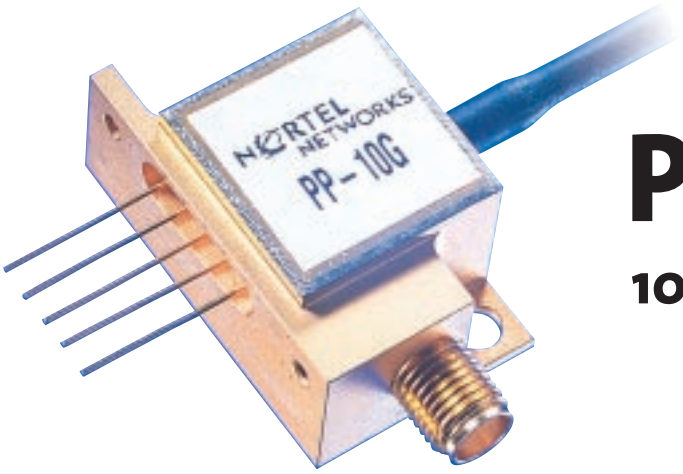
High Performance
Optical Component Solutions

DATASHEET



PP - 10G

10Gb/s PIN Preamp Receiver

Features

Low capacitance high speed InGaAs PIN detector.

GaAs HBT preamp IC chip.

Single polarity power supply.

11GHz bandwidth.

Wide dynamic range.

Hermetically sealed.

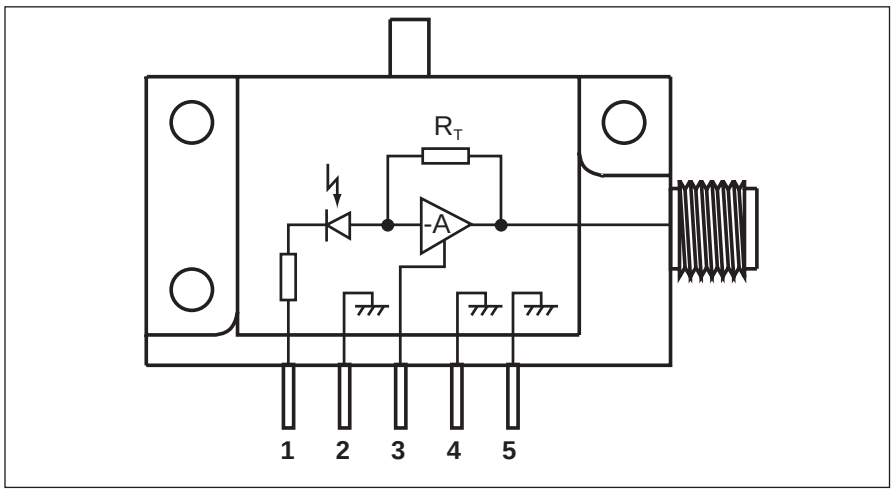
Bellcore TR-NWT-000468 compliant.

Applications

Long and short reach SONET/SDH systems
Optically preamplified receivers
Datacom systems up to 12.5 Gb/s

Description

The PP-10G module consists of a low capacitance photodetector and a low noise GaAs transimpedance amplifier in an hermetic package with a connectorized single-mode fibre pigtail and a 50 Ω SMA electrical output.



NORTEL NETWORKS™

PP - 10G

Characteristics

Over entire temperature range, at end-of-Life

General	Min	Typ	Max	Unit
NRZ data rate		10		Gb/s
Operating case temperature	0		70	°C
Physical dimensions		30 x 19 x 13.6		mm
SM fibre pigtail connector options		Standard SC-PC, Custom ST-PC, FC-PC		

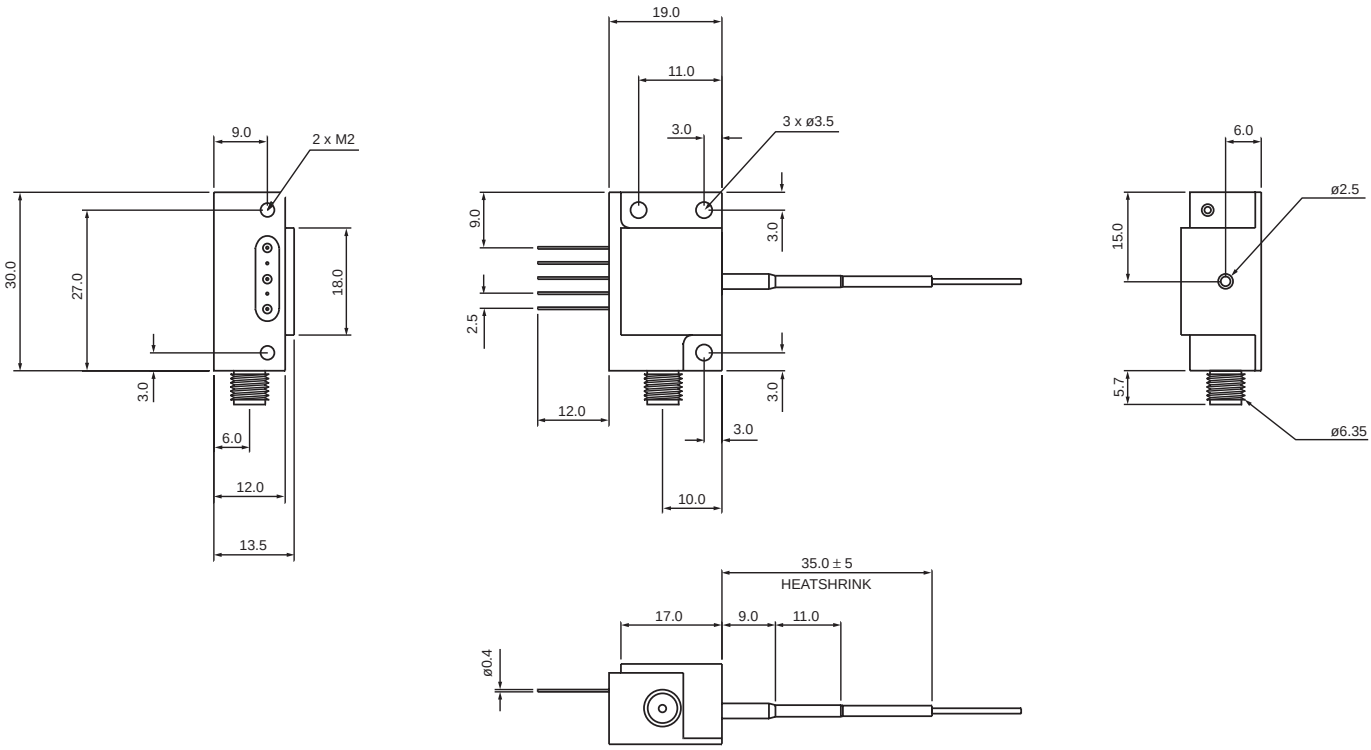
Performance	Symbol	Min	Typ	Max	Unit
Module PIN bias voltage	V_m	9.5	11.5	13.5	V
Positive supply	V_{cc}	7.5	8	8.5	V
Power dissipation	P_d		1	1.6	W
PIN responsivity (1)	R		0.88		A/W
PIN responsivity (5)	R		0.83		A/W
Responsivity variation with temperature 0°C to 70°C			5		%
Dark current (25°C)	I_d			10	nA
Optical connector loss			0.3		dB
Sensitivity (2)		-18	-19		dBm
Optical saturation power (BER< 10^{-9})	P_{sat}	0			dBm
Average input equivalent noise current density 30KHz - 10GHz	I_e			16.5	pA/√Hz
High frequency -3dB corner (3)			11		GHz
Transimpedance gain (3,4)	TZG	400	500	650	Ohms
Trans. gain variation with supply voltage and temperature (3)		-15		+15	%
Output return loss (3) 100kHz - 8GHz		10			dB

Notes :

1. Excluding optical connector loss. Optical wavelength is in the 1300nm region and between 1525 - 1575nm.
2. For 10^{-10} BER, PRBS 2^{23}-1. NRZ @10Gb/s
3. Load impedance is 50Ω with a return loss > 20dB, up to 20GHz.
4. Excluding PIN responsivity factor and connector loss.
5. Excluding optical connector loss. Optical wavelength is in the range 1576 - 1610nm.

Outline Drawing

Dimensions in mm



Instructions for Use - PP-10G

Pin 1 PIN Bias

A DC voltage, between 9.5V and 13.5V, to reverse bias the PIN. This voltage should be present BEFORE the Positive Supply (pin 3) is applied to prevent the possibility of forward biasing the PIN (which will damage the device). Power down sequence is: pin 3, then pin 1. This pin should be decoupled externally to minimise conducted noise from the power rails.

Pin 2, 4, 5 Ground

Ground all pins for optimum performance.

Pin 3 Positive Supply

DC voltage between 7.5 and 8.5V provides power to the pre-amplifier IC. This pin should be decoupled externally to minimise conducted noise from the power rails. The source should be capable of supplying up to 150 mA.

SMA Electrical Output

Device output is via the SMA connector and should be delivered into a 50Ω load. There is a DC offset of approximately 3V on this pin, so most applications will require that the output is AC coupled.

PP - 10G

Absolute Ratings

Parameter	Symbol	Ratings	Units
Positive supply	V_{cc}	9	V
Operating temperature (1)	T_{op}	0 to 70	°C
Storage temperature (2)	T_{stg}	-50 to 70	°C
Maximum optical input (3)	P_o	10	dBm
Maximum module PIN bias voltage	V_m	15	V
Maximum peak module PIN current	I_m	3	mA
Minimum fibre bend radius		35	mm

Notes :
1. The operating temperature is defined as the temperature of the module case.
2. The storage temperature is defined as the ambient temperature.
3. The optical level that causes no damage to the module. Performance specified in this document is not guaranteed at this input power.

Device Ordering Information

PP - 10G (Standard connector SC/PC (C28B)

Connector type FC/PC = C33

A Qualification Test Report QR1317B is also available for this device

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