

## 3 mm (T1) LED, Non Diffused

LS 3340, LO 3340, LY 3340, LG 3330, LP 3340



### Besondere Merkmale

- **Gehäusetypp:** eingefärbtes, klares 3 mm (T1) Gehäuse
- **Besonderheit des Bauteils:** Lötspieße mit Aufsetzebene
- **Wellenlänge:** 628 nm (super-rot), 606 nm (orange), 587 nm (gelb), 570 nm (grün), 560 nm (pure green)
- **Abstrahlwinkel:** 50°
- **Technologie:** GaAlP (super-rot, orange, gelb, grün), GaP (pure green)
- **optischer Wirkungsgrad:** 1,5 lm/W (super-rot, orange, gelb), 2,5 lm/W (grün), 0,6 lm/W (pure green)
- **Gruppierungsparameter:** Lichtstärke
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar

### Anwendungen

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

### Features

- **package:** colored, clear 3 mm (T1) package
- **feature of the device:** solder leads with stand-off
- **wavelength:** 628 nm (super-red), 606 nm (orange), 587 nm (yellow), 570 nm (green), 560 nm (pure green)
- **viewing angle:** 50°
- **technology:** GaAlP (super-red, orange, yellow, green), GaP (pure green)
- **optical efficiency:** 1.5 lm/W (super-red, orange, yellow), 2.5 lm/W (green), 0.6 lm/W (pure 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)
- signal and symbol luminaire
- marker lights (e.g. steps, exit ways, etc.)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- light writing displays

## LS 3340, LO 3340, LY 3340, LG 3330, LP 3340

Typ Type	Emissions- farbe Color of Emission	Gehäuse- farbe Color of Package	Lichtstärke Luminous Intensity $I_F = 10 \text{ mA}$ $I_V \text{ (mcd)}$	Lichtstrom Luminous Flux $I_F = 10 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Bestellnummer Ordering Code
LS 3340-KN LS 3340-L LS 3340-M LS 3340-LP	super-red	red clear	7.1 ... 45.0 11.2 ... 18.0 18.0 ... 28.0 11.2 ... 71.0	35 (typ.) 20 (typ.) 30 (typ.) 55 (typ.)	Q62703Q1701 Q62703Q1702 Q62703Q1704 Q62703Q3223
LO 3340-KN LO 3340-L LO 3340-M LO 3340-N LO 3340-MP	orange	orange clear	7.1 ... 45.0 11.2 ... 18.0 18.0 ... 28.0 28.0 ... 45.0 18 ... 71.0	35 (typ.) 20 (typ.) 30 (typ.) 45 (typ.) 60 (typ.)	Q62703Q1886 Q62703Q2256 Q62703Q2255 Q62703Q2473 Q62703Q2628
LY 3340-JM LY 3340-M LY 3340-N LY 3340-LP	yellow	yellow clear	4.5 ... 28.0 18.0 ... 28.0 28.0 ... 45.0 11.2 ... 71.0	20 (typ.) 30 (typ.) 45 (typ.) 55 (typ.)	Q62703Q1789 Q62703Q1999 Q62703Q2652 Q62703Q1792
LG 3330-KN LG 3330-N LG 3330-P LG 3330-LP	green	colorless clear	7.1 ... 45.0 28.0 ... 45.0 45.0 ... 71.0 11.2 ... 71.0	35 (typ.) 45 (typ.) 70 (typ.) 55 (typ.)	Q62703Q1698 Q62703Q2010 Q62703Q4873 Q62703Q2011
LP 3340-JL LP 3340-K LP 3340-KM	pure green	green clear	4.5 ... 18.0 7.1 ... 11.2 7.1 ... 28.0	15 (typ.) 12 (typ.) 24 (typ.)	Q62703Q2749 Q62703Q2982 Q62703Q3211

*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	Wert Value		Einheit Unit
		LS, LO, LY, LG	LP	
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	$I_F$	40	30	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	$I_{FM}$	0.5		A
Sperrspannung <sup>1)</sup> Reverse voltage	$V_R$	12		V
Leistungsaufnahme Power consumption $T_A \leq 25 \text{ °C}$	$P_{tot}$	130	95	mW
Wärmewiderstand <sup>2)</sup> Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Löt看pad Junction/soldering 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	$R_{th JA}$  $R_{th JS}$	400  180		K/W  K/W

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

<sup>2)</sup>  $R_{th}$  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 Parameter	Symbol Symbol	Wert Value					Einheit Unit
		LS	LO	LY	LG	LP	
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 10\text{ mA}$	$\lambda_{\text{peak}}$	635	610	586	572	557	nm
Dominantwellenlänge <sup>1)</sup> (typ.) Dominant wavelength $I_F = 10\text{ mA}$	$\lambda_{\text{dom}}$	628	606	587	570	560	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ (typ.) Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 10\text{ mA}$	$\Delta\lambda$	45	40	45	25	22	nm
Abstrahlwinkel bei 50 % $I_V$ (Vollwinkel) (typ.) Viewing angle at 50 % $I_V$	$2\phi$	50	50	50	50	50	Grad deg.
Durchlassspannung <sup>2)</sup> (typ.) Forward voltage $I_F = 10\text{ mA}$	$V_F$ $V_F$	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	2.0 2.5	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 12\text{ V}$	$I_R$ $I_R$	0.01 10	0.01 10	0.01 10	0.01 10	0.01 10	$\mu\text{A}$ $\mu\text{A}$
Temperaturkoeffizient von $\lambda_{\text{peak}}$ (typ.) Temperature coefficient of $\lambda_{\text{peak}}$ $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{peak}}}$	0.11	0.12	0.10	0.11	0.11	nm/K
Temperaturkoeffizient von $\lambda_{\text{dom}}$ (typ.) Temperature coefficient of $\lambda_{\text{dom}}$ $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{dom}}}$	0.07	0.07	0.07	0.07	0.05	nm/K
Temperaturkoeffizient von $V_F$ (typ.) Temperature coefficient of $V_F$ $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_V$	-1.9	-1.9	-1.9	-1.4	-2.1	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 10\text{ mA}$	$\eta_{\text{opt}}$	1.5	1.5	1.5	2.5	0.6	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> <b>Luminous Intensity Group</b>	<b>Lichtstärke</b> <b>Luminous Intensity</b> <b><math>I_v</math> (mcd)</b>	<b>Lichtstrom</b> <b>Luminous Flux</b> <b><math>\Phi_v</math> (mlm)</b>
J	4.50 ... 7.10	8 (typ.)
K	7.10 ... 11.20	12 (typ.)
L	11.20 ... 18.00	20 (typ.)
M	18.00 ... 28.00	30 (typ.)
N	28.00 ... 45.00	45 (typ.)
P	45.00 ... 71.00	78 (typ.)

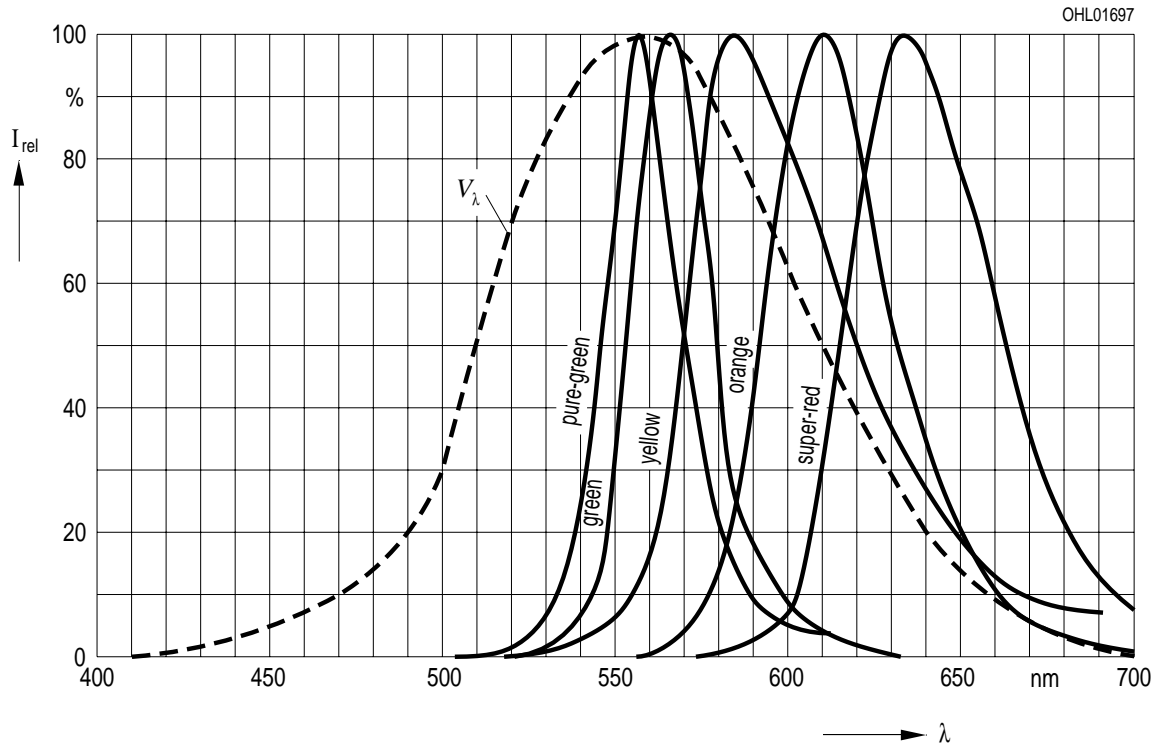
Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von  $\pm 11$  % ermittelt.  
 Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of  $\pm 11$  %.

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

**Relative Spectral Emission**

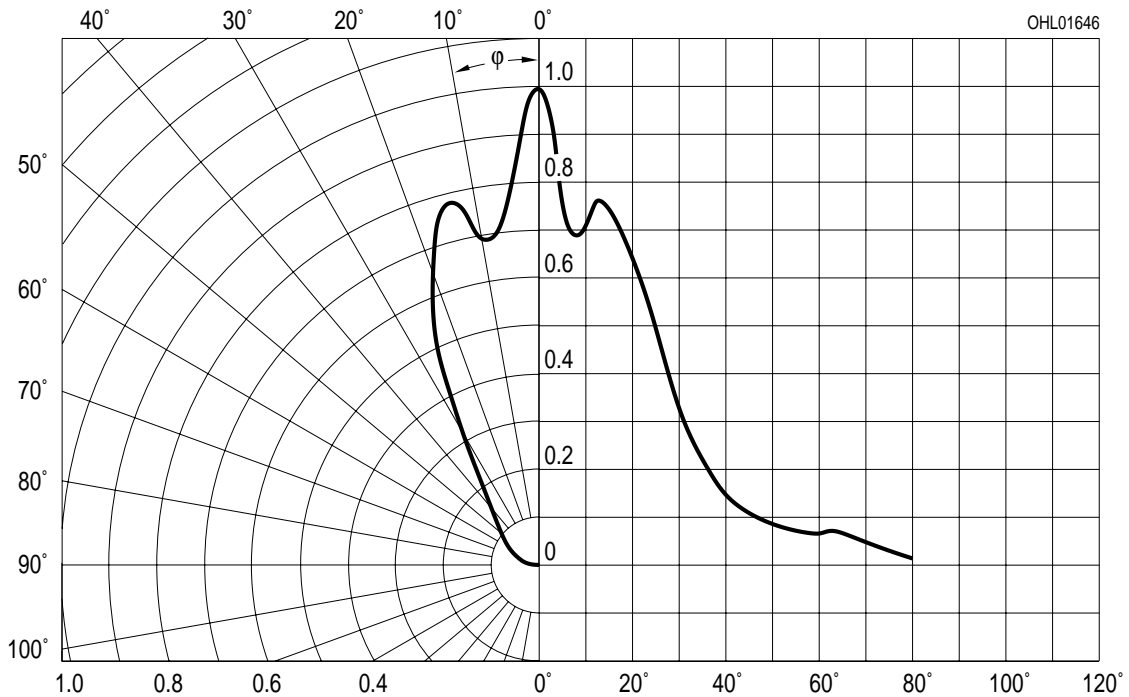
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



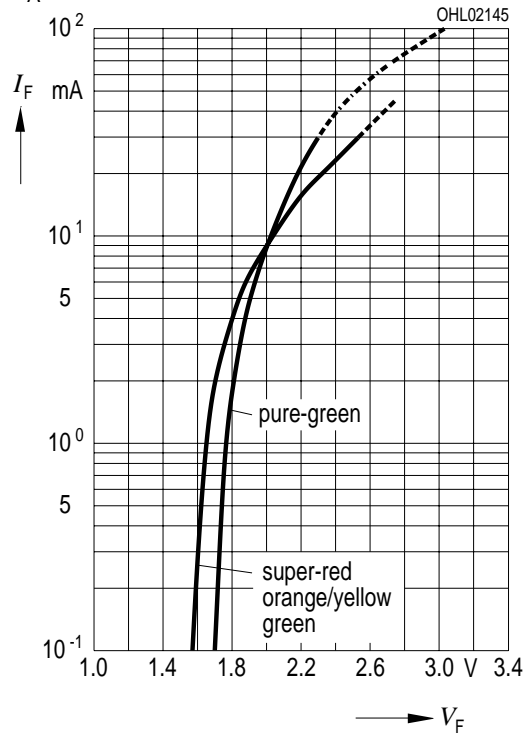
Abstrahlcharakteristik  $I_{rel} = f(\varphi)$

**Radiation Characteristic**



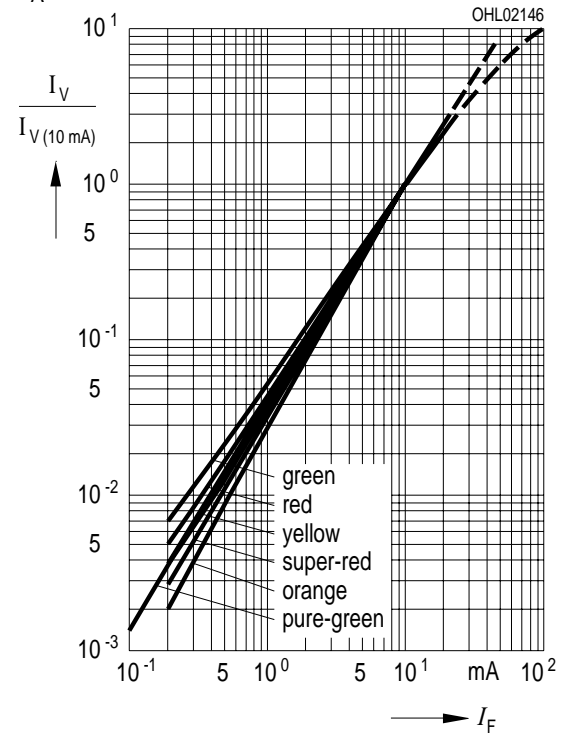
**Durchlassstrom  $I_F = f(V_F)$**   
**Forward Current**

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

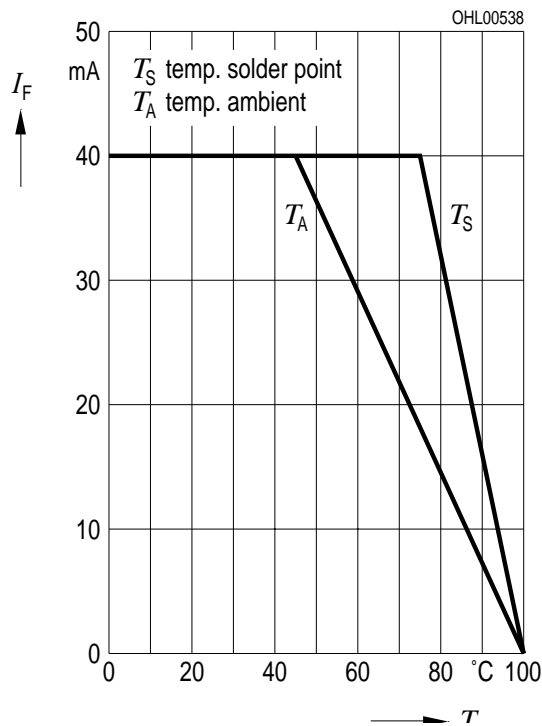


**Relative Lichtstärke  $I_V/I_{V(10\text{ mA})} = f(I_F)$**   
**Relative Luminous Intensity**

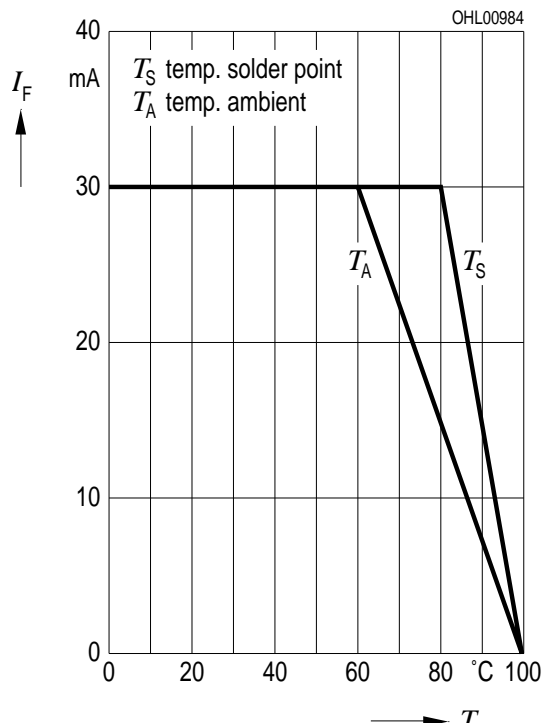
$T_A = 25\text{ }^\circ\text{C}$



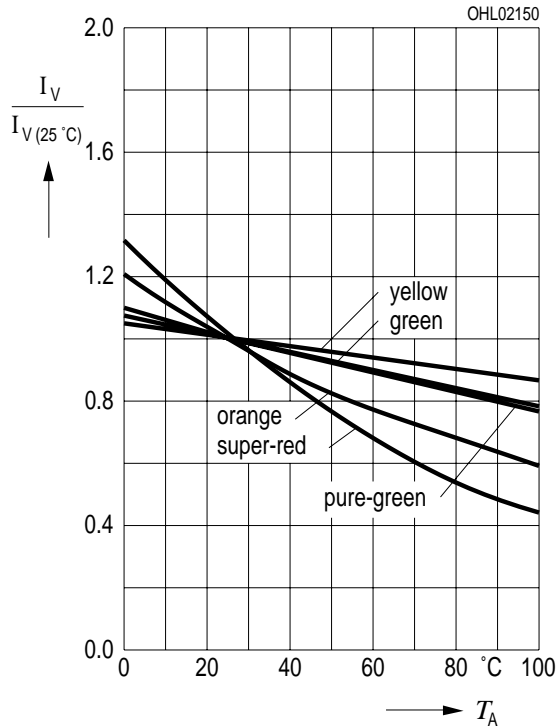
**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**  
**LS, LO, LY, LG**



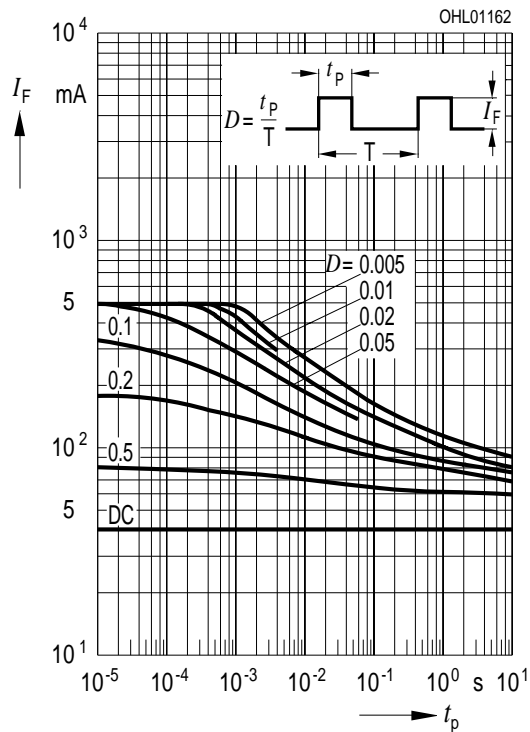
**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**  
**LP**



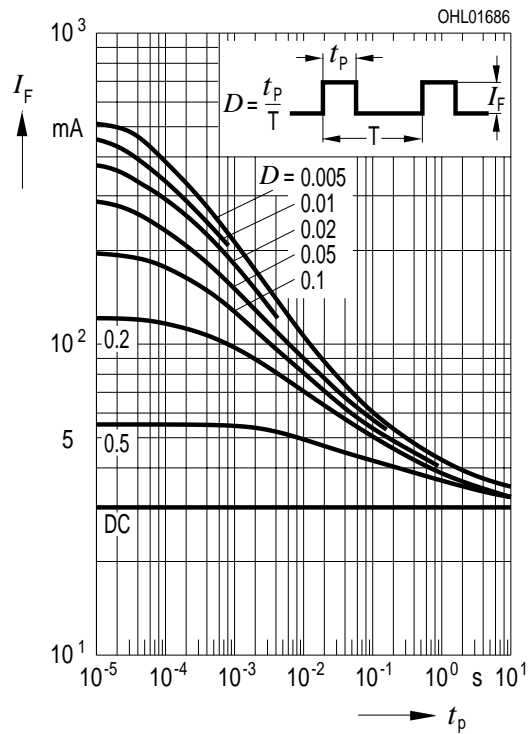
Relative Lichtstärke  $I_V/I_{V(25\text{ °C})} = f(T_A)$   
 Relative Luminous Intensity  $I_F = 10\text{ mA}$



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

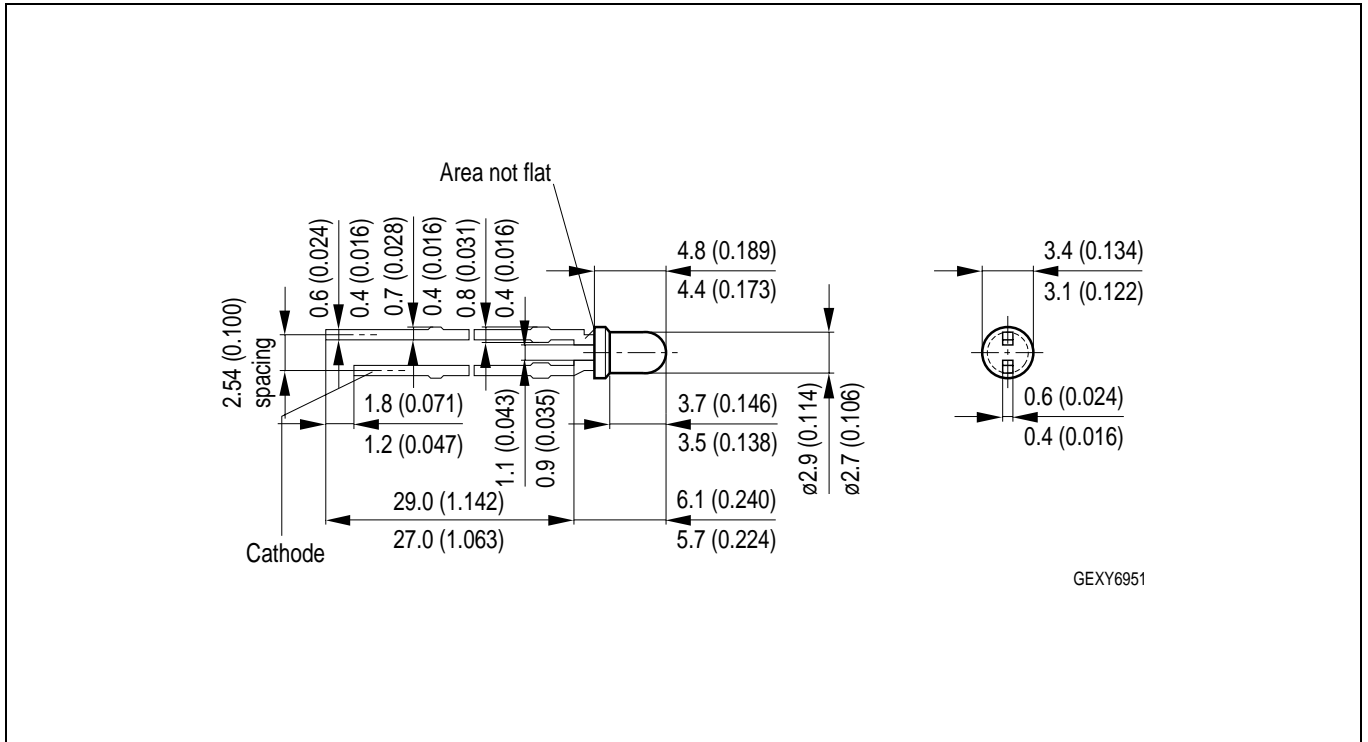


Zulässige Impulsbelastbarkeit  $I_F = f(t_p)$   
 Permissible Pulse Handling Capability  
 Duty cycle  $D =$  parameter,  $T_A = 25\text{ °C}$   
**LP**





**Maßzeichnung**  
**Package Outlines**

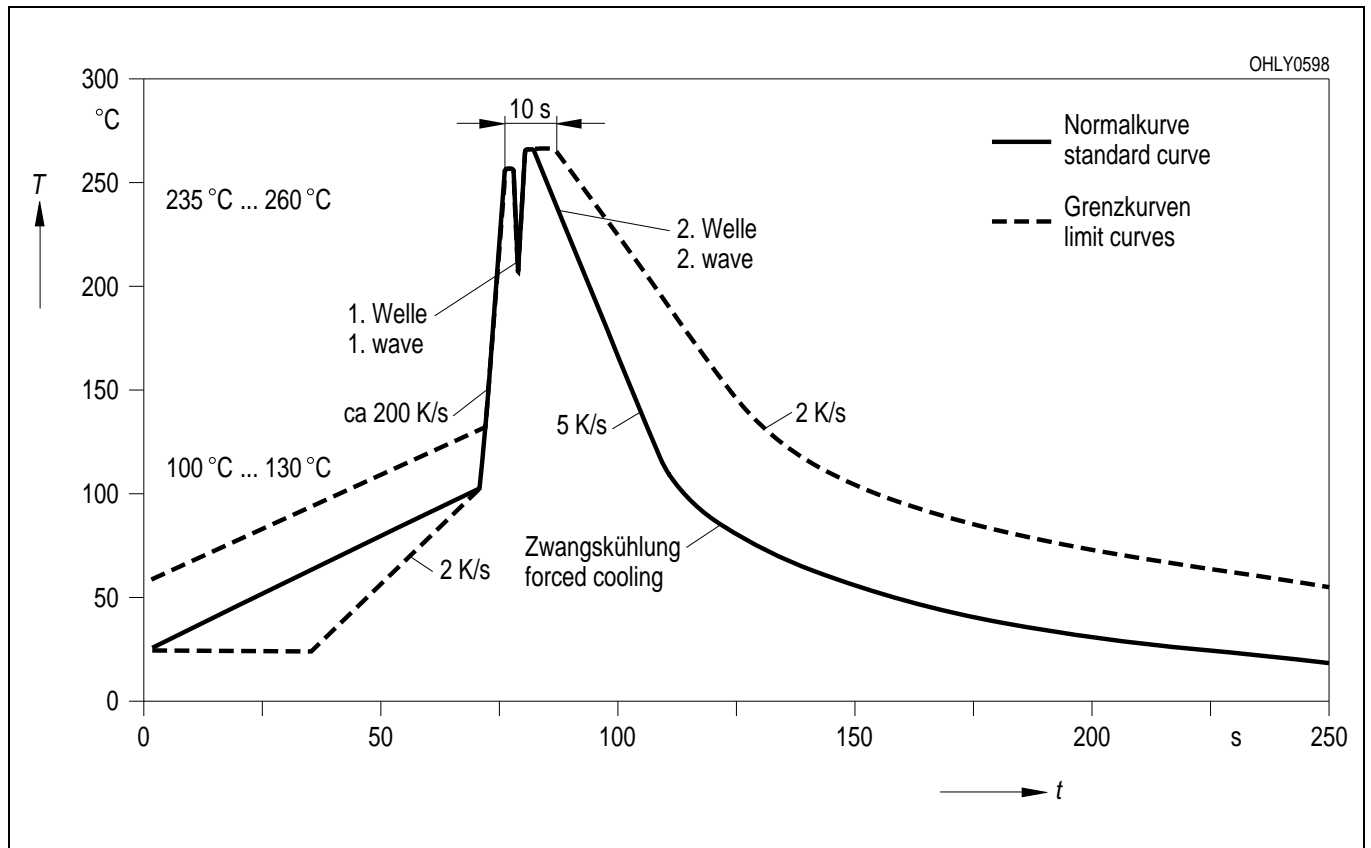


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

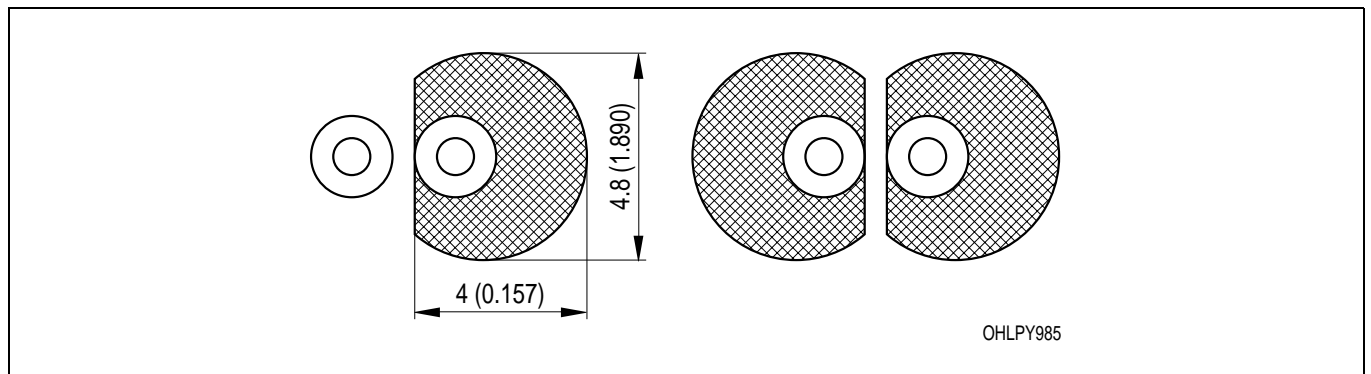
**Kathodenkennung:** kürzerer Lötspieß  
**Cathode mark:** short solder lead  
**Gewicht / Approx. weight:** 0.15 g

**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: 2003-09-03		Date of change
Previous Version: 2002-09-18		
Page	Subjects (major changes since last revision)	
3	thermal resistance (footnote)	
4	dominant wavelength (orange)	
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
2	low yield groups deleted	2003-09-03

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<sup>1</sup> A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

<sup>2</sup> Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.