



NEC's 1310 nm **InGaAsP MQW FP LASER DIODE** **IN COAXIAL PACKAGE** **FOR 622 Mb/s APPLICATIONS**

NX7302BA-CC
NX7302CA-CC

FEATURES

- **CENTER WAVELENGTH:**
 $\lambda_c = 1310 \text{ nm}$
- **OPTICAL OUTPUT POWER:**
 $P_f = 0.2 \text{ mW}$
- **LOW THRESHOLD CURRENT:**
 $I_{TH} = 9 \text{ mA}$
- **HIGH CUTOFF FREQUENCY:**
 $f_c = 2.0 \text{ GHz}$
- **InGaAs MONITOR PIN-PD**
- **WITH SC-UPC CONNECTOR**
- **WIDE OPERATING TEMPERATURE RANGE:**
 $-40 \text{ to } +85^\circ\text{C}$
- **BASED ON TELCORDIA RELIABILITY**

DESCRIPTION

NEC's NX7302BA-CC and NX7302CA-CC are 1310 nm Fabry-Perot (FP) laser diode coaxial modules with single mode fiber. They have a Multiple Quantum Well (MQW) structure and a built-in InGaAs monitor photo diode. These modules are ideal as light sources for Synchronous Digital Hierarchy (SDH) systems, STM-4 and short-haul S-4.1 ITU-T recommendations.

ELECTRO-OPTICAL CHARACTERISTICS ($T_c = -40 \text{ to } +85^\circ\text{C}$, unless otherwise specified)

PART NUMBER			NX7302BA-CC, NX7302CA-CC		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
P_f	Optical Output Power from Fiber	mW		0.2	
V_{OP}	Operating Voltage, $P_f = 0.2 \text{ mW}$	V		1.2	1.5
I_{TH}	Threshold Current	$T_c = +25^\circ\text{C}$	4	9	20
			2		50
P_{TH}	Threshold Output Power, $I_f = I_{TH}$	μW			15
I_{MOD}	Modulation Current	$P_f = 0.2 \text{ mW}, T_c = 25^\circ\text{C}$	7	15	20
		$P_f = 0.2 \text{ mW}$	5		40
η_d	Differential Efficiency	$P_f = 0.2 \text{ mW}, T_c = 25^\circ\text{C}$	0.010	0.015	0.025
		$P_f = 0.2 \text{ mW}$	0.005		0.040
$\Delta\eta_d$	Temperature Dependence of Differential Efficiency, $\Delta\eta_d = 10 \log \frac{\eta_d (@ T_c \text{ } ^\circ\text{C})}{\eta_d (@ 25 \text{ } ^\circ\text{C})}$	dB	-3	-2	
Kink	Kink, $P_f = \text{Up to } 0.24 \text{ mW}$ (Refer to Definitions)	%			± 20
λ_c	Center Wavelength, $P_f = 0.2 \text{ mW}$, RMS (-20 dB)	nm	1274	1310	1356
$\Delta\lambda/\Delta T$	Temperature Dependence of Center Wavelength	nm/ $^\circ\text{C}$		0.4	0.5
σ	Spectral Width, $P_f = 0.2 \text{ mW}$, RMS (-20 dB)	nm		1.3	2.5
f_c	Cut-off Frequency, -3 dB	GHz		2.0	
t_r	Rise Time, 10 to 90%, $P_{pk} = 0.2 \text{ mW}$, $I_f = I_{TH}$	ns		0.2	0.5
t_f	Fall Time, 90 to 10%, $P_{pk} = 0.2 \text{ mW}$, $I_f = I_{TH}$	ns		0.3	0.5
Applicable to Monitor PD: $T_c = -40 \text{ to } +85^\circ\text{C}$ unless otherwise specified					
I_m	Monitor Current, $V_R = 5 \text{ V}$, $P_f = 0.2 \text{ mW}$	μA	100	700	1200
I_D	Dark Current	$V_R = 5 \text{ V}, T_c = 25^\circ\text{C}$		0.1	50
		$V_R = 5 \text{ V}$		10	500
C_t	Terminal Capacitance, $V_R = 5 \text{ V}$, $f = 1 \text{ MHz}$	pF			20
LIN_m	Linearity, $V_R = 5 \text{ V}$, $P_f = 0.02 \text{ to } 0.2 \text{ mW}$ (Refer to Definitions)	%			± 10
γ	Tracking Error, $I_m = \text{const.}$ (Refer to Definitions)	dB		0.5	1.0

ABSOLUTE MAXIMUM RATINGS¹

(Tc = 25°C, unless otherwise specified)

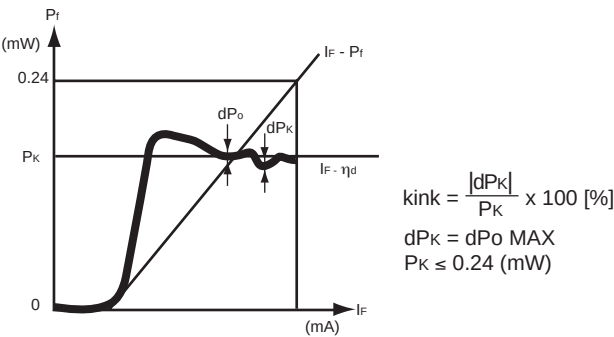
SYMBOLS	PARAMETERS	UNITS	RATINGS
Pf	Optical Output Power from Fiber	mW	0.5
If	Forward Current of LD	mA	150
VR	Reverse Voltage of LD	V	2.0
IF	Forward Current of PD	mA	10
VR	Reverse Voltage of PD	V	20
Tc	Operating Case Temperature	°C	-40 to +85
TSTG	Storage Temperature	°C	-40 to +85
TSLD	Lead Soldering Temperature (10 s)	°C	260
RH	Relative Humidity (noncondensing)	%	85

Note:

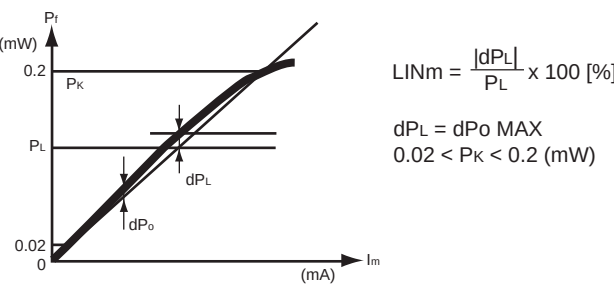
1. Operation in excess of any one of these parameters may result in permanent damage.

PARAMETER DEFINITIONS

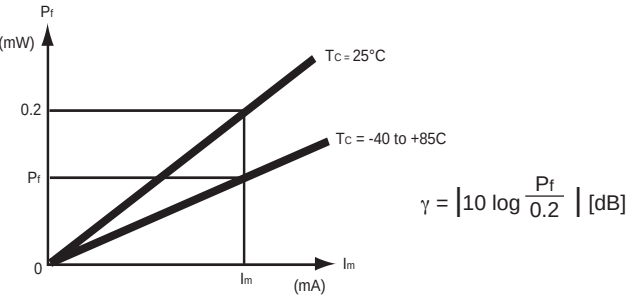
Kink : kink



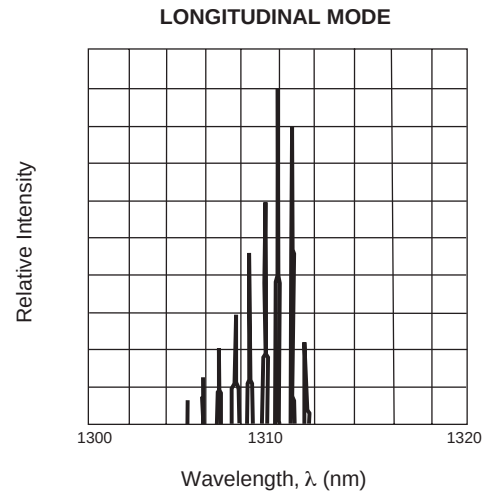
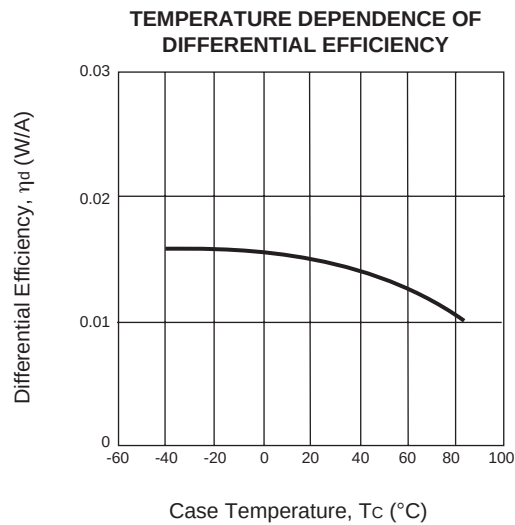
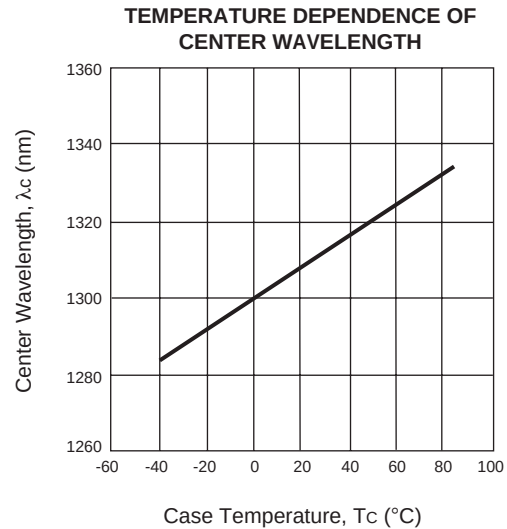
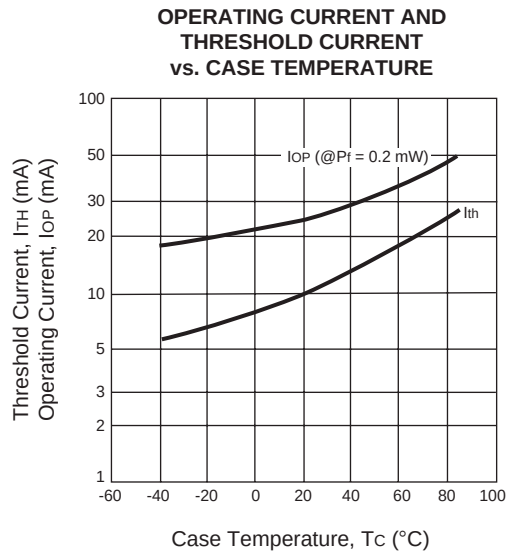
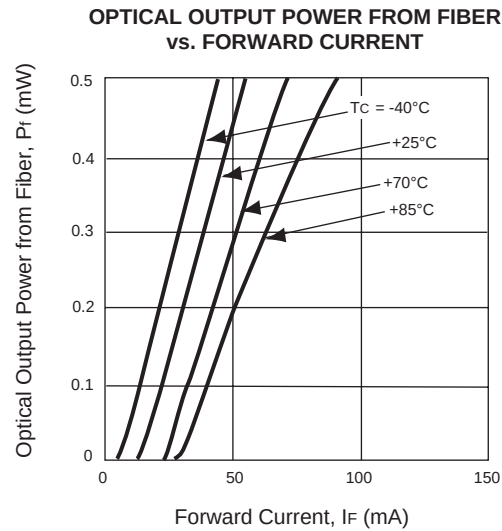
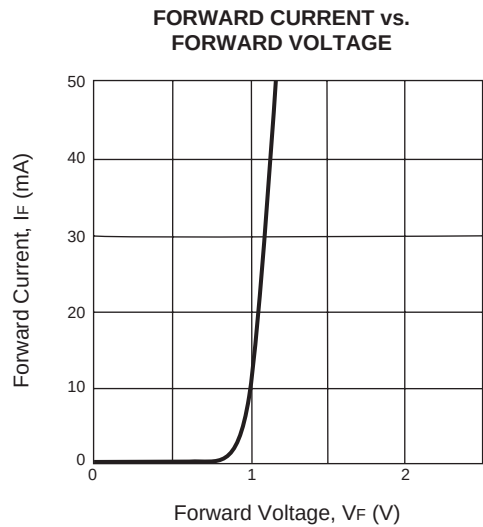
Linearity : LINm



Tracking Error : γ

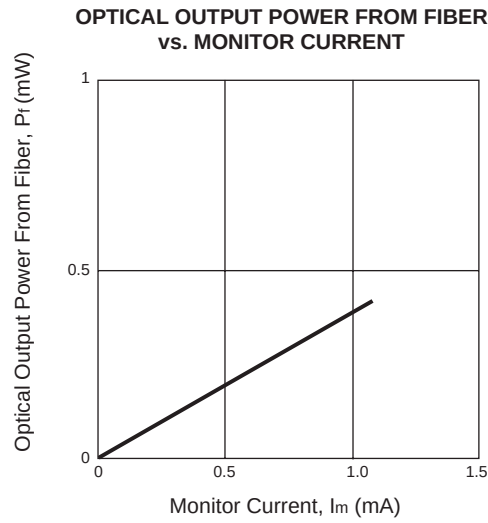


TYPICAL PERFORMANCE CURVES (T_C = -40 to +85°C)



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(Tc = -40 to +85°C)

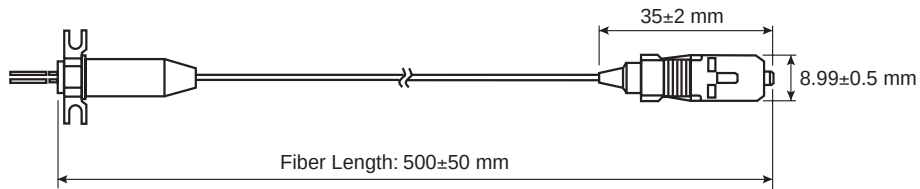


ORDERING INFORMATION

PART NUMBER	AVAILABLE CONNECTOR	FLANGE TYPE
NX7302BA-CC	With SC-UPC Connector	Flat Mount Flange
NX7302CA-CC	With SC-UPC Connector	Vertical Mount Flange

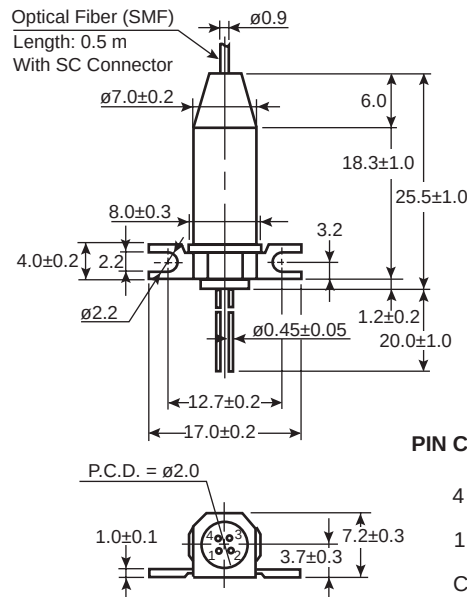
OPTICAL FIBER CHARACTERISTICS

PARAMETER	UNITS	SPECIFICATION
Mode Field Diameter	μm	9.5±1
Cladding Diameter	μm	125±2
Maximum Cladding Noncircularity	%	2
Maximum Core/Cladding Concentricity	%	1.6
Outer Diameter	mm	0.9±0.1
Cut-off Wavelength	nm	1100 to 1270
Minimum Fiber Bending Radius	mm	30
Fiber Length	mm	500±50
Flammability		UL 1581 VW-1



OUTLINE DIMENSIONS (Units in mm)

NX7302BA-CC



NX7302CA-CC

