

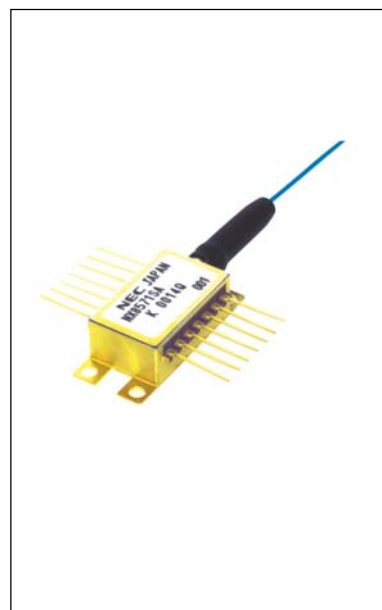
**1 550 nm CW LIGHT SOURCE**  
**InGaAsP MQW-DFB LASER DIODE MODULE**  
**WITH WAVELENGTH MONITOR****DESCRIPTION**

The NX8571 Series 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  $4 \times 50$  GHz channels. Available at both C-band (1530.334 to 1565.087 nm) and L-band (1565.496 to 1608.760 nm) ITU-T grid wavelengths.

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

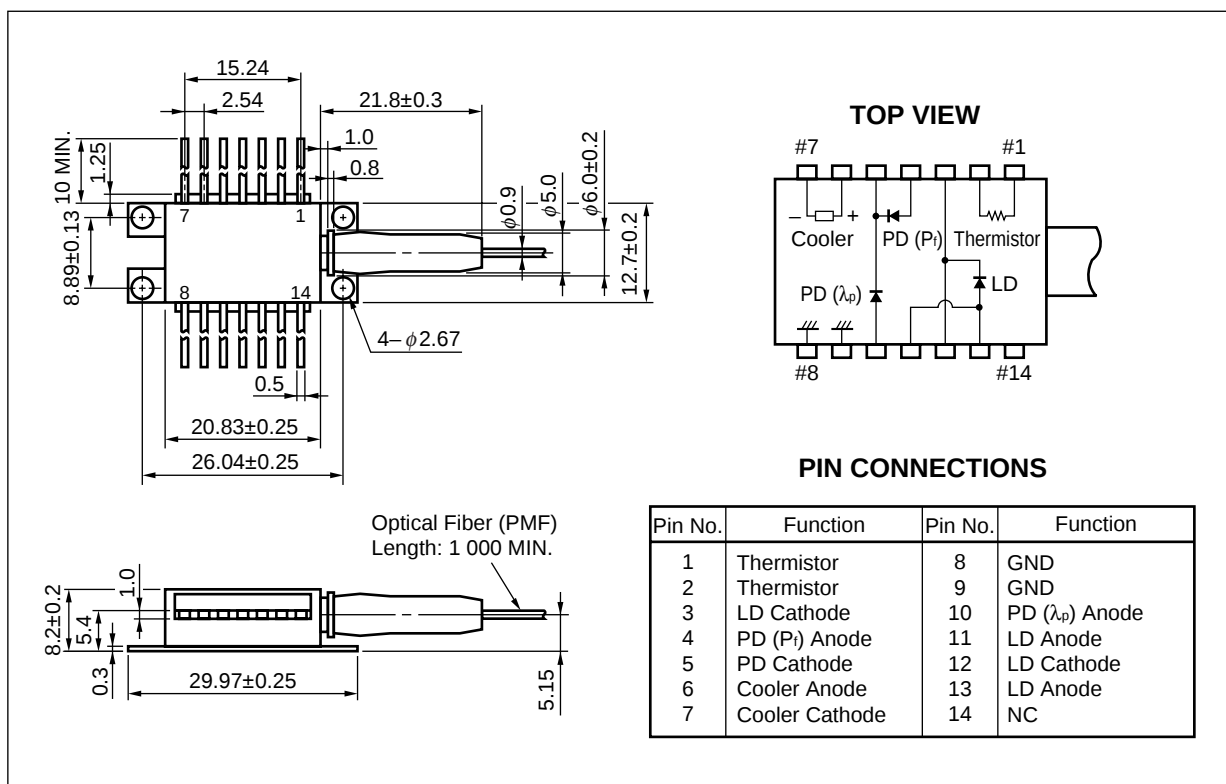
**FEATURES**

- 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)
- 4-channel wavelength tunable capability for 50 GHz-spacing (NX8571S×××D)
- Internal thermo-electric cooler and isolator
- Hermetically sealed 14-pin butterfly package
- Polarization maintain fiber pigtail



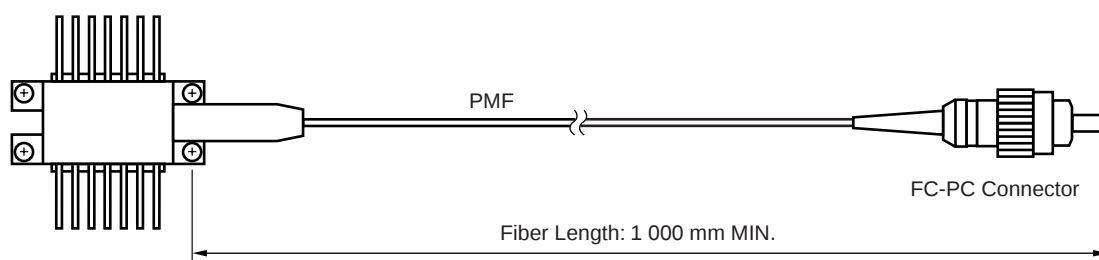
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## ★ PACKAGE DIMENSIONS (UNIT: mm)



## 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 | $T_{sld}$ | 260 (10 sec.) | °C   |

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

| Parameter                                   | Symbol      | Conditions                                                   | MIN.  | TYP.                | MAX.  | Unit  |
|---------------------------------------------|-------------|--------------------------------------------------------------|-------|---------------------|-------|-------|
| Laser Set Temperature                       | $T_{set}$   | Single channel                                               | 20    |                     | 35    | °C    |
|                                             |             | 4 channel tunable                                            | 10    |                     | 45    |       |
| 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                    | $\lambda_p$ | $P_f = 10$ mW, CW, $T_{LD} = T_{set}$                        | 1 530 | ITU-T <sup>*1</sup> | 1 609 | nm    |
| Wavelength Stability                        | —           | $T_{LD} = T_{set}$ , applicable to wavelength monitor, E.O.L | -20   |                     | +20   | pm    |
| Spectral Line Width                         | $\Delta\nu$ | $P_f = 10$ 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 |
| Optical Isolation                           | $I_s$       | $P_f = 10$ mW, CW                                            | 30    |                     |       | dB    |
| Polarization Extinction Ratio <sup>*2</sup> | ext         | $P_f = 10$ mW, CW                                            | 20    |                     |       | dB    |

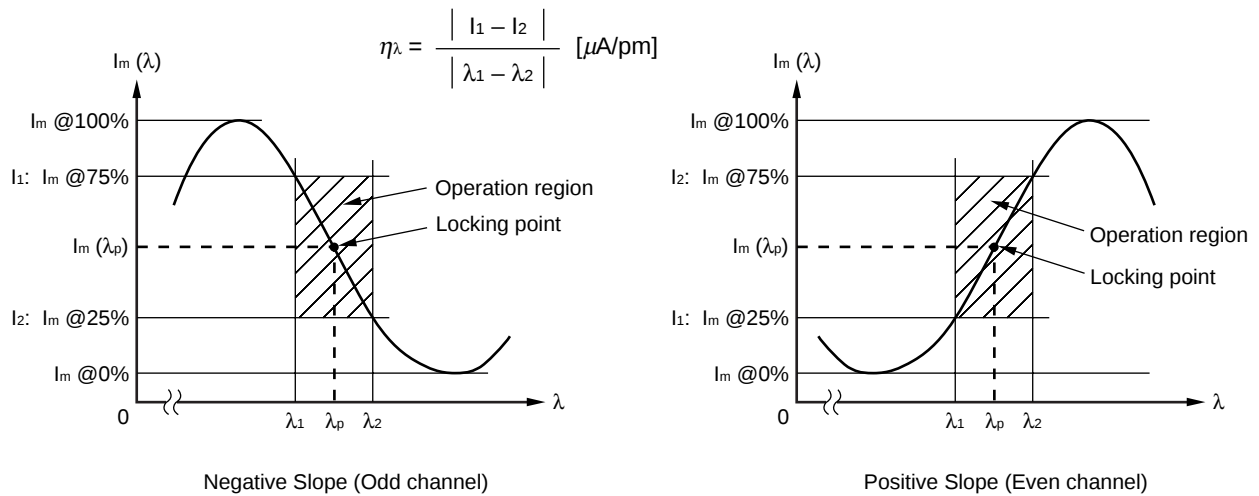
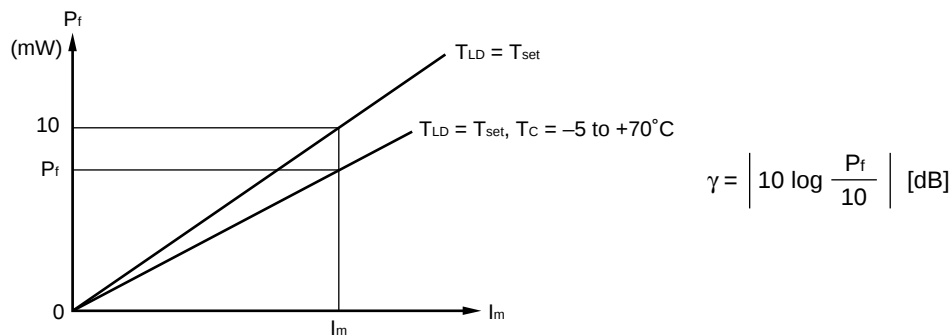
<sup>\*1</sup> Available for DWDM wavelengths based on ITU-T recommendations (50 GHz grid).

Please refer to **Table A**.

<sup>\*2</sup> 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  $+70^\circ\text{C}$ )**

| Parameter                              | Symbol                    | Conditions                                                  | MIN. | TYP. | MAX. | Unit             |
|----------------------------------------|---------------------------|-------------------------------------------------------------|------|------|------|------------------|
| Monitor Current ( $P_f$ Monitor)       | $I_m (P_f)$               | $P_f = 10 \text{ mW}$ , $V_R = 5 \text{ V}$                 | 20   |      | 200  | $\mu\text{A}$    |
| Monitor Current ( $\lambda_p$ Monitor) | $I_m (\lambda_p)$         | $P_f = 10 \text{ mW}$ , $V_R = 5 \text{ V}$ , Locking point | 10   |      | 100  | $\mu\text{A}$    |
| Operation Region <sup>*1</sup>         | $I_m (\lambda)$           |                                                             | 25   |      | 75   | %                |
|                                        | $ \lambda_1 - \lambda_2 $ |                                                             | 90   |      |      | pm               |
| Discrimination Slope <sup>*1</sup>     | $\eta_\lambda$            |                                                             | 0.05 |      |      | $\mu\text{A/pm}$ |
| Dark Current                           | $I_D$                     | $V_R = 5 \text{ V}$                                         |      | 2    | 10   | nA               |
| Tracking Error                         | $\gamma^{*2}$             | $I_m = \text{const.}$                                       |      |      | 0.5  | dB               |

**\*1** Operation region, Discrimination slope, Slope assignment**\*2** Tracking Error:  $\gamma$ **ELECTRO-OPTICAL CHARACTERISTICS****(Applicable to Thermistor and TEC:  $T_{LD} = T_{set}$ ,  $T_C = -5$  to  $+70^\circ\text{C}$ )**

| Parameter             | Symbol | Conditions                                        | MIN.  | TYP.  | MAX.  | Unit             |
|-----------------------|--------|---------------------------------------------------|-------|-------|-------|------------------|
| Thermistor Resistance | $R$    | $T_{LD} = 25^\circ\text{C}$                       | 9.5   | 10.0  | 10.5  | $\text{k}\Omega$ |
| B Constant            | $B$    | $T_{LD} = 25^\circ\text{C}$                       | 3 350 | 3 450 | 3 550 | K                |
| Cooler Current        | $I_C$  | $\Delta T = 70 - T_{set}$ , $P_f = 10 \text{ mW}$ |       |       | 1.5   | A                |
| Cooler Voltage        | $V_C$  | $\Delta T = 70 - T_{set}$ , $P_f = 10 \text{ mW}$ |       |       | 3.0   | V                |

## ★ ORDERING INFORMATION

NX8571SC □□□□-BA

With FC-PC connector

Without : Single channel  
D : 4 channel tunableWavelength code : Refer to **Table A**

Package code

**Table A: DWDM wavelength base on ITU-T recommendations (@ T<sub>LD</sub> = T<sub>set</sub>) (1/7)**

| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 315D              | 303            | 1530.33                                 | 195.90             | Negative      |
|                   | 307            | 1530.72                                 | 195.85             | Positive      |
|                   | 311            | 1531.11                                 | 195.80             | Negative      |
|                   | 315            | 1531.50                                 | 195.75             | Positive      |
| 330D              | 318            | 1531.89                                 | 195.70             | Negative      |
|                   | 322            | 1532.29                                 | 195.65             | Positive      |
|                   | 326            | 1532.68                                 | 195.60             | Negative      |
|                   | 330            | 1533.07                                 | 195.55             | Positive      |
| 346D              | 334            | 1533.46                                 | 195.50             | Negative      |
|                   | 338            | 1533.85                                 | 195.45             | Positive      |
|                   | 342            | 1534.25                                 | 195.40             | Negative      |
|                   | 346            | 1534.64                                 | 195.35             | Positive      |
| 362D              | 350            | 1535.03                                 | 195.30             | Negative      |
|                   | 354            | 1535.42                                 | 195.25             | Positive      |
|                   | 358            | 1535.82                                 | 195.20             | Negative      |
|                   | 362            | 1536.21                                 | 195.15             | Positive      |
| 377D              | 366            | 1536.60                                 | 195.10             | Negative      |
|                   | 370            | 1537.00                                 | 195.05             | Positive      |
|                   | 373            | 1537.39                                 | 195.00             | Negative      |
|                   | 377            | 1537.79                                 | 194.95             | Positive      |
| 393D              | 381            | 1538.18                                 | 194.90             | Negative      |
|                   | 385            | 1538.58                                 | 194.85             | Positive      |
|                   | 389            | 1538.97                                 | 194.80             | Negative      |
|                   | 393            | 1539.37                                 | 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<sub>LD</sub> = T<sub>set</sub>) (2/7)

| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 409D              | 397            | 1539.76                                 | 194.70             | Negative      |
|                   | 401            | 1540.16                                 | 194.65             | Positive      |
|                   | 405            | 1540.55                                 | 194.60             | Negative      |
|                   | 409            | 1540.95                                 | 194.55             | Positive      |
| 425D              | 413            | 1541.34                                 | 194.50             | Negative      |
|                   | 417            | 1541.74                                 | 194.45             | Positive      |
|                   | 421            | 1542.14                                 | 194.40             | Negative      |
|                   | 425            | 1542.53                                 | 194.35             | Positive      |
| 441D              | 429            | 1542.93                                 | 194.30             | Negative      |
|                   | 433            | 1543.33                                 | 194.25             | Positive      |
|                   | 437            | 1543.73                                 | 194.20             | Negative      |
|                   | 441            | 1544.12                                 | 194.15             | Positive      |
| 457D              | 445            | 1544.52                                 | 194.10             | Negative      |
|                   | 449            | 1544.92                                 | 194.05             | Positive      |
|                   | 453            | 1545.32                                 | 194.00             | Negative      |
|                   | 457            | 1545.72                                 | 193.95             | Positive      |
| 473D              | 461            | 1546.11                                 | 193.90             | Negative      |
|                   | 465            | 1546.51                                 | 193.85             | Positive      |
|                   | 469            | 1546.91                                 | 193.80             | Negative      |
|                   | 473            | 1547.31                                 | 193.75             | Positive      |
| 489D              | 477            | 1547.71                                 | 193.70             | Negative      |
|                   | 481            | 1548.11                                 | 193.65             | Positive      |
|                   | 485            | 1548.51                                 | 193.60             | Negative      |
|                   | 489            | 1548.91                                 | 193.55             | Positive      |
| 505D              | 493            | 1549.31                                 | 193.50             | Negative      |
|                   | 497            | 1549.71                                 | 193.45             | Positive      |
|                   | 501            | 1550.11                                 | 193.40             | Negative      |
|                   | 505            | 1550.51                                 | 193.35             | Positive      |
| 521D              | 509            | 1550.91                                 | 193.30             | Negative      |
|                   | 513            | 1551.31                                 | 193.25             | Positive      |
|                   | 517            | 1551.72                                 | 193.20             | Negative      |
|                   | 521            | 1552.12                                 | 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<sub>LD</sub> = T<sub>set</sub>) (3/7)

| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 537D              | 525            | 1552.52                                 | 193.10             | Negative      |
|                   | 529            | 1552.92                                 | 193.05             | Positive      |
|                   | 533            | 1553.32                                 | 193.00             | Negative      |
|                   | 537            | 1553.73                                 | 192.95             | Positive      |
| 553D              | 541            | 1554.13                                 | 192.90             | Negative      |
|                   | 545            | 1554.53                                 | 192.85             | Positive      |
|                   | 549            | 1554.94                                 | 192.80             | Negative      |
|                   | 553            | 1555.34                                 | 192.75             | Positive      |
| 569D              | 557            | 1555.74                                 | 192.70             | Negative      |
|                   | 561            | 1556.15                                 | 192.65             | Positive      |
|                   | 565            | 1556.55                                 | 192.60             | Negative      |
|                   | 569            | 1556.95                                 | 192.55             | Positive      |
| 585D              | 573            | 1557.36                                 | 192.50             | Negative      |
|                   | 577            | 1557.76                                 | 192.45             | Positive      |
|                   | 581            | 1558.17                                 | 192.40             | Negative      |
|                   | 585            | 1558.57                                 | 192.35             | Positive      |
| 602D              | 589            | 1558.98                                 | 192.30             | Negative      |
|                   | 593            | 1559.38                                 | 192.25             | Positive      |
|                   | 597            | 1559.79                                 | 192.20             | Negative      |
|                   | 602            | 1560.20                                 | 192.15             | Positive      |
| 618D              | 606            | 1560.60                                 | 192.10             | Negative      |
|                   | 610            | 1561.01                                 | 192.05             | Positive      |
|                   | 614            | 1561.41                                 | 192.00             | Negative      |
|                   | 618            | 1561.82                                 | 191.95             | Positive      |
| 634D              | 622            | 1562.23                                 | 191.90             | Negative      |
|                   | 626            | 1562.64                                 | 191.85             | Positive      |
|                   | 630            | 1563.04                                 | 191.80             | Negative      |
|                   | 634            | 1563.45                                 | 191.75             | Positive      |
| 650D              | 638            | 1563.86                                 | 191.70             | Negative      |
|                   | 642            | 1564.27                                 | 191.65             | Positive      |
|                   | 646            | 1564.67                                 | 191.60             | Negative      |
|                   | 650            | 1565.08                                 | 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<sub>LD</sub> = T<sub>set</sub>) (4/7)

| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 667D              | 654            | 1565.49                                 | 191.50             | Negative      |
|                   | 659            | 1565.90                                 | 191.45             | Positive      |
|                   | 663            | 1566.31                                 | 191.40             | Negative      |
|                   | 667            | 1566.72                                 | 191.35             | Positive      |
| 683D              | 671            | 1567.13                                 | 191.30             | Negative      |
|                   | 675            | 1567.54                                 | 191.25             | Positive      |
|                   | 679            | 1567.95                                 | 191.20             | Negative      |
|                   | 683            | 1568.36                                 | 191.15             | Positive      |
| 700D              | 687            | 1568.77                                 | 191.10             | Negative      |
|                   | 691            | 1569.18                                 | 191.05             | Positive      |
|                   | 695            | 1569.59                                 | 191.00             | Negative      |
|                   | 700            | 1570.00                                 | 190.95             | Positive      |
| 716D              | 704            | 1570.41                                 | 190.90             | Negative      |
|                   | 708            | 1570.82                                 | 190.85             | Positive      |
|                   | 712            | 1571.23                                 | 190.80             | Negative      |
|                   | 716            | 1571.65                                 | 190.75             | Positive      |
| 733D              | 720            | 1572.06                                 | 190.70             | Negative      |
|                   | 724            | 1572.47                                 | 190.65             | Positive      |
|                   | 728            | 1572.88                                 | 190.60             | Negative      |
|                   | 733            | 1573.30                                 | 190.55             | Positive      |
| 749D              | 737            | 1573.71                                 | 190.50             | Negative      |
|                   | 741            | 1574.12                                 | 190.45             | Positive      |
|                   | 745            | 1574.54                                 | 190.40             | Negative      |
|                   | 749            | 1574.95                                 | 190.35             | Positive      |
| 766D              | 753            | 1575.36                                 | 190.30             | Negative      |
|                   | 757            | 1575.78                                 | 190.25             | Positive      |
|                   | 761            | 1576.19                                 | 190.20             | Negative      |
|                   | 766            | 1576.61                                 | 190.15             | Positive      |
| 782D              | 770            | 1577.02                                 | 190.10             | Negative      |
|                   | 774            | 1577.44                                 | 190.05             | Positive      |
|                   | 778            | 1577.85                                 | 190.00             | Negative      |
|                   | 782            | 1578.27                                 | 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<sub>LD</sub> = T<sub>set</sub>) (5/7)

| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 799D              | 786            | 1578.68                                 | 189.90             | Negative      |
|                   | 791            | 1579.10                                 | 189.85             | Positive      |
|                   | 795            | 1579.51                                 | 189.80             | Negative      |
|                   | 799            | 1579.93                                 | 189.75             | Positive      |
| 816D              | 803            | 1580.35                                 | 189.70             | Negative      |
|                   | 807            | 1580.76                                 | 189.65             | Positive      |
|                   | 811            | 1581.18                                 | 189.60             | Negative      |
|                   | 816            | 1581.60                                 | 189.55             | Positive      |
| 832D              | 820            | 1582.01                                 | 189.50             | Negative      |
|                   | 824            | 1582.43                                 | 189.45             | Positive      |
|                   | 828            | 1582.85                                 | 189.40             | Negative      |
|                   | 832            | 1583.27                                 | 189.35             | Positive      |
| 849D              | 836            | 1583.69                                 | 189.30             | Negative      |
|                   | 841            | 1584.10                                 | 189.25             | Positive      |
|                   | 845            | 1584.52                                 | 189.20             | Negative      |
|                   | 849            | 1584.94                                 | 189.15             | Positive      |
| 866D              | 853            | 1585.36                                 | 189.10             | Negative      |
|                   | 857            | 1585.78                                 | 189.05             | Positive      |
|                   | 862            | 1586.20                                 | 189.00             | Negative      |
|                   | 866            | 1586.62                                 | 188.95             | Positive      |
| 883D              | 870            | 1587.04                                 | 188.90             | Negative      |
|                   | 874            | 1587.46                                 | 188.85             | Positive      |
|                   | 878            | 1587.88                                 | 188.80             | Negative      |
|                   | 883            | 1588.30                                 | 188.75             | Positive      |
| 899D              | 887            | 1588.72                                 | 188.70             | Negative      |
|                   | 891            | 1589.14                                 | 188.65             | Positive      |
|                   | 895            | 1589.56                                 | 188.60             | Negative      |
|                   | 899            | 1589.98                                 | 188.55             | Positive      |
| 916D              | 904            | 1590.41                                 | 188.50             | Negative      |
|                   | 908            | 1590.83                                 | 188.45             | Positive      |
|                   | 912            | 1591.25                                 | 188.40             | Negative      |
|                   | 916            | 1591.67                                 | 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<sub>LD</sub> = T<sub>set</sub>) (6/7)

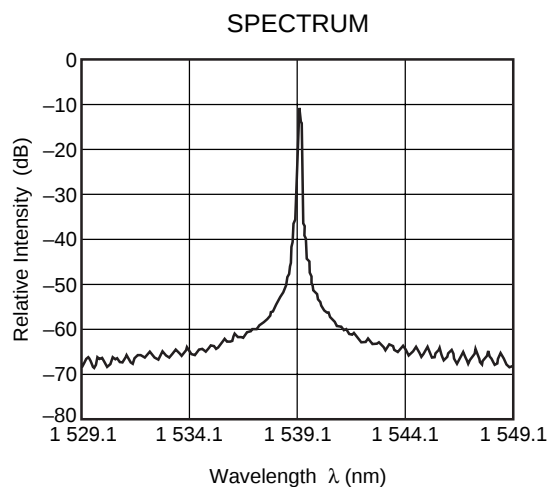
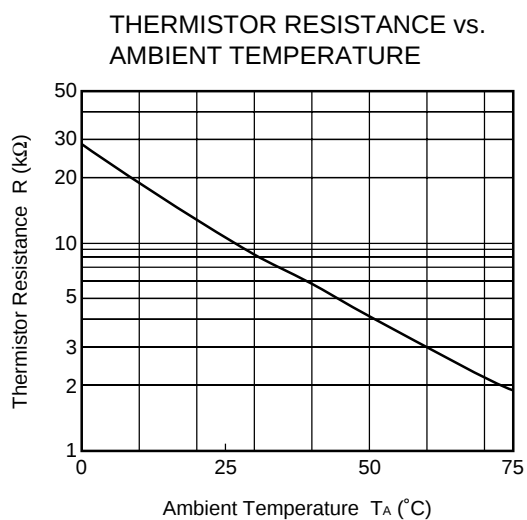
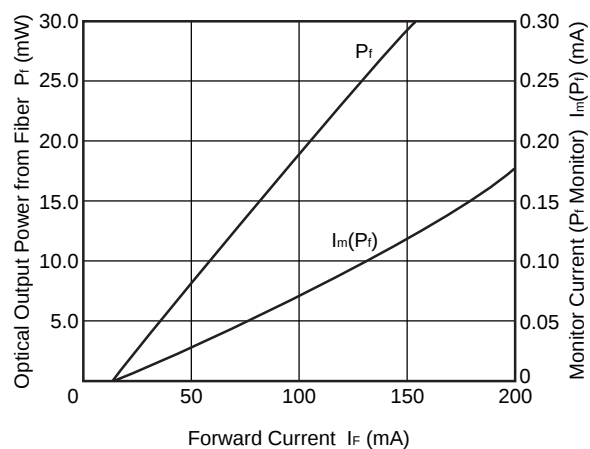
| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 933D              | 921            | 1592.10                                 | 188.30             | Negative      |
|                   | 925            | 1592.52                                 | 188.25             | Positive      |
|                   | 929            | 1592.94                                 | 188.20             | Negative      |
|                   | 933            | 1593.36                                 | 188.15             | Positive      |
| 950D              | 937            | 1593.79                                 | 188.10             | Negative      |
|                   | 942            | 1594.21                                 | 188.05             | Positive      |
|                   | 946            | 1594.64                                 | 188.00             | Negative      |
|                   | 950            | 1595.06                                 | 187.95             | Positive      |
| 967D              | 954            | 1595.48                                 | 187.90             | Negative      |
|                   | 959            | 1595.91                                 | 187.85             | Positive      |
|                   | 963            | 1596.33                                 | 187.80             | Negative      |
|                   | 967            | 1596.76                                 | 187.75             | Positive      |
| 984D              | 971            | 1597.18                                 | 187.70             | Negative      |
|                   | 976            | 1597.61                                 | 187.65             | Positive      |
|                   | 980            | 1598.04                                 | 187.60             | Negative      |
|                   | 984            | 1598.46                                 | 187.55             | Positive      |
| 6001D             | 988            | 1598.89                                 | 187.50             | Negative      |
|                   | 993            | 1599.32                                 | 187.45             | Positive      |
|                   | 997            | 1599.74                                 | 187.40             | Negative      |
|                   | 6001           | 1600.17                                 | 187.35             | Positive      |
| 6018D             | 6006           | 1600.60                                 | 187.30             | Negative      |
|                   | 6010           | 1601.02                                 | 187.25             | Positive      |
|                   | 6014           | 1601.45                                 | 187.20             | Negative      |
|                   | 6018           | 1601.88                                 | 187.15             | Positive      |
| 6035D             | 6023           | 1602.31                                 | 187.10             | Negative      |
|                   | 6027           | 1602.74                                 | 187.05             | Positive      |
|                   | 6031           | 1603.16                                 | 187.00             | Negative      |
|                   | 6035           | 1603.59                                 | 186.95             | Positive      |
| 6053D             | 6040           | 1604.02                                 | 186.90             | Negative      |
|                   | 6044           | 1604.45                                 | 186.85             | Positive      |
|                   | 6048           | 1604.88                                 | 186.80             | Negative      |
|                   | 6053           | 1605.31                                 | 186.75             | Positive      |

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

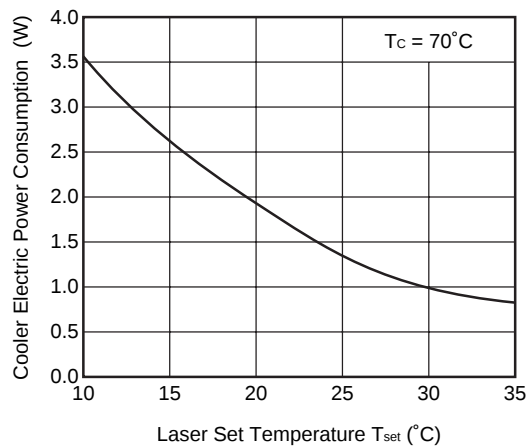
**Table A: DWDM wavelength base on ITU-T recommendations (@ T<sub>LD</sub> = T<sub>set</sub>) (7/7)**

| Wavelength Code   |                | ITU-T Wavelength * <sup>1</sup><br>(nm) | Frequency<br>(THz) | Monitor Slope |
|-------------------|----------------|-----------------------------------------|--------------------|---------------|
| 4 channel tunable | single channel |                                         |                    |               |
| 6070D             | 6057           | 1605.74                                 | 186.70             | Negative      |
|                   | 6061           | 1606.17                                 | 186.65             | Positive      |
|                   | 6066           | 1606.60                                 | 186.60             | Negative      |
|                   | 6070           | 1607.03                                 | 186.55             | Positive      |
| 6087D             | 6074           | 1607.46                                 | 186.50             | Negative      |
|                   | 6078           | 1607.89                                 | 186.45             | Positive      |
|                   | 6083           | 1608.32                                 | 186.40             | Negative      |
|                   | 6087           | 1608.76                                 | 186.35             | Positive      |

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

TYPICAL CHARACTERISTICS ( $T_{LD} = 25^{\circ}\text{C}$ , unless otherwise specified)OPTICAL OUTPUT POWER FROM FIBER, MONITOR CURRENT ( $P_f$  MONITOR) vs. FORWARD CURRENT

## COOLER ELECTRIC POWER CONSUMPTION vs. LASER SET TEMPERATURE



**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     |

Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (\*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

| Restricted Substance per RoHS | Concentration Limit per RoHS (values are not yet fixed) | Concentration contained in CEL devices |     |
|-------------------------------|---------------------------------------------------------|----------------------------------------|-----|
|                               |                                                         | -A                                     | -AZ |
| Lead (Pb)                     | < 1000 PPM                                              | Not Detected                           | (*) |
| Mercury                       | < 1000 PPM                                              | Not Detected                           |     |
| Cadmium                       | < 100 PPM                                               | Not Detected                           |     |
| Hexavalent Chromium           | < 1000 PPM                                              | Not Detected                           |     |
| PBB                           | < 1000 PPM                                              | Not Detected                           |     |
| PBDE                          | < 1000 PPM                                              | Not Detected                           |     |

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

**Important Information and Disclaimer:** Information provided by CEL on its website or in other communications concerning the substance content of its products represents knowledge and belief as of the date that it is provided. CEL bases its knowledge and belief on information provided by third parties and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. CEL has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. CEL and CEL suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall CEL's liability arising out of such information exceed the total purchase price of the CEL part(s) at issue sold by CEL to customer on an annual basis.

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