PRELIMINARY DATA SHEET

NEC

LASER DIODE

NX8508 Series

1 470 TO 1 610 nm InGaAsP MQW-DFB LASER DIODE COAXIAL MODULE FOR 2.5 Gb/s, CWDM

DESCRIPTION

The NX8508 Series is a 1 470 to 1 610 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode coaxial module with an internal optical isolator.

These devices are ideal for 2.5 Gb/s CWDM application.

FEATURES

- Internal optical isolator
- Peak emission wavelength λ_p = 1 470 to 1 610 nm (Based on CWDM)
- Optical output power P_f = 2.0 mW
- Operating case temperature range T_C = 0 to +70°C
- Side mode suppression ratio SMSR = 40 dB
- InGaAs monitor PIN-PD
- With SC-UPC connector
- Based on Telcordia reliability

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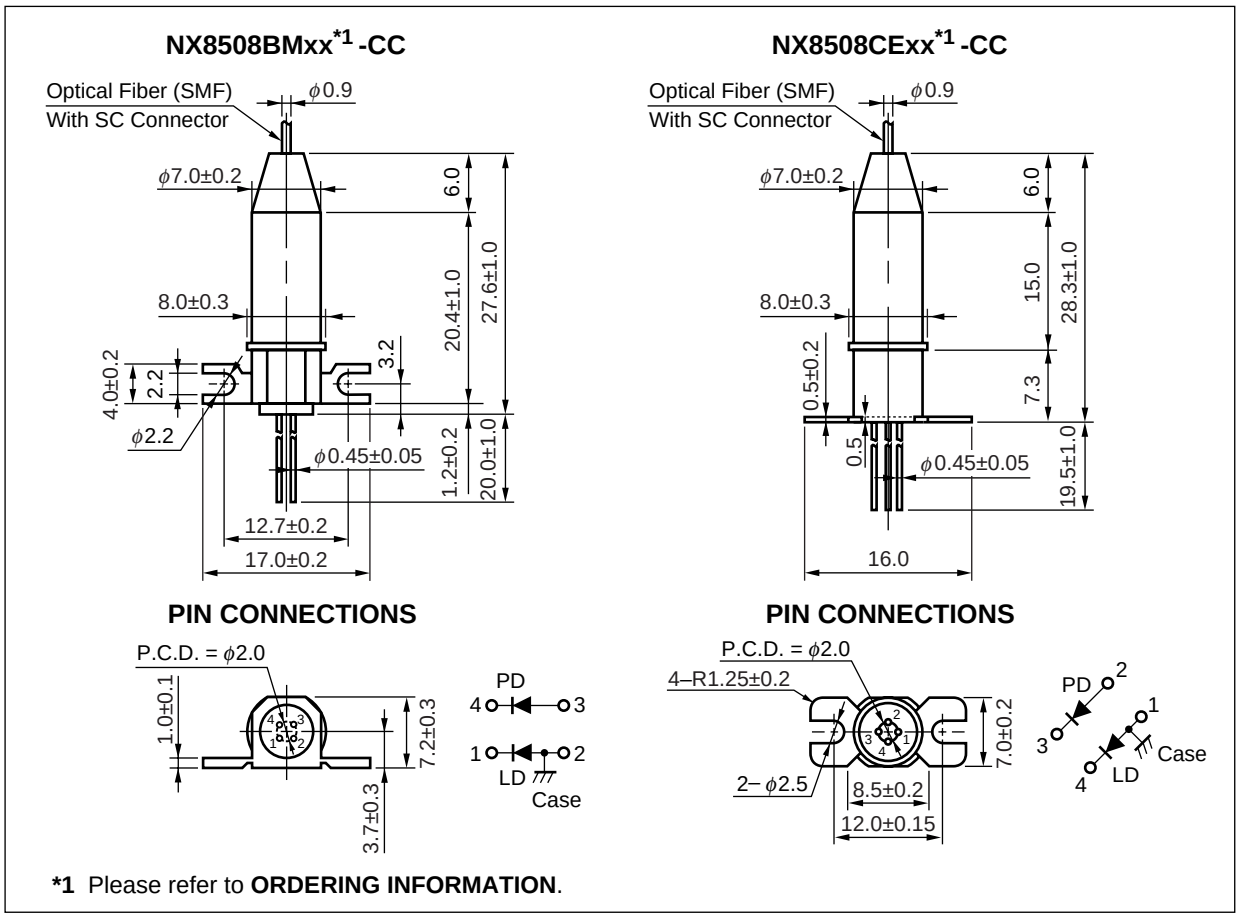
The mark ★ shows major revised points.

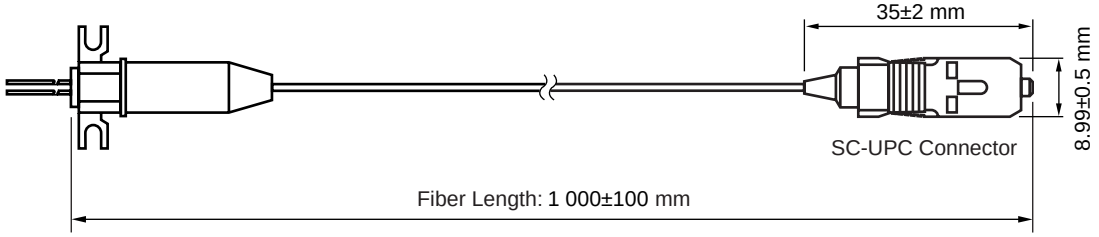
★ PACKAGE DIMENSIONS (UNIT : mm)



1 Please refer to **ORDERING INFORMATION**.

OPTICAL FIBER CHARACTERISTICS

Parameter	Specification	Unit
Mode Field Diameter	9.5±1	μm
Cladding Diameter	125±2	μm
Maximum Cladding Noncircularity	2	%
Maximum Core/Cladding Concentricity	1.6	%
Outer Diameter	0.9±0.1	mm
Cut-off Wavelength	1 100 to 1 270	nm
Minimum Fiber Bending Radius	30	mm
Fiber Length	1 000±100	mm
Flammability	UL1581 VW-1	



ORDERING INFORMATION

	Part Number	Flange Type	Available Connector
★	NX8508BMxx-CC	Flat Mount Flange	With SC-UPC Connector
	NX8508CExx-CC	Vertical Mount Flange	

NX8508□□xx-CC

- Connector code : With SC-UPC connector
- Wavelength code : Refer to **Table A**
- Package code : Refer to **PACKAGE DIMENSIONS**

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P_f	5	mW
Forward Current of LD	I_F	150	mA
Reverse Voltage of LD	V_R	2.0	V
Forward Current of PD	I_F	2.0	mA
Reverse Voltage of PD	V_R	15	V
Operating Case Temperature	T_C	0 to +70	°C
Storage Temperature	T_{stg}	–40 to +85	°C
Lead Soldering Temperature	T_{sld}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

ELECTRO-OPTICAL CHARACTERISTICS (T_C = 0 to +70°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power from Fiber	P_f	CW, T_C = 25°C, $I_F = I_{th}$ + 20 mA		2.0		mW
Operating Voltage	V_{op}	CW, P_f = 2.0 mW		1.1	1.6	V
Threshold Current	I_{th}	T_C = 25°C		10	20	mA
					40	
Threshold Output Power	P_{th}	$I_F = I_{th}$			100	μW
Differential Efficiency	η_d	P_f = 2.0 mW, T_C = 25°C	0.07	0.1		W/A
		P_f = 2.0 mW	0.04			
Temperature Dependence of Differential Efficiency	$\Delta\eta_d$	$\Delta\eta_d = 10 \log \frac{\eta_d (@ T_C°C)}{\eta_d (@ 25°C)}$	–3.0	–1.6		dB
Peak Emission Wavelength	λ_p	CW, P_f = 2.0 mW, T_C = 25°C	λ_p–3	λ_p *1	λ_p+3	nm
Temperature Dependence of Peak Emission Wavelength	$\Delta\lambda/\Delta T$	CW	0.08	0.10	0.12	nm/°C
Side Mode Suppression Ratio	SMSR	P_f = 2.0 mW	30	40		dB
Rise Time	t_r	20-80%, P_f = 2.0 mW			100	ps
Fall Time	t_f	80-20%, P_f = 2.0 mW			150	ps
Monitor Current	I_m	V_R = 1.5 V, P_f = 1.0 mW	100	500	1 000	μA
Monitor Dark Current	I_D	V_R = 1.5 V, T_C = 25°C		0.1	50	nA
		V_R = 1.5 V		10	500	
Tracking Error *2	γ	I_m = const.	–1.0		1.0	dB

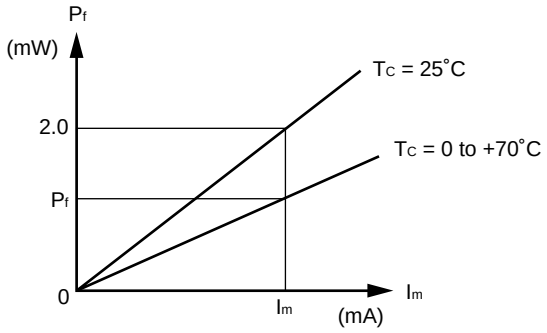
***1** Available Available for CWDM Wavelengths based on ITU-T recommendations
λ_p = 1 470, 1 490, 1 510, 1 530, 1 550, 1 570, 1 590, 1 610 nm
Please refer to **Table A**.

Table A: CWDM wavelength code (@ T_C = 25°C)

Wavelength Code	MIN. (nm)	TYP. (nm)	MAX. (nm)
47	1 467	1 470	1 473
49	1 487	1 490	1 493
51	1 507	1 510	1 513
53	1 527	1 530	1 533
55	1 547	1 550	1 553
57	1 567	1 570	1 573
59	1 587	1 590	1 593
61	1 607	1 610	1 613

Remark ±2 nm to tolerance for optional

***2** Tracking Error: γ



$$\gamma = \left| 10 \log \frac{P_f}{2.0} \right| \text{[dB]}$$

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
NX8304BE-CC NX8304CE-CC	–40 to +85	–40 to +85	15	2 *1	1 310	For fiberoptic communications	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
NX8508 Series	0 to +70	–40 to +85	10	2 *1	λ_p *2	2.5 Gb/s: CWDM	Coaxial
★ NX8509 Series	–20 to +85	–40 to +85	10	2 *1	1 550	2.5 Gb/s: STM-16 (L-16.2)	Coaxial
NX8562 Series	–20 to +70	–40 to +85	20	20	1 550 *3	CW Light Source for external modulator	BFY
NX8563 Series	–20 to +70	–40 to +85	20	10	1 550 *3	CW Light Source for external modulator	BFY
NX8563LA Series	–20 to +85	–40 to +85	20	10	1 550 *3	2.5 Gb/s: DWDM	BFY
NX8570SA/SCxxx-BA	–20 to +70	–40 to +85	20	20	1 550 *3	CW Light Source with λ monitoring PD single channel wavelength, 50 GHz-spacing	BFY
NX8570SA/SCxxxD-BA	–20 to +70	–40 to +85	20	20	1 550 *3	CW Light Source with λ monitoring PD 4 channel wavelength tunable capability for 50 GHz-spacing	BFY
NX8570SCxxxQ-BA	–20 to +70	–40 to +85	20	20	1 550 *3	CW Light Source with λ monitoring PD 8 channel wavelength tunable capability for 50 GHz-spacing	BFY
NX8571SA/SCxxx-BA	–20 to +70	–40 to +85	20	10	1 550 *3	CW Light Source with λ monitoring PD single channel wavelength, 50 GHz-spacing	BFY
NX8571SA/SCxxxD-BA	–20 to +70	–40 to +85	20	10	1 550 *3	CW Light Source with λ monitoring PD 4 channel wavelength tunable capability for 50 GHz-spacing	BFY
NX8571SCxxxQ-BA	–20 to +70	–40 to +85	20	10	1 550 *3	CW Light Source with λ monitoring PD 8 channel wavelength tunable capability for 50 GHz-spacing	BFY

***1** TYP.

***2** Available for CWDM Wavelengths based on ITU-T recommendations
λ_p = 1 470, 1 490, 1 510, 1 530, 1 550, 1 570, 1 590, 1 610 nm

***3** Available for DWDM Wavelengths based on ITU-T recommendations also

REFERENCE

Document Name	Document No.
OPTICAL SEMICONDUCTOR DEVICES FOR FIBEROPTIC COMMUNICATIONS SELECTION GUIDE	PL10161E
Opto-Electronics Devices Pamphlet	PX10160E

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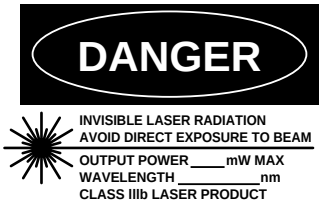

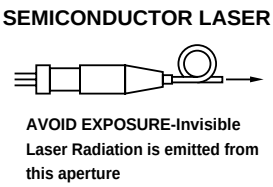

Warning Laser Beam	A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight. • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
Caution GaAs Products	This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points. • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.
Caution Optical Fiber	A glass-fiber is attached on the product. Handle with care. • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

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NEC Compound Semiconductor Devices, Ltd. **http://www.ncsd.necel.com/**
E-mail: salesinfo@ml.ncsd.necel.com (sales and general)
techinfo@ml.ncsd.necel.com (technical)
5th Sales Group, Sales Division TEL: +81-44-435-1588 FAX: +81-44-435-1579

NEC Compound Semiconductor Devices Hong Kong Limited
E-mail: ncsd-hk@elhk.nec.com.hk (sales, technical and general)
Hong Kong Head Office TEL: +852-3107-7303 FAX: +852-3107-7309
Taipei Branch Office TEL: +886-2-8712-0478 FAX: +886-2-2545-3859
Korea Branch Office TEL: +82-2-558-2120 FAX: +82-2-558-5209

NEC Electronics (Europe) GmbH **http://www.ee.nec.de/**
TEL: +49-211-6503-01 FAX: +49-211-6503-487

California Eastern Laboratories, Inc. **http://www.cel.com/**
TEL: +1-408-988-3500 FAX: +1-408-988-0279

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