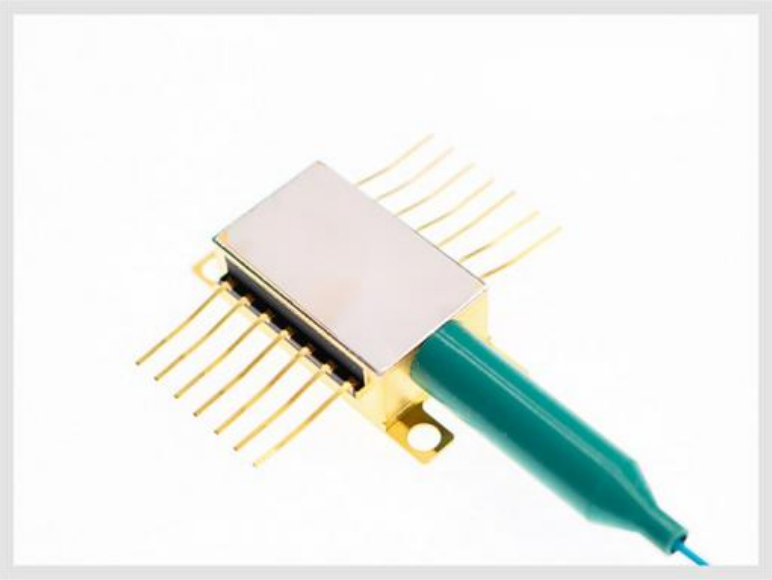
2004nm 3mW DFB Laser Diode for CO_2 Sensing



Product Description

2004nm DFB laser diode module is a cost-effective, high-coherence laser source. The DFB laser diode chip is packaged in the industry-standard 14-pin butterfly package with hermetic sealing. A Thermoelectric Cooler (TEC) and a built-in Photodiode (PD) are integrated inside the module. It features excellent Side Mode Suppression Ratio (SMSR) and high optical output power.

Product features

Narrow linewidth: < 2 MHz ; Excellent wavelength control and stability ; Industry-standard 14-pin butterfly package ; Mode-hop-free tuning ; Ultra-high reliability; Customizable wavelength available on request

Part Number

MP-DFB-2004-3-A81-14BF-SA

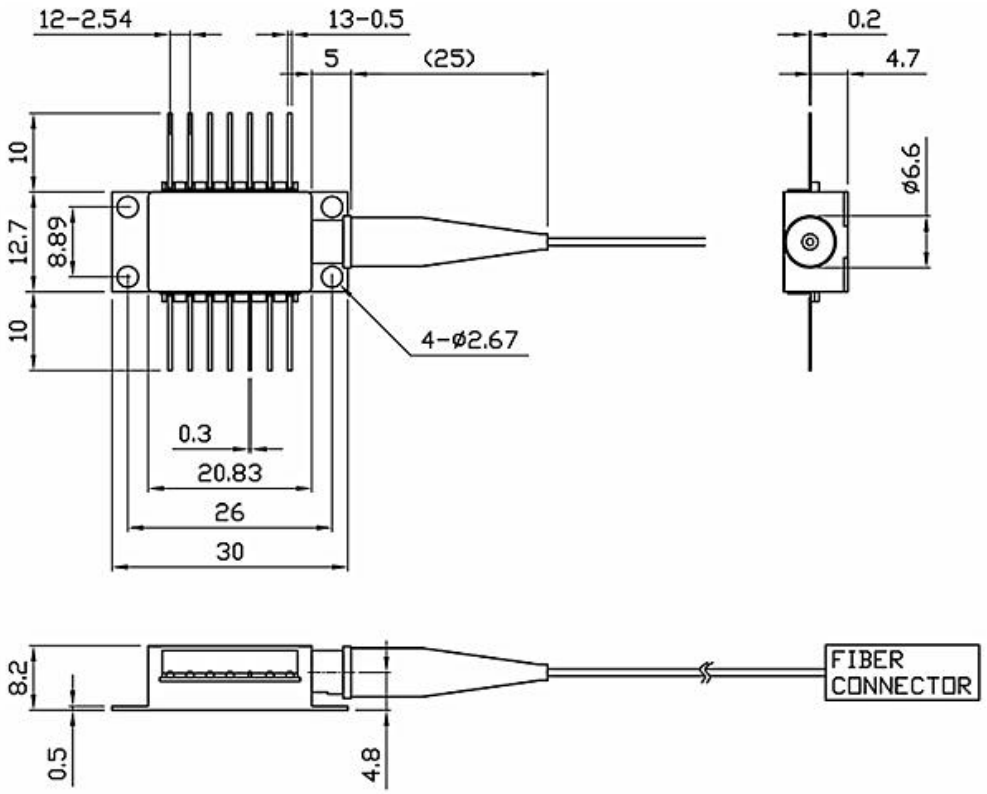
Application area

Tunable Diode Laser Absorption Spectroscopy (TDLAS) | Carbon Dioxide (CO_2) Monitoring

Core parameters

Central Wavelength	Output Power
2004nm	3mW

Dimension Drawing



General Parameters

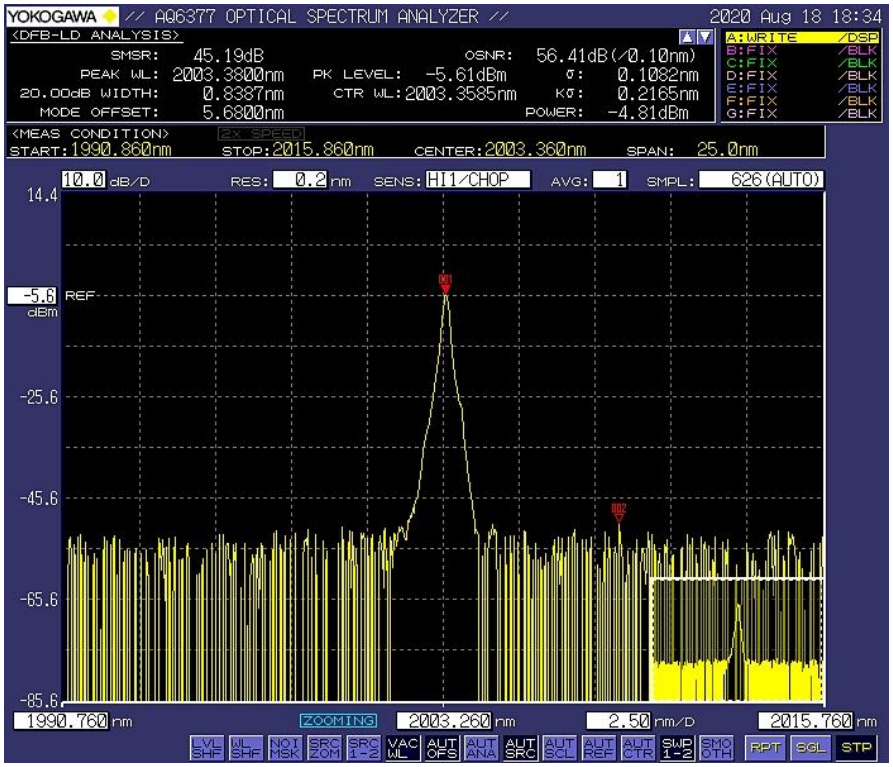
Detailed parameters

Electrical/Optical Properties (Substrate Temperature = 25°C, CW Bias unless otherwise noted)

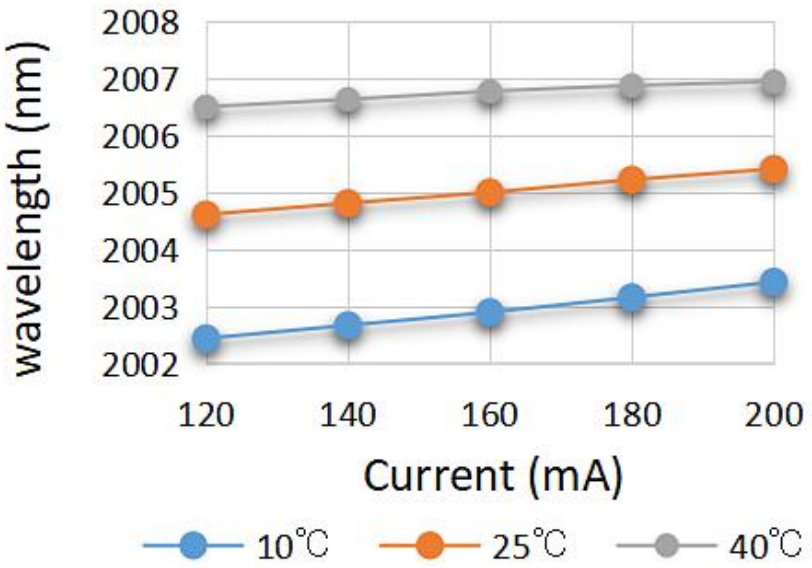
Parameters	symbol	Minimum	Typical values	Maximum	unit
Center wavelength	λ	2003	2004	2005	nm
Side Mode Suppression Ratio	SMSR	30	40		dB
Threshold current	Ith		20	30	mA
Operating current	Iop		180	200	mA

Fiber output power	Pf	2	3	8	mW
Quantum Efficiency	η	0.08	0.12		mW/mA
Current Tuning Coefficient	Δλ/ΔI		0.015		nm/mA
Temperature Tuning Coefficient	Δλ/ΔT		0.12		nm/K
Forward Voltage	Vf		1.3	2	V
Thermistor resistance value	RT	9.5	10	10.5	KΩ
Thermistor temperature coefficient			-4.4		%/℃
connectors	FC/APC				

Spectrum

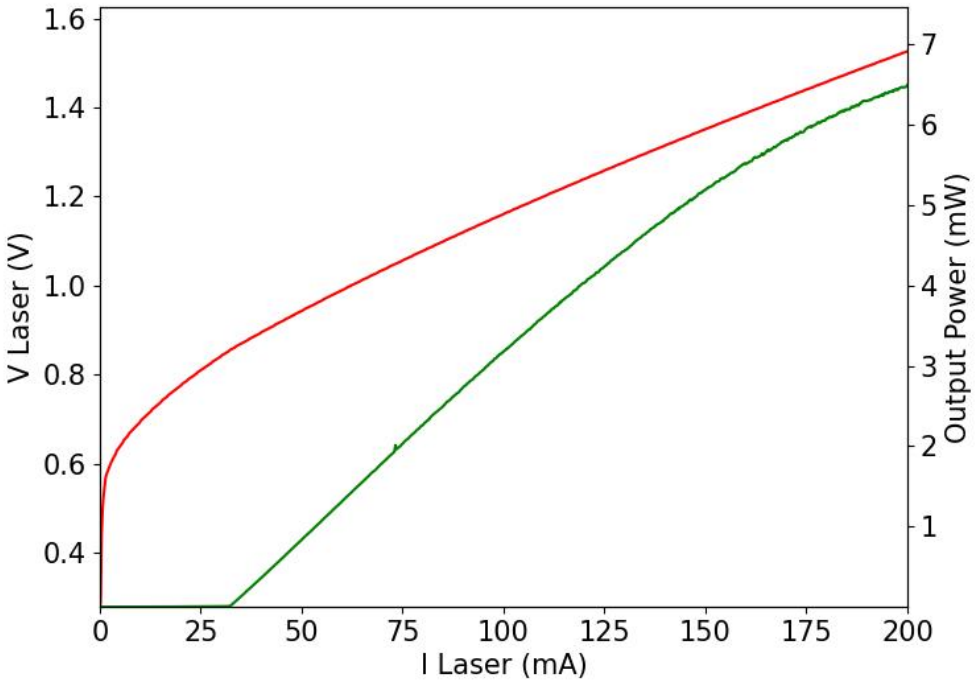


Tuning Characteristics

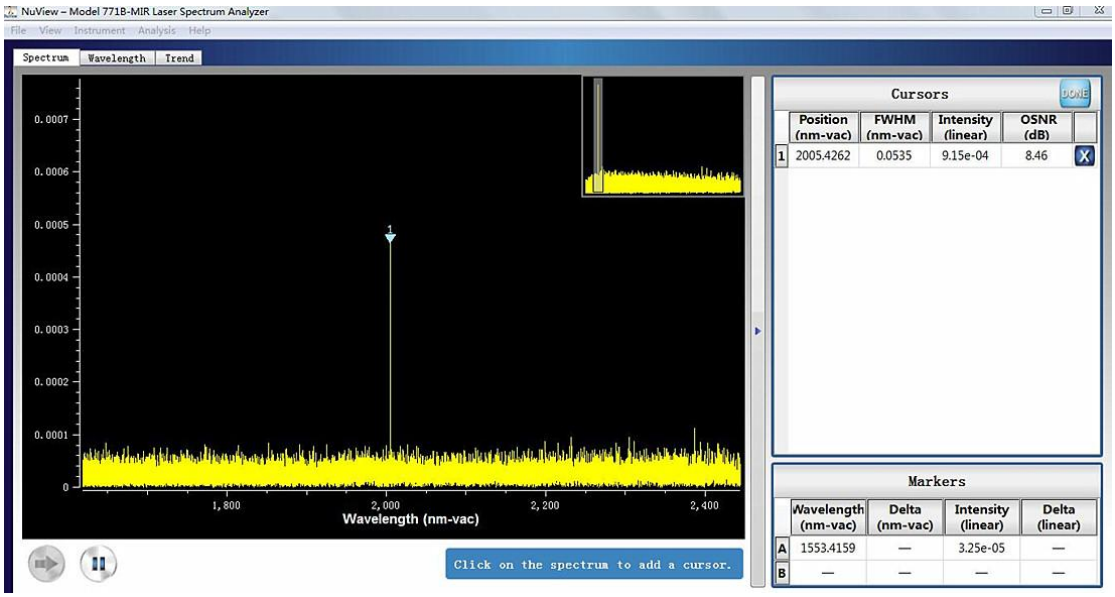


DFB Linewidth Test Result

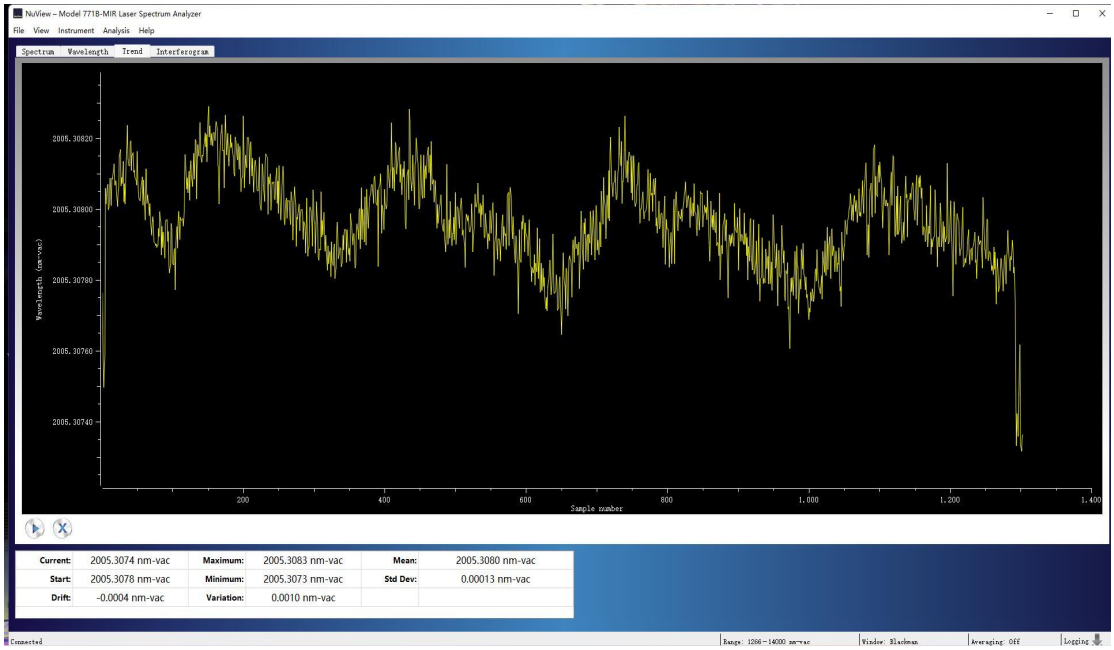
L-I Curve



Central Wavelength

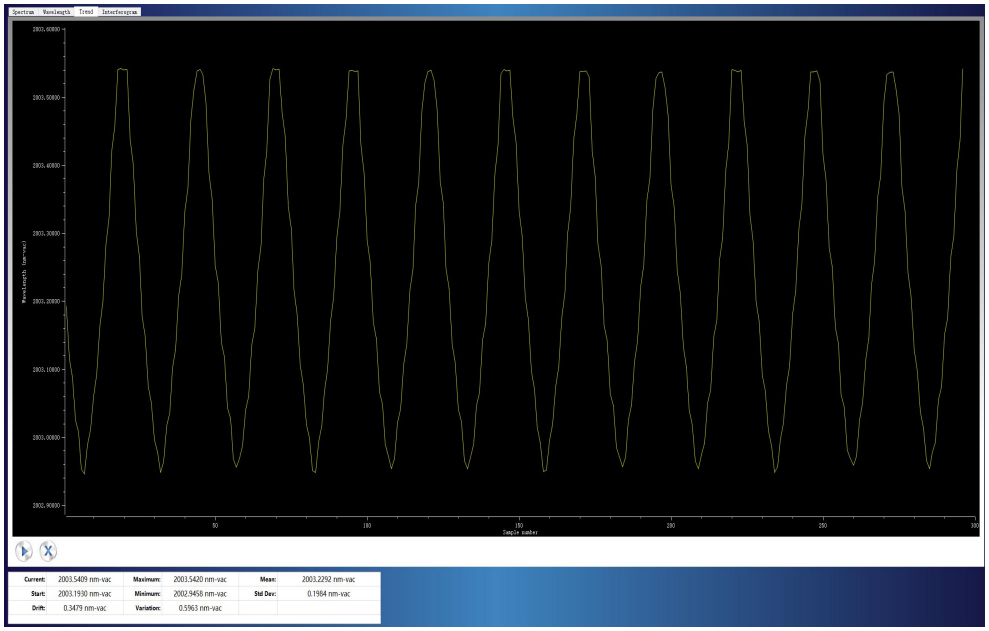


Wavelength Stability

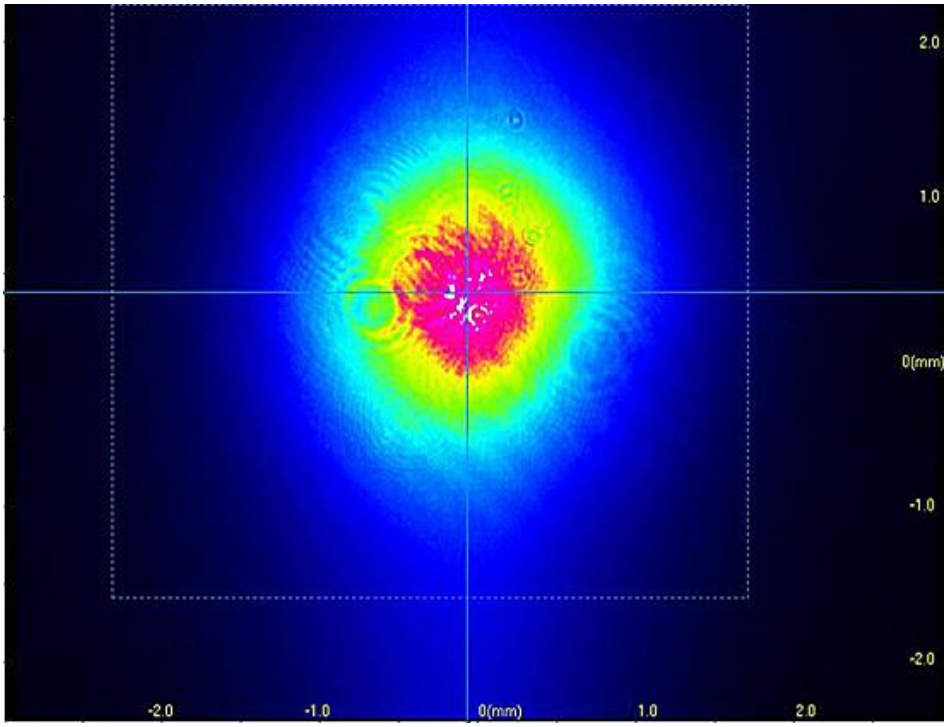


Power Stability

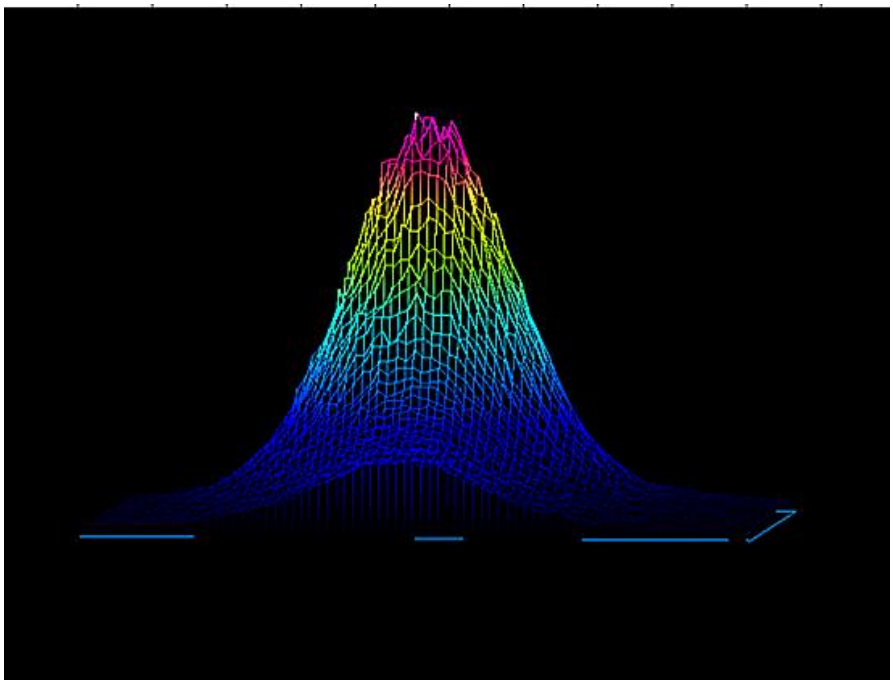
Mode-hop Tuning Range



Beam Quality

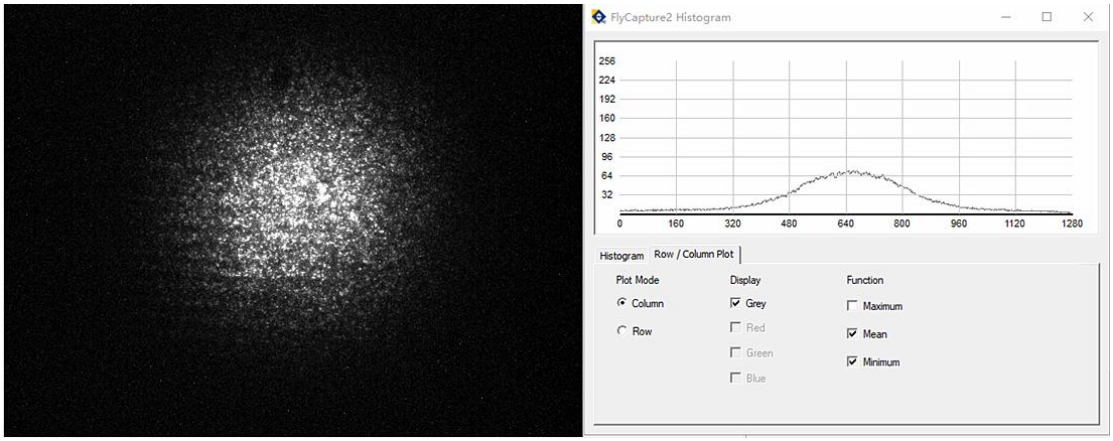


2D



3D

Camera Analysis



Pin Definition

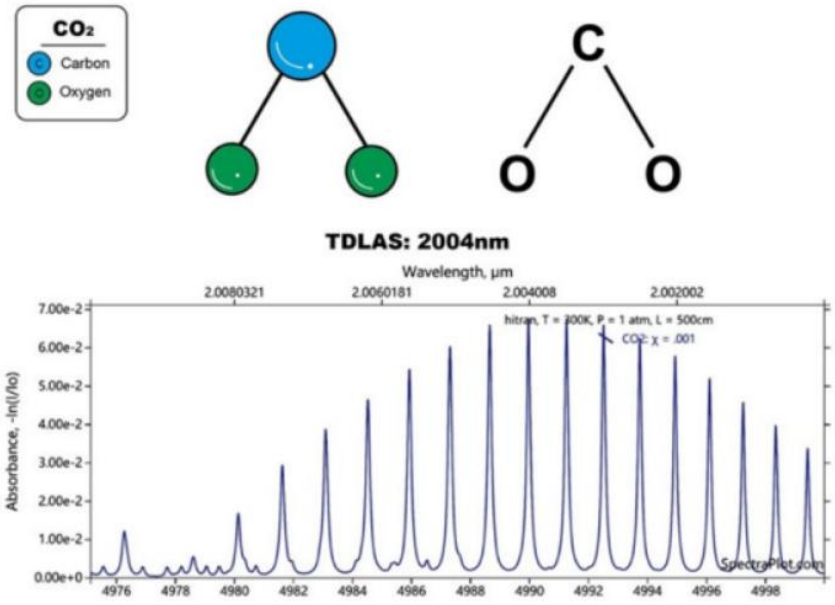
PIN#	Function	PIN#	Function
1	Thermistor	8	Case Ground

2	Thermistor	9	Case Ground
3	Laser Anode (-)	10	N/C
4	N/C	11	Laser Cathode (+)
5	N/C	12	Laser Anode (-)
6	TEC (+)	13	Laser Cathode (+)
7	TEC (-)	14	N/C

Absolute maximum rating

project	unit	Minimum	Typical values	Maximum
Shell temperature	℃	-5	25	70
Chip temperature	℃	+10	25	40
Operating current	mA	0	180	200
Forward voltage	V	0.8	1.2	1.8
Semiconductor Refrigerator (TEC) Current	A	-	-	1.2
Laser diode (LD) reverse voltage	V	-	-	2.0
Photodiode (PD) reverse voltage	V	-	-	20

CO_2



Order information

MP-DFB-□□□□-☆-A8▽-14BF-XX

□□□□: Wavelength

1512:1512nm

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1653.7: 1653.7nm

2004: 2004nm

☆: Output Power

A: 2mW

B: 5mW

▽: Wavelength Tolerance

1: ±1nm

2: ±2nm

XX: Fiber and Connector Type

SA=SMF-28E+ FC/APC

SP=SMF-28E+ FC/PC

PP=PM Fiber+ FC/PC

PA=PM Fiber+ FC/APC