

Hyper 3 mm (T1) LED, Diffused Hyper-Bright, Wide-Angle LED

LS 3386, LA 3386, LO 3386, LY 3386



Besondere Merkmale

- **Gehäusotyp:** eingefärbtes, diffuses 3 mm (T1) Gehäuse
- **Besonderheit des Bauteils:** Lötspieße mit Aufsetzebene
- **Wellenlänge:** 632 nm (super-rot), 615 nm (amber), 605 nm (orange), 587 nm (gelb)
- **Abstrahlwinkel:** 100°
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 11 lm/W (gelb, orange, amber), 7 lm/W (super-rot)
- **Gruppierungsparameter:** Lichtstärke
- **Lötmethode:** Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Verpackung:** Schüttgut, gegurtet lieferbar

Anwendungen

- optischer Indikator
- Hinterleuchtung (Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Tastenbeleuchtung, u.ä.)
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)
- Signal- und Symbolleuchten

Features

- **package:** colored, diffused 3 mm (T1) package
- **feature of the device:** solder leads with stand-off
- **wavelength:** 632 nm (super-red), 615 nm (amber), 605 nm (orange), 587 nm (yellow)
- **viewing angle:** 100°
- **technology:** InGaAlP
- **optical efficiency:** 11 lm/W (yellow, orange, amber), 7 lm/W (super-red)
- **grouping parameter:** luminous intensity
- **soldering methods:** TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **packing:** bulk, available taped on reel

Applications

- coupling into light guides
- backlighting (keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. key backlighting, etc.)
- marker lights (e.g. steps, exit ways, etc.)
- signal and symbol luminaire

| Type | Emissionsfarbe Color of Emission | Gehäusefarbe Color of Package | Lichtstärke Luminous Intensity $I_F = 20 \text{ mA}$ $I_V \text{ (mcd)}$ | Lichtstrom Luminous Flux $I_F = 20 \text{ mA}$ $\Phi_V \text{ (mlm)}$ | Bestellnummer Ordering Code |
|------------|-------------------------------------|----------------------------------|---|--|--------------------------------|
| LS 3386-LP | super-red | red diffused | 11.2 ... 71.0 | 360 (typ.) | Q62703-Q3579 |
| LS 3386-M | | | 18.0 ... 28.0 | 190 (typ.) | Q62703-Q3581 |
| LS 3386-N | | | 28.0 ... 45.0 | 300 (typ.) | Q62703-Q3582 |
| LS 3386-P | | | 45.0 ... 71.0 | 480 (typ.) | Q62703-Q3709 |
| LS 3386-MQ | | | 18.0 ... 112.0 | 560 (typ.) | Q62703-Q3580 |
| LA 3386-MQ | amber | orange diffused | 18.0 ... 112.0 | 530 (typ.) | Q62703-Q3886 |
| LA 3386-N | | | 28.0 ... 45.0 | 280 (typ.) | Q62703-Q3887 |
| LA 3386-P | | | 45.0 ... 71.0 | 450 (typ.) | Q62703-Q3888 |
| LA 3386-Q | | | 71.0 ... 112.0 | 700 (typ.) | Q62703-Q3889 |
| LA 3386-NR | | | 28.0 ... 180.0 | 840 (typ.) | Q62703-Q3890 |
| LO 3386-MQ | orange | orange diffused | 18.0 ... 112.0 | 530 (typ.) | Q62703-Q3891 |
| LO 3386-N | | | 28.0 ... 45.0 | 280 (typ.) | Q62703-Q3892 |
| LO 3386-P | | | 45.0 ... 71.0 | 450 (typ.) | Q62703-Q3893 |
| LO 3386-Q | | | 71.0 ... 112.0 | 700 (typ.) | Q62703-Q3894 |
| LO 3386-NR | | | 28.0 ... 180.0 | 840 (typ.) | Q62703-Q3895 |
| LY 3386-MQ | yellow | yellow diffused | 18.0 ... 112.0 | 530 (typ.) | Q62703-Q3896 |
| LY 3386-N | | | 28.0 ... 45.0 | 280 (typ.) | Q62703-Q3897 |
| LY 3386-P | | | 45.0 ... 71.0 | 450 (typ.) | Q62703-Q3898 |
| LY 3386-Q | | | 71.0 ... 112.0 | 700 (typ.) | Q62703-Q3899 |
| LY 3386-NR | | | 28.0 ... 180.0 | 840 (typ.) | Q62703-Q3900 |

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 $\pm 11 \%$.

*Anm.: Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe oder mindestens zwei Einzelgruppen.
In einer Verpackungseinheit / Gurt ist immer nur eine Helligkeitsgruppe enthalten.
Die technologiebedingte Helligkeits-Streuung der heutigen LED-Herstellprozesse über einen längeren Fertigungszeitraum (Halbleitermaterial - Chipherstellung - Montageprozess) erlaubt keine Zusage einer einzelnen Helligkeitsgruppe. Daher müssen mindestens zwei Helligkeitsgruppen vorgesehen werden!*

*Note: The standard shipping format for serial types includes a lower or upper family group or at least two individual groups.
No packing unit / tape ever contains more than one luminous intensity group.
Luminosity variations caused by the technology used in current LED manufacturing processes over a protracted manufacturing period (semiconductor material - chip fabrication - assembly process) mean that it is not possible to assign LEDs to a single luminous intensity group. For this reason at least two luminous intensity groups must be provided!*

Grenzwerte
Maximum Ratings

| Bezeichnung Parameter | Symbol Symbol | Werte Values | | Einheit Unit |
|--|------------------|-----------------|-----|-----------------|
| | | LS, LO, LA | LY | |
| Betriebstemperatur Operating temperature range | T_{op} | - 55 ... + 100 | | °C |
| Lagertemperatur Storage temperature range | T_{stg} | - 55 ... + 100 | | °C |
| Sperrschichttemperatur Junction temperature | T_j | + 100 | | °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 consumption $T_A \leq 25 \text{ °C}$ | 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 $\geq 16 \text{ mm}^2$) Minimale Beinchenlänge Minimum lead length | $R_{th JS}$ | 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 | 100 | 100 | 100 | 100 | Grad deg. |
| Durchlassspannung ¹⁾ Forward voltage ¹⁾ $I_F = 20\text{ mA}$ | (typ.) V_F (max.) V_F | 2.0 2.4 | 2.0 2.4 | 2.0 2.4 | 2.0 2.4 | 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} $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | (typ.) $TC_{\lambda_{\text{peak}}}$ | 0.14 | 0.13 | 0.13 | 0.13 | nm/K |
| Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | (typ.) $TC_{\lambda_{\text{dom}}}$ | 0.01 | 0.06 | 0.07 | 0.10 | nm/K |
| Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | (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 |

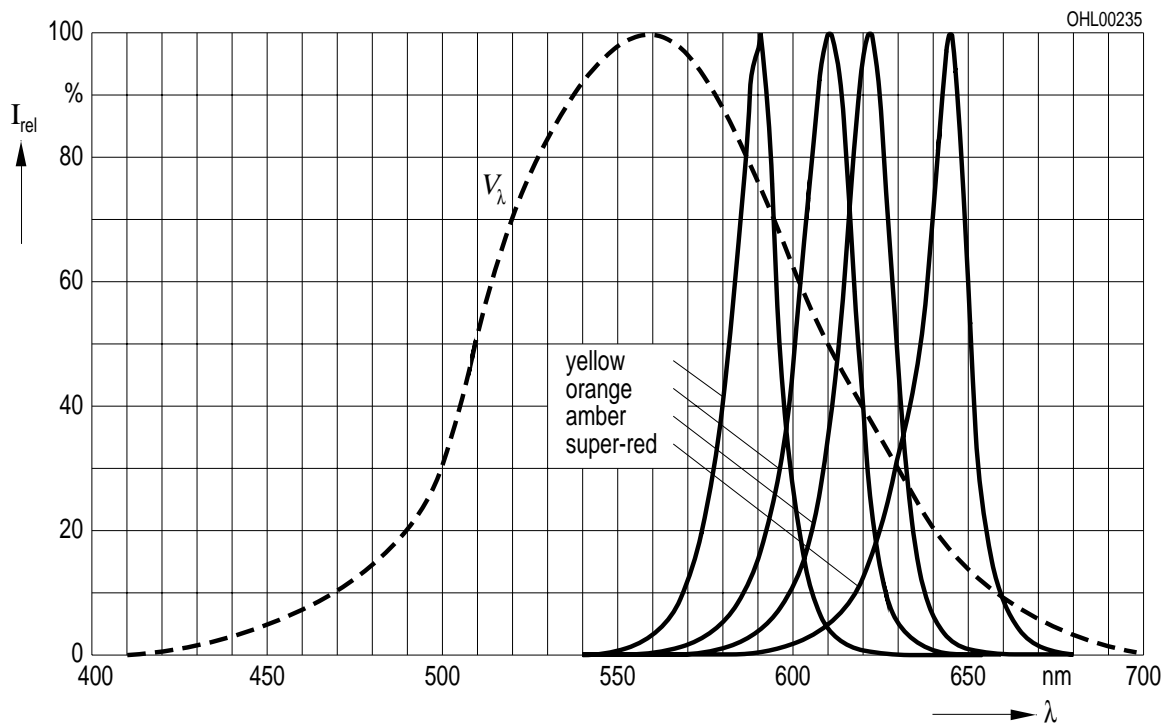
¹⁾ Spannungswerte werden mit einer Stromeinprägedauer von 1 ms und einer Genauigkeit von $\pm 0.1\text{ V}$ ermittelt.
Voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.1\text{ V}$.

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

Relative Spectral Emission

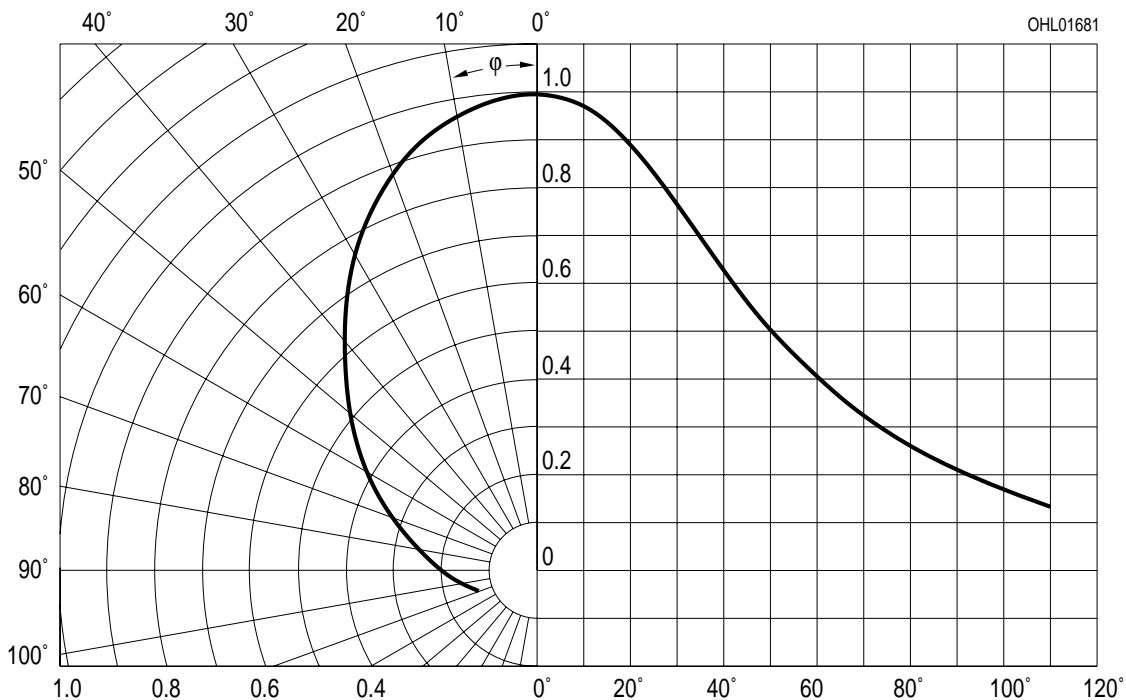
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



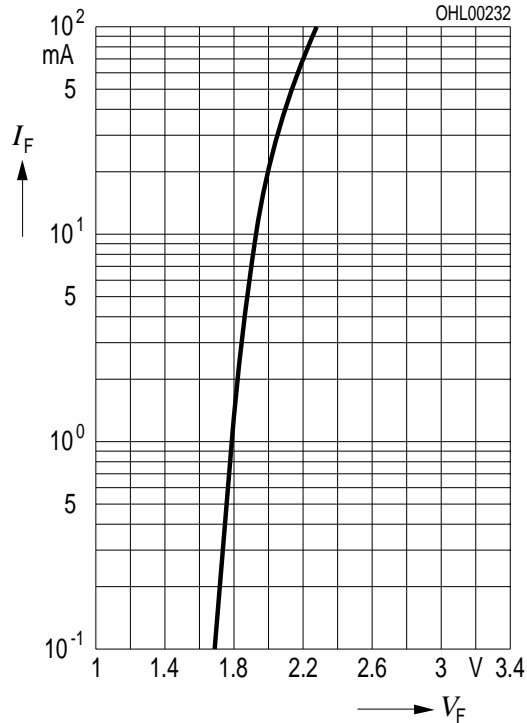
Abstrahlcharakteristik $I_{rel} = f(\varphi)$

Radiation Characteristic



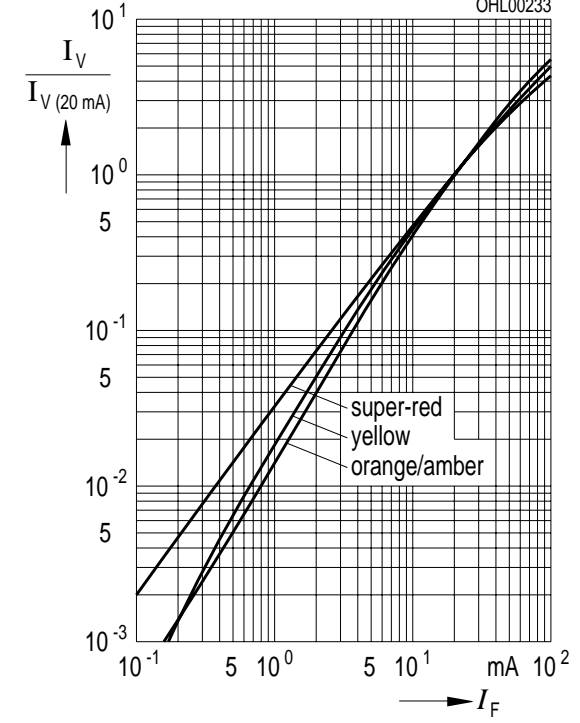
Durchlassstrom $I_F = f(V_F)$
Forward Current

$T_A = 25\text{ °C}$

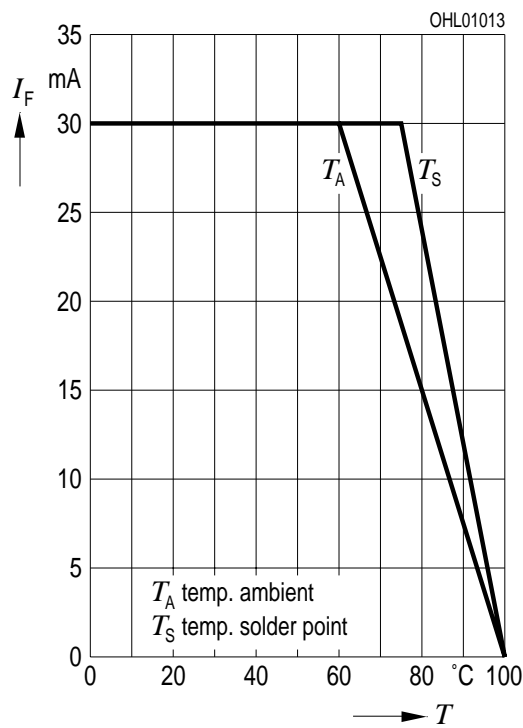


Relative Lichtstärke $I_V/I_{V(20\text{ mA})} = f(I_F)$
Relative Luminous Intensity

$T_A = 25\text{ °C}$

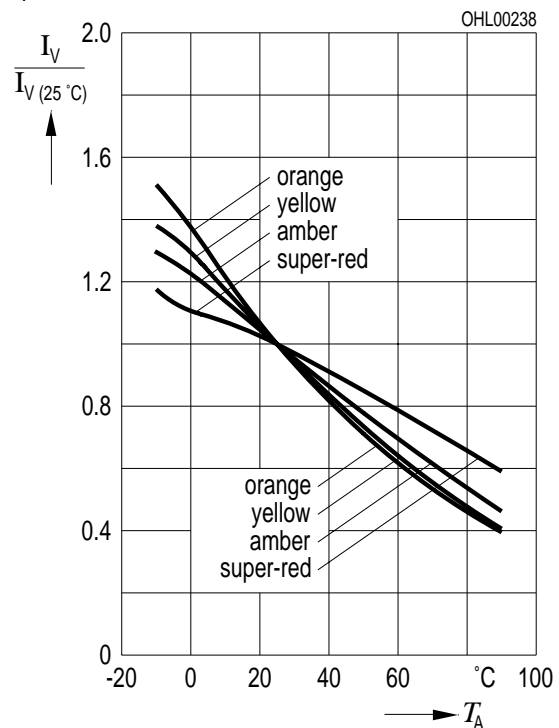


Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



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

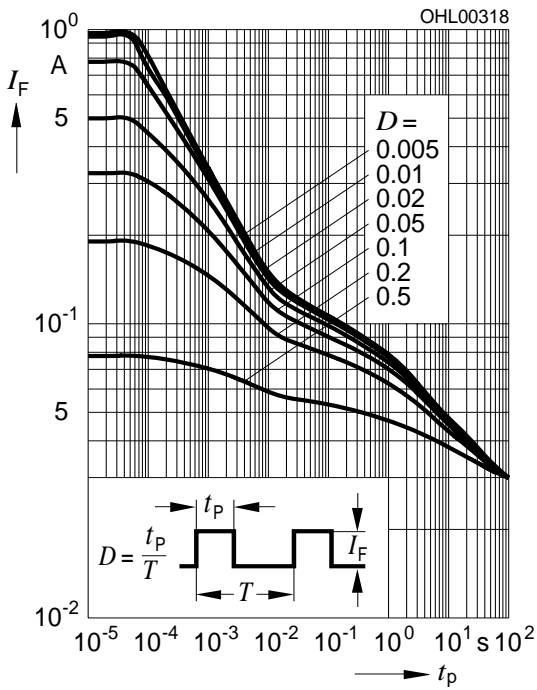
$I_F = 20\text{ mA}$



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$

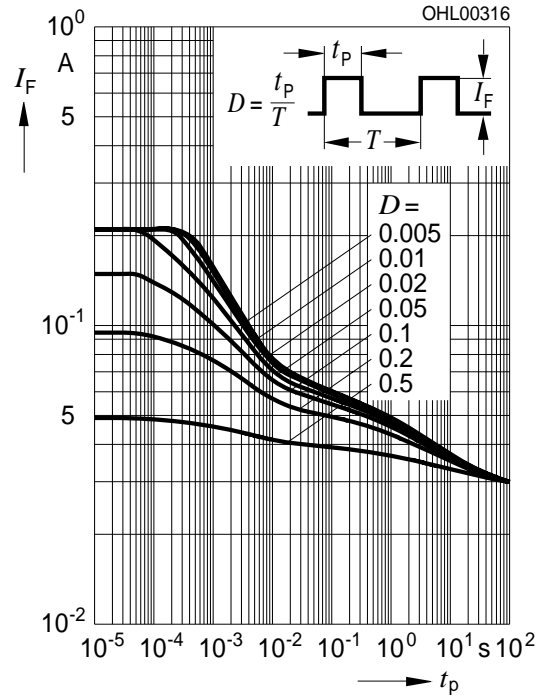
LS, LA, LO



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$

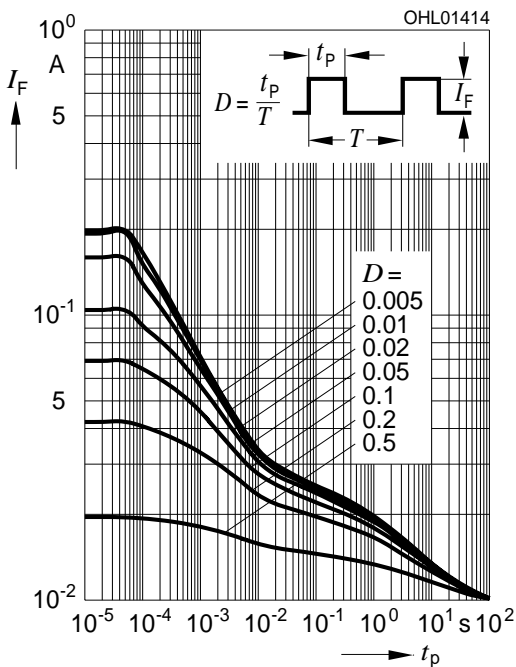
LY



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle $D =$ parameter, $T_A = 85\text{ °C}$

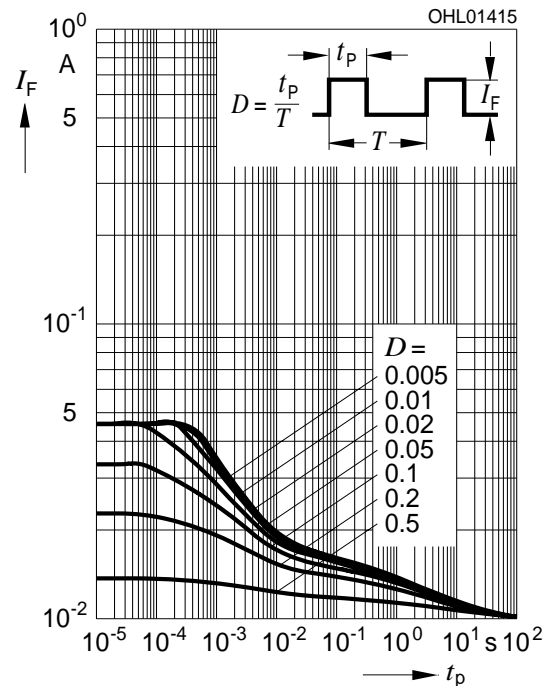
LS, LA, LO



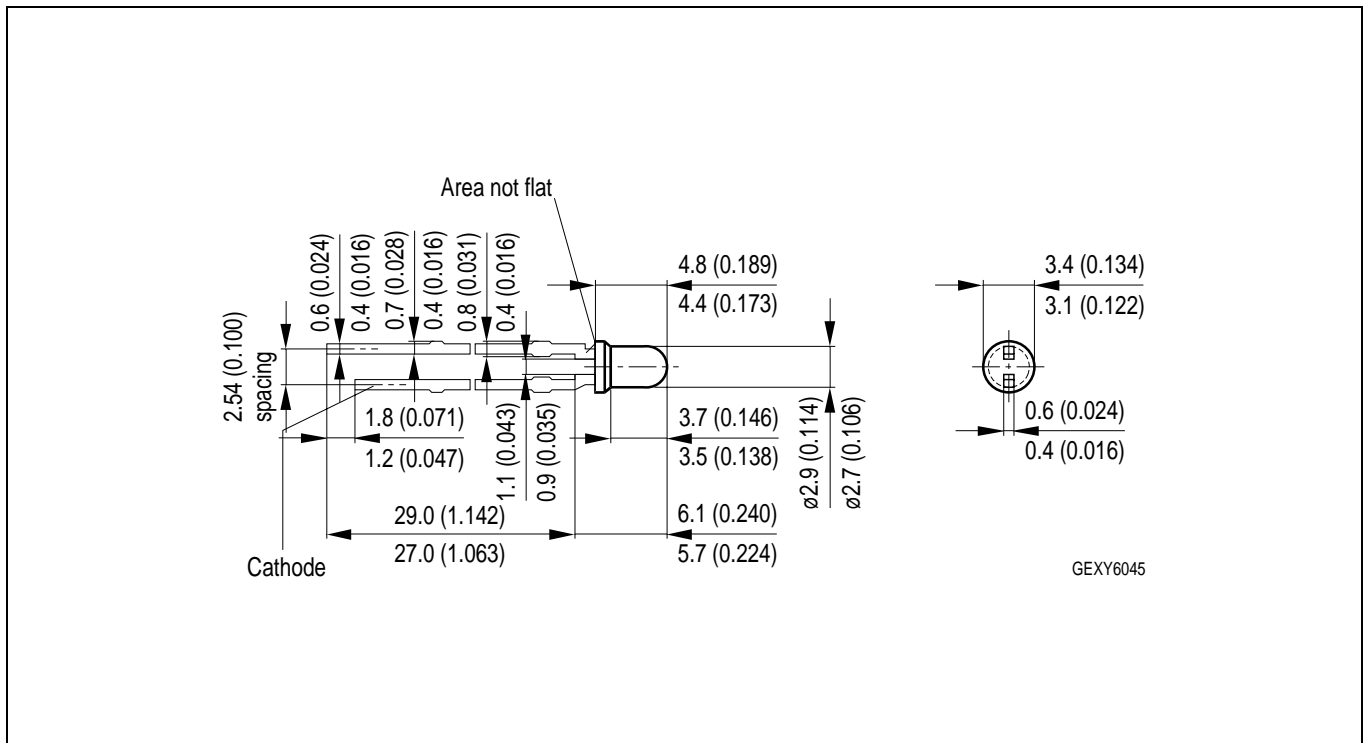
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle $D =$ parameter, $T_A = 85\text{ °C}$

LY



Maßzeichnung
Package Outlines

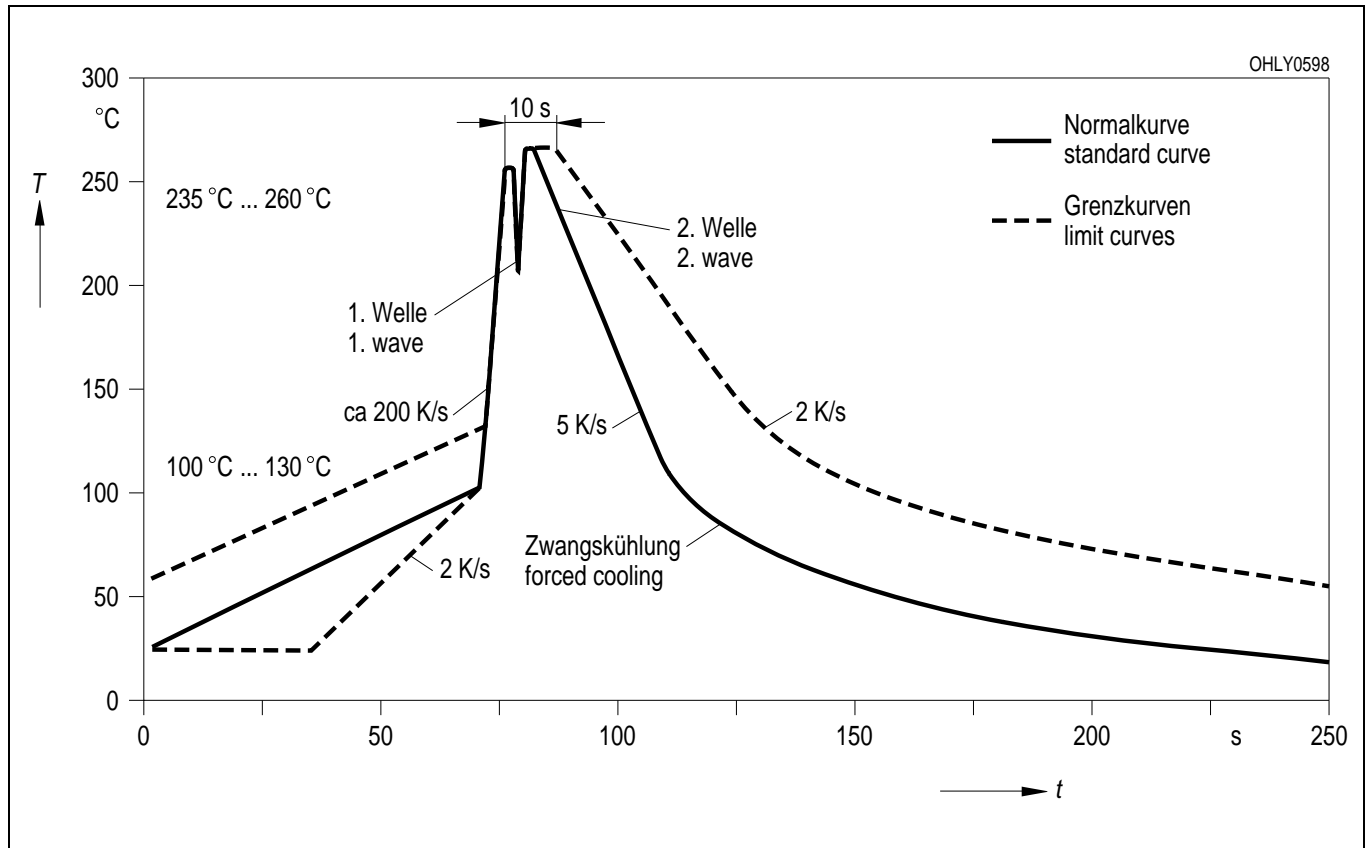


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

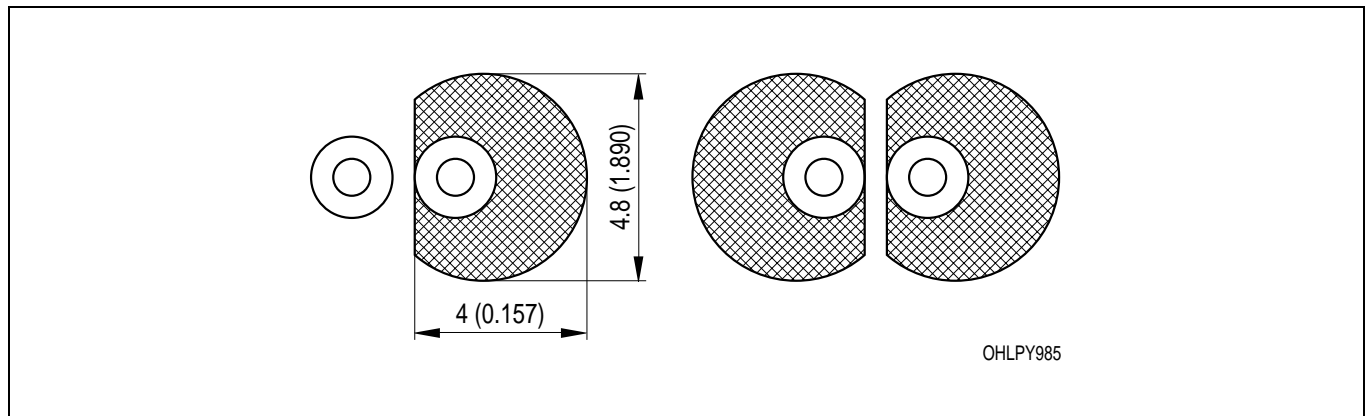
Kathodenkennung: kürzerer Lötspieß
Cathode mark: short solder lead
Gewicht / Approx. weight: 0.15 g

Lötbedingungen
Soldering Conditions

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)

Revision History: 2001-02-13

Previous Version: 2001-02-13

| Page | Subjects (major changes since last revision) |
|------|--|
| | |
| | |

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