

**IR-Lumineszenzdiode (850 nm) mit hoher Ausgangsleistung**  
**High Power Infrared Emitter (850 nm)**  
**Lead (Pb) Free Product - RoHS Compliant**  
**SFH 4550**

勝特力材料 886-3-5753170  
 胜特力电子(上海) 86-21-34970699  
 胜特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)



**Wesentliche Merkmale**

- Infrarot LED mit hoher Ausgangsleistung
- Enger Abstrahlwinkel  $\pm 3^\circ$
- 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-Normen 60825-1 und 62471 behandelt werden.

**Features**

- High Power Infrared LED
- Narrow emission angle  $\pm 3^\circ$
- 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 and IEC 62471.

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

<sup>1)</sup> 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 ( $T_A = 25\text{ °C}$ )**

**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}, T_{stg}$	- 40 ... + 100	°C
Sperrspannung Reverse voltage	$V_R$	5	V
Vorwärtsgleichstrom Forward current	$I_F$	100	mA
Stoßstrom, $t_p = 10\ \mu\text{s}$ , $D = 0$ Surge current	$I_{FSM}$	1.5	A
Verlustleistung Power dissipation	$P_{tot}$	180	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je $16\ \text{mm}^2$ Thermal resistance junction - ambient mounted on PC-board (FR4), padsizes $16\ \text{mm}^2$ each	$R_{thJA}$	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 $I_F = 100\ \text{mA}$	$\lambda_{peak}$	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	$\varphi$	$\pm 3$	Grad deg.
Aktive Chipfläche Active chip area	$A$	0.09	$\text{mm}^2$
Abmessungen der aktiven Chipfläche Dimension of the active chip area	$L \times B$ $L \times W$	$0.3 \times 0.3$	$\text{mm}^2$
Schaltzeiten, $I_e$ von 10% auf 90% und von 90% auf 10%, bei $I_F = 100\ \text{mA}$ , $R_L = 50\ \Omega$ Switching times, $I_e$ from 10% to 90% and from 90% to 10%, $I_F = 100\ \text{mA}$ , $R_L = 50\ \Omega$	$t_r, t_f$	12	ns

**Kennwerte** ( $T_A = 25\text{ °C}$ )  
**Characteristics** (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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 $V_R = 5\text{ V}$	$I_R$	not designed for reverse operation	$\mu\text{A}$
Gesamtstrahlungsfluss Total radiant flux $I_F = 100\text{ mA}$ , $t_p = 20\text{ ms}$	$\Phi_{e\text{ typ}}$	50	mW
Temperaturkoeffizient von $I_e$ bzw. $\Phi_e$ , $I_F = 100\text{ mA}$ Temperature coefficient of $I_e$ or $\Phi_e$ , $I_F = 100\text{ mA}$	$TC_I$	- 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 $\lambda$ , $I_F = 100\text{ mA}$ Temperature coefficient of $\lambda$ , $I_F = 100\text{ mA}$	$TC_\lambda$	+ 0.2	nm/K

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**Strahlstärke  $I_e$  in Achsrichtung<sup>1)</sup>**

gemessen bei einem Raumwinkel  $\Omega = 0.001$  sr

**Radiant Intensity  $I_e$  in Axial Direction**

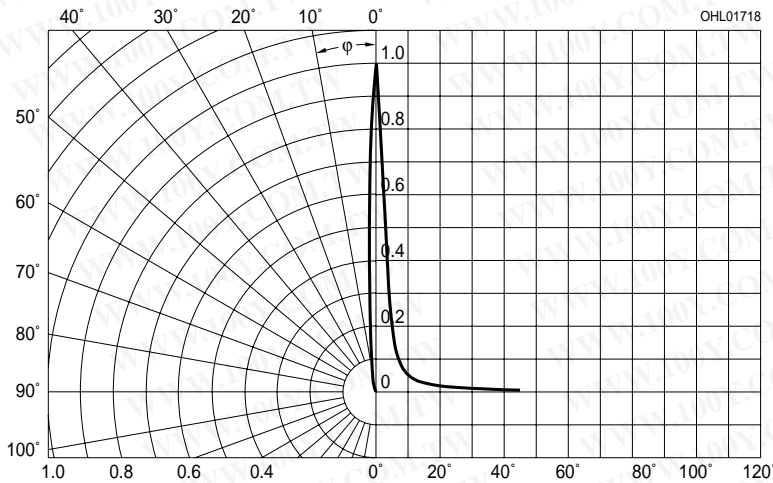
at a solid angle of  $\Omega = 0.001$  sr

Bezeichnung Parameter	Symbol	Werte Values			Einheit Unit
		SFH 4550-DW	SFH 4550-EW	SFH 4550-FW	
Strahlstärke Radiant intensity $I_F = 100$ mA, $t_p = 20$ ms	$I_{e \text{ min}}$	400	630	1000	mW/sr
	$I_{e \text{ max}}$	800	1250	2000	mW/sr
Strahlstärke Radiant intensity $I_F = 1$ A, $t_p = 100$ $\mu$ s	$I_{e \text{ typ}}$	5000	7000	9000	mW/sr

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

**Abstrahlcharakteristik**

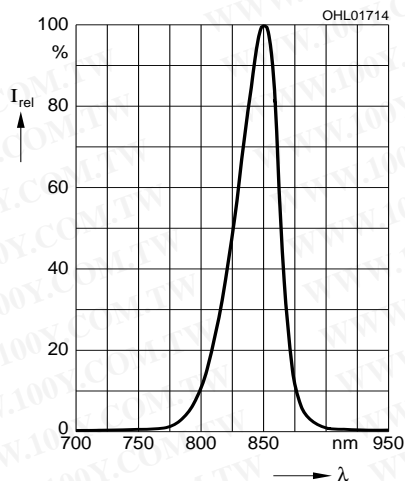
**Radiation Characteristics  $I_{rel} = f(\varphi)$**



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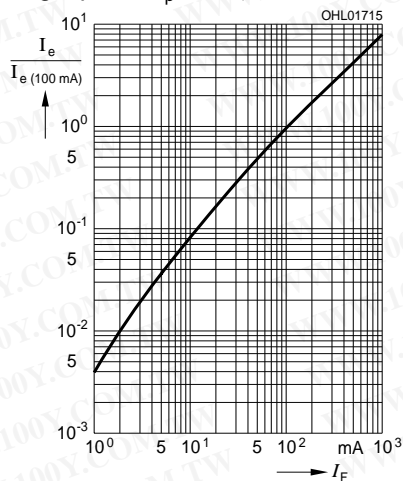
**Relative Spectral Emission**

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



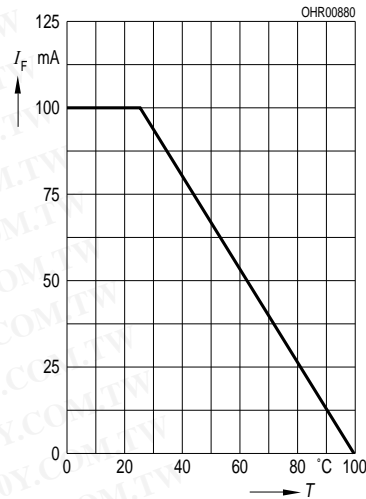
**Radiant Intensity**  $\frac{I_e}{I_e(100\text{ mA})} = f(I_F)$

Single pulse,  $t_p = 20\ \mu\text{s}$



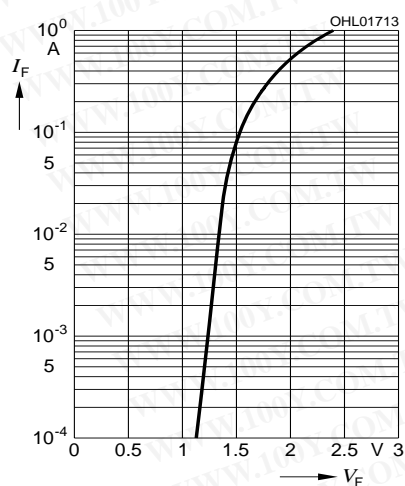
**Max. Permissible Forward Current**

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



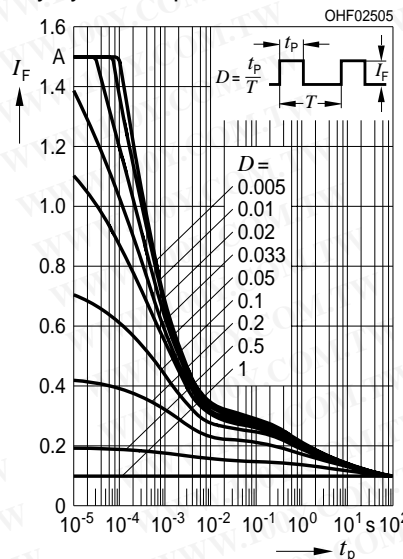
**Forward Current**  $I_F = f(V_F)$

Single pulse,  $t_p = 20\ \mu\text{s}$



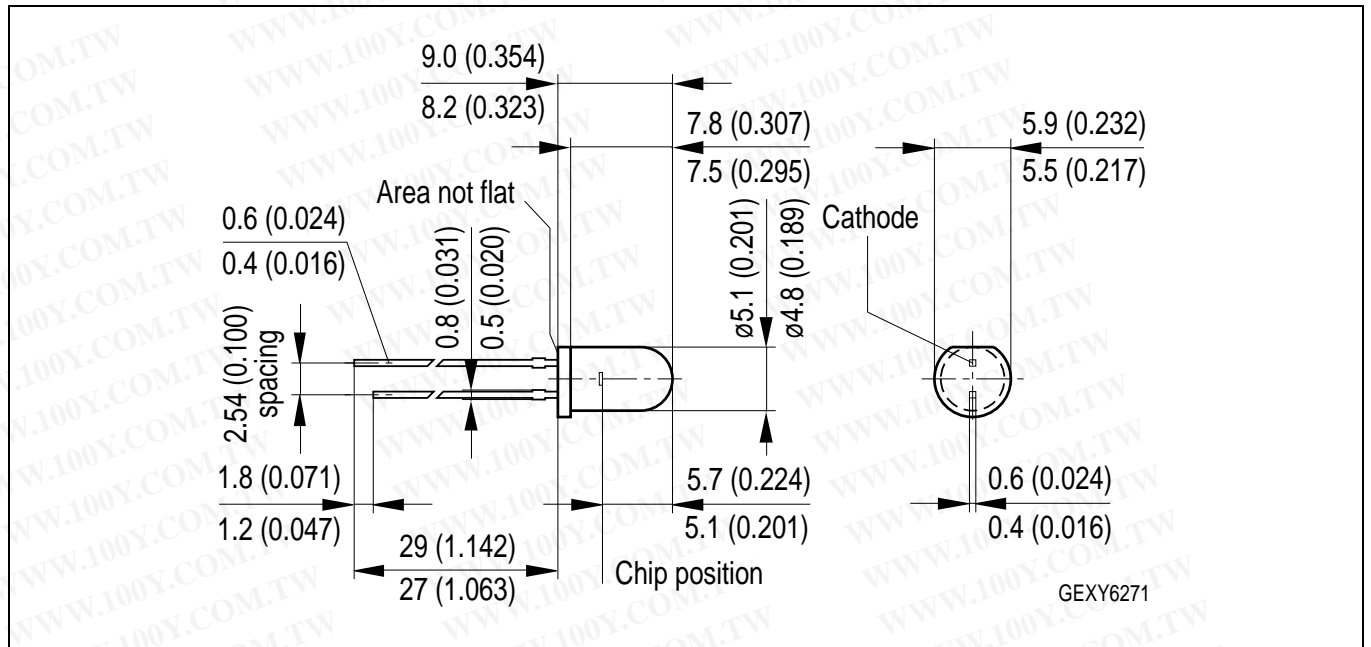
**Permissible Pulse Handling**

**Capability**  $I_F = f(\tau), T_A = 25\ ^\circ\text{C}$ ,  
duty cycle  $D =$  parameter



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**Maßzeichnung**  
**Package Outlines**



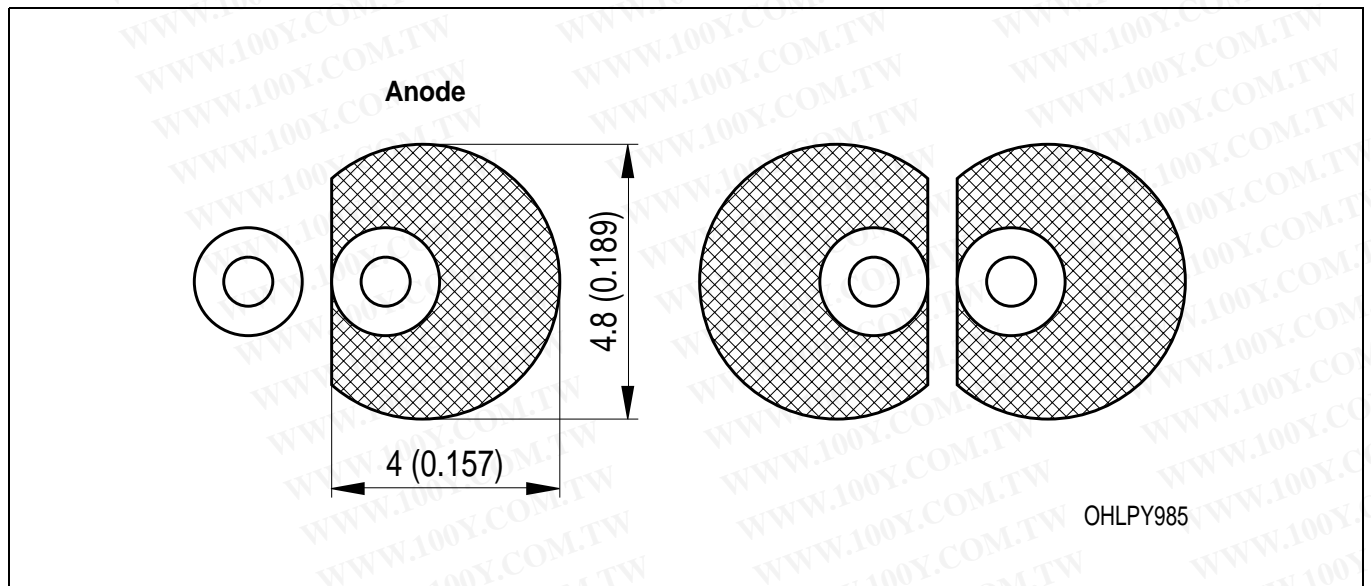
Maße in mm (inch) / Dimensions in mm (inch).

**Empfohlenes Lötpaddesign**

**Recommended Solder Pad Design**

**Wellenlöten TTW**

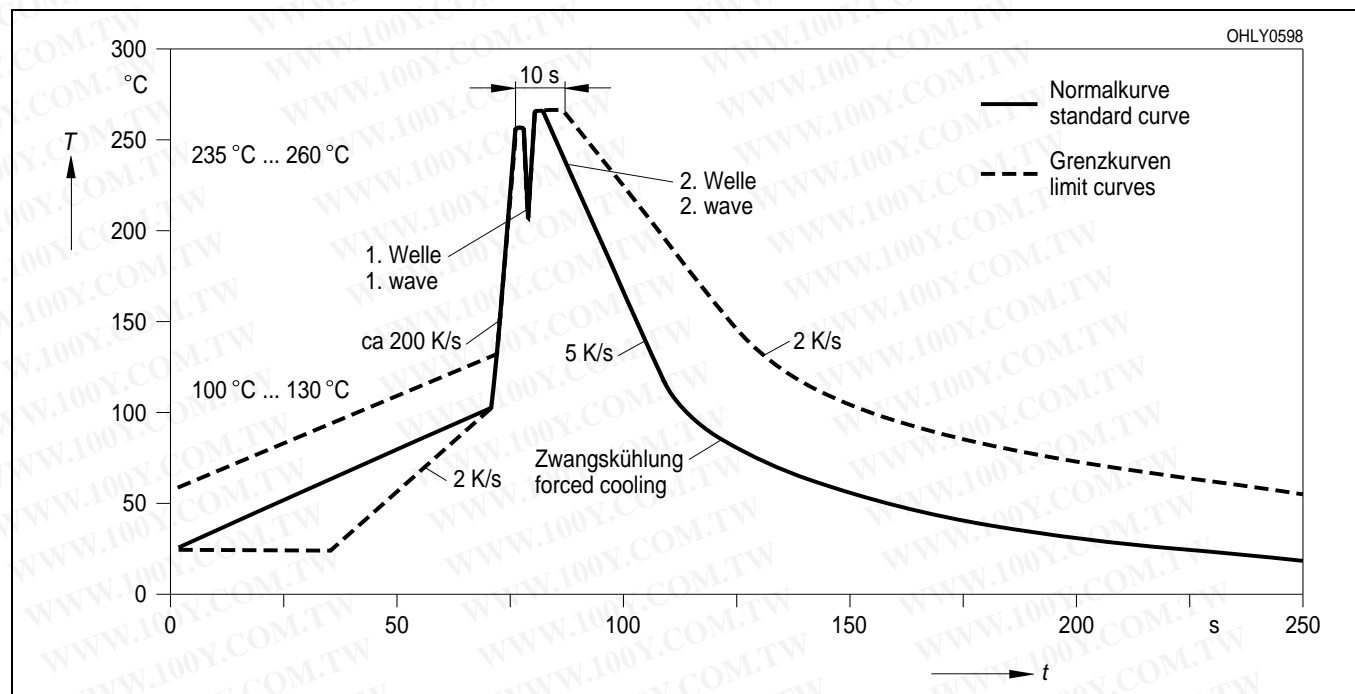
**TTW Soldering**



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

**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten (TTW)**  
**TTW Soldering**

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



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<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.