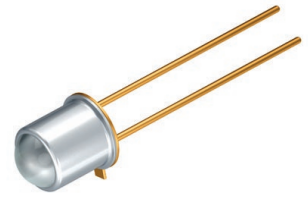


# SFH 4846

## TO18

Infrared Emitter (940 nm)



## Applications

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

## Features:

- Package: hermetically sealed
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Wavelength 950nm
- Anode is electrically connected to the case
- Short switching times
- Spectral match with silicon photodetectors

## Ordering Information

Type	Radiant intensity <sup>1)</sup> $I_F = 100 \text{ mA}; t_p = 20 \text{ ms}$ $I_e$	Radiant intensity <sup>1)</sup> typ. $I_F = 100 \text{ mA}; t_p = 20 \text{ ms}$ $I_e$	Ordering Code
SFH 4846	25 ... 125 mW/sr	50 mW/sr	Q65111A6131

## Maximum Ratings

$T_A = 25\text{ °C}$

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 <sup>2)</sup>	$V_R$	max.	12 V
Forward current	$I_F$	max.	100 mA
Surge current $t_p \leq 250\ \mu\text{s}; D = 0$	$I_{FSM}$	max.	1 A
Power consumption	$P_{tot}$	max.	190 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	$V_{ESD}$	max.	2 kV

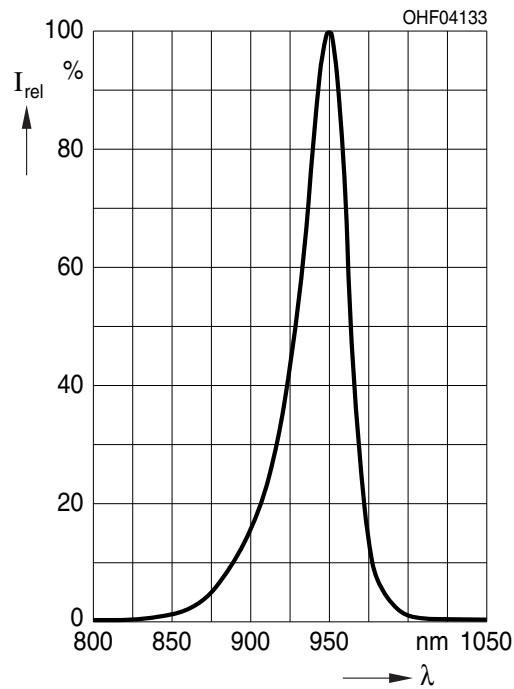
## Characteristics

$I_F = 100 \text{ mA}$ ;  $t_p = 20 \text{ ms}$ ;  $T_A = 25 \text{ °C}$

Parameter	Symbol		Values
Peak wavelength	$\lambda_{\text{peak}}$	typ.	950 nm
Centroid wavelength	$\lambda_{\text{centroid}}$	typ.	940 nm
Spectral bandwidth at 50% $I_{\text{rel,max}}$	$\Delta\lambda$	typ.	42 nm
Half angle	$\varphi$	typ.	20 °
Dimensions of active chip area	L x W	typ.	0.3 x 0.3 mm x mm
Distance chip surface to lens top	H	min. max.	2.8 mm 3.7 mm
Rise time (10% / 90%) $I_F = 100 \text{ mA}$ ; $R_L = 50 \text{ }\Omega$	$t_r$	typ.	12 ns
Fall time (10% / 90%) $I_F = 100 \text{ mA}$ ; $R_L = 50 \text{ }\Omega$	$t_f$	typ.	12 ns
Forward voltage	$V_F$	typ. max.	1.6 V 1.9 V
Forward voltage $I_F = 1 \text{ A}$ ; $t_p = 100 \text{ }\mu\text{s}$	$V_F$	typ. max.	3.6 V 4.6 V
Reverse current <sup>2)</sup> $V_R = 5 \text{ V}$	$I_R$	max. typ.	10 $\mu\text{A}$ 0.01 $\mu\text{A}$
Total radiant flux <sup>3)</sup>	$\Phi_e$	typ.	35 mW
Radiant intensity <sup>1)</sup> $I_F = 1 \text{ A}$ ; $t_p = 100 \text{ }\mu\text{s}$	$I_e$	typ.	210 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	$TC_\lambda$	typ.	0.3 nm / K
Thermal resistance junction ambient real	$R_{\text{thJA}}$	max.	500 K / W
Thermal resistance junction case real	$R_{\text{thJC}}$	max.	350 K / W

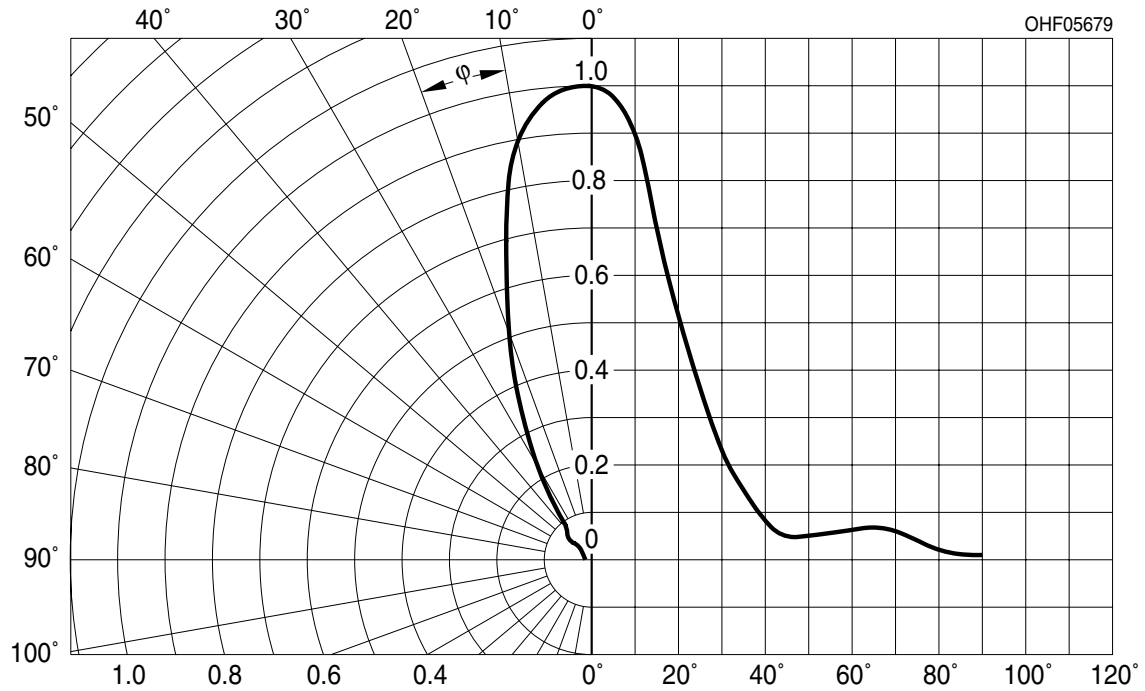
### Relative Spectral Emission <sup>4), 5)</sup>

$I_{rel} = f(\lambda); I_F = 100 \text{ mA}; t_p = 20 \text{ ms}$



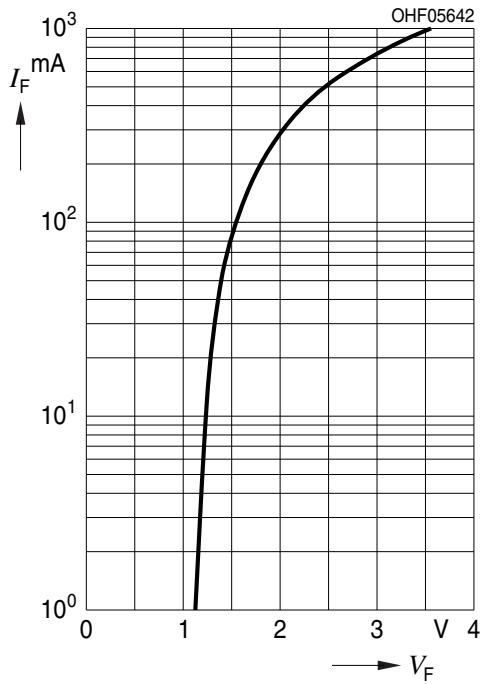
### Radiation Characteristics <sup>4), 5)</sup>

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



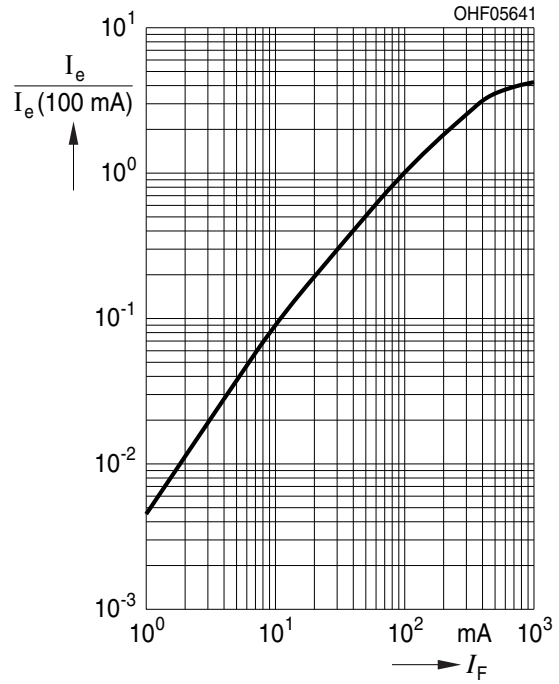
**Forward current** <sup>4), 5)</sup>

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



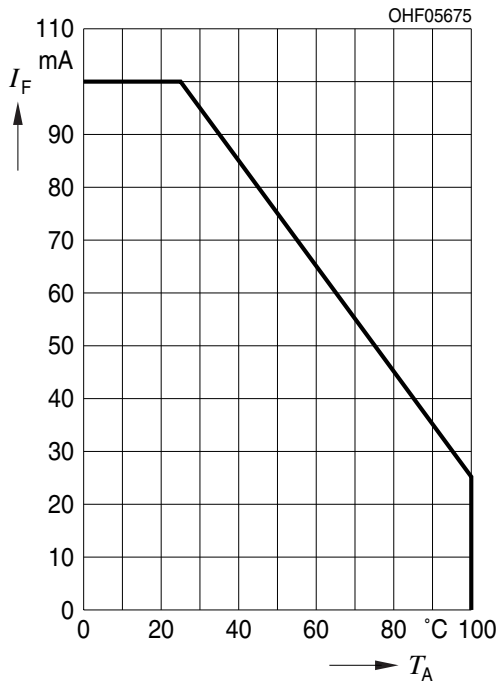
**Relative Radiant Intensity** <sup>4), 5)</sup>

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



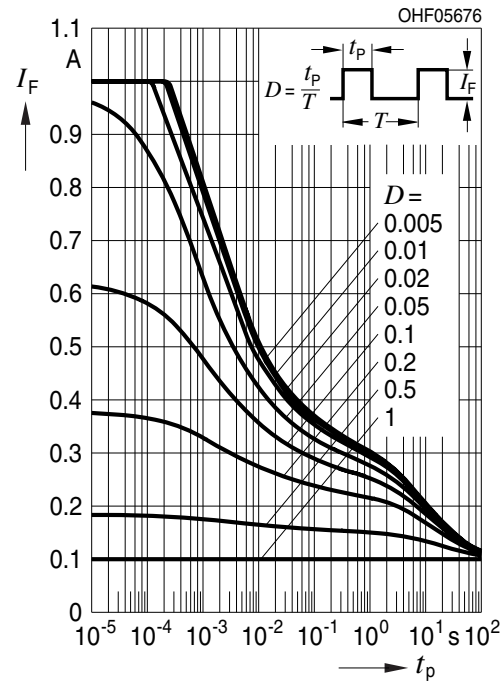
**Max. Permissible Forward Current**

$I_{F,max} = f(T_A)$ ;  $R_{thJA} = 500 K/W$



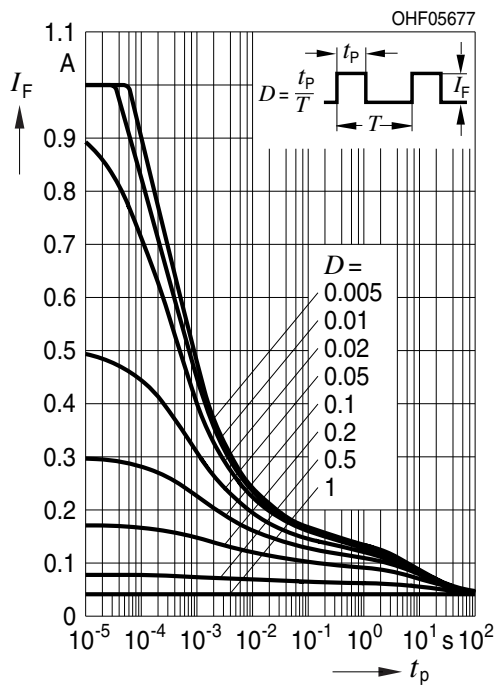
**Permissible Pulse Handling Capability**

$I_F = f(t_p)$ ; duty cycle  $D = \text{parameter}$ ;  $T_A = 25^\circ C$

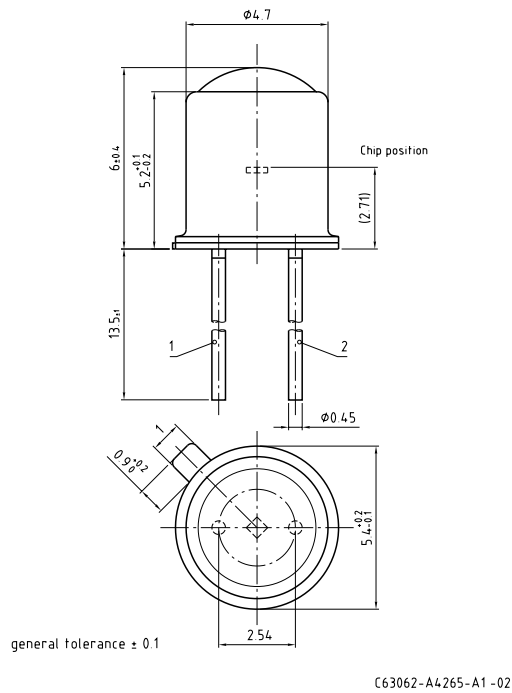


## Permissible Pulse Handling Capability

$I_F = f(t_p)$ ; duty cycle  $D = \text{parameter}$ ;  $T_A = 85^\circ\text{C}$



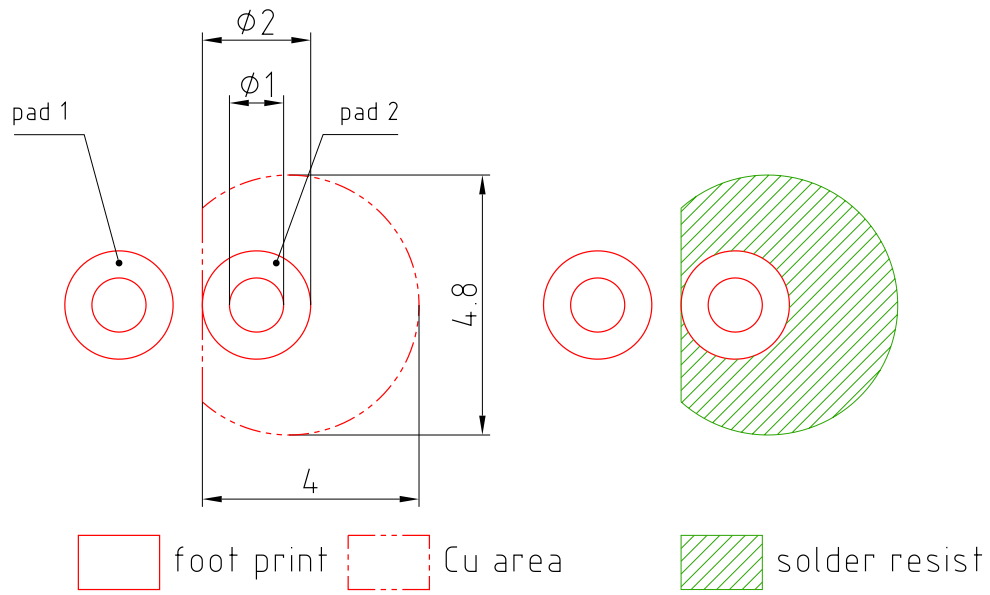
Dimensional Drawing <sup>6)</sup>



Approximate Weight: 380.0 mg

Pin	Description
1	Anode
2	Cathode

**Recommended Solder Pad** <sup>6)</sup>



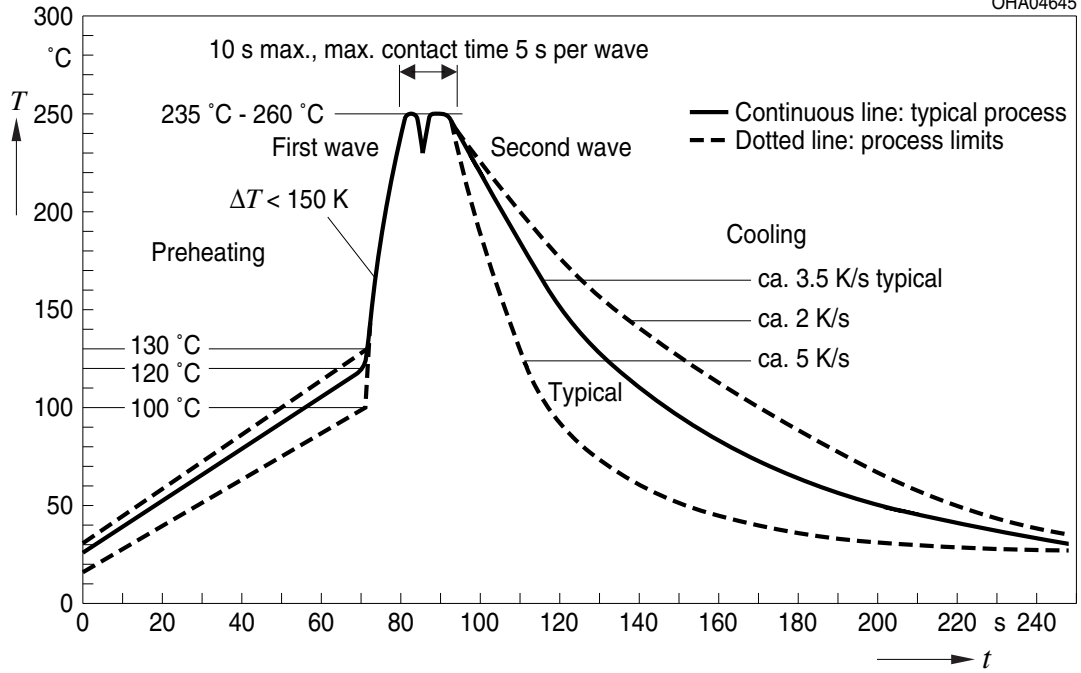
E062.3010.188-01



# TTW Soldering

IEC-61760-1 TTW

OHA04645



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## 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/apnotes](http://www.osram-os.com/apnotes)

## Disclaimer

### Disclaimer

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

### Attention please!

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For information on the types in question please contact our Sales Organization.

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### Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.

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## Glossary

- 1) **Radiant intensity:** Measured at a solid angle of  $\Omega = 0.01$  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) **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.
- 5) **Testing temperature:**  $T_A = 25^\circ\text{C}$
- 6) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with  $\pm 0.1$  and dimensions are specified in mm.

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