



Optan SM Series UVC LEDs

DISCONTINUED

- Precise peak wavelength bins from 235 nm – 275 nm
- High power output stability with low pulse-to-pulse variation
- Minimum power consumption at 20 mA
- Compact package built for PCBA

Version	Date
1.0	February 27, 2024
2.0	March 25, 2026

Product Bins

Optan is binned by emission wavelength and optical power.

Part Number ¹	Peak Wavelength		Optical Output at 20 mA	Optical Output at 100 mA	
	Min	Max	Min	Min	Max
OP235-02N-SM	231 nm	237 nm	0.05 mW	Not applicable ²	
OP255-10P-SM	250 nm	260 nm	0.5 mW	4 mW	8 mW
OP275-10P-SM	270 nm	280 nm	0.5 mW	4 mW	8 mW

Notes

1. LEDs are produced with semiconductor technology that is subject to process variation, yielding a range of flux performance that is approximately Gaussian in nature. To provide customers with fine granularity within the overall flux distribution, Crystal IS separates LEDs into bins
2. Maximum operating current of 50 mA for OP235-02N-SM

Specifications

LED Characteristics

OP235-02N-SM Characteristics				
	Unit	Min	Typical	Max
Viewing Angle ¹	degrees		120	
Forward voltage at 20 mA	V	5	6	9
Thermal resistance, junction-to-case	°C/W		10	
Power dissipation at 20 mA	W			0.18

OP255-10P-SM and OP275-10P-SM Characteristics				
	Unit	Min	Typical	Max
Viewing Angle ¹	degrees		120	
Forward voltage at 100 mA	V			8
Thermal resistance, junction-to-case	°C/W		10	
Power dissipation at 100 mA	W			0.8

Notes

1. Viewing angle is the angle over which the output intensity is at least half the peak output intensity (FWHM).

Absolute Maximum Ratings

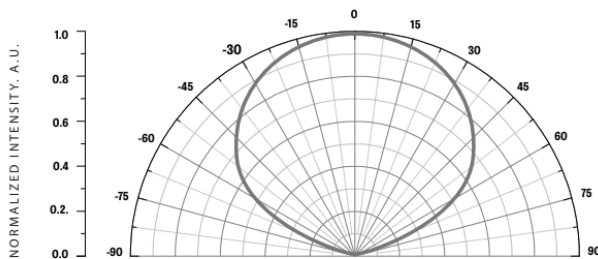
OP235-02N-SM Characteristics			
	Unit	Min	Max
Forward Current (continuous or CW)	mA	20	50
Reverse Voltage	V		-5
Operating Case Temperature Range	°C	-5	50
Storage Temperature	°C	-40	85

OP255-10P-SM and OP275-10P-SM Characteristics			
	Unit	Min	Max
Forward Current (continuous or CW)	mA	20	100
Reverse Voltage	V		-5
Operating Case Temperature Range	°C	-5	55
Storage Temperature	°C	-40	100
Junction Temperature	°C		115

Typical Characteristics

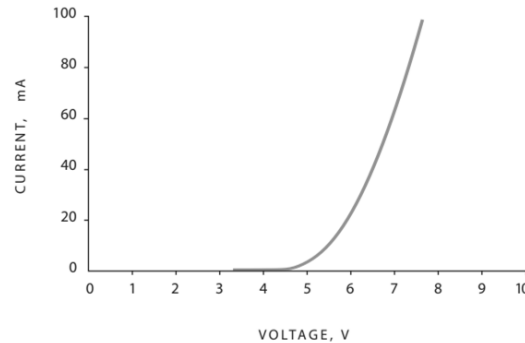
Radiation Pattern

Optan SM LEDs have a typical viewing angle of 120°. The typical forward voltage is less than 8V at an operating current of 100 mA.



Test Conditions: I (CW) = 100 mA, CW = Continuous Wave Mode

Electrical Characteristics



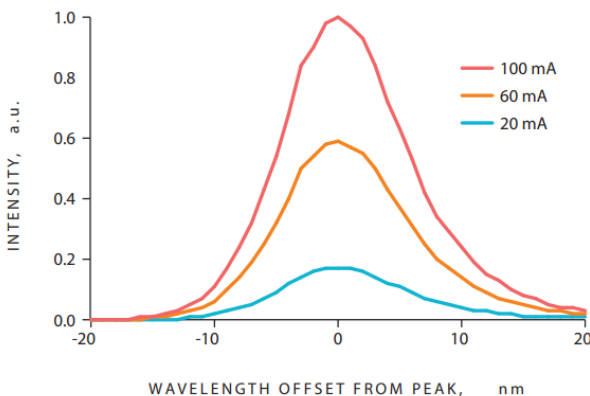
Test Conditions: I (Pulsed Mode) = 1 to 100 mA

Solder Temperature (T_S) = 35 °C

Note – graph does not depict characterization of OP235-02N-SM which operates at a lower current.

Typical Spectral Characteristics Over Current

Stability of peak wavelength at various applied currents. No shift is typically observed in the peak wavelength with change in drive current from 20 mA to 100 mA.



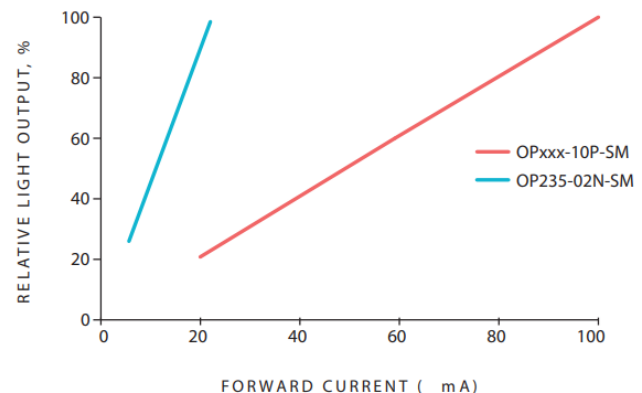
Test Conditions: Solder Temperature (T_S) = 35 °C

Pulse mode operation

Note – graph does not depict characterization of OP235-02N-SM which operates at a lower current.

Light Output Over Current

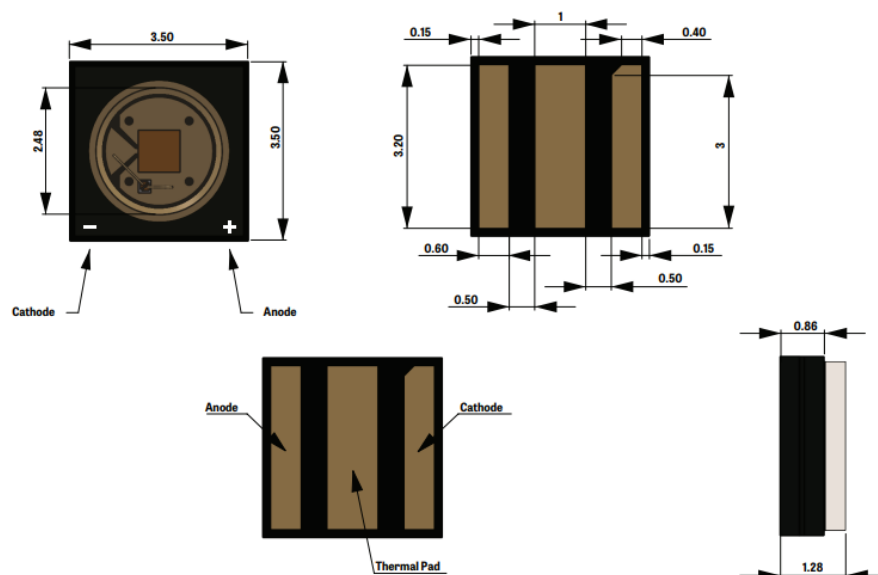
Typical variation in light output with forward current, normalized to light output at 100 mA.



Test Conditions: Solder Temperature (T_S) = 35 °C

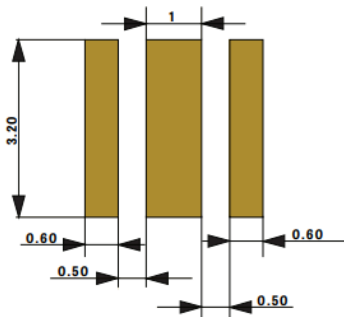
Pulse mode operation

Mechanical Dimensions



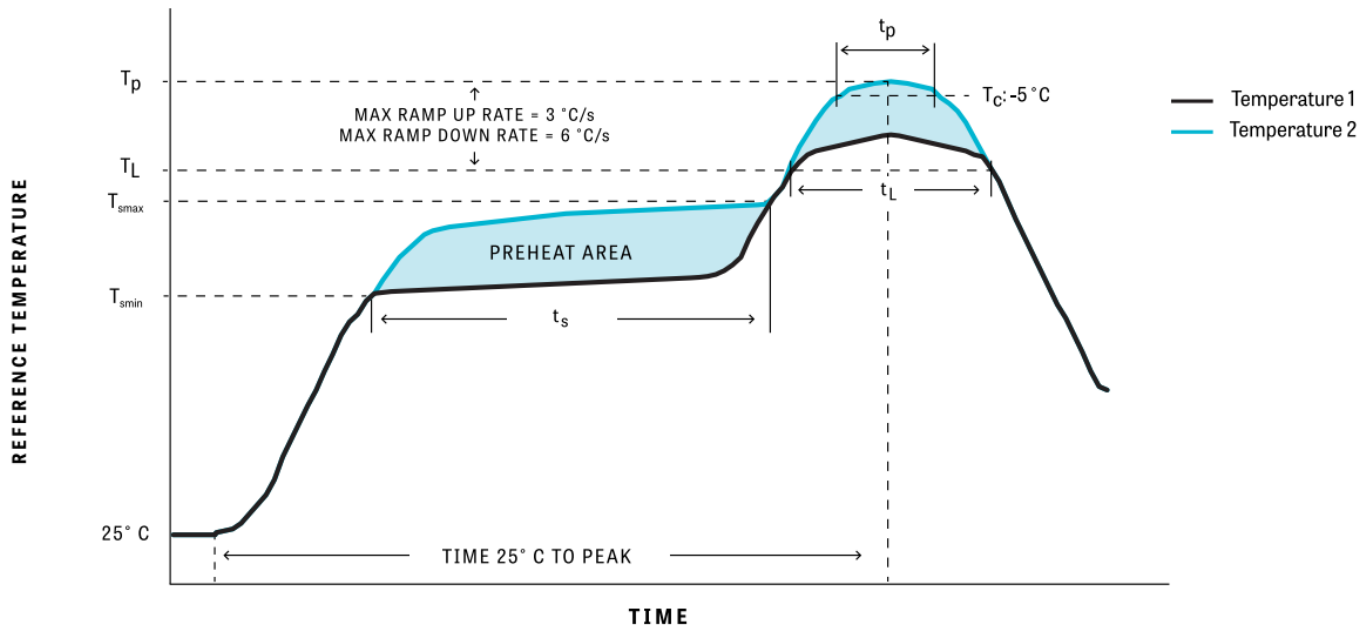
All dimensions are in millimeters. Unless otherwise noted, all dimensions have a tolerance of ± 0.05 mm
Dimensions are design values.

Solder Pattern



Recommended Soldering Guidelines

The recommended solder reflow profile for Optan SM LEDs follows the JEDEC standard J-STD-020D. **Hand soldering is not recommended for these devices.**



Guidelines

Profile Feature	Pb-Free Assembly
Preheat/Soak	
> Temperature Min (T_{smin})	150 °C
> Temperature Max (T_{smax})	200 °C
> Maximum Time (t_s) from T_{smin} to T_{smax}	60~120 seconds
Ramp-up rate (T_L to T_P)	3 °C / second max.
Liquidous Temperature (T_L)	217 °C
Time (t_L) maintained above T_L	60~150 seconds
Maximum peak package body temperature (T_P)	260 °C
Time (t_p) within 5 °C of the specified temperature (T_C)	30 seconds
Ramp-down rate (T_P to T_L)	6 °C/second max.
Maximum Time 25 °C to peak temperature	8 minutes max.

Important Usage Notes

ESD Sensitivity

- **CAUTION: LEDs are ESD (electrostatic discharge) sensitive**
- Static electricity and surge voltages seriously damage UV LEDs and can result in product failure
- Ensure that tools, jigs and machines being used are properly grounded
- LED mounting equipment should include protection against voltage surge
- Use proper ESD protection, including grounded wrist straps, ESD footwear and clothes

Thermal Management

- Excess heat will negatively impact the performance and lifetime of the LED
- A metal-core or metal base PCB is recommended.
- When assembling arrays of LEDs, ensure that your calculations properly account for the size of heatsink required for proper thermal dissipation

Storage Conditions

- **Product complies with JEDEC MSL3 or equivalent** and is shipped in a moisture proof package (with silica desiccant). See IPC/JEDEC STD-202 for moisture sensitivity details.
- Product should be stored in a controlled dust-free environment
- To avoid condensation, LEDs should be stored in an environment with minimal fluctuations in temperature and humidity

Safety

- During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes.
- UV light is hazardous to skin and may cause cancer.
- Avoid exposure to UV light when LED is operational.
- Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses.
- Do not look directly at the front of the LED or at the LED's lens when LED is operational.
- Attach warning labels on products/systems that use UV LEDs.

Certifications

ROHS COMPLIANCE

The levels of environmentally sensitive, persistent biologically toxic (PBT), persistent organic pollutants (POP), or otherwise restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2015/863 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

REACH

This product and associated materials, packing materials and associated production processes are in compliance with Regulation (EC) No 1907/2006 - Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and its latest revised version, Commission Regulation (EU) 2022/586.

To access the compliance declarations associated with this product, please visit:

<https://www.cisuvc.com/company/quality-documents/>

Disclaimer

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