarization Extinction Ratio | DOP | % | | 90 | |

Measurement Conditions / Comments

parallel to base plate (see p. 3)

perpendicular to base plate (see p. 3)

E field perpendicular to base plate (see p. 3)

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Monitor Diode

| Parameter | Symbol | Unit | min | typ | max |
|-------------------------------|-----------|---------|-----|-----|------|
| Monitor Detector Responsivity | I_{mon} | μA | 10 | | 1000 |

Measurement Conditions / Comments

$U_R = 5 V$; $P_{opt} = 800 mW$

Thermoelectric Cooler

| Parameter | Symbol | Unit | min | typ | max |
|--|------------|------|-----|-----|-----|
| Current | I_{TEC} | A | 0.3 | 0.9 | 1.5 |
| Voltage | U_{TEC} | V | 1.0 | 4.0 | 5.5 |
| Power Dissipation (total loss at case) | P_{loss} | W | 1.8 | 2.0 | 2.5 |
| Temperature Difference | ΔT | K | | | 30 |

Measurement Conditions / Comments

$P_{opt} = 800 mW$ $\Delta T = 30 K$

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$P_{opt} = 800 mW$ $\Delta T = 30 K$

$P_{opt} = 800 mW$ $\Delta T = I T_{case} - T_{LD}$

Thermistor (Standard NTC Type)

| Parameter | Symbol | Unit | min | typ | max |
|------------------------------|---------|-----------|-----|-------------------------|-----|
| Resistance | R | $k\Omega$ | | 10 | |
| Beta Coefficient | β | | | 3892 | |
| Steinhart & Hart Coefficient | A | | | 1.1293×10^{-3} | |
| Steinhart & Hart Coefficient | B | | | 2.3410×10^{-4} | |
| Steinhart & Hart Coefficient | C | | | 8.7755×10^{-8} | |

Measurement Conditions / Comments

$T = 25^\circ C$

$R_1 / R_2 = e^{\beta(1/T_1 - 1/T_2)}$ at $T = 0^\circ \dots 50^\circ C$

$1/T = A + B(\ln R) + C(\ln R)^3$

T: temperature in Kelvin

R: resistance at T im Ohm

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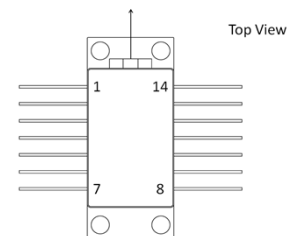
Package Dimensions

| Parameter | Symbol | Unit | min | typ | max |
|--------------------------|----------|------|-----|-----|-----|
| Height of Emission Plane | h_{EP} | mm | | 4.9 | |

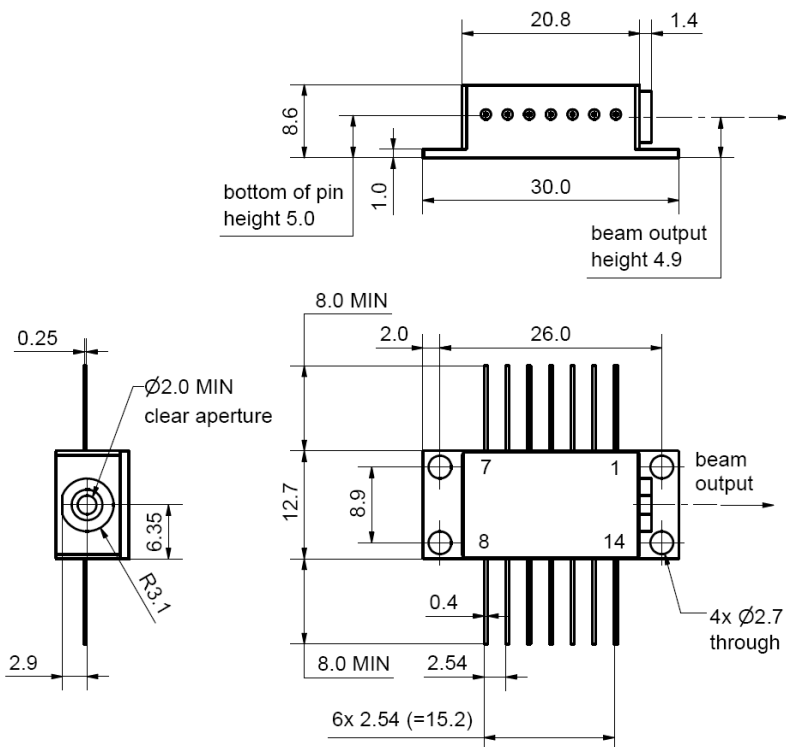
Measurement Conditions / Comments

Package Pinout

| | | | |
|---|---------------------------|----|---------------------------|
| 1 | Thermoelectric Cooler (+) | 14 | Thermoelectric Cooler (-) |
| 2 | not connected | 13 | Case |
| 3 | not connected | 12 | not connected |
| 4 | not connected | 11 | Laser Diode (Cathode) |
| 5 | not connected | 10 | Laser Diode (Anode) |
| 6 | Thermistor | 9 | Photodiode (Anode) |
| 7 | Thermistor | 8 | Photodiode (Cathode) |



Package Drawings



Polarization:

E field perpendicular to base plate

Z13-EE00-BFY32-RWL-0006

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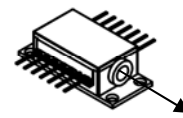
Unpacking, Installation and Laser Safety

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.

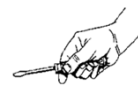
Operating at moderate temperatures on proper heat sinks will contribute to a long lifetime of the diode.

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



Complies with 21 CFR 1040.10 and 1040.40