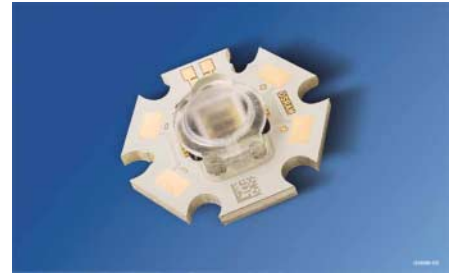


OSTAR® - Lighting IR 6-fold with Optics (850nm) Lead (Pb) Free Product - RoHS Compliant

SFH 4750



Vorläufige Daten / Preliminary Data

Wesentliche Merkmale

- 3.5 W optische Leistung bei IF=1A
- Aktive Chipfläche 2.1 x 3.2 mm²
- max. Gleichstrom 1 A
- niedriger Wärmewiderstand (3 K/W)
- Emissionswellenlänge 850 nm
- ESD-sicher bis 2 kV nach JESD22-A114-B

Anwendungen

- Infrarotbeleuchtung für Kameras
- Überwachungssysteme
- IR-Datenübertragung
- Verkehrsüberwachungssysteme
- Beleuchtung für Bilderkennungssysteme
- Nicht für Anwendungen im Automobilbereich

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

- 3.5 W optical power at IF=1A
- Active chip area 2.1 x 3.2 mm²
- max. DC-current 1 A
- Low thermal resistance (3 K/W)
- Spectral emission at 850 nm
- ESD save up to 2 kV acc. to JESD22-A114-B

Applications

- Infrared Illumination for cameras
- Surveillance systems
- IR Data Transmission
- Intelligent Transportation Systems
- Machine vision systems
- Not released for automotive applications

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 | Strahlstärke ¹⁾ ($I_F = 1A, t_p = 20 ms$) Radiant intensity ¹⁾ I_e (mW/sr) |
|-------------|--------------------------------|---|
| SFH 4750 | Q65110A8280 | > 630 (typ. 1000) |

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

Grenzwerte $T_B^{1)} = 25\text{ °C}$ **Maximum Ratings**

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|--|-------------------------|----------------|-----------------|
| Betriebs- und Lagertemperatur Operating and storage temperature range | $T_{B, op}, T_{B, stg}$ | - 40 ... + 100 | °C |
| Sperrschichttemperatur Junction temperature | T_J | + 145 | °C |
| Sperrspannung Reverse voltage | V_R | 0.5 | V |
| Vorwärtsgleichstrom Forward current | I_F | 1 | A |
| Stoßstrom, $t_p = 100\ \mu\text{s}$, $D = 0$ Surge current | I_{FSM} | 5 | A |
| Leistungsaufnahme, Power consumption | P_{tot} | 12 | W |
| Thermische Verlustleistung Thermal power-dissipation | P_{th} | 9.8 | W |
| Wärmewiderstand Sperrschicht / Bodenplatte Thermal resistance Junction / Base plate | R_{thJB} | 3 | K/W |

¹⁾ T_B = Temperatur auf der Rückseite der Metallkernplatte / Temperature at the backside of the base plate.

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

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|----------------------|---------------|-----------------|
| Wellenlänge der Strahlung Wavelength at peak emission $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$ | λ_{peak} | 860 | nm |
| Schwerpunkts-Wellenlänge der Strahlung Centroid wavelength $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$ | $\lambda_{centroid}$ | 850 | nm |
| Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$ | $\Delta\lambda$ | 30 | nm |
| Abstrahlwinkel Half angle | φ | ± 70 | Grad deg. |

Kennwerte ($T_B = 25\text{ °C}$)

Characteristics (cont'd)

| Bezeichnung Parameter | Symbol Symbol | Wert Value | Einheit Unit |
|---|---------------------------------|---------------|-----------------|
| Abmessungen der aktiven Chipfläche ¹⁾ Dimension of the active chip area | $L \times B$ $L \times W$ | 2.1 × 3.2 | mm ² |
| 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 | 10, 10 | ns |
| Durchlassspannung Forward voltage $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$ | V_F | 9.5 (< 12) | V |
| Gesamtstrahlungsfluss Total radiant flux $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$ | $\Phi_{e\text{ typ}}$ | 3.5 | W |
| Temperaturkoeffizient von I_e bzw. Φ_e Temperature coefficient of I_e or Φ_e $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$ | TC_I | - 0.3 | %/K |
| Temperaturkoeffizient von V_F Temperature coefficient of V_F $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$ | TC_V | - 6 | mV/K |
| Temperaturkoeffizient von λ Temperature coefficient of λ $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$ | $TC_{\lambda, \text{centroid}}$ | + 0.3 | nm/K |

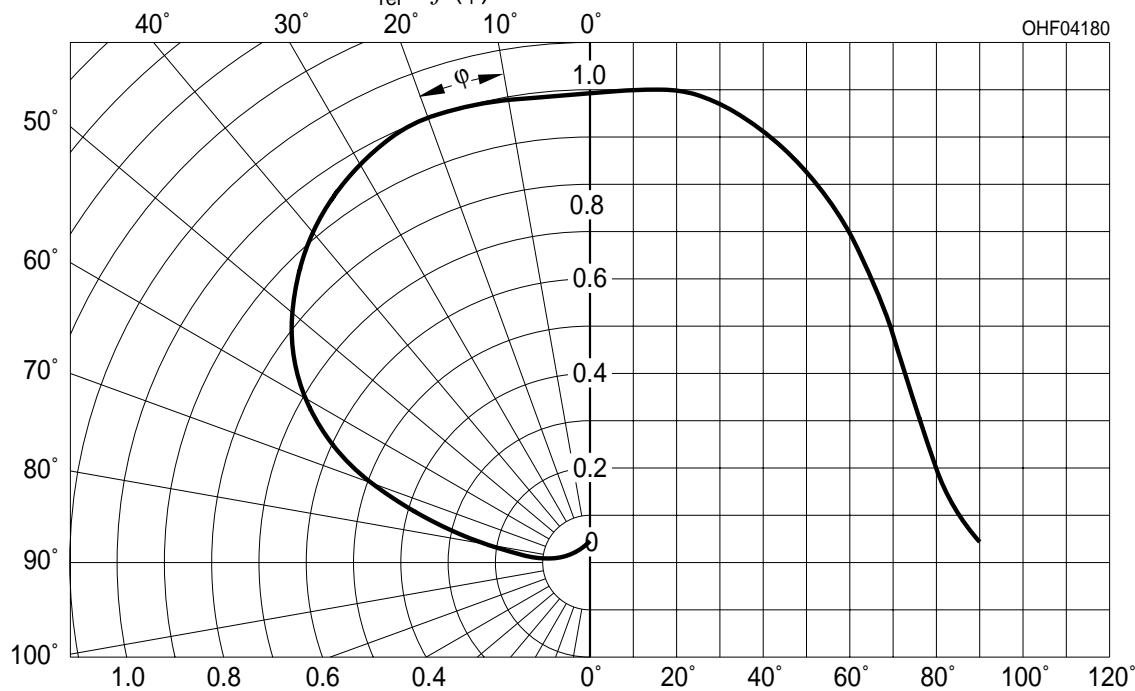
¹⁾ Die aktive Chipfläche besteht aus 6 einzelnen Chips mit je 1 x 1 mm².
The active chip area consists of 6 single chips with 1 x 1 mm² each.

Strahlstärke¹⁾ I_e
 Radiant Intensity¹⁾ I_e

| Bezeichnung Parameter | Symbol | Werte Values | | Einheit Unit |
|---|--|-----------------|--------------|-----------------|
| | | SFH 4750 -EA | SFH 4750 -EB | |
| Strahlstärke Radiant Intensity $I_F = 1 \text{ A}, t_p = 20 \text{ ms}$ | $I_{e \text{ min}}$ $I_{e \text{ max}}$ | 630 1000 | 800 1250 | mW/sr mW/sr |

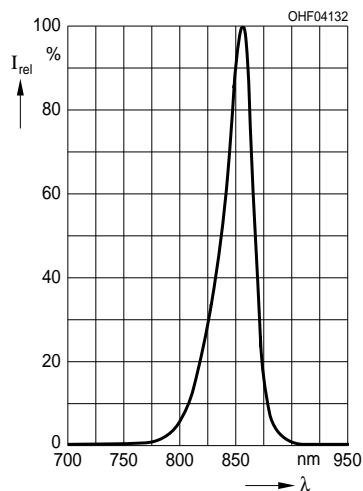
¹⁾ Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 1.6:1)
 Only one group in one packing unit (variation lower 1.6:1)

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



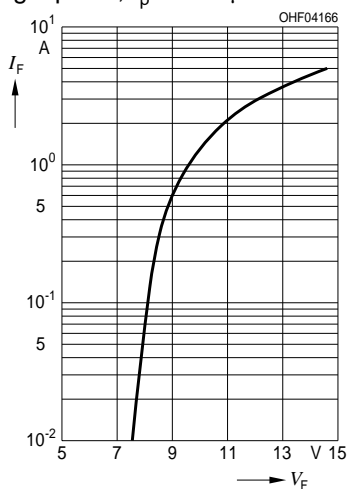
**Relative spektrale Emission
Relative Spectral Emission**

$I_{rel} = f(\lambda), T_B = 25\text{ °C}$



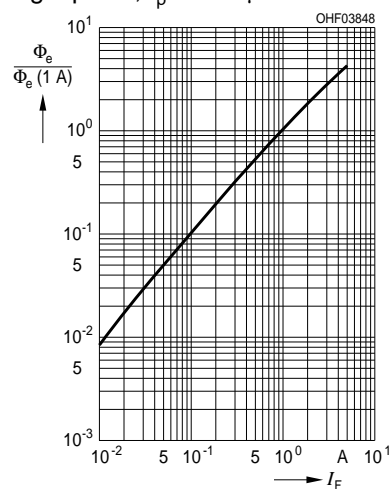
**Durchlassstrom
Forward Current**

$I_F = f(V_F), T_B = 25\text{ °C},$
Single pulse, $t_p = 100\text{ }\mu\text{s}$



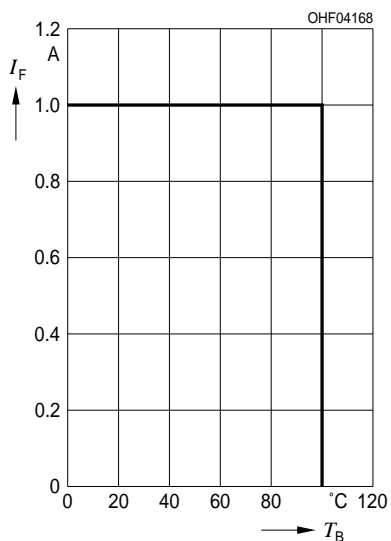
**Relativer Gesamtstrahlungsfluss
Relative Total Radiant Flux**

$\Phi_e / \Phi_e(1A) = f(I_F), T_B = 25\text{ °C},$
Single pulse, $t_p = 100\text{ }\mu\text{s}$



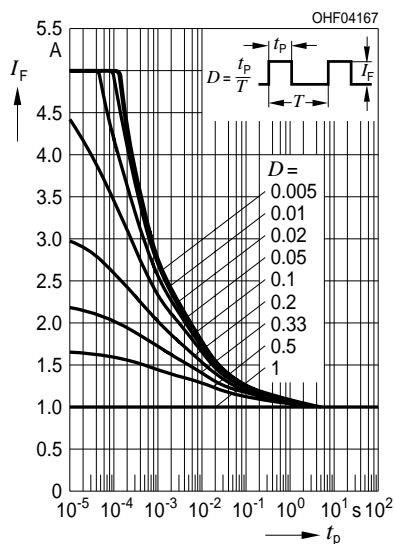
**Max. zulässiger Durchlassstrom
Max. Permissible Forward Current**

$I_F = f(T_B), R_{thJB} = 3\text{ K/W}$



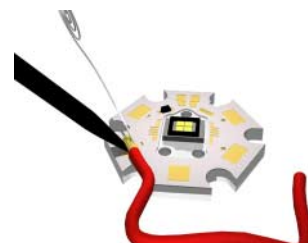
**Zulässige Impulsbelastbarkeit
Permissible Pulse Handling**

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

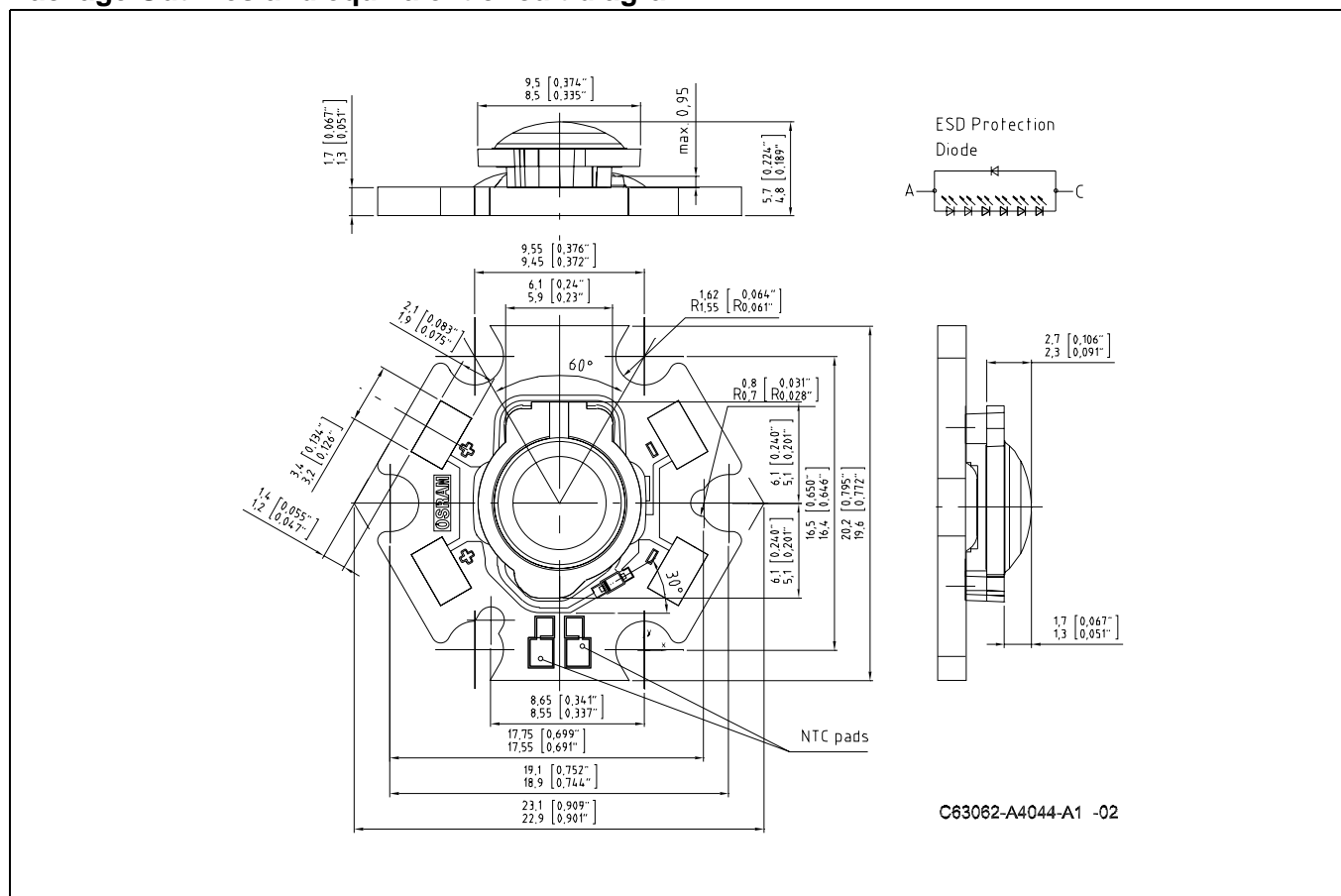


Anschlusskontaktierung
Contacting

| Drahttyp Wire type | Durchmesser Diameter | Lötspitze Solder Tip | Temperatur Temperature | Lötzeit Solder Time |
|-----------------------|--------------------------------------|-------------------------------|---------------------------|------------------------|
| AWG 18 | ~0.8 mm (Litze; flexible wire) | 3.2 mm (Meisel; Chisel) | 250 °C 350 °C | 16 sec. 6 sec |
| AWG 20 | ~0.5 mm (Litze; flexible wire) | 3.2 mm (Meisel; Chisel) | 250 °C 350 °C | 14 sec. 5 sec |
| AWG 22 | ~0.3 mm (Litze; flexible wire) | 3.2 mm (Meisel; Chisel) | 250 °C 350 °C | 9 sec. 3 sec |



Maßzeichnung und Ersatzschaltbild Package Outlines and equivalent circuit diagram



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

Published by OSRAM Opto Semiconductors GmbH
Leibnizstraße 4, D-93055 Regensburg

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