

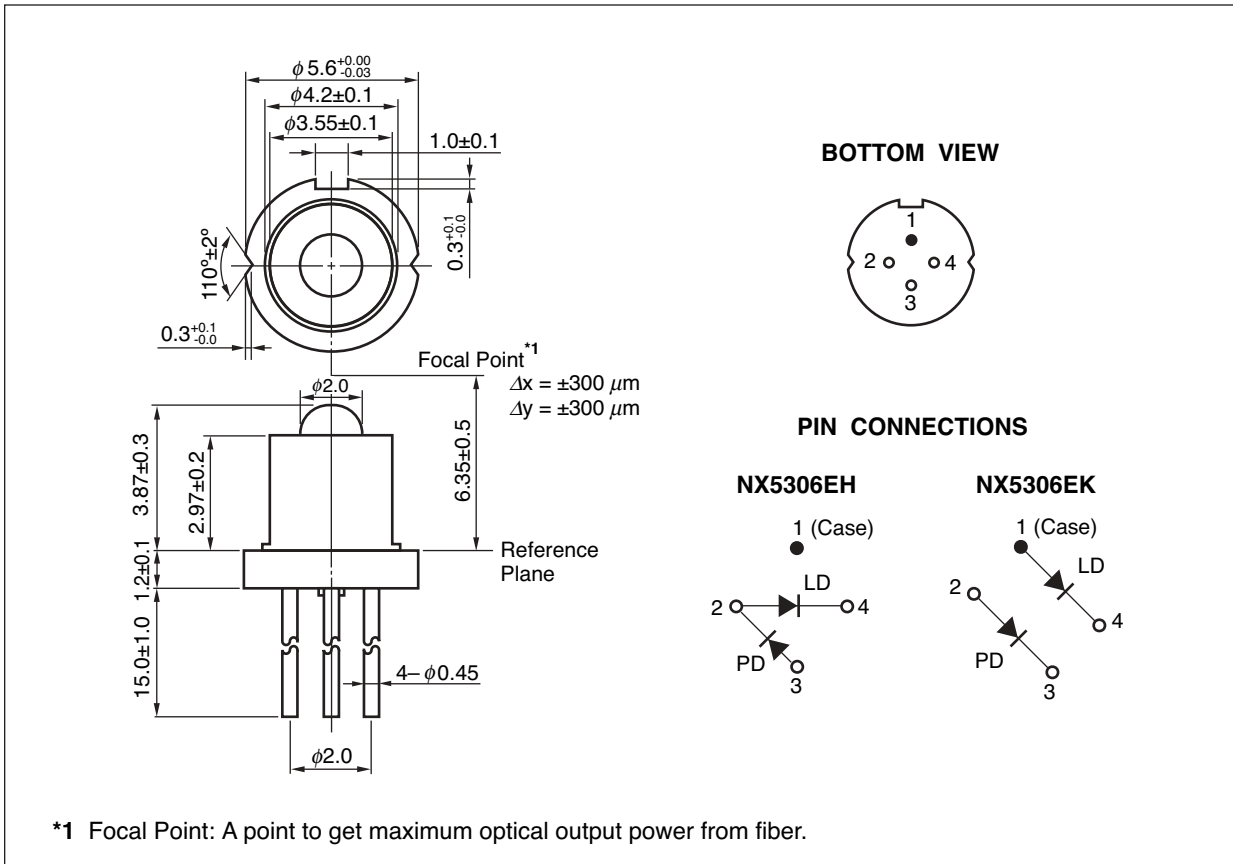
CEL**NEC's 1310 nm InGaAsP MQW FP
LASER DIODE IN CAN PACKAGE
FOR 155 Mb/s and 622 Mb/s APPLICATIONS****NX5306 SERIES****FEATURES**

- **OPTICAL OUTPUT POWER:**
 $P_o = 5.0 \text{ mW}$
- **LOW THRESHOLD CURRENT :**
 $I_{TH} = 10 \text{ mA}$
- **HIGH SPEED:**
 $t_r = 0.3 \text{ ns MAX}$
 $t_f = 0.3 \text{ ns MAX}$
- **WIDE OPERATING TEMPERATURE RANGE:**
 $T_c = -40 \text{ to } +85^\circ\text{C}$
- **InGaAs MONITOR PIN-PD**
- **CAN PACKAGE:**
 $\varnothing 5.6 \text{ mm}$
- **BASED ON TELCORDIA RELIABILITY**

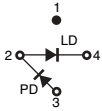

**DESCRIPTION**

NEC's NX5306 series is a 1310 nm Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diode with InGaAs monitor PIN-PD. This device is ideal for Synchronous Digital Hierarchy (SDH) systems, long haul STM-1 (L-1.1), short haul STM-4 (S-4.1), and ITU-T recommendations.

PACKAGE DIMENSIONS (Units in mm)



ORDERING INFORMATION

PART NUMBER	PACKAGE	PIN CONNECTIONS
NX5306EH	4-pin CAN with ball lens cap	
NX5306EK		

- Remarks**
1. The color of ball lens cap might be observed differently from our can package products.
 2. The hermetic test will be performed as AQL 1.0%.

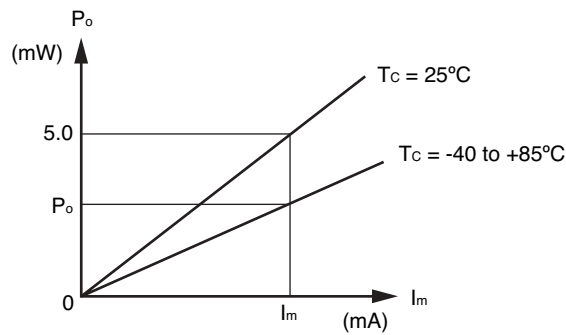
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Optical Output Power	P_o	20	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)

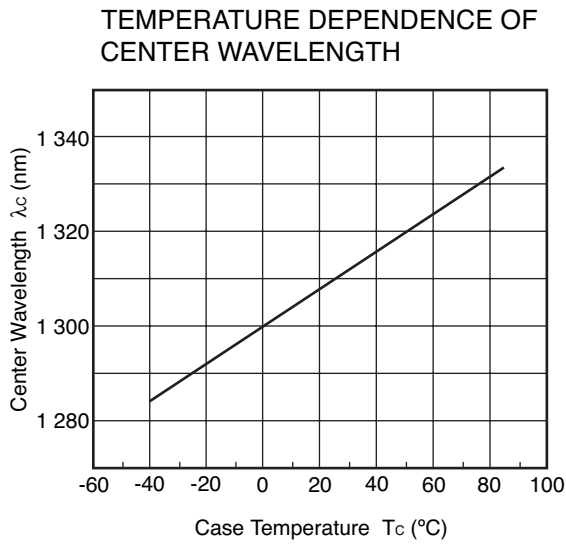
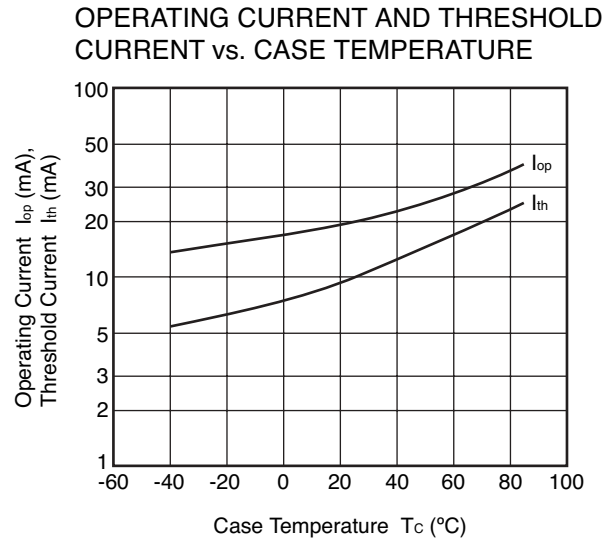
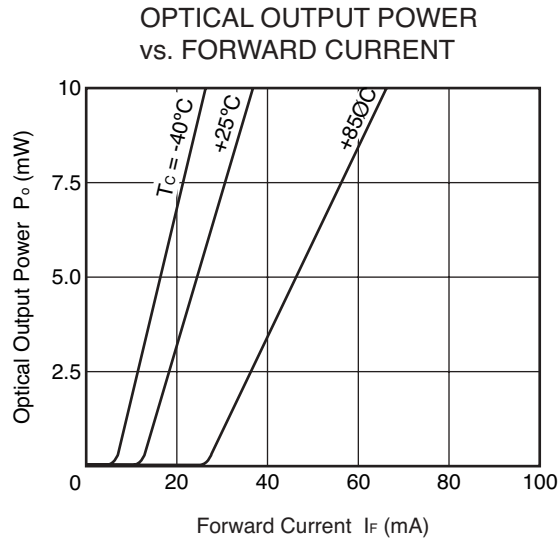
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V _{op}	P _o = 5.0 mW, T _C = -40 to +85°C		1.1	1.5	V
Threshold Current	I _{th}			10	15	mA
		T _C = 85°C		25	30	
Threshold Output Power	P _{th}	T _C = -40 to +85°C, I _F = I _{th}		100	200	μW
Differential Efficiency	η _d		0.32	0.4		W/A
Temperature Dependence of Differential Efficiency	Δη _d	Δη _d = 10 log $\frac{\eta_d(@85^\circ\text{C})}{\eta_d(@25^\circ\text{C})}$	-3.0	-1.2		dB
Center Wavelength	λ _c	P _o = 5.0 mW, RMS (-20 dB) T _C = -40 to +85°C	1 263		1 360	nm
Temperature Dependence of Center Wavelength	Δλ/ΔT	T _C = -40 to +85°C		0.4	0.5	nm/ °C
Spectral Width	σ	P _o = 5.0 mW, RMS (-20 dB) T _C = -40 to +85°C		1.0	2.5	nm
Rise Time	t _r	10-90%		0.15	0.3	ns
Fall Time	t _f	90-10%		0.15	0.3	ns
Monitor Current	I _m	V _R = 5 V, P _o = 5.0 mW	150	300	600	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 ^{*1}	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 Tracking Error: γ



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

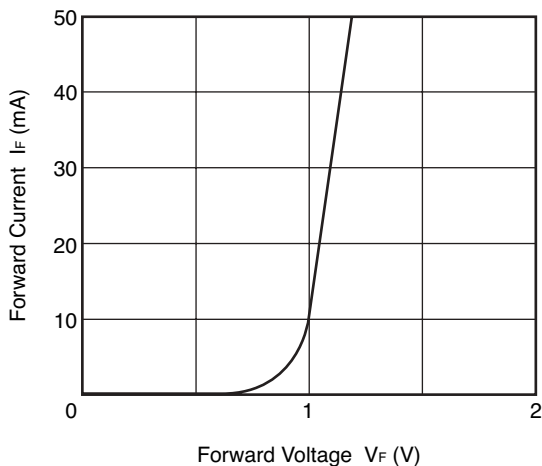
TYPICAL CHARACTERISTICS ($T_c = -40$ to $+85^\circ\text{C}$, unless otherwise specified)



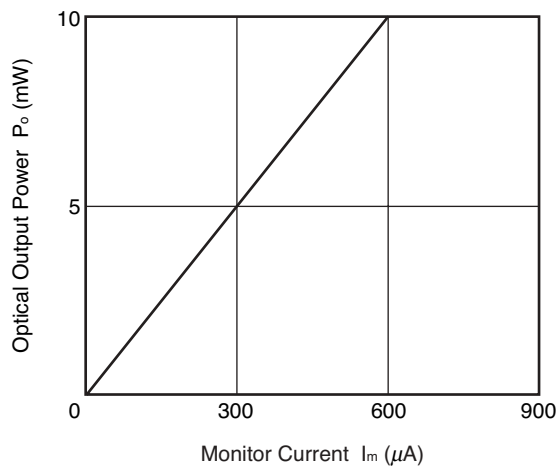
Remark The graphs indicate nominal characteristics.

TYPICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

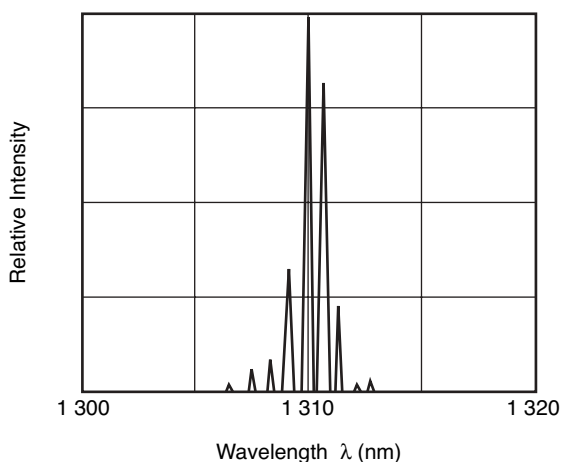
FORWARD CURRENT vs. FORWARD VOLTAGE



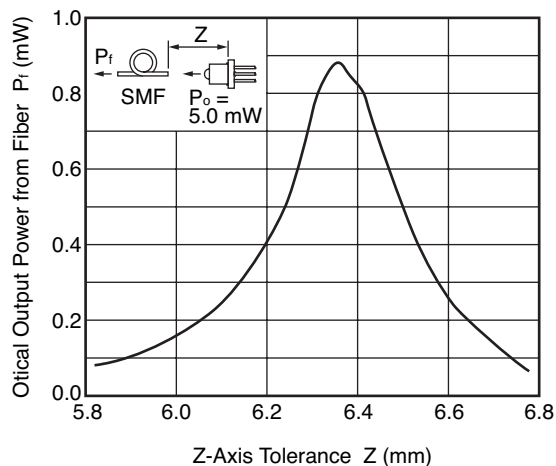
OPTICAL OUTPUT POWER vs. MONITOR CURRENT



SPECTRUM



TOLERANCE OF FIBER COUPLING DISTANCE (Z)



Remark The graphs indicate nominal characteristics.

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.

CEL California Eastern Laboratories, Your source for NEC RF, Microwave, Optoelectronic, and Fiber Optic Semiconductor Devices.
 4590 Patrick Henry Drive • Santa Clara, CA 95054-1817 • (408) 988-3500 • FAX (408) 988-0279 • www.cel.com

DATA SUBJECT TO CHANGE WITHOUT NOTICE

08/03/2004