

Pigtailed Analog FP-LD TBSxxxx Series



- 1310/1550nm InGaAsP LD
- Fabry-Perot Laser Diode
- SMQW(Strained Multi-Quantum Well) Structure
- SMF Pigtailed, SC or FC Connector
- Analog application

Family Model

TBSx104 TBSx204 TBSx304 / TBFx104 TBFx204 TBFx304

Features

- 1.31 μ m/1.5 μ m InGaAsP SMQW Fabry-Perot laser diode
- Low threshold, high slope efficiency and high output power LD
- Cost-effective uncooled laser diode
- Wide Operating temperature ; -40 $^{\circ}$ C to +85 $^{\circ}$ C
- Tested by TERADIAN's Reliability and Qualification Program

Description

The TBSxxx4 pigtailed coaxial LD module consists of an uncooled, reliable strained MQW InGaAsP laser(FP) 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 (-40 $^{\circ}$ C to +85 $^{\circ}$ C).

Applications

- Wireless fiber-optic repeaters
- Analog and digital modulation systems
- Video link

Absolute Maximum Ratings

Parameters	Symbol	Unit	Min.	Max.	Remarks
Ambient Operating Temperature	T_{op}	°C	0	70	Indoor use
			-40	85	Outdoor use
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 & Optical Characteristics

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

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Threshold Current	I_{th}	CW	mA		7	15	TBS3XX4
					9	17	TBS5XX4
Operating Current	I_{op}	CW, @ P_f	mA			40	TBS3XX4
						42	TBS5XX4
Forward Voltage	V_f	CW, @ P_f	V			1.6	
Optical Output Power	P_f	CW, $I_{op}=I_{th} + 20mA$	mW		1.0		TBSX104
					2.0		TBSX204
					3.0		TBSX304
Slope Efficiency	η	CW, @ P_f	mW/ mA	0.04	0.05		TBSX104
				0.08	0.10		TBSX204
				0.12	0.15		TBSX304
Central Wavelength	λ_c	CW, @ P_f	nm	1280	1310	1340	TBS3XX4
				1520	1550	1580	TBS5xx4
Spectral Linewidth	$\Delta\lambda$	CW, @ P_f	nm		2	3	
Tracking Error	γ	APC, $T_c=0\sim+70^{\circ}C$ or $-40\sim+85^{\circ}C$	dB	-1.0		1.0	$I_m=const.$
Optical Isolation ¹	ISO		dB	30			
Dark Current(m-PD)	I_D	$V_{RP}=5V$	nA			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.

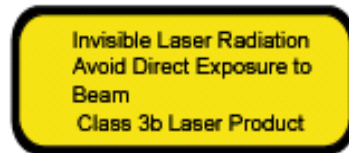
Caution

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



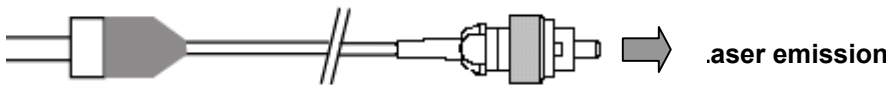
INVISIBLE LASER RADIATION
AVOID DIRECT EXPOSURE TO BEAM

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



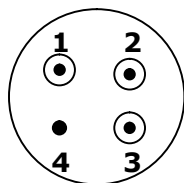
Ref : IEC60825

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

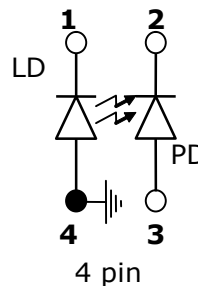


Pin Descriptions

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

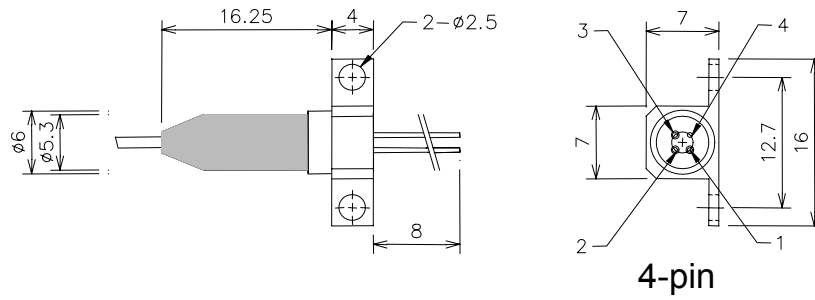


Bottom view

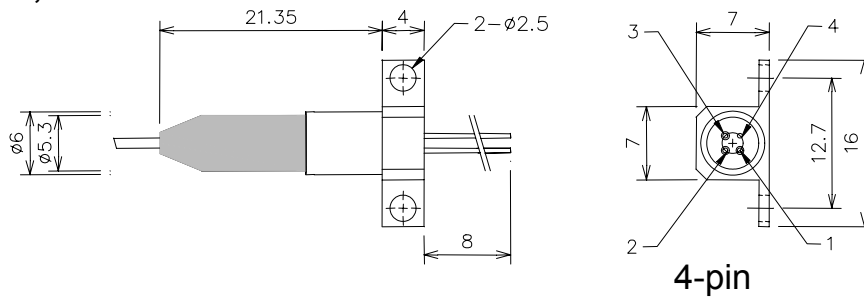


Outline Diagram

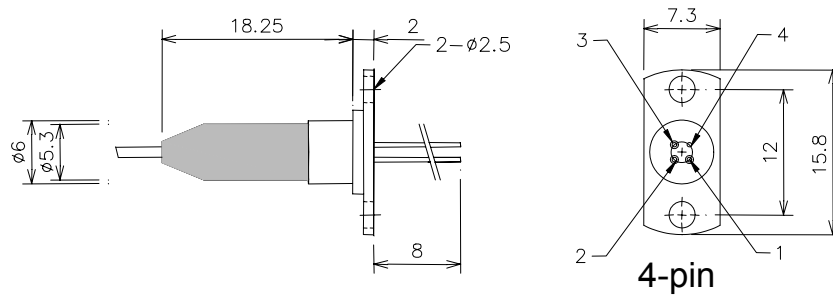
- TBFx104-xxxH



- TBFx204-xxxH, TBFx304-xxxH



- TBFx104-xxxV



- TBFx204-xxxV, TBFx304-xxxV

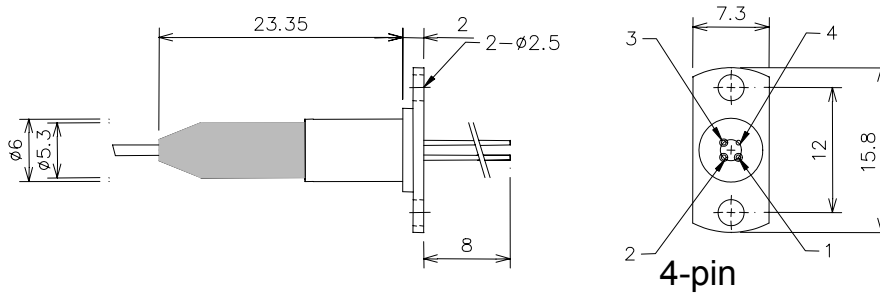


Fig.3 TBS series Dimensions [unit: mm]

Ordering Information

Company	Device Type		Wave-length	Supply Voltage	Pin	Temp. Range	Fiber	Connector	Flange
T	B	S	3	10	4	I	S	S	N
Teradial	B ; Analog App. (Wireless Repeater)	F ;FP (without isolator) S ;FP (with isolator) D ;DFB (with isolator) E ;DFB (without isolator)	3 ;1.3μm 5 ;1.55μm	10 ;1.0mW 20 ;2.0mW 30 ;3.0mW	4 ; 4pin	I ;Indoor Use (0~70℃) O ;Outdoor Use (-40~85℃)	S ;SMF M ;MMF	N ;None S ; SC/APC F ; FC/APC	N ;None V ;Vertical H ;Horizontal

*Note 1 ; additional order information

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

More Information

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