

1 550 nm FOR 2.5 Gb/s
InGaAsP MQW-DFB LASER DIODE**DESCRIPTION**

The NX6509 Series is a 1 550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD.

These devices are designed for 2.5 Gb/s: STM-16 (L-16.2) application and ideal for Synchronous Digital Hierarchy (SDH) system.

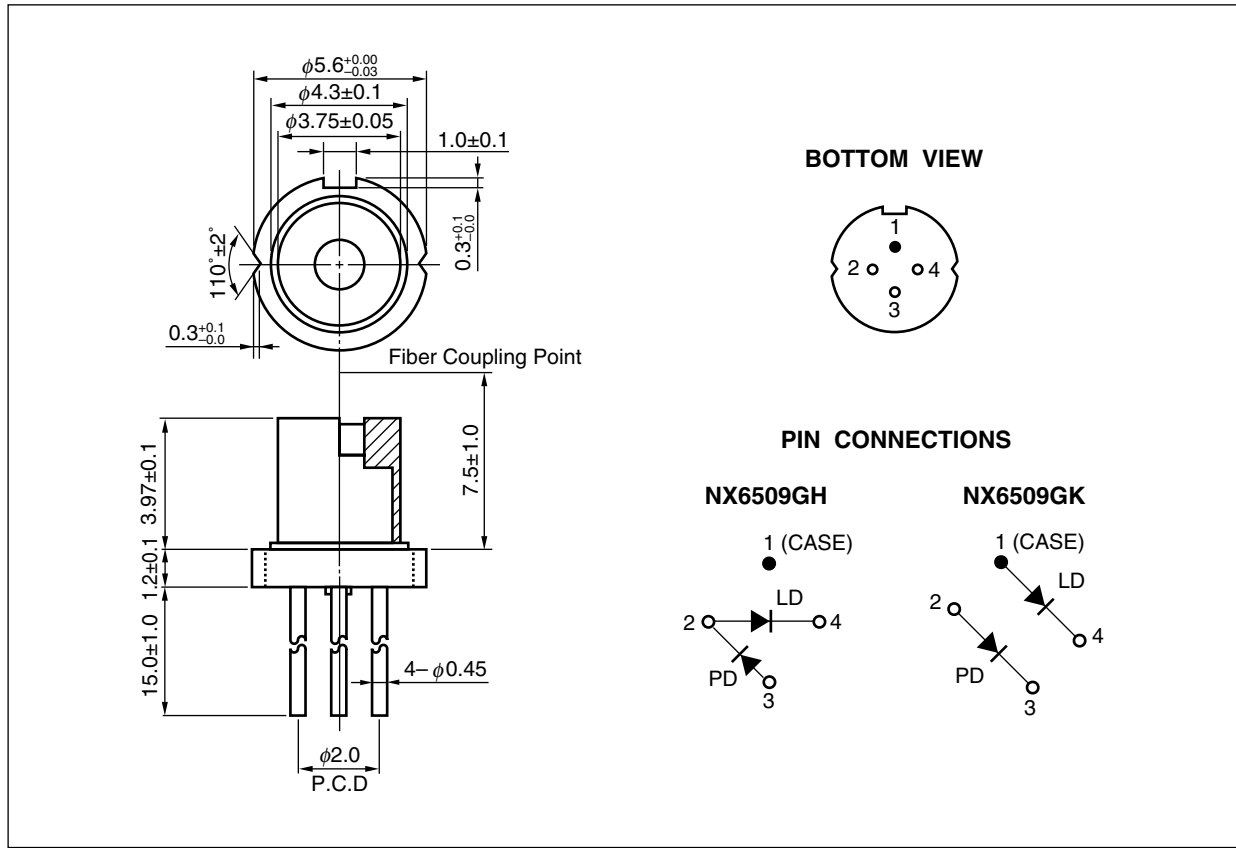
FEATURES

- | | |
|------------------------------------|--|
| • Optical output power | $P_o = 5.0 \text{ mW}$ |
| • Low threshold current | $I_{th} = 10 \text{ mA}$ |
| • High speed | $t_r = 100 \text{ ps MAX.}$
$t_f = 150 \text{ ps MAX.}$ |
| • Wide operating temperature range | $T_c = -20 \text{ to } +85^\circ\text{C}$ |
| • InGaAs monitor PIN-PD | |
| • CAN package | $\phi 5.6 \text{ mm}$ |
| • Fiber coupling point | $7.5 \pm 1.0 \text{ mm}$ |

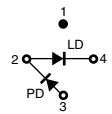
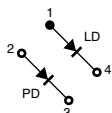


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PACKAGE DIMENSIONS (UNIT: mm)



ORDERING INFORMATION

Part Number	Package	Pin Connections
NX6509GH	4-pin CAN with aspherical lens cap	
NX6509GK		

Remark The hermetic test will be performed as AQL 1.0%.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P _o	10	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	−20 to +85	°C
Storage Temperature	T _{stg}	−40 to +85	°C
Assemble Temperature	T _{asb}	150 (15 Hr)	°C
Lead Soldering Temperature	T _{slid}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

ELECTRO-OPTICAL CHARACTERISTICS (T_C = −20 to +85°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power	P _o	CW		5.0		mW
Operating Voltage	V _{op}	P _o = 5.0 mW		1.1	1.6	V
Threshold Current	I _{th}	T _C = 25°C		10	20	mA
					50	
Differential Efficiency	η_d	P _o = 5.0 mW, T _C = 25°C	0.18	0.25		W/A
		P _o = 5.0 mW	0.10			
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	P _o = 5.0 mW	1 530		1 570	nm
Side Mode Suppression Ratio	SMSR	P _o = 5.0 mW	30	40		dB
Rise Time	t _r	P _o = 5.0 mW, 20-80%			100	ps
Fall Time	t _f	P _o = 5.0 mW, 80-20%			150	ps
Monitor Current	I _m	V _R = 1.5 V, P _o = 5.0 mW	200	1 000	2 000	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	

LD CAN PACKAGES FAMILY FOR OPTICAL FIBER COMMUNICATIONS

Part Number	Absolute Maximum Ratings		Electro-Optical Characteristics (T _c = 25°C)				Application	Package
	T _C (°C)	T _{stg} (°C)	I _{th} (mA)	P _o (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 _p −3 ^{*1}	λ _p +3 ^{*1}	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_p = 1 470, 1 490, 1 510, 1 530, 1 550, 1 570, 1 590, 1 610 nm

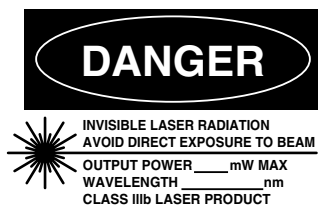
REFERENCE

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

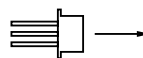
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SAFETY INFORMATION ON THIS PRODUCT



SEMICONDUCTOR LASER



AVOID EXPOSURE-Invisible
Laser Radiation is emitted from
this aperture

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.

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