

Hyper SIDELED®

White Hyper-Bright LED

LW A673



Besondere Merkmale

- **Gehäusotyp:** weißes SMT Gehäuse
- **Besonderheit des Bauteils:** Abstrahlung parallel zur Platine, deshalb ideal zur Einkopplung in Lichtleiter
- **Farbort:** $x = 0,32$, $y = 0,31$ nach CIE 1931 (weiß)
- **typische Farbtemperatur:** 6500 K
- **Farbwiedergabeindex:** 80
- **Abstrahlwinkel:** Lambertischer Strahler (120°)
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 6 lm/W
- **Gruppierungsparameter:** Lichtstärke, Farbort
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten und Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 12 mm Gurt mit 2000/Rolle, $\varnothing 330$ mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- Einkopplung in Lichtleiter
- Hinterleuchtung (LCD, Schalter, Tasten, Displays)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)
- Ersatz von Kleinst-Glühlampen
- Rettungsnotleuchten
- Signal- und Symbolleuchten
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)

Features

- **package:** white SMT package
- **feature of the device:** radiation direction parallel to PCB, so an ideal LED for coupling in light guides
- **color coordinates:** $x = 0.32$, $y = 0.31$ acc. to CIE 1931 (white)
- **typ. color temperature:** 6500 K
- **color reproduction index:** 80
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaN
- **optical efficiency:** 6 lm/W
- **grouping parameter:** luminous intensity, color coordinates
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 12 mm tape with 2000/reel, $\varnothing 330$ mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- coupling into light guides
- backlighting (LCD, switches, keys, displays)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- substitution of micro incandescent lamps
- emergency lighting
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)

| Typ | Emissions- farbe | Farbe der Lichtaustritts- fläche | Lichtstärke | Lichtstrom | Bestellnummer |
|-------------------|----------------------|--|---|--|---------------|
| Type | Color of Emission | Color of the Light Emitting Area | Luminous Intensity $I_F = 20 \text{ mA}$ $I_V \text{ (mcd)}$ | Luminous Flux $I_F = 20 \text{ mA}$ $\Phi_V \text{ (lm)}$ | Ordering Code |
| LW A673-R1S1-3C5D | white | colored | 112 ... 224 | 480 (typ.) | Q62703Q5891 |
| LW A673-S1T1-3C5D | | diffused | 180 ... 355 | 770 (typ.) | Q65110A0587 |

Anm.: -3C5D gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)

*Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe, die aus nur 3 bzw. 4 Halbgruppen besteht. Einzelne Halbgruppen sind nicht erhältlich.
In einer Verpackungseinheit / Gurt ist immer nur eine Halbgruppe enthalten.*

Note: -3C5D Color selection acc. to Chromaticity coordinate groups (see **page 5**)

*The standard shipping format for serial types includes a lower or upper family group of 3 or 4 individual groups. Individual half groups are not available.
No packing unit / tape ever contains more than one luminous intensity half group.*

Grenzwerte
Maximum Ratings

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|------------------|----------------|-----------------|
| Betriebstemperatur Operating temperature range | T_{op} | – 40 ... + 100 | °C |
| Lagertemperatur Storage temperature range | T_{stg} | – 40 ... + 100 | °C |
| Sperrschichttemperatur Junction temperature | T_j | + 110 | °C |
| Durchlassstrom Forward current | I_F | 20 | mA |
| Stoßstrom Surge current $t = 10 \mu s, D = 0.005$ | I_{FM} | 200 | mA |
| Sperrspannung ¹⁾ Reverse voltage | V_R | 5 | V |
| Leistungsaufnahme Power consumption $T_A \leq 25 \text{ °C}$ | P_{tot} | 80 | mW |
| Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient | $R_{th JA}$ | 430 | K/W |
| Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$) | $R_{th JS}$ | 200 | K/W |

¹⁾ für kurzzeitigen Betrieb geeignet / suitable for short term application

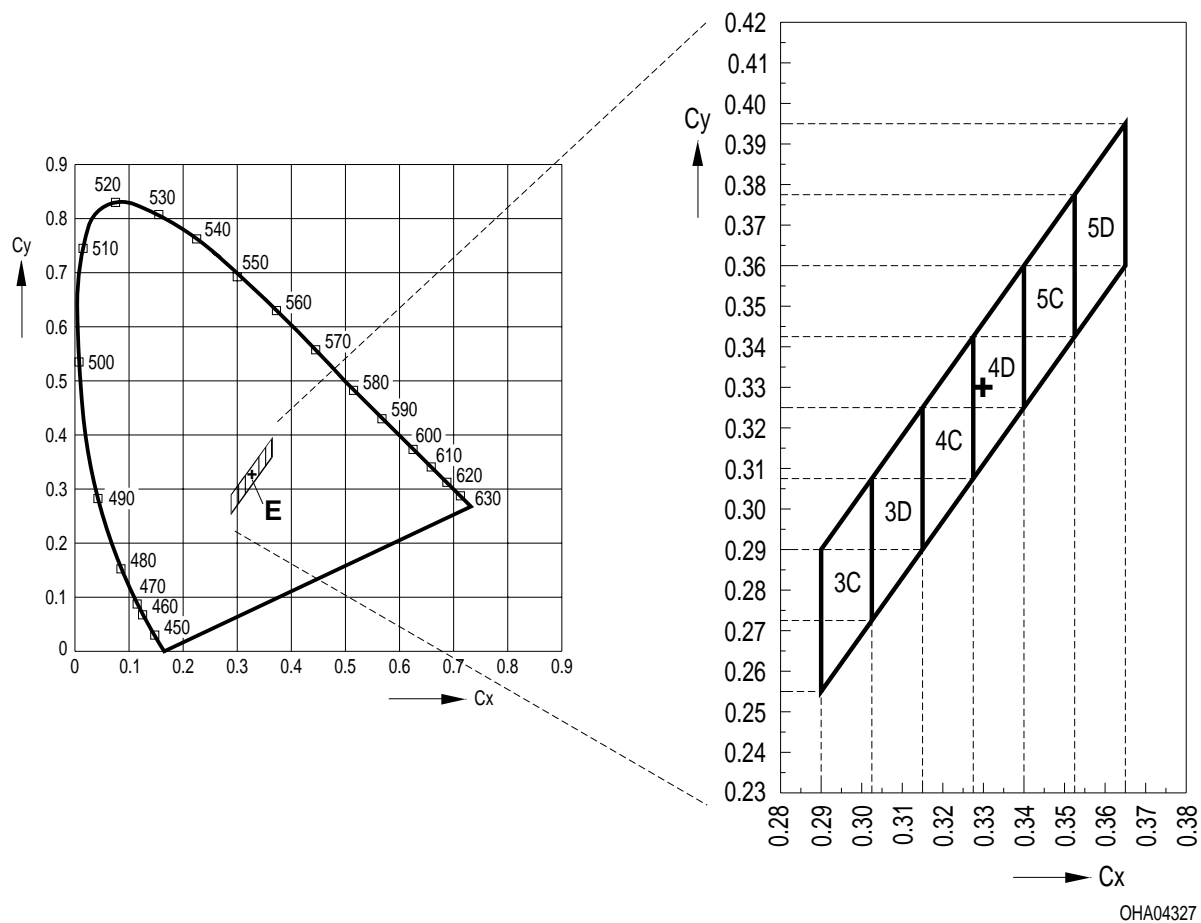
Kennwerte ($T_A = 25\text{ °C}$)**Characteristics**

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|-------------------------|-------------------|--------------------------------|
| Farbkoordinate x nach CIE 1931 ¹⁾ (typ.) Chromaticity coordinate x acc. to CIE 1931 $I_F = 20\text{ mA}$ | x | 0.32 | – |
| Farbkoordinate y nach CIE 1931 ¹⁾ (typ.) Chromaticity coordinate y acc. to CIE 1931 $I_F = 20\text{ mA}$ | y | 0.31 | – |
| Abstrahlwinkel bei 50 % I_V (Vollwinkel) (typ.) Viewing angle at 50 % I_V | 2 ϕ | 120 | Grad deg. |
| Durchlassspannung ²⁾ (min.) Forward voltage (typ.) $I_F = 20\text{ mA}$ (max.) | V_F V_F V_F | 2.9 3.5 3.9 | V V V |
| Sperrstrom (typ.) Reverse current (max.) $V_R = 5\text{ V}$ | I_R I_R | 0.01 10 | μA μA |
| Temperaturkoeffizient von x (typ.) Temperature coefficient of x $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | TC_x | –0.1 | $10^{-3}/\text{K}$ |
| Temperaturkoeffizient von y (typ.) Temperature coefficient of y $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | TC_y | –0.2 | $10^{-3}/\text{K}$ |
| Temperaturkoeffizient von V_F (typ.) Temperature coefficient of V_F $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | TC_V | – 4.5 | mV/K |
| Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 20\text{ mA}$ | η_{opt} | 6 | lm/W |

¹⁾ Farbortgruppen werden mit einer Stromeinprägungsdauer von 25 ms und einer Genauigkeit von $\pm 0,01$ ermittelt.
Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of ± 0.01 .

²⁾ Durchlassspannungsgruppen werden mit einer Stromeinprägungsdauer von 1 ms und einer Genauigkeit von $\pm 0,05\text{ V}$ ermittelt.
Forward voltage groups are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.05\text{ V}$.

1) Farbortgruppen
Chromaticity coordinate groups



Helligkeits-Gruppierungsschema Luminous Intensity Groups

| Lichtgruppe Luminous Intensity Group | Lichtstärke Luminous Intensity I_v (mcd) | Lichtstrom Luminous Flux Φ_v (lm) |
|---|--|--|
| R1 | 112 ... 140 | 380 (typ.) |
| R2 | 140 ... 180 | 480 (typ.) |
| S1 | 180 ... 224 | 600 (typ.) |
| S2 | 224 ... 280 | 760 (typ.) |
| T1 | 280 ... 355 | 920 (typ.) |

Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von $\pm 11\%$ ermittelt.
Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of $\pm 11\%$.

Gruppenbezeichnung auf Etikett

Group Name on Label

Beispiel: R2-4

Example: R2-4

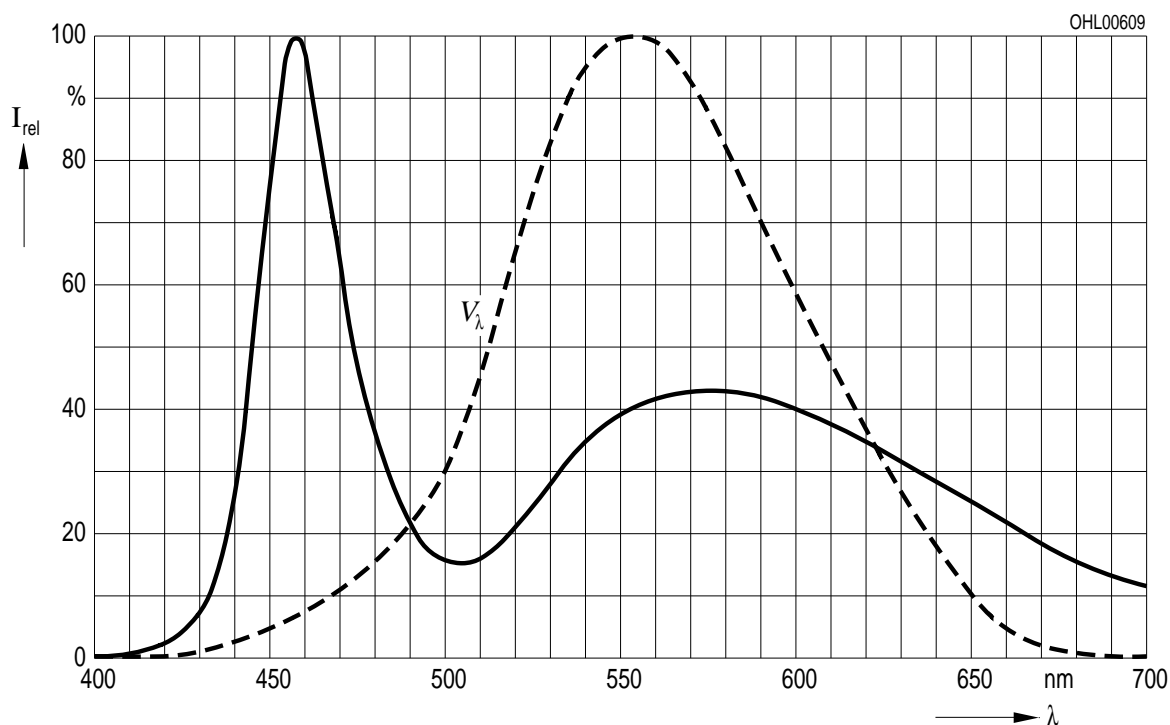
| Lichtgruppe Luminous Intensity Group | Halbgruppe Half Group | Farbortgruppe Chromaticity Coordinate Group |
|---|--------------------------|--|
| R | 2 | 4 |

Relative spektrale Emission $I_{\text{rel}} = f(\lambda)$, $T_A = 25\text{ °C}$, $I_F = 20\text{ mA}$

Relative Spectral Emission

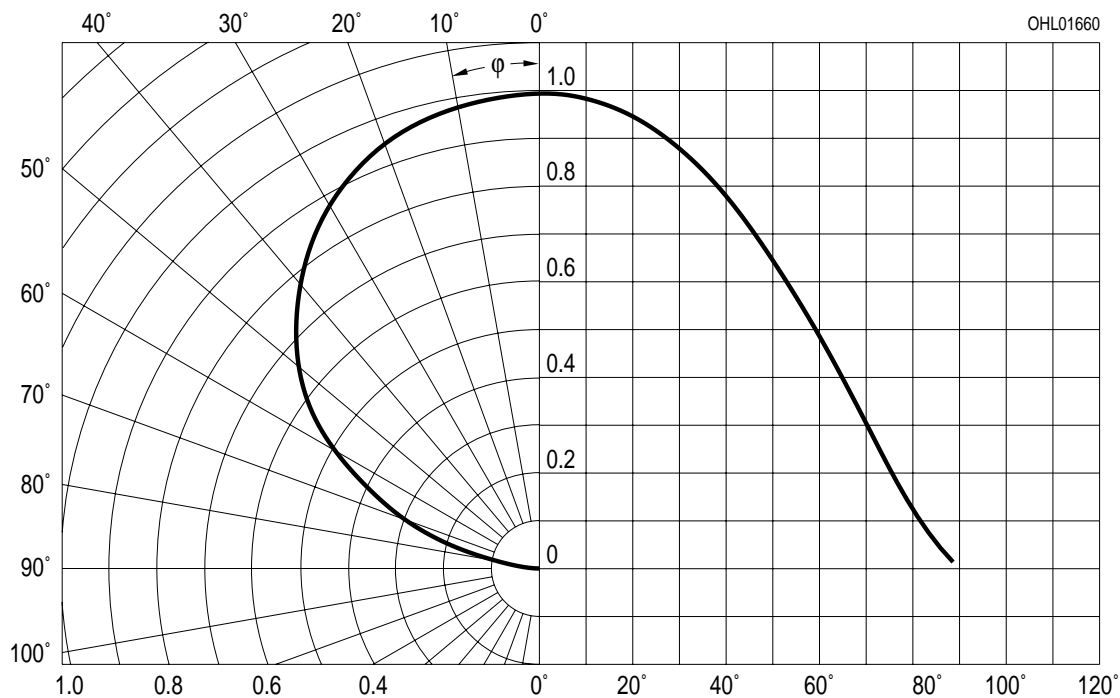
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



Abstrahlcharakteristik $I_{\text{rel}} = f(\varphi)$

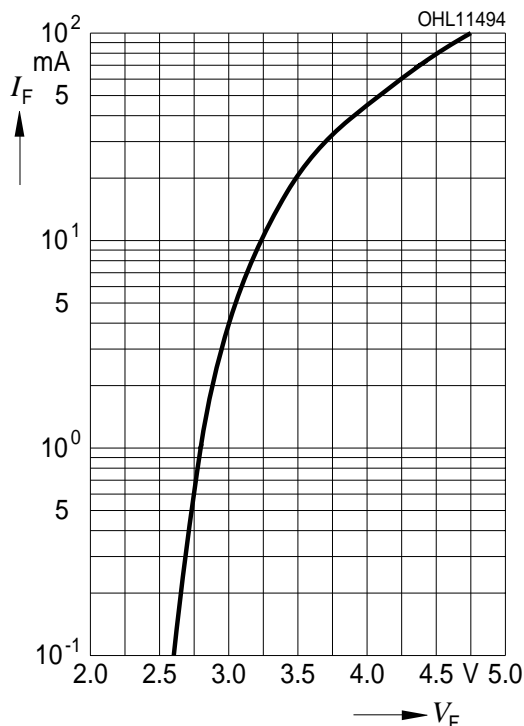
Radiation Characteristic



Durchlassstrom $I_F = f(V_F)$

Forward Current

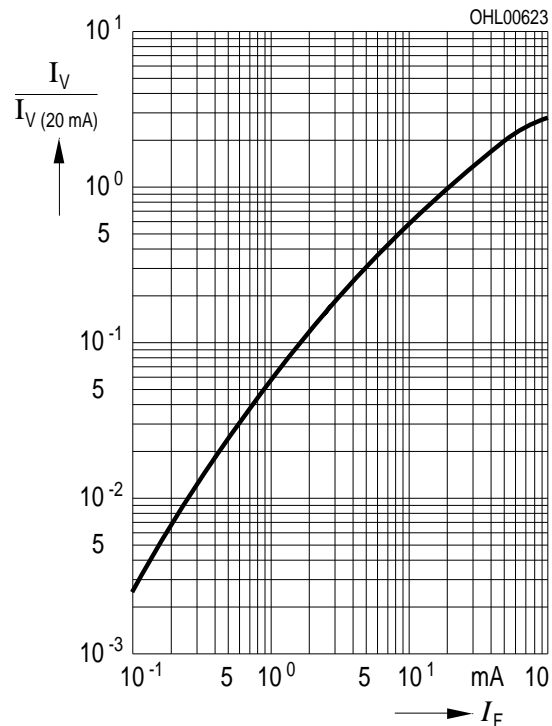
$T_A = 25\text{ °C}$



Relative Lichtstärke $I_V/I_{V(20\text{ mA})} = f(I_F)$

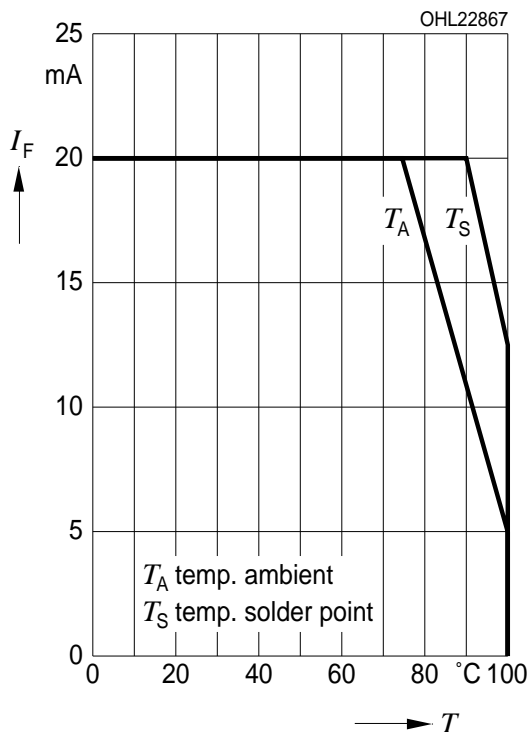
Relative Luminous Intensity

$T_A = 25\text{ °C}$



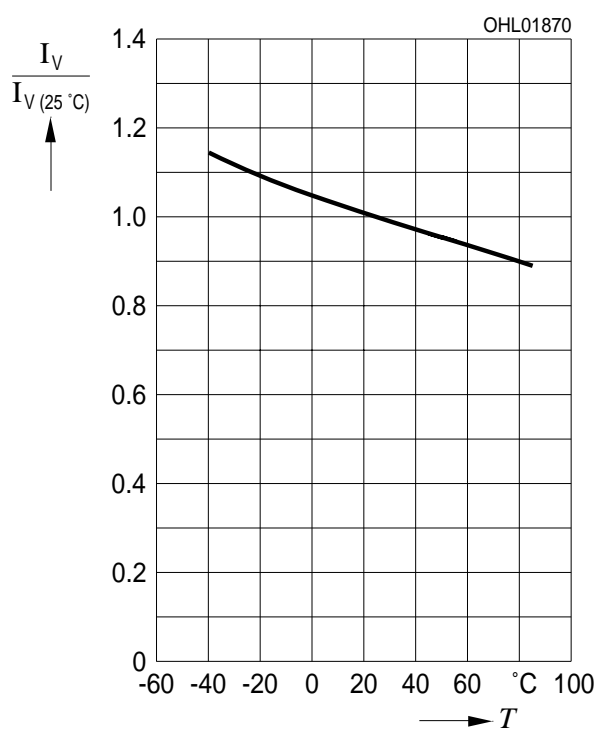
Maximal zulässiger Durchlassstrom $I_F = f(T)$

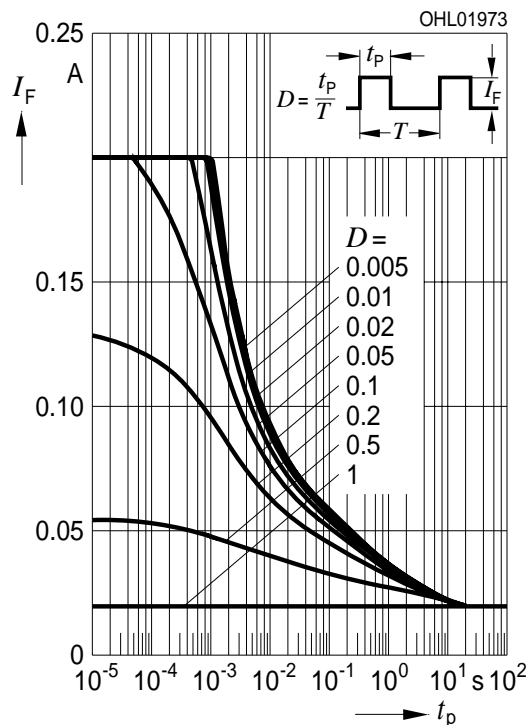
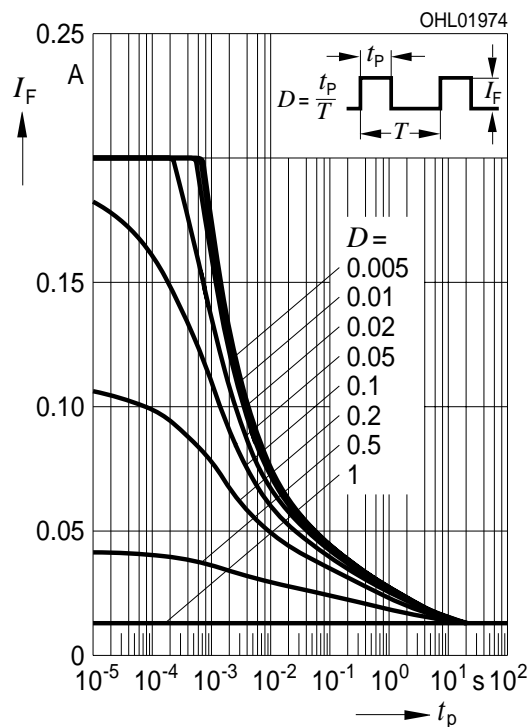
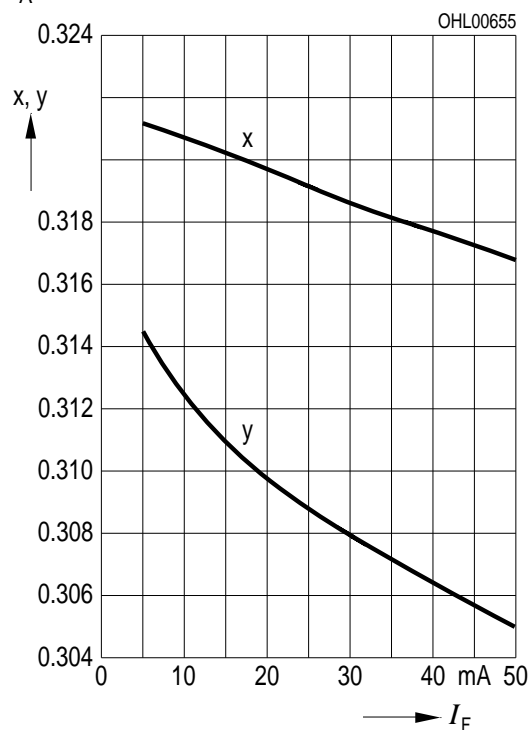
Max. Permissible Forward Current



Relative Lichtstärke $I_V/I_{V(25\text{ °C})} = f(T_A)$

Relative Luminous Intensity, $I_F = 20\text{ mA}$



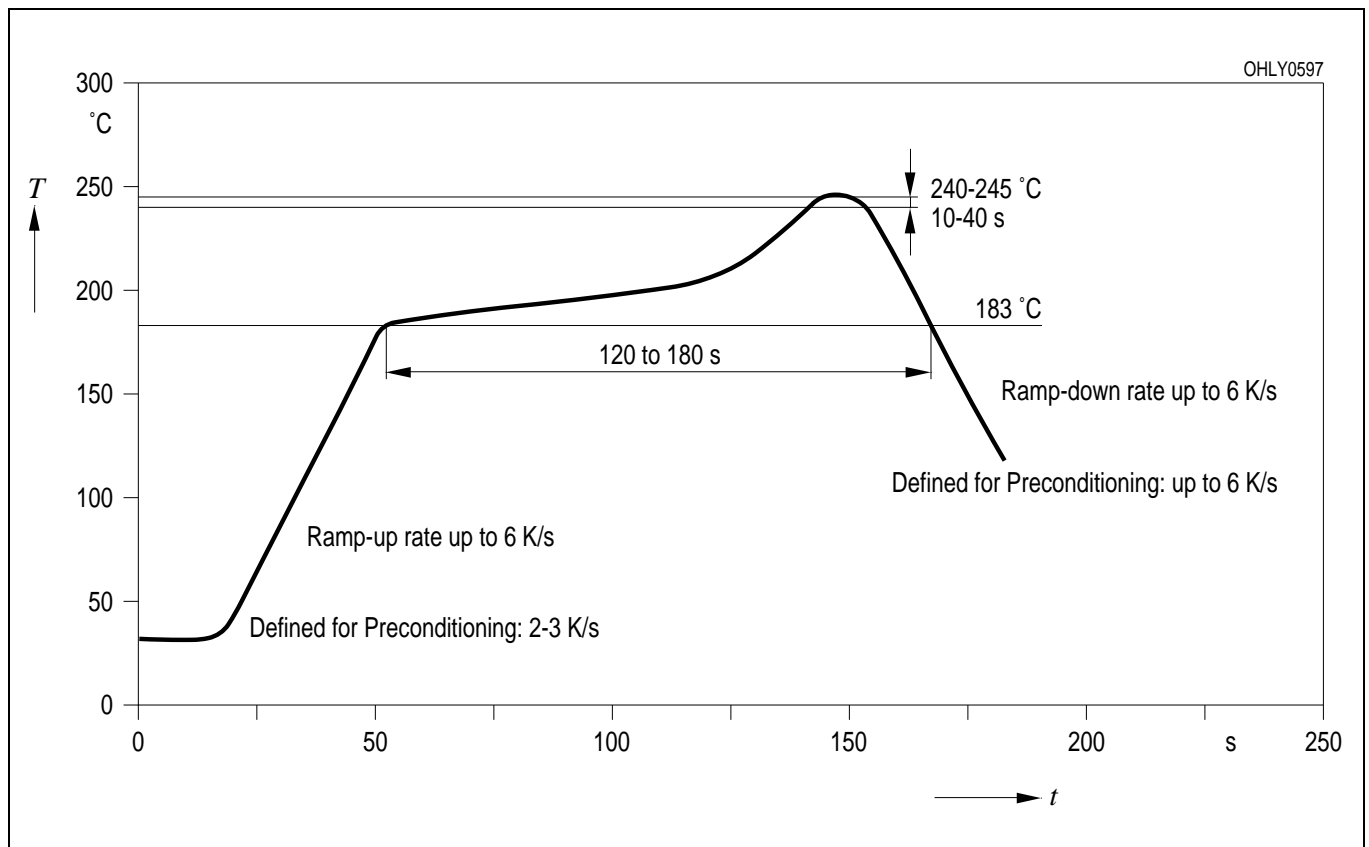
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$ **Permissible Pulse Handling Capability**Duty cycle $D = \text{parameter}$, $T_A = 25\text{ °C}$ **Zulässige Impulsbelastbarkeit $I_F = f(t_p)$** **Permissible Pulse Handling Capability**Duty cycle $D = \text{parameter}$, $T_A = 85\text{ °C}$ **Farbortverschiebung $x, y = f(I_F)$** **Chromaticity Coordinate Shift** $T_A = 25\text{ °C}$ 



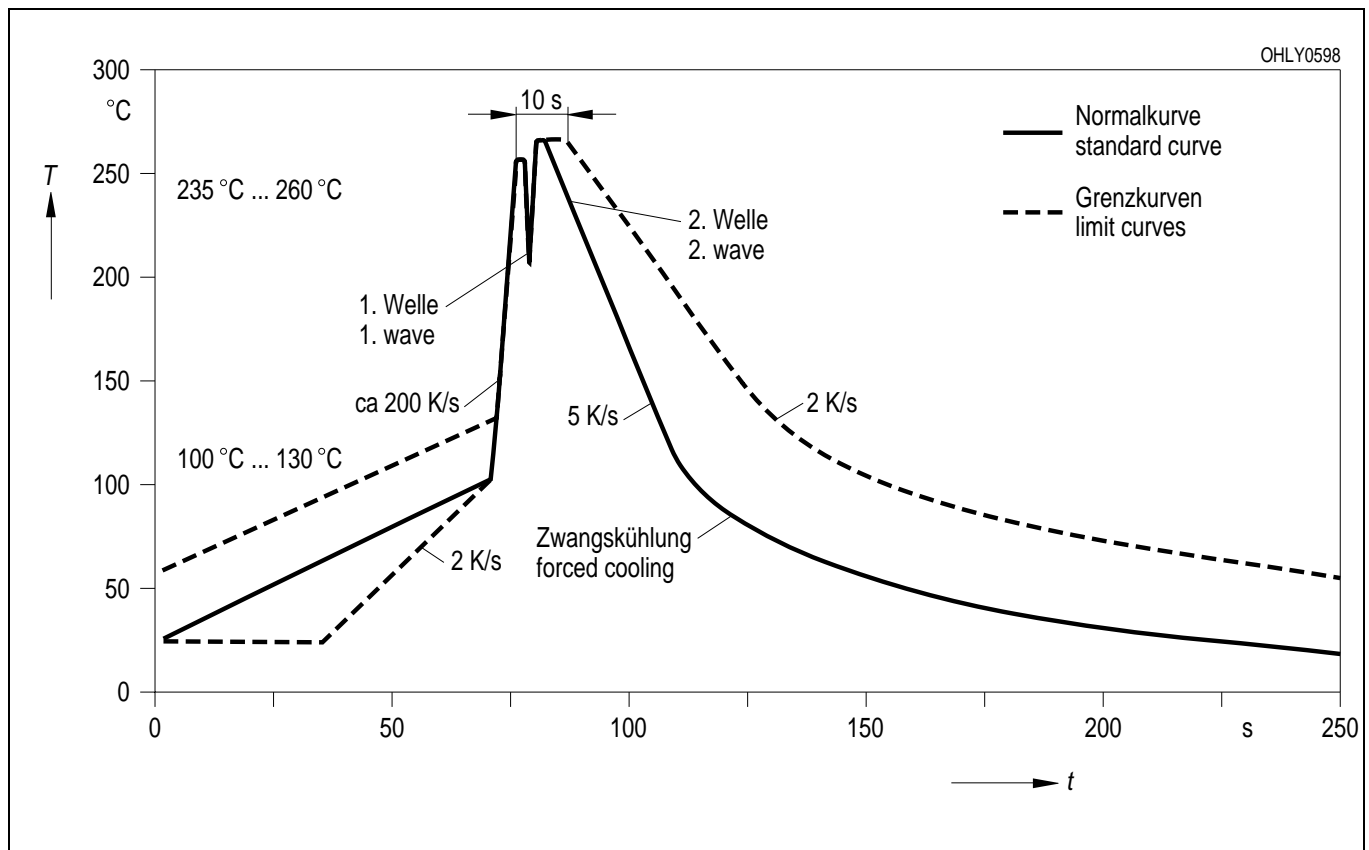
| | |
|----------------------------------|-------------------|
| Kathodenkennung: | abgeschrägte Ecke |
| Cathode mark: | bevelled edge |
| Gewicht / Approx. weight: | 40 mg |

Lötbedingungen Vorbehandlung nach JEDEC Level 2
Soldering Conditions Preconditioning acc. to JEDEC Level 2

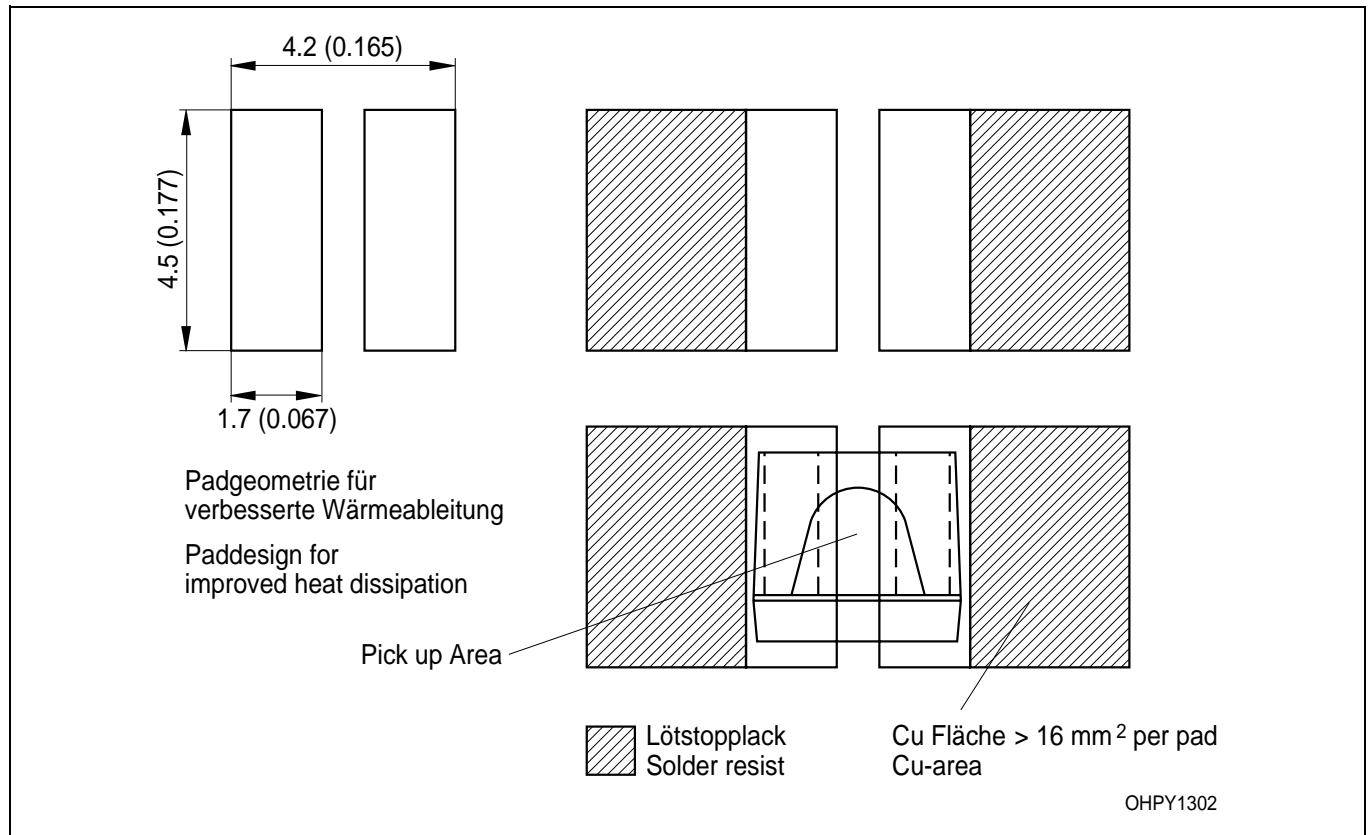
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)

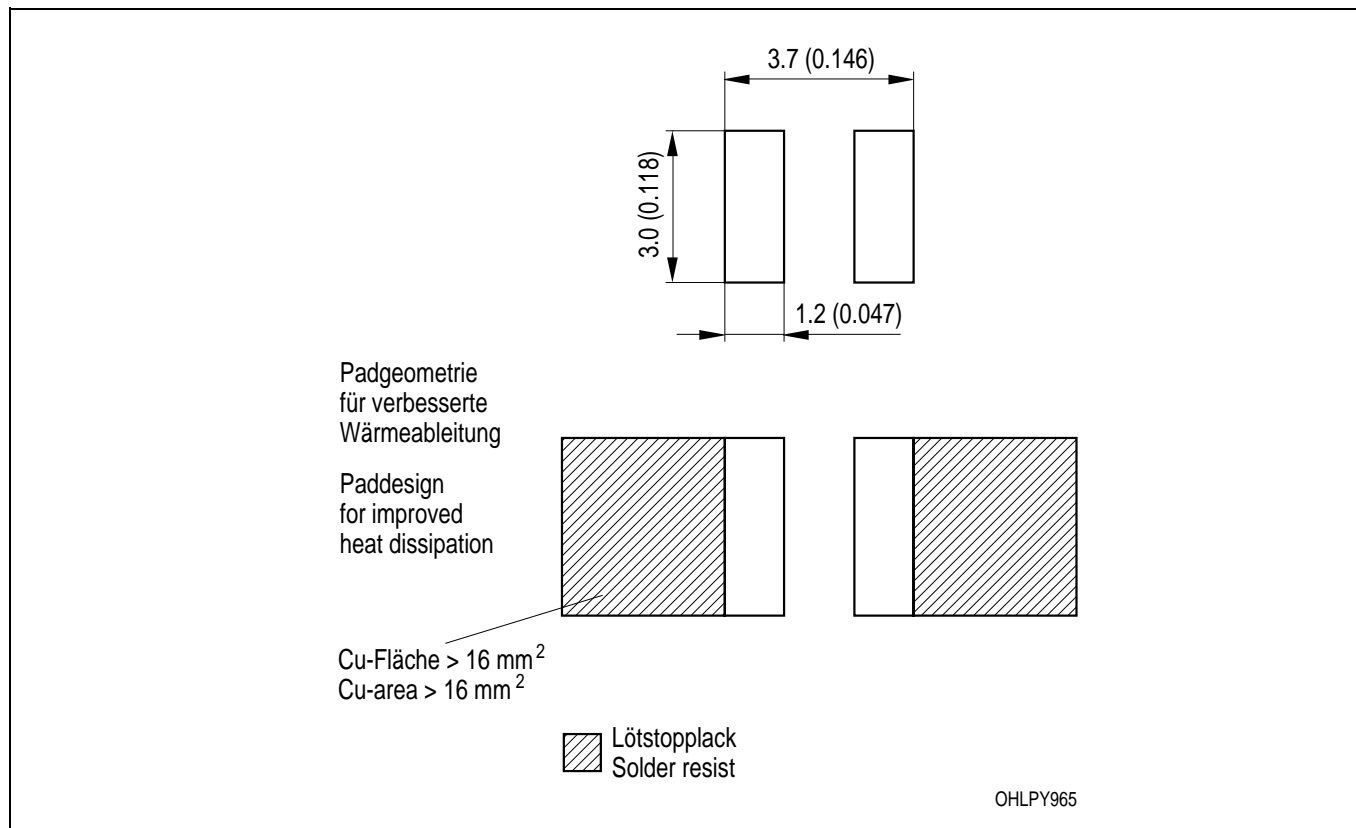


Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



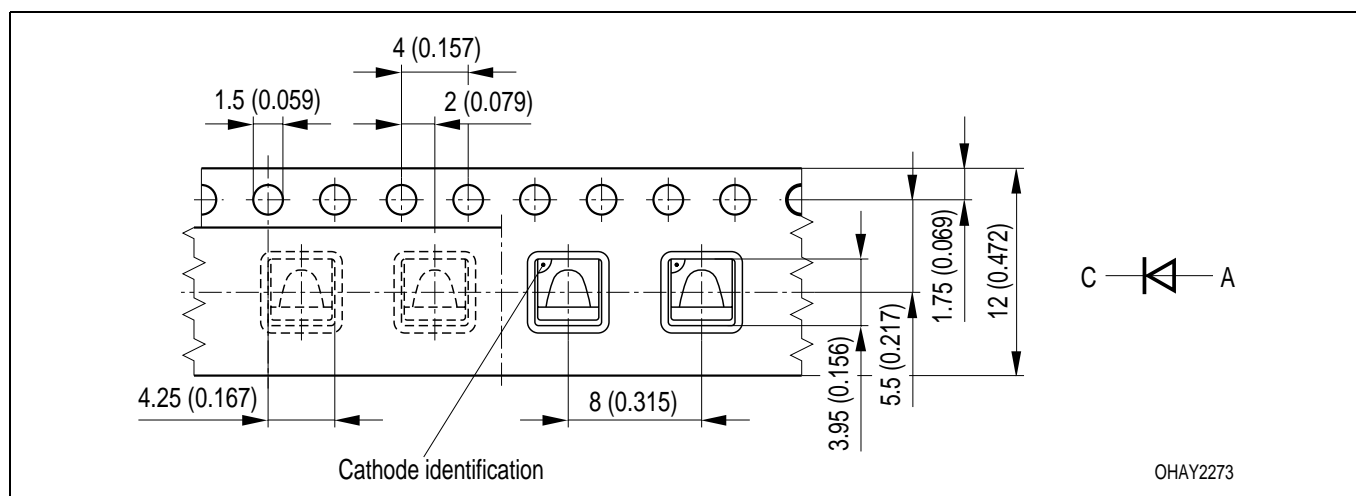
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch)

Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Gurtung / Polarität und Lage Verpackungseinheit 2000/Rolle, ø330 mm
Method of Taping / Polarity and Orientation Packing unit 2000/reel, ø330 mm



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch)

| Revision History: 2003-06-30 | | Date of change |
|------------------------------|---|----------------|
| Previous Version: 2003-06-16 | | |
| Page | Subjects (major changes since last revision) | |
| 13 | recommended solder pad (TTW soldering) | |
| 4 | value (forward voltage) | |
| 3 | power consumption from 85 mW to 80 mW | |
| 5 | wavelength groups | |
| 2 | wavelength grouping for white | |
| 15 | annotations | 2002-07-25 |
| 14 | recommended solder pad (IR reflow soldering) | 2002-08-01 |
| 9 | diagram pulse handling (25°C) OHL01405 to OHL11405 | 2002-08-13 |
| 9 | diagram pulse handling (85°C) OHL01406 to OHL11406 | 2002-08-13 |
| 8 | diagram max. forward current (T_A) OHL00861 to OHL10867 | 2002-08-13 |
| 8 | diagram max. forward current (T_S) OHL01083 to OHL11086 | 2002-08-13 |
| 3 | reverse voltage (footnote) | 2002-08-21 |
| 2, 5 | new luminous intensity groups and new ordering codes | 2002-11-04 |
| 15 | new patent no. | 2003-03-04 |
| 4, 8 | forward voltage | 2003-05-19 |
| 7 | diagram max. perm. forward current | 2003-06-16 |
| 9 | new diagrams pulse derating | 2003-06-30 |

Patent List

Patent No.

US 6 066 861, US 5 035 483, US 6 277 301, US 6 245 259

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