

SIEMENS

GaAs-IR-Lumineszenzdioden (950 nm)
GaAs Infrared Emitters (950 nm)

SFH 4510
SFH 4515

The image contains technical drawings and photographs for two infrared LED models: SFH 4510 and SFH 4515.

SFH 4510: The top-left drawing shows a side view of the chip with dimensions: 7.5, 5.5, 2.7, 2.3, 3.7, 3.3, 14.7, 13.1, 4.5, 3.9, R 2.05, R 1.95, and a tolerance of -0.1...0.1. The top-right drawing shows a top view with dimensions: 4.8, 4.4, 2.7, 2.4, (3.2), (R 2.8), (3.2), 6.0, 5.4, and a tolerance of -0.15...0.15. The bottom-left drawing shows a side view of the package with a 2.54 mm spacing and dimensions: 4.5, 3.9, 7.7, 7.1. The bottom-right drawing shows a top view of the package with dimensions: 4.8, 4.4, 2.7, 2.4, (3.2), (R 2.8), (3.2), 6.0, 5.4, and a tolerance of -0.15...0.15. A photograph of the SFH 4510 LED is shown to the right of the top-right drawing. The part number GEO06968 is located below the top-right drawing.

SFH 4515: The middle-left drawing shows a side view of the chip with dimensions: 8.0, 7.4, 15.5, 14.7, 4.5, 3.9, R 2.05, R 1.95. The middle-right drawing shows a top view of the chip with dimensions: 4.8, 4.4, 2.7, 2.4, (3.2), (R 2.8), (3.2), 6.0, 5.4, and a tolerance of -0.15...0.15. The bottom-left drawing shows a side view of the package with a 2.54 mm spacing and dimensions: 4.5, 3.9, 7.7, 7.1. The bottom-right drawing shows a top view of the package with dimensions: 4.8, 4.4, 2.7, 2.4, (3.2), (R 2.8), (3.2), 6.0, 5.4, and a tolerance of -0.15...0.15. A photograph of the SFH 4515 LED is shown to the right of the middle-right drawing. The part number GEO06969 is located below the middle-right drawing.

Maße in mm, wenn nicht anders angegeben/Dimensions in mm, unless otherwise specified.

Wesentliche Merkmale

- Hergestellt im Schmelzepitaxieverfahren
- Für Oberflächenmontage geeignet
- Gegurtet lieferbar
- Gehäusegleich mit Fotodiode SFH 2500/ SFH 2505 und Fototransistor SFH 3500/ SFH 3505
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger

Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb

Features

- Fabricated in a liquid phase epitaxy process
- Suitable for surface mounting (SMT)
- Available on tape and reel
- Same package as photodiode SFH 2500/ SFH 2505 and phototransistor SFH 3500/ SFH 3505
- High reliability
- Spectral match with silicon photodetectors

Applications

- IR remote control of hi-fi and TV-sets, video tape recorders, dimmers
- Remote control for steady and varying intensity

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 4510	Q62702-P1798	5-mm-LED-Gehäuse (T 1 ³ / ₄), schwarzes Epoxy-Gießharz, Anschlüsse (SFH 4510 gebogen, SFH 4515 gerade) im 2.54-mm-Raster (1/10"), Kathodenkennzeichnung: siehe Maßzeichnung. 5 mm LED package (T 1 ³ / ₄), black-colored epoxy resin, solder tabs (SFH 4510 bent, SFH 4515 straight) lead spacing 2.54 mm (1/10"), cathode marking: see package outline.
SFH 4515	Q62702-P1821	

Grenzwerte ($T_A = 25\text{ °C}$)
Maximum Ratings

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 85	°C
Sperrschichttemperatur Junction temperature	T_j	85	°C
Sperrspannung Reverse voltage	V_R	5	V
Durchlaßstrom Forward current	I_F (DC)	100	mA
Stoßstrom, $t_p = 10\text{ }\mu\text{s}$, $D = 0$ Surge current	I_{FSM}	3	A
Verlustleistung Power dissipation	P_{tot}	150	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je 20 mm ² Thermal resistance junction - ambient mounted on PC-board (FR4), padsize 20 mm ² each	R_{thJA}	300	K/W

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\text{ mA}$	λ_{peak}	950	nm
Spektrale Bandbreite bei 50 % von I_{max} Spectral bandwidth at 50 % of I_{max} $I_F = 100\text{ mA}$	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle	φ	± 14	Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm^2
Abmessungen der aktive 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 %, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10 % to 90 % and from 90 % to 10 %, $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$	t_r , t_f	0.5	μs
Kapazität Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	C_o	25	pF
Durchlaßspannung Forward voltage $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$	V_F V_F	1.30 (≤ 1.5) 2.30 (≤ 2.8)	V V
Sperrstrom Reverse current $V_R = 5\text{ V}$	I_R	0.01 (≤ 1)	μA
Gesamtstrahlungsfluß Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	Φ_e	22	mW

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 100\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 100\text{ mA}$	TC_I	- 0.5	%/K
Temperaturkoeffizient von V_F , $I_F = 100\text{ mA}$ Temperature coefficient of V_F , $I_F = 100\text{ mA}$	TC_V	- 2	mV/K
Temperaturkoeffizient von λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$	TC_λ	0.3	nm/K

Strahlstärke I_e in Achsrichtung

gemessen bei einem Raumwinkel $\Omega = 0.001\text{ sr}$

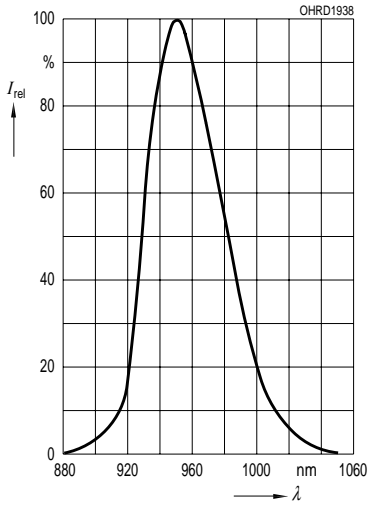
Grouping of radiant intensity I_e in axial direction

at a solid angle of $\Omega = 0.001\text{ sr}$

Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Strahlstärke Radiant intensity $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	$I_{e\text{ typ}}$ $I_{e\text{ min}}$	50 ≥ 25	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	$I_{e\text{ typ}}$	450	mW/sr

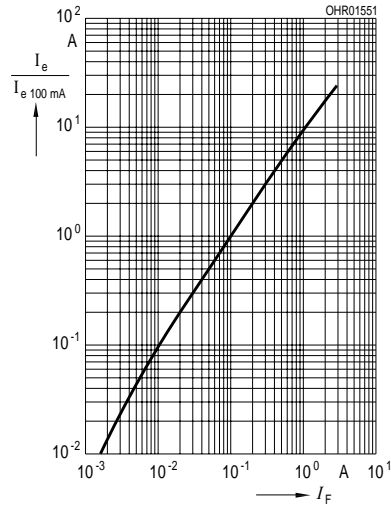
Relative spectral emission

$$I_{rel} = f(\lambda)$$



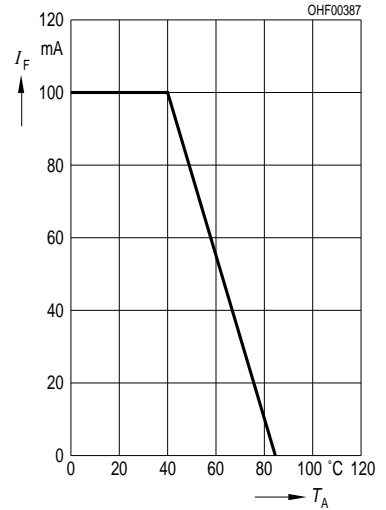
Radiant intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

Single pulse, $t_p = 20 \mu\text{s}$



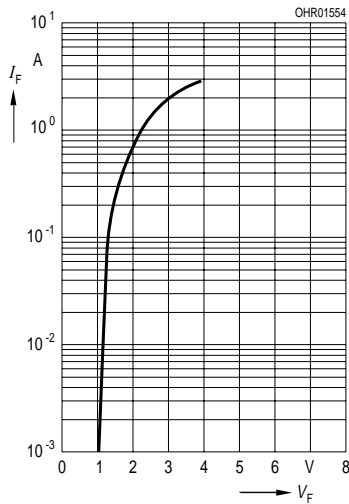
Max. permissible forward current

$$I_F = f(T_A)$$



Forward current

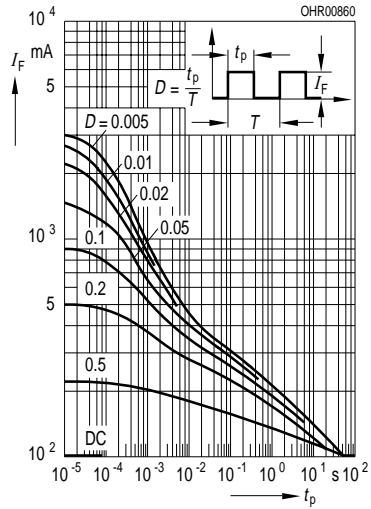
$$I_F = f(V_F), \text{ single pulse, } t_p = 20 \mu\text{s}$$



Permissible pulse handling capability

$$I_F = f(\tau), T_A = 25^\circ\text{C},$$

duty cycle $D = \text{parameter}$



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

