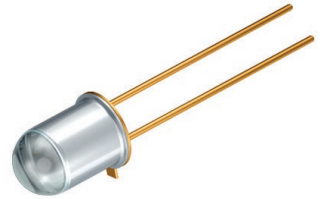


# SFH 4855

## Metal Can® 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

## Ordering Information

Type	Radiant intensity <sup>1)2)</sup> $I_e$ $I_F = 100 \text{ mA}; t_p = 20 \text{ ms}$	Radiant intensity <sup>1)</sup> typ. $I_e$ $I_F = 100 \text{ mA}; t_p = 20 \text{ ms}$	Ordering Code
SFH 4855	45 ... 280 mW/sr	110 mW/sr	Q65111A6128
SFH 4855-VAW	71 ... 180 mW/sr	110 mW/sr	Q65111A9675

## Maximum Ratings

$T_A = 25\text{ °C}$

Parameter	Symbol	Values
Operating temperature	$T_{op}$	min. -40 °C max. 125 °C
Storage temperature	$T_{stg}$	min. -40 °C max. 125 °C
Forward current	$I_F$	max. 100 mA
Surge current $t_p \leq 200\ \mu\text{s}; D = 0$	$I_{FSM}$	max. 1 A
Reverse voltage <sup>3)</sup>	$V_R$	max. 12 V
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

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

Parameter	Symbol		Values
Peak wavelength	$\lambda_{\text{peak}}$	typ.	860 nm
Centroid wavelength	$\lambda_{\text{centroid}}$	typ.	850 nm
Spectral bandwidth at 50% $I_{\text{rel,max}}$ (FWHM)	$\Delta\lambda$	typ.	30 nm
Half angle	$\varphi$	typ.	8 °
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.	4 mm 4.8 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 <sup>4)</sup>	$V_F$	typ. max.	1.7 V 1.9 V
Forward voltage <sup>4)</sup> $I_F = 1 \text{ A}$ ; $t_p = 100 \text{ }\mu\text{s}$	$V_F$	typ. max.	3.6 V 4.5 V
Reverse current <sup>3)</sup> $V_R = 5 \text{ V}$	$I_R$	max.	10 $\mu\text{A}$
Radiant intensity <sup>1)</sup> $I_F = 1 \text{ A}$ ; $t_p = 100 \text{ }\mu\text{s}$	$I_e$	typ.	515 mW/sr
Total radiant flux <sup>5)</sup>	$\Phi_e$	typ.	35 mW
Temperature coefficient of voltage	$TC_V$	typ.	-0.6 mV / K
Temperature coefficient of brightness	$TC_I$	typ.	-0.3 % / K
Temperature coefficient of wavelength	$TC_\lambda$	typ.	0.3 nm / K
Thermal resistance junction case real	$R_{\text{thJC}}$	max.	350 K / W
Thermal resistance junction ambient real	$R_{\text{thJA}}$	max.	500 K / W

### Brightness Groups

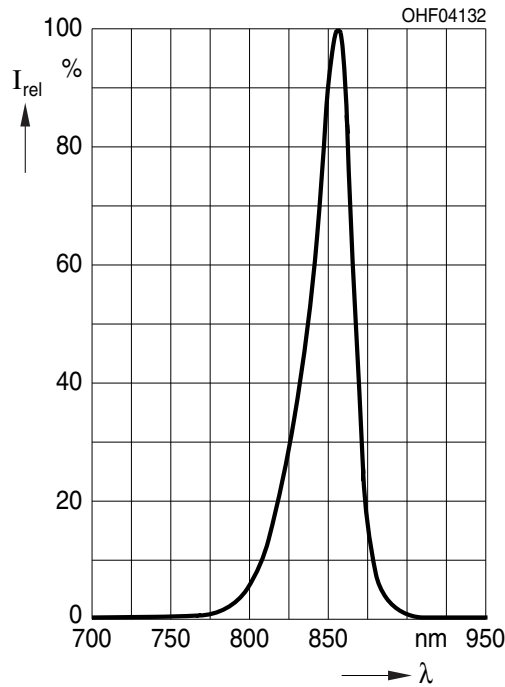
$T_A = 25\text{ °C}$

Group	Radiant intensity <sup>1)2)</sup> $I_F = 100\text{ mA}; t_p = 20\text{ ms}$ min. $I_e$	Radiant intensity <sup>1)2)</sup> $I_F = 100\text{ mA}; t_p = 20\text{ ms}$ max. $I_e$
	U	45 mW/sr
V	71 mW/sr	112 mW/sr
AW	112 mW/sr	180 mW/sr
BW	180 mW/sr	280 mW/sr

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

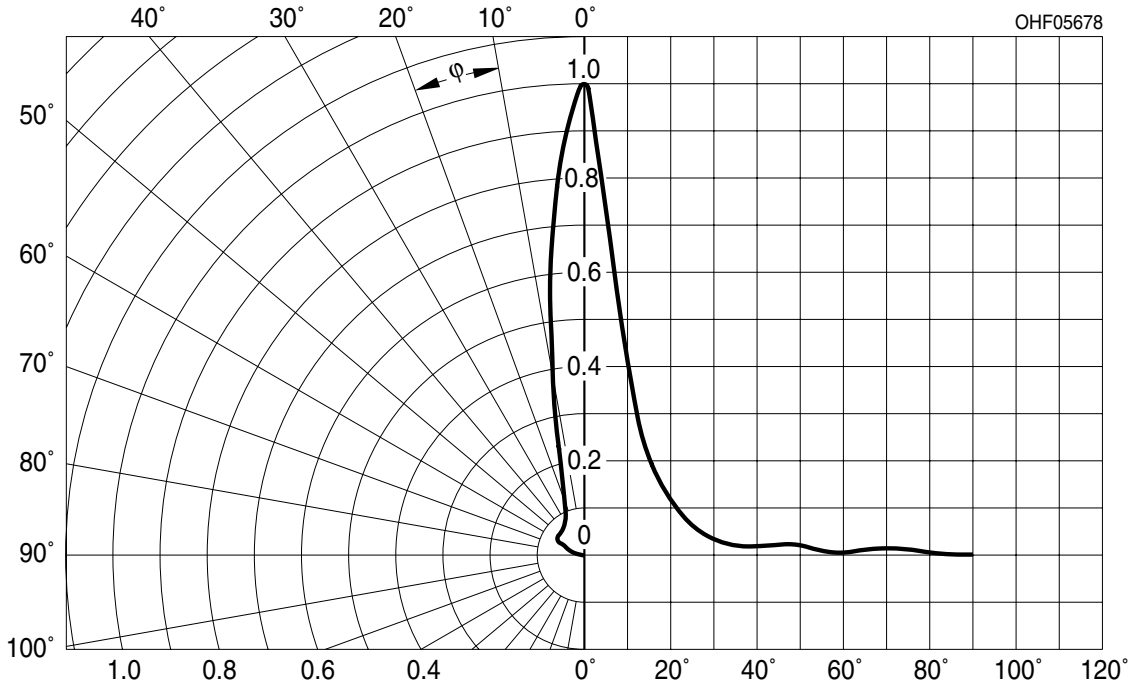
### Relative Spectral Emission <sup>6), 7)</sup>

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



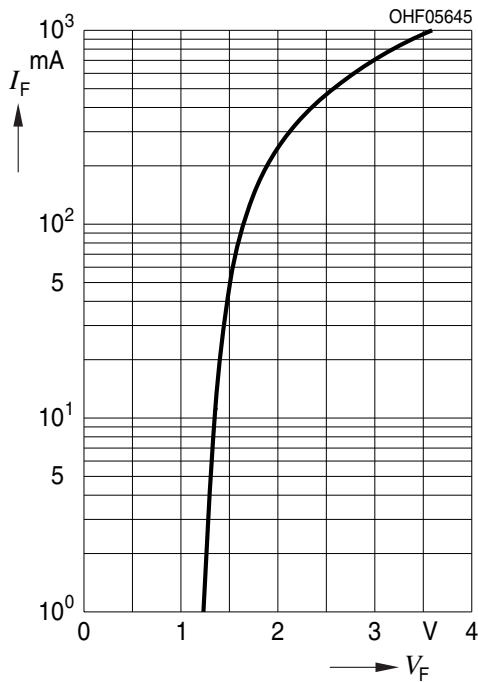
**Radiation Characteristics** (6), (7)

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



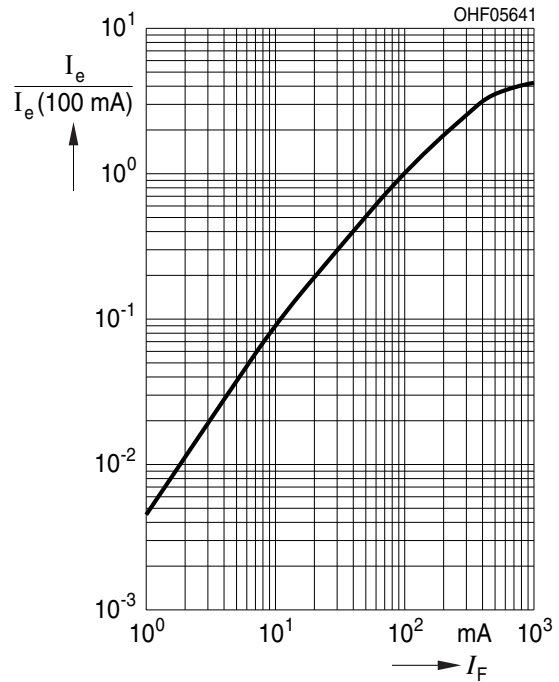
**Forward current** (6), (7)

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



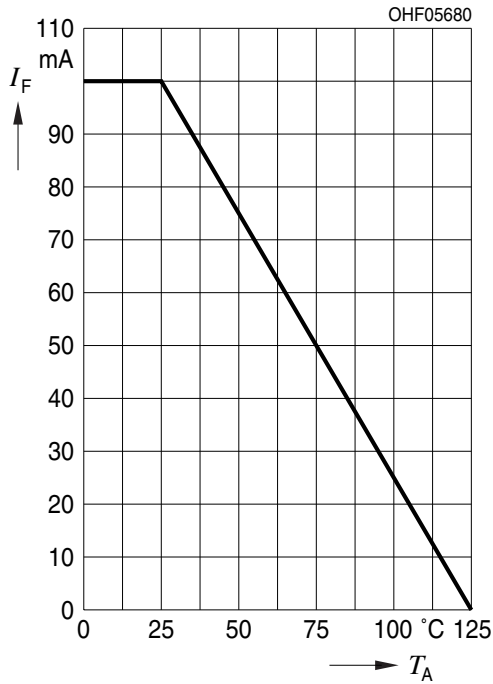
**Relative Radiant Intensity** (6), (7)

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



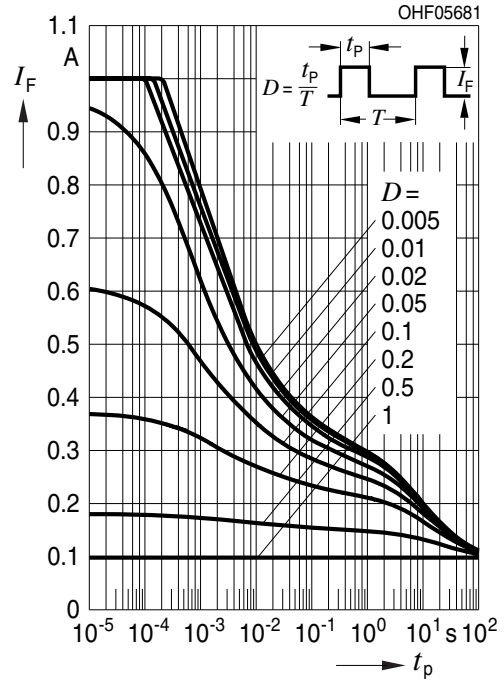
### Max. Permissible Forward Current

$I_{F,max} = f(T_A)$ ;  $R_{th_{ja}} = 500K / W$ ; single pulse



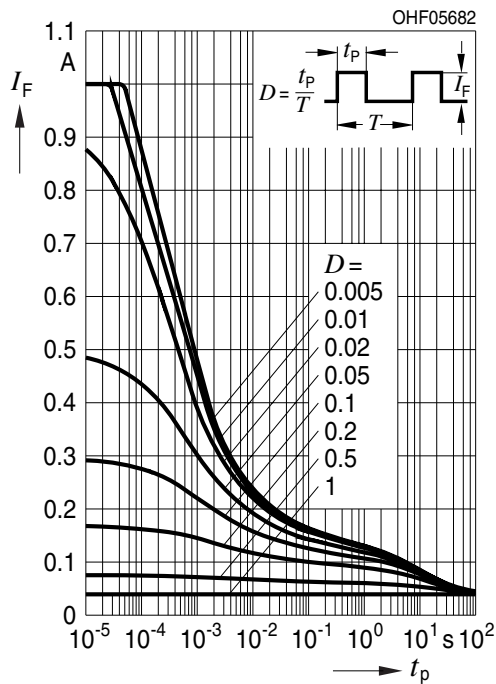
### Permissible Pulse Handling Capability

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

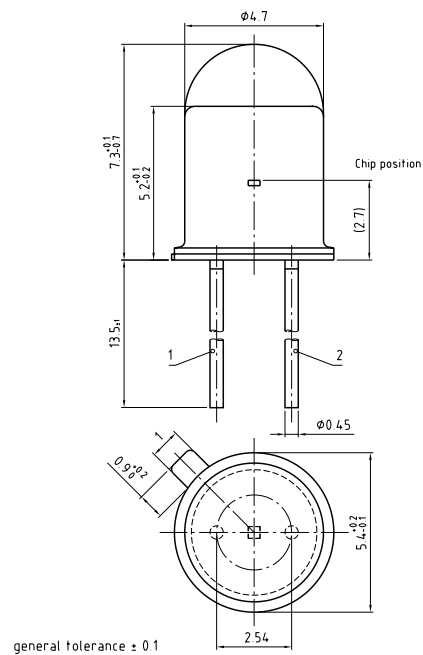


### Permissible Pulse Handling Capability

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



## Dimensional Drawing <sup>8)</sup>



C63062-A4266-A1-02

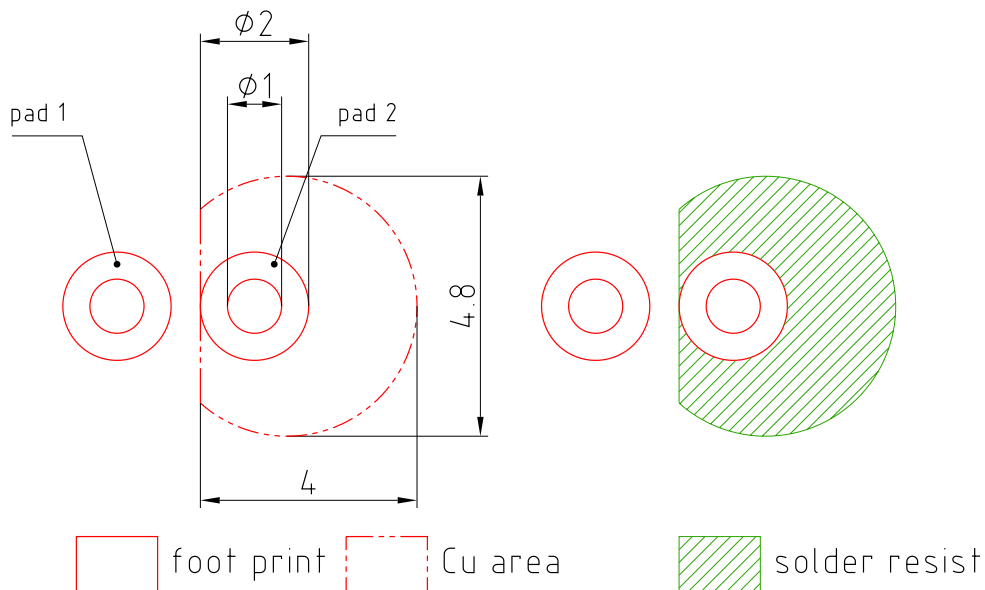
### Further Information:

**Approximate Weight:** 380.0 mg

**Package marking:** Cathode

Pin	Description
1	Cathode
2	Anode

**Recommended Solder Pad** <sup>8)</sup>

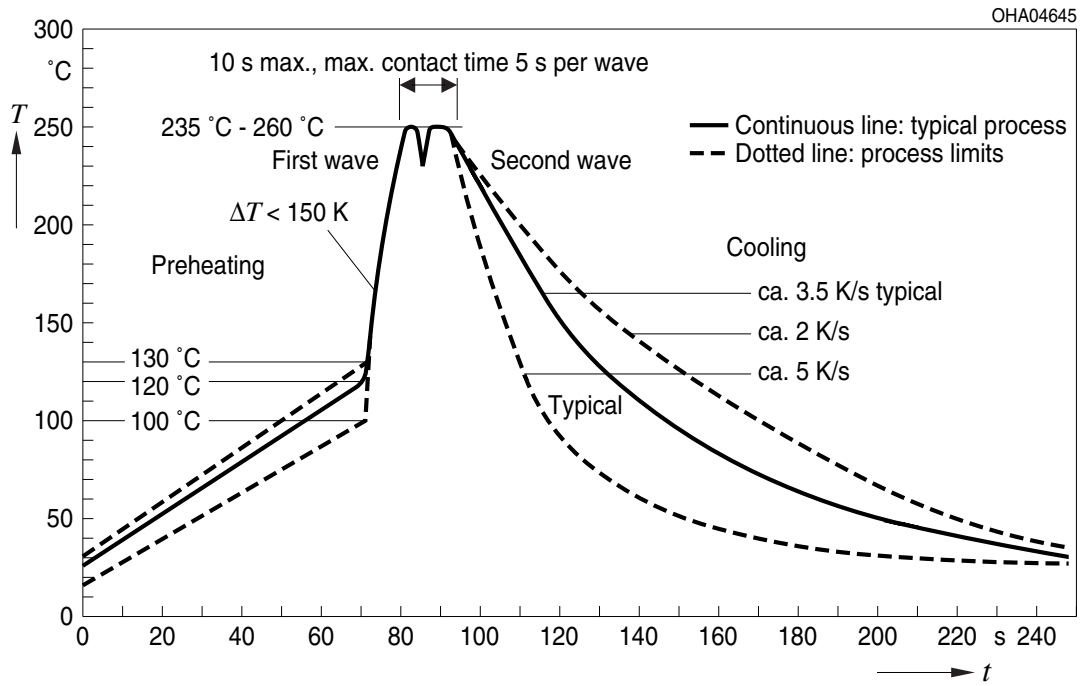


E062.3010.188-01

Pad 1: cathode

## TTW Soldering

IEC-61760-1 TTW



## Disclaimer

### **Attention please!**

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

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

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## Glossary

- 1) **Radiant intensity:** Measured at a solid angle of  $\Omega = 0.01$  sr
- 2) **Brightness:** The brightness values are measured with a tolerance of  $\pm 11\%$ .
- 3) **Reverse Operation:** Reverse Operation of 10 hours is permissible in total. Continuous reverse operation is not allowed.
- 4) **Forward Voltage:** The forward voltages are measured with a tolerance of  $\pm 0.1$  V.
- 5) **Total radiant flux:** Measured with integrating sphere.
- 6) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, 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:**  $T_A = 25^\circ\text{C}$  (unless otherwise specified)
- 8) **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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## Revision History

Version	Date	Change
1.4	2020-02-04	Ordering Information Characteristics

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