

# PTHS992-003 10Gb/s Coplanar Surface-Mount PIN-TIA Receiver

## *PTHS992-003*

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### Features

- *Up to 10.7Gb/s data-rate capability*
- *Surface mount MSA compliant*
- *-18dBm typical sensitivity*
- *+2.0dBm typical overload*
- *Low capacitance high speed InGaAs PIN with TIA*
- *4k $\Omega$  differential electrical gain*
- *Telcordia Technologies GR-468 compliant*
- *0.18W typical power*

### Applications

- *VSR, SR and IR applications up to 10.7Gb/s.*
- *SONET and 10Gb/s Ethernet transponders*
- *Other application*

## Description

The PTHS992-003 receiver integrates a 10Gb/s PIN and a low noise preamplifier, a connectorized single-mode fibre pigtail and hermetic metal package with coplanar output, Optimized for VSR, SR, and IR applications, most notably, high gain, 3.3V power supply, and low power consumption.

## Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	TS	°C	-40	85
Photodiode Bias Voltage	VPD	V	-0.5	20
TIA Supply Voltage	VCC	V	-0.5	4
Optical Input Power	Pin	dBm	-	6
Lead solder temperature	-	°C	-	260
Lead solder duration	-	S	-	20
Fiber yield strength	-	kgf	-	1
Fiber bend radius	-	mm	30	-
ESD-susceptibility, all pin1	-	V	-	500

**Note 1:** Based on human-body model of  $R=1500\Omega$  and  $C=100\text{pf}$ , in general, ESD precautions should be taken to avoid damage to device.

## Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Case Operating Temperature Range	Tc	°C	-5	25	75
Power Supply Voltage	Vcc	V	3.1	3.3	3.5
Photodiode Bias Voltage	VPD	V	4.0	5	12

## Specifications

*(Tested under recommended operating conditions, unless otherwise noted)*

Parameter	Symbol	Unit	Min	Typ	Max	Test condition
<b>Electrical Characteristics</b>						
-3dB Bandwidth	BW	GHz	7.5	8.5	-	$P_{IN} = -20\text{dBm}$ , from 130MHz
Low Frequency Cut-off	$f_{\text{Low}}$	KHz	-	24	52	-
Transimpedance	Zt	$\Omega$	-	2000	-	Single-ended, p-p, $f=100\text{MHz}$
Max. Output Swing	$V_{\text{outp}} - V_{\text{outn}}$	mVp-p	-	330	-	For $I_{IN} > 0.1\text{mA}$ p-p
Output Impedance	Ro	$\Omega$	-	50	-	Single-ended
TIA Supply Current	Icc	mA	43	55	73	No loads
<b>Optical Characteristics</b>						

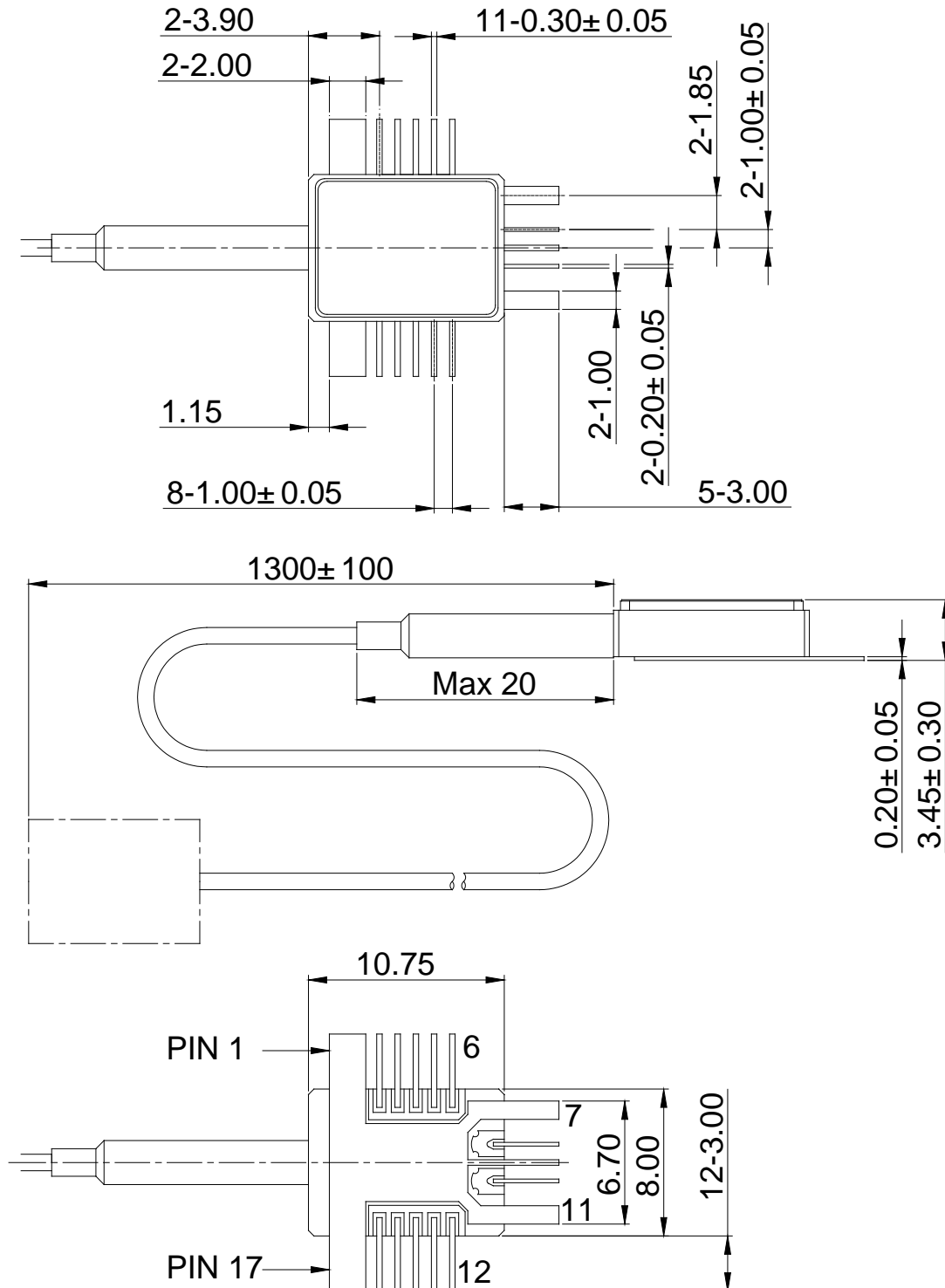
Optical wavelength	$\lambda$	nm	1280	1550	1610	-
Optical Return Loss	ORL	dBm	35	-	-	-
Overload	Ps	dBm	+1.0	+2.0	-	$\lambda=1550\text{nm}$ , NRZ, ER=10dB, 9.953Gb/s, PRBS $2^{31}-1$ , BER= $10^{-12}$
Sensitivity	S	dBm	-	-18.0	-17.0	
Responsivity	R	A/W	0.80	0.90	-	$\lambda=1550\text{nm}$

## Pin Description

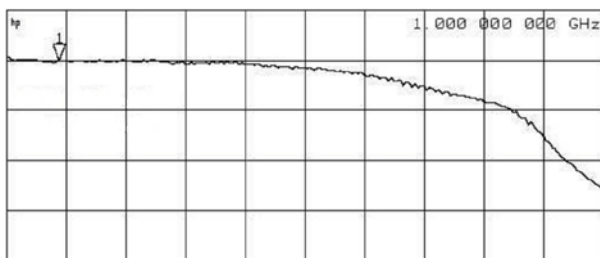
Pin	Symbol	Description	Pin	Symbol	Description
1	GND	Case ground	10	OUT_P	Data output
2	V <sub>PD</sub>	Photodiode Bias	11	GND	Case ground
3	NC	No Connection	12	GND	Case ground
4	NC	No Connection	13	NC	No Connection
5	NC	No Connection	14	V <sub>CC</sub>	TIA Bias(3.3V)
6	GND	Case ground	15	NC	No Connection
7	GND	Case ground	16	NC	No Connection
8	OUT_N	Data output	17	GND	Case ground
9	GND	Case ground			

## Package Outline Drawing

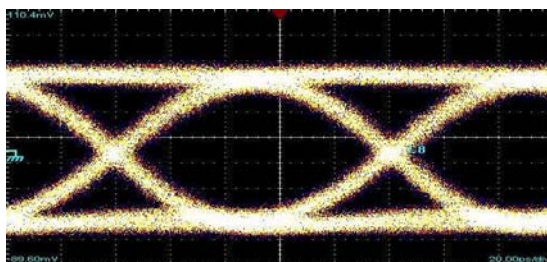
[Unit: mm]



## Characteristic Curves



**Figure 1.** S21: 0.13GHz to 10GHz,3dB/div



**Figure 2.** Eye pattern:  $P_{IN}=-17\text{dBm}$ , 9.953Gb/s,  $2^{31}-1\text{PRBS}$

## Ordering Information

Part No.	Specification							
	Package	Datarate	Laser	Optical Power	Detector	Sensitivity	Temp	Others
PTHS992-003	17pin SMT	9.953Gb/s	-	-	PIN+TIA	-18dBm	-5-75°C	

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