PRELIMINARY DATA SHEET

NEC

LASER DIODE
NX7461LE-CC

1 480 nm EDFA APPLICATION
InGaAsP MQW-FP LASER DIODE MODULE

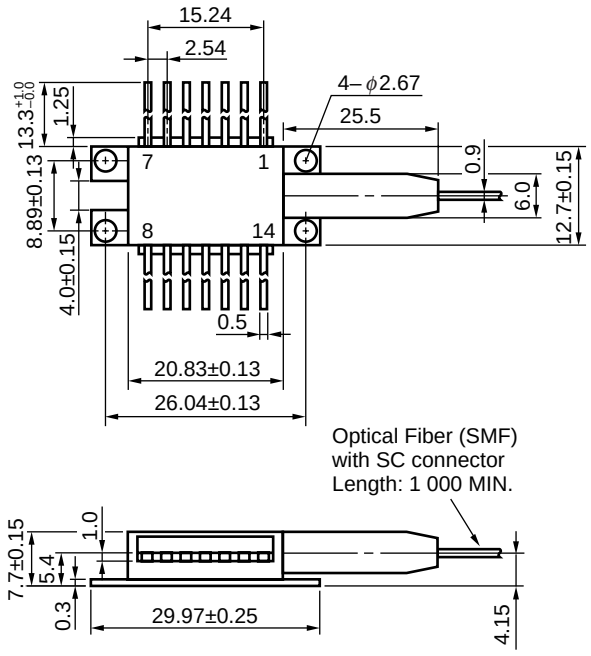
DESCRIPTION

The NX7461LE-CC is a 1 480 nm pumping laser diode module with optical isolator for an EDFA (Er Doped optical Fiber Amplifier) that can expand the transmission span and compensate optical losses. The device is a Multiple Quantum Well (MQW) structured Fabry-Perot (FP) laser diode that features high output power, high efficiency, and stable fundamental mode.

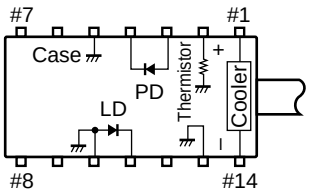
FEATURES

- InGaAsP MQW-FP laser diode
- High output power P_f = 150 mW MIN. @ I_F = 600 mA CW
- Internal optical isolator, thermoelectric cooler and InGaAs monitor photo diode
- Hermetically sealed 14-pin butterfly package
- Single mode fiber pigtail

PACKAGE DIMENSIONS (UNIT: mm)



TOP VIEW



PIN CONNECTIONS

Pin No.	Function	Pin No.	Function
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	LD Anode,
4	PD Cathode		Case Ground
5	Case Ground	11	LD Cathode
6	NC	12	NC
7	NC	13	Case Ground
		14	Cooler Cathod

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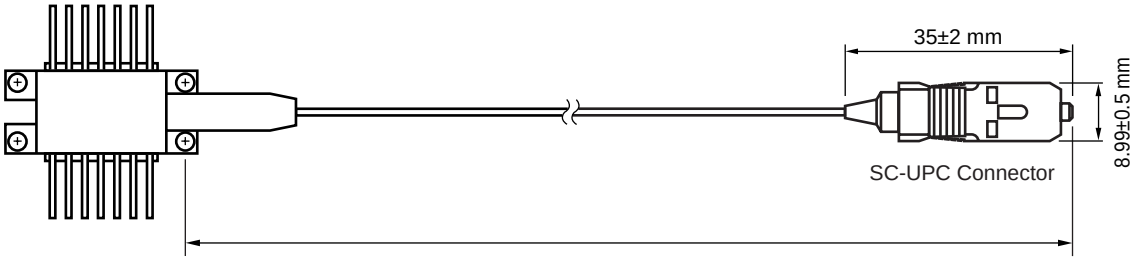
The mark ★ shows major revised points.

OPTICAL FIBER CHARACTERISTICS

Parameter	Specification	Unit
Mode Field Diameter	9.5±1	μm
Cladding Diameter	125±2	μm
Maximum Cladding Noncircularity	2	%
Maximum Core/Cladding Concentricity	1.6	%
Outer Diameter	0.9±0.1	mm
Cut-off Wavelength	1 100 to 1 270	nm
Minimum Fiber Bending Radius	30	mm
Fiber Length	1 000 MIN.	mm
Flammability	UL1581 VW-1	



Fiber Length: 1 000 mm MIN.

ORDERING INFORMATION

Part Number	Available Connector
NX7461LE-CC	With SC-UPC Connector

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Forward Current of LD	I_F	720	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 +70	°C
Storage Temperature	T_{stg}	–40 to +85	°C
Thermistor Current	I_t	0.5	mA
Thermistor Voltage	V_t	12.0	V
Cooler Current	I_C	1.8	A
Cooler Voltage	V_C	6.0	V
Lead Soldering Temperature	T_{sld}	260 (10 sec.)	°C

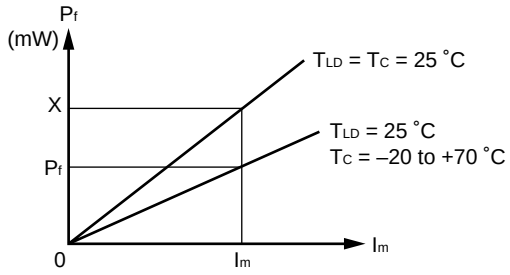
ELECTRO-OPTICAL CHARACTERISTICS (T_{LD} = 25 °C, T_C = –20 to +70 °C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Threshold Current	I_{th}	CW		50	60	mA
Forward Voltage	V_F	I_F = 600 mA		2.4	2.7	V
Optical Output Power from Fiber	P_f	I_F = 600 mA, T_{LD} = T_C = 25 °C	150			mW
Center Emission Wavelength	λ_C	I_F = 600 mA, RMS (–20 dB)	1 460	1 480	1 490	nm
Spectrum Width	σ	I_F = 600 mA, RMS (–20 dB)		4.0	8.0	nm
Isolation	I_S	1 460 nm to 1 490 nm	25			dB

ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Monitor PD: T_{LD} = 25 °C, T_C = –20 to +70 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
★ Monitor Current	I_m	V_R = 5 V, I_F = 600 mA	500	1 300	2 000	μA
Dark Current	I_D	V_R = 5 V		2	10	nA
Tracking Error	γ^{*1}	I_m = const.			0.5	dB

***1** $\gamma = \left| 10 \log \frac{P_f}{150 \text{ mW}} \right|$



(@P_f (25 ˚C) = 150 mW)

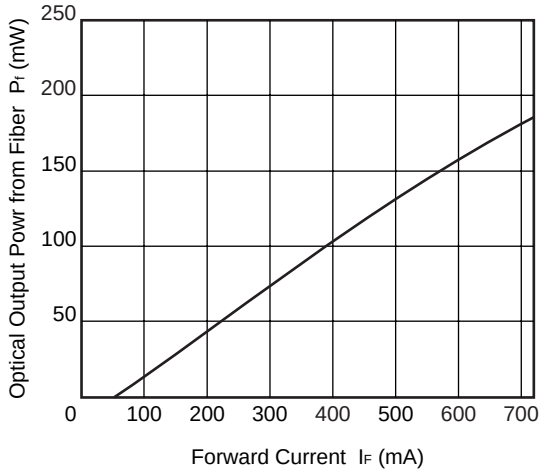
ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_C = –20 to +70 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T_{LD} = 25 °C	9.5	10.0	10.5	kΩ
B Constant	B		3 350	3 450	3 550	K
Cooler Current	I_C	ΔT = 45 °C, I_F = 720 mA		1.2	1.4	A
Cooler Voltage	V_C	ΔT = 45 °C, I_F = 720 mA		3.0	3.6	V
Cooling Capacity	ΔT^{*1}	I_C = 1.4 A, I_F = 720 mA	45			°C

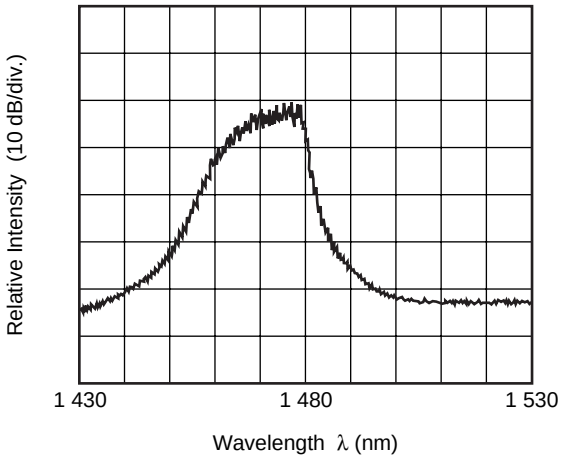
***1** $\Delta T = \left| T_C - T_{LD} \right|$

TYPICAL CHARACTERISTICS (T_C = 25 °C)

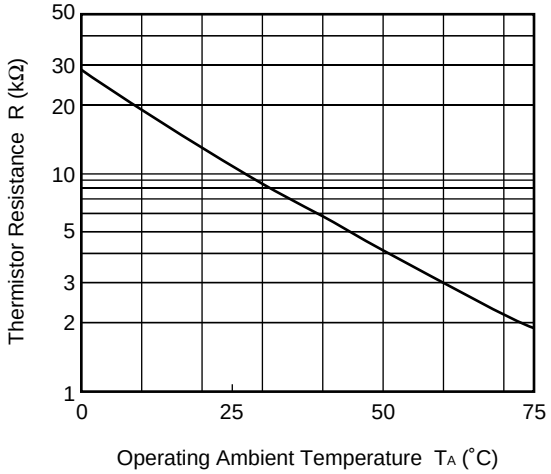
OPTICAL OUTPUT POWER FROM FIBER vs. FORWARD CURRENT



SPECTRUM



THERMISTOR RESISTANCE vs. OPERATING AMBIENT TEMPERATURE



Remark The graphs indicate nominal characteristics.

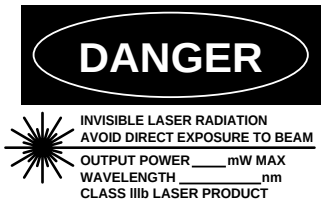
EDFA PUMPING FP-LD FAMILY

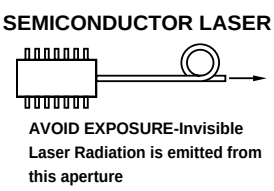
Part Number	Absolute Maximum Ratings		Typical Characteristics (T_C = 25 °C)			Description	Package
	T_C (°C)	T_{stg} (°C)	I_{th} (mA)	P_f (mW)	λ_C (nm)		
			TYP.	MIN.	TYP.		
NX7461LE-CC	−20 to +70	−40 to +85	600	150	1 480	For EDFA pumping	BFY
NX7462LE-CC	−20 to +70	−40 to +85	550	120	1 480	For EDFA pumping	BFY

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 Products & Packages (CD-ROM)	X13769X

SAFETY INFORMATION ON THIS PRODUCT





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.

Warning Laser Beam	A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight. • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
Caution GaAs Products	The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested. • Do not destroy or burn the product. • Do not cut or cleave off any part of the product. • Do not crush or chemically dissolve the product. • Do not put the product in the mouth. Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.
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