

To our customers,

Old Company Name in Catalogs and Other Documents

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

April 1st, 2010
Renesas Electronics Corporation

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

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InGaAsP STRAINED MQW-DC-PBH PULSED LASER DIODE
1310nm OTDR APPLICATION

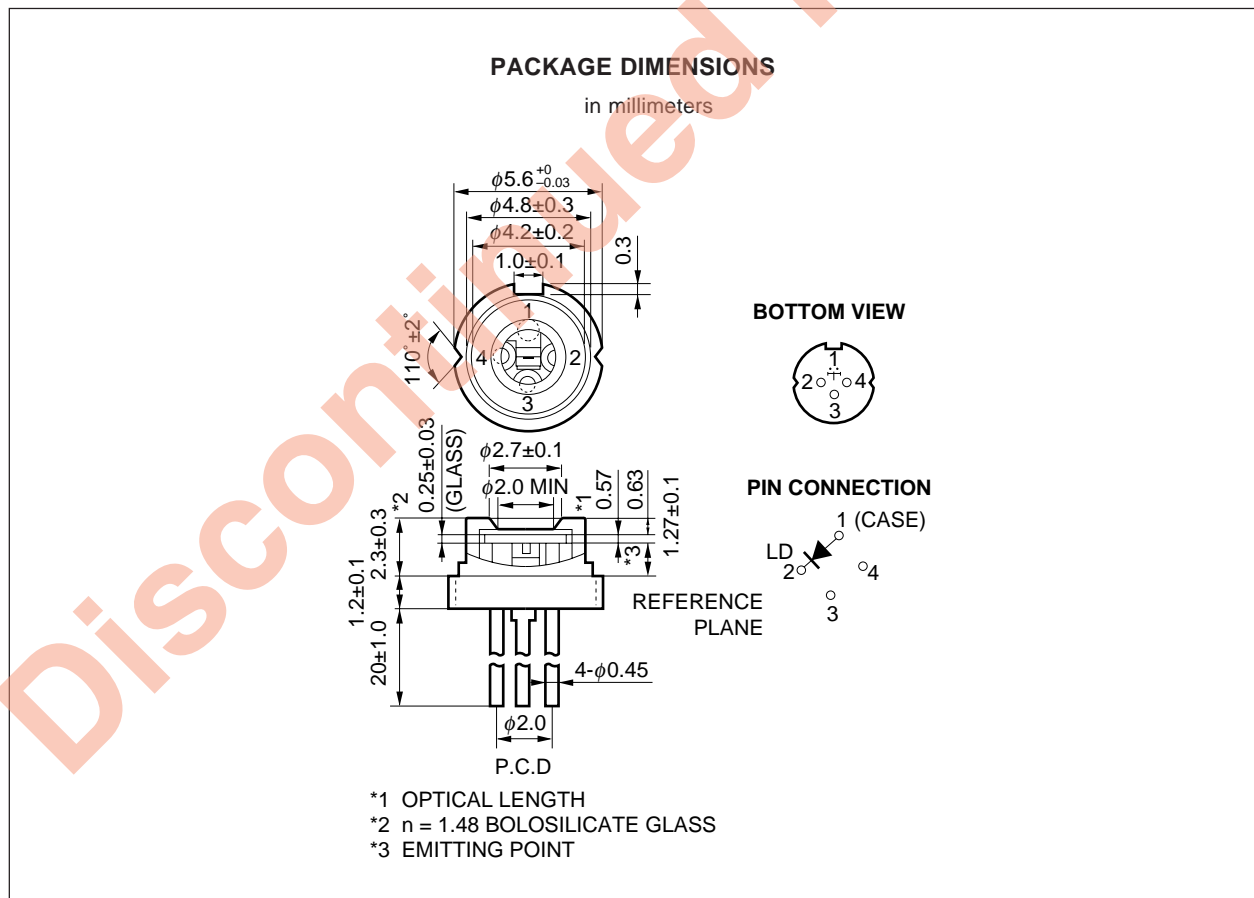
DESCRIPTION

NDL7103 is a 1310nm newly developed Strained Multiple Quantum Well (st-MQW) structure pulsed laser diode. This is designed for light sources of optical measurement equipment (OTDR).

FEATURES

- High output power $P_o = 320 \text{ mW} @ \text{IFP} = 1000 \text{ mA}^*1$
- Long wavelength $\lambda_c = 1310\text{nm}$
- Wide operating temperature range.
- Small can package

*1 Pulse Conditions: Pulse width (PW) = 1 μs , Duty = 1 %



ABSOLUTE MAXIMUM RATINGS (T_c = 25 °C)

Parameter	Symbol	Ratings	Unit
Pulsed Forward Current *1	I _{FP}	1.2	A
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 _{slid}	260	°C

*1 Pulse Condition: Pulse Width (PW) = 1 μs, Duty = 1 %

ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25 °C)

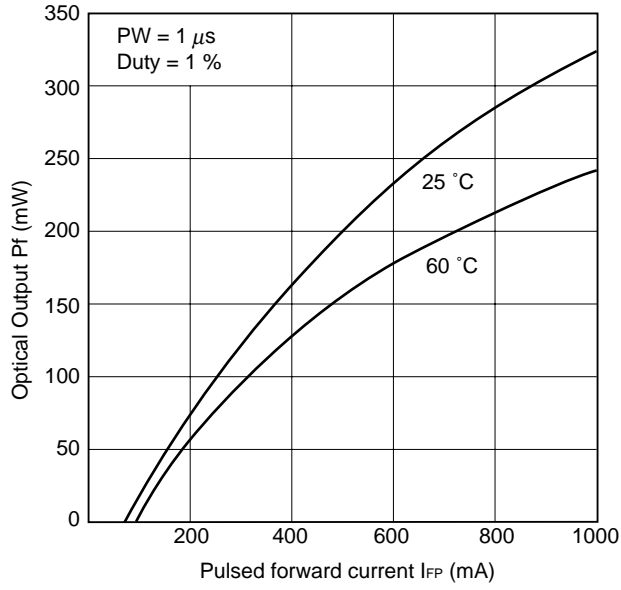
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V _{FP}	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %		2.5	4.0	V
Threshold Current	I _{th}			35	65	mA
Optical Output Power	P _o	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %	290	320		mW
RMS Center Wavelength	λ _c	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %	1290	1310	1330	nm
RMS Spectral Width	σ	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %		3.0	7.0	nm
Rise Time	t _r	10 - 90 %			2.0	ns
Fall Time	t _f	90 - 10 %			2.0	ns
Lateral Beam Angle	θ _l	P _o = 10 mW, FAHM, CW		20	35	deg.
Vertical Beam Angle	θ _v	P _o = 10 mW, FAHM, CW		25	40	deg.

FAHM: Full Angle at Half Maximum

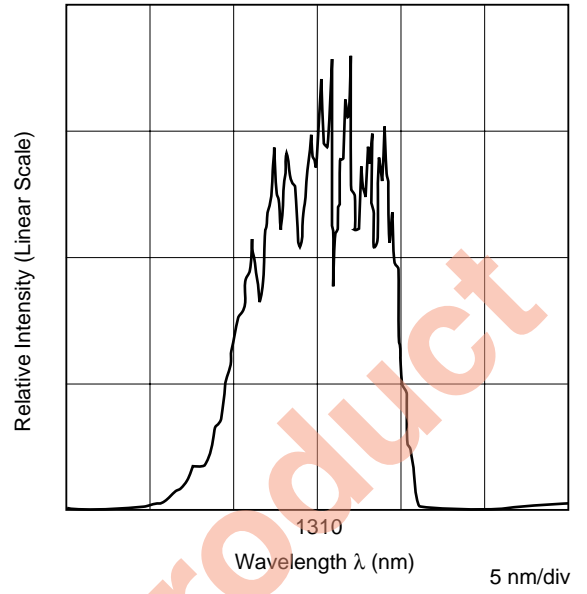
ELECTRO-OPTICAL CHARACTERISTICS (T_c = 0 to +60 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Threshold Current	I _{th}				80	mA
Optical Output Power	P _o	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %	180			mW
RMS Center Wavelength	λ _c	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %	1265		1350	nm
Temperature Dependency of Center Wavelength	Δλ / ΔT			0.35		nm/°C
RMS Spectral Width	σ	I _{FP} = 1000 mA, PW = 1 μs, Duty = 1 %			10	nm

OPTICAL OUTPUT POWER FROM FIBER vs. LD PULSE FORWARD CURRENT



LONGITUDINAL MODE (FROM FIBER)



Discontinued Product

LASER DIODE FAMILY FOR OTDR APPLICATION

FEATURES PACKAGE	1.31 μm		1.55 μm		IFP *1 (mA)	REMARKS
	PART NUMBER	P (mW) MIN./TYP.	PART NUMBER	P (mW) MIN./TYP.		
ϕ 5.6 CAN	NDL7103	290/320	NDL7153	220/240	1000	
	NDL7113	160/175	NDL7163	100/120	400	
4 pin COAXIAL MODULE with SMF	NDL7503P/P1	110/180	NDL7553P/P1	96/145	1000	P: no flange P1: with flange
	NDL7513P/P1	70/110	NDL7563P/P1	60/80	400	
	NDL7514P/P1	25/50	NDL7564P/P1	15/40	400	
14 pin DIP MODULE with SMF	NDL7502P	125/190	NDL7552P	100/125	1000	with TEC and Thermistor
	NDL7512P	90/110	NDL7562P	70/80	400	
	NDL7510P	40/55	NDL7560P	20/30	400	

These modules are also available with FC-PC.

*1 Pulse conditions; pulse width = 10 μs , duty = 1 % (modules)
pulse width = 1 μs , duty = 1 % (ϕ 5.6 can)

Discontinued Product

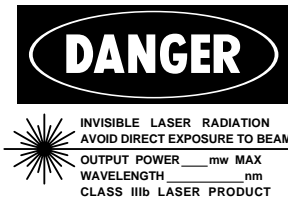
REFERENCE

DOCUMENT NAME	DOCUMENT NO.
NEC semiconductor device reliability/quality control system	IEI-1205
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	IEI-1207
Semiconductor device package manual	MEI-1213
Guide to quality assurance for semiconductor devices	IEI-1202
Semiconductor selection guide	X10679E

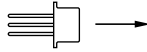
Discontinued Product

CAUTION

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



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 DHHS regulations as applicable to standards 21 CFR Chapter I, Subchapter J.

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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.