

# ARGUS® LED

## 3 mm (T1) LED, Non Diffused

LS K380, LO K380, LY K380, LG K380, LP K380



### Besondere Merkmale

- **Gehäusetypp:** eingefärbtes, klares 3 mm (T1) Gehäuse mit spezieller Linse
- **Besonderheit des Bauteils:** mit Einsatz eines äußeren Reflektors zur Hinterleuchtung von Lichtfeldern und LCD-Anzeigen; Lötspieße mit Aufsetzebene
- **Wellenlänge:** 628 nm (super-rot), 606 nm (orange), 587 nm (gelb), 570 nm (grün), 560 nm (pure green)
- **Abstrahlwinkel:** angepasst an Einsatz mit äußerem Reflektor, siehe Diagramm
- **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:** Lichtstrom
- **Lötmethode:** Wellenlöten (TTW)
- **Verpackung:** Schüttgut, gegurtet lieferbar

### Anwendungen

- Einsatz mit äußerem Reflektor
- optischer Indikator
- Hinterleuchtung (LCD, Schalter, Tasten, Displays)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u.ä.)
- Einkopplung in Lichtleiter

### Features

- **package:** colored, 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:** 628 nm (super-red), 606 nm (orange), 587 nm (yellow), 570 nm (green), 560 nm (pure green)
- **viewing angle:** matched to use with external reflector, see diagram
- **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 flux
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel

### Applications

- use of reflector
- optical indicators
- backlighting (LCD, switches, keys, displays)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- coupling into light guides

## LS K380, LO K380, LY K380, LG K380, LP K380

Typ Type	Emissionsfarbe Color of Emission	Gehäusefarbe Color of Package	Lichtstrom Luminous Flux $I_F = 15 \text{ mA}$ $\Phi_V$ (mlm)	Bestellnummer Ordering Code
LS K380-LP LS K380-N LS K380-P LS K380-NR	super-red	red clear	11.2 ... 71.0 28.0 ... 45.0 45.0 ... 71.0 28.0 ... 180.0	Q62703Q1768 Q62703Q0760 Q62703Q1003 Q62703Q2223
LO K380-LP LO K380-N LO K380-P LO K380-Q LO K380-NR	orange	orange clear	11.2 ... 71.0 28.0 ... 45.0 45.0 ... 71.0 71.0 ... 112.0 28.0 ... 180.0	Q62703Q1888 Q62703Q2227 Q62703Q2228 Q62703Q2229 Q62703Q2201
LY K380-LP LY K380-N LY K380-P LY K380-NR	yellow	yellow clear	11.2 ... 71.0 28.0 ... 45.0 45.0 ... 71.0 28.0 ... 180.0	Q62703Q1769 Q62703Q0575 Q62703Q0576 Q62703Q2224
LG K380-Q LG K380-NR	green	green clear	71.0 ... 112.0 28.0 ... 180.0	Q62703Q3193 Q62703Q2225
LP K380-KN LP K380-L LP K380-M LP K380-LP	pure green	colorless clear	7.1 ... 45.0 11.2 ... 18.0 18.0 ... 28.0 11.2 ... 71.0	Q62703Q2506 Q62703Q3215 Q62703Q2610 Q62703Q3217

*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	$P_{tot}$	130	95	mW
Wärmewiderstand <sup>2)</sup> Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	400		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	$R_{th JS}$	180		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 Parameter	Symbol Symbol	Wert Value					Einheit Unit
		LS	LO	LY	LG	LP	
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 15\text{ mA}$	$\lambda_{\text{peak}}$	635	610	586	572	557	nm
Dominantwellenlänge <sup>1)</sup> (typ.) Dominant wavelength $I_F = 15\text{ mA}$	$\lambda_{\text{dom}}$	628	606	587	570	560	nm
Spektrale Bandbreite bei 50 % $\Phi_{\text{rel max}}$ (typ.) Spectral bandwidth at 50 % $\Phi_{\text{rel max}}$ $I_F = 15\text{ mA}$	$\Delta\lambda$	45	40	45	25	22	nm
Durchlassspannung <sup>2)</sup> (typ.) Forward voltage (max.) $I_F = 15\text{ mA}$	$V_F$ $V_F$	2.1 2.5	2.1 2.5	2.1 2.5	2.1 2.5	2.1 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 $\lambda_{\text{peak}}$ $I_F = 15\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{peak}}}$	0.11	0.12	0.10	0.11	0.11	nm/K
Temperaturkoeffizient von $\lambda_{\text{dom}}$ (typ.) Temperature coefficient of $\lambda_{\text{dom}}$ $I_F = 15\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{dom}}}$	0.07	0.07	0.07	0.07	0.05	nm/K
Temperaturkoeffizient von $V_F$ (typ.) Temperature coefficient of $V_F$ $I_F = 15\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_V$	-1.9	-1.9	-1.9	-1.4	-2.1	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 15\text{ mA}$	$\eta_{\text{opt}}$	1.5	1.5	1.5	2.5	0.6	lm/W

<sup>1)</sup> Wellenlängen werden mit einer Stromeinprägungsdauer 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 Stromeinprägungsdauer 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</b> <b>Group</b>	<b>Lichtstrom</b> <b>Luminous Flux</b> $\Phi_V$ (mlm)
L	11.2 ... 18.0
M	18.0 ... 28.0
N	28.0 ... 45.0
P	45.0 ... 71.0
Q	71.0 ... 112.0
R	112.0 ... 180.0

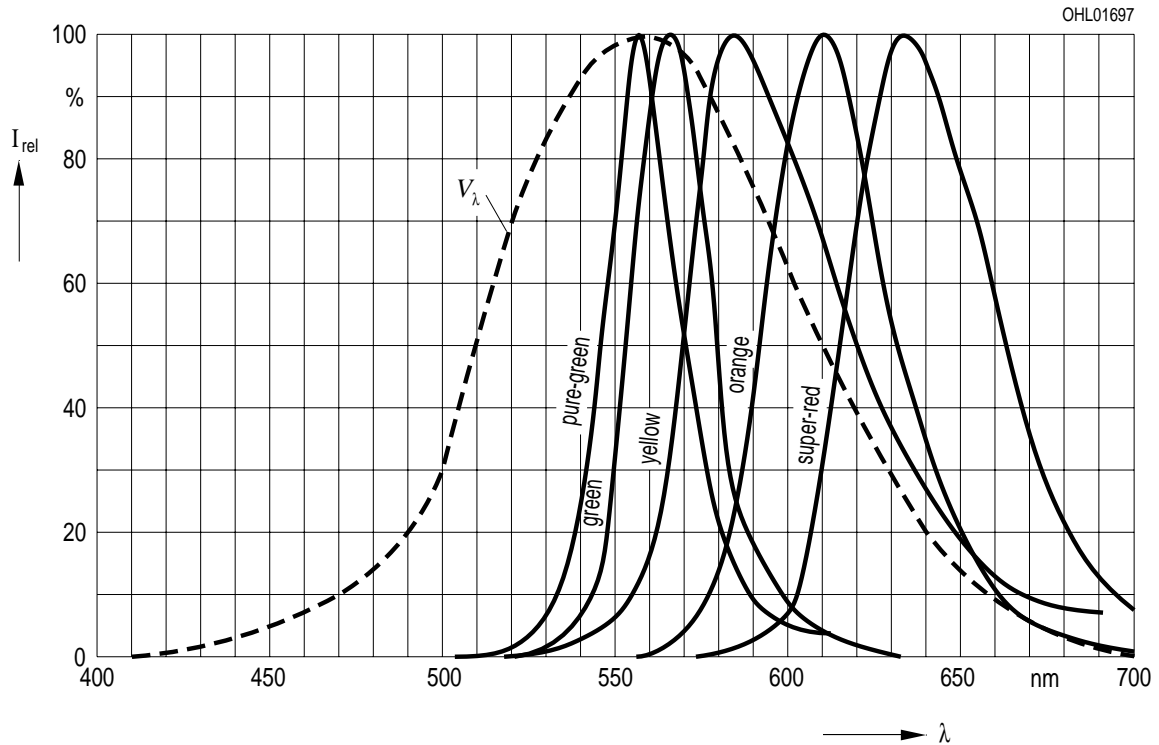
Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von  $\pm 11\%$  ermittelt.  
Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of  $\pm 11\%$ .

Relative spektrale Emission  $I_{rel} = f(\lambda)$ ,  $T_A = 25\text{ °C}$ ,  $I_F = 15\text{ mA}$

Relative Spectral Emission

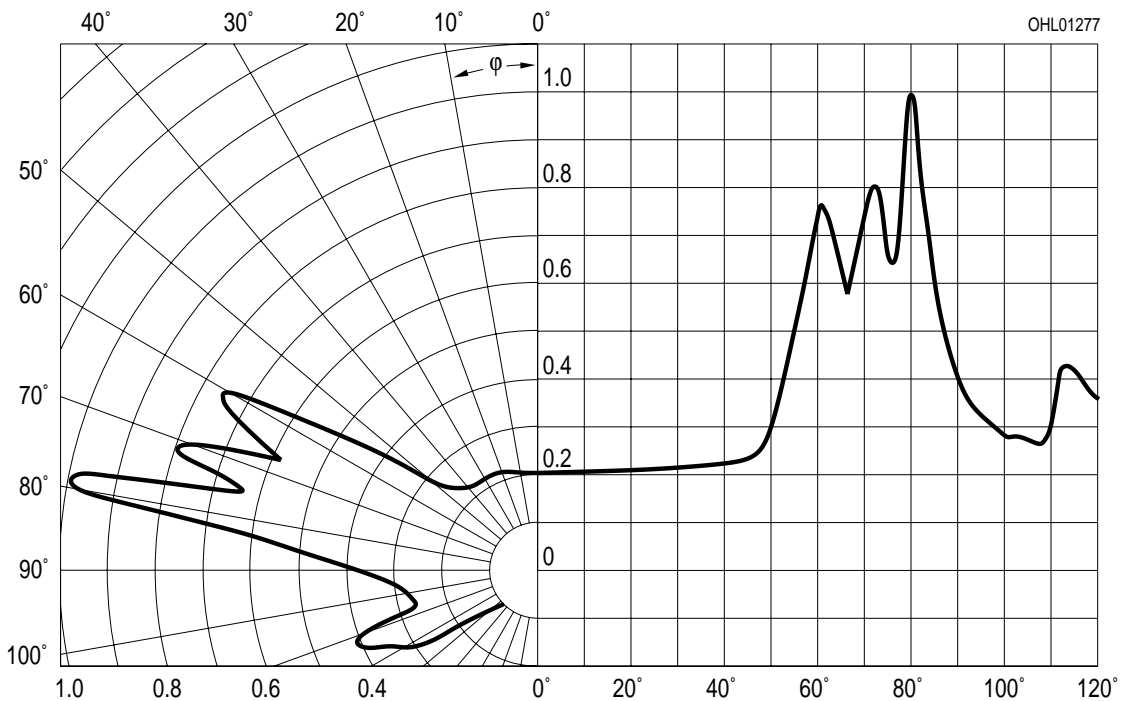
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



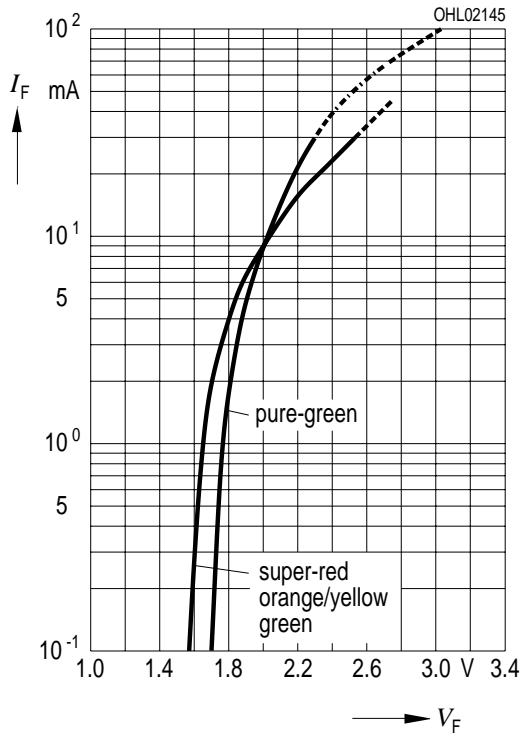
Abstrahlcharakteristik  $I_{rel} = f(\varphi)$

Radiation Characteristic



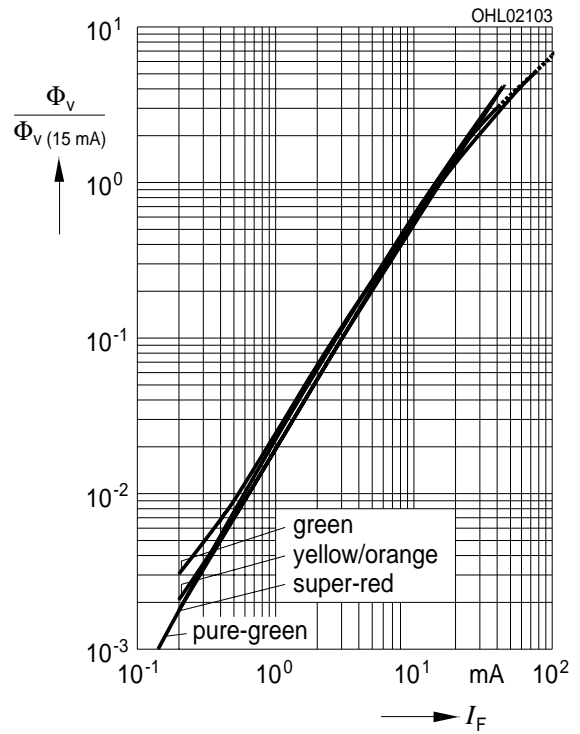
**Durchlassstrom  $I_F = f(V_F)$**   
**Forward Current**

$T_A = 25\text{ °C}$

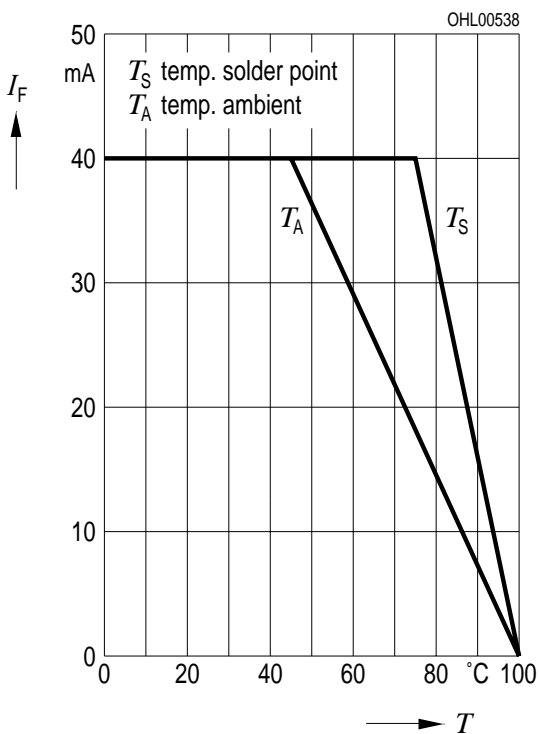


**Relativer Lichtstrom  $\Phi_V/\Phi_{V(15\text{ mA})} = f(I_F)$**   
**Relative Luminous Flux**

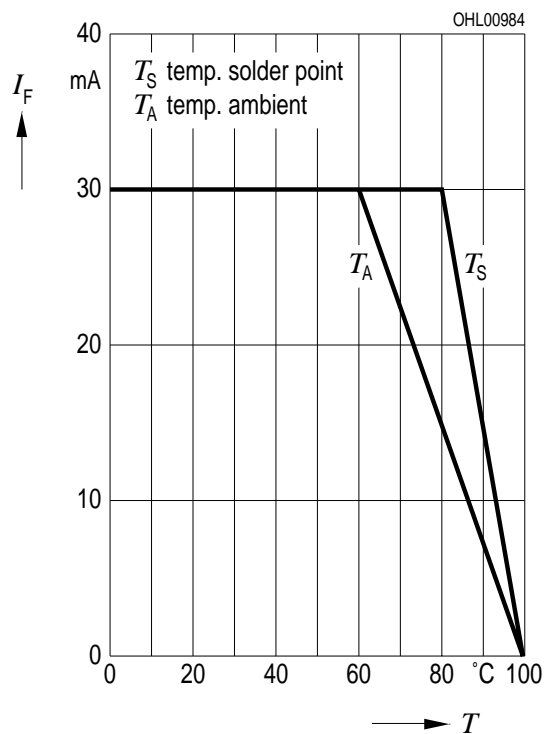
$T_A = 25\text{ °C}$



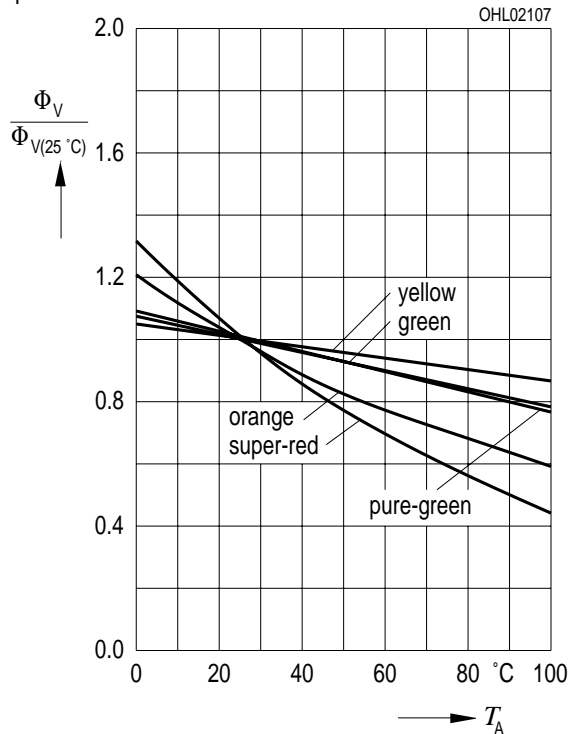
**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**  
**LS, LO, LY, LG**



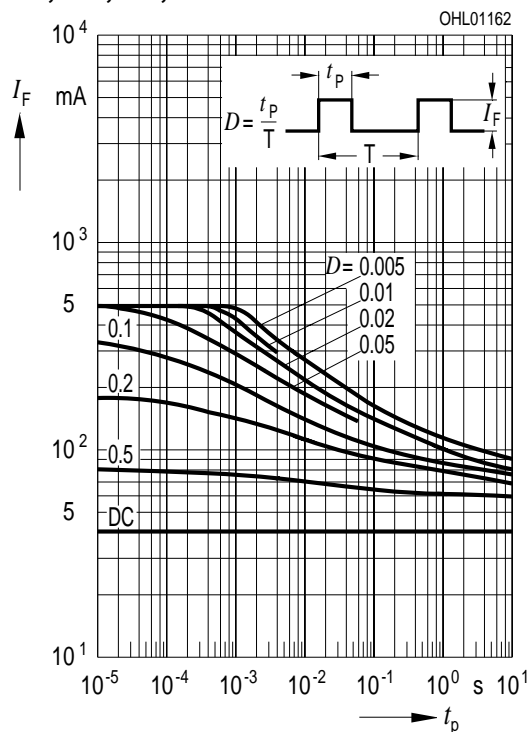
**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**  
**LP**



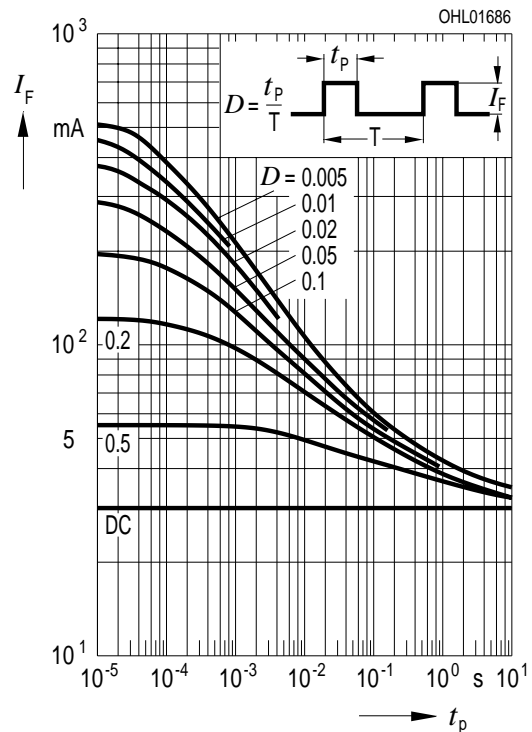
Relativer Lichtstrom  $\Phi_V / \Phi_{V(25^\circ\text{C})} = f(T_A)$   
 Relative Luminous Flux  
 $I_F = 15 \text{ mA}$



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



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

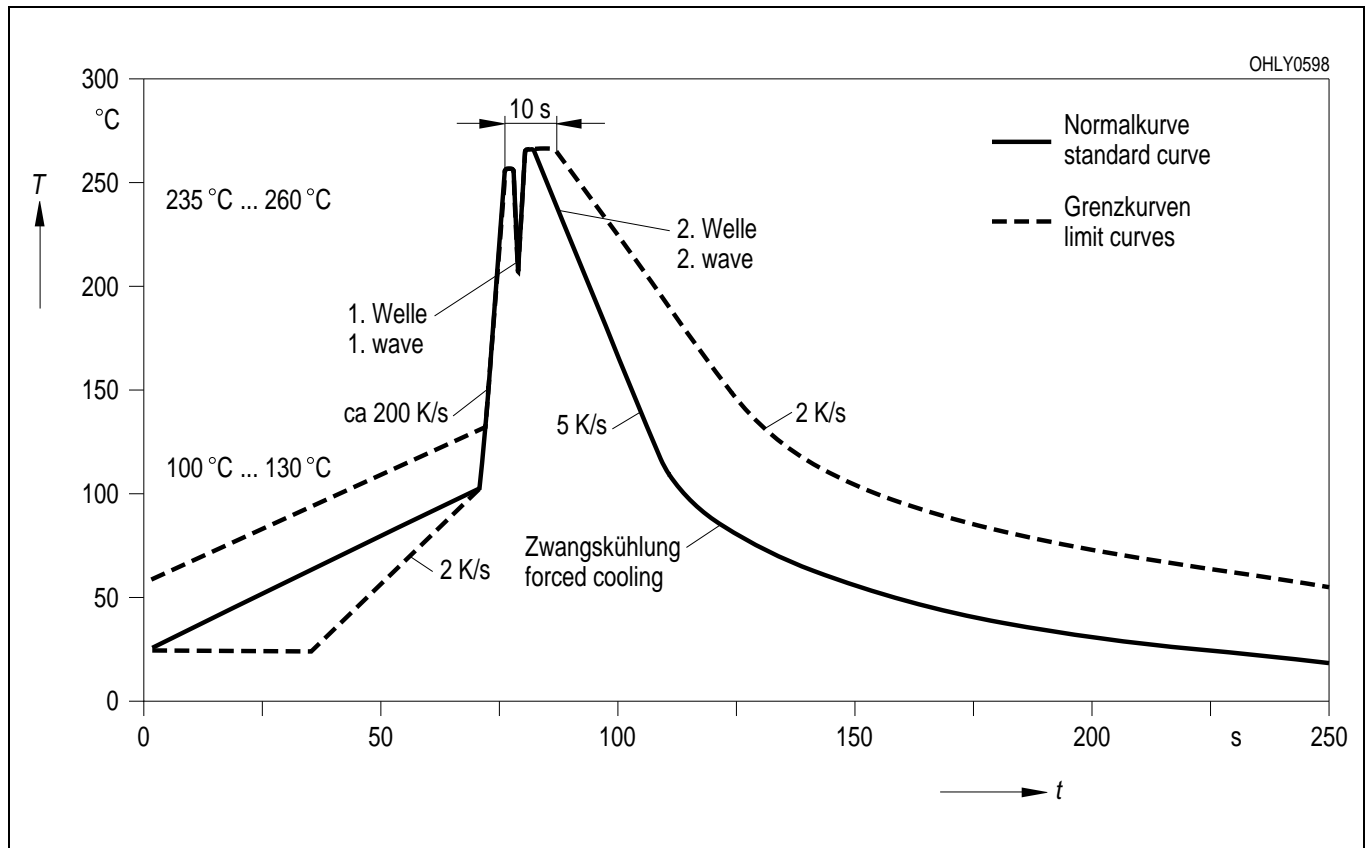




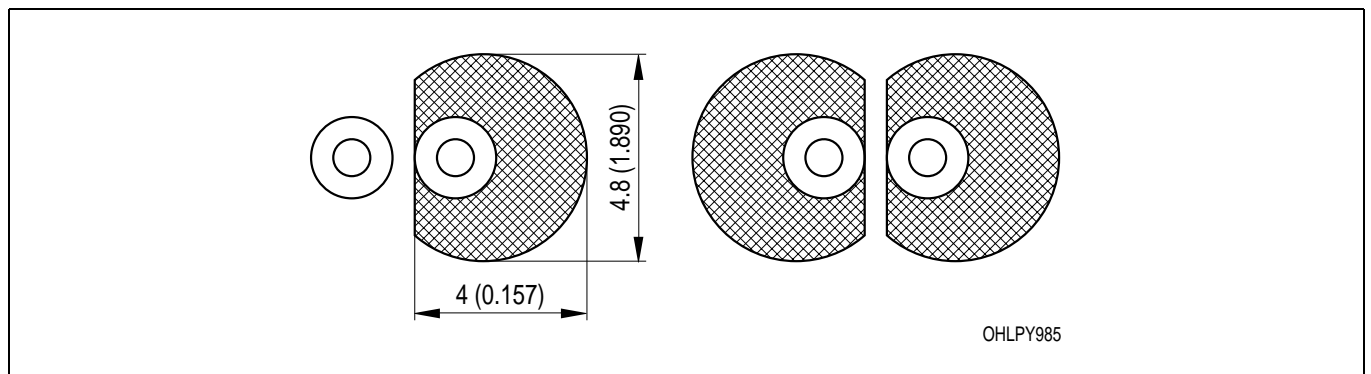


**Lötbedingungen**  
**Soldering Conditions**

**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: 2003-09-03		Date of change
Previous Version: 2003-07-08		
Page	Subjects (major changes since last revision)	
3	thermal resistance (footnote)	
4	value (wavelength orange)	
10	annotations	2002-07-23
5	luminous intensity groups	2002-08-01
3, 4	value (reverse voltage from 5 V to 12 V)	2002-09-18
7	diagram relative luminous flux	2003-07-08
2	low yield groups deleted	2003-09-03

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