

Pigtailed PIN-TIA Receivers TPT44xx series



- PIN-TIA with low-noise transimpedance amplifier 622Mbps
- Operation voltage 3.3V or 5V
- Detection wavelength range of 1.1 μ m to 1.6 μ m
- SMF or MMF Pigtailed
- SC, FC, LC or ST Connector

Family Model – x : pin

TPT443x TPT445x (TPT4434-OxxxH-PE)

Features

- InGaAs long wavelength PIN photodiode with transimpedance amplifier and decoupling capacitor operating at 622Mbps
- 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 $^{\circ}$ C to +85 $^{\circ}$ C
- 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 622Mbps.

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 $^{\circ}$ C to +85 $^{\circ}$ C), 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}	°C	-40	85	Outdoor use
Storage Temperature	T _{stg}	°C	-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	-0.5	4.2/ 6pe 7.0	@3.3V @5V
Optical Input Power	P _{in}	mW		2.5 5	@3.3V @5V
Lead Soldering Temp./Time		°C/sec		260/10	

Electrical & Optical Characteristics

(T_{op} = 25°C)

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Detection range	λ	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, measured with 40μA _{p-p} signal I _{IN} <2μA _{p-p}	kΩ	16 15.7 5.2	19.5 18.3 6.5	25 20.9 7.8	3.3pe @3.3V @5V
Output Impedance	Z _o	Single ended	Ω	40 60 40	50 75 50	62 90 60	3.3pe @3.3V @5V
Differential Output Offset	ΔV _{out}	I _{IN} =1.3mA I _{IN} =500μA	mV	-25	2	25	(622)3.3 @5V
Maximum Differential Output Voltage	V _{diff}	Input = 1mA _{p-p} P to P, Single ended Input = 500μA, P-P Differential Signal	mV _{p-p}	150 75	240 200 550	400 330 950	@3.3V 3.3pe @5V
Low Cut-off Frequency (-3dB point)	f _c	High; V _R =5V Low; I _{IN} =1μA	GHz kHz			30	@3.3V @5V
High Cut-off Frequency (-3dB point)	f _{-3dB(h)}	Measured relative to the gain at	MHz	440	520	600	3.3pe

		to the gain at 10MHz		435 450	580 560		@3.3V @5.0V
Small-Signal Bandwidth	B_s		MHz	115			
Supply Current	I_s	AC coupled $R_L=50\Omega$	mA	20	20/28 20	26/42 30	@3.3V/pe @5V
Optical Sensitivity	S	$\lambda=1.3\mu\text{m}$, $R_L=50\Omega$ NRZ, PRBS= $2^{23}-1$ BER= 10^{-10} *1	dBm		-32:5 -30	-28	3.3pe
Input-Referred Noise	i_{in}	BW=460MHz	nA _{RMS}		45 73	55 93.5	@3.3V (622)
Optical Overloads	OL	$\lambda=1.3\mu\text{m}$	dBm	0	+1		

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

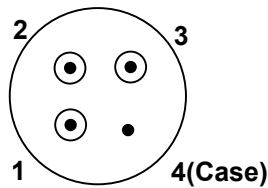
! Handling Caution

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

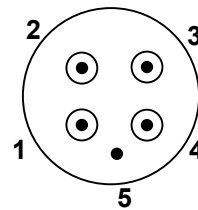
This device is susceptible to damage as a result of electrostatic discharge(ESD). Take proper precautions during both handling and testing

Pin Description

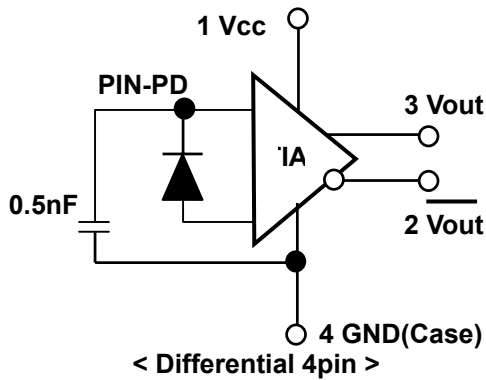
Pin No.	Differential 4pin		Single 4pin		Differential 5pin	
	Sym.	Description	Sym.	Description	Sym.	Description
1	V _{CC}	Power Supply	V _{PD}	PD bias	V _{out}	Non-inverting Data Output
2	V _{out}	Inverting Data Output	V _{CC}	Power Supply	V _{PD}	PD bias
3	V _{out}	Non-inverting Data Output	V _{out}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



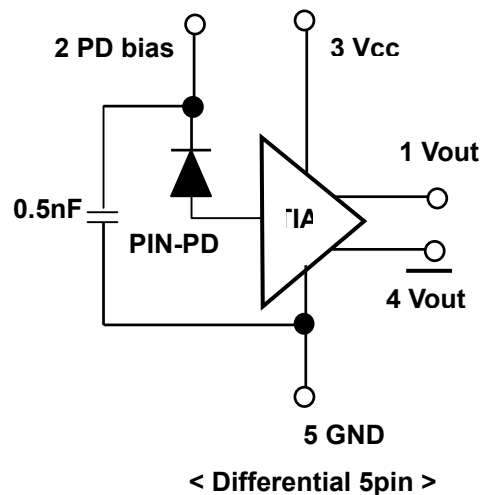
< TO Package bottom view : 4pin >



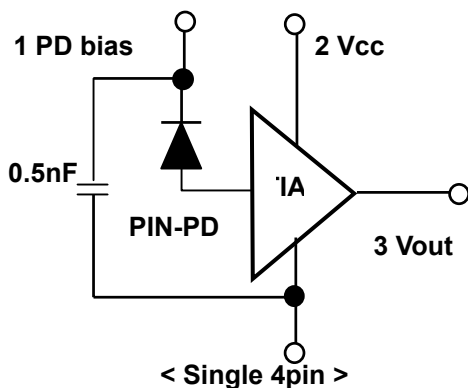
< TO Package bottom view : 5pin >



< Differential 4pin >



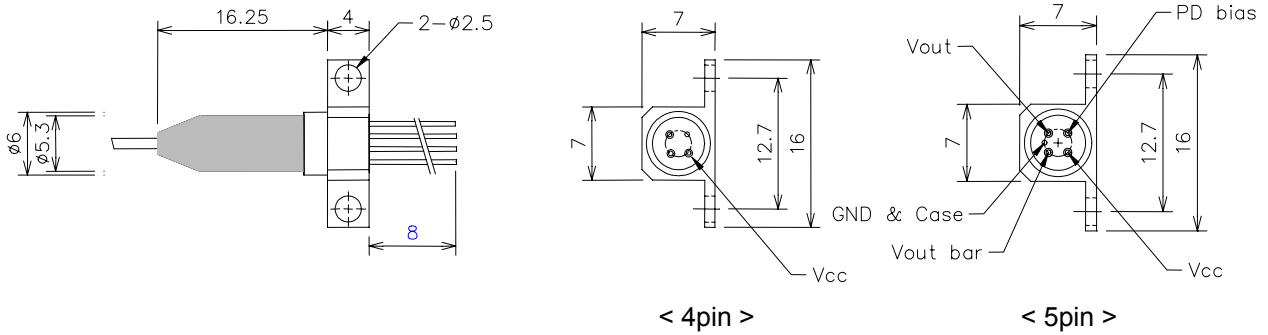
< Differential 5pin >



< Single 4pin >

Outline Diagram

- TPT4xxx-xxxH-PE(반시계 90도 회전) (pin numbering : clockwise)



- TPT4xxx-xxxV

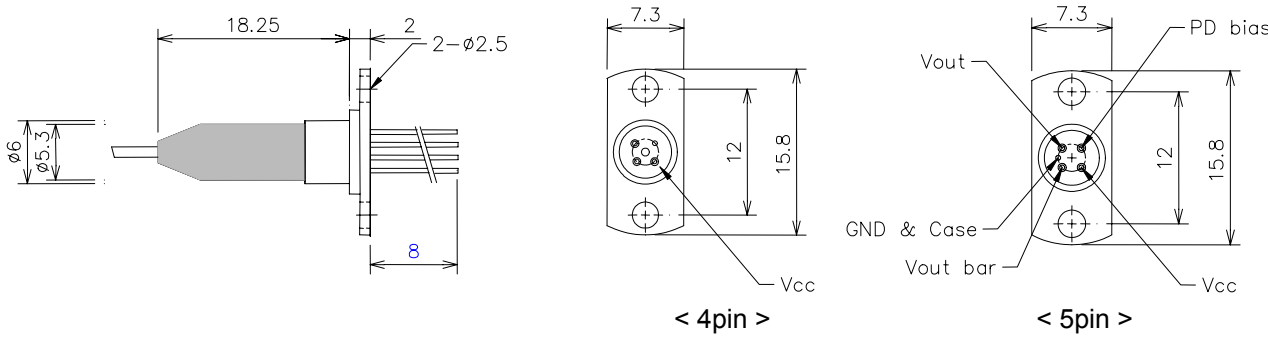
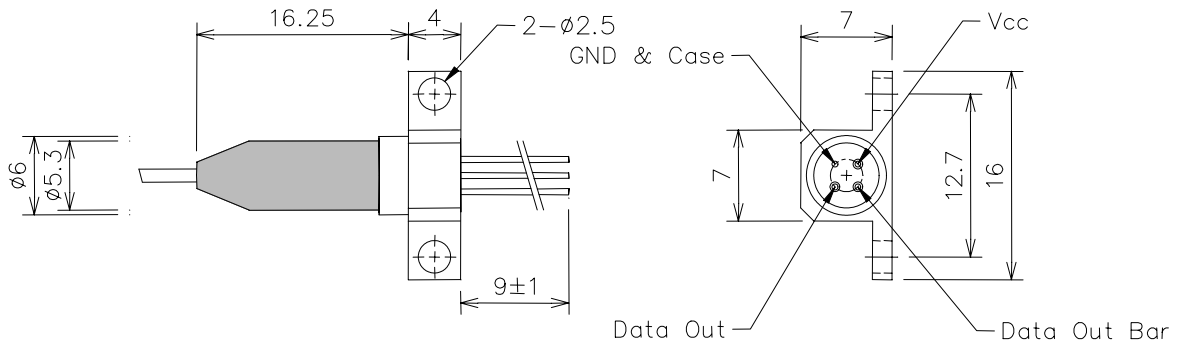


Fig.4 Pigtailed PD-TIA Package Dimensions [unit: mm]

TPT4434-OxxH-PE



Ordering Information

Company	Device Type		Wave-length	Data rate (PIN-TIA)	Volt. (TIA)	Pin	Temp. Range	Fiber	Connector	Flange
	T	P								
TERADIAN	P ; PD Pigtail C ; PD Receptacle	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 (differential) 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 ; Horizontal

*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

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