



NEC's
Ø50 µm InGaAs PIN-PD ROSA WITH
INTERNAL PRE-AMPLIFIER
FOR 2.5 GB/s APPLICATIONS

NR3510UR

FEATURES

- **INTERNAL PRE-AMPLIFIER**
- **HIGH SENSITIVITY**
 $S = 0.80 \text{ A/W MIN. @ } \lambda = 1.31 \text{ } \mu\text{m}$
 $S = 0.85 \text{ A/W MIN. @ } \lambda = 1.55 \text{ } \mu\text{m}$
- **LOW OPERATING VOLTAGE**
 $V_{pd} = 3.3 \text{ V}$
- **MINIMUM RECEIVER SENSITIVITY**
 $\bar{P}_r = -22 \text{ dBm}$
- **WIDE OPERATING TEMPERATURE RANGE**
 $T_c = -40 \text{ to } +85^\circ\text{C}$
- **50 Ω DIFFERENTIAL OUTPUT**
- **SMALL PACKAGE**
 $\phi 4.6 \text{ mm ROSA (Total length 12.0 mm MAX.)}$
- **BASED ON TELCORDIA RELIABILITY**

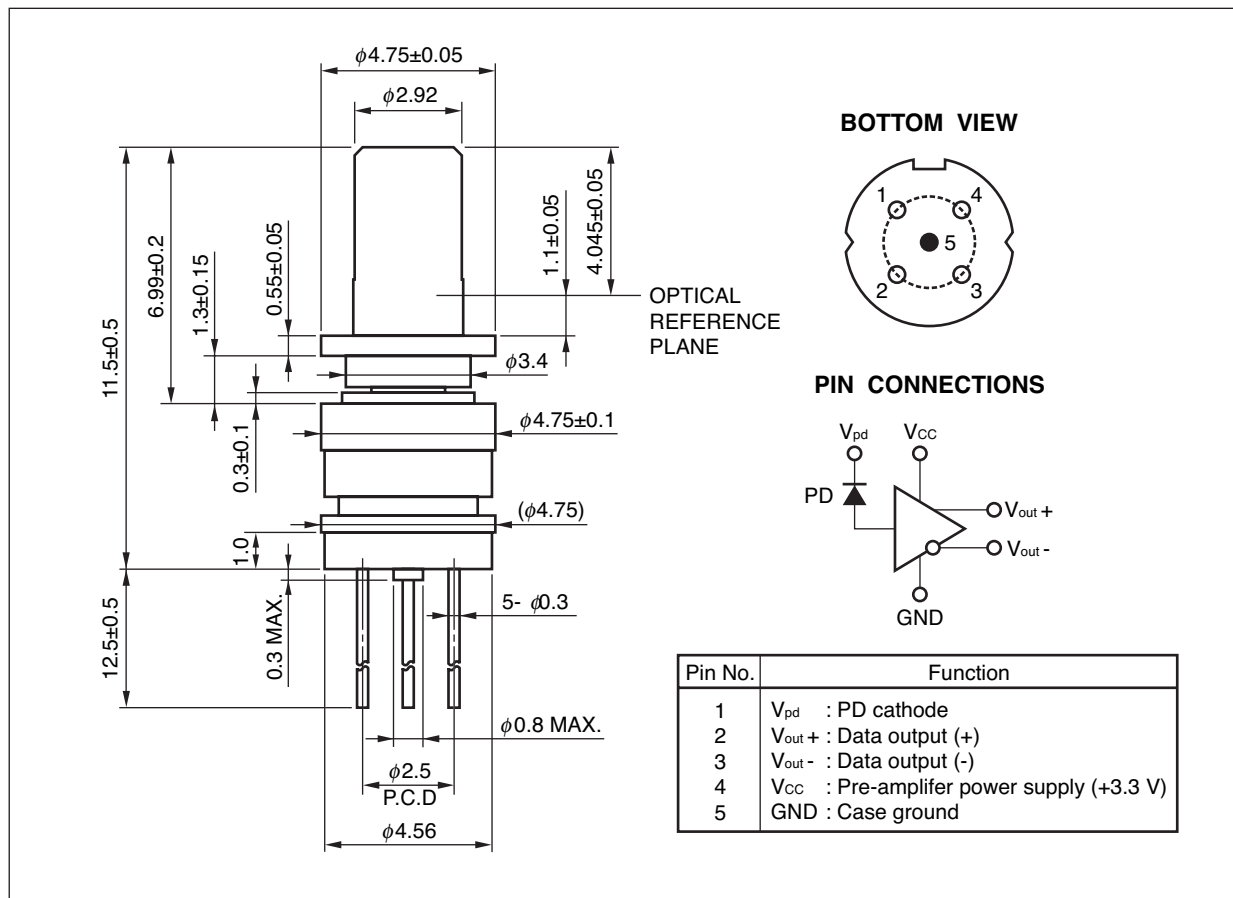


DESCRIPTION

NEC's NR3510UR is a InGaAs PIN PD ROSA with an internal pre-amplifier in a receptacle type package designed for SFF/SFP transceiver with LC duplex receptacle. This device is ideal as a receiver for Synchronous Digital Hierarchy (SDH) system, STM-16, ITU-T recommendations.

NR3510UR

PACKAGE DIMENSIONS (UNIT:mm)



ORDERING INFORMATION

PART NUMBER	PACKAGE
NR3510UR	φ 4.6 mm ROSA

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Reverse Current	I_R	1.0	mA
Pre-amplifier Supply Voltage	V_{CC}	-0.5 to +4.5	V
Reverse Voltage	V_R	20	V
Forward Current	I_F	10	mA
Optical Input Power	P_{in}	8	mW
Operating Case Temperature	T_C	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Lead Soldering Temperature	T_{slid}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

ELECTRO-OPTICAL CHARACTERISTICS

($T_C = -40$ to $+85^\circ\text{C}$, $V_{CC} = 3.3$ V, $\lambda = 1.31$ μm , 1.55 μm , unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Dark Current	I_D	$V_R = 3.3$ V, $T_C = 25^\circ\text{C}$		0.1	1.0	nA
		$V_R = 3.3$ V			50	
Minimum Receiver Sensitivity	\bar{P}_r	2.48832 Gb/s, BER = 10^{-10} , PRBS = $2^{23}-1$, ER = 10 dB, $\lambda = 1.31$ μm , NRZ, AC-coupled		-22	-21	dBm
Maximum Optical Input Power	P_{ovl}	2.48832 Gb/s, BER = 10^{-10} , PRBS = $2^{23}-1$, ER = 10 dB, $\lambda = 1.31$ μm , NRZ, AC-coupled	0.5	1.0		dBm
Sensitivity	S	$V_R = 3.3$ V, $\lambda = 1.31$ μm	0.80			A/W
		$V_R = 3.3$ V, $\lambda = 1.55$ μm	0.85			
Cut-off Frequency	f_c	$V_R = 3.3$ V, AC-coupled, $R_L = 50$ Ω , -3 dB Ref to 100 MHz	1.8	1.9		GHz
Optical Return Loss	ORL	SMF	27			dB
Transimpedance	Z_t	$f = 100$ MHz, 50 Ω single-ended, AC-coupled 50 Ω load	1.05	1.4		k Ω
Power Supply Voltage	V_{pd}		3.15	3.3	3.45	V
Pre-amplifier Supply Voltage	V_{CC}		3.15	3.3	3.45	V
Pre-amplifier Supply Current	I_{CC}	$V_{CC} = 3.15$ to 3.45 V		35	65	mA

Life Support Applications

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