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

SFH 4501, SFH 4502, SFH 4503

SFH 4501

SFH 4502

SFH 4503

Wesentliche Merkmale

- Leistungsstarke GaAs-LED (40mW)
- Hoher Wirkungsgrad bei kleinen Strömen
- Typische Peakwellenlänge 950nm
- SFH 4501 -03: Unterschiedliche Halbwinkel

Features

- High Power GaAs-LED (40mW)
- High Efficiency at low currents
- Typical peak wavelength 950nm
- SFH 4501 - 03: different half angles

Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb
- Sensorik
- Diskrete Lichtschranken
- IR-Scheinwerfer für Kameras

Applications

- IR remote control of hi-fi and TV-sets, video tape recorders, dimmers
- Remote control for steady and varying intensity
- Sensor technology
- Discrete interrupters
- IR spotlight for cameras

Typ **Type**	**Bestellnummer** **Ordering Code**	**Strahlstärkegruppierung** [1] (I_F = 100mA, t_p = 20 ms) **Radiant intensity grouping** [1] I_e (mW/sr)
SFH 4501	Q62702P5061	110 (>63)
SFH 4502	Q62702P5062	60 (>25)
SFH 4503	Q62702P5305	250 (>63)

[1] gemessen bei einem Raumwinkel Ω = 0.01 sr (SFH4503 Ω = 0.001 sr)
measured at a solid angle of Ω = 0.01 sr (SFH4503 Ω = 0.001 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, t_p = 10 µs, D = 0 Surge current	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 at 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 m A, t_p = 20 ms	$\Delta\lambda$	40	nm
Abstrahlwinkel Half angle SFH 4501 SFH 4502 SFH 4503	φ	 ± 7 ± 18 ± 4	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

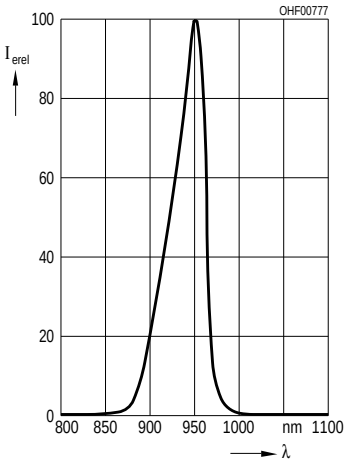
Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei I_F = 100 mA, t_p = 20 ms, R_L = 50 Ω 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, I_F = 100 mA Temperature coefficient of I_e or Φ_e, I_F = 100 mA	TC_I	– 0.44	%/K
Temperaturkoeffizient von V_F, I_F = 100 mA Temperature coefficient of V_F, I_F = 100 mA	TC_V	– 1.5	mV/K
Temperaturkoeffizient von λ, I_F = 100 mA Temperature coefficient of λ, I_F = 100 mA	TC_λ	+ 0.2	nm/K

Strahlstärke I_e in Achsrichtung
gemessen bei einem Raumwinkel Ω = 0.01 sr (SFH 4503 Ω = 0.001 sr)
Radiant Intensity I_e in Axial Direction
at a solid angle of Ω = 0.01 sr (SFH 4503 Ω = 0.001 sr)

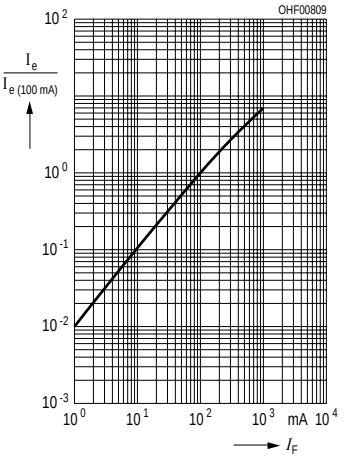
Bezeichnung Description	Symbol	Werte Values			Einheit Unit
		SFH 4501	SFH 4502	SFH 4503	
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms	$I_{e\ min}$ $I_{e\ typ}$	63 110	25 60	63 250	mW/sr
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\ typ}$	690	390	1500	mW/sr

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

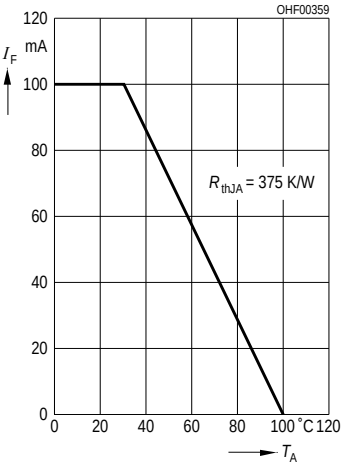


Radiant Intensity $\frac{I_e}{I_e\ 100\ mA} = f(I_F)$

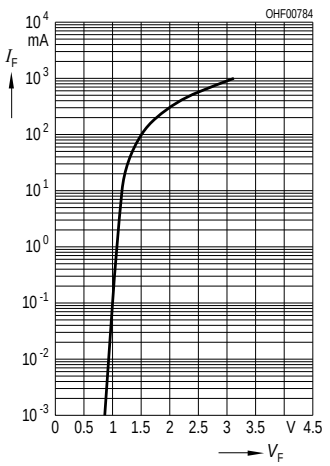
Single pulse, t_p = 20 µs



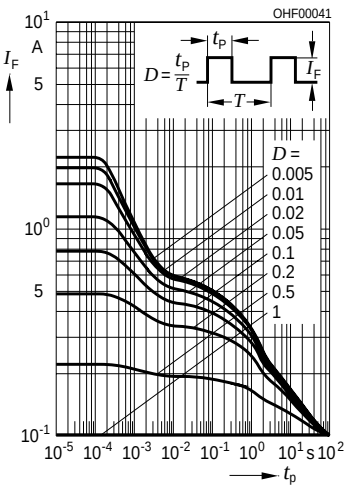
Max. Permissible Forward Current
$I_F = f(T_A)$



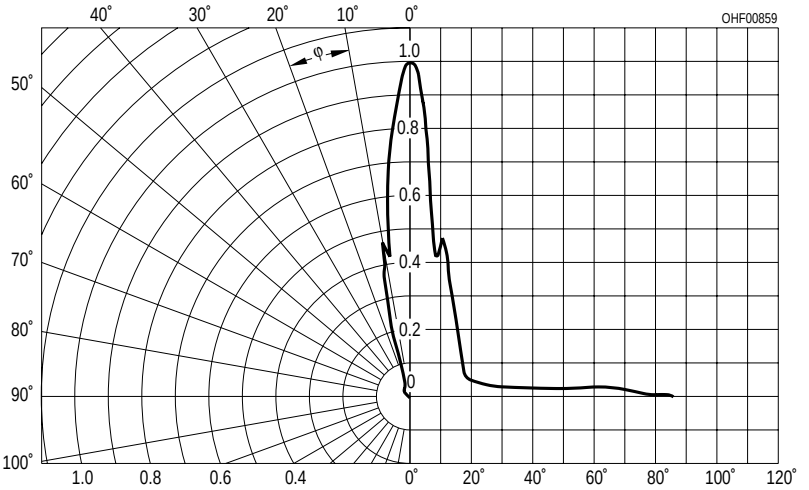
Forward Current $I_F = f(V_F)$
single pulse, t_p = 20 µs



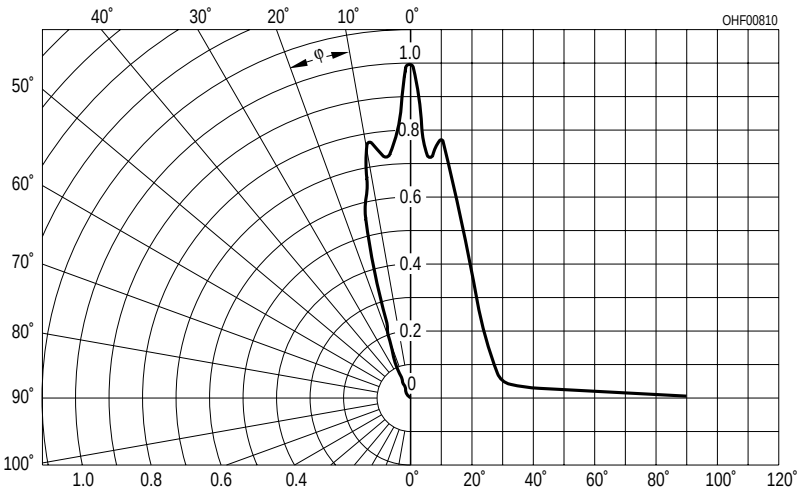
Permissible Pulse Handling Capability $I_F = f(\tau)$, T_A = 25 °C, duty cycle D = parameter



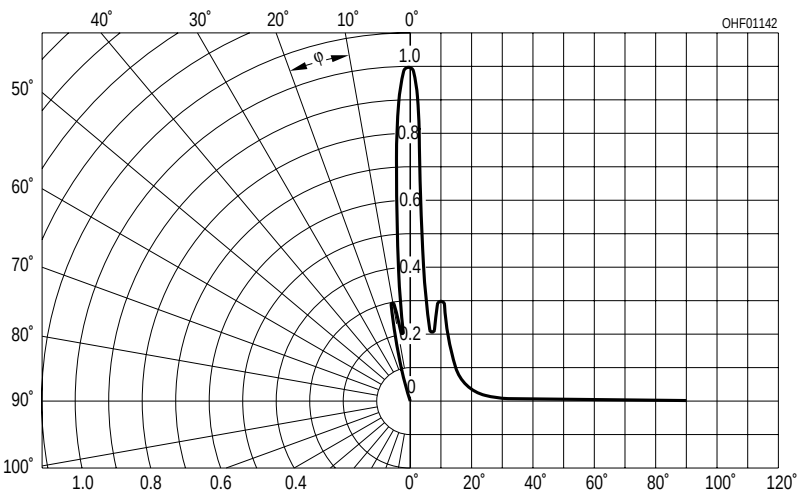
Radiation Characteristics $I_{rel} = f(\varphi)$
SFH 4501



Radiation Characteristics $I_{rel} = f(\varphi)$
SFH 4502

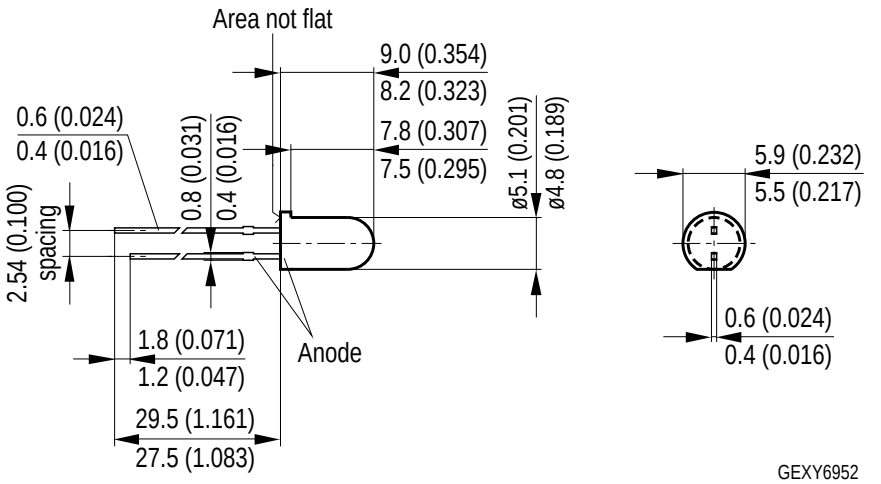


Radiation Characteristics $I_{rel} = f(\varphi)$
SFH 4503

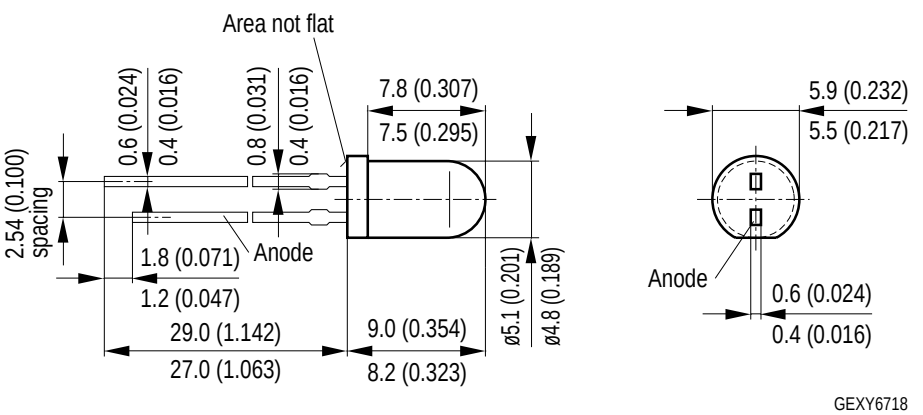


Maßzeichnung
Package Outlines

SFH 4501

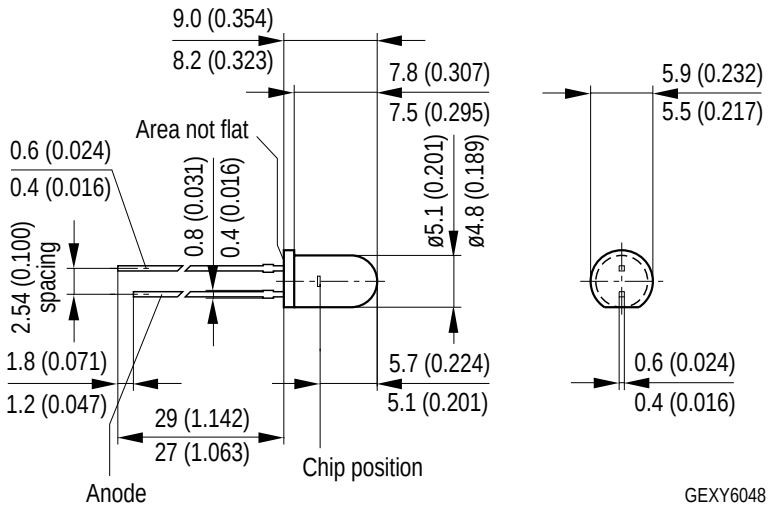


SFH 4502



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

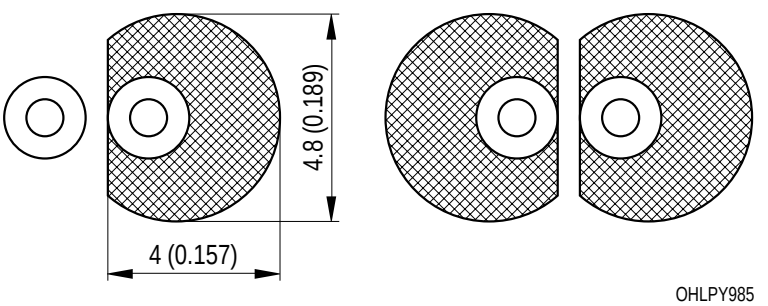
SFH 4503



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

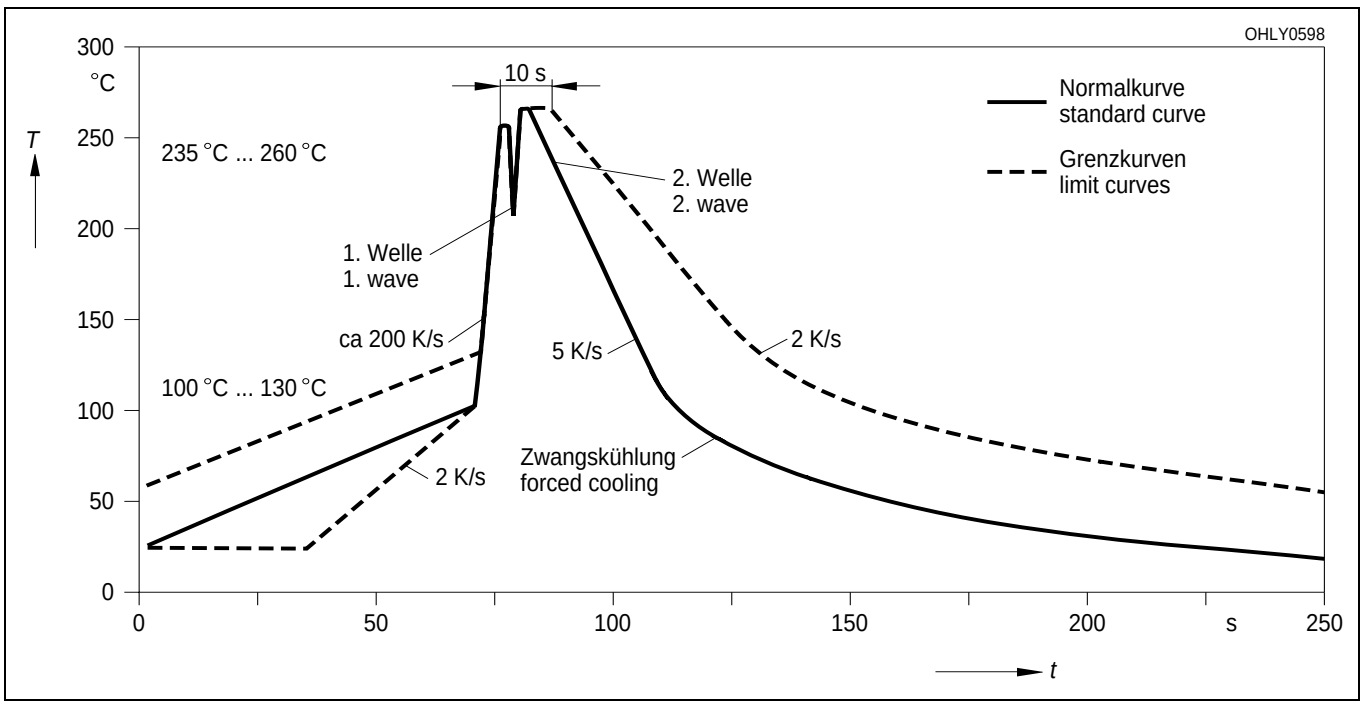
Empfohlenes Lötpaddesign[)]
Recommended Solder Pad

Wellenlöten (TTW)
TTW Soldering



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

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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.