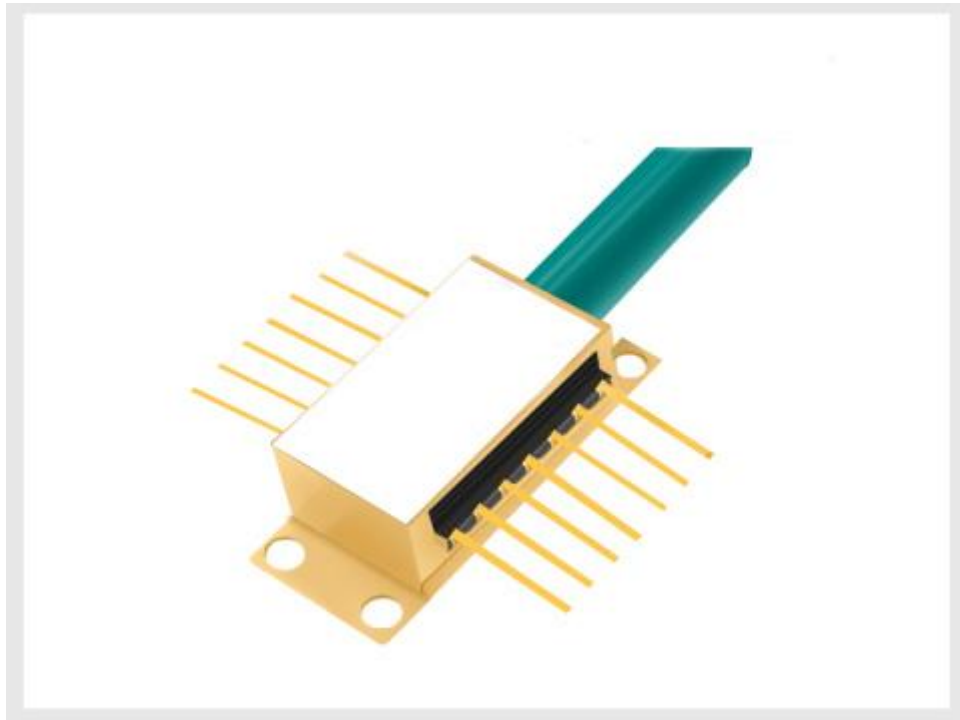


1550nm PM Ultra-Narrow Linewidth Single-Frequency Laser Diode



● Product Description

The 1550 nm ultra-narrow linewidth single-frequency laser is a high-performance semiconductor laser that integrates silicon photonic chip technology, precise optical path design, and advanced packaging processes.

● Product features

Central wavelength 1550nm; Optical output 10mW; Narrow linewidth <5KHz; with TEC; Optical Isolation 50dB; Pigtail Length $1.2 \pm 0.1\text{m}$; PMF; FC/APC

● Part Number

MP-U-NL-1550-A-A81-PA

● Application area

LiDAR | Coherent detection | Fiber optics sensing | Biomedical photonics |
Scientific research equipment | 3D mapping

● Core parameters

Wavelength	Output Power	Linewidth
1550nm	10mW	5kHz

● General Parameters

Limit parameter

During use, the environmental conditions and parameter settings should not exceed the following limit values; otherwise, it may lead to poor performance of the device, shorten the product life, or cause damage to the device. Any product problems caused by this are not covered by the warranty.

Specification	Symbol	Condition	Min.	Typ.	Max.	Unit
Storage Temperature	TS		-40		85	°C
LD forward voltage	VLD			1.6	1.8	V
LD forward current	ILD				500	mA
TEC current	ITEC				1.5	A
TEC voltage	VTEC				3	V

Optical and electrical parameters (TLD=25°C)

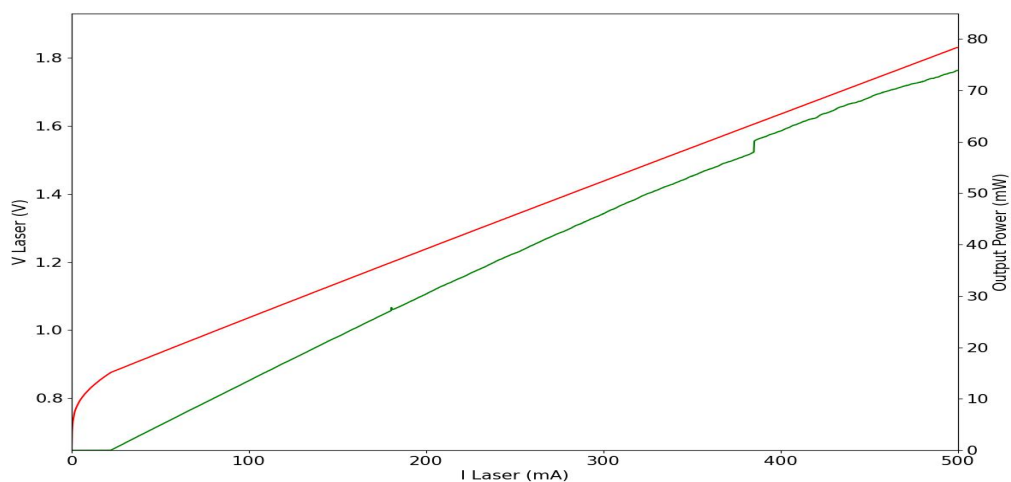
Specification	Symbol	Condition	Min.	Typ.	Max.	Unit
Threshold Current	Ith	CW		35		mA
Central Wavelength	λ_C		1530	1550.12	1565	nm
Fiber optical power	Pf	CW		10		mW
Lorentz line width *	FWHM	CW			5	kHz
Light Noise	PhN	light noise@10Hz		7E+05		Hz rms ² /Hz
		light noise@200Hz		6E+03		Hz rms ² /Hz
Relative Intensity Noise	RIN	$\geq 1\text{kHz}$			-140	dB/Hz

Side Mode Suppression Ratio	SMSR	CW		50		dB
Polarization extinction ratio	PER	CW	20			dB
Optical isolation ratio	ISO			50		dB
TEC set temperature	TTEC	CW	15		45	°C
Operating Temperature	To		-20		70	°C
Operating Humidity	%		5		85	%

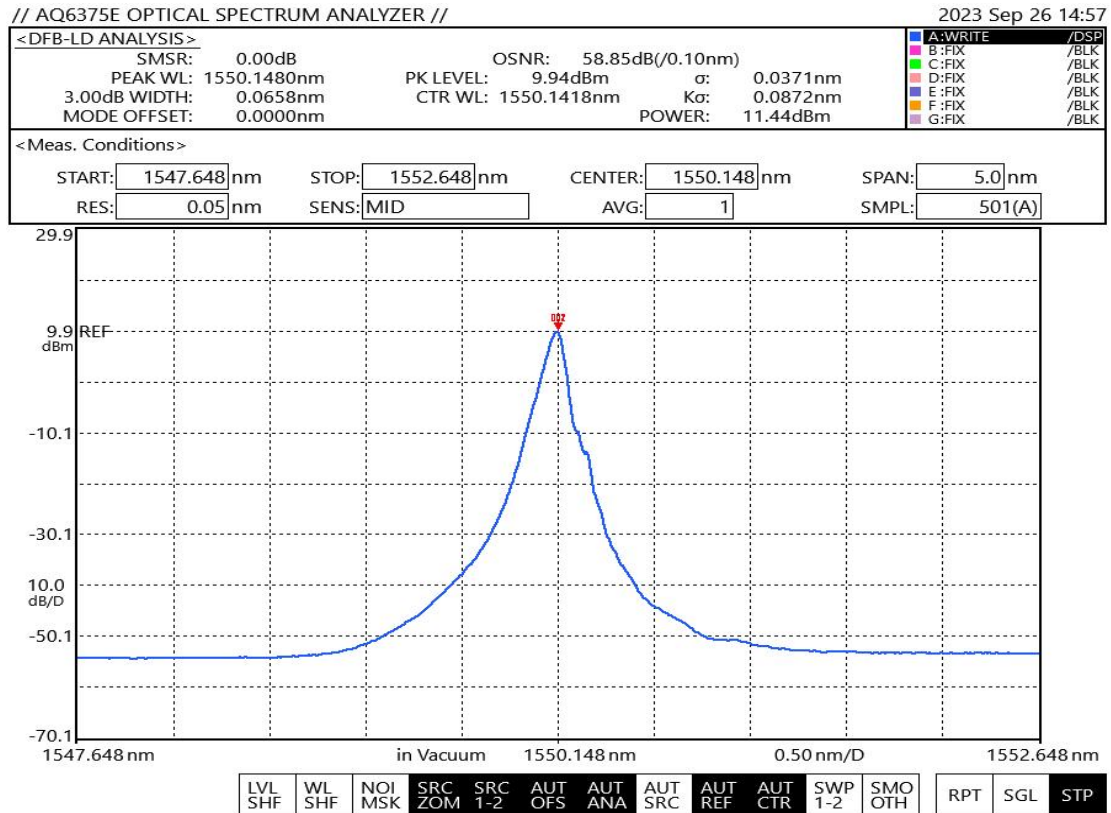
***Determination of Lorentz line width by self-heterodyne method with time**

delay

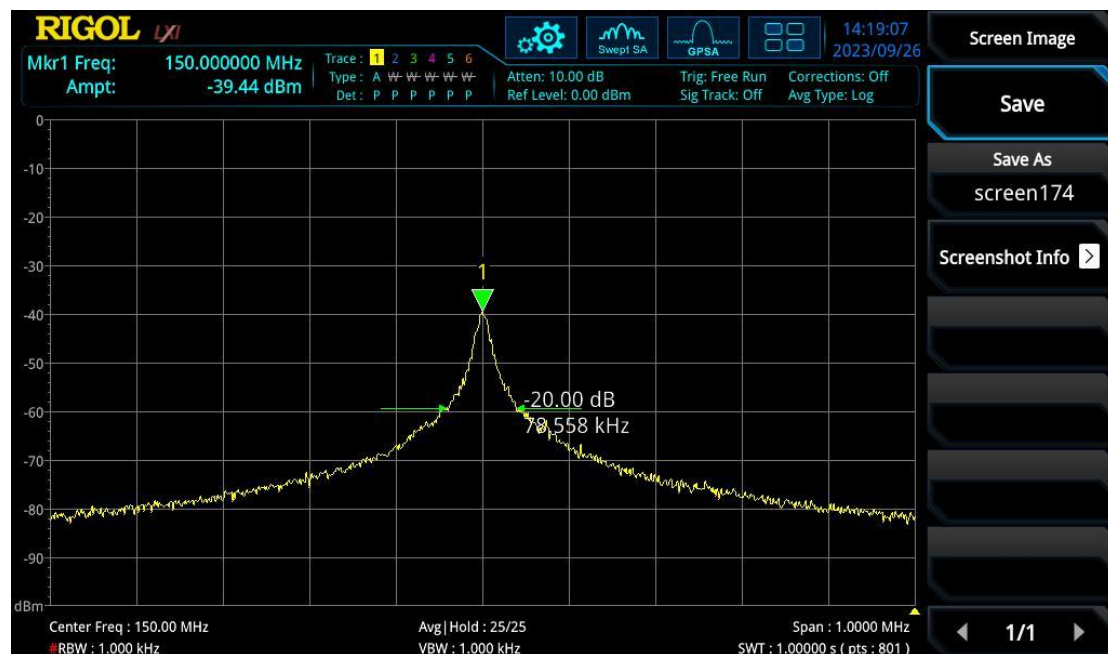
L-I-V Curve



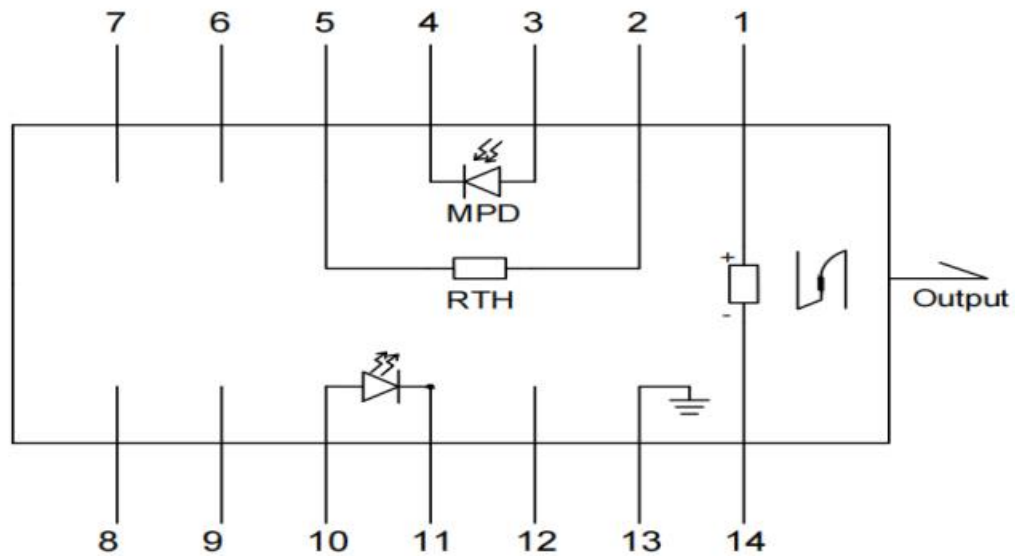
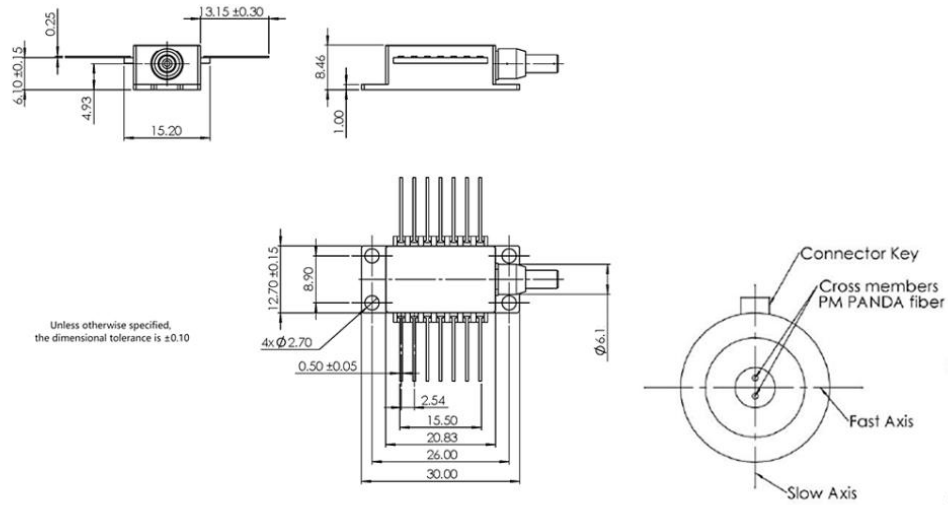
Optical Spectrum data



Typical Lorentz linewidth (<5kHz)



Dimensions and Pin definitions



Pin	Function	Pin	Function
1	TEC +	8	NC
2	Thermistors	9	NC
3	PD -	10	LD+
4	PD +	11	LD-
5	Thermistors	12	NC
6	NC	13	Case
7	NC	14	TEC -

Pigtail and connector definition

No.	Item	Parameter	Unit	Note
1	Pigtail Type	Panda type PMF $\phi 0.9\text{mm}$ red		SMF/PMF Optional
2	Pigtail Length	1200 ± 10	mm	
3	Connector Type	FC/APC		

Optional Configurations