



## **1310nm DFB 10Gbit/s Laser**

### ***LDM3S510-001***

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### **Features**

- *Data rate up to 10Gbit/s*
- *Input impedance is 50  $\Omega$*
- *Uncooled DFB laser diode with MQW structure*
- *Emission wavelength is the 1310nm band*
- *Built-in optical isolator*
- *Built-in InGaAs monitor photodiode*
- *Single-mode optical fiber pigtail*
- *Industry-standard TO-56 packaged (4-PIN)*

### **Application**

- *SDH/SONET Transmission system up to 10Gbps*
- *10 Gigabit Ethernet*
- *other applications*

## Absolute Maximum Ratings

| Parameter                     | Symbol   | Unit | Min | Max |
|-------------------------------|----------|------|-----|-----|
| Storage Temperature Range     | $T_s$    | °C   | -40 | 80  |
| Laser Diode Reverse Voltage   | $V_{RL}$ | V    | -   | 1.8 |
| Laser Diode Forward Current   | $I_{FL}$ | mA   | -   | 150 |
| Monitor Diode Reverse Voltage | $V_{RD}$ | V    | -   | 15  |
| Monitor Diode Forward Current | $I_{FD}$ | mA   | -   | 2   |
| Lead Solder Temperature       | -        | °C   | -   | 260 |
| Lead Soldering Time           | -        | s    | -   | 10  |
| Fiber yield strength          | -        | kgf  | --  | 1   |
| Fiber bend radius             | -        | mm   | 30  | -   |

## Recommended Operating Conditions


| Parameter                        | Symbol   | Unit | Min | Typ | Max |
|----------------------------------|----------|------|-----|-----|-----|
| Case Operating Temperature Range | $T_c$    | °C   | -10 | -   | 80  |
| Operating Voltage                | $V_{op}$ | V    | -   | 1.2 | 1.5 |
| Relative Humidity                | RH       | %    | -   | -   | 95  |

## Specifications ( $T=25^{\circ}\text{C}$ , unless otherwise noted)

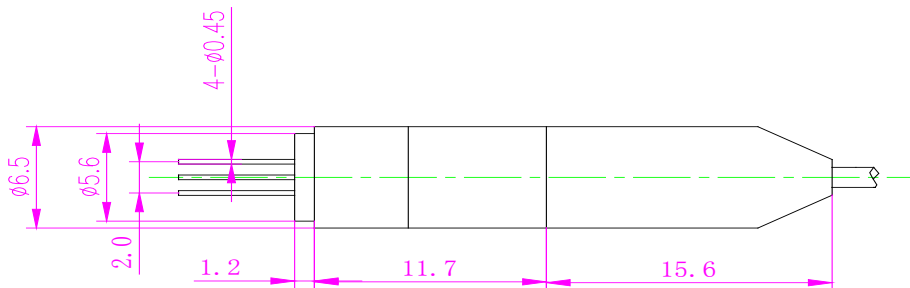
| Parameter                         | Symbol          | Unit  | Min  | Typ  | Max  | Test condition   |
|-----------------------------------|-----------------|-------|------|------|------|--|
| <b>Electrical Characteristics</b> |                 |       |      |      |      |  |
| Threshold Current                 | $I_{th}$        | V     | -    | 10   | 25   | CW   |
|                                   |                 |       | -    | -    | 40   | CW, over temperature   |
| Rise/Fall Time                    | $T_{r/f}$       | ps    | -    | 40   | 50   | $I_b = I_{th}$ ; 20%~80%   |
| Monitor Current                   | $I_m$           | μA    | 100  | -    | 1000 | CW, $V_{RD}=5\text{V}$   |
| Monitor Dark Current              | $I_d$           | nA    | -    | -    | 10   | CW, $V_{RD}=5\text{V}$   |
|                                   |                 |       | -    | -    | 100  | CW, $V_{RD}=5\text{V}$ , over temperature                              |
| <b>Optical Characteristics</b>    |                 |       |      |      |      |  |
| Optical Output Power              | $P_o$           | dBm   | -6   | -    | -2   | CW, $I_f = I_{th} + 30\text{mA}$                                       |
| Slope Efficiency                  | $Se$            | mW/mA | 0.01 | -    | -    |  |
| Central Wavelength                | $\lambda_c$     | nm    | 1290 | 1310 | 1330 | CW   |
|                                   |                 |       | 1270 | -    | 1340 | CW, over temperature   |
| Spectral Width                    | $\Delta\lambda$ | nm    | -    | -    | 0.5  | CW, -20dB  |
| Side Mode Suppression Ratio       | SMSR            | dB    | 30   | -    | -    | CW   |
| Optical Return Loss               | ORL             | dB    | 18   | -    | -    | CW   |
| Tracking Error                    | $\Delta P_f$    | dB    | -1.0 | -    | +1.0 | CW, over temperature<br>$I_m = \text{const}@P_f(I_{th} + 20\text{mA})$ |

|                         |   |    |    |   |    |                     |
|-------------------------|---|----|----|---|----|---------------------|
| Monitor PD Capacitance  | C | pF | -  | - | 10 | $V_{RD}=5V, f=1MHz$ |
| Connector Repeatability | - | dB | -1 | - | +1 |                     |

## Pin Description

| Pin | Description | Bottom View   |
|-----|-------------|---|
| 1   | LD(N) CASE  |  |
| 2   | LD(P)       |   |
| 3   | Detector(N) |   |
| 4   | Detector(P) |   |

## Package outline (Unit: mm)



## Ordering Information

| Part No.     | Specification   |          |            |               |           |           |
|--------------|-----------------|----------|------------|---------------|-----------|-----------|
|              | Package         | Datarate | Laser      | Optical Power | Temp      | Connector |
| LDM3S510-001 | Coaxial Pigtail | 10G      | 1310nm DFB | -6 ~ -2dBm    | -10~80 °C | SC/PC     |
| LDM3S510-002 | Coaxial Pigtail | 10G      | 1310nm FP  | -6 ~ -2dBm    | -10~80 °C | SC/PC     |
| LDM3S510-003 | LC TOSA         | 10G      | 1310nm DFB | -6 ~ -2dBm    | -10~80 °C | -         |
| LDM3S510-004 | LC TOSA         | 10G      | 1310nm FP  | -6 ~ -2dBm    | -10~80 °C | -         |

**Note:** Fiber length in the pigtail package is 1000mm±30mm

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