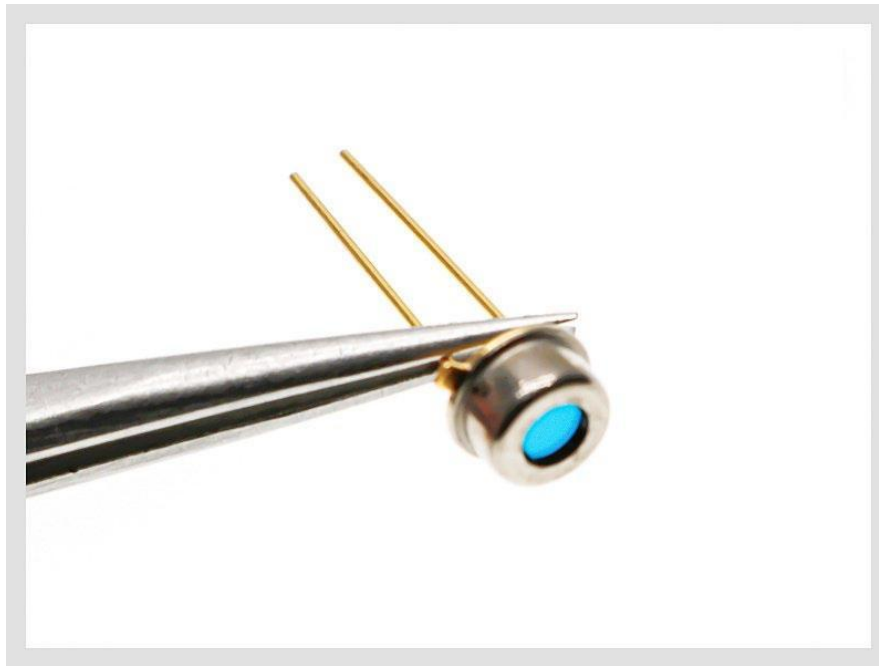


# 763nm 0.5mW SM VCSEL laser diode without TEC



## ● Product Description

The 763 nm vertical-cavity surface-emitting laser (VCSEL) is a vertically light-emitting laser fabricated from GaAsP/AlGaAs single-mode semiconductor laser chip grown via Metal-Organic Vapor Phase Epitaxy (MOVPE) process. Packaged in TO46 housing, 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). Specially designed for Tunable Diode Laser Absorption



Spectroscopy (TDLAS) applications, its narrow linewidth characteristic makes it an ideal choice for oxygen analyzers without TEC, combining excellent performance and low cost, suitable for the manufacturing of analytical instruments related to oxygen detection.

- **Product features**

100 MHz spectral bandwidth; Wavelength tunability; TO-46 window with anti-reflection (AR) coating; Optimized for oxygen sensing applications

- **Part Number**

MP-VCS-763-0.5-A82-TO46-SM

- **Application area**

TDLAS Oxygen Sensing | Fourier Transform Infrared Spectroscopy (FTIR)

- **Core parameters**

Center Wavelength
763nm



## ● General Parameters

Detailed parameters

Laser specifications

Condition: Die back of the chip temperature (TOP) of 20°C and operating current (I<sub>op</sub>) of 2.0mA unless otherwise stated (TOP is the back of the chip temperature, controlled by a thermoelectric cooler (TEC)).

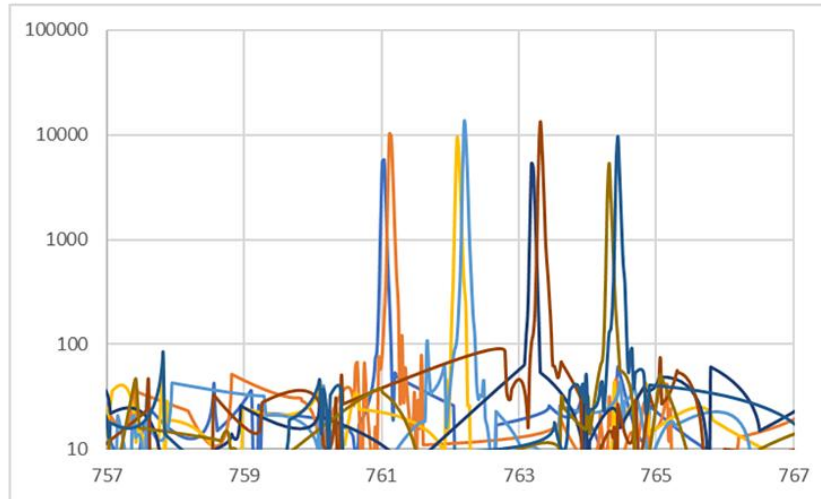
Parameters	symbol	Minimu m	Typical values	Maxim um	unit	Note:
Emission wavelength	$\lambda_R$	763nm				
Threshold current	ITH		0.5		mA	
Output power	Popt	0.25	0.5	0.75	mW	
Threshold voltage	UTH		1.8		V	
Drive current	IOP			2	mA	Popt = 0.3 mW
Laser voltage	UOP		2		V	Popt = 0.3 mW
Electro-optical conversion efficiency	$\eta_{WP}$		12		%	Popt = 0.3 mW
Slope efficiency	$\eta_S$		0.3		W/A	
Differential series resistors	RS		150		$\Omega$	Popt = 0.3 mW
3dB bandwidth	v3dB	0.10			GHz	Popt = 0.3 mW, Due to ESD



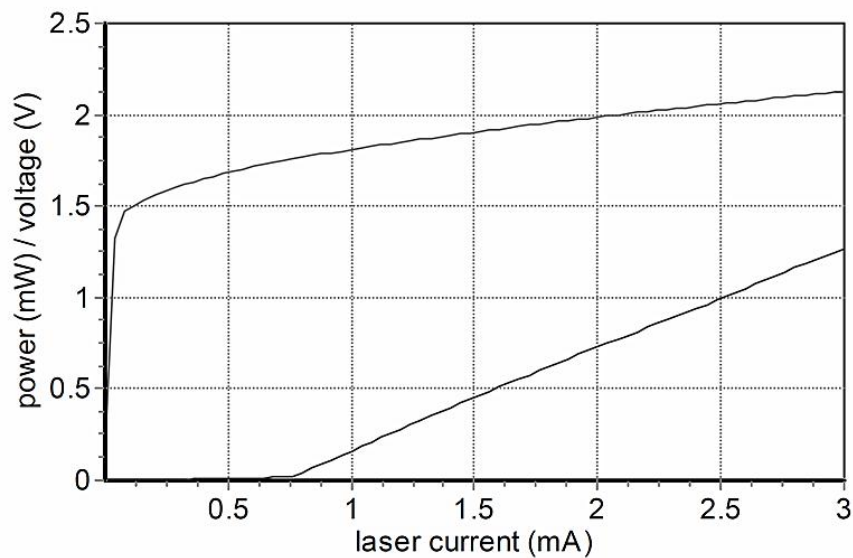
						protection diode
Relative intensity noise	RIN		-130	-120	dB/Hz	Popt = 0.3 mW @ 1 GHz
Current tuning wavelength range			0.6		nm/mA	
Thermal resistance (VCSEL chip).	Rthermal	3		5	K/mW	
Edge mold suppression ratio		25			dB	I = 2 mA
Beam divergence angle	$\theta$	10		25	$^{\circ}$	Popt = 0.3 mW, full width 1/e <sup>2</sup>
Spectral line width			100		MHz	Popt = 0.3 mW

## Spectrum

1.5 / 2.0 mA @ 0 / 20 / 40 / 60°C



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



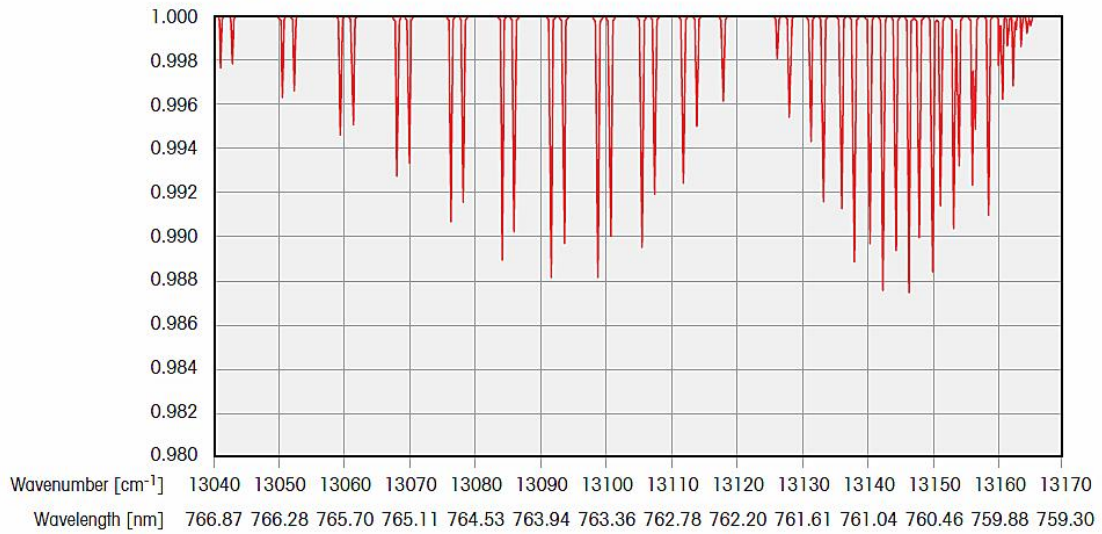
To ensure the performance of this vertical cavity surface emitting laser (VCSEL), we strongly recommend that its maximum operating current does not exceed

**2mA**

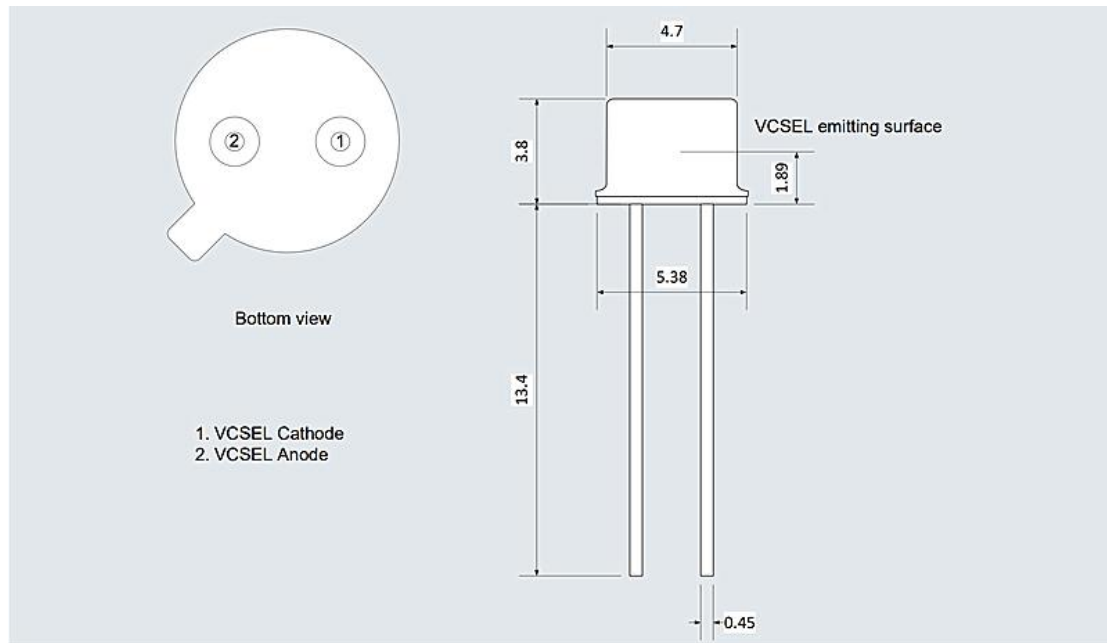


## Oxygen absorption line

O<sub>2</sub> Conc = 131.800 g/m<sup>3</sup>  
 L = 1.0 m T = 296.0 K P = 1.00 atm



## Dimensions and pin definitions





## Absolute maximum rating

project	unit	Minimum	Typical values	Maximum
Storage temperature	°C	-40	25	125
Chip temperature	°C	+10	25	40
Operating current	mA	0	2	2.5
Forward voltage	V	0.8	1.2	1.8
Welding temperature*	°C	100	130	270
Dissipate power	mw	-	-	5

## Ordering information

MP-VCS-□□□□-☆-A8▽-TO39-XX

□□□□: Wavelength

0760: 760nm

\*\*\*\*\*

1653.7: 1653.7nm

☆: TEC

0: Without TEC

1: With TEC

▽: Wavelength Tolerance

1: ±0.5nm

2: ±1.5nm