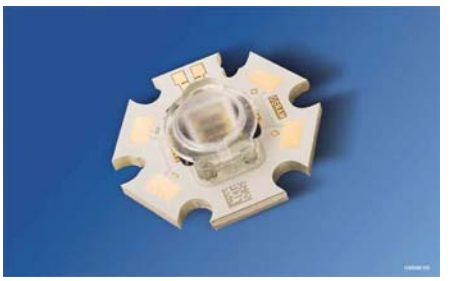
OSRAM OSTAR - Lighting IR 6-fold with Optics (850nm)
Lead (Pb) Free Product - RoHS Compliant

SFH 4750



Wesentliche Merkmale

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

Features

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

Anwendungen

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

Applications

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

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 Sicherheits-richtlinien 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**	**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 Ω = 0.01 sr / measured at a solid angle of Ω = 0.01 sr.

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Grenzwerte T_B [1] = 25 °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 µs, 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 Metallkernplatine / Temperature at the backside of the base plate.

Kennwerte (T_B = 25 °C)
Characteristics

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

Kennwerte (T_B = 25 °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	mm²
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, I_F = 5 A, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 5 A, R_L = 50 Ω	t_r, t_f	10, 10	ns
Durchlassspannung Forward voltage I_F = 1 A, t_p = 100 µs	V_F	9.5 (< 12)	V
Gesamtstrahlungsfluss Total radiant flux I_F = 1 A, t_p = 100 µs	Φ_e	3.5	W
Temperaturkoeffizient von I_e bzw. Φ_e Temperature coefficient of I_e or Φ_e I_F = 1 A, t_p = 10 ms	TC_I	– 0.3	%/K
Temperaturkoeffizient von V_F Temperature coefficient of V_F I_F = 1 A, t_p = 10 ms	TC_V	– 6	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ I_F = 1 A, t_p = 10 ms	$TC_{\lambda,centroid}$	+ 0.3	nm/K

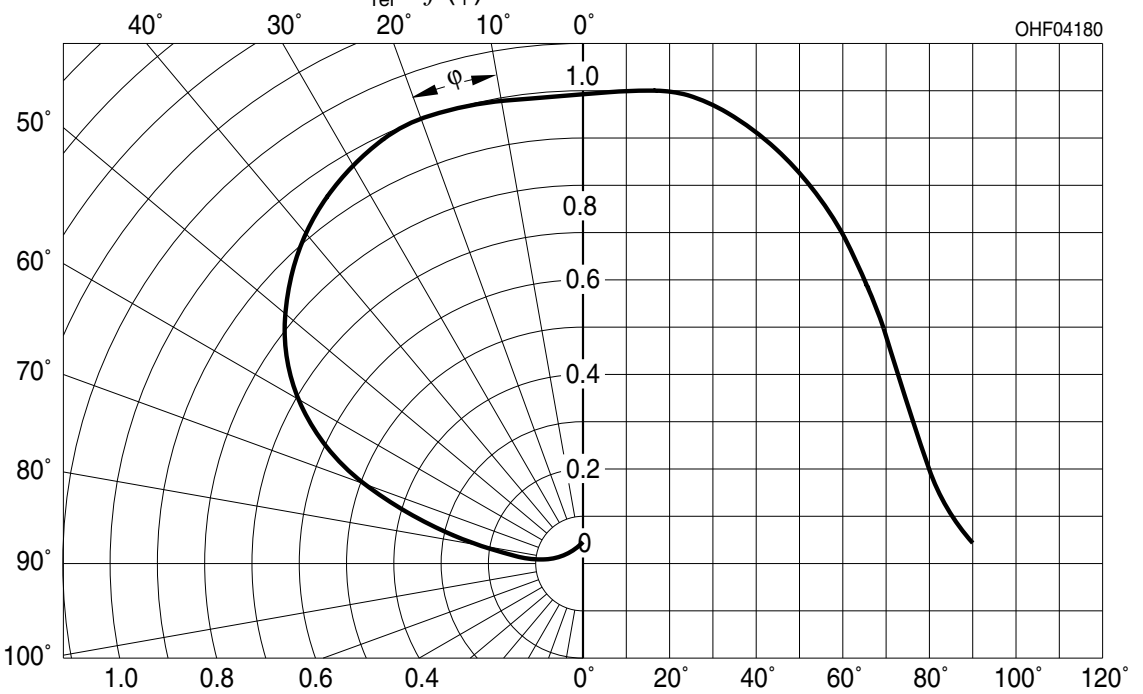
[1)] Die aktive Chipfläche besteht aus 6 einzelnen Chips mit je 1 x 1 mm².
The active chip area consists of 6 single chips with 1 x 1 mm² each.

Strahlstärke[1] I_e
Radiant Intensity[1] I_e

Bezeichnung Parameter	Symbol	Werte Values		Einheit Unit
		SFH 4750 -EA	SFH 4750 -EB	
Strahlstärke Radiant Intensity I_F = 1 A, t_p = 20 ms	$I_{e\ min}$ $I_{e\ max}$	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 $I_{rel} = f(\varphi)$



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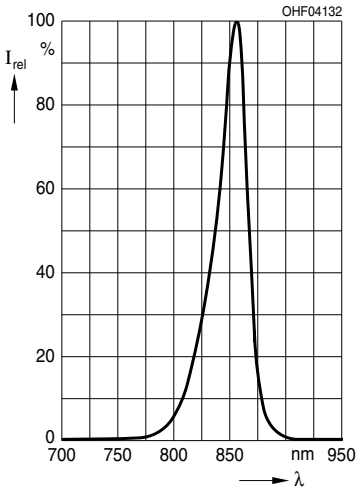
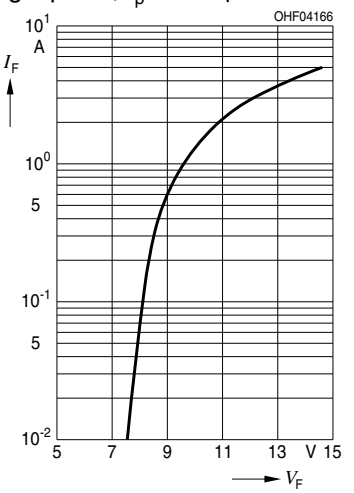
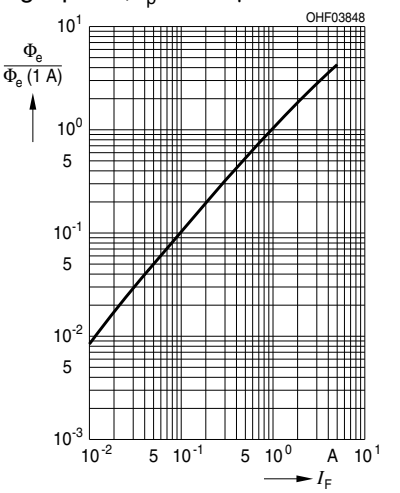
Relative spektrale Emission
Relative Spectral Emission
$I_{rel} = f(\lambda)$, $T_B = 25$ °C



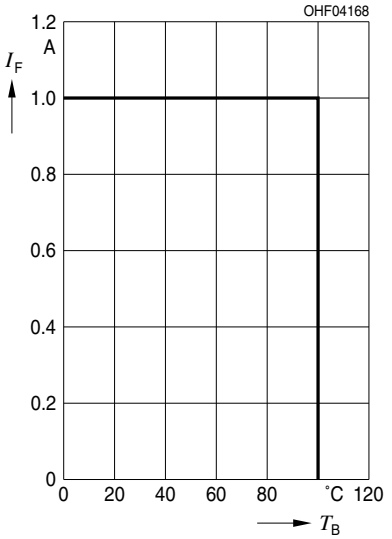
Durchlassstrom
Forward Current
$I_F = f(V_F)$, $T_B = 25$ °C,
Single pulse, $t_p = 100$ µs



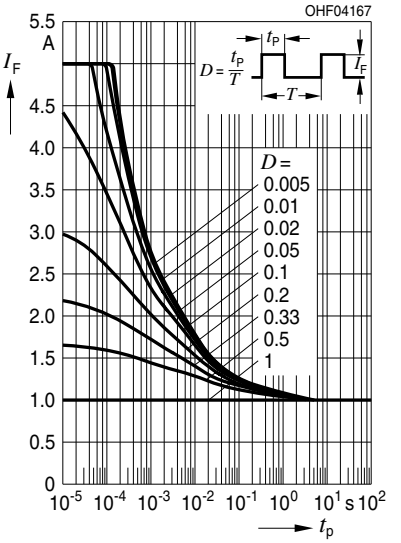
Relativer Gesamtstrahlungsfluss
Relative Total Radiant Flux
$\Phi_e/\Phi_e(1A) = f(I_F)$, $T_B = 25$ °C,
Single pulse, $t_p = 100$ µs



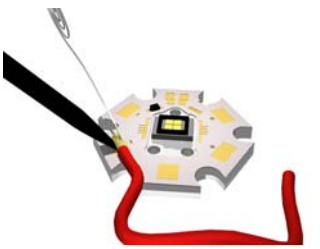
Max. zulässiger Durchlassstrom
Max. Permissible Forward Current
$I_F = f(T_B)$, $R_{thJB} = 3$ K/W



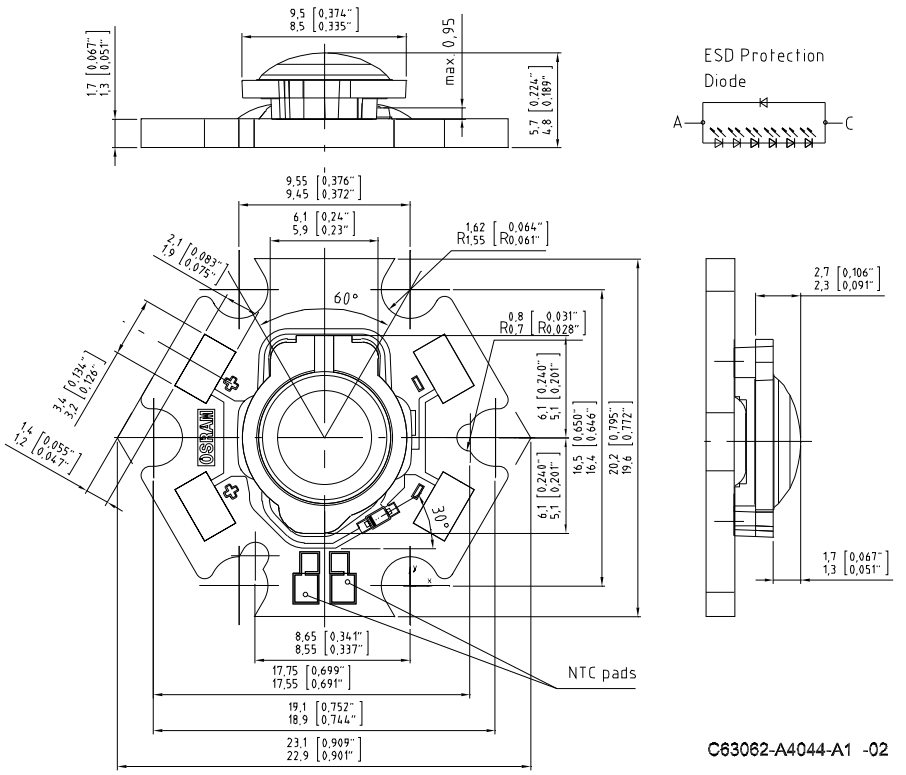
Zulässige Impulsbelastbarkeit
Permissible Pulse Handling Capability $I_F = f(t_p)$, $T_B = 85$ °C,
Duty cycle D = parameter



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).

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[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.

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