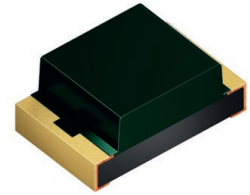


SFH 2711 A01

CHIPLED®

Silicon PIN Photodiode with V_λ Characteristics



Applications

- Ambient Light Sensors
- Industrial Automation (Machine Controls, Light Barriers, Vision Controls)

Features:

- Package: black epoxy
- 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.
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Very small SMT package
- Good match to human eye sensitivity (V_λ)
- Sensitivity to IR radiation ($\lambda > 750\text{nm}$) $< 1\%$

Ordering Information

| Type | Photocurrent ¹⁾ $E_v = 1000 \text{ lx; white LED; } V_R = 5 \text{ V}$ I_P | Photocurrent typ. $E_v = 1000 \text{ lx; white LED; } V_R = 5 \text{ V}$ I_P | Ordering Code |
|--------------|---|---|---------------|
| SFH 2711 A01 | $\geq 0.056 \mu\text{A}$ | $0.12 \mu\text{A}$ | Q65112A4787 |

Maximum Ratings

$T_A = 25\text{ °C}$

| Parameter | Symbol | | Values |
|--|-----------|--------------|------------------|
| Operating Temperature | T_{op} | min. max. | -40 °C 100 °C |
| Storage temperature | T_{stg} | min. max. | -40 °C 100 °C |
| Reverse voltage | V_R | max. | 16 V |
| ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2) | V_{ESD} | max. | 2 kV |

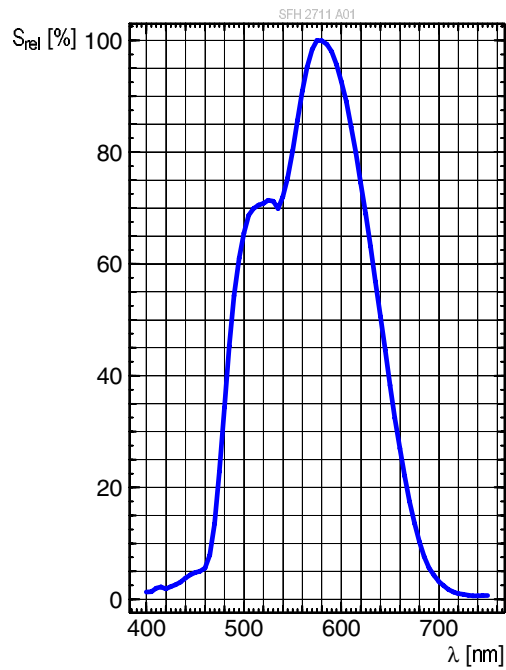
Characteristics

$T_A = 25\text{ °C}$

| Parameter | Symbol | | Values |
|---|--------------------------|--------------|------------------------|
| Spectral sensitivity $V_R = 5\text{ V}$; Std. Light A; $T = 2856\text{ K}$ | S | typ. | 0.115 nA/lx |
| Wavelength of max sensitivity | $\lambda_{S\text{ max}}$ | typ. | 580 nm |
| Spectral range of sensitivity | $\lambda_{10\%}$ | typ. | 470 ... 670 nm |
| Radiant sensitive area | A | typ. | 0.35 mm ² |
| Dimensions of active chip area | L x W | typ. | 0.59 x 0.59 mm x mm |
| Half angle | φ | typ. | 55 ° |
| Dark current $V_R = 5\text{ V}$ | I_R | typ. max. | 0.01 nA 5 nA |
| Open-circuit voltage $E_v = 1000\text{ lx}$; Std. Light A; $V_R = 0\text{ V}$ | V_O | min. typ. | 300 mV 377 mV |
| Short-circuit current $E_v = 1000\text{ lx}$; Std. Light A; $V_R = 0\text{ V}$ | I_{SC} | typ. | 0.115 μA |
| Rise time $V_R = 5\text{ V}$, $R_L = 50\text{ Ohm}$, $\lambda = 530\text{ nm}$ | t_r | typ. | 0.06 μs |
| Fall time $V_R = 5\text{ V}$, $R_L = 50\text{ Ohm}$, $\lambda = 530\text{ nm}$ | t_f | typ. | 0.06 μs |
| Forward voltage 0 | V_F | typ. | 0.70 V |
| Capacitance $V_R = 0\text{ V}$; $f = 1\text{ MHz}$; $E = 0$ | C_0 | typ. | 28 pF |

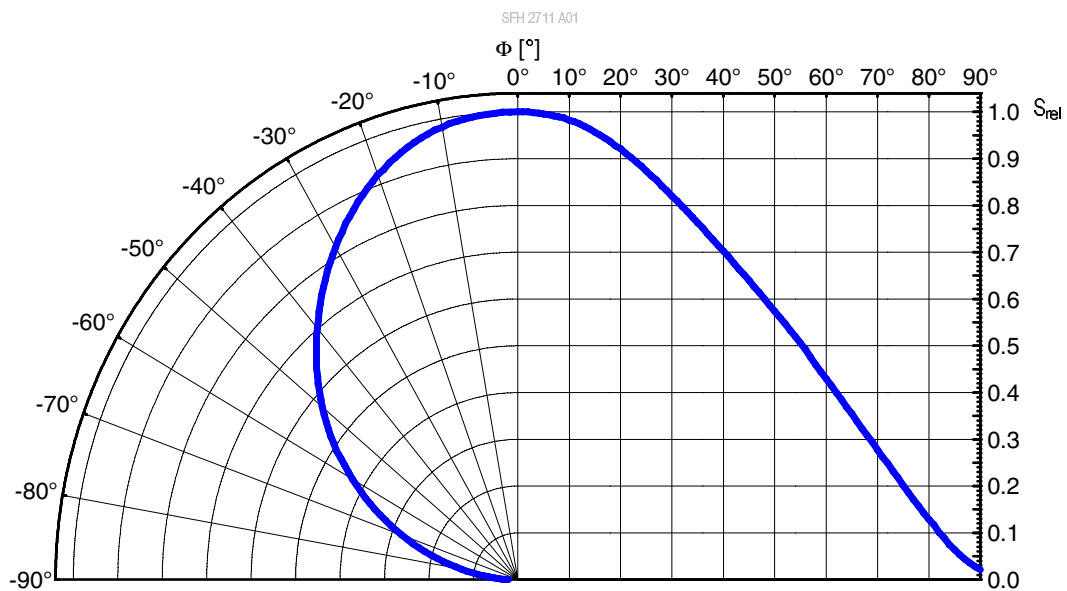
Relative Spectral Sensitivity ^{2), 3)}

$$S_{rel} = f(\lambda)$$



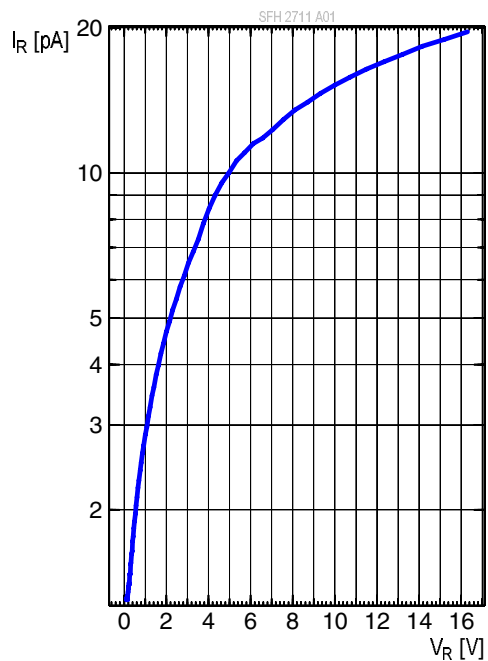
Directional Characteristics ^{2), 3)}

$$S_{rel} = f(\varphi)$$



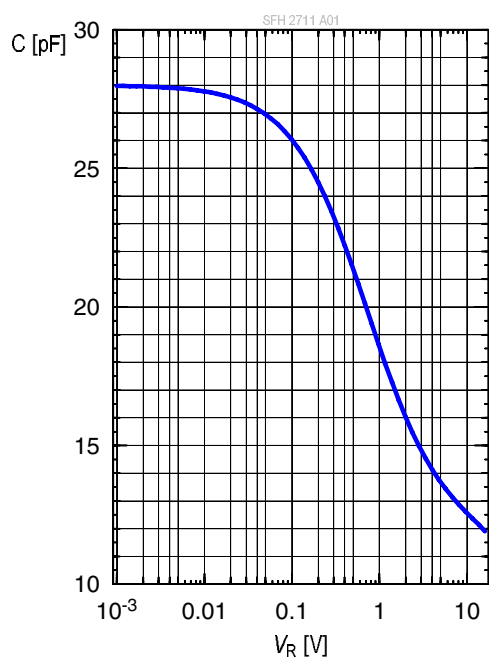
Dark Current ^{2), 3)}

$$I_R = f(V_R)$$

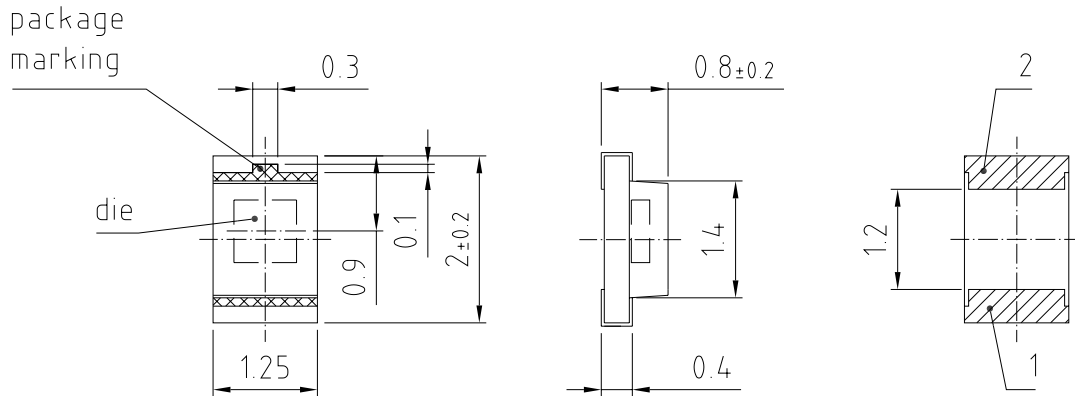


Capacitance ^{2), 3)}

$$C = f(V_R); f = 1\text{MHz}; E = 0; T_A = 25^\circ\text{C}$$



Dimensional Drawing 4)



general tolerance ± 0.1
 lead finish Au

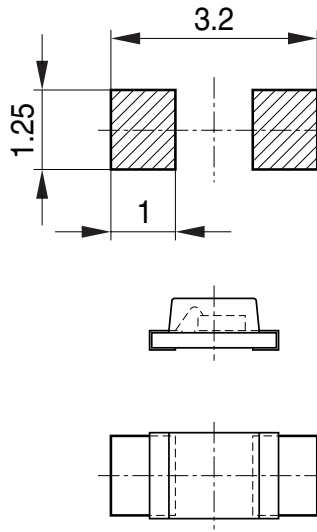
C67062-A0256-A1..-02

Further Information:

- Approximate Weight:** 3.8 mg
- Package marking:** Cathode
- Corrosion test:** Class: 3B
 Test condition: 40°C / 90 % RH / 15 ppm H₂S / 14 days (stricter than IEC 60068-2-43)

| Pin | Description |
|-----|-------------|
| 1 | Anode |
| 2 | Cathode |

Recommended Solder Pad ⁴⁾

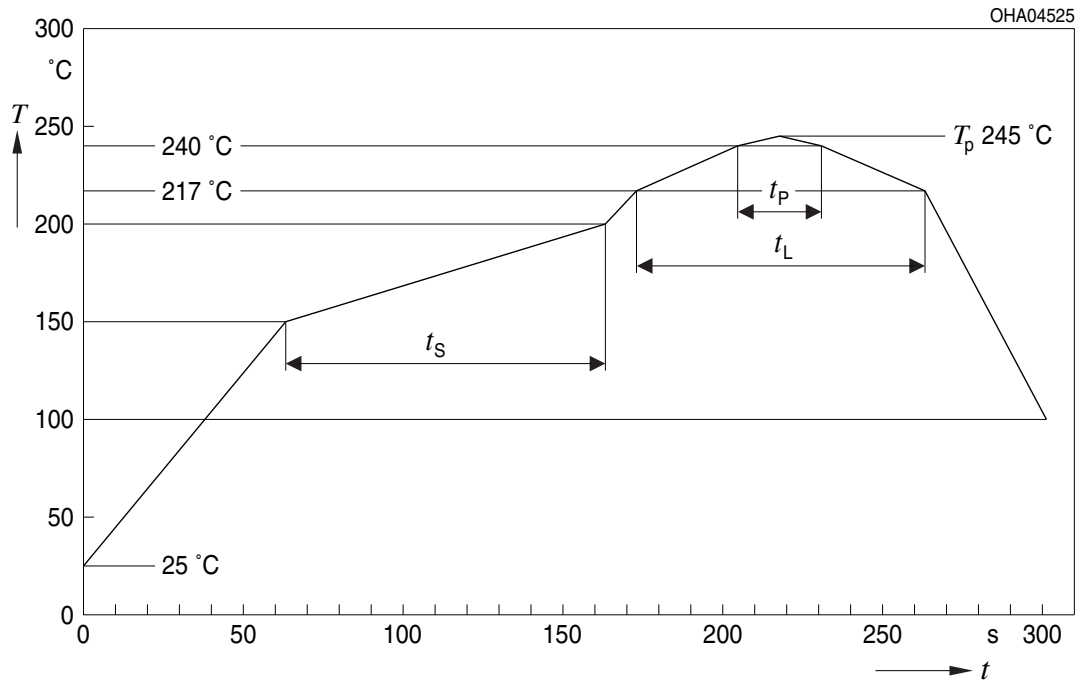


Bauteil positioniert
Component location on pad

OHFP2578

Reflow Soldering Profile

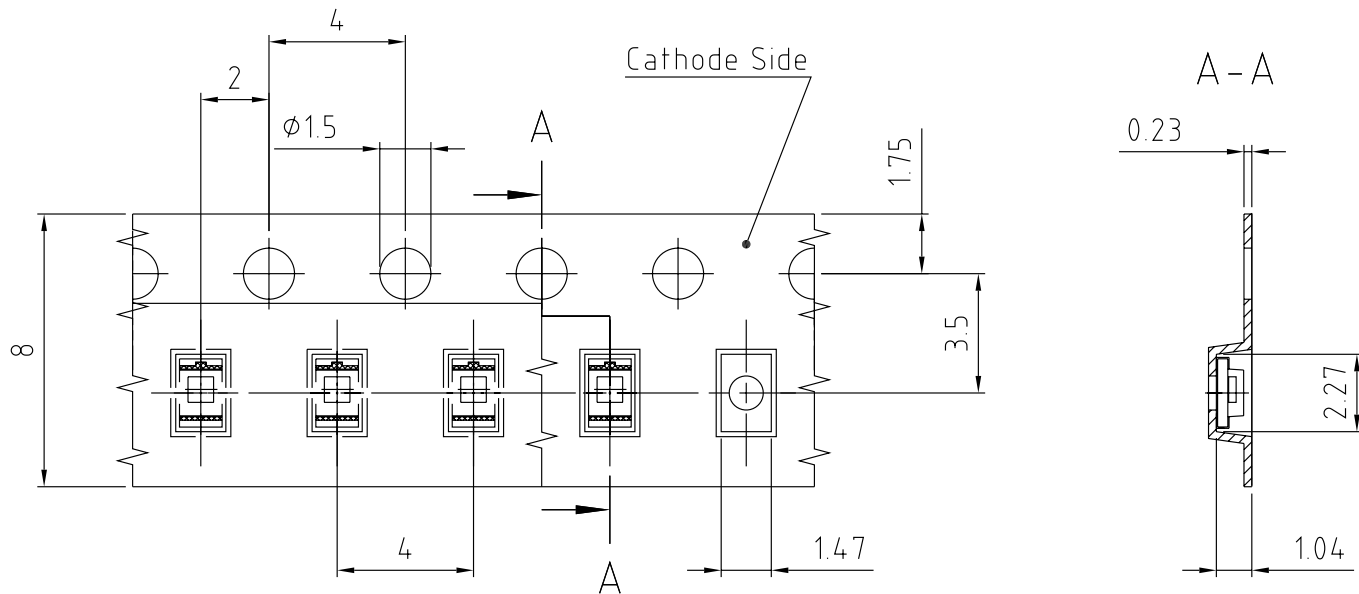
Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



| 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 $T_p - 5 \text{ K}$ | 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 |

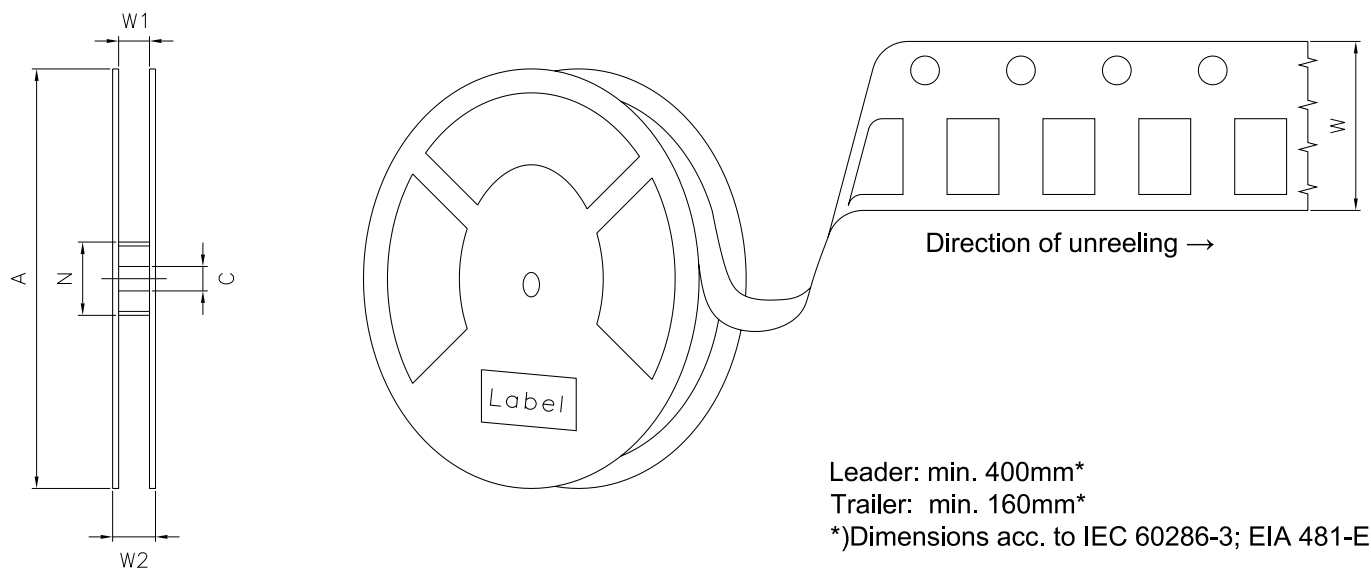
All temperatures refer to the center of the package, measured on the top of the component
^{*)} slope calculation DT/Dt : Dt max. 5 s; fulfillment for the whole T-range

Taping ⁴⁾



C67062-A0256-B1-03

Tape and Reel ⁵⁾



Reel Dimensions

| A | W | N_{\min} | W_1 | $W_{2\max}$ | Pieces per PU |
|--------|-----------------------|------------|---------------|-------------|---------------|
| 180 mm | $12 + 0.3 / - 0.1$ mm | 60 mm | $12.4 + 2$ mm | 18.4 mm | 3000 |

Barcode-Product-Label (BPL)

OSRAM Opto Semiconductors LX XXXX BIN1: XX-XX-X-XXX-X



RoHS Compliant

(6P) BATCH NO: 1234567890 ML Temp ST
X XXX °C X

(1T) LOT NO: 1234567890 (9D) D/C: 1234

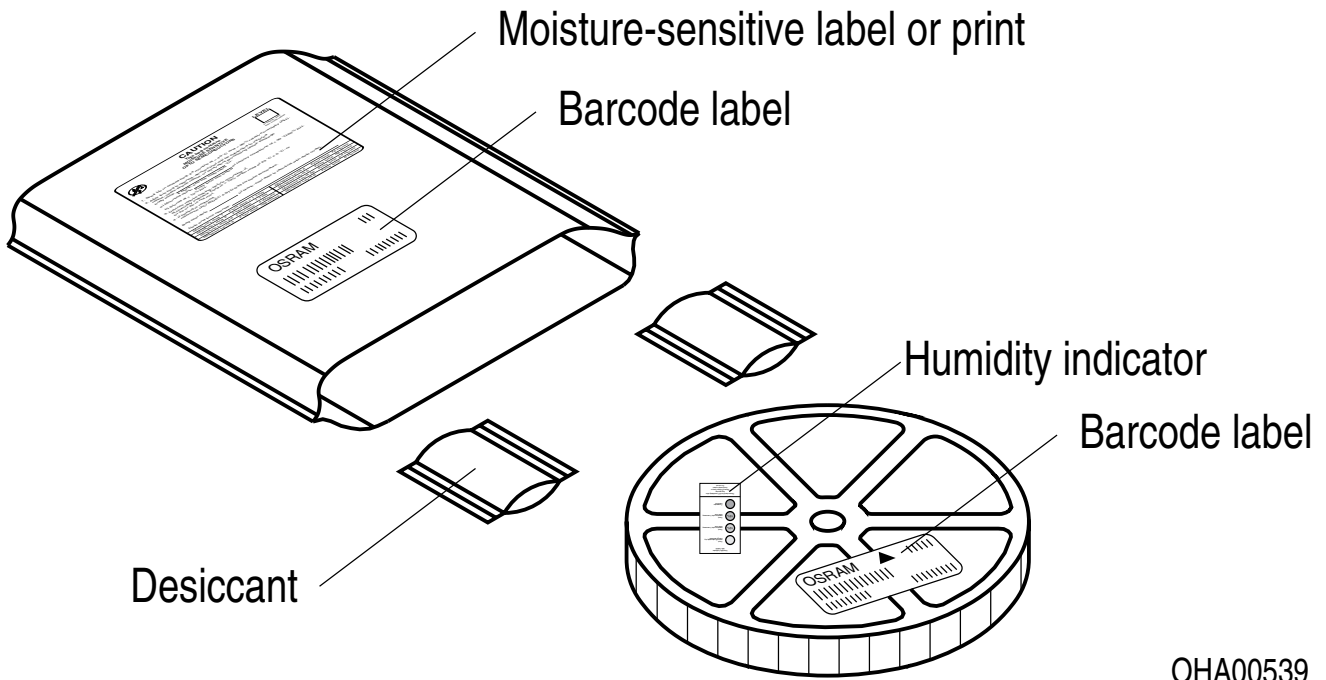
(X) PROD NO: 123456789(Q)QTY: 9999 (G) GROUP: XX-XX-X-X

Pack: RXX
DEMY XXX
X_X123_1234.1234 X

OHA04563

Dry Packing Process and Materials ⁴⁾



OHA00539

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

Disclaimer

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.

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

OSRAM OS products are not qualified at module and system level for such application.

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Glossary

- 1) **Photocurrent:** The photocurrent values are measured (by irradiating the devices with a homogenous light source and applying a voltage to the device) with a tolerance of $\pm 11\%$.
- 2) **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.
- 3) **Testing temperature:** $T_A = 25^\circ\text{C}$ (unless otherwise specified)
- 4) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.
- 5) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

Revision History

| Version | Date | Change |
|---------|------------|--|
| 1.1 | 2020-09-21 | Taping Schematic Transportation Box Dimensions of Transportation Box |

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