DATA SHEET

RENESAS

LASER DIODE

NX8517XC Series

1 470 TO 1 610 nm FOR CWDM 2.5 Gb/s InGaAsP MQW-DFB LASER DIODE TOSA

DESCRIPTION

The NX8517XC is a 1 470 to 1 610 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode TOSA (transmitter optical sub-assembly) with InGaAs monitor PIN-PD in a receptacle type package designed for SFF/SFP transceiver with LC duplex receptacle. This device is ideal for 2.5 Gb/s CWDM application.

FEATURES

- Internal optical isolator
- Optical output power P_f = 2.0 mW
- Peak emission wavelength λ_p = 1 470 to 1 610 nm (Based on CWDM)
- Low threshold current I_{th} = 10 mA TYP. @ T_C = 25°C
- Operating case temperature range T_C = –20 to +85°C
- Side mode suppression ratio SMSR = 40 dB
- InGaAs monitor PIN-PD

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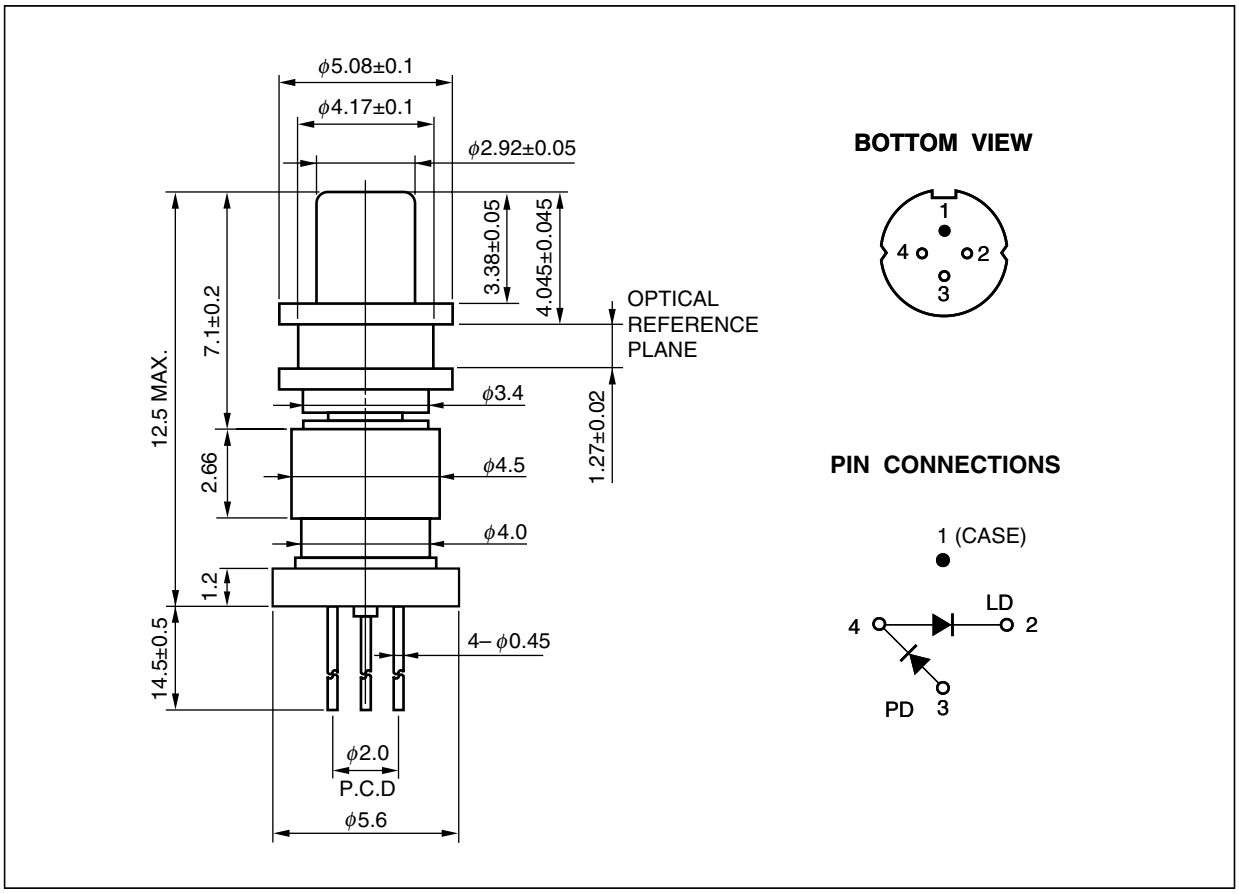
PACKAGE DIMENSIONS (UNIT: mm)



ORDERING INFORMATION

NX8517XC xx

- xx: Wavelength code: Refer to **Table A**
- XC: Package code

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Optical Output Power from Fiber	P_f	5.0	mW
Forward Current of LD	I_F	150	mA
Reverse Voltage of LD	V_R	2.0	V
Forward Current of PD	I_F	2.0	mA
Reverse Voltage of PD	V_R	15	V
Operating Case Temperature	T_C	–20 to +85	°C
Storage Temperature	T_{stg}	–40 to +85	°C
Lead Soldering Temperature	T_{sld}	350 (3 sec.)	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_C = –20 to +85°C, unless otherwise specified)

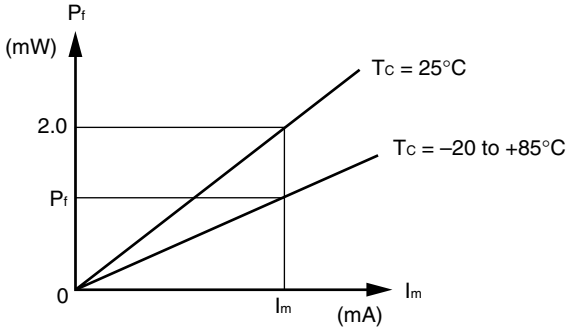
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Optical Output Power from Fiber	P_f	CW, T_C = 25°C, $I_F = I_{th}$ + 20 mA		2.0		mW
Operating Voltage	V_{op}	CW, P_f = 2.0 mW		1.1	1.6	V
Threshold Current	I_{th}	CW, T_C = 25°C		10	20	mA
		CW			50	
Differential Efficiency	η_d	CW, P_f = 2.0 mW, T_C = 25°C	0.07	0.1		W/A
		CW, P_f = 2.0 mW	0.04			
Peak Emission Wavelength	λ_p	CW, P_f = 2.0 mW, RMS (–20 dB), T_C = 35°C	λ_p–2	λ_p [*1]	λ_p+2	nm
Temperature Dependence of Peak Emission Wavelength	$\Delta\lambda/\Delta T$	CW	0.08	0.10	0.12	nm/°C
Side Mode Suppression Ratio	SMSR	CW, P_f = 2.0 mW	30	40		dB
Rise Time	t_r	$I_b = I_{th}$, 20-80%, P_f = 2.0 mW			100	ps
Fall Time	t_f	$I_b = I_{th}$, 80-20%, P_f = 2.0 mW			150	ps
Monitor Current	I_m	CW, V_R = 1.5 V, P_f = 1.0 mW	100	500	1 000	μA
Monitor Dark Current	I_D	V_R = 1.5 V, T_C = 25°C		0.1	50	nA
		V_R = 1.5 V		10	500	
Tracking Error[*2]	γ	CW, I_m = const. (@ P_f = 2.0 mW)	–1.0		1.0	dB
Connector Repeatability	–	With master pigtail	–1.0		1.0	dB

***1** 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
Please refer to **Table A**.

Table A: CWDM wavelength code (@ T_C = 35°C)

Wavelength Code	MIN. (nm)	TYP. (nm)	MAX. (nm)
47	1 468	1 470	1 472
49	1 488	1 490	1 492
51	1 508	1 510	1 512
53	1 528	1 530	1 532
55	1 548	1 550	1 552
57	1 568	1 570	1 572
59	1 588	1 590	1 592
61	1 608	1 610	1 612

***2** Tracking Error: γ



$$\gamma = \left| 10 \log \frac{P_f}{2.0} \right| [dB]$$

REFERENCE

Document Name	Document No.
Opto-Electronics Devices Pamphlet	PX10160E

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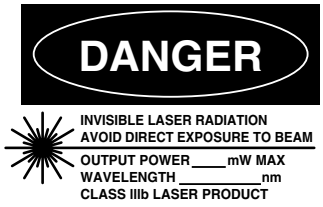

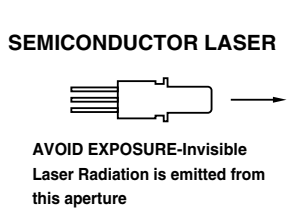

Warning Laser Beam	A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight. • Do not look directly into the laser beam. • Avoid exposure to the laser beam, any reflected or collimated beam.
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.