

### FEATURES

- **PEAK WAVELENGTH:**  
 $\lambda_P = 1510 \text{ nm}$
- **OUTPUT POWER:**  
 $P_f = 2.0 \text{ mW}$
- **LOW THRESHOLD CURRENT:**  
 $I_{TH} = 20 \text{ mA}$  at  $T_c = 25^\circ\text{C}$
- **InGaAs MONITOR PIN-PD**
- **WIDE OPERATING TEMPERATURE RANGE:**  
 $T_c = 0 \text{ to } +65^\circ\text{C}$
- **BASED ON BELLCORE TA-NWT-000983**

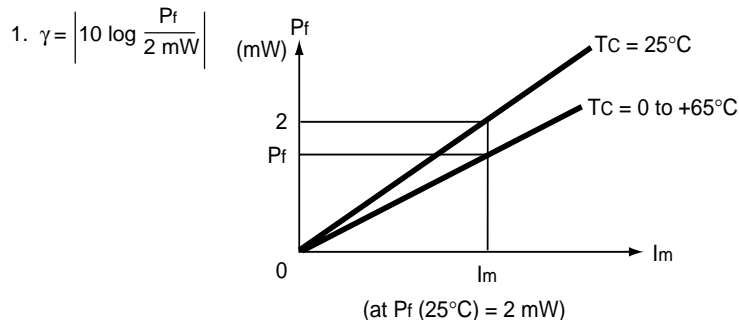
### DESCRIPTION

The NX8501 Series is a 1510 nm phase-shifted DFB (Distributed Feed-Back) laser diode with single mode fiber. The Multiple Quantum Well (MQW) structure is adopted to achieve stable dynamic single longitudinal mode operation over a wide temperature range of 0 to +65°C. It is designed for on-line monitoring of dense WDM fiber-optic networks.

### ELECTRO-OPTICAL CHARACTERISTICS ( $T_c = 0 \text{ to } +65^\circ\text{C}$ , unless otherwise specified)

PART NUMBER			NX8501 Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
$V_f$	Forward Voltage, $P_f = 2.0 \text{ mW}$ , $T_c = 25^\circ\text{C}$	V		1.6	2.0
$I_{OP}$	Operating Current, $P_f = 2.0 \text{ mW}$	mA		80	100
$I_{TH}$	Threshold Current, $P_f = 0.2 \text{ to } 1.0 \text{ mW}$ , $T_c = 25^\circ\text{C}$	mA		20	30
$\eta_d$	Differential Efficiency from Fiber, $P_f = 2.0 \text{ mW}$	W/A	0.04	0.08	
$\lambda_p$	Peak Emission Wavelength, $P_f = 2.0 \text{ mW}$	nm	1500	1510	1520
SMSR	Side Mode Suppression Ratio, $P_f = 2.0 \text{ mW}$	dB	30	35	
$\Delta\nu$	Spectral Line Width, $P_f = 2.0 \text{ mW}$ , 3.0 dB down, $T_c = 25^\circ\text{C}$	MHz		2	10
RIN	Relative Intensity Noise, $P_f = 2.0 \text{ mW}$ , $T_c = 25^\circ\text{C}$	dB/Hz		-155	-150
$t_r$	Rise Time, 10-90%, $P_f = 2.0 \text{ mW}$ , $T_c = 25^\circ\text{C}$	ns		0.3	0.5
$t_f$	Fall Time, 90-10%, $P_f = 2.0 \text{ mW}$ , $T_c = 25^\circ\text{C}$	ns		0.3	0.5
$I_m$	Monitor Current, $V_R = 5 \text{ V}$ , $P_f = 2.0 \text{ mW}$ , $T_c = 25^\circ\text{C}$	$\mu\text{A}$	100	1000	2000
$I_D$	Monitor Dark Current, $V_R = 5 \text{ V}$ , $T_c = 25^\circ\text{C}$	nA			10
$\gamma^1$	Tracking Error, $I_m = \text{const.}$ (at $P_f = 2 \text{ mW}$ , $T_c = 25^\circ\text{C}$ )	dB	-1.0		1.0

Note:



# NX8501 SERIES

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

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

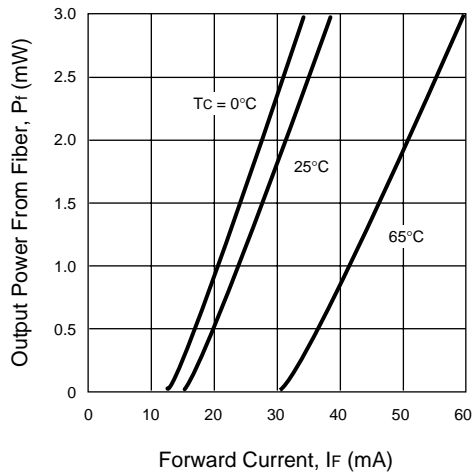
SYMBOLS	PARAMETERS	UNITS	RATINGS
P <sub>f</sub>	Optical Output Power from Fiber	mW	5.0
I <sub>F</sub>	Forward Current of LD	mA	200
V <sub>R</sub>	Reverse Voltage of LD	V	2.0
I <sub>F</sub>	Forward Current of PD	mA	10
V <sub>R</sub>	Reverse Voltage of PD	V	20
T <sub>c</sub>	Operating Case Temperature	°C	0 to +65
T <sub>STG</sub>	Storage Temperature	°C	-40 to +85
T <sub>SLD</sub>	Lead Soldering Temperature (10 s)	°C	260

Note:

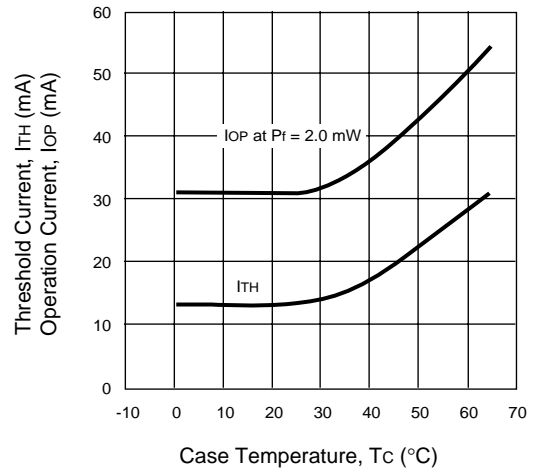
1. Operation in excess of any one of these parameters may result in permanent damage.

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

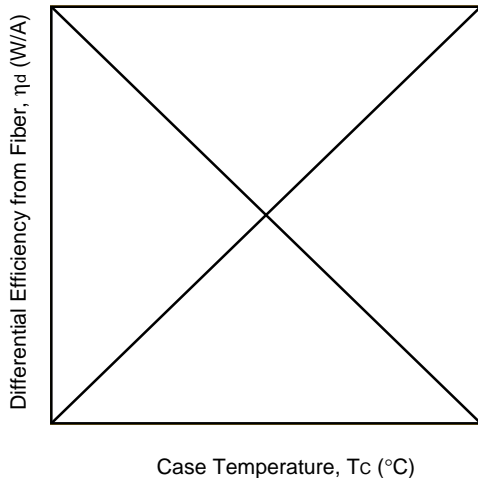
**OUTPUT POWER FROM FIBER vs. FORWARD CURRENT**



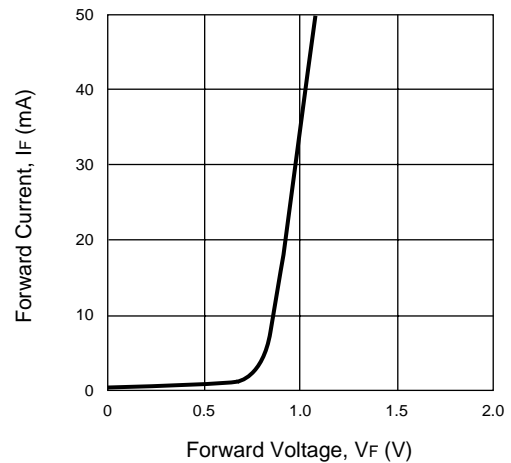
**OPERATING CURRENT AND THRESHOLD CURRENT vs. CASE TEMPERATURE**



**TEMPERATURE DEPENDENCE OF DIFFERENTIAL EFFICIENCY FROM FIBER vs. CASE TEMPERATURE**

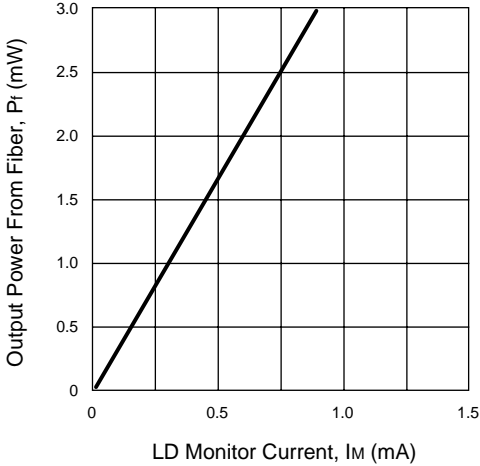


**FORWARD CURRENT vs. FORWARD VOLTAGE**

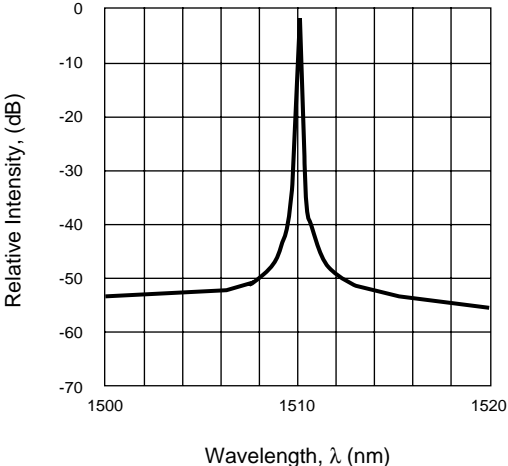


**TYPICAL PERFORMANCE CURVES** ( $T_c = 25^\circ\text{C}$ , unless otherwise specified)

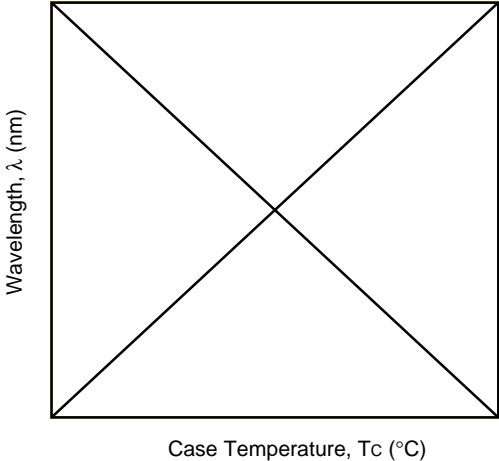
**OUTPUT POWER FROM FIBER vs. LD MONITOR CURRENT**



**LONGITUDINAL MODE FROM FIBER**



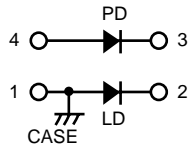
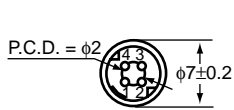
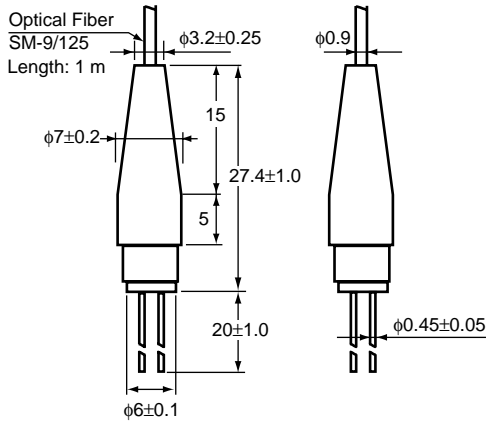
**TEMPERATURE DEPENDENCE OF WAVELENGTH vs. CASE TEMPERATURE**



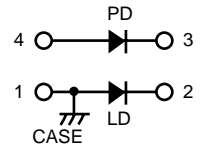
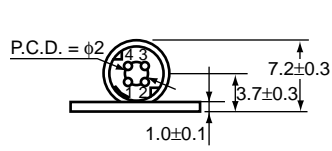
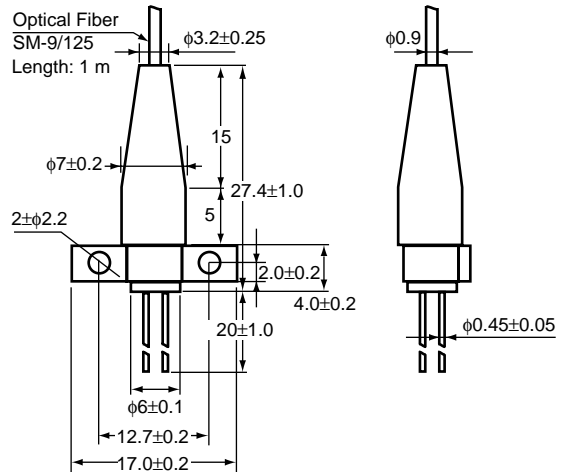
# NX8501 SERIES

## OUTLINE DIMENSIONS (Units in mm)

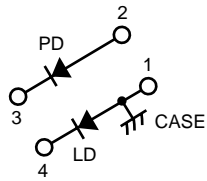
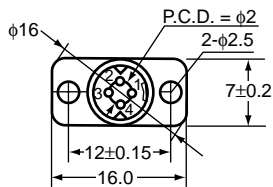
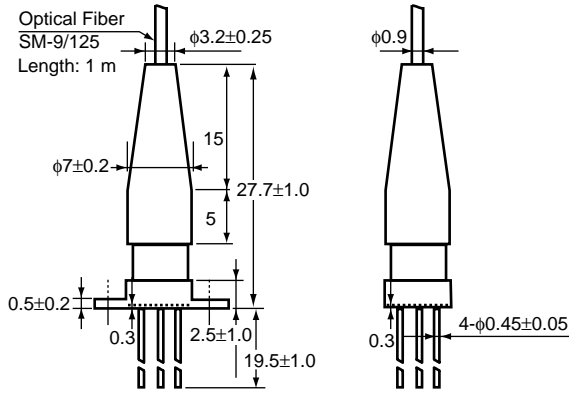
**NX8501AC**



**NX8501BC**



**NX8501CC**



**ORDERING INFORMATION**

PART NUMBER	AVAILABLE CONNECTOR	Flange Type	Fiber Type
NX8501AC	Without Connector	No Flange	
NX8501AC-BA	With FC-PC Connector		
NX8501AC-CA	With SC-PC Connector		
NX8501BC	Without Connector	Flat Mount Flange	φ250μm Corning SMF-28 with loose tube <sup>1</sup>
NX8501BC-BA	With FC-PC Connector		
NX8501BC-CA	With SC-PC Connector		
NX8501CC	Without Connector	Vertical Flange	
NX8501CC-BA	With FC-PC Connector		
NX8501CC-CA	With SC-PC Connector		
NX8501AG	Without Connector	No Flange	
NX8501AG-BA	With FC-PC Connector		
NX8501AG-CA	With SC-PC Connector		
NX8501BG	Without Connector	Flat Mount Flange	Standard SMF
NX8501BG-BA	With FC-PC Connector		
NX8501BG-CA	With SC-PC Connector		
NX8501CG	Without Connector	Vertical Flange	
NX8501CG-BA	With FC-PC Connector		
NX8501CG-CA	With SC-PC Connector		

Note:

1. Please refer to OPTICAL FIBER DIMENSIONS below.

**OPTICAL FIBER DIMENSIONS** (Units in mm)

