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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DATA SHEET

Phase-out/Discontinued

LASER DIODE

# NX8341,NX8343,NX8344 Series

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

### DESCRIPTION

The NX8341, NX8343, and NX8344 Series 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 XENPAK/XPAK/X2/XFP transceiver.

### APPLICATIONS

- 10 G BASE-LW/LR
- 10 G Fibre Channel
- <R> SONET OC-192

### FEATURES

- Internal optical isolator
- Optical output power $P_f$ = –2 dBm
- Low threshold current $I_{th}$ = 8 mA TYP. @ $T_C$ = 25°C
- Wide operating temperature range $T_C$ = –5 to +85°C
- InGaAs monitor PIN-PD



Document No. PL10525EJ05V0DS (5th edition)
Date Published July 2008 NS
Printed in Japan

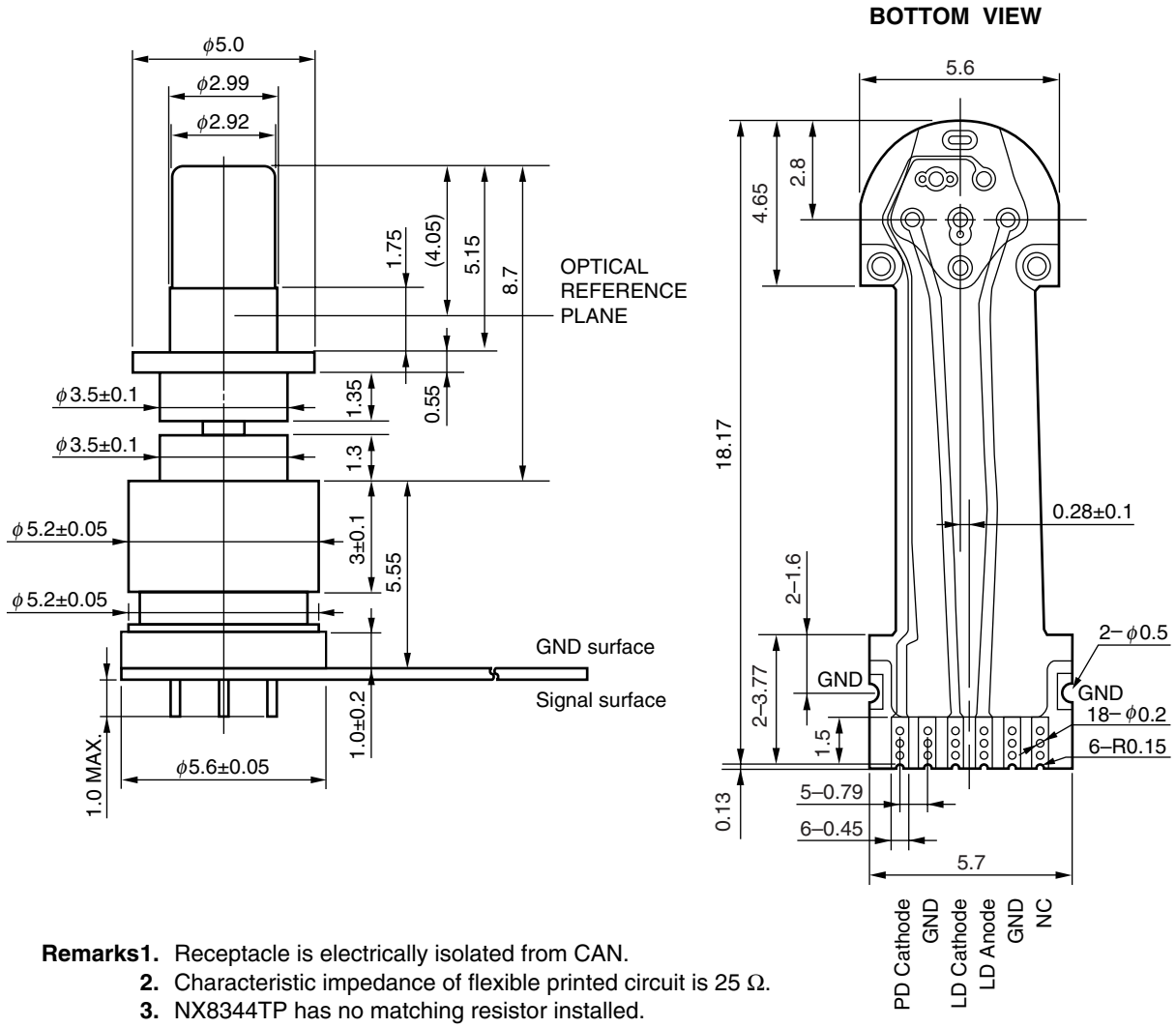
The mark <R> shows major revised points.



The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

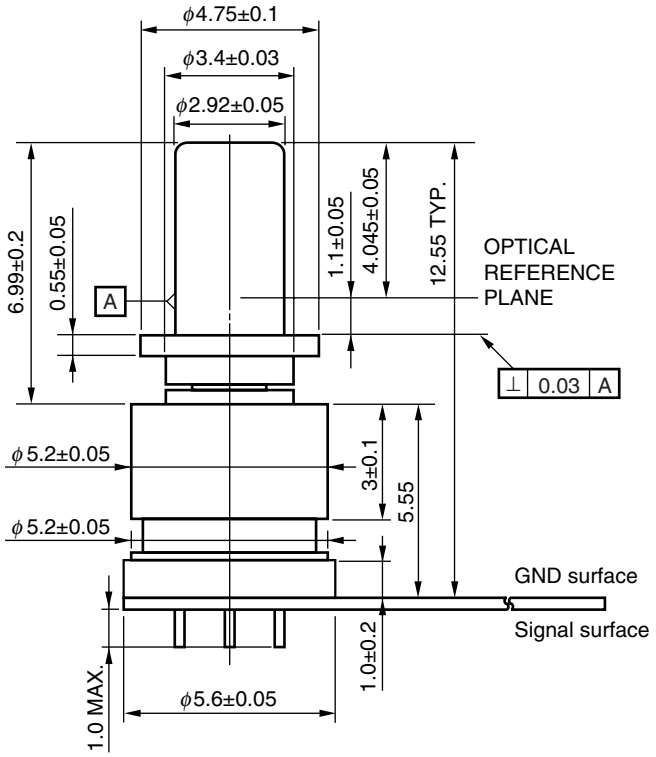
<R> **PACKAGE DIMENSIONS (UNIT : mm)**

**NX8343TB/NX8344TP**

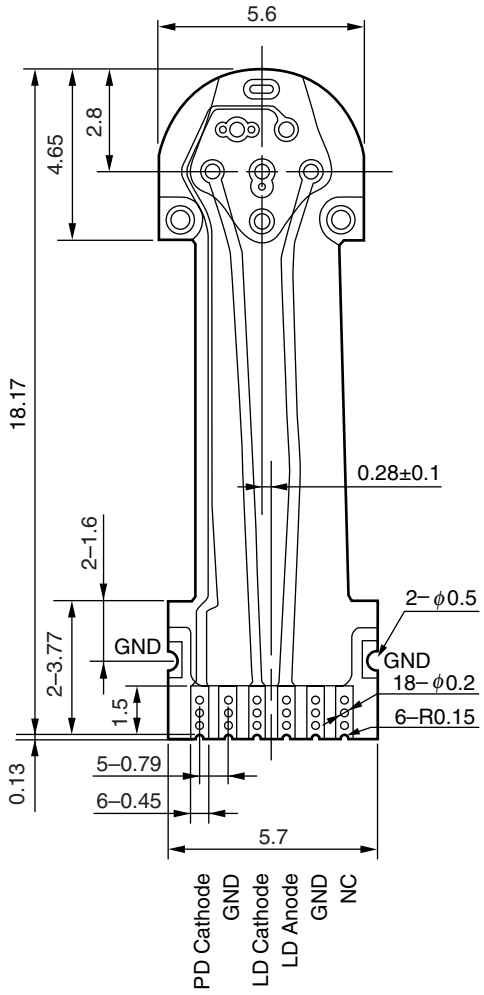



**Remarks1.** Receptacle is electrically isolated from CAN.
**2.** Characteristic impedance of flexible printed circuit is 25 Ω.
**3.** NX8344TP has no matching resistor installed.
**4.** ( ) indicates nominal dimension.

**NX8341TJ**

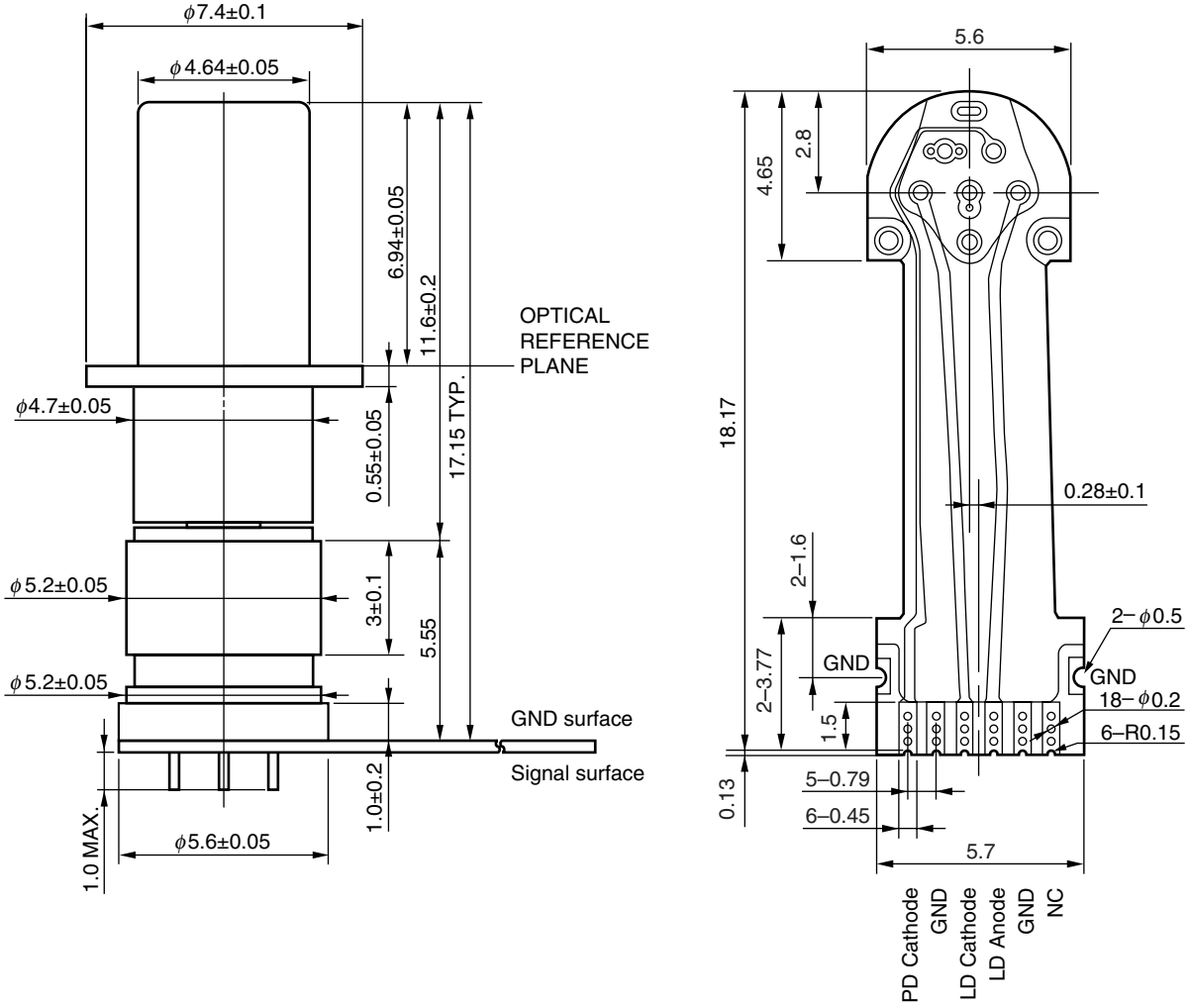



**BOTTOM VIEW**



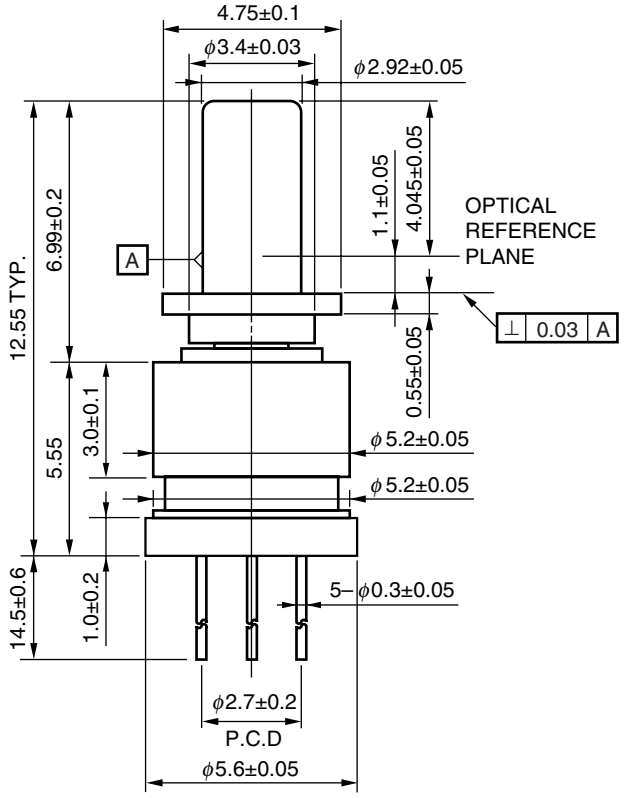

**Remark** Characteristic impedance of flexible printed circuit is 25 Ω.

**NX8341TL**

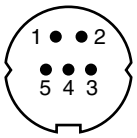



**Remark** Characteristic impedance of flexible printed circuit is 25 Ω.

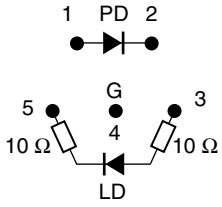
**NX8341UJ**



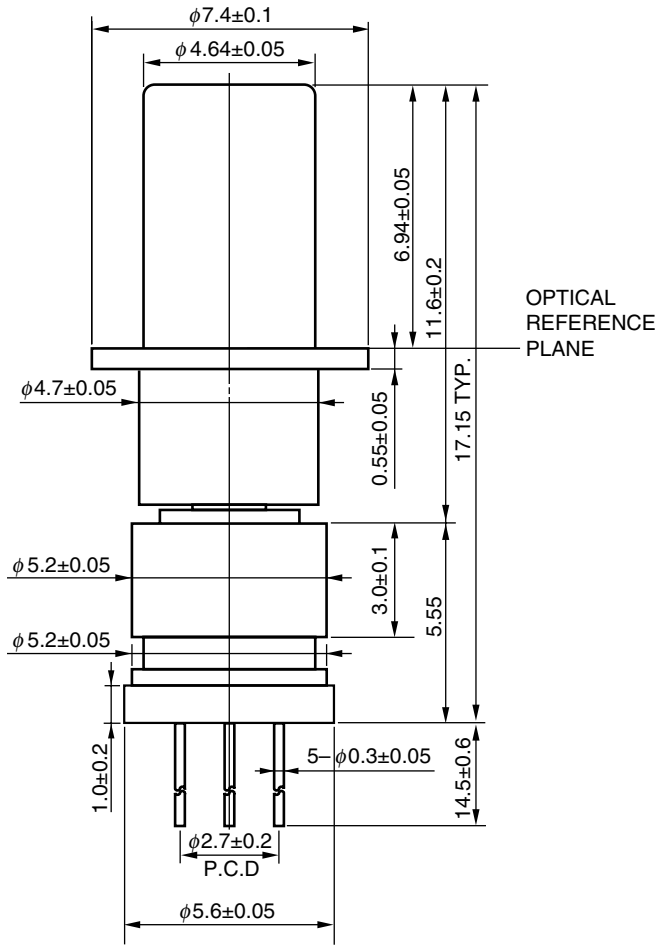

**BOTTOM VIEW**



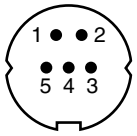

**PIN CONNECTIONS**



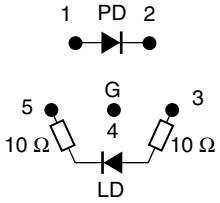
**NX8341UL**




**BOTTOM VIEW**




**PIN CONNECTIONS**



<R> **ORDERING INFORMATION**

| Part Number | Receptacle Type | Note |
|---|---|---|
| NX8341TJ | LC | Differential input with flexible PCB |
| NX8341TL | SC | Differential input with flexible PCB |
| NX8341UJ | LC | Differential input, 5-pin |
| NX8341UL | SC | Differential input, 5-pin |
| NX8343TB | LC, Electrically isolated | Differential input with flexible PCB |
| NX8344TP | LC, Electrically isolated | Differential input with flexible PCB, without matching resistor |

## ABSOLUTE MAXIMUM RATINGS

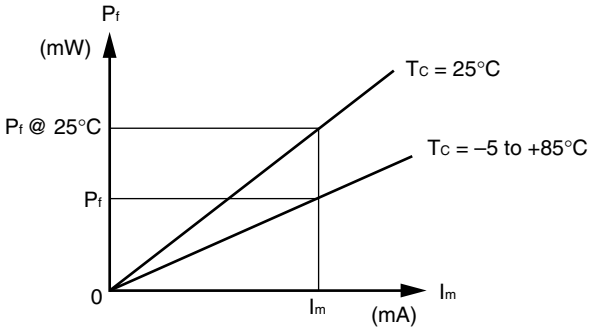
| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Storage Temperature | $T_{stg}$ | −40 to +85 | °C |
| Operating Case Temperature | $T_C$ | −5 to +85 | °C |
| Forward Current of LD | $I_{FLD}$ | 120 | mA |
| Reverse Voltage of LD | $V_{RLD}$ | 2 | V |
| Forward Current of PD | $I_{FPD}$ | 10 | mA |
| Reverse Voltage of PD | $V_{RPD}$ | 20 | V |
| <R> Lead Soldering Temperature | $T_{sld}$ | 350 (3 sec.) | °C |
| Optical Output Power | $P_f$ | 5 | mW |

**ELECTRO-OPTICAL CHARACTERISTICS ($T_C$ = –5 to +85°C, BOL, unless otherwise specified)**

| | Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|
| | Mean Optical Output Power | $P_f$ | | | –2 | | dBm |
| | Peak Emission Wavelength | $\lambda_p$ | CW, $P_f$ = –2 dBm | 1 290 | | 1 330 | nm |
| | Side Mode Suppression Ratio | SMSR | CW, $P_f$ = –2 dBm | 30 | | | dB |
| | Threshold Current | $I_{th}$ | CW, $T_C$ = 25°C | | 8 | 20 | mA |
| | | | CW | 2 | | 40 | |
| | Differential Efficiency | $\eta_d$ | CW, $P_f$ = –2 dBm, $T_C$ = 25°C | 0.02 | 0.025 | 0.04 | W/A |
| | | | CW, $P_f$ = –2 dBm | 0.005 | | 0.05 | |
| | Operation Voltage | $V_{op}$ | CW, $P_f$ = –2 dBm | | | 2 | V |
| <R> | Monitor Current | $I_m$ | $P_f$ = –2 dBm, $V_R$ = 1.5 V | 90 | | 700 | $\mu$A |
| | Monitor Dark Current | $I_D$ | $V_R$ = 1.5 V, $T_C$ = 25°C | | | 5 | nA |
| | | | $V_R$ = 1.5 V | | | 50 | |
| | Rise Time | $t_r$ | 20-80% ***1** | | 30 | 50 | ps |
| | Fall Time | $t_f$ | 20-80% ***1** | | 40 | 50 | ps |
| <R> | Extinction Ratio | Ex | 10 GbE, 10 G FC | 4 | 5 | | dB |
| | | | SONET OC-192 | 6 | 7 | | |
| | Tracking Error***2** | $\gamma$ | | –1.0 | | 1.0 | dB |
| | Input Impedance | $Z_{in}$ | | | 25 | | Ω |
| | Connector Repeatability | CR | With master pigtail | –1.0 | | 1.0 | dB |

***1** 9.95/10.3/10.5 Gb/s, PRBS $2^{31}$–1, NRZ, Duty Cycle = 50%

***2** Tracking Error: $\gamma$




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

**REFERENCE**

| Document Name | Document No. |
|---|---|
| Opto-Electronics Devices Pamphlet | PX10160E |

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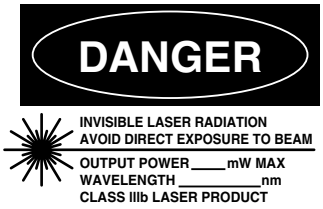


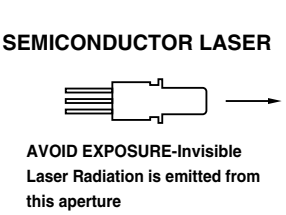


| | |
|---|---|
| **Warning** Laser Beam | A laser beam is emitted from this diode during operation.<br>The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight.<br>• Do not look directly into the laser beam.<br>• Avoid exposure to the laser beam, any reflected or collimated beam. |
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