

# NX6350EP Series

Data Sheet

LASER DIODE

1 270/1 290/1 310/1 330 nm AlGaInAs MQW-DFB LASER DIODE  
 FOR 40GBASE-LR4 APPLICATION

R08DS0066EJ0100  
 Rev.1.00  
 Aug 14, 2012

## DESCRIPTION

The NX6350EP series is a 1 270/1 290/1 310/1 330 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD.

## APPLICATIONS

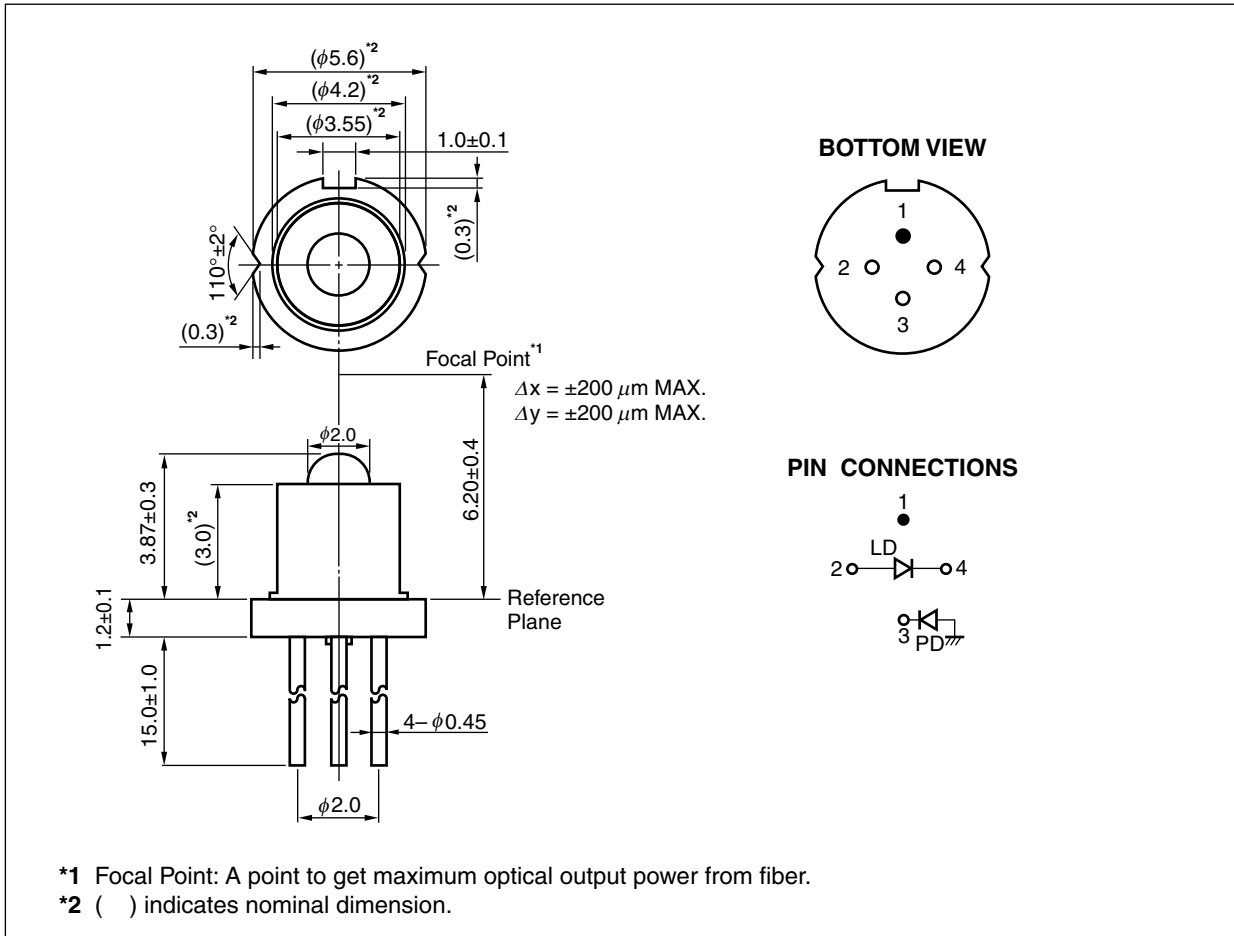
- 40GBASE-LR4
- Bi-Directional 10G SFP+ (CPRI,10G-Ethernet)

## FEATURES

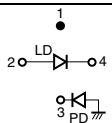
- |                                    |  |
|------------------------------------|--|
| • Optical output power             | $P_O = 8.5 \text{ mW}$                   |
| • Low threshold current            | $I_{th} = 8 \text{ mA}$                  |
| • Differential efficiency          | $\eta_d = 0.35 \text{ W/A}$              |
| • Wide operating temperature range | $T_C = -5 \text{ to } +85^\circ\text{C}$ |
| • InGaAs monitor PIN-PD            |  |
| • CAN package                      | $\phi 5.6 \text{ mm}$                    |
| • Focal point                      | 6.2 mm                                   |



**PACKAGE DIMENSIONS (UNIT: mm)**



**NX6350EP Series**
**ORDERING INFORMATION**

Part Number	Package	Pin Connections
NX6350EPxx*1	4-pin CAN with ball lens cap	

Note: \*1. The last two digits ("xx") of Part Number indicates Wavelength Code.  
The relationships between the code and wavelength are as follows.

WAVELENGTH CODE	WAVELENGTH (nm)
27	1 270
29	1 290
31	1 310
33	1 330

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

## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Optical Output Power	$P_O$	15	mW
Forward Current of LD	$I_F$	120	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	$T_C$	-5 to +85	$^\circ\text{C}$
Storage Temperature	$T_{\text{stg}}$	-40 to +95	$^\circ\text{C}$
Lead Soldering Temperature	$T_{\text{sld}}$	350 (3 sec.)	$^\circ\text{C}$
Relative Humidity (noncondensing)	RH	85	%

## RECOMMENDED LD DRIVE CURRENT AT MODULE LEVEL

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Bias Current	$I_{\text{bias}}$	$T_C = 25^\circ\text{C}$	-	30	-	mA

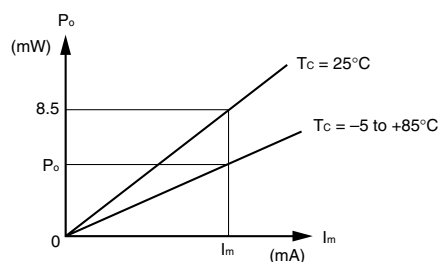
## ELECTRO-OPTICAL CHARACTERISTICS

( $T_C = -5$  to  $+85^\circ\text{C}$ , CW, BOL, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Signaling Rate			-	10.3125	-	Gb/s	
Optical Output Power	$P_O$		-	8.5	-	mW	
Operating Voltage	$V_{\text{op}}$	$P_O = 8.5$ mW	-	-	1.8	V	
Threshold Current	$I_{\text{th}}$	$T_C = 25^\circ\text{C}$	-	8	15	mA	
			-	-	30		
Differential Efficiency	$\eta_d$	$P_O = 8.5$ mW, $T_C = 25^\circ\text{C}$	0.28	0.35	-	W/A	
		$P_O = 8.5$ mW	0.16	-	-		
Peak Emission Wavelength	$\lambda_p$	$P_O = 8.5$ mW	NX6350EP27	1 264.5	-	1 277.5	nm
			NX6350EP29	1 284.5	-	1 297.5	
			NX6350EP31	1 304.5	-	1 317.5	
			NX6350EP33	1 324.5	-	1 337.5	
Side Mode Suppression Ratio	SMSR	$P_O = 8.5$ mW	35	-	-	dB	
Rise Time	$t_r$	20-80% <sup>**1</sup>	-	-	50	ps	
Fall Time	$t_f$	80-20% <sup>**1</sup>	-	-	50	ps	
Monitor Current	$I_m$	$V_R = 1.5$ V, $P_O = 8.5$ mW	100	-	1 000	$\mu\text{A}$	
Monitor Dark Current	$I_D$	$V_R = 3.3$ V, $T_C = 25^\circ\text{C}$	-	-	10	nA	
		$V_R = 3.3$ V	-	-	100		
Monitor PD Terminal Capacitance	$C_t$	$V_R = 3.3$ V, $f = 1$ MHz	-	-	20	pF	
Tracking Error <sup>**2</sup>	$\gamma$	$I_m = \text{const.}$ (@ $P_O = 8.5$ mW, $T_C = 25^\circ\text{C}$ )	-0.9	-	0.9	dB	

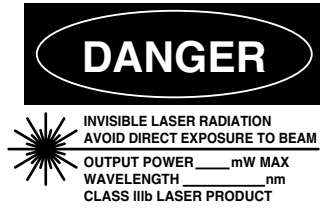
Notes: 1. 10.3125 Gb/s, PRBS  $2^{31} - 1$ , NRZ, Duty Cycle = 50%

2. Tracking Error:  $\gamma$

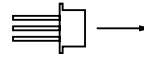


$$\gamma = \left| 10 \log \frac{P_o}{8.5} \right| \text{ [dB]}$$

**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>

<b>Revision History</b>	<b>NX6350EP Series Data Sheet</b>
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<b>Rev.</b>	<b>Date</b>	<b>Description</b>	
		<b>Page</b>	<b>Summary</b>
1.00	Aug 14, 2012	-	First edition issued