OSRAM BPX 38

Datasheet

Discontinued

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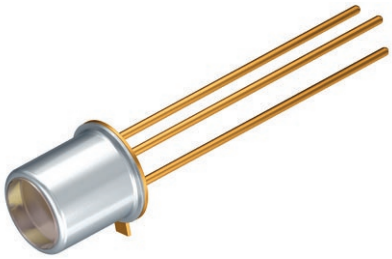
OSRAM

Metal Can® TO18

BPX 38

Silicon NPN Phototransistor



Applications

- Industrial Automation (Machine Controls, Light Barriers, Vision Controls)

Features

- Package: hermetically sealed
- Spectral range of sensitivity: (typ) 450 ... 1120 nm
- Base connection
- Suitable up to 125 °C
- High linearity
- Available in groups

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Ordering Information

Type	Photocurrent [1] V_{CE} = 5 V; λ = 950 nm; E_e = 0.5 mW/cm² I_{PCE}	Ordering Code
BPX 38	224 ... 900 µA	Q62702P0015
BPX 38-3	355 ... 560 µA	Q62702P0015S003
BPX 38-4	560 ... 900 µA	Q62702P0015S004
BPX 38-2/3	224 ... 560 µA	Q62702P3578

Only one bin within one packing unit (variation less than 2:1)

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Maximum Ratings

T_A = 25 °C

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 125 °C
Storage temperature	T_{stg}	min. max.	-40 °C 125 °C
Collector-emitter voltage	V_{CE}	max.	50 V
Collector current	I_C	max.	50 mA
Collector surge current τ ≤ 10 µs	I_{CS}	max.	200 mA
Emitter-basis voltage	V_{EB}	max.	7 V
Total power dissipation	P_{tot}	max.	220 mW

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Characteristics

T_A = 25 °C

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\ max}$	typ.	880 nm
Spectral range of sensitivity	$\lambda_{10\%}$	typ.	450 ... 1120 nm
Dimensions of chip area	L x W	typ.	1.02 x 1.02 mm x mm
Radiant sensitive area	A	typ.	0.675 mm²
Half angle	φ	typ.	40 °
Photocurrent V_{CE} = 5 V; Std. Light A; E_v = 1000 lx	I_{PCE}	typ.	1900 µA
Photocurrent of collector-base photodiode E_e = 0.5 mW/cm²; λ = 950 nm; V_{CB} = 5 V	I_{PCB}	typ.	1.8 µA
Photocurrent of collector-base photodiode E_v = 1000 lx; Std. Light A ; V_{CB} = 5 V	I_{PCB}	typ.	5.5 µA
Dark current V_{CE} = 5 V; E = 0	I_{CE0}	typ. max.	20 nA 100 nA
Rise time I_C = 1 mA; λ = 950 nm; V_{CC} = 5 V; R_L = 1 kΩ	t_r	typ.	12 µs
Fall time I_C = 1 mA; λ = 950 nm; V_{CC} = 5 V; R_L = 1 kΩ	t_f	typ.	12 µs
Collector-emitter saturation voltage [2)] $I_C = I_{PCE,min}$ X 0.3; λ = 950 nm; E_e = 0.5 mW/cm²	V_{CEsat}	typ.	200 mV
Capacitance V_{CE} = 0 V; f = 1 MHz; E = 0	C_{CE}	typ.	23 pF
Capacitance V_{CB} = 0 V; f = 1 MHz; E = 0	C_{CB}	typ.	39 pF
Capacitance V_{EB} = 0 V; f = 1 MHz; E = 0	C_{EB}	typ.	47 pF

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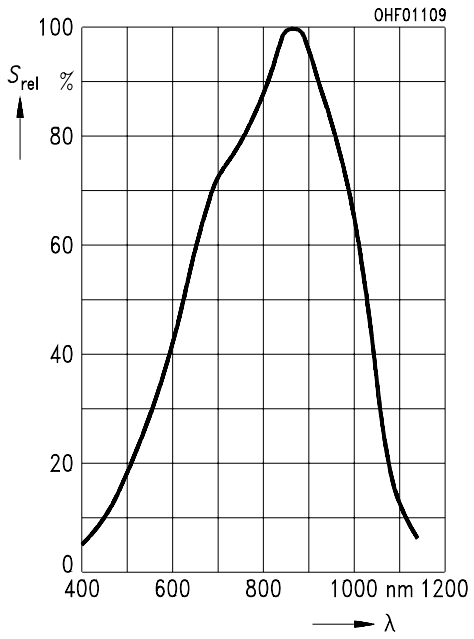
Photocurrent Groups

T_A = 25 °C

Group	Photocurrent [1] V_{CE} = 5 V; λ = 950 nm; E_e = 0.5 mW/cm² min. I_{PCE}	Photocurrent [1] V_{CE} = 5 V; λ = 950 nm; E_e = 0.5 mW/cm² max. I_{PCE}
2	224 µA	355 µA
3	355 µA	560 µA
4	560 µA	900 µA

Relative Spectral Sensitivity [3), 4)]

S_{rel} = f (λ)



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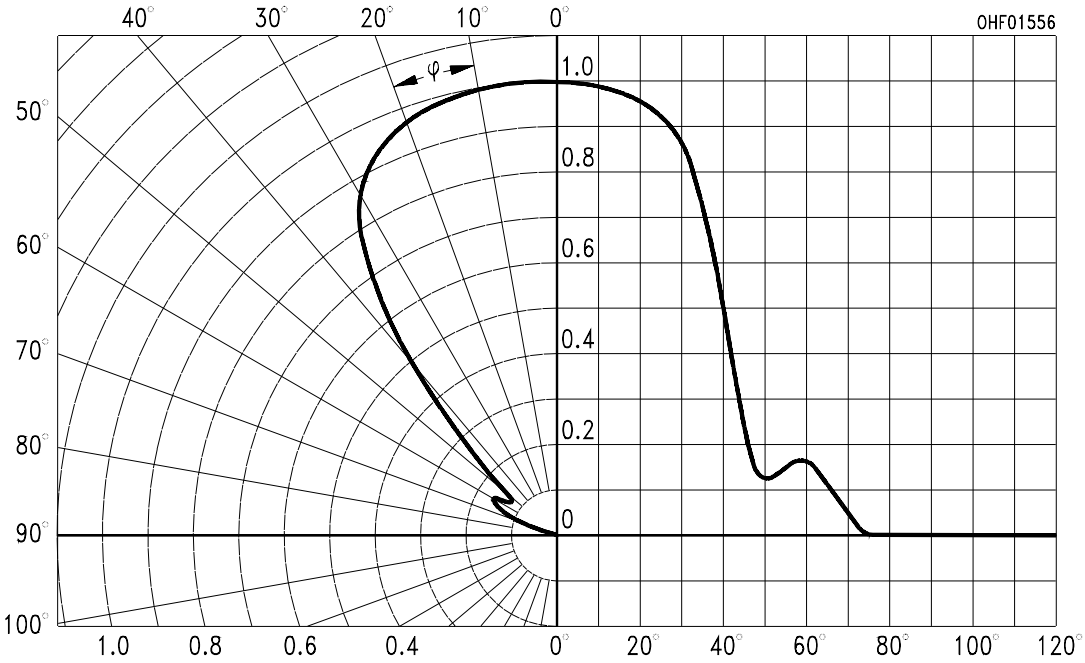
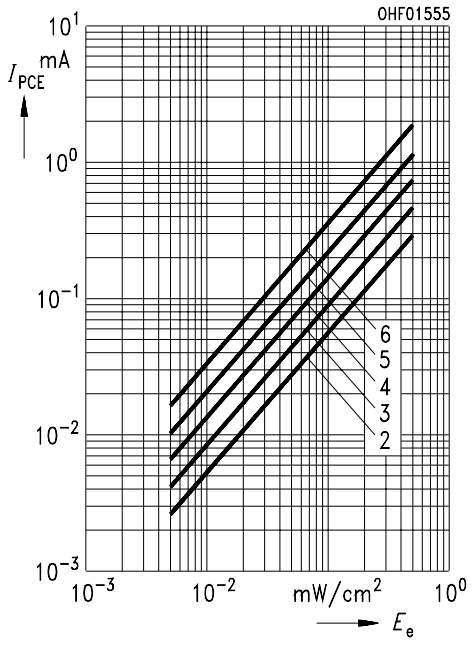
Directional Characteristics [3), 4)]

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



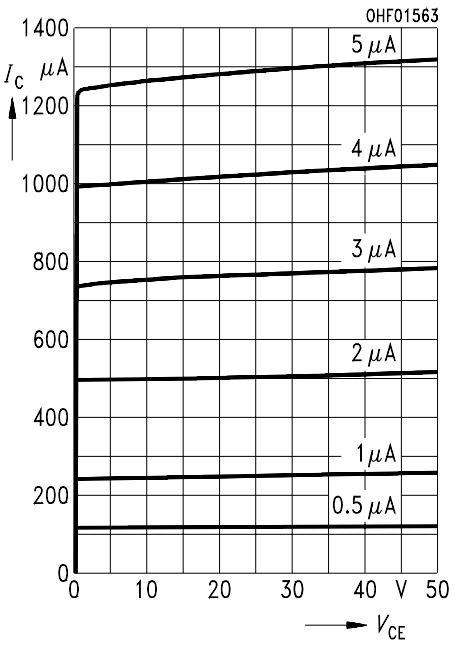
Photocurrent [3), 4)]

$I_{PCE} = f(E_e)$; $V_{CE} = 5$ V



Collector Current [3), 4)]

$I_{CE} = f(V_{CE})$; I_B = Parameter



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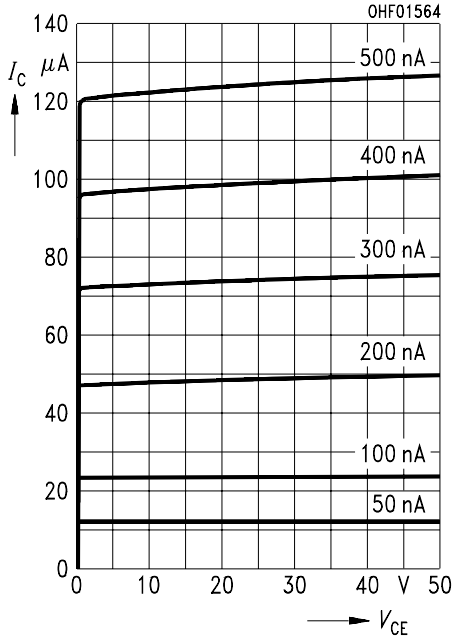
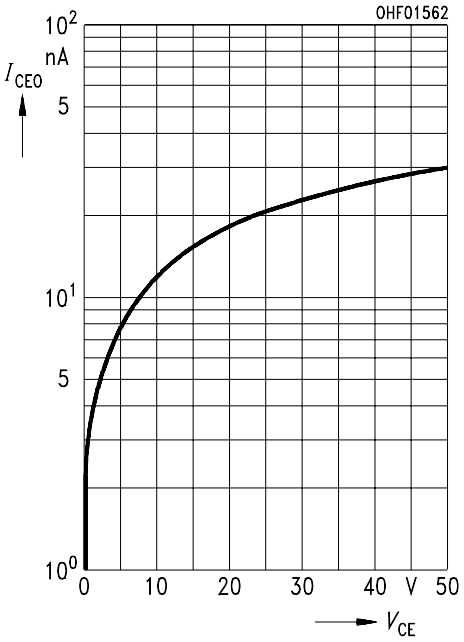
Collector Current [3), 4)]

$I_{CE} = f(V_{CE})$; I_B = Parameter



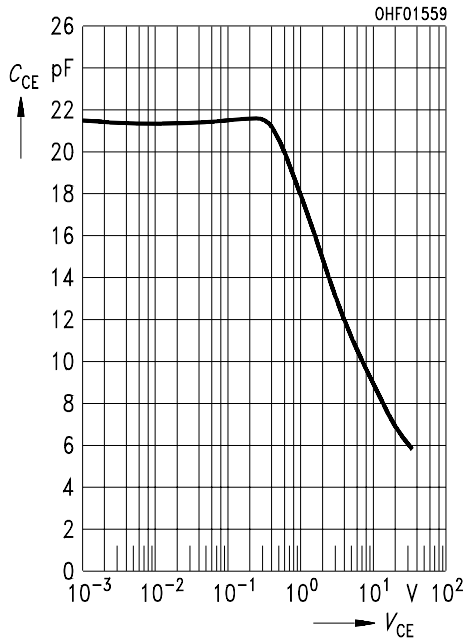
Dark Current [3), 4)]

$I_{CE0} = f(V_{CE})$; E = 0



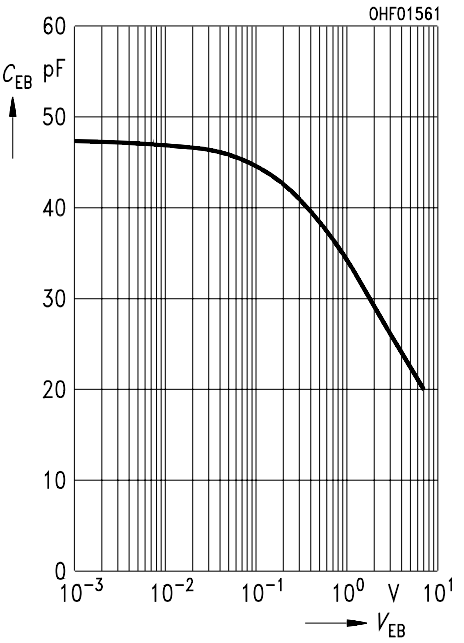
Collector-Emitter Capacitance [3), 4)]

$C_{CE} = f(V_{CE})$; f = 1 MHz; E = 0



Emitter-Base Capacitance [3), 4)]

$C_{EB} = f(V_{EB})$; f = 1 MHz; E = 0 ;



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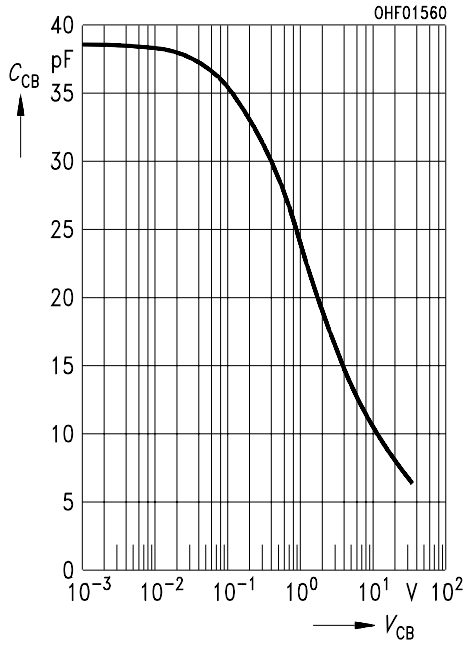
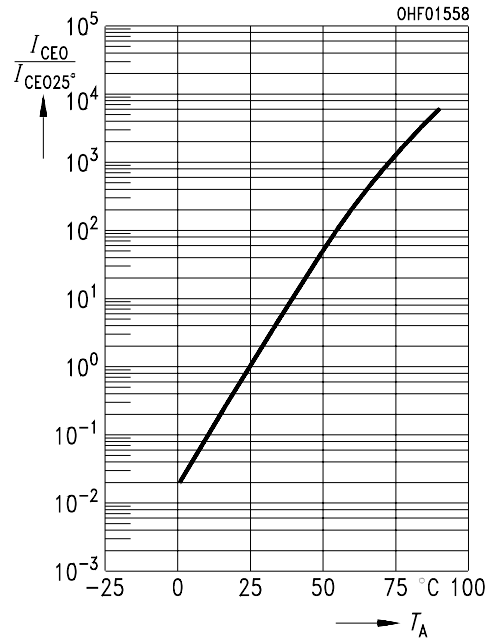
Collector-Base Capacitance [3), 4)]

$C_{CB} = f(V_{CB})$; f = 1 MHz; E = 0 ;



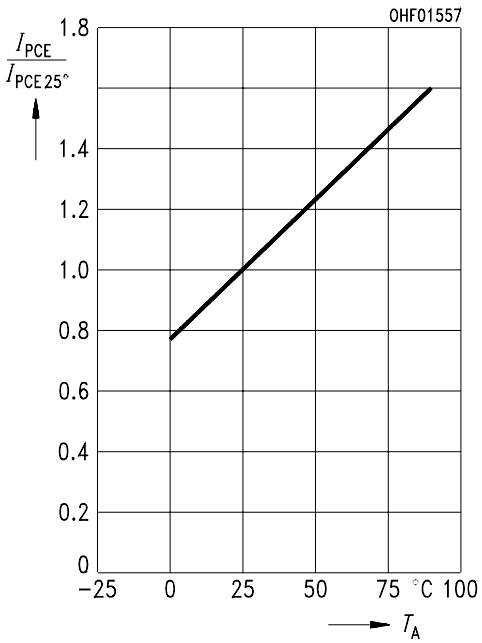
Dark Current [3)]

$I_{CE0,rel} = f(T_A)$; V_{CE} = 25 V; E = 0 ;



Photocurrent [3)]

$I_{PCE,rel} = f(T_A)$; V_{CE} = 5 V



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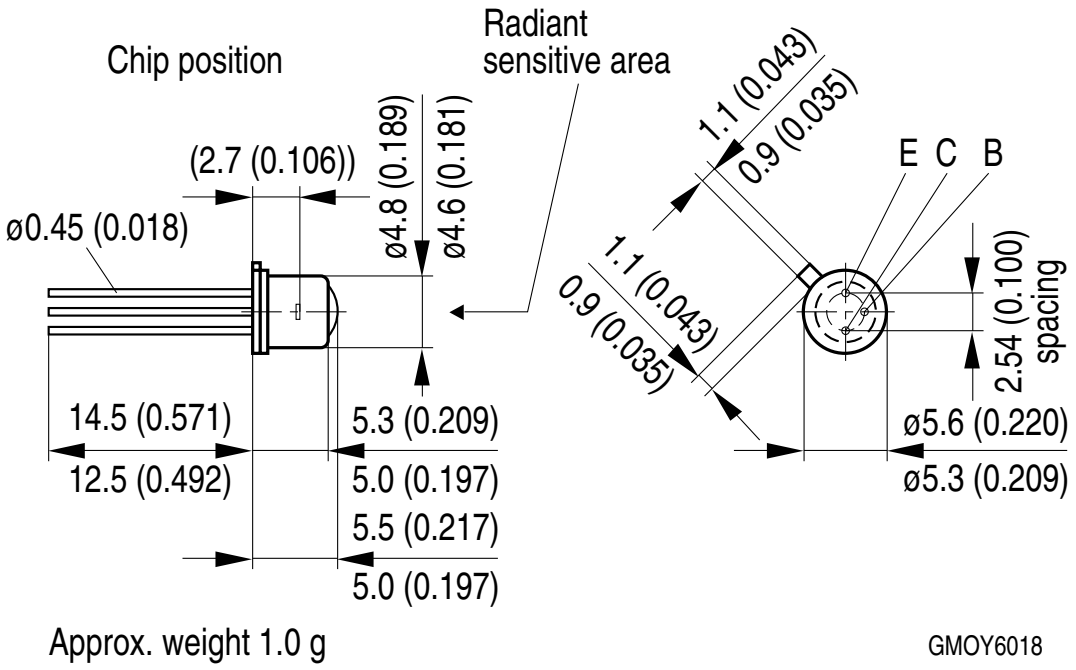
Dimensional Drawing [5)]



Further Information:

Approximate Weight: 332.0 mg

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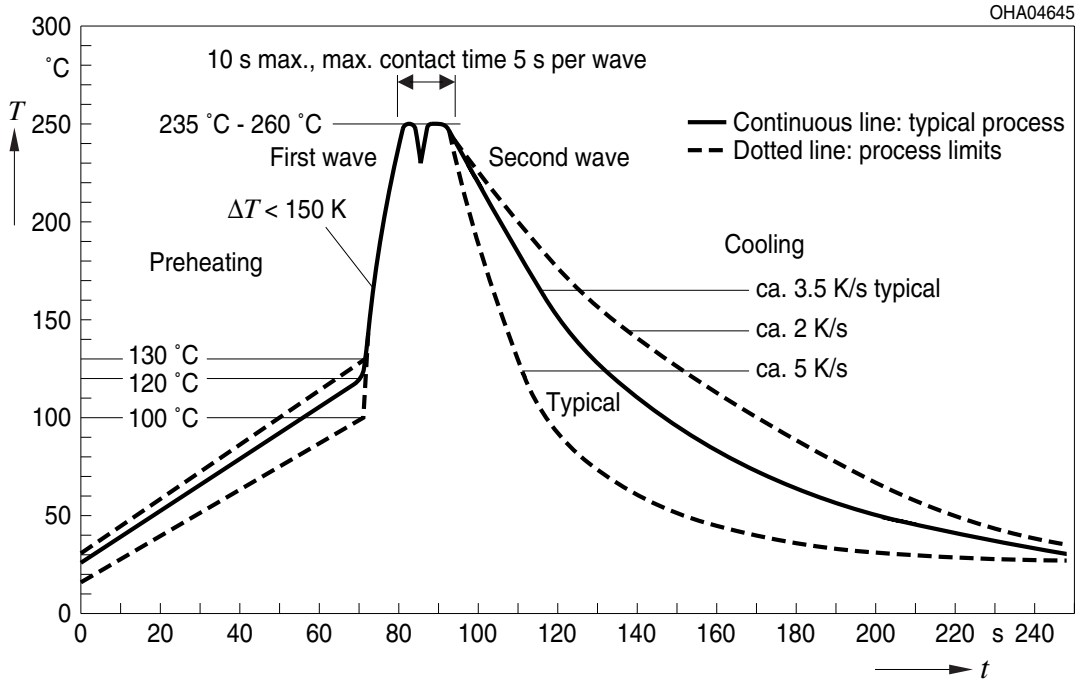
TTW Soldering

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 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.

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.

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

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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.

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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) **IPCEmin:** IPCEmin is the min. photocurrent of the specified group.

3) **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.

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

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

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Revision History

Version	Date	Change
1.4	2019-09-13	Characteristics
1.5	2022-03-02	New Layout Discontinued

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