



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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**GaAs-IR-Lumineszenzdiode mit 3/4 Linse (950nm)**  
**GaAs Infrared Emitter with 3/4 lens (950nm)**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 4113**



**Wesentliche Merkmale**

- Wellenlänge der Strahlung 950 nm
- Hohe Strahlstärke
- Geringe Außenabmessungen

**Anwendungen**

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

**Features**

- Peak wavelength of 950 nm
- High radiant intensity
- Small outline dimensions

**Applications**

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

<b>Typ Type</b>	<b>Bestellnummer Ordering Code</b>	<b>Ee<sup>1)</sup> [mW/cm<sup>2</sup>] at d<sup>2)</sup>=6mm, If=4mA</b>
SFH 4113	Q62702P5299	0.25 - 1.25

<sup>1)</sup> Auf einem Detektor erzeugte Bestrahlungsstärke.  
Irradiance generated on a detector.

<sup>2)</sup> Entfernung zwischen Vorderseite Beinchen und Detektorebene.  
Distance between leadframe front side and detection area.

**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)	50	mA
Stoßstrom, $t_p = 10\ \mu\text{s}$ , $D = 0$ Surge current	$I_{FSM}$	1	A
Verlustleistung Power dissipation	$P_{tot}$	75	mW
Wärmewiderstand Sperrschicht - Umgebung Thermal resistance junction - ambient	$R_{thJA}$	450	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 horizontal/ vertikal Half angle horizontal/ vertical	$\varphi$	$\pm 33/ 43$	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>
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%, $I_F = 50\text{ mA}$ , $R_L = 50\ \Omega$	$t_r, t_f$	0.5	$\mu\text{s}$
Kapazität, Capacitance $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_o$	40	pF

Kennwerte ( $T_A = 25\text{ °C}$ )

Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Durchlaßspannung, Forward voltage $I_F = 20\text{ mA}$ , $t_p = 20\text{ ms}$	$V_F$	1.25 ( $\leq 1.6$ )	V
Sperrstrom, Reverse current $V_R = 5\text{ V}$	$I_R$	0.01 ( $\leq 1.0$ )	$\mu\text{A}$
Gesamtstrahlungsfluß, Total radiant flux $I_F = 20\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_e$	3.5	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 20\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 20\text{ mA}$	$TC_I$	- 1.1	%/K
Temperaturkoeffizient von $V_F$ , $I_F = 20\text{ mA}$ Temperature coefficient of $V_F$ , $I_F = 20\text{ mA}$	$TC_V$	- 1.3	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

Bezeichnung Parameter	Symbol Symbol	Werte Values	Einheit Unit
Bestrahlungsstärke <sup>1)</sup> Irradiance <sup>1)</sup> $d^2) = 6\text{ mm}$ , $I_F = 4\text{ mA}$ , $t_p = 20\text{ ms}$	$E_e$ <sup>1)</sup>	0.25 ... 1.25	mW/cm <sup>2</sup>

<sup>1)</sup> Auf einem Detektor erzeugte Bestrahlungsstärke.

Irradiance generated on a detector.

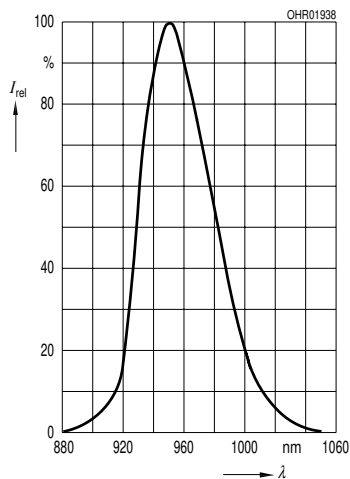
<sup>2)</sup> Entfernung zwischen Vorderseite Beinchen und Detektorebene.

Distance between leadframe front side and detection area.



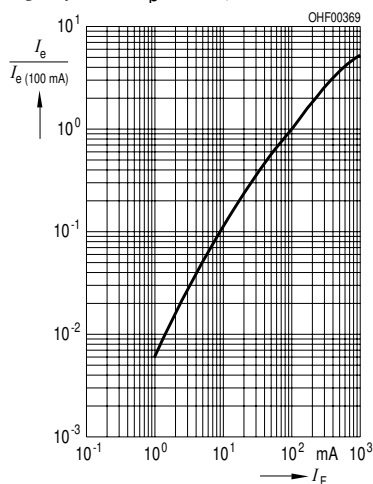
**Relative Spectral Emission**

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



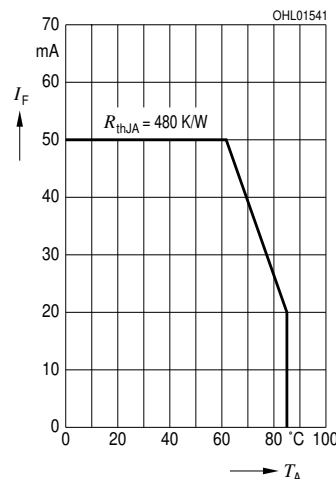
**Radiant Intensity**  $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



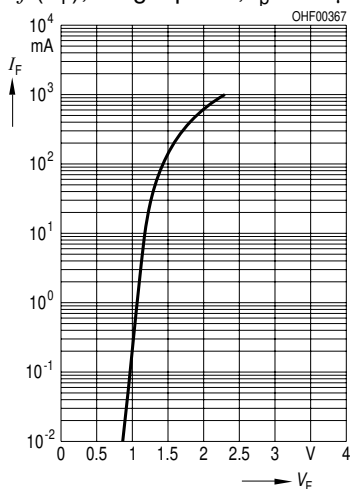
**Max. Permissible Forward Current**

$I_F = f(T_A)$



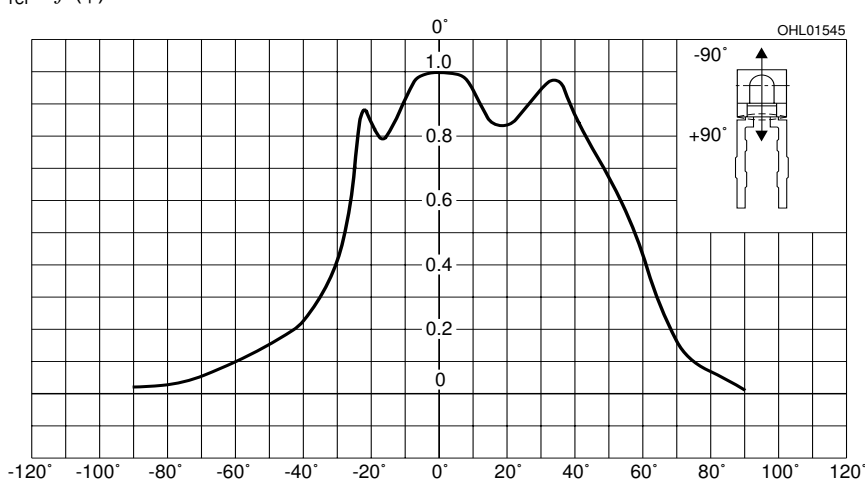
**Forward Current**

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



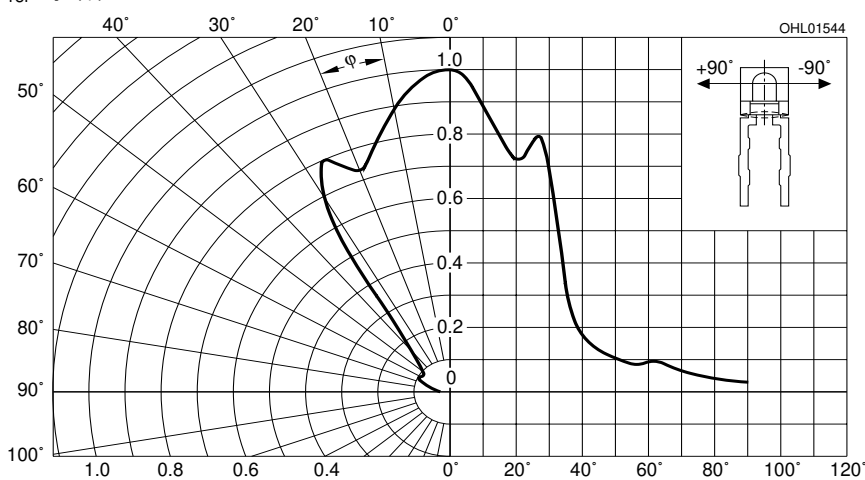
**Radiation Characteristics/ vertical**

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

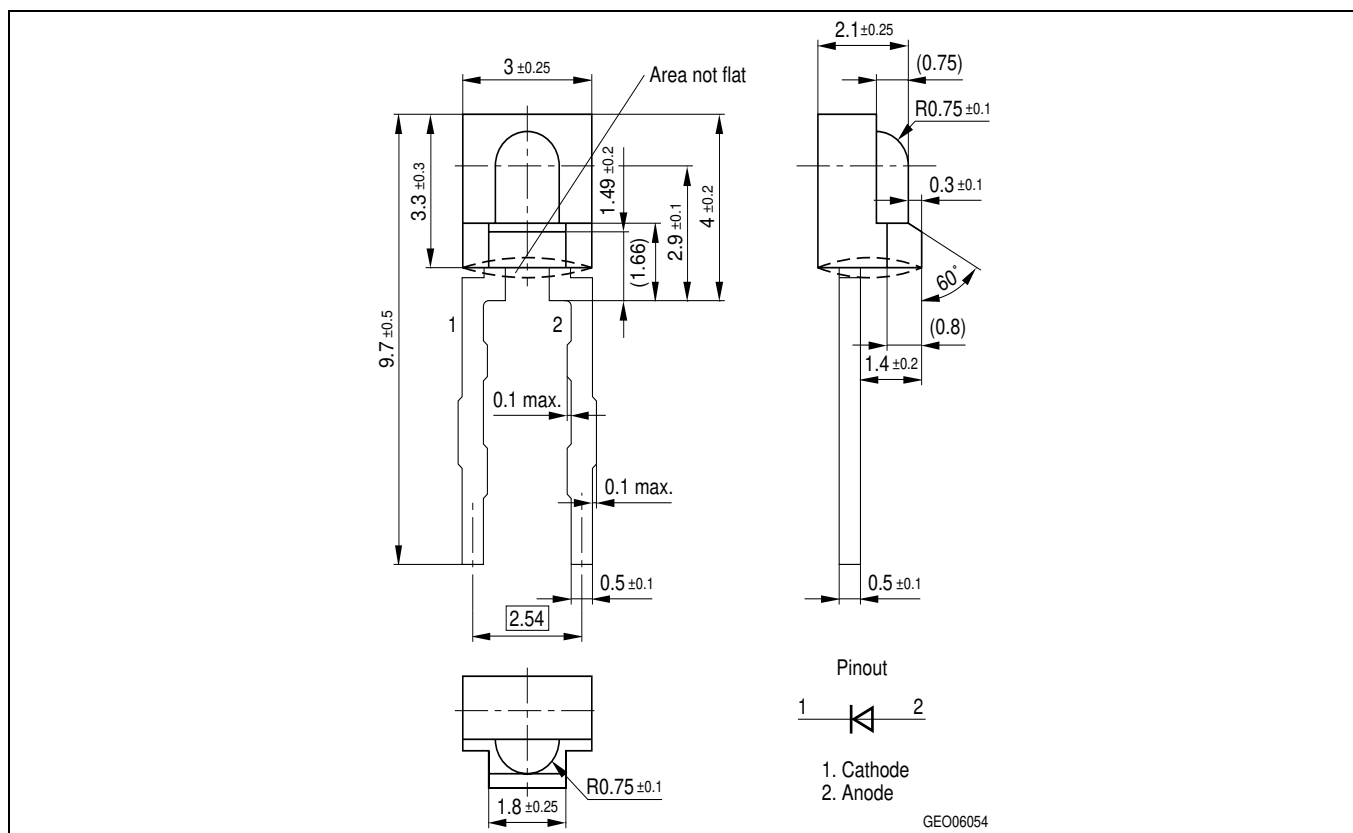


**Radiation Characteristics/ horiz**

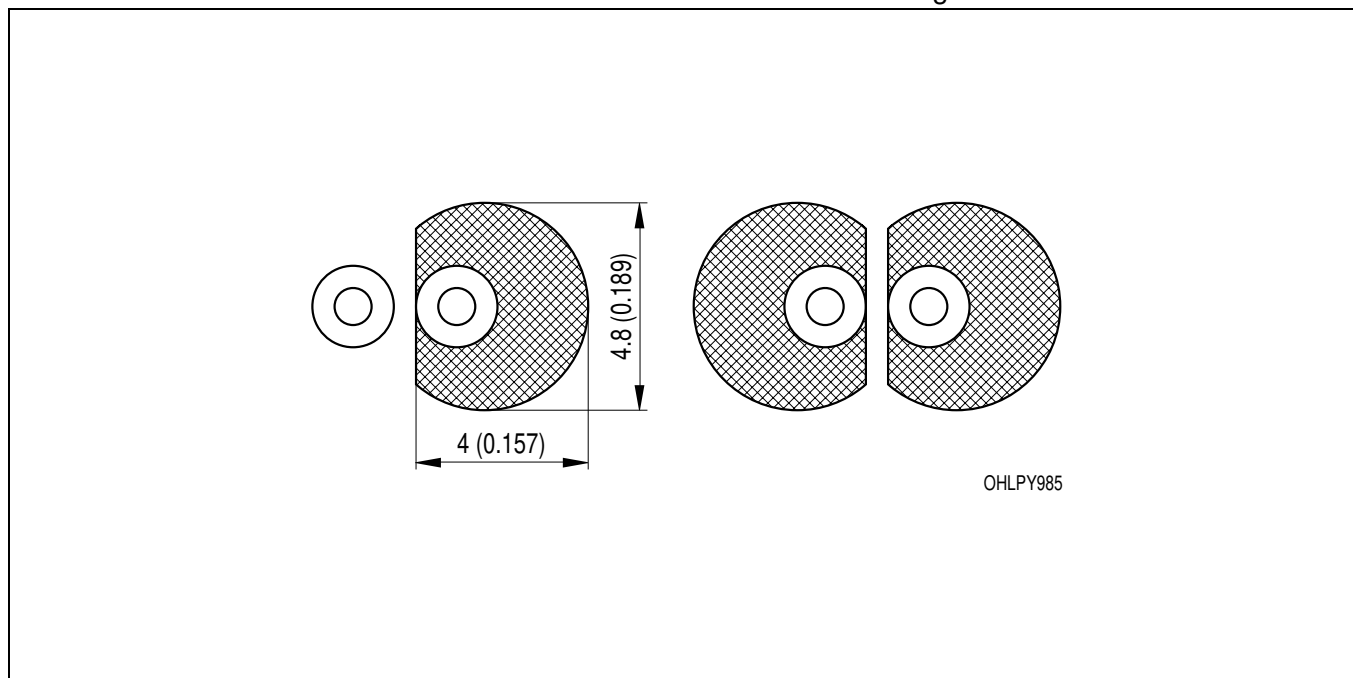
$I_{rel} = f(\varphi)$



## Maßzeichnung Package Outlines



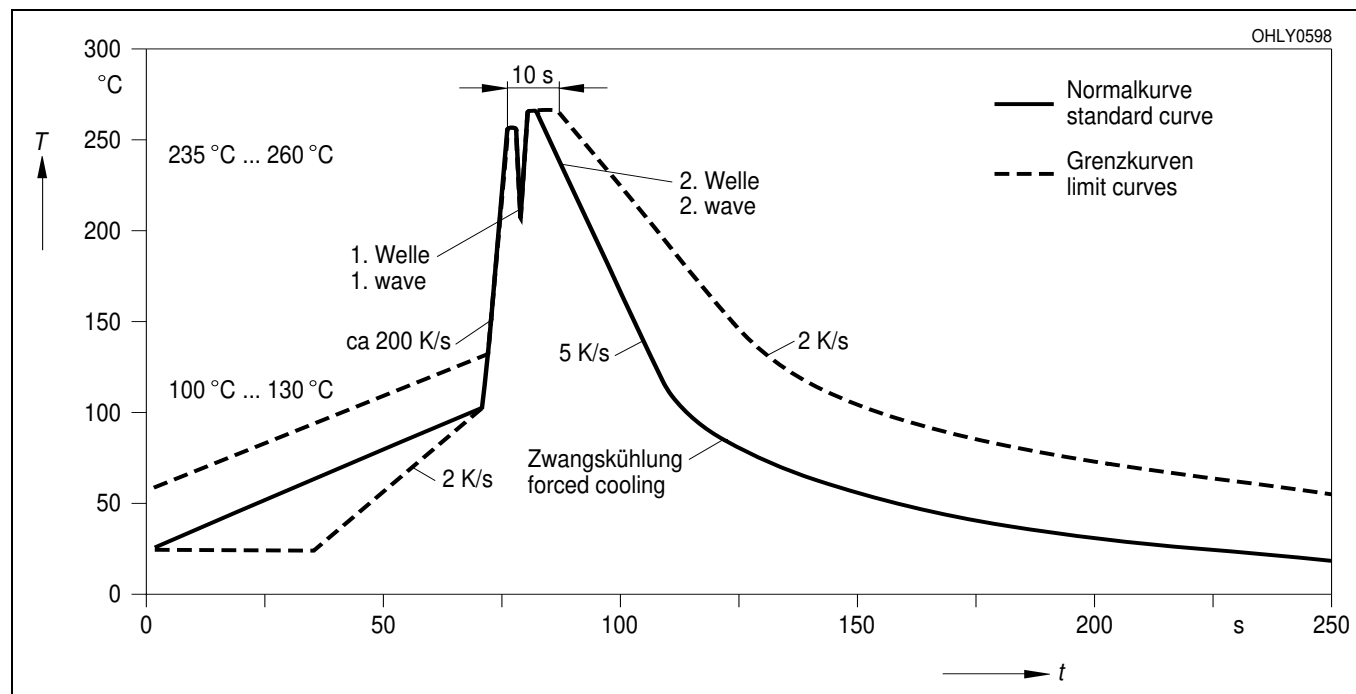
Maße in mm (inch) / Dimensions in mm (inch).

**Empfohlenes Lötpaddesign**  
**Recommended Solder Pad****Wellenlöten (TTW)**  
**TTW Soldering**

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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<sup>1</sup> A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

<sup>2</sup> Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.

EU RoHS and China RoHS compliant product



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