VCx-940C200A
940nm 200mW CW VCSEL Diode

Data Sheet

Features

- 940nm VCSEL diode
- Output power: 200mW (CW)
- Single longitudinal mode
- Low threshold current
- Available in SMD or TO-can package options

Applications

- 3D sensing and facial recognition
- Gesture recognition systems
- Infrared illumination
- Medical diagnostics and monitoring
- Proximity sensors

Ordering Information

Part Number	Description
VC35A-940C200A	940nm 200mW CW VCSEL Diode, SMD 3535 Package
VCT5-940C200A	940nm 200mW CW VCSEL Diode, TO-56 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	4	V	
Maximum Continuous Current	Imax	400	mA	
ESD Exposure (Human Body) Model	ESD	2K	V	

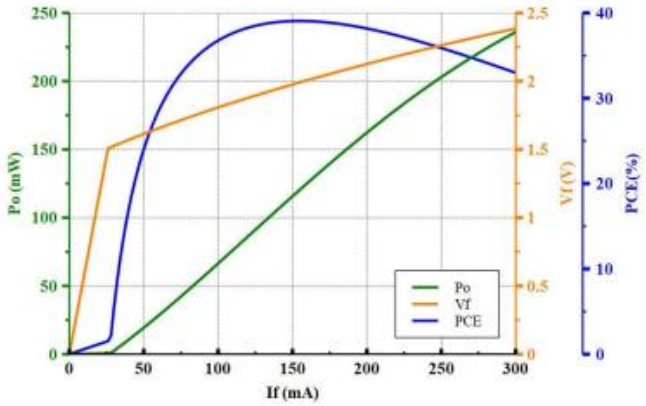
Electrical-Optical Characteristics (T_{op}=25°C, CW Mode)

Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Optical Output Power	P_o	-	200	-	mW	I_F=250mA
Threshold Current	I_{th}	-	25	-	mA	
Forward Current	I_F	-	250	-	mA	
Slope Efficiency	η	-	0.9	-	W/A	P_o=200mW
Power Conversion Efficiency	PCE	-	35	39	%	I_F=250mA
Peak Wavelength	λ_P	930	940	950	nm	I_F=250mA
Laser Forward Voltage	V_F	-	2.3	-	V	I_F=250mA
Series Resistance	R_S	-	3.4	-	Ω	I_F=250mA
Beam Divergence	$FWHM_B$	-	16	-	deg	I_F=250mA
	(1/e^2)		20			
Wavelength Temperature Drift	$\Delta\lambda_P/\Delta T$	-	-	0.07	nm/°C	I_F=250mA
No. of Emission Aperture		-	20	-		

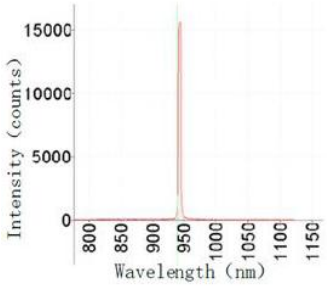
Note: Electro-optical characteristics with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.

Typical Characteristics

LIV Graph

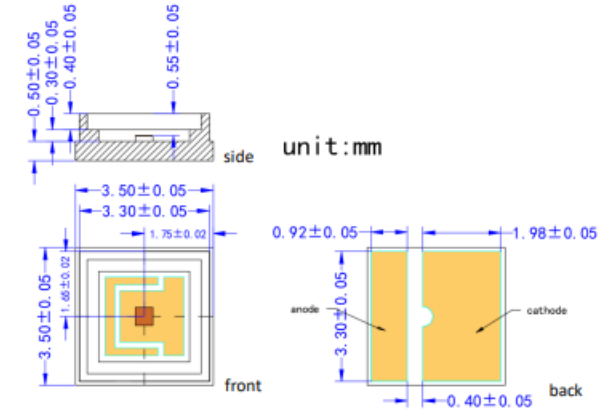


Intensity vs. Wavelength

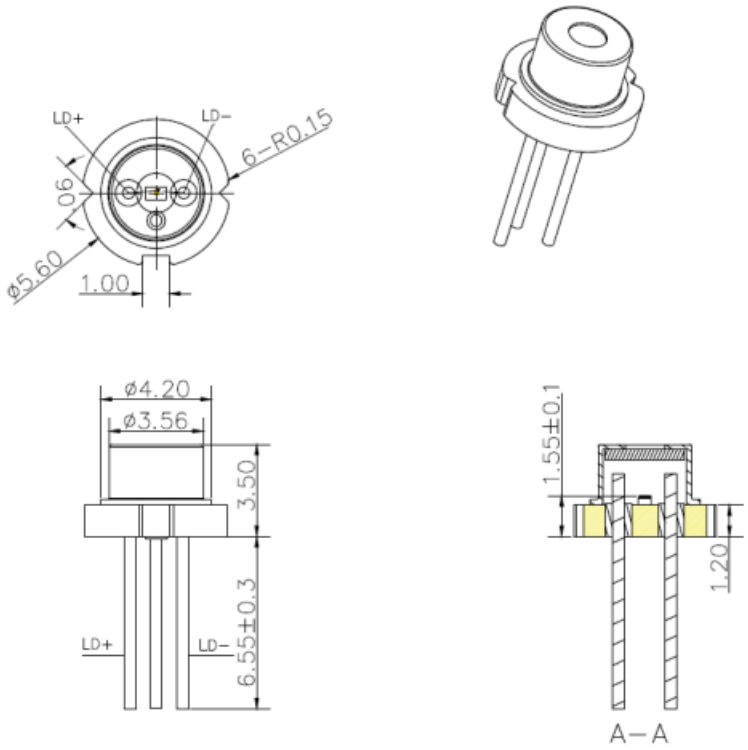


Outline Dimensions (unit: mm)

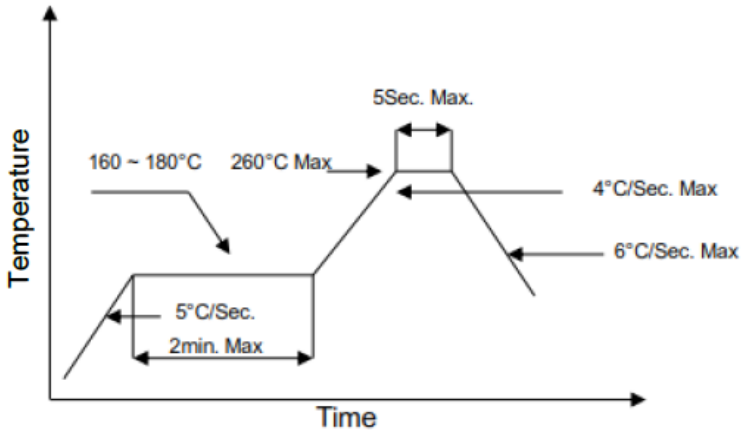
SMD 3535 Package



TO-56 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.