

GaAIAs-IR-Lumineszenzdiode (880 nm) GaAIAs Infrared Emitter (880 nm)

SFH 487



Wesentliche Merkmale

- GaAIAs-LED mit sehr hohem Wirkungsgrad
- Hohe Zuverlässigkeit
- Hohe Impulsbelastbarkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Gehäusegleich mit SFH 309, SFH 409

Anwendungen

- IR-Fernsteuerung von Fernseh-, Rundfunk- und Videogeräten, Lichtdimmern
- Lichtschranken bis 500 kHz
- Münzzähler
- Sensorik
- Diskrete Optokoppler

Features

- Very highly efficient GaAIAs-LED
- High reliability
- High pulse handling capability
- Good spectral match to silicon photodetectors
- Same package as SFH 309, SFH 409

Applications

- IR remote control for hifi and TV sets, video tape recorder, dimmers
- Light-reflection switches (max. 500 kHz)
- coin counters
- Sensor technology
- Discrete optocouplers

| Typ Type | Bestellnummer Ordering Code | Gehäuse Package |
|-------------|--------------------------------|--|
| SFH 487 | Q62703-Q1095 | 3-mm-LED-Gehäuse (T1), klares violettes Epoxy-Gießharz, Anschlüsse im 2.54-mm-Raster ($1/10''$), Anodenkennzeichnung: kürzerer Anschluß 3 mm LED package (T1), violet-colored transparent epoxy resin, solder tabs lead spacing 2.54 mm ($1/10''$), anode marking: short lead |
| SFH 487-2 | Q62703-Q2174 | |
| SFH 487-3 | Q62703-Q2175 | |

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 ... + 100 | °C |
| Sperrspannung Reverse voltage | V_R | 5 | V |
| Durchlaßstrom Forward current | I_F | 100 | mA |
| Stoßstrom, $\tau \leq 10\ \mu\text{s}$ Surge current | I_{FSM} | 2.5 | A |
| Verlustleistung Power dissipation | P_{tot} | 200 | mW |
| Wärmewiderstand, freie Beinchenlänge max. 10 mm Thermal resistance, lead length between package bottom and PC-board max. 10 mm | R_{thJA} | 375 | K/W |

Kennwerte ($T_A = 25\text{ °C}$)**Characteristics**

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|------------------------------|------------------|-----------------|
| Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\text{ mA}$ | λ_{peak} | 880 | nm |
| Spektrale Bandbreite bei 50% von I_{max} , $I_F = 100\text{ mA}$ Spectral bandwidth at 50% of I_{max} | $\Delta\lambda$ | 80 | nm |
| Abstrahlwinkel Half angle | φ | ± 20 | Grad deg. |
| Aktive Chipfläche Active chip area | A | 0.09 | mm ² |
| Abmessungen der aktiven Chipfläche Dimension of the active chip area | $L \times B$ $L \times W$ | 0.3×0.3 | mm |
| Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top | H | 2.6 | mm |

Kennwerte ($T_A = 25\text{ °C}$)
Characteristics (cont'd)

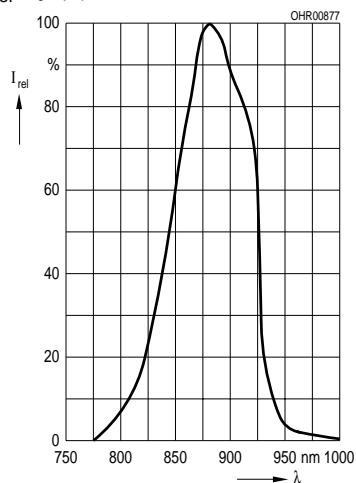
| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|------------------|----------------------------|-----------------|
| Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ | t_r, t_f | 0.6/0.5 | μs |
| Kapazität Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | C_o | 15 | pF |
| Durchlaßspannung Forward voltage $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$ | V_F | 1.5 (< 1.8) 3.0 (< 3.8) | V |
| Sperrstrom Reverse current $V_R = 5\text{ V}$ | I_R | 0.01 (≤ 1) | μA |
| Gesamtstrahlungsfluß Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | Φ_e | 25 | mW |
| Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 100\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 100\text{ mA}$ | TC_I | - 0.5 | %/K |
| Temperaturkoeffizient von V_F , $I_F = 100\text{ mA}$ Temperature coefficient of V_F , $I_F = 100\text{ mA}$ | TC_V | - 2 | mV/K |
| Temperaturkoeffizient von λ_{peak} , $I_F = 100\text{ mA}$ Temperature coefficient of λ_{peak} , $I_F = 100\text{ mA}$ | TC_λ | 0.25 | nm/K |

Gruppierung der Strahlstärke I_e in Achsrichtunggemessen bei einem Raumwinkel $\Omega = 0.01$ sr**Grouping of Radiant Intensity I_e in Axial Direction**at a solid angle of $\Omega = 0.01$ sr

| Bezeichnung Parameter | Symbol | Wert Value | | | Einheit Unit |
|---|----------------------|---------------|-----------|------------|-----------------|
| | | SFH 487 | SFH 487-2 | SFH 487-3 | |
| Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms | I_e | > 12.5 | > 20 | 31 ... 125 | mW/sr |
| Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s | $I_{e \text{ typ.}}$ | 270 | 270 | – | mW/sr |

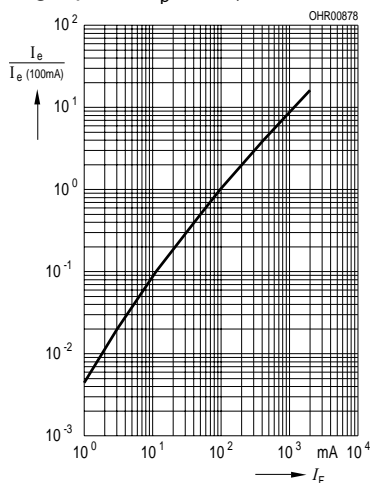
Relative Spectral Emission

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



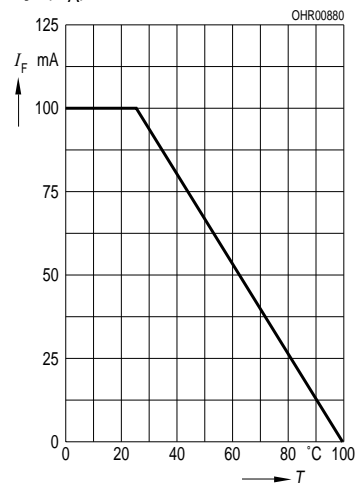
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



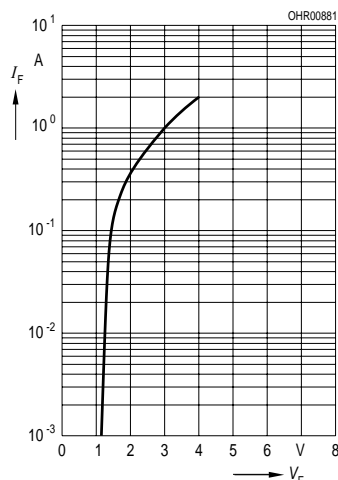
Max. Permissible Forward Current

$I_F = f(T_A)$



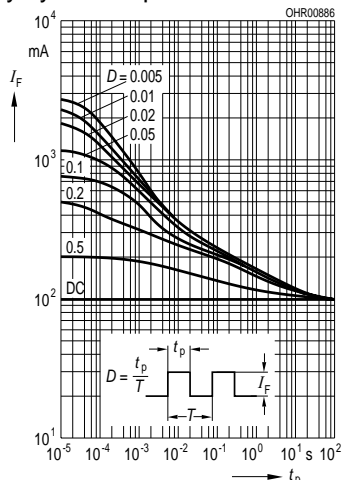
Forward Current, $I_F = f(V_F)$

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



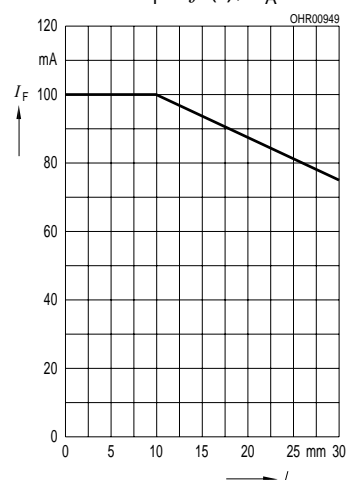
Permissible Pulse Handling Capability

$I_F = f(\tau)$, $T_A = 25 \text{ }^\circ\text{C}$,
duty cycle $D = \text{parameter}$

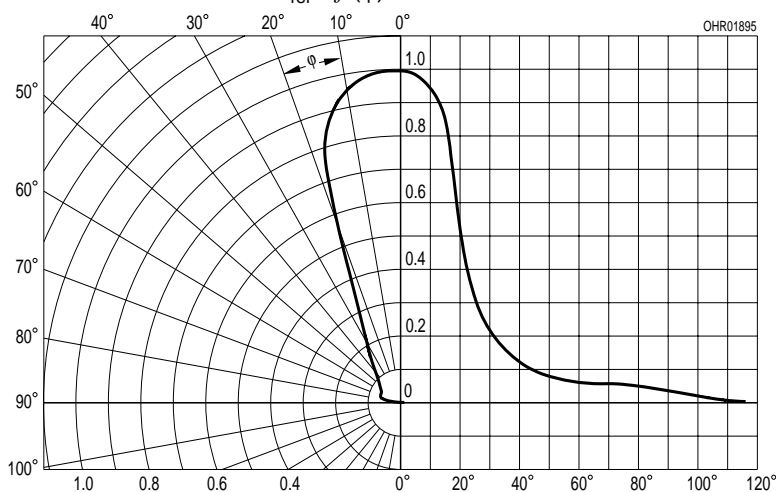


Forward Current vs. Lead Length

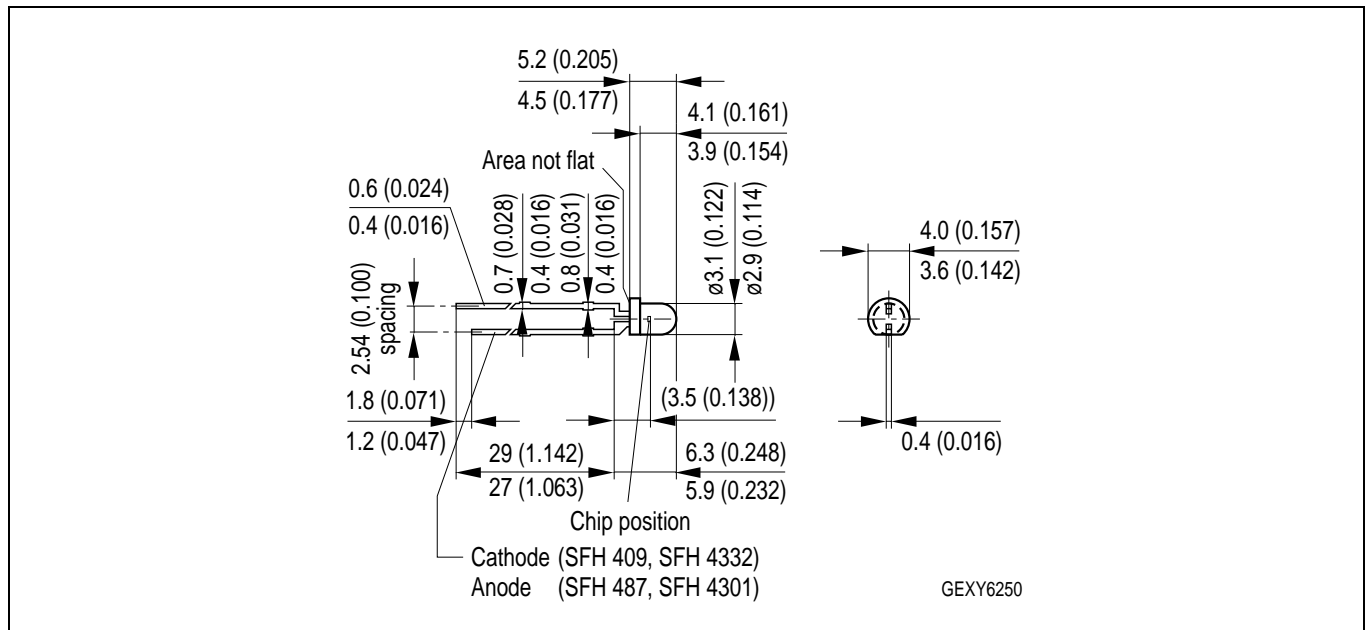
between the Package Bottom and the PC-Board $I_F = f(l)$, $T_A = 25 \text{ }^\circ\text{C}$



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



Maßzeichnung Package Outlines



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

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