

# Hyper SIDELED® Hyper-Bright LED

LB A673, LV A673, LT A673



## Besondere Merkmale

- **Gehäusetypp:** weißes SMT Gehäuse
- **Besonderheit des Bauteils:** Abstrahlung parallel zur Platine, deshalb ideal zur Einkopplung in Lichtleiter
- **Wellenlänge:** 470 nm (blau), 505 nm (verde), 528 nm (true green)
- **Abstrahlwinkel:** Lambertischer Strahler (120°)
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 2 lm/W (blau), 6 lm/W (verde), 8 lm/W (true green)
- **Gruppierungsparameter:** Lichtstärke, Wellenlänge
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten und Wellenlöten (TTW)
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 12 mm Gurt mit 2000/Rolle, ø330 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

## Anwendungen

- Einkopplung in Lichtleiter
- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u. ä.)
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u.ä.)
- Signal- und Symbolleuchten

## Features

- **package:** white SMT package
- **feature of the device:** radiation direction parallel to PCB, so an ideal LED for coupling in light guides
- **wavelength:** 470 nm (blue), 505 nm (verde), 528 nm (true green)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaN
- **optical efficiency:** 2 lm/W (blue), 6 lm/W (verde), 8 lm/W (true green)
- **grouping parameter:** luminous intensity, wavelength
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 12 mm tape with 2000/reel, ø330 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

## Applications

- coupling into light guides
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- marker lights (e.g. steps, exit ways, etc.)
- signal and symbol luminaire

Typ	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 20 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 20 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Ordering Code
LB A673-N1P1-35 LB A673-P1Q2-35	blue	colorless clear	28.0 ... 56.0 45.0 ... 112.0	120 (typ.) 230 (typ.)	Q65110A0539 Q65110A0540
■ LV A673-Q1R1-35 ■ LV A673-R1S2-35	verde	colorless clear	71.0 ... 140.0 112.0 ... 280.0	310 (typ.) 560 (typ.)	Q62703Q4846 Q62703Q4892
LT A673-Q2R2-35 LT A673-R2T1-35	true green	colorless clear	90.0 ... 180.0 140.0 ... 355.0	390 (typ.) 700 (typ.)	Q62703Q4852 Q62703Q4896

■ Nicht für Neuentwicklungen / Not for New Designs

Anm.: -35 gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)

*Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe, die aus nur 3 bzw. 4 Halbgruppen besteht. Einzelne Halbgruppen sind nicht erhältlich.  
In einer Verpackungseinheit / Gurt ist immer nur eine Halbgruppe enthalten.*

Note: -35 Total color tolerance range, delivery in single groups (please see **page 5**)

*The standard shipping format for serial types includes a lower or upper family group of 3 or 4 individual groups. Individual half groups are not available.  
No packing unit / tape ever contains more than one luminous intensity half group.*

**Grenzwerte**  
**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Werte Values		Einheit Unit
		LB	LV, LT	
Betriebstemperatur Operating temperature range	$T_{op}$	- 40 ... + 100		°C
Lagertemperatur Storage temperature range	$T_{stg}$	- 40 ... + 100		°C
Sperrschichttemperatur Junction temperature	$T_j$	+ 110	+125	°C
Durchlassstrom Forward current	$I_F$	20		mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	$I_{FM}$	200	250	mA
Sperrspannung <sup>1)</sup> Reverse voltage	$V_R$	5		V
Leistungsaufnahme Power consumption $T_A \leq 25 \text{ °C}$	$P_{tot}$	80		mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	430		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 $\geq 16 \text{ mm}^2$ )	$R_{th JS}$	200		K/W

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

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

Bezeichnung Parameter	Symbol Symbol	Werte Values			Einheit Unit
		LB	LV	LT	
Wellenlänge des emittierten Lichtes Wavelength at peak emission $I_F = 20\text{ mA}$	(typ.) $\lambda_{\text{peak}}$	465	503	523	nm
Dominantwellenlänge <sup>1)</sup> Dominant wavelength $I_F = 20\text{ mA}$	(typ.) $\lambda_{\text{dom}}$	470 $\pm 6$	505 $\pm 7$	528 $\pm 9$	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 20\text{ mA}$	(typ.) $\Delta\lambda$	25	30	33	nm
Abstrahlwinkel bei 50 % $I_V$ (Vollwinkel) Viewing angle at 50 % $I_V$	(typ.) $2\phi$	120	120	120	Grad deg.
Durchlassspannung <sup>2)</sup> Forward voltage $I_F = 20\text{ mA}$	(min.) $V_F$ (typ.) $V_F$ (max.) $V_F$	2.9 3.5 3.9	2.9 3.3 3.9	2.9 3.3 3.9	V V V
Sperrstrom Reverse current $V_R = 5\text{ V}$	(typ.) $I_R$ (max.) $I_R$	0.01 10	0.01 10	0.01 10	$\mu\text{A}$ $\mu\text{A}$
Temperaturkoeffizient von $\lambda_{\text{peak}}$ Temperature coefficient of $\lambda_{\text{peak}}$ $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.) $TC_{\lambda_{\text{peak}}}$	0.04	0.03	0.04	nm/K
Temperaturkoeffizient von $\lambda_{\text{dom}}$ Temperature coefficient of $\lambda_{\text{dom}}$ $I_F = 20\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.) $TC_{\lambda_{\text{dom}}}$	0.02	0.02	0.03	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.) $TC_V$	-2.9	-3.2	-3.6	mV/K
Optischer Wirkungsgrad Optical efficiency $I_F = 20\text{ mA}$	(typ.) $\eta_{\text{opt}}$	2	6	8	lm/W

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

<sup>2)</sup> Durchlassspannungsguppen werden mit einer Stromeinprägungsdauer von 1 ms und einer Genauigkeit von  $\pm 0,05\text{ V}$  ermittelt.  
Forward voltage groups are tested at a current pulse duration of 1 ms and a tolerance of  $\pm 0.05\text{ V}$ .

1) Wellenlängengruppen / Wavelength groups

Gruppe Group	blue		verde		true green		Einheit Unit
	min.	max.	min.	max.	min.	max.	
3	464	468	498	503	519	525	nm
4	468	472	503	507	525	531	nm
5	472	476	507	512	531	537	nm

Helligkeits-Gruppierungsschema  
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity $I_V$ (mcd)	Lichtstrom Luminous Flux $\Phi_V$ (mlm)
N1	28.0 ... 35.5	95 (typ.)
N2	35.5 ... 45.0	120 (typ.)
P1	45.0 ... 56.0	150 (typ.)
P2	56.0 ... 71.0	190 (typ.)
Q1	71.0 ... 90.0	240 (typ.)
Q2	90.0 ... 112.0	300 (typ.)
R1	112.0 ... 140.0	380 (typ.)
R2	140.0 ... 180.0	480 (typ.)
S1	180.0 ... 224.0	600 (typ.)
S2	224.0 ... 280.0	760 (typ.)
T1	280.0 ... 355.0	950 (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  $\pm 11\%$ .

Gruppenbezeichnung auf Etikett  
Group Name on Label

Beispiel: S2-3  
Example: S2-3

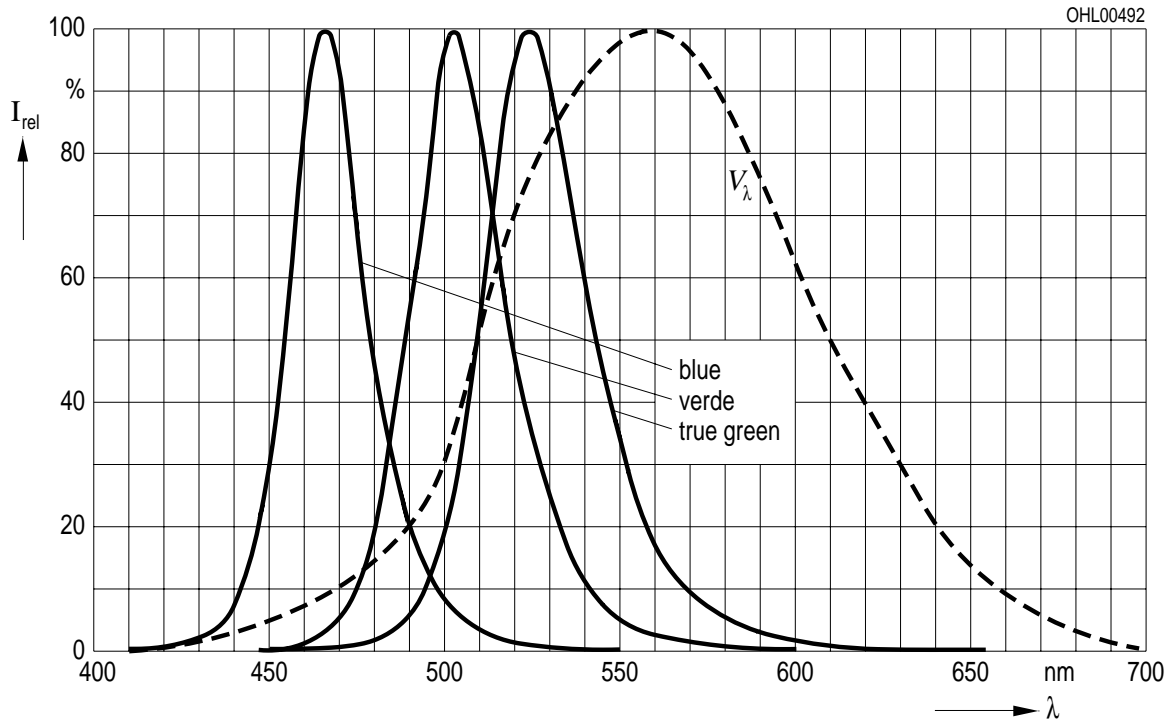
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
S	2	3

Relative spektrale Emission  $I_{rel} = f(\lambda)$ ,  $T_A = 25\text{ °C}$ ,  $I_F = 20\text{ mA}$

Relative Spectral Emission

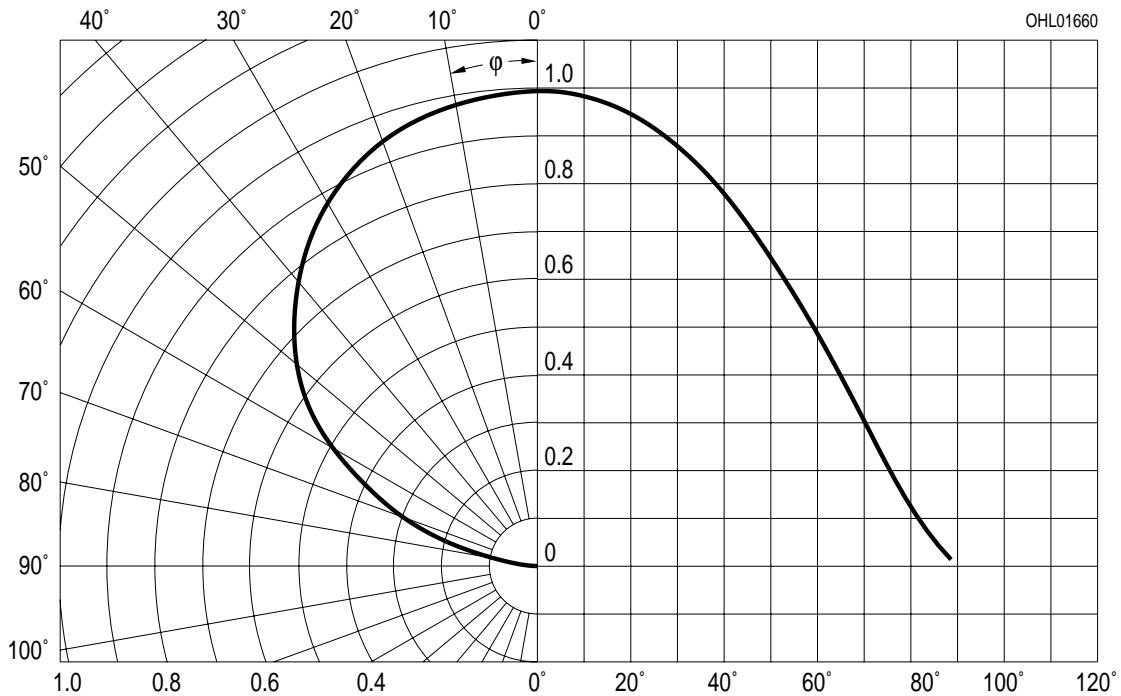
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



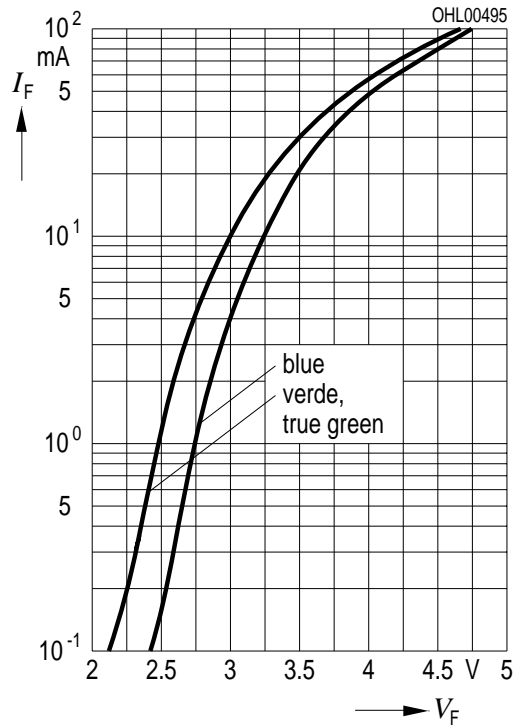
Abstrahlcharakteristik  $I_{rel} = f(\varphi)$

Radiation Characteristic



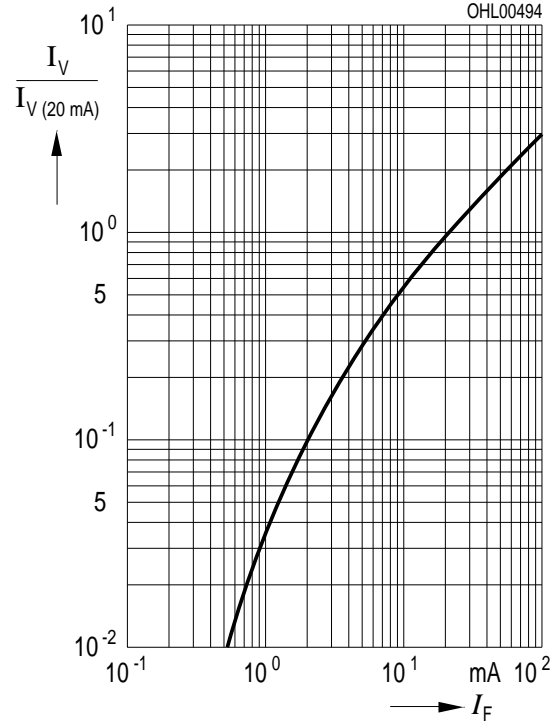
**Durchlassstrom  $I_F = f(V_F)$**   
**Forward Current**

$T_A = 25\text{ °C}$

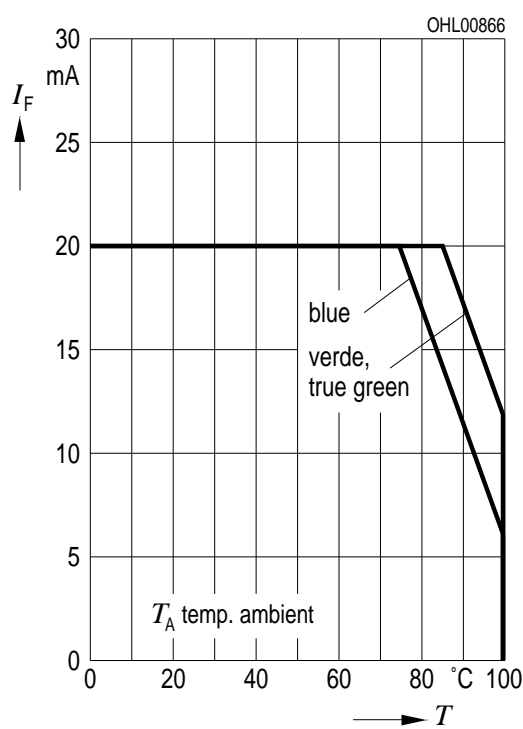


**Relative Lichtstärke  $I_V/I_{V(20\text{ mA})} = f(I_F)$**   
**Relative Luminous Intensity**

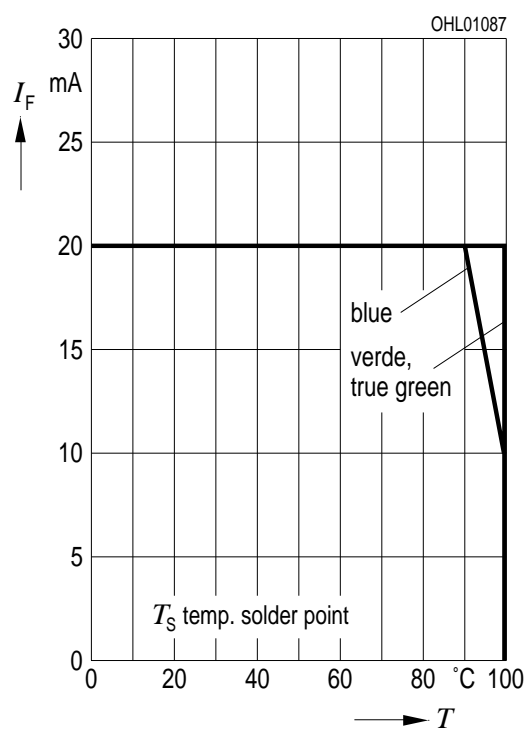
$T_A = 25\text{ °C}$



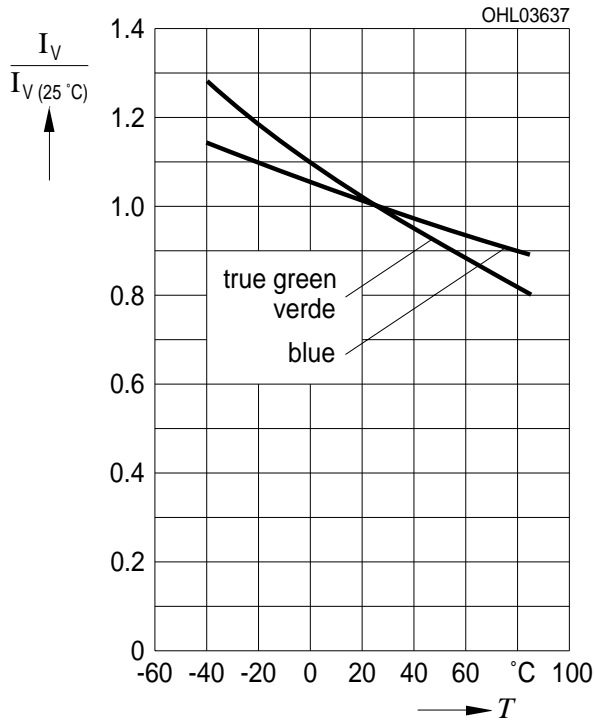
**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**



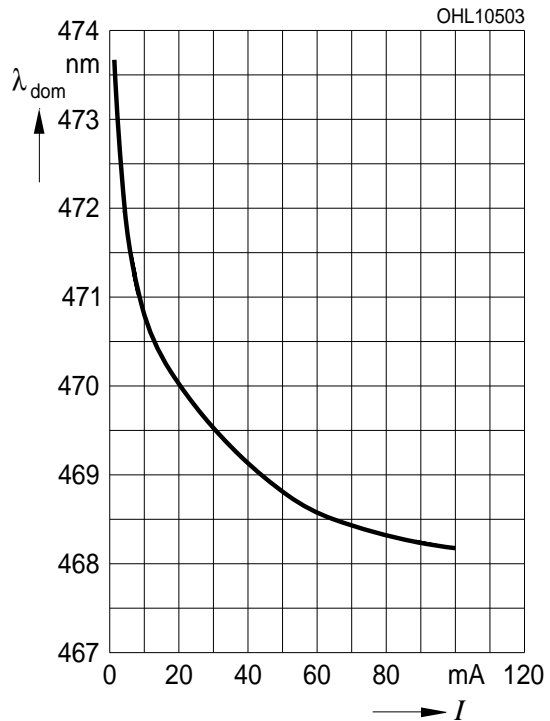
**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**   
**Max. Permissible Forward Current**



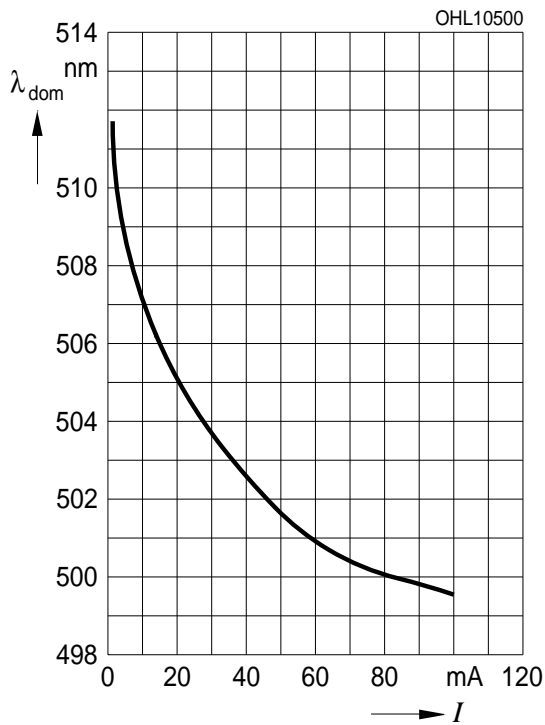
Relative Lichtstärke  $I_V/I_{V(25^\circ\text{C})} = f(T_A)$   
 Relative Luminous Intensity  
 $I_F = 20 \text{ mA}$



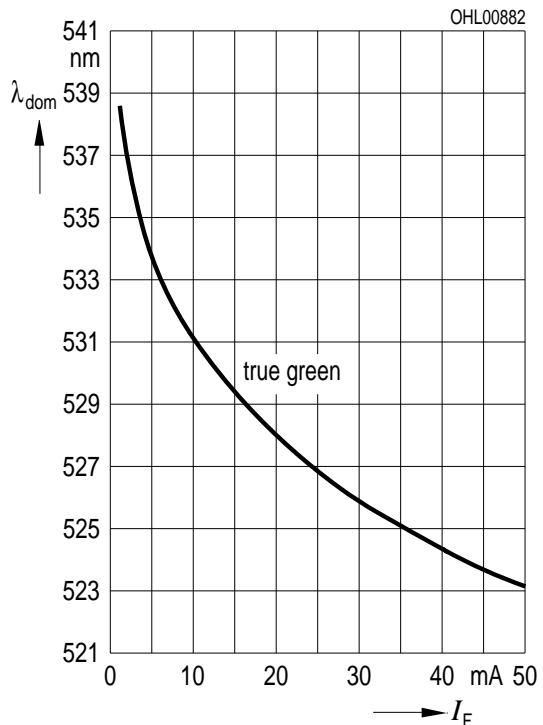
Dominante Wellenlänge  $\lambda_{\text{dom}} = f(I_F)$   
 Dominant Wavelength  
 LB,  $T_A = 25^\circ\text{C}$



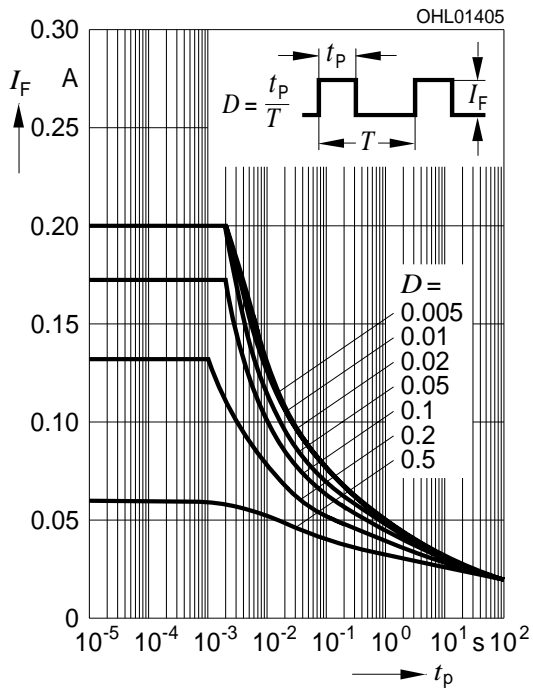
Dominante Wellenlänge  $\lambda_{\text{dom}} = f(I_F)$   
 Dominant Wavelength  
 LV,  $T_A = 25^\circ\text{C}$



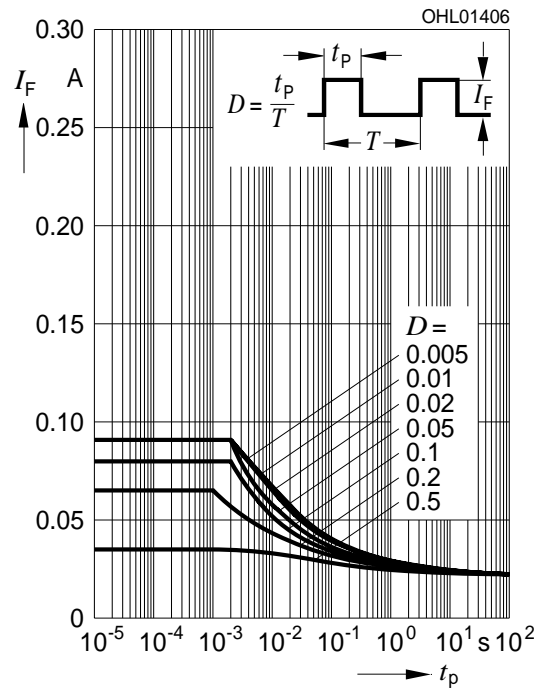
Dominante Wellenlänge  $\lambda_{\text{dom}} = f(I_F)$   
 Dominant Wavelength  
 LT,  $T_A = 25^\circ\text{C}$



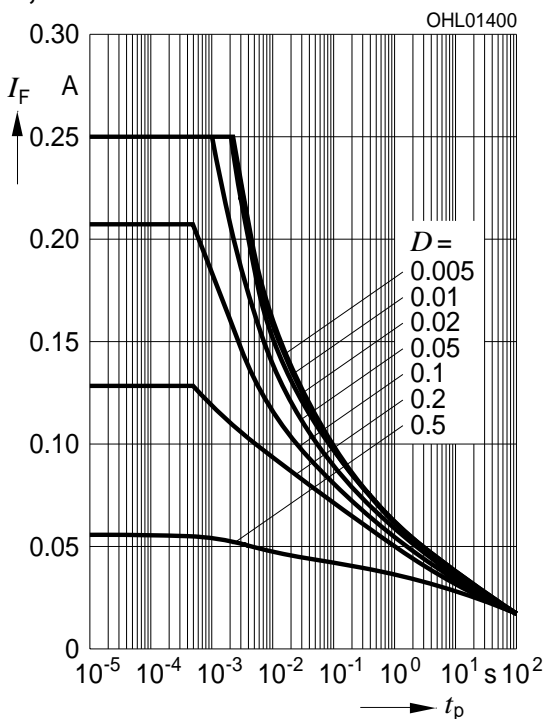
**Zulässige Impulsbelastbarkeit  $I_F = f(t_p)$**   
**Permissible Pulse Handling Capability**  
 Duty cycle  $D = \text{parameter}$ ,  $T_A = 25\text{ °C}$   
**LB**



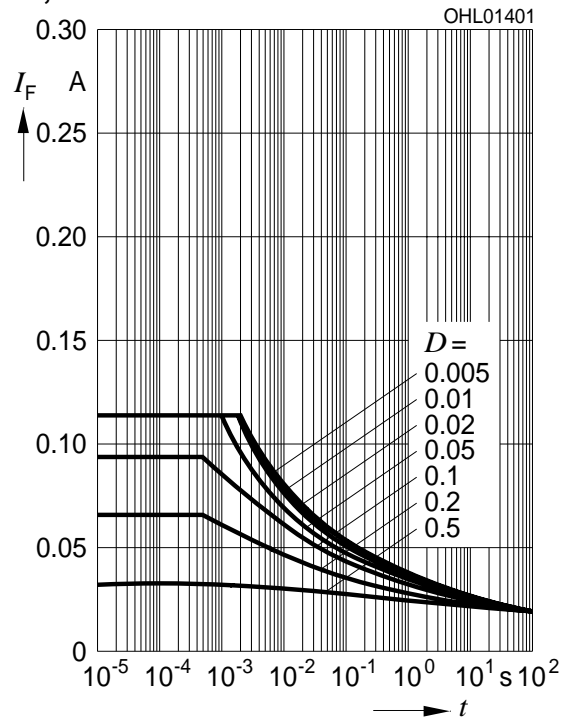
**Zulässige Impulsbelastbarkeit  $I_F = f(t_p)$**   
**Permissible Pulse Handling Capability**  
 Duty cycle  $D = \text{parameter}$ ,  $T_A = 85\text{ °C}$   
**LB**



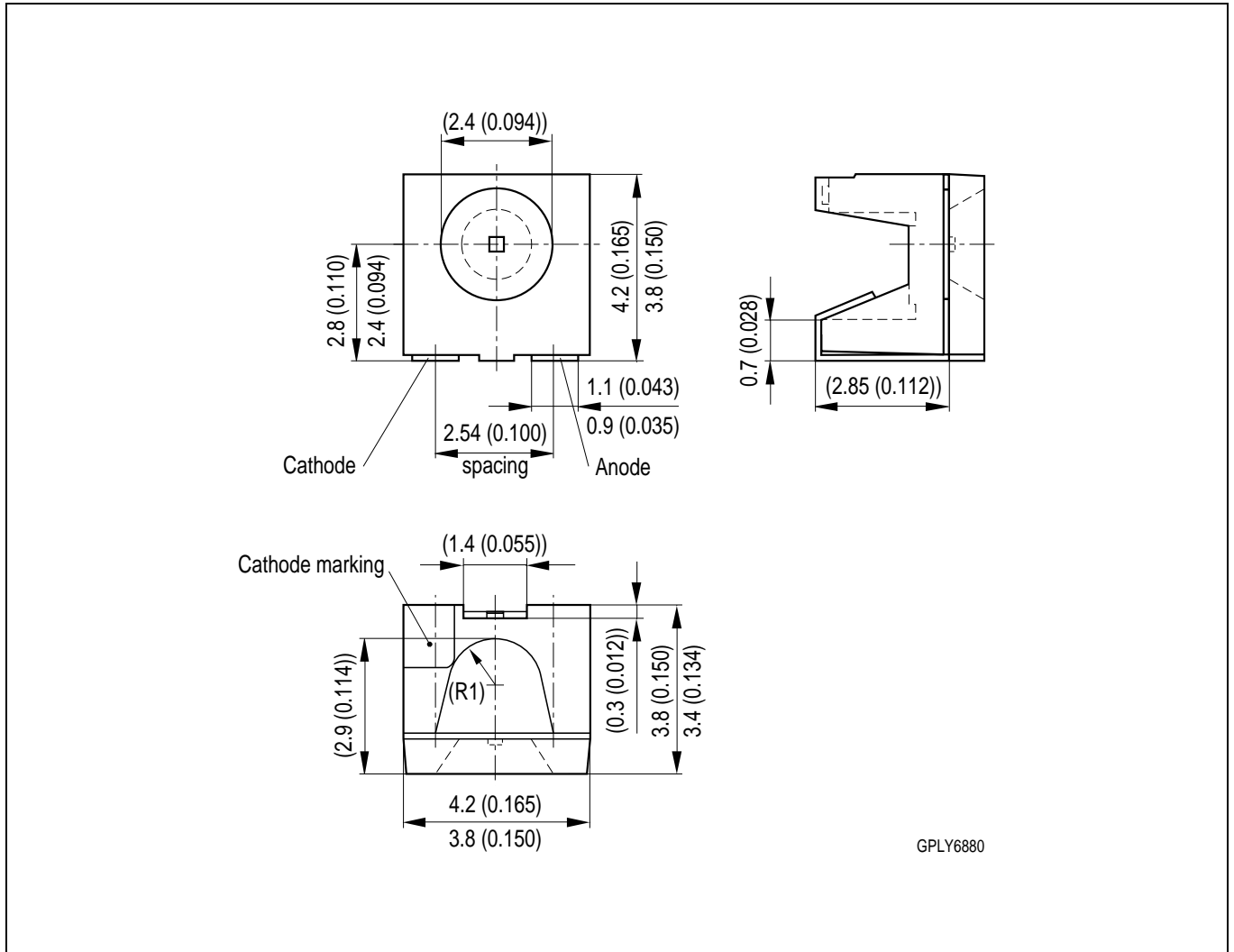
**Zulässige Impulsbelastbarkeit  $I_F = f(t_p)$**   
**Permissible Pulse Handling Capability**  
 Duty cycle  $D = \text{parameter}$ ,  $T_A = 25\text{ °C}$   
**LV, LT**



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



Maßzeichnung  
Package Outlines



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

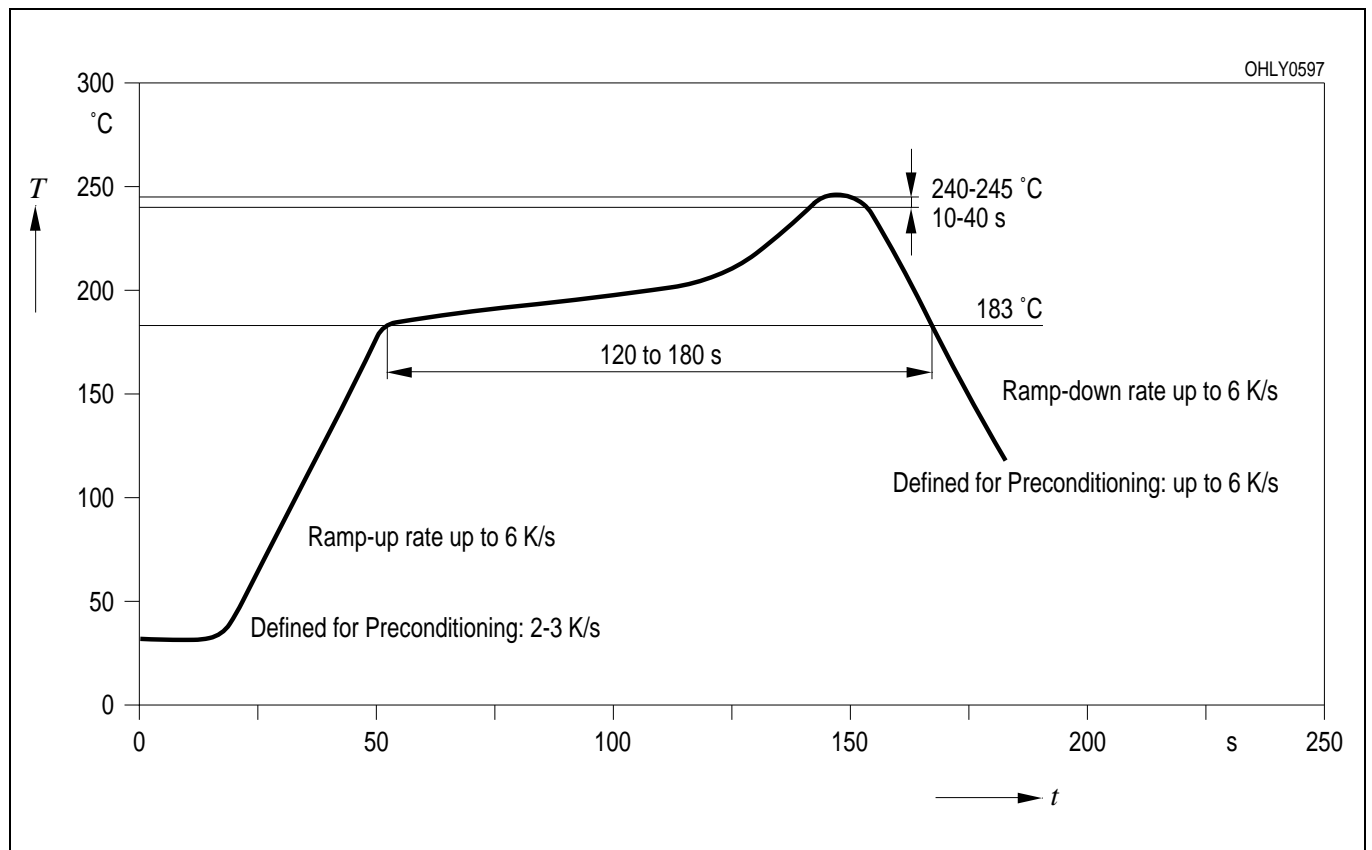
**Kathodenkennung:** abgeschrägte Ecke

**Cathode mark:** bevelled edge

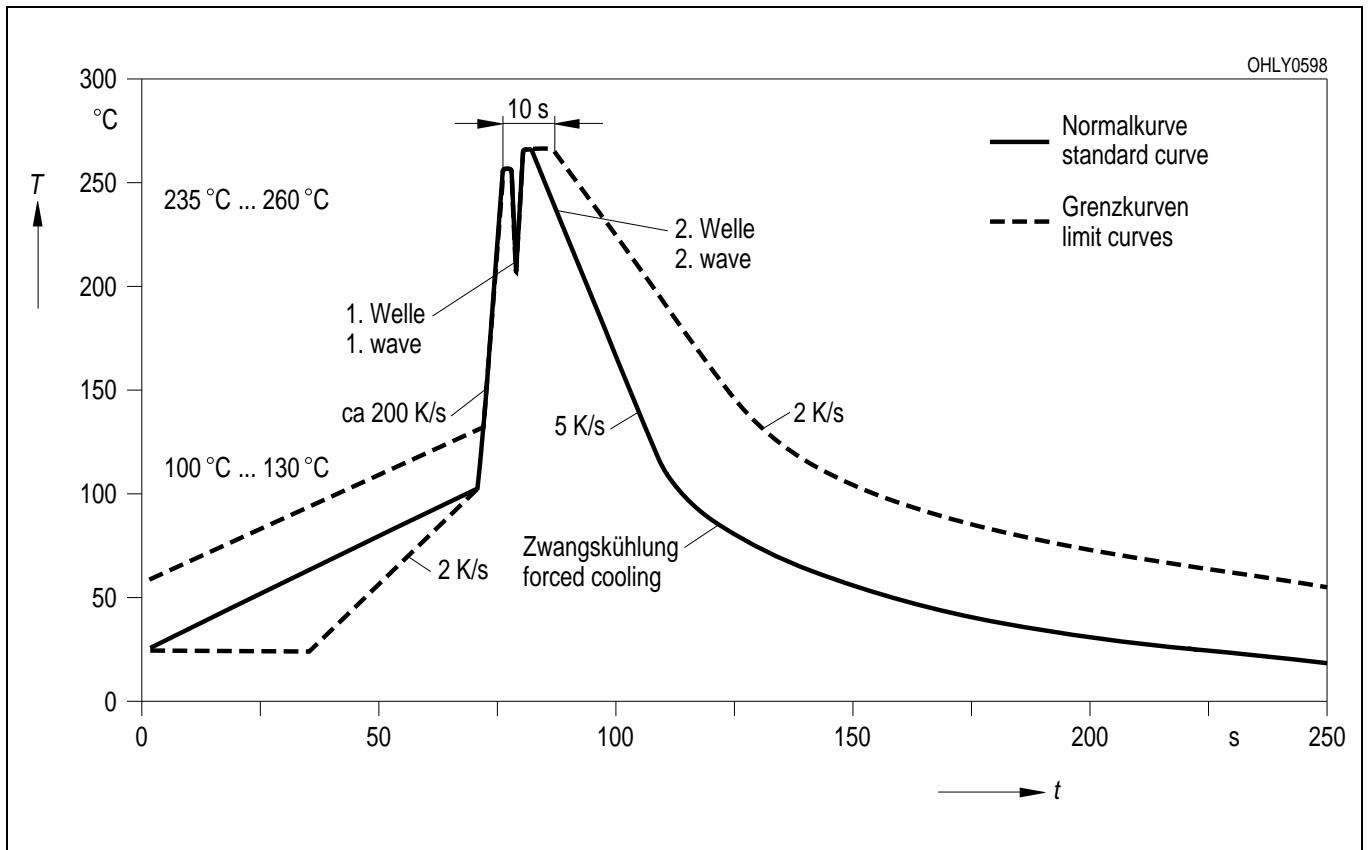
**Gewicht / Approx. weight:** 40 mg

**Lötbedingungen** Vorbehandlung nach JEDEC Level 2  
**Soldering Conditions** Preconditioning acc. to JEDEC Level 2

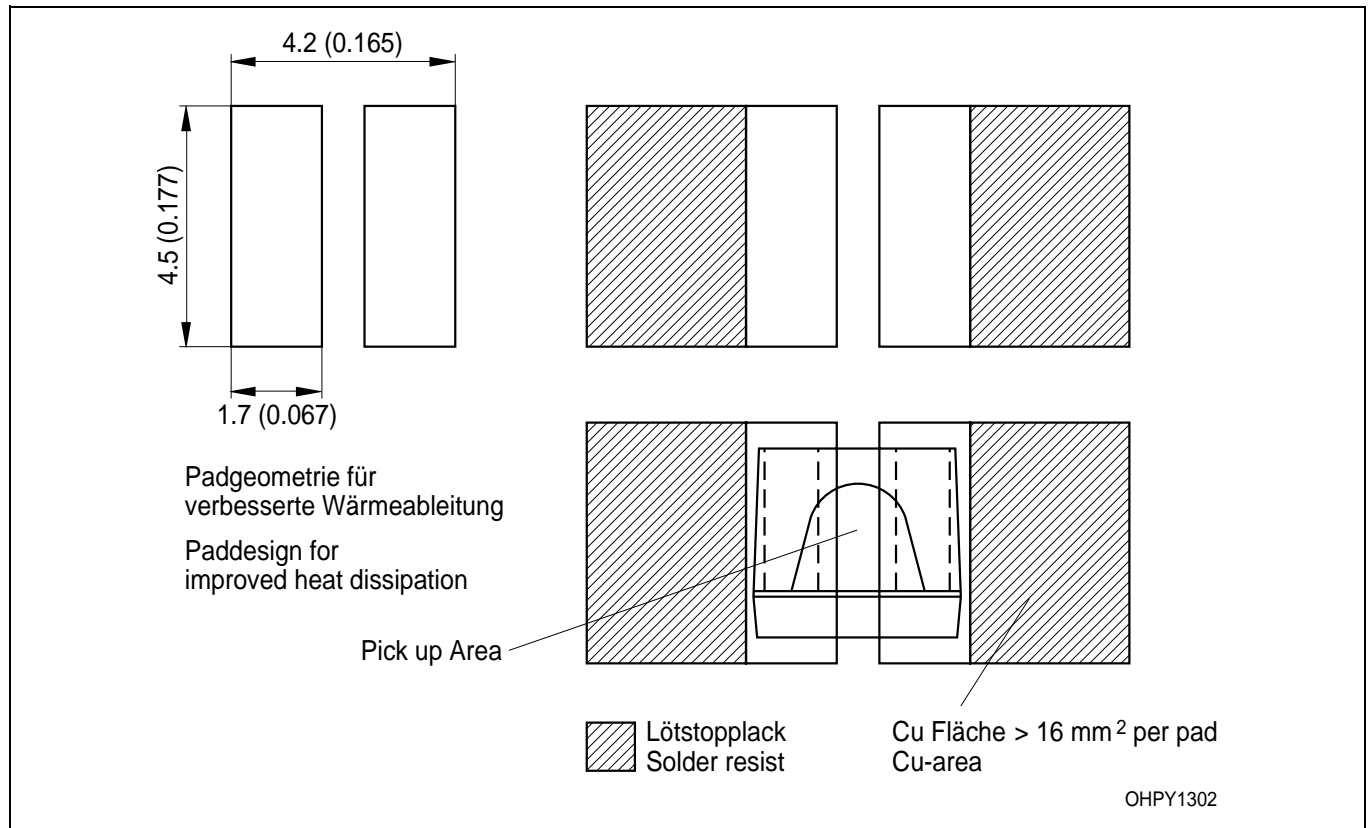
**IR-Reflow Lötprofil** (nach IPC 9501)  
**IR Reflow Soldering Profile** (acc. to IPC 9501)



**Wellenlötten (TTW)** (nach CECC 00802)  
**TTW Soldering** (acc. to CECC 00802)

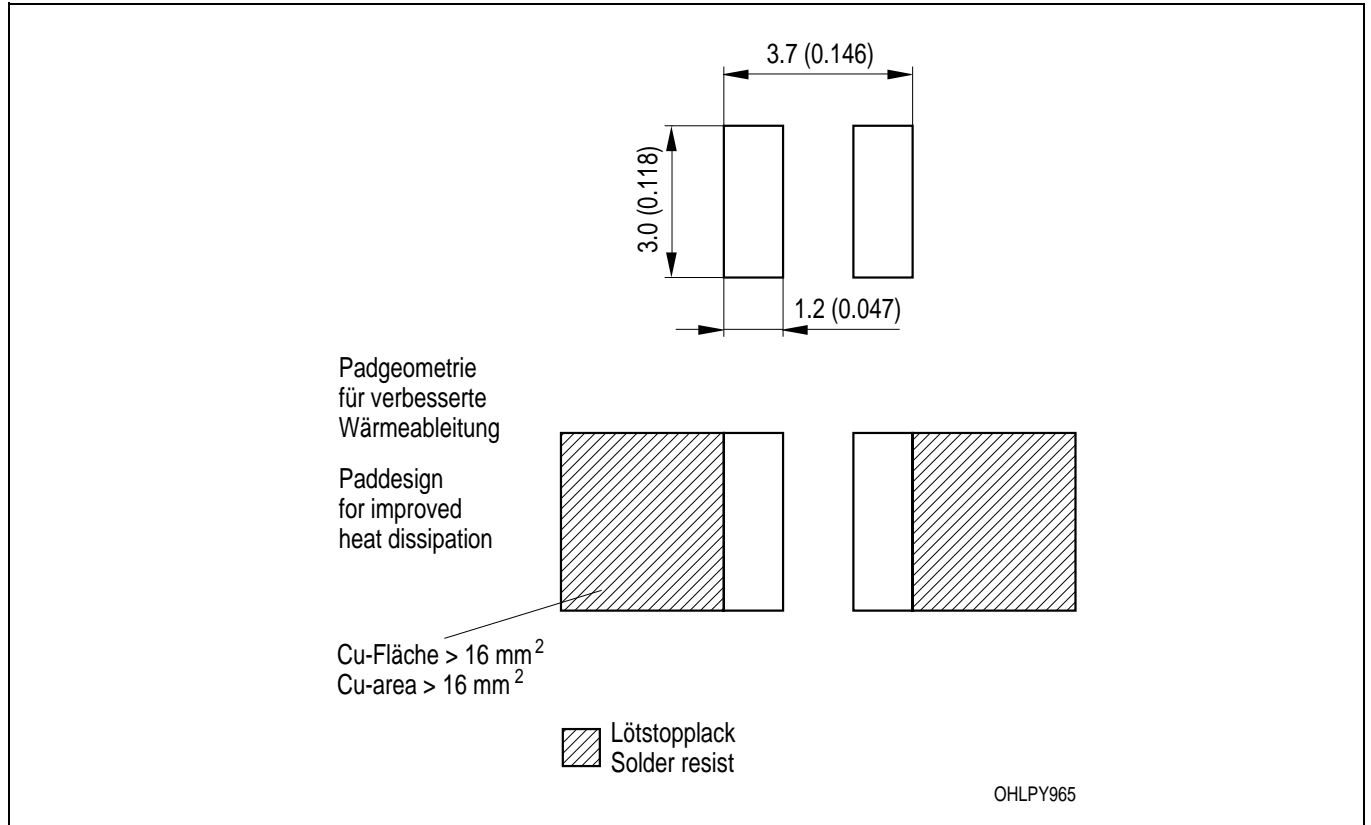


**Empfohlenes Lötpad Design** Wellenlöten (TTW)  
**Recommended Solder Pad** TTW Soldering



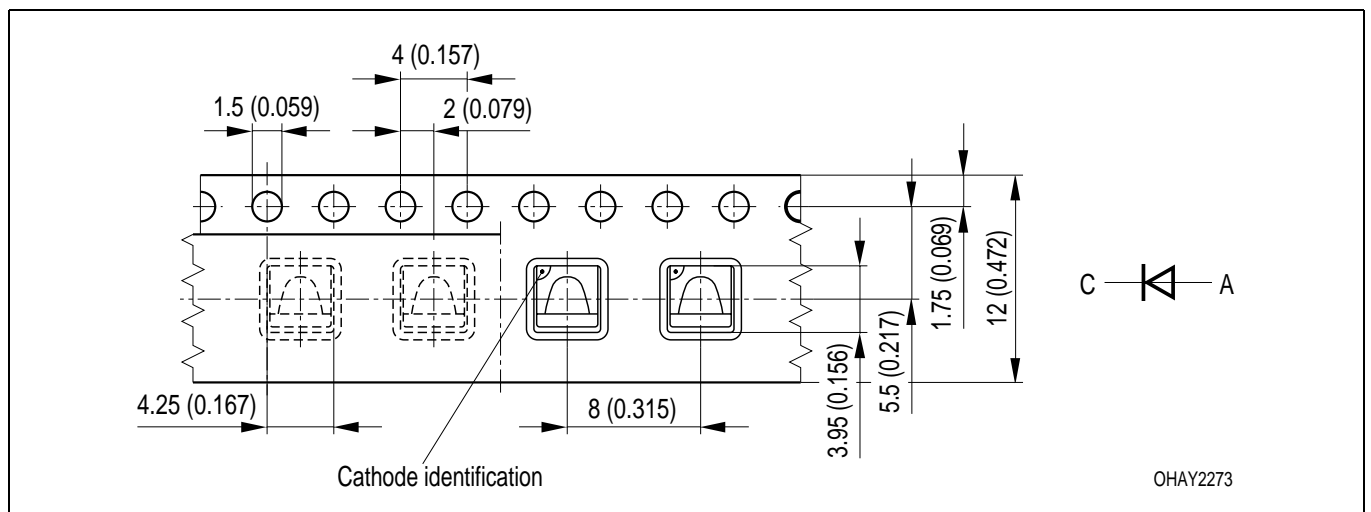
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

**Empfohlenes Lötpad Design** IR Reflow Lötten  
**Recommended Solder Pad** IR Reflow Soldering



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

**Gurtung / Polarität und Lage** Verpackungseinheit 2000/Rolle, ø330 mm  
**Method of Taping / Polarity and Orientation** Packing unit 2000/reel, ø330 mm



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

Revision History: 2003-03-11		Date of change
Previous Version: 2002-08-21		
Page	Subjects (major changes since last revision)	
13	recommended solder pad (TTW soldering)	
4	value (forward voltage)	
3	power consumption from 85 mW to 80 mW	
8	new diagram for luminous intensity $f(T_A)$ from OHL00870 to OHL03637	
5	wavelength groups	
2	wavelength grouping for blue, true green and verde	
14	annotations	2002-07-23
13	recommended solder pad (IR reflow soldering)	2002-08-01
3	reverse voltage (footnote)	2002-08-21
2	new luminous intensity groups for LB A673	2003-03-11

**Published by OSRAM Opto Semiconductors GmbH**  
**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. 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 <sup>1</sup> may only be used in life-support devices or systems <sup>2</sup> with the express written approval of OSRAM OS.

<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.