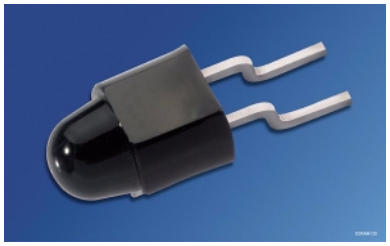
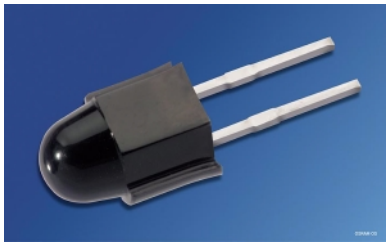
Schnelle IR-Lumineszenzdiode (950 nm) im SMR®-Gehäuse
High-Speed Infrared Emitter (950 nm) in SMR® Package

SFH 4500
SFH 4505



SFH 4500



SFH 4505

Wesentliche Merkmale

- Hohe Pulsleistung und hoher Gesamt-strahlungsfluß Φ_e
- SMR® (Surface Mount Radial)-Gehäuse
- Sehr kurze Schaltzeiten (10 ns)
- Sehr hohe Langzeitstabilität
- Hohe Zuverlässigkeit

Features

- High pulse power and high radiant flux Φ_e
- SMR® (Surface Mount Radial) package
- Very short switching times (10 ns)
- Very high long-time stability
- High reliability

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
- Batteriebetriebene Geräte (geringe Stromaufnahme)
- Anwendungen mit hohen Zuverlässigkeits-ansprüchen bzw. erhöhten Anforderungen
- Alarm- und Sicherungssysteme
- IR Freiraumübertragung

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
- Low power consumption (battery) equipment
- Suitable for professional and high-reliability applications
- Alarm and safety equipment
- IR free air transmission

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 4500	Q62702-P5163	5-mm-SMR®-Gehäuse (T1 ¾), schwarzes Epoxy-Gießharz, Anschlüsse (SFH 4500 gebogen, SFH 4505 gerade) im 2.54-mm-Raster ($^1/_{10}$''), Kathodenkennung: siehe Maßzeichnung. 5 mm SMR® package (T1 ¾), black epoxy resin, solder tabs (SFH 4500 bent, SFH 4505 straight) lead spacing 2.54 mm ($^1/_{10}$''), cathode marking: see package outline.
SFH 4505	Q62702-P5164	

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
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 (≤ 4.0)	 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	32	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

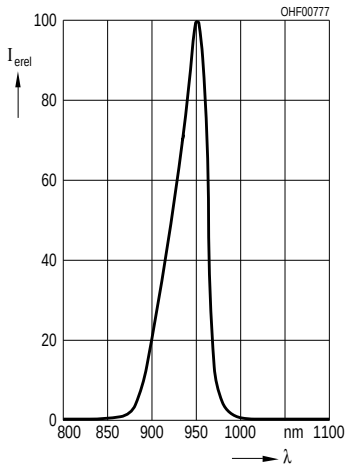
Strahlstärke I_e in Achsrichtung
gemessen bei einem Raumwinkel von Ω = 0.01 sr
Radiant Intensity I_e in Axial Direction
measured at a solid angle of Ω = 0.01 sr

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	$I_{e\ min}$ $I_{e\ typ}$	40 80	mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\ typ}$	500	mW/sr

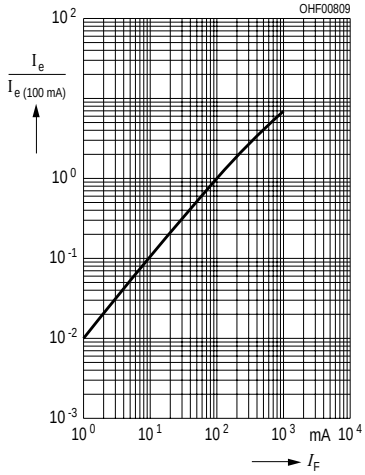
Lötbedingungen
Soldering Conditions

Tauch-, Schwall- und Schlepplötung **Dip, Wave and Drag Soldering**			**Kolbenlötung (mit 1,5-mm-Kolbenspitze)** **Iron Soldering (with 1.5-mm-bit)**		
Lötpad-temperatur **Temperature of the Soldering Bath**	**Maximal zulässige Lötzeit** **Max. Perm. Soldering Time**	**Abstand Lötstelle – Gehäuse** **Distance Between Solder Joint and Case**	**Temperatur des Kolbens** **Temperature of the Soldering Iron**	**Maximale zulässige Lötzeit** **Max. Permissible Soldering Time**	**Abstand Lötstelle – Gehäuse** **Distance between Solder Joint and Case**
260 °C	10 s	≥ 1.5 mm	300 °C	3 s	≥ 1.5 mm

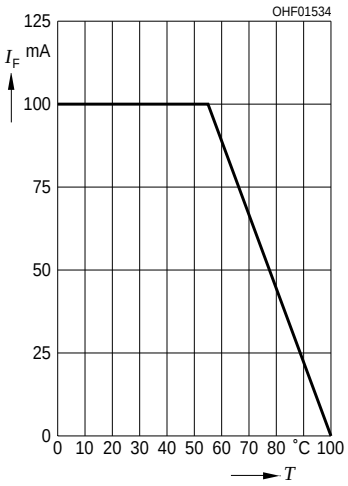
Relative Spectral Emission
$I_{erel} = f(\lambda)$



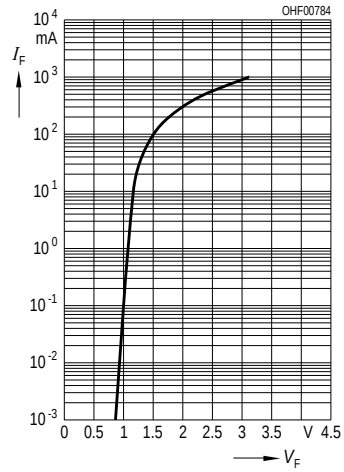
Radiant Intensity $I_e/I_{e\ (100\ mA)} = f(I_F)$
Single pulse, t_p = 20 µs



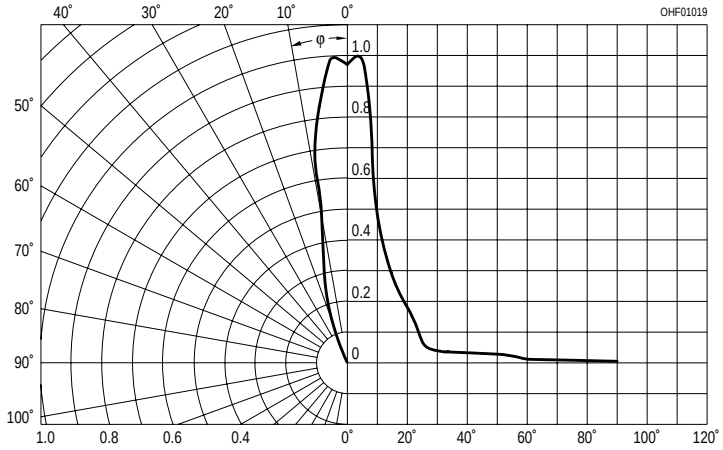
Max. Permissible Forward Current
$I_F = f(T_A)$



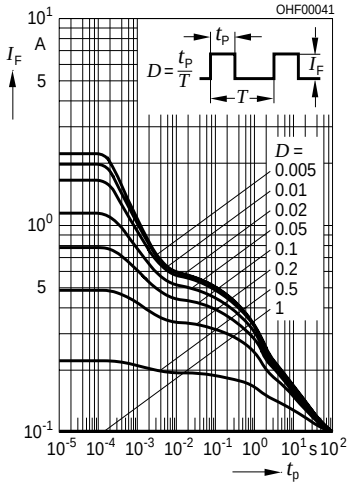
Forward Current $I_F = f(V_F)$
single pulse, t_p = 20 µs



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

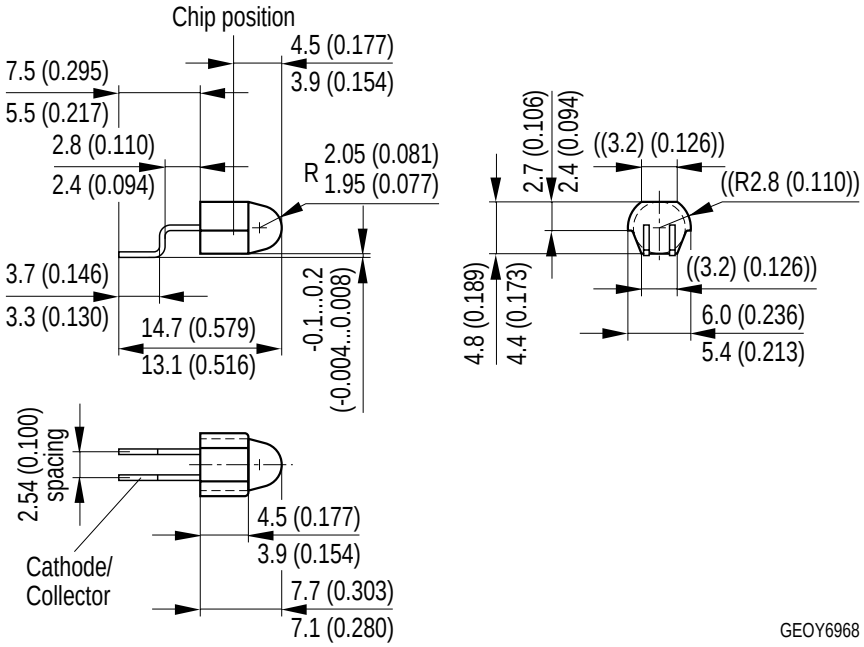


Permissible Pulse Handling Capability $I_F = f(\tau)$, T_A = 25 °C,
duty cycle D = parameter

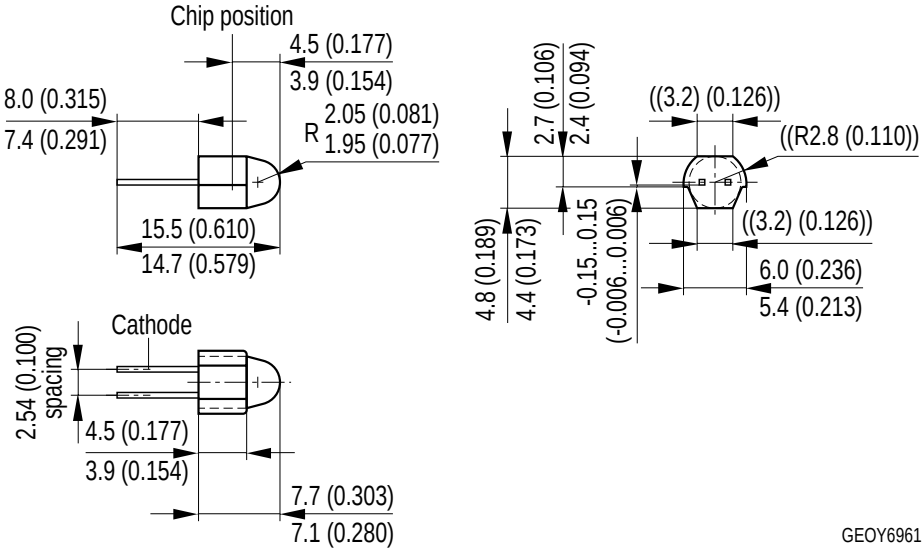


Maßzeichnungen
Package Outlines

SFH 4500



SFH 4505



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

Published by OSRAM Opto Semiconductors GmbH & Co. OHG
Wernerwerkstrasse 2, D-93049 Regensburg

Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
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.