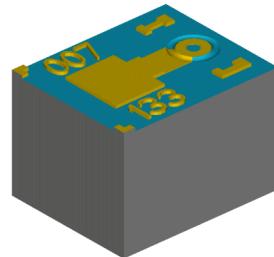


# **GaAs-Infrarot-VCSEL-Chip (850 nm) GaAs Infrared VCSEL Chip (850 nm)**

**F 0496A**



## **Vorläufige Daten / Preliminary Data**

### **Wesentliche Merkmale**

- Technologie basierend auf selektiver Oxidation
- Sehr hohe Datenrate (GBit/s) möglich
- Oberflächenstrahler
- Emissionswellenlänge 850nm
- Multimodebetrieb
- Zuverlässigkeit gemäß Bellcore Standard

### **Anwendungen**

- Faseroptische Datenübertragung
- Parallel optical data link
- Laserdrucker
- Näherungssensoren
- Reflexlichtschranken
- Gabellichtschranken

### **Features**

- Technology based on selective oxidation
- Very high data rate (GBit/s) possible
- Surface emitter
- 850 nm emission wavelength
- Multimode operation
- Reliability acc. Bellcore Standard

### **Applications**

- Fiber Optic data link
- Parallel optical data link
- Laser printing
- Proximity sensors
- Reflective sensor
- Slotted interrupter

<b>Typ Type</b>	<b>Bestellnummer Ordering Code</b>	<b>Beschreibung Description</b>
F 0496A	on request	Infrarot emittierender VCSEL-Chip, Oberseite Anodenanschluss Infrared emitting VCSEL die, top side anode connection

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

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

<b>Bezeichnung Parameter</b>	<b>Symbol Symbol</b>	<b>Wert<sup>1)</sup> Value<sup>1)</sup></b>			<b>Einheit Unit</b>
		<b>min.</b>	<b>typ.</b>	<b>max.</b>	
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 10 \text{ mA}$	$\lambda_{\text{peak}}$	830	850	870	nm
Spektrale Bandbreite bei 50% von $I_{\text{max}}$ , $I_F = 10 \text{ mA}$ Spectral bandwidth at 50% of $I_{\text{max}}$	$\Delta\lambda$		0.7		nm
Schwellstrom Threshold current	$I_{\text{th}}$	1	3	5	mA
Steilheit Slope efficiency	$\eta$	0.2	0.25	0.4	mW/mA
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 6 \text{ mA}$ , $R_L = 50 \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 6 \text{ mA}$ , $R_L = 50 \Omega$	$t_r, t_f$		200		ps
Durchlaßspannung Forward voltage $I_F = 10 \text{ mA}$ , $t_p = 20 \text{ ms}$	$V_F$	1.7	2.1	2.5	V
Dynamischer Widerstand Dynamic Resistance	$R_S$	30	60	100	V
Sperrstrom Reverse current $V_R = 3 \text{ V}$	$I_R$		0.01		µA
Gesamtstrahlungsfluß <sup>4)</sup> Total radiant flux <sup>4)</sup> $I_F = 10 \text{ mA}$ , $t_p = 20 \text{ ms}$	$\Phi_e$	1.5	1.8		mW
Detuning	$T_{\text{opt}}$	10	25	40	°C
Temperaturkoeffizient von $\lambda_{\text{peak}}$ , $I_F = 10 \text{ mA}$ Temperature coefficient of $\lambda_{\text{peak}}$ , $I_F = 10 \text{ mA}$	$TC_\lambda$		0.06		nm/K

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

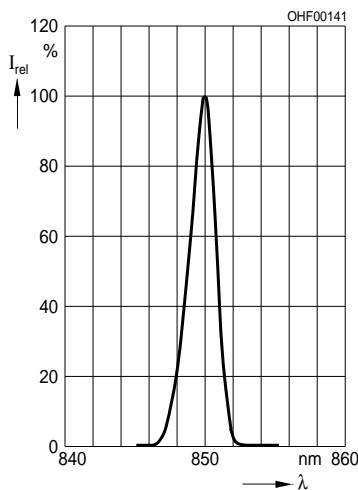
<b>Bezeichnung</b> <b>Parameter</b>	<b>Symbol</b> <b>Symbol</b>	<b>Wert<sup>1)</sup></b> <b>Value<sup>1)</sup></b>			<b>Einheit</b> <b>Unit</b>
		<b>min.</b>	<b>typ.</b>	<b>max.</b>	
Chipkantenlänge (x-Richtung) Length of chip edge (x-direction)	$L_x$	0.25	0.27	0.29	mm
Chipkantenlänge (y-Richtung) Length of chip edge (y-direction)	$L_y$	0.20	0.22	0.24	mm
Durchmesser der aktiven Chipfläche Dimension of the active chip area	$D$		15		µm
Durchmesser des Wafers Diameter of the wafer	$D$		76.2		mm
Chiphöhe Die height	$H$	160	185	210	µm

**Grenzwerte<sup>3)</sup> ( $T_A = 25 \text{ }^{\circ}\text{C}$ )**

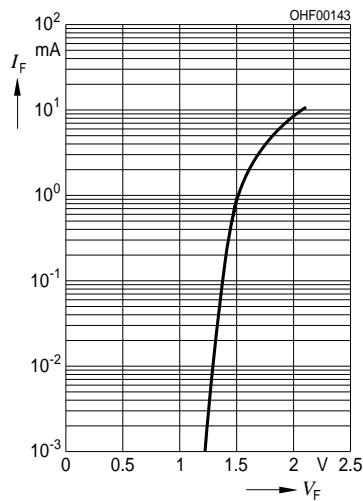
**Maximum Ratings<sup>3)</sup>**

<b>Bezeichnung</b> <b>Parameter</b>	<b>Symbol</b> <b>Symbol</b>	<b>Werte</b> <b>Value</b>	<b>Einheit</b> <b>Unit</b>
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 85	°C
Sperrspannung Reverse voltage	$V_R$	3	V
Durchlaßstrom Forward current	$I_F$	20	mA

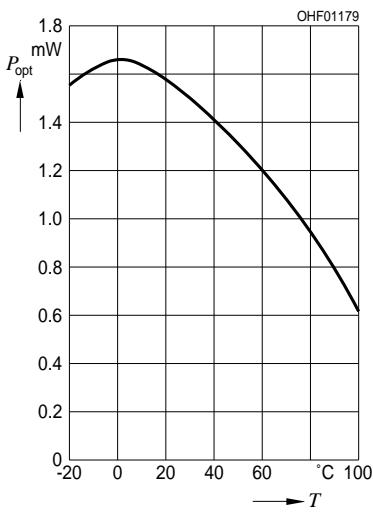
**Relative Spectral Emission<sup>2)</sup>**  
 $I_{\text{rel}} = f(\lambda)$



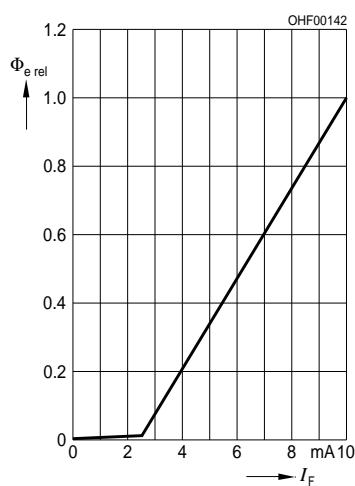
**Forward Current<sup>2)</sup>**  $I_F = f(V_F)$



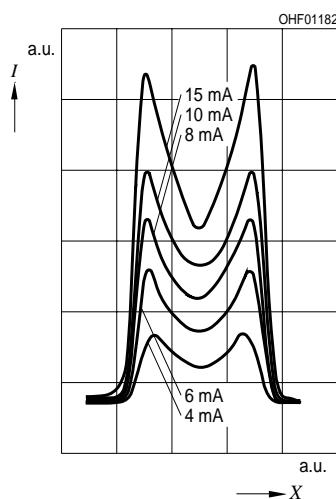
**Optical power<sup>2)</sup>**  $\Phi_{\text{rel}} = f(T_A)$



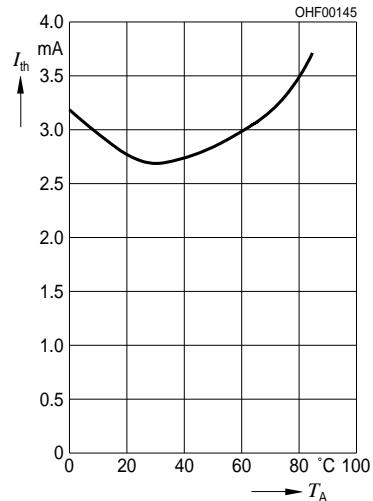
**Radiant Intensity<sup>2)</sup>**  $\frac{\Phi_e}{\Phi_{e \text{ 10 mA}}} = f(I_F)$



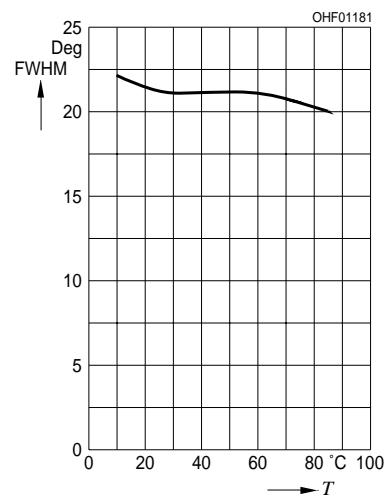
**Near Field Emission Pattern<sup>2)</sup>**



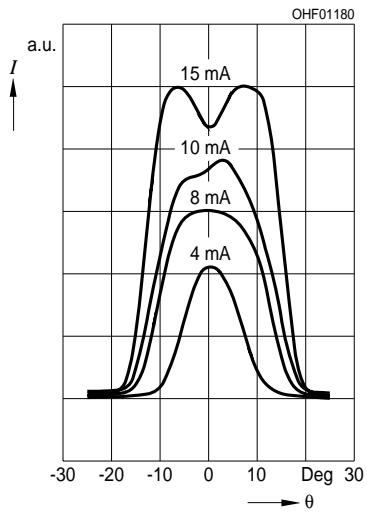
**Threshold Current<sup>2)</sup>**  $I_{\text{th}} = f(T_A)$

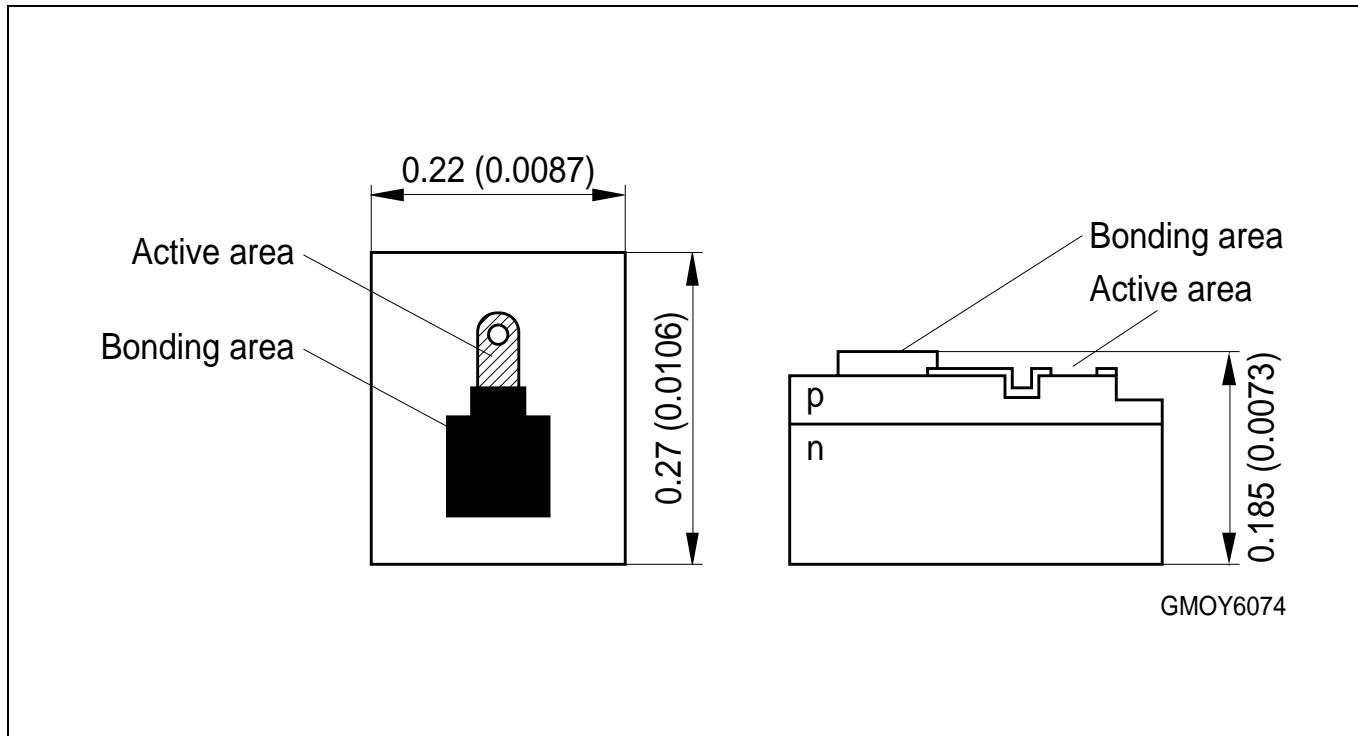


**Spectral Width<sup>2)</sup>**  $FWHM = f(T)$



**Far Field Emission Pattern<sup>2)</sup>**



**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.

**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 components<sup>5)</sup>, may only be used in life-support devices or systems<sup>6)</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> Based on data measured in TO18 package. They represent typical<sup>1)</sup> data.

<sup>3)</sup> Maximum ratings are strongly package dependent and may differ between different packages. The values given represent the chip in an TO18 package and are only valid for this package.

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

<sup>5)</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>6)</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.