

# Hyper CHIPLED Hyper-Bright LED

## LW Q983



### Besondere Merkmale

- **Gehäusotyp:** SMT Gehäuse 0603
- **Besonderheit des Bauteils:** kleinste Bauform 1,6 x 0,8 x 0,8 mm (LxBxH)
- **Farbort:** x = 0,35, y = 0,34 nach CIE 1931 (weiß)
- **Typische Farbtemperatur:** 4770 K
- **Farbwiedergabeindex:** 80
- **Abstrahlwinkel:** extrem breite Abstrahlcharakteristik (160°)
- **Technologie:** InGaN
- **optischer Wirkungsgrad:** 4 lm/W
- **Gruppierungsparameter:** Lichtstärke, Farbort
- **Verarbeitungsmethode:** für alle SMT-Bestücktechniken geeignet
- **Lötmethode:** IR Reflow Löten
- **Vorbehandlung:** nach JEDEC Level 2
- **Gurtung:** 8 mm Gurt mit 4000/Rolle, ø180 mm
- **ESD-Festigkeit:** ESD-sicher bis 2 kV nach EOS/ESD-5.1-1993

### Anwendungen

- flache Hinterleuchtung (LCD, Handy, Schalter, Display)
- Spielsachen

### Features

- **package:** SMT package 0603
- **feature of the device:** smallest package 1.6 x 0.8 x 0.8 mm (LxWxH)
- **color coordinates:** x = 0.35, y = 0.34 acc. to CIE 1931 (white)
- **typ. color temperature:** 4770 K
- **color reproduction index:** 80
- **viewing angle:** extremely wide (160°)
- **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
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8 mm tape with 4000/reel, ø180 mm
- **ESD-withstand voltage:** up to 2 kV acc. to EOS/ESD-5.1-1993

### Applications

- flat backlighting (LCD, cellular phones, switches, displays)
- toys

Typ	Emissions- farbe	Farbe der Lichtaustritts- fläche	Lichtstärke		Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 6 \text{ mA}$ $I_V (\text{mcd})$		Ordering Code
			min.	typ.	
LW Q983	white	colored diffused	5	15	Q62702-P5225

Anm.: Farbselektiert nach Farbortgruppen, 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: Color selection acc. to chromaticity coordinate groups, delivery in single 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 half group.*

**Grenzwerte**  
**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebstemperatur Operating temperature range	$T_{op}$	– 30 ... + 85	°C
Lagertemperatur Storage temperature range	$T_{stg}$	– 40 ... + 85	°C
Sperrschichttemperatur Junction temperature	$T_j$	+ 95	°C
Durchlassstrom Forward current	$I_F$	15	mA
Stoßstrom Surge current $t = 10 \mu s, D = 0.1$	$I_{FM}$	0.1	A
Sperrspannung Reverse voltage	$V_R$	5	V
Leistungsaufnahme Power consumption	$P_{tot}$	60	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$ ) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$ )	$R_{th JA}$  $R_{th JS}$	650  370	K/W  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> Chromaticity coordinate x acc. to CIE 1931 $I_F = 6\text{ mA}$	x	0.35	–
Farbkoordinate y nach CIE 1931 <sup>1)</sup> Chromaticity coordinate y acc. to CIE 1931 $I_F = 6\text{ mA}$	y	0.34	–
Abstrahlwinkel bei 50 % $I_V$ (Vollwinkel) (typ.) Viewing angle at 50 % $I_V$	2 $\phi$	160	Grad deg.
Durchlassspannung <sup>2)</sup> (typ.) Forward voltage (max.) $I_F = 6\text{ mA}$	$V_F$ $V_F$	3.3 3.6	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 $\lambda_{\text{peak}}$ (typ.) Temperature coefficient of $\lambda_{\text{peak}}$ $I_F = 6\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_x$	– 0.4	$10^{-3}/\text{K}$
Temperaturkoeffizient von $\lambda_{\text{dom}}$ (typ.) Temperature coefficient of $\lambda_{\text{dom}}$ $I_F = 6\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_y$	– 0.3	$10^{-3}/\text{K}$
Temperaturkoeffizient von $V_F$ (typ.) Temperature coefficient of $V_F$ $I_F = 6\text{ mA}; -10^\circ\text{C} \leq T \leq 100^\circ\text{C}$	$TC_V$	– 2.9	mV/K
Optischer Wirkungsgrad (typ.) Optical efficiency $I_F = 6\text{ mA}$	$\eta_{\text{opt}}$	4	lm/W

<sup>1)</sup> Farbortgruppen werden mit einer Stromeinprägungsdauer 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 a tolerance of  $\pm 0.01$ .

<sup>2)</sup> 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  $\pm 0.1\text{ V}$ .

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<sup>1)</sup> Farbortgruppen / Chromaticity coordinate groups

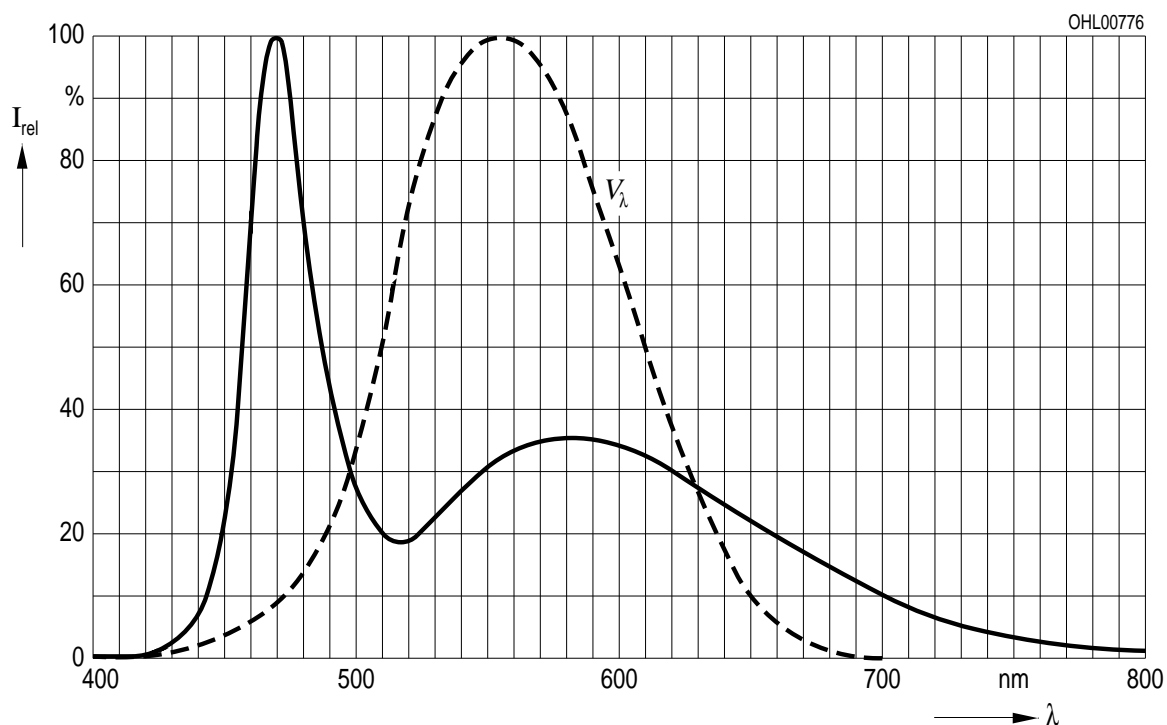
Gruppe Group	x		y	
	min.	max.	min.	max.
1	0.290	0.350	0.250	0.410
2	0.350	0.410	0.270	0.430

**Relative spektrale Emission**  $I_{\text{rel}} = f(\lambda)$ ,  $T_A = 25^\circ\text{C}$ ,  $I_F = 6\text{ mA}$

**Relative Spectral Emission**

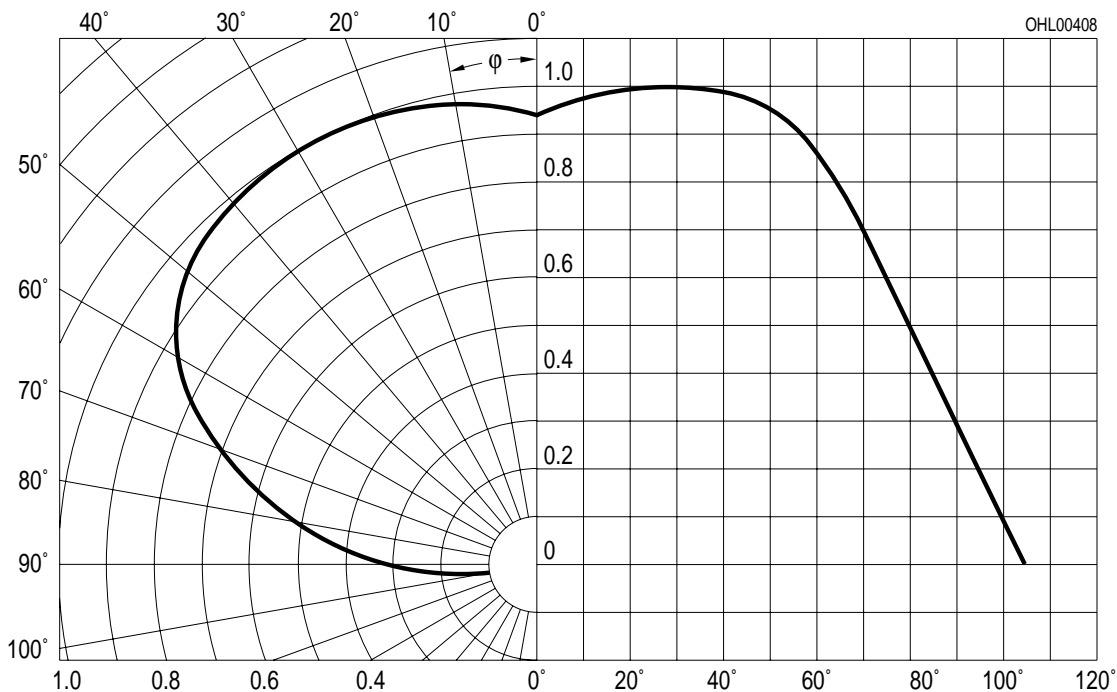
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



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

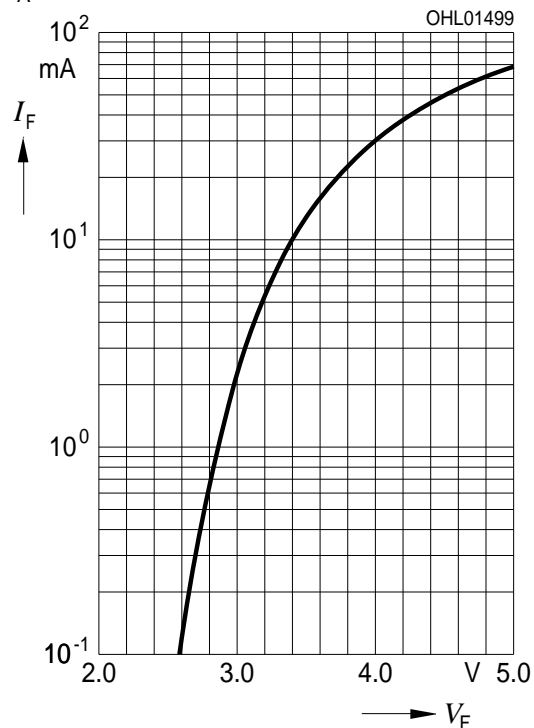
**Radiation Characteristic**



Durchlassstrom  $I_F = f(V_F)$

Forward Current

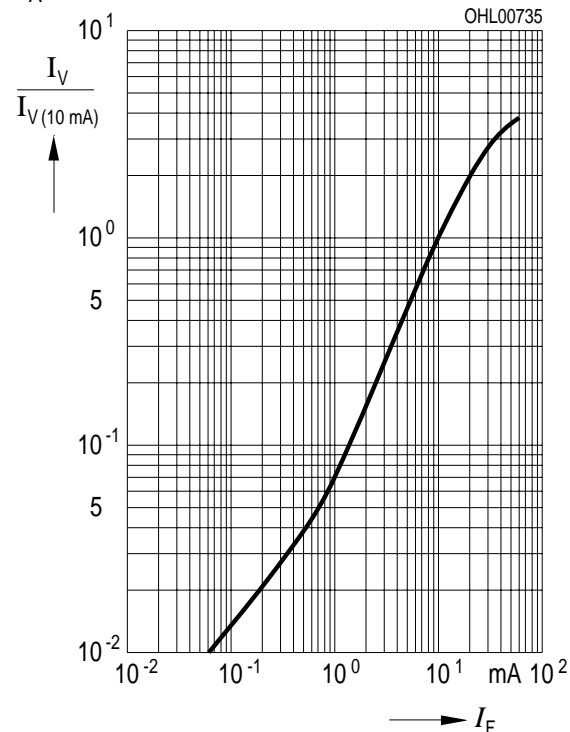
$T_A = 25\text{ °C}$



Relative Lichtstärke  $I_V/I_{V(6\text{ mA})} = f(I_F)$

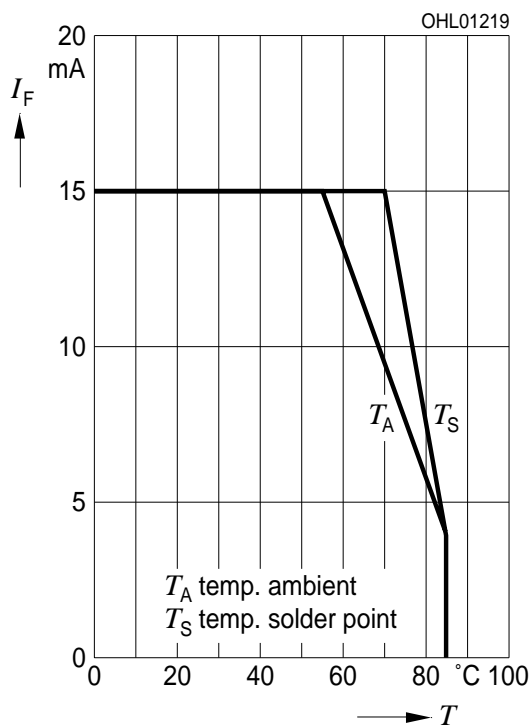
Relative Luminous Intensity

$T_A = 25\text{ °C}$



Maximal zulässiger Durchlassstrom  $I_F = f(T)$

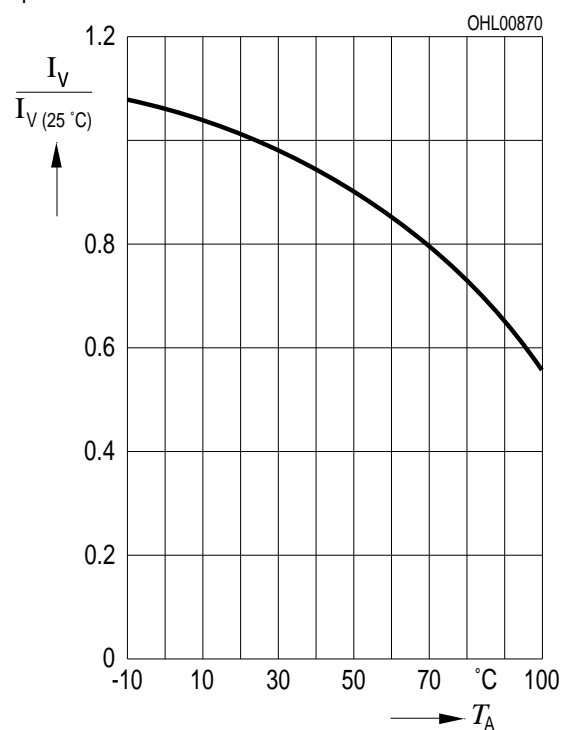
Max. Permissible Forward Current

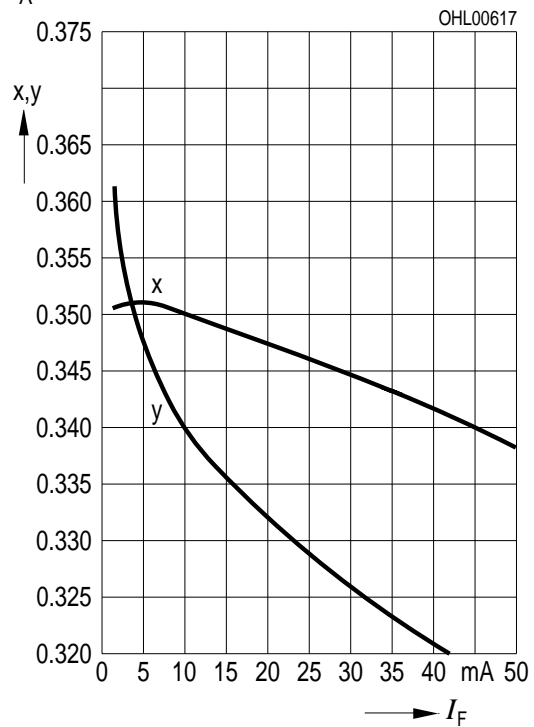


Relative Lichtstärke  $I_V/I_{V(25\text{ °C})} = f(T_A)$

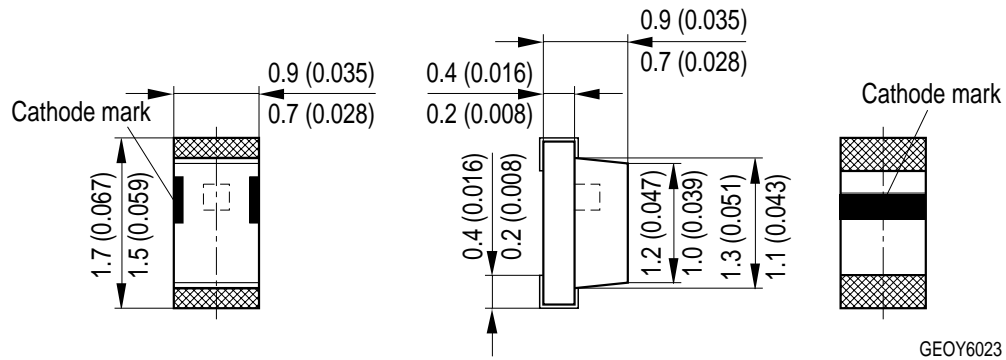
Relative Luminous Intensity

$I_F = 6\text{ mA}$



**Farbortverschiebung  $x, y = f(T)$** **Chromaticity Coordinate Shift** $T_A = 25\text{ °C}$ 

# **Maßzeichnung** **Package Outlines**

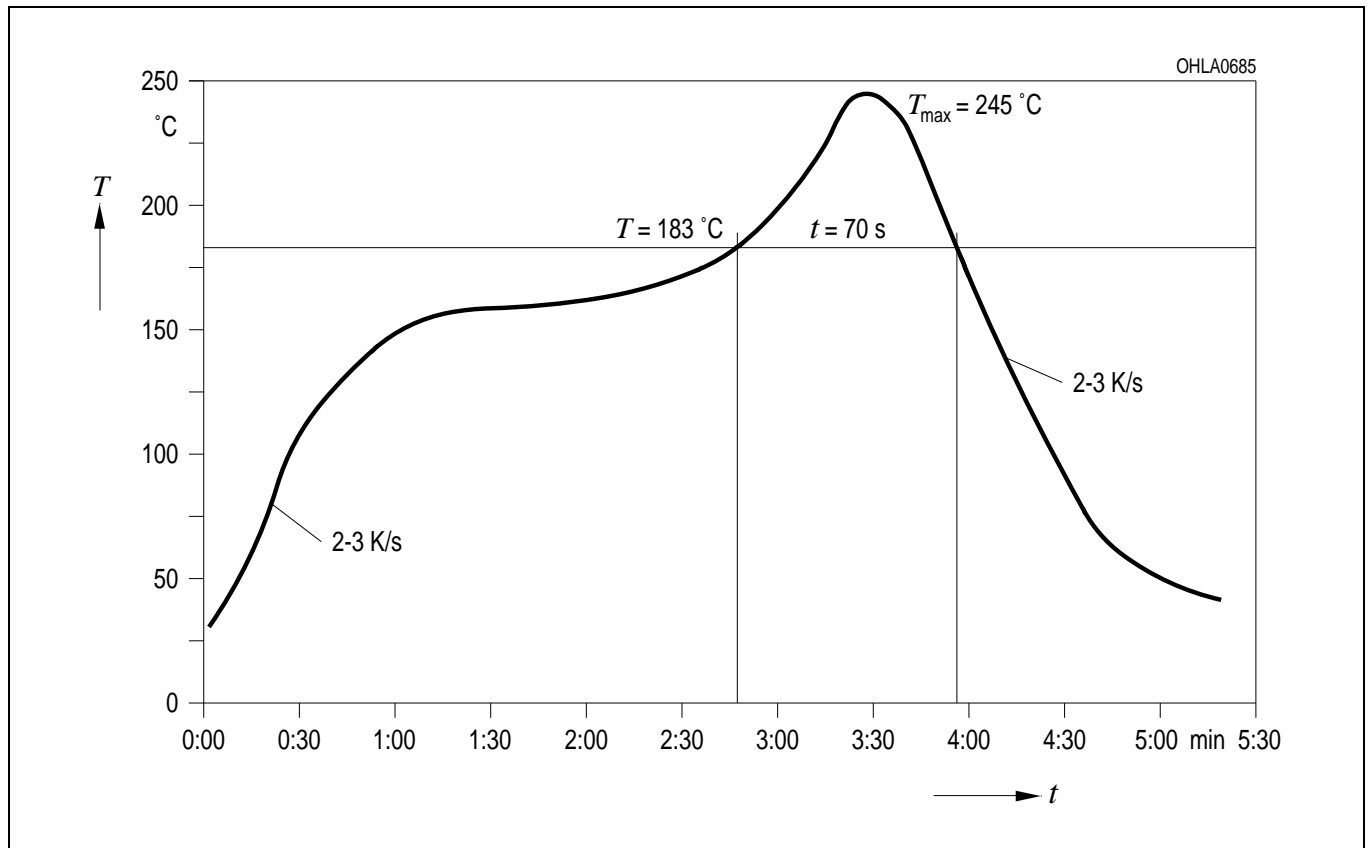


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

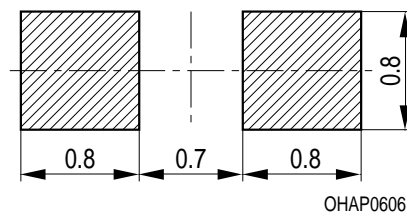
**Gewicht / Approx. weight:** 1.4 mg

**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)

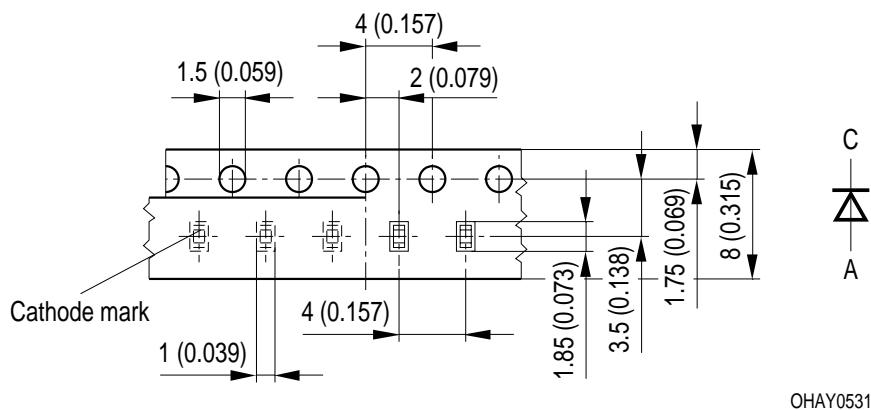


**Empfohlenes Lötpaddesign** IR Reflow Löten  
**Recommended Solder Pad** IR Reflow Soldering



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

**Gurtung / Polarität und Lage** Verpackungseinheit 4000/Rolle, ø180 mm  
**Method of Taping / Polarity and Orientation** Packing unit 4000/reel, ø180 mm



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

**Revision History: 2001-03-16**

Previous Version: 2001-02-28

Page	Subjects (major changes since last revision)
2	$I_F$ reduced from 10 mA to 6 mA

**Patent List****Patent No.**

US 6 066 861

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