DATA SHEET

NEC

LASER DIODE

NX8563LB Series

CW LIGHT SOURCE
InGaAsP STRAINED MQW-DFB LASER DIODE MODULE
FOR D-WDM APPLICATIONS

DESCRIPTION

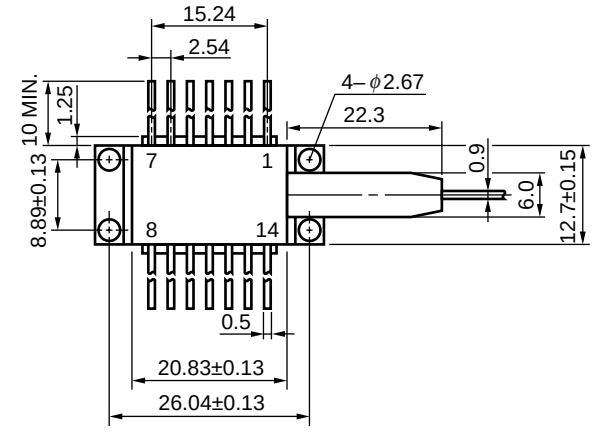
The NX8563LB Series is a 1 550 nm laser diode with Polarization Maintain Fiber (PMF).

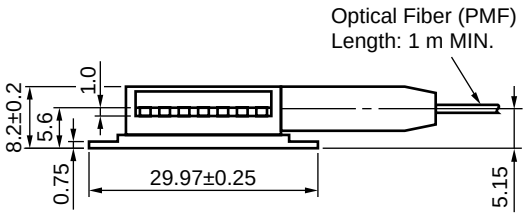
This device is designed as CW light source and ideal for D-WDM transmission systems in which external modulators are used.

FEATURES

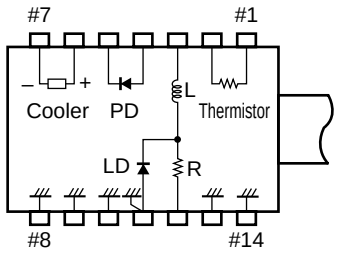
- Output power P_f = 10 mW MIN.
- Wavelength availability λ_p = 1 540 to 1 560 nm, ITU standard based
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Polarization maintain fiber pigtail

PACKAGE DIMENSIONS
in millimeters





TOP VIEW



PIN CONNECTIONS

Pin No.	Function	Pin No.	Function
1	Thermistor	8	GND
2	Thermistor	9	GND
3	Bias	10	GND
4	PD Anode	11	GND, LD Anode
5	PD Cathode	12	Signal Input
6	Cooler Anode	13	GND
7	Cooler Cathode	14	GND

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

Document No. P13642EJ3V0DS00 (3rd edition)
Date Published November 1998 NS CP(K)
Printed in Japan

The mark ★ shows major revised points.

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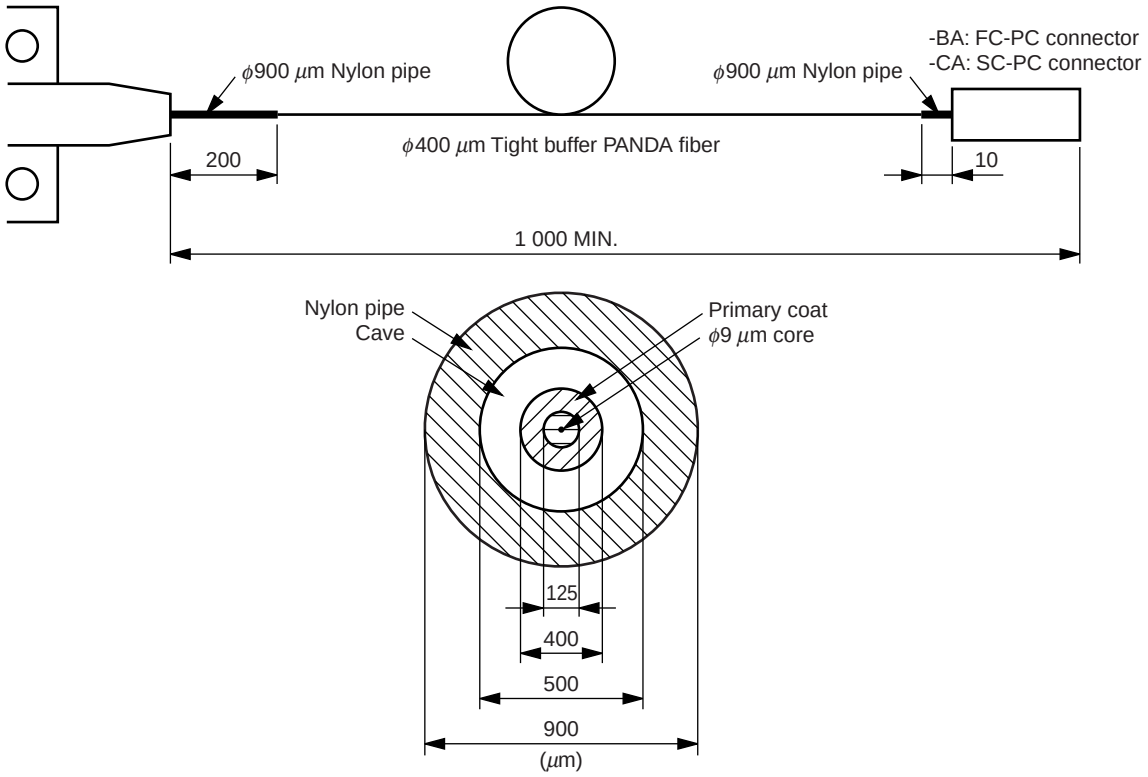
OPTICAL FIBER DIMENSIONS
in millimeters



ORDERING INFORMATION

Part Number			ITU-T Wavelength	Frequency
Without Connector	With FC-PC Connector	With SC-PC Connector	(nm)	(THz)
NX8563LB405	NX8563LB405-BA	NX8563LB405-CA	1540.56	194.6
NX8563LB413	NX8563LB413-BA	NX8563LB413-CA	1541.35	194.5
NX8563LB421	NX8563LB421-BA	NX8563LB421-CA	1542.14	194.4
NX8563LB429	NX8563LB429-BA	NX8563LB429-CA	1542.94	194.3
NX8563LB437	NX8563LB437-BA	NX8563LB437-CA	1543.73	194.2
NX8563LB445	NX8563LB445-BA	NX8563LB445-CA	1544.53	194.1
NX8563LB453	NX8563LB453-BA	NX8563LB453-CA	1545.32	194
NX8563LB461	NX8563LB461-BA	NX8563LB461-CA	1546.12	193.9
NX8563LB469	NX8563LB469-BA	NX8563LB469-CA	1546.92	193.8
NX8563LB477	NX8563LB477-BA	NX8563LB477-CA	1547.72	193.7
NX8563LB485	NX8563LB485-BA	NX8563LB485-CA	1548.51	193.6
NX8563LB493	NX8563LB493-BA	NX8563LB493-CA	1549.32	193.5
NX8563LB501	NX8563LB501-BA	NX8563LB501-CA	1550.12	193.4
NX8563LB509	NX8563LB509-BA	NX8563LB509-CA	1550.92	193.3
NX8563LB517	NX8563LB517-BA	NX8563LB517-CA	1551.72	193.2
NX8563LB525	NX8563LB525-BA	NX8563LB525-CA	1552.52	193.1
NX8563LB533	NX8563LB533-BA	NX8563LB533-CA	1553.33	193
NX8563LB541	NX8563LB541-BA	NX8563LB541-CA	1554.13	192.9
NX8563LB549	NX8563LB549-BA	NX8563LB549-CA	1554.94	192.8
NX8563LB557	NX8563LB557-BA	NX8563LB557-CA	1555.75	192.7
NX8563LB565	NX8563LB565-BA	NX8563LB565-CA	1556.55	192.6
NX8563LB573	NX8563LB573-BA	NX8563LB573-CA	1557.36	192.5
NX8563LB581	NX8563LB581-BA	NX8563LB581-CA	1558.17	192.4
NX8563LB589	NX8563LB589-BA	NX8563LB589-CA	1558.98	192.3
NX8563LB597	NX8563LB597-BA	NX8563LB597-CA	1559.79	192.2
NX8563LB606	NX8563LB606-BA	NX8563LB606-CA	1560.61	192.1

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

Parameter	Symbol	Ratings	Unit
Forward Current of LD	I_F	300	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	−20 to +65	°C
Storage Temperature	T_{stg}	−40 to +85	°C
Lead Soldering Temperature (10 s)	T_{sld}	260	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_{LD} = 25 °C, T_C = –20 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Laser Set Temperature	T_{set}		20		35	°C
Forward Voltage	V_F	P_f = 10 mW	0.9		1.5	V
Threshold Current	I_{th}			20	40	mA
Optical Output Power from Fiber	P_f	I_F = 167 mA, T_{LD} = T_{set}	10			mW
Threshold Output Power from Fiber	P_{th}	I_F = I_{th}			100	μW
Quantum Efficiency	η		0.08	0.1		W/A
Peak Emission Wavelength	λ_p	P_f = 10 mW, CW, T_{LD} = T_{set}	Specified to ITU-T[*1]			nm
Spectral Line Width	$\Delta\nu$	P_f = 10 mW, CW, 3 dB down		1	2	MHz
Side Mode Suppression Ratio	SMSR	P_f = 10 mW, CW	30	35		dB
FM Response	η_{FM}	P_f = 10 mW	50	70		MHz/mA
Relative Intensity Noise	RIN	P_f = 10 mW, 20 MHz to 3 GHz			–150	dB/Hz
Flat frequency response	f_m	P_f = 10 mW, +/–3 dB	1.8			GHz
Polarization Extinction Ratio[*2]	ext	P_f = 10 mW, CW	15	20		dB

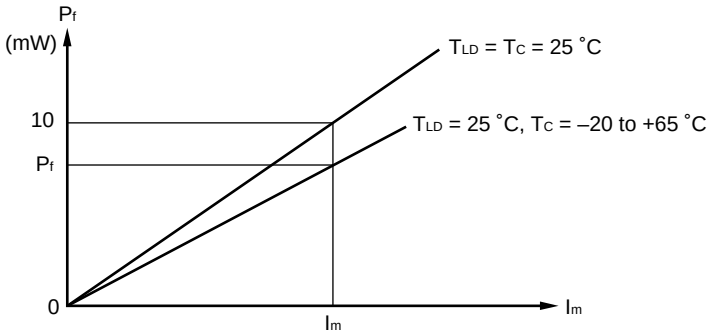
***1** Please refer to ORDERING INFORMATION

***2** Polarization state of LD is aligned parallel to the slow axis.

ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Monitor PD: T_{LD} = 25 °C, T_C = –20 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Monitor Current	I_m	P_f = 10 mW, V_R = 5 V	100			μA
Dark Current	I_D	V_R = 5 V		2	10	nA
Tracking Error	γ *1	I_m = const.			0.5	dB

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



(@ P_f (25 ˚C) = 10 mW)

ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_C = –20 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	$\Delta T = 65 - T_{set}$, P_f = 10 mW			1.0	A
Cooler Voltage	V_C	$\Delta T = 65 - T_{set}$, P_f = 10 mW			2.0	V

DFB-LD FAMILY FOR TELECOM

Part Number	Absolute Maximum Ratings		Typical Characteristics			SDH Application	Package
	T_C (°C)	T_{stg} (°C)	I_{th} (mA)	P_f (mW)	λ_p (nm)		
			TYP.	MIN.	TYP.		
NDL7603P Series	–40 to +85	–40 to +85	15	2	1 310	≤ STM-4 : 622 Mb/s	Coaxial
NDL7620P Series	0 to +70	–40 to +85	45 (MAX.)	2	1 310	≤ STM-16: 2.5 Gb/s	Coaxial
NDL7701P Series	–20 to +85	–40 to +85	15	2	1 550	≤ STM-4 : 622 Mb/s	Coaxial
NDL7705P Series	–40 to +85	–40 to +85	15	2	1 550	≤ STM-4 : 622 Mb/s	Coaxial
NX8562LB	–20 to +65	–40 to +85	20	20	1 550 *1	CW Light Source for external modulator	BFY
NX8563LB Series	–20 to +65	–40 to +85	20	10	ITU-T *2	CW Light Source for external modulator	BFY
NDL7910P	–20 to +70	–40 to +85	7	0.5	1 550 *1	≤ STM-16: 2.5 Gb/s EA modulator integrated DFB-LD	BFY

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

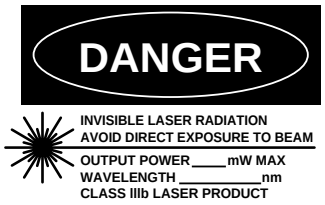
***2** Wavelength selectable for ITU-T standards

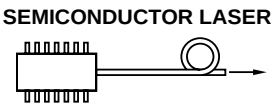
REFERENCE

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

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.





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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