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VCC-94A3WH
940nm 3000mW VCSEL Chip

Description

The Lasermate VCC-94A3WH is an 940nm wavelength, 3000mW output power, multi-emitter, Vertical Cavity Surface Emitting Laser (VCSEL) chip designed for use in sensing applications.

Features

- 940nm multi-emitter multi-mode VCSEL chip
- Typical 3W peak pulse output at 3.8A
- 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.

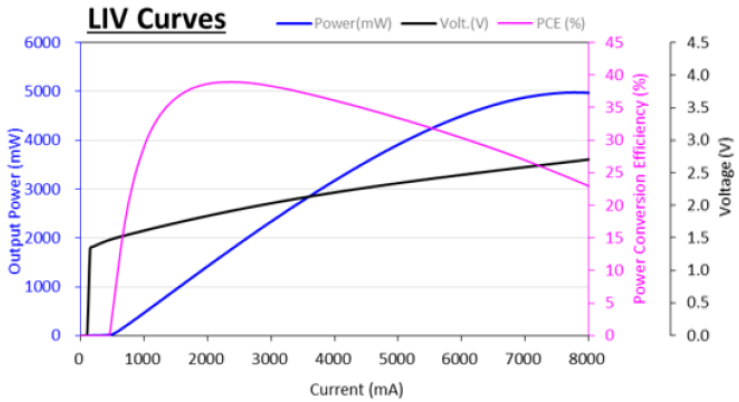
Electro-Optical Characteristics (T_a=25°C unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I_{th}		0.5		A	
Slope Efficiency	η	0.9	1		W/A	I_f=3000mA
Optical Output Power	P_o		3000		mW	I_f=3800mA
Center Wavelength	λ_C	930	940	950	nm	I_f=3000mA
Beam Divergence	Θ		23		°	I_f=3000mA, Full width 1/e^2
Forward Voltage	V_f		2.2		V	I_f=3800mA
Wavelength Shift	$\Delta\lambda/\Delta T$		0.07		nm/°C	I_f=3000mA

Notes:

- Forward Voltage (V_f) measurement allowance is ±0.1V.
- Center Wavelength (λ_C) measurement allowance is ±1.5nm.
- Others measurement allowance is ±5%.
- Test DUTs are mounted on star board and measured with operating bias current @ Ta=25°C, 1% duty cycle of T=100ms.

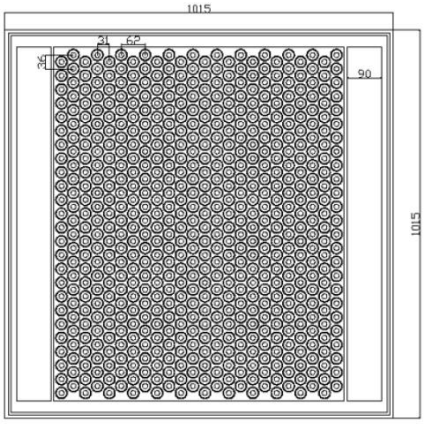
Typical Characteristics

LIV Graph at 25°C



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

Outline Dimensions (unit: µm)



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.