

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

| Typ Type | Bestellnummer Ordering Code | Ee¹⁾ [mW/cm²] at d²⁾=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, $t_p = 10\ \mu\text{s}$, $D = 0$ 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 ² |
| 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 | 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.

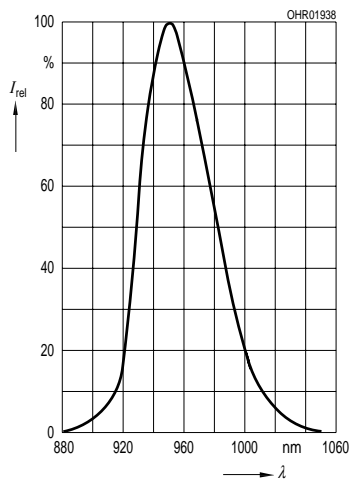
Irradiance generated on a detector.

²⁾ Entfernung zwischen Vorderseite Beinchen und Detektorebene.

Distance between leadframe front side and detection area.

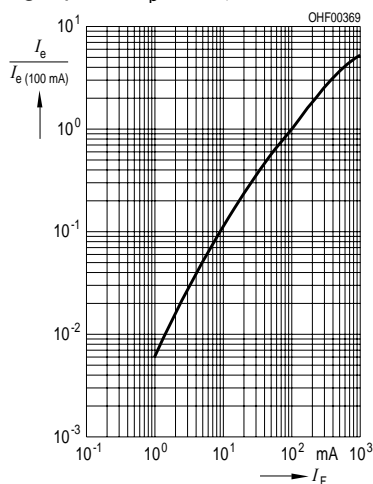
Relative Spectral Emission

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



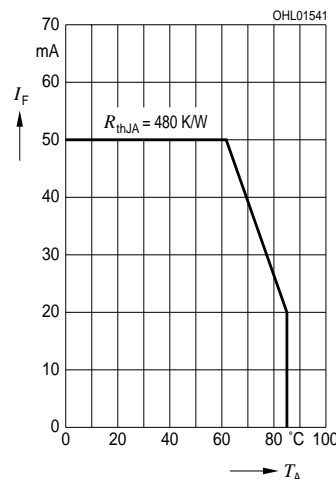
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



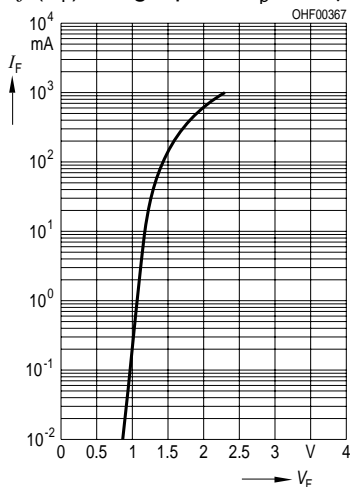
Max. Permissible Forward Current

$I_F = f(T_A)$



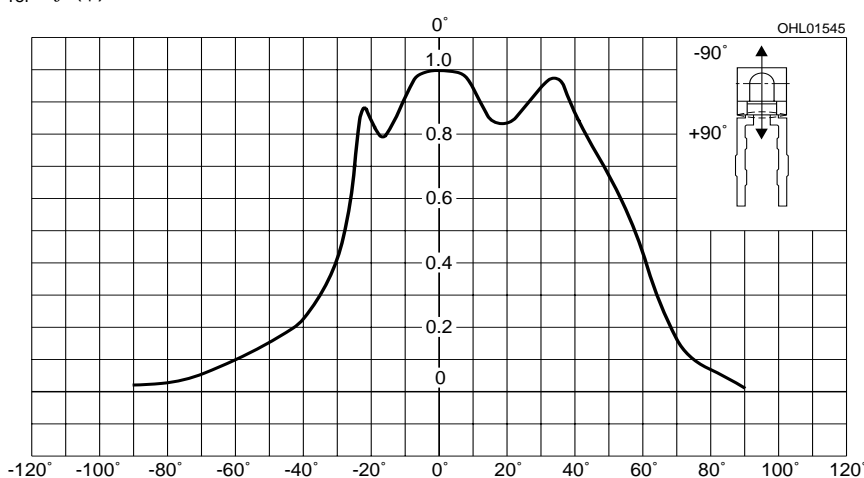
Forward Current

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



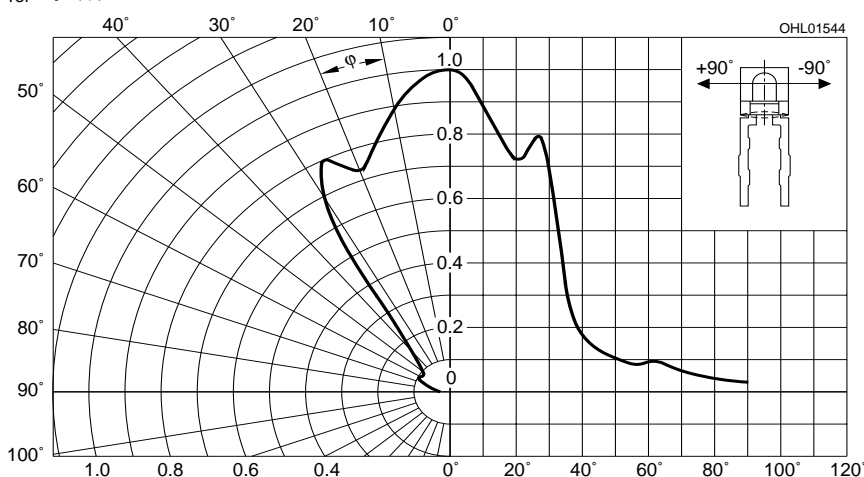
Radiation Characteristics/ vertical

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

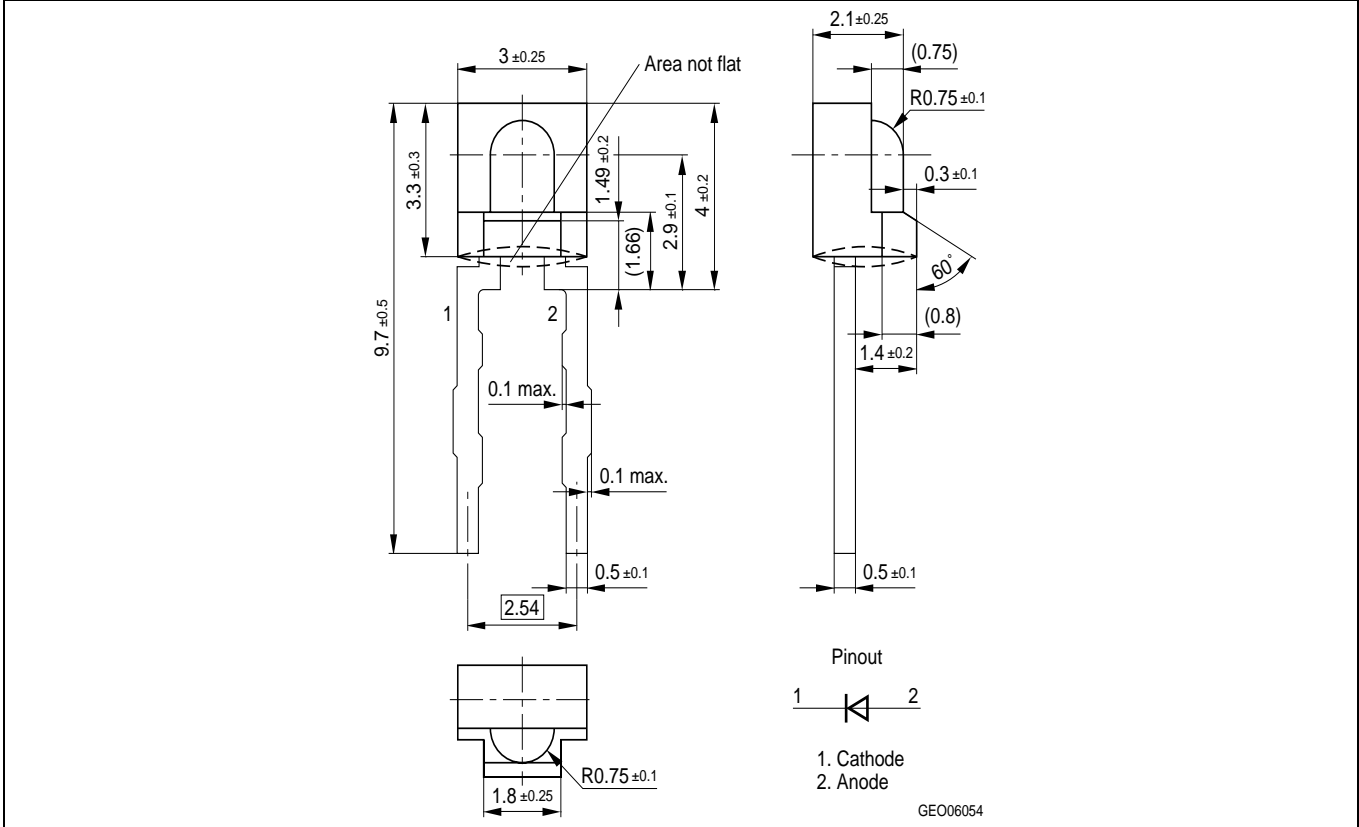


Radiation Characteristics/ horiz

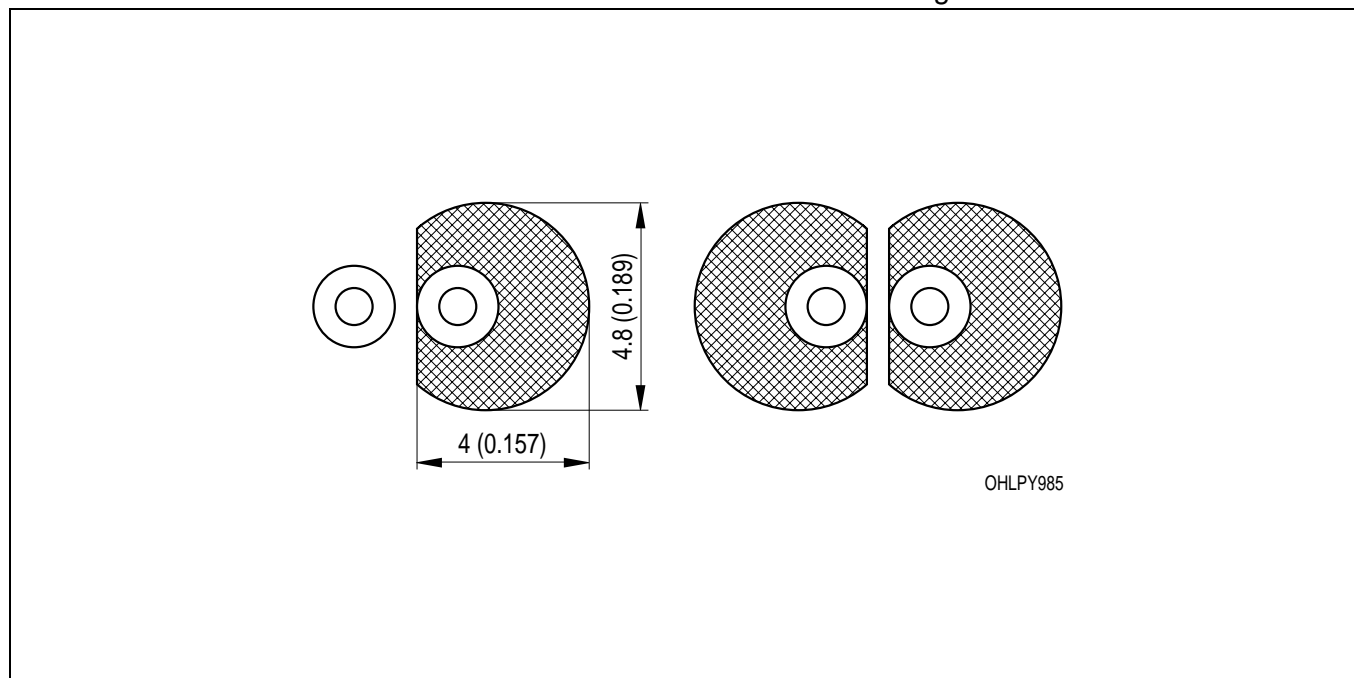
$I_{rel} = f(\varphi)$



Maßzeichnung
Package Outlines



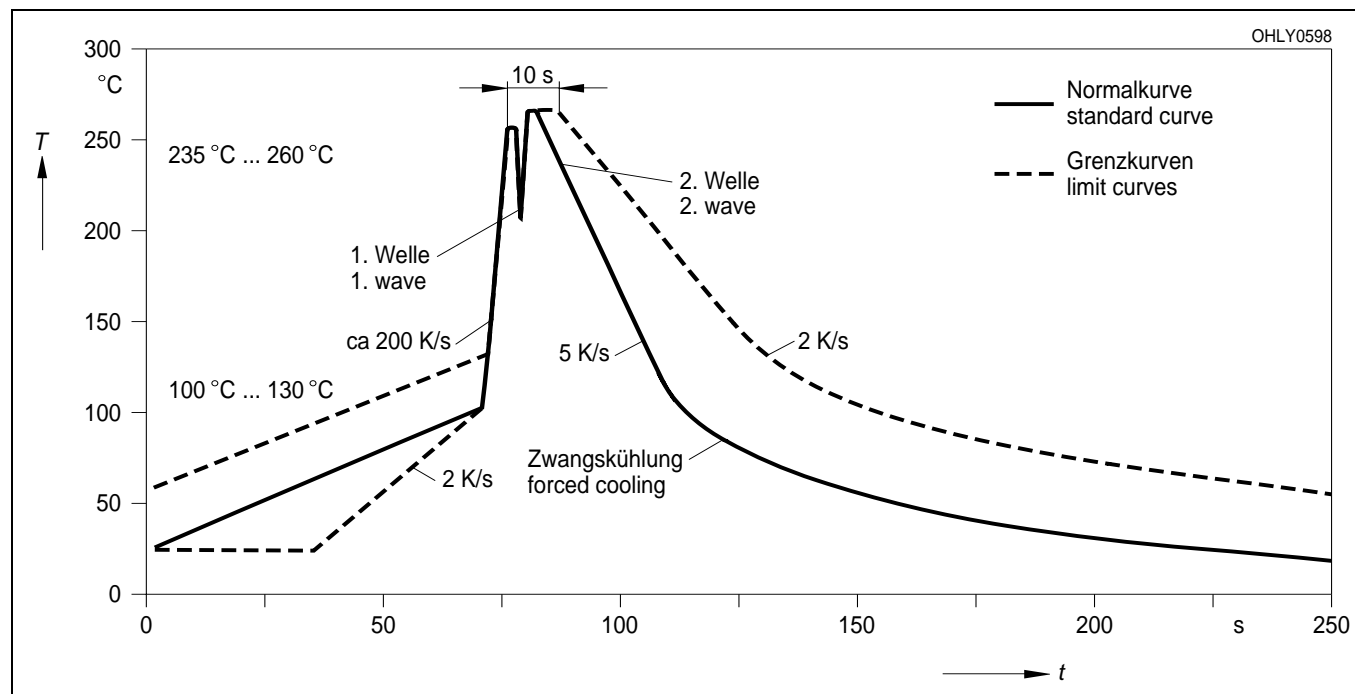
Maße in mm (inch) / Dimensions in mm (inch).

Empfohlenes Lötpaddesign
Recommended Solder PadWellenlöten (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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EU RoHS and China RoHS compliant product



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