GaAs-IR-Lumineszenzdiode
GaAs Infrared Emitter

SFH 409

Wesentliche Merkmale

- GaAs-LED mit sehr hohem Wirkungsgrad
- Hohe Zuverlässigkeit
- Hohe Impulsbelastbarkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Gehäusegleich mit SFH 309, SFH 487

Anwendungen

- IR-Fernsteuerungen von Fernseh-, Rundfunk- und Videogeräten, Lichtdimmern
- Lichtschranken bis 500 kHz
- Münzzähler
- Sensorik
- Diskrete Optokoppler

Features

- Very highly efficient GaAs-LED
- High reliability
- High pulse handling capability
- Good spectral match to silicon photodetectors
- Same package as SFH 309, SFH 487

Applications

- IR remote control for hifi and TV sets, video tape recorders, dimmers
- Light-reflection switches (max. 500 kHz)
- Coin counters
- Sensor technology
- Discrete optocouplers

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 409	Q62702-P860	3-mm-LED-Gehäuse (T 1), grau eingefärbt, Anschlüsse im 2.54-mm-Raster ($^1/_{10}$''), Kathodenkennzeichnung: kürzerer Anschluß
SFH 409-2	Q62702-P1002	3 mm LED package (T 1), grey-colored epoxy resin, solder tabs lead spacing 2.54 mm ($^1/_{10}$''), cathode marking: short lead

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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	5	V
Durchlaßstrom Forward current	I_F	100	mA
Stoßstrom, $\tau \le 10\ \mu s$, $D = 0$ Surge current	I_{FSM}	3	A
Verlustleistung Power dissipation	P_{tot}	165	mW
Wärmewiderstand Thermal resistance	R_{thJA}	450	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 mA, t_p = 20 ms	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle	φ	± 20	Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm^2
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	0.3 × 0.3	mm
Abstand Chipoberfläche bis Linsenscheitel Distance chip surface to lens top	H	2.6	mm
Kapazität, V_R = 0 V Capacitance	C_o	25	pF

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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, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 100 mA, R_L = 50 Ω	t_r, t_f	0.5	µs
Durchlaßspannung, Forward voltage I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	V_F V_F	1.30 ($\leq$ 1.5) 1.9 ($\leq$ 2.5)	V V
Sperrstrom, Reverse current, V_R = 5 V	I_R	0.01 ($\leq$ 1)	µA
Gesamtstrahlungsfluß, Total radiant flux I_F = 100 mA, t_p = 20 ms	Φ_e	15	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	− 0.55	%/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_{peak}, I_F = 100 mA Temperature coefficient of λ_{peak}, I_F = 100 mA	TC_λ	+ 0.3	nm/K

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

| Bezeichnung Parameter	Symbol	Werte Values				Einheit Unit
		SFH 409	SFH 409-1[1]	SFH 409-2	SFH 409-3	
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	I_e $I_{e\ typ.}$	$\geq$ 6.3 –	6.3 … 12.5 75	> 10 120	16 … 32 –	mW/sr mW/sr

[1] Nur auf Anfrage lieferbar.

[1] Available only on request.

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

OHR01938
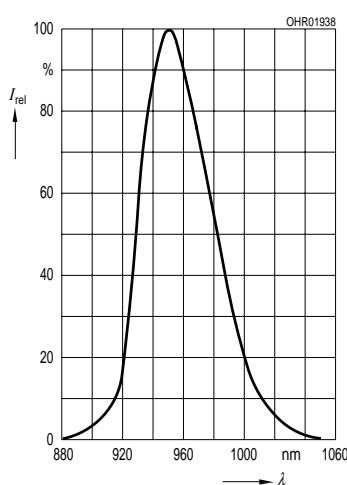
Radiant Intensity $\dfrac{I_e}{I_e\,100\ mA} = f(I_F)$

Single pulse, $t_p = 20\ \mu s$

OHR00864
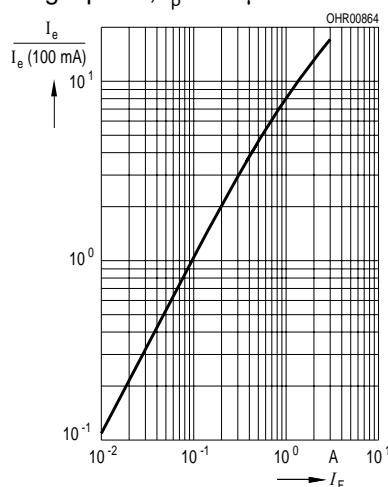
Max. Permissible Forward Current
$I_F = f(T_A)$

OHR00883

$R_{thjA} = 450\ K/W$
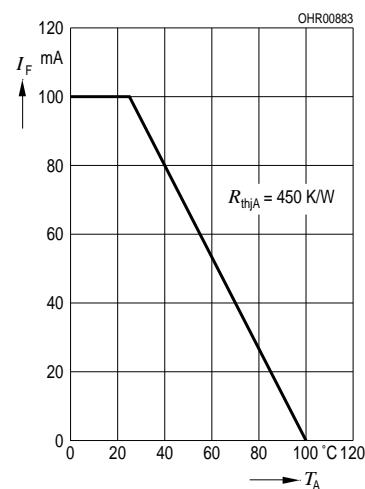
Forward Current
$I_F = f(V_F)$, Single pulse, $t_p = 20\ \mu s$

OHR01041

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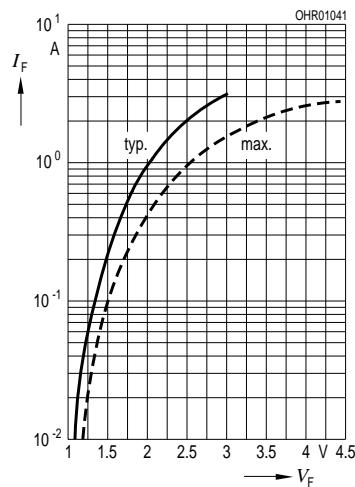
**Permissible Pulse Handling
Capability** $I_F = f(\tau)$, $T_A = 25\ °C$
duty cycle D = parameter

OHR00865

$D = \dfrac{\tau}{T}$

$D = 0.005$
0.01
0.02
0.05
0.1
0.2
0.5
DC
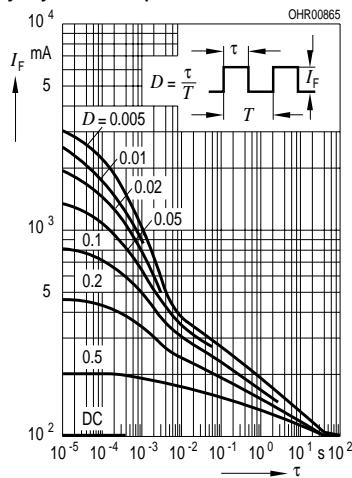
Radiation Characteristics $I_{rel} = f(\varphi)$

OHR01887

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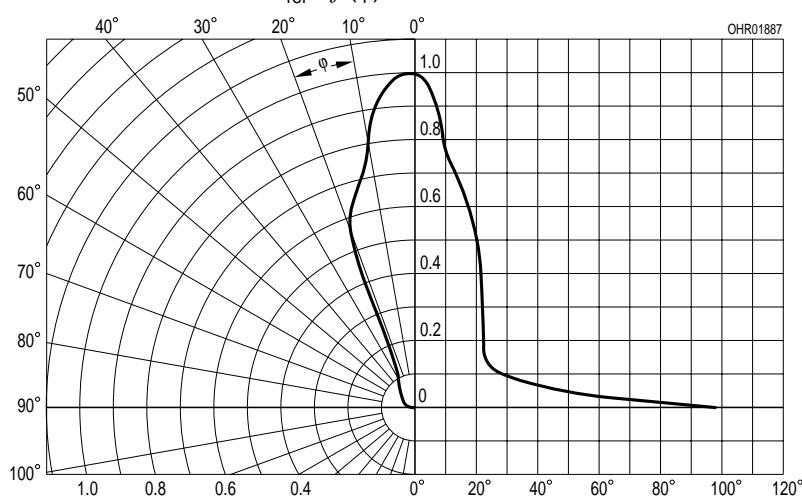
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Maßzeichnung
Package Outlines
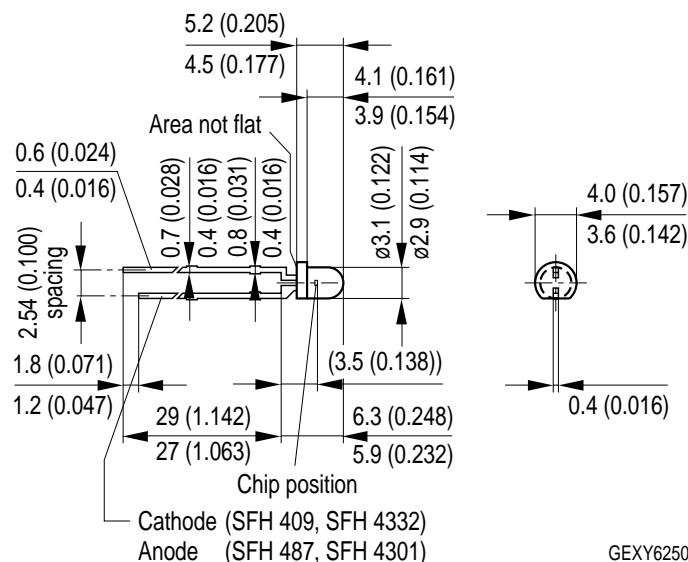
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Published by OSRAM Opto Semiconductors GmbH & Co. OHG
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2001-02-22
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