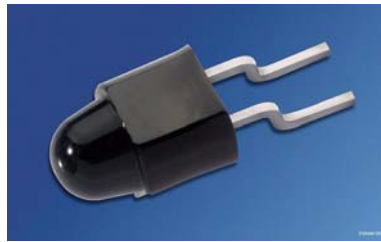
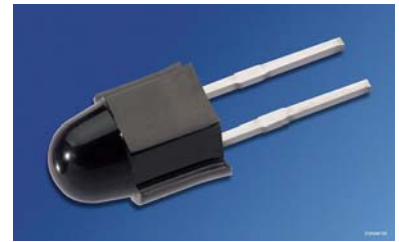


**Leistungsstarke IR-Lumineszenzdiode**  
**High Power Infrared Emitter**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 4500**  
**SFH 4505**



SFH 4500



SFH 4505

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

**Wesentliche Merkmale**

- Leistungsstarke GaAs-LED (40mW)
- Hoher Wirkungsgrad bei kleinen Strömen
- Typische Peakwellenlänge 950nm
- Engwinkliger SMT-Sidelooker

**Features**

- High Power GaAs-LED (40mW)
- High Efficiency at low currents
- Typical peak wavelength 950nm
- Narrow angle SMT-Sidelooker

**Anwendungen**

- Bauteil mit hoher Strahlstärke zur Oberflächenmontage (SMT)
- Schnelle Datenübertragung mit Übertragungsraten bis 100 Mbaud (IR Tastatur, Joystick, Multimedia)
- Analoge und digitale Hi-Fi Audio- und Videosignalübertragung
- Alarm- und Sicherungssysteme
- IR Freiraumdatenübertragung
- IR-Scheinwerfer für Kameras

**Applications**

- Device with high radiant intensity suitable for surface mounting (SMT)
- 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 free air data transmission
- 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 4500	Q65110A2642	85 (>25)
SFH 4505	Q65110A2643	85 (>25)

<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
Durchlassstrom Forward current	$I_F$ (DC)	100	mA
Stoßstrom Surge current $t_p = 10\ \mu\text{s}, D = 0$	$I_{FSM}$	2.2	A
Verlustleistung Power dissipation	$P_{tot}$	180	mW
Wärmewiderstand Sperrschicht - Umgebung, freie Beinchenlänge max. 10 mm Thermal resistance junction - ambient, lead length between package bottom and PCB max. 10 mm	$R_{thJA}$	375	K/W

Kennwerte ( $T_A = 25\text{ °C}$ )

## Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength of 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	$\varphi$	$\pm 10$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.09	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimension 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% 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
Kapazität Capacitance $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_o$	35	pF
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 $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_e$	40	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ Temperature coefficient of $I_e$ or $\Phi_e$ $I_F = 100\text{ mA}$	$TC_I$	- 0.44	%/K

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

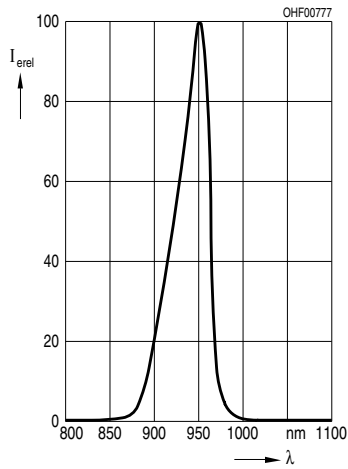
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Temperaturkoeffizient von $V_F$ Temperature coefficient of $V_F$ $I_F = 100\text{ mA}$	$TC_V$	- 1.5	mV/K
Temperaturkoeffizient von $\lambda$ Temperature coefficient of $\lambda$ $I_F = 100\text{ mA}$	$TC_\lambda$	+ 0.2	nm/K

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

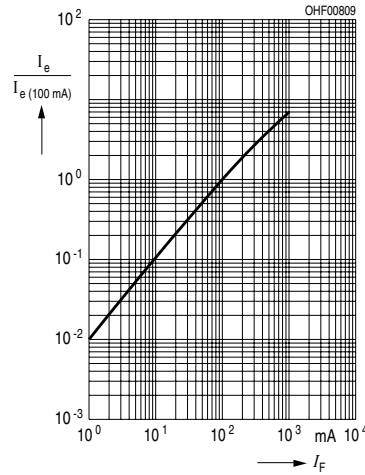
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Strahlstärke Radiant intensity $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$I_{e\text{ min}}$ $I_{e\text{ typ}}$	25 85	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$	$I_{e\text{ typ}}$	550	mW/sr

**Relative Spectral Emission**

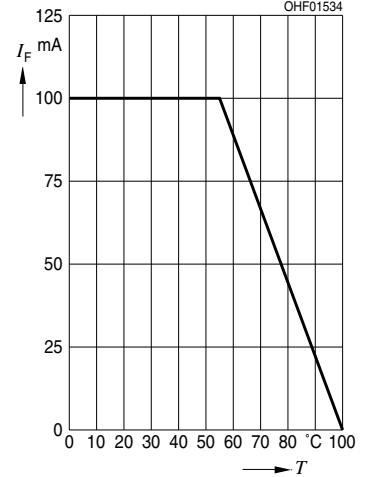
$I_{\text{erel}} = f(\lambda)$



**Radiant Intensity  $I_e/I_e(100 \text{ mA}) = f(I_F)$**   
Single pulse,  $t_p = 20 \mu\text{s}$

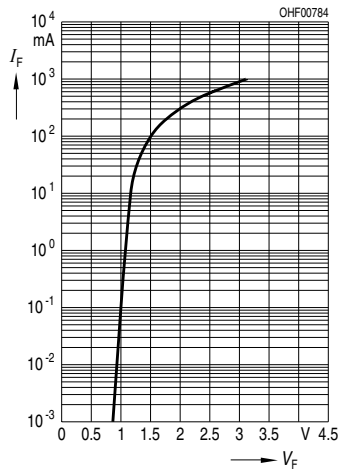


**Max. Permissible Forward Current  $I_F = f(T_A)$**



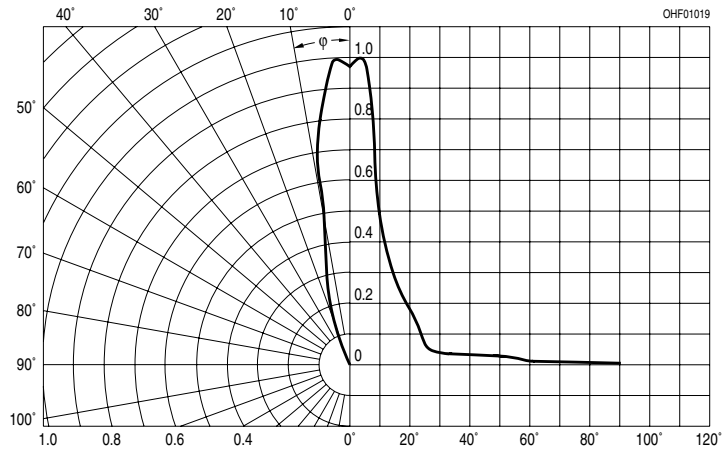
**Forward Current  $I_F = f(V_F)$**

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



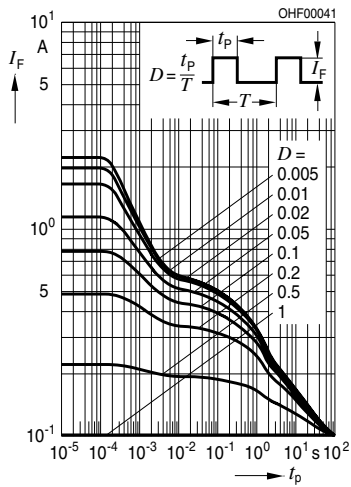
**Radiation Characteristic**

$I_{\text{erel}} = f(\varphi)$

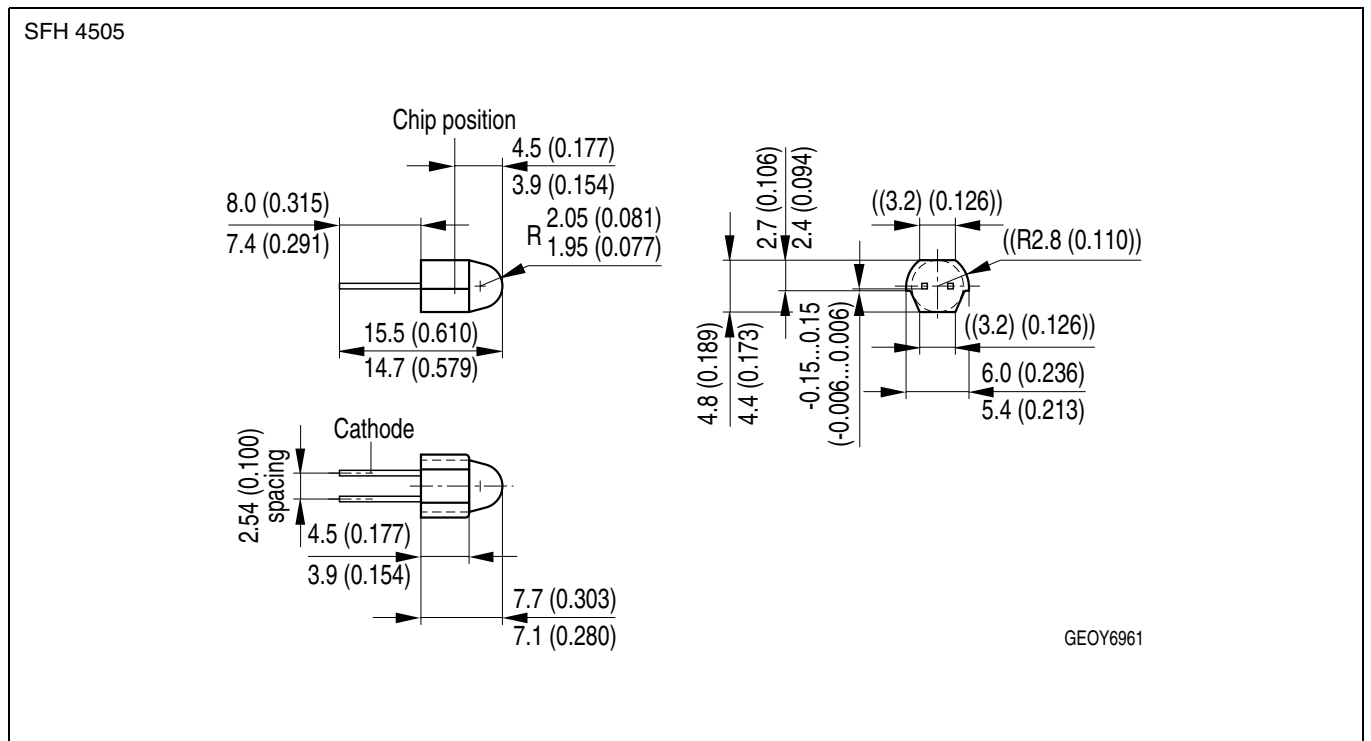
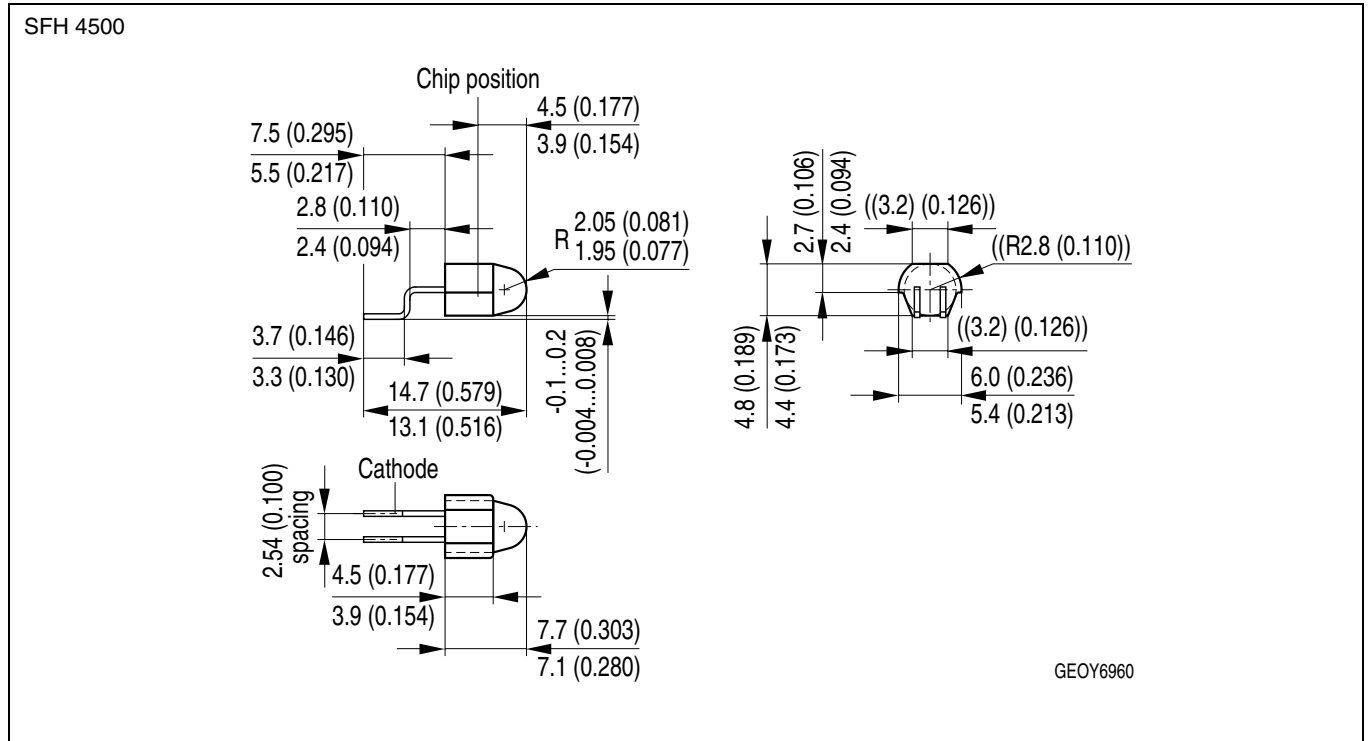


**Permissible Pulse Handling Capability**

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

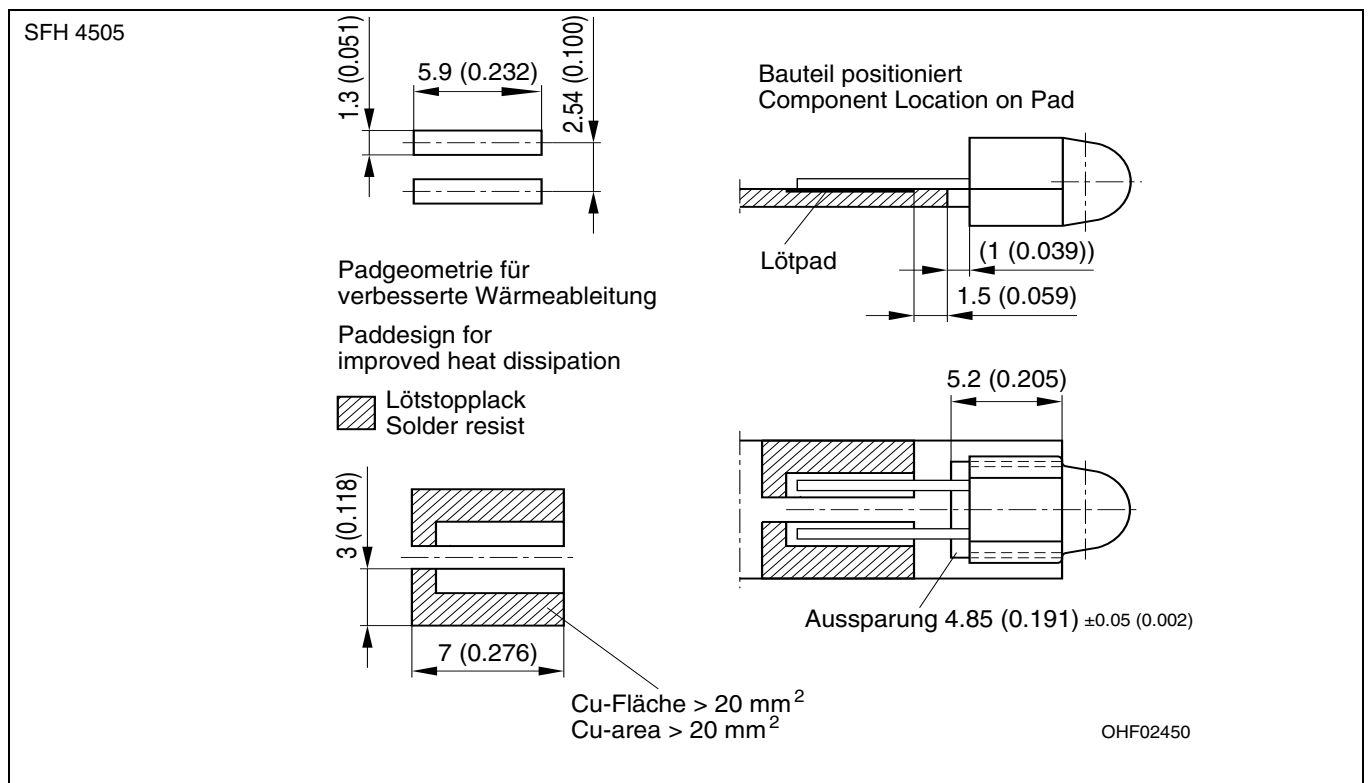
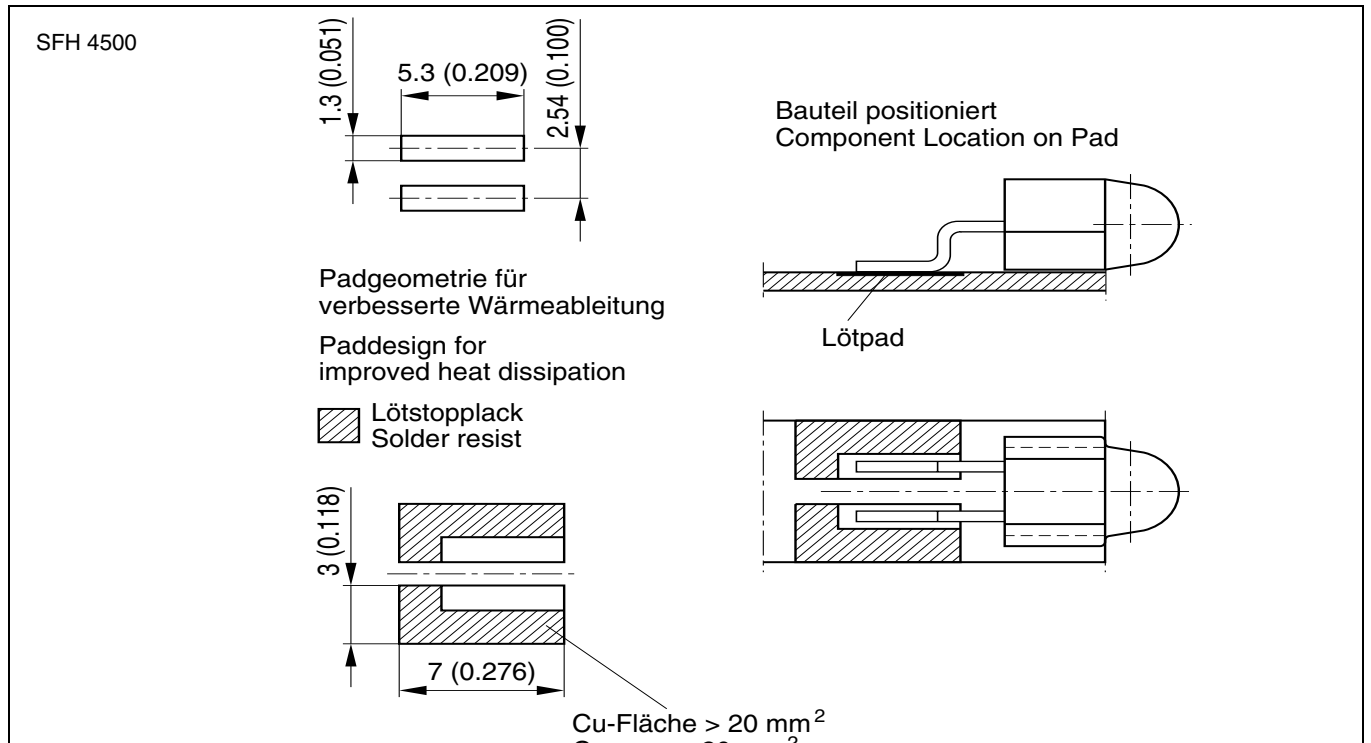


Maßzeichnungen  
Package Outlines



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

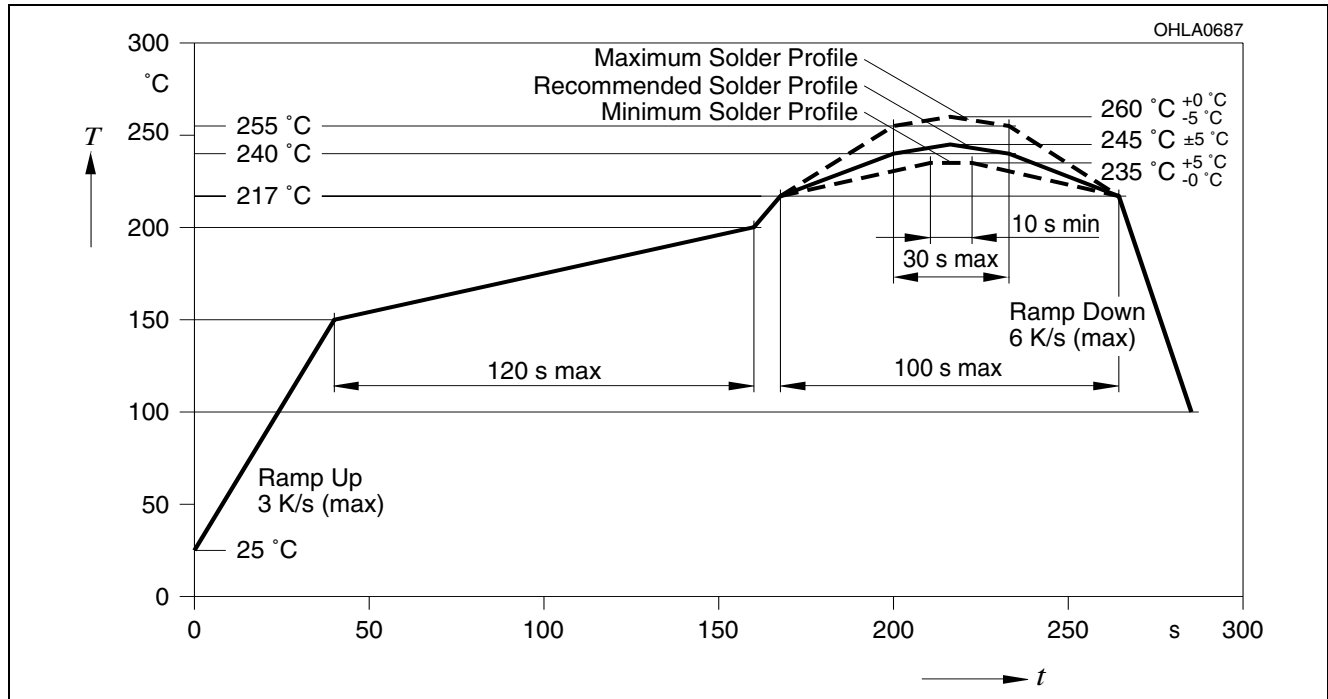
**Empfohlenes Lötpaddesign**  
**Recommended Solder Pad**



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 3  
 Preconditioning acc. to JEDEC Level 3  
 (nach J-STD-020C)  
 (acc. to J-STD-020C)



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