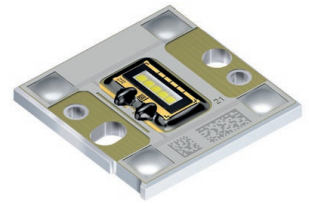


# LE UW U1A5 01

## OSRAM OSTAR® Headlamp Pro

OSRAM OSTAR Headlamp is designed for applications where high brightness is required. Due to a seamless white colour impression at a maximum brightness level and its scalable brightness.



## Applications

- Headlamps, LED & Laser & Night Vision

## Features:

- Package: compact lightsource in multi chip on board technology
- Chip technology: UX:3
- Typ. Radiation: 120° (Lambertian emitter)
- Color: Cx = 0.322, Cy = 0.334 acc. to CIE 1931 (● ultra white)
- Corrosion Robustness Class: 3B
- ESD: 8 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 3B)

## Ordering Information

| Type                            | Luminous Flux <sup>1)</sup><br>$I_F = 1000 \text{ mA}$<br>$\Phi_V$ | Ordering Code |
|---------------------------------|--------------------------------------------------------------------|---------------|
| LE UW U1A5 01-6R6S-ebvF68ebzB68 | 1250 ... 2240 lm                                                   | Q65111A7561   |

## Maximum Ratings

| Parameter                                                               | Symbol               |      | Values  |
|-------------------------------------------------------------------------|----------------------|------|---------|
| Operating Temperature                                                   | $T_{op}$             | min. | -40 °C  |
|                                                                         |                      | max. | 135 °C  |
| Storage Temperature                                                     | $T_{stg}$            | min. | -40 °C  |
|                                                                         |                      | max. | 135 °C  |
| Junction Temperature                                                    | $T_j$                | max. | 150 °C  |
| Junction temperature for short time applications*                       | $T_j$                | max. | 175 °C  |
| Forward Current<br>$T_B = 25\text{ °C}$                                 | $I_F$                | min. | 50 mA   |
|                                                                         |                      | max. | 1500 mA |
| Forward Current pulsed<br>(acc. pulse derating on page 10)              | $I_{F\text{ pulse}}$ |      | 2000 mA |
| ESD withstand voltage<br>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 LED chip exhibits excellent performance but slight package discoloration occurs at highest temperatures. Exemplary median lifetime for  $T_j = 175\text{ °C}$  is 100h.

## Characteristics

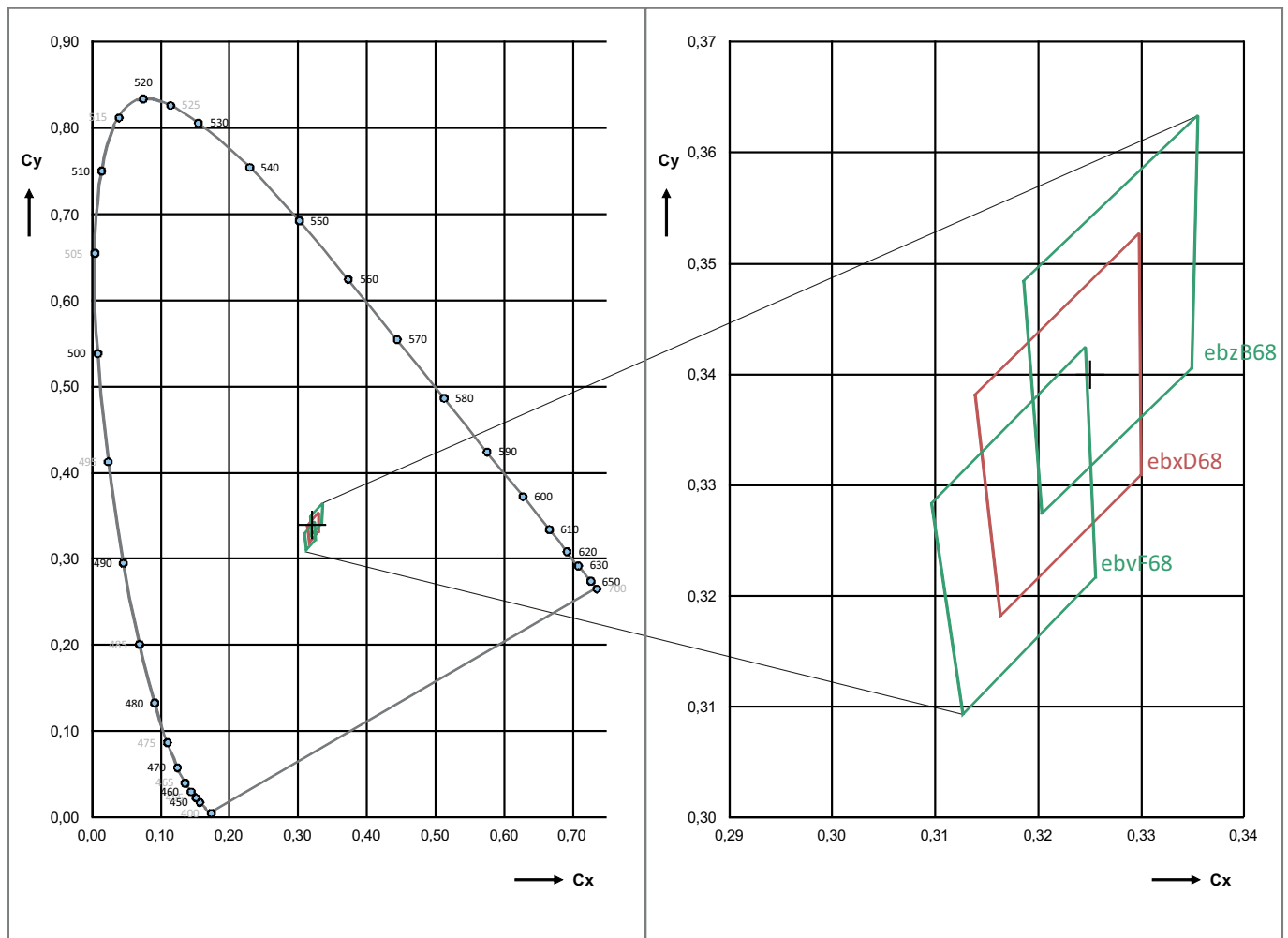
$I_F = 1000 \text{ mA}$ ;  $T_B = 25 \text{ °C}$

| Parameter                                                                                             | Symbol                  |      | Values              |
|-------------------------------------------------------------------------------------------------------|-------------------------|------|---------------------|
| Chromaticity Coordinate <sup>3)</sup>                                                                 | Cx                      | typ. | 0.322               |
|                                                                                                       | Cy                      | typ. | 0.334               |
| Viewing angle at 50 % $I_V$                                                                           | $2\phi$                 | typ. | 120 °               |
| Radiating surface                                                                                     | $A_{\text{color}}$      | typ. | 5.5 mm <sup>2</sup> |
| Forward Voltage <sup>4)</sup><br>$I_F = 1000 \text{ mA}$                                              | $V_F$                   | min. | 14.7 V              |
|                                                                                                       |                         | typ. | 15.5 V              |
|                                                                                                       |                         | max. | 17.6 V              |
| Reverse voltage (ESD device)                                                                          | $V_{R \text{ ESD}}$     | min. | 45 V                |
| Reverse voltage <sup>2)</sup><br>$I_R = 20 \text{ mA}$                                                | $V_R$                   | max. | 1.2 V               |
|                                                                                                       |                         |      |                     |
| Real thermal resistance junction/board <sup>5)</sup>                                                  | $R_{\text{thJB real}}$  | typ. | 1.5 K / W           |
|                                                                                                       |                         | max. | 1.8 K / W           |
| Electrical thermal resistance junction/board <sup>5)</sup><br>with efficiency $\eta_e = 30 \text{ %}$ | $R_{\text{thJB elec.}}$ | typ. | 1.1 K / W           |
|                                                                                                       |                         | max. | 1.3 K / W           |

## Brightness Groups

| Group | Luminous Flux <sup>1)</sup><br>$I_F = 1000 \text{ mA}$<br>min.<br>$\Phi_v$ | Luminous Flux <sup>1)</sup><br>$I_F = 1000 \text{ mA}$<br>max.<br>$\Phi_v$ | Luminous Intensity <sup>6)</sup><br>$I_F = 1000 \text{ mA}$<br>typ.<br>$I_v$ |
|-------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------------------------------------|
| 6R    | 1250 lm                                                                    | 1400 lm                                                                    | 440 cd                                                                       |
| 7R    | 1400 lm                                                                    | 1590 lm                                                                    | 500 cd                                                                       |
| 8R    | 1590 lm                                                                    | 1800 lm                                                                    | 560 cd                                                                       |
| 5S    | 1800 lm                                                                    | 2010 lm                                                                    | 630 cd                                                                       |
| 6S    | 2010 lm                                                                    | 2240 lm                                                                    | 710 cd                                                                       |

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



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

| Group  | Cx     | Cy     | Group  | Cx     | Cy     | Group  | Cx     | Cy     |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| ebvF68 | 0.3127 | 0.3093 | ebxD68 | 0.3163 | 0.3181 | ebzB68 | 0.3203 | 0.3274 |
|        | 0.3255 | 0.3216 |        | 0.3300 | 0.3308 |        | 0.3349 | 0.3404 |
|        | 0.3246 | 0.3424 |        | 0.3298 | 0.3526 |        | 0.3355 | 0.3633 |
|        | 0.3096 | 0.3282 |        | 0.3138 | 0.3381 |        | 0.3186 | 0.3484 |

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## Group Name on Label

**Example: 5S-ebvF68**

Brightness

Color Chromaticity

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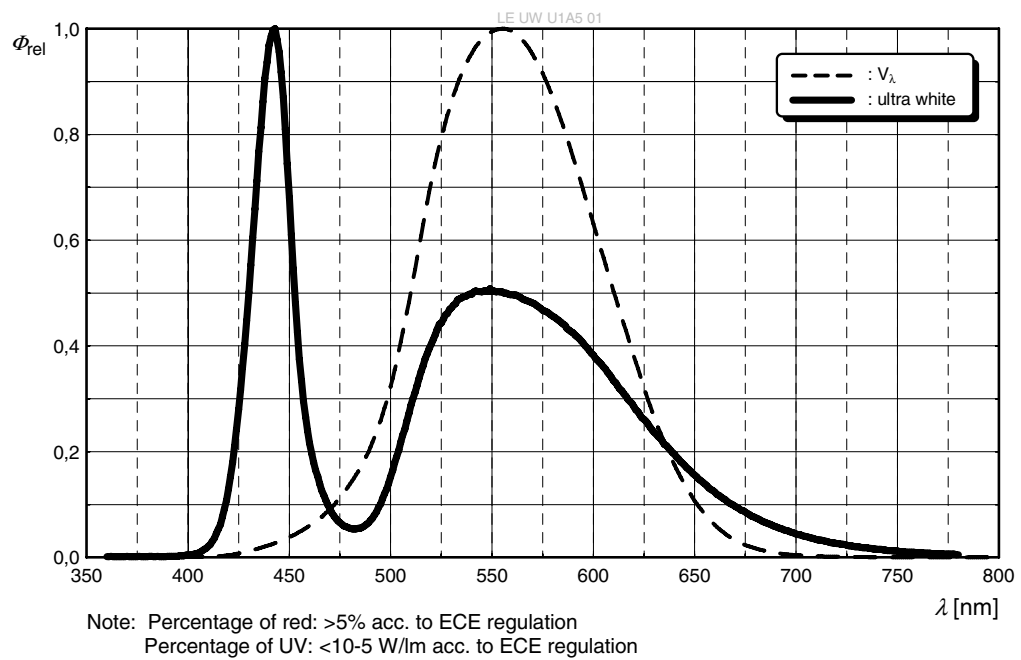
5S

ebvF68

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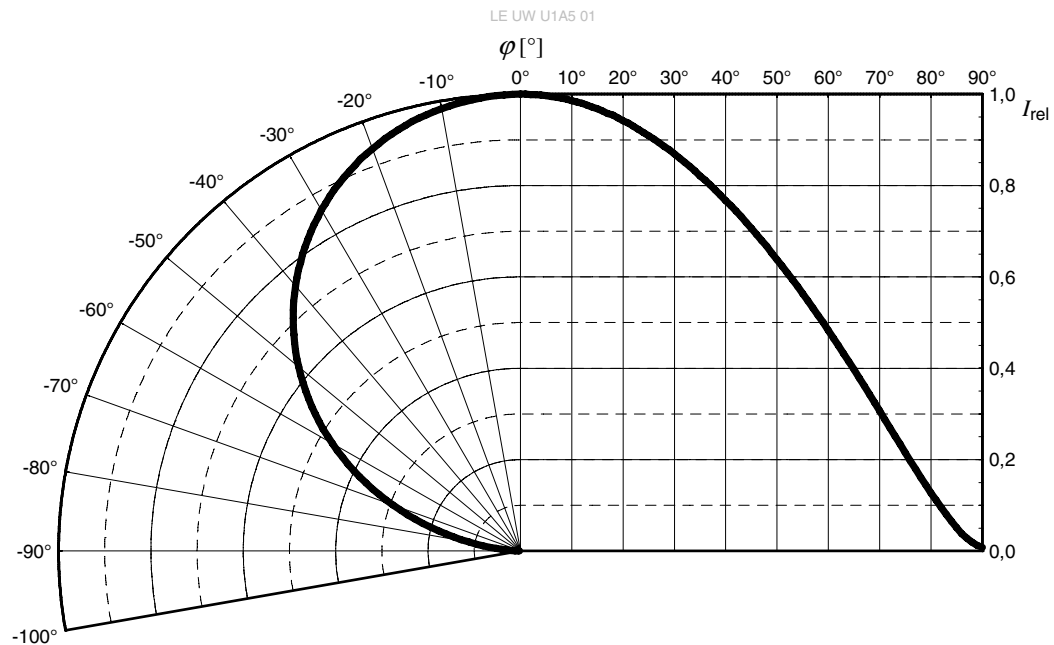
## Relative Spectral Emission <sup>6)</sup>

$$\Phi_{\text{rel}} = f(\lambda); I_F = 1000 \text{ mA}; T_B = 25^\circ \text{C}$$



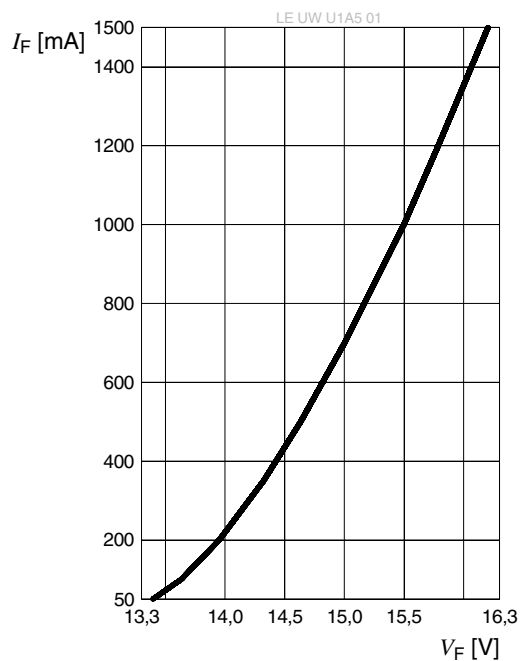
## Radiation Characteristics <sup>6)</sup>

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

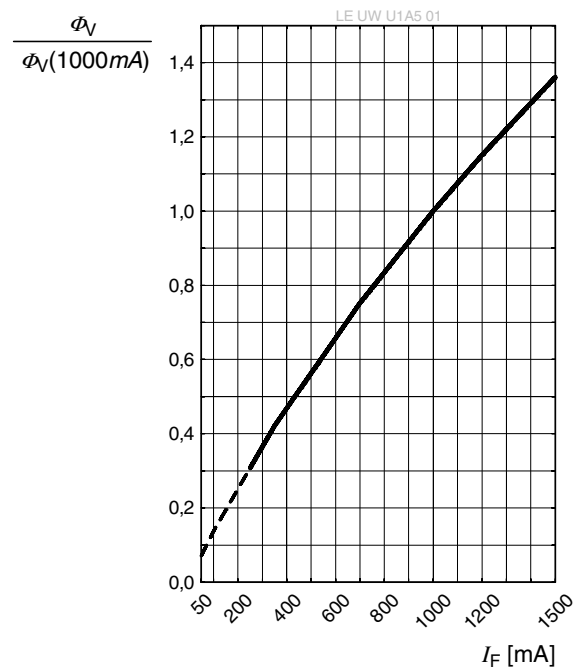


**Forward current** <sup>6), 7)</sup>

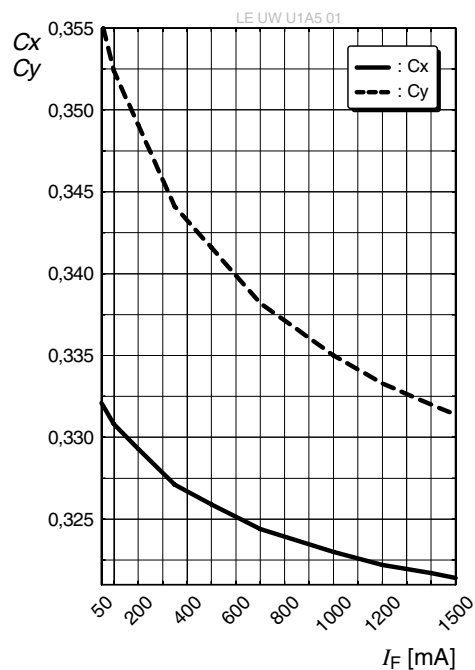
$$I_F = f(V_F); T_B = 25^\circ\text{C}$$

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

$$\Phi_V/\Phi_V(1000\text{ mA}) = f(I_F); T_B = 25^\circ\text{C}$$

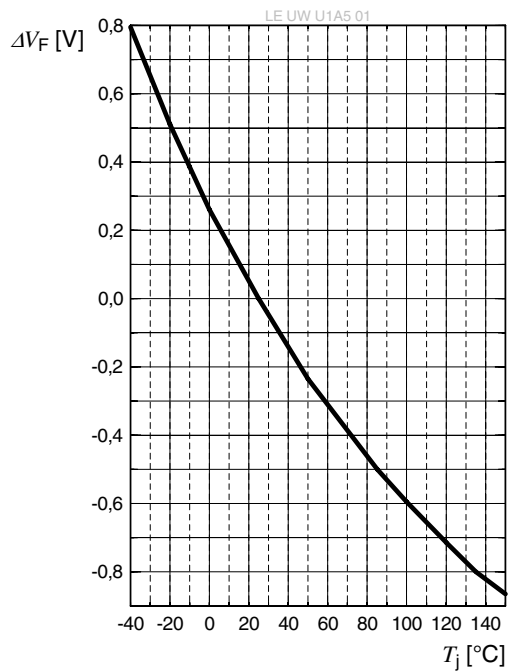
**Chromaticity Coordinate Shift** <sup>6)</sup>

$$C_x, C_y = f(I_F); T_B = 25^\circ\text{C}$$

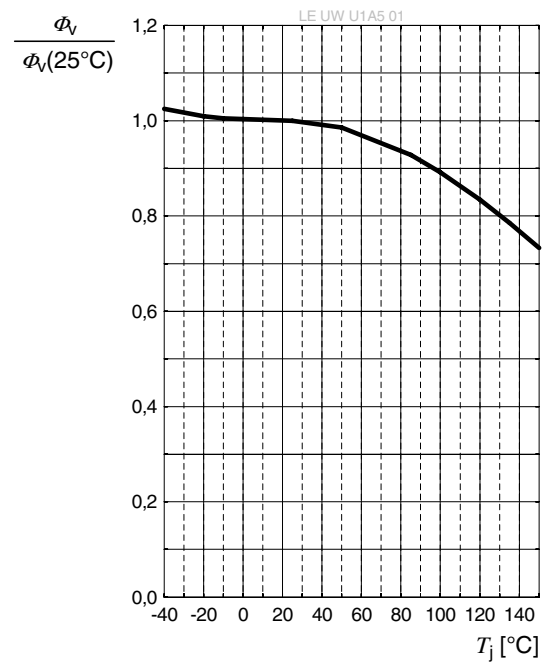


**Forward Voltage** <sup>6)</sup>

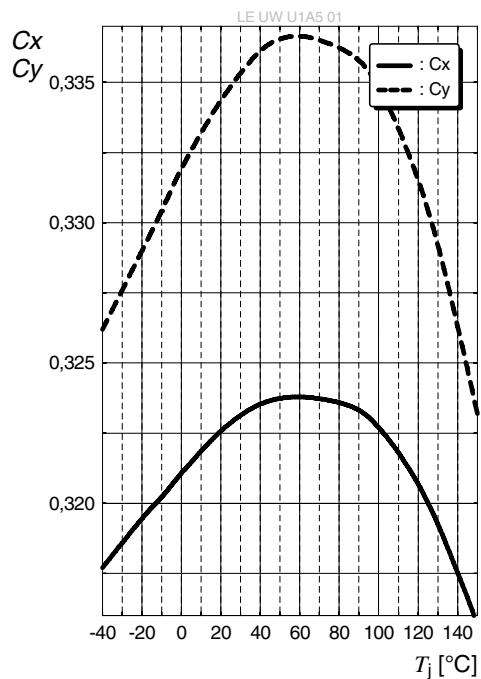
$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 1000 \text{ mA}$$

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

$$\Phi_V / \Phi_V(25^\circ\text{C}) = f(T_j); I_F = 1000 \text{ mA}$$

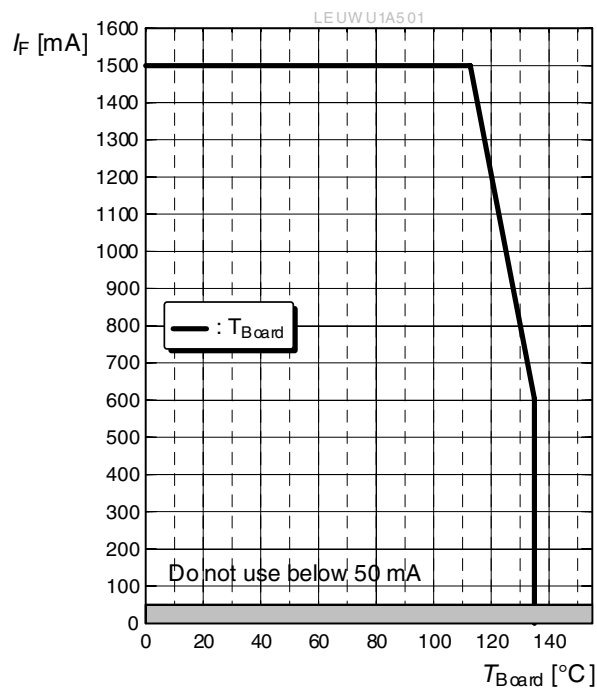
**Chromaticity Coordinate Shift** <sup>6)</sup>

$$C_x, C_y = f(T_j); I_F = 1000 \text{ mA}$$



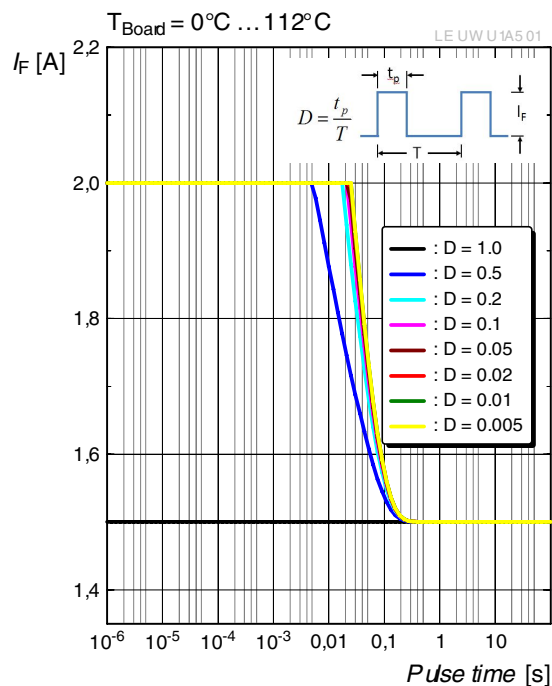
## Max. Permissible Forward Current

$$I_F = f(T); 0.7 \cdot \Phi_{V \min.} \text{ of bin 6R; } R_{th \text{ real max.}}$$



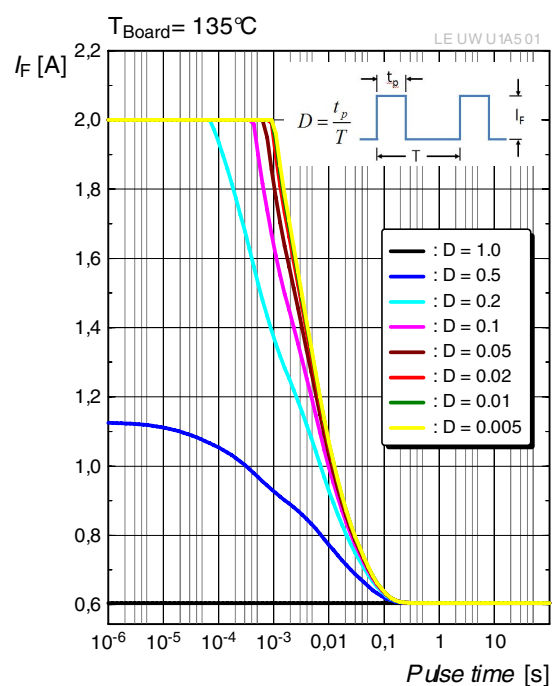
## Permissible Pulse Handling Capability

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

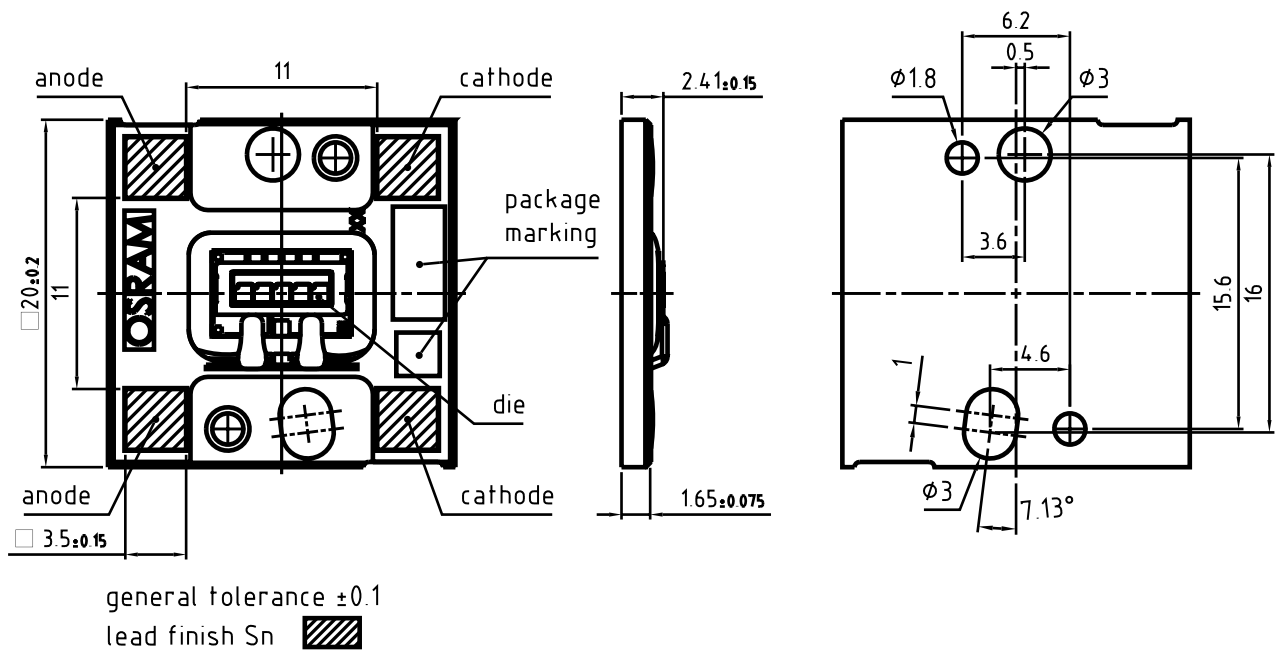


## Permissible Pulse Handling Capability

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



## Dimensional Drawing <sup>8)</sup>



C63062-A4214-A1-03

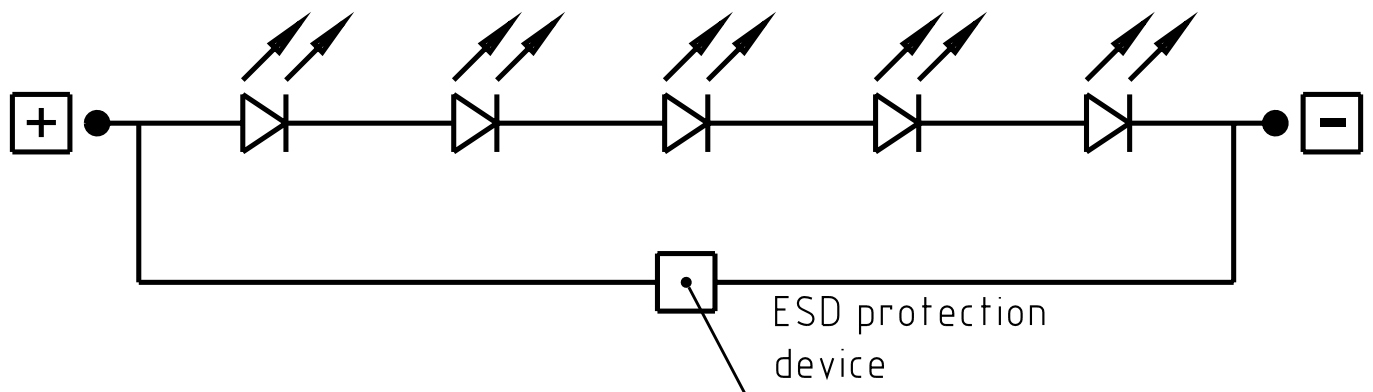
**Approximate Weight:** 1,800.0 mg

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

**ESD advice:** The device is protected by ESD device which is connected in parallel to the Chip.

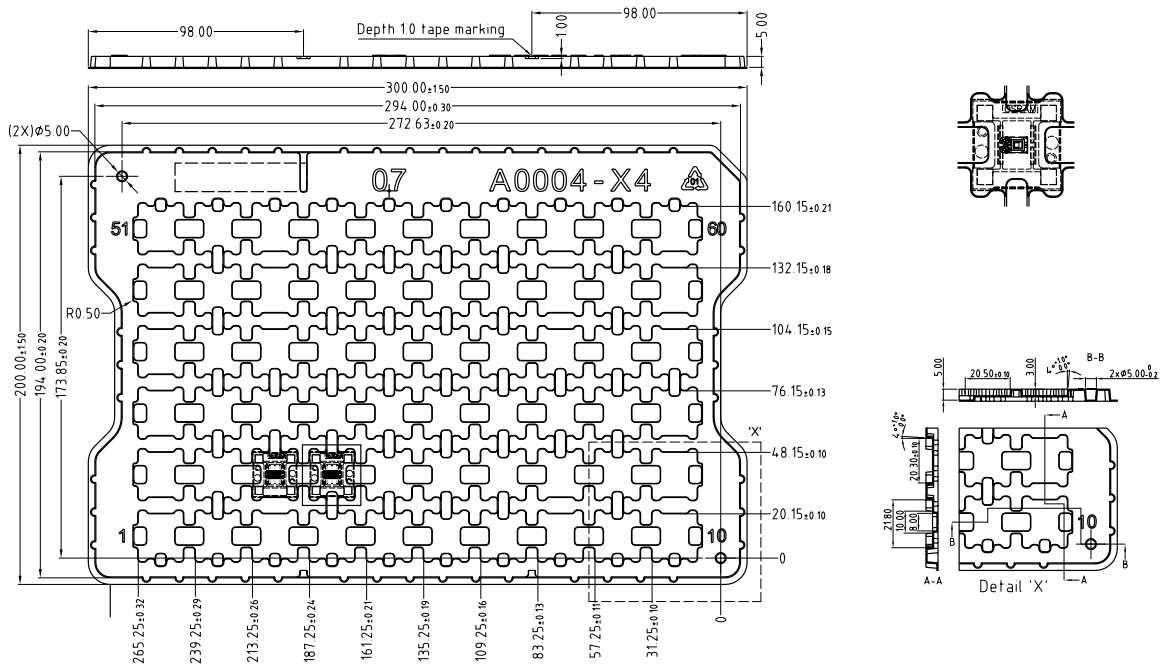
**Notes:** Package not suitable for any kind of wet cleaning or ultrasonic cleaning.

## Electrical internal circuit



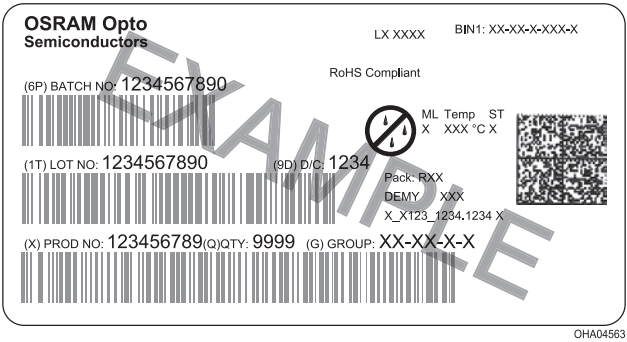
## Tray <sup>8)</sup>

60 pieces per Tray

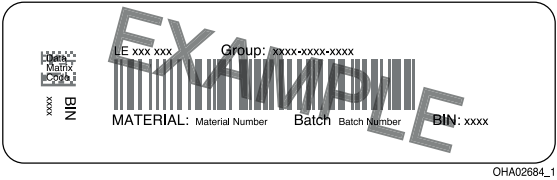


C67062-A0004-X4-03

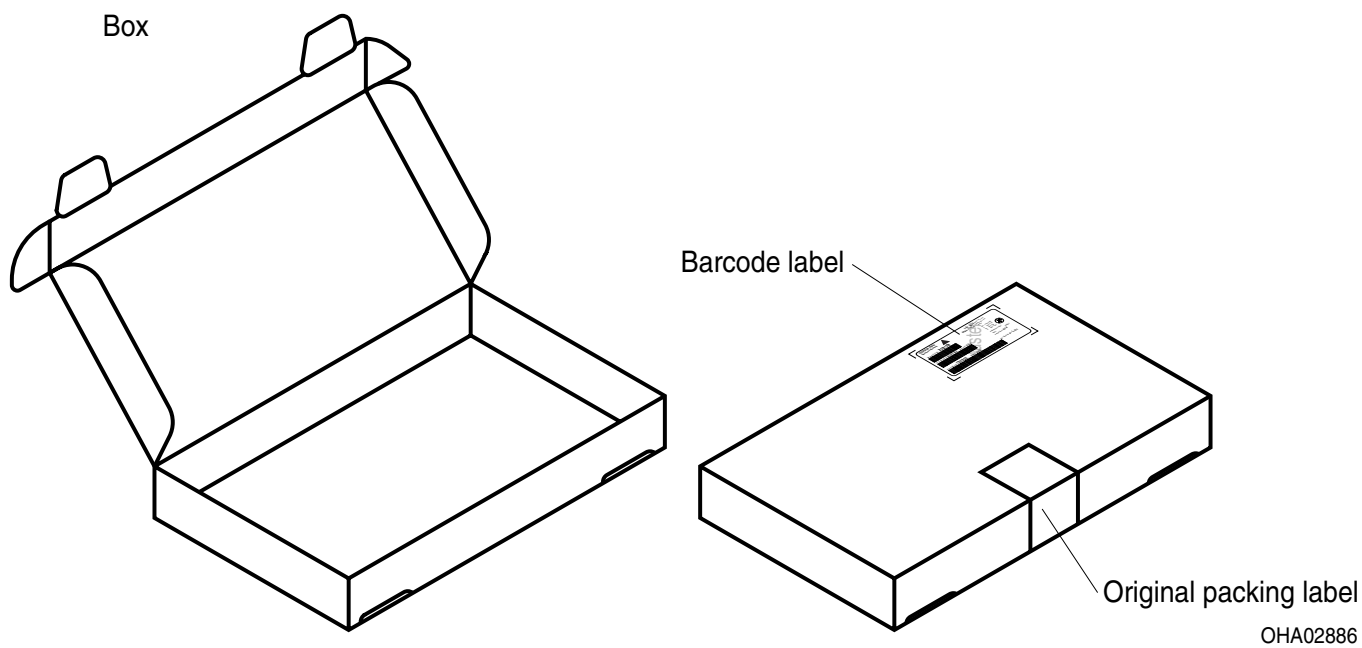
Barcode-Product-Label (BPL)



Barcode-Tray-Label (BTL)



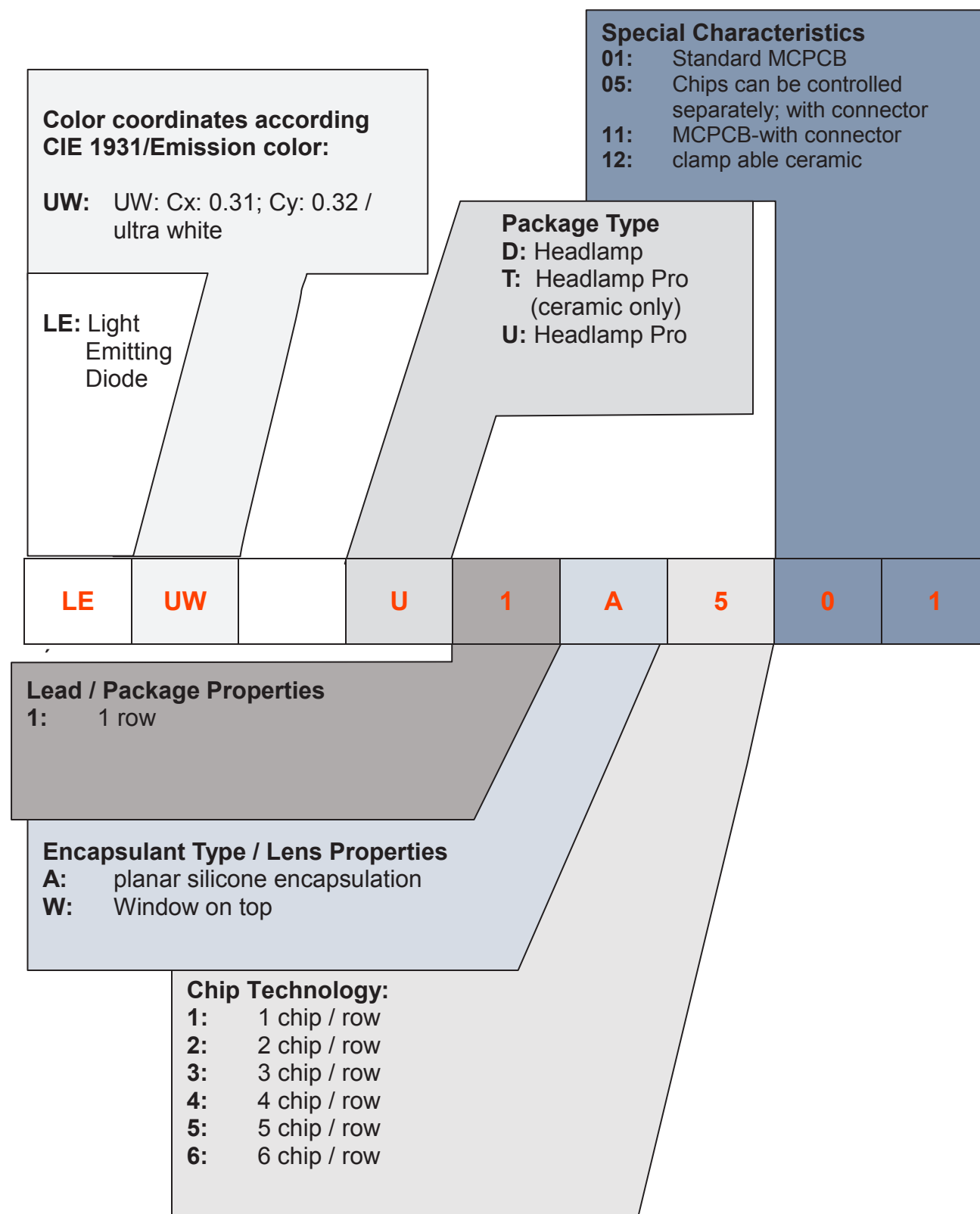
Transportation Packing and Materials <sup>8)</sup>



Dimensions of transportation box in mm

| Width      | Length    | Height    |
|------------|-----------|-----------|
| 333 ± 5 mm | 218 ±5 mm | 28 ± 5 mm |
| 337 ± 5 mm | 218 ±5 mm | 63 ± 5 mm |

## Type Designation System



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## 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 device specified in this data sheet falls into the class **moderate risk (exposure time 0.25 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 device 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 device exposure to aggressive substances during storage, production, and use. Devices 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.

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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.

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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:**  $R_{th\text{ max}}$  is based on statistic values ( $6\sigma$ ).
- 6) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, 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 devices 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.

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