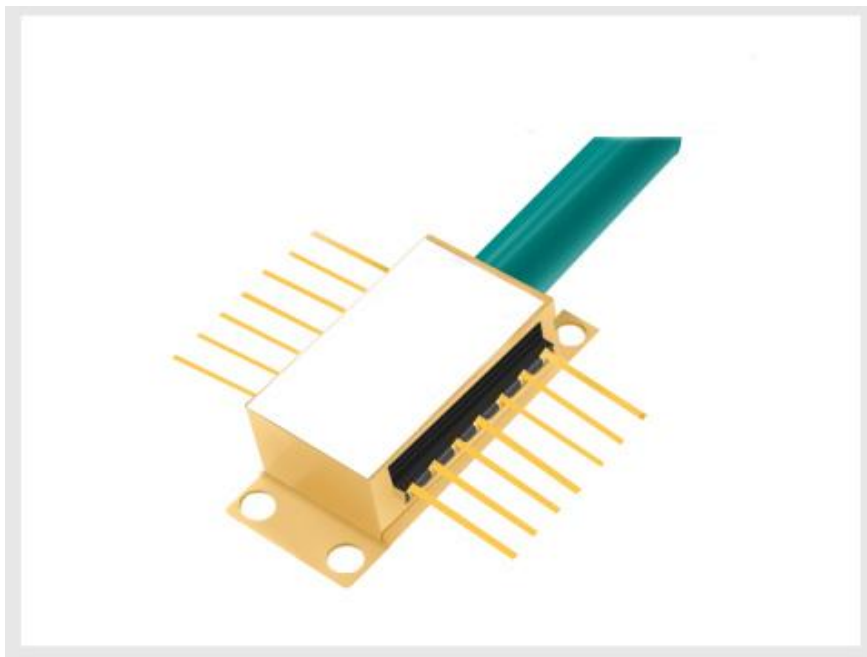


## 780nm 10mW SM Narrow Linewidth Laser

### Diodes



- **Product Description**

Single frequency FBG-stabilized laser diode module designed for optical measurement and communication. The laser is packaged in Butterfly package with monitor photodiode and thermo-electric cooler (TEC). Module is pigtailed with 0.5-0.9 m of single mode or polarization maintaining (optional) fiber and connectorized by FC/APC connector.



## ● Product features

Optical output: 10mW; Narrow linewidth ( $\Delta\nu < 1\text{MHz}$ ); Wavelength: 780nm  
@ 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

## ● Part Number

MP-NL-780-A-A81-SA

## ● Application area

Coherent Optical Communication | High-Precision Fiber Optic Sensing |  
LiDAR | Optical Metrology & Spectroscopy | Microwave Photonics

## ● Core parameters

Wavelength	Output Power	Fiber Type
780nm	10mW	SM



## ● General Parameters

### Optical and Electrical Characteristics

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Optical Power	$P_f$	CW	10			mW
Pulsed Optical Power	$P_{fp}$	Pulse, $\tau=10\mu s$ , D=1%		20		mW
Threshold Current	$I_{th}$		30	40	70	mA
Forward Current	$I_f$	$P_f$		100	150	mA
Pulsed Forward Current	$I_{fp}$	$P_{fp}$ , $\tau=10\mu s$ , D=1%		200		mA
Forward Voltage	$V_f$	$P_f$			2.5	V
Center Wavelength	$\lambda_c$	$P_f$	779	780	781	nm
Spectral Width	$\Delta\lambda_c$	$P_f$			1	MHz
Side Mode Suppression Ratio		SMSR	30			dB
Single-Frequency Continuous Tuning Range	$\Delta f$		1			GHz
Current Tuning	$\Delta\lambda/\Delta I$			0.001		nm/mA
Temperature Tuning	$\Delta\lambda/\Delta T$			0.08		nm/°C
Monitor Current	$I_m$	$P_f$	20		500	$\mu A$

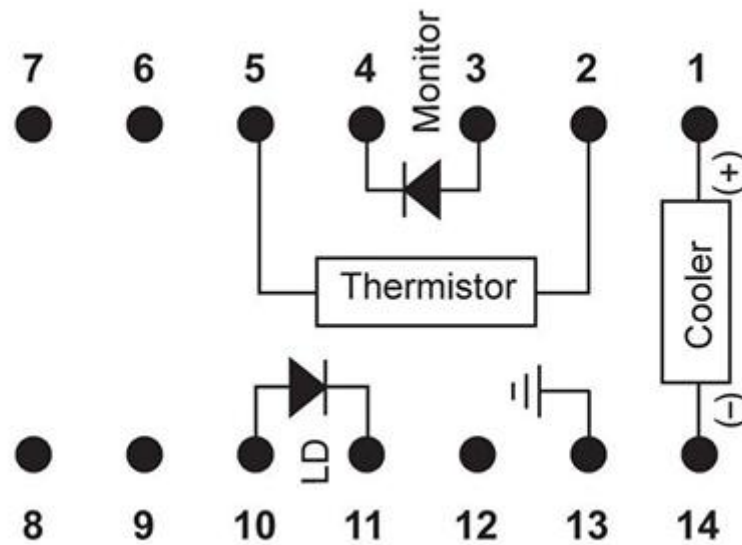


PD Dark Current	$I_d$	$V_{rd}=5V$			0.1	$\mu A$
TEC Current	$I_t$	$I_t$			1.4	A
TEC Voltage	$V_t$	TC=70°C			2.7	V
Thermal Resistance	$R_0$	T=25°C, B=3900 $\pm 100K$	9.5	10	10.5	k $\Omega$
Extinction Ratio (PM fiber)	$X_p$	$P_f$	20			dB

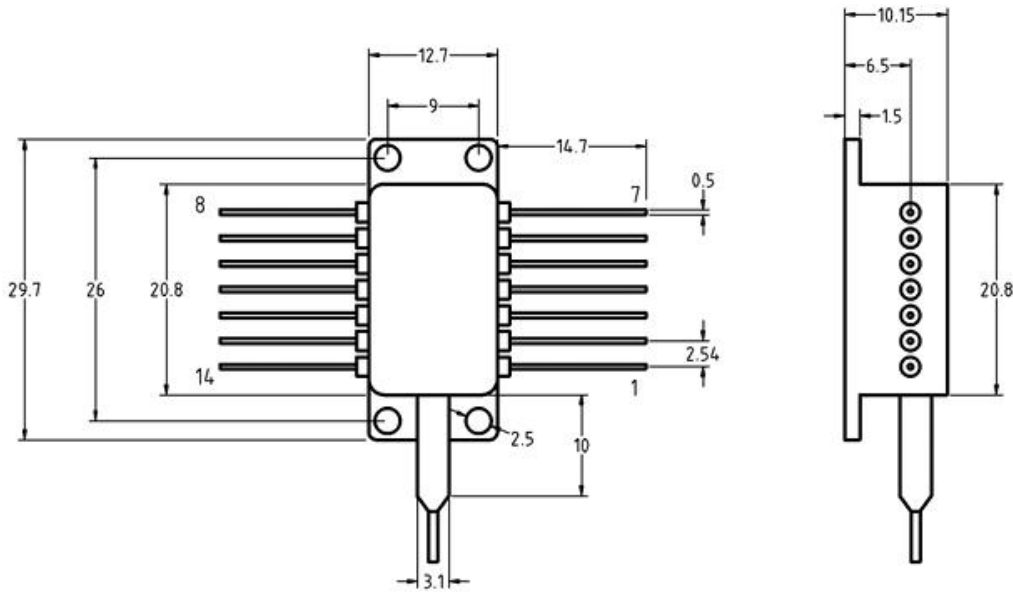
### Absolute maximum ratings:

Parameter	Symbol	Rating	Unit
Forward Current	$I_f$	170	mA
Reverse Voltage	$V_r$	1.8	V
PD Reserve Voltage	$V_{rd}$	7	V
Minimum Operation Case Temperature	$T_{ol}$	-40	°C
Maximum Operation Case Temperature	$T_{oh}$	70	°C
Minimum Storage Temperature	$T_{sl}$	-40	°C
Maximum Storage Temperature	$T_{sh}$	70	°C
TEC Current	$I_t$	1.5	A

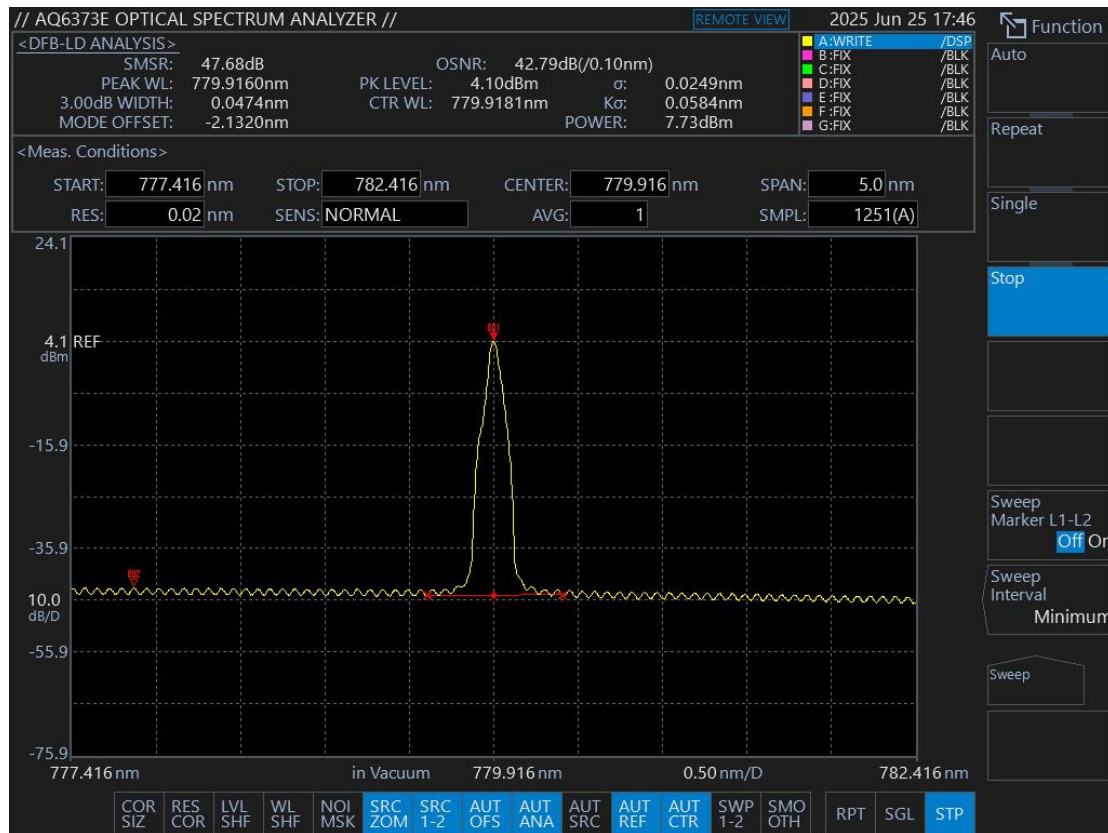
## Pin definition



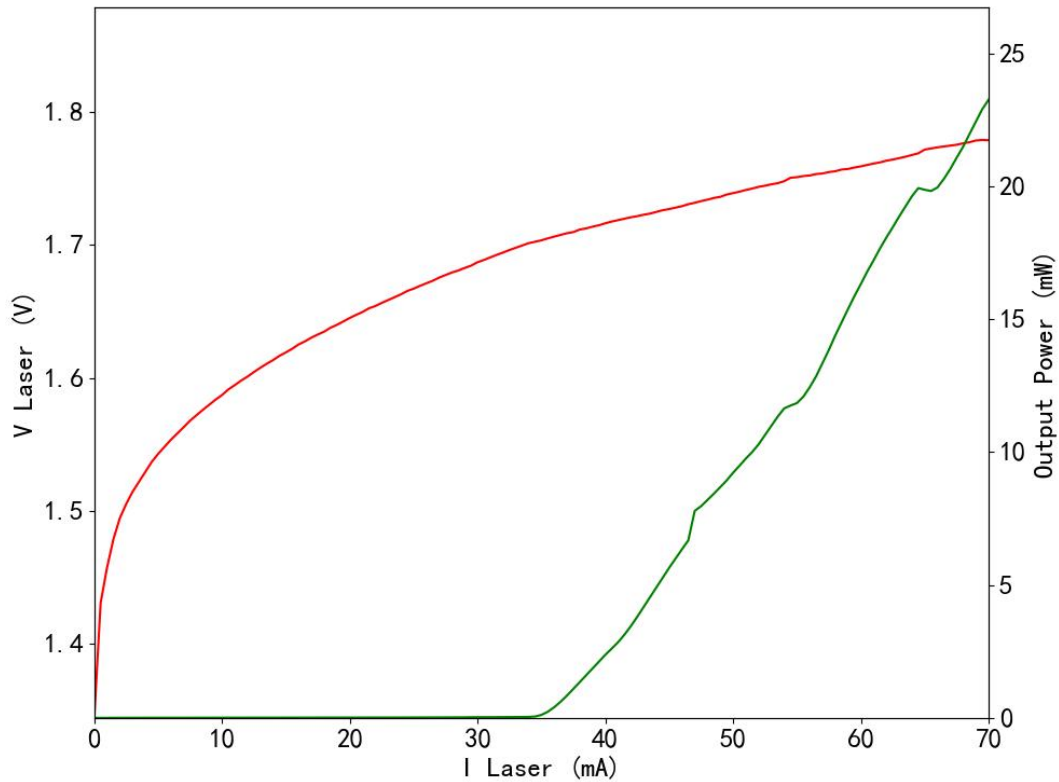
None PZT Built inside			
NO	Parameter	NO	Parameter
1	Cooler anode+	8	NC
2	Thermistor	9	NC
3	PD anode-	10	LD anode+
4	PD cathode+	11	LD cathode-
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler cathode-



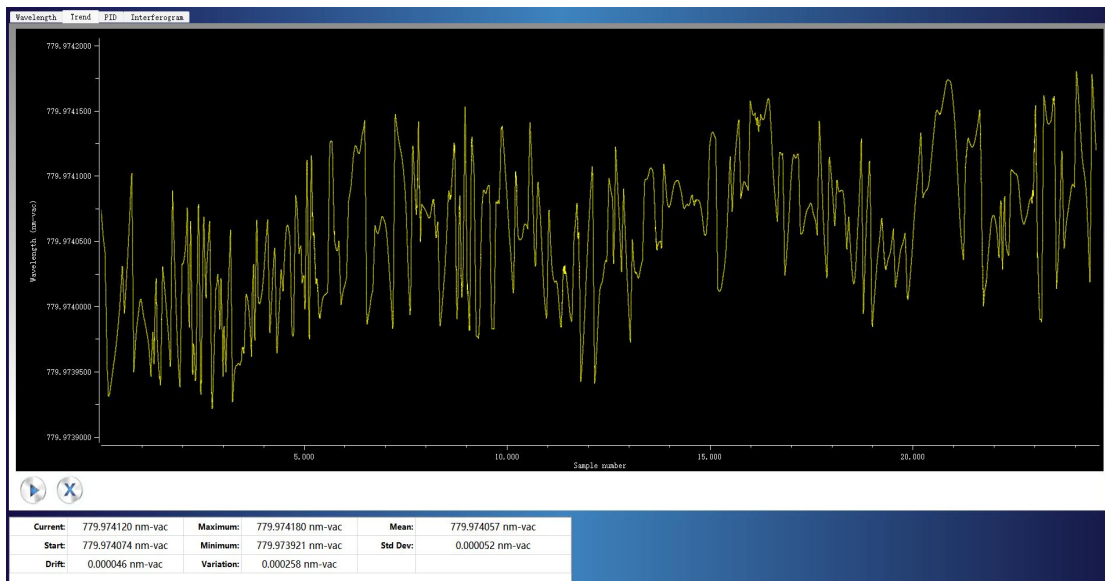
## Spectrum



## L-I-V Curve

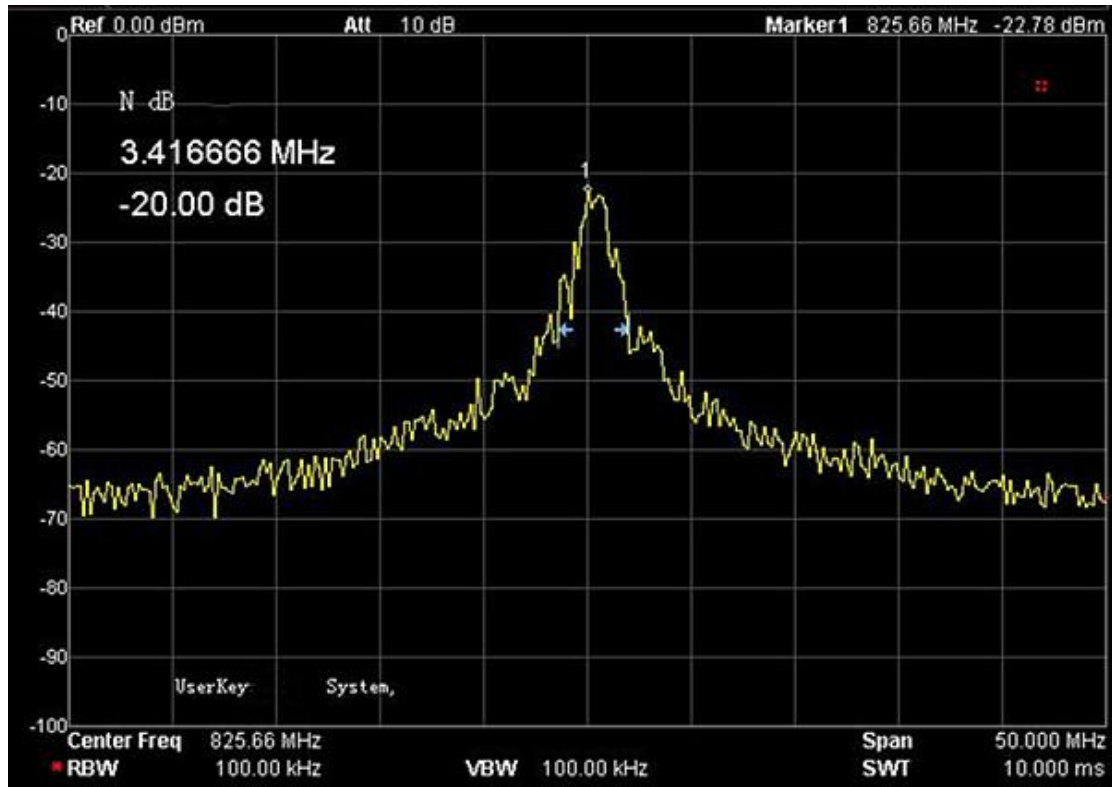


## Wavelength Stability Measurement





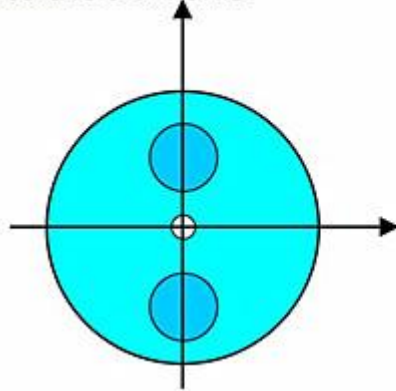
## Linewidth Test Result



## Fiber Pigtail Specifications

Parameters	Description
Fiber Type	HI780/PM780fiber
Jacket Type	900μm loose tube
Pigtail Length	1.0±0.1m
Connector Type	FC/APC
PM fiber Connector Orientation	Please see the right figure

Polarized light aligned  
to the slow axis



Polarized light aligned  
to the fast axis

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