



# VCT-F85A32-SPL

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

Data Sheet

### Description

The Lasermate VCT-F85A32-SPL is an 850nm wavelength, typical 2mW output power at 6mA, 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  $>1\text{GHz}$

### Applications

- Consumer electronics
- Sensing

### Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	125	°C	
Operating Temperature	-20	65	°C	
Lead Solder Temperature		260	°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	$\eta$		0.4		W/A	$I_f=6\text{mA}$
Optical Output Power	$P_o$	1.5	2		mW	$I_f=6\text{mA}$
Side Mode Suppression Ratio	SMSR	20			dB	$I_f=6\text{mA}$
Peak Wavelength	$\lambda_p$	840	850	860	nm	$I_f=6\text{mA}$
Beam Divergence	$\Theta$	12	15	18	°	$I_f=6\text{mA}$ ( $1/e^2$ )
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		uA	$I_f=6\text{mA}$
Dark Current	$I_d$			20	nA	$P_0=0\text{mW}$ , $V_R=10\text{V}$
PD Reverse Voltage	$BVR_{PD}$	35			V	$P_0=0\text{mW}$ , $I_R=100\text{uA}$
PD Capacitance	C		16		pF	$V_R=3\text{V}$ , $f=1\text{MHz}$

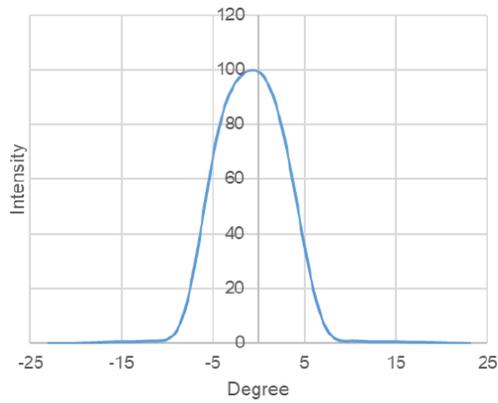
Note: VCT-F85A32-SPL may become multimode if the operating current  $>6\text{mA}$ .

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
P <sub>o</sub> Temperature Coefficient			-0.65		%/°C	T <sub>a</sub> =25~65°C/I <sub>F</sub> =6mA
V <sub>F</sub> Temperature Coefficient			-2.5		mV/°C	T <sub>a</sub> =25~65°C/I <sub>F</sub> =6mA
λ <sub>P</sub> Temperature Coefficient			0.065		nm/°C	T <sub>a</sub> =25~65°C/I <sub>F</sub> =6mA

## Typical Characteristics

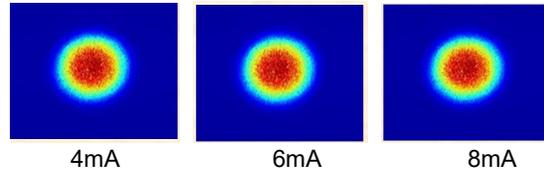
### Beam Divergence

Operation Current at 6mA

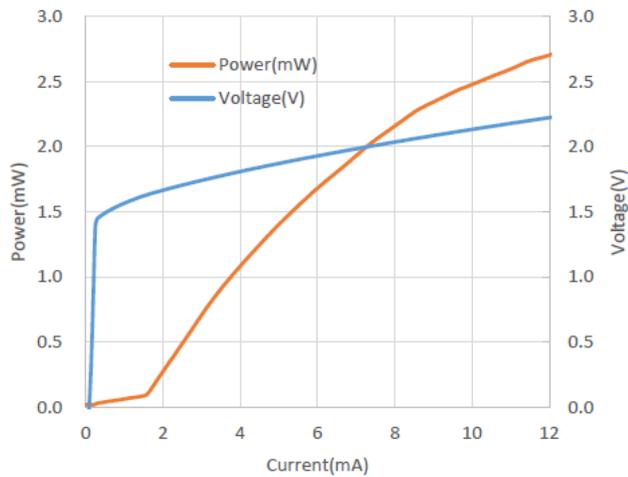


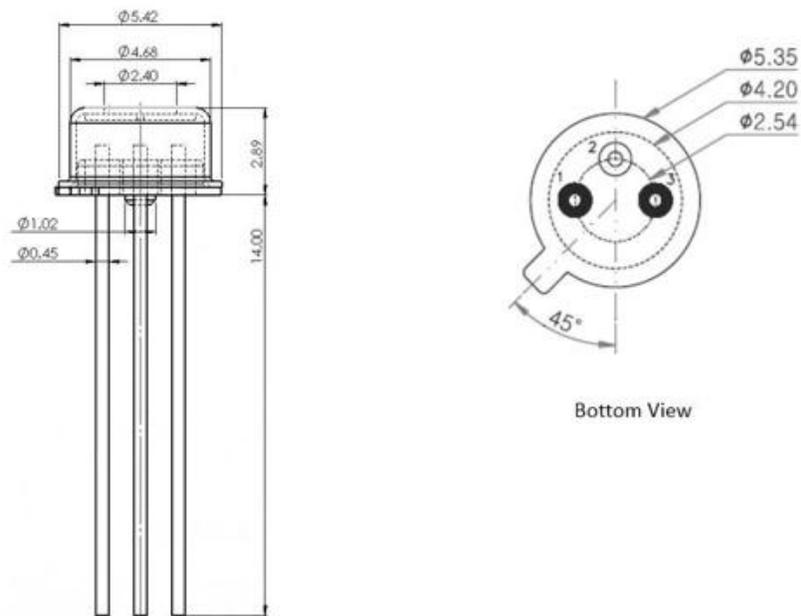
Full angle is around 15 degrees.

### 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.