

CEL

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

NX6306 SERIES**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 Gigabit Ethernet and Synchronous Digital Hierarchy (SDH) system STM-1 (I-1, S-1.1, L-1.1), STM-4 (I-4, S-4.1, L-4.1), ITU-T recommendations.

FEATURES

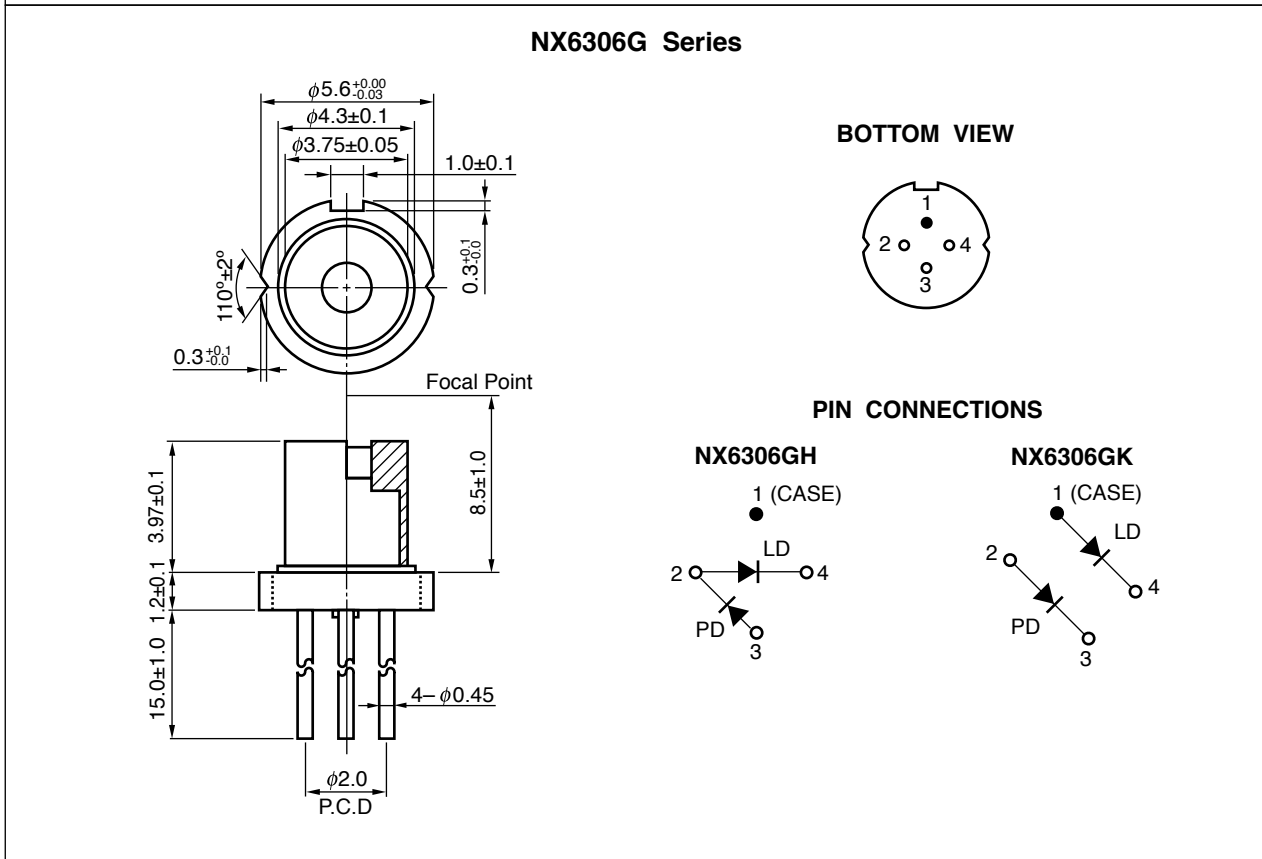
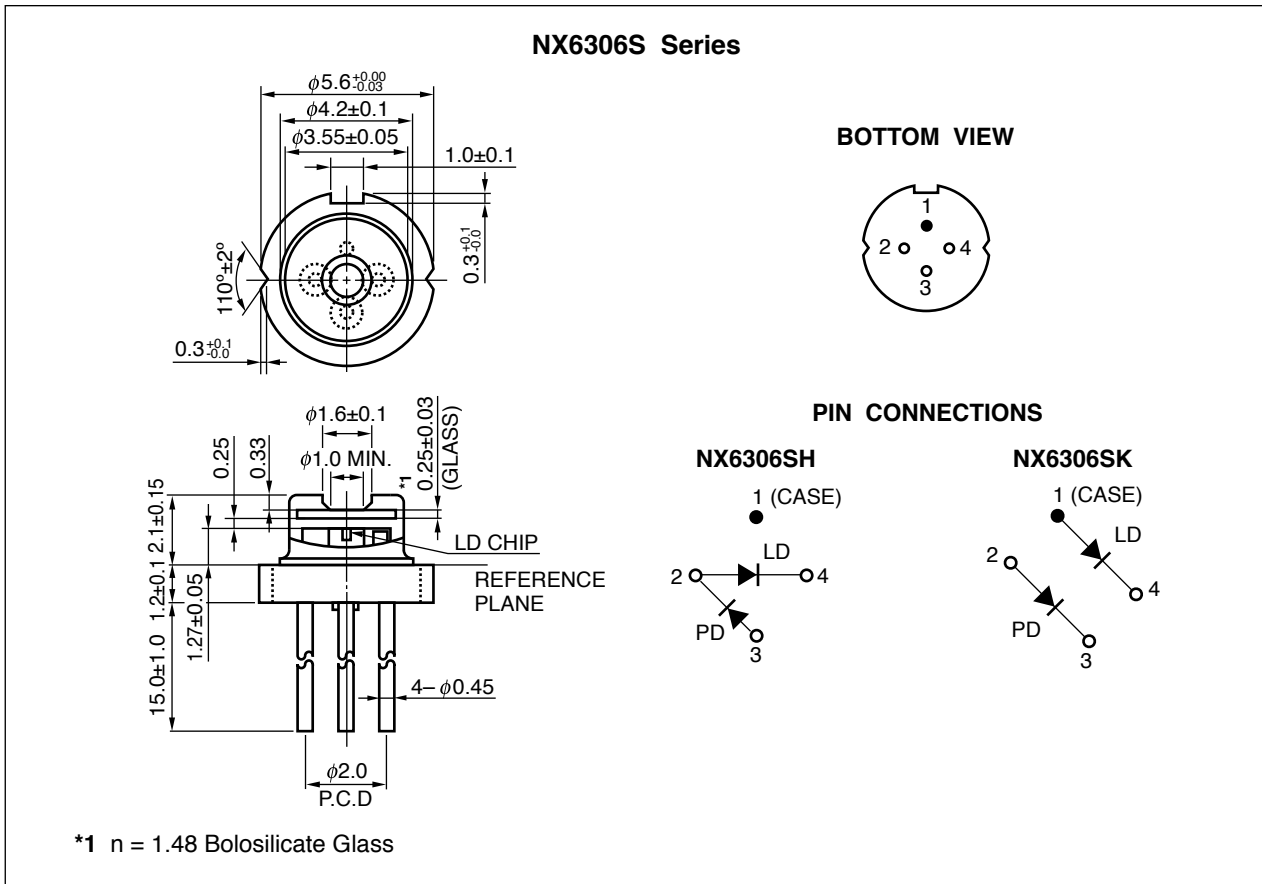
- **OPTICAL OUTPUT POWER:**
 $P_o = 5.0 \text{ mW}$
- **LOW THRESHOLD CURRENT:**
 $I_{th} = 10 \text{ mA @ } T_c = 25^\circ\text{C}$
- **HIGH SPEED:**
 $t_r, t_f = 0.5 \text{ ns MAX.}$
- **40% REDUCTION OF MOUNTING AREA:**
5-pin SOP \times 2
- **SIDE MODE SUPPRESSION RATIO:**
SWSR = 45 dB @ TYP.
- **InGaAs MONITOR PIN-PD**
- **CAN PACKAGE:**
 $\phi 5.6 \text{ mm}$
- **BASED ON TELCORDIA RELIABILITY**

**APPLICATIONS**

- 156 Mb/s: STM-1 (I-1, S-1.1, L-1.1)
- 622 Mb/s: STM-4 (I-4, S-4.1, L-4.1)
- 1.25 Gb/s: Gigabit Ethernet

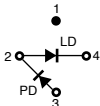
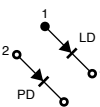
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PACKAGE DIMENSIONS (UNIT: mm)

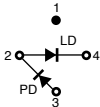



ORDERING INFORMATION

NX6306S Series

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

NX6306G Series

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

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Optical Output Power	P _o	10	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	20	V
Operating Case Temperature	T _C	-40 to +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C
Assembly Temperature	T _{asb}	150 (15 Hr)	°C
Lead Soldering Temperature	T _{slid}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

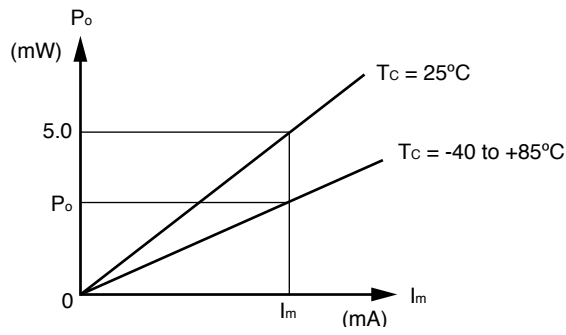
ELECTRO-OPTICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V _{op}	P _o = 5.0 mW, T _C = -40 to +85°C		1.1	1.6	V
Threshold Current	I _{th}			10	20	mA
		T _C = 85°C		30	40	
Threshold Output Power	P _{th}	T _C = -40 to +85°C, I _F = I _{th}		100	200	μW
Differential Efficiency	η _d	(Flat glass type: NX6306S Series)	0.2	0.35		W/A
		(Aspherical lens type: NX6306G Series)	0.2	0.3		W/A
Temperature Dependence of Differential Efficiency	Δη _d	$\Delta\eta_d = 10 \log \frac{\eta_d (@ 85^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$	-3.0	-2.5		dB
Peak Emission Wavelength	λ _p	P _o = 5.0 mW, RMS (-20 dB), T _C = -40 to +85°C	1 280		1 335	nm
Side Mode Suppression Ratio	SMSR	P _o = 5.0 mW, RMS (-20 dB), T _C = -40 to +85°C	30	45		dB
Vertical Beam Angle *1	θ _⊥	P _o = 5.0 mW, FAHM *2		35	40	deg.
Lateral Beam Angle *1	θ _∥	P _o = 5.0 mW, FAHM *2		30	35	deg.
Rise Time	t _r	10-90%			0.5	ns
Fall Time	t _f	90-10%			0.5	ns
Monitor Current	I _m	V _R = 5 V, P _o = 5.0 mW	200	600	1 000	μA
Monitor Dark Current	I _D	V _R = 5 V		0.1	10	nA
		V _R = 5 V, T _C = -40 to +85°C			500	
Monitor PD Terminal Capacitance	C _t	V _R = 5 V, f = 1 MHz		6	20	pF
Tracking Error *3	γ	I _m = const. (@ P _o = 5.0 mW, T _C = 25°C) T _C = -40 to +85°C	-1.0		1.0	dB

*1 Applicable to only NX6306S Series

*2 FAHM: Full Angle at Half Maximum

3 Tracking Error: γ



$$\gamma = \left| 10 \log \frac{P_o}{5.0} \right| \text{ [dB]}$$

Life Support Applications

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