

NEC

1550 nm CW LIGHT SOURCE InGaAsP STRAINED MQW-DFB LASER DIODE MODULE WITH WAVELENGTH MONITOR

NX8570SA**FEATURES**

- **OUTPUT POWER:**
 $P_f = 20$ mW MIN
- **WAVELENGTH SELECTABLE FOR ITU-T STANDARDS**
(100 GHz Grid)
- **INTERNAL THERMOELECTRIC COOLER AND ISOLATOR**
- **HERMETICALLY SEALED 14-PIN BUTTERFLY PACKAGE**
- **POLARIZATION MAINTAIN FIBER PIGTAIL**
- **INTEGRATED WAVELENGTH MONITORING FILTER**
(Wavelength stability ± 50 pm)

DESCRIPTION

The NX8570SA is a 1550 nm laser diode with wavelength monitor function. This device is designed as a CW light source and is ideal for transmission systems in which external modulators are used. Polarization Maintain Fiber (PMF) is attached.

ELECTRO-OPTICAL CHARACTERISTICS ($T_{LD} = 25^\circ\text{C}$, $T_C = -5$ to $+70^\circ\text{C}$, unless otherwise specified)

PART NUMBER			NX8570SA		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
T_{SET}	Laser Set Temperature	$^\circ\text{C}$	20		35
V_F	Forward Voltage, $P_f = 20$ mW	V	0.9		2.5
I_{TH}	Threshold Current	mA		20	40
P_f	Optical Output Power from Fiber, $I_F = 167$ mA, $T_{LD} = T_{SET}$	mW	20		
P_{TH}	Threshold Output Power from Fiber, $I_F = I_{TH}$	μW			100
η	Quantum Efficiency	W/A	0.13		
λ_p	Peak Emission Wavelength ¹ , $P_f = 20$ mW, CW, $T_{LD} = T_{SET}$	nm	1529	1550	1561
$\Delta\nu$	Spectral Line Width, $P_f = 20$ mW, CW, 3 dB down	MHz			200
SMSR	Side mode Suppression Ratio, $P_f = 20$ mW, CW	dB	33	45	
RIN	Relative Intensity Noise, $P_f = 20$ mW, 20 MHz to 3 GHz	dB/Hz			-145
ext	Polarization Extinction Ratio ² , $P_f = 20$ mW, CW	dB	15		

Notes:

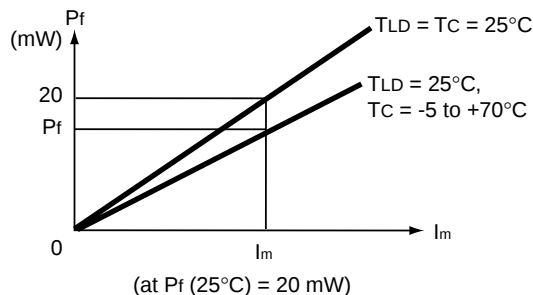
1. Wavelength selectable for ITU-T standards (100 GHz grid).
2. Polarization state of LD is aligned parallel to the slow axis.

ELECTRO-OPTICAL CHARACTERISTICS (Applicable to Monitor PD: $T_{LD} = 25^{\circ}\text{C}$, $T_c = -5$ to $+70^{\circ}\text{C}$)

PART NUMBER			NX8570SA Series		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
$I_m(P_f)$	Monitor Current (P_f Monitor), $P_f = 20$ mW, $V_R = 5$ V	μA	30		300
$I_m(\lambda_c)$	Monitor Current (λ_c Monitor), $P_f = 20$ mW, $V_R = 5$ V, Peak value	μA	30		300
I_D	Dark Current, $V_R = 5$ V	nA		2	10
γ^1	Tracking Error, $I_m = \text{const.}$	dB			0.5

Note:

$$1. \gamma = \left| 10 \log \frac{P_f}{20 \text{ mW}} \right|$$

**ELECTRO-OPTICAL CHARACTERISTICS** (Applicable to Thermistor and TEC: $T_{LD} = 25^{\circ}\text{C}$, $T_c = -5$ to $+70^{\circ}\text{C}$)

PART NUMBER			NX8570SA		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
R	Thermistor Resistance	k Ω	9.5	10.0	10.5
B	B Constant	K	3380	3450	3520
I_c	Cooler Current, $\Delta T = 70 - T_{SET}$, $P_f = 20$ mW	A			1.5
V_c	Cooler Voltage, $\Delta T = 70 - T_{SET}$, $P_f = 20$ mW	V			4.5

WAVELENGTH MONITOR CHARACTERISTICS (Applicable to Wavelength Monitor: $T_{LD} = T_{SET}$, $T_c = -5$ to $+70^{\circ}\text{C}$)

PART NUMBER			NX8570SA		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
	Wavelength Stability Tolerance, E.O.L.	pm	-50	0	+50

ABSOLUTE MAXIMUM RATINGS¹

(TA = 25°C, unless otherwise specified)

SYMBOLS	PARAMETERS	UNITS	RATINGS
I_F	Forward Current of LD	mA	300
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	-20 to +70
T_{STG}	Storage Temperature	°C	-40 to +85
T_{SLD}	Lead Soldering Temperature (10 s)	°C	260

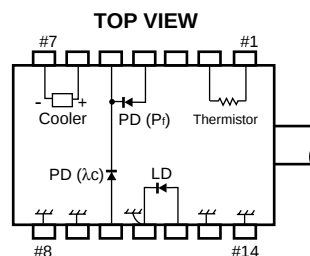
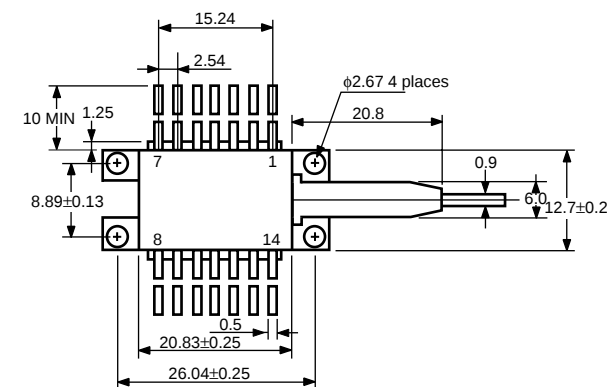
Note:

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

ORDERING INFORMATION

Part Number	Available Connector
NX8570SA	Without Connector
NX8570SA-BA	With FC-PC Connector
NX8570SA-CA	With SC-PC Connector

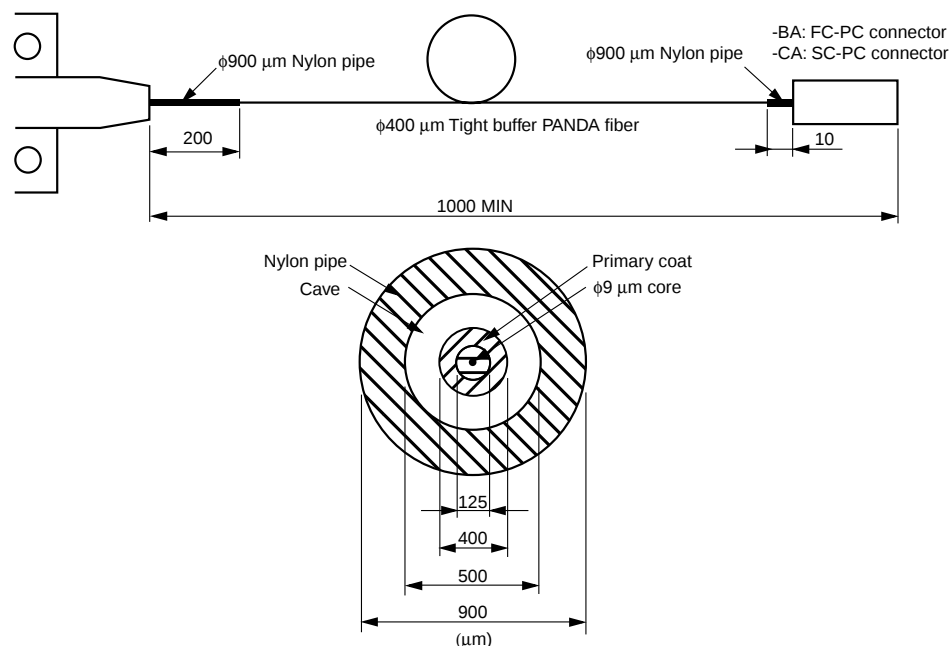
OUTLINE DIMENSIONS (Units in mm)



PIN CONNECTIONS

PIN No.	FUNCTION	PIN No.	FUNCTION
1	THERMISTOR	8	GND
2	THERMISTOR	9	GND
3	NC	10	PD (λc)ANODE
4	PD (Pi)ANODE	11	LD CATHODE, GND
5	PD CATHODE	12	LD ANODE
6	COOLER ANODE	13	GND
7	PD CATHODE	14	GND

OPTICAL FIBER DIMENSIONS (Units in mm)



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