

GaAs-IR-Lumineszenzdiode in SMT-Gehäuse
GaAs Infrared Emitter in SMT Package
Lead (Pb) Free Product - RoHS Compliant

SFH 420
SFH 425



SFH 420



SFH 425

Wesentliche Merkmale

- GaAs-LED mit sehr hohem Wirkungsgrad
- Gute Linearität ($I_e = f[I_F]$) bei hohen Strömen
- Gleichstrom- (mit Modulation) oder Impulsbetrieb möglich
- Hohe Zuverlässigkeit
- Hohe Impulsbelastbarkeit
- Oberflächenmontage geeignet
- Gegurtet lieferbar
- SFH 420 Gehäusegleich mit SFH 320
- SFH 425 Gehäusegleich mit SFH 325

Features

- Very highly efficient GaAs-LED
- Good Linearity ($I_e = f[I_F]$) at high currents
- DC (with modulation) or pulsed operations are possible
- High reliability
- High pulse handling capability
- Suitable for surface mounting (SMT)
- Available on tape and reel
- SFH 420 same package as SFH 320
- SFH 425 same package as SFH 325

Anwendungen

- Miniaturlichtschranken für Gleich- und Wechsellichtbetrieb, Lochstreifenleser
- Industrieelektronik
- „Messen/Steuern/Regeln“
- Automobiltechnik
- Sensorik
- Alarm- und Sicherungssysteme
- IR-Freiraumübertragung

Applications

- Miniature photointerrupters
- Industrial electronics
- For drive and control circuits
- Automotive technology
- Sensor technology
- Alarm and safety equipment
- IR free air transmission

| Typ Type | Bestellnummer Ordering Code | Gehäuse Package |
|-------------|--------------------------------|---|
| SFH 420 | Q65110A2473 | Kathodenkennzeichnung: abgesetzte Ecke cathode marking: beveled edge |
| SFH 425 | Q65110A2463 | TOPLED® SIDELED® |

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 | 5 | V |
| Durchlassstrom Forward current | I_F | 100 | mA |
| Stoßstrom, $\tau = 10\ \mu\text{s}$, $D = 0$ Surge current | I_{FSM} | 3 | A |
| Verlustleistung Power dissipation | P_{tot} | 160 | mW |
| Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je $16\ \text{mm}^2$ Thermal resistance junction - ambient mounted on PC-board (FR4), pads size $16\ \text{mm}^2$ 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 $I_F = 100\ \text{mA}$, $t_p = 20\ \text{ms}$ | λ_{peak} | 950 | nm |
| Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100\ \text{mA}$ | $\Delta\lambda$ | 55 | nm |
| Abstrahlwinkel Half angle | φ | ± 60 | Grad deg. |
| Aktive Chipfläche Active chip area | A | 0.09 | mm^2 |
| Abmessungen der aktiven Chipfläche Dimensions of the active chip area | $L \times B$ $L \times W$ | 0.3×0.3 | mm^2 |

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

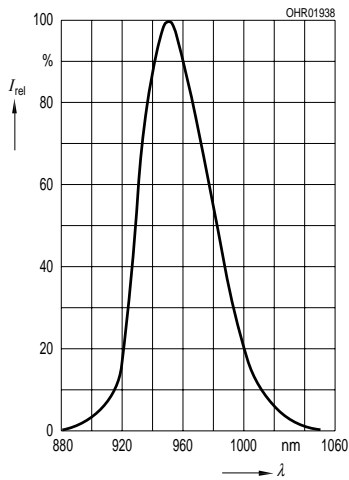
| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|------------------|--|-----------------|
| Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ | t_r, t_f | 0.5 | μs |
| Kapazität Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | C_o | 25 | 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 | 1.3 (≤ 1.5) 1.9 (≤ 2.5) | V V |
| Sperrstrom Reverse current $V_R = 5\text{ V}$ | I_R | 0.01 (≤ 1) | μA |
| Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | Φ_e | 18 | mW |
| Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 100\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 100\text{ mA}$ | TC_I | - 0.55 | %/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 λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$ | TC_λ | + 0.3 | nm/K |

Strahlstärke I_e in Achsrichtung (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 |
|--|--|-----------------|-----------------|
| Strahlstärke Radiant intensity $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | $I_{e\text{ min}}$ $I_{e\text{ typ}}$ | 2.5 5.0 | mW/sr mW/sr |
| Strahlstärke Radiant intensity $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$ | $I_{e\text{ typ.}}$ | 38 | mW/sr |

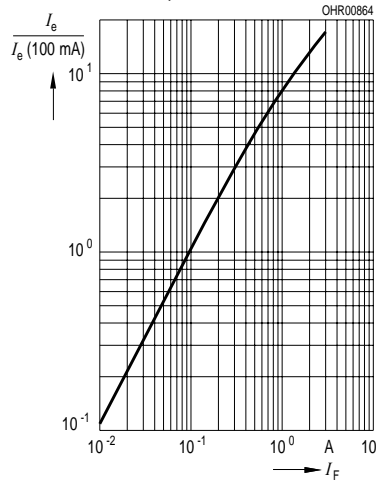
Relative Spectral Emission

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



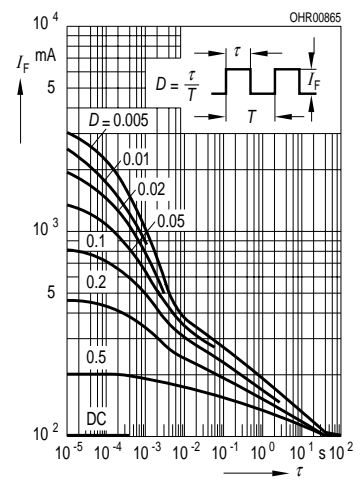
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



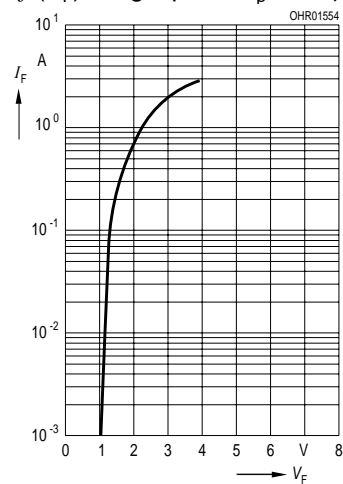
Permissible Pulse Handling Capability

$I_F = f(t_p)$, duty cycle $D =$ parameter, $T_A = 20 \text{ }^\circ\text{C}$



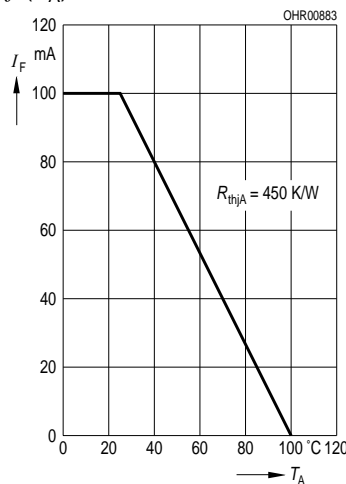
Forward Current

$I_F = f(V_F)$, single pulse, $t_p = 20 \mu\text{s}$



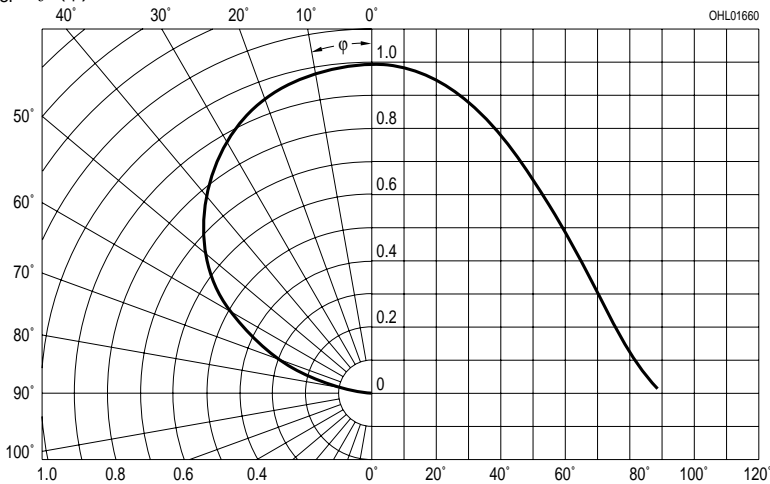
Max. Permissible Forward Current

$I_F = f(T_A)$

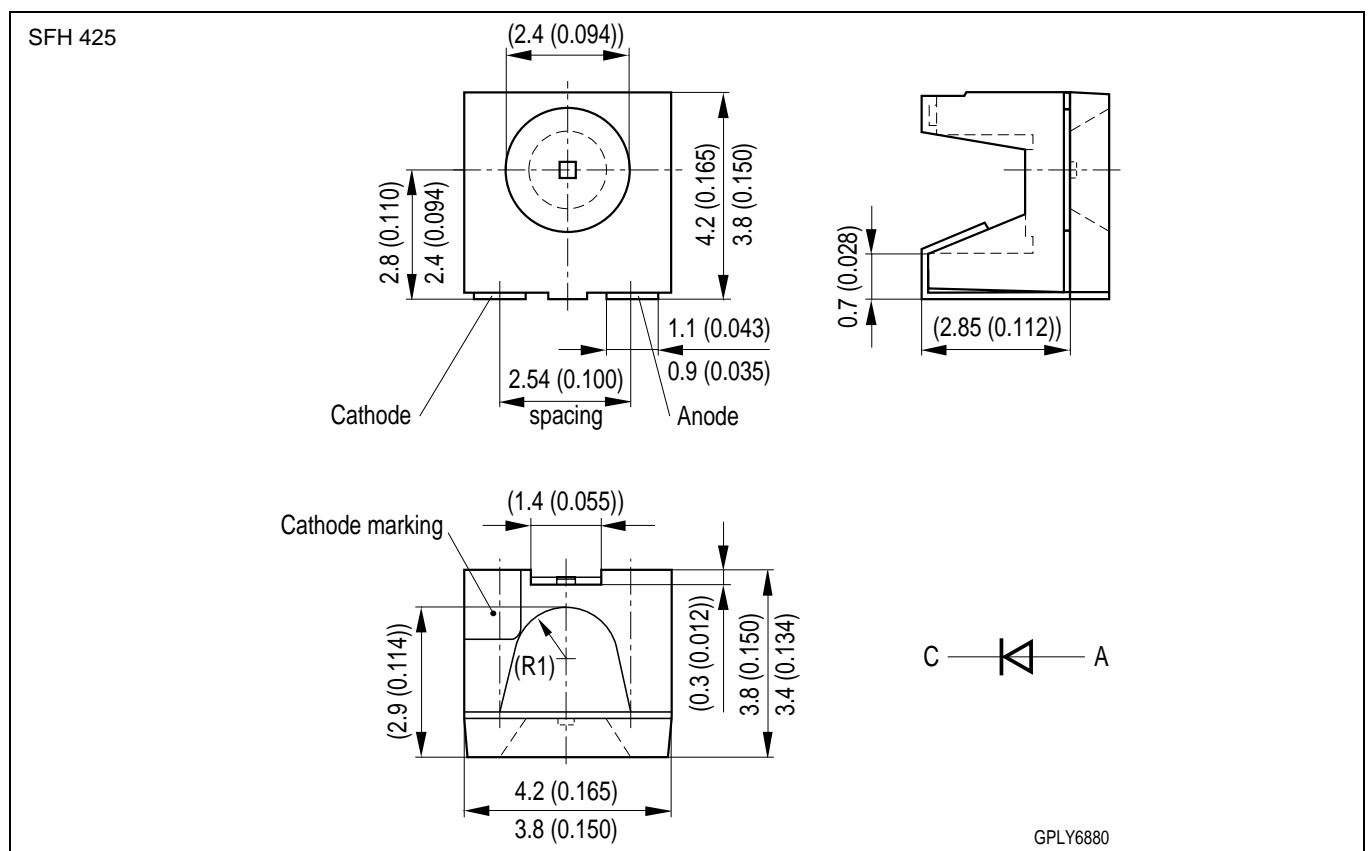
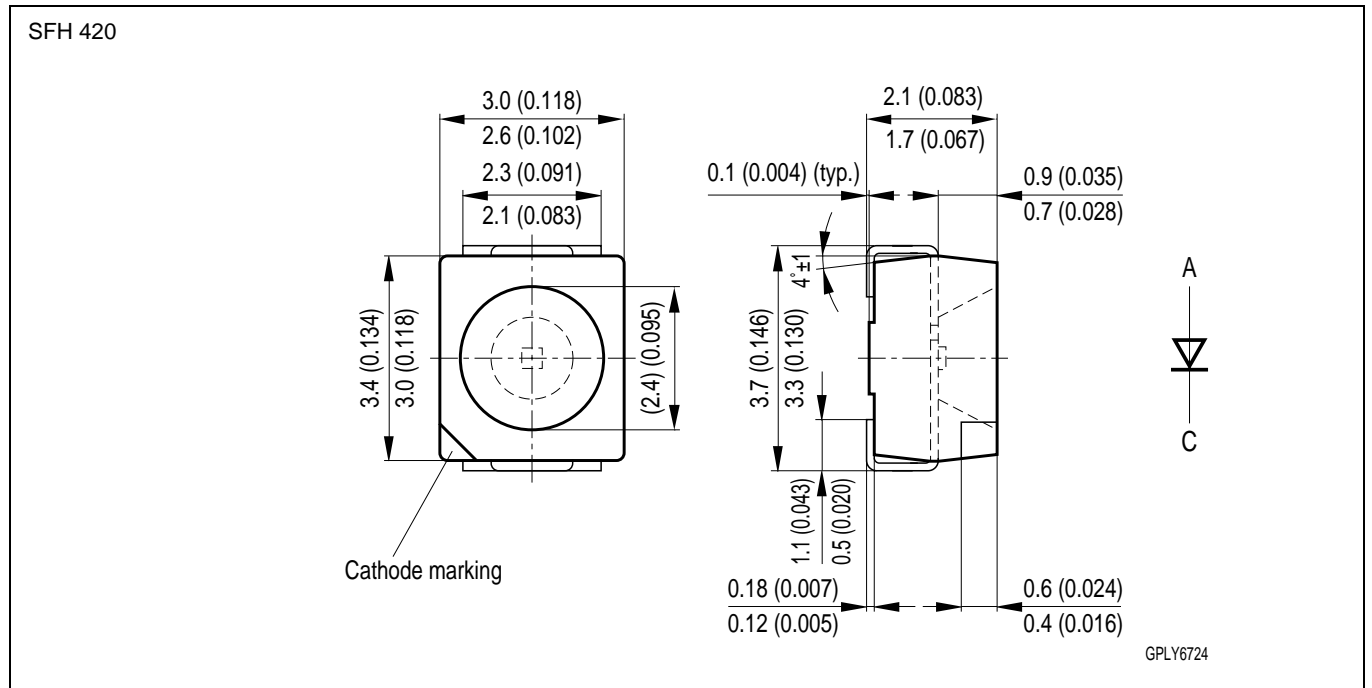


Radiation Characteristics

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



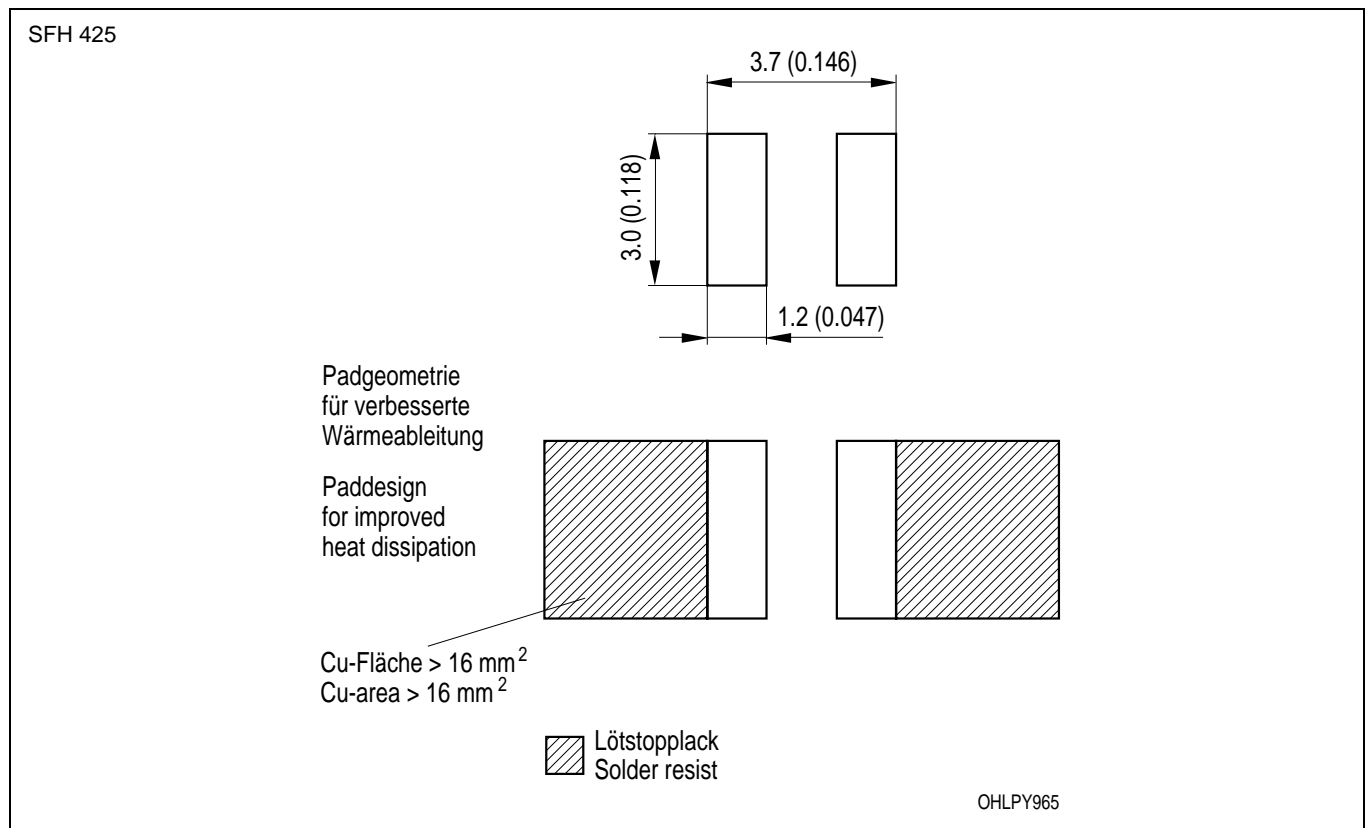
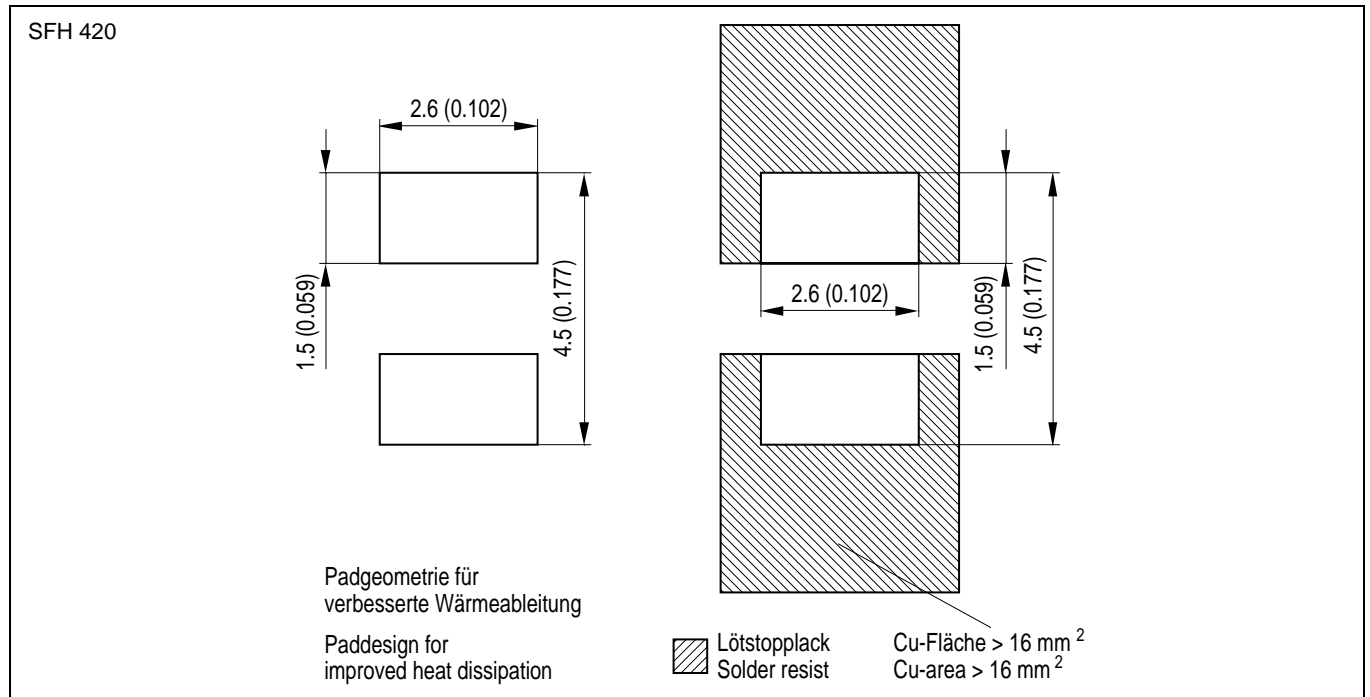
Maßzeichnung
Package Outlines



Maße in mm / Dimensions in mm.

Empfohlenes Lötpad-Design
Recommended Solder Pad

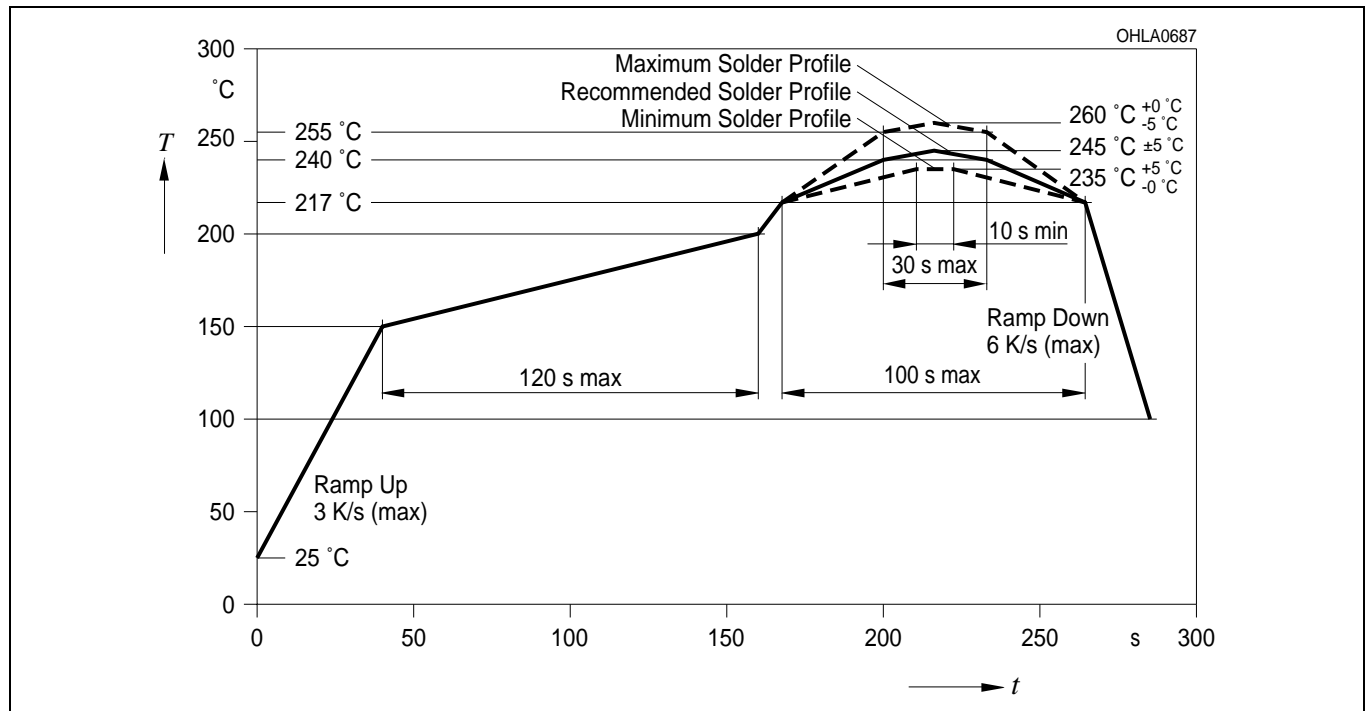
Reflow Löten
Reflow Soldering



Maße in mm / Dimensions in mm.

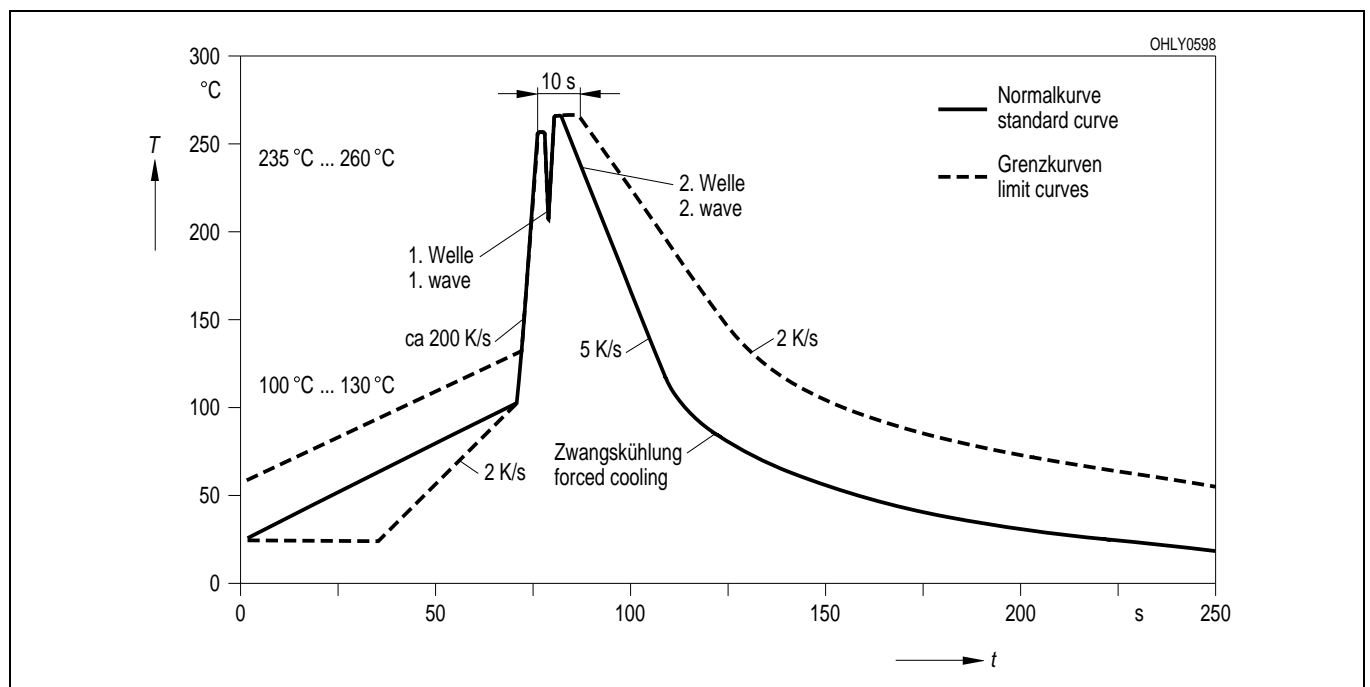
Lötbedingungen
Soldering Conditions
Reflow Lötprofil für bleifreies Löten
Reflow Soldering Profile for lead free soldering

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



Wellenlöten (TTW)
TTW Soldering

(nach CECC 00802)
 (acc. to CECC 00802)



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