



FEATURES

- Wide dynamic range, typically $6\mu\text{W}$ to 1.7mW (p-p)
- Differential transimpedance of $4\text{k}\Omega$
- Bandwidth from DC to 1.9GHz
- Differential outputs
- On-chip Automatic Gain Control(AGC)
- Single supply voltage 3.3V
- Remains linear up to 1.7mW (p-p) input current(unclipped)



AGC CHARACTERISTICS

The XPD0250CT-001 can handle input optical power from $6\mu\text{W}$ to 1.7mW which is equivalent to a dynamic range of 49dB . At low input optical power, the transimpedance gain Z_T must be high to obtain enough output voltage, and the noise should be low enough to guarantee a minimum bit error rate. The transimpedance is regulated from $4\text{k}\Omega$ at low input optical power ($P_o < 30\mu\text{W}$) to 80Ω at high power ($P_o = 1.7\text{mW}$).

APPLICATIONS

- Digital fiber optic receiver in short, medium and long haul optical telecommunications transmission systems or in high speed data networks
- Wide-band RF gain block

ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Power supply voltage	V_{CC}	-	3.0	3.3	3.3	V
Power supply current	I_{CC}	-		26	37	mA
Photodiode bias voltage*	V_{PD}	-	3.3		5	V
Transimpedance	Z_T	$R_L=50\Omega$, measured differentially, AC coupled		4		$\text{k}\Omega$
3dB Bandwidth	f_{3dB}	$P_{in}=-10\text{dBm}$	1.7	1.9		GHz
Transimpedance gain deviation	ΔZ_T	$f=1\text{MHz}$ to 1.8GHz			2	dB
Electrical return loss	L_E	-			-10	dB
Responsivity	R	$\lambda = 1550\text{nm}$	0.85			A/W
Output impedance	Z_O	-		50		Ω

* Photodiode bias is necessary only for 5 pin type module.

2.5 Gbps PIN-TIA module – XPD0250CT-001

OPTICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Optical wavelength range	λ	-	1100		1600	nm
Sensitivity	P_S	RL=50, 2.5Gbps NRZ, PRBS=2 ²³ -1, BER=1×10 ⁻¹⁰		-23		dBm
Maximum overload	P_{MAX}				2	dBm
Optical return loss	Lo	$\lambda = 1550\text{nm}$			-30	dB

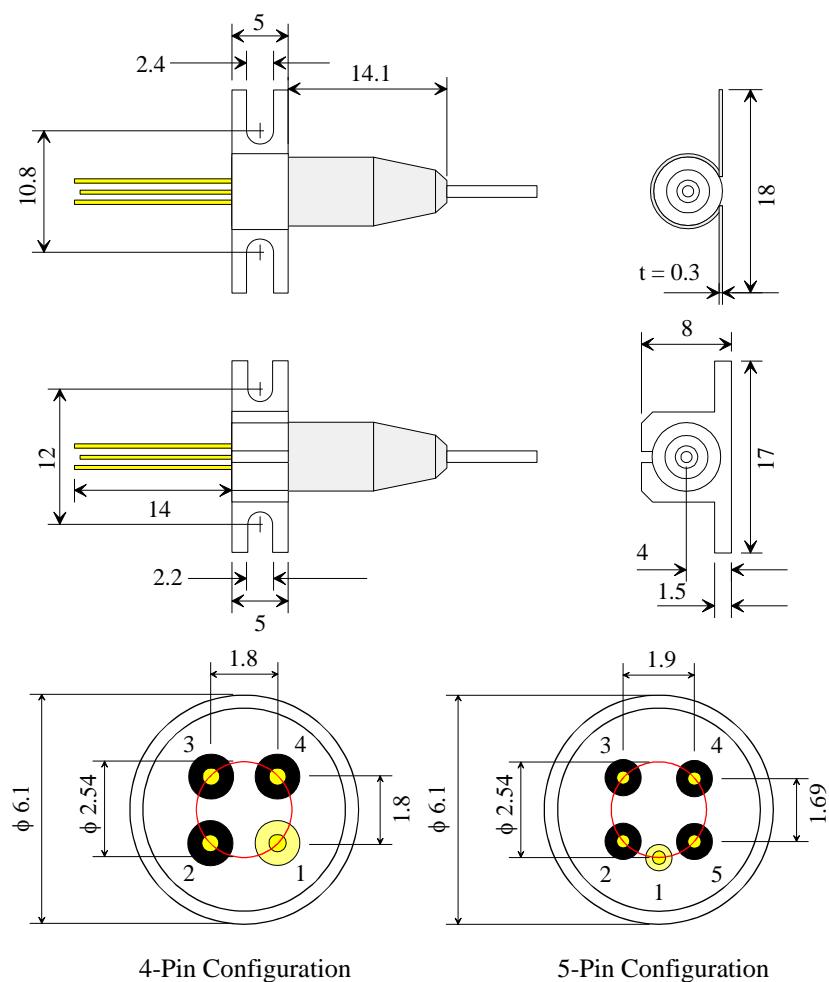
ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	+3.8	V
Photodiode bias voltage*	V_{PD}	10	V
Operating case temperature range	T_C	-20 to +75	$^\circ\text{C}$
Storage temperature range	T_{STG}	-40 to +85	$^\circ\text{C}$

* Photodiode bias is necessary only for 5 pin type module.

MECHANICAL DIMENSIONS & PIN LAYOUT

(unit : mm)



2.5 Gbps PIN-TIA module – XPD0250CT-001

PIN CONFIGURATION

4 pin

	A1	AM	B1	BM
1	GND	GND	GND	GND
2	OUTQ	OUT	OUT	OUTQ
3	OUT	OUTQ	VCC	VCC
4	VCC	VCC	OUTQ	OUT

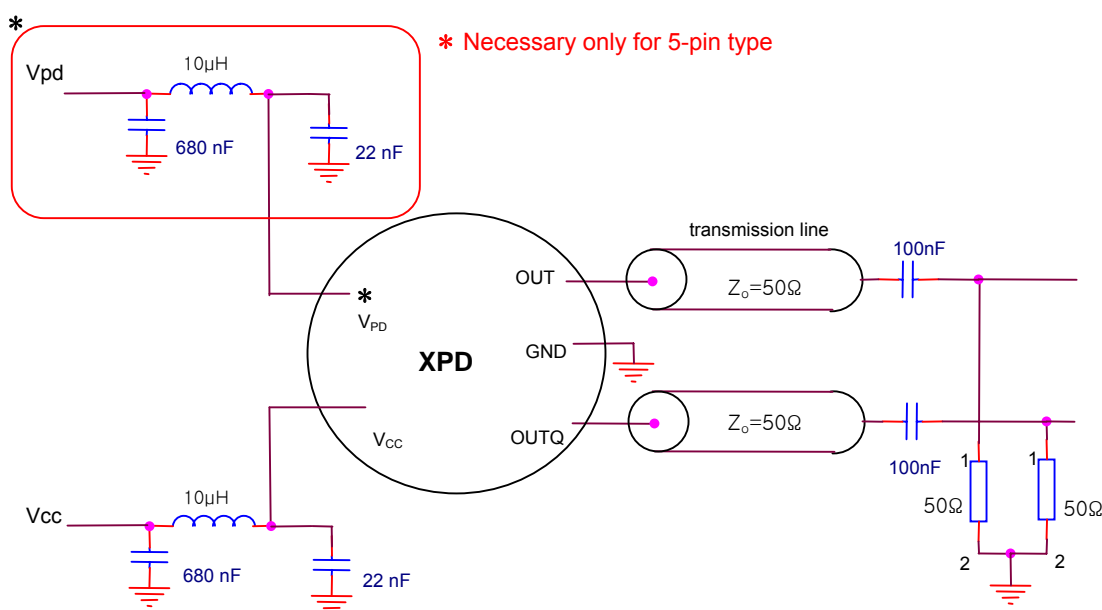
5 pin

	C1	CM	D1	DM
1	GND	GND	GND	GND
2	OUT	OUTQ	OUT	OUTQ
3	VCC	VCC	VPD	VPD
4	VPD	VPD	VCC	VCC
5	OUTQ	OUT	OUTQ	OUT

Symbol	Type	Description
GND	Ground	Ground
Vout	Output	Data output
Vcc	Supply	Supply voltage
Voutq	Output	Data reverse output
Vpd	Supply	PD bias voltage

Other pin configurations are available. Please contact us for new pin configurations custom ordered.

APPLICATIONS DIAGRAM



PRECAUTIONS FOR USE

ESD protection is imperative. Use of ground straps, anti static mats, and other standard ESD protective equipment is recommended when handling or testing an InGaAs PIN/APD or any other junction photodiode.

Soldering temperature of the leads should not exceed 260 °C for more than 10 seconds.

Fiber pigtailed should be handled with less than 10 N pull and with a bending radius greater than 1 inch.

2.5 Gbps PIN-TIA module – XPD0250CT-001

ORDERING INFORMATION

Model name				Option			
PD type	Bit-rate	Package type	Code	Pinning	Fiber*	Connector type	Flange
XPD: PIN PD	0250: 2.5G	CT: Coaxial type embedded TIA	001	A1 B1 C1 D1	S: SMF M: MMF P: PMF	NC: No connector SP: SC/UPC FP: FC/UPC SA: SC/APC FA: FC/APC	N: No flange F: Flange B: Bracket

* Standard fiber length: 1 meter

ex) XPD0250CT-001-A1SFPN

2.5 Gbps PIN-TIA receiver module with A1 pin-layout, single mode fiber-pigtailed FC/UPC connector

REVISION HISTORY

Date	Revision	Description
July 2004	003	Document layout is changed
January 2003	002	Document revised
August 2002	001	Initial release

URL: www.XL-photonics.com E-mail: sales@XL-photonics.com

59-8 Jang-Dong, Yusong-Gu, Daejeon 305-343, South Korea

TEL: +82-42-3600-100 FAX: +82-42-3600-101

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