Hyper ARGUS® LED
Hyper-Bright, 3mm (T1) LED, Non Diffused

LS K376, LO K376, LY K376

Besondere Merkmale

- **Gehäusetyp:** nicht eingefärbtes, klares 3 mm (T1) Gehäuse mit spezieller Linse
- **Besonderheit des Bauteils:** mit Einsatz eines äußeren Reflektors zur Hinterleuchtung von Leuchtfeldern und LCD-Anzeigen; Lötspieße mit Aufsetzebene
- **Wellenlänge:** 633 nm (super-rot), 606 nm (orange), 587 nm (gelb)
- **Abstrahlwinkel:** angepasst an Einsatz mit äußerem Reflektor, siehe Diagramm
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 11 lm/W (gelb, orange), 7 lm/W (super-rot)
- **Gruppierungsparameter:** Lichtstrom
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)
- Einkopplung in Lichtleiter

Features

- **package:** colorless, clear 3 mm (T1) package with specially shaped lens
- **feature of the device:** for backlighting and LCDs with use of a reflector; solder leads with stand-off
- **wavelength:** 633 nm (super-red), 606 nm (orange), 587 nm (yellow)
- **viewing angle:** matched to use with external reflector, see diagram
- **technology:** InGaAlP
- **optical efficiency:** 11 lm/W (yellow, orange), 7 lm/W (super-red)
- **grouping parameter:** luminous flux
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- coupling into light guides

Typ Type	Emissions-farbe Color of Emission	Gehäusefarbe Color of Package	Lichtstrom Luminous Flux I_F = 20 mA Φ_V (mlm)	Bestellnummer Ordering Code
LS K376-QT	super-red	colorless clear	71 ... 450	Q62703Q3467
LS K376-R			112 ... 180	Q62703Q3468
LS K376-S			180 ... 280	Q62703Q3469
LS K376-T			280 ... 450	Q62703Q3470
LS K376-RU			112 ... 710	Q62703Q3471
LO K376-RU	orange	colorless clear	112 ... 710	Q62703Q3472
LO K376-S			180 ... 280	Q62703Q3473
LO K376-T			280 ... 450	Q62703Q3474
LO K376-U			450 ... 710	Q62703Q3475
LO K376-SV			180 ... 1120	Q62703Q3476
LY K376-RU	yellow	colorless clear	112 ... 710	Q62703Q3477
LY K376-S			180 ... 280	Q62703Q3478
LY K376-T			280 ... 450	Q62703Q3479
LY K376-U			450 ... 710	Q62703Q3480
LY K376-SV			180 ... 1120	Q62703Q3481

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	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 $t \leq 10$ µs, $D = 0.005$	I_{FM}	1	0.2	A
Sperrspannung[1)] Reverse voltage	V_R	12		V
Leistungsaufnahme Power consumption $T_A \leq 25$ °C	P_{tot}	80		mW
Wärmewiderstand [2)] Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm²) mounted on PC board FR 4 (pad size ≥ 16 mm²) Minimale Beinchenlänge Minimum lead length	 $R_{th\ JA}$ $R_{th\ JS}$	 500 280		 K/W 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 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Werte** **Values**			**Einheit** **Unit**
			LS	**LO**	**LY**	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 20 mA	(typ.)	λ_{peak}	645	610	591	nm
Dominantwellenlänge Dominant wavelength I_F = 20 mA	(typ.)	λ_{dom}	633	606	587	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 20 mA	(typ.)	$\Delta\lambda$	16	16	15	nm
Durchlassspannung [1] Forward voltage [1] I_F = 20 mA	(typ.) (max.)	V_F V_F	2.0 2.4	2.0 2.4	2.0 2.4	V V
Sperrstrom Reverse current V_R = 12 V	(typ.) (max.)	I_R I_R	0.01 10	0.01 10	0.01 10	µA µA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda peak}$	0.14	0.13	0.13	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.05	0.07	0.10	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 20 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 2.0	– 1.7	– 2.5	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 20 mA	(typ.)	η_{opt}	7	11	11	lm/W

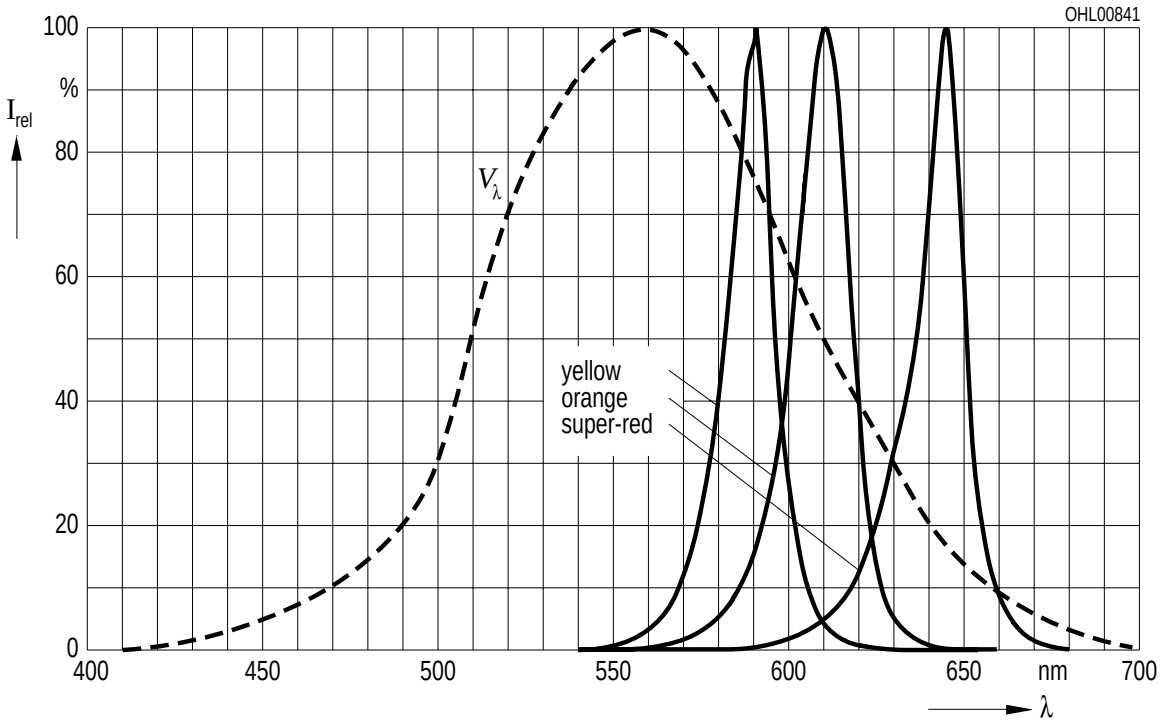
[1] Spannungswerte werden mit einer Stromeinprägedauer von 1 ms und einer Genauigkeit von ±0,1 V ermittelt.
Voltages are tested at a current pulse duration of 1 ms and a tolerance of ±0.1 V.

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

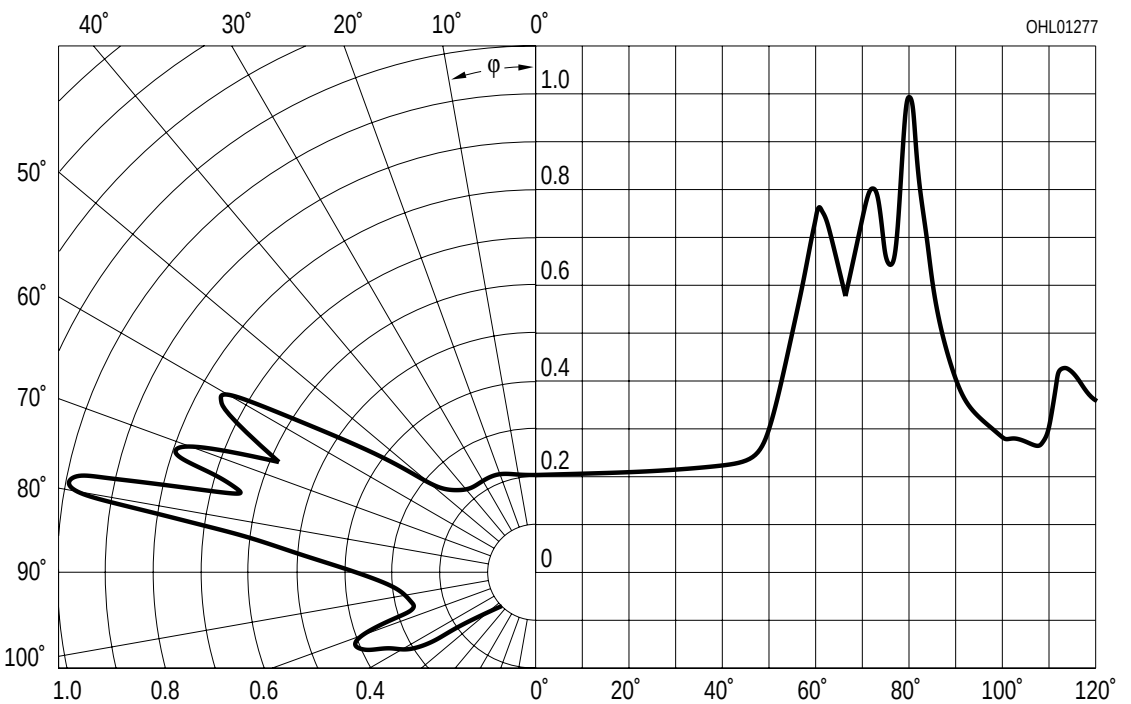
Lichtgruppe **Luminous Intensity Group**	**Lichtstrom** **Luminous Flux** **Φ_V (mlm)**
Q	71 … 112
R	112 … 180
S	180 … 280
T	280 … 450
U	450 … 710
V	710 … 1120

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

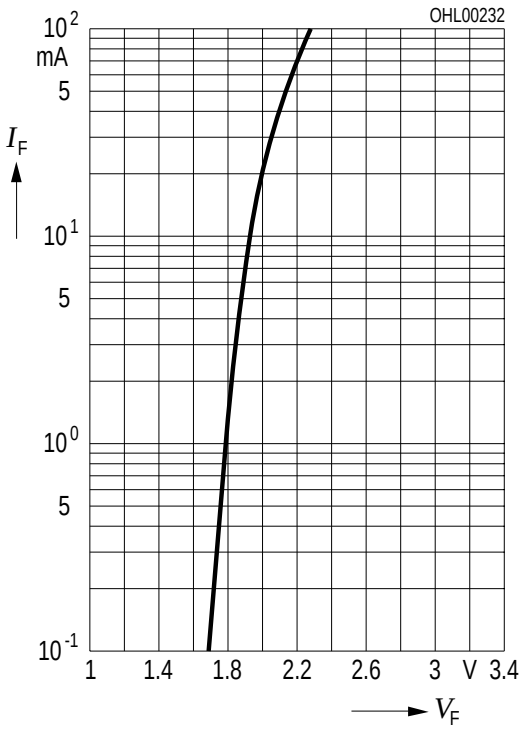
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 20 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



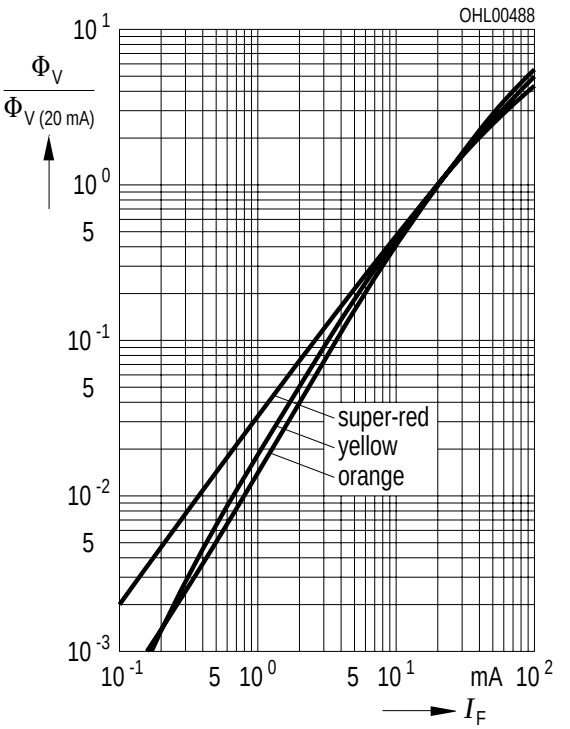
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



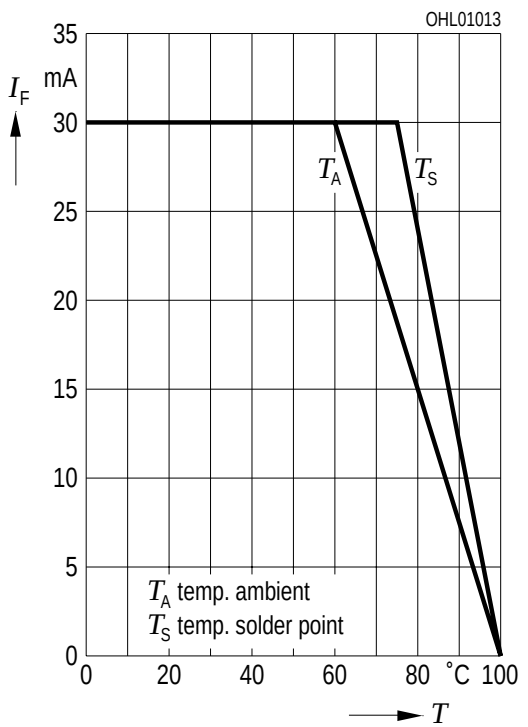
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



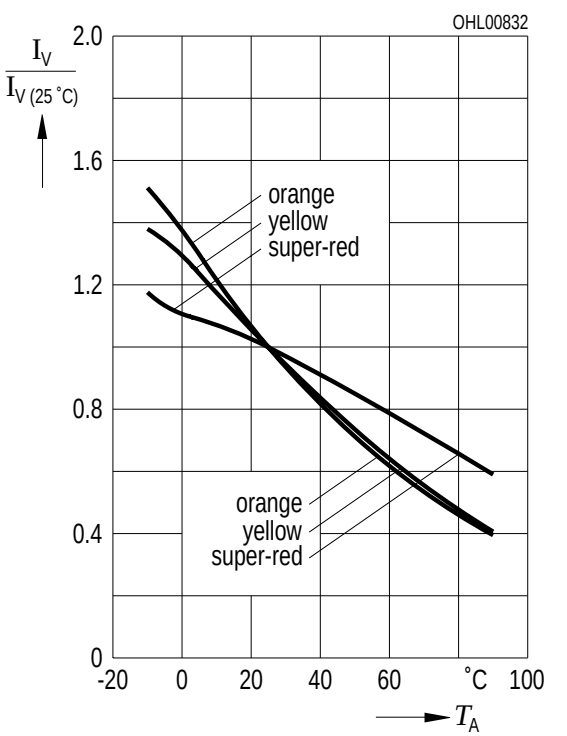
Relativer Lichtstrom $\Phi_V/\Phi_{V(20\ mA)} = f(I_F)$
Relative Luminous Flux
T_A = 25 °C



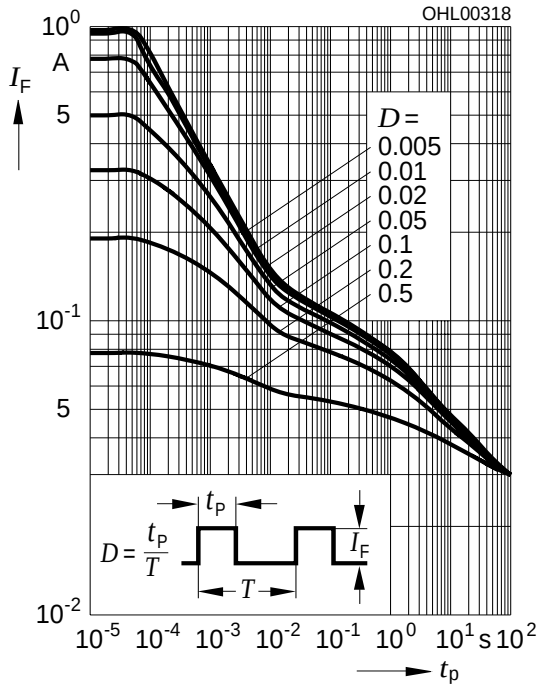
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



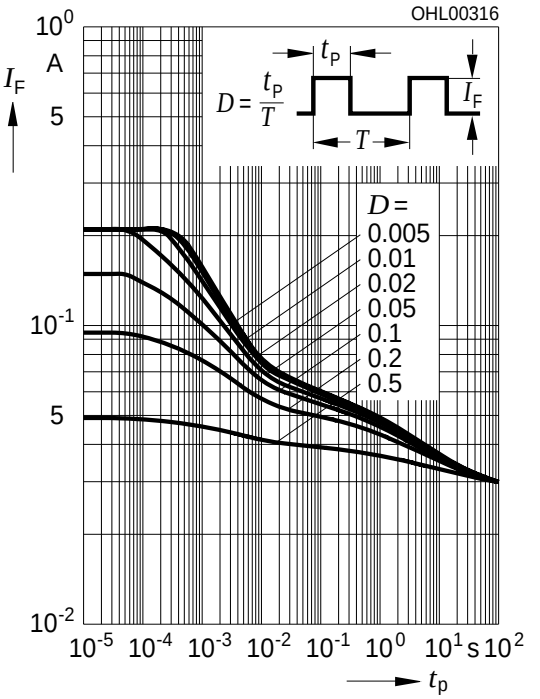
Relativer Lichtstrom $\Phi_V/\Phi_{V(25\ °C)} = f(T_A)$
Relative Luminous Flux
I_F = 20 mA



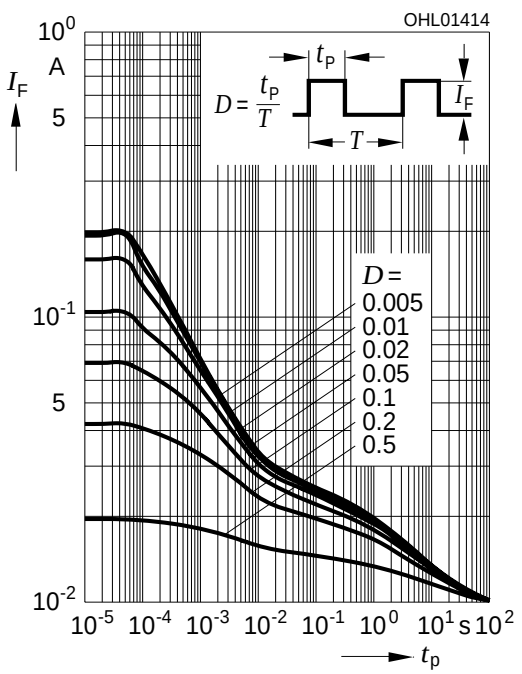
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A = 25 °C
LS, LO



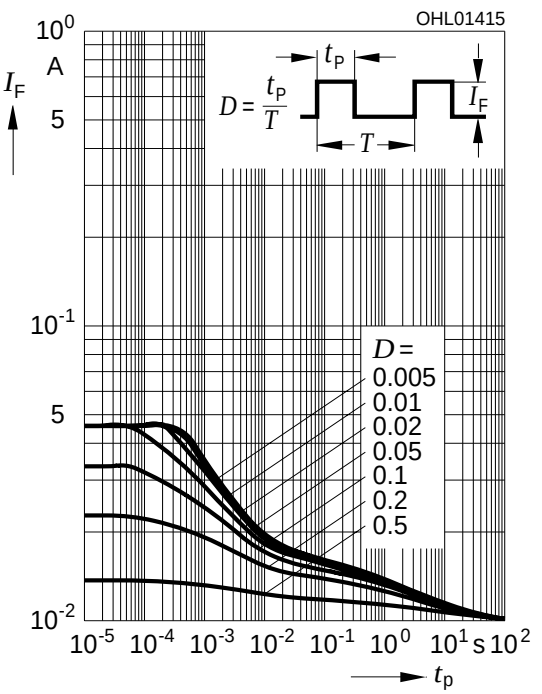
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A = 25 °C
LY



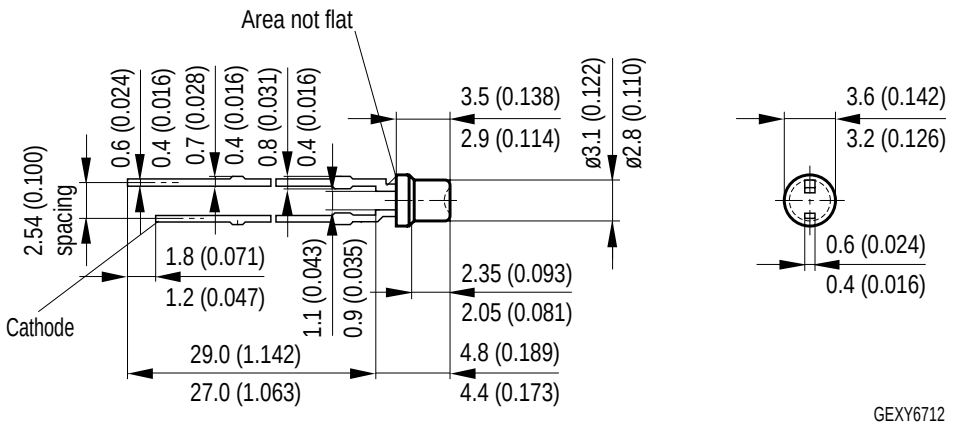
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A = 85 °C
LS, LO



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



Maßzeichnung
Package Outlines

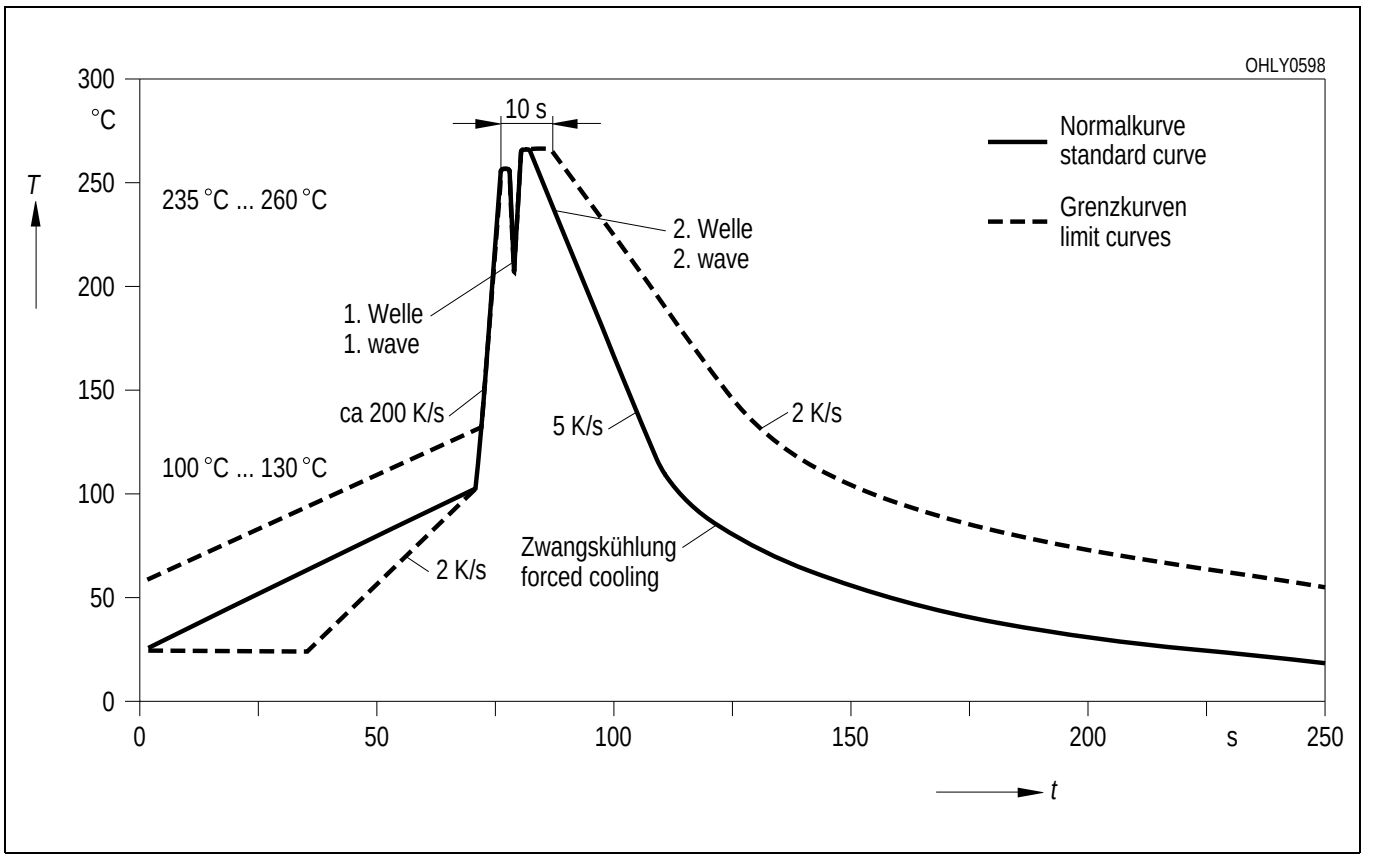


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

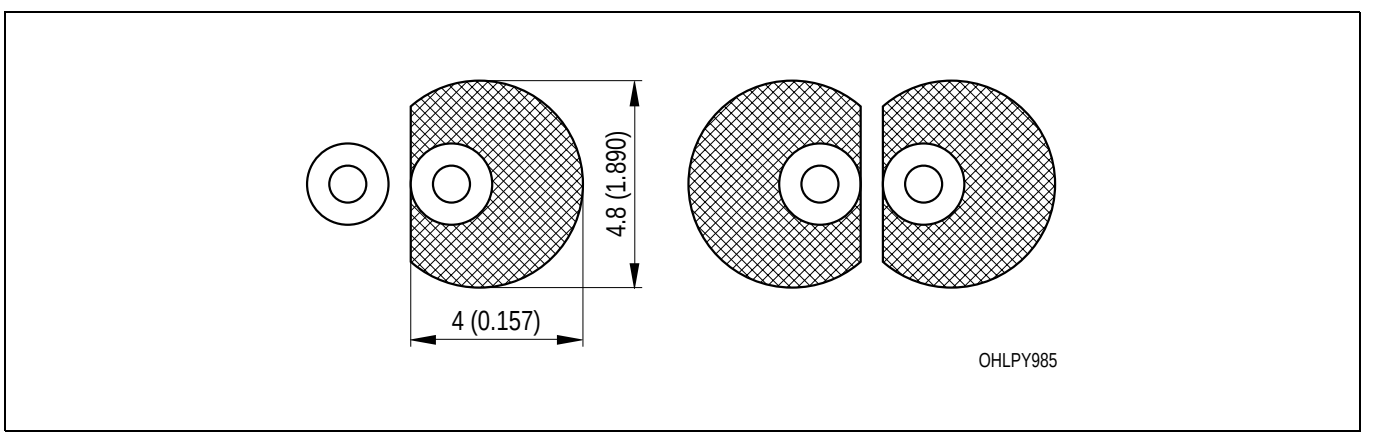
Kathodenkennung: kürzerer Lötspieß
Cathode mark: short solder lead
Gewicht / Approx. weight: 160 mg

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: 2003-07-14		Date of change
Previous Version: 2002-10-07		
Page	**Subjects (major changes since last revision)**	
3	thermal resistance (footnote)	
4	value (wavelength super-red/amber/orange)	
10	annotations	2002-07-25
4	value ($TC_{\lambda dom}$ from 0.01 to 0.05 nm/K)	2002-07-25
5	luminous intensity groups	2002-08-01
3, 4	value (reverse voltage from 3 V to 12 V)	2002-09-18
all	removal of “amber”	2002-10-01
7	new diagram for rel. lum. flux (I_F) (OHL01090 to OHL00488)	2002-10-01
7	new diagram for rel. lum. flux (T_A) (OHL01091 to OHL00832)	2002-10-01
5	new diagram for rel. spec. emission (OHL00235 to OHL00841)	2002-10-07
1	ESD withstand voltage	2002-10-25

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Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
All typical data and graphs are basing on representative samples, but don’t represent the production range. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
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.