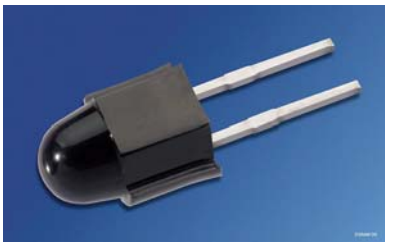
Leistungsstarke IR-Lumineszenzdiode
High Power Infrared Emitter
Lead (Pb) Free Product - RoHS Compliant

SFH 4500
SFH 4505

SFH 4500



SFH 4505

Nicht für Neuentwicklungen / Not for new designs

Wesentliche Merkmale

- Leistungsstarke GaAs-LED (40mW)
- Hoher Wirkungsgrad bei kleinen Strömen
- Typische Peakwellenlänge 950nm
- Engwinkliger SMT-Sidelooker

Features

- High Power GaAs-LED (40mW)
- High Efficiency at low currents
- Typical peak wavelength 950nm
- Narrow angle SMT-Sidelooker

Anwendungen

- Bauteil mit hoher Strahlstärke zur Oberflächenmontage (SMT)
- Schnelle Datenübertragung mit Übertragungsraten bis 100 Mbaud (IR Tastatur, Joystick, Multimedia)
- Analoge und digitale Hi-Fi Audio- und Videosignalübertragung
- Alarm- und Sicherungssysteme
- IR Freiraumdatenübertragung
- IR-Scheinwerfer für Kameras

Applications

- Device with high radiant intensity suitable for surface mounting (SMT)
- High data transmission rate up to 100 Mbaud (IR keyboard, Joystick, Multimedia)
- Analog and digital Hi-Fi audio and video signal transmission
- Alarm and safety equipment
- IR free air data transmission
- IR spotlight for cameras

Typ **Type**	**Bestellnummer** **Ordering Code**	**Strahlstärkegruppierung**[1] (I_F = 100 mA, t_p = 20 ms) **Radiant Intensity Grouping** [1] I_e (mW/sr)
SFH 4500	Q65110A2642	85 (>25)
SFH 4505	Q65110A2643	85 (>25)

[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	3	V
Durchlassstrom Forward current	I_F (DC)	100	mA
Stoßstrom Surge current t_p = 10 µs, D = 0	I_{FSM}	2.2	A
Verlustleistung Power dissipation	P_{tot}	180	mW
Wärmewiderstand Sperrschicht - Umgebung, freie Beinchenlänge max. 10 mm Thermal resistance junction - ambient, lead length between package bottom and PCB max. 10 mm	R_{thJA}	375	K/W

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength of peak emission I_F = 100 mA, t_p = 20 ms	λ_{peak}	950	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 100 mA, t_p = 20 ms	$\Delta\lambda$	40	nm
Abstrahlwinkel Half angle	φ	± 10	Grad deg.
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% Switching times, I_e from 10% to 90% and from 90% to 10% I_F = 100 mA, t_P = 20 ms, R_L = 50 Ω	t_r, t_f	10	ns
Kapazität Capacitance V_R = 0 V, f = 1 MHz	C_o	35	pF
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) 3.2 (≤ 4.3)	 V V
Sperrstrom Reverse current V_R = 3 V	I_R	0.01 (≤ 10)	µA
Gesamtstrahlungsfluss Total radiant flux I_F = 100 mA, t_p = 20 ms	Φ_e	40	mW
Temperaturkoeffizient von I_e bzw. Φ_e Temperature coefficient of I_e or Φ_e I_F = 100 mA	TC_I	– 0.44	%/K

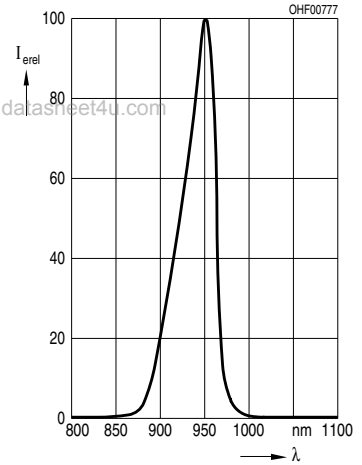
Kennwerte (T_A = 25 °C) (cont'd)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 100 mA	TC_V	– 1.5	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ I_F = 100 mA	TC_λ	+ 0.2	nm/K

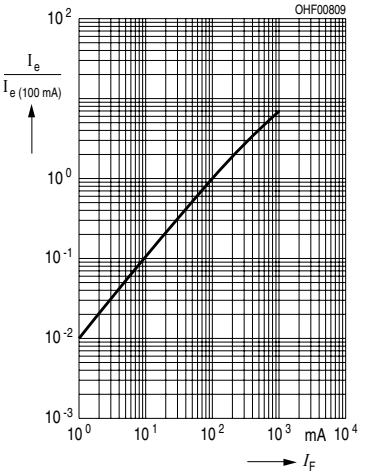
Strahlstärke I_e in Achsrichtung
gemessen bei einem Raumwinkel von Ω = 0.01 sr
Radiant Intensity I_e in Axial Direction
measured at a solid angle of Ω = 0.01 sr

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	$I_{e\ min}$ $I_{e\ typ}$	25 85	mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\ typ}$	550	mW/sr

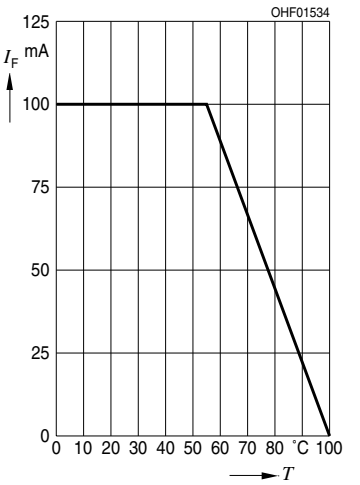
Relative Spectral Emission
$I_{erel} = f(\lambda)$



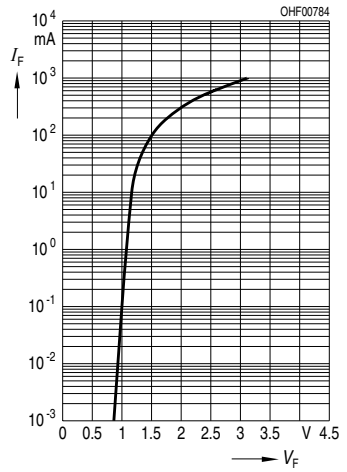
Radiant Intensity $I_e/I_{e\,(100\ mA)} = f(I_F)$
Single pulse, $t_p = 20\ \mu s$



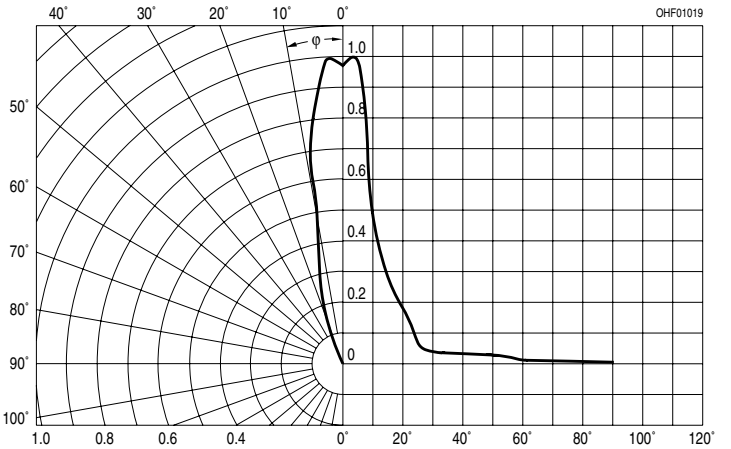
Max. Permissible Forward Current
$I_F = f(T_A)$



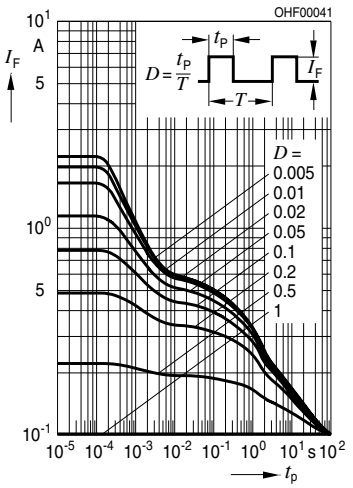
Forward Current $I_F = f(V_F)$
single pulse, $t_p = 20\ \mu s$



Radiation Characteristic
$I_{erel} = f(\varphi)$

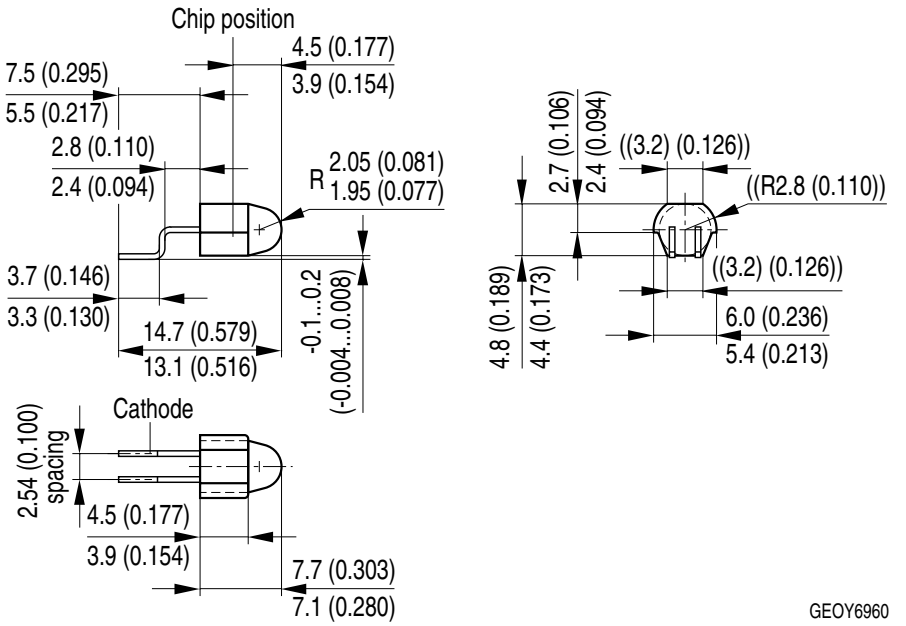


Permissible Pulse Handling Capability $I_F = f(\tau)$, $T_A = 25$ °C,
duty cycle D = parameter



Maßzeichnungen
Package Outlines

SFH 4500



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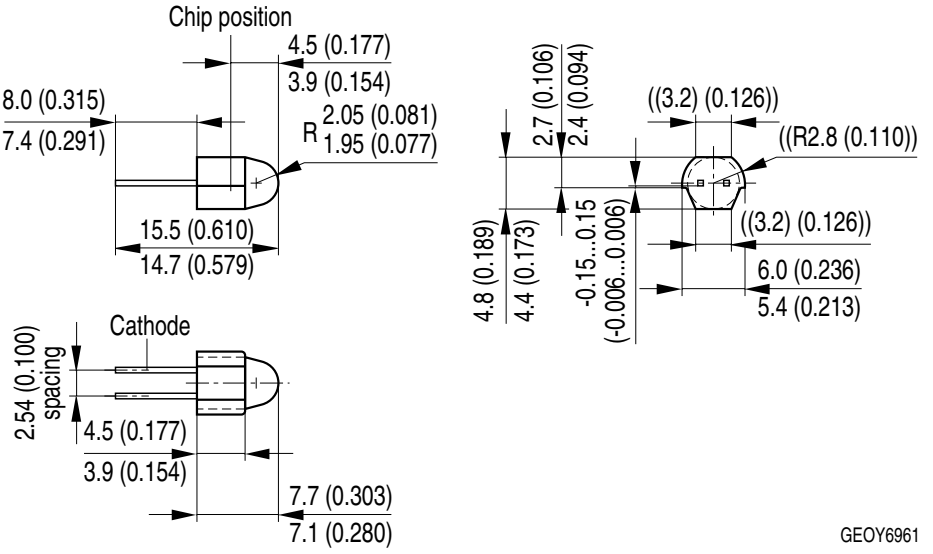
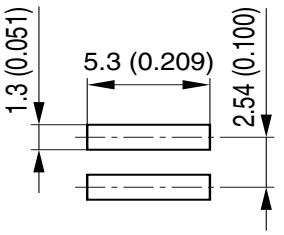


Maße in mm (inch) / Dimensions in mm (inch).

Empfohlenes Lötpaddesign
Recommended Solder Pad

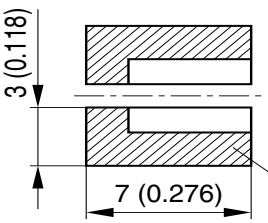
SFH 4500



Padgeometrie für
verbesserte Wärmeableitung

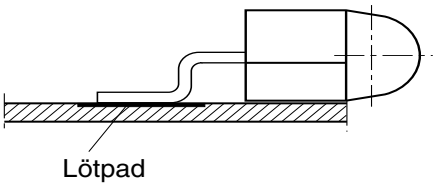
Paddesign for
improved heat dissipation

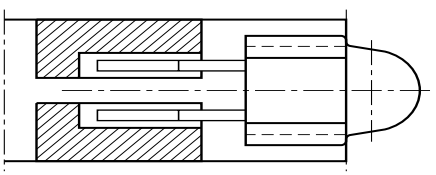
Lötstopplack
Solder resist



Cu-Fläche > 20 mm²

Bauteil positioniert
Component Location on Pad





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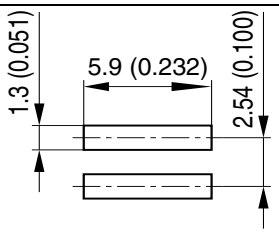

Padgeometrie für
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Paddesign for
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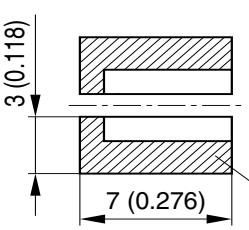
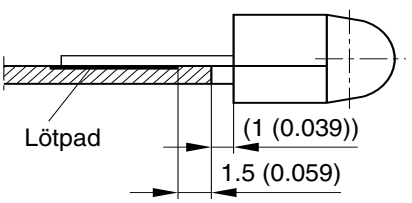
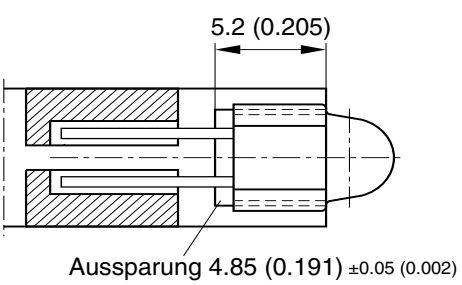
Lötstopplack
Solder resist



Cu-Fläche > 20 mm²
Cu-area > 20 mm²

Bauteil positioniert
Component Location on Pad



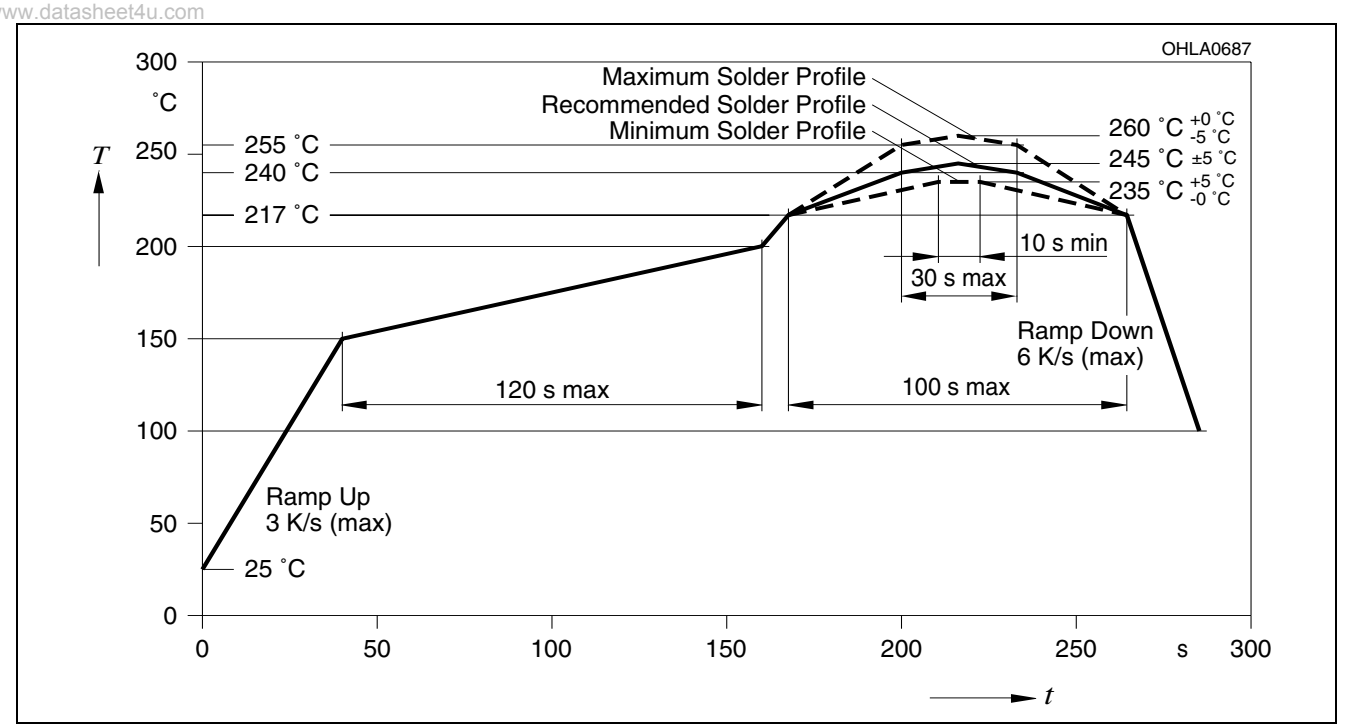


OHF02450

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

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

Vorbehandlung nach JEDEC Level 3
Preconditioning acc. to JEDEC Level 3
(nach J-STD-020C)
(acc. to J-STD-020C)



Published by
OSRAM Opto Semiconductors GmbH
Wernerwerkstrasse 2, D-93049 Regensburg
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