



# 940nm 8mW VCSEL Chip

## VCC-94A8H

### Features

- 940nm single emitter VCSEL chip
- 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

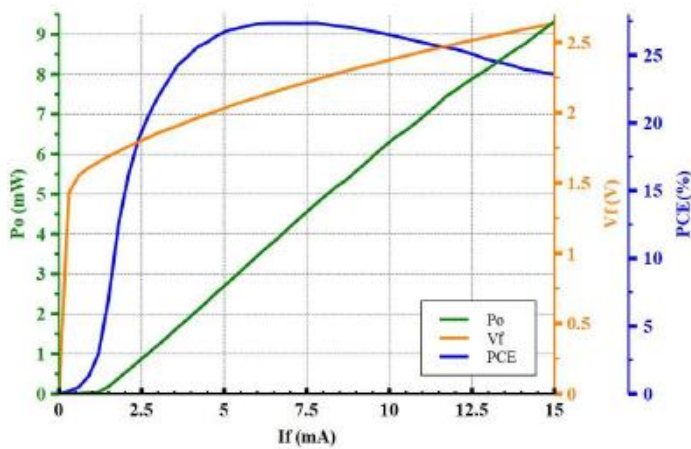
Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Case Operating Temperature	Top	-40 to 60	°C	
Storage Temperature	Tstg	-40 to 85	°C	
Reflow Soldering Temperature	Tsol	320	°C	10 seconds
Reverse Voltage	Vr	5	V	
Maximum Continuous Current	I <sub>max</sub>	20	mA	
ESD Exposure (Human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

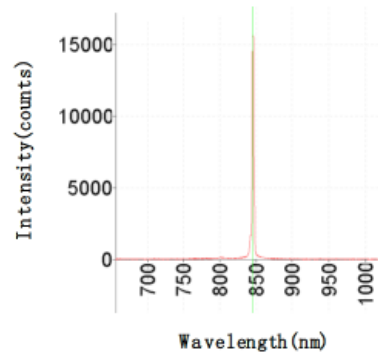
Note: Electro-optical characteristic with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.

## Typical Characteristics

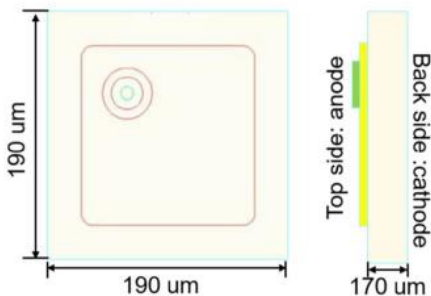
LIV Graph



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.