

IR-Lumineszenzdiode (850 nm) mit hoher Ausgangsleistung
High Power Infrared Emitter (850 nm)
Lead (Pb) Free Product - RoHS Compliant
SFH 4254



Vorläufige Daten / Preliminary Data

Wesentliche Merkmale

- Homogene Abstrahlung
- Typische Peakwellenlänge 850 nm
- Feuchte-Empfindlichkeitsstufe 2 nach JEDEC Standard J-STD-020C

Anwendungen

- Schnelle Datenübertragung mit Übertragungsraten bis 100 Mbaud (IR Tastatur, Joystick, Multimedia)
- Analoge und digitale Hi-Fi Audio- und Videosignalübertragung
- Batteriebetriebene Geräte (geringe Stromaufnahme)
- Alarm- und Sicherungssysteme

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

- Homogenous Radiation Pattern
- Typical Peakwavelength 850 nm
- Moisture Sensitivity Level 2 according to JEDEC Standard J-STD-020C

Applications

- High data transmission rate up to 100 Mbaud (IR keyboard, Joystick, Multimedia)
- Analog and digital Hi-Fi audio and video signal transmission
- Low power consumption (battery) equipment
- Alarm and safety equipment

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⁾ ($I_F = 50 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant intensity grouping ¹⁾ $I_e \text{ (mW/sr)}$
SFH 4254	Q65110A6462	>4 (typ. 7)

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



ATTENTION - Observe Precautions For Handling - Electrostatic Sensitive Device

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
Vorwärtsgleichstrom Forward current	I_F	70	mA
Stoßstrom Surge current	I_{FSM}	1	A
Leistungsaufnahme Power dissipation	P_{tot}	120	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je 5 mm ² Thermal resistance junction - ambient mounted on PC-board (FR4), padsize 5 mm ² each	R_{thJA}	530	K/W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	R_{thJS}	300	K/W

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\text{ mA}$	λ_{peak}	850	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100\text{ mA}$	$\Delta\lambda$	35	nm
Abstrahlwinkel Half angle	φ	± 60	Grad deg.

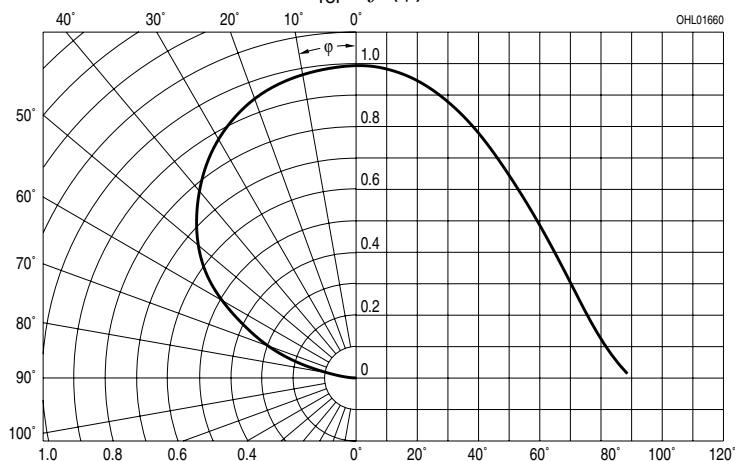
Kennwerte ($T_A = 25\text{ °C}$)
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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%, 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	12	ns
Durchlassspannung Forward voltage $I_F = 50\text{ mA}$, $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$	V_F V_F	1.4 (< 1.7) 2.4 (< 3.0)	V V
Sperrstrom Reverse current $V_R = 5\text{ V}$	I_R	not designed for reverse operation	μA
Gesamtstrahlungsfluss Total radiant flux $I_F = 50\text{ mA}$, $t_p = 20\text{ ms}$	$\Phi_{e\text{ typ}}$	23	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	- 0.5	%/K
Temperaturkoeffizient von V_F , $I_F = 100\text{ mA}$ Temperature coefficient of V_F , $I_F = 100\text{ mA}$	TC_V	- 0.7	mV/K
Temperaturkoeffizient von λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$	TC_λ	+ 0.2	nm/K

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

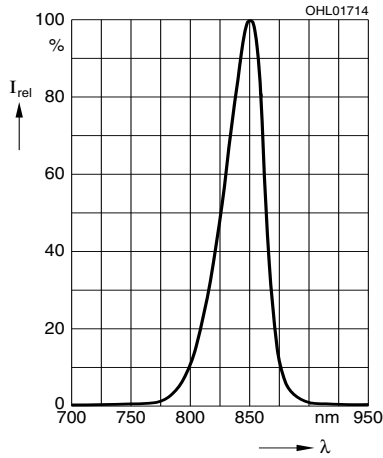
Bezeichnung Parameter	Symbol	Werte Values		Einheit Unit
		SFH 4254-P	SFH 4254-Q	
Strahlstärke Radiant intensity $I_F = 50$ mA, $t_p = 20$ ms	$I_{e \min}$ $I_{e \max}$	4 8	6.3 12.5	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s	$I_{e \text{ typ}}$	70	80	mW/sr

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

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

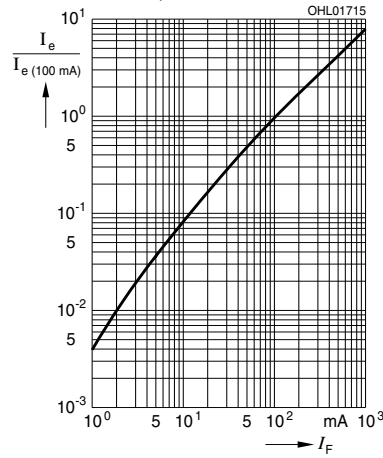
Relative Spectral Emission

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



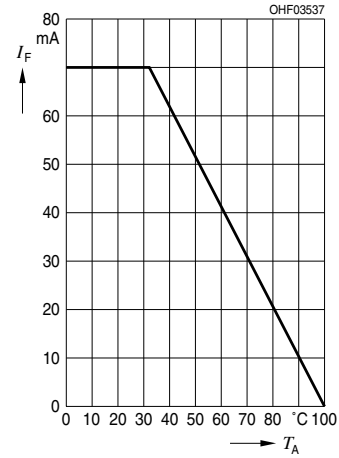
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



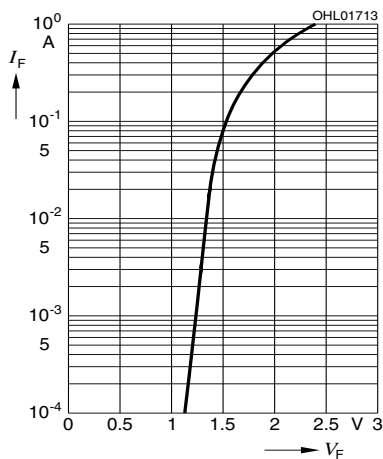
Max. Permissible Forward Current

$I_F = f(T_A), R_{thJA} = 530 \text{ K/W}$



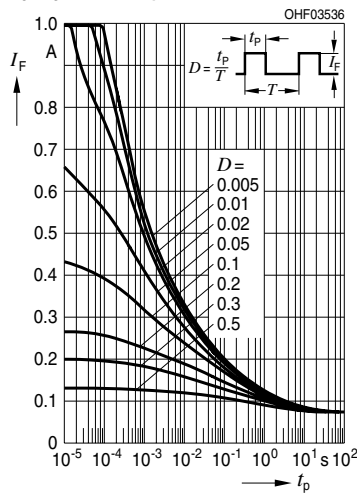
Forward Current $I_F = f(V_F)$

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

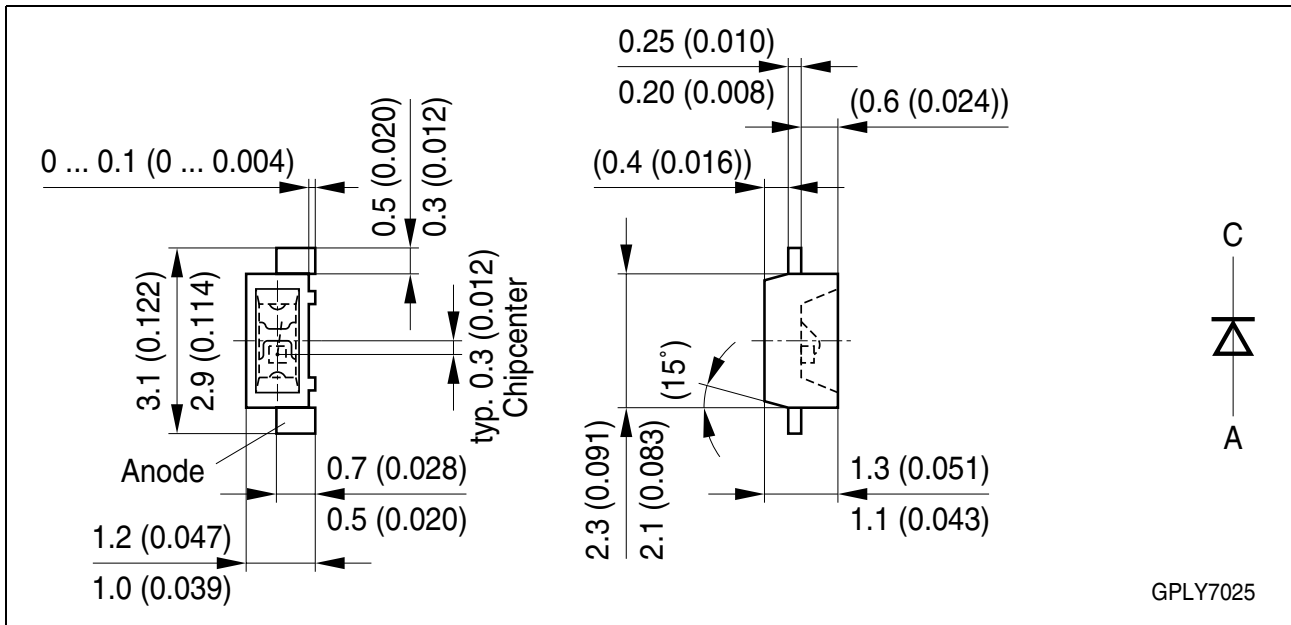


Permissible Pulse Handling Capability

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



**Maßzeichnung
Package Outlines**



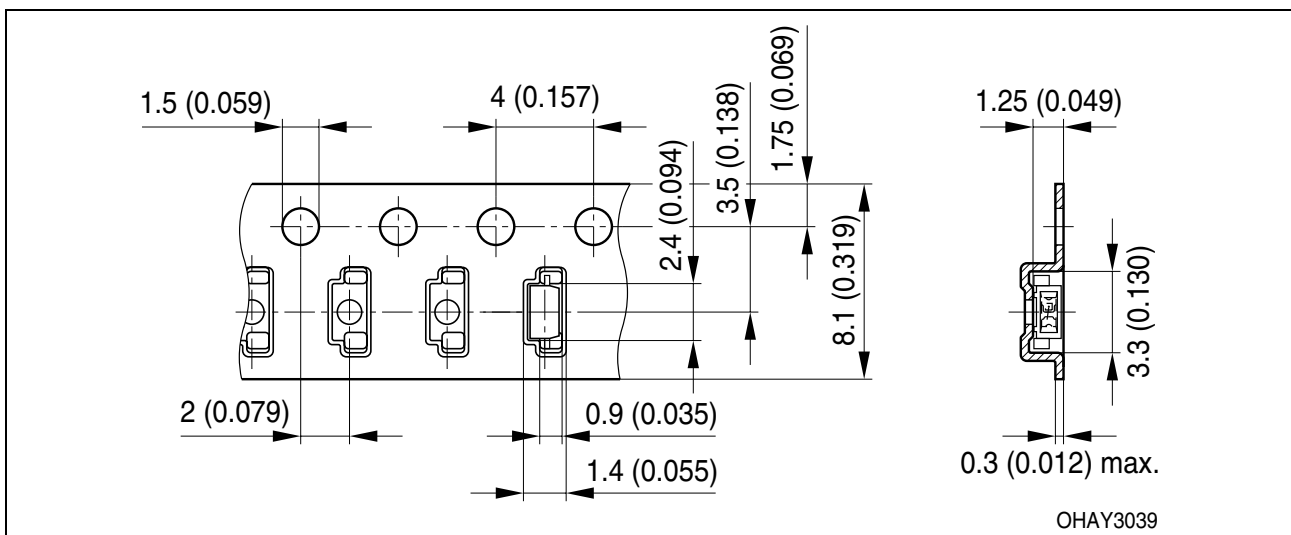
Maße in mm (inch) / Dimensions in mm (inch).

Gurtung / Polarität und Lage

Verpackungseinheit 3000/Rolle, ø180 mm
oder 10000/Rolle, ø330 mm

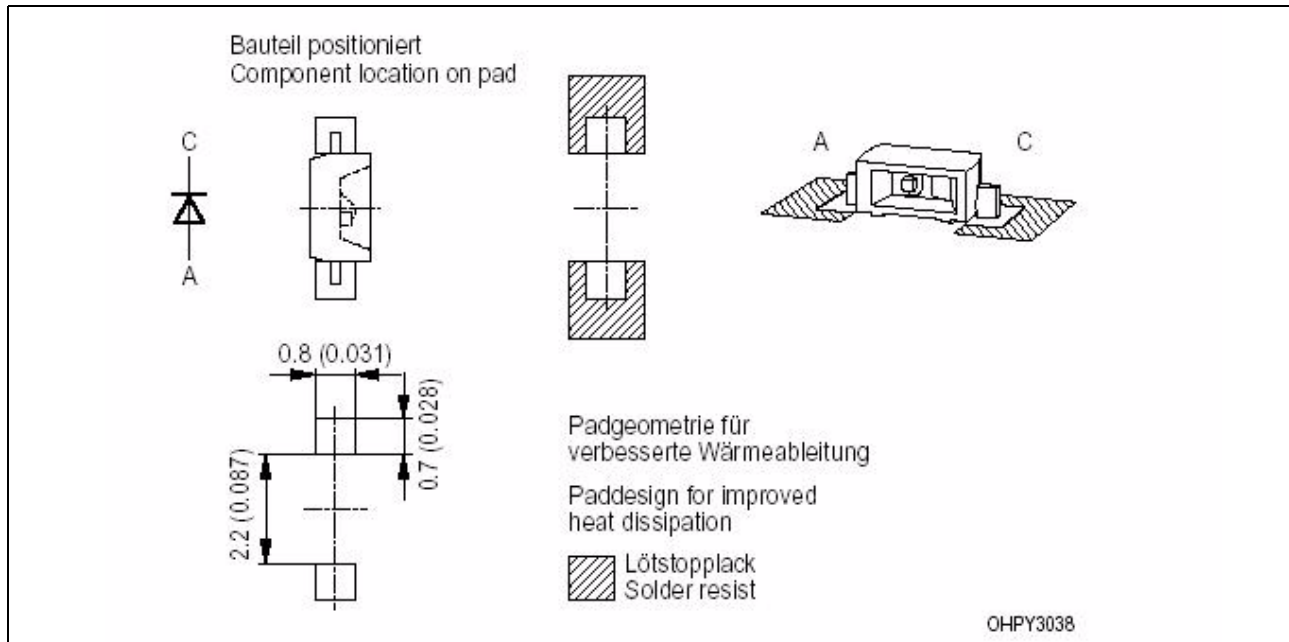
Method of Taping / Polarity and Orientation

Packing unit 3000/reel, ø180 mm
or 10000/reel, ø330 mm



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

Empfohlenes Lötpaddesign Recommended Solder Pad Design

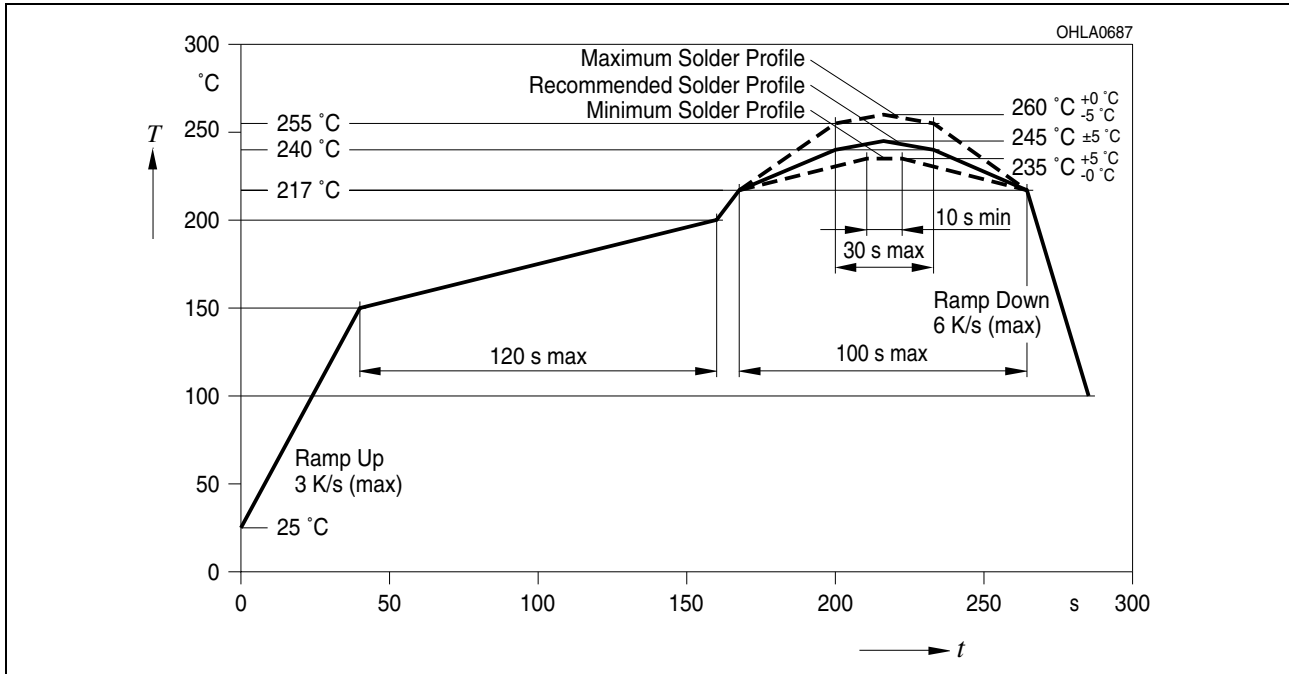


Maße in mm (inch) / Dimensions in mm (inch).

Gehäuse hält TTW-Löthitze aus / Package able to withstand TTW-soldering heat.

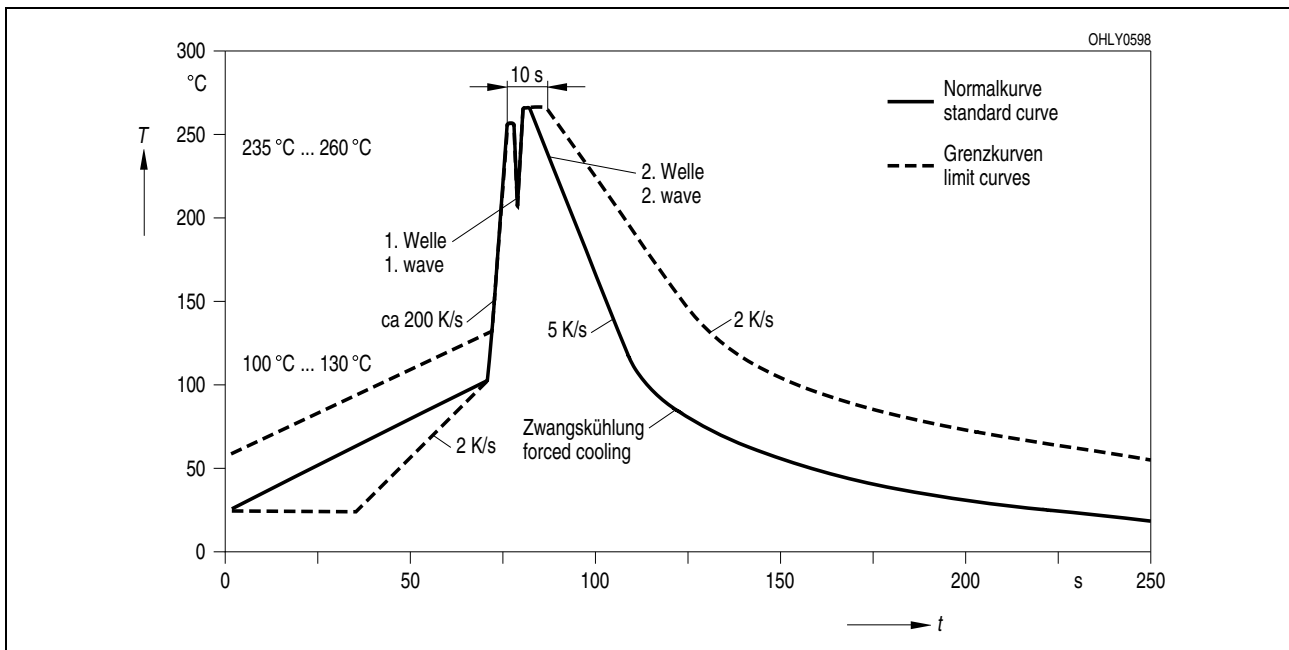
Lötbedingungen
Soldering Conditions
Reflow Lötprofil für bleifreies Löt
Reflow Soldering Profile for lead free soldering

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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EU RoHS and China RoHS compliant product



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