

# NX8349TS, NX8349YK, NX8349XK

LASER DIODE

R08DS0002EJ0100

1 310 nm AlGaInAs MQW-DFB LASER DIODE FOR 10 Gb/s APPLICATION

Rev.1.00

Jul 26, 2010

## DESCRIPTION

The NX8349TS, NX8349YK, NX8349XK are 1 310 nm Multiple Quantum Wells (MQW) structured Distributed Feed-Back (DFB) laser diode TOSA (transmitter optical subassembly) with InGaAs monitor PIN-PD in a receptacle type package designed for SFP+/XFP transceiver.

## FEATURES

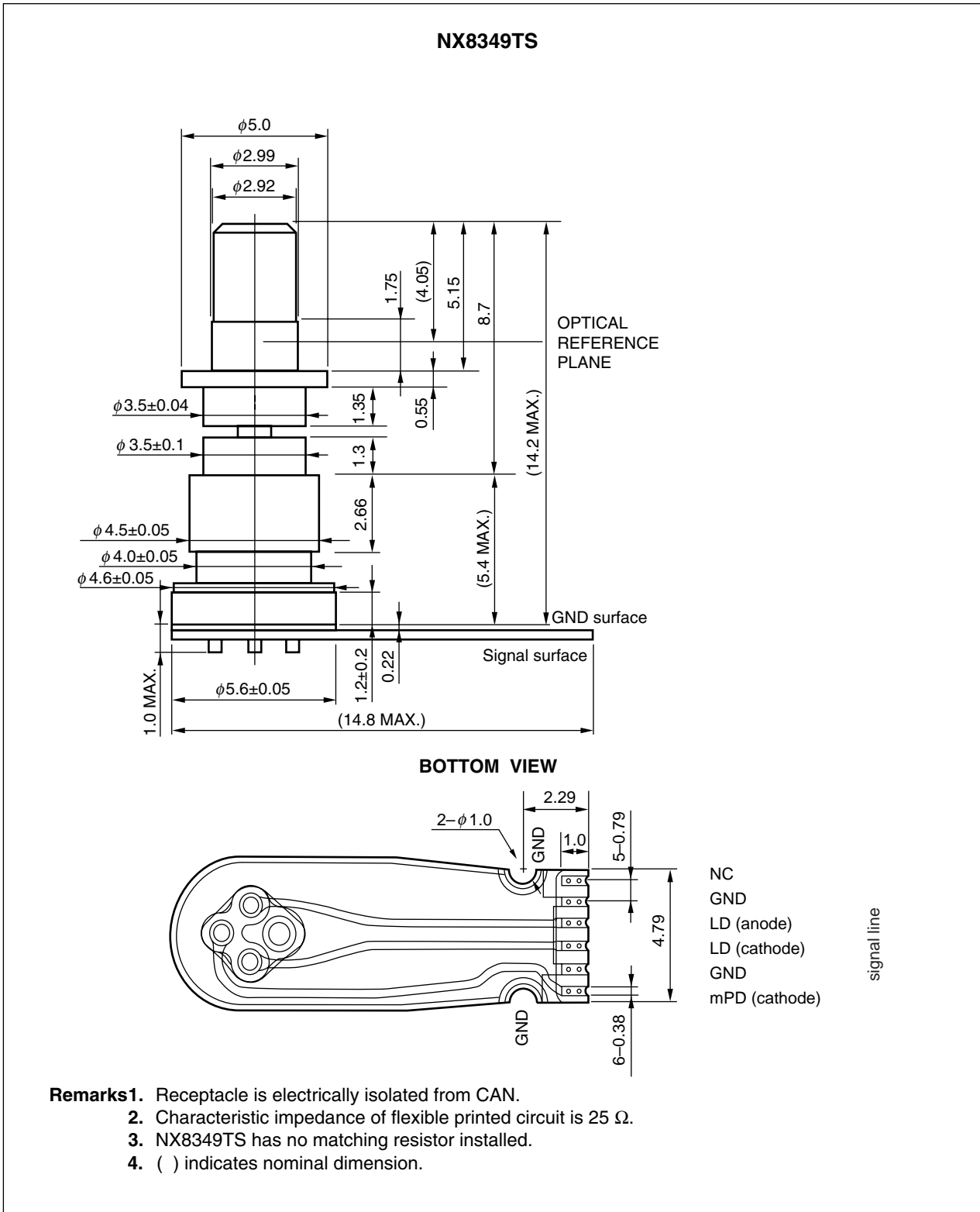
- Internal optical isolator
- Optical output power  $P_r = -3 \text{ dBm}$
- Low threshold current  $I_{th} = 8 \text{ mA TYP. @ } T_C = 25^\circ\text{C}$
- Wide operating temperature range  $T_C = -5 \text{ to } +95^\circ\text{C}$
- InGaAs monitor PIN-PD

## APPLICATIONS

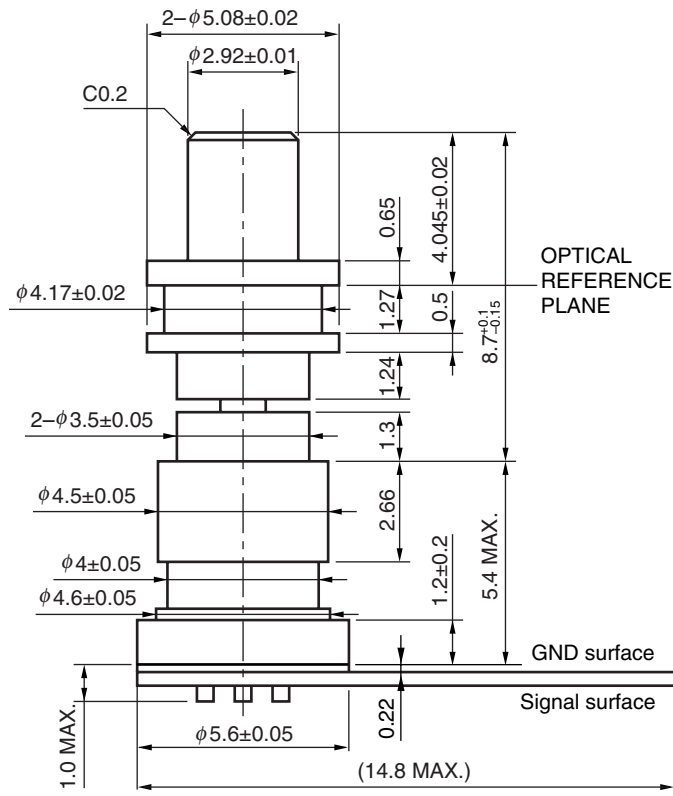
- 10 G BASE-LW/LR
- 10 G Fibre Channel



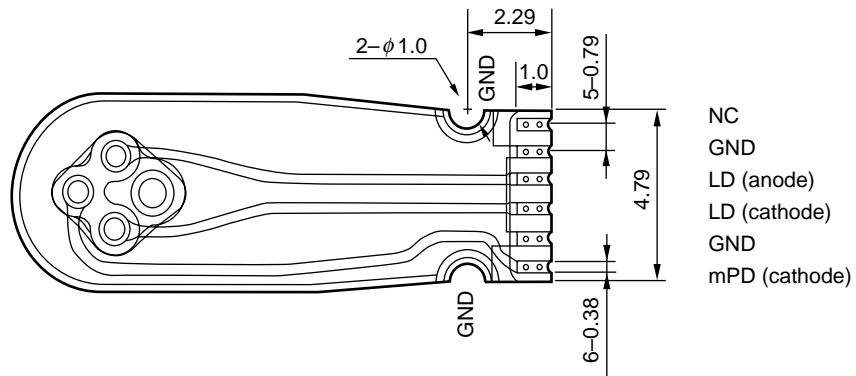
PACKAGE DIMENSIONS (UNIT: mm)



NX8349YK

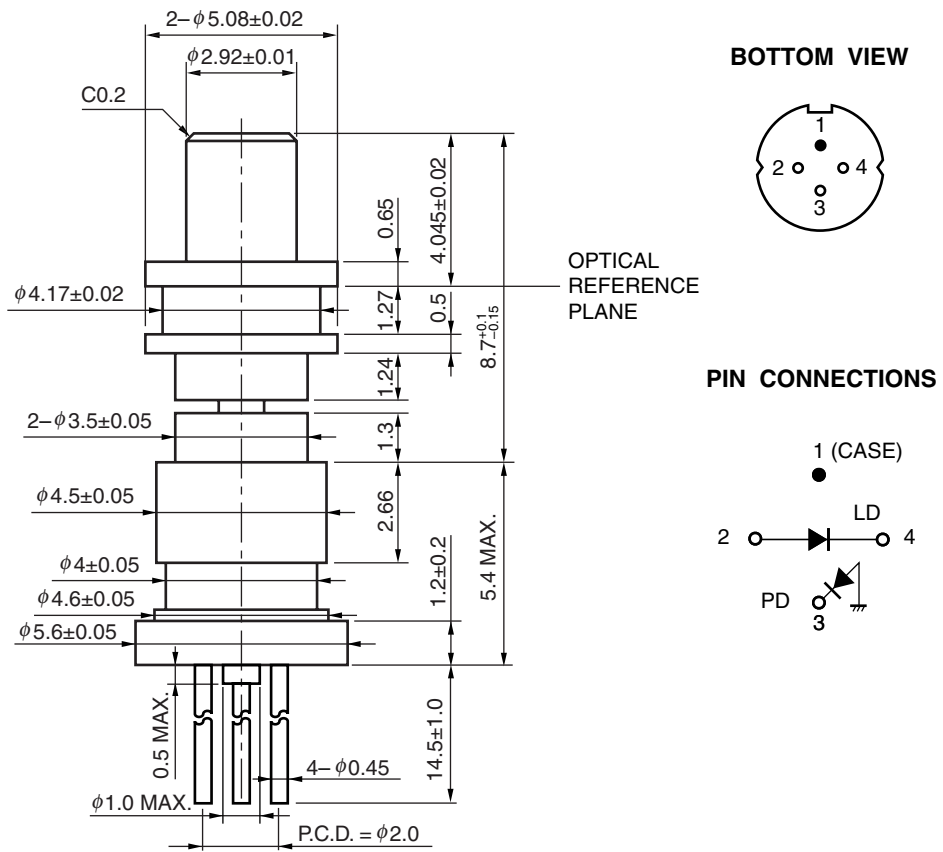


BOTTOM VIEW



- Remarks**
1. Receptacle is electrically isolated from CAN.
  2. Characteristic impedance of flexible printed circuit is 25 Ω.
  3. NX8349YK has no matching resistor installed.
  4. ( ) indicates nominal dimension.

**NX8349XK**



- Remarks**
1. Receptacle is electrically isolated from CAN.
  2. NX8349XK has no matching resistor installed.
  3. ( ) indicates nominal dimension.

**ORDERING INFORMATION**

Part Number	Receptacle Type	Note
NX8349TS	LC, Electrically isolated, type 1	Differential input with short length flexible PCB, without matching resistor
NX8349YK	LC, Electrically isolated, type 2	
NX8349XK	LC, Electrically isolated, type 2	Differential input without flexible PCB, without matching resistor

**ABSOLUTE MAXIMUM RATINGS**

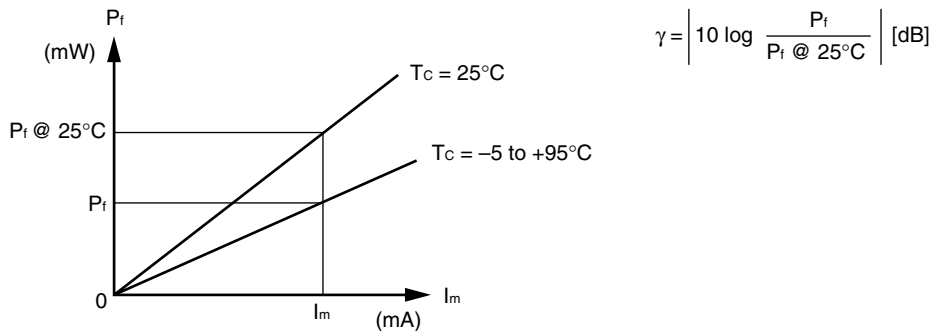
Parameter	Symbol	Ratings	Unit
Storage Temperature	$T_{stg}$	-40 to +95	°C
Operating Case Temperature	$T_C$	-5 to +95	°C
Forward Current of LD	$I_{FLD}$	120	mA
Reverse Voltage of LD	$V_{RLD}$	2	V
Forward Current of PD	$I_{FPD}$	10	mA
Reverse Voltage of PD	$V_{RPD}$	15	V
Soldering Temperature (Flexible Printed Circuit)	$T_{sld}$	350 (10 sec.)	°C
Optical Output Power	$P_f$	5	mW

**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = -5 to +95°C, BOL, unless otherwise specified)**

Parameter	Symbol	Conditions	MIN.	TYP	MAX.	Unit
Mean Optical Output Power	P <sub>f</sub>			-3		dBm
Peak Emission Wavelength	λ <sub>p</sub>	CW, P <sub>f</sub> = -3 dBm	1 290		1 330	nm
Spectral Width	Δλ	CW, P <sub>f</sub> = -3 dBm, 20 dB down			1	nm
Side Mode Suppression Ratio	SMSR	CW, P <sub>f</sub> = -3 dBm	35			dB
Threshold Current	I <sub>th</sub>	CW, T <sub>c</sub> = 25°C		8	15	mA
		CW	2		30	
Differential Efficiency	η <sub>d</sub>	CW, P <sub>f</sub> = -3 dBm, T <sub>c</sub> = 25°C	0.020	0.033	0.040	W/A
		CW, P <sub>f</sub> = -3 dBm	0.012		0.060	
Temperature Dependence of Differential Efficiency	Δη <sub>d</sub>	$\Delta\eta_d = 10 \log \frac{\eta_d}{\eta_d (@ 25^\circ\text{C})}$	-3.5		1.5	dB
Operation Voltage	V <sub>op</sub>	CW, P <sub>f</sub> = -3 dBm	0.5		2.2	V
Monitor Current	I <sub>m</sub>	CW, P <sub>f</sub> = -3 dBm	70		700	μA
Monitor Dark Current	I <sub>D</sub>	V <sub>R</sub> = 3.3 V, T <sub>c</sub> = 25°C			10	nA
		V <sub>R</sub> = 3.3 V			500	
Rise Time	t <sub>r</sub>	20-80% *1			50	ps
Fall Time	t <sub>f</sub>	20-80% *1			50	ps
Monitor PD Terminal Capacitance	C <sub>t</sub>	V <sub>R</sub> = 3.3 V, f = 1 MHz		6	20	pF
Relative Intensity Noise	RIN				-128	dB/Hz
Tracking Error <sup>*2</sup>	γ		-1.0		1.0	dB

Notes: \*1. 9.95/10.3/10.5 Gb/s, PRBS 2<sup>31</sup>-1, NRZ, Duty Cycle = 50%

\*2. Tracking Error: γ



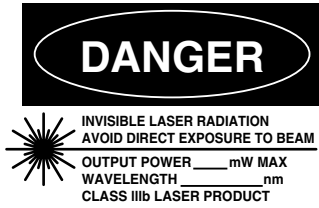
## REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet* <sup>1</sup>	PX10160E

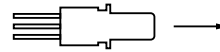
Notes: \*1. Published by the former NEC Electronics Corporation.



**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>
<p><b>Caution</b> Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> <li>• When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.</li> </ul>

<b>Revision History</b>	<b>NX8349TS,NX8349YK,NX8349XK Data Sheet</b>
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<b>Rev.</b>	<b>Date</b>	<b>Description</b>	
		<b>Page</b>	<b>Summary</b>
1.00	Jul 26, 2010	-	First edition issued

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