



# VCx-808C20WA

## 808nm 20W CW VCSEL Diode

### Features

- 808nm high-power VCSEL diode
- Output power: 20W CW
- Available in SMD or T-mount package options

### Applications

- 3D sensing and structured light systems
- Industrial and automotive LiDAR
- Infrared (IR) illumination
- Solid-state laser pumping
- Cosmetics, i.e. Hair removal

### Ordering Information

Part Number	Description
VC74A-808C20WA	808nm 20W CW VCSEL Diode, SMD 7471 Package
VCTMC-808C20WA	808nm 20W CW VCSEL Diode, T-Mount Package

\* Additional package configurations may be available upon request.

### 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>	30	A	
ESD Exposure (Human Body) Model	ESD	2k-4k (Class 2)	V	
ESD Exposure (Machine) Model	ESD	200-400 (Class B)	V	

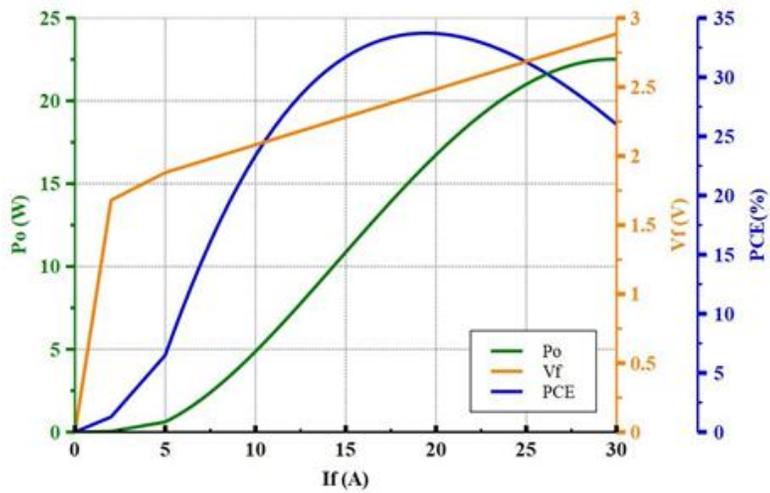
### Electrical-Optical Characteristics (T<sub>op</sub>=25°C, CW Mode)

Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I <sub>th</sub>	-	5	-	A	
Forward Current	I <sub>F</sub>	-	24	-	A	
Optical Output Power	P <sub>o</sub>	-	20	-	W	I <sub>F</sub> =24A
Forward Voltage	V <sub>f</sub>	-	2.64	-	V	I <sub>F</sub> =24A
Power Conversion Efficiency	PCE	-	32	-	%	I <sub>F</sub> =24A
Slope Efficiency	η	-	1.01	-	W/A	P <sub>o</sub> =20W
Series Resistance	R	-	0.11	-	Ohm	I <sub>F</sub> =24A
Peak Wavelength	λ <sub>P</sub>	800	808	816	nm	I <sub>F</sub> =24A
Wavelength Temperature Drift	Δλ <sub>P</sub> /ΔT	-	0.07	-	nm/°C	I <sub>F</sub> =24A
Beam Divergence	(1/e <sup>2</sup> ) <sub>B</sub>	-	25	-	deg	I <sub>F</sub> =24A
Emission Area			4.31x3.45		mm <sup>2</sup>	
Number of Emission Aperture			306x8			

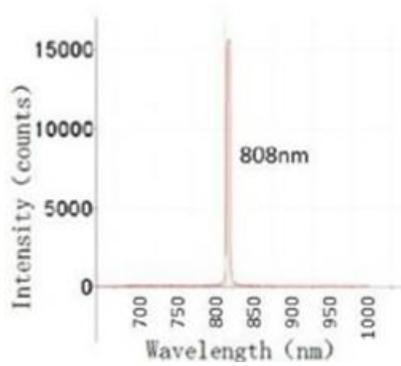
Note: Electro-optical characteristics with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.

### Typical Characteristics

#### LIV Graph

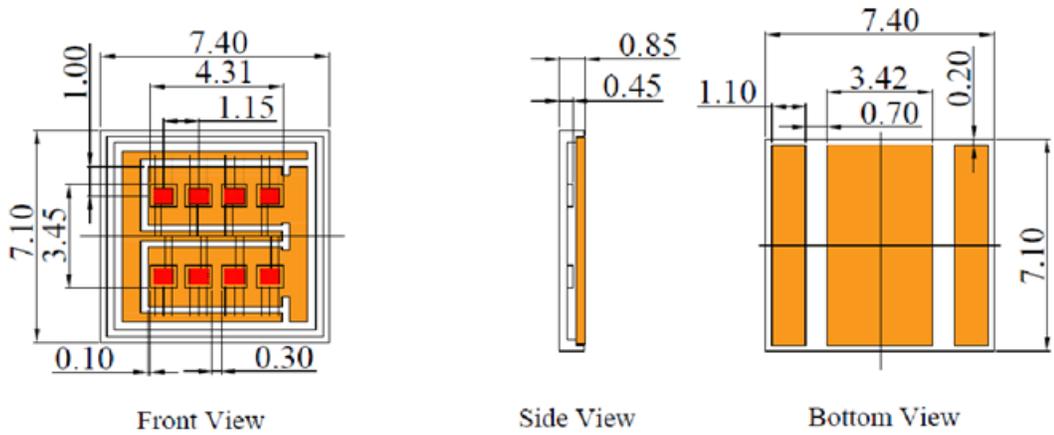


#### Intensity vs. Wavelength

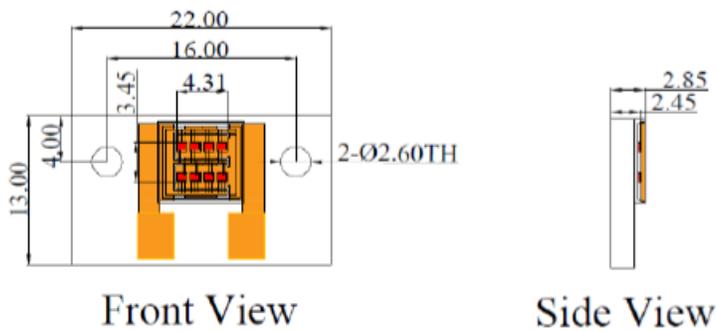


**Outline Dimensions (unit: mm)**

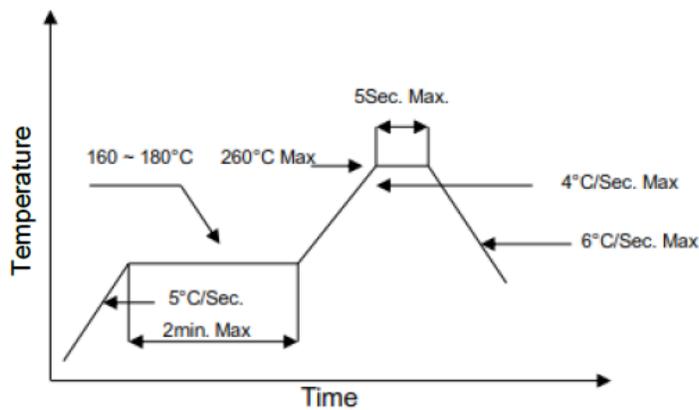
**SMD 7471 Package**



**T-Mount Package**



**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. Stresses exceeding those listed in Absolute Maximum Ratings may cause permanent damage to the device. These ratings are stress limits only and do not imply functional operation under such conditions. Exposure to conditions beyond recommended operating limits may affect device reliability.
2. Operation at or near maximum ratings may degrade performance and may create potential safety risks, including device failure.
3. The device is sensitive to electrostatic discharge (ESD). Proper ESD precautions, including grounded wrist straps, antistatic work surfaces, and ESD-safe handling procedures, must be followed during handling and assembly.
4. Adequate thermal management must be provided. The VCSEL device should be properly mounted to ensure efficient heat transfer to the package or system thermal path to maintain stable optical performance.
5. Avoid direct exposure of laser radiation to human eyes or skin. Follow applicable laser safety regulations and system-level safety design practices.
6. The emitting surface of the VCSEL should not be touched or contaminated. Mechanical contact or contamination may degrade optical performance or damage the device.
7. Use appropriate pick-and-place handling tools, such as ceramic or ESD-safe vacuum nozzles, to prevent mechanical or electrostatic damage during assembly.
8. Specifications are subject to change without notice.

