



**OPTAN™**

## OPTAN® 3535

Data Sheet Updated October, 2020

### FEATURES

- Lifetime capacity to generate over 36 Billion spectroscopic measurements
- High power output stability with low pulse-to-pulse variation
- Minimal power consumption at 20mA
- Compact package built for PCBA



### BENEFITS

- Measurement data at orders of magnitude lower cost than other techniques
- Simple UVC source ideal for compact sensors
- On-demand power output and low power requirements
- Wavelength ranges aligned directly with most industrial and water quality processes



realtime  
monitoring



swarm  
sensing



digitize  
water

Regardless of your critical compound or parameter, Optan UVC LEDs can provide the right solution.

### SUGGESTED WAVELENGTH RANGE FOR COMMON PARAMETERS

Parameter	250 nm - 260 nm	270 nm - 280 nm
EPA UV 254/SAC	•	
COD	•	
Ozone	•	
TOC	•	
BOD		•
Oil-in-Water		•
Protein		•
Uric Acid		•

**PRODUCT NOMENCLATURE**

Optan LEDs are binned by peak wavelength and total power output ( $P_{t,i}$ ).

Part Number	Peak Wavelength		Optical Power output at 20 mA		Optical Power output 100 mA	
	Min	Max	Min		Min	Max
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

**LED CHARACTERISTICS**

Characteristic	Unit	Min	Typical	Max
Viewing Angle <sup>1</sup>	degrees	120		
Forward voltage at 100 mA	V		8	
Thermal resistance, junction-to-case	°C/W	10		
Power dissipation	W	0.8		

**Notes:**

1. Viewing angle is twice of half-value angle. A half-value angle is the angle between axial direction and direction in which the light intensity value is half of the axial intensity.

**ABSOLUTE MAXIMUM RATINGS**

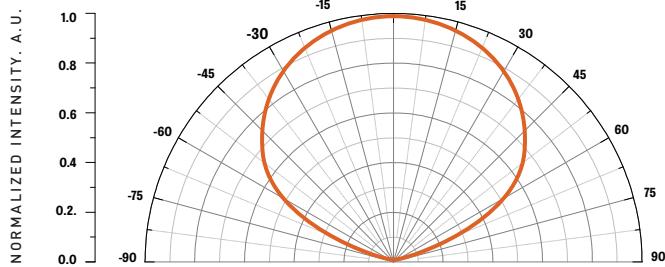
Characteristic	Unit	Min	Max
Forward Current (continuous)	mA	20	100
Reverse Voltage	V	-5	
Operating temperature range	°C	-5	55
Storage temperature	°C	-40	100
Junction temperature	°C	115	



#### TYPICAL RADIATION PATTERN

Optan 3535 LEDs have a nominal viewing angle of 120°.

Typical Radiation Pattern



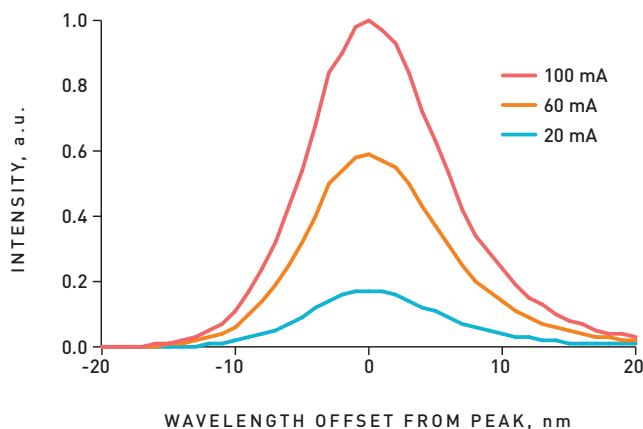
Test Conditions:  $I_{(CW)} = 100 \text{ mA}$ , CW=Continuous Wave Mode

#### TYPICAL SPECTRAL CHARACTERISTICS

##### OVER CURRENT

The plot below shows the stability of the peak wavelength with various applied currents. No shift is typically observed in the peak wavelength with change in drive current from 20 mA to 100 mA.

Spectrum over Current

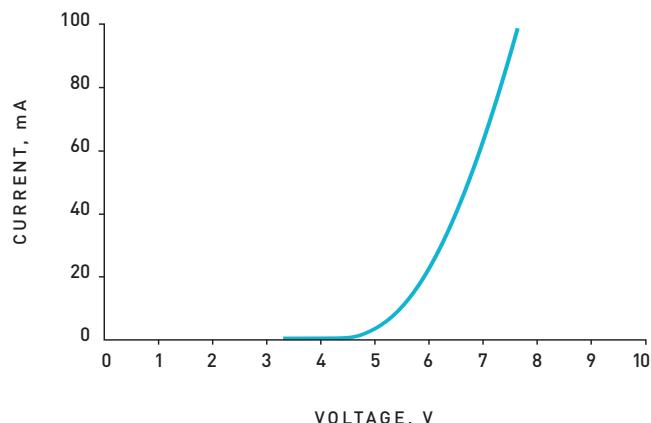


Test Conditions: Solder temperature ( $T_s$ ) = 35 °C  
Pulse mode operation

#### TYPICAL ELECTRICAL CHARACTERISTICS

The typical forward voltage is less than 8 V at an operating current of 100 mA.

Electrical Characteristics



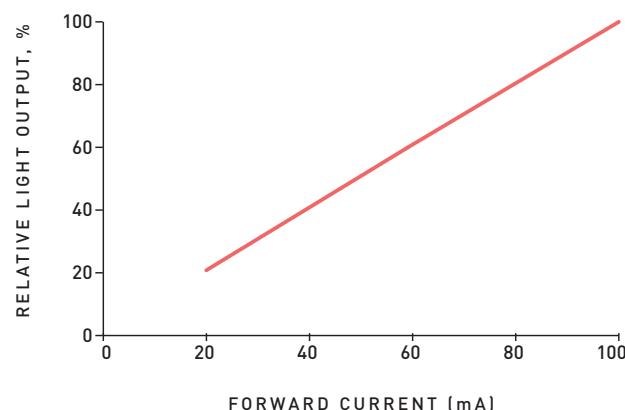
Test Conditions: Solder temperature ( $T_s$ ) = 35 °C  
Pulse mode operation from 1 mA to 100 mA

#### TYPICAL LIGHT OUTPUT CHARACTERISTICS

##### OVER CURRENT

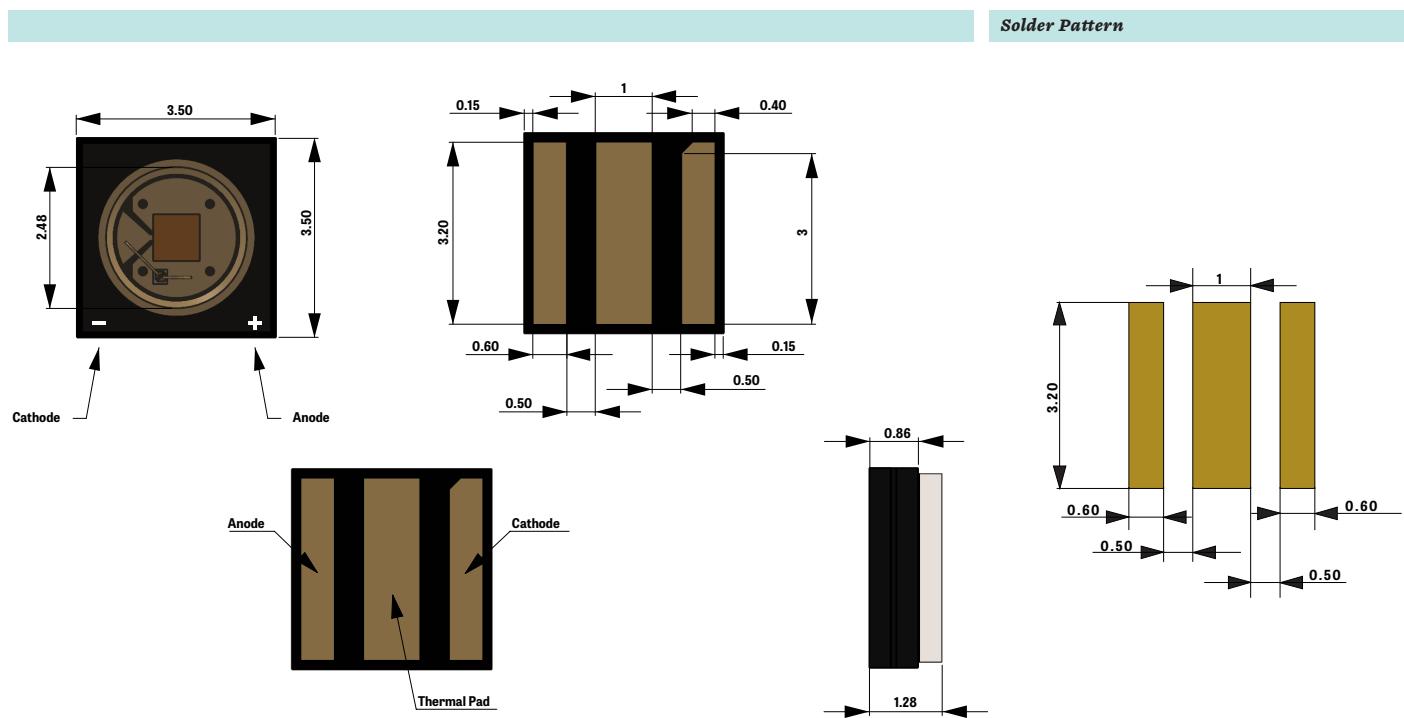
The plot below shows the typical variation in light output with forward current. The light output data is normalized to the light output at 100 mA.

Light Output over Current



Test Conditions: Solder temperature ( $T_s$ ) = 35 °C  
Pulse mode operation

## MECHANICAL DIMENSIONS

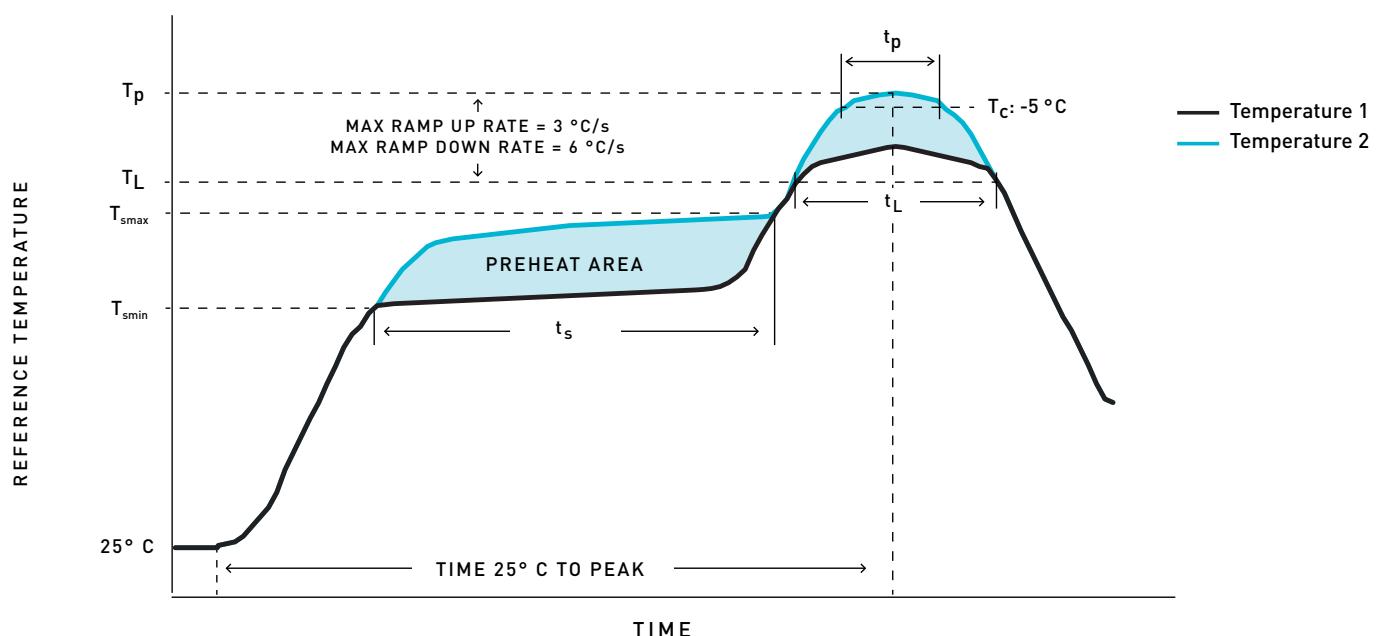


All dimensions are in millimeters. Unless noted otherwise, all dimensions have a tolerance of  $\pm 0.05$  mm.

## RECOMMENDED SOLDERING GUIDELINES

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

Figure 1





## 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.
Liquidus 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.

#### EYE SAFETY GUIDELINES

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.

#### 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 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS), as adopted by EU member states on July 22, 2019.

#### HANDLING PRECAUTIONS

LEDs are sensitive to static electricity. When handling, proper ESD protection is required, including:

- Eliminating static charge
- Using grounded wriststrap,
- ESD footwear, clothes, and floors
- Grounded workstation and tools

#### ATTACH THE FOLLOWING WARNING LABELS ON PRODUCTS/SYSTEMS THAT USE UV LED:



#### DISCLAIMER

The specifications, characteristics, and technical data presented in this datasheet are subject to change without prior notice. It is recommended that the most updated specifications, characteristics, and technical data be used in your application.

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