

1 310 nm OPTICAL CATV RETURN PATH APPLICATIONS InGaAsP MQW DFB LASER DIODE MODULE WITH ISOLATOR

DESCRIPTION

The NDL7605P Series is a 1 310 nm uncooled isolated coaxial DFB laser diode. It is especially designed for optical CATV return path applications.

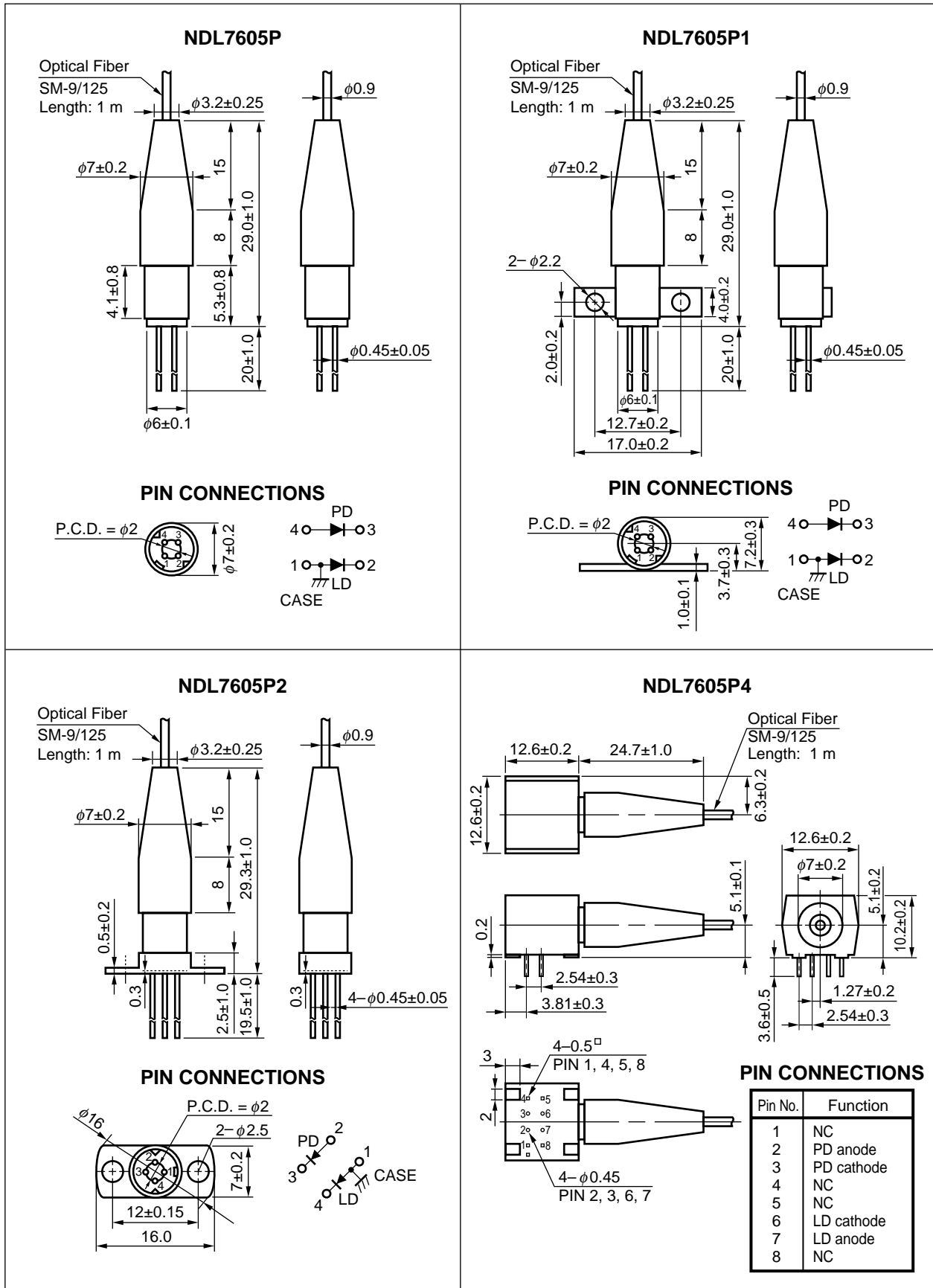
FEATURES

- Low distortion
 - IMD2 = -50 dBc MAX.*1 @ T_c = 25 °C
 - IMD2 = -45 dBc MAX.*1 @ T_c = -40 to +85 °C
 - IMD3 = -60 dBc MAX.*1 @ T_c = -40 to +85 °C
- Output power P_r = 2.0 mW
- Long wavelength λ_p = 1 310 nm
- Internal InGaAs monitor PD and isolator
- Single mode fiber pigtail with FC-UPC, SC-UPC or SC-APC connector
- Wide operating temperature range T_c = -40 to +85 °C

*1 2-ch, Optical loss = 7 dB, OMI = 10 %/ch

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

PACKAGE DIMENSIONS (in millimeters)



ORDERING INFORMATION

Part Number	Available Connector	Flange Type
NDL7605PC	With FC-UPC Connector	No Flange
NDL7605PD	With SC-UPC Connector	
NDL7605PX	With SC-APC Connector	
NDL7605P1C	With FC-UPC Connector	Flat Mount Flange
NDL7605P1D	With SC-UPC Connector	
NDL7605P1X	With SC-APC Connector	
NDL7605P2C	With FC-UPC Connector	Vertical Flange
NDL7605P2D	With SC-UPC Connector	
NDL7605P2X	With SC-APC Connector	
NDL7605P4C	With FC-UPC Connector	Lead Bend
NDL7605P4D	With SC-UPC Connector	
NDL7605P4X	With SC-APC Connector	

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

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P _f	5	mW
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	15	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

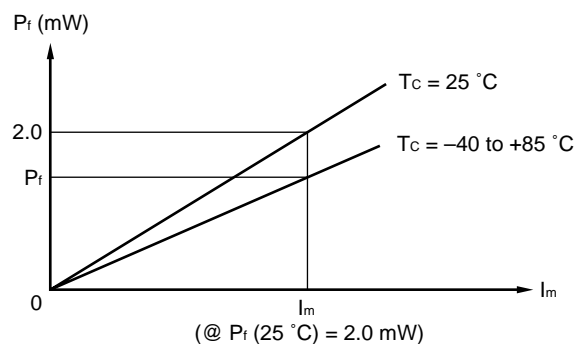
ELECTRO-OPTICAL CHARACTERISTICS

(T_c = 25 °C, Optical Reflection ≤ -50 dB, unless otherwise specified)

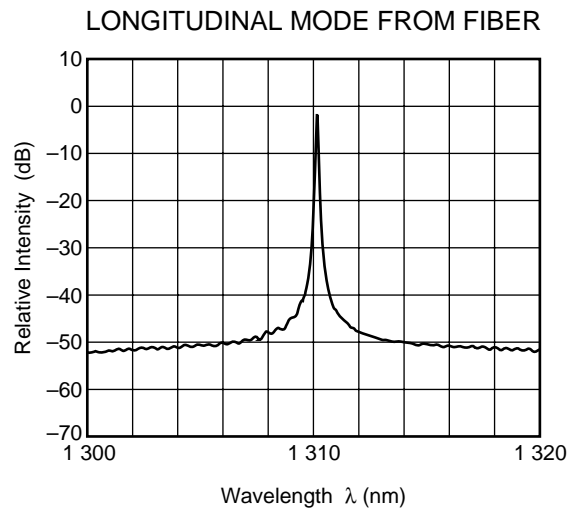
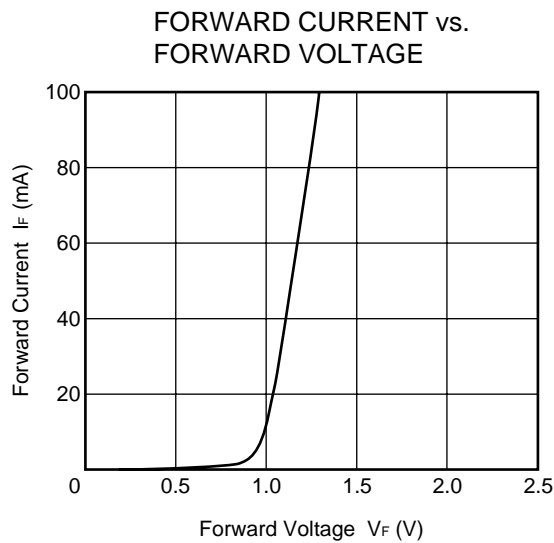
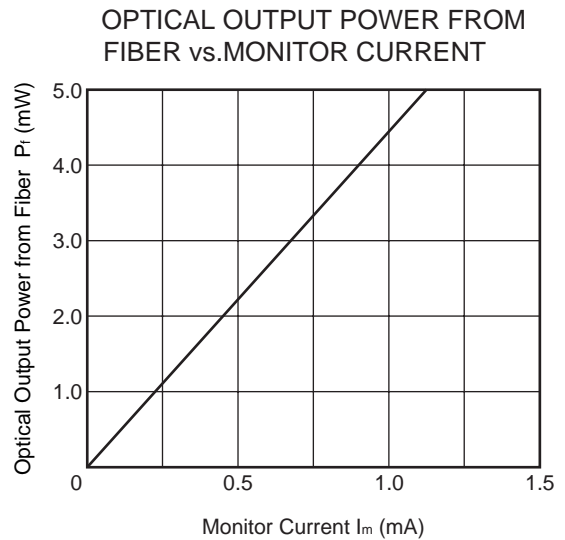
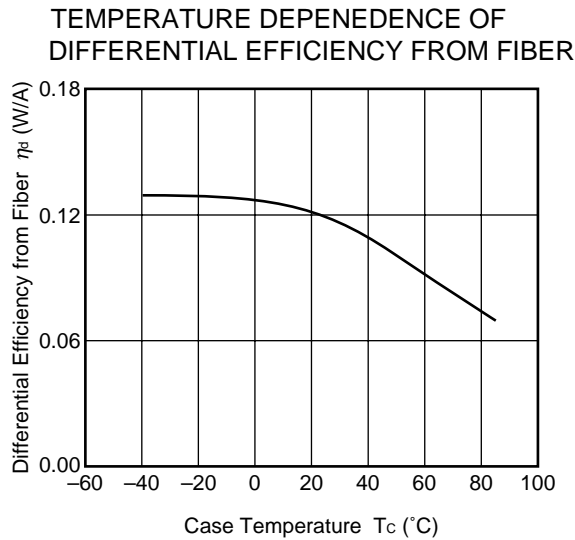
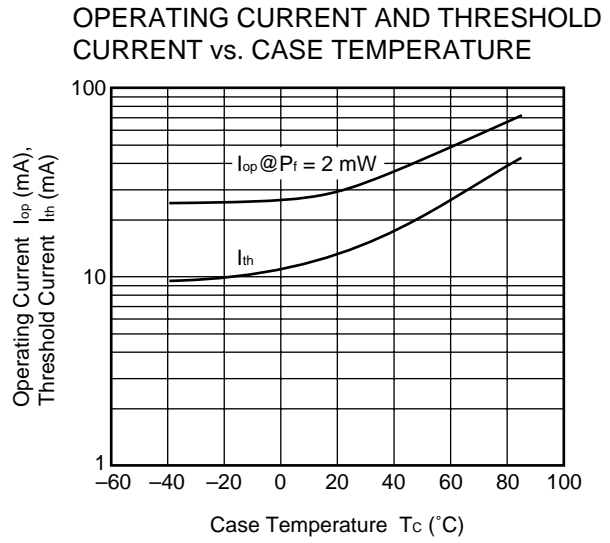
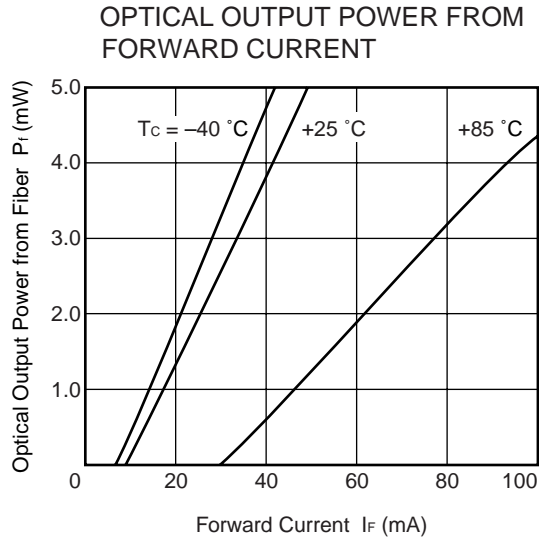
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V _F	I _F = 30 mA	0.9	1.1	1.3	V
Optical Output Power from Fiber	P _f	CW		2.0		mW
Threshold Current	I _{th}	CW		15	30	mA
		CW, T _c = 85 °C		40	60	
Differential Efficiency from Fiber	η _d	P _f = 2.0 mW	0.080	0.200		W/A
Temperature Dependence of Differential Efficiency from Fiber	Δη _d	P _f = 2.0 mW, η (85 °C) / η (25 °C)	-3.0			dB
Peak Emission Wavelength	λ _p	P _f = 2.0 mW, RMS (-20 dB)	1 290	1 310	1 330	nm
Side Mode Suppression Ratio	SMSR	P _f = 2.0 mW	30			dB
2nd Order Inter-modulation Distortion	IMD2	*1			-50	dBc
		*1, T _c = -40 to +85 °C			-45	
3rd Order Inter-modulation Distortion	IMD3	*1, T _c = -40 to +85 °C			-60	dBc
Carrier to Noise Ratio	CNR	*1, T _c = -40 to +85 °C	52			dB
Monitor Current	I _m	V _R = 5 V, P _f = 2.0 mW	100	500	1 000	μA
Dark Current	I _D	V _R = 5 V		0.1	10	nA
Tracking Error	γ ²	I _m = const., P _f = 2.0 mW, T _c = -40 to +85 °C			1.5	dB
Optical Isolation	ISO		30			dB

*1 Conditions: P_f = 2.0 mW, T_c = 25 °C, 2 channel unmodulated carriers 13 MHz and 19 MHz,
Optical Reflection = -50 dB, Optical Loss = 7 dB, OMI = 10 %/ch

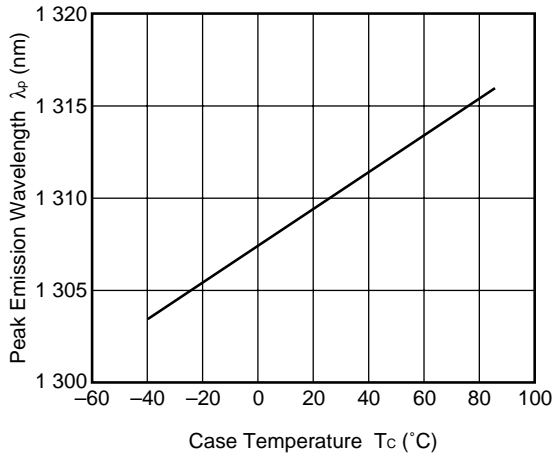
*2 $\gamma = \left| 10 \log \frac{P_f}{2.0 \text{ mW}} \right|$



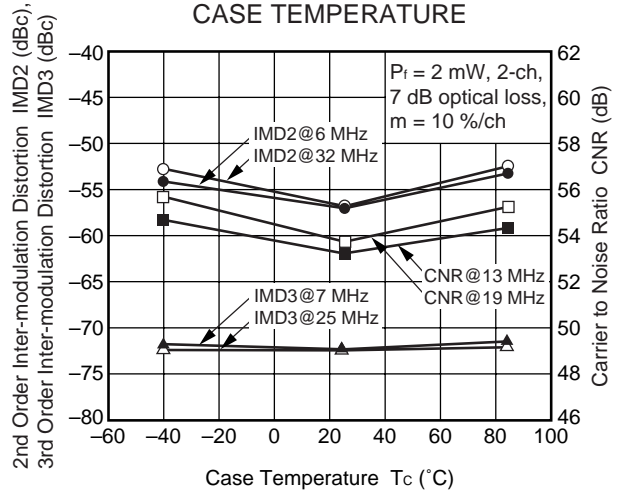
★ TYPICAL CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified)



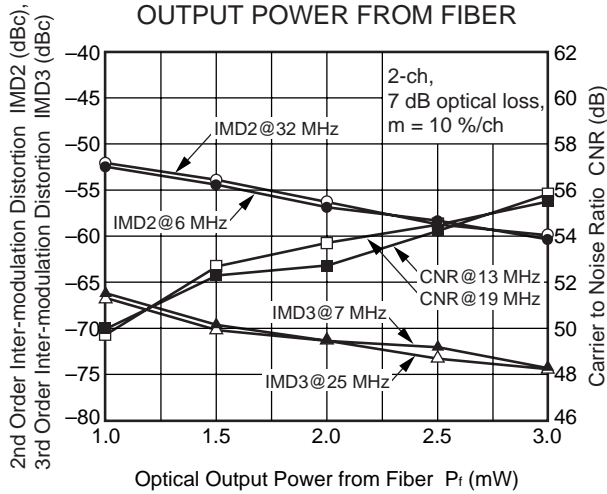
TEMPERATURE DEPENDENCE OF PEAK EMISSION WAVELENGTH



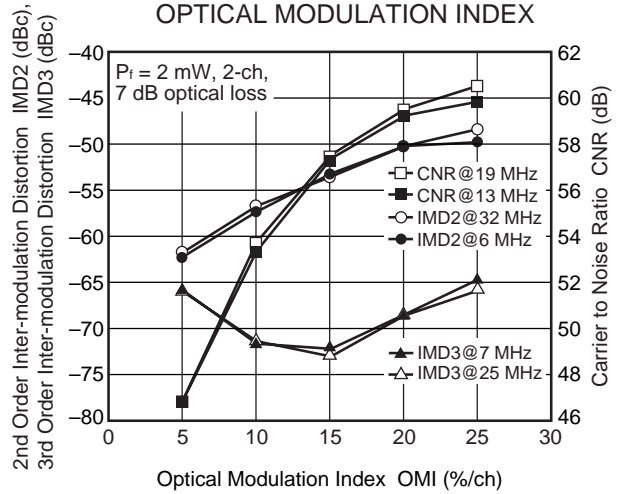
IMD2, IMD3, CNR vs. CASE TEMPERATURE



IMD2, IMD3, CNR vs. OPTICAL OUTPUT POWER FROM FIBER



IMD2, IMD3, CNR vs. OPTICAL MODULATION INDEX



Remark The graphs indicate nominal characteristics.

★ **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
SEMICONDUCTORS SELECTION GUIDE Products & Packages (CD-ROM)	X13769X

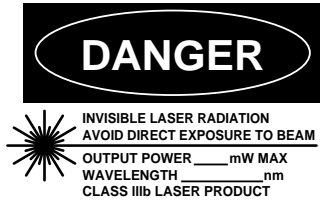
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CAUTION

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.

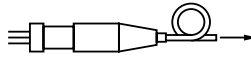


DANGER

INVISIBLE LASER RADIATION
AVOID DIRECT EXPOSURE TO BEAM

OUTPUT POWER _____ mW MAX
WAVELENGTH _____ nm
CLASS IIIb LASER PRODUCT

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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