



VCC-94A2WH 940nm 2000mW VCSEL Chip

Description

The Lasermate VCC-94A2WH is an 940nm wavelength, 2000mW output power, multi-emitter, Vertical Cavity Surface Emitting Laser (VCSEL) chip designed for use in sensing applications.

Features

- 940nm multi emitter VCSEL chip
- Typical 2W peak pulse output at 2.5A
- Number of emitters: 648
- High PCE (Power Conversion Efficiency): 41%
- -20 to 85°C operating temperature
- Chip size: 1260 x 1113.6 ± 15 μm
- Electrode side: Gold alloy on both anode P (emission side) and cathode N (backside)

Applications

- Sensing light source
- Photoelectric sensors
- Optical encoders
- 3D sensing
- 3D imaging, including Time of Flight, Structure light, Iris/Facial recognition, etc.

Specifications

Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Storage Temperature	T _{stg}	-40 to 85	°C	
Operating Temperature	T _{op}	-20 to 85	°C	
Continuous Forward Current	I _f	2600	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.

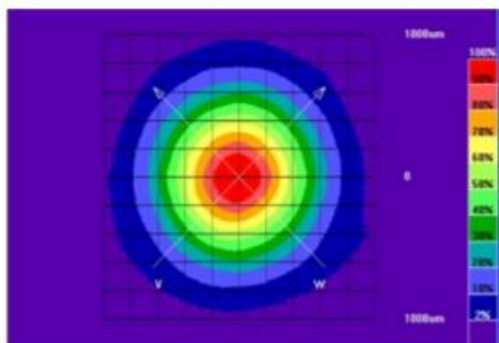
Electro-Optical Characteristics (T _a =25°C unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I _{th}		500		mA	
Slope Efficiency	η	0.9	1.0		W/A	I _f =2500mA
Optical Output Power	P _o		2000		mW	I _f =2500mA
Center Wavelength	λ _c	930	940	950	nm	I _f =2500mA
Power Conversion Efficiency	PCE		41		%	I _f =2500mA
Beam Divergence	Θ		26		°	Full width 1/e ²
Forward Voltage	V _f	1.7	2.0	2.3	V	I _f =2500mA
Wavelength Shift	Δλ/ΔT		0.07		nm/°C	I _f =2500mA

Notes:

- Forward Voltage (V_f) measurement allowance is ±0.1V.
- Center Wavelength (λ_c) measurement allowance is ±1.5nm.
- Others measurement allowance is ±10%.
- Test DUTs are mounted on star board and measured with operating bias current @ 2.5A, Duty Cycle: 10%.

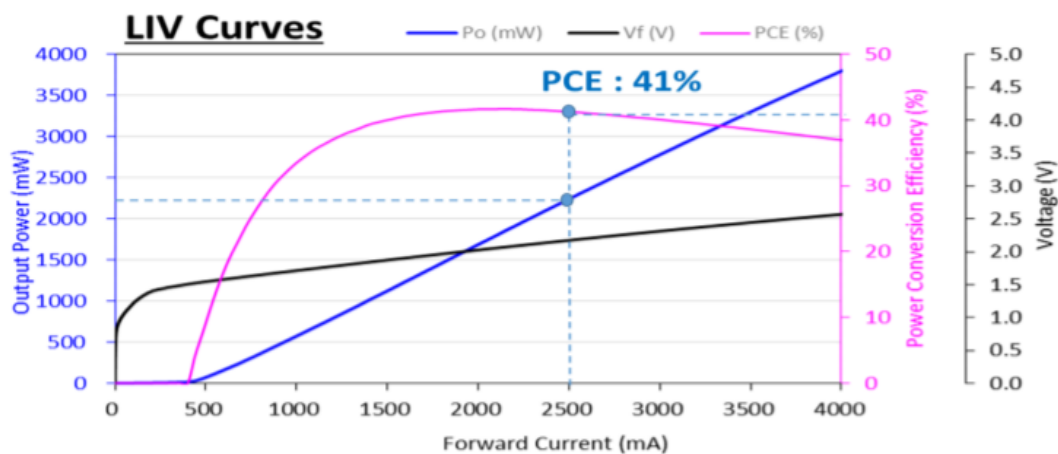
Typical Characteristics

Beam Divergence



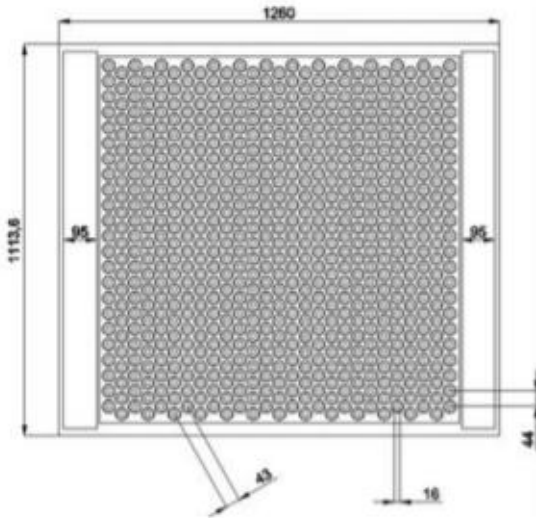
Full Width $1/e^2$: 26°

LIV Graph at 25°C



Note: Curves measurement at 0 ~ 4A current sweep with 1% duty cycle.

Outline Dimensions (unit: μm)



Specification	Min.	Typ.	Max.
Chip width	1245	1260	1275
Chip length	1098.6	1113.6	1128.6
Chip thickness	105	120	135
Bond pad width	-	95	-

Notes:

- Abnormal Aperture allowable is 1%.
- Continuous abnormal aperture (x, y or diagonal direction) is not allowed.

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.