

LASER DIODE  
**NDL7515P Series****InGaAsP MQW DC-PBH PULSED LASER DIODE MODULE**  
**1 310 nm OTDR APPLICATION****DESCRIPTION**

The NDL7515P Series is a 1 310 nm newly developed Multiple Quantum Well (MQW) structure pulsed laser diode module with single mode fiber. It is designed for light source of optical measurement equipment (OTDR).

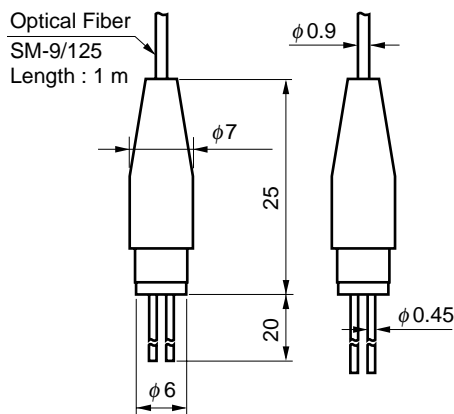
**FEATURES**

- Output power  $P_f = 20 \text{ mW MIN. @ } I_{FP} = 400 \text{ mA, } T_c = 25 \text{ }^\circ\text{C}^*$
- Long wavelength  $\lambda_c = 1\,310 \text{ nm}$
- Coaxial module without thermoelectric cooler
- Single mode fiber pigtail

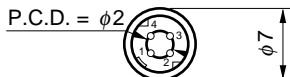
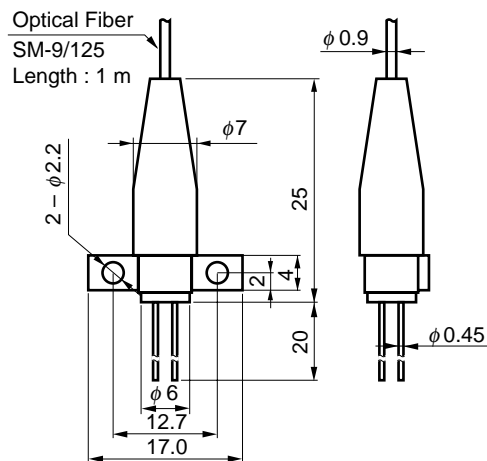
\*1 Pulse conditions: Pulse width (PW) = 10  $\mu\text{s}$ , Duty = 1 %

**PACKAGE DIMENSIONS**

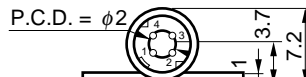
in millimeters

**NDL7515P****PIN CONNECTIONS**

P.C.D. =  $\phi 2$

**NDL7515P1****PIN CONNECTIONS**

P.C.D. =  $\phi 2$



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

## ORDERING INFORMATION

Part Number	Available Connector	Flange Type
NDL7515P	Without Connector	No Flange
NDL7515PC	With FC-PC Connector	
NDL7515P1	Without Connector	Flat Mount Flange
NDL7515P1C	With FC-PC Connector	

## ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub> = 25 °C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Pulsed Forward Current <sup>*1</sup>	I <sub>FP</sub>	600	mA
Reverse Voltage of LD	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 (10 s)	T <sub>sld</sub>	260	°C

\*1 Pulse conditions: Pulse width (PW) = 10 μs, Duty = 1 %

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

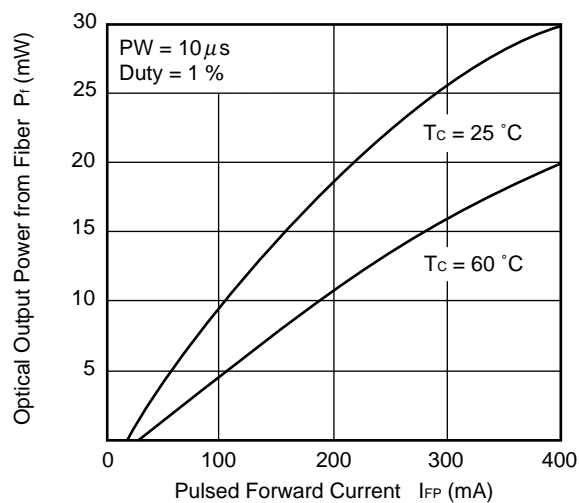
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V <sub>FP</sub>	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %		2.5	4.0	V
Threshold Current	I <sub>th</sub>			20	30	mA
Optical Output Power from Fiber	P <sub>f</sub>	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %	20	30		mW
Center Wavelength	λ <sub>c</sub>	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (-20 dB)	1 290	1 310	1 330	nm
Spectral Width	σ	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (-20 dB)			10	nm
Rise Time	t <sub>r</sub>	10 to 90 %			1.0	ns
Fall Time	t <sub>f</sub>	90 to 10 %			1.0	ns

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

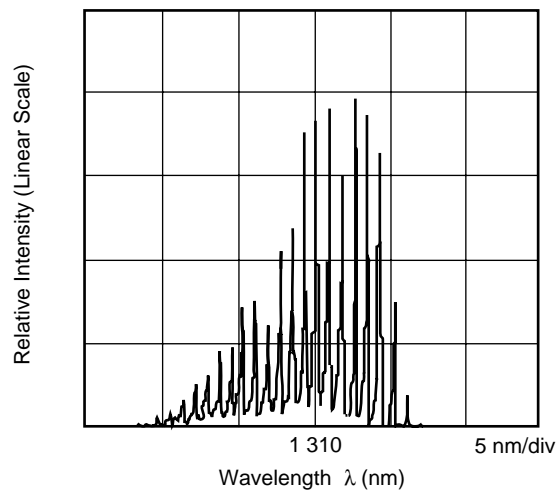
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Threshold Current	I <sub>th</sub>				50	mA
Optical Output Power from Fiber	P <sub>f</sub>	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %	10			mW
Center Wavelength	λ <sub>c</sub>	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (-20 dB)	1 280		1 342.5	nm
Temperature Dependence of Center Wavelength	Δλ/ΔT			0.35		nm/°C
Spectral Width	σ	I <sub>FP</sub> = 400 mA, PW = 10 μs, Duty = 1 %, RMS (-20 dB)			10	nm

★ TYPICAL CHARACTERISTICS ( $T_c = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

OPTICAL OUTPUT POWER FROM FIBER vs.  
LD PULSED FORWARD CURRENT



LONGITUDINAL MODE (FROM FIBER)



★ LASER DIODE FAMILY FOR OTDR APPLICATION

Features Packages	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	1 000	
	NDL7113	160/175	NDL7163	100/120	400	
4-pin Coaxial Module with SMF	NDL7503P/P1	110/180	NDL7553P/P1	95/145	1 000	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	1 000	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**

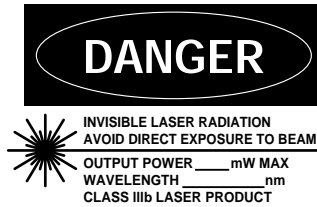
Document Name	Document No.
NEC semiconductor device reliability/quality control system	LEI-1201
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

[MEMO]

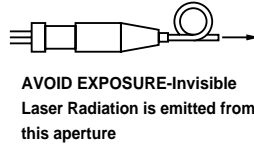
[MEMO]

## CAUTION

Within this 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



**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:

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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.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.