PRELIMINARY DATA SHEET

NEC

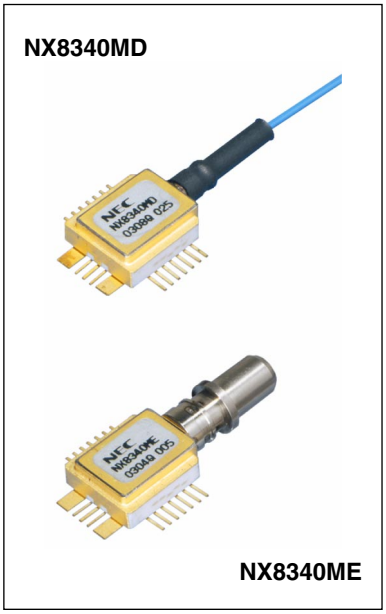
LASER DIODE

NX8340 Series

1 310 nm MQW-DFB LASER DIODE MODULE WITH DRIVER FOR 10 Gb/s APPLICATIONS

DESCRIPTION

The NX8340 Series is a 1 310 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode module with an internal driver IC. It is capable of transmitting up to 12 km standard single mode fiber (dispersion: 40 ps/nm) for 10 Gb/s applications.



FEATURES

- AlGaInAs BH DFB-LD
- Internal driver IC
- Up to 12 km transmission 10 Gb/s (dispersion: 40 ps/nm)
- 19-pin SMT package

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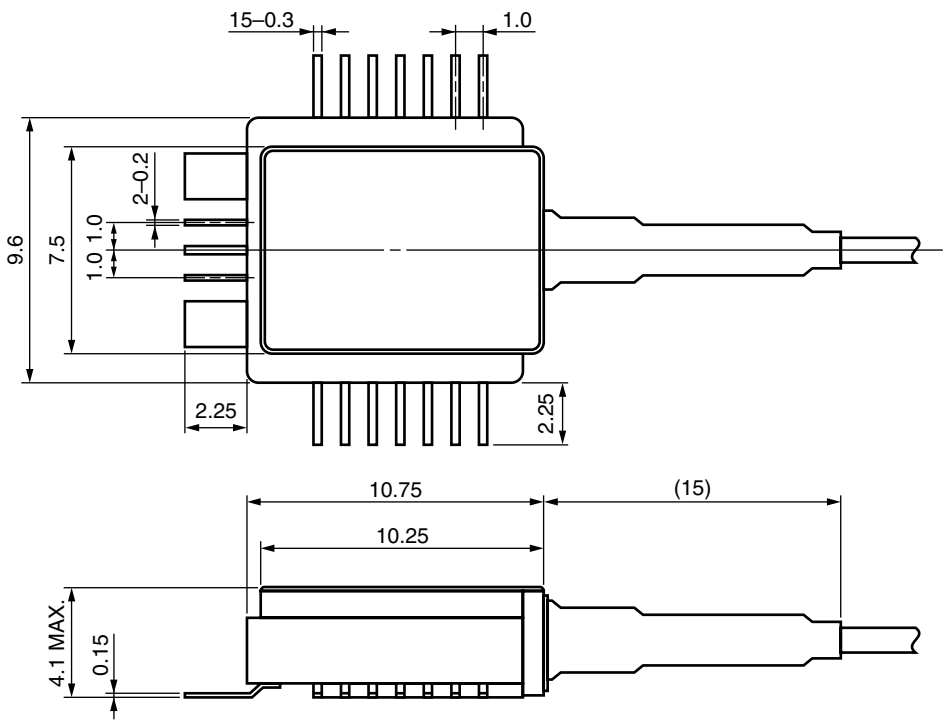
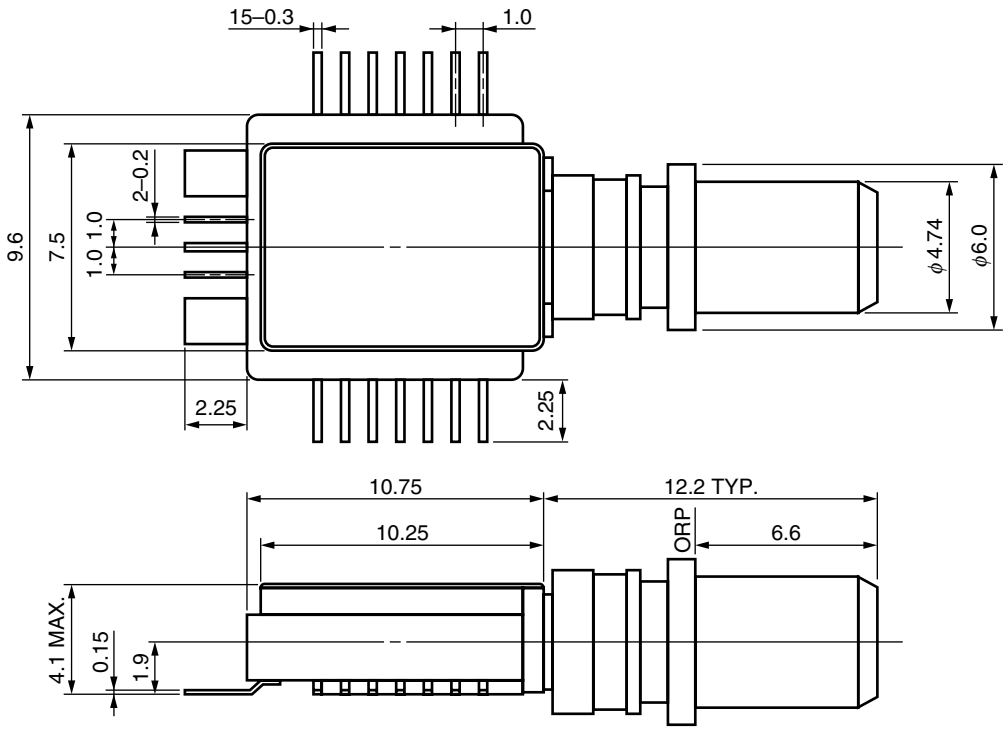
PACKAGE DIMENSIONS (UNIT : mm)

NX8340MD

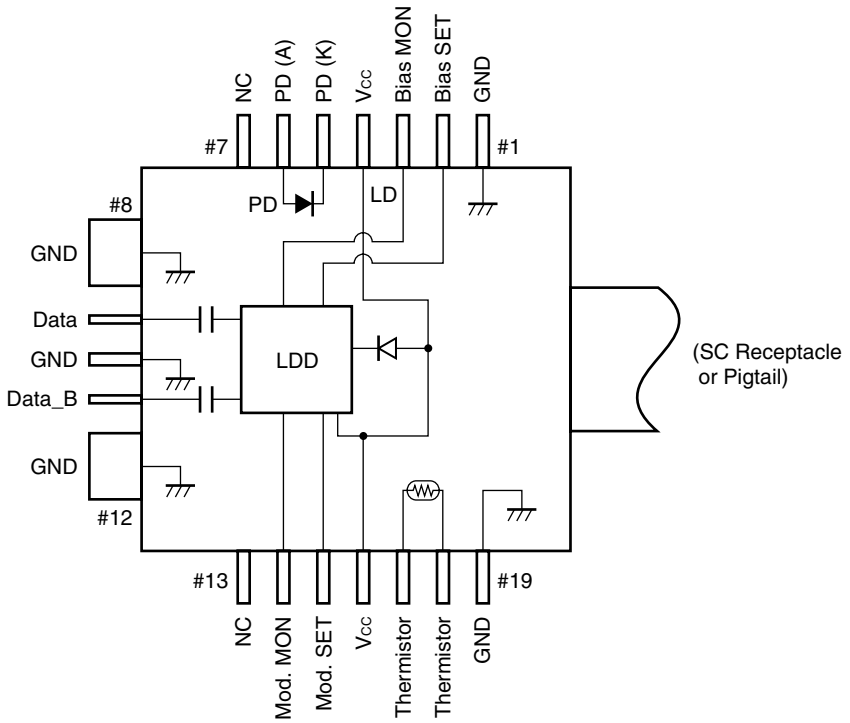


NX8340ME



PIN CONNECTIONS

TOP VIEW



Pin No.	Function	Pin No.	Function	Pin No.	Function
1	Case GND	8	Case GND	13	NC
2	Vb	9	D_{IN}	14	Vmm
3	Vbm	10	Case GND	15	Vm
4	V_{CC}	11	$D_{IN}B$	16	V_{CC}
5	PD Cathode	12	Case GND	17	Thermistor
6	PD Anode			18	Thermistor
7	NC			19	Case GND

OPTICAL FIBER CHARACTERISTICS

Parameter	Specification	Unit
Mode Field Diameter	9.5±1.0	μm
Cladding Diameter	125±2	μm
Maximum Cladding Noncircularity	2	%
Maximum Core/Cladding Concentricity	1.6	%
Tight Buffer Diameter	900±100	μm
Cut-off Wavelength	< 1 270	nm
Minimum Fiber Bending Radius	30	mm
Fiber Length	900 MIN.	mm
Flammability	UL1581 VW-1	

ORDERING INFORMATION

Part Number	Available Connector/Receptacle
NX8340MD-CC	With SC-UPC Connector
NX8340ME	SC Receptacle

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Storage Temperature	T_{stg}	–40 to +85	°C
Operating Case Temperature	T_C	0 to +75	°C
Forward Current of PD	I_{FPD}	10	mA
Reverse Voltage of PD	V_{RPD}	20	V
Driver Power Supply Voltage	V_{CC}	–0.5 to +6.0	V
Data Input Voltage (DC coupled, single)	D_{IN}, D_{INB}	V_{CC}–1.2 to V_{CC}+0.5	V
Bias Monitor Voltage	Vbm	–0.5 to V_{CC}+0.5	V
Modulation Monitor Voltage	Vmm	–0.5 to V_{CC}+0.5	V
Bias Control Voltage	Vb	–0.5 to +2.6	V
Modulation Control Voltage	Vm	–0.5 to +1.4	V
Lead Soldering Temperature	T_{sld}	350 (3 sec.)	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_C = 0 to +75°C, BOL, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power	P_{op}	***1**	−4		−1	dBm
Peak Emission Wavelength	λ_p	CW, $P_f = P_{op}$	1 290		1 330	nm
Side Mode Suppression Ratio	SMSR	CW, $P_f = P_{op}$	30			dB
Monitor Current	I_m	$P_f = P_{op}$, V_R = 1.5 V ***1**	50			μA
Monitor Dark Current	I_D	V_R = 1.5 V			500	nA
Tracking Error	γ	I_m = const. ($P_f = P_{op}$)	−1.0		1.0	dB
Driver Power Supply Voltage	V_{CC}	***1**	4.75	5.0	5.5	V
Driver Power Supply Current	I_{CC}	***1**			250	mA
Bias Set Voltage	Vb	***1**	1.7		2.15	V
Modulation Set Voltage	Vm	***1**	1.0		1.2	V
Data Input Voltage	D_{IN}, $D_{IN}B$	Differential input, AC-coupled	0.2		1.6	V
Thermistor Resistance	R	T_C = 25°C, Non-operation	9.5	10.0	10.5	kΩ
B Constant	B		3 350	3 450	3 550	K
Eye Mask Margin	MASK	Ex = 7 dB, Back to back ***1**	5			%
Extinction Ratio	ER	***1**	6			dB
Dispersion Penalty	DP	BER = 10^{-12}, 40 ps/nm, SMF ***1**			1	dB
Connector Repeatability (Applicable to SC receptacle)	–	With master pigtail	−1.0		1.0	dB

***1** 9.95/10.66 Gb/s, PRBS $2^{31}-1$, NRZ, Duty Cycle = 50%

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 NX8303CG-CC	−10 to +85	−40 to +85	15	2 *1	1 310	622 Mb/s: STM-4 (L-4.1)	Coaxial
NX8304BE-CC NX8304CE-CC	−40 to +85	−40 to +85	15	2 *1	1 310	For fiberoptic communications	Coaxial
NX8340 Series	0 to +75	−40 to +85	–	0.4	1 310	10 Gb/s: STM-64 (I-64.1) 10 GBASE-LW/LR	SMT
NX8503BG-CC NX8503CG-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
NX8508 Series	0 to +70	−40 to +85	10	2 *1	λ_p *2	2.5 Gb/s: CWDM	Coaxial
NX8562 Series	−20 to +70	−40 to +85	20	20	1 550 *3	CW Light Source for external modulator	BFY
NX8563 Series	−20 to +70	−40 to +85	20	10	1 550 *3	CW Light Source for external modulator	BFY
NX8563LA Series	−20 to +85	−40 to +85	20	10	1 550 *3	2.5 Gb/s: DWDM	BFY
NX8570SA/SCxxx-BA	−20 to +70	−40 to +85	20	20	1 550 *3	CW Light Source with λ monitoring PD single channel wavelength, 50 GHz-spacing	BFY
NX8570SA/SCxxxD-BA	−20 to +70	−40 to +85	20	20	1 550 *3	CW Light Source with λ monitoring PD 4 channel wavelength tunable capability for 50 GHz-spacing	BFY
NX8570SCxxxQ-BA	−20 to +70	−40 to +85	20	20	1 550 *3	CW Light Source with λ monitoring PD 8 channel wavelength tunable capability for 50 GHz-spacing	BFY
NX8571SA/SCxxx-BA	−20 to +70	−40 to +85	20	10	1 550 *3	CW Light Source with λ monitoring PD single channel wavelength, 50 GHz-spacing	BFY
NX8571SA/SCxxxD-BA	−20 to +70	−40 to +85	20	10	1 550 *3	CW Light Source with λ monitoring PD 4 channel wavelength tunable capability for 50 GHz-spacing	BFY
NX8571SCxxxQ-BA	−20 to +70	−40 to +85	20	10	1 550 *3	CW Light Source with λ monitoring PD 8 channel wavelength tunable capability for 50 GHz-spacing	BFY

***1** TYP.

***2** Available for CWDM Wavelengths based on ITU-T recommendations

λ_p = 1 470, 1 490, 1 510, 1 530, 1 550, 1 570, 1 590, 1 610 nm

***3** Available for DWDM Wavelengths based on ITU-T recommendations also

REFERENCE

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

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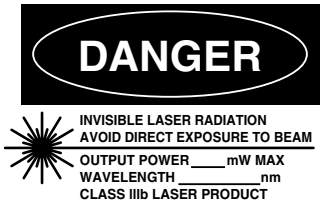

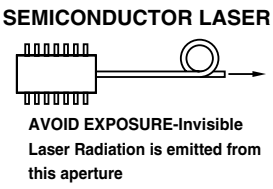

Warning Laser Beam	A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight. • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
Caution GaAs Products	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. • 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. 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.
Caution Optical Fiber	A glass-fiber is attached on the product. Handle with care. • When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

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