

**1 310 nm AlGaInAs MQW-FP LASER DIODE  
FOR 4 Gb/s FIBER CHANNEL APPLICATION****DESCRIPTION**

The NX5320EH is a 1 310 nm Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diode with InGaAs monitor PIN-PD.

**APPLICATION**

- 4 G fiber channel

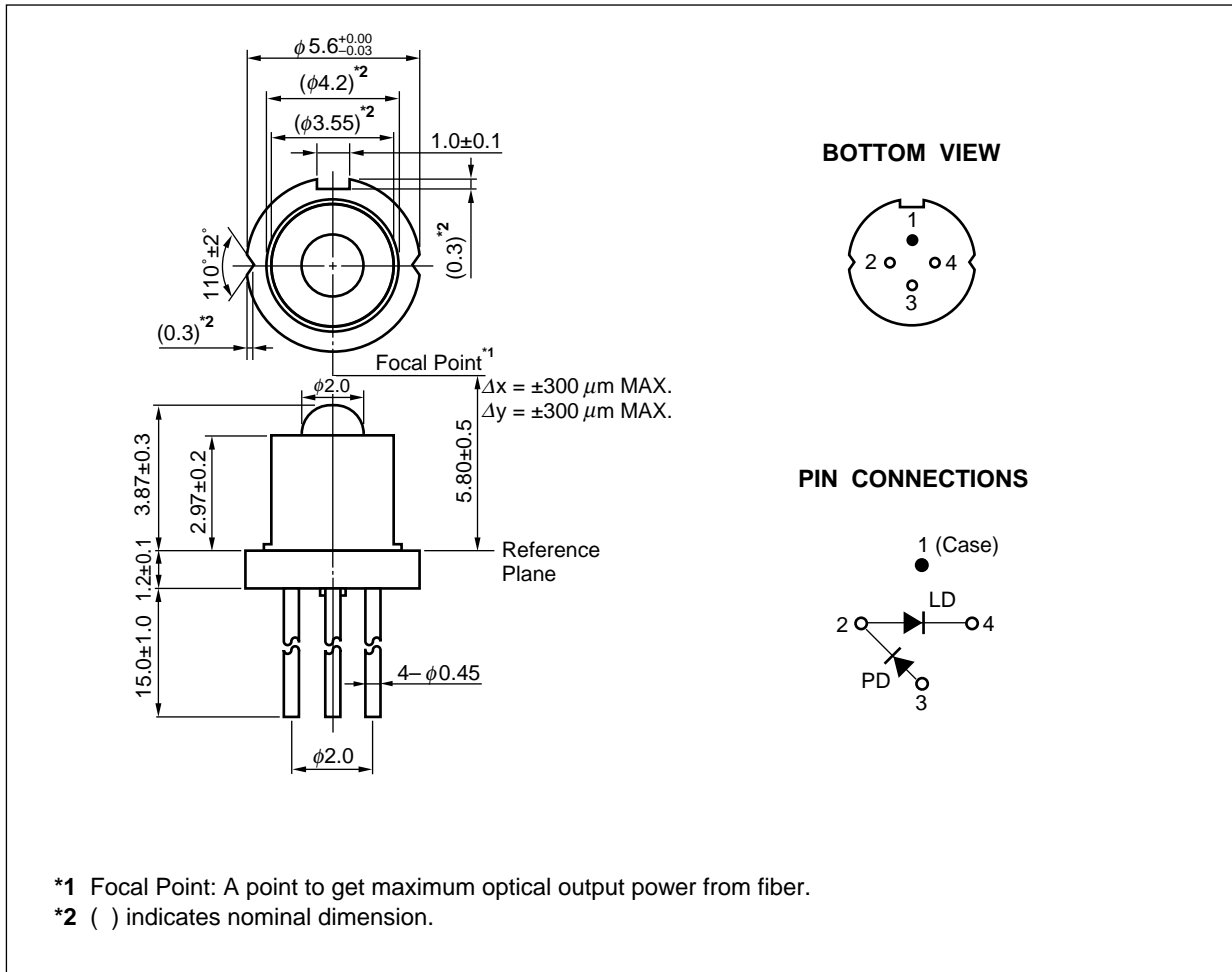
**FEATURES**

- Optical output power  $P_o = 7.0 \text{ mW}$
- Low threshold current  $I_{th} = 8 \text{ mA}$
- Differential efficiency  $\eta_d = 0.35 \text{ W/A}$
- Wide operating temperature range  $T_c = -30 \text{ to } +85^\circ\text{C}$
- InGaAs monitor PIN-PD
- CAN package  $\phi 5.6 \text{ mm}$
- Focal point  $5.8 \text{ mm}$

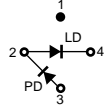


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**PACKAGE DIMENSIONS (UNIT: mm)**



**ORDERING INFORMATION**

Part Number	Package	Pin Connections
NX5320EH-AZ*	4-pin CAN with ball lens cap	

**\*Note** Please refer to the last page of this data sheet “Compliance with EU Directives for Pb-Free RoHS Compliance Information.

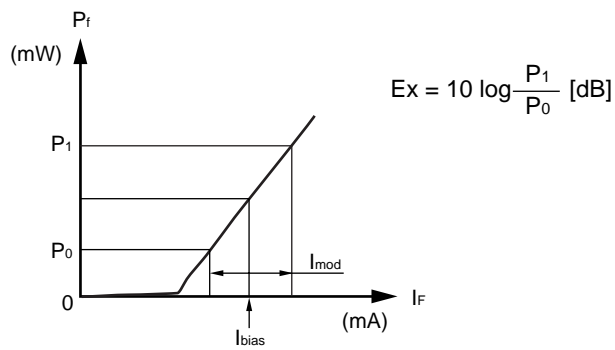
- Remarks**
1. The color of ball lens cap might be observed differently.
  2. The hermetic test will be performed as AQL 1.0%.

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Ratings	Unit
Optical Output Power	P <sub>o</sub>	15	mW
Forward Current of LD	I <sub>F</sub>	120	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>	20	V
Operating Case Temperature	T <sub>c</sub>	-30 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	%

**RECOMMENDED OPERATING CONDITION**

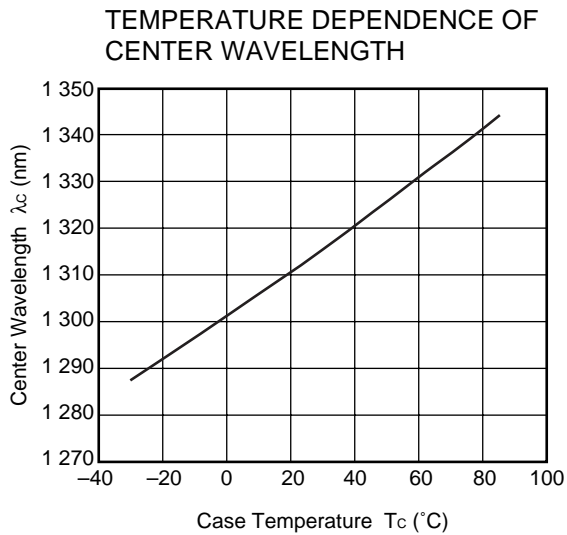
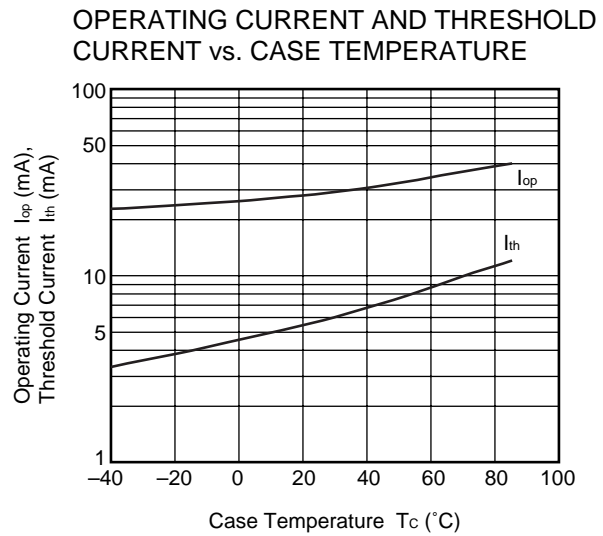
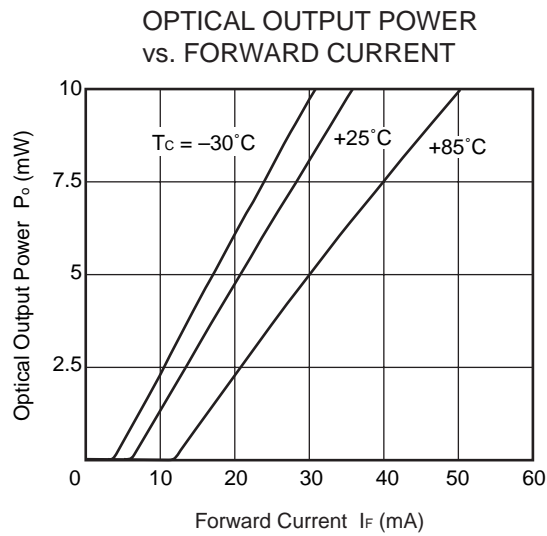
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Bias Current	I <sub>bias</sub>	T <sub>c</sub> = 25°C, refer to below		I <sub>th</sub> +12.5		mA



**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = -30 to +85°C, unless otherwise specified)**

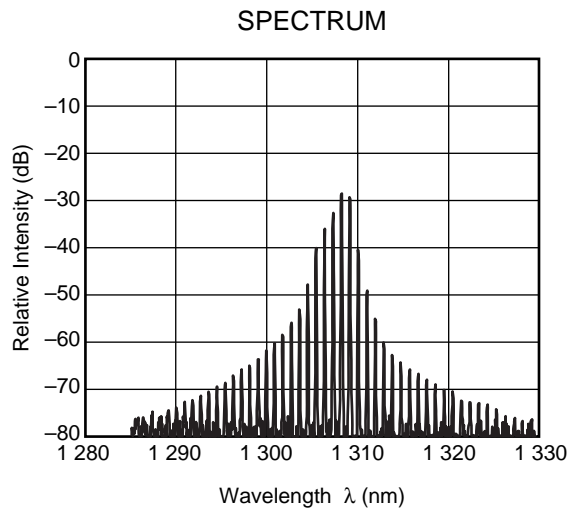
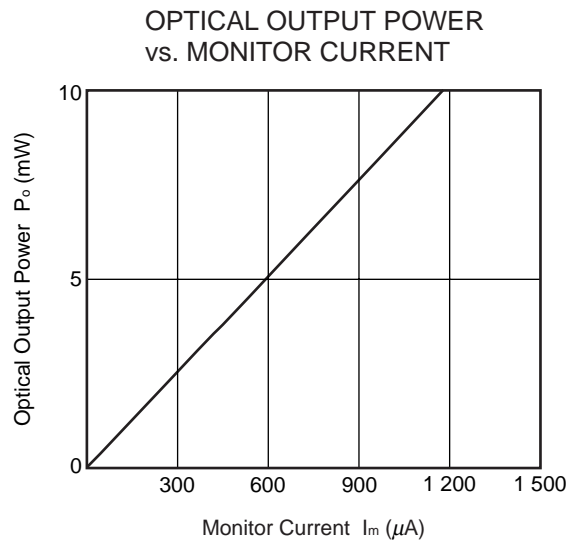
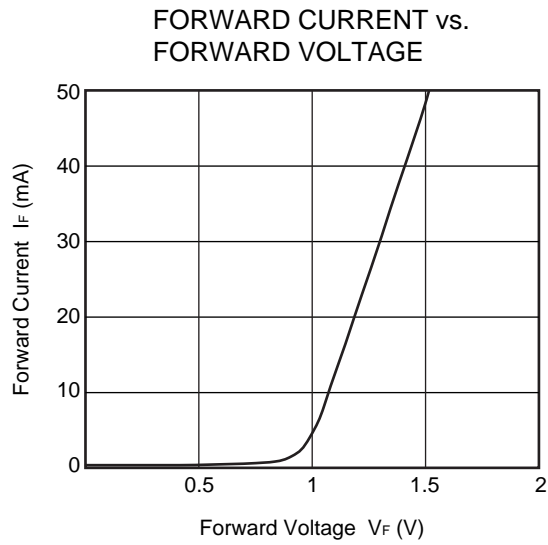
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V <sub>op</sub>	CW, P <sub>o</sub> = 7.0 mW, T <sub>c</sub> = +25°C		1.3	1.6	V
		CW, P <sub>o</sub> = 7.0 mW			2.0	
Threshold Current	I <sub>th</sub>	CW, T <sub>c</sub> = +25°C		8	20	mA
		CW	2		40	
Differential Efficiency	η <sub>d</sub>	CW, T <sub>c</sub> = +25°C	0.25	0.35	0.50	W/A
		CW	0.12		0.65	
Center Wavelength	λ <sub>c</sub>	P <sub>o</sub> = 7.0 mW, RMS (-20 dB)	1 278		1 350	nm
Temperature Dependence of Slope Efficiency	Δη	$\Delta\eta = 10 \log \frac{\eta_d (@ 85^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$	-3.0		1.5	dB
Spectral Width	σ	P <sub>o</sub> = 7.0 mW, RMS (-20 dB)			2	nm
Rise Time	t <sub>r</sub>	20-80%			90	ps
Fall Time	t <sub>f</sub>	80-20%			90	ps
Relative Intensity Noise	RIN	Under modulation			-120	dB/Hz
Monitor Current	I <sub>m</sub>	V <sub>R</sub> = 1.5 V, P <sub>o</sub> = 7.0 mW	200		2 000	μA
Monitor Dark Current	I <sub>D</sub>	V <sub>R</sub> = 5 V			500	nA
Monitor PD Terminal Capacitance	C <sub>t</sub>	V <sub>R</sub> = 5 V, f = 1 MHz		6	20	pF

**TYPICAL CHARACTERISTICS ( $T_c = -30$  to  $+85^\circ\text{C}$ , unless otherwise specified)**



**Remark** The graphs indicate nominal characteristics.

**TYPICAL CHARACTERISTICS (T<sub>c</sub> = 25°C, unless otherwise specified)**



**Remark** The graphs indicate nominal characteristics.

**REFERENCE**

Document Name	Document No.
Opto-Electronics Devices Pamphlet	PX10160E



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"Special": Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support).

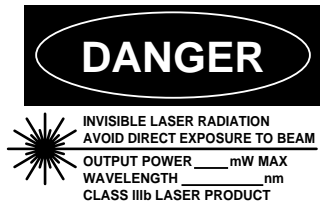
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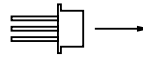
(Note)

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**SAFETY INFORMATION ON THIS PRODUCT**



**SEMICONDUCTOR LASER**



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

<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>

Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (\*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL’s understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices	
		-A	-AZ
Lead (Pb)	< 1000 PPM	Not Detected	(*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
PBB	< 1000 PPM	Not Detected	
PBDE	< 1000 PPM	Not Detected	

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

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