

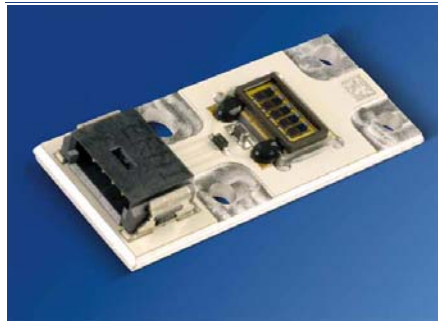


# THE DATASHEET OF SFH 4730

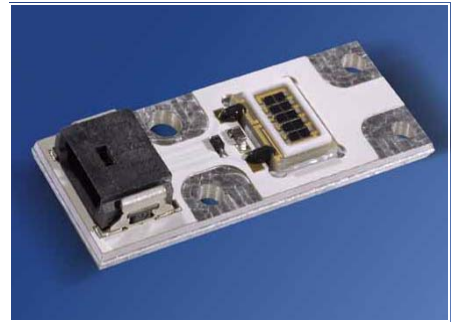


**Ostar Observation (850nm)**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 4730, SFH 4740**



SFH 4730



SFH 4740

**Vorläufige Daten / Preliminary Data**

**SFH 4730**

- Schwarzer Rahmen zur Streulichtminimierung
- 3.6 W optische Leistung bei IF=1A

**SFH 4740**

- Weißer Rahmen für hohe Lichtleistung
- 4.3 W optische Leistung bei IF=1A

**SFH 4730**

- Black frame to minimize scattered light
- 3.6 W optical power at IF=1A

**SFH 4740**

- White frame to achieve high optical power
- 4.3 W optical power at IF=1A

**Wesentliche Merkmale**

- Aktive Chipfläche 2.1 x 5.4 mm<sup>2</sup>
- max. Gleichstrom 1 A
- niedriger Wärmewiderstand (2.8 K/W)
- Emissionswellenlänge 850 nm
- ESD-sicher bis 2 kV nach JESD22-A114-E
- Augensicherheitsrichtlinien der IEC-Normen 60825-1 und 62471 müssen beachtet werden.

**Features**

- Active chip area 2.1 x 5.4 mm<sup>2</sup>
- max. DC-current 1 A
- Low thermal resistance (2.8 K/W)
- Spectral emission at 850 nm
- ESD save up to 2 kV acc. to JESD22-A114-E
- Eye safety precautions given in IEC 60825-1 and IEC 62471 have to be followed.

**Anwendungen**

- Infrarotbeleuchtung für Kameras
- Überwachungssysteme
- IR-Datenübertragung
- Fahrer-Assistenz Systeme

**Applications**

- Infrared Illumination for cameras
- Surveillance systems
- IR Data Transmission
- Driver assistance systems

Typ Type	Bestellnummer Ordering Code	Strahlstärke <sup>1)</sup> ( $I_F = 1A, t_p = 20 ms$ ) Radiant intensity <sup>1)</sup> $I_e$ (mW/sr)
SFH 4730	Q65110A5452	≥ 800 (typ.1200)
SFH 4740	Q65110A6190	≥ 1000 (typ.1400)

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

**Grenzwerte**  
**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 ... + 125	°C
Sperrschichttemperatur Junction temperature	$T_J$	+ 145	°C
Sperrspannung Reverse voltage	$V_R$	0.5	V
Vorwärtsgleichstrom, $T_B^{1)} \leq 90$ °C Forward current	$I_F$	1	A
Stoßstrom, $t_p < 3$ ms, $D = 0$ Surge current	$I_{FSM}$	5	A
Leistungsaufnahme, $T_B \leq 90$ °C Power consumption	$P_{tot}$	19	W
Thermische Verlustleistung, $T_B \leq 90$ °C Thermal power-dissipation	$P_{th}$	15.4	W
Wärmewiderstand Sperrschicht / Bodenplatte Thermal resistance Junction / Base plate	$R_{thJB}$	2.8	K/W

<sup>1)</sup>  $T_B$  = Temperatur auf der Rückseite der Metallkernplatine / 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 $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\lambda_{\text{peak}}$	860	nm
Schwerpunkts-Wellenlänge der Strahlung Centroid wavelength $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\lambda_{\text{centroid}}$	850	nm
Spektrale Bandbreite bei 50% von $I_{\text{max}}$ Spectral bandwidth at 50% of $I_{\text{max}}$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$\Delta\lambda$	30	nm
Abstrahlwinkel Half angle	$\varphi$	$\pm 60$	Grad deg.
Abmessungen der aktiven Chipfläche <sup>1)</sup> Dimension of the active chip area	$L \times B$ $L \times W$	$2.1 \times 5.4$	mm <sup>2</sup>
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, $I_F = 5\text{ A}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 5\text{ A}$ , $R_L = 50\ \Omega$	$t_r$ , $t_f$	10, 10	ns
Durchlassspannung Forward voltage $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$	$V_F$	$15.5 (\leq 19)$	V
Gesamtstrahlungsfluss Total radiant flux $I_F = 1\text{ A}$ , $t_p = 100\ \mu\text{s}$ SFH 4730 SFH 4740	$\Phi_e$ $\Phi_e$	3.6 4.3	W 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 $V_F$ $I_F = 1\text{ A}$ , $t_p = 10\text{ ms}$	$TC_V$	- 10	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

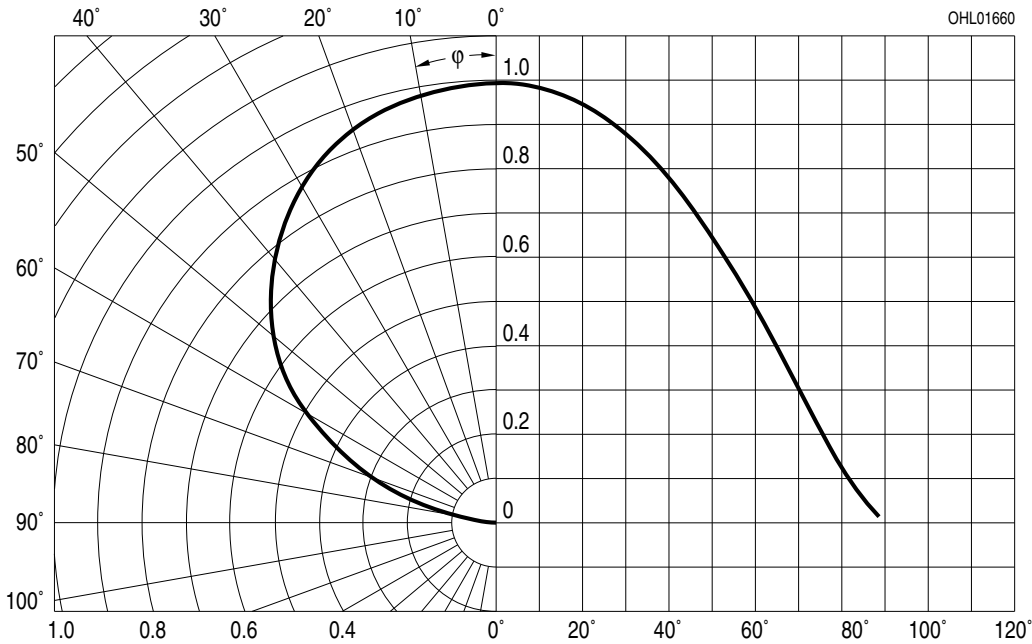
<sup>1)</sup> Die aktive Chipfläche besteht aus 10 einzelnen Chips mit je  $1 \times 1\text{ mm}^2$ .  
The active chip area consists of 10 single chips with  $1 \times 1\text{ mm}^2$  each.

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

Bezeichnung Parameter	Symbol	Werte Values				Einheit Unit
		SFH 4730 -EB	SFH 4730 -FA	SFH 4740 -FA	SFH 4740 -FB	
Strahlstärke Radiant Intensity $I_F = 1 \text{ A}, t_p = 20 \text{ ms}$	$I_{e \text{ min}}$ $I_{e \text{ max}}$	800 1250	1000 1600	1000 1600	1250 2000	mW/sr mW/sr

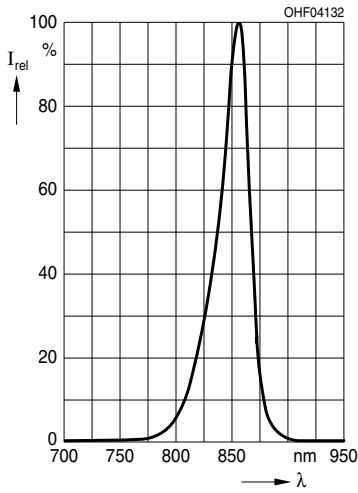
<sup>1)</sup> Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 1.6:1)  
 Only one group in one packing unit (variation lower 1.6:1)

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



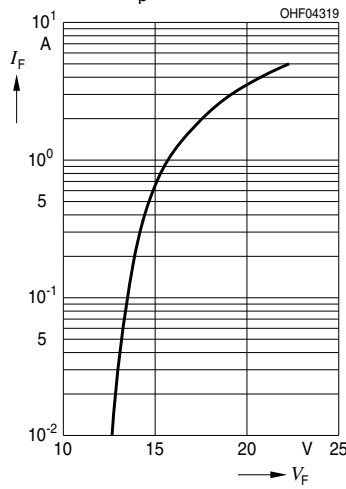
**Relative spektrale Emission**  
**Relative Spectral Emission**

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



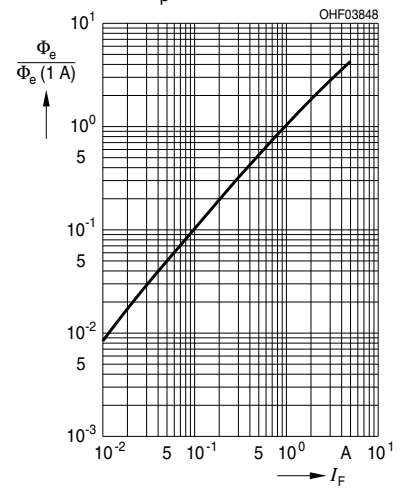
**Durchlassstrom**  
**Forward Current**

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



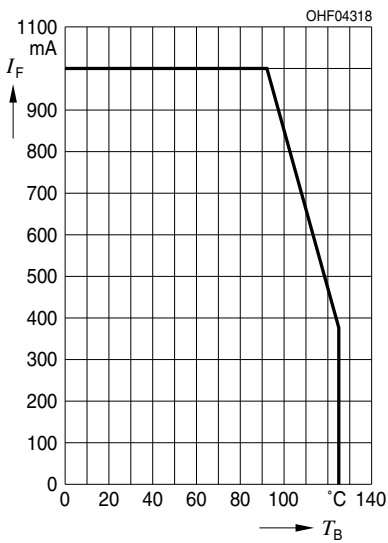
**Relativer Gesamtstrahlungsfluss**  
**Relative Total Radiant Flux**

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

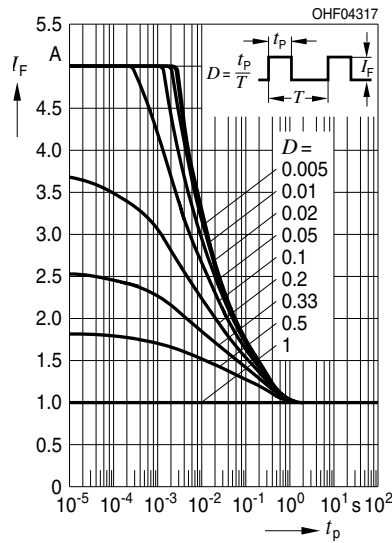


**Max. zulässiger Durchlassstrom**  
**Max. Permissible Forward Current**

$I_F = f(T_B), R_{thJB} = 2.8\text{ K/W}$



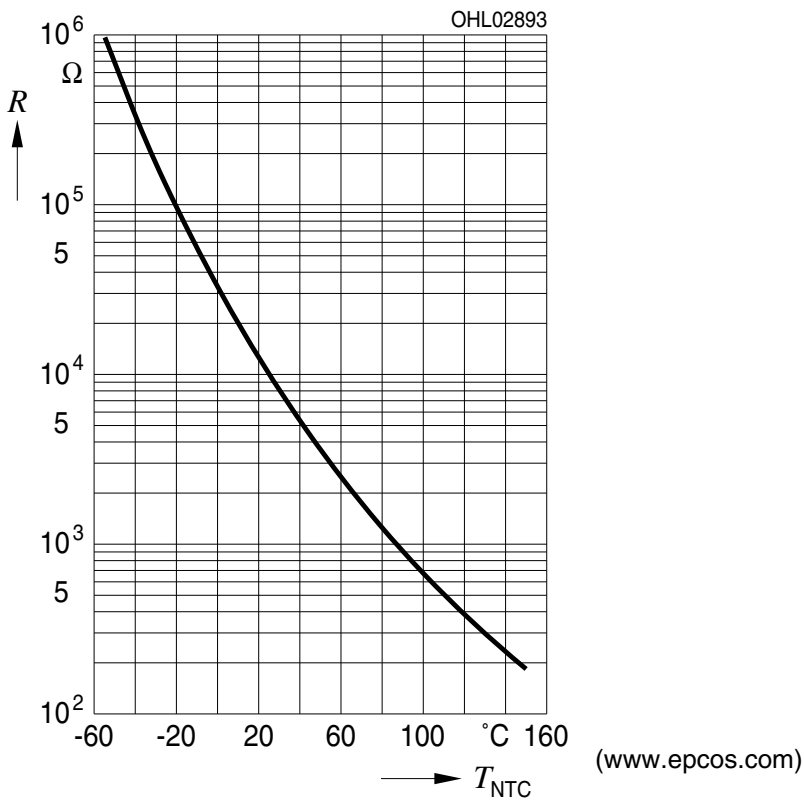
**Zulässige Impulsbelastbarkeit**  
**Permissible Pulse Handling**  
**Capability**  $I_F = f(t_p), T_B = 85\text{ °C},$   
Duty cycle  $D = \text{parameter}$



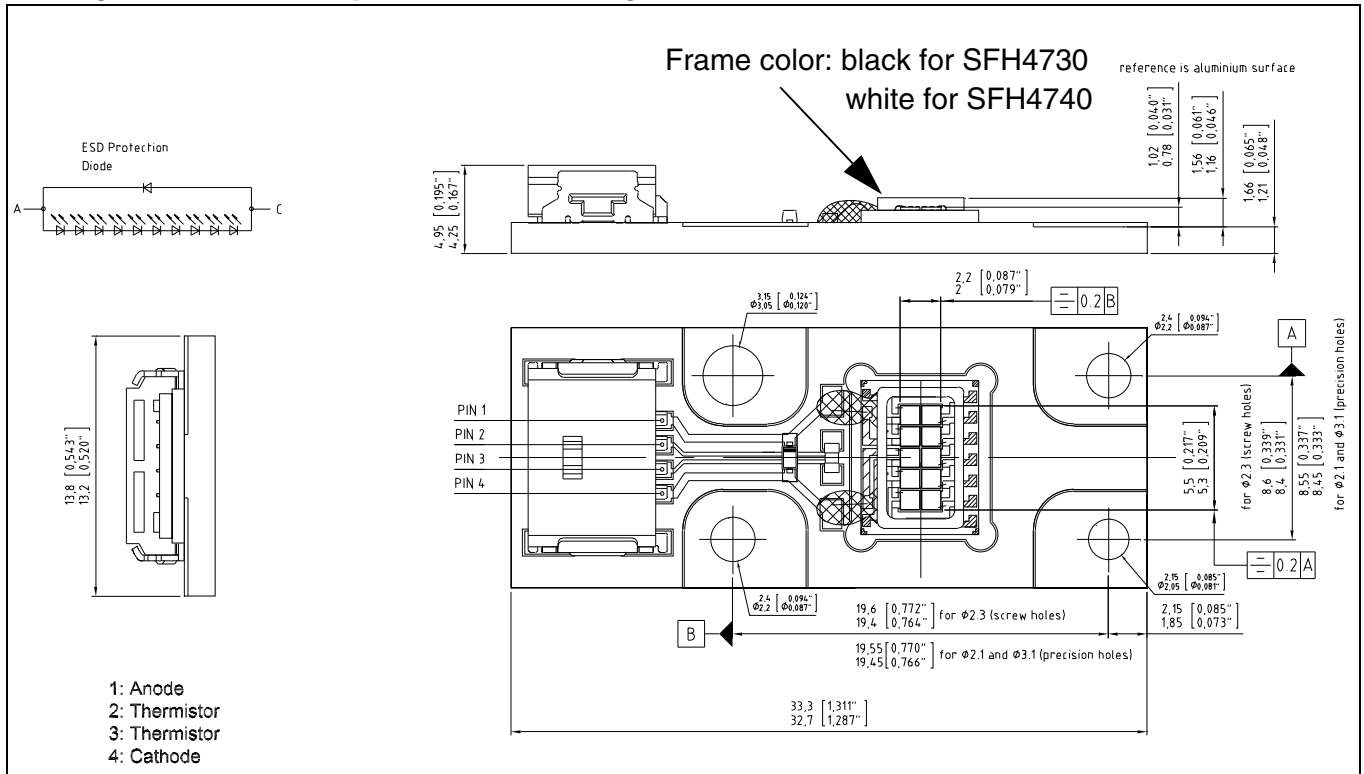
**SMD NTC Thermistor mit Nickel Barrier Termination, Typ 0603**  
**SMD NTC Thermistor with Nickel Barrier Termination, Type 0603**

No. of R/T characteristics	$R_{25}$ [ $\Omega$ ]	$B_{25/50}$ [K]	$B_{25/85}$ [K]	$B_{25/100}$ [K]
EPCOS 8502 / A01	10k $\pm$ 5%	3940	3980	4000

**Typische Thermistor Kennlinie**  
**Typical Thermistor Graph**



**Maßzeichnung und Ersatzschaltbild**  
**Package Outlines and equivalent circuit diagram**



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

**Verwendeter Stecker / Used male connector on board:**  
 ERNI male connector SMD 214012, 4-pins (www.erni.com)

**Empfohlene Gegenstecker / Recommended female connector for power supply:**  
 ERNI female connector SMD 214025, 4-pins (www.erni.com)

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<sup>1</sup> 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.

<sup>2</sup> 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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