CEL

NEC's 1550 nm InGaAsP MQW-DFB LASER DIODE IN CAN PACKAGE FOR LONG HAUL 2.5 Gb/s APPLICATIONS

NX6509 Series

FEATURES

- **OPTICAL OUTPUT POWER:**
  P_o = 5.0 mW
- **LOW THRESHOLD CURRENT:**
  I_{th} = 10 mA
- **HIGH SPEED:**
  t_r = 100 ps MAX.
  t_f = 150 ps MAX.
- **WIDE OPERATING TEMPERATURE RANGE:**
  T_C = –20 to +85°C
- **INGAAS MONITOR PIN-PD**
- **CAN PACKAGE:**
  ϕ 5.6 mm
- **FIBER COUPLING POINT:**
  7.5±1.0 mm

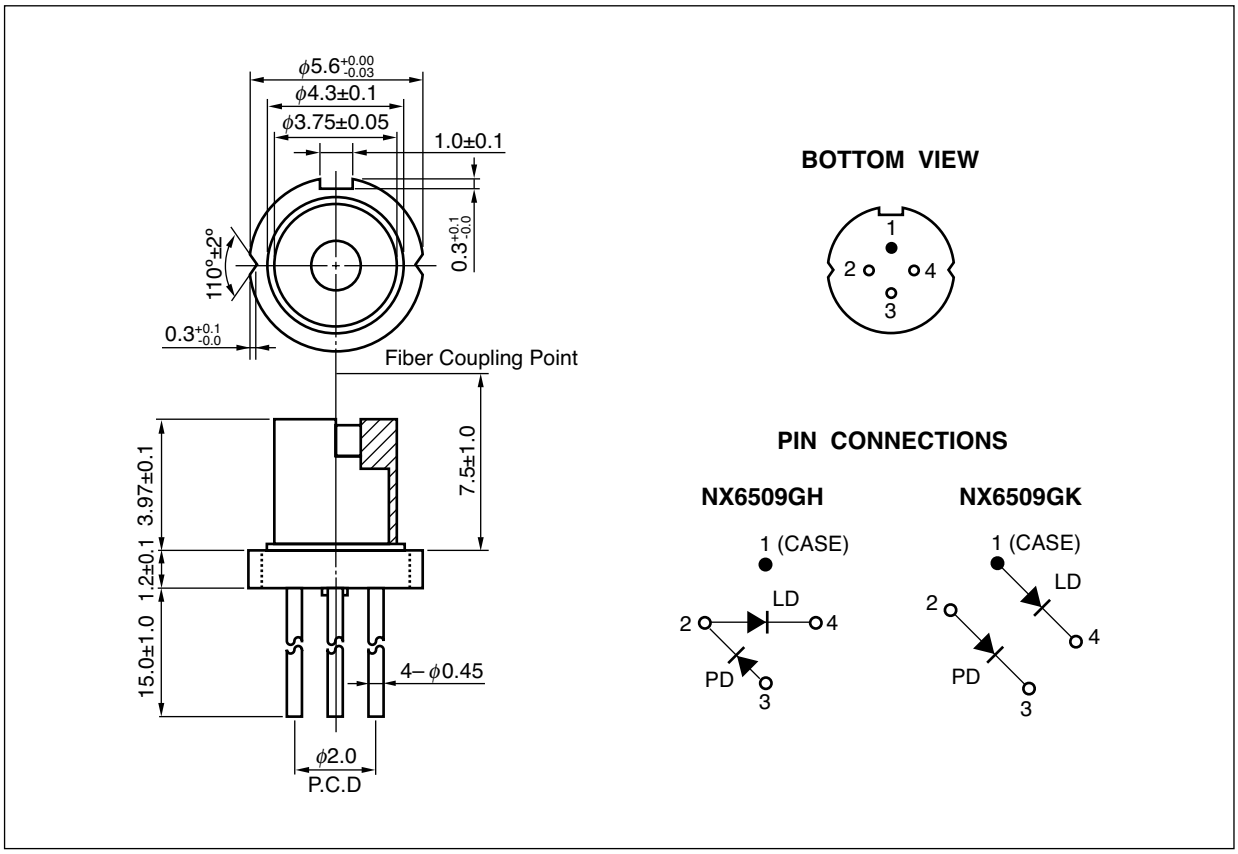


DESCRIPTION

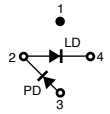
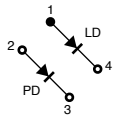
NEC's NX6509 Series is a 1550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD.

These devices are designed for 2.5 Gb/s: STM-16 (L-16.2) application and ideal for Synchronous Digital Hierarchy (SDH) system.

PACKAGE DIMENSIONS (UNIT : mm)



ORDERING INFORMATION

PART NUMBER	PACKAGE	PIN CONNECTIONS
NX6509GH-AZ*	4-pin CAN with aspherical lens cap	
NX6509GK-AZ*		

Remark The hermetic test will be performed as AQL 1.0%.

***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_o	10	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
Assemble Temperature	T_{asb}	150 (15 Hr)	°C
Lead Soldering Temperature	T_{sld}	350 (3 sec.)	°C
Relative Humidity (noncondensing)	RH	85	%

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

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Optical Output Power	P_o	CW		5.0		mW
Operating Voltage	V_{op}	P_o = 5.0 mW		1.1	1.6	V
Threshold Current	I_{th}	T_C = 25°C		10	20	mA
					50	
Differential Efficiency	η_d	P_o = 5.0 mW, T_C = 25°C	0.18	0.25		W/A
		P_o = 5.0 mW	0.10			
Temperature Dependence of Differential Efficiency	$\Delta\eta_d$	$\Delta\eta_d = 10 \log \frac{\eta_d\ (@T_C\ ^oC)}{\eta_d\ (@25\ ^oC)}$	–3.0	–1.6		dB
Peak Emission Wavelength	λ_p	P_o = 5.0 mW	1 530		1 570	nm
Side Mode Suppression Ratio	SMSR	P_o = 5.0 mW	30	40		dB
Rise Time	t_r	P_o = 5.0 mW, 20-80%			100	ps
Fall Time	t_f	P_o = 5.0 mW, 80-20%			150	ps
Monitor Current	I_m	V_R = 1.5 V, P_o = 5.0 mW	200	1 000	2 000	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	

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.

Important Information and Disclaimer: Information provided by CEL on its website or in other communications concerting the substance content of its products represents knowledge and belief as of the date that it is provided. CEL bases its knowledge and belief on information provided by third parties and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. CEL has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. CEL and CEL suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.
In no event shall CEL's liability arising out of such information exceed the total purchase price of the CEL part(s) at issue sold by CEL to customer on an annual basis.
See CEL Terms and Conditions for additional clarification of warranties and liability.