

**1 550 nm InGaAsP MQW-DFB LASER DIODE MODULE
CW LIGHT SOURCE FOR DWDM APPLICATIONS****DESCRIPTION**

The NX8563LB is a 1 550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode module with Polarization Maintain Fiber (PMF).

It is designed as Continuous Wave (CW) light source and ideal for optical transmission systems with external modulators.

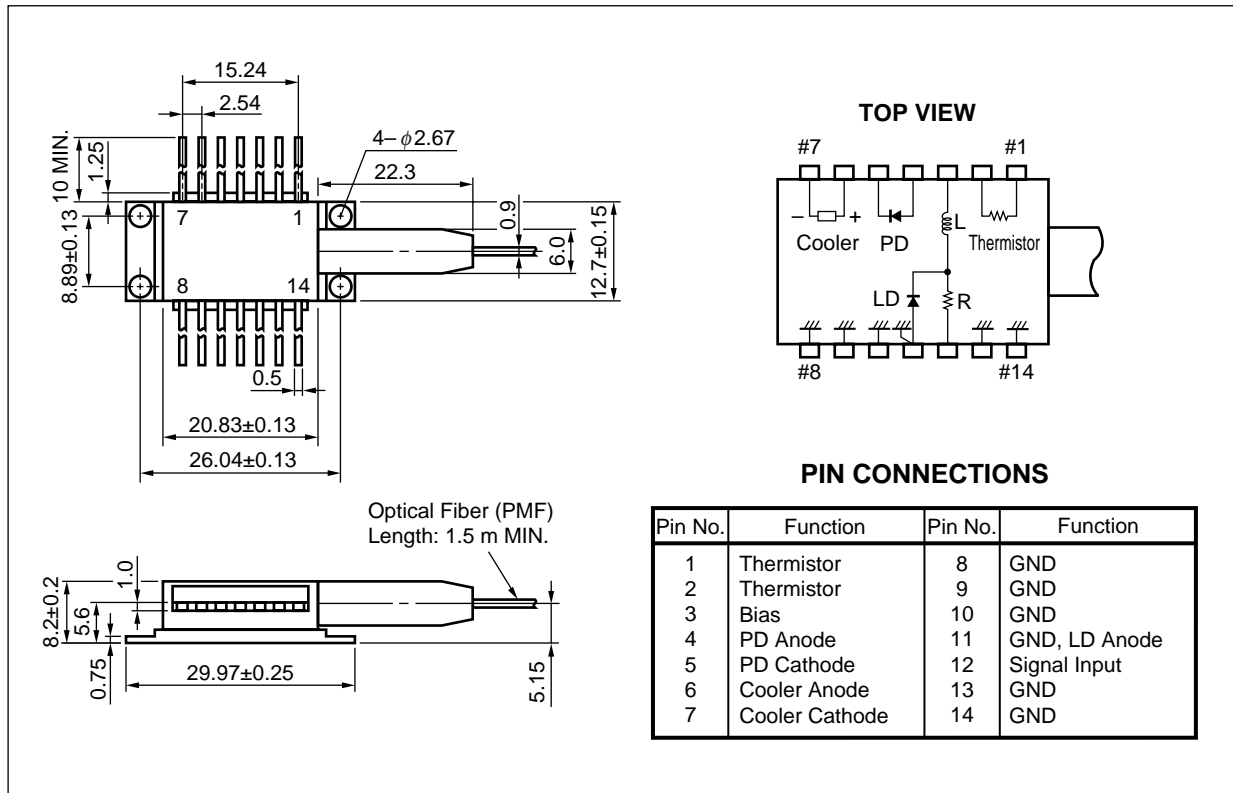
The device is available for Dense Wavelength Division Multiplexing (DWDM) wavelengths based on ITU-T recommendations, enabling a wide range of applications.

FEATURES

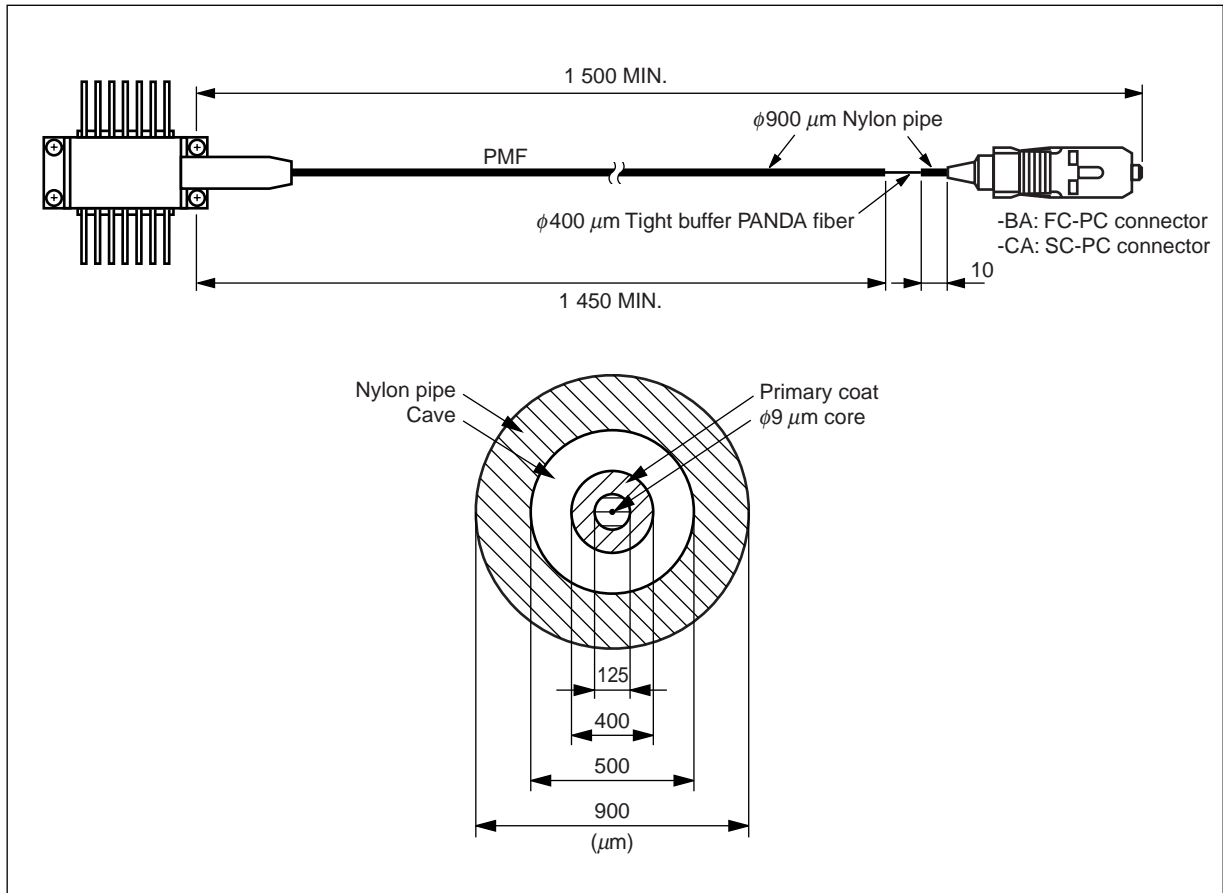
- Output power $P_f = 10 \text{ mW MIN.}$
- ★ • Available for DWDM wavelengths based on ITU-T recommendations (100 GHz grid)
Refer to the ORDERING INFORMATIONS
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Polarization maintain fiber pigtail

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

★ PACKAGE DIMENSIONS (UNIT : mm)



★ OPTICAL FIBER DIMENSIONS (UNIT : mm)



★ ORDERING INFORMATION

Part Number			ITU-T Wavelength ^{*1} (nm)	Frequency (THz)
Without Connector	With FC-PC Connector	With SC-PC Connector		
NX8563LB279	NX8563LB279-BA	NX8563LB279-CA	1527.99	196.20
NX8563LB287	NX8563LB287-BA	NX8563LB287-CA	1528.77	196.10
NX8563LB295	NX8563LB295-BA	NX8563LB295-CA	1529.55	196.00
NX8563LB303	NX8563LB303-BA	NX8563LB303-CA	1530.33	195.90
NX8563LB311	NX8563LB311-BA	NX8563LB311-CA	1531.11	195.80
NX8563LB318	NX8563LB318-BA	NX8563LB318-CA	1531.89	195.70
NX8563LB326	NX8563LB326-BA	NX8563LB326-CA	1532.68	195.60
NX8563LB334	NX8563LB334-BA	NX8563LB334-CA	1533.46	195.50
NX8563LB342	NX8563LB342-BA	NX8563LB342-CA	1534.25	195.40
NX8563LB350	NX8563LB350-BA	NX8563LB350-CA	1535.03	195.30
NX8563LB358	NX8563LB358-BA	NX8563LB358-CA	1535.82	195.20
NX8563LB366	NX8563LB366-BA	NX8563LB366-CA	1536.60	195.10
NX8563LB373	NX8563LB373-BA	NX8563LB373-CA	1537.39	195.00
NX8563LB381	NX8563LB381-BA	NX8563LB381-CA	1538.18	194.90
NX8563LB389	NX8563LB389-BA	NX8563LB389-CA	1538.97	194.80
NX8563LB397	NX8563LB397-BA	NX8563LB397-CA	1539.76	194.70
NX8563LB405	NX8563LB405-BA	NX8563LB405-CA	1540.55	194.60
NX8563LB413	NX8563LB413-BA	NX8563LB413-CA	1541.34	194.50
NX8563LB421	NX8563LB421-BA	NX8563LB421-CA	1542.14	194.40
NX8563LB429	NX8563LB429-BA	NX8563LB429-CA	1542.93	194.30
NX8563LB437	NX8563LB437-BA	NX8563LB437-CA	1543.73	194.20
NX8563LB445	NX8563LB445-BA	NX8563LB445-CA	1544.52	194.10
NX8563LB453	NX8563LB453-BA	NX8563LB453-CA	1545.32	194.00
NX8563LB461	NX8563LB461-BA	NX8563LB461-CA	1546.11	193.90
NX8563LB469	NX8563LB469-BA	NX8563LB469-CA	1546.91	193.80
NX8563LB477	NX8563LB477-BA	NX8563LB477-CA	1547.71	193.70
NX8563LB485	NX8563LB485-BA	NX8563LB485-CA	1548.51	193.60
NX8563LB493	NX8563LB493-BA	NX8563LB493-CA	1549.31	193.50
NX8563LB501	NX8563LB501-BA	NX8563LB501-CA	1550.11	193.40
NX8563LB509	NX8563LB509-BA	NX8563LB509-CA	1550.91	193.30
NX8563LB517	NX8563LB517-BA	NX8563LB517-CA	1551.72	193.20
NX8563LB525	NX8563LB525-BA	NX8563LB525-CA	1552.52	193.10
NX8563LB533	NX8563LB533-BA	NX8563LB533-CA	1553.32	193.00
NX8563LB541	NX8563LB541-BA	NX8563LB541-CA	1554.13	192.90

*1 The value which omitted and computed the 3rd place below the decimal point

Part Number			ITU-T Wavelength ^{*1} (nm)	Frequency (THz)
Without Connector	With FC-PC Connector	With SC-PC Connector		
NX8563LB549	NX8563LB549-BA	NX8563LB549-CA	1554.94	192.80
NX8563LB557	NX8563LB557-BA	NX8563LB557-CA	1555.74	192.70
NX8563LB565	NX8563LB565-BA	NX8563LB565-CA	1556.55	192.60
NX8563LB573	NX8563LB573-BA	NX8563LB573-CA	1557.36	192.50
NX8563LB581	NX8563LB581-BA	NX8563LB581-CA	1558.17	192.40
NX8563LB589	NX8563LB589-BA	NX8563LB589-CA	1558.98	192.30
NX8563LB597	NX8563LB597-BA	NX8563LB597-CA	1559.79	192.20
NX8563LB606	NX8563LB606-BA	NX8563LB606-CA	1560.60	192.10
NX8563LB614	NX8563LB614-BA	NX8563LB614-CA	1561.41	192.00
NX8563LB622	NX8563LB622-BA	NX8563LB622-CA	1562.23	191.90
NX8563LB630	NX8563LB630-BA	NX8563LB630-CA	1563.04	191.80
NX8563LB638	NX8563LB638-BA	NX8563LB638-CA	1563.86	191.70
NX8563LB646	NX8563LB646-BA	NX8563LB646-CA	1564.67	191.60
NX8563LB654	NX8563LB654-BA	NX8563LB654-CA	1565.49	191.50

*1 The value which omitted and computed the 3rd place below the decimal point

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

Parameter	Symbol	Ratings	Unit
Forward Current of LD	I _F	300	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 +65	°C
Storage Temperature	T _{stg}	-40 to +85	°C
Lead Soldering Temperature	T _{slid}	260 (10 sec.)	°C

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Laser Set Temperature	T _{set}		20		35	°C
Forward Voltage	V _F	P _f = 10 mW	0.9		1.5	V
Threshold Current	I _{th}			20	40	mA
Optical Output Power from Fiber	P _f	I _F = 167 mA, T _{LD} = T _{set}	10			mW
Threshold Output Power from Fiber	P _{th}	I _F = I _{th}			100	μW
Quantum Efficiency	η		0.08	0.1		W/A
★ Peak Emission Wavelength	λ _p	P _f = 10 mW, CW, T _{LD} = T _{set}	1527.6	ITU-T ^{*1}	1565.6	nm
Spectral Line Width	Δν	P _f = 10 mW, CW, 3 dB down		1	2	MHz
Side Mode Suppression Ratio	SMSR	P _f = 10 mW, CW	30	35		dB
FM Response	η _{FM}	P _f = 10 mW	50	70		MHz/mA
Relative Intensity Noise	RIN	P _f = 10 mW, 20 MHz to 3 GHz			-150	dB/Hz
Flat frequency response	f _m	P _f = 10 mW, +/-3 dB	1.8			GHz
Polarization Extinction Ratio ^{*2}	ext	P _f = 10 mW, CW	15	20		dB

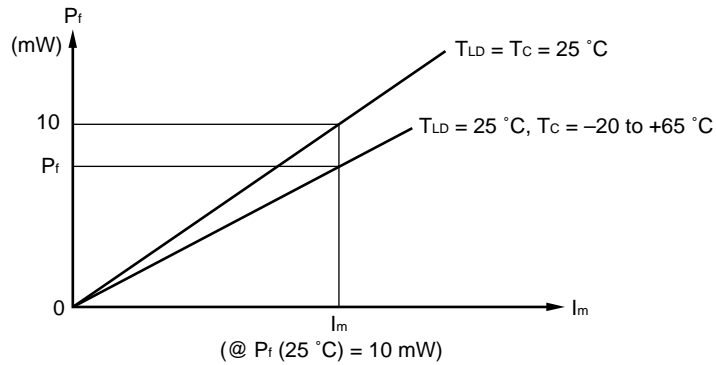
*1 Available for DWDM wavelengths based on ITU-T recommendation.
Please refer to the ORDERING INFORMATION.

*2 Polarization state of LD is aligned parallel to the slow axis.

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
★ Monitor Current	I _m	P _f = 10 mW, V _R = 5 V	100		2 000	μA
Dark Current	I _d	V _R = 5 V		2	10	nA
Tracking Error	γ ^{*1}	I _m = const.			0.5	dB

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

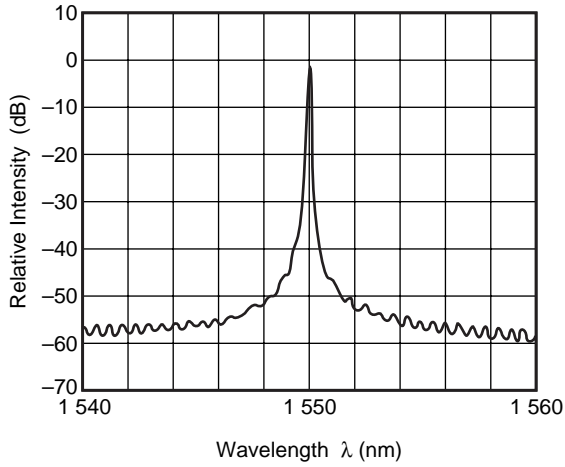


ELECTRO-OPTICAL CHARACTERISTICS
(Applicable to Thermistor and TEC: T_{LD} = 25 °C, T_c = -20 to +65 °C)

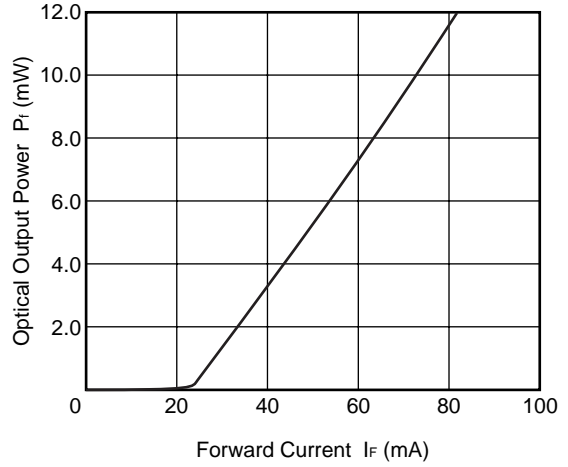
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T _{LD} = 25 °C	9.5	10.0	10.5	kΩ
B Constant	B		3 350	3 450	3 550	K
Cooler Current	I _c	ΔT = 65 - T _{set} , P _f = 10 mW			1.0	A
Cooler Voltage	V _c	ΔT = 65 - T _{set} , P _f = 10 mW			2.0	V

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

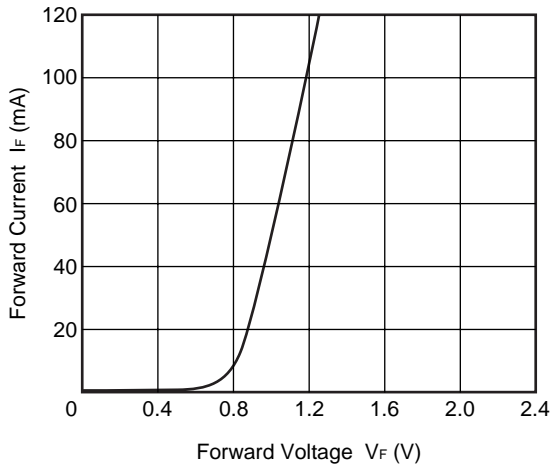
LONGITUDINAL MODE



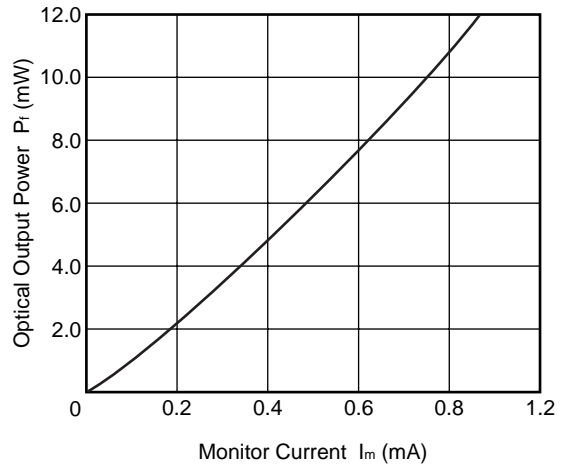
OPTICAL OUTPUT POWER vs. FORWARD CURRENT



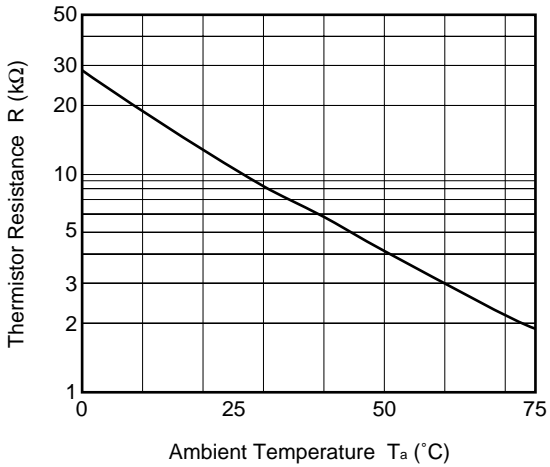
FORWARD CURRENT vs. FORWARD VOLTAGE



OPTICAL OUTPUT POWER vs. MONITOR CURRENT



TYPICAL THERMISTOR RESISTANCE vs. AMBIENT TEMPERATURE



★ DFB-LD FAMILY

Part Number	Absolute Maximum Ratings		Electro-Optical Characteristics (T _c = 25 °C)			Application	Package
	T _c (°C)	T _{stg} (°C)	I _{th} (mA)	P _f (mW)	λ _p (nm)		
			TYP.	MIN.	TYP.		
NX8300BE-CC NX8300CE-CC	0 to +75	-40 to +85	15	2 ^{*1}	1 310	2.5 Gb/s: STM-16 (S-16.1, L-16.1)	Coaxial
NX8303BG-CC	-10 to +85	-40 to +85	15	2 ^{*1}	1 310	622 Mb/s: STM-4 (L-4.1)	Coaxial
NX8503BG-CC	-10 to +85	-40 to +85	15	2 ^{*1}	1 550	156 Mb/s: STM-1 (L-1.2, L-1.3)	Coaxial
						622 Mb/s: STM-4 (L-4.2, L-4.3)	
NX8504BE-CC NX8504CE-CC	-10 to +85	-40 to +85	15	2 ^{*1}	1 550	622 Mb/s: STM-4 (L-4.2, L-4.3)	Coaxial
NX8560LJ-CC	-10 to +70	-40 to +85	6	-2 dBm	1 550 ^{*2}	≤ 10 Gb/s: STM-64	BFY with GPO
NX8562LB	-20 to +65	-40 to +85	20	20	1 550 ^{*2}	CW Light Source for external modulator	BFY
NX8563LB	-20 to +65	-40 to +85	20	10	1 550 ^{*2}	CW Light Source for external modulator	BFY
NX8564LE-CC	-20 to +70	-40 to +85	7	0.6 ^{*1}	1 550 ^{*2}	2.5 Gb/s: STM-16 EA modulator integrated	BFY
NX8565LE-CC	-20 to +70	-40 to +85	7	0.6 ^{*1}	1 550 ^{*2}	2.5 Gb/s: STM-16 EA modulator integrated	BFY
NX8570SA	-20 to +70	-40 to +85	20	20	1 550 ^{*2}	CW Light Source with λ monitoring PD	BFY

*1 TYP.

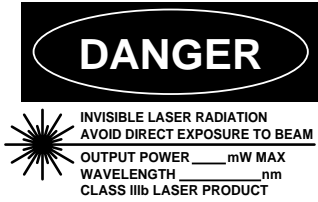
*2 Available for DWDM Wavelength based on ITU-T recommendation

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

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.

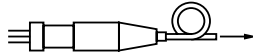


DANGER

INVISIBLE LASER RADIATION
AVOID DIRECT EXPOSURE TO BEAM

OUTPUT POWER _____mW MAX
WAVELENGTH _____nm
CLASS IIIb LASER 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.

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