

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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Phase-out/Discontinued**LASER DIODE
NX8310UA****1 310 nm FOR LONG HAUL 622 Mb/s
InGaAsP MQW-DFB LASER DIODE TOSA****DESCRIPTION**

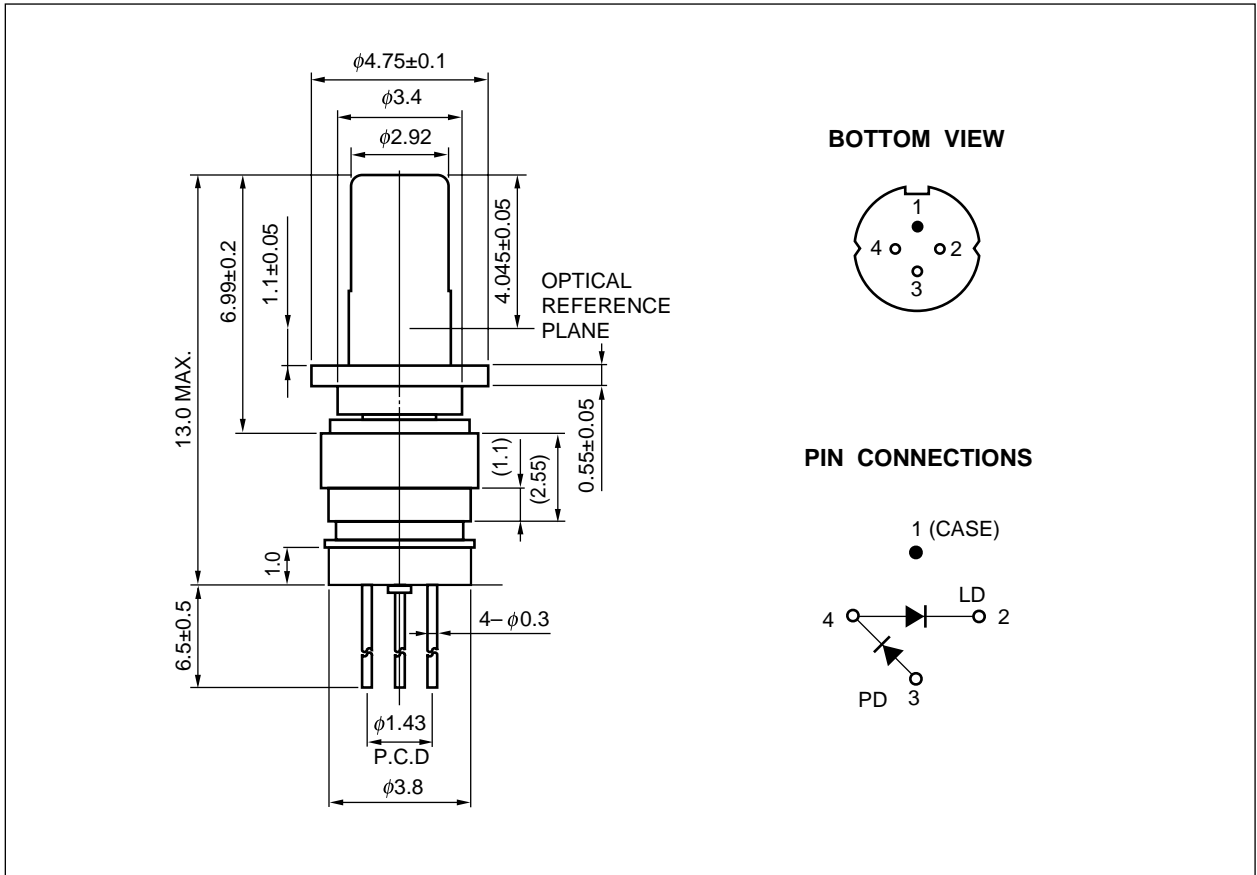
The NX8310UA is a 1 310 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode TOSA (transmitter optical sub-assembly) with InGaAs monitor PIN-PD in a receptacle type package designed for SFF/SFP transceiver with LC duplex receptacle. This device is ideal for Synchronous Digital Hierarchy (SDH) system, long haul STM-4 (L-4.1), ITU-T recommendations, and SONET OC-12 (LR).

FEATURES

- Optical output power $P_r = 2.0 \text{ mW}$
- Low threshold current $I_{th} = 10 \text{ mA TYP. @ } T_c = 25^\circ\text{C}$
- Wide operating temperature range $T_c = -40 \text{ to } +85^\circ\text{C}$
- InGaAs monitor PIN-PD
- Small package $\phi 3.8 \text{ mm TOSA (Total length } 13.0 \text{ mm MAX.)}$

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Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

PACKAGE DIMENSIONS (UNIT: mm)



ORDERING INFORMATION

Part Number	Package	Pin Connections
NX8310UA	ϕ 3.8 mm TOSA	

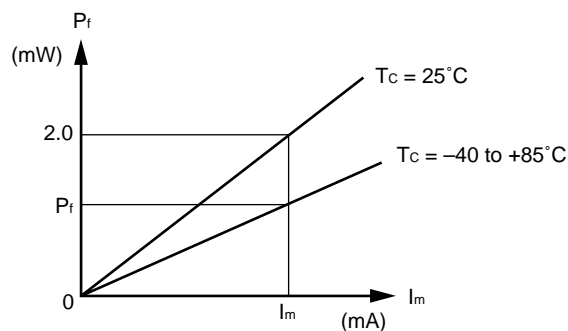
ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P _i	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	10	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 _{slid}	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	0.04		0.29	W/A
		CW, 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)	-1.5		1.5	dB
Connector Repeatability	-	With master pigtail	-1.0		1.0	dB

*1 Tracking Error: γ



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

LD ϕ 3.8 mm FP-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 _i (mW)	λ_c (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

LD ϕ 3.8 mm DFB-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 _i (mW)	λ_p (nm)			
			TYP.	TYP.	MIN.	MAX.		
NX8310UA	-40 to +85	-40 to +85	10	2.0	1 280	1 335	622 Mb/s: STM-4 (L-4.1)	ϕ 3.8 mm TOSA
NX8311UD	-20 to +85	-40 to +85	10	2.0	1 280	1 335	2.5 Gb/s: STM-16 (L-16.1)	ϕ 3.8 mm TOSA
NX8312UD	-20 to +85	-40 to +85	10	1.0	1 280	1 335	2.5 Gb/s: STM-16 (S-16.1)	ϕ 3.8 mm TOSA

REFERENCE

Document Name	Document No.
OPTICAL SEMICONDUCTOR DEVICES FOR FIBEROPTIC COMMUNICATIONS SELECTION GUIDE	PX10161E
Opto-Electronics Devices Pamphlet	PX10160E
Opto-Electronics Devices (CD-ROM)	P12944X
NEC semiconductor device reliability/quality control system ^{*1}	C11159E
Quality grades on NEC semiconductor devices ^{*1}	C11531E
SEMICONDUCTOR SELECTION GUIDE –Products and Packages– ^{*1}	X13769E

*1 Published by NEC Corporation

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M8E 00.4-0110

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>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p>

► **Business issue**

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► **Technical issue**

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