

PRELIMINARY DATA SHEET



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**
 $\lambda_p = 1\,470$ to $1\,610$ nm (Based on CWDM)
- **OPTICAL OUTPUT POWER**
 $P_f = 2.0$ mW
- **OPERATING CASE TEMPERATURE RANGE**
 $T_c = -20$ to $+85^\circ\text{C}$
- **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 $+85^\circ\text{C}$, unless otherwise specified)

SYMBOLS	PART NUMBER		NX8508 SERIES		
	PARAMETER AND CONDITIONS	UNIT	MIN.	TYP.	MAX.
P_f	Optical Output Power from Fiber, CW, $T_c = 25^\circ\text{C}$, $I_f = I_{th} + 20$ mA	mW		2.0	
V_{op}	Operating Voltage, CW, $P_f = 2.0$ mW	V		1.1	1.6
I_{th}	Threshold Current, $T_c = 25^\circ\text{C}$	mA		10	20
					50
P_{th}	Threshold Output Power, $I_f = I_{th}$	µW			100
η_d	Differential Efficiency	$P_f = 2.0$ mW, $T_c = 25^\circ\text{C}$	W/A	0.07	0.1
		$P_f = 2.0$ mW		0.04	
$\Delta\eta_d$	Temperature Dependence of Differential Efficiency $\Delta\eta_d = 10 \log \frac{\eta_d (@ T_c^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$	dB	-3.0	-1.6	
λ_p	Peak Emission Wavelength, CW, $P_f = 2.0$ mW, $T_c = 25^\circ\text{C}$	nm	$\lambda_p - 2$	$\lambda_p \pm 1$	$\lambda_p + 2$
$\Delta\lambda/\Delta T$	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

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

SYMBOLS	PART NUMBER		NX8508 SERIES			
	PARAMETER AND CONDITIONS		UNIT	MIN.	TYP.	MAX.
t _f	Fall Time, 80-20%, P _r = 2.0 mW		ps			150
I _m	Monitor Current, V _R = 1.5 V, P _r = 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

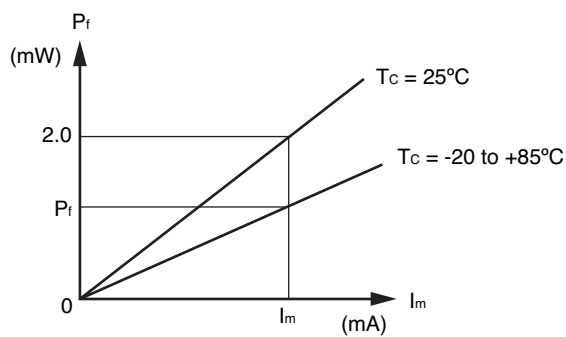
λ_p = 1 470, 1 490, 1 510, 1 530, 1 550, 1 570, 1 590, 1 610 nm

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



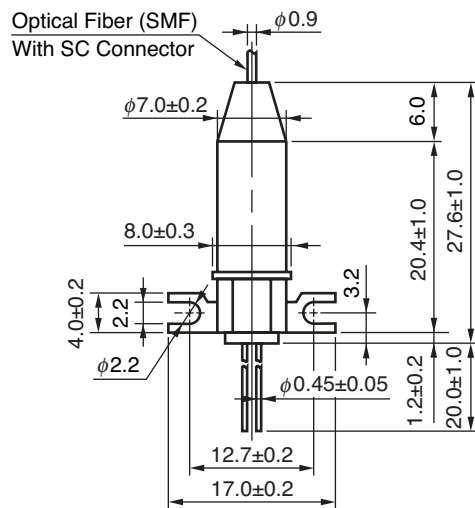
$$\gamma = \left| 10 \log \frac{P_f}{2.0} \right| \text{ [dB]}$$

ABSOLUTE MAXIMUM RATINGS¹

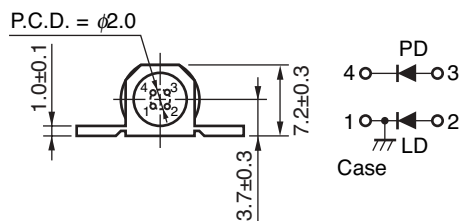
SYMBOL	PARAMETER	UNIT	RATINGS
P _f	Optical Output Power from Fiber	mW	5
I _F	Forward Current of LD	mA	150
V _R	Reverse Voltage of LD	V	2.0
I _F	Forward Current of PD	mA	2.0
V _R	Reverse Voltage of PD	V	15
T _c	Operating Case Temperature	°C	-20 to +85
T _{stg}	Storage Temperature	°C	-40 to +85

PACKAGE DIMENSIONS (Units in mm)

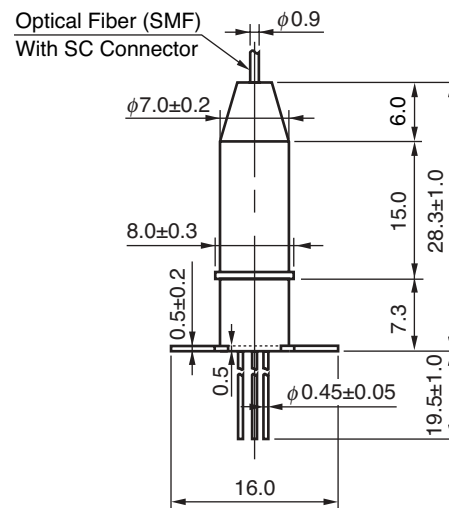
NX8508BMxx^{*1}-CC



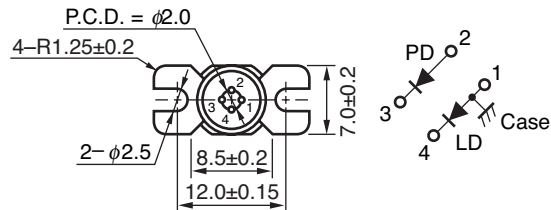
PIN CONNECTIONS



NX8508CGxx^{*1}-CC



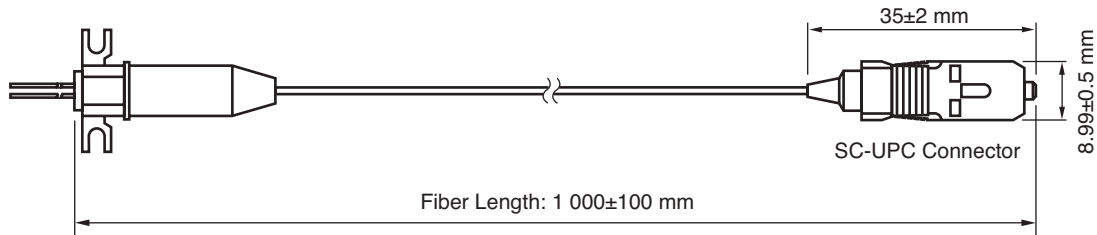
PIN CONNECTIONS



^{*1} Please refer to ORDERING INFORMATION.

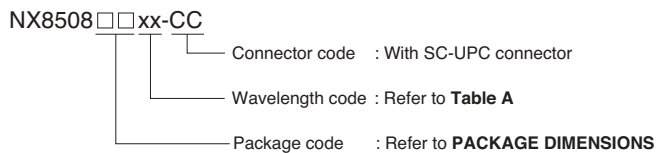
OPTICAL FIBER CHARACTERISTICS

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	Flat Mount Flange	With SC-UPC Connector
NX8508CGxx-CC	Vertical Mount Flange	



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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