



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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IR-Lumineszenzdiode (940 nm) mit hoher Ausgangsleistung

High Power Infrared Emitter (940 nm)

Lead (Pb) Free Product - RoHS Compliant

SFH 4045



Vorläufige Daten / Preliminary Data

Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung
- Kurze Schaltzeiten

Anwendungen

- Lichtschranken, Lichtvorhänge
- Sensorik
- Näherungssensor
- berührungsempfindliche Bildschirme

Sicherheitshinweise

Je nach Betriebsart emittieren diese Bauteile hochkonzentrierte, nicht sichtbare Infrarot-Strahlung, die gefährlich für das menschliche Auge sein kann. Produkte, die diese Bauteile enthalten, müssen gemäß den Sicherheitsrichtlinien der IEC-Normen 60825-1 und 62471 behandelt werden.

Features

- High Power Infrared LED
- Short switching times

Applications

- Interrupters, Lightcurtains
- Sensors
- proximity sensor
- Touchscreen

Safety Advices

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

Typ Type	Bestellnummer Ordering Code	Strahlstärkegruppierung ¹⁾ ($I_F = 70 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping ¹⁾ $I_e (\text{mW/sr})$
SFH 4045	Q65110A9731	≥ 40 (typ. 90)

¹⁾ gemessen bei einem Raumwinkel $\Omega = 0.01$ / measured at a solid angle of $\Omega = 0.01 \text{ sr}$

Grenzwerte ($T_A = 25^\circ\text{C}$)**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebstemperatur Operating temperature range	T_{op}	- 25 ... + 85	°C
Lagertemperatur Storage temperature range	T_{stg}	- 40 ... + 85	°C
Sperrspannung Reverse voltage	V_R	5	V
Vorwärtsgleichstrom Forward current	I_F	70	mA
Stoßstrom, $t_p = 100 \mu\text{s}$, $D = 0$ Surge current	I_{FSM}	700	mA
Verlustleistung Power dissipation	P_{tot}	140	mW
Wärmewiderstand Sperrsicht - Umgebung bei Montage auf FR4 Platine, Padgröße je 16 mm ² Thermal resistance junction - ambient mounted on PC-board (FR4), padsize 16 mm ² each Wärmewiderstand Sperrsicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	R_{thJA} R_{thJS}	540 360	K/W K/W

Kennwerte ($T_A = 25^\circ\text{C}$)**Characteristics**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 70 \text{ mA}$	λ_{peak}	950	nm
Centroid-Wellenlänge der Strahlung Centroid wavelength $I_F = 70 \text{ mA}$	$\lambda_{centroid}$	940	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 70 \text{ mA}$	$\Delta\lambda$	42	nm
Abstrahlwinkel Half angle	φ	± 9	Grad deg.

Kennwerte ($T_A = 25^\circ\text{C}$)**Characteristics (cont'd)**

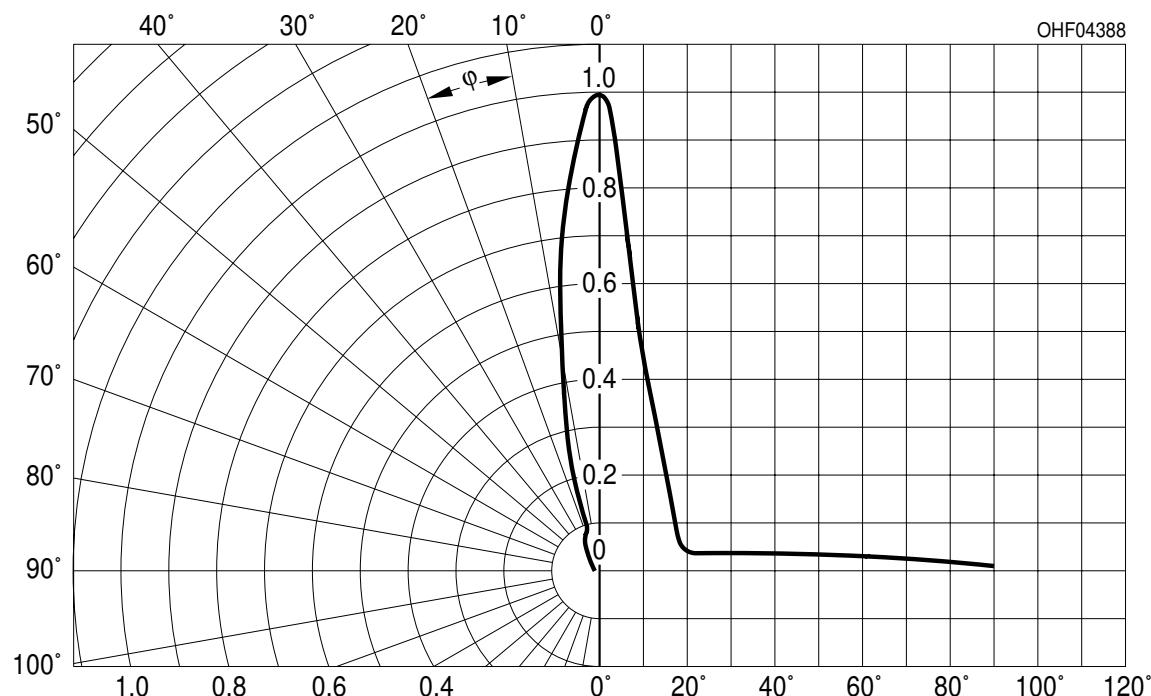
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Aktive Chipfläche Active chip area	A	0.04	mm^2
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.2×0.2	mm^2
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 70 \text{ mA}$, $R_L = 50 \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 70 \text{ mA}$, $R_L = 50 \Omega$	t_r, t_f	12	ns
Durchlassspannung Forward voltage $I_F = 70 \text{ mA}, t_p = 20 \text{ ms}$	V_F	1.6 (< 2.0)	V
Sperrstrom Reverse current	I_R	not designed for reverse operation	μA
Gesamtstrahlungsfluss Total radiant flux $I_F = 70 \text{ mA}, t_p = 20 \text{ ms}$	$\Phi_e \text{ typ}$	40	mW
Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 70 \text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 70 \text{ mA}$	TC_I	- 0.5	%/K
Temperaturkoeffizient von V_F , $I_F = 70 \text{ mA}$ Temperature coefficient of V_F , $I_F = 70 \text{ mA}$	TC_V	- 3.5	mV/K
Temperaturkoeffizient von λ , $I_F = 70 \text{ mA}$ Temperature coefficient of λ , $I_F = 70 \text{ mA}$	TC_λ	+ 0.3	nm/K

Strahlstärke I_e in Achsrichtung¹⁾gemessen bei einem Raumwinkel $\Omega = 0.01 \text{ sr}$ **Radiant Intensity I_e in Axial Direction**at a solid angle of $\Omega = 0.01 \text{ sr}$

Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		SFH 4045 - U	SFH 4045 - V	SFH 4045 - AW	
Strahlstärke Radiant intensity $I_F = 70 \text{ mA}, t_p = 20 \text{ ms}$	$I_{e \min}$ $I_{e \max}$	40 80	63 125	100 200	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 500 \text{ mA}, t_p = 25 \mu\text{s}$	$I_{e \text{ typ}}$	225	360	550	mW/sr

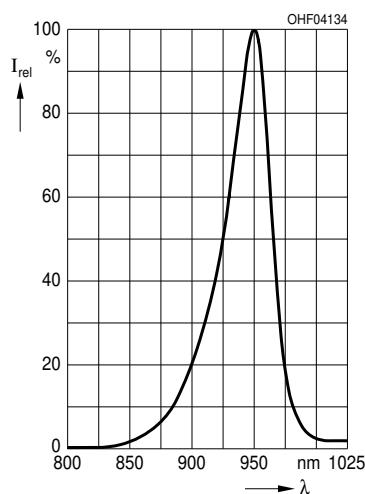
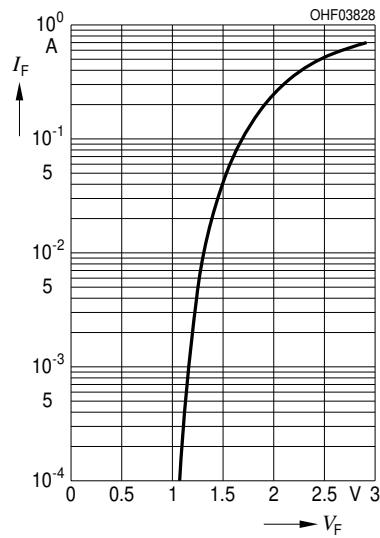
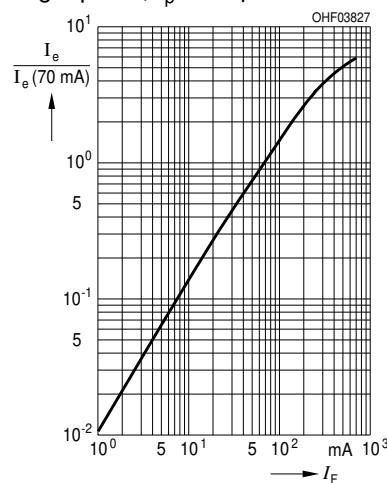
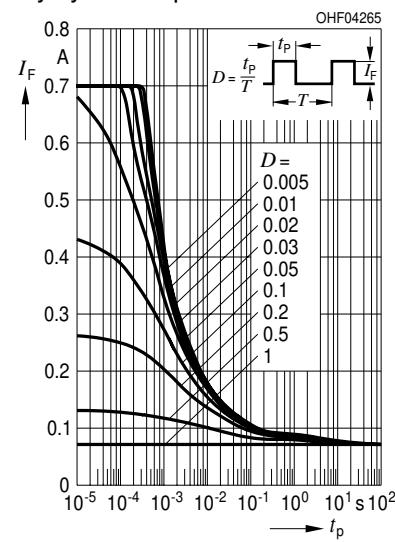
¹⁾ Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1) /

Only one bin in one packing unit (variation lower 2:1)

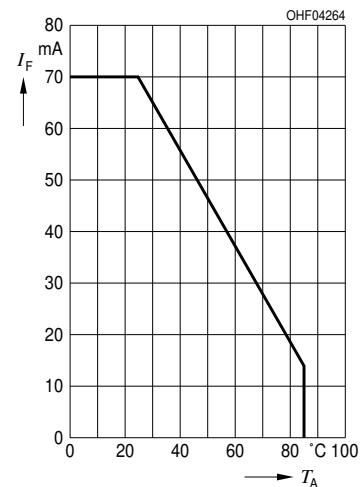
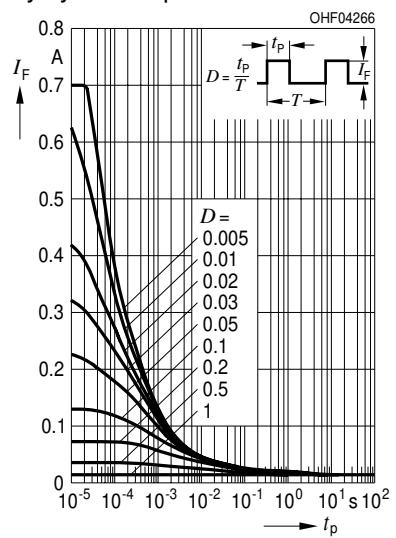
Abstrahlcharakteristik**Radiation Characteristics $I_{\text{rel}} = f(\varphi)$** 

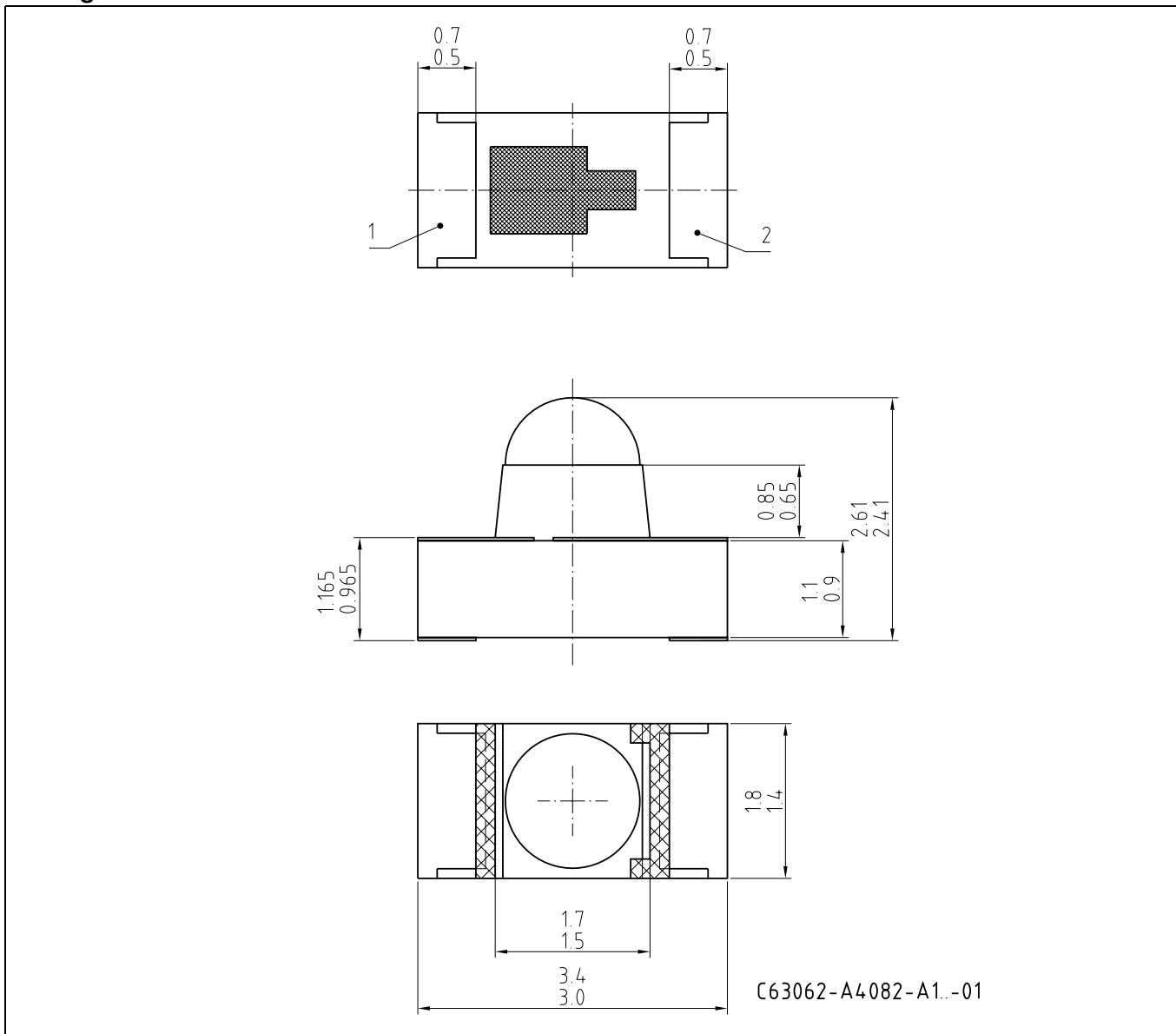
Relative Spectral Emission

$$I_{\text{rel}} = f(\lambda)$$

**Forward Current $I_F = f(V_F)$** Single pulse, $t_p = 100 \mu\text{s}$ **Radiant Intensity $\frac{I_e}{I_e(70 \text{ mA})} = f(I_F)$** Single pulse, $t_p = 25 \mu\text{s}$ **Permissible Pulse Handling Capability $I_F = f(\tau)$** $T_A = 25^\circ\text{C}$, duty cycle D = parameter**Max. Permissible Forward Current $I_F = f(T_A)$**

$$R_{\text{thJA}} = 540 \text{ K/W}$$

**Permissible Pulse Handling Capability $I_F = f(\tau)$** $T_A = 85^\circ\text{C}$, duty cycle D = parameter

**Maßzeichnung
Package Outlines**


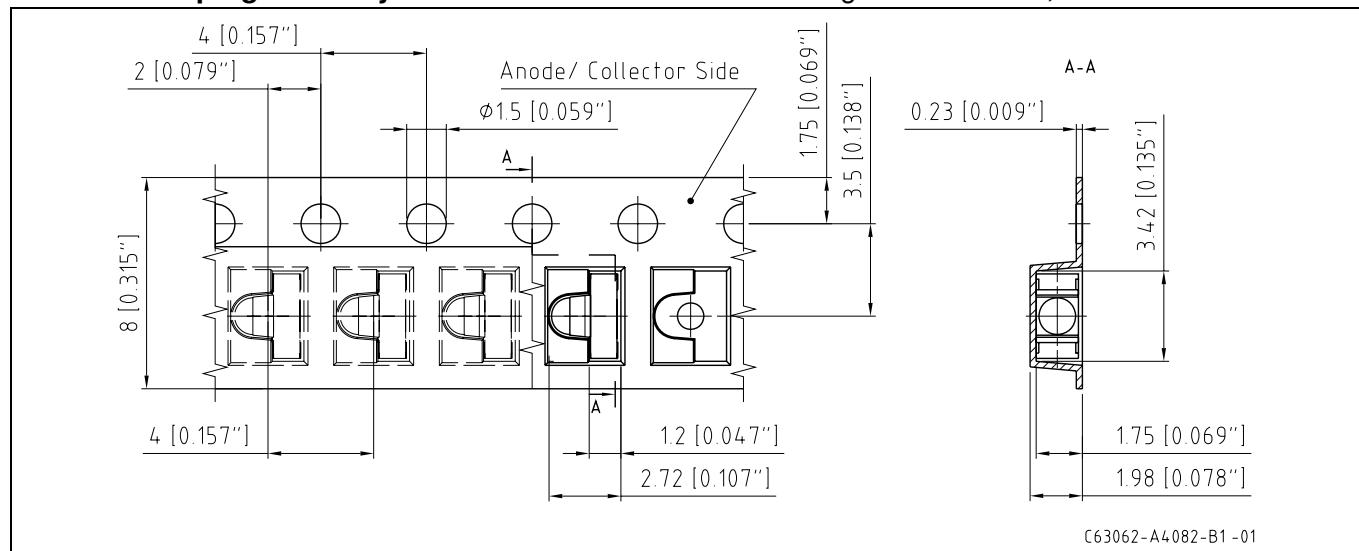
Maße in mm / Dimensions in mm.

Gehäuse / Package	Sidelooker mit Linse / Sidelooker with Lens
Anschlussbelegung pin configuration	1 = Kathode / cathode 2 = Anode / anode
Farbe Color	farblos klar colorless clear

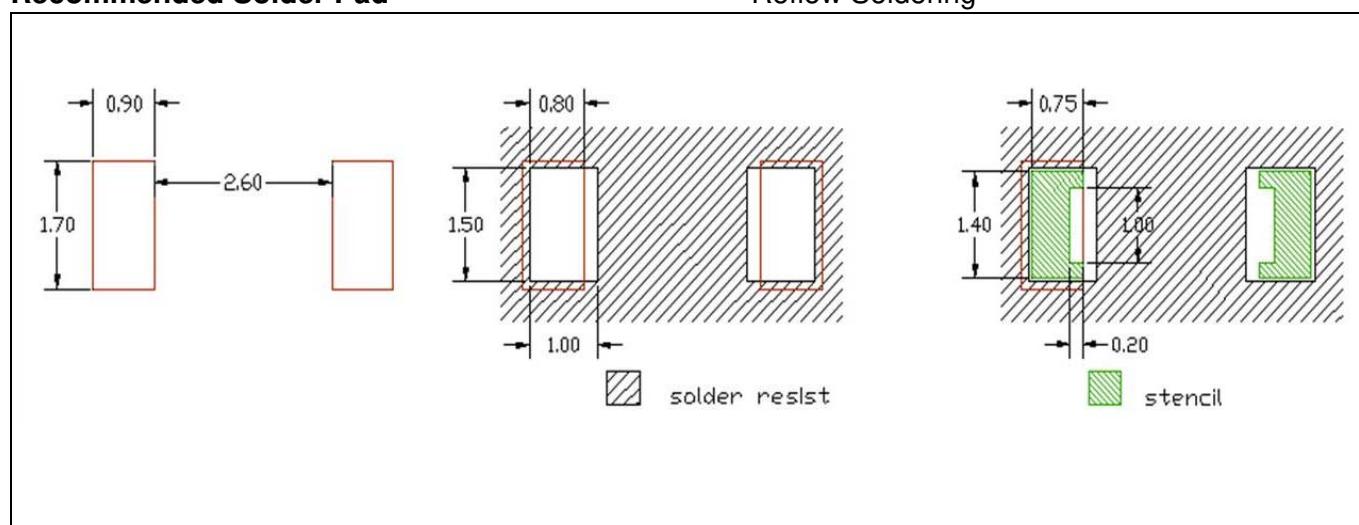
Gurtung / Polarität und Lage**Method of Taping / Polarity and Orientation**

Verpackungseinheit 1500/Rolle, ø180 mm

Packing unit 1500/reel, ø180 mm



Maße in mm (inch) / Dimensions in mm (inch).

Empfohlenes Lötpaddesign
Recommended Solder PadReflow Löten
Reflow Soldering

Maße in mm / Dimensions in mm.

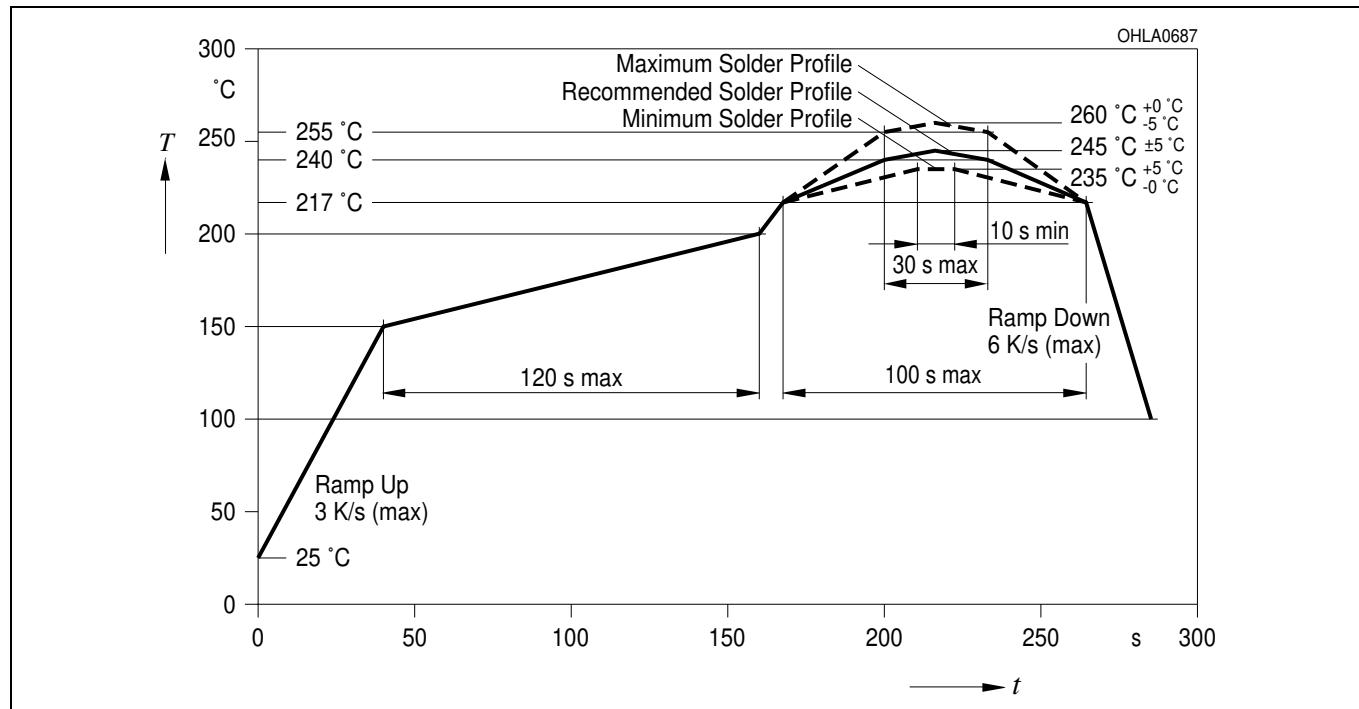
Lötbedingungen**Soldering Conditions****Reflow Lötprofil für bleifreies Löten****Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 3

Preconditioning acc. to JEDEC Level 3

(nach J-STD-020C)

(acc. to J-STD-020C)



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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.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components¹, may only be used in life-support devices or systems² 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 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.

EU RoHS and China RoHS compliant product



此产品符合欧盟 RoHS 指令的要求；

按照中国的相关法规和标准，不含有毒有害物质或元素。