

GaAs-IR-Lumineszenzdiode mit Zylinderlinse (950nm)
GaAs Infrared Emitter with cylindrical lens (950nm)
Lead (Pb) Free Product - RoHS Compliant

SFH 4111



Nicht für Neuentwicklung / Not for new design

Wesentliche Merkmale

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

Features

- Peak wavelength of 950 nm
- Cylindrical lens
- 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 4111	Q62702P5333	0.25 - 1

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	$\pm 30/ 60$	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 , Temperature coefficient of I_e or Φ_e , $I_F = 4\text{ mA}$	TC_I	- 1.1	%/K
Temperaturkoeffizient von V_F , $I_F = 4\text{ mA}$ Temperature coefficient of V_F , $I_F = 4\text{ mA}$	TC_V	- 1.3	mV/K
Temperaturkoeffizient von λ , $I_F = 10\text{ mA}$ Temperature coefficient of λ , $I_F = 10\text{ mA}$	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	mW/cm ²

1) Auf einem Detektor erzeugte Bestrahlungsstärke.

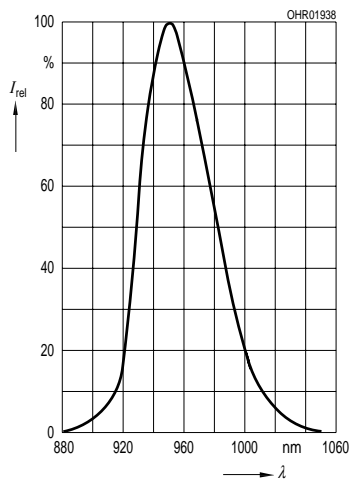
Irradiance generated on a detector.

2) Entfernung zwischen Vorderseite Beinchen und Detektorebene.

Distance between leadframe front side and detection area.

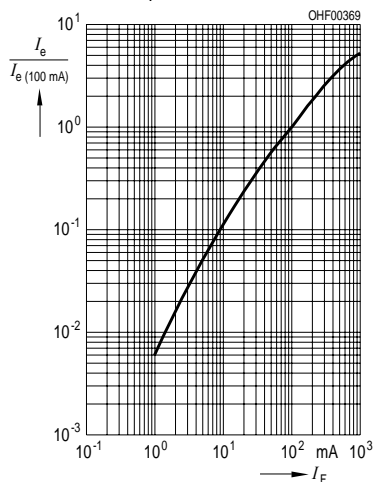
Relative Spectral Emission

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



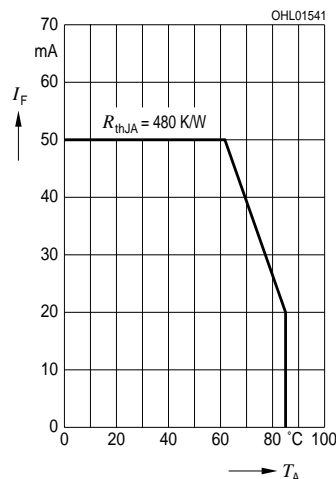
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



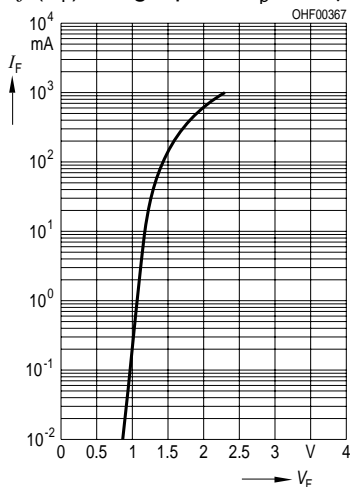
Max. Permissible Forward Current

$I_F = f(T_A)$



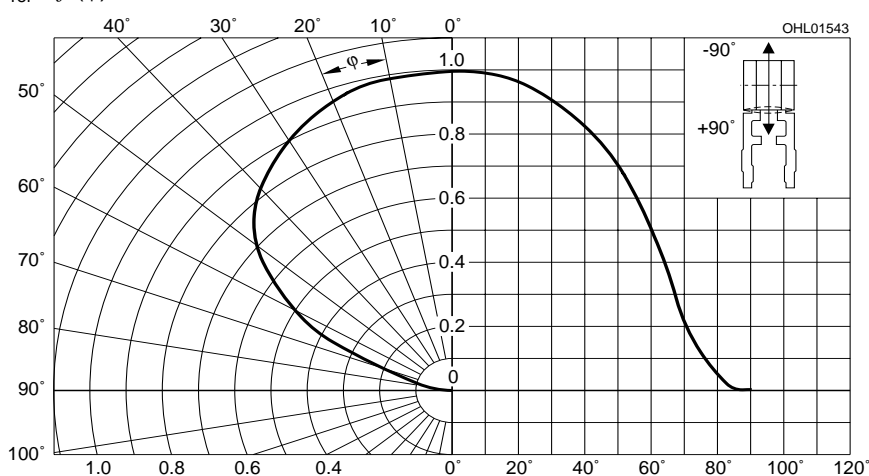
Forward Current

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



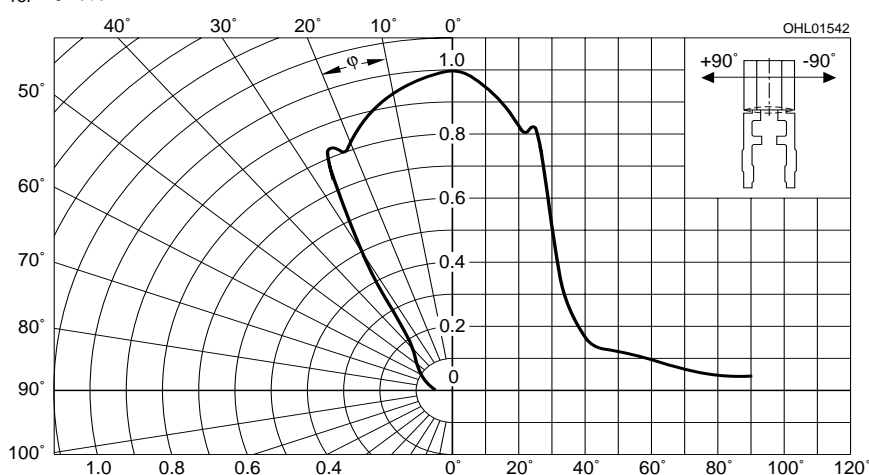
Radiation Characteristics/ vertical

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

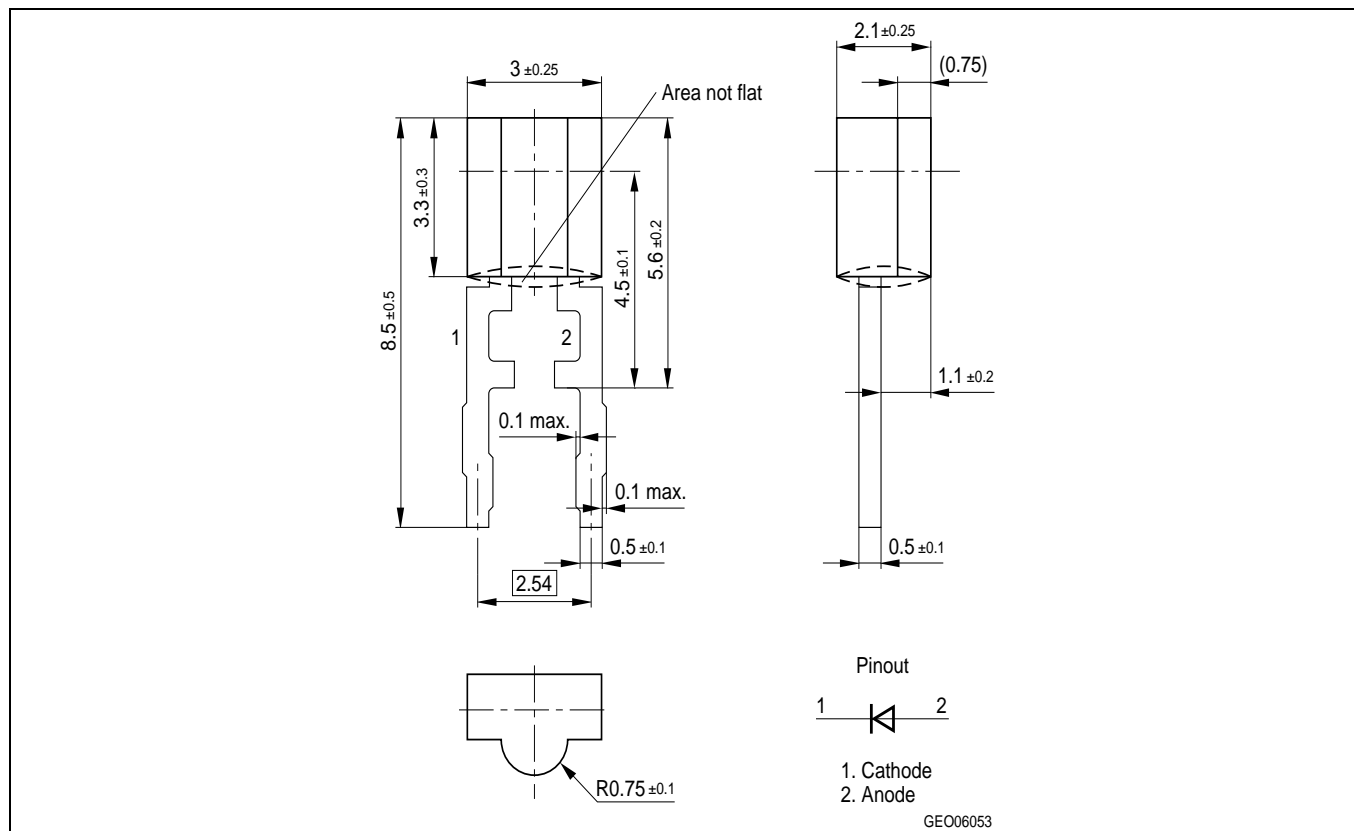


Radiation Characteristics/ horiz.

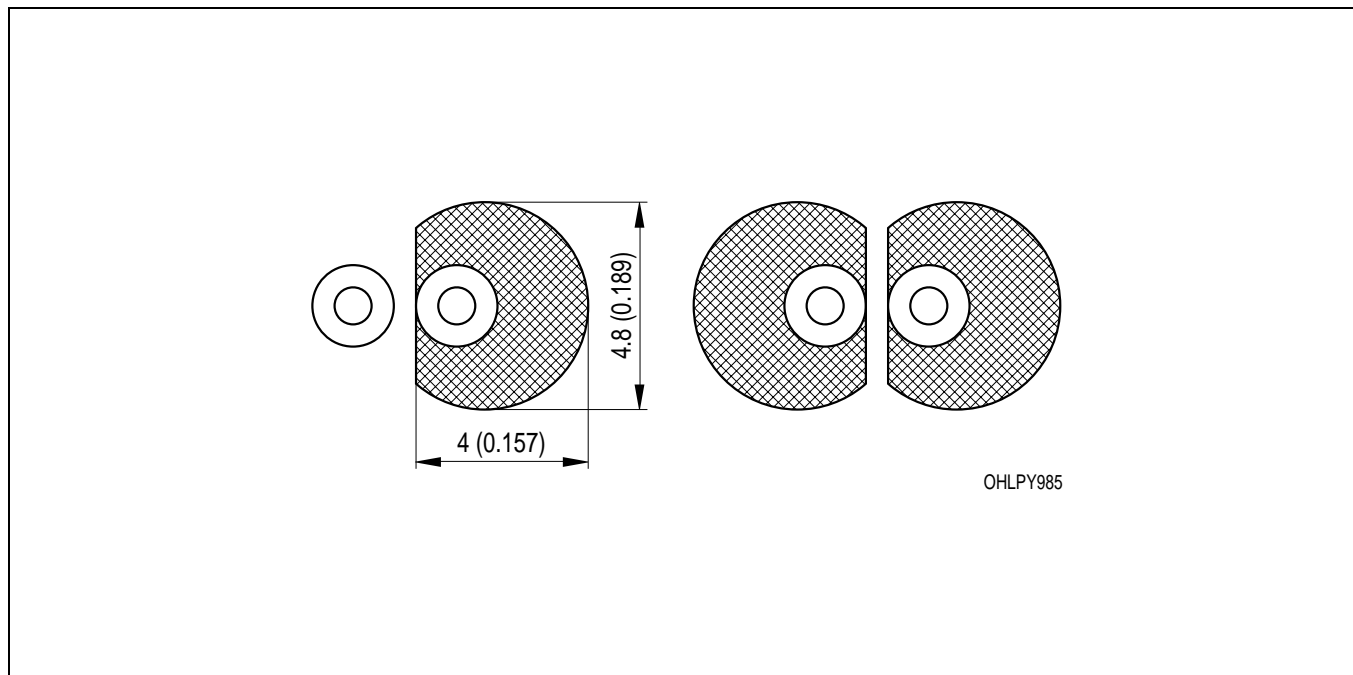
$I_{rel} = f(\varphi)$



Maßzeichnung
Package Outlines



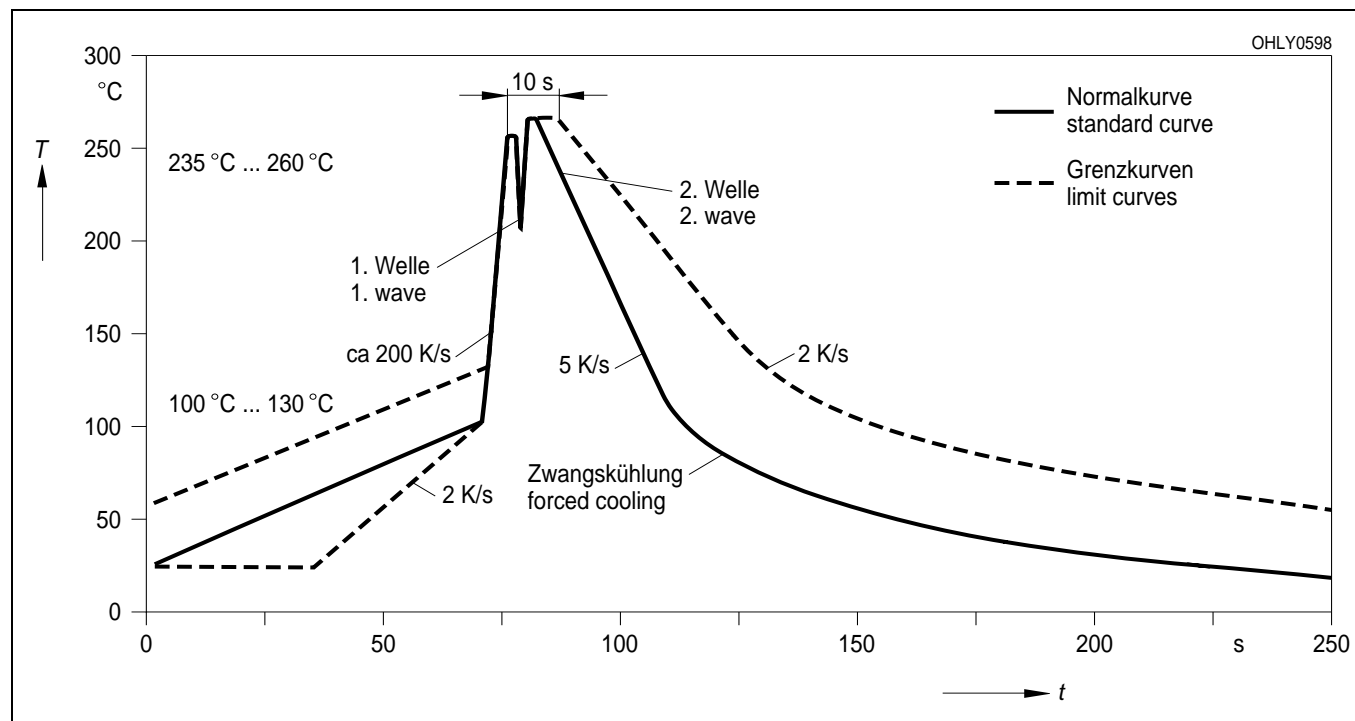
Maße in mm (inch) / Dimensions in mm (inch).

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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