

GaAs-IR-Lumineszenzdiode mit 3/4 Linse (950nm)

GaAs Infrared Emitter with 3/4 lens (950nm)

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	Q62702-P5299	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	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.

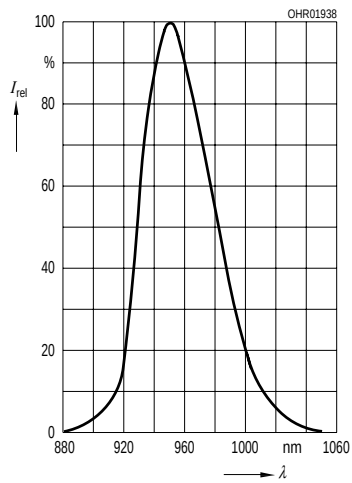
Irradiance generated on a detector.

²⁾ Entfernung zwischen Vorderseite Beinchen und Detektorebene.

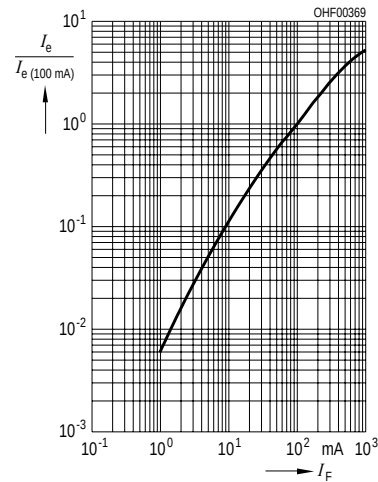
Distance between leadframe front side and detection area.

Relative Spectral Emission

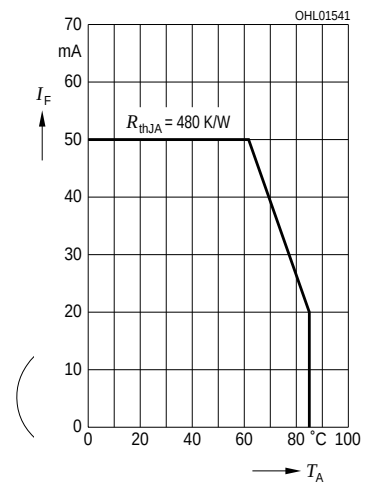
$$I_{\text{rel}} = f(\lambda)$$



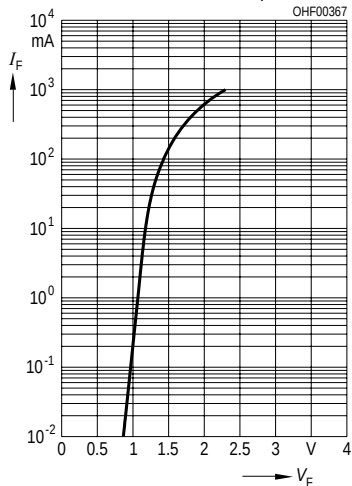
$$\text{Radiant Intensity } \frac{I_e}{I_e(100 \text{ mA})} = f(I_F)$$

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

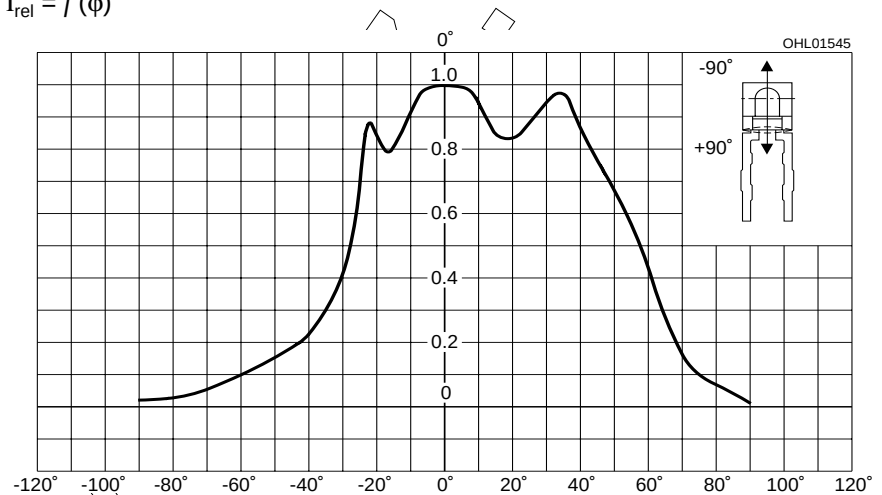
$$I_F = f(T_A)$$

**Forward Current**

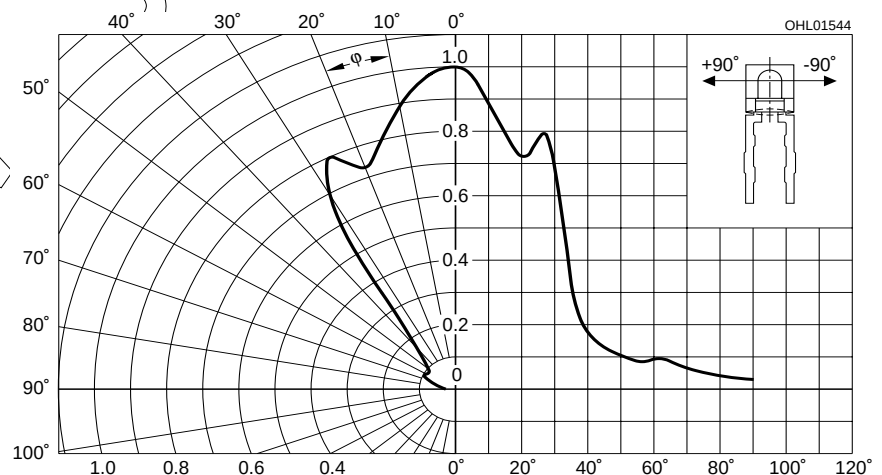
$$I_F = f(V_F), \text{ Single pulse, } t_p = 20 \mu\text{s}$$

**Radiation Characteristics/ vertical**

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

**Radiation Characteristics/ horiz**

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





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Packing

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components ¹, may only be used in life-support devices or systems ² with the express written approval of OSRAM OS.

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.