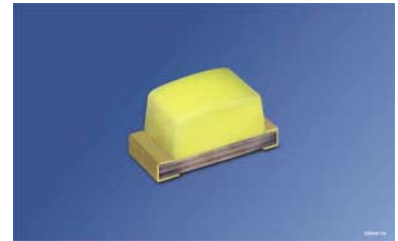


Hyper CHIPLED Hyper-Bright LED

LW Q18S



Besondere Merkmale

- **Gehäusotyp:** SMT Gehäuse 0603
- **Besonderheit des Bauteils:** kleinste Bauform 1,6 x 0,8 x 0,6 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 0.6 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		Lichtstrom	Bestellnummer
Type	Color of Emission	Color of the Light Emitting Area	Luminous Intensity $I_F = 6 \text{ mA}$ $I_V (\text{mcd})$		Luminous Flux $I_F = 6 \text{ mA}$ $\Phi_V (\text{lm})$	Ordering Code
			min.	typ.		
LW Q18S-KM-A2B2	white	colored diffused	7.1	28.0	115 (typ.)	Q62702P5407

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 $\pm 11 \%$.

*Anm.: Farbselektiert nach Farbortgruppen, Lieferung in Einzelgruppen (siehe **Seite 5**)*

Die Standardlieferform von Serientypen beinhaltet alle Gruppen. Einzelne Gruppen sind nicht erhältlich.

In einer Verpackungseinheit / Gurt ist immer nur eine Gruppe enthalten.

*Note: Color selection acc. to chromaticity coordinate groups, delivery in single groups (see **page 5**)*

The standard shipping format for serial types includes all groups. Individual 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}	– 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 ¹⁾ Reverse voltage	V_R	5	V
Leistungsaufnahme Power consumption	P_{tot}	60	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	$R_{th JA}$	650	K/W
Sperrschicht/Lötpad Junction/solder point Montage auf PC-Board FR 4 (Padgröße $\geq 5 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 5 \text{ mm}^2$)	$R_{th JS}$	370	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
Farbkoordinate x nach CIE 1931 ¹⁾ Chromaticity coordinate x acc. to CIE 1931 $I_F = 6\text{ mA}$	x	0.35	–
Farbkoordinate y nach CIE 1931 ¹⁾ 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 ϕ	160	Grad deg.
Durchlassspannung ²⁾ (typ.) Forward voltage (max.) $I_F = 6\text{ mA}$	V_F V_F	3.3 3.7	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 5\text{ V}$	I_R I_R	0.01 10	μA μA
Temperaturkoeffizient von λ_{peak} (typ.) Temperature coefficient of λ_{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 λ_{dom} (typ.) Temperature coefficient of λ_{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 $I_F = 6\text{ mA}$	η_{opt}	4	lm/W

¹⁾ 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 a tolerance of ± 0.01 .

²⁾ Spannungswerte werden mit einer Stromeinprägedauer 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⁾ **Farbortgruppen**
Chromaticity coordinate groups

Gruppe Group	x		y	
	min.	max.	min.	max.
A2	0.290	0.350	0.250	0.410
B2	0.350	0.410	0.270	0.430

Helligkeits-Gruppierungsschema
Luminous Intensity Groups

Lichtgruppe Luminous Intensity Group	Lichtstärke Luminous Intensity I_v (mcd)
K	7.1 ... 11.2
L	11.2 ... 18.0
M	18.0 ... 28.0

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: K-A2

Example: K-A2

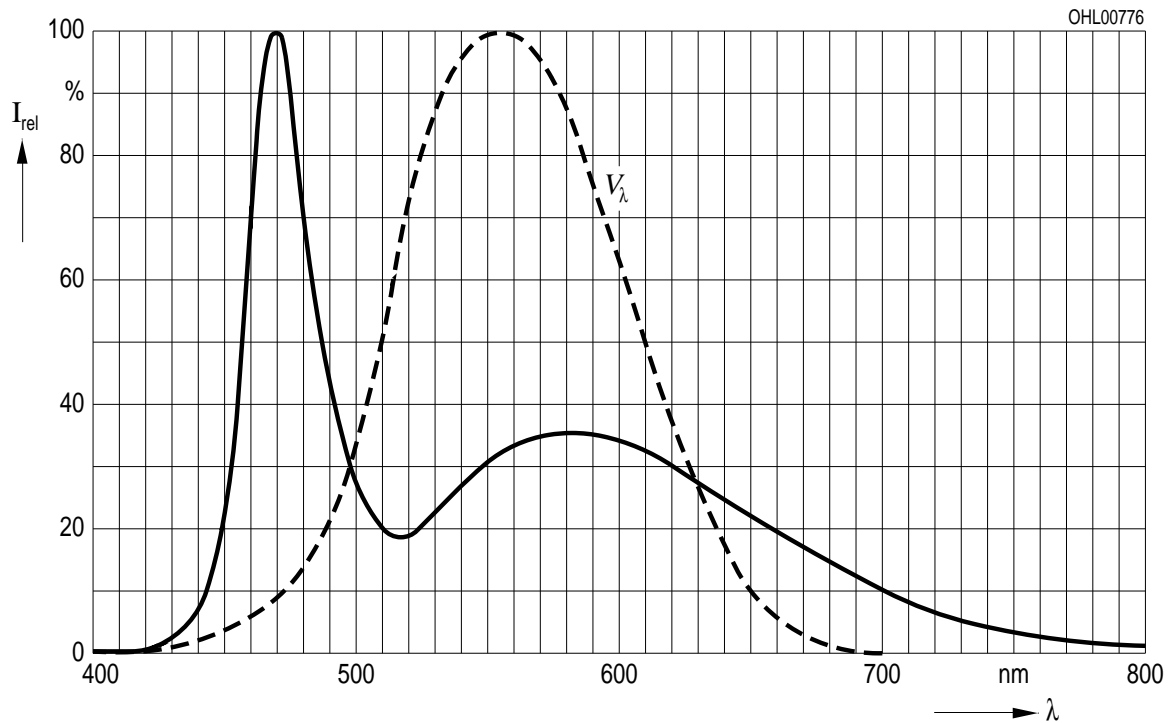
Lichtgruppe Luminous Intensity Group	Farbortgruppe Chromaticity Coordinate Group
K	A2

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

Relative Spectral Emission

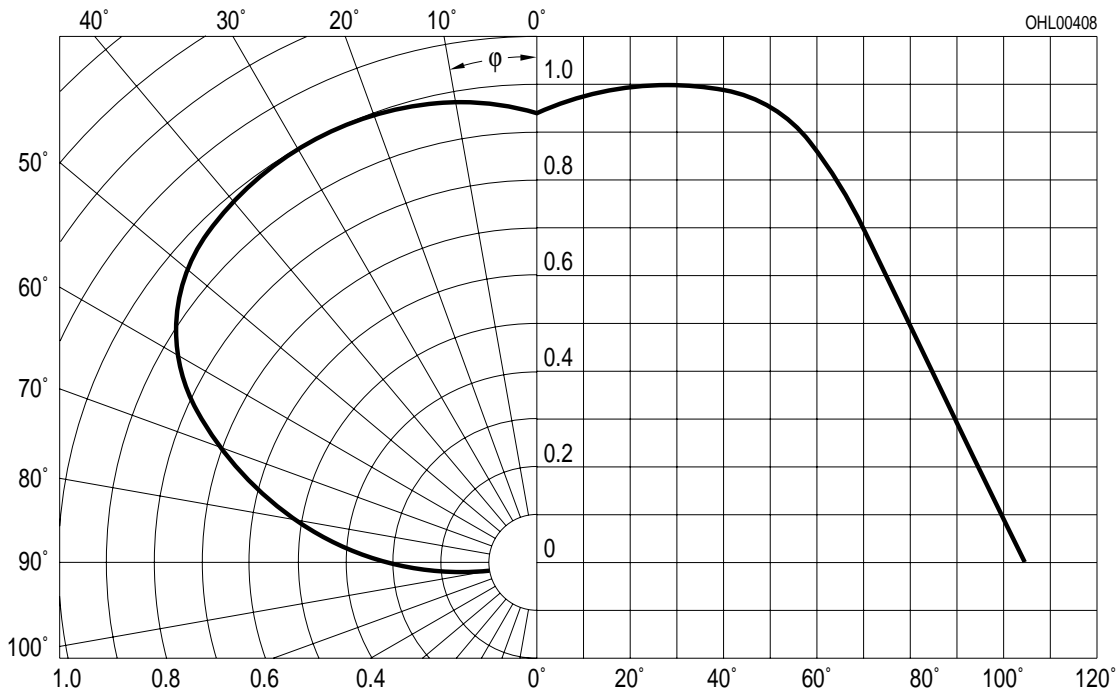
$V(\lambda)$ = spektrale Augenempfindlichkeit

Standard eye response curve



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

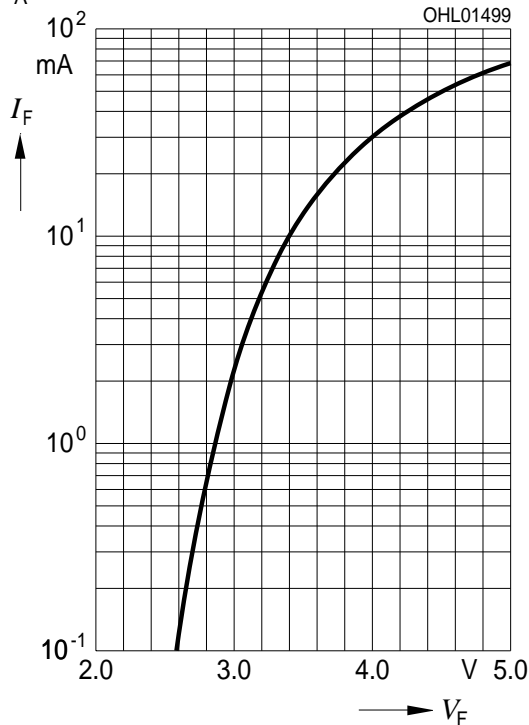
Radiation Characteristic



Durchlassstrom $I_F = f(V_F)$

Forward Current

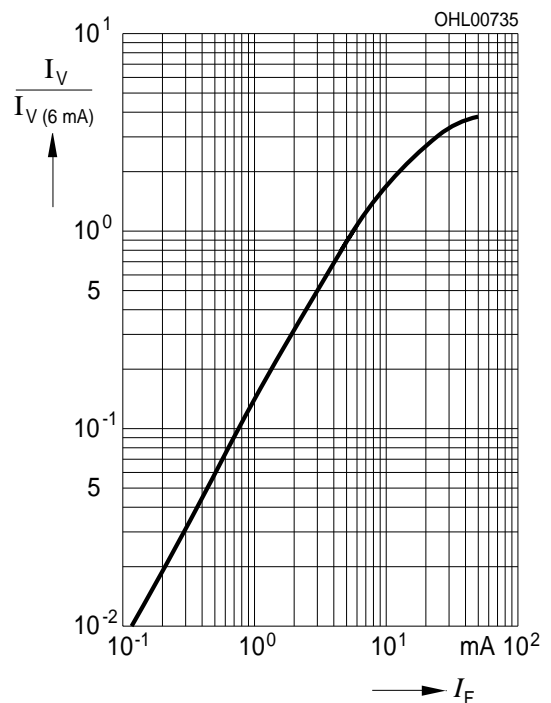
$T_A = 25\text{ °C}$



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

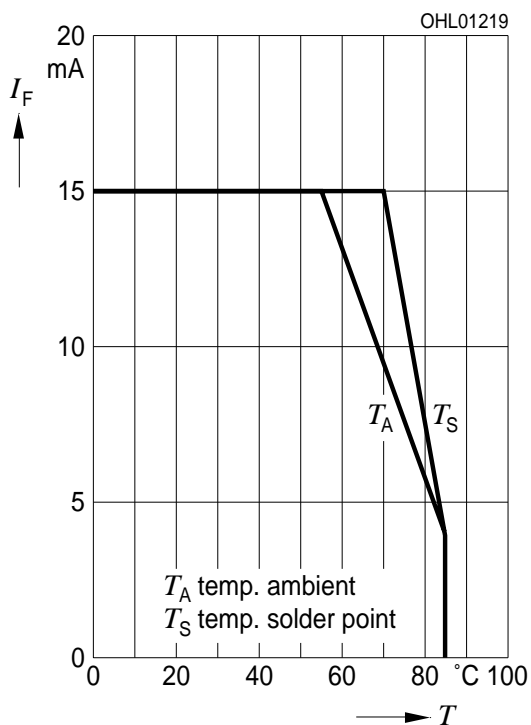
Relative Luminous Intensity

$T_A = 25\text{ °C}$



Maximal zulässiger Durchlassstrom $I_F = f(T)$

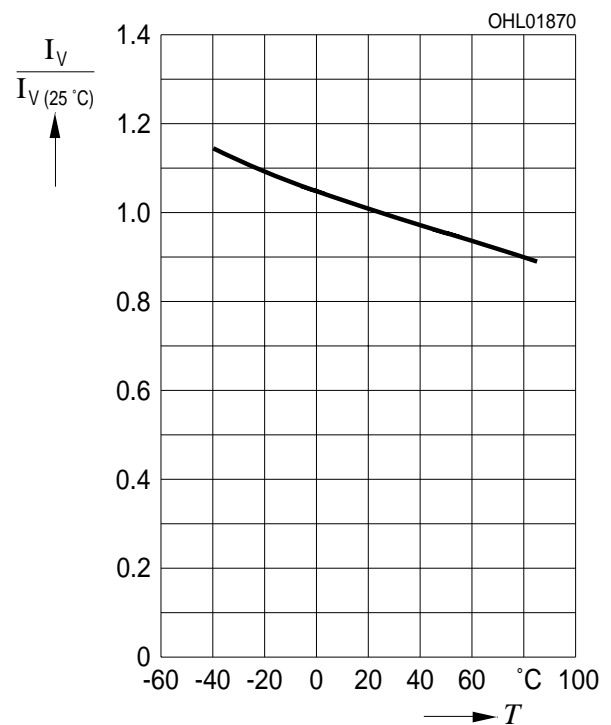
Max. Permissible Forward Current

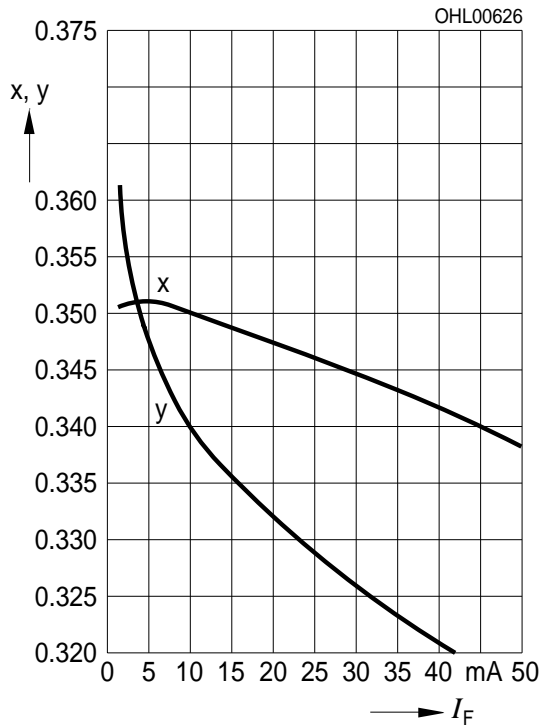
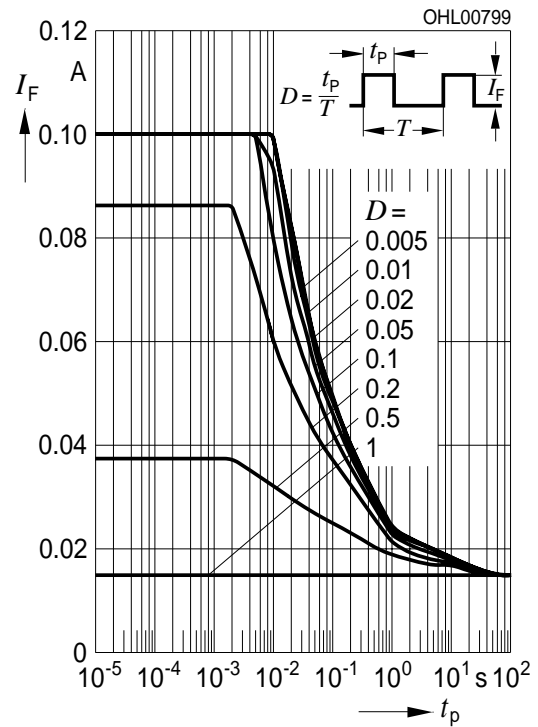


Relative Lichtstärke $I_V/I_{V(25\text{ °C})} = f(T_A)$

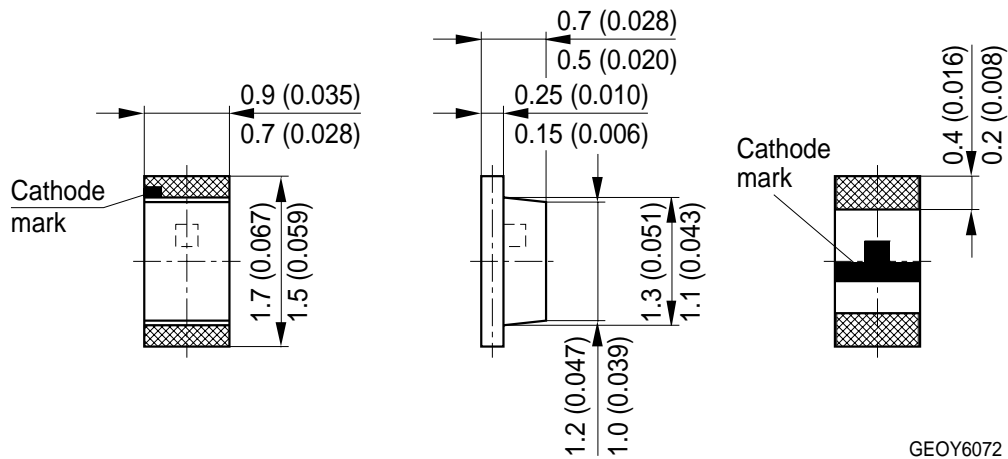
Relative Luminous Intensity

$I_F = 6\text{ mA}$



Farbortverschiebung $x, y = f(T)$ **Chromaticity Coordinate Shift** $T_A = 25\text{ °C}$ **Zulässige Impulsbelastbarkeit $I_F = f(t_p)$** **Permissible Pulse Handling Capability**Duty cycle $D =$ parameter, $T_A = 25\text{ °C}$ 

Maßzeichnung Package Outlines

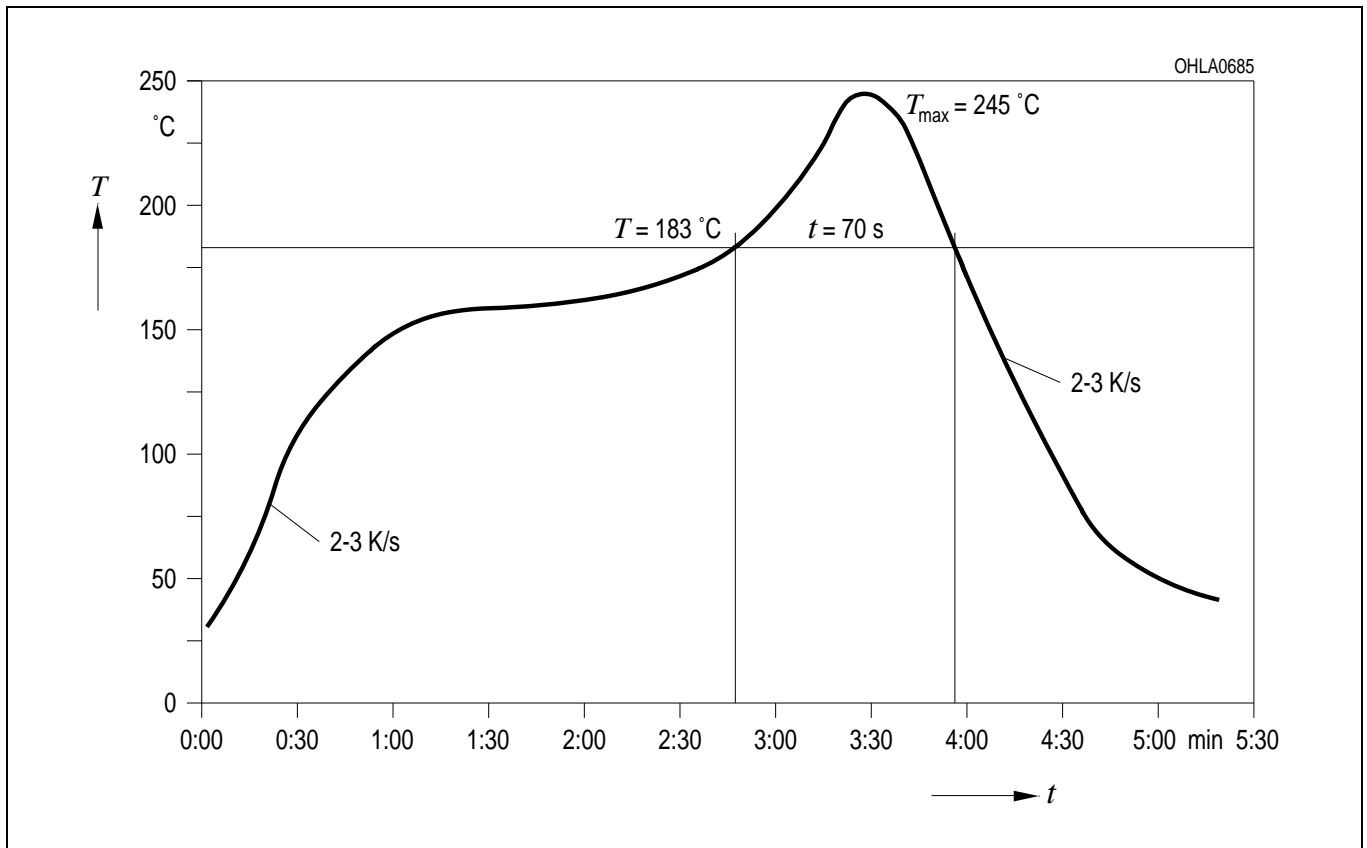


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

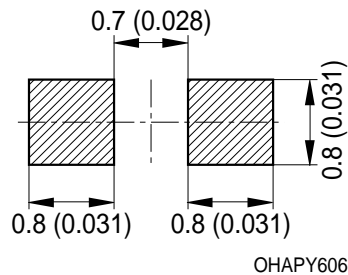
Gewicht / Approx. weight: 1.4 mg

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



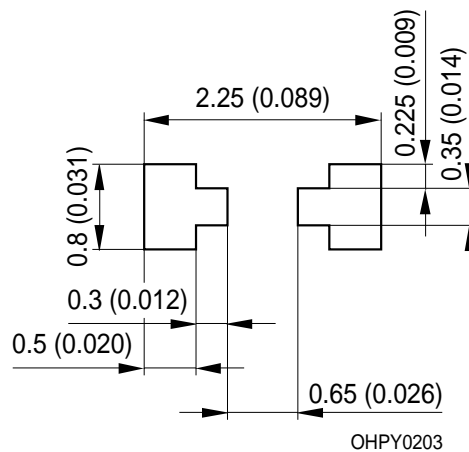
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Empfohlenes Lötpaddesign verwendbar für Chipled - Bauform 0603 und SmartLED™

IR Reflow Löten

Recommended Solder Pad useable for Chipled - Package 0603 and SmartLED™

IR Reflow Soldering



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

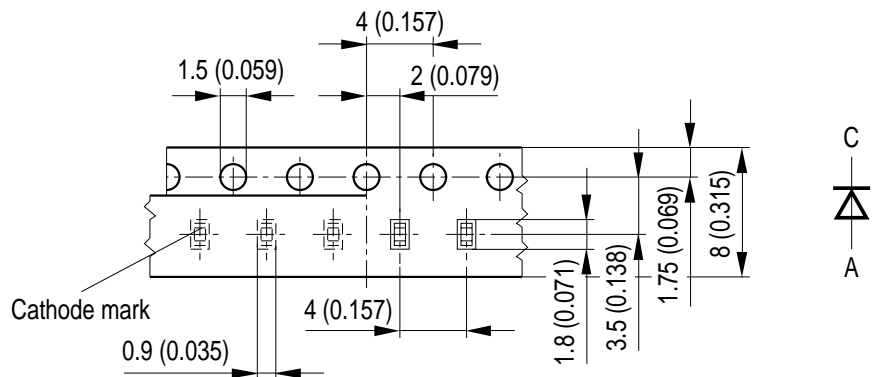
Empfohlene Lötpastendicke: 120 µm/ recommended thickness of solder paste: 120 µm

Gurtung / Polarität und Lage

Verpackungseinheit 4000/Rolle, ø180 mm

Method of Taping / Polarity and Orientation

Packing unit 4000/reel, ø180 mm



OHAY1538

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

Revision History: 2003-02-18		Date of change
Previous Version: 2003-02-17		
Page	Subjects (major changes since last revision)	
2	I_F reduced from 10 mA to 6 mA	
11	recommended solder pad	
4	forward voltage	
7	diagram relative luminous intensity OHL00870 to OHL01870	
8	diagram chromacity coordinate shift	
3	pad size from 16 mm ² to 5 mm ²	
5	change group name of chromaticity coordinate groups	
8	Permissible Pulse Handling Capability	2002-07-22
13	annotations	2002-07-25
3	reverse voltage (footnote)	2002-08-21
2	wavelength groups	2002-09-19

Patent List

Patent No.

US 6 066 861, US 6 277 301

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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.

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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.