

1080nm 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). The Single-Frequency Continuous Tuning Range: > 1.2 nm by adjust the Mini PZT Built in the laser diode.

Features:

- Optical output: 35mW
- Narrow linewidth ($\Delta\nu < 1\text{MHz}$)
- Wavelength: 1080nm @ 25°C
- Tunable wavelength
- Single-frequency mode of operation
- Single mode fiber with fiber Bragg grating (FBG)
- Single-Frequency Continuous Tuning Range: > 1.2 nm
- Current Tuning: 0.002 mA/nm
- Temperature Tuning: 0.08 mA/°C
- Mode Hop Free Range: 30 mA
- Nominal Wavelength: 630 - 1650 nm
- Hermetic 14-pin DIL or 14-pin Butterfly package
- TEC, thermistor, PD

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)

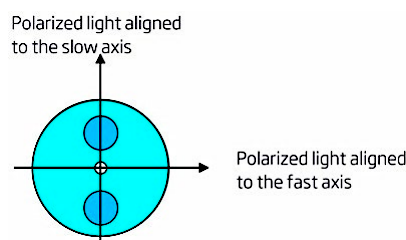
Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	λ_c	TL=15~35 °C CW	1079	1080	1081	nm
Peak Optical Output Power	PO	-	-	25	35	mW
Spectral linewidth	LW	-	-	1	10	MHz
Side-mode Suppression Ratio	SMSR	CW	40	50	-	dB
Optical Isolation	-	-10 < TC < +70 °C	30	-	-	dB
Polarization Extinction Ratio	ER	-	20	-	-	dB
Relative Intensity Noise	RIN		-	-	-135	dB/Hz
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
Operating current	Iop	CW	-	80	140	mA
TEC set temperature	Ts	-	15	-	35	°C
Laser Forward Voltage	VF	CW output power @15 mW	-	1.3	3.0	V
Monitor Dark Current	ID	Pf=15mw VRD=5V	-	-	0.1	μA
Input Impedance	ZIN	-	22	25	28	Ω
Thermistor Current	ITC	-	10	-	70	μA
Thermistor Resistance	RTH	TL = 25 °C	9.5	10	10.5	KΩ
TEC Current	ITEC	TL = 25 °C, TC = 70 °C	-	-	1.4	A
TEC Voltage	VTEC	TL = 25 °C, TC = 70 °C	-	-	2.8	V

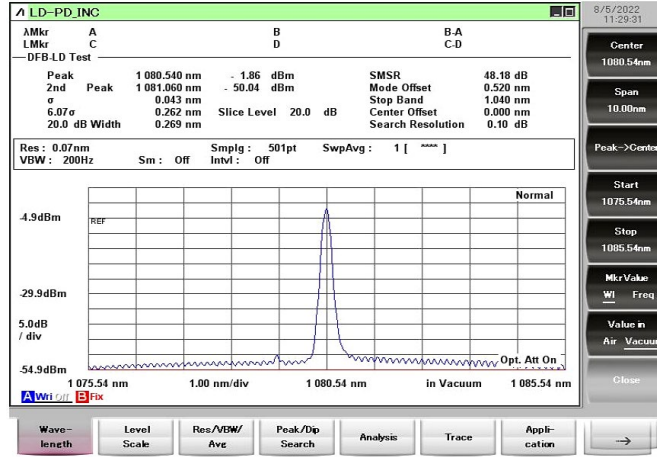
Fiber Pigtail Specifications:

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

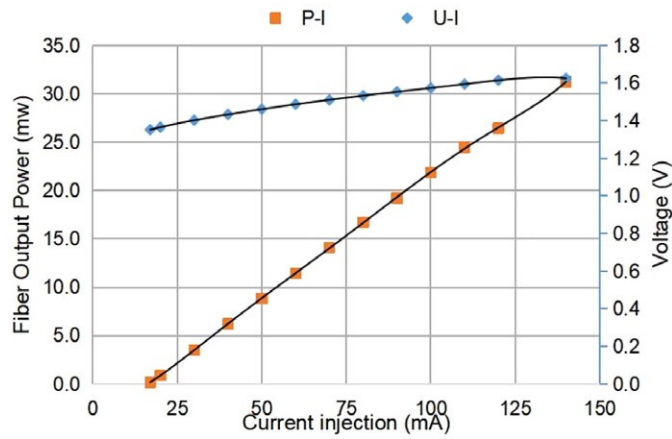


Note: The PM fiber and the connector key are aligned to the slow axis, fast axis is blocked.

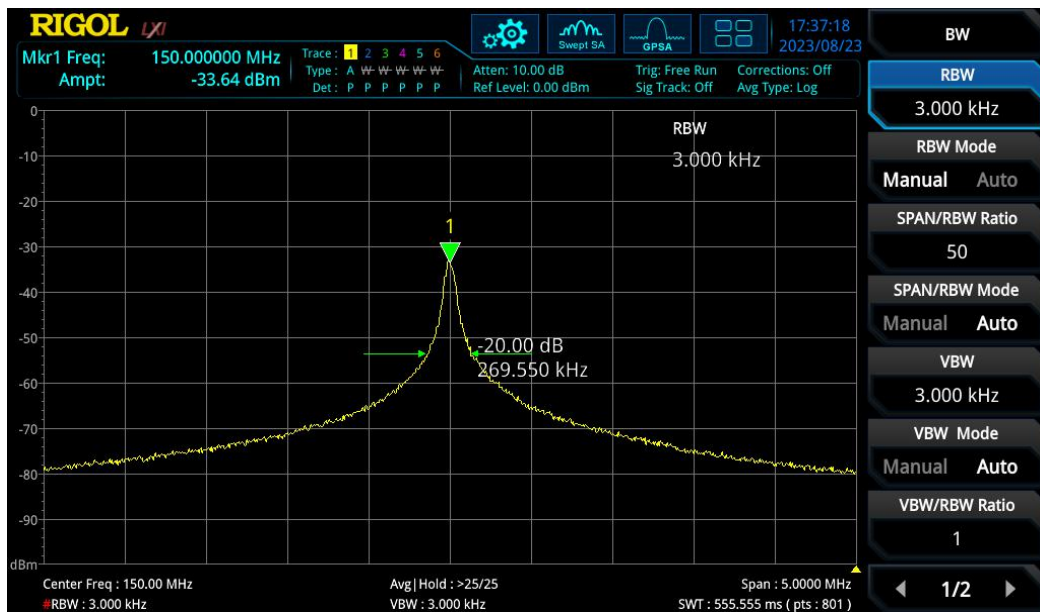
Spectrum:



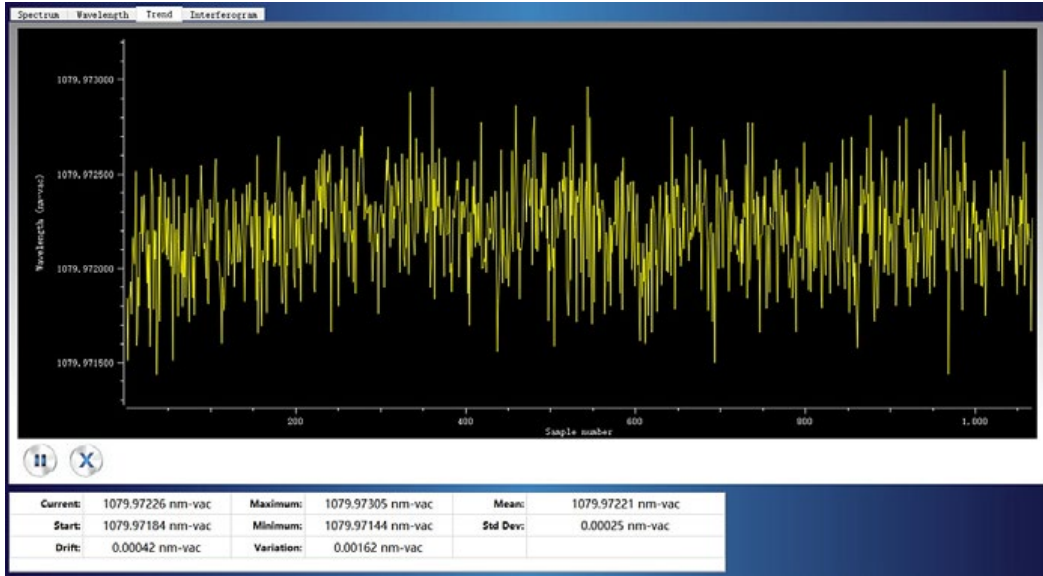
L-I Curve:



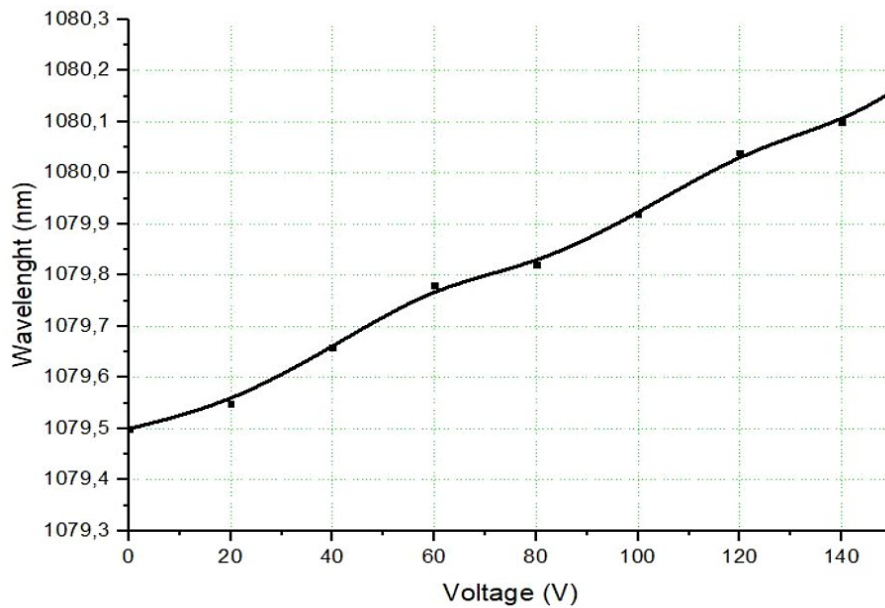
Linewidth Testing Result:



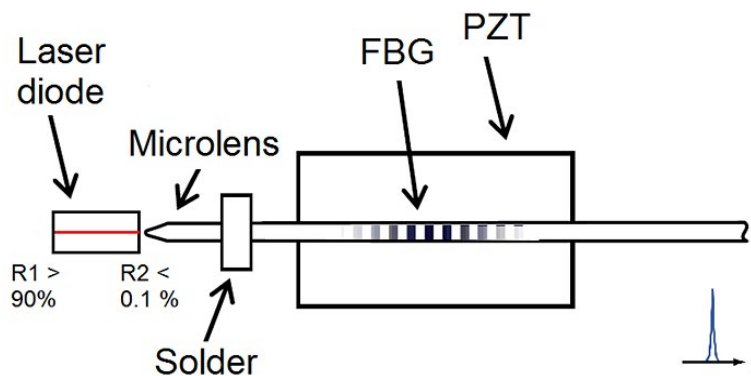
Wavelength Stability Test Result:



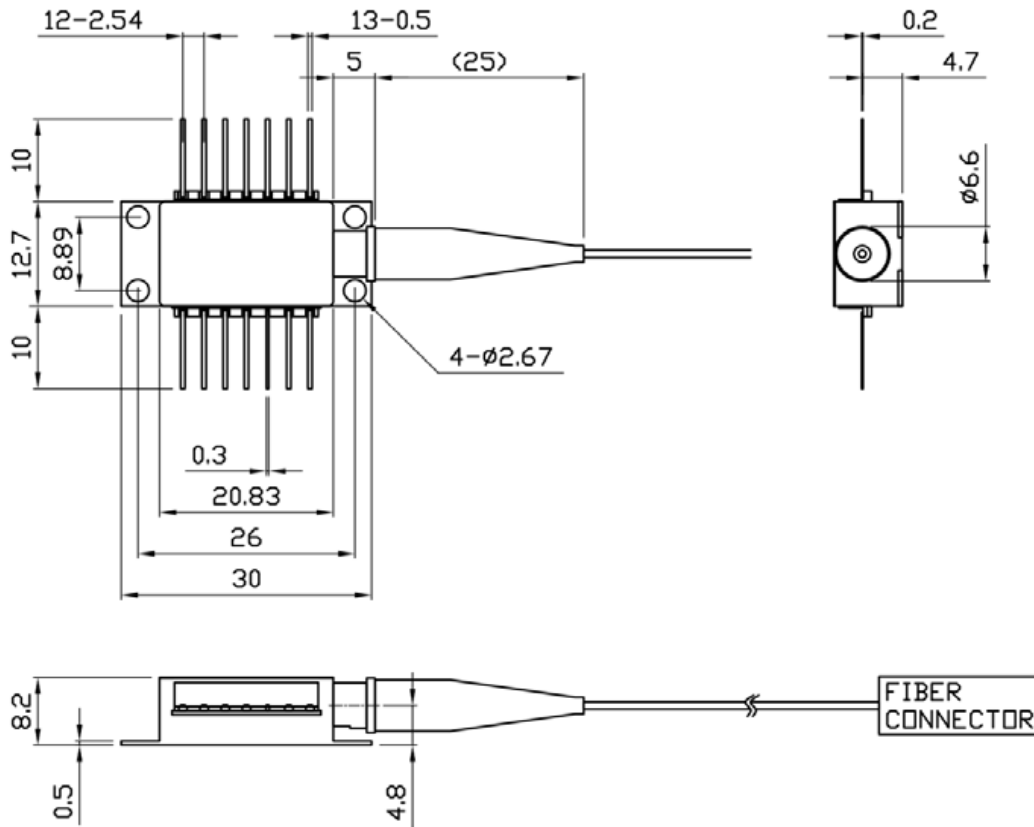
Wavelength VS PZT Voltage:



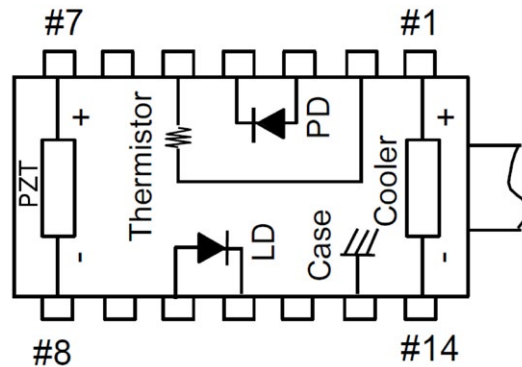
Working Structure:



Package Size:



Pin definition:



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	80	140
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

1064:1064nm

1550:1550nm

1555:1555nm

1560:1560nm

☆ :Output Power

A:10mW

B:20mW

▽:Linewidth

1:<10MHz

XX: Fiber and Connector Type

SA=HI1060+ FC/APC

SP=HI1060+ FC/PC

PP=PM Fiber+ FC/PC

PA=PM Fiber+ FC/APC