

DATA SHEET

NEC

VISIBLE LASER DIODE NDL3233SF, NDL3233SU

35 mW, 685 nm VISIBLE LASER DIODE HIGH OUTPUT POWER AND SHORT WAVELENGTH

DESCRIPTION

The NDL3233SF and NDL3233SU are ideal light source for 640 MB or high-density magneto-optical disk drive, taking the place of the existing 780 nm band laser diodes.

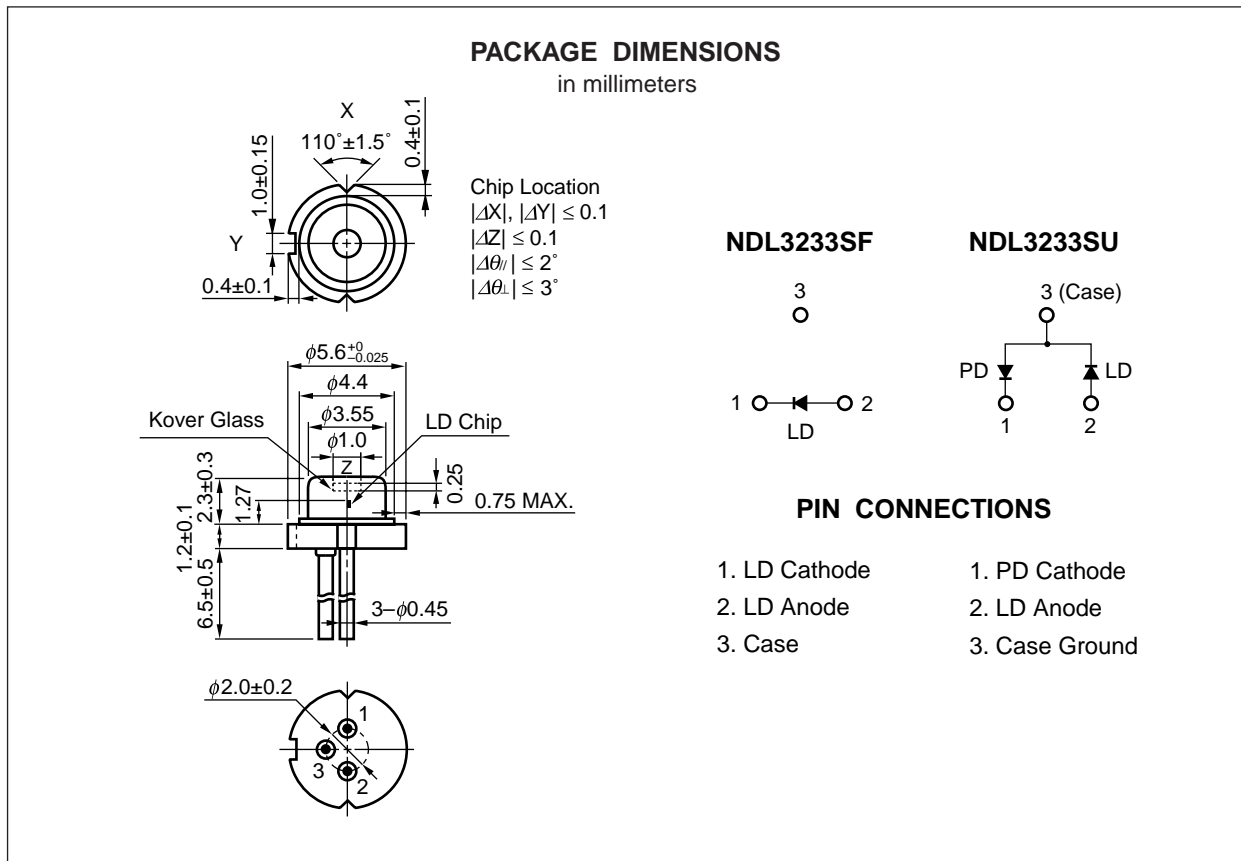
FEATURES

- | | | | |
|-------------------------|--------------------------------------|------------------------------------|--|
| • Optical output power | $P_o (CW) = 35 \text{ mW}$ | • Operating voltage | $V_{op} = 2.3 \text{ V TYP.}$ |
| | $P_o (\text{pulse}) = 55 \text{ mW}$ | • Wide operating temperature range | $T_c = -10 \text{ to } +70 \text{ }^\circ\text{C}$ |
| • Low threshold current | $I_{th} = 50 \text{ mA TYP.}$ | • Peak emission wavelength | $\lambda_p = 685 \text{ nm TYP.}$ |
| • Operating current | $I_{op} = 100 \text{ mA TYP.}$ | • Fundamental transverse mode | |

APPLICATIONS

- Magneto-Optical Disk Drive
- Information Processing System
- Measurement Instrument

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

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

Parameter	Symbol	Ratings	Unit
Optical Output Power	P _o	35	mW
Reverse Voltage of LD	V _R	2.0	V
Forward Current of PD	I _F	20	mA
Reverse Voltage of PD	V _R	30	V
Operating Case Temperature	T _c	-10 to +70	°C
Storage Temperature	T _{stg}	-40 to +100	°C

RECOMMENDED OPERATING CONDITIONS (T_c = 25 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power (CW)	P _{o (CW)}	CW			35	mW
Optical Output Power (pulse)	P _{o (pulse)}	PW = 100 ns, duty 50 %, Bias: I _{th}			55	mW

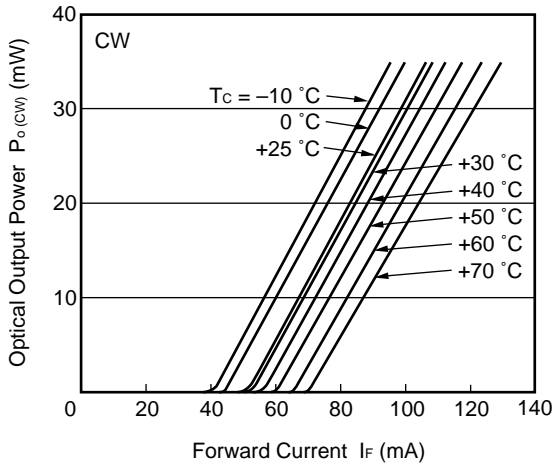
ELECTRO-OPTICAL CHARACTERISTICS (T_c = 25 °C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Operating Voltage	V _{op}	P _o = 35 mW	2.0	2.3	2.7	V
Threshold Current	I _{th}	CW	30	50	60	mA
Operating Current	I _{op}	P _o = 35 mW	65	100	130	mA
Monitor Current (NDL3233SU)	I _m	V _R = 5 V, P _o = 35 mW	0.05	0.10	0.50	mA
Peak Emission Wavelength	λ _p	P _o = 35 mW	670	685	695	nm
Vertical Beam Angle	θ _⊥	P _o = 35 mW, FAHM ^{*1}	17	21	23	deg.
Lateral Beam Angle	θ _∥	P _o = 35 mW, FAHM ^{*1}	7	9	12	deg.

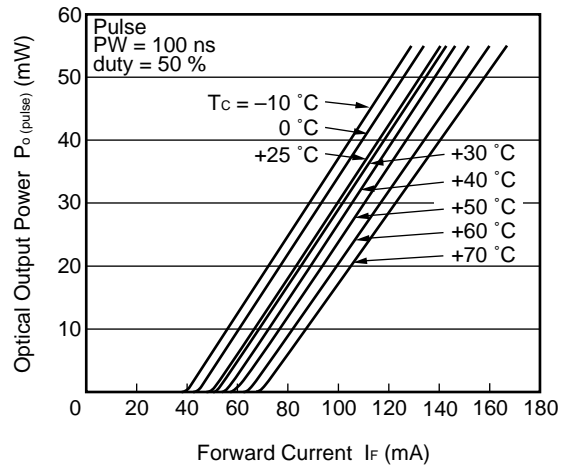
*1 FAHM: Full Angle at Half Maximum

★ TYPICAL CHARACTERISTICS ($T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified)

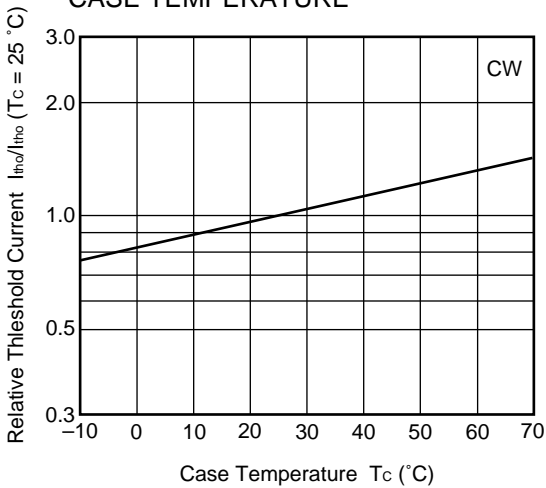
OPTICAL OUTPUT POWER vs. FORWARD CURRENT



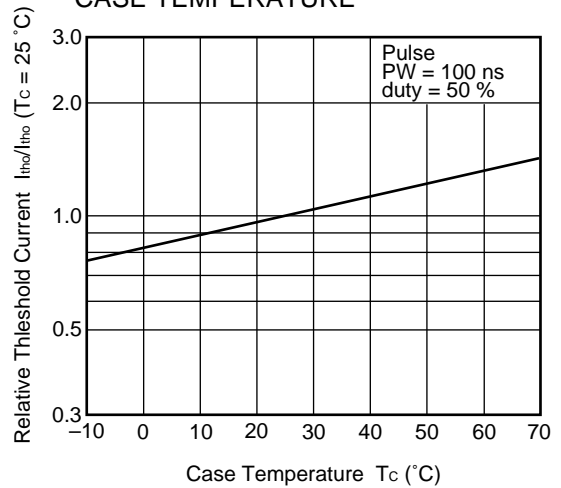
OPTICAL OUTPUT POWER vs. FORWARD CURRENT



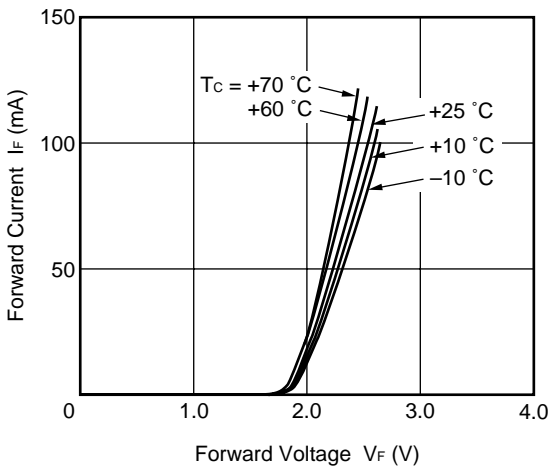
RELATIVE THRESHOLD CURRENT vs. CASE TEMPERATURE



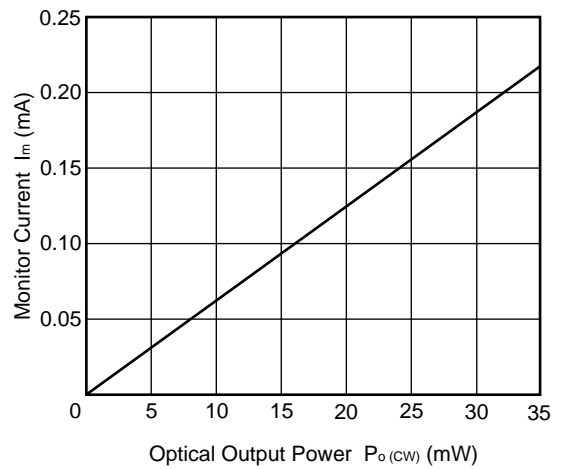
RELATIVE THRESHOLD CURRENT vs. CASE TEMPERATURE



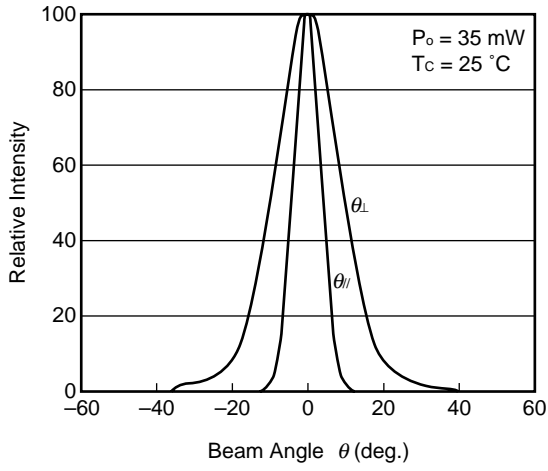
FORWARD CURRENT vs. FORWARD VOLTAGE



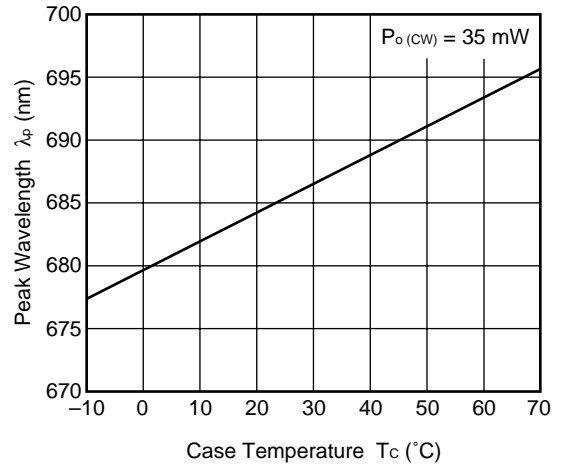
MONITOR CURRENT vs. OPTICAL OUTPUT POWER



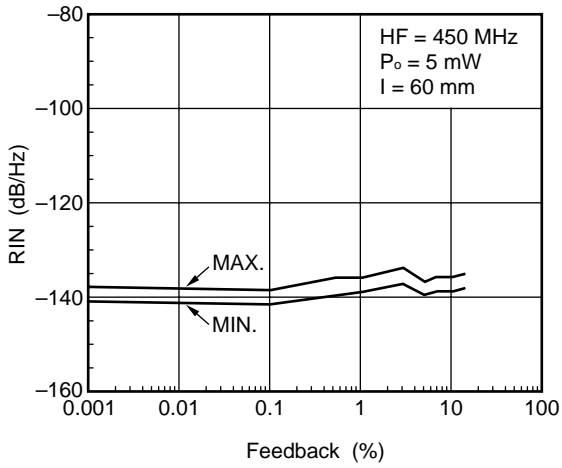
FAR FIELD PATTERN



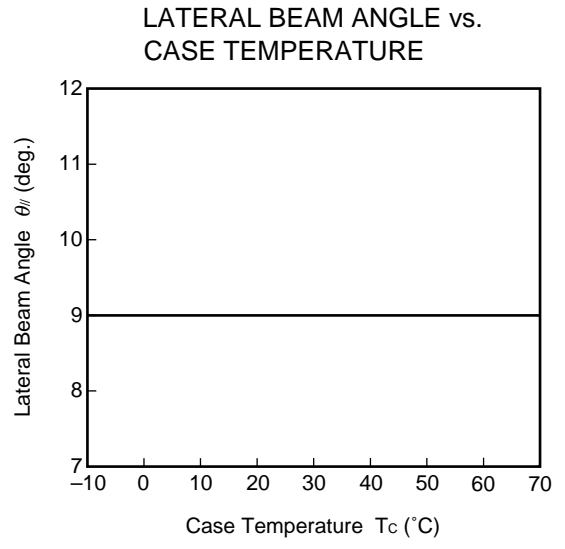
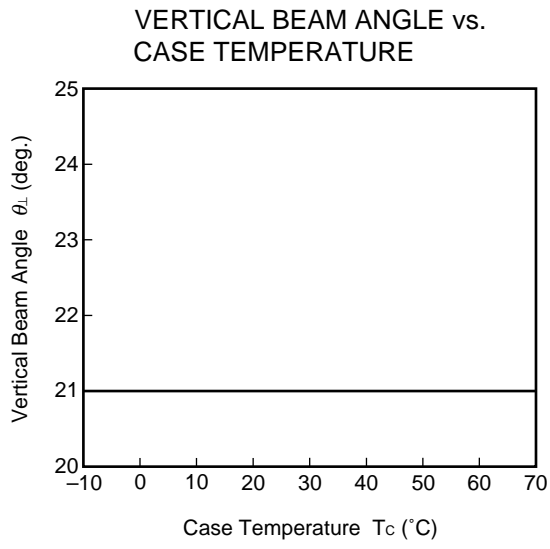
PEAK WAVELENGTH vs. CASE TEMPERATURE



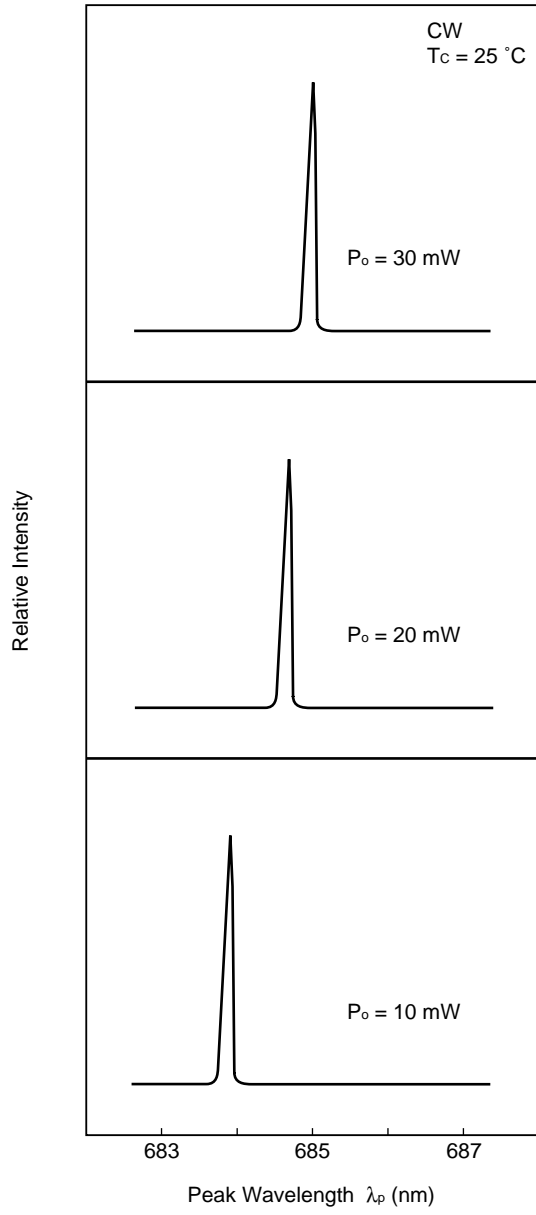
RELATIVE INTENSITY NOISE



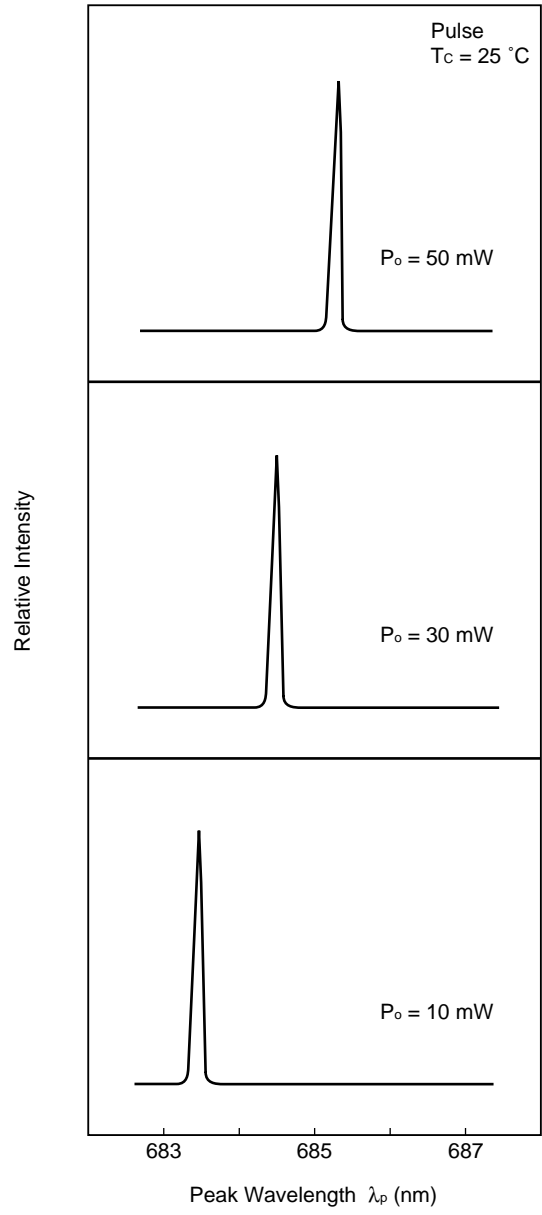
★ TEMPERATURE DEPENDENCE OF OPTICAL CHARACTERISTICS



POWER DEPENDENCE OF LONGITUDINAL MODE

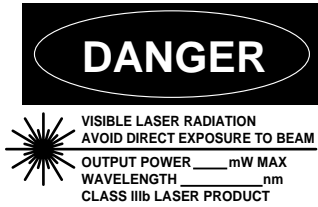


POWER DEPENDENCE OF LONGITUDINAL MODE

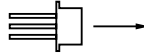


CAUTION

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-Visible
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.

Warning on Handling

To prevent health hazards, avoid looking directly or through lenses at beams from the operating laser diode.

Exceeding absolute maximum ratings' value may cause destruction or degradation of the device.

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NEC devices are classified into the following three quality grades:

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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.