Pigtailed PIN-TIA Receivers
TPT41xx series

■ PIN-TIA with low-noise transimpedance amplifier 155Mbps
■ Operation voltage 3.3V or 5V
■ Detection wavelength range of 1.1μm to 1.6μm
■ SMF Pigtailed & SC, FC, LC or ST Connector

Family Model – x : pin

TPT413x TPT415x

Features

- InGaAs long wavelength PIN photodiode with transimpedance amplifier and decoupling capacitor operating at 155Mbps
- Operation at 1310nm & 1550nm
- High sensitivity and high overload characteristics
- High transimpedance gain with on-chip AGC(Automatic Gain Control(AGC)
- Differential or single ended output
- Operating temperature ; -40℃ to +85℃
- Single-mode fiber or Multi-mode fiber pigtailed with SC, LC, FC or ST connector

Description

The TPT4XXX series is a reliable InGaAs PIN-TIA module pigtailed with transimpedance amplifier and decoupling capacitor operating at 155Mbps.

The parts of pigtailed PD module – single-mode fiber, lens and photodiode - are actively aligned by high power YAG laser welding method. This packaging guarantees high sensitivity and low deviation over a wide temperature range(-40℃ to +85℃), and provides high optical performance for ITU-T G.651 and 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.

- Intra-office and Inter-office SONET/ITU-T SDH links

- Fiber in the loop(FTTO, FTTC, FTTH etc.)
- Transport links receiver
- Subscriber loops
- Private optical networks

Absolute Maximum Ratings

Parameters	Symbol	Unit	Min.	Max.	Remarks
Ambient Operating Temperature	T_{op}	℃	-40	85	Outdoor use
Storage Temperature	T_{stg}	℃	-40	85	
PD Reverse Voltage	V_{RP}	V	-	15	
PD Reverse Current	I_{RP}	mA	-	3	
PD Forward Current	I_{FL}	mA	-	50	
Supply Voltage	V_{cc}-GND	V	-	3.5 6	@3.3V @5V
Optical Input Power	P_{in}	mW		2.5	
Lead Soldering Temp./Time		℃/sec		260/10	

Electrical & Optical Characteristics

(T_{op} = 25℃)

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Detection range		V_R=5V, R>0.75	μm	1.1		1.6	
Responsivity	R	V_R=5V,λ=1.3μm	A/W	0.8			
Transimpedance	$R_Ω$	Differential	kΩ	52 0.2		70 200	3.3V 5.0V
Output Impedance	Z_o	Differential output	Ω		50		
Maximum Differential Output Voltage	V_{diff}		V_{p-p}			1.2	
Cut-off Frequency	f_c	High;-3dB, V_R=5V Low;-3dB, I_{IN}=1μA	GHz kHz	1.0	2.0	 30	R_L=50Ω
Small-Signal Bandwidth	B_s		MHz	115			(155)
Supply Current	I_s		mA			24 35	3.3V 5.0V
Optical Sensitivity	S	λ=1.3μm, RL=50Ω NRZ, PRBS=2^23-1 BER=10^10-1 *1	dBm			-34.0	
Optical Overloads	OL	λ=1.3μm	dBm	0.0			

* Note 1 : post-amp BW = 150MHz, Extinction Ratio of LD is 10dB

ECI : Sensitivity : -39dBm (155Mbps, typ., 4pin) -39dBm(155Mbps, max., 5pin)

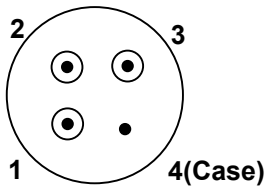
! Handling Caution

The Photo-diode can be damaged by overvoltage and current surges. Precautions should be taken for transient power supply.

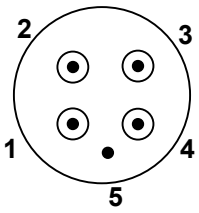
This device is susceptible to damage as a result of electrostatic discharge(ESD). Take proper precautions during both handling and testing

Pin Description

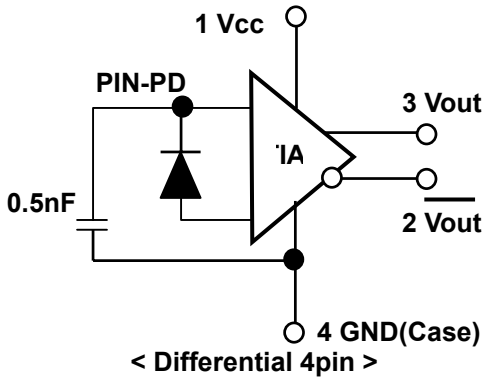
Pin No.	Differential 4pin		Single 4pin		Differential 5pin	
	Sym.	Description	Sym.	Description	Sym.	Description
1	V_{CC}	Power Supply	V_{PD}	PD bias	V_{out}	Non-inverting Data Output
2	V_{out}	Inverting Data Output	V_{CC}	Power Supply	V_{PD}	PD bias
3	V_{out}	Non-inverting Data Output	V_{out}	Non-inverting Data Output	V_{CC}	Power Supply
4	GND	Ground	GND	Ground	V_{out}	inverting Data Output
5					GND	Case GND



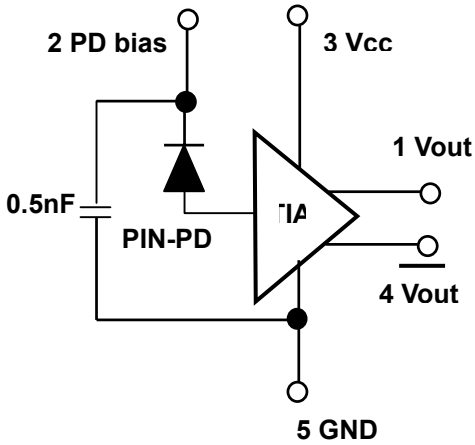
< TO Package bottom view : 4pin >



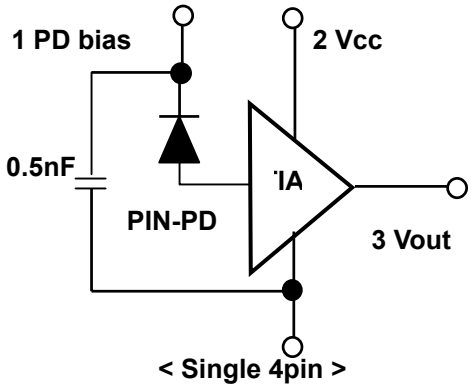
< TO Package bottom view : 5pin >



< Differential 4pin >



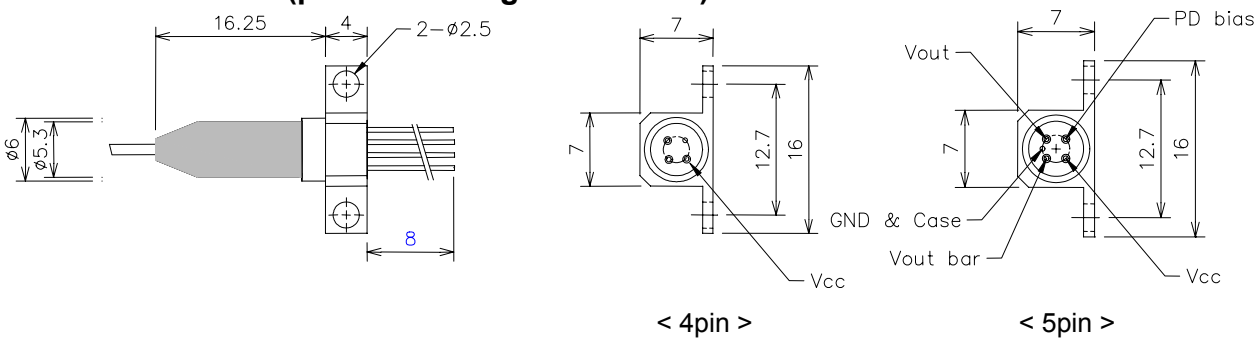
< Differential 5pin >



< Single 4pin >

Outline Diagram

– TPT4xxx-xxxH (pin numbering : clockwise)



- TPT4xxx-xxxV

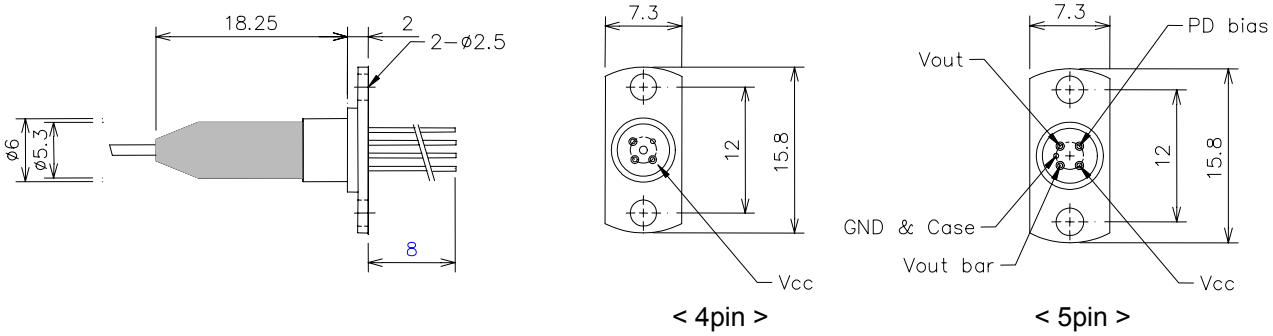
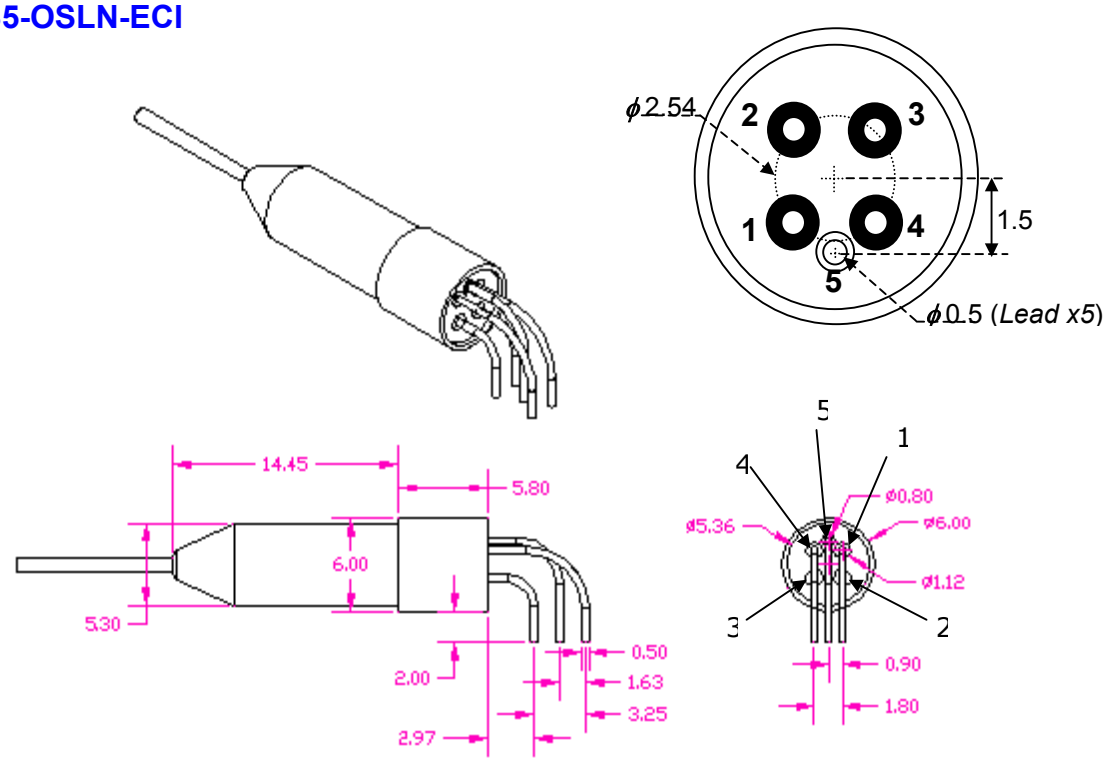


Fig.4 Pigtailed PD-TIA Package Dimensions [unit: mm]

– TPT4135-OSLN-ECI



Ordering Information

Company	Device Type		Wave-length	Data rate (PIN-TIA)	Volt. (TIA)	Pin		Temp. Range	Fiber	Connector	Flange
T	**P**	**T**	**4**	**1**	**3**	**4**	**-**	**O**	**S**	**N**	**H**
TERADIAN	**P**;PD Pigtail **C**;PD Recep-tacle	**P**;PIN **T**;PIN-TIA **A**;APD	**4**; 1.3/1.5 μm **8**; 850nm	**N**; None **0**; 51Mbps **1**;155Mbps **4**;622Mbps **8**;1.25Gbps **G**;2.5Gbps	**N**; None **3**;3.3V **5**;5V	**3**;3pin **4**;4pin (diffe-rential) **5**;5pin **6**;4pin (single ended)		**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 default is SC/PC and the default length of fiber is 1m
- In case of ordering pigtailed Bi-Di Transceiver, please specify specs. clearly if not default.

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