

NEC

1310 nm FIBER OPTIC COMMUNICATIONS InGaAsP MQW LASER DIODE (5 mW)

NX5302 Series**FEATURES**

- **OPTICAL OUTPUT POWER:**
Po = 5.0 mW
- **LOW THRESHOLD CURRENT :**
I_{TH} = 10 mA
- **HIGH SPEED:**
tr = 0.15 ns MAX
tf = 0.3 ns MAX
- **WIDE OPERATING TEMPERATURE RANGE:**
Tc = -40 to +85°C
- **InGaAs MONITOR PIN-PD**
- **CAN PACKAGE:**
ø5.6 mm
- **BASED ON TELCORDIA RELIABILITY**

DESCRIPTION

The NX5302 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 SONET systems, short haul and long haul OC-3, and short haul OC-12 applications.

NX7312UA ELECTRO-OPTICAL CHARACTERISTICS (Tc = 25°C, unless otherwise specified)

PART NUMBER			NX5302 Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
V _{OP}	Operating Voltage, Po = 5.0 mW	V	–	1.1	1.3
I _{TH}	Threshold Current	mA	–	10	20
	Tc = +85°C	mA	–	25	35
P _{TH}	Threshold Output Power, Tc = -40 to +85°C, If = I _{TH}	μW	–	100	200
η _d	Differential Efficiency	W/A	0.40	0.50	–
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	-1.5	
λ _c	Center Emission Wavelength, Po = 5.0 mW, RMS (-20 dB), Tc = -40 to +85°C	nm	1263	–	1360
Δλ _c /ΔT	Temperature Dependence of Center Wavelength, Tc = -40 to +85°C	nm/°C	–	0.4	0.5
σ	Spectral Width, Po = 5.0 mW, RMS (-20 dB), Tc = -40 to +85°C	nm	–	1.0	2.5
θ _⊥	Vertical Beam Angle ¹ , Po = 5.0 mW, FAHM ²	°	–	25	40
θ	Lateral Beam Angle ¹ , Po = 5.0 mW, FAHM ²	°	–	20	35
tr	Rise Time, 10 to 90%	ns	–	0.05	0.15
tf	Fall Time, 10 to 90%	ns	–	0.15	0.30
I _m	Monitor Current, Po = 5.0 mW, VR = 5 V	μA	200	500	
I _D	Monitor Dark Current, VR = 5 V	nA	–	0.1	10
	VR = 5 V, Tc = -40 to +85°C	nA	–	–	500
C _t	Monitor PD Terminal Capacitance, VR = 5 V, f = 1 MHz	pF	–	6	20
kink	Kink (Refer to Definitions) Po = Up to 6.0 mW, TC = -40 to +85°C	%	-20	–	20
γ	Tracking Error (Refer to Definitions) Im = const. (@ Po = 5.0 mW) Tc = -40 to +85°C	dB	-1.0	–	1.0

Notes:

1. Applicable only to flat window type, NX5302S Series.
2. FAHM: Full Angle at Half Maximum.

NX5302 SERIES

ABSOLUTE MAXIMUM RATINGS¹

(T_C = 25°C, unless otherwise specified)

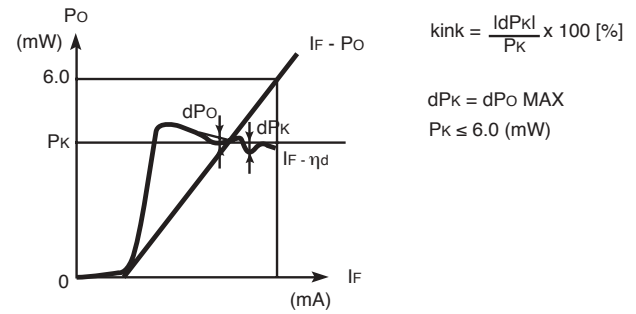
SYMBOLS	PARAMETERS	UNITS	RATINGS
P _f	Optical Output Power	mW	10
I _F	Forward Current of LD	mA	150
V _R	Reverse Voltage of LD	V	2.0
I _F	Forward Current of PD	mA	10
V _R	Reverse Voltage of PD	V	20
T _C	Operating Case Temperature	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-40 to +85
T _{SLD}	Lead Soldering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

Note:

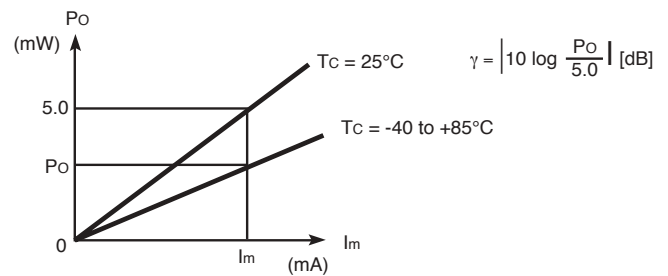
- Operation in excess of any one of these parameters may result in permanent damage.

PARAMETER DEFINITIONS

Kink: kink

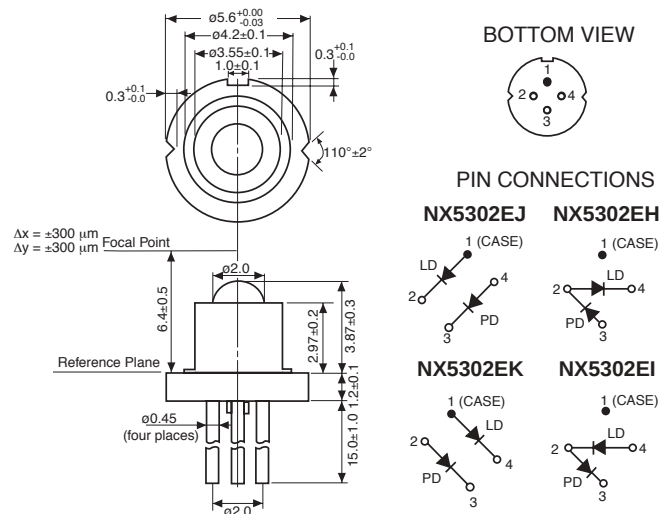


Tracking Error: γ

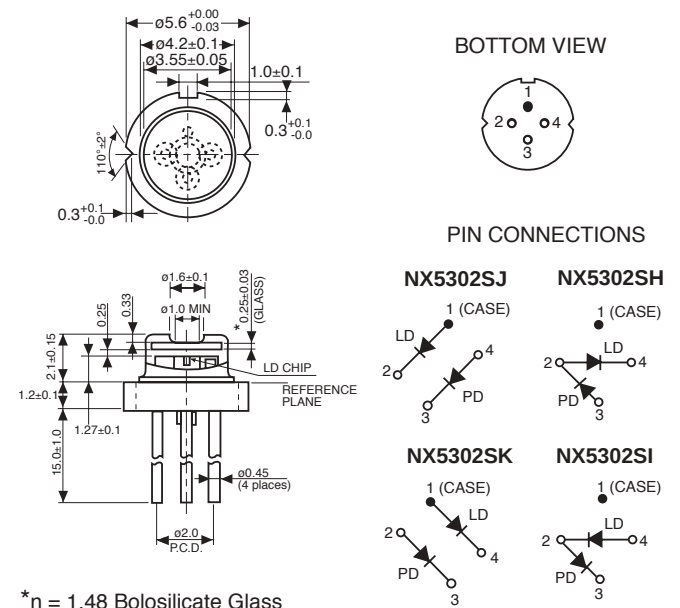


OUTLINE DIMENSIONS (Units in mm)

NX5302E SERIES with Ball-type lens

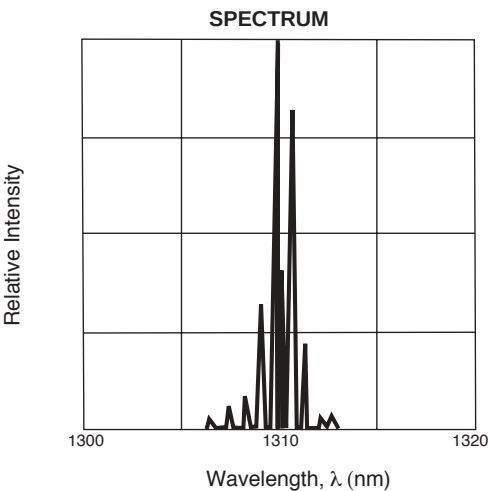
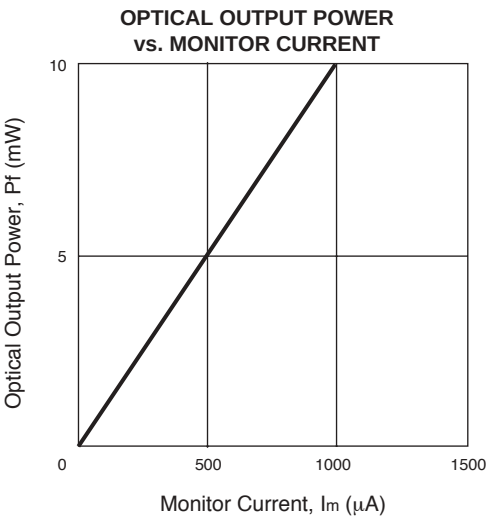
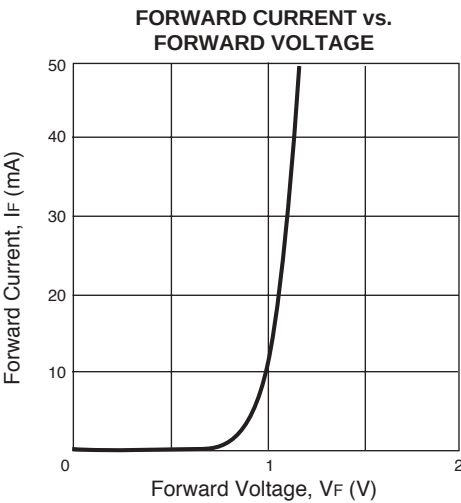
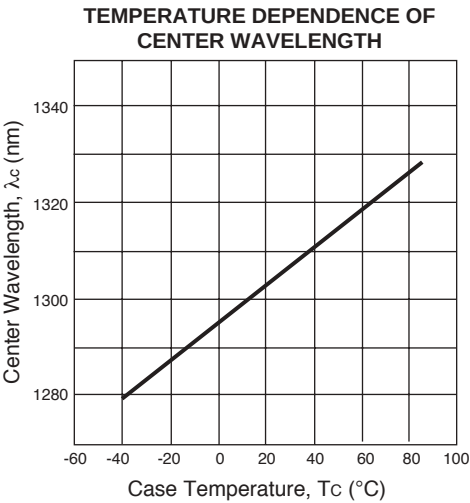
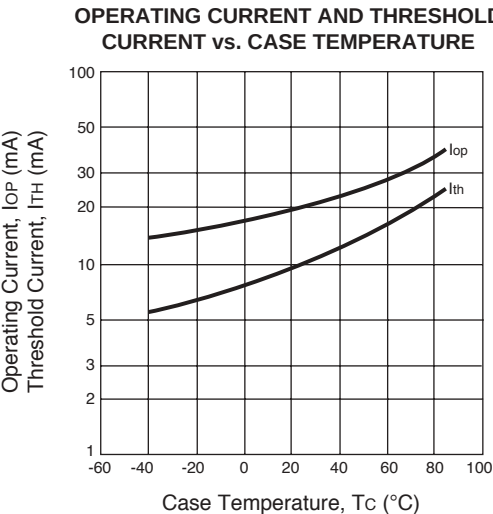
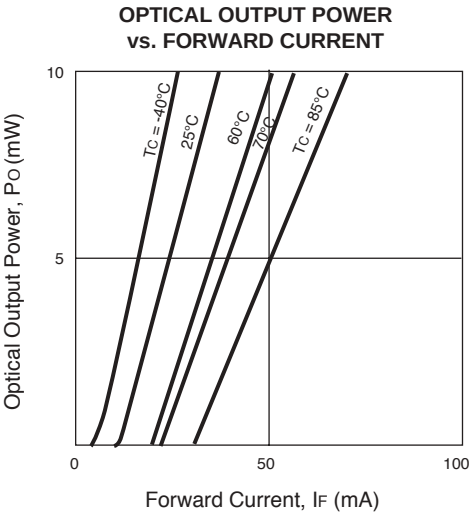


NX5302S SERIES



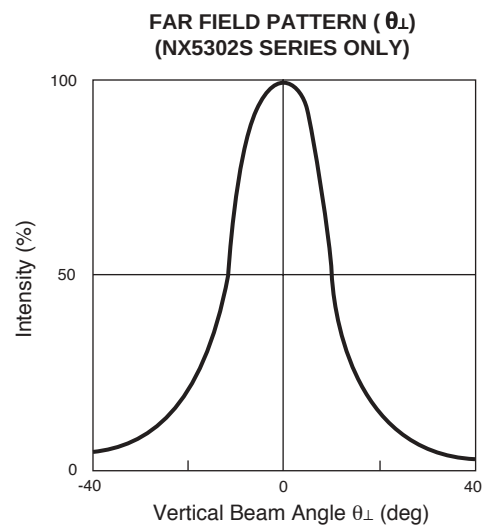
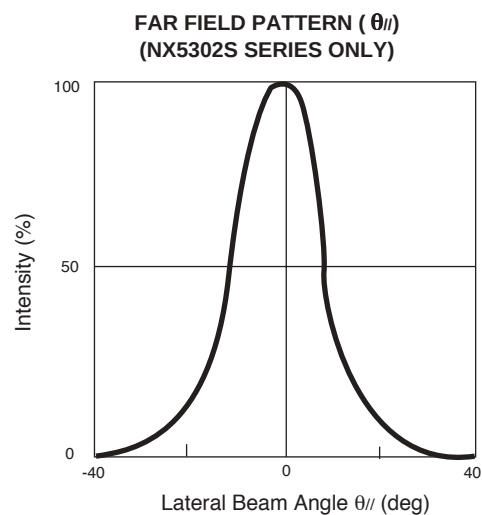
*n = 1.48 Borosilicate Glass

TYPICAL PERFORMANCE CURVES (T_C = -40 to +85°C)



Note: The graphs indicate nominal characteristics.

TYPICAL CHARACTERISTICS (T_C = 25°C)



Life Support Applications

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CEL CALIFORNIA EASTERN LABORATORIES • Headquarters • 4590 Patrick Henry Drive • Santa Clara, CA 95054-1817 • (408) 988-3500 • Telex 34-6393 • FAX (408) 988-0279
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Internet: <http://WWW.CEL.COM>

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