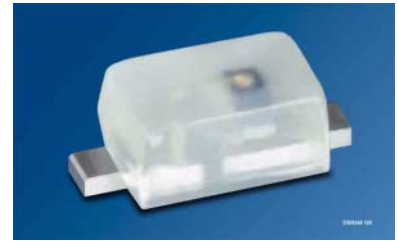


SmartLED™ Enhanced Optical Power LED (HOP2000)

LA L89B



Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusetyp:** SMT Gehäuse SCD 80
- **Besonderheit des Bauteils:** kleinste Bauform 1,7 x 0,8 x 0,65 mm (LxBxH). Die SmartLED™ kann jede CHIPLLED 0603 ersetzen. Die SmartLED erlaubt mehr Strom bei gleicher Chiptechnologie und Umgebungstemperatur. Daher ist die SmartLED heller als jede vergleichbare CHIPLLED 0603.
- **Wellenlänge:** 617 nm
- **Abstrahlwinkel:** 160°
- **Technologie:** InGaAlP
- **optischer Wirkungsgrad:** 19 lm/W
- **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 5000/Rolle bzw. 10000/Rolle, ø180 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- Informationsanzeigen im Außenbereich
- Flache Hinterleuchtung (LCD, Mobile Phone, Schalter, Display)
- Signal- und Symbolleuchten
- Ultraflache Leuchtenkonzepte unter Einsatz geeigneter Linsensysteme für den Automobil- und Allgemeinbeleuchtungsbereiche

Features

- **package:** SMT package SCD 80
- **feature of the device:** smallest package 1.7 x 0.8 x 0.65 mm (LxWxH). The SmartLED™ can replace each CHIPLLED 0603. The SmartLED allows a higher current to drive at the same chip technology and ambient temperature. Therefore the SmartLED is a superior package and is much brighter as each comparable CHIPLLED 0603.
- **wavelength:** 617 nm
- **viewing angle:** 160°
- **technology:** InGaAlP
- **optical efficiency:** 19 lm/W
- **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 5000/reel resp. 10000/reel, ø180 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- outdoor displays
- flat backlighting (LCD, cellular phones, switches, displays)
- signal and symbol luminaire
- Ultra-thin lamps using special optics for automotive and general lighting applications

Typ	Emissions- farbe	Gehäusefarbe	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of Package	Luminous Intensity $I_F = 30 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 30 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Ordering Code
LA L89B-S1T2-24	amber	colorless diffused	180 ... 450	1200 (typ.)	Q65110A0570

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

Die Standardlieferform von Serientypen beinhaltet eine Familiengruppe, die aus 4 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** Total color tolerance range, delivery in single groups (please see **page 5**)

The standard shipping format for serial types includes a family group of 4 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	+ 110	°C
Durchlassstrom Forward current	I_F	60	mA
Stoßstrom Surge current $t = 10 \mu s, D = 0.1$	I_{FM}	0.1	A
Sperrspannung ¹⁾ Reverse voltage	V_R	12	V
Leistungsaufnahme Power consumption	P_{tot}	110	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	500	K/W
Sperrschicht/Löt看垫 Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 5 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 5 \text{ mm}^2$)	$R_{th JS}$	290	K/W

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

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Parameter		Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge des emittierten Lichtes Wavelength at peak emission $I_F = 30\text{ mA}$	(typ.)	λ_{peak}	624	nm
Dominantwellenlänge ¹⁾ Dominant wavelength $I_F = 30\text{ mA}$	(typ.)	λ_{dom}	617 -5/+7	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 30\text{ mA}$	(typ.)	$\Delta\lambda$	18	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.)	2ϕ	160	Grad deg.
Durchlassspannung ²⁾ Forward voltage $I_F = 30\text{ mA}$	(min.) (typ.) (max.)	V_F V_F V_F	1.8 2.1 2.4	V V V
Sperrstrom Reverse current $V_R = 12\text{ V}$	(typ.) (max.)	I_R I_R	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} $I_F = 30\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.)	$TC_{\lambda_{\text{peak}}}$	0.15	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} $I_F = 30\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.)	$TC_{\lambda_{\text{dom}}}$	0.07	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 30\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.)	TC_V	-3.7	mV/K
Optischer Wirkungsgrad Optical efficiency $I_F = 30\text{ mA}$	(typ.)	η_{opt}	19	lm/W

¹⁾ 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 $\pm 1\text{ nm}$.

²⁾ Durchlassspannungsgruppen 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	amber		Einheit Unit
	min.	max.	
2	612	616	nm
3	616	620	nm
4	620	624	nm

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (lm)
S1	180.0 ...224.0	800 (typ.)
S2	224.0 ...280.0	1000 (typ.)
T1	280.0 ...355.0	1250 (typ.)
T2	355.0 ...450.0	1600 (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: S2-4

Example: S2-4

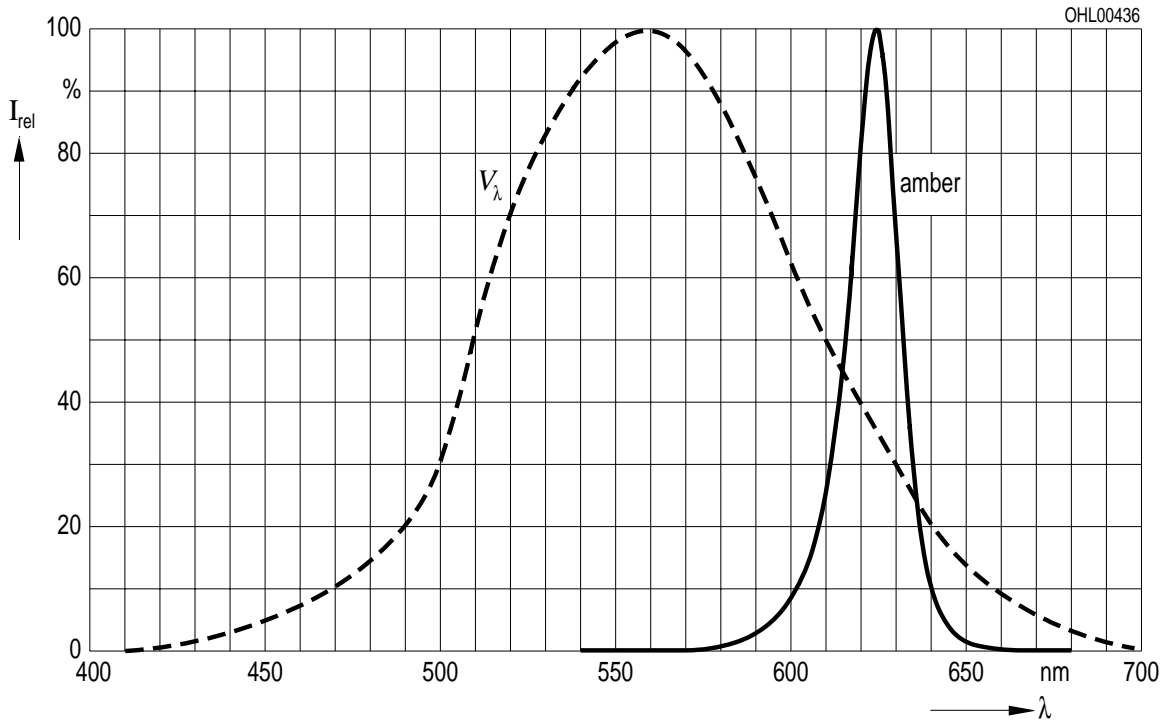
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
S	2	4

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

Relative Spectral Emission

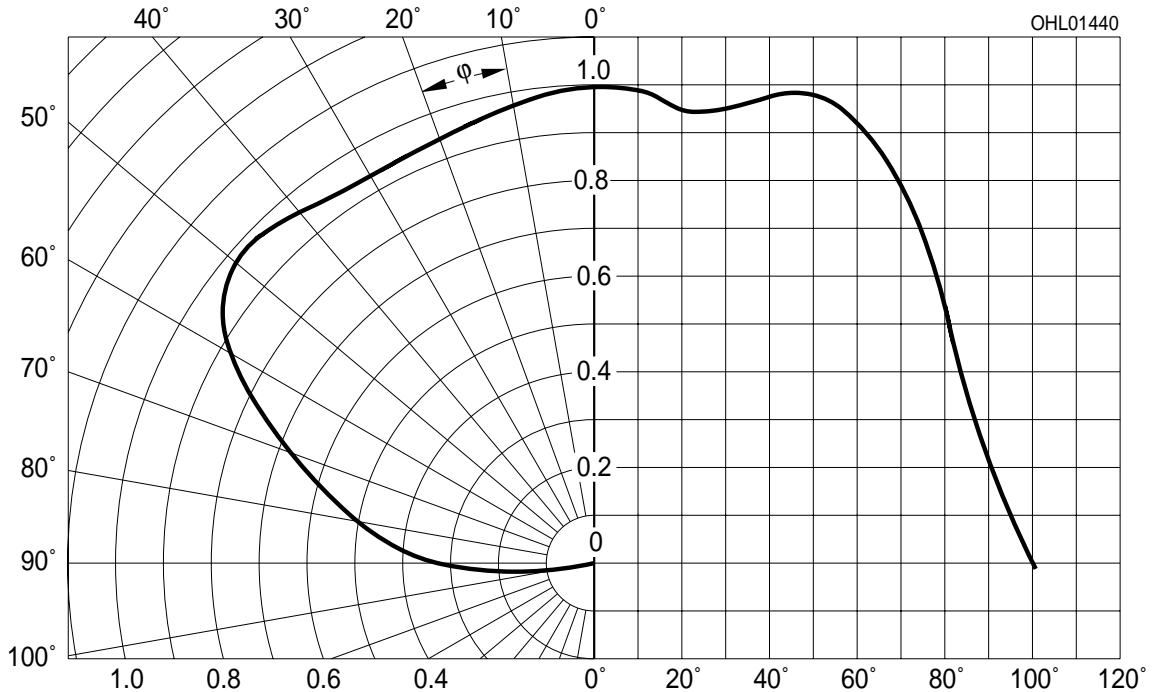
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



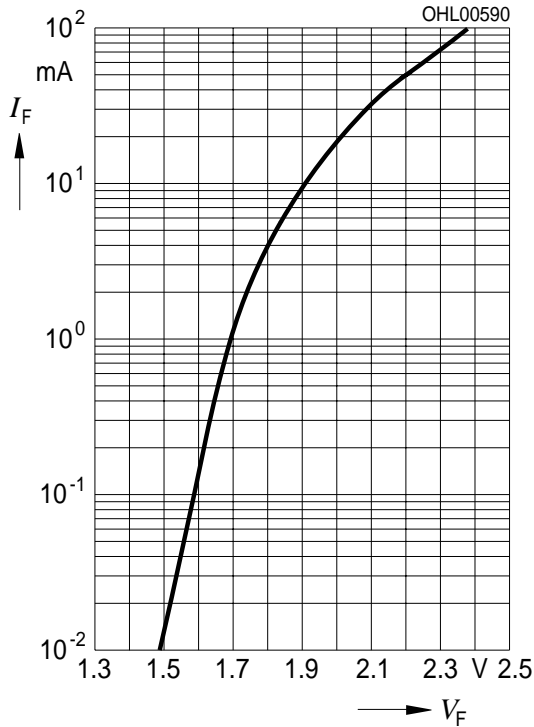
Abstrahlcharakteristik $I_{rel} = f(\varphi)$

Radiation Characteristic



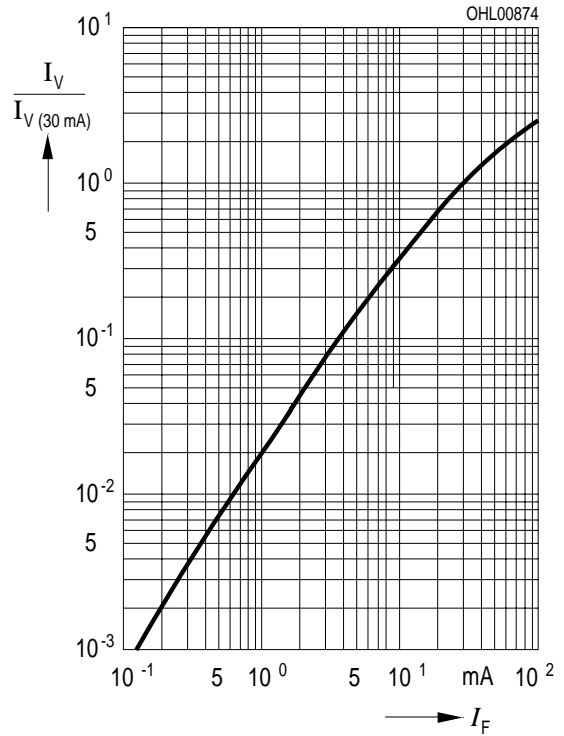
**Durchlassstrom $I_F = f(V_F)$
Forward Current**

$T_A = 25\text{ °C}$

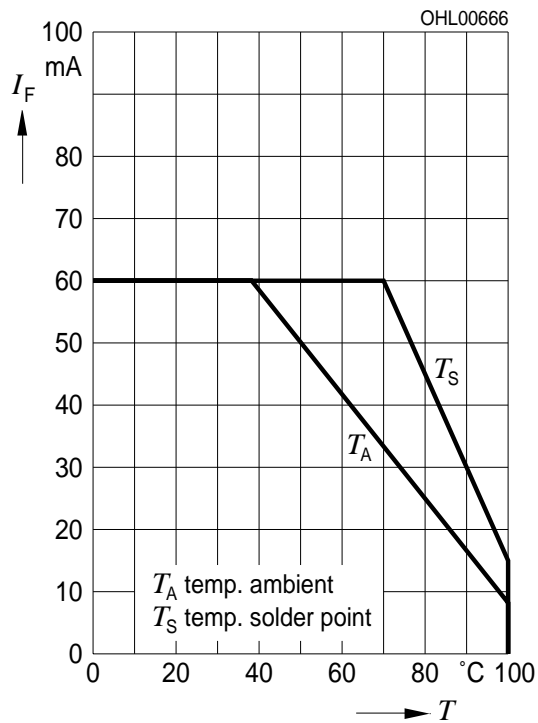


**Relative Lichtstärke $I_V/I_{V(30\text{ mA})} = f(I_F)$
Relative Luminous Intensity**

$T_A = 25\text{ °C}$

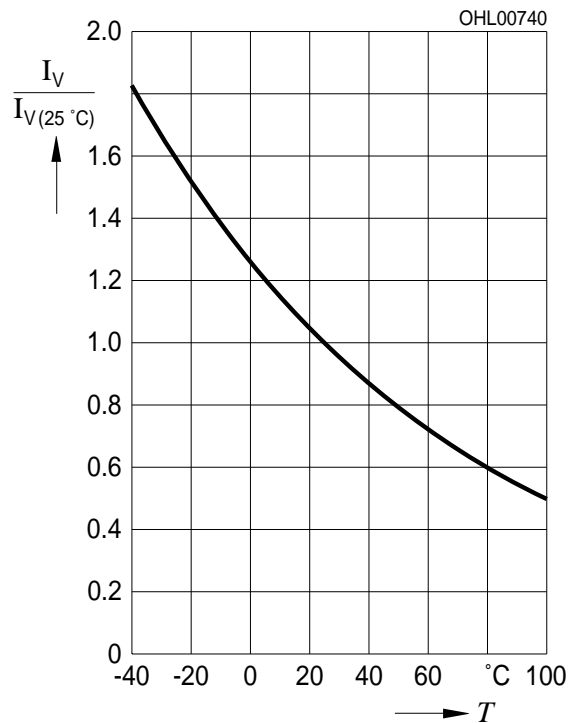


**Maximal zulässiger Durchlassstrom $I_F = f(T_A)$
Max. Permissible Forward Current**

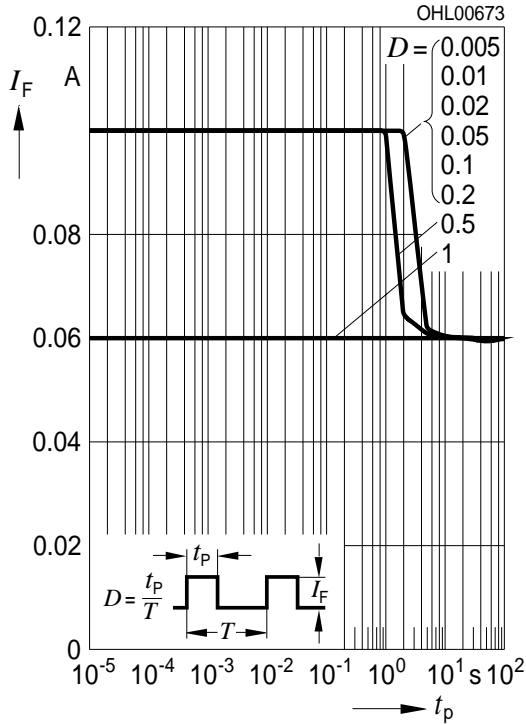


**Relative Lichtstärke $I_V/I_{V(25\text{ °C})} = f(T_A)$
Relative Luminous Intensity**

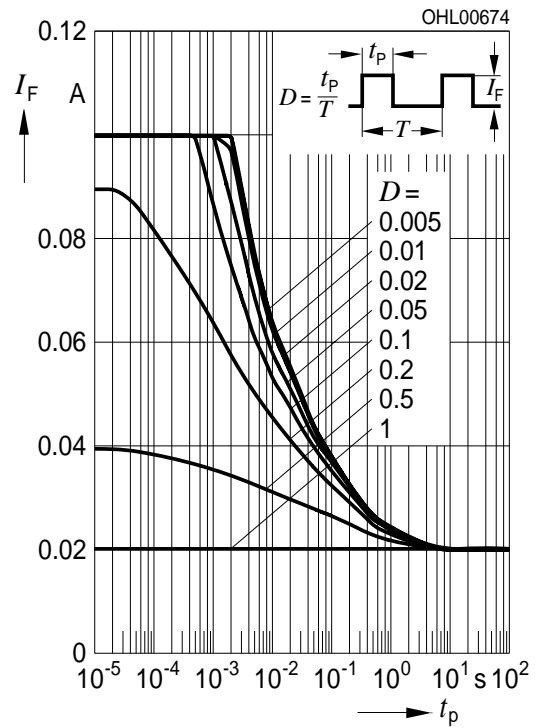
$I_F = 30\text{ mA}$

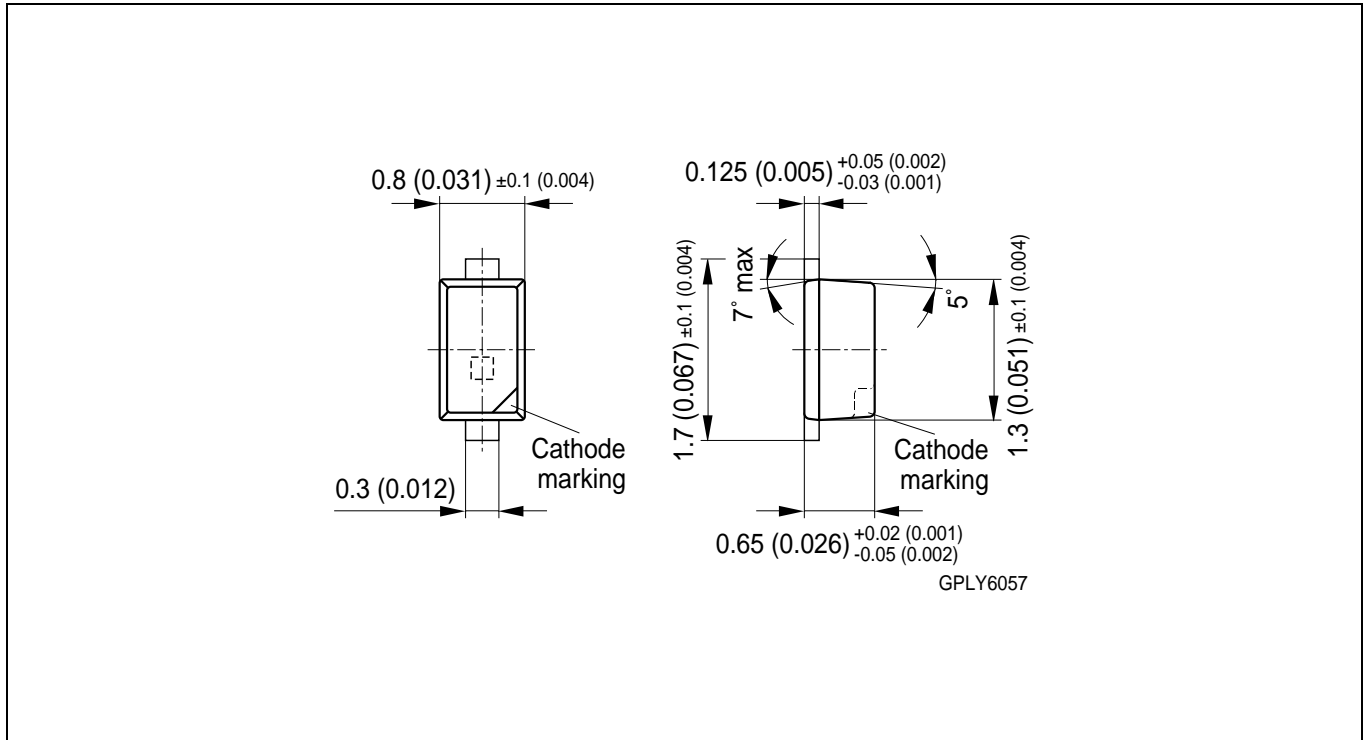


Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$



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



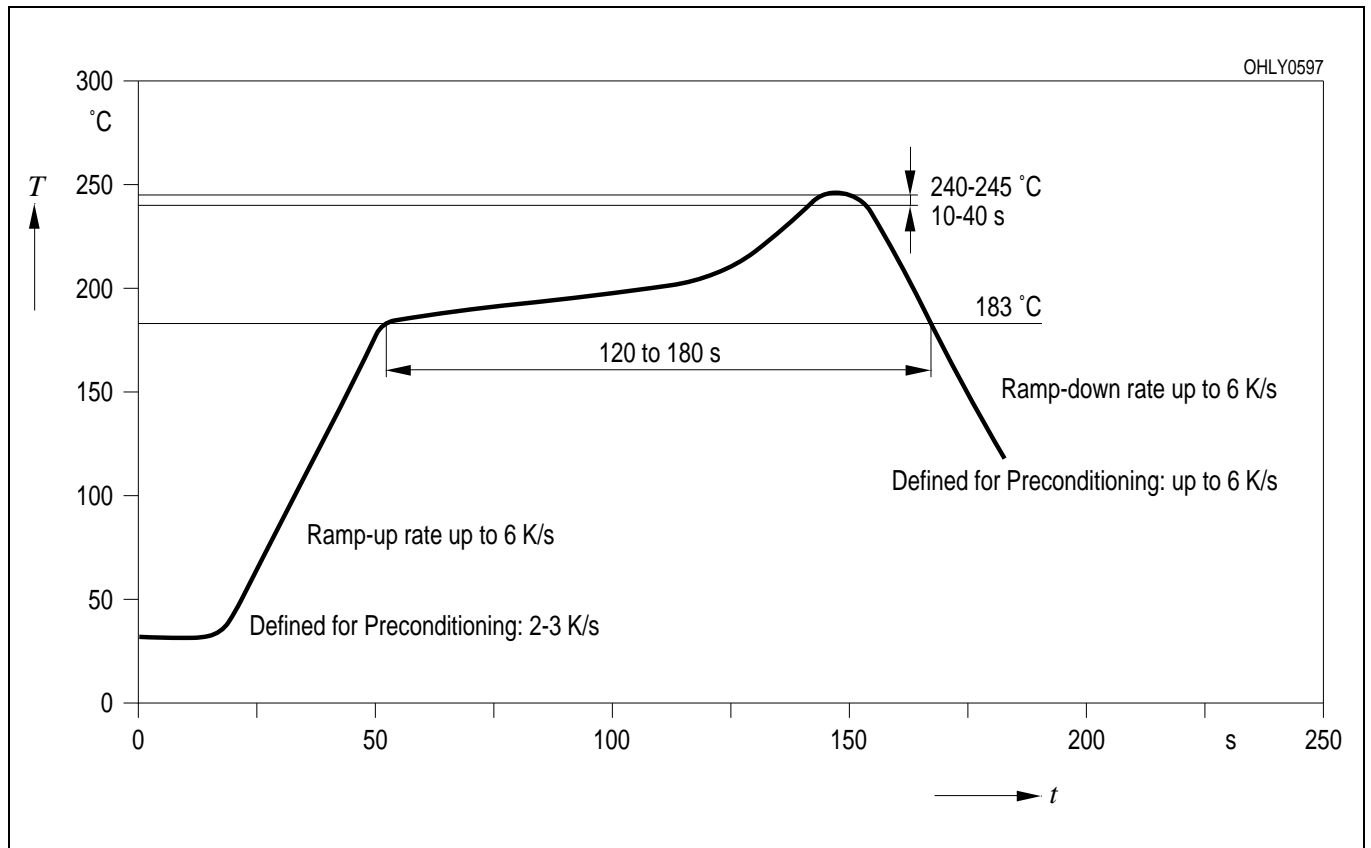
**Maßzeichnung
Package Outlines**

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

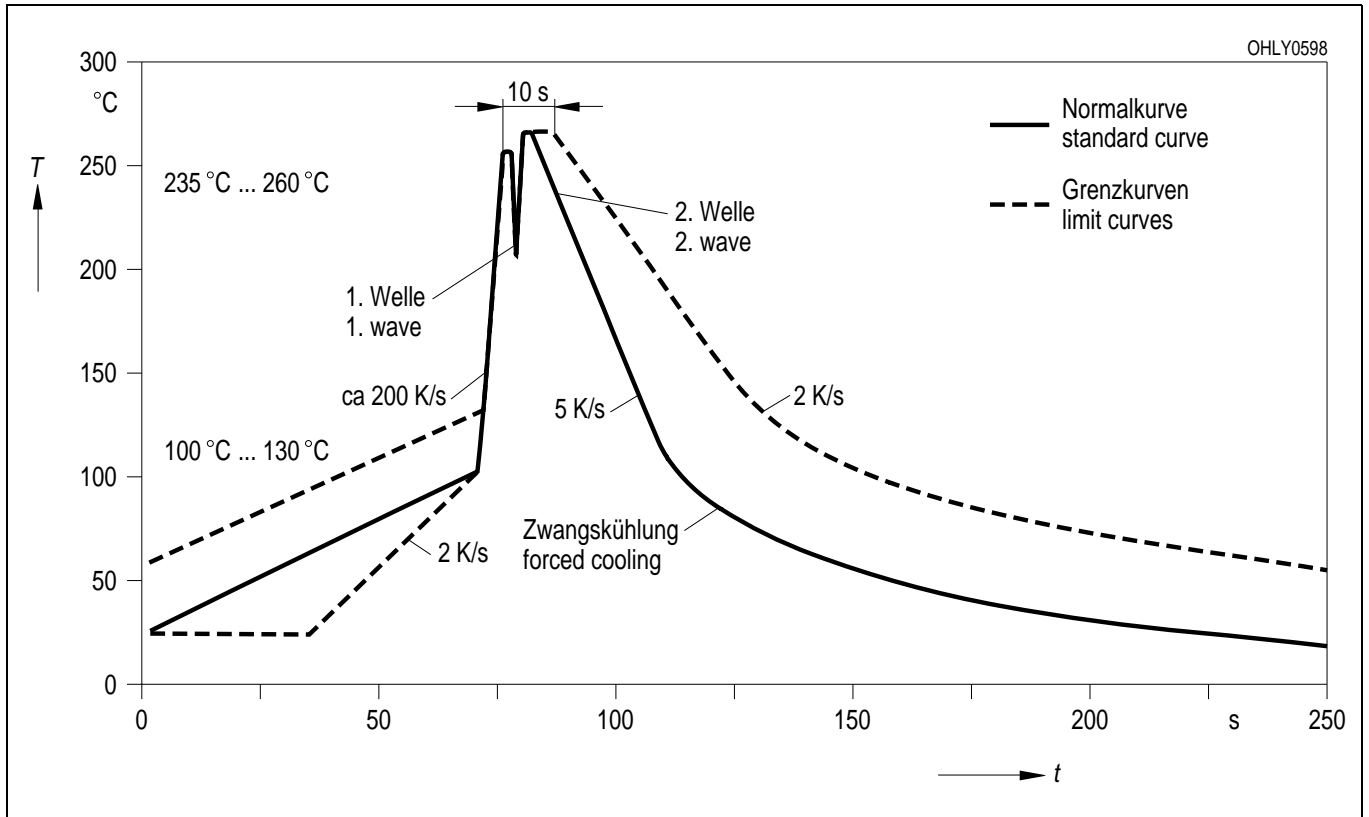
Gewicht / Approx. weight: 1,4 mg

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

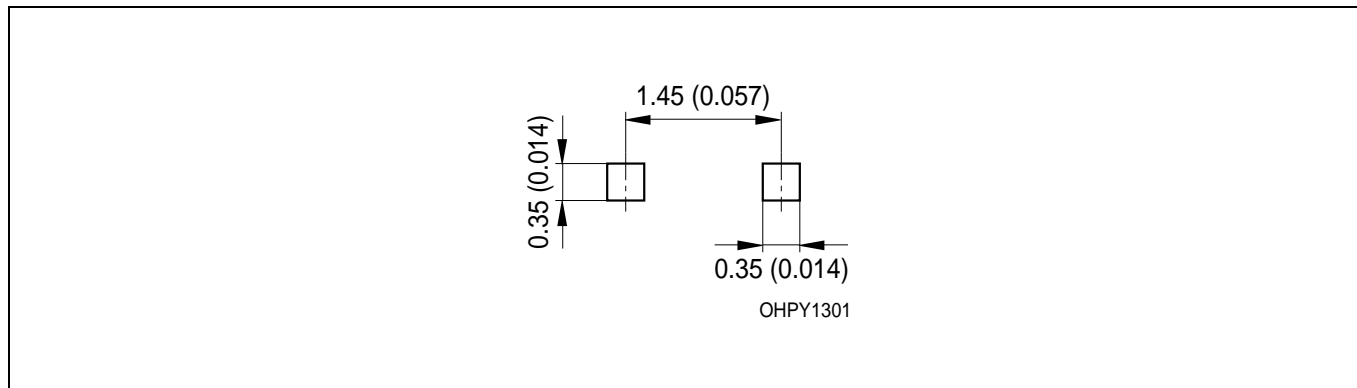
IR-Reflow Lötprofil (nach IPC 9501)
IR Reflow Soldering Profile (acc. to IPC 9501)



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

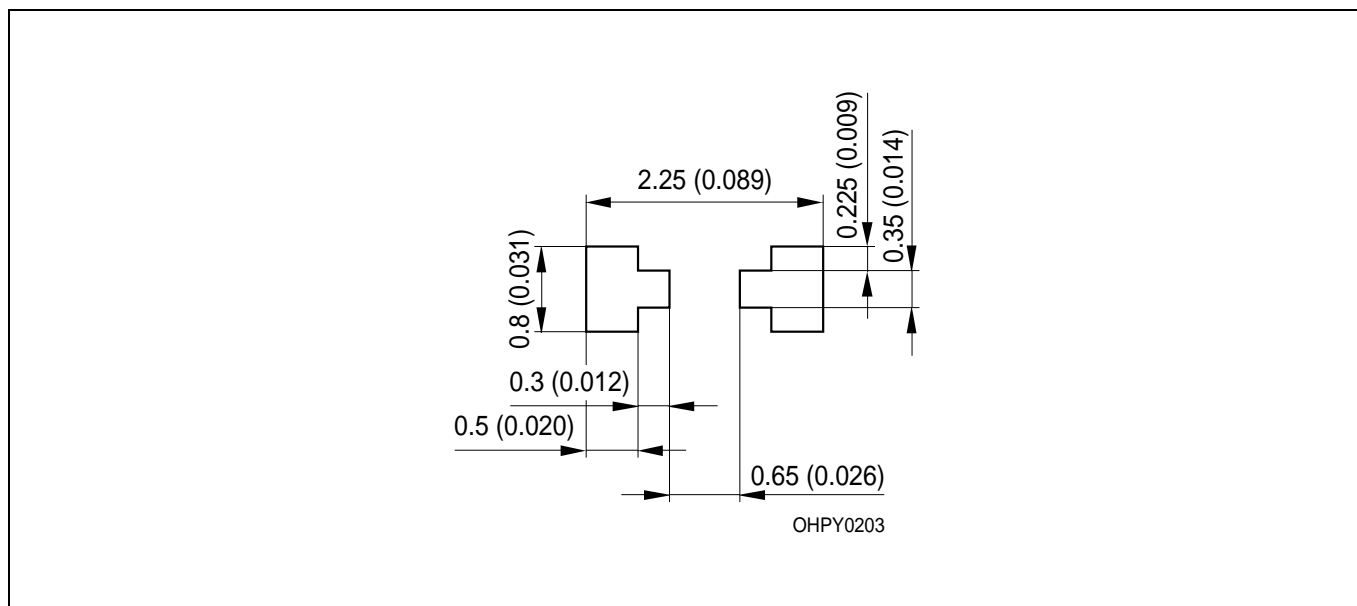


Empfohlenes Löt paddesign IR Reflow Lötén
Recommended Solder Pad IR Reflow Soldering



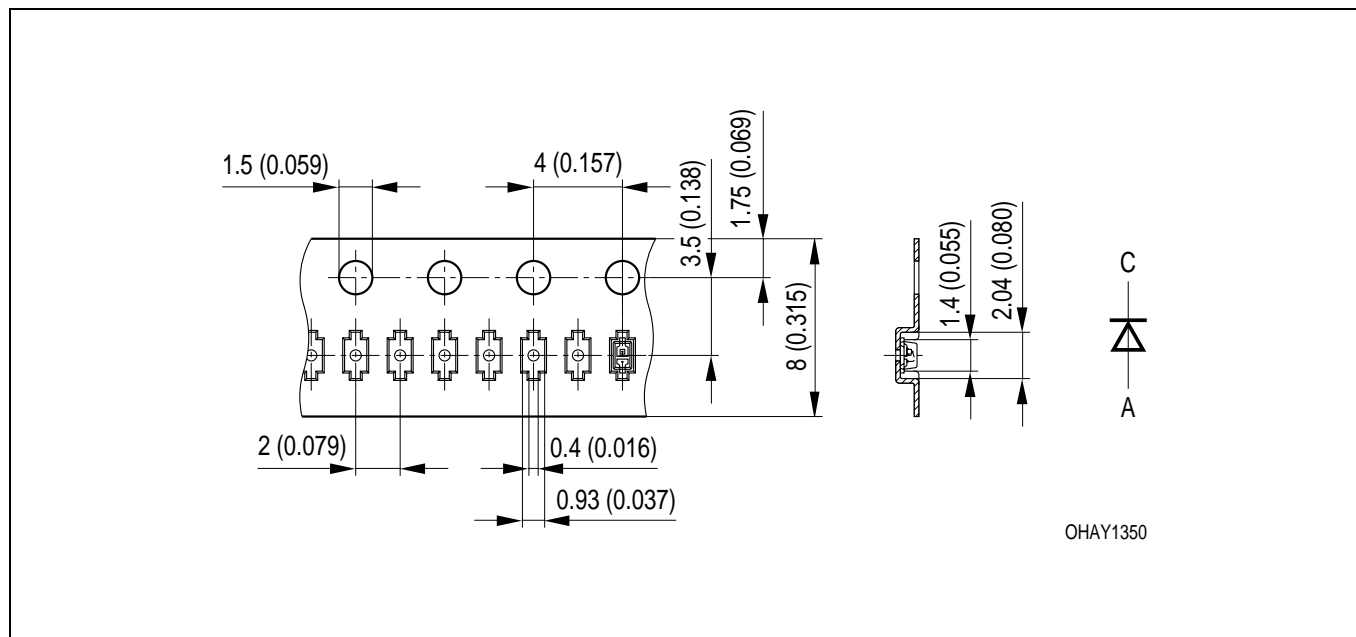
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
 Gehäuse hält TTW-Löthitze aus / Package able to withstand TTW-soldering heat

Empfohlenes Löt paddesign verwendbar für SmartLED™ und Chipled - Bauform 0603
 IR Reflow Lötén
Recommended Solder Pad useable for SmartLED™ and Chipled - Package 0603
 IR Reflow Soldering



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
 Empfohlene Löt pastendicke: 120 µm / recommended thickness of solder paste: 120 µm
 Gehäuse für Wellenlötén (TTW) geeignet / Package suitable for TTW-soldering

Gurtung / Polarität und Lage
Method of Taping / Polarity and Orientation



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

Verpackungseinheit:

8 mm Gurt mit 5000/Rolle, \varnothing 180 mm
 8 mm Gurt mit 10000/Rolle, \varnothing 180 mm (auf Anfrage)

Packing unit:

8 mm tape with 5,00/reel, \varnothing 180 mm
 8 mm tape with 10000/reel, \varnothing 180 mm (on request)

Revision History: 2003-05-22		Date of change
Previous Version: 2002-12-10		
Page	Subjects (major changes since last revision)	
1 & 4	change of optical efficiency from 24 to 19 lm/W	
1	increase of "feature of device" and "applications"	
3	pad size from 16 mm ² to 5 mm ²	
7	change of diagram rel. lum. intensity (T _A) from OHL01640 to OHL00740	
2 & 5	insert of wavelength groups	2002-07-19
14	annotations	2002-07-23
3, 4	value (reverse voltage from 5 V to 12 V)	2002-09-18
2	ordering code	2002-10-25
1, 13	tape with 5000/reel and 10000/reel instead of 10000	2002-12-10
7	diagram forward current OHL01382 replaced by OHL00590	2003-02-12

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 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.