

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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NX8563LA Series

Phase-out/Discontinued

1 550 nm InGaAsP MQW-DFB LASER DIODE MODULE 2.5 Gb/s DIRECTLY MODULATION LIGHT SOURCE FOR DWDM APPLICATIONS

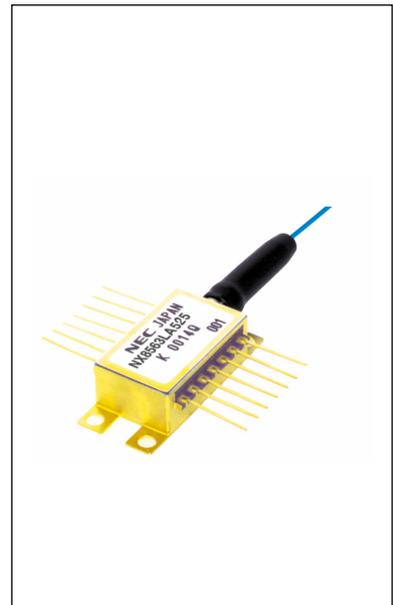
DESCRIPTION

The NX8563LA Series is a 1 550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode module with Single Mode Fiber.

It is designed as directly modulation light source and ideal for optical transmission systems. The device is available for Dense Wavelength Division Multiplexing (DWDM) wavelengths based on ITU-T recommendations, enabling a wide range of applications.

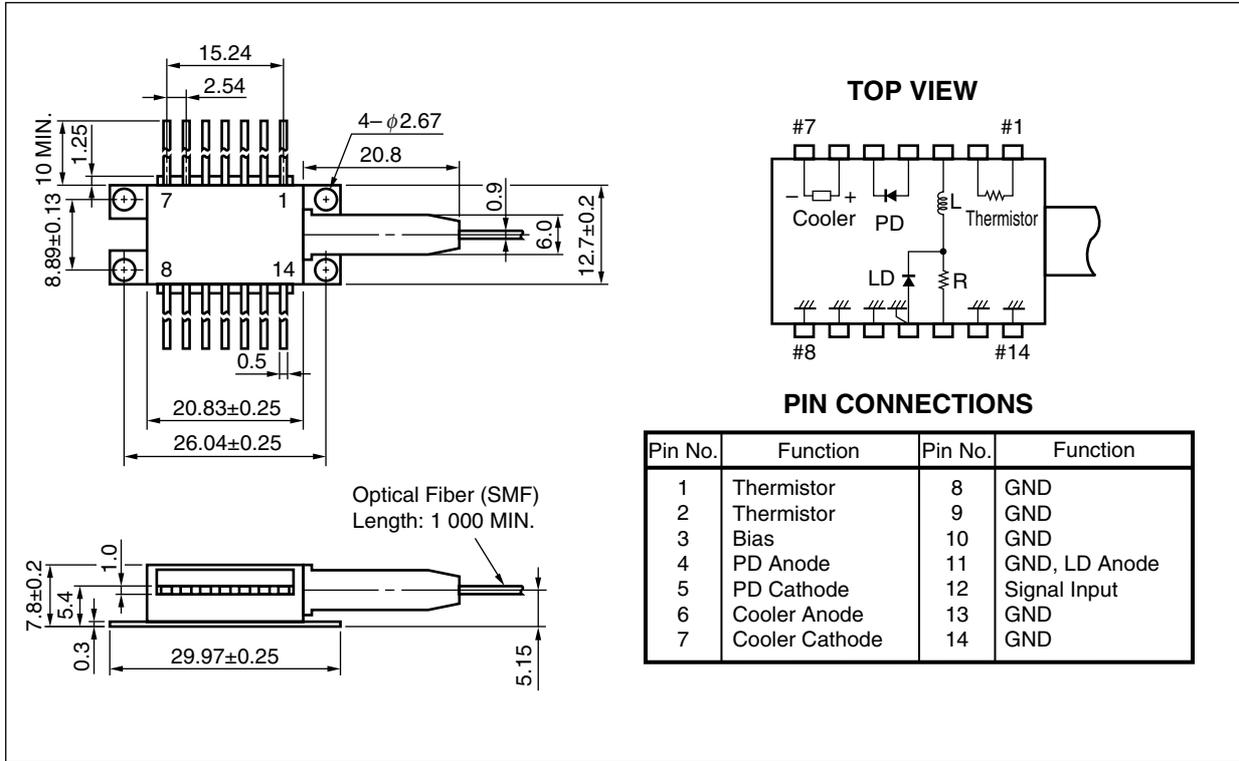
FEATURES

- Peak output power $P_r = 10 \text{ mW MIN.}$
- Available for DWDM wavelengths based on ITU-T recommendations (100 GHz grid, please refer to the **ORDERING INFORMATION**)
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Single mode fiber pigtail
- Wide operation temperature range



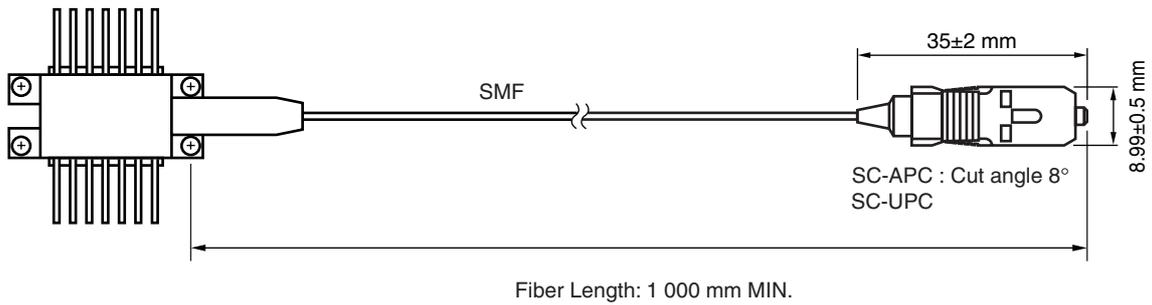
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★ PACKAGE DIMENSIONS (UNIT: mm)



OPTICAL FIBER DIMENSIONS (UNIT: mm)

Parameter	Specification	Unit
Outer Diameter	0.9±0.1	mm
Minimum Fiber Bending Radius	30	mm
Fiber Length	1 000 MIN.	mm



ORDERING INFORMATION

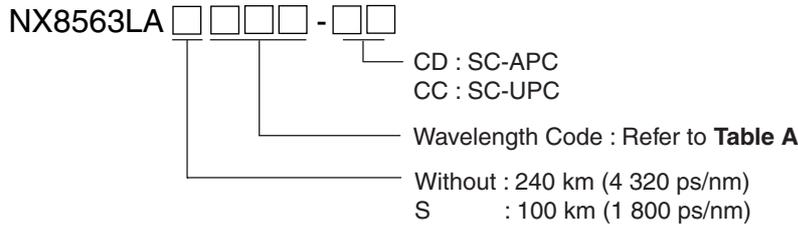


Table A: DWDM wavelength based on ITU-T recommendations (@T_{LD} = T_{set})

Wavelength Code	ITU-T Wavelength ^{*1} (nm)	Frequency (THz)	Wavelength Code	ITU-T Wavelength ^{*1} (nm)	Frequency (THz)
303	1 530.33	195.90	509	1 550.91	193.30
311	1 531.11	195.80	517	1 551.72	193.20
318	1 531.89	195.70	525	1 552.52	193.10
326	1 532.68	195.60	533	1 553.32	193.00
334	1 533.46	195.50	541	1 554.13	192.90
342	1 534.25	195.40	549	1 554.94	192.80
350	1 535.03	195.30	557	1 555.74	192.70
358	1 535.82	195.20	565	1 556.55	192.60
366	1 536.60	195.10	573	1 557.36	192.50
373	1 537.39	195.00	581	1 558.17	192.40
381	1 538.18	194.90	589	1 558.98	192.30
389	1 538.97	194.80	597	1 559.79	192.20
397	1 539.76	194.70	606	1 560.60	192.10
405	1 540.55	194.60	614	1 561.41	192.00
413	1 541.34	194.50			
421	1 542.14	194.40			
429	1 542.93	194.30			
437	1 543.73	194.20			
445	1 544.52	194.10			
453	1 545.32	194.00			
461	1 546.11	193.90			
469	1 546.91	193.80			
477	1 547.71	193.70			
485	1 548.51	193.60			
493	1 549.31	193.50			
501	1 550.11	193.40			

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

ABSOLUTE MAXIMUM RATINGS

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 +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C
Lead Soldering Temperature	T_{sld}	260 (10 sec.)	°C

ELECTRO-OPTICAL CHARACTERISTICS ($T_{LD} = T_{set}$, $T_C = -20$ to $+85^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Laser Set Temperature	T_{set}		30		45	°C
Forward Voltage	V_F	$P_f = 10$ mW	0.9		2.0	V
Threshold Current	I_{th}			20	40	mA
Optical Output Power from Fiber	P_f	$I_F = I_{op}$, $T_{LD} = T_{set}$	10			mW
Operation Current	I_{op}				125	mA
Threshold Output Power	P_{th}	$I_F = I_{th}$			100	μW
Quantum Efficiency	η	CW	0.142	0.17		W/A
Peak Emission Wavelength	λ_p	$P_f = 10$ mW, CW, $T_{LD} = T_{set}$	1 530	ITU-T ^{*1}	1 562	nm
Spectral Line Width	$\Delta\nu$	$P_f = 10$ mW, CW, 3 dB down		1	5	MHz
Side Mode Suppression Ratio	SMSR	$P_f = 10$ mW, under modulation	30	35		dB
Input Impedance	ZIN			25		Ω
Relative Intensity Noise	RIN	$P_f = 10$ mW, 20 MHz to 3 GHz			-140	dB/Hz
Rise and Fall Time	t_r / t_f	20-80%/80-20%, $T_C = 25^\circ\text{C}$			120	ps
Input Return Loss	S_{11}	f = 50 MHz to 3 GHz	6			dB
		f = 3 GHz to 6 GHz	3			
Band Width	BW	-3 dB, $P_f = 10$ mW	2.5			GHz
Dispersion Penalty	DP	$T_C = 25^\circ\text{C}^2$			2.0	dB

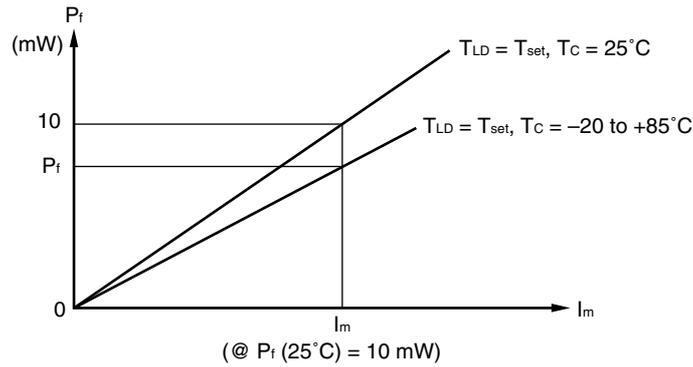
*1 Available for DWDM wavelengths based on ITU-T recommendations (100 GHz grid, please refer to the **ORDERING INFORMATION**)

*2 2.48832 Gb/s, PRBS 2²³-1, duty cycle, Extinction Ratio ≥ 8.5 dB, BER = 10⁻¹⁰, NX8563LAS: 1 800 ps/nm (100 km), NX8563LA: 4 320 ps/nm (240 km)

ELECTRO-OPTICAL CHARACTERISTICS
 (Applicable to Monitor PD: $T_{LD} = T_{set}$, $T_C = -20$ to $+85^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Monitor Current	I_m	$P_f = 10 \text{ mW}$, $V_R = 5 \text{ V}$	100		2 000	μA
Dark Current	I_D	$V_R = 5 \text{ V}$			10	nA
Tracking Error	γ^{-1}	$I_m = \text{const.}$			0.6	dB

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



ELECTRO-OPTICAL CHARACTERISTICS
 (Applicable to Thermistor and TEC: $T_{LD} = T_{set}$, $T_C = -20$ to $+85^\circ\text{C}$)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	$T_{LD} = 25^\circ\text{C}$	9.5	10.0	10.5	$\text{k}\Omega$
B Constant	B		3 350	3 450	3 550	K
Cooler Current	I_C	$\Delta T = 85 - T_{set}$, $P_f = 10 \text{ mW}$			1.2	A
Cooler Voltage	V_C	$\Delta T = 85 - T_{set}$, $P_f = 10 \text{ mW}$			2.4	V

REFERENCE

Document Name	Document No.
OPTICAL SEMICONDUCTOR DEVICES FOR FIBEROPTIC COMMUNICATIONS SELECTION GUIDE	PL10161E
Opto-Electronics Devices Pamphlet	PX10160E

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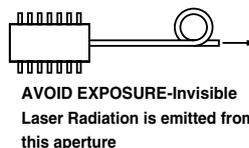
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M8E 00.4-0110

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SEMICONDUCTOR LASER



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<p>Caution GaAs Products</p>	<p>This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.</p> <ul style="list-style-type: none"> • Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. <ol style="list-style-type: none"> 1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. 2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. • Do not burn, destroy, cut, crush, or chemically dissolve the product. • Do not lick the product or in any way allow it to enter the mouth.
<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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