

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

**DESCRIPTION**

The NX6508 Series are 1 470 to 1 610 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD. These devices are ideal for 2.5 Gb/s CWDM application.

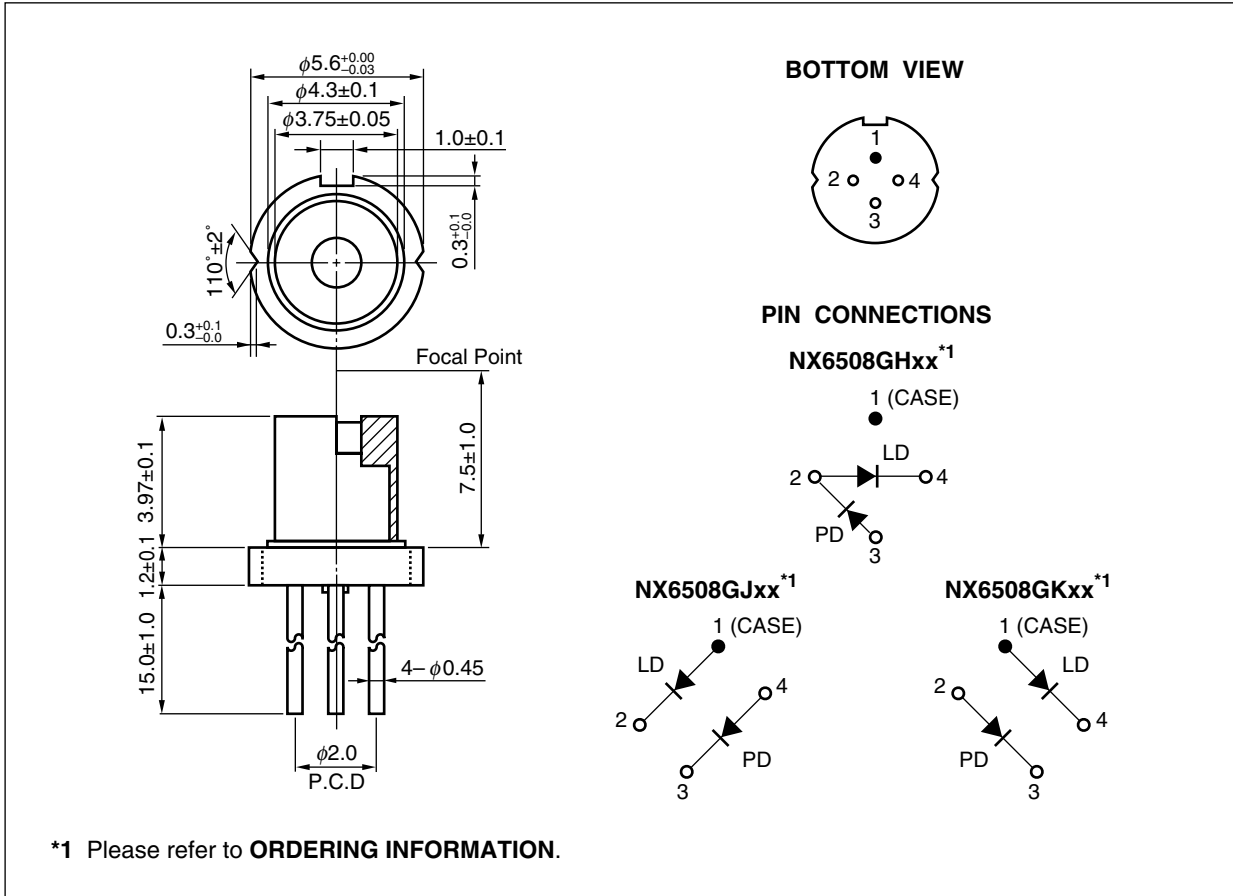
**FEATURES**

- |                                    |  |
|------------------------------------|--|
| • Optical output power             | $P_o = 5.0 \text{ mW}$   |
| • Peak emission wavelength         | $\lambda_p = 1\,470 \text{ to } 1\,610 \text{ nm (Based on CWDM)}$ |
| • Low threshold current            | $I_{th} = 10 \text{ mA}$   |
| • High speed                       | $t_r = 100 \text{ ps MAX.}$<br>$t_r = 150 \text{ ps MAX.}$         |
| • Side mode suppression ratio      | SMSR = 40 dB   |
| • Operating case temperature range | $T_c = 0 \text{ to } +70^\circ\text{C}$                            |
| • InGaAs monitor PIN-PD            |  |
| • CAN package                      | $\phi 5.6 \text{ mm}$  |
| • Based on Telcordia reliability   |  |



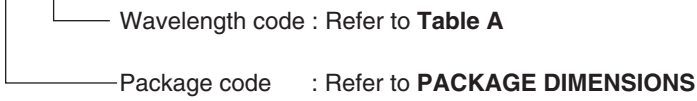
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Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

PACKAGE DIMENSIONS (UNIT: mm)



**ORDERING INFORMATION**

NX6508 □□ xx



**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Ratings	Unit
Optical Output Power	P <sub>o</sub>	10	mW
Forward Current of LD	I <sub>F</sub>	150	mA
Reverse Voltage of LD	V <sub>R</sub>	2.0	V
Forward Current of PD	I <sub>F</sub>	2.0	mA
Reverse Voltage of PD	V <sub>R</sub>	15	V
Operating Case Temperature	T <sub>C</sub>	0 to +70	°C
Storage Temperature	T <sub>stg</sub>	-40 to +85	°C
Lead Soldering Temperature	T <sub>slid</sub>	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power	P <sub>o</sub>	CW		5.0		mW
Operating Voltage	V <sub>op</sub>	P <sub>o</sub> = 5.0 mW		1.1	1.6	V
Threshold Current	I <sub>th</sub>	T <sub>c</sub> = 25°C		10	20	mA
					40	
Differential Efficiency	η <sub>d</sub>	P <sub>o</sub> = 5.0 mW, T <sub>c</sub> = 25°C	0.18	0.25		W/A
		P <sub>o</sub> = 5.0 mW	0.10			
Temperature Dependence of Differential Efficiency	Δη <sub>d</sub>	$\Delta\eta_d = 10 \log \frac{\eta_d (@ T_c^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$	-3.0	-1.6		dB
Peak Emission Wavelength	λ <sub>p</sub>	P <sub>o</sub> = 5.0 mW	λ <sub>p</sub> -3	λ <sub>p</sub> +1	λ <sub>p</sub> +3	nm
Temperature Dependence of Peak Emission Wavelength	Δλ/ΔT	CW	0.08	0.1	0.12	nm/°C
Side Mode Suppression Ratio	SMSR	P <sub>o</sub> = 5.0 mW	30	40		dB
Rise Time	t <sub>r</sub>	20-80%, P <sub>o</sub> = 5.0 mW			100	ps
Fall Time	t <sub>f</sub>	80-20%, P <sub>o</sub> = 5.0 mW			150	ps
Monitor Current	I <sub>m</sub>	V <sub>R</sub> = 1.5 V, P <sub>o</sub> = 5.0 mW	200	1 000	2 000	μA
Monitor Dark Current	I <sub>D</sub>	V <sub>R</sub> = 1.5 V, T <sub>c</sub> = 25°C		0.1	50	nA
		V <sub>R</sub> = 1.5 V		10	500	

\*1 Available for CWDM Wavelengths based on ITU-T recommendations

λ<sub>p</sub> = 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 (@ Tc = 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

LD CAN PACKAGES FAMILY FOR OPTICAL FIBER COMMUNICATIONS

Part Number	Absolute Maximum Ratings		Electro-Optical Characteristics (T <sub>c</sub> = 25°C)				Application	Package
	T <sub>c</sub> (°C)	T <sub>stg</sub> (°C)	I <sub>th</sub> (mA)	P <sub>o</sub> (mW)	λ (nm)			
			TYP.	TYP.	MIN.	MAX.		
NX5304 Series	-40 to +85	-40 to +85	10	5	1 263	1 360	156 Mb/s: STM-1 (I-1, S-1.1, L-1.1)	CAN
							622 Mb/s: STM-4 (I-4, S-4.1)	
							1.25 Gb/s: GbE	
NX5306 Series	-40 to +85	-40 to +85	10	5	1 263	1 360	156 Mb/s: STM-1 (I-1, S-1.1, L-1.1)	CAN
							622 Mb/s: STM-4 (I-4, S-4.1)	
							1.25 Gb/s: GbE	
NX5307 Series	-40 to +85	-40 to +85	10	10	1 266	1 360	2.5 Gb/s: STM-16	CAN
NX5501 Series	-20 to +85	-40 to +85	8	5	1 480	1 580	For FTTH	CAN
NX5504 Series	-20 to +85	-40 to +85	8	5	1 480	1 580	For FTTH	CAN
NX6306 Series	-40 to +85	-40 to +85	10	5	1 280	1 335	156 Mb/s: STM-1 (I-1, S-1.1, L-1.1)	CAN
							622 Mb/s: STM-4 (I-4, S-4.1, L-4.1)	
							1.25 Gb/s: GbE	
NX6307 Series	-20 to +85	-40 to +85	10	7	1 280	1 335	2.5 Gb/s: STM-16 (S-16.1, L-16.1)	CAN
NX6504 Series	-10 to +85	-40 to +85	12	5	1 530	1 570	156 Mb/s: STM-1	CAN
							622 Mb/s: STM-4	
NX6508 Series	0 to +70	-40 to +85	10	5	λ <sub>p</sub> -3 <sup>11</sup>	λ <sub>p</sub> +3 <sup>11</sup>	For CWDM	CAN
NX6509 Series	-20 to +85	-40 to +85	10	5	1 530	1 570	2.5 Gb/s: STM-16 (L-16.2)	CAN

\*1 λ<sub>p</sub> = 1 470, 1 490, 1 510, 1 530, 1 550, 1 570, 1 590, 1 610 nm

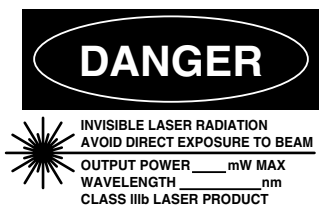
**REFERENCE**

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

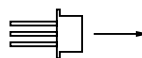
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M8E 00.4-0110

**SAFETY INFORMATION ON THIS PRODUCT**



**SEMICONDUCTOR LASER**



**AVOID EXPOSURE-Invisible**  
Laser Radiation is emitted from  
this aperture

<p><b>Warning</b> 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"> <li>• Do not look directly into the laser beam.</li> <li>• Avoid exposure to the laser beam, any reflected or collimated beam.</li> </ul>
<p><b>Caution</b> GaAs Products</p>	<p>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.</p> <ul style="list-style-type: none"> <li>• 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.             <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> </ol> </li> <li>• Do not burn, destroy, cut, crush, or chemically dissolve the product.</li> <li>• Do not lick the product or in any way allow it to enter the mouth.</li> </ul>

► For further information, please contact

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