850nm 1mW TO46 SM VCSEL Laser Diode(without TEC)

Product Description

With optimized optical characteristics, the 850 nm single-mode VCSEL is an ideal choice for high-demand sensing system applications. Its innovative chip design suppresses high-order longitudinal and transverse modes, and features stable linear polarization performance.

Product features

Vertical-cavity surface-emitting laser architecture ; High operational reliability; Low power consumption design; TO46 metal hermetic package; High-speed modulation capability

Part Number

MP-VCS-850-1-TO46-SM

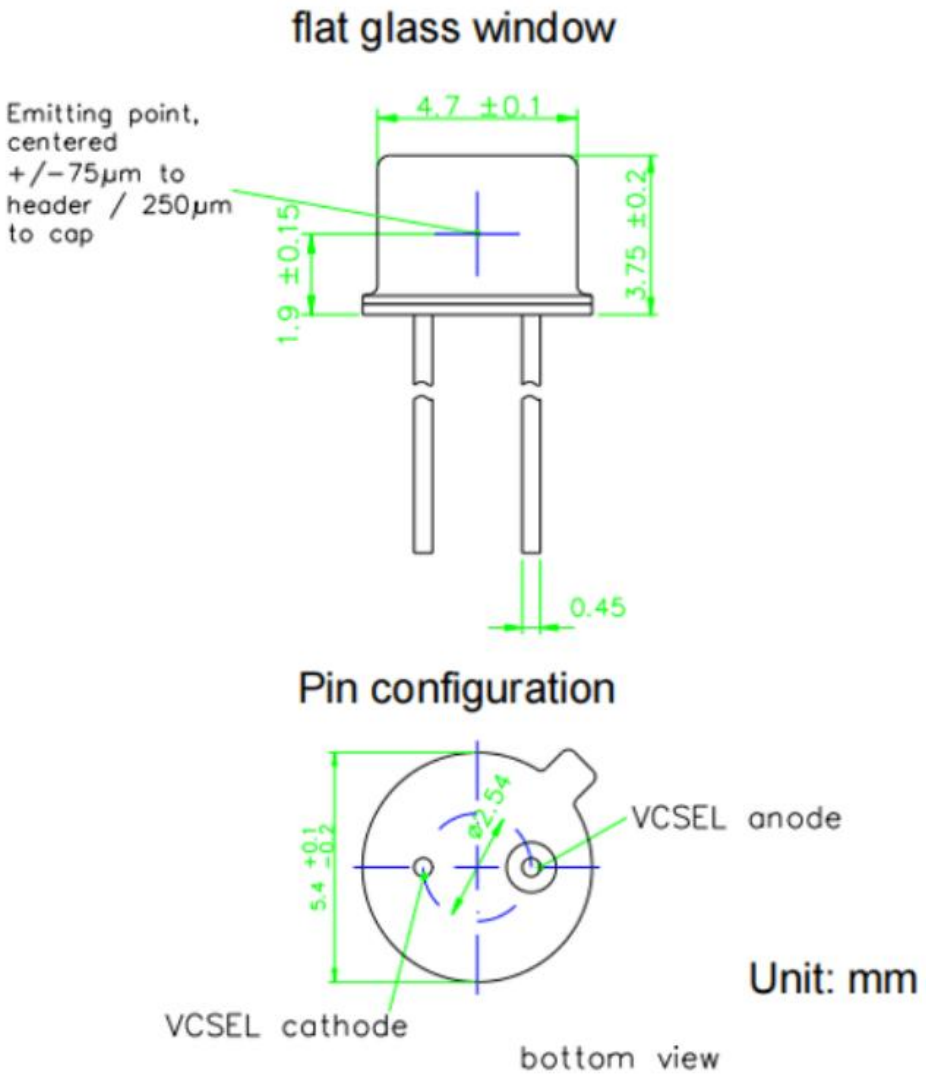
Application area

Data Center | Consumer Electronics | Industrial Sensing | Optical Fiber Access Network | Scientific Research Experiments

Core parameters

Center Wavelength
850nm

Dimension Drawing



General Parameters

Model parameters

Parameters	symbol	Min. value	Typical values	Max. value	unit	Note:
Incident wavelength	λ_R	840	850	860	nm	T = 20°C, I_{TEC} = 0,

						P_{OP}= 0.5 mW
Threshold current	I_{TH}		0.50		mA	T = 20°C
Output power	P_{opt}	0.50			mW	T = 0 ⋯ 50° C
Threshold voltage	U_{TH}		1.80		V	
Laser current	I_{OP}			2.0	mA	P_{opt} = 0.5 mW
Laser voltage	U_{OP}		2.0		V	P_{opt} = 0.5 mW
Electro-optical conversion rate	η_{WP}		12		%	P_{opt} = 0.5 mW
Slope performance	η_S		0.3		W/A	T = 20°C
Differential series resistors	R_S		250		Ω	P_{opt} = 0.5 mW
3dB modulation bandwidth	v3dB	0.10			GHz	P_{opt} = 0.5 mW (Due to ESD protection diodes)
Relative noise intensity	RIN		-130	-120	dB/ Hz	P_{opt} = 0.3 mW @ 1 GHz
Wavelength-tuned current			0.6		nm/ mA	
Wavelength Tuning			0.06		nm/	

Temperature					K	
Thermal resistance	$R_{thermal}$	3		5	K/mW	
Edge mode suppression		30			dB	
Beam divergence	θ	10		25	°	P_{opt} = 0.5 mW full $1/e^2$ bandwidth
Spectral bandwidth	Δv		100		MHz	P_{opt} = 0.5 mW
TEC current	I_{TEC}			500	mA	Proper radiator is required
NTC thermistor		9.5	10.0	10.5	kΩ	T= 25°C,
NTC temperature dependence		$10/exp[3892 \cdot (1/298K-1/T_O)_P)]$			kΩ	
Wavelength tuning TEC current		0.008			nm/mA	TEC current < 200 mA

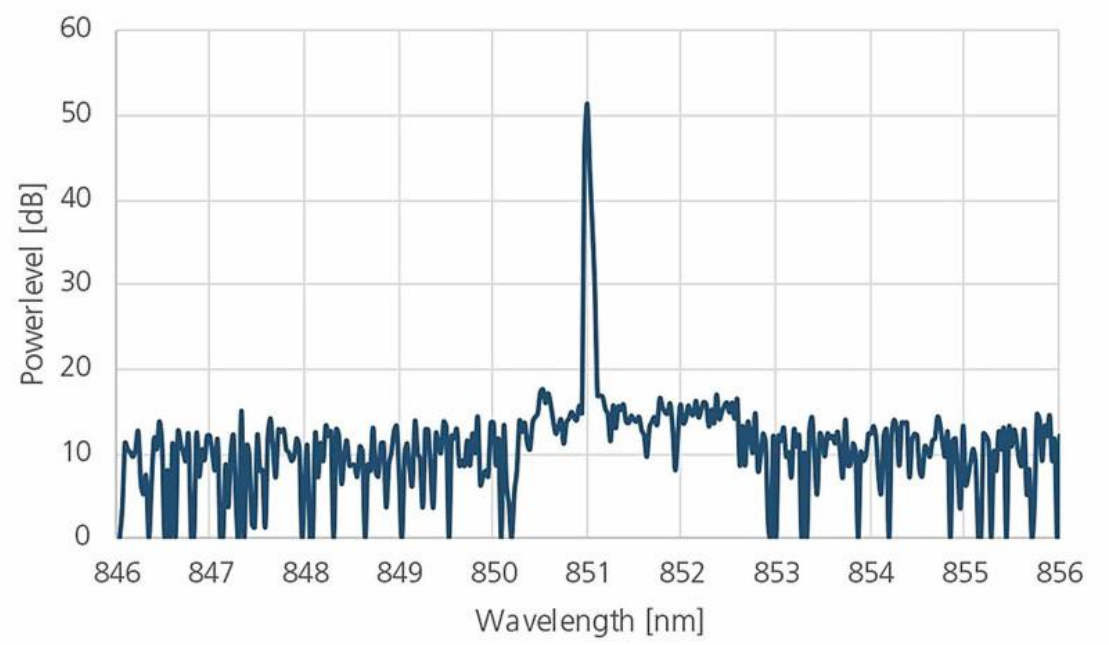
Absolute maximum

- Storage temperature -40~125°C
- Operating temperature -20~80°C

- **Electrical power loss of 5 mW**
- **Forward laser current 2 mA**
- **Reverse current 10 mA**
- **Welding temperature* 270C°**
- ***TEC temperature must be below 150°C**

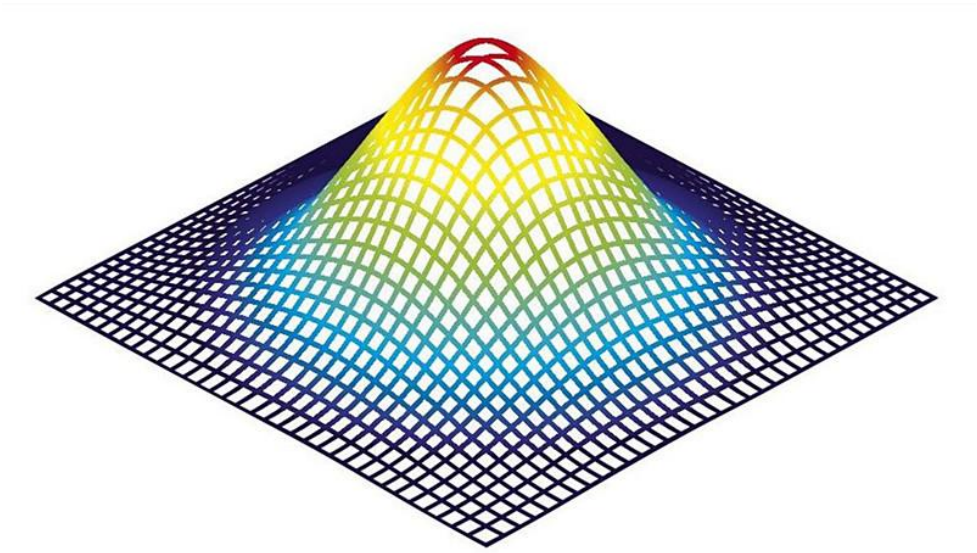
Spectral diagram

Higher-order modes are strongly suppressed and the spectral bandwidth is extremely narrow



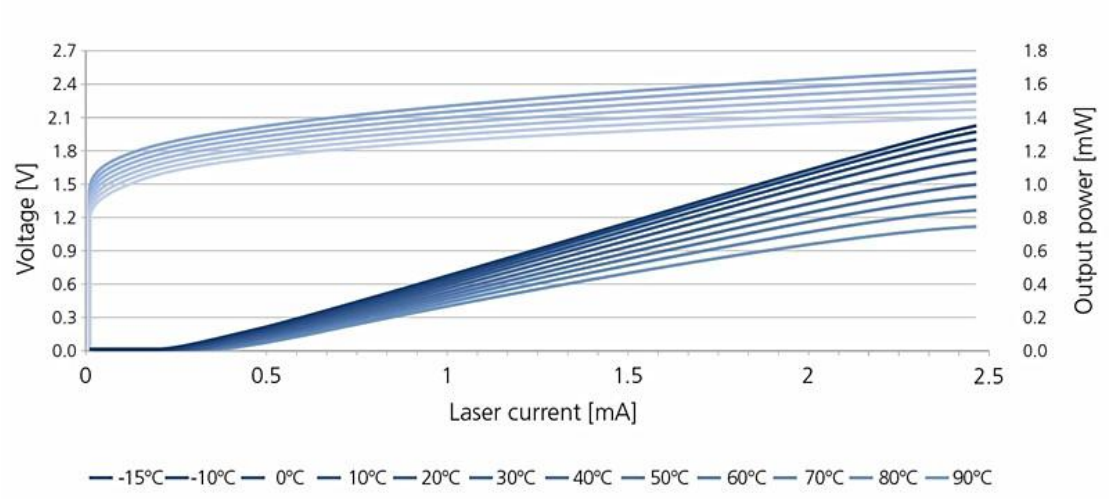
Beam profile

The far-field light intensity distribution of single-mode VCSEL is complete in accordance with the Gaussian mode



LIVT characteristic curves

You will benefit from linear performance and low threshold currents over a wide temperature range



Temperature/wavelength under TEC current tuning