



**NEC's $\phi 50\mu\text{m}$
InGaAs PIN-PD
IN COAXIAL PACKAGE
FOR 2.5 Gbp/s APPLICATIONS**

NR7500 SERIES

FEATURES

- **SMALL DARK CURRENT:**
 $I_D = 0.1 \text{ nA}$
- **HIGH SPEED RESPONSE:**
 $f_c = 2.5 \text{ GHz MIN}$
- **HIGH SENSITIVITY:**
 $S = 0.89 \text{ A/W}$ at $\lambda = 1310 \text{ nm}$
 $S = 0.94 \text{ A/W}$ at $\lambda = 1550 \text{ nm}$
- **LOW OPERATING VOLTAGE:**
 $V_R = 5 \text{ V}$
- **COAXIAL MODULE WITH SINGLE MODE FIBER (SMF)
OR GI-50 FIBER**
- **WITH SC CONNECTOR: Standard, FC connector: option**
(Refer to Ordering Information)

DESCRIPTION

NEC's NR7500 Series is an InGaAs PIN photo diode (PIN-PD) coaxial module with optical fiber pigtail. This module is designed for long wavelength 2.5 Gb/s optical fiber communication systems and is ideal as a receiver for Synchronous Digital Hierarchy (SDH) system, STM-16, ITU-T recommendations.

ELECTRO-OPTICAL CHARACTERISTICS ($T_c = 40^\circ \text{ C}$ to $+85^\circ \text{ C}$, unless otherwise specified)

PART NUMBER			NR7500 Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_D	Dark Current, $V_R = 5 \text{ V}$, $T_c = 25^\circ \text{ C}$ $V_R = 5 \text{ V}$	nA		0.1	1.0
					20
C_t	Terminal Capacitance, $V_R = 5 \text{ V}$, $f = 1 \text{ MHz}$, $T_c = 25^\circ \text{ C}$	pF		0.7	0.9
S	Sensitivity, $V_R = 5 \text{ V}$, $\lambda = 1310 \text{ nm}$ $V_R = 5 \text{ V}$, $\lambda = 1550 \text{ nm}$	A/W	0.78	0.89	
			0.80	0.94	
f_c	Cut-off Frequency, $V_R = 5 \text{ V}$, $T_c = 25^\circ \text{ C}$	GHz	2.5		
ORL	Optical Return Loss	SMF	30		
		GI-50 Fiber	28		

ABSOLUTE MAXIMUM RATINGS¹

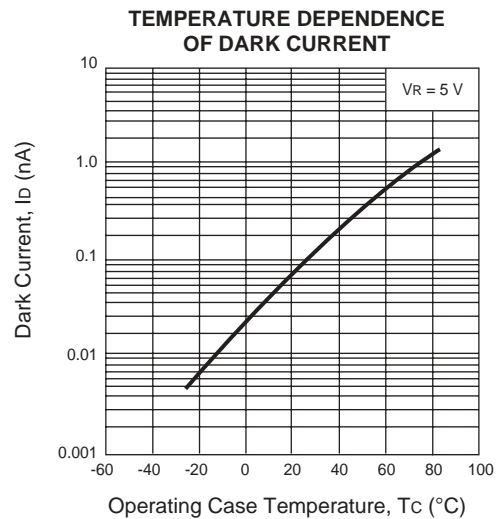
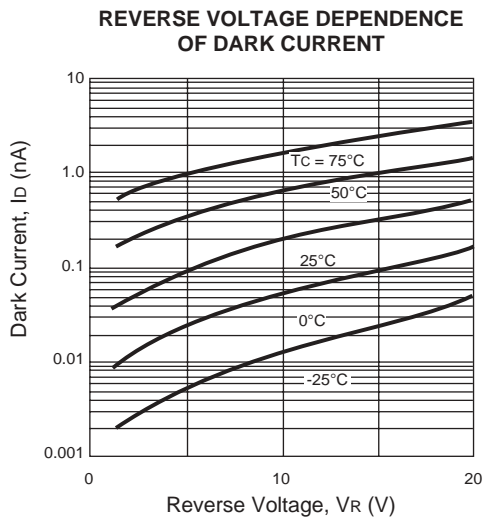
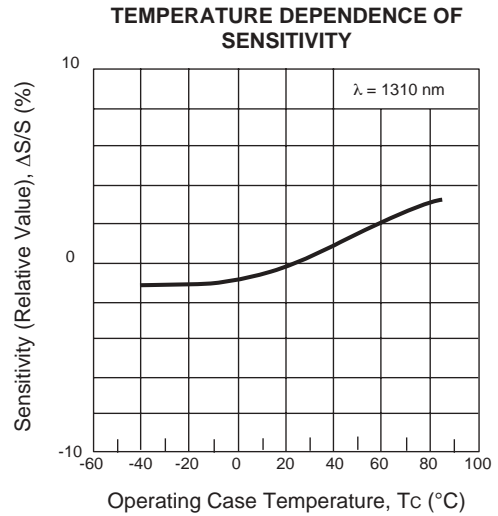
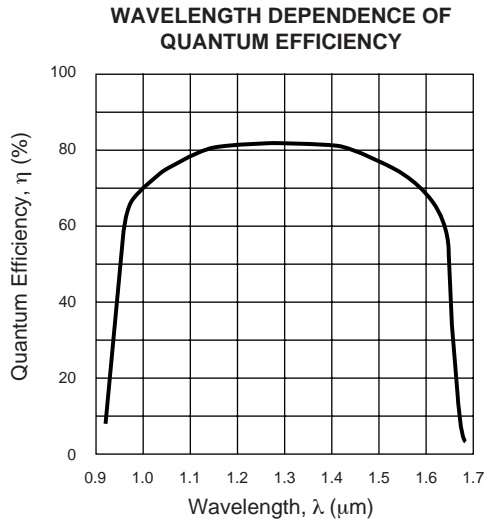
(T_C = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _R	Reverse Voltage	V	20
I _F	Forward Current	mA	10
P _{IN}	Optical Input Power	mW	8
T _C	Operating Case Temp.	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-40 to +85
T _{SLD}	Lead Soldering Temp.	°C	260 (10 sec.)
RH	Relative Humidity (noncondensing)	%	85

Note:

1. Operation in excess of any one of these parameters may result in permanent damage.

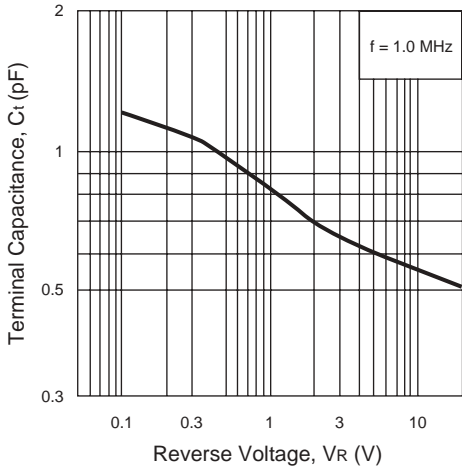
TYPICAL PERFORMANCE CURVES (T_C = 25°C, unless otherwise specified)



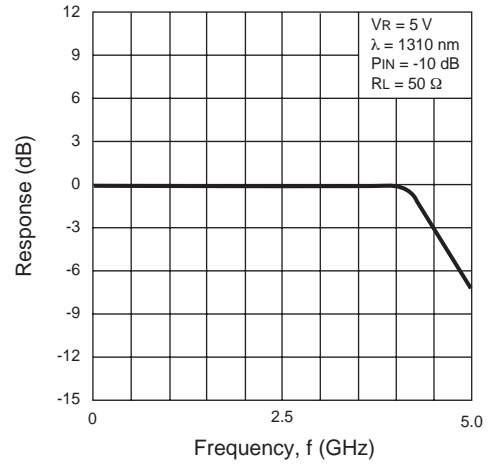
Remark: The graphs indicate nominal characteristics.

TYPICAL PERFORMANCE CURVES ($T_c = 25^\circ\text{C}$, unless otherwise specified)

REVERSE VOLTAGE DEPENDENCE OF TERMINAL CAPACITANCE



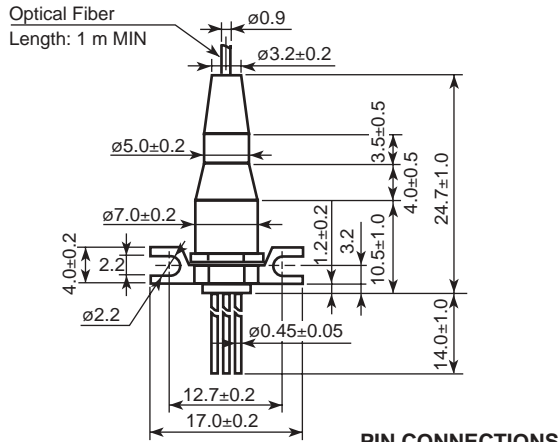
FREQUENCY RESPONSE



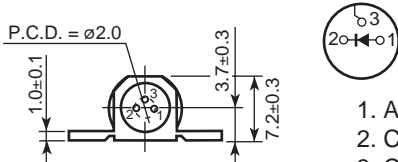
Remark: The graphs indicate nominal characteristics.

OUTLINE DIMENSIONS (Units in mm)

NR7500FP/FR

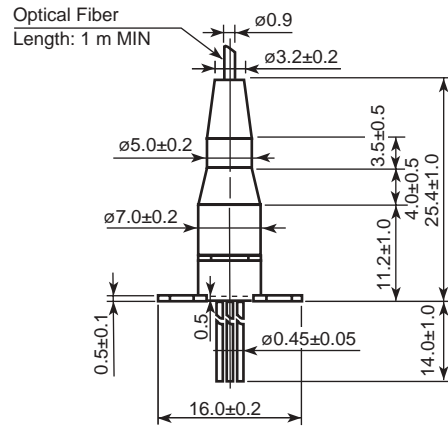


PIN CONNECTIONS

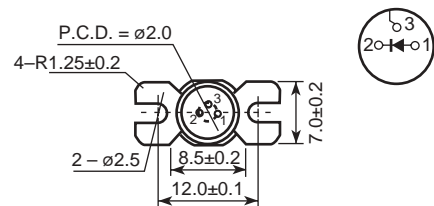


1. Anode (Negative)
2. Cathode (Positive)
3. Case

NR7500CP/CR

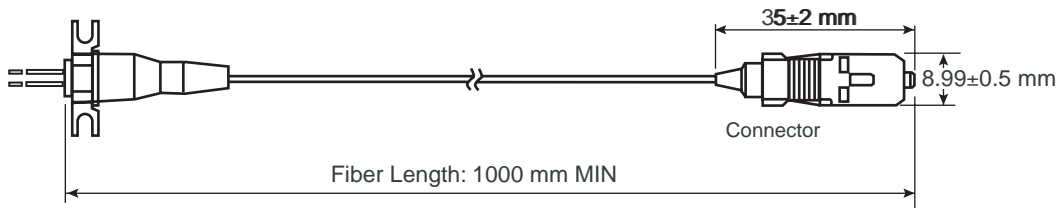


PIN CONNECTIONS



OPTICAL FIBER CHARACTERISTICS

PARAMETER	UNITS	SPECIFICATION	
		SMF	GI-50
Mode Field Diameter	μm	9.5±1	–
Core Diameter	μm	–	50±3
Cladding Diameter	μm	125±2	125±2
Maximum Cladding Noncircularity	%	2	2
Maximum Core/Cladding Concentricity	%	1.6	4.0
Outer Diameter	mm	0.9±0.1	0.9±0.1
Cut-off Wavelength	nm	1100 to 1270	–
Minimum Fiber Bending Radius	mm	30	30
Fiber Length	mm	1000 MIN	1000 MIN
Flammability		UL1581 VW-1	



ORDERING INFORMATION

PART NUMBER	FLANGE TYPE	FIBER TYPE	AVAILABLE CONNECTOR ¹
NR7500FP-BC	Flat mount Flange	SMF	With FC-UPC Connector
NR7500FP-CC			With SC-UPC Connector
NR7500FR-BB		GI-50 Fiber	With FC-SPC Connector
NR7500FR-CB			With SC-SPC Connector
NR7500CP-BC	Vertical Mount Flange	SMF	With FC-UPC Connector
NR7500CP-CC			With SC-UPC Connector
NR7500CR-BB		GI-50 Fiber	With FC-SPC Connector
NR7500CR-CB			With SC-SPC Connector

Note:

- 1. SC Connector: standard
- FC Connector: option

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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