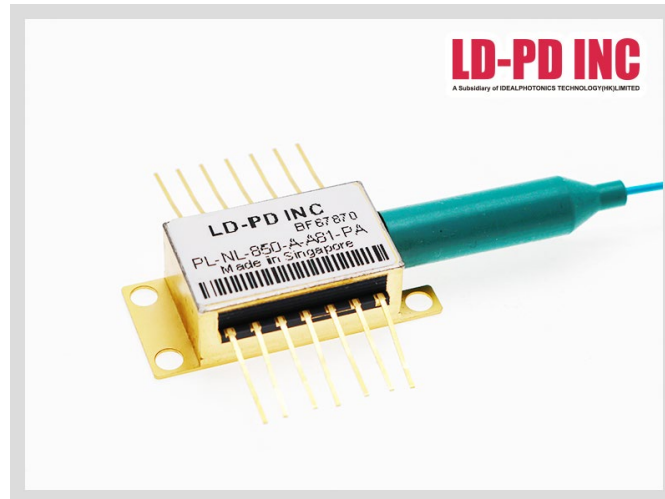


## 850nm Narrow Linewidth Laser diode



### Description:

The PL-NL series laser is single frequency laser diode module designed for optical measurement and communication. The laser is packaged in 14-pin standard butterfly package with monitor photodiode and thermo-electric cooler (TEC). The Single-Frequency Continuous Tuning Range: > 1.2 nm by adjust the Mini PZT Built in the laser diode. 850nm Tunable laser diodes for CS spectroscopy.

### Features:

- Optical output: 30mW
- Narrow linewidth ( $\Delta\nu < 1\text{MHz}$ )
- Wavelength: 850nm @ 25°C
- SM or PM Fiber ( $\varnothing 0.9\text{mm}$ )
- FC-APC connector
- 14-pin butterfly package
- Internal monitor PD and TEC
- Low power consumption

### Optional:

- Laser interference experiment
- Drop-side of DWDM long-haul transport equipment
- Optical Test and Instrumentation
- Microwave Photonics
- CATV networks
- Sensors

**E/O Characteristics:**

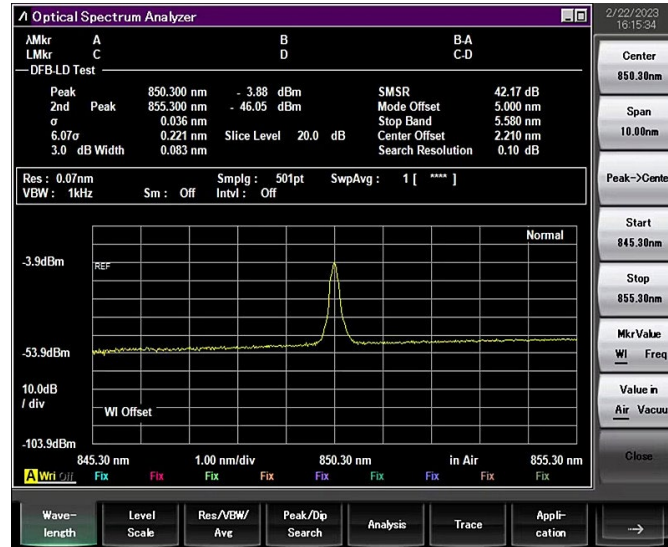
Optical Characteristics (at 25 °C laser temperature)

| Parameter   | Symbol                   | Condition             | Min. | Typical | Max. | Unit  |
|---|--------------------------|-----------------------|------|---------|------|-------|
| Center Wavelength                                     | $\lambda_c$              | TL=15~35°C CW         | 849  | 850     | 851  | nm    |
| Peak Optical Output Power                             | PO                       | -                     | 10   | -       | 30   | mW    |
| Spectral linewidth                                    | LW                       | -                     | -    | 1       | 10   | MHz   |
| Side-mode Suppression Ratio                           | SMSR                     | CW                    | 40   | 45      | -    | dB    |
| Optical Isolation                                     | -                        | -10 < TC < +70 °C     | 30   | -       | -    | dB    |
| Polarization Extinction Ratio                         | ER                       | -                     | 20   | -       | -    | dB    |
| Relative Intensity Noise                              | RIN                      | CW, output power 10mW | -    | -       | -145 | dB    |
| Wavelength drift with case (-10 to 70 °C) temperature | $\Delta\lambda$          | TL=15~35°C            | -    | -       | ±30  | pm    |
| Wavelength Temperature coefficient                    | $\Delta\lambda/\Delta T$ | TL=15~35°C            | -    | 60      | 80   | pm/°C |
| Wavelength Current coefficient                        | $\Delta\lambda/\Delta I$ | -                     | -    | 1.5     | 2    | pm/mA |

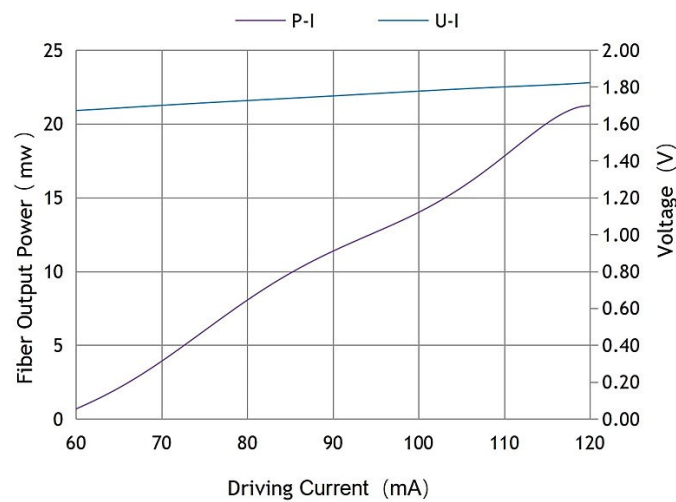
Electrical Characteristics (at 25 °C laser temperature)

| Parameter              | Symbol | Condition              | Min.  | Typical | Max. | Unit  |
|------------------------|--------|------------------------|-------|---------|------|-------|
| Threshold Current      | ITH    | -                      | -     | 45      | 65   | mA    |
| Slope Efficiency       |        | CW , 10 mW             | 0.064 | 0.1     | -    | mW/mA |
| Operating current      | Iop    | CW                     | -     | 90      | 120  | mA    |
| TEC set temperature    | Ts     | -                      | 15    | -       | 35   | °C    |
| Laser Forward Voltage  | VF     | CW output power 5 mW   | -     | 1.3     | 1.8  | V     |
| Monitor Dark Current   | ID     | -                      | -     | -       | 0.1  | μA    |
| Thermistor Resistance  | RTH    | TL = 25 °C             | 9.5   | 10      | 10.5 | KΩ    |
| Thermistor Current     | ITC    | -                      | 10    | -       | 100  | μA    |
| TEC Current            | ITEC   | TL = 25 °C, TC = 70 °C | -     | -       | 1.8  | A     |
| TEC Voltage            | VTEC   | TL = 25 °C, TC = 70 °C | -     | -       | 3.5  | V     |
| TEC capacity           | ΔT     | Tc = 70 °C             | -     | -       | 50   | °C    |
| Thermistor temperature | -      | -                      | -     | -       | 100  | °C    |

**Spectrum:**

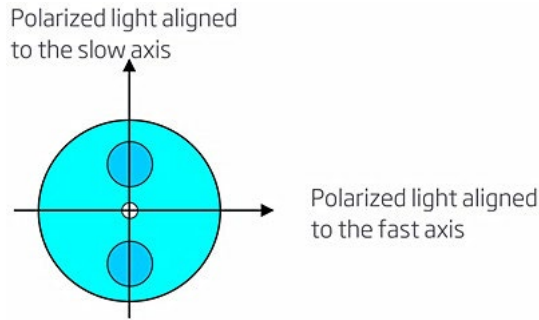


**L-I Curve:**



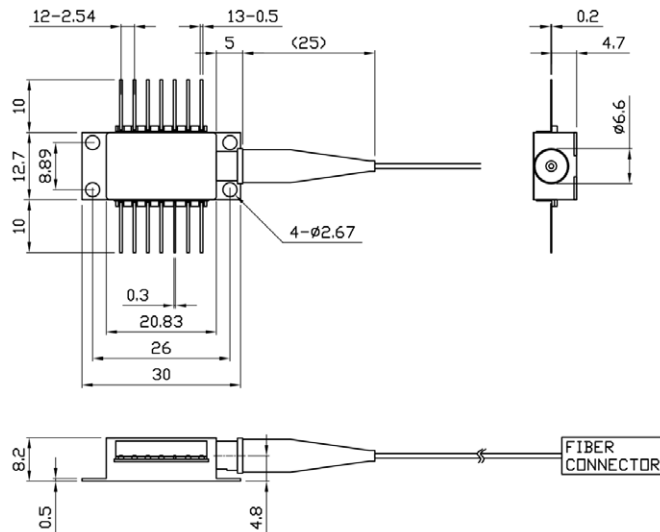
**Fiber Pigtail Specifications:**

| Parameters                     | Description                 |
|--------------------------------|-----------------------------|
| Fiber Type                     | PM fiber                    |
| Jacket Type                    | 900 $\mu$ m loose tube      |
| Pigtail Length                 | 1.0 $\pm$ 0.1m              |
| Connector Type                 | FC/APC                      |
| PM fiber Connector Orientation | Please see the right figure |

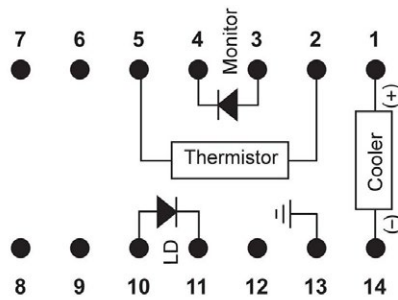


Note: The PM fiber and the connector key are aligned to the slow axis,fast axis is blocked.

**Package Size:**



**Pin definition:**



|   |                           |    |                           |
|---|---------------------------|----|---------------------------|
| 1 | Thermoelectric Cooler (+) | 8  | N/C                       |
| 2 | Thermistor                | 9  | N/C                       |
| 3 | PD Monitor Anode (-)      | 10 | Laser Anode (+)           |
| 4 | PD Monitor Cathode (+)    | 11 | Laser Cathode (-)         |
| 5 | Thermistor                | 12 | N/C                       |
| 6 | N/C                       | 13 | Case Ground               |
| 7 | N/C                       | 14 | Thermoelectric Cooler (-) |

## Absolute Maximum Ratings:

| Item                 | Unit | Min | Typ | Max |
|----------------------|------|-----|-----|-----|
| Case Temperature     | °C   | -5  | 25  | 70  |
| Chip Temperature     | °C   | +10 | 25  | 40  |
| Operating Current    | mA   | 0   | 90  | 120 |
| Forward Voltage      | V    | 0.8 | 1.2 | 1.8 |
| TEC Current          | A    | -   | 1.2 | 1.4 |
| Reverse Voltage (LD) | V    | -   | -   | 1.8 |

## Ordering Info:

PL-NL-□□□□-☆-A8▽-XX

□□□□:Wavelength

0633:633nm

0850:850nm

1550:1550nm

1555:1555nm

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1560:1560nm

☆:Output Power

A:10mW

B:20mW

▽:Linewidth

1:10MHz

XX: Fiber and Connector Type

SA=HI780+ FC/APC

SP=HI780+ FC/PC

PP=PM850 Fiber+ FC/PC

PA=PM850 Fiber+ FC/APC