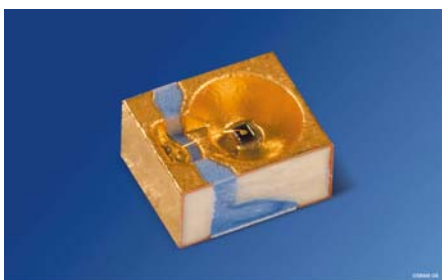
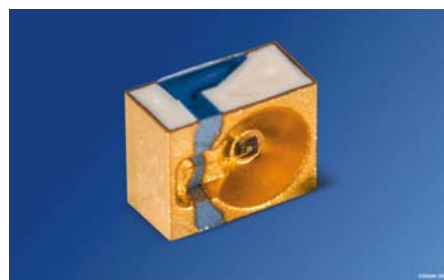


Engwinklige LED im MIDLED-Gehäuse
Narrow beam LED in MIDLED package
Lead (Pb) Free Product - RoHS Compliant

SFH 4600
SFH 4605



SFH 4600



SFH 4605

Nicht für Neuentwicklungen / Not for new designs

Wesentliche Merkmale

- Leistungsstarke GaAs-LED (35 mW) mit typischer Emissionswellenlänge 950 nm
- Enger Abstrahlwinkel ($\pm 20^\circ$)
- Geringe Bauhöhe
- Als Toplooker und Sidelooker einsetzbar
- SFH 4600: Gurtung als Toplooker
- SFH 4605: Gurtung als Sidelooker

Features

- High Power GaAs-LED (35 mW) with typical peak wavelength of 950 nm
- Narrow halfangle ($\pm 20^\circ$)
- Low profile component
- Usable as top-looking and side-looking device
- SFH 4600: Taping as Toplooker
- SFH 4605: Taping as Sidelooker

Anwendungen

- Lichtschranken, Lichtvorhänge
- Sensorik
- IR Scheinwerfer

Applications

- Interrupters, Lightcurtains
- Sensors
- IR floodlight

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.

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 | Strahlstärkegruppierung ¹⁾ ($I_F = 100 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping ¹⁾ I_e (mW/sr) |
|-------------|--------------------------------|---|
| SFH 4600 | Q65110A1575 | ≥ 16 (typ. 30) |
| SFH 4605 | Q65110A1576 | ≥ 16 (typ. 30) |

¹⁾ gemessen bei einem Raumwinkel $\Omega = 0.01 \text{ sr}$ / measured at a solid angle of $\Omega = 0.01 \text{ sr}$



ATTENTION - Observe Precautions For Handling - Electrostatic Sensitive Device

**Grenzwerte
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 |
| Sperrspannung Reverse voltage | V_R | 5 | V |
| Vorwärtsgleichstrom, $T_A \leq 60$ °C Forward current | I_F | 100 | mA |
| Stoßstrom, $t_p = 300$ µs, $D = 0$, $T_A \leq 60$ °C Surge current | I_{FSM} | 1 | A |
| Verlustleistung $T_A = 25$ °C Power dissipation | P_{tot} | 180 | mW |
| Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je 16 mm ² Thermal resistance junction - ambient mounted on PC-board (FR4), pads size 16 mm ² each | R_{thJA} | 340 | K/W |
| Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block | R_{thJS} | 180 | K/W |

Kennwerte ($T_A = 25$ °C)

Characteristics

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|--|------------------|---------------|-----------------|
| Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100$ mA | λ_{peak} | 950 | nm |
| Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100$ mA | $\Delta\lambda$ | 40 | nm |

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

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|------------------------------|--|-----------------|
| Abstrahlwinkel Half angle | φ | ± 20 | Grad deg. |
| Aktive Chipfläche Active chip area | A | 0.09 | mm ² |
| Abmessungen der aktiven Chipfläche Dimension of the active chip area | $L \times B$ $L \times W$ | 0.3×0.3 | mm ² |
| Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\ \Omega$ 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 | 10 | ns |
| Durchlassspannung Forward voltage $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$ | V_F V_F | 1.5 (< 1.8) 3.2 (< 4.3) | V V |
| Sperrstrom Reverse current $V_R = 5\text{ V}$ | I_R | not designed for reverse operation | μA |
| Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ | $\Phi_{e\text{ typ}}$ | 35 | mW |
| Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 100\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 100\text{ mA}$ | TC_I | - 0.44 | %/K |
| Temperaturkoeffizient von V_F , $I_F = 100\text{ mA}$ Temperature coefficient of V_F , $I_F = 100\text{ mA}$ | TC_V | - 1.5 | mV/K |
| Temperaturkoeffizient von λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$ | TC_λ | + 0.2 | nm/K |

Strahlstärke I_e in Achsrichtung¹⁾

gemessen bei einem Raumwinkel $\Omega = 0.01$ sr

Radiant Intensity I_e in Axial Direction

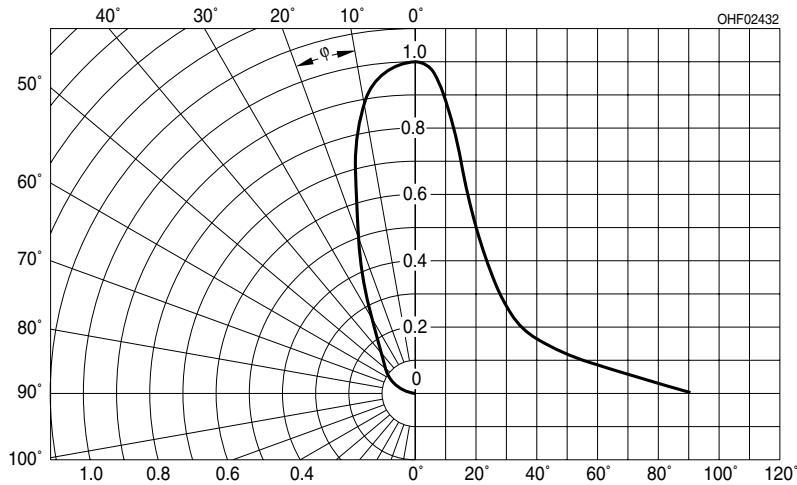
at a solid angle of $\Omega = 0.01$ sr

| Bezeichnung Parameter | Symbol | Werte Values | | | Einheit Unit |
|---|--|-----------------|----------|----------|-----------------|
| | | -S | -T | -U | |
| Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms | $I_{e \text{ min}}$ $I_{e \text{ max}}$ | 16 32 | 25 50 | 40 80 | mW/sr mW/sr |
| Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s | $I_{e \text{ typ}}$ | 160 | 220 | 280 | mW/sr |

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

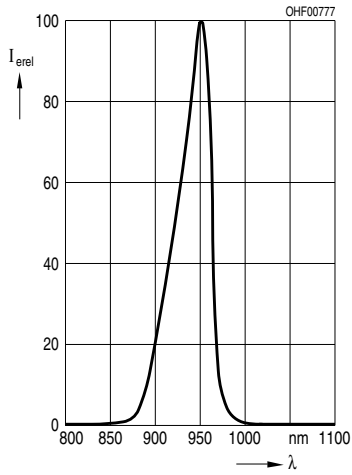
Abstrahlcharakteristik

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



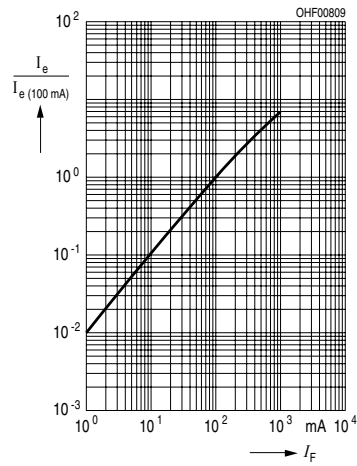
Relative Spectral Emission

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



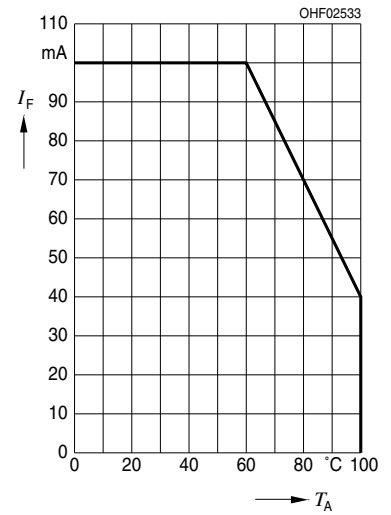
Radiant Intensity $\frac{I_e}{I_e(100 \text{ mA})} = f(I_F)$

Single pulse, $t_p = 20 \mu\text{s}$



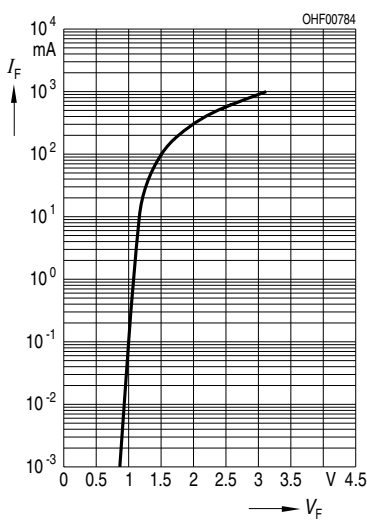
Max. Permissible Forward Current

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



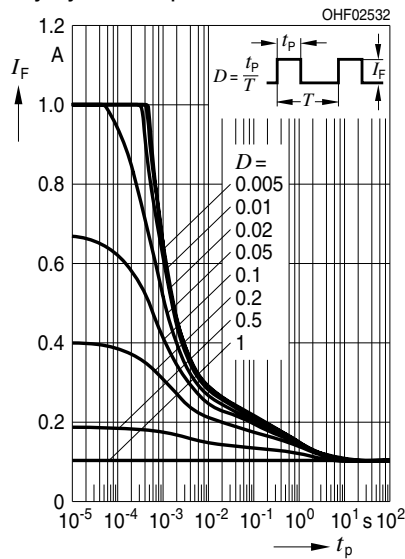
Forward Current $I_F = f(V_F)$

Single pulse, $t_p = 20 \mu\text{s}$

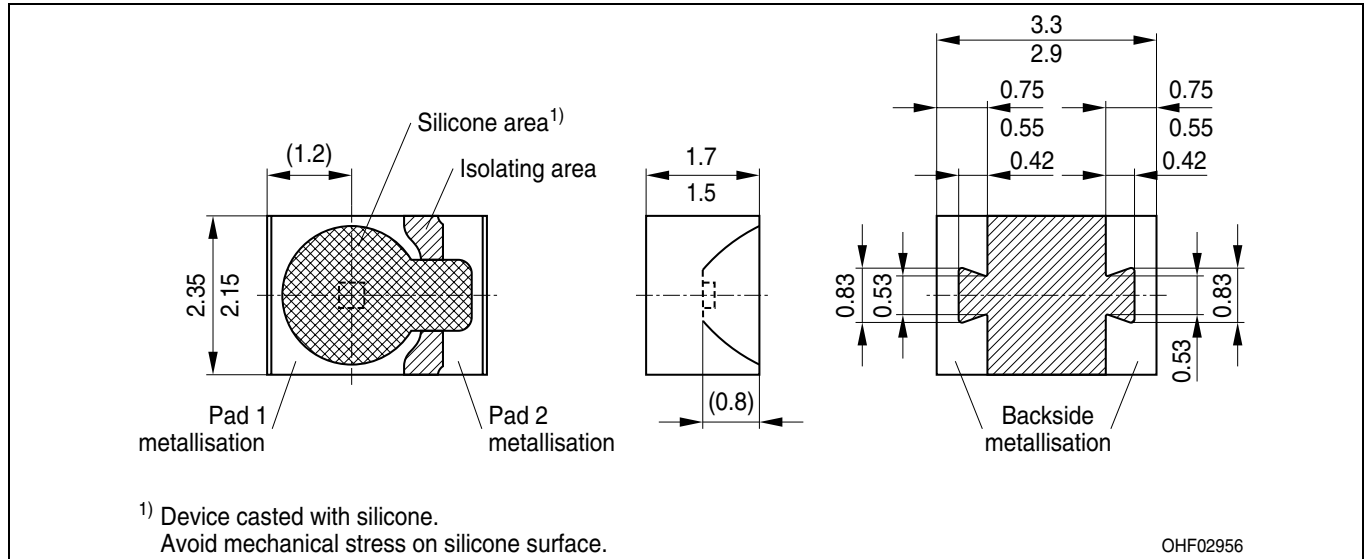


Permissible Pulse Handling Capability

$I_F = f(\tau), T_A \leq 60^\circ\text{C}$,
duty cycle $D = \text{parameter}$



**Maßzeichnung
Package Outlines**



Maße in mm / Dimensions in mm.

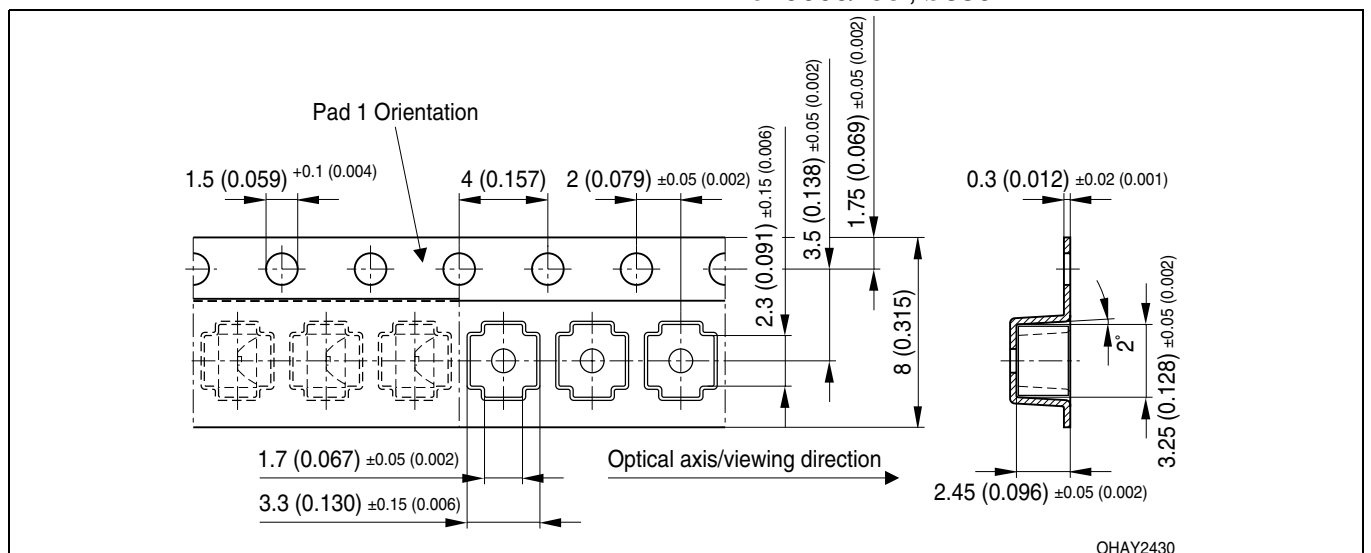
| | |
|--|--|
| Gehäuse / Package | MID mit klarem Silikonverguss / MID casted with clear Silicone |
| Anschlussbelegung Pin configuration | Pad 1 = Anode / anode Pad 2 = Kathode / cathode |

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




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

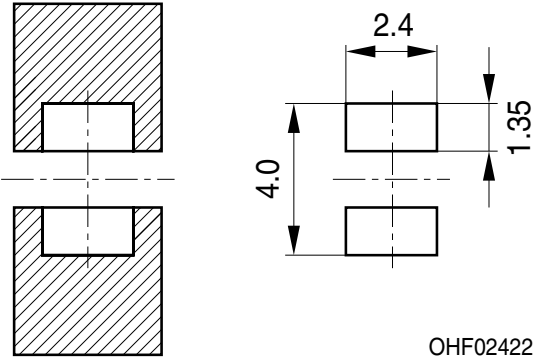
Empfohlenes Lötpaddesign
Recommended Solder Pad Design

SFH 4600

Padgeometrie für verbesserte Wärmeableitung
 Pad design for improved heat dissipation

Cu-Fläche > 16 mm²
 Cu-area

 Lötstopplack
 Solder resist




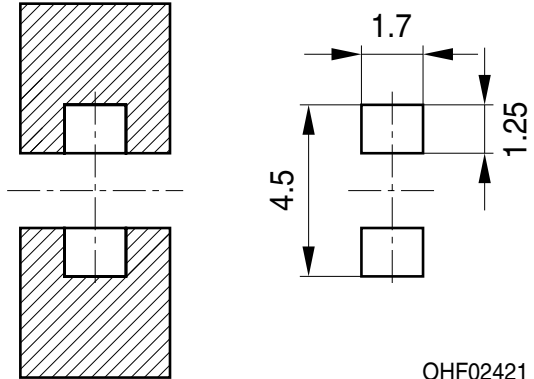
OHF02422

SFH 4605

Padgeometrie für verbesserte Wärmeableitung
 Pad design for improved heat dissipation

Cu-Fläche > 16 mm²
 Cu-area

 Lötstopplack
 Solder resist



OHF02421

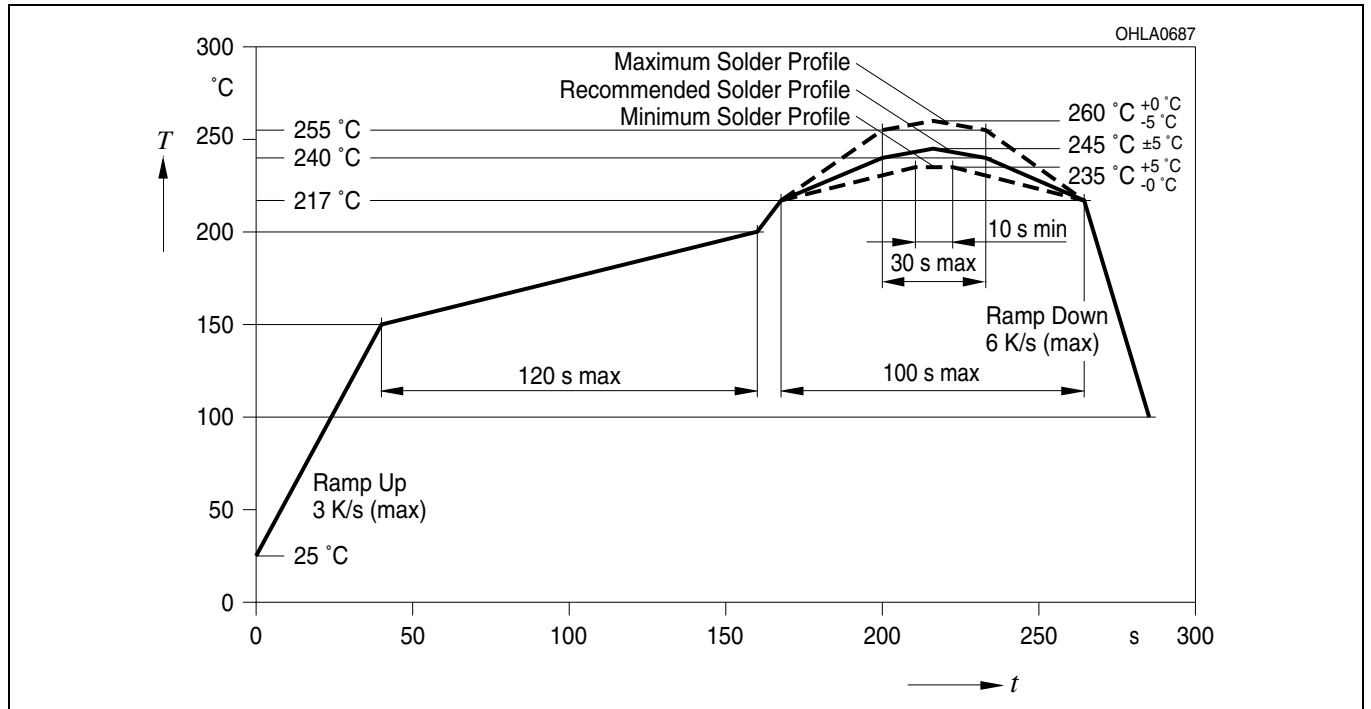
Maße in mm / Dimensions in mm.

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)



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¹ 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.

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.