



## VCC-94A170H 940nm 170mW VCSEL Chip

### Description

The Lasermate VCC-94A170H is an 940nm wavelength, 170mW output power, multi-emitter Vertical Cavity Surface Emitting Laser (VCSEL) chip designed for use in sensing applications.

### Features

- 940nm multi-emitter VCSEL chip
- Typical 170mW output power at 200mA
- High Power Conversion Efficiency ~43% Typical
- Number of emitters: 30
- Chip size: 330 x 330 ±15 um
- -20 to 85°C operating temperature
- Electrode Side: Gold alloy on both anode P (emission side) and cathode N (backside)

### Applications

- Sensor light source
- Consumer electronics
- Security camera light source

### Specifications

Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Storage Temperature	T <sub>stg</sub>	-40 to 125	°C	
Operating Temperature	T <sub>op</sub>	-20 to 85	°C	
Continuous Forward Current	I <sub>f</sub>	200	mA	
Maximum package SMT solder reflow temperature	-	260	°C	10 seconds

Note: The maximum CW 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.

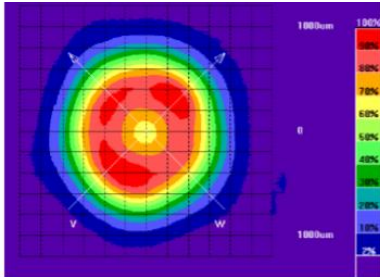
Electro-Optical Characteristics (T <sub>a</sub> =25°C unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I <sub>th</sub>		25		mA	CW
Slope Efficiency	η	0.9	1.0		W/A	I <sub>f</sub> =200mA
Optical Output Power	P <sub>o</sub>		170		mW	I <sub>f</sub> =200mA
Center Wavelength	λ <sub>c</sub>	930	940	950	nm	I <sub>f</sub> =200mA
Beam Divergence	Θ		25		°	Full Width 1/e <sup>2</sup>
Operating Voltage	V <sub>f</sub>		1.8	2.1	V	I <sub>f</sub> =200mA
Power Conversion Efficiency	PCE		43		%	I <sub>f</sub> =200mA

#### Notes:

- Forward Voltage (V<sub>f</sub>) measurement allowance is ±0.1V.
- Center Wavelength (λ<sub>c</sub>) measurement allowance is ±1.5nm.
- Others measurement allowance is ±5%.
- All parameters except mentioned are measured at I<sub>f</sub>=200mA, T<sub>a</sub>=25°C, CW.

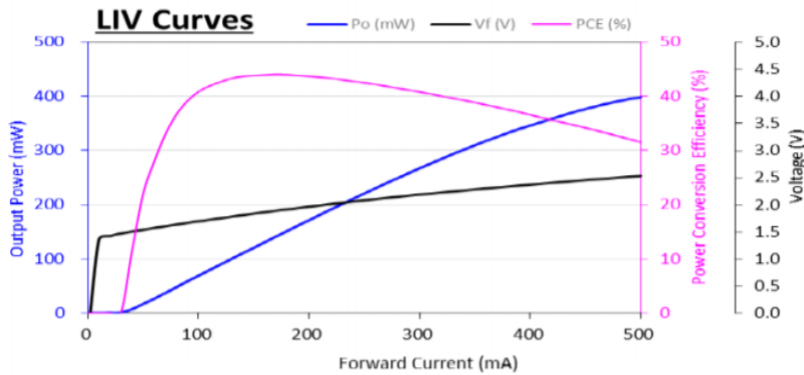
## Typical Characteristics

### Beam Divergence

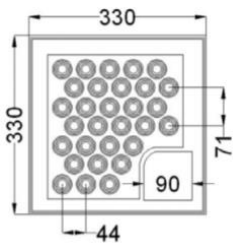


Full Width  $1/e^2$  : 25°

### LIV Graph at 25°C



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



Specification	Min.	Typ.	Max.
Chip width	315	330	345
Chip length	315	330	345
Chip thickness	105	120	135
Bond pad width	-	90	-

### 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.