

IR-Lumineszenzdiode (940 nm) mit hoher Ausgangsleistung

High Power Infrared Emitter (940 nm)

Lead (Pb) Free Product - RoHS Compliant

SFH 4248

SFH 4249

Vorläufige Daten / Preliminary Data

OS-PCN-2010-033-A. To be used for design-in.

Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung
- Kurze Schaltzeiten
- Halbwinkel SFH 4248: $\pm 15^\circ$
- Halbwinkel SFH 4249: $\pm 25^\circ$
- Hohe Bestromung bei hohen Temperaturen möglich

Features

- High Power Infrared LED
- Short switching times
- Half angle SFH 4248: $\pm 15^\circ$
- Half angle SFH 4249: $\pm 25^\circ$
- High forward current allowed at high temperature

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 Sicherheitsrichtlinien 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⁾ ($I_F = 100 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping ¹⁾ $I_e \text{ (mW/sr)}$
SFH 4248	Q65110A7518	≥ 40 (typ. 100)
SFH 4249	Q65110A7519	≥ 25 (typ. 55)

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

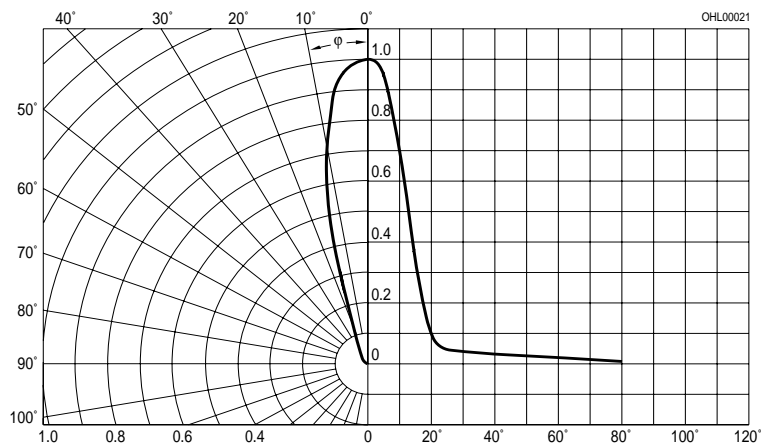
Kennwerte ($T_A = 25\text{ °C}$)

Characteristics (cont'd)

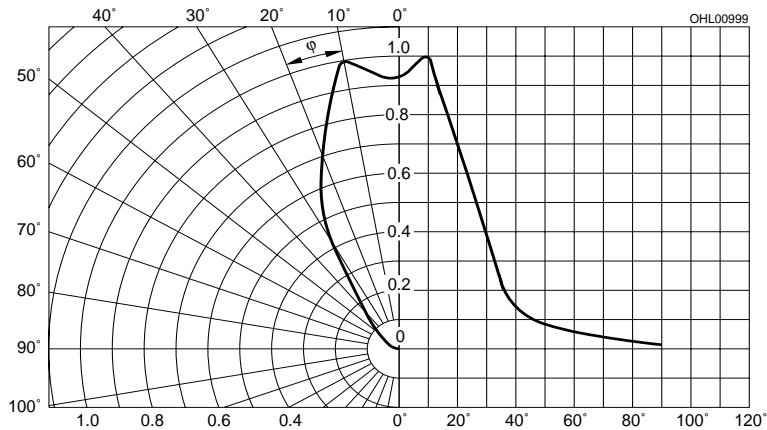
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Aktive Chipfläche Active chip area	A	0.09	mm ²
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.3×0.3	mm ²
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ 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	11	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) 2.3 (< 3.0)	V V
Sperrstrom Reverse current	I_R	not designed for reverse operation	μA
Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	Φ_e	50	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	- 3	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

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

SFH 4248

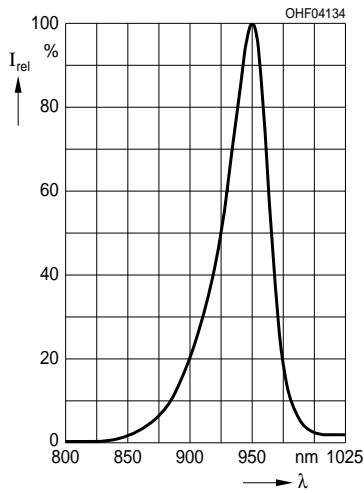
**Abstrahlcharakteristik****Radiation Characteristics** $I_{\text{rel}} = f(\varphi)$

SFH 4249



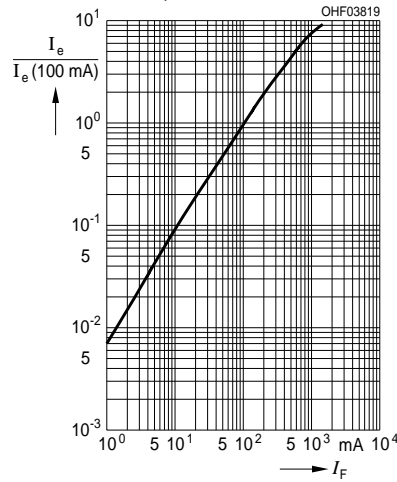
Relative Spectral Emission

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



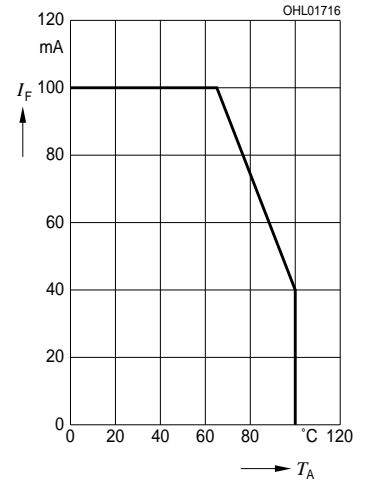
$$\text{Radiant Intensity } \frac{I_e}{I_e \text{ 100 mA}} = f(I_F)$$

Single pulse, $t_p = 25 \mu\text{s}$



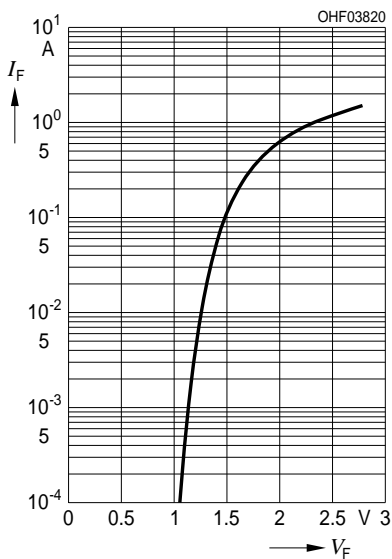
Max. Permissible Forward Current

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



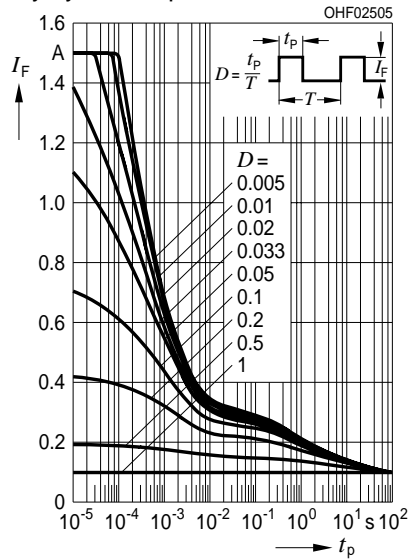
Forward Current $I_F = f(V_F)$

Single pulse, $t_p = 100 \mu\text{s}$

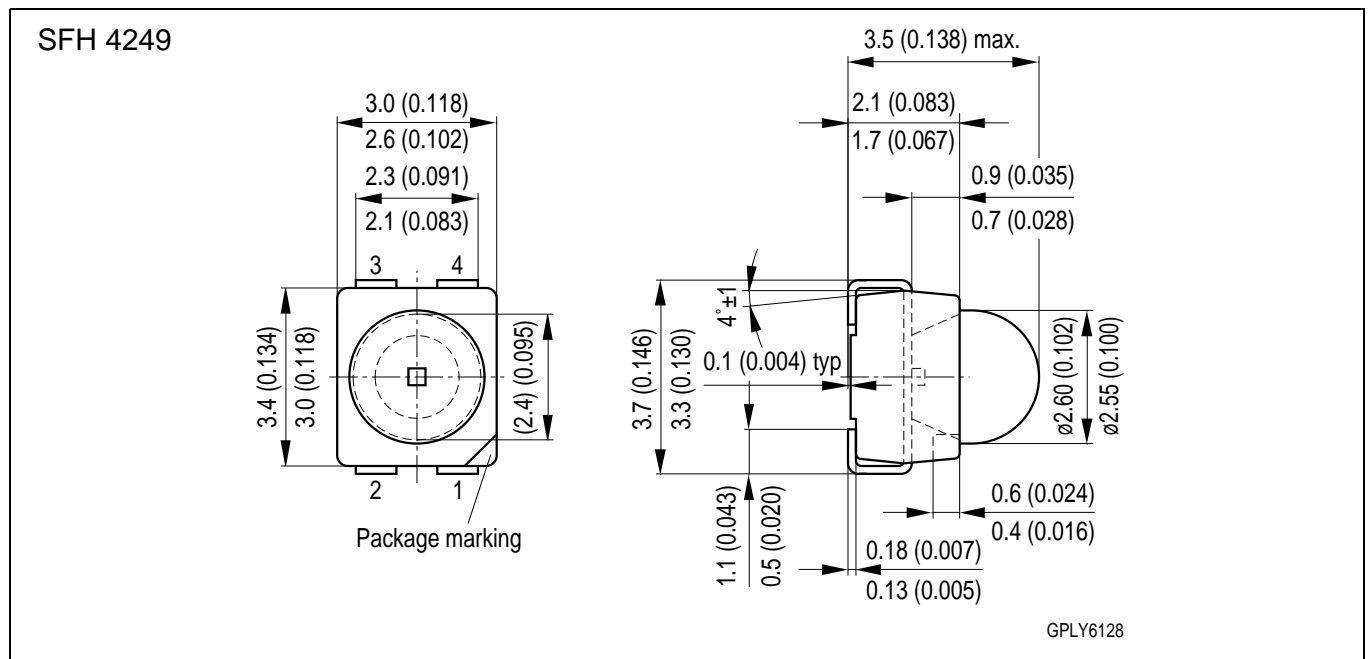
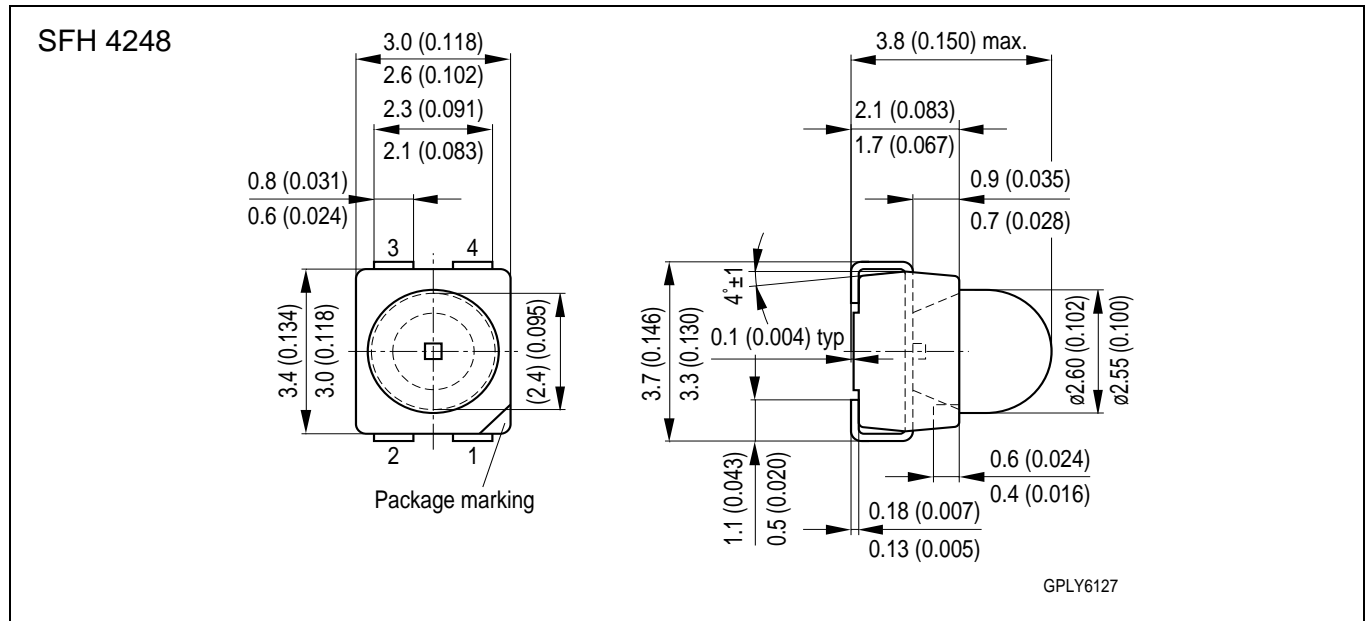


Permissible Pulse Handling

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



**Maßzeichnung
Package Outlines**



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

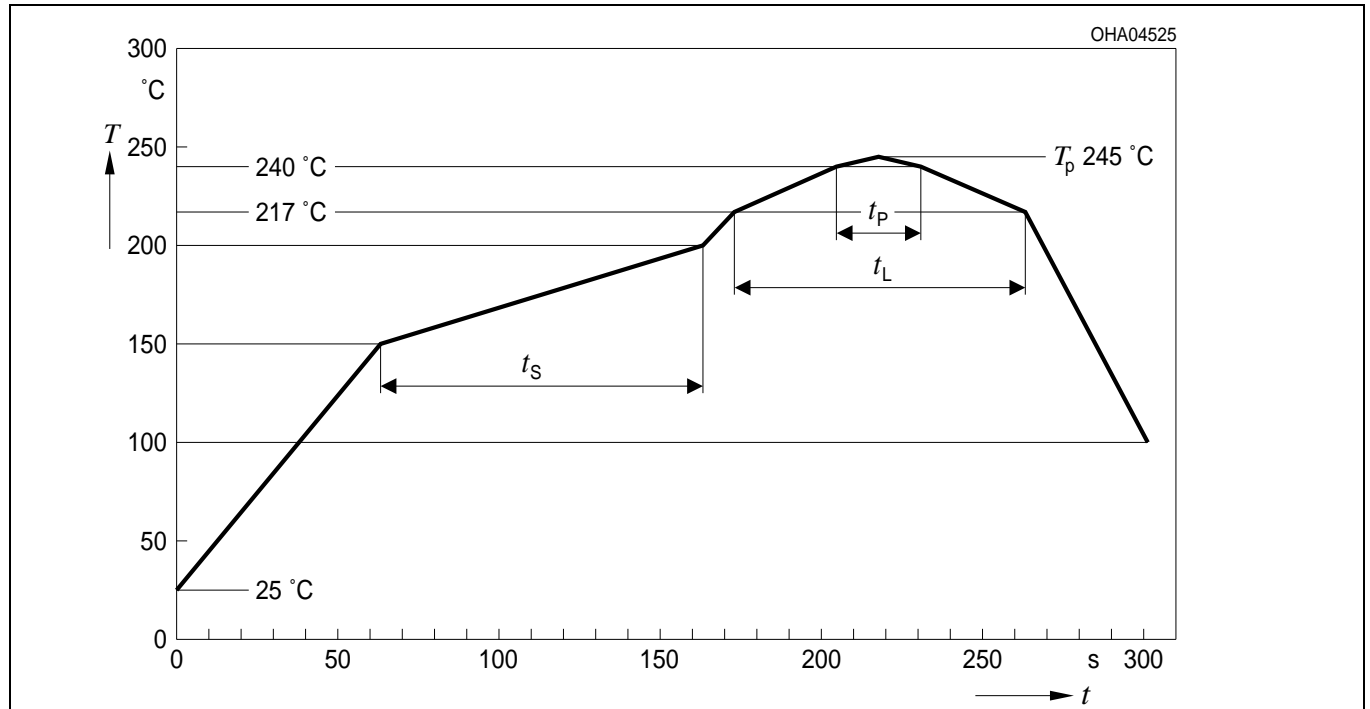
Lötbedingungen**Soldering Conditions****Reflow Lötprofil für bleifreies Löten****Reflow Soldering Profile for lead free soldering**

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°C / sec	3°C / 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°C / sec	3°C / sec
Liquidus Temperature 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°C / sec	4°C / 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

