

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

**SFH 4110**



**Wesentliche Merkmale**

- Wellenlänge der Strahlung 950 nm
- Enger Abstrahlwinkel
- Hohe Strahlstärke
- Geringe Außenabmessungen
- Gehäusegleich mit Fototransistor SFH 3100 F
- Hoher Koppelfaktor in Lichtschranken in Verbindung mit SFH 3100 F
- Hohe Zuverlässigkeit

**Features**

- Peak wavelength of 950 nm
- Narrow half angle
- High radiant intensity
- Small outline dimensions
- Same package as phototransistor SFH 3100 F
- High coupling factor in light barriers with SFH 3100 F
- High reliability

**Anwendungen**

- Sender für Lichtschranken
- Bandende Erkennung (z.B. Videorecorder)
- Datenübertragung
- Positionsüberwachung
- Barcode-Leser
- „Messen/Steuern/Regeln“
- Münzzähler

**Applications**

- Emitter in photointerrupter
- Tape end detection (VCR e.g.)
- Data transmission
- Position sensing
- Barcode reader
- For control and drive circuits
- Coin counters

Typ Type	Bestellnummer Ordering Code	Strahlstärke <sup>1)</sup> ( $I_F = 20\text{mA}$ , $t_p = 20\text{ ms}$ ) Radiant intensity <sup>1)</sup> $I_e$ (mW/sr)
SFH 4110	Q62702P5072	$\geq 2.5$

<sup>1)</sup> gemessen bei einem Raumwinkel  $\Omega = 0.01\text{sr}$   
 measured at a solid angle of  $\Omega = 0.01\text{ sr}$

**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 ... + 85	°C
Sperrspannung Reverse voltage	$V_R$	5	V
Durchlaßstrom Forward current	$I_F$ (DC)	60	mA
Stoßstrom, $t_p = 10\text{ }\mu\text{s}$ , $D = 0$ Surge current	$I_{FSM}$	1	A
Verlustleistung Power dissipation	$P_{tot}$	100	mW
Wärmewiderstand Sperrschicht - Umgebung Thermal resistance junction - ambient	$R_{thJA}$	280	K/W

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission	$\lambda_{peak}$	950	nm
Spektrale Bandbreite bei 50% von $I_{max}$ Spectral bandwidth at 50% of $I_{max}$	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 9$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.0625	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	$0.25 \times 0.25$	mm <sup>2</sup>
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 20\text{ mA}$ , $R_L = 50\text{ }\Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 20\text{ mA}$ , $R_L = 50\text{ }\Omega$	$t_r, t_f$	450/360	ns
Kapazität, Capacitance $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_o$	16	pF

Kennwerte ( $T_A = 25\text{ °C}$ )

Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Durchlaßspannung, Forward voltage $I_F = 20\text{ mA}$ , $t_p = 20\text{ ms}$	$V_F$	1.2 ( $\leq 1.4$ )	V
Sperrstrom, Reverse current $V_R = 3\text{ V}$	$I_R$	0.01 ( $\leq 1.0$ )	$\mu\text{A}$
Gesamtstrahlungsfluß, Total radiant flux $I_F = 20\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_e$	2	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 20\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 20\text{ mA}$	$TC_I$	- 0.55	%/K
Temperaturkoeffizient von $V_F$ , $I_F = 20\text{ mA}$ Temperature coefficient of $V_F$ , $I_F = 20\text{ mA}$	$TC_V$	- 1.8	mV/K
Temperaturkoeffizient von $\lambda$ , $I_F = 20\text{ mA}$ Temperature coefficient of $\lambda$ , $I_F = 20\text{ mA}$	$TC_\lambda$	+ 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  $\Omega = 0.01\text{ sr}$ 

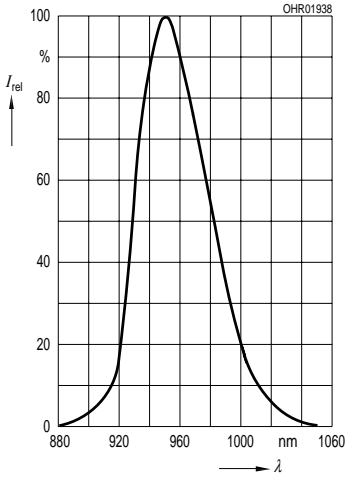
Bezeichnung Parameter	Symbol	Werte Values	Einheit Unit
Strahlstärke <sup>1)</sup> Radiant intensity <sup>1)</sup> $I_F = 20\text{ mA}$ , $t_p = 20\text{ ms}$	$I_{e\text{ min}}$	2.5	mW/sr

1) Sonderselektion auf Anfrage.

1) Special bin selection on request.

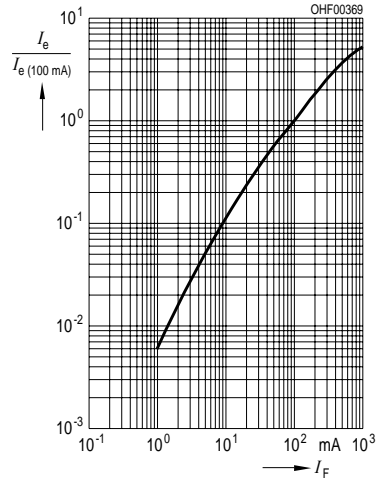
**Relative Spectral Emission**

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



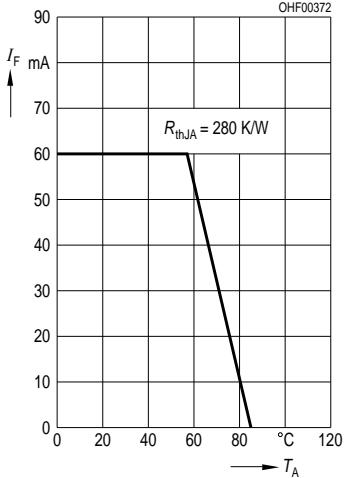
**Radiant Intensity**  $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



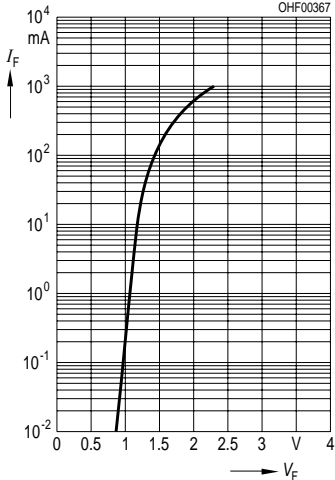
**Max. Permissible Forward Current**

$I_F = f(T_A)$



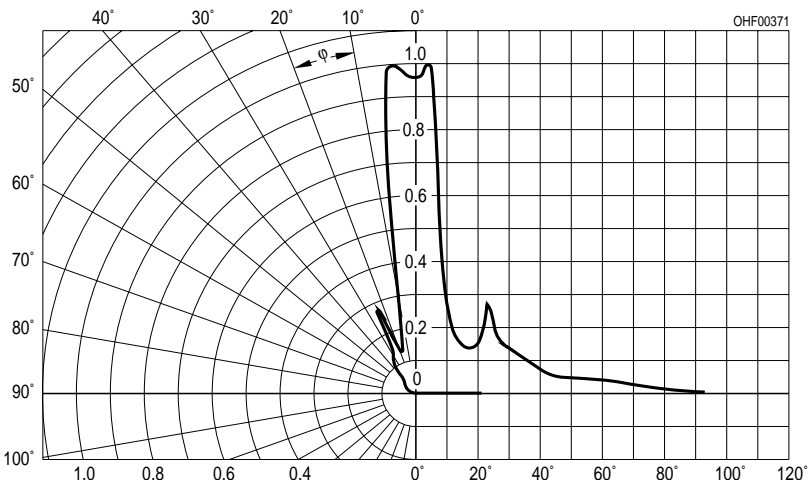
**Forward Current**

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



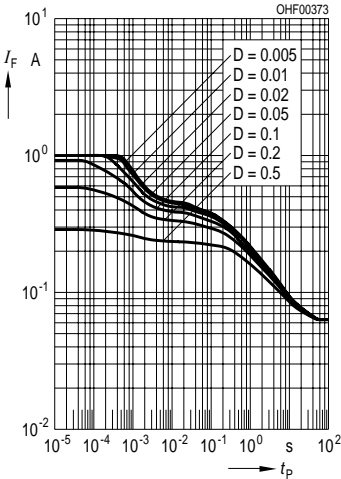
**Radiation Characteristics**

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

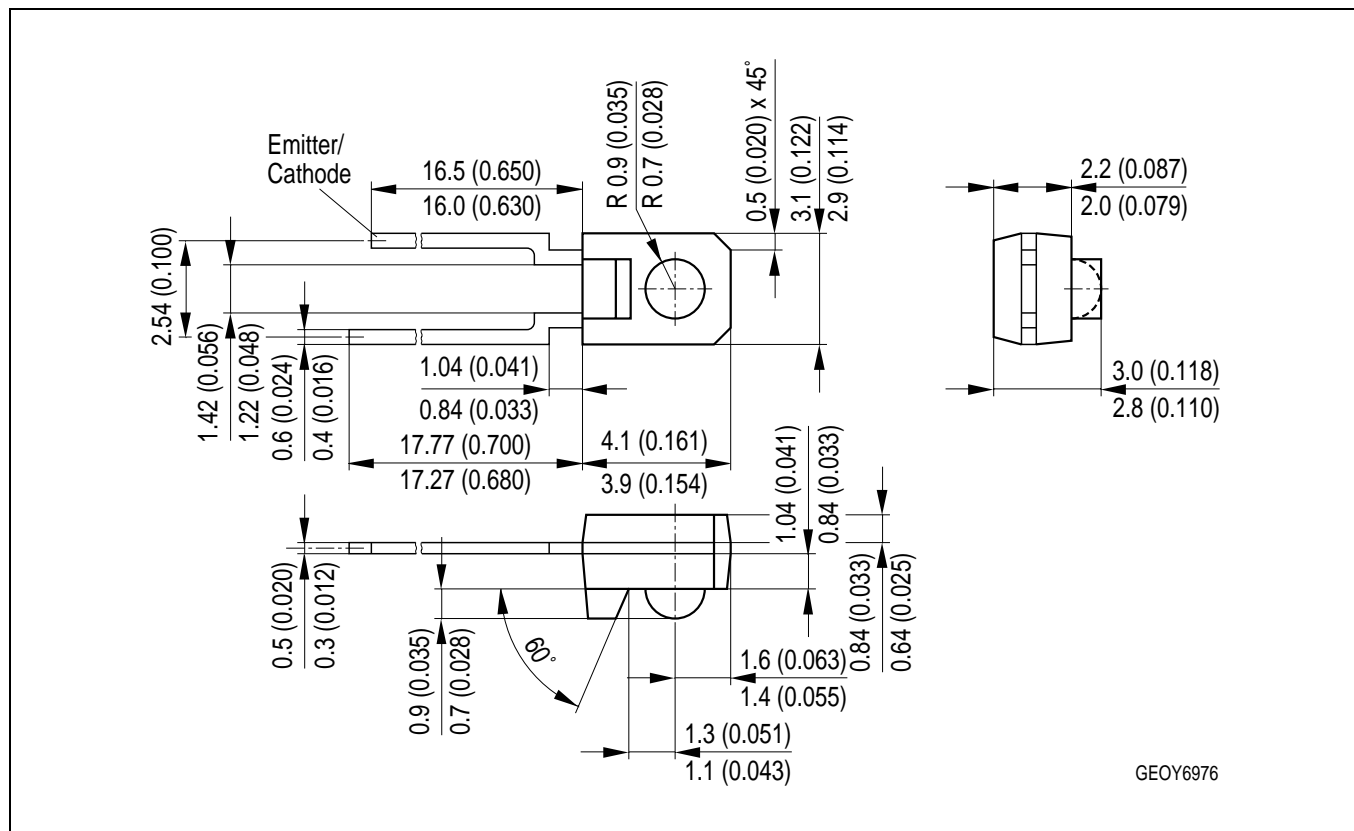


**Permissible Pulse Power**

Duty cycle  $D =$  parameter,  $T_A = 25 \text{ }^\circ\text{C}$



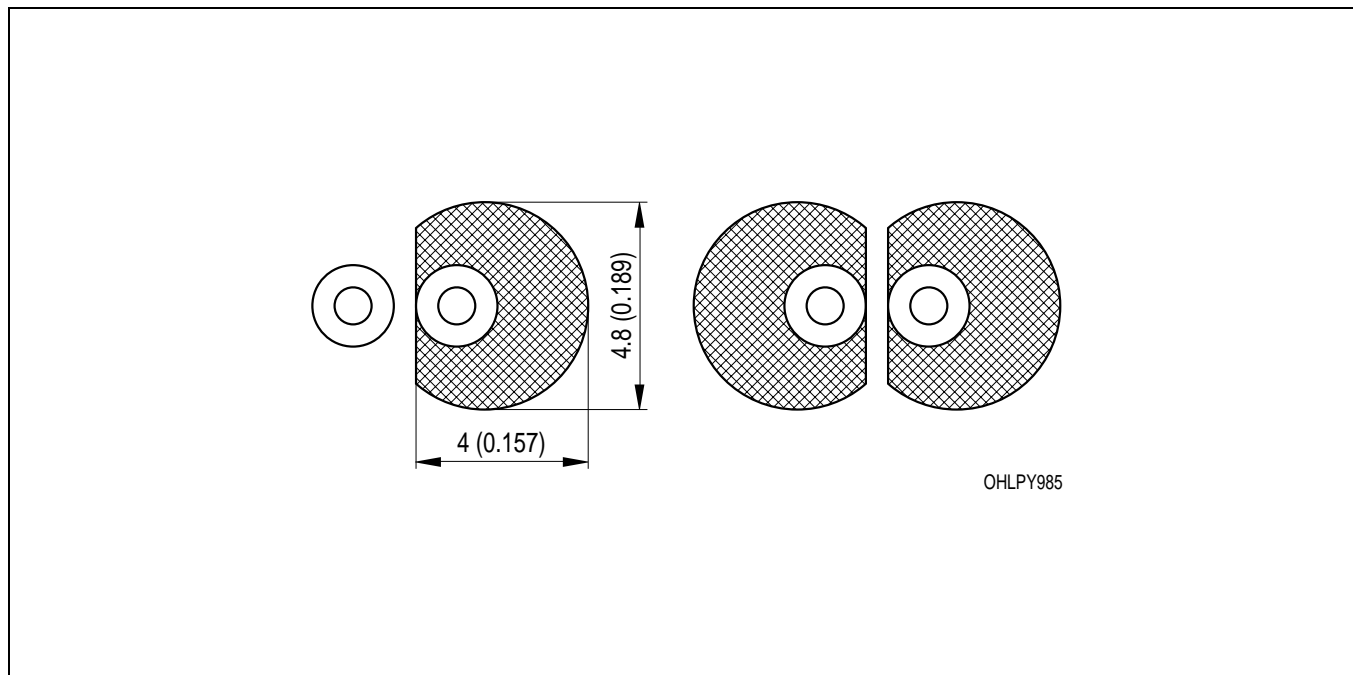
Maßzeichnung  
Package Outlines



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

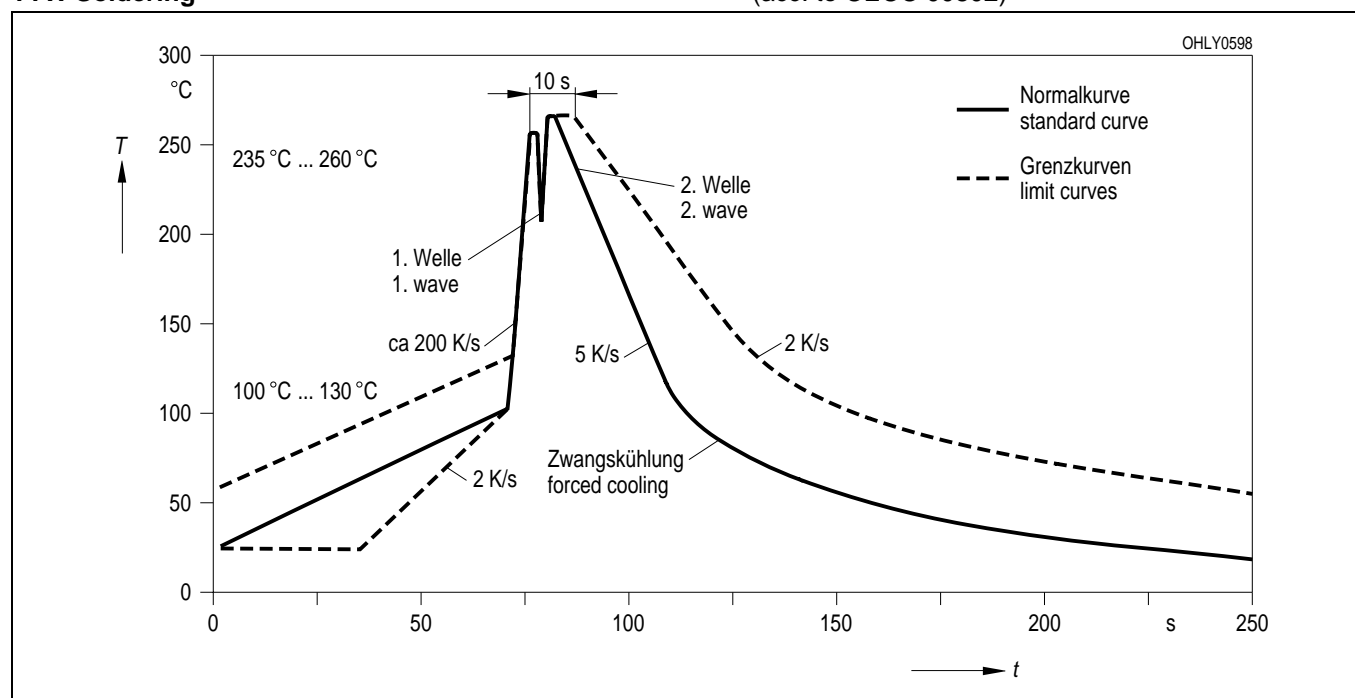
Empfohlenes Lötpad design  
Recommended Solder Pad

Wellenlöten (TTW)  
TTW Soldering



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

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



Published by  
**OSRAM Opto Semiconductors GmbH**  
Wernerwerkstrasse 2, D-93049 Regensburg  
[www.osram-os.com](http://www.osram-os.com)

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