

**InGaAs PIN-PD RECEIVER WITH INTERNAL PRE-AMPLIFIER
FOR 10 Gb/s APPLICATIONS****DESCRIPTION**

The NR3312 Series products consist of InGaAs PIN ROSAs (Receiver Optical Sub-Assembly) with internal pre-amplifiers designed for 10 Gb/s optical transceivers such as the XENPAK/X2/XFP. These modules are ideal as receivers for IEEE 10G BASE and SONET OC-192 systems.

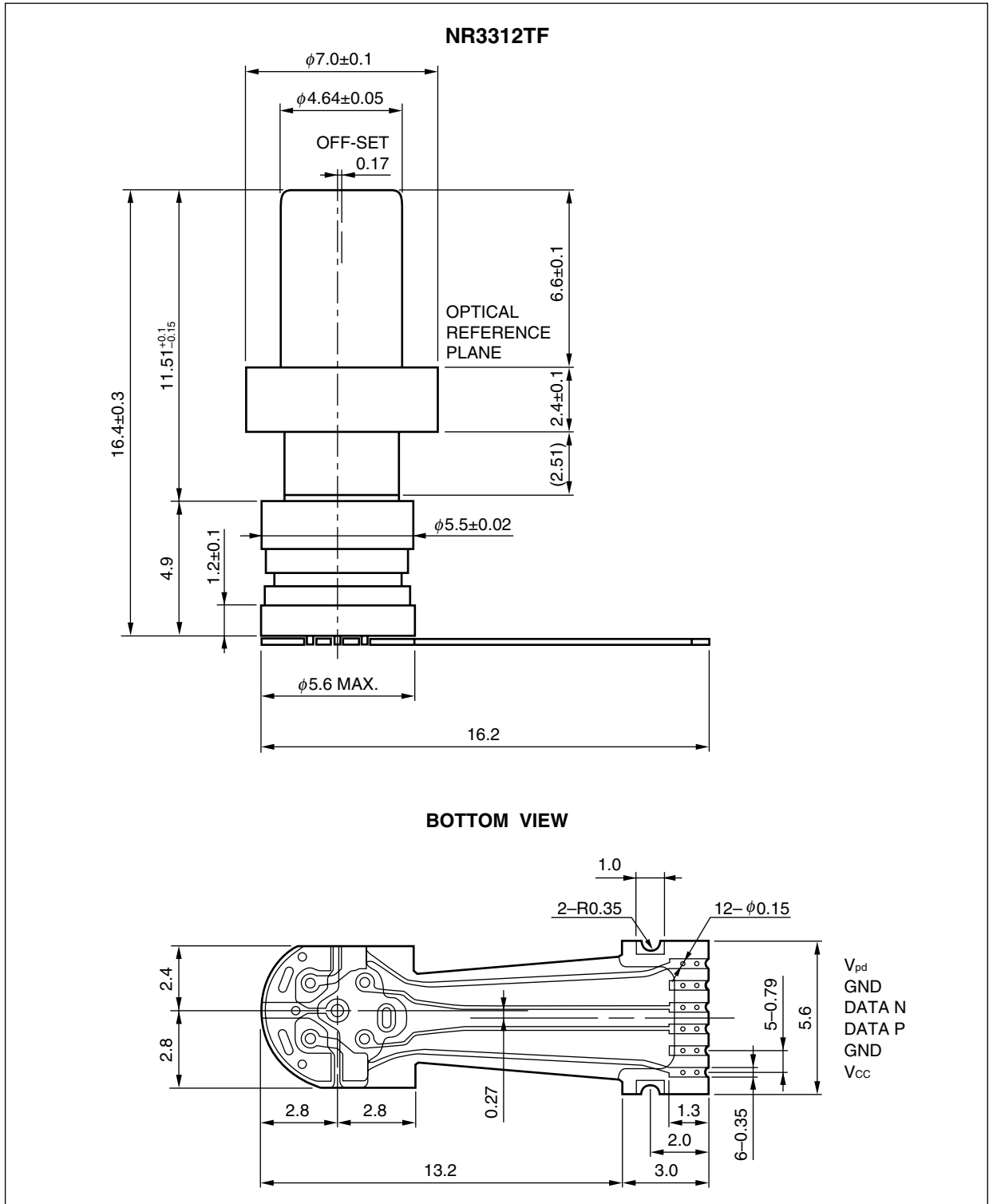
FEATURES

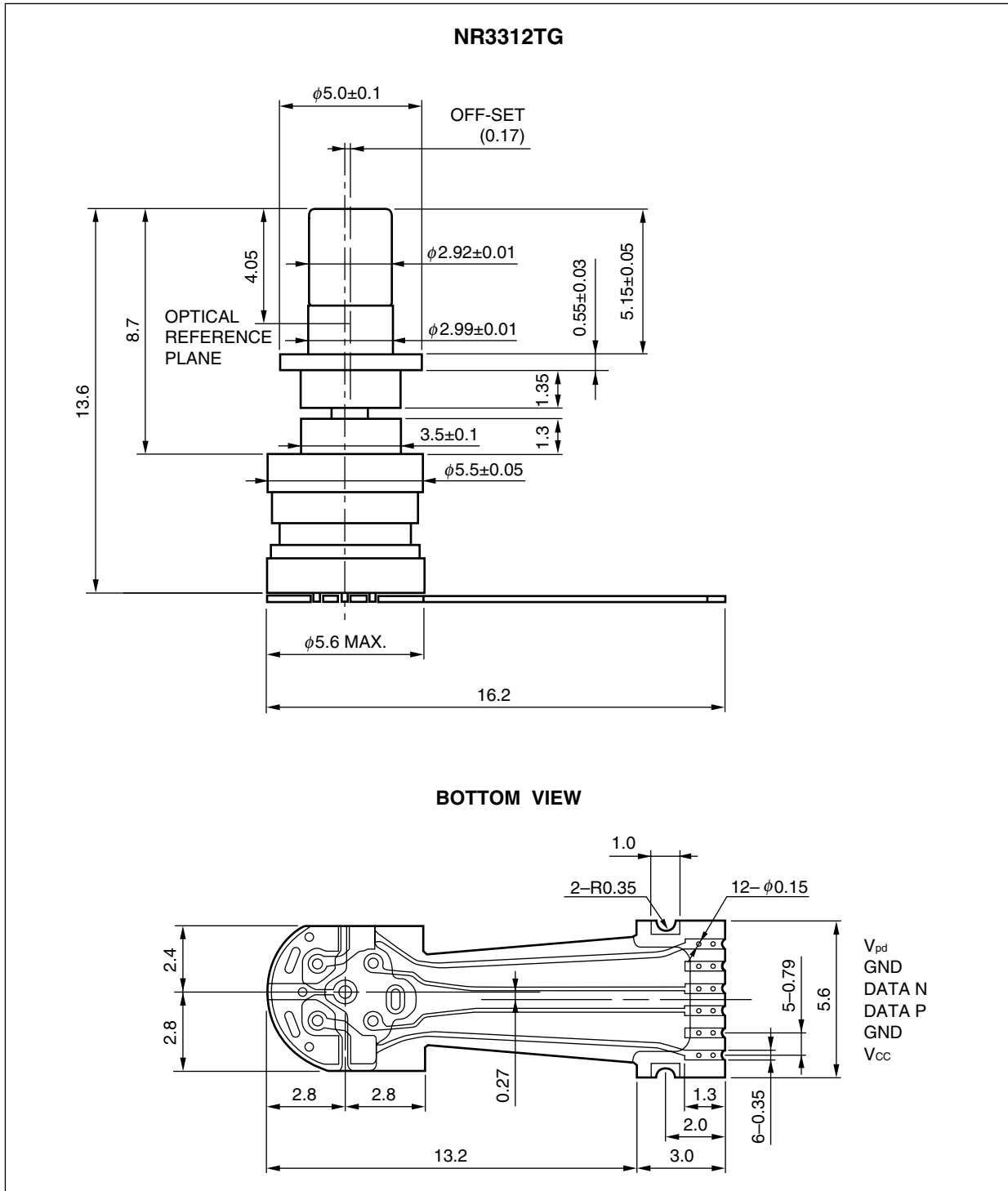
- XMD-MSA compliant ROSA
- 10 Gb/s high sensitivity InGaAs PIN-PD
- +3.3 V SiGe transimpedance pre-amplifier
- Minimum receiver sensitivity $\bar{P}_r = -20$ dBm
- Operating case temperature $T_c = -5$ to $+85^\circ\text{C}$
- Transimpedance $Z_t = 2\,000\ \Omega$ (Single-ended)
- Cut-off frequency $f_c = 11$ GHz
- With flexible printed circuit

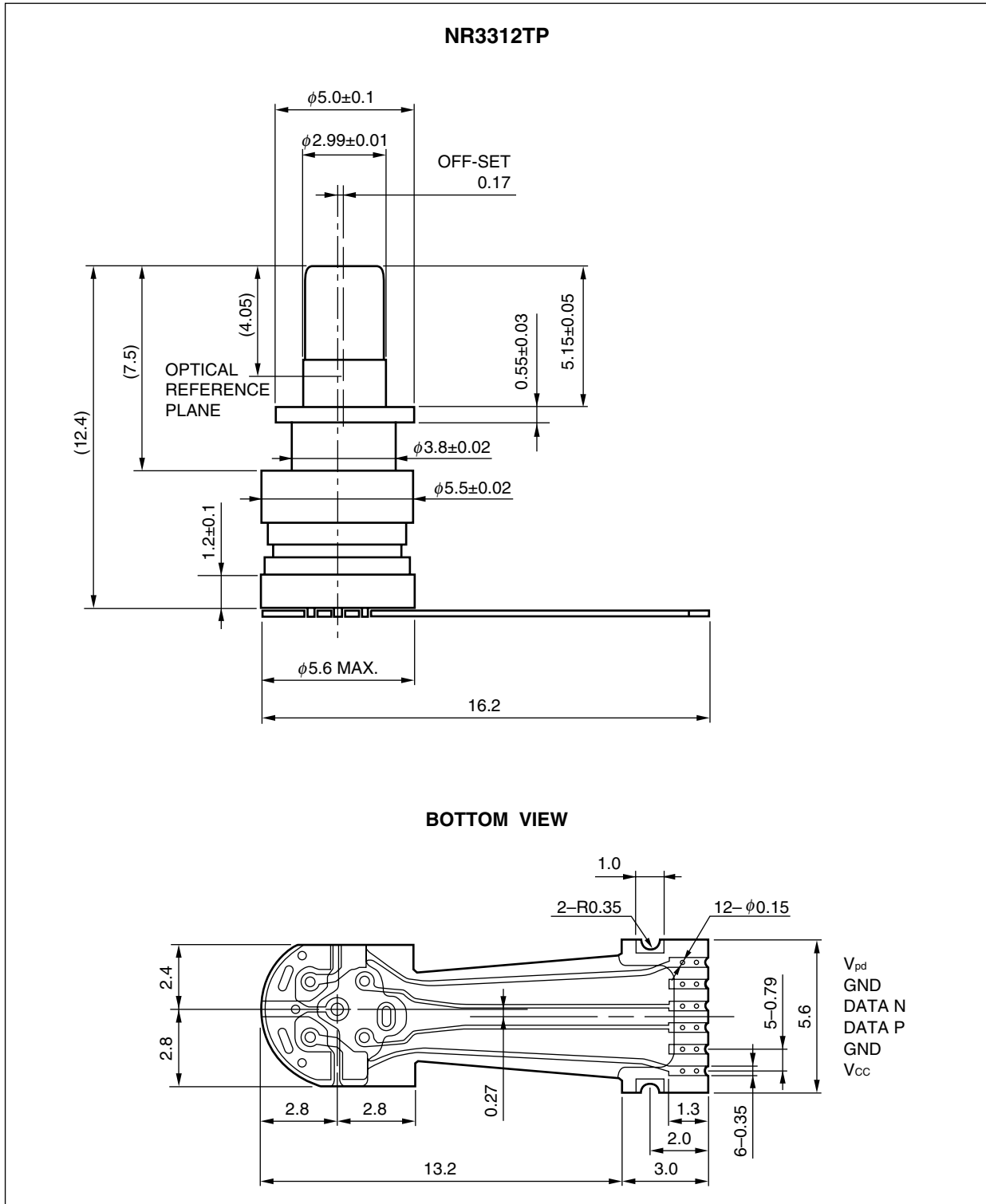


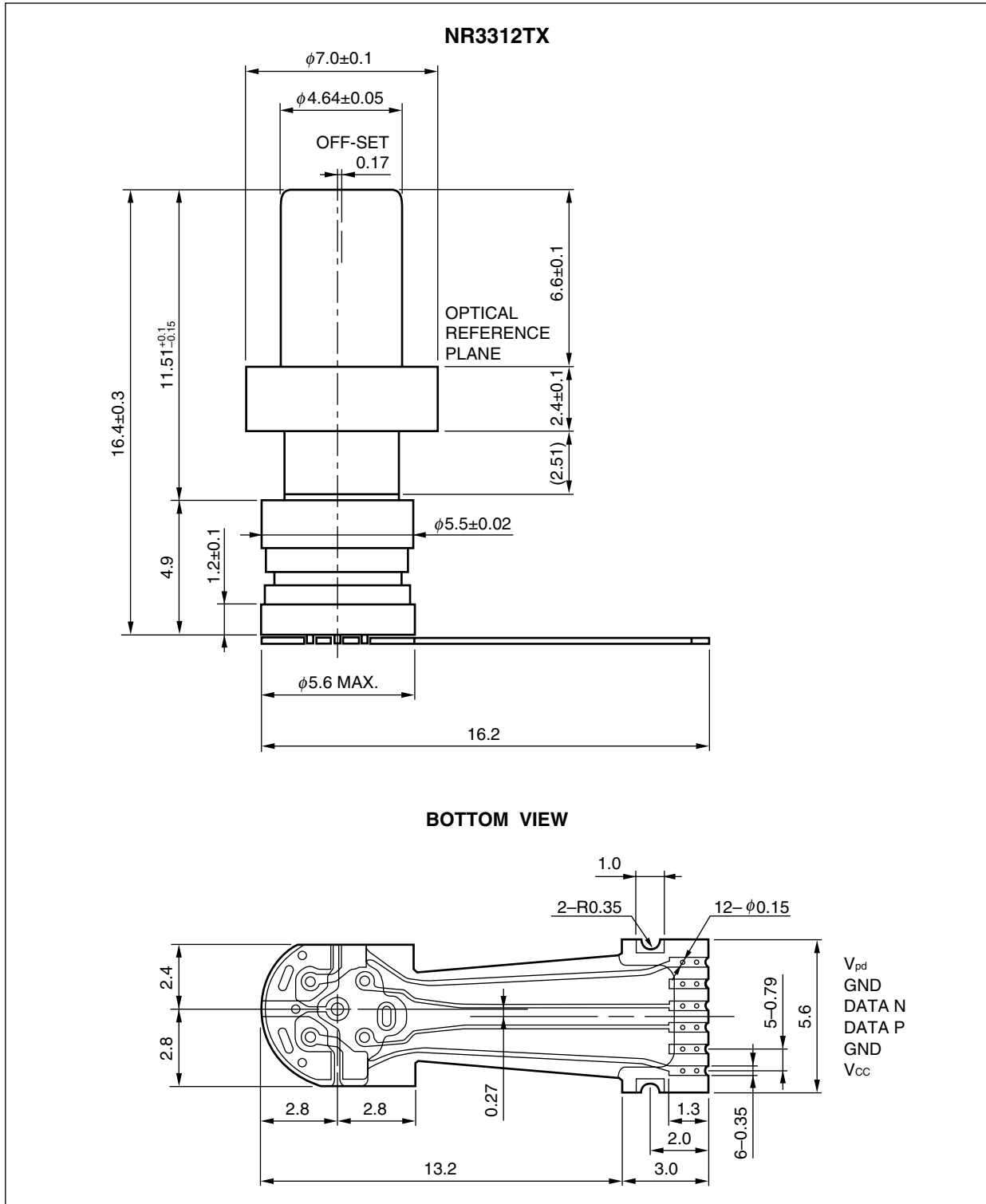
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PACKAGE DIMENSIONS (UNIT: mm)

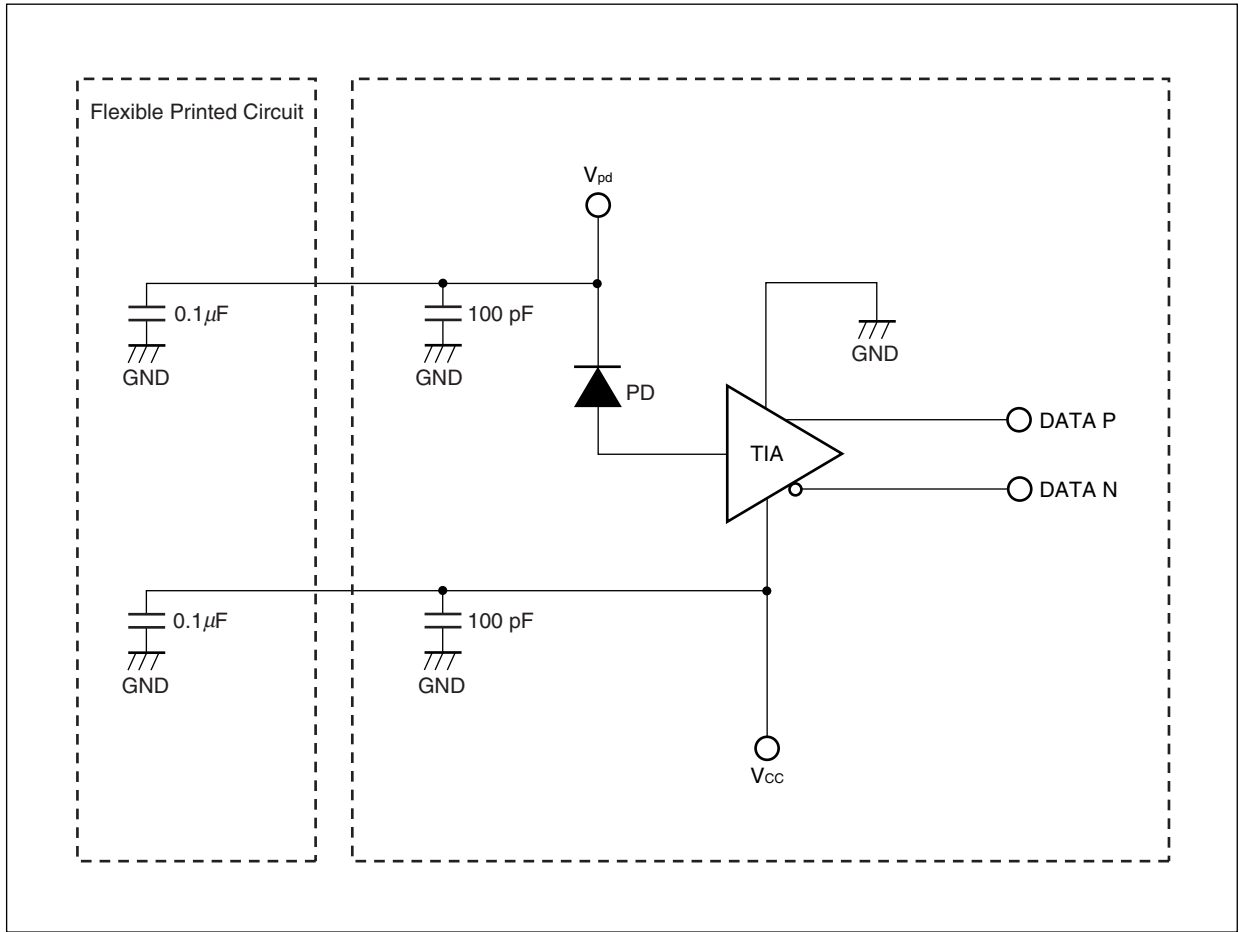








BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Receptacle Type	Note
NR3312TF	SC, Zirconia	Differential output with flexible PCB
NR3312TG	LC, Electrically Isolated	Differential output with flexible PCB
NR3312TP	LC, Zirconia	Differential output with flexible PCB
NR3312TX	SC, Metal	Differential output with flexible PCB

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
PIN-PD Reverse Voltage	V_R	10	V
PIN-PD Reverse Current	I_R	10	mA
IC Supply Voltage	V_{CC}	-0.7 to +5.0	V
Operating Case Temperature	T_C	-5 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Maximum AOP Input (ER < 5.4 dB (1.1 A/W))	P_{in}	+5	dBm
Lead Soldering Temperature (Flexible Printed Circuit)	T_{sld}	350 (3 sec.)	°C

RECOMMENDED OPERATING CONDITION

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
PIN-PD Reverse Voltage	V_R	3.1	3.3	3.5	V
IC Supply Voltage	V_{CC}	+3.1	+3.3	+3.5	V
Operating Case Temperature	T_C	-5	+25	+85	°C

ELECTRO-OPTICAL CHARACTERISTICS ($\lambda = 1\ 310\ \text{nm}/1\ 550\ \text{nm}$, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Sensitivity	S		0.75	0.9		A/W
Transimpedance	Z_t	$R_L = 50\ \Omega$, $P_{in} = -17\ \text{dBm}$, Single-ended	800	2 000	3 000	Ω
Maximum Output Voltage Swing	V_{clip}	Single-ended	100	125	200	mV _{pp}
Cut-off Frequency	f_c	$R_L = 50\ \Omega$, $P_{in} = -17\ \text{dBm}$, -3 dB from 1 GHz	7	11		GHz
Minimum Receiver Sensitivity	\bar{P}_r	9.95 Gb/s, BER = 10^{-12} ,		-20	-17	dBm
Overload	P_o	PRBS = $2^{31}-1$, ER = 13 dB, NRZ, $\lambda = 1\ 550\ \text{nm}$	+0.5	+3		dBm
IC Supply Current	I_{CC}		40	55	75	mA
Optical Return Loss	ORL				-27	dB

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet ^{*1}	PX10160E

*1 Published by the former NEC Compound Semiconductor Devices, Ltd.

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► For further information, please contact

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