

# LDI-1550-DFB-50S

Preliminary

## OVERVIEW

LDI-1550-DFB-50S is the laser diode coupled to an optical fiber and packaged into a hermetic case

## MAIN FEATURES

- Wavelength: 1550 nm
- Cavity type: DFB
- Linewidth: <500 kHz
- Optical power: up to 50 mW in CW mode
- Package types: coaxial, coaxial with bracket, 14 pins BTF
- Built-in monitor photodiode

## APPLICATIONS

- Laser systems

## ORDERING INFORMATION

# LDI-1550-DFB-50S-X-2-X-X-X-X

### Case type

**U:** compact coaxial

**B:** compact coaxial with double-sided bracket

**BTF:** 14-pins BTF for active thermal stabilization (TEC and thermistor)

Other type on request

### Fiber type

**SMT:** SM, [Corning Titania-Clad](#), furcation tubing Ø0.9 mm, ultrasmall bending radius 2.5 mm

**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

**MM5:** MM, [50/125. OM2](#), furcation tubing Ø0.9 mm

**MM6:** MM, [62.5/125. OM1](#), furcation tubing Ø0.9 mm

Other type on request

### Connector type

**FA:** FC/APC (SM1, SM3, SMT)

**FU:** FC/UPC (SM1, SM3, SMT, MM5, MM6)

**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)

### Fiber length

**0.5:** 500+/-50 mm

**1.0:** 1000+/-100 mm

Other length on request

Version 25.3

# LDI-1550-DFB-50S

## ABSOLUTE MAXIMUM RATINGS

| Parameter                   |            | Value     | Unit | Conditions               |
|-----------------------------|------------|-----------|------|--------------------------|
| Laser diode forward current | $I_{FL}$   | 330       | mA   | CW, Tst = 45 °C          |
| Laser diode reverse voltage | $V_{RL}$   | 2         | V    |                          |
| Photodiode reverse voltage  | $V_{RP}$   | 15        | V    |                          |
| Photodiode forward current  | $I_{FP}$   | 2         | mA   |                          |
| Operating temperature*      | $T_{OP}$   | 0 - +70   | °C   | Package U, B             |
| Operating temperature*      | $T_{OP}$   | -40 - +60 | °C   | Package BTF (Tst = 25°C) |
| Storage temperature         | $T_{stg}$  | -40 - +85 | °C   |                          |
| Soldering temperature       | $T_{sold}$ | 260       | °C   | Max. 5 seconds           |

\*Operating temperature is defined by the case temperature. It is recommended to ensure sufficient heat dissipation so that the module's maximum operating temperature is not exceeded. Operation at elevated temperatures reduces the lifetime of the laser diode.

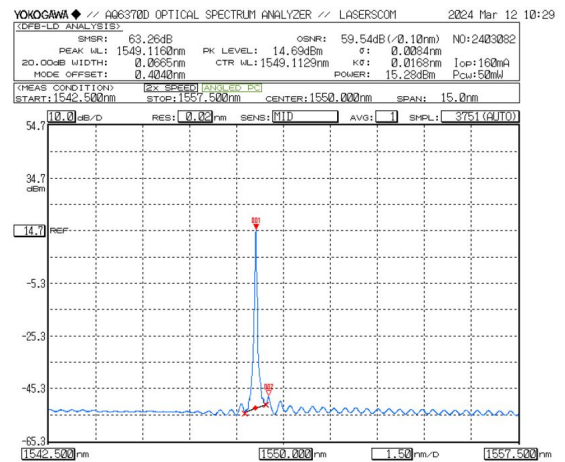
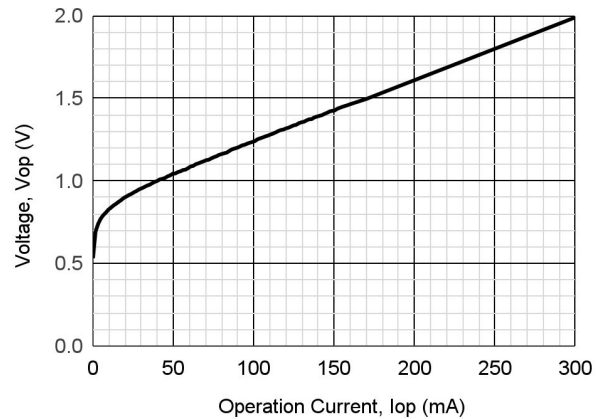
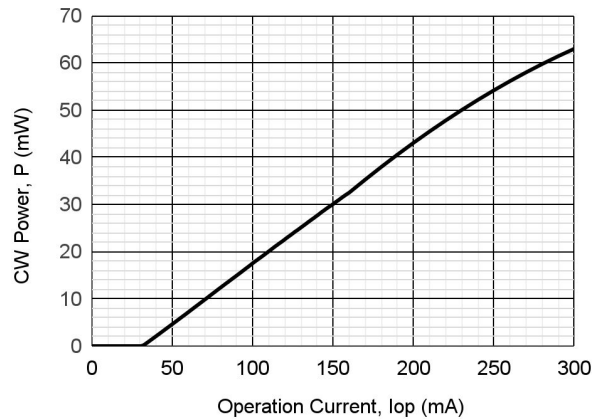
Operating temperature for the BTF 14-pins case with TEC is defined for internal temperature stabilization at Tst = 25°C that corresponds to thermistor resistance Rt = 10 kOhm.

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

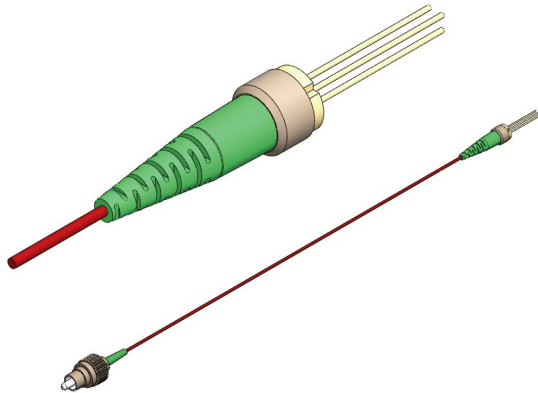
| Parameter                      |                 | MIN  | TYP  | MAX  | Unit  | Conditions                                            |
|--------------------------------|-----------------|------|------|------|-------|-------------------------------------------------------|
| Optical power (CW)             | $P_{CW}$        | 50   | 60   |      | mW    | CW, $I_{op} = 300$ mA, SM1                            |
| Wavelength                     | $\lambda$       | 1540 | 1550 | 1560 | nm    | CW, $I_{op} = 300$ mA                                 |
| Spectral width                 | $\Delta\lambda$ |      | 0.1  |      | nm    | CW, $I_{op} = 300$ mA, -20 dB, OSA                    |
| Spectral width                 | $\Delta\lambda$ |      | 250  | 500  | kHz   | CW, $I_{op} = 300$ mA, delayed self-heterodyne method |
| Wavelength-temperature coeff.  | $d\lambda/dT$   |      |      |      | nm/°C |                                                       |
| Side-mode suppression ratio    | SMSR            | 45   |      |      | dB    | CW, $I_{op} = 300$ mA                                 |
| Threshold current              | $I_{th}$        |      | 40   | 70   | mA    | CW                                                    |
| Slope efficiency               | $S_e$           | 0.18 | 0.25 |      | W/A   | CW, SM1                                               |
| Operating voltage              | $V_{op}$        |      | 1.8  | 2.2  | V     | CW, $I_{op} = 300$ mA                                 |
| Tracking error**               | $E_r$           |      |      |      | dB    | CW, P = 3 mW; T = -40 ÷ +80 °C                        |
| Monitoring output current (PD) | $I_m$           | 0.02 | 0.5  | 2.0  | mA    | CW, $I_{op} = 300$ mA, $V_{rd} = 5$ V                 |

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

# LDI-1550-DFB-50S

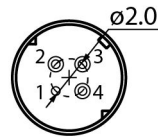
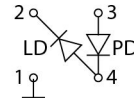


# LDI-1550-DFB-50S



## PACKAGE U

BACK VIEW

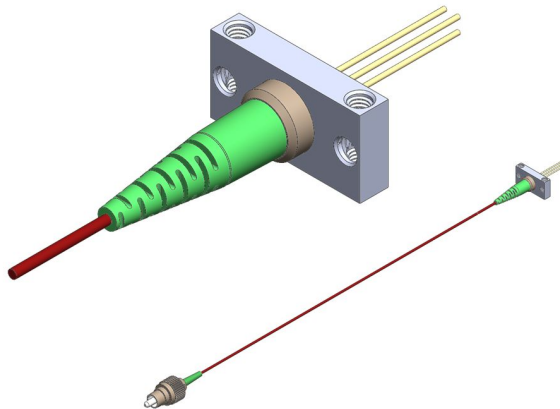
PINOUT  
#2

Download more information

Drawing

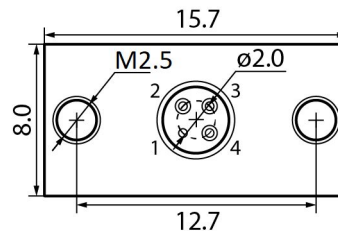
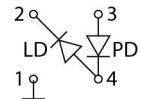
3D model

Application Notes



## PACKAGE B

BACK VIEW

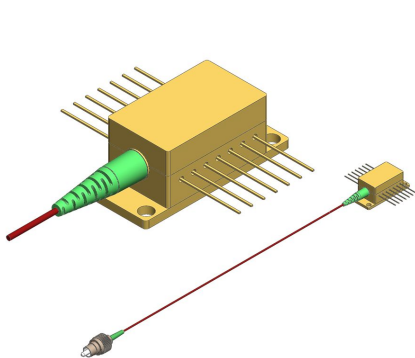
PINOUT  
#2

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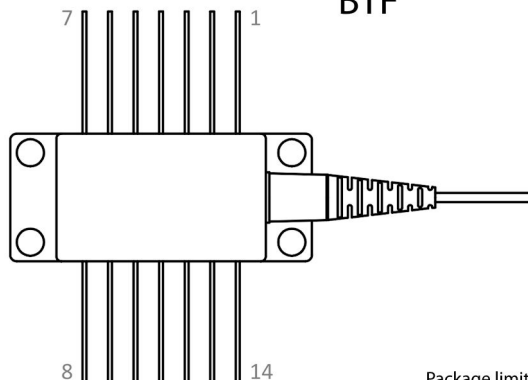
Drawing

3D model

Application Notes



## BTF



1. TEC+
2. Thermistor
3. NC
4. NC
5. Thermistor
6. NC
7. NC
8. NC
9. NC
10. LD/SLD Anode
11. LD/SLD Cathode
12. NC
13. Case Ground
14. TEC -

TEC HP:  $I_{max} = 1.4A$ ,  $U_{max} = 3.9V$ ,  $Q_{max} = 3.3W$ ,  
 $AC R = 2.0 \Omega$ ,  $\Delta T_{max} = 69 K$

Package limits RF bandwidth to 500 MHz  
 Thermistor:  
 $R_t = 10 \cdot \exp(3600 \cdot \{1/T[K] - 1/298\})$  kOhm

Download more information

Drawing

3D model

Application Notes

# LDI-1550-DFB-50S

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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.