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.

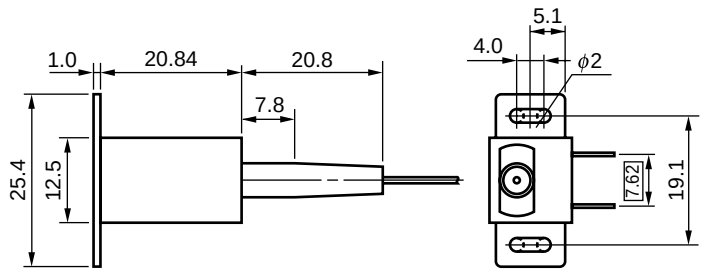
It is designed for on-line monitoring of dense WDM fiber-optic networks.

FEATURES

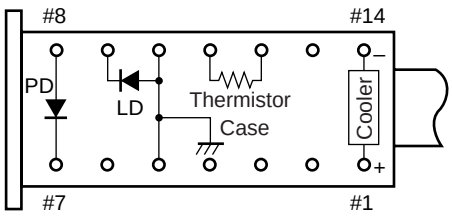
- Peak wavelength λ_p = 1 510 nm
- Output power P_f = 3.0 mW
- Low threshold current I_{th} = 20 mA
- Internal InGaAs monitor PD
- Internal thermoelectric cooler, thermistor
- Hermetically sealed 14-pin Dual-In-Line Package

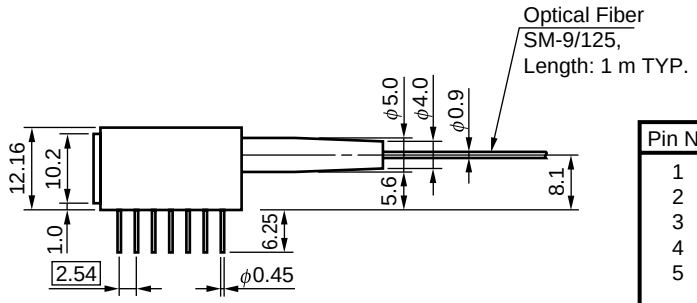
PACKAGE DIMENSIONS

in millimeters



BOTTOM VIEW





PIN CONNECTIONS

Pin No.	Function	Pin No.	Function
1	Cooler Anode	8	PD Anode
2	NC	9	Laser Cathode
3	NC	10	Laser Anode,
4	NC		Case Ground
5	Laser Anode,	11	Thermistor
	Case Ground	12	Thermistor
6	NC	13	NC
7	PD Cathode	14	Cooler Cathode

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

Document No. P13855EJ1V0DS00 (1st edition)
Date Published October 1998 NS CP(K)
Printed in Japan

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_{sld}	260	°C
Cooler Voltage	V_C	2.0	V
Cooler Current	I_C	1.5	A

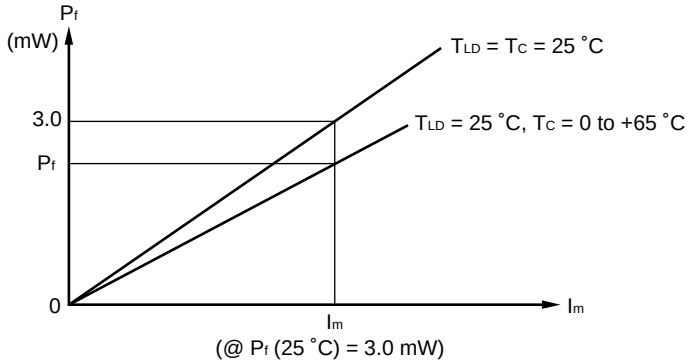
ELECTRO-OPTICAL CHARACTERISTICS (T_{LD} = 25 °C, T_C = 0 to +65 °C)

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



(@ P_f (25 ˚C) = 3.0 mW)

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** $\Delta T = \left| T_C - T_{LD} \right|$

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_f (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

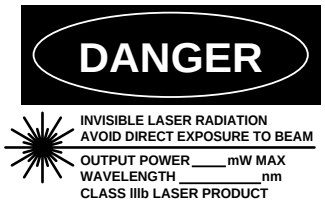
Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

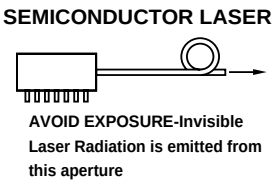
[MEMO]

[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.





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.

The export of this product from Japan is prohibited without governmental license. To export or re-export this product from a country other than Japan may also be prohibited without a license from that country. Please call an NEC sales representative.

M4 96.5