

PRELIMINARY DATASHEET



NEC's 1310 nm InGaAsP MQW DFB LASER DIODE IN CAN PACKAGE FOR 155 Mb/s AND 622 Mb/s APPLICATIONS

NX6306 Series

FEATURES

- **OPTICAL OUTPUT POWER:**
Po = 5.0 mW
- **LOW THRESHOLD CURRENT:**
I_{TH} = 10 mA @ T_c = 25°C
- **HIGH SPEED:**
t_r = 0.5 ns MAX
t_f = 0.5 ns MAX
- **SMSR:**
45 dB @ TYP
- **WIDE OPERATING TEMPERATURE RANGE:**
T_c = -40 to +85°C
- **InGaAs MONITOR PIN-PD**
- **CAN PACKAGE:**
ø5.6 mm
- **BASED ON TELCORDIA RELIABILITY**

DESCRIPTION

NEC's NX6306 Series is a 1310 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD. This device is ideal for Synchronous Digital Hierarchy (SDH) systems and ITU-T recommendations.

APPLICATIONS

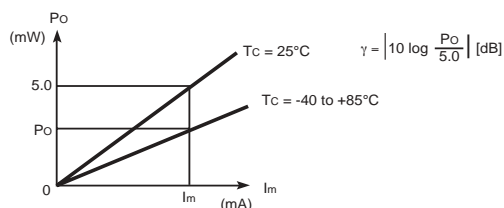
- 156 Mb/s: OC-3 (SR, IR-1, LR-1)
- 622 Mb/s: OC-12 (SR, IR-1, LR-1)

ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25°C, unless otherwise specified)

| PART NUMBER | | | NX6306 Series | | |
|-----------------|---|---|---------------|------|------|
| SYMBOLS | PARAMETERS AND CONDITIONS | UNITS | MIN | TYP | MAX |
| V _{OP} | Operating Voltage, Po = 5.0 mW, T _c = -40 to +85°C | V | – | 1.1 | 1.6 |
| I _{TH} | Threshold Current | | – | 10 | 20 |
| | | T _c = 85°C | – | 30 | 40 |
| P _{TH} | Threshold Output Power, T _c = -40 to +85°C, I _F = I _{TH} | μW | – | 100 | 200 |
| η _d | Differential Efficiency (Flat glass type: NX6306S Series) (Aspherical lens type: NX6306G Series) | W/A | 0.2 | 0.35 | – |
| | | | 0.2 | 0.3 | – |
| Δη _d | Temperature Dependence of Differential Efficiency Δη _d = 10 log $\frac{\eta_d (@ 85^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$ | dB | -3.0 | -2.5 | – |
| λ _p | Peak Emission Wavelength, Po = 5.0 mW, RMS (-20 dB), T _c = -40 to +85°C | nm | 1280 | – | 1335 |
| SMSR | Side mode Suppression Ratio Po = 5.0 mW, RMS (-20 dB), T _c = -40 to +85°C | dB | 30 | 45 | – |
| θ _⊥ | Vertical Beam Angle ¹ , Po = 5.0 mW, FAHM ² | deg | – | 35 | 40 |
| θ _∥ | Lateral Beam Angle ¹ , Po = 5.0 mW, FAHM ² | deg | – | 30 | 35 |
| t _r | Rise Time, 10 to 90% | ns | – | – | 0.5 |
| t _f | Fall Time, 90 to 10% | ns | – | – | 0.5 |
| I _m | Monitor Current, Po = 5.0 mW, V _R = 5 V | μA | 200 | 600 | 1000 |
| I _D | Monitor Dark Current, V _R = 5 V | | – | 0.1 | 10 |
| | | V _R = 5 V, T _c = -40 to +85°C | – | – | 500 |
| C _t | Monitor PD Terminal Capacitance, V _R = 5 V, f = 1 MHz | pF | – | 6 | 20 |
| γ | Tracking Error ³ I _m = const, (@ Po = 5.0 mW, T _c = 25°C) T _c = -40 to +85°C | dB | -1.0 | – | 1.0 |

Notes:

1. Applicable only to NX6306S Series.
2. FAHM: Full Angle at Half Maximum.
3. Tracking Error: γ



NX6306 SERIES

ABSOLUTE MAXIMUM RATINGS¹

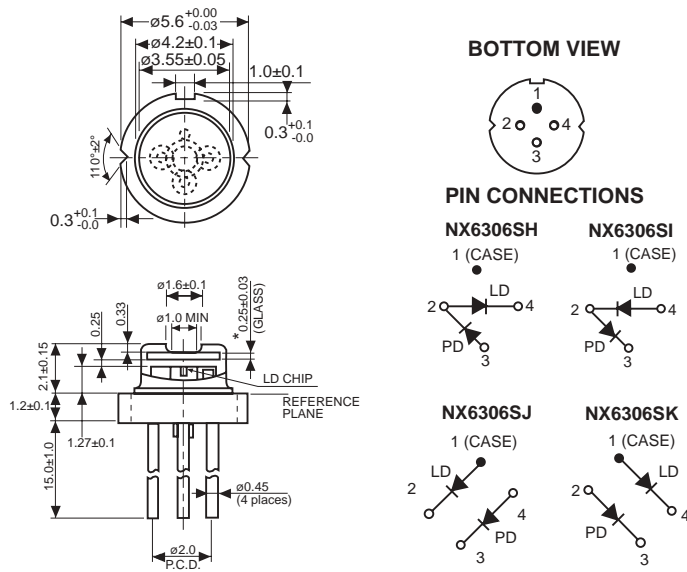
| SYMBOLS | PARAMETERS | UNITS | RATINGS |
|------------------|-----------------------------------|-------|--------------|
| P _o | Optical Output Power | mW | 10 |
| I _F | Forward Current of LD | mA | 150 |
| V _R | Reverse Voltage of LD | V | 2.0 |
| I _F | Forward Current of PD | mA | 10 |
| V _R | Reverse Voltage of PD | V | 20 |
| T _c | Operating Case Temperature | °C | -40 to +85 |
| T _{STG} | Storage Temperature | °C | -40 to +85 |
| T _{ASB} | Assembly Temperature | °C | 150 (15 Hr) |
| T _{SLD} | Lead Soldering Temperature | °C | 350 (3 sec.) |
| RH | Relative Humidity (noncondensing) | % | 85 |

Note:

1. Operation in excess of any one of these parameters may result in permanent damage.

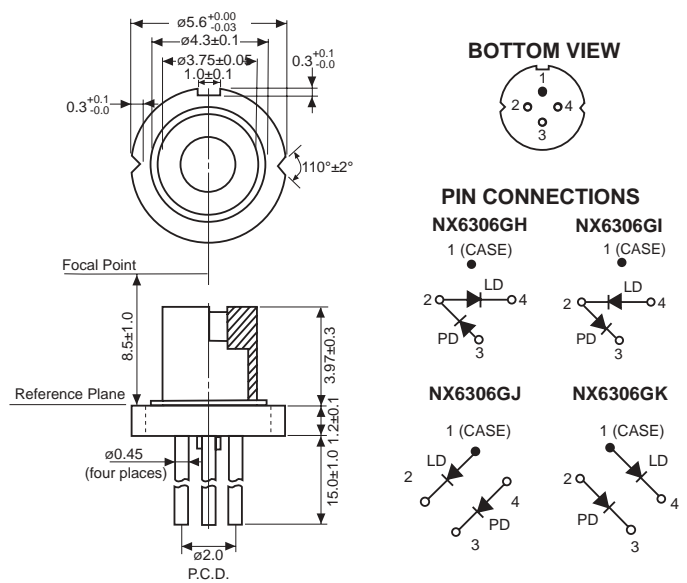
OUTLINE DIMENSIONS (Units in mm)

NX6306S SERIES



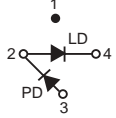
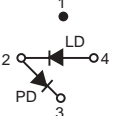

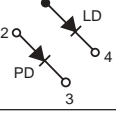
*n = 1.48 Bolosilicate Glass

NX6306G SERIES

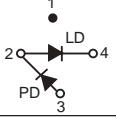
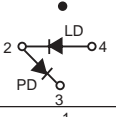
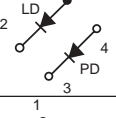
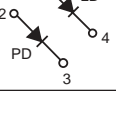


ORDERING INFORMATION

NX6306S Series

| PART NUMBER | PACKAGE | PIN CONNECTIONS |
|-------------|----------------------------------|---|
| NX6306SH | 4-pin CAN with flat glass cap |  |
| NX6306SI | |  |
| NX6306SJ | |  |
| NX6306SK | |  |

NX6306G Series

| PART NUMBER | PACKAGE | PIN CONNECTIONS |
|-------------|---------------------------------------|---|
| NX6306GH | 4-pin CAN with aspherical lens cap |  |
| NX6306GI | |  |
| NX6306GJ | |  |
| NX6306GK | |  |

Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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