

TAPERED AMPLIFIER

GaAs Semiconductor Laser Diode



DATA SHEET

Tapered Amplifier

EYP-TPA-0780-02000-4006-CMT04-0000**General Product Information**

| Product | Application |
|--------------------------|----------------|
| 780 nm Tapered Amplifier | Spectroscopy |
| C-Mount Package | Metrology |
| | Fiber Coupling |
| | |
| | |

**Absolute Maximum Ratings**

| | Symbol | Unit | min | typ | max |
|---------------------------------|-----------|------|-----|-----|-----|
| Storage Temperature | T_S | °C | -40 | | 85 |
| Operational Temperature at Case | T_C | °C | 0 | | 50 |
| Current | I_F | A | | | 5 |
| Reverse Voltage | V_R | V | | | 0 |
| Output Power | P_{opt} | W | | | 2.2 |

non condensing

non condensing

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.

Recommended Operational Conditions

| | Symbol | Unit | min | typ | max |
|---------------------------------|---------------|------|-----|-----|-----|
| Operational Temperature at Case | T_C | °C | 5 | | 40 |
| Forward Current | $I_{F, Gain}$ | A | | | 4 |
| Output Power | P_{opt} | W | | | 2 |

non condensing

with proper injection from a seed laser

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

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------------|-----------------|--------|-----|------|-----|
| Center Wavelength | λ_C | nm | 770 | 780 | 785 |
| Gain Width (FWHM) | $\Delta\lambda$ | nm | 5 | 10 | |
| Temperature Coefficient of Wavelength | $d\lambda / dT$ | nm / K | | 0.25 | |
| Amplification | | dB | | 18 | |
| Minimum Input Power | P_{min} | mW | | 10 | |
| Saturation Power | P_{Sat} | mW | | 50 | |

Measurement Conditions / Comments

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EYP-TPA-0780-02000-4006-CMT04-0000**Characteristics at T_{amb} 25 °C at Begin Of Life**

| Parameter | Symbol | Unit | min | typ | max |
|---------------------------------------|------------------|---------|-----|------|-----|
| Operational Current @ $P_{opt} = 2$ W | I_{op} Gain | A | | | 4 |
| Output Power @ $I_f = 4$ A | P_{opt} | W | 2 | | |
| Operational Current @ P_{opt} min | I_{op} Gain | mA | | 170 | 200 |
| Sidemode Supression Ratio | SMSR | dB | 30 | 45 | |
| Cavity Length | L | μ m | | 4000 | |
| Input Aperture (at rear side) | d_{input} | μ m | | 3 | |
| Output Aperture (at front side) | d_{output} | μ m | | 210 | |
| Astigmatism | A | μ m | | | 600 |
| Divergence parallel (FWHM) | $\Theta_{ }$ | ° | | 10 | |
| Divergence perpendicular (FWHM) | Θ_{\perp} | ° | | 33 | |
| Polarization | | | | TM | |

Measurement Conditions / Comments

with proper injection from a seed laser

with proper injection from a seed laser

E field perpendicular to junction plane

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Tapered Amplifier

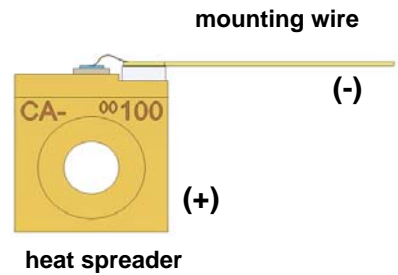
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Package Dimensions

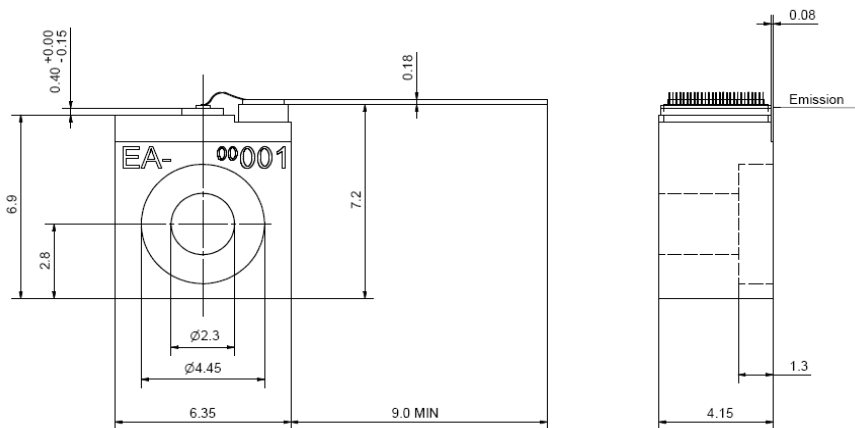
| | Symbol | Unit | min | typ | max |
|-------------------|--------|------|------|------|------|
| Emission Plane | l | mm | 7.05 | 7.20 | 7.35 |
| C-Mount Thickness | d | mm | | 4.15 | |

Package Pinout

| | |
|-------------|---------------|
| Cathode (-) | Mounting Wire |
| Anode (+) | Housing |
| | |
| | |
| | |
| | |
| | |
| | |
| | |



Package Drawings



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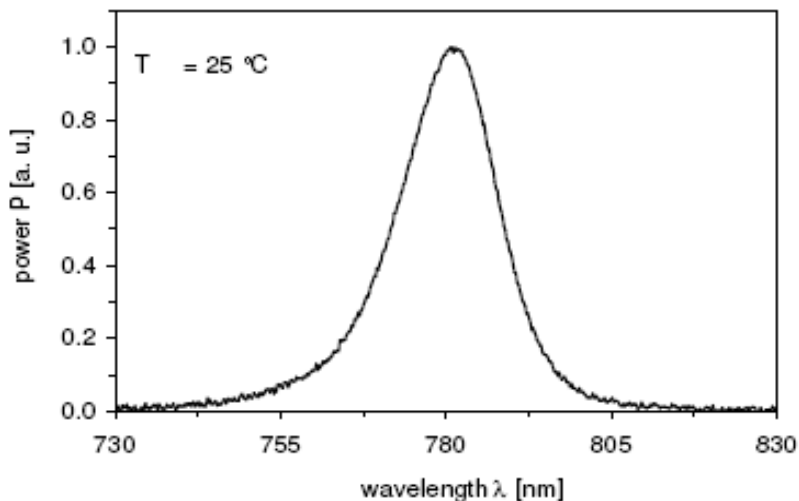


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EYP-TPA-0780-02000-4006-CMT04-0000**Typical Measurement Results**

Spectrum measured w/o injection



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.

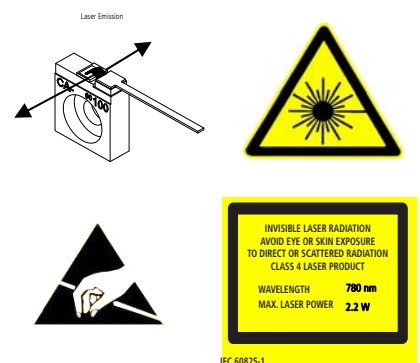
Unpackaging, Installation and Laser Safety

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 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.



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We focus on power.