SFH 4550

Radial T1 3/4

Infrared Emitter (850 nm)

Applications

- Electronic Equipment
- Highbay Industrial
- Industrial Automation (Machine controls, Light barriers, Vision controls)
- Safety systems and CCTV
- Smoke Detectors
- White Goods

Features:

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- High Power Infrared LED
- Narrow emission angle (± 3°)
- Very high radiant intensity
- UL version E9548 available (details & test conditions on request)

Ordering Information

Type	Radiant intensity [1] I_F = 100 mA; t_p = 20 ms I_e	Radiant intensity [1] typ. I_F = 100 mA; t_p = 20 ms I_e	Ordering Code
SFH 4550	630 ... 3200 mW/sr	1,100 mW/sr	Q65110A1772
SFH 4550-EWFW	630 ... 2000 mW/sr	1,100 mW/sr	Q65110A7758
SFH 4550 E9548	630 ... 3200 mW/sr	1,100 mW/sr	Q65110A8097

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 100 °C
Storage temperature	T_{stg}	min. max.	-40 °C 100 °C
Reverse voltage [2)]	V_R	max.	12 V
Forward current	I_F	max.	100 mA
Surge current $t_p \leq 100$ µs; D = 0	I_{FSM}	max.	1 A
Power consumption	P_{tot}	max.	180 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

Characteristics

I_F = 100 mA; t_p = 20 ms; T_A = 25 °C

Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	860 nm
Centroid wavelength	$\lambda_{centroid}$	typ.	850 nm
Spectral bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	30 nm
Half angle	φ	typ.	3 °
Dimensions of active chip area	L x W	typ.	0.3 x 0.3 mm x mm
Rise time (10% / 90%) I_F = 100 mA; R_L = 50 Ω	t_r	typ.	12 ns
Fall time (10% / 90%) I_F = 100 mA; R_L = 50 Ω	t_f	typ.	12 ns
Forward voltage	V_F	typ. max.	1.5 V 1.8 V
Forward voltage I_F = 1 A; t_p = 100 µs	V_F	typ. max.	2.4 V 3 V
Reverse current [2] V_R = 5 V	I_R	max. typ.	10 µA 0.01 µA
Total radiant flux [3]	Φ_e	typ.	70 mW
Radiant intensity [1] I_F = 1 A; t_p = 25 µs	I_e	typ.	8500 mW/sr
Temperature coefficient of brightness	TC_I	typ.	-0.5 % / K
Temperature coefficient of voltage	TC_V	typ.	-0.7 mV / K
Temperature coefficient of wavelength	TC_λ	typ.	0.3 nm / K
Thermal resistance junction ambient real [4]	R_{thJA}	max.	450 K / W

Brightness Groups

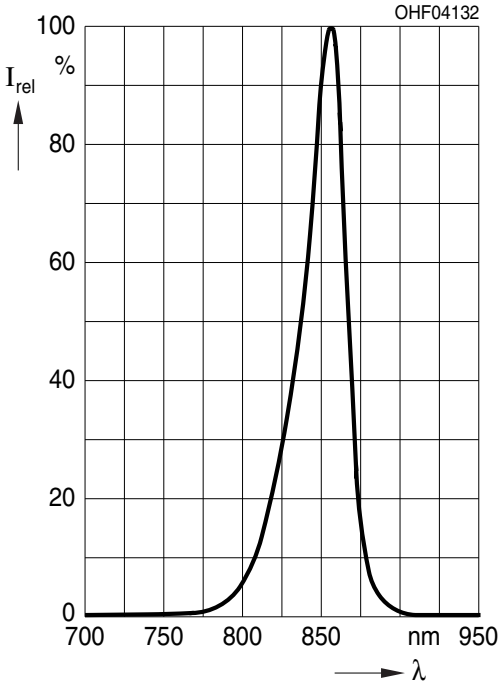
T_A = 25 °C

Group	Radiant intensity I_F = 100 mA; t_p = 20 ms min. I_e	Radiant intensity I_F = 100 mA; t_p = 20 ms max. I_e
EW	630 mW/sr	1250 mW/sr
FW	1000 mW/sr	2000 mW/sr
GW	1600 mW/sr	3200 mW/sr

Only one group in one packing unit (variation lower 2:1).

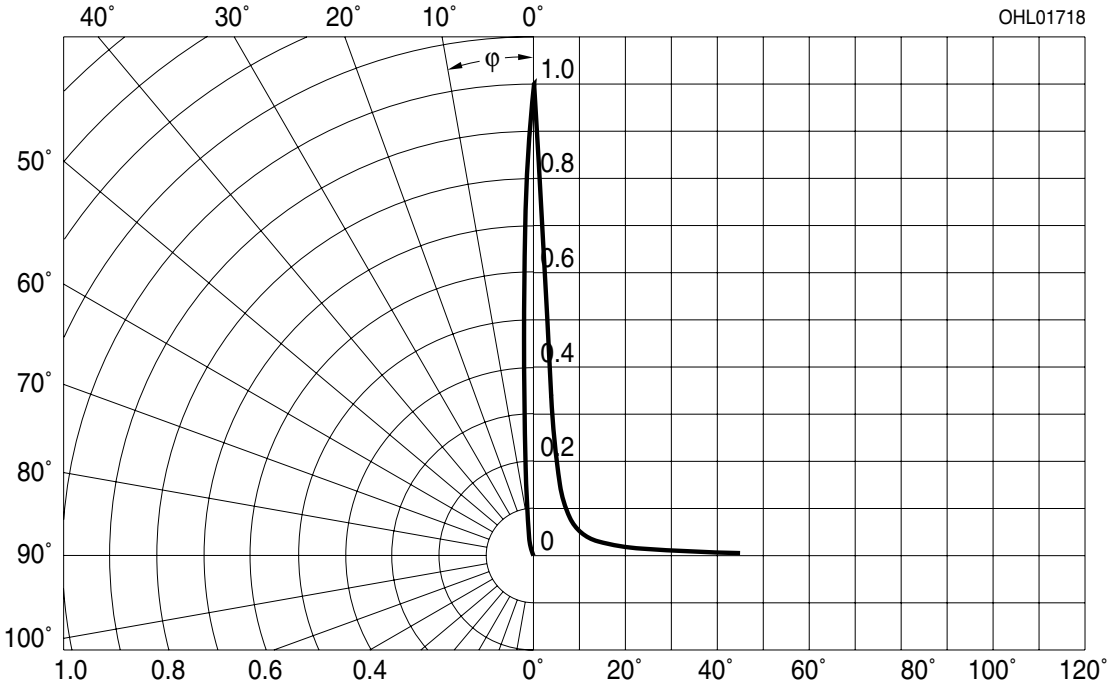
Relative Spectral Emission [5), 6)]

I_{rel} = f (λ); I_F = 100 mA; t_p = 20 ms



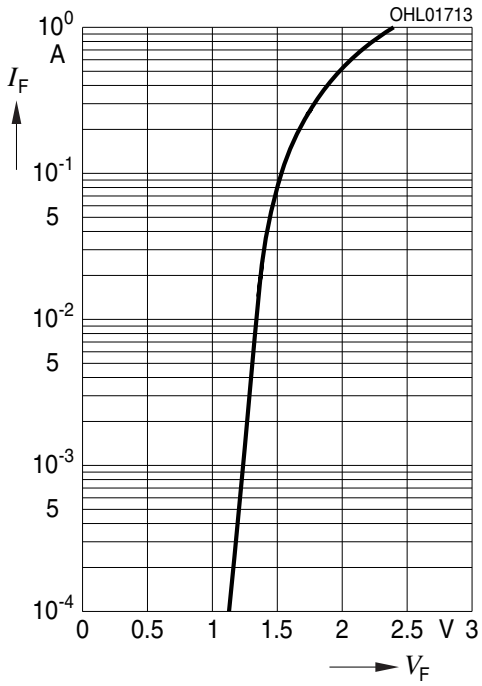
Radiation Characteristics [5), 6)]

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



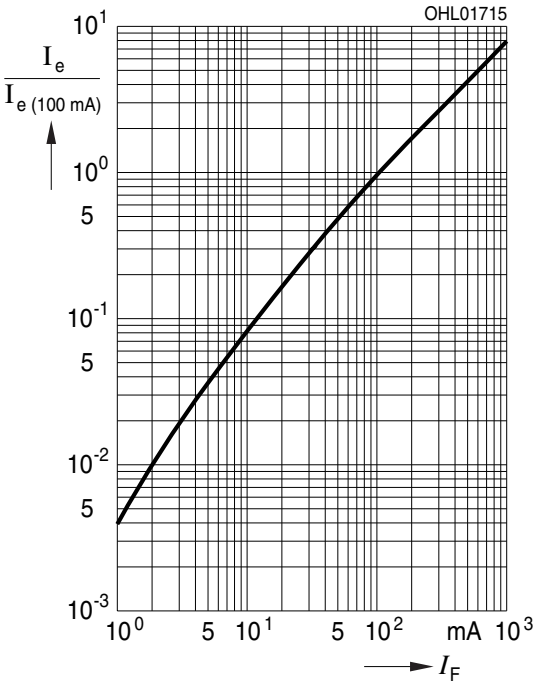
Forward current [5), 6)]

$I_F = f(V_F)$; single pulse; $t_p = 100\ \mu s$



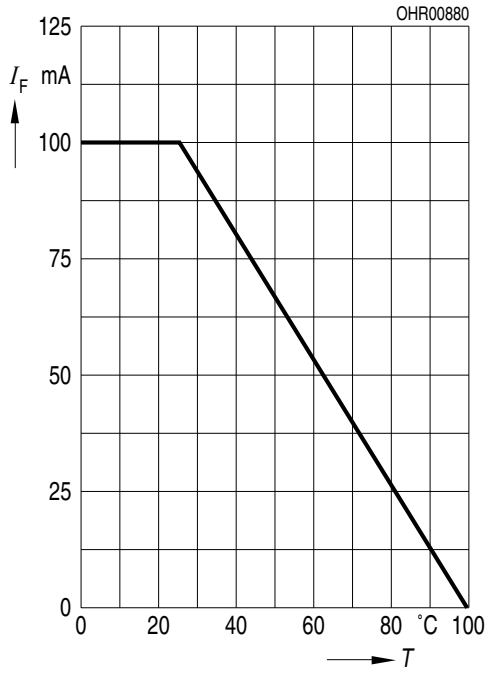
Radiant Intensity [5), 6)]

$I_e/I_e(100mA) = f(I_F)$; single pulse; $t_p = 25\ \mu s$



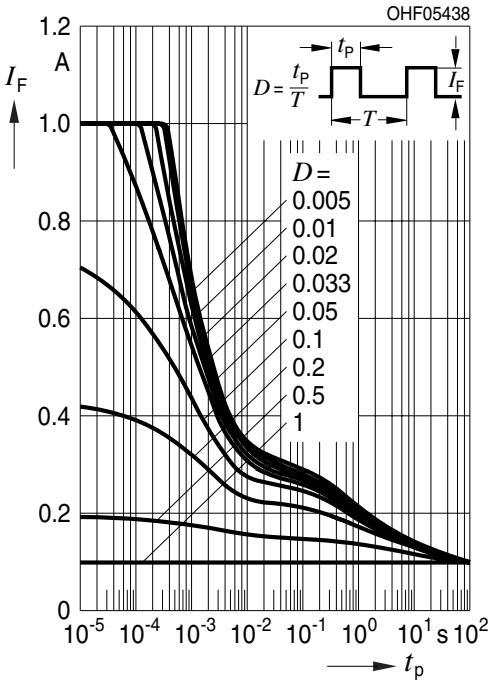
Max. Permissible Forward Current

$I_{F,max} = f(T_A)$; R_{thJA} = 450 K / W



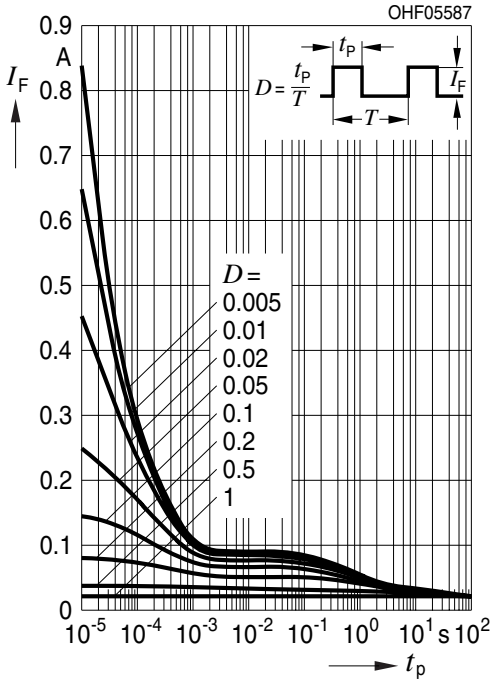
Permissible Pulse Handling Capability

$I_F = f(t_p)$; duty cycle D = parameter; T_A = 25°C

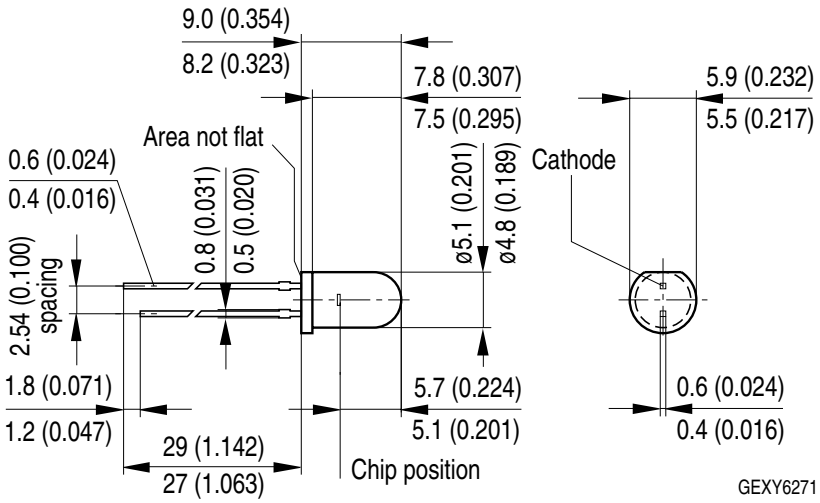


Permissible Pulse Handling Capability

$I_F = f(t_p)$; duty cycle D = parameter; T_A = 85°C



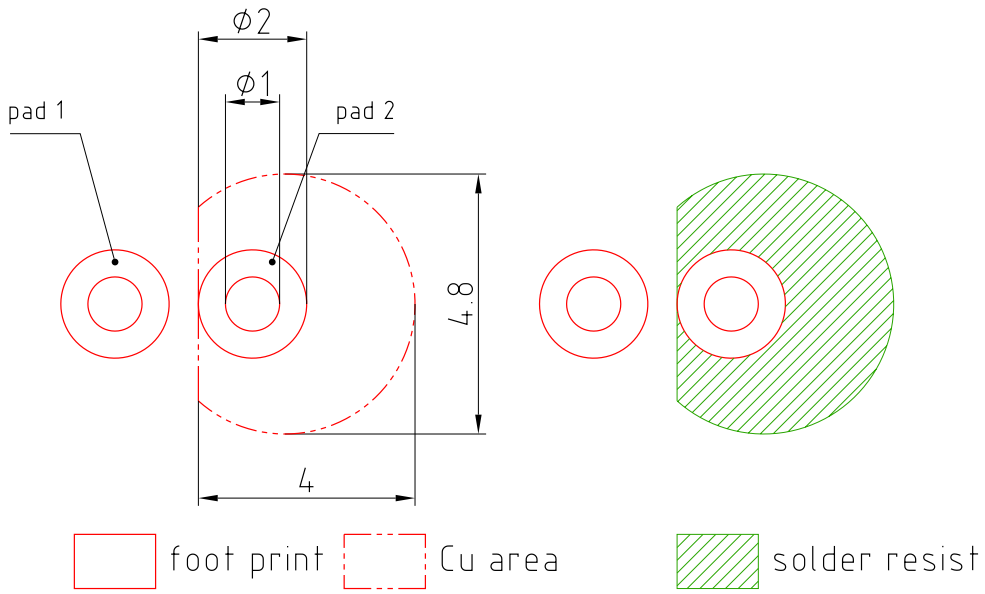
Dimensional Drawing [7)]



Approximate Weight: 329.0 mg

Package marking: Cathode

Recommended Solder Pad [7)]



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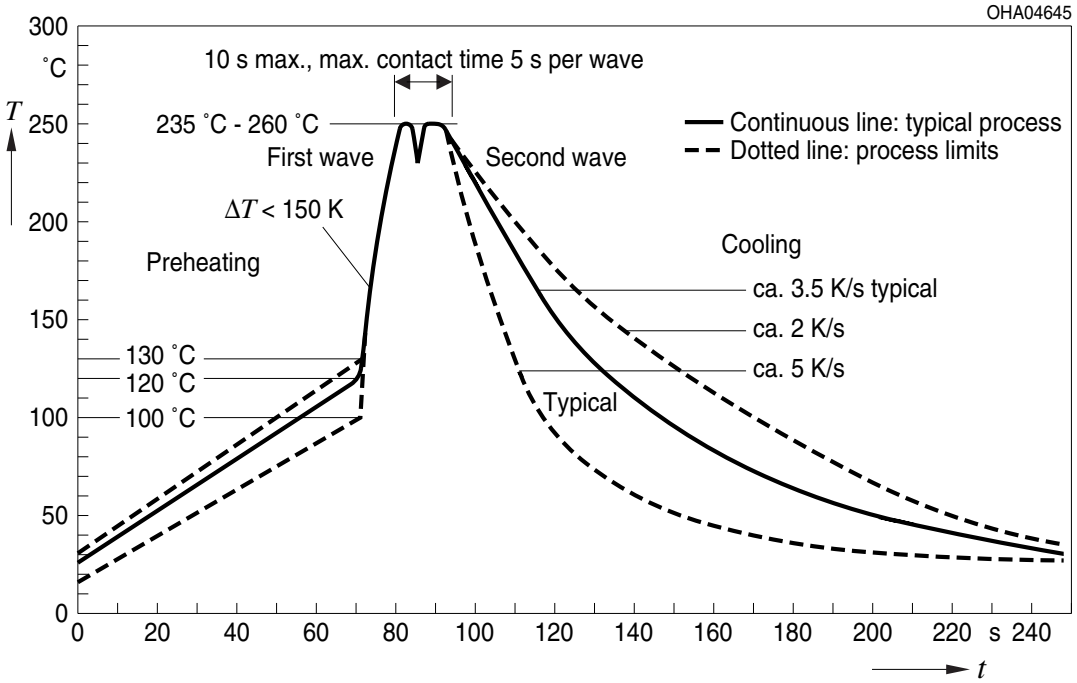
Pad 1: cathode

TTW Soldering

IEC-61760-1 TTW



Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the LED specified in this data sheet fall into the class **exempt group (exposure time 10000 s)**. Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Packing information is available on the internet (online product catalog).

For further application related informations please visit www.osram-os.com/appnotes

Disclaimer

Disclaimer
Language english will prevail in case of any discrepancies or deviations between the two language wordings.

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Glossary

1) **Radiant intensity**: Measured at a solid angle of Ω = 0.001 sr

2) **Reverse Operation**: Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.

3) **Total radiant flux**: Measured with integrating sphere.

4) **Thermal resistance**: junction - ambient, mounted on PC-board (FR4), padsize 16 mm² each

5) **Typical Values**: Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

6) **Testing temperature**: T_A = 25°C

7) **Tolerance of Measure**: Unless otherwise noted in drawing, tolerances are specified with ±0.1 and dimensions are specified in mm.

Published by OSRAM Opto Semiconductors GmbH
Leibnizstraße 4, D-93055 Regensburg

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