852nm 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. 852nm Tunable laser diodes for CS spectroscopy.

Features

- Optical output: 30mW
- Narrow linewidth (Δv<1MHz)
- Wavelength: 852nm @ 25℃
- 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

E/O Characteristics

Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	λc	TL=15～	851	852	853	nm

		35℃ CW				
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 ºC	30	-	-	dB
Polarization Extinction Ratio	ER	-	20	-	-	dB
Relative Intensity Noise	RIN	CW, output power 10mW	-	-	-145	dB/HZ
Wavelength drift with case (-10 to 70 ºC) temperature	△λ	TL=15～35℃	-	-	±30	pm

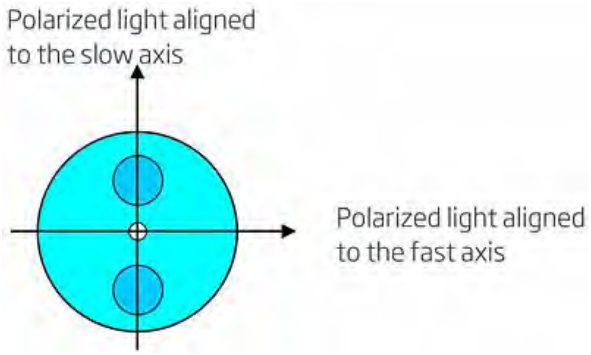
Electrical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	ITH	-	-	45	65	mA
Slope Efficiency	η	CW , 10 mW	0.064	0.1	-	mW/mA
Operating current	Iop	CW	-	150	200	mA
TEC set temperature	Ts	-	15	-	35	℃
Laser Forward Voltage	VF	CW output power 5 mW	-	1.3	1.8	V
Monitor Dark Current	ID	-	-	-	0.1	μA
Cooler Voltage	Vc	IF=EOL, TC=70°C			2.7	V
Cooler Current	Ic	IF=EOL, TC=70°C	-	-	1.4	A
Thermistor Resistance	RTH	TL = 25 °C	9.5	10	10.5	KΩ
TEC Current	ITEC	TL = 25 °C, TC = 70 °C	-	-	1.8	A
TEC Voltage	VTEC	TL = 25 °C, TC = 70 °C	-	-	3.5	V
Tuning Range	Δf		1		1.5	nm
PZT Tuning Voltage	VT		0		150	V

Mode Hop Free Range	ΔI			3		mA
Extinction Ratio	XP	CW 10 mW	17			dB
TEC capacity	ΔT	Tc = 70℃	-	-	50	°C
Thermistor temperature	-	-	-	-	100	°C

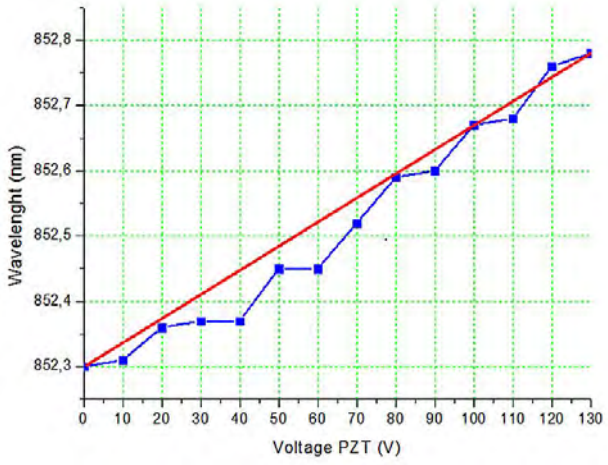
Fiber Pigtail Specifications

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

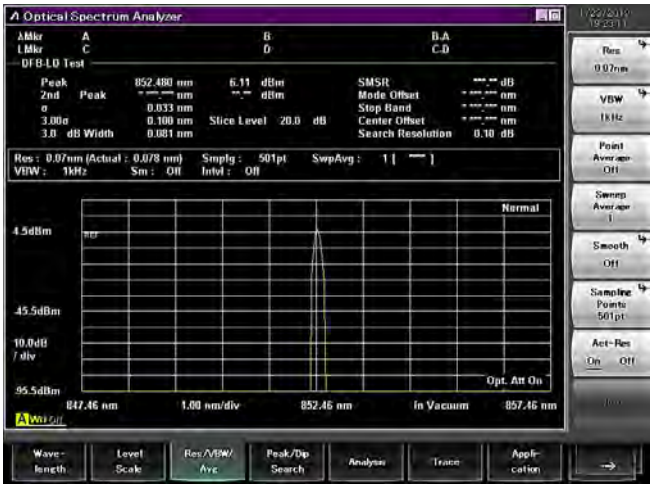


Note: The PM fiber and the connector key are aligned to the slow axis,fast axis is blocked

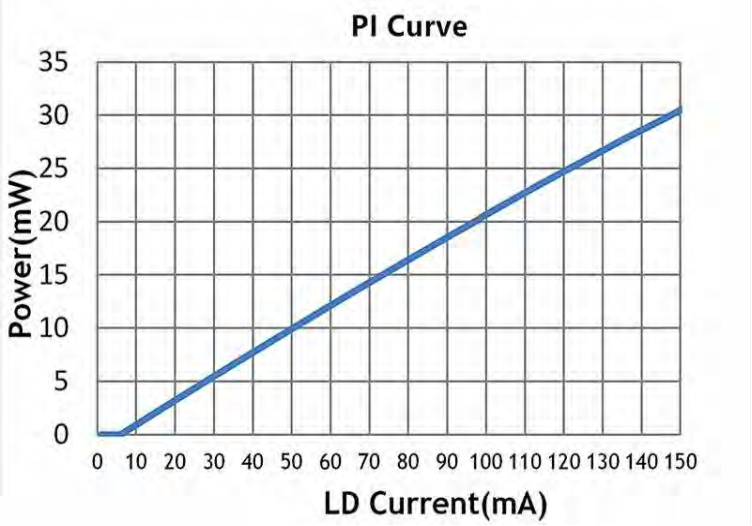
Wavelength VS PZT Voltage



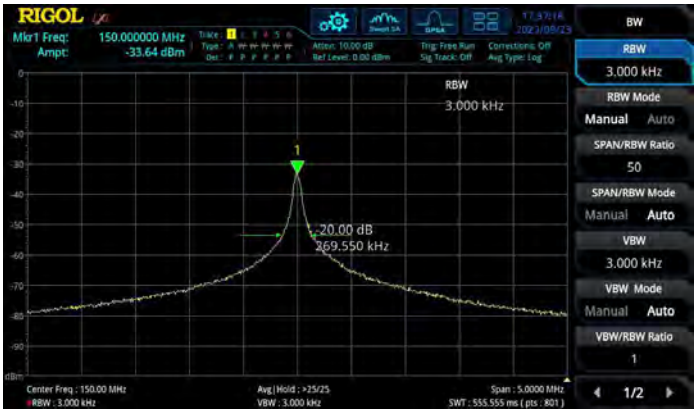
Spectrum



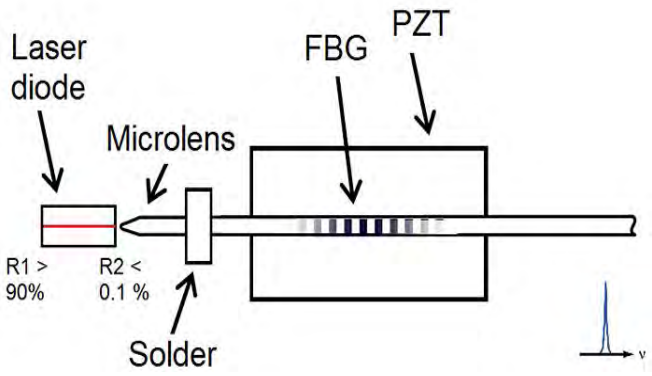
L-I Curve



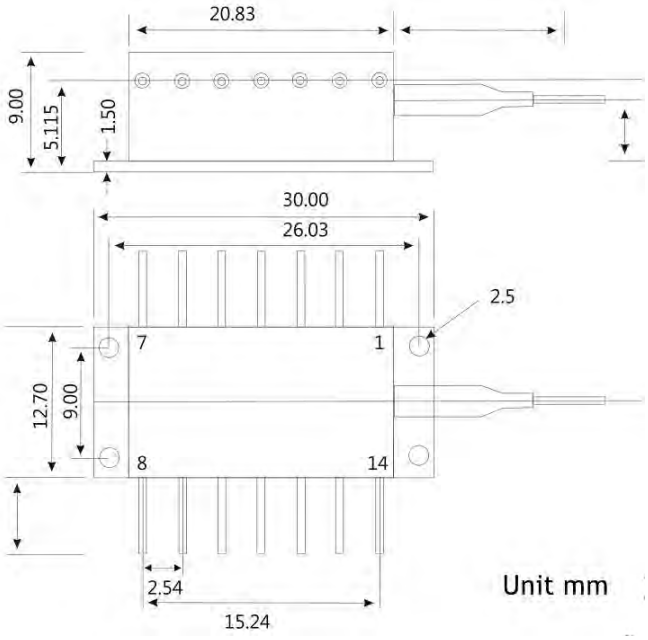
Linewidth Testing Result



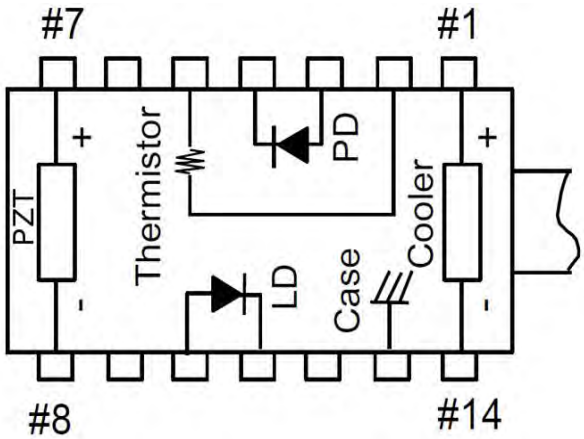
Working Structure



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	℃	-5	25	70
Chip Temperature	℃	+10	25	40
Operating Current	mA	0	150	200
Forward Voltage	V	0.8	1.2	1.8
TEC Current	A	-	1.2	1.4
Reverse Voltage（LD）	V	-	-	1.8

Application

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

Ordering Info

PL-NL-□□□□-☆-A8▽-XX-PZT

□□□□：Wavelength

0633:633nm

0852:852nm

1550:1550nm

1555:1555nm

*****

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