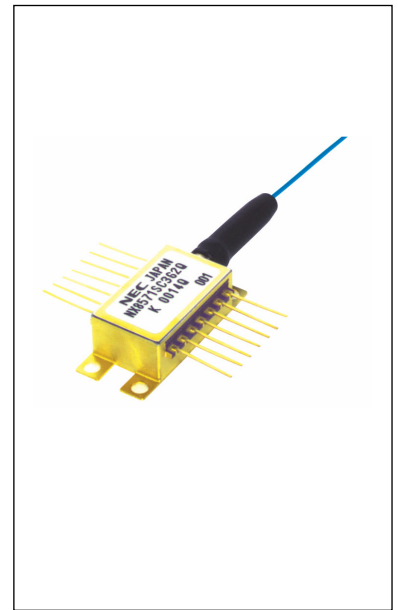


1 550 nm CW LIGHT SOURCE InGaAsP MQW-DFB LASER DIODE MODULE WITH WAVELENGTH MONITOR

DESCRIPTION

The NX8571SCxxxQ-BA is a 1 550 nm Multiple Quantum Well (MQW) structured Distributed Feed-Back (DFB) laser diode module with wavelength monitor function. This device is temperature tunable over 8×50 GHz channels. Available at both C-band (1 530.334 to 1 565.087 nm) and L-band (1 565.496 to 1 608.760 nm) ITU-T grid wavelengths.

This device is designed as CW light source and ideal for transmission systems in which external modulators are used.

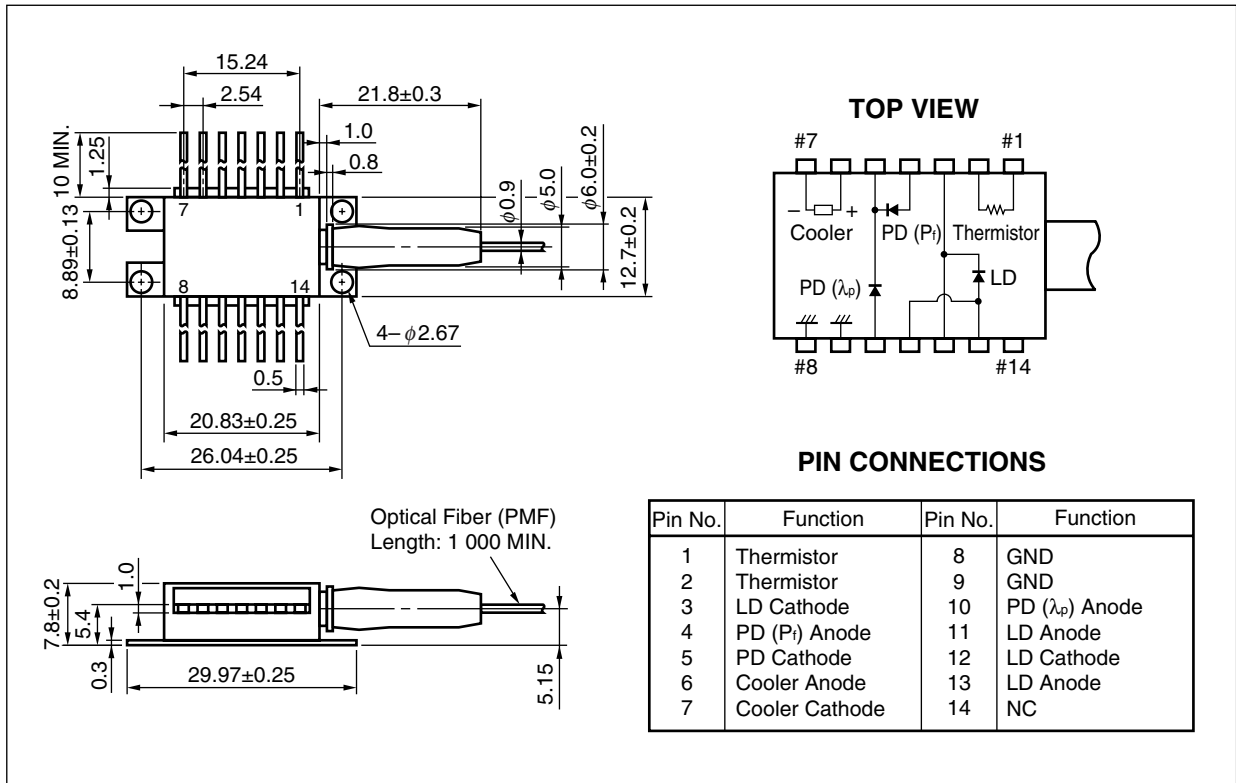


FEATURES

- Wavelength monitor function (Etalon Filter, Wavelength monitor PD)
- Optical output power $P_r = 10$ mW MIN.
- Available for DWDM wavelengths based on ITU-T recommendations (50 GHz grid, please refer to the **ORDERING INFORMATION**)
- 8 channel wavelength tunable capability for 50 GHz-spacing
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Polarization maintain fiber pigtail

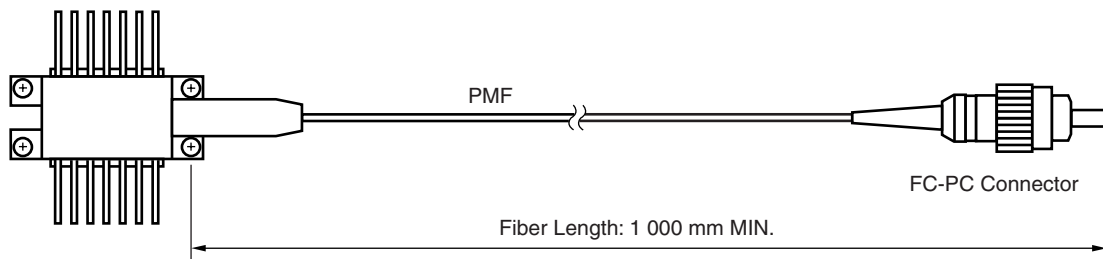
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Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

★ PACKAGE DIMENSIONS (UNIT : mm)



OPTICAL FIBER CHARACTERISTICS

Parameter	Specification	Unit
Outer Diameter	0.9±0.1	mm
Minimum Fiber Bending Radius	25	mm
Fiber Length	1 000 MIN.	mm



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Forward Current of LD	I _F	300	mA
Reverse Voltage of LD	V _R	2.0	V
Forward Current of PD	I _F	10	mA
Reverse Voltage of PD	V _R	20	V
Operating Case Temperature	T _C	-20 to +70	°C
Storage Temperature	T _{stg}	-40 to +85	°C
Lead Soldering Temperature	T _{slid}	260 (10 sec.)	°C

ELECTRO-OPTICAL CHARACTERISTICS (T_{LD} = T_{set}, T_C = -5 to +70°C, unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Laser Set Temperature	T _{set}	8 channel tunable	5		55	°C
Forward Voltage	V _F	P _f = 10 mW	0.9	1.2	2.5	V
Threshold Current	I _{th}			20	40	mA
Operation Current	I _{op}	P _f = 10 mW		70	125	mA
Optical Output Power from Fiber	P _f	I _F = 125 mA, T _{LD} = T _{set}	10			mW
Peak Emission Wavelength	λ _p	P _f = 10 mW, CW, T _{LD} = T _{set}	1 530	ITU-T ^{*1}	1 609	nm
Wavelength Stability	-	T _{LD} = T _{set} , applicable to wavelength monitor, E.O.L	-20		+20	pm
Spectral Line Width	Δν	P _f = 10 mW, CW, 3 dB down		1	2	MHz
Side Mode Suppression Ratio	SMSR	P _f = 10 mW, CW	35	45		dB
Relative Intensity Noise	RIN	P _f = 10 mW, 20 MHz to 3 GHz			-150	dB/Hz
Isolation	I _s		30			dB
Polarization Extinction Ratio ^{*2}	ext	P _f = 10 mW, CW	20			dB

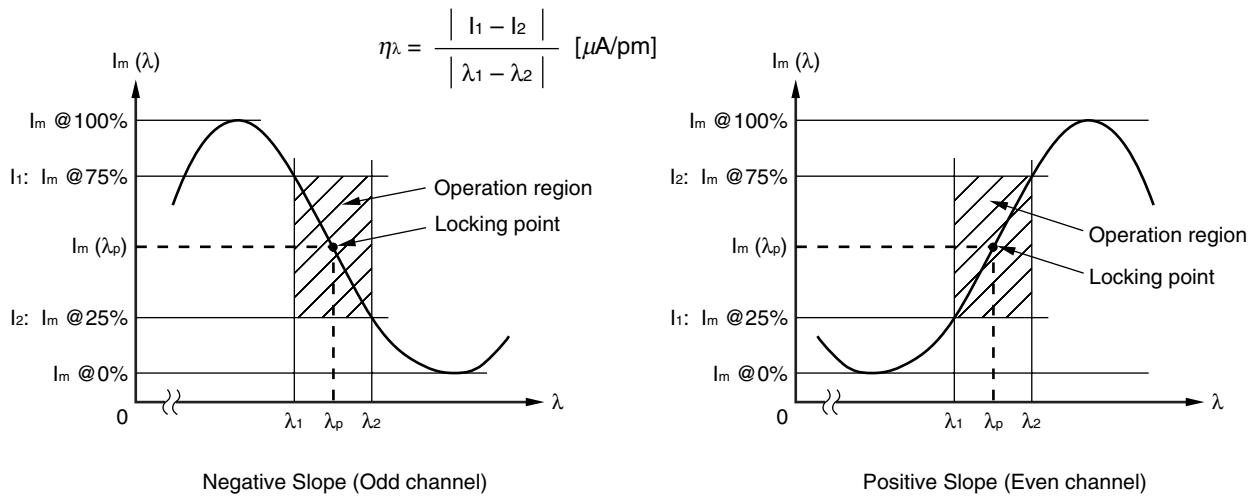
*1 Available for DWDM wavelengths based on ITU-T recommendations (50 GHz grid, please refer to the **ORDERING INFORMATION**)

*2 Polarization state of LD is aligned parallel to the slow axis.

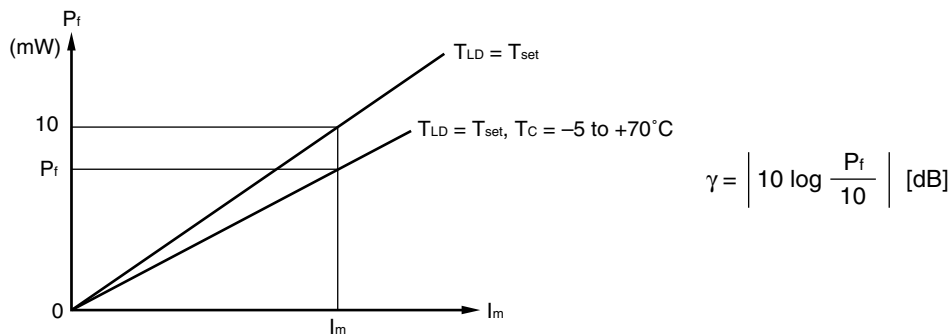
ELECTRO-OPTICAL CHARACTERISTICS (Applicable to Monitor PD: T_{LD} = T_{set}, T_c = -5 to +70°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Monitor Current (P _f Monitor)	I _m (P _f)	P _f = 10 mW, V _R = 5 V	20		200	μA
Monitor Current (λ _p Monitor)	I _m (λ _p)	P _f = 10 mW, V _R = 5 V, Locking point	10		100	μA
Operation Region ^{*1}	I _m (λ)		25		75	%
	λ ₁ -λ ₂		90			pm
Discrimination Slope ^{*1}	η _λ		0.05			μA/pm
Dark Current	I _D	V _R = 5 V		2	10	nA
Tracking Error	γ ^{*2}	I _m = const.			0.5	dB

*1 Operation region, Discrimination slope, Slope assignment



*2 Tracking Error: γ



ELECTRO-OPTICAL CHARACTERISTICS (Applicable to Thermistor and TEC: T_{LD} = T_{set}, T_c = -5 to +70°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Thermistor Resistance	R	T _{LD} = 25°C	9.5	10.0	10.5	kΩ
B Constant	B	T _{LD} = 25°C	3 350	3 450	3 550	K
Cooler Current	I _c	ΔT = 70 - T _{set} , P _f = 10 mW			1.5	A
Cooler Voltage	V _c	ΔT = 70 - T _{set} , P _f = 10 mW			3.0	V

ORDERING INFORMATION

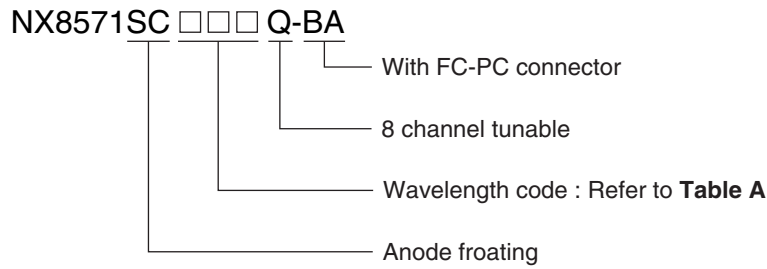


Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (1/7)

Wavelength Code	ITU-T Wavelength *1 (nm)	Frequency (THz)	Monitor Slope
330Q	1 530.33	195.90	Negative
	1 530.72	195.85	Positive
	1 531.11	195.80	Negative
	1 531.50	195.75	Positive
	1 531.89	195.70	Negative
	1 532.29	195.65	Positive
	1 532.68	195.60	Negative
	1 533.07	195.55	Positive
362Q	1 533.46	195.50	Negative
	1 533.85	195.45	Positive
	1 534.25	195.40	Negative
	1 534.64	195.35	Positive
	1 535.03	195.30	Negative
	1 535.42	195.25	Positive
	1 535.82	195.20	Negative
	1 536.21	195.15	Positive
393Q	1 536.60	195.10	Negative
	1 537.00	195.05	Positive
	1 537.39	195.00	Negative
	1 537.79	194.95	Positive
	1 538.18	194.90	Negative
	1 538.58	194.85	Positive
	1 538.97	194.80	Negative
	1 539.37	194.75	Positive

*1 The value which omitted and computed the 3rd place below the decimal point

Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (2/7)

Wavelength Code	ITU-T Wavelength *1	Frequency	Monitor Slope
8 channel tunable	(nm)	(THz)	
425Q	1 539.76	194.70	Negative
	1 540.16	194.65	Positive
	1 540.55	194.60	Negative
	1 540.95	194.55	Positive
	1 541.34	194.50	Negative
	1 541.74	194.45	Positive
	1 542.14	194.40	Negative
	1 542.53	194.35	Positive
457Q	1 542.93	194.30	Negative
	1 543.33	194.25	Positive
	1 543.73	194.20	Negative
	1 544.12	194.15	Positive
	1 544.52	194.10	Negative
	1 544.92	194.05	Positive
	1 545.32	194.00	Negative
	1 545.72	193.95	Positive
489Q	1 546.11	193.90	Negative
	1 546.51	193.85	Positive
	1 546.91	193.80	Negative
	1 547.31	193.75	Positive
	1 547.71	193.70	Negative
	1 548.11	193.65	Positive
	1 548.51	193.60	Negative
	1 548.91	193.55	Positive
521Q	1 549.31	193.50	Negative
	1 549.71	193.45	Positive
	1 550.11	193.40	Negative
	1 550.51	193.35	Positive
	1 550.91	193.30	Negative
	1 551.31	193.25	Positive
	1 551.72	193.20	Negative
	1 552.12	193.15	Positive

*1 The value which omitted and computed the 3rd place below the decimal point

Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (3/7)

Wavelength Code	ITU-T Wavelength *1	Frequency	Monitor Slope
8 channel tunable	(nm)	(THz)	
553Q	1 552.52	193.10	Negative
	1 552.92	193.05	Positive
	1 553.32	193.00	Negative
	1 553.73	192.95	Positive
	1 554.13	192.90	Negative
	1 554.53	192.85	Positive
	1 554.94	192.80	Negative
	1 555.34	192.75	Positive
585Q	1 555.74	192.70	Negative
	1 556.15	192.65	Positive
	1 556.55	192.60	Negative
	1 556.95	192.55	Positive
	1 557.36	192.50	Negative
	1 557.76	192.45	Positive
	1 558.17	192.40	Negative
	1 558.57	192.35	Positive
618Q	1 558.98	192.30	Negative
	1 559.38	192.25	Positive
	1 559.79	192.20	Negative
	1 560.20	192.15	Positive
	1 560.60	192.10	Negative
	1 561.01	192.05	Positive
	1 561.41	192.00	Negative
	1 561.82	191.95	Positive
650Q	1 562.23	191.90	Negative
	1 562.64	191.85	Positive
	1 563.04	191.80	Negative
	1 563.45	191.75	Positive
	1 563.86	191.70	Negative
	1 564.27	191.65	Positive
	1 564.67	191.60	Negative
	1 565.08	191.55	Positive

*1 The value which omitted and computed the 3rd place below the decimal point

Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (4/7)

Wavelength Code	ITU-T Wavelength *1	Frequency	Monitor Slope
8 channel tunable	(nm)	(THz)	
683Q	1 565.49	191.50	Negative
	1 565.90	191.45	Positive
	1 566.31	191.40	Negative
	1 566.72	191.35	Positive
	1 567.13	191.30	Negative
	1 567.54	191.25	Positive
	1 567.95	191.20	Negative
	1 568.36	191.15	Positive
716Q	1 568.77	191.10	Negative
	1 569.18	191.05	Positive
	1 569.59	191.00	Negative
	1 570.00	190.95	Positive
	1 570.41	190.90	Negative
	1 570.82	190.85	Positive
	1 571.23	190.80	Negative
	1 571.65	190.75	Positive
749Q	1 572.06	190.70	Negative
	1 572.47	190.65	Positive
	1 572.88	190.60	Negative
	1 573.30	190.55	Positive
	1 573.71	190.50	Negative
	1 574.12	190.45	Positive
	1 574.54	190.40	Negative
	1 574.95	190.35	Positive
782Q	1 575.36	190.30	Negative
	1 575.78	190.25	Positive
	1 576.19	190.20	Negative
	1 576.61	190.15	Positive
	1 577.02	190.10	Negative
	1 577.44	190.05	Positive
	1 577.85	190.00	Negative
	1 578.27	189.95	Positive

*1 The value which omitted and computed the 3rd place below the decimal point

Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (5/7)

Wavelength Code	ITU-T Wavelength *1	Frequency	Monitor Slope
8 channel tunable	(nm)	(THz)	
816Q	1 578.68	189.90	Negative
	1 579.10	189.85	Positive
	1 579.51	189.80	Negative
	1 579.93	189.75	Positive
	1 580.35	189.70	Negative
	1 580.76	189.65	Positive
	1 581.18	189.60	Negative
	1 581.60	189.55	Positive
849Q	1 582.01	189.50	Negative
	1 582.43	189.45	Positive
	1 582.85	189.40	Negative
	1 583.27	189.35	Positive
	1 583.69	189.30	Negative
	1 584.10	189.25	Positive
	1 584.52	189.20	Negative
	1 584.94	189.15	Positive
883Q	1 585.36	189.10	Negative
	1 585.78	189.05	Positive
	1 586.20	189.00	Negative
	1 586.62	188.95	Positive
	1 587.04	188.90	Negative
	1 587.46	188.85	Positive
	1 587.88	188.80	Negative
	1 588.30	188.75	Positive
916Q	1 588.72	188.70	Negative
	1 589.14	188.65	Positive
	1 589.56	188.60	Negative
	1 589.98	188.55	Positive
	1 590.41	188.50	Negative
	1 590.83	188.45	Positive
	1 591.25	188.40	Negative
	1 591.67	188.35	Positive

*1 The value which omitted and computed the 3rd place below the decimal point

Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (6/7)

Wavelength Code	ITU-T Wavelength *1	Frequency	Monitor Slope
8 channel tunable	(nm)	(THz)	
950Q	1 592.10	188.30	Negative
	1 592.52	188.25	Positive
	1 592.94	188.20	Negative
	1 593.36	188.15	Positive
	1 593.79	188.10	Negative
	1 594.21	188.05	Positive
	1 594.64	188.00	Negative
	1 595.06	187.95	Positive
984Q	1 595.48	187.90	Negative
	1 595.91	187.85	Positive
	1 596.33	187.80	Negative
	1 596.76	187.75	Positive
	1 597.18	187.70	Negative
	1 597.61	187.65	Positive
	1 598.04	187.60	Negative
	1 598.46	187.55	Positive
6018Q	1 598.89	187.50	Negative
	1 599.32	187.45	Positive
	1 599.74	187.40	Negative
	1 600.17	187.35	Positive
	1 600.60	187.30	Negative
	1 601.02	187.25	Positive
	1 601.45	187.20	Negative
	1 601.88	187.15	Positive
6053Q	1 602.31	187.10	Negative
	1 602.74	187.05	Positive
	1 603.16	187.00	Negative
	1 603.59	186.95	Positive
	1 604.02	186.90	Negative
	1 604.45	186.85	Positive
	1 604.88	186.80	Negative
	1 605.31	186.75	Positive

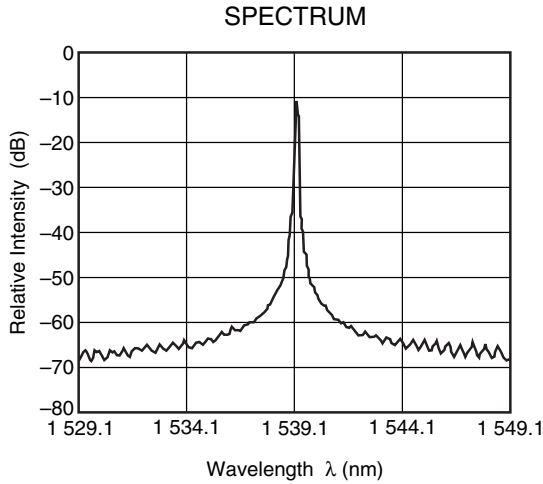
*1 The value which omitted and computed the 3rd place below the decimal point

Table A: DWDM wavelength base on ITU-T recommendations (@ T_{LD} = T_{set}) (7/7)

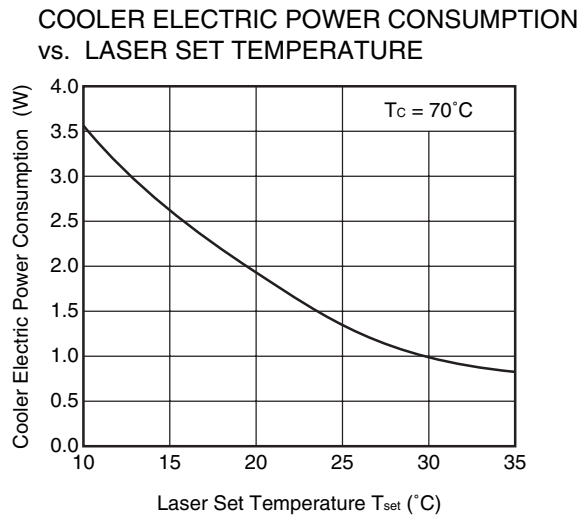
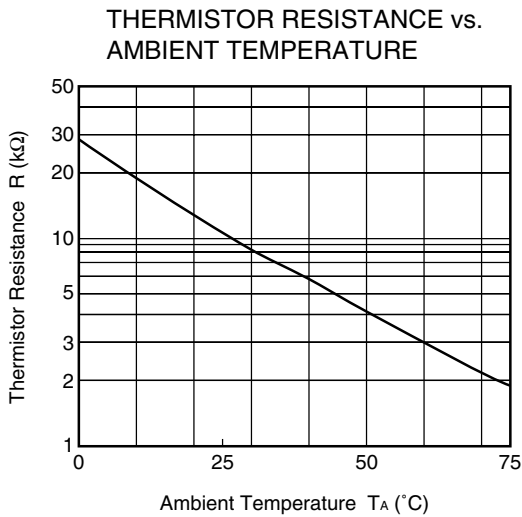
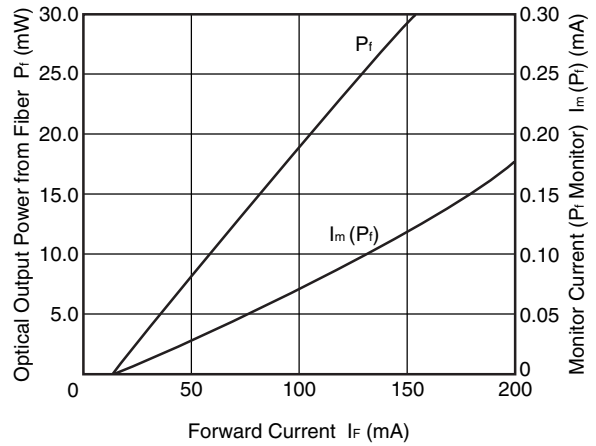
Wavelength Code	ITU-T Wavelength *1	Frequency	Monitor Slope
8 channel tunable	(nm)	(THz)	
6087Q	1 605.74	186.70	Negative
	1 606.17	186.65	Positive
	1 606.60	186.60	Negative
	1 607.03	186.55	Positive
	1 607.46	186.50	Negative
	1 607.89	186.45	Positive
	1 608.32	186.40	Negative
	1 608.76	186.35	Positive

*1 The value which omitted and computed the 3rd place below the decimal point

TYPICAL CHARACTERISTICS ($T_{LD} = T_{set}$, unless otherwise specified)



OPTICAL OUTPUT POWER FROM FIBER, MONITOR CURRENT (P_f MONITOR) vs. FORWARD CURRENT



Remark The graphs indicate nominal characteristics.

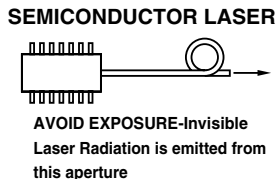
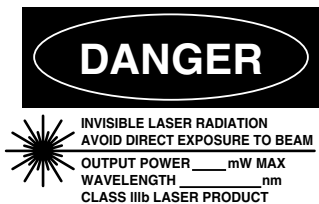
REFERENCE

Document Name	Document No.
OPTICAL SEMICONDUCTOR DEVICES FOR FIBEROPTIC COMMUNICATIONS SELECTION GUIDE	PL10161E
Opto-Electronics Devices Pamphlet	PX10160E

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- M8E 00.4-0110

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<p>Warning Laser Beam</p>	<p>A laser beam is emitted from this diode during operation. The laser beam, visible or invisible, directly or indirectly, may cause injury to the eye or loss of eyesight.</p> <ul style="list-style-type: none"> Do not look directly into the laser beam. Avoid exposure to the laser beam, any reflected or collimated beam.
<p>Caution GaAs Products</p>	<p>This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.</p> <ul style="list-style-type: none"> Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below. <ol style="list-style-type: none"> Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal. Do not burn, destroy, cut, crush, or chemically dissolve the product. Do not lick the product or in any way allow it to enter the mouth.
<p>Caution Optical Fiber</p>	<p>A glass-fiber is attached on the product. Handle with care.</p> <ul style="list-style-type: none"> When the fiber is broken or damaged, handle carefully to avoid injury from the damaged part or fragments.

► For further information, please contact

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