

Pigtailed DFB-LD for CWDM TLD#xxx Series



- 1270~1610nm InGaAsP LD for CWDM
with 20nm spacing
- DFB Laser with Optical Isolator
- SMQW Structure
- SMF Pigtailed with SC, FC,
ST or LC Connector

Family Model – (A ~ H :1470 ~ 1610nm, M ~ W : 1270~1450nm)

TLD#20x / TLD#30x

- A:1470, B:1490, C:1510, D:1530, E:1550, F:1570, G:1590, H:1610

- M:1270, N:1290, O:1310, P:1330, Q:1350, R:1370, S:1390, T:1410, U:1430 , W:1450

Features

- 1.27 μ m ~ 1.61 μ m InGaAsP SMQW DFB laser diode
- Low threshold, high slope efficiency and high output power LD
- 18 channel CWDM applications with 20nm spacing
- Operating temperature ; 0 $^{\circ}$ C to +70 $^{\circ}$ C/ -20 $^{\circ}$ C to +85 $^{\circ}$ C
- Single-mode fiber pigtailed with SC, FC, ST or LC connector
- Tested by TERADIAN's Reliability and Qualification Program

Description

The TLD#xxx 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.

- CWDM applications
- Fiber in the loop (FTTO, FTTC, FTTH etc.)
- 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

($T_{op} = 25^{\circ}C$)

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remarks
Threshold Current	I_{th}	CW	mA		10	15	
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		TLD#20X TLD#30X
Slope Efficiency	η	CW	mW/ mA	0.08 0.12	0.10 0.15		TLD#20X TLD#30X
Peak Wavelength	λ_c	CW, @ P_f	nm	$\lambda_c \pm 2nm$ 1270nm~1610nm, 18ch with 20nm spacing			
Spectral Linewidth	$\Delta\lambda$	CW, @ P_f	nm			1	
Wavelength Temp. Coefficient	$\Delta\lambda/\Delta T$	CW, $T_C=0\sim 70^{\circ}C$ or $-20\sim 85^{\circ}C$	nm/ °C	0.08	0.1	0.12	
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	$\geq 2.5Gbps$
Tracking Error	γ	APC, $T_C=0\sim +70^{\circ}C$ or $-20\sim +85^{\circ}C$	dB	-1.0		1.0	$I_m = const.$
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



INVISIBLE LASER RADIATION
 AVOID DIRECT EXPOSURE TO BEAM

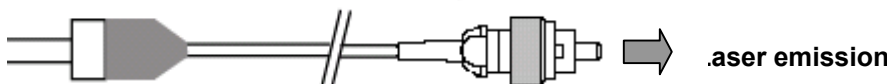
Maximum Output Power : mW
 Wavelength : nm
 CLASS IIIb LASER PRODUCT



Invisible Laser Radiation
 Avoid Direct Exposure to
 Beam
 Class 3b Laser Product

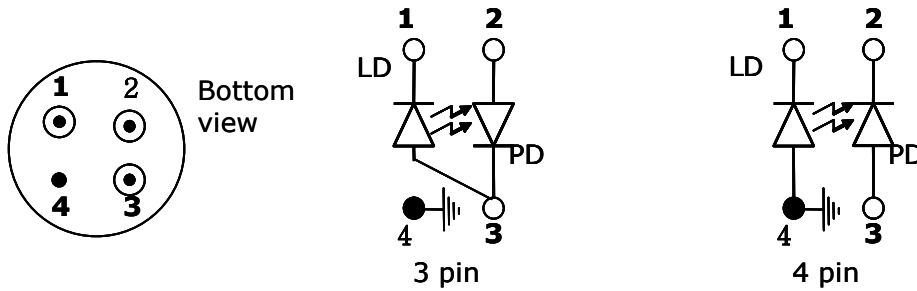
Ref : IEC60825

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



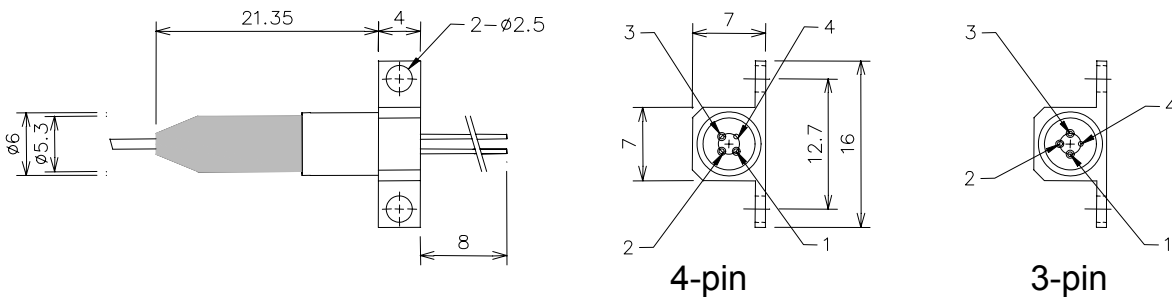
Pin Descriptions

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

- TLD#20x-xxxH, TLD#30x-xxxH



- TLD#20x-xxxV, TLD#30x-xxxV

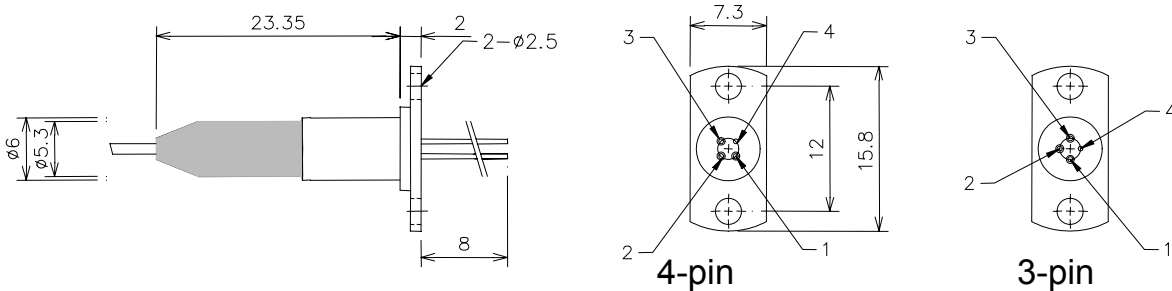


Fig.3 TLD series Dimensions [unit: mm]

Ordering Information

Company	Device Type		Wavelength	Supply Voltage	Pin	Temp. Range	Fiber	Connector	Flange	
T	L	D	C	20	4	-	E	S	S	N
TERADIAN	L; Pigtail LD	D;DFB (with isolator) E;DFB (without isolator)	A;1470nm B;1490nm C;1510nm D;1530nm E;1550nm F;1570nm G;1590nm H;1610nm M; 1270nm N; 1290nm O; 1310nm P; 1330nm Q; 1350nm R; 1370nm S; 1390nm T; 1410nm U; 1430nm W; 1450nm	20;2.0mW 30;3.0mW 2G:2mW - 2.5Gbps 3G: 3mW - 2.5Gbps	3;3pin 4;4pin		I;Indoor Use (0~70℃) E;Extended Temp (-20~85℃)	S;SMF M;MMF	N;None S;SC F;FC T;ST L;LC	N;None V;Vertical H;Horizontal

*Note 1 ; additional order information

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

More Information

Teradian Inc.

Address 946, Dunsan-dong, Seo-gu, Daejeon, 302-120, Korea
 Tel +82-42-476-4800, 4803(Oversea Sales Team)
 Fax +82-42-476-4805
 Homepage <http://www.teradian.com>
 e-mail sales@teradian.com