DATA SHEET

EYP-TPA-0795-02000-4006-CMT04-0000

Revision 0.92

TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

General Product Information

<table>
<thead>
<tr>
<th>Product</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>795 nm Tapered Amplifier</td>
<td>Spectroscopy</td>
</tr>
<tr>
<td>C-Mount Package</td>
<td></td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
<th>min</th>
<th>typ</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature (non condensing)</td>
<td>T_s</td>
<td>°C</td>
<td>-40</td>
<td></td>
<td>85</td>
</tr>
<tr>
<td>Operational Temperature at Case (non cond.)</td>
<td>T_c</td>
<td>°C</td>
<td>0</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Forward Current</td>
<td>I_f</td>
<td>A</td>
<td>4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse Voltage</td>
<td>V_R</td>
<td>V</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>P_opt</td>
<td>W</td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

Recommended Operational Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
<th>min</th>
<th>typ</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational Temperature at Case</td>
<td>T_c</td>
<td>°C</td>
<td>5</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Forward Current</td>
<td>I_f</td>
<td>A</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Power</td>
<td>P_input</td>
<td>mW</td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>P_opt</td>
<td>W</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Measurement Conditions / Comments

with proper injection from a seed laser

Characteristics at T_{LD} = 25 °C at BOL

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
<th>min</th>
<th>typ</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Wavelength</td>
<td>\lambda_c</td>
<td>nm</td>
<td>795</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain Width (FWHM)</td>
<td>\Delta\lambda</td>
<td>nm</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Coefficient of Wavelength</td>
<td>d\lambda / dT</td>
<td>nm / K</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Current</td>
<td>@ P_{opt} = 2.0 W</td>
<td>I_{opt Gain}</td>
<td>A</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Output Power</td>
<td>P_{opt}</td>
<td>W</td>
<td>2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplification</td>
<td>G</td>
<td>dB</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cavity length</td>
<td>L_c</td>
<td>\mu m</td>
<td>4000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Measurement Conditions / Comments

see images on page 4

with proper injection from a seed laser

at recommended maximum forward current

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TAPERED AMPLIFIERS
Semiconductor Optical Amplifier

Characteristics at \( T_{LD} = 25 \, ^\circ C \) at BOL cont’d

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
<th>min</th>
<th>typ</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflectivity at Front Facet</td>
<td>( R_{ff} )</td>
<td>( \mu m )</td>
<td>( 3 \times 10^{-4} )</td>
<td>( 1 \times 10^{-3} )</td>
<td></td>
</tr>
<tr>
<td>Reflectivity at Rear Facet</td>
<td>( R_{rf} )</td>
<td>( \mu m )</td>
<td>( 3 \times 10^{-4} )</td>
<td>( 1 \times 10^{-3} )</td>
<td></td>
</tr>
<tr>
<td>Input Aperture (at rear side)</td>
<td>( d_{in} )</td>
<td>( \mu m )</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Aperture (at front side)</td>
<td>( d_{out} )</td>
<td>( \mu m )</td>
<td>210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Astigmatism</td>
<td>( A )</td>
<td>( \mu m )</td>
<td>700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Divergence parallel (1/e²)</td>
<td>( \Theta_{\parallel} )</td>
<td>°</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Divergence perpendicular (1/e²)</td>
<td>( \Theta_{\perp} )</td>
<td>°</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Divergence parallel (1/e²)</td>
<td>( \Theta_{\parallel, \text{out}} )</td>
<td>°</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Divergence perpendicular (1/e²)</td>
<td>( \Theta_{\perp, \text{out}} )</td>
<td>°</td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polarization</td>
<td></td>
<td></td>
<td>TM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Measurement Conditions / Comments
- Estimated at recommended maximum forward current
- E field perpendicular to junction plane

Typical Measurement Results

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.
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Package Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
<th>min</th>
<th>typ</th>
<th>max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height of Emission Plane</td>
<td>h</td>
<td>mm</td>
<td>7.05</td>
<td>7.10</td>
<td>7.20</td>
</tr>
<tr>
<td>C-Mount Thickness</td>
<td>t</td>
<td>mm</td>
<td>4.05</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Package Pinout

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

Package Drawings
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Semiconductor Optical Amplifier

Unpacking, Installation and Laser Safety

Unpacking the laser diodes should only be done at electrostatic safe workstations (EPA). Though protection against electrostatic 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.