

GaAs-IR-Lumineszenzdiode (Mini Sidelooker) GaAs Infrared Emitter (Mini Sidelooker)

SFH 4110



Wesentliche Merkmale

- Wellenlänge der Strahlung 950 nm
- Enger Abstrahlwinkel
- Hohe Strahlstärke
- Geringe Außenabmessungen
- Gehäusegleich mit Fototransistor SFH 3100 F
- Hoher Koppelfaktor in Lichtschranken in Verbindung mit SFH 3100 F
- Hohe Zuverlässigkeit

Anwendungen

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

Features

- Peak wavelength of 950 nm
- Narrow half angle
- High radiant intensity
- Small outline dimensions
- Same package as phototransistor SFH 3100 F
- High coupling factor in light barriers with SFH 3100 F
- High reliability

Applications

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

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 4110	Q62702-P5072	Klares Miniatur-Kunststoffgehäuse, seitliche Abstrahlung, Anschlüsse im 2,54-mm Raster, Kathodenkennzeichnung: kurzer Anschluß Clear miniature plastic package, sidelooker, solder tabs 2.54-mm ($1/10''$), cathode marking: short lead

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	3	V
Durchlaßstrom Forward current	I_F (DC)	60	mA
Stoßstrom, $t_p = 10\text{ }\mu\text{s}$, $D = 0$ Surge current	I_{FSM}	1	A
Verlustleistung Power dissipation	P_{tot}	100	mW
Wärmewiderstand Sperrschicht - Umgebung Thermal resistance junction - ambient	R_{thJA}	280	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 Half angle	φ	± 9	Grad deg.
Aktive Chipfläche Active chip area	A	0.0625	mm ²
Abmessungen der aktiven Chipfläche Dimensions of the active chip area	$L \times B$ $L \times W$	0.25×0.25	mm
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 20\text{ mA}$, $R_L = 50\text{ }\Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 20\text{ mA}$, $R_L = 50\text{ }\Omega$	t_r, t_f	450/360	ns
Kapazität, Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	C_o	16	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	1.2 (≤ 1.4)	V
Sperrstrom, Reverse current $V_R = 3\text{ V}$	I_R	0.01 (≤ 1.0)	μA
Gesamtstrahlungsfluß, Total radiant flux $I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$	Φ_e	2	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	- 0.55	%/K
Temperaturkoeffizient von V_F , $I_F = 20\text{ mA}$ Temperature coefficient of V_F , $I_F = 20\text{ mA}$	TC_V	- 1.8	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

Strahlstärke I_e in Achsrichtunggemessen bei einem Raumwinkel $\Omega = 0.01\text{ sr}$ **Radiant Intensity I_e in Axial Direction**at a solid angle of $\Omega = 0.01\text{ sr}$

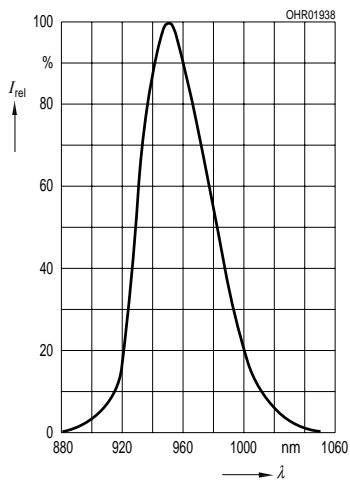
Bezeichnung Parameter	Symbol	Werte Values	Einheit Unit
Strahlstärke ¹⁾ Radiant intensity ¹⁾ $I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$	$I_{e\text{ min}}$	2.5	mW/sr

1) Sonderselektion auf Anfrage.

1) Special bin selection on request.

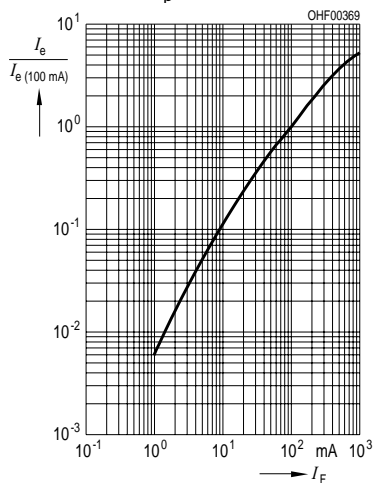
Relative Spectral Emission

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



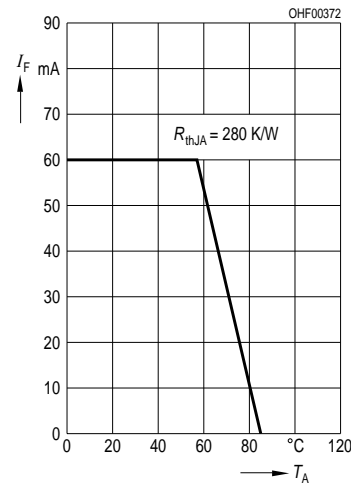
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



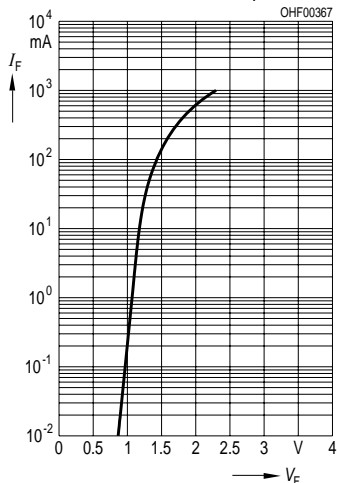
Max. Permissible Forward Current

$I_F = f(T_A)$



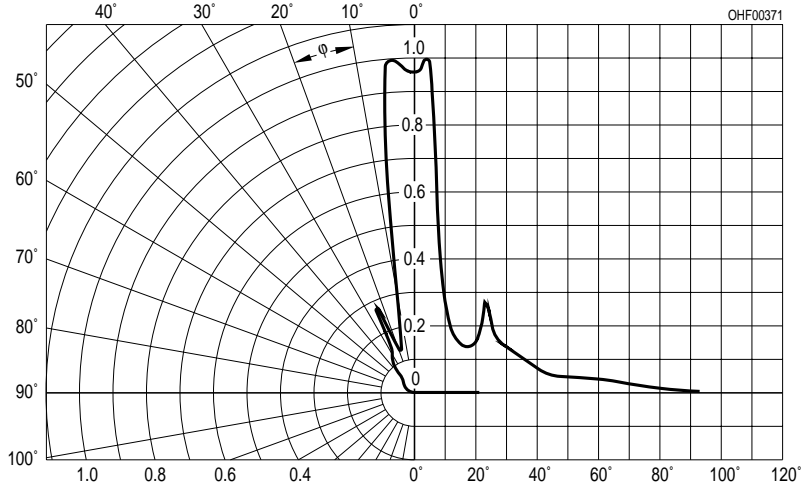
Forward Current

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



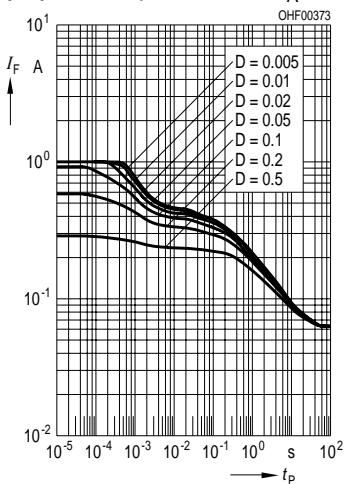
Radiation Characteristics

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

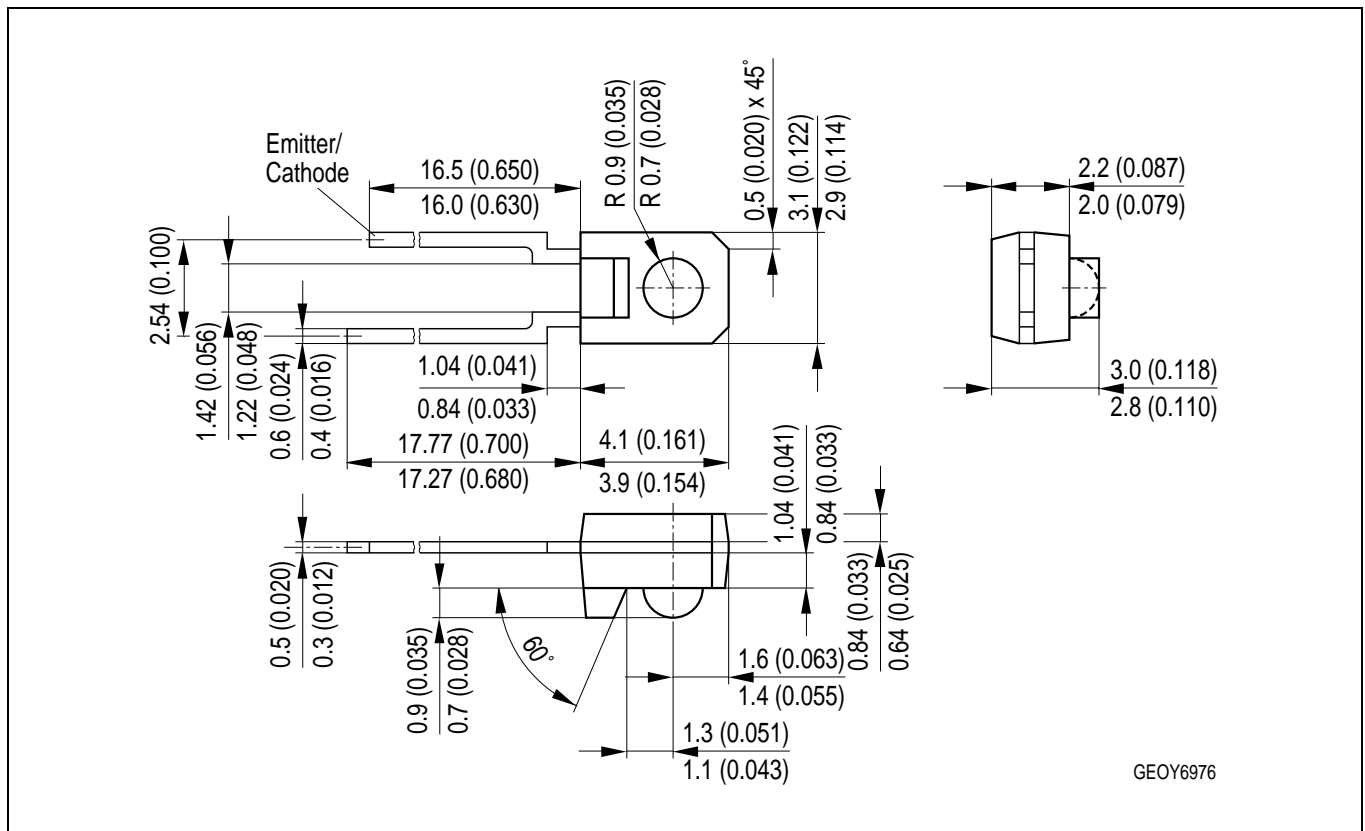


Permissible Pulse Power

Duty cycle $D = \text{parameter}$, $T_A = 25 \text{ }^\circ\text{C}$



Maßzeichnung Package Outlines



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

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