

GaAlAs-Lumineszenzdiode
GaAlAs Infrared Emitter
Lead (Pb) Free Product - RoHS Compliant

SFH 483 L/M E7800



Wesentliche Merkmale

- Hergestellt im Schmelzepitaxieverfahren
- Anode galvanisch mit dem Gehäuseboden verbunden
- Hohe Zuverlässigkeit
- Gute spektrale Anpassung an Si-Fotoempfänger
- Gehäusegleich mit BPX 63, BP 103, LD 242, SFH 464
- Anwendungsklasse nach DIN 40 040 GQC

Features

- Fabricated in a liquid phase epitaxy process
- Anode is electrically connected to the case
- High reliability
- Matches all Si-Photodetectors
- Same package as BPX 63, BP 103, LD 242, SFH 464
- DIN humidity category in acc. with DIN 40 040 GQG

Anwendungen 2007-12-07

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Sensorik
- Lichtgitter

Applications

- Photointerrupters
- Sensor technology
- Light curtains

| 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 483 L/M E7800 | Q62703Q4755 | 2 (> 1) |

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

Grenzwerte ($T_C = 25\text{ °C}$)
Maximum Ratings

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|--|--------------------------|---------------|-----------------|
| Betriebs- und Lagertemperatur Operating and storage temperature range | $T_{op}; T_{stg}$ | - 40 ... + 80 | °C |
| Sperrspannung Reverse voltage | V_R | 5 | V |
| Vorwärtsgleichstrom Forward current | I_F | 200 | mA |
| Stoßstrom, $t_p = 10\text{ }\mu\text{s}$, $D = 0$ Surge current | I_{FSM} | 2.5 | A |
| Verlustleistung Power dissipation | P_{tot} | 470 | mW |
| Wärmewiderstand Thermal resistance | R_{thJA} R_{thJC} | 450 160 | K/W 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} Spectral bandwidth at 50% of I_{max} $I_F = 100\text{ mA}$ | $\Delta\lambda$ | 80 | nm |
| Abstrahlwinkel Half angle | φ | ± 23 | Grad deg. |
| Aktive Chipfläche Active chip area | A | 0.16 | mm ² |
| Abmessungen der aktiven Chipfläche Dimension of the active chip area | $L \times B$ $L \times W$ | 0.4 × 0.4 | mm ² |
| Abstand Gehäuserückseite bis Chipoberfläche Distance chip front to case back | H | 2.7 ... 2.9 | mm |
| Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\text{ }\Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$, $R_L = 50\text{ }\Omega$ | t_r, t_f | 0.6/0.5 | μs |

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

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|------------------|----------------------------|-----------------|
| Kapazität Capacitance $V_R = 0\text{ V}, f = 1\text{ MHz}$ | C_o | 25 | pF |
| Durchlassspannung Forward voltage $I_F = 100\text{ mA}, t_p = 20\text{ ms}$ $I_F = 1\text{ A}, t_p = 100\text{ }\mu\text{s}$ | V_F | 1.5 (< 1.8) 2.4 (< 3.0) | 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 | 23 | 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 | - 2.5 | mV/K |
| Temperaturkoeffizient von λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$ | TC_λ | + 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)

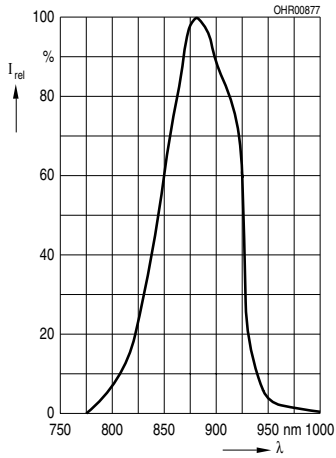
| Bezeichnung Parameter | Symbol | Werte Values | | Einheit Unit |
|-------------------------------|--------------|-----------------|----------------|-----------------|
| | | SFH 483-L E7800 | SFH483-M E7800 | |
| Strahlstärke ¹⁾ | | | | |
| Radiant intensity | $I_{e \min}$ | 1 | 1.6 | mW/sr |
| $I_F = 100$ mA, $t_p = 20$ ms | $I_{e \max}$ | 2 | 3.2 | mW/sr |

¹⁾ Die Messung der Strahlstärke und des Halbwinkels erfolgt mit einer Lochblende vor dem Bauteil (Durchmesser der Lochblende: 1,1 mm; Abstand Lochblende zu Gehäuserückseite: 4,0 mm). Dadurch wird sichergestellt, dass bei der Strahlstärkemessung nur diejenige Strahlung in Achsrichtung bewertet wird, die direkt von der Chipoberfläche austritt. Von der Bodenplatte reflektierte Strahlung (vagabundierende Strahlung) wird dagegen nicht bewertet. Diese Reflexionen sind besonders bei Abbildungen der Chipoberfläche über Zusatzoptiken störend (z.B. Lichtschranken großer Reichweite). In der Anwendung werden im allgemeinen diese Reflexionen ebenfalls durch Blenden unterdrückt. Durch dieses, der Anwendung entsprechende, Messverfahren ergibt sich für den Anwender eine besser verwertbare Größe. Diese Lochblendenmessung ist gekennzeichnet durch den Eintrag „E 7800“, der an die Typenbezeichnung angehängt ist.

¹⁾ An aperture is used in front of the component for measurement of the radiant intensity and the half angle (diameter of the aperture: 1.1 mm; distance of aperture to case back side: 4.0 mm). This ensures that solely the radiation in axial direction emitting directly from the chip surface will be evaluated during measurement of the radiant intensity. Radiation reflected by the bottom plate (stray radiation) will not be evaluated. These reflections impair the projection of the chip surface by additional optics (e.g. long-range light reflection switches). In respect of the application of the component, these reflections are generally suppressed by apertures as well. This measuring procedure corresponding with the application provides more useful values. This aperture measurement is denoted by "E 7800" added to the type designation.

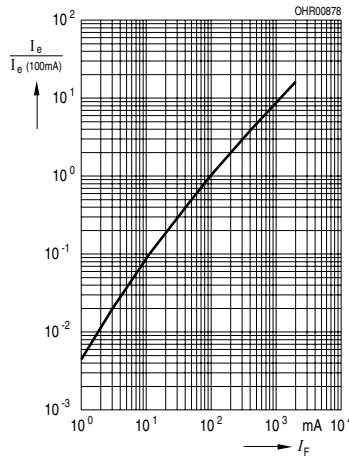
Relative Spectral Emission

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



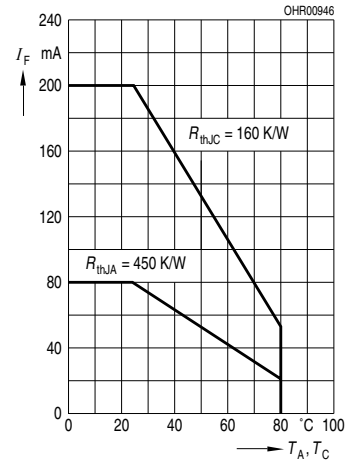
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

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



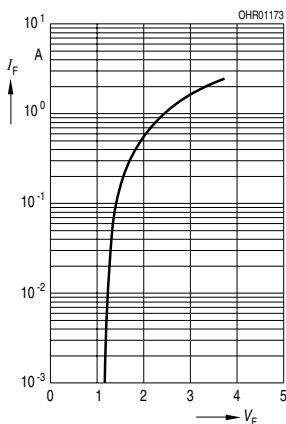
Max. Permissible Forward Current

$I_F = f(T_A)$

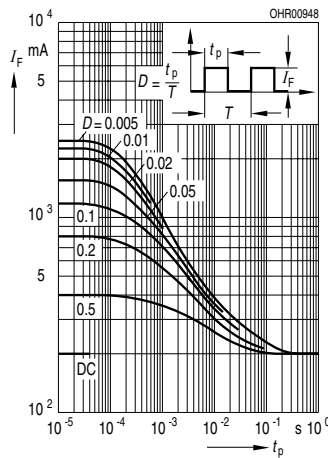


Forward Current $I_F = f(V_F)$

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

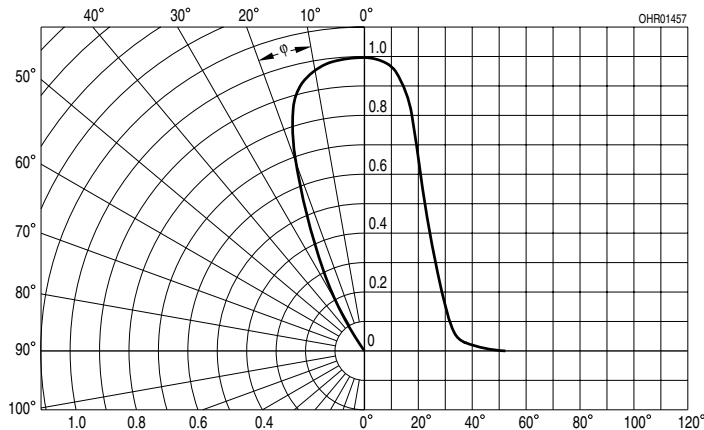


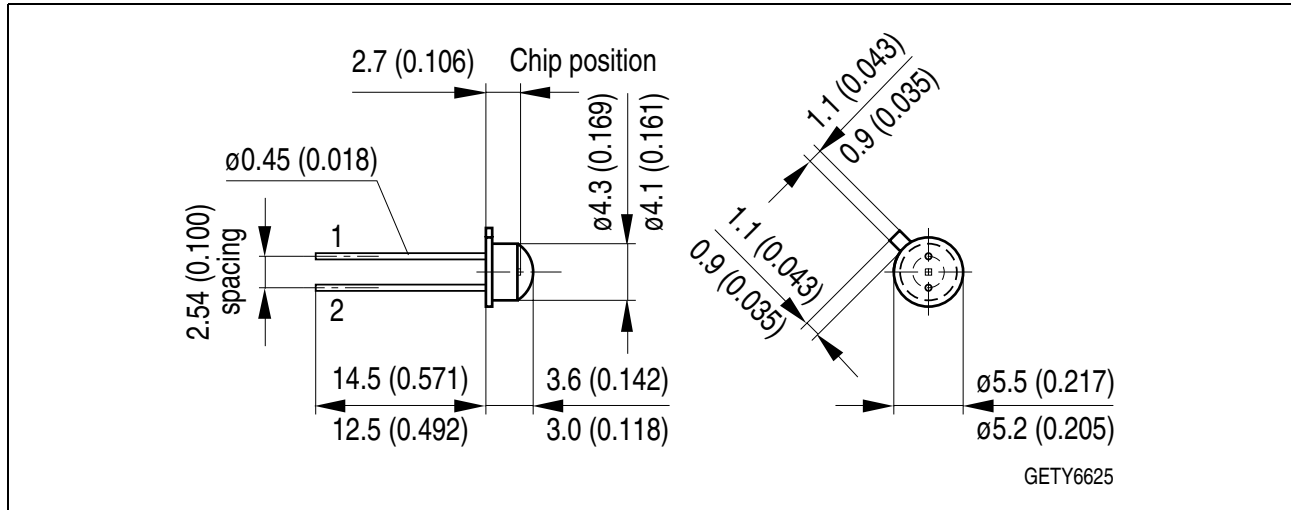
Permissible Pulse Handling Capability $I_F = f(t_p), T_C = 25^\circ\text{C}$,
duty cycle $D = \text{parameter}$



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

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



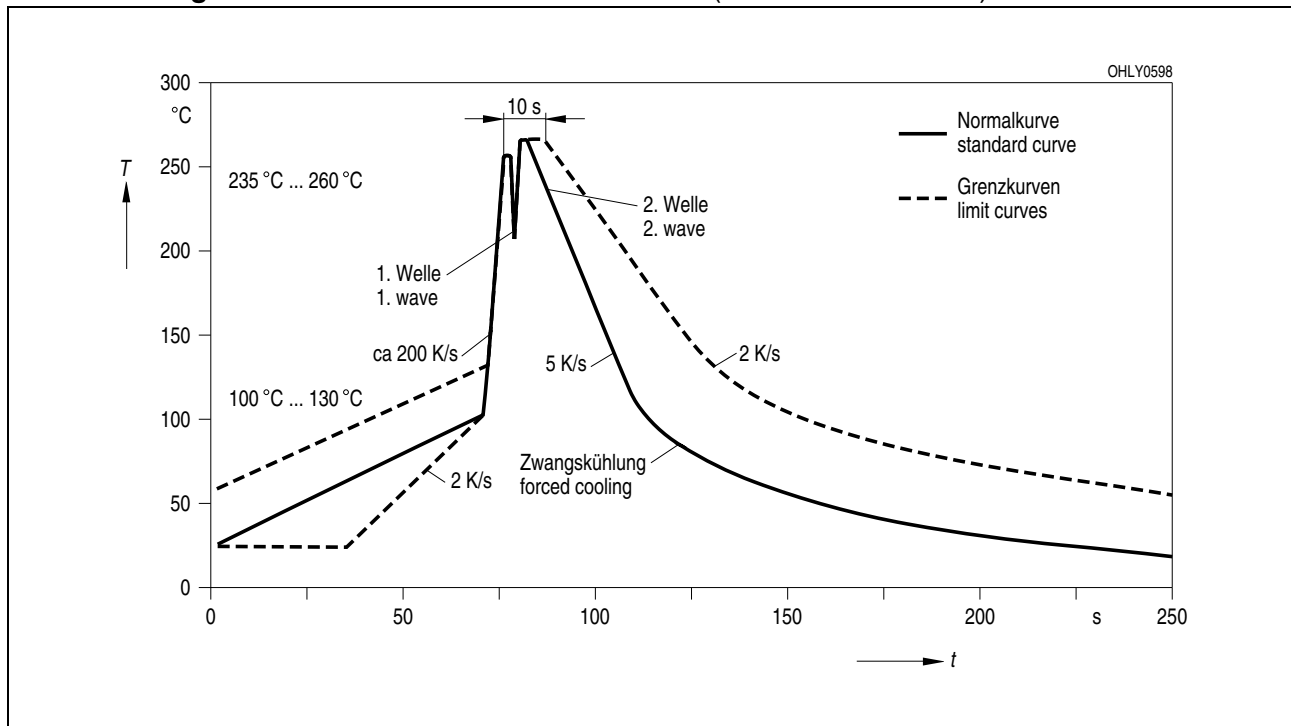
Maßzeichnung
Package Outlines


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

| | |
|--|--|
| Gehäuse Package | 18 A3 DIN 41870 (TO-18), klares Epoxy-Gießharz 18 A3 DIN 41876 (TO-18), transparent epoxy resin |
| Anschlussbelegung pin configuration | 1 = Kathode/ cathode 2 = Anode/ anode |

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW)
TTW Soldering

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



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