

NX8349TS, NX8349YK, NX8349XK

Data Sheet

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

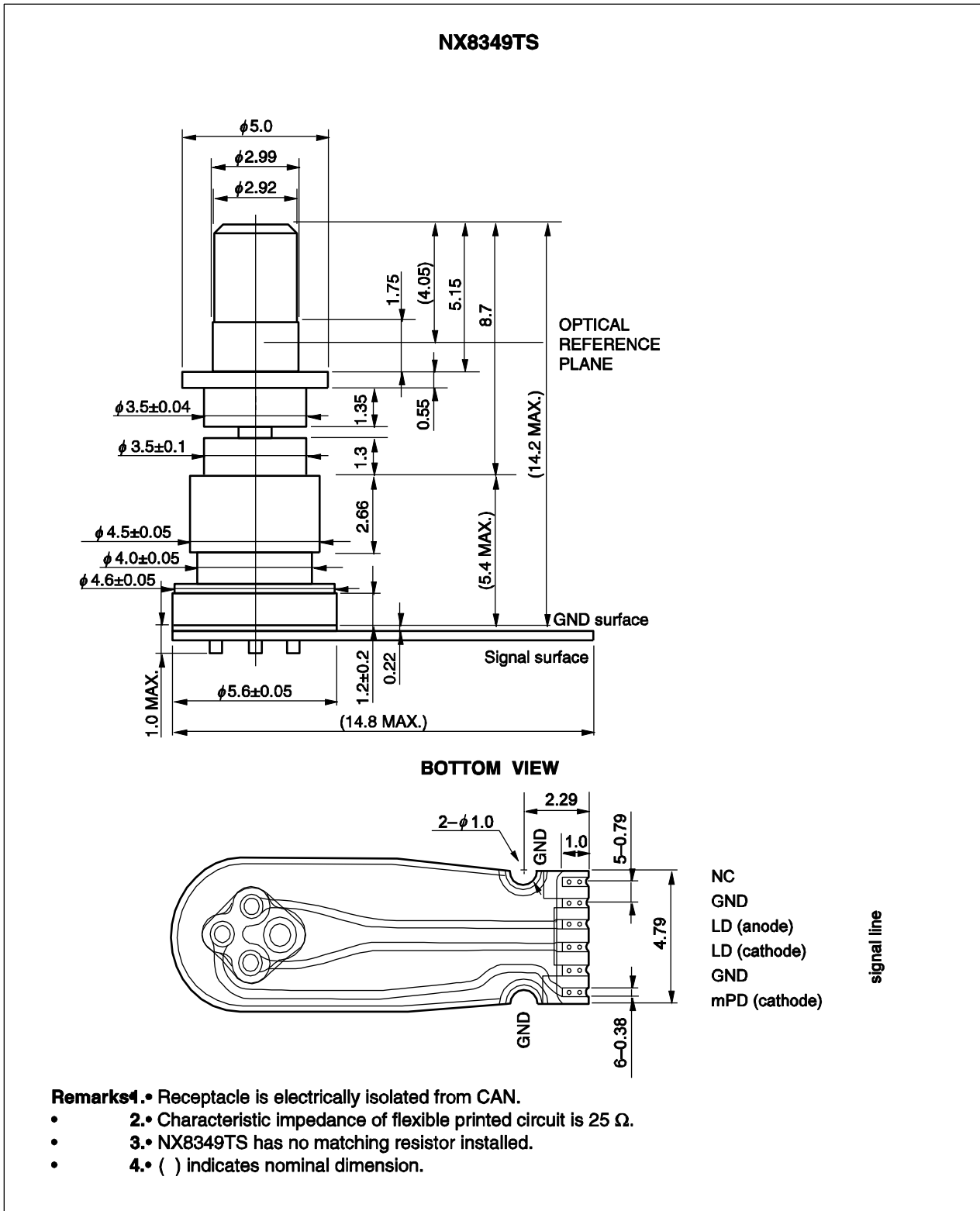
- Internal optical isolator
- Optical output power $P_r = -3 \text{ dBm}$
- Low threshold current $I_{th} = 8 \text{ mA TYP. @ } T_C = 25^\circ\text{C}$
- Wide operating temperature range $T_C = -5 \text{ to } +95^\circ\text{C}$
- InGaAs monitor PIN-PD

APPLICATIONS

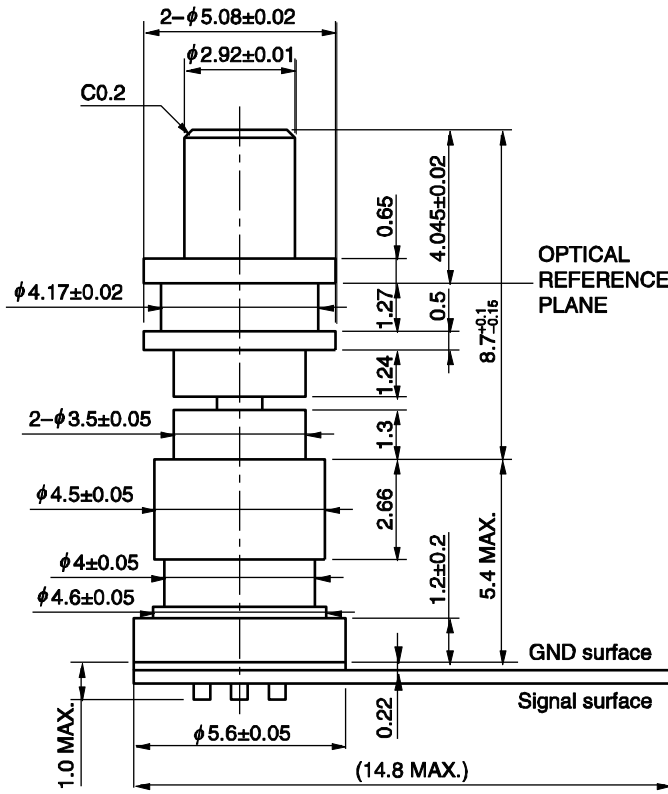
- 10 G BASE-LW/LR
- 10 G Fibre Channel



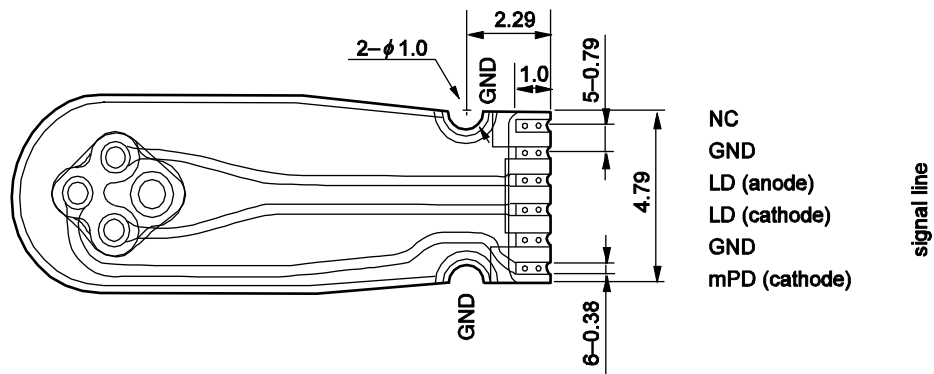
PACKAGE DIMENSIONS (UNIT: mm)



NX8349YK

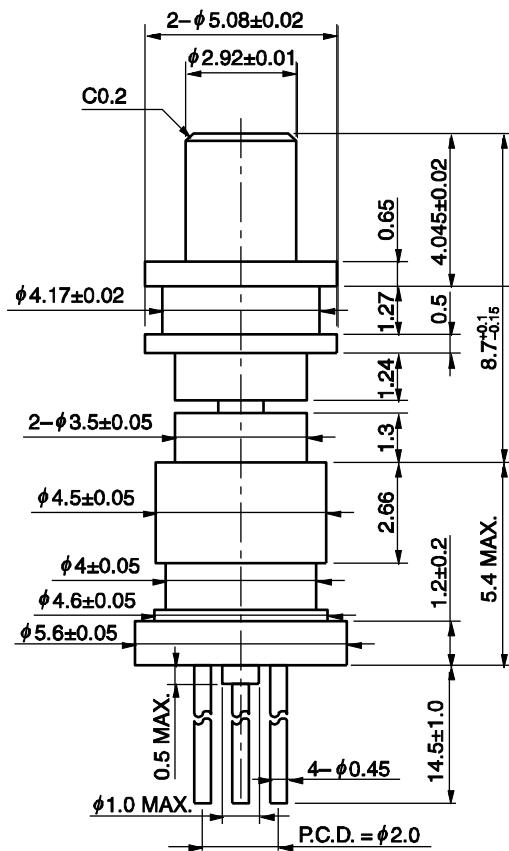


BOTTOM VIEW

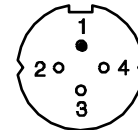


- Remarks**
- 1. Receptacle is electrically isolated from CAN.
 - 2. Characteristic impedance of flexible printed circuit is 25 Ω.
 - 3. NX8349YK has no matching resistor installed.
 - 4. () indicates nominal dimension.

NX8349XK

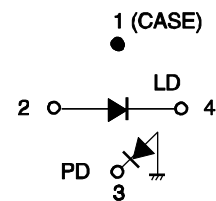


BOTTOM VIEW



OPTICAL REFERENCE PLANE

PIN CONNECTIONS



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

NX8349TS,NX8349YK,NX8349XK**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

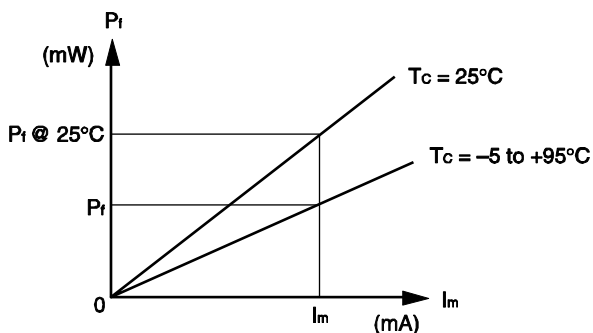
Parameter	Symbol	Ratings	Unit
Storage Temperature	T_{stg}	-40 to +95	°C
Operating Case Temperature	T_C	-5 to +95	°C
Forward Current of LD	I_{FLD}	120	mA
Reverse Voltage of LD	V_{RLD}	2	V
Forward Current of PD	I_{FPD}	10	mA
Reverse Voltage of PD	V_{RPD}	15	V
Soldering Temperature (Flexible Printed Circuit)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

ELECTRO-OPTICAL CHARACTERISTICS (T_c = -5 to +95°C, BOL, unless otherwise specified)

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

Notes: *1. 9.95/10.3/10.5 Gb/s, PRBS 2³¹-1, NRZ, Duty Cycle = 50%

*2. Tracking Error: γ



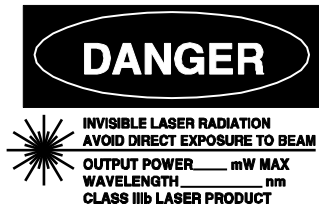
$$\gamma = \left| 10 \log \frac{P_f}{P_f @ 25^\circ\text{C}} \right| \text{ [dB]}$$

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet ^{*1}	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>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>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"> • 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"> 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.
<p>Caution Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

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

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