Power TOPLED
Hyper-Bright LED

LB E673, LV E673, LT E673

Besondere Merkmale

- **Gehäusetyp:** weißes P-LCC-4 Gehäuse
- **Besonderheit des Bauteils:** mehr Licht durch einen geringen thermischen Widerstand
- **Wellenlänge:** 469 nm (blau), 503 nm (verde), 525 nm (true green)
- **Abstrahlwinkel:** Lambertscher 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:** 8 mm Gurt mit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

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

Features

- **package:** white P-LCC-4 package
- **feature of the device:** more brightness due to a lower thermal resistance
- **wavelength:** 469 nm (blue), 503 nm (verde), 525 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:** 8 mm tape with 2000/reel, ø180 mm or 8000/reel, ø330 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- traffic lights
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- 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 **Type**	**Emissionsfarbe** **Color of Emission**	**Farbe der Lichtaustrittsfläche** **Color of the Light Emitting Area**	**Lichtstärke** **Luminous Intensity** I_F **= 30 mA** I_V **(mcd)**	**Lichtstrom** **Luminous Flux** I_F **= 30 mA** Φ_V **(mlm)**	**Bestellnummer** **Ordering Code**
LB E673-N1P1-1 LB E673-P1Q2-1	blue	colorless clear	28 ... 56 45 ... 112	120 (typ.) 220 (typ.)	Q62703-Q4844 Q62703-Q4890
LV E673-Q2R2-1 LV E673-R2T1-1	verde	colorless clear	90 ... 180 140 ... 355	390 (typ.) 700 (typ.)	Q62703-Q4848 Q62703-Q4894
LT E673-R1S1-1 LT E673-S1T2-1	true green	colorless clear	112 ... 224 180 ... 450	490 (typ.) 880 (typ.)	Q62703-Q4854 Q62703-Q4898

Anm.: -1 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: -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 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	30		mA
Stoßstrom Surge current $t \leq 10\ \mu s$, $D = 0.1$	I_{FM}	200	250	mA
Sperrspannung Reverse voltage	V_R	5		V
Leistungsaufnahme Power consumption	P_{tot}	130		mW
Wärmewiderstand Thermal resistance				
Sperrschicht/Umgebung Junction/ambient	$R_{th\ JA}$	300		K/W
Sperrschicht/Lötpad Junction/solder point	$R_{th\ JS}$	130		K/W
Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm^2) mounted on PC board FR 4 (pad size ≥ 16 mm^2)				

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Werte** **Values**			**Einheit** **Unit**
			LB	**LV**	**LT**	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 30 mA	(typ.)	λ_{peak}	464	501	520	nm
Dominantwellenlänge [1)] Dominant wavelength I_F = 30 mA	(typ.)	λ_{dom}	469 ± 6	503 ± 6	525 ± 9	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 30 mA	(typ.)	$\Delta\lambda$	25	30	33	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	120	120	120	Grad deg.
Durchlassspannung [2)] Forward voltage I_F = 30 mA	(typ.) (max.)	V_F V_F	3.7 4.2	3.5 4.2	3.5 4.2	V V
Sperrstrom Reverse current V_R = 5 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 = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda peak}$	0.04	0.03	0.04	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.02	0.02	0.03	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 2.9	– 3.2	– 3.6	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 30 mA	(typ.)	η_{opt}	2	6	8	lm/W

[1)] Wellenlängengruppen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ±1 nm ermittelt. Wavelength groups are tested at a current pulse duration of 25 ms and a tolerance of ±1 nm.

[2)] 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.

[1] **Wellenlängengruppen / Wavelength groups**

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)
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.)
T2	355.0 … 450.0	1200 (typ.)

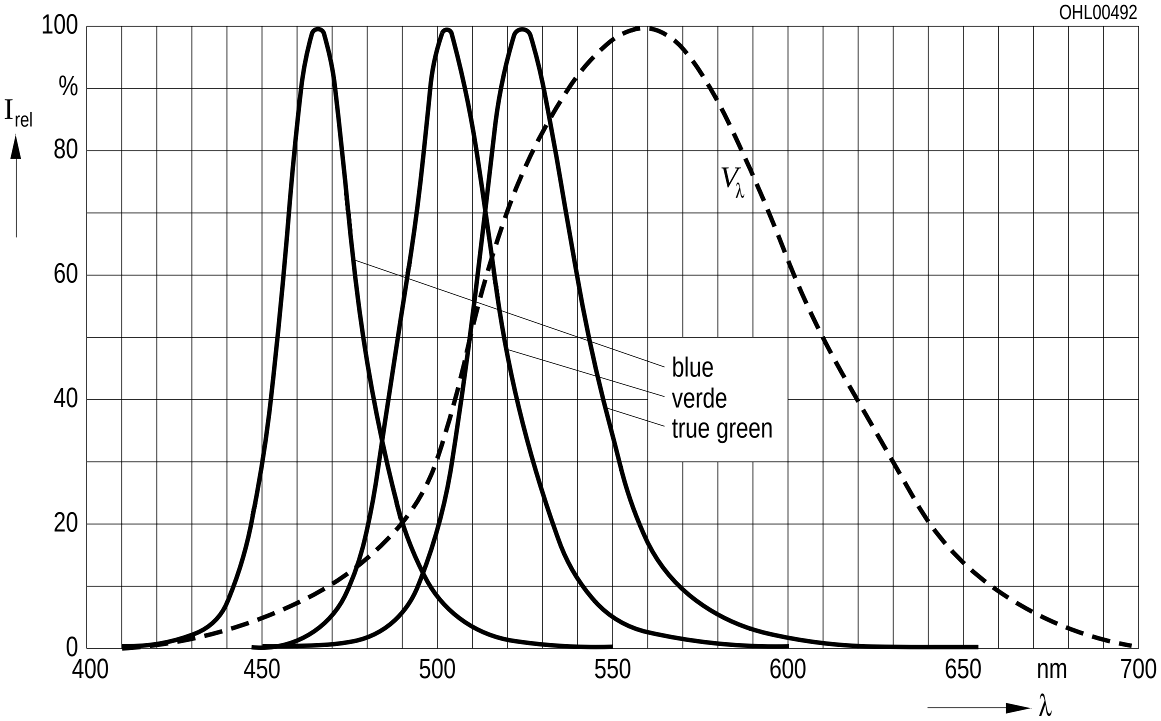
Helligkeitswerte werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von ± 11% ermittelt.
Luminous intensity is tested at a current pulse duration of 25 ms and a tolerance of ± 11%.

Gruppenbezeichnung auf Etikett
Group Name on Label

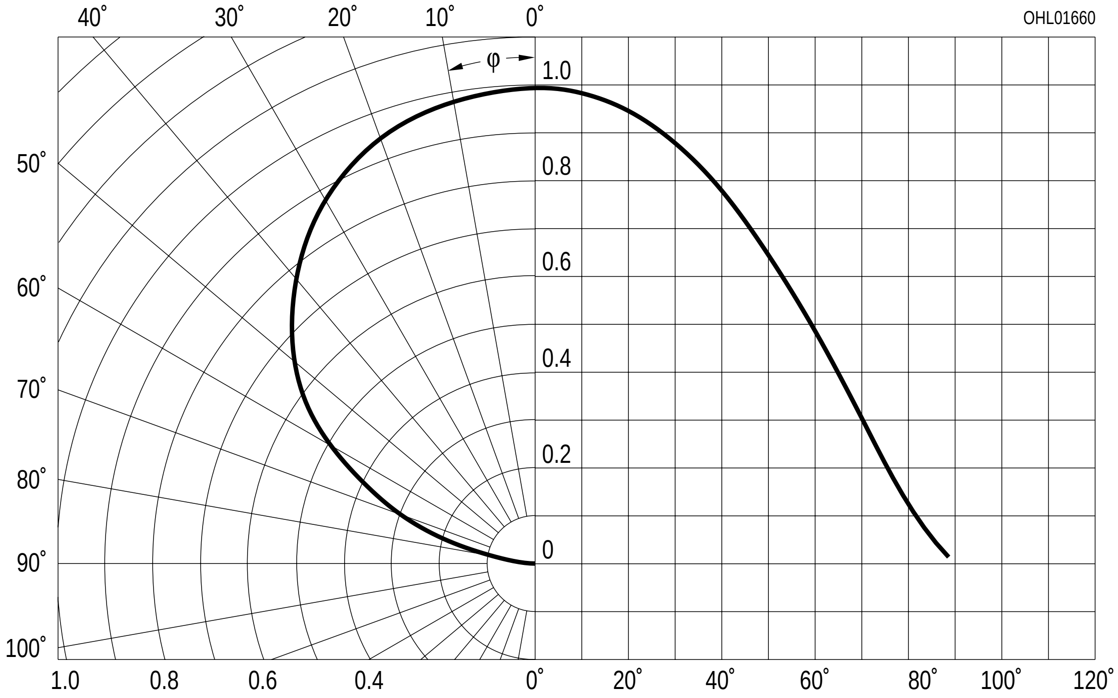
Beispiel: S2-3
Example: S2-3

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

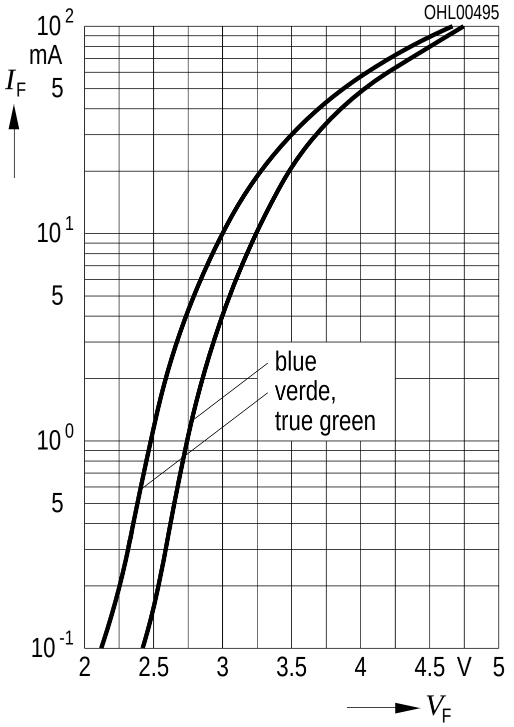
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 30 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



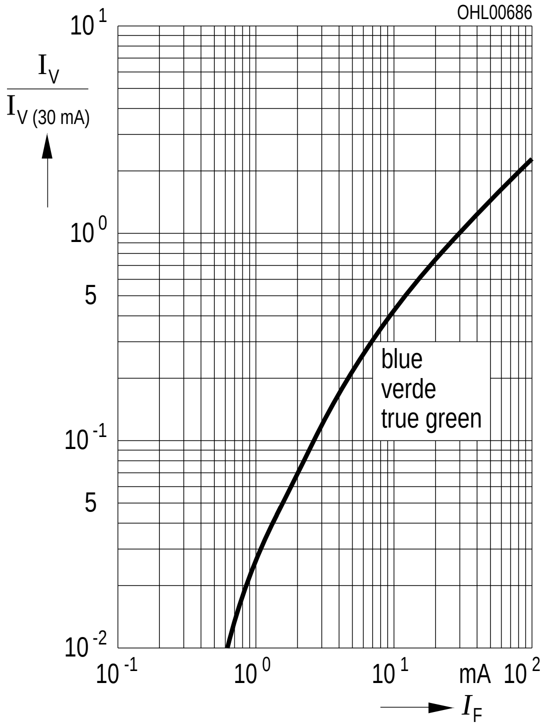
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



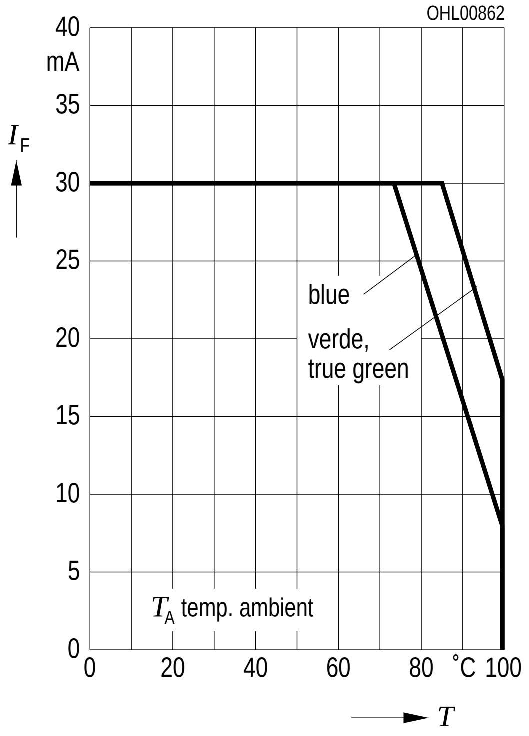
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



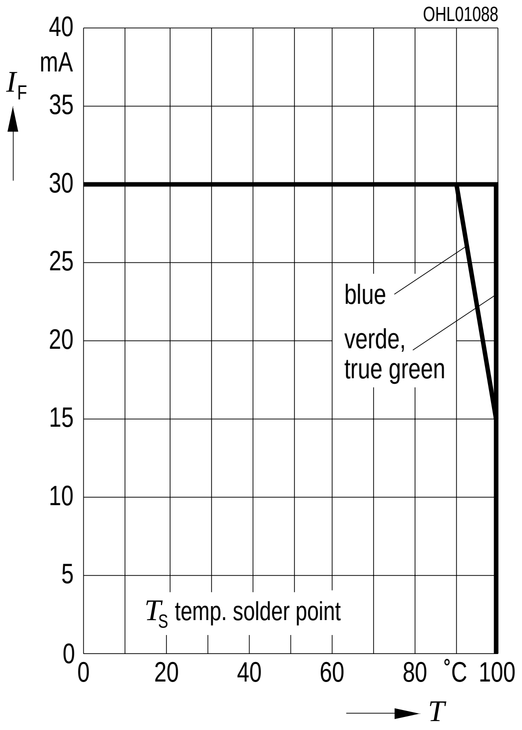
Relative Lichtstärke $I_V/I_{V(30\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



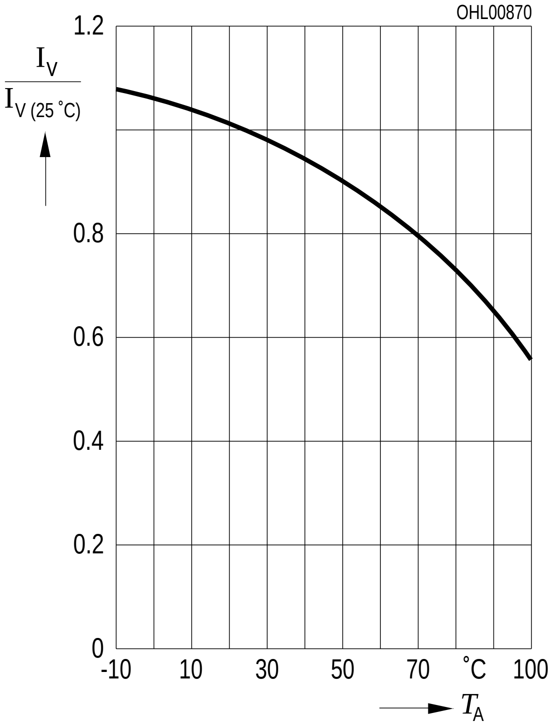
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



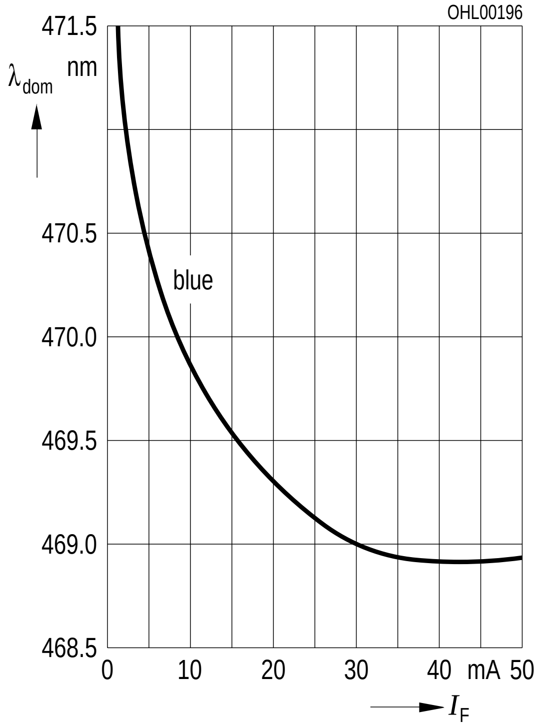
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



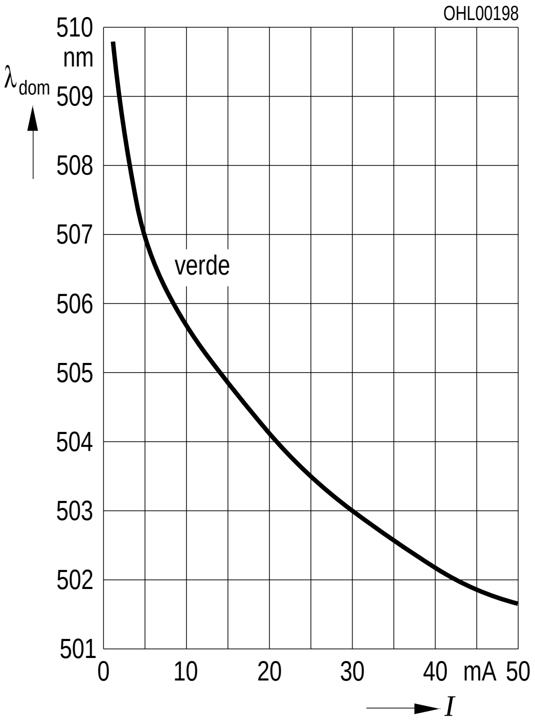
Relative Lichtstärke $I_V/I_{V(25\,°C)} = f\,(T_A)$
Relative Luminous Intensity
I_F = 30 mA



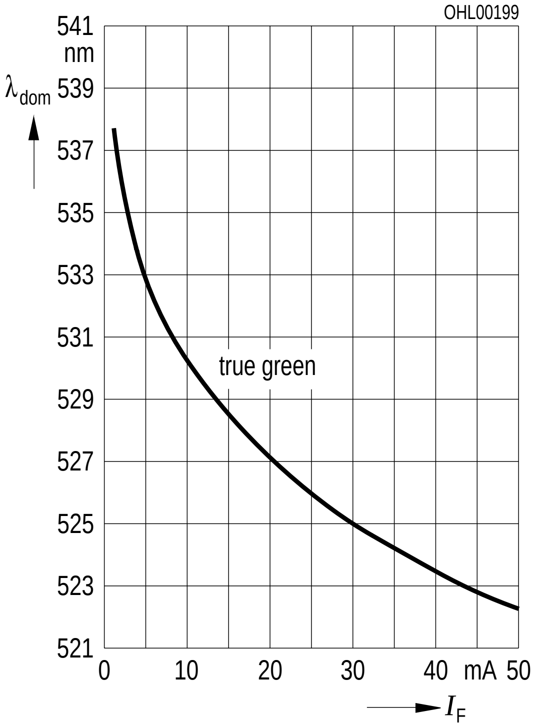
Dominante Wellenlänge $\lambda_{dom} = f\,(I_F)$
Dominant Wavelength
LB, T_A = 25 °C



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



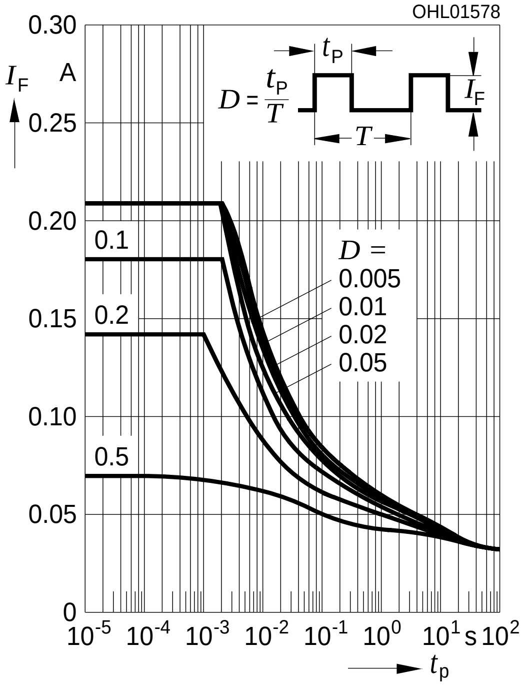
Dominante Wellenlänge $\lambda_{dom} = f\,(I_F)$
Dominant Wavelength
LT, T_A = 25 °C



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle D = parameter, T_A= 25 °C

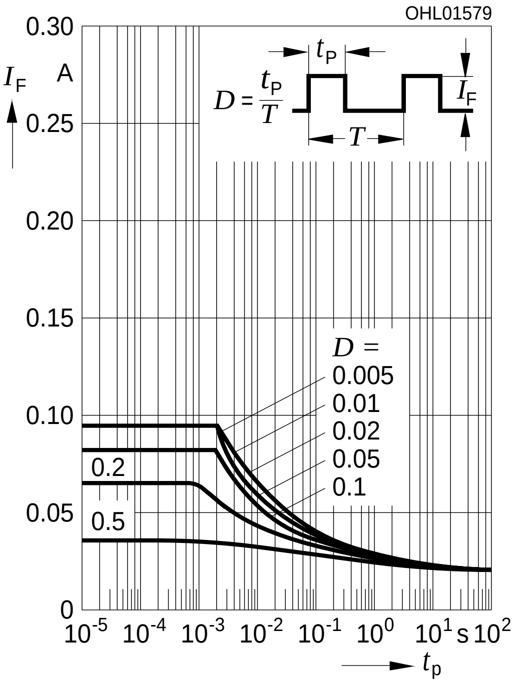
LB



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle D = parameter, T_A= 85 °C

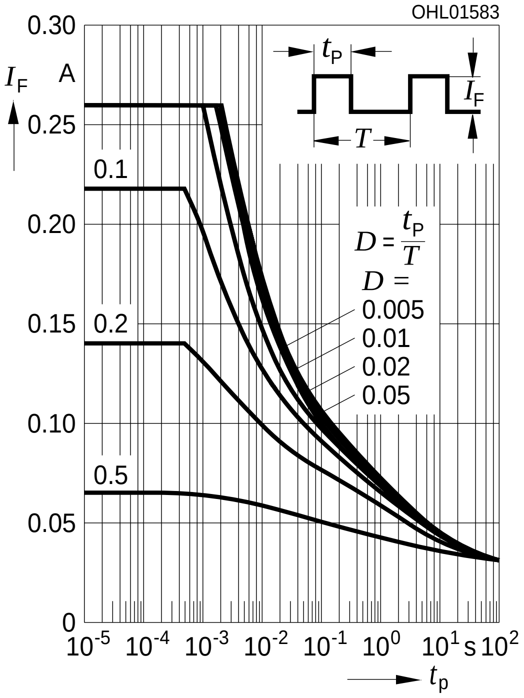
LB



Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle D = parameter, T_A= 25 °C

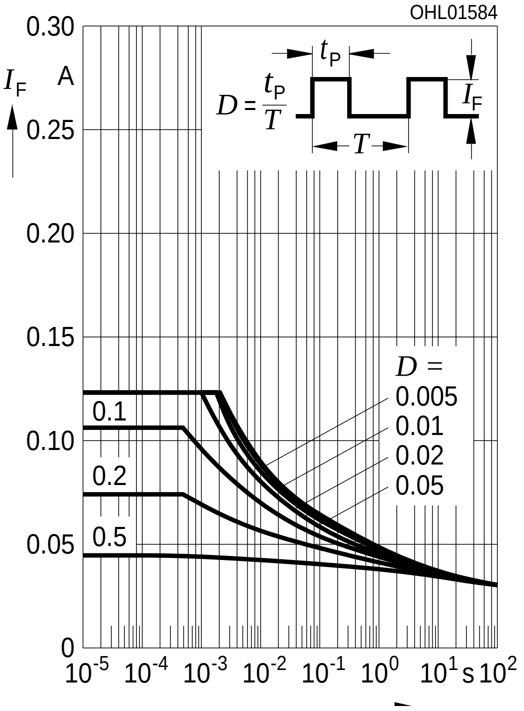
LT / LV



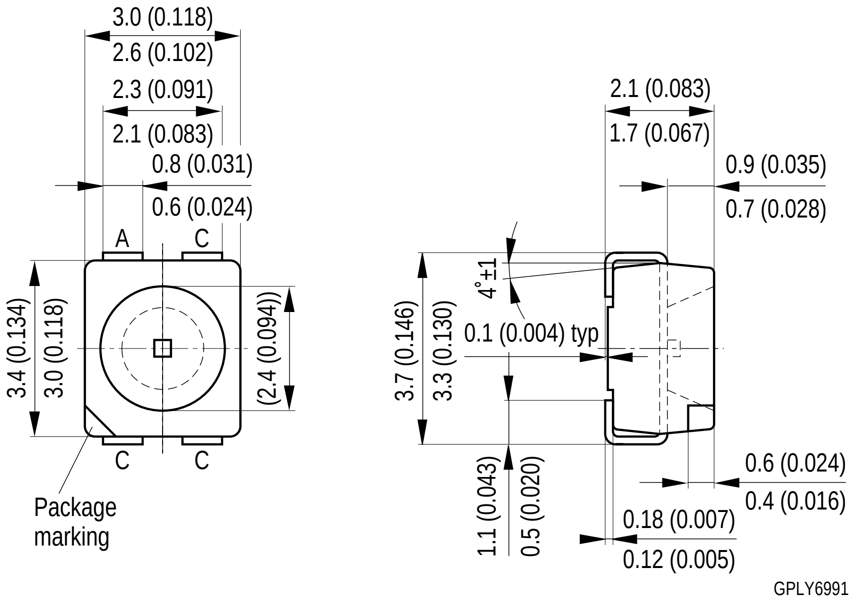
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability

Duty cycle D = parameter, T_A= 85 °C

LT / LV



Maßzeichnung
Package Outlines

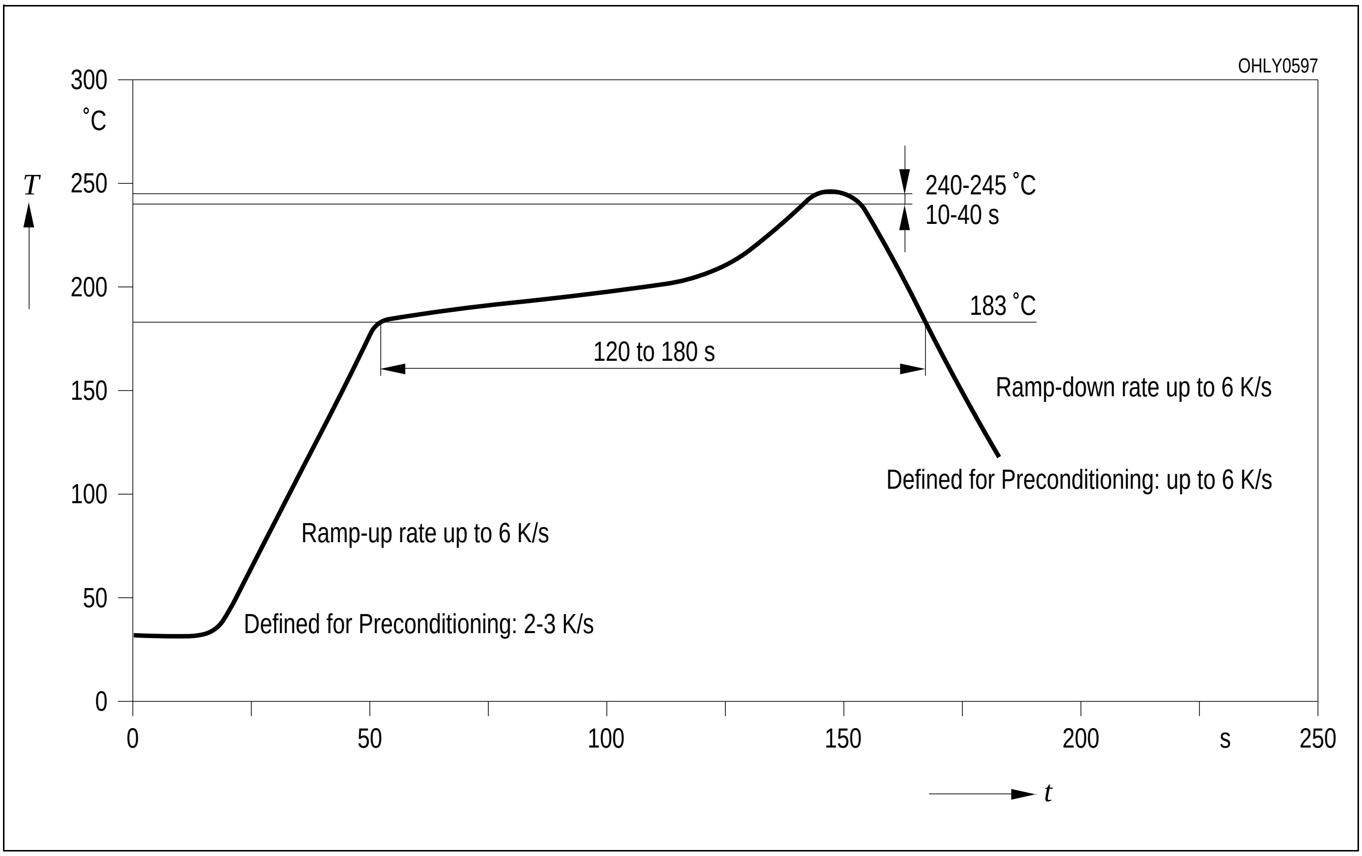


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

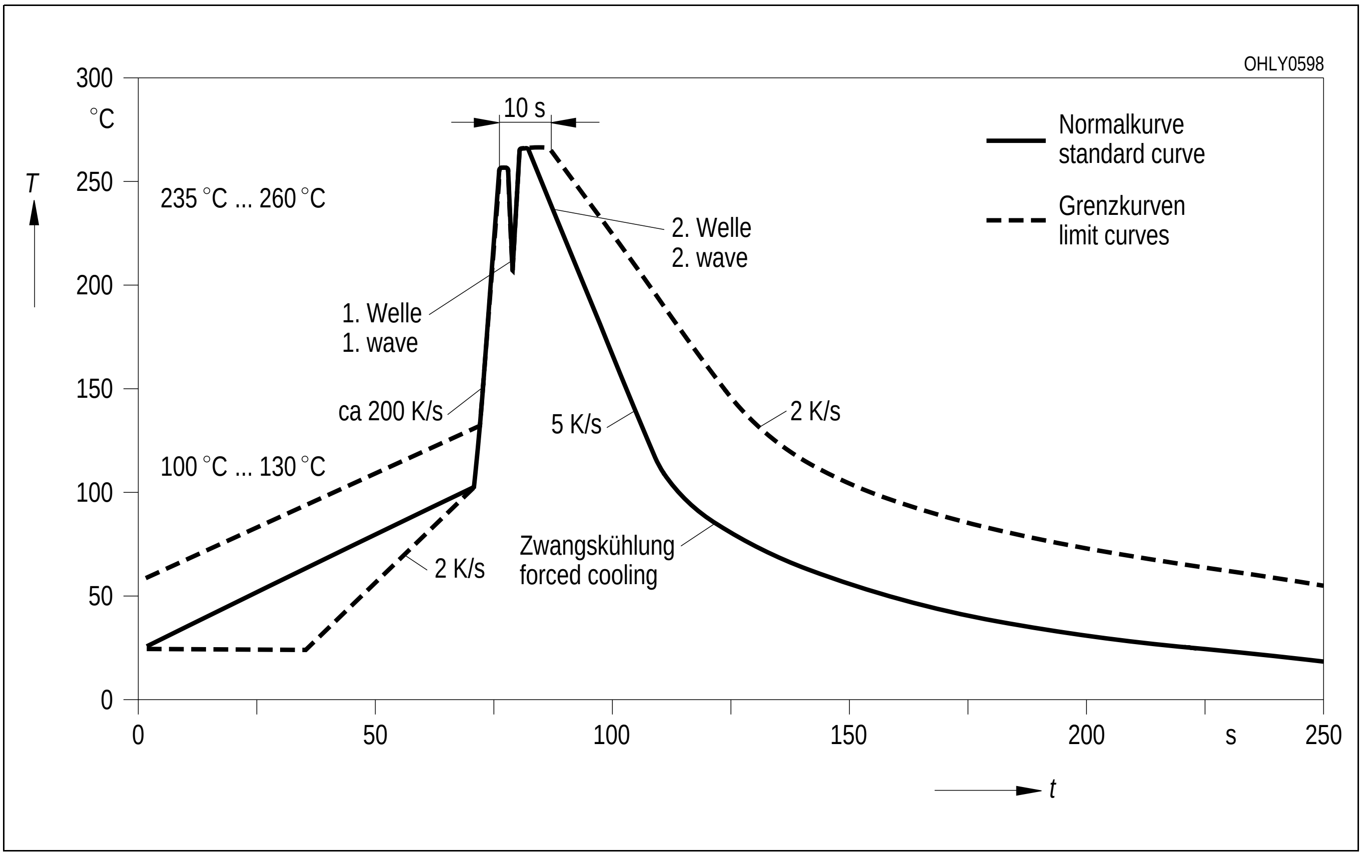
Gewicht / Approx. weight: 31 mg

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

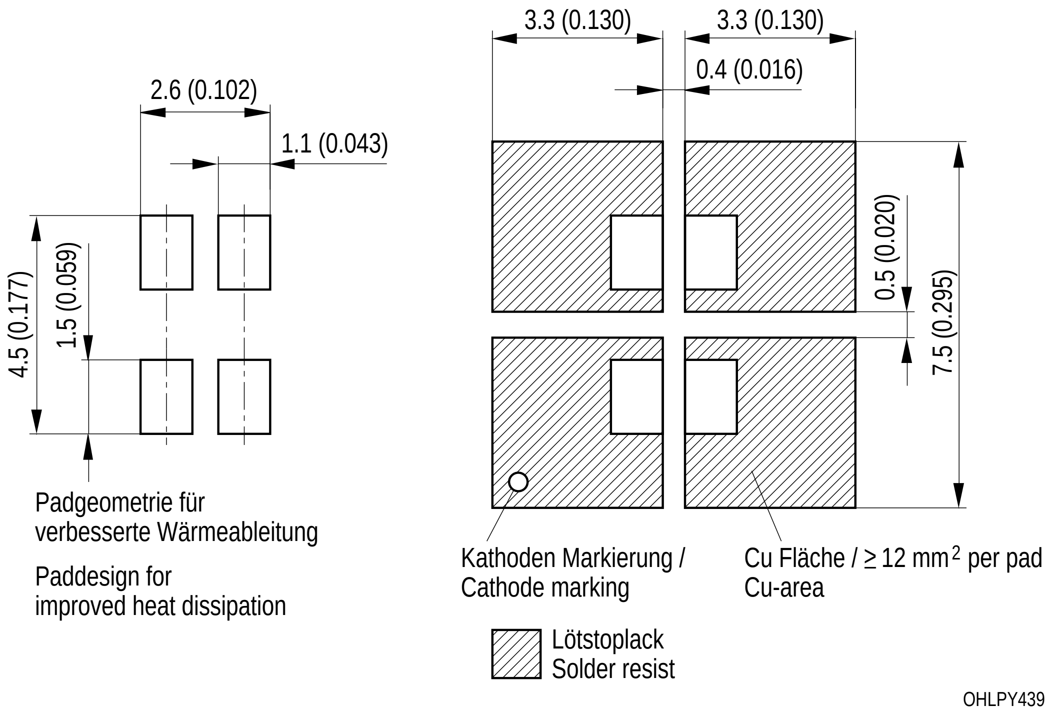
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

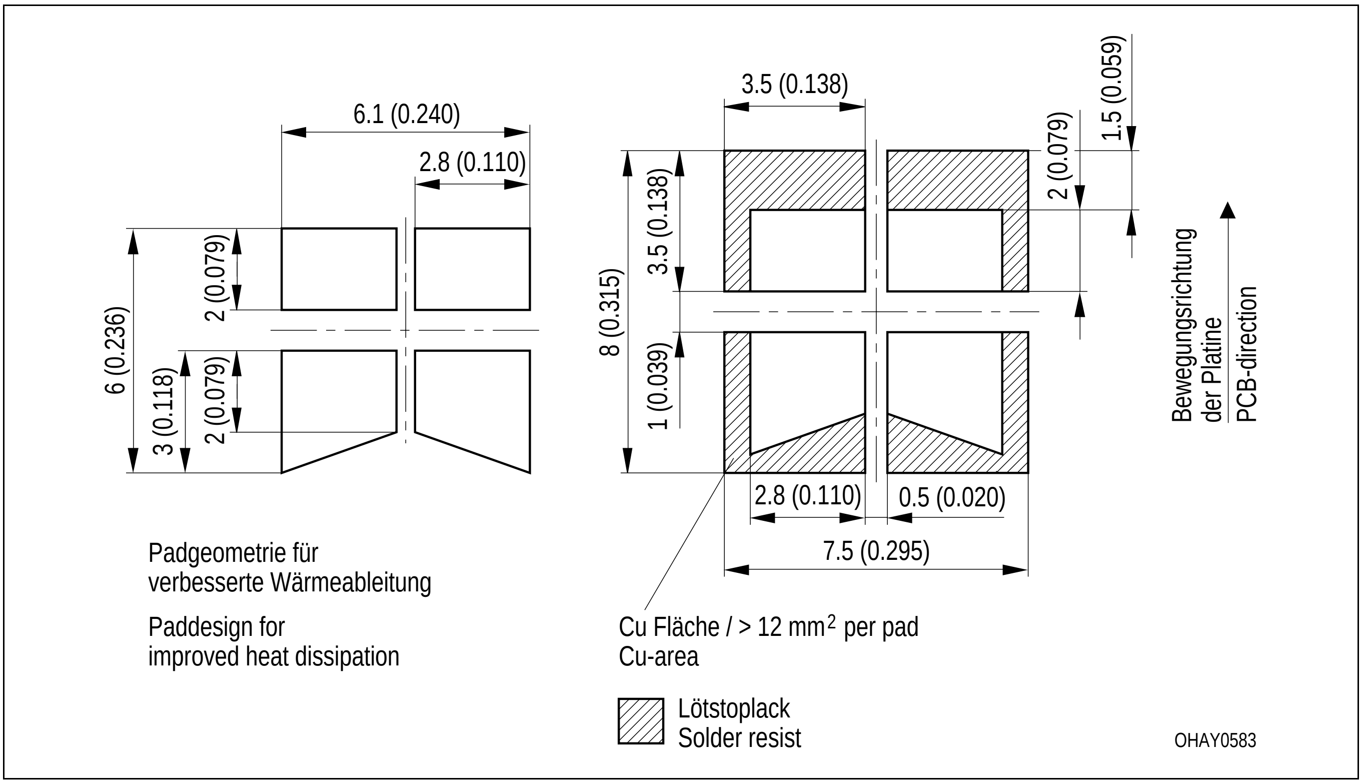


Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



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

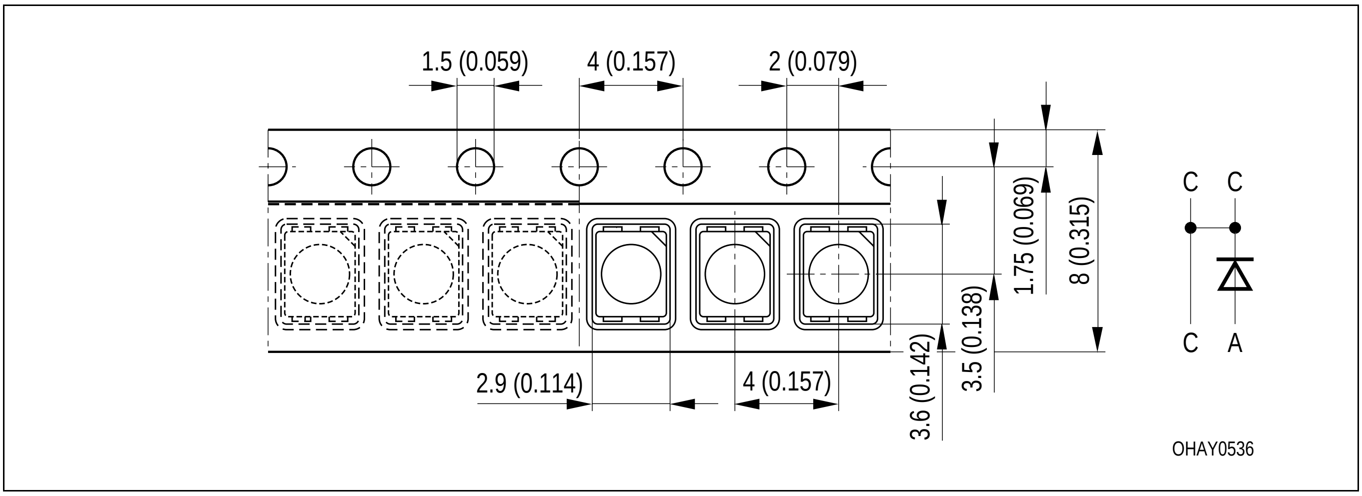
Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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

Gurtung / Polarität und Lage Verpackungseinheit 2000/Rolle, ø180 mm oder 8000/Rolle, ø330 mm

Method of Taping / Polarity and Orientation Packing unit 2000/reel, ø180 mm or 8000/reel, ø330 mm



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

Revision History:	**2001-08-17**
Previous Version:	2001-02-21
Page	**Subjects (major changes since last revision)**

Published by OSRAM Opto Semiconductors GmbH & Co. OHG
Wernerwerkstrasse 2, D-93049 Regensburg

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.