

FEATURES

- **PEAK EMISSION WAVELENGTH:**
 $\lambda_p = 1310 \text{ nm}$
- **OPTICAL OUTPUT POWER:**
 $P_f = 2.0 \text{ mW}$
- **WIDE OPERATING TEMPERATURE RANGE:**
-40 to +85°C
- $\lambda/4$ PHASE-SHIFTED DFB
- **SIDE MODE SUPPRESSION RATIO:**
SMSR = 35 dB MIN
- InGaAs MONITOR PIN-PD

DESCRIPTION

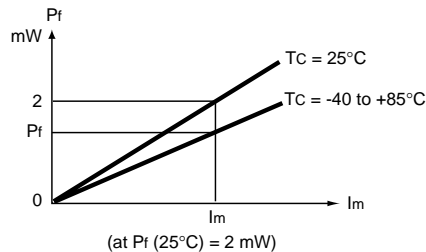
The NDL7603P Series is a 1310 nm phase-shifted DFB (distributed feedback) laser diode module with single mode fiber. The Multiple Quantum Well (st-MQW) structure is adopted to achieve stable dynamic single longitudinal mode operation over a wide temperature range of -40 to +85°C. It is designed for all STM-1 and STM-4 applications.

ELECTRO-OPTICAL CHARACTERISTICS (Tc = -40 to +85°C, unless otherwise specified)

PART NUMBER PACKAGE OUTLINE			NDL7603P Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
V _F	Forward Voltage, I _F = 30 mA		V	0.9	1.3
I _{TH}	Threshold Current, T _c = 25°C T _c = 85°C	mA		15 45	50
η_d	Differential Efficiency from Fiber, T _c = 25°C T _c = 85°C	W/A	0.070 0.035	0.120 0.070	
$\Delta\eta_d$	Temperature Dependence of Differential Efficiency from Fiber $\Delta\eta_d = 10 \log \frac{\eta_d(85^\circ\text{C})}{\eta_d(25^\circ\text{C})}$	dB	-3	-2.5	
λ_p	Peak Emission Wavelength, P _f = 1 mW	nm	1290	1310	1330
SMSR	Side Mode Suppression Ratio, P _f = 1 mW	dB	35		
t _r	Rise Time, I _b = 0.9 x I _{TH}	ns			0.5
t _f	Fall Time, I _b = 0.9 x I _{TH}	ns			0.5
I _m	Monitor Current, V _R = 5 V, P _f = 2 mW	μA	300		2500
I _D	Monitor Dark Current, V _R = 5 V, T _c = 25°C	nA		0.1	5
γ	Tracking Error ¹ , I _m = const., P _f = 2 mW, T _c = 25°C	dB			1.0
RIN	Relative Intensity Noise, Ref = -14 dB, P _f = 1 mW, polarization worst case	dB/Hz		-115	

Note:

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



NDL7603P SERIES

ABSOLUTE MAXIMUM RATINGS¹

(T_c = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
P _f	Optical Output Power from Fiber	mW	5
I _F	Forward Current of LD	mA	150
V _R	Reverse Voltage of LD	V	2
I _F	Forward Current of PD	mA	2
V _R	Reverse Voltage of PD	V	15
T _c	Operating Case Temperature	°C	-40 to +85
T _{STG}	Storage Temperature	°C	-40 to +85
T _{SLD}	Lead Soldering Temperature (10 s)	°C	260

Note:

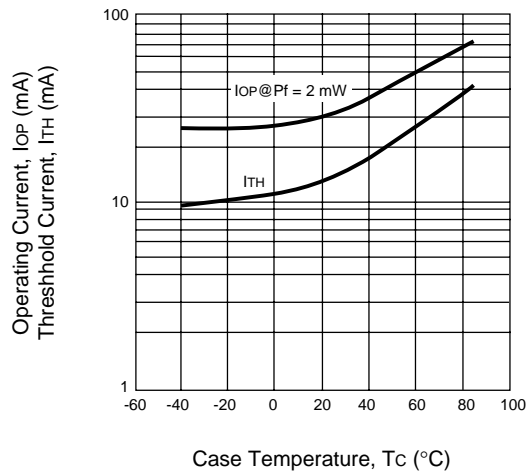
- Operation in excess of any one of these parameters may result in permanent damage.

ORDERING INFORMATION

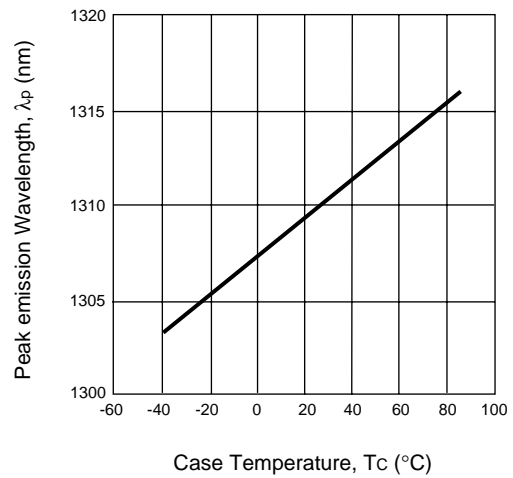
PART NUMBER	AVAILABLE CONNECTOR	FLANGE TYPE
NDL7603P	Without Connector	No Flange
NDL7603PC	With FC-PC Connector	
NDL7603PD	With SC-PC Connector	Flat Mount Flange
NDL7603P1	Without Connector	
NDL7603P1C	With FC-PC Connector	
NDL7603P1D	With SC-PC Connector	Vertical Mount Flange
NDL7603P2	Without Connector	
NDL7603P2C	With FC-PC Connector	
NDL7603P2D	With SC-PC Connector	

TYPICAL PERFORMANCE CURVES (T_c = 25°C unless otherwise specified)

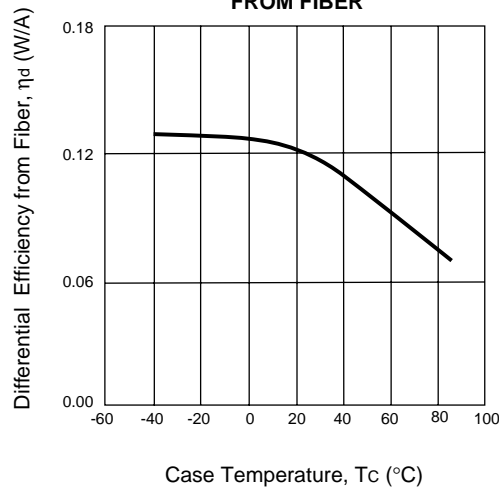
OPERATING CURRENT AND THRESHOLD CURRENT vs. CASE TEMPERATURE



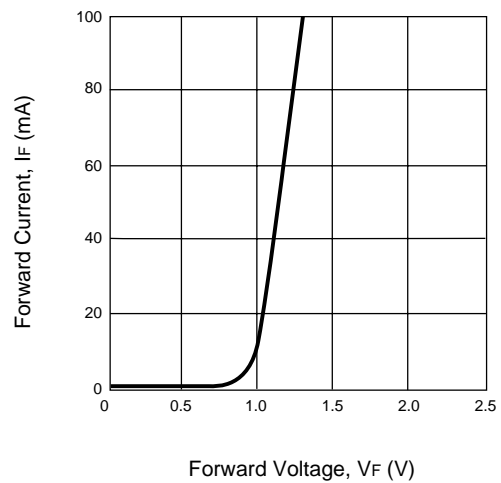
TEMPERATURE DEPENDENCE OF PEAK EMISSION WAVELENGTH



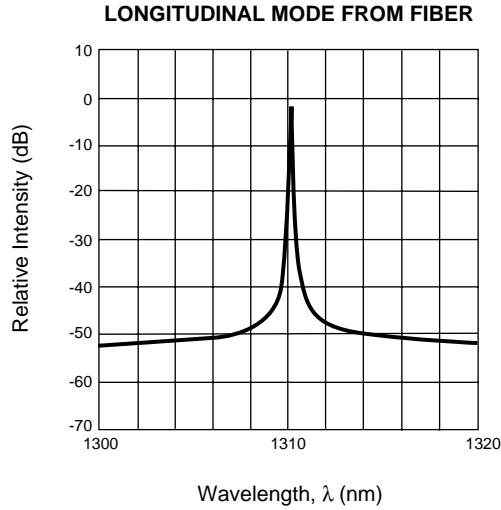
TEMPERATURE DEPENDENCE OF DIFFERENTIAL EFFICIENCY FROM FIBER



FORWARD CURRENT vs. FORWARD VOLTAGE



TYPICAL PERFORMANCE CURVES ($T_c = 25^\circ\text{C}$ unless otherwise specified)



PACKAGE DIMENSIONS (Units in mm)

