

NEC

$\phi 80\mu\text{m}$ InGaAs PIN-PD COAXIAL MODULE FOR 622 Mb/s, 156 Mb/s FIBER OPTIC COMMUNICATIONS AND EDFA MONITOR

NR7800 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

The NR7800 Series are InGaAs PIN photo diode (PIN-PD) coaxial modules with single mode fiber. 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 0.80	0.89 0.94	
ΔS_t	Temperature Dependence of Sensitivity, $V_R = 5 \text{ V}$, $\lambda = 1550 \text{ nm}$	%	-5		5
ΔS_p	Polarization Dependence of Sensitivity, $V_R = 5 \text{ V}$, $\lambda = 1550 \text{ nm}$, $T_C = 25^\circ \text{ C}$	%	-2.5		2.5
ΔS_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 RATINGS¹

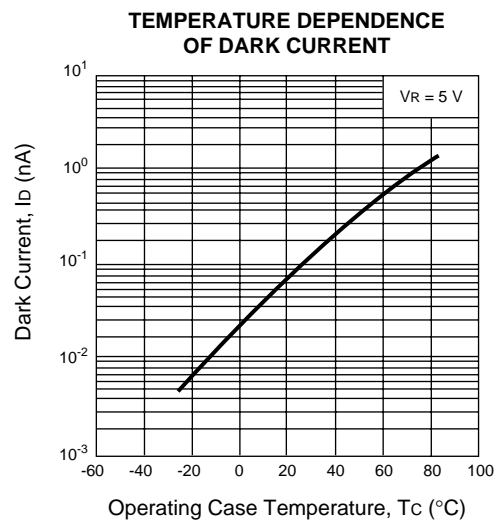
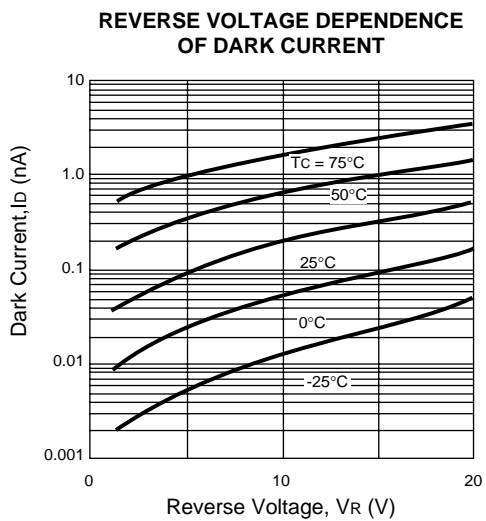
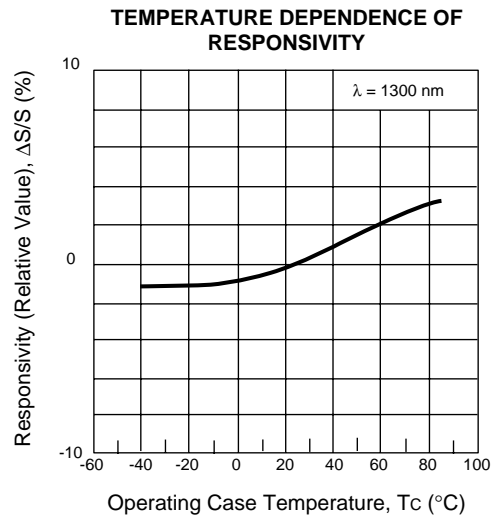
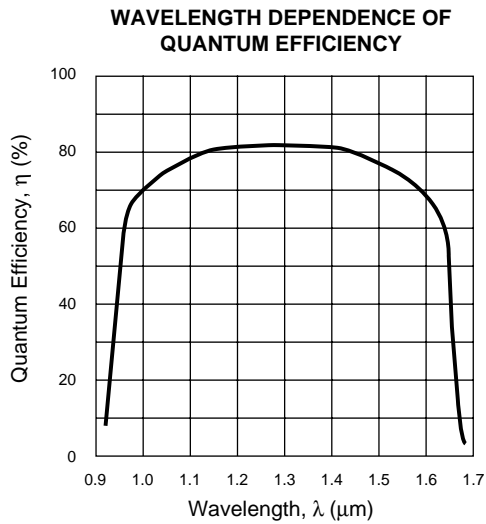
(T_C = 25°C, unless otherwise specified)

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:

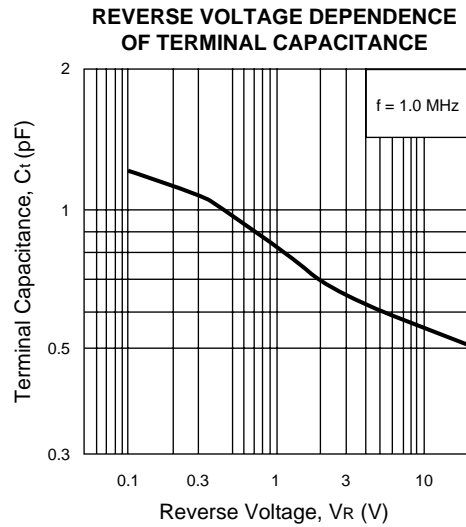
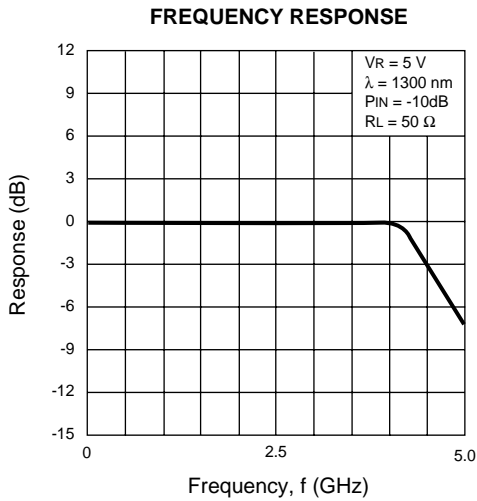
1. Operation in excess of any one of these parameters may result in permanent damage.

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



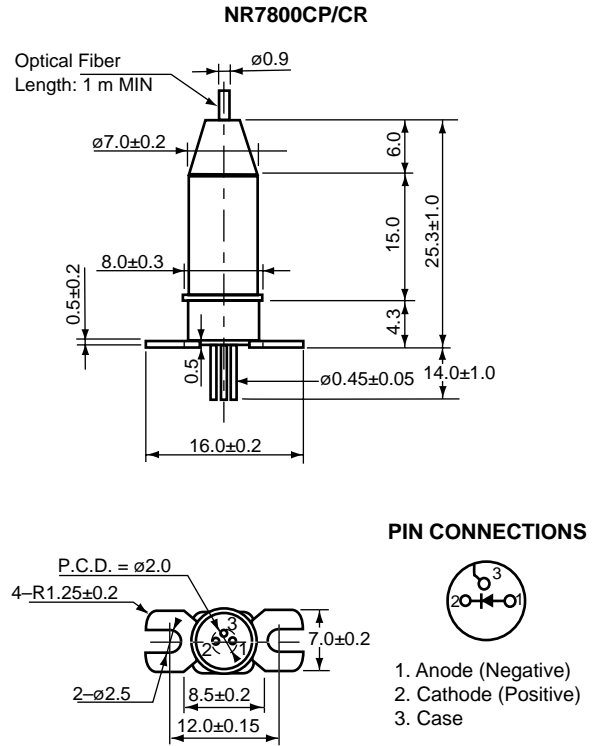
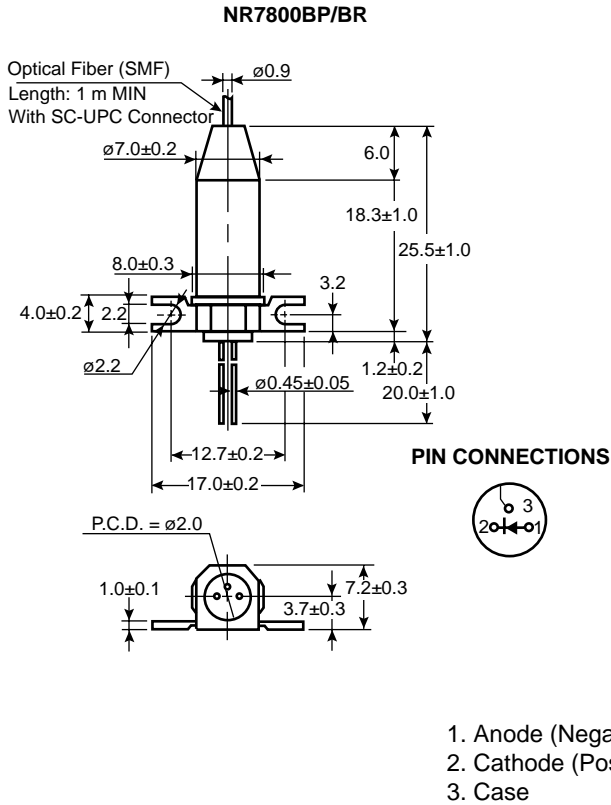
Remark: The graphs indicate nominal characteristics.

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



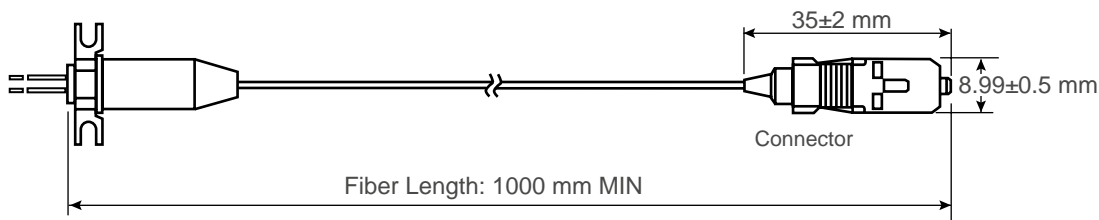
Remark: The graphs indicate nominal characteristics.

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 ¹
NR7800BP-BC	Flat mount Flange	SMF	With FC-UPC Connector
NR7800BP-CC			With SC-UPC Connector
NR7800BR-BB		GI-50 Fiber	With FC-SPC Connector
NR7800BR-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