DATA SHEET

NEC

LASER DIODE
NX7315UA

1 310 nm FOR INTRA-OFFICE 2.5 Gb/s InGaAsP MQW-FP LASER DIODE TOSA

DESCRIPTION

The NX7315UA is a 1 310 nm Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diode TOSA (transmitter optical sub-assembly) with InGaAs monitor PIN-PD in a receptacle type package designed for SFF/SFP transceiver with LC duplex receptacle. This device is ideal for Synchronous Digital Hierarchy (SDH) system, intra-office STM-16 (I-16), ITU-T recommendations, and SONET OC-48 (SR).

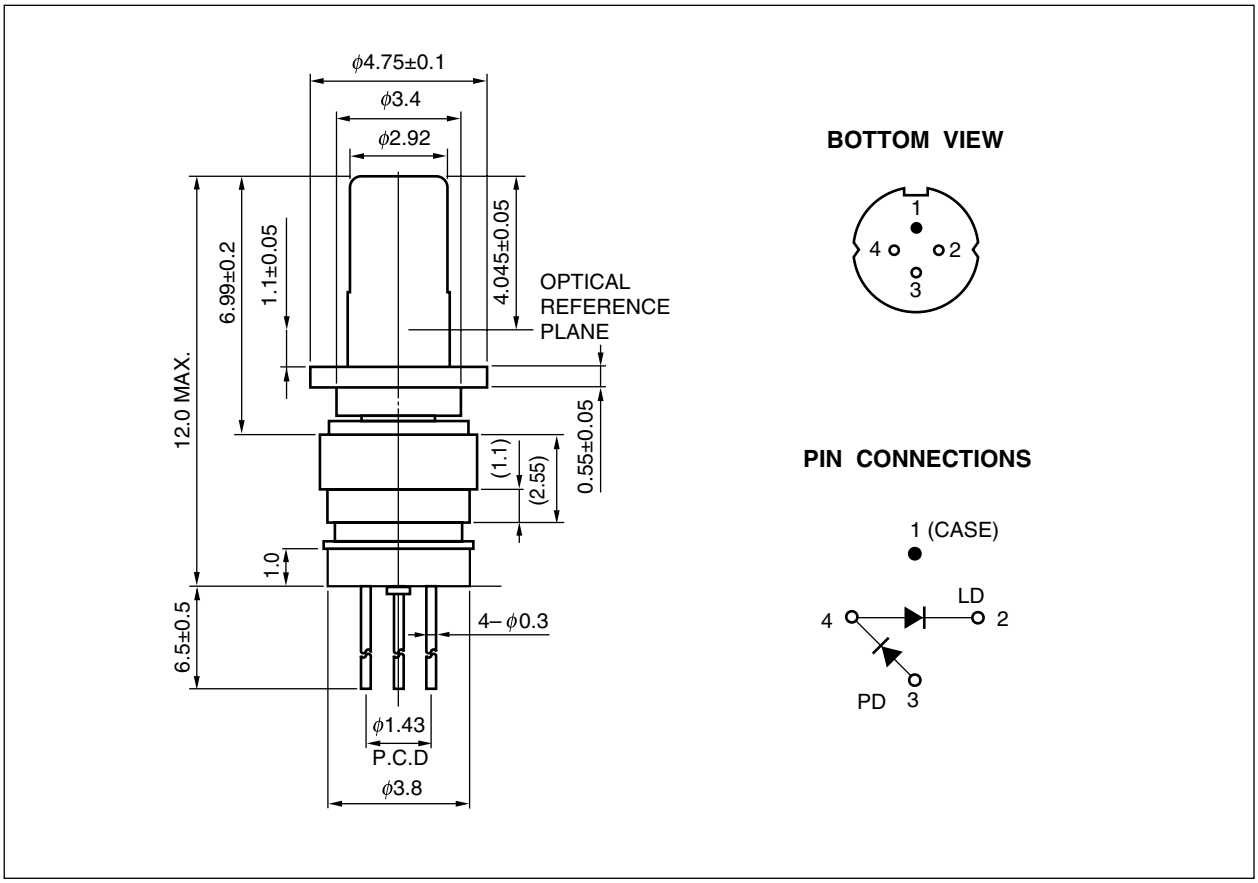
FEATURES

- Optical output power P_f = 0.6 mW
- Low threshold current I_{th} = 8 mA TYP. @T_C = 25°C
- Wide operating temperature range T_C = –40 to +85°C
- InGaAs monitor PIN-PD
- Small package ϕ 3.8 mm TOSA (Total length 12.0 mm MAX.)
- Based on Telcordia reliability GR-468-CORE

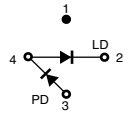
Document No. PL10149EJ02V0DS (2nd edition)
Date Published May 2003 CP(K)
Printed in Japan

The mark ★ shows major revised points.

PACKAGE DIMENSIONS (UNIT: mm)



ORDERING INFORMATION

Part Number	Package	Pin Connections
NX7315UA	ϕ 3.8 mm TOSA	

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P_f	2.0	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
Lead Soldering Temperature	T_{sld}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

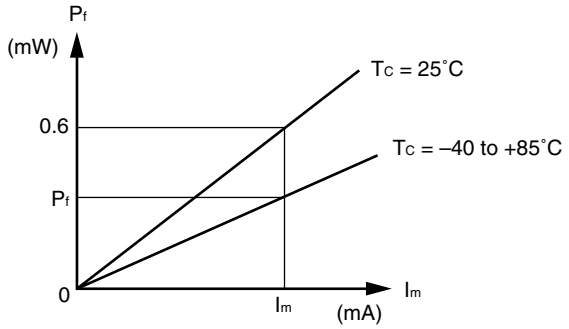
ELECTRO-OPTICAL CHARACTERISTICS (T_C = –40 to +85°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V_{op}	CW, P_f = 0.6 mW		1.2	1.5	V
Threshold Current	I_{th}	CW	2		50	mA
		CW, T_C = 25°C	4	8	20	
Optical Output Power from Fiber	P_f	CW		0.6		mW
Modulation Current*1	I_{mod}	CW, P_f = 0.6 mW	14		60	mA
★		CW, P_f = 0.6 mW, T_C = 25°C	20	25	40	
Differential Efficiency	η_d	CW	0.010		0.042	W/A
		CW, T_C = 25°C	0.015	0.020	0.030	
Center Wavelength	λ_C	CW, P_f = 0.6 mW, RMS (–20 dB)	1 266		1 360	nm
Spectral Width	σ	CW, P_f = 0.6 mW, RMS (–20 dB)			4.0	nm
Rise Time	t_r	$I_b = I_{th}$, 10-90%			0.2	ns
Fall Time	t_f	$I_b = I_{th}$, 90-10%			0.2	ns
Monitor Current	I_m	CW, V_R = 1.5 V, P_f = 0.3 mW	200		1 200	μA
Monitor Dark Current	I_D	V_R = 1.5 V			500	nA
		V_R = 1.5 V, T_C = 25°C			50	
Tracking Error*2	γ	CW, I_m = const. (@ P_f = 0.6 mW)	–1.5		1.5	dB
Connector Repeatability	–	With master pigtail	–1.0		1.0	dB

★ ***1** Modulation Current: I_{mod}

$I_{mod} \geq 25mA_{PP}$ at T_C = 25°C is recommended in order to satisfy 20% eye mask margin of STM-16 (I-16) /OC-48 (SR).

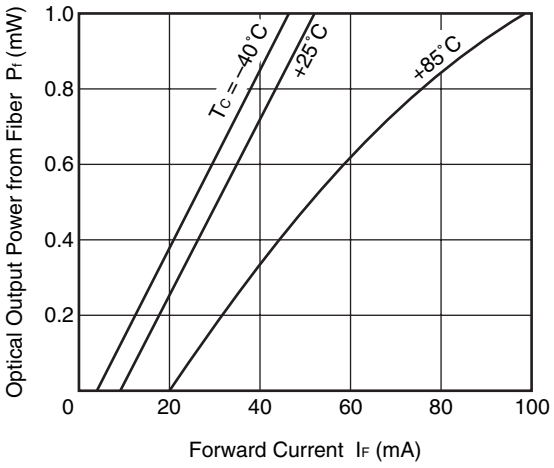
***2** Tracking Error: γ



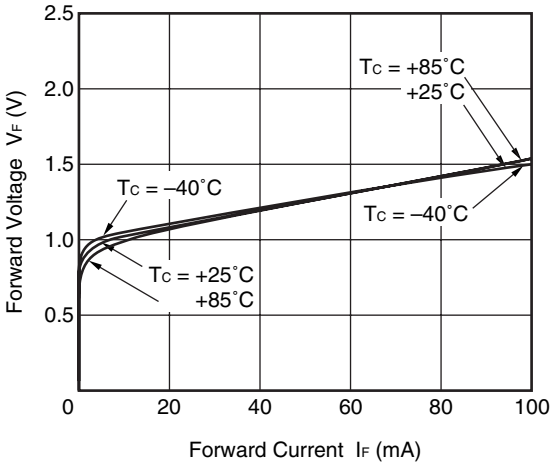
$$\gamma = \left| 10 \log \frac{P_f}{0.6} \right| [dB]$$

★ **TYPICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)**

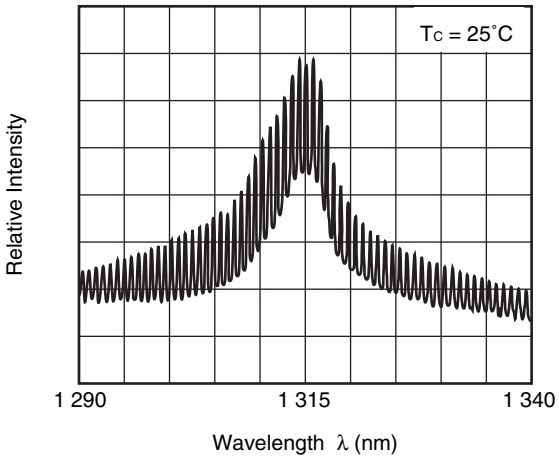
OPTICAL OUTPUT POWER FROM FIBER vs. FORWARD CURRENT



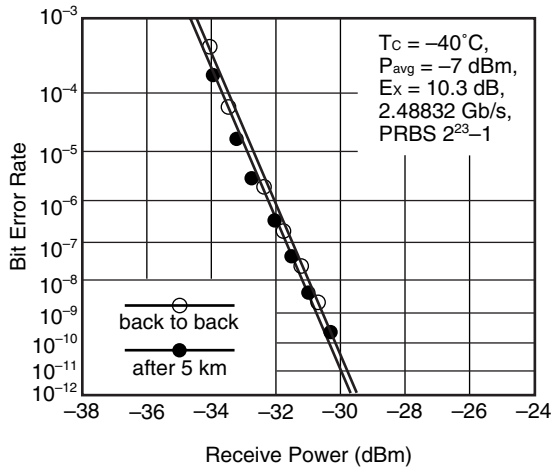
FORWARD VOLTAGE vs. FORWARD CURRENT



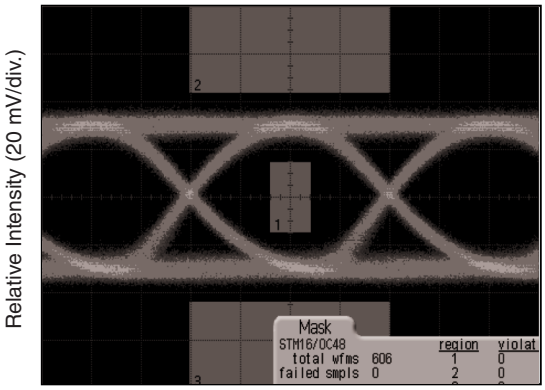
SPECTRUM



ERROR RATE CHARACTERISTICS



EYE DIAGRAM



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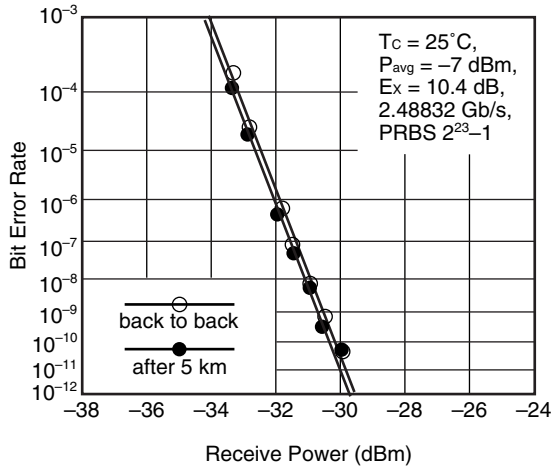
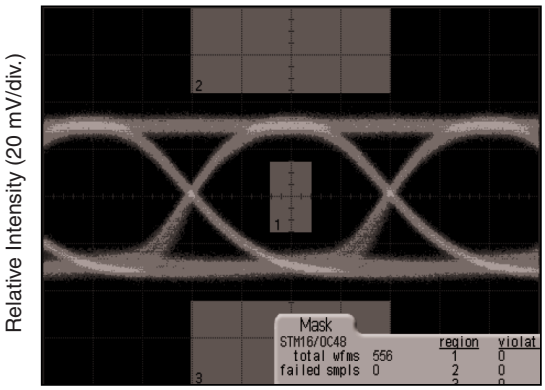
ERROR RATE CHARACTERISTICS



EYE DIAGRAM



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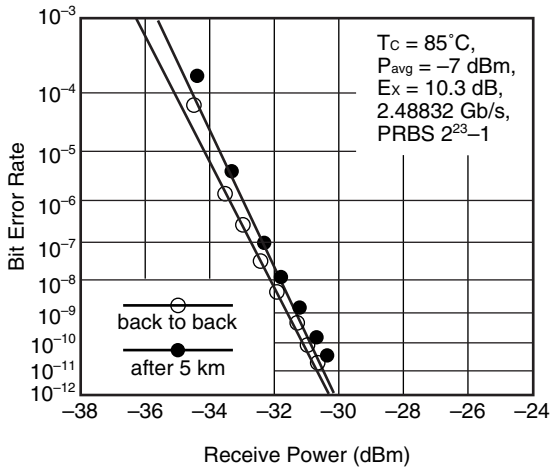
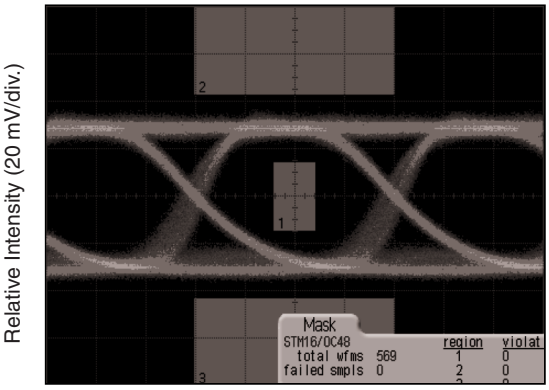
ERROR RATE CHARACTERISTICS



EYE DIAGRAM



Back to Back (100 ps/div.)

Remark The graphs indicate nominal characteristics.

LD ϕ 3.8 mm TOSA PACKAGES FAMILY FOR OPTICAL FIBER COMMUNICATIONS

Part Number	Absolute Maximum Ratings		Electro-Optical Characteristics				Application	Package
			@T_C = 25°C	@T_C				
	T_C (°C)	T_{stg} (°C)	I_{th} (mA)	P_f (mW)	λ (nm)			
			TYP.	TYP.	MIN.	MAX.		
NX7312UA	–40 to +85	–40 to +85	8	0.2	1 274	1 356	156 Mb/s: STM-1 (S-1.1)	ϕ 3.8 mm TOSA
							622 Mb/s: STM-4 (S-4.1)	
NX7313UA	–40 to +85	–40 to +85	8	0.6	1 270	1 355	1.25 Gb/s: GbE	ϕ 3.8 mm TOSA
NX7314UA	–40 to +85	–40 to +85	8	1.0	1 263	1 360	156 Mb/s: STM-1 (L-1.1)	ϕ 3.8 mm TOSA
NX7315UA	–40 to +85	–40 to +85	8	0.6	1 266	1 360	2.5 Gb/s: STM-16 (I-16)	ϕ 3.8 mm TOSA

REFERENCE

Document Name	Document No.
OPTICAL SEMICONDUCTOR DEVICES FOR FIBEROPTIC COMMUNICATIONS SELECTION GUIDE	PX10161E
Opto-Electronics Devices Pamphlet	PX10160E

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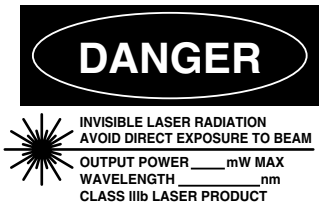
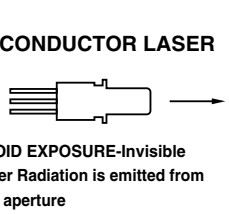
SAFETY INFORMATION ON THIS PRODUCT





Warning Laser Beam	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. • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
Caution GaAs Products	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. • 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. 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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