

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

Features

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

Anwendungen

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

Applications

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

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

¹⁾ Auf einem Detektor erzeugte Bestrahlungsstärke.

Irradiance generated on a detector.

²⁾ 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, $t_p = 10\text{ }\mu\text{s}$, $D = 0$ 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	λ_{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	φ	$\pm 33/ 43$	Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm ²
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	0.3×0.3	mm
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 50\text{ mA}$, $R_L = 50\text{ }\Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 50\text{ mA}$, $R_L = 50\text{ }\Omega$	t_r, t_f	0.5	μs
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 (≤ 1.6)	V
Sperrstrom, Reverse current $V_R = 5\text{ V}$	I_R	0.01 (≤ 1.0)	μA
Gesamtstrahlungsfluß, Total radiant flux $I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$	Φ_e	3.5	mW
Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 20\text{ mA}$ Temperature coefficient of I_e or Φ_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 λ , $I_F = 20\text{ mA}$ Temperature coefficient of λ , $I_F = 20\text{ mA}$	TC_λ	+ 0.3	nm/K

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

¹⁾ Auf einem Detektor erzeugte Bestrahlungsstärke.

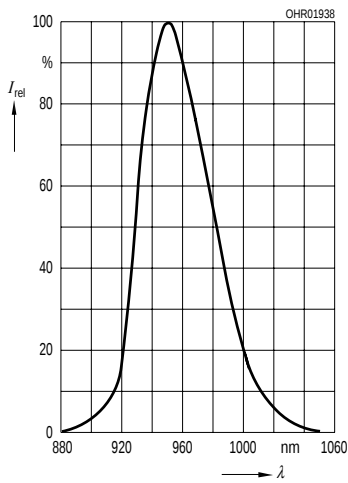
Irradiance generated on a detector.

²⁾ Entfernung zwischen Vorderseite Beinchen und Detektorebene.

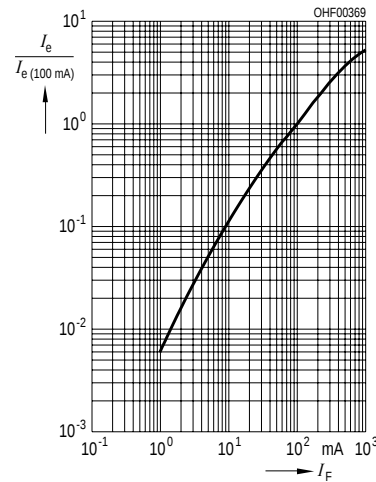
Distance between leadframe front side and detection area.

Relative Spectral Emission

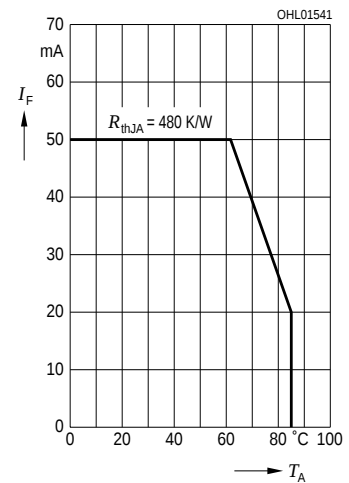
$$I_{\text{rel}} = f(\lambda)$$



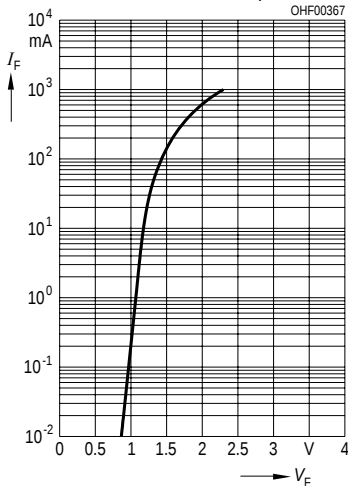
$$\text{Radiant Intensity } \frac{I_e}{I_e(100 \text{ mA})} = f(I_F)$$

Single pulse, $t_p = 20 \mu\text{s}$ **Max. Permissible Forward Current**

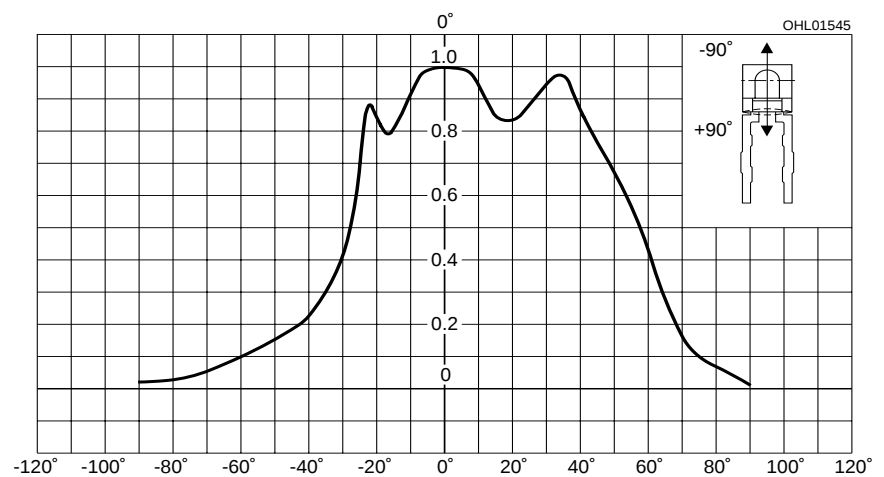
$$I_F = f(T_A)$$

**Forward Current**

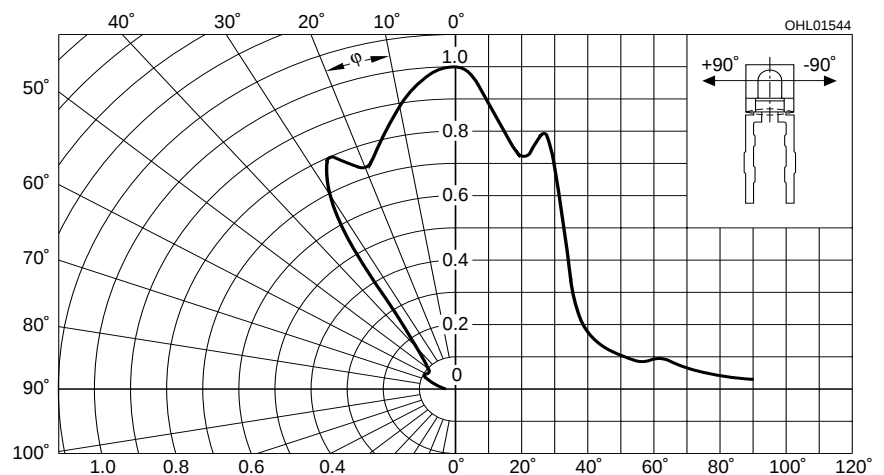
$$I_F = f(V_F), \text{ Single pulse, } t_p = 20 \mu\text{s}$$

**Radiation Characteristics/ vertical**

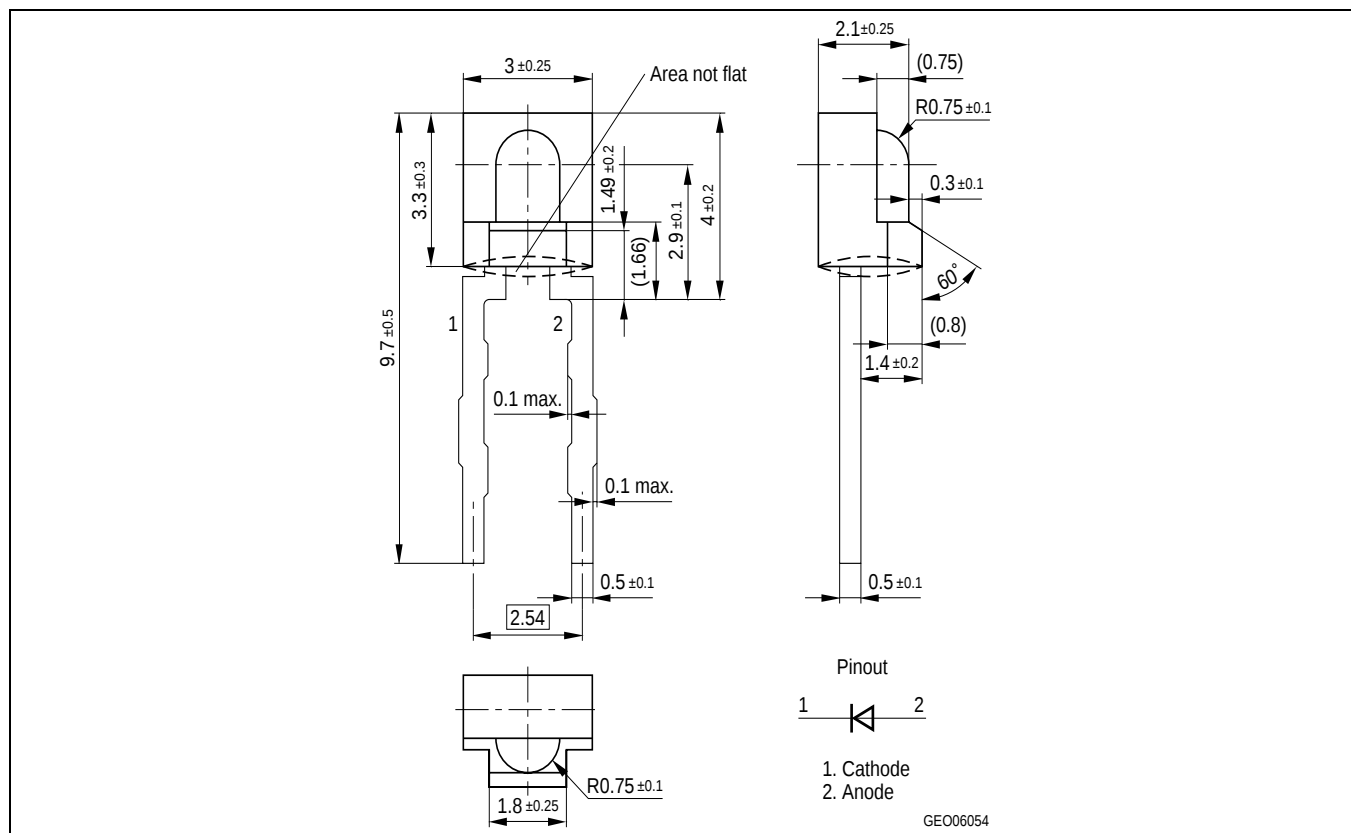
$$I_{\text{rel}} = f(\varphi)$$

**Radiation Characteristics/ horiz**

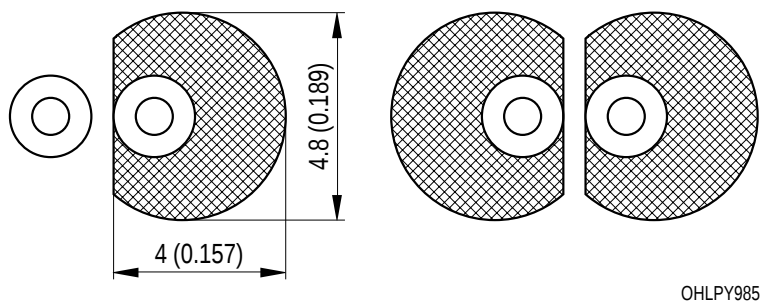
$$I_{\text{rel}} = f(\varphi)$$



Maßzeichnung Package Outlines



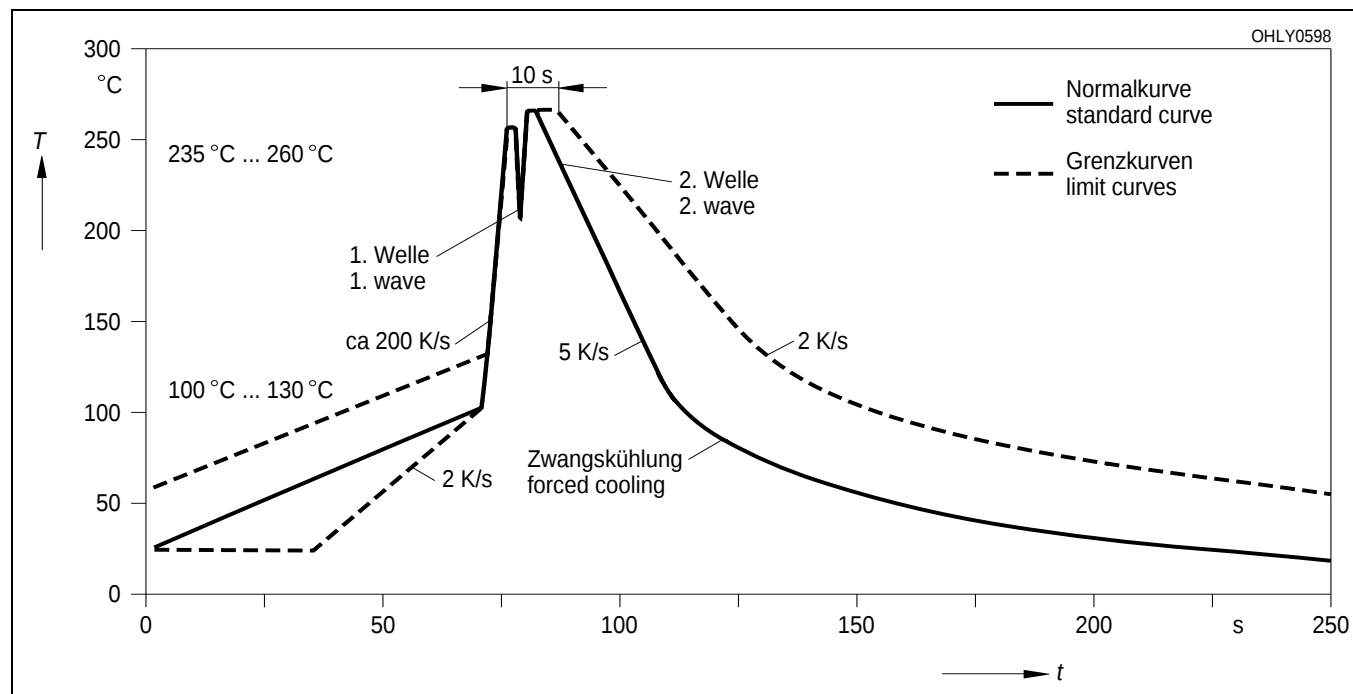
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

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

Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW)
TTW Soldering

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



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Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

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¹ 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.

² 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.