OSRAM SFH 2504

Datasheet

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OSRAM

Radial T1 3/4

SFH 2504

Silicon PIN Photodiode with integrated Temperature Sensor

Applications

- Access Control & Security
- Appliances & Tools

Features

- Package: black epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Especially suitable for applications from 740 nm to 1100 nm
- 5 mm LED plastic package
- Integrated NTC thermistor, R_{25}=10kΩ

Ordering Information

Type	Photocurrent [1]	Photocurrent	Ordering Code
	E_e = 1 mW/cm²; λ = 870 nm; V_R = 5 V	typ. E_e = 1 mW/cm²; λ = 870 nm; V_R = 5 V	
	I_P	I_P	
SFH 2504 AN23	≥ 2.1 µA	2.7 µA	Q65110A3986

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.	30 V
Total power dissipation	P_{tot}	max.	30 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

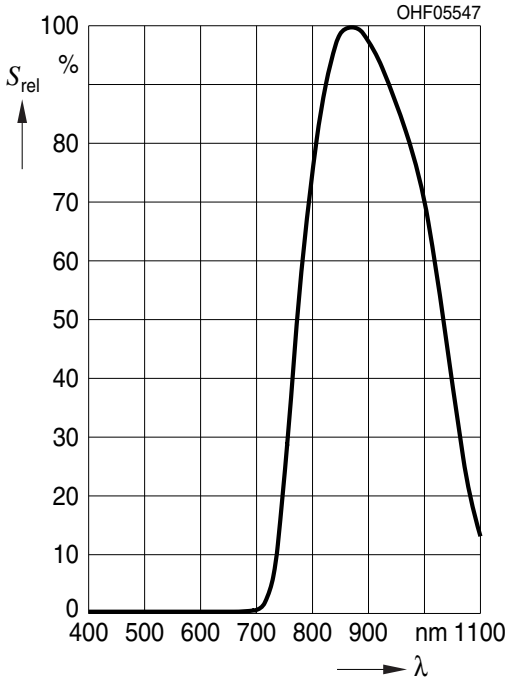
Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\ max}$	typ.	870 nm
Spectral range of sensitivity	$\lambda_{10\%}$	typ.	740 ... 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.	60 °
Dark current V_R = 10 V	I_R	typ. max.	0.05 nA 5 nA
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.	1.2 V
Capacitance V_R = 0 V; f = 1 MHz; E = 0	C_0	max.	13 pF
Temperature coefficient of voltage	TC_V	typ.	-2.6 mV / K
Resistance Thermistor (EPCOS B57860S0103A002)	R_{25}	typ.	10 kΩ
Tolerance of resistance Thermistor (EPCOS B57860S0103A002)	R_{tol}	typ.	3 %
Rated temperature Thermistor (EPCOS B57860S0103A002)	T_n	typ.	25 °C

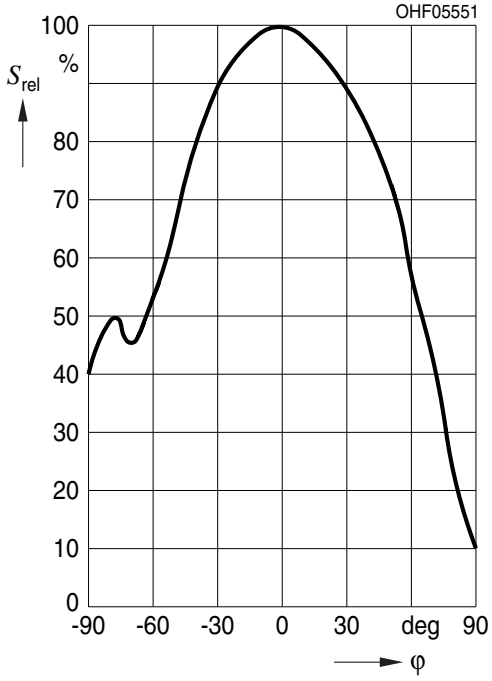
Relative Spectral Sensitivity [2], [3]

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



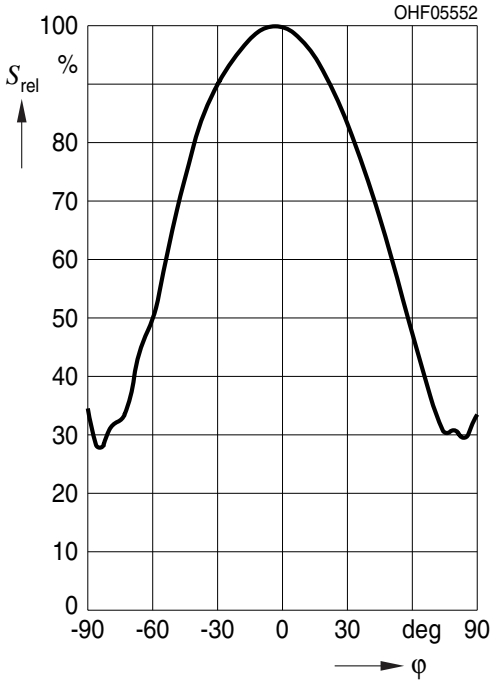
Directional Characteristics [2], [3]

$S_{rel} = f(\varphi)$ perpendicular to leads



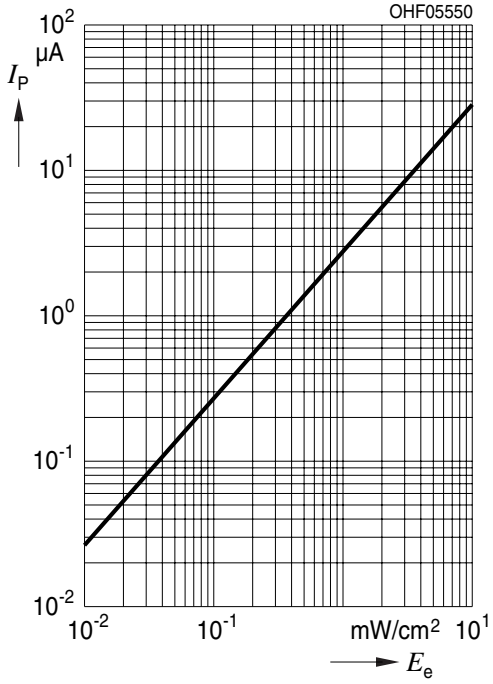
Directional Characteristics 2), 3)

$S_{rel} = f(\varphi)$ parallel to leads



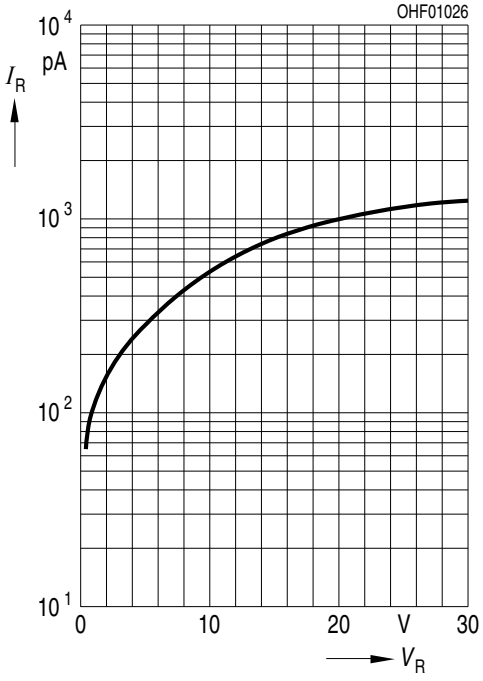
Photocurrent 2), 3)

$I_P = f(E_e)$; λ = 870 nm; V_R = 5 V



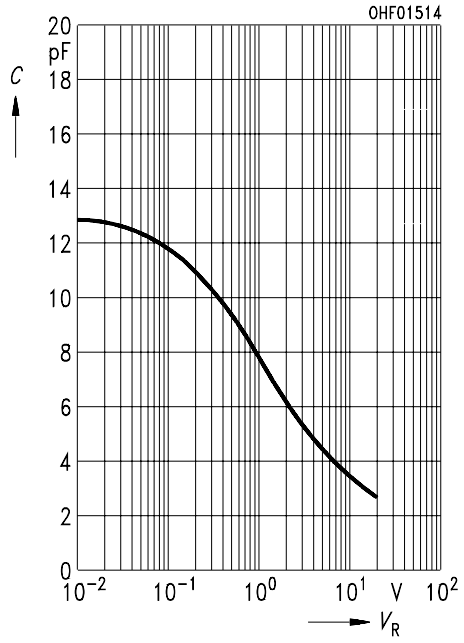
Dark Current 2), 3)

$I_R = f(V_R)$; E = 0



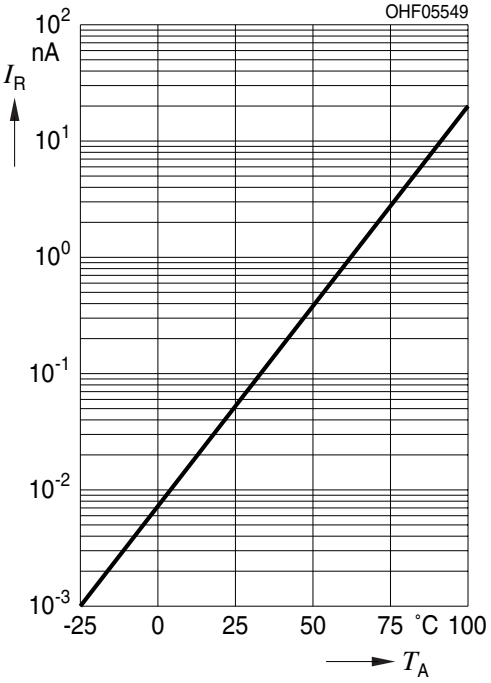
Capacitance [2], [3]

C = f (V_R); f = 1MHz; E = 0; T_A = 25°C



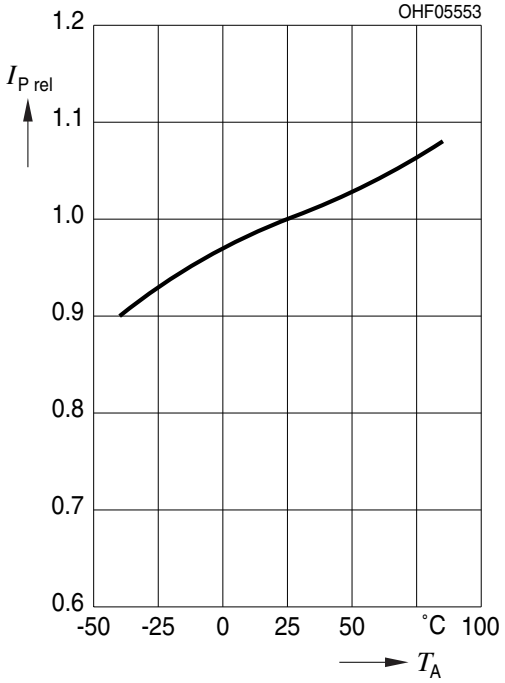
Dark Current [2]

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

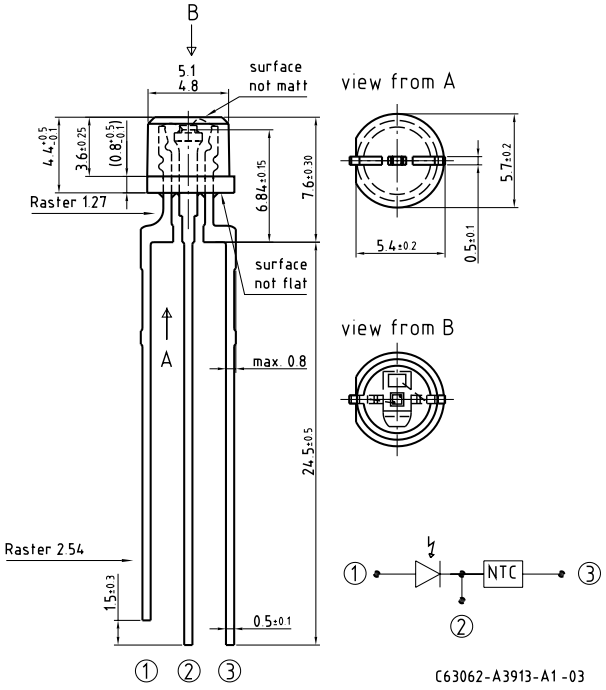


Photocurrent

$I_P/I_P(25°C)$ = f(T_A), λ = 870 nm, V_{CE} = 5 V



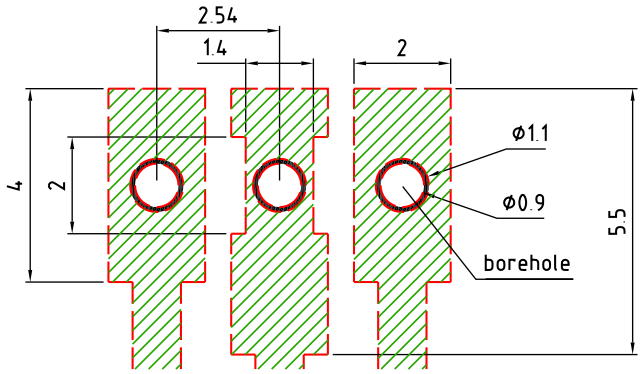
Dimensional Drawing [4)]



Further Information:

Approximate Weight: 337.0 mg

Recommended Solder Pad [4)]



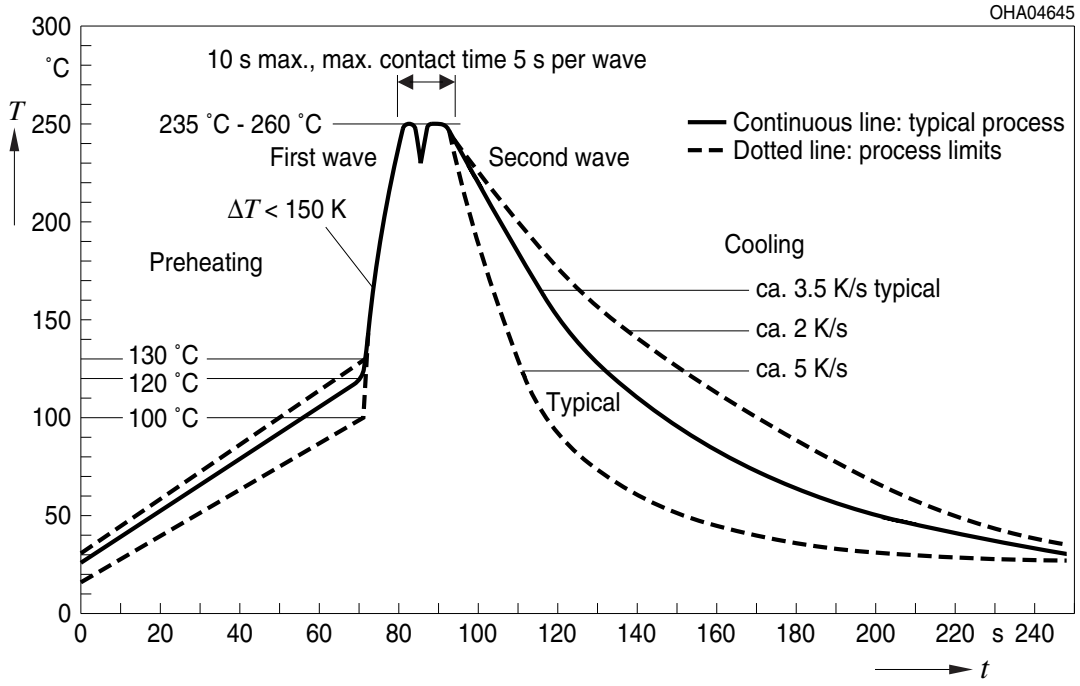
Cu area appr. 8mm² per pad and side with solder resist

Cu without solder resist

E062.3010.24-01

TTW Soldering

IEC-61760-1 TTW



Notes

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

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

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

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.
If printed or downloaded, please find the latest version on our website.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Product and functional safety devices/applications or medical devices/applications

Our components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.
Our products are not qualified at module and system level for such application.

In case buyer – or customer supplied by buyer – considers using our components in product safety devices/ applications or medical devices/applications, buyer and/or customer has to inform our local sales partner immediately and we and buyer and /or customer will analyze and coordinate the customer-specific request between us and buyer and/or customer.

Glossary

1) **Photocurrent:** The photocurrent values are measured (by irradiating the devices with a homogenous light source and applying a voltage to the device) with a tolerance of ±11 %.

2) **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.

3) **Testing temperature:** TA = 25°C (unless otherwise specified)

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

Revision History

Version	Date	Change
1.5	2022-08-11	Applications New Layout

EU RoHS and China RoHS compliant product
此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，
不含有毒有害物质或元素。

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