THE DATASHEET OF

SFH 4113

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/cm²] 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 °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 µs, 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 °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	± 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	mm²
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei I_F = 50 mA, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 50 mA, R_L = 50 Ω	t_r, t_f	0.5	µs
Kapazität, Capacitance V_R = 0 V, f = 1 MHz	C_o	40	pF

Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

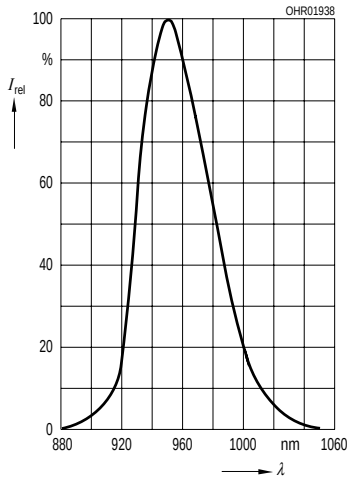
Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Durchlaßspannung, Forward voltage I_F = 20 mA, t_p = 20 ms	V_F	1.25 (≤ 1.6)	V
Sperrstrom, Reverse current V_R = 5V	I_R	0.01 (≤ 1.0)	µA
Gesamtstrahlungsfluß, Total radiant flux I_F = 20 mA, t_p = 20 ms	Φ_e	3.5	mW
Temperaturkoeffizient von I_e bzw. Φ_e, I_F = 20 mA Temperature coefficient of I_e or Φ_e, I_F = 20 mA	TC_I	– 1.1	%/K
Temperaturkoeffizient von V_F, I_F = 20 mA Temperature coefficient of V_F, I_F = 20 mA	TC_V	– 1.3	mV/K
Temperaturkoeffizient von λ, I_F = 20 mA Temperature coefficient of λ, I_F = 20 mA	TC_λ	+ 0.3	nm/K

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Werte** **Values**	**Einheit** **Unit**
Bestrahlungsstärke[1)] Irradiance[1)] d[2)] = 6mm, I_F = 4mA, t_p = 20 ms	E_e [1)]	0.25 ... 1.25	mW/cm²

1) Auf einem Detektor erzeugte Bestrahlungsstärke.
Irradiance generated on a detector.

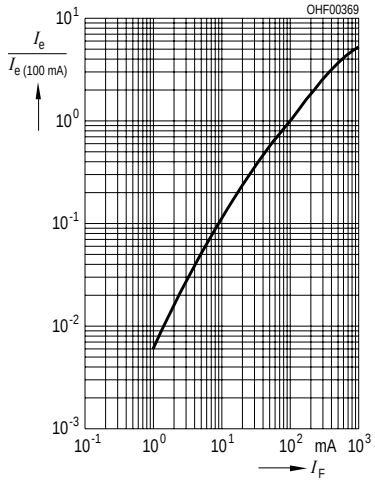
2) Entfernung zwischen Vorderseite Beinchen und Detektorebene.
Distance between leadframe front side and detection area.

Relative Spectral Emission
$I_{rel} = f(\lambda)$

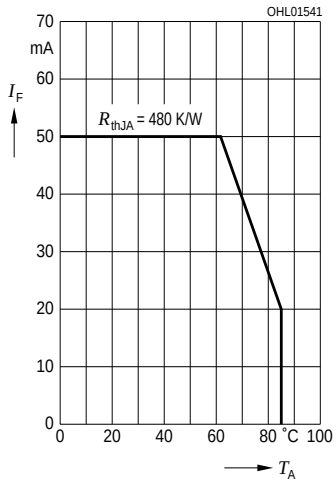


Radiant Intensity $\frac{I_e}{I_e\ 100\ mA} = f(I_F)$

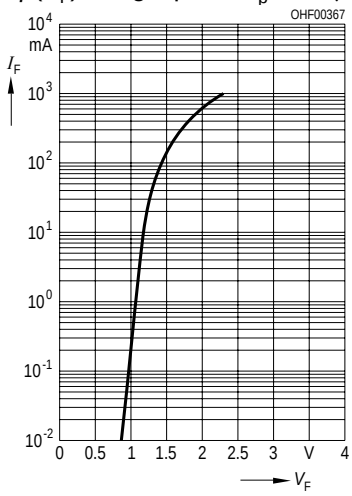
Single pulse, t_p = 20 µs



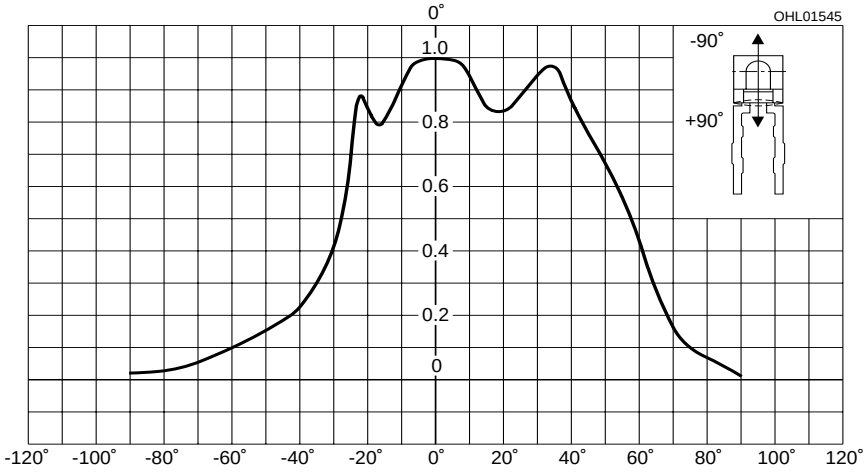
Max. Permissible Forward Current
$I_F = f(T_A)$



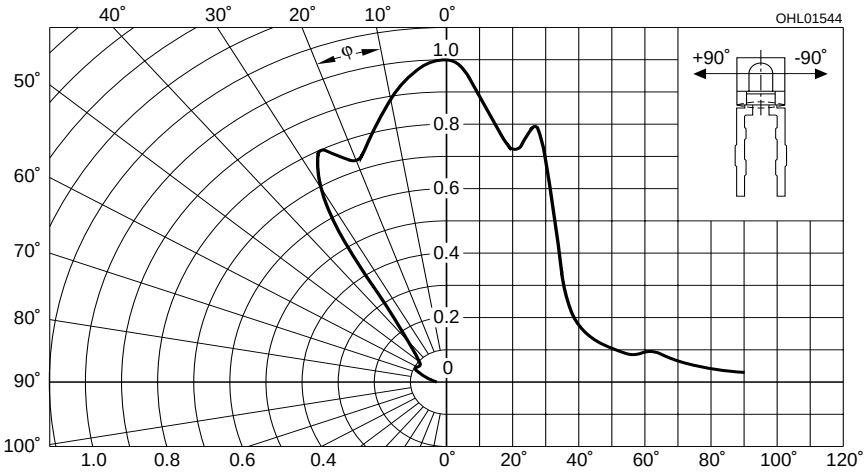
Forward Current
$I_F = f(V_F)$, Single pulse, t_p = 20 µs



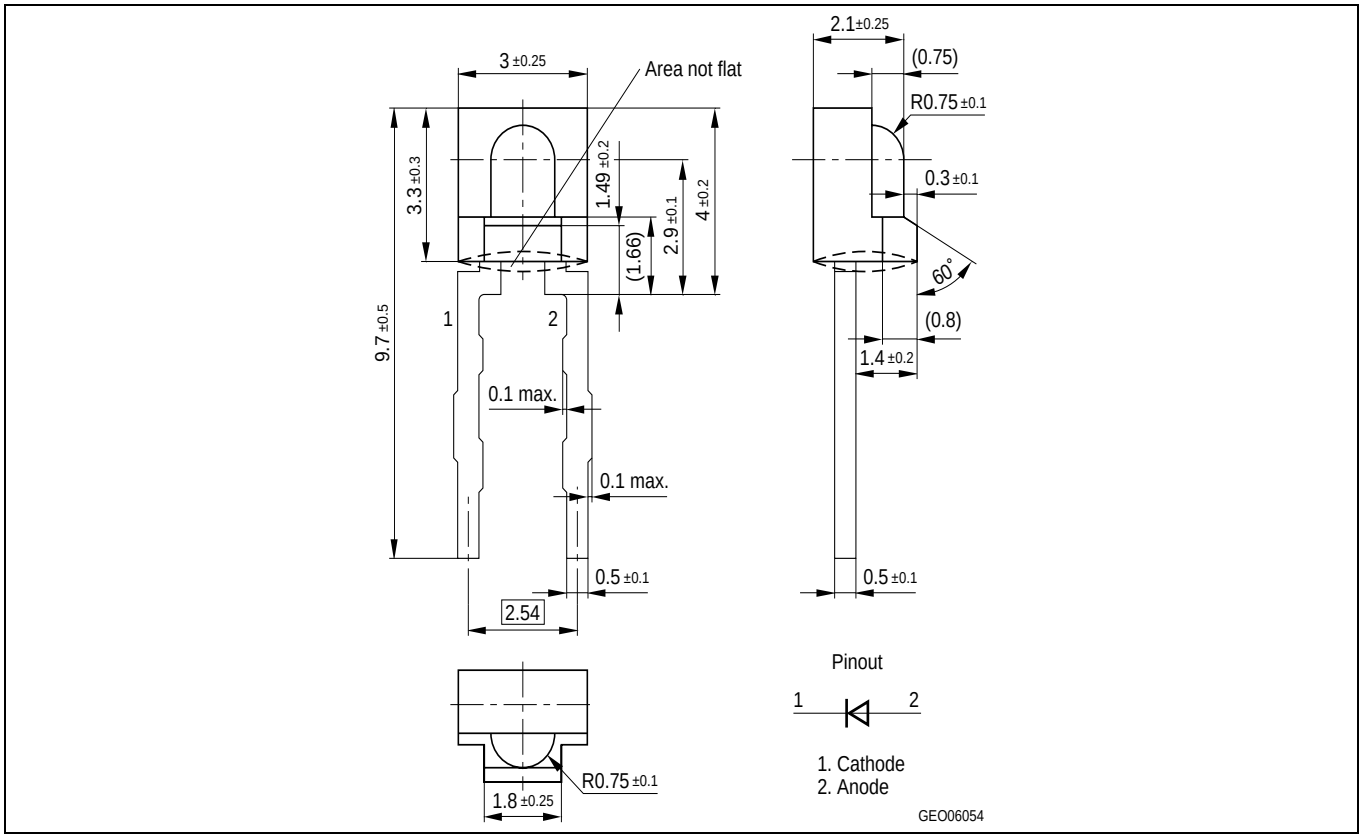
Radiation Characteristics/ vertical
$I_{rel} = f(\varphi)$



Radiation Characteristics/ horiz
$I_{rel} = f(\varphi)$

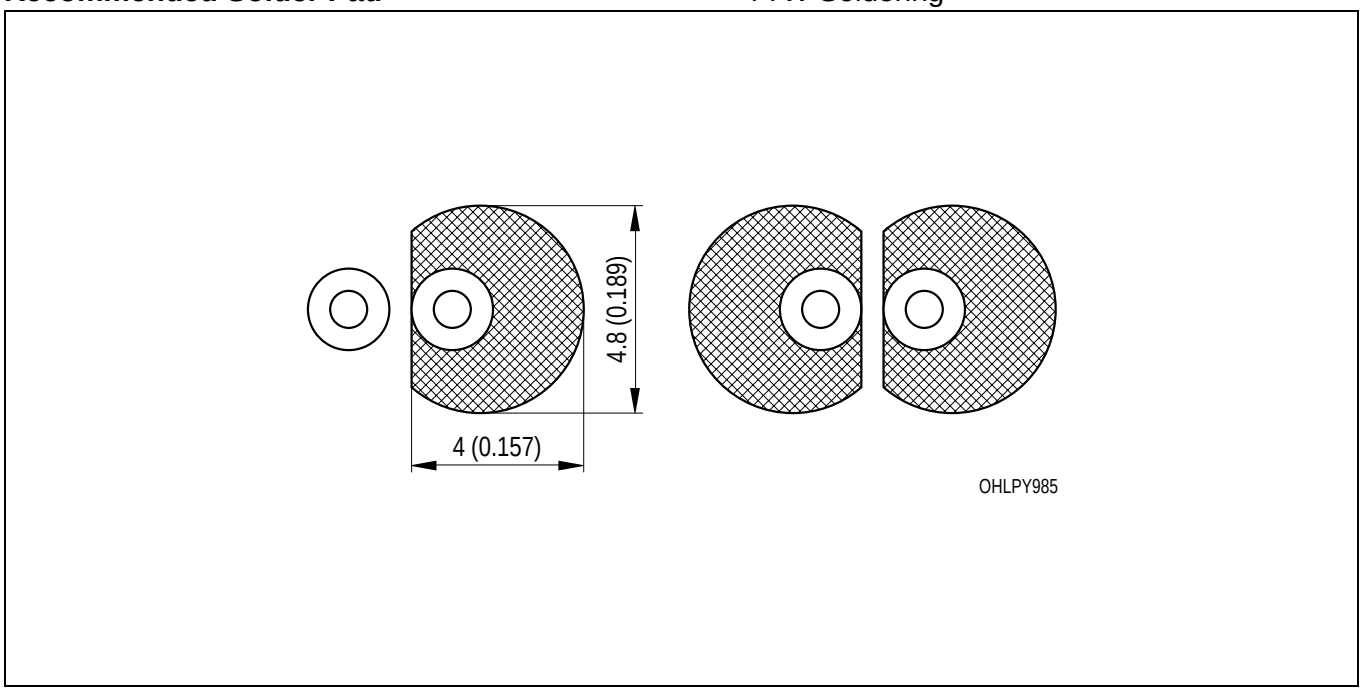


Maßzeichnung
Package Outlines



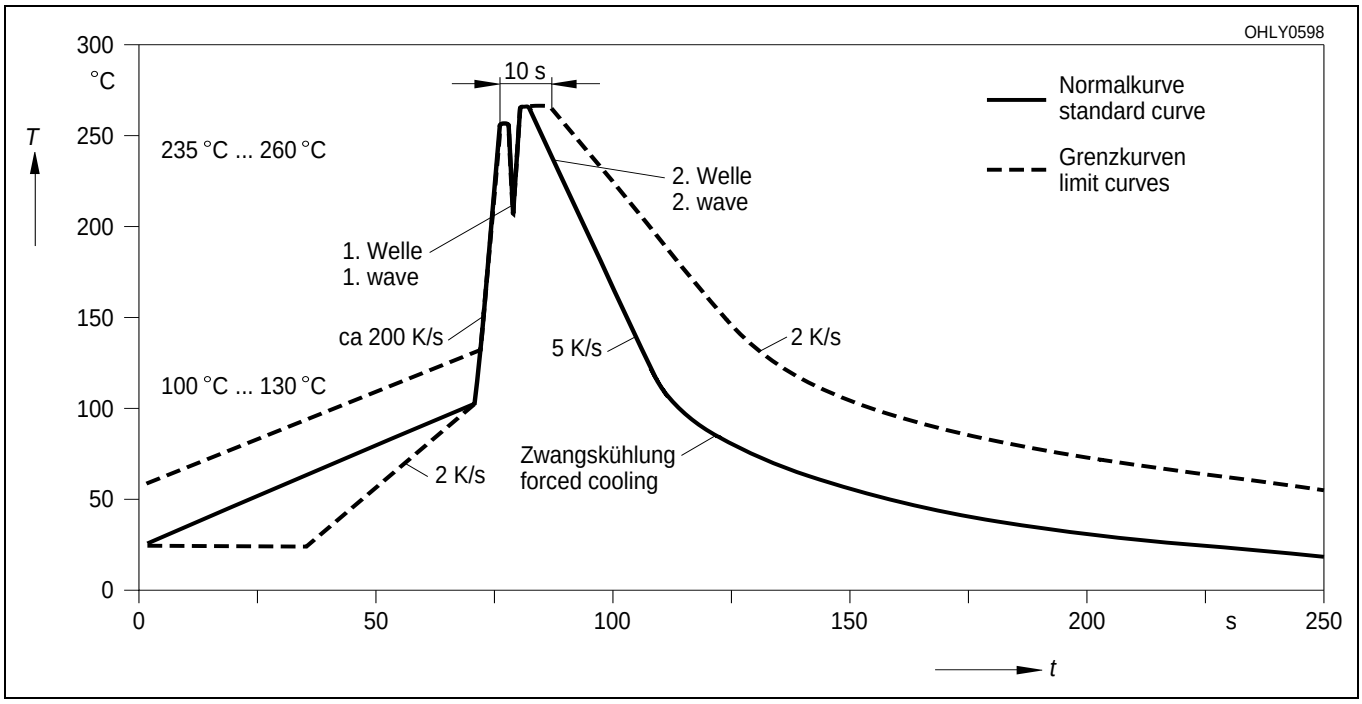
Maße in mm (inch) / Dimensions in mm (inch).

Empfohlenes Lötpaddesign Wellenlöten (TTW)
Recommended Solder Pad TTW Soldering



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

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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[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.

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