

**GaAs-IR-Lumineszenzdiode**  
**GaAs Infrared Emitter**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 405**



**Wesentliche Merkmale**

- GaAs-IR-Lumineszenzdiode
- Hohe Zuverlässigkeit
- Gruppierbar
- Gehäusegleich mit SFH 305
- Miniatur-Gehäuse

**Features**

- GaAs infrared emitting diode
- High reliability
- Available in groups
- Same package as SFH 305
- Miniature package

**Anwendungen**

- Miniaturlichtschranken für Gleich- und Wechsellichtbetrieb
- Barcodeleser
- Industrieelektronik
- „Messen/Steuern/Regeln“
- Sensorik
- Drehzahlsteuerung

**Applications**

- Miniature photointerrupters
- Barcode readers
- Industrial electronics
- For control and drive circuits
- Sensor technology
- Speed controller

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 405	Q62702P0835	Miniatur-Leiterbandgehäuse, klares Epoxy-Gießharz, linsenförmig, Anschluß im 2.54-mm-Raster ( $\frac{1}{10}$ "), Kathodenkennzeichnung: abgeschrägte Anschlüsse Miniature lead frame, transparent epoxy resin, solder tabs lead spacing 2.54 mm ( $\frac{1}{10}$ "), cathode marking: bevelled leads

**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 ... + 80	°C
Sperrspannung Reverse voltage	$V_R$	5	V
Durchlassstrom Forward current	$I_F$	40	mA
Stoßstrom, $\tau \leq 10\ \mu\text{s}$ , $D = 0$ Surge current	$I_{FSM}$	1.6	A
Verlustleistung Power dissipation	$P_{tot}$	65	mW
Wärmewiderstand Thermal resistance	$R_{thJA}$ $R_{thJL}$	950 850	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 $I_F = 40\text{ mA}$ , $t_p = 20\text{ ms}$	$\lambda_{peak}$	950	nm
Spektrale Bandbreite bei 50% von $I_{max}$ Spectral bandwidth at 50% of $I_{max}$ $I_F = 50\text{ mA}$ , $t_p = 20\text{ ms}$	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 16$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.25	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	$0.5 \times 0.5$	mm
Abstand Chipoberfläche bis Linsenscheitel Distance chip surface to lens top	$H$	1.3 ... 1.9	mm
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 40\text{ mA}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 40\text{ mA}$ , $R_L = 50\ \Omega$	$t_r$ , $t_f$	1	$\mu\text{s}$

Kennwerte ( $T_A = 25\text{ °C}$ )

Characteristics (cont'd)

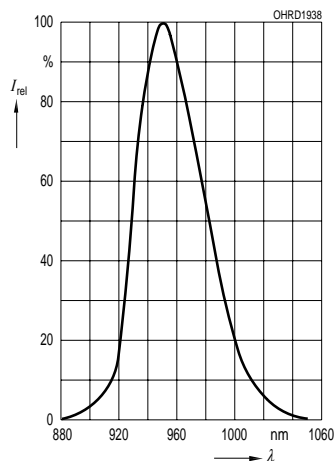
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Kapazität, Capacitance $V_R = 0\text{ V}, f = 1\text{ MHz}$	$C_o$	40	pF
Durchlassspannung Forward voltage $I_F = 40\text{ mA}$	$V_F$	1.25 ( $\leq 1.4$ )	V
Sperrstrom Reverse current $V_R = 5\text{ V}$	$I_R$	0.01 ( $\leq 1$ )	$\mu\text{A}$
Gesamtstrahlungsfluss Total radiant flux $I_F = 40\text{ mA}, t_p = 20\text{ ms}$	$\Phi_e$	7	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 40\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 40\text{ mA}$	$TC_I$	- 0.55	%/K
Temperaturkoeffizient von $V_F$ , $I_F = 40\text{ mA}$ Temperature coefficient of $V_F$ , $I_F = 40\text{ mA}$	$TC_V$	- 1.5	mV/K
Temperaturkoeffizient von $\lambda_{\text{peak}}$ , $I_F = 40\text{ mA}$ Temperature coefficient of $\lambda_{\text{peak}}$ , $I_F = 40\text{ mA}$	$TC_\lambda$	+ 0.3	nm/K

**Strahlstärke  $I_e$  in Achsrichtung**gemessen bei einem Raumwinkel  $\Omega = 0.01\text{ sr}$ **Radiant Intensity  $I_e$  in Axial Direction**at a solid angle of  $\Omega = 0.01\text{ sr}$ 

Bezeichnung Parameter	Symbol	Werte Values	Einheit Unit
Strahlstärke Radiant intensity $I_F = 40\text{ mA}, t_p = 20\text{ ms}$	$I_e$	2.5 ( $> 1.6$ )	mW/sr

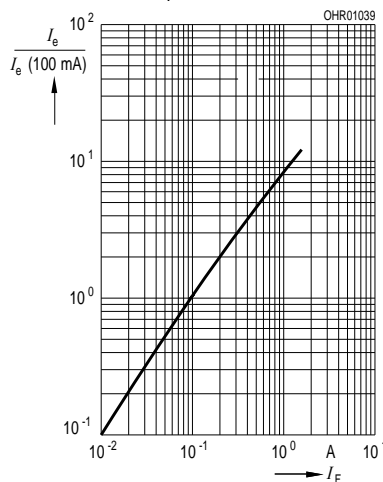
**Relative Spectral Emission**

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



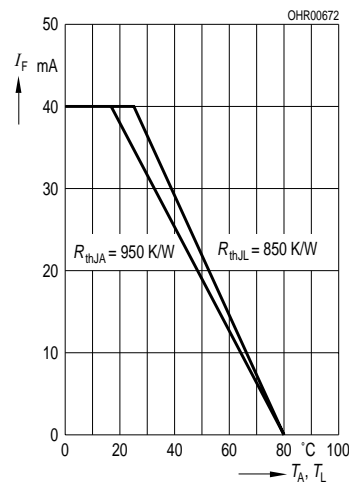
**Radiant Intensity**  $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



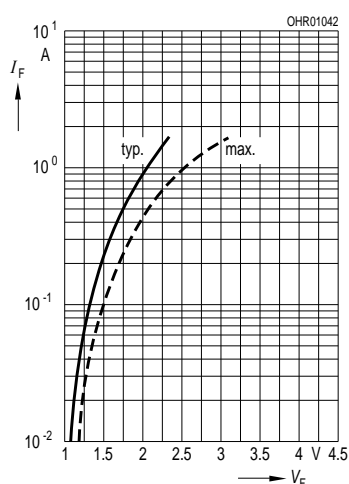
**Max. Permissible Forward Current**

$I_F = f(T_A)$



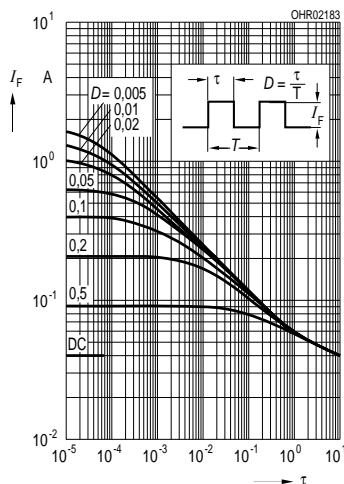
**Forward Current**

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



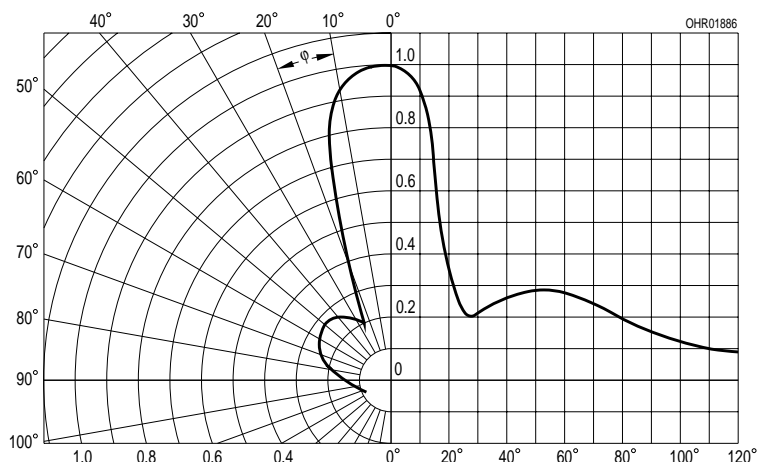
**Permissible Pulse Handling Capability**

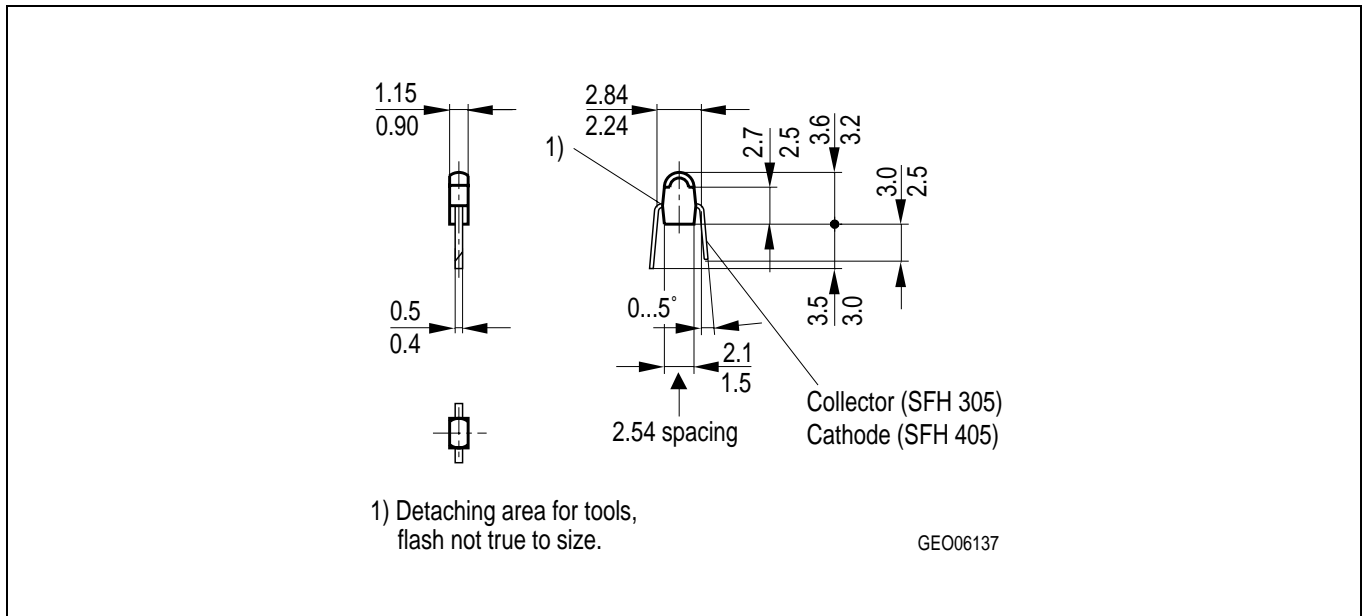
$I_F = f(\tau)$ ,  $T_A = 25^\circ\text{C}$ , duty cycle  $D = \text{parameter}$



**Radiation Characteristics**

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

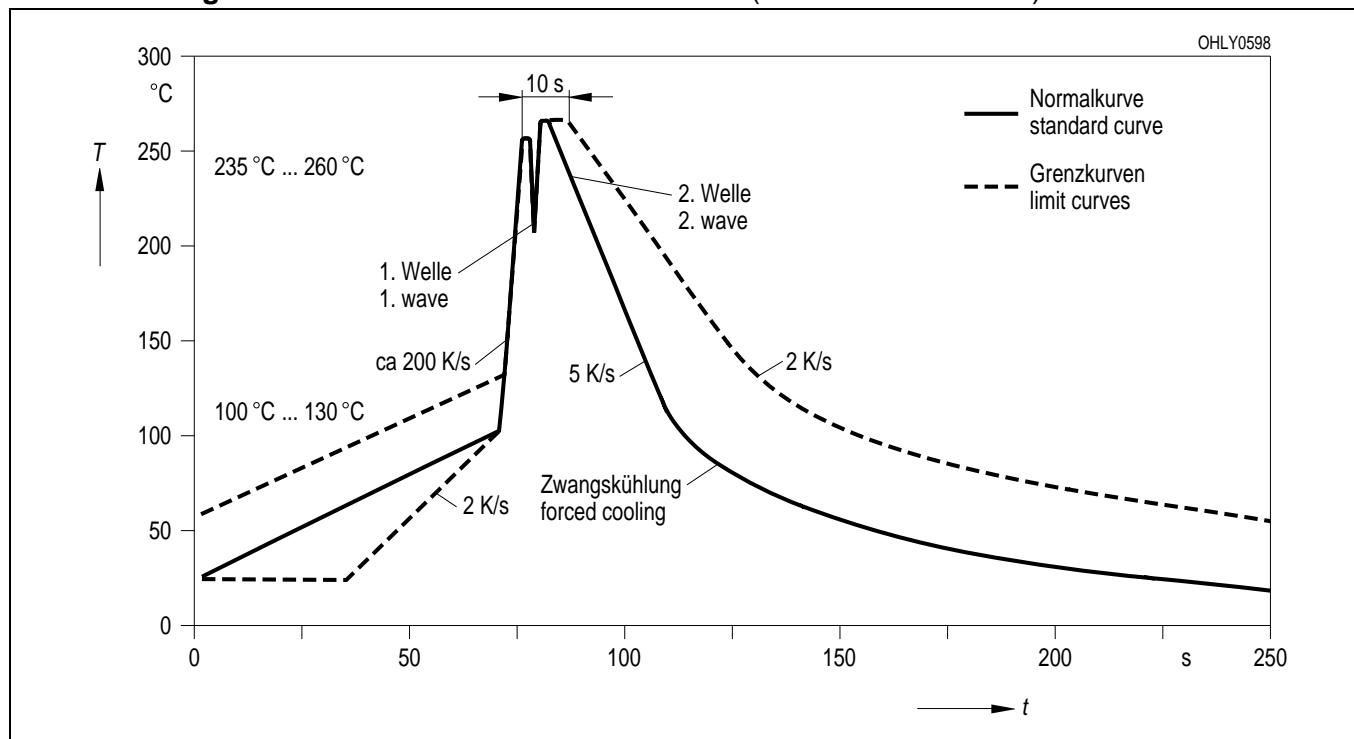


**Maßzeichnung  
Package Outlines**

Maße in mm (inch) / Dimensions in mm (inch).

**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten (TTW)**  
**TTW Soldering**

(nach CECC 00802)  
(acc. to CECC 00802)



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