

OSRAM BPX 81

Datasheet

Discontinued

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Array Mini

BPX 81

Silicon NPN Phototransistor



Applications

- Factory Automation

Features

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- Spectral range of sensitivity: (typ) 450 ... 1100 nm
- One-digit array package
- High linearity
- Available in groups

Ordering Information

Type	Photocurrent ¹⁾ $V_{CE} = 5 \text{ V}; \lambda = 950 \text{ nm}; E_e = 0.5 \text{ mW/cm}^2$ I_{PCE}	Ordering Code
BPX 81	280 ... 1120 μA	Q62702P0020
BPX 81-3	450 ... 710 μA	Q62702P0043S003
BPX 81-4	710 ... 1120 μA	Q62702P0043S004
BPX 81-2/3	280 ... 710 μA	Q62702P3583
BPX 81-3/4	450 ... 1120 μA	Q62702P3584

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

Maximum Ratings

$T_A = 25\text{ °C}$

Parameter	Symbol		Values
Operating temperature	T_{op}	min. max.	-40 °C 80 °C
Storage temperature	T_{stg}	min. max.	-40 °C 80 °C
Collector-emitter voltage	V_{CE}	max.	35 V
Collector current	I_C	max.	50 mA
Collector surge current $\tau \leq 10\ \mu\text{s}$	I_{CS}	max.	200 mA
Emitter-collector voltage	V_{EC}	max.	7 V
Total power dissipation	P_{tot}	max.	90 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)	V_{ESD}	max.	2 kV

Characteristics

$T_A = 25\text{ °C}$

Parameter	Symbol		Values
Wavelength of max sensitivity	$\lambda_{S\ max}$	typ.	850 nm
Spectral range of sensitivity	$\lambda_{10\%}$	typ.	450 ... 1100 nm
Dimensions of chip area	L x W	typ.	0.55 x 0.55 mm x mm
Radiant sensitive area	A	typ.	0.11 mm ²
Half angle	φ	typ.	18 °
Photocurrent $V_{CE} = 5\text{ V}$; Std. Light A; $E_v = 1000\text{ lx}$	I_{PCE}	typ.	1900 μA
Dark current $V_{CE} = 5\text{ V}$	I_{CE0}	typ. max.	1 nA 50 nA
Rise time $I_C = 1\text{ mA}$; $\lambda = 0\text{ nm}$; $V_{CC} = 5\text{ V}$; $R_L = 1\text{ k}\Omega$	t_r	typ.	7 μs
Fall time $I_C = 1\text{ mA}$; $\lambda = 0\text{ nm}$; $V_{CC} = 5\text{ V}$; $R_L = 1\text{ k}\Omega$	t_f	typ.	7 μs
Collector-emitter saturation voltage ²⁾ $I_C = I_{PCE,\min} \times 0.3$; $\lambda = 950\text{ nm}$; $E_e = 0.5\text{ mW/cm}^2$; $E_v = 0\text{ lx}$; 0	V_{CEsat}	typ.	150 mV
Capacitance $V_{CE} = 0\text{ V}$; $f = 1\text{ MHz}$; $E = 0$	C_{CE}	typ.	7.5 pF

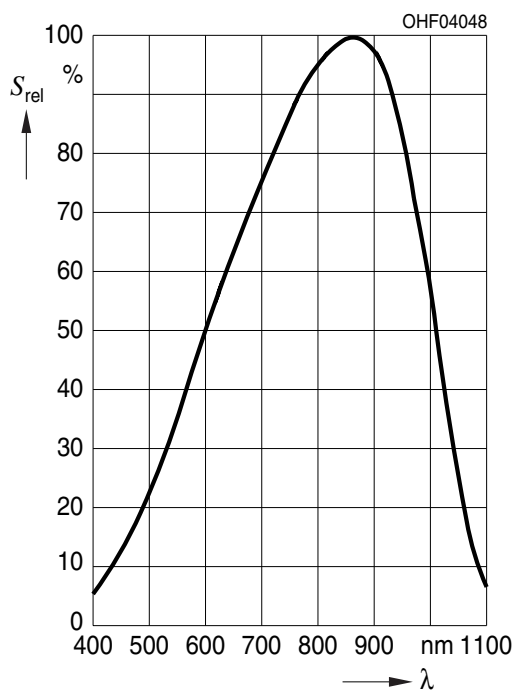
Photocurrent Groups

$T_A = 25\text{ °C}$

Group	Photocurrent ¹⁾	Photocurrent ¹⁾
	$V_{CE} = 5\text{ V}; \lambda = 950\text{ nm}; E_e = 0.5\text{ mW/cm}^2$ min. I_{PCE}	$V_{CE} = 5\text{ V}; \lambda = 950\text{ nm}; E_e = 0.5\text{ mW/cm}^2$ max. I_{PCE}
2	280 μA	450 μA
3	450 μA	710 μA
4	710 μA	1120 μA

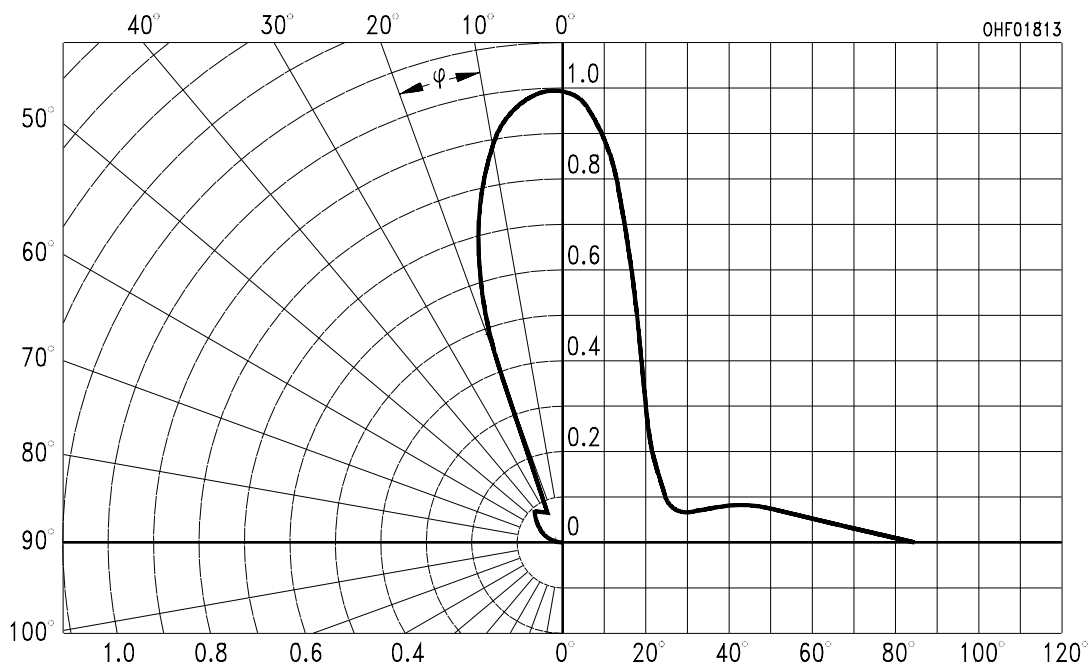
Relative Spectral Sensitivity ^{3), 4)}

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



Directional Characteristics ^{3), 4)}

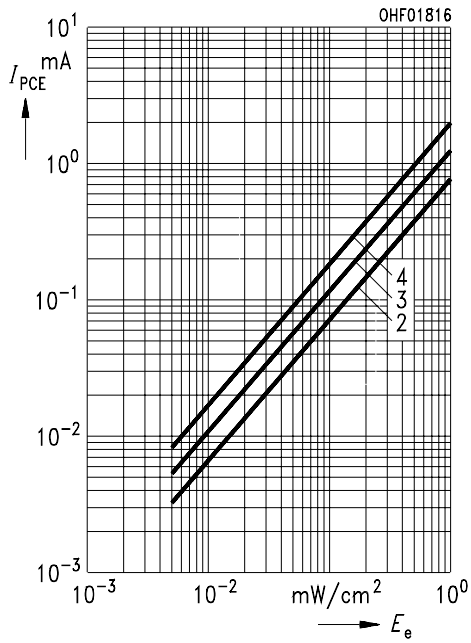
$$S_{rel} = f(\varphi)$$



Discontinued

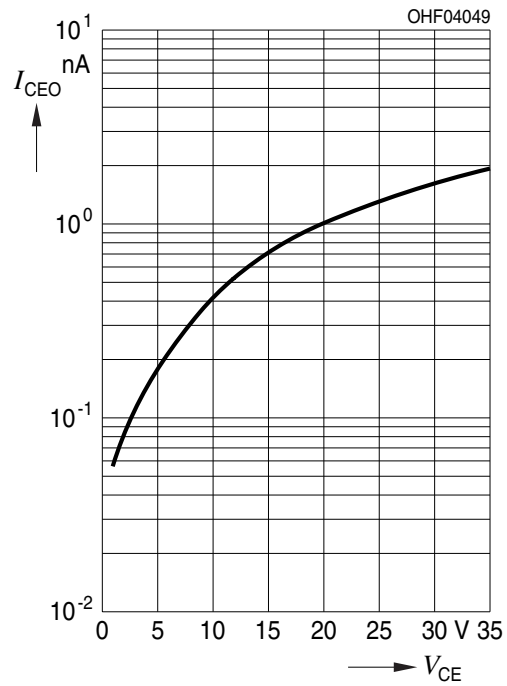
Photocurrent 3), 4)

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



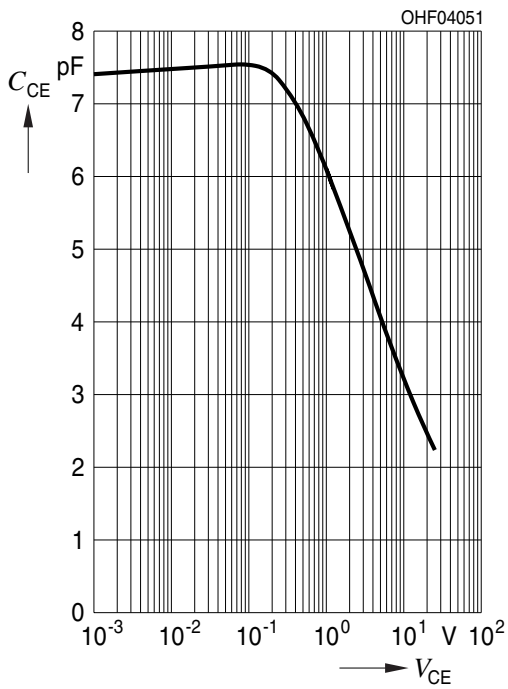
Dark Current 3), 4)

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



Collector-Emitter Capacitance 3), 4)

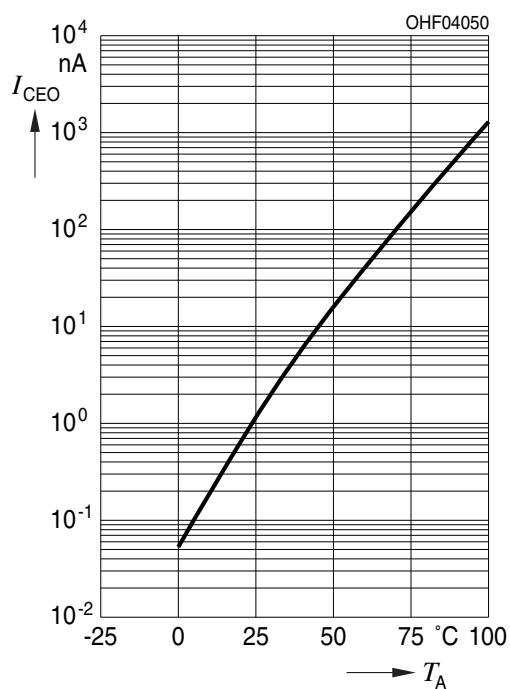
$C_{CE} = f(V_{CE}); f = 1\text{ MHz}; E = 0$



Discontinued

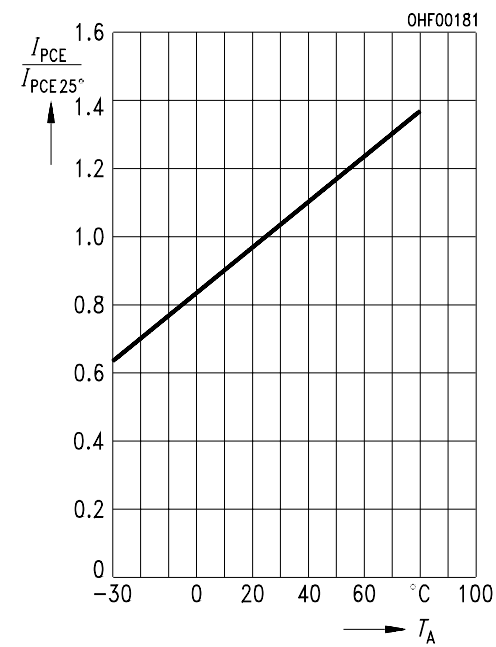
Dark Current ³⁾

$$I_{CE0} = f(T_A); V_{CE} = 0 \text{ V}; E = 0; E_e = 0 \text{ mW/cm}^2; 0$$

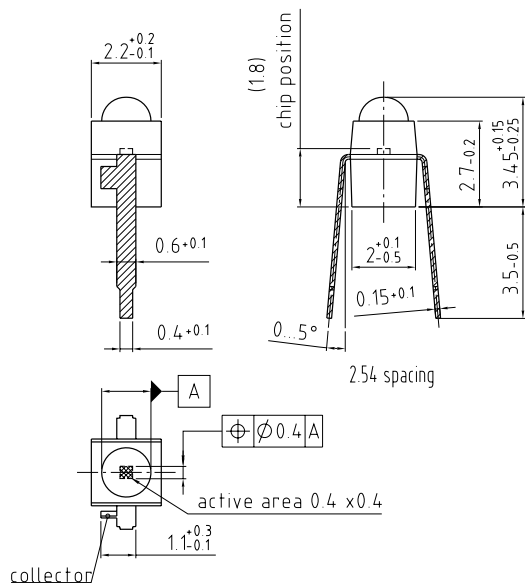


Photocurrent ³⁾

$$I_{PCE,rel} = f(T_A); V_{CE} = 5 \text{ V}; E_v = 0 \text{ lx}; \text{Std. Light A}$$



Dimensional Drawing ⁵⁾



general tolerance ± 0.1
lead finish Sn

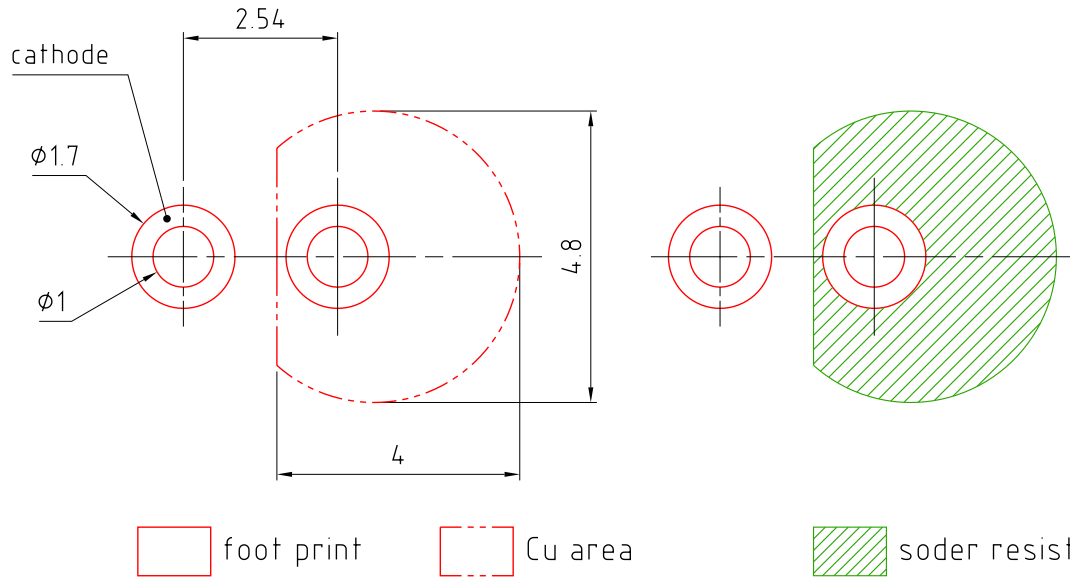
C63062-A257-A31-05

Further Information:

Approximate Weight: 24.0 mg

Package marking: Collector

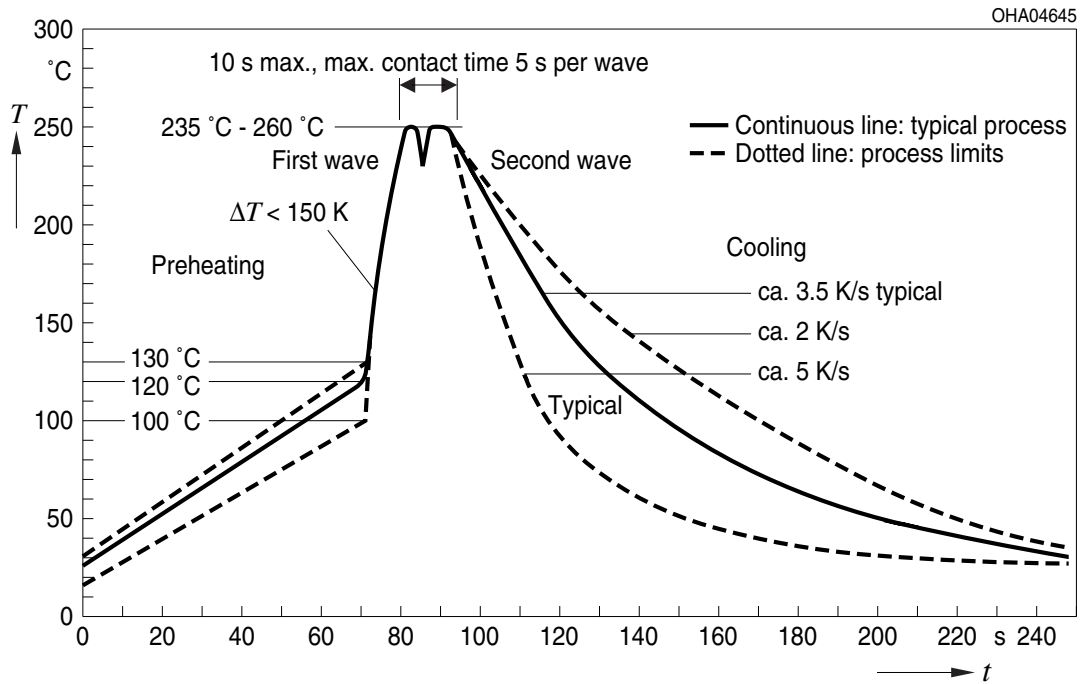
Recommended Solder Pad ⁵⁾



E062.3010.189-01

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.

For further application related information please visit <https://ams-osram.com/support/application-notes>

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 $\pm 11\%$.
- 2) **IPCE_{min}:** IPCE_{min} 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.

Revision History

Version	Date	Change
1.4	2023-06-06	New Layout Applications Discontinued

Discontinued



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，
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