To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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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DATA SHEET

RENESAS

LASER DIODE

NX6309GH

1 310 nm InGaAsP MQW-DFB LASER DIODE FOR 1.25 Gb/s FTTH PON APPLICATION

DESCRIPTION

The NX6309GH is a 1 310 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD.



APPLICATION

- 1.25 Gb/s FTTH PON (Fiber To The Home Passive Optical Network)

FEATURES

- Optical output power P_o = 10.0 mW
- Low threshold current I_{th} = 10 mA
- Differential efficiency η_d = 0.40 W/A
- Wide operating temperature range T_C = –40 to +85°C
- InGaAs monitor PIN-PD
- CAN package ϕ5.6 mm
- Focal point 10 mm

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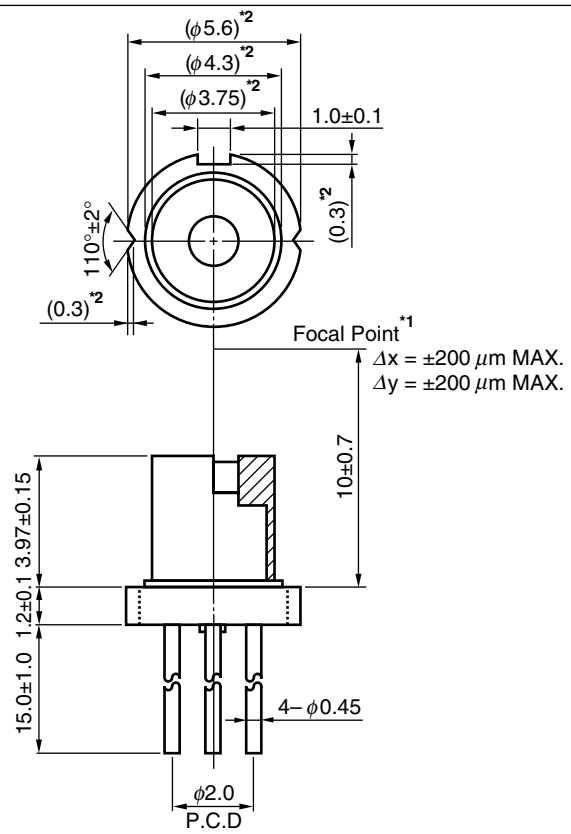
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Date Published March 2010 NS
Printed in Japan

The mark <R> shows major revised points.

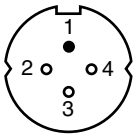
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The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

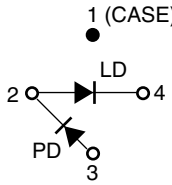
<R> **PACKAGE DIMENSIONS (UNIT: mm)**



BOTTOM VIEW

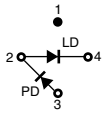


PIN CONNECTIONS



***1** Focal Point: A point to get maximum optical output power from fiber.
***2** ( ) indicates nominal dimension.

ORDERING INFORMATION

Part Number	Package	Pin Connections
NX6309GH	4-pin CAN with aspherical lens cap	

<R> **Remarks 1.** The color of ball lens cap might be observed differently.

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

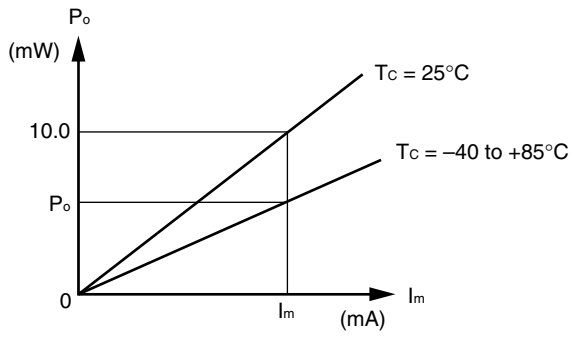
ABSOLUTE MAXIMUM RATINGS

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	10.0	mA
Reverse Voltage of PD	V_R	15	V
Operating Case Temperature	T_C	–40 to +85	°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 = –40 to +85°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power	P_o	CW		10.0		mW
Operating Voltage	V_{op}	P_o = 10.0 mW		1.1	1.6	V
Threshold Current	I_{th}	T_C = 25°C		10	20	mA
				30	45	
Differential Efficiency	η_d	T_C = 25°C	0.30	0.40		W/A
			0.15			
Peak Emission Wavelength	λ_p	CW, P_o = 10.0 mW, RMS (–20 dB)	1 290		1 330	nm
Side Mode Suppression Ratio	SMSR	P_o = 10.0 mW, RMS (–20 dB)	30	45		dB
Rise Time	t_r	$I_b = I_{th}$, 10-90%			500	ps
Fall Time	t_f	$I_b = I_{th}$, 90-10%			500	ps
Monitor Current	I_m	V_R = 1.5 V, P_o = 10.0 mW	80		800	μA
Monitor Dark Current	I_D	V_R = 5 V			100	nA
Monitor PD Terminal Capacitance	C_t	V_R = 5 V			20	pF
Tracking Error*1	γ	I_m = const. (@ P_o = 10.0 mW, T_C = 25°C)	–1.0		1.0	dB

***1** Tracking Error: γ



$$\gamma = \left| 10 \log \frac{P_o}{10.0} \right| [dB]$$

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet	PX10160E

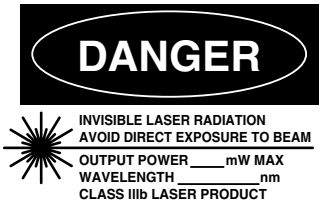
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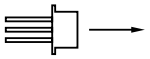
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M8E0904E

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.