CEL

NEC's InGaAsP MQW-DFB TOSA FOR 2.5 Gb/s CWDM APPLICATIONS

NX8510UD Series

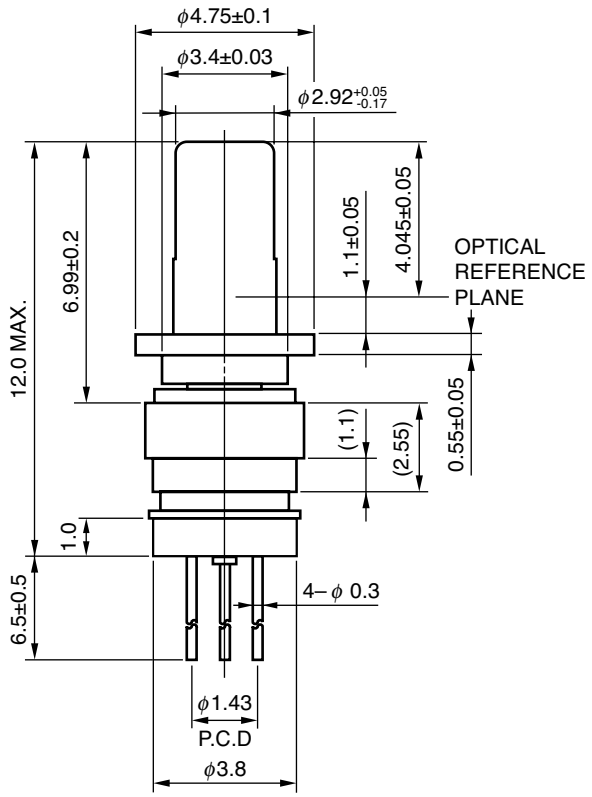
FEATURES

- **INTERNAL OPTICAL ISOLATOR**
- **PEAK EMISSION WAVELENGTH**
  λ_p = 1 470 to 1 610 nm
  (Based on ITU-T recommendations)
- **OPTICAL OUTPUT POWER**
  P_f = 2.0 mW
- **OPERATING CASE TEMPERATURE RANGE**
  T_C = -20 to +85°C
- **LOW THRESHOLD CURRENT**
  Ith = 10 mA TYP. @ TC = 25°C
- **SIDE MODE SUPPRESSION RATIO**
  SMSR = 40 dB
- **InGaAs MONITOR PIN-PD**
- **SMALL PACKAGE**
  ϕ 3.8 mm TOSA (Total length 12.0 mm MAX.)

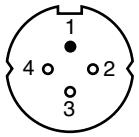
DESCRIPTION

NEC's NX8510UD 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.

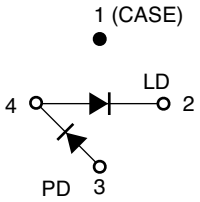
PACKAGE DIMENSIONS (Units in mm)



BOTTOM VIEW



PIN CONNECTIONS



ORDERING INFORMATION

PART NUMBER	PACKAGE
NX8510UD-AZ*	φ 3.8 mm TOSA

NX8510UD xx

Wavelength code : Refer to **Table A**

Package code : Refer to **PACKAGE DIMENSIONS**

***NOTE:**
Please refer to the last page of this data sheet, “Compliance with EU Directives” for Pb-Free RoHS Compliance Infomation.

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)

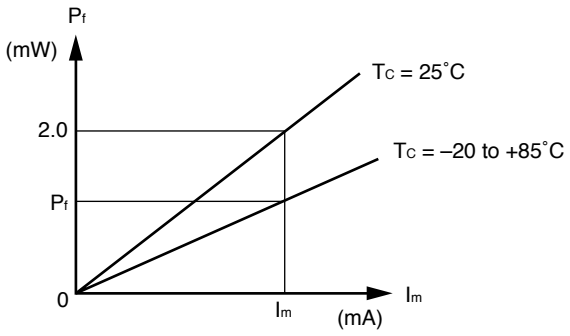
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V_{op}	CW, P_f = 2.0 mW		1.1	1.6	V
Threshold Current	I_{th}	CW, T_C = 25°C		10	20	mA
		CW			50	
Optical Output Power from Fiber	P_f	CW, T_C = 25°C, $I_F = I_{th}$ + 20 mA		2.0		mW
Differential Efficiency	η_d	CW, P_f = 2.0 mW, T_C = 25°C	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	10	nA
		V_R = 1.5 V		10	100	
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 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



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

Life Support Applications
These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices	
Lead (Pb)	< 1000 PPM	-A	-AZ
		Not Detected	(*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
PBB	< 1000 PPM	Not Detected	
PBDE	< 1000 PPM	Not Detected	

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.