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

LD 242

Wesentliche Merkmale

- Hergestellt im Schmelzepitaxieverfahren
- Kathode galvanisch mit dem Gehäuseboden verbunden
- Hohe Zuverlässigkeit
- Großer Öffnungskegel
- Gehäusegleich mit BP 103, BPX 63, SFH 464, SFH 483
- Anwendungsklasse nach DIN 40 040 GQC

Features

- Fabricated in a liquid phase epitaxy process
- Cathode is electrically connected to the case
- High reliability
- Wide beam
- Same package as BP 103, BPX 63, SFH 464, SFH 483
- DIN humidity caregory in acc. with DIN 40 040 GQG

Anwendungen

- Lichtschranken für Gleich- und Wechsellichtbetrieb
- Sensorik
- Lichtgitter

Applications

- Photointerrupters
- Sensor technology
- Light curtains

Typ **Type**	**Bestellnummer** **Ordering Code**	**Strahlstärkegruppierung** [1] (I_F = 100 mA, t_p = 20 ms) **Radiant Intensity Grouping** [1] I_e (mW/sr)
LD 242-2/3	Q62703Q4749	> 4.0
LD 242 E7800	Q62703Q3509	1 - 3.2

[1] gemessen bei einem Raumwinkel Ω = 0.01 sr
measured at a solid angle of Ω = 0.01 sr

Grenzwerte (T_A = 25 °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
Durchlassstrom Forward current	I_F	300	mA
Stoßstrom, $\tau \leq 10$ µs, $D = 0$ Surge current	I_{FSM}	3	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 °C)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der Strahlung Wavelength at peak emission I_F = 100 mA, t_p = 20 ms	λ_{peak}	950	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 100 mA, t_p = 20 ms	$\Delta\lambda$	55	nm
Abstrahlwinkel Half angle	φ	± 40	Grad deg.
Aktive Chipfläche Active chip area	A	0.25	mm^2
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.5 × 0.5	mm^2
Abstand Chipoberfläche bis Linsenscheitel Distance chip surface to lens top	H	0.3 … 0.7	mm

Kennwerte (T_A = 25 °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 mA, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 100 mA, R_L = 50 Ω	t_r, t_f	1	µs
Kapazität Capacitance V_R = 0 V	C_o	40	pF
Durchlassspannung Forward voltage I_F = 100 mA I_F = 1 A, t_p = 100 µs	 V_F V_F	 1.3 (≤ 1.5) 1.9 (≤ 2.5)	 V V
Sperrstrom, V_R = 5 V Reverse current	I_R	0.01 (≤ 1)	µA
Gesamtstrahlungsfluss Total radiant flux I_F = 100 mA, t_p = 20 ms	Φ_e	16	mW
Temperaturkoeffizient von I_e bzw. Φ_e, I_F = 100 mA Temperature coefficient of I_e or Φ_e, I_F = 100 mA	TC_I	– 0.55	%/K
Temperaturkoeffizient von V_F, I_F = 100 mA Temperature coefficient of V_F, I_F = 100 mA	TC_V	– 1.5	mV/K
Temperaturkoeffizient von λ_{peak}, I_F = 100 mA Temperature coefficient of λ_{peak}, I_F = 100 mA	TC_λ	0.3	nm/K

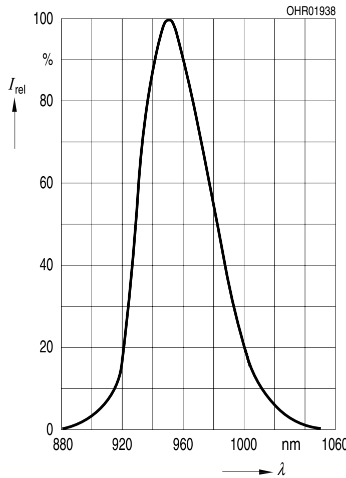
Gruppierung der Strahlstärke I_e in Achsrichtung
gemessen bei einem Raumwinkel Ω = 0.01 sr
Grouping of Radiant Intensity I_e in Axial Direction
measured at a solid angle of Ω = 0.01 sr

Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		LD 242-2	LD 242-3	LD 242 7800[1]	
Strahlstärke Radiant intensity I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	 I_e $I_{e\ typ.}$	 4 … 8 50	 > 6.3 75	 1 … 3.2 –	 mW/sr 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 die Anwender eine besser verwertbare Größe. Diese Lochblendenmessung ist gekennzeichnet durch den Eintrag „E 7800", der an die Typenbezeichnung angehängt ist.

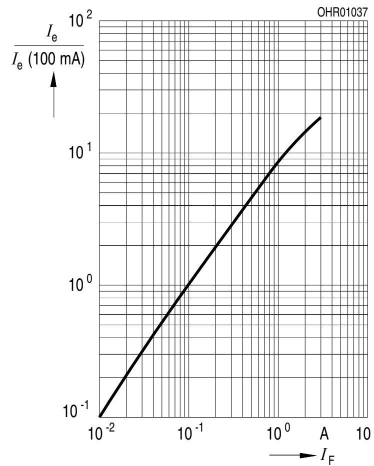
[1] An aperture is used in front of the component for measurement of the radiant intensity and the half angle (diameter of the aperture: 1.1 mm; distance of aperture to case back side: 4.0 mm). This ensures that solely the radiation in axial direction emitting directly from the chip surface will be evaluated 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
$I_{rel} = f(\lambda)$

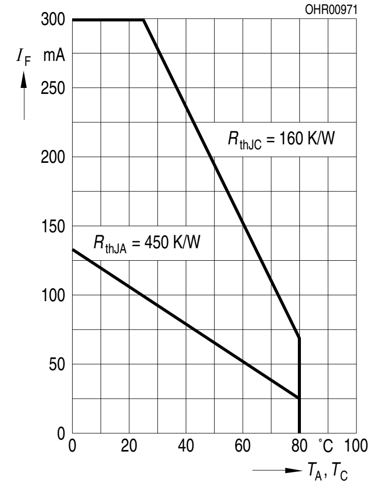


Radiant Intensity $\frac{I_e}{I_e\ 100\ mA} = f(I_F)$

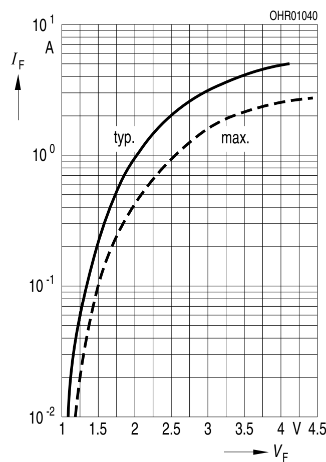
Single pulse, t_p = 20 µs



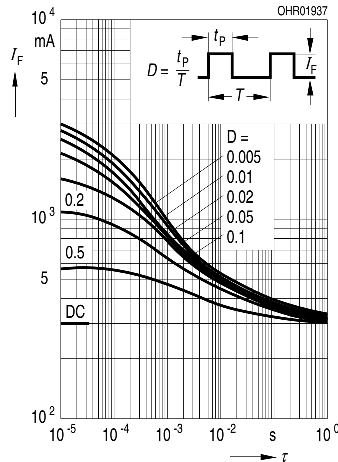
Max. Permissible Forward Current
$I_F = f(T_A)$



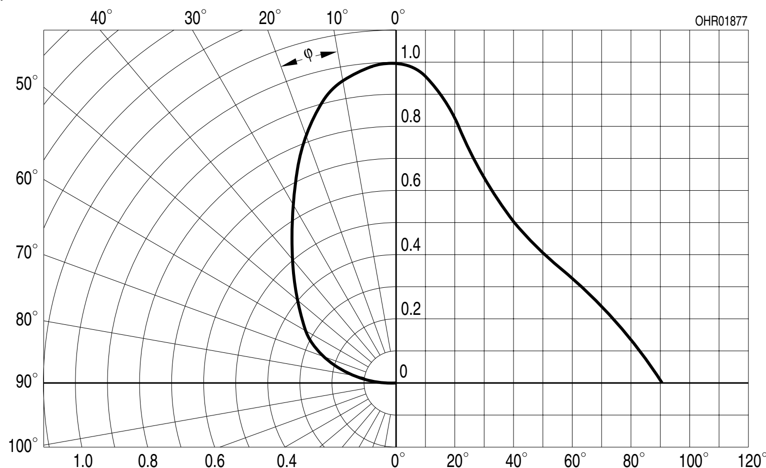
Forward Current
$I_F = f(V_F)$



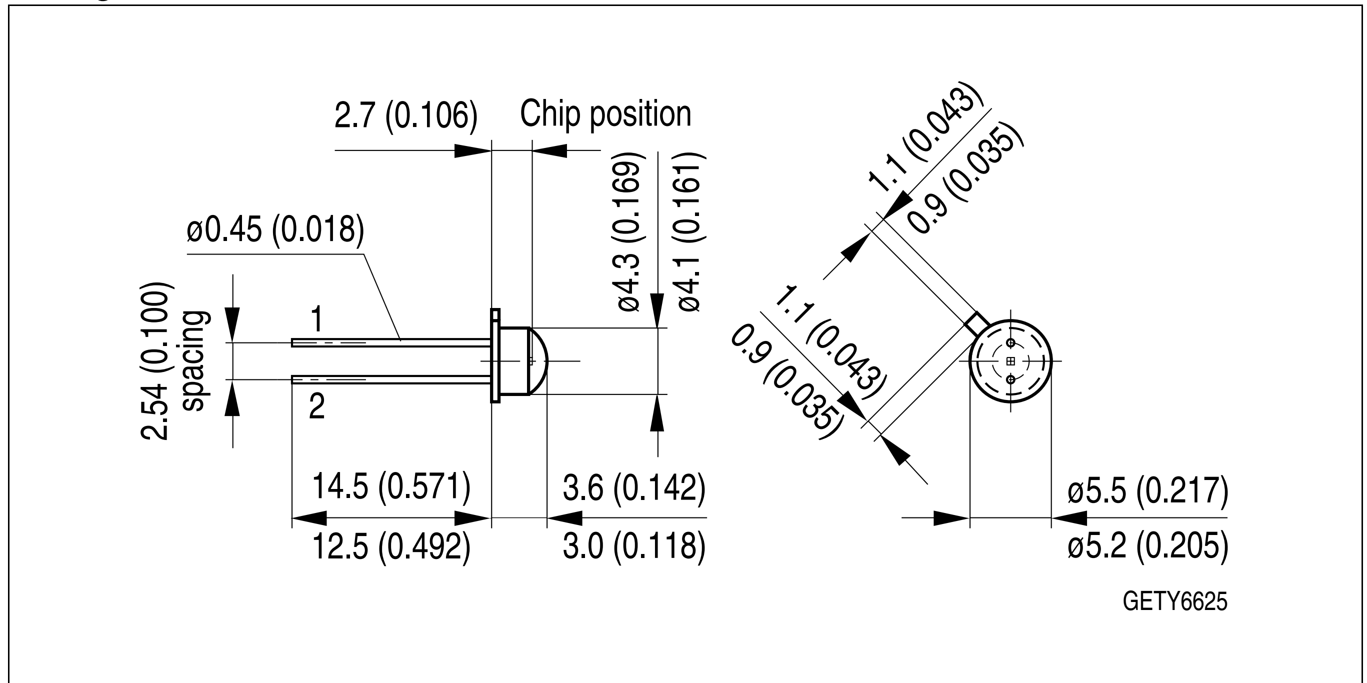
Permissible Pulse Handling Capability $I_F = f(\tau)$, T_C = 25 °C, duty cycle D = parameter



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



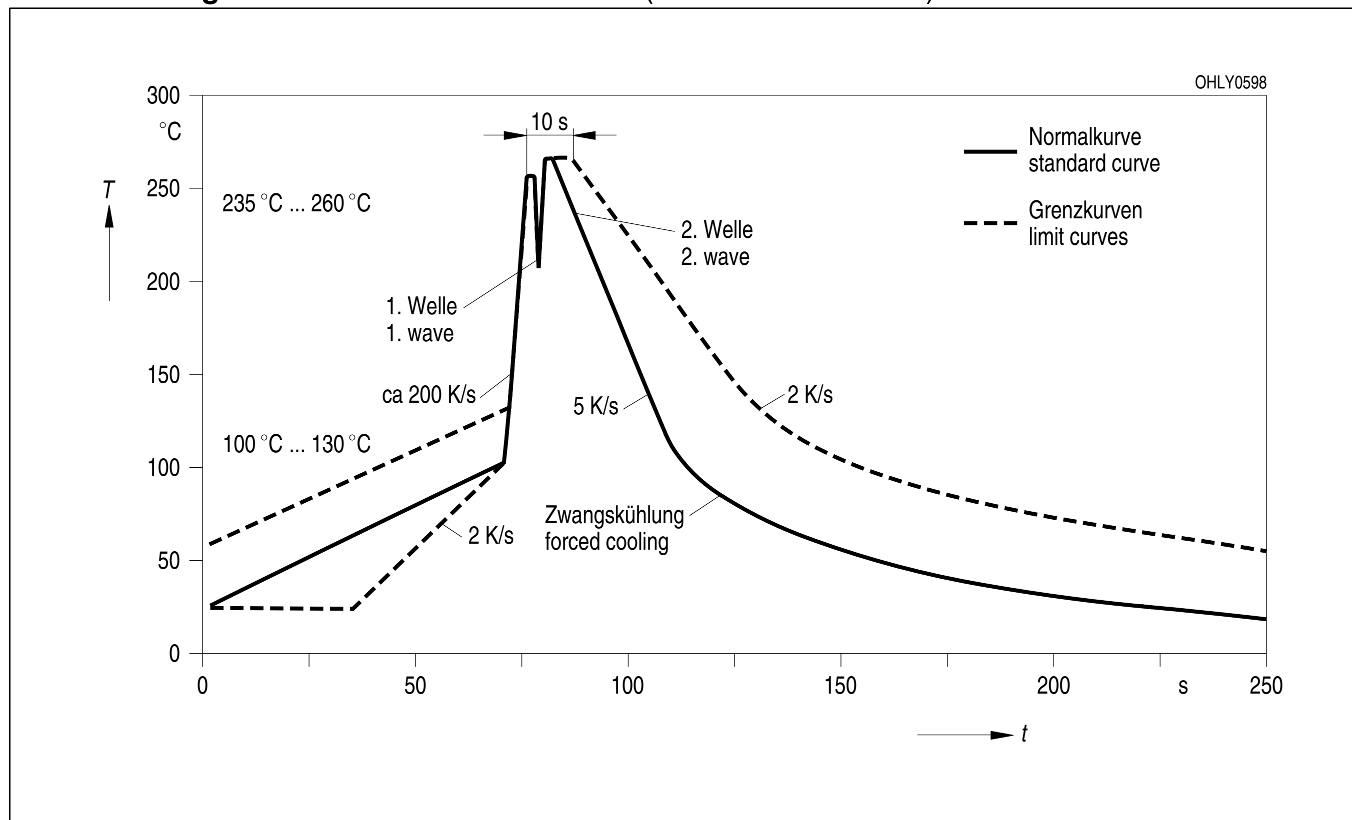
Maßzeichnung
Package Outlines



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

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

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



Published by
OSRAM Opto Semiconductors GmbH
Wernerwerkstrasse 2, D-93049 Regensburg
www.osram-os.com

EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，不含有毒有害物质或元素。

© All Rights Reserved.
The information describes the type of component and shall not be considered as assured characteristics.
Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.

Packing
Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components [1], may only be used in life-support devices or systems [2] with the express written approval of OSRAM OS.

[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

[2] Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.