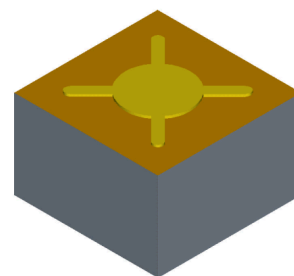


GaAs-Infrarot-Lumineszenzdiode (950 nm, 300 µm Kantenlänge) GaAs Infrared Light Emitting Diode (950 nm, 12 mil)

F 0094U

F 0094V



Vorläufige Daten / Preliminary data

Wesentliche Merkmale

- Typ. Gesamtleistung: 15 mW @ 100 mA im TOPLED® Gehäuse
- Chipgröße 300 x 300 µm²
- 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

- Miniaturlichtschranken für Gleich- und Wechsellichtbetrieb, Lochstreifenleser
- Industrieelektronik
- „Messen/Steuern/Regeln“
- Automobiltechnik
- Sensorik
- Alarm- und Sicherungssysteme
- IR-Freiraumübertragung

Features

- Typ. total radiant power: 15 mW @ 100 mA in TOPLED® package
- Chip size 300 x 300 µm²
- 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

- Miniature photointerrupters
- Industrial electronics
- Drive and control circuits
- Automotive technology
- Sensor technology
- Alarm and safety equipment
- IR free air transmission

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
F 0094U	on request	Infrarot emittierender Chip, Oberseite Anodenanschluß, Oberfläche aufgeraut Infrared emitting die, top side anode connection, surface frosted
F 0094V	Q67220-C1268	Infrarot emittierender Chip, Oberseite Anodenanschluß Infrared emitting die, top side anode connection

Elektrische Werte (gemessen auf TO18-Bodenplatte ohne Verguss, $T_A = 25\text{ °C}$)

Electrical values (measured on TO18 header without resin, $T_A = 25\text{ °C}$)

Bezeichnung Parameter	Symbol Symbol	Wert ¹⁾ Value ¹⁾			Einheit Unit
		min.	typ.	max.	
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 10\text{ mA}$	λ_{peak}		950		nm
Spektrale Bandbreite bei 50% von I_{max} , $I_F = 10\text{ mA}$ Spectral bandwidth at 50% of I_{max}	$\Delta\lambda$		55		nm
Sperrspannung Reverse voltage $I_R = 10\text{ }\mu\text{A}$,	V_R	5	30		V
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		0.5/0.4		μs
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		1.35 3.0	1.5	V
Gesamtstrahlungsfluß ⁴⁾ Total radiant flux ⁴⁾ $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ F 0094U F 0094V	Φ_e	4.8 4.2	8 7		mW mW
Temperaturkoeffizient ²⁾ von λ Temperature coefficient ²⁾ of λ $I_F = 100\text{ mA}$;	TC_λ		0.3		nm/K
Temperaturkoeffizient ²⁾ von V_F Temperature coefficient ²⁾ of V_F $I_F = 100\text{ mA}$;	TC_V		-1.5		mV/K

Mechanische Werte
Mechanical values

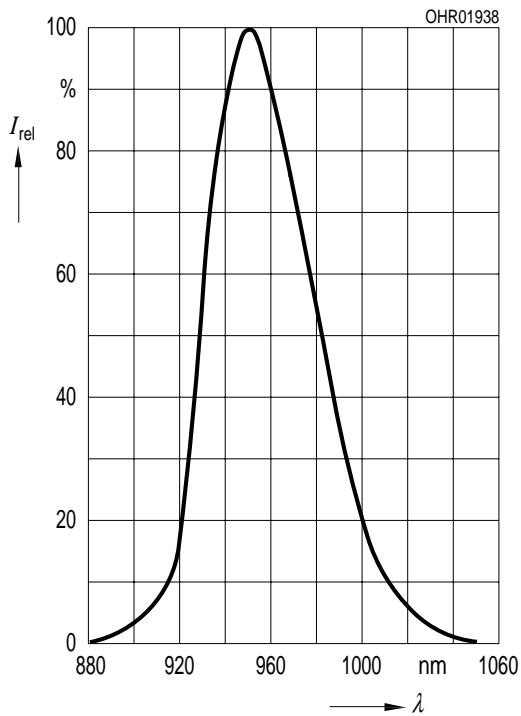
Bezeichnung Parameter	Symbol Symbol	Wert ¹⁾ Value ¹⁾			Einheit Unit
		min.	typ.	max.	
Chipkantenlänge (x-Richtung) Length of chip edge (x-direction)	L_x	0.28	0.3	0.32	mm
Chipkantenlänge (y-Richtung) Length of chip edge (y-direction)	L_y	0.28	0.3	0.32	mm
Durchmesser des Wafers Diameter of the wafer	D		76.2		mm
Chiphöhe Die height	H	170	185	200	μm
Bondpaddurchmesser Diameter of bondpad	d		135		μm

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

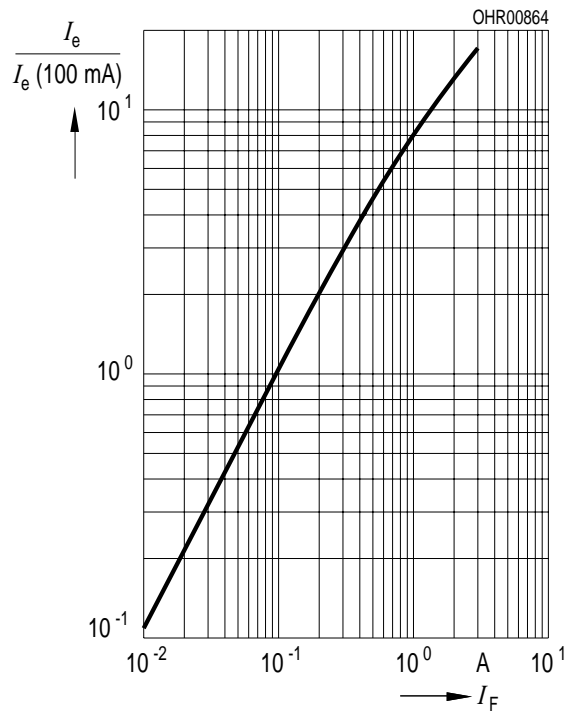
Grenzwerte³⁾ ($T_A = 25\text{ °C}$)
Maximum Ratings³⁾ ($T_A = 25\text{ °C}$)

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

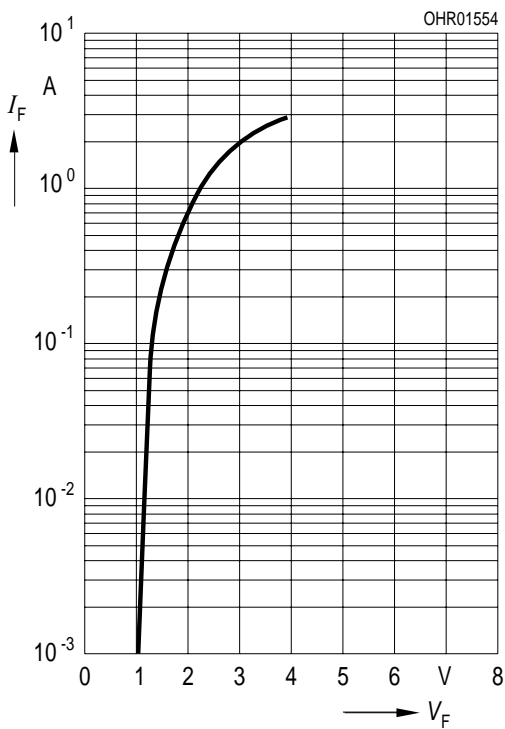
Relative Spectral Emission²⁾ $I_{rel} = f(\lambda)$,
 $T_A = 25\text{ °C}$



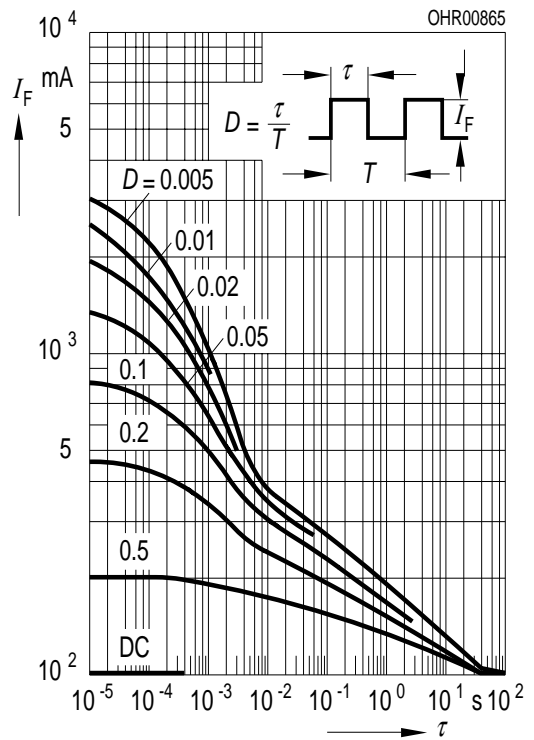
Radiant Intensity²⁾ $\frac{I_e}{I_e(100\text{ mA})} = f(I_F)$
 Single pulse, $t_p = 20\text{ }\mu\text{s}$, $T_A = 25\text{ °C}$



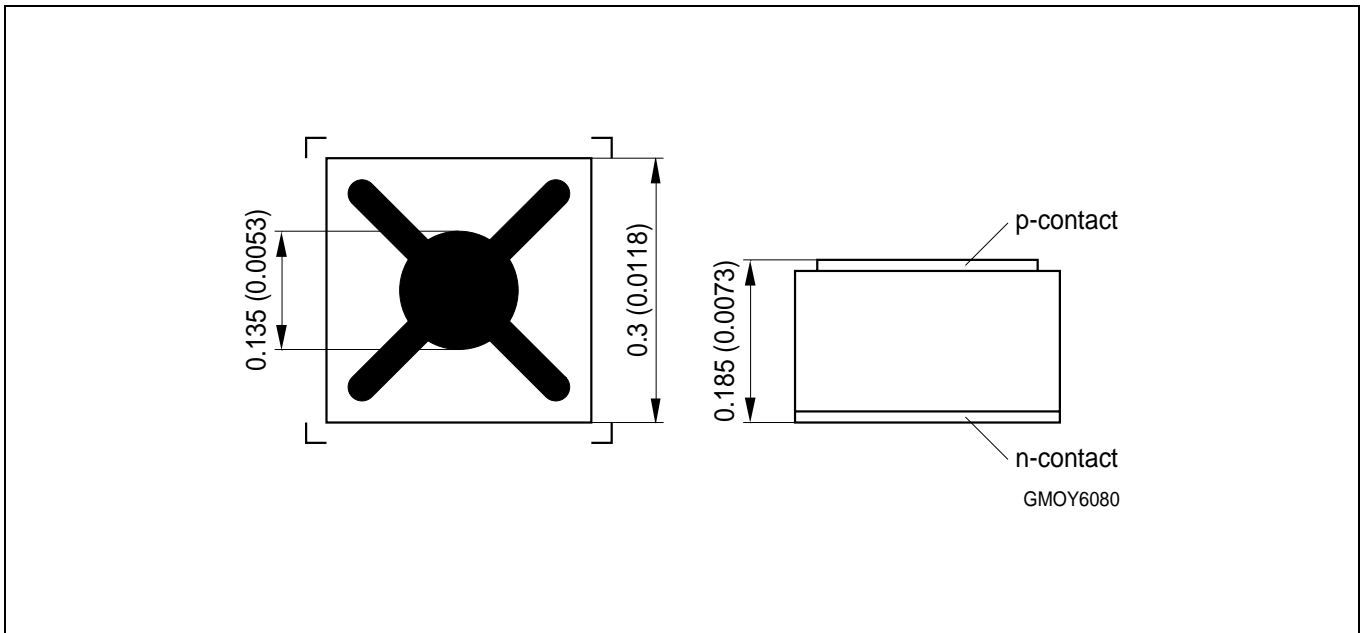
Forward Current²⁾ $I_F = f(V_F)$,
 single pulse, $t_p = 20\text{ }\mu\text{s}$, $T_A = 25\text{ °C}$



Permissible Pulse Handling Capability²⁾ $I_F = f(t_p)$
 duty cycle $D = \text{parameter}$, $T_A = 25\text{ °C}$



Maßzeichnung
Chip Outlines



Maße werden als typische¹⁾ Werte wie folgt angegeben: mm (inch) / Dimensions are specified as typical¹⁾ 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.

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 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.

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

Critical components⁵⁾, may only be used in life-support devices or systems⁶⁾ with the express written approval of OSRAM OS.

¹⁾ 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. For final electrical testing a spot check with sufficient statistical accuracy is carried out. Minimum and maximum values (referred to as min. and max.) refer to the limits of the sample measurement.

²⁾ Based on data measured in OSRAM Opto Semiconductor's TOPLED[®] package. They represent typical¹⁾ data.

³⁾ Maximum ratings are strongly package dependent and may differ between different packages. The values given represent the chip in an OSRAM OS TOPLED[®] package and are only valid for this package.

⁴⁾ Value is referenced to the vendor's measurement system (correlation to customer product(s) is required).

⁵⁾ 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.

⁶⁾ 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.