

Hyper TOPLED® Hyper-Bright LED

LS T676, LA T676, LO T676, LY T676



Besondere Merkmale

- **Gehäusetyp:** weißes P-LCC-2 Gehäuse
- **Besonderheit des Bauteils:** extrem breite Abstrahlcharakteristik; ideal für Hinterleuchtungen und Einkopplungen in Lichtleiter
- **Wellenlänge:** 632 nm (super-rot), 615 nm (amber), 605 nm (orange), 587 nm (gelb)
- **Abstrahlwinkel:** Lambertischer Strahler (120°)
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 11 lm/W (gelb, orange, amber), 7 lm/W (super-rot)
- **Gruppierungsparameter:** Lichtstärke
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten und Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8-mm Gurt mit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm

Anwendungen

- Ampelanwendung (EN 12368, nur für amber gültig; EN 12368, ITE VTCSH part 2, für super-rot, verde, gelb gültig)
- Informationsanzeigen im Innen- und Außenbereich (z. B. im Verkehrsbereich; Laufschriftanzeigen)
- optischer Indikator
- Einkopplung in Lichtleiter
- Hinterleuchtung (LCD, Handy, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innen- und Außenbeleuchtung im Automobilbereich (z. B. Instrumentenbeleuchtung, Bremslichter und Blinklichter)
- Ersatz von Kleinst-Glühlampen
- Markierungsbeleuchtung
- Signal- und Symbolleuchten

Features

- **package:** white P-LCC-2 package
- **feature of the device:** extremely wide viewing angle; ideal for backlighting and coupling in light guides
- **wavelength:** 632 nm (super-red), 615 nm (amber), 605 nm (orange), 587 nm (yellow)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaAlP
- **optical efficiency:** 11 lm/W (yellow, orange, amber), 7 lm/W (super-red)
- **grouping parameter:** luminous intensity
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8-mm tape with 2000/reel, ø180 mm or 8000/reel, ø330 mm

Applications

- traffic lights (EN 12368, only for amber ; EN 12368, ITE VTCSH part 2, for super-red, verde, yellow)
- indoor and outdoor displays (e.g. displays for traffic; light writing displays)
- optical indicators
- coupling into light guides
- backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting)
- interior and exterior automotive lighting (e.g. dashboard backlighting, brake lights, turn signal lamps, etc.)
- substitution of micro incandescent lamps
- marker lights
- signal and symbol luminaire

LS T676, LA T676, LO T676, LY T676

| 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 |
| LS T676-P1Q1-1 | super-red | colorless clear | 45 ... 90 | 190 (typ.) | Q62703-Q5096 |
| LS T676-Q1R2-1 | | | 71 ... 180 | 360 (typ.) | Q62703-Q5097 |
| LS T676-P1 | | | 45 ... 56 | 150 (typ.) | |
| LS T676-P2 | | | 56 ... 71 | 190 (typ.) | |
| LS T676-Q1 | | | 71 ... 90 | 240 (typ.) | |
| LS T676-Q2 | | | 90 ... 112 | 300 (typ.) | |
| LS T676-R1 | | | 112 ... 140 | 380 (typ.) | |
| LS T676-R2 | | | 140 ... 180 | 480 (typ.) | |
| LA T676-Q1R1-1 | amber | colorless clear | 71 ... 140 | 310 (typ.) | Q62703-Q4982 |
| LA T676-R1S2-1 | | | 112 ... 280 | 560 (typ.) | Q62703-Q4983 |
| LA T676-Q1 | | | 71 ... 90 | 240 (typ.) | |
| LA T676-Q2 | | | 90 ... 112 | 300 (typ.) | |
| LA T676-R1 | | | 112 ... 140 | 380 (typ.) | |
| LA T676-R2 | | | 140 ... 180 | 480 (typ.) | |
| LA T676-S1 | | | 180 ... 224 | 600 (typ.) | |
| LA T676-S2 | | | 224 ... 280 | 760 (typ.) | |
| LO T676-Q2R2-1 | orange | colorless clear | 90 ... 180 | 390 (typ.) | Q62703-Q5048 |
| LO T676-R2S2-1 | | | 140 ... 280 | 610 (typ.) | Q62703-Q5049 |
| LO T676-Q2 | | | 90 ... 112 | 300 (typ.) | |
| LO T676-R1 | | | 112 ... 140 | 380 (typ.) | |
| LO T676-R2 | | | 140 ... 180 | 480 (typ.) | |
| LO T676-S1 | | | 180 ... 224 | 600 (typ.) | |
| LO T676-S2 | | | 224 ... 280 | 760 (typ.) | |
| LY T676-Q1R1-1 | | | yellow | colorless clear | 71 ... 140 |
| LY T676-R1S2-1 | 112 ... 280 | 560 (typ.) | | | Q62703-Q5135 |
| LY T676-Q1 | 71 ... 90 | 240 (typ.) | | | |
| LY T676-Q2 | 90 ... 112 | 300 (typ.) | | | |
| LY T676-R1 | 112 ... 140 | 380 (typ.) | | | |
| LY T676-R2 | 140 ... 180 | 480 (typ.) | | | |
| LY T676-S1 | 180 ... 224 | 600 (typ.) | | | |
| LY T676-S2 | 224 ... 280 | 760 (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 an accuracy of $\pm 11 \%$.

Grenzwerte
Maximum Ratings

| Bezeichnung Parameter | Symbol Symbol | Werte Values | | Einheit Unit |
|---|------------------|-----------------|-----|-----------------|
| | | LS, LA, LO | LY | |
| Betriebstemperatur Operating temperature range | T_{op} | - 40 ... + 100 | | °C |
| Lagertemperatur Storage temperature range | T_{stg} | - 40 ... + 100 | | °C |
| Sperrschichttemperatur Junction temperature | T_j | + 125 | | °C |
| Durchlassstrom Forward current | I_F | 30 | | mA |
| Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$ | I_{FM} | 1 | 0.2 | A |
| Sperrspannung Reverse voltage | V_R | 3 | | V |
| Leistungsaufnahme Power dissipation $T_A \leq 25 \text{ °C}$ | P_{tot} | 80 | | mW |
| Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient | $R_{th JA}$ | 500 | | K/W |
| Sperrschicht/Löt看 Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$) | $R_{th JS}$ | 280 | | K/W |

Kennwerte ($T_A = 25\text{ °C}$)

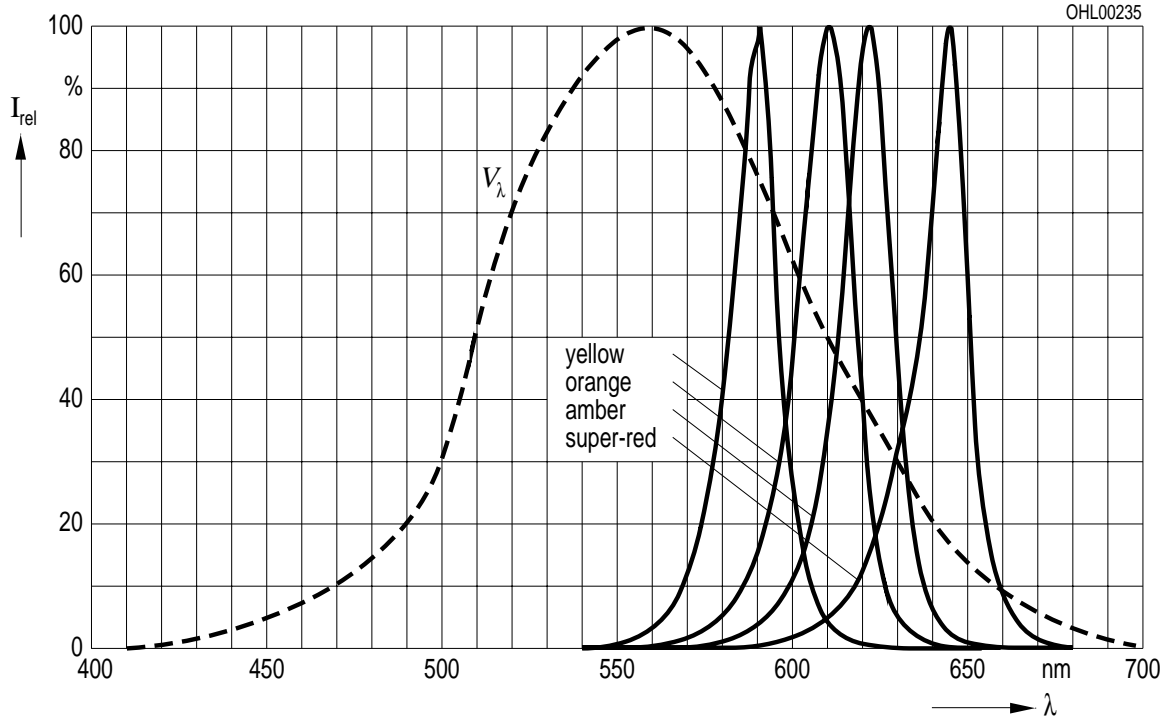
Characteristics

| Bezeichnung Parameter | Symbol Symbol | Werte Values | | | | Einheit Unit |
|---|-------------------------------------|-----------------|------------|------------|------------|--------------------------------|
| | | LS | LA | LO | LY | |
| Wellenlänge des emittierten Lichtes Wavelength at peak emission $I_F = 20\text{ mA}$ | (typ.) λ_{peak} | 645 | 622 | 610 | 591 | nm |
| Dominantwellenlänge Dominant wavelength $I_F = 20\text{ mA}$ | (typ.) λ_{dom} | 632 | 615 | 605 | 587 | nm |
| Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 20\text{ mA}$ | (typ.) $\Delta\lambda$ | 16 | 16 | 16 | 15 | nm |
| Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V | (typ.) 2ϕ | 120 | 120 | 120 | 120 | Grad deg. |
| Durchlassspannung Forward voltage $I_F = 20\text{ mA}$ | (typ.) V_F (max.) V_F | 2.0 2.5 | 2.0 2.5 | 2.0 2.5 | 2.0 2.5 | V V |
| Sperrstrom Reverse current $V_R = 3\text{ V}$ | (typ.) I_R (max.) I_R | 0.01 10 | 0.01 10 | 0.01 10 | 0.01 10 | μA μA |
| Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} $I_F = 20\text{ mA}$ | (typ.) $TC_{\lambda_{\text{peak}}}$ | 0.14 | 0.13 | 0.13 | 0.13 | nm/K |
| Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} $I_F = 20\text{ mA}$ | (typ.) $TC_{\lambda_{\text{dom}}}$ | 0.01 | 0.06 | 0.07 | 0.10 | nm/K |
| Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 20\text{ mA}$ | (typ.) TC_V | -2.0 | -1.8 | -1.7 | -2.5 | mV/K |
| Optischer Wirkungsgrad Optical efficiency $I_F = 20\text{ mA}$ | (typ.) η_{opt} | 7 | 11 | 11 | 11 | lm/W |

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

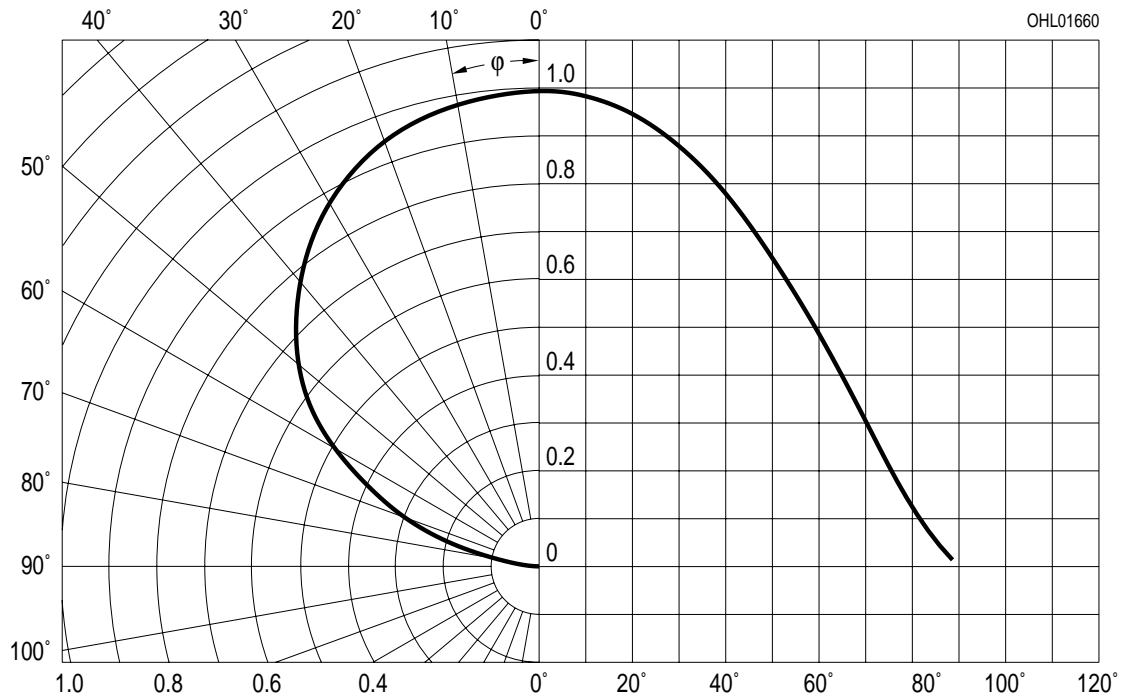
Relative Spectral Emission

$V(\lambda)$ = spektrale Augenempfindlichkeit
Standard eye response curve



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

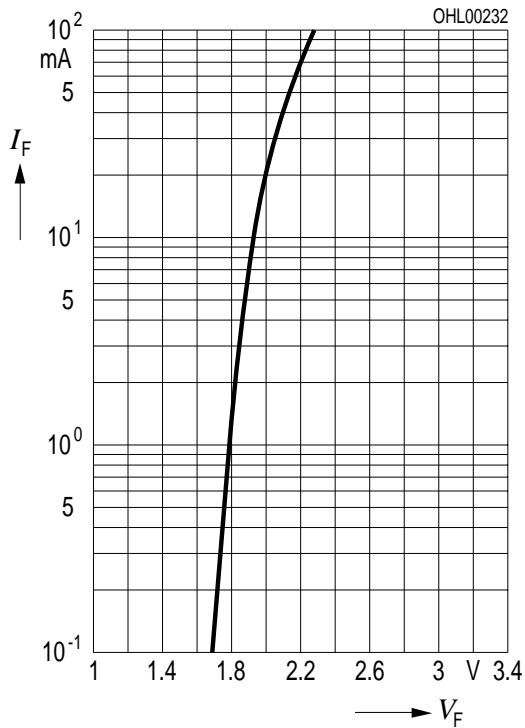
Radiation Characteristic



Durchlassstrom $I_F = f(V_F)$

Forward Current

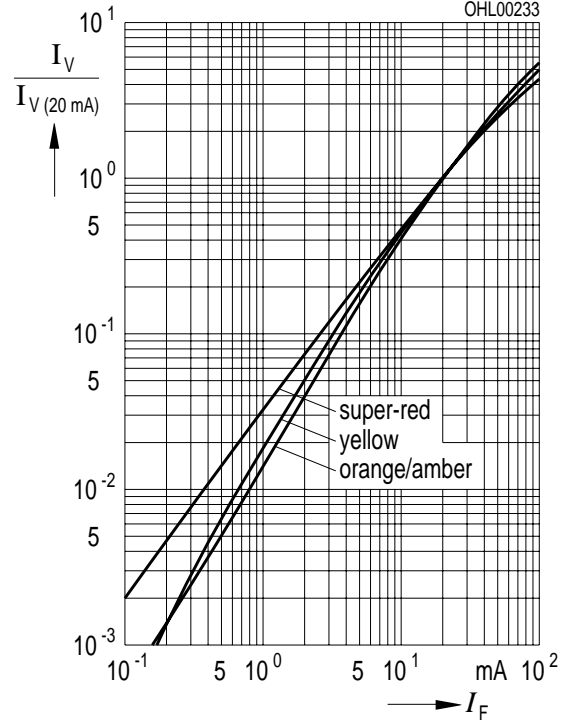
$T_A = 25\text{ }^\circ\text{C}$



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

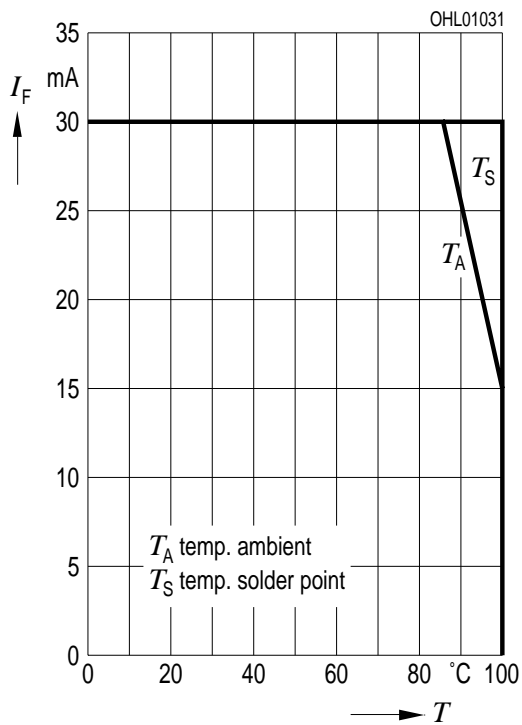
Relative Luminous Intensity

$T_A = 25\text{ }^\circ\text{C}$



Maximal zulässiger Durchlassstrom $I_F = f(T)$

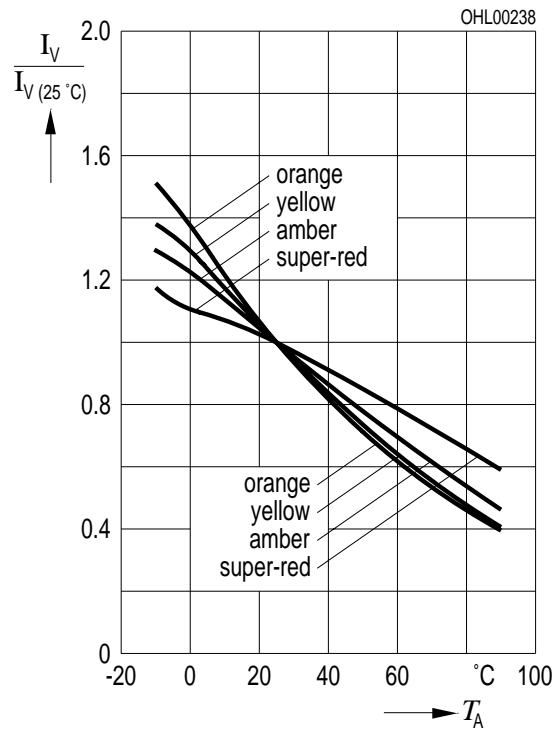
Max. Permissible Forward Current



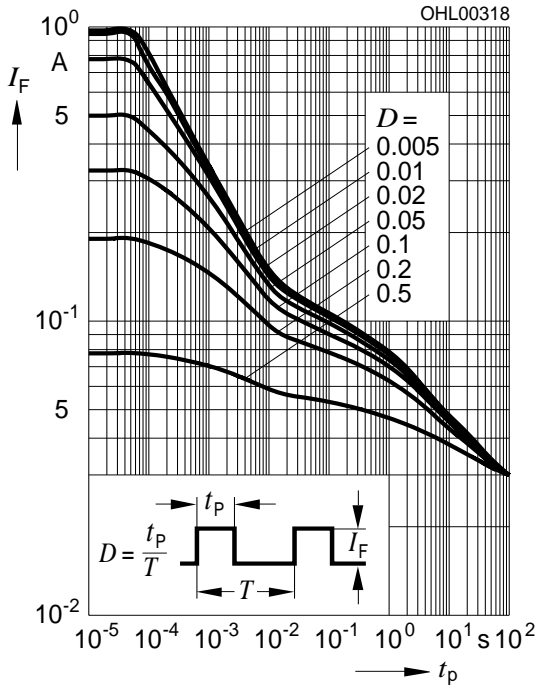
Relative Lichtstärke $I_V/I_{V(25\text{ }^\circ\text{C})} = f(T_A)$

Relative Luminous Intensity

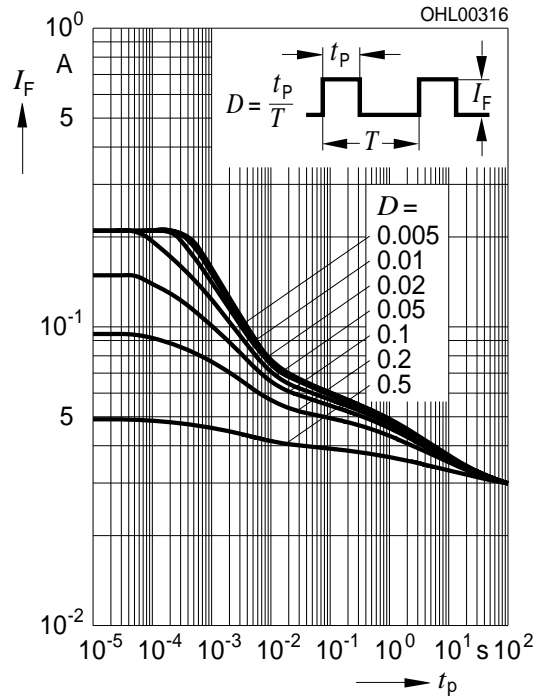
$I_F = 20\text{ mA}$



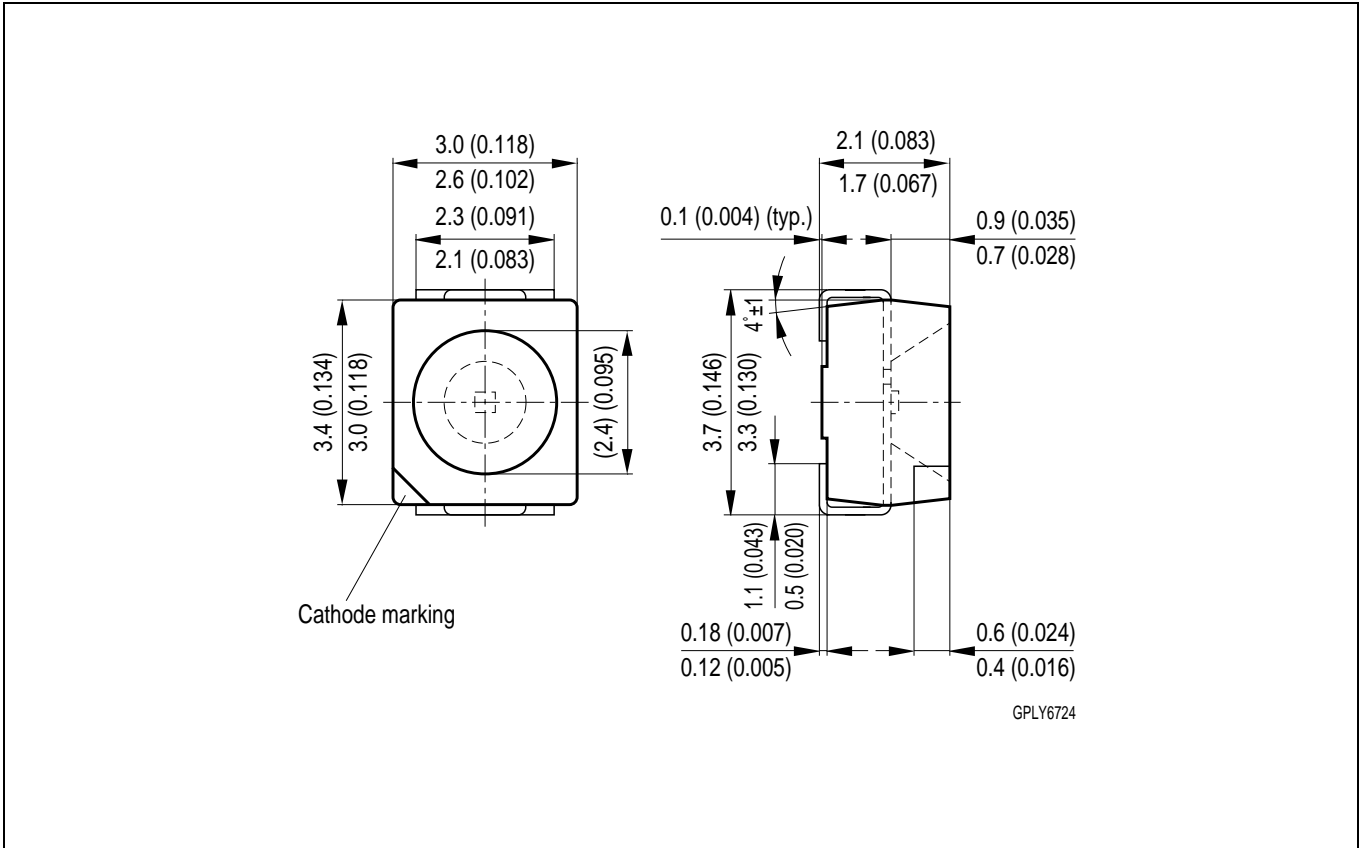
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
 Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$
 LS, LA, LO



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
 Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$
 LY



Maßzeichnung
Package Outlines

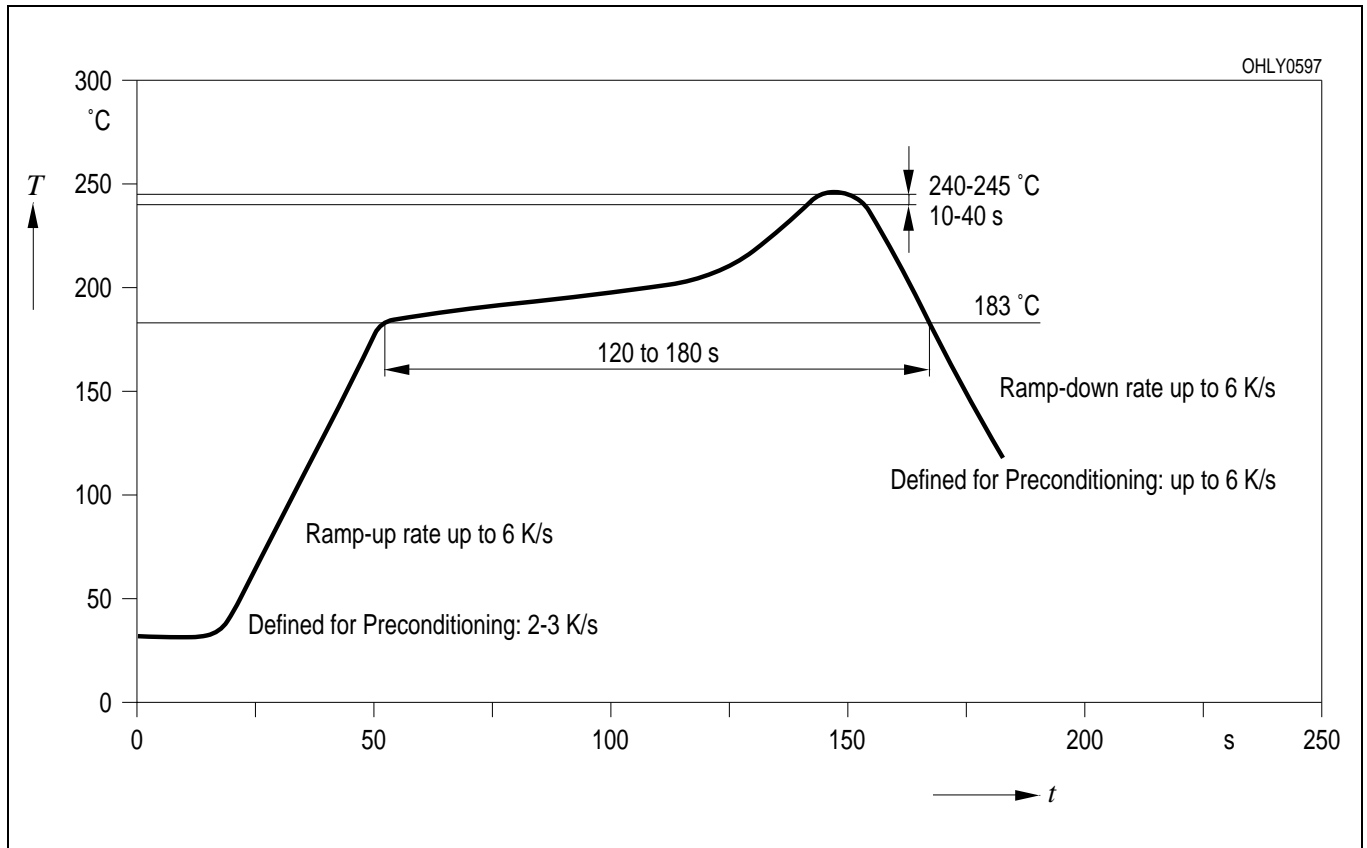


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

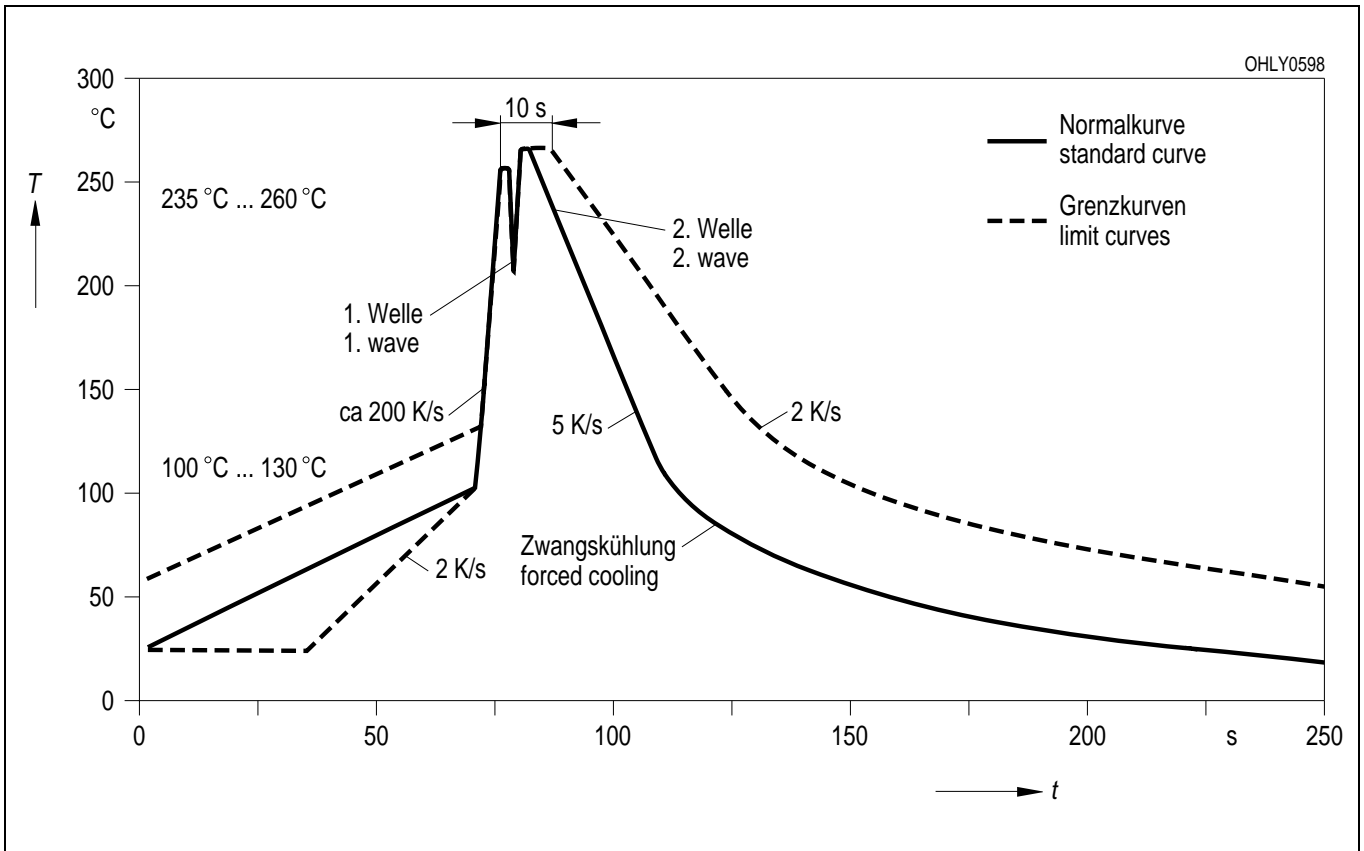
Kathodenkennung: abgeschrägte Ecke
Cathode mark: bevelled edge

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

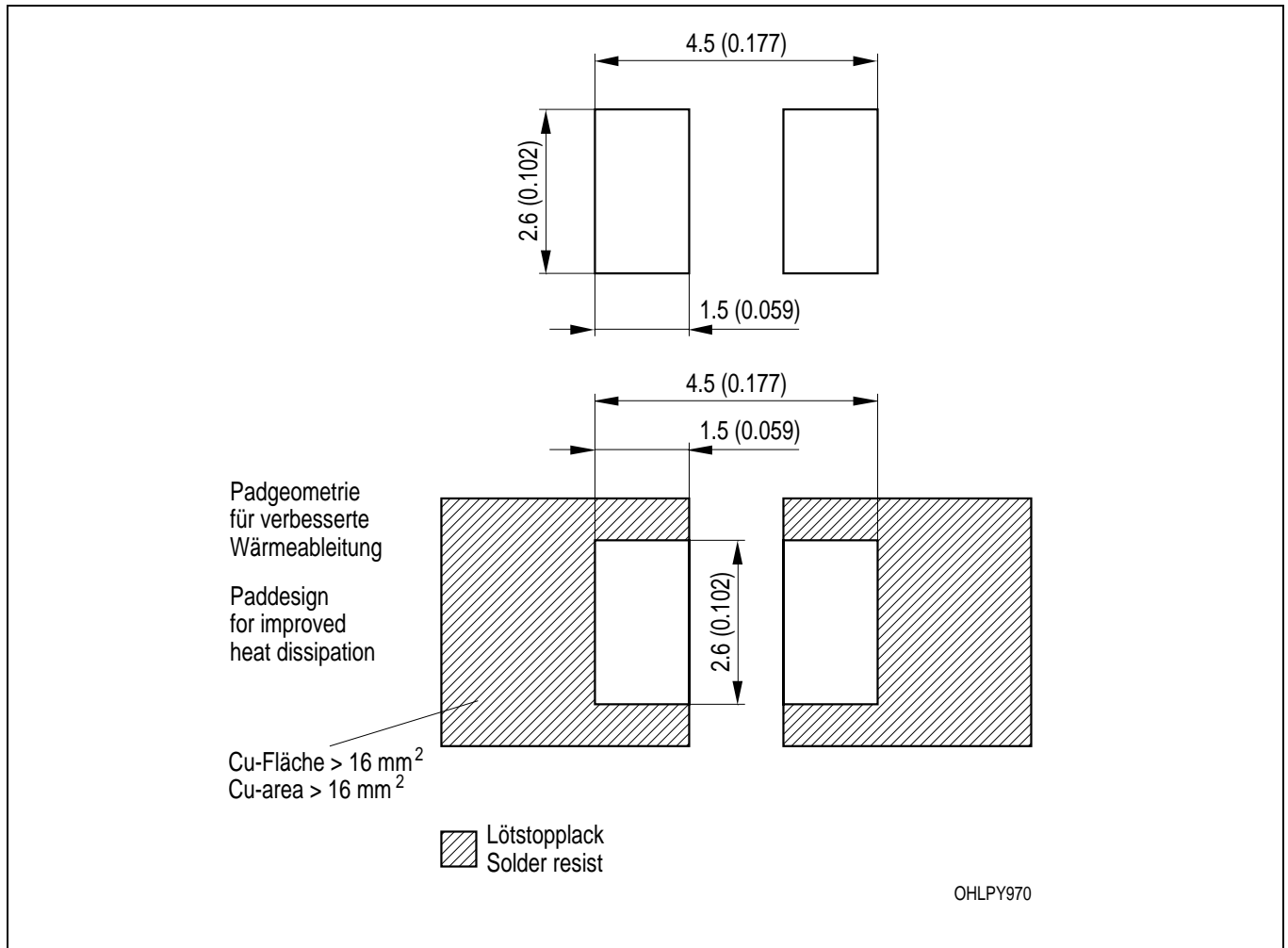
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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



Empfohlenes Lötpadding IR-Reflow Löten / Wellenlöten (TTW)
Recommended Solder Pad IR Reflow Soldering / TTW Soldering



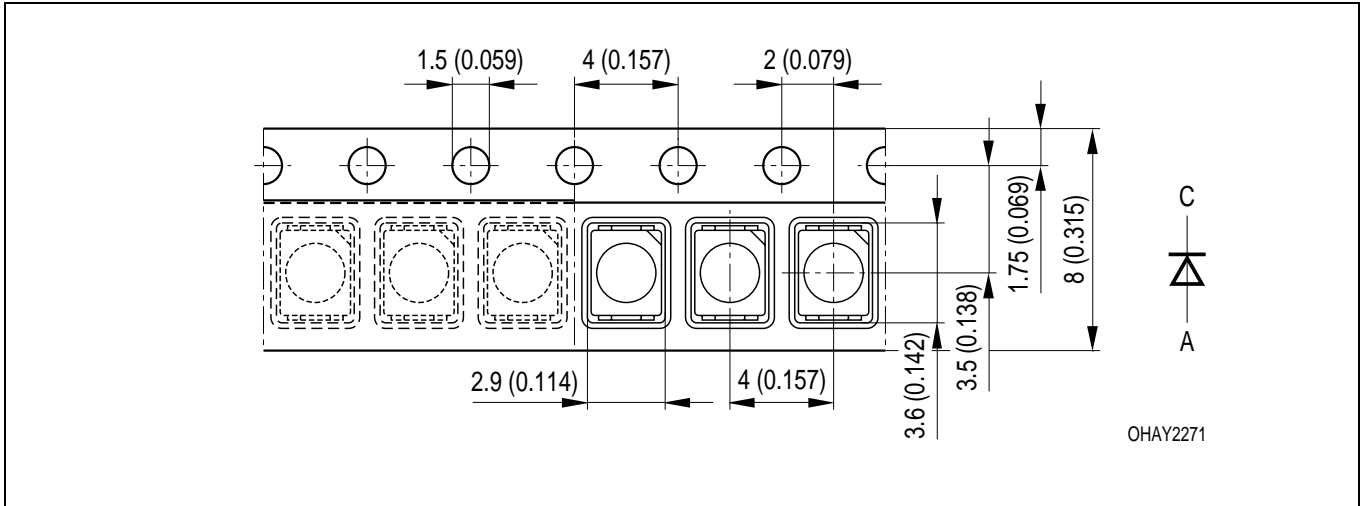
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch)

Gurtung / Polarität und Lage

Verpackungseinheit 2000/Rolle, \varnothing 180 mm
oder 8000/Rolle, \varnothing 330 mm

Method of Taping / Polarity and Orientation

Packing unit 2000/reel, \varnothing 180 mm
or 8000/reel, \varnothing 330 mm



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