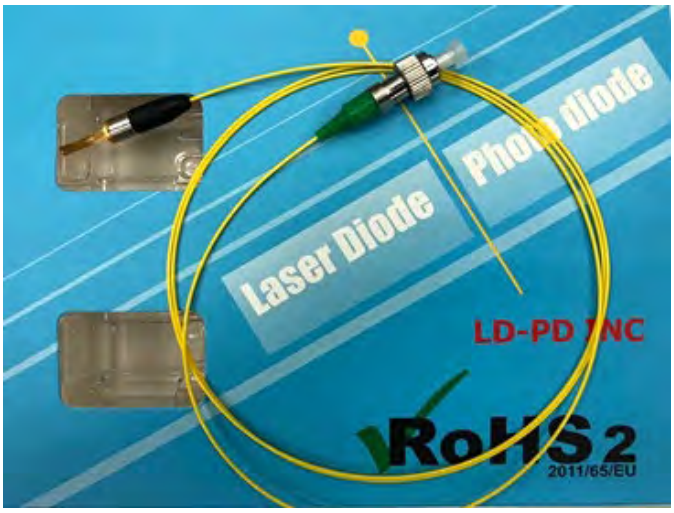
850nm SM Fiber coupled VCSEL Laser diode (with TEC)



Description:

850 nm single-mode VCSELs are the perfect choice for demanding sensor applications due to their improved optical characteristics. Higher-order longitudinal and transversal modes are suppressed by the innovative chip design; at the same time, the polarization is linearly stable.

Features:

- Low dependence of electrical and optical characteristics over temperature
- Data rates from OC-3 to OC-48
- Vertical Cavity Surface-Emitting Laser
- Internal TEC and Thermistor, ESD protection
- Narrow linewidth
- 2 nm tunability with TEC

Application:

- Access network for long distance
- Local area network
- Gigabit Ethernet

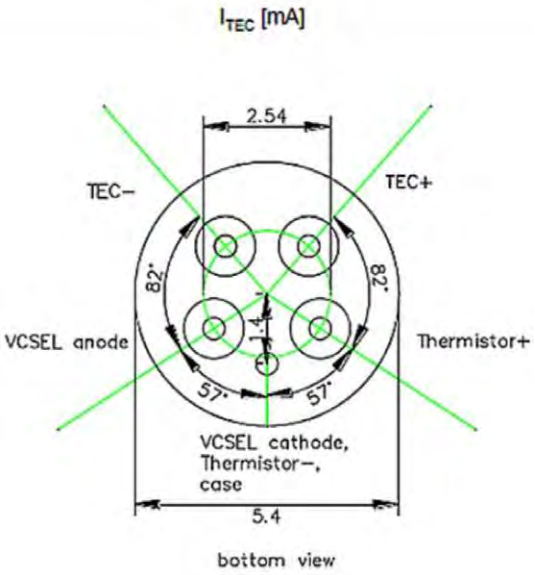
Laser Specifications:

Condition:TO P = 20°C, IO P = 10.0 mA unless otherwise stated (TO P = chip backside temperature, controlled by the TEC)

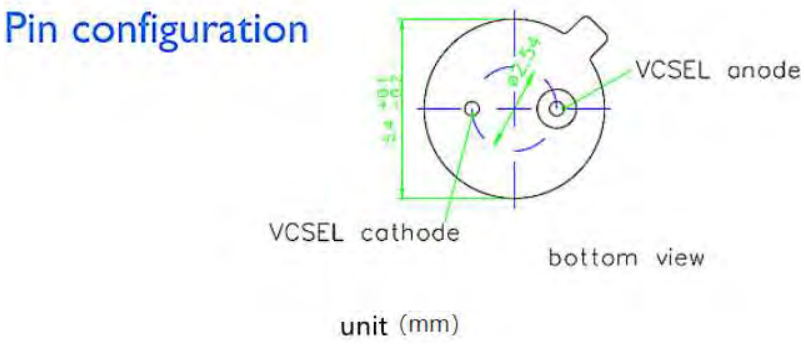
Parameters	Symbol	Min	Typ	Max	Unit	Remark
Emission Wavelength	λR	850nm				
Threshold current	ITH		1		mA	
Output Power	Popt	0.5	1		mW	
Threshold Voltage	UTH		1.8		V	
Driving Current	IOP		3		mA	Popt = 0.5mW
Laser voltage	UOP		3		V	Popt = 0.5 mW
Electro optic conversion rate	ηWP		12		%	Popt = 0.5 mW
Slope efficiency	ηS		0.3		W/A	
Rise and Fall time	Tr/Tf		90/120		Psec	
Differential series resistance	RS		100	200	Ω	Popt = 0.5 mW
3dB bandwidth	v3dB	0.10	2.5		GHz	Popt = 0.5 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		35			dB	I = 2 mA
Beam divergence	θ	10		25	°	Popt = 0.5mW, full width 1/e2
Spectral Width			100		MHz	Popt = 0.5 mW

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

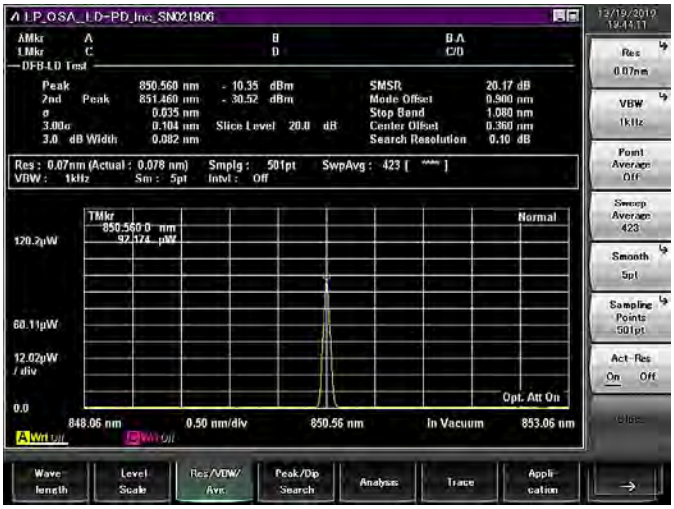
With TEC Pin definition:



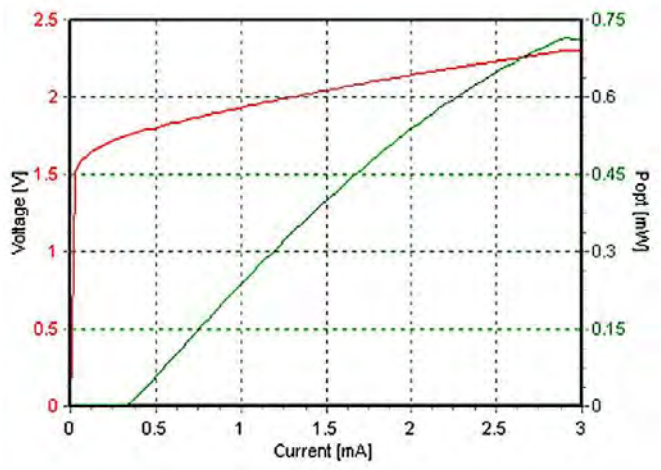
Without TEC Pin definition:



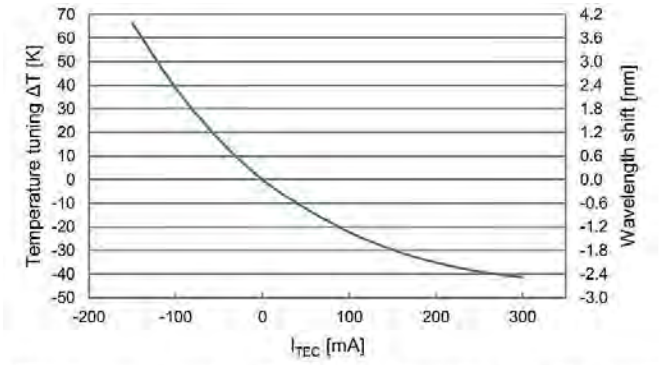
Spectrum:



L-I Curve(T@25°C):

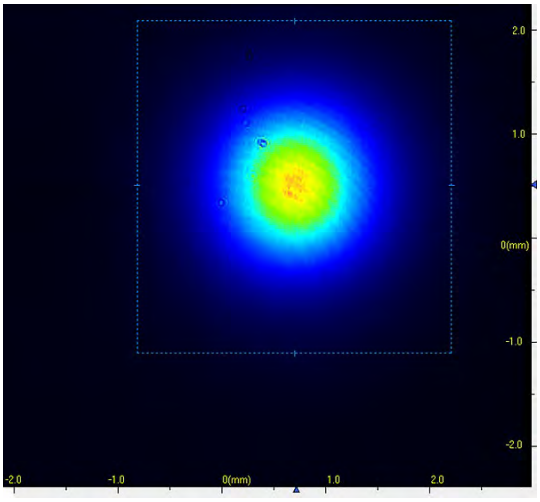


Temperature / wavelength tuning over TEC current*:

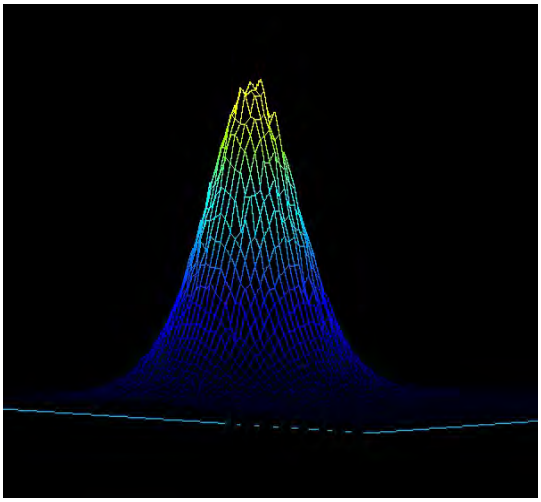


* TEC performance is dependent on heat load, ambient temperature and heatsink properties

Beam Quality Profiler (2D/3D):



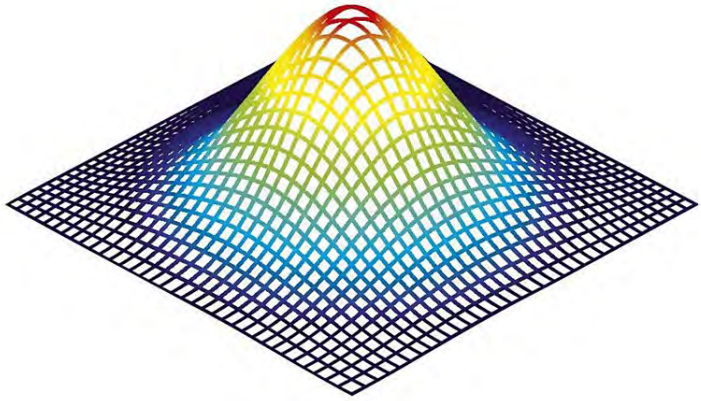
2D



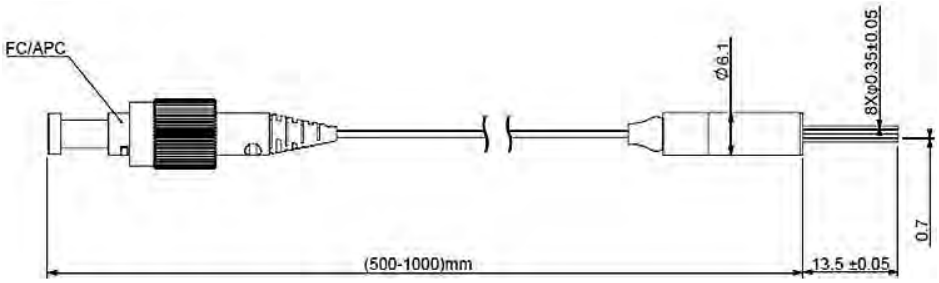
3D

Beam profile:

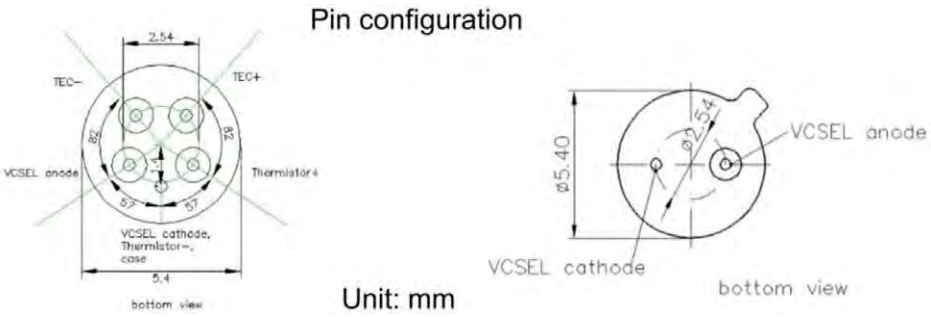
In the far field, the intensity distribution of the single-mode VCSEL is perfectly Gaussian shaped



Package Size:



TO package Bottom side View:



Pin	Definitions	Pin	Definitions
1	TEC (-)	5	TEC (+)
2	THERMISTOR (+)	6	THERMISTOR
3	NA	7	NA
4	VCSEL Cathode	8	VCSEL anode

Absolute Maximum Ratings:

Item	Unit	Min	Typ	Max
Store Temperature	℃	-40	25	125
Chip Temperature	℃	+10	25	40
Operating Current	mA	0	3.0	5.0
Forward Voltage	V	0.8	3.0	4.8
TEC Current	mA	-150	-	+300
Soldering Temperature*	℃	100	130	260
Electrical Power Dissipation	mw	-	-	5

Ordering Info:

PL-VCSEL-□□□□-☆-A8▽-XX

□□□□: Wavelength

0760: 760nm

0850: 850nm

*****

1550: 1550nm

☆ : TEC

0: Without TEC

1: With TEC

▽: Wavelength Tolerance

1: ±0.5nm

2: ±1.5nm

XX: Fiber and Connector Type

FS=Free Space

BFSA=Butterfly Package with HI780+ FC/APC

CPSA=Coaxial Package with HI780+ FC/APC

BFSP=Butterfly Package with HI780+ FC/PC

CPSP=Coaxial Package with HI780+ FC/PC

BFPP=PM Fiber+ FC/PC

PA=PM Fiber+ FC/APC