

# NDL7503P Series

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

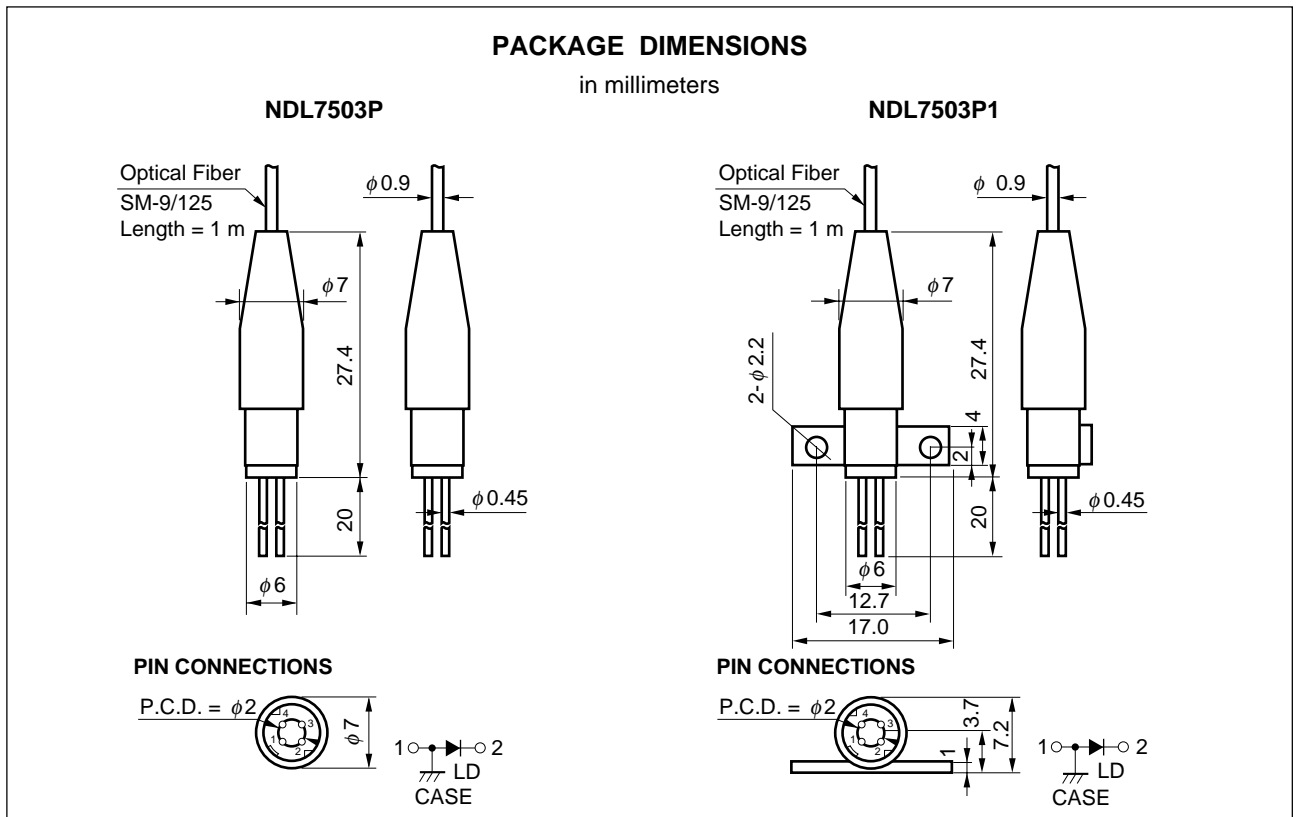
### DESCRIPTION

NDL7503P Series is a 1310nm newly developed Strained Multiple Quantum Well (st-MQW) structure pulsed laser diode coaxial module with singlemode fiber. It is designed for light source of optical measurement equipment (OTDR).

### FEATURES

- High output power  $P_f = 180 \text{ mW} @ I_{FP} = 1000 \text{ mA}^{*1}$
- Long wavelength  $\lambda_c = 1310 \text{ nm}$
- Coaxial module without thermoelectric cooler.
- Singlemode fiber pigtail

\*1 Pulse Conditions: Pulse width (PW) = 10  $\mu\text{s}$ , Duty = 1 %



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

**ORDERING INFORMATION**

Part Number	Available Connector	Flange Type
NDL7503P	Without Connector	no flange
NDL7503PC	With FC-PC Connector	
NDL7503PD	With SC-PC Connector	
NDL7503P1	Without Connector	flat mount flange
NDL7503P1C	With FC-PC Connector	
NDL7503P1D	With SC-PC Connector	

**ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub> = 25 °C)**

Parameter	Symbol	Ratings	Unit
Pulsed Forward Current*1	I <sub>FP</sub>	1.2	A
Reverse Voltage	V <sub>R</sub>	2.0	V
Operating Case Temperature	T <sub>c</sub>	-20 to +60	°C
Storage Temperature	T <sub>stg</sub>	-40 to +85	°C
Lead Soldering Temperature (10sec)	T <sub>slid</sub>	260	°C

\*1 Pulse Condition: Pulse Width (PW) = 10 μs, Duty = 1 %

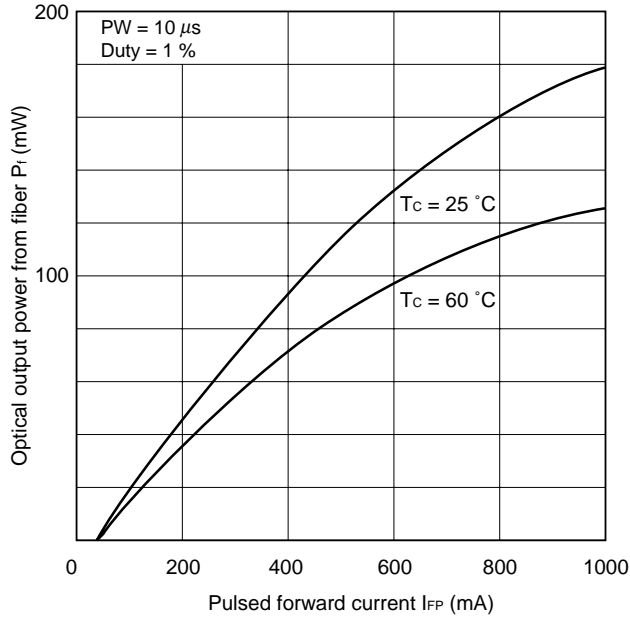
**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = 25 °C)**

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V <sub>FP</sub>	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %		2.5	4.0	V
Threshold Current	I <sub>th</sub>			35	65	mA
Optical Output Power from Fiber	P <sub>f</sub>	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %	110	180		mW
RMS Center Wavelength	λ <sub>c</sub>	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %	1290	1310	1330	nm
RMS Spectral Width	σ	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %		4.5	10.0	nm
Rise Time	t <sub>r</sub>	10 - 90 %			2.0	ns
Fall Time	t <sub>f</sub>	90 - 10 %			2.0	ns

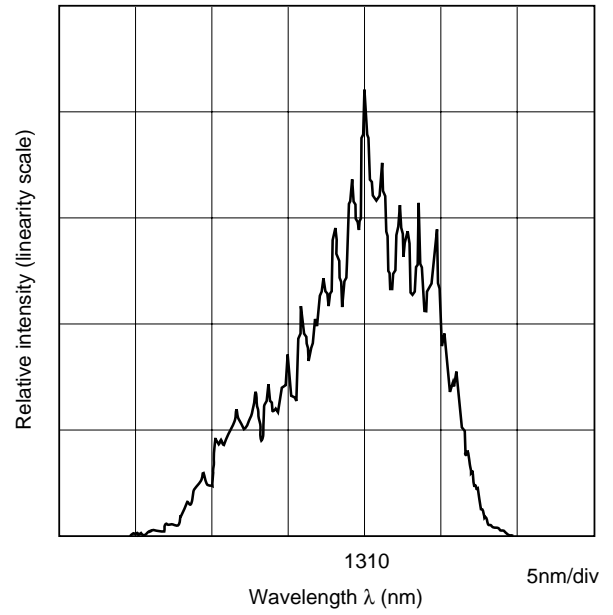
**ELECTRO-OPTICAL CHARACTERISTICS (T<sub>c</sub> = 0 to +60°C)**

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Threshold Current	I <sub>tr</sub>				80	mA
Optical Output Power from Fiber	P <sub>f</sub>	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %	75			mW
RMS Center Wavelength	λ <sub>c</sub>	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %	1280		1342.5	nm
Temperature Dependency of Center Wavelength	Δλ/ΔT			0.35		nm/°C
RMS Spectral Width	σ	I <sub>FP</sub> = 1000 mA, PW = 10 μs, Duty = 1 %			10	nm

OPTICAL OUTPUT POWER FROM FIBER vs.  
LD PULSE FORWARD CURRENT



LONGITUDINAL MODE (FROM FIBER)



LASER DIODE FAMILY FOR OTDR APPLICATION

Package	Features	1.31 $\mu\text{m}$		1.55 $\mu\text{m}$		$I_{FP}^{*1}$ (mA)	Remarks
		Part Number	P (mW) MIN./TYP.	Part Number	P (mW) MIN./TYP.		
$\phi$ 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	95/145	1000	P : no flange P1 : with flange
		NDL7513P/P1	70/110	NDL7563P/P1	60/80	400	
		NDL7514P/P1	25/50	NDL7564P/P1	20/40	400	
		NDL7515P/P1	20/30	NDL7565P/P1	8/11	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	

\*1 Pulse conditions: pulse width = 10  $\mu\text{s}$ , duty = 1 % (modules)  
 pulse width = 1  $\mu\text{s}$ , duty = 1 % ( $\phi$ 5.6 can)

**REFERENCE**

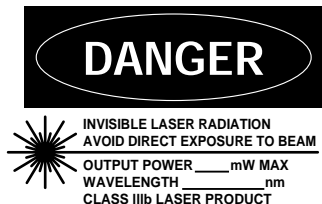
Document Name	Document No.
NEC semiconductor device reliability/quality control system	LEI-1201
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

[MEMO]

[MEMO]

**CAUTION**

**Within this module 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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Anti-radioactive design is not implemented in this product.