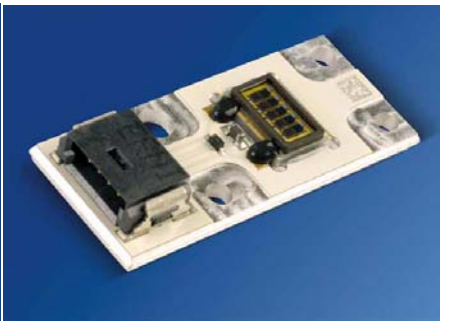
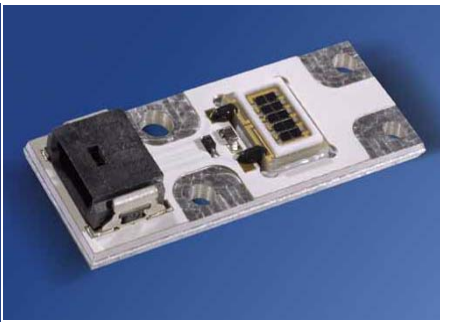
OSRAM OSTAR Observation (850nm)

Lead (Pb) Free Product - RoHS Compliant

SFH 4730, SFH 4740



SFH 4730



SFH 4740

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

Wesentliche Merkmale

- Aktive Chipfläche 2.1 x 5.4 mm^2
- 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.

Anwendungen

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

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

Features

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

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 Ω = 0.01 sr / measured at a solid angle of Ω = 0.01 sr.

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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] ≤ 90 °C Forward current	I_F	1	A
Stoßstrom, t_p < 3 ms, D = 0 Surge current	I_{FSM}	5	A
Leistungsaufnahme, T_B ≤ 90 °C Power consumption	P_{tot}	19	W
Thermische Verlustleistung, T_B ≤ 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 °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	± 60	Grad deg.
Abmessungen der aktiven Chipfläche[1)] Dimension of the active chip area	$L \times B$ $L \times W$	2.1 × 5.4	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	15.5 (≤ 19)	V
Gesamtstrahlungsfluss Total radiant flux I_F = 1 A, t_p = 100 µs 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 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	– 10	mV/K
Temperaturkoeffizient von λ Temperature coefficient of λ I_F = 1 A, t_p = 10 ms	$TC_{\lambda,centroid}$	+ 0.3	nm/K

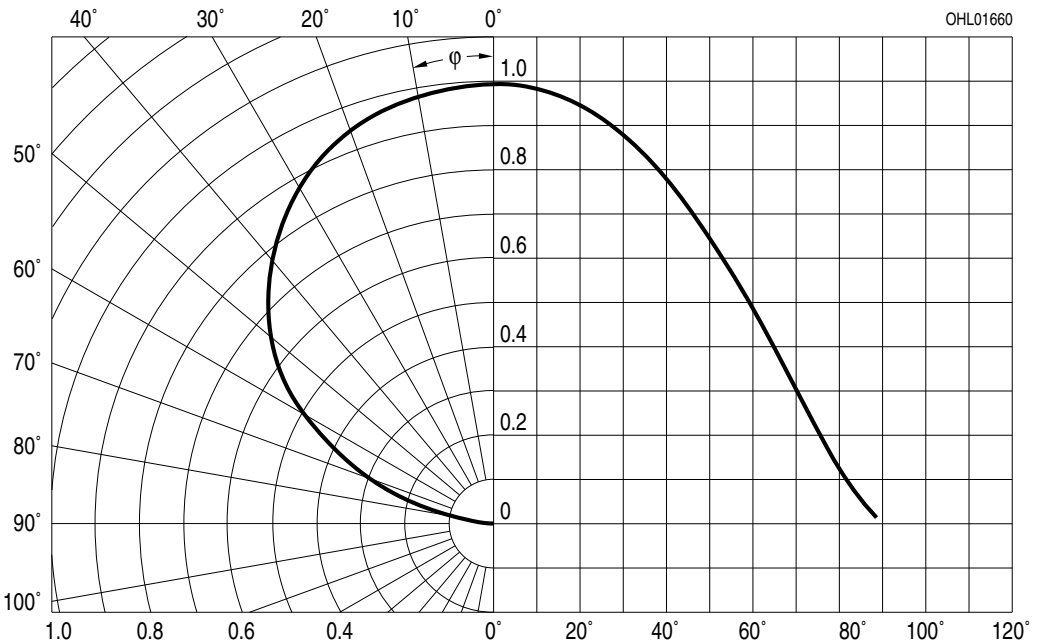
[1)] Die aktive Chipfläche besteht aus 10 einzelnen Chips mit je 1 x 1 mm².
The active chip area consists of 10 single chips with 1 x 1 mm² each.

Strahlstärke[1] I_e
Radiant Intensity[1] I_e

Bezeichnung Parameter	Symbol	Werte Values				Einheit Unit
		SFH 4730 -EB	SFH 4730 -FA	SFH 4740 -FA	SFH 4740 -FB	
Strahlstärke Radiant Intensity I_F = 1 A, t_p = 20 ms	$I_{e\ min}$ $I_{e\ max}$	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 $I_{rel} = f(\varphi)$



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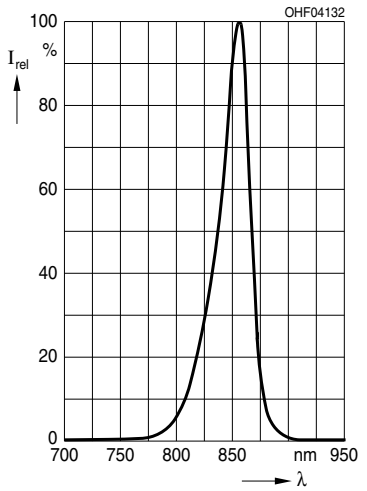
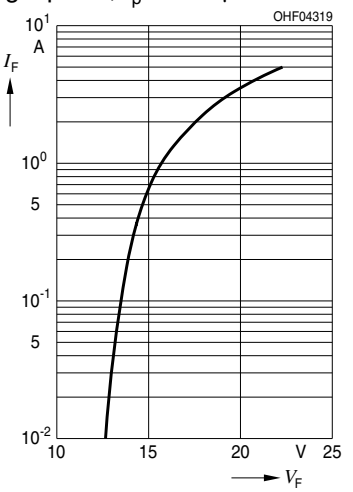
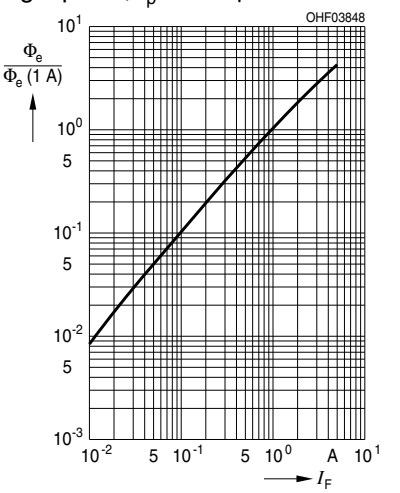
Relative spektrale Emission
Relative Spectral Emission
$I_{rel} = f(\lambda)$, $T_B = 25$ °C



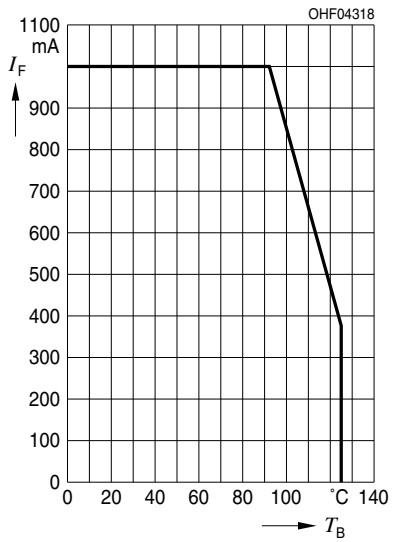
Durchlassstrom
Forward Current
$I_F = f(V_F)$, $T_B = 25$ °C,
Single pulse, $t_p = 100$ µs



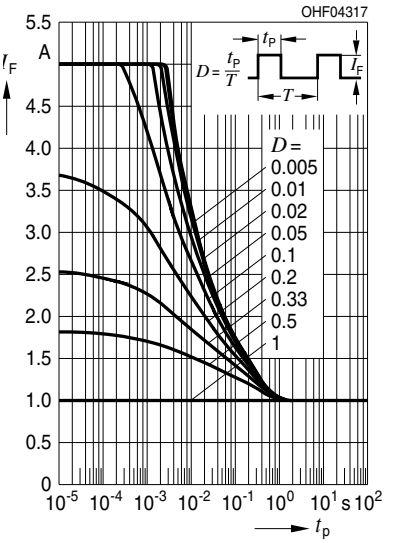
Relativer Gesamtstrahlungsfluss
Relative Total Radiant Flux
$\Phi_e/\Phi_e(1A) = f(I_F)$, $T_B = 25$ °C,
Single pulse, $t_p = 100$ µs



Max. zulässiger Durchlassstrom
Max. Permissible Forward Current
$I_F = f(T_B)$, $R_{thJB} = 2.8$ K/W



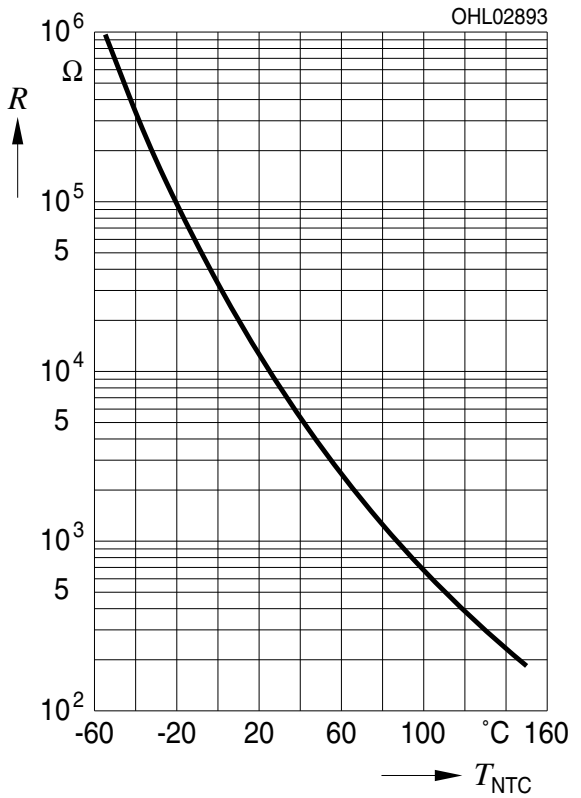
Zulässige Impulsbelastbarkeit
Permissible Pulse Handling Capability $I_F = f(t_p)$, $T_B = 85$ °C,
Duty cycle D = parameter



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 ± 5%	3940	3980	4000

Typische Thermistor Kennlinie
Typical Thermistor Graph



(www.epcos.com)

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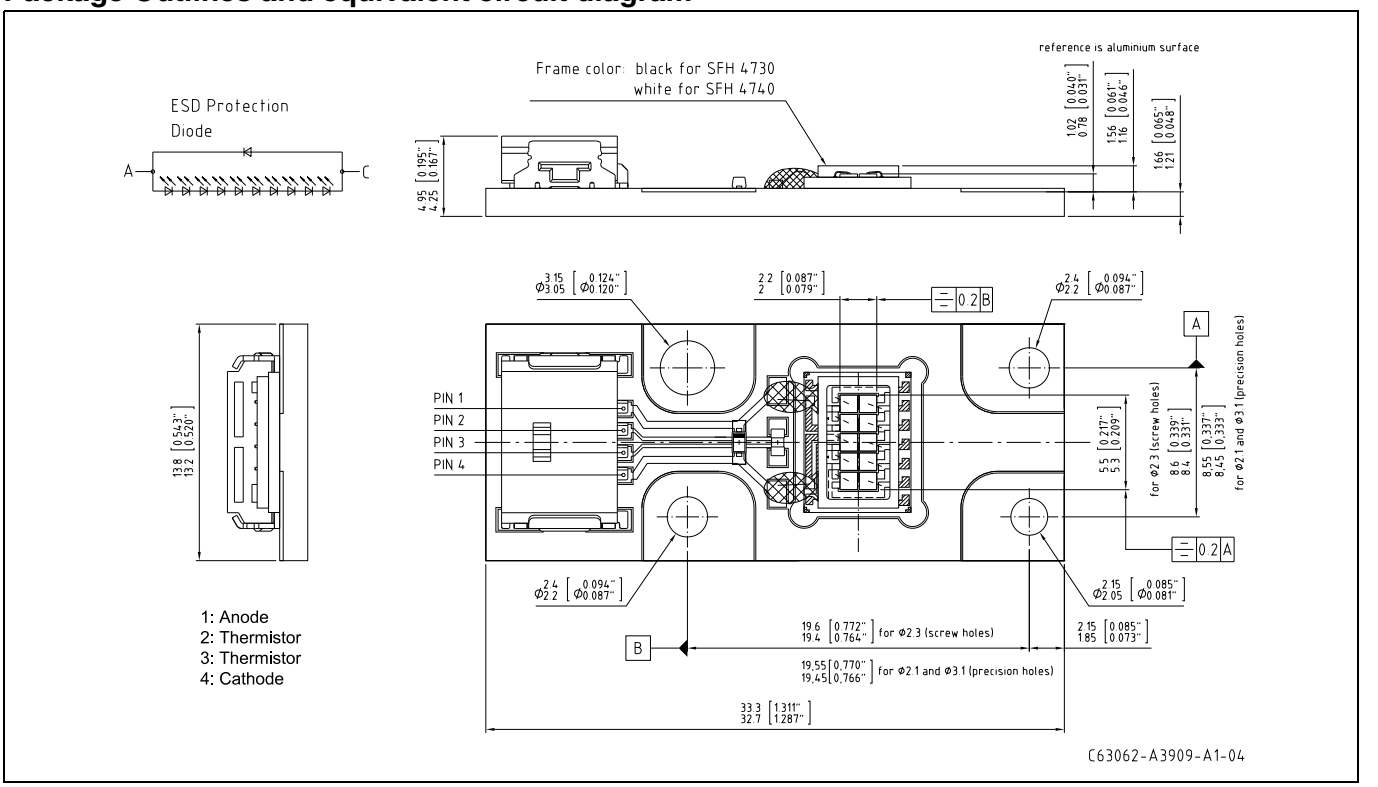
Maßzeichnung und Ersatzschaltbild
Package Outlines and equivalent circuit diagram



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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