

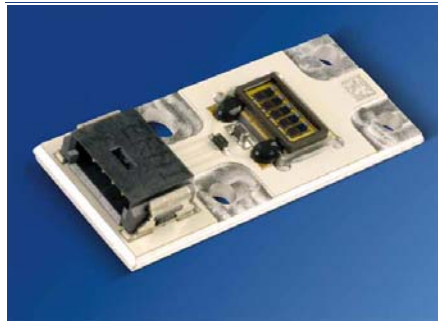


THE DATASHEET OF SFH 4730

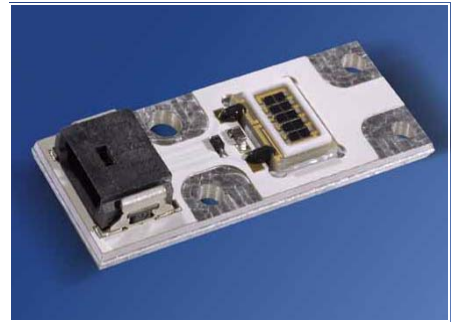


Ostar Observation (850nm)
Lead (Pb) Free Product - RoHS Compliant

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 mm²
- 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 mm²
- 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 ¹⁾ ($I_F = 1A, t_p = 20 ms$) Radiant intensity ¹⁾ I_e (mW/sr)
SFH 4730	Q65110A5452	≥ 800 (typ.1200)
SFH 4740	Q65110A6190	≥ 1000 (typ.1400)

¹⁾ 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

¹⁾ 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 $I_F = 1\text{ A}$, $t_p = 10\text{ ms}$	λ_{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_{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	± 60	Grad deg.
Abmessungen der aktiven Chipfläche ¹⁾ Dimension of the active chip area	$L \times B$ $L \times W$	2.1×5.4	mm ²
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 (≤ 19)	V
Gesamtstrahlungsfluss Total radiant flux $I_F = 1\text{ A}$, $t_p = 100\ \mu\text{s}$ SFH 4730 SFH 4740	Φ_e Φ_e	3.6 4.3	W 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	- 10	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

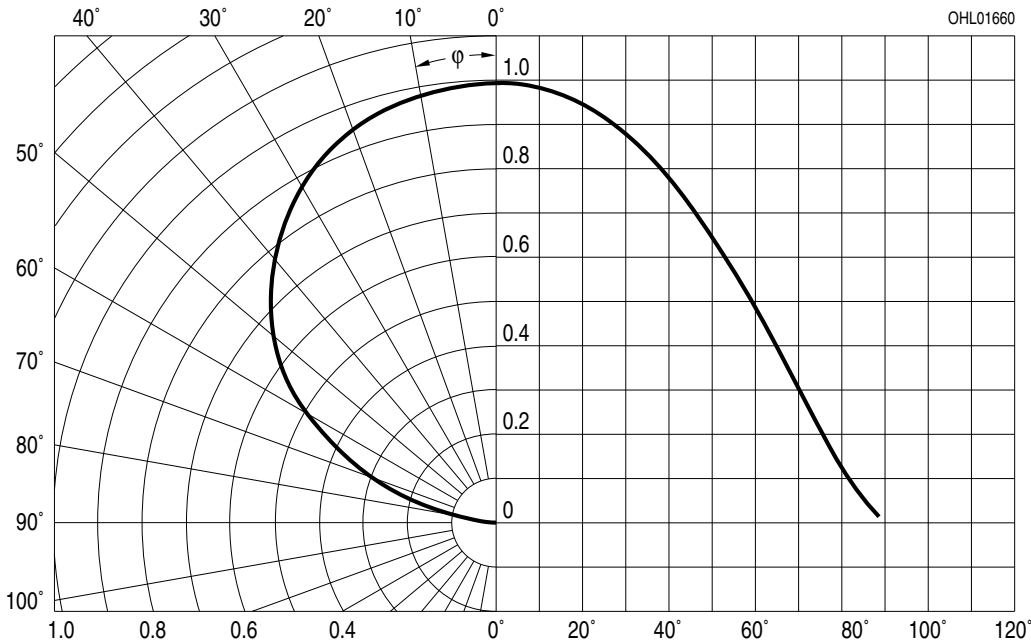
¹⁾ Die aktive Chipfläche besteht aus 10 einzelnen Chips mit je $1 \times 1\text{ mm}^2$.
The active chip area consists of 10 single chips with $1 \times 1\text{ mm}^2$ each.

Strahlstärke¹⁾ I_e
 Radiant Intensity¹⁾ 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

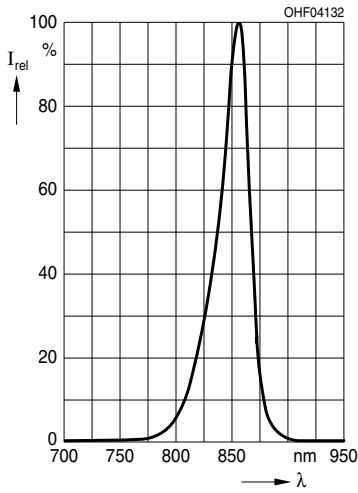
¹⁾ Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 1.6:1)
 Only one group in one packing unit (variation lower 1.6:1)

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



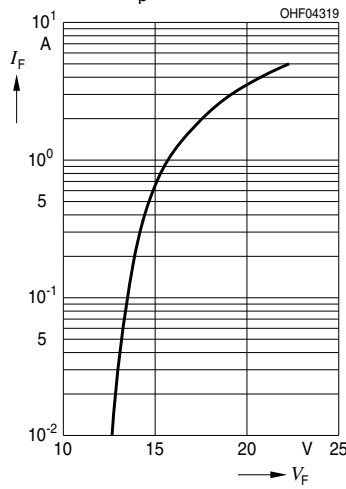
Relative spektrale Emission
Relative Spectral Emission

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



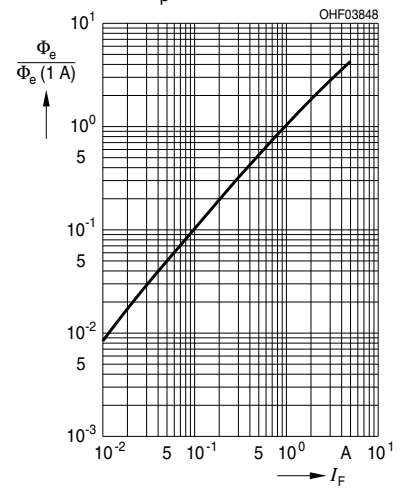
Durchlassstrom
Forward Current

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



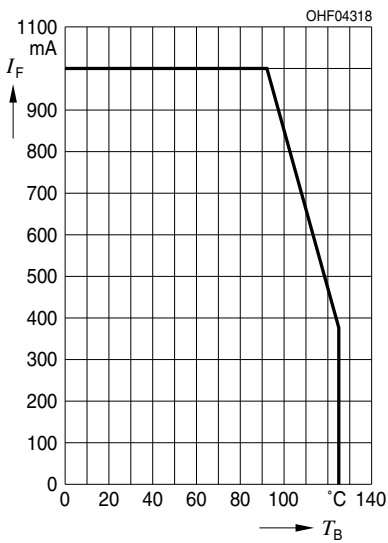
Relativer Gesamtstrahlungsfluss
Relative Total Radiant Flux

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

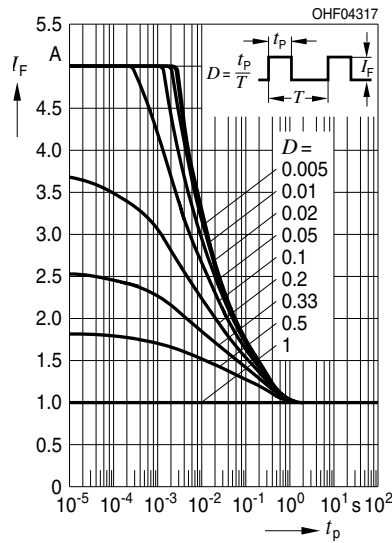


Max. zulässiger Durchlassstrom
Max. Permissible Forward Current

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



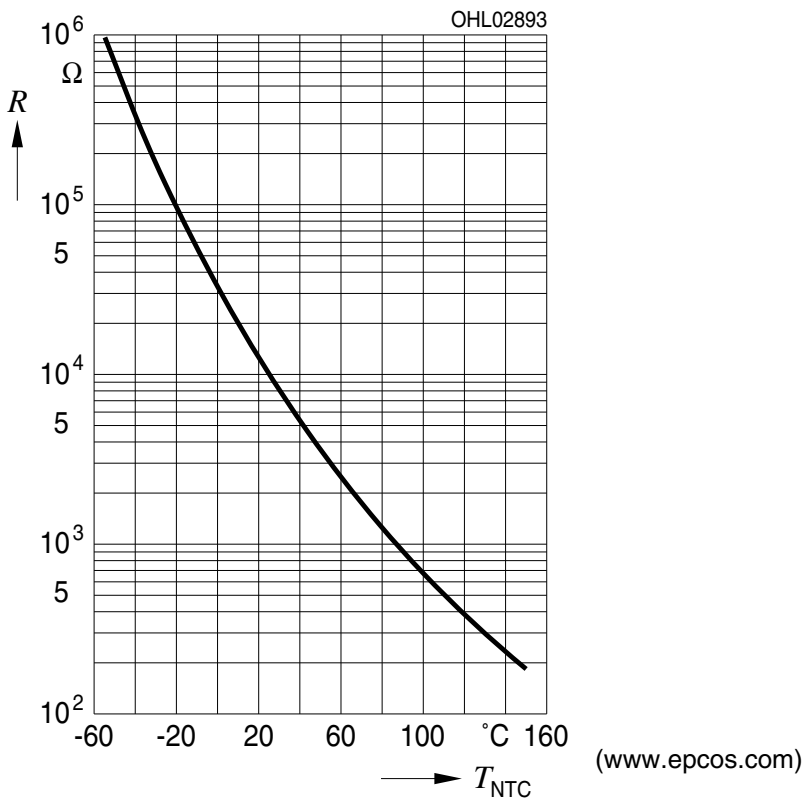
Zulässige Impulsbelastbarkeit
Permissible Pulse Handling
Capability $I_F = f(t_p), T_B = 85\text{ °C},$
Duty cycle $D = \text{parameter}$



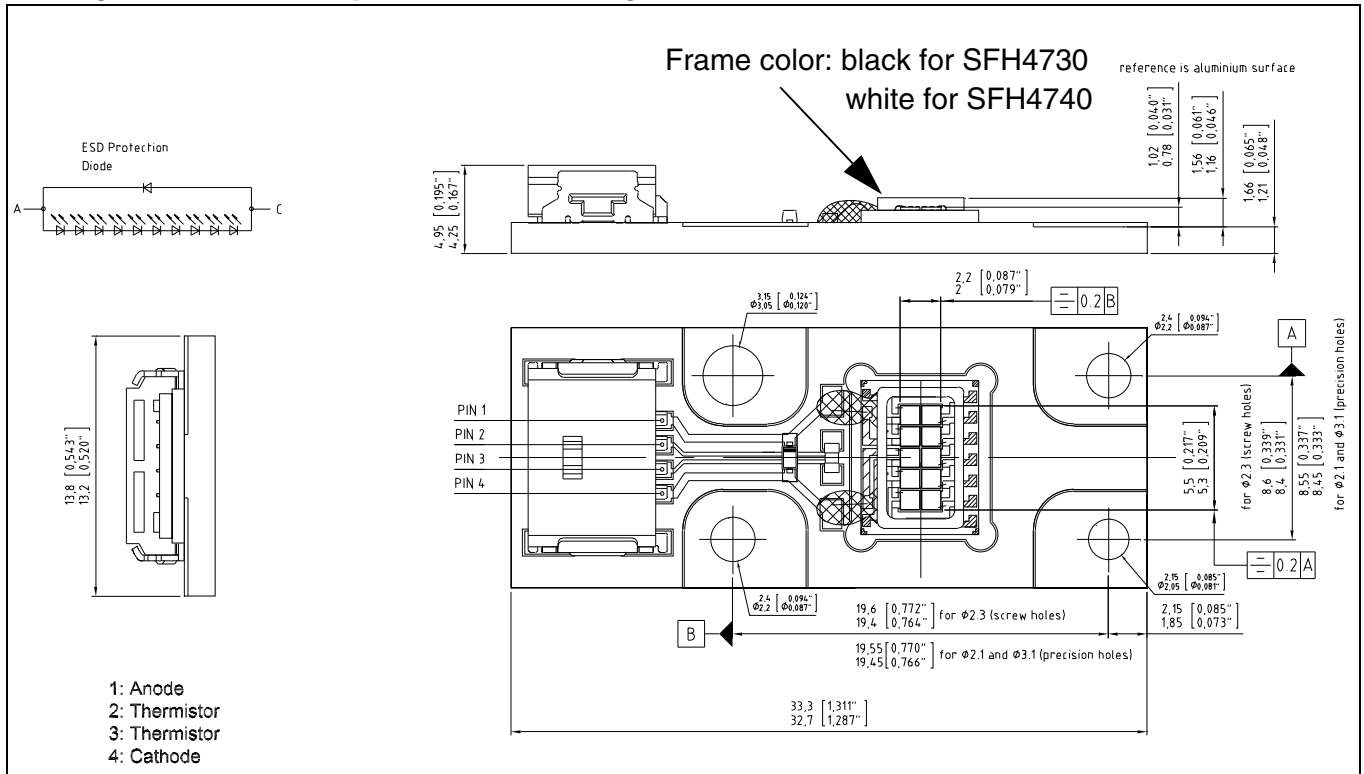
SMD NTC Thermistor mit Nickel Barrier Termination, Typ 0603
SMD NTC Thermistor with Nickel Barrier Termination, Type 0603

No. of R/T characteristics	R_{25} [Ω]	$B_{25/50}$ [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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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.

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