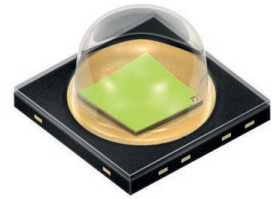


# LUW H9GP

## OSLON® Black

OSLON Black Series combines thermal stability with high performance and reliability in a compact black package. It has a metal lead frame and a tried and tested lens design. The LED can be used wherever there are large fluctuations in temperature and a large amount of light is needed from a small area.



## Applications

- Cluster, Button Backlighting
- Custom Tuning
- Head-Up Display LED & Laser
- Interior Illumination e.g. Ambient Map
- Transportation, Plane, Ship

## Features:

- Package: SMD epoxy package with silicone lens
- Chip technology: ThinGaN
- Typ. Radiation: 90°
- Color: Cx = 0.31, Cy = 0.32 acc. to CIE 1931 (● ultra white)
- Corrosion Robustness Class: 3B
- Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101-REV-C, Stress Test Qualification for Automotive Grade Discrete Semiconductors.
- Color temperature: 6500K
- ESD: 8 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)

## Ordering Information

Type	Luminous Flux <sup>1)</sup> $I_F = 350 \text{ mA}$ $\Phi_V$	Color temperature	Ordering Code
LUW H9GP-KYLY-4C8E-1	82 ... 150 lm	6500 K	Q65111A0924

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## Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	$T_{op}$	min.	-40 °C
		max.	125 °C
Storage Temperature	$T_{stg}$	min.	-40 °C
		max.	125 °C
Junction Temperature	$T_j$	max.	150 °C
Junction Temperature for short time applications*	$T_j$	max.	175 °C
Forward Current $T_s = 25\text{ °C}$	$I_F$	min.	100 mA
		max.	1000 mA
Surge Current $t \leq 10\ \mu\text{s}; D = 0.016; T_s = 25\text{ °C}$	$I_{FS}$	max.	2500 mA
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)	$V_{ESD}$		8 kV
Reverse current <sup>2)</sup>	$I_R$	max.	200 mA

\*The median lifetime (L70/B50) for  $T_j = 175\text{ °C}$  is 100h.

## Characteristics

$I_F = 350 \text{ mA}$ ;  $T_s = 25 \text{ °C}$

Parameter	Symbol		Values
Chromaticity Coordinate <sup>3)</sup>	$C_x$	typ.	0.31
	$C_y$	typ.	0.32
Viewing angle at 50 % $I_v$	$2\phi$	typ.	90 °
Forward Voltage <sup>4)</sup> $I_F = 350 \text{ mA}$	$V_F$	min.	2.75 V
		typ.	3.20 V
		max.	3.75 V
Reverse voltage (ESD device)	$V_{R\text{ESD}}$	min.	45 V
Reverse voltage <sup>2)</sup> $I_R = 20 \text{ mA}$	$V_R$	max.	1.2 V
Real thermal resistance junction/solderpoint <sup>5)</sup>	$R_{\text{thJS real}}$	typ.	5.4 K / W
		max.	7.3 K / W

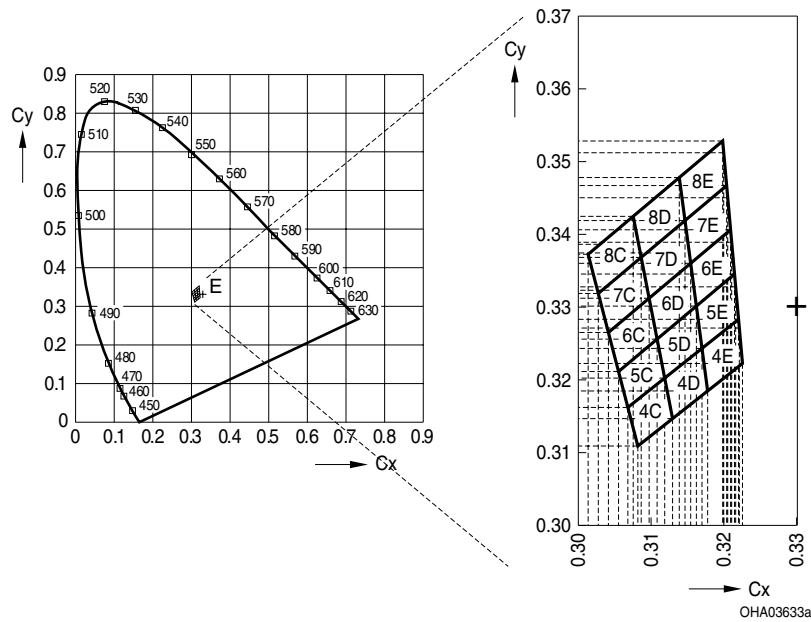
## Brightness Groups

Group	Luminous Flux <sup>1)</sup> $I_F = 350 \text{ mA}$ min. $\Phi_V$	Luminous Flux <sup>1)</sup> $I_F = 350 \text{ mA}$ max. $\Phi_V$	Luminous Intensity <sup>6)</sup> $I_F = 350 \text{ mA}$ typ. $I_v$
KY	82 lm	97 lm	43 cd
KZ	97 lm	112 lm	50 cd
LX	112 lm	130 lm	58 cd
LY	130 lm	150 lm	67 cd

## Forward Voltage Groups

Group	Forward Voltage <sup>4)</sup> $I_F = 350 \text{ mA}$ min. $V_F$	Forward Voltage <sup>4)</sup> $I_F = 350 \text{ mA}$ max. $V_F$
8E	2.75 V	3.00 V
8F	3.00 V	3.25 V
8G	3.25 V	3.50 V
8H	3.50 V	3.75 V

### Chromaticity Coordinate Groups <sup>3)</sup>



### Color Chromaticity Groups <sup>3)</sup>

Group	Cx	Cy	CCT	Group	Cx	Cy	CCT	Group	Cx	Cy	CCT
4C	0.3081	0.3049	6500	5D	0.3119	0.3162	6500	6E	0.3162	0.3282	6500
	0.3068	0.3113	6500		0.3108	0.3229	6500		0.3154	0.3352	6500
	0.3119	0.3162	6500		0.3162	0.3282	6500		0.3210	0.3408	6500
	0.3130	0.3095	6500		0.3170	0.3212	6500		0.3216	0.3334	6500
4D	0.3130	0.3095	6500	5E	0.3170	0.3212	6500	7C	0.3041	0.3240	6500
	0.3119	0.3162	6500		0.3162	0.3282	6500		0.3028	0.3304	6500
	0.3170	0.3212	6500		0.3216	0.3334	6500		0.3087	0.3363	6500
	0.3178	0.3142	6500		0.3221	0.3262	6500		0.3098	0.3296	6500
4E	0.3178	0.3142	6500	6C	0.3055	0.3177	6500	7D	0.3098	0.3296	6500
	0.3170	0.3212	6500		0.3041	0.3240	6500		0.3087	0.3363	6500
	0.3221	0.3262	6500		0.3098	0.3296	6500		0.3146	0.3422	6500
	0.3226	0.3189	6500		0.3108	0.3229	6500		0.3154	0.3352	6500
5C	0.3068	0.3113	6500	6D	0.3108	0.3229	6500	7E	0.3154	0.3352	6500
	0.3055	0.3177	6500		0.3098	0.3296	6500		0.3146	0.3422	6500
	0.3108	0.3229	6500		0.3154	0.3352	6500		0.3205	0.3481	6500
	0.3119	0.3162	6500		0.3162	0.3282	6500		0.3210	0.3408	6500

## LUW H9GP

Group	Cx	Cy	CCT	Group	Cx	Cy	CCT	Group	Cx	Cy	CCT
8C	0.3028	0.3304	6500	8D	0.3087	0.3363	6500	8E	0.3146	0.3422	6500
	0.3015	0.3368	6500		0.3076	0.3430	6500		0.3138	0.3492	6500
	0.3076	0.3430	6500		0.3138	0.3492	6500		0.3200	0.3554	6500
	0.3087	0.3363	6500		0.3146	0.3422	6500		0.3205	0.3481	6500

### Group Name on Label

**Example: KY-4C-8E**

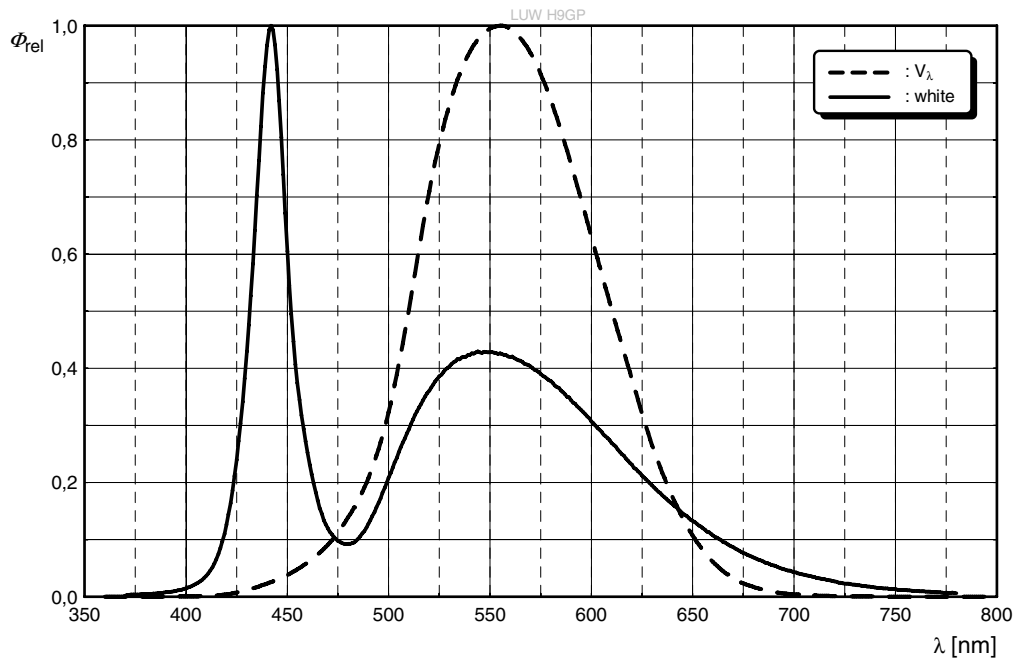
Brightness	Color chromaticity	Forward Voltage
KY	4C	8E

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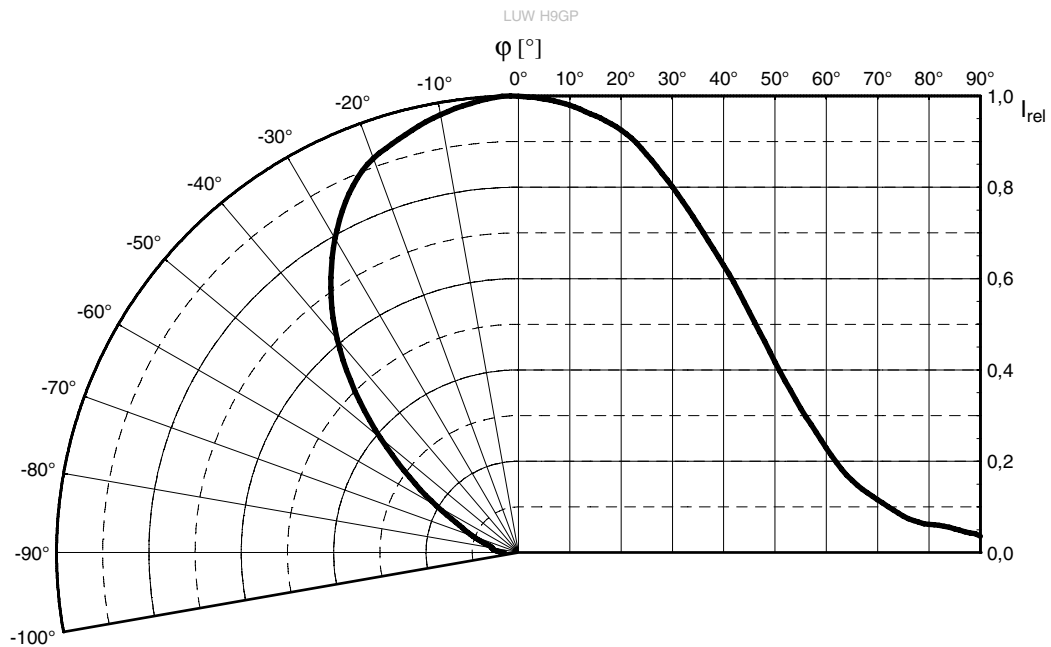
### Relative Spectral Emission <sup>6)</sup>

$\Phi_{rel} = f(\lambda); I_F = 350 \text{ mA}; T_S = 25 \text{ }^\circ\text{C}$



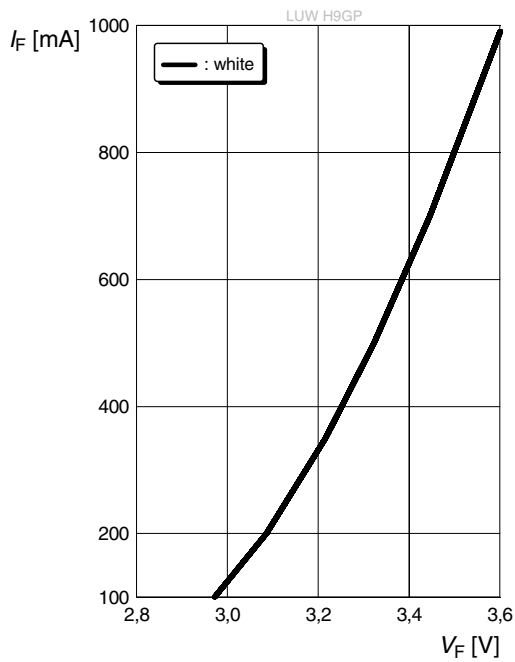
### Radiation Characteristics <sup>6)</sup>

$I_{rel} = f(\phi); T_S = 25 \text{ }^\circ\text{C}$



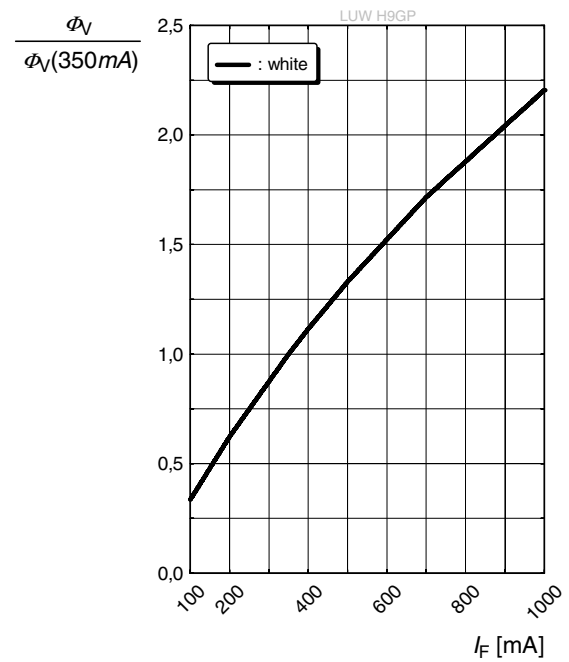
**Forward current** <sup>6), 7)</sup>

$I_F = f(V_F); T_S = 25\text{ °C}$



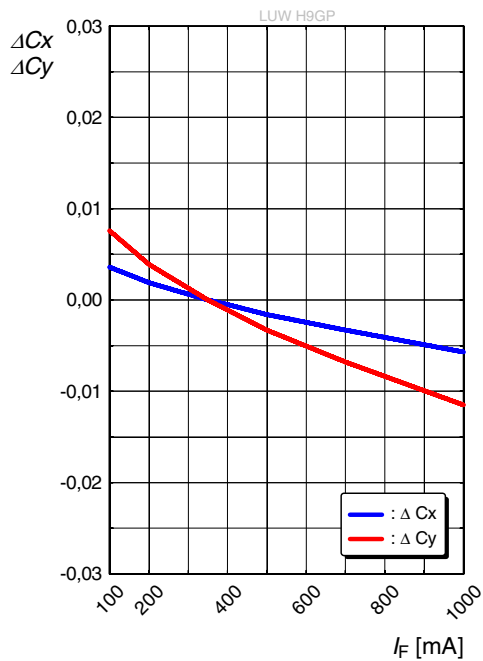
**Relative Luminous Flux** <sup>6), 7)</sup>

$\Phi_V / \Phi_V(350\text{ mA}) = f(I_F); T_S = 25\text{ °C}$



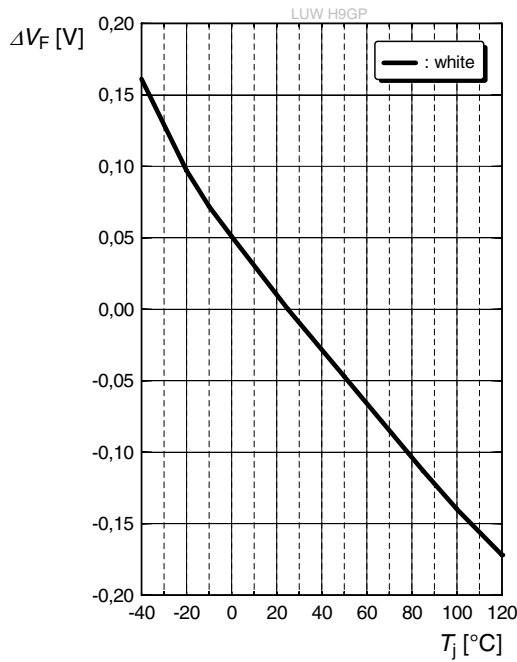
**Chromaticity Coordinate Shift** <sup>6)</sup>

$\Delta C_x, \Delta C_y = f(I_F); T_S = 25\text{ °C}$



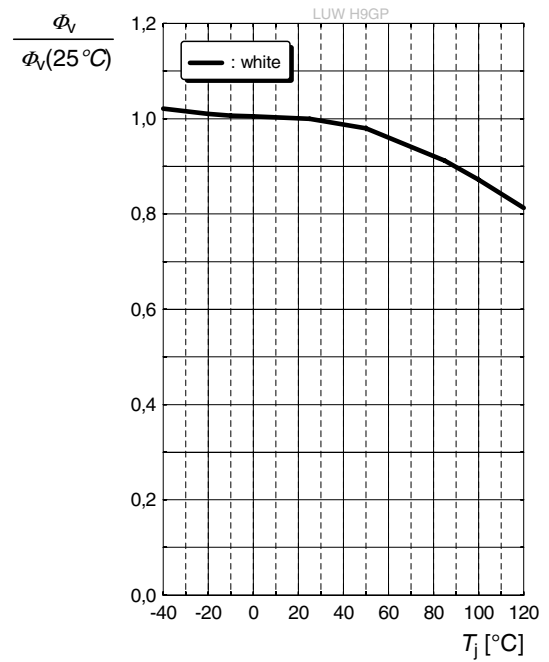
### Forward Voltage <sup>6)</sup>

$$\Delta V_F = V_F - V_F(25\text{ }^\circ\text{C}) = f(T_j); I_F = 350\text{ mA}$$



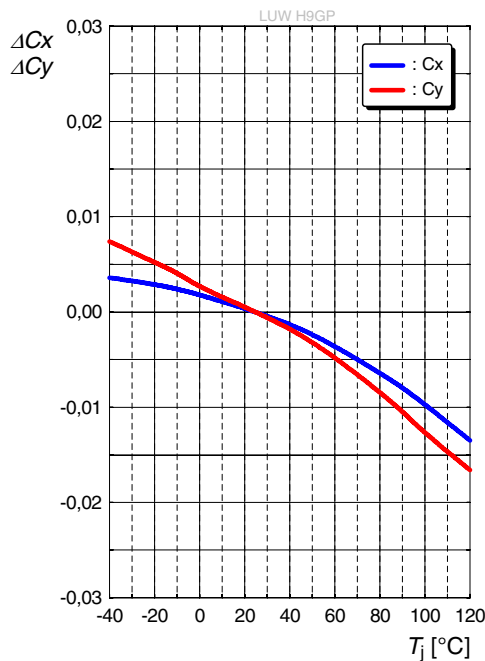
### Relative Luminous Flux <sup>6)</sup>

$$\Phi_V / \Phi_V(25\text{ }^\circ\text{C}) = f(T_j); I_F = 350\text{ mA}$$



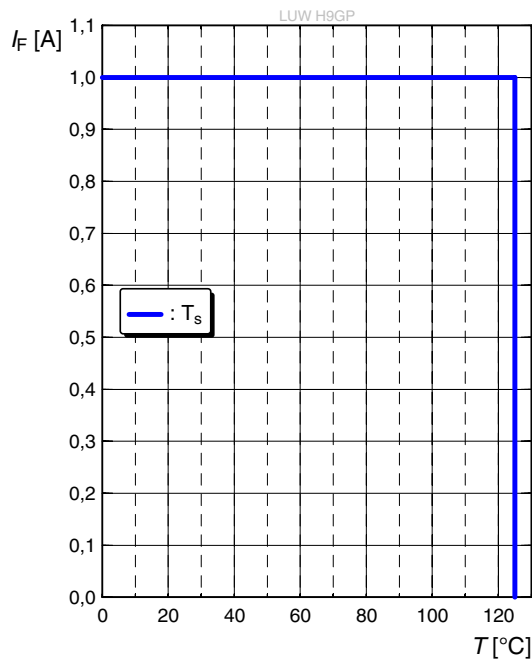
### Chromaticity Coordinate Shift <sup>6)</sup>

$$\Delta C_x, \Delta C_y = f(T_j); I_F = 350\text{ mA}$$



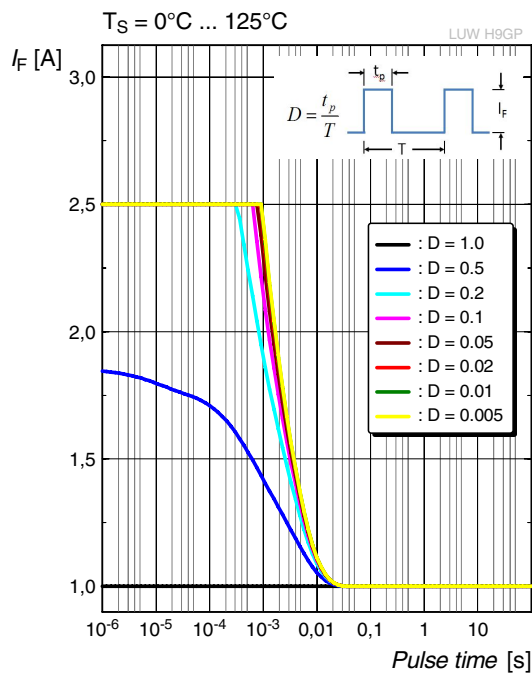
## Max. Permissible Forward Current

$$I_F = f(T)$$

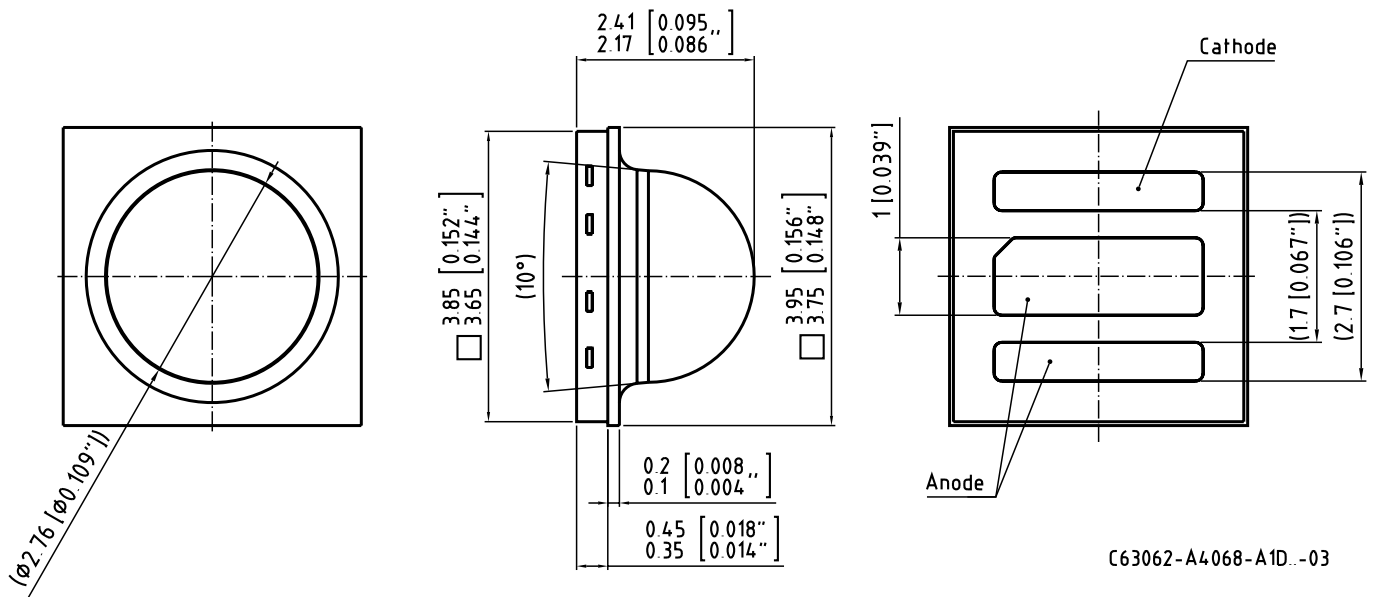


## Permissible Pulse Handling Capability

$$I_F = f(t_p); D: \text{Duty cycle}$$



Dimensional Drawing <sup>8)</sup>



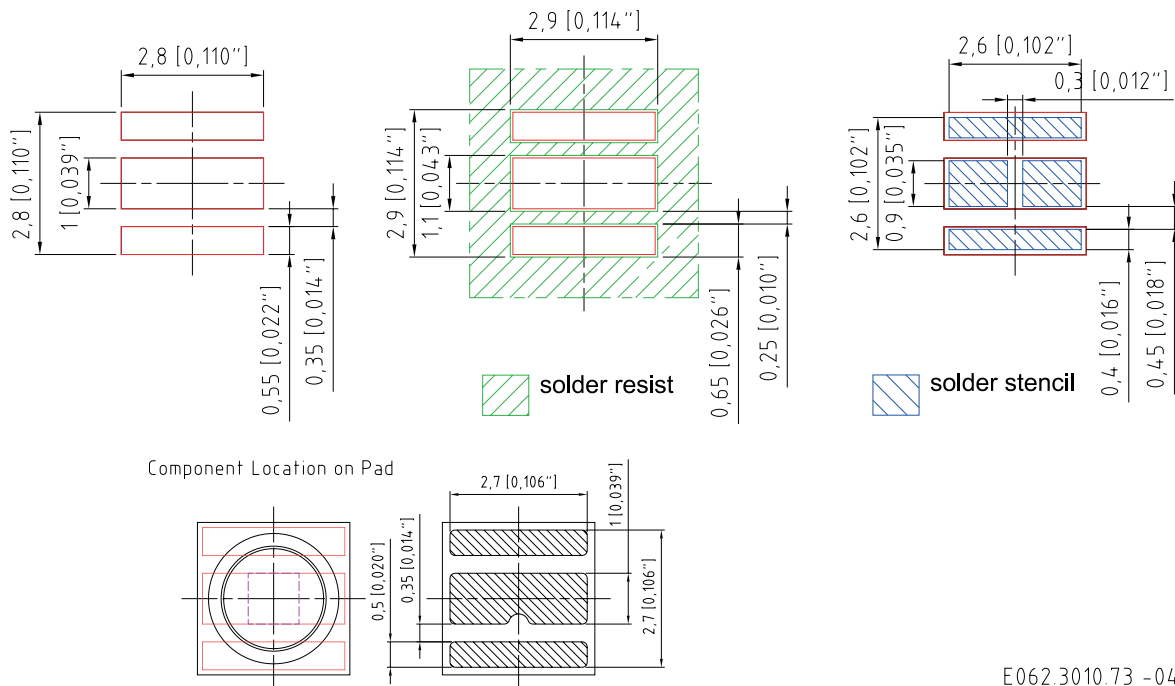
**Approximate Weight:** 32.0 mg

**Package marking:** Cathode

**Corrosion test:** Class: 3B  
 Test condition: 40°C / 90 % RH / 15 ppm H<sub>2</sub>S / 14 days (stricter than IEC 60068-2-43)

**ESD advice:** LED is protected by ESD device which is connected in parallel to LED-Chip.

**Recommended Solder Pad** <sup>8)</sup>

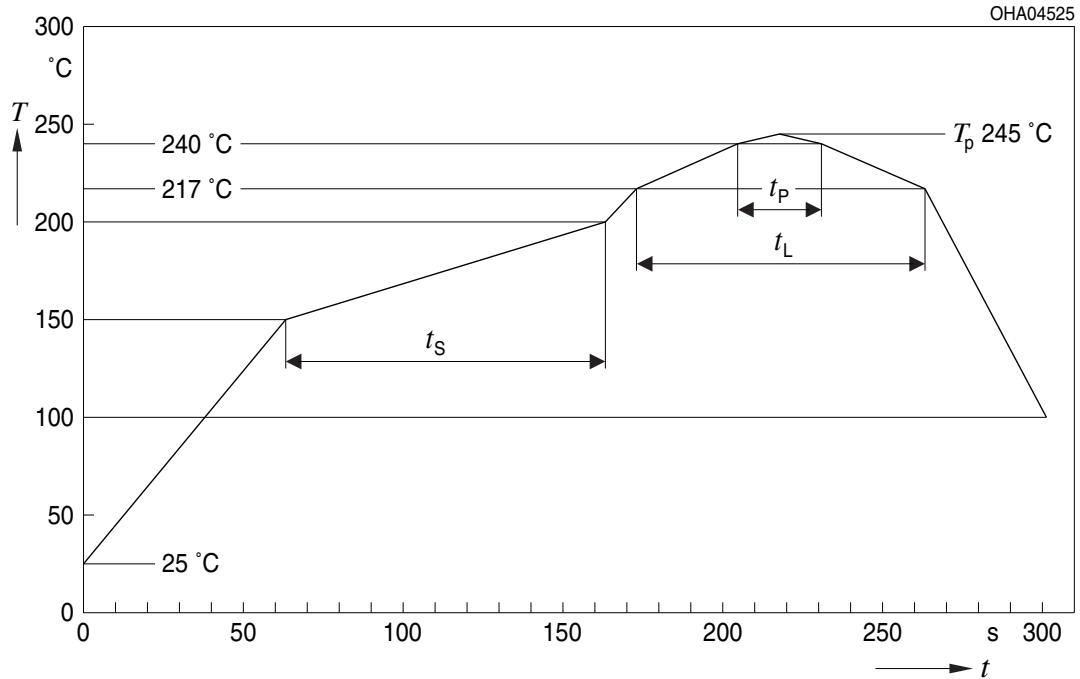


E062.3010.73 -04

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere. In case the PCB layout of the application is intended to be used with other OSRON derivatives or in future developed OSRON derivatives, the heat sink must not be electrically connected to anode or cathode solder pad because of possible chip inverted polarity. Package not suitable for ultra sonic cleaning.

## Reflow Soldering Profile

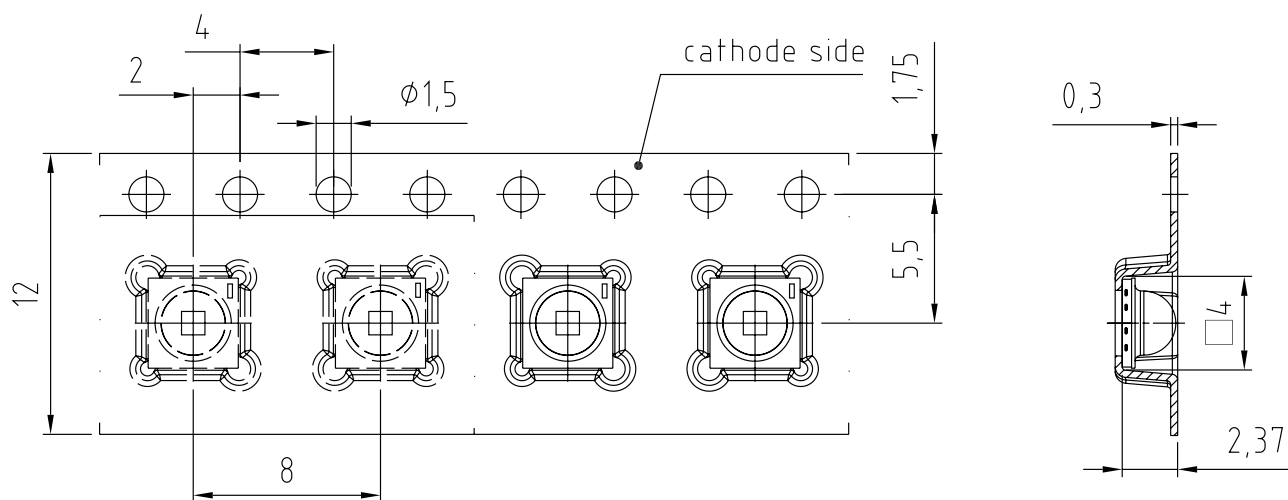
Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time $t_s$ $T_{Smin}$ to $T_{Smax}$	$t_s$	60	100	120	s
Ramp-up rate to peak*) $T_{Smax}$ to $T_p$			2	3	K/s
Liquidus temperature	$T_L$		217		°C
Time above liquidus temperature	$t_L$		80	100	s
Peak temperature	$T_p$		245	260	°C
Time within 5 °C of the specified peak temperature $T_p - 5$ K	$t_p$	10	20	30	s
Ramp-down rate* $T_p$ to 100 °C			3	6	K/s
Time 25 °C to $T_p$				480	s

All temperatures refer to the center of the package, measured on the top of the component  
 \*) slope calculation  $DT/Dt$ :  $Dt$  max. 5 s; fulfillment for the whole T-range

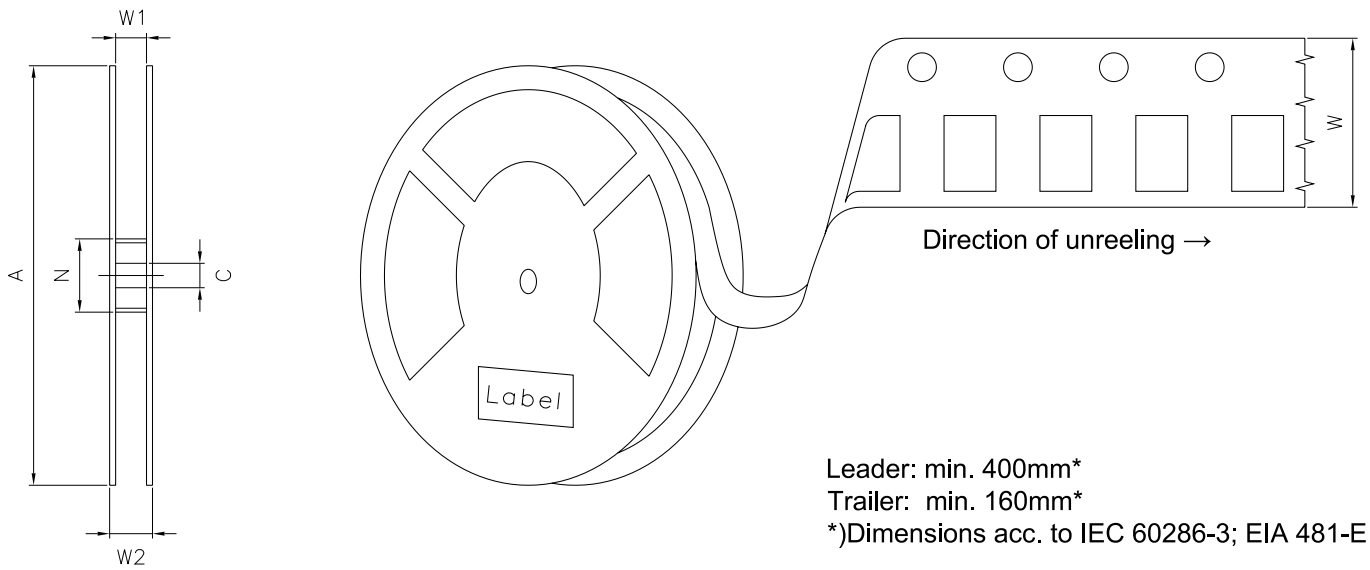
Taping <sup>8)</sup>



C63062-A4068-B10 -12



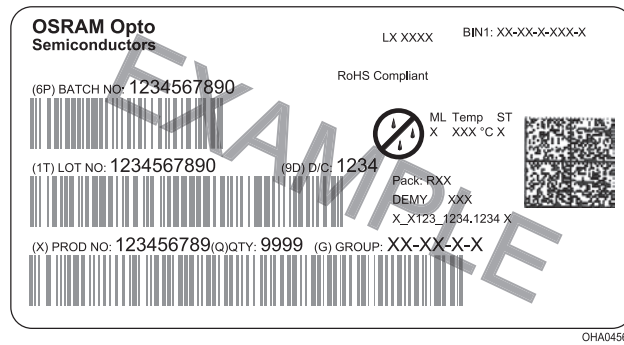
**Tape and Reel** <sup>9)</sup>



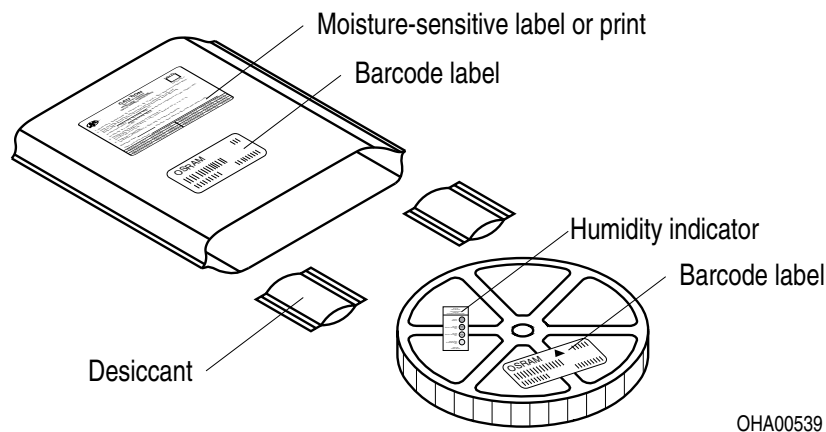
**Reel dimensions [mm]**

A	W	N <sub>min</sub>	W <sub>1</sub>	W <sub>2max</sub>	Pieces per PU
180 mm	12 + 0.3 / - 0.1	60	12.4 + 2	18.4	600
330 mm	12 + 0.3 / - 0.1	60	12.4 + 2	18.4	3000

## Barcode-Product-Label (BPL)

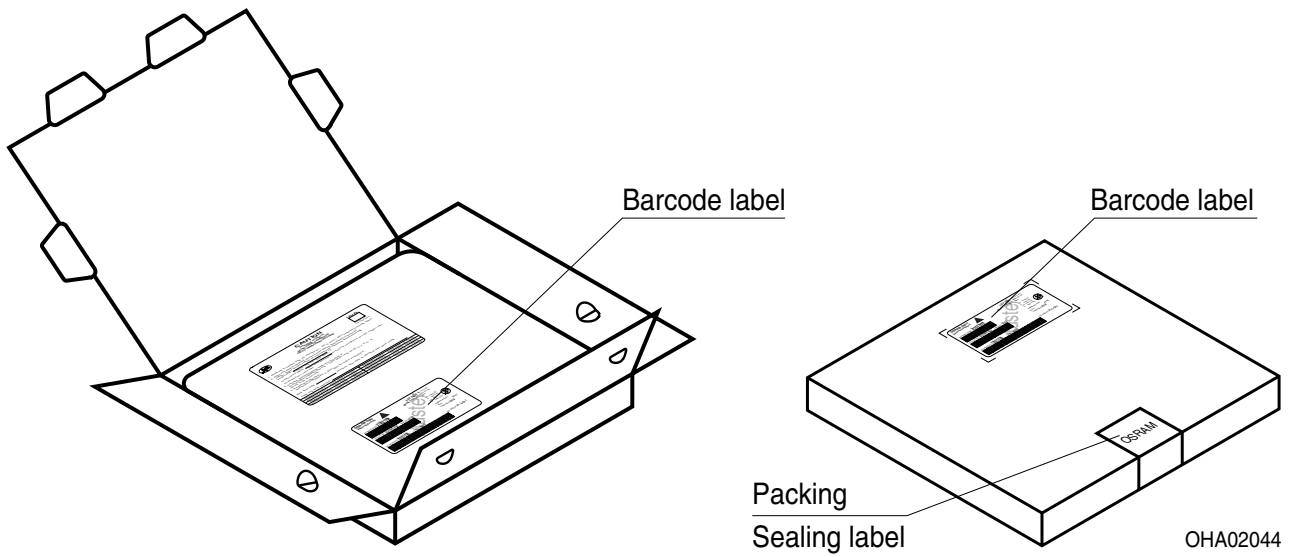


## Dry Packing Process and Materials <sup>8)</sup>



Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

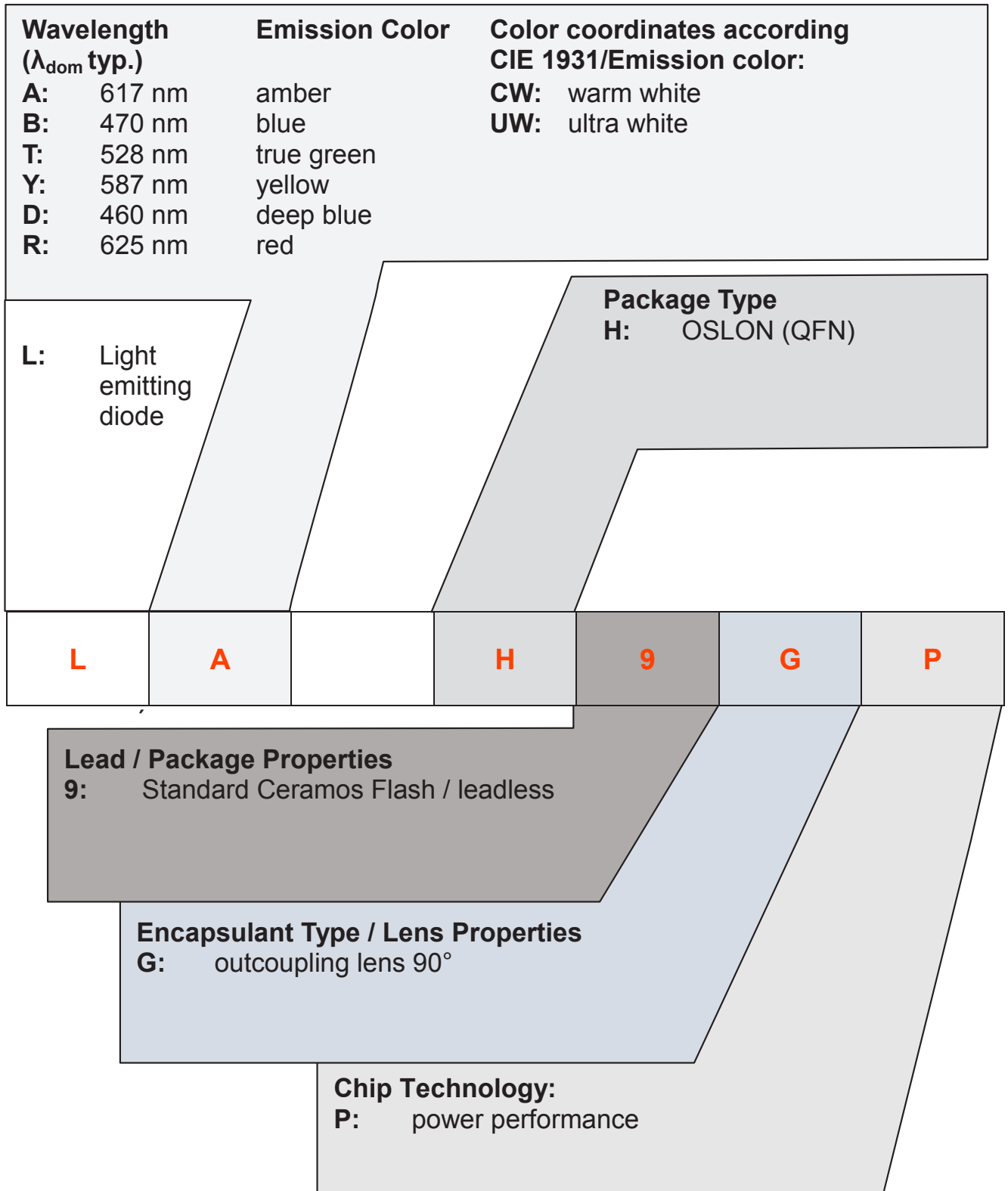
## Transportation Packing and Materials <sup>8)</sup>



### Dimensions of transportation box in mm

Width	Length	Height
195 ± 5 mm	195 ± 5 mm	30 ± 5 mm
349 ± 5 mm	349 ± 5 mm	33 ± 5 mm

## Type Designation System



## Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the LED specified in this data sheet fall into the class **low risk (exposure time 100 s)**. Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Subcomponents of this LED contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize LED exposure to aggressive substances during storage, production, and use. LEDs that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

For further application related informations please visit [www.osram-os.com/appnotes](http://www.osram-os.com/appnotes)

## Disclaimer

### Disclaimer

Language english will prevail in case of any discrepancies or deviations between the two language wordings.

### Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version on the OSRAM OS website.

### Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.

By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

### Product safety devices/applications or medical devices/applications

OSRAM OS components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

In case Buyer – or Customer supplied by Buyer– considers using OSRAM OS components in product safety devices/applications or medical devices/applications, Buyer and/or Customer has to inform the local sales partner of OSRAM OS immediately and OSRAM OS and Buyer and /or Customer will analyze and coordinate the customer-specific request between OSRAM OS and Buyer and/or Customer.

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## Glossary

- 1) **Brightness:** Brightness values are measured during a current pulse of typically 25 ms, with an internal reproducibility of  $\pm 8\%$  and an expanded uncertainty of  $\pm 11\%$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 2) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 3) **Chromaticity coordinate groups:** Chromaticity coordinates are measured during a current pulse of typically 25 ms, with an internal reproducibility of  $\pm 0.005$  and an expanded uncertainty of  $\pm 0.01$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 4) **Forward Voltage:** The forward voltage is measured during a current pulse of typically 8 ms, with an internal reproducibility of  $\pm 0.05\text{ V}$  and an expanded uncertainty of  $\pm 0.1\text{ V}$  (acc. to GUM with a coverage factor of  $k = 3$ ).
- 5) **Thermal Resistance:**  $R_{th\ max}$  is based on statistic values ( $6\sigma$ ).
- 6) **Typical Values:** Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 7) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single LEDs within one packing unit.
- 8) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with  $\pm 0.1$  and dimensions are specified in mm.
- 9) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

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**Leibnizstraße 4, D-93055 Regensburg**  
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EU RoHS and China RoHS compliant product



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按照中国的相关法规和标准，不含有毒有害物质或元素。