

# GaAlAs-IR-Lumineszenzdiode (880 nm)

## GaAlAs Infrared Emitters (880 nm)

### Lead (Pb) Free Product - RoHS Compliant

#### SFH 484 SFH 485



SFH 484



SFH 485

#### Wesentliche Merkmale

- GaAlAs-LED mit sehr hohem Wirkungsgrad
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Gegurtet lieferbar (im Ammo-Pack)
- Gruppiert lieferbar
- SFH 484: Gehäusegleich mit LD 274
- SFH 485: Gehäusegleich mit SFH 300, SFH 203

#### Features

- Very highly efficient GaAlAs-LED
- High reliability
- Spectral match with silicon photodetectors
- Available on tape and reel (in Ammopack)
- Available in bins
- SFH 484: Same package as LD 274
- SFH 485: Same package as SFH 300, SFH 203

#### Anwendungen

- IR-Fernsteuerung von Fernseh- und Rundfunkgeräten, Videorecordern, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb
- Rauchmelder (UL-Freigabe)
- Sensorik
- Diskrete Lichtschranken

#### Applications

- IR remote control of hi-fi and TV-sets, video tape recorders, dimmers
- Remote control for steady and varying intensity
- Smoke detectors (UL-approval)
- Sensor technology
- Discrete interrupters

| Typ<br>Type | Bestellnummer<br>Ordering Code | Gehäuse<br>Package                                                                                                                                                                                                                                                       |
|-------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SFH 484     | Q62703Q1092                    | 5-mm-LED-Gehäuse (T 1 3/4), klares violettes Epoxy-Gießharz, Anschlüsse im 2.54-mm-Raster (1/10"), Anodenkennzeichnung: kürzerer Anschluß<br>5 mm LED package (T 1 3/4), violet-colored epoxy resin, solder tabs lead spacing 2.54 mm (1/10"), anode marking: short lead |
| SFH 484-2   | Q62703Q1756                    |                                                                                                                                                                                                                                                                          |
| SFH 485     | Q62703Q1093                    |                                                                                                                                                                                                                                                                          |
| SFH 485-2   | Q62703Q1547                    |                                                                                                                                                                                                                                                                          |

Grenzwerte ( $T_A = 25\text{ °C}$ )

## Maximum Ratings

| Bezeichnung<br>Parameter                                                                                                                | Symbol<br>Symbol  | Wert<br>Value  | Einheit<br>Unit |
|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-----------------|
| Betriebs- und Lagertemperatur<br>Operating and storage temperature range                                                                | $T_{op}; T_{stg}$ | - 40 ... + 100 | °C              |
| Sperrspannung<br>Reverse voltage                                                                                                        | $V_R$             | 5              | V               |
| Durchlaßstrom<br>Forward current                                                                                                        | $I_F$             | 100            | mA              |
| Stoßstrom, $t_p = 10\text{ }\mu\text{s}$ , $D = 0$<br>Surge current                                                                     | $I_{FSM}$         | 2.5            | A               |
| Verlustleistung<br>Power dissipation                                                                                                    | $P_{tot}$         | 200            | mW              |
| Wärmewiderstand, freie Beinchenlänge<br>max. 10 mm<br>Thermal resistance, lead length between<br>package bottom and PC-board max. 10 mm | $R_{thJA}$        | 375            | K/W             |

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

| Bezeichnung<br>Parameter                                                                                                                                                                                          | Symbol<br>Symbol             | Wert<br>Value                              | Einheit<br>Unit |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------------------------------|-----------------|
| Wellenlänge der Strahlung<br>Wavelength at peak emission<br>$I_F = 100\text{ mA}$                                                                                                                                 | $\lambda_{\text{peak}}$      | 880                                        | nm              |
| Spektrale Bandbreite bei 50% von $I_{\text{rel}}$<br>Spectral bandwidth at 50% of $I_{\text{rel}}$<br>$I_F = 100\text{ mA}$                                                                                       | $\Delta\lambda$              | 80                                         | nm              |
| Abstrahlwinkel<br>Half angle<br>SFH 484<br>SFH 485                                                                                                                                                                | $\varphi$<br>$\varphi$       | $\pm 8$<br>$\pm 20$                        | Grad<br>deg.    |
| Aktive Chipfläche<br>Active chip area                                                                                                                                                                             | $A$                          | 0.09                                       | mm <sup>2</sup> |
| Abmessungen der aktiven Chipfläche<br>Dimension of the active chip area                                                                                                                                           | $L \times B$<br>$L \times W$ | $0.3 \times 0.3$                           | mm <sup>2</sup> |
| Abstand Chipoberfläche bis Linsenscheitel<br>Distance chip front to lens top<br>SFH 484<br>SFH 485                                                                                                                | $H$<br>$H$                   | 5.1 ... 5.7<br>4.2 ... 4.8                 | mm<br>mm        |
| Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$<br>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<br>Capacitance<br>$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$                                                                                                                                               | $C_o$                        | 15                                         | pF              |
| Durchlaßspannung<br>Forward voltage<br>$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$<br>$I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$                                                                              | $V_F$<br>$V_F$               | 1.50 ( $\leq 1.8$ )<br>3.00 ( $\leq 3.8$ ) | V<br>V          |
| Sperrstrom,<br>Reverse current<br>$V_R = 5\text{ V}$                                                                                                                                                              | $I_R$                        | 0.01 ( $\leq 1$ )                          | $\mu\text{A}$   |
| Gesamtstrahlungsfluß,<br>Total radiant flux<br>$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$                                                                                                                       | $\Phi_e$                     | 25                                         | mW              |

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

| Bezeichnung<br>Parameter                                                                                                                            | Symbol<br>Symbol | Wert<br>Value | Einheit<br>Unit |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------|-----------------|
| Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ ,<br>$I_F = 100\text{ mA}$<br>Temperature coefficient of $I_e$ or $\Phi_e$ ,<br>$I_F = 100\text{ mA}$ | $TC_I$           | - 0.5         | %/K             |
| Temperaturkoeffizient von $V_F$ , $I_F = 100\text{ mA}$<br>Temperature coefficient of $V_F$ , $I_F = 100\text{ mA}$                                 | $TC_V$           | - 2           | mV/K            |
| Temperaturkoeffizient von $\lambda$ , $I_F = 100\text{ mA}$<br>Temperature coefficient of $\lambda$ , $I_F = 100\text{ mA}$                         | $TC_\lambda$     | 0.25          | nm/K            |

**Gruppierung der Strahlstärke  $I_e$  in Achsrichtung**

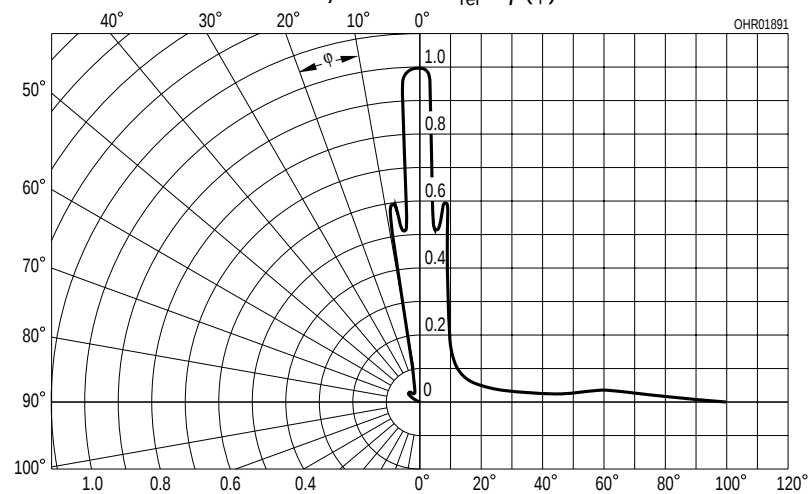
gemessen bei einem Raumwinkel  $\Omega = 0.001\text{ sr}$  bei SFH 484 bzw.  $\Omega = 0.01\text{ sr}$  bei SFH 485

**Grouping of Radiant Intensity  $I_e$  in Axial Direction**

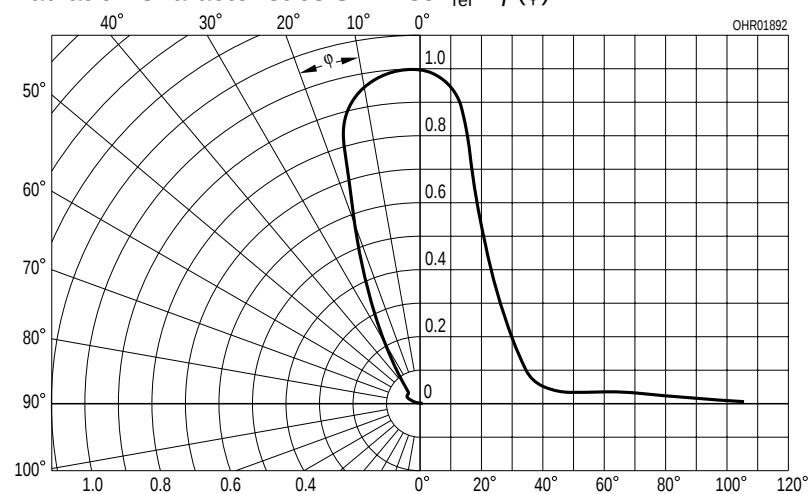
at a solid angle of  $\Omega = 0.001\text{ sr}$  at SFH 484 or  $\Omega = 0.01\text{ sr}$  at SFH 485

| Bezeichnung<br>Parameter                                                                 | Symbol                                   | Wert<br>Value |              |              |            |              | Einheit<br>Unit |
|------------------------------------------------------------------------------------------|------------------------------------------|---------------|--------------|--------------|------------|--------------|-----------------|
|                                                                                          |                                          | SFH<br>484    | SFH<br>484-1 | SFH<br>484-2 | SFH<br>485 | SFH<br>485-2 |                 |
| Strahlstärke<br>Radiant intensity<br>$I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$        | $I_{e\text{ min}}$<br>$I_{e\text{ max}}$ | 50<br>-       | 50<br>100    | 80<br>-      | 25<br>160  | 25<br>100    | mW/sr<br>mW/sr  |
| Strahlstärke<br>Radiant intensity<br>$I_F = 1\text{ A}$ , $t_p = 100\text{ }\mu\text{s}$ | $I_{e\text{ typ.}}$                      | 800           | 700          | 900          | 300        | 340          | mW/sr           |

**Radiation Characteristics, SFH 484**  $I_{\text{rel}} = f(\varphi)$

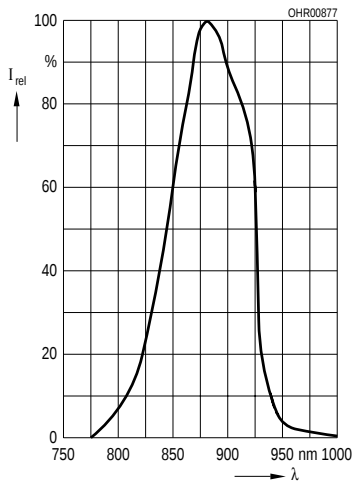


**Radiation Characteristics SFH 485**  $I_{\text{rel}} = f(\varphi)$



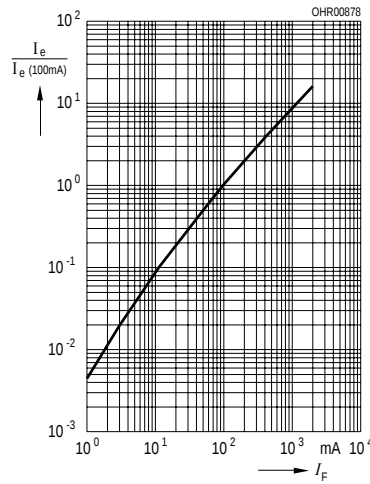
### Relative Spectral Emission

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



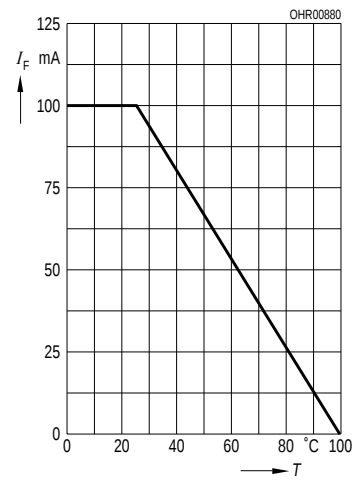
$$\text{Radiant Intensity } \frac{I_e}{I_e(100 \text{ mA})} = f(I_F)$$

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



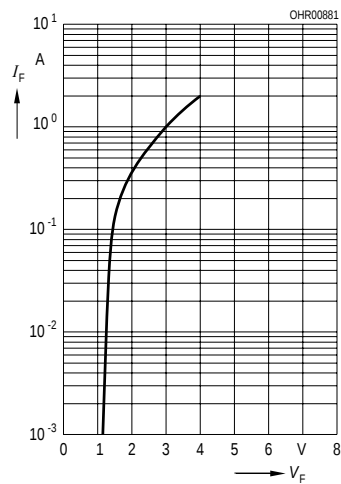
### Max. Permissible Forward Current

$$I_F = f(T_A)$$



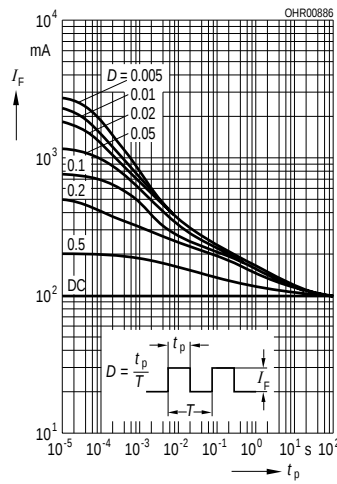
### Forward Current

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



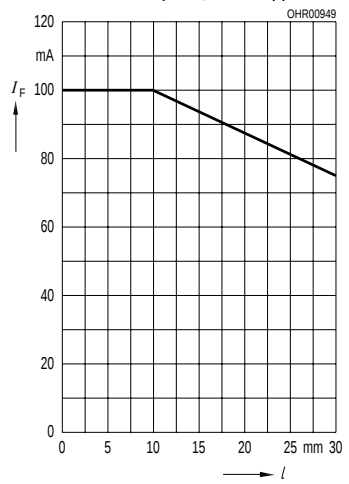
### Permissible Pulse Handling Capability

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



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

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



The technical drawing illustrates the dimensions of a cathode chip. It includes a side view and a top-down view of the circular cathode.

- Side View Dimensions:**
  - Total length: 9.0 (0.354)
  - Distance from left edge to start of chip: 8.2 (0.323)
  - Chip length: 7.8 (0.307)
  - Distance from left edge to end of chip: 7.5 (0.295)
  - Chip thickness: 0.6 (0.024)
  - Distance between chips: 0.4 (0.016)
  - Spacing between chips: 2.54 (0.100)
  - Distance from bottom edge to start of chip: 1.8 (0.071)
  - Distance from bottom edge to end of chip: 1.2 (0.047)
  - Distance from left edge to center of chip: 29 (1.142)
  - Distance from left edge to right edge of chip: 27 (1.063)
  - Chip position offset: 5.7 (0.224)
  - Chip position offset: 5.1 (0.201)
- Top-Down View Dimensions:**
  - Cathode diameter:  $\varnothing 5.1$  (0.201)
  - Inner diameter:  $\varnothing 4.8$  (0.189)
  - Distance from center to edge: 5.9 (0.232)
  - Distance from center to edge: 5.5 (0.217)
  - Distance from center to edge: 0.6 (0.024)
  - Distance from center to edge: 0.4 (0.016)
- Labels:**
  - Area not flat
  - Cathode
  - Chip position

Technical drawing of the GEXY6305 package showing side and top views with dimensions in mm and inches.

**Side View Dimensions:**

- Overall length: 9.0 (0.354)
- Distance from lead tip to end of package: 8.2 (0.323)
- Lead length: 7.8 (0.307)
- Distance from lead tip to center of package: 7.5 (0.295)
- Lead thickness: 0.6 (0.024)
- Lead spacing: 0.4 (0.016)
- Distance from lead tip to start of chip: 2.54 (0.100)
- Chip length: 1.5 (0.059)
- Chip width: 0.8 (0.031)
- Chip thickness: 0.5 (0.020)
- Chip position: 4.8 (0.189)
- Chip width: 4.2 (0.165)
- Chip length: 29 (1.142)
- Chip width: 27 (1.063)

**Top View Dimensions:**

- Distance from lead tip to center of package: 5.9 (0.232)
- Distance from lead tip to center of package: 5.5 (0.217)
- Lead thickness: 0.6 (0.024)
- Lead spacing: 0.4 (0.016)

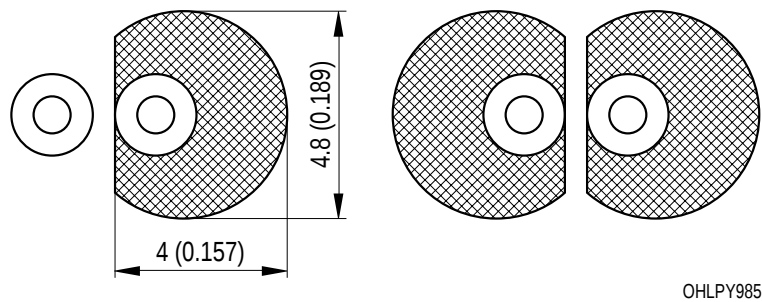
**Other Labels:**

- Area not flat
- Cathode

# OSRAM

**Empfohlenes Lötpaddesign**  
**Recommended Solder Pad**

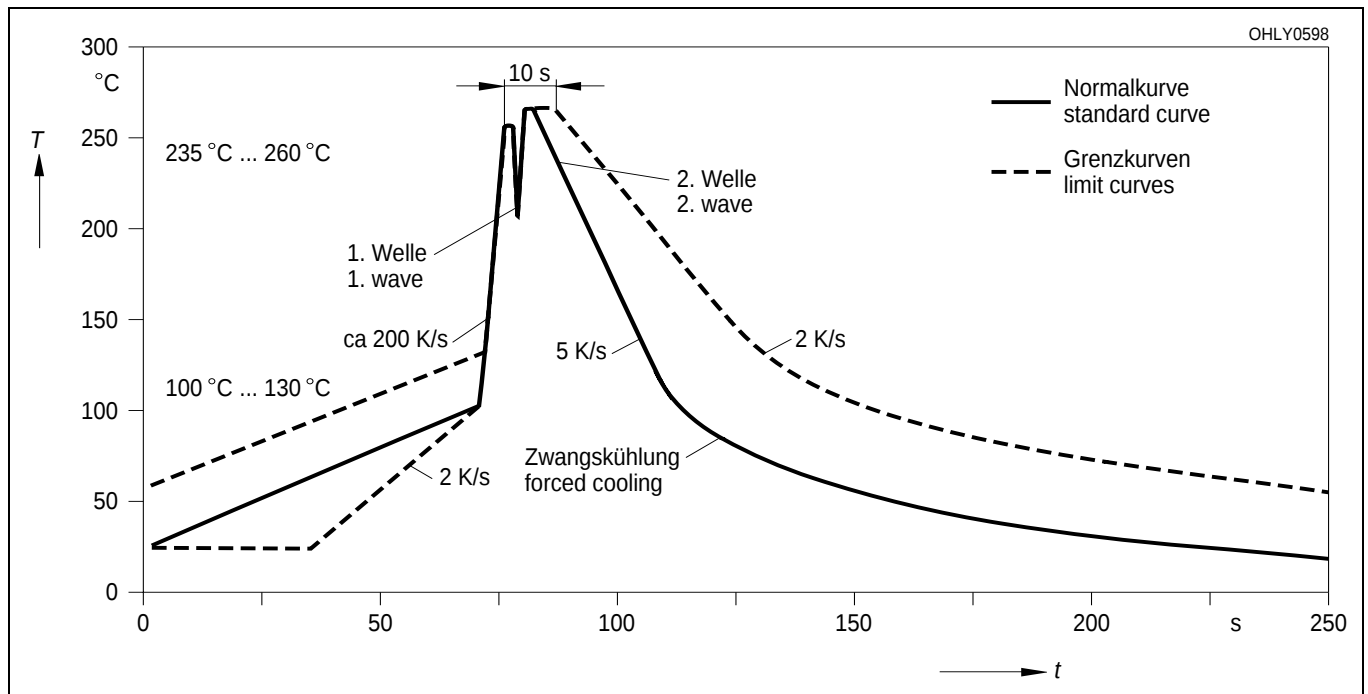
Wellenlöten (TTW)  
 TTW Soldering



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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