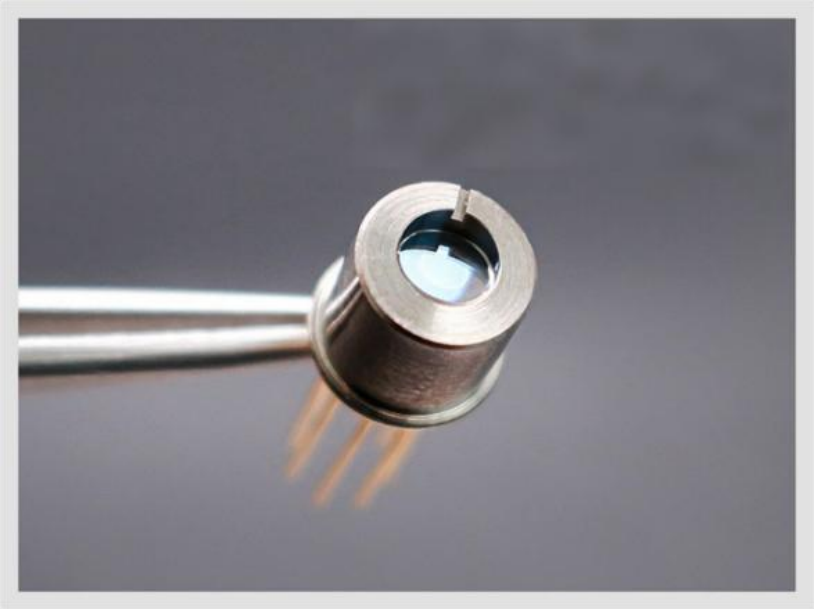
763nm 0.5mW SM VCSEL laser diode with TEC



Product Description

The 763 nm vertical-cavity surface-emitting laser is a GaAsP/AlGaAs single-mode semiconductor laser grown via Metal-Organic Vapor Phase Epitaxy (MOVPE) process. Adopting TO39 metal hermetic package, it realizes wavelength tuning by adjusting laser drive current and operating temperature. The package integrates a built-in Thermoelectric Cooler (TEC) and a monitoring Photodetector (PD).

Product features

Vertical-cavity surface-emitting laser architecture； Built-in Thermoelectric Cooler (TEC) and thermistor； Integrated Electro-Static Discharge (ESD)

protection function ; Ultra-narrow spectral linewidth 2 nm continuous wavelength tuning range enabled by TEC temperature control

Part Number

MP-VCS-763-0.5-A82-TO39-SM-TEC

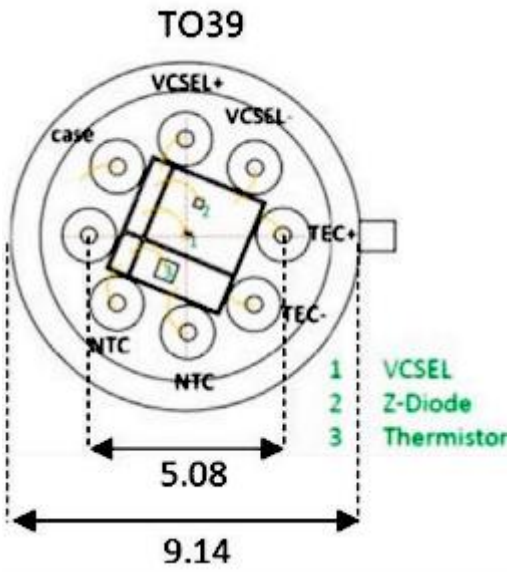
Application area

Tunable Diode Laser Absorption Spectroscopy (TDLAS) | Oxygen Monitoring

Core parameters

Center Wavelength
763nm

Dimension Drawing



General Parameters

Detailed parameters

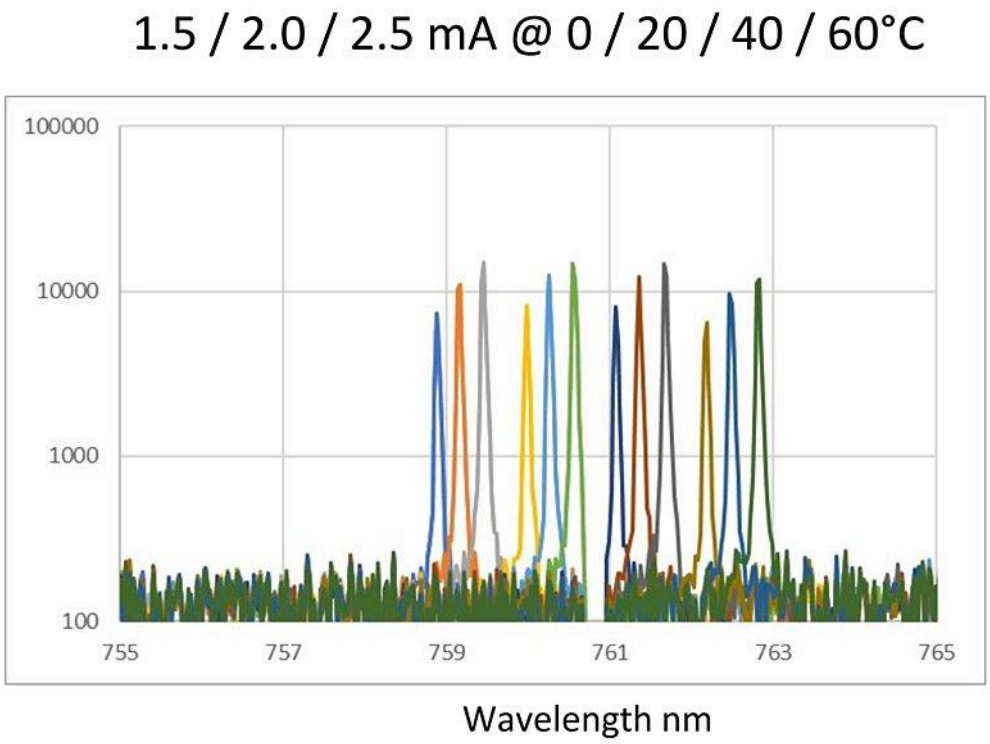
Laser specifications

Parameters	symbol	Minimum	Typical values	Maximum	unit	Note:
Emission wavelength	λR	Detail precision Wavelength Choose From Below Absorption Line				
Threshold current	ITH		0.5		mA	
Output power	Popt	0.25	0.5	0.7	mW	
Threshold voltage	UTH		1.8		V	
Drive current	IOP			2	mA	Popt = 0.3 mW
Laser voltage	UOP		2		V	Popt = 0.3 mW
Electro-optical conversion efficiency	ηWP		12		%	Popt = 0.3 mW
Slope efficiency	ηS		0.3		W/A	
Differential series resistors	RS		250		Ω	Popt = 0.3 mW
3dB bandwidth	V3dB	0.10			GHz	Popt = 0.3 mW Due to

						ESD protection diode
Relative intensity noise	RIN		-130	-120	dB/Hz	Popt = 0.3 mW @ 1 GHz
Current tuning wavelength range			0.6		nm/mA	
Temperature-tuned wavelength range			0.06		nm/K	
Thermal resistance (VCSEL chip).	Rthermal	3		5	K/mW	
Edge mold suppression ratio		25			dB	I = 2 mA
Beam divergence angle	θ	10		25	°	Popt = 0.3 mW, full width 1/e2
Spectral line width			100		MHz	Popt = 0.3 mW

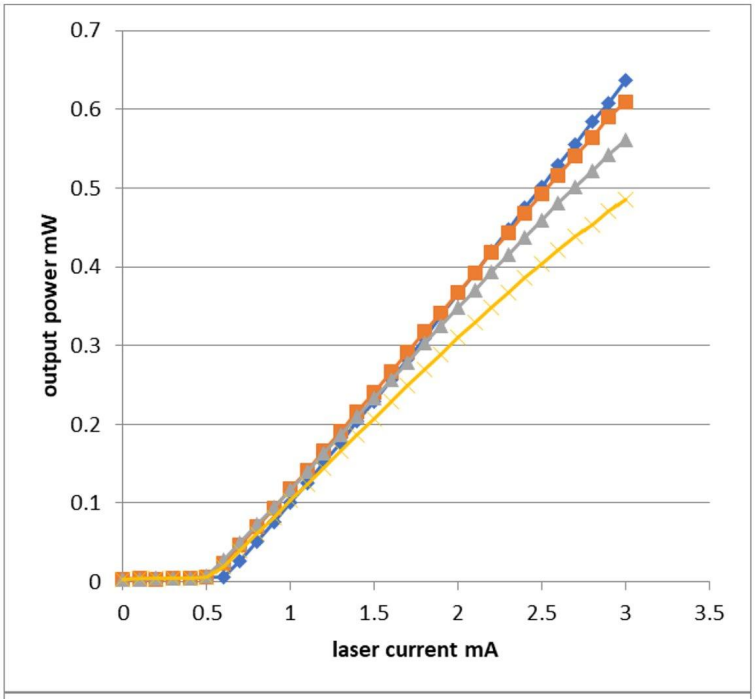
Thermoelectric chiller (TEC) characteristics	unit	Minimum	Typical values	Maximum	Note:
thermoelectric chiller current	mA	-150(Heating)		+300 (Cooling)	Proper Heart Sink Required
NTC thermistor resistance value	KΩ	9.5	10.0	10.5	T=25°C @10 KΩ
NTC Thermistor Resistance Value (Formula)	KΩ	10/exp{3892-(1/289K-I/TOP)}			

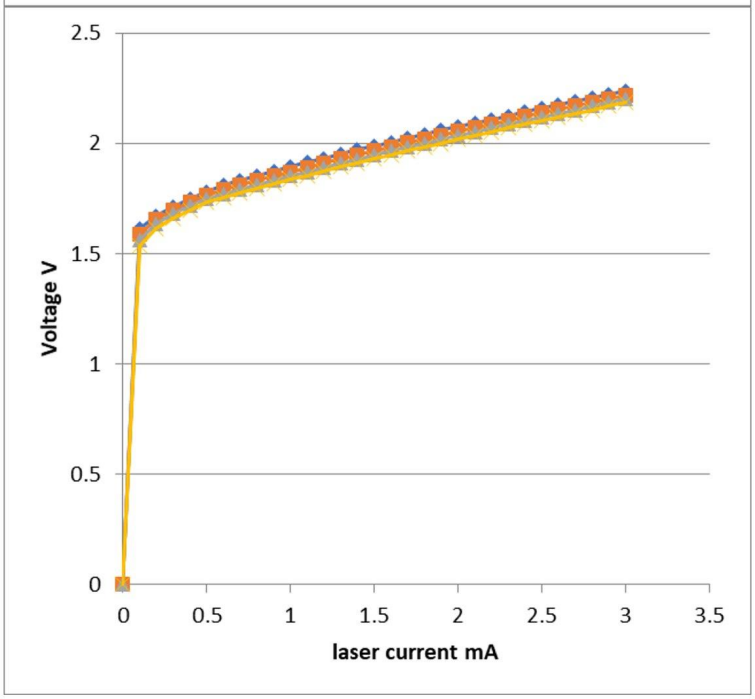
Spectrum



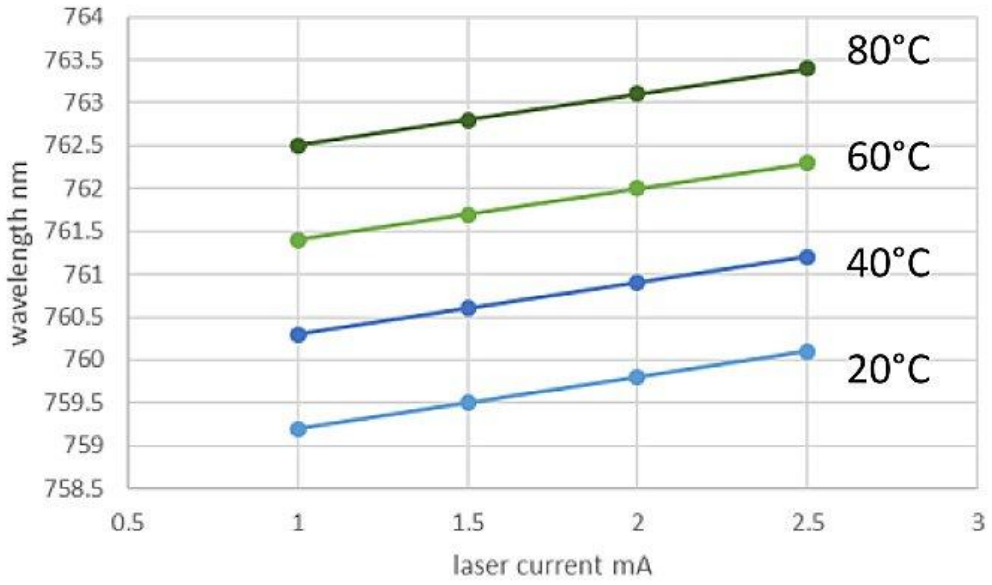
Optical Power - Current curve (at 25°C).

0 / 20 / 40 / 60°C

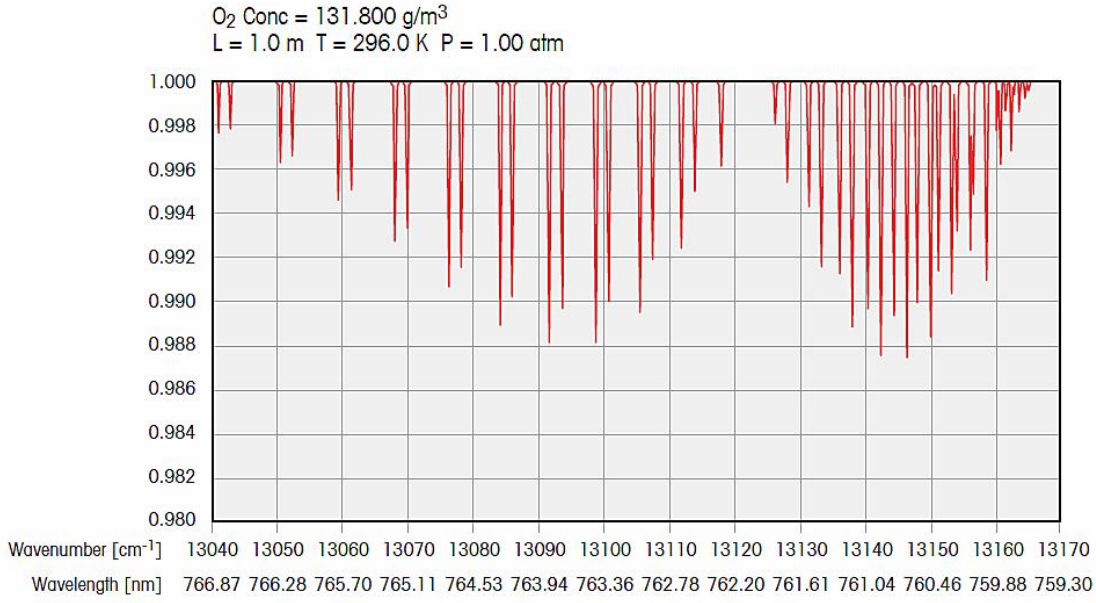




Wavelength tuning range for temperature and current regulation



Oxygen absorption line



Based on the oxygen absorption line data we provide, we offer the following high-precision wavelengths of vertical cavity surface emission lasers (VCSELs) for you to choose from:

Typical emission wavelength (TOP=20°C, Iop=2mA).				
Typical emission wavelength (TOP=20°C, Iop=2mA).			The final wavelength is tuned by TEC and current	
760nm absorption line	Minimum	Maximum		
Grade A	759.8	760.8	760.3	761.3
Grade C	759.0	760.1	760.1	761.3
763nm absorption line				
Grade A	762.5	763.5	763.0	764.0
Grade C	761.9	764.9	763.0	764.8

Absolute maximum rating

Item	unit	Minimum	Typical values	Maximum
Storage temperature	°C	-40	25	125
Chip temperature	°C	+10	25	40
Operating current	mA	0	2	3
Forward voltage	V	0.8	1.2	1.8
Thermoelectric chiller (TEC) current	A	-150	-	+300
Welding temperature*	V	100	130	270
Power consumption	V	-	-	5

Ordering information

MP-VCS-□□□□-☆-A8▽-TO39-XX

□□□□: Wavelength

0760: 760nm

0763: 763nm

Package: TO39

☆: TEC

0: Without TEC

1: With TEC

▽: Wavelength Tolerance

1: ±0.5nm

2: ±1.5nm

XX: Fiber and Connector Type

FS=Free Space