

GaAlAs-IR-Lumineszenzdiode
GaAlAs Infrared Emitter
Lead (Pb) Free Product - RoHS Compliant

SFH 4289



Wesentliche Merkmale

- TOPLED mit Linse
- GaAlAs-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
- Gekurtet lieferbar
- SFH 4289 Gehäusegleich mit SFH 3219

Features

- TOPLED with lens
- Very highly efficient GaAlAs-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 4289 same package as SFH 3219

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	Strahlstärkegruppierung ¹⁾ ($I_F = 100 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping ¹⁾ I_e (mW/sr)
SFH 4289	Q65110A2519	> 6.3 (typ. 17)

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	5	V
Durchlassstrom Forward current	I_F	100	mA
Stoßstrom, $\tau = 10\ \mu\text{s}$, $D = 0$ Surge current	I_{FSM}	2.5	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

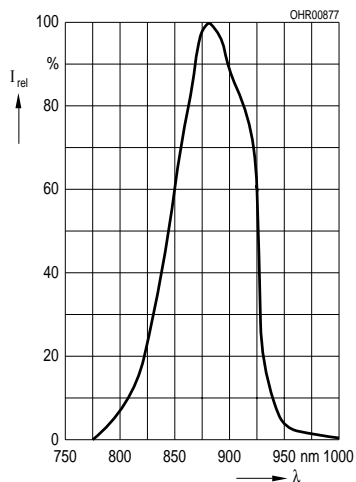
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	λ_{peak}	880	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100\text{ mA}$	$\Delta\lambda$	80	nm
Abstrahlwinkel Half angle	φ	± 25	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
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	15	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) 3.0 (≤ 3.8)	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	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	- 2	mV/K
Temperaturkoeffizient von λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$	TC_λ	+ 0.25	nm/K

Strahlstärke I_e in Achsrichtunggemessen 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
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$ $I_{e \text{ typ}}$	6.3 17	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s	$I_{e \text{ typ}}$	120	mW/sr

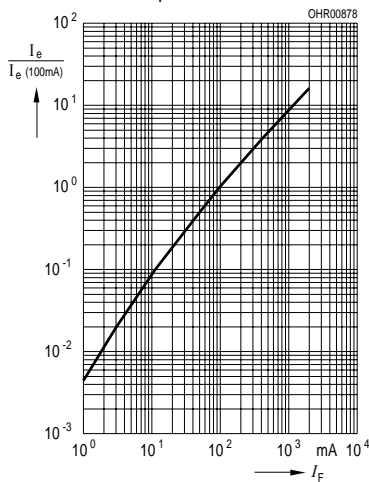
Relative Spectral Emission

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



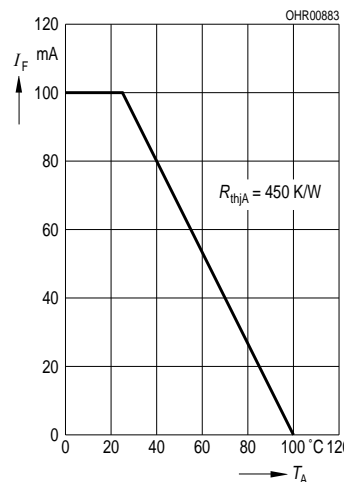
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



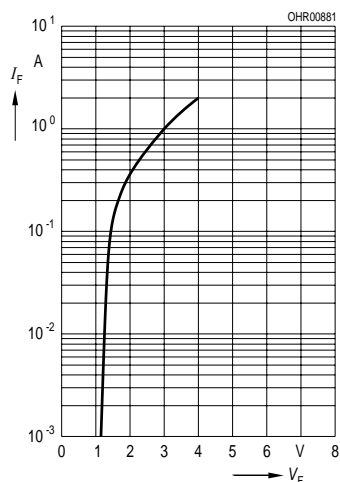
Max. Permissible Forward Current

$I_F = f(T_A)$



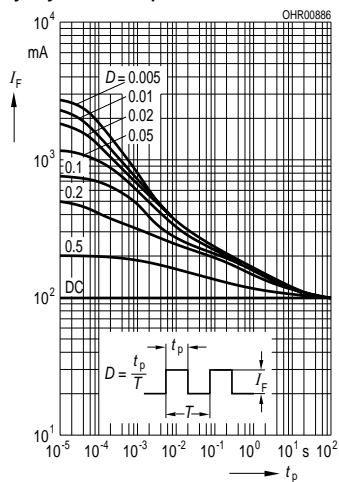
Forward Current

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

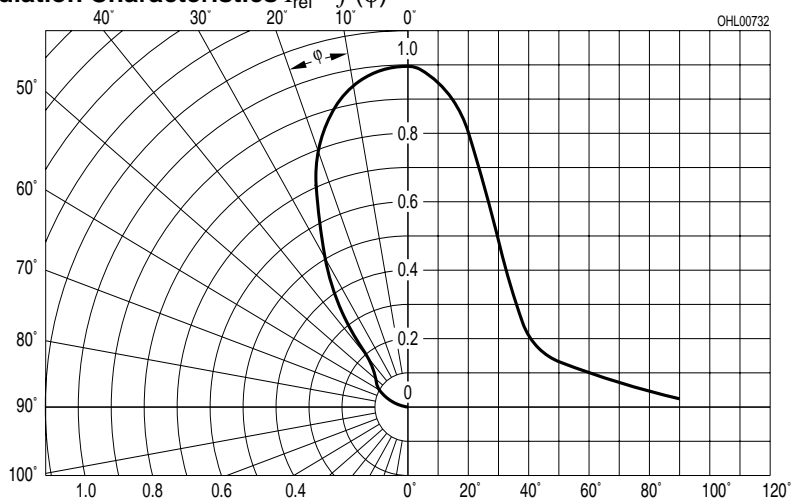


Permissible Pulse Handling Capability

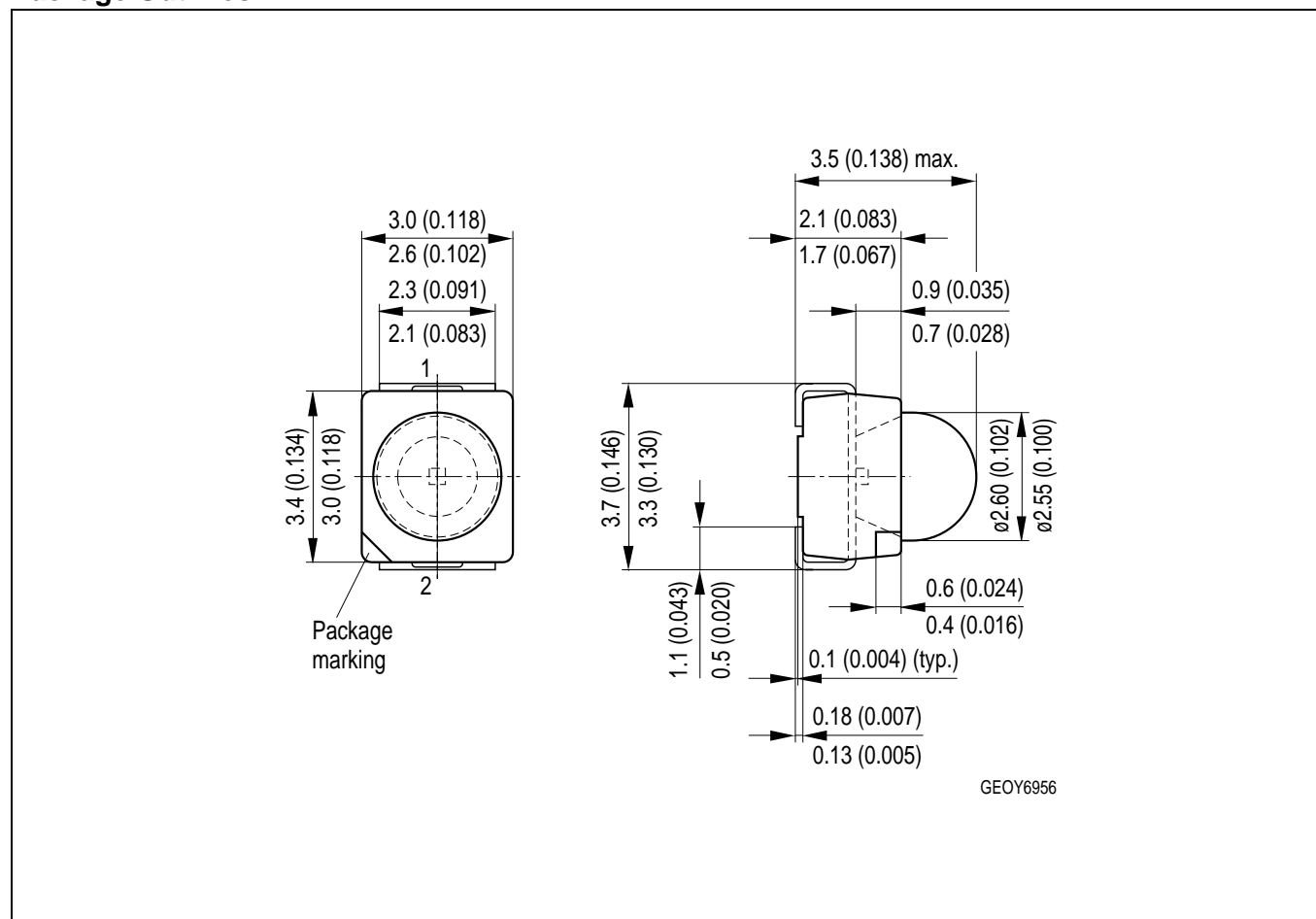
$I_F = f(t_p, T_A = 25^\circ\text{C})$
duty cycle $D =$ parameter



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



Maßzeichnung Package Outlines

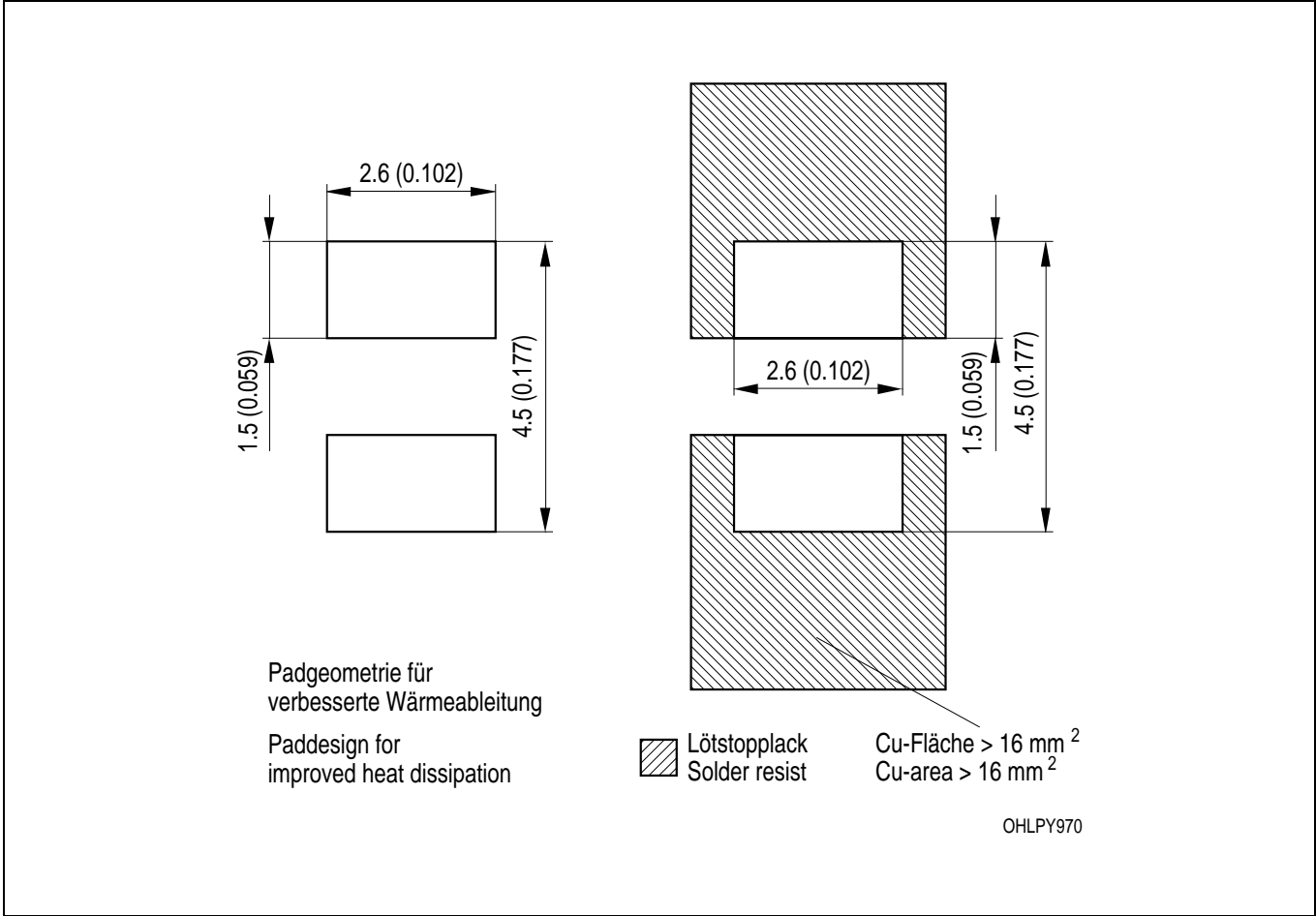


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Gehäuse / Package	TOPLED® mit Linse (P-LCC-2) / TOPLED® with lens (P-LCC-2)
Anschlussbelegung pin configuration	1 = Anode / anode 2 = Kathode / cathode
Farbe Color	weiß white

Empfohlenes Lötpad design
Recommended Solder Pad

IR-Reflow Löten
IR Reflow Soldering



Lötbedingungen

Soldering Conditions

IR-Reflow Lötprofil für bleifreies Löt

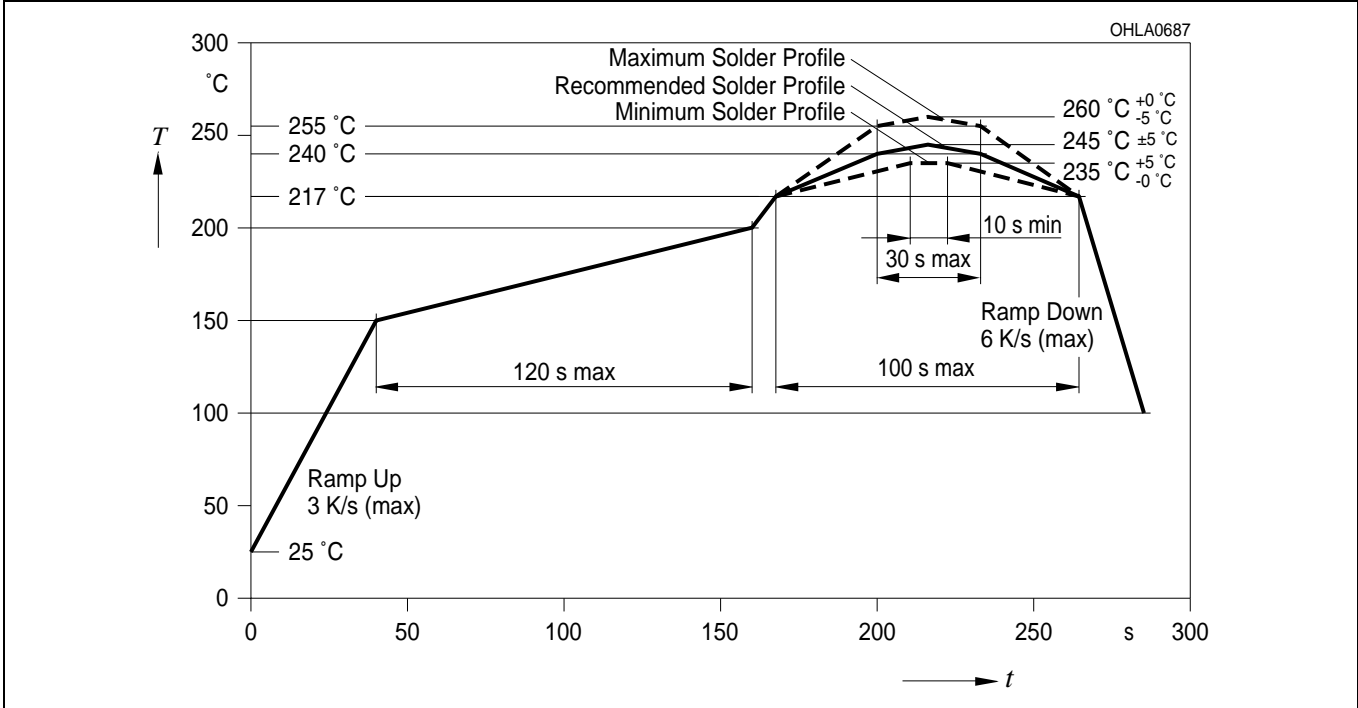
IR Reflow Soldering Profile for lead free soldering

Vorbehandlung nach JEDEC Level 2

Preconditioning acc. to JEDEC Level 2

(nach J-STD-020B)

(acc. to J-STD-020B)

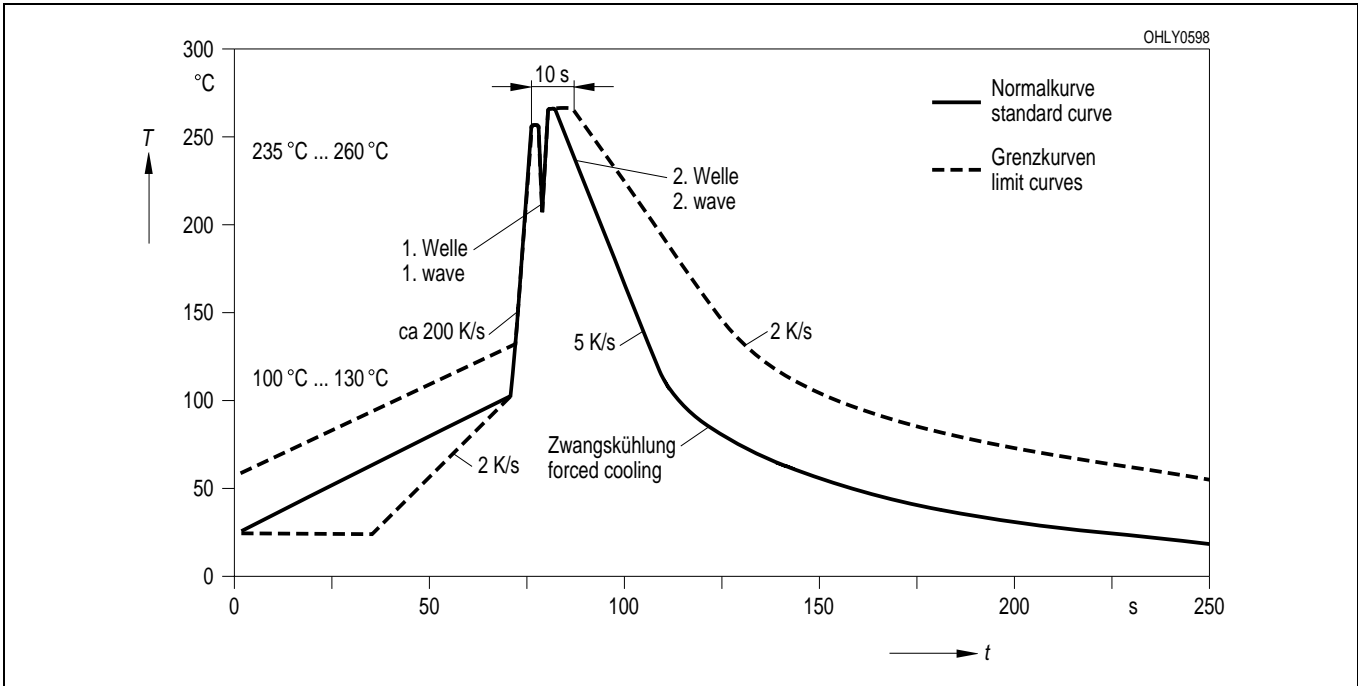


Wellenlöt (TTW)

TTW Soldering

(nach CECC 00802)

(acc. to CECC 00802)



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