

**1 510 nm OPTICAL FIBER COMMUNICATIONS
 InGaAsP STRAINED MQW DC-PBH LASER DIODE MODULE**

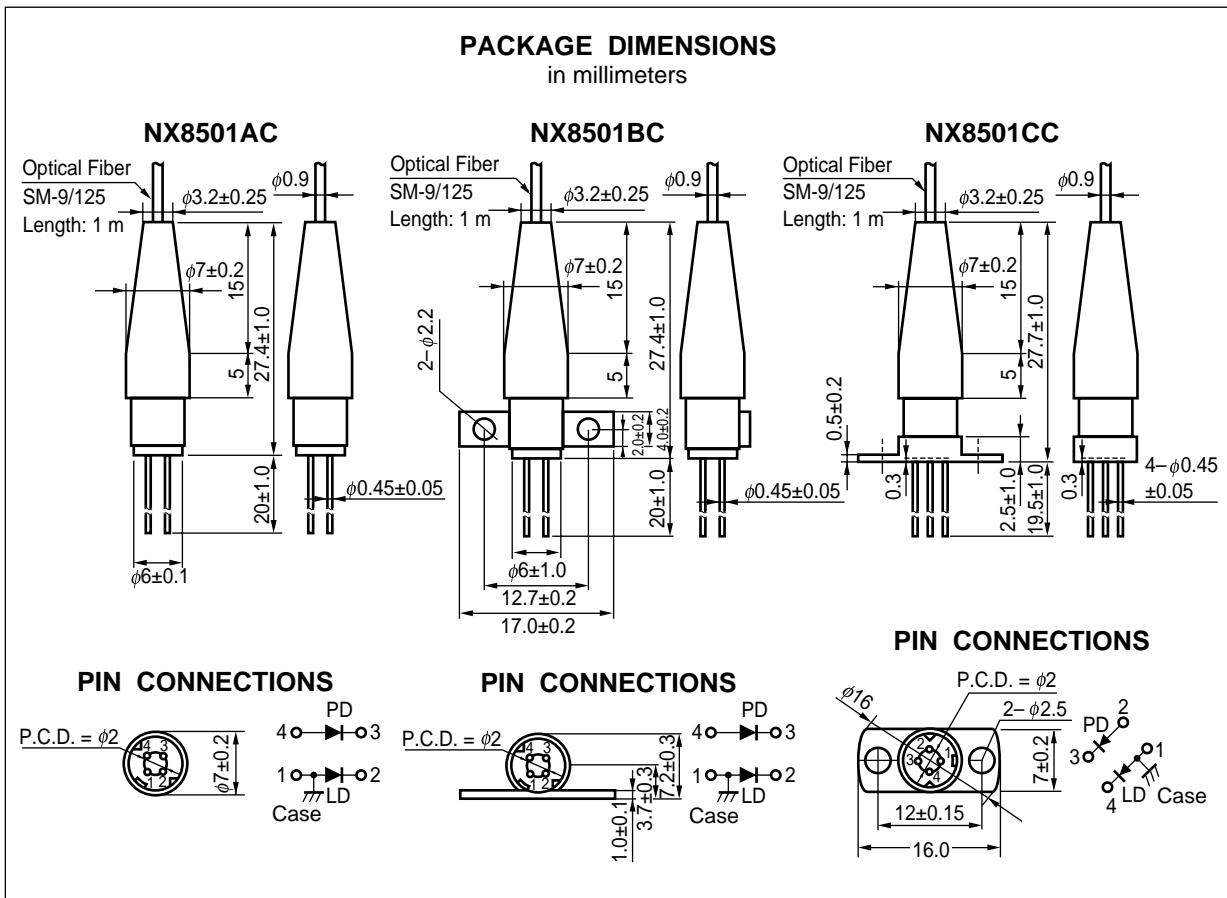
DESCRIPTION

The NX8501 Series is a 1 510 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 wide temperature range of 0 to +65 °C.

It is designed for on-line monitoring of dense WDM fiber-optic networks.

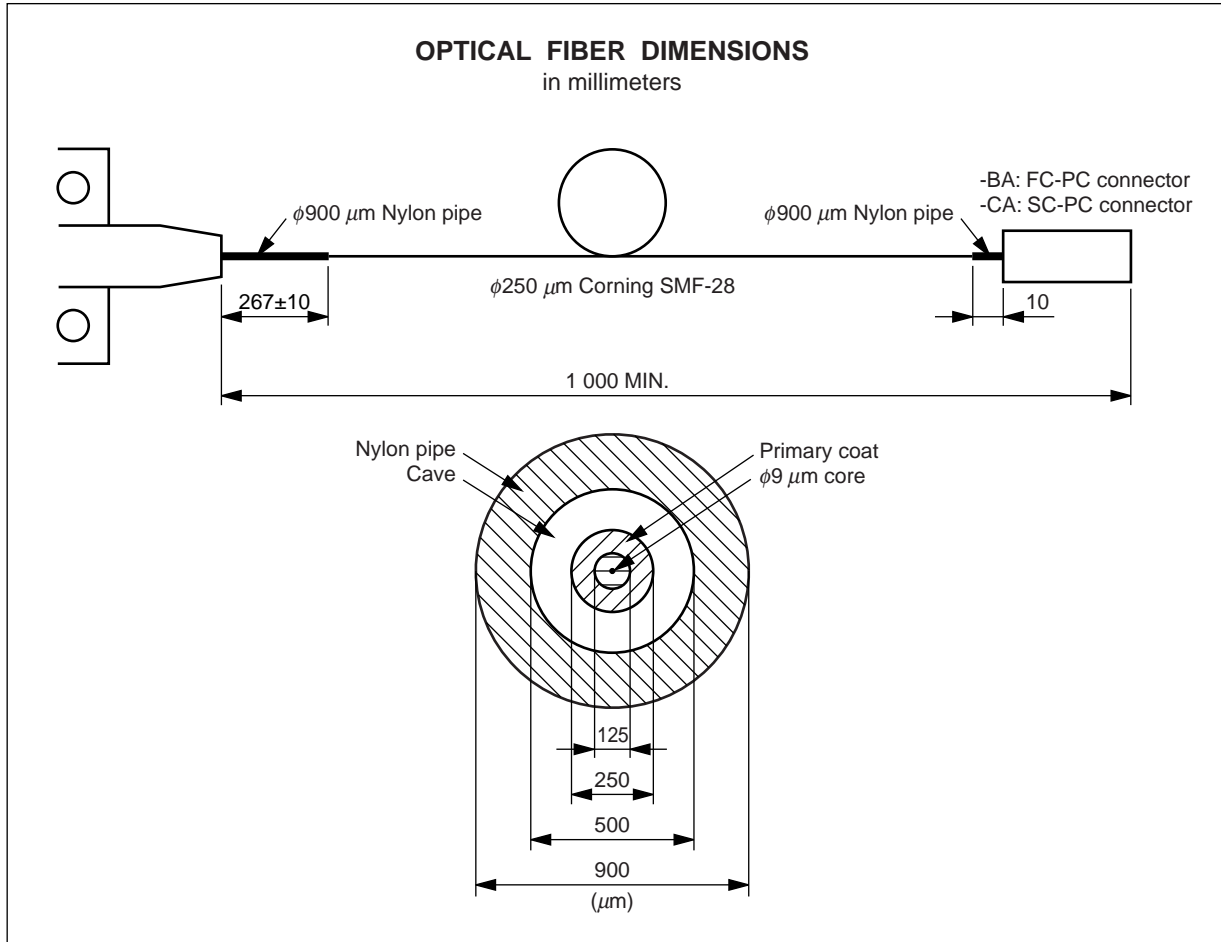
FEATURES

- Peak wavelength $\lambda_p = 1\ 510\ \text{nm}$
- Output power $P_f = 2.0\ \text{mW}$
- Low threshold current $I_{th} = 20\ \text{mA} @ T_c = 25\ ^\circ\text{C}$
- Wide operating temperature range $T_c = 0\ \text{to}\ +65\ ^\circ\text{C}$
- InGaAs monitor PIN-PD
- Based on Bellcore TA-NWT-000983



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 Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

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★ ORDERING INFORMATION

Part Number	Available Connector	Flange Type	Fiber Type
NX8501AC	Without Connector	No Flange	φ250 μm Corning SMF-28 with loose tube ^{*1}
NX8501AC-BA	With FC-PC Connector		
NX8501AC-CA	With SC-PC Connector		
NX8501BC	Without Connector	Flat Mount Flange	
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	Standard SMF
NX8501AG-BA	With FC-PC Connector		
NX8501AG-CA	With SC-PC Connector		
NX8501BG	Without Connector	Flat Mount Flange	
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		

*1 Please refer to **OPTICAL FIBER DIMENSIONS**.

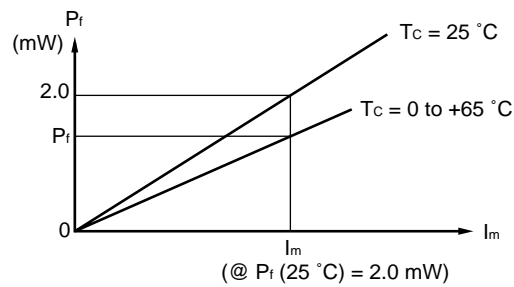
ABSOLUTE MAXIMUM RATINGS (T_c = 25 °C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P _f	5	mW
Forward Current of LD	I _F	200	mA
Reverse Voltage of LD	V _R	2.0	V
Forward Current of PD	I _F	10	mA
Reverse Voltage of PD	V _R	20	V
Operating Case Temperature	T _c	0 to +65	°C
Storage Temperature	T _{stg}	-40 to +85	°C
Lead Soldering Temperature (10 s)	T _{slid}	260	°C

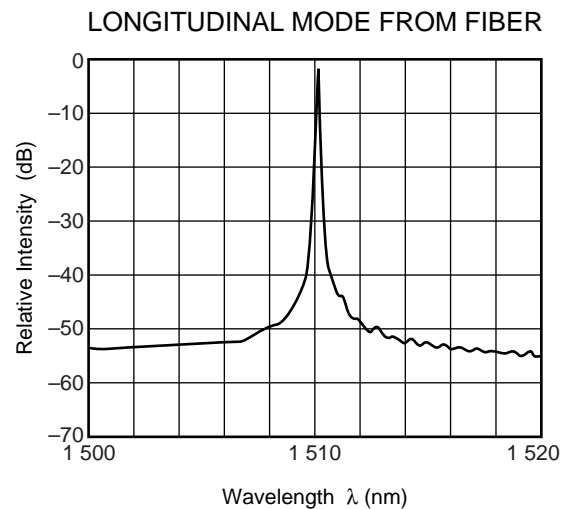
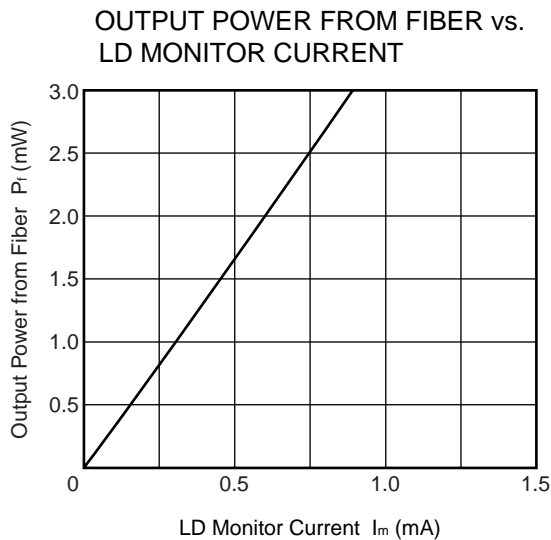
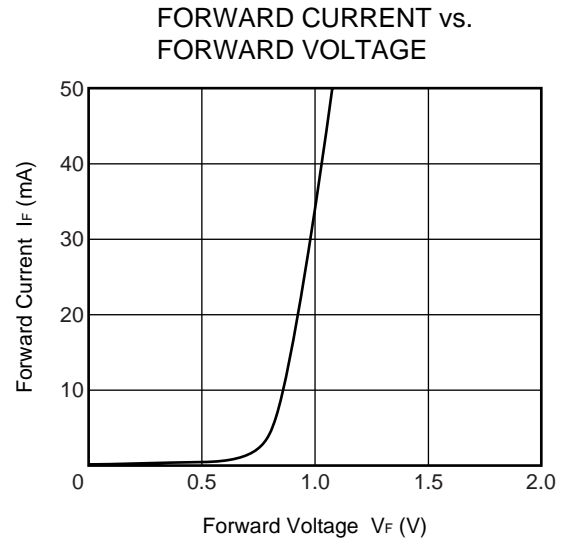
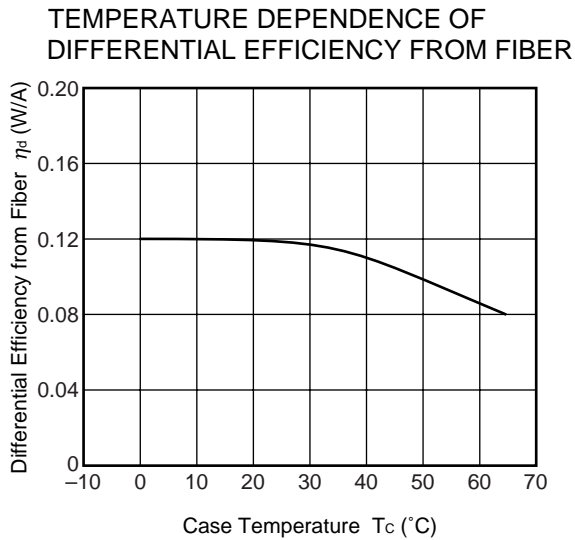
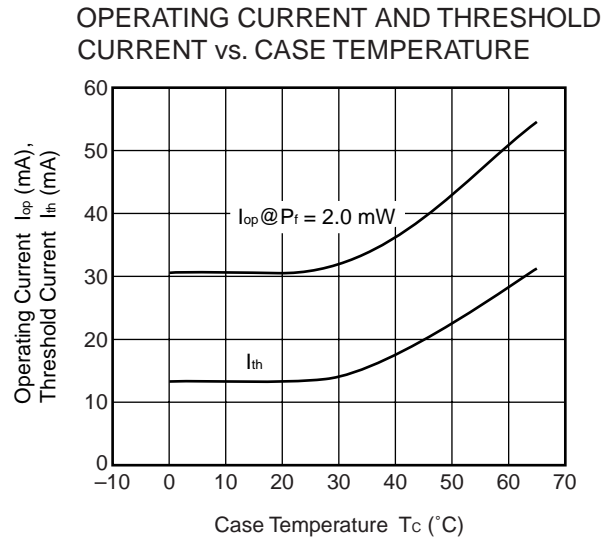
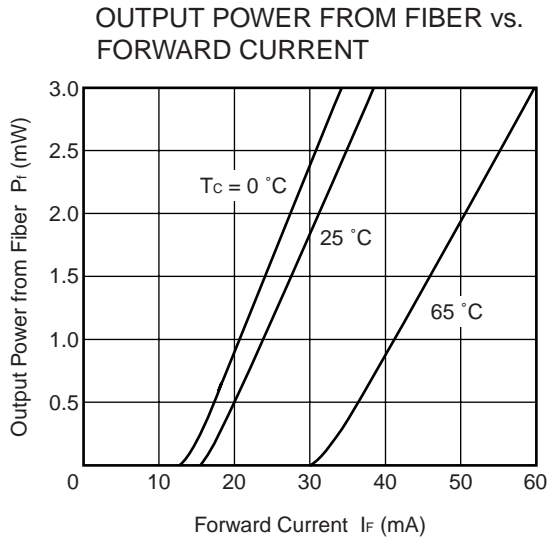
ELECTRO-OPTICAL CHARACTERISTICS (T_c = 0 to +65 °C, unless otherwise specified)

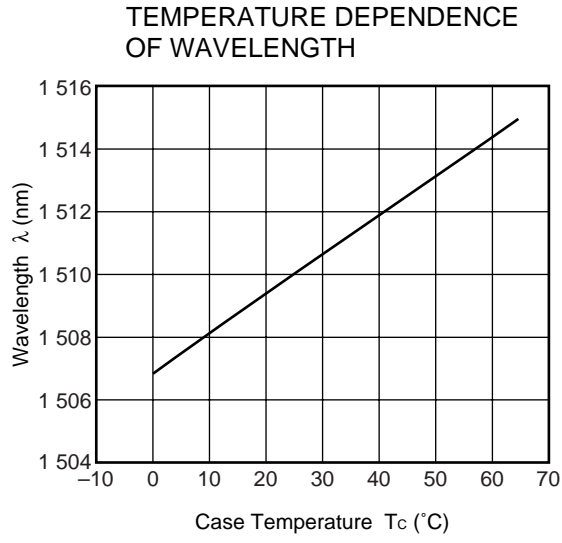
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V _F	P _f = 2.0 mW, T _c = 25 °C		1.6	2.0	V
Operating Current	I _{op}	P _f = 2.0 mW		80	100	mA
Threshold Current	I _{th}	P _f = 0.2 to 1.0 mW, T _c = 25 °C		20	30	mA
Differential Efficiency from Fiber	η _d	P _f = 2.0 mW	0.04	0.08		W/A
Peak Emission Wavelength	λ _p	P _f = 2.0 mW	1 500	1 510	1 520	nm
Side Mode Suppression Ratio	SMSR	P _f = 2.0 mW	30	35		dB
Spectral Line Width	Δν	P _f = 2.0 mW, 3 dB down, T _c = 25 °C		2	10	MHz
Relative Intensity Noise	RIN	P _f = 2.0 mW, T _c = 25 °C		-155	-150	dB/Hz
Rise Time	t _r	10-90 %, T _c = 25 °C, P _f = 2.0 mW		0.3	0.5	ns
Fall Time	t _f	90-10 %, T _c = 25 °C, P _f = 2.0 mW		0.3	0.5	ns
Monitor Current	I _m	V _R = 5 V, P _f = 2.0 mW, T _c = 25 °C	100	1 000	2 000	μA
Monitor Dark Current	I _D	V _R = 5 V, T _c = 25 °C			10	nA
Tracking Error	γ ⁻¹	I _m = const. (@ P _f = 2.0 mW, T _c = 25 °C)	-1.0		1.0	dB

$$*1 \gamma = \left| 10 \log \frac{P_f}{2.0 \text{ mW}} \right|$$



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





Remark The graphs indicate nominal characteristics.

★ LD FAMILY FOR DENSE WDM APPLICATION

Part Number	Absolute Maximum Ratings		Typical Characteristics			Description	Package
	T _c (°C)	T _{stg} (°C)	I _{th} (mA)	P _r (mW)	λ _c (nm)		
			TYP.	MIN.	TYP.		
NDL7540PA	-20 to +65	-40 to +85	40	90	1 480	1 480 nm pump LD module	BFY
NX7460LE ^{*1}	-20 to +65	-40 to +85	25	120	1 480	1 480 nm pump LD module	BFY
NX8501 Series	0 to +65	-40 to +85	20	2	1 510	Telemetry	Coaxial
NX8561JC ^{*1}	0 to +65	-40 to +85	20	3	1 510	Telemetry	DIP
NX7660JC ^{*1}	-20 to +65	-40 to +85	15	5	1 625	Telemetry	DIP
NDL7910P	-20 to +70	-40 to +85	7	0.5	1 550 ^{*2}	2.5 G EA modulator integrated module	BFY
NX8562LB	-20 to +65	-40 to +85	20	20	1 550 ^{*2}	1 550 CW LD module	BFY
NX8563LB	-20 to +65	-40 to +85	20	10	ITU-T ^{*3}	1 550 CW LD module	BFY

*1 Under development

*2 Wavelength selectable for ITU-T standards upon request.

*3 Wavelength selectable for ITU-T standards.

REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

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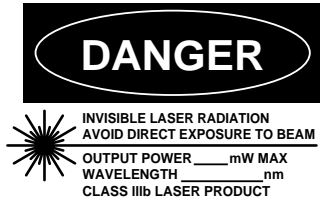
CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.

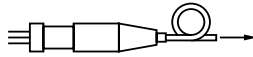
DANGER

INVISIBLE LASER RADIATION
AVOID DIRECT EXPOSURE TO BEAM

OUTPUT POWER _____ mW MAX
WAVELENGTH _____ nm
CLASS IIIb LASER PRODUCT



SEMICONDUCTOR LASER



AVOID EXPOSURE-Invisible
Laser Radiation is emitted from
this aperture

NEC Corporation

NEC Building, 7-1, Shiba 5-chome,
Minato-ku, Tokyo 108-01, Japan

Type number: _____

Manufactured: _____

Serial Number: _____

This product conforms to FDA
regulations as applicable
to standards 21 CFR Chapter 1.
Subchapter J.

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