Pigtailed Analog FP-LD
TASxxxx/TAFxxxx Series

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

Family Model

TAS305x TAS310x TAS320x TAS330x
TAF305x TAF310x TAF320x TAF330x

Features

- 1.3μm 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℃ to +85℃
- Tested by TERADIAN's Reliability and Qualification Program

Description

The TASxxxx 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℃ to +85℃).

Applications

- CATV
- Analog and digital modulation systems
- Video link

Absolute Maximum Ratings

Parameters	Symbol	Unit	Min.	Max.	Remarks
Ambient Operating Temperature	T_{op}	℃	0 -40	70 85	Indoor use Outdoor use
Storage Temperature	T_{stg}	℃	-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℃)

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Threshold Current	I_{th}	CW	mA		7	15	
Operating Current	I_{op}	CW, @P_f	mA			40	TAS3XXX
Forward Voltage	V_f	CW, @P_f	V			1.6	
Optical Output Power	P_f	CW, $I_{op}=I_{th}$ + 20mA	mW		0.5 1.0 2.0 3.0		TAS305X TAF310X TAF320X TAF330X
Slope Efficiency	η	@P_f	mW/mA	0.02 0.04 0.08 0.12	0.025 0.05 0.10 0.15		TAF305X TAF310X TAF320X TAF330X
Central Wavelength	λ_C	CW, @P_f	nm	1280	1310	1340	TAF3XXX
Spectral Linewidth	$\Delta\lambda$	CW, @P_f, RMS	nm		2	3	
Tracking Error	γ	APC,T_C=0~+70℃ or -40~+85℃	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.

RF Characteristics

(T_{op} = 25℃)

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Relative Intensity Noise	RIN	CW, @P_f Freq.=5MHz to 300MHz	dB /Hz		-140	-130	
Modulation Bandwidth	f_{-3dB}		GHz	1.5			TAF3XX4
RF Bandpass Flatness	BF	Peak to valley, 5MHz to 300MHz	dB			1.0	
Carrier-to-Noise Ratio	CNR	@P_f, OMI=0.1, ref. to one-tone: 5MHz to 50MHz, 20km of fiber	dB	45			TAS3104
		@P_f, OMI=0.2, ref. to one-tone: 5MHz to 50MHz, 20km of fiber		51			TAS3204
Second-order Distortion	IMD2	@P_f, OMI=0.1, Two-tone test: f1=13MHz, f2=19MHz, f1±f2	dBc			-40	TAS3104
		@P_f, OMI=0.2, Two-tone test: f1=13MHz, f2=19MHz, f1±f2				-45	TAS3204
Third-order Distortion	IMD3	@P_f, OMI=0.1, Two-tone test: f1=13MHz, f2=19MHz, all peaks from 5MHz to 50MHz meet this level	dBc			-50	TAS3104
		@P_f, OMI=0.2, Two-tone test: f1=13MHz, f2=19MHz, all peaks from 5MHz to 50MHz meet this level				-55	TAS3204

! 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

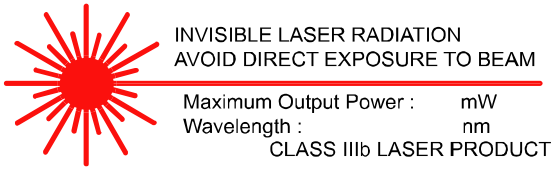
Wavelength : nm(Model :) / nm(Model :)

Measured Output power : mW(1310nm) / mW(1550nm)

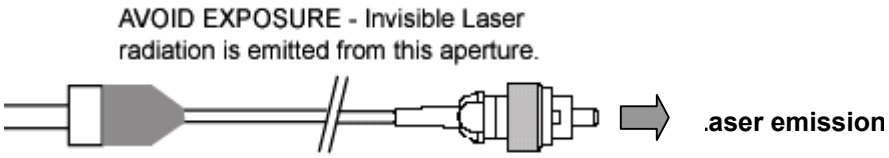
Limited Power : mW(1310nm) / nW(1550nm)

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

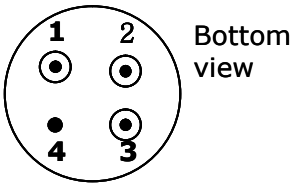


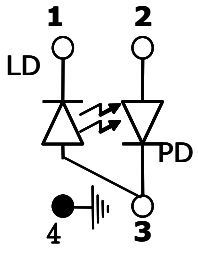
Ref : IEC60825



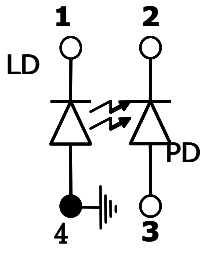
Pin Descriptions

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





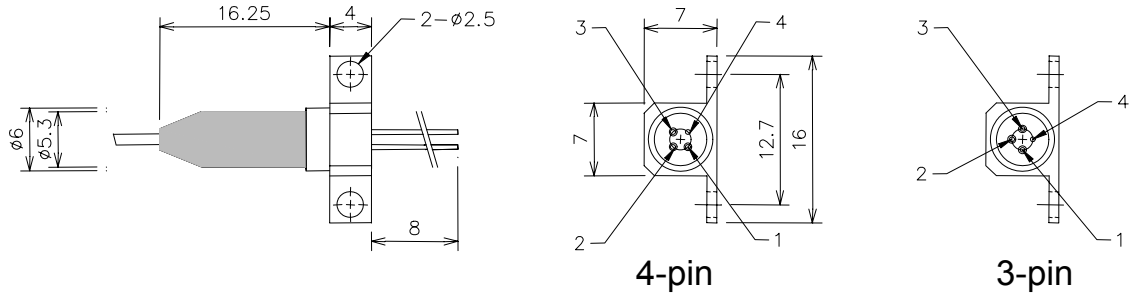
3 pin



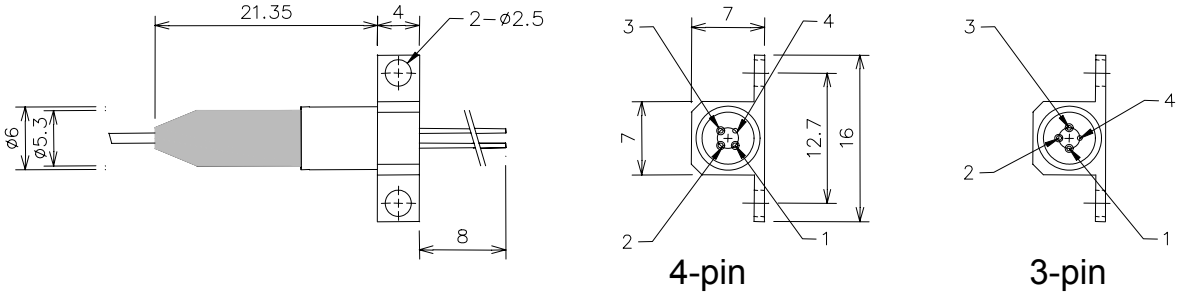
4 pin

Outline Diagram

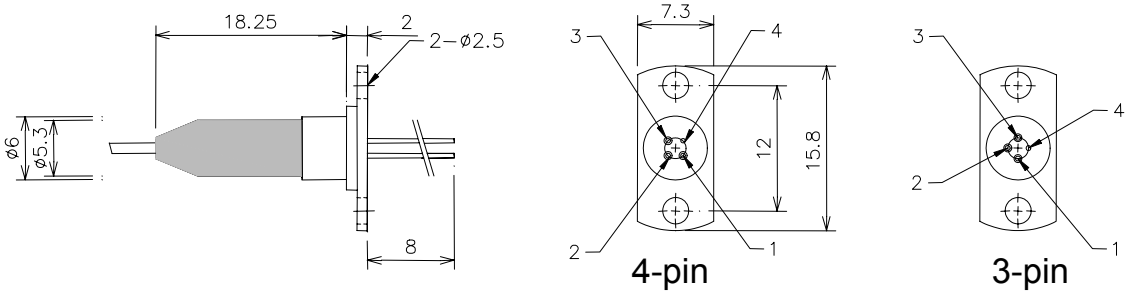
- TLFx05x-xxxH, TLF310x-xxxH



- TLF510x-xxxH, TLFx20x-xxxH, TLFx30x-xxxH



- TLFx05x-xxxV, TLF310x-xxxV



- TLF510x-xxxV, TLFx20x-xxxV, TLFx30x-xxxV

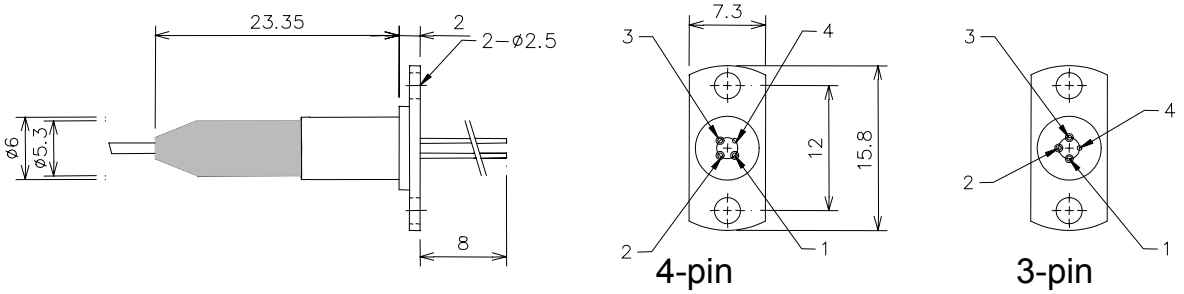


Fig.3 TAF series Dimensions [unit: mm]

Ordering Information

Company	Device Type		Wave-length	Supply Voltage	Pin		Temp. Range	Fiber	Conn-ector	Flange
T	**A**	**S**	**3**	**10**	**3**	**-**	**O**	**S**	**S**	**N**
Teradian	**A**; Analog App. (CATV return – path)	**F**;FP (without isolator) **S**;FP (with isolator) **D**;DFB (with isolator) **E**;DFB (without isolator)	**3**;1.3μm **5**;1.55μm	**05**;0.5mW **10**;1.0mW **20**;2.0mW **30**;3.0mW	**3**; 3pin **4**; 4pin		**I**;Indoor Use (0~70℃) **O**;Outdoor Use (-40~85℃)	**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 for analog application is SC/APC and the default length of fiber is 1m
- If CATV Analog application, it recommends to use the 4pin .

More Information

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