

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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# NX5321 Series

**Phase-out/Discontinued**

**1 310 nm FOR 156 Mb/s, 622 Mb/s, 1.25 Gb/s, FTTH  
InGaAsP MQW-FP LASER DIODE**

**DESCRIPTION**

The NX5321 Series is a 1 310 nm Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diode with InGaAs monitor PIN-PD. These devices are designed for application up to 1.25 Gb/s.

**APPLICATIONS**

- STM-1 (I-1, S-1.1), STM-4 (I-4, S-4.1), ITU-T recommendations
- FTTH P2P (Fiber To The Home Point to Point) system

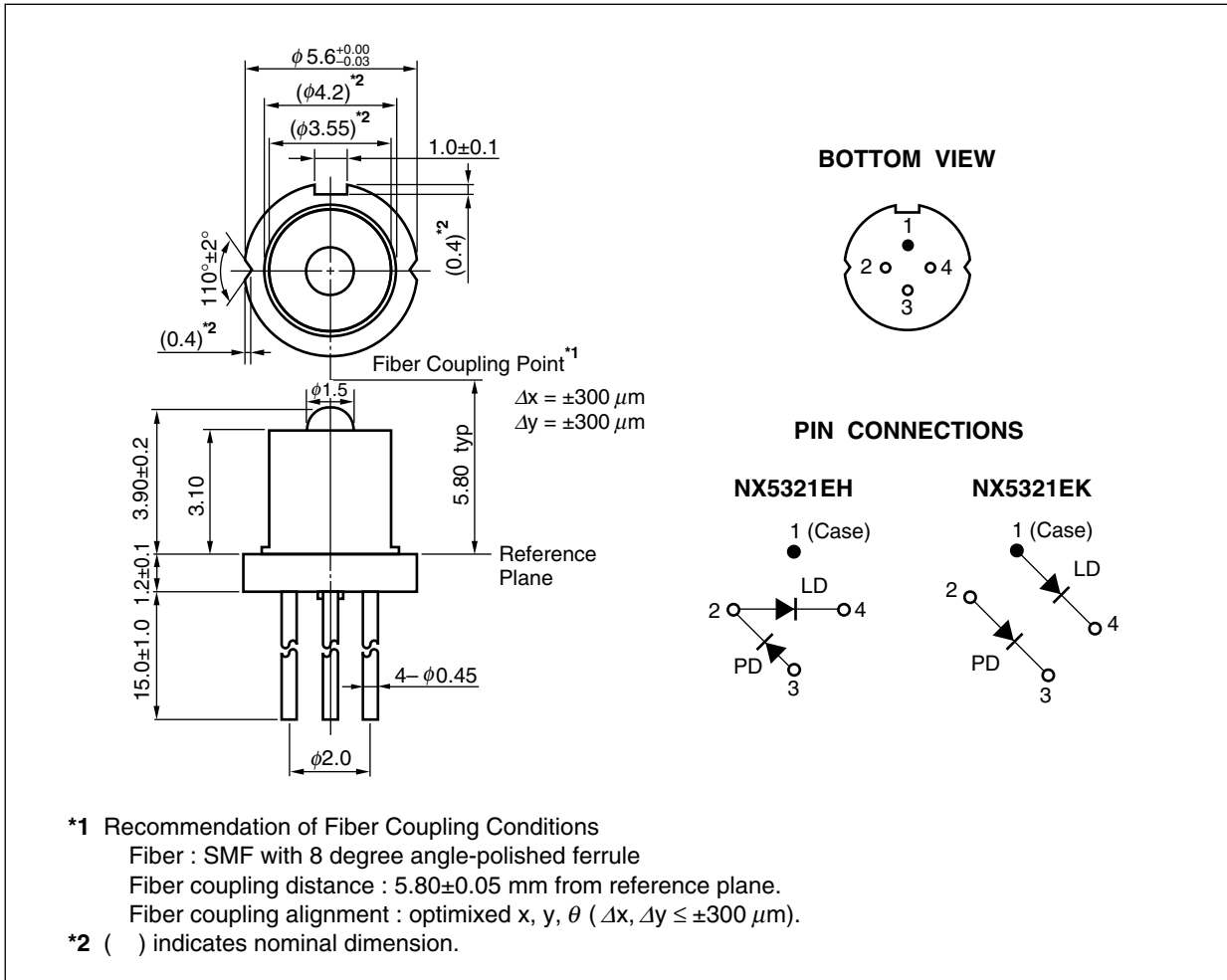
**FEATURES**

- Optical output power  $P_o = 5.0 \text{ mW}$
- Low threshold current  $I_{th} = 7 \text{ mA}$
- Differential efficiency  $\eta_d = 0.3 \text{ W/A}$
- Wide operating temperature range  $T_c = -40 \text{ to } +85^\circ\text{C}$
- InGaAs monitor PIN-PD
- CAN package  $\phi 5.6 \text{ mm}$
- Fiber coupling point  $5.8 \text{ mm}$

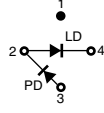
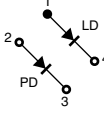


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PACKAGE DIMENSIONS (UNIT: mm)



**ORDERING INFORMATION**

Part Number	Package	Pin Connections
NX5321EH	4-pin CAN with ball lens cap	
NX5321EK		

- 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**

<R>

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>	10	mA
Reverse Voltage of PD	V <sub>R</sub>	15	V
Operating Case Temperature	T <sub>C</sub>	-40 to +85	°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 (T<sub>c</sub> = 25°C, unless otherwise specified)**

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V <sub>op</sub>	P <sub>o</sub> = 5.0 mW		1.1	1.5	V
Operating Current	I <sub>op</sub>	P <sub>o</sub> = 5.0 mW	10	20	35	mA
Threshold Current	I <sub>th</sub>		3	7	15	mA
Differential Efficiency	η <sub>d</sub>		0.2	0.3	0.7	W/A
Center Wavelength	λ <sub>C</sub>	P <sub>o</sub> = 5.0 mW, RMS (-20 dB)	1 290	1 310	1 330	nm
Spectral Width	σ	P <sub>o</sub> = 5.0 mW, RMS (-20 dB)		1.0	2.0	nm
Rise Time	t <sub>r</sub>	10-90%		0.15	0.3	ns
Fall Time	t <sub>f</sub>	90-10%		0.15	0.3	ns
Lateral Beam Angle	θ <sub>l</sub>	P <sub>o</sub> = 5.0 mW		11		deg.
Vertical Beam Angle	θ <sub>v</sub>	P <sub>o</sub> = 5.0 mW		11		deg.
Monitor Current	I <sub>m</sub>	V <sub>R</sub> = 1.5 V, P <sub>o</sub> = 5.0 mW	100	500	900	μA
Monitor Dark Current	I <sub>D</sub>	V <sub>R</sub> = 10 V			100	nA
Monitor PD Terminal Capacitance	C <sub>t</sub>	V <sub>R</sub> = 10 V, f = 1 MHz			20	pF
Focal Distance	D <sub>f</sub>	P <sub>o</sub> = 5.0 mW	5.0	5.8	6.2	mm
Optical Output Power from Fiber	P <sub>f</sub>	P <sub>o</sub> = 5.0 mW, 8 degree angled fiber, Optimized x, y, θ. z = 5.80±0.05 mm	400	800		μW

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet	PX10160E

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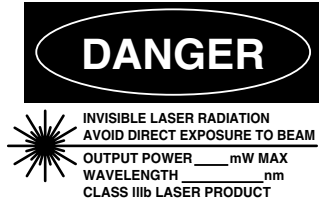
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(Note)

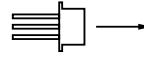
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**SAFETY INFORMATION ON THIS PRODUCT**



**SEMICONDUCTOR LASER**



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

<b>Warning</b>	Laser Beam	<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>
<b>Caution</b>	GaAs Products	<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>