

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

DESCRIPTION

The NX5312 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 (L-1.1), STM-4 (S-4.1), ITU-T recommendations
- FTTH (Fiber To The Home) system

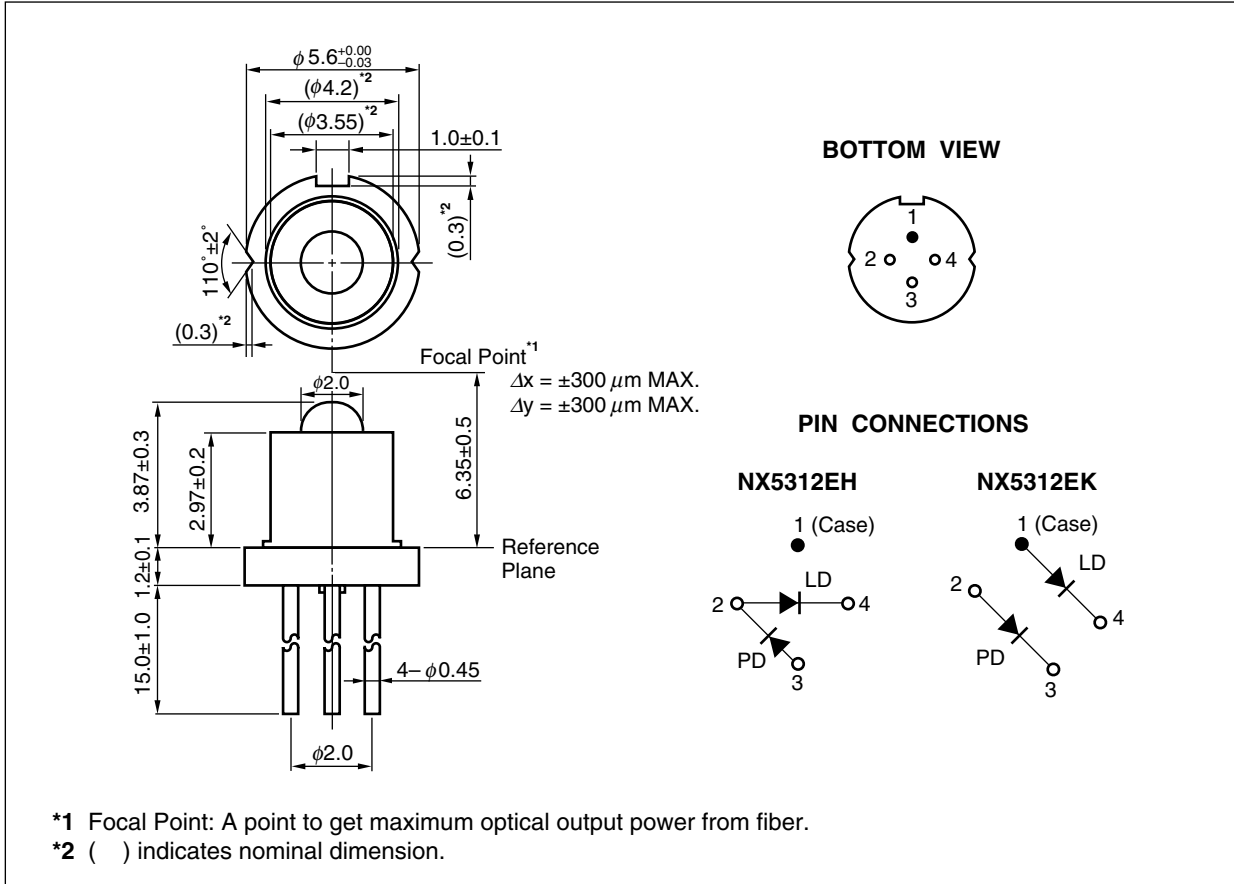
FEATURES

- Optical output power $P_o = 5.0 \text{ mW}$
- Low threshold current $I_{th} = 6 \text{ mA}$
- Differential Efficiency $\eta_d = 0.45 \text{ W/A}$
- Wide operating temperature range $T_c = -40 \text{ to } +85^\circ\text{C}$
- InGaAs monitor PIN-PD
- CAN package $\phi 5.6 \text{ mm}$
- Focal point 6.35 mm

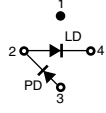
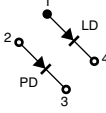


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<R> PACKAGE DIMENSIONS (UNIT: mm)



ORDERING INFORMATION

Part Number	Package	Pin Connections
NX5312EH	4-pin CAN with ball lens cap	 <p>Diagram showing a 4-pin CAN package with pins 1, 2, 3, and 4. Pin 1 is at the top, pin 2 on the left, pin 3 at the bottom, and pin 4 on the right. Pin 1 is connected to LD (Laser Diode) and pin 4 is connected to PD (Photodiode).</p>
NX5312EK		 <p>Diagram showing a 4-pin CAN package with pins 1, 2, 3, and 4. Pin 1 is at the top, pin 2 on the left, pin 3 at the bottom, and pin 4 on the right. Pin 1 is connected to LD (Laser Diode) and pin 3 is connected to PD (Photodiode).</p>

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

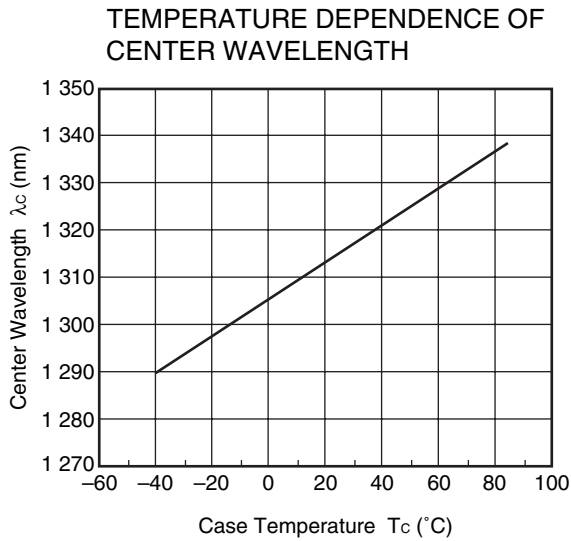
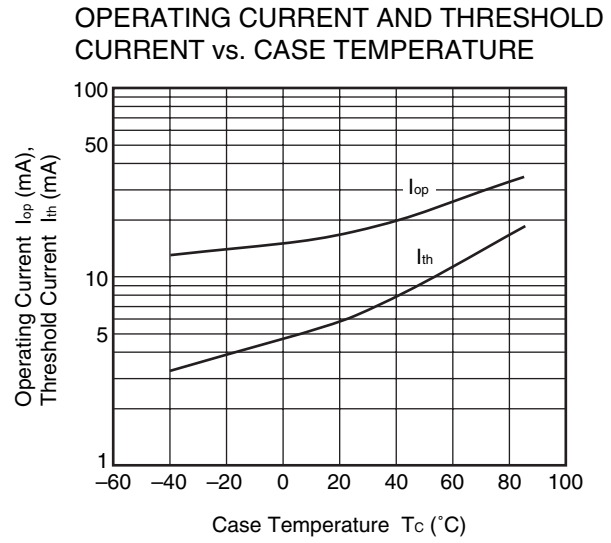
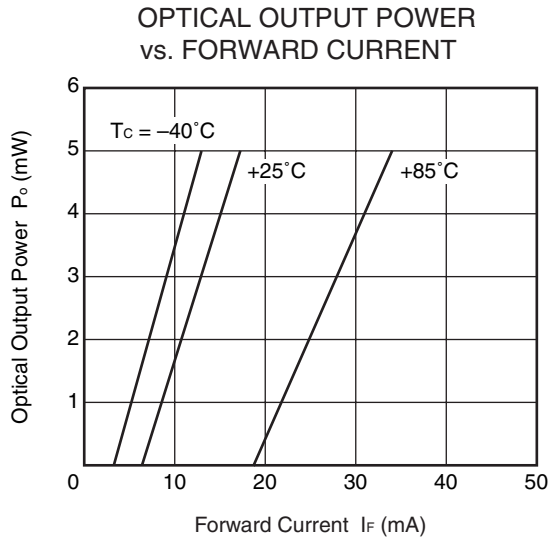
ABSOLUTE MAXIMUM RATINGS

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	mA
Reverse Voltage of PD	V_R	20	V
Operating Case Temperature	T_c	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Assembly Temperature	T_{asb}	150 (15 Hr)	°C
Lead Soldering Temperature	T_{slid}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

ELECTRO-OPTICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V_{op}	$P_o = 5.0 \text{ mW}$		1.1	1.5	V
Threshold Current	I_{th}			6	15	mA
Differential Efficiency	η_d		0.35	0.45		W/A
Center Wavelength	λ_c	$P_o = 5.0 \text{ mW, RMS } (-20 \text{ dB})$	1 290	1 310	1 330	nm
Spectral Width	σ	$P_o = 5.0 \text{ mW, RMS } (-20 \text{ dB})$		1.0	2.0	nm
Rise Time	t_r	10-90%		0.15	0.3	ns
Fall Time	t_f	90-10%		0.15	0.3	ns
Monitor Current	I_m	$V_R = 1.5 \text{ V, } P_o = 5.0 \text{ mW}$	100	300	900	μA
Monitor Dark Current	I_D	$V_R = 10 \text{ V}$			10	nA
Monitor PD Terminal Capacitance	C_t	$V_R = 10 \text{ V, } f = 1 \text{ MHz}$		5	20	pF
Focal Distance	D_f	$P_o = 5.0 \text{ mW}$	5.85	6.35	6.85	mm

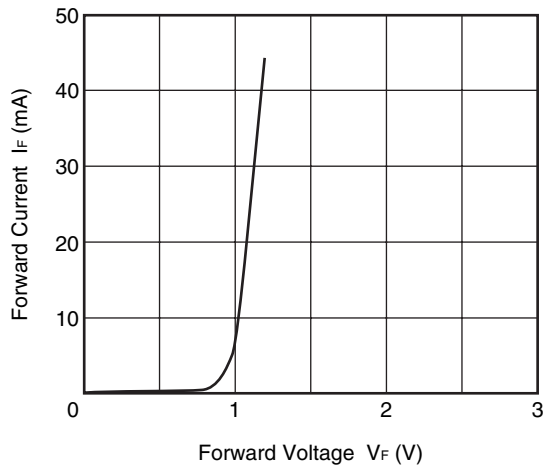
<R> **TYPICAL CHARACTERISTICS (T_c = -40 to +85°C, unless otherwise specified)**



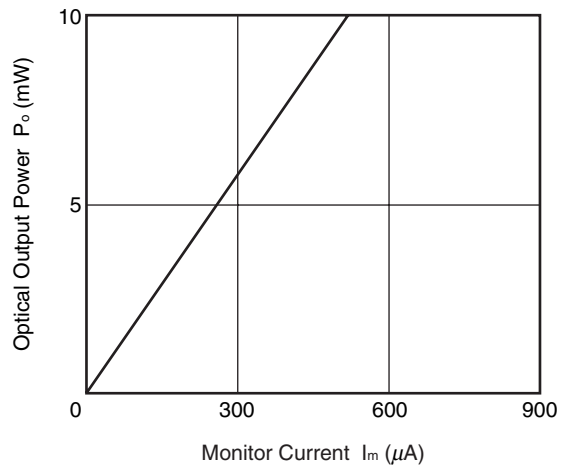
Remark The graphs indicate nominal characteristics.

<R> **TYPICAL CHARACTERISTICS (T_c = 25°C, unless otherwise specified)**

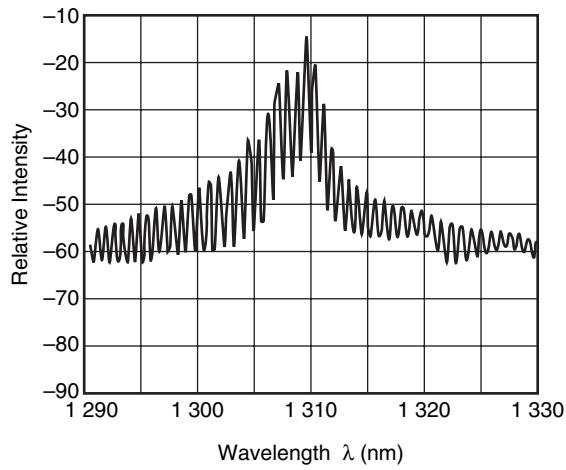
FORWARD CURRENT vs. FORWARD VOLTAGE



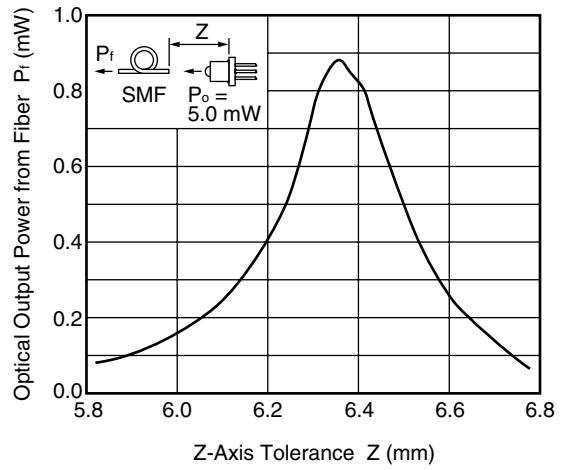
OPTICAL OUTPUT POWER vs. MONITOR CURRENT



SPECTRUM



TOLERANCE OF FIBER COUPLING DISTANCE (Z)



Remark The graphs indicate nominal characteristics.

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet ^{*1}	PX10160E

*1 Published by the former NEC Compound Semiconductor Devices, Ltd.

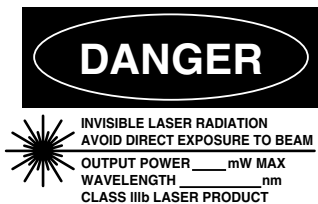
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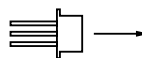
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SAFETY INFORMATION ON THIS PRODUCT



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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