

GaAlAs-Lumineszenzdiode

GaAlAs Infrared Emitter

SFH 460



Wesentliche Merkmale

- Hergestellt im Schmelzepitaxieverfahren
- Kathode galvanisch mit dem Gehäuseboden verbunden
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Hermetisch dichtes Metallgehäuse
- Gehäusegleich mit SFH 216, SFH 400 und SFH 480

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- IR-Gerätefernsteuerungen
- Sensorik
- Lichtgitter

Features

- Fabricated in a liquid phase epitaxy process
- Cathode is electrically connected to the case
- High reliability
- Matches all Si-Photodetectors
- Hermetically sealed package
- Same package as SFH 216, SFH 400 and SFH 480

Applications

- Photointerrupters
- IR remote control of various equipment
- Sensor technology
- Light-grille barrier

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 460	Q62702-P478	18 A3 DIN 41876 (TO-18), Bodenplatte, Glaslinse, hermetisch dichtes Gehäuse, Anschlüsse im 2.54-mm-Raster ($1/10''$) 18 A3 DIN 41876 (TO -18), glass lens, hermetically sealed package, lead spacing 2.54 mm ($1/10''$)

Grenzwerte ($T_A = 25\text{ °C}$)**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	50	mA
Stoßstrom, $\tau = 10\ \mu\text{s}$, $D = 0$ Surge current	I_{FSM}	1	A
Verlustleistung Power dissipation	P_{tot}	120	mW
Wärmewiderstand Thermal resistance	R_{thJA} R_{thJC}	450 160	K/W K/W

Kennwerte ($T_A = 25\text{ °C}$)**Characteristics**

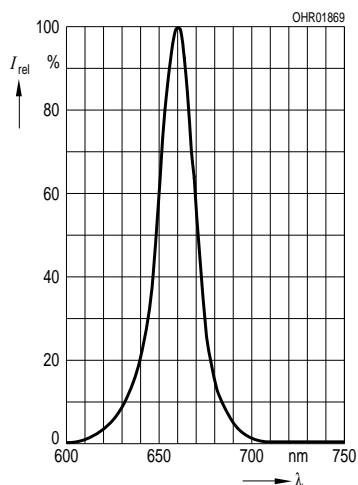
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 50\text{ mA}$, $t_p = 20\text{ ms}$	λ_{peak}	660	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 50\text{ mA}$	$\Delta\lambda$	25	nm
Abstrahlwinkel Half angle	φ	± 6	Grad deg.
Aktive Chipfläche Active chip area	A	0.106	mm ²
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.325×0.325	mm
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top	H	4.0 ... 4.8	mm
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 50\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 50\text{ mA}$, $R_L = 50\ \Omega$	t_r , t_f	100	ns

Kennwerte ($T_A = 25\text{ °C}$)
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Kapazität, Capacitance $V_R = 0\text{ V}, f = 1\text{ MHz}$	C_o	30	pF
Durchlaßspannung, Forward voltage $I_F = 50\text{ mA}, t_p = 20\text{ ms}$	V_F	2.1 (≤ 2.8)	V
Sperrstrom, Reverse current $V_R = 3\text{ V}$	I_R	0.01 (≤ 10)	μA
Gesamtstrahlungsfluß, Total radiant flux $I_F = 50\text{ mA}, t_p = 20\text{ ms}$	Φ_e	4	mW
Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 50\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 50\text{ mA}$	TC_I	- 0.4	%/K
Temperaturkoeffizient von V_F , $I_F = 50\text{ mA}$ Temperature coefficient of V_F , $I_F = 50\text{ mA}$	TC_V	- 3	mV/K
Temperaturkoeffizient von λ , $I_F = 50\text{ mA}$ Temperature coefficient of λ , $I_F = 50\text{ mA}$	TC_λ	+ 0.16	nm/K
Strahlstärke Radiant intensity $I_F = 50\text{ mA}, t_p = 20\text{ ms}$	$I_{e\text{ min}}$	16	mW/sr

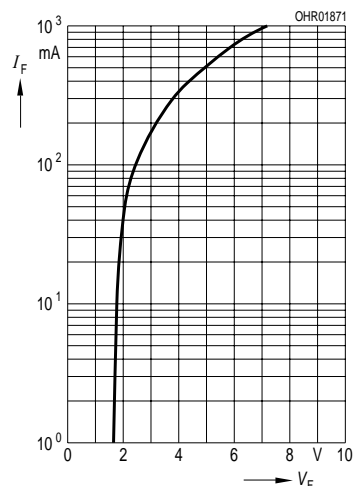
Relative Spectral Emission

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



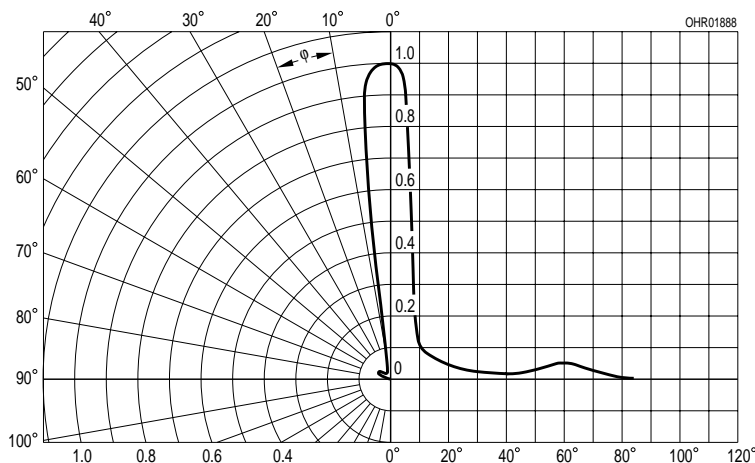
Forward Current

$I_F = f(V_F)$, single pulse, $\tau = 20 \mu s$



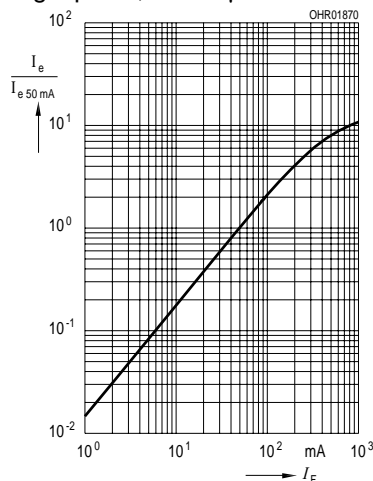
Directional Characteristics

$S_{rel} = f(\varphi)$



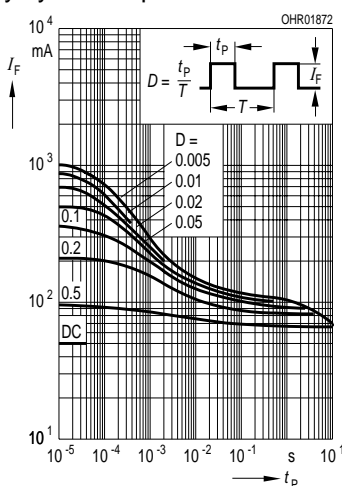
Radiant Intensity $\frac{I_e}{I_{e 50 \text{ mA}}} = f(I_F)$

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



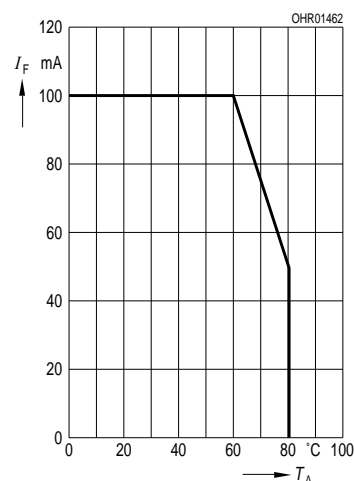
Permissible Pulse Handling Capability

$I_F = f(\tau)$, $T_C = 25 \text{ }^\circ\text{C}$, duty cycle $D = \text{parameter}$



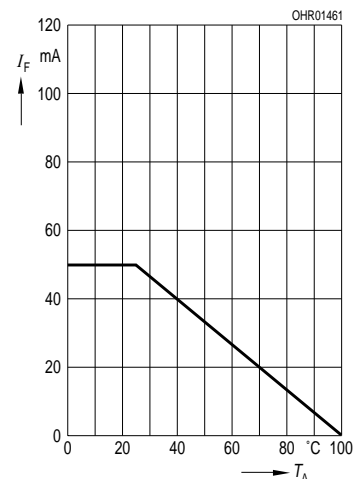
Max. Permissible Forward Current

$I_F = f(T_C)$, $R_{thJC} = 160 \text{ k/W}$ mounted on a heat sink

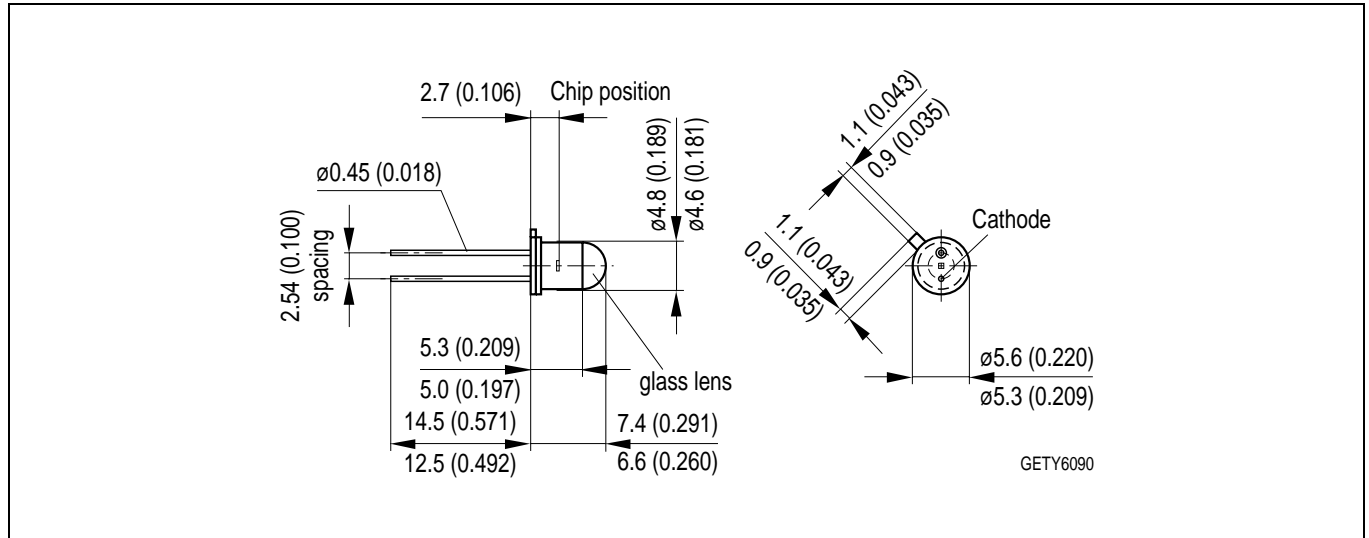


Max. Permissible Forward Current

$I_F = f(T_C)$, $R_{thJC} = 450 \text{ k/W}$



Maßzeichnung Package Outlines



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

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