

# IRL 81 A

## Radial Sidelooker

High Power Infrared Emitter (850 nm)



## Applications

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

## Features:

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- High Power Infrared LED
- Pink plastic package with lateral emission
- Short switching times
- Matches phototransistor LPT 80 A

## Ordering Information

Type	Radiant intensity <sup>1)</sup> $I_F = 20 \text{ mA}; t_p = 20 \text{ ms}$ $I_e$	Radiant intensity <sup>1)</sup> typ. $I_F = 20 \text{ mA}; t_p = 20 \text{ ms}$ $I_e$	Ordering Code
IRL 81A-RS	10.0 ... 32.0 mW/sr	25 mW/sr	Q65112A2269
IRL 81A	6.3 ... 50.0 mW/sr	25 mW/sr	Q68000A8000

## Maximum Ratings

$T_A = 25\text{ °C}$

Parameter	Symbol	Values
Operating temperature	$T_{op}$	min. -40 °C max. 100 °C
Storage temperature	$T_{stg}$	min. -40 °C max. 100 °C
Reverse voltage <sup>2)</sup>	$V_R$	max. 12 V
Forward current	$I_F$	max. 100 mA
Surge current $t_p \leq 200\ \mu\text{s}; D = 0$	$I_{FSM}$	max. 1 A
Power consumption	$P_{tot}$	max. 180 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
Half angle	$\varphi$	typ.	12 °
Dimensions of active chip area	L x W	typ.	0.3 x 0.3 mm x 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 $I_F = 20 \text{ mA}$ ; $t_p = 20 \text{ ms}$	$V_F$	typ. max.	1.3 V 1.6 V
Forward voltage $I_F = 1 \text{ A}$ ; $t_p = 100 \text{ } \mu\text{s}$	$V_F$	typ. max.	2.4 V 3 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> $I_F = 20 \text{ mA}$ ; $t_p = 20 \text{ ms}$	$\Phi_e$	typ.	12 mW
Radiant intensity <sup>1)</sup> $I_F = 1 \text{ A}$ ; $t_p = 25 \text{ } \mu\text{s}$	$I_e$	typ.	1150 mW/sr
Temperature coefficient of brightness	$TC_I$	typ.	-0.5 % / K
Temperature coefficient of voltage	$TC_V$	typ.	-0.7 mV / K
Temperature coefficient of wavelength	$TC_\lambda$	typ.	0.3 nm / K
Thermal resistance junction ambient real	$R_{\text{thJA}}$	max.	380 K / W

### Brightness Groups

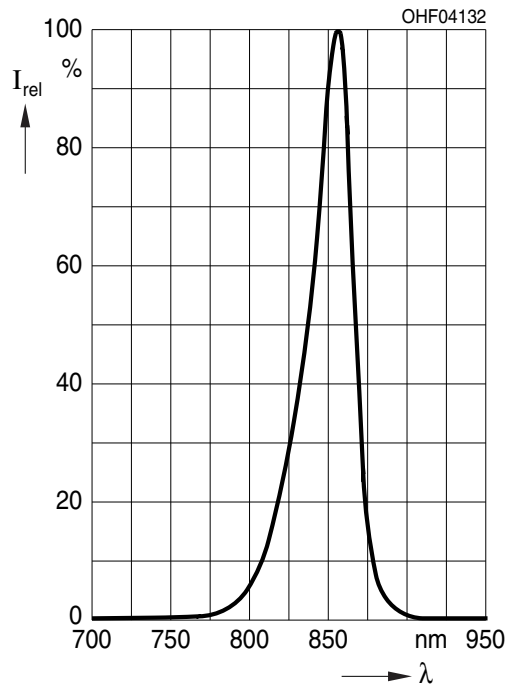
$T_A = 25\text{ °C}$

Group	Radiant intensity $I_F = 20\text{ mA}; t_p = 20\text{ ms}$ min. $I_e$	Radiant intensity $I_F = 20\text{ mA}; t_p = 20\text{ ms}$ 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
T	25.0 mW/sr	50.0 mW/sr

Only one group in one packing unit (variation lower 1.6:1).

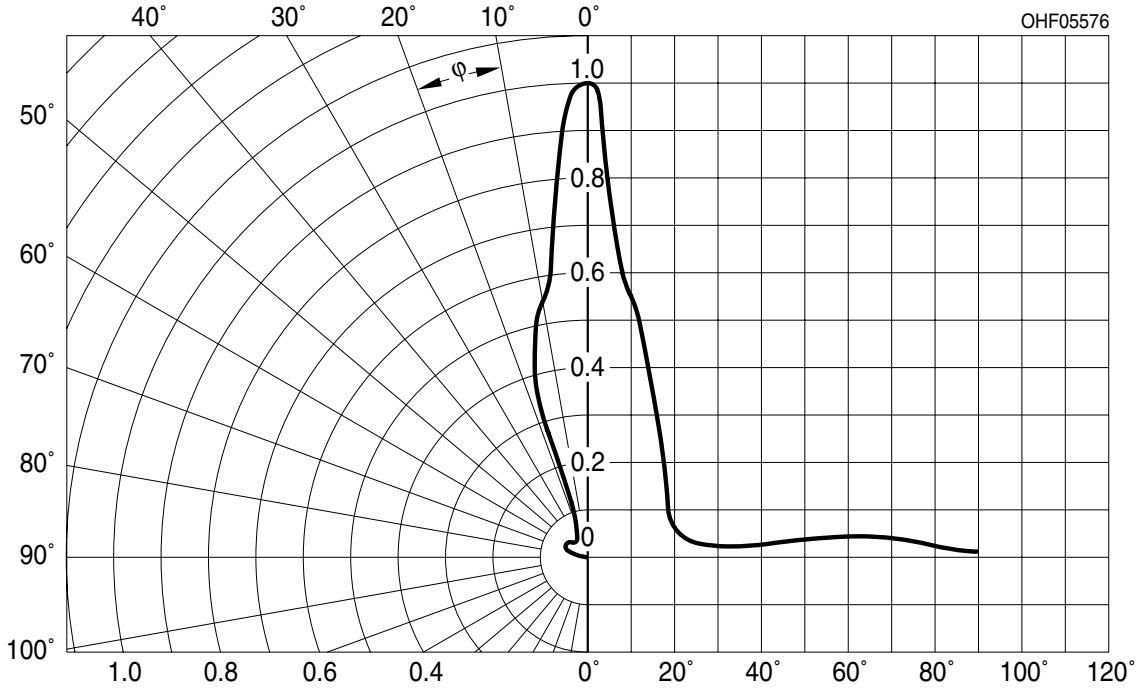
### Relative Spectral Emission <sup>4), 5)</sup>

$I_{rel} = f(\lambda);$



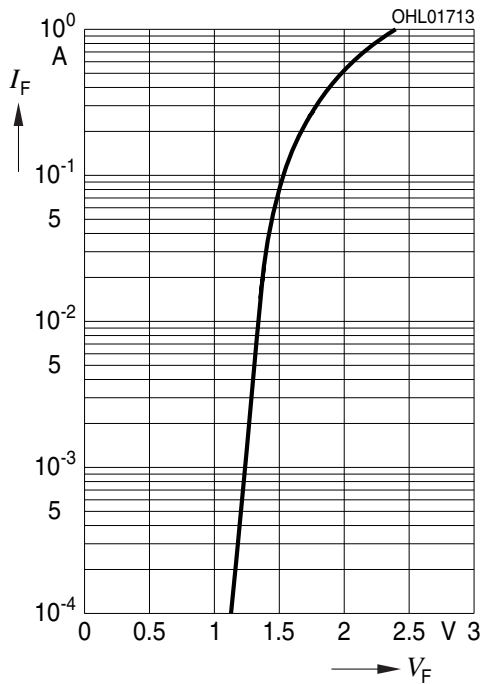
**Radiation Characteristics** 4), 5)

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



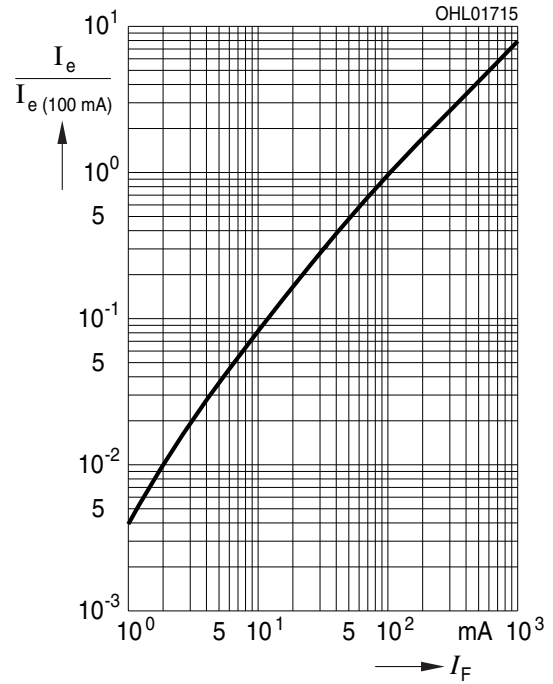
**Forward current** 4), 5)

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



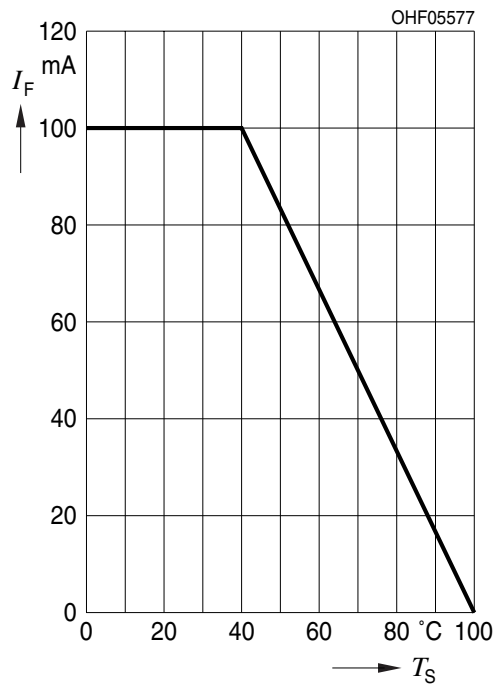
**Relative Radiant Intensity** 4), 5)

$I_e / I_e(100 \text{ mA}) = f(I_F)$ , single pulse,  $t_p = 25 \mu s$

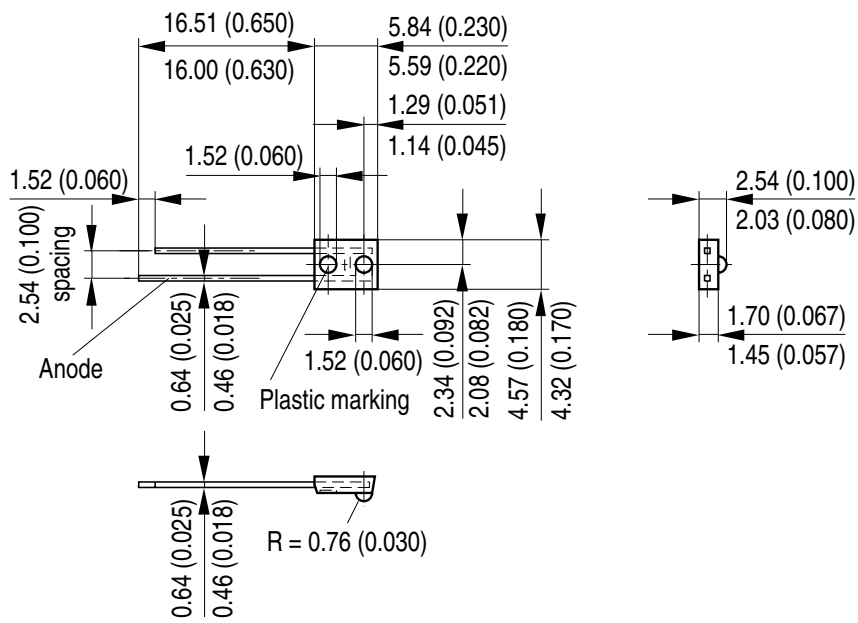


## Max. Permissible Forward Current

$$I_{F,max} = f(T_A); R_{thJA} = 375 \text{ K / W}$$



Dimensional Drawing <sup>6)</sup>



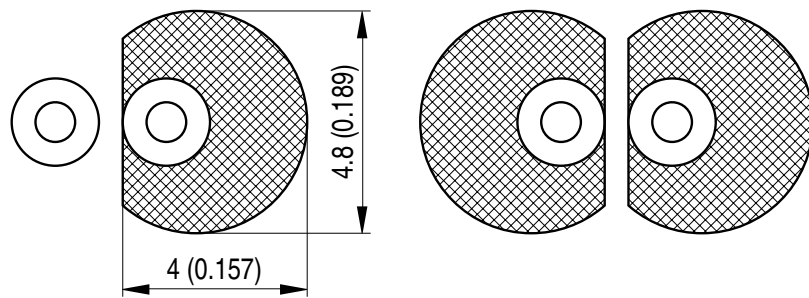
Approx. weight 0.2 g

GEOY6461

**Approximate Weight:** 157.0 mg

**Package marking:** Cathode

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



OHLPY985

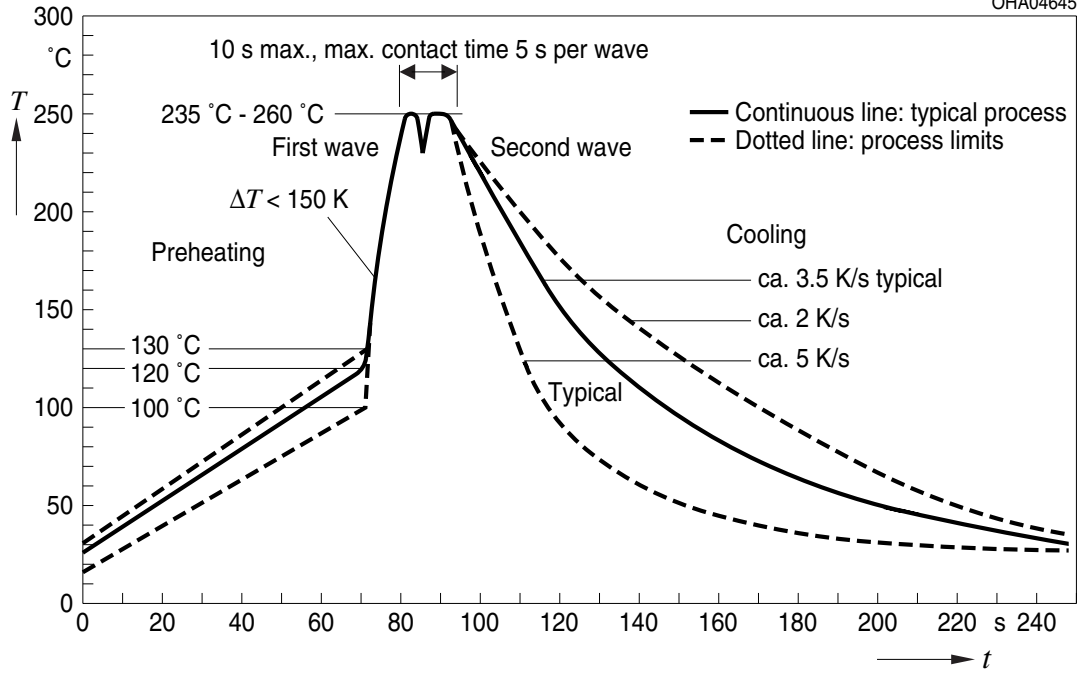
Dimensions in mm (inch).



## TTW Soldering

IEC-61760-1 TTW

OHA04645



## 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

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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  $\Omega = 0.01$  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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