

Pigtails Coaxial DFB-LD TLDxxxx Series



- 1310nm/1550nm InGaAsP LD
- DFB Laser with Optical Isolator
- SMQW Structure
- SMF Pigtails, SC or FC Connector
- 2.5Gbps Transmission

Family Model

TLDx20x TLDx30x TLD340x

Features

- 1.3 μ m/1.55 μ m InGaAsP SMQW DFB laser diode
- Low threshold, high slope efficiency LD
- High output power uncooled laser diode
- Operating temperature ; 0 $^{\circ}$ C to +70 $^{\circ}$ C / -20 $^{\circ}$ C to +85 $^{\circ}$ C
- Single-mode fiber pigtailed with SC or FC connector
- Tested by TERADIAN's Reliability and Qualification Program

Description

The TLDxxxx series, pigtailed coaxial LD module consists of an uncooled, reliable strained MQW InGaAsP laser(DFB) and a back-facet InGaAs PIN photodiode.

The parts of pigtailed LD module – single-mode fiber, lens and laser diode - are actively aligned by high power YAG laser welding method. This packaging guarantees high coupling efficiency, high slope efficiency, low operating current and low tracking error over a wide temperature range (0 $^{\circ}$ C to +70 $^{\circ}$ C/-20 $^{\circ}$ C to +85 $^{\circ}$ C), and provides high optical performance for ITU-T G.652 standard optical fiber.

Applications

Used in telecommunication and data communication systems, from medium to high speed for intra-office, short-haul inter-office and long-haul inter-office applications.

- Fiber in the loop(FTTO, FTTC, FTTH etc.)
- Intra-office and Inter-office links
- Transport links (SDH,SONET, PDH)
- Private optical networks
- Subscriber loops

Absolute Maximum Ratings

| Parameters | Symbol | Unit | Min. | Max. | Remarks |
|-------------------------------|-----------|--------|----------|----------|-----------------------------|
| Ambient Operating Temperature | T_{op} | °C | 0 -20 | 70 85 | Indoor Use Extended Temp |
| Storage Temperature | T_{stg} | °C | -40 | 85 | |
| Forward Current(LD) | I_{FL} | mA | - | 150 | |
| Reverse Voltage(LD) | V_{RL} | V | - | 2 | |
| Reverse Current(mPD) | I_{RP} | mA | - | 2 | |
| Reverse Voltage(mPD) | V_{RP} | V | - | 15 | |
| Lead Soldering Temp./Time | | °C/sec | | 260/10 | |

Electrical and Optical Characteristics

(T_{op} = 25°C)

| Parameters | Symbol | Condition | Unit | Min. | Typ. | Max. | Remarks |
|--------------------------------|-----------------|--|-----------|----------------------|----------------------|--------------|-------------------------------|
| Threshold Current | I_{th} | CW | mA | | 8 10 | 15 15 | TLD3XXX TLD5XXX |
| Operating Current | I_{op} | CW, @P _f | mA | | | 40 | |
| Forward Voltage | V_f | CW, @P _f | V | | | 1.6 | |
| Fiber Output Power | P_f | CW, $I_{op}=I_{th} + 20mA$ | mW | | 2.0 3.0 4.0 | | TLDX20X TLDX30X TLD340X |
| Slope Efficiency | η | CW | mW/ mA | 0.08 0.12 0.16 | 0.10 0.15 0.20 | | TLDX20X TLDX30X TLD340X |
| Peak Wavelength | λ_C | CW, @P _f | nm | 1290 1530 | 1310 1550 | 1330 1570 | TLD3XXX TLD5XXX |
| Spectral Linewidth | $\Delta\lambda$ | CW, @P _f | nm | | | 1 | |
| Side Mode Suppression Ratio | SMSR | CW | dB | 30 | | | |
| Rise/Fall Time | t_R, t_F | $I_b = I_{th}, 20-80\%$ | ns | | 0.2 | 0.3 0.15 | ≥2.5Gbps |
| Tracking Error | γ | APC, T _C =0~+70°C or -20~+85°C | dB | -1.0 | | 1.0 | $I_m = \text{const.}$ |
| Optical Isolation ¹ | ISO | | dB | 30 | | | |
| Dark Current(m-PD) | I_D | $V_{RP}=5V$ | nA | | 1 | 10 | |
| Monitor Current(m-PD) | I_m | $V_{RP}=5V, @P_f$ | mA | 0.08 | | | |
| Capacitance(m-PD) | | $V_{RP}=5V, f=1MHz$ | pF | | | 10 | |

1. Optical Isolation is only applicable for the optical isolator option

! Handling Caution

The LD module can be damaged by overvoltage and current surges. Precautions should be taken for transient power supply.

This device is susceptible to damage as a result of electrostatic discharge(ESD). Take proper precautions during both handling and testing

The stress to the fiber pigtail may cause the damage on the performance. The fiber pigtail may snap off by dropping the module.

Laser Eye Safety

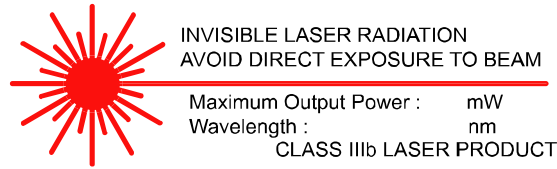
These LD modules have laser semiconductor product and are classified as AEL Class IIIb per U.S. FDA/CDRH 21CFR 1040 and class 3a per EN60825-1. These products comply with 21CFR, Chapter 1, Subchapter J(21CFR 1040.10 and 1040.11 laser safety requirements).

Laser Data

Wavelength : nm(Model :) / nm(Model :)
 Measured Output power : mW(1310nm) / mW(1550nm)
 Limited Power : mW(1310nm) / nW(1550nm)

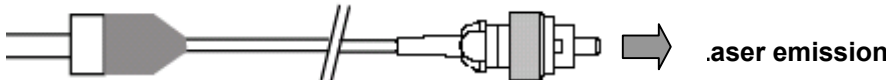
Caution

On operation, If optical connectors are unterminated, modules can emit invisible laser radiation. Radiation emitted by laser devices can be dangerous to the eyes. Avoided eye or skin exposure to direct or scattered radiation



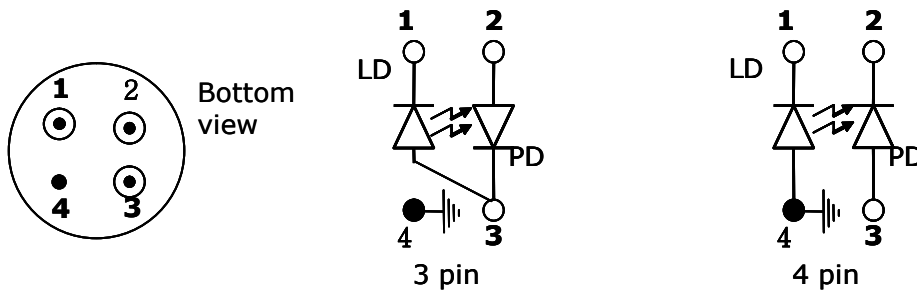
Ref : IEC60825

AVOID EXPOSURE - Invisible Laser radiation is emitted from this aperture.



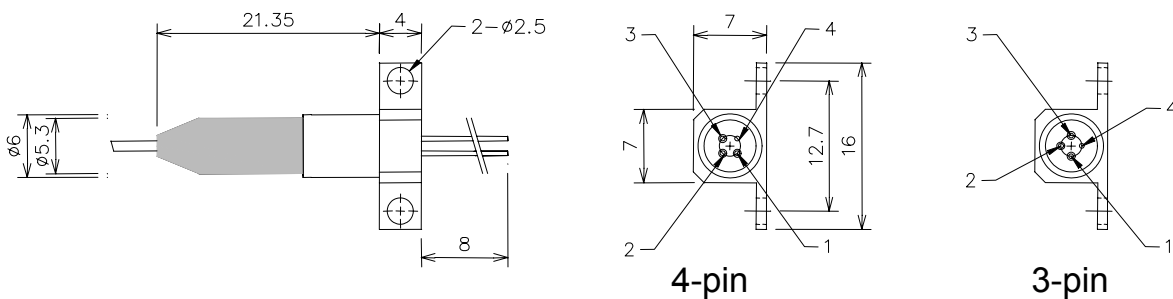
Pin Descriptions

| Pin No. | Description | |
|---------|-----------------------|------------------------|
| | 3 pin type | 4 pin type |
| 1 | LD cathode | LD cathode |
| 2 | Backfacet PD anode | Backfacet PD cathode |
| 3 | LD anode & PD cathode | Backfacet PD anode |
| 4 | Case ground | LD anode & Case ground |



Outline Diagram

- TLDx20x-xxxH, TLDx30x-xxxH



- TLDx20x-xxxV, TLDx30x-xxxV

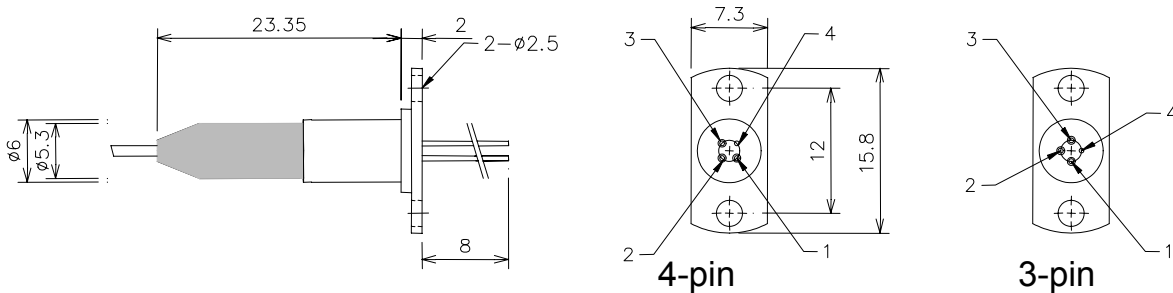


Fig.3 TLD series Dimensions [unit: mm]

Ordering Information

| Component | Device Type | | Wave-length | Output Power | Pin | Temp. Range | Fiber | Connector | Flange |
|-----------|-----------------------------|---|---|--|--|---|--------------------------------|--|---|
| T | L | D | 3 | 20 | 4 | E | S | S | N |
| | L ; Pigtail LD | D ;DFB (with isolator) E ;DFB (without isolator) | 3 ;1.3 μ m 5 ;1.55 μ m | 20 ;2.0mW 30 ;3.0mW 40 ;4.0mW (1.3u only) 2G :2mW - 2.5Gbps 3G : 3mW - 2.5Gbps | 3 ; 3pin 4 ; 4pin | I ;Indoor Use (0~70 $^{\circ}$ C) E ;Extended Temp (-20~85 $^{\circ}$ C) | S ;SMF M ;MMF | N ;None S ;SC F ;FC T ;ST L ;LC | N ;None V ;Vertical H ;Hori- zontal |

*Note 1 ; additional order information

- Connector type default is SC/PC and the default length of fiber is 1m

Contact

Vitex LLC

Address: 210 Sylvan Ave, Suite 25, Englewood Cliffs, NJ 07632

Ph: 201-296-0145

Email: info@vitextech.com

Website: www.vitextech.com