

Infrarot-LED mit hoher Ausgangsleistung
High Power Infrared LED
Lead (Pb) Free Product - RoHS Compliant
SFH 4250



preliminary data / vorläufige Daten

Wesentliche Merkmale

- Infrarot LED mit sehr hoher Ausgangsleistung
- Emissionswellenlänge typ. 850nm
- Hohe Bestromung bei hohen Temperaturen möglich

Anwendungen

- Infrarotbeleuchtung für CMOS Kameras
- IR-Datenübertragung
- Sensorik

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-Norm 60825-1 behandelt werden.

Features

- High Power Infrared LED
- Peak wavelength typ. 850nm
- High forward current allowed at high temperature

Applications

- Infrared Illumination for CMOS cameras
- IR Data Transmission
- optical sensors

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 "Safety of laser products".

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 4250	Q65110A2465	≥ 10 (typ. 15)

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
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebstemperatur Operating temperature range	T_{op}	- 40 ... + 100	°C
Lagertemperatur Storage temperature range	T_{stg}	- 40 ... + 100	°C
Sperrspannung Reverse voltage	V_R	3	V
Vorwärtsgleichstrom, $T_A \leq 65 \text{ °C}$ Forward current	I_F	100	mA
Stoßstrom, $t_p = 10 \text{ }\mu\text{s}$, $D = 0$, $T_A = 25 \text{ °C}$ Surge current	I_{FSM}	1.5	A
Verlustleistung $T_A = 25 \text{ °C}$ Power dissipation	P_{tot}	180	mW
Wärmewiderstand Thermal resistance			
Sperrschicht/Umgebung Junction/ambient	R_{thJA}	300	K/W
Sperrschicht/Lötpad Junction/soldering point	R_{thJS}	140	K/W
Montage auf PC-Board FR 4 (Padgröße $\geq 16 \text{ mm}^2$) mounted on PC board FR 4 (pad size $\geq 16 \text{ mm}^2$)			

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.
Aktive Chipfläche Active chip area	A	0.09	mm^2

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics (cont'd)

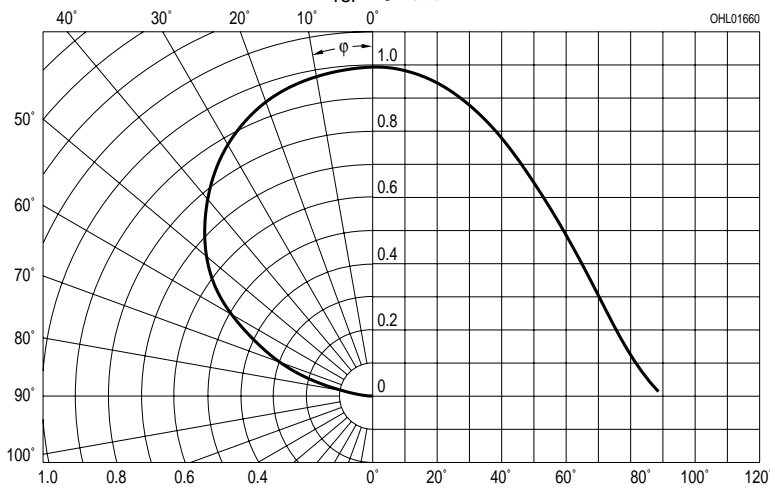
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.3×0.3	mm
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$	t_r , t_f	12	ns
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) 2.4 (< 3.0)	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 , $I_F = 100\text{ mA}$ 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 4250-R	SFH 4250-S	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$ $I_{e \text{ max}}$	10 20	16 32	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s	$I_{e \text{ typ}}$	100	140	mW/sr

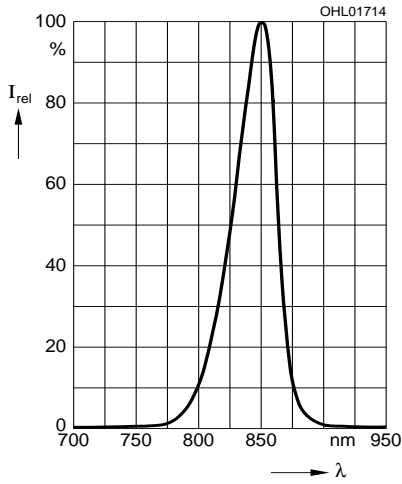
¹⁾ Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1)
¹⁾ Only one group in one packing unit, (variation lower 2:1)

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



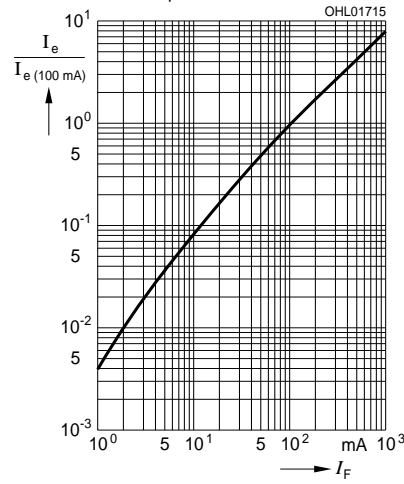
Relative Spectral Emission

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



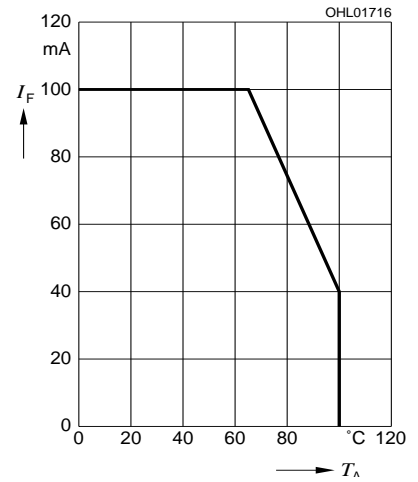
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



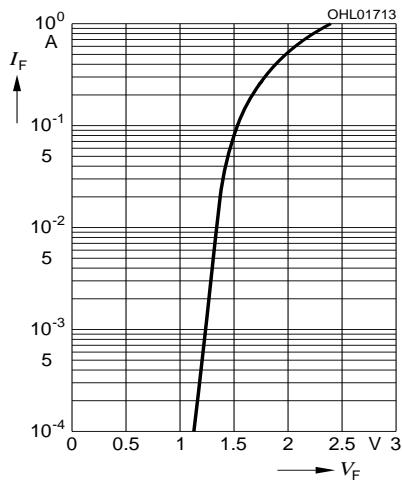
Max. Permissible Forward Current

$I_F = f(T_A), R_{thJA} = 300 \text{ K/W}$



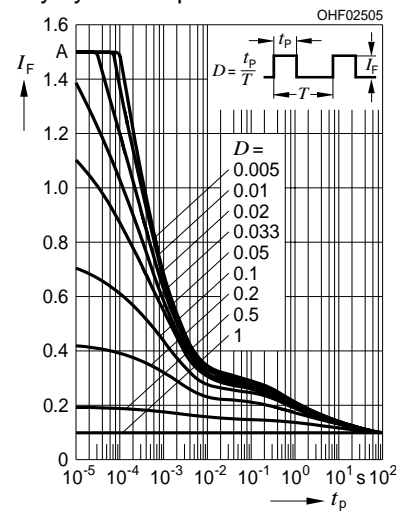
Forward Current $I_F = f(V_F)$

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

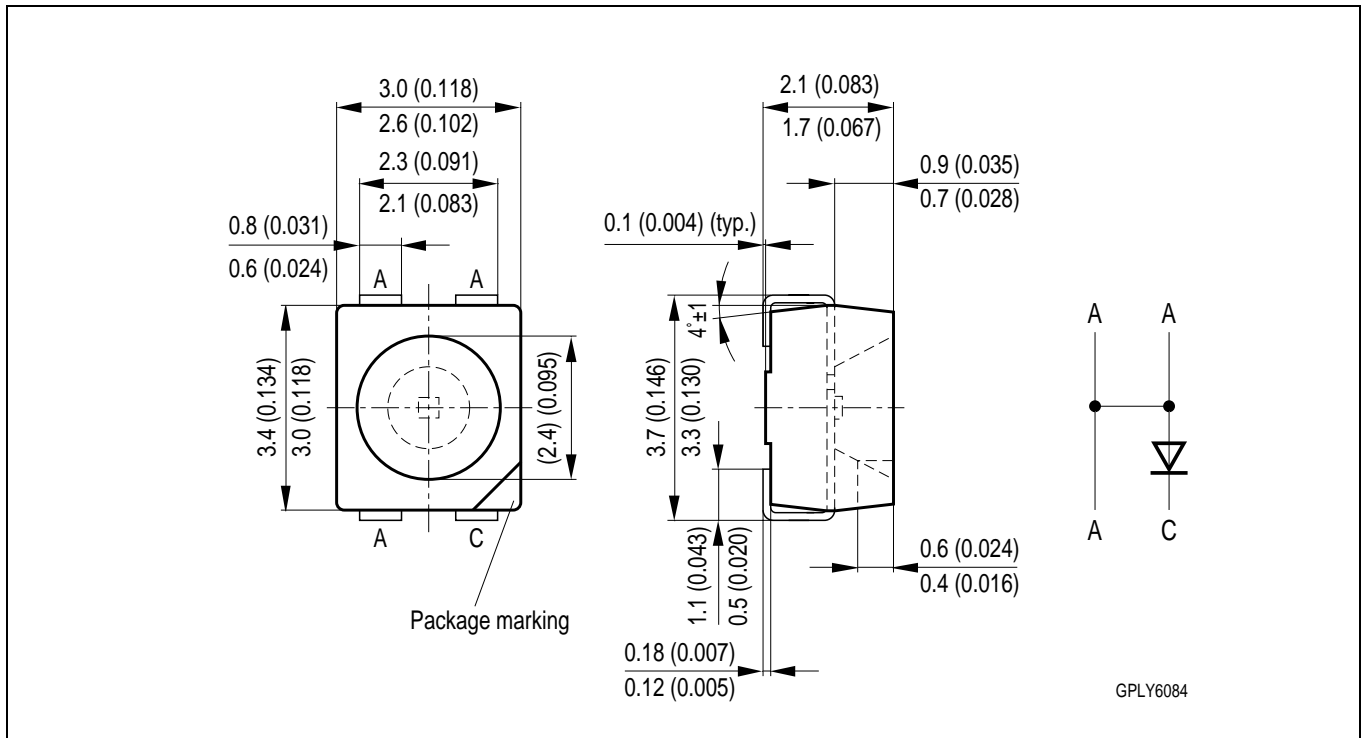


Permissible Pulse Handling Capability

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



Maßzeichnung
Package Outlines



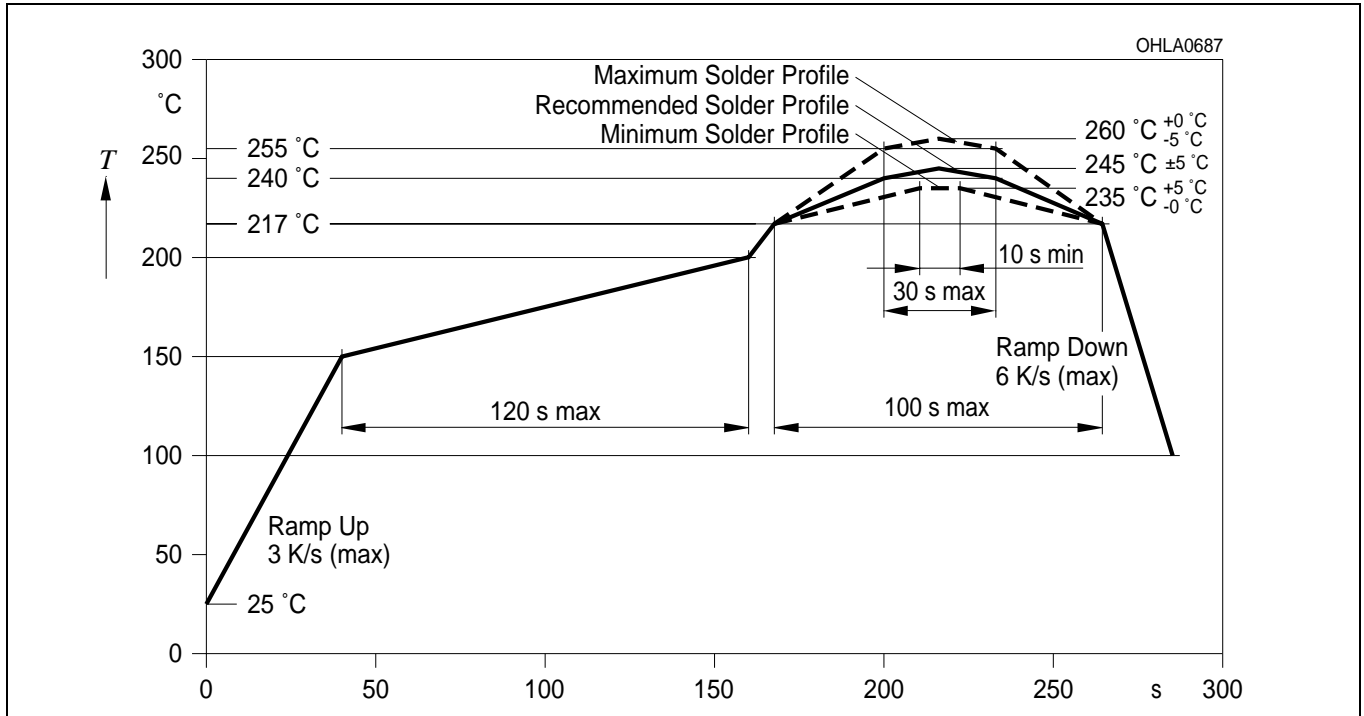
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Lötbedingungen Vorbehandlung nach JEDEC Level 2

Soldering Conditions Preconditioning acc. to JEDEC Level 2

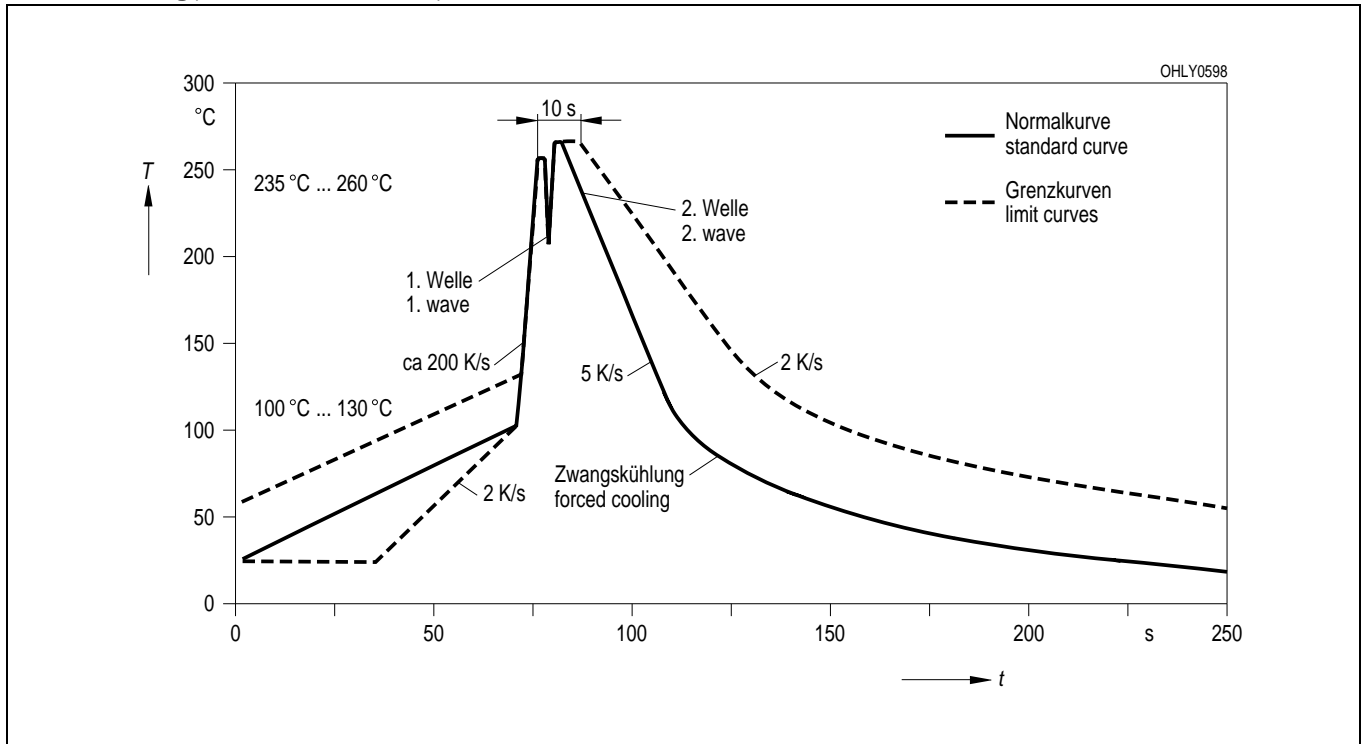
IR-Reflow Lötprofil für bleifreies Löten (nach J-STD-020B)

IR Reflow Soldering Profile for lead free soldering (acc. to J-STD-020B)



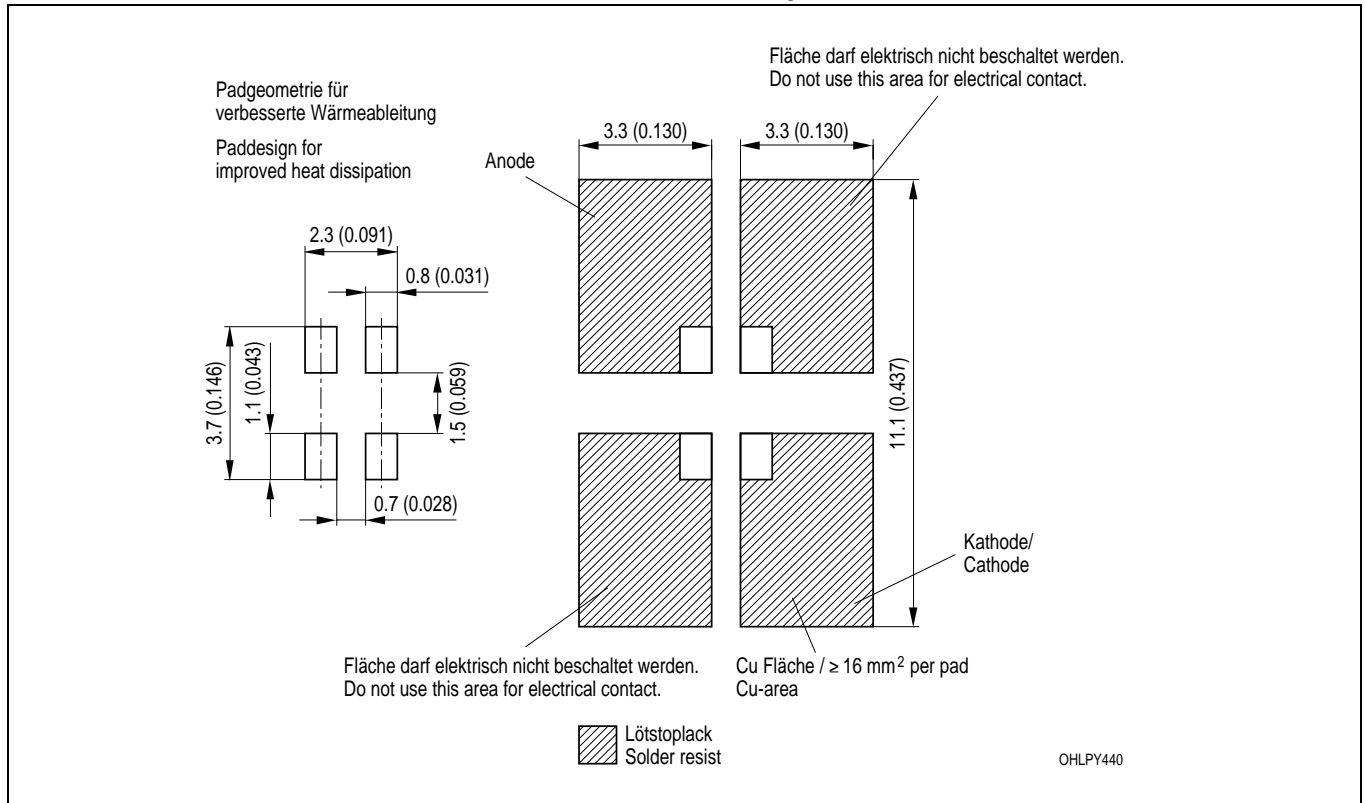
Wellenlöten (TTW) (nach CECC 00802)

TTW Soldering (acc. to CECC 00802)



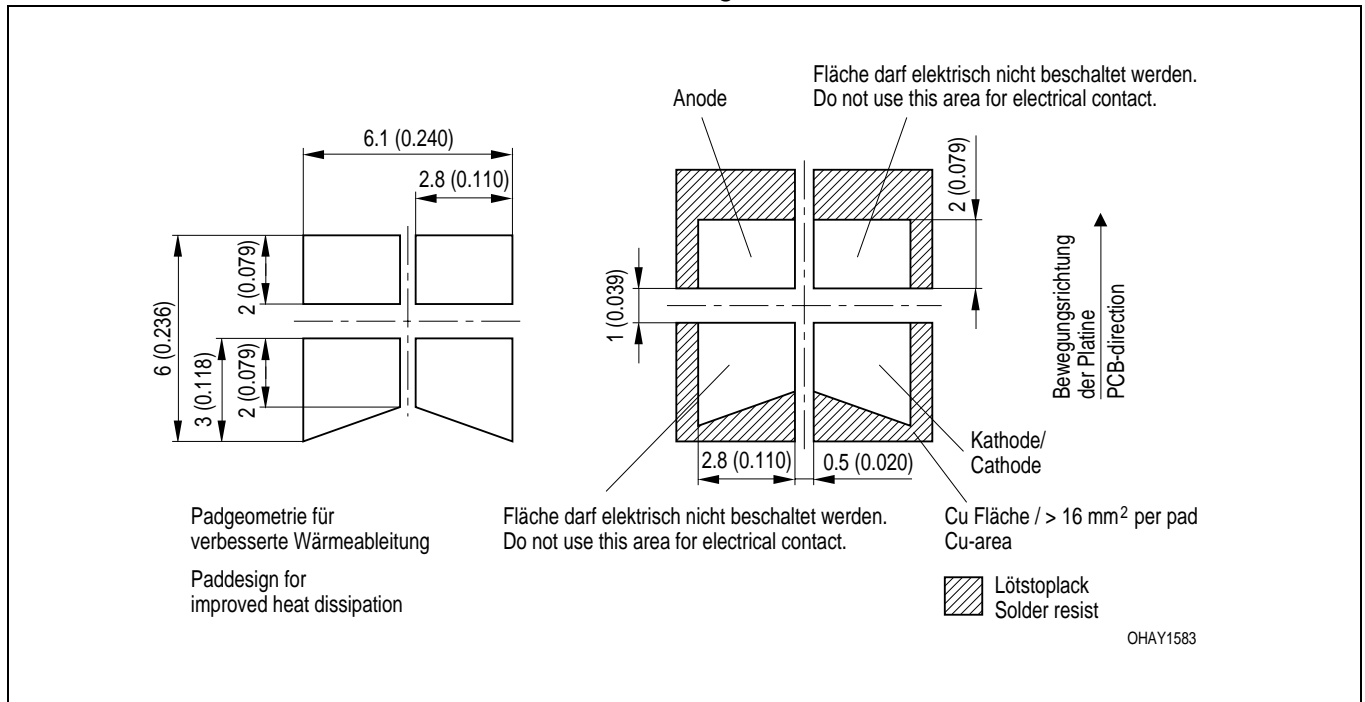
Empfohlenes Lötpad Design
Recommended Solder Pad

IR Flow Löten
IR Reflow Soldering



Empfohlenes Lötpad Design
Recommended Solder Pad

Wellenlöten (TTW)
TTW Soldering



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