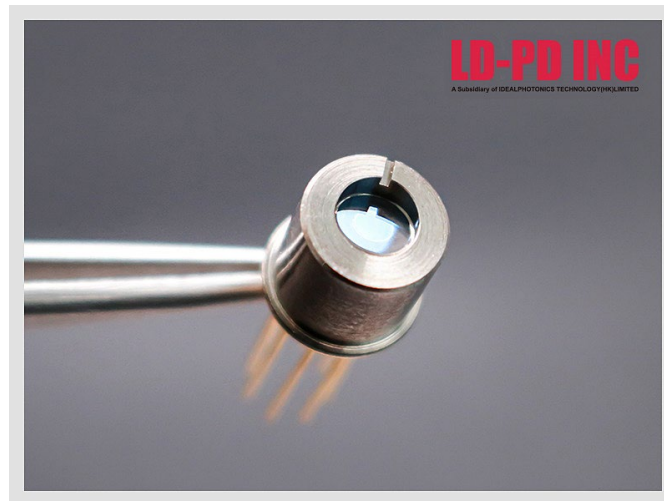


760nm/763nm SM VCSEL Laser diode for O₂ Sensing (TO39 Package)



Description:

The PL-VCSEL-1-A81 760nm VCSEL is a vertical emitting MOVPE grown GaAsP/AlGaAs Single Mode diode laser. The chips are mounted in TO39 can. Wavelength tuning can be achieved via laser current and temperature tuning. package with TEC and PD Built in. It is special designed for TDLAS Application. Good Narrow linewidth and wide tunability with TEC made it a great low cost choice for Analyzer measures oxygen manufacture.

Features:

- Vertical Cavity Surface-Emitting Laser
- Internal TEC and Thermistor, ESD protection
- Narrow linewidth
- 2nm tunability with TEC

Application:

- Tunable diode laser absorption spectroscopy
- Oxygen Monitoring

Laser Specifications:

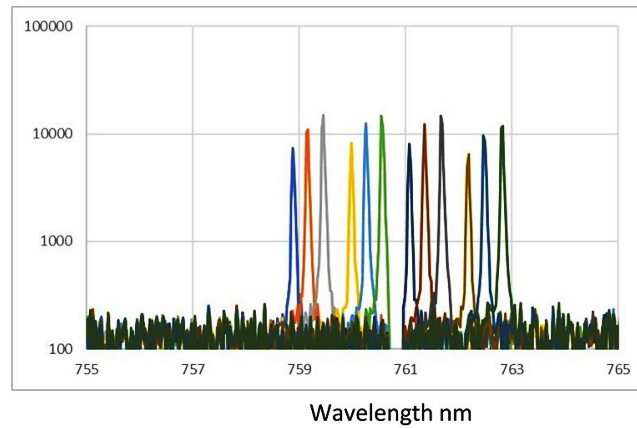
Condition: TO P = 20°C, IO P = 2.0 mA unless otherwise stated (TO P = chip backside temperature, controlled by the TEC)

Parameters	Symbol	Min	Typ	Max	Unit	Remark
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	
Driving Current	IOP			2	mA	Popt = 0.3 mW
Laser voltage	UOP		2		V	Popt = 0.3 mW
Electro optic conversion rate	η_{WP}		12		%	Popt = 0.3 mW
Slope efficiency	η_S		0.3		W/A	
Differential series resistance	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
Wavelength tuning over current			0.6		nm/mA	
Wavelength tuning over temperature			0.06		nm/K	
Thermal resistance (VCSEL chip)	Rthermal	3		5	K/mW	
Side mode supression		25			dB	I = 2 mA
Beam divergence	θ	10		25	$^\circ$	Popt = 0.3 mW, full width 1/e2
Spectral Width			100		MHz	Popt = 0.3 mW

Tec Characteristics	Unit	Min	Typ	Max	Remark
Tec Current	mA	-150(Heating)		+300 (Cooling)	Proper Heart Sink Required
NTC Thermistor Resistance	K Ω	9.5	10.0	10.5	T=25°C @10 K Ω
NTC Thermistor Resistance	K Ω	10/exp{3892-(1/289K-I/TOP)}			

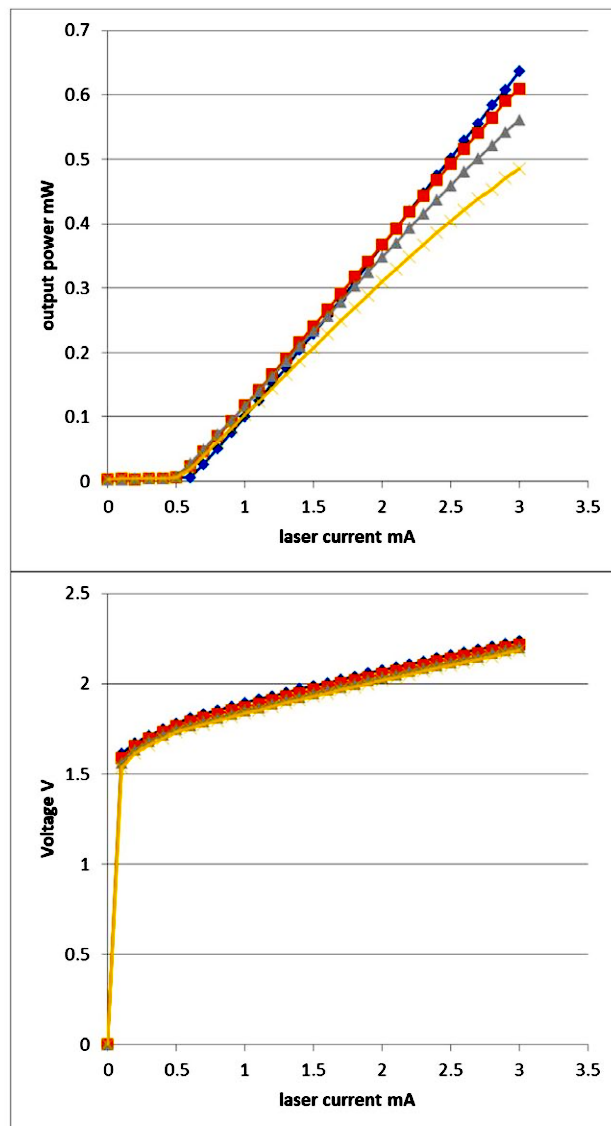
Spectrum:

1.5 / 2.0 / 2.5 mA @ 0 / 20 / 40 / 60°C

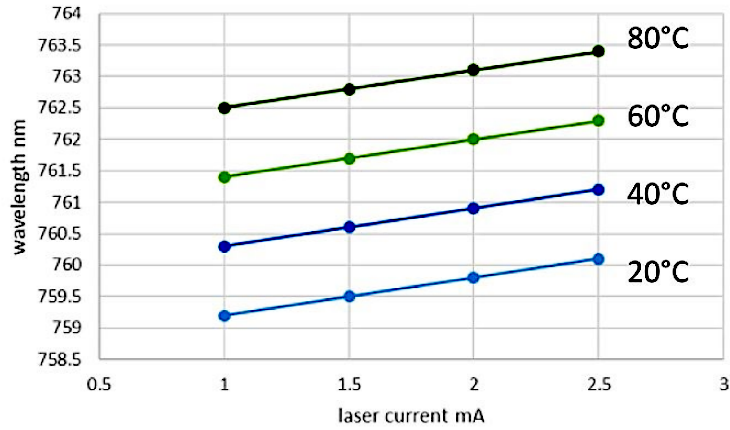


L-I Curve(T@25°C):

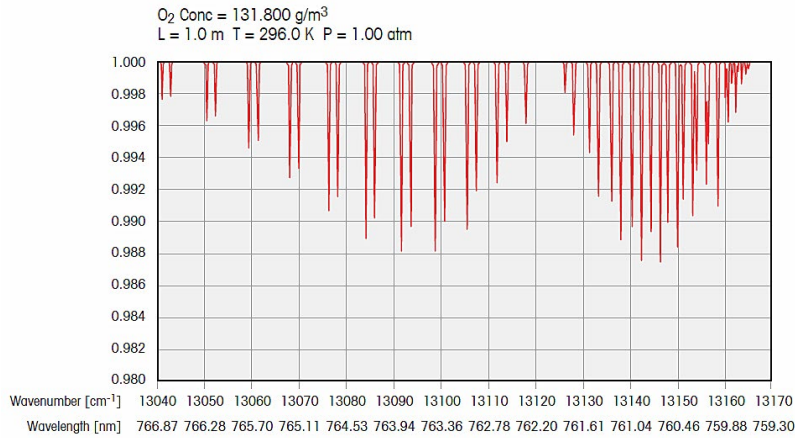
0 / 20 / 40 / 60°C



Wavelength tuning Range toward Temperature and Current:



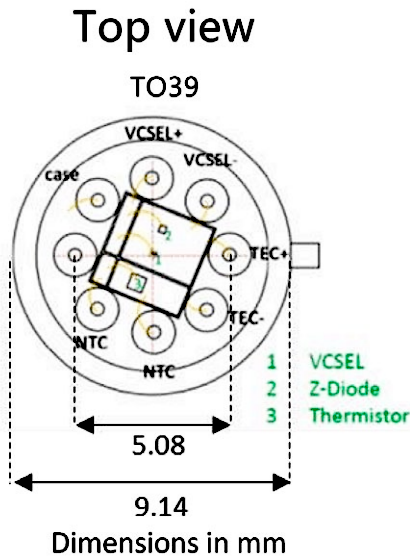
Oxygen Absorption line:



Judging from Oxygen Absorption line we provide following high precision wavelength VCSEL Laser diode for your Choice:

High Precision Wavelength Selection Table				
Typ Emission Wavelength@Top=20 Iop=2mA			Final wavelength Tuned by TEC and Current	
760nm Absorption Line	min	max		
A Grade	759.8	760.8	760.3	761.3
C Grade	759.0	760.1	760.1	761.3
763nm Absorption Line				
A Grade	762.5	763.5	763.0	764.0
C Grade	761.9	764.9	763.0	764.8

Dimensions and Pin definitions:



Absolute Maximum Ratings:

Item	Unit	Min	Typ	Max
Store 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
TEC Current	A	-150	-	+300
Soldering Temperature*	V	100	130	270
Electrical Power Dissipation	V	-	-	5

(*TEC temperature must be below 150°C)

Ordering Info:

PL-VCSEL-□□□□-☆-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