

# PRELIMINARY DATA SHEET

# NEC

# LASER DIODE NX7660JC

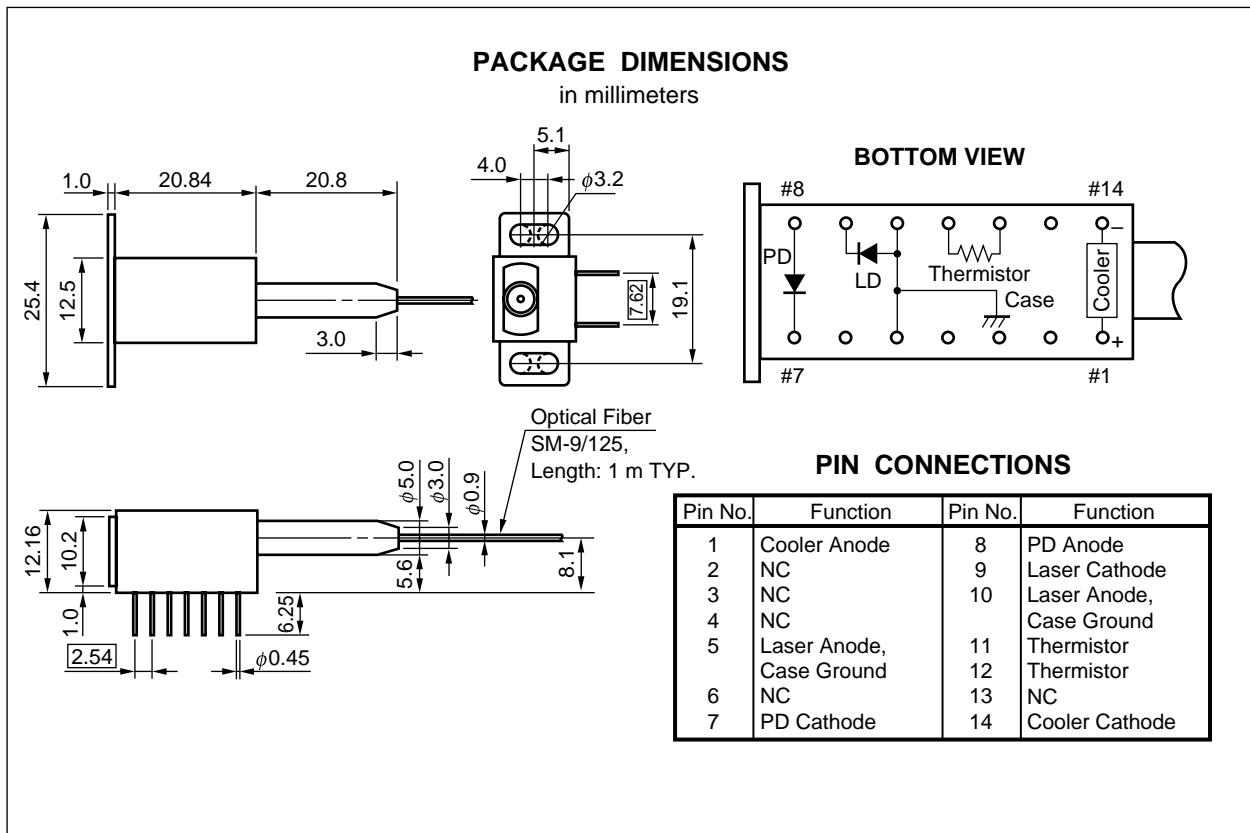
## InGaAsP STRAINED DC-PBH LASER DIODE MODULE 1 625 nm TELEMETRY APPLICATION

### DESCRIPTION

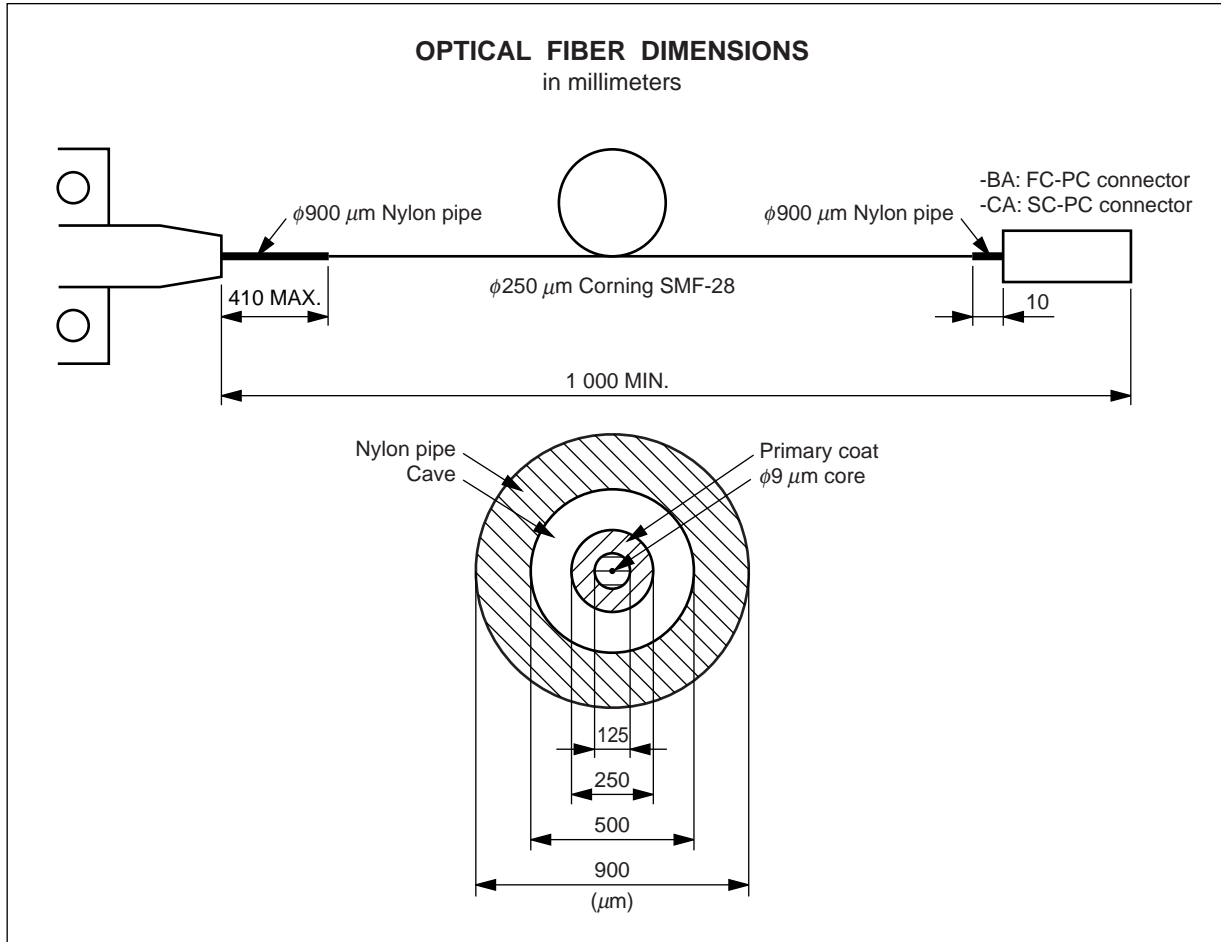
The NX7660JC is a 1 625 nm newly developed Strained Multiple Quantum Well (St-MQW) structure laser diode DIP module with single mode fiber and internal thermoelectric cooler. It is designed for light sources of telemetry equipment.

### FEATURES

- Output power  $P_i = 5 \text{ mW MIN. @ } I_F = 75 \text{ mA CW}$
- Long Wavelength  $\lambda_c = 1 625 \text{ nm}$
- Wide operating temperature range  $T_c = -20 \text{ to } +65 \text{ }^\circ\text{C}$
- Internal thermoelectric cooler, thermistor
- Hermetically sealed 14-pin DIP package
- Single mode fiber pigtail



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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.



**ORDERING INFORMATION**

Part Number	Available Connector
NX7660JC	Without Connector
NX7660JC-BA	With FC-PC Connector
NX7660JC-CA	With SC-PC Connector

**ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub> = 25 °C, unless otherwise specified)**

Parameter	Symbol	Ratings	Unit
Forward Current of LD	I <sub>F</sub>	150	mA
Reverse Voltage of LD	V <sub>R</sub>	2.0	V
Forward Current of PD	I <sub>F</sub>	10	mA
Reverse Voltage of PD	V <sub>R</sub>	20	V
Cooler Current	I <sub>c</sub>	1.3	A
Cooler Voltage	V <sub>c</sub>	3.5	V
Operating Case Temperature	T <sub>c</sub>	-20 to +65	°C
Storage Temperature	T <sub>stg</sub>	-40 to +85	°C
Lead Soldering Temperature (10 s)	T <sub>slid</sub>	260	°C

**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>LD</sub> = 25 °C, T<sub>c</sub> = -20 to +65 °C)**

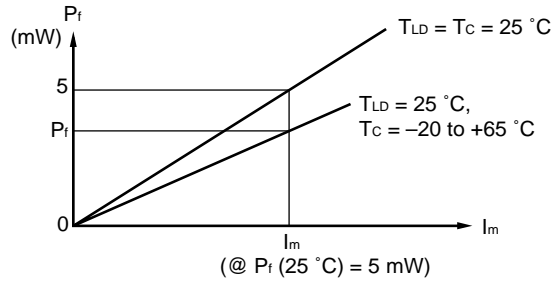
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V <sub>F</sub>	P <sub>f</sub> = 5 mW			1.5	V
Threshold Current	I <sub>th</sub>			15	30	mA
Optical Output Power from Fiber	P <sub>f</sub>	I <sub>F</sub> = 75 mA	5			mW
Operating Current	I <sub>op</sub>	P <sub>f</sub> = 5 mW		65	75	mA
Differential Efficiency form Fiber	η <sub>d</sub>		0.067	0.077		W/A
Center Wavelength	λ <sub>c</sub>	P <sub>f</sub> = 5 mW, RMS	1 615	1 625	1 635	nm
Spectral Width	σ	P <sub>f</sub> = 5 mW, RMS			5	nm
Rise Time	t <sub>r</sub>	10-90 %			1.0	ns
Fall Time	t <sub>f</sub>	90-10 %			1.0	ns

**ELECTRO-OPTICAL CHARACTERISTICS**

(Applicable to Monitor PD: T<sub>LD</sub> = 25 °C, T<sub>c</sub> = -20 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Monitor Current	I <sub>m</sub>	V <sub>R</sub> = 5 V, P <sub>f</sub> = 5 mW	50		250	μA
Monitor Dark Current	I <sub>d</sub>	V <sub>R</sub> = 5 V		0.1	10	nA
Tracking Error	γ <sup>-1</sup>	I <sub>m</sub> = const.			0.5	dB

$$*1 \gamma = \left| 10 \log \frac{P_f}{5 \text{ mW}} \right|$$



**ELECTRO-OPTICAL CHARACTERISTICS**

(Applicable to Thermistor and TEC: T<sub>LD</sub> = 25 °C, T<sub>c</sub> = -20 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R		9.5	10.0	10.5	kΩ
B Constant	B		3 300	3 400	3 500	K
Cooler Current	I <sub>c</sub>	ΔT = 40 K		0.6	1.0	A
Cooler Voltage	V <sub>c</sub>	ΔT = 40 K		1.3	1.5	V
Cooling Capacity	ΔT <sup>-1</sup>	I <sub>c</sub> = 1.0 A	40			K

$$*1 \Delta T = |T_c - T_{LD}|$$

LD FAMILY FOR DENSE WDM APPLICATION

Part Number	Absolute Maximum Ratings		Typical Characteristics			Description	Package
	T <sub>c</sub> (°C)	T <sub>stg</sub> (°C)	I <sub>th</sub> (mA)	P <sub>r</sub> (mW)	λ <sub>c</sub> (nm)		
			TYP.	MIN.	TYP.		
NDL7540PA	-20 to +65	-40 to +85	40	90	1 480	1 480 nm pump LD module	BFY
NX7460LE <sup>*1</sup>	-20 to +65	-40 to +85	25	120	1 480	1 480 nm pump LD module	BFY
NX8501 Series	0 to +65	-40 to +85	20	2	1 510	Telemetry	Coaxial
NX8561JC <sup>*1</sup>	0 to +65	-40 to +85	20	3	1 510	Telemetry	DIP
NX7660JC <sup>*1</sup>	-20 to +65	-40 to +85	15	5	1 625	Telemetry	DIP
NDL7910P	-20 to +70	-40 to +85	7	0.5	1 550 <sup>*2</sup>	2.5 G EA modulator integrated module	BFY
NX8562LB	-20 to +65	-40 to +85	20	20	1 550 <sup>*2</sup>	1 550 CW LD module	BFY
NX8563LB	-20 to +65	-40 to +85	20	10	ITU-T <sup>*3</sup>	1 550 CW LD module	BFY

\*1 Under development

\*2 Wavelength selectable for ITU-T standards upon request

\*3 Wavelength selectable for ITU-T standards

**REFERENCE**

Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E


CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.

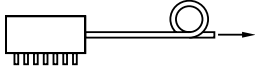
**DANGER**

INVISIBLE LASER RADIATION  
AVOID DIRECT EXPOSURE TO BEAM

OUTPUT POWER \_\_\_\_\_mW MAX  
WAVELENGTH \_\_\_\_\_nm  
CLASS IIIb LASER 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.

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