

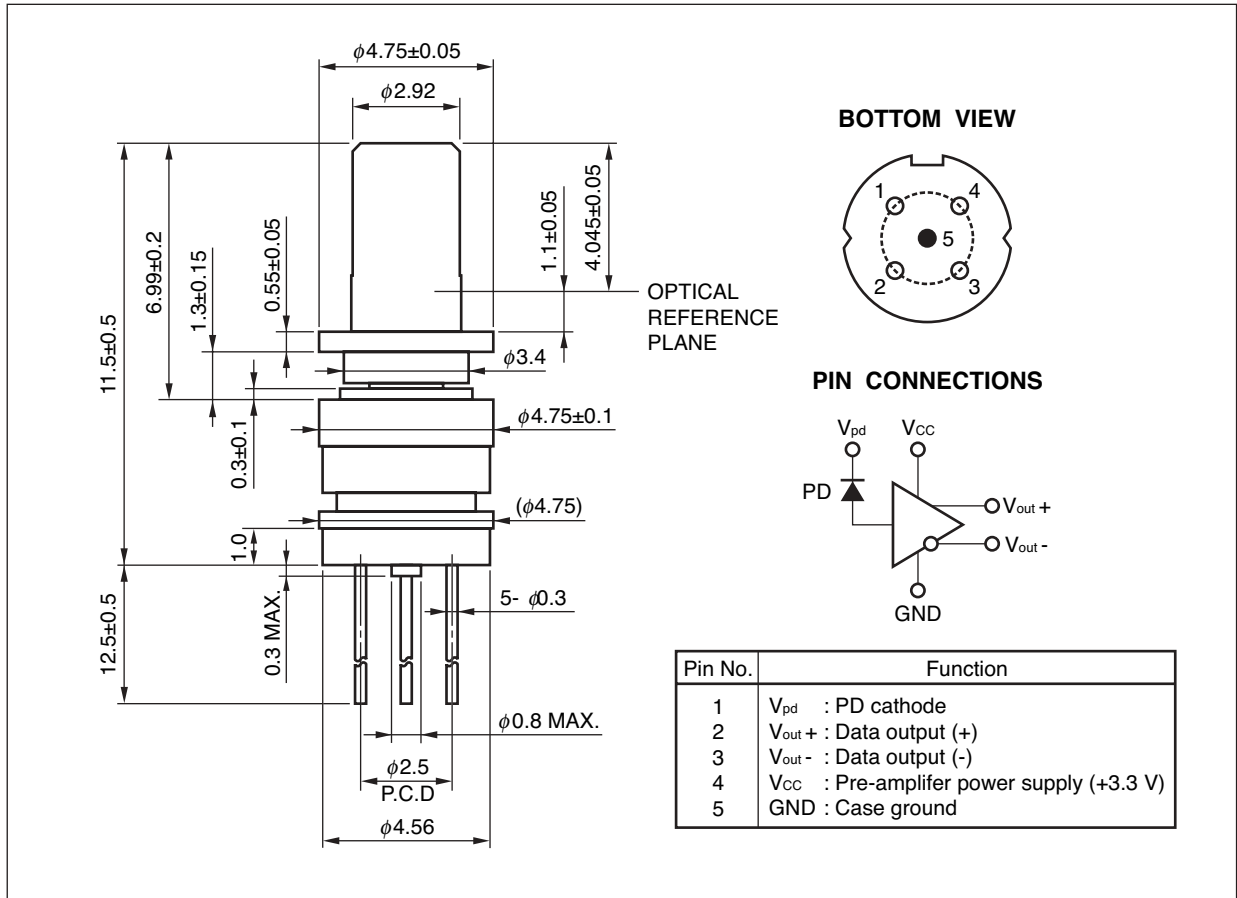
CEL**NEC's
Ø50 µm InGaAs APD ROSA WITH
INTERNAL PRE-AMPLIFIER
FOR 2.5 GB/s APPLICATIONS****NR4510UR****DESCRIPTION**

NEC's NR4510UR is a InGaAs APD 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.

**FEATURES**

- **INTERNAL PRE-AMPLIFIER**
- **MINIMUM RECEIVER SENSITIVITY**
 $\bar{P}_r = -33$ dBm
- **WIDE OPERATING TEMPERATURE RANGE**
 $T_c = -40$ to $+85^\circ\text{C}$
- **50 Ω DIFFERENTIAL OUTPUT**
- **SMALL PACKAGE**
 ϕ 4.6 mm ROSA (Total length 12.0 mm MAX.)
- **BASED ON TELCORDIA RELIABILITY**

PACKAGE DIMENSIONS (UNIT:mm)



ORDERING INFORMATION

PART NUMBER	PACKAGE
NR4510UR	ϕ 4.6 mm ROSA

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Forward Current	I_F	10	mA
Reverse Current	I_R	1.5	mA
Supply Voltage	V_{CC}	4.5	V
Operating Case Temperature	T_C	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Lead Soldering Temperature	T_{sld}	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
Reverse Break Down Voltage	V_{BR}	$I_D = 100$ μA	40	60	70	V
Temperature Coefficient of Reverse Breakdown Voltage	δ		0.09		0.15	%/°C
Dark Current	I_D	$V_R = 0.9 V_{BR}$, $T_C = 85^\circ\text{C}$			500	nA
Minimum Receiver Sensitivity	P_r	2.48832 Gb/s, BER = 10^{-10} , PRBS = $2^{23}-1$, ER = 10 dB, $\lambda = 1.31$ μm , NRZ, AC-coupled, M_{opt}		-33	-30	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, $M = 3$	-6	-5		dBm
Sensitivity	S	$M = 1$, $\lambda = 1.31$ μm	0.80			A/W
		$M = 1$, $\lambda = 1.55$ μm	0.88			
Cut-off Frequency	f_c	AC-coupled, $R_L = 50$ Ω , $M = 10$, -3 dB Ref to 100 MHz	1.6	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
Supply Voltage	V_{CC}		3.15	3.3	3.45	V
Supply Current	I_{CC}				45	mA

Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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