

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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## InGaAsP MQW-DC-PBH HIGH POWER PULSED LASER DIODE

### 1 550 nm OTDR APPLICATION

#### DESCRIPTION

NDL7161 is a 1 550 nm pulsed laser diode especially designed for optical measurement equipment (OTDR). The newly developed Multiple Quantum Well (MQW) structure LD chip can achieve high output power in wide temperature range. This device is also available up to 20  $\mu$ s pulse width as customizing.

#### FEATURES

- High output power.  $P_o = 65$  mW @  $I_{FP} = 400$  mA\*1
- Long wavelength.  $\lambda_c = 1\ 550$  nm
- Hermetically sealed.
- High reliability.

#### QUALITY GRADE

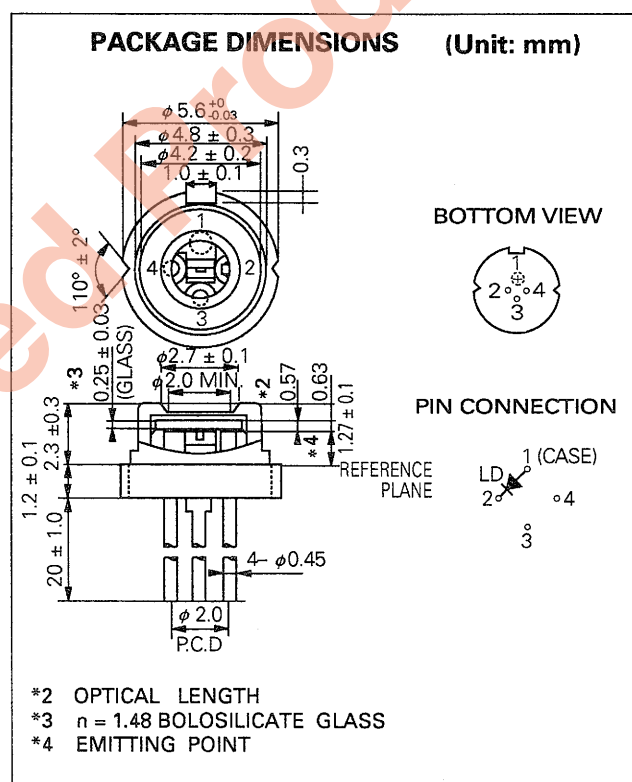
Part Number	Quality Grade
NDL7161	Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

#### ABSOLUTE MAXIMUM RATINGS ( $T_c = 25$ °C)

Optical Output Power	$P_o$	100	mW
Pulsed Forward Current*1	$I_{FP}$	800	mA
Reverse Voltage	$V_R$	2.0	V
Operating Case Temperature	$T_c$	-40 to +70	°C
Storage Temperature	$T_{stg}$	-55 to +125	°C
Lead Soldering Temperature (10 sec)	$T_{sld}$	260	°C

\*1 Pulse Conditions: Pulse Width(PW) = 1  $\mu$ s, Duty = 1 %



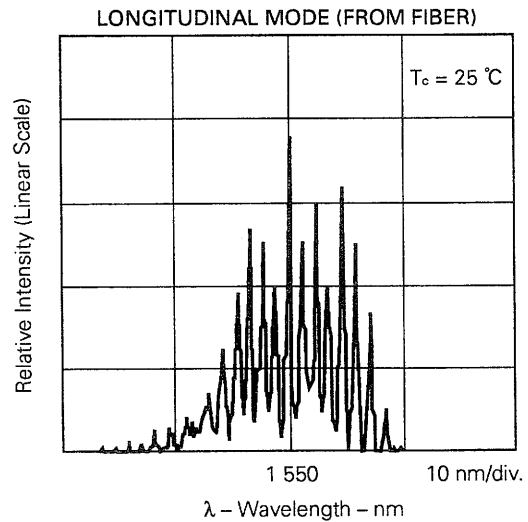
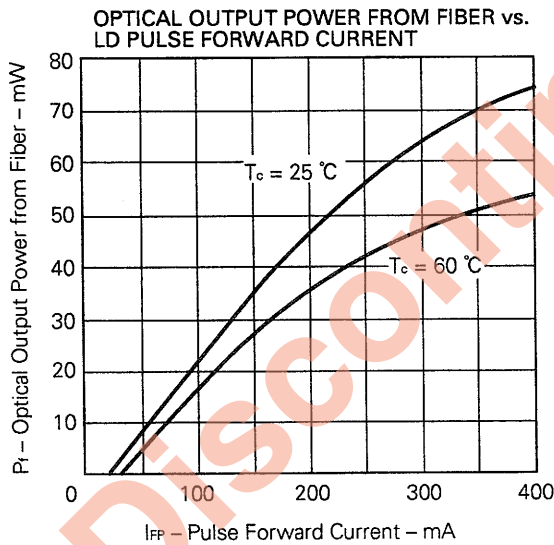
**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = 25 °C)**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDECTIONS
Forward Voltage	V <sub>FP</sub>		2.5	4.0	V	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %
Threshold Current	I <sub>th</sub>		20	30	mA	
Optical Output Power	P <sub>o</sub>	50	65		mW	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %
RMS Center Wavelength	λ <sub>c</sub>	1580	1550	1580	nm	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %
RMS Spectral Width	σ			10	nm	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %
Rise Time	t <sub>r</sub>		0.5	1.0	ns	10 – 90 %
Fall Time	t <sub>f</sub>		0.7	1.0	ns	90 – 10 %
Lateral Beam Angle	θ <sub>∥</sub>		26	40	deg	CW, P <sub>o</sub> = 10 mW, FAHM
Vertical Beam Angle	θ <sub>⊥</sub>		30	45	deg	CW, P <sub>o</sub> = 10 mW, FAHM

**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = 0 to + 60 °C)**

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Threshold Current	I <sub>th</sub>		30	50	mA	
Optical Output Power	P <sub>o</sub>	40	50		mW	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %
RMS Center Wavelength	λ <sub>c</sub>	1505		1590	nm	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %
Temperature Dependency of Center Wavelength	Δλ/ΔT <sub>c</sub>		0.35		nm / °C	
RMS Spectral Width	σ			15	nm	I <sub>FP</sub> = 400 mA, PW = 1 μs, Duty = 1 %

**TYPICAL CHARACTERISTICS**



**OTDR / MQW HIGH POWER PULSED LD FAMILY (Tc = 25 °C)**

PACKAGE \ FEATURES	1.3 μm		1.55 μm		I <sub>FP</sub> *5 (mA)	REMARKS
	PART NUMBER	P <sub>o</sub> , P <sub>r</sub> (mW)	PART NUMBER	P <sub>o</sub> , P <sub>r</sub> (mW)		
SMALL CAN	NDL7101	260	NDL7151	160	1000	
	NDL7111	120	NDL7161	65	400	
14-pin DIP MODULE with SMF	NDL7500P	120	NDL7550P	70	1000	with TEC , thermistor
	NDL7510P	55	NDL7560P	30	400	
4-pin COAXIAL MODULE with SMF	NDL7501P NDL7501P1	100	NDL7551P NDL7551P1	70	1000	P1 : with flange
	NDL7511P NDL7511P1	45	NDL7561P NDL7561P1	25	400	

\*5 Pulse Conditions: PW = 1 μs , Duty = 1 %

These modules are also available with FC-PC connector, NDL75xxPC or NDL75xxP1C.

Discontinued Product

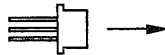


INVISIBLE LASER RADIATION  
AVOID DIRECT EXPOSURE TO BEAM



OUT PUT POWER \_\_\_\_\_mw MAX.  
WAVELENGTH \_\_\_\_\_nm  
CLASS IIIb LASER PRODUCT

**SEMICONDUCTOR LASER**



AVOID EXPOSURE-Invisible  
Laser Radition 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 DHHS  
regulations as applicable  
to standards 21 CFR Chapter I,  
Subchapter J.

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Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.