



VCx-850C1WA

850nm 1000mW CW VCSEL Diode

Data Sheet

Features

- 850nm VCSEL diode
- Output power: 1000mW (CW)
- Low threshold current
- Oxide isolation technology
- Available in 7060 SMD or 3535 SMD package options

Applications

- 3D sensors
- Proximity detection systems
- IR illumination
- Medical imaging and diagnostics
- Range finder sensors

Ordering Information

Part Number	Description
VC70C-850C1WA	850nm 1000mW CW VCSEL Diode, 7060 SMD Package
VC35A-850C1WA	850nm 1000mW CW VCSEL Diode, 3535 SMD Package

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	5 seconds
Reverse Voltage	Vr	5	V	
Maximum Continuous Current	I _{max}	3	A	
ESD Exposure (Human Body) Model	ESD	2k-4k	V	Class 2
ESD Exposure (Machine) Model	ESD	200-400	V	Class B

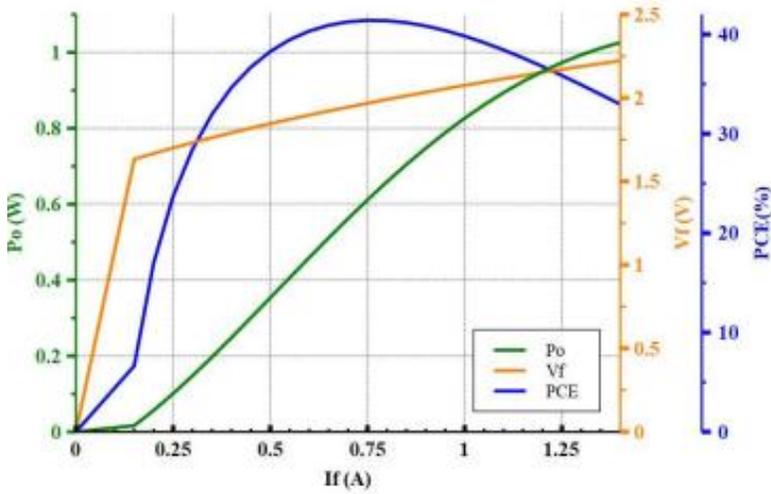
Electrical-Optical Characteristics (T_{op}=25°C, CW Mode)

Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Optical Output Power	P _o	-	1000	-	mW	I _F =1.2A
Threshold Current	I _{th}	-	0.15	-	A	
Forward Current	I _F	-	1.2	-	A	
Slope Efficiency	η	-	1.0	-	W/A	P _o =1000mW
Power Conversion Efficiency	PCE	-	36	-	%	I _F =1.2A
Peak Wavelength	λ _p	840	850	860	nm	I _F =1.2A
Laser Forward Voltage	V _F	-	2.18	-	V	I _F =1.2A
Series Resistance	R _s	-	0.5	-	Ω	I _F =1.2A
Beam Divergence	FWHM _B	-	20	-	deg	
Wavelength Temperature Drift	Δλ _p / ΔT	-	-	0.07	nm/°C	I _F =1.2A
Emission Area			470x470		mm ²	
No. of Emission Aperture			113			

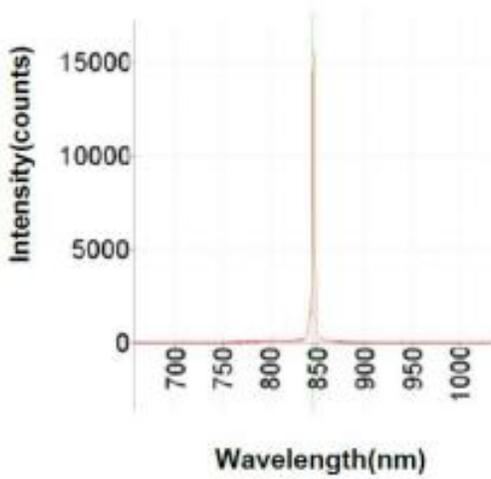
Note: Electro-optical characteristics with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.

Typical Characteristics

LIV Graph

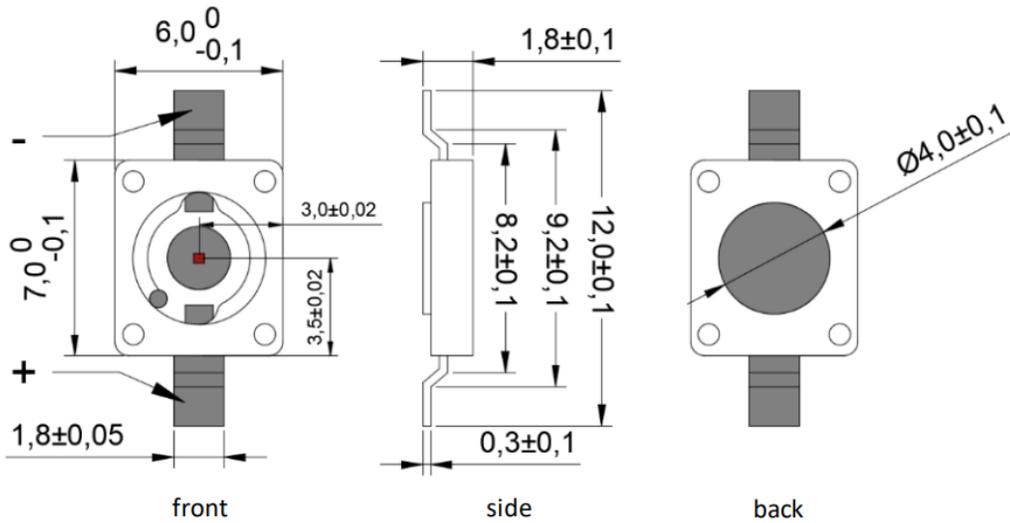


Intensity vs. Wavelength

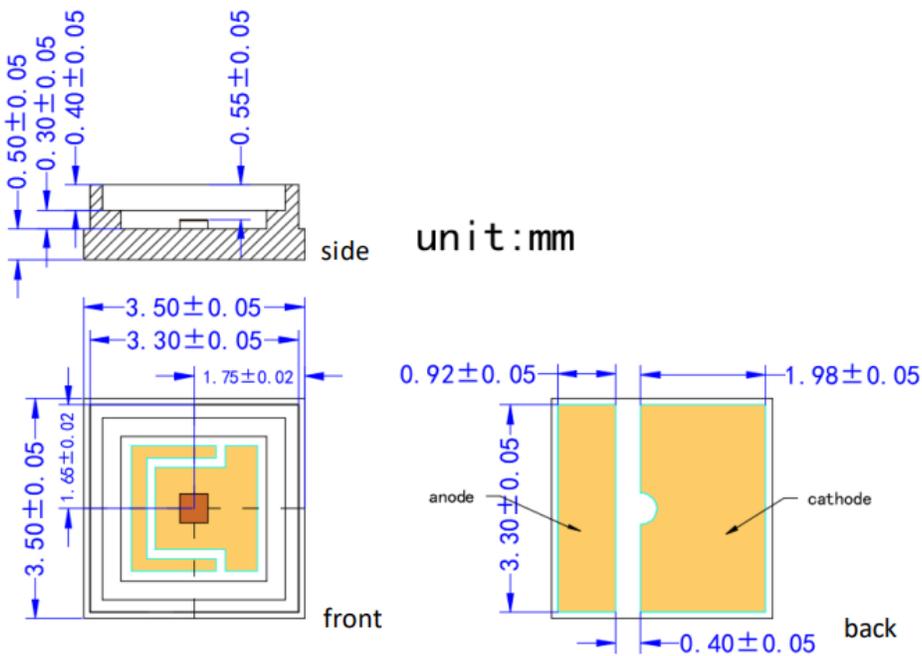


Outline Dimensions (unit: mm)

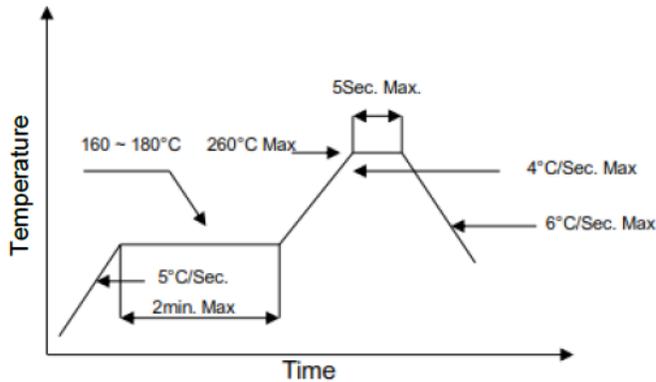
7060 SMD Package



3535 SMD 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.