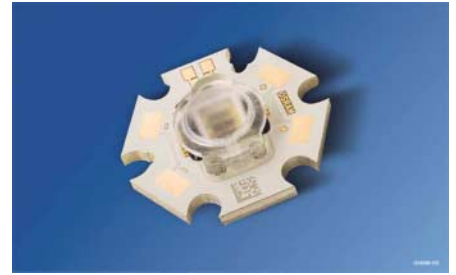


# OSTAR® - Lighting IR 6-fold with Optics (940nm) Lead (Pb) Free Product - RoHS Compliant

## SFH 4751



### Vorläufige Daten / Preliminary Data

#### Wesentliche Merkmale

- 3.1 W optische Leistung bei  $I_F=1A$
- Aktive Chipfläche  $2.1 \times 3.2 \text{ mm}^2$
- max. Gleichstrom 1 A
- niedriger Wärmewiderstand (3 K/W)
- Emissionswellenlänge 940 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

- 3.1 W optical power at  $I_F=1A$
- Active chip area  $2.1 \times 3.2 \text{ mm}^2$
- max. DC-current 1 A
- Low thermal resistance (3 K/W)
- Spectral emission at 940 nm
- ESD safe 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 <sup>1)</sup> ( $I_F = 1A, t_p = 20 \text{ ms}$ ) Radiant intensity <sup>1)</sup> $I_e$ (mW/sr)
SFH 4751	Q65110A8867	> 630 (typ. 900)

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

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	$P_{th}$	10.3	W
Wärmewiderstand Sperrschicht / Bodenplatte Thermal resistance Junction / Base plate	$R_{thJB}$	3	K/W

<sup>1)</sup>  $T_B$  = 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 $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\lambda_{peak}$	950	nm
Schwerpunkts-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 $I_{max}$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\Delta\lambda$	37	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 70$	Grad deg.

Kennwerte ( $T_B = 25\text{ °C}$ )

Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Abmessungen der aktiven Chipfläche <sup>1)</sup> Dimension of the active chip area	$L \times B$ $L \times W$	2.1 × 3.2	mm <sup>2</sup>
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%, $I_F = 1\text{ A}$ , $R_L = 50\ \Omega$	$t_r$ , $t_f$	tbd	ns
Durchlassspannung Forward voltage $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$	9.8 (< 12)	V
Gesamtstrahlungsfluss Total radiant flux $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$\Phi_{e\text{ typ}}$	3.1	W
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ Temperature coefficient of $I_e$ or $\Phi_e$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$TC_I$	- 0.3	%/K
Temperaturkoeffizient von $V_F$ Temperature coefficient of $V_F$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$TC_V$	- 30	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

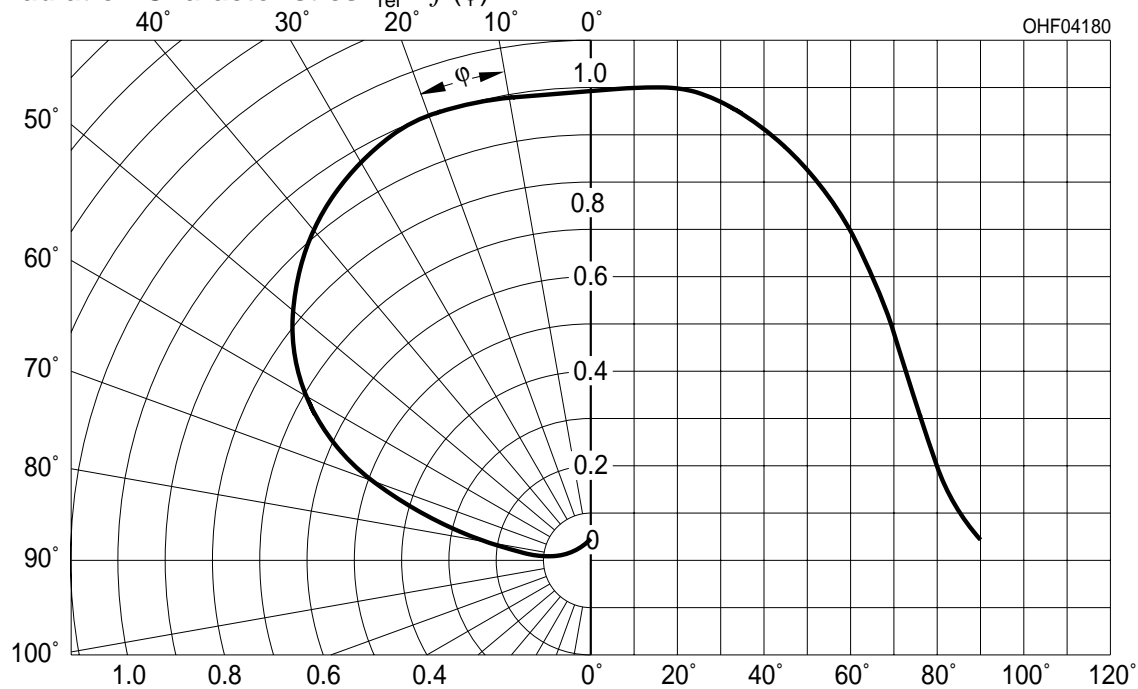
<sup>1)</sup> Die aktive Chipfläche besteht aus 6 einzelnen Chips mit je 1 x 1 mm<sup>2</sup>.  
The active chip area consists of 6 single chips with 1 x 1 mm<sup>2</sup> each.

Strahlstärke<sup>1)</sup>  $I_e$   
 Radiant Intensity<sup>1)</sup>  $I_e$

Bezeichnung Parameter	Symbol	Werte Values		Einheit Unit
		SFH 4751 -EA	SFH 4751 -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

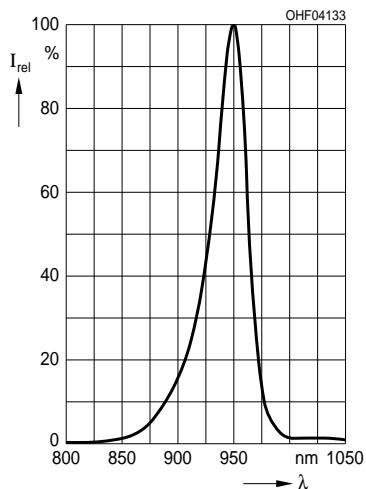
<sup>1)</sup> Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 1.6:1)  
 Only one group in one packing unit (variation lower 1.6:1)

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



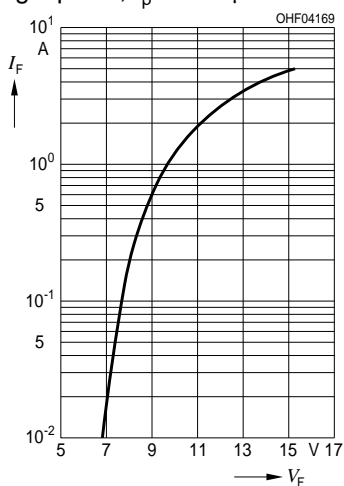
**Relative spektrale Emission**  
**Relative Spectral Emission**

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



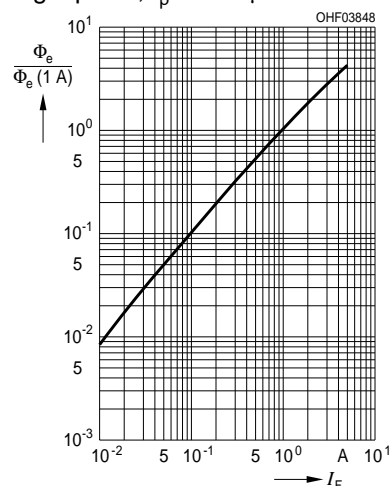
**Durchlassstrom**  
**Forward Current**

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



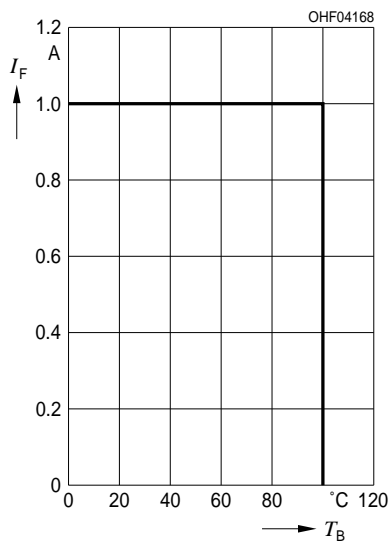
**Relativer Gesamtstrahlungsfluss**  
**Relative Total Radiant Flux**

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



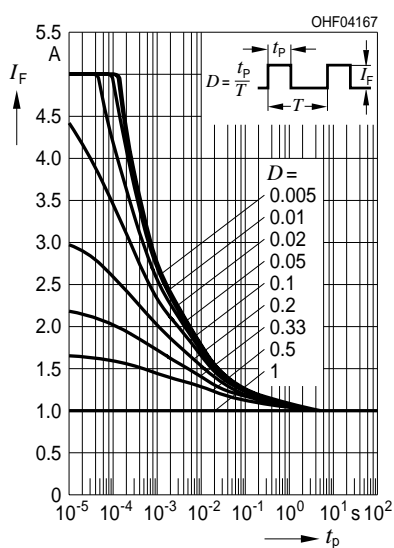
**Max. zulässiger Durchlassstrom**  
**Max. Permissible Forward Current**

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



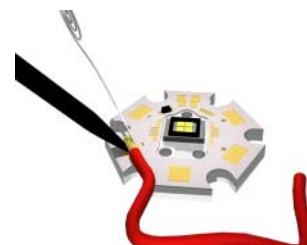
**Zulässige Impulsbelastbarkeit**  
**Permissible Pulse Handling**

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

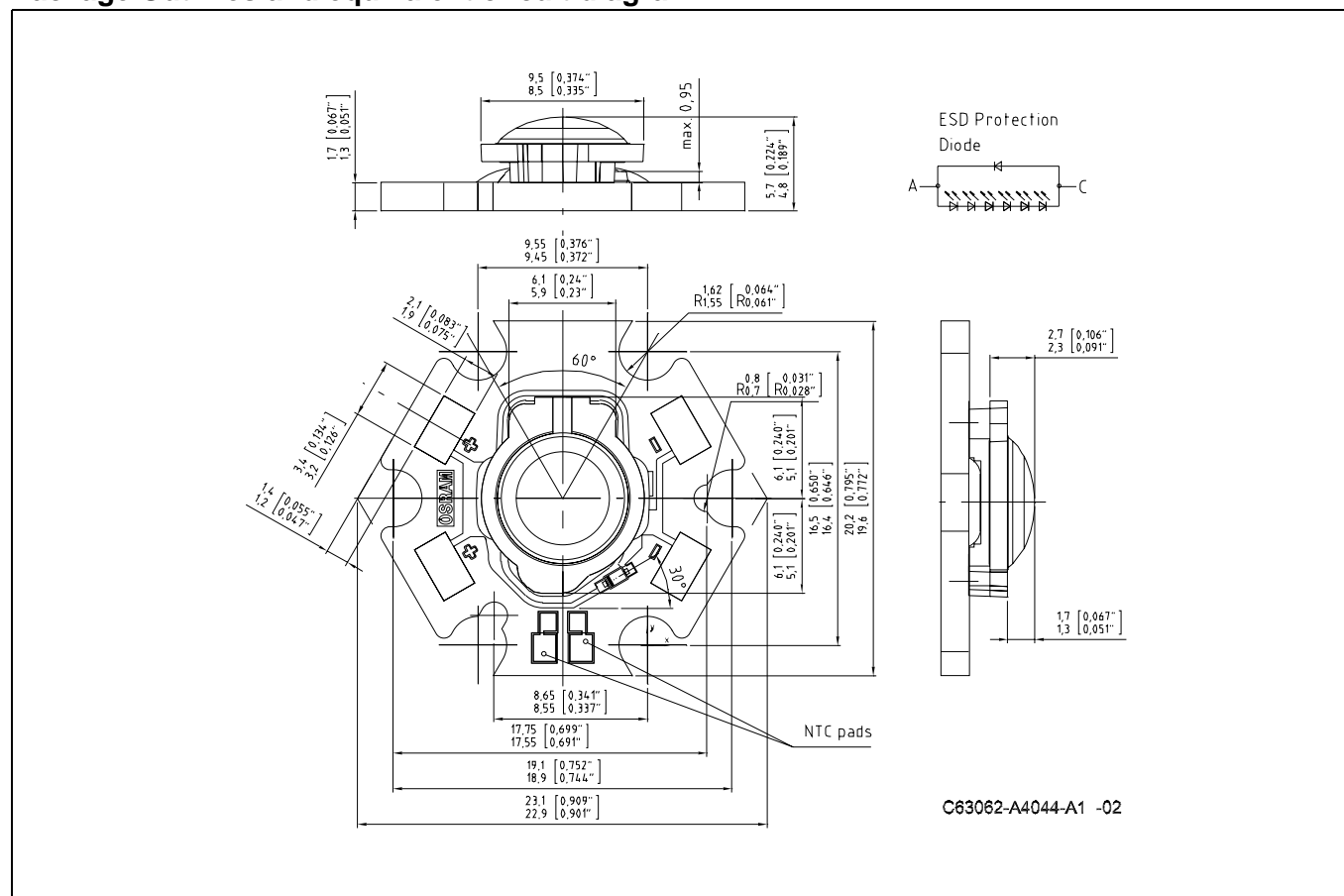


## Anschlusskontaktierung Contacting

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).

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