


# 10Gb/s Coplanar PIN Preamp Receiver

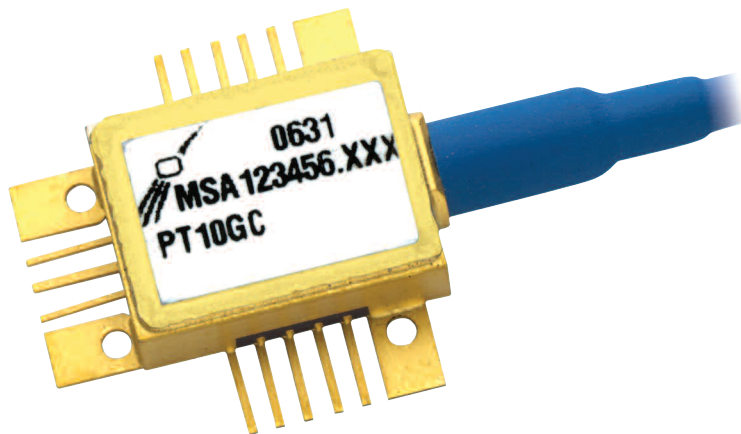
## PT10GC

The module consists of a PIN photodetector, a low noise preamplifier, a connectorized single-mode fibre pigtail and a hermetic metal package with coplanar output.

Optimized for use in 10 Gb/s long haul applications, either as a discrete device or within a transponder, using NRZ Modulation.

### Features:

- High sensitivity, -18.5 dBm typical
- Surface mount MSA compliant
- Low capacitance high speed InGaAs PIN detector
- Hermetically sealed
- Designed to exceed the requirements of Telcordia GR468-CORE
- Single mode fibre tail
- Compatible with AT10GC APD Receiver
- Output stage limits the signal to typically 1100 mV p-p differential, removing the need for a post amplifier
- RoHS 5/6 compliant 



## Characteristics

TC = 25°C unless otherwise specified

Parameter	Symbol	Min	Typ	Max	Unit
Optical sensitivity $2^{31}-1$ BER $<10^{-12}$ [4]	Sens		-18.5	-17	dBm
Optical overload $2^{31}-1$ BER $<10^{-12}$	Psat	+1			dBm
High frequency -3 dB corner [2]	f3 dB	8	9.5		GHz
Return loss S22 (400 KHz to 7 GHz)				-8	dB
PiN bias voltage	Vpd		5		V
Dark current	Id			10	nA
PiN responsivity [1]	R	0.7	0.8		A/W
Amplifier bias voltage	Vee		-5.2		V
Amplifier current consumption	Iee		75	90	mA
Transimpedance gain [2,3,5]	TZG	1100	1440	1800	Ohms

- Notes** [1] Optical wavelength between 1525nm – 1575nm.  
 [2] Load impedance is 50 Ω (AC coupled) with a return loss >20 dB, up to 20 GHz.  
 [3] Excludes PIN responsivity.  
 [4] Measured with 10 Gb/s NRZ PRBS data and no FEC.  
 [5] Differential.

## Absolute Ratings

Parameter	Symbol	Min	Max	Unit
Amplifier bias voltage	Vcc	-6	+0.5	V
Operating temperature [1]	Top	-40	85	°C
Storage temperature [2]	Tstg	-40	85	°C
Optical input [3]	po		10	dBm
Fibre bend radius		35		mm
Maximum PIN bias voltage	Vpd		+7.5	V

- Notes (Absolute Ratings):**  
 [1] The operating temperature is defined as the temperature of the module case.  
 [2] The rating is referred to ambient temperature.  
 [3] The optical level that causes no damage to the module. However, the electrical and optical performance specified in this document may not be guaranteed.

### Pin Out

Pin #	Symbol	Parameter	Pin #	Symbol	Parameter
1	GND	Case ground	10	Out_P	Positive output
2	Vpd	PIN bias voltage	11	GND	Case ground
3	NC	No connection	12	GND	Case ground
4	Vee	Amplifier Bias	13	FBIN	Offset feedback (if used)
5	NC	No connection	14	NC	No connection
6	GND	Case ground	15	NC	No connection
7	GND	Case ground	16	NC	No connection
8	Out_N	Negative output	17	GND	Case ground
9	GND	Case ground			

### Schematic Diagram

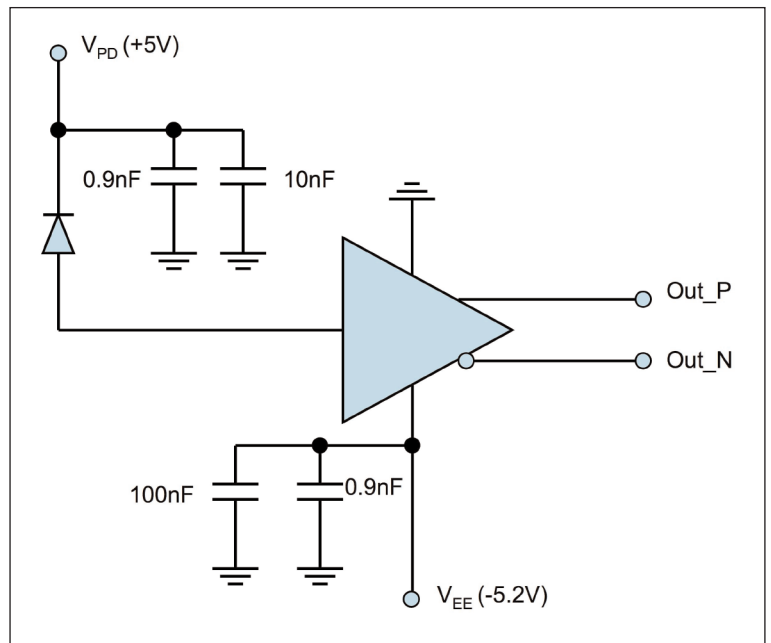


Figure 1: Schematic Diagram

### Typical Performance Characteristics

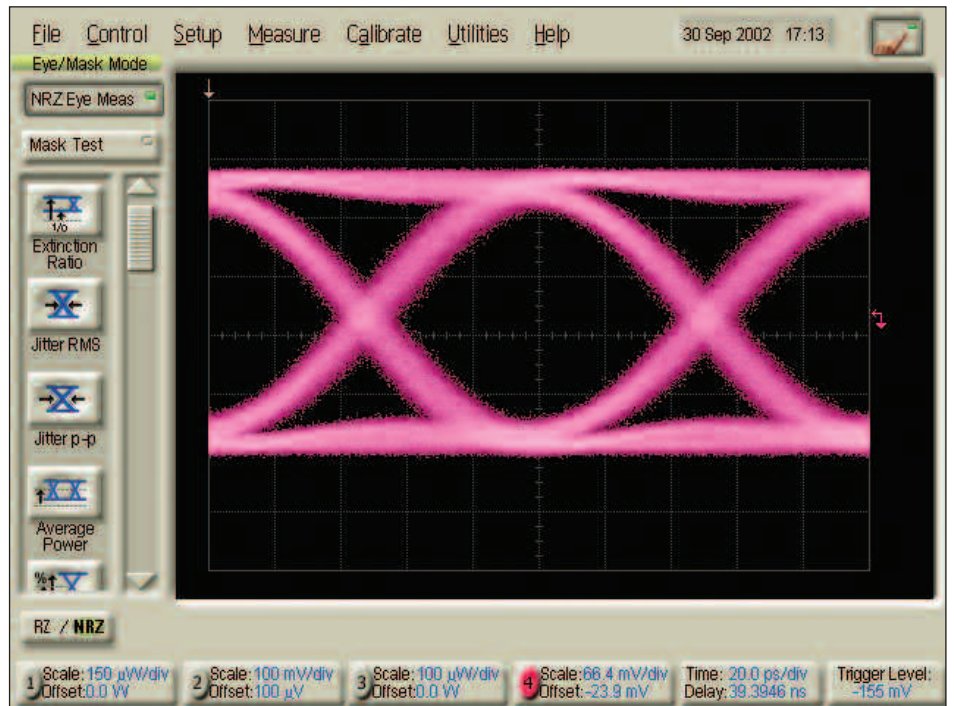


Figure 2: Typical small signal eye diagram measured at 10Gb/s 223-1 PRBS.

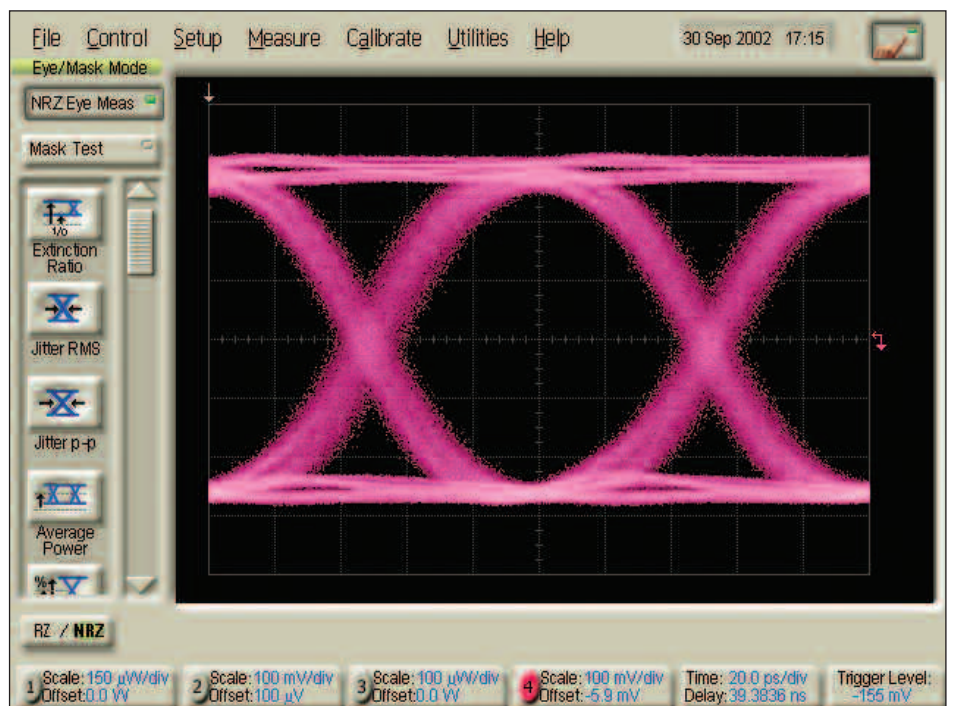


Figure 3: Typical large signal eye diagram measured at 10Gb/s 223-1 PRBS.

Typical Performance Characteristics (continued)

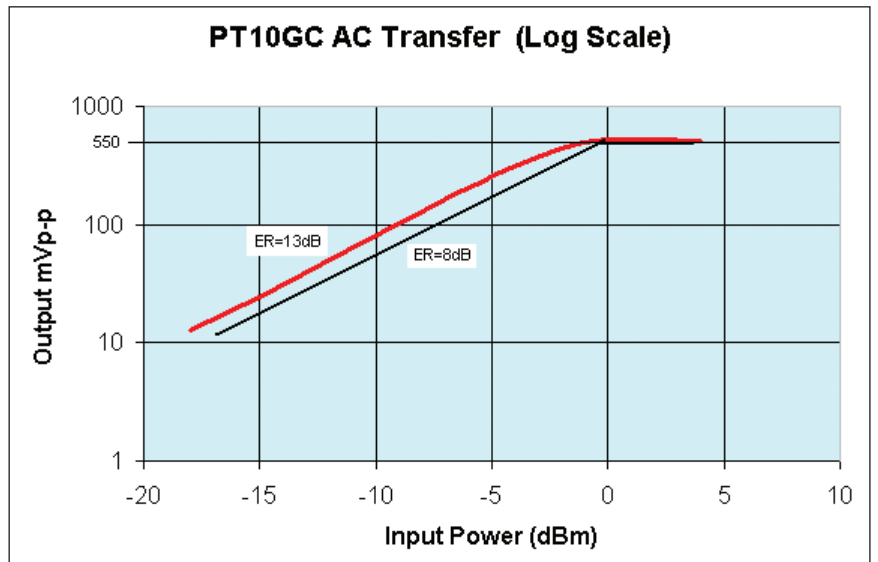


Figure 4: PT10GC AC transfer function.

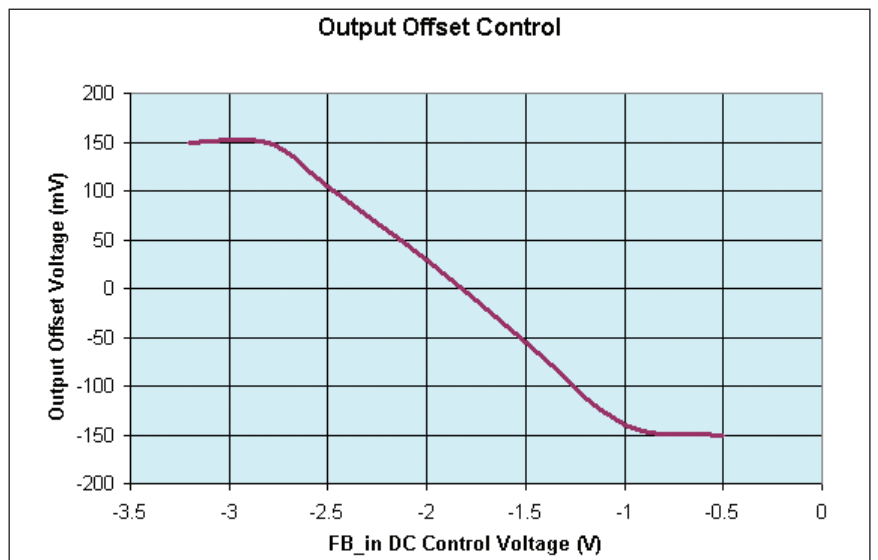


Figure 5: Output DC offset adjust using FB\_in (pin 13).

## Outline Diagram

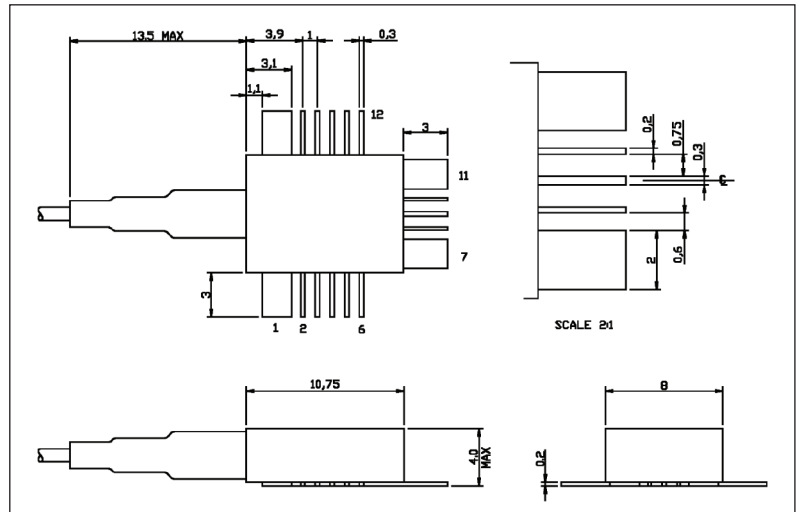


Figure 6: Outline Diagram.

## RoHS Compliance



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### Ordering Information

PT10GC - (Connector)  
 J = SC/PC  
 J57 = LC

e.g. PT10GC-J is a PT10GC with an SC/PC connector.

Other options available on request.

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