

PRELIMINARY DATA SHEET

NEC

LASER DIODE NX7462LE-CC

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

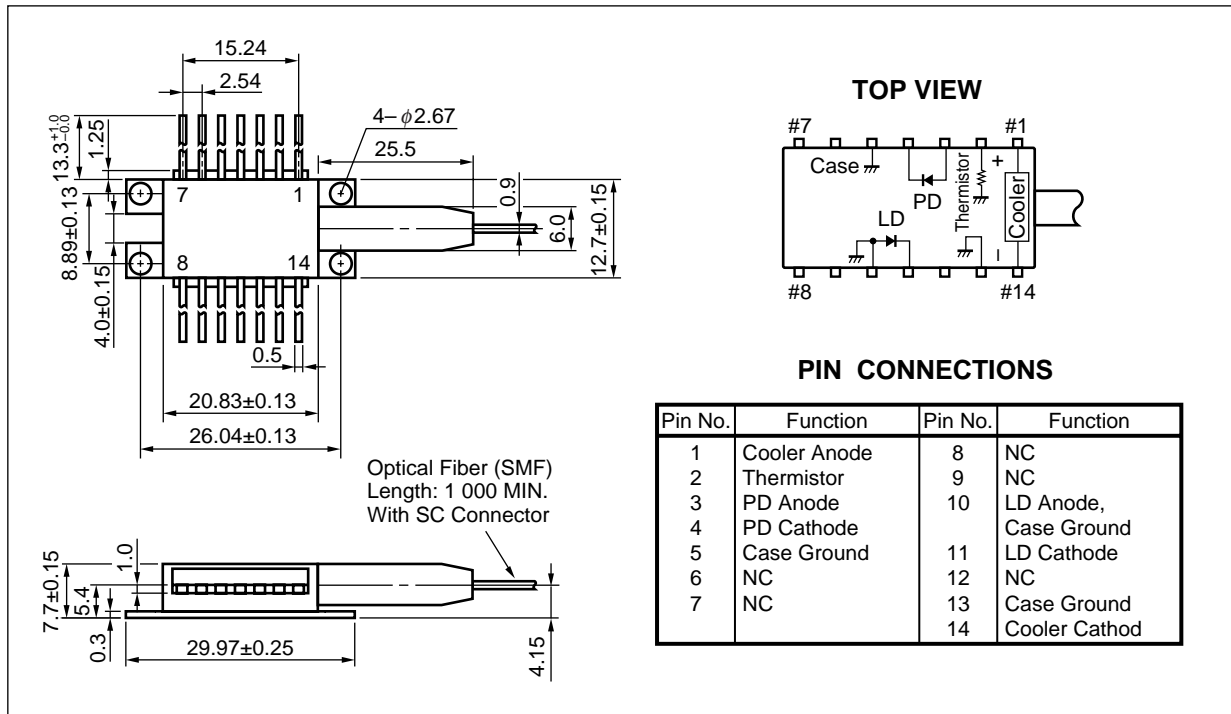
DESCRIPTION

The NX7462LE-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 $P_r = 120 \text{ mW MIN. @ } I_f = 550 \text{ mA CW}$
- Internal optical isolator, thermoelectric cooler and InGaAs monitor photo diode
- Hermetically sealed 14-pin butterfly package
- Single mode fiber pigtail

PACKAGE DIMENSIONS (UNIT: mm)

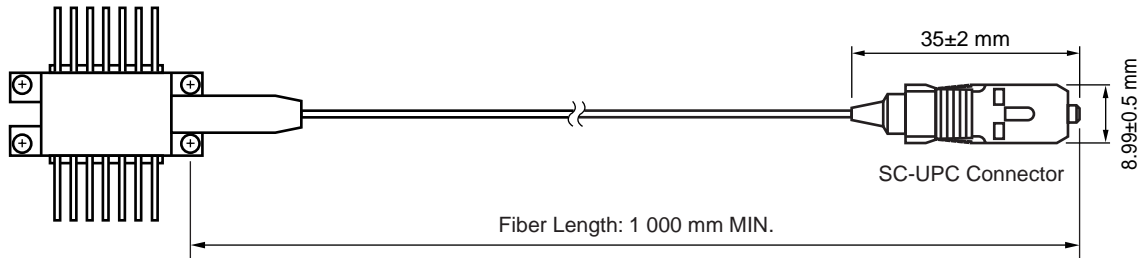


Pin No.	Function	Pin No.	Function
1	Cooler Anode	8	NC
2	Thermistor	9	NC
3	PD Anode	10	LD Anode, Case Ground
4	PD Cathode	11	LD Cathode
5	Case Ground	12	NC
6	NC	13	Case Ground
7	NC	14	Cooler Cathod

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

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	



ORDERING INFORMATION

Part Number	Available Connector
NX7462LE-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 ($T_{LD} = 25\text{ °C}$, $T_C = -20\text{ to }+70\text{ °C}$)

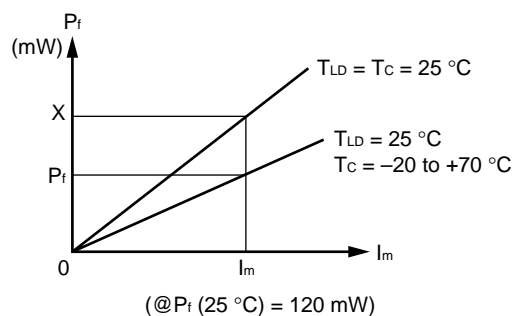
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Threshold Current	I_{th}	CW		25	35	mA
Forward Voltage	V_F	$I_F = 550\text{ mA}$		2.2	2.7	V
Optical Output Power from Fiber	P_f	$I_F = 550\text{ mA}$	120	140		mW
Center Wavelength	λ_c	$I_F = 550\text{ mA}$, RMS (-20 dB)	1 460	1 480	1 490	nm
Spectrum Width	σ	$I_F = 550\text{ mA}$, 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 = 550 mA	500	1 200	2 000	μA
Monitor Dark Current	I _D	V _R = 5 V		2	10	nA
Tracking Error	γ ⁻¹	I _m = const.			0.5	dB

$$*1 \gamma = \left| 10 \log \frac{P_f}{120 \text{ mW}} \right|$$



ELECTRO-OPTICAL CHARACTERISTICS

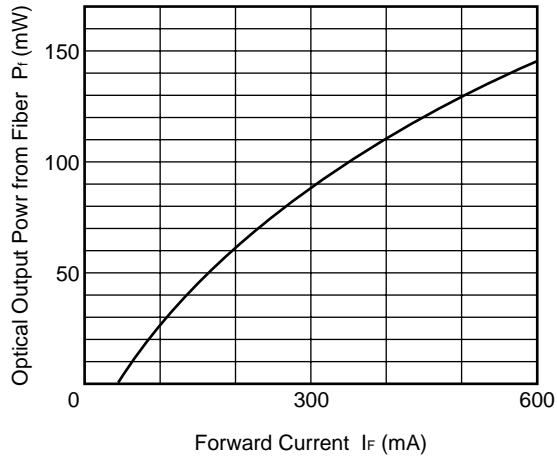
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_C = -20 to +70 °C)

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 = 660 mA		1.2	1.4	A
Cooler Voltage	V _c	ΔT = 45 °C, I _F = 660 mA		3.0	3.6	V
Cooling Capacity	ΔT ⁻¹	I _c = 1.4 A, I _F = 660 mA	45			°C

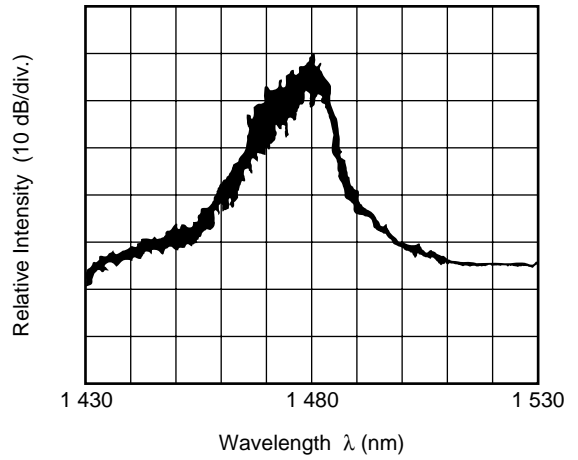
$$*1 \Delta T = |T_C - T_{LD}|$$

TYPICAL CHARACTERISTICS (T_c = 25 °C)

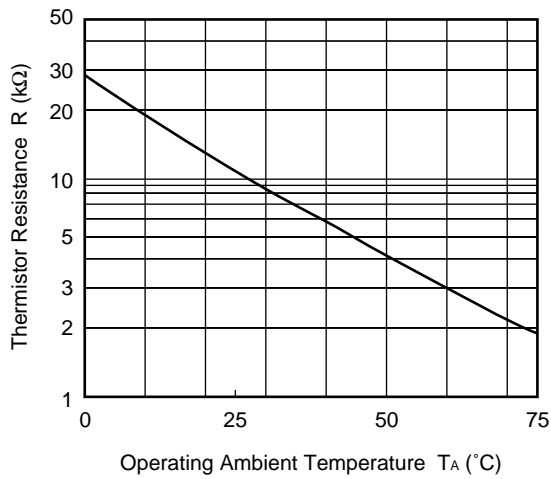
OPTICAL OUTPUT POWER FROM FIBER vs. FORWARD CURRENT



LONGITUDINAL MODE



THERMISTOR RESISTANCE vs. OPERATING AMBIENT TEMPERATURE



Remark The graphs indicate nominal characteristics.

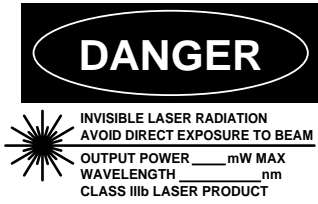
EDFA PUMPING FP-LD FAMILY

Part Number	Absolute Maximum Ratings		Typical Characteristics (T _c = 25 °C)			Application	Package
	T _c (°C)	T _{stg} (°C)	I _F (mA)	P _r (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

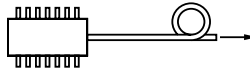
REFERENCE

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



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.

<p>Warning Laser Beam</p>	<p>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.</p> <ul style="list-style-type: none"> • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
<p>Caution GaAs Products</p>	<p>The product contains gallium arsenide, GaAs. GaAs vapor and powder are hazardous to human health if inhaled or ingested.</p> <ul style="list-style-type: none"> • 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. <p>Follow related laws and ordinances for disposal. The product should be excluded from general industrial waste or household garbage.</p>
<p>Caution Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

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