



# 940nm 6mW Multimode VCSEL Chip

## VCC-94A6H

### Features

- 940nm multimode VCSEL
- Typical 6mW optical output power at 9mA
- Chip size: 175um x 175um
- Chip thickness: 100um

### Applications

- Sensor light source
- Consumer electronics

### 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		
Maximum CW Current	-	12	mA		
Laser Reverse Voltage	-	5	V		
Human-Body Model	-	200	V	JESD22-A114	
Machine Model	-	25	V	JESD22-A115	
Maximum Package SMT Solder Reflow Temperature	-	260	°C	10 seconds	

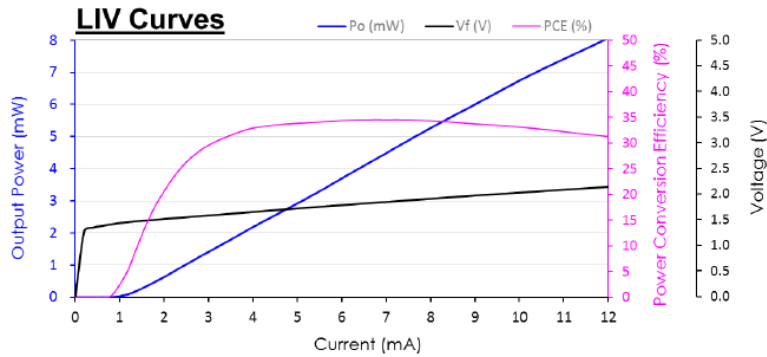
Note: The maximum CW laser current in the Absolute Maximum Ratings is valid for the operating temperature noted at the table above. Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

Electro-Optical Characteristics ( $T_a=25^\circ\text{C}$ unless otherwise stated)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	$I_{th}$	1	2	2.5	mA	
Forward Voltage	$V_f$	1.7	1.9	2.1	V	$I_f=9\text{mA}$
Slope Efficiency	$\eta$	0.6	0.8	1	W/A	$I_f=9\text{mA}$
Optical Output Power	$P_o$	5	6	7	mW	$I_f=9\text{mA}$
Center Wavelength	$\lambda_c$	930	940	950	nm	$I_f=9\text{mA}$
Beam Divergence	$\theta$	-	15	20	°	$I_f=6\text{mA}$ (Full Width $1/e^2$ )
		-	18	22		$I_f=9\text{mA}$ (Full Width $1/e^2$ )

Notes:

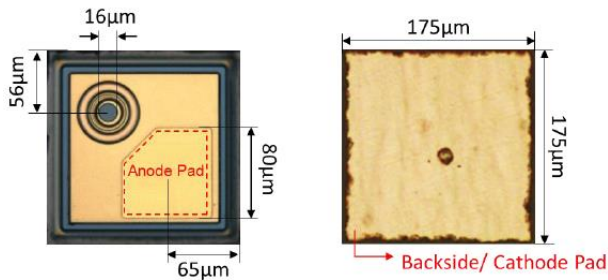
- Forward Voltage ( $V_f$ ) measurement allowance is  $\pm 0.1\text{V}$ .
- Center Wavelength ( $\lambda_c$ ) measurement allowance is  $\pm 1.5\text{nm}$ .
- Others measurement allowance is  $\pm 5\%$ .
- All parameters except mentioned are measured at  $I_f=9\text{mA}$ ,  $T_a=25^\circ\text{C}$ , CW.

### Typical Characteristics



Note: Data measure at ambient temperature 25°C.

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



Parameter	Unit	Min.	Typ.	Max.	Condition
Number of emitters	ea	1			
Length (X), Width (Y)	um	160	175	190	
Thickness	um	90	100	110	
Emitter surface area diameter	um	-	16	-	
Anode pad size (Bond pad)	um	77	80	83	Emitter side
Cathode pad size	um	160	175	190	Backside

Note: Dimension tolerance  $\pm 3\mu\text{m}$  unless specified otherwise.

### 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.