VCx-1060P1WA
1060nm 1000mW Pulsed VCSEL Diode

Data Sheet

Features

- 1060nm VCSEL diode
- Typical 1000mW (ms pulse) peak output power
- Available in SMD package options

Applications

- Consumer electronics
- Lidar
- Heating applications
- Medical applications
- 3D camera

Ordering Information

Part Number	Description
VC35A-1060P1WA	1060nm 1000mW Pulsed VCSEL Diode, SMD 3535 Package
VC70C-1060P1WA	1060nm 1000mW Pulsed VCSEL Diode, SMD 7060 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	10 seconds
Reverse Voltage	Vr	5	V	
Maximum Continuous Current	Imax	2.3	A	
ESD Exposure (Human Body) Model	ESD	4-8K	V	Class 3
ESD Exposure (Machine) Model	ESD	400-800	V	Class C

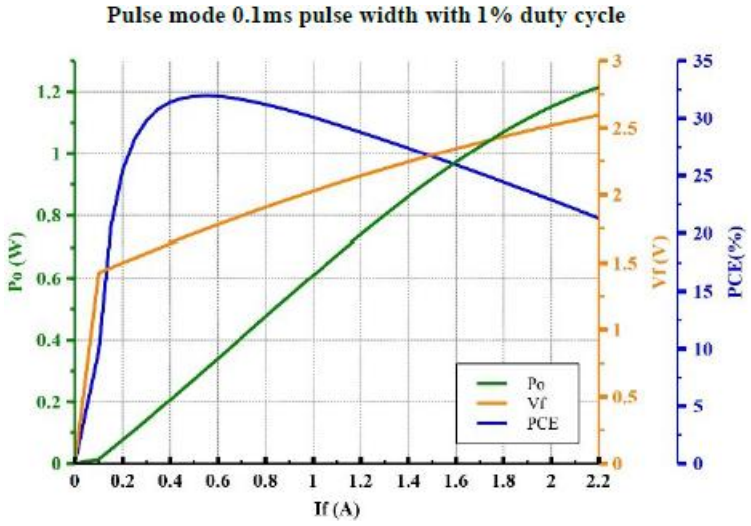
Electro-Optical Characteristics (T_{op}=25°C, 0.1ms pulse width, 1% duty cycle)

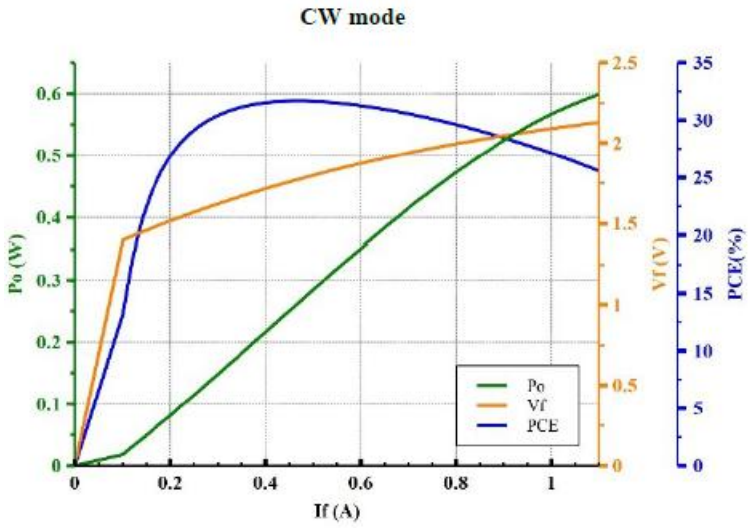
Parameters		Symbol	Min.	Typ.	Max.	Unit	Conditions
Peak Output Power		P_o	0.9	1	-	W	I_F=1.65A
Threshold Current		I_{th}	-	0.1	-	A	
Slope Efficiency		η	-	0.65	-	W/A	P_o=1W
Power Conversion Efficiency		PCE	-	25	-	%	I_F=1.65A
Peak Wavelength		λ_P	1050	1060	1070	nm	I_F=1.65A
Laser Forward Voltage		V_F	-	2.37	-	V	I_F=1.65A
Series Resistance		R_S	-	0.47	-	Ω	I_F=1.65A
Beam Angle	(1/e^2)	θ	-	24	-	deg	I_F=1.65A
	FWHM	θ	-	19	-	deg	
Wavelength Temperature Drift		$\Delta\lambda_P/\Delta T$	-	-	0.07	nm/°C	I_F=1.65A
Emission Area			-	354x355	-	um	
Soldering Temperature					260	°C	10seconds, VC35A-1060P1WA
Soldering Temperature					180	°C	10seconds, VC70C-1060P1WA

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

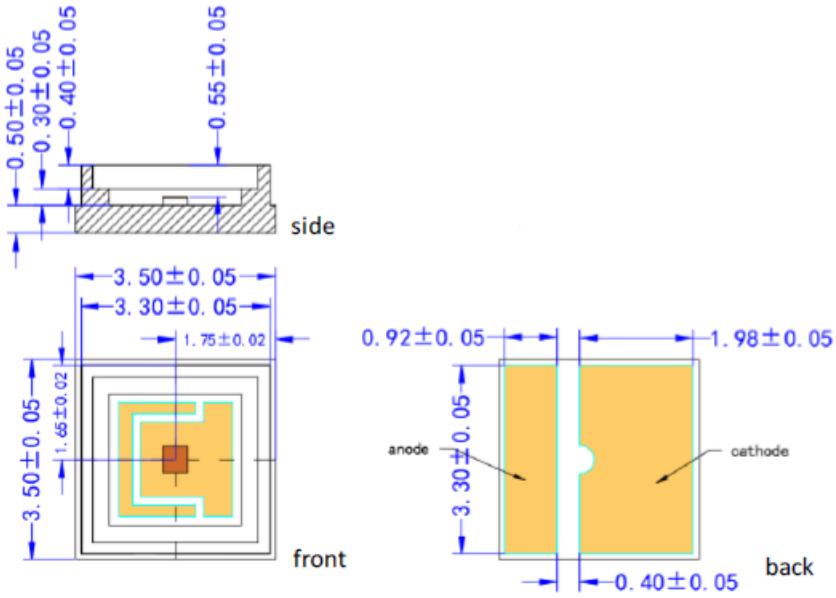
LIV Graph



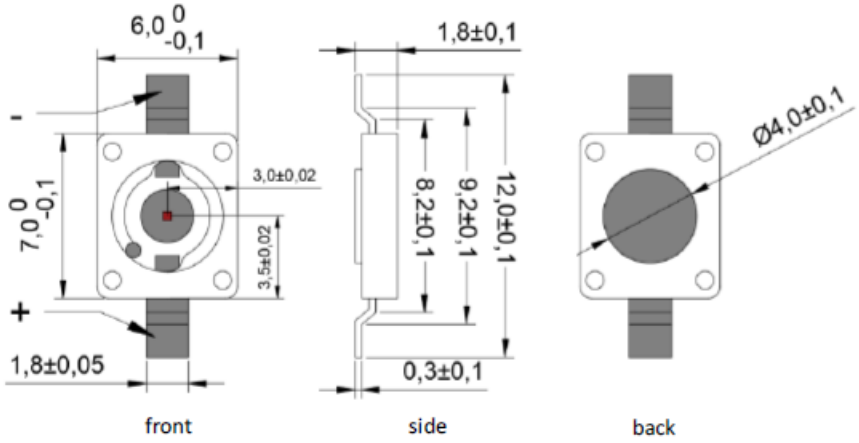


Outline Dimensions (unit: mm)

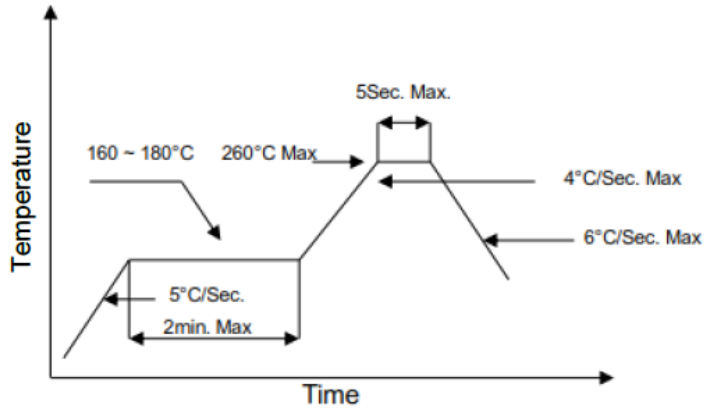
SMD 3535 Package



SMD 7060 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.