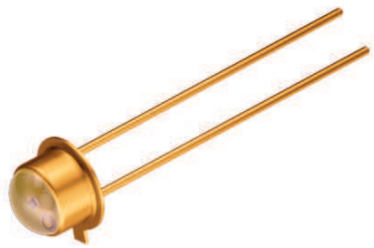
Infrared Emitter (850 nm)
Version 1.5

SFH 4850 E7800



Features:
- Wavelength 850nm
- Anode is electrically connected to the case
- Short switching times
- Spectral match with silicon photodetectors
- Measured with a 1.1mm aperture.
- DIN humidity caregory in acc. with DIN 40 040 GQG

Applications
- Photointerrupters
- Sensor technology
- Light curtains

Notes

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.

Ordering Information

Type:	**Radiant Intensity** I_e [mW/sr] **I_F= 100 mA, t_p= 20 ms**	**Ordering Code**
SFH 4850 E7800	10 (≥ 4)	Q65110A2093

Note: measured at a solid angle of Ω = 0.01 sr

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Maximum Ratings (T_C = 25 °C)

Parameter	Symbol	Values	Unit
Operation and storage temperature range	T_{op}; T_{stg}	-40 ... 80	°C
Reverse voltage	V_R	5	V
Forward current	I_F	200	mA
Surge current ($t_p \leq 1000$ µs, D = 0)	I_{FSM}	1	A
Power consumption	P_{tot}	470	mW
Thermal resistance junction - ambient	R_{thJA}	450	K / W
Thermal resistance junction - case	R_{thJC}	160	K / W
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	V_{ESD}	2	kV

Characteristics (T_A = 25 °C)

Parameter		Symbol	Values	Unit
Peak wavelength (I_F = 100 mA, t_p = 20 ms)	(typ)	λ_{peak}	860	nm
Centroid wavelength (I_F = 100 mA, t_p = 20 ms)	(typ)	$\lambda_{centroid}$	850	nm
Spectral bandwidth at 50% of I_{max} (I_F = 100 mA, t_p = 20 ms)	(typ)	$\Delta\lambda$	30	nm
Half angle	(typ)	φ	± 23	°
Dimensions of active chip area	(typ)	L x W	0.3 x 0.3	mm x mm
Rise and fall time of I_e (10% and 90% of $I_{e\,max}$) (I_F = 100 mA, R_L = 50 Ω)	(typ)	t_r, t_f	12	ns
Forward voltage (I_F = 100 mA, t_p = 20 ms)	(typ (max))	V_F	1.5 (≤ 1.8)	V
Forward voltage (I_F = 1 A, t_p = 100 µs)	(typ (max))	V_F	2.4 (≤ 3)	V
Reverse current (V_R = 5 V)		I_R	not designed for reverse operation	µA
Total radiant flux (I_F=100 mA, t_p=20 ms)	(typ)	Φ_e	50	mW

Parameter		Symbol	Values	Unit
Temperature coefficient of I_e or Φ_e (I_F = 100 mA, t_p = 20 ms)	(typ)	TC_I	-0.5	% / K
Temperature coefficient of V_F (I_F = 100 mA, t_p = 20 ms)	(typ)	TC_V	-0.7	mV / K
Temperature coefficient of wavelength (I_F = 100 mA, t_p = 20 ms)	(typ)	TC_λ	0.3	nm / K

Grouping (T_A = 25 °C)

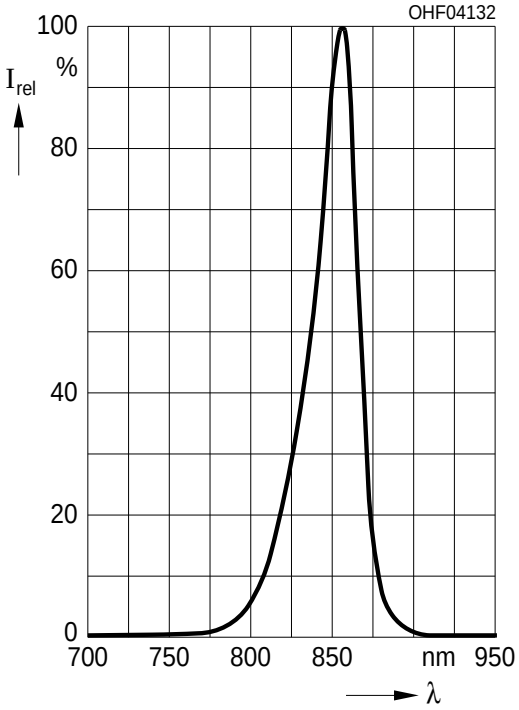
Group	Min Radiant Intensity I_F= 100 mA, t_p= 20 ms $I_{e, min}$ [mW / sr]	Max Radiant Intensity I_F= 100 mA, t_p= 20 ms $I_{e, max}$ [mW / sr]	Typ Radiant Intensity I_F = 1 A, t_p = 100 µs $I_{e, typ}$ [mW / sr]
SFH 4850 E7800-P	4	8	50
SFH 4850 E7800-Q	6.3	12.5	75
SFH 4850 E7800-R	10	20	120

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

An aperture is used in front of the component for measurement of the radiant intensity and the half angle (diameter of the aperture: 1.1 mm; distance of aperture to case back side: 4.0 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 reflection switches). In respect of the application of the component, these reflections are generally suppressed by apertures as well. This measuring procedure corresponding with the application 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).

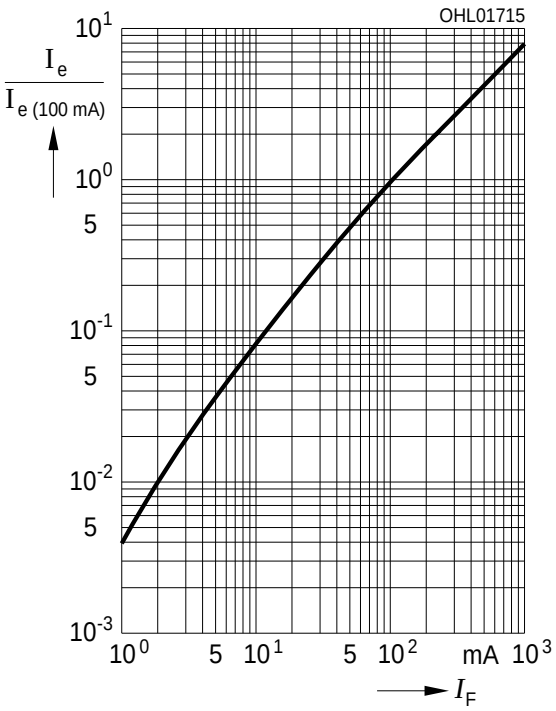
Relative Spectral Emission [1] *page 9*

$I_{rel} = f(\lambda)$, $T_A = 25°C$



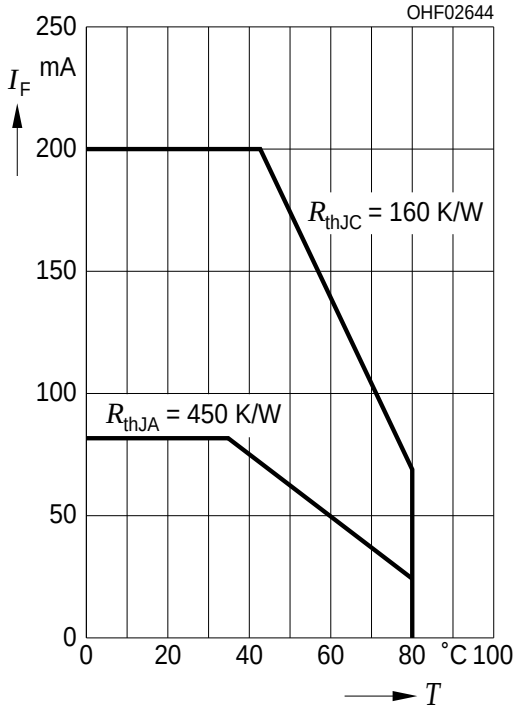
Radiant Intensity [1] *page 9*

$I_e / I_e(100\ mA) = f(I_F)$, single pulse, $t_p = 25\ \mu s$, $T_A = 25°C$



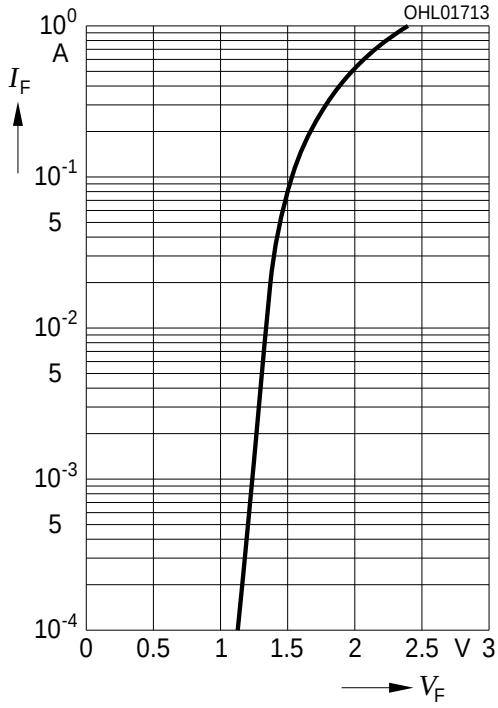
Max. Permissible Forward Current

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



Forward Current [1] *page 9*

$I_F = f(V_F)$, single pulse, $t_p = 100\ \mu s$, $T_A = 25°C$



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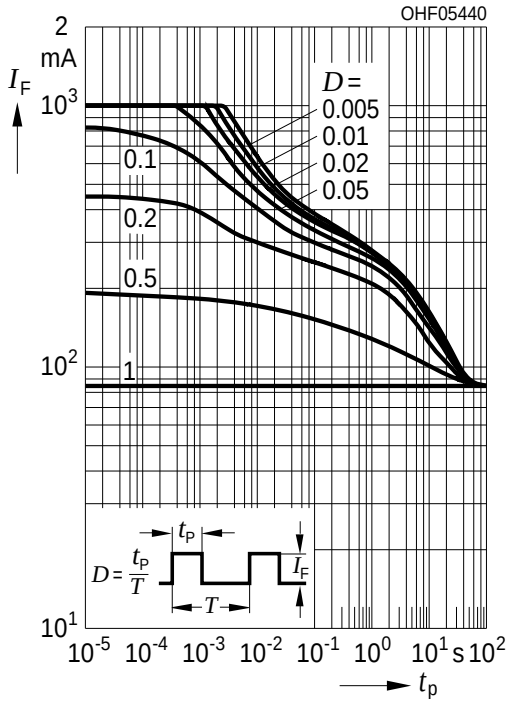
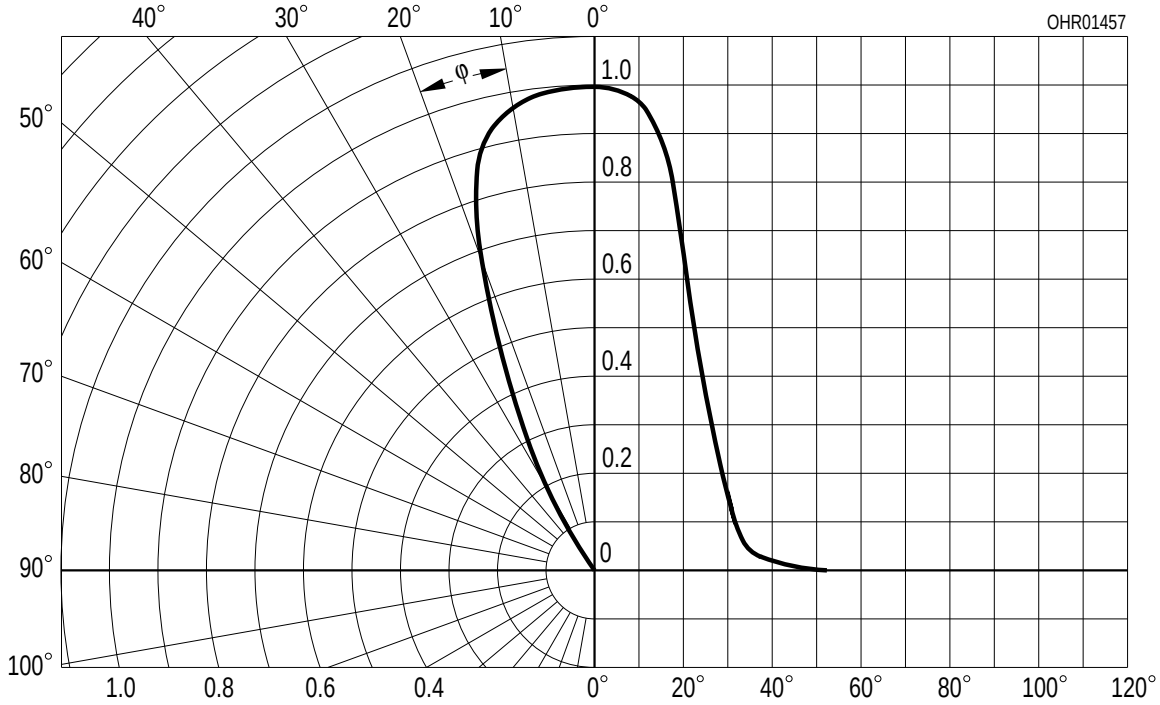
Permissible Pulse Handling Capability

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



Radiation Characteristics [1] *page 9*

$I_{rel} = f(\phi)$, T_A= 25°C



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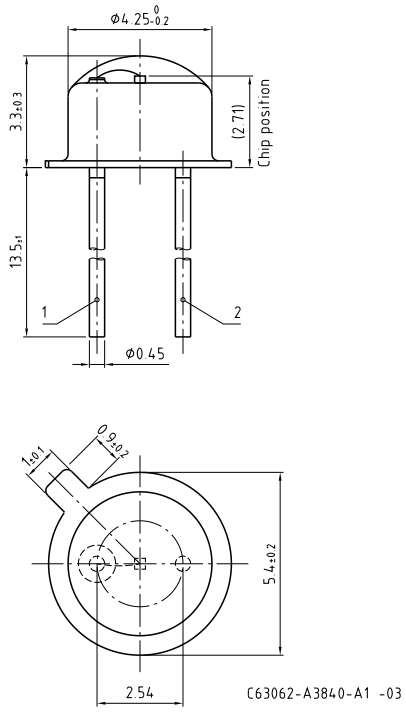
Package Outline



Dimensions in mm.

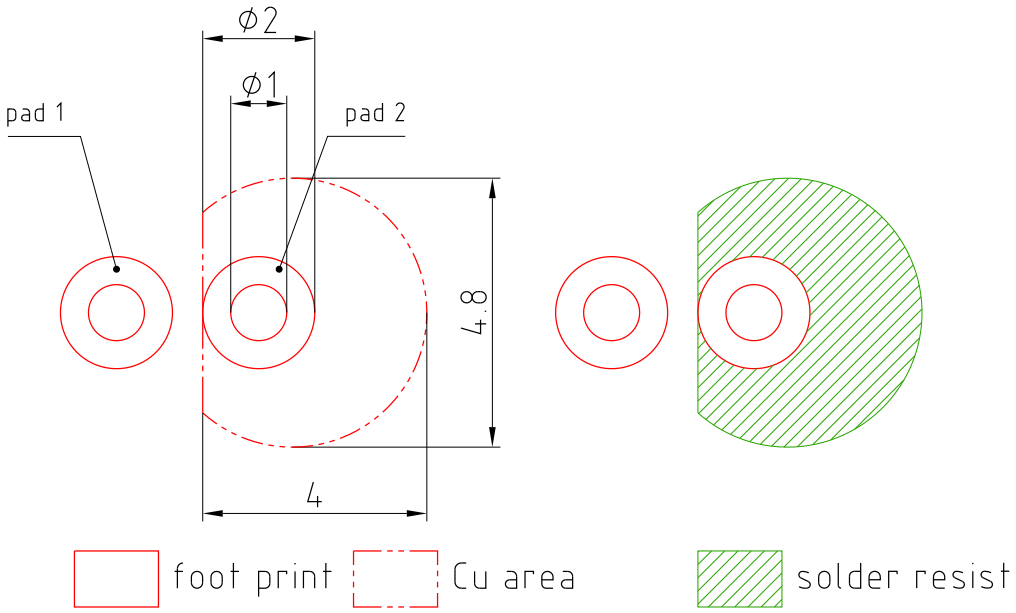
Pinning

Pin	Description
1	Cathode
2	Anode

Package
Metal Can (TO-18)

Approximate Weight:
0.2 g

Recommended Solder Pad



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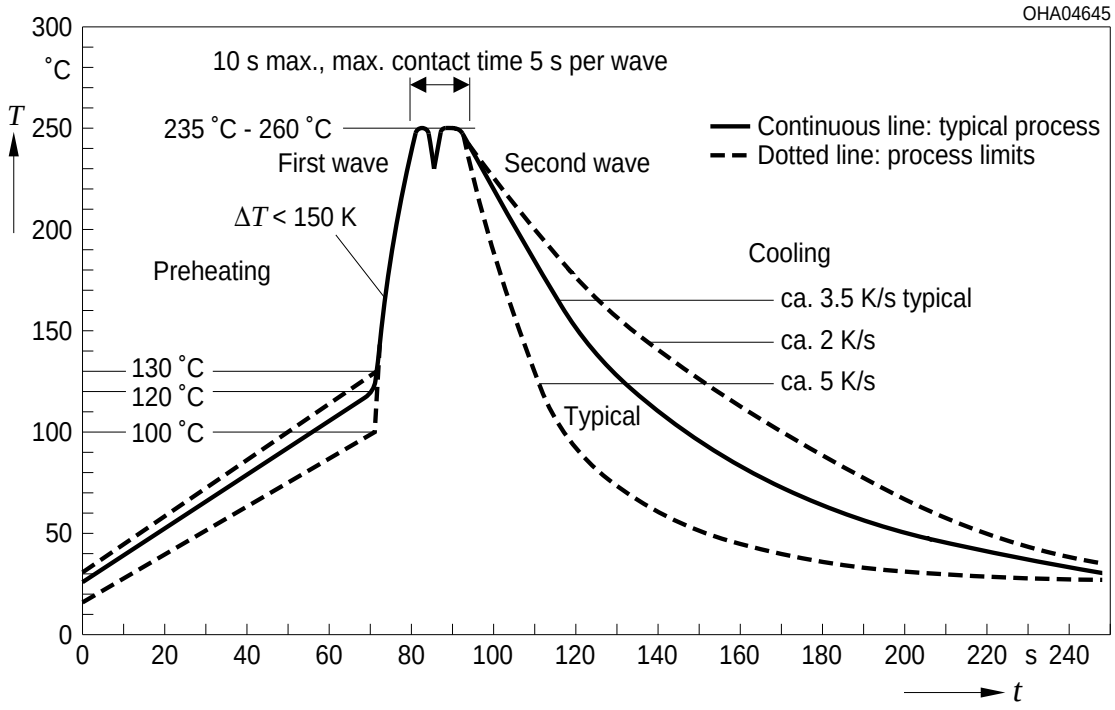
Dimensions in mm.

Note:
pad 1: cathode

TTW Soldering
IEC-61760-1 TTW



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Disclaimer

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

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Glossary

[1] **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.

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