IR-Lumineszenzdiode (940 nm) mit hoher Ausgangsleistung
High Power Infrared Emitter (940 nm)
Lead (Pb) Free Product - RoHS Compliant
SFH 4231

Vorläufige Daten / Preliminary Data

Wesentliche Merkmale

- Punktlichtquelle mit hohem Wirkungsgrad bei geringer Baugröße
- Chipgröße (emittierende Fläche) 1 x 1 mm^2
- max. Gleichstrom 1 A
- niedriger Wärmewiderstand (15 K/W)
- Emissionswellenlänge 940 nm
- ESD-sicher bis 2 kV nach JESD22-A114-B

Features

- Point lightsource with high efficiency and small package
- die-size (emitting area) 1 x 1 mm^2
- max. DC-current 1 A
- Low thermal resistance (15 K/W)
- Maximum of spectral emission at 940 nm
- ESD save up to 2 kV acc. to JESD22-A114-B

Anwendungen

- Infrarotbeleuchtung für CMOS Kameras
- Überwachungssysteme
- IR-Datenübertragung
- Fahrer-Assistenz Systeme
- Maschinensicherheit

Applications

- Infrared Illumination for CMOS cameras
- Surveillance systems
- IR Data Transmission
- Driver assistance systems
- Machine security

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**	**Gesamtstrahlungsfluss**[1] (I_F = 1A, t_p = 100 µs) **Total Radiant Flux**[1] Φ_e (mW)
SFH 4231	Q65110A4808	typ. 500

[1] gemessen mit Ulbrichtkugel / measured with integrating sphere

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
Sperrschichttemperatur Junction temperature	T_J	+ 125	°C
Sperrspannung Reverse voltage	V_R	1	V
Vorwärtsgleichstrom Forward current	I_F	1	A
Stoßstrom, t_p < 1 ms, D = 0.2 Surge current	I_{FSM}	2	A
Leistungsaufnahme Power consumption	P_{tot}	2.4	W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	R_{thJS}	15	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 = 1 A, t_p = 10 ms	λ_{peak}	940	nm
Centroid-Wellenlänge der Strahlung Centroid wavelength I_F = 1 A, t_p = 10 ms	$\lambda_{centroid}$	935	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 1 A, t_p = 10 ms	$\Delta\lambda$	45	nm
Abstrahlwinkel Half angle	φ	± 60	Grad deg.
Aktive Chipfläche Active chip area	A	1	mm^2
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	1 × 1	mm^2

Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

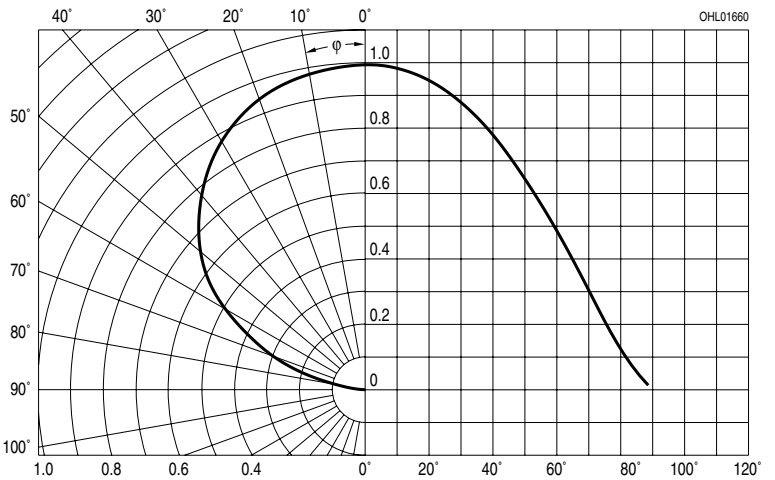
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, I_F = 1 A, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 1 A, R_L = 50 Ω	t_r, t_f	20	ns
Durchlassspannung Forward voltage I_F = 1 A, t_p = 100 µs	V_F	1.8 (< 2.4)	V
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\,typ}$	200	mW/sr
Temperaturkoeffizient von I_e bzw. Φ_e Temperature coefficient of I_e or Φ_e I_F = 1 A, t_p = 10 ms	TC_I	– 0.5	%/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 1 A, t_p = 10 ms	TC_V	– 1	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ I_F = 1 A, t_p = 10 ms	$TC_{\lambda,centroid}$	+ 0.2	nm/K

Gesamtstrahlungsfluss[1] Φ_e
Total Radiant Flux[1] Φ_e

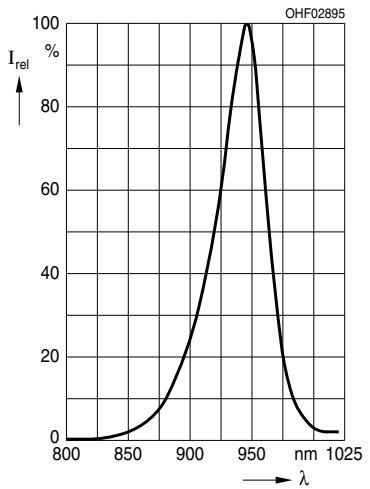
Bezeichnung Parameter	Symbol	Werte Values		Einheit Unit
		SFH 4231-CX	SFH 4231-DX	
Gesamtstrahlungsfluss Total Radiant Flux I_F = 1 A, t_p = 100 µs	$\Phi_{e\ min}$ $\Phi_{e\ max}$	320 630	500 1000	mW mW

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

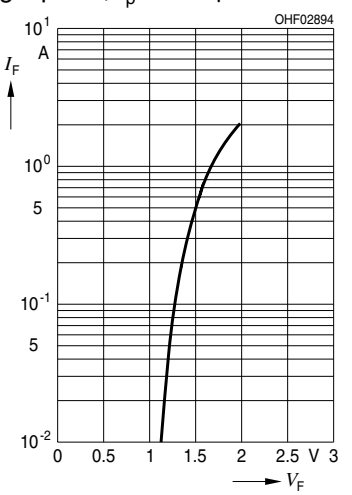
Abstrahlcharakteristik
Radiation Characteristics $I_{rel} = f(\varphi)$



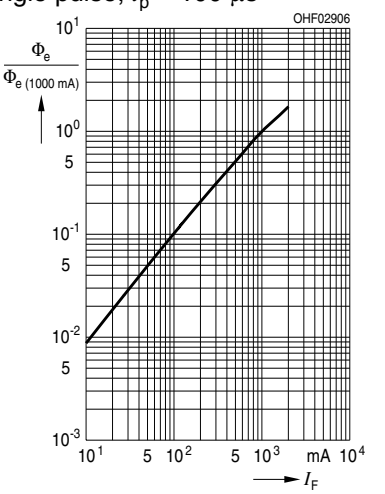
Relative spektrale Emission
Relative Spectral Emission
$I_{rel} = f(\lambda)$



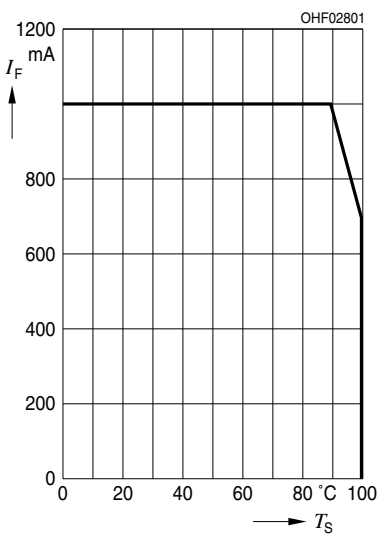
Durchlassstrom
Forward Current
$I_F = f(V_F)$
Single pulse, t_p = 100 µs



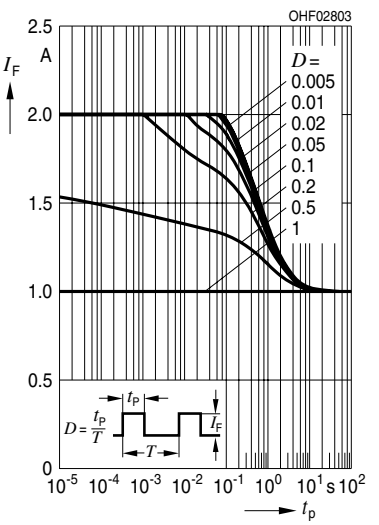
Relativer Gesamtstrahlungsfluss
Relative Total Radiant Flux
$\Phi_e/\Phi_e(1000mA) = f(I_F)$
Single pulse, t_p = 100 µs



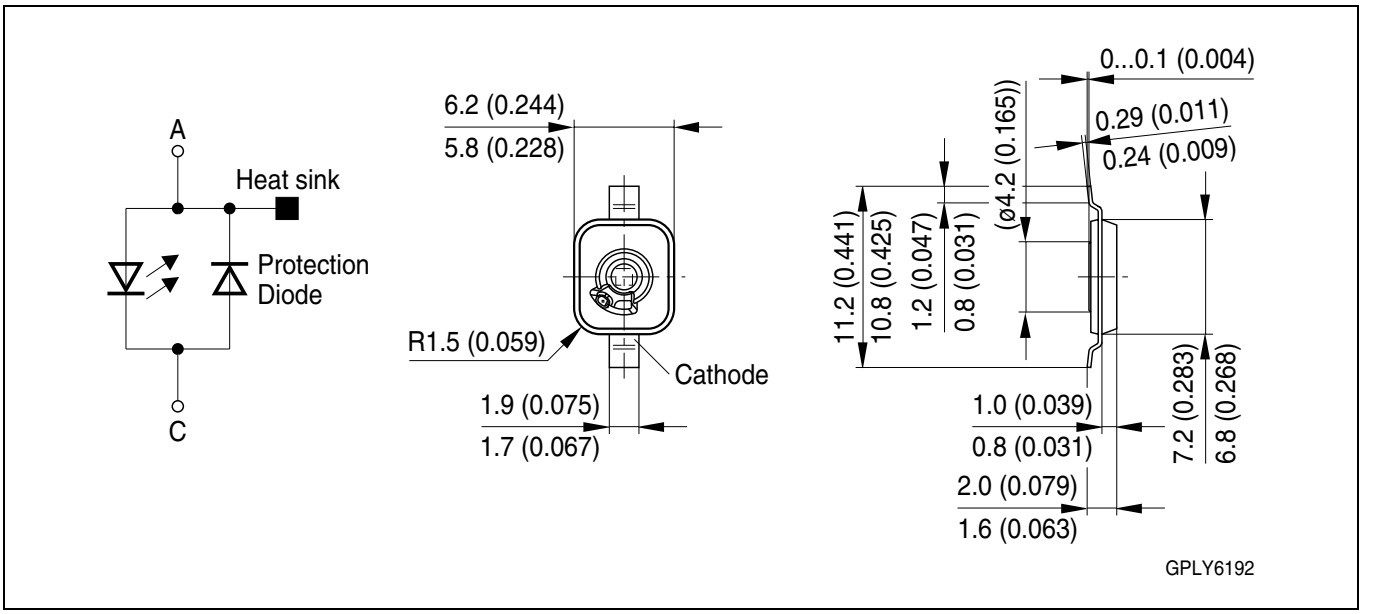
Max. zulässiger Durchlassstrom
Max. Permissible Forward Current
$I_F = f(T_A)$, R_{thJS} = 15 K/W



Zulässige Impulsbelastbarkeit
Permissible Pulse Handling Capability $I_F = f(t_p)$, $T_A \leq 85$ °C,
Duty cycle D = parameter

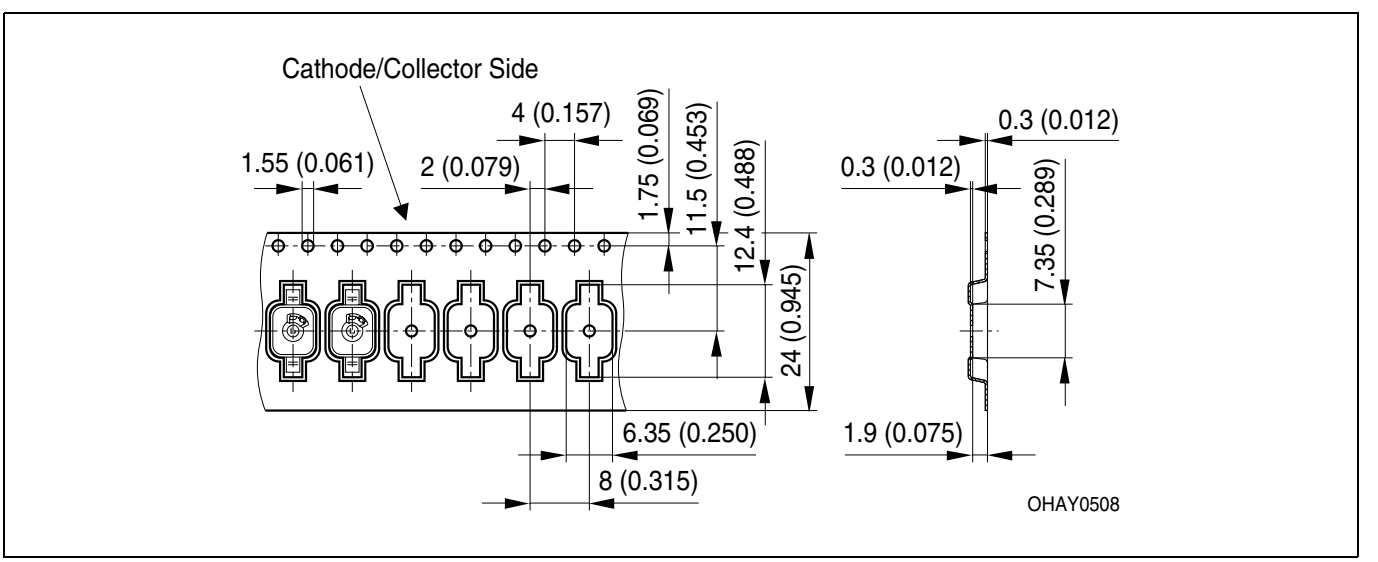


Maßzeichnung[1)]
Package Outlines



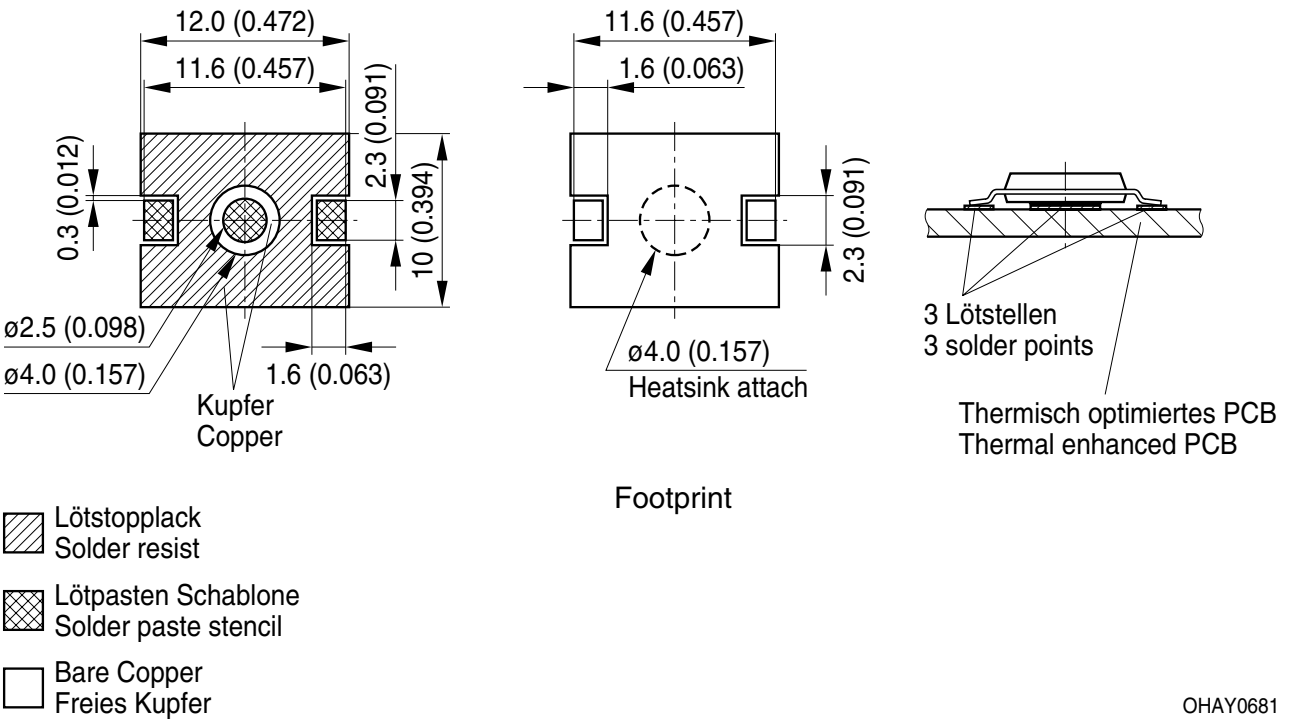
Kathodenkennung:	Markierung
Cathode mark:	mark
Gewicht / Approx. weight:	0.2 g

Gurtung / Polarität und Lage	Verpackungseinheit 800/Rolle, ø180 mm
Method of Taping / Polarity and Orientation	Packing unit 800/reel, ø180 mm



[1)] Maße werden wie folgt angegeben: mm (inch)
Dimensions are specified as follows: mm (inch)

Empfohlenes Lötpaddesign
Recommended Solder Pad Design

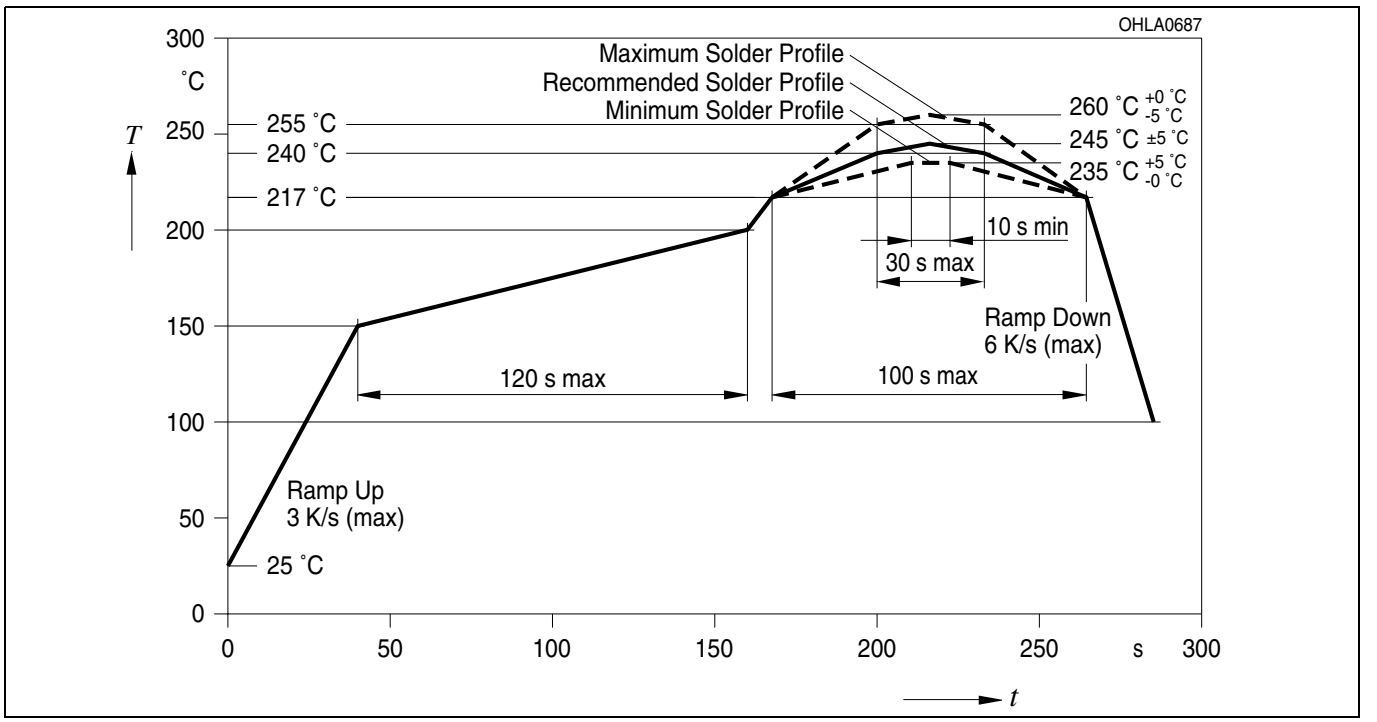


Achtung:
Anode und Heatsink sind elektrisch verbunden

Attention:
Anode and Heatsink are electrically connected

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

Vorbehandlung nach JEDEC Level 4
Preconditioning acc. to JEDEC Level 4
(nach J-STD-020B)
(acc. to J-STD-020B)



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[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

[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.