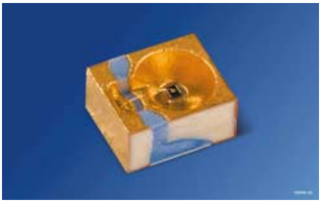
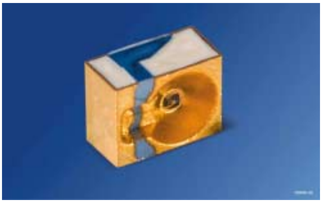
# Engwinklige LED im MIDLED-Gehäuse
# Narrow beam LED in MIDLED package
## Lead (Pb) Free Product - RoHS Compliant

## SFH 4640
## SFH 4645



SFH 4640



SFH 4645

### Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung (45 mW)
- Emissionswellenlänge typ. 950 nm
- Enger Abstrahlwinkel (± 15°)
- Geringe Bauhöhe
- Als Toplooker und Sidelooker einsetzbar
- SFH 4640: Gurtung als Toplooker
  SFH 4645: Gurtung als Sidelooker

### Anwendungen

- Infrarotbeleuchtung für Kameras
- IR-Datenübertragung
- Sensorik in der Automobiltechnik
- Fernsteuerung

### 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

- High Power (45 mW) Infrared LED
- Peak wavelength typ. 950 nm
- Narrow halfangle (± 15°)
- Low profile component
- Usable as top-looking and side-looking device
- SFH 4640: Taping as Toplooker
  SFH 4645: Taping as Sidelooker

### Applications

- Infrared Illumination for cameras
- IR Data Transmission
- Automotive sensors
- Remote controls

### 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**<br>**Type** | **Bestellnummer**<br>**Ordering Code** | **Strahlstärkegruppierung**[1] ($I_F$ = 100 mA, $t_p$ = 20 ms)<br>**Radiant Intensity Grouping**[1]<br>$I_e$ (mW/sr) |
|---|---|---|
| SFH 4640 | Q65110A9369 | ≥ 25 (typ. 50) |
| SFH 4645 | Q65110A9367 | ≥ 25 (typ. 50) |

[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**<br>**Parameter** | **Symbol**<br>**Symbol** | **Wert**<br>**Value** | **Einheit**<br>**Unit** |
|---|---|---|---|
| Betriebs- und Lagertemperatur<br>Operating and storage temperature range | $T_{op}$ , $T_{stg}$ | – 40 … + 100 | °C |
| Sperrspannung<br>Reverse voltage | $V_R$ | 5 | V |
| Vorwärtsgleichstrom<br>Forward current | $I_F$ | 100 | mA |
| Stoßstrom, $t_p = 300\ \mu s$, $D = 0$<br>Surge current | $I_{FSM}$ | 1 | A |
| Verlustleistung<br>Power dissipation | $P_{tot}$ | 180 | mW |
| Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je 16 mm$^2$<br>Thermal resistance junction - ambient mounted on PC-board (FR4), padsize 16 mm$^2$ each | $R_{thJA}$ | 340 | K/W |
| Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block<br>Thermal resistance junction - soldering point, mounted on metal block | $R_{thJS}$ | 180 | K/W |

**Kennwerte** ($T_A$ = 25 °C)
**Characteristics**

| **Bezeichnung**<br>**Parameter** | **Symbol**<br>**Symbol** | **Wert**<br>**Value** | **Einheit**<br>**Unit** |
|---|---|---|---|
| Wellenlänge der Strahlung<br>Wavelength at peak emission<br>$I_F$ = 100 mA | $\lambda_{peak}$ | 950 | nm |
| Centroid-Wellenlänge der Strahlung<br>Centroid wavelength<br>$I_F$ = 100 mA | $\lambda_{centroid}$ | 940 | nm |
| Spektrale Bandbreite bei 50% von $I_{max}$<br>Spectral bandwidth at 50% of $I_{max}$<br>$I_F$ = 100 mA | $\Delta\lambda$ | 42 | nm |
| Abstrahlwinkel<br>Half angle | $\varphi$ | ± 15 | Grad<br>deg. |

**Kennwerte** ($T_A$ = 25 °C)
**Characteristics** (cont'd)

| **Bezeichnung**<br>**Parameter** | **Symbol**<br>**Symbol** | **Wert**<br>**Value** | **Einheit**<br>**Unit** |
|---|---|---|---|
| Aktive Chipfläche<br>Active chip area | $A$ | 0.09 | $mm^2$ |
| Abmessungen der aktiven Chipfläche<br>Dimension of the active chip area | $L \times B$<br>$L \times W$ | 0.3 × 0.3 | $mm^2$ |
| Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F$ = 100 mA, $R_L$ = 50 Ω<br>Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F$ = 100 mA, $R_L$ = 50 Ω | $t_r$, $t_f$ | 11 | ns |
| Durchlassspannung<br>Forward voltage | | | |
| $I_F$ = 100 mA, $t_p$ = 20 ms | $V_F$ | 1.5 (< 1.8) | V |
| $I_F$ = 1 A, $t_p$ = 100 µs | $V_F$ | 2.3 (< 3.0) | V |
| Sperrstrom<br>Reverse current | $I_R$ | not designed for reverse operation | µA |
| Gesamtstrahlungsfluss<br>Total radiant flux<br>$I_F$ = 100 mA, $t_p$ = 20 ms | $\Phi_{e\ typ}$ | 45 | mW |
| Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$, $I_F$ = 100 mA<br>Temperature coefficient of $I_e$ or $\Phi_e$, $I_F$ = 100 mA | $TC_I$ | – 0.5 | %/K |
| Temperaturkoeffizient von $V_F$, $I_F$ = 100 mA<br>Temperature coefficient of $V_F$, $I_F$ = 100 mA | $TC_V$ | – 3 | mV/K |
| Temperaturkoeffizient von $\lambda$, $I_F$ = 100 mA<br>Temperature coefficient of $\lambda$, $I_F$ = 100 mA | $TC_\lambda$ | + 0.3 | nm/K |

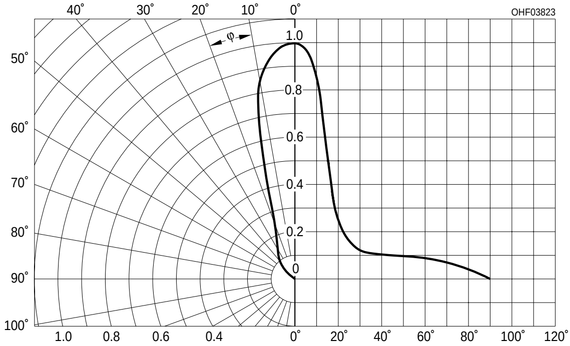
**Strahlstärke $I_e$ in Achsrichtung**[1]
gemessen bei einem Raumwinkel $\Omega$ = 0.01 sr
**Radiant Intensity $I_e$ in Axial Direction**
at a solid angle of $\Omega$ = 0.01 sr

| **Bezeichnung** **Parameter** | **Symbol** | **Werte Values** | | | **Einheit Unit** |
|---|---|---|---|---|---|
| | | **-T** | **-U** | **-V** | |
| Strahlstärke<br>Radiant intensity<br>$I_F$ = 100 mA, $t_p$ = 20 ms | $I_{e\ min}$<br>$I_{e\ max}$ | 25<br>50 | 40<br>80 | 63<br>125 | mW/sr<br>mW/sr |
| Strahlstärke<br>Radiant intensity<br>$I_F$ = 1 A, $t_p$ = 25 µs | $I_{e\ typ}$ | 260 | 420 | 660 | mW/sr |

---

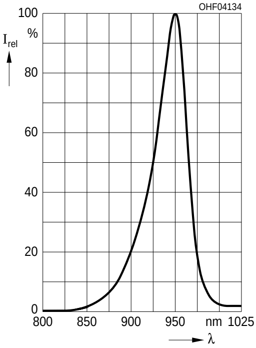
[1] Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1) / Only one bin in one packing unit (variation lower 2:1)

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



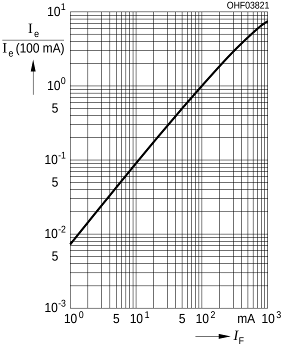
### Relative Spectral Emission

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



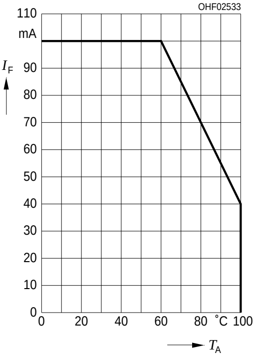
### Radiant Intensity $\frac{I_e}{I_e\,100\text{ mA}} = f(I_F)$

Single pulse, $t_p$ = 25 µs



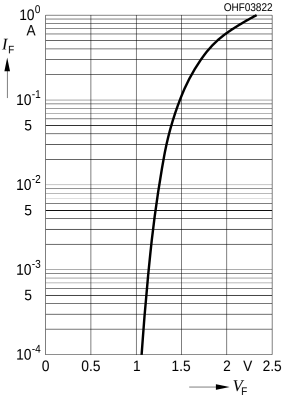
### Max. Permissible Forward Current

$I_F = f(T_A)$, $R_{thJA}$ = 340 K/W

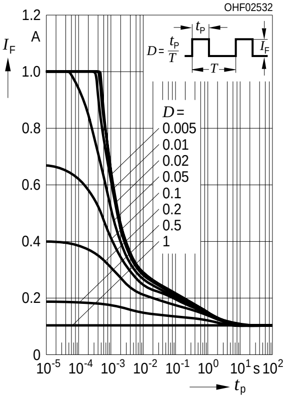


### Forward Current $I_F = f(V_F)$

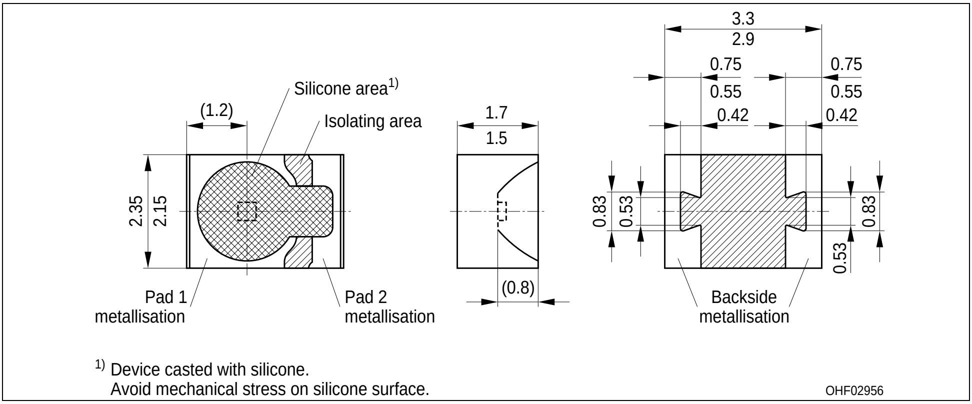
Single pulse, $t_p$ = 100 µs



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



## Maßzeichnung
## Package Outlines



[1] Device casted with silicone.
Avoid mechanical stress on silicone surface.

Maße in mm / Dimensions in mm.

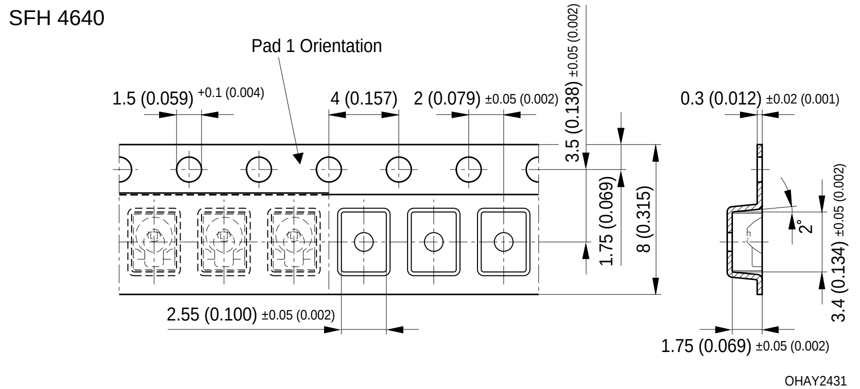
| Gehäuse / Package | MID mit klarem Silikonverguss / MID casted with clear Silicone |
|---|---|
| Anschlussbelegung<br>Pin configuration | Pad 1 = Anode / anode<br>Pad 2 = Kathode / cathode |

## Gurtung / Polarität und Lage

Verpackungseinheit 2000/Rolle, ø180 mm
oder 9000/Rolle, ø330 mm

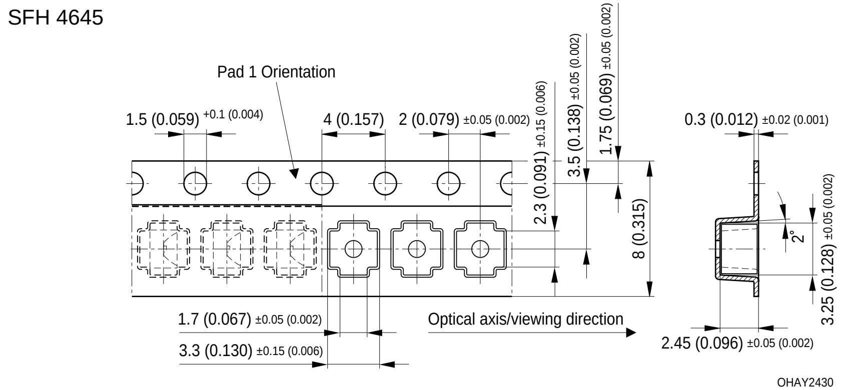
## Method of Taping / Polarity and Orientation

Packing unit 2000/reel, ø180 mm
or 9000/reel, ø330 mm



SFH 4640

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



SFH 4645

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

## Empfohlenes Lötpaddesign
## Recommended Solder Pad Design

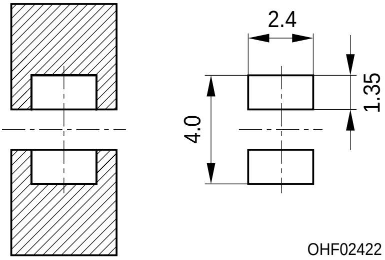
SFH 4640

Padgeometrie für
verbesserte Wärmeableitung

Paddesign for improved
heat dissipation

Cu-Fläche > 16 mm$^2$
Cu-area

▨ Lötstopplack
Solder resist



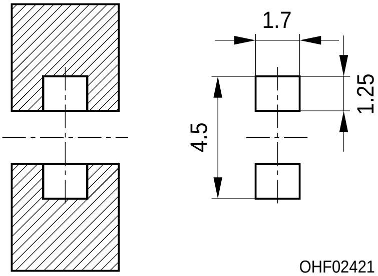
SFH 4645

Padgeometrie für
verbesserte Wärmeableitung

Paddesign for improved
heat dissipation

Cu-Fläche > 16 mm$^2$
Cu-area

▨ Lötstopplack
Solder resist

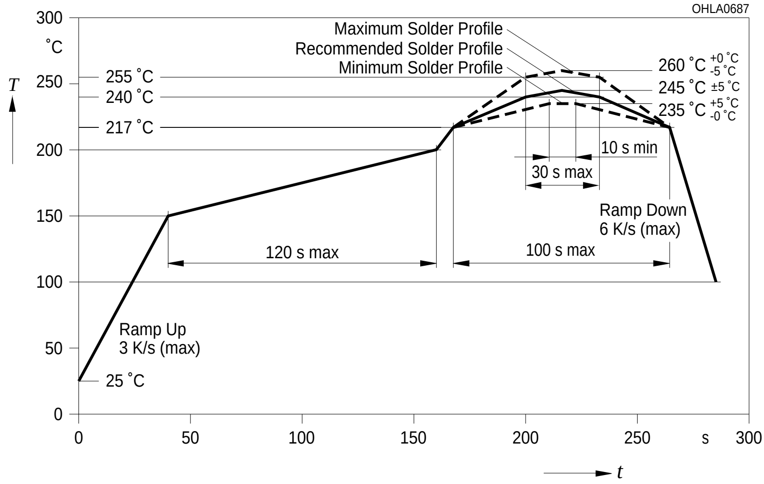


Maße in mm / Dimensions in mm.

| | |
|---|---|
| **Verarbeitungshinweis:** | **Das Gehäuse ist mit Silikon vergossen. Mechanischer Stress auf der Bauteiloberfläche sollte so gering wie möglich gehalten werden.** |
| **Handling indication:** | **The package is casted with silicone. Mechanical stress at the surface of the unit should be as low as possible.** |

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

Vorbehandlung nach JEDEC Level 2
Preconditioning acc. to JEDEC Level 2
(nach J-STD-020C)
(acc. to J-STD-020C)



**Published by**
**OSRAM Opto Semiconductors GmbH**
**Leibnizstrasse 4, D-93055 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。

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.

Стандарт
Электрон
Связь

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** sales@st-electron.ru

**Адрес:** 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331