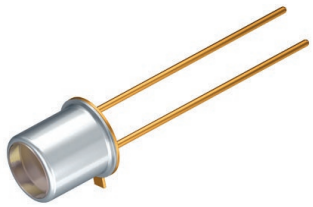
SFH 4857 E7800

TO18

Infrared Emitter (850 nm)



Applications

- 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 850nm
- Short switching times
- Spectral match with silicon photodetectors
- Measured with a 2mm aperture.

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 4857 E7800	6.3 ... 32.0 mW/sr	15 mW/sr	Q65111A6126

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 125 °C
Storage temperature	T_{stg}	min. max.	-40 °C 125 °C
Reverse voltage [2)]	V_R	max.	12 V
Forward current	I_F	max.	100 mA
Surge current $t_p \leq 200$ µs; D = 0	I_{FSM}	max.	1 A
Power consumption	P_{tot}	max.	200 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.	37 °
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.	2.1 mm 2.7 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.	1.7 V 2 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.	35 mW
Radiant intensity [1] I_F = 1 A; t_p = 100 µs	I_e	typ.	60 mW/sr
Temperature coefficient of brightness	TC_I	typ.	-0.3 % / K
Temperature coefficient of voltage	TC_V	typ.	-0.6 mV / K
Temperature coefficient of wavelength	TC_λ	typ.	0.3 nm / K
Thermal resistance junction ambient real	R_{thJA}	max.	500 K / W
Thermal resistance junction case real	R_{thJC}	max.	350 K / W

Brightness Groups

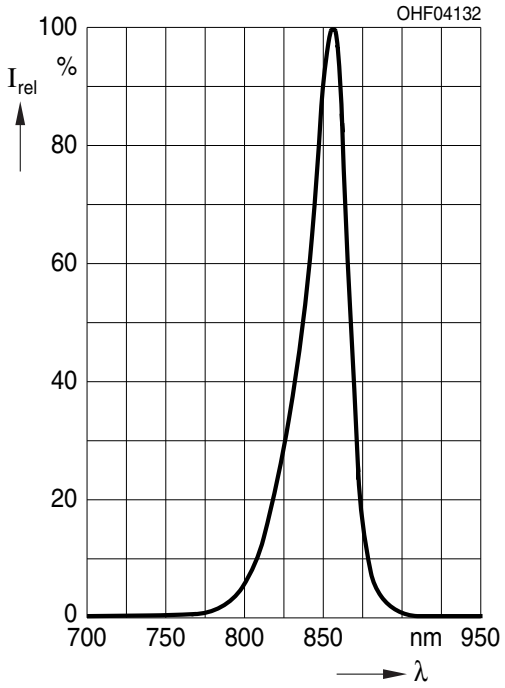
T_A = 25 °C

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
Q	6.3 mW/sr	12.5 mW/sr
R	10.0 mW/sr	20.0 mW/sr
S	16.0 mW/sr	32.0 mW/sr

An aperture is used in front of the component for measurement of the radiant intensity and the half angle (diameter of the aperture: 2.0 mm; distance of aperture to case back side: 5.4 mm). This ensures that solely the radiation in axial direction emitting directly from the chip surface will be evaluated during measurement of the radiant intensity. Radiation reflected by the bottom plate (stray radiation) will not be evaluated. These reflections impair the projection of the chip surface by additional optics (e.g. long-range light refelction switches). In respect of the application of the component, these reflections are generally suppressed by apertures as well. This measuring procedure corresponding with the apllication provides more useful values. This aperture measurement is denoted by “E 7800” added to the type designation. Only one group in one packing unit (variation lower 2:1).

Relative Spectral Emission [4), 5)]

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



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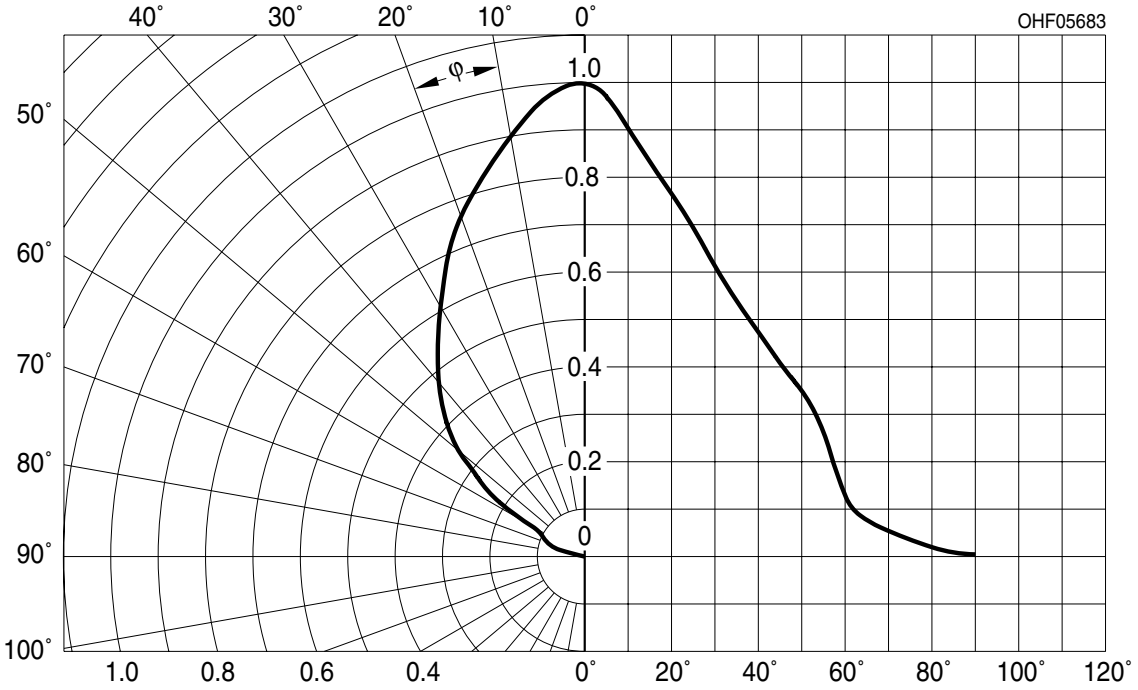
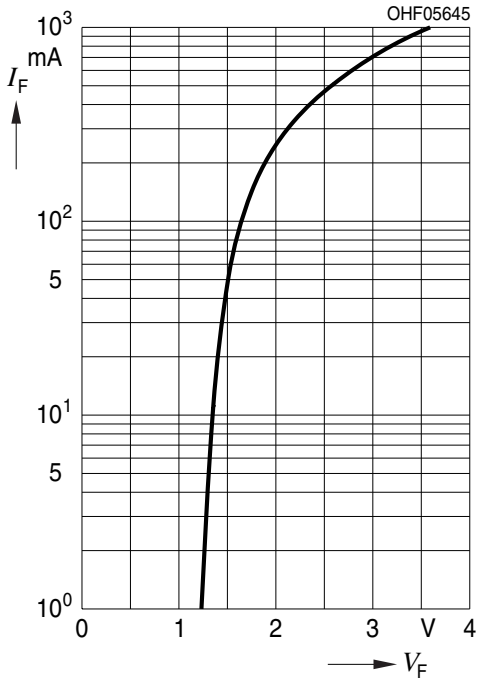
Radiation Characteristics [4), 5)]

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



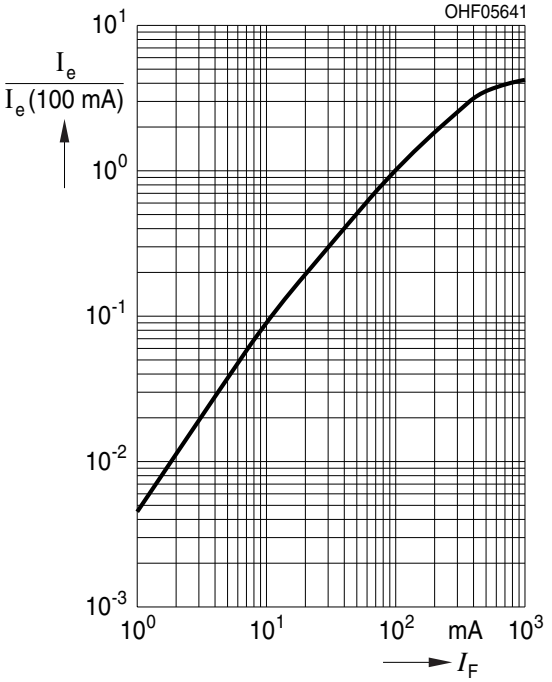
Forward current [4), 5)]

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



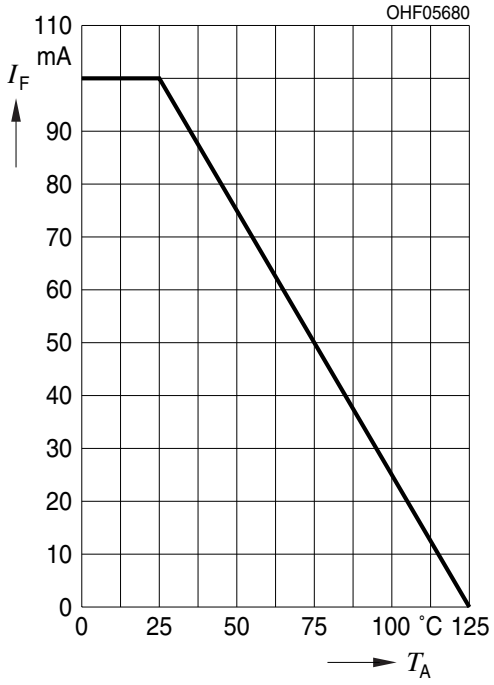
Relative Radiant Intensity [4), 5)]

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



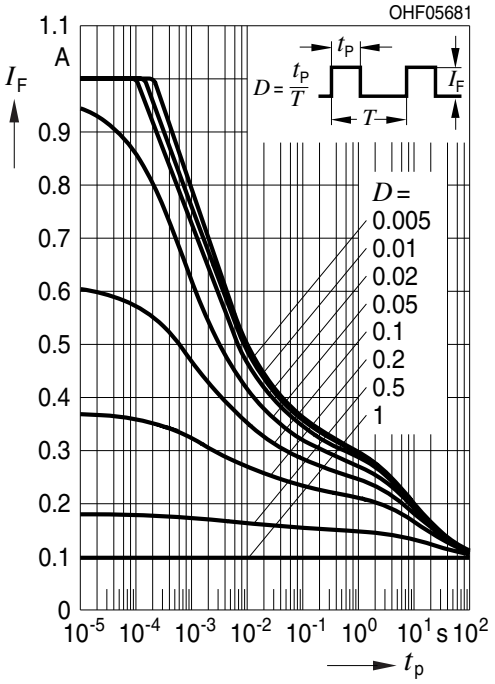
Max. Permissible Forward Current

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



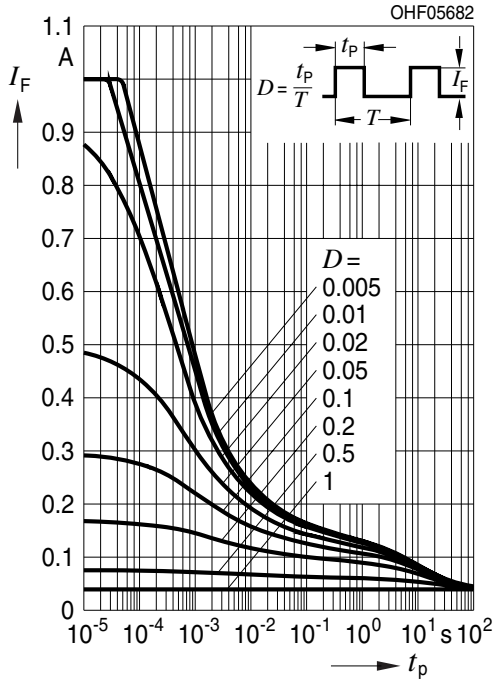
Permissible Pulse Handling Capability

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

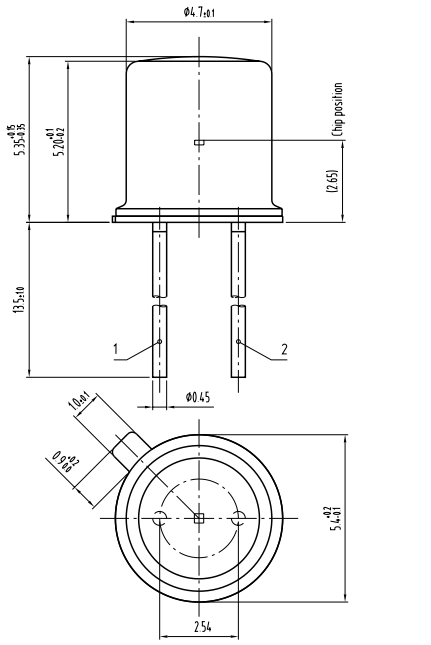


Permissible Pulse Handling Capability

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



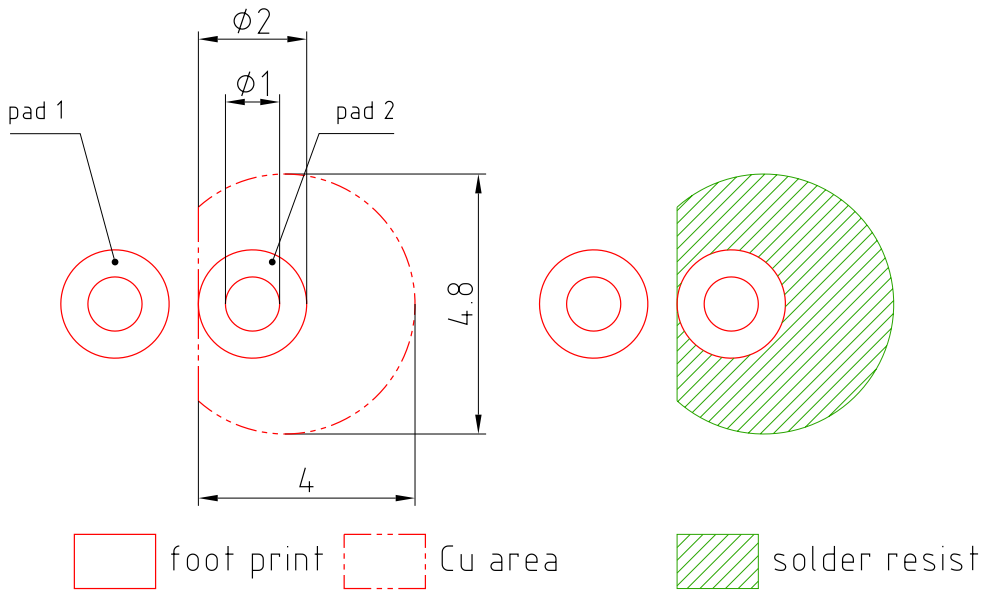
Dimensional Drawing [6)]



Approximate Weight: 330.0 mg

Pin	Description
1	Cathode
2	Anode

Recommended Solder Pad [6)]



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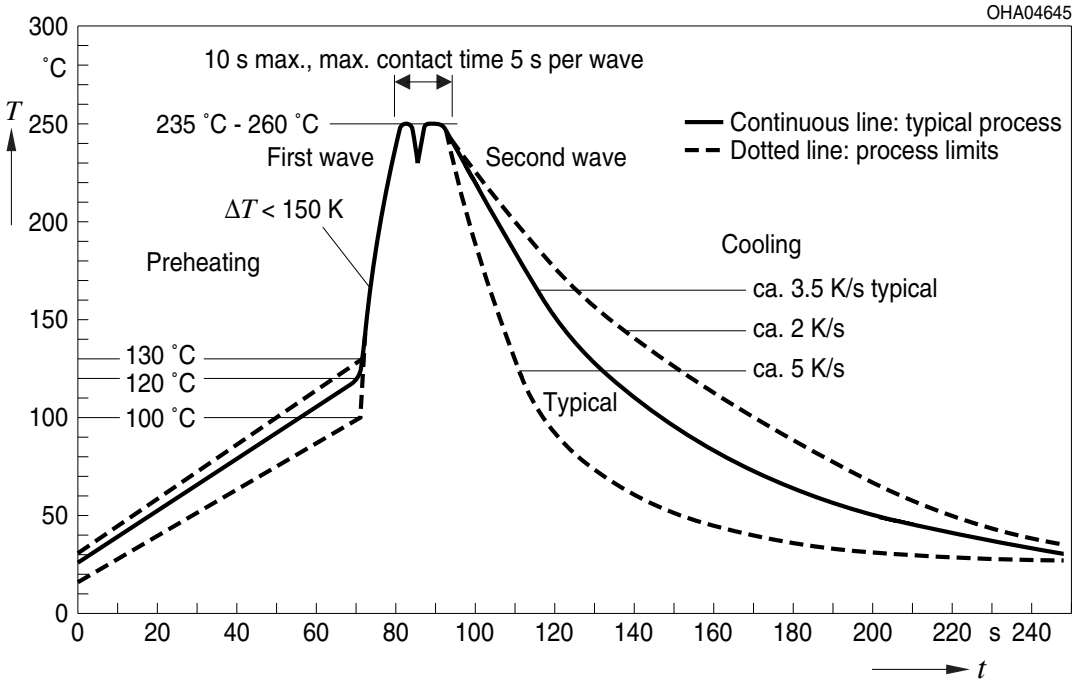
Pad 1: cathode

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

Disclaimer

Disclaimer
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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) **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°C

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

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