

NDL7408P Series**1 310 nm InGaAsP STRAINED MQW DC-PBH LASER DIODE
COAXIAL MODULE WITH SINGLE MODE FIBER****DESCRIPTION**

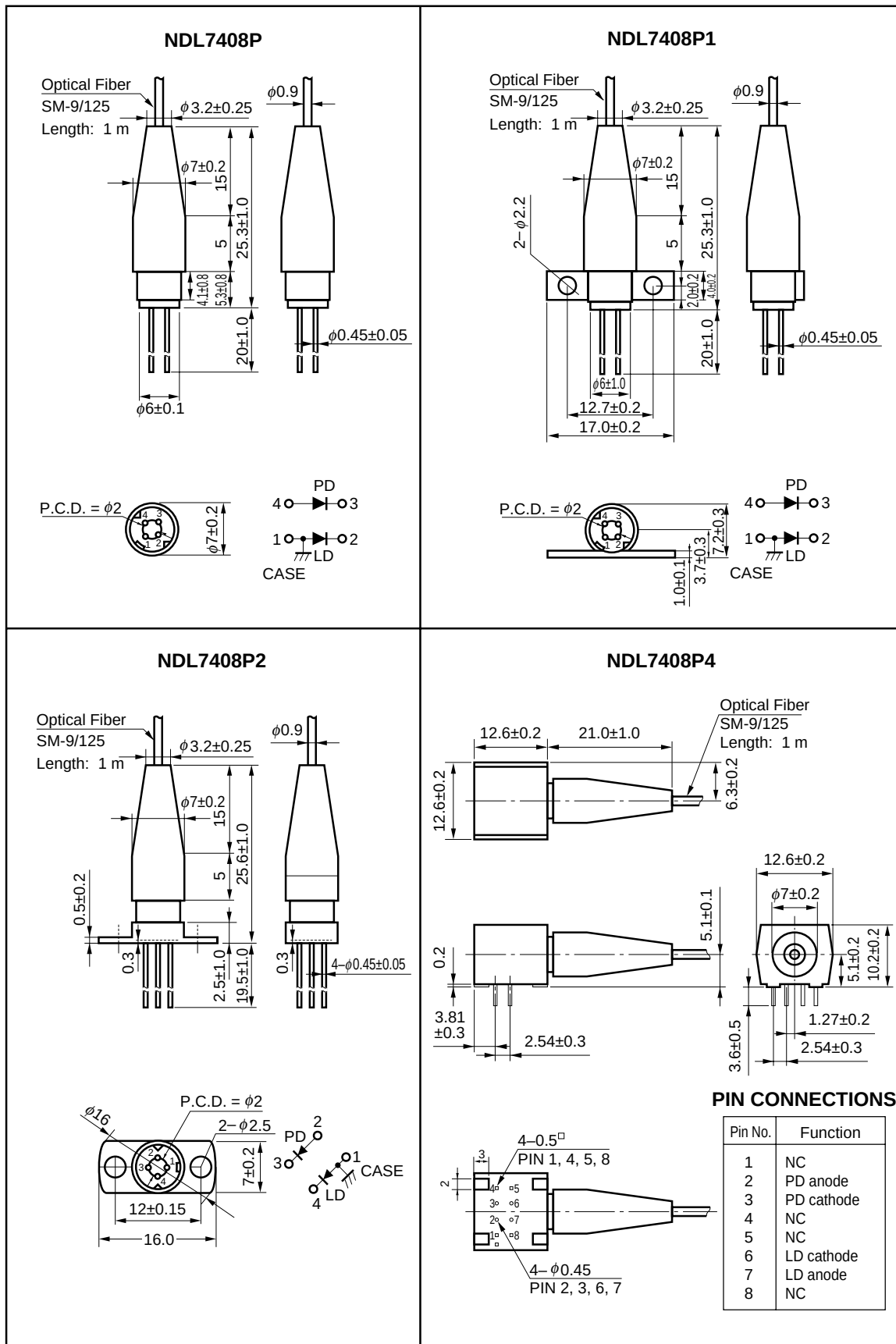
NDL7408P Series is a 1 310 nm laser diode coaxial module with single mode fiber. It has a strained Multiple Quantum Well (st-MQW) structure and a built-in InGaAs monitor photo diode. It is recommended for junction or access network systems. The series is available in two types of output power: 1.0 mW and 0.2 mW.

FEATURES

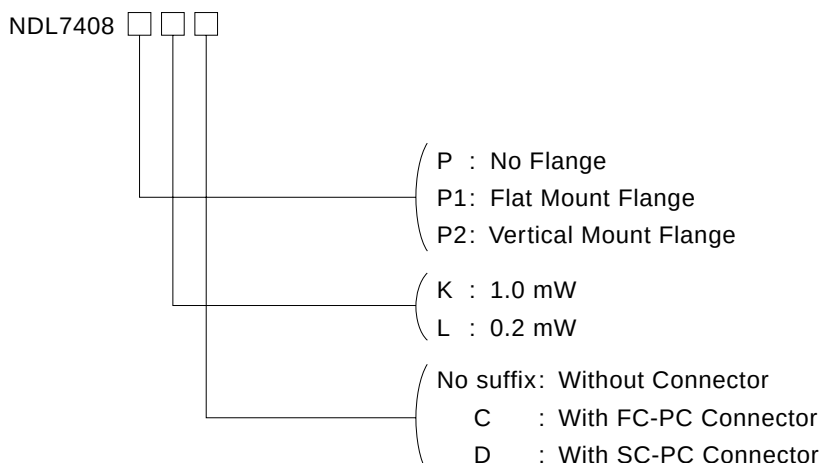
- Center wavelength $\lambda_c = 1\,310\text{ nm}$
- Two types of output power : 1.0 mW (NDL7408PK Series)
0.2 mW (NDL7408PL Series)
- Low threshold current $I_{th} = 12\text{ mA TYP. @}T_c = 25\text{ }^\circ\text{C}$
- High cut-off frequency $f_c = 2.0\text{ GHz}$
- InGaAs monitor PIN-PD
- Wide operating 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.

★ PACKAGE DIMENSIONS (in millimeters)



ORDERING INFORMATION



Part Number	Ranks	Description	
NDL7408PK	M	1.0 mW	Without Connector
NDL7408PKC		No Flange	With FC-PC Connector
NDL7408PKD			With SC-PC Connector
NDL7408P1K	M	1.0 mW	Without Connector
NDL7408P1KC		Flat Mount Flange	With FC-PC Connector
NDL7408P1KD			With SC-PC Connector
NDL7408P2K	M	1.0 mW	Without Connector
NDL7408P2KC		Vertical Flange	With FC-PC Connector
NDL7408P2KD			With SC-PC Connector
NDL7408P4K	M	1.0 mW	Without Connector
NDL7408P4KC		8-pin DIP	With FC-PC Connector
NDL7408P4KD			With SC-PC Connector
NDL7408PL	N	0.2 mW	Without Connector
NDL7408PLC		No Flange	With FC-PC Connector
NDL7408PLD			With SC-PC Connector
NDL7408P1L	N	0.2 mW	Without Connector
NDL7408P1LC		Flat Mount Flange	With FC-PC Connector
NDL7408P1LD			With SC-PC Connector
NDL7408P2L	N	0.2 mW	Without Connector
NDL7408P2LC		Vertical Flange	With FC-PC Connector
NDL7408P2LD			With SC-PC Connector
NDL7408P4L	N	0.2 mW	Without Connector
NDL7408P4LC		8-pin DIP	With FC-PC Connector
NDL7408P4LD			With SC-PC Connector

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

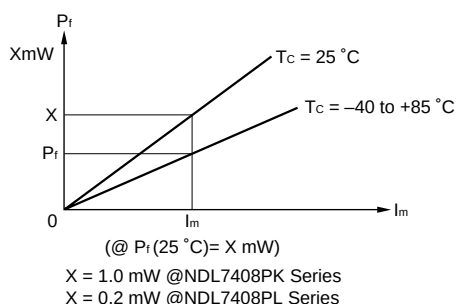
Parameter	Symbol	Ratings	Unit
Forward Current of LD	I _F	I _{th} + 50	mA
Reverse Voltage of LD	V _R	2.0	V
Forward Current of PD	I _F	10	mA
Reverse Voltage of PD	V _R	20	V
Operating Case Temperature	T _c	−40 to +85	°C
Storage Temperature	T _{stg}	−40 to +85	°C
Lead Soldering Temperature (10 s)	T _{sld}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

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

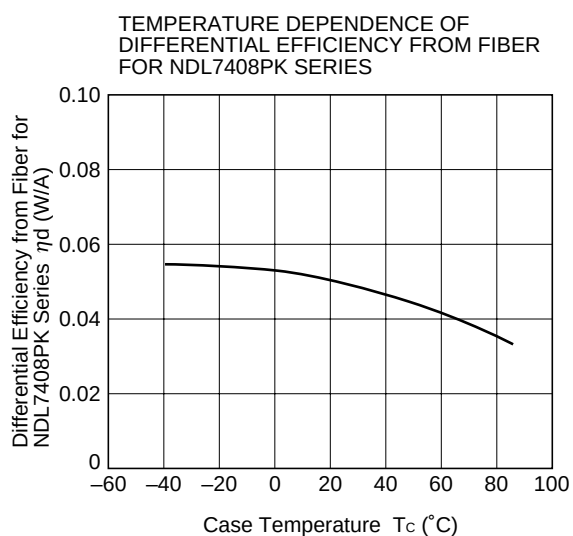
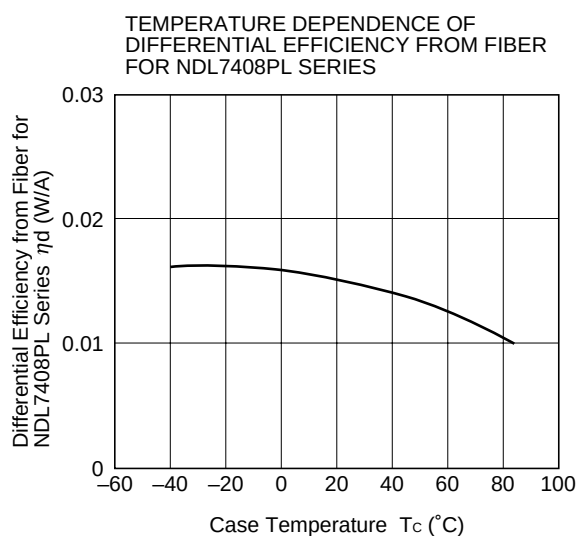
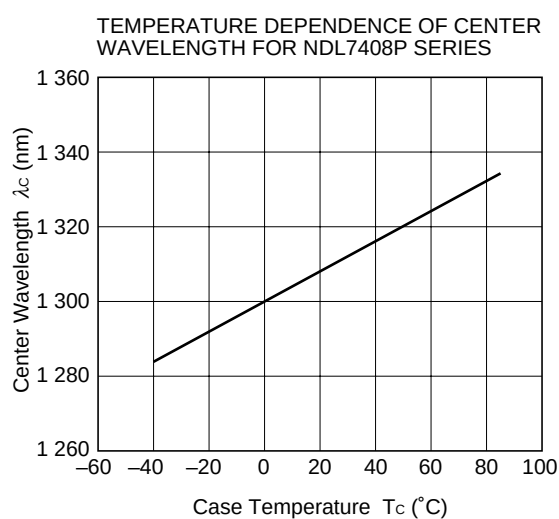
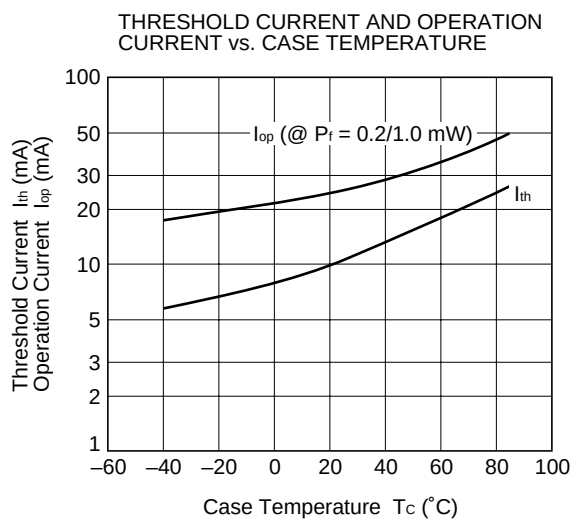
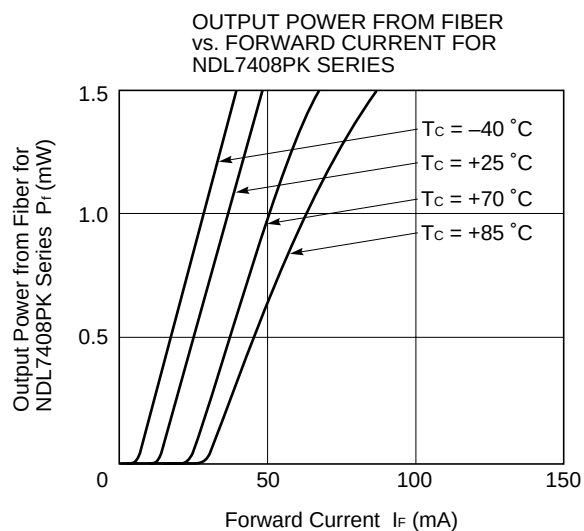
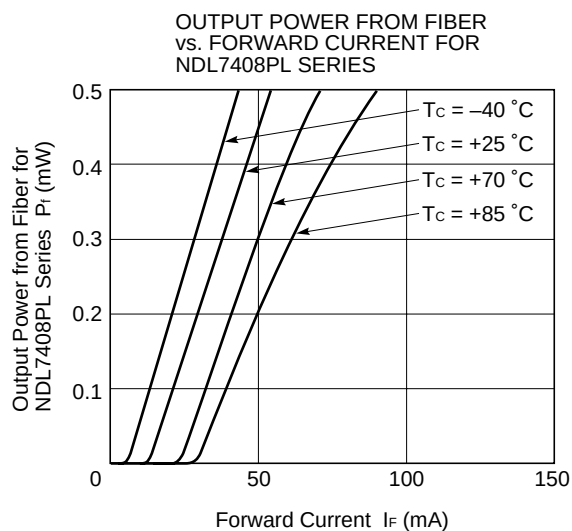
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V _{op}	*1		1.1	1.3	V
Threshold Current	I _{th}			10	25	mA
		T _c = +85 °C		25	50	
Modulation Current	I _{mod}	P _r = 1.0 mW @NDL7408PK Series		15	30	mA
		P _r = 0.2 mW @NDL7408PL Series				
Differential Efficiency from Fiber for NDL7408PK Series	η _d		0.025	0.050		W/A
		T _c = +85 °C	0.018	0.035		
Differential Efficiency from Fiber for NDL7408PL Series	η _d		0.010	0.015		
		T _c = +85 °C	0.005	0.010		
Center Emission Wavelength	λ _c	*1 , 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	*1 , RMS (−20 dB)		1.3	2.5	nm
		T _c = +85 °C		1.5	4	
Cut-off Frequency	f _c	−3 dB		2.0		GHz
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 of PD	I _m	V _{RD} = 5 V, *1	100	700		μA
Dark Current of PD	I _D	V _{RD} = 5 V		0.1	10	nA
Tracking Error	γ ^{*2}	I _m = const., T _c = −40 to +85 °C		0.5	1.0	dB

***1** P_r = 1.0 mW @NDL7408PK Series
P_r = 0.2 mW @NDL7408PL Series

$$\text{*2 } \gamma = \left| 10 \log \frac{P_r}{X \text{ mW}} \right|$$

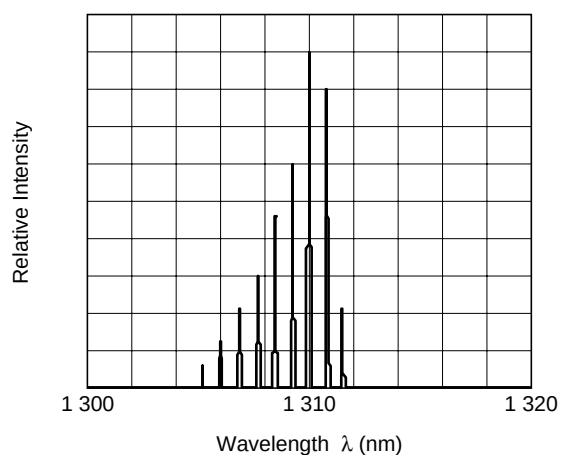


TYPICAL CHARACTERISTICS ($T_c = -40$ to $+85$ °C)

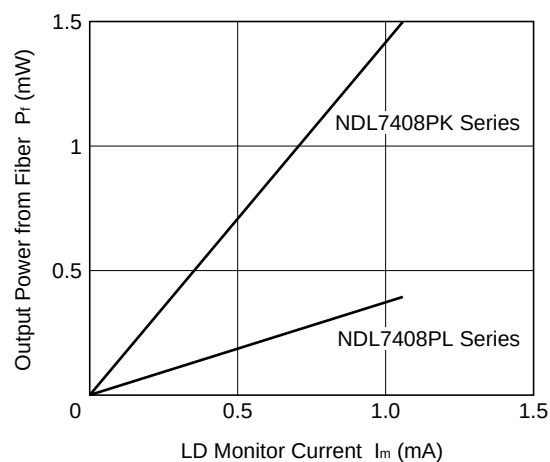


TYPICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$)

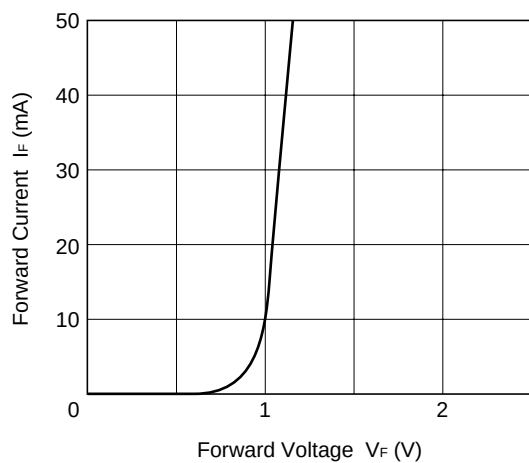
LONGITUDINAL MODE FROM FIBER
FOR NDL7408P SERIES



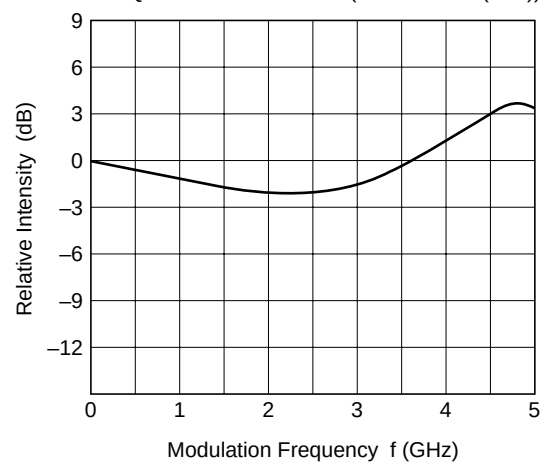
OUTPUT POWER FROM FIBER vs.
LD MONITOR CURRENT



FORWARD CURRENT vs.
FORWARD VOLTAGE FOR
NDL7408P SERIES



FREQUENCY RESPONSE ($P_f = 0.2 / 1.0$ (mW))



1.3 μm FABRY-PEROT DC-PBH LASER DIODE FAMILY

Package \ Features	Part Number	Remarks
$\phi 5.6$ mm Small Can	NDL7001	With monitor photo diode
$\phi 5.6$ 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

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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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)

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The quality grade of NEC devices in "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 NEC Sales Representative in advance.

Anti-radioactive design is not implemented in this product.