PRELIMINARY DATA SHEET

CEL

NEC's InGaAsP MQW-DFB LASER MODULE IN COAXIAL PACKAGE FOR 2.5 Gb/s, CWDM APPLICATIONS

NX8508 Series

FEATURES

- **INTERNAL OPTICAL ISOLATOR**
- **PEAK EMISSION WAVELENGTH**
  λ_p = 1 470 to 1 610 nm (Based on CWDM)
- **OPTICAL OUTPUT POWER**
  P_f = 2.0 mW
- **OPERATING CASE TEMPERATURE RANGE**
  T_C = -20 to +85°C
- **SIDE MODE SUPPRESSION RATIO**
  SMSR = 40 dB
- **InGaAs MONITOR PIN-PD**
- **WITH SC-UPC CONNECTOR**
- **BASED ON TELCORDIA RELIABILITY**

DESCRIPTION

NEC'S NX8508 Series are 1 470 to 1 610 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode coaxial modules with an internal optical isolator.

These devices are ideal for 2.5 Gb/s CWDM application.

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

	PART NUMBER			NX8508 SERIES		
SYMBOLS	**PARAMETER AND CONDITIONS**		**UNIT**	**MIN.**	**TYP.**	**MAX.**
P_f	Optical Output Power from Fiber, CW, T_C = 25°C, I_F = I_{th} + 20 mA		mW		2.0	
V_{op}	Operating Voltage, CW, P_f = 2.0 mW		V		1.1	1.6
I_{th}	Threshold Current, T_C = 25°C		mA		10	20
						50
P_{th}	Threshold Output Power, I_F = I_{th}		μW			100
η_d	Differential Efficiency	P_f = 2.0 mW, T_C = 25°C	W/A	0.07	0.1	
		P_f = 2.0 mW		0.04		
$\Delta\eta_d$	Temperature Dependence of Differential Efficiency $\Delta\eta_d = 10 \log \frac{\eta_d\ (@\ T_C°C)}{\eta_d\ (@\ 25°C)}$		dB	−3.0	−1.6	
λ_p	Peak Emission Wavelength, CW, P_f = 2.0 mW, T_C = 25°C		nm	λ_p−2	λ_p *1	λ_p+2
$\Delta\lambda/\Delta T$	Temperature Dependence of Peak Emission Wavelength, CW		nm/°C	0.08	0.10	0.12
SMSR	Side Mode Suppression Ratio, P_f = 2.0 mW		dB	30	40	
t_r	Rise Time, 20-80%, P_f = 2.0 mW		ps			100

Continued on next page

ELECTRO-OPTICAL CHARACTERISTICS (TC = -25 to +85°C, unless otherwise specified)

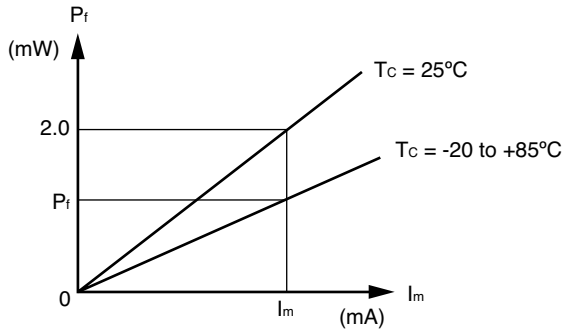
	PART NUMBER			NX8508 SERIES		
SYMBOLS	PARAMETER AND CONDITIONS		UNIT	MIN.	TYP.	MAX.
t_f	Fall Time, 80-20%, P_f = 2.0 mW		ps			150
I_m	Monitor Current, V_R = 1.5 V, P_f = 1.0 mW		μA	100	500	1 000
I_D	Monitor Dark Current	V_R = 1.5 V, T_C = 25°C	nA		0.1	10
		V_R = 1.5 V			10	100
γ	Tracking Error *2, I_m = const.		dB	−1.0		1.0

***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 = 25°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



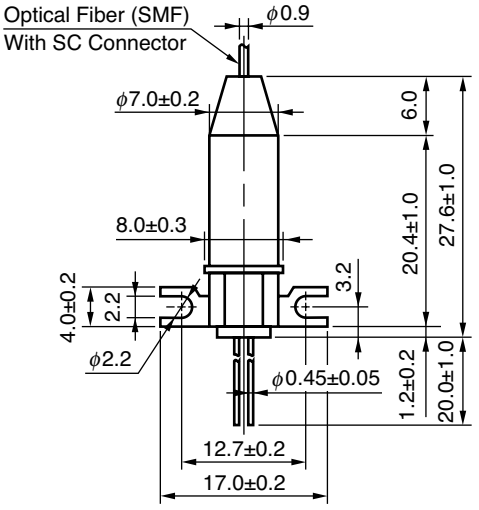
$$\gamma = \left| 10 \log \frac{P_f}{2.0} \right| \text{[dB]}$$

ABSOLUTE MAXIMUM RATINGS[1]

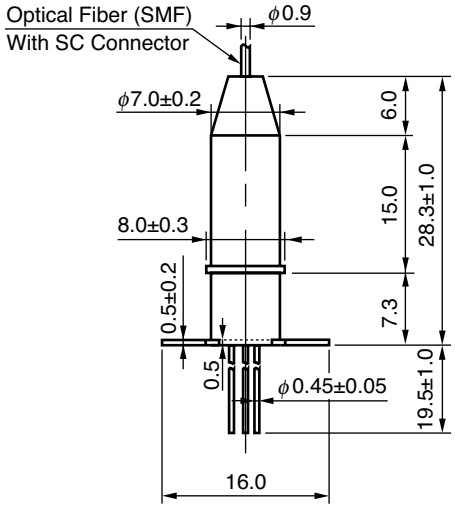
SYMBOL	PARAMETER	UNIT	RATINGS
P_f	Optical Output Power from Fiber	mW	5
I_F	Forward Current of LD	mA	150
V_R	Reverse Voltage of LD	V	2.0
I_F	Forward Current of PD	mA	2.0
V_R	Reverse Voltage of PD	V	15
T_C	Operating Case Temperature	°C	-20 to +85
T_{stg}	Storage Temperature	°C	–40 to +85

PACKAGE DIMENSIONS (Units in mm)

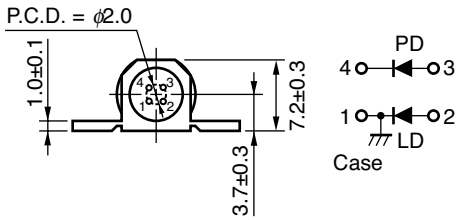
NX8508BMxx*1-CC



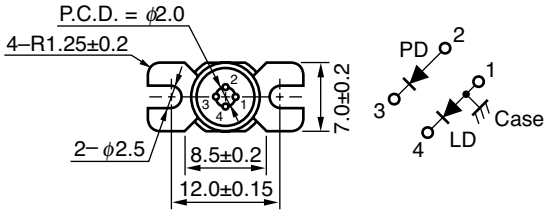
NX8508CGxx*1-CC



PIN CONNECTIONS



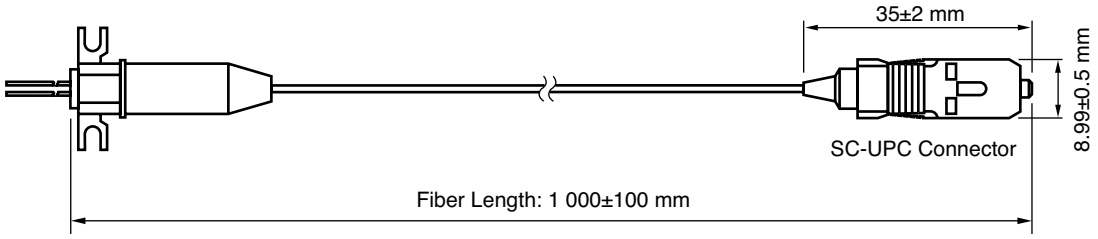
PIN CONNECTIONS



***1** Please refer to **ORDERING INFORMATION**.

OPTICAL FIBER CHARACTERISTICS

PARAMETER	SPECIFICATION	UNIT
Mode Field Diameter	9.5±1	μm
Cladding Diameter	125±2	μm
Maximum Cladding Noncircularity	2	%
Maximum Core/Cladding Concentricity	1.6	%
Outer Diameter	0.9±0.1	mm
Cut-off Wavelength	1 100 to 1 270	nm
Minimum Fiber Bending Radius	30	mm
Fiber Length	1 000±100	mm
Flammability	UL1581 VW-1	



ORDERING INFORMATION

PART NUMBER	FLANGE TYPE	AVAILABLE CONNECTOR
NX8508BMxx-CC-AZ*	Flat Mount Flange	With SC-UPC Connector
NX8508CGxx-CC-AZ*	Vertical Mount Flange	

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

NX8508□□xx-CC

- Connector code : With SC-UPC connector
- Wavelength code : Refer to **Table A**
- Package code : Refer to **PACKAGE DIMENSIONS**

CEL California Eastern Laboratories

4590 Patrick Henry Drive
Santa Clara, CA 95054-1817
Telephone: (408) 919-2500
Facsimile: (408) 988-0279

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.