PRELIMINARY DATA SHEET

CEL

LASER DIODE
NX8313UD

1 310 nm FOR LONG HAUL 2.5 Gb/s InGaAsP MQW-DFB LASER DIODE TOSA

DESCRIPTION

The NX8313UD is a 1 310 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) 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.

APPLICATION

- STM-16 (L-16.1), SONET OC-48 (LR-1)

FEATURES

- Internal optical isolator
- Optical output power P_f = 2.0 mW
- Low threshold current I_{th} = 10 mA TYP. @ T_C = 25°C
- Wide operating temperature range T_C = –40 to +85°C
- InGaAs monitor PIN-PD
- Small package ϕ3.8 mm TOSA (Total length 12.0 mm MAX.)

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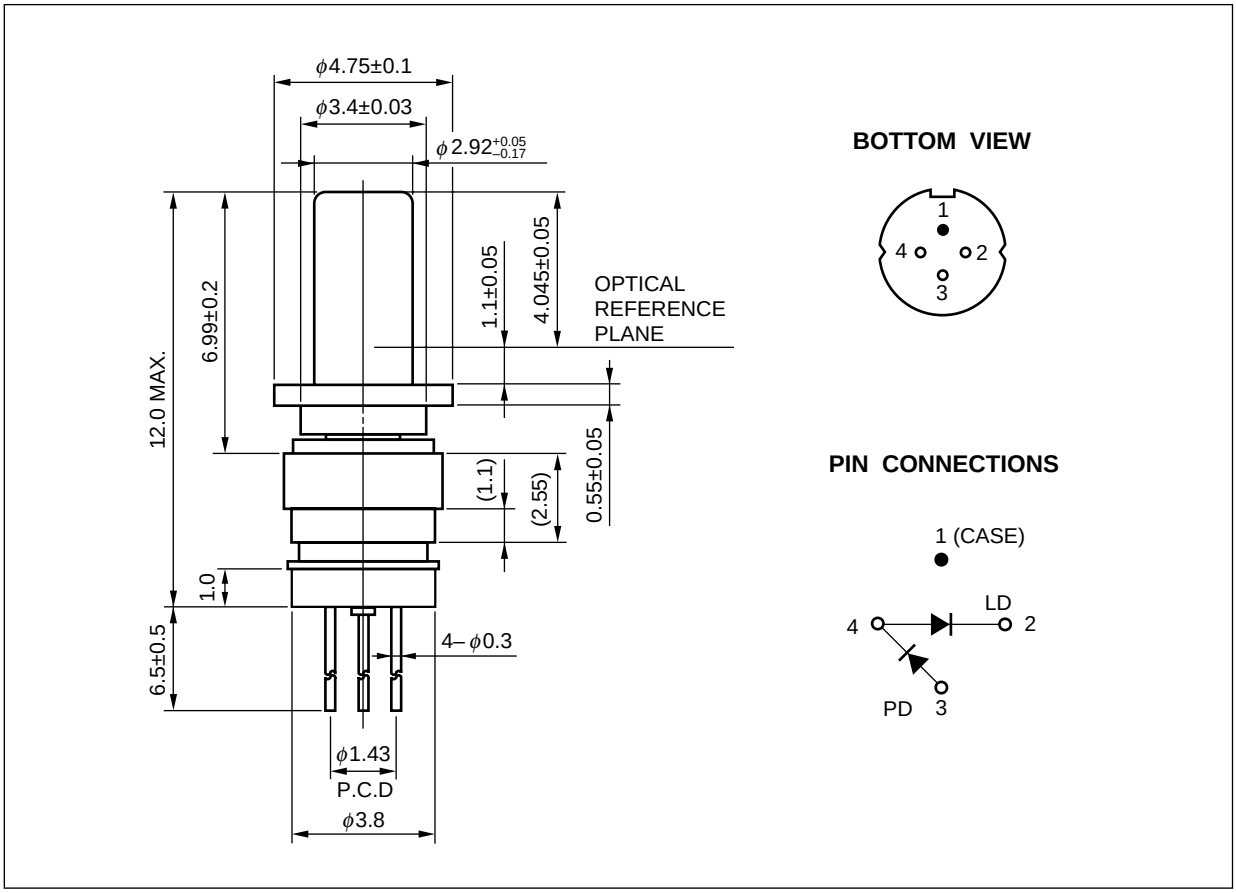
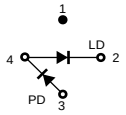
PACKAGE DIMENSIONS (UNIT : mm)



ORDERING INFORMATION

Part Number	Package	Pin Connections
NX8313UD-AZ	ϕ3.8 mm TOSA	

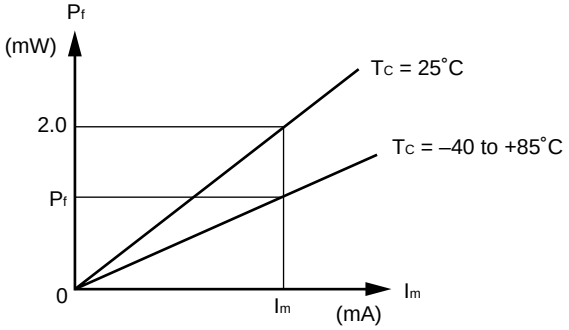
ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P_f	5.0	mW
Forward Current of LD	I_F	150	mA
Reverse Voltage of LD	V_R	2.0	V
Forward Current of PD	I_F	2.0	mA
Reverse Voltage of PD	V_R	15	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

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 = 2.0 mW		1.2	1.6	V
Threshold Current	I_{th}	CW	2		50	mA
		CW, T_C = 25°C	4	10	20	
Optical Output Power from Fiber	P_f	CW		2.0		mW
Modulation Current	I_{mod}	CW, P_f = 2.0 mW	7		50	mA
		CW, P_f = 2.0 mW, T_C = 25°C	9	20	30	
Differential Efficiency	η_d	CW, P_f = 2.0 mW	0.04		0.29	W/A
		CW, P_f = 2.0 mW, T_C = 25°C	0.07	0.10	0.20	
Peak Emission Wavelength	λ_p	CW, P_f = 2.0 mW, RMS (–20 dB)	1 280		1 335	nm
Side Mode Suppression Ratio	SMSR	CW, P_f = 2.0 mW	30			dB
Rise Time	t_r	$I_b = I_{th}$, 10-90%			200	ps
Fall Time	t_f	$I_b = I_{th}$, 90-10%			200	ps
Monitor Current	I_m	CW, V_R = 1.5 V, P_f = 1.0 mW	100		2 000	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*1	γ	CW, I_m = const. (@ P_f = 2.0 mW)	–1.0		1.0	dB
Repeatability	–	With master pigtail	–1.0		1.0	dB
Optical Isolation	I_s	CW, P_f = 2.0 mW	20			dB

***1** Tracking Error: γ



$$\gamma = \left| 10 \log \frac{P_f}{2.0} \right| [dB]$$

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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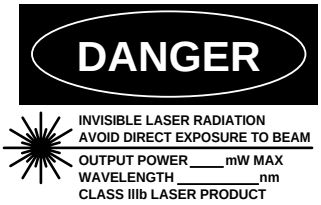
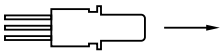
SAFETY INFORMATION ON THIS PRODUCT



SEMICONDUCTOR LASER



AVOID EXPOSURE-Invisible Laser Radiation is emitted from this aperture

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.
Caution Optical Fiber	A glass-fiber is attached on the product. Handle with care. • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

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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	
Lead (Pb)	< 1000 PPM	-A	-AZ
		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	

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