

GaAIAs-IR-Lumineszenzdiode (880 nm)
GaAIAs Infrared Emitter (880 nm)
Lead (Pb) Free Product - RoHS Compliant

SFH 487



Wesentliche Merkmale

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

Features

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

Anwendungen

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

Applications

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

Typ Type	Bestellnummer Ordering Code	Strahlstärkegruppierung ¹⁾ ($I_F = 100 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant intensity grouping ¹⁾ , I_e (mW/sr)
SFH 487	Q62703Q1095	> 12.5
SFH 487-2	Q62703Q2174	20 ... 80
SFH 487-3	Q62703Q2175	31 ... 125

¹⁾ gemessen bei einem Raumwinkel $\Omega = 0.01 \text{ sr}$ / measured at a solid angle of $\Omega = 0.01 \text{ sr}$

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 ²
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top	H	2.6	mm

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

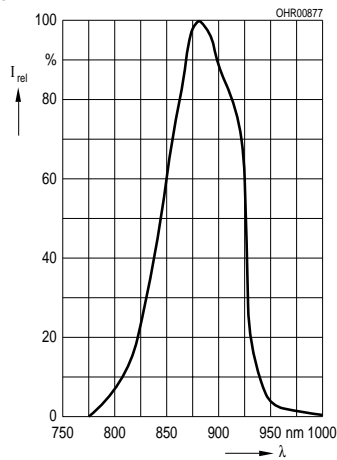
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$	t_r, t_f	0.6/0.5	μs
Kapazität Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	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 487-1	SFH 487-2	SFH 487-3	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	I_e	12.5 ... 25	20 ... 80	31 ... 125	mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s	$I_{e \text{ typ.}}$	–	270	–	mW/sr

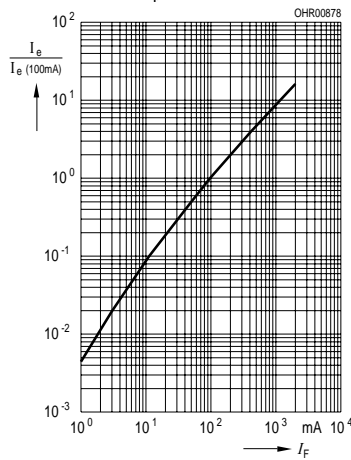
Relative Spectral Emission

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



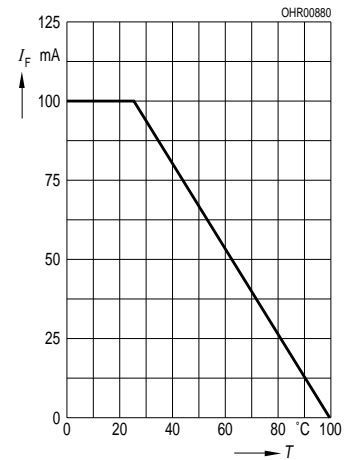
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



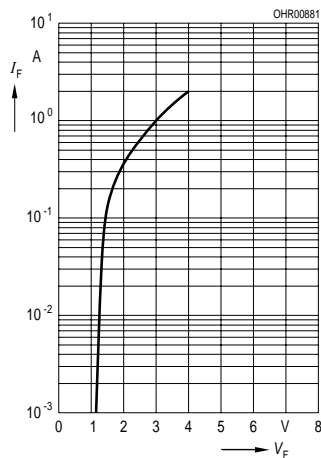
Max. Permissible Forward Current

$I_F = f(T_A)$

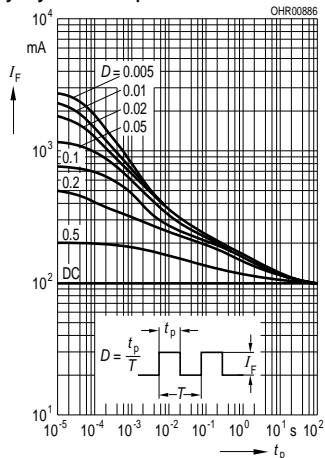


Forward Current, $I_F = f(V_F)$

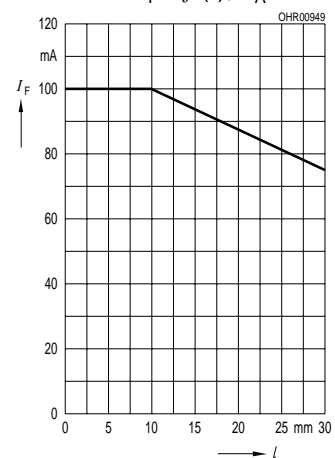
Single pulse, $t_p = 20 \mu\text{s}$



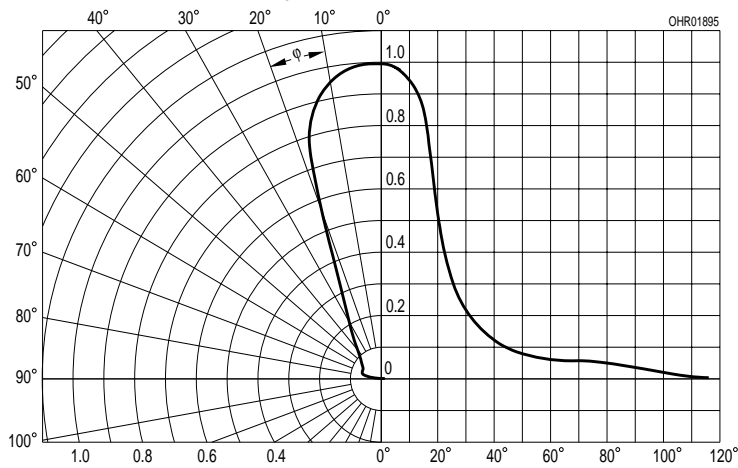
Permissible Pulse Handling Capability $I_F = f(\tau)$, $T_A = 25^\circ\text{C}$, duty cycle $D =$ parameter



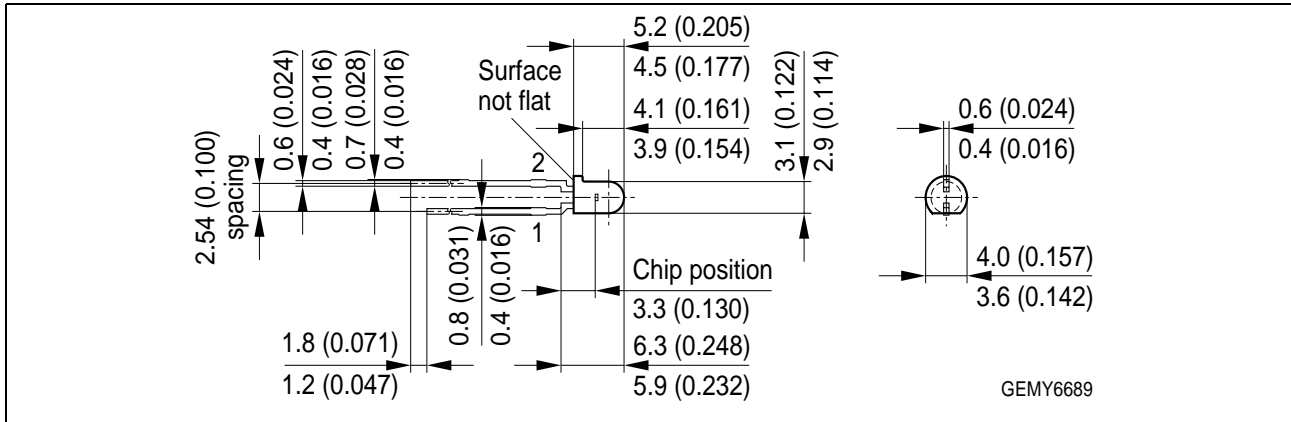
Forward Current vs. Lead Length between the Package Bottom and the PC-Board $I_F = f(l)$, $T_A = 25^\circ\text{C}$



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



**Maßzeichnung
Package Outlines**

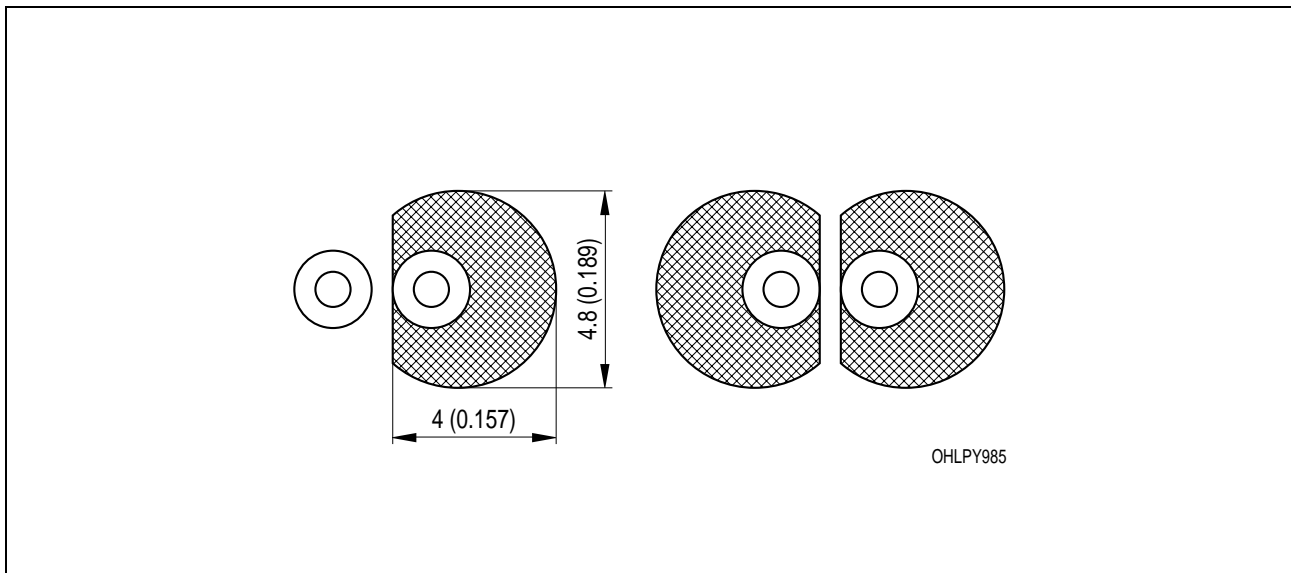


Maße in mm (inch) / Dimensions in mm (inch).

Gehäuse / Package	3mm, klares violette Gehäuse 1/10 " violett colored transparent package
Anschlußbelegung pin configuration	1 = Anode / anode 2= Kathode / cathode

**Empfohlenes Lötpad Design
Recommended Solder Pad**

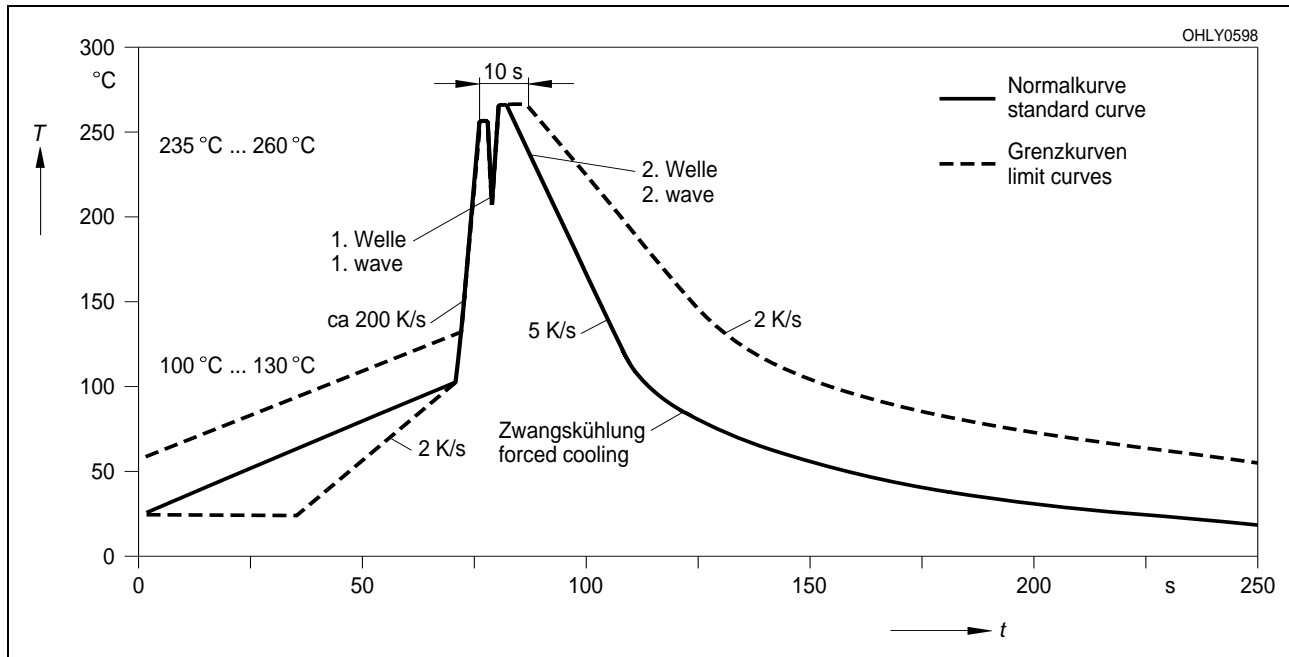
Wellenlöten (TTW)
TTW Soldering



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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