

NDL7701P Series

**1 550 nm OPTICAL FIBER COMMUNICATIONS
InGaAsP STRAINED MQW DFB DC-PBH LASER DIODE MODULE**

DESCRIPTION

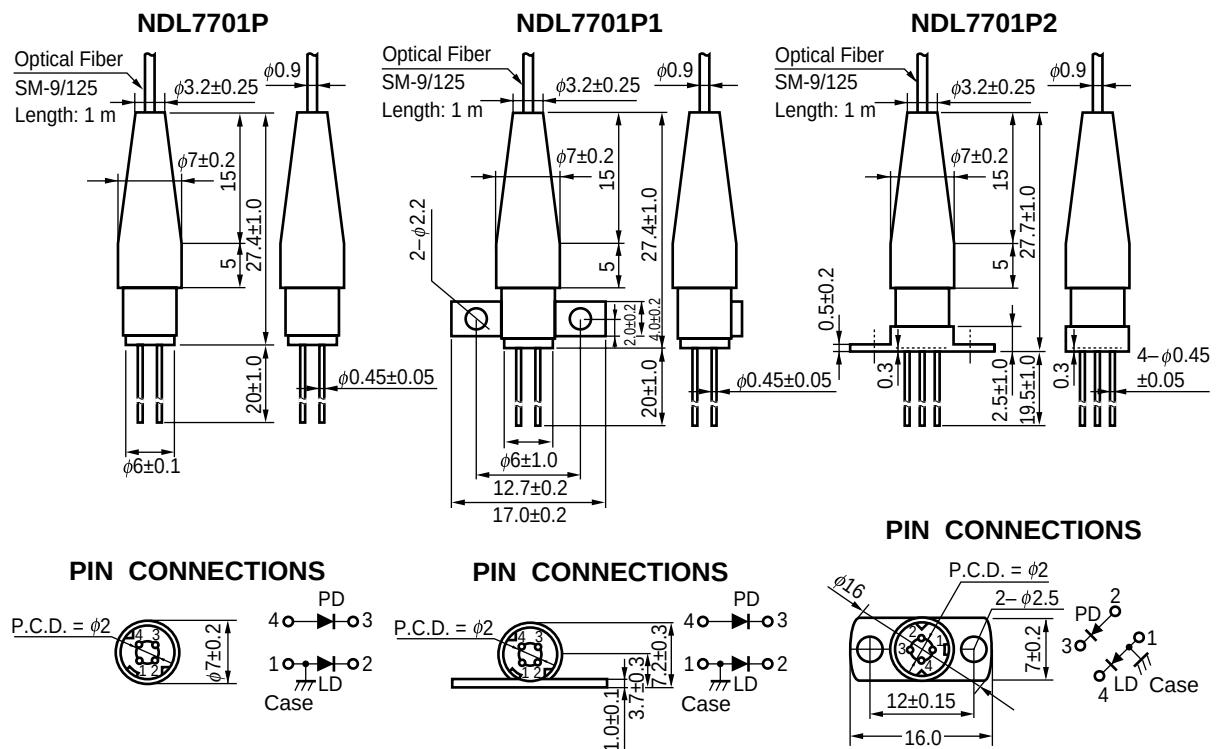
The NDL7701P Series is a 1 550 nm phase-shifted DFB (Distributed Feed-Back) laser diode with single mode fiber. The strained Multiple Quantum Well (st-MQW) structure is adopted to achieve stable dynamic single longitudinal mode operation over wide temperature range of -20 to $+85$ °C.

It is designed for all STM-1 and STM-4 applications.

FEATURES

- Peak emission wavelength $\lambda_p = 1\,550$ nm
- ★ • Low threshold current $I_{th} = 15$ mA @ $T_c = 25$ °C
- Wide operating temperature range $T_c = -20$ to $+85$ °C
- InGaAs monitor PIN-PD
- Based on Bellcore TA-NWT-000983

PACKAGE DIMENSIONS
in millimeters



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

ORDERING INFORMATION

Part Number	Available Connector	Flange Type
NDL7701P	Without Connector	No Flange
NDL7701PC	With FC-PC Connector	
NDL7701PD	With SC-PC Connector	
NDL7701P1	Without Connector	Flat Mount Flange
NDL7701P1C	With FC-PC Connector	
NDL7701P1D	With SC-PC Connector	
NDL7701P2	Without Connector	Vertical Flange
NDL7701P2C	With FC-PC Connector	
NDL7701P2D	With SC-PC Connector	

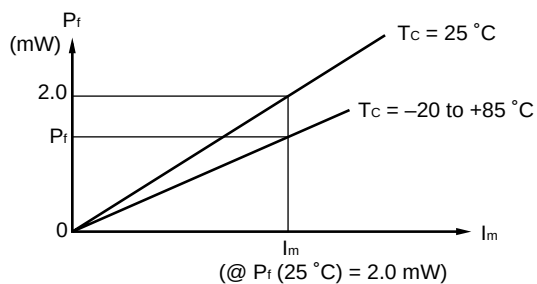
ABSOLUTE MAXIMUM RATINGS ($T_c = -20$ to $+85$ °C, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P_f	5.0	mW
Forward Current of LD	I_F	150	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	-20 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 = -20 to +85 °C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V _F	P _f = 2.0 mW, T _c = 25 °C			1.3	V
Threshold Current	I _{th}	T _c = 25 °C		15	25	mA
Differential Efficiency from Fiber	η _d	P _f = 2.0 mW, T _c = 25 °C		0.1		W/A
Peak Emission Wavelength	λ _p	P _f = 1.0 mW, PN 1/2, I _b = I _{th} ,	1 530	1 550	1 570	nm
Side Mode Suppression Ratio	SMSR	622 Mb/s-NRZ	30			dB
Temperature Dependence of Differential Efficiency from Fiber	Δη _d	Δη _d = 10 log $\frac{\eta_d (T_c = 85\text{ }^{\circ}\text{C})}{\eta_d (T_c = 25\text{ }^{\circ}\text{C})}$	-3.0	-2.5		dB
Rise Time	t _r	10-90%, T _c = 25 °C			0.5	ns
Fall Time	t _f	90-10%, T _c = 25 °C			0.5	ns
Monitor Current	I _m	V _R = 5 V, P _f = 2.0 mW	100			μA
Monitor Dark Current	I _D	V _R = 5 V, T _c = 25 °C		0.1	5	nA
Tracking Error	γ ^{*1}	I _m = const. (@ P _f = 2 mW, T _c = 25 °C)			1.0	dB

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



★ DFB-LD FAMILY FOR TELECOM

Part Number	Absolute Maximum Ratings		Typical Characteristics			SDH Application	Package
	T _c (°C)	T _{stg} (°C)	I _{th} (mA)	P _r (mW)	λ _p (nm)		
			TYP.	MIN.	TYP.		
NDL7603P Series	−40 to +85	−40 to +85	15	2	1 310	≤ STM-4 : 622 Mb/s	Coaxial
NDL7620P Series	0 to +70	−40 to +85	45 (MAX.)	2	1 310	≤ STM-16: 2.5 Gb/s	Coaxial
NDL7701P Series	−20 to +85	−40 to +85	15	2	1 550	≤ STM-4 : 622 Mb/s	Coaxial
NDL7705P Series	−40 to +85	−40 to +85	15	2	1 550	≤ STM-4 : 622 Mb/s	Coaxial
NX8562LB	−20 to +65	−40 to +85	20	20	1 550 ^{*1}	CW Light Source for external modulator	BFY
NX8563LB Series	−20 to +65	−40 to +85	20	10	ITU-T ^{*2}	CW Light Source for external modulator	BFY
NDL7910P	−20 to +70	−40 to +85	7	0.5	1 550 ^{*1}	≤ STM-16: 2.5 Gb/s EA modulator integrated DFB-LD	BFY

*1 Wavelength selectable for ITU-T standards upon request.

*2 Wavelength selectable for ITU-T standards.

REFERENCE

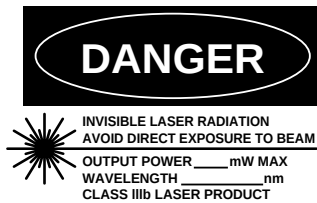
Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

[MEMO]

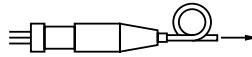
[MEMO]

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



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.

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.