

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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

April 1st, 2010
Renesas Electronics Corporation

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

Send any inquiries to <http://www.renesas.com/inquiry>.

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(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

NDL7451P Series

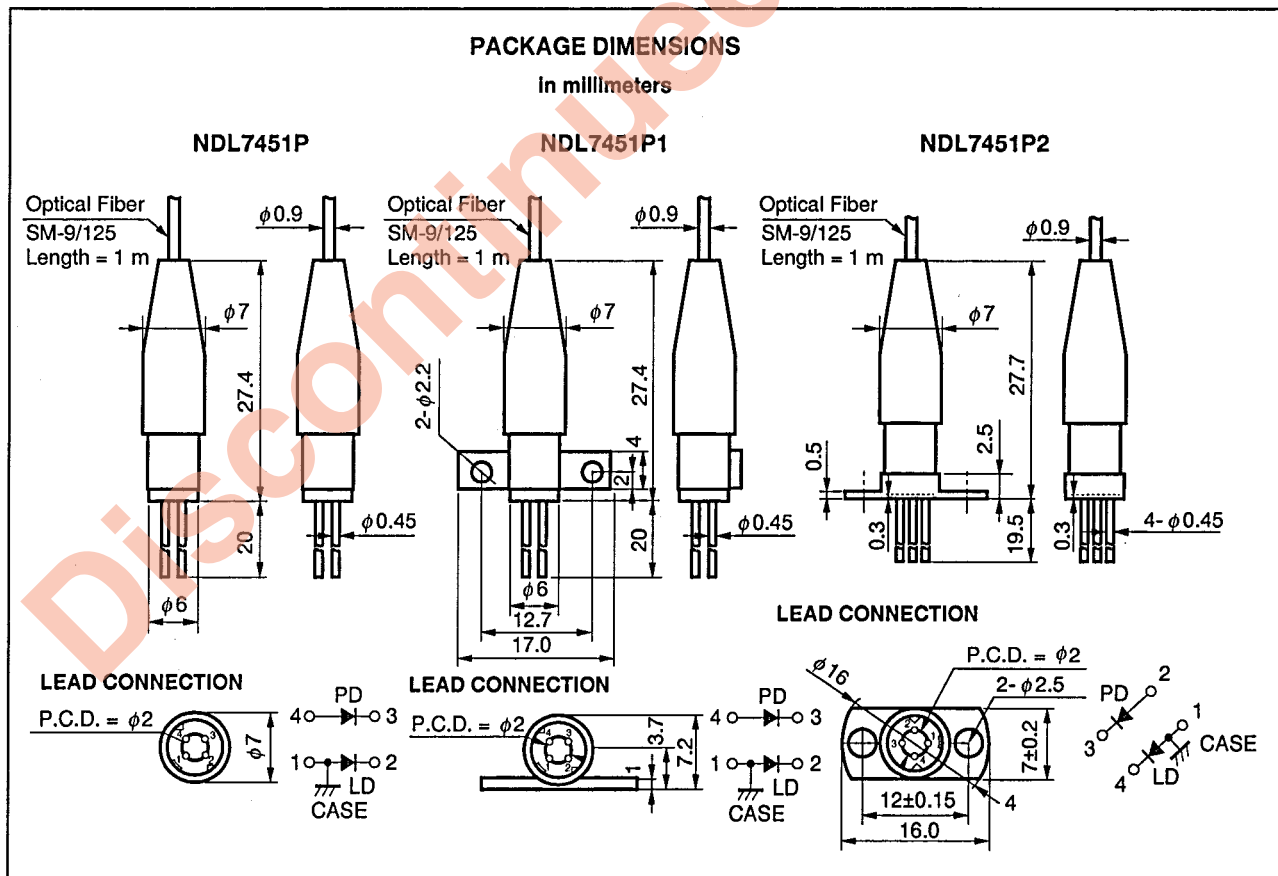
1550 nm InGaAsP STRAINED-MQW DC-PBH LASER DIODE COAXIAL MODULE WITH SINGLEMODE FIBER

DESCRIPTION

NDL7451P Series are 1550nm laser diode coaxial modules with singlemode fiber. They have a strained Multiple Quantum Well (St-MQW) structure and built in InGaAs monitor photo diode. They are also available with FC-PC and SC-PC connector.

FEATURES

- Center wavelength $\lambda_c = 1550 \text{ nm}$
- Optical output powers $P_f = 2.0 \text{ mW}$
- Low threshold current $I_{th} = 20 \text{ mA typ. @ } T_c = 25 \text{ }^\circ\text{C}$
- High cutoff frequency $f_c = 2.0 \text{ GHz}$
- InGaAs monitor PIN-PD
- Wide operating temperature range: $-40 \text{ to } +85 \text{ }^\circ\text{C}$
- Based on Bellcore TA-NWT-000983



The information in this document is subject to change without notice.

ORDERING INFORMATION

PART NUMBER	DESCRIPTION	
NDL7451P	no flange	Without connector
NDL7451PC		With FC-PC connector
NDL7451PD		With SC-PC connector
NDL7451P1	flat mount flange	Without connector
NDL7451P1C		With FC-PC connector
NDL7451P1D		With SC-PC connector
NDL7451P2	vertical flange	Without connector
NDL7451P2C		With FC-PC connector
NDL7451P2D		With SC-PC connector

Discontinued Product

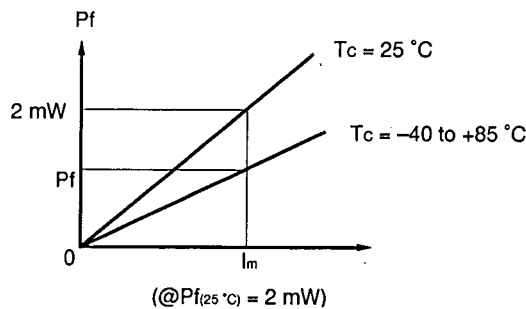
ABSOLUTE MAXIMUM RATINGS (T_c = 25 °C)

Parameter	Symbol	Ratings	Unit
Forward Current of LD	I _F	I _{th} + 50	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 (10 sec)	T _{slid}	260	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25 °C, Reflection = -40 dB Unless otherwise mentioned)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V _{op}	Pf = 2.0 mW		1.0	1.3	V
Threshold Current	I _{th}			20	30	mA
		T _c = +85 °C		50	70	
Modulation Current	I _{mod}	Pf = 2.0 mW		8	20	mA
Differential Efficiency from Fiber	η _d		0.10	0.24		W/A
		T _c = +85 °C	0.05	0.18		
Center Wavelength	λ _c	RMS (-20 dB), Pf = 2.0 mW	1525	1550	1575	nm
		T _c = -40 to +85 °C	1500		1600	
Temperature Dependence of Center Wavelength	Δλ/ΔT	T _c = -40 to +85 °C		0.4	0.5	nm/°C
Spectral Width	σ	RMS (-20 dB), Pf = 2.0 mW		2.0	4.0	nm
		T _c = +85 °C		3.0	6.0	
Cutoff Frequency	f _c	-3 dB		2.0		GHz
Rise Time	t _r	10 - 90 %		0.5	1.0	ns
Fall Time	t _f	90 - 10 %		0.7	1.0	ns
Monitor Current of PD	I _m	V _R = 5 V, Pf = 2.0 mW	100	400	1000	μA
Dark Current of PD	I _d	V _R = 5 V		0.1	10	nA
Tracking Error	γ*1	I _m = const. T _c = -40 to +85 °C		0.5	1.0	dB

$$*1 \gamma = \left| 10 \log \frac{Pf}{2mW} \right|$$



When this device is used as a source of fiber optic communication, use of an external isolator (Isolation ≥ 40 dB) is recommended.

FABRY-PEROT DC-PBH LASER DIODE FAMILY

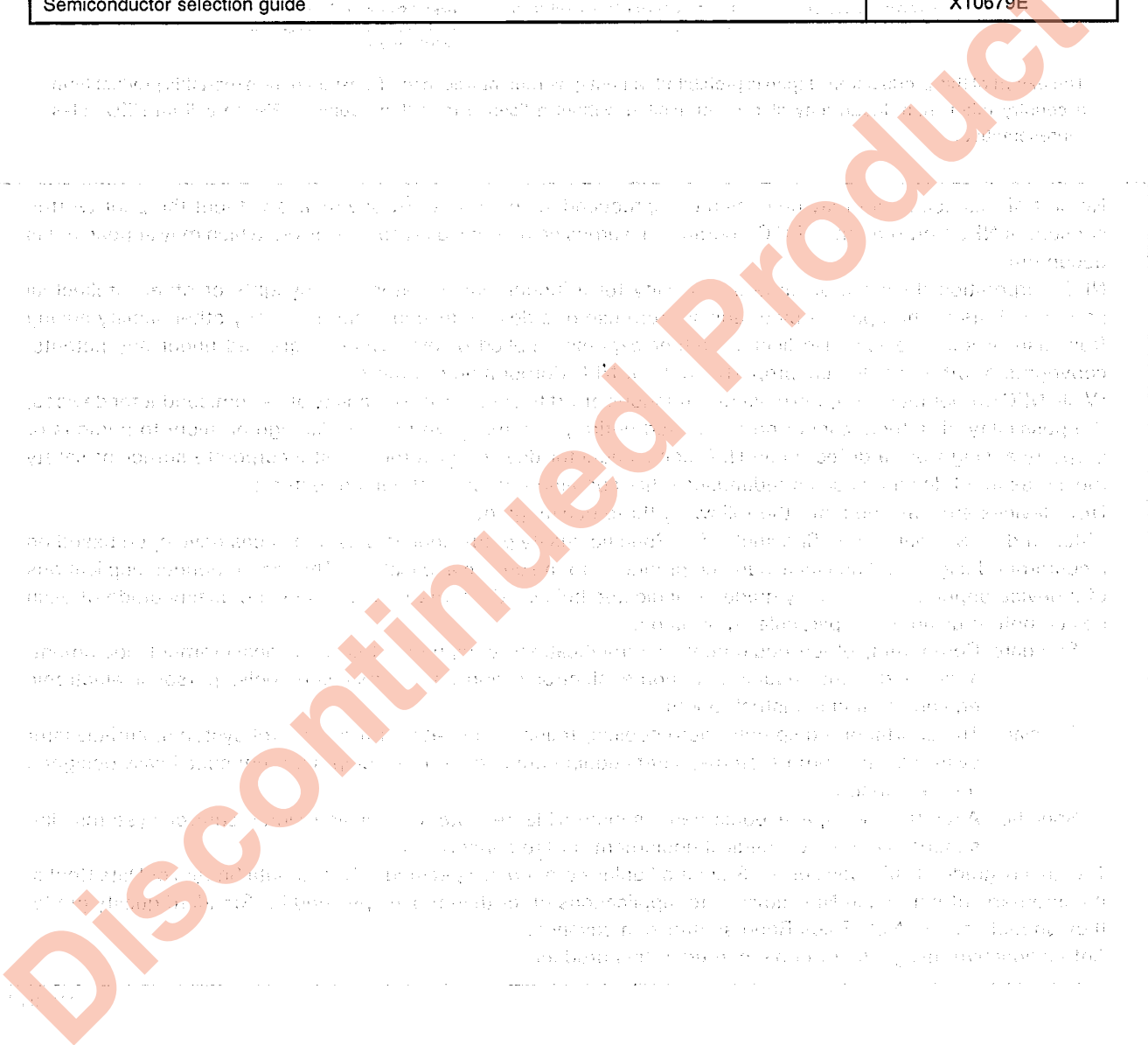
PACKAGE \ FEATURE	1.3 μm	1.5 μm	REMARKS
φ5.6 mm SMALL CAN	NDL7001	NDL7051	With monitor photo diode
φ5.6 mm SMALL CAN WITH LENS	NDL7001L		With monitor photo diode
4 PIN COAXIAL MODULE WITH SMF	NDL7401P Series NDL7408P Series	NDL7451P Series	Without TEC With monitor photo diode
4 PIN DIP MODULE WITH SMF	NDL7400P	NDL7450P	

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	C10535E
Semiconductor device package manual	MEI-1213
Guide to quality assurance for semiconductor devices	IEI-1202
Semiconductor selection guide	X10679E



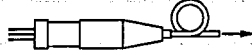
CAUTION

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



INVISIBLE LASER RADIATION
AVOID DIRECT EXPOSURE TO BEAM
OUTPUT POWER _____mw MAX
WAVELENGTH _____nm
CLASS IIb 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 DHHS
regulations as applicable
to standards 21 CFR Chapter 1,
Subchapter J.

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NEC devices are classified into the following three quality grades:

"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

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.