

NEC

1550 nm FIBER OPTIC COMMUNICATIONS InGaAsP MQW LASER DIODE (5 mW)

NX6504 Series**FEATURES**

- **OPTICAL OUTPUT POWER:**
 $P_O = 5.0$ mW
- **LOW THRESHOLD CURRENT:**
 $I_{TH} = 12$ mA
- **HIGH SPEED:**
 $t_r, t_f = 0.5$ ns MAX
- **SMSR:**
45 dB
- **WIDE OPERATING TEMPERATURE RANGE:**
 $T_C = -10$ to $+85^\circ\text{C}$
- **InGaAs MONITOR PIN-PD**
- **CAN PACKAGE:**
 $\varnothing 5.6$ mm
- **BASED ON TELCORDIA RELIABILITY**

DESCRIPTION

The NX6504 Series is a 1550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode with InGaAs monitor PIN-PD. This device is ideal for Synchronous Digital Hierarchy (SDH) system, STM-1, STM-4 and ITU-T recommendations.

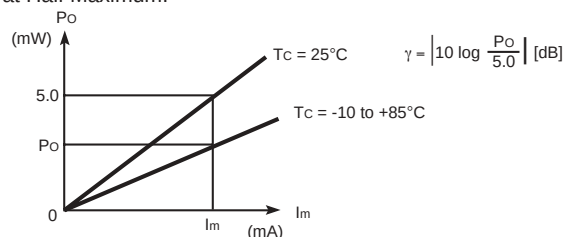
ELECTRO-OPTICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, unless otherwise specified)

PART NUMBER			NX6504 Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
V_{OP}	Operating Voltage, $P_O = 5.0$ mW, $T_C = -10$ to $+85^\circ\text{C}$	V	–	1.0	1.5
I_{TH}	Threshold Current	mA	–	12	25
	$T_C = 85^\circ\text{C}$	mA	–	35	50
P_{TH}	Threshold Output Power, $T_C = -10$ to $+85^\circ\text{C}$, $I_F = I_{TH}$	μW	–	–	200
η_d	Differential Efficiency	W/A	0.15	0.25	–
$\Delta\eta_d$	Temperature Dependence of Differential Efficiency $\Delta\eta_d = 10 \log \frac{\eta_d (@ 85^\circ\text{C})}{\eta_d (@ 25^\circ\text{C})}$	dB	-3.0	-1.5	–
λ_p	Peak Emission Wavelength, $P_O = 5.0$ mW, RMS (-20 dB), $T_C = -10$ to $+85^\circ\text{C}$	nm	1530	–	1570
SMSR	Side mode Suppression Ratio $P_O = 5.0$ mW, $T_C = -10$ to $+85^\circ\text{C}$	dB	30	45	–
$\theta_{\perp}$	Vertical Beam Angle ¹ , (Refer to Definitions) $P_O = 5.0$ mW, FAHM ²	deg	–	30	40
$\theta_{\parallel}$	Lateral Beam Angle ¹ , $P_O = 5.0$ mW, FAHM ²	deg	–	25	35
t_r	Rise Time, 10 to 90%	ns	–	0.05	0.5
t_f	Fall Time, 10 to 90%	ns	–	0.2	0.5
I_m	Monitor Current, $P_O = 5.0$ mW, $V_R = 5$ V	μA	200	800	–
I_D	Monitor Dark Current, $V_R = 5$ V	nA	–	0.1	10
	$V_R = 5$ V, $T_C = -10$ to $+85^\circ\text{C}$	nA	–	–	500
C_t	Monitor PD Terminal Capacitance, $V_R = 5$ V, $f = 1$ MHz	pF	–	6	20
γ	Tracking Error ³ $I_m = \text{const}$, (@ $P_O = 5.0$ mW, $T_C = 25^\circ\text{C}$) $T_C = -10$ to $+85^\circ\text{C}$	dB	-1.0	–	1.0

Notes:

1. Applicable only to NX6504S Series.

2. FAHM: Full Angle at Half Maximum.

3. Tracking Error: γ 

NX6504 SERIES

ABSOLUTE MAXIMUM RATINGS¹

(T_c = 25°C, unless otherwise specified)

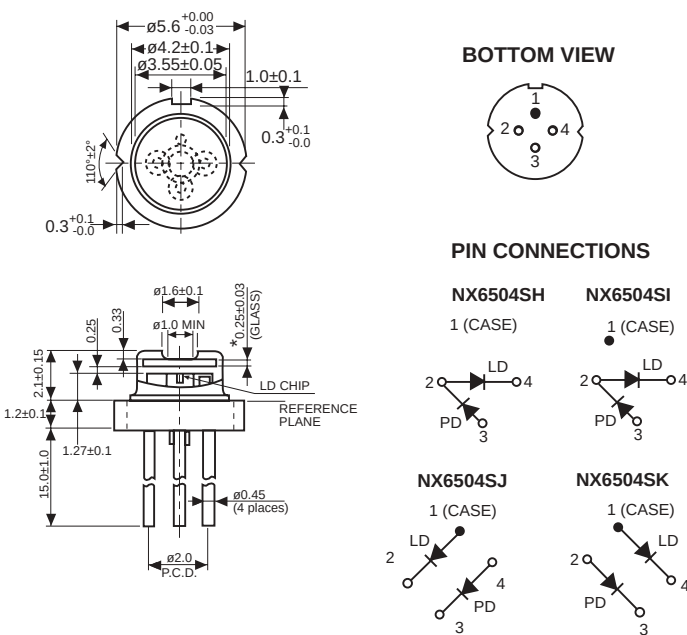
SYMBOLS	PARAMETERS	UNITS	RATINGS
P _f	Optical Output Power	mW	10
I _F	Forward Current of LD	mA	150
V _R	Reverse Voltage of LD	V	2.0
I _F	Forward Current of PD	mA	10
V _R	Reverse Voltage of PD	V	20
T _c	Operating Case Temperature	°C	-10 to +85
T _{STG}	Storage Temperature	°C	-40 to +85
T _{SLD}	Lead Soldering Temperature (10 s)	°C	350 (3 sec.)
RH	Relative Humidity (noncondensing)	%	85

Note:

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

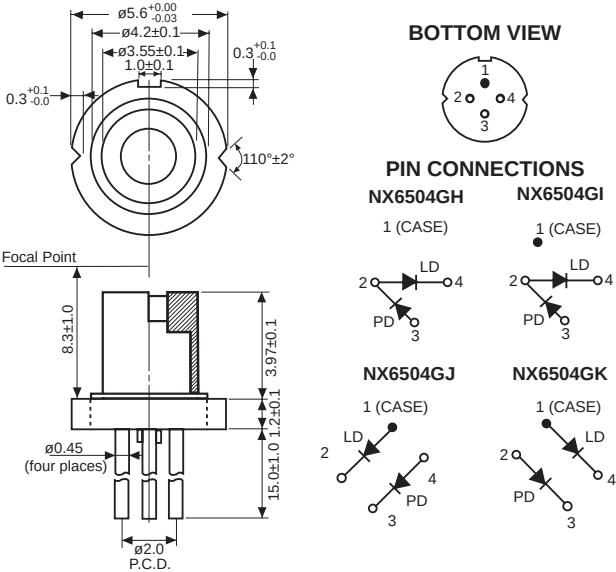
OUTLINE DIMENSIONS (Units in mm)

NX6504S SERIES

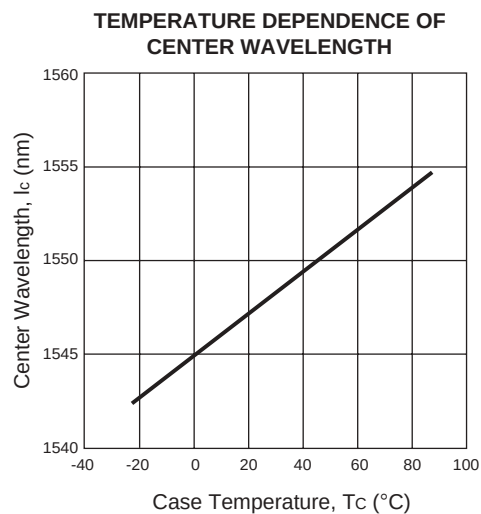
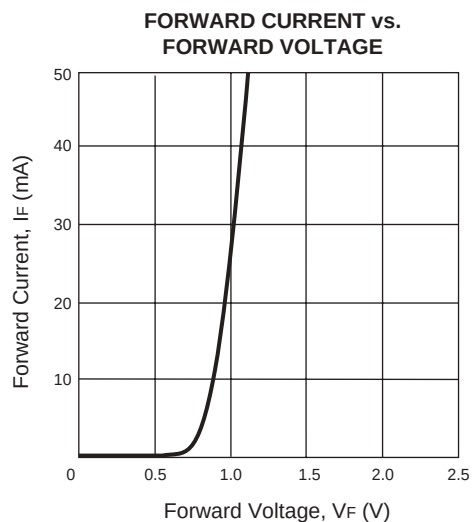
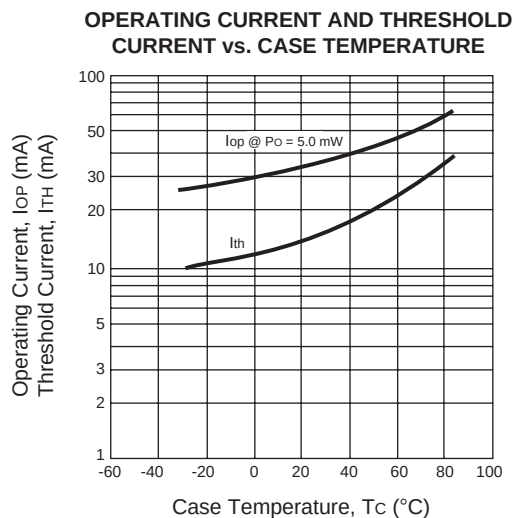
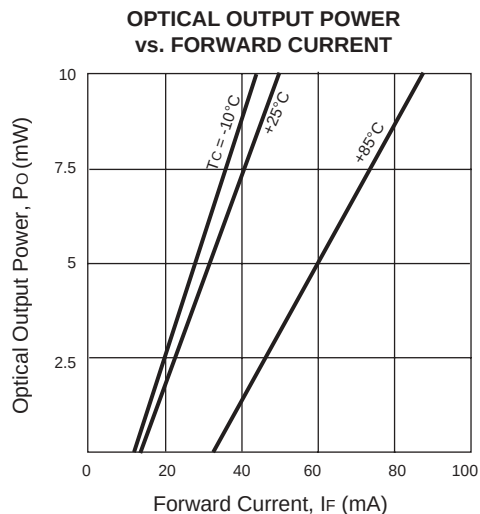


*n = 1.48 Bolosilicate Glass

NX6504G SERIES



TYPICAL PERFORMANCE CURVES ($T_C = -40$ to $+85^\circ\text{C}$)



Note: The graphs indicate nominal characteristics.

Life Support Applications

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03/14/2002