

# 5 mm (T1 $\frac{3}{4}$ ) LED, Diffused Wide-Angle LED

LS 5380, LY 5380, LG 5380



Abgekündigt nach PD\_078\_02 - werden durch  
LG\_LR\_LS\_LY 5360 ersetzt werden  
Obsolete acc. to PD\_078\_02 - will be replaced by  
LG\_LR\_LS\_LY 5360

## Besondere Merkmale

- **Gehäusertyp:** eingefärbtes, diffuses 5 mm (T1  $\frac{3}{4}$ ) Gehäuse
- **Besonderheit des Bauteils:** Lötspieße ohne Aufsetzebene
- **Wellenlänge:** 628 nm (super-rot), 587 nm (gelb), 570 nm (grün)
- **Abstrahlwinkel:** 140°, extrem breite Abstrahlcharakteristik
- **Technologie:** GaAIP
- **optischer Wirkungsgrad:** 1,5 lm/W (super-rot, gelb), 2,5 lm/W (grün)
- **Gruppierungsparameter:** Lichtstärke
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar

## Anwendungen

- optischer Indikator
- Hinterleuchtung (LCD, Handy, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)

## Features

- **package:** colored, diffused 5 mm (T1  $\frac{3}{4}$ ) package
- **feature of the device:** solder leads without stand-off
- **wavelength:** 628 nm (super-red), 587 nm (yellow), 570 nm (green)
- **viewing angle:** 140°, extremely wide viewing angle
- **technology:** GaAIP
- **optical efficiency:** 1.5 lm/W (super-red, yellow), 2.5 lm/W (green)
- **grouping parameter:** luminous intensity
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel

## Applications

- optical indicators
- backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- marker lights (e.g. steps, exit ways, etc.)

| Typ<br>Type  | Emissions-<br>farbe<br>Color of<br>Emission | Gehäuse-<br>farbe<br>Color of<br>Package | Lichtstärke<br>Luminous<br>Intensity<br>$I_F = 10 \text{ mA}$<br>$I_V \text{ (mcd)}$ | Lichtstrom<br>Luminous<br>Flux<br>$I_F = 10 \text{ mA}$<br>$\Phi_V \text{ (mlm)}$ | Bestellnummer<br>Ordering Code  |
|--|---|--|--|---|---|
| ■LS 5380-FJ<br>■LS 5380-G<br>■LS 5380-H<br>■LS 5380-J<br>■LS 5380-HL | super-red                                   | red diffused                             | 1.12 ... 7.1<br>1.80 ... 2.8<br>2.80 ... 4.5<br>4.50 ... 7.1<br>2.80 ... 18.0        | 22 (typ.)<br>12 (typ.)<br>20 (typ.)<br>30 (typ.)<br>55 (typ.)                     | Q62703Q1452<br>Q62703Q1740<br>Q62703Q1453<br>Q62703Q1454<br>Q62703Q1455 |
| ■LY 5380-GK<br>■LY 5380-H<br>■LY 5380-J<br>■LY 5380-HL               | yellow                                      | yellow diffused                          | 1.80 ... 11.2<br>2.80 ... 4.5<br>4.50 ... 7.1<br>2.80 ... 18.0                       | 35 (typ.)<br>18 (typ.)<br>30 (typ.)<br>55 (typ.)                                  | Q62703Q2002<br>Q62703Q1457<br>Q62703Q2319<br>Q62703Q2003                |
| ■LG 5380-GK<br>■LG 5380-H<br>■LG 5380-J<br>■LG 5380-K<br>■LG 5380-HL | green                                       | green diffused                           | 1.80 ... 11.2<br>2.80 ... 4.5<br>4.50 ... 7.1<br>7.10 ... 11.2<br>2.80 ... 18.0      | 35 (typ.)<br>18 (typ.)<br>30 (typ.)<br>45 (typ.)<br>55 (typ.)                     | Q62703Q1463<br>Q62703Q2032<br>Q62703Q2016<br>Q62703Q3189<br>Q62703Q3825 |

- Abgekündigt nach PD\_078\_02 - werden durch LG\_LR\_LS\_LY 5360 ersetzt werden  
 Obsolete acc. to PD\_078\_02 - will be replaced by LG\_LR\_LS\_LY 5360  
 Letzte Bestellung / Last Order: 30.09.2003  
 Letzte Lieferung / Last Delivery: 31.03.2004

*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<br>Parameter  | Symbol<br>Symbol               | Wert<br>Value  | Einheit<br>Unit |
|---|--------------------------------|----------------|-----------------|
| Betriebstemperatur<br>Operating temperature range   | $T_{op}$                       | - 55 ... + 100 | °C              |
| Lagertemperatur<br>Storage temperature range  | $T_{stg}$                      | - 55 ... + 100 | °C              |
| Sperrschichttemperatur<br>Junction temperature  | $T_j$                          | + 100          | °C              |
| Durchlassstrom<br>Forward current   | $I_F$                          | 40             | mA              |
| Stoßstrom<br>Surge current<br>$t \leq 10 \mu s, D = 0.005$  | $I_{FM}$                       | 0.5            | A               |
| Sperrspannung <sup>1)</sup><br>Reverse voltage  | $V_R$                          | 12             | V               |
| Leistungsaufnahme<br>Power consumption<br>$T_A \leq 25 \text{ °C}$  | $P_{tot}$                      | 130            | mW              |
| Wärmewiderstand <sup>2)</sup><br>Thermal resistance<br>Sperrschicht/Umgebung<br>Junction/ambient<br>Sperrschicht/Löt看pad<br>Junction/solder point<br>Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$ )<br>mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$ )<br>Minimale Beinchenlänge<br>Minimum lead length | $R_{th JA}$<br><br>$R_{th JS}$ | 400<br><br>180 | K/W<br><br>K/W  |

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

2)  $R_{th}$  erhöht sich um 13 K/W pro mm Beinchenlänge.  
Each additional 1 mm of lead length increases  $R_{th}$  by 13 K/W.

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

**Characteristics**

| Bezeichnung<br>Parameter  | Symbol<br>Symbol             | Wert<br>Value |            |            | Einheit<br>Unit                |
|---|------------------------------|---------------|------------|------------|--------------------------------|
|   |                              | LS            | LY         | LG         |                                |
| Wellenlänge des emittierten Lichtes (typ.)<br>Wavelength at peak emission<br>$I_F = 10\text{ mA}$   | $\lambda_{\text{peak}}$      | 635           | 586        | 572        | nm                             |
| Dominantwellenlänge <sup>1)</sup> (typ.)<br>Dominant wavelength<br>$I_F = 10\text{ mA}$   | $\lambda_{\text{dom}}$       | 628           | 587        | 570        | nm                             |
| Spektrale Bandbreite bei 50% von $I_{\text{rel max}}$ (typ.)<br>Spectral bandwidth at 50% of $I_{\text{rel max}}$<br>$I_F = 10\text{ mA}$                                       | $\Delta\lambda$              | 45            | 45         | 25         | nm                             |
| Abstrahlwinkel bei 50 % $I_V$ (Vollwinkel) (typ.)<br>Viewing angle at 50 % $I_V$  | $2\phi$                      | 140           | 140        | 140        | Grad<br>deg.                   |
| Durchlassspannung <sup>2)</sup> (typ.)<br>Forward voltage<br>$I_F = 10\text{ mA}$   | $V_F$<br>$V_F$               | 2.0<br>2.5    | 2.0<br>2.5 | 2.0<br>2.5 | V<br>V                         |
| Sperrstrom (typ.)<br>Reverse current<br>$V_R = 12\text{ V}$   | $I_R$<br>$I_R$               | 0.01<br>10    | 0.01<br>10 | 0.01<br>10 | $\mu\text{A}$<br>$\mu\text{A}$ |
| Temperaturkoeffizient von $\lambda_{\text{peak}}$ (typ.)<br>Temperature coefficient of $\lambda_{\text{peak}}$<br>$I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$ | $TC_{\lambda_{\text{peak}}}$ | 0.11          | 0.10       | 0.11       | nm/K                           |
| Temperaturkoeffizient von $\lambda_{\text{dom}}$ (typ.)<br>Temperature coefficient of $\lambda_{\text{dom}}$<br>$I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$   | $TC_{\lambda_{\text{dom}}}$  | 0.07          | 0.07       | 0.07       | nm/K                           |
| Temperaturkoeffizient von $V_F$ (typ.)<br>Temperature coefficient of $V_F$<br>$I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$                                     | $TC_V$                       | - 1.9         | - 1.9      | - 1.4      | mV/K                           |
| Optischer Wirkungsgrad (typ.)<br>Optical efficiency<br>$I_F = 10\text{ mA}$   | $\eta_{\text{opt}}$          | 1.5           | 1.5        | 2.5        | lm/W                           |

<sup>1)</sup> Wellenlängen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von  $\pm 1\text{ nm}$  ermittelt.  
Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of  $\pm 1\text{ nm}$ .

<sup>2)</sup> 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  $\pm 0.1\text{ V}$ .

**Helligkeits-Gruppierungsschema**  
**Luminous Intensity Groups**

| <b>Lichtgruppe</b><br><b>Luminous Intensity Group</b> | <b>Lichtstärke</b><br><b>Luminous Intensity</b><br><b><math>I_v</math> (mcd)</b> | <b>Lichtstrom</b><br><b>Luminous Flux</b><br><b><math>\Phi_v</math> (mlm)</b> |
|---|--|---|
| F   | 1.12 ... 1.80  | 8 (typ.)  |
| G   | 1.80 ... 2.80  | 12 (typ.)   |
| H   | 2.80 ... 4.50  | 20 (typ.)   |
| J   | 4.50 ... 7.10  | 30 (typ.)   |
| K   | 7.10 ... 11.20   | 45 (typ.)   |
| L   | 11.20 ... 18.00  | 80 (typ.)   |

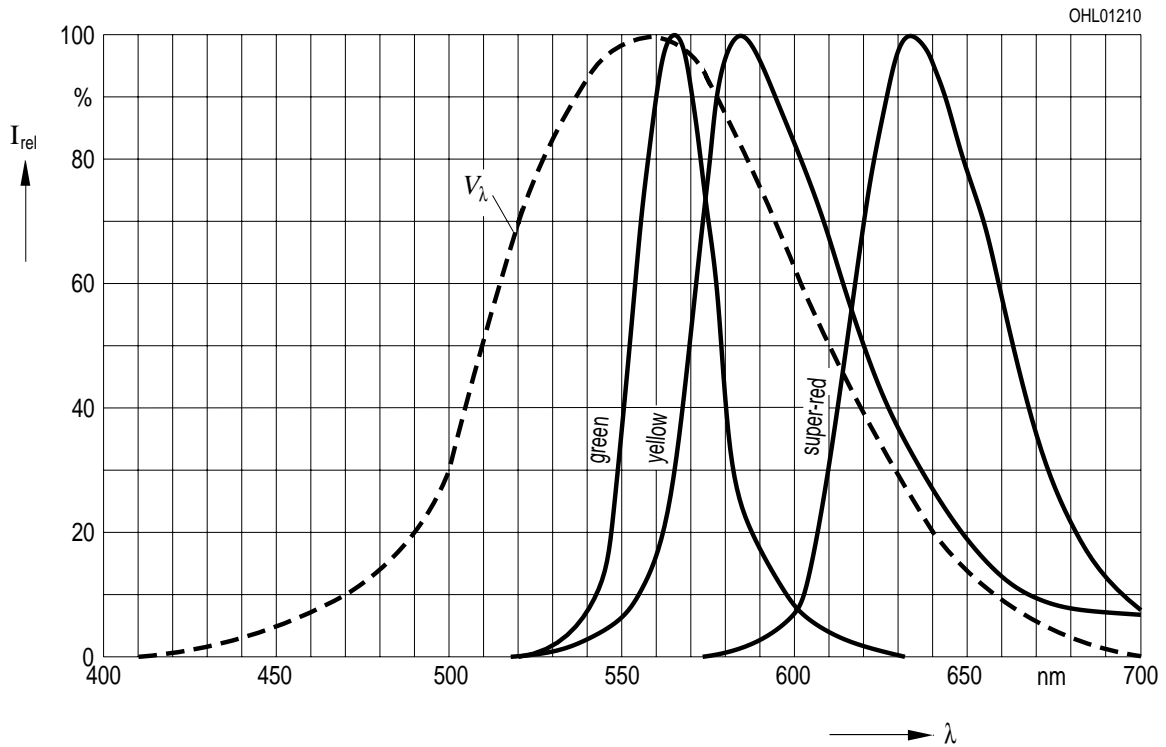
Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von  $\pm 11$  % ermittelt.  
 Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of  $\pm 11$  %.

Relative spektrale Emission  $I_{rel} = f(\lambda)$ ,  $T_A = 25\text{ °C}$ ,  $I_F = 10\text{ mA}$

Relative Spectral Emission

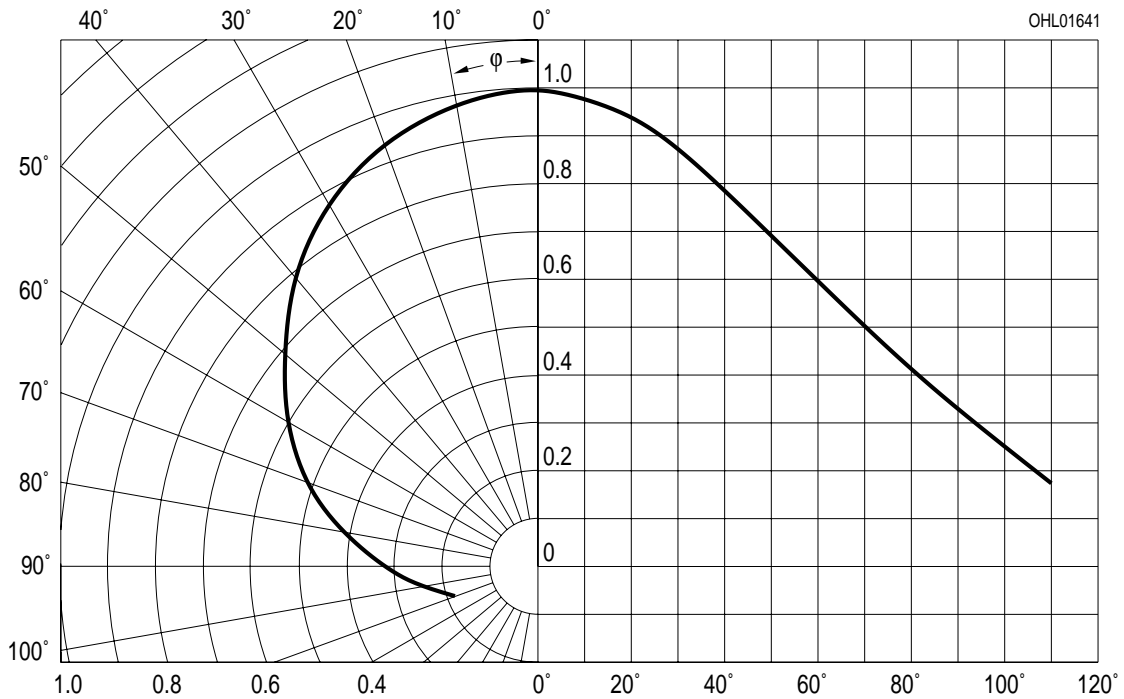
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



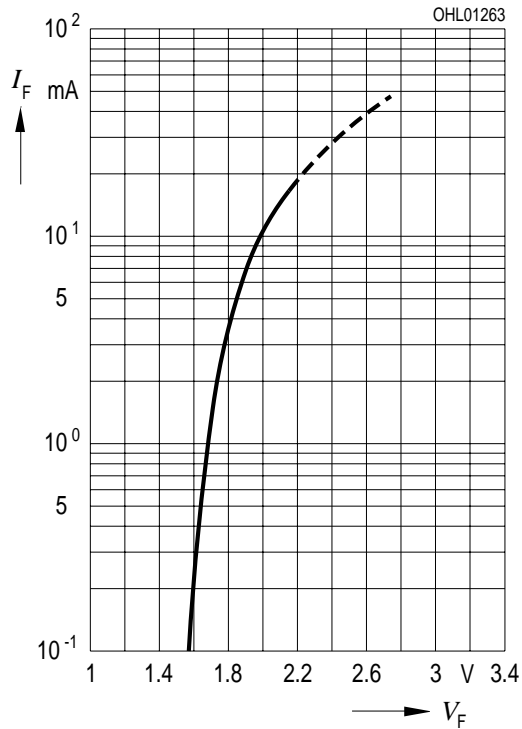
Abstrahlcharakteristik  $I_{rel} = f(\varphi)$

Radiation Characteristic



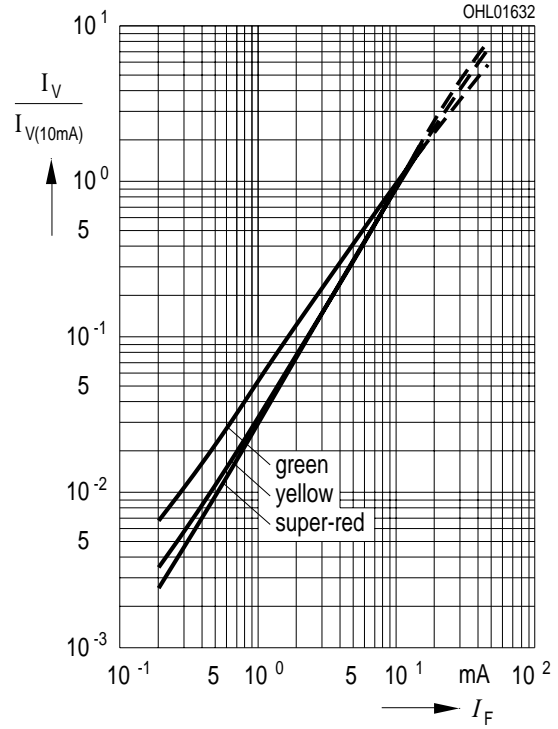
**Durchlassstrom  $I_F = f(V_F)$**   
**Forward Current**

$T_A = 25\text{ °C}$

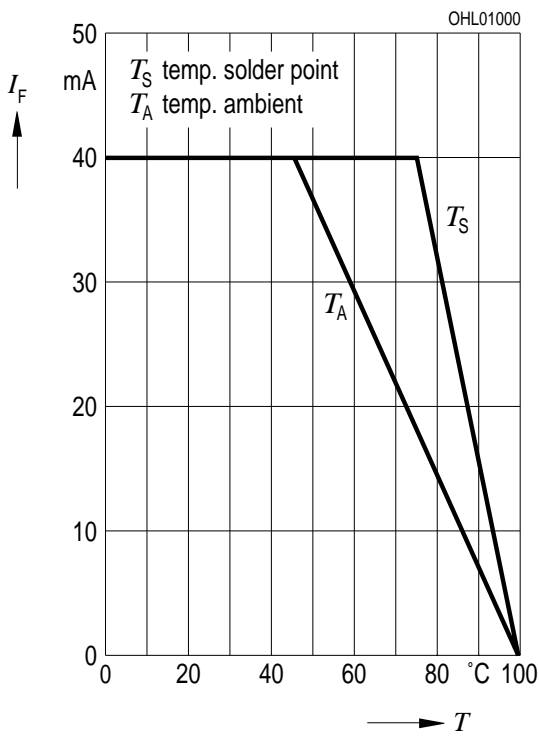


**Relative Lichtstärke  $I_V/I_{V(10\text{ mA})} = f(I_F)$**   
**Relative Luminous Intensity**

$T_A = 25\text{ °C}$

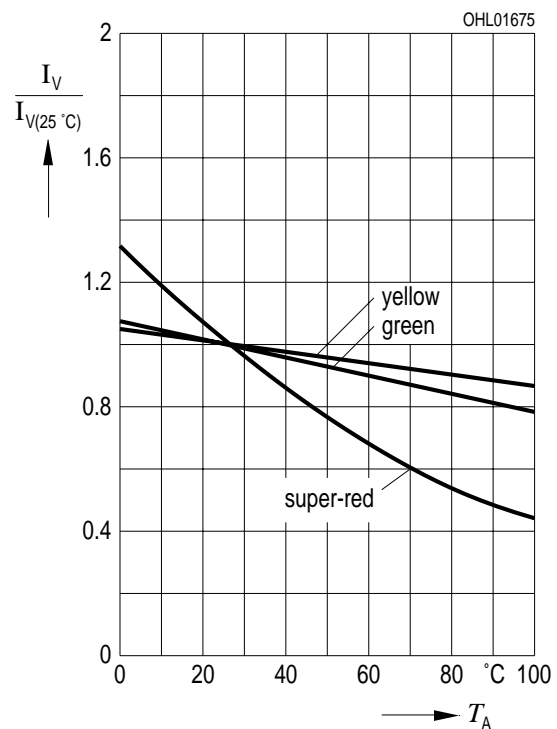


**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**



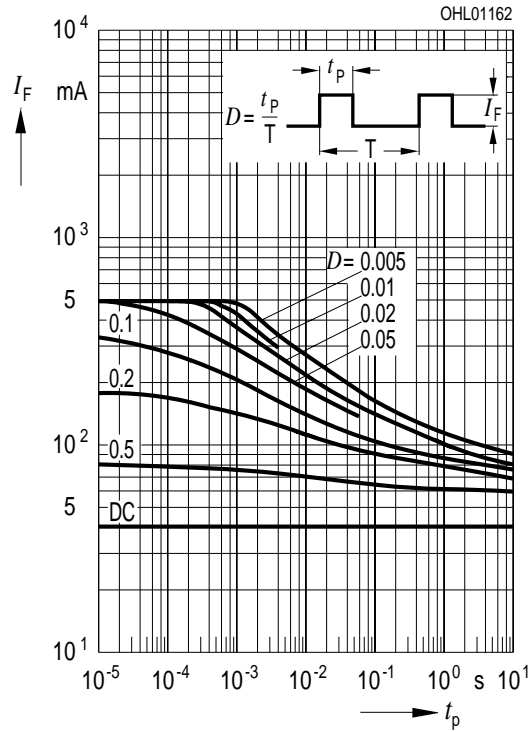
**Relative Lichtstärke  $I_V/I_{V(25\text{ °C})} = f(T_A)$**   
**Relative Luminous Intensity**

$I_F = 10\text{ mA}$



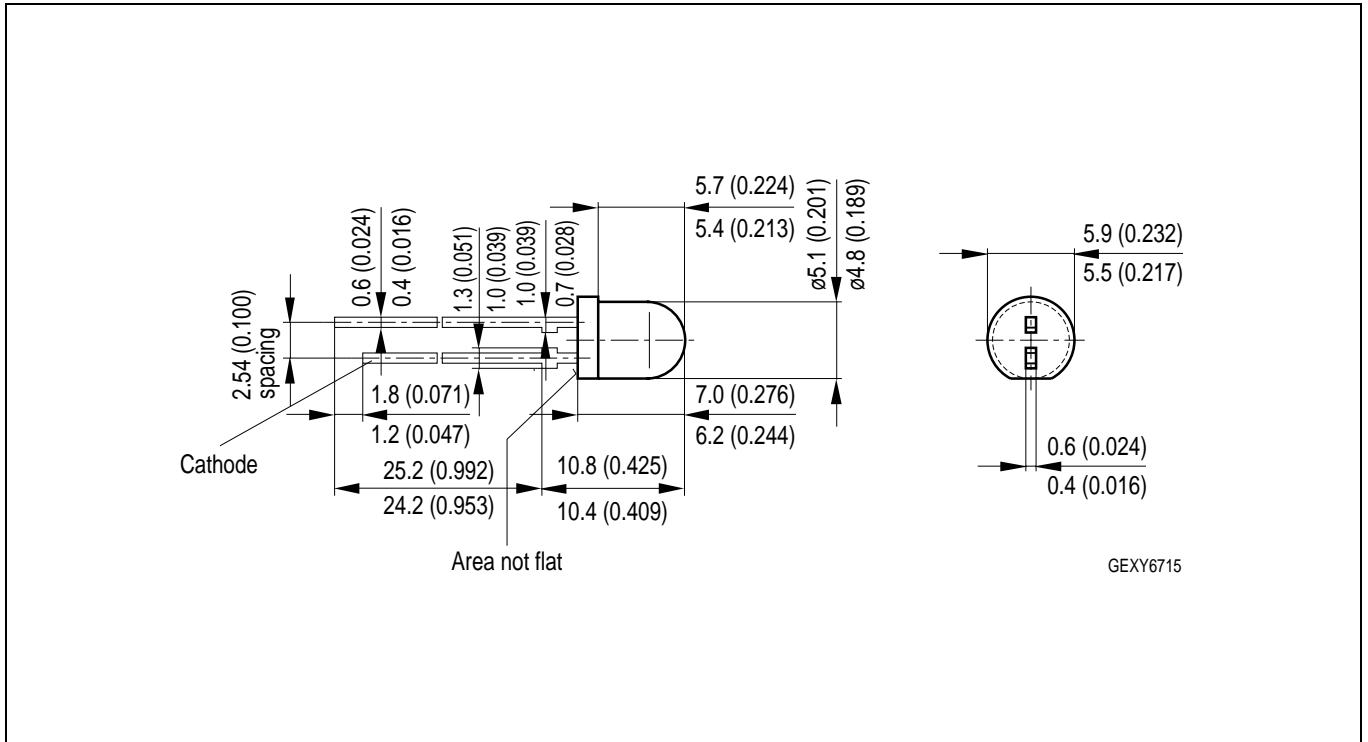
**Zulässige Impulsbelastbarkeit  $I_F = f(t_p)$**   
**Permissible Pulse Handling Capability**

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





**Maßzeichnung  
Package Outlines**

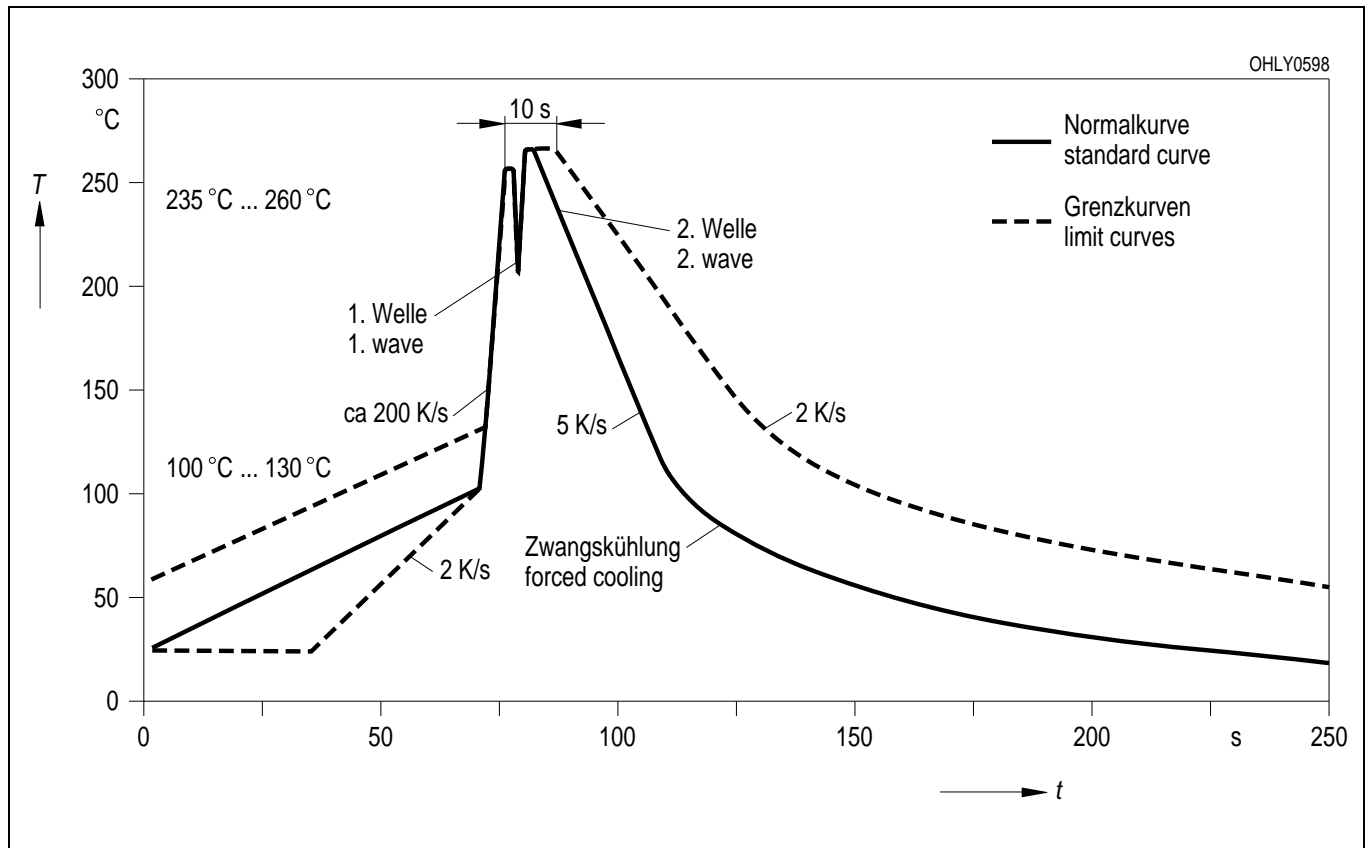


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

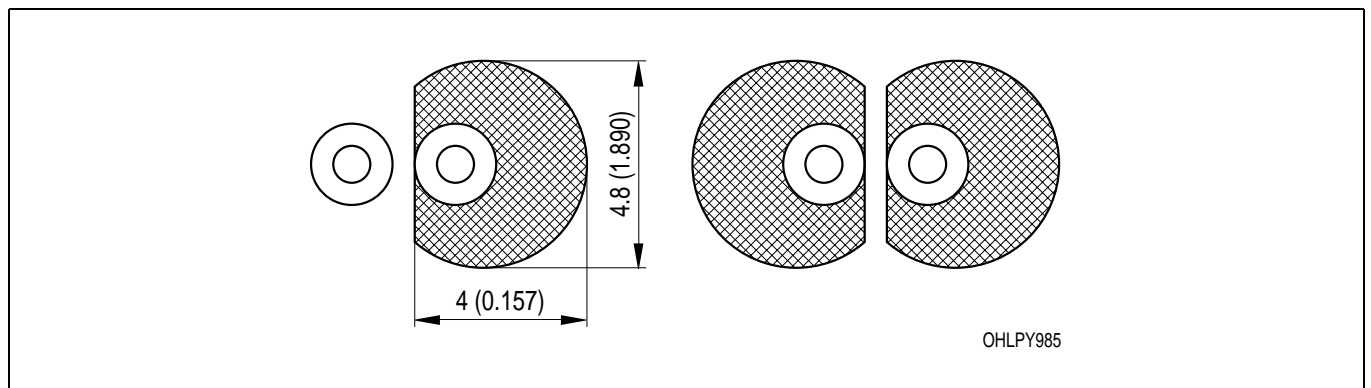
**Kathodenkennung:** kürzerer Lötspieß  
**Cathode mark:** short solder lead  
**Gewicht / Approx. weight:** 0.35 g

**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: 2003-08-04 |  | Date of change |
|------------------------------|--|----------------|
| Previous Version: 2002-11-18 |  |                |
| Page                         | Subjects (major changes since last revision) |                |
| 3                            | thermal resistance (footnote)                |                |
| 10                           | annotations                                  | 2002-07-23     |
| 5                            | luminous intensity groups                    | 2002-07-30     |
| 3, 4                         | value (reverse voltage from 5 V to 12 V)     | 2002-09-18     |
| all                          | not for new designs                          | 2002-11-18     |
| 1, 2                         | Obsolete                                     | 2003-08-04     |

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