NEC

LASER DIODE
NX8562LB

1 550 nm CW LIGHT SOURCE
InGaAsP STRAINED MQW-DFB LASER DIODE MODULE

DESCRIPTION

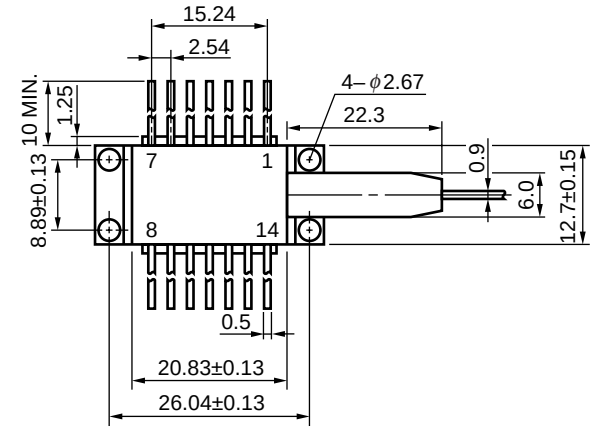
The NX8562LB is a 1 550 nm laser diode with Polarization Maintain Fiber (PMF).

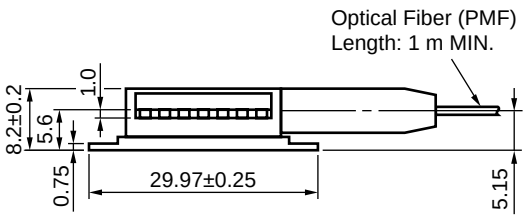
This device is designed as CW light source and ideal for transmission systems in which external modulators are used.

FEATURES

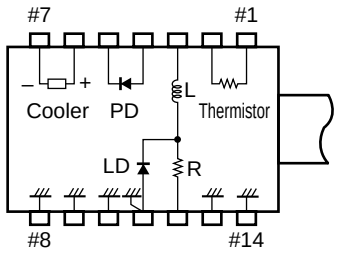
- Output power P_f = 20 mW MIN.
- Wavelength selectable for ITU-T standards
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Polarization maintain fiber pigtail

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

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The mark ★ shows major revised points.

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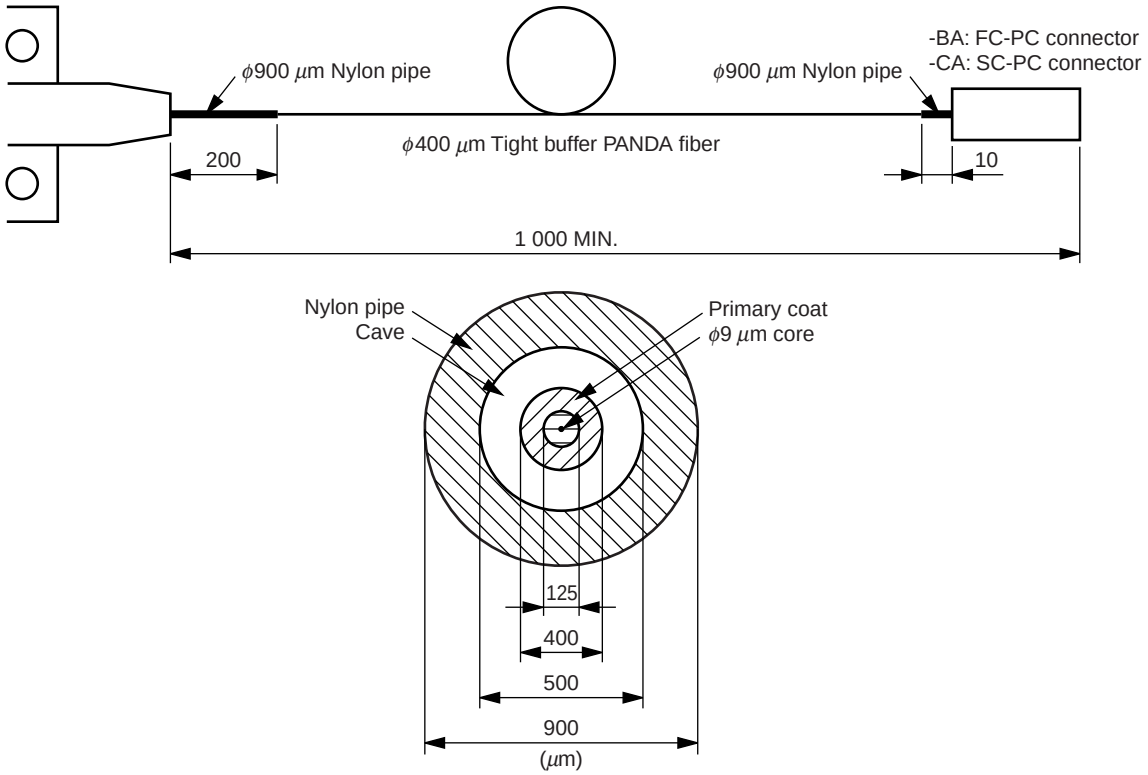
OPTICAL FIBER DIMENSIONS
in millimeters



ORDERING INFORMATION

Part Number	Available Connector
NX8562LB	Without Connector
NX8562LB-BA	With FC-PC Connector
NX8562LB-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	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 = 20 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}	20			mW
Threshold Output Power from Fiber	P_{th}	I_F = I_{th}			100	μW
Quantum Efficiency	η		0.13			W/A
Peak Emission Wavelength[*1]	λ_p	P_f = 20 mW, CW, T_{LD} = T_{set}	1 540		1 561	nm
Spectral Line Width	$\Delta\nu$	P_f = 20 mW, CW, 3 dB down		1	2	MHz
Side Mode Suppression Ratio	SMSR	P_f = 20 mW, CW	30	35		dB
FM Response	η_{FM}	P_f = 20 mW	50	70		MHz/mA
Relative Intensity Noise	RIN	P_f = 20 mW, 20 MHz to 3 GHz			–150	dB/Hz
Flat frequency response	f_m	P_f = 20 mW, +/–3 dB	1.8			GHz
Polarization Extinction Ratio[*2]	ext	P_f = 20 mW, CW	15	20		dB

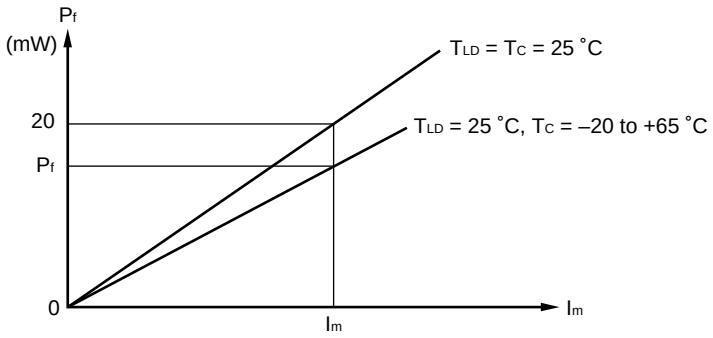
***1** Wavelength selectable for ITU-T standards.

***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 = 20 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** $\gamma = \left| 10 \log \frac{P_f}{20 \text{ mW}} \right|$



(@ P_f (25 ˚C) = 20 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 = 20 mW			1.0	A
Cooler Voltage	V_C	$\Delta T = 65 - T_{set}$, P_f = 20 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.

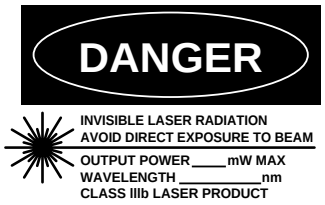
REFERENCE

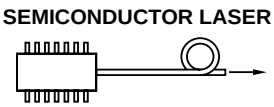
Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

[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.





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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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