SFH 229

Radial T1

Silicon PIN Photodiode with very short switching time

Applications

- Electronic Equipment
- Highbay Industrial
- Industrial Automation (Machine Controls, Light Barriers, Vision Controls)
- Smoke Detectors
- White Goods

Features:

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Especially suitable for applications from 380 nm to 1100 nm
- Short switching time (typ. 10 ns)
- 3 mm LED plastic package
- Also available on tape and reel

Ordering Information

Type	Photocurrent E_v = 1000 lx; Std. Light A; V_R = 5 V I_P	Photocurrent typ. E_v = 1000 lx; Std. Light A; V_R = 5 V I_P	Ordering Code
SFH 229	≥ 18 µA	28 µA	Q62702P0215

OSRAM
Opto Semiconductors

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
Reverse voltage	V_R	max.	20 V
Total power dissipation	P_{tot}	max.	150 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

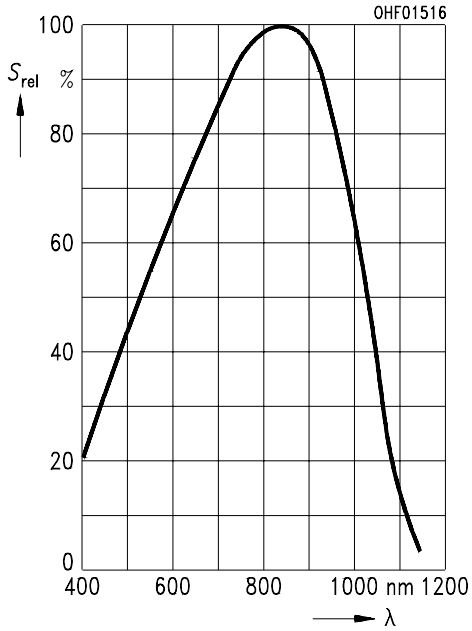
Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\ max}$	typ.	860 nm
Spectral range of sensitivity	$\lambda_{10\%}$	typ.	380 ... 1100 nm
Radiant sensitive area	A	typ.	0.31 mm²
Dimensions of active chip area	L x W	typ.	0.56 x 0.56 mm x mm
Half angle	φ	typ.	17 °
Dark current V_R = 10 V	I_R	typ. max.	0.05 nA 5 nA
Spectral sensitivity of the chip λ = 850 nm	S_λ	typ.	0.62 A / W
Quantum yield of the chip λ = 850 nm	η	typ.	0.90 Electrons / Photon
Open-circuit voltage E_v = 1000 lx; Std. Light A	V_O	min. typ.	400 mV 450 mV
Short-circuit current E_v = 1000 lx; Std. Light A	I_{SC}	typ.	27 µA
Rise time V_R = 10 V; R_L = 50 Ω; λ = 850 nm	t_r	typ.	0.01 µs
Fall time V_R = 10 V; R_L = 50 Ω; λ = 850 nm	t_f	typ.	0.01 µs
Forward voltage I_F = 100 mA; E = 0	V_F	typ.	1.3 V
Capacitance V_R = 0 V; f = 1 MHz; E = 0	C_0	typ.	13 pF
Temperature coefficient of voltage	TC_V	typ.	-2.6 mV / K
Temperature coefficient of short-circuit current Std. Light A	TC_I	typ.	0.18 % / K
Noise equivalent power V_R = 10 V; λ = 850 nm	NEP	typ.	0.006 pW / $Hz^{1/2}$
Detection limit V_R = 10 V; λ = 850 nm	D*	typ.	8.7e12 cm x $Hz^{1/2}$ / W

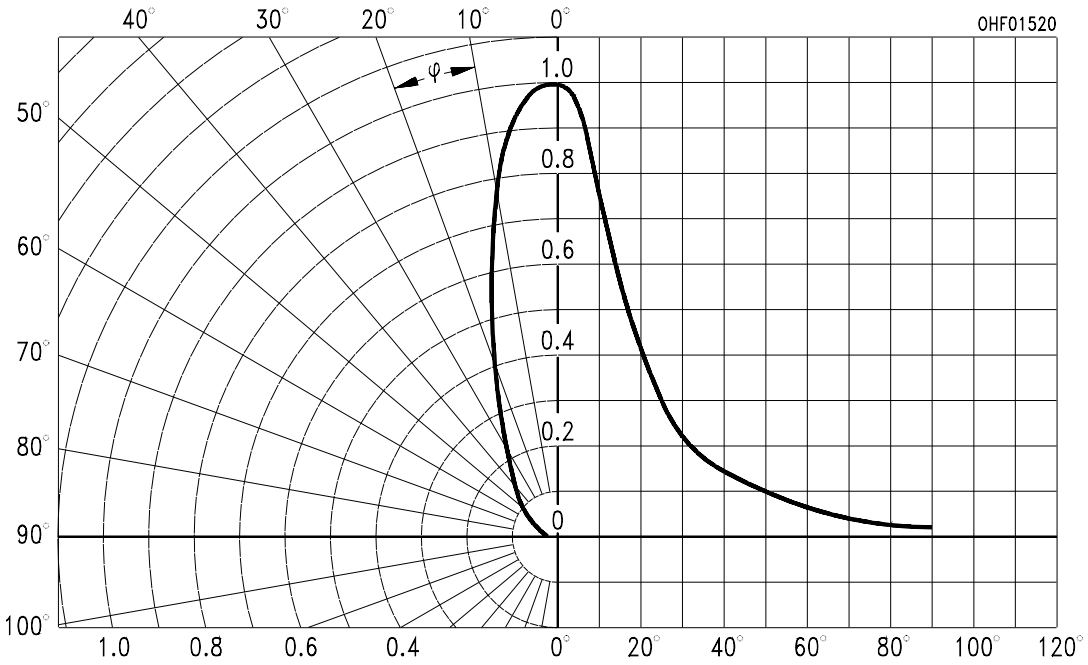
Relative Spectral Sensitivity [1), 2)]

$S_{rel} = f(\lambda)$



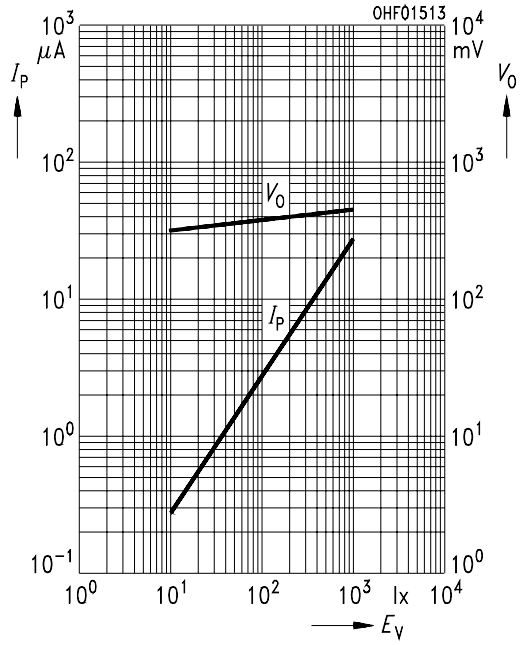
Directional Characteristics [1), 2)]

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



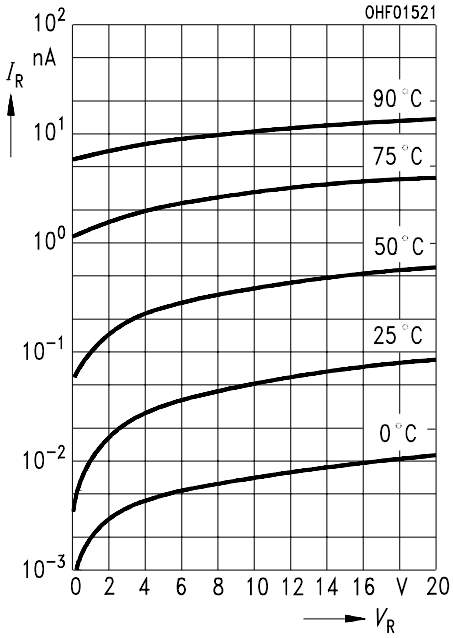
Photocurrent/Open-Circuit Voltage [1), 2)]

I_P (V_R = 5 V) / V_O = f (E_v)



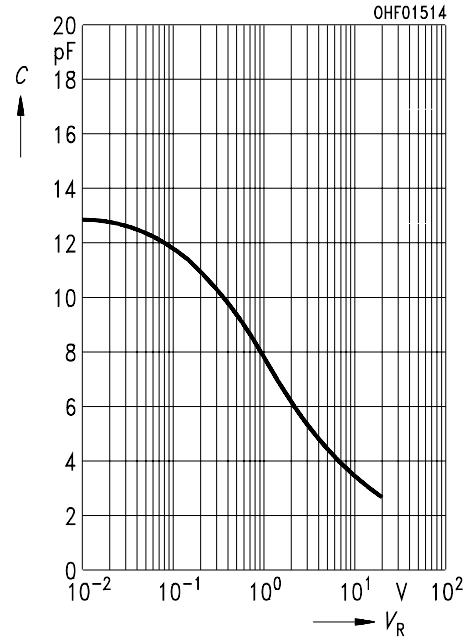
Dark Current [1), 2)]

I_R = f (V_R) ; E = 0



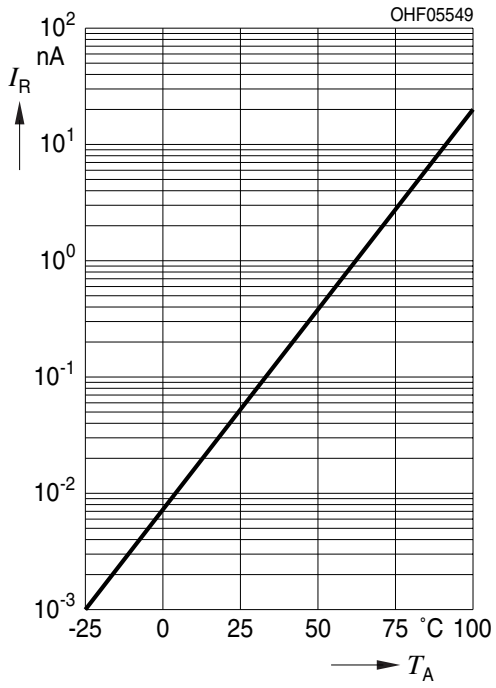
Capacitance [1), 2)]

C = f (V_R); f = 1 MHz; E = 0;



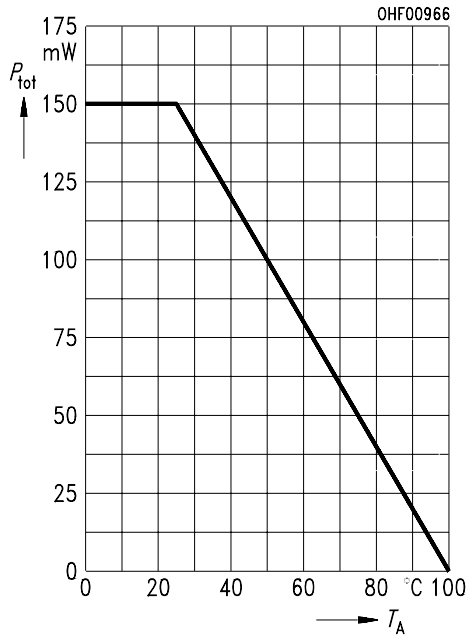
Dark Current [2)]

$I_R = f(T_A)$; E = 0; V_R = 10 V

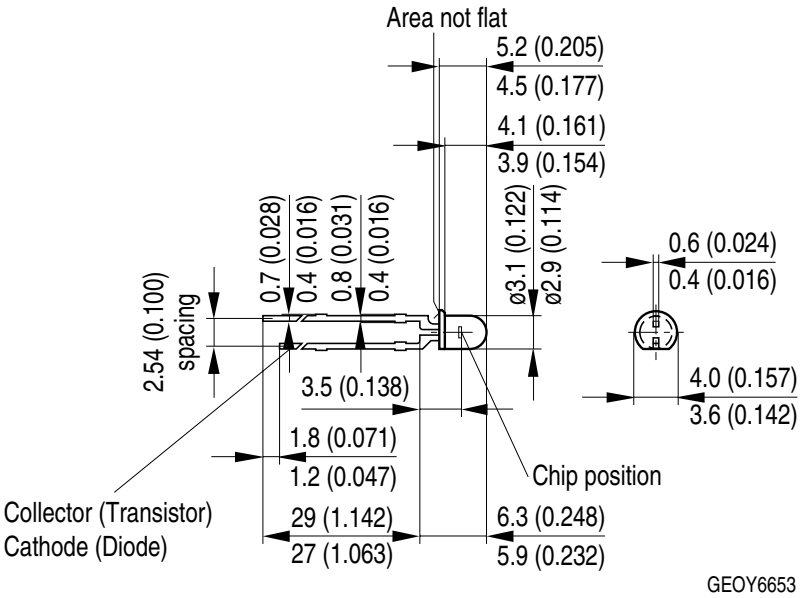


Power Consumption

$P_{tot} = f(T_A)$;



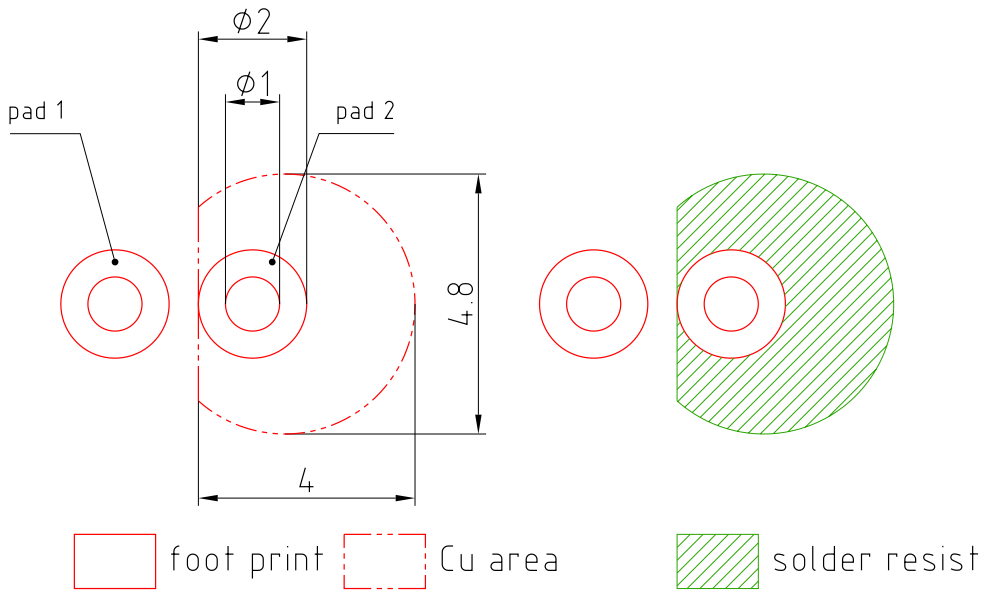
Dimensional Drawing [3)]



Approximate Weight: 156.0 mg

Package marking: Cathode

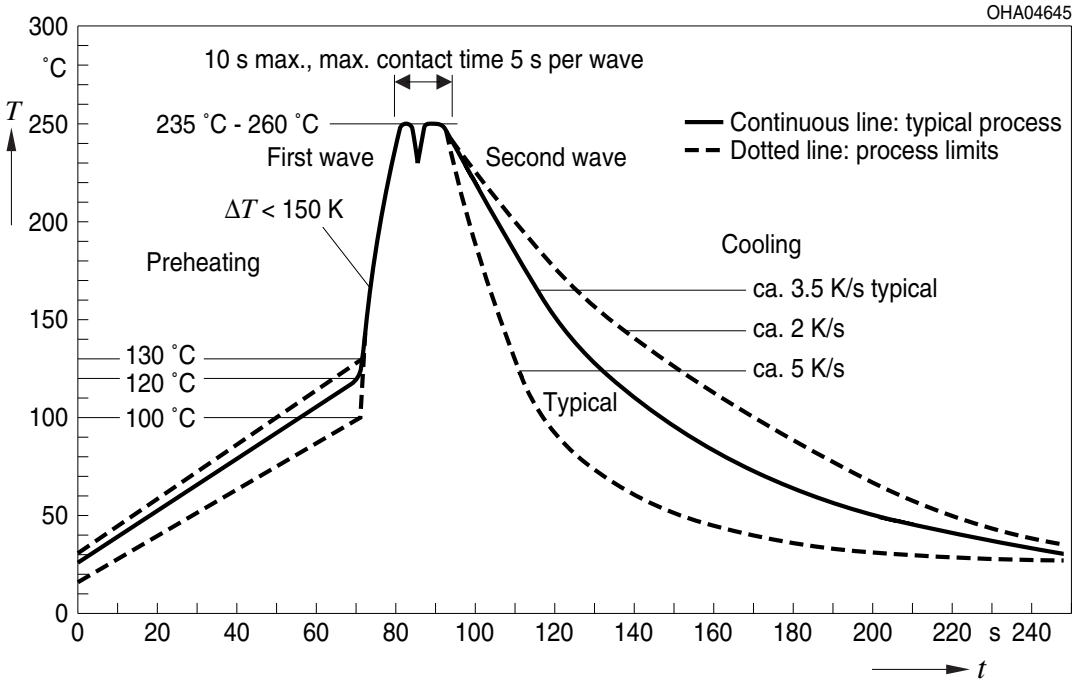
Recommended Solder Pad [3)]



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 device specified in this data sheet falls 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.

Packing information is available on the internet (online product catalog).

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) **Testing temperature**: T_A = 25°C

2) **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.

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

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EU RoHS and China RoHS compliant product

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