PRELIMINARY DATA SHEET

NEC

LASER DIODE

NX5302SJ,NX5302SH

1 310 nm FIBER OPTIC COMMUNICATIONS
InGaAsP MQW LASER DIODE

DESCRIPTION

The NX5302SJ and NX5302SH are 1 310 nm Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diodes with InGaAs monitor PIN-PD. These devices are ideal for Synchronous Digital Hierarchy (SDH) system, short haul and long haul STM-1, short haul STM-4 and Intraoffice STM-16, ITU-T recommendations.

FEATURES

- Optical output power P_o = 5.0 mW
- Low threshold current I_{th} = 10 mA
- High speed t_r, t_f = 0.175 ns MAX.
- Wide operating temperature range T_C = –40 to +85°C
- InGaAs monitor PIN-PD
- Small package ϕ 5.6 mm
- Based on Telcordia reliability

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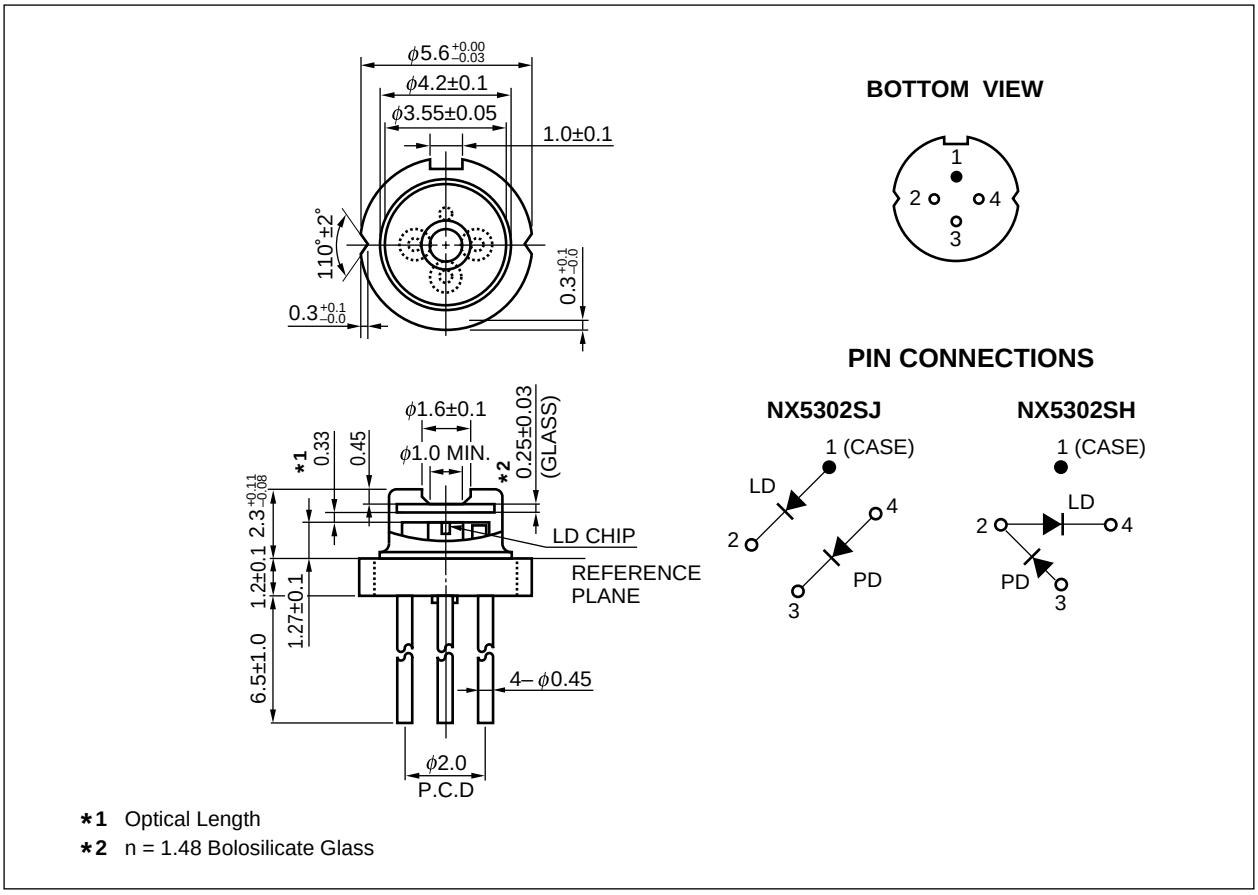
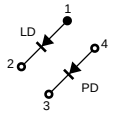
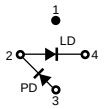
PACKAGE DIMENSIONS (UNIT: mm)



***1** Optical Length

***2** n = 1.48 Bolosilicate Glass

ORDERING INFORMATION

Part Number	Package	Pin Connections
NX5302SJ	4-pin CAN	
NX5302SH	4-pin CAN	

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
Lead Soldering Temperature	T_{sld}	260 (10 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

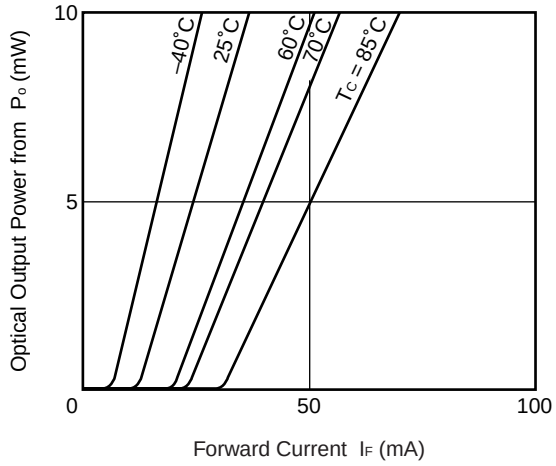
ELECTRO-OPTICAL CHARACTERISTICS (T_C = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V_{op}	P_o = 5.0 mW		1.1	1.3	V
Threshold Current	I_{th}			10	20	mA
		T_C = 85°C		25	50	
Threshold Output Power	P_{th}	$I_F = I_{th}$			75	μW
Modulation Current	I_{mod}	P_o = 5.0 mW		10	15	mA
Differential Efficiency	η_d		0.40	0.50		W/A
Temperature Dependence of Differential Efficiency	$\Delta\eta_d$	$\Delta\eta_d = 10 \log \frac{\eta_d\ (@\ 85°C)}{\eta_d\ (@\ 25°C)}$	–3.0	–1.5		dB
Center Wavelength	λ_C	P_o = 5.0 mW, RMS (–20 dB)	1 280	1 310	1 340	nm
Temperature Dependence of Center Wavelength	$\Delta\lambda/\Delta T$	T_C = –40 to +85°C		0.4	0.5	nm/°C
Spectral Width	σ	P_o = 5.0 mW, RMS (–20 dB)		1.0	4.0	nm
Vertical Beam Angle	$\theta_\perp$	P_o = 5.0 mW, FAHM[*1]		25	40	deg.
Lateral Beam Angle	$\theta_{//}$	P_o = 5.0 mW, FAHM[*1]		20	35	deg.
Rise Time	t_r	10-90%		0.125	0.175	ns
Fall Time	t_f	90-10%		0.150	0.175	ns
Monitor Current	I_m	V_R = 5 V, P_o = 5.0 mW	200	600		μA
Monitor PD Terminal Capacitance	I_D	V_R = 5 V		0.1	10	nA
Terminal Capacitance	C_t	V_R = 5 V, f = 1 MHz			20	pF

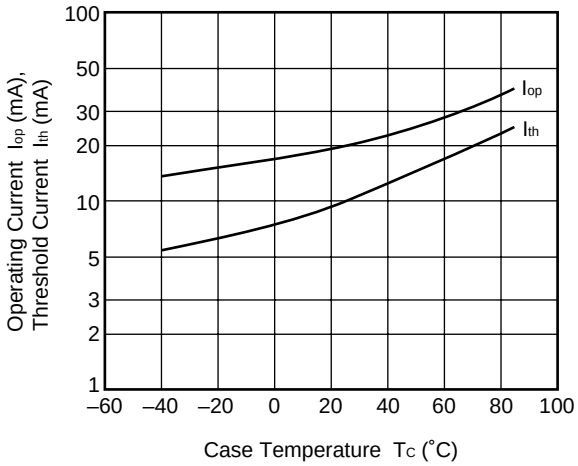
***1** FAHM: Full Angle at Half Maximum

TYPICAL CHARACTERISTICS (T_C = –40 to +85°C)

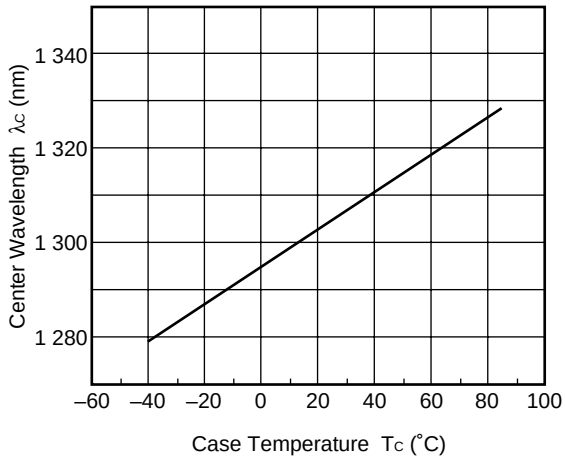
OPTICAL OUTPUT POWER vs. FORWARD CURRENT



OPERATING CURRENT AND THRESHOLD CURRENT vs. CASE TEMPERATURE



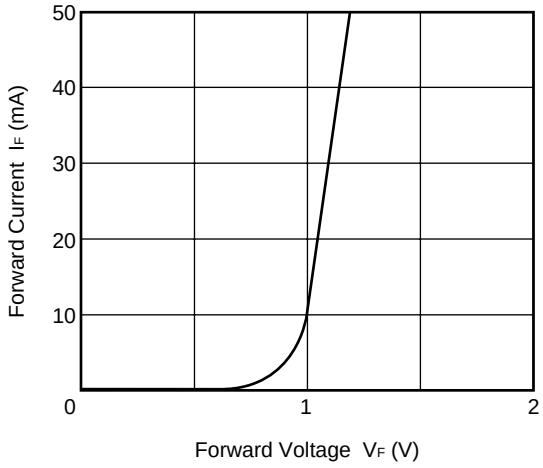
TEMPERATURE DEPENDENCE OF CENTER WAVELENGTH



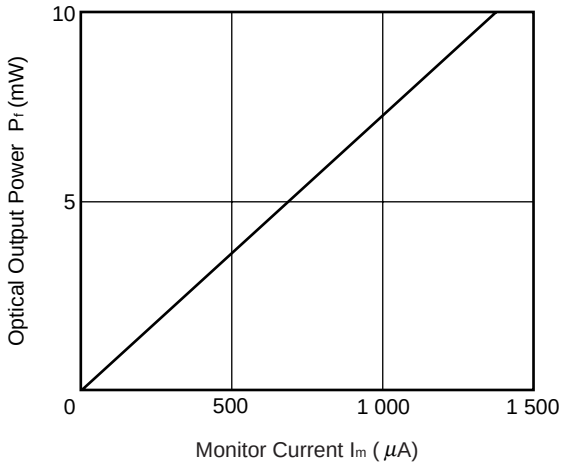
Remark The graphs indicate nominal characteristics.

TYPICAL CHARACTERISTICS (T_C = 25°C)

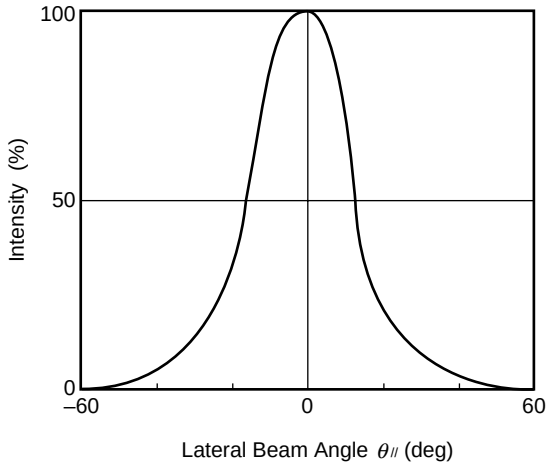
FORWARD CURRENT vs.
FORWARD VOLTAGE



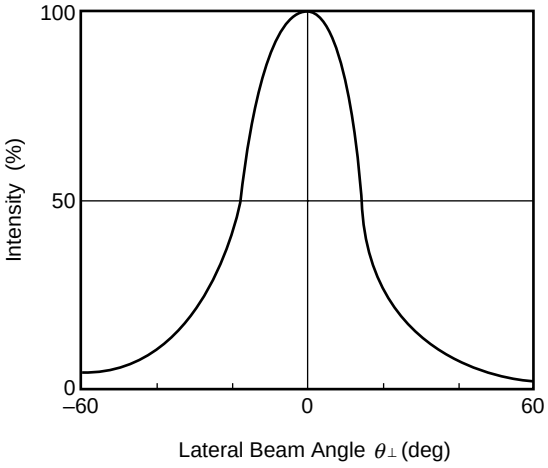
OPTICAL OUTPUT POWER
vs. MONITOR CURRENT



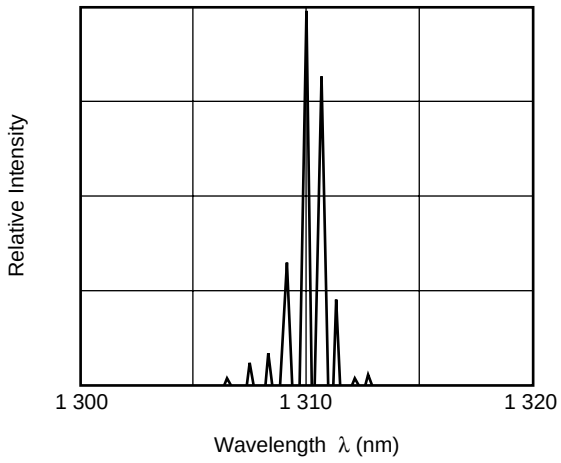
FAR FIELD PATTERN ($\theta_{//}$)



FAR FIELD PATTERN ($\theta_{\perp}$)



SPECTRUM



Remark The graphs indicate nominal characteristics.

REFERENCE

Document Name	Document No.
Optical semiconducrtor devices for fiberoptic communications Selection Guide	P12480E
Opto-Electronics Devices Pamphlet	P13623E
Opto-Electronics Devices (CD-ROM)	P12944X
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
SEMICONDUCTOR SELECTION GUIDE –Products and Packages–	X13769E

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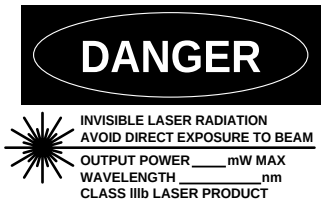
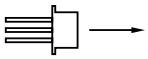
SAFETY INFORMATION ON THIS PRODUCT



SEMICONDUCTOR LASER



AVOID EXPOSURE-Invisible Laser Radiation is emitted from this aperture

NEC Corporation
NEC Building, 7-1, Shiba 5-chome, Minato-ku, Tokyo 108-01, Japan

Type number: _____
Manufactured: _____
Serial Number: _____
This product conforms to FDA regulations as applicable to standards 21 CFR Chapter 1. Subchapter J.

Warning Laser Beam	A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight. • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
Caution GaAs Products	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested. • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.
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