



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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**Leistungsstarke IR-Lumineszenzdiode**  
**High Power Infrared Emitter**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 4200**  
**SFH 4205**



SFH 4200



SFH 4205

**Nicht für Neuentwicklungen / Not for new designs**

**Wesentliche Merkmale**

- Leistungsstarke GaAs-LED (35mW)
- Hoher Wirkungsgrad bei kleinen Strömen
- Homogene Abstrahlung
- Typische Peakwellenlänge 950nm

**Features**

- High Power GaAs-LED (35mW)
- High Efficiency at low currents
- Homogeneous Radiation Pattern
- Typical peak wavelength 950nm

**Anwendungen**

- Schnelle Datenübertragung mit Übertragungsraten bis 100 Mbaud (IR Tastatur, Joystick, Multimedia)
- Analoge und digitale Hi-Fi Audio- und Videosignalübertragung
- Alarm- und Sicherungssysteme
- IR-Scheinwerfer für Kameras

**Applications**

- High data transmission rate up to 100 Mbaud (IR keyboard, Joystick, Multimedia)
- Analog and digital Hi-Fi audio and video signal transmission
- Alarm and safety equipment
- IR spotlight for cameras

Typ Type	Bestellnummer Ordering Code	Strahlstärkegruppierung <sup>1)</sup> ( $I_F = 100 \text{ mA}$ , $t_p = 20 \text{ ms}$ ) Radiant Intensity Grouping <sup>1)</sup> $I_e$ (mW/sr)
SFH 4200	Q65110A2494	$\geq 4$ (typ. 10)
SFH 4205	Q65110A2498	$\geq 4$ (typ. 10)

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

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 100	°C
Sperrspannung Reverse voltage	$V_R$	3	V
Vorwärtsgleichstrom Forward current	$I_F$	100	mA
Stoßstrom, $t_p = 100\ \mu\text{s}$ , $D = 0$ Surge current	$I_{FSM}$	2.2	A
Verlustleistung Power dissipation	$P_{tot}$	180	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je $16\ \text{mm}^2$ Thermal resistance junction - ambient mounted on PC-board (FR4), padsize $16\ \text{mm}^2$ each	$R_{thJA}$	450	K/W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	$R_{thJS}$	200	K/W

Kennwerte ( $T_A = 25\text{ °C}$ )

## Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\lambda_{\text{peak}}$	950	nm
Spektrale Bandbreite bei 50% von $I_{\text{max}}$ Spectral bandwidth at 50% of $I_{\text{max}}$ $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Delta\lambda$	40	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 60$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.09	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	$0.3 \times 0.3$	mm <sup>2</sup>
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ , $R_L = 50\ \Omega$	$t_r$ , $t_f$	10	ns
Durchlassspannung Forward voltage $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$ $V_F$	1.5 ( $\leq 1.8$ ) 3.2 ( $\leq 4.3$ )	V V
Sperrstrom Reverse current $V_R = 3\text{ V}$	$I_R$	0.01 ( $\leq 10$ )	$\mu\text{A}$
Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_{e\text{ typ}}$	35	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 100\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 100\text{ mA}$	$TC_I$	- 0.44	%/K
Temperaturkoeffizient von $V_F$ , $I_F = 100\text{ mA}$ Temperature coefficient of $V_F$ , $I_F = 100\text{ mA}$	$TC_V$	- 1.5	mV/K
Temperaturkoeffizient von $\lambda$ , $I_F = 100\text{ mA}$ Temperature coefficient of $\lambda$ , $I_F = 100\text{ mA}$	$TC_\lambda$	+ 0.2	nm/K



**Strahlstärke  $I_e$  in Achsrichtung<sup>1)</sup>**

gemessen bei einem Raumwinkel  $\Omega = 0.01$  sr

**Radiant Intensity  $I_e$  in Axial Direction**

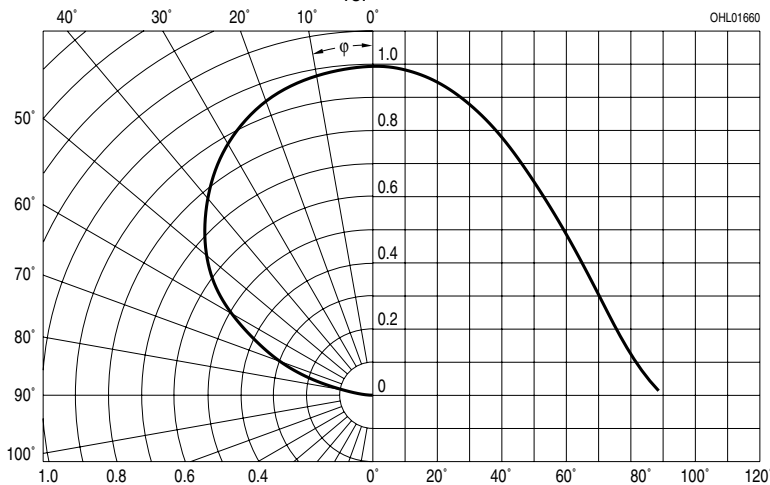
at a solid angle of  $\Omega = 0.01$  sr

Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		-P	-Q	-R	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$ $I_{e \text{ max}}$	4 8	6.3 12.5	10 20	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ $\mu$ s	$I_{e \text{ typ}}$	40	60	80	mW/sr

<sup>1)</sup> Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1) /  
Only one group in one packing unit (variation lower 2:1)

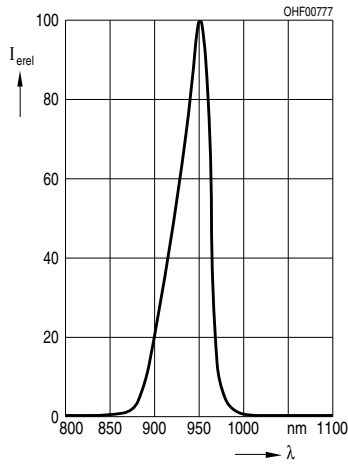
**Abstrahlcharakteristik**

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



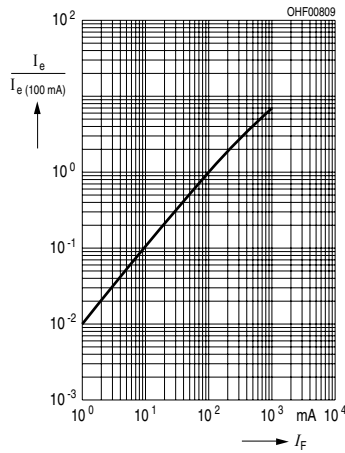
**Relative Spectral Emission**

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



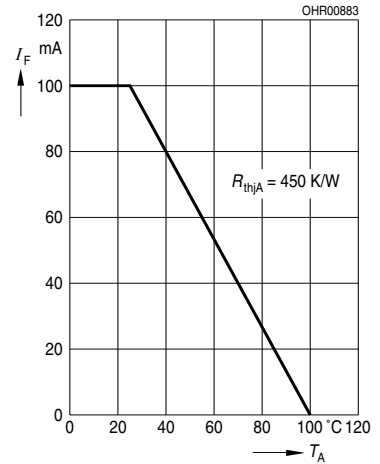
**Radiant Intensity**  $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

Single pulse,  $t_p = 20 \mu\text{s}$



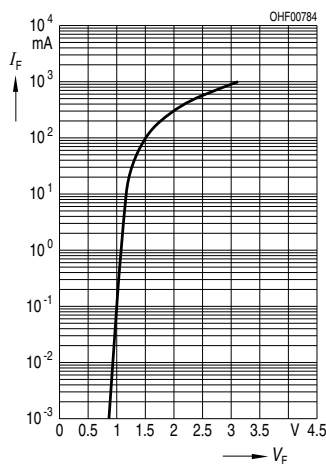
**Max. Permissible Forward Current**

$I_F = f(T_A), R_{thJA} = 450 \text{ K/W}$



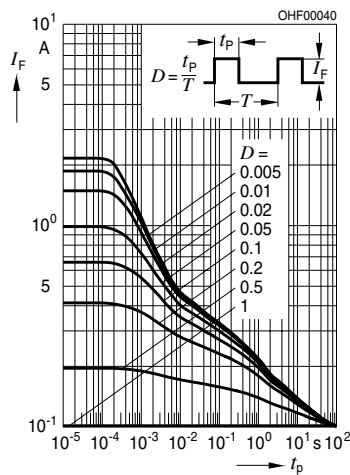
**Forward Current**  $I_F = f(V_F)$

single pulse,  $t_p = 20 \mu\text{s}$

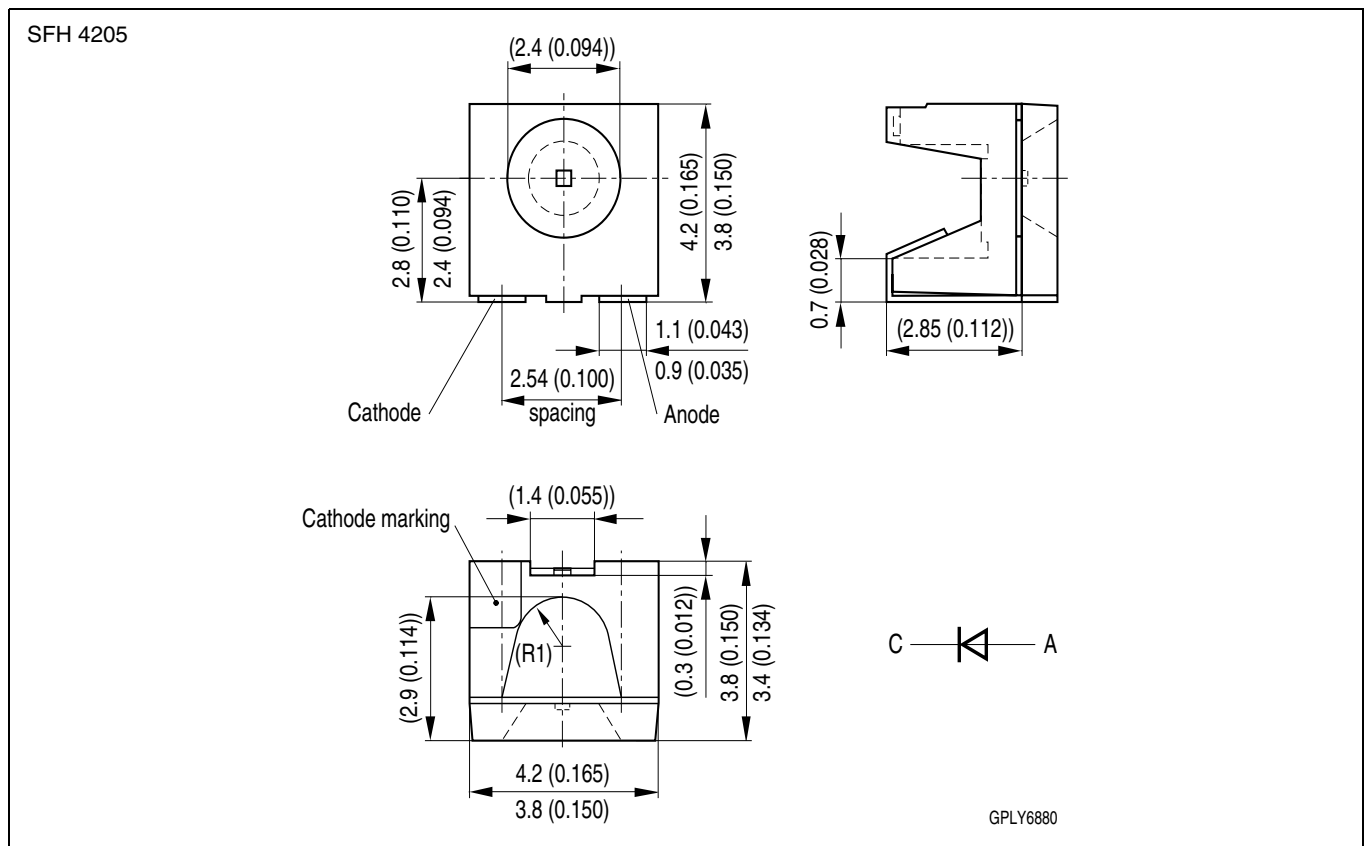
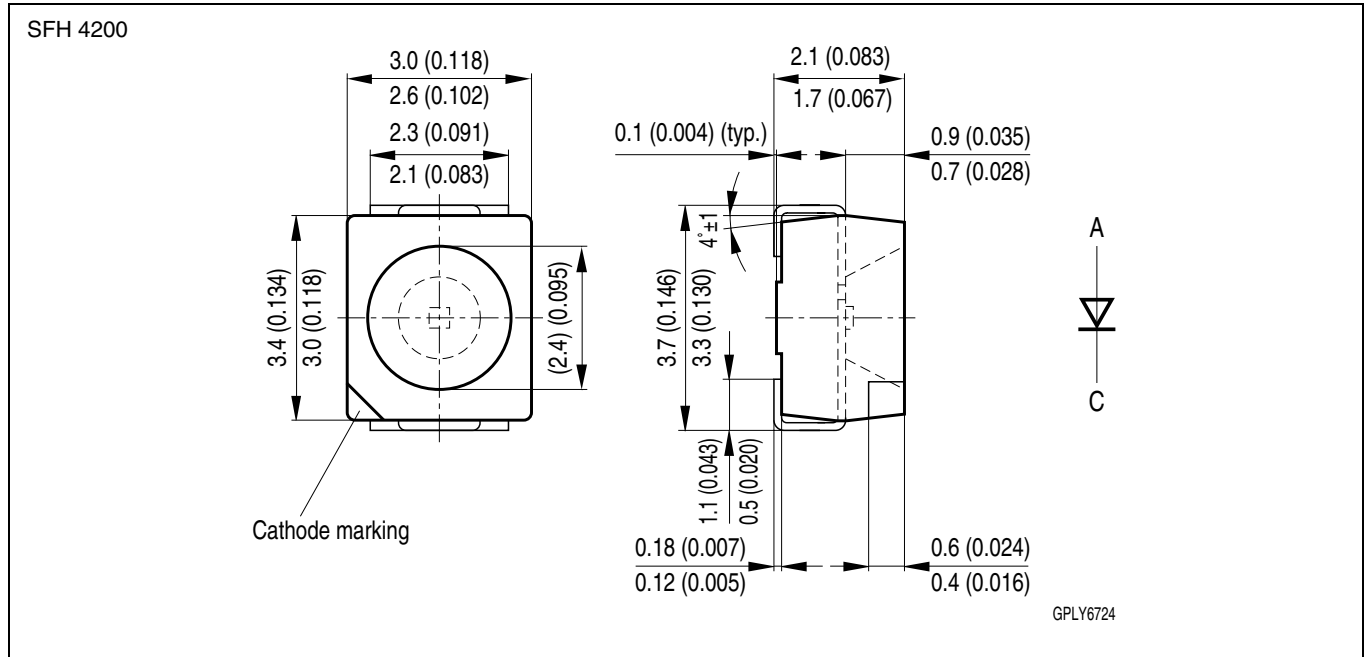


**Permissible Pulse Handling Capability**

$I_F = f(\tau), T_A = 25^\circ\text{C}$ ,  
duty cycle  $D = \text{parameter}$



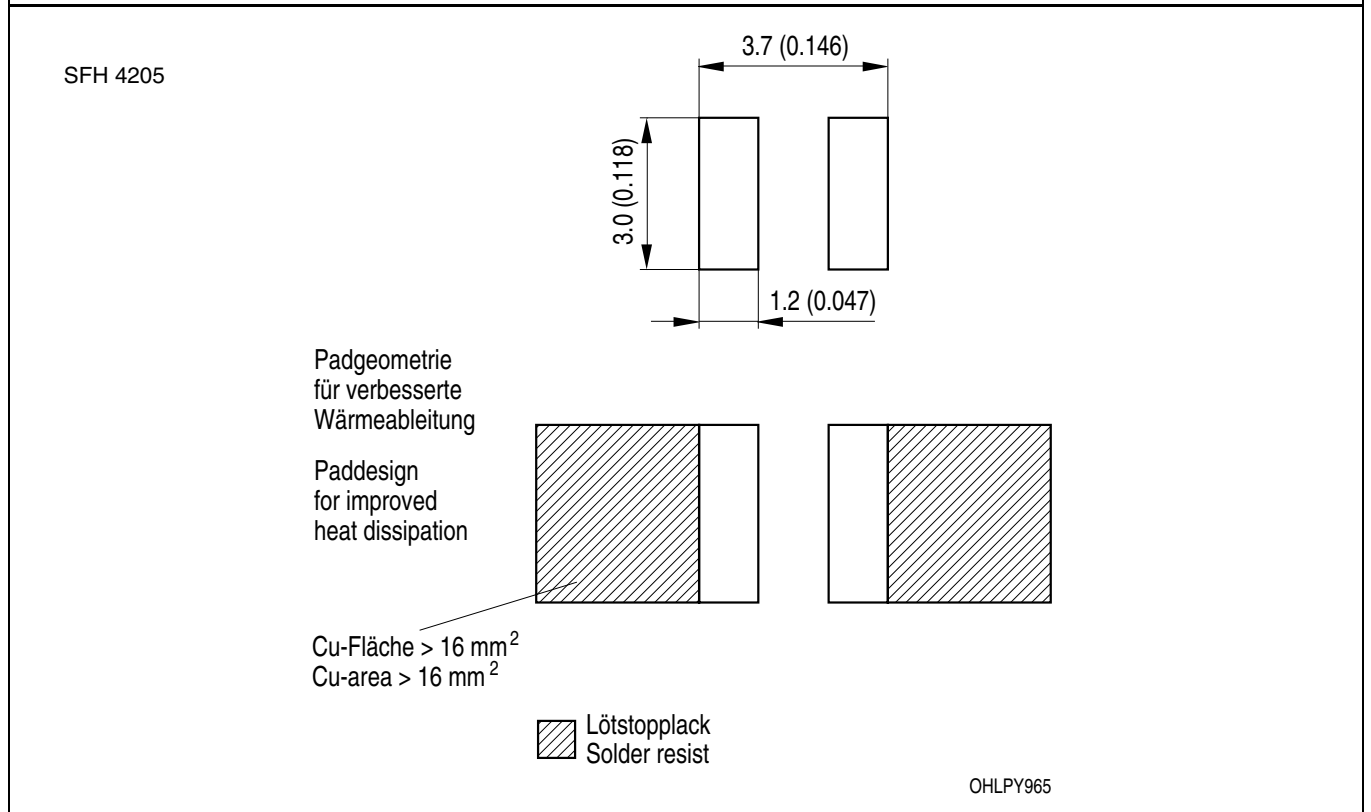
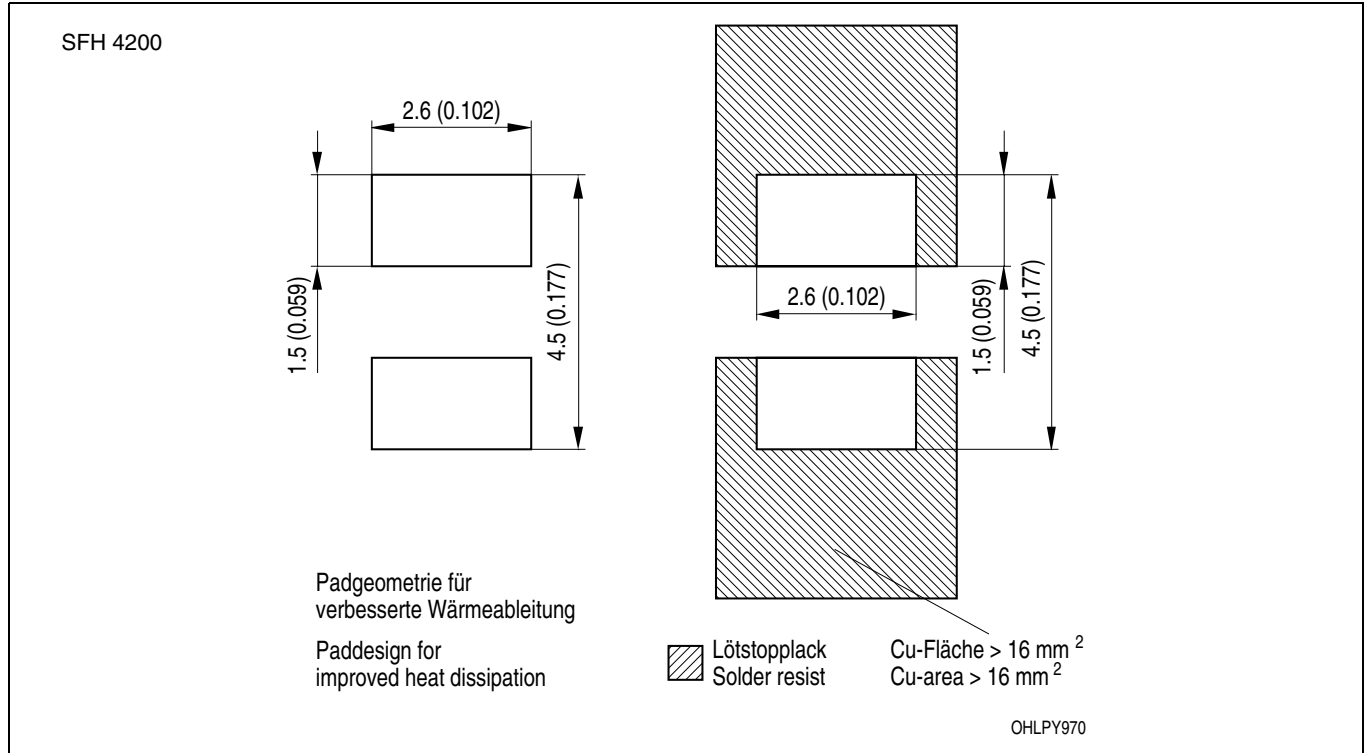
Maßzeichnung  
Package Outlines



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

**Empfohlenes Lötpaddesign**  
**Recommended Solder Pad**

**Reflow Löten**  
**Reflow Soldering**

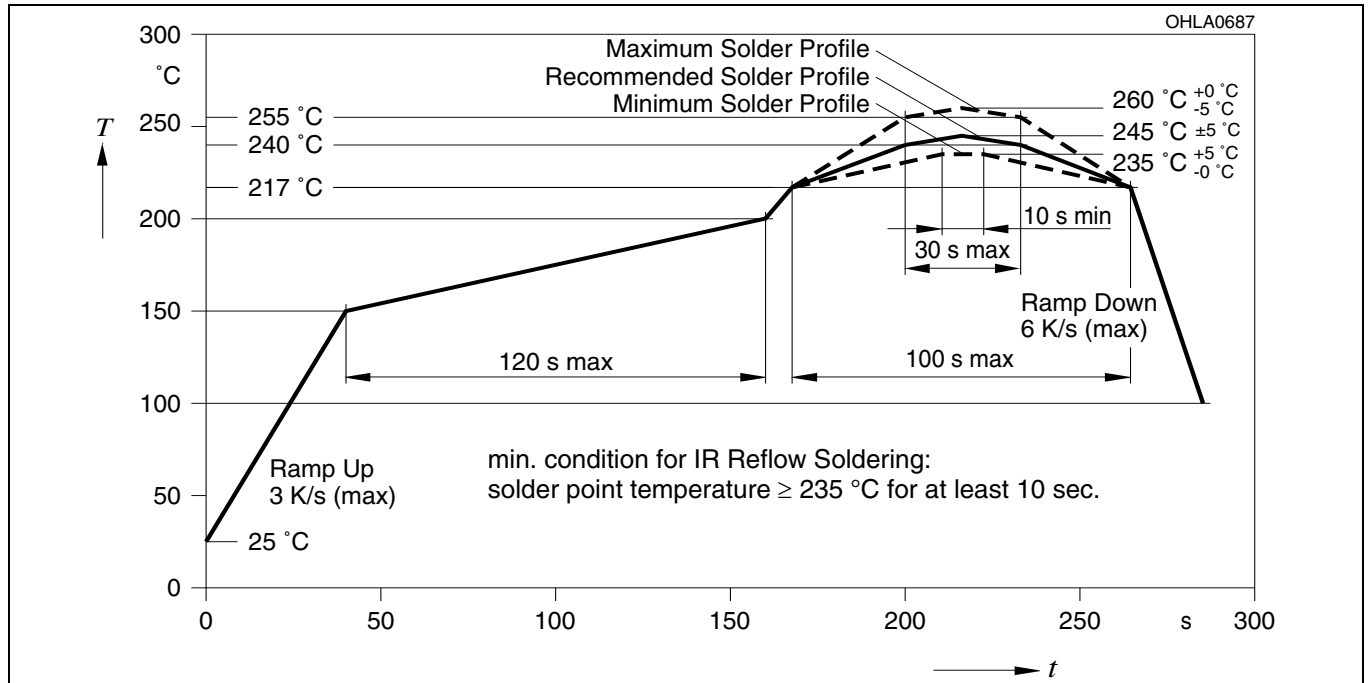


Maße in mm (inch) / Dimensions in mm (inch).

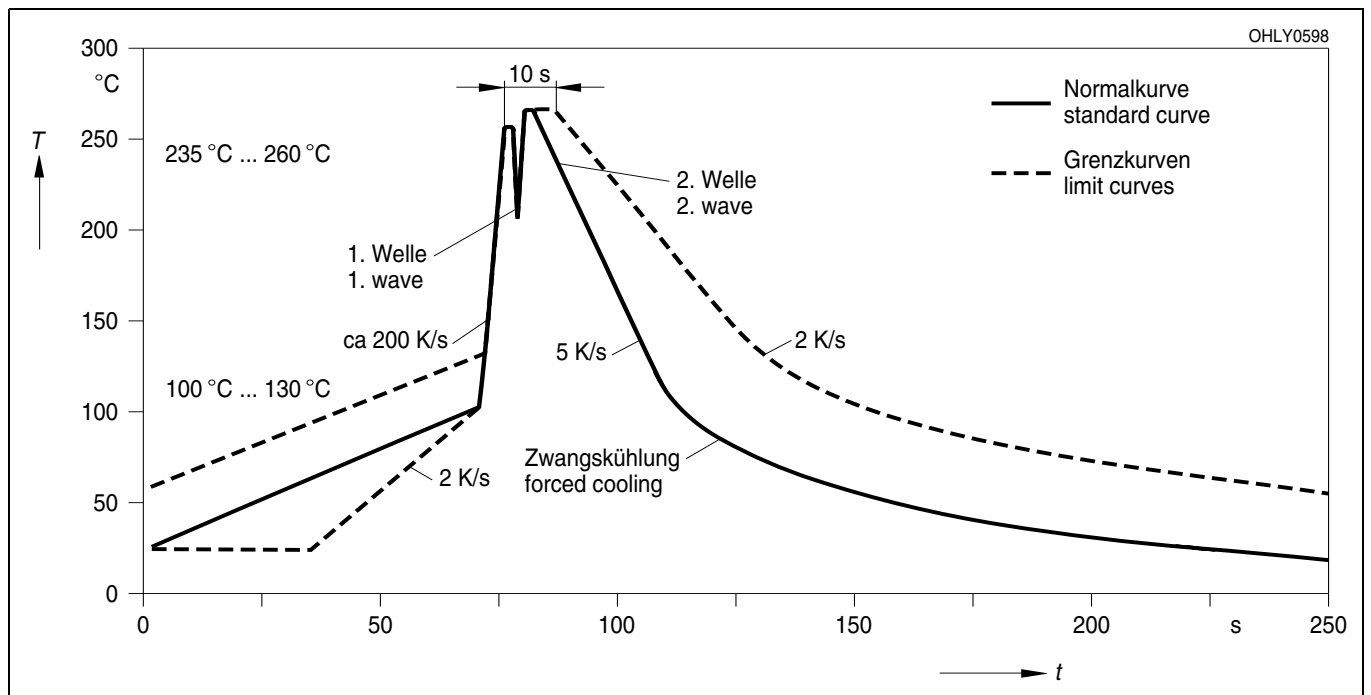


**Lötbedingungen**  
**Soldering Conditions**  
**Reflow Lötprofil für bleifreies Löten**  
**Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 2  
 Preconditioning acc. to JEDEC Level 2  
 (nach J-STD-020C)  
 (acc. to J-STD-020C)



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



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<sup>1</sup> 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.

<sup>2</sup> 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.