

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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Phase-out/Discontinued

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

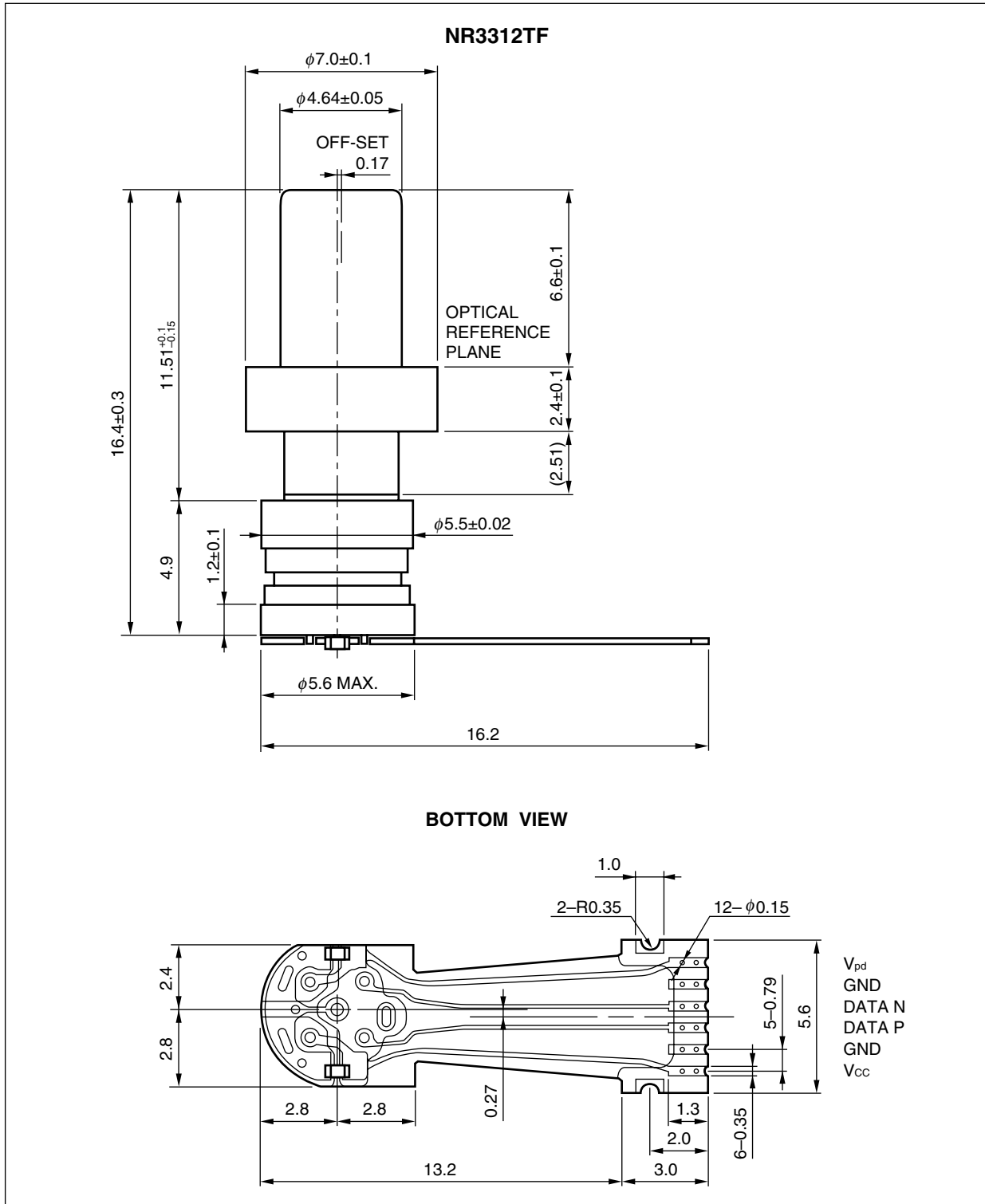
- XMD-MSA compliant ROSA
- 10 Gb/s high sensitivity InGaAs PIN-PD
- +3.3 V SiGe transimpedance pre-amplifier
- Minimum receiver sensitivity $P_r = -20$ dBm
- Operating case temperature $T_c = -5$ to $+85^\circ\text{C}$
- Transimpedance $Z_t = 2\,000\ \Omega$ (Single-ended)
- Cut-off frequency $f_c =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

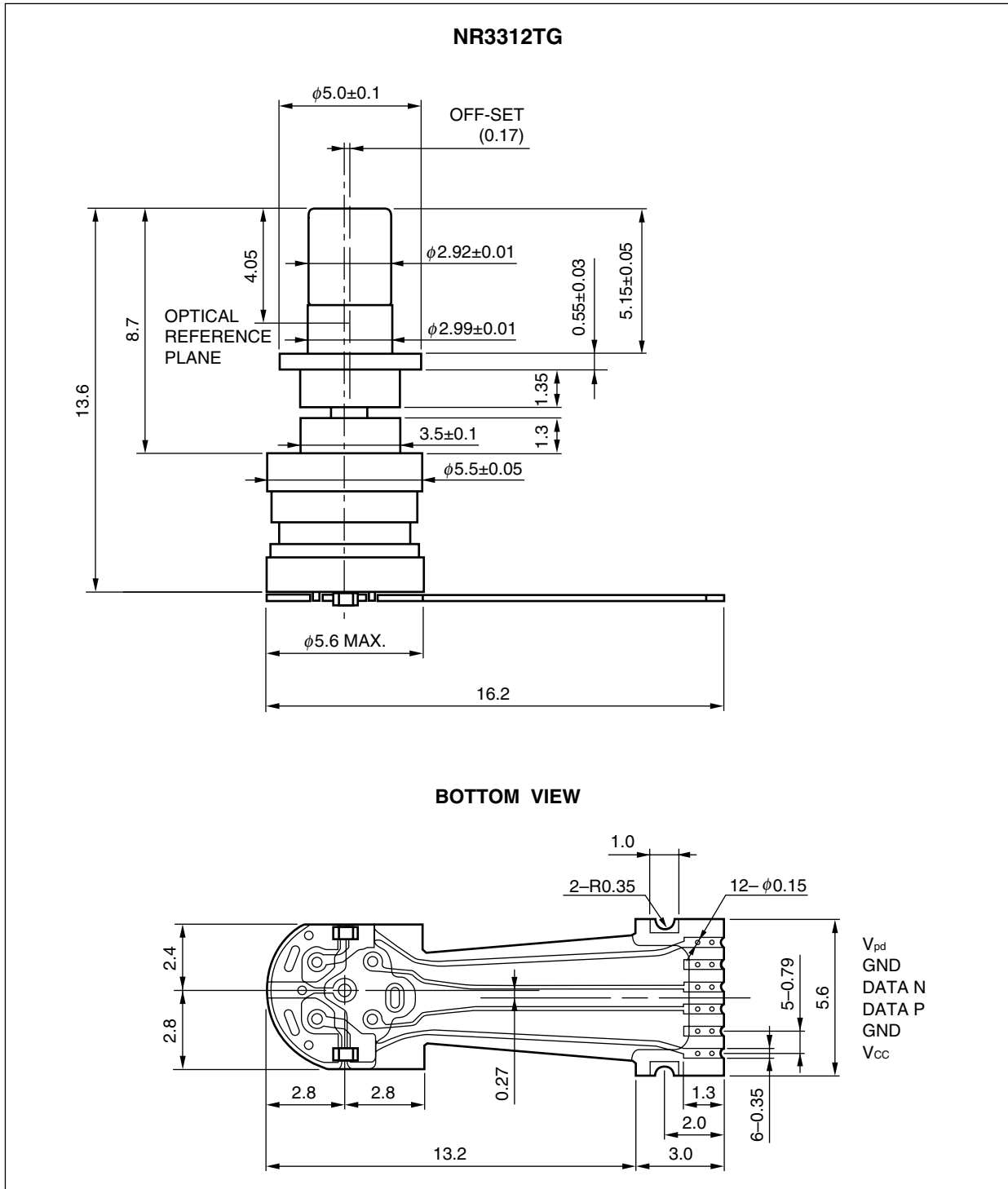
NR3312TG



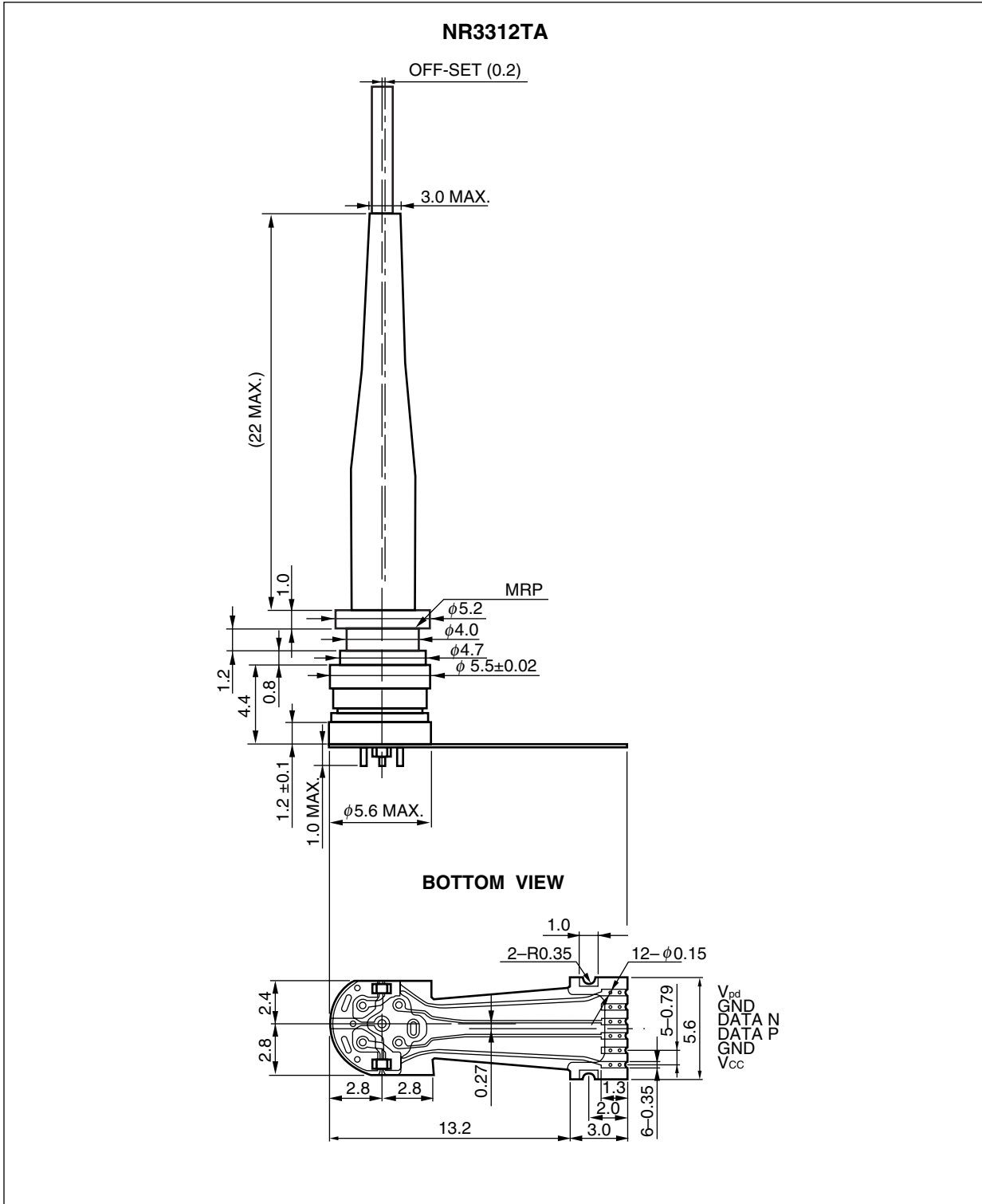
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PACKAGE DIMENSIONS (UNIT: mm)



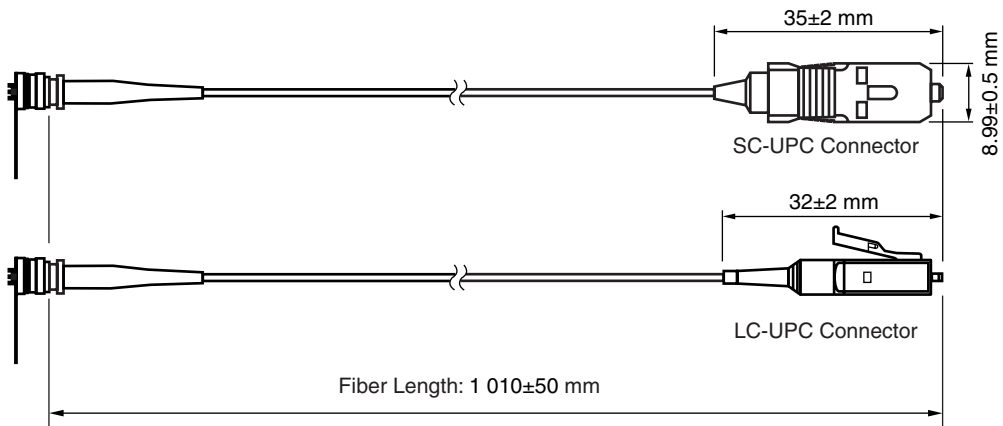


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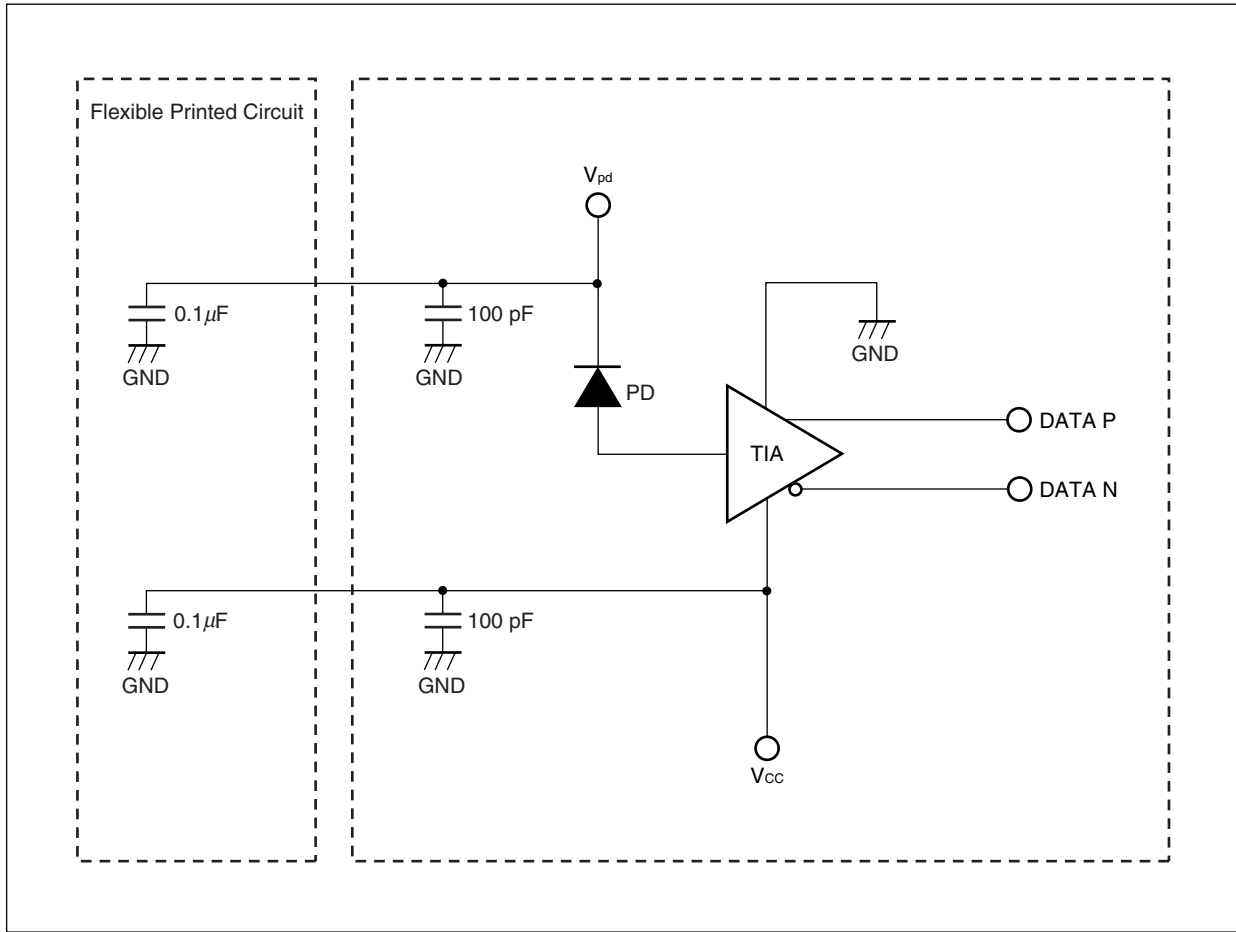


OPTICAL FIBER CHARACTERISTICS

Parameter	Specification	Unit
Mode Field Diameter	9.5±1	μm
Core Diameter	–	μm
Cladding Diameter	125±2	μm
Maximum Cladding Noncircularity	2	%
Maximum Core/Cladding Concentricity	1.6	%
Outer Diameter	0.9±0.1	mm
Cut-off Wavelength	1 100 to 1 270	nm
Minimum Fiber Bending Radius	30	mm
Fiber Length	1 010±50	mm
Flammability	UL1581 VW-1	



BLOCK DIAGRAM



ORDERING INFORMATION

	Part Number	Receptacle Type	Note
<R>	NR3312TA-CC	SC connector pigtail	Differential output with flexible PCB
<R>	NR3312TA-EC	LC connector pigtail	Differential output with flexible PCB
	NR3312TF	SC, Zirconia	Differential output with flexible PCB
	NR3312TG	LC, Electrically Isolated	Differential output with flexible PCB

ABSOLUTE MAXIMUM RATINGS

<R>

Parameter	Symbol	Ratings	Unit
PIN-PD Reverse Voltage	V_R	10	V
PIN-PD Reverse Current	I_R	5	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

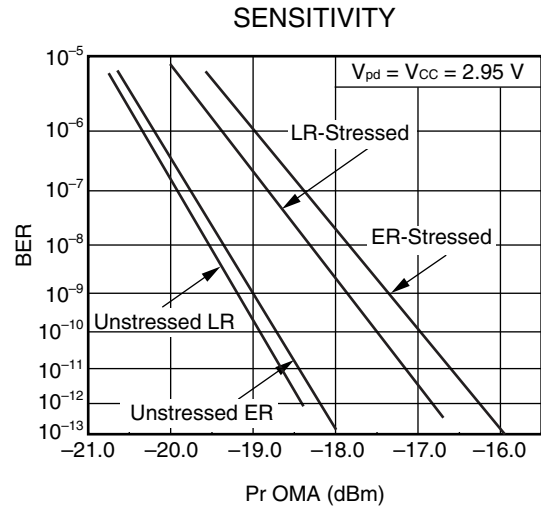
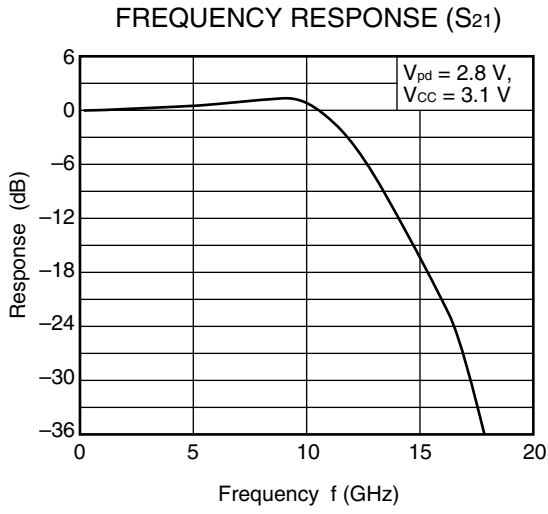
RECOMMENDED OPERATING CONDITION

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	P_r	9.95 Gb/s, BER = 10^{-12} , PRBS = $2^{31}-1$, ER = 13 dB, NRZ, $\lambda = 1\ 550\ \text{nm}$		-20	-17	dBm
Overload	P_o		+0.5	+3		dBm
IC Supply Current	I_{CC}		40	55	75	mA
Optical Return Loss	ORL				-27	dB

<R> **TYPICAL CHARACTERISTICS (T_c = 25°C, unless otherwise specified)**



Remark The graphs indicate nominal characteristics.

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet	PX10160E

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<p>Caution Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.