Multi TOPLED®
Enhanced Optical Power LED (HOP2000)

LSY T67B

Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusetyp:** weißes P-LCC-4 Gehäuse
- **Besonderheit des Bauteils:** mehr Licht durch erhöhten optischen Wirkungsgrad
- **Wellenlänge:** 633 nm (super-rot), 587 nm (gelb)
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 14 lm/W (super-rot), 20 lm/W (gelb)
- **Gruppierungsparameter:** Lichtstärke
- **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

Features

- **package:** white P-LCC-4 package
- **feature of the device:** more light due to higher optical efficiency
- **wavelength:** 633 nm (super-red), 587 nm (yellow)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaAlP
- **optical efficiency:** 14 lm/W (super-red), 20lm/W (yellow)
- **grouping parameter:** luminous intensity
- **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

Anwendungen

- optischer Indikator
- Hinterleuchtung (LCD, Schalter, Tasten, Displays, Werbebeleuchtung, Allgemeinbeleuchtung)

Applications

- optical indicators
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)

Typ Type	Emissions-farbe Color of Emission	Farbe der Lichtaustritts-fläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity I_F = 30 mA I_V (mcd)		Bestellnummer Ordering Code
			super-red	yellow	
LSY T67B-S1T2-1+T1U2-1	super-red / yellow	colorless clear	180 ... 450	280... 710	Q65110A0661

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 %.

Anm.: Die Standardlieferform von Serientypen beinhaltet eine Familiengruppe. Einzelne Gruppen sind nicht erhältlich.
In einer Verpackungseinheit / Gurt ist immer nur eine Gruppe pro Farbe enthalten.
Dimmverhältnis im Gleichstrom-Betrieb max. 5:1

Note: The standard shipping format for serial types includes a family group. Individual groups are not available.
No packing unit / tape ever contains more than one luminous intensity group per color.
Dimming range for direct current mode max. 5:1

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Werte Values	Einheit Unit
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 100	°C
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 100	°C
Sperrschichttemperatur Junction temperature	T_j	+ 125	°C
Durchlassstrom Forward current	I_F	50	mA
Stoßstrom Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	0.1	A
Sperrspannung[1)] Reverse voltage	V_R	12	V
Leistungsaufnahme Power consumption	P_{tot}	130	mW
Wärmewiderstand Thermal resistance Sperrschicht / Umgebung 1 chip on Junction / air 2 chips on Sperrschicht / Lötpad 1 chip on Junction / solder point 2 chips on Montage auf PC-Board FR 4 (Padgröße ≥ 16 mm²) mounted on PC board FR 4 (pad size ≥ 16 mm²)	 $R_{th\ JA}$ $R_{th\ JA}$ $R_{th\ JS}$ $R_{th\ JS}$	 480 650 260 360	 K/W K/W K/W K/W

[1)] für kurzzeitigen Betrieb geeignet / suitable for short term application

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**		**Symbol** **Symbol**	**Werte** **Values**		**Einheit** **Unit**
			LS	**LY**	
Wellenlänge des emittierten Lichtes Wavelength at peak emission I_F = 30 mA	(typ.)	λ_{peak}	645	594	nm
Dominantwellenlänge [1] Dominant wavelength I_F = 30 mA	(typ.)	λ_{dom}	633 ± 6	587 –7/+8	nm
Spektrale Bandbreite bei 50 % $I_{rel\ max}$ Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 30 mA	(typ.)	$\Delta\lambda$	15	15	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2φ	120	120	Grad deg.
Durchlassspannung [2] Forward voltage I_F = 30 mA	(min.) (typ.) (max.)	V_F V_F V_F	1.8 2.1 2.4	1.8 2.1 2.4	V V V
Sperrstrom Reverse current V_R = 12 V	(typ.) (max.)	I_R I_R	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.)	$TC_{\lambda peak}$	0.15	0.13	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	$TC_{\lambda dom}$	0.05	0.10	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 30 mA; –10°C ≤ T ≤ 100°C	(typ.)	TC_V	– 3.4	– 3.7	mV/K
Optischer Wirkungsgrad Optical efficiency I_F = 30 mA	(typ.)	η_{opt}	14	20	lm/W

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

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

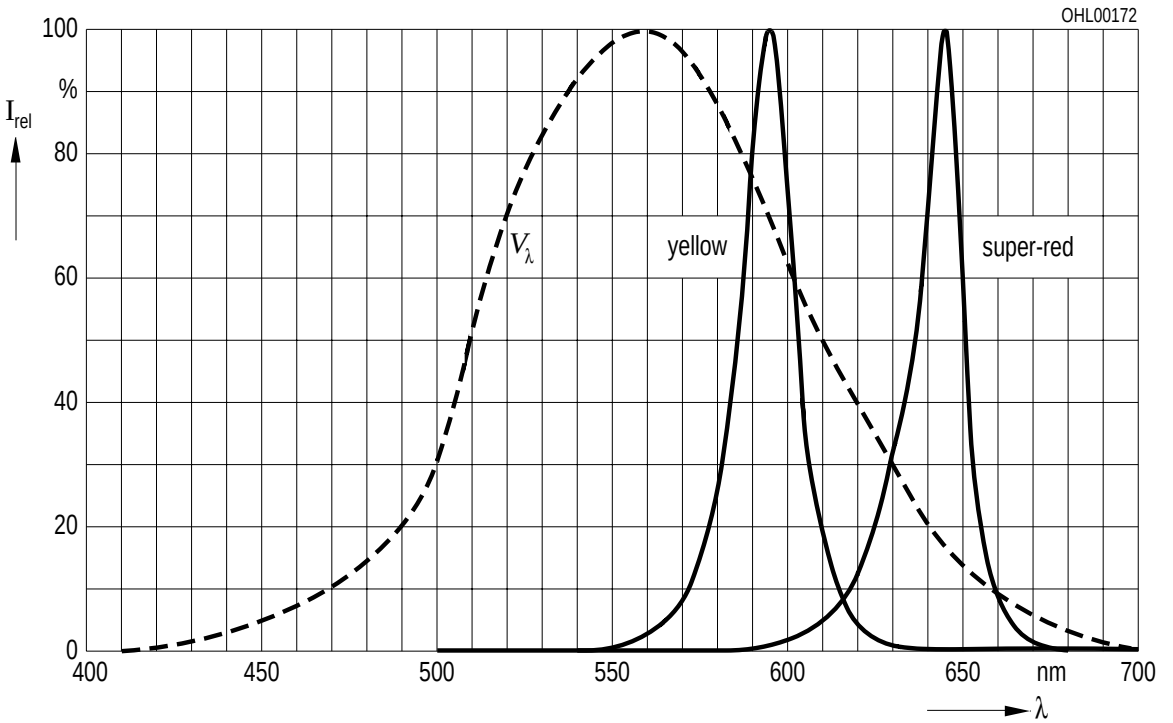
Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe **Luminous Intensity Group**	**Lichtstärke** **Luminous Intensity** **I_V (mcd)**	**Lichtstrom** **Luminous Flux** **Φ_V (mlm)**
S1	180 ... 224	600 (typ.)
S2	224 ... 280	760 (typ.)
T1	280 ... 355	950 (typ.)
T2	355 ... 450	1200 (typ.)
U1	450 ... 560	1500 (typ.)
U2	560 ... 710	1900 (typ.)

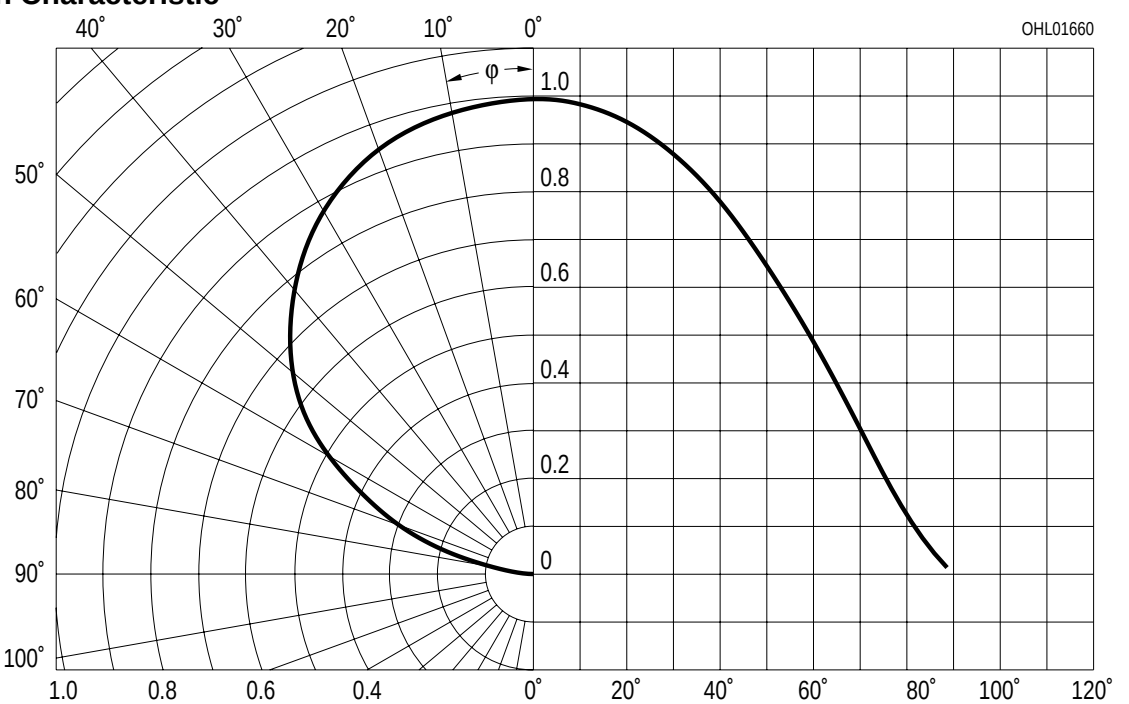
Gruppenbezeichnung auf Etikett
Group Name on Label
Beispiel: S2-1+T2-1
Example: S2-1+T2-1

Lichtgruppe (Halbgruppe) **Luminous Intensity Half Group**	**Wellenlänge** **Wavelength**		**Lichtgruppe (Halbgruppe)** **Luminous Intensity Half Group**	**Wellenlänge** **Wavelength**
super-red		+	yellow	
S2	1	+	T2	1

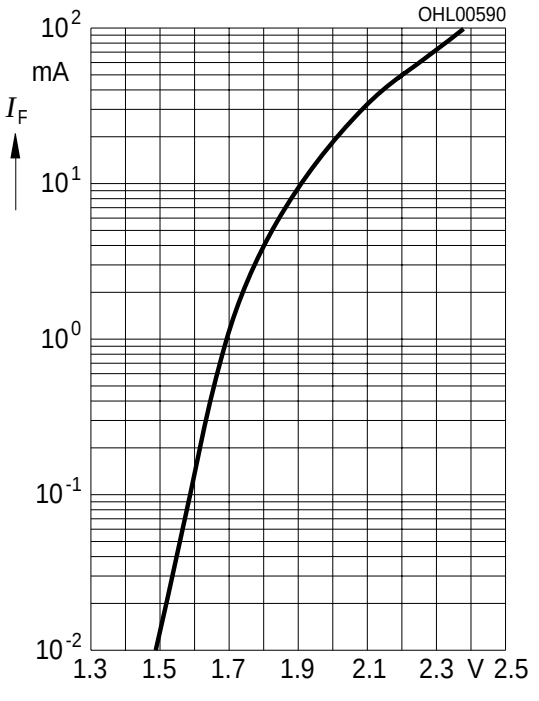
Relative spektrale Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 30 mA
Relative Spectral Emission
V(λ) = spektrale Augenempfindlichkeit
Standard eye response curve



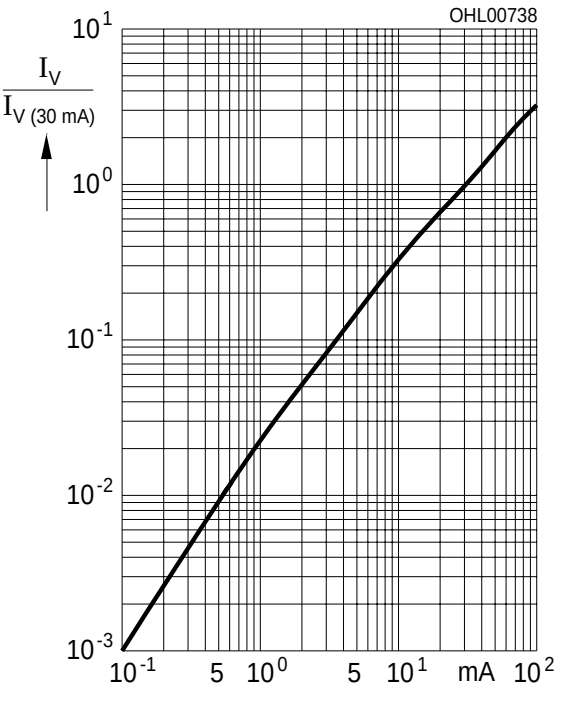
Abstrahlcharakteristik $I_{rel} = f(\varphi)$
Radiation Characteristic



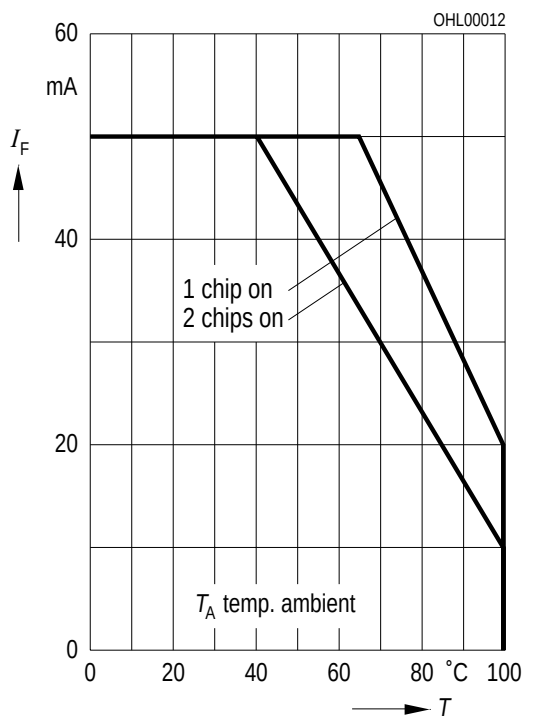
Durchlassstrom $I_F = f(V_F)$
Forward Current
T_A = 25 °C



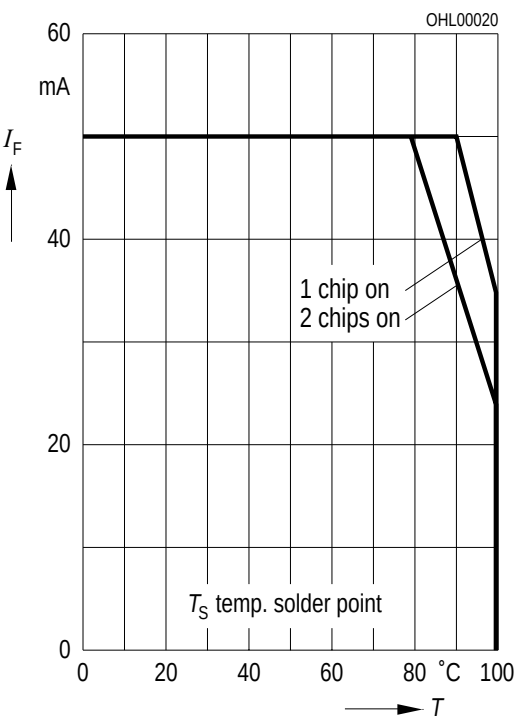
Relative Lichtstärke $I_V/I_{V(30\ mA)} = f(I_F)$
Relative Luminous Intensity
T_A = 25 °C



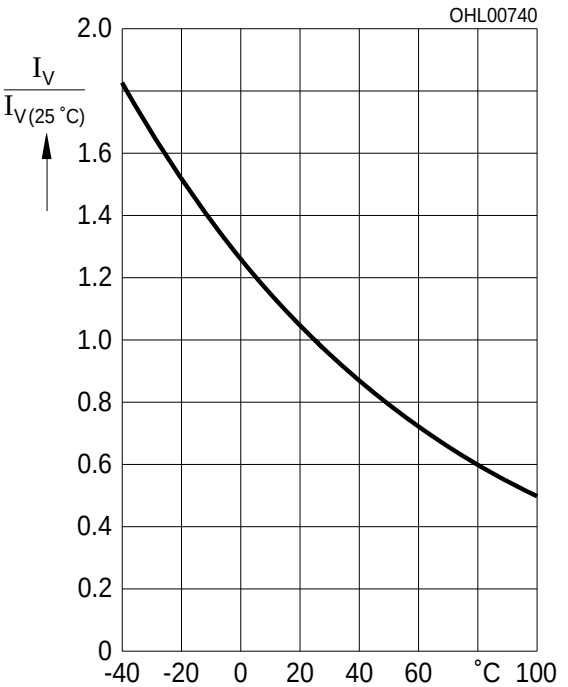
Maximal zulässiger Durchlassstrom $I_F = f(T)$
Max. Permissible Forward Current



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



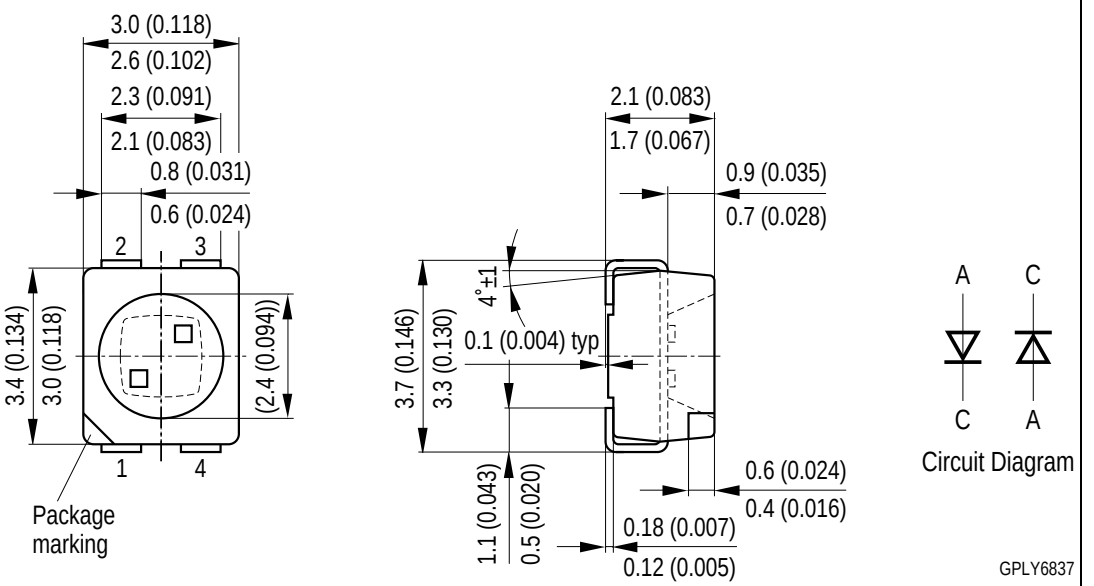
Relative Lichtstärke $I_V/I_{V(25\,°C)} = f(T_A)$
Relative Luminous Intensity
I_F = 30 mA



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

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

Maßzeichnung
Package Outlines



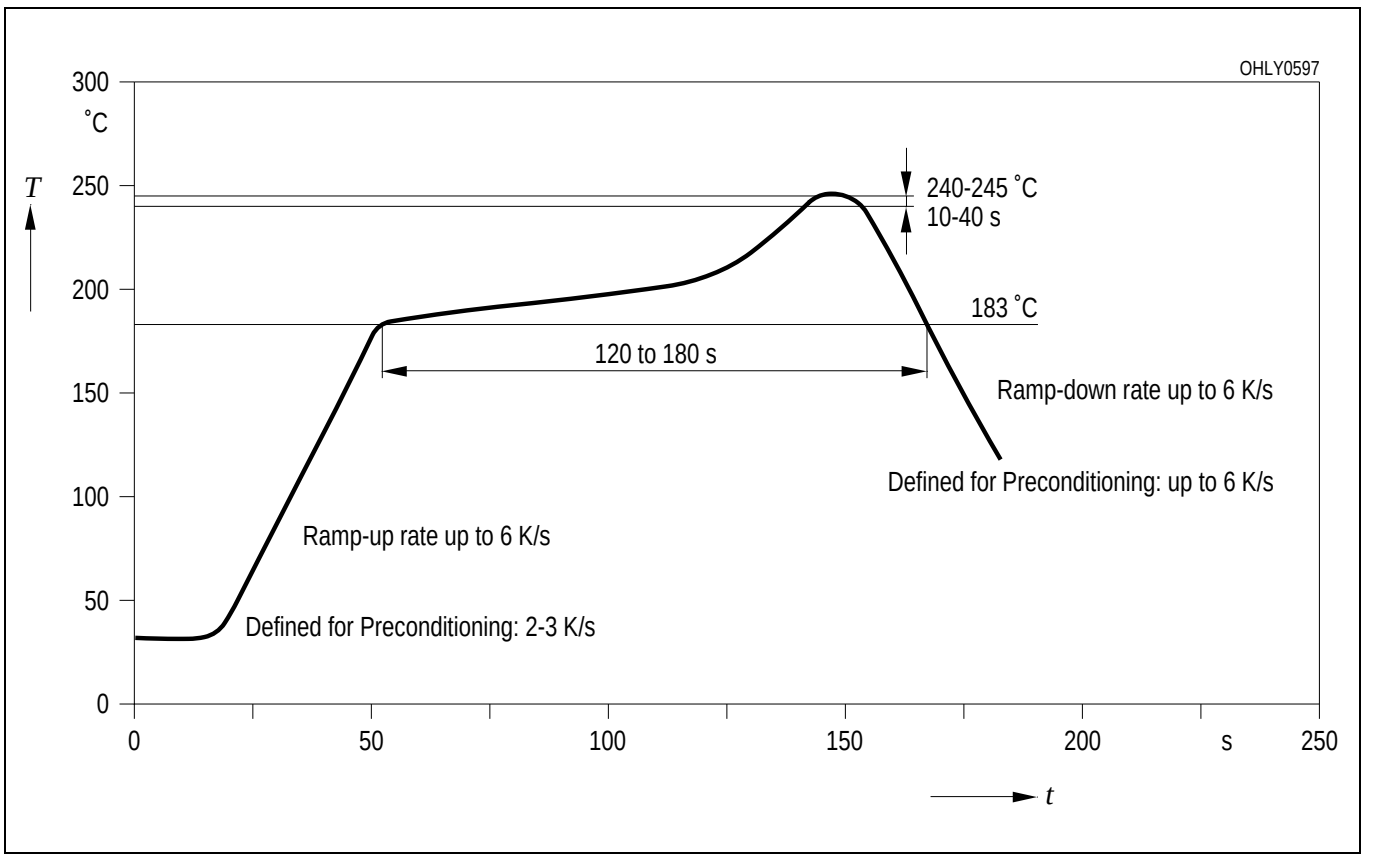
L	S	Y	T67B
LED	Anode: pin 2	Anode: pin 4	Package
	Cathode: pin 1	Cathode: pin 3	

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

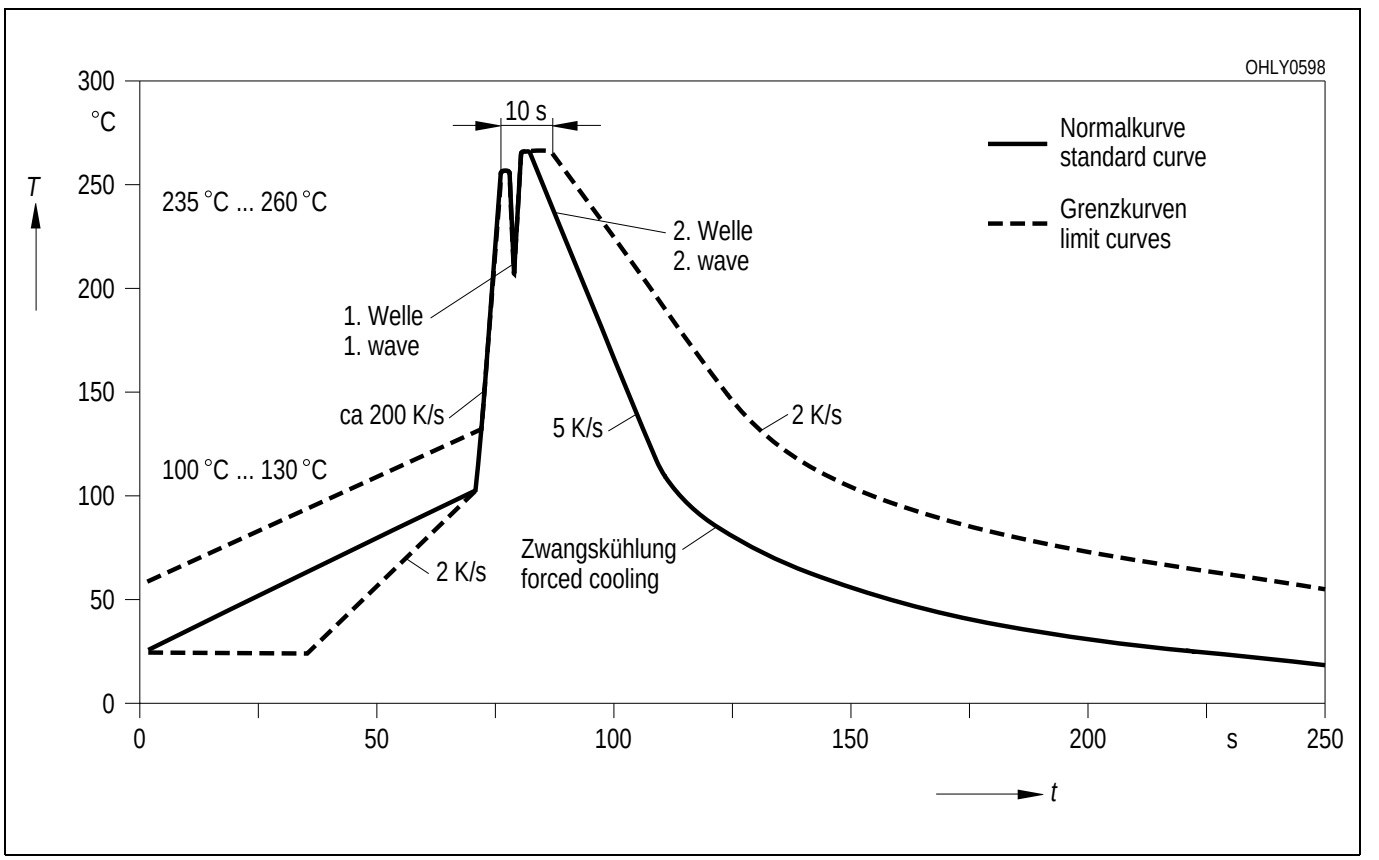
Gewicht / Approx. weight: 35 mg

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

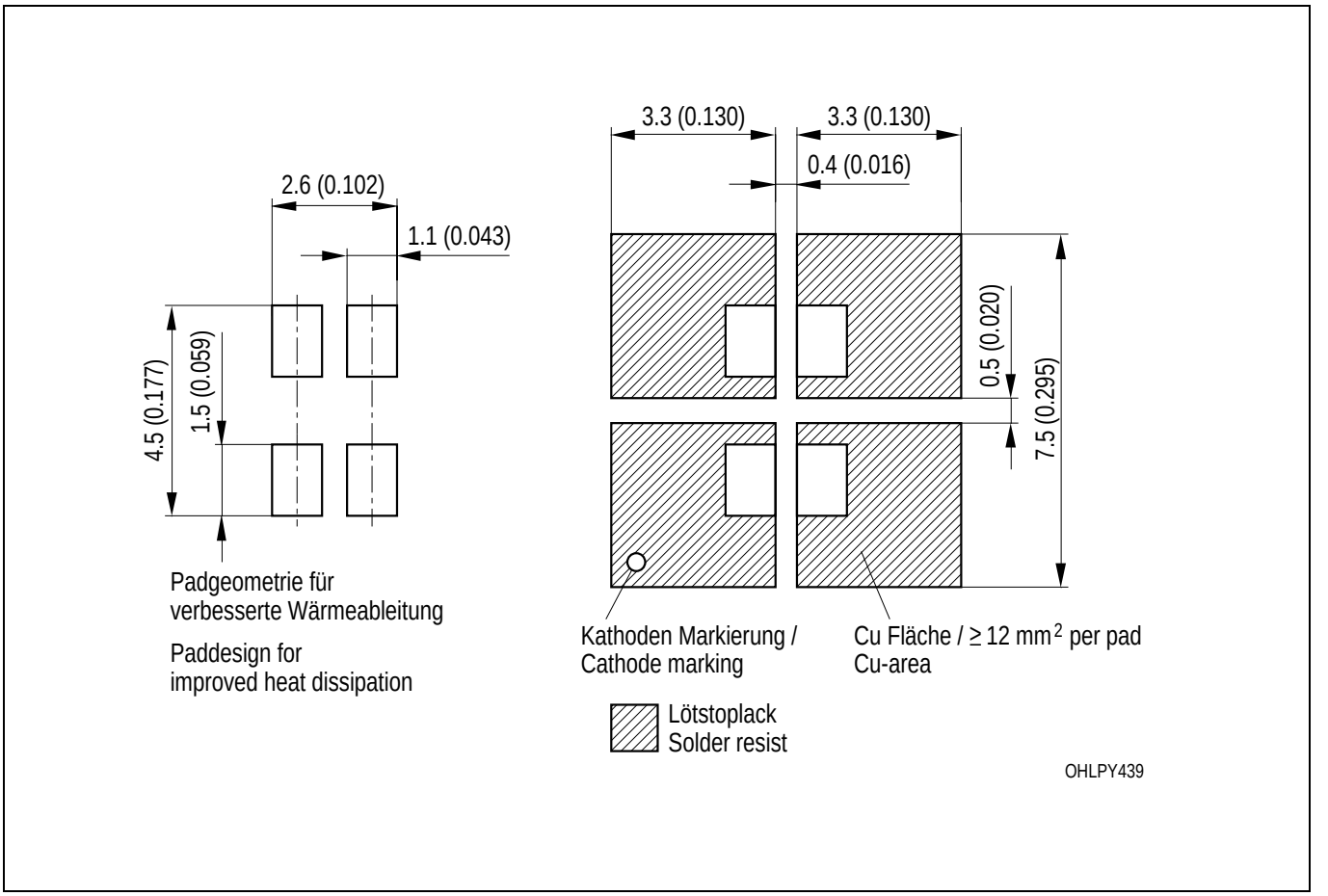
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

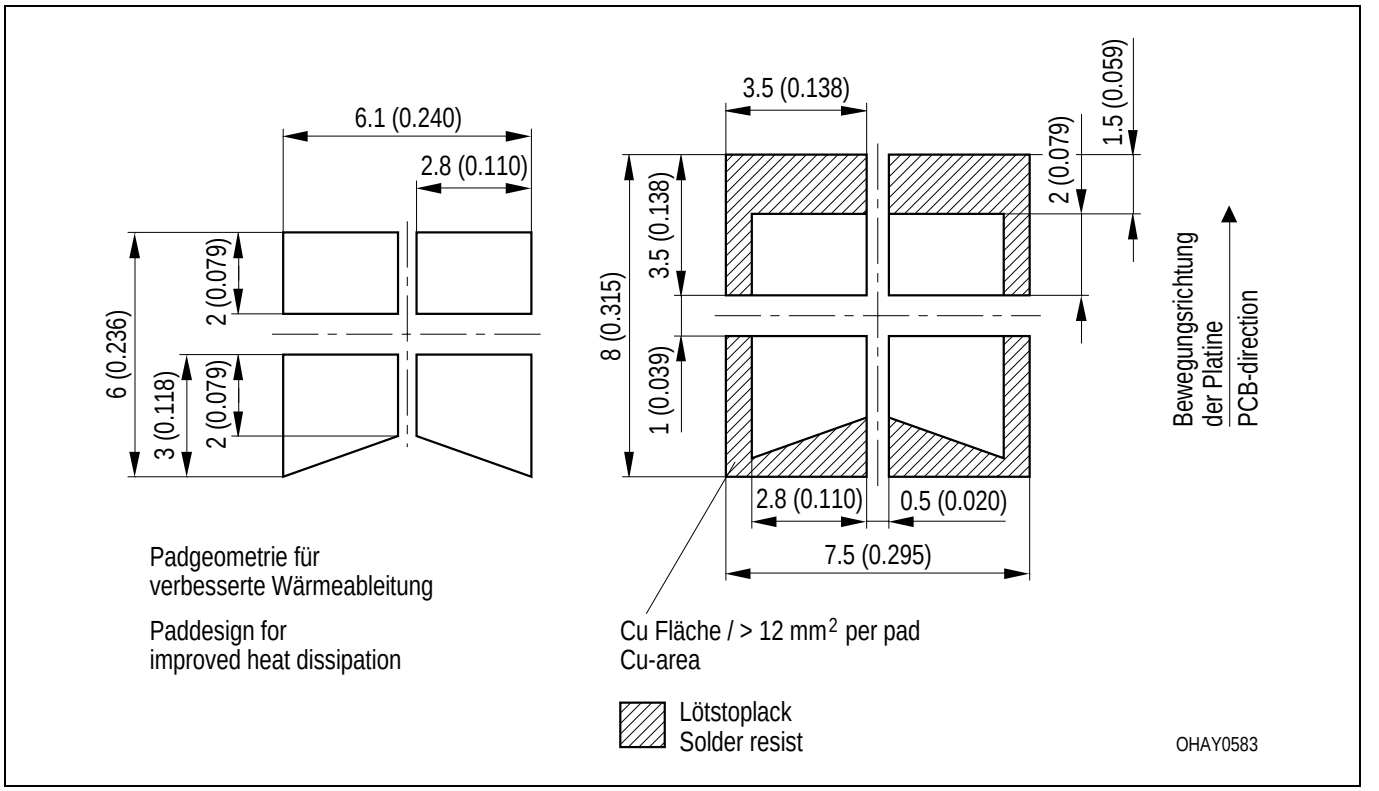


Empfohlenes Lötpaddesign IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



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

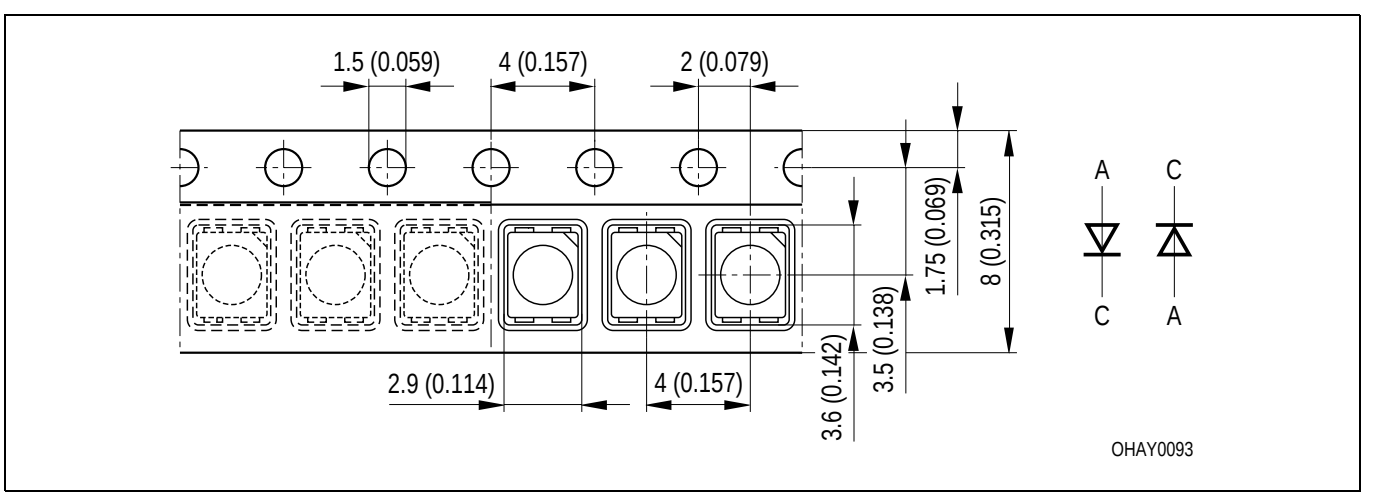
Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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: 2003-02-12		Date of change
Previous Version: 2003-01-14		
Page	**Subjects (major changes since last revision)**	
14	annotations	2002-07-25
4	value ($TC_{\lambda dom}$ from 0.06 to 0.05 nm/K)	2002-07-25
3, 4	value (reverse voltage from 5 V to 12 V)	2002-09-18
2	new ordering code	2003-01-14
7	diagram forward current OHL00646 replaced by OHL00590	2003-02-12

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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.
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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.