

**1 550 nm CW LIGHT SOURCE
InGaAsP MQW-DFB LASER DIODE MODULE
WITH WAVELENGTH MONITOR**

DESCRIPTION

The NX8571SA is a 1 550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode module with wavelength monitor function.

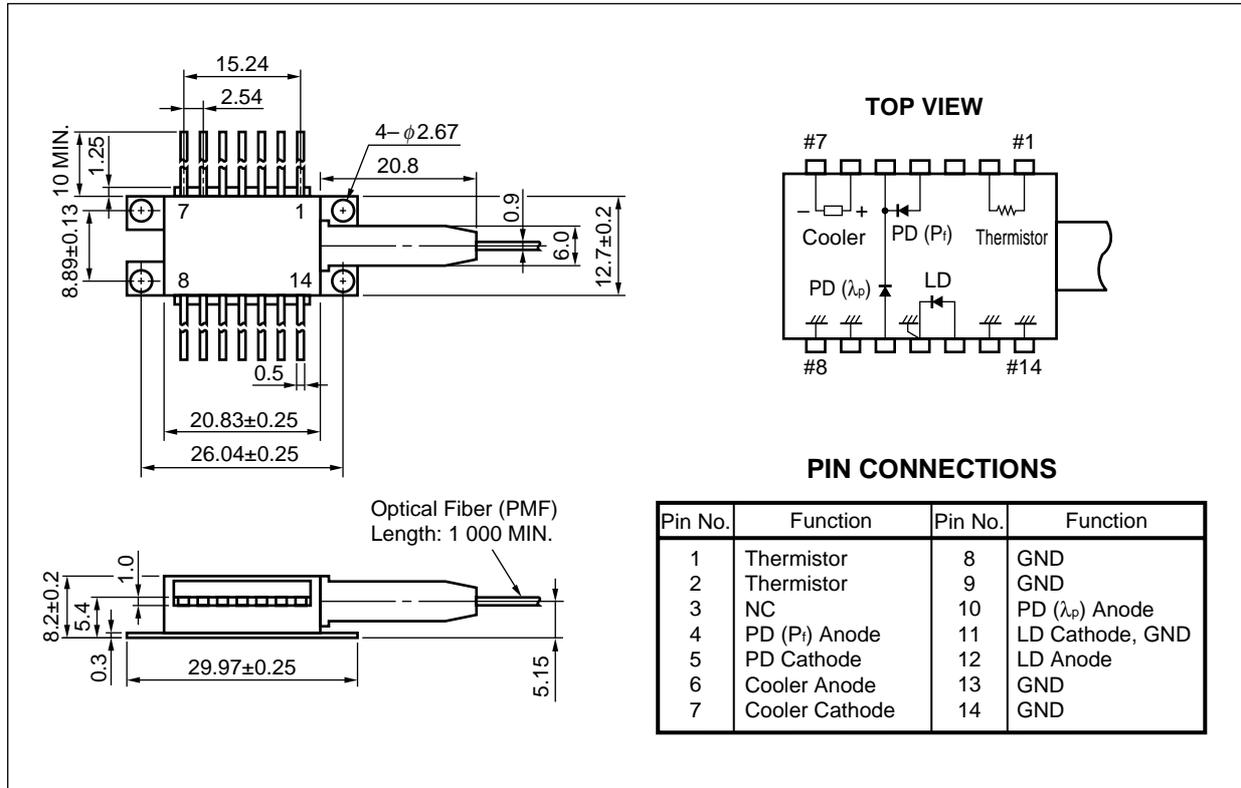
This device is designed as CW light source and ideal for transmission systems in which external modulators are used.

FEATURES

- Wavelength monitor function (Etalon Filter, Wavelength monitor PD)
- Output power $P_r = 10 \text{ mW MIN.}$
- Available for DWDM wavelengths based on ITU-T recommendations (100 GHz grid, refer to ORDERING INFORMATION)
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Polarization maintain fiber pigtail

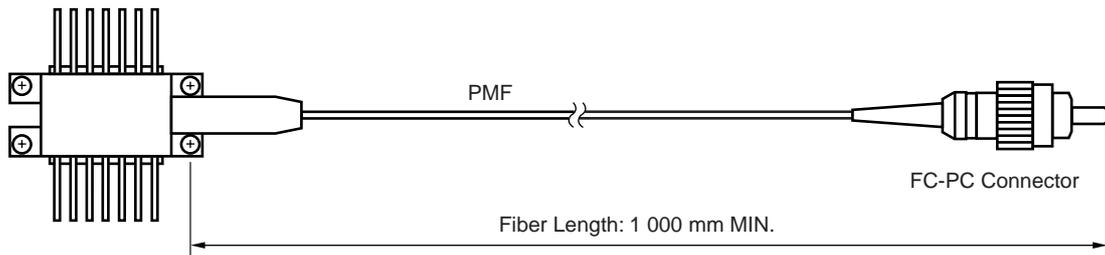
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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.**

PACKAGE DIMENSIONS (Unit: mm)



OPTICAL FIBER CHARACTERISTICS

Parameter	Specification	Unit
Outer Diameter	0.9±0.1	mm
Minimum Fiber Bending Radius	40	mm
Fiber Length	1 000 MIN.	mm



ORDERING INFORMATION

Part Number		ITU-T Wavelength ^{*1} (nm)	Frequency (THz)
With FC-PC Connector (Standard)	With SC-PC Connector (Option)		
NX8571SA303-BA	NX8571SA303-CA	1530.33	195.90
NX8571SA311-BA	NX8571SA311-CA	1531.11	195.80
NX8571SA318-BA	NX8571SA318-CA	1531.89	195.70
NX8571SA326-BA	NX8571SA326-CA	1532.68	195.60
NX8571SA334-BA	NX8571SA334-CA	1533.46	195.50
NX8571SA342-BA	NX8571SA342-CA	1534.25	195.40
NX8571SA350-BA	NX8571SA350-CA	1535.03	195.30
NX8571SA358-BA	NX8571SA358-CA	1535.82	195.20
NX8571SA366-BA	NX8571SA366-CA	1536.60	195.10
NX8571SA373-BA	NX8571SA373-CA	1537.39	195.00
NX8571SA381-BA	NX8571SA381-CA	1538.18	194.90
NX8571SA389-BA	NX8571SA389-CA	1538.97	194.80
NX8571SA397-BA	NX8571SA397-CA	1539.76	194.70
NX8571SA405-BA	NX8571SA405-CA	1540.55	194.60
NX8571SA413-BA	NX8571SA413-CA	1541.34	194.50
NX8571SA421-BA	NX8571SA421-CA	1542.14	194.40
NX8571SA429-BA	NX8571SA429-CA	1542.93	194.30
NX8571SA437-BA	NX8571SA437-CA	1543.73	194.20
NX8571SA445-BA	NX8571SA445-CA	1544.52	194.10
NX8571SA453-BA	NX8571SA453-CA	1545.32	194.00
NX8571SA461-BA	NX8571SA461-CA	1546.11	193.90
NX8571SA469-BA	NX8571SA469-CA	1546.91	193.80
NX8571SA477-BA	NX8571SA477-CA	1547.71	193.70
NX8571SA485-BA	NX8571SA485-CA	1548.51	193.60
NX8571SA493-BA	NX8571SA493-CA	1549.31	193.50
NX8571SA501-BA	NX8571SA501-CA	1550.11	193.40
NX8571SA509-BA	NX8571SA509-CA	1550.91	193.30
NX8571SA517-BA	NX8571SA517-CA	1551.72	193.20
NX8571SA525-BA	NX8571SA525-CA	1552.52	193.10
NX8571SA533-BA	NX8571SA533-CA	1553.32	193.00
NX8571SA541-BA	NX8571SA541-CA	1554.13	192.90
NX8571SA549-BA	NX8571SA549-CA	1554.94	192.80
NX8571SA557-BA	NX8571SA557-CA	1555.74	192.70
NX8571SA565-BA	NX8571SA565-CA	1556.55	192.60

*1 The value which omitted and computed the 3rd place below the decimal point

Part Number		ITU-T Wavelength ^{*1} (nm)	Frequency (THz)
With FC-PC Connector (Standard)	With SC-PC Connector (Option)		
NX8571SA573-BA	NX8571SA573-CA	1557.36	192.50
NX8571SA581-BA	NX8571SA581-CA	1558.17	192.40
NX8571SA589-BA	NX8571SA589-CA	1558.98	192.30
NX8571SA597-BA	NX8571SA597-CA	1559.79	192.20
NX8571SA606-BA	NX8571SA606-CA	1560.60	192.10
NX8571SA614-BA	NX8571SA614-CA	1561.41	192.00
NX8571SA622-BA	NX8571SA622-CA	1562.23	191.90
NX8571SA630-BA	NX8571SA630-CA	1563.04	191.80
NX8571SA638-BA	NX8571SA638-CA	1563.86	191.70
NX8571SA646-BA	NX8571SA646-CA	1564.67	191.60
NX8571SA654-BA	NX8571SA654-CA	1565.49	191.50

*1 The value which omitted and computed the 3rd place below the decimal point

ABSOLUTE MAXIMUM RATINGS

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 +70	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Lead Soldering Temperature	T_{sld}	260 (10 sec.)	°C

ELECTRO-OPTICAL CHARACTERISTICS

($T_{LD} = 25\text{ °C}$, $T_C = -5\text{ to }+70\text{ °C}$, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Laser Set Temperature	T_{set}		20		35	°C
Forward Voltage	V_F	$P_f = 10\text{ mW}$	0.9		2.5	V
Threshold Current	I_{th}			20	40	mA
Optical Output Power from Fiber	P_f	$I_F = 167\text{ mA}$, $T_{LD} = T_{set}$	10			mW
Threshold Output Power from Fiber	P_{th}	$I_F = I_{th}$			100	μW
Peak Emission Wavelength	λ_p	$P_f = 10\text{ mW}$, CW, $T_{LD} = T_{set}$	1 530	ITU-T ^{*1}	1 566	nm
Wavelength Stability	—	$T_{LD} = T_{set}$, applicable to wavelength monitor, E.O.L.	-30		+30	pm
Spectral Line Width	$\Delta\nu$	$P_f = 10\text{ mW}$, CW, 3 dB down			20	MHz
Side Mode Suppression Ratio	SMSR	$P_f = 10\text{ mW}$, CW	33	45		dB
Relative Intensity Noise	RIN	$P_f = 10\text{ mW}$, 20 MHz to 3 GHz			-145	dB/Hz
Isolation	I_s		30			dB
Polarization Extinction Ratio ^{*2}	ext	$P_f = 10\text{ mW}$, CW	15			dB

*1 Available for DWDM wavelengths based on ITU-T recommendations (100 GHz grid).

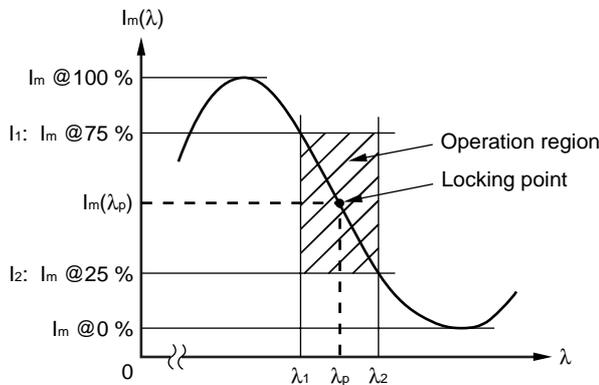
Please refer to ORDERING INFORMATION.

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

ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Monitor PD: T_{LD} = T_{set}, T_c = -5 to +70 °C)

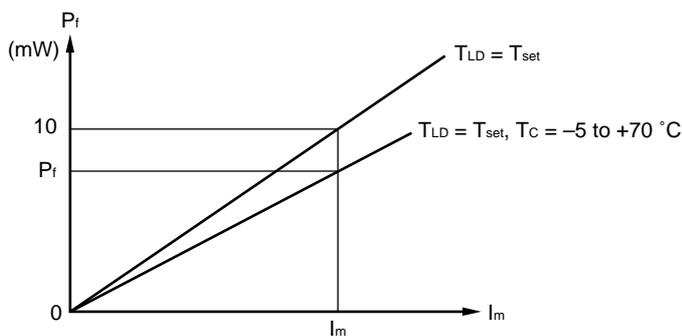
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Monitor Current (P _f Monitor)	I _m (P _f)	P _f = 10 mW, V _R = 5 V	20		200	μA
Monitor Current (λ _p Monitor)	I _m (λ _p)	P _f = 10 mW, V _R = 5 V, Locking point	10		100	μA
Operation Region ^{*1}	I _m (λ)		25		75	%
	λ ₁ -λ ₂		90			pm
Discrimination Slope ^{*1}	η _λ		0.1			μA/pm
Dark Current	I _D	V _R = 5 V		2	10	nA
Tracking Error	γ ^{*2}	I _m = const.			0.5	dB

*1 Operation region, Discrimination slope



$$\eta_{\lambda} = \frac{|I_1 - I_2|}{|\lambda_1 - \lambda_2|} \text{ [}\mu\text{A/pm]}$$

*2 Tracking error: γ

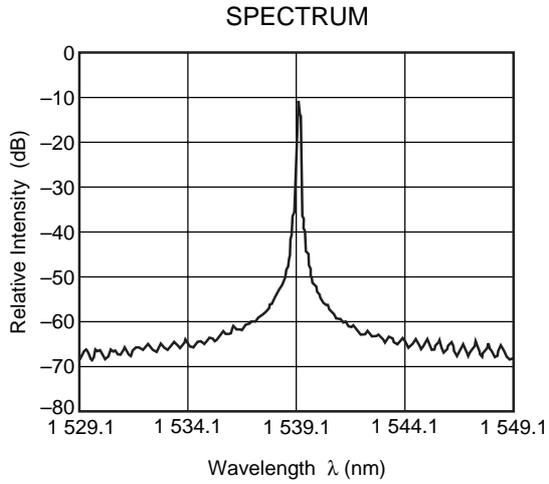


$$\gamma = \left| 10 \log \frac{P_f}{10} \right| \text{ [dB]}$$

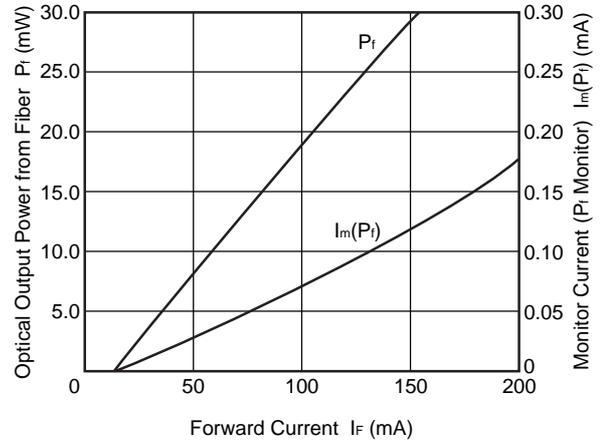
ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_c = -5 to +70 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T _{LD} = 25 °C	9.5	10.0	10.5	kΩ
B Constant	B		3 350	3 450	3 550	K
Cooler Current	I _c	ΔT = 70 - T _{set} , P _f = 10 mW			1.5	A
Cooler Voltage	V _c	ΔT = 70 - T _{set} , P _f = 10 mW			4.5	V

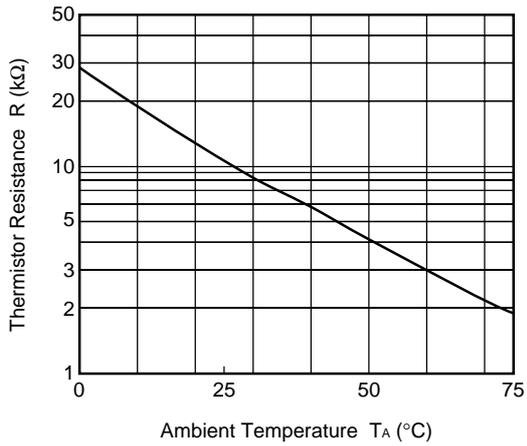
TYPICAL CHARACTERISTICS ($T_{LD} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)



OPTICAL OUTPUT POWER FROM FIBER, MONITOR CURRENT (P_f MONITOR) vs. FORWARD CURRENT



THERMISTOR RESISTANCE vs. AMBIENT TEMPERATURE



Remark The graphs indicate nominal characteristics.

DFB-LD FAMILY

Part Number	Absolute Maximum Ratings		Electro-Optical Characteristics (T _c = 25 °C)			Application	Package
	T _c (°C)	T _{stg} (°C)	I _{th} (mA)	P _f (mW)	λ _p (nm)		
			TYP.	MIN.	TYP.		
NX8300BE-CC NX8300CE-CC	0 to +75	-40 to +85	15	2 ^{*1}	1 310	2.5 Gb/s: STM-16 (S-16.1, L-16.1)	Coaxial
NX8303BG-CC NX8303CG-CC	-10 to +85	-40 to +85	15	2 ^{*1}	1 310	622 Mb/s: STM-4 (L-4.1)	Coaxial
NX8503BG-CC NX8503CG-CC	-10 to +85	-40 to +85	15	2 ^{*1}	1 550	156 Mb/s: STM-1 (L-1.2, L-1.3)	Coaxial
						622 Mb/s: STM-4 (L-4.2, L-4.3)	
NX8504BE-CC NX8504CE-CC	-10 to +85	-40 to +85	15	2 ^{*1}	1 550	622 Mb/s: STM-4 (L-4.2, L-4.3)	Coaxial
NX8560LJ-CC	-20 to +70	-40 to +85	6	-2 dBm	1 550	≤ 10 Gb/s: STM-64	BFY with GPO™
NX8562LB	-20 to +65	-40 to +85	20	20	1 550 ^{*2}	CW Light Source for external modulator	BFY
NX8563LB	-20 to +65	-40 to +85	20	10	1 550 ^{*2}	CW Light Source for external modulator	BFY
NX8564LE-CC	-20 to +70	-40 to +85	7	0.6 ^{*1}	1 550 ^{*2}	2.5 Gb/s: STM-16 EA modulator integrated	BFY
NX8565LE-CC	-20 to +70	-40 to +85	7	0.6 ^{*1}	1 550 ^{*2}	2.5 Gb/s: STM-16 EA modulator integrated	BFY
NX8570SA	-20 to +70	-40 to +85	20	20	1 550 ^{*2}	CW Light Source with λ monitoring PD	BFY
NX8571SA	-20 to +70	-40 to +85	20	10	1 550 ^{*2}	CW Light Source with λ monitoring PD	BFY

*1 TYP.

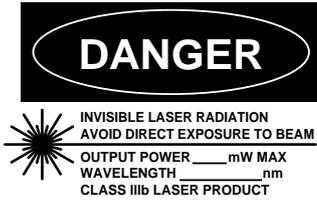
*2 Available for DWDM Wavelengths based on ITU-T recommendations

REFERENCE

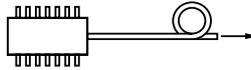
Document Name	Document No.
Optical semiconductor devices for fiberoptic communications Selection Guide	P12480E
Opto-Electronics Devices Pamphlet	P13623E
Opto-Electronics Devices (CD-ROM)	P12944X
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
SEMICONDUCTOR SELECTION GUIDE –Products and Packages–	X13769E

[MEMO]

SAFETY INFORMATION ON THIS PRODUCT



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.

<p>Warning Laser Beam</p>	<p>A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight.</p> <ul style="list-style-type: none"> • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
<p>Caution GaAs Products</p>	<p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p>
<p>Caution Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

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