

# LDS-1450-DFB-2.5G-15/45

## OVERVIEW

LDS-1450-DFB-2.5G-15/45 is the MQW laser diode coupled to an optical fiber and packaged into a hermetic case. The special feature of the LDS technology is the increased thermal stability of optical power

## MAIN FEATURES

- Wavelength: 1450 nm
- Cavity type: DFB
- Linewidth: <500 kHz
- Data rate up to 2.5 Gbps
- Optical power: up to 15 mW in CW mode, up to 45 mW in pulse mode in SM fiber G.657.A1
- Package types: coaxial, coaxial with bracket
- Built-in monitor photodiode

## APPLICATIONS

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

## ORDERING INFORMATION

### LDS-1450-DFB-2.5G-15/45-X-2-X-X-X-X

#### Case type

**U:** compact coaxial (pulse mode only)  
**B:** compact coaxial with double-sided bracket  
 Other type on request

#### Fiber type

**SM1:** SM, G.657.A1, [Corning SMF-28 Ultra](#), furcation tubing Ø0.9 mm or **BSM1** Ø0.25mm  
**SM3:** SM, G.657.B3, [Corning ClearCurve ZBL](#), furcation tubing Ø0.9 mm or **BSM3** Ø0.25mm  
**SMP13:** PM, [Fujikura SM13](#), PANDA type, furcation tubing Ø0.9 mm  
 Other type on request

#### Connector type

**FA:** FC/APC (SM1, SM3, SMP13)    **FU:** FC/UPC (SM1, SM3)  
**SA:** SC/APC (SM1)                    **SU:** SC/UPC (SM1)  
**N:** no connector  
 Other type: on request

#### Test measurements

**CW:** CW mode (electro-optical parameters at T=25+/-5 C and spectrum)  
**P:** pulse mode (10 µs; duty cycle = 1%)  
**CWP:** both CW and pulse modes

#### Fiber length

**0.5:** 500+/-50 mm  
**1.0:** 1000+/-100 mm  
 Other length on request

# LDS-1450-DFB-2.5G-15/45

## ABSOLUTE MAXIMUM RATINGS

| Parameter                   |            | Value     | Unit | Conditions      |
|-----------------------------|------------|-----------|------|-----------------|
| Laser diode forward current | $I_{FL}$   | 120       | mA   | CW              |
|                             |            | 450       | mA   | Pulse           |
| Laser diode reverse voltage | $V_{RL}$   | 2         | V    |                 |
| Photodiode reverse voltage  | $V_{RP}$   | 20        | V    |                 |
| Photodiode forward current  | $I_{FP}$   | 2         | mA   |                 |
| Operating temperature       | $T_{OP}$   | -40 - +85 | °C   | Package U, B    |
| Storage temperature         | $T_{stg}$  | -50 - +85 | °C   |                 |
| Soldering temperature       | $T_{sold}$ | 260       | °C   | Max. 10 seconds |

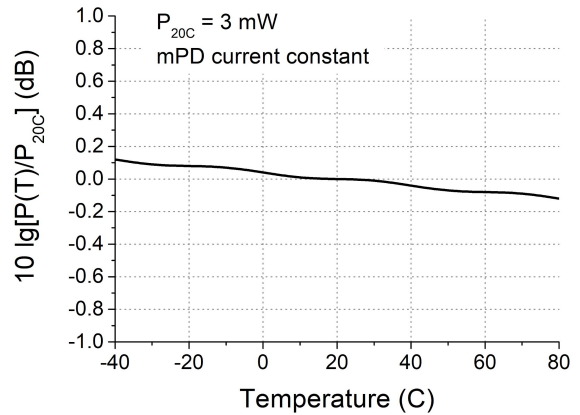
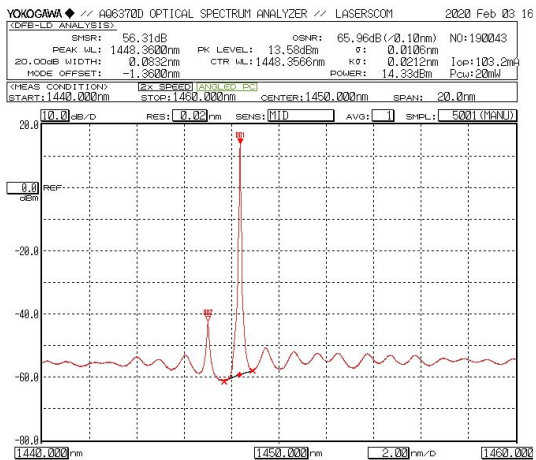
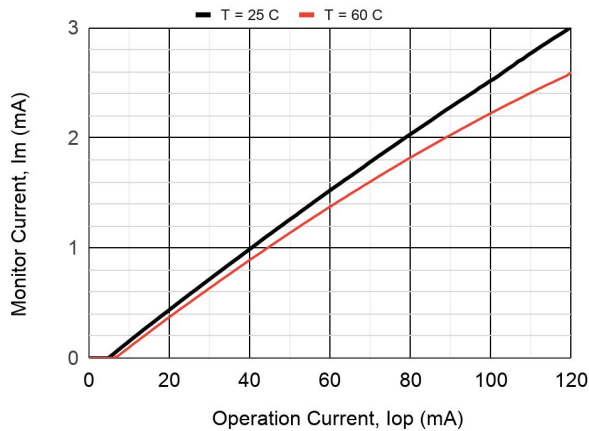
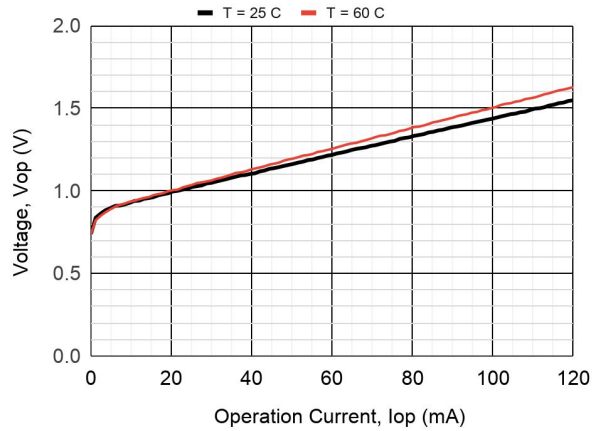
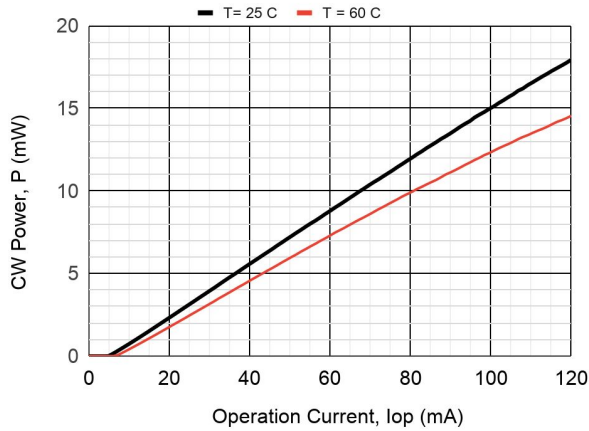
## ELECTRICAL-OPTICAL CHARACTERISTICS (T = 25 °C)

| Parameter                      |                 | MIN  | TYP  | MAX  | Unit  | Conditions   |
|--------------------------------|-----------------|------|------|------|-------|--|
| Optical power (CW)             | $P_{CW}$        | 15   |      |      | mW    | CW, $I_{op} = 120$ mA, SM1                             |
| Optical power (pulse)          | $P_p$           | 40   | 45   |      | mW    | Pulse, $I_{op} = 450$ mA                               |
| Wavelength                     | $\lambda$       | 1447 | 1450 | 1453 | nm    | CW, $I_{op} = 120$ mA                                  |
| Spectral width                 | $\Delta\lambda$ |      | 0.09 |      | nm    | CW, $I_{op} = 120$ mA, -20 dB, OSA                     |
| Spectral width                 | $\Delta f$      |      |      | 500  | kHz   | CW, $I_{op} = 120$ mA, delayed self-heterodyne method  |
| Wavelength-temperature coeff.  | $d\lambda/dT$   |      | 0.12 |      | nm/°C |  |
| Side-mode suppression ratio    | SMSR            | 40   | 55   |      | dB    | CW, $I_{op} = 120$ mA                                  |
| Threshold current              | $I_{th}$        |      | 8    | 12   | mA    | CW   |
| Slope efficiency               | $S_e$           | 0.13 | 0.16 |      | W/A   | CW, SM1  |
| Operating voltage              | $V_{op}$        |      | 1.4  | 1.8  | V     | CW, $I_{op} = 120$ mA                                  |
| Tracking error                 | $E_r$           |      | 0.15 | 0.30 | dB    | CW, P = 3 mW; T = -40 ÷ +80 °C                         |
| Rise and fall times            | $t_r, t_f$      |      | 80   | 120  | ps    | 20%-80%, package U, B                                  |
| Resonance frequency            | $f_r$           |      | 6.0  |      | GHz   | 2.5Gbps, $I_{mod} = 40$ mA, $I_{bias} = I_{th} + 2$ mA |
| Monitoring output current (PD) | $I_m$           | 1.0  | 2.0  | 5.0  | mA    | CW, $I_{op} = 120$ mA, $V_{rd} = 5$ V                  |
| Capacitance (PD)               | $C_t$           |      | 10   | 20   | pF    | $V_{rd} = 5$ V, f = 1 MHz                              |
| Dark current (PD)              | $I_d$           |      |      | 100  | nA    | $V_{rd} = 5$ V   |
| Polarization extinction ratio  | PER             | 20   |      |      | dB    | CW, SMP13  |

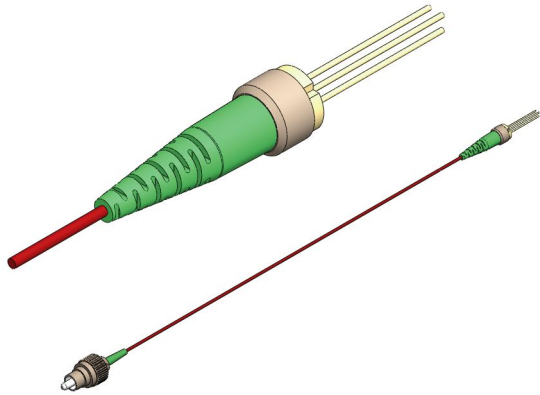
Pulse mode: pulse duration 10  $\mu$ s; duty cycle = 1%

Tracking error  $E_r = \max [10 \lg [P(T)/P(25^\circ\text{C})]]$ ,  $I_m = \text{const}$ , T =  $T_{min} \div T_{max}$

# LDS-1450-DFB-2.5G-15/45

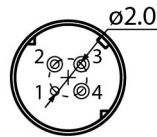


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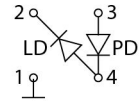


## PACKAGE U

BACK VIEW



PINOUT  
#2

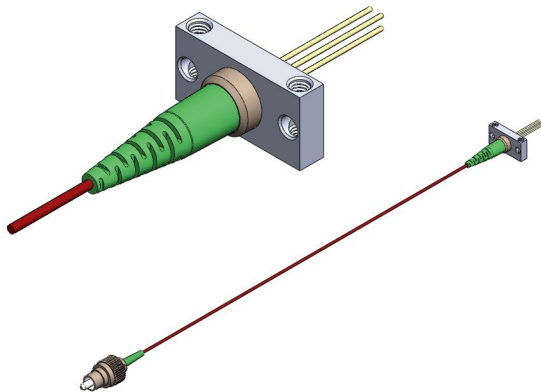


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Drawing

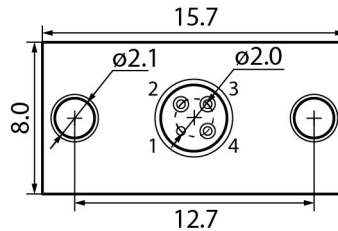
3D model

Application Notes

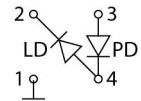


## PACKAGE B

BACK VIEW



PINOUT  
#2



Download more information

Drawing

3D model

Application Notes

# LDS-1450-DFB-2.5G-15/45

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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. 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.
2. Exceeding absolute maximum ratings even for a short time can cause permanent damage of the module.
3. 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.