



## VCC-85A3WH 850nm 3000mW VCSEL Chip

### Description

The Lasermate VCC-85A3WH is an 850nm wavelength, 3000mW output power, multi-emitter, Vertical Cavity Surface Emitting Laser (VCSEL) chip designed for use in sensing applications.

### Features

- 850nm multi-emitter multi-mode VCSEL chip
- Typical 3W peak pulse output at 3.5A
- Number of emitters: 600
- -20 to 85°C operating temperature
- Chip size: 1015um x 1015um
- Chip thickness: 100um

### Applications

- Photoelectric sensors
- Optical encoders
- 3D sensing

### Specifications

Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Storage Temperature	$T_{stg}$	-40 to 150	°C	
Operating Temperature	$T_{op}$	-20 to 85	°C	1% duty cycle
Maximum package SMT solder reflow temperature	-	260	°C	10 seconds

Note: The maximum pulse laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the table above. Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

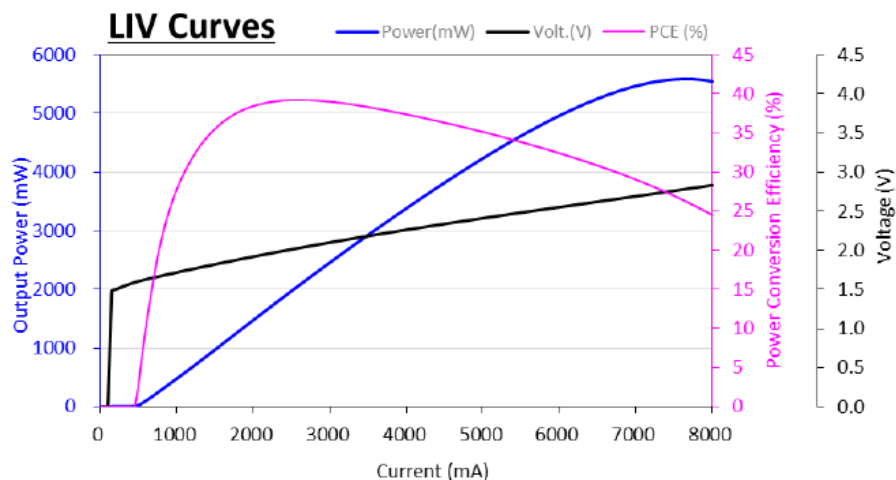
Electro-Optical Characteristics ( $T_a=25^\circ\text{C}$ unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	$I_{th}$		0.5		A	
Slope Efficiency	$\eta$	0.9	1.08		W/A	$I_f=3000\text{mA}$
Optical Output Power	$P_o$		3000		mW	$I_f=3500\text{mA}$
Center Wavelength	$\lambda_c$	840	850	860	nm	$I_f=3000\text{mA}$
Beam Divergence	$\theta$		23		°	$I_f=3000\text{mA}$ , Full width $1/e^2$
Forward Voltage	$V_f$		2.3		V	$I_f=3500\text{mA}$
Wavelength Shift	$\Delta\lambda/\Delta T$		0.07		nm/°C	$I_f=3000\text{mA}$

Notes:

- Forward Voltage ( $V_f$ ) measurement allowance is  $\pm 0.1\text{V}$ .
- Center Wavelength ( $\lambda_c$ ) measurement allowance is  $\pm 1.5\text{nm}$ .
- Others measurement allowance is  $\pm 5\%$ .
- Test DUTs are mounted on star board and measured with operating bias current @  $T_a=25^\circ\text{C}$ , 1% duty cycle of  $T=100\text{ms}$ .

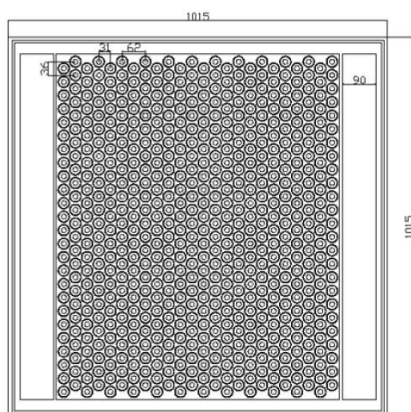
## Typical Characteristics

### LIV Graph at 25°C



Note: Curves measurement at 0 ~ 8A current sweep with 1% duty cycle, T=100ms.

### Outline Dimensions (unit: $\mu\text{m}$ )



Specification	Unit	Min.	Typ.	Max.
Number of emitters	ea		600	
Length (X), Width (Y)	um	1000	1015	1030
Thickness	um	85	100	115
Bond pad width	um	-	90	-

Note: Chip backside cathode pad is the same as chip size.

### 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.