LASER DIODE NX8501 Series

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

DESCRIPTION

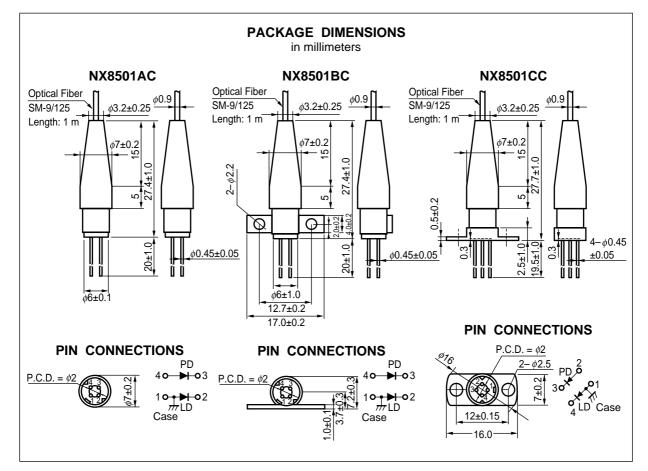
NEC

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 $^{\circ}$ C.

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

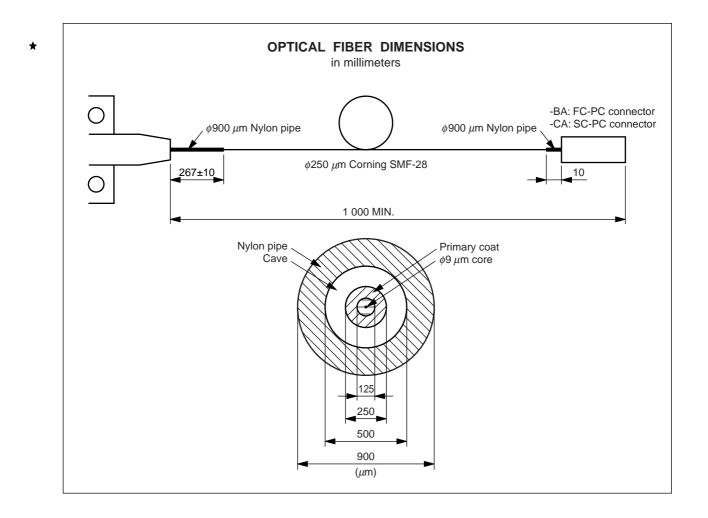
FEATURES

- Peak wavelength
- Output power
- Low threshold current
- $\lambda_p = 1510 \text{ nm}$ Pf = 2.0 mW Ith = 20 mA @ Tc = 25 °C
- Wide operating temperature range $T_c = 0$ to +65 °C
- InGaAs monitor PIN-PD
- Based on Bellcore TA-NWT-000983



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The mark **★** shows major revised points.



***** ORDERING INFORMATION

Part Number	Available Connector	Flange Type	Fiber Type
NX8501AC	Without Connector	No Flange	ϕ 250 μ m Corning
NX8501AC-BA	With FC-PC Connector		SMF-28 with loose tube ^{*1}
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		

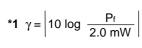
*1 Please refer to OPTICAL FIBER DIMENSIONS.

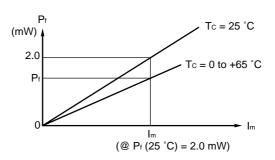
ABSOLUTE MAXIMUM RATINGS (Tc = 25 °C, unless otherwise specified)

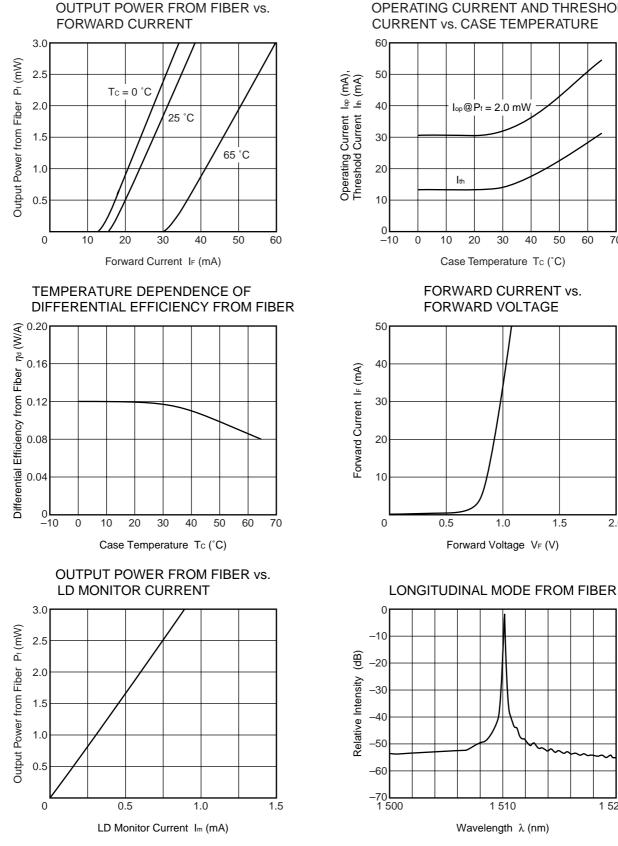
Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	Pf	5	mW
Forward Current of LD	lf	200	mA
Reverse Voltage of LD	Vr	2.0	V
Forward Current of PD	lf	10	mA
Reverse Voltage of PD	Vr	20	V
Operating Case Temperature	Tc	0 to +65	°C
Storage Temperature	Tstg	-40 to +85	°C
Lead Soldering Temperature (10 s)	Tsld	260	°C

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	VF	$P_f = 2.0 \text{ mW}, \text{ Tc} = 25 ^{\circ}\text{C}$		1.6	2.0	V
Operating Current	Гор	Pf = 2.0 mW		80	100	mA
Threshold Current	Ith	P_f = 0.2 to 1.0 mW, Tc = 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	λρ	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, Tc = 25 °C		2	10	MHz
Relative Intensity Noise	RIN	$P_f = 2.0 \text{ mW}, \text{ Tc} = 25 ^{\circ}\text{C}$		-155	-150	dB/Hz
Rise Time	tr	10-90 %, Tc = 25 °C, Pf = 2.0 mW		0.3	0.5	ns
Fall Time	tr	90-10 %, Tc = 25 °C, Pf = 2.0 mW		0.3	0.5	ns
Monitor Current	Im	V_R = 5 V, P _f = 2.0 mW, T _c = 25 °C	100	1 000	2 000	μA
Monitor Dark Current	lo	V _R = 5 V, T _c = 25 °C			10	nA
Tracking Error	γ*1	Im = const. (@ Pf = 2.0 mW, Tc = 25 °C)	-1.0		1.0	dB







TYPICAL CHARACTERISTICS (Tc = 25 °C, unless otherwise specified)

OPERATING CURRENT AND THRESHOLD CURRENT vs. CASE TEMPERATURE

30

1.0

1.5

2.0

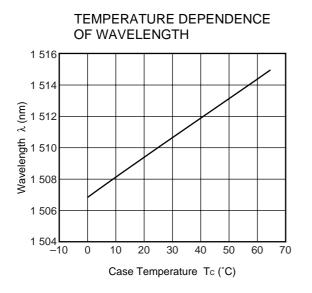
40

50

60

70

1 520



Remark The graphs indicate nominal characteristics.

★ LD FAMILY FOR DENSE WDM APPLICATION

	Absolute Maximum Ratings		Typical Characteristics				
Part Number	Тс (°С)	T₅tg (°C)	I _{th} (mA)	P _f (mW)	λc (nm)	Description	Package
			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

[MEMO]

[MEMO]

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.



SEMICONDUCTOR LASER

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AVOID EXPOSURE-Invisible Laser Radiation is emitted from this aperture

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- Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
- Specific: Aircraft, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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