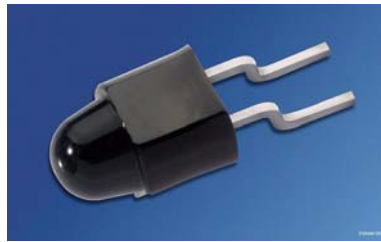
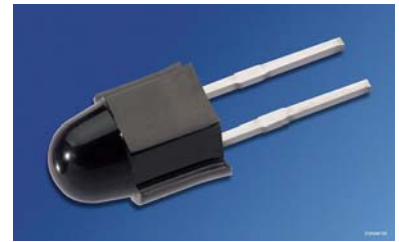


Leistungsstarke IR-Lumineszenzdiode
High Power Infrared Emitter
Lead (Pb) Free Product - RoHS Compliant

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 ¹⁾ ($I_F = 100 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping ¹⁾ I_e (mW/sr)
SFH 4500	Q65110A2642	85 (>25)
SFH 4505	Q65110A2643	85 (>25)

¹⁾ 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 $t_p = 10\text{ }\mu\text{s}, D = 0$	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 $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	λ_{peak}	950	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	$\Delta\lambda$	40	nm
Abstrahlwinkel Half angle	φ	± 10	Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm ²
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.3×0.3	mm ²
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 (≤ 1.8) 3.2 (≤ 4.3)	V V
Sperrstrom Reverse current $V_R = 3\text{ V}$	I_R	0.01 (≤ 10)	μA
Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	Φ_e	40	mW
Temperaturkoeffizient von I_e bzw. Φ_e Temperature coefficient of I_e or Φ_e $I_F = 100\text{ mA}$	TC_I	- 0.44	%/K

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

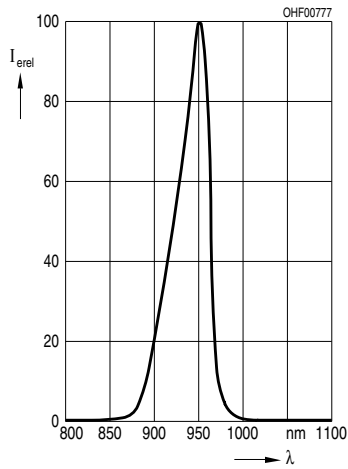
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 100\text{ mA}$	TC_V	- 1.5	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ $I_F = 100\text{ mA}$	TC_λ	+ 0.2	nm/K

Strahlstärke I_e in Achsrichtunggemessen 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

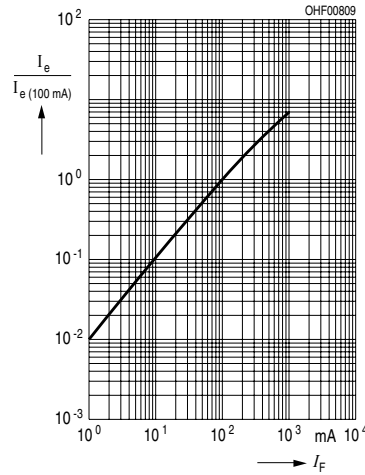
Relative Spectral Emission

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

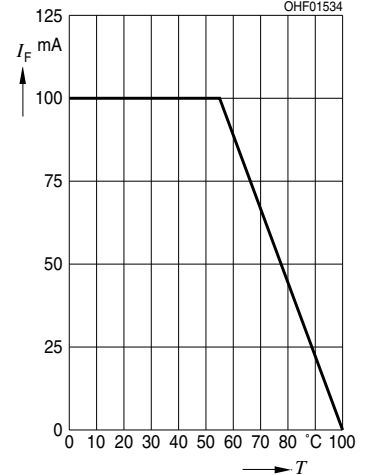


Radiant Intensity $I_e/I_e(100 \text{ mA}) = f(I_F)$

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

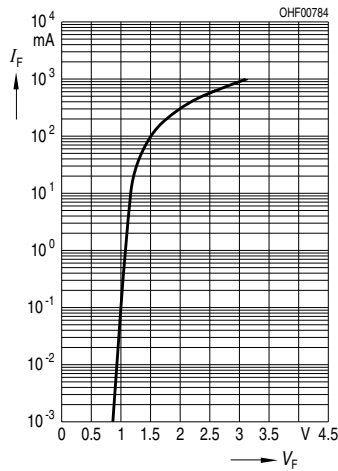


Max. Permissible Forward Current $I_F = f(T_A)$



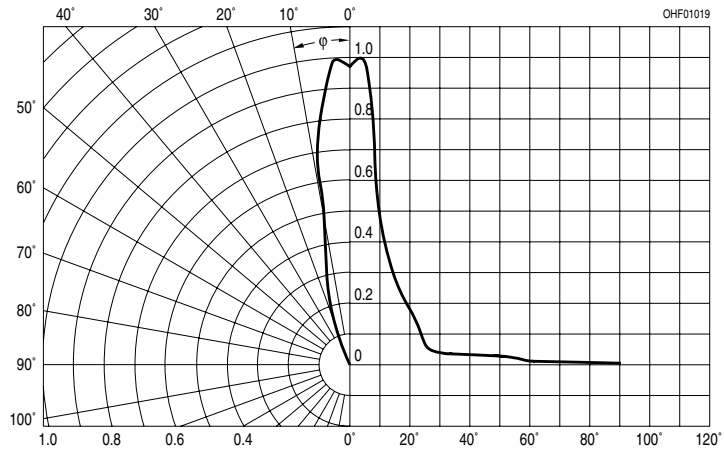
Forward Current $I_F = f(V_F)$

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



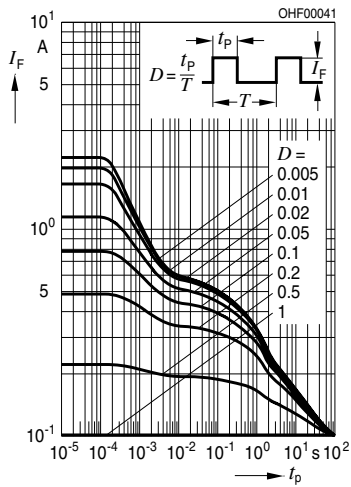
Radiation Characteristic

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

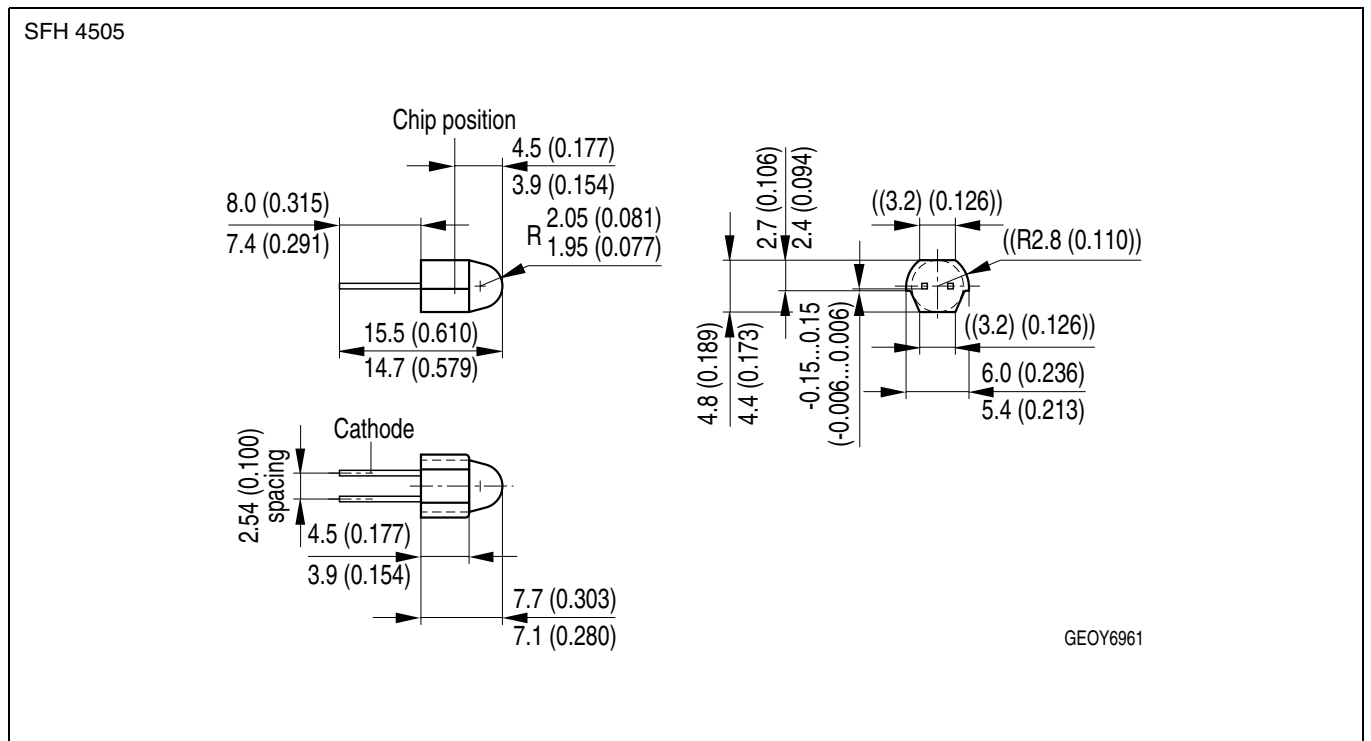
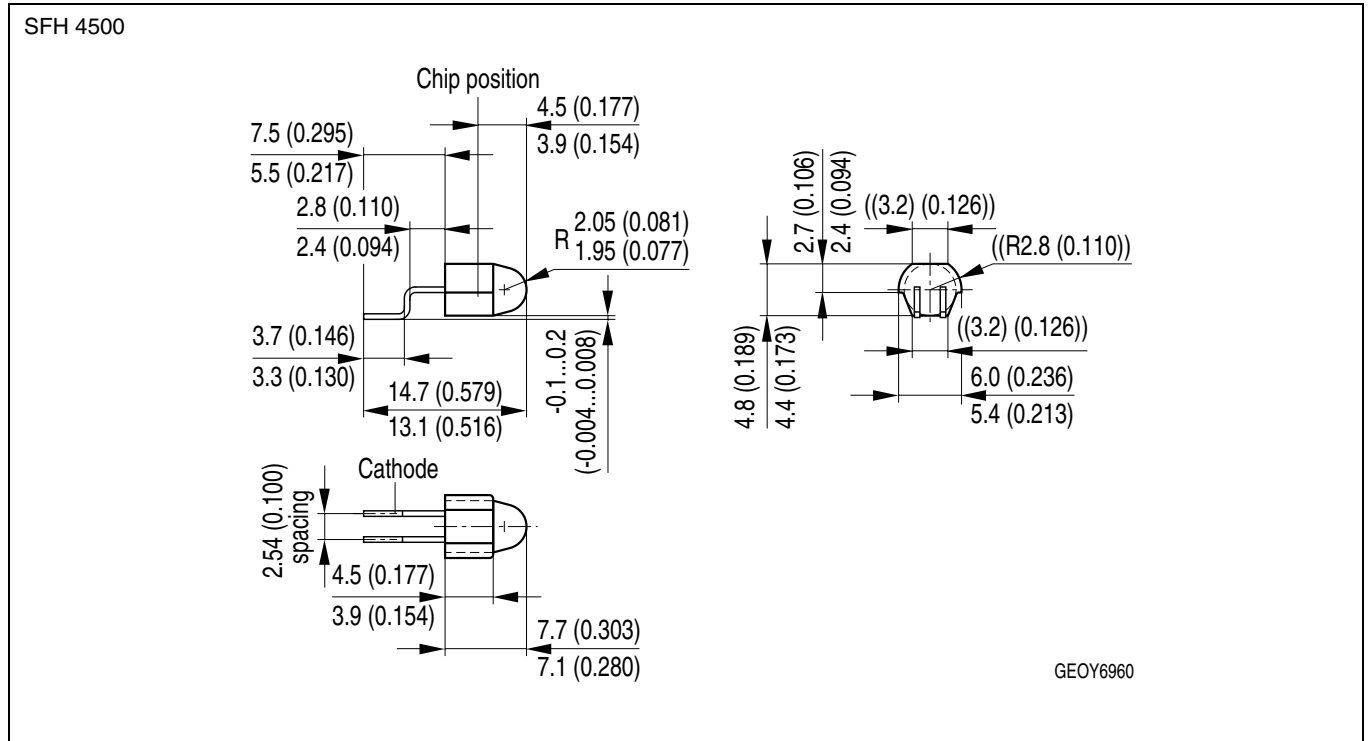


Permissible Pulse Handling Capability $I_F = f(\tau)$, $T_A = 25 \text{ }^\circ\text{C}$,

duty cycle $D =$ parameter

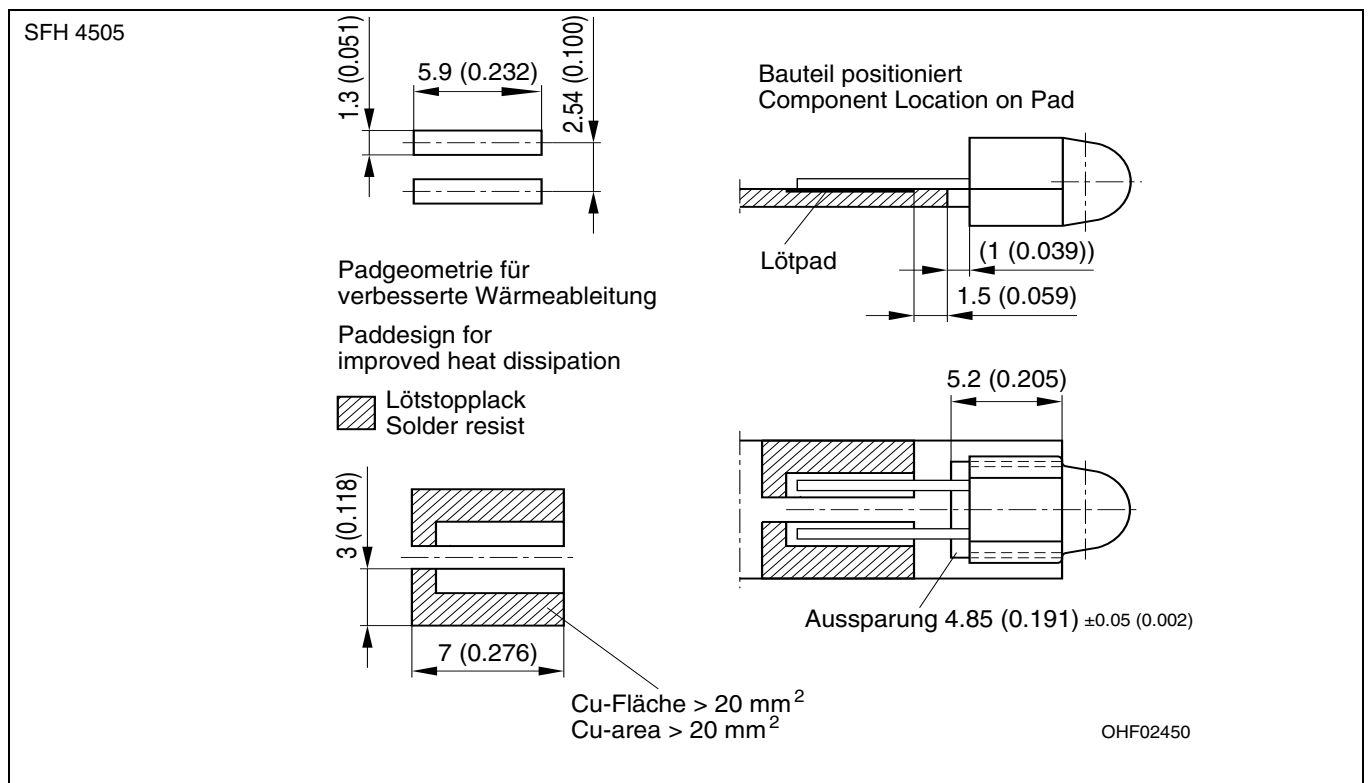
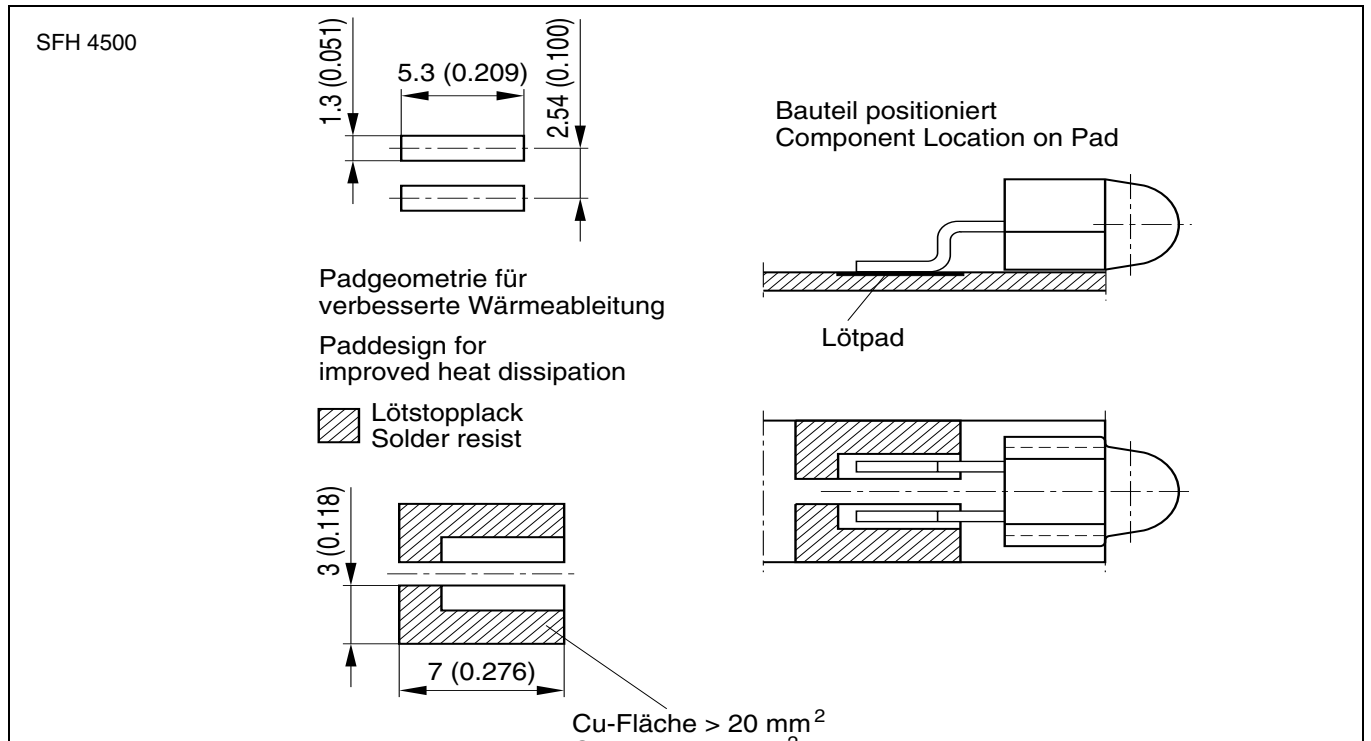


Maßzeichnungen
Package Outlines



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

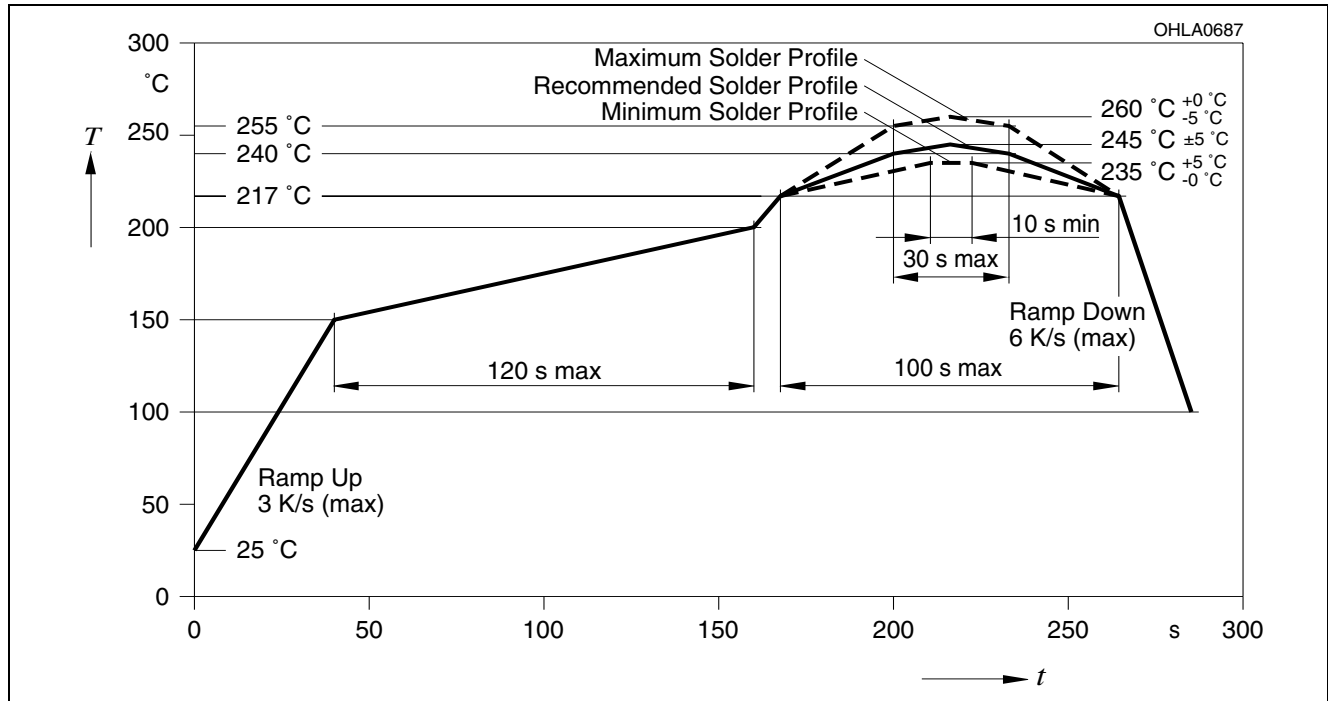
Reflow Soldering Profile for lead free soldering

Vorbehandlung nach JEDEC Level 3

Preconditioning acc. to JEDEC Level 3

(nach J-STD-020C)

(acc. to J-STD-020C)



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