

### 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 NR7800 Series are InGaAs PIN photo diode (PIN-PD) coaxial modules with optical fiber pigtail. These modules are designed for long wavelength optical communication systems and are ideal as receivers for Synchronous Digital Hierarchy (SDH) system, STM-4 and STM-1, ITU-T recommendations.

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

PART NUMBER			NR7800 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		1.0	1.5
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	
$\Delta S_t$	Temperature Dependence of Sensitivity, $V_R = 5 \text{ V, } \lambda = 1550 \text{ nm}$	%	-5		5
$\Delta S_p$	Polarization Dependence of Sensitivity, $V_R = 5 \text{ V, } \lambda = 1550 \text{ nm, } T_c = 25^\circ \text{ C}$	%	-2.5		2.5
$\Delta S_w$	Wavelength Dependence of Sensitivity, $V_R = 5 \text{ V, } \lambda = 1520 \text{ to } 1560 \text{ nm, } T_c = 25^\circ \text{ C}$	%	-2.5		2.5
$f_c$	Cut-off Frequency, $V_R = 5 \text{ V, } T_c = 25^\circ \text{ C}$	GHz	2.5		
ORL	Optical Return Loss, SMF GI-50 Fiber	dB	30		
			28		

**ABSOLUTE MAXIMUM RATINGS<sup>1</sup>**

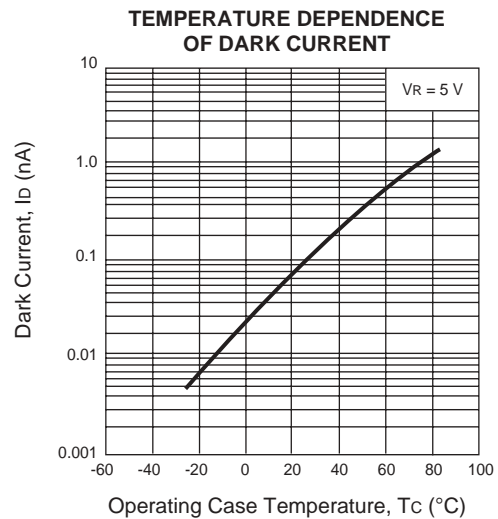
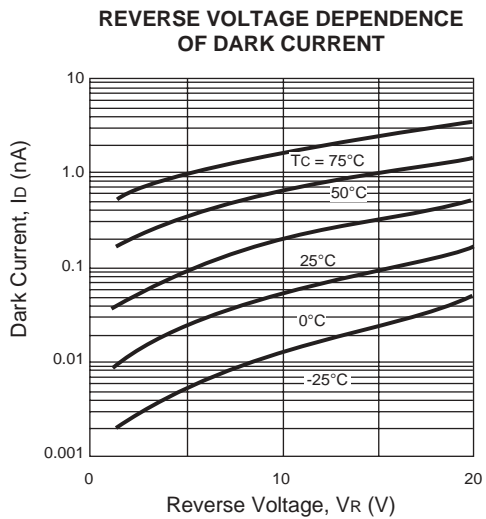
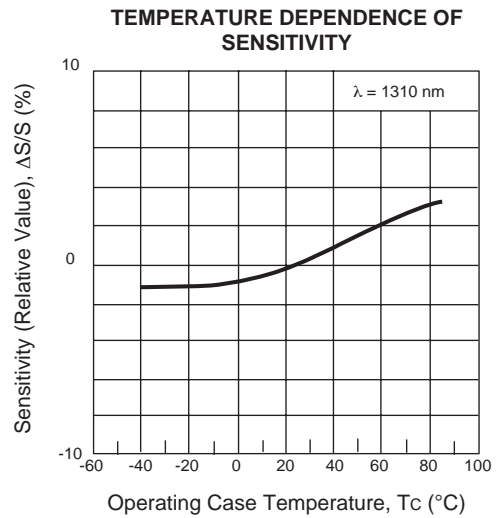
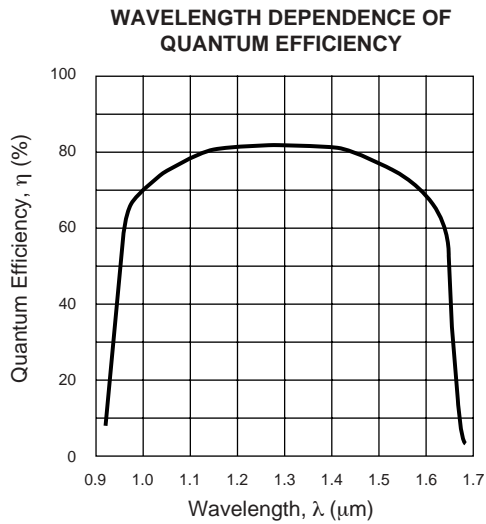
(T<sub>C</sub> = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>R</sub>	Reverse Voltage	V	20
I <sub>F</sub>	Forward Current	mA	10
P <sub>IN</sub>	Optical Input Power	mW	8
T <sub>C</sub>	Operating Case Temp.	°C	-40 to +85
T <sub>STG</sub>	Storage Temperature	°C	-40 to +85
T <sub>SLD</sub>	Lead Soldering Temp.	°C	260 (10 sec.)
RH	Relative Humidity (noncondensing)	%	85

Note:

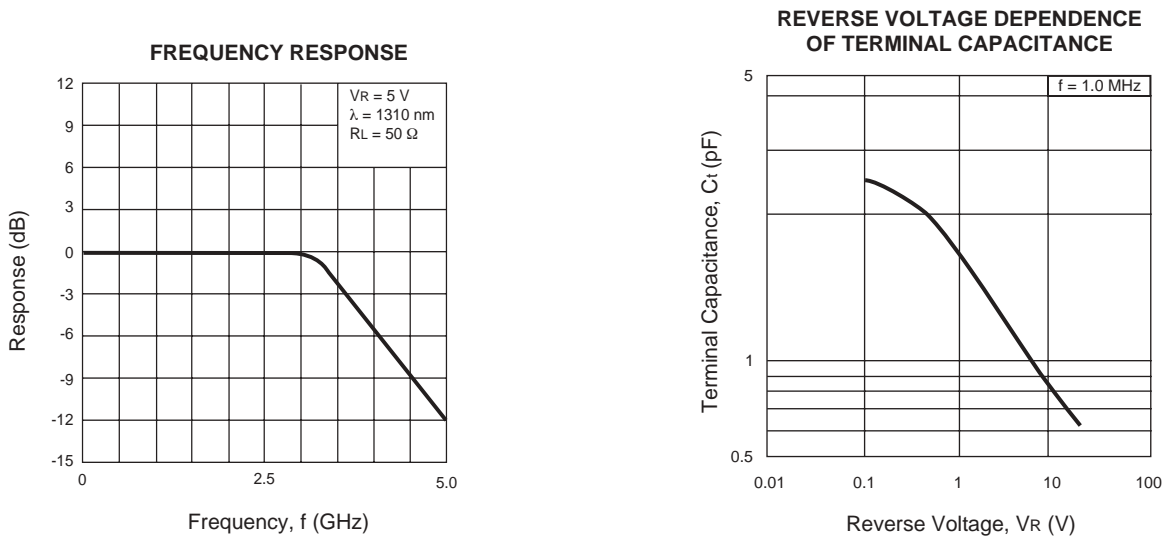
1. Operation in excess of any one of these parameters may result in permanent damage.

**TYPICAL PERFORMANCE CURVES** (T<sub>C</sub> = 25°C, unless otherwise specified)



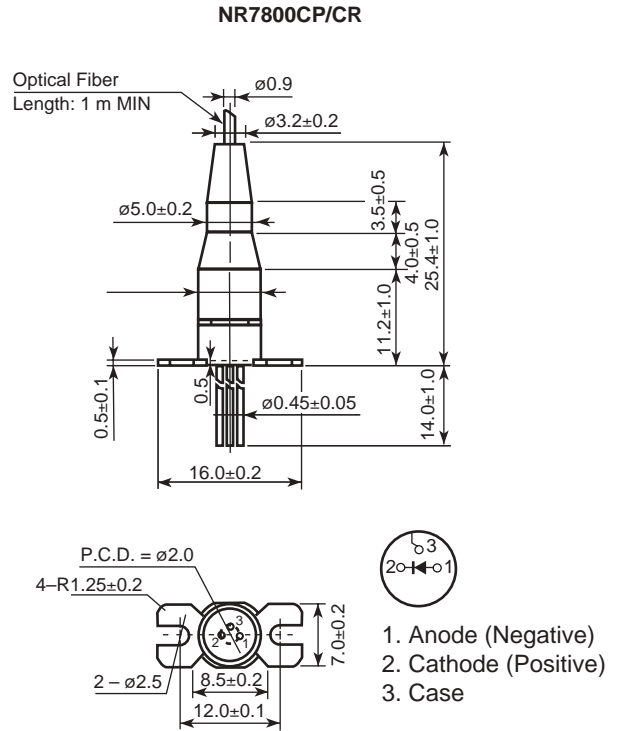
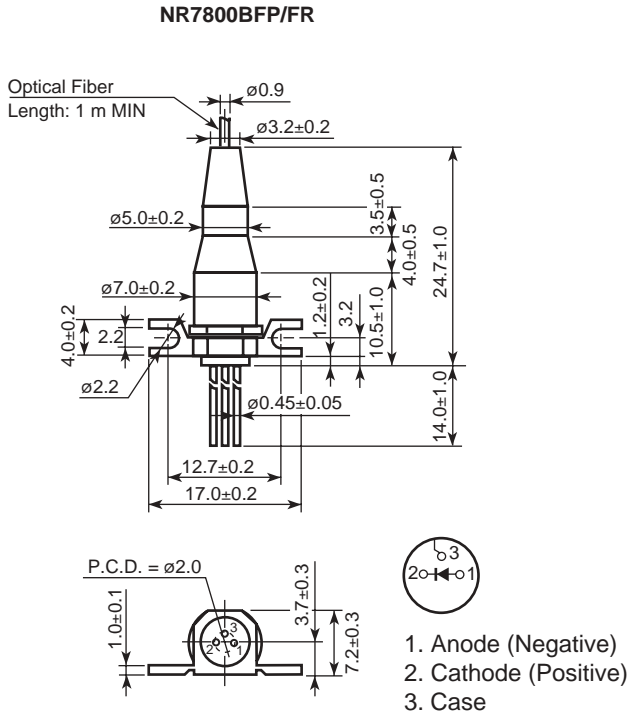
Remark: The graphs indicate nominal characteristics.

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



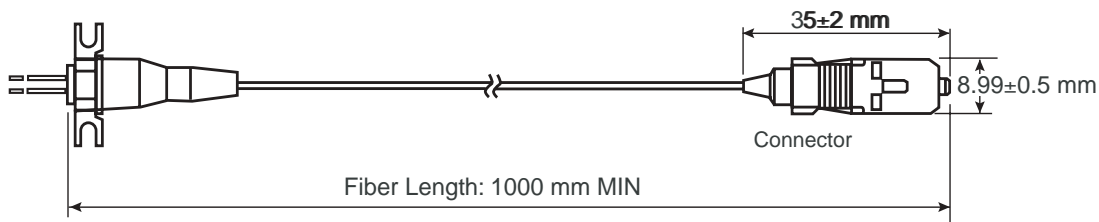
Remark: The graphs indicate nominal characteristics.

**OUTLINE DIMENSIONS** (Units in mm)



**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 <sup>1</sup>
NR7800FP-BC	Flat mount Flange	SMF	With FC-UPC Connector
NR7800FP-CC			With SC-UPC Connector
NR7800FR-BB		GI-50 Fiber	With FC-SPC Connector
NR7800FR-CB			With SC-SPC Connector
NR7800CP-BC	Vertical Mount Flange	SMF	With FC-UPC Connector
NR7800CP-CC			With SC-UPC Connector
NR7800CR-BB		GI-50 Fiber	With FC-SPC Connector
NR7800CR-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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