IR-Lumineszenzdiode (940 nm) mit hoher Ausgangsleistung
High Power Infrared Emitter (940 nm)
Lead (Pb) Free Product - RoHS Compliant
SFH 4233



Vorläufige Daten / Preliminary Data

Wesentliche Merkmale
- IR-Lichtquelle mit hohem Wirkungsgrad
- Chipgröße (emittierende Fläche) 1 x 1 mm^2
- max. Gleichstrom 1 A
- niedriger Wärmewiderstand (9 K/W)
- Schwerpunktswellenlänge 940 nm
- ESD-sicher bis 2 kV nach JESD22-A114-E
- Erweiterte Korrosionsfestigkeit (s.a. Abschnitt Maßzeichnung)

Features
- IR lightsource with high efficiency
- die-size (emitting area) 1 x 1 mm^2
- max. DC-current 1 A
- Low thermal resistance (9 K/W)
- Center of spectral emission at 940 nm
- ESD safe up to 2 kV acc. to JESD22-A114-E
- Superior Corrosion Robustness (see chapter package outlines)

Anwendungen
- Infrarotbeleuchtung für Kameras
- Überwachungssysteme
- Fahrer-Assistenz Systeme
- Beleuchtung für Bilderkennungssysteme

Applications
- Infrared Illumination for cameras
- Surveillance systems
- Driver assistance systems
- Machine vision systems

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 = 10 ms) **Total Radiant Flux**[1] Φ_e (mW)
SFH 4233	Q65110A8901	≥ 320 (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 … + 125	°C
Sperrschichttemperatur Junction temperature	T_J	+ 145	°C
Sperrspannung Reverse voltage	V_R	1	V
Vorwärtsgleichstrom Forward current	I_F	1	A
Stoßstrom, t_p < 200 µs, D = 0 Surge current	I_{FSM}	5	A
Leistungsaufnahme Power consumption	P_{tot}	1.8	W
Wärmewiderstand Sperrschicht - Lötstelle Thermal resistance junction - soldering point	R_{thJS}	9	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}	950	nm
Centroid-Wellenlänge der Strahlung Centroid wavelength I_F = 1 A, t_p = 10 ms	$\lambda_{centroid}$	940	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 1 A, t_p = 10 ms	$\Delta\lambda$	35	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)

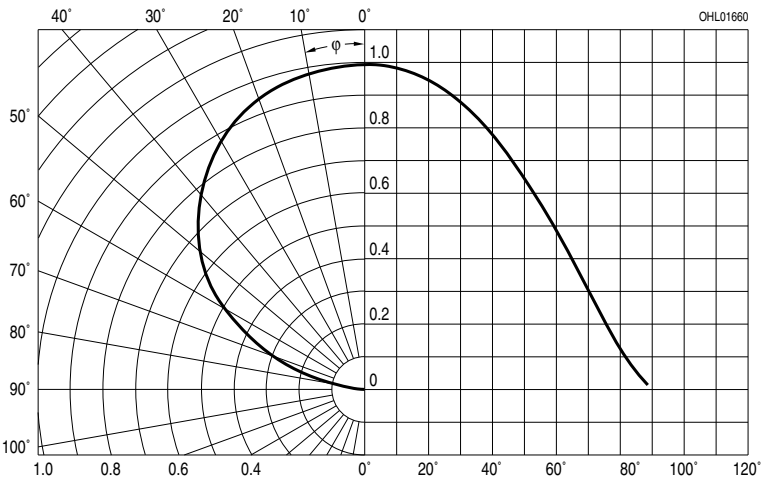
Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, I_F = 5 A, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 5 A, R_L = 50 Ω	t_r / t_f	8 / 14	ns
Durchlassspannung Forward voltage I_F = 1 A, t_p = 100 µs I_F = 5 A, t_p = 100 µs	 V_F V_F	 1.4 (< 1.8) 2.0 (< 2.9)	 V V
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	I_e	170	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	– 0.3	%/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 1 A, t_p = 10 ms	TC_V	– 2	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ I_F = 1 A, t_p = 10 ms	$TC_{\lambda,centroid}$	+ 0.3	nm/K

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

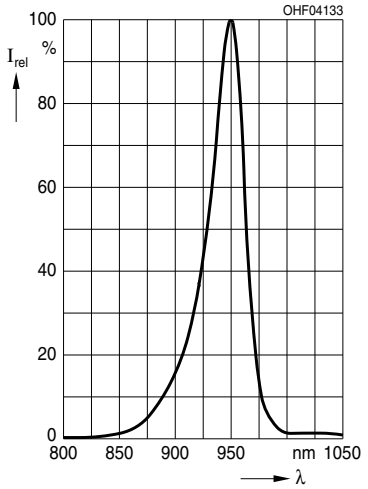
Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		-CB	-DA	-DB	
Gesamtstrahlungsfluss Total Radiant Flux I_F = 1 A, t_p = 10 ms	$\Phi_{e\ min}$ $\Phi_{e\ max}$	320 500	400 630	500 800	mW mW

1) Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 1.6:1) /
Only one group in one packing unit (variation lower 1.6:1)

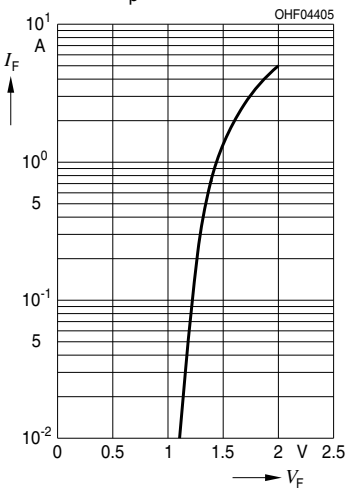
Abstrahlcharakteristik
Radiation Characteristics $I_{rel} = f(\varphi)$



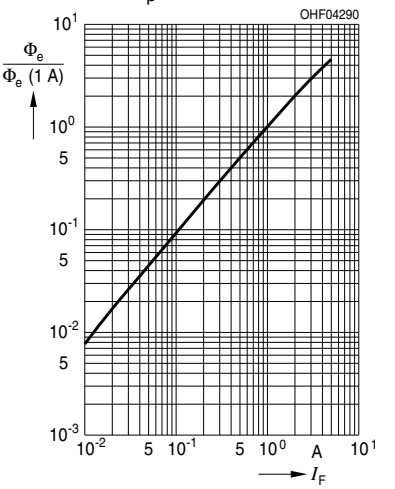
Relative spektrale Emission
Relative Spectral Emission
$I_{rel} = f(\lambda)$



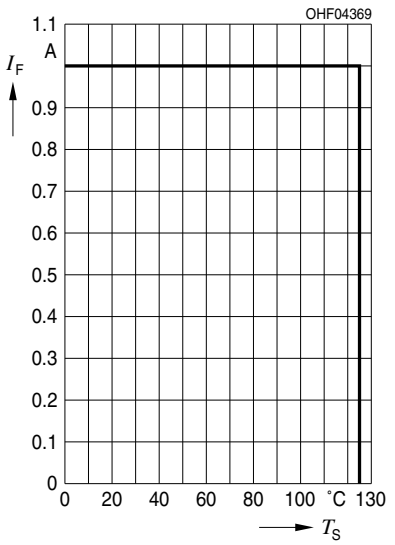
Durchlassstrom
Forward Current
$I_F = f(V_F)$
Single pulse, t_p = 100 µs



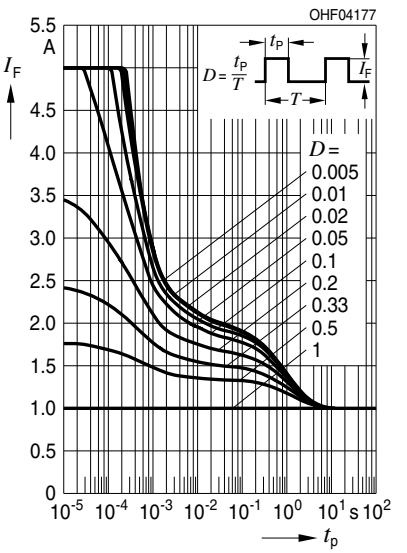
Relativer Gesamtstrahlungsfluss
Relative Total Radiant Flux
$\Phi_e/\Phi_e(1A) = f(I_F)$
Single pulse, t_p = 100 µs



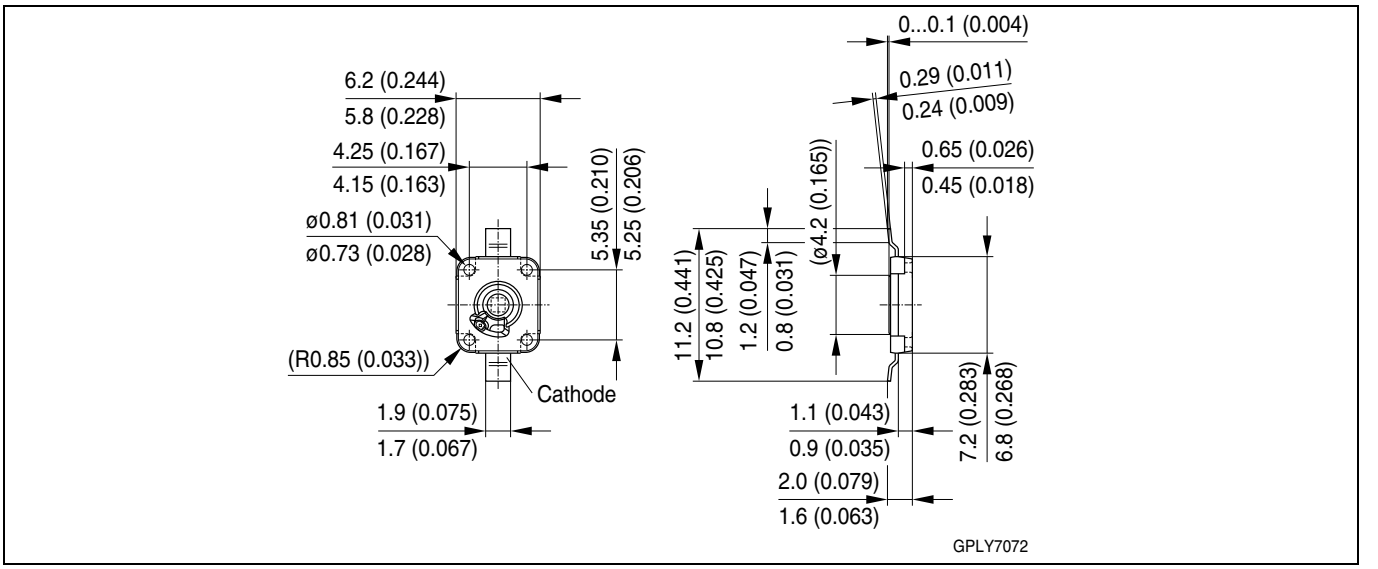
Max. zulässiger Durchlassstrom
Max. Permissible Forward Current
$I_F = f(T_A)$, R_{thJS} = 9 K/W



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



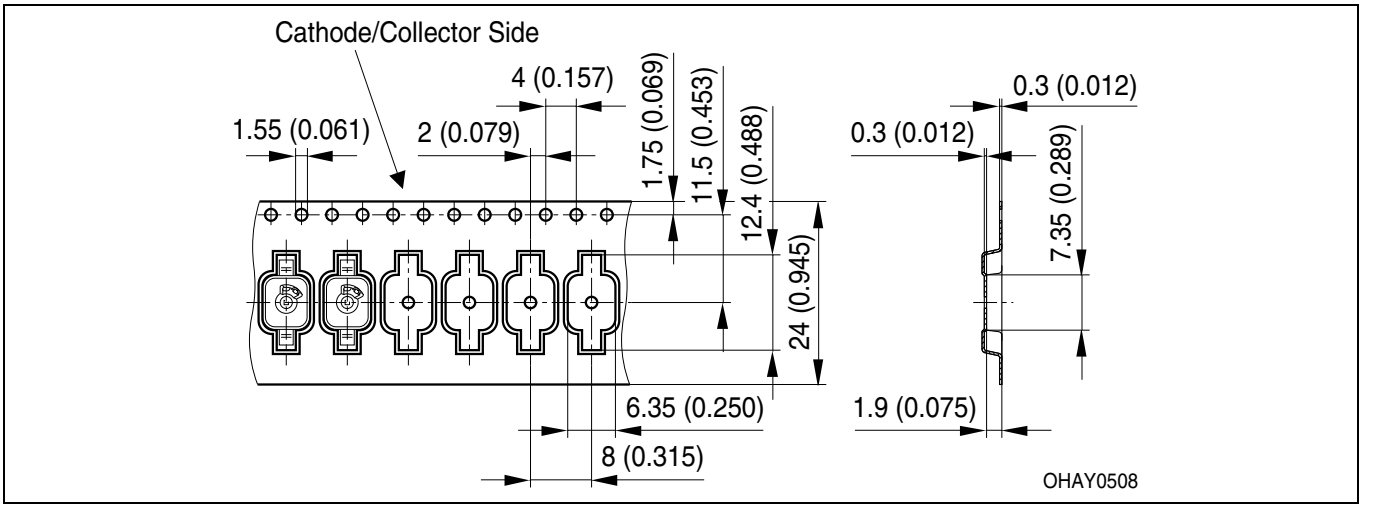
Maßzeichnung[1)]
Package Outlines



Korrosionsfestigkeit besser als EN 60068-2-60 (method 4):
mit erweitertem Korrosionstest: 40°C / 90%rh / 15ppm H2S / 336h
Corrosion robustness better than EN 60068-2-60 (method 4):
with enhanced corrosion test: 40°C / 90%rh / 15ppm H2S / 336h

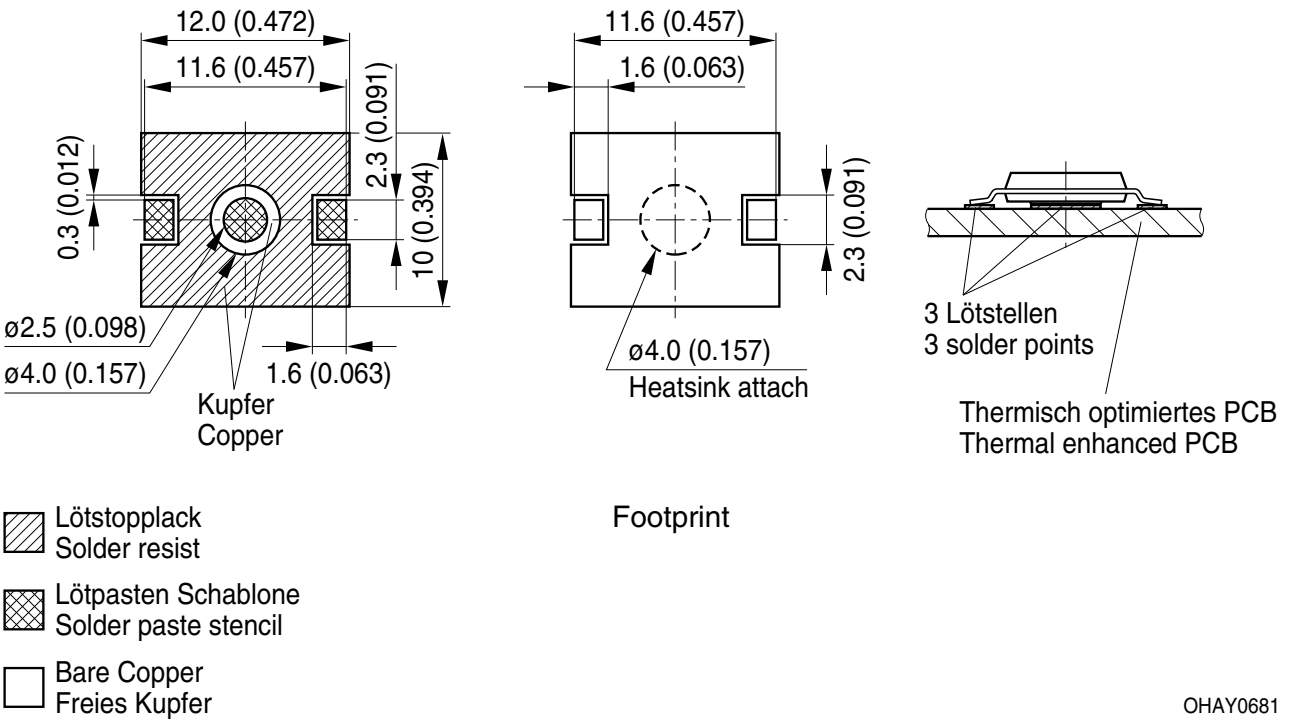
Kathodenkennung:	Markierung
Cathode mark:	mark
Gewicht / Approx. weight:	0.2 g

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



[1)] Maße in mm (inch) / Dimensions in mm (inch)

Empfohlenes Lötpaddesign
Recommended Solder Pad Design

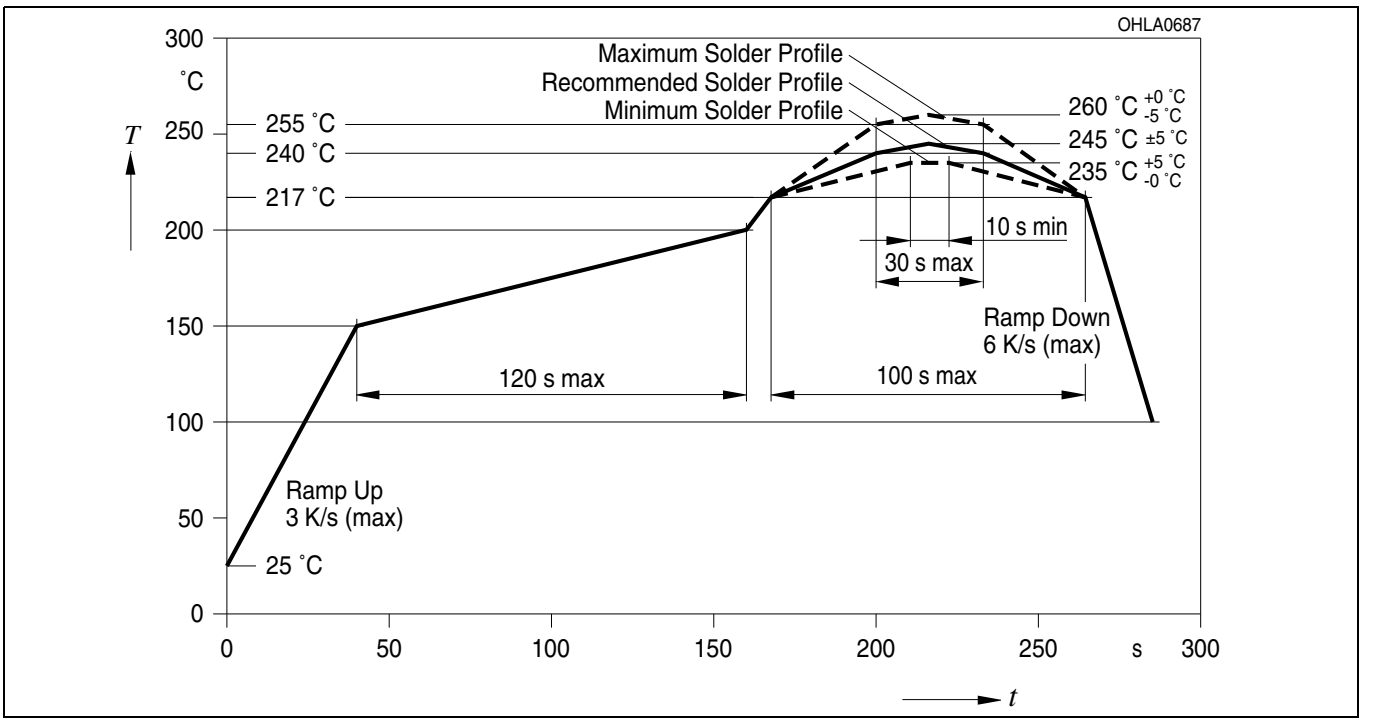


Achtung:
Anode und Heatsink sind elektrisch verbunden

Attention:
Anode and Heatsink are electrically connected

Lötbedingungen
Soldering Conditions
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-020C)
(acc. to J-STD-020C)



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Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1] , may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.

[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.

Mouser Electronics

Related Product Links

720-SFH4233 - Osram Opto Semiconductor SFH 4233