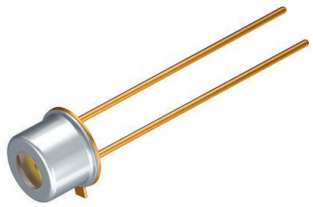
SFH 4860

TO18

GaAlAs Light Emitting Diode (660 nm)



Applications

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

Features:

- Package: hermetically sealed
- Fabricated in a liquid phase epitaxy process
- Cathode is electrically connected to the case
- High reliability
- Spectral match with silicon photodetectors

Ordering Information

Type	Radiant intensity [1] I_F = 50 mA; t_p = 20 ms I_e	Radiant intensity [1] typ. I_F = 50 mA; t_p = 20 ms I_e	Ordering Code
SFH 4860	0.63 ... 2.00 mW/sr	1.3 mW/sr	Q62702P5053

18 A3 DIN 870 (TO-18), flat glass cap, lead spacing 2.54 mm (1/10'')
anode making: projection at package bottom

Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 100 °C
Storage temperature	T_{stg}	min. max.	-40 °C 100 °C
Junction temperature	T_j	max.	125 °C
Reverse voltage [2)]	V_R	max.	12 V
Forward current	I_F	max.	50 mA
Surge current $t_p \leq 10$ µs; D = 0	I_{FSM}	max.	1 A
Power consumption	P_{tot}	max.	140 mW

Characteristics

I_F = 50 mA; t_p = 20 ms; T_A = 25 °C

Parameter	Symbol		Values
Peak wavelength	λ_{peak}	typ.	660 nm
Spectral bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	25 nm
Half angle	φ	typ.	50 °
Dimensions of active chip area	L x W	typ.	0.325 x 0.325 mm x mm
Rise time (10% / 90%) I_F = 50 mA; R_L = 50 Ω	t_r	typ.	100 ns
Fall time (10% / 90%) I_F = 50 mA; R_L = 50 Ω	t_f	typ.	100 ns
Forward voltage	V_F	typ. max.	2 V 2.8 V
Reverse current [2] V_R = 3 V	I_R	max. typ.	10 µA 0.01 µA
Total radiant flux [3]	Φ_e	typ.	3 mW
Radiant intensity [1] I_F = 1 A; t_p = 100 µs	I_e	typ.	15 mW/sr
Temperature coefficient of brightness	TC_I	typ.	-0.4 % / K
Temperature coefficient of voltage	TC_V	typ.	-3 mV / K
Temperature coefficient of wavelength	TC_λ	typ.	0.16 nm / K
Thermal resistance junction ambient real	R_{thJA}	max.	450 K / W
Thermal resistance junction case real	R_{thJC}	max.	160 K / W

Brightness Groups

T_A = 25 °C

Group	Radiant intensity I_F = 50 mA; t_p = 20 ms min. I_e	Radiant intensity I_F = 50 mA; t_p = 20 ms max. I_e
K	0.63 mW/sr	1.25 mW/sr
L	1.00 mW/sr	2.00 mW/sr

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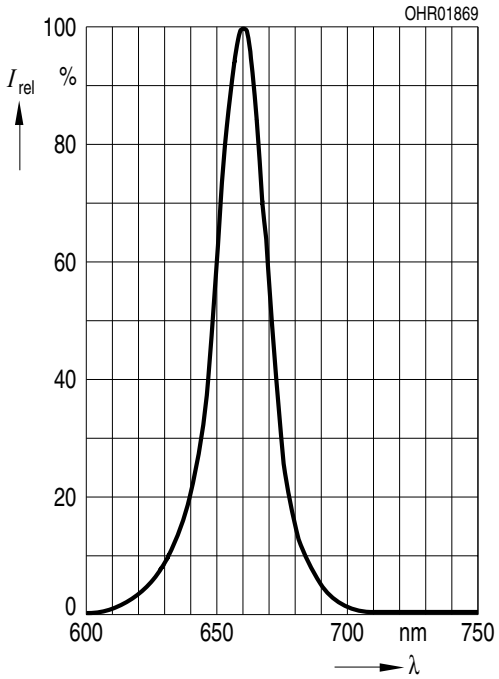
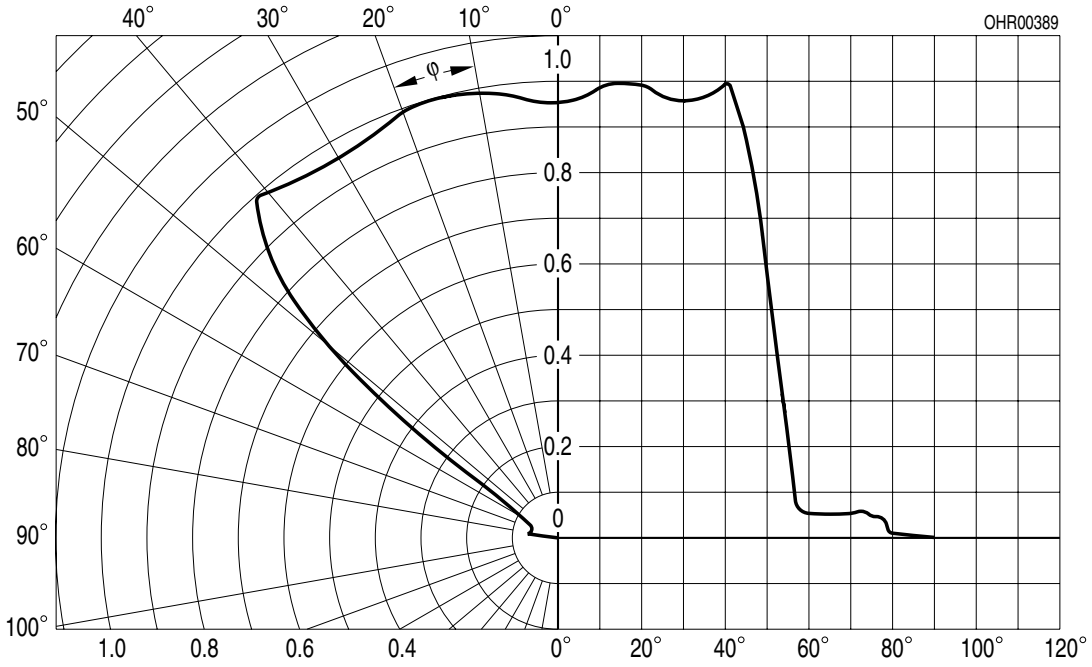
Relative Spectral Emission [4), 5)]

$I_{rel} = f(\lambda)$; $I_F = 50$ mA; $t_p = 20$ ms



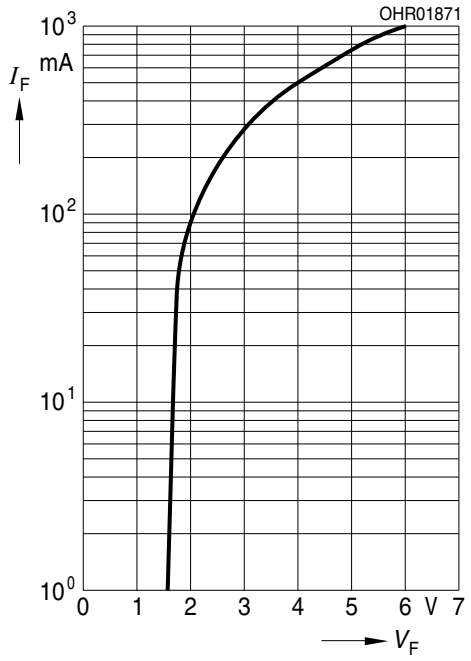
Radiation Characteristics [4), 5)]

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



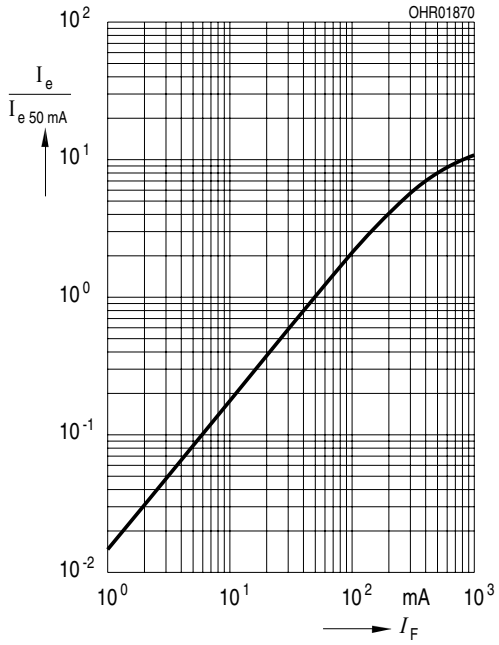
Forward current [4), 5)]

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



Relative Radiant Intensity [4), 5)]

$I_e/I_e(50mA) = f(I_F)$; single pulse; $t_p = 20\ \mu s$

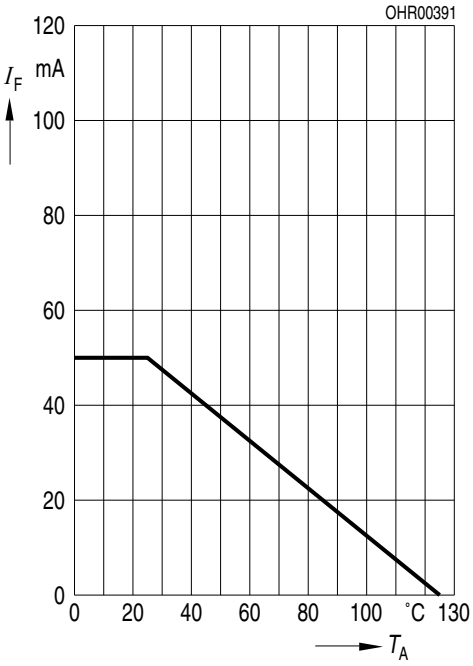


Max. Permissible Forward Current

$I_{F,max} = f(T_C)$; $R_{thJC} = 160\ K/W$

Max. Permissible Forward Current

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



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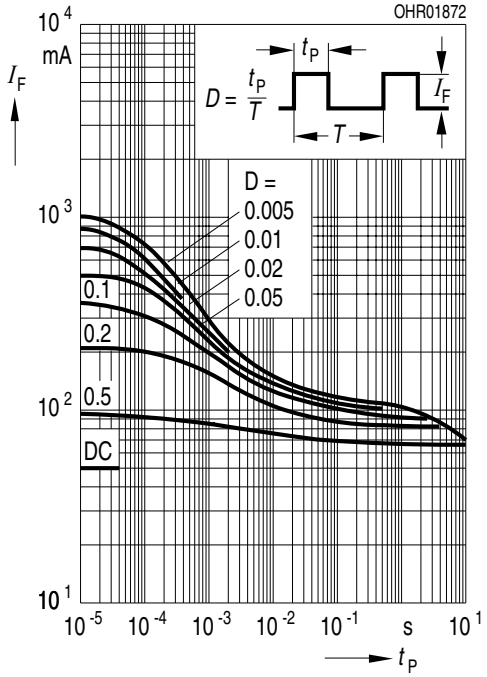
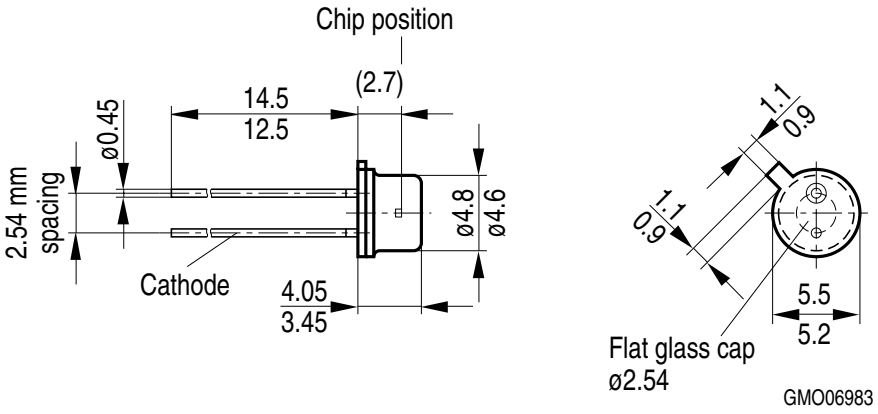
Permissible Pulse Handling Capability

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



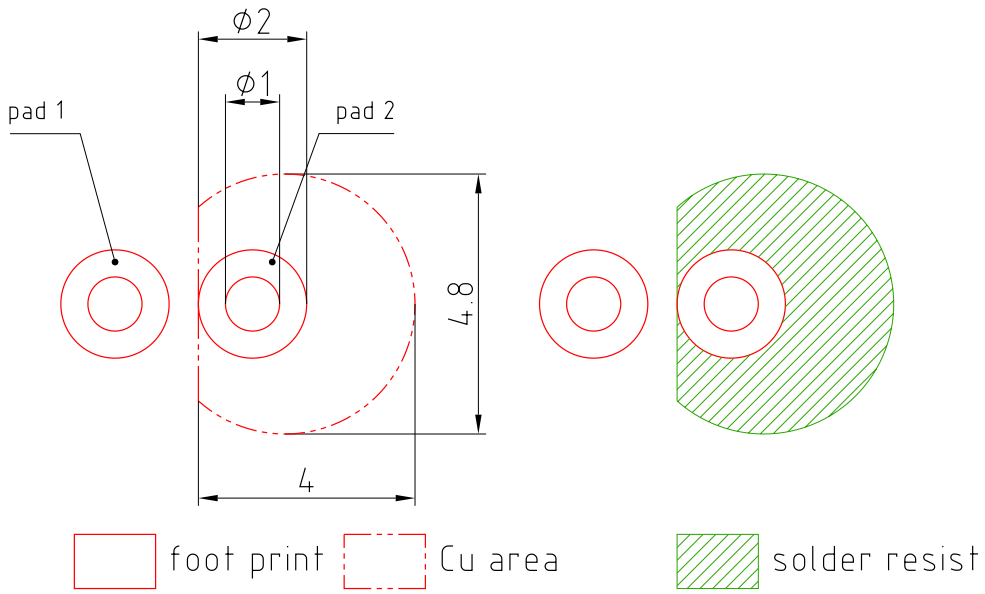
Dimensional Drawing [6)]



Approximate Weight: 330.0 mg

Package marking: Anode

Recommended Solder Pad [6)]



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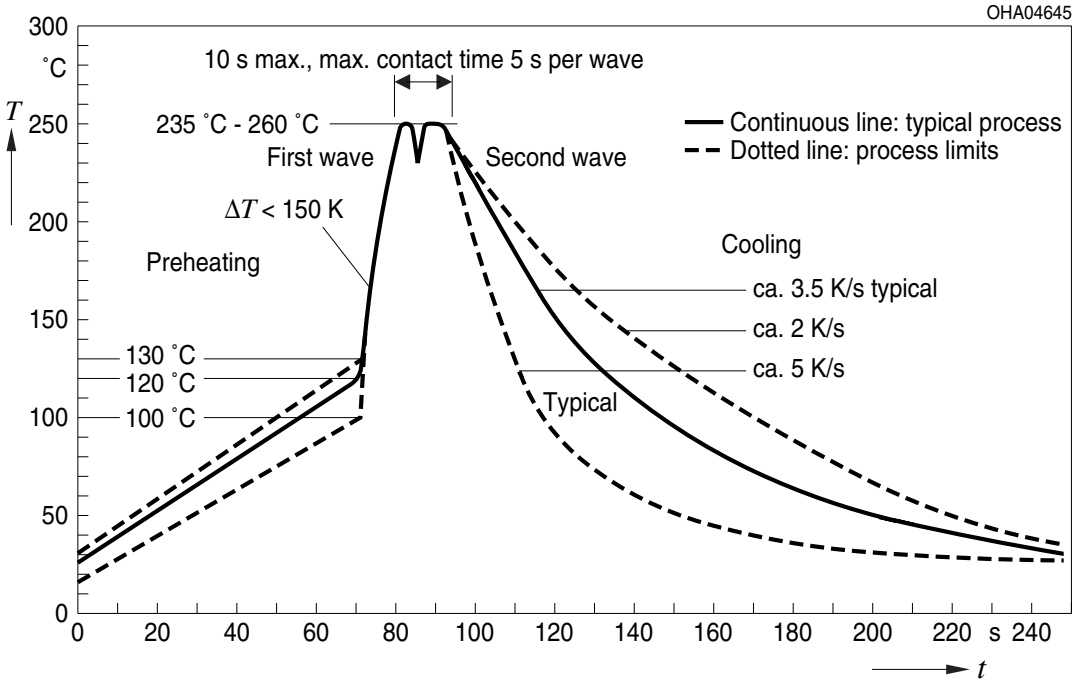
Pad 1: anode

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.

Based on very short life cycle times in chip technology this component is subject to frequent adaption to the latest chip technology.

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

Disclaimer

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

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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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