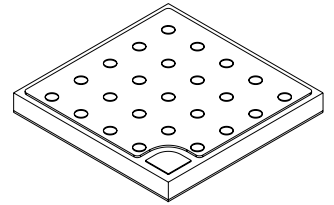


# ODB4040UX3.A2

## OS-CORE® UX:3



### Features:

- Polarity: p-side up
- Chip technology: UX:3
- Color: ● blue
- Chipsize: 40 mil x 40 mil

### Ordering Information

Type  
ODB4040UX3.A2-MM-MM-1-C

Ordering Code  
Q65111A5240

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## Maximum Ratings

| Parameter                                                                                     | Symbol         |                      | Values  |
|-----------------------------------------------------------------------------------------------|----------------|----------------------|---------|
| Operating Temperature                                                                         | $T_{op}$       | min.                 | -40 °C  |
|                                                                                               |                | max.                 | 135 °C  |
| Storage Temperature <sup>1)</sup>                                                             | $T_{stg}$      | min.                 | -40 °C  |
|                                                                                               |                | max.                 | 135 °C  |
| Recommended Die Storage Temperature<br>≤ 60% RH                                               | $T_{stg\ die}$ | max.                 | 30 °C   |
| Junction Temperature                                                                          | $T_j$          | max.                 | 150 °C  |
| Junction temperature for short time applications*                                             | $T_j$          | max.                 | 175 °C  |
| Forward Current<br>$T_j = 25\text{ °C}$                                                       | $I_F$          | min.                 | 20 mA   |
|                                                                                               |                | max.                 | 1500 mA |
| Forward Current Pulsed<br>$t \leq 10\text{ }\mu\text{s}$ ; $D = 0.005$ ; $T_j = 25\text{ °C}$ | $I_{F\ pulse}$ | max.                 | 2500 mA |
| Reverse voltage <sup>2)</sup><br>$T_j = 25\text{ °C}$                                         | $V_R$          | max.                 | 5 V     |
| ESD withstand voltage<br>acc. ANSI/ESDA/JEDEC JS-001 (HBM, Class 0)                           | $V_{ESD}$      | ESD sensitive device |         |

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

## Characteristics

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

| Parameter                                                  | Symbol          |      | Values   |
|------------------------------------------------------------|-----------------|------|----------|
| Dominant Wavelength <sup>3)</sup><br>$I_F = 350\text{ mA}$ | $\lambda_{dom}$ | min. | 440.0 nm |
|                                                            |                 | max. | 480.0 nm |
| Forward Voltage <sup>4)</sup><br>$I_F = 350\text{ mA}$     | $V_F$           | min. | 2.70 V   |
|                                                            |                 | typ. | 2.85 V   |
|                                                            |                 | max. | 3.20 V   |

## Additional Information

|                  |                        |                       |
|------------------|------------------------|-----------------------|
| Die bonding      | Metalization frontside | Metalization backside |
| Adhesive bonding | Gold                   | Gold                  |

## Binning Table <sup>5)3)</sup>

$I_F = 350 \text{ mA}$

| Radiant Intensity<br>$I_e$<br>a. u. | Dominant Wavelength<br>$\lambda_{\text{dom}}$<br>nm |               |               |               |               |
|-------------------------------------|-----------------------------------------------------|---------------|---------------|---------------|---------------|
|                                     | 440.0 - 442.5                                       | 442.5 - 445.0 | 445.0 - 447.5 | 447.5 - 450.0 | 450.0 - 452.5 |
|                                     |                                                     |               |               |               |               |
| 100 - 105                           | A16                                                 | B16           | C16           | D16           | E16           |
| 105 - 107                           | A19                                                 | B19           | C19           | D19           | E19           |
| 107 - 110                           | A22                                                 | B22           | C22           | D22           | E22           |
| 110 - 114                           | A25                                                 | B25           | C25           | D25           | E25           |
| 114 - 117                           | A28                                                 | B28           | C28           | D28           | E28           |
| 117 - 120                           | A31                                                 | B31           | C31           | D31           | E31           |
| 120 - 124                           | A34                                                 | B34           | C34           | D34           | E34           |
| 124 - 128                           | A37                                                 | B37           | C37           | D37           | E37           |
| 128 - 132                           | A40                                                 | B40           | C40           | D40           | E40           |
| 132 - 136                           | A43                                                 | B43           | C43           | D43           | E43           |
| 136 - 140                           | A46                                                 | B46           | C46           | D46           | E46           |

| Radiant Intensity<br>$I_e$<br>a. u. | Dominant Wavelength<br>$\lambda_{\text{dom}}$<br>nm |               |               |               |
|-------------------------------------|-----------------------------------------------------|---------------|---------------|---------------|
|                                     | 452.5 - 455.0                                       | 455.0 - 457.5 | 457.5 - 460.0 | 460.0 - 462.5 |
|                                     |                                                     |               |               |               |
| 100 - 105                           | F16                                                 | G16           | H16           | I16           |
| 105 - 107                           | F19                                                 | G19           | H19           | I19           |
| 107 - 110                           | F22                                                 | G22           | H22           | I22           |
| 110 - 114                           | F25                                                 | G25           | H25           | I25           |
| 114 - 117                           | F28                                                 | G28           | H28           | I28           |
| 117 - 120                           | F31                                                 | G31           | H31           | I31           |
| 120 - 124                           | F34                                                 | G34           | H34           | I34           |
| 124 - 128                           | F37                                                 | G37           | H37           | I37           |
| 128 - 132                           | F40                                                 | G40           | H40           | I40           |
| 132 - 136                           | F43                                                 | G43           | H43           | I43           |
| 136 - 140                           | F46                                                 | G46           | H46           | I46           |

## Correlation factor <sup>6)</sup>

| Unit              | Value | Condition               |
|-------------------|-------|-------------------------|
| CF (mW/sr / a.u.) | 1.6   | chip to air             |
| CF (mW / a.u.)    | 5.25  | chip with silicone lens |

## Binning Table <sup>5)3)</sup>

$I_F = 350 \text{ mA}$

Luminous Intensity Dominant Wavelength

| $I_v$<br>a. u. | $\lambda_{\text{dom}}$<br>nm |               |               |               |               |
|----------------|------------------------------|---------------|---------------|---------------|---------------|
|                | 462.5 - 465.0                | 465.0 - 467.5 | 467.5 - 470.0 | 470.0 - 472.5 | 472.5 - 475.0 |
| 45 - 50        | J10                          | K10           | L10           | M10           | N10           |
| 50 - 55        | J13                          | K13           | L13           | M13           | N13           |
| 55 - 60        | J16                          | K16           | L16           | M16           | N16           |
| 60 - 65        | J19                          | K19           | L19           | M19           | N19           |
| 65 - 70        | J22                          | K22           | L22           | M22           | N22           |
| 70 - 75        | J25                          | K25           | L25           | M25           | N25           |
| 75 - 80        | J28                          | K28           | L28           | M28           | N28           |
| 80 - 90        | J31                          | K31           | L31           | M31           | N31           |

Luminous Intensity

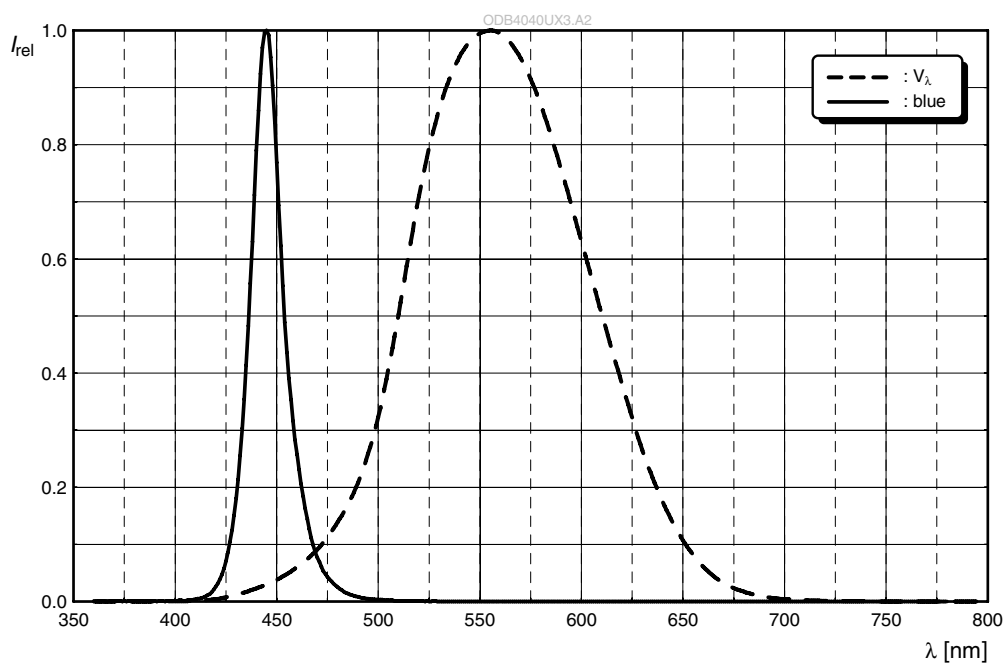
| $I_v$<br>a. u. | $\lambda_{\text{dom}}$<br>nm |               |
|----------------|------------------------------|---------------|
|                | 475.0 - 477.5                | 477.5 - 480.0 |
| 45 - 50        | O10                          | P10           |
| 50 - 55        | O13                          | P13           |
| 55 - 60        | O16                          | P16           |
| 60 - 65        | O19                          | P19           |
| 65 - 70        | O22                          | P22           |
| 70 - 75        | O25                          | P25           |
| 75 - 80        | O28                          | P28           |
| 80 - 90        | O31                          | P31           |

## Correlation factor <sup>6)</sup>

| Unit            | Value | Condition               |
|-----------------|-------|-------------------------|
| CF (mcd / a.u.) | 160   | chip to air             |
| CF (mlm / a.u.) | 535   | chip with silicone lens |

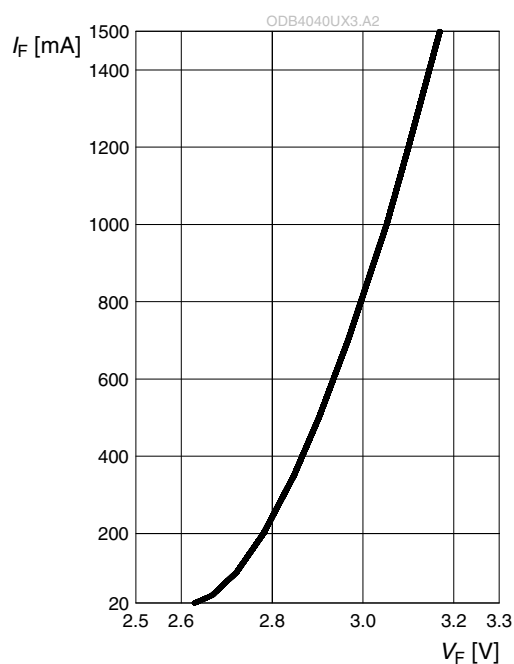
## Relative Spectral Emission <sup>7)</sup>

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



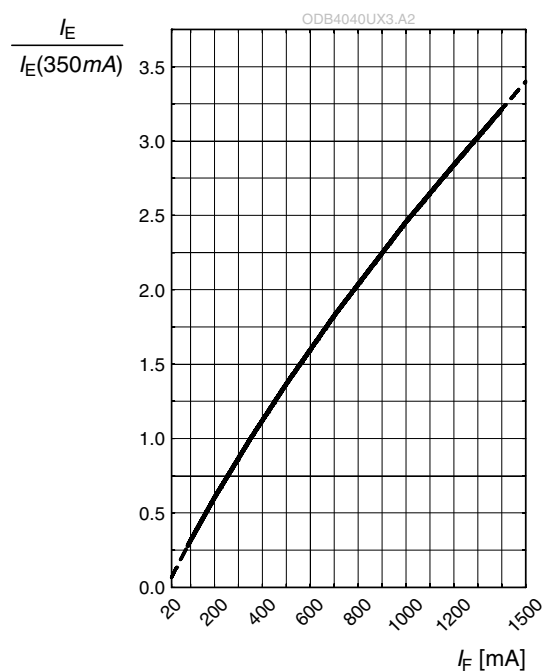
## Forward current <sup>7), 8)</sup>

$$I_F = f(V_F); T_S = 25\text{ °C}$$



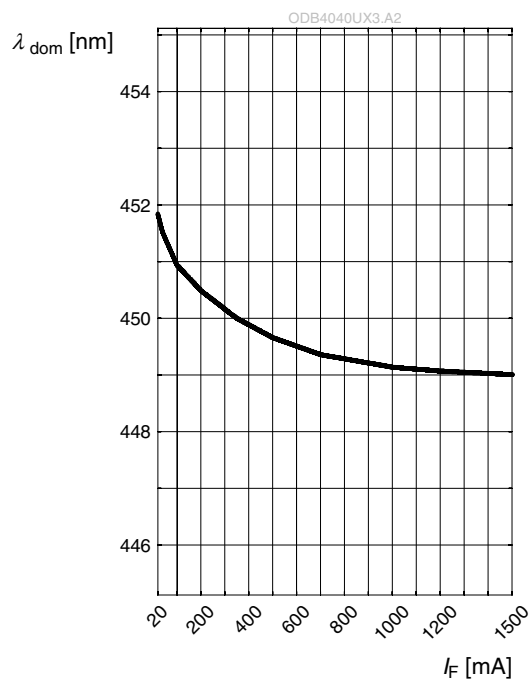
## Relative Radiant Intensity <sup>7), 8)</sup>

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



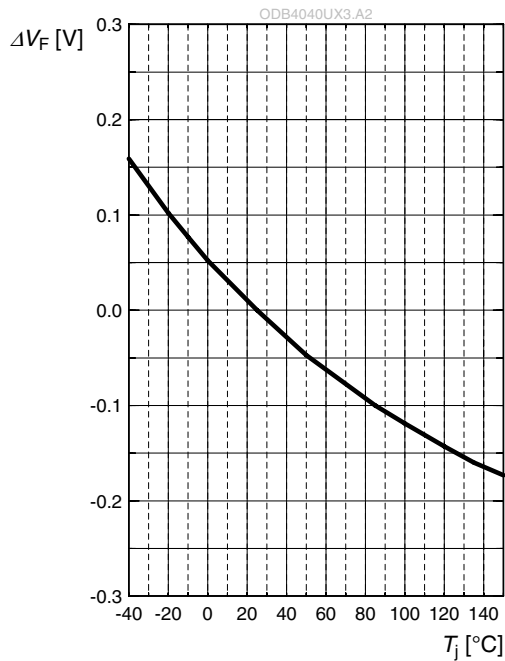
## Dominant Wavelength <sup>7)</sup>

$$\lambda_{\text{dom}} = f(I_F); T_S = 25\text{ °C}$$



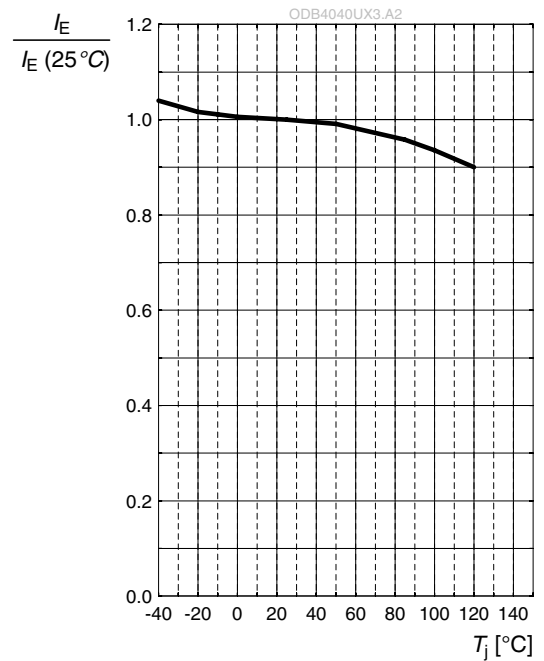
## Forward Voltage <sup>7)</sup>

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



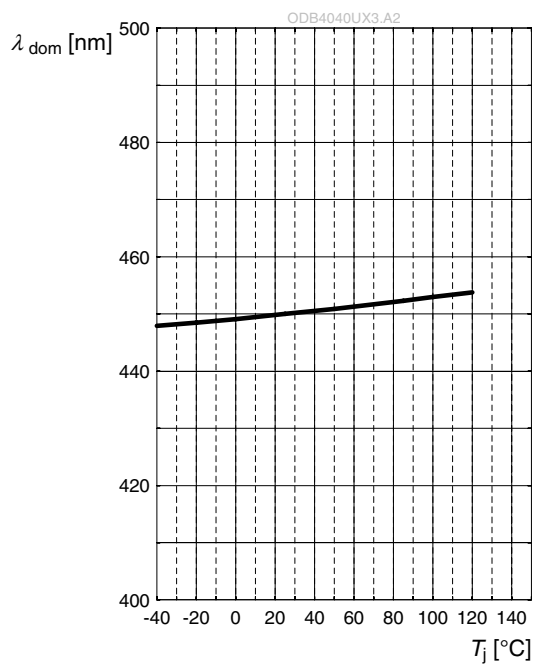
## Relative Radiant Intensity <sup>7)</sup>

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



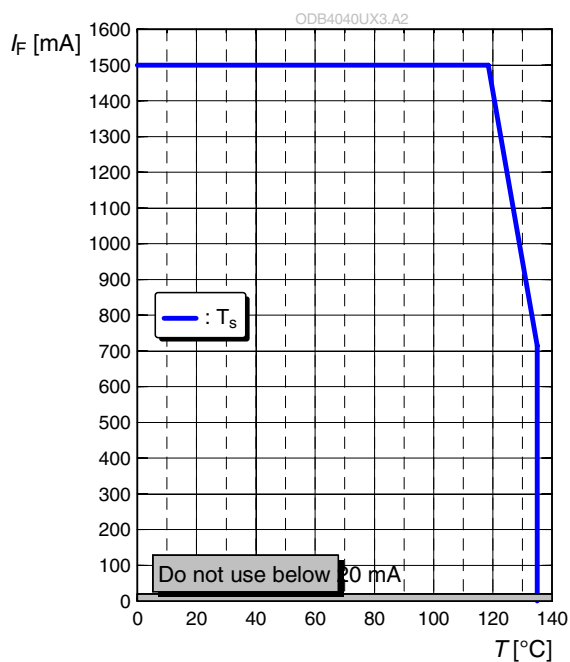
## Dominant Wavelength <sup>7)</sup>

$$\lambda_{\text{dom}} = f(T_j); I_F = 350\text{ mA}$$



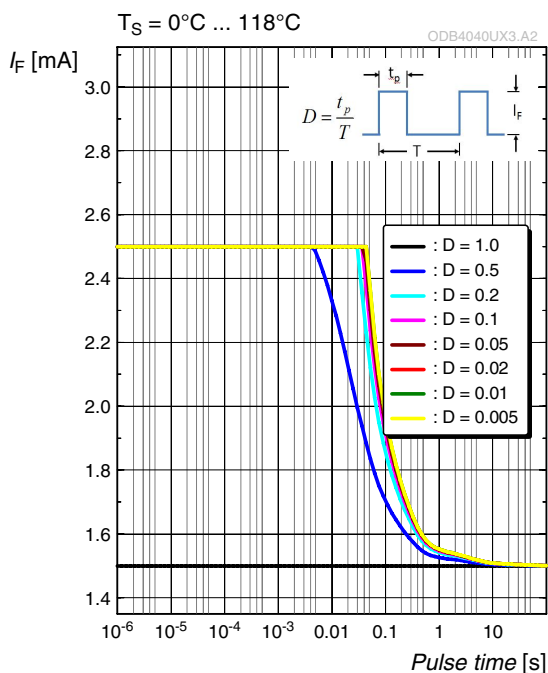
## Max. Permissible Forward Current

$$I_F = f(T)$$



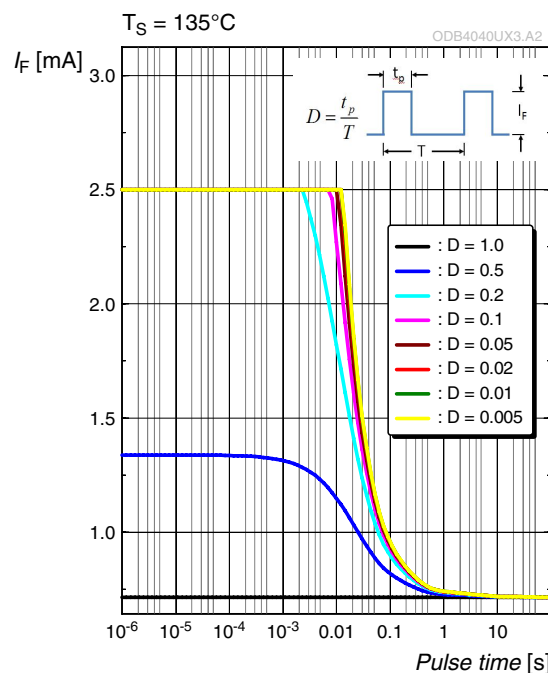
## Permissible Pulse Handling Capability

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

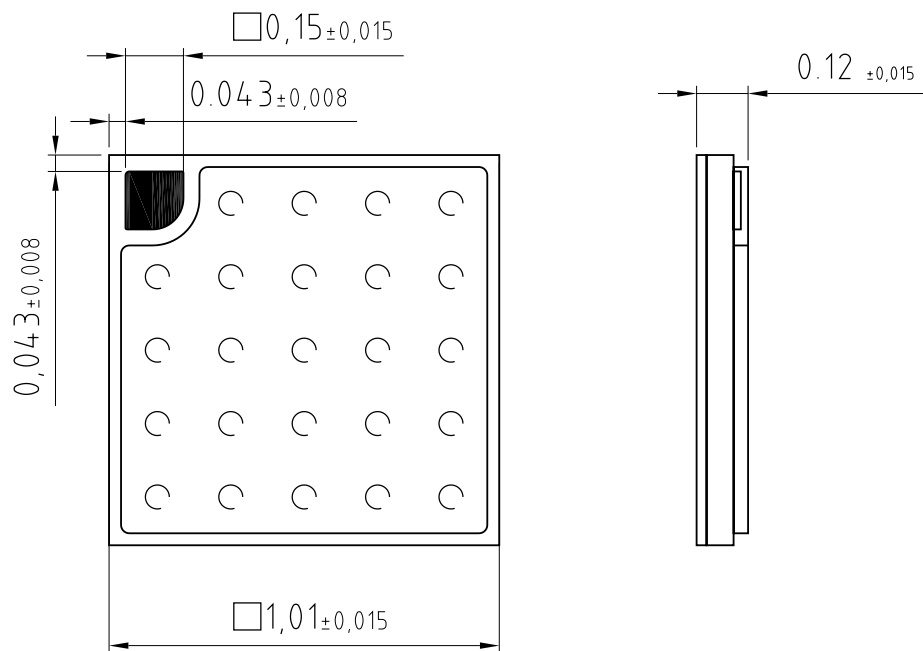


## Permissible Pulse Handling Capability

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



## Dimensional Drawing <sup>9)</sup>



ODB4040UX3.A2

## Disclaimer

### Disclaimer

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

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## Glossary

- 1) **Shelf life:** Temperature refer solely to storage of finished LED product (Not valid for chip on die sheet).
- 2) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 3) **Wavelength:** The wavelength is measured at a current pulse of typically 10 ms and with an internal reproducibility of  $\pm 1$  nm (with a coverage factor of  $k = 3$ ).
- 4) **Forward Voltage:** The forward voltage is measured during a current pulse of typically 5 ms and with an internal reproducibility of  $\pm 0.1$  V (with a coverage factor of  $k = 3$ ).
- 5) **Brightness:** Brightness values are measured during a current pulse of typically 10 ms and with an internal reproducibility of  $\pm 8$  % (with a coverage factor of  $k = 3$ ).
- 6) **Correlation Factor:** The exemplary correlation factor (CF) was estimated by sample build of the chip in a reference package and describes the exemplary correlation between the chip brightness measured in arbitrary units (a.u.) and the brightness in a reference package:  $CF = I/\Phi(\text{package}) / I(\text{chip})$ . This factor is purely given as an indication of possible package brightness values. It may vary for different packages due to influences of geometries, reflectivity/refractive index of package materials or other material properties.
- 7) **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.
- 8) **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.
- 9) **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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