

**IR-Lumineszenzdiode (950 nm) im TO-46-Gehäuse**  
**Infrared Emitter (950 nm) in TO-46 Package**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 4811**  
**SFH 4813**



SFH 4811



SFH 4813

**Wesentliche Merkmale**

- Hergestellt im Schmelzepitaxieverfahren
- Kathode galvanisch mit dem Gehäuseboden verbunden
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Hermetisch dichtes Metallgehäuse

**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

**Applications**

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

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 4811	Q62702P5300	TO-46-Metallgehäuse, Glaslinse, hermetisch dicht, Anschlüsse im 2.54-mm-Raster ( $1/10''$ ) TO-46-metal-package, glass lens, hermetically sealed, solder tabs lead spacing 2.54 mm ( $1/10''$ )
SFH 4813	Q62702P5301	

**Grenzwerte ( $T_C = 25\text{ °C}$ )****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	$V_R$	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 $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\lambda_{peak}$	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 4811 SFH 4813	$\varphi$ $\varphi$	$\pm 5$ $\pm 35$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.09	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	$0.3 \times 0.3$	mm <sup>2</sup>

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

## Characteristics

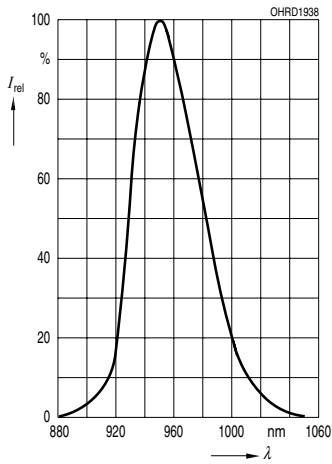
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top SFH 4811 SFH 4813	$H$ $H$	4.7 2.6	mm mm
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$	$t_r$ , $t_f$	0.5	$\mu\text{s}$
Kapazität Capacitance $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_o$	25	pF
Durchlaßspannung Forward voltage $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$ $I_F = 1.5\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$ $V_F$ $V_F$	1.30 ( $\leq 1.5$ ) 1.90 ( $\leq 2.5$ ) 2.30 ( $\leq 3.0$ )	V V V
Sperrstrom Reverse current $V_R = 5\text{ V}$	$I_R$	0.01 ( $\leq 1$ )	$\mu\text{A}$
Gesamtstrahlungsfluß Total radiant flux $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_e$	8	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 100\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 100\text{ mA}$	$TC_I$	- 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 $\lambda$ , $I_F = 100\text{ mA}$ Temperature coefficient of $\lambda$ , $I_F = 100\text{ mA}$	$TC_\lambda$	+ 0.3	nm/K

**Gruppierung der Strahlstärke  $I_e$  in Achsrichtung**gemessen 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 4811	SFH 4813	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min.}}$ $I_{e \text{ typ.}}$	25 40	2.5 4.5	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ $\mu$ s	$I_{e \text{ typ.}}$	250	30	mW/sr

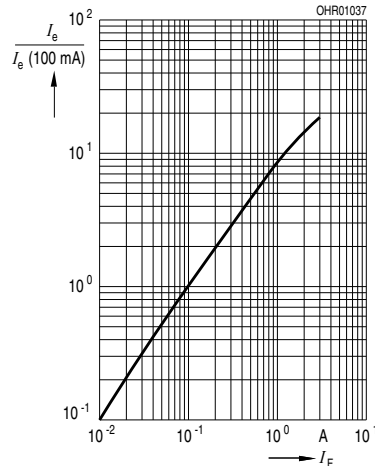
**Relative Spectral Emission**

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

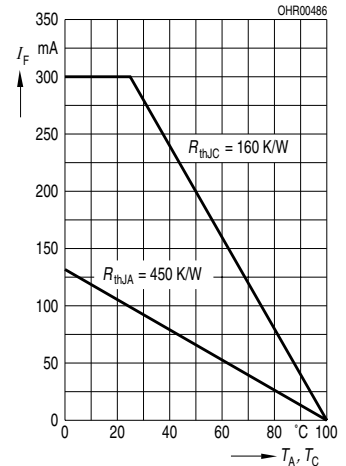


**Radiant Intensity  $I_e/I_e(100\text{ mA}) = f(I_F)$**

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

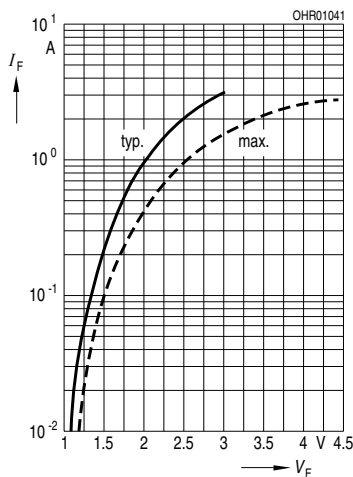


**Max. Permissible Forward Current  $I_F = f(T_A, T_C)$**



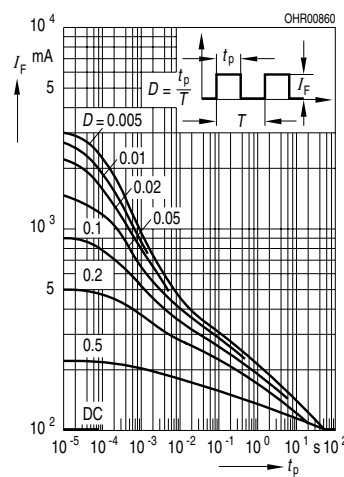
**Forward Current  $I_F = f(V_F)$**

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

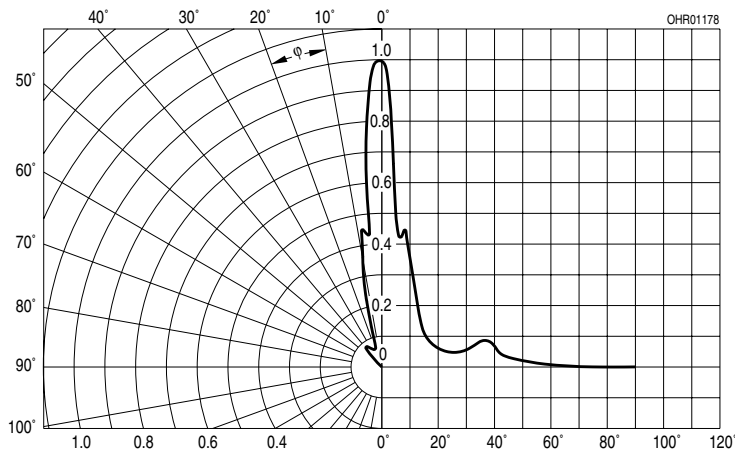


**Permissible Pulse Handling Capability  $I_F = f(\tau), T_C = 25\ ^\circ\text{C}$**

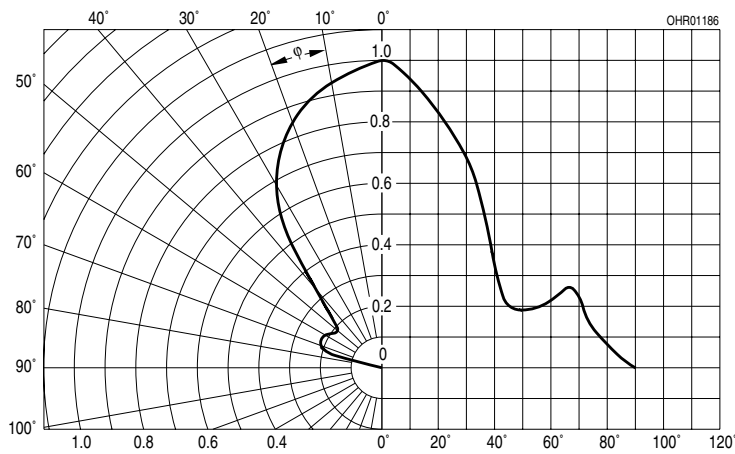
$R_{thJC} = 160\ \text{K/W}$ , duty cycle  $D = \text{parameter}$



**Radiation Characteristics, SFH 4811**  $I_{rel} = f(\varphi)$

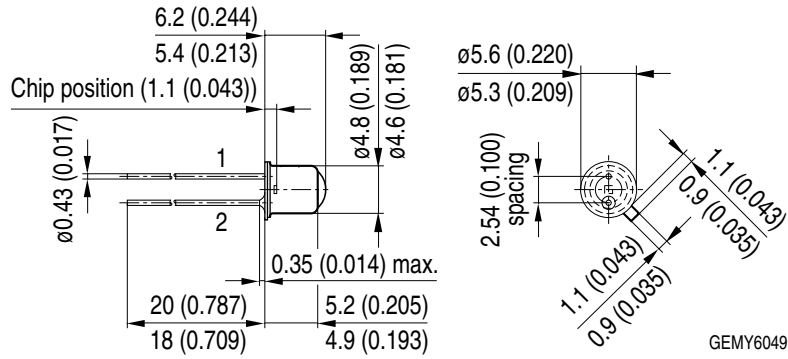


**Radiation Characteristics, SFH 4813**  $I_{rel} = f(\varphi)$

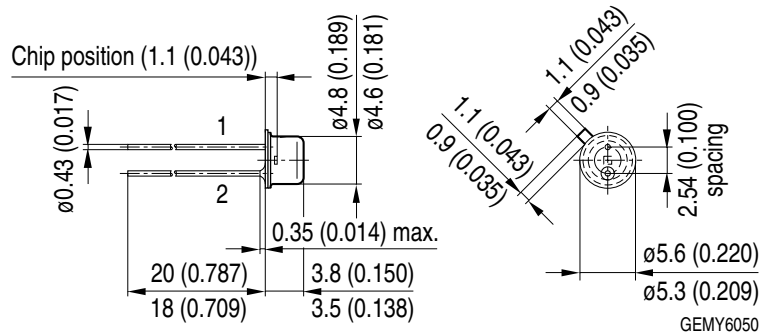


Maßzeichnung  
Package Outlines

SFH 4811



SFH 4813

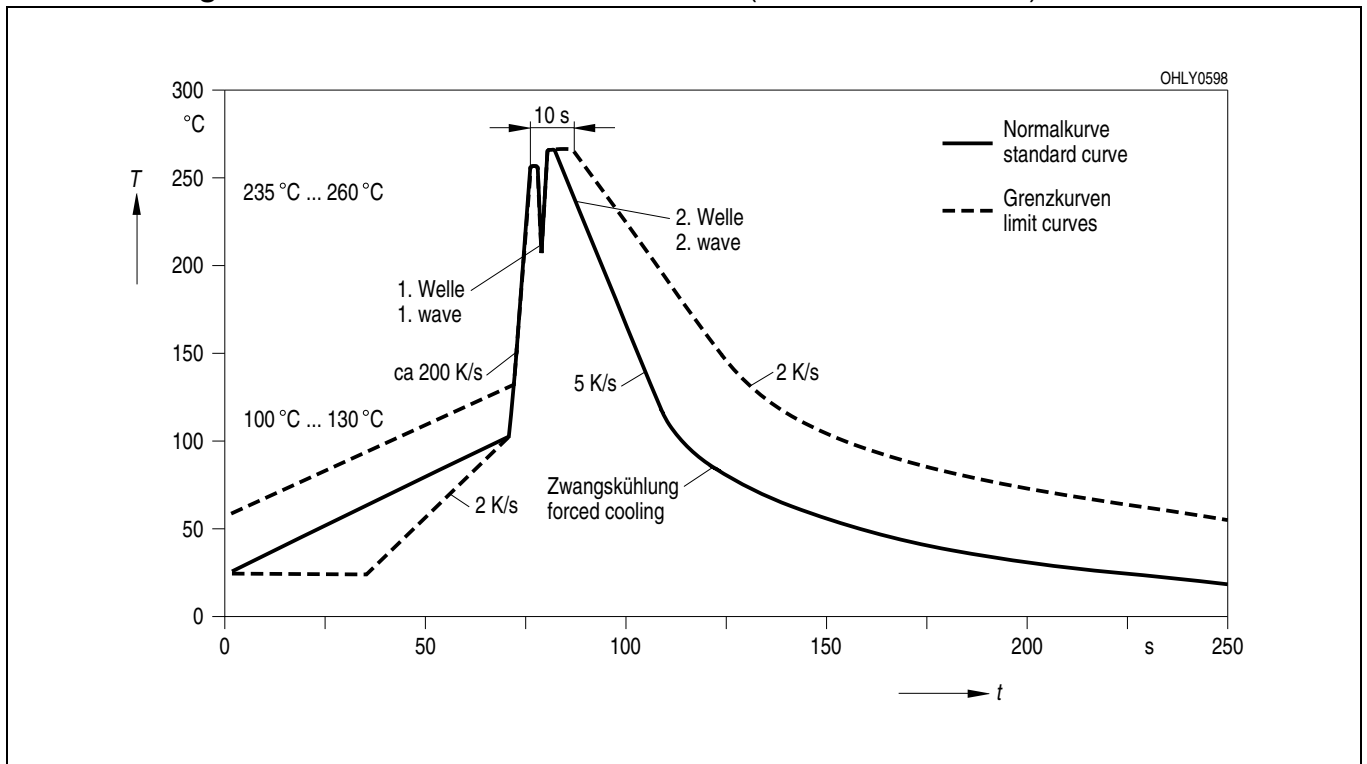


Maße in mm (inch) / Dimensions in mm (inch).

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

(nach CECC 00802)

(acc. to CECC 00802)



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