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

Wesentliche Merkmale

- Infrarot LED mit hoher Ausgangsleistung
- Enger Abstrahlwinkel ± 3°
- 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 ± 3°
- 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.

Typ **Type**	**Bestellnummer** **Ordering Code**	**Strahlstärkegruppierung**[1] (I_F = 100 mA, t_p = 20 ms) **Radiant Intensity Grouping**[1] I_e (mW/sr)
SFH 4550	Q65110A1772	≥ 400 (typ. 700)

[1] gemessen bei einem Raumwinkel Ω = 0.001 sr / measured at a solid angle of Ω = 0.001 sr

ATTENTION - Observe Precautions For Handling - Electrostatic Sensitive Device

Grenzwerte (T_A = 25 °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 µs, 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 mm^2 Thermal resistance junction - ambient mounted on PC-board (FR4), padsize 16 mm^2 each	R_{thJA}	450	K/W

Kennwerte (T_A = 25 °C)
Characteristics

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der Strahlung Wavelength at peak emission I_F = 100 mA	λ_{peak}	850	nm
Spektrale Bandbreite bei 50% von I_{max} Spectral bandwidth at 50% of I_{max} I_F = 100 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^2
Schaltzeiten, I_e von 10% auf 90% und von 90% auf 10%, bei I_F = 100 mA, R_L = 50 Ω Switching times, I_e from 10% to 90% and from 90% to 10%, I_F = 100 mA, R_L = 50 Ω	t_r, t_f	12	ns

Kennwerte (T_A = 25 °C)
Characteristics (cont'd)

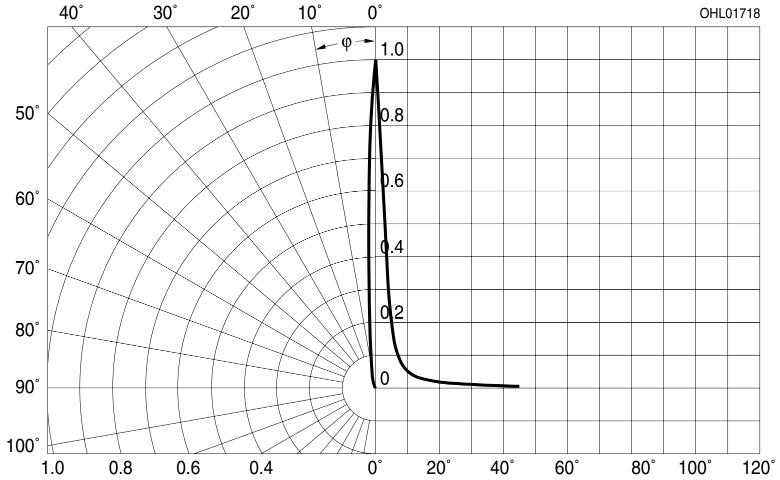
Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Durchlassspannung Forward voltage I_F = 100 mA, t_p = 20 ms I_F = 1 A, t_p = 100 µs	V_F V_F	1.5 (< 1.8) 2.4 (< 3.0)	V V
Sperrstrom Reverse current V_R = 5 V	I_R	not designed for reverse operation	µA
Gesamtstrahlungsfluss Total radiant flux I_F = 100 mA, t_p = 20 ms	$\Phi_{e\ typ}$	50	mW
Temperaturkoeffizient von I_e bzw. Φ_e, I_F = 100 mA Temperature coefficient of I_e or Φ_e, I_F = 100 mA	TC_I	– 0.5	%/K
Temperaturkoeffizient von V_F, I_F = 100 mA Temperature coefficient of V_F, I_F = 100 mA	TC_V	– 0.7	mV/K
Temperaturkoeffizient von λ, I_F = 100 mA Temperature coefficient of λ, I_F = 100 mA	TC_λ	+ 0.2	nm/K

Strahlstärke I_e in Achsrichtung[1]
gemessen bei einem Raumwinkel Ω = 0.001 sr
Radiant Intensity I_e in Axial Direction
at a solid angle of Ω = 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	$I_{e\ min}$ $I_{e\ max}$	400 800	630 1250	1000 2000	mW/sr mW/sr
Strahlstärke Radiant intensity I_F = 1 A, t_p = 100 µs	$I_{e\ typ}$	5000	7000	9000	mW/sr

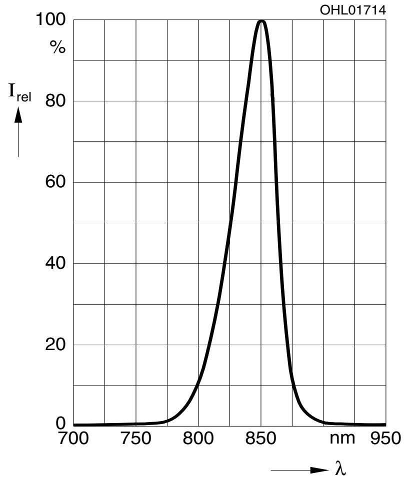
[1] Nur eine Gruppe in einer Verpackungseinheit (Streuung kleiner 2:1) /
Only one group in one packing unit (variation lower 2:1)

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



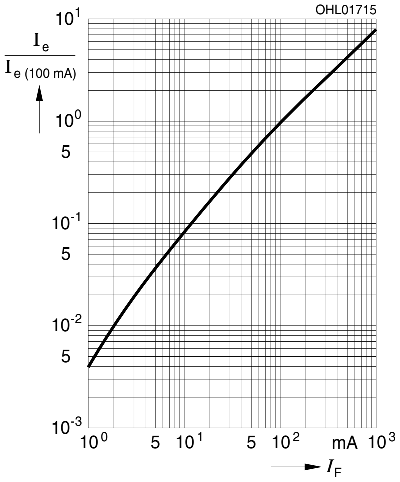
Relative Spectral Emission

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



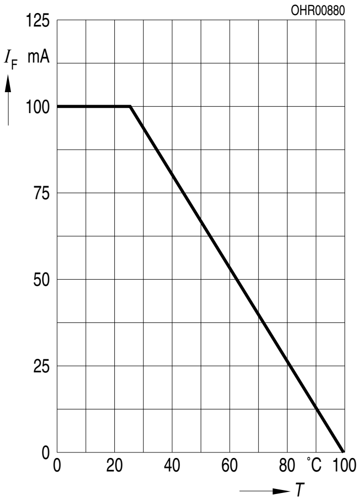
Radiant Intensity $\frac{I_e}{I_e\ 100\ \text{mA}} = f(I_F)$

Single pulse, t_p = 20 µs



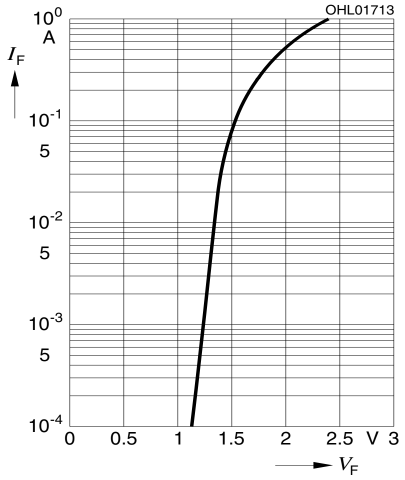
Max. Permissible Forward Current

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



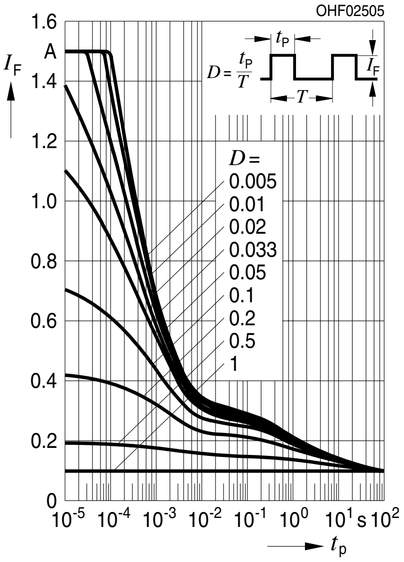
Forward Current $I_F = f(V_F)$

Single pulse, t_p = 20 µs

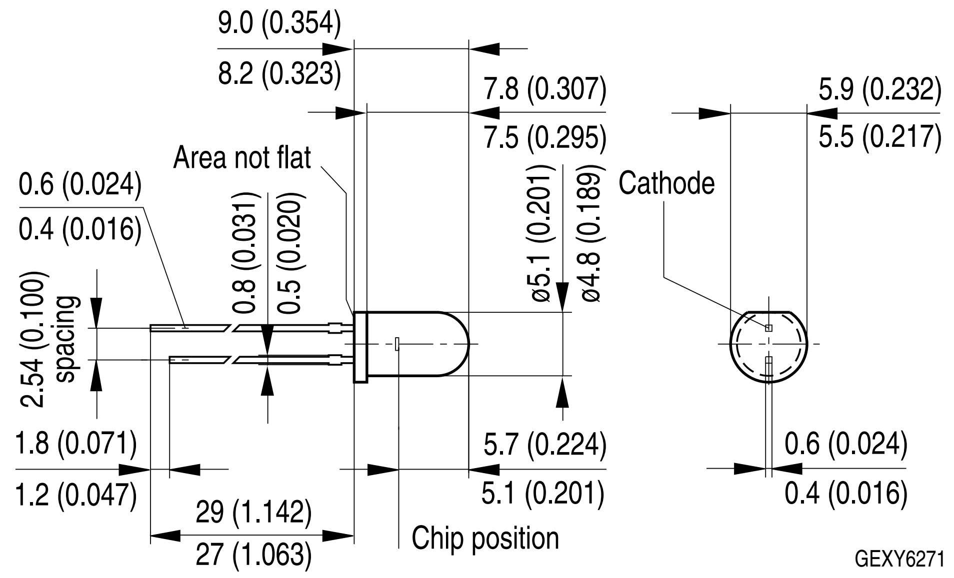


Permissible Pulse Handling Capability $I_F = f(\tau)$, T_A = 25 °C,

duty cycle D = parameter



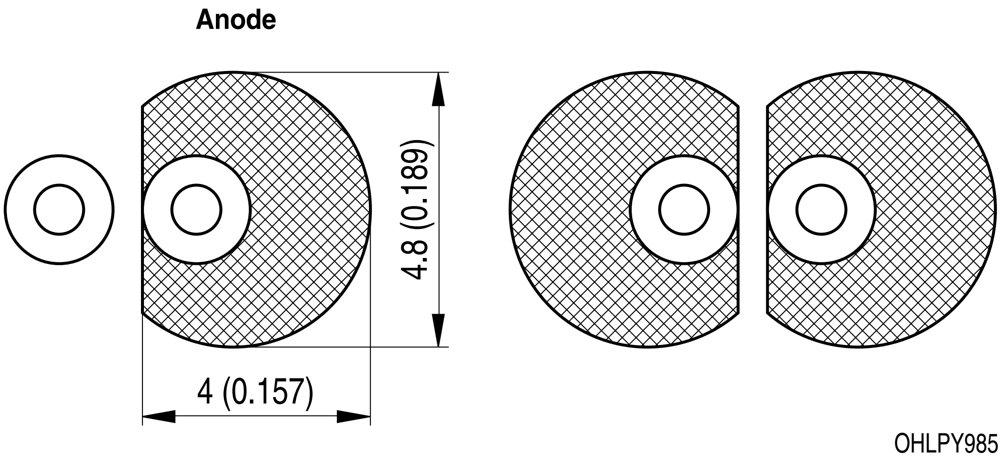
Maßzeichnung
Package Outlines



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

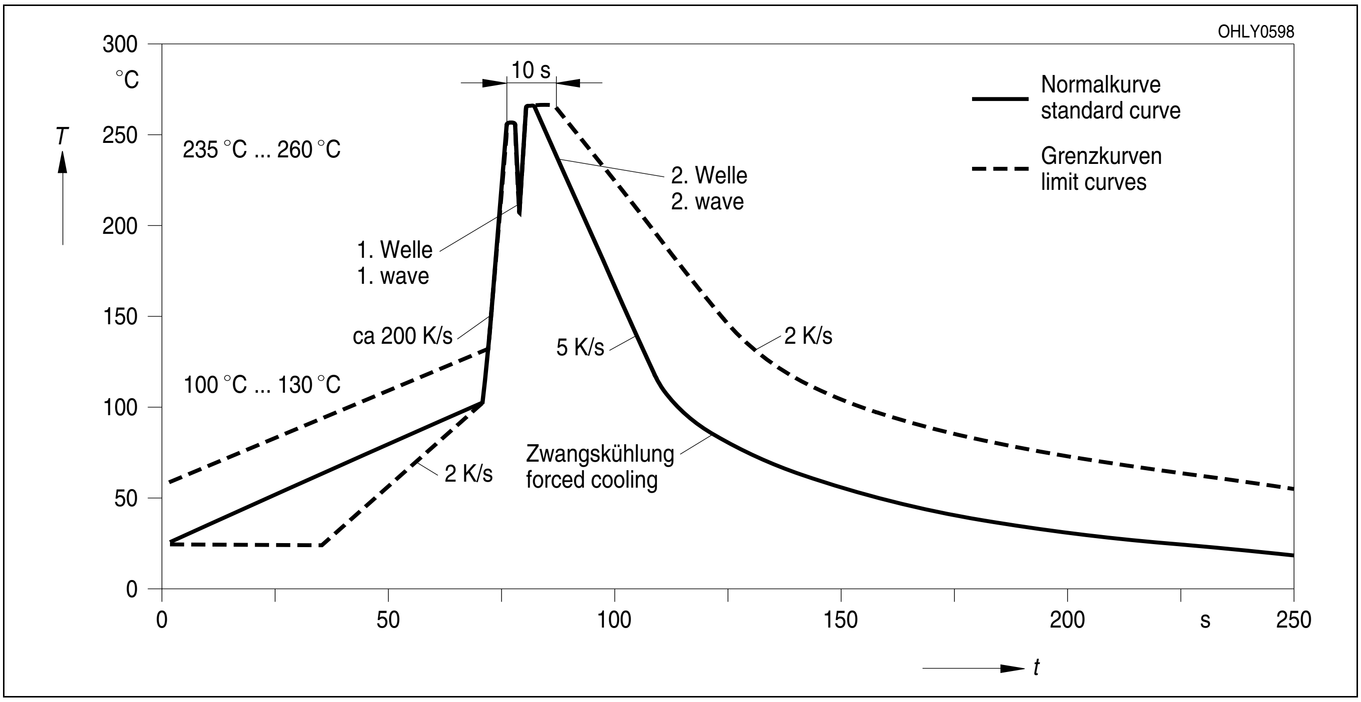
Empfohlenes Lötpaddesign
Recommended Solder Pad Design

Wellenlöten TTW
TTW Soldering



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

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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