LDI-1450-DFB-2.5G-20/60

OVERVIEW
LDI-1450-DFB-2.5G-20/60 is an InGaAsP MQW laser diode coupled to an optical fiber

MAIN FEATURES
- Wavelength: 1450 nm
- Cavity type: DFB
- Linewidth < 500 kHz
- Data rate up to 2.5 Gbps
- Optical power: up to 20 mW in CW mode and up to 60 mW in pulse mode in the single-mode fiber G.657.A1
- Package types: coaxial
- Built-in monitor photodiode

APPLICATIONS
- Optical fiber communication systems with data rate up to 2.5 Gbps

ORDERING INFORMATION
LDI-1450-DFB-2.5G-20/60 - X-2- X- X- X

Case type
- U: compact coaxial (pulse mode only)
- B: compact coaxial with double-sided bracket
- It is necessary to provide heat removal from the case

Fiber type
- SM1: G.657.A1, furcation tubing ø0.9 mm
- SM3: G.657.B3, furcation tubing ø0.9 mm
- Standard fiber length 50 cm
- Other type and length: on request

Connector type
- FU: FC/UPC
- FA: FC/APC
- N: no connector
- Other types: on request

Certification
- CW: CW mode,
- P: pulse mode,
- CWP: both CW and pulse mode

This document was updated on 03.05.2019
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LDI-1450-DFB-2.5G-20/60

ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser diode forward current</td>
<td>I_{FL}</td>
<td>140</td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Laser diode reverse voltage</td>
<td>V_{RL}</td>
<td>2</td>
<td>V</td>
</tr>
<tr>
<td>Photodiode reverse voltage</td>
<td>V_{RP}</td>
<td>20</td>
<td>V</td>
</tr>
<tr>
<td>Photodiode forward current</td>
<td>I_{FP}</td>
<td>2</td>
<td>mA</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_{op}</td>
<td>-40 ÷ +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>T_{stg}</td>
<td>-50 ÷ +85</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering temperature</td>
<td>T_{sold}</td>
<td>260</td>
<td>°C</td>
</tr>
</tbody>
</table>

ELECTRICAL-OPTICAL CHARACTERISTICS (T = 25 °C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength</td>
<td>λ</td>
<td>1447</td>
<td>1450</td>
<td>nm</td>
<td>CW, P = 20 mW</td>
</tr>
<tr>
<td>Spectral width</td>
<td>Δλ</td>
<td>0.09</td>
<td></td>
<td>nm</td>
<td>CW, P = 20 mW, -20 dB, OSA</td>
</tr>
<tr>
<td>Spectral width</td>
<td>Δν</td>
<td>500</td>
<td></td>
<td>kHz</td>
<td>CW, P = 20 mW, delayed self-heterodyne method</td>
</tr>
<tr>
<td>Wavelength-temperature coeff.</td>
<td>dλ/dT</td>
<td>0.1</td>
<td></td>
<td>nm/°C</td>
<td></td>
</tr>
<tr>
<td>Side-mode suppression ratio</td>
<td>SMSR</td>
<td>40</td>
<td>55</td>
<td>dB</td>
<td>CW, P = 20 mW</td>
</tr>
<tr>
<td>Threshold current</td>
<td>I_{th}</td>
<td>8</td>
<td>12</td>
<td>mA</td>
<td>CW</td>
</tr>
<tr>
<td>Operating current</td>
<td>I_{op}</td>
<td>100</td>
<td>120</td>
<td>mA</td>
<td>CW, P = 20 mW</td>
</tr>
<tr>
<td>Pulse optical power</td>
<td>P_{p}</td>
<td>50</td>
<td>60</td>
<td>mW</td>
<td>Pulse, I_{op} = 450 mA</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>V_{op}</td>
<td>1.4</td>
<td>1.8</td>
<td>V</td>
<td>CW, P = 20 mW</td>
</tr>
<tr>
<td>Slope efficiency</td>
<td>S_e</td>
<td>0.18</td>
<td>0.23</td>
<td>mW/mA</td>
<td>CW</td>
</tr>
<tr>
<td>Tracking error</td>
<td>E_r</td>
<td>0.4</td>
<td>0.6</td>
<td>dB</td>
<td>CW, P = 3 mW, T = -40 ÷ +80 °C, SM1, SM3</td>
</tr>
<tr>
<td>Rise and fall times</td>
<td>t_r, t_t</td>
<td>80</td>
<td>120</td>
<td>ps</td>
<td>20% - 80%, Package U, B</td>
</tr>
<tr>
<td>Monitoring output current (PD)</td>
<td>I_{m}</td>
<td>0.2</td>
<td>1.5</td>
<td>mA</td>
<td>CW, P = 20 mW, V_{id} = 5 V</td>
</tr>
<tr>
<td>Capacitance (PD)</td>
<td>C_t</td>
<td>10</td>
<td>20</td>
<td>pF</td>
<td>V_{id} = 5 V, f = 1 MHz</td>
</tr>
<tr>
<td>Dark current (PD)</td>
<td>I_{d}</td>
<td>100</td>
<td>nA</td>
<td></td>
<td>V_{id} = 5 V</td>
</tr>
</tbody>
</table>

Pulse mode: pulse duration 10 μs, duty cycle = 0.01
Tracking error \( E_r = \max\{10 \log[P(T)/P(25°C)]\}, I_{m} = \text{const}, T = T_{\min} + T_{\max} \)
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CHARACTERISTICS (T = 25 °C)

- CW Power, P (mW)
- Voltage, V (V)
- Monitor Current, I_m (mA)
- Pulse Power, P (mW)

Temperature (°C)

P_m = 3 mW
mPD current constant

info@laserscom.com
+375 17 358 27 76
www.laserscom.com
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PACKAGE TYPE AND ELECTRICAL CONNECTION

U

1. Case
2. LD Cathode
3. PD Anode
4. LD Anode, PD Cathode

B

1. Case
2. LD Cathode
3. PD Anode
4. LD Anode, PD Cathode

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Characteristics, data, materials and structures specified in this datasheet are subject to change without notice. Please refer to the latest specification before use of the products.

Safety and handling cautions
1. Laser light is very dangerous if shot directly into human eyes. Do not look directly into the output connector aperture or through optical components such as lenses, prisms, mirrors, microscope objectives etc. Wear protective goggles.
2. Avoid smashing and burning of the module. Avoid storing and using the module in conditions where water, organic solvents or aggressive acids or bases may contact the module or where there is a possibility of exposure to corrosive gases, explosive gases, dust, salinity or other harsh conditions. The module should be disposed as special industrial waste.
3. Exceeding absolute maximal ratings even for a short time can cause permanent damage of the module.
4. The module is sensitive to and can be broken by ESD (static electricity).

Conflict Minerals Policy Statement
LasersCom LLC achieves business objectives and customer needs with social responsibility. We do not support or contribute to the violence and human rights violations associated with the mining of conflict minerals coming from Conflict Regions according to US "Dodd-Frank Act". When possible, our suppliers’ conflict mineral statements are reviewed. We do not directly purchase Conflict Minerals from any source and do not knowingly procure any parts and products containing Conflict Minerals from Conflict Regions.

RoHS Compliance Statement
Restriction of Hazardous Substances (RoHS) directive (Directive 2011/65/EC amended with Directive (EU) 2015/863) is the directive aimed at reducing the harmful environmental impact of waste electrical equipment by restricting the use of known dangerous substances. Based on information received from our supply sources, LasersCom LLC hereby states that the banned substances listed in the RoHS directive are not found in the parts and materials used above the threshold level listed other than exceptions approved by the European Commission.

REACH Compliance Statement
Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) is a European Union regulation 1907/2006/EC that addresses the production and use of chemical substances, and their potential impacts on human health and the environment. Based on information received from our supply sources, LasersCom LLC hereby states compliance of the parts and materials used in manufacturing to REACH regulation. LasersCom LLC does not manufacture or import any substances or preparations as defined under REACH.