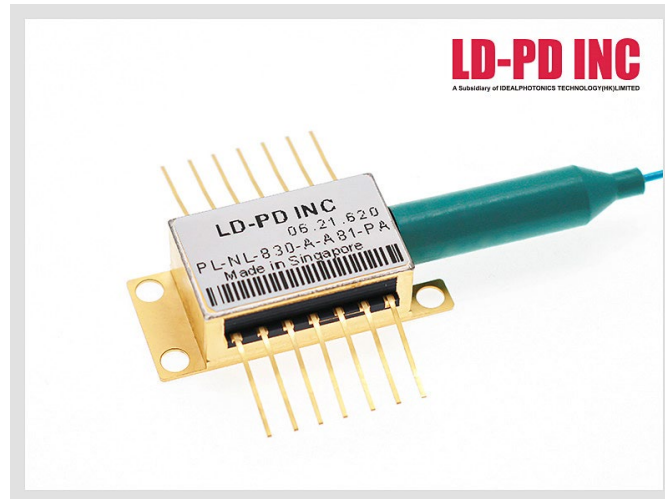


## 830nm Single Frequency Narrow Linewidth Laser Diodes



### Description:

The PL-NL series Fiber Bragg Grating 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).

### Features:

- Optical output: 20mW
- Narrow linewidth ( $\Delta\nu < 1\text{MHz}$ )
- Wavelength: 830nm @ 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

### Application:

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

**E/O Characteristics:**

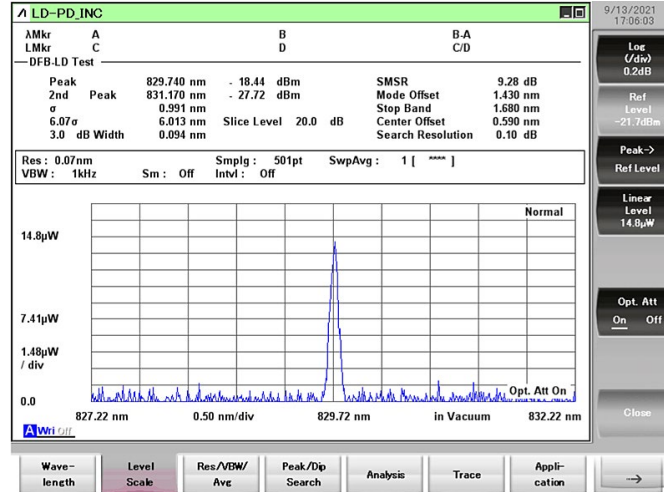
Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	$\lambda_c$	TL=15~35°C CW	825	830	835	nm
Peak Optical Output Power	PO	-	-	10	20	mW
Spectral linewidth	LW	-	-	1	10	MHz
Side-mode Suppression Ratio	SMSR	CW	30	40	-	dB
Optical Isolation	-	-10 < TC < +70°C	30	-	-	dB
Polarization Extinction Ratio	ER	-	20	-	-	dB
Relative Intensity Noise	RIN	CW, output power 5mW	-	-	-135	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	-	65	80	pm/°C
Wavelength Current coefficient	$\Delta\lambda/\Delta I$	-	-	1.0	2	pm/mA

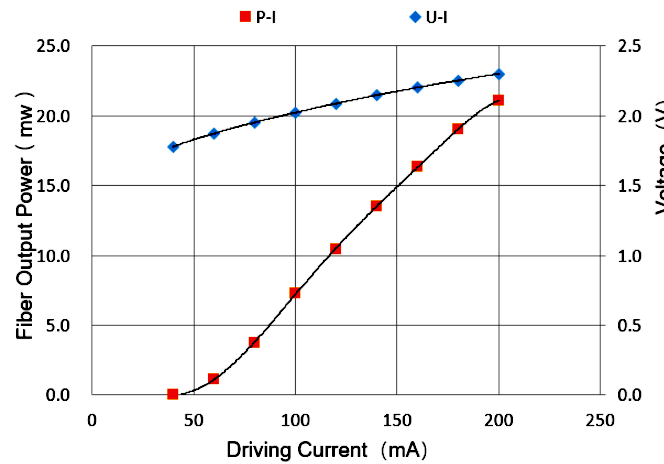
Electrical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	ITH	-	-	25	40	mA
Slope Efficiency	$\eta$	CW output power 30 mW	0.064	0.1	-	mW/mA
Operating current	I <sub>op</sub>	CW	-	150	200	mA
TEC set temperature	T <sub>s</sub>	-	15	-	35	°C
Laser Forward Voltage	V <sub>F</sub>	CW output power 30 mW	-	1.3	2.5	V
Monitor Dark Current	I <sub>D</sub>	-	-	-	0.1	μA
Input Impedance	Z <sub>IN</sub>	-	22	25	28	Ω
Thermistor Current	I <sub>TC</sub>	-	10	-	100	μA
Thermistor Resistance	R <sub>TH</sub>	TL = 25 °C	9.5	10	10.5	KΩ
TEC Current	I <sub>TEC</sub>	TL = 25 °C, TC = 70 °C	-	-	1.8	A
TEC Voltage	V <sub>TEC</sub>	TL = 25 °C, TC = 70 °C	-	-	3.5	V
TEC capacity	$\Delta T$	T <sub>c</sub> = 70 °C	-	-	50	°C
Thermistor temperature	-	-	-	-	100	°C

**Spectrum:**

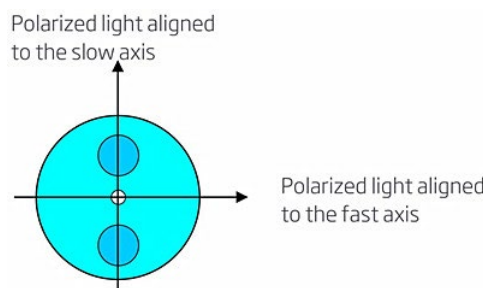


**L-I Curve:**



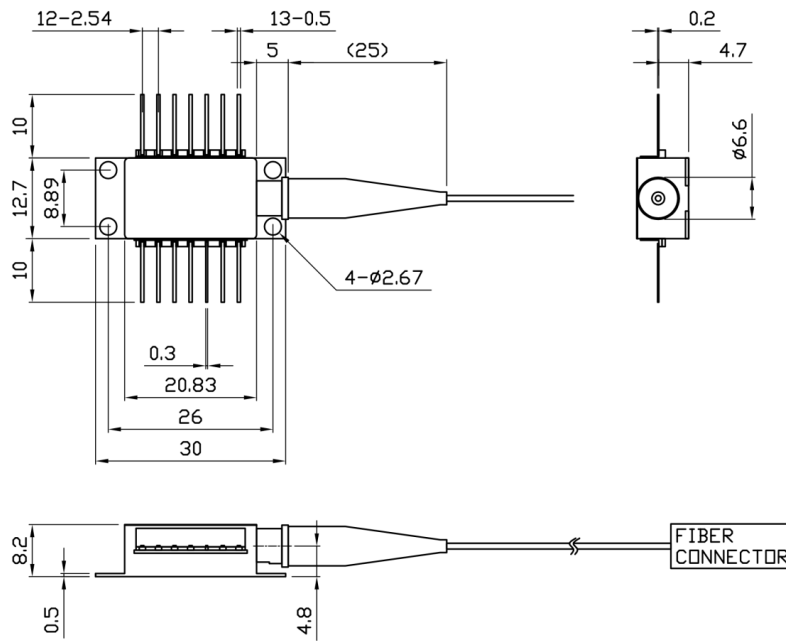
**Fiber Pigtail Specifications:**

Parameters	Description
Fiber Type	PM fiber
Jacket Type	900µm loose tube
Pigtail Length	1.0±0.1m
Connector Type	FC/APC
PM fiber Connector Orientation	Please see the right figure

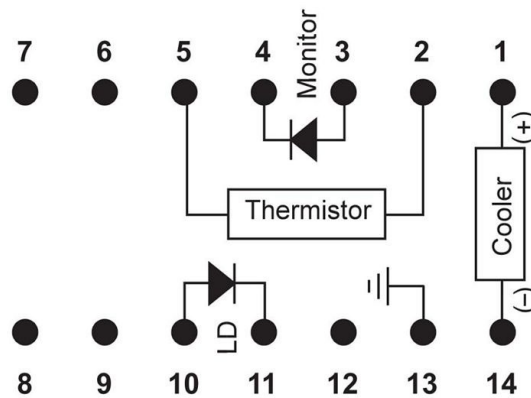


Note: The PM fiber and the connector key are aligned to the slow axis, fast axis is blocked.

**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	250	300
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

0785:785nm

0790:790nm

0830:830nm

1050:1050nm

1550:1550nm

1555:1555nm

\*\*\*\*\*

1560: 1560nm

☆ : Output Power

A: 10mW

B: 30mW

▽ : Linewidth

1: < 10MHZ

XX: Fiber and Connector Type

SA=SMF-28E+ FC/APC

SP=SMF-28E+ FC/PC

PP=PM Fiber+ FC/PC

PA=PM Fiber+ FC/APC