

Power TOPLED® With Lens Enhanced Thin Film LED

LA E65F



Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusotyp:** weißes P-LCC-4 Gehäuse
- **Besonderheit des Bauteils:** fokussierte Abstrahlung in SMT-Technologie; hohe Helligkeit in Achsrichtung
- **Wellenlänge:** 617 nm (amber)
- **Abstrahlwinkel:** 60°
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 43 lm/W
- **Gruppierungsparameter:** Lichtstärke, Durchflussspannung, 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

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

Features

- **package:** white P-LCC-4 package
- **feature of the device:** focussed radiation in SMT technology; high brightness in beam direction
- **wavelength:** 617 nm (amber)
- **viewing angle:** 60°
- **technology:** InGaAlP
- **optical efficiency:** 43 lm/W
- **grouping parameter:** luminous intensity, forward voltage, 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

- traffic lights
- backlighting (LCD, switches, keys, displays, illuminated advertising)
- interior and exterior automotive lighting (e.g. dashboard backlighting and brake lights)
- substitution of micro incandescent lamps
- 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 $I_F = 50 \text{ mA}$ $I_V (\text{mcd})$	Luminous Flux $I_F = 50 \text{ mA}$ $\Phi_V (\text{mlm})$	Ordering Code
LA E65F-CADA-24-1	amber	colorless clear	2800 ...5600	5000 (typ.)	Q65110A0633

Anm.: -**24-1** gesamter Farbbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)
 -**24-1** gesamter Durchlassspannungsbereich, Lieferung in Einzelgruppen (siehe **Seite 5**)

*Die Standardlieferform von Serientypen beinhaltet eine Familiengruppe, die aus 3 Halbgruppen besteht. Einzelne Halbgruppen sind nicht erhältlich.
 In einer Verpackungseinheit / Gurt ist immer nur eine Halbgruppe enthalten.
 Dimmverhältnis im Gleichstrom-Betrieb max. 5:1*

Note: -**24-1** Total color tolerance range, delivery in single groups (please see **page 5**)
 -**24-1** Total forward voltage tolerance, delivery in single groups (see **page 5**)

*The standard shipping format for serial types includes a family group of 3 individual groups. Individual half groups are not available.
 No packing unit / tape ever contains more than one luminous intensity half group.
 Dimming range for direct current mode max. 5:1*

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	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	70	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.1$	I_{FM}	0.1	A
Sperrspannung Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption $T_A \leq 25 \text{ °C}$	P_{tot}	190	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/soldering point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$)	$R_{th JA}$ $R_{th JS}$	300 130	K/W K/W

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission $I_F = 50\text{ mA}$	λ_{peak}	624	nm
Dominantwellenlänge ¹⁾ (typ.) Dominant wavelength $I_F = 50\text{ mA}$	λ_{dom}	617 -5/+7	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ (typ.) Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 50\text{ mA}$	$\Delta\lambda$	18	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) (typ.) Viewing angle at 50 % I_V	2ϕ	60	Grad deg.
Durchlassspannung ²⁾ (min.) Forward voltage (typ.) $I_F = 50\text{ mA}$ (max.)	V_F V_F V_F	2.05 2.30 2.65	V V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 5\text{ V}$	I_R I_R	t.b.d. t.b.d.	μA μA
Temperaturkoeffizient von λ_{peak} (typ.) Temperature coefficient of λ_{peak} $I_F = 50\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{peak}}}$	0.14	nm/K
Temperaturkoeffizient von λ_{dom} (typ.) Temperature coefficient of λ_{dom} $I_F = 50\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_{\lambda_{\text{dom}}}$	0.07	nm/K
Temperaturkoeffizient von V_F (typ.) Temperature coefficient of V_F $I_F = 50\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	TC_V	- 4.7	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 50\text{ mA}$	η_{opt}	43	lm/W

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

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
Wavelength groups

Gruppe Group	Wellenlänge Wavelength		Einheit Unit
	min.	max.	
2	612	616	nm
3	616	620	nm
4	620	624	nm

²⁾ Durchlassspannungsgruppen
Forward voltage groups

Gruppe Group	Durchlassspannung Forward voltage		Einheit Unit
	min.	max.	
3B	2.05	2.20	V
4A	2.20	2.35	V
4B	2.35	2.50	V
5A	2.50	2.65	V

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (lm)
CA	2800 ... 3550	3700 (typ.)
CB	3550 ... 4500	4800 (typ.)
DA	4500 ... 5600	6000 (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: CB-3-4A

Example: CB-3-4A

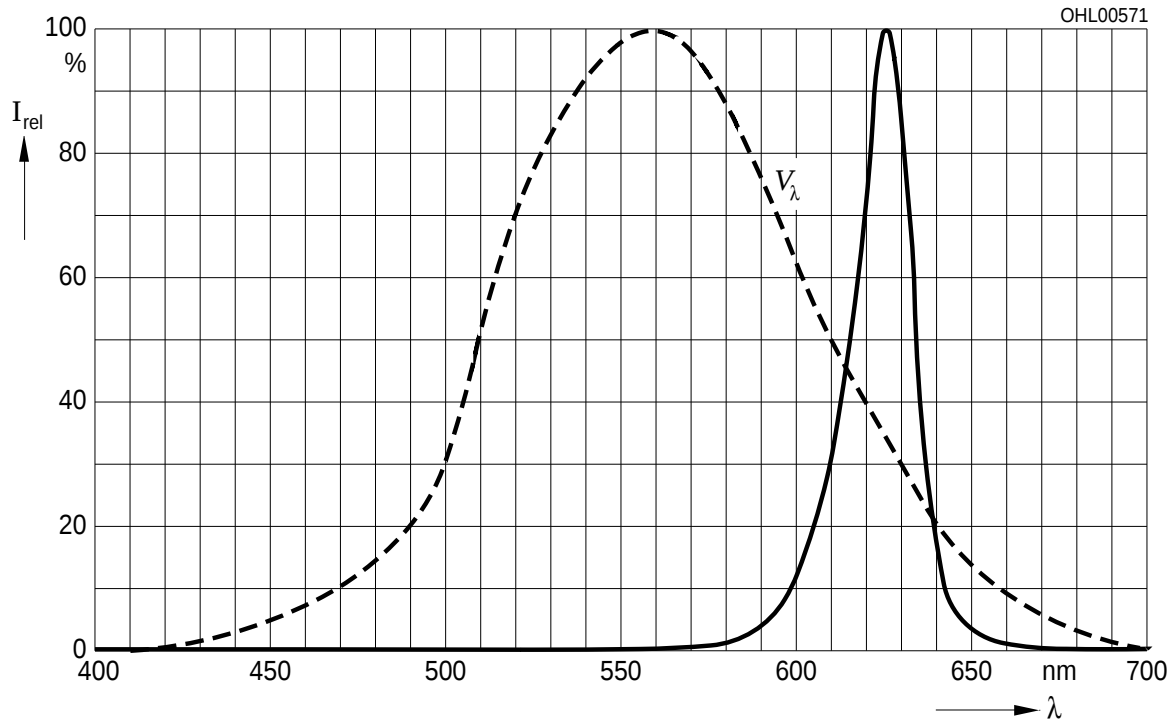
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength	Durchlassspannung Forward Voltage
C	B	3	4A

Relative spektrale Emission $I_{\text{rel}} = f(\lambda)$, $T_A = 25\text{ °C}$, $I_F = 50\text{ mA}$

Relative Spectral Emission

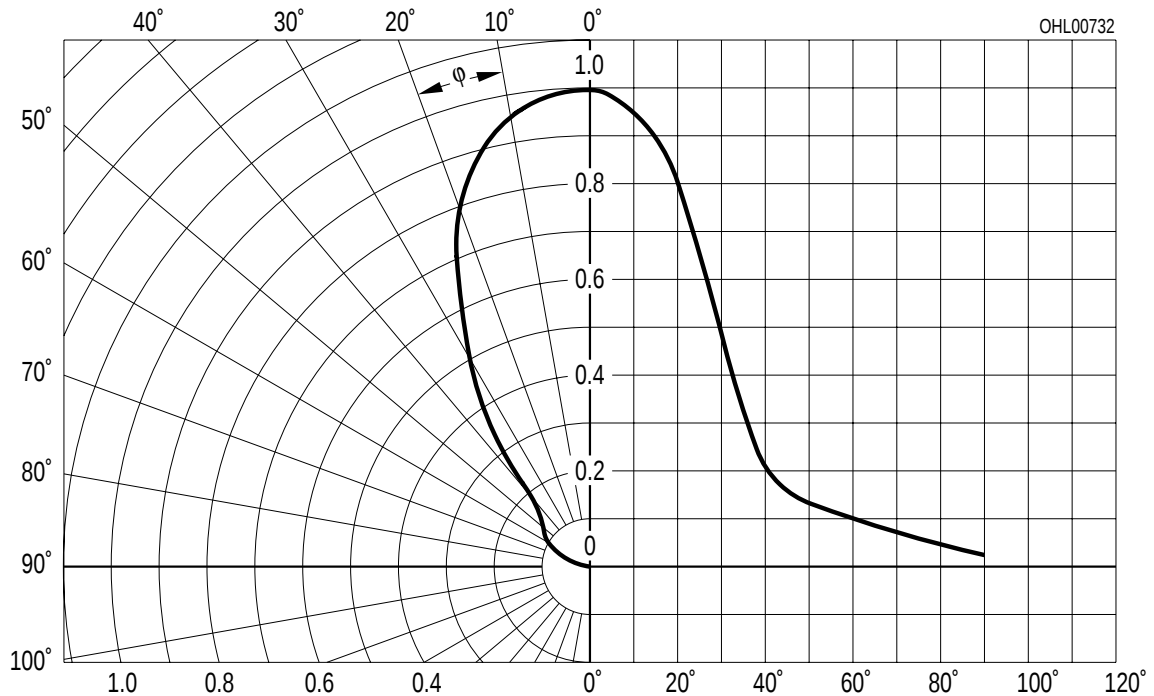
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



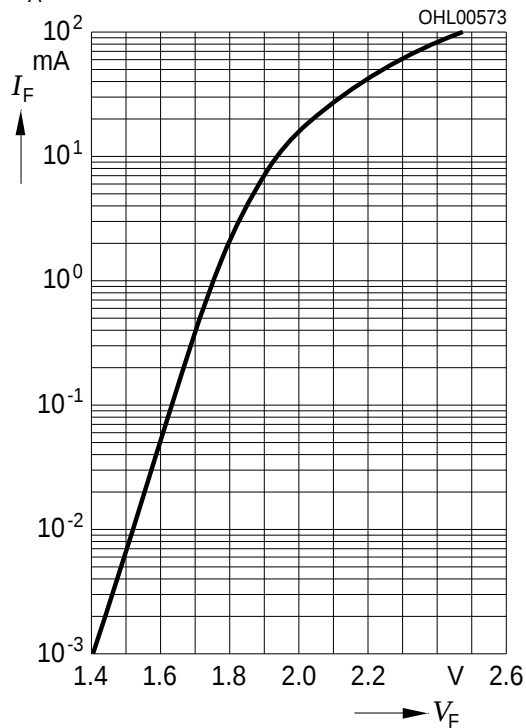
Abstrahlcharakteristik $I_{\text{rel}} = f(\varphi)$

Radiation Characteristic

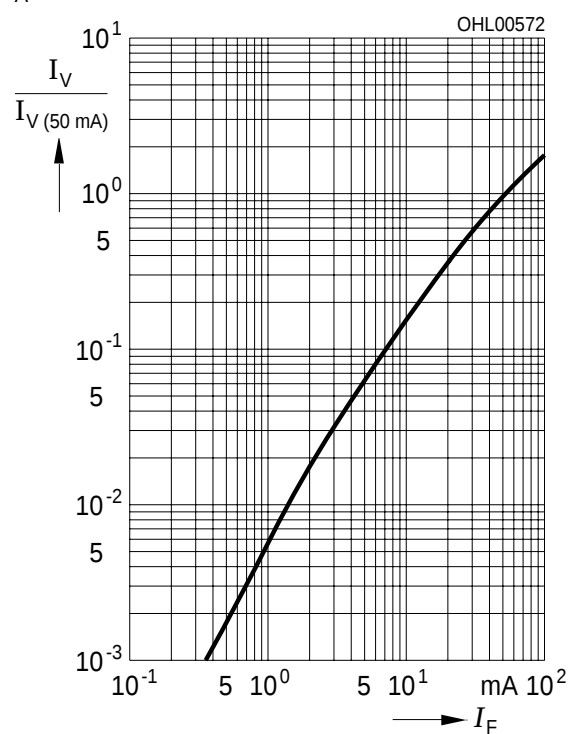


Durchlassstrom $I_F = f(V_F)$

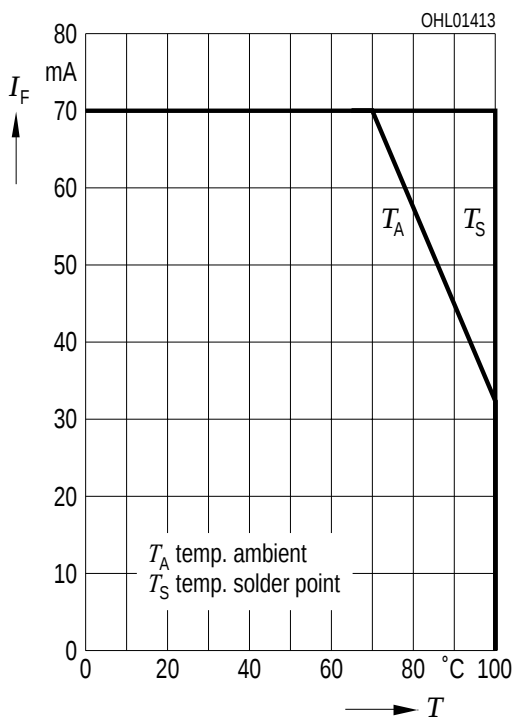
Forward Current

 $T_A = 25\text{ °C}$ Relative Lichtstärke $I_V/I_{V(50\text{ mA})} = f(I_F)$

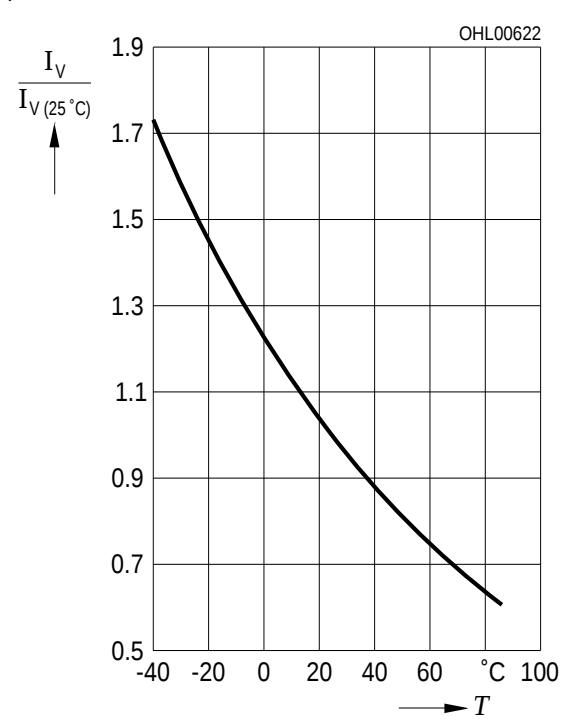
Relative Luminous Intensity

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

Max. Permissible Forward Current

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

Relative Luminous Intensity

 $I_F = 50\text{ mA}$ 

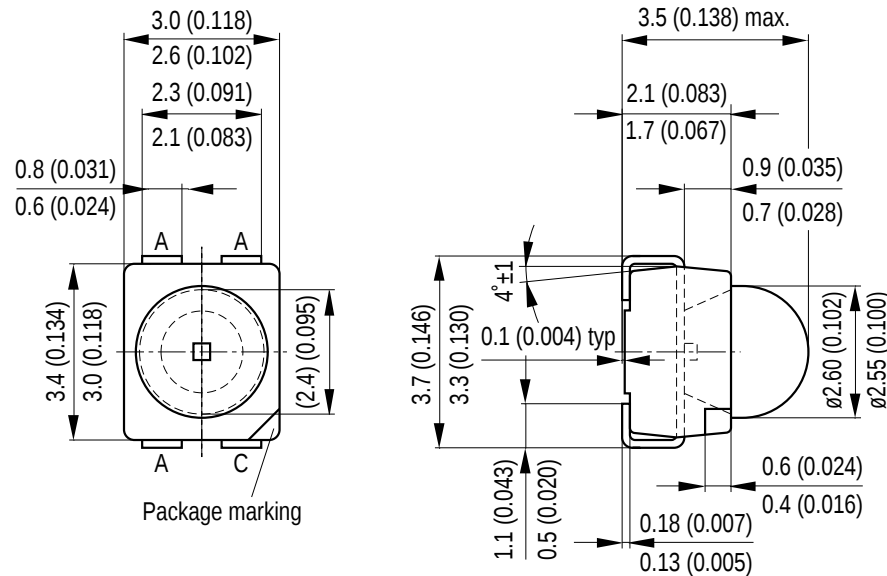
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, $T_A = 25\text{ °C}$

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

Diagram of
„Permissible Handling
Capability“
will be enclosed to
datasheet as soon as
evaluated data
available.

Diagram of
„Permissible Handling
Capability“
will be enclosed to
datasheet as soon as
evaluated data
available.

Maßzeichnung Package Outlines



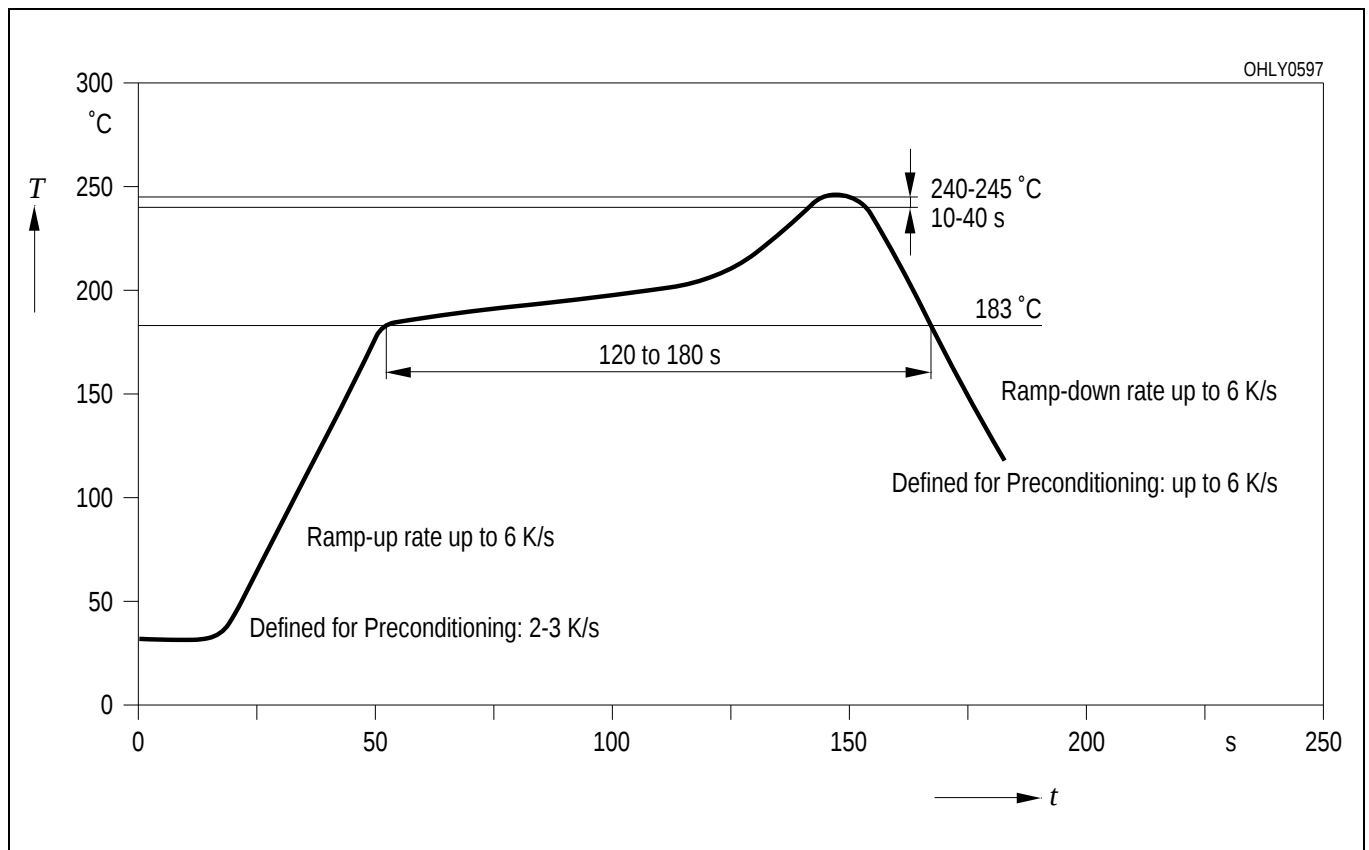
GPLY6085

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

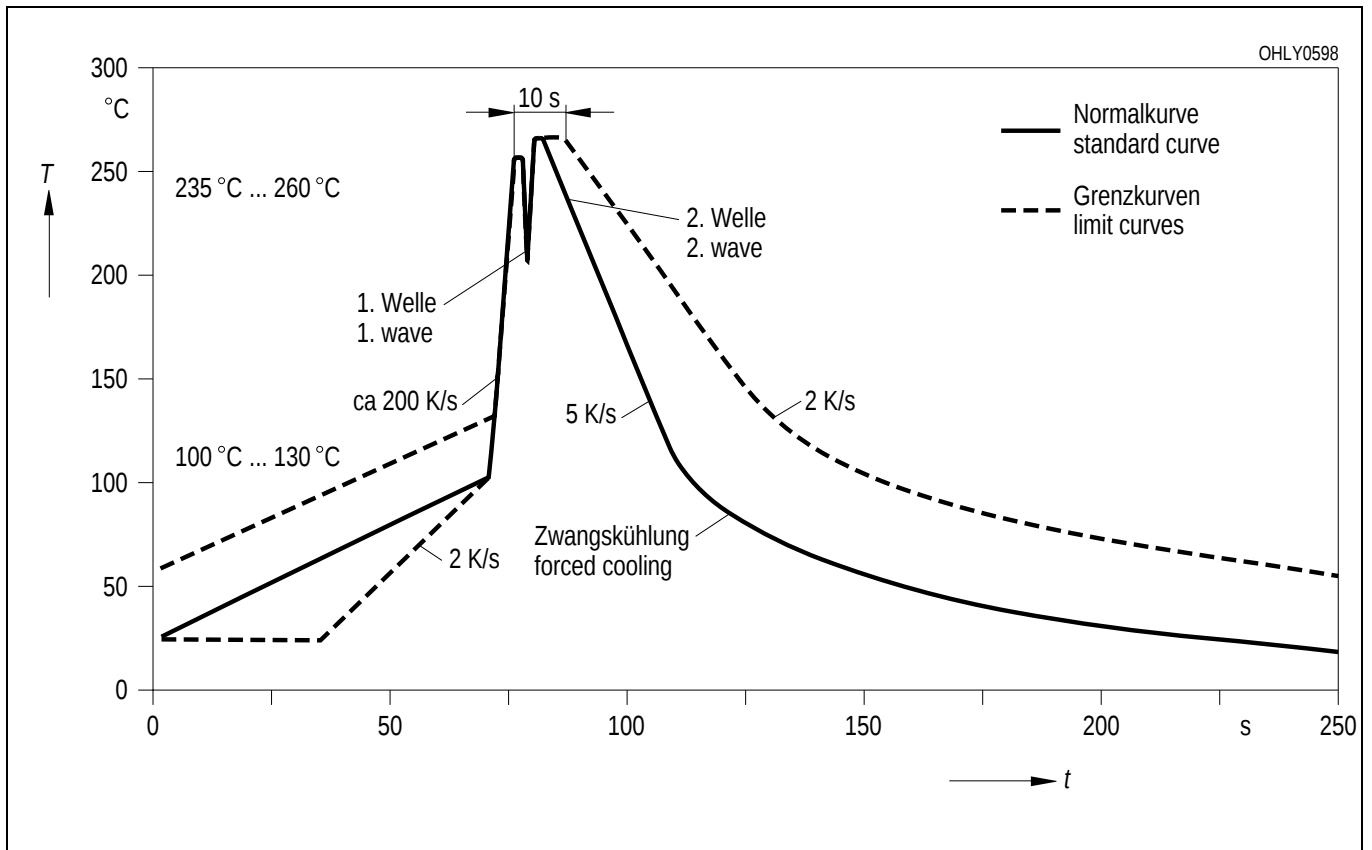
Gewicht / Approx. weight: 38 mg

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

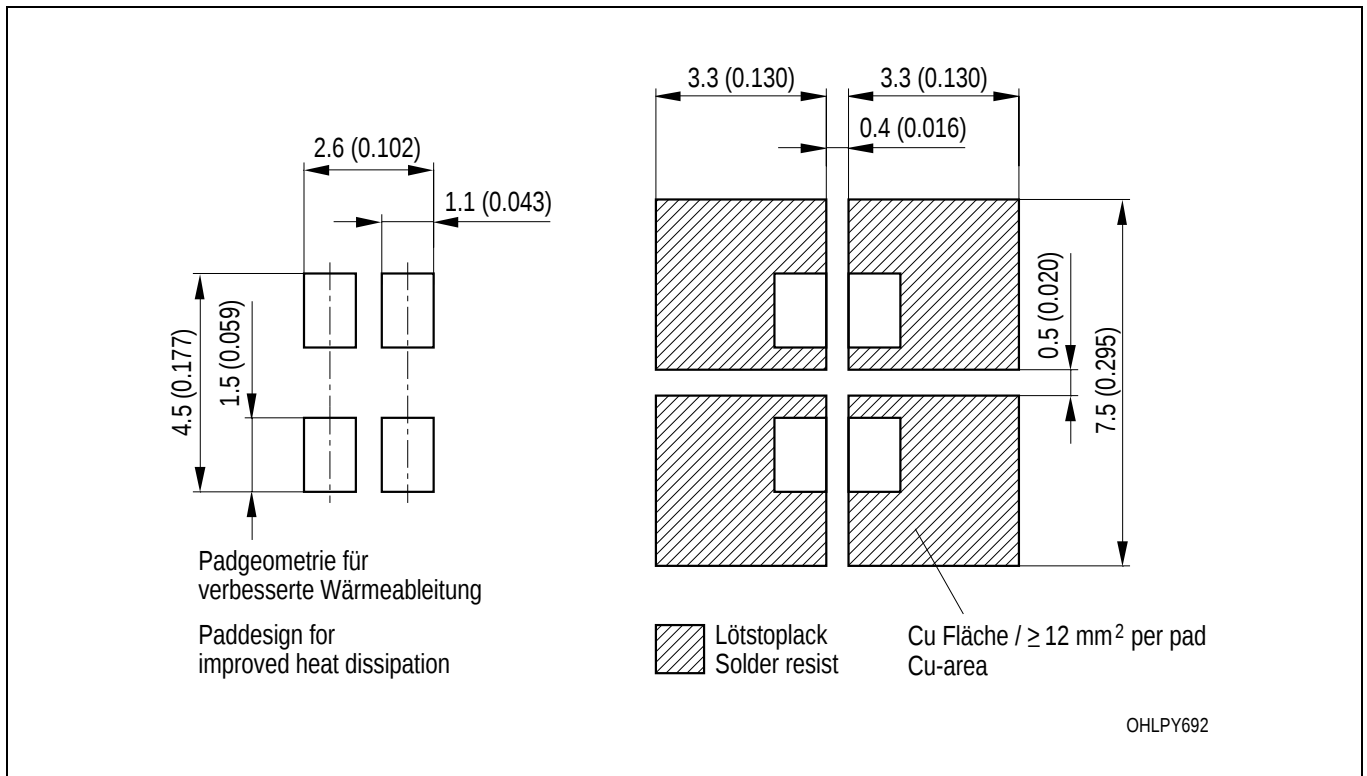
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

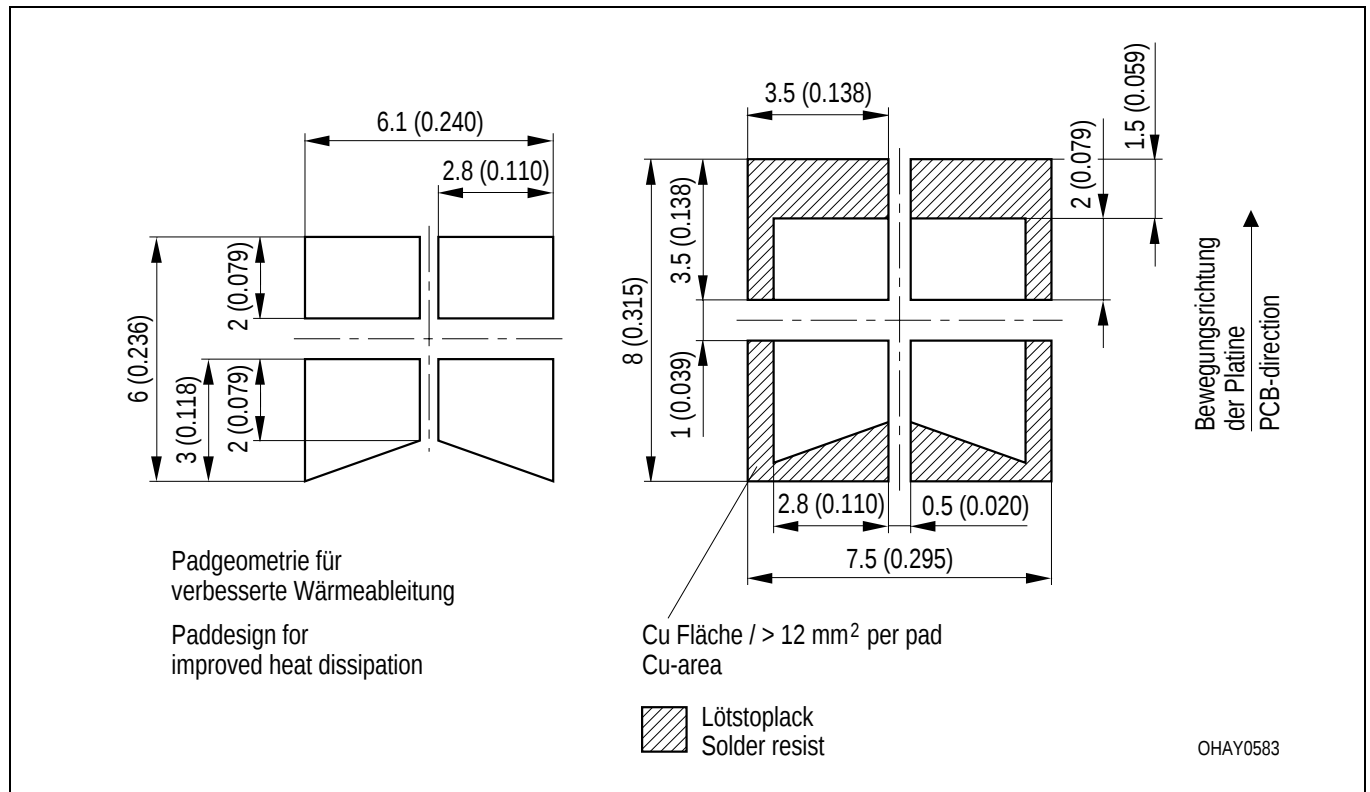


Empfohlenes Lötpad design IR Reflow Löten
Recommended Solder Pad IR Reflow Soldering



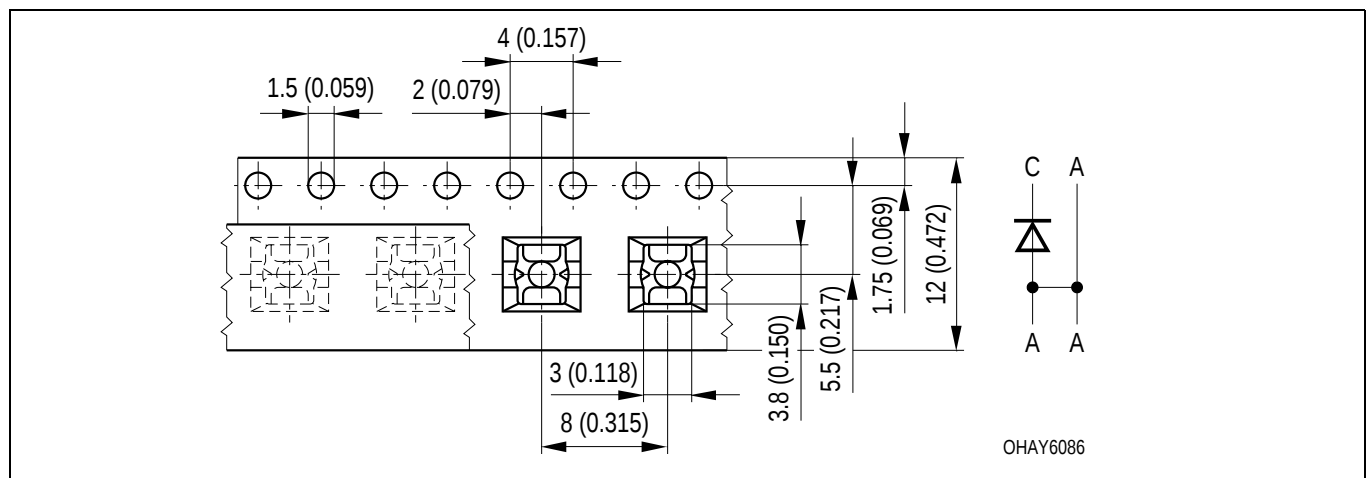
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

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, 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: 2002-11-29		Date of change
Previous Version: 2002-08-05		
Page	Subjects (major changes since last revision)	
4	set reverse current from 0.01 and 10 to t.b.d.	
14	annotations	2002-07-23
2	ordering code	2002-11-29

Published by OSRAM Opto Semiconductors GmbH & Co. OHG

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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.

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.