



# 940nm 500mW VCSEL Diode in 7060 Package

Part No. VC70C-940H500A

## Features

- 7060 package
- Low wavelength drift
- Oxide isolation technology
- Low threshold current
- High reliability and easy to collimate
- 500mW 940nm VCSEL @ 750mA



7060 Package

## Applications

- 3D sensor
- IR illumination
- Medical application
- Gesture recognition
- Broadband access network

## Specifications

Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Case Operating Temperature	Top	-40 to 85	°C	
Storage Temperature	Tstg	-40 to 105	°C	
Reflow Soldering Temperature	Tsol	260°C	°C	<10 seconds
Reverse Voltage	Vr	5	V	
Maximum Continuous Current	I <sub>max</sub>	1	A	
ESD Exposure (Human Body) Model	ESD	2K	V	

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.

Electro-Optical Characteristics (T <sub>op</sub> =25°C)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Optical Output Power	P <sub>o</sub>	480	500	520	mW	I <sub>F</sub> =0.75A
Threshold Current	I <sub>th</sub>	-	0.1	-	A	
Forward Current	I <sub>F</sub>	-	0.8	-	A	
Power Conversion Efficiency	PCE	-	30	-	%	
Slope Efficiency	η	-	0.71	-	mW/mA	
Peak Wavelength	λ <sub>P</sub>	930	940	950	nm	P <sub>o</sub> =500mW
Laser Forward Voltage	V <sub>F</sub>	2.25	2.35	2.45	V	I <sub>F</sub> =0.75A
Series Resistance	R <sub>S</sub>	2.81	2.94	3.07	Ohm	I <sub>F</sub> =0.75A
Beam Angle	Θ	-	20	-	Deg	I <sub>F</sub> =0.75A
Wavelength Temperature Drift	Δλ <sub>P</sub> / ΔT	-	0.07	-	nm/°C	I <sub>F</sub> =0.75A
Die Size		-	371 x 370	-	um	
Soldering Temperature	Tsol	-	-	260	°C	10 seconds
Substrate					CuAg	

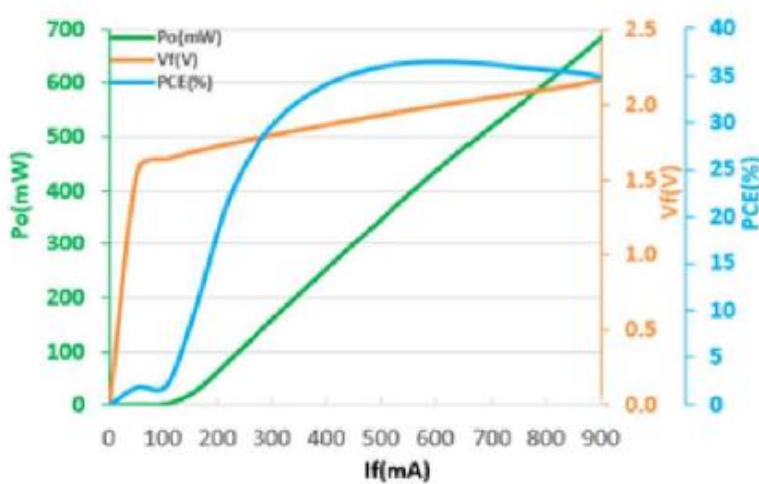
Note: Electro-optical characteristic with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.



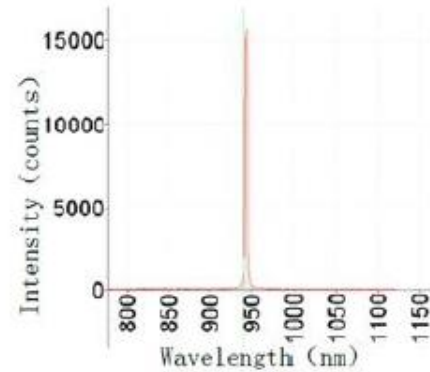
Environmental Specifications						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Case Operating Temperature	Top	-40	25	85	°C	
Storage Temperature	Tstg	-40	25	105	°C	

## Typical Characteristics

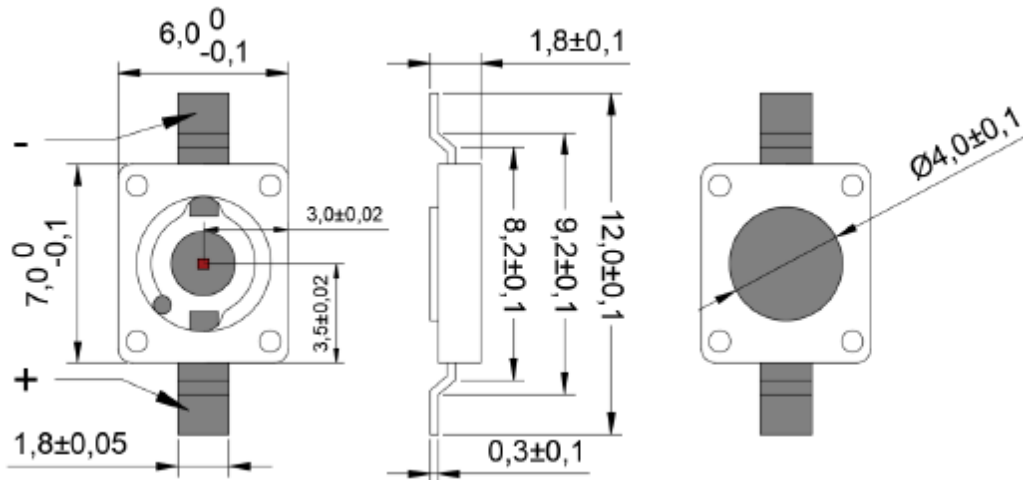
LIV Graph

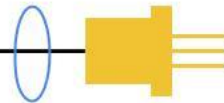


Intensity vs. Wavelength

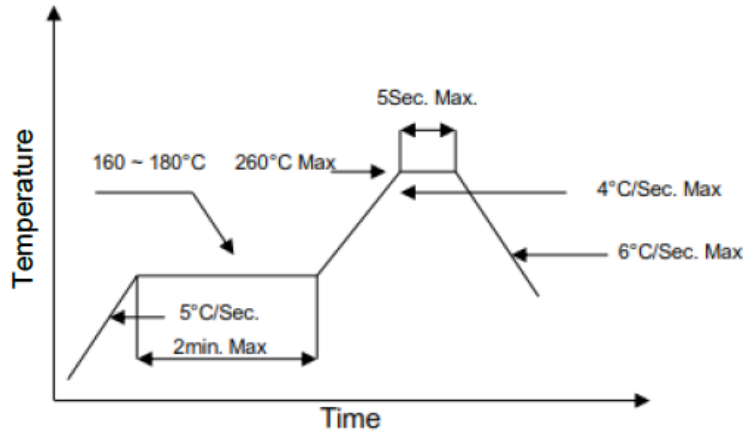


## Outline Dimensions (unit: mm)





## SMT Reflow Soldering Curve



Note: Reflow soldering can be operated only one time. During the temperature ramp-up, no forces may be exerted on the LD which would deform or damage them. After soldering is completed, please do not process until the product temperature ramps down to room temperature.

## Additional Notes

1. Please use solder paste to cure the laser diode.
2. Please make sure that the heat of VCSEL diode has been completely conducted to metal shell to avoid affecting the optical power output.
3. This VCSEL diode can be only used in constant voltage and current.
4. Please do not aim the laser at people or animals.
5. You may observe the laser spot through an image monitoring equipment.
6. Please do not touch VCSEL diode surface by naked hands or squeeze the sealant on VCSEL diode surface. It may cause wrong optical angle and distorted laser spot, and even damage the VCSEL diode.
7. Please use ceramic suction nozzle to absorb the VCSEL diode, so as to avoid VCSEL diode sticking to the nozzle.
8. Please add a 0.02s blowing action after locating the laser diode to aluminum substrate.
9. Specifications are subject to change without notice.