



# VCT-A85A4x-3

## 2.5Gbps 850nm VCSEL in TO-46 Package



### Description

The Lasermate VCT-A85A4x-3 is an 850nm wavelength, Vertical Cavity Surface Emitting Laser (VCSEL) diode in TO46 package with cap lens designed for use in 2.5Gbps datacom applications.

### Features

- Industry TO-46 package with cap lens for multimode fiber communication
- Packaged with attenuating coating and monitoring PD
- High coupling efficiency for multi-mode fibers
- High performance of noise and jitter characteristics
- Common cathode or common anode pin

### Applications

- Designed for 1.25/2.5 Gbps data rate operation

### 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-A85A41-3	2.5Gbps 850nm VCSEL TO-46, Cap Lens, Common Cathode Pin
VCT-A85A42-3	2.5Gbps 850nm VCSEL TO-46, Cap Lens, Common Anode Pin

## Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	125	°C	
Operating Temperature	-10	85	°C	
Lead Solder Temperature		260	°C	10 seconds
Continuous Forward Current		12	mA	
Continuous Reverse Voltage		5	V	10uA

Electro-Optical Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	$I_{th}$		2	2.75	mA	
Slope Efficiency	$\eta$	0.08	0.12	0.16	mW/mA	$I_F=6$ mA
Optical Output Power	$P_o$		0.4		mW	$I_F=6$ mA
Wavelength	$\lambda_P$	830	850	860	nm	$I_F=6$ mA <sup>(2)</sup>
Forward Voltage	$V_F$	1.6	1.8	2.1	V	$I_F=6$ mA
Breakdown Voltage	$V_{BD}$	5	14		V	$I_R=10$ uA
Rise Time (20%~80%)	$T_r$		0.10	0.15	ns	$I_{bias}=6$ mA
Fall Time (20%~80%)	$T_f$		0.13	0.15	ns	$I_{bias}=6$ mA
Series Resistance	$R_s$	30	45	60	$\Omega$	$I_F=6$ mA
Spectral Width (RMS)	$\Delta\lambda$			0.85	nm	$I_F=6$ mA
Relative Intensity Noise	RIN		-130	-122	dB/Hz	$I_F=6$ mA, $f=1$ GHz
Monitor Current	$I_M$	200		800	uA	$P_o=500$ uW
PD Capacitance	$C_{PD}$		6	10	pF	$V_R=3$ V, $f=1$ MHz

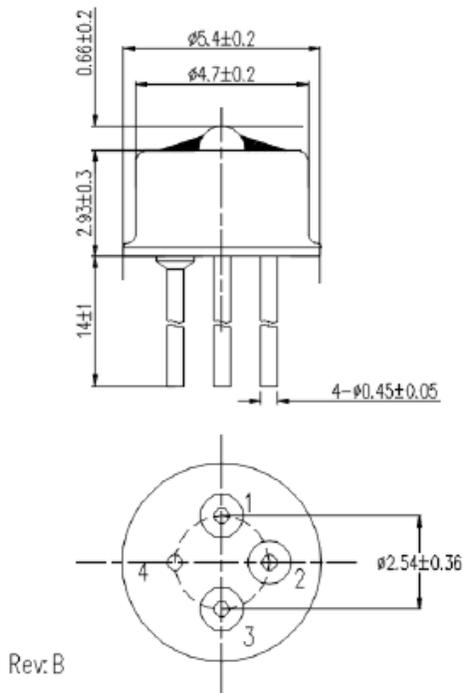
### Notes:

1. All parameters except mentioned are measured at  $I_F=6$  mA, 25°C, CW.
2. Minimum and Maximum values are valid over the entire ambient temperature range.

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
$I_{th}$ Temperature Variation	$\Delta I_{th}$	-1.5		1.5	mA	$T_A=0\sim70^\circ\text{C}$
$V_F$ Temperature Coefficient	$\Delta V_F/\Delta T$		-1.5		mV/°C	$T_A=0\sim70^\circ\text{C}$ , $I_F=6$ mA
$\eta$ Temperature Coefficient	$\Delta\eta/\Delta T$	-0.6			%/°C	$T_A=0\sim70^\circ\text{C}$ , $I_F=6$ mA
$\lambda_P$ Temperature Coefficient	$\Delta\lambda_P/\Delta T$		0.06		nm/°C	$T_A=0\sim70^\circ\text{C}$ , $I_F=6$ mA



**Outline Dimensions (unit: mm)**



**Pin Configuration**

VCT-A85A41-3		VCT-A85A42-3	
Number	Function	Number	Function
1	VCSEL Anode	1	VCSEL Cathode
2	VCSEL Cathode/PD Anode	2	VCSEL Anode/PD Cathode
3	PD Cathode	3	PD Anode
4	Case	4	Case

**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.
- The VCSEL is a class IIIb laser and should be treated as a potential eye hazard. Due to the size of the component, the applicable warning logotype, aperture label, and certification/identification label cannot be placed on the component itself.
- Specifications are subject to change without notice.