



VCT-F85A32-SPLM

850nm Single Mode Polarization Locked VCSEL in TO-46 Package

Data Sheet

Description

The Lasermate VCT-F85A32-SPLM is an 850nm wavelength, typical 1mW output power at 6mA 85°C, CW operating mode, single longitudinal mode and single transverse mode, polarization locked Vertical Cavity Surface Emitting Laser (VCSEL) diode in TO-46 package designed for use in sensing applications.

Features

- 850nm VCSEL Diode
- Gaussian beam profile
- Single transverse and longitudinal mode @ $\leq 6\text{mA}$
- Built-in monitor PD with common anode pinout
- In TO-46 package with flat window
- Polarization locked emission (No polarization switching below operating current 8mA)
- Bandwidth $>1\text{GHz}$
- -20 to 85°C operating temperature

Applications

- Consumer electronics
- Sensing

Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	125	$^\circ\text{C}$	
Operating Temperature	-20	85	$^\circ\text{C}$	
Lead Solder Temperature		260	$^\circ\text{C}$	10 seconds
Continuous Forward Current		8	mA	
Continuous Reverse Voltage		5	V	

Electro-Optical Characteristics ($T_a=25^\circ\text{C}$ unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I_{th}		1.5		mA	CW
Slope Efficiency	η		0.4		W/A	$I_f=6\text{mA}$
Optical Output Power	P_o	1.5	2		mW	$I_f=6\text{mA}$ @ 25°C
Optical Output Power	P_o		1		mW	$I_f=6\text{mA}$ @ 85°C
Side Mode Suppression Ratio	SMSR	20	30		dB	$I_f=6\text{mA}$
Peak Wavelength	λ_P	840	850	860	nm	$I_f=6\text{mA}$
Beam Divergence	Θ	12	15	18	$^\circ$	$I_f=6\text{mA}$ ($1/e^2$)
Forward Voltage	V_f	1.75	2.0	2.25	V	$I_f=6\text{mA}$
Dynamic Resistance	R_d		55		Ohm	
Monitor Current	I_m		10		μA	$I_f=6\text{mA}$
Dark Current	I_d			20	nA	$P_0=0\text{mW}$, $V_R=10\text{V}$
PD Reverse Voltage	BVR_{PD}	35			V	$P_0=0\text{mW}$, $I_R=100\mu\text{A}$
PD Capacitance	C		16		pF	$V_R=3\text{V}$, $f=1\text{MHz}$

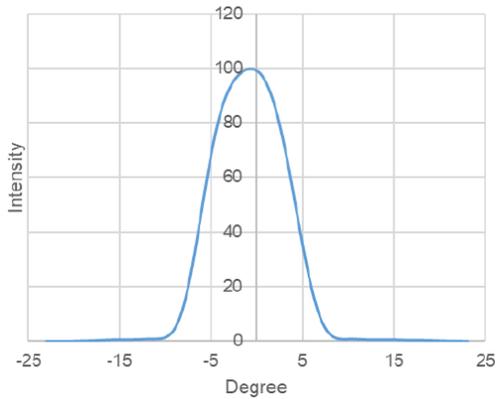
Note: VCT-F85A32-SPL may become multimode if the operating current $>6\text{mA}$.

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
P _o Temperature Coefficient			-0.65		%/°C	T _a =25~65°C/I _F =6mA
V _F Temperature Coefficient			-2.5		mV/°C	T _a =25~65°C/I _F =6mA
λ _P Temperature Coefficient			0.065		nm/°C	T _a =25~65°C/I _F =6mA

Typical Characteristics

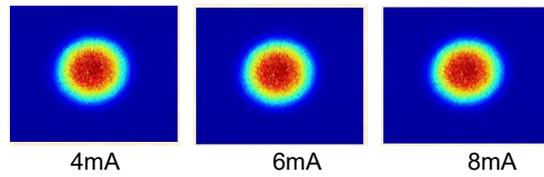
Beam Divergence

Operation Current at 6mA

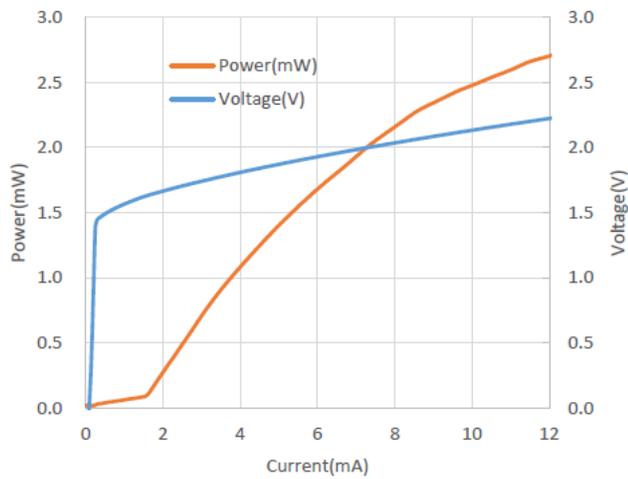


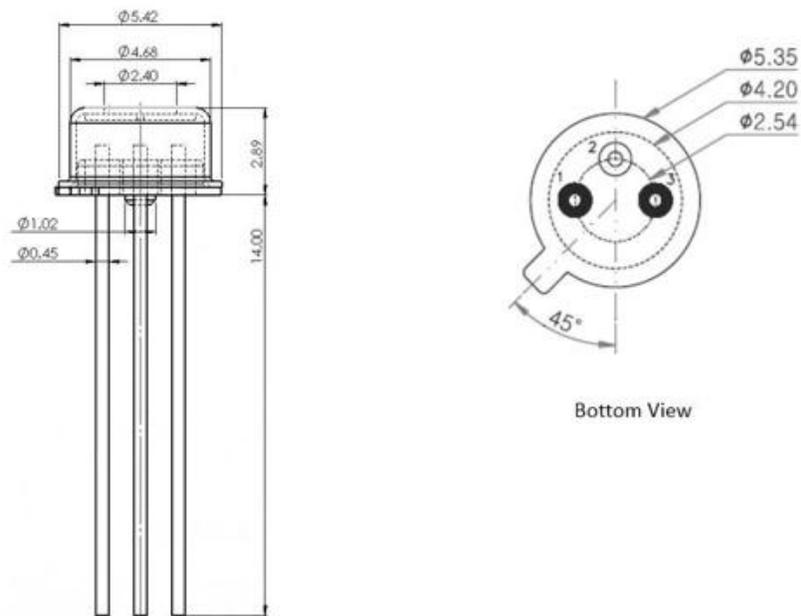
Full angle is around 15 degrees.

Gaussian Beam Profile



LIV Curve



Outline Dimensions (unit: mm)**Pin Configuration**

Pin No.	Function
1	VCSEL Cathode
2	VCSEL Anode/PD Cathode
3	PD Anode

Additional Notes

- The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.
- Specifications are subject to change without notice.