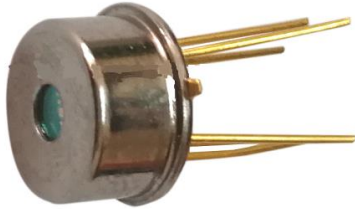


## VCSEL FLPD-76X-0.3-VCSEL-TO39-Y



### Description

The FLPD-76X-0.3-VCSEL-TO39-Y is a vertical emitting MOVPE grown GaAsP/AlGaAs single mode diode laser in a TO39 can with TEC and PD. The 760/763 nm single mode VCSELs are designed for TDLAS applications.

### Features

- Internal TEC and Thermistor
- ESD Protection
- Narrow Line Width
- 2nm Tunability with TEC

### Applications

- Tuneable Diode Laser Absorption Spectroscopy
- Oxygene Monitoring

### Absolute Maximum Ratings

Storage Temperature	-40°C - +125°C
Operating Temperature	+10°C - +40°C
El. Power Dissipation	5mW
Forward Current	2.0mA
Forward Voltage	2.2V
Soldering Temperature (TEC Temperature must be below 150°C)	270°C, 10s

## Electrical/Optical Specifications

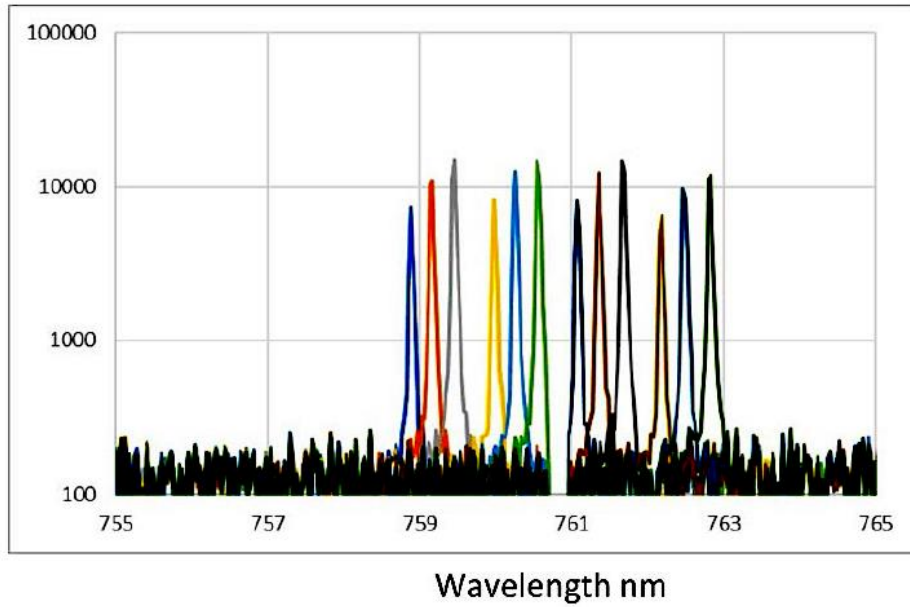
Parameter	Symbol	Units	Min	Typ	Max	Test Conditions
Emission Wavelength	$\lambda_R$	nm	Choose from table below*			
Output Power	$P_{OP}$	mW	0.25	0.3		T=20°C
Threshold Current	$I_{TH}$	mA	0.25	0.5		T=20°C
Laser Current	$I_{OP}$	mA	-	-	2.0	$P_{OP}=0.3mW$
Threshold Voltage	$U_{TH}$	V		1.8		
Laser Voltage	$U_{OP}$	V		2.0		$P_{OP}=0.3mW$
Wallplug Efficiency	$\eta_{WP}$	%		12		$P_{OP}=0.3mW$
Slope Efficiency	$\eta_S$	W/A		0.3		T=20°C
Differential Series Resistance	$R_S$	$\Omega$		250	-	$P_{OP}=0.3mW$
3dB Modulation Bandwidth	$\nu_{3dB}$	GHz	0.1			$P_{OP}=0.3mW$ , limited by ESD diode
Relative Intensity Noise	RIN	dB/Hz		-130.0	-120.0	$P_{OP}=0.3mW$ @ 1GHz
Wavelength Tuning over Current		nm/mA		0.60		
Wavelength Tuning over Temperature		nm/K		0.06		
Thermal Resistance (VCSEL chip)	$R_{Thermal}$	K/mW	3		5	
Side Mode Suppression		dB/Hz	25			$I_{op} = 2mA$
Beam Divergence	$\theta$	degree	10		25	$P_{OP}=0.3mW$ , FW1/e <sup>2</sup>
Spectral Width	$\Delta\lambda$	MHz		100		$P_{OP}=0.3mW$
TEC Current		mA	-150 (Heating)		300 (Cooling)	Appropriate heat sink required
NTC Thermistor Resistance		K $\Omega$	9.5	10	10.5	T=25°C
NTC Temperature Dependence		K $\Omega$	10/exp[3892*(1/298K-1/T <sub>OP</sub> )]			

### \*Wavelength Selection Table

Typical Emission Wavelength (T <sub>op</sub> =20°C & I <sub>op</sub> =2mA)			Final Wavelength Tuned by TEC and Current	
760nm Absorption Line	Min	Max	Min	Max
FLPD-760-0.3-VCSEL-TO39-A	759.8nm	760.8nm	760.3nm	761.3nm
FLPD-760-0.3-VCSEL-TO39-C	759.0nm	762.0nm	760.1nm	761.3nm
763nm Absorption Line	Min	Max	Min	Max
FLPD-763-0.3-VCSEL-TO39-A	762.5nm	763.5nm	763.0nm	764.0nm
FLPD-763-0.3-VCSEL-TO39-C	761.9nm	764.9nm	763.0nm	764.8nm

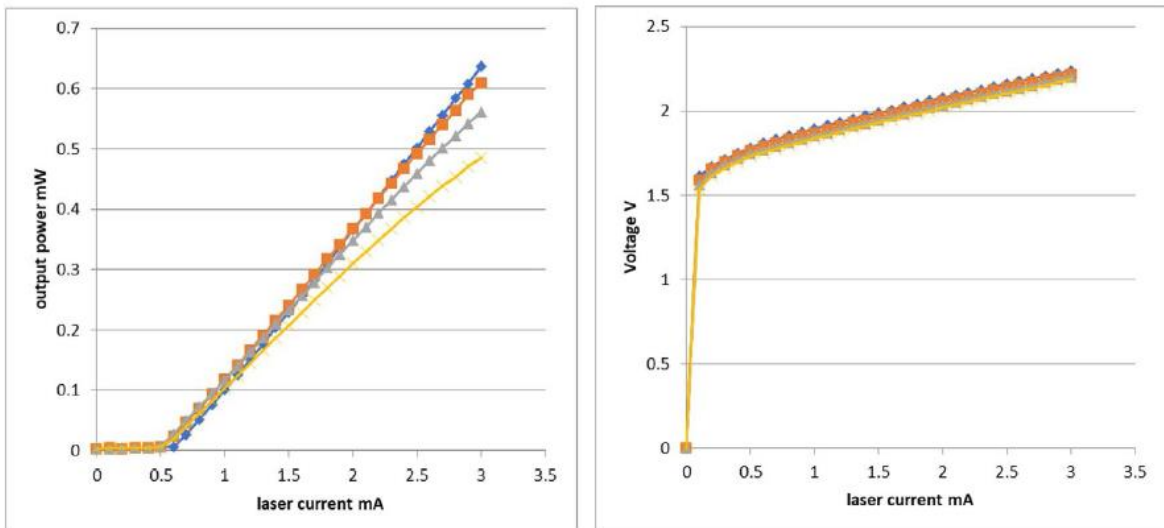
## Spectrum

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

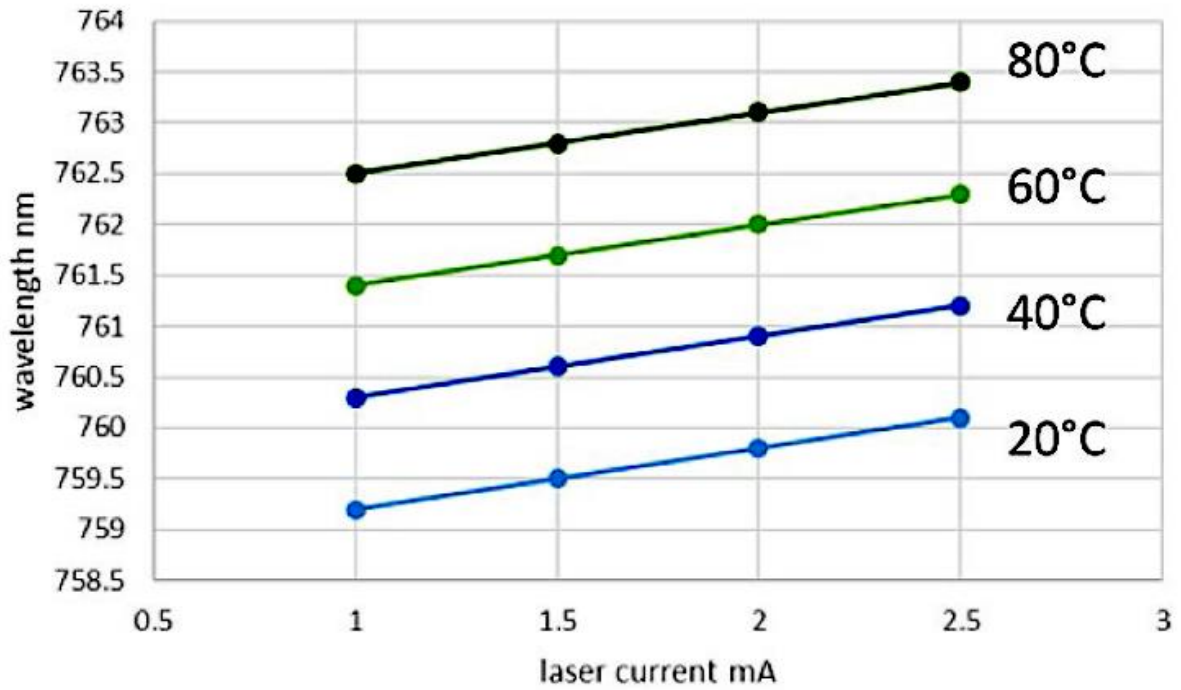


## P-I & U-I Curve

0 / 20 / 40 / 60°C

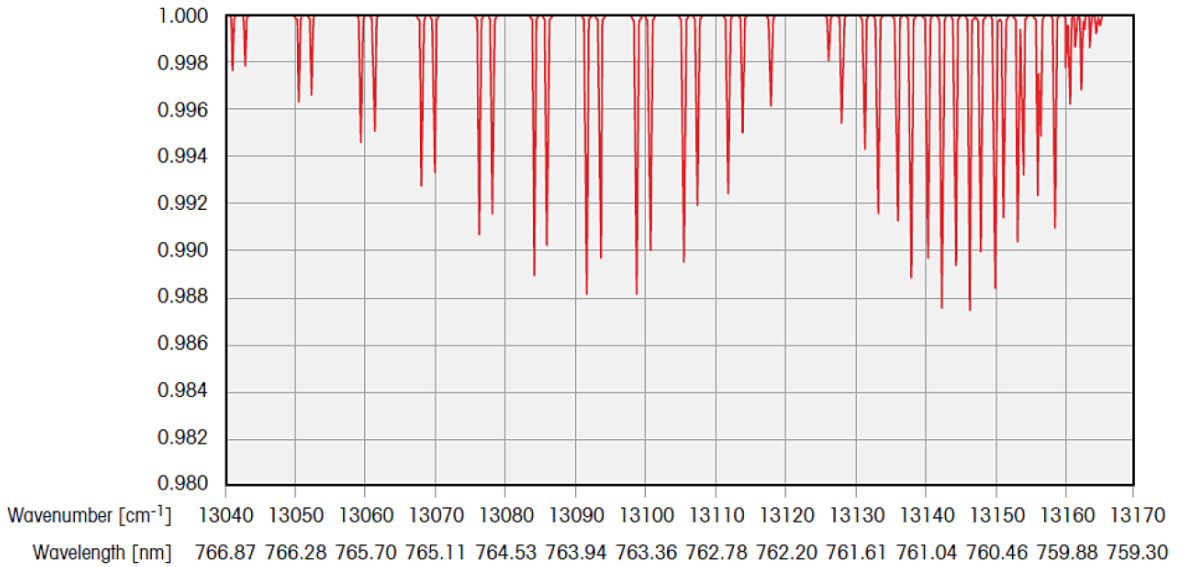


### Wavelength Tuning Range

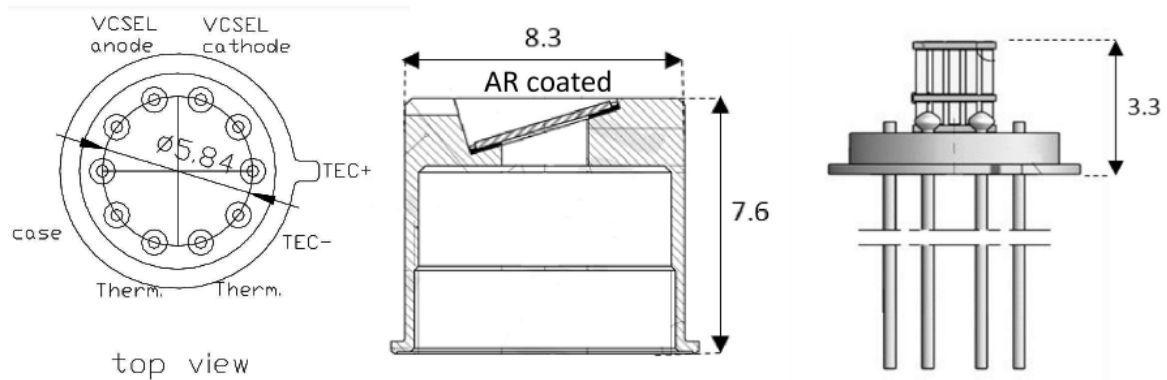


### Oxygen Absorption Line Chart

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



## Package Size and Pin Definition



Unit: mm

Bottom View