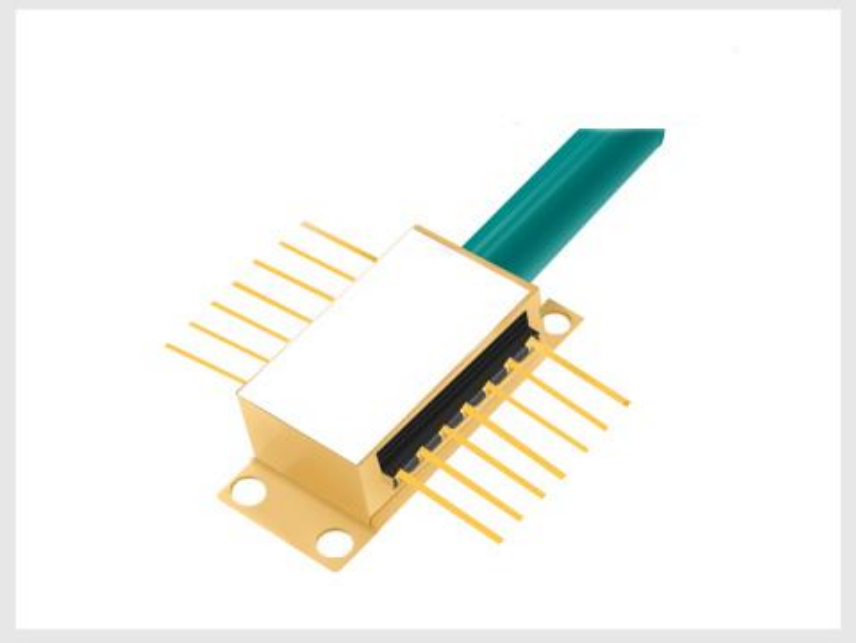
780nm 10mW SM FBG stabilized Tunable laser diode



Product Description

This 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.

Product features

Optical output: 10mW; Narrow linewidth (Δv < 1MHz); Wavelength: 780nm @ 25 ℃; SMor PMFiber (ø0.9mm); FC-APC connector; 14-pin butterfly package; Internal monitor PD and TEC; Low power consumption

Part Number

MP-NL-780-A-A81-SA-PZT

Application area

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

Core parameters

Wavelength	Output Power	Fiber Type
780nm	10mW	SM

General Parameters

Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	λc	TL=15～35°C CW	775	780	785	nm
Peak Optical Output Power	PO	-	-	10	20	mW
Spectral linewidth	LW	-	-	1	10	MHZ
Relative Intensity Noise	RIN	CW，output power 5mW	-	-	-135	db/HZ
Side-mode Suppression Ratio	SMSR	CW	30	40	-	dB
Polarization Extinction Ratio	ER	-	20	-	-	dB
Wavelength drift with case (-10 to 70 °C) temperature	△λ	TL=15～35°C	-	-	±30	pm
Wavelength Temperature coefficient	Δλ/ΔT	TL=15～35°C	-	65	80	pm/°C
Wavelength Current coefficient	Δλ/ΔI	-	-	1.0	2	pm/mA

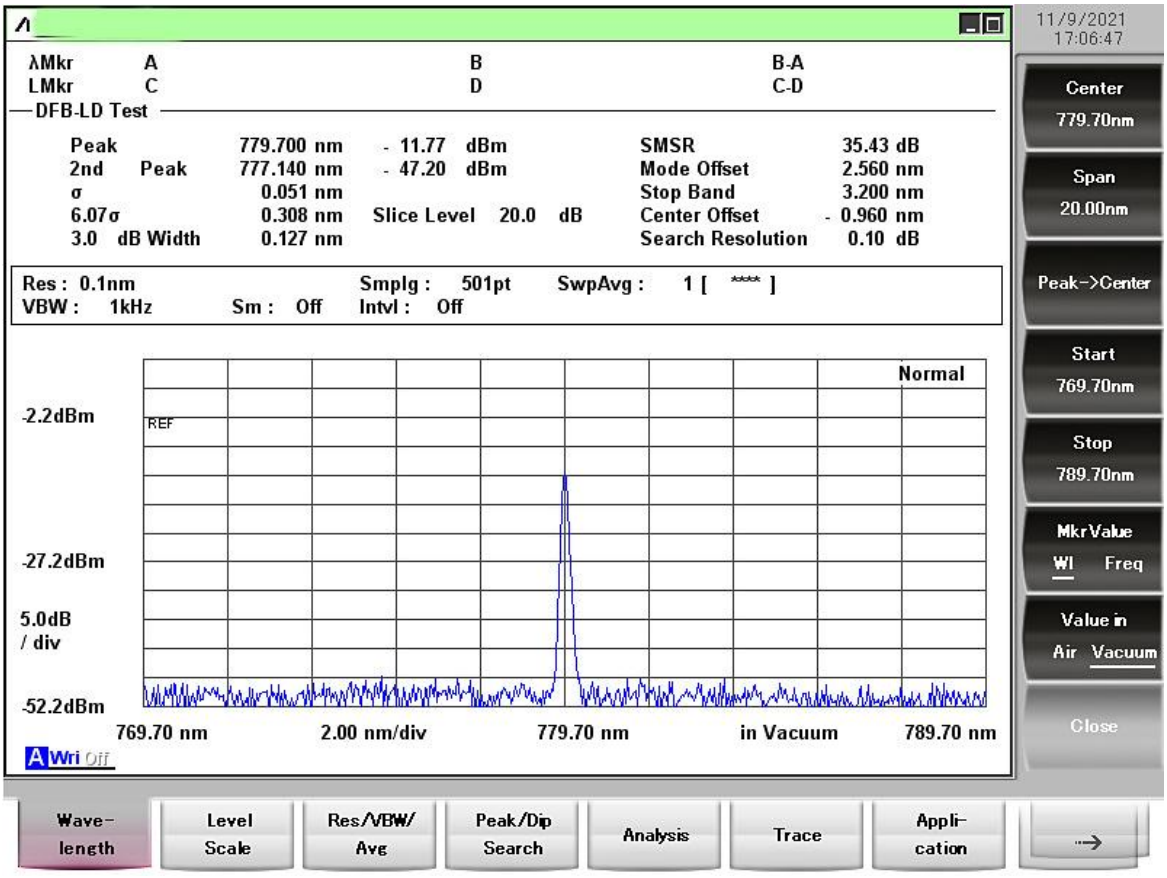
Tuning Range(For PZT Version)	Δf		0.5		1	nm
PZT Driving Voltage(PZT Version)	VT		0		150	V
Mode Hope free Range	ΔI			3		mA

Electrical Characteristics (at 25 °C laser temperature)

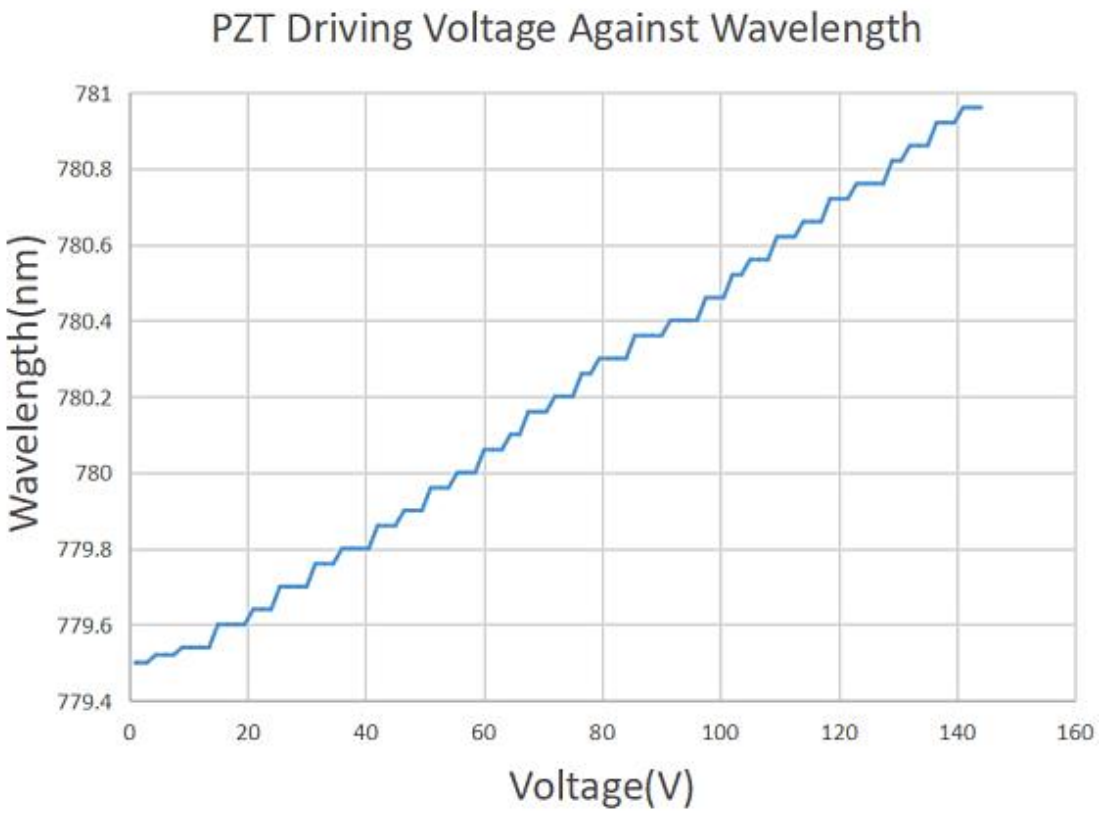
Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	ITH	-	-	45	65	mA
Operating current	Iop	CW	-	60	120	mA
Slope Efficiency	η	CW output power 30 mW	0.064	0.3	0.4	mW/mA
TEC set temperature	Ts	-	15	-	35	℃
Laser Forward Voltage	VF	CW output power@30 mW	-	1.3	2.5	V
Monitor Dark Current	ID	-	-	-	0.1	μA
Thermistor Current	ITC	-	10	-	100	μA

Thermistor Resistance	RTH	TLD=25°C	9.5	10	10.5	KΩ
TEC Current	ITEC	TLD=25° C, TC=70°C	-	-	1.8	A
TEC Voltage	VTEC	IF=EOL, TC=70°C	-	-	3.5	V

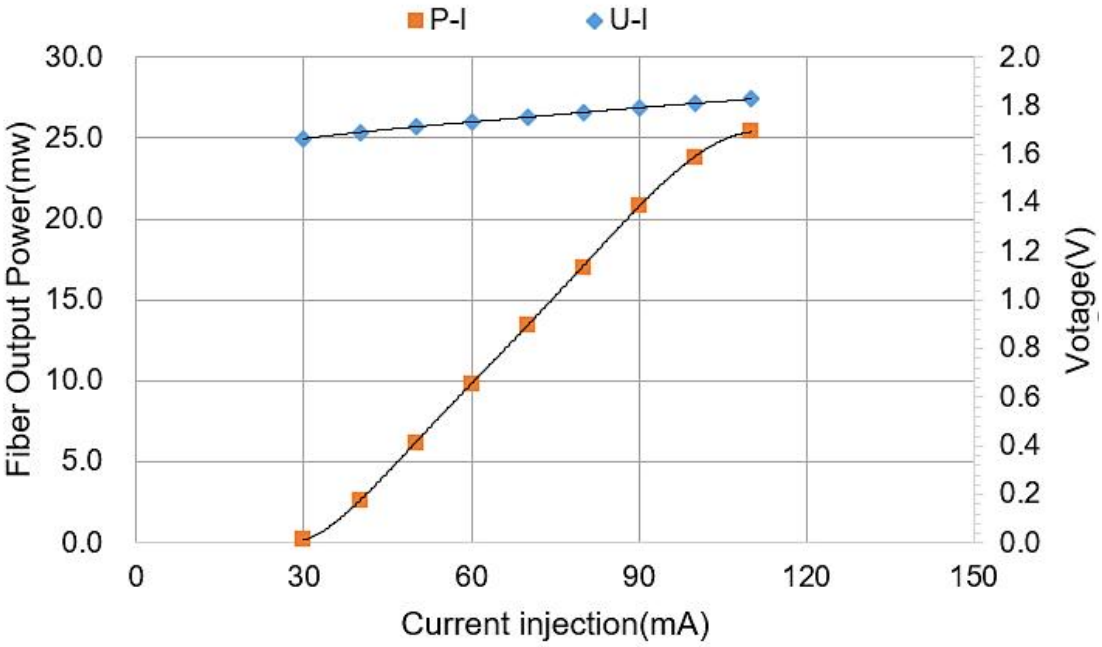
Spectrum



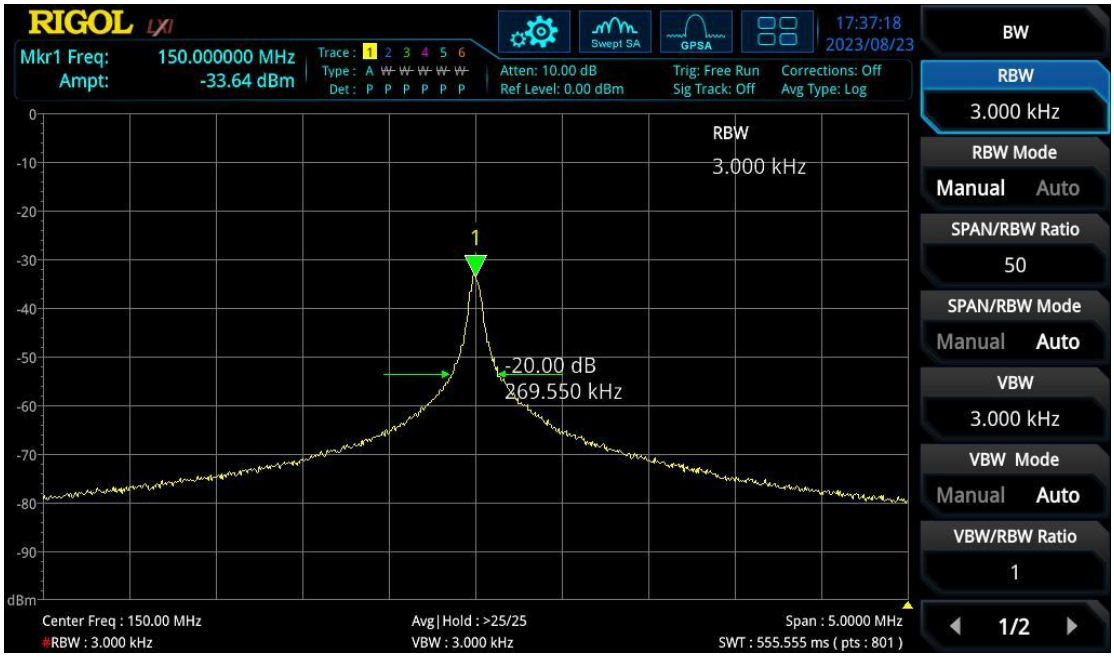
Voltage Vs Wavelength(PZT Version)



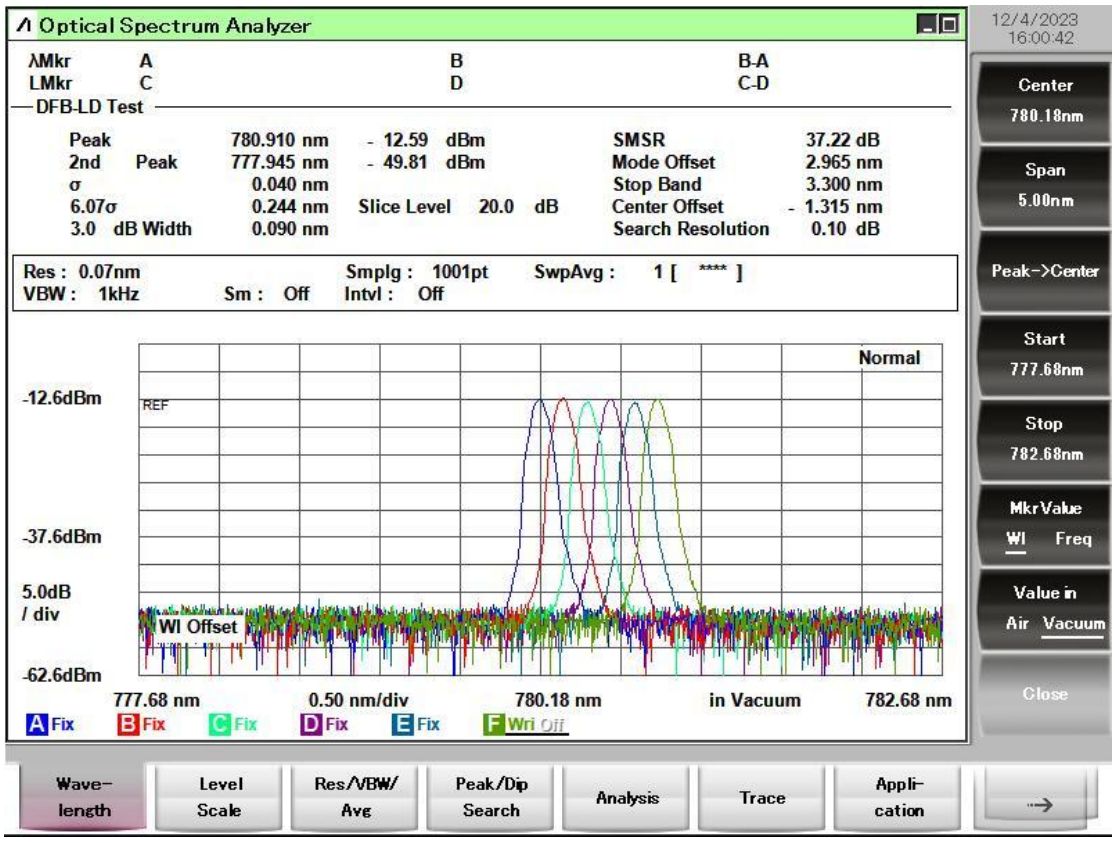
L-I Curve



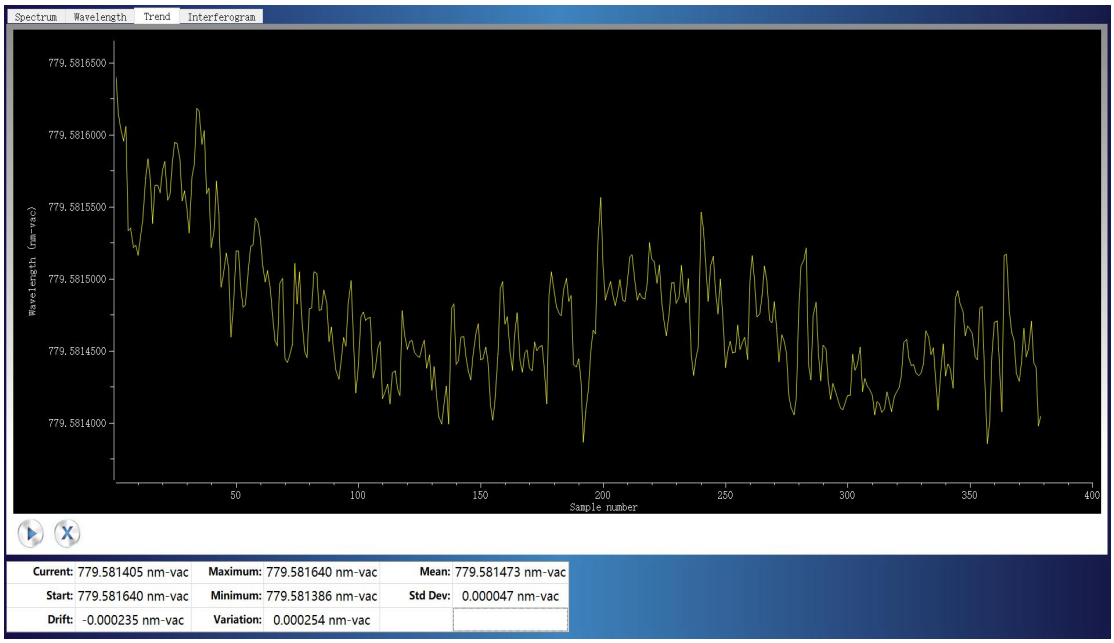
Linewidth Testing Result



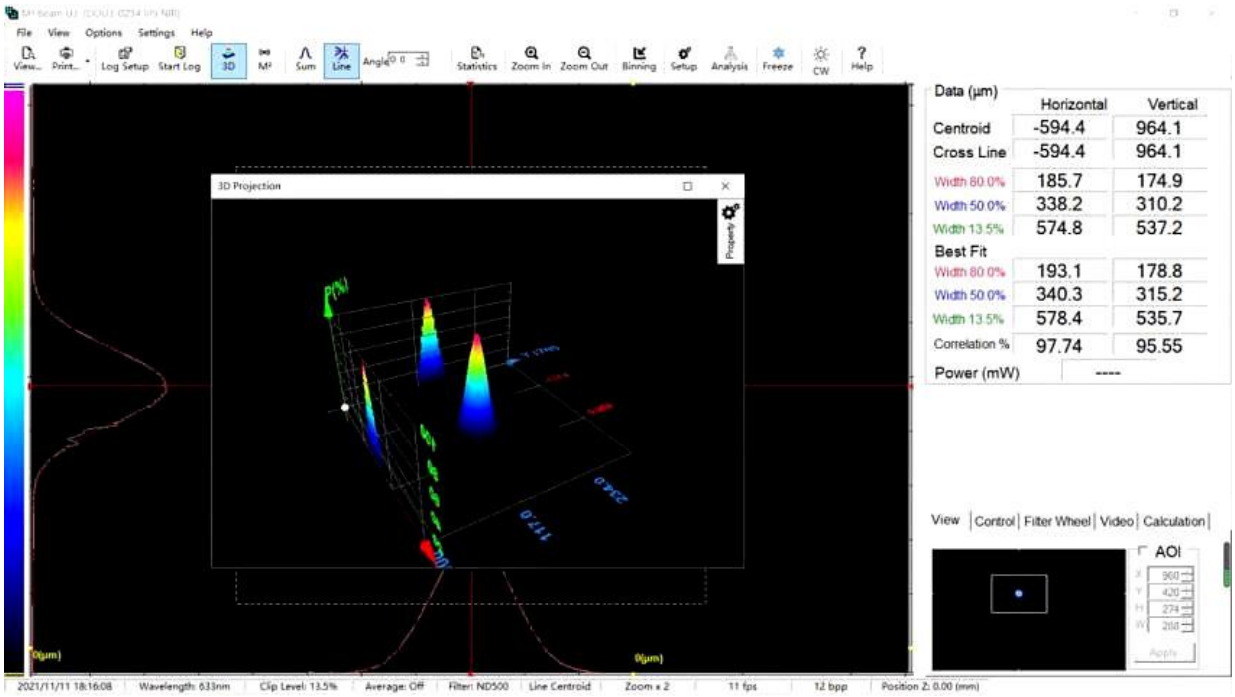
PZT ECL Spectrum



Wavelength Stability Measurement



Beam Quality(M2,2D/3D Beam)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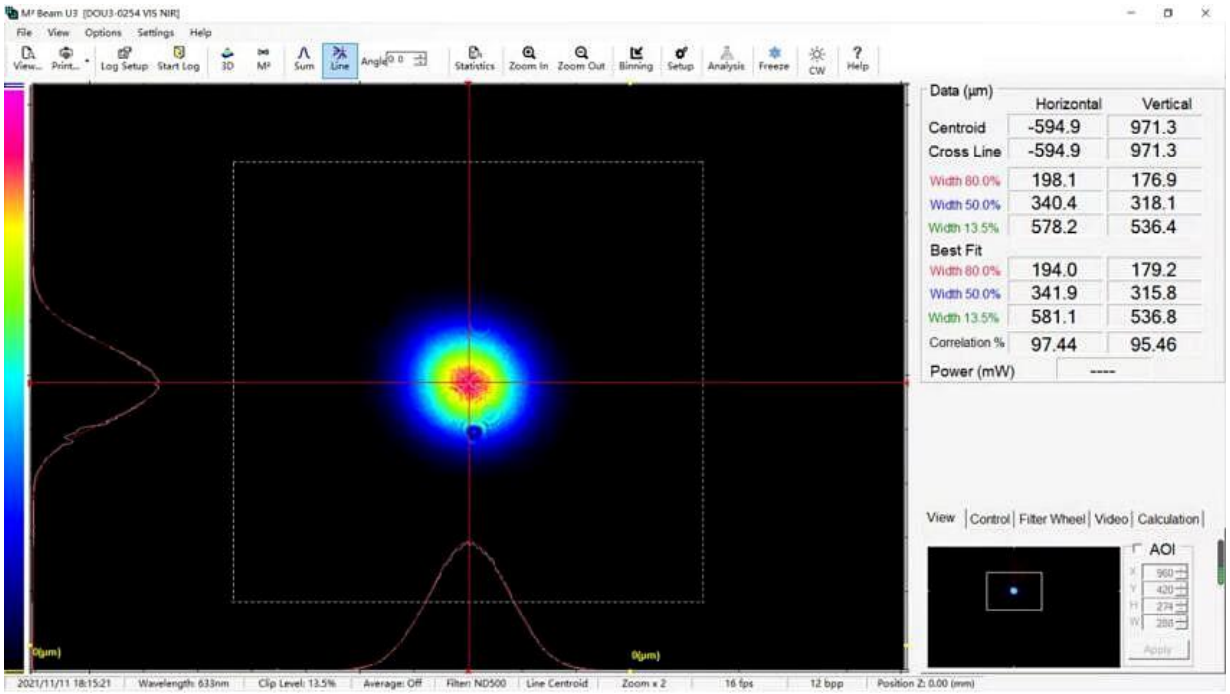
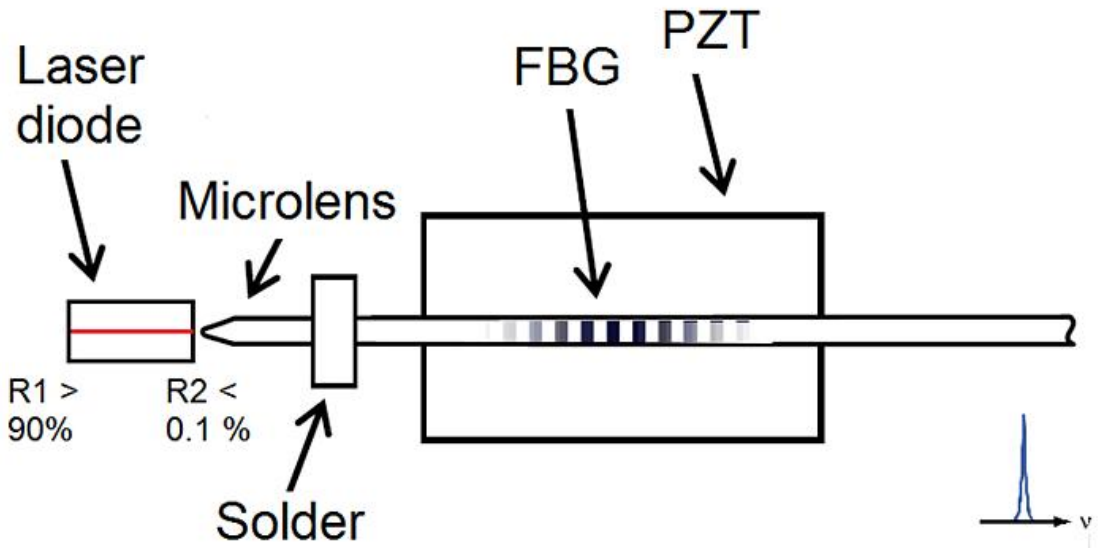
3D Projection
Data (µm)
Horizontal Vertical
Centroid -594.4 964.1
Cross Line -594.4 964.1
Width 80.0% 185.7 174.9
Width 50.0% 338.2 310.2
Width 13.5% 574.8 537.2
Best Fit
Width 80.0% 193.1 178.8
Width 50.0% 340.3 315.2
Width 13.5% 578.4 535.7
Correlation % 97.74 95.55
Power (mW) ----
View Control Filter Wheel Video Calculation
AOI
2021/11/11 18:16:08 Wavelength: 633nm Clip Level: 13.5% Average: Off Filter: ND500 Line Centroid Zoom x 2 11 fps 12 bpp Position Z: 0.00 (mm)


File View Options Settings Help
Data (µm)
Horizontal Vertical
Centroid -594.9 971.3
Cross Line -594.9 971.3
Width 80.0% 198.1 176.9
Width 50.0% 340.4 318.1
Width 13.5% 578.2 536.4
Best Fit
Width 80.0% 194.0 179.2
Width 50.0% 341.9 315.8
Width 13.5% 581.1 536.8
Correlation % 97.44 95.46
Power (mW) ----
View Control Filter Wheel Video Calculation
AOI
2021/11/11 18:15:21 Wavelength: 633nm Clip Level: 13.5% Average: Off Filter: ND500 Line Centroid Zoom x 2 16 fps 12 bpp Position Z: 0.00 (mm)

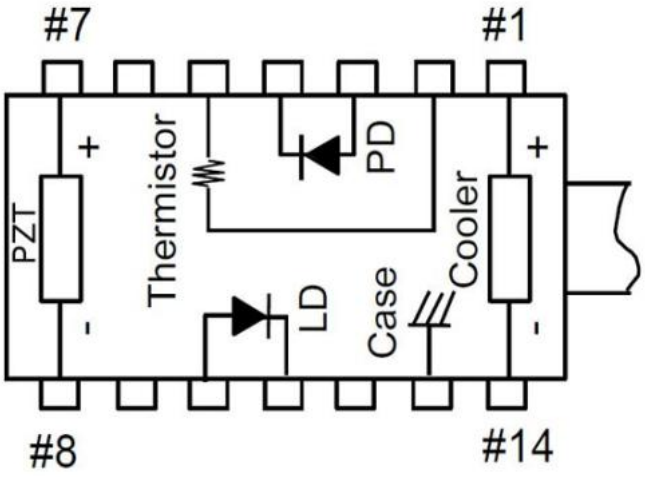
Working Structure



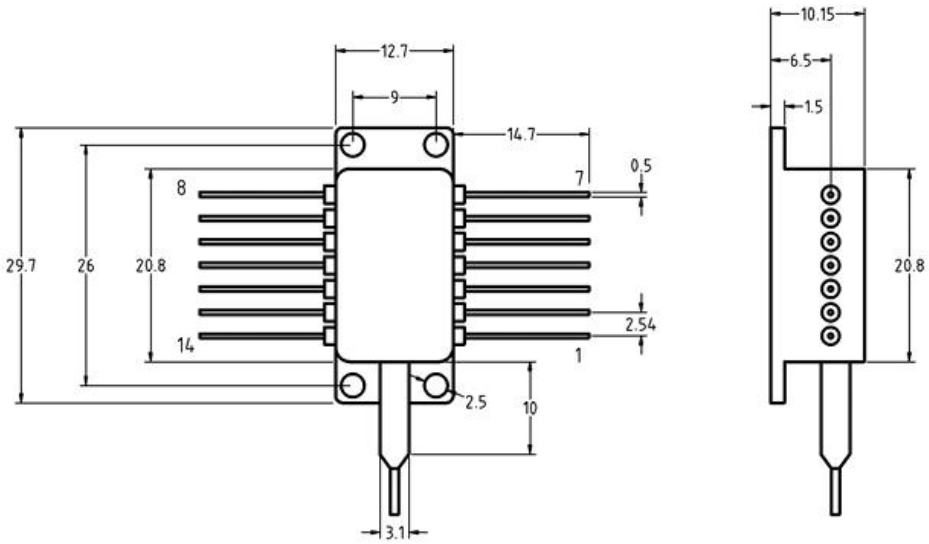
Absolute maximum ratings:

Parameter	Unit	Min	Typ	Max
Case Temperature	°C	-40	25	70
Chip Temperature	°C	+10	25	40
Operating Current	mA	0	150	170
Forward Voltage	V	0.8	1.2	1.8
TEC Current	A	-	1.2	1.4
Reverse Voltage(LD)	V	-	-	1.8

Pin definition

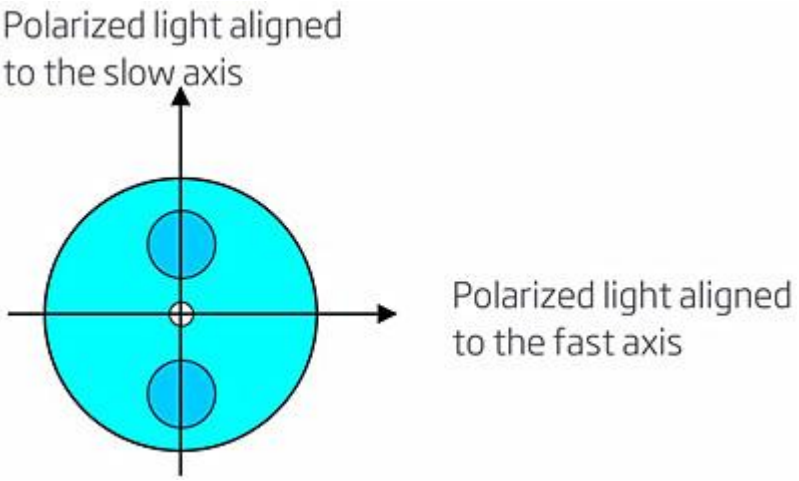


None PZT Bulit inside			
NO	Parameter	NO	Parameter
1	Cooler anode+	8	PZT tuning -
2	Thermistor	9	NC
3	PD anode-	10	LD anode+
4	PD cathode+	11	LD cathode-
5	Thermistor	12	NC
6	NC	13	Case
7	PZT tuning +	14	Cooler cathode-



Fiber Pigtail Specifications

Parameters	Description
Fiber Type	SM 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