SFH 4141

Radial Mini Sidelooker

Infrared Emitter (940 nm) in Mini Sidelooker Package

Applications

- Electronic Equipment
- Industrial Automation (Machine controls, Light barriers, Vision controls)

Features:

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Wavelength 950nm
- Narrow half angle (± 9°)
- Short switching times
- Small outline dimensions
- Same package as phototransistor SFH 3100 F
- High coupling factor in light barriers with SFH 3100 F

Ordering Information

Type	Radiant intensity [1] I_F = 20 mA; t_p = 20 ms I_e	Radiant intensity [1] typ. I_F = 20 mA; t_p = 20 ms I_e	Ordering Code
SFH 4141	16 ... 80 mW/sr	35 mW/sr	Q65111A6138

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 85 °C
Storage temperature	T_{stg}	min. max.	-40 °C 85 °C
Reverse voltage [2)]	V_R	max.	12 V
Forward current	I_F	max.	60 mA
Surge current $t_p \leq 100$ µs; D = 0	I_{FSM}	max.	1 A
Power consumption	P_{tot}	max.	100 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

Characteristics

I_F = 20 mA; t_p = 20 ms; T_A = 25 °C

Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	950 nm
Centroid wavelength	$\lambda_{centroid}$	typ.	940 nm
Spectral bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	42 nm
Half angle	φ	typ.	9 °
Dimensions of active chip area	L x W	typ.	0.3 x 0.3 mm x mm
Rise time (10% / 90%) I_F = 20 mA; R_L = 50 Ω	t_r	typ.	12 ns
Fall time (10% / 90%) I_F = 20 mA; R_L = 50 Ω	t_f	typ.	12 ns
Forward voltage	V_F	typ. max.	1.3 V 1.6 V
Forward voltage I_F = 1 A; t_p = 100 µs	V_F	typ. max.	3.6 V 4.6 V
Reverse current [2] V_R = 5 V	I_R	max. typ.	10 µA 0.01 µA
Total radiant flux [3]	Φ_e	typ.	12 mW
Radiant intensity [1] I_F = 1 A; t_p = 100 µs	I_e	typ.	770 mW/sr
Temperature coefficient of brightness	TC_I	typ.	-0.3 % / K
Temperature coefficient of voltage	TC_V	typ.	-0.8 mV / K
Temperature coefficient of wavelength	TC_λ	typ.	0.3 nm / K
Thermal resistance junction ambient real [4]	R_{thJA}	max.	350 K / W
Thermal resistance junction solder point real [5]	R_{thJS}	max.	200 K / W

Brightness Groups

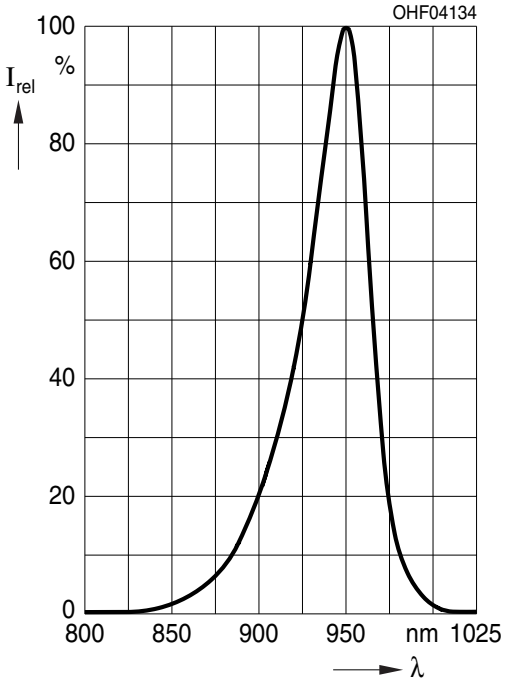
T_A = 25 °C

Group	Radiant intensity I_F = 20 mA; t_p = 20 ms min. I_e	Radiant intensity I_F = 20 mA; t_p = 20 ms max. I_e
S	16 mW/sr	32 mW/sr
T	25 mW/sr	50 mW/sr
U	40 mW/sr	80 mW/sr

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

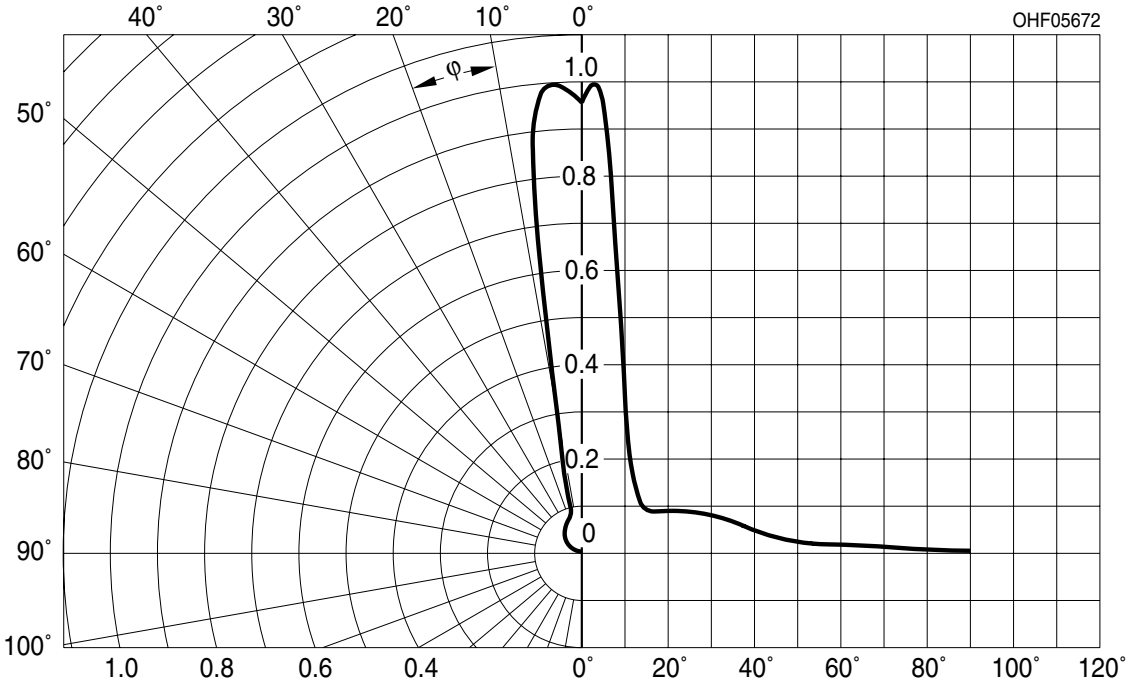
Relative Spectral Emission [6), 7)]

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



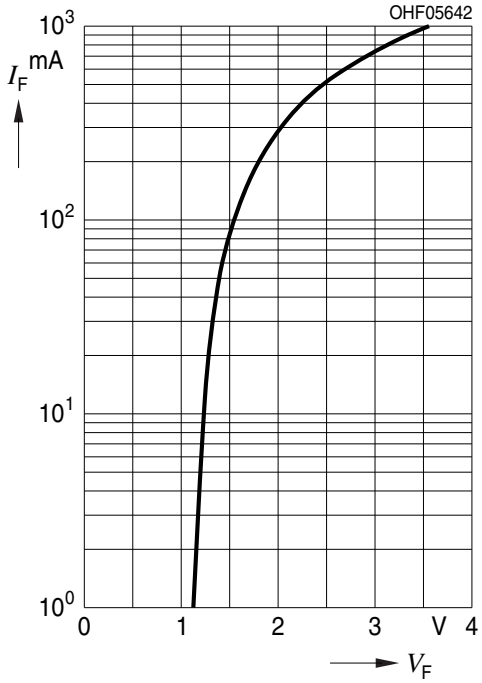
Radiation Characteristics [6), 7)]

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



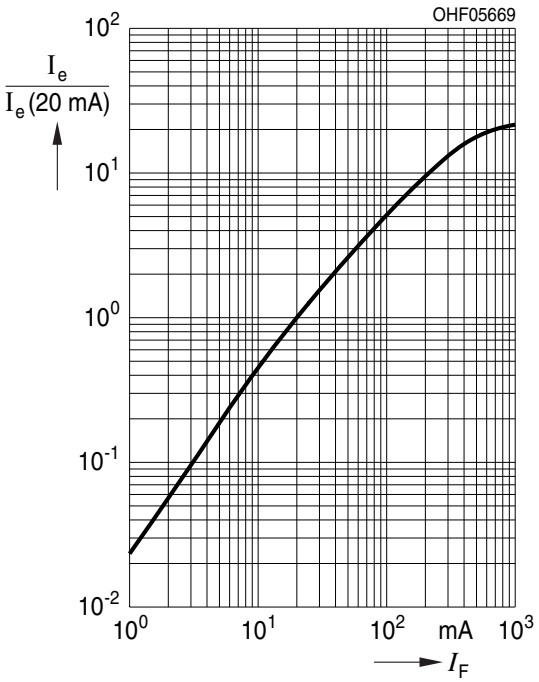
Forward current [6), 7)]

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



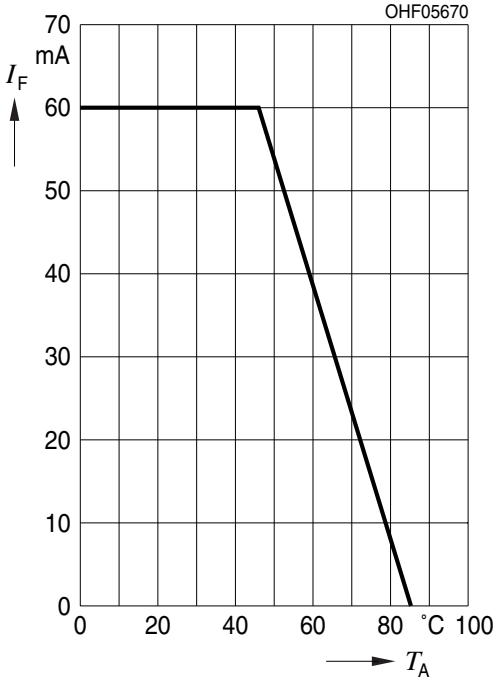
Relative Radiant Intensity [6), 7)]

$I_e/I_e(20mA) = f(I_F)$; single pulse; $t_p = 100\ \mu s$



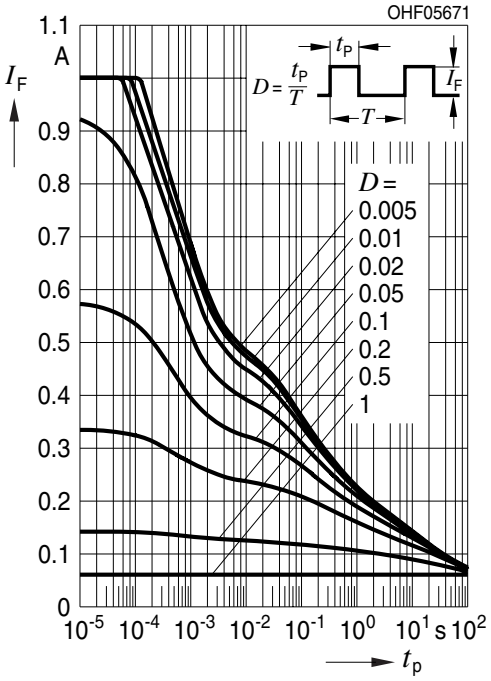
Max. Permissible Forward Current

$I_{F,max} = f(T_A)$; R_{thJA} = 350 K / W



Permissible Pulse Handling Capability

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



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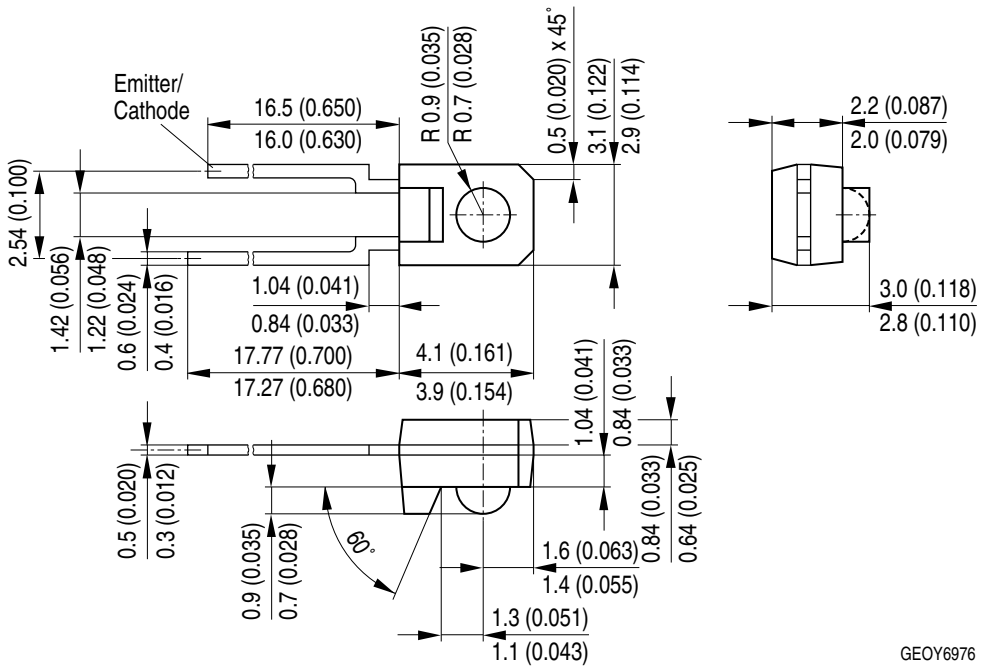
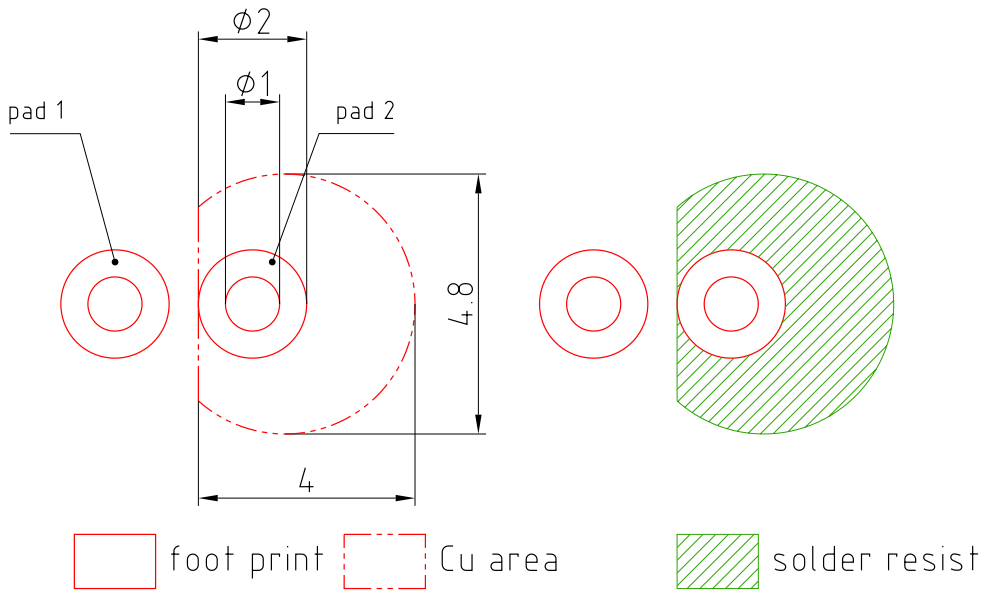
Dimensional Drawing [8)]



Approximate Weight: 0.2 g

Package marking: Cathode

Recommended Solder Pad [8)]



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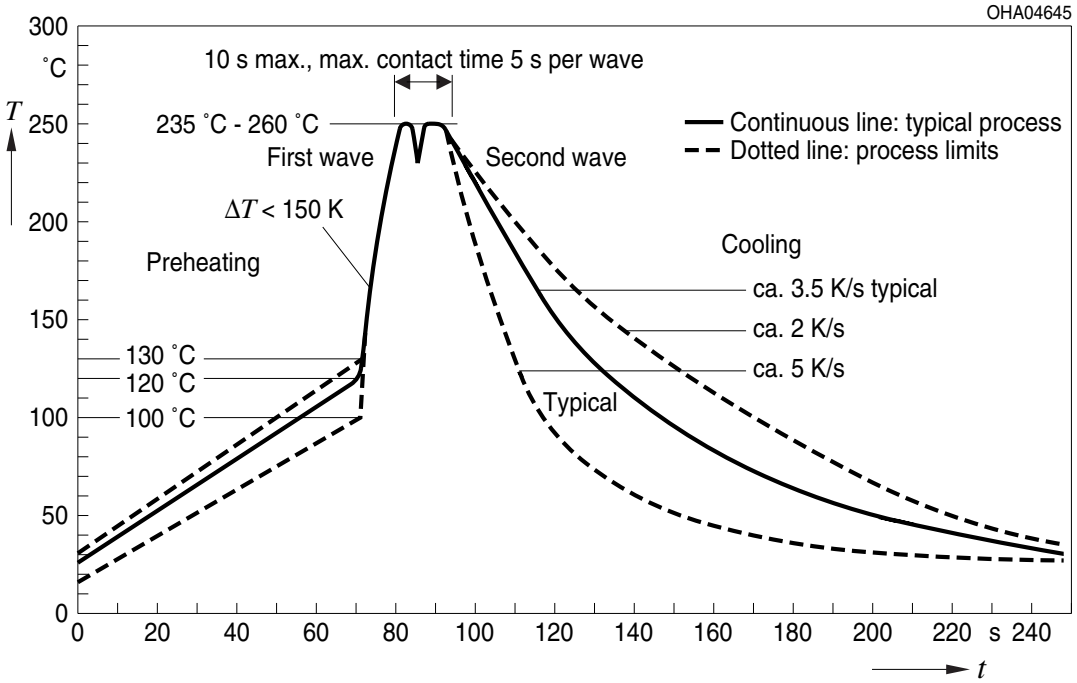
Pad 1: cathode

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.

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

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Glossary

1) **Radiant intensity**: Measured at a solid angle of Ω = 0.01 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) **Thermal resistance**: junction - soldering point, of the device only, mounted on an ideal heatsink (e.g. metal block)

6) **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.

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

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

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