

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 LS 3386-M LS 3386-N LS 3386-P LS 3386-MQ	super-red	red diffused	11.2 ... 71.0 18.0 ... 28.0 28.0 ... 45.0 45.0 ... 71.0 18.0 ... 112.0	360 (typ.) 190 (typ.) 300 (typ.) 480 (typ.) 560 (typ.)	Q62703-Q3579 Q62703-Q3581 Q62703-Q3582 Q62703-Q3709 Q62703-Q3580
LA 3386-MQ LA 3386-N LA 3386-P LA 3386-Q LA 3386-NR	amber	orange diffused	18.0 ... 112.0 28.0 ... 45.0 45.0 ... 71.0 71.0 ... 112.0 28.0 ... 180.0	530 (typ.) 280 (typ.) 450 (typ.) 700 (typ.) 840 (typ.)	Q62703-Q3886 Q62703-Q3887 Q62703-Q3888 Q62703-Q3889 Q62703-Q3890
LO 3386-MQ LO 3386-N LO 3386-P LO 3386-Q LO 3386-NR	orange	orange diffused	18.0 ... 112.0 28.0 ... 45.0 45.0 ... 71.0 71.0 ... 112.0 28.0 ... 180.0	530 (typ.) 280 (typ.) 450 (typ.) 700 (typ.) 840 (typ.)	Q62703-Q3891 Q62703-Q3892 Q62703-Q3893 Q62703-Q3894 Q62703-Q3895
LY 3386-MQ LY 3386-N LY 3386-P LY 3386-Q LY 3386-NR	yellow	yellow diffused	18.0 ... 112.0 28.0 ... 45.0 45.0 ... 71.0 71.0 ... 112.0 28.0 ... 180.0	530 (typ.) 280 (typ.) 450 (typ.) 700 (typ.) 840 (typ.)	Q62703-Q3896 Q62703-Q3897 Q62703-Q3898 Q62703-Q3899 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

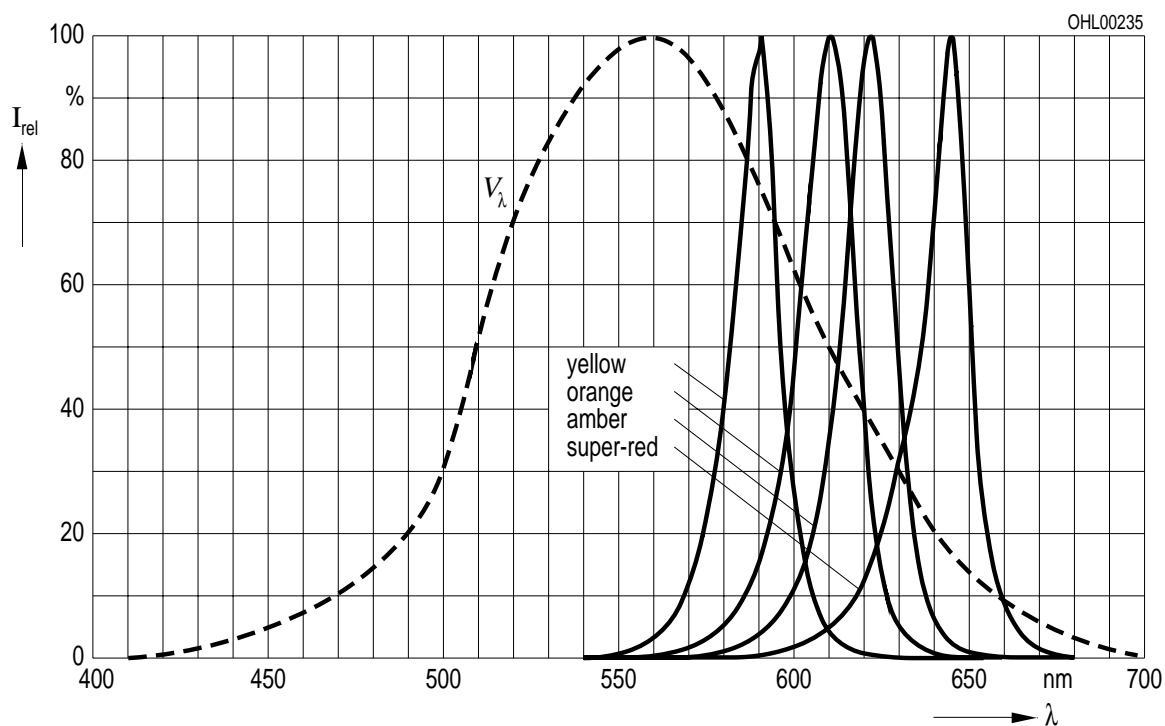
Bezeichnung Parameter	Symbol Symbol	Werte Values				Einheit Unit
		LS	LA	LO	LY	
Wellenlänge des emittierten Lichtes Wavelength at peak emission $I_F = 20\text{ mA}$	(typ.) λ_{peak}	645	622	610	591	nm
Dominantwellenlänge Dominant wavelength $I_F = 20\text{ mA}$	(typ.) λ_{dom}	632	615	605	587	nm
Spektrale 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 $I_{rel} = f(\lambda)$, $T_A = 25\text{ °C}$, $I_F = 20\text{ mA}$

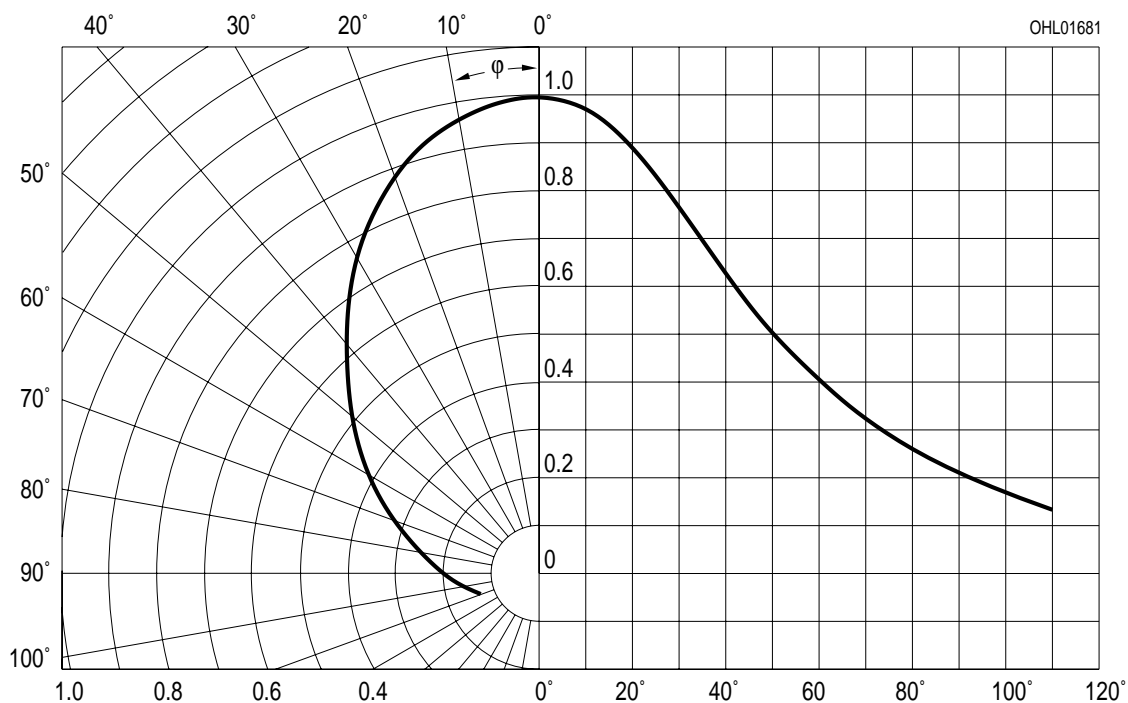
Relative Spectral Emission

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



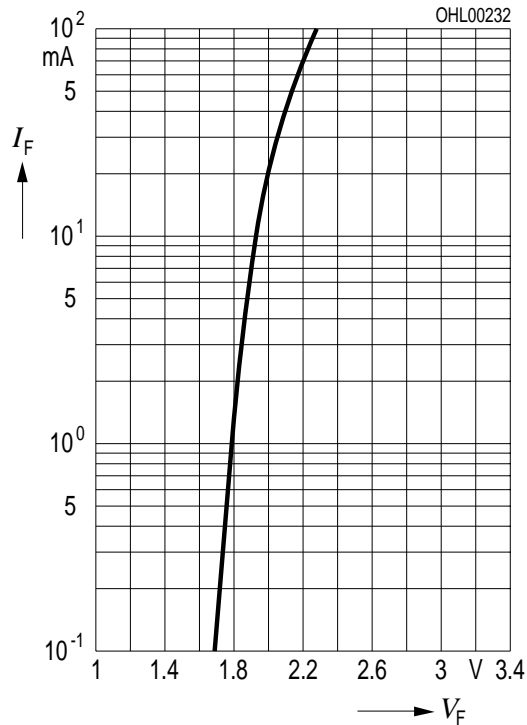
Abstrahlcharakteristik $I_{rel} = f(\varphi)$

Radiation Characteristic



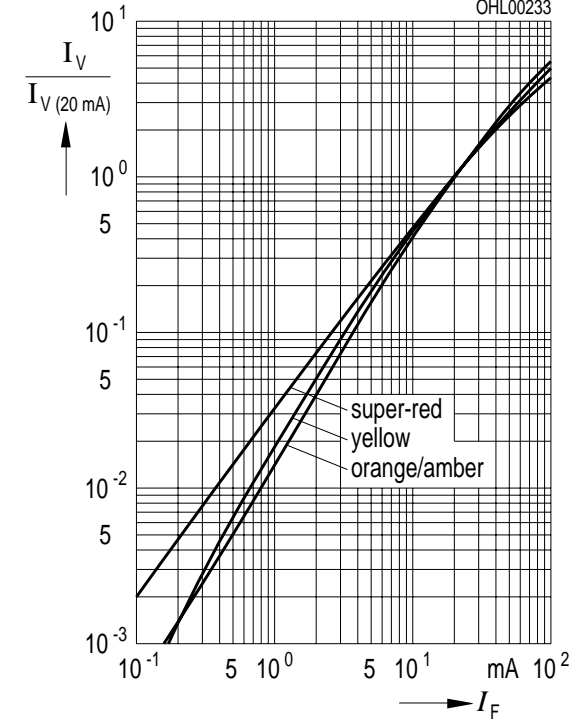
Durchlassstrom $I_F = f(V_F)$
Forward Current

$T_A = 25\text{ °C}$

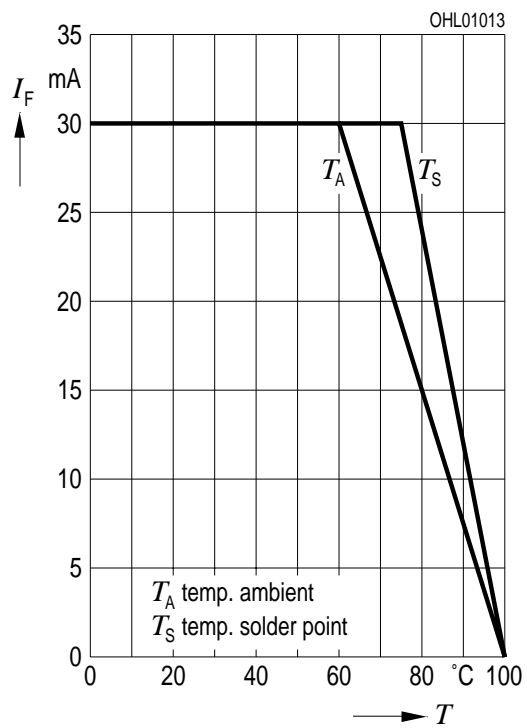


Relative Lichtstärke $I_V/I_{V(20\text{ mA})} = f(I_F)$
Relative Luminous Intensity

$T_A = 25\text{ °C}$

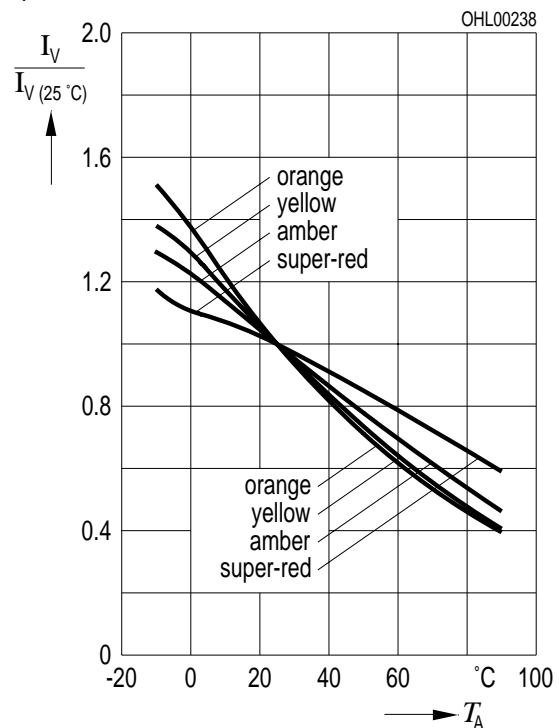


Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current

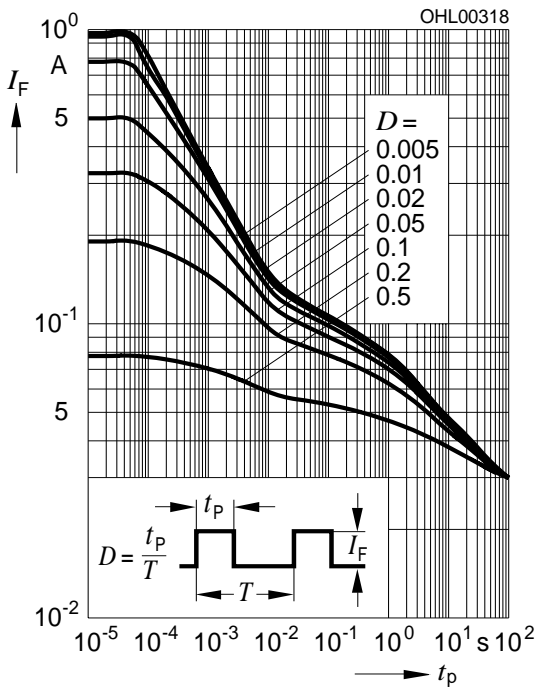


Relative Lichtstärke $I_V/I_{V(25\text{ °C})} = f(T_A)$
Relative Luminous Intensity

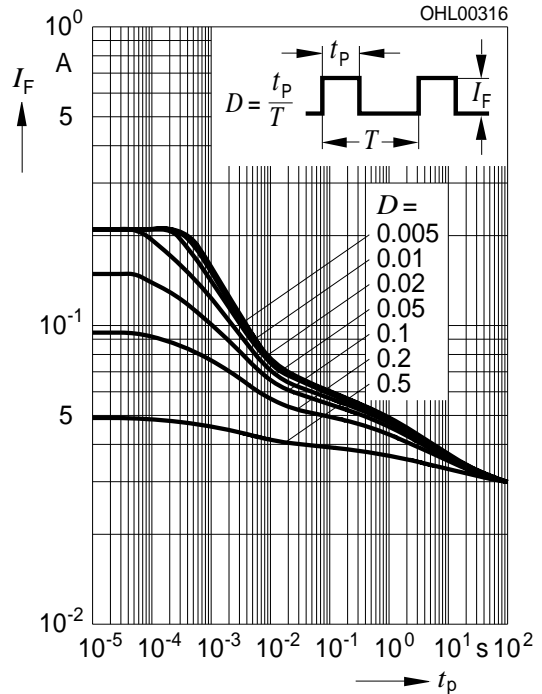
$I_F = 20\text{ mA}$



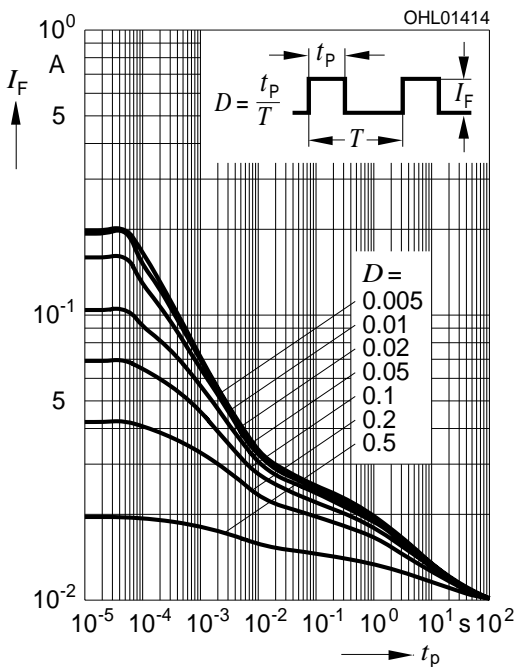
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$
LS, LA, LO



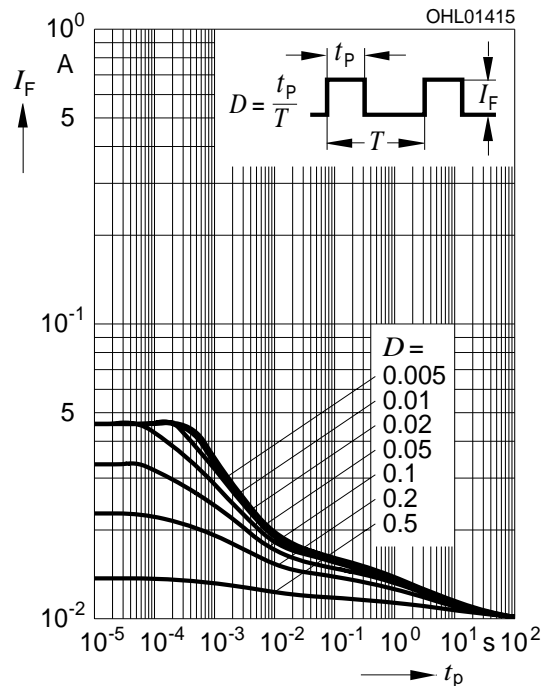
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$
LY



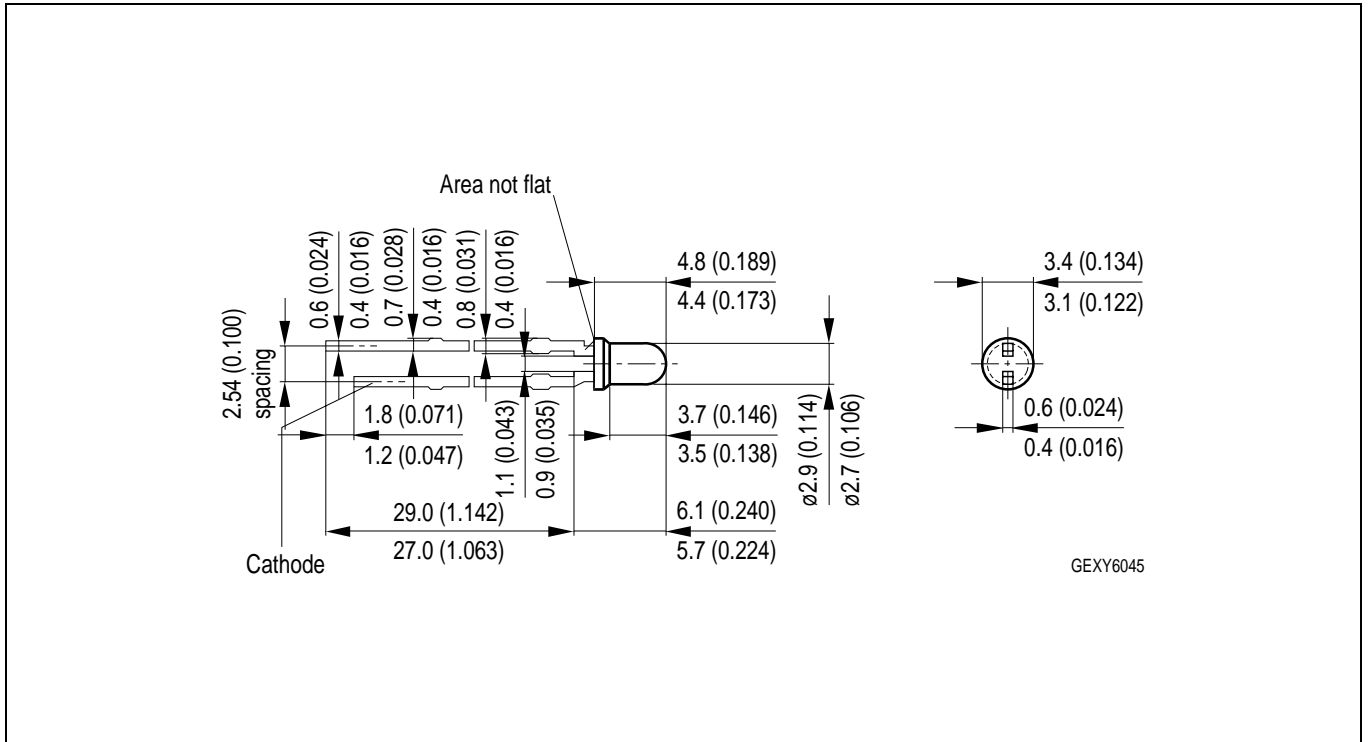
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 85\text{ °C}$
LS, LA, LO



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 85\text{ °C}$
LY



**Maßzeichnung
Package Outlines**

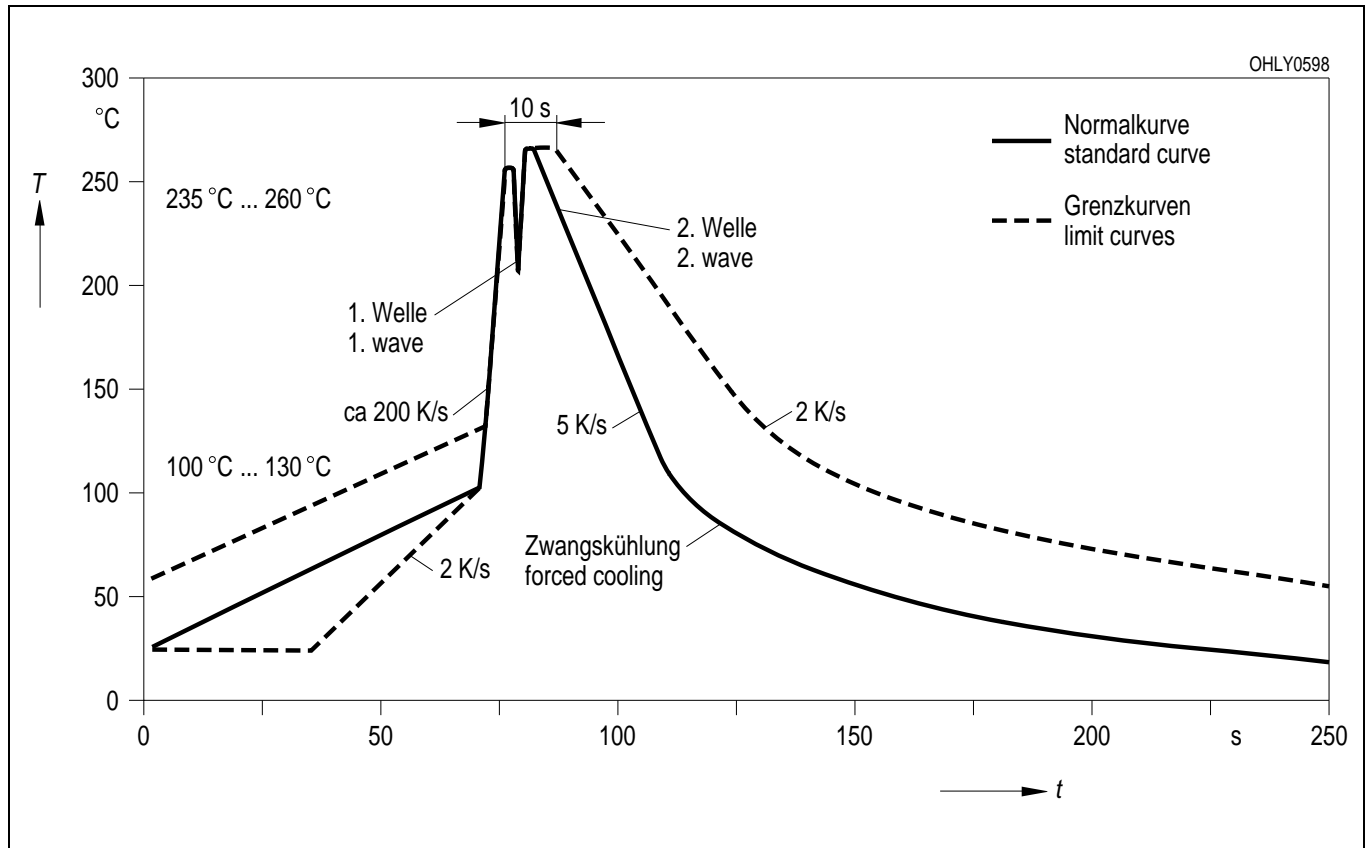


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

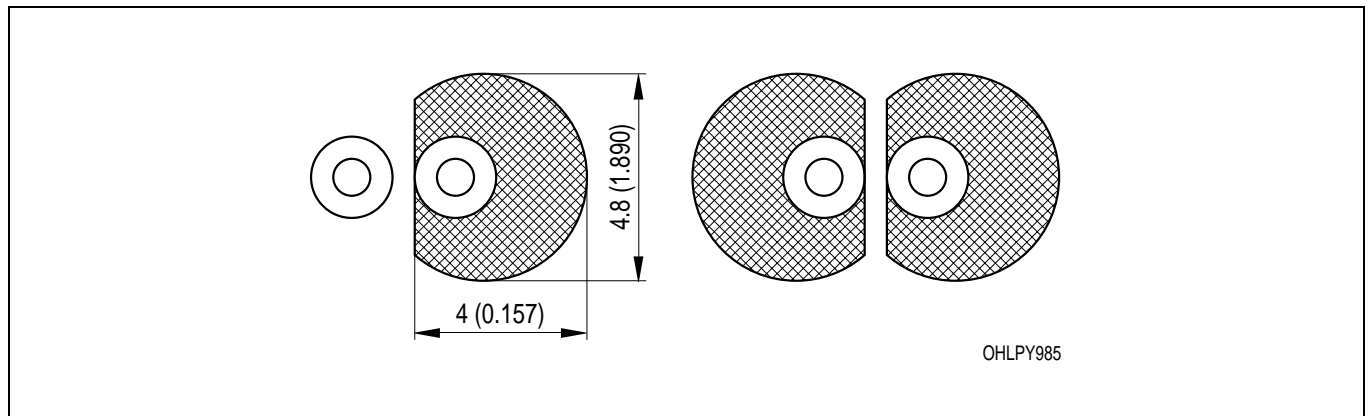
Kathodenkennung: kürzerer Lötspieß
Cathode mark: short solder lead
Gewicht / Approx. weight: 0.15 g

Lötbedingungen
Soldering Conditions

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



Empfohlenes Lötpad design 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)

Published by OSRAM Opto Semiconductors GmbH & Co. OHG

Wernerwerkstrasse 2, D-93049 Regensburg

© All Rights Reserved.

Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization. If printed or downloaded, please find the latest version in the Internet.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components ¹ may only be used in life-support devices or systems ² with the express written approval of OSRAM OS.

¹ 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.

² 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.