

## Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[OSRAM Opto Semiconductors, Inc.](#)  
[SFH 4231](#)

For any questions, you can email us directly:

[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)

## IR-Lumineszenzdiode (940 nm) mit hoher Ausgangsleistung

### High Power Infrared Emitter (940 nm)

#### Lead (Pb) Free Product - RoHS Compliant

#### SFH 4231



#### Wesentliche Merkmale

- IR-Lichtquelle mit hohem Wirkungsgrad
- Chipgröße (emittierende Fläche) 1 x 1 mm<sup>2</sup>
- max. Gleichstrom 1 A
- niedriger Wärmewiderstand (15 K/W)
- Schwerpunktswellenlänge 940 nm
- ESD-sicher bis 2 kV nach JESD22-A114-E

#### Anwendungen

- Infrarotbeleuchtung für Kameras
- Überwachungssysteme
- IR-Datenübertragung
- Fahrer-Assistenz Systeme
- Maschinensicherheit

#### Sicherheitshinweise

Je nach Betriebsart emittieren diese Bauteile hochkonzentrierte, nicht sichtbare Infrarot-Strahlung, die gefährlich für das menschliche Auge sein kann. Produkte, die diese Bauteile enthalten, müssen gemäß den Sicherheitsrichtlinien der IEC-Normen 60825-1 und 62471 behandelt werden.

#### Features

- IR lightsource with high efficiency
- die-size (emitting area) 1 x 1 mm<sup>2</sup>
- max. DC-current 1 A
- Low thermal resistance (15 K/W)
- Center of spectral emission at 940 nm
- ESD save up to 2 kV acc. to JESD22-A114-E

#### Applications

- Infrared Illumination for cameras
- Surveillance systems
- IR Data Transmission
- Driver assistance systems
- Machine security

#### Safety Advices

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 and IEC 62471.

Typ Type	Bestellnummer Ordering Code	Gesamtstrahlungsfluss <sup>1)</sup> ( $I_F = 1A, t_p = 100 \mu s$ ) Total Radiant Flux <sup>1)</sup> $\Phi_e$ (mW)
SFH 4231	Q65110A4808	≥ 320 (typ. 500)

<sup>1)</sup> gemessen mit Ulbrichtkugel / measured with integrating sphere

**SFH 4231**
**Grenzwerte ( $T_A = 25\text{ °C}$ )**
**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}, T_{stg}$	- 40 ... + 100	°C
Sperrschichttemperatur Junction temperature	$T_J$	+ 125	°C
Sperrspannung Reverse voltage	$V_R$	1	V
Vorwärtsgleichstrom Forward current	$I_F$	1	A
Stoßstrom, $t_p < 1\text{ ms}$ , $D = 0.2$ Surge current	$I_{FSM}$	2	A
Leistungsaufnahme Power consumption	$P_{tot}$	2.4	W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	$R_{thJS}$	15	K/W

**Kennwerte ( $T_A = 25\text{ °C}$ )**
**Characteristics**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\lambda_{peak}$	950	nm
Centroid-Wellenlänge der Strahlung Centroid wavelength $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\lambda_{centroid}$	940	nm
Spektrale Bandbreite bei 50% von $I_{max}$ Spectral bandwidth at 50% of $I_{max}$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\Delta\lambda$	45	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 60$	Grad deg.
Aktive Chipfläche Active chip area	$A$	1	mm <sup>2</sup>
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	$1 \times 1$	mm <sup>2</sup>

**SFH 4231**
**Kennwerte ( $T_A = 25\text{ °C}$ )**
**Characteristics (cont'd)**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, $I_F = 1\text{ A}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 1\text{ A}$ , $R_L = 50\ \Omega$	$t_r, t_f$	20	ns
Durchlassspannung Forward voltage $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$	1.8 (< 2.4)	V
Strahlstärke Radiant intensity $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$I_{e\text{ typ}}$	170	mW/sr
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ Temperature coefficient of $I_e$ or $\Phi_e$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$TC_I$	- 0.5	%/K
Temperaturkoeffizient von $V_F$ Temperature coefficient of $V_F$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$TC_V$	- 1	mV/K
Temperaturkoeffizient von $\lambda$ Temperature coefficient of $\lambda$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$TC_{\lambda, \text{centroid}}$	+ 0.3	nm/K

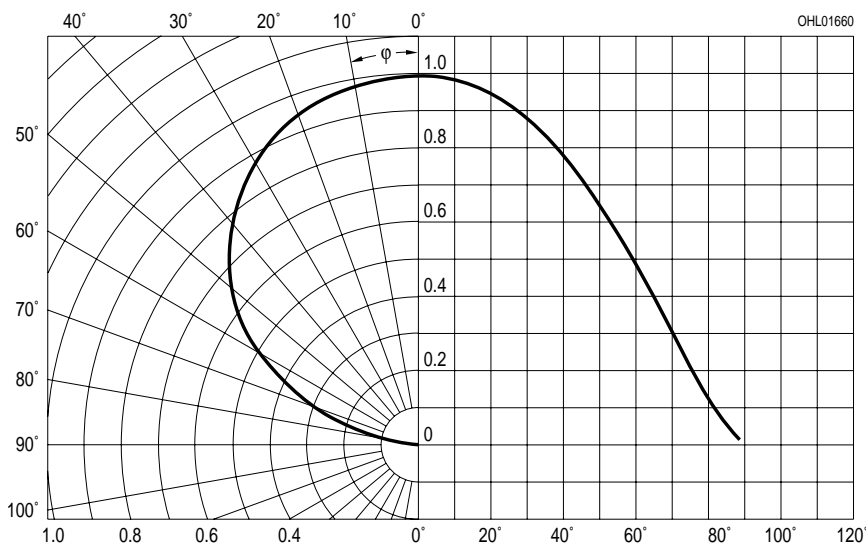
**SFH 4231**

**Gesamtstrahlungsfluss<sup>1)</sup>  $\Phi_e$**   
**Total Radiant Flux<sup>1)</sup>  $\Phi_e$**

Bezeichnung Parameter	Symbol	Werte Values		Einheit Unit
		SFH 4231-CX	SFH 4231-DX	
Gesamtstrahlungsfluss Total Radiant Flux $I_F = 1 \text{ A}, t_p = 100 \mu\text{s}$	$\Phi_{e \text{ min}}$ $\Phi_{e \text{ max}}$	320 630	500 1000	mW mW

<sup>1)</sup> Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1) /  
 Only one group in one packing unit (variation lower 2:1)

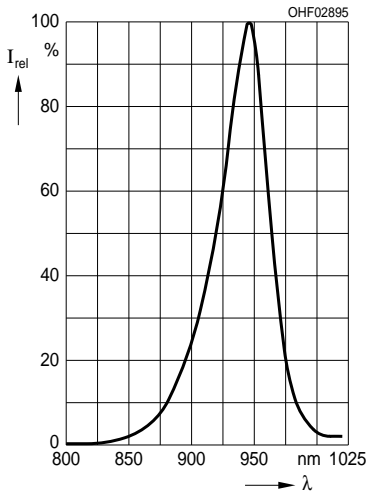
**Abstrahlcharakteristik**  
**Radiation Characteristics  $I_{rel} = f(\varphi)$**



**SFH 4231**

**Relative spektrale Emission  
Relative Spectral Emission**

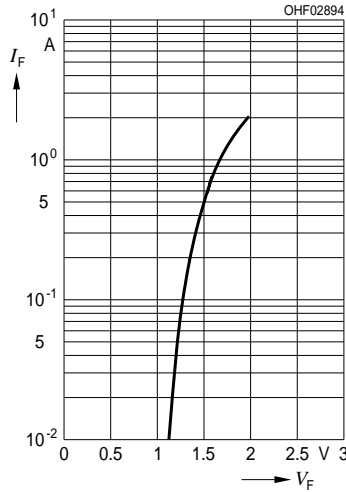
$I_{rel} = f(\lambda)$



**Durchlassstrom  
Forward Current**

$I_F = f(V_F)$

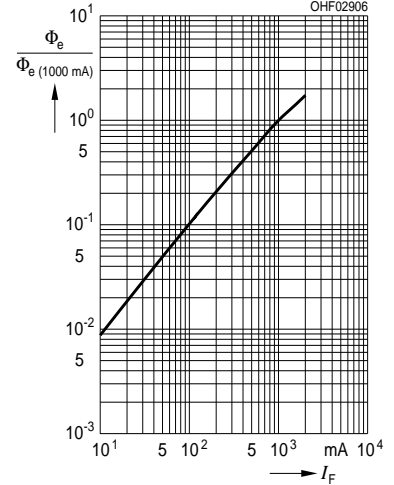
Single pulse,  $t_p = 100 \mu s$



**Relativer Gesamtstrahlungsfluss  
Relative Total Radiant Flux**

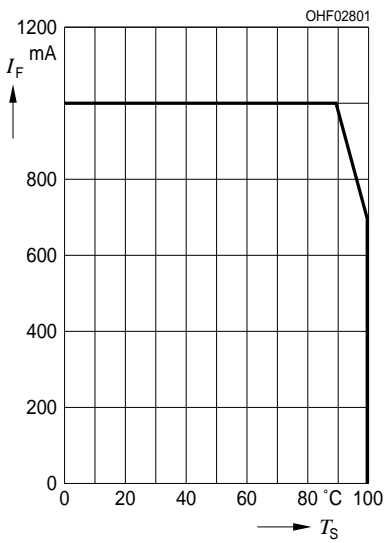
$\Phi_e / \Phi_e(1000mA) = f(I_F)$

Single pulse,  $t_p = 100 \mu s$



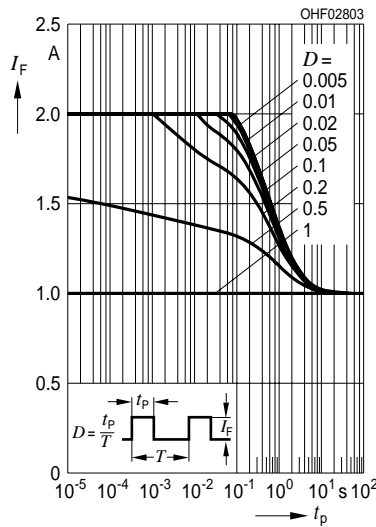
**Max. zulässiger Durchlassstrom  
Max. Permissible Forward Current**

$I_F = f(T_A), R_{thJS} = 15 K/W$



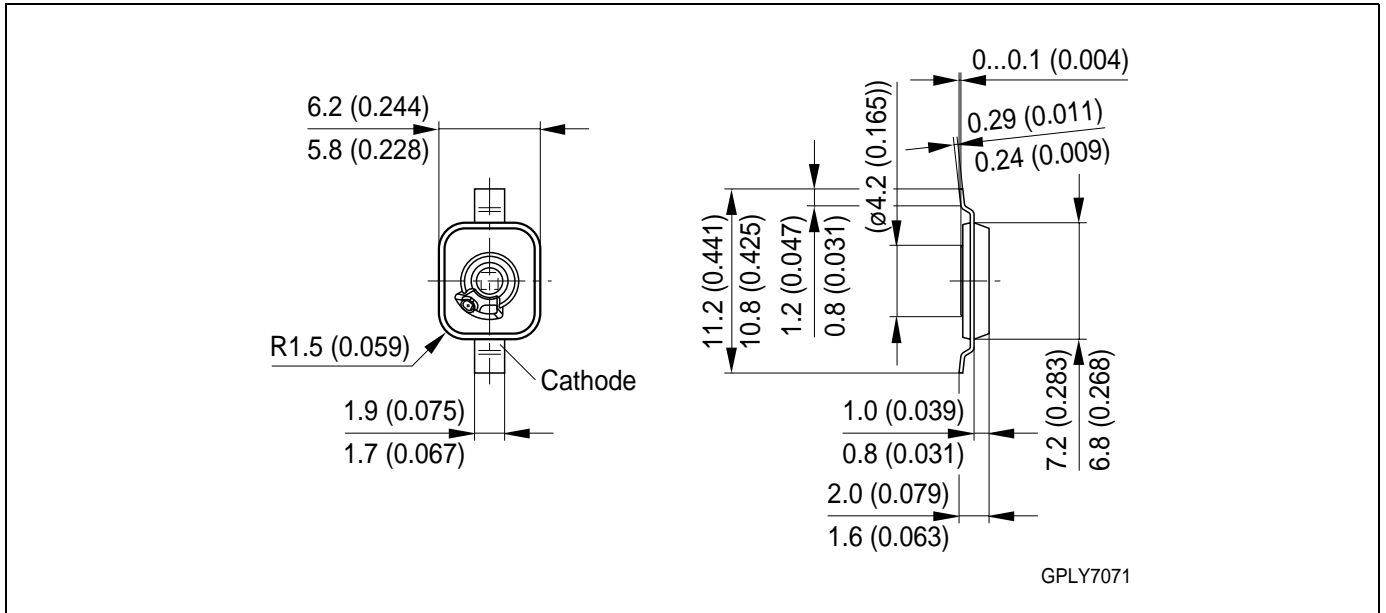
**Zulässige Impulsbelastbarkeit  
Permissible Pulse Handling**

**Capability**  $I_F = f(t_p), T_A = 85 \text{ °C}$ ,  
Duty cycle  $D = \text{parameter}$



**SFH 4231**

**Maßzeichnung<sup>1)</sup>**  
**Package Outlines**

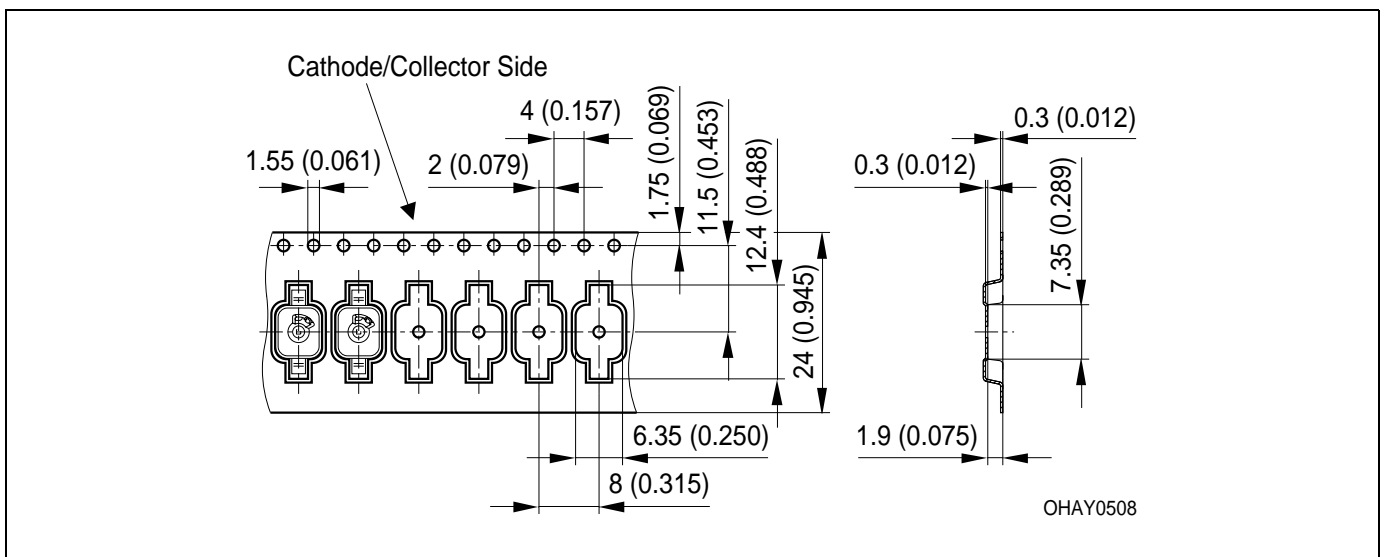


**Kathodenkennung:**  
**Cathode mark:**  
**Gewicht / Approx. weight:**

**Markierung**  
 mark  
 0.2 g

**Gurtung / Polarität und Lage**  
**Method of Taping / Polarity and Orientation**

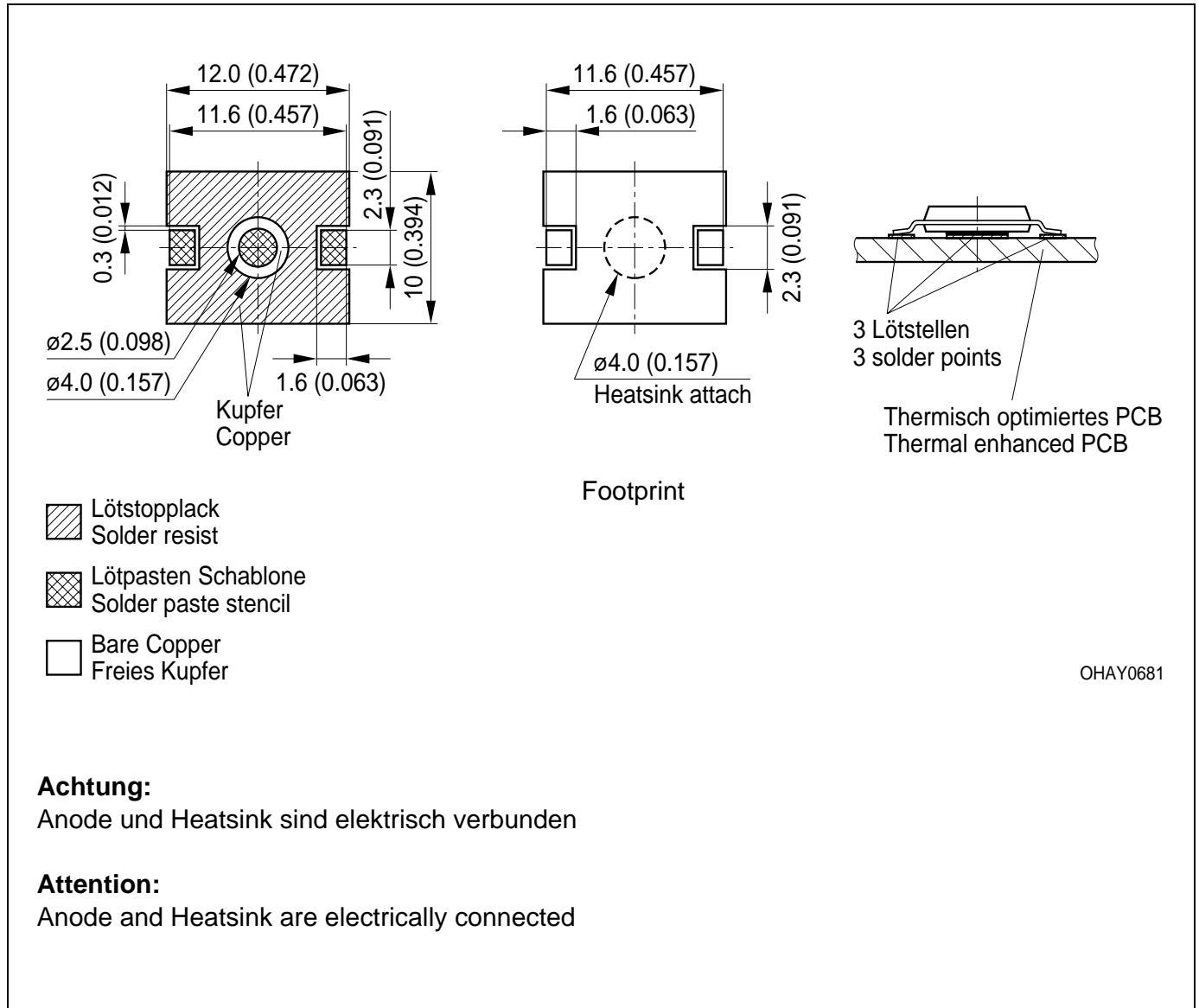
Verpackungseinheit 800/Rolle,  $\phi$ 180 mm  
 Packing unit 800/reel,  $\phi$ 180 mm



<sup>1)</sup> Maße in mm (inch) / Dimensions in mm (inch)

**SFH 4231**

**Empfohlenes Lötpad Design**  
**Recommended Solder Pad Design**



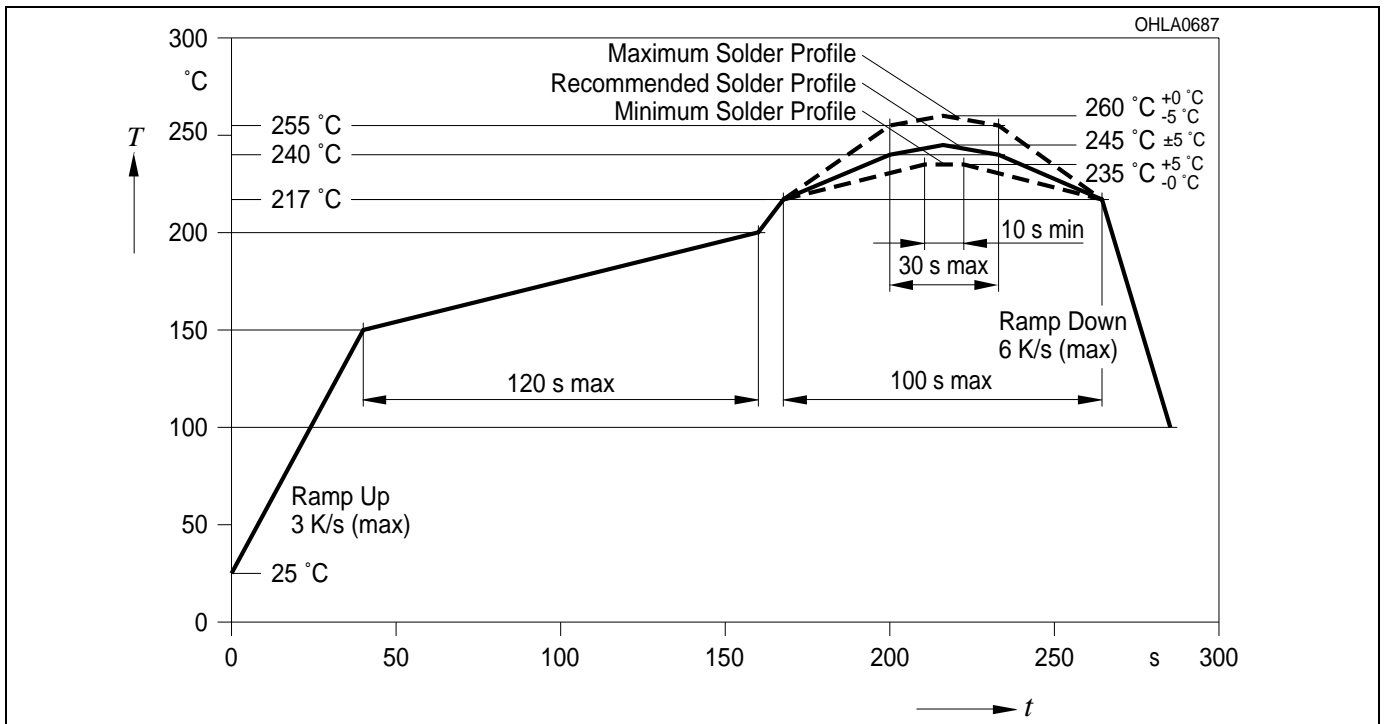


**SFH 4231**

**Lötbedingungen**  
**Soldering Conditions**

**Reflow Lötprofil für bleifreies Löten**  
**Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 4  
 Preconditioning acc. to JEDEC Level 4  
 (nach J-STD-020C)  
 (acc. to J-STD-020C)



Published by  
**OSRAM Opto Semiconductors GmbH**  
 Leibnizstraße 4, D-93055 Regensburg  
[www.osram-os.com](http://www.osram-os.com)

© 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 <sup>1</sup>, may only be used in life-support devices or systems <sup>2</sup> with the express written approval of OSRAM OS.

<sup>1</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>2</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.

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。