

Power TOPLED® with Lens Hyper-Bright LED

LB E633, LV E633, LT E633



Abgekündigt nach PD_078_02 - werden durch
LB_LT_LV E63C ersetzt werden
Obsolete acc. to PD_078_02 - will be replaced by
LB_LT_LV E63C

Besondere Merkmale

- **Gehäusotyp:** weißes P-LCC-4 Gehäuse mit Linse, farbloser klarer Verguss
- **Besonderheit des Bauteils:** mehr Licht durch engen Abstrahlwinkel
- **Wellenlänge:** 469 nm (blau), 503 nm (verde), 525 nm (true green)
- **Abstrahlwinkel:** 30°
- **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 JESD22-A114-B

Anwendungen

- Ampelanwendung
- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung)
- Innenbeleuchtung im Automobilbereich (z.B. Instrumentenbeleuchtung, u. ä.)
- Ersatz von Kleinst-Glühlampen
- Markierungsbeleuchtung (z.B. Stufen, Fluchtwege, u. ä.)
- Signal- und Symboleuchten
- Scanner

Features

- **package:** white P-LCC-4 package with lens, colorless clear
- **feature of the device:** more brightness due to narrow viewing angle
- **wavelength:** 469 nm (blue), 503 nm (verde), 525 nm (true green)
- **viewing angle:** 30°
- **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 JESD22-A114-B

Applications

- traffic lights
- backlighting (LCD, switches, keys, displays, illuminated advertising)
- interior automotive lighting (e.g. dashboard backlighting, etc.)
- substitution of micro incandescent lamps
- marker lights (e.g. steps, exit ways, etc.)
- signal and symbol luminaire
- scanners

Typ	Emissions- farbe	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Luminous Intensity $I_F = 30 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 30 \text{ mA}$ $\Phi_V \text{ (lm)}$	Ordering Code
■ LB E633-Q1R1-1 ■ LB E633-R1S2-1	blue	71 ... 140 112 ... 280	120 (typ.) 220 (typ.)	on request
■ LV E633-U1V1-1 ■ LV E633-V1AB-1	verde	450 ... 900 710 ...1800	390 (typ.) 700 (typ.)	on request
■ LT E633-U1V1-1 ■ LT E633-V1AB-1	true green	450 ... 900 710 ...1800	390 (typ.) 700 (typ.)	on request

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 $\pm 11 \%$.

- Abgekündigt nach PD_078_02 - werden durch LB_LT_LV E63C ersetzt werden
 Obsolete acc. to PD_078_02 - will be replaced by LB_LT_LV E63C
 Letzte Bestellung / Last Order: 30.09.2003
 Letzte Lieferung / Last Delivery: 31.03.2004

Anm.: -1 gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)

Die Standardlieferform von Serientypen beinhaltet eine untere bzw. eine obere Familiengruppe. Diese besteht aus 3 bzw. 4 Helligkeitshalbgruppen. Einzelne Helligkeitshalbgruppen können nicht bestellt werden.

In einer Verpackungseinheit / Gurt ist immer nur eine Helligkeitshalbgruppe enthalten.

Note: -1 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 luminous intensity half groups. Individual luminous intensity half groups cannot be ordered.

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 ($T_A=25^\circ\text{C}$)	I_F	30		mA
Stoßstrom Surge current $t \leq 10 \mu\text{s}$, $D = 0.005$, $T_A=25^\circ\text{C}$	I_{FM}	200	250	mA
Sperrspannung Reverse voltage ($T_A=25^\circ\text{C}$)	V_R	5		V
Leistungsaufnahme Power consumption ($T_A=25^\circ\text{C}$)	P_{tot}	120		mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	300		K/W
Sperrschicht/Lötpad Junction/solder point ¹⁾	$R_{th JS}$	130		K/W

¹⁾ Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$)
 mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$)

Kennwerte ($T_A = 25^\circ\text{C}$)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Werte Values			Einheit Unit
		LB	LV	LT	
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 30\text{ mA}$	λ_{peak}	464	501	520	nm
Dominantwellenlänge ¹⁾ Dominant wavelength $I_F = 30\text{ mA}$	λ_{dom}	469 ± 6	503 ± 6	525 ± 9	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 30\text{ mA}$	$\Delta\lambda$	25	30	33	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	2ϕ	30	30	30	Grad deg.
Durchlassspannung ²⁾ Forward voltage $I_F = 30\text{ mA}$	(min.) V_F (typ.) V_F (max.) V_F	3.1 3.7 4.0	3.1 3.5 4.0	3.1 3.5 4.0	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	μA μA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} $I_F = 30\text{ mA}$; $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	(typ.) $TC_{\lambda_{\text{peak}}}$	0.04	0.03	0.04	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} $I_F = 30\text{ mA}$; $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	(typ.) $TC_{\lambda_{\text{dom}}}$	0.03	0.04	0.03	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 30\text{ mA}$; $-10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	(typ.) TC_V	- 4.5	- 3.6	- 3.6	mV/K
Optischer Wirkungsgrad Optical efficiency $I_F = 30\text{ mA}$	(typ.) η_{opt}	2	6	8	lm/W

¹⁾ Wellenlängengruppen werden mit einer Stromeinprägedauer 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 $\pm 1\text{ nm}$.

²⁾ Durchlassspannungsgruppen werden mit einer Stromeinprägedauer 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 für Dominantwellenlänge
Wavelength groups for dominant wavelength

Gruppe Group	blue		verde		true green		Einheit Unit
	min.	max.	min.	max.	min.	max.	
3	463	467	497	501	516	522	nm
4	467	471	501	505	522	528	nm
5	471	475	505	509	528	534	nm

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_v (mcd)	Lichtstrom Luminous Flux Φ_v (mlm)
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.)
T2	355.0 ... 450.0	1200 (typ.)
U1	450.0 ... 560.0	1500 (typ.)
U2	560.0 ... 710.0	1900 (typ.)
V1	710.0 ... 900.0	2400 (typ.)
V2	900.0 ... 1120.0	3000 (typ.)
AA	1120.0 ... 1400.0	3700 (typ.)
AB	1400.0 ... 1800.0	4800 (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

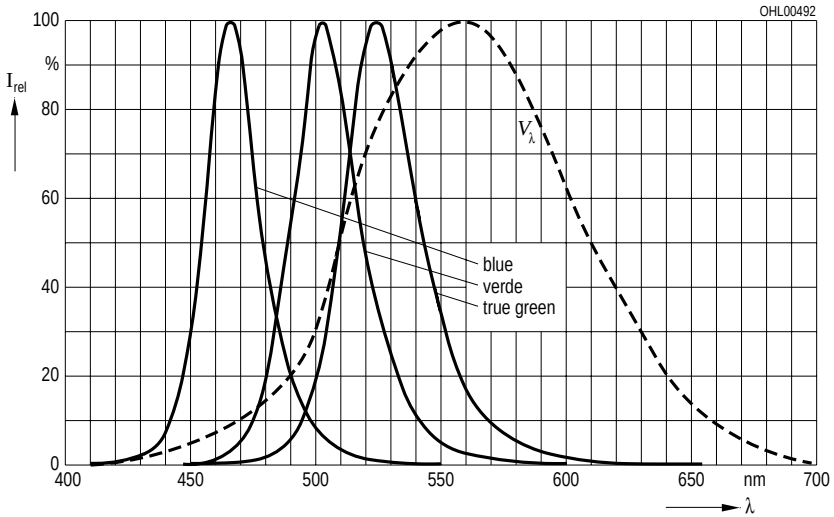
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
S	2	3

Relative spektrale Emission $I_{\text{rel}} = f(\lambda)$, $T_A = 25^\circ\text{C}$, $I_F = 30\text{ mA}$

Relative Spectral Emission

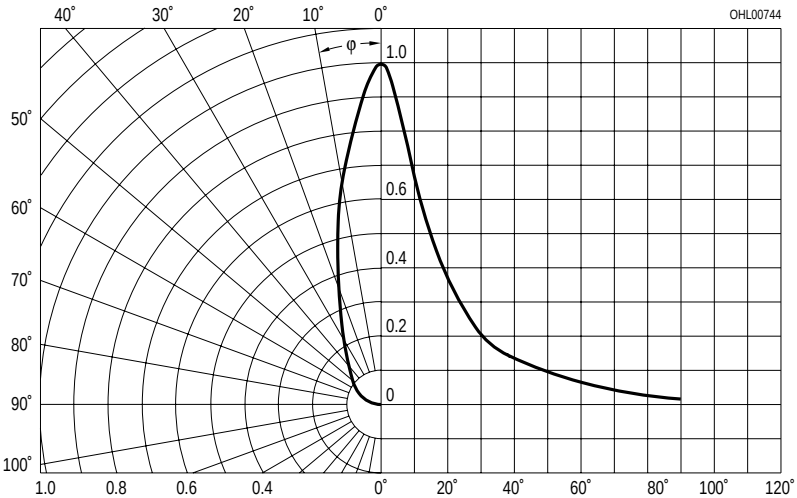
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



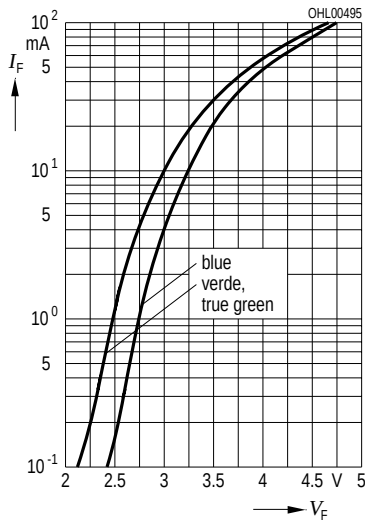
Abstrahlcharakteristik $I_{\text{rel}} = f(\varphi)$

Radiation Characteristic

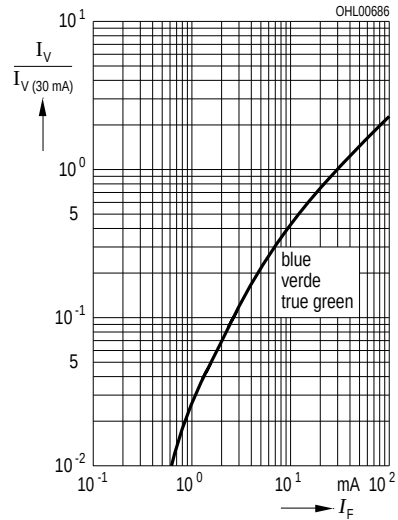


Durchlassstrom $I_F = f(V_F)$

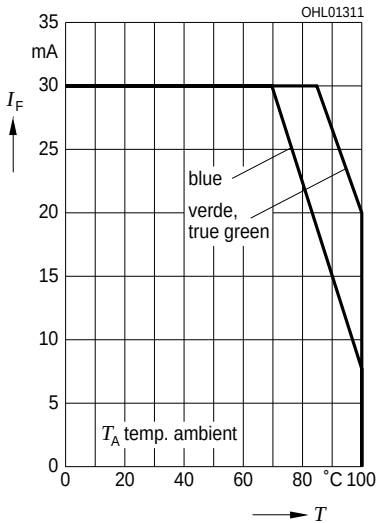
Forward Current

 $T_A = 25^\circ\text{C}$ Relative Lichtstärke $I_V/I_{V(30\text{ mA})} = f(I_F)$

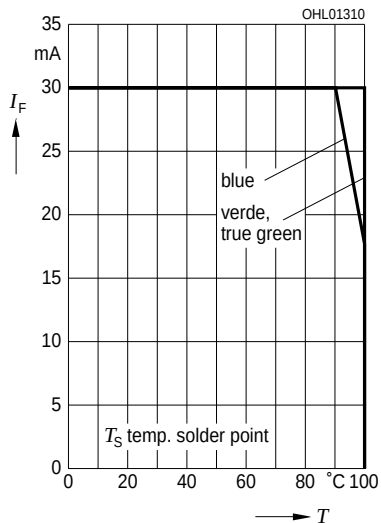
Relative Luminous Intensity

 $T_A = 25^\circ\text{C}$ Maximal zulässiger Durchlassstrom $I_F = f(T)$

Max. Permissible Forward Current

Maximal zulässiger Durchlassstrom $I_F = f(T)$

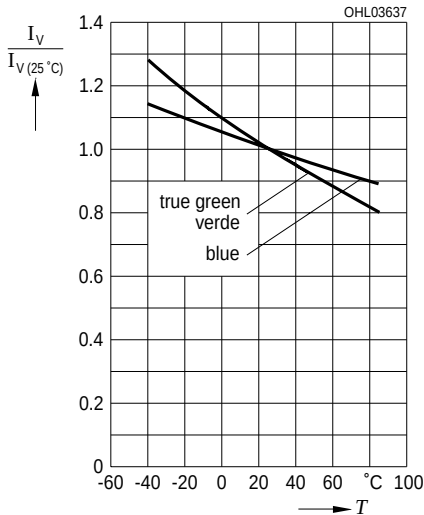
Max. Permissible Forward Current



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

Relative Luminous Intensity

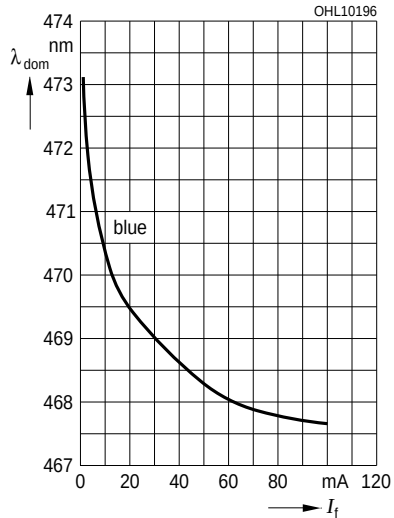
$I_F = 30 \text{ mA}$



Dominante Wellenlänge $\lambda_{\text{dom}} = f(I_F)$

Dominant Wavelength

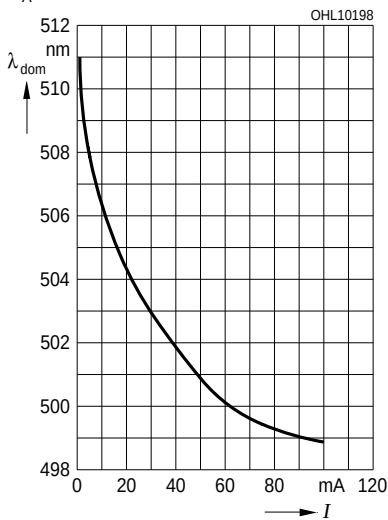
LB, $T_A = 25^\circ\text{C}$



Dominante Wellenlänge $\lambda_{\text{dom}} = f(I_F)$

Dominant Wavelength

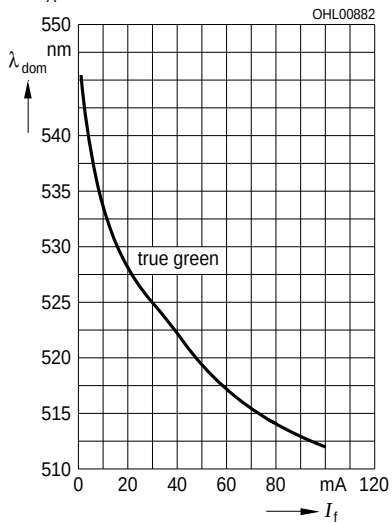
LV, $T_A = 25^\circ\text{C}$



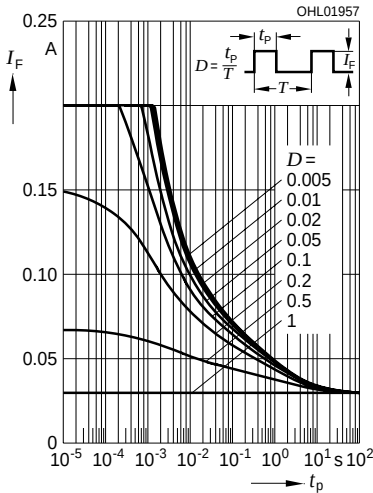
Dominante Wellenlänge $\lambda_{\text{dom}} = f(I_F)$

Dominant Wavelength

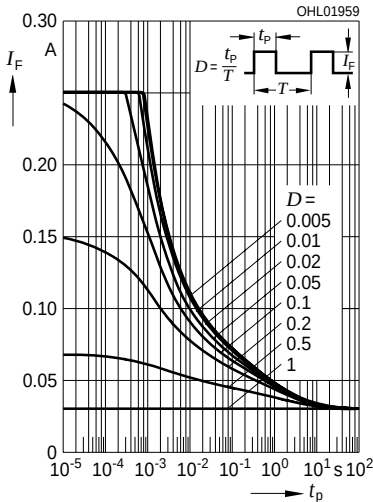
LT, $T_A = 25^\circ\text{C}$



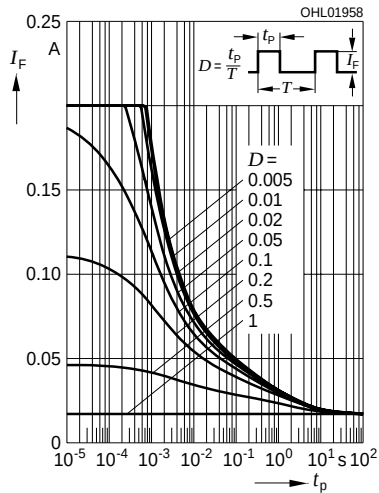
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D = \text{parameter}$, $T_A = 25^\circ\text{C}$
LB



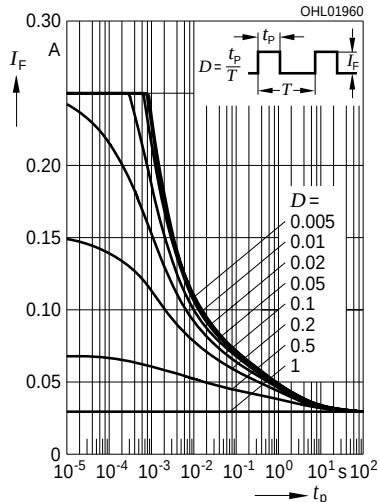
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D = \text{parameter}$, $T_A = 25^\circ\text{C}$
LV, LT



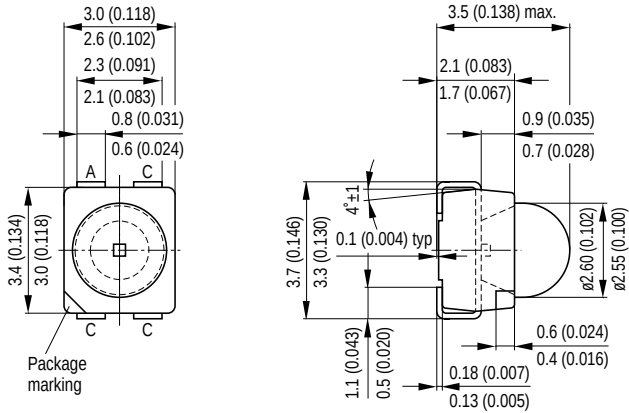
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D = \text{parameter}$, $T_A = 85^\circ\text{C}$
LB



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



Maßzeichnung Package Outlines



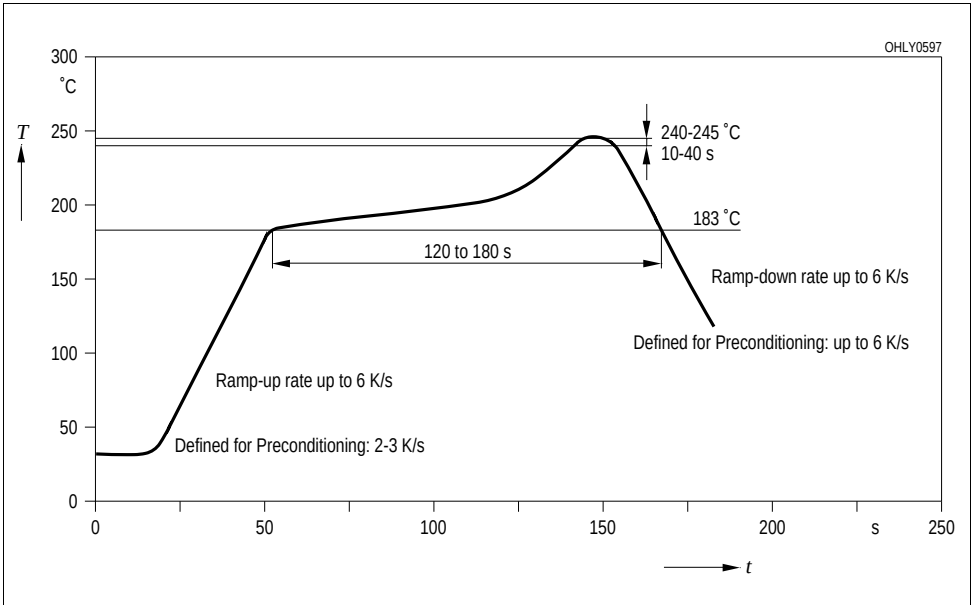
GPLY7000

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

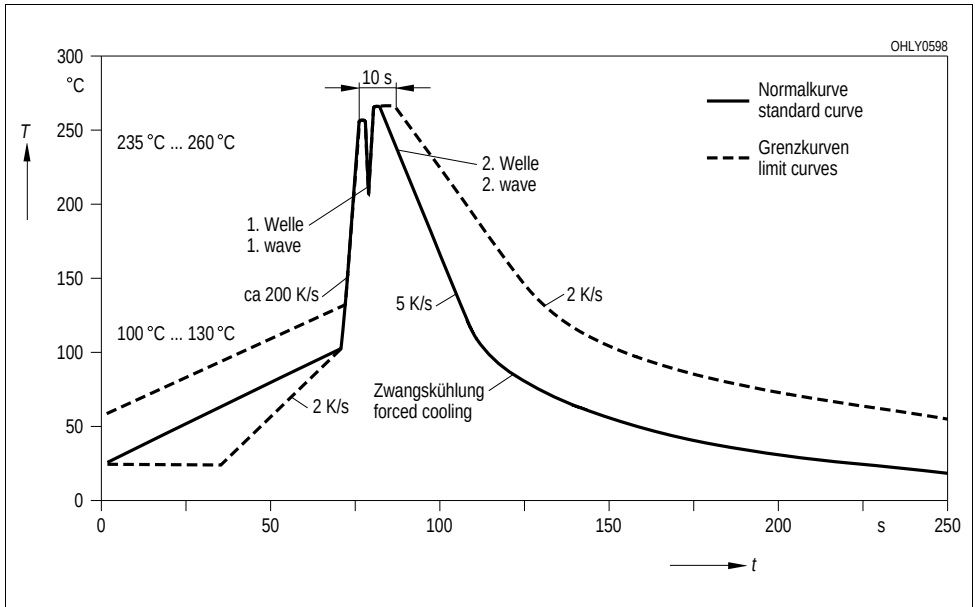
Gewicht / Approx. weight: 38 mg

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)



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

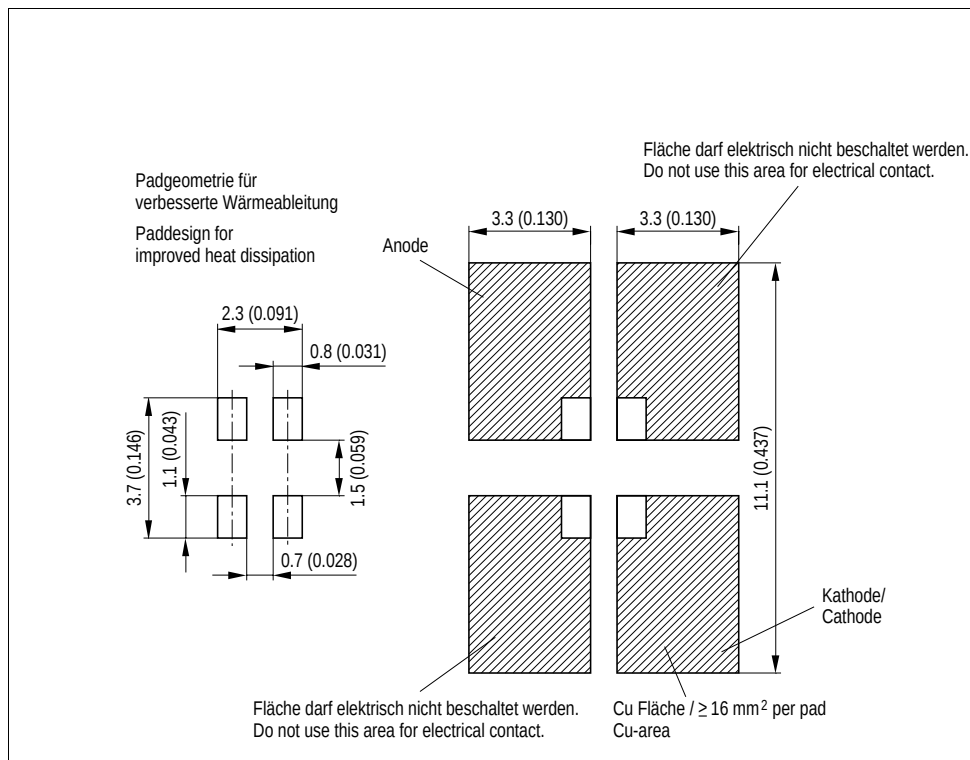


Empfohlenes Lötpad-Design verwendbar für TOPLED® und Power TOPLED®

IR Reflow Löten

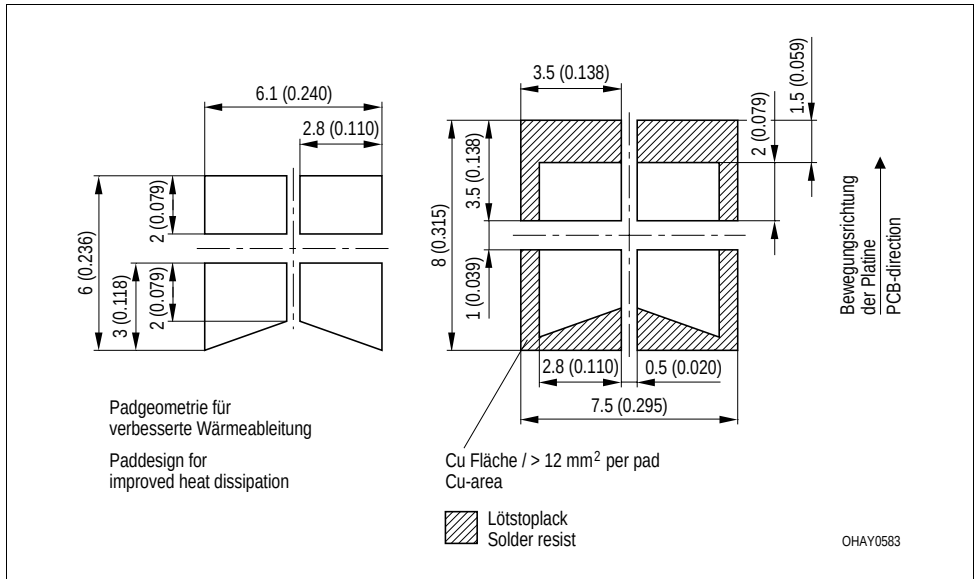
Recommended Solder Pad useable for TOPLED® and Power TOPLED®

IR Reflow Soldering



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

Empfohlenes Lötpad design	Wellenlöten (TTW)
Recommended Solder Pad	TTW Soldering



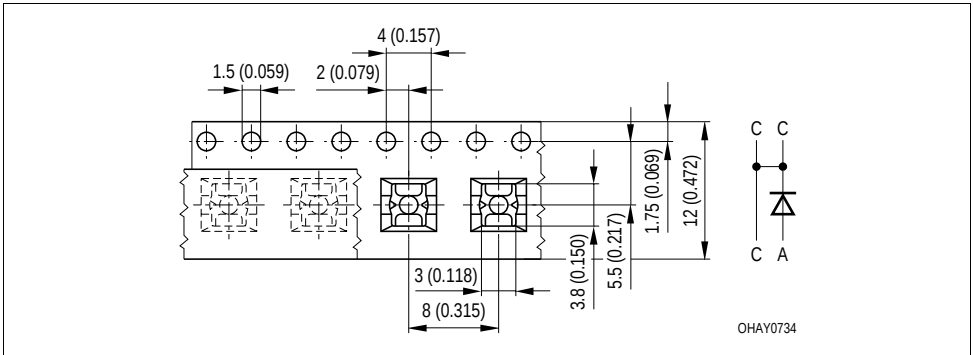
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Gurtung / Polarität und Lage

Method of Taping / Polarity and Orientation

Verpackungseinheit 2000/Rolle, ø330 mm

Packing unit 2000/reel, ø330 mm



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

Anm.: Bezüglich Trockenverpackung finden Sie weitere Hinweise im Internet und in unserem Short Form Catalog im Kapitel "Gurtung und Verpackung" unter dem Punkt "Trockenverpackung". Hier sind Normenbezüge, unter anderem ein Auszug der JEDEC-Norm, enthalten.

Note: Regarding dry pack you will find further information in the internet and in the Short Form Catalog in chapter "Tape and Reel" under the topic "Dry Pack". Here you will also find the normative references like JEDEC.

Revision History: 2003-08-28		Date of change
Previous Version: 2003-08-26		
Page	Subjects (major changes since last revision)	
4	value (forward voltage)	
1, 2	Obsolete	2003-08-07
14	note: dry pack	2003-08-28
1	ESD norm	2003-08-28
3	ambient temperature	2003-08-28

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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.