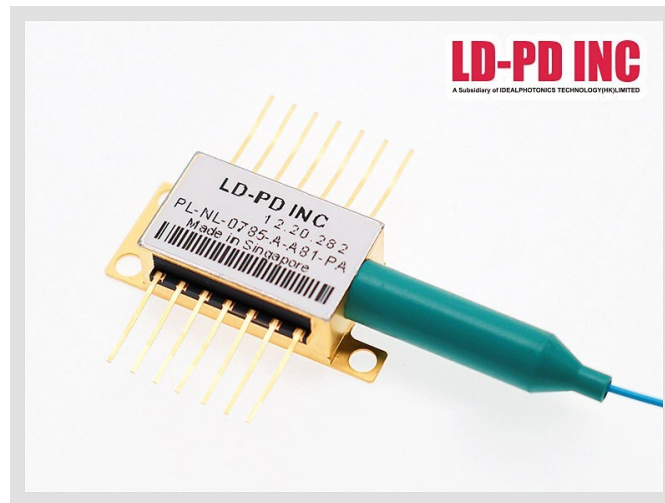


## 785nm Single frequency FBG stabilized Tunable Narrow Linewidth Laser Diodes



### 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: 785nm @ 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

## Laser Specifications:

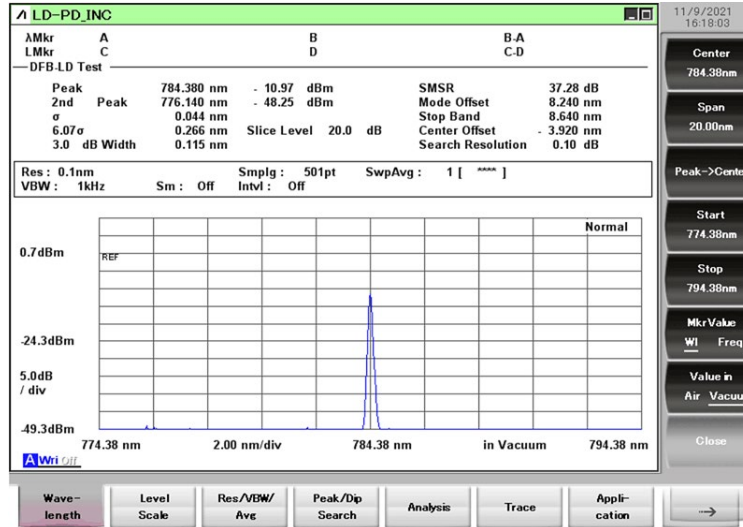
Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	$\lambda_c$	TL=15~35°C CW	780	785	790	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
Tuning Range (For PZT Version)	$\Delta f$		0.5		1	nm
PZT Driving Voltage ( PZT Version)	VT		0		150	V
Mode Hop free Range	$\Delta I$			30		mA

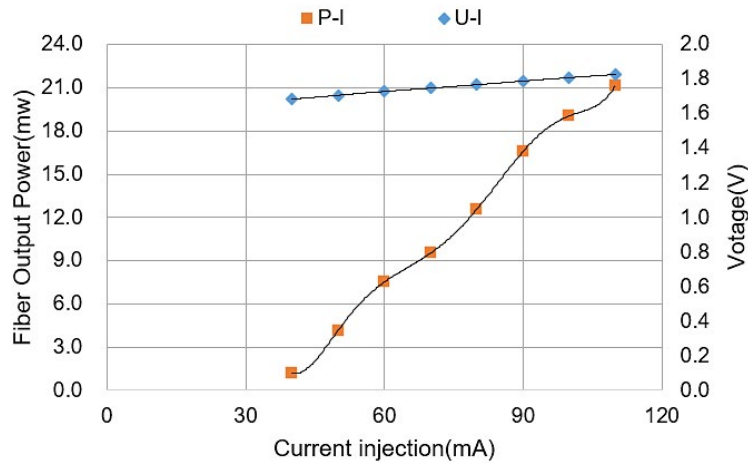
Electrical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	ITH	-	-	45	65	mA
Operating Current	Iop	CW	-	80	100	mA
Slope Efficiency		CW output power @30 mW	0.064	0.1	0.4	mW/mA
TEC set temperature	Ts	-	15	-	35	°C
Laser Forward Voltage	VF	CW output power @30 mW	-	1.3	2.5	V
Input Impedance	ZIN		22	25	28	$\Omega$
Monitor Dark Current	ID	-	-	-	0.1	$\mu$ A
Thermistor Current	ITC	-	10	-	100	$\mu$ A
Thermistor Resistance	RTH	TLD=25°C	9.5	10	10.5	K $\Omega$
TEC Current	ITEC	TLD=25°C, TC=70°C	-	-	1.8	A
TEC Voltage	VTEC	IF=EOL, TC=70°C	-	-	3.5	V
TEC capacity	$\Delta T$	Tc = 70°C	-	-	50	°C
Thermistor temperature	-	-	-	-	100	°C

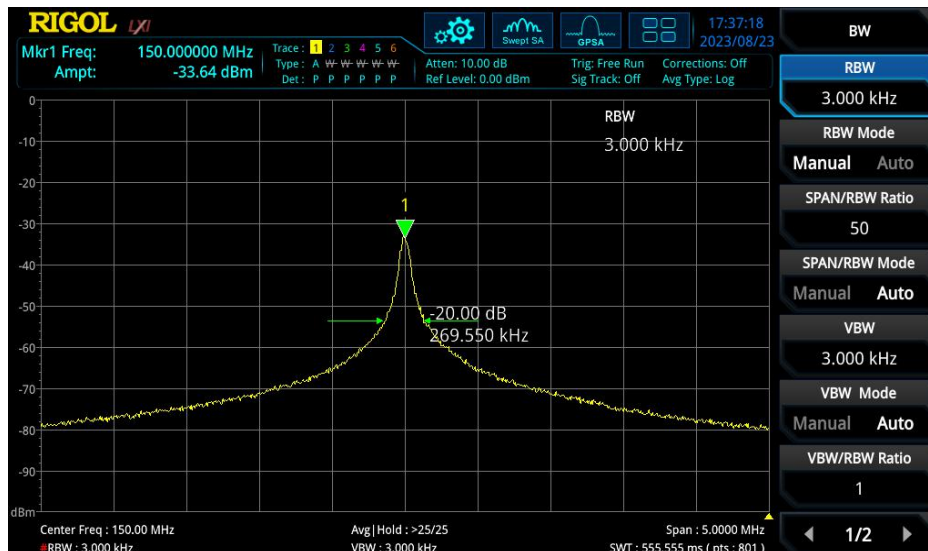
**Spectrum:**



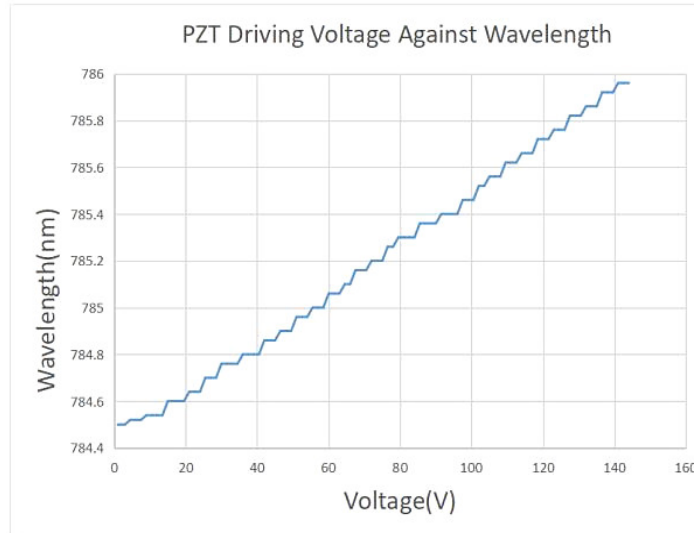
**L-I Curve:**



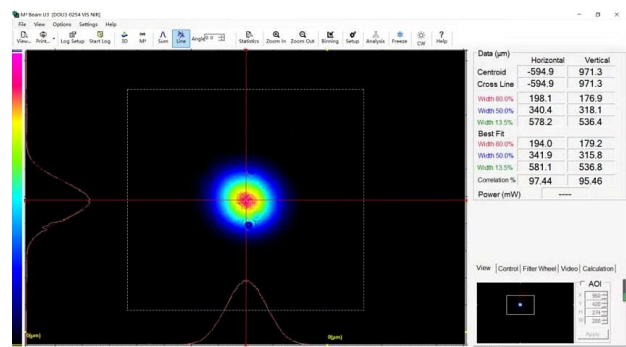
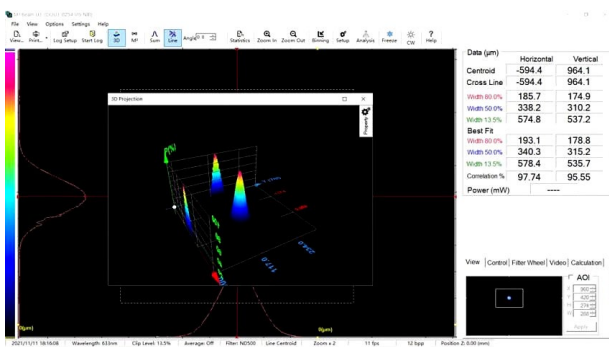
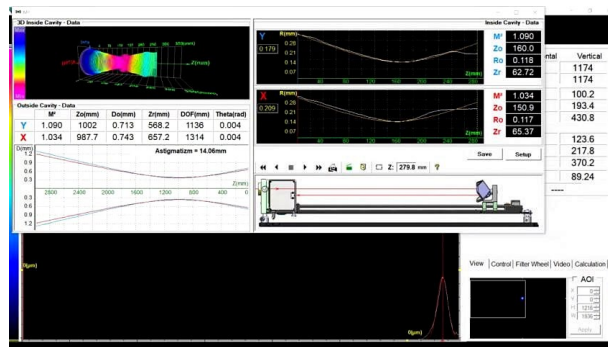
**Linewidth Testing Result:**



**Wavelength VS PZT Voltage:**

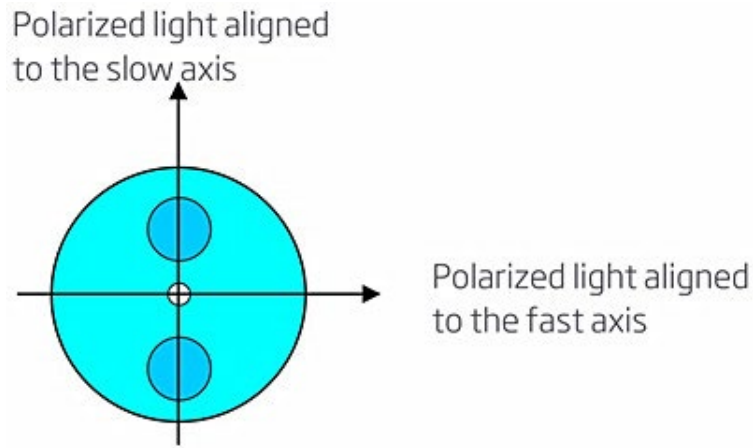


**Beam Quality(M2,2D/3D Beam):**



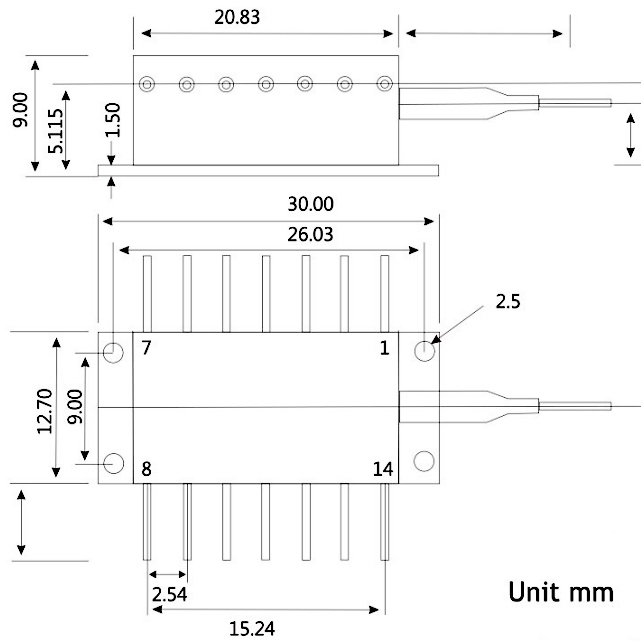
**Fiber Pigtail Specifications:**

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

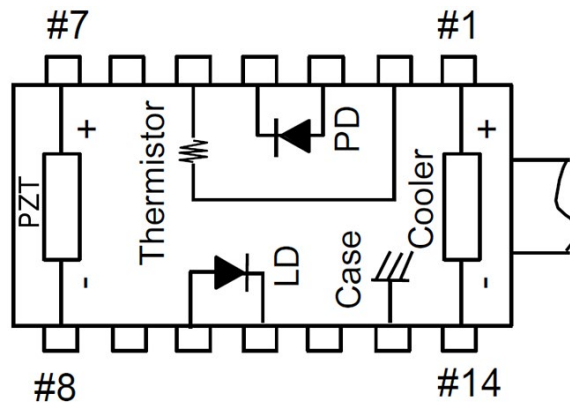


Note: The PM fiber and the connector key are aligned to the slow axis, fast axis is blocked.

**Package Size:**



**Pin definition:**



### PZT Built Inside:

1	Thermoelectric Cooler (+)	8	PZT tuning -
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	PZT tuning +	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

### OEM Info:

PL-NL-□□□□- A8▽-XX-PZT

□□□□: Wavelength

0633: 633nm

0785: 785nm

1550: 1550nm

1555: 1555nm

\*\*\*\*\*

1560: 1560nm

: Output Power

A: 10mW

B: 30mW

▽: Linewidth

1: < 10MHz

XX: Fiber and Connector Type

SA=SM780+ FC/APC

SP=SM780+ FC/PC

PP=PM780 Fiber+ FC/PC

PA=PM780 Fiber+ FC/APC

No PZT: Leave it Blank

PZT: Version please use PZT to replace