

CEL

**NEC's 1310 nm InGaAsP MQW FP
LASER DIODE IN CAN PACKAGE
FOR FTTH PON APPLICATIONS**

NX5313 SERIES

FEATURES

- **OPTICAL OUTPUT POWER:**
 $P_o = 13.0 \text{ mW}$
- **LOW THRESHOLD CURRENT :**
 $I_{th} = 6 \text{ mA}$
- **DIFFERENTIAL EFFICIENCY:**
 $\eta_d = 0.5 \text{ W/A}$
- **WIDE OPERATING TEMPERATURE RANGE:**
 $T_c = -40 \text{ to } +85^\circ\text{C}$
- **InGaAs MONITOR PIN-PD**
- **CAN PACKAGE:**
 $\varnothing 5.6 \text{ mm}$
- **FOCAL POINT:**
 6.35 mm
- **LD BEAM ANGLE OPTIMIZED FOR 8 DEGREE
ANGLED SMF**



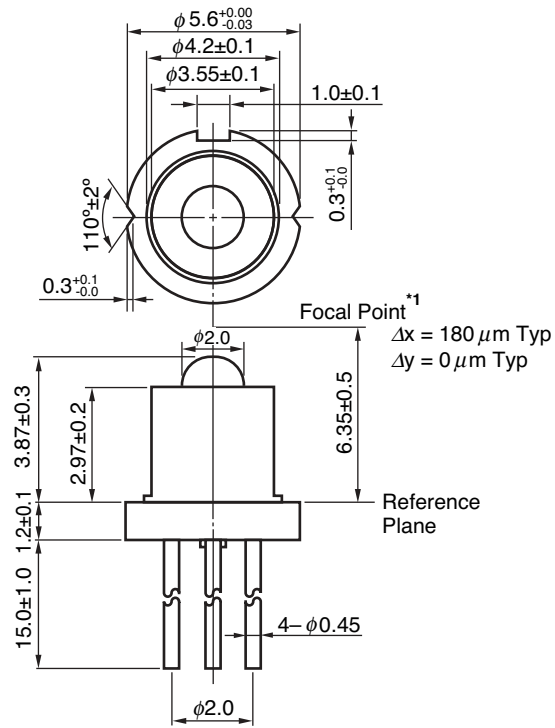
APPLICATIONS

- **FTTH PON (B-PON, G-PON, GE-PON 10 Km) system**

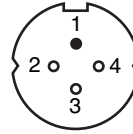
DESCRIPTION

NEC's NX5313 Series is a 1310 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.

PACKAGE DIMENSIONS (Units in mm)

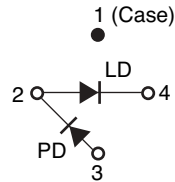


BOTTOM VIEW

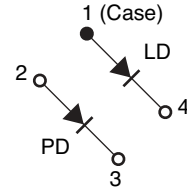


PIN CONNECTIONS

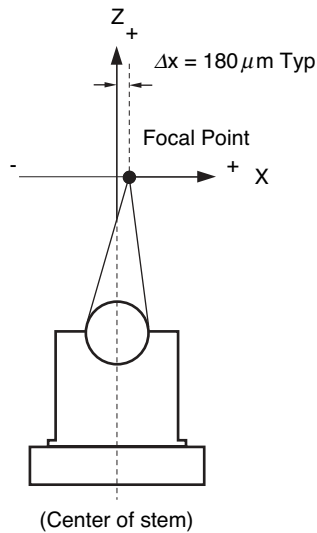
NX5313EH



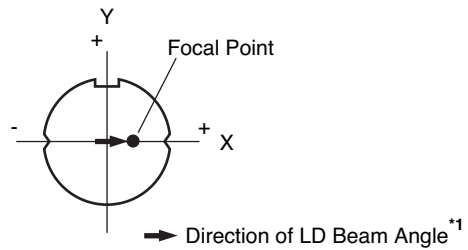
NX5313EK



*1 Focal Point: A point to get maximum optical output power from fiber.

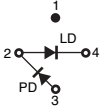



TOP VIEW



*1 LD Beam angle is optimized for coupling with 8 degree angled SMF.

ORDERING INFORMATION

PART NUMBER	PACKAGE	PIN CONNECTIONS
NX5313EH	4-pin CAN with ball lens cap	 <p>Diagram showing pin connections for NX5313EH. Pin 1 is at the top, pin 2 is on the left, pin 3 is at the bottom, and pin 4 is on the right. Pin 1 is labeled 'LD' and pin 3 is labeled 'PD'. Arrows indicate the direction of light emission from pins 2 and 4.</p>
NX5313EK		 <p>Diagram showing pin connections for NX5313EK. Pin 1 is at the top, pin 2 is on the left, pin 3 is at the bottom, and pin 4 is on the right. Pin 1 is labeled 'LD' and pin 3 is labeled 'PD'. Arrows indicate the direction of light emission from pins 2 and 4.</p>

- Remarks**
1. The color of ball lens cap might be observed differently from our can package products.
 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}	$P_o = 13.0\text{ mW}$		1.1	1.5	V
Threshold Current	I_{th}			6	15	mA
Differential Efficiency	η^d		0.40	0.50		W/A
Center Wavelength	λ_c	$P_o = 13.0\text{ mW, RMS (-20 dB)}$ $T_C = -40\text{ to }+85^\circ\text{C}$	1 276	1 310	1 352	nm
Spectral Width	σ	$P_o = 13.0\text{ mW, RMS (-20 dB)}$ $T_C = -40\text{ to }+85^\circ\text{C}$		1.5	2.8	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	$V_R = 1.5\text{ V, } P_o = 13.0\text{ mW}$	50	100		μA
Monitor Dark Current	I_D	$V_R = 10\text{ V}$			100	nA
Monitor PD Terminal Capacitance	C_t	$V_R = 10\text{ V, } f = 1\text{ MHz}$		5	20	pF
Fiber Coupling Power	P_f	$P_o = 13.0\text{ mW, Optimized Coupling}$ with 8 degree angled SMF		2.6		mW
Focal Distance	D_f		5.85	6.35	6.85	mm

Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

CEL California Eastern Laboratories, Your source for NEC RF, Microwave, Optoelectronic, and Fiber Optic Semiconductor Devices.

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