

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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**Phase-out/Discontinued**

LASER DIODE  
**NX7561JB-BC**

**InGaAsP MQW DC-PBH PULSED LASER DIODE MODULE  
1 550 nm OTDR APPLICATION**

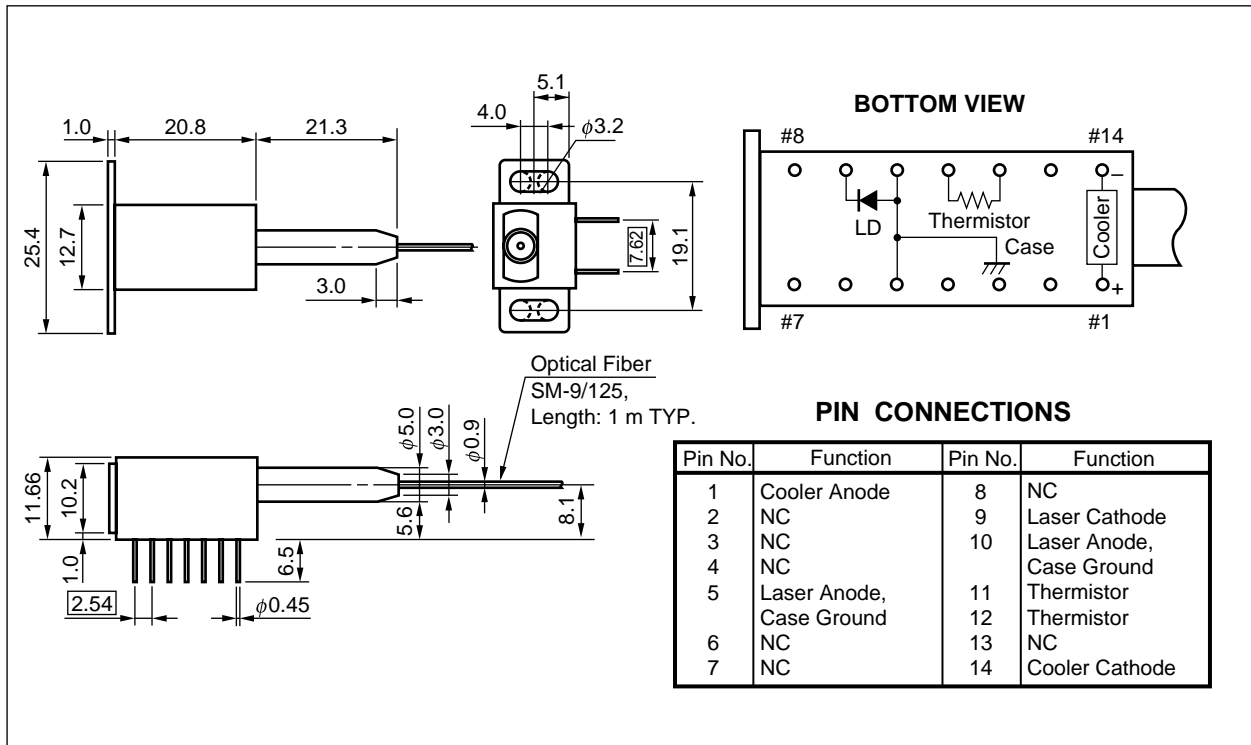
**DESCRIPTION**

The NX7561JB-BC is a 1 550 nm Multiple Quantum Well (MQW) structure pulsed laser diode DIP module with single mode fiber and internal thermoelectric cooler. It is designed for light sources of optical measurement equipment (OTDR).

**FEATURES**

- High output power  $P_f = 135 \text{ mW MIN. @ } I_{FP} = 1\,000 \text{ mA, PW} = 10 \mu\text{s, Duty} = 1\%$
- Long wavelength  $\lambda_c = 1\,550 \text{ nm}$
- Internal thermoelectric cooler, thermistor
- Hermetically sealed 14-pin Dual-In-Line Package
- Single mode fiber pigtail

★ **PACKAGE DIMENSIONS (UNIT: mm)**



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★ ORDERING INFORMATION

Part Number	Available Connector
NX7561JB-BC	With FC-UPC Connector

**ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Ratings	Unit
Pulsed Forward Current <sup>*1</sup>	I <sub>FP</sub>	1.2	A
Reverse Voltage	V <sub>R</sub>	2.0	V
Cooler Current	I <sub>C</sub>	1.0	A
Cooler Voltage	V <sub>C</sub>	2.0	V
Thermistor Current	I <sub>t</sub>	0.5	mA
Thermistor Voltage	V <sub>t</sub>	12.0	V
Operating Case Temperature	T <sub>C</sub>	-20 to +65	°C
Storage Temperature	T <sub>stg</sub>	-40 to +70	°C
Lead Soldering Temperature	T <sub>slid</sub>	260 (10 sec)	°C

\*1 Pulse conditions: Pulse width (PW) = 10 μs, Duty = 1%

**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>FP</sub>	CW, I <sub>F</sub> = 30 mA		2.5	4.0	V
Threshold Current	I <sub>th</sub>	CW		40	70	mA
Optical Output Power from Fiber	P <sub>r</sub>	I <sub>FP</sub> = 1 000 mA, *1	135			mW
		I <sub>FP</sub> = 600 mA, *1	70			
		I <sub>FP</sub> = 400 mA, *1	20			
Center Wavelength	λ <sub>c</sub>	RMS, I <sub>FP</sub> = 400, 600, 1 000 mA, *1	1 530	1 550	1 570	nm
★ Spectral Width	σ	RMS, I <sub>FP</sub> = 400, 600, 1 000 mA, *1		6.0	10.0	nm
Rise Time	t <sub>r</sub>	10-90%		1.0	2.0	ns
Fall Time	t <sub>f</sub>	90-10%		1.4	2.0	ns

\*1 PW = 10 μs, Duty = 1%

**ELECTRO-OPTICAL CHARACTERISTICS**

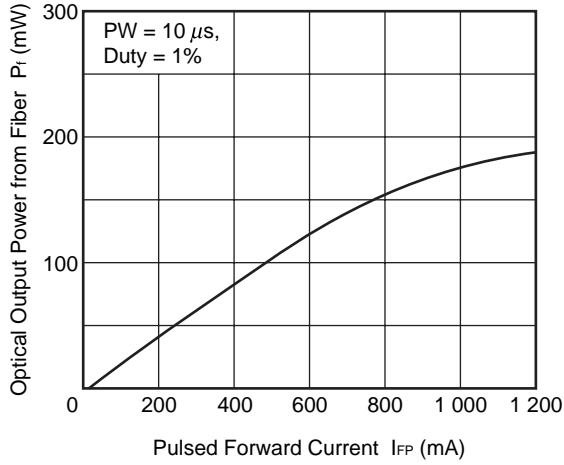
**(Applicable to Thermistor and TEC: T<sub>LD</sub> = 25°C, T<sub>C</sub> = -20 to +65°C)**

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T <sub>LD</sub> = 25°C	9.5	10.0	10.5	kΩ
★ B Constant	B		3 350	3 450	3 550	K
Cooler Current	I <sub>c</sub>	ΔT = 40°C		0.6	0.8	A
Cooler Voltage	V <sub>c</sub>	ΔT = 40°C		1.1	1.5	V
Cooling Capacity	ΔT <sup>-1</sup>	I <sub>c</sub> = 0.8 A	40			°C

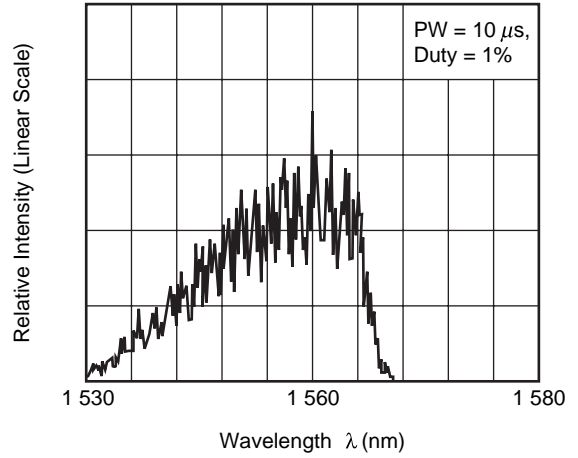
\*1  $\Delta T = |T_C - T_{LD}|$

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

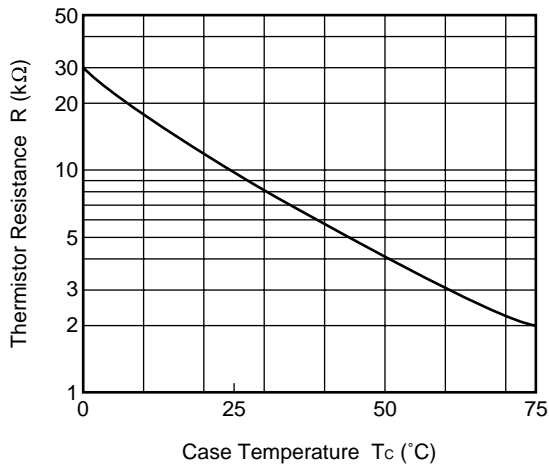
OPTICAL OUTPUT POWER FROM FIBER vs. PULSED FORWARD CURRENT



SPECTRUM



THERMISTOR RESISTANCE vs. CASE TEMPERATURE



**Remark** The graphs indicate nominal characteristics.

★ OTDR LD FAMILY

Part Number	Electro-Optical Characteristics (T <sub>c</sub> = 25°C)			Conditions			Application	Package
	λ <sub>c</sub> (nm)	P <sub>f</sub> (mW)		I <sub>FP</sub> (mA)	PW (μs)	Duty (%)		
		TYP.	MIN.					
NX7327BF-AA	1 310	110	180	1 000	10	1	OTDR	4-pin coax. with SMF
NX7328BF-AA	1 310	70	110	400	10	1	OTDR	4-pin coax. with SMF
NX7329BB-AA	1 310	25	50	400	10	1	OTDR	4-pin coax. with SMF
NX7361JB-BC	1 310	150	–	1 000	10	1	OTDR	14-pin DIP with SMF
NX7526BF-AA	1 550	95	145	1 000	10	1	OTDR	4-pin coax. with SMF
NX7527BF-AA	1 550	120	145	1 000	10	1	OTDR	4-pin coax. with SMF
NX7528BF-AA	1 550	60	80	400	10	1	OTDR	4-pin coax. with SMF
NX7529BB-AA	1 550	20	40	400	10	1	OTDR	4-pin coax. with SMF
NX7561JB-BC	1 550	135	–	1 000	10	1	OTDR	14-pin DIP with SMF
NX7661JB-BC	1 625	120	–	1 000	10	1	OTDR	14-pin DIP with SMF

REFERENCE

Document Name	Document No.
Optical semiconductor 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 <sup>*1</sup>	C11159E
Quality grades on NEC semiconductor devices <sup>*1</sup>	C11531E
SEMICONDUCTOR SELECTION GUIDE –Products and Packages– <sup>*1</sup>	X13769E

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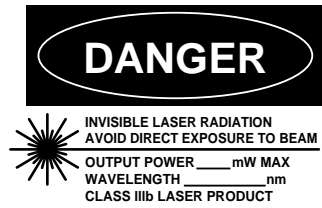
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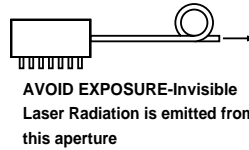
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M8E 00.4-0110

**SAFETY INFORMATION ON THIS PRODUCT**



**SEMICONDUCTOR LASER**



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<p><b>Caution</b> GaAs Products</p>	<p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> <li>Do not destroy or burn the product.</li> <li>Do not cut or cleave off any part of the product.</li> <li>Do not crush or chemically dissolve the product.</li> <li>Do not put the product in the mouth.</li> </ul> <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p>
<p><b>Caution</b> Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> <li>When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.</li> </ul>

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