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

SFH 4258
SFH 4259



Vorläufige Daten / Preliminary Data
OS-PCN-2010-033-A. To be used for design-in.

Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung
- Halbwinkel SFH 4258: ± 15°
- Halbwinkel SFH 4259: ± 25°
- Hohe Bestromung bei hohen Temperaturen möglich
- Kurze Schaltzeiten

Features

- High Power Infrared LED
- Half angle SFH 4258: ± 15°
- Half angle SFH 4259: ± 25°
- High forward current allowed at high temperature
- Short switching times

Anwendungen

- Infrarotbeleuchtung für Kameras
- IR-Datenübertragung
- Sensorik

Applications

- Infrared Illumination for cameras
- IR Data Transmission
- Optical sensors

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 Sicherheits-richtlinien der IEC-Normen 60825-1 und 62471 behandelt werden.

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 = 100 mA, t_p = 20 ms) **Radiant Intensity Grouping**[1] I_e (mW/sr)
SFH 4258	Q65110A2975	≥ 40 (typ. 90)
SFH 4259	Q65110A2464	≥ 25 (typ. 55)

[1] gemessen bei einem Raumwinkel Ω = 0.01 sr / measured at a solid angle of Ω = 0.01 sr

Grenzwerte (T_A = 25 °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	100	mA
Stoßstrom, t_p = 100 µs, D = 0 Surge current	I_{FSM}	1.5	A
Verlustleistung Power dissipation	P_{tot}	180	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je 16 mm² Thermal resistance junction - ambient mounted on PC-board (FR4), padsize 16 mm² each	R_{thJA}	300	K/W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	R_{thJS}	140	K/W

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission I_F = 100 mA	λ_{peak}	860	nm
Centroid-Wellenlänge der Strahlung Centroid wavelength I_F = 100 mA	$\lambda_{centroid}$	850	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 100 mA	$\Delta\lambda$	42	nm
Abstrahlwinkel Half angle SFH 4258 SFH 4259	 φ φ	 ± 15 ± 25	 Grad deg.

Kennwerte (T_A = 25 °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	mm²
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei I_F = 100 mA, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 100 mA, R_L = 50 Ω	t_r, t_f	12	ns
Durchlassspannung Forward voltage I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	 V_F V_F	 1.5 (< 1.8) 2.4 (< 3.0)	 V V
Sperrstrom Reverse current	I_R	not designed for reverse operation	µA
Gesamtstrahlungsfluss Total radiant flux I_F = 100 mA, t_p = 20 ms	$\Phi_{e\ typ}$	50	mW
Temperaturkoeffizient von I_e bzw. Φ_e, I_F = 100 mA Temperature coefficient of I_e or Φ_e, I_F = 100 mA	TC_I	– 0.5	%/K
Temperaturkoeffizient von V_F, I_F = 100 mA Temperature coefficient of V_F, I_F = 100 mA	TC_V	– 0.7	mV/K
Temperaturkoeffizient von λ, I_F = 100 mA Temperature coefficient of λ, I_F = 100 mA	TC_λ	+ 0.3	nm/K

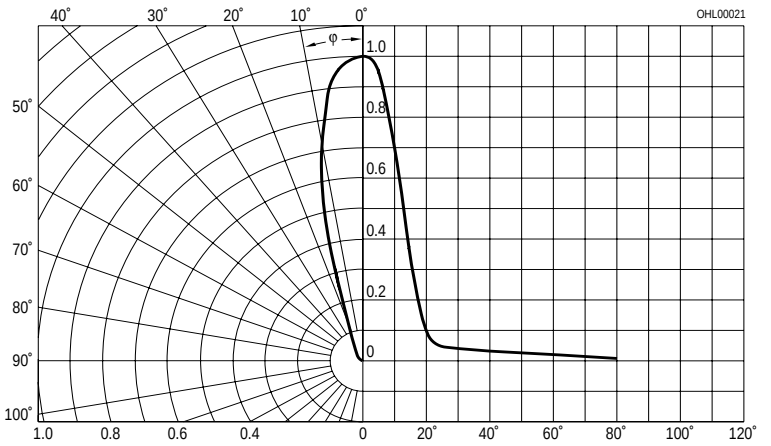
Strahlstärke I_e in Achsrichtung[1)]
gemessen bei einem Raumwinkel Ω = 0.01 sr
Radiant Intensity I_e in Axial Direction
at a solid angle of Ω = 0.01 sr

Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		SFH 4258 -U	SFH 4258 -V	SFH 4258 -AW	
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	$I_{e\ min}$ $I_{e\ max}$	40 80	63 125	100 200	mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1A, t_p = 100 µs	$I_{e\ typ.}$	400	600	800	mW/sr
		SFH 4259 -T	SFH 4259 -U		
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	$I_{e\ min}$ $I_{e\ max}$	25 50	40 80		mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1A, t_p = 100 µs	$I_{e\ typ.}$	250	350		mW/sr

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

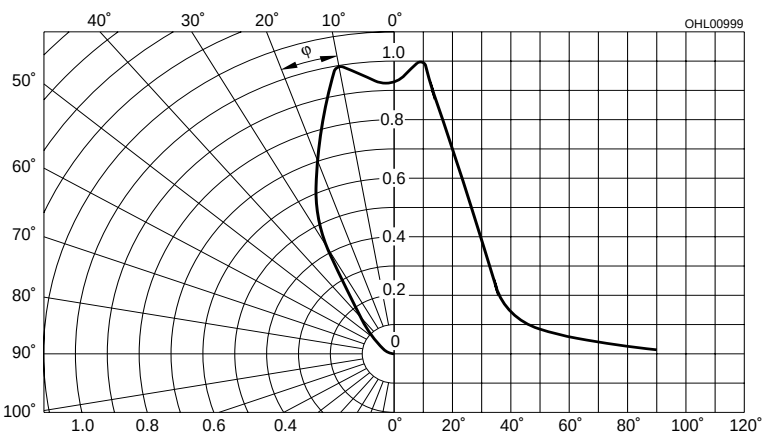
Abstrahlcharakteristik
Radiation Characteristics $I_{rel} = f(\varphi)$

SFH 4258

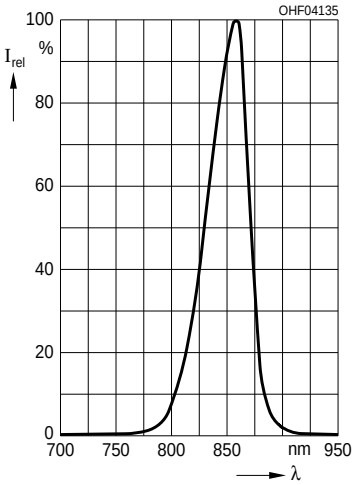


Abstrahlcharakteristik
Radiation Characteristics $I_{rel} = f(\varphi)$

SFH 4259

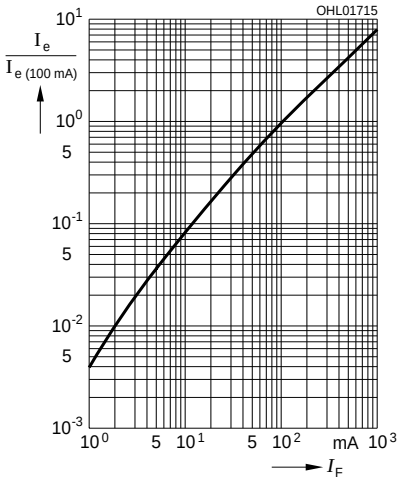


Relative Spectral Emission
$I_{rel} = f(\lambda)$

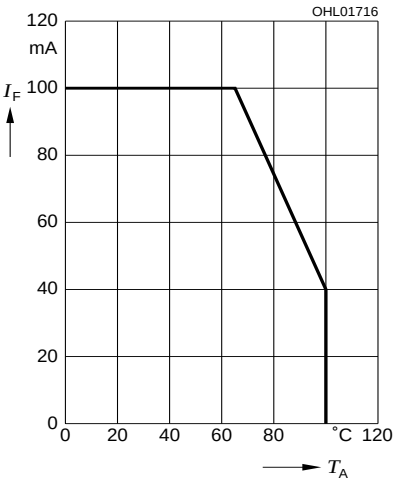


Radiant Intensity $\frac{I_e}{I_e\ 100\ mA} = f(I_F)$

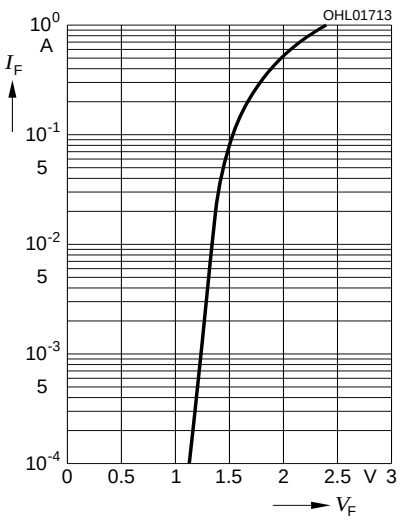
Single pulse, t_p = 20 µs



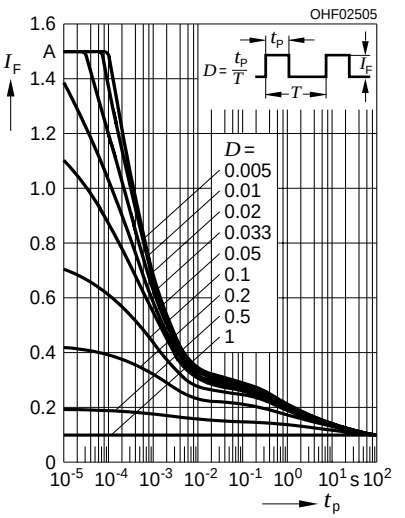
Max. Permissible Forward Current
$I_F = f(T_A)$, R_{thJA} = 300 K/W



Forward Current $I_F = f(V_F)$
Single pulse, t_p = 20 µs

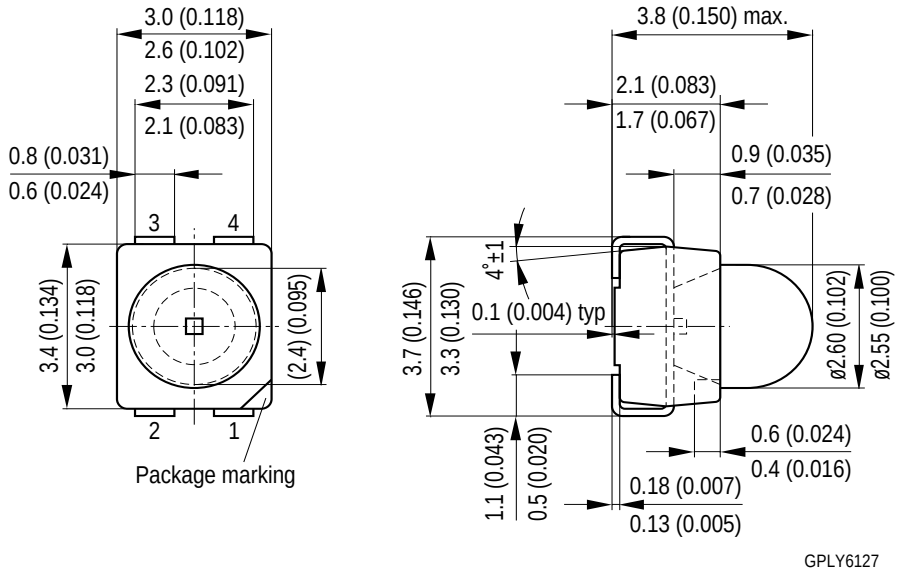


Permissible Pulse Handling Capability $I_F = f(\tau)$, T_A = 25 °, duty cycle D = parameter

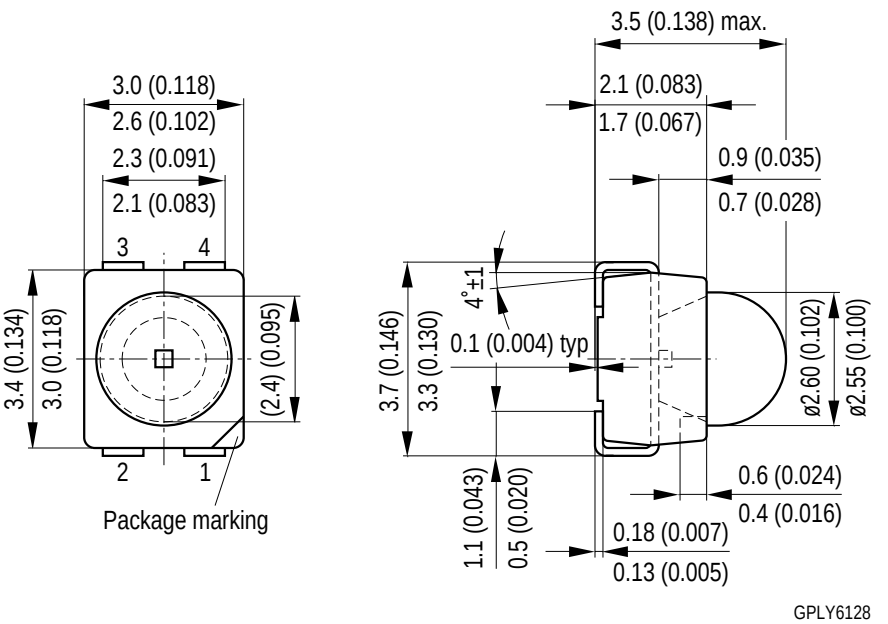


Maßzeichnung
Package Outlines

SFH 4258



SFH 4259

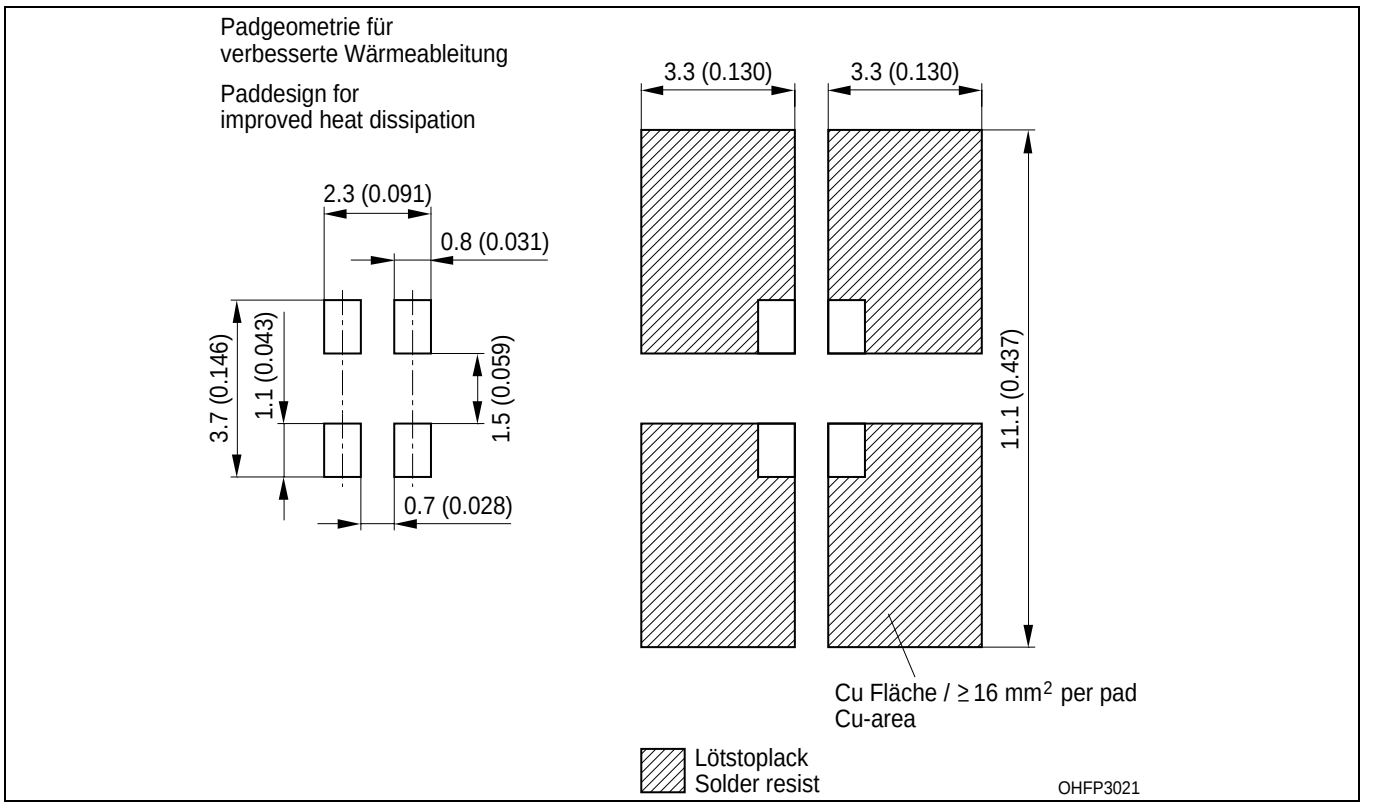


Maße in mm (inch) / Dimensions in mm (inch).

Gehäuse / Package	Power TOPLED® mit Linse, klarer Verguss / Power TOPLED® with lens, clear resin
Anschlussbelegung pin configuration	1 = Kathode / cathode 2/3/4 = Anode / anode

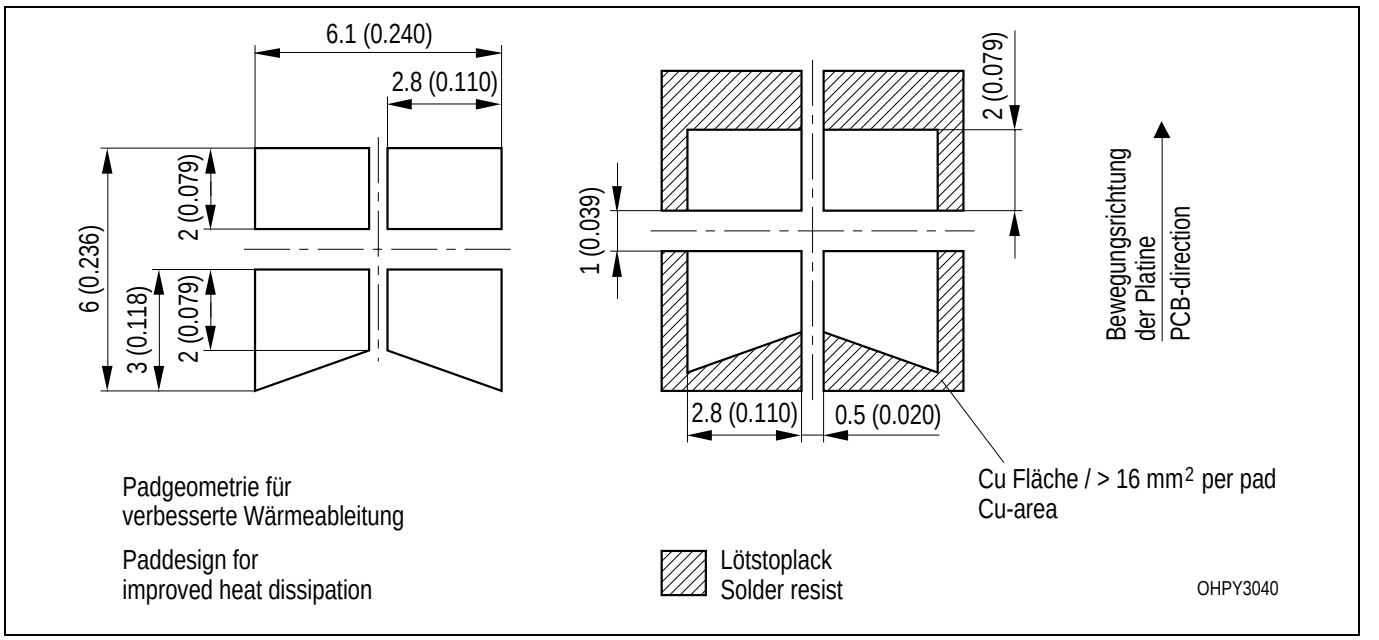
Empfohlenes Lötpaddesign
Recommended Solder Pad Design

Reflow Löten
Reflow Soldering



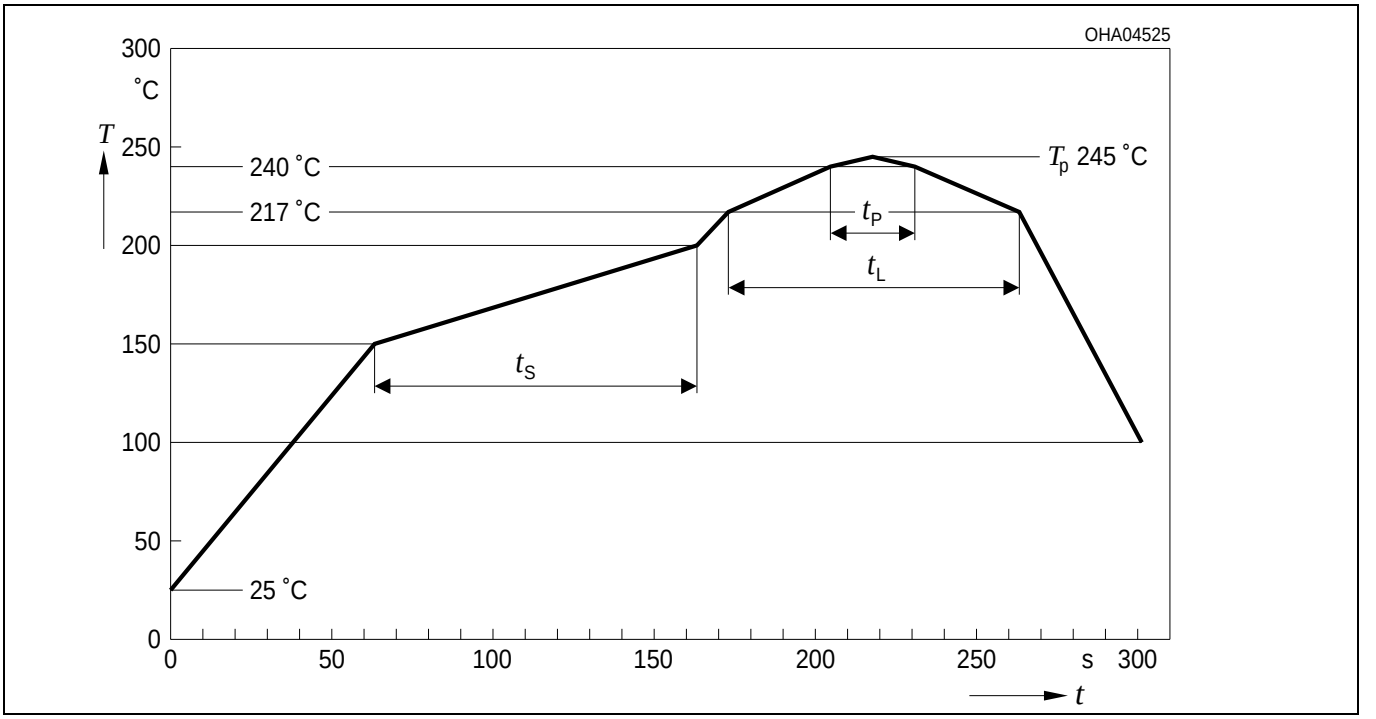
Empfohlenes Lötpaddesign
Recommended Solder Pad Design

Wellenlöten TTW
TTW Soldering



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

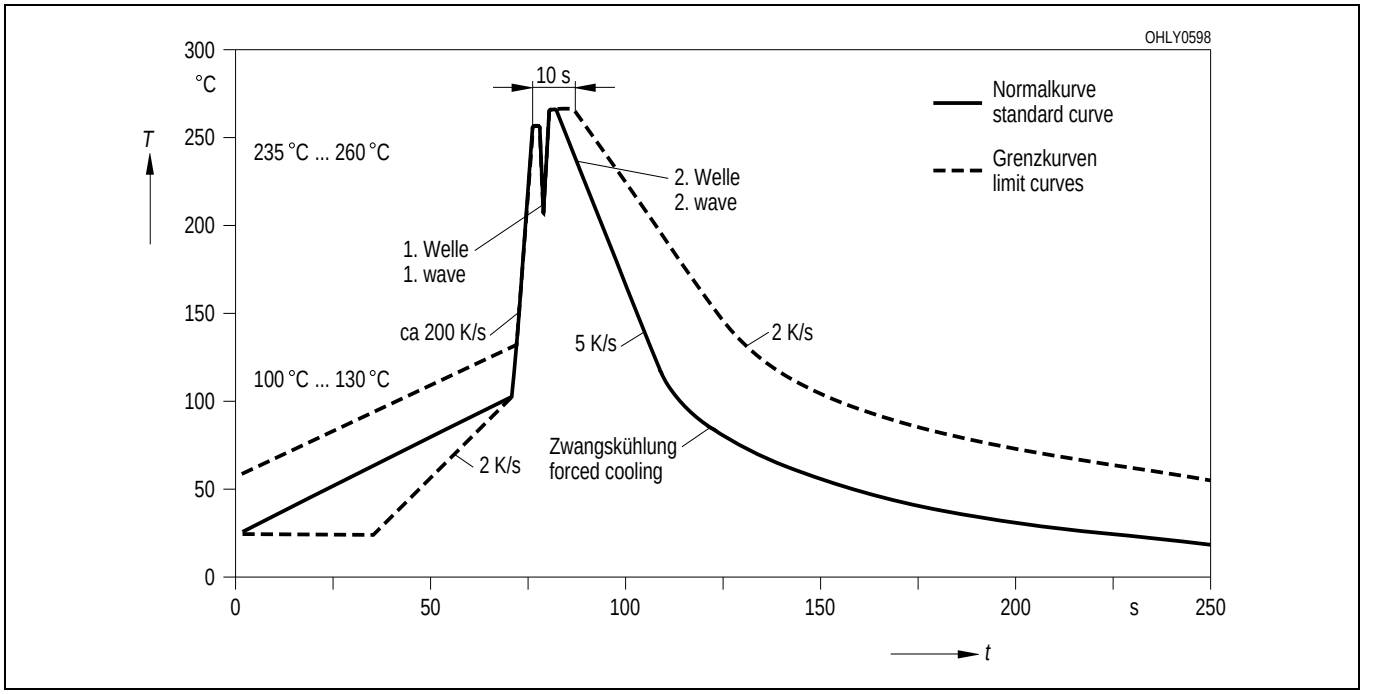
Vorbehandlung nach JEDEC Level 2
Preconditioning acc. to JEDEC Level 2
(nach J-STD-020-D.01)
(acc. to J-STD-020-D.01)



	Pb-Free (SnAgCu) Assembly	
Profile Feature	**Recommendation**	**Max. Ratings**
Ramp-up Rate to Preheat*) 25°C to 150°C	2°K / sec	3°K / sec
Time t_s from T_{Smin} to T_{Smax} (150°C to 200°C	100s	min. 60sec max. 120sec
Ramp-up Rate to Peak*) T_{Smax} to T_P	2°K / sec	3°K / sec
Liquidus Temperture T_L	217°C	
Time t_L above T_L	80sec	max. 100sec
Peak Temperature T_P	245°C	max. 250°C
Time t_P within 5°C of the specified peak temperature T_P - 5K	20sec	min. 10sec max. 30sec
Ramp-down Rate* T_P to 100°C	3°K / sec	4°K / sec maximum
Time 25°C to Peak temperature		max. 8 min.

All temperatures refer to the center of the package, measured on the top of the component
* slope calculation $\Delta T/\Delta t$: Δt max. 5 sec; fulfillment for the whole T-range

Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.

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720-SFH4259-Z - Osram Opto Semiconductor SFH 4259-Z