

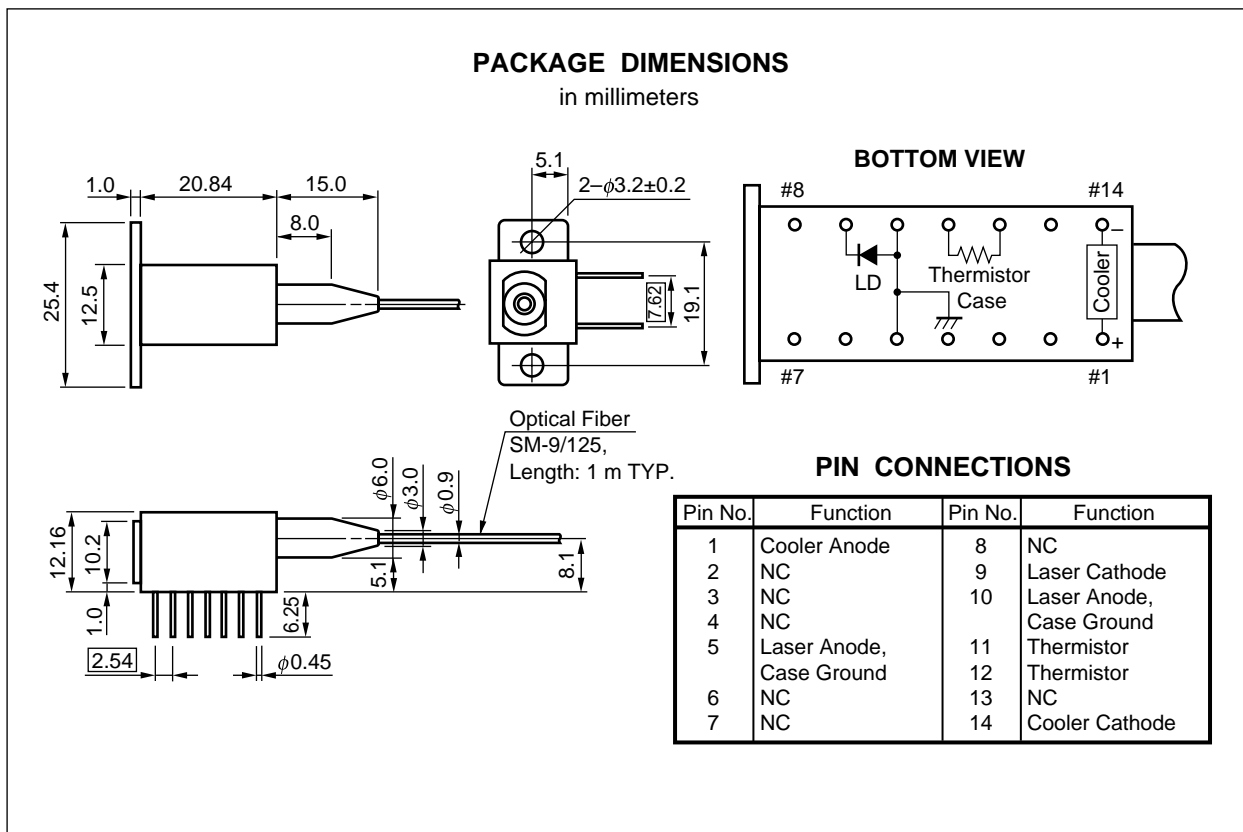
InGaAsP MQW DC-PBH PULSED LASER DIODE MODULE
1 550 nm OTDR APPLICATION

DESCRIPTION

The NDL7560P is a 1 550 nm laser diode DIP module with single mode fiber and internal thermoelectric cooler. It has a Multiple Quantum Well (MQW) structure and is designed for light source of optical measurement equipment (OTDR).

FEATURES

- High output power $P_f = 30 \text{ mW @ } I_{FP} = 400 \text{ mA}$,
 $PW = 10 \mu\text{s}$, Duty = 1 %
- Long wavelength $\lambda_c = 1 550 \text{ nm}$
- Wide operating temperature range $T_c = -20 \text{ to } +65 \text{ }^\circ\text{C}$
- Internal thermoelectric cooler, thermistor
- Hermetically sealed 14-pin Dual-In-Line Package
- Single mode fiber pigtail



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

ORDERING INFORMATION

Part Number	Available Connector
NDL7560P	Without Connector
NDL7560PC	With FC-PC Connector

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

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber ^{*1}	P _f	50	mW
Pulsed Forward Current ^{*1}	I _{FP}	600	mA
Cooler Current	I _c	1.3	A
Cooler Voltage	V _c	3.5	V
Reverse Voltage	V _R	2.0	V
Operating Case Temperature	T _c	-20 to +65	°C
Storage Temperature	T _{stg}	-40 to +70	°C
Lead Soldering Temperature (10 s)	T _{slid}	260	°C

*1 Pulse conditions: Pulse width (PW) = 10 μs, Duty = 1 %

ELECTRO-OPTICAL CHARACTERISTICS (T_{LD} = 25 °C, T_c = -20 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Forward Voltage	V _{FP}	I _{FP} = 400 mA, PW = 10 μs, Duty = 1 %		2.5	4.0	V
Threshold Current	I _{th}			20	30	mA
Optical Output Power from Fiber	P _f	I _{FP} = 400 mA, PW = 10 μs, Duty = 1 %	20	30		mW
Center Wavelength	λ _c	I _{FP} = 400 mA, PW = 10 μs, Duty = 1 %, RMS (-20 dB)	1 530	1 550	1 570	nm
Spectral Width	σ	I _{FP} = 400 mA, PW = 10 μs, Duty = 1 %, RMS (-20 dB)			10	nm
Rise Time	t _r	10-90 %		0.5	1.0	ns
Fall Time	t _f	90-10 %		0.7	1.0	ns

ELECTRO-OPTICAL CHARACTERISTICS

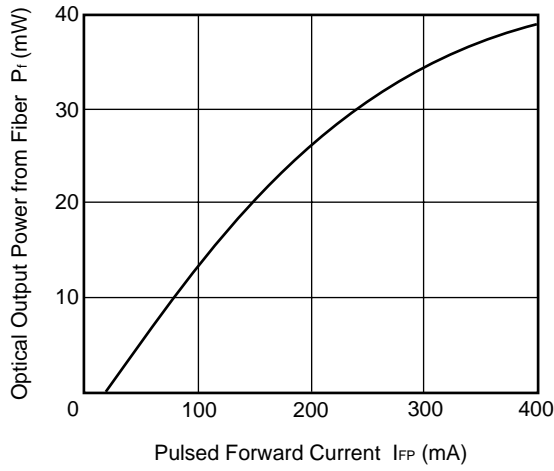
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_c = -20 to +65 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T _{LD} = 25 °C	9.5	10.0	10.5	kΩ
B Constant	B		3 300	3 400	3 500	K
Cooler Current	I _c	ΔT = 40 K		0.6	1.0	A
Cooler Voltage	V _c	ΔT = 40 K		1.1	1.5	V
Cooling Capacity	ΔT ⁻¹	I _c = 1.0 A	40			K

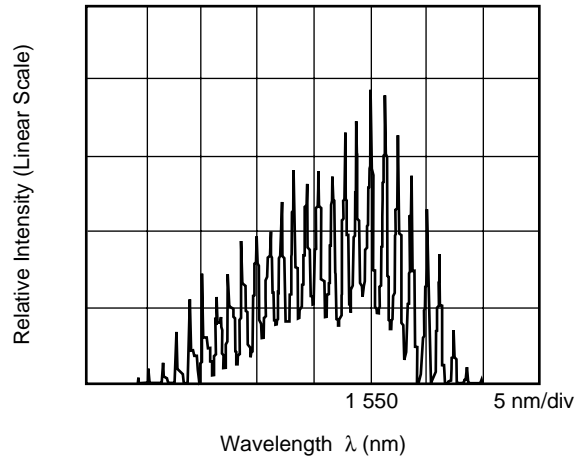
*1 ΔT = |T_c - T_{LD}|

TYPICAL CHARACTERISTICS (T_c = 25 °C, unless otherwise specified)

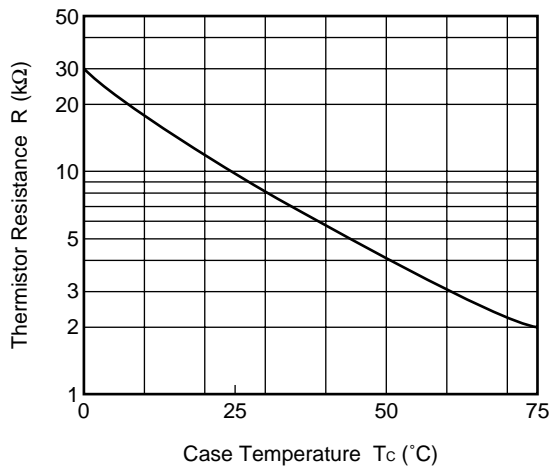
OPTICAL OUTPUT POWER FROM FIBER vs. PULSED FORWARD CURRENT



LONGITUDINAL MODE (FROM FIBER)



THERMISTOR RESISTANCE vs. CASE TEMPERATURE



Remark The graphs indicate nominal characteristics.

★ LASER DIODE FAMILY FOR OTDR APPLICATION

Features Packages	1.31 μm		1.55 μm		I_{FP}^{*1} (mA)	Remarks
	Part Number	P (mW) MIN./TYP.	Part Number	P (mW) MIN./TYP.		
ϕ 5.6 Can	NDL7103	290/320	NDL7153	220/240	1 000	
	NDL7113	160/175	NDL7163	100/120	400	
4-pin Coaxial Module with SMF	NDL7503P/P1	110/180	NDL7553P/P1	95/145	1 000	P : No frange P1: With frange
	NDL7513P/P1	70/110	NDL7563P/P1	60/80	400	
	NDL7514P/P1	25/50	NDL7564P/P1	20/40	400	
	NDL7515P/P1	20/30	NDL7565P/P1	8/11	400	
14-pin DIP Module with SMF	NDL7502P	125/190	NDL7552P	100/125	1 000	With TEC and Thermistor
	NDL7512P	90/110	NDL7562P	70/80	400	
	NDL7510P	40/55	NDL7560P	20/30	400	

*1 Pulse conditions: Pulse width = 10 μs , Duty = 1 % (modules)
Pulse width = 1 μs , Duty = 1 % (ϕ 5.6 can)

REFERENCE

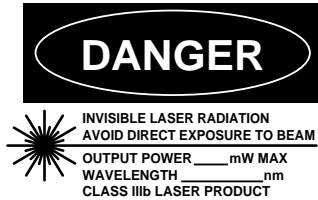
Document Name	Document No.
NEC semiconductor device reliability/quality control system	C11159E
Quality grades on NEC semiconductor devices	C11531E
Semiconductor device mounting technology manual	C10535E
Semiconductor selection guide	X10679E

[MEMO]

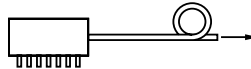
[MEMO]

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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Anti-radioactive design is not implemented in this product.