

# GaAIAs-IR-Lumineszenzdiode (880 nm) in SMR® Gehäuse

## GaAIAs Infrared Emitters (880 nm) in SMR® Package

**SFH 4580**  
**SFH 4585**



SFH 4580



SFH 4585

### Wesentliche Merkmale

- GaAIAs-LED mit sehr hohem Wirkungsgrad
- SMR® (Surface Mount Radial) Gehäuse
- Für Oberflächenmontage geeignet
- Gegurtet lieferbar
- Gehäusegleich mit Fotodiode SFH 2500/ SFH 2505
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- UL-Freigabe

### Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb
- Sensorik
- Diskrete Lichtschranken
- Diskrete Optokoppler

### Features

- Very highly efficient GaAIAs-LED
- SMR® (Surface Mount Radial) package
- Suitable for surface mounting (SMT)
- Available on tape and reel
- Same package as photodiode SFH 2500/ SFH 2505
- High reliability
- Spectral match with silicon photodetectors
- UL-approval

### Applications

- IR remote control of hi-fi and TV-sets, video tape recorders, dimmers
- Remote control for steady and varying intensity
- Sensor technology
- Discrete interrupters
- 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 4580	Q62702-P1806	≥ 25
SFH 4585	Q62702-P1799	

<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, $t_p = 10\text{ }\mu\text{s}$ , $D = 0$ 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 $I_{rel}$ Spectral bandwidth at 50% of $I_{rel}$ $I_F = 100\text{ mA}$	$\Delta\lambda$	80	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 15$	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
Abstand Chipoberfläche bis Linsenscheitel Distance chip front to lens top	$H$	3.9 ... 4.5	mm

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

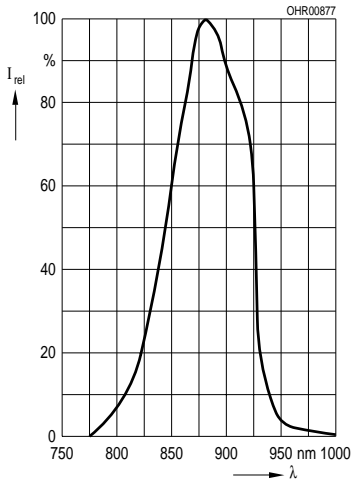
<b>Bezeichnung Parameter</b>	<b>Symbol Symbol</b>	<b>Wert Value</b>	<b>Einheit Unit</b>
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$	$t_r$ , $t_f$	0.6/0.5	$\mu\text{s}$
Kapazität Capacitance $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_o$	15	$\text{pF}$
Durchlaßspannung, Forward voltage $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$ $V_F$	1.50 ( $\leq 1.8$ ) 3.00 ( $\leq 3.8$ )	V 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 $\lambda$ , $I_F = 100\text{ mA}$ Temperature coefficient of $\lambda$ , $I_F = 100\text{ mA}$	$TC_\lambda$	0.25	nm/K

**Strahlstärke  $I_e$  in Achsrichtung**gemessen bei einem Raumwinkel  $\Omega = 0.01$  sr**Radiant Intensity  $I_e$  in Axial Direction**at a solid angle of  $\Omega = 0.01$  sr

Bezeichnung Parameter	Symbol	Wert Value	Einheit Unit
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$	$\geq 25$	mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ $\mu$ s	$I_{e \text{ typ}}$	225	mW/sr

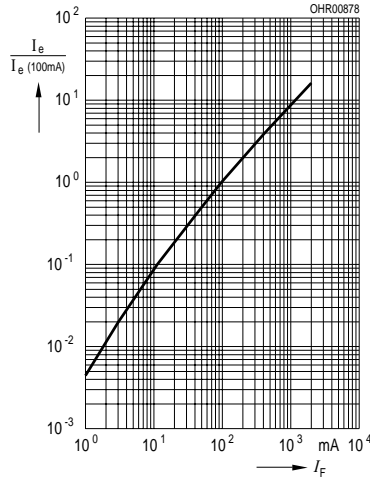
**Relative Spectral Emission**

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



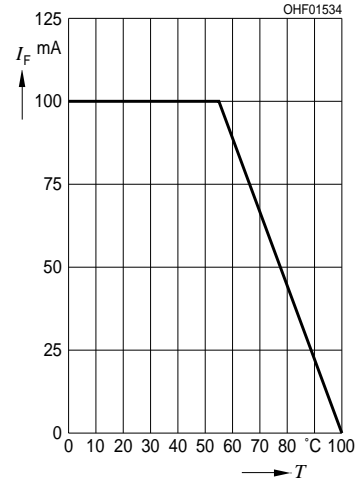
**Radiant Intensity**  $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



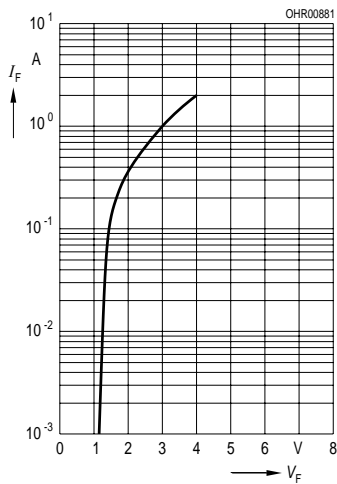
**Max. Permissible Forward Current**

$I_F = f(T_A)$



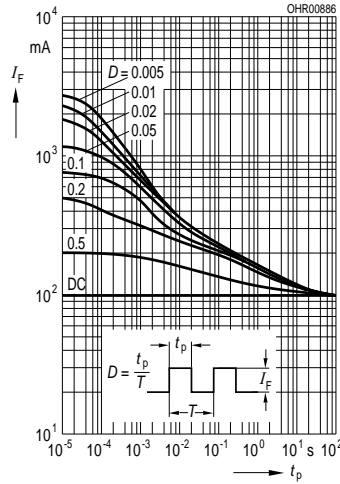
**Forward Current**

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



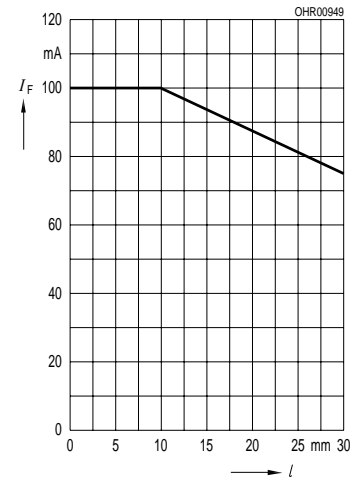
**Permissible Pulse Handling Capability**

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

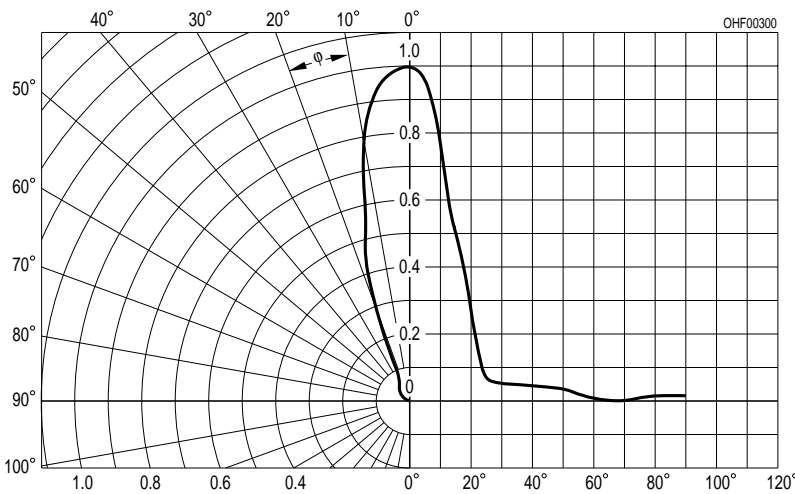


**Forward Current vs. Lead Length between the Package Bottom and the PC-Board**

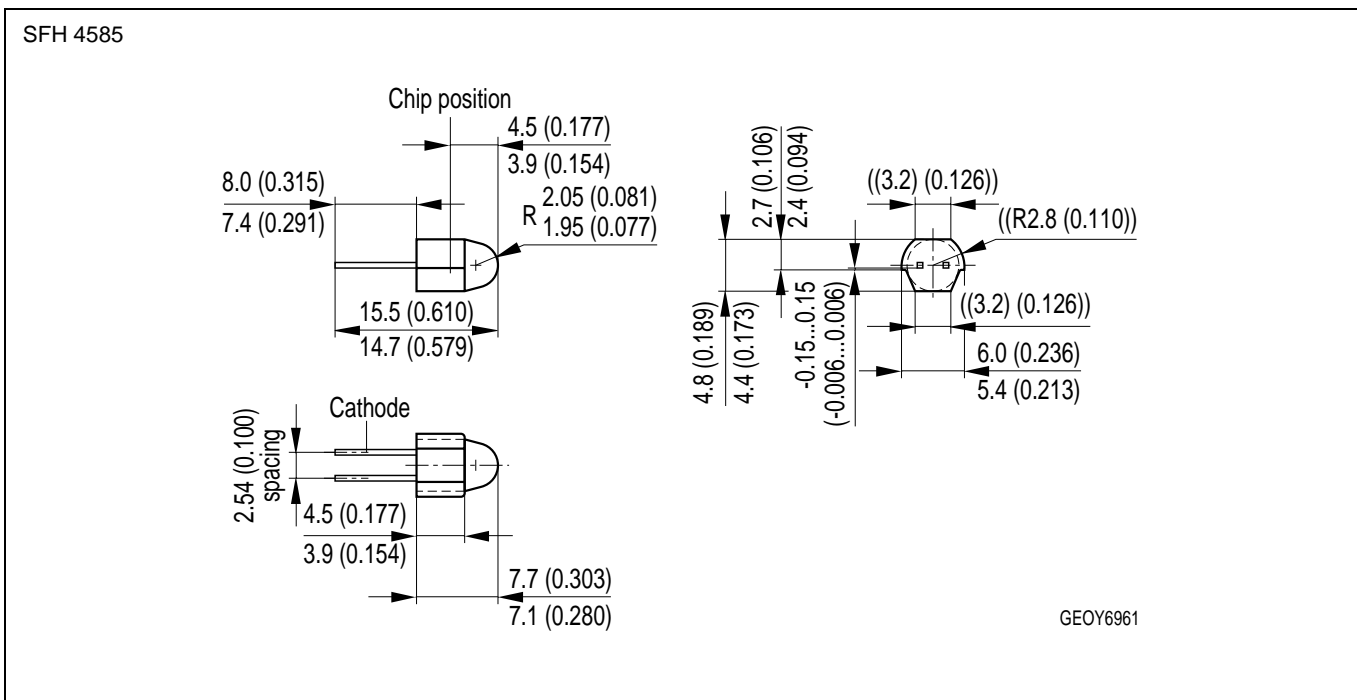
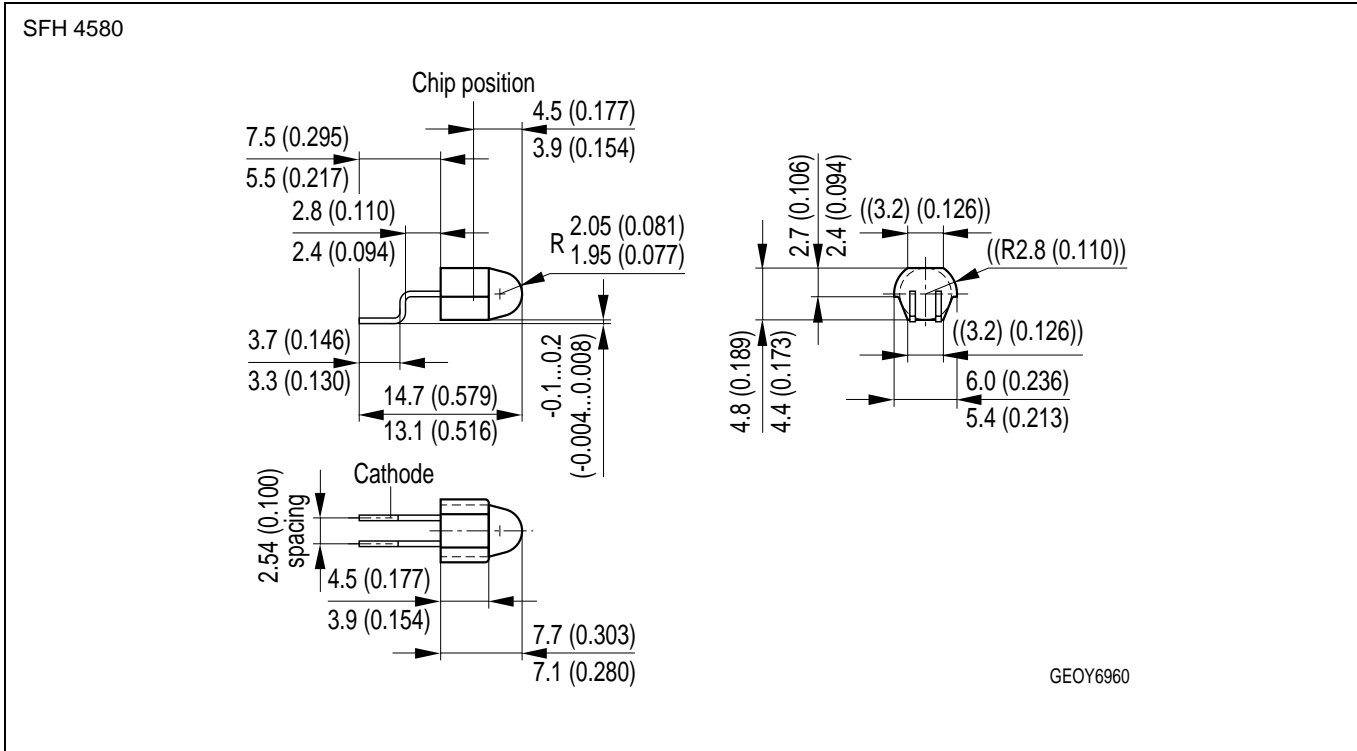
$I_F = f(l)$ ,  $T_A = 25^\circ\text{C}$



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



Maßzeichnung  
Package Outlines



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

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