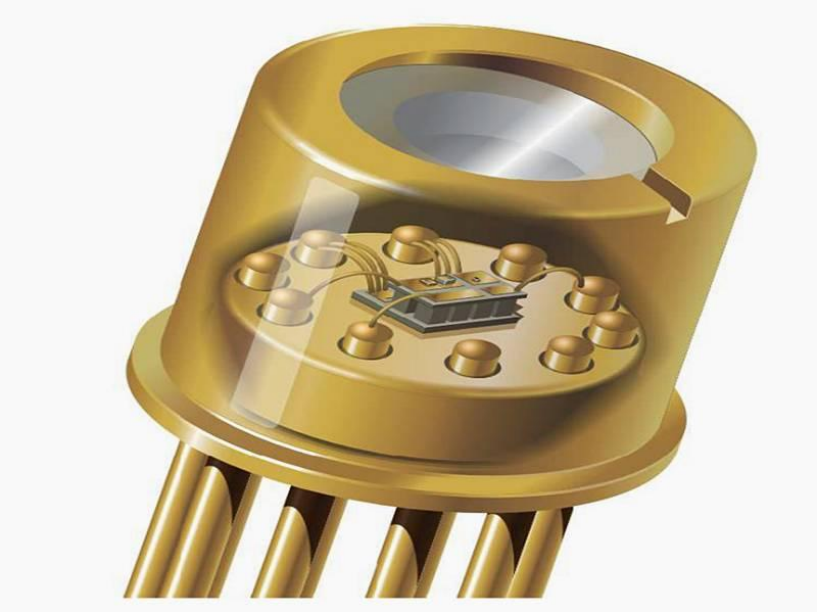
1512nm High-Power SM DFB Laser (10mW, TO39 Package, NH3 Detection)



Product Description

With optimized optical characteristics, the 1512nm single-mode DFB laser is an ideal choice for high-demand sensor system applications. The innovative chip design suppresses high-order longitudinal and transverse modes while ensuring linear polarization stability. The laser offers high output power, narrow linewidth, and excellent consistency, making it highly favored by domestic research clients. Currently, we have 1512nm DFB lasers in stock

for TDLAS oxygen detection, 795nm VCSELs for Rubidium atomic clock experiments, and 852nm VCSELs for Cesium atomic cooling.

Product features

Ultra-High Output Power、 Narrow Linewidth、 Internal TEC and Thermistor、 2nm TEC Adjustability

Part Number

MP-DFB-1512-10-A81-TO39

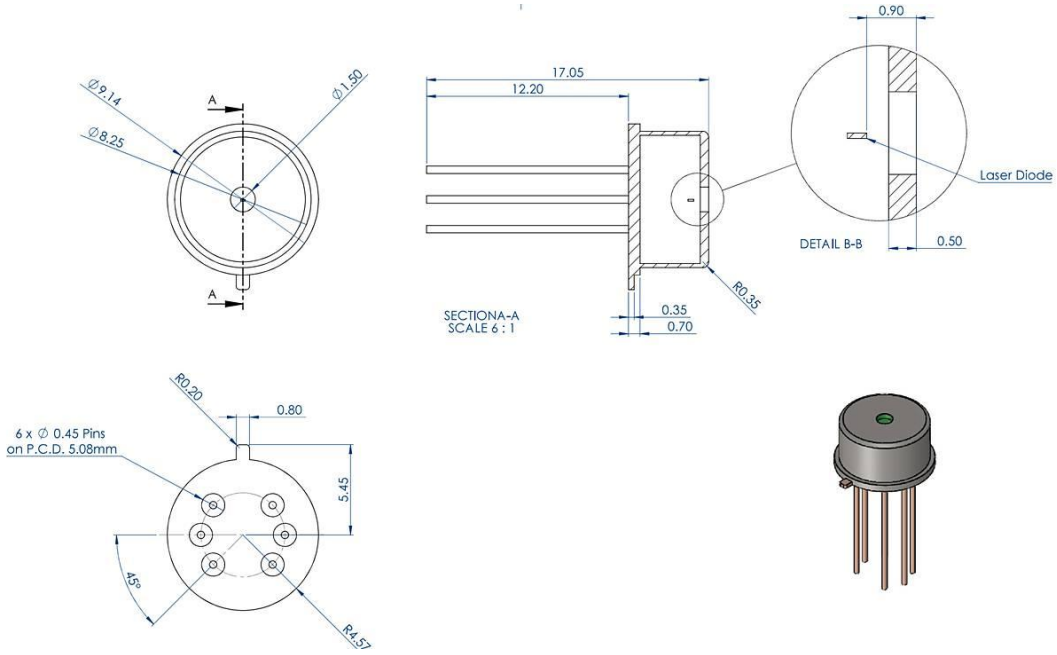
Application area

TDLAS Oxygen Analysis and Detection、 Optical Coherence Experiment

Core parameters

Wavelength	Output Power	Package
1512nm	10mW	TO39

Dimension Drawing



General Parameters

Descriptions

Parameter	Symbol	Min	Typical	Max	Unit	Remarks
Incident Wavelength	λ_R	1512	1512.5	1513	nm	T=20° C, I_{TEC}=0, P_{OP}=35mw
Threshold Current	I_{TH}		40		mA	T=20°C
Output Power	P_{opt}	10	20	30	mW	T=0…50°C
Threshold Voltage	U_{TH}		1.80		V	
Laser Current	I_{OP}			130	mA	P_{opt}=35mw
Laser Voltage	U_{OP}		2.0		V	P_{opt}=35mw

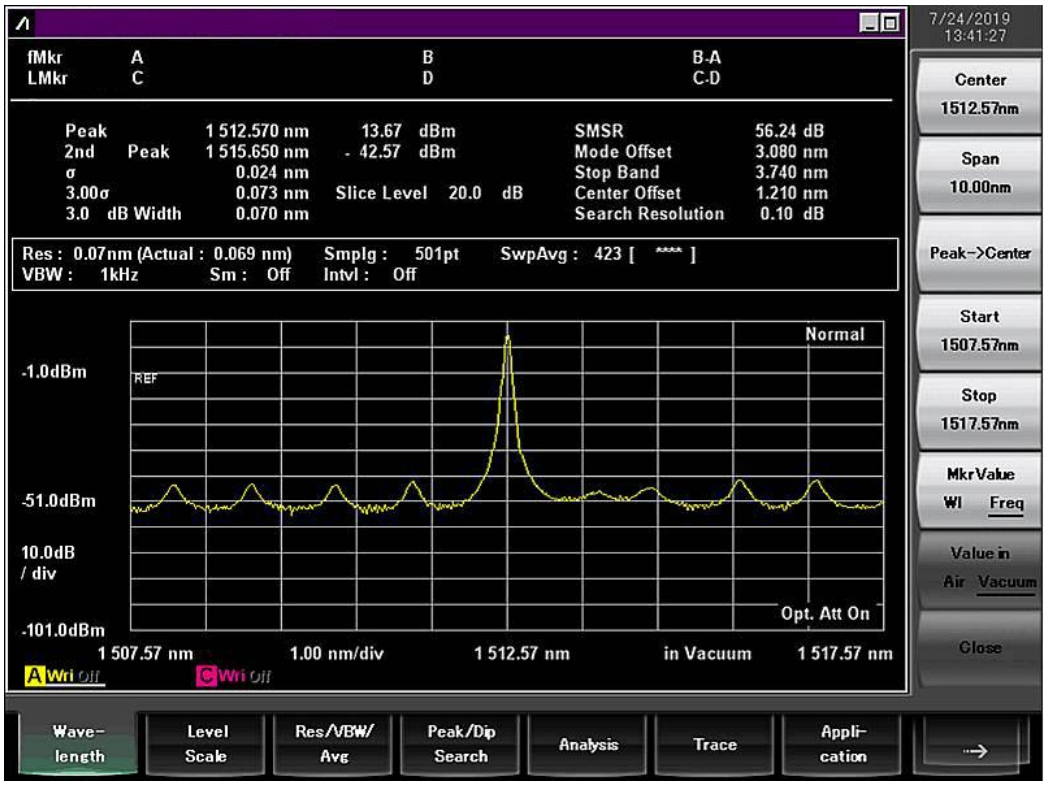
Electro-Optic Conversion Efficiency	η_{WP}		12		%	P_{opt}=20 mw
Slope Efficiency	η_s		0.74		W/A	T=20°C
3dB Modulation Bandwidth	v3dB		3		MHz	P_{opt} = 20mW (due to ESD protection diode)
Relative Intensity Noise	RIN		-130	-120	dB/Hz	P_{opt}=0.3 mW@1 GHz
Wavelength Tuning Current			0.01		nm/mA	
Wavelength Tuning Temperature			0.1		nm/deg	
Thermal Resistance	$R_{thermal}$	3		5	K/mW	
Side Mode Suppression		30			dB	
Beam Divergence	θ	10		25	°	P_{opt} = 35mW, Full 1/e ^{2} Bandwidth
Spectral Bandwidth	Δv		3		MHz	P_{opt}=35 mw
TEC Current	I_{TEC}			1000	mA	Requires appropriate heatsink
NTC Thermistor Resistance		9.5	10.0	10.5	kΩ	T=25°C
NTC Temperature Dependency		10/exp[3892 • (1/298K-1/TOP)]			kΩ	

Absolute Maximum Ratings:

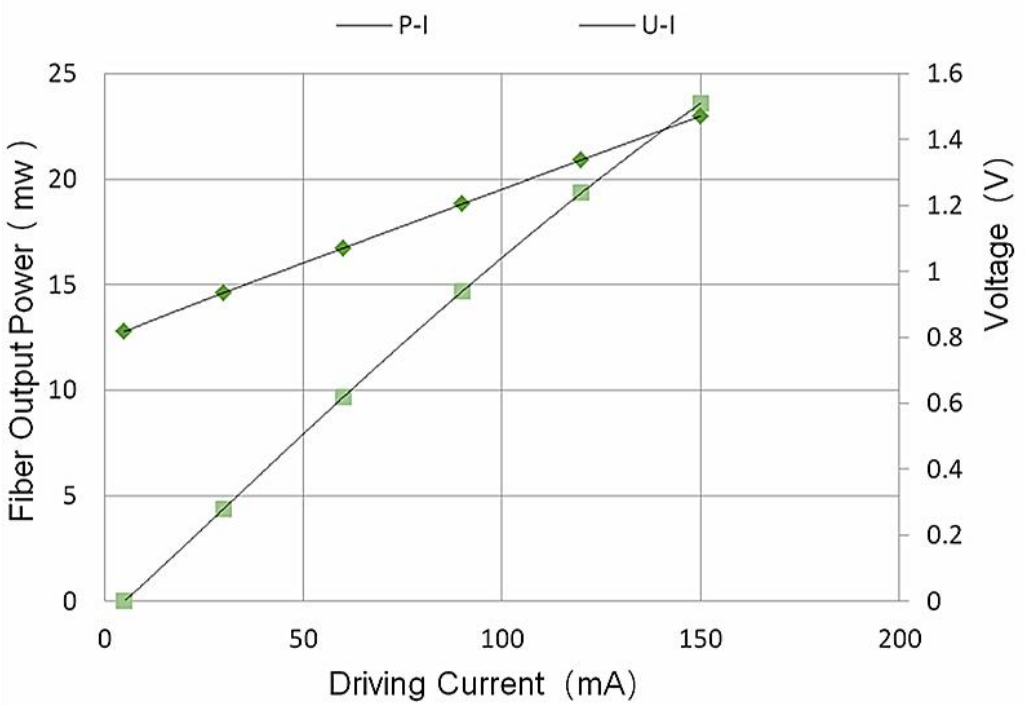
Storage Temperature	-40···125℃
Operating Temperature	-20···80℃
Power Dissipation	500mW
Forward Laser Current	130mA
Reverse Current	10 mA
Soldering Temperature	270°C

*(The TEC temperature must be below 70°C)

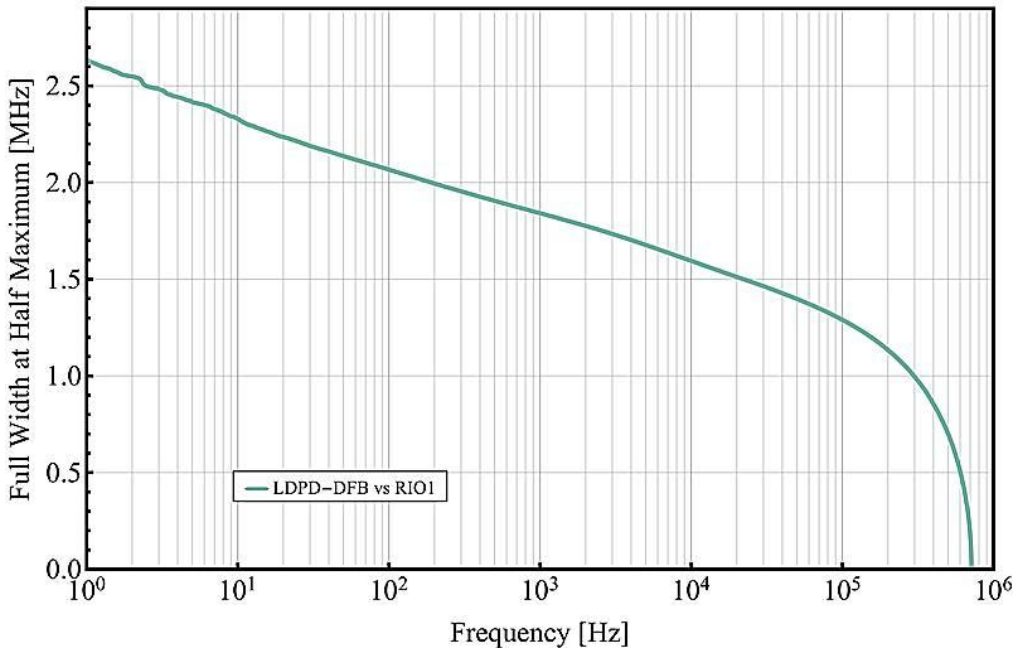
Spectrum:



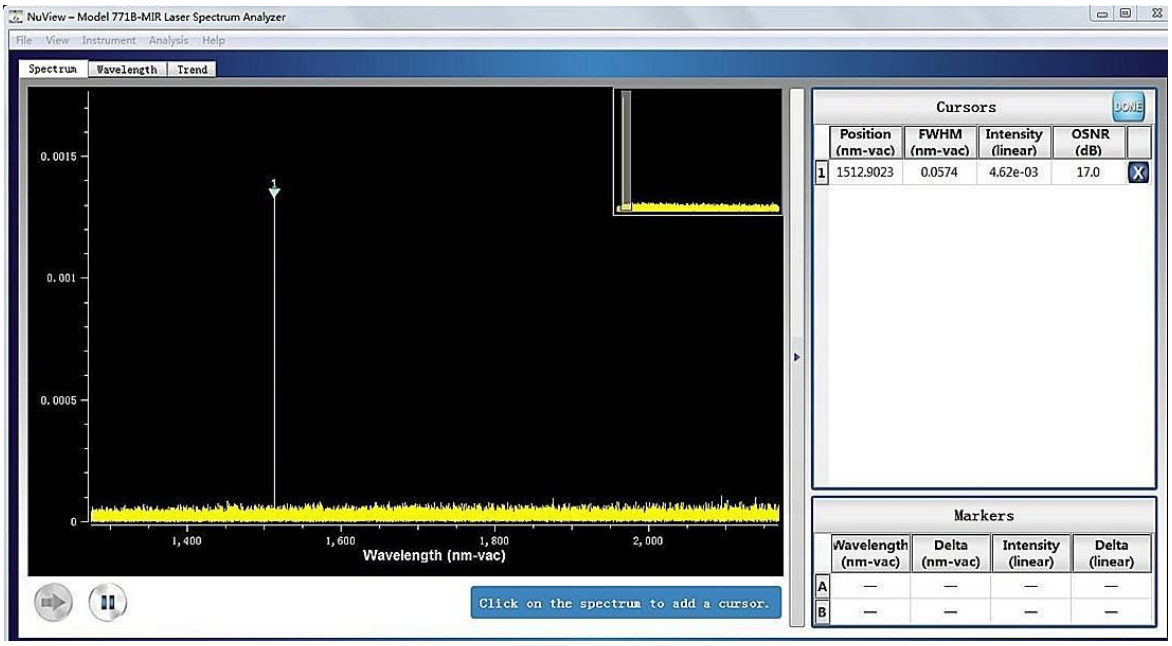
L-I Curve:



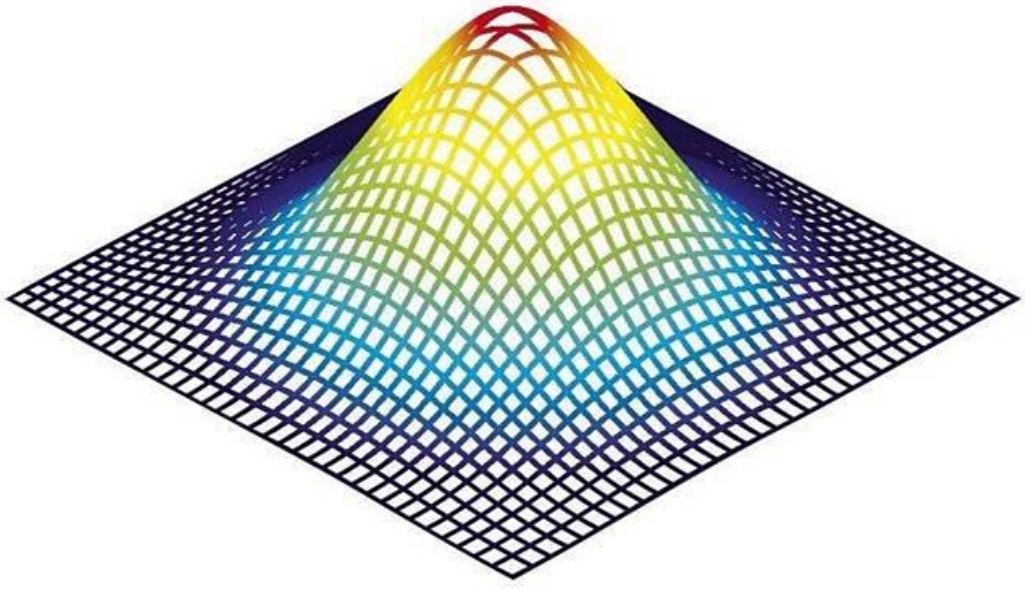
DFB Linewidth Testing Result:



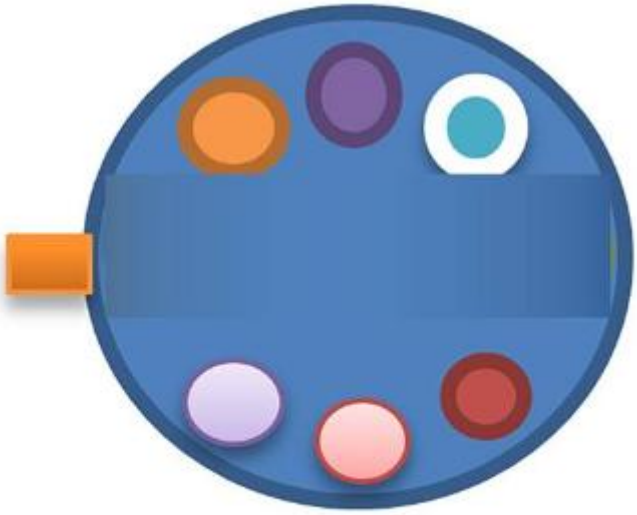
Central Wavelength:



Beam Quality Analysis



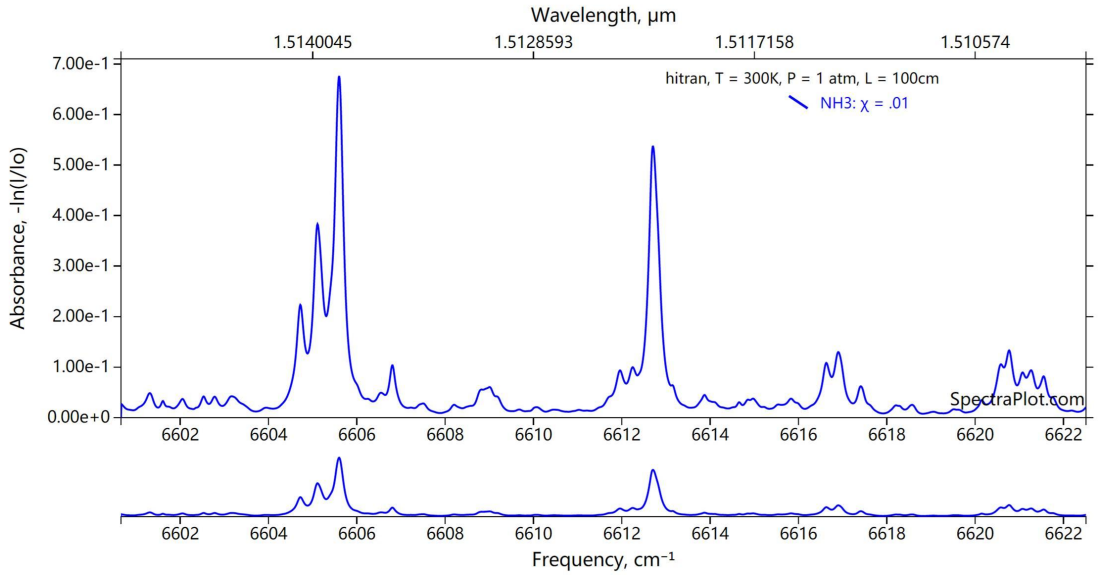
Dimensions



Bottom View

PN#	Pin Definition
1	Cooler+
2	LD+
3	Thermistor
4	Thermistor
5	LD-
6	Cooler-

Ammonia Absorption Spectrum



MP-DFB-□□□□-☆-A8▽-TO5

□□□□：wavelength

0760：760nm

1270：1270nm

1532：1532nm

1392：1392nm

1512：1512nm

1567: 1567nm

1653.7: 1653.7nm

☆：output power

A：10mW

B：20mW

▽：wavelength tolerance

1：±1nm

2：±2nm