

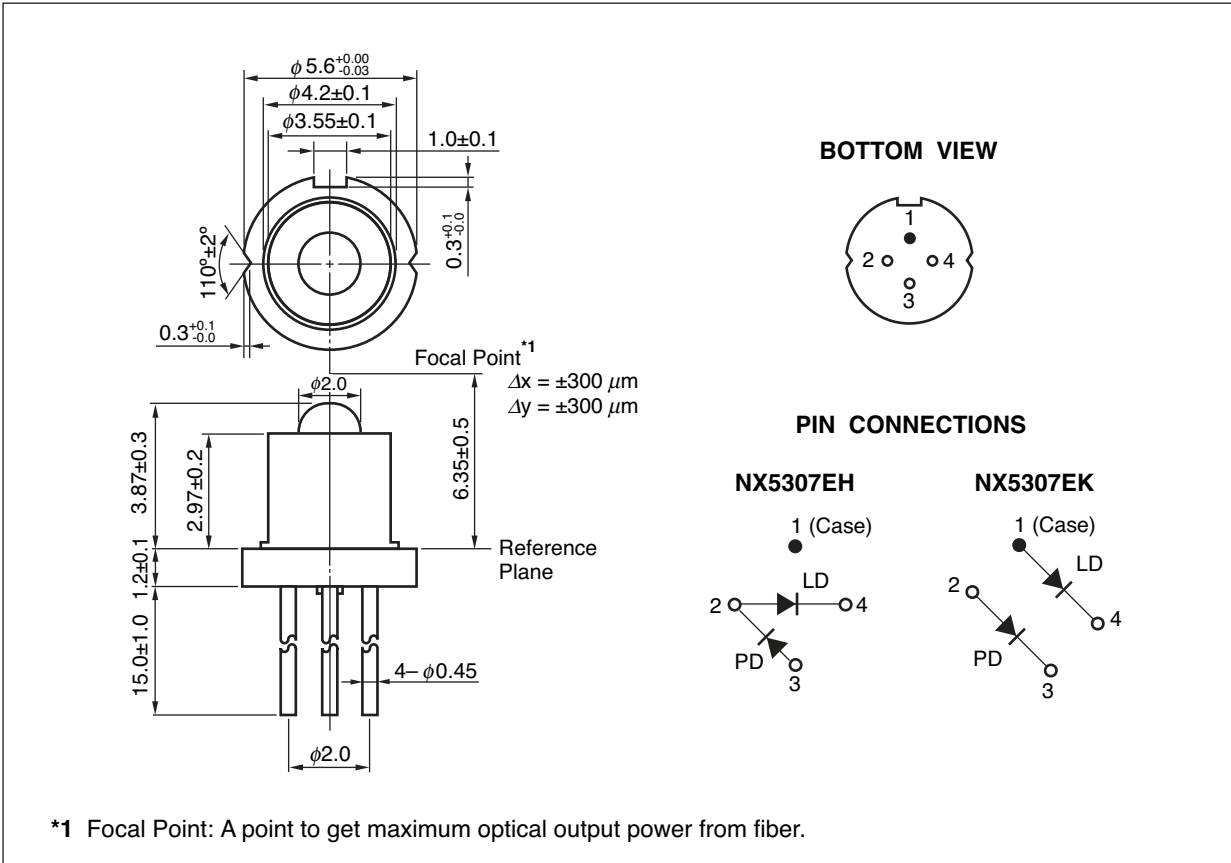
CEL**NEC's 1310 nm InGaAsP MQW FP
LASER DIODE IN CAN PACKAGE
FOR 2.5 Gb/s INTRA-OFFICE APPLICATION****NX5307 SERIES****FEATURES**

- **OPTICAL OUTPUT POWER:**
 $P_o = 10 \text{ mW}$
- **LOW THRESHOLD CURRENT :**
 $I_{TH} = 10 \text{ mA}$
- **HIGH SPEED:**
 $t_r = 0.2 \text{ ns MAX}$
 $t_f = 0.2 \text{ ns MAX}$
- **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**

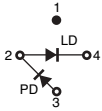

**DESCRIPTION**

NEC's NX5307 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, intra-office STM-16 (I-16), and ITU-T recommendations.

PACKAGE DIMENSIONS (Units in mm)



ORDERING INFORMATION

PART NUMBER	PACKAGE	PIN CONNECTIONS
NX5307EH	4-pin CAN with ball lens cap	
NX5307EK		

- 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%.

NX5307 SERIES

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	%

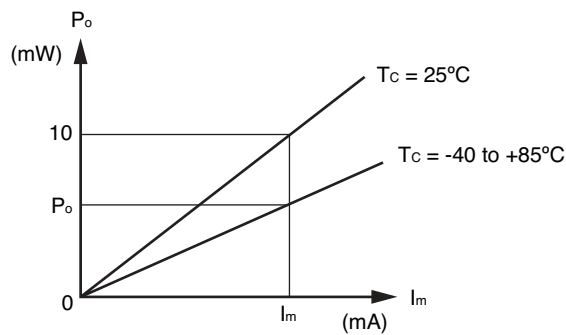
RECOMMENDED OPERATING CONDITION

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Modulation Current	I_{mod}	$T_c = 25^\circ\text{C}$		25		mA

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

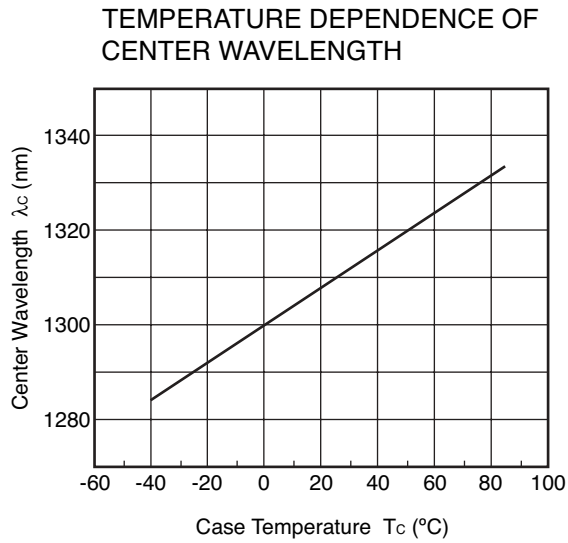
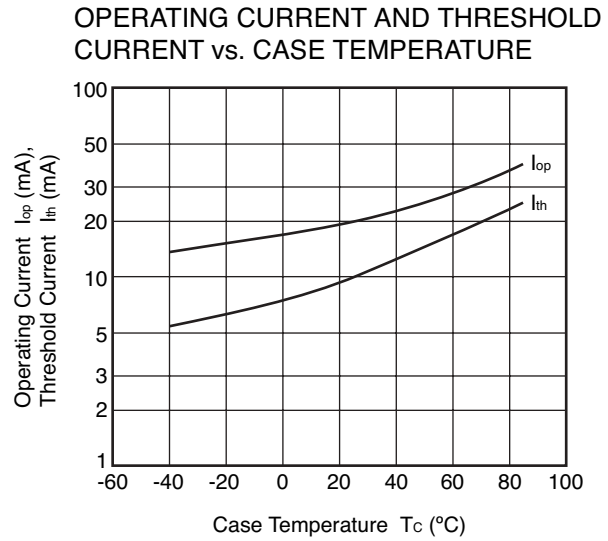
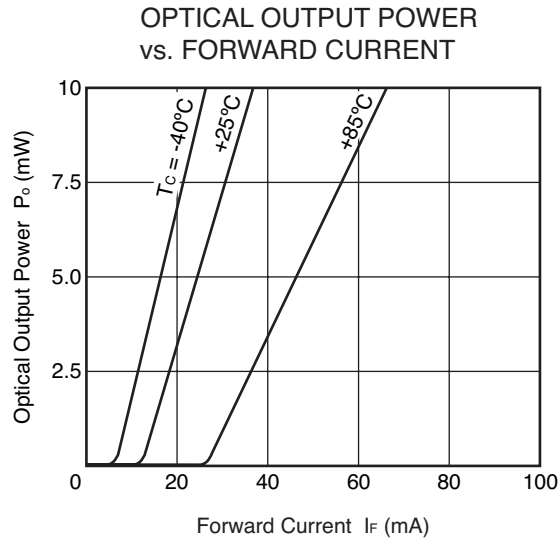
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V _{op}	P _o = 10 mW, T _C = -40 to +85°C		1.1	1.5	V
Threshold Current	I _{th}			10	15	mA
		T _C = 85°C		25	30	
Threshold Output Power	P _{th}	T _C = -40 to +85°C, I _F = I _{th}		100	200	μW
Optical Output Power	P _o	T _C = -40 to +85°C, I _F = I _{th}	8	10		mW
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
Modulation Current	I _{mod}	T _C = 85°C			50	mA
Center Wavelength	λ _C	P _o = 10 mW, RMS (-20 dB) T _C = -40 to +85°C	1 266		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 = 10 mW, RMS (-20 dB) T _C = -40 to +85°C		1.0	2.5	nm
Rise Time	t _r	10-90%		0.15	0.2	ns
Fall Time	t _f	90-10%		0.15	0.2	ns
Monitor Current	I _m	V _R = 5 V, I _F = I _{th} + 25 mA	300	600	1 200	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	nA
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 = 10 mW, T _C = 25°C)	-1.0		1.0	dB

*1 Tracking Error: γ



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

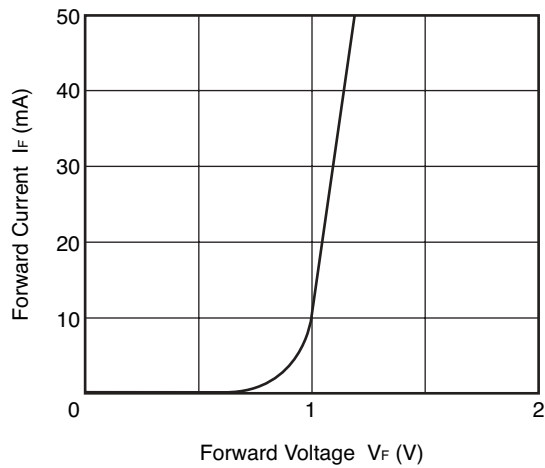
TYPICAL CHARACTERISTICS ($T_c = -40$ to $+85^\circ\text{C}$, unless otherwise specified)



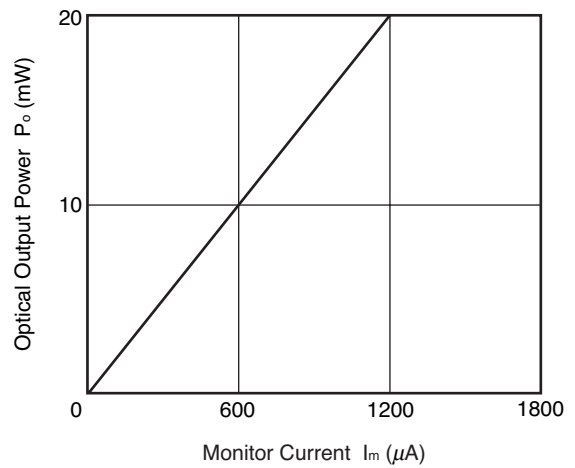
Remark The graphs indicate nominal characteristics.

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

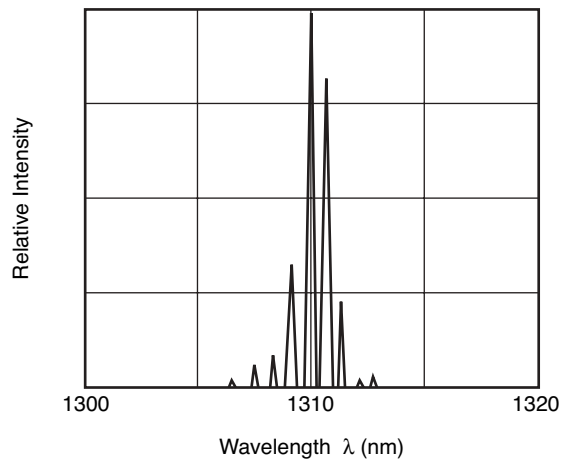
FORWARD CURRENT vs. FORWARD VOLTAGE



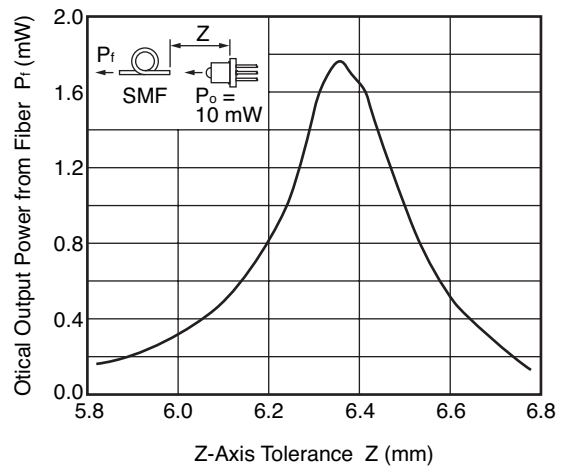
OPTICAL OUTPUT POWER vs. MONITOR CURRENT



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.

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