



## 850nm 0.5mW Single Mode VCSEL with Flat Window, TO-46 Package

VCT-F85A3x-SL



### Description

The Lasermate VCT-F85A3x-SL is an 850nm wavelength, 0.5mW output power, CW operating mode, single longitudinal mode and single transverse mode, Vertical Cavity Surface Emitting Laser (VCSEL) diode in TO-46 package with flat window designed for use in sensing applications.

### Features

- 850nm VCSEL diode
- Single mode transverse and longitudinal mode
- With built-in monitor PD
- Flat window type TO-46 can package

### Applications

- Consumer electronics
- Laser mouse
- Safety sensor

### Product Overview

The following table lists the available part numbers, as well as the package type of each of the part numbers.

Part Number	Description
VCT-F85A31-SL	850nm Single Mode VCSEL TO-46, Flat Window, Common Cathode Pin
VCT-F85A32-SL	850nm Single Mode VCSEL TO-46, Flat Window, Common Anode Pin

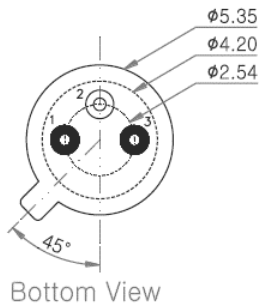
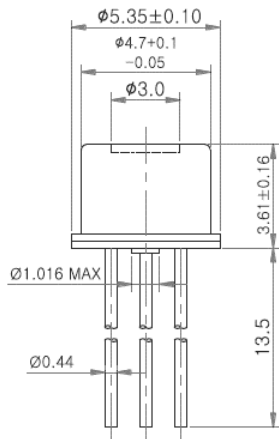
## Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	85	°C	
Operating Temperature	-10	70	°C	
Lead Solder Temperature		260	°C	10 seconds
Continuous Forward Current		6	mA	
Continuous Reverse Voltage		5	V	10uA

Electro-Optical Characteristics (T <sub>a</sub> =25°C unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I <sub>th</sub>		2	3	mA	CW
Slope Efficiency	η	0.2	0.35		W/A	I <sub>f</sub> =3.5mA
Optical Output Power	P <sub>o</sub>	0.25	0.5	0.7	mW	I <sub>f</sub> =3.5mA
Peak Wavelength	λ <sub>p</sub>	840	850	860	nm	I <sub>f</sub> =3.5mA
Beam Divergence	θ		8		°	I <sub>f</sub> =3.5mA, (FWHM)
Forward Voltage	V <sub>f</sub>		1.8	2.1	V	I <sub>f</sub> =3.5mA
Breakdown Voltage	V <sub>b</sub>		-10		V	
Dynamic Resistance	R <sub>d</sub>		70	90	Ohm	I <sub>f</sub> =3.5mA
Monitor Current	I <sub>m</sub>		20		uA	VCSEL I <sub>f</sub> =3.5mA
Dark Current	I <sub>d</sub>			10	nA	P <sub>o</sub> =0mW, V <sub>R</sub> =5V
Side Mode Suppression Ratio	SMSR	15	30		dB	I <sub>f</sub> =3.5mA
			10			I <sub>f</sub> =4.0mA
Max. Single-Mode Power	P <sub>SM</sub>			0.35	mW	SMSR>15dB
PD Reverse Voltage	BVR <sub>PD</sub>	40			V	P <sub>o</sub> =0mW, I <sub>R</sub> =10uA
PD Capacitance	C		15	50	pF	V <sub>R</sub> =0V, f=1MHz
			5	20		V <sub>R</sub> =5V, f=1MHz

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
I <sub>th</sub> Temperature Variation	ΔI <sub>th</sub>		1.5		mA	T <sub>a</sub> =-10 to 70°C
η Temperature Coefficient	Δη/ΔT		-0.5		%/°C	T <sub>a</sub> =-10 to 70°C, I <sub>f</sub> =3.5mA
λ Temperature Coefficient	Δλ/ΔT		0.06		nm/°C	T <sub>a</sub> =-10 to 70°C, I <sub>f</sub> =3.5mA

**Outline Dimensions (unit: mm)**



**Pin Configuration**

VCT-F85A31-SL		VCT-F85A32-SL	
Pin Number	Function	Pin Number	Function
1	VCSEL Anode	1	VCSEL Cathode
2	PD Anode/VCSEL Cathode	2	VCSEL Anode/PD Cathode
3	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.



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