

NEC

1550 nm OPTICAL FIBER COMMUNICATIONS EA MODULATOR INTEGRATED MQW-DFB LASER DIODE MODULE WITH GPO CONNECTOR FOR 10 Gb/s APPLICATIONS

NX8560LJ**FEATURES**

- INTEGRATED ELECTROABSORPTION MODULATOR
- UP TO 40 km TRANSMISSION CAPABILITY WITH STANDARD FIBER
- LOW MODULATION VOLTAGE
- WITH GPO CONNECTOR

DESCRIPTION

The NX8560LJ is an EA Modulator integrated 1550 nm DFB-LD for 10 Gb/s. The newly developed bandgap energy controlled Selective MOVPE technology is utilized as the fabrication method.

ELECTRO-OPTICAL CHARACTERISTICS ($T_{LD} = 25^{\circ}\text{C}$, $T_c = -20$ to $+70^{\circ}\text{C}$, unless otherwise specified)

PART NUMBER			NX8560LJ		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
T_{SET}	Laser Set Temperature	$^{\circ}\text{C}$	20		35
I_{op}	Operating Current	mA	50		100
V_{Rmc}	Modulation Center Voltage	V	0.5		1.2
V_{Rmpp}	Modulation Voltage	V	2		3
V_{FLD}	Forward Voltage of LD, $I_{FLD} = I_{op}$	V			1.8
I_{TH}	Threshold Current	mA		7	20
P_f	Optical Output from Fiber, $V_{Rm} = 0\text{ V}$, $I_{FLD} = I_{op}$	mW	0.5		
λ_p	Peak Emission Wavelength, $I_{FLD} = I_{op}$, $V_{Rm} = 0\text{ V}$, $T_{LD} = T_{SET}$	nm	1545	1550	1562
SMSR	Side Mode Suppression Ratio, $I_{FLD} = I_{op}$, $V_{Rm} = 0\text{ V}$	dB	30		
ER	Extinction Ratio, $I_{FLD} = I_{op}$, Under Modulation ¹	dB	10		
f_c	Cut-off Frequency, $I_{FLD} = I_{op}$, $V_{Rm} = 1/2 V_{Rmpp}$, -3 dB, 50 Ω	GHz	8		
P_e	Transmission Penalty Due to Dispersion, $I_{FLD} = I_{op}$, Under Modulation ¹ , 40 km standard fiber ²	dB			2
ISOL	Isolation	dB	30		

Notes:

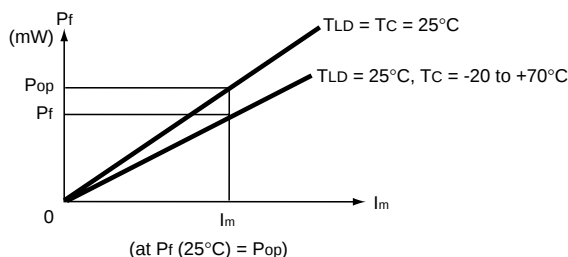
1. 10 Gb/s, PRBS 2²³-1, $V_{Rm} = V_{Rmc} \pm 1/2 V_{Rmpp}$, NEC Test System.
2. 40 km stadard fiber NEC Test System, Transmission penalty at BER = 10⁻⁹

ELECTRO-OPTICAL CHARACTERISTICS (Applicable to Monitor PD: T_{LD} = 25°C, T_c = -20 to +70°C)

PART NUMBER			NX8560LJ		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I _m	Monitor Current, I _{FLD} = I _{OP} , V _{RM} = 0 V	μA	20		1000
I _D	Dark Current, V _{RPD} = 5 V	nA			10
γ ¹	Tracking Error, I _m = const.	dB			0.5
C _t	Monitor Capacitance, V _{RPD} = 5 V, f = 1 Mhz	pF			15

Note:

$$1. \gamma = 10 \log \frac{P_f}{P_{op}}$$

**ELECTRO-OPTICAL CHARACTERISTICS** (Applicable to Thermistor and TEC: T_{LD} = 25°C, T_c = -20 to +70°C)

PART NUMBER			NX8560LJ		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
R	Thermistor Resistance	kΩ	9.5	10.0	10.5
B	B Constant	K	3300	3400	3500
I _c	Cooler Current, ΔT = 70 - T _{set}	A			1.5
V _c	Cooler Voltage, ΔT = 70 - T _{set}	V			2.5

ABSOLUTE MAXIMUM RATINGS¹(T_c = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
P _f	Optical Output from Fiber	mW	10
I _{FLD}	Forward Current of LD	mA	150
V _{RLD}	Reverse Voltage of LD	V	2.0
V _{Fm}	Forward Voltage of Modulator	V	1
V _{Rm}	Reverse Voltage of Modulator	V	5
I _{FPD}	Forward Current of PD	mA	1
V _{RPD}	Reverse Voltage of PD	V	10
I _c	Cooler Current	A	1.5
V _c	Cooler Voltage	V	2.5
T _c	Operating Case Temperature	°C	-20 to +70
T _{STG}	Storage Temperature	°C	-40 to +85
T _{SLD}	Lead Soldering Temperature (10 s)	°C	260

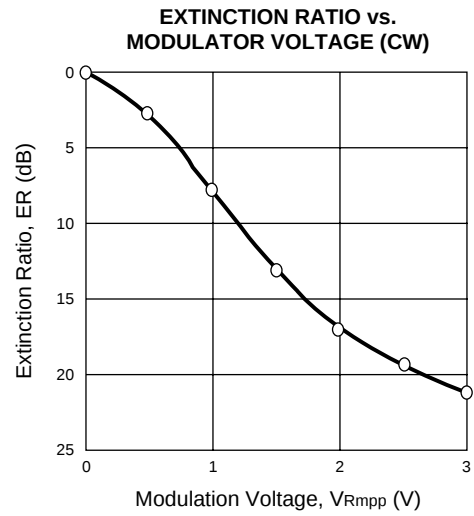
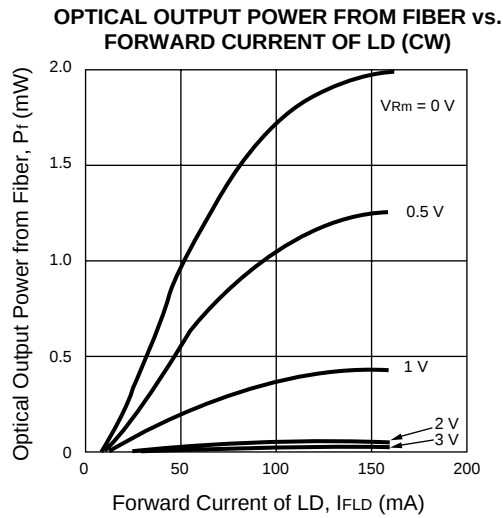
Note:

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

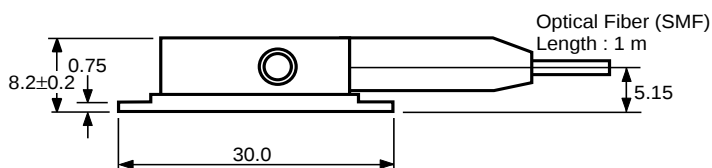
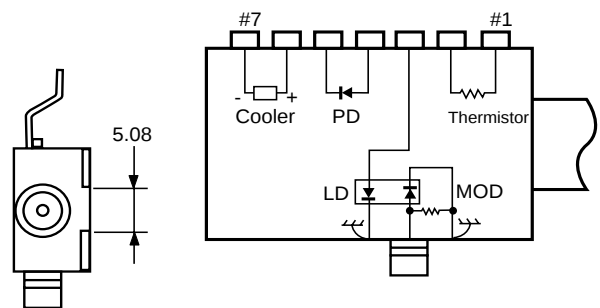
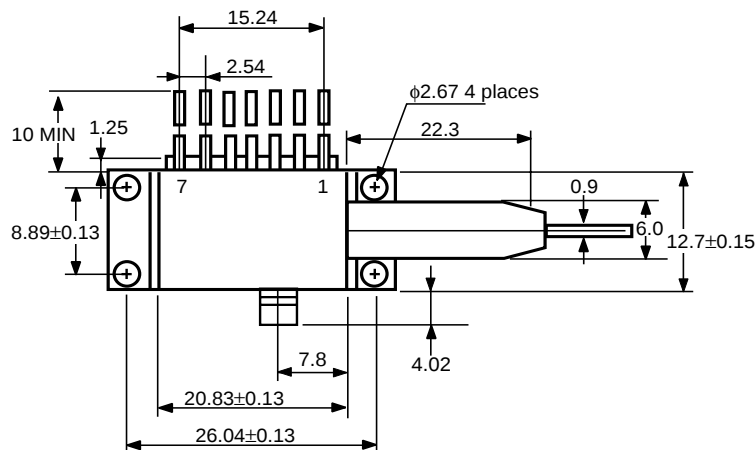
ORDERING INFORMATION

Part Number	Available Connector
NX8560LJ-BA	With FC-PC Connector
NX8560LJ-CA	With SC-PC Connector

TYPICAL PERFORMANCE CURVES ($T_{LD} = 25^{\circ}\text{C}$, Unless otherwise specified)



OUTLINE DIMENSIONS (Units in mm)



PIN CONNECTIONS

PIN No.	FUNCTION
1	THERMISTOR
2	THERMISTOR
3	LD DC Bias
4	PD ANODE
5	PD CATHODE,
6	COOLER ANODE
7	COOLER CATHODE