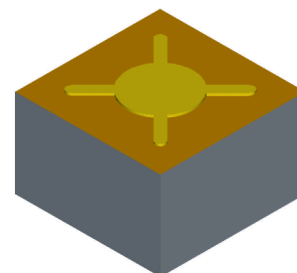


# GaAs-Infrarot-Lumineszenzdiode (950 nm, Enhanced Power) GaAs Infrared Emitting Diode (950 nm, Enhanced Power)

F 0118G



## Vorläufige Daten / Preliminary Data

### Wesentliche Merkmale

- Typ. Gesamtleistung: 24 mW @ 100 mA im TOPLED® Gehäuse
- Chipgröße 300 x 300 µm<sup>2</sup>
- Emissionswellenlänge: 950 nm
- GaAs-LED mit sehr hohem Wirkungsgrad
- Gute Linearität ( $I_e = f[I_F]$ ) bei hohen Strömen
- Gleichstrom- oder Impulsbetrieb möglich
- Hohe Zuverlässigkeit
- Hohe Impulsbelastbarkeit

### Anwendungen

- IR-Fernsteuerung von Fernseh-, Rundfunk- und Videogeräten, Lichtdimmern
- Gerätefernsteuerungen für Gleich- und Wechsellichtbetrieb
- Lichtschranken bis 500 kHz
- Sensorik

### Features

- Typ. total radiant power: 24 mW @ 100 mA in TOPLED® package.
- Chip size 300 x 300 µm<sup>2</sup>
- Peak wavelength: 950 nm
- Very highly efficient GaAs LED
- Good linearity ( $I_e = f[I_F]$ ) at high currents
- DC or pulsed operations are possible
- High reliability
- High pulse handling capability

### Applications

- IR remote control for hifi and TV sets, video tape recorder, dimmers
- Remote control for steady and varying intensity
- Light-reflection switches (max. 500 kHz)
- Sensor technology

Typ Type	Bestellnummer Ordering Code	Beschreibung Description
F 0118G	Q65110A0136	Infrarot emittierender Chip, Oberseite Anodenanschluß, Infrared emitting die, top side anode connection

**Elektrische Werte** ( $T_A = 25\text{ °C}$ )**Electrical values<sup>1)</sup>** ( $T_A = 25\text{ °C}$ )

Bezeichnung Parameter	Symbol Symbol	Wert Value <sup>2)</sup>			Einheit Unit
		min.	typ.	max.	
Emissionswellenlänge Peak wavelength $I_F = 10\text{ mA}$	$\lambda_{\text{peak}}$		950		nm
Spektrale Bandbreite bei 50% von $I_{\text{max}}$ , Spectral bandwidth at 50% of $I_{\text{max}}$ $I_F = 10\text{ mA}$	$\Delta\lambda$		55		nm
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%, $I_F = 100\text{ mA}$ , $R_L = 50\ \Omega$	$t_r, t_f$		0.5/0.4		$\mu\text{s}$
Sperrspannung Reverse voltage $I_R = 1\ \mu\text{A}$	$V_R$	5			V
Durchlaßspannung Forward voltage $I_F = 100\text{ mA}$	$V_F$		1.4	1.6	V
Strahlungsleistung Radiant Power <sup>3)</sup> $I_F = 100\text{ mA}$	$\Phi_e$		12		mW
Photostrom (Spezifikationsparameter Helligkeit) Photocurrent (specified parameter brightness) $I_F = 100\text{ mA}$	$I_e$	0.65			a.u.

<sup>1)</sup> Measurement limits describe actual settings and do not include measurement uncertainties. Each wafer and fragment of a wafer is subject to final testing. The wafer or its pieces are individually attached on foils (rings). Sample chips are picked from each foil and placed on a special carrier for measurement purposes. The sampling density is one chip per  $2\text{ cm}^2$ . If a sample fails, the area around that sample is tested again by taking samples in fourfold density. If a sample fails in that measurement, an area of  $0,5\text{ cm}^2$  around each failed sample is marked by pen. All el. values are referenced to the vendor's measurement system (correlation to customer product(s) is required)

<sup>2)</sup> Typical (referred to as typ.) data are defined as long-term production mean values and are only given for information. This is not a specified value

<sup>3)</sup> Radiant power is measured on TO-18 header in integrating sphere.

**Mechanische Werte**  
**Mechanical values**

Bezeichnung Parameter	Symbol Symbol	Wert Value <sup>1)</sup>			Einheit Unit
		min.	typ.	max.	
Chipkantenlänge (x-Richtung) Length of chip edge (x-direction)	$L_x$	0.28	0.30	0.32	mm
Chipkantenlänge (y-Richtung) Length of chip edge (y-direction)	$L_y$	0.28	0.30	0.32	mm
Durchmesser des Wafers Diameter of the wafer	$D$		76.2		mm
Chiphöhe Die height	$H$	165	185	205	$\mu\text{m}$
Bondpaddurchmesser Diameter of bondpad	d		135		$\mu\text{m}$

**Weitere Informationen**  
**Additional information<sup>2)</sup>**

Vorderseitenmetallisierung Metallization frontside	Aluminium Aluminum
Rückseitenmetallisierung Metallization backside	Goldlegierung Gold alloy
Trennverfahren Dicing	Sägen Sawing
Verbindung Chip - Träger Die bonding	Kleben Epoxy bonding

<sup>1)</sup> Typical (referred to as typ.) data are defined as long-term production mean values and are only given for information. This is not a specified value

<sup>2)</sup> All chips are checked according to the following procedure and the OSRAM OS specification of the visual inspection A63501-Q0013-N001-\*-76G3:

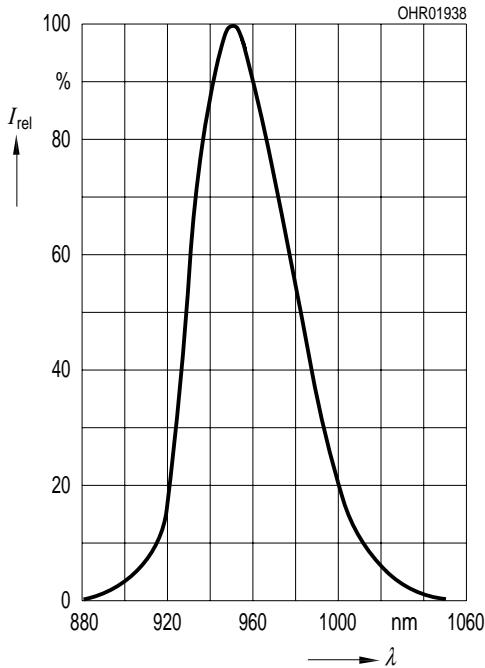
The visual inspection shall be made in accordance to the "specification of the visual inspection" as referenced. The visual inspection of chip backside is performed by eye for 100% of the area of each wafer. If decisions (good/bad) are not possible additional a stereo microscope with incident light with 40x-80x magnification is used. Areas greater than  $\frac{1}{4}$  cm<sup>2</sup> which have an amount of more than 3% failed dies will be marked manually with pen. The marked area from backside will be transferred to frontside and will be also marked manually with pen. The visual inspection of chip frontside is performed by a stereo microscope with incident light with 40x-80x magnification for 100% of the area of each wafer. Areas greater than 1 cm<sup>2</sup> which have an amount of more than 50% failed dies and areas greater than 2 cm<sup>2</sup> which have an amount of more than 25% failed dies will be marked. The quality inspection (final visual inspection) is performed by production. An additional visual inspection step as special release procedure by QM after the final visual inspection is not installed.

**Grenzwert<sup>1)</sup>****Maximum Ratings**

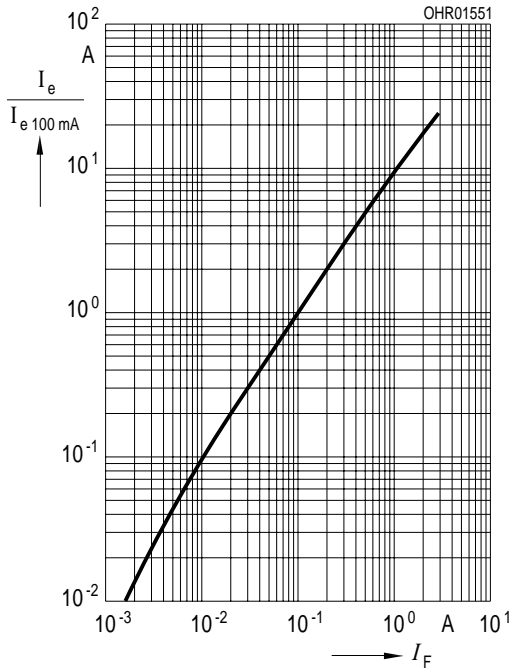
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Maximaler Betriebstemperaturbereich Maximum Operating temperature range	$T_{op}$	-40...+85	°C
Maximaler Lagertemperaturbereich Maximum storage temperature range	$T_{stg}$	-40...+85	°C
Maximaler Durchlaßstrom Maximum forward current	$I_F$	100	mA
Maximaler Stoßstrom Maximum surge current $t_p = 10 \mu s, D = 0.005$	$I_S$	3	A
Maximale Sperrschichttemperatur Maximum junction temperature	$T_j$	125	°C

<sup>1)</sup>Maximum ratings are strongly package dependent and may differ between different packages. The values given represent the chip in a TO-18 package.

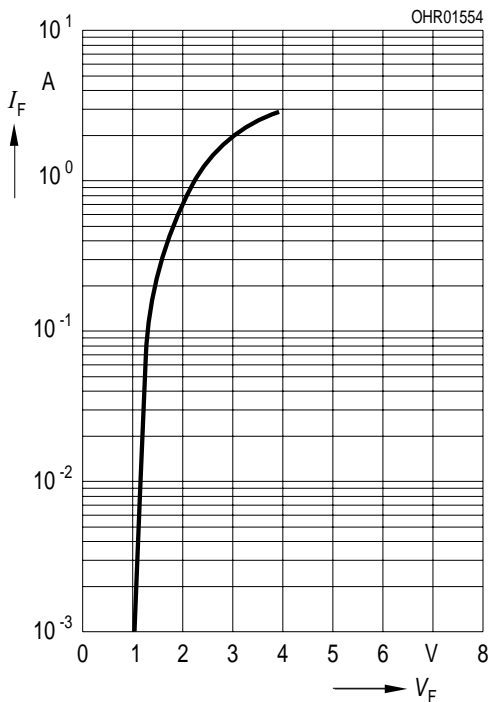
**Relative Spectral Emission<sup>1)</sup>**  $I_{Frel} = f(\lambda)$   
 $T_A = 25\text{ °C}$



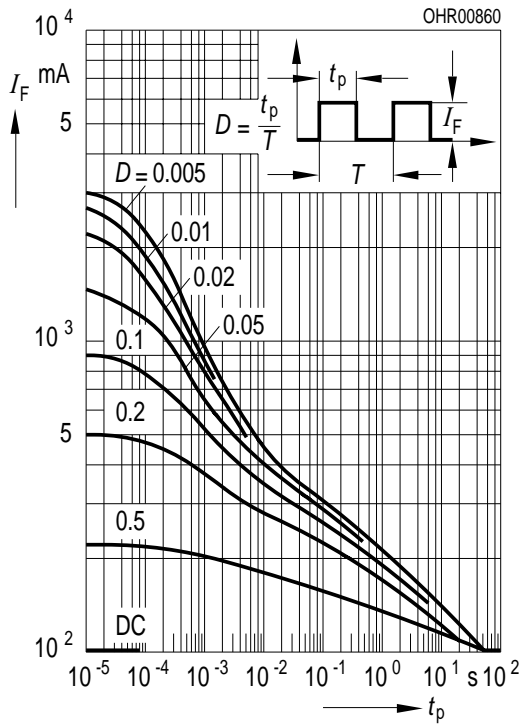
**Radiant Intensity<sup>1)</sup>**  $I_e / I_e(100mA) = f(I_F)$   
 $T_A = 25\text{ °C}$ , single pulse:  $t_p = 20\text{ }\mu\text{s}$



**Forward Current<sup>1)</sup>**  
 $I_F = f(V_F)$ , Single pulse,  $t_p = 20\text{ }\mu\text{s}$ ,  $T_A = 25\text{ °C}$

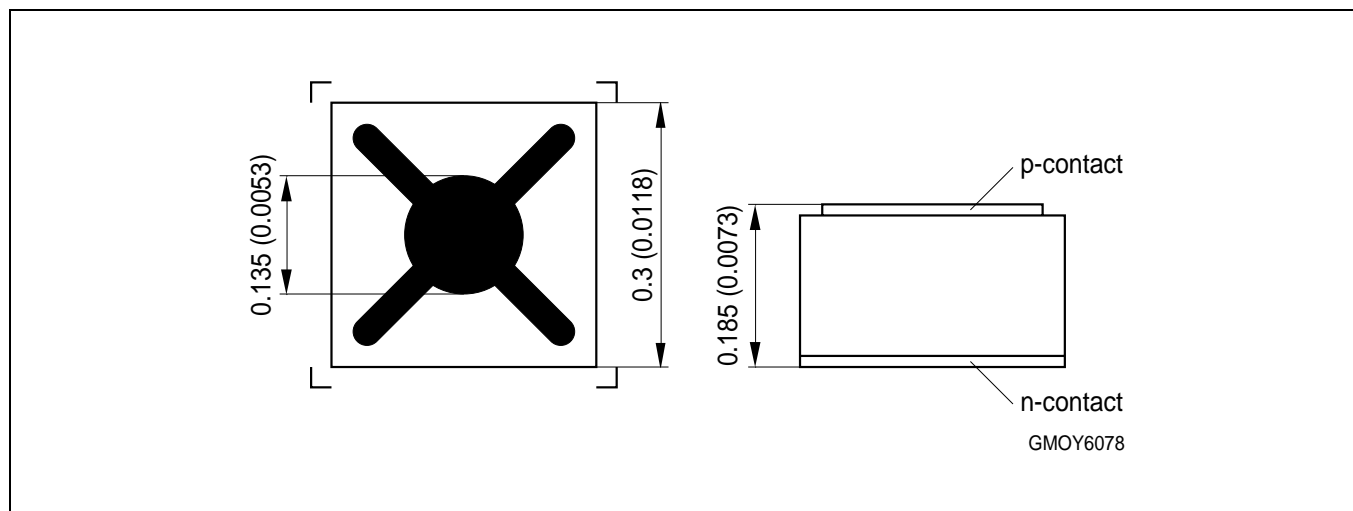


**Permissible Pulse Power<sup>1)</sup>**  
 Duty cycle  $D = \text{parameter}$ ,  $T_A = 25\text{ °C}$



1) Based on typ. (see page 2, footnote 2 for explanation)  
 data measured in OSRAM Opto Semiconductor's  
 TOPLED® package.

## Maßzeichnung Chip Outlines



Maße werden als typische<sup>1)</sup> Werte wie folgt angegeben: mm (inch) / Dimensions are specified as typical<sup>1)</sup> values as follows: mm (inch).

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### Attention please!

The information generally describes the type of component and shall not be considered as assured characteristics or detailed specification.

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.

### Handling and Storage Conditions:

The hermetically sealed shipment lot shall be opened under temperature and moisture controlled cleanroom environment only. Customer has to follow the according rules for disposition of material that can be hazardous for humans and environment.

### Packing

Chips are placed on a blue foil, which is fixed in a yellow frame of 5" diameter.

For shipment the wafers of a shipment lot are arranged to stacks. The top and bottom of the stack is covered by a dummy disk to protect the top and bottom wafer from damage. The whole package is fixed by rubber strings and hermetically sealed in a plastic bag for storage and shipment. 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 will have to 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.

### Further Conditions:

If not otherwise arranged, the "General Conditions for the supply of products and services of the electrical and electronics industry" apply for any shipment, just as the Supplier Addendum "Chip business" to the "General Conditions for the supply of products and services of the electrical and electronics industry". If this document is not familiar to you, please request it at our nearest sales office.

### Components used in life-support devices or systems must be expressly authorized by us for such purpose!

Critical components<sup>2)</sup>, may only be used in life-support devices or systems<sup>3)</sup> with the express written approval of OSRAM OS.

<sup>1)</sup> Typical (referred to as typ.) data are defined as long-term production mean values and are only given for information. This is not a specified value.

<sup>2)</sup> A critical component is a component used in 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.

<sup>3)</sup> 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.