NEC

1310 nm OPTICAL FIBER COMMUNICATIONS InGaAsP MQW-DFB LASER DIODE COAXIAL MODULE

NDL7603P SERIES

FEATURES

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

DESCRIPTION

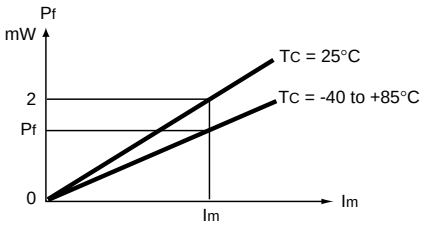
The NDL7603P Series is a 1310 nm phase-shifted DFB (distributed feedback) laser diode module with single mode fiber. The Multiple Quantum Well (st-MQW) structure is adopted to achieve stable dynamic single longitudinal mode operation over a wide temperature range of -40 to +85°C. It is designed for all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

ELECTRO-OPTICAL CHARACTERISTICS (T_C = -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	mA		15	
	T_C = 85°C			45	50
η_d	Differential Efficiency from Fiber, T_C = 25°C	W/A	0.070	0.120	
	T_C = 85°C		0.035	0.070	
$\Delta\eta_d$	Temperature Dependence of Differential Efficiency from Fiber $\Delta\eta_d = 10 \log \frac{\eta_d(85°C)}{\eta_d(25°C)}$	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. $\gamma = 10 \log \left| \frac{Pf}{2.0\ mW} \right|$



(at P_f (25°C) = 2 mW)

ABSOLUTE MAXIMUM RATINGS[1]

(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

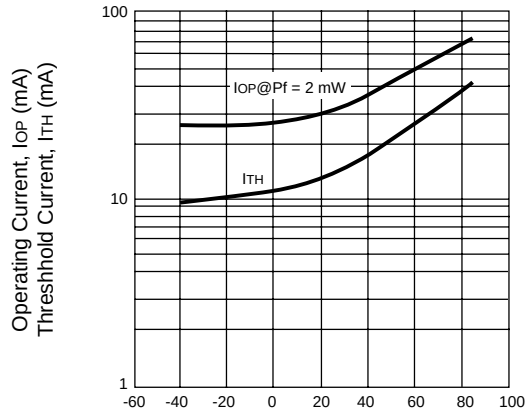
Note:
1. Operation in excess of any one of these parameters may result in permanent damage.

ORDERING INFORMATION

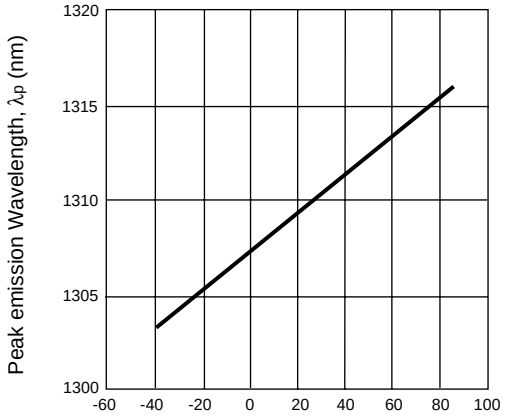
PART NUMBER	AVAILABLE CONNECTOR	FLANGE TYPE
NDL7603P	Without Connector	No Flange
NDL7603PC	With FC-PC Connector	
NDL7603PD	With SC-PC Connector	
NDL7603P1	Without Connector	Flat Mount Flange
NDL7603P1C	With FC-PC Connector	
NDL7603P1D	With SC-PC Connector	
NDL7603P2	Without Connector	Vertical Mount Flange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

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

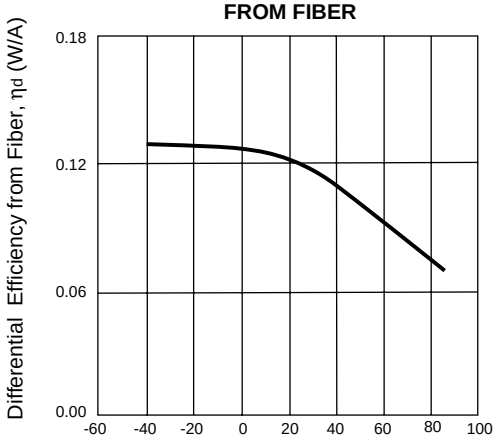
OPERATING CURRENT AND THRESHHOLD CURRENT vs. CASE TEMPERATURE



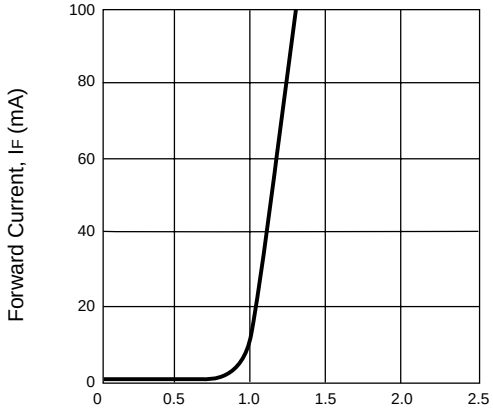
TEMPERATURE DEPENDENCE OF PEAK EMISSION WAVELENGTH



TEMPERATURE DEPENDENCE OF DIFFERENTIAL EFFICIENCY FROM FIBER

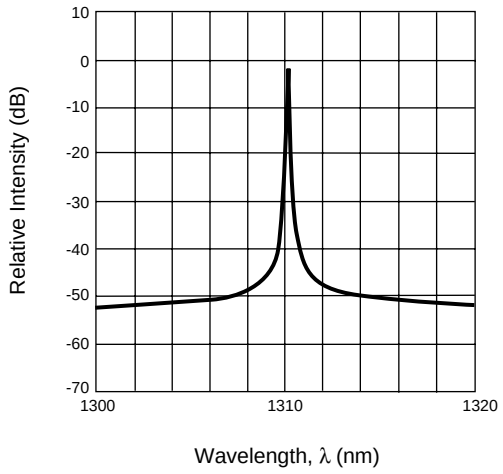


FORWARD CURRENT vs. FORWARD VOLTAGE



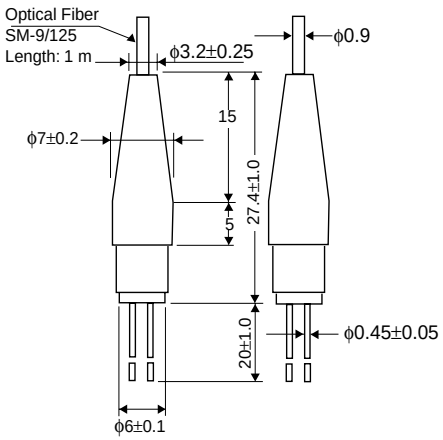
TYPICAL PERFORMANCE CURVES (Tc = 25°C unless otherwise specified)

LONGITUDINAL MODE FROM FIBER

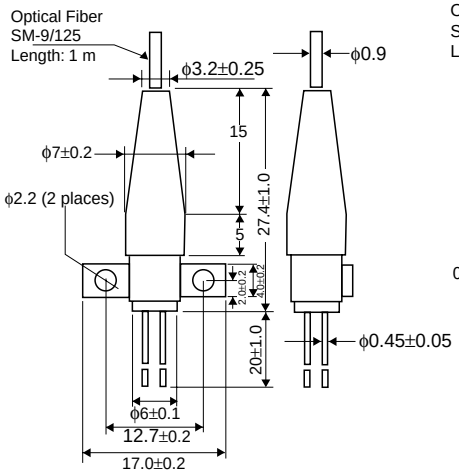


PACKAGE DIMENSIONS (Units in mm)

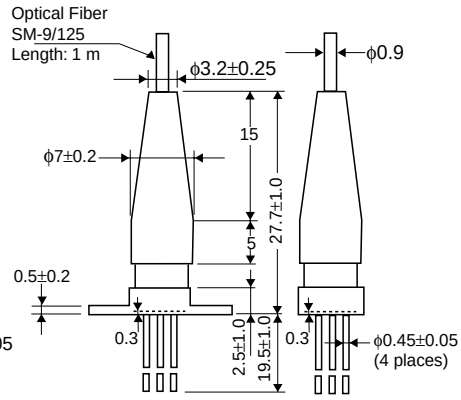
NDL7603P



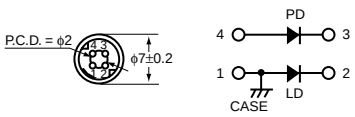
NDL7603P1



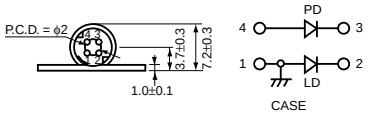
NDL7603P2



PIN CONNECTIONS



PIN CONNECTIONS



PIN CONNECTIONS

