

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>)

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.

NDL7401P Series

1 310 nm InGaAsP STRAINED MQW DC-PBH LASER DIODE COAXIAL MODULE WITH SINGLE MODE FIBER

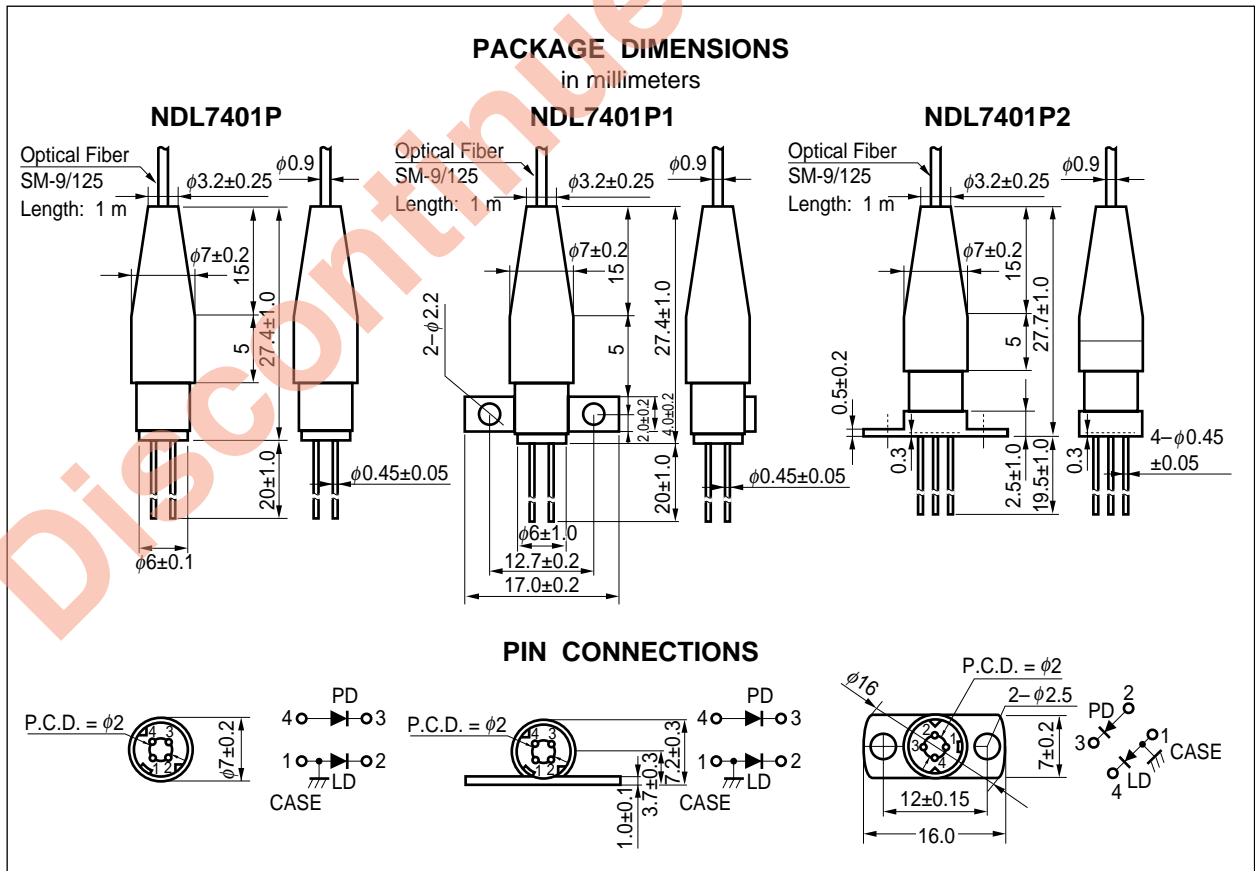
DESCRIPTION

NDL7401P Series is 1 310 nm laser diode coaxial module with single mode fiber. It has a strained Multiple Quantum Well (st-MQW) structure and a built-in InGaAs monitor photo diode. It is recommended for junction and access network systems.

The series is also available in FC-PC and SC-PC connector.

FEATURES

- Center wavelength $\lambda_c = 1\ 310\ \text{nm}$
- High output power from fiber $P_f = 2.0\ \text{mW MIN.}$
- Low threshold current $I_{th} = 10\ \text{mA TYP. @ } T_c = 25\ ^\circ\text{C}$
- High cut-off frequency $f_c = 2.0\ \text{GHz}$
- InGaAs monitor PIN-PD
- Wide operating temperature range $T_c = -40\ \text{to } +85\ ^\circ\text{C}$
- Based on Bellcore TA-NWT-000983



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

ORDERING INFORMATION

Part Number	Available Connector	Description
NDL7401P	Without Connector	No Flange
NDL7401PC	With FC-PC Connector	
NDL7401PD	With SC-PC Connector	
NDL7401P1	Without Connector	Flat Mount Flange
NDL7401P1C	With FC-PC Connector	
NDL7401P1D	With SC-PC Connector	
NDL7401P2	Without Connector	Vertical Flange
NDL7401P2C	With FC-PC Connector	
NDL7401P2D	With SC-PC Connector	

ABSOLUTE MAXIMUM RATINGS (T_c = 25 °C, unless otherwise specified)

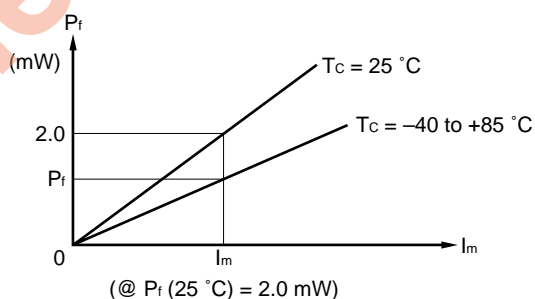
Parameter	Symbol	Ratings	Unit
Forward Current of LD	I _F	I _{th} + 50	mA
Reverse Voltage of LD	V _R	2.0	V
Forward Current of PD	I _F	10	mA
Reverse Voltage of PD	V _R	20	V
Operating Case Temperature	T _c	-40 to +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C
Lead Soldering Temperature (10 s)	T _{slid}	260	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25 °C, unless otherwise specified)



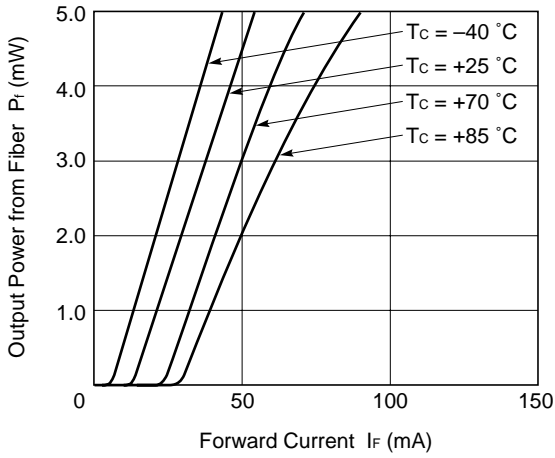
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V _{op}	P _f = 2.0 mW		1.1	1.3	V
Threshold Current	I _{th}			10	25	mA
		T _c = 85 °C		25	50	
Modulation Current	I _{mod}	P _f = 2.0 mW		15	20	mA
Differential Efficiency from Fiber	η _d		0.100	0.150		W/A
		T _c = 85 °C	0.075	0.100		
Center Emission Wavelength	λ _c	P _f = 2.0 mW, RMS (-20 dB)	1 290	1 310	1 330	nm
		T _c = -40 to +85 °C	1 260		1 360	
Temperature Dependence of Center Emission Wavelength	Δλ/ΔT	T _c = -40 to +85 °C		0.4	0.5	nm/°C
Spectral Width	σ	P _f = 2.0 mW, RMS (-20 dB)		1.3	2.5	nm
		T _c = 85 °C		1.5	4.0	
Rise Time	t _r	10 to 90 %		0.2	0.5	ns
Fall Time	t _f	90 to 10 %		0.3	0.5	ns
Monitor Current	I _m	V _R = 5 V, P _f = 2.0 mW	100	700		μA
Monitor Dark Current	I _d	V _R = 5 V		0.1	10	nA
Tracking Error	γ ^{*1}	I _m = const., T _c = -40 to +85 °C			1.0	dB

$$*1 \quad \gamma = \left| 10 \log \frac{P_f}{2.0 \text{ mW}} \right|$$

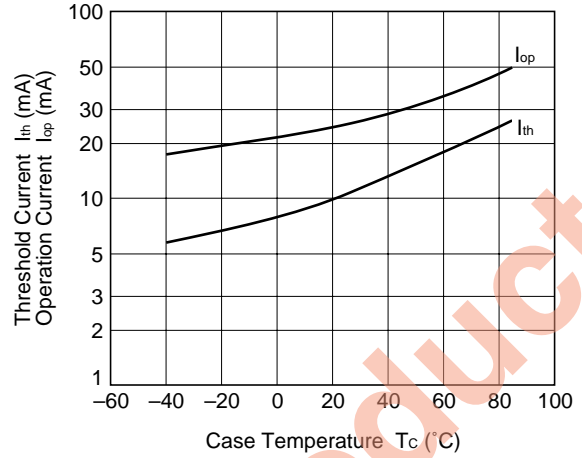


★ TYPICAL CHARACTERISTICS ($T_c = -40$ to $+85$ °C)

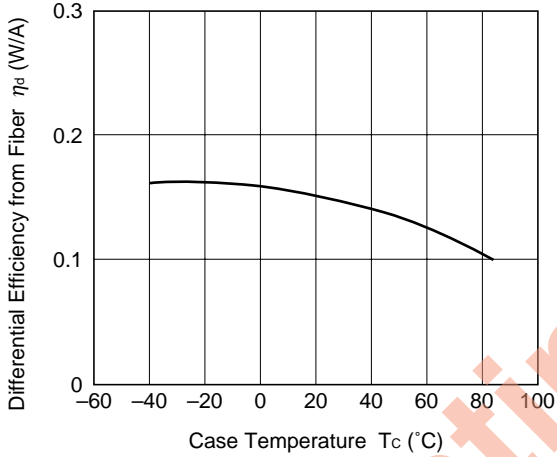
OUTPUT POWER FROM FIBER vs. FORWARD CURRENT



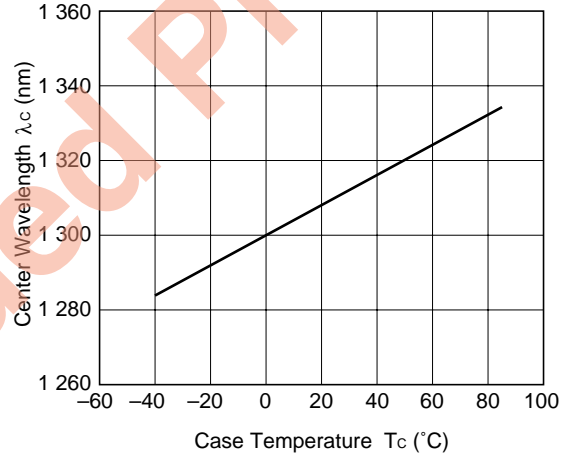
THRESHOLD CURRENT AND OPERATION CURRENT vs. CASE TEMPERATURE



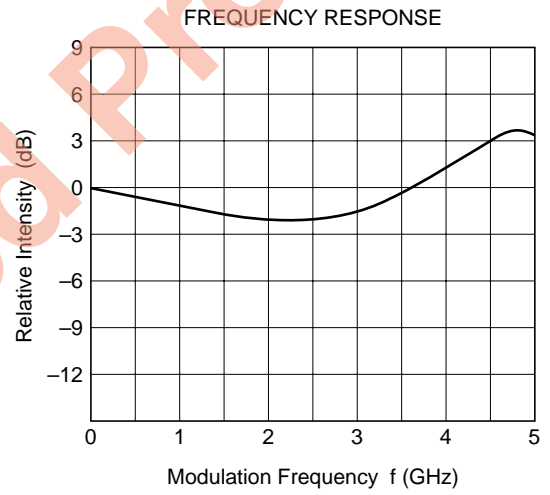
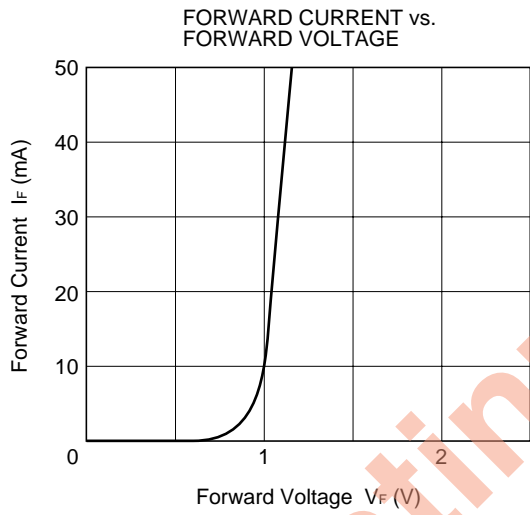
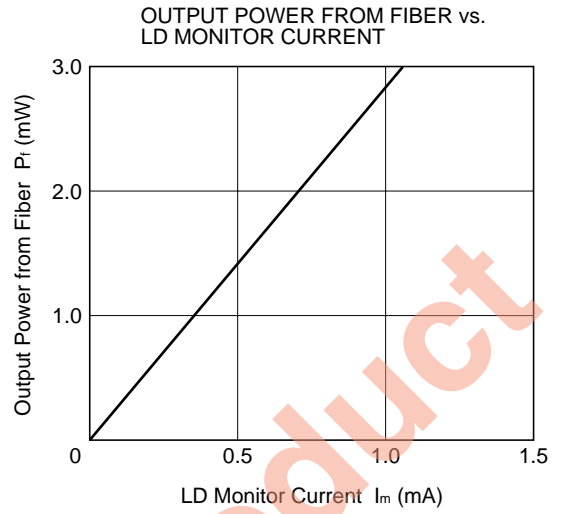
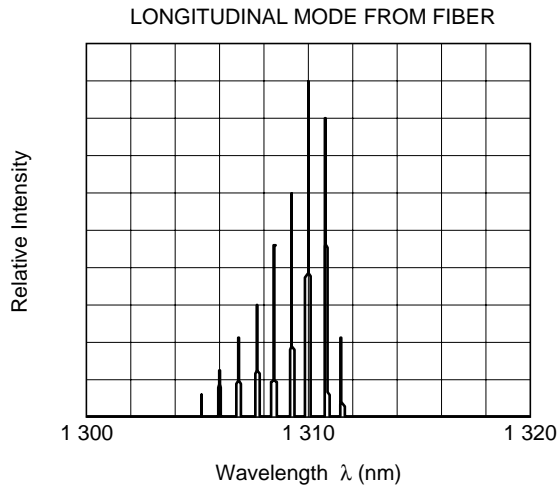
TEMPERATURE DEPENDENCE OF DIFFERENTIAL EFFICIENCY FROM FIBER



TEMPERATURE DEPENDENCE OF CENTER WAVELENGTH



TYPICAL CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$)



Discontinued Product

1.3 μm FABRY-PEROT DC-PBH LASER DIODE FAMILY

Package	Part Number	Remarks
ϕ 5.6 mm Small Can	NDL7001	With monitor photo diode
ϕ 5.6 mm Small Can with Lens	NDL7001L	With monitor photo diode
4-pin Coaxial Module with SMF	NDL7401P Series NDL7408P Series	Without TEC With monitor photo diode

REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	LEI-1201
Quality grades on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

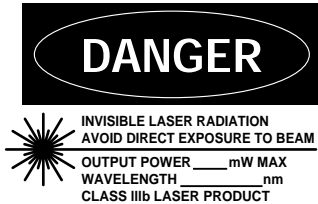
Discontinued Product

[MEMO]

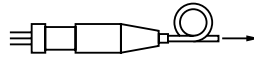
Discontinued Product

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.



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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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.