

10Gbps Pigtailed PIN-TIA Receivers TPT4T35 series



- Optical Receiver for 10/11.1Gbps Applications
- InGaAs PIN-PD with 3.3V low-noise Transimpedance amplifier
- Differential data output
- 1250 to 1650nm Wavelength
- SMF/MMF Pigtailed with SC, FC, LC or ST Connector

Features

- InGaAs long wavelength PIN photodiode with 3.3V Transimpedance amplifier and decoupling capacitor operating at 10/11.1Gbps
- Optimum detection Wavelength range of 1250 to 1650nm
- Typical sensitivity of -18.5dBm and minimum overload of +1.1dBm
- High Transimpedance gain of 4kOhm into a 100 Ohm differential load
- RSSI(Receiver Signal Strength Indicator), current output operates from sensitivity to overload optional.
- Operating junction temperature ; -40°C to +85°C
- Single-mode fiber or Multi-mode fiber pigtailed with SC, LC, FC or ST connector

Description

The TPT4T35 series optical receiver module is a reliable InGaAs PIN-TIA module pigtailed with Transimpedance amplifier and decoupling capacitor operating at 10/11.1Gbps.

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°C to +85°C).

Applications

- SONET/SDH-based Receiver systems, test equipment and module
- OC-192 fibre optic module and line termination
- 10 Gigabit Ethernet, Fibre Channel and Serial data system up to 11.1 Gbps

Absolute Maximum Ratings

Parameters	Symbol	Unit	Min.	Max.	Remarks
Operating Junction Temperature	T_{op}	°C	-40	85	
Storage Temperature	T_{stg}	°C	-40	125	
PD Reverse Voltage	V_{RP}	V	-	20	
PD Reverse Breakdown	I_{RB}	uA	-	1	@ $V_{RP} = 20V$
Supply Voltage	V_{cc}	V	-0.7	5.0	
Voltage at any input or output	V_{IO}	V	-0.5	$V_{cc}+0.5$	
Optical Input Power	P_{in}	mW		5	
Lead Soldering Temp./Time		°C/sec		260/10	

Electrical & Optical Characteristics

(T_{op} = 25°C)

Parameters	Symbol	Condition	Unit	Min.	Typ.	Max.	Remark
Supply Voltage	V_{cc}		V	3.1	3.3	3.5	
Supply Current	I_{cc}	AC coupled $R_L=50\Omega$	mA	43	55	73 (77)	(RSSI)
Detection range	λ_D	$V_R=3.3V, R_D>97\%R$	nm	1250		1650	
Responsivity	R	$V_R=3.3V, \lambda=1.3\mu m$	A/W	0.8			
Transimpedance	R_Ω	50Ω, Differential output f=100MHz	kΩ	2.3	4.0	5.7	
Output Impedance	Z_o	Single ended	Ω	40	50	60	
Input Data Rate	D_{ri}		Gb/s			11.1	
Maximum Differential Output Voltage	V_{diff}	Input = 1.3mA, P-P Differential Signal	mV _{p-p}			330	
Low Cut-off Frequency (-3dB point)	f_c	DC, mean input current = 1.3mA	kHz		24	52	
Small-Signal Upper Bandwidth (-3dB point)	B_s	-3dB point	GHz	9.0	10.8		
Optical Sensitivity	S	BER> 10 ⁻¹² , ER=10dB 10Gb/s NRZ, PRBS=2 ³¹ -1	dBm		-18.5	-16	
Input-Referred Noise	i_{in}	BW=10GHz	uA _{RMS}		1.0	1.46	
Optical Overloads	OL	$\lambda=1.3\mu m$	dBm	+1.1			
RSSI Sensitivity	RSSI _S	$I_{in}=0\sim 1.3mA$	mA/mA	0.5	1.0	1.5	@R=0.8A/W
RSSI Output Offset	RSSI _O	$I_{in}=0mA$	uA			35	
RSSI -3dB Bandwidth	RSSI _{BW}	-3dB point	kHz			38	

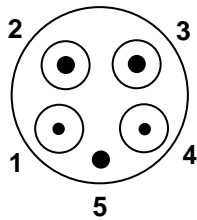
! Handling Caution

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

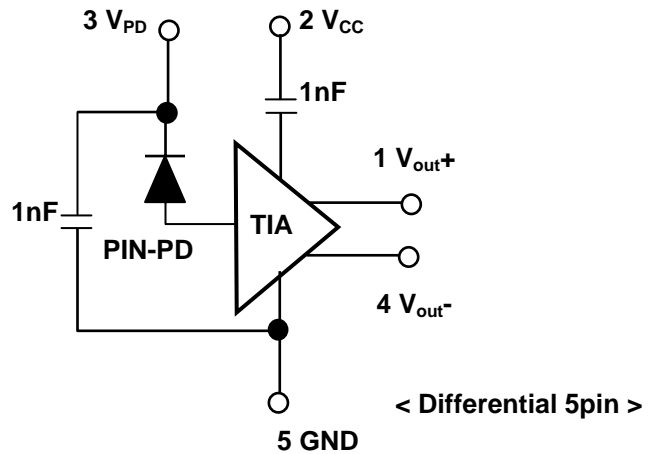
This device is susceptible to damage as a result of electrostatic discharge (ESD). Take proper precautions during both handling and testing

Pin Description

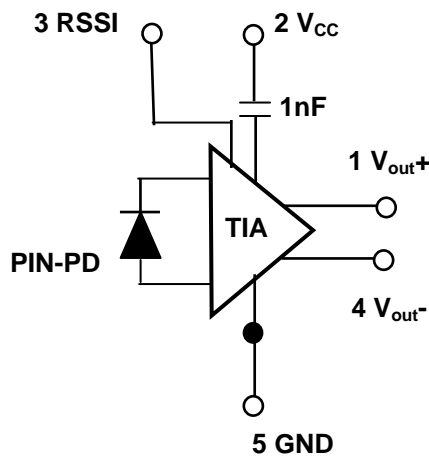
Pin No.	Differential 5pin		Differential 5pin with RSSI (optional)	
	Sym.	Description	Sym.	Description
1	V_{out+}	Inverting Data Output	V_{out+}	Inverting Data Output
2	V_{CC}	Input Supply Voltage	V_{CC}	Input Supply Voltage
3	V_{PD}	Input PD bias Voltage	I_{RSSI}	Received Signal Strength Indicator
4	V_{out-}	Non-inverting Data Output	V_{out-}	Non-inverting Data Output
5	GND	Ground	GND	Ground



< Bottom view of 5 pin-outs >



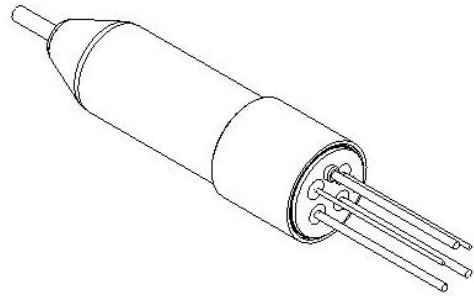
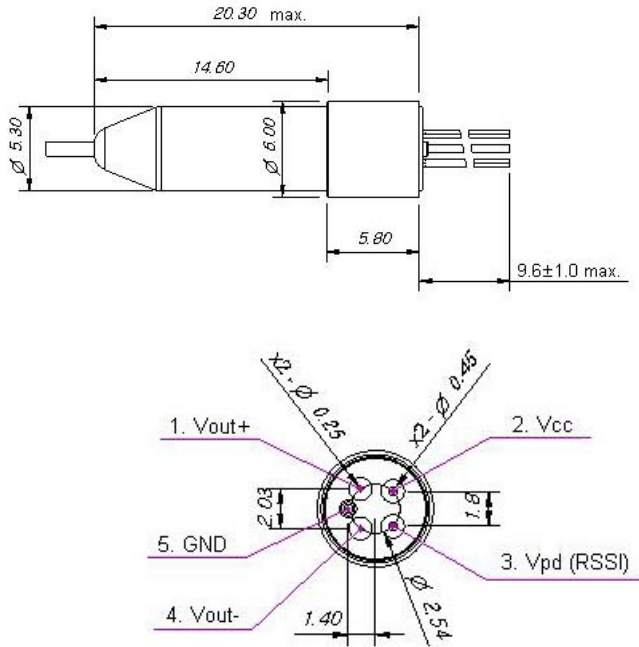
< Differential 5pin >



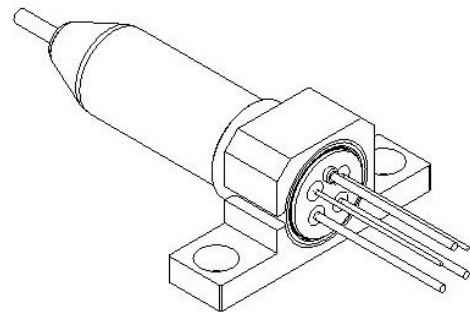
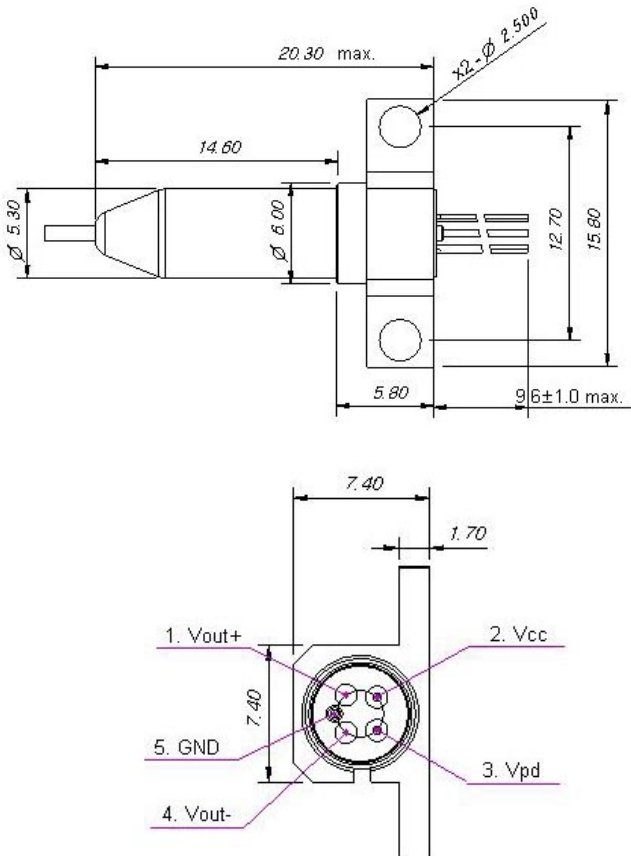
< Differential 5pin with RSSI >

Outline Diagram

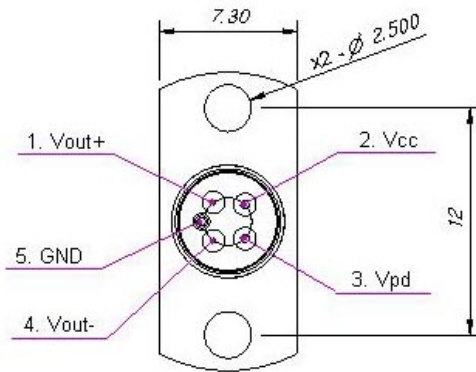
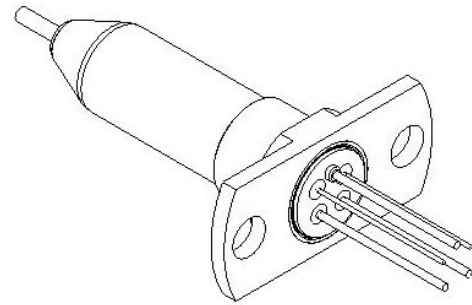
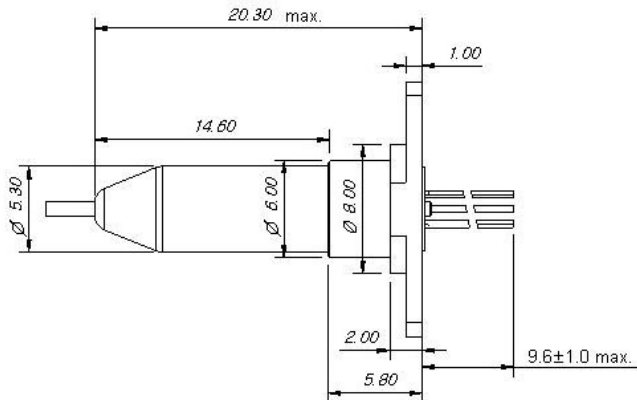
- TPT4T35-xxxN



- TPT4T35-xxxH (pin numbering : clockwise)



- TPT4T35-xxxV



< Pigtailed PIN-TIA Package Dimensions > [unit: mm]

Ordering Information

Company	Device Type		Wave-length	Data rate (PIN-TIA)	Volt. (TIA)	Pin	Temp. Range	Fiber	Connector	Flange
T	P	T	4	T	3	5	O	S	S	N
TERADIAN	P;PD Pigtail T;TO Can	P;PIN T;PIN-TIA A;APD	4;1.3/ 1.55μm 8;850nm	N; None O; 51Mbps 1;155Mbps 4;622Mbps 8;1.25Gbps G;2.5Gbps T;10Gbps	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 R;SC/APC E;FC/APC	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

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