

PRELIMINARY DATA SHEET

NEC

LASER DIODE NX8561JC

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

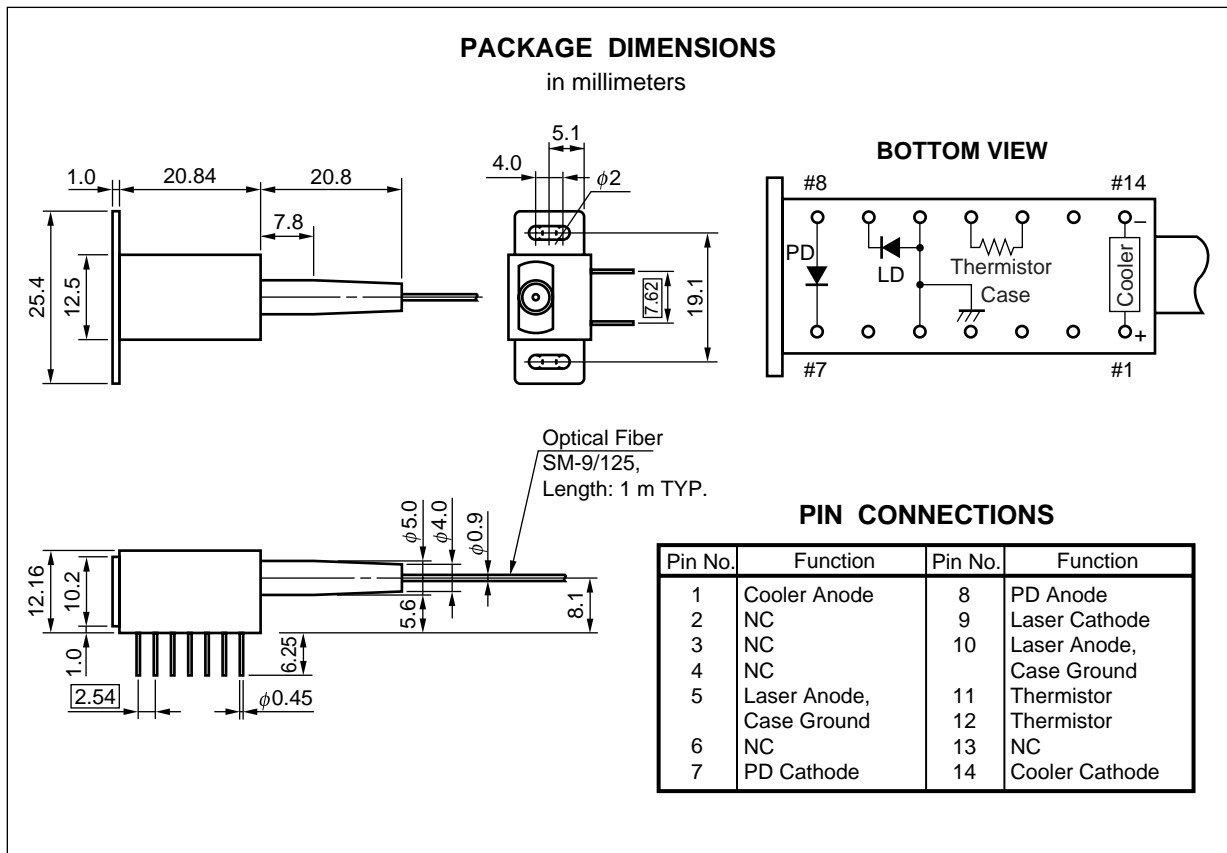
DESCRIPTION

The NX8561JC 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 $P_r = 3.0\ \text{mW}$
- Low threshold current $I_{th} = 20\ \text{mA}$
- Internal InGaAs monitor PD
- Internal thermoelectric cooler, thermistor
- Hermetically sealed 14-pin Dual-In-Line Package



The information in this document is subject to change without notice.

ORDERING INFORMATION

Part Number	Available Connector
NX8561JC	Without Connector
NX8561JC-BA	With FC-PC Connector
NX8561JC-CA	With SC-PC Connector

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

Parameter	Symbol	Ratings	Unit
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
Cooler Voltage	V _c	2.0	V
Cooler Current	I _c	1.5	A

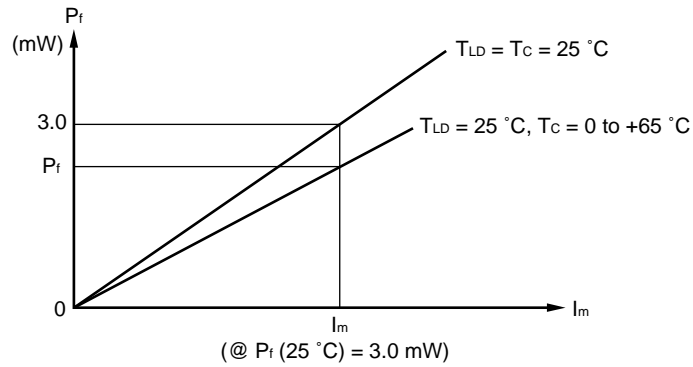
ELECTRO-OPTICAL CHARACTERISTICS (T_{LD} = 25 °C, T_c = 0 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V _F	P _f = 3.0 mW		1.6	2.0	V
Operating Current	I _{op}	P _f = 3.0 mW		65	80	mA
Threshold Current	I _{th}	P _f = 0.2 to 1.0 mW		20	30	mA
Differential Efficiency from Fiber	η _d		0.08	0.12		W/A
Peak Emission Wavelength	λ _p	P _f = 3.0 mW	1 505	1 510	1 515	nm
Side Mode Suppression Ratio	SMSR	P _f = 3.0 mW	30	35		dB
Spectral Line Width	Δν	P _f = 3.0 mW, 3 dB down		2	10	MHz
Relative Intensity Noise	RIN	P _f = 3.0 mW		-155	-150	dB/Hz
Rise Time	t _r	10-90 %, P _f = 3.0 mW			0.5	ns
Fall Time	t _f	90-10 %, P _f = 3.0 mW			0.5	ns

ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Monitor PD: T_{LD} = 25 °C, T_c = 0 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Monitor Current	I _m	V _R = 5 V, P _f = 3.0 mW	100			μA
Dark Current	I _D	V _R = 5 V			10	nA
Tracking Error	γ ^{*1}	I _m = const., P _f = 3.0 mW	-0.5		0.5	dB

$$*1 \gamma = \left| 10 \log \frac{P_f}{3.0 \text{ mW}} \right|$$



ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_c = 0 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T _{LD} = 25 °C	9.5	10.0	10.5	kΩ
B Constant	B		3 300	3 400	3 500	K
Cooler Current	I _c	ΔT = 40 K, P _f = 3.0 mW		0.8	1.0	A
Cooler Voltage	V _c	ΔT = 40 K, P _f = 3.0 mW		1.0	1.5	V
Cooling Capacity	ΔT ^{*1}	I _c = 1.0 A, P _f = 3.0 mW	40			K

$$*1 \Delta T = |T_c - T_{LD}|$$

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
NX8501 Series	0 to +65	-40 to +85	20	2	1 510	Telemetry	Coaxial
NX8561JC	0 to +65	-40 to +85	20	3	1 510	Telemetry	BFY
NDL7910P	-20 to +70	-40 to +85	7	0.5	1 550 ^{*1}	2.5 G EA modulator integrated module	BFY
NX8563LB	-20 to +65	-40 to +85	20	10	ITU-T ^{*2}	1 550 CW LD module	BFY

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

*2 Wavelength selectable for ITU-T standards.

REFERENCE

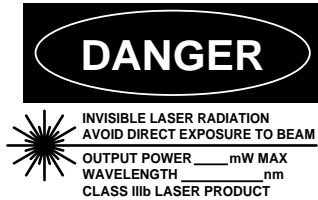
Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

[MEMO]

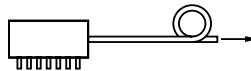
[MEMO]

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



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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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: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.