

# LD-ISO-1550-DFB-50S-TEC

Preliminary

## OVERVIEW

LD-ISO-1550-DFB-50S-TEC is the laser diode with an integrated TEC (Thermo-Electric Cooler) and an optical isolator coupled to an optical fiber and packaged into a hermetic case

## MAIN FEATURES

- Wavelength: 1550 nm
- Cavity type: DFB
- Linewidth: 1 MHz
- Optical power: up to 50 mW in CW mode
- Package types: coaxial with bracket
- Built-in monitor photodiode
- Built-in TEC and thermistor
- Built-in optical isolator (35 dB Isolation)

## APPLICATIONS

- Laser systems

## ORDERING INFORMATION

# LD-ISO-1550-DFB-50S-TEC-X-27-X-X-X-X

### Case type

**B:** compact coaxial with double-sided bracket  
 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 25.4

# LD-ISO-1550-DFB-50S-TEC

## 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  | $I_{FP}$   | 5         | mA   |                     |
| Operating temperature*      | $T_{OP}$   | -40 - +60 | °C   | Ambient (heat sink) |
| Storage temperature         | $T_{stg}$  | -40 - +85 | °C   |                     |
| Soldering temperature       | $T_{sold}$ | 260       | °C   | Max. 5 seconds      |
| TEC Voltage                 | $V_{TEC}$  | 1.1       | V    |                     |
| TEC Current                 | $I_{TEC}$  | 1.2       | A    |                     |

\*Operating temperature is defined for internal temperature stabilization at Tst = 45°C that corresponds to thermistor resistance Rt = 4.4 kOhm.

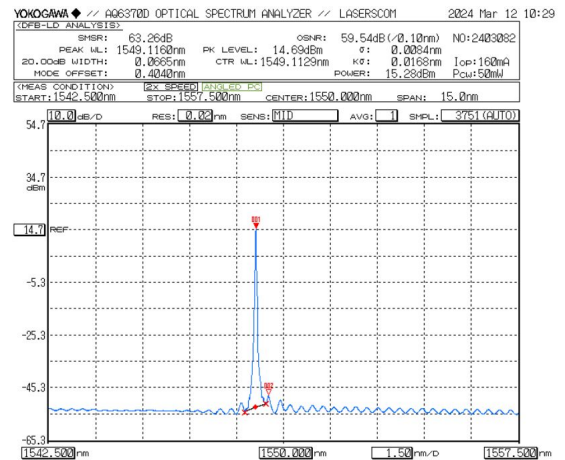
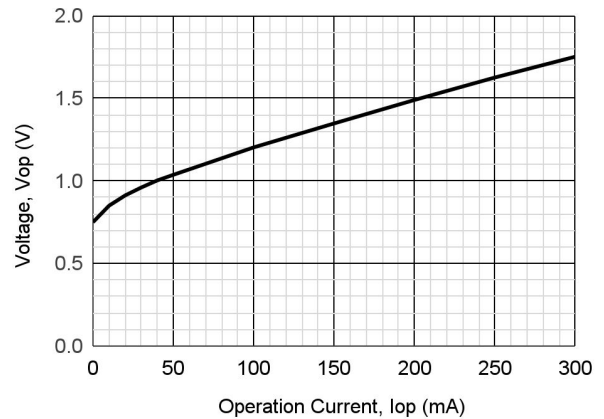
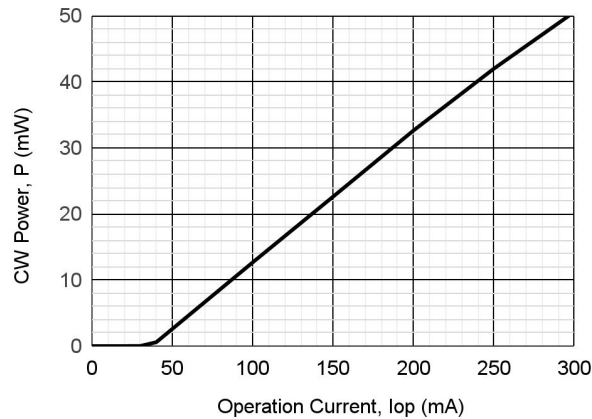
It is necessary to ensure sufficient heat dissipation so that the module's maximum operating temperature is not exceeded.

## ELECTRICAL-OPTICAL CHARACTERISTICS (T = 25 °C, Tst = 45 °C)

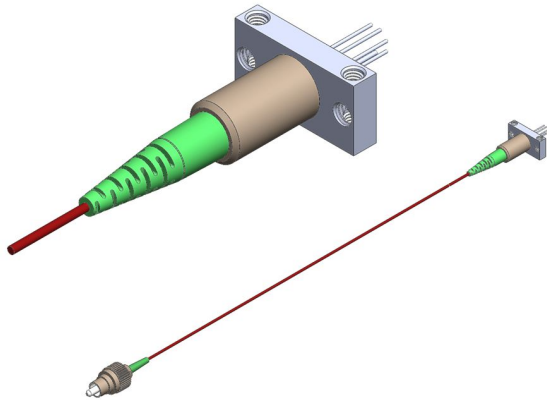
| Parameter                      |                 | MIN  | TYP  | MAX  | Unit  | Conditions                                            |
|--------------------------------|-----------------|------|------|------|-------|-------------------------------------------------------|
| Optical power (CW)             | $P_{CW}$        | 45   | 50   |      | 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                 | $\Delta f$      |      | 1.0  | 2.0  | MHz   | CW, $I_{op}$ = 300 mA, delayed self-heterodyne method |
| Wavelength-temperature coeff.  | $d\lambda/dT$   |      | 0.1  |      | nm/°C |                                                       |
| Side-mode suppression ratio    | SMSR            | 45   |      |      | dB    | CW, $I_{op}$ = 300 mA                                 |
| Threshold current              | $I_{th}$        |      | 40   | 70   | mA    | CW                                                    |
| Isolation                      | IS              | 35   | 40   |      | dB    |                                                       |
| Slope efficiency               | $S_e$           | 0.15 | 0.18 |      | W/A   | CW, SM1                                               |
| Operating voltage              | $V_{op}$        |      | 1.7  | 3.0  | V     | CW, $I_{op}$ = 300 mA                                 |
| Tracking error                 | $E_r$           |      |      |      | dB    | CW, P = 3 mW; T = -40 ÷ +80 °C                        |
| Monitoring output current (PD) | $I_m$           | 0.01 | 0.5  | 4.5  | mA    | CW, $I_{op}$ = 300 mA, $V_{rd}$ = 5V                  |
| Thermistor resistance          | $R_{th}$        | 9.5  | 10.0 | 10.5 | kOhm  | T = 25 °C                                             |
| Thermistor B Constant          | B               | 3800 | 3900 | 4000 | K     |                                                       |

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

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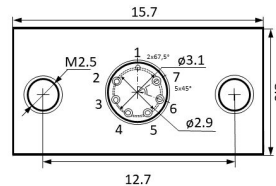


# LD-ISO-1550-DFB-50S-TEC



## PACKAGE B

### BACK VIEW



### PINOUT

#27

1. LD (-)/Gnd/Rth
2. LD (+)
3. PD (+)
4. TEC (-)
5. TEC (+)
6. PD (-)
7. Rth

Download more  
information



Drawing



3D model



Application Notes

# LD-ISO-1550-DFB-50S-TEC

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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.