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Hyper Micro SIDELED® Hyper-Bright LED

LB Y87S



Vorläufige Daten / Preliminary Data

Besondere Merkmale

- **Gehäusotyp:** weißes SMT Gehäuse
- **Besonderheit des Bauteils:** kleine Bauform mit extrem breiter Abstrahlcharakteristik; ideal für Hinterleuchtungen und Einkopplungen in Lichtleiter
- **Wellenlänge:** 470 nm (blau)
- **Abstrahlwinkel:** Lambertscher Strahler (120°)
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 2 lm/W
- **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 3000/Rolle, ø180 mm oder 10000/Rolle, ø330 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

Anwendungen

- optimale Einkopplung in Lichtleiter
- Hinterleuchtung (LCD, Mobiltelefone, Tasten, Allgemeinbeleuchtung, Werbebeleuchtung)
- Signal- und Symbolleuchten
- Automobilbereich (z. B. Autoradio und Instrumentenbeleuchtung)

Features

- **package:** white SMT package
- **feature of the device:** small package with extremely wide viewing angle; ideal for backlighting and coupling in light guides
- **wavelength:** 470 nm (blue)
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** InGaN
- **optical efficiency:** 2 lm/W
- **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 3000/reel, ø180 mm or 10000/reel, ø330 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

Applications

- optimized coupling into light guides
- backlighting (LCD, cellular phones, keys, general lighting, illuminated advertising)
- signal and symbol luminaire
- automotive (e. g. car radio and dashboard backlighting)

Typ Type	Emissions- farbe Color of Emission	Gehäusefarbe Color of Package	Lichtstärke Luminous Intensity $I_F = 10 \text{ mA}$ $I_V \text{ (mcd)}$	Lichtstrom Luminous Flux $I_F = 10 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Bestellnummer Ordering Code
LB Y87S-L1M1-35	blue	colorless clear	11.2 ... 22.4	50 (typ.)	Q65110A0383
LB Y87S-M1N2-35			18.0 ... 45.0	95 (typ.)	Q65110A0482

Anm.: -35 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: -35 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	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	15	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	I_{FM}	150	mA
Sperrspannung ¹⁾ Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption	P_{tot}	60	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	530	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 $\geq 5 \text{ mm}^2$)	$R_{th JS}$	300	K/W

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

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Parameter	Symbol Symbol	Werte Values	Einheit Unit
Wellenlänge des emittierten Lichtes Wavelength at peak emission $I_F = 10\text{ mA}$	(typ.) λ_{peak}	465	nm
Dominantwellenlänge ¹⁾ Dominant wavelength $I_F = 10\text{ mA}$	(typ.) λ_{dom}	470 ± 6	nm
Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ Spectral bandwidth at 50 % $I_{\text{rel max}}$ $I_F = 10\text{ mA}$	(typ.) $\Delta\lambda$	25	nm
Abstrahlwinkel bei 50 % I_V (Vollwinkel) Viewing angle at 50 % I_V	(typ.) 2ϕ	120	Grad deg.
Durchlassspannung ²⁾ Forward voltage $I_F = 10\text{ mA}$	(typ.) V_F (max.) V_F	3.4 3.8	V V
Sperrstrom Reverse current $V_R = 5\text{ V}$	(typ.) I_R (max.) I_R	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} Temperature coefficient of λ_{peak} $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.) $TC_{\lambda_{\text{peak}}}$	0.04	nm/K
Temperaturkoeffizient von λ_{dom} Temperature coefficient of λ_{dom} $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.) $TC_{\lambda_{\text{dom}}}$	0.02	nm/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	(typ.) TC_V	- 3.1	mV/K
Optischer Wirkungsgrad Optical efficiency $I_F = 10\text{ mA}$	(typ.) η_{opt}	2	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⁾ Spannungswerte werden mit einer Stromeinprägungsdauer von 1 ms und einer Genauigkeit von $\pm 0,1\text{ V}$ ermittelt.
Voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.1\text{ V}$.

1) Wellenlängengruppen / Wavelength groups

Gruppe Group	Wellenlänge Wavelength		Einheit Unit
	min.	max.	
3	464	468	nm
4	468	472	nm
5	472	476	nm

Helligkeits-Gruppierungsschema

Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_V (mcd)	Lichtstrom Luminous Flux Φ_V (mlm)
L1	11.2 ... 14.0	35 (typ.)
L2	14.0 ... 18.0	45 (typ.)
M1	18.0 ... 22.4	55 (typ.)
M2	22.4 ... 28.0	70 (typ.)
N1	28.0 ... 35.5	85 (typ.)
N2	35.5 ... 45.0	110 (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: L1-3

Example: L1-3

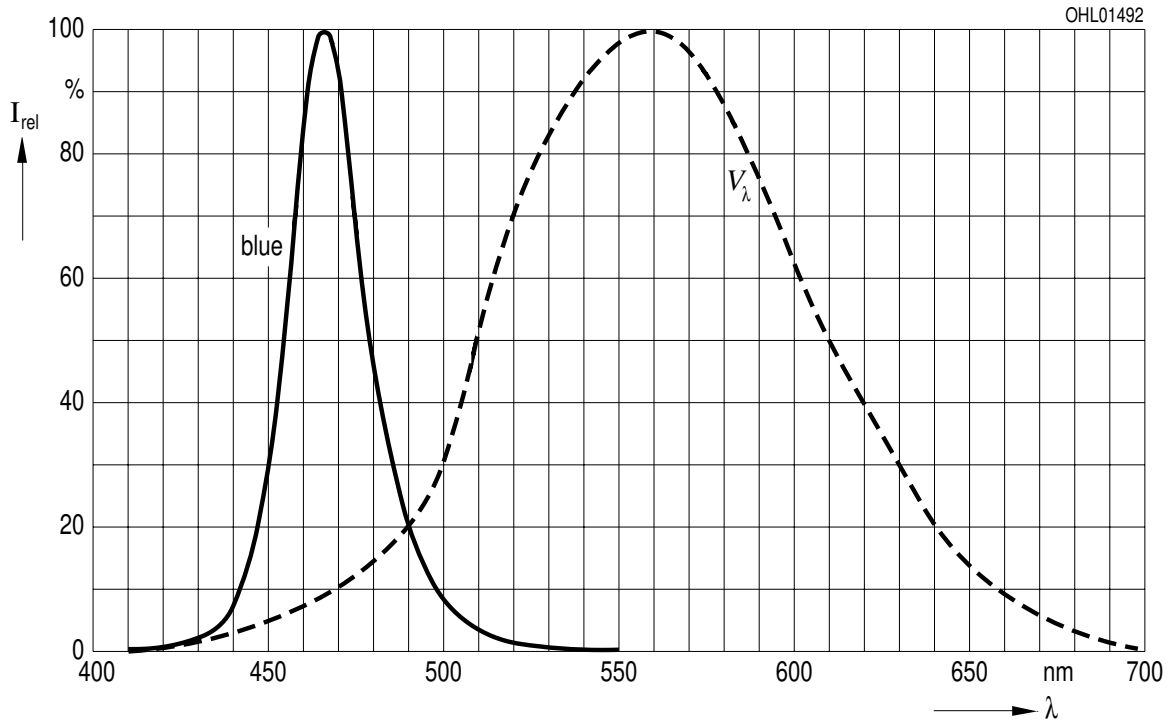
Lichtgruppe Luminous Intensity Group	Halbgruppe Half Group	Wellenlänge Wavelength
L	1	3

Relative spektrale Emission $I_{rel} = f(\lambda)$, $T_A = 25\text{ °C}$, $I_F = 10\text{ mA}$

Relative Spectral Emission

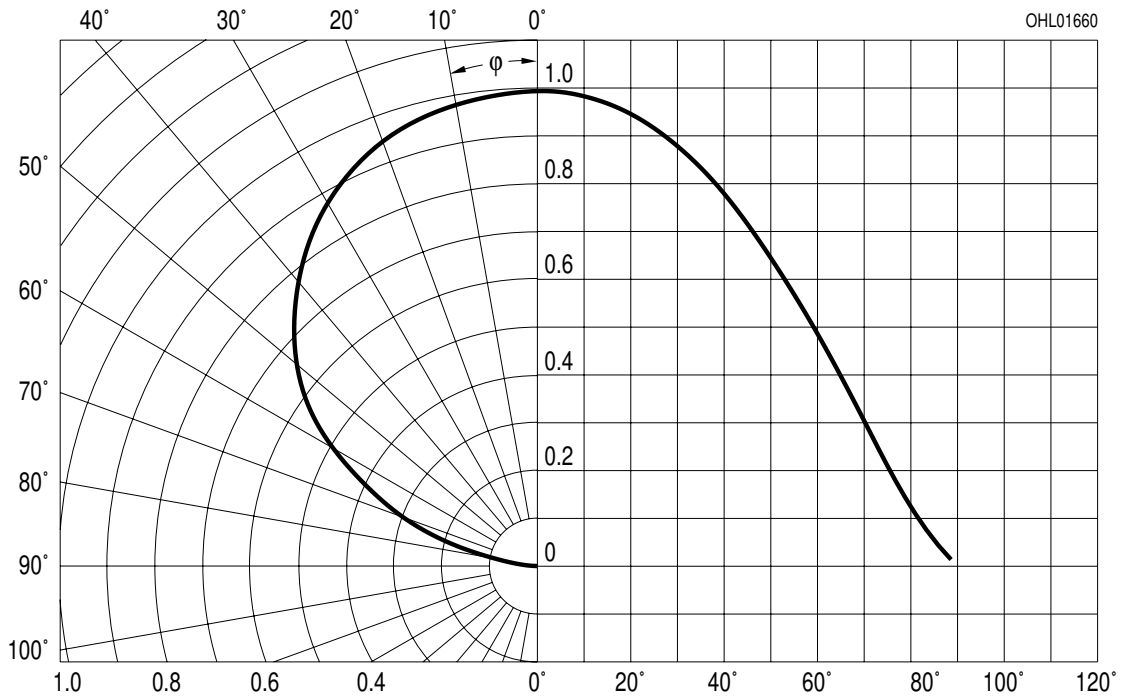
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



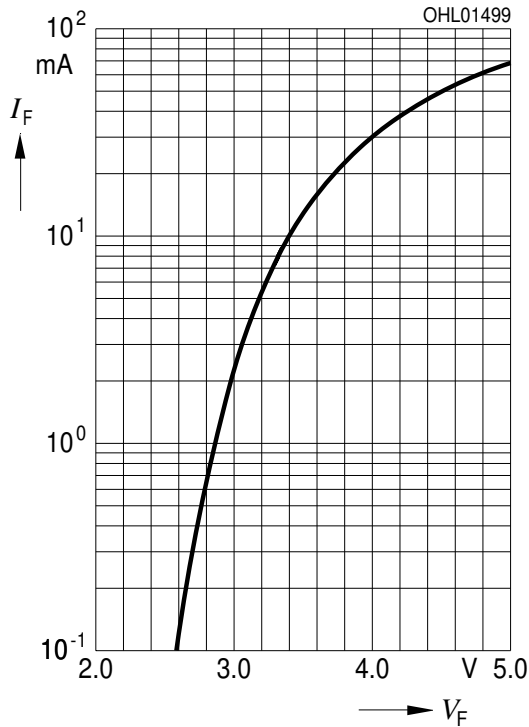
Abstrahlcharakteristik $I_{rel} = f(\varphi)$

Radiation Characteristic



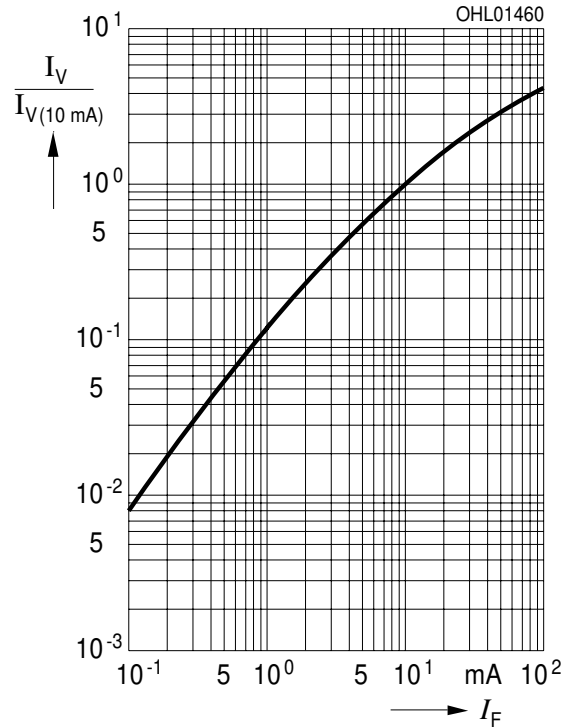
Durchlassstrom $I_F = f(V_F)$
Forward Current

$T_A = 25\text{ °C}$



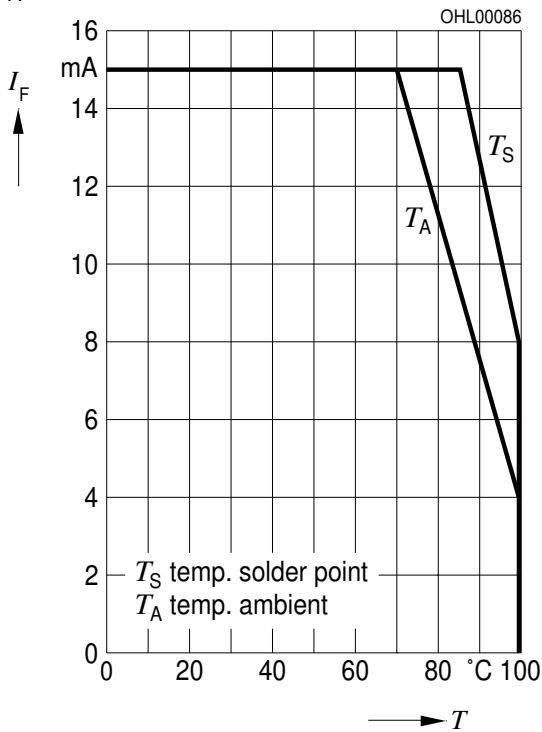
Relative Lichtstärke $I_V/I_{V(10\text{ mA})} = f(I_F)$
Relative Luminous Intensity

$T_A = 25\text{ °C}$



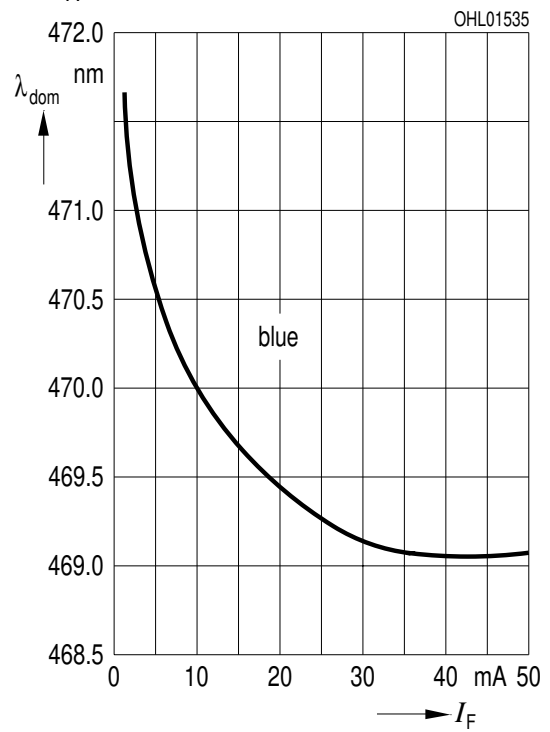
Maximal zulässiger Durchlassstrom $I_F = f(T_A)$
Max. Permissible Forward Current

T_A : temp. ambient



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

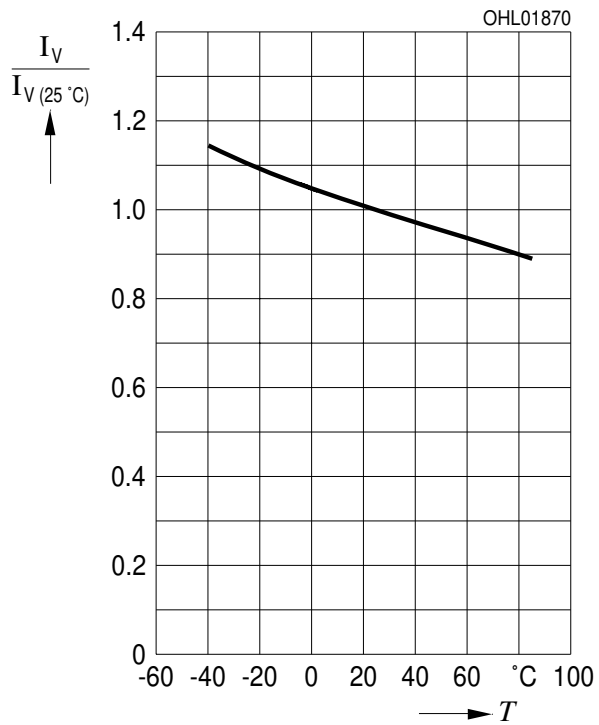
LB, $T_A = 25\text{ °C}$



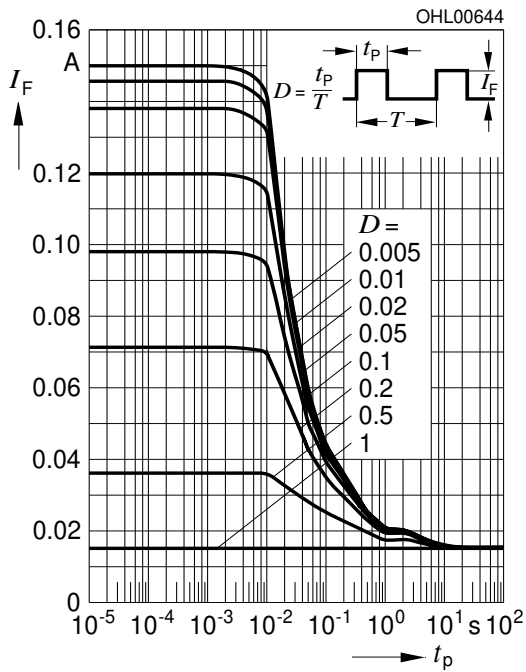
Relative Lichtstärke $I_V/I_{V(25\text{ }^\circ\text{C})} = f(T_A)$

Relative Luminous Intensity

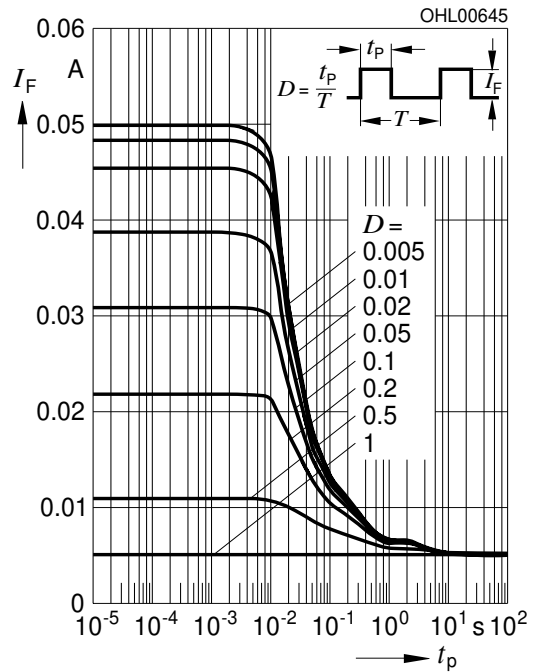
$I_F = 10\text{ mA}$



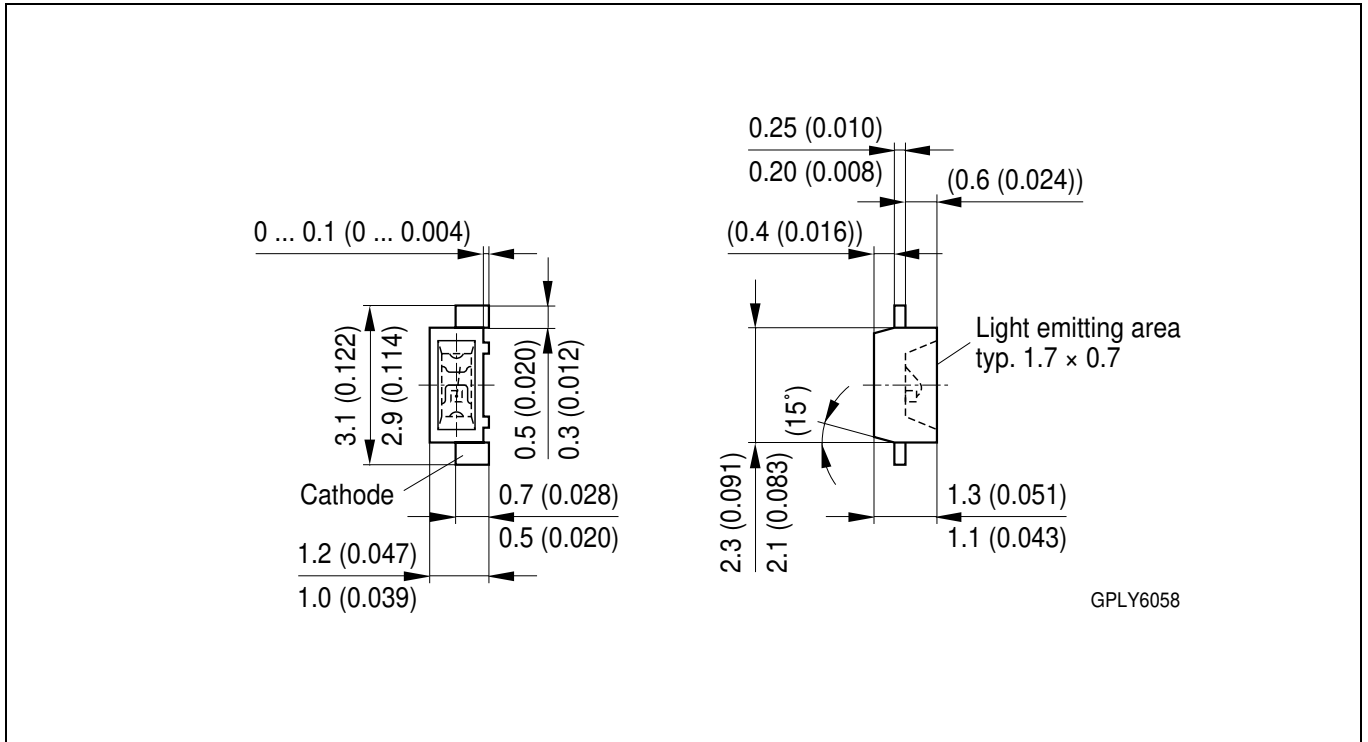
Zulässige Impulsbelastbarkeit $I_F = f(t_p)$
Permissible Pulse Handling Capability
 Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$
LB



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



**Maßzeichnung
Package Outlines**

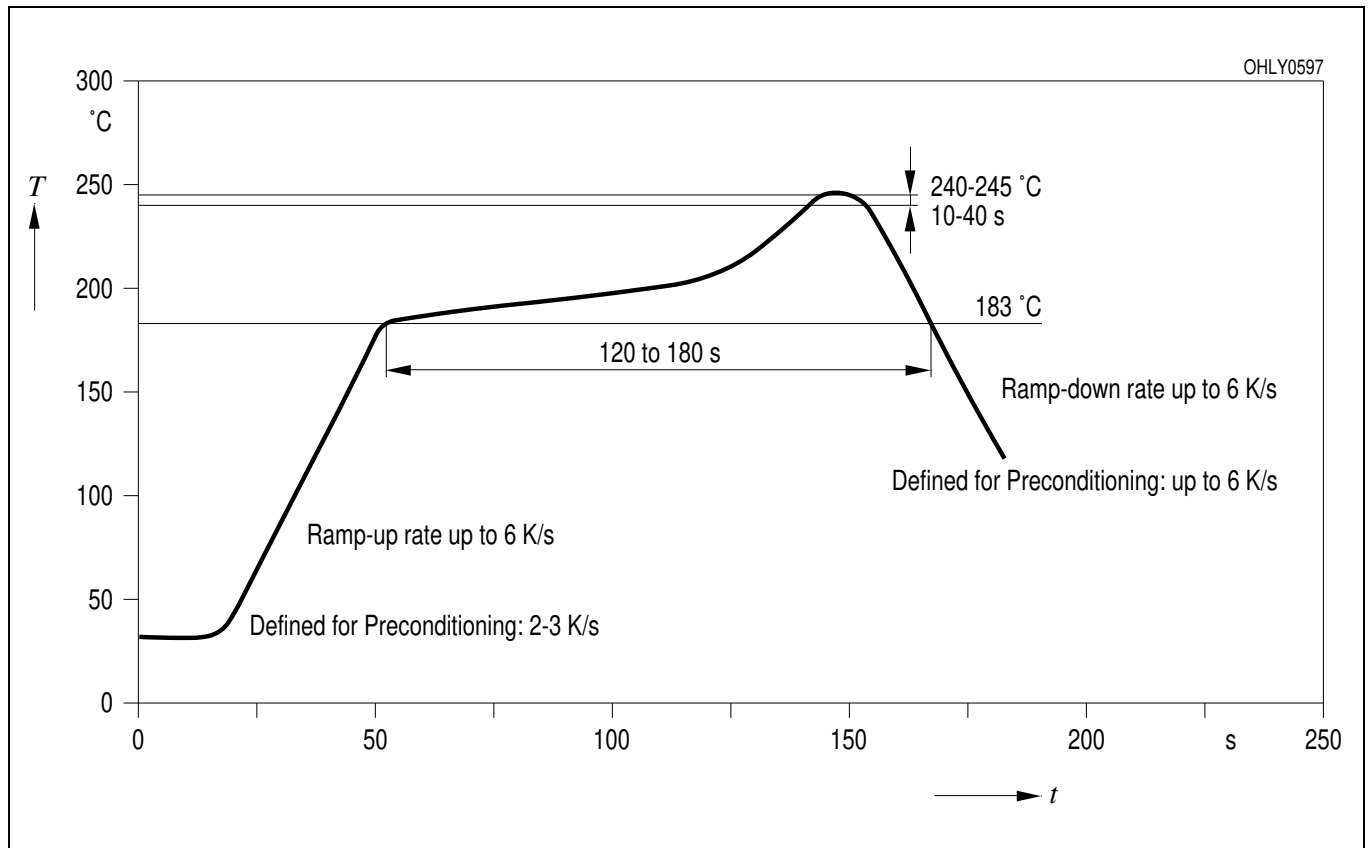


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

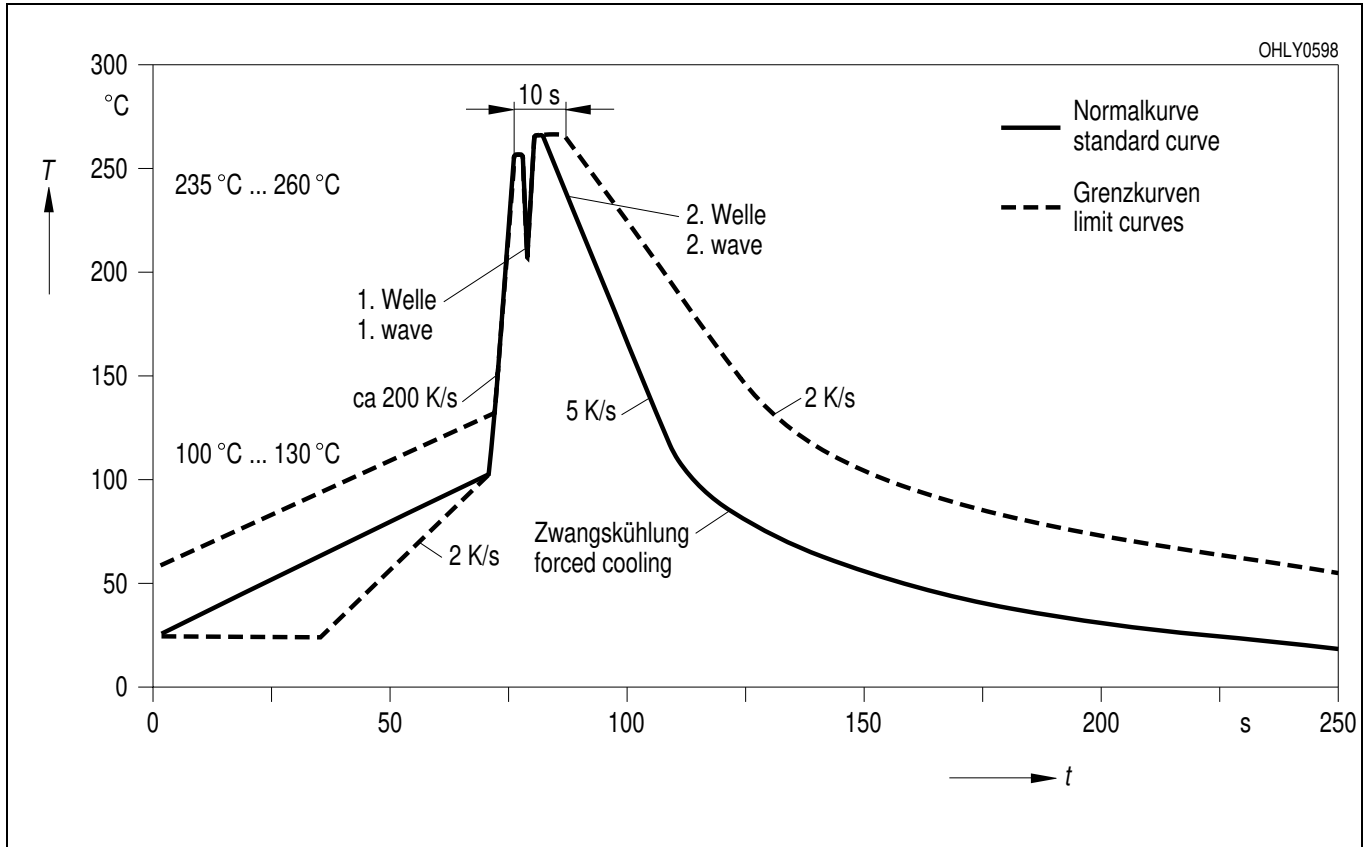
Gewicht / Approx. weight: 6 mg

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

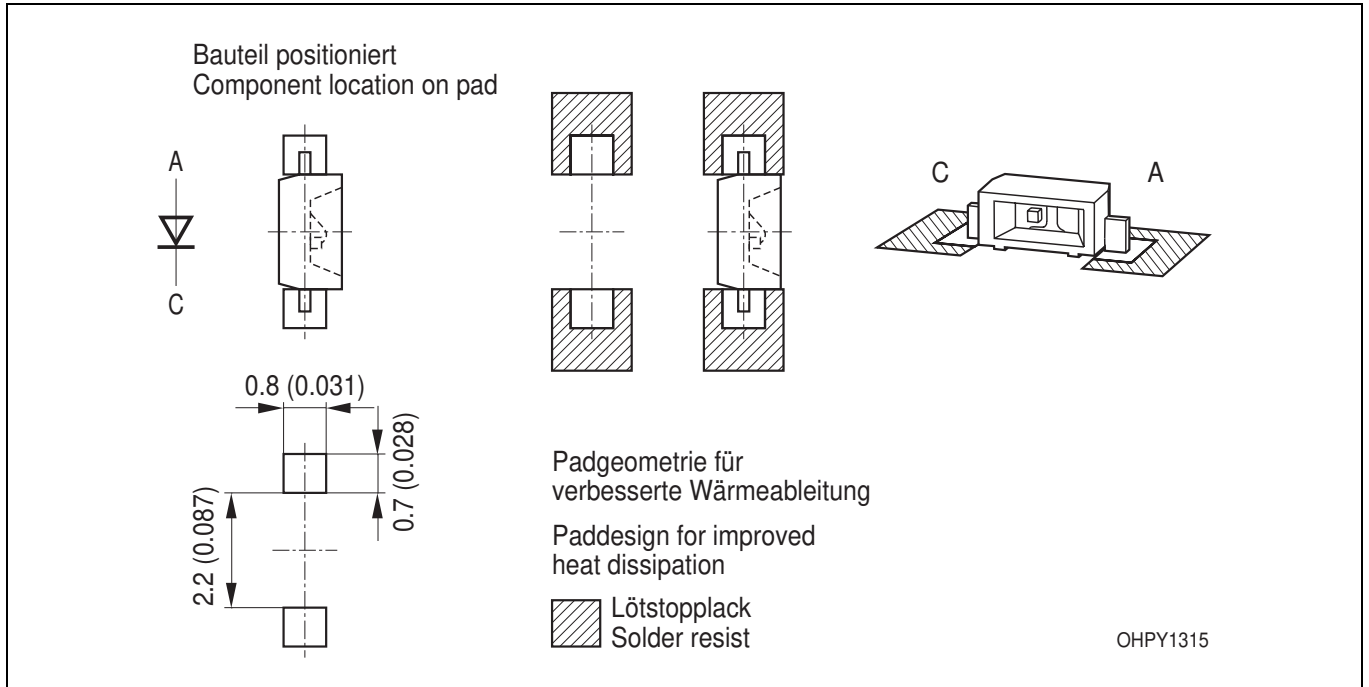
IR-Reflow Lötprofil (nach CECC 00802)
IR Reflow Soldering Profile (acc. to CECC 00802)



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



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



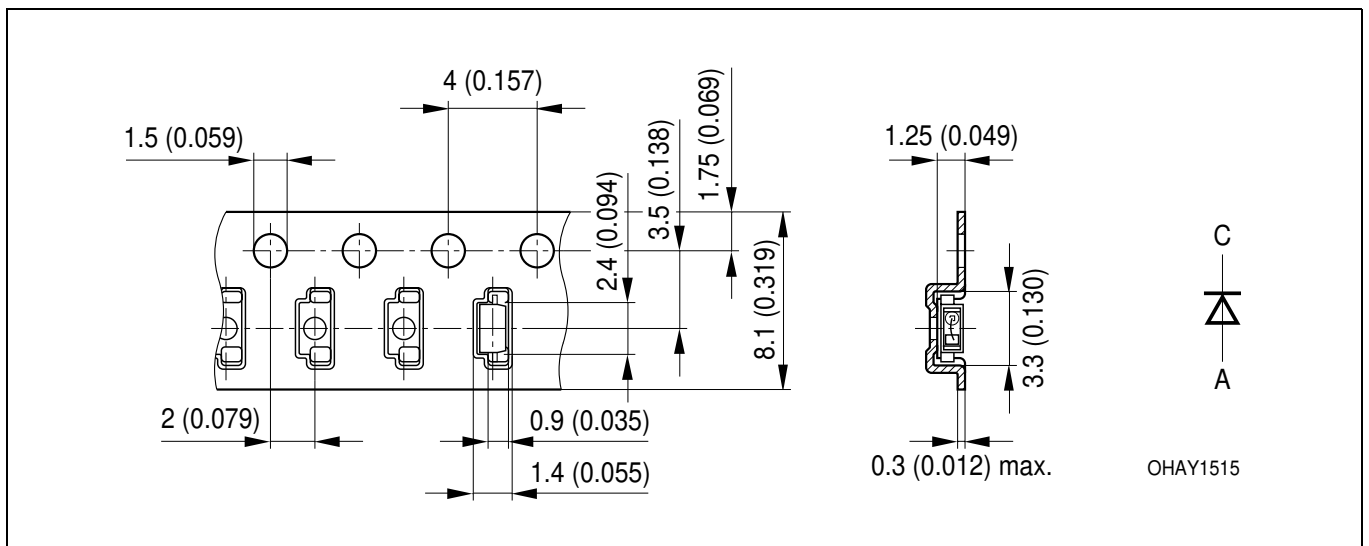
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).
 Gehäuse hält TTW-Löthitze aus / Package able to withstand TTW-soldering heat

Gurtung / Polarität und Lage

Verpackungseinheit 3000/Rolle, ø180 mm oder
10000/Rolle, ø330 mm

Method of Taping / Polarity and Orientation

Packing unit 3000/reel, ø180 mm
or 10000/reel, ø330 mm



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

Revision History: 2002-10-18		Date of change
Previous Version: -		
Page	Subjects (major changes since last revision)	

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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.

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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.