

Infrarot-LED mit hoher Ausgangsleistung

High Power Infrared LED

Lead (Pb) Free Product - RoHS Compliant

SFH 4550



preliminary data / vorläufige Daten

Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung
- Enger Abstrahlwinkel
- Sehr hohe Strahlstärke
- Emissionswellenlänge typ. 850 nm

Anwendungen

- Infrarotbeleuchtung für CMOS Kameras
- Sensorik
- Datenübertragung

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-Norm 60825-1 behandelt werden.

Features

- High Power Infrared LED
- Narrow emission angle
- Very high radiant intensity
- Peak wavelength typ. 850 nm

Applications

- Infrared Illumination for CMOS cameras
- Sensor technology
- Data transmission

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 "Safety of laser products".

Typ Type	Bestellnummer Ordering Code	Strahlstärkegruppierung ¹⁾ ($I_F = 100 \text{ mA}$, $t_p = 20 \text{ ms}$) Radiant Intensity Grouping ¹⁾ $I_e \text{ (mW/sr)}$
SFH 4550	Q65110A1772	≥ 400 (typ 700)

¹⁾ gemessen bei einem Raumwinkel $\Omega = 0.001 \text{ sr}$ measured at a solid angle of $\Omega = 0.001 \text{ sr}$



ATTENTION - Observe Precautions For Handling - Electrostatic Sensitive Device

Grenzwerte

Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebstemperatur Operating temperature range	T_{op}	- 40 ... + 100	°C
Lagertemperatur Storage temperature range	T_{stg}	- 40 ... + 100	°C
Sperrspannung Reverse voltage	V_R	3	V
Vorwärtsgleichstrom, $T_A \leq 25\text{ °C}$ Forward current	I_F	100	mA
Stoßstrom, $t_p = 10\text{ }\mu\text{s}$, $D = 0$, $T_A = 25\text{ °C}$ Surge current	I_{FSM}	1.5	A
Verlustleistung $T_A = 25\text{ °C}$ Power dissipation	P_{tot}	180	mW
Wärmewiderstand Thermal resistance Sperrschicht/Umgebung Junction/ambient	R_{thJA}	450	K/W

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der Strahlung Wavelength at peak emission $I_F = 100\text{ mA}$	λ_{peak}	850	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} $I_F = 100\text{ mA}$	$\Delta\lambda$	35	nm
Abstrahlwinkel Half angle	φ	± 3	Grad deg.
Aktive Chipfläche Active chip area	A	0.09	mm ²
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	0.3×0.3	mm

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\text{ mA}$, $R_L = 50\text{ }\Omega$ Switching times, I_e from 10% to 90% and from 90% to 10%, $I_F = 100\text{ mA}$, $R_L = 50\text{ }\Omega$	t_r, t_f	12	ns
Durchlassspannung Forward voltage $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$ $I_F = 1\text{ A}$, $t_p = 100\text{ }\mu\text{s}$	V_F V_F	1.5 (< 1.8) 2.4 (< 3.0)	V V
Sperrstrom Reverse current $V_R = 3\text{ V}$	I_R	0.01 (≤ 10)	μA
Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$, $t_p = 20\text{ ms}$	Φ_e	50	mW
Temperaturkoeffizient von I_e bzw. Φ_e , $I_F = 100\text{ mA}$ Temperature coefficient of I_e or Φ_e , $I_F = 100\text{ mA}$	TC_I	- 0.5	%/K
Temperaturkoeffizient von V_F , $I_F = 100\text{ mA}$ Temperature coefficient of V_F , $I_F = 100\text{ mA}$	TC_V	- 0.7	mV/K
Temperaturkoeffizient von λ , $I_F = 100\text{ mA}$ Temperature coefficient of λ , $I_F = 100\text{ mA}$	TC_λ	+ 0.2	nm/K

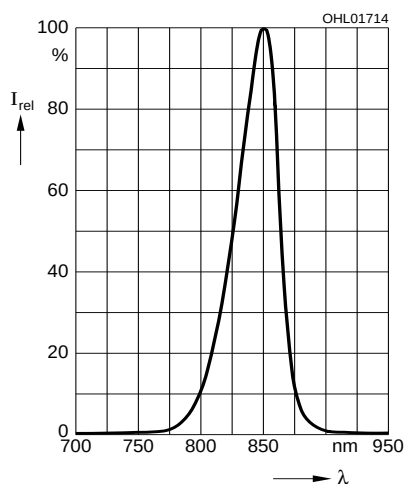
Strahlstärke I_e in Achsrichtung¹⁾gemessen bei einem Raumwinkel $\Omega = 0.001$ sr**Radiant Intensity I_e in Axial Direction**at a solid angle of $\Omega = 0.001$ sr

Bezeichnung Parameter	Symbol	Werte Values		Einheit Unit
		SFH 4550-DW	SFH 4550-EW	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \min}$ $I_{e \max}$	400 800	630 1250	mW/sr mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ μ s	$I_{e \text{ typ.}}$	5000	7000	mW/sr

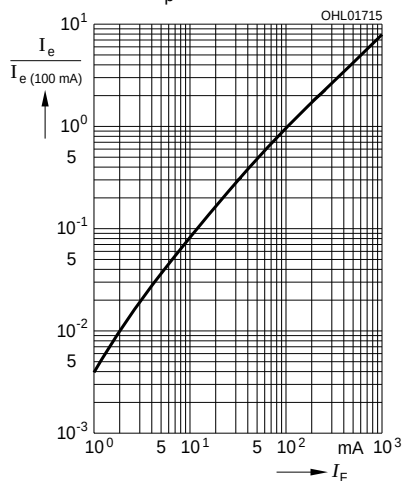
¹⁾ Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1)
Only one group in one packing unit (variation lower 2:1)

Relative Spectral Emission

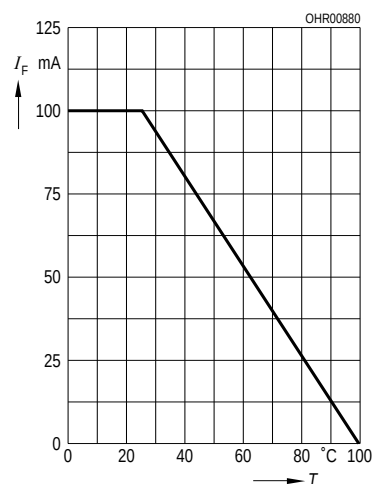
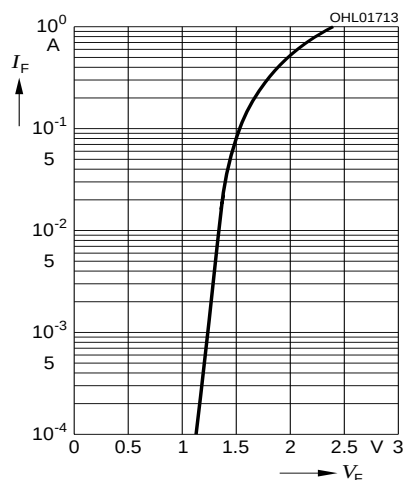
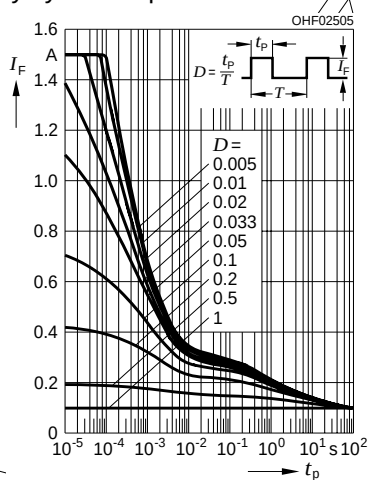
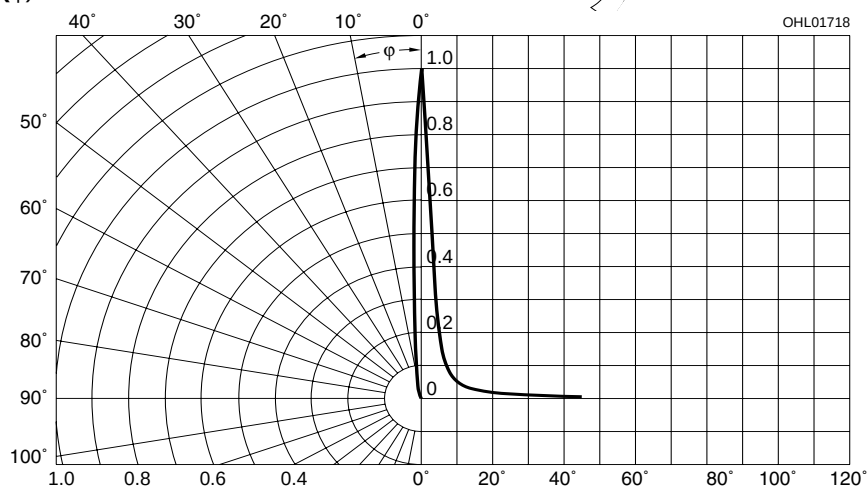
$I_{\text{rel}} = f(\lambda)$



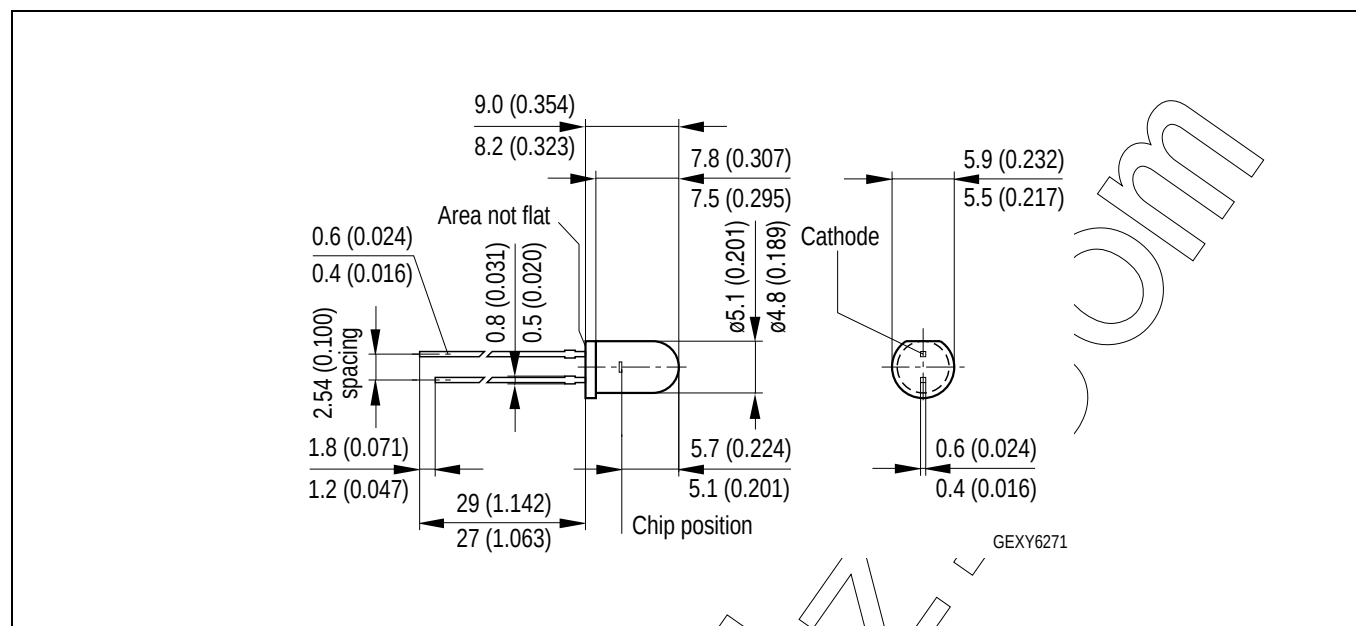
Radiant Intensity $\frac{I_e}{I_e 100 \text{ mA}} = f(I_F)$

Single pulse, $t_p = 20 \mu\text{s}$ **Max. Permissible Forward Current**

$I_F = f(T_A), R_{\text{thJA}} = 450 \text{ K/W}$

**Forward Current $I_F = f(V_F)$** Single pulse, $t_p = 20 \mu\text{s}$ **Permissible Pulse Handling****Capability** $I_F = f(\tau), T_A = 25^\circ\text{C}$,
duty cycle $D = \text{parameter}$ **Radiation Characteristics $I_{\text{rel}} = f(\varphi)$** 

Maßzeichnung Package Outlines

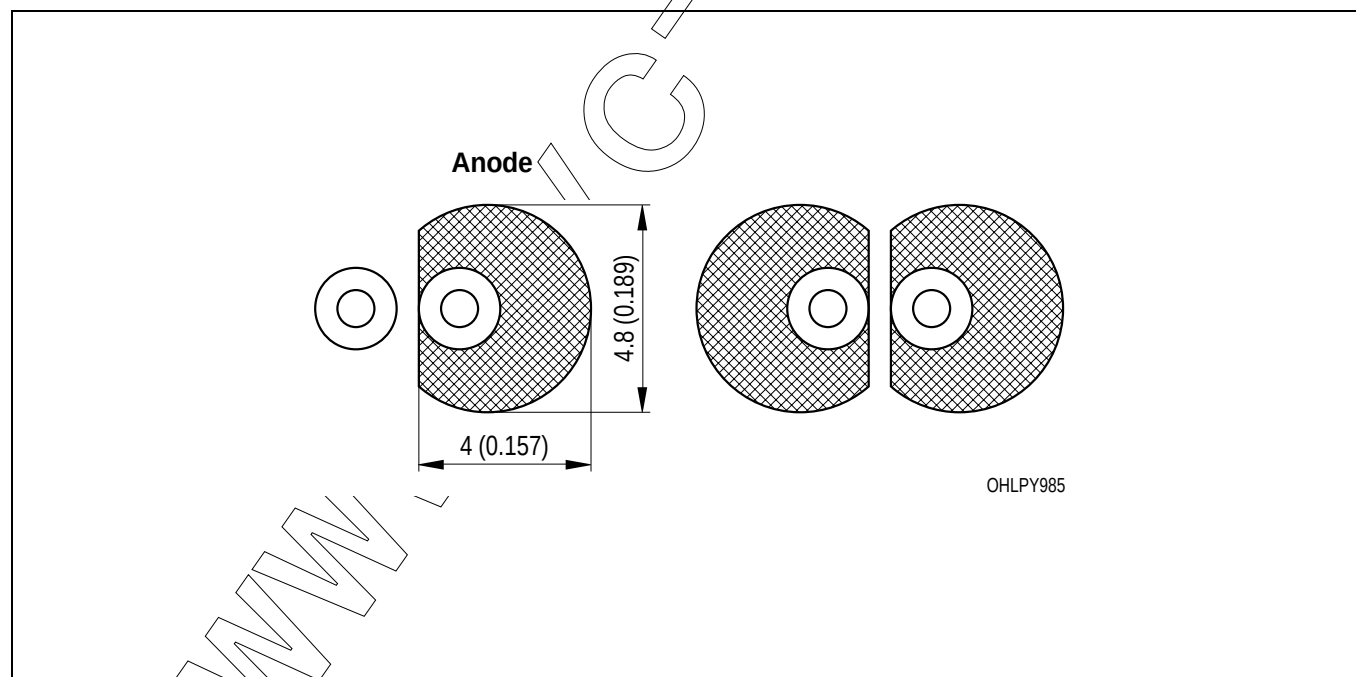


Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Empfohlenes Lötpad-Design

Recommended Solder Pad

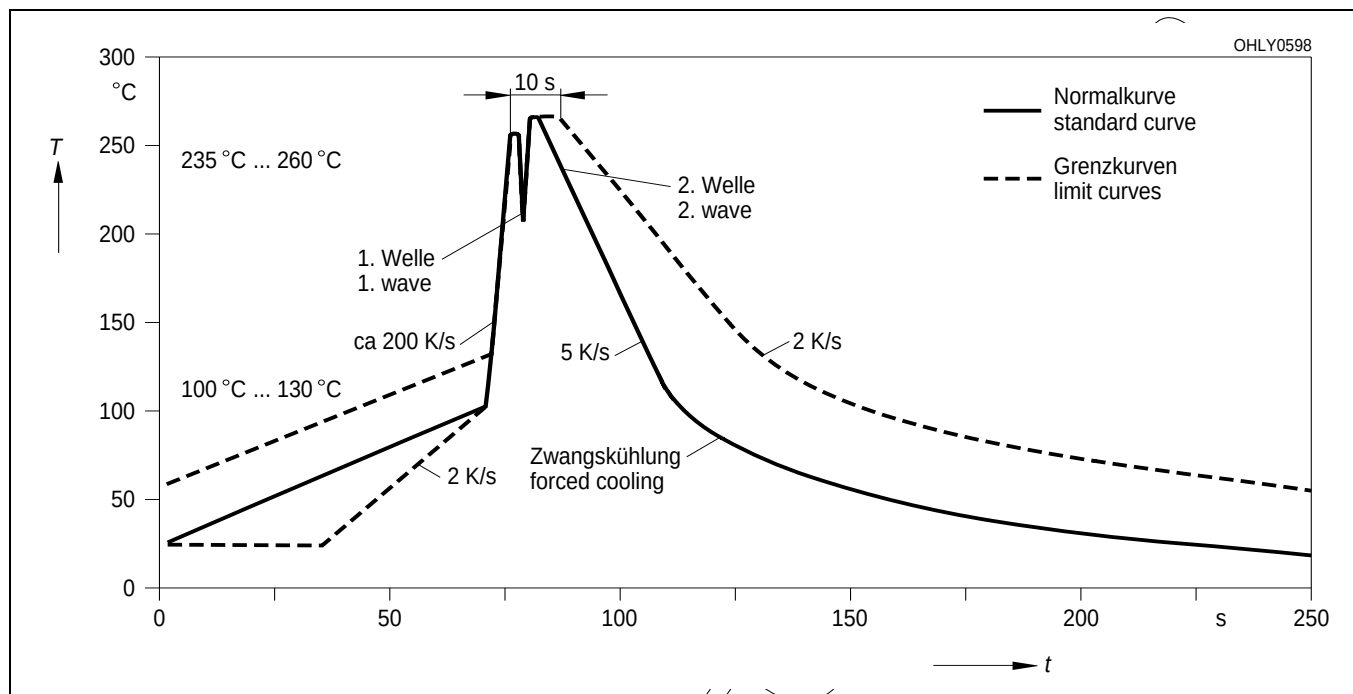
Wellenlöten (TTW)
TTW Soldering



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW)
TTW Soldering

(nach CECC 00802)
 (acc. to CECC 00802)



Published by
OSRAM Opto Semiconductors GmbH
 Wernerwerkstrasse 2, D-93049 Regensburg
www.osram-os.com

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