

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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Phase-out/Discontinued

LASER DIODE

NX6307 Series

**1 310 nm FOR 2.5 Gb/s
InGaAsP MQW-DFB LASER DIODE**

DESCRIPTION

The NX6307 Series is a 1 310 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD. This device is ideal for Synchronous Digital Hierarchy (SDH) system, short haul and long haul STM-16, ITU-T recommendations.

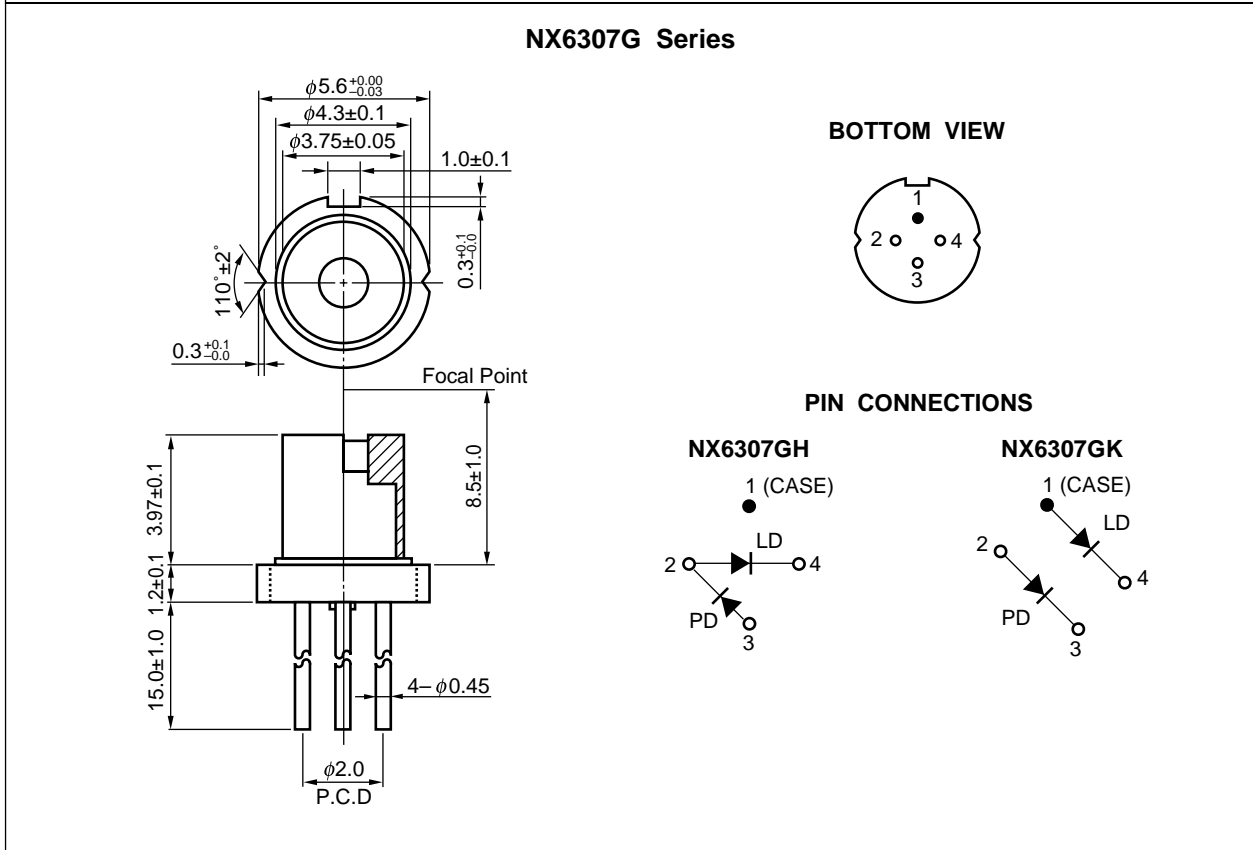
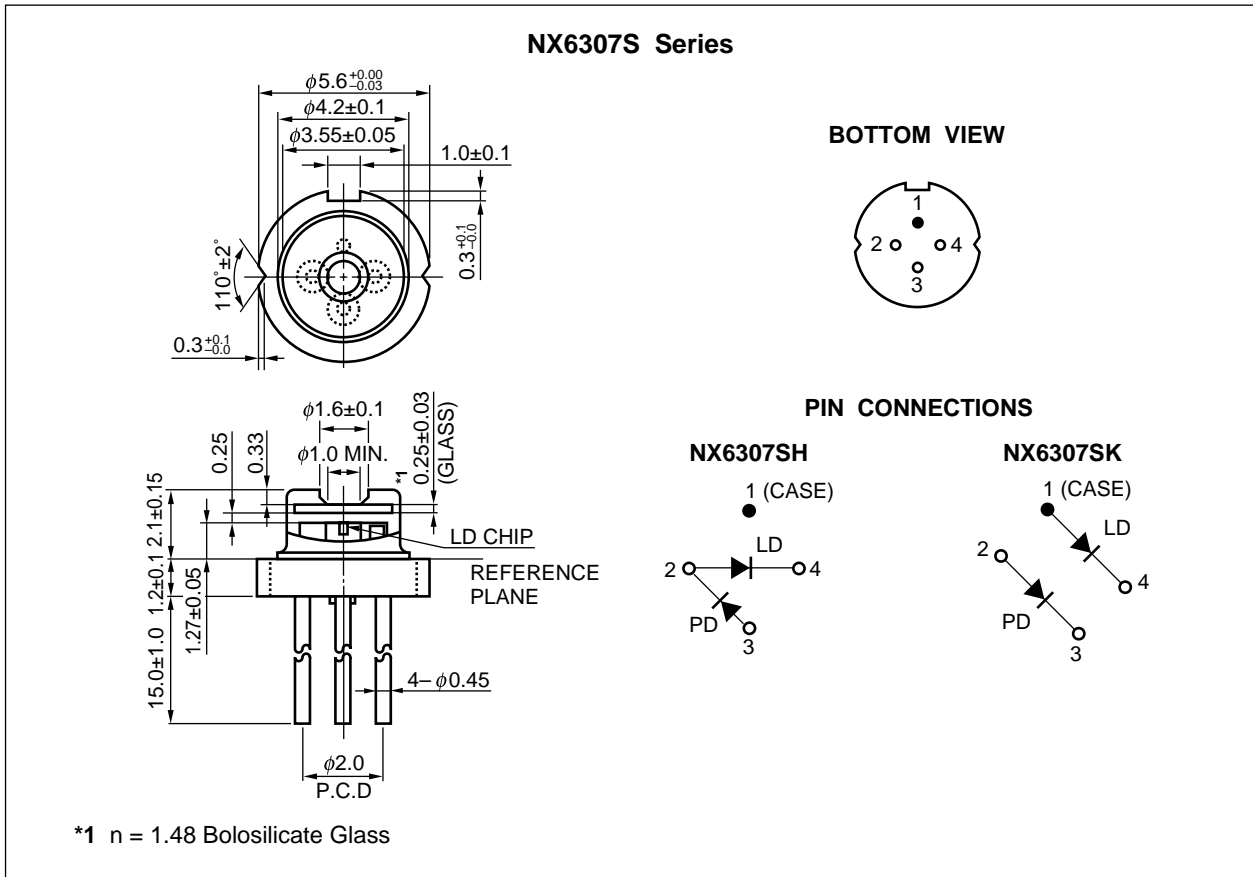
FEATURES

- Optical output power $P_o = 7.0 \text{ mW}$
- Low threshold current $I_{th} = 10 \text{ mA @ } T_c = 25^\circ\text{C}$
- High speed $t_r, t_f = 0.2 \text{ ns MAX.}$
- Side mode suppression ratio $\text{SMSR} = 45 \text{ dB @ TYP.}$
- Wide operating temperature range $T_c = -20 \text{ to } +85^\circ\text{C}$
- 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

NX6307S Series

Part Number	Package	Pin Connections
NX6307SH	4-pin CAN with flat glass cap	
NX6307SK		

NX6307G Series

Part Number	Package	Pin Connections
NX6307GH	4-pin CAN with aspherical lens cap	
NX6307GK		

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power	P _o	20	mW
Forward Current of LD	I _F	150	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 +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C
Assembly Temperature	T _{asb}	150 (15 Hr)	°C
Lead Soldering Temperature	T _{sltd}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

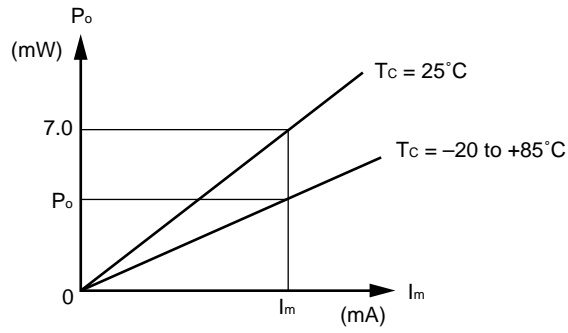
ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V _{op}	P _o = 7.0 mW, T _c = -20 to +85°C		1.1	1.6	V
Threshold Current	I _{th}			10	20	mA
		T _c = 85°C		30	40	
Threshold Output Power	P _{th}	T _c = -20 to +85°C, I _F = I _{th}		100	200	μW
Optical Output Power	P _o	I _F = I _{th} + 20 mA	4	7		mW
Differential Efficiency	η _d		0.2	0.35		W/A
Temperature Dependence of Differential Efficiency	Δη _d	$\Delta\eta_d = 10 \log \frac{\eta_d (@ 85^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$	-3.0	-2.5		dB
Modulation Current	I _{mod}	T _c = 85°C			50	mA
Peak Emission Wavelength	λ _p	P _o = 7.0 mW, RMS (-20 dB), T _c = -20 to +85°C	1 280		1 335	nm
Side Mode Suppression Ratio	SMSR	P _o = 7.0 mW, RMS (-20 dB), T _c = -20 to +85°C	30	45		dB
Vertical Beam Angle ^{*1}	θ _v	P _o = 7.0 mW, FAHM ^{*2}		35	40	deg.
Lateral Beam Angle ^{*1}	θ _l	P _o = 7.0 mW, FAHM ^{*2}		30	35	deg.
Rise Time	t _r	10-90%			0.2	ns
Fall Time	t _f	90-10%			0.2	ns
Monitor Current	I _m	V _R = 5 V, I _F = I _{th} + 20 mA	280	840	1 400	μA
Monitor Dark Current	I _d	V _R = 5 V		0.1	10	nA
		V _R = 5 V, T _c = -20 to +85°C			500	
Monitor PD Terminal Capacitance	C _t	V _R = 5 V, f = 1 MHz		6.0	20	pF
Tracking Error ^{*3}	γ	I _m = const. (@ P _o = 7.0 mW, T _c = 25°C) T _c = -20 to +85°C	-1.0		1.0	dB

*1 Applicable to only NX6307S Series

*2 FAHM: Full Angle at Half Maximum

*3 Tracking Error: γ



$$\gamma = \left| 10 \log \frac{P_o}{7.0} \right| \text{ [dB]}$$

★ 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

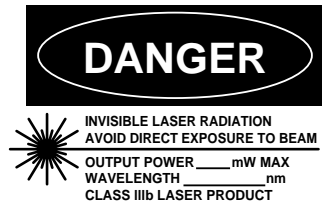
REFERENCE

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

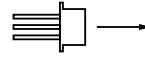
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M8E 00.4-0110

SAFETY INFORMATION ON THIS PRODUCT



SEMICONDUCTOR LASER



AVOID EXPOSURE-Invisible
Laser Radiation is emitted from
this aperture

<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>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"> • 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"> 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.

► For further information, please contact

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