

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

**SFH 487**



**Wesentliche Merkmale**

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

**Features**

- Very highly efficient GaAlAs-LED
- High reliability
- 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
- Sensorik
- Diskrete Optokoppler

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

<sup>1)</sup> 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 $I_F = 100\text{ mA}$	$\lambda_{peak}$	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	$\varphi$	$\pm 20$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.09	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	$0.3 \times 0.3$	mm <sup>2</sup>
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top	$H$	2.6	mm

Kennwerte ( $T_A = 25\text{ °C}$ )

Characteristics (cont'd)

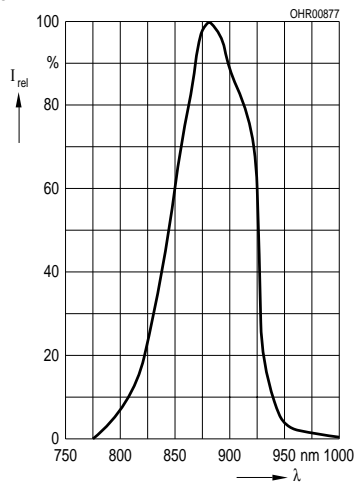
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$	$t_r, t_f$	0.6/0.5	$\mu\text{s}$
Kapazität 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 ( $\leq 1$ )	$\mu\text{A}$
Gesamtstrahlungsfluß Total radiant flux $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_e$	25	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 100\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 100\text{ mA}$	$TC_I$	- 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 $\lambda_{\text{peak}}$ , $I_F = 100\text{ mA}$ Temperature coefficient of $\lambda_{\text{peak}}$ , $I_F = 100\text{ mA}$	$TC_\lambda$	0.25	nm/K

**Gruppierung der Strahlstärke  $I_e$  in Achsrichtung**gemessen 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 ... 80	31 ... 125	mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ $\mu$ s	$I_{e \text{ typ.}}$	270	270	–	mW/sr

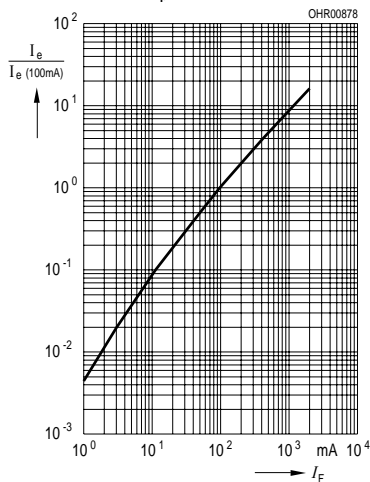
**Relative Spectral Emission**

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



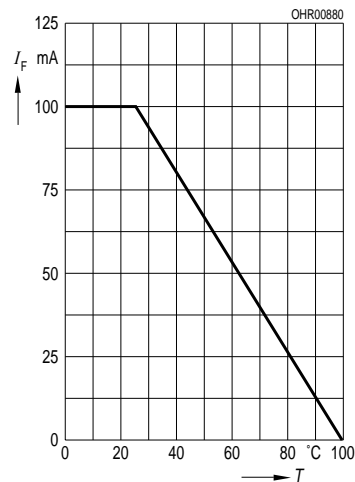
**Radiant Intensity**  $\frac{I_e}{I_e \text{ 100 mA}} = f(I_F)$

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



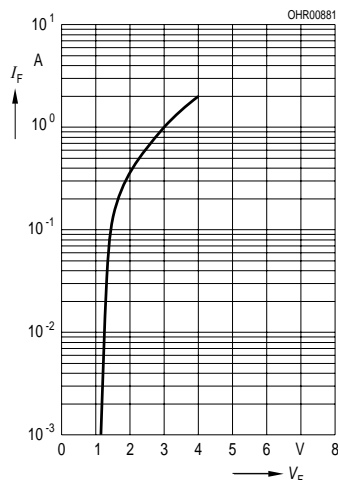
**Max. Permissible Forward Current**

$I_F = f(T_A)$

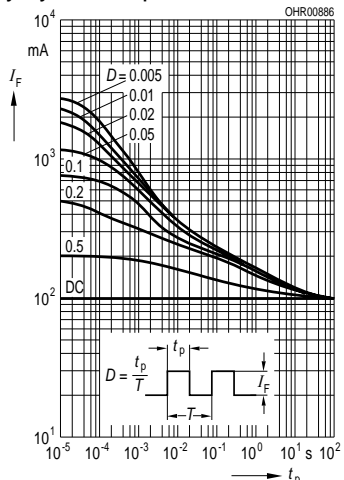


**Forward Current,  $I_F = f(V_F)$**

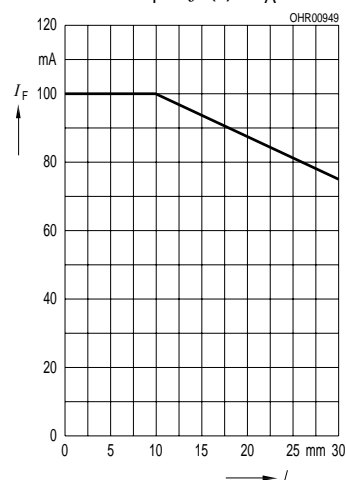
Single pulse,  $t_p = 20 \mu\text{s}$



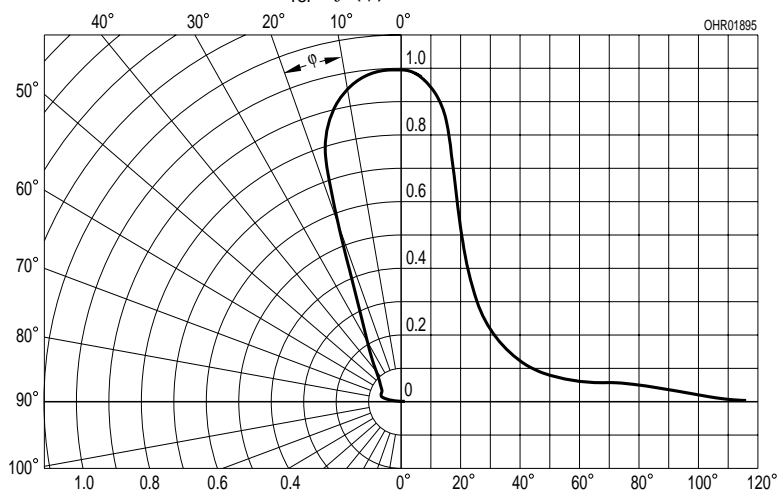
**Permissible Pulse Handling Capability  $I_F = f(\tau)$ ,  $T_A = 25^\circ\text{C}$ , duty cycle  $D =$  parameter**



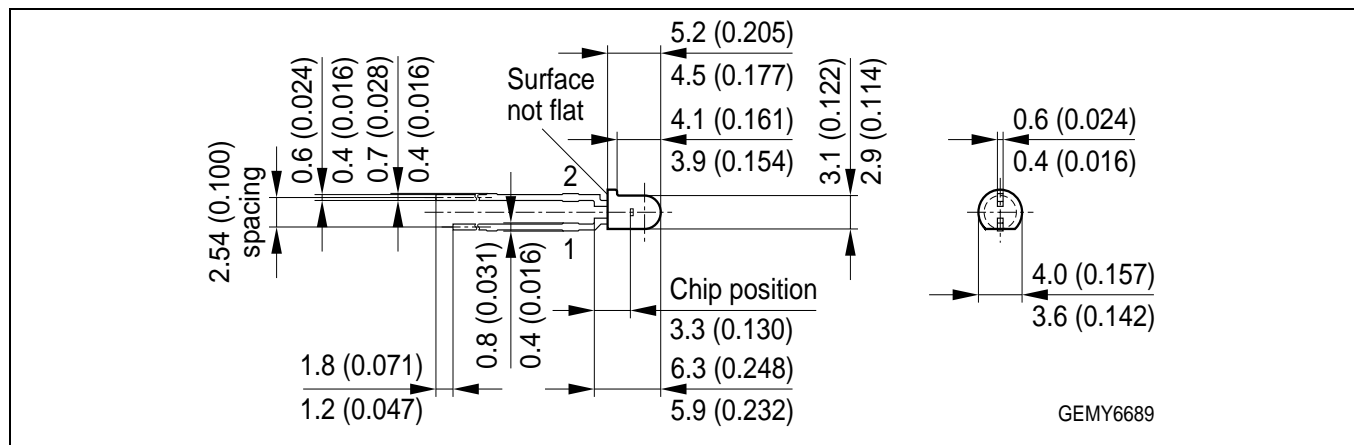
**Forward Current vs. Lead Length between the Package Bottom and the PC-Board  $I_F = f(l)$ ,  $T_A = 25^\circ\text{C}$**



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



**Maßzeichnung  
Package Outlines**

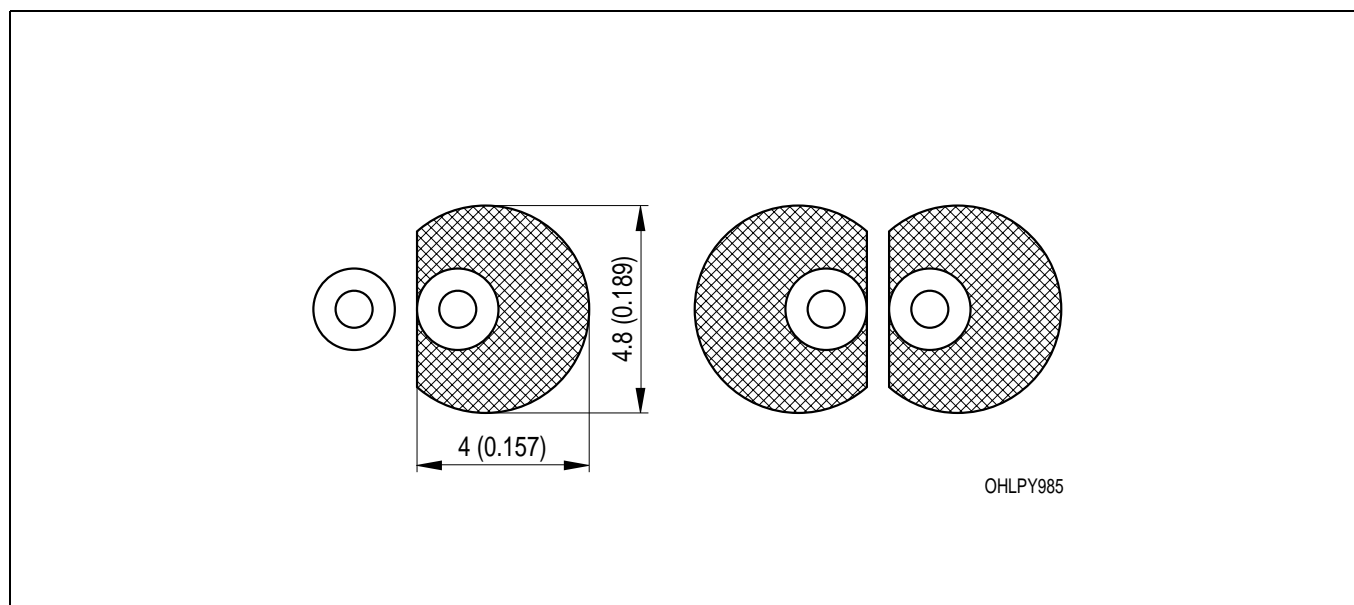


Maße in mm (inch) / Dimensions in mm (inch).

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

**Empfohlenes Lötpaddesign  
Recommended Solder Pad**

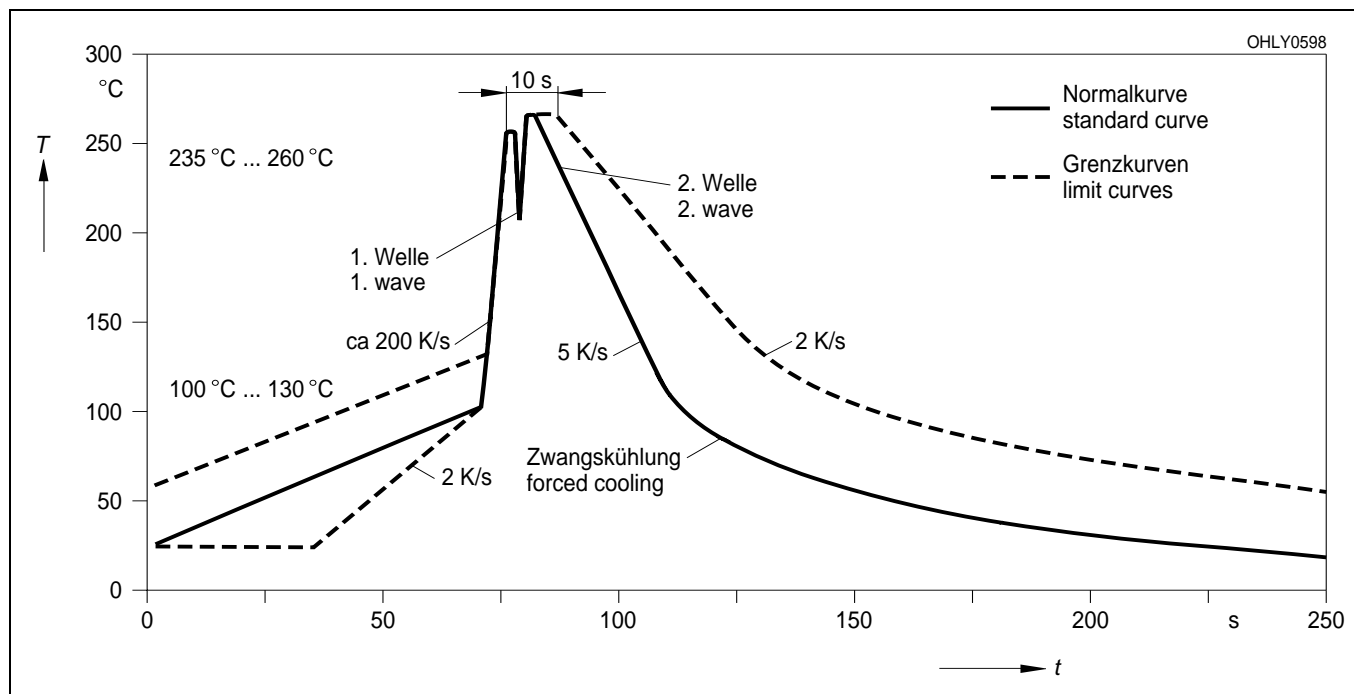
Wellenlöten (TTW)  
TTW Soldering



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

**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten (TTW)**  
**TTW Soldering**

(nach CECC 00802)  
(acc. to CECC 00802)



Published by  
**OSRAM Opto Semiconductors GmbH**  
Wernerwerkstrasse 2, D-93049 Regensburg  
[www.osram-os.com](http://www.osram-os.com)  
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