



## VCC-94A8H 940nm 8mW VCSEL Chip

### Description

The Lasermate VCC-94A8H is a 940nm wavelength, 8mW output power, Vertical Cavity Surface Emitting Laser (VCSEL) chip designed for use in sensing applications.

### Features

- 940nm single emitter VCSEL chip
- Single longitudinal mode
- Typical 8mW output power at 13mA
- Power Conversion Efficiency (PCE): 26%
- Chip size: 190um x 190um
- Chip thickness: 170um

### Applications

- Proximity sensor
- Consumer electronics
- Active optical cables
- Medical application
- Range finder sensor
- Modulation bandwidth >2GHz

### Specifications

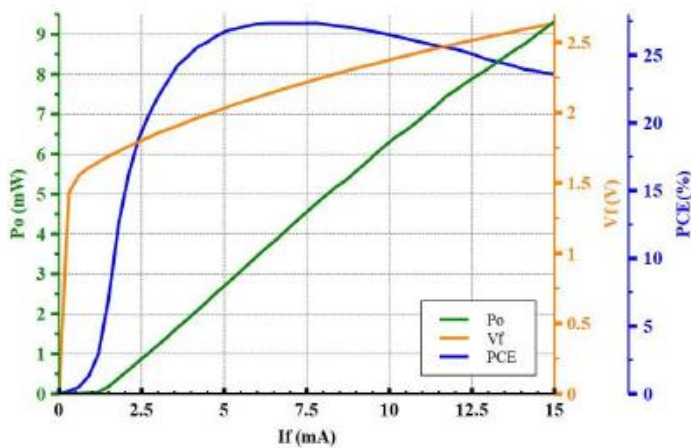
| Absolute Maximum Ratings        |                  |           |      |            |
|---------------------------------|------------------|-----------|------|------------|
| Parameters                      | Symbol           | Rating    | Unit | Conditions |
| Case Operating Temperature      | Top              | -40 to 60 | °C   |            |
| Storage Temperature             | Tstg             | -40 to 85 | °C   |            |
| Reflow Soldering Temperature    | Tsol             | 320       | °C   | 10 seconds |
| Reverse Voltage                 | Vr               | 5         | V    |            |
| Maximum Continuous Current      | I <sub>max</sub> | 20        | mA   |            |
| ESD Exposure (Human Body) Model | ESD              | 2K        | V    |            |

| Electro-Optical Characteristics (T <sub>op</sub> =25°C, CW mode) |                      |      |      |      |       |                      |
|--|----------------------|------|------|------|-------|----------------------|
| Parameters   | Symbol               | Min. | Typ. | Max. | Unit  | Conditions           |
| Optical Output Power   | P <sub>o</sub>       | -    | 8    | -    | mW    | I <sub>F</sub> =13mA |
| Threshold Current  | I <sub>th</sub>      | -    | 1.2  | -    | mA    |                      |
| Forward Current  | I <sub>F</sub>       | -    | 12.5 | -    | mA    |                      |
| Power Conversion Efficiency                                      | PCE                  | -    | 26.5 | -    | %     | I <sub>F</sub> =13mA |
| Slope Efficiency   | η                    | -    | 0.65 | -    | mW/mA | P <sub>o</sub> =8mW  |
| Peak Wavelength  | λ <sub>P</sub>       | 930  | 940  | 950  | nm    | I <sub>F</sub> =13mA |
| Forward Voltage  | V <sub>F</sub>       | -    | 2.5  | -    | V     | I <sub>F</sub> =13mA |
| Series Resistance  | R <sub>S</sub>       | -    | 62   | -    | Ohm   | I <sub>F</sub> =13mA |
| Wavelength Temperature Drift                                     | Δλ <sub>P</sub> / ΔT | -    | -    | 0.07 | nm/°C | I <sub>F</sub> =13mA |
| Beam Divergence  | FWHM <sub>B</sub>    | -    | 20   | -    | deg   |                      |
| Number of Emission Aperture                                      |                      | -    | 1    | -    |       |                      |

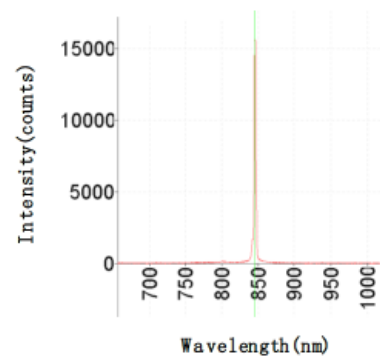
Note: Electro-optical characteristic with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.

## Typical Characteristics

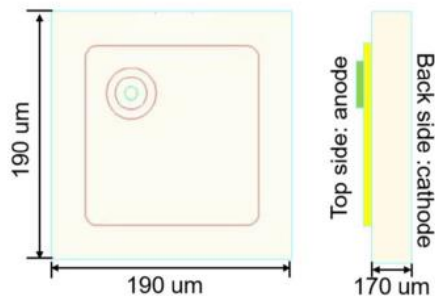
### LIV Graph



### Typical Spectral Width



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



### Additional Notes

- Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or other conditions above those indicated in the operations section for expanded periods of time may affect reliability.
- In its maximum rating diode laser operation could damage its performance or cause potential safety hazard such as equipment failure.
- Electrostatic discharge is the main reason for laser fault of the diode. Take effective precautions against ESD. When dealing with laser diodes, use wrist strap, grounding work surface and strict antistatic technology.
- 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.