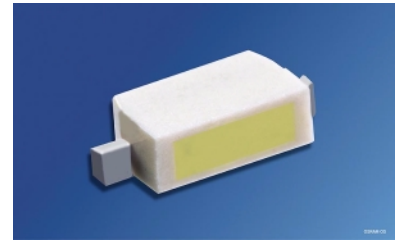


# Micro SIDELED White Hyper-Bright LED

LW 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
- **Farbort:**  $x = 0,33$ ,  $y = 0,33$  nach CIE 1931 (weiß)
- **typische Farbtemperatur:** 5600 K
- **Farbwiedergabeindex:** 80
- **Abstrahlwinkel:** Lambertischer Strahler ( $120^\circ$ )
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 4 lm/W
- **Gruppierungsparameter:** Lichtstärke, Farbort
- **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,  $\varnothing 180$  mm oder 10000/Rolle,  $\varnothing 330$  mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

### Anwendungen

- Hinterleuchtung (LCD, Mobiltelefone, Schalter, Tasten, Displays, Werbebeleuchtung)
- optimierte Einkopplung in Lichtleiter

### Features

- **package:** white SMT package
- **feature of the device:** small package with extremely wide viewing angle; ideal for backlighting and coupling in light guides
- **color coordinates:**  $x = 0.33$ ,  $y = 0.33$  acc. to CIE 1931 (white)
- **typ. color temperature:** 5600 K
- **color reproduction index:** 80
- **viewing angle:** Lambertian Emitter ( $120^\circ$ )
- **technology:** InGaN
- **optical efficiency:** 4 lm/W
- **grouping parameter:** luminous intensity, color coordinates
- **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,  $\varnothing 180$  mm or 10000/reel,  $\varnothing 330$  mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

### Applications

- backlighting (LCD, mobile phones, switches, keys, displays, illuminated advertising)
- optimized coupling into light guides

Typ	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke	Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 10 \text{ mA}$ $I_V \text{ (mcd)}$	Luminous Flux $I_F = 10 \text{ mA}$ $\Phi_V \text{ (mlm)}$	Ordering Code
LW Y87S-NQ-1	white	colored diffused	28.0 ...112.0	210	Q62703-Q6139

Anm.: -1 Farbselektiert nach Farbortgruppen (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 Color selection acc. to Chromaticity coordinate groups (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 group.*

**Grenzwerte**  
**Maximum Ratings**

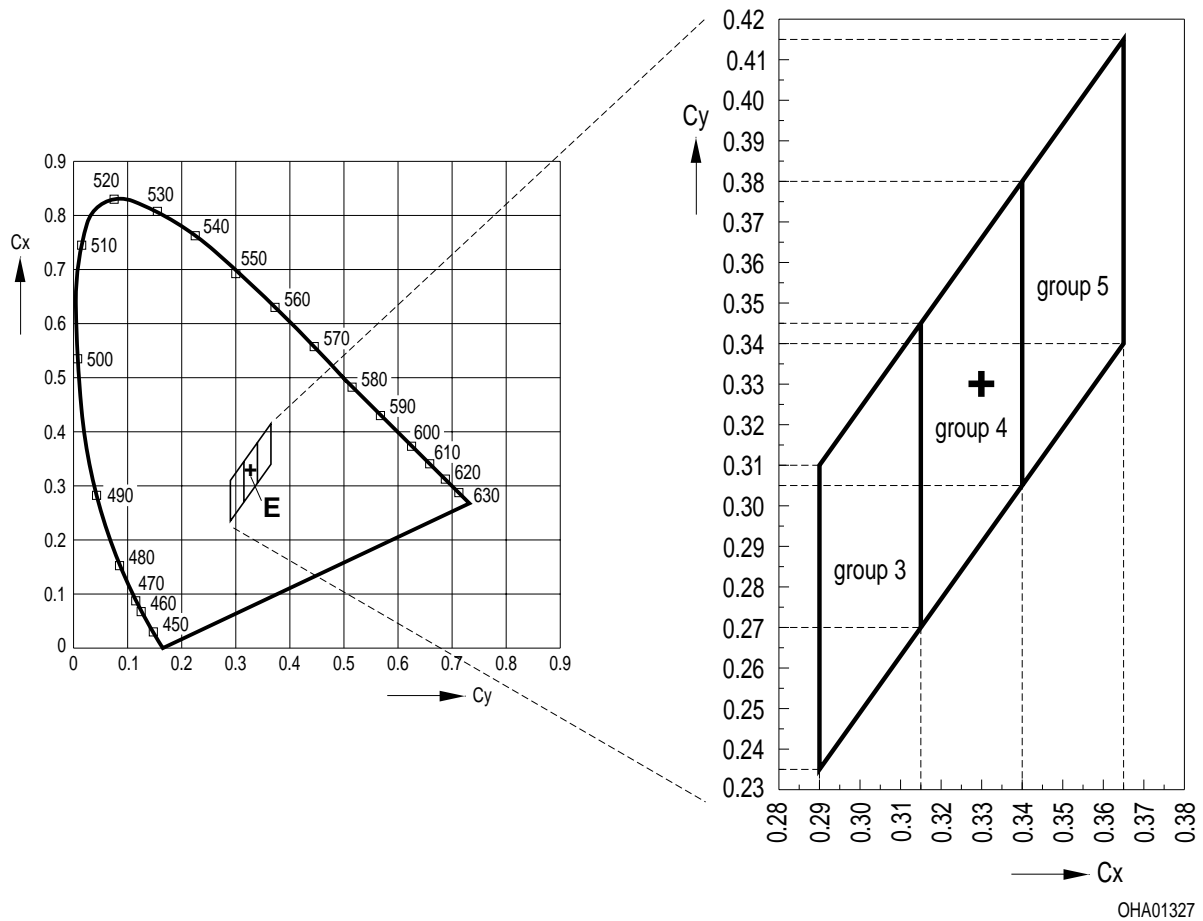
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebstemperatur Operating temperature range	$T_{op}$	- 40 ... + 100	°C
Lagertemperatur Storage temperature range	$T_{stg}$	- 40 ... + 100	°C
Sperrschichttemperatur Junction temperature	$T_j$	+ 110	°C
Durchlassstrom Forward current	$I_F$	15	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	$I_{FM}$	-	mA
Sperrspannung Reverse voltage	$V_R$	5	V
Leistungsaufnahme Power consumption $T_A \leq 25 \text{ °C}$	$P_{tot}$	60	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	530	K/W
Sperrschicht/Löt看pad Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$ ) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$ )	$R_{th JS}$	300	K/W

Kennwerte ( $T_A = 25\text{ °C}$ )

## Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Farbkoordinate x nach CIE 1931 <sup>1)</sup> (typ.) Chromaticity coordinate x acc. to CIE 1931 <sup>1)</sup> $I_F = 10\text{ mA}$	x	0.33	–
Farbkoordinate y nach CIE 1931 <sup>1)</sup> (typ.) Chromaticity coordinate y acc. to CIE 1931 <sup>1)</sup> $I_F = 10\text{ mA}$	y	0.33	–
Abstrahlwinkel bei 50 % $I_V$ (Vollwinkel) (typ.) Viewing angle at 50 % $I_V$	2 $\phi$	120	Grad deg.
Durchlassspannung <sup>2)</sup> (typ.) Forward voltage <sup>2)</sup> (max.) $I_F = 10\text{ mA}$	$V_F$ $V_F$	3.4 3.8	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 5\text{ V}$	$I_R$ $I_R$	0.01 10	$\mu\text{A}$ $\mu\text{A}$
Temperaturkoeffizient von x (typ.) Temperature coefficient of x $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_x$	–0.1	$10^{-3}/\text{K}$
Temperaturkoeffizient von y (typ.) Temperature coefficient of y $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_y$	–0.2	$10^{-3}/\text{K}$
Temperaturkoeffizient von $V_F$ (typ.) Temperature coefficient of $V_F$ $I_F = 10\text{ mA}; -10\text{ °C} \leq T \leq 100\text{ °C}$	$TC_V$	– 3.0	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 10\text{ mA}$	$\eta_{\text{opt}}$	4	lm/W

1) **Farbortgruppen**  
**Chromaticity coordinate groups**



Farbortgruppen werden mit einer Stromeinprägedauer von 25 ms und einer Genauigkeit von  $\pm 0,01$  ermittelt.  
 Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and an accuracy of  $\pm 0.01$ .

<sup>2)</sup> Spannungswerte werden mit einer Stromeinprägedauer von 1 ms und einer Genauigkeit von  $\pm 0.1$  V ermittelt.  
 Voltages are tested at a current pulse duration of 1 ms and an accuracy of  $\pm 0.1$  V.

### Helligkeits-Gruppierungsschema

#### Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity $I_V$ (mcd)	Lichtstrom Luminous Flux $\Phi_V$ (lm)
N	28.0 ... 45.0	100.0 (typ.)
P	45.0 ... 71.0	170.0 (typ.)
Q	71.0 ... 112.0	270.0 (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 an accuracy of  $\pm 11\%$ .

### Gruppenbezeichnung auf Etikett

#### Group Name on Label

Beispiel: N-4

Example: N-4

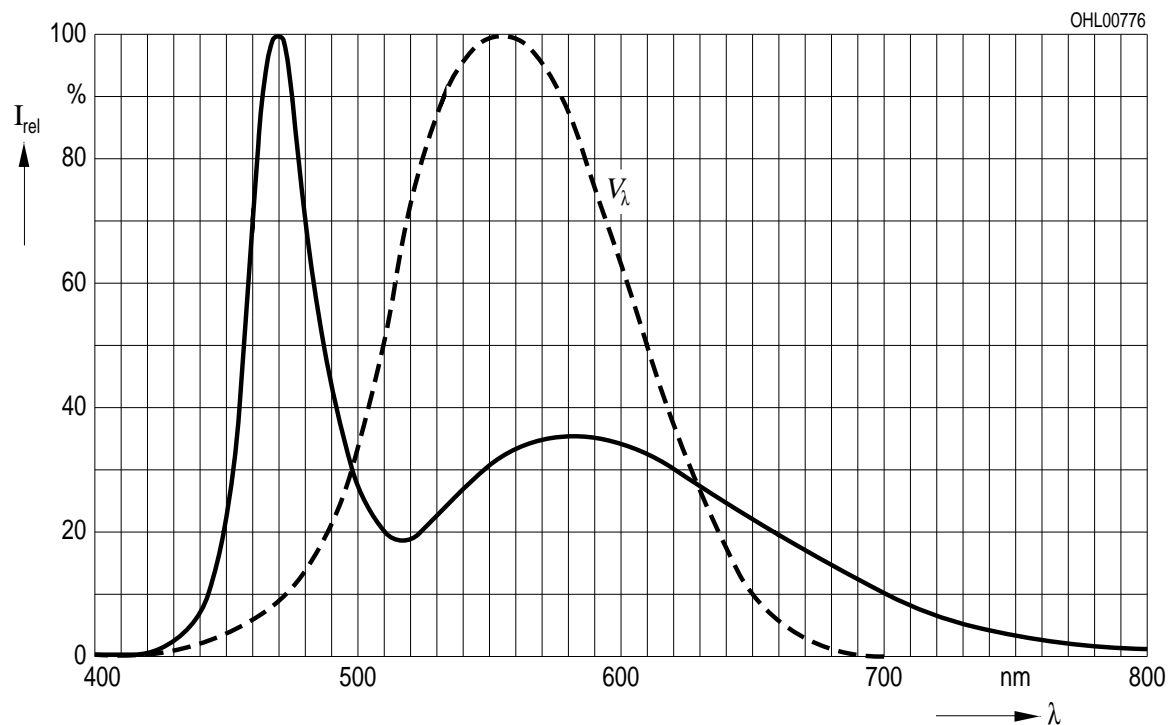
Lichtgruppe Luminous Intensity Group	Farbortgruppe Chromaticity Coordinate Group
N	4

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

**Relative Spectral Emission**

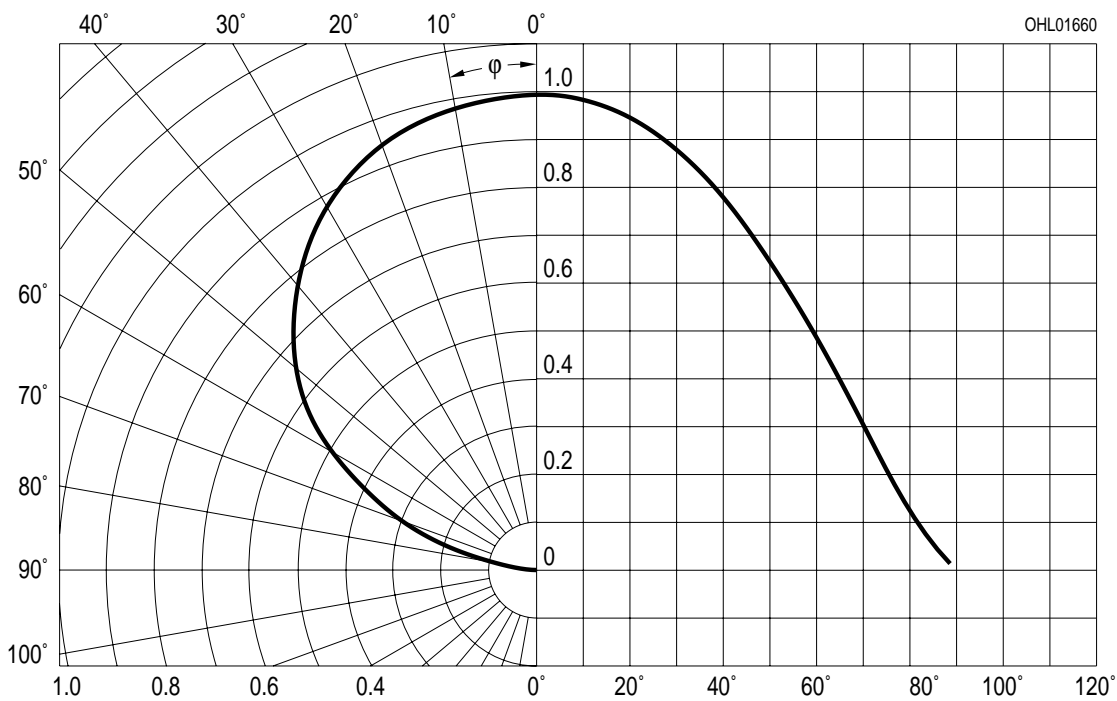
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



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

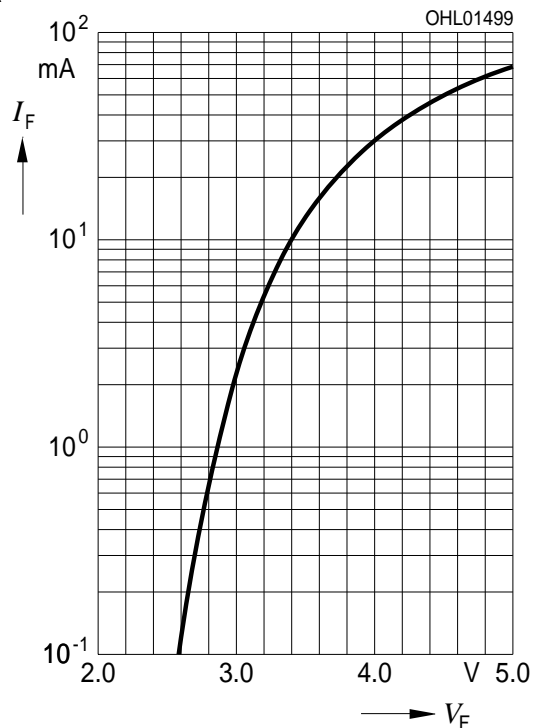
**Radiation Characteristic**



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

**Forward Current**

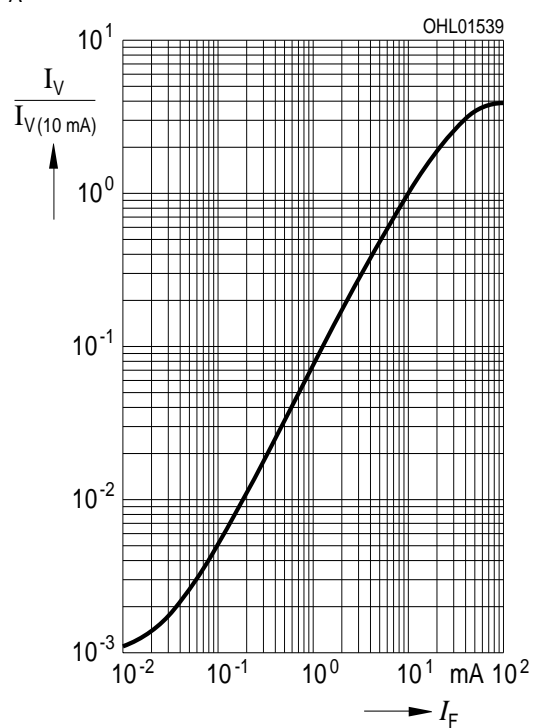
$T_A = 25\text{ °C}$



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

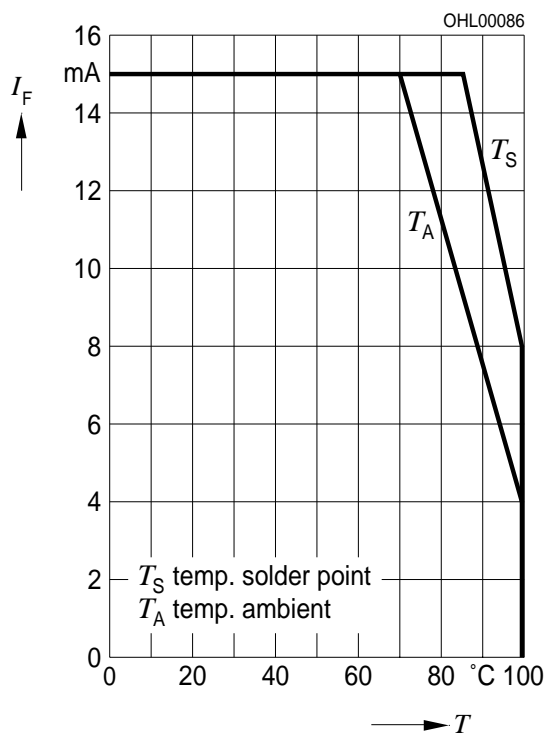
**Relative Luminous Intensity**

$T_A = 25\text{ °C}$



**Maximal zulässiger Durchlassstrom  $I_F = f(T)$**

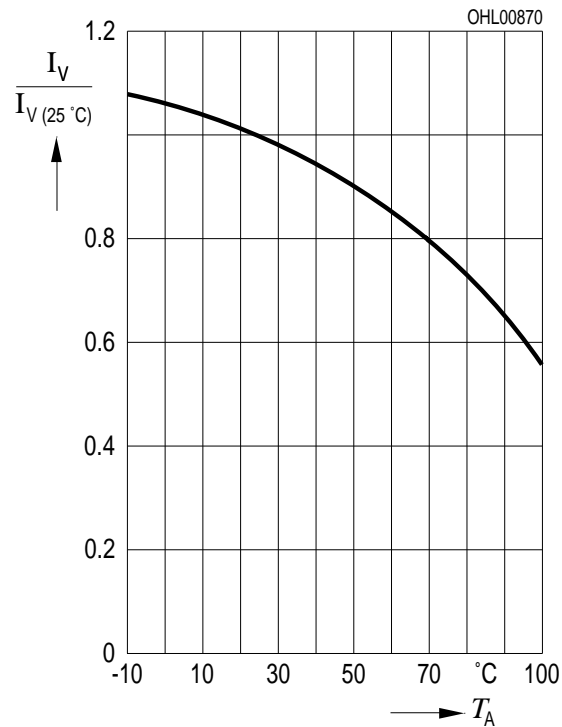
**Max. Permissible Forward Current**



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

**Relative Luminous Intensity**

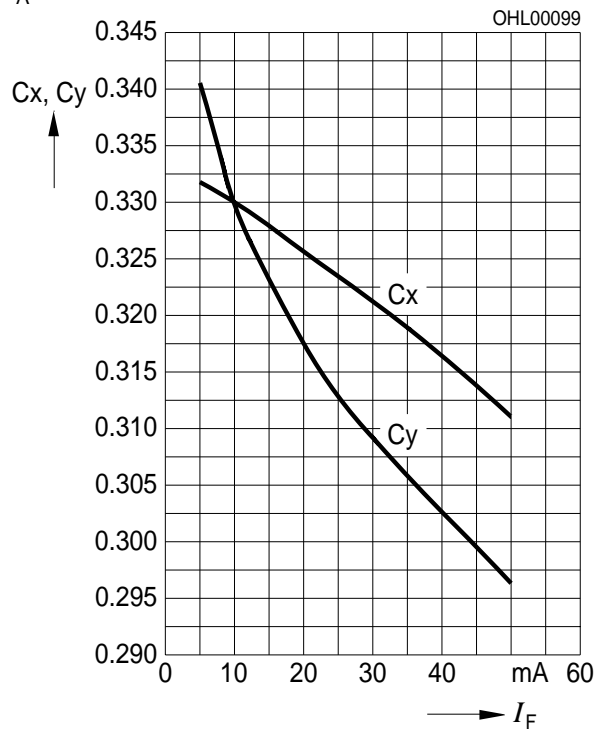
$I_F = 10\text{ mA}$



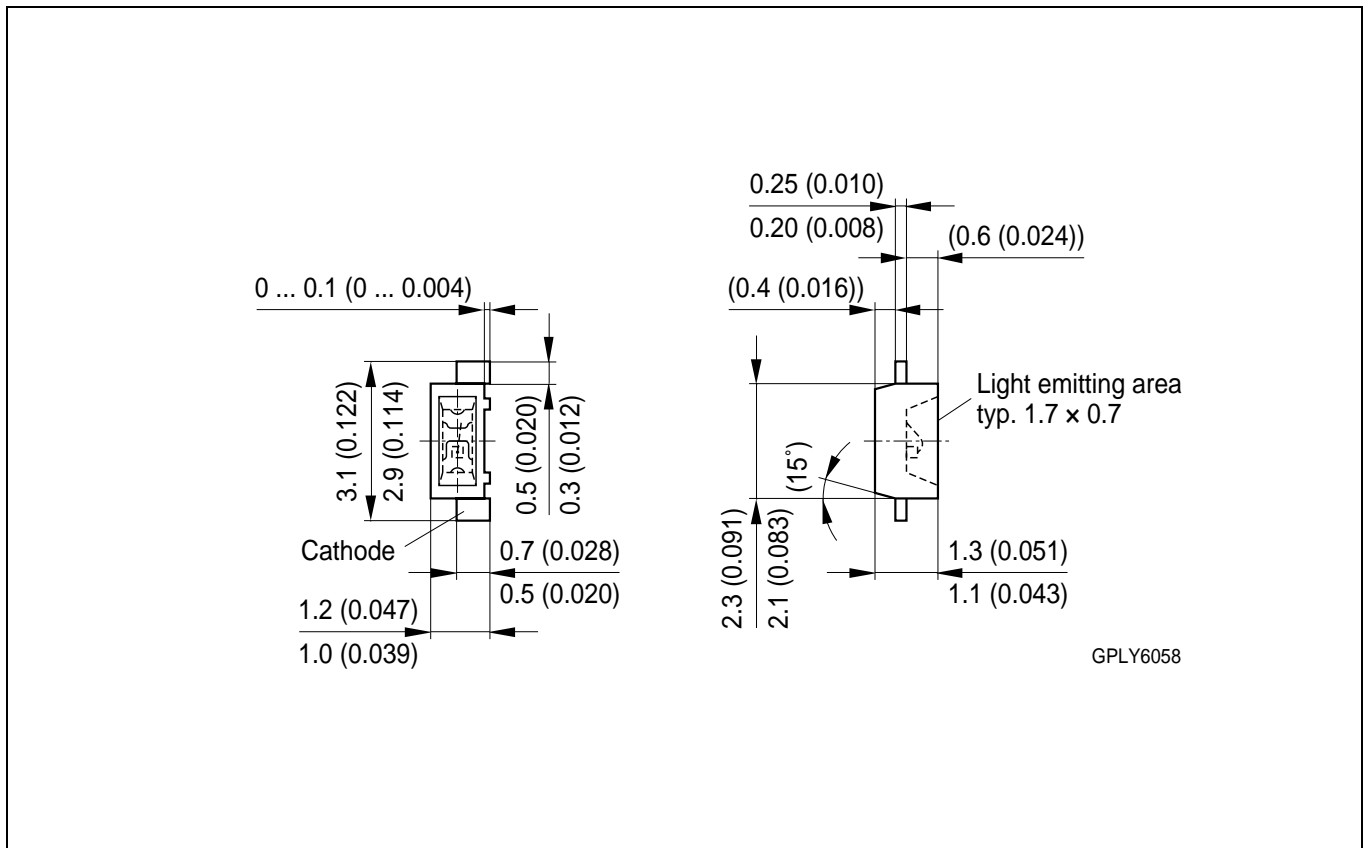


Farbortverschiebung  $x, y = f(I_F)$   
Chromaticity Coordinate Shift

$T_A = 25\text{ °C}$



**Maßzeichnung**  
**Package Outlines**

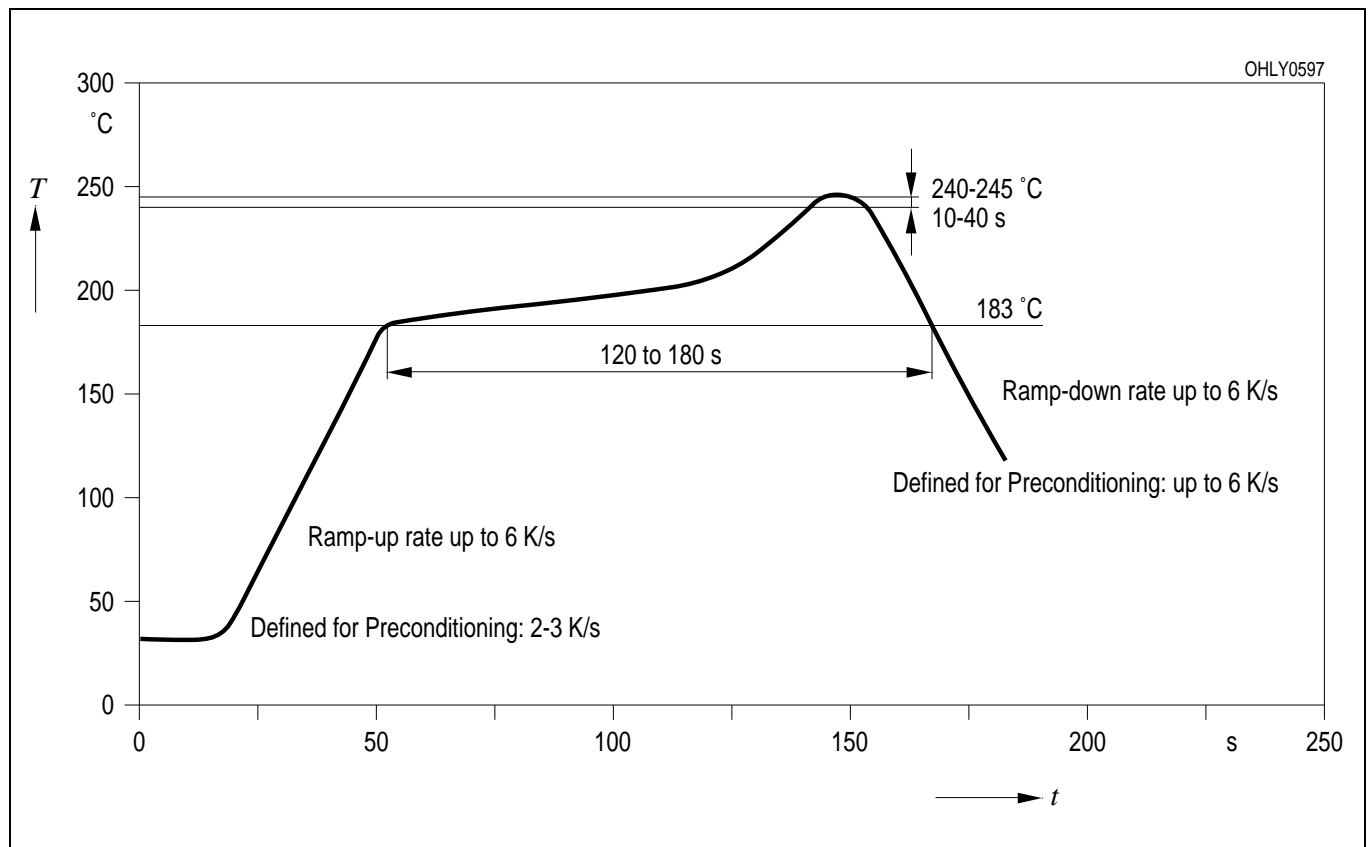


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

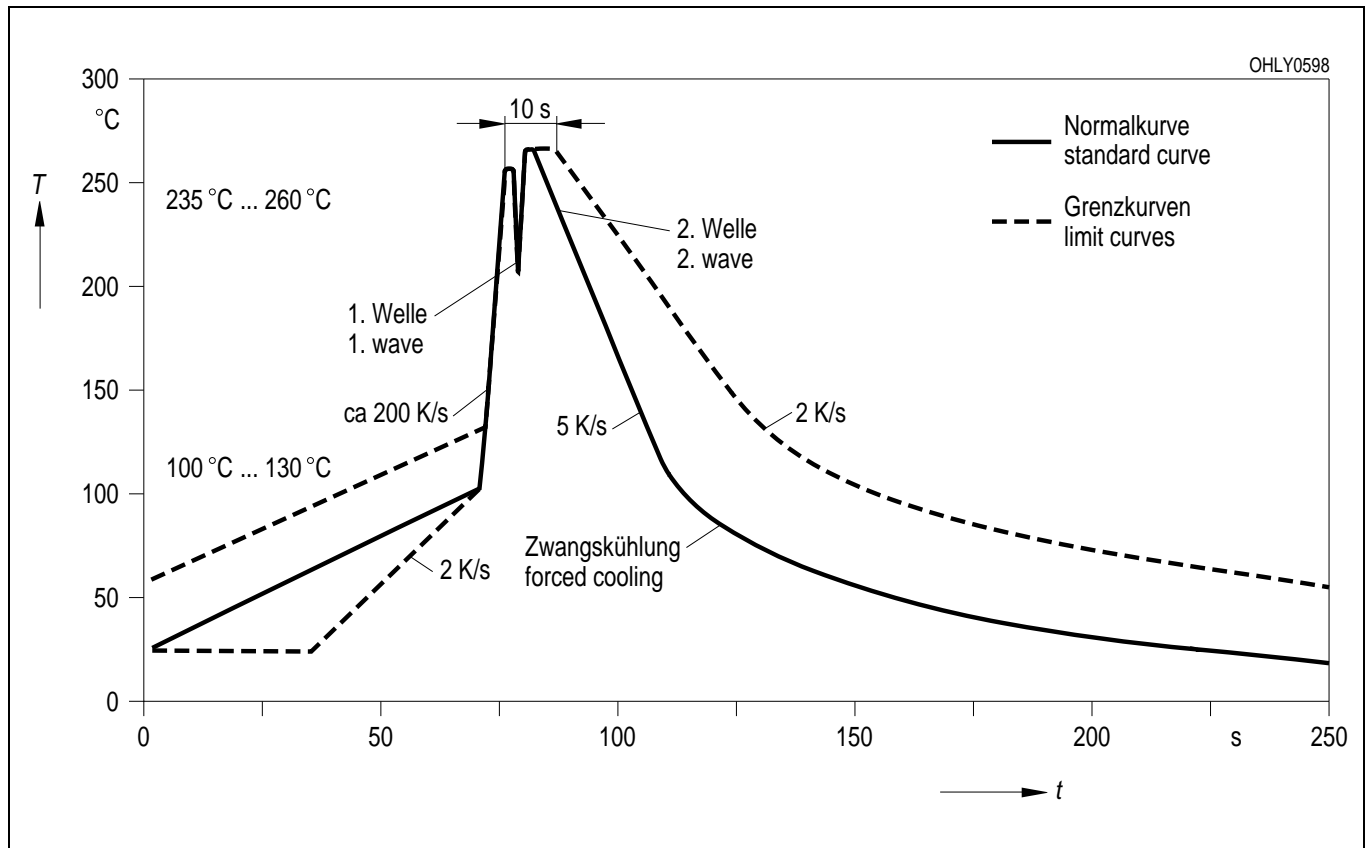
**Gewicht / Approx. weight:** 6 mg

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

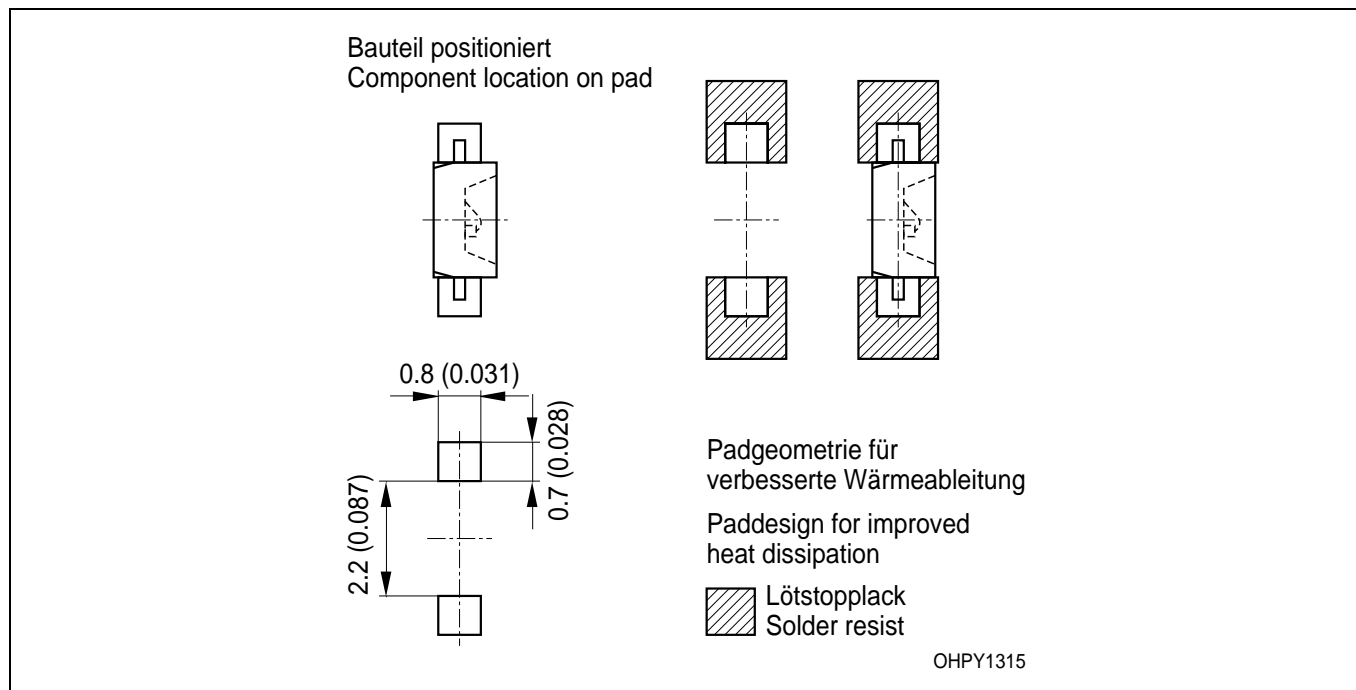
**IR-Reflow Lötprofil** (nach IPC 9501)  
**IR Reflow Soldering Profile** (acc. to IPC 9501)



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



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



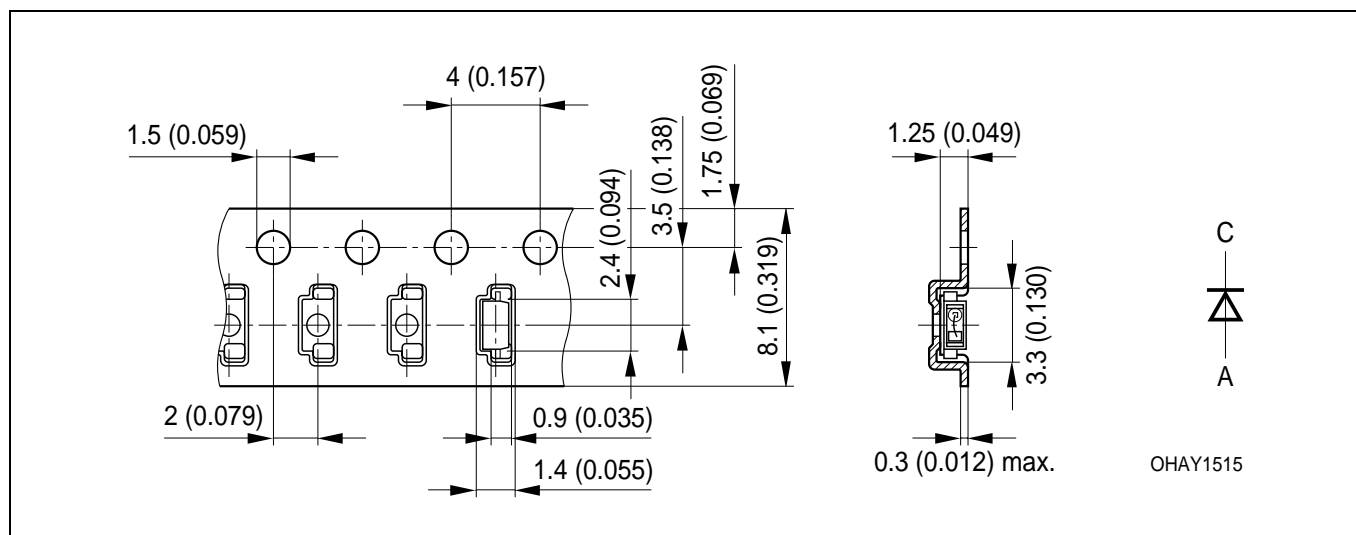
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).  
 Gehäuse für Wellenlöten (TTW) geeignet / Package suitable for TTW-soldering

**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).

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**Revision History: 2001-02-14**

Previous Version: 2001-02-14

Page	Subjects (major changes since last revision)

## Patent List

### Patent No.

US 6 066 861

**Published by OSRAM Opto Semiconductors GmbH & Co. OHG**

**Wernerwerkstrasse 2, D-93049 Regensburg**

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