

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

SFH 400
SFH 401



SFH 400



SFH 401

Wesentliche Merkmale

- Kathode galvanisch mit dem Gehäuseboden verbunden
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Hermetisch dichtes Metallgehäuse
- SFH 401: Gehäusegleich mit BPX 43, BPY 62

Features

- Cathode is electrically connected to the case
- High reliability
- Matches all Si-Photodetectors
- Hermetically sealed package
- SFH 401: Same package as BPX 43, BPY 62

Anwendungen

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

Applications

- Photointerrupters
- IR remote control
- Sensor technology
- Light curtains

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 400	Q62702P0096	18 A3 DIN 41876 (TO-18), Glaslinse, hermetisch dichtes Gehäuse, Anschlüsse im 2.54-mm-Raster ($1/10''$)
SFH 401	Q62702P0097	18 A3 DIN 41876 (TO-18) glass lens, hermetically sealed package, solder tabs lead spacing 2.54 mm ($1/10''$)

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range SFH 400	$T_{op}; T_{stg}$	- 40 ... + 125	°C
Betriebs- und Lagertemperatur Operating and storage temperature range SFH 401	$T_{op}; T_{stg}$	- 40 ... + 100	°C
Sperrspannung Reverse voltage	V_R	5	V
Durchlassstrom Forward current	I_F	300	mA
Stoßstrom, $t_p = 10\ \mu\text{s}$, $D = 0$ Surge current	I_{FSM}	3	A
Verlustleistung Power dissipation	P_{tot}	470	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 $I_F = 100\text{ mA}$, $t_p = 20\text{ms}$	λ_{peak}	950	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100\text{ mA}$, $t_p = 20\text{ms}$	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle SFH 400 SFH 401	φ φ	± 6 ± 15	Grad deg.
Aktive Chipfläche Active chip area	A	0.25	mm ²
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.5×0.5	mm ²

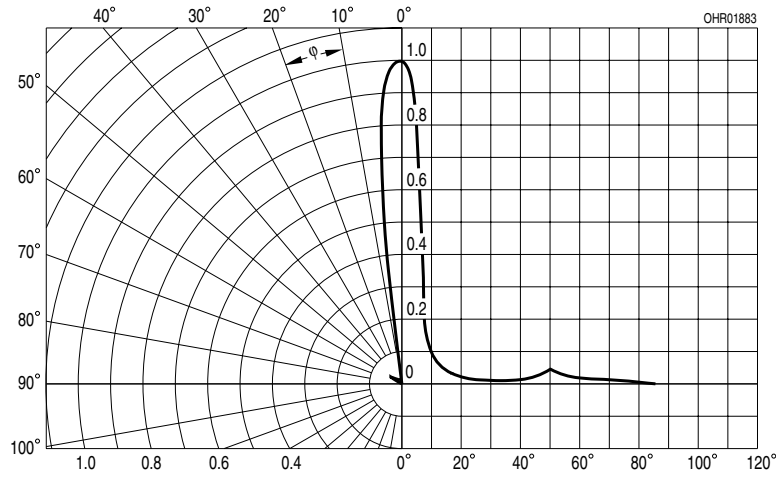
Kennwerte ($T_A = 25\text{ °C}$)
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top SFH 400 SFH 401	H H	4.0 ... 4.8 2.8 ... 3.7	mm 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	1	μs
Kapazität Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	C_o	40	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) 1.90 (≤ 2.5)	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	8	mW
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	- 0.55	%/K
Temperaturkoeffizient von V_F , $I_F = 100\text{ mA}$ Temperature coefficient of V_F , $I_F = 100\text{ mA}$	TC_V	- 1.5	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

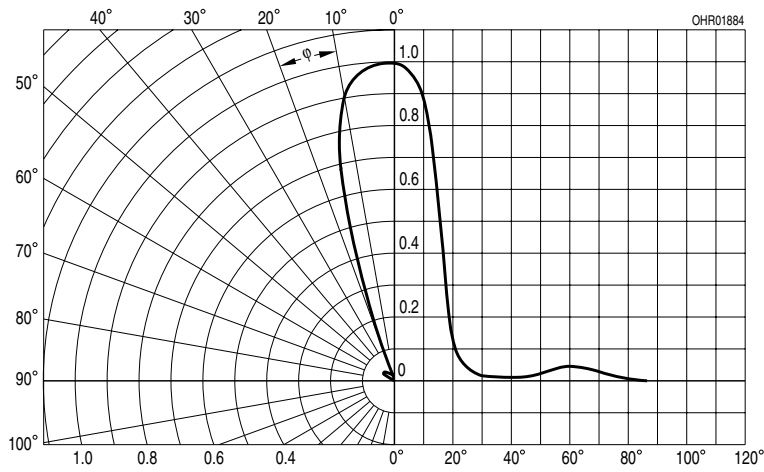
Gruppierung der Strahlstärke I_e in Achsrichtunggemessen bei einem Raumwinkel $\Omega = 0.01$ sr**Grouping of Radiant Intensity I_e in Axial Direction**at a solid angle of $\Omega = 0.01$ sr

Bezeichnung Parameter	Symbol Symbol	Wert Value				Einheit Unit
		SFH 400-2	SFH 400-3	SFH 401-2	SFH 401-3	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$	20	> 32	10	>16	mW/sr
	$I_{e \text{ max}}$	40	–	20	–	mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s	$I_{e \text{ typ.}}$	300	320	120	190	mW/sr

Radiation Characteristics, SFH 400, $I_{rel} = f(\varphi)$

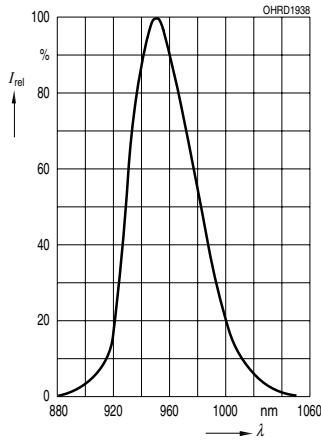


Radiation Characteristics, SFH 401, $I_{rel} = f(\varphi)$



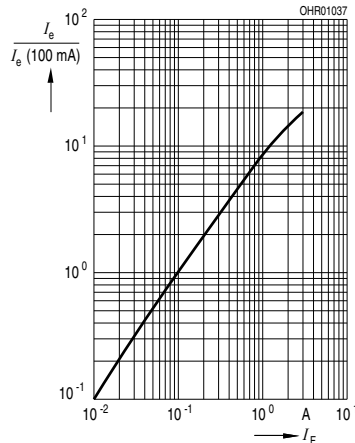
Relative Spectral Emission

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

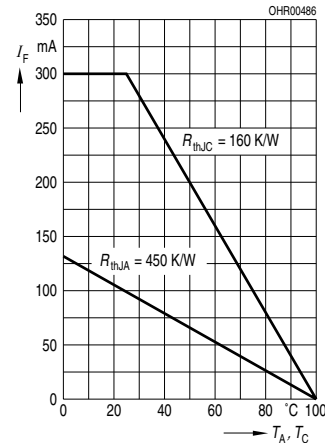


Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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

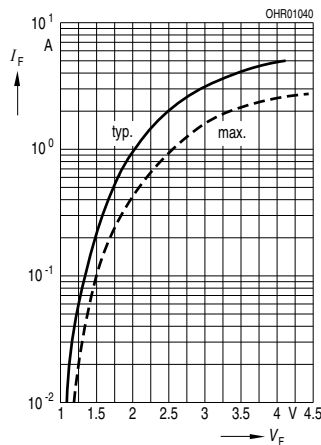


Max. Permissible Forward Current SFH 401, $I_F = f(T_A)$



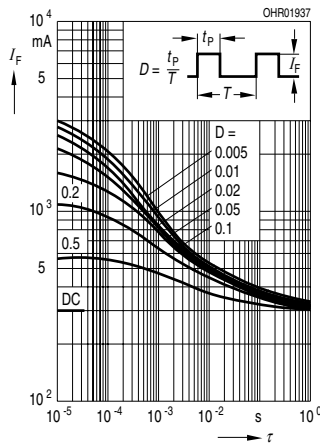
Forward Current

$I_F = f(V_F)$

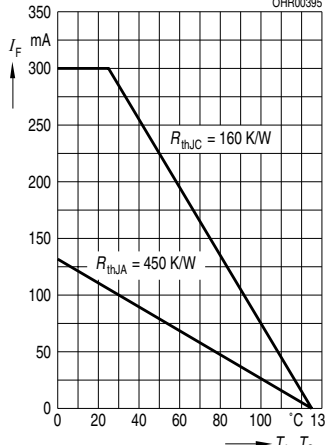


Permissible Pulse Handling Capability $I_F = f(\tau)$, $T_C = 25^\circ\text{C}$, $R_{thJC} = 160 \text{ K/W}$, duty cycle $D =$ parameter

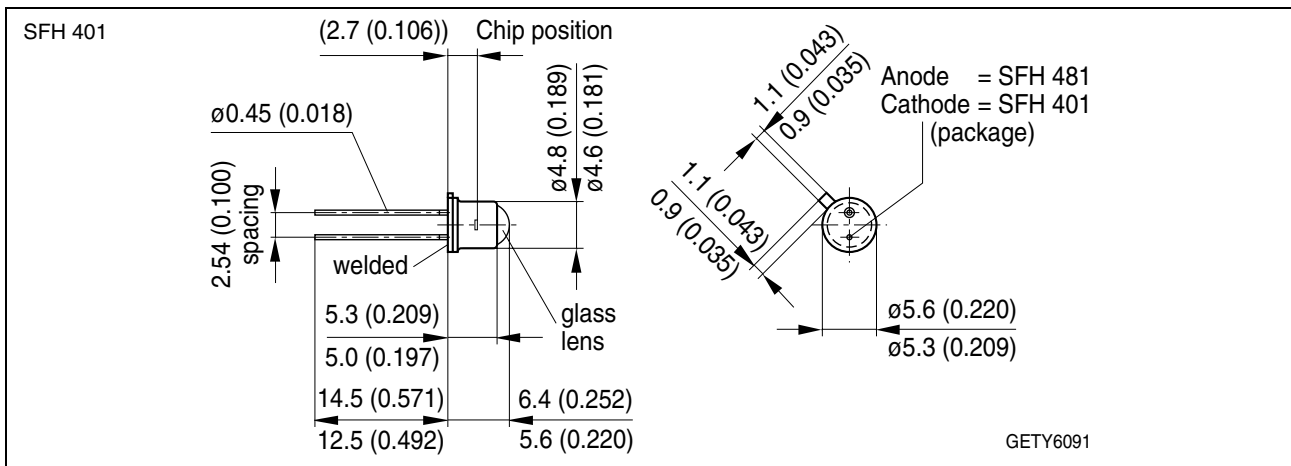
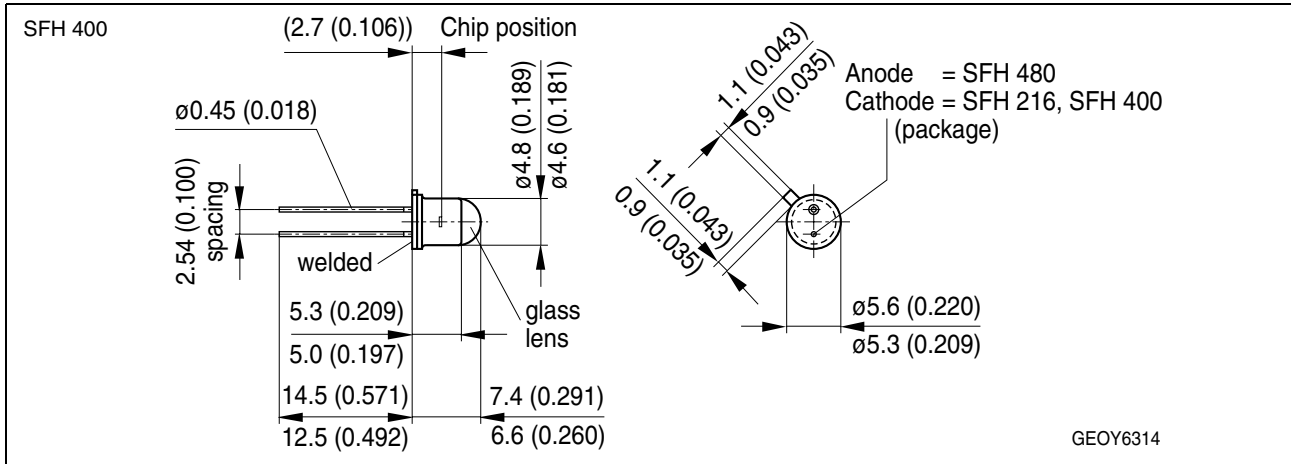
$D = \frac{t_p}{T}$



Max. Permissible Forward Current SFH 400, $I_F = f(T_A)$



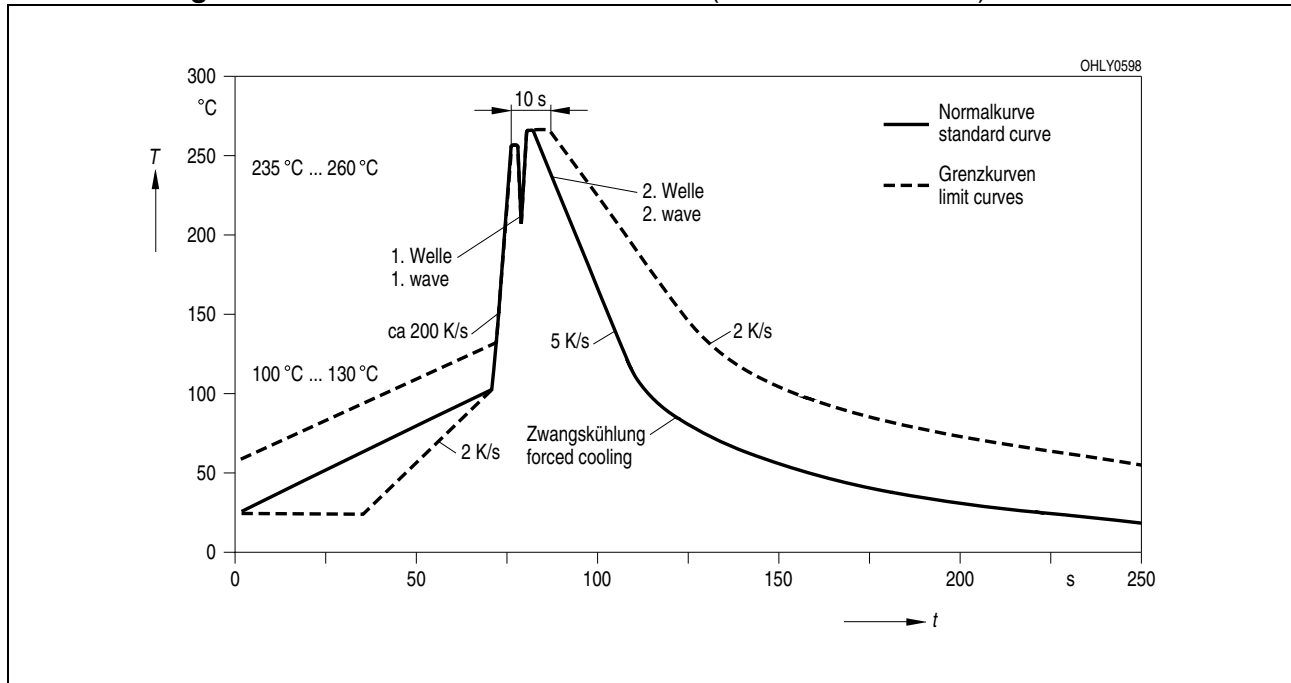
**Maßzeichnung
Package Outlines**



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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