Silicon NPN Phototransistor
Version 1.3

SFH 314



Features:

- **Spectral range of sensitivity:** (typ) 460 ... 1080 nm
- **Package:** 5mm Radial (T 1 ¾), Epoxy
- **Special:** High linearity

Applications

- Computer-controlled flashes
- Photointerrupters
- Industrial electronics
- For control and drive circuits

Ordering Information

Type:	**Photocurrent** I_{PCE} [µA] **λ = 950 nm, E_e = 0.5 mW/cm², V_{CE} = 5 V**	**Ordering Code**
SFH 314	≥ 630	Q62702P1668
SFH 314-2/3	1000 ... 3200	Q62702P3600

Note: 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	Unit
Operating and storage temperature range	T_{op}; T_{stg}	-40 ... 100	°C
Collector-emitter voltage	V_{CE}	70	V
Collector current	I_C	50	mA
Collector surge current (τ < 10 µs)	I_{CS}	100	mA
Emitter-collector voltage	V_{EC}	7	V
Total Power dissipation	P_{tot}	200	mW
Thermal resistance	R_{thJA}	375	K / W
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	V_{ESD}	2000	V

Characteristics (T_A = 25 °C)

Parameter		Symbol	Values	Unit
Wavelength of max. sensitivity	(typ)	$\lambda_{S\ max}$	850	nm
Spectral range of sensitivity	(typ)	$\lambda_{10\%}$	(typ) 460 ... 1080	nm
Radiant sensitive area	(typ)	A	0.55	mm^2
Dimensions of chip area	(typ)	L x W	(typ) 1 x 1	mm x mm
Half angle	(typ)	φ	± 40	°
Capacitance (V_{CE} = 5 V, f = 1 MHz, E = 0)	(typ)	C_{CE}	10	pF
Dark current (V_{CE} = 10 V, E = 0)	(typ (max))	I_{CE0}	3 (≤ 200)	nA
Rise and fall time (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ)	(typ)	t_r, t_f	11	µs

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Grouping (T_A = 25 °C, λ = 950 nm)

Group	Min Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V $I_{PCE, min}$ [µA]	Max Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V $I_{PCE, max}$ [µA]	Typ Photocurrent E_V = 1000 lx, Std. Light A, V_{CE} = 5 V I_{PCE} [µA]	Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ t_r, t_f [µs]
-1	630	1250	3400	8
-2	1000	2000	5400	10
-3	1600	3200	8600	12
-4	2500		13500	14

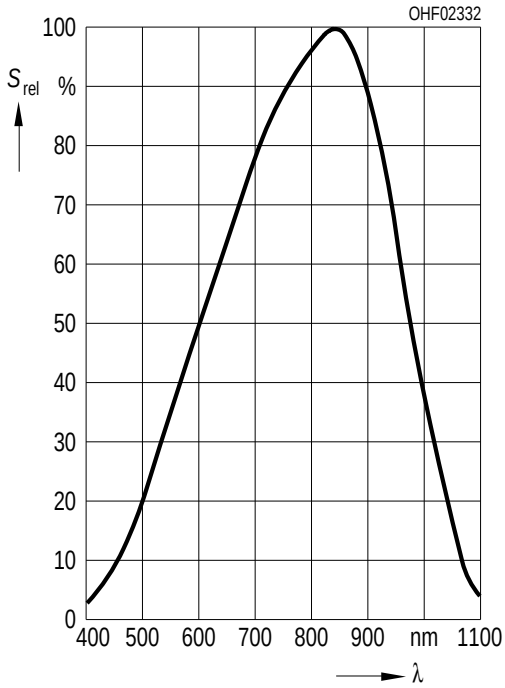
Group	Collector-emitter saturation voltage $I_C = I_{PCEmin}$ x 0.3, E_e = 0.5 mW/cm² V_{CEsat} [mV]
-1	150
-2	150
-3	150
-4	150

Note.: I_{PCEmin} *is the min. photocurrent of the specified group.*

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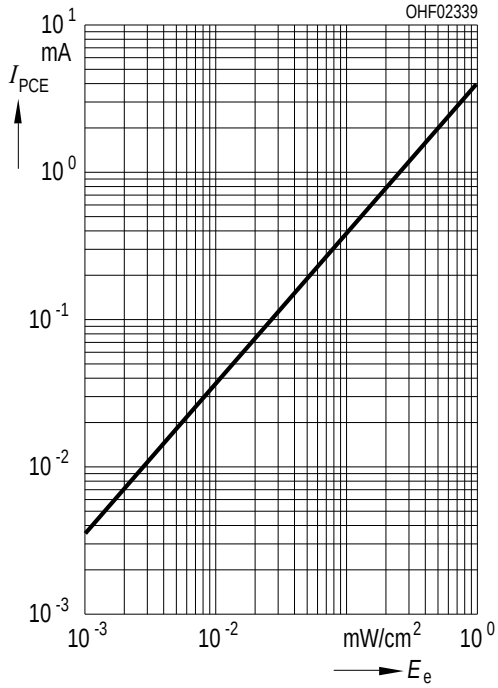
Relative Spectral Sensitivity [1] *page 9*

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



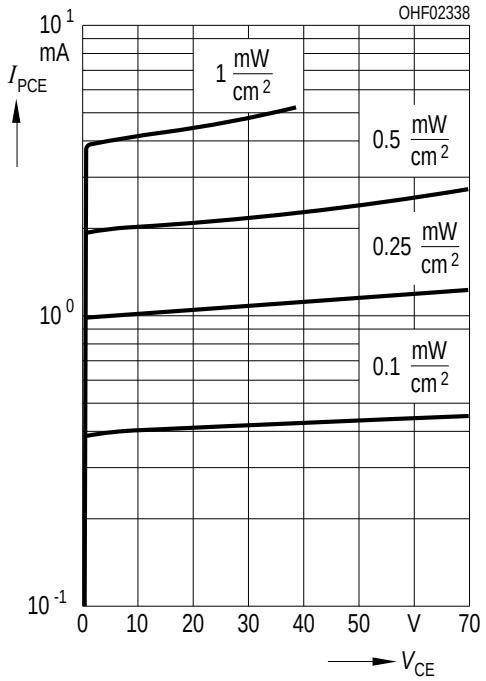
Photocurrent [1] *page 9*

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



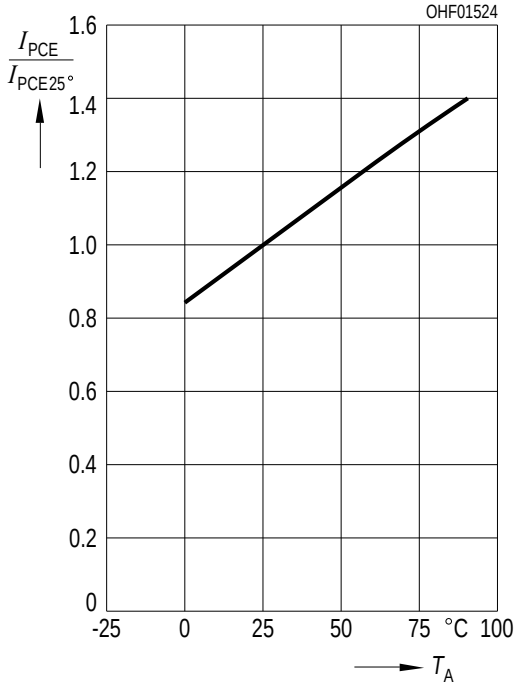
Photocurrent [1] *page 9*

$I_{PCE} = f(V_{CE})$, E_e = Parameter



Photocurrent [1] *page 9*

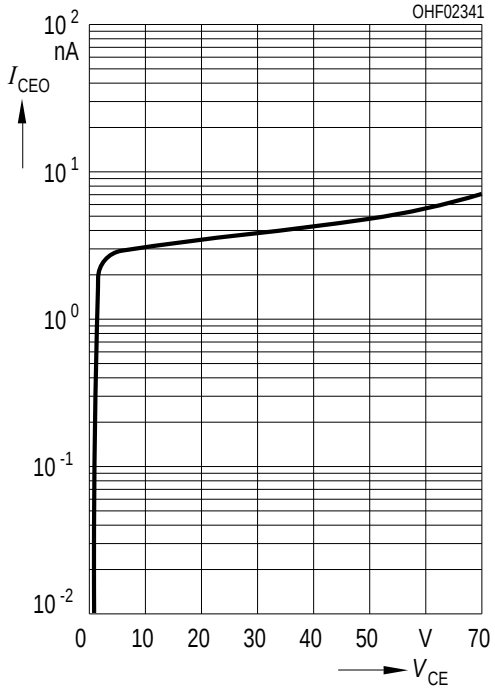
$I_{PCE} / I_{PCE}(25°C) = f(T_A)$, V_{CE} = 5 V



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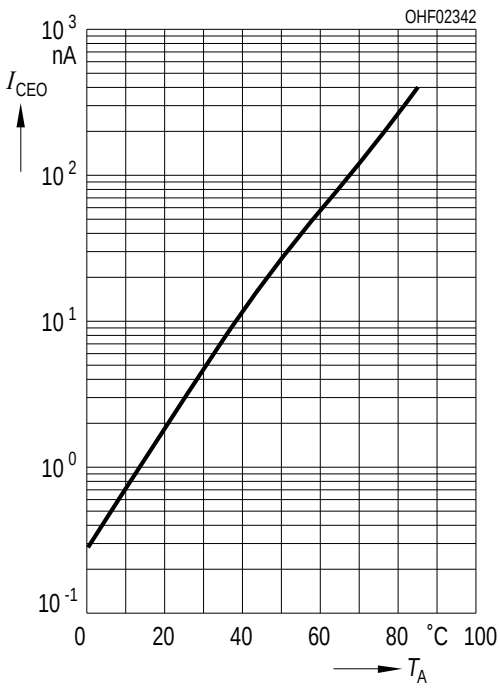
Dark Current [1] *page 9*

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



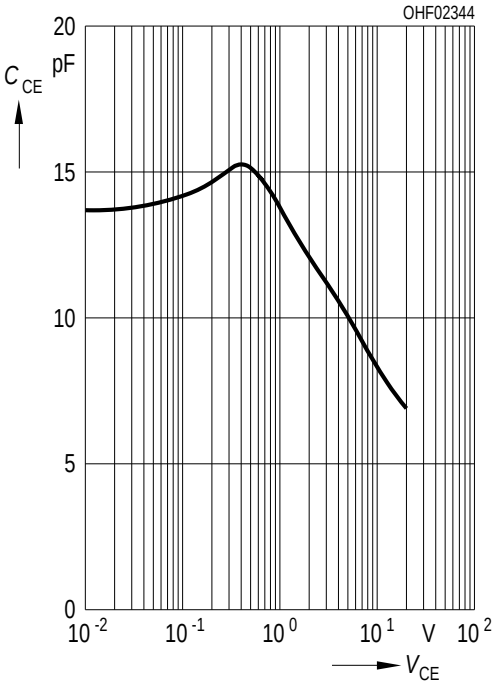
Dark Current [1] *page 9*

$I_{CEO} = f(T_A)$, E = 0



Collector-Emitter Capacitance [1] *page 9*

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



Power Consumption

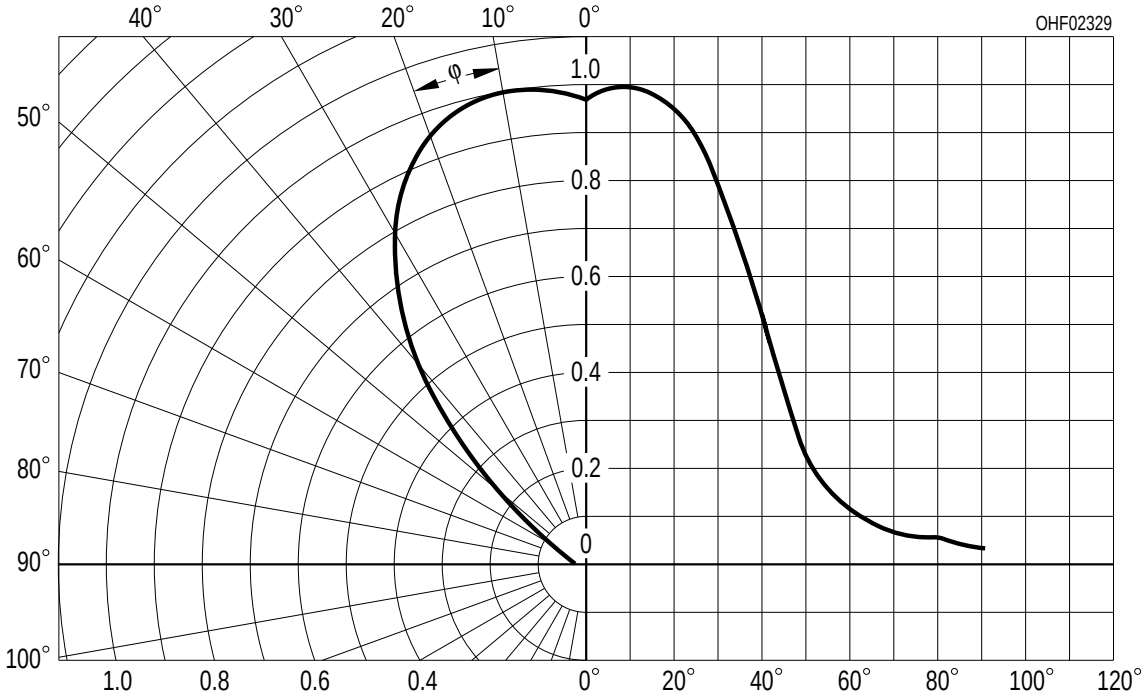
$P_{tot} = f(T_A)$



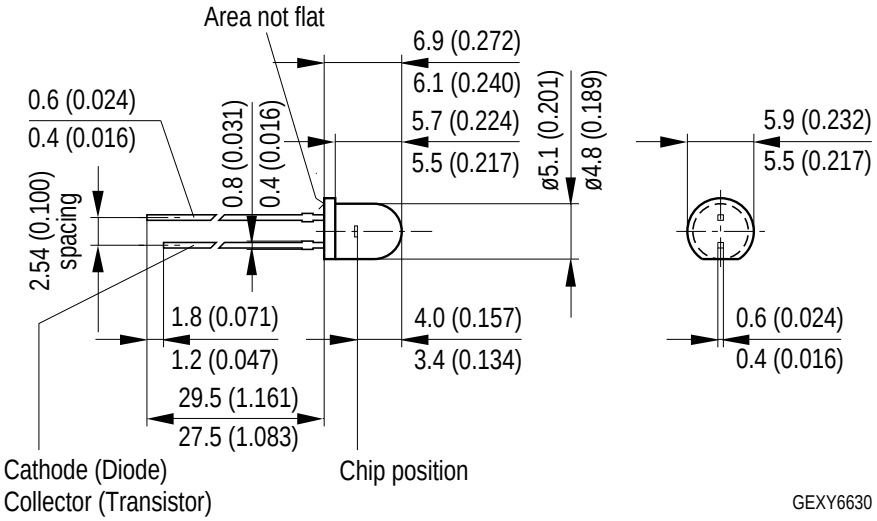
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Directional Characteristics 1) *page 9*

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



Package Outline



Dimensions in mm (inch).

Package

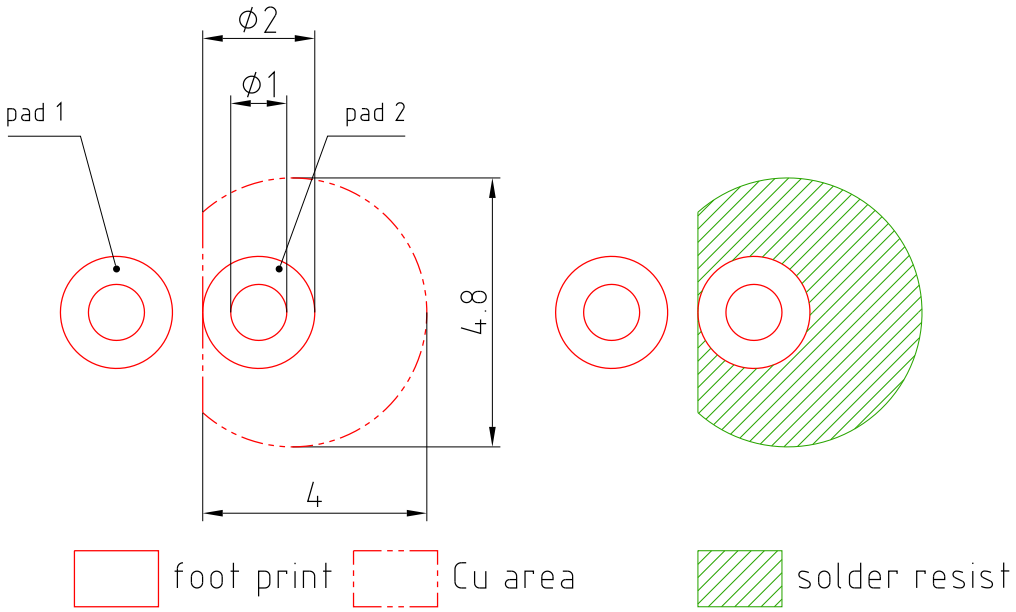
5mm Radial (T 1 ¾), Epoxy

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Approximate Weight:
0.3 g

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

Recommended Solder Pad

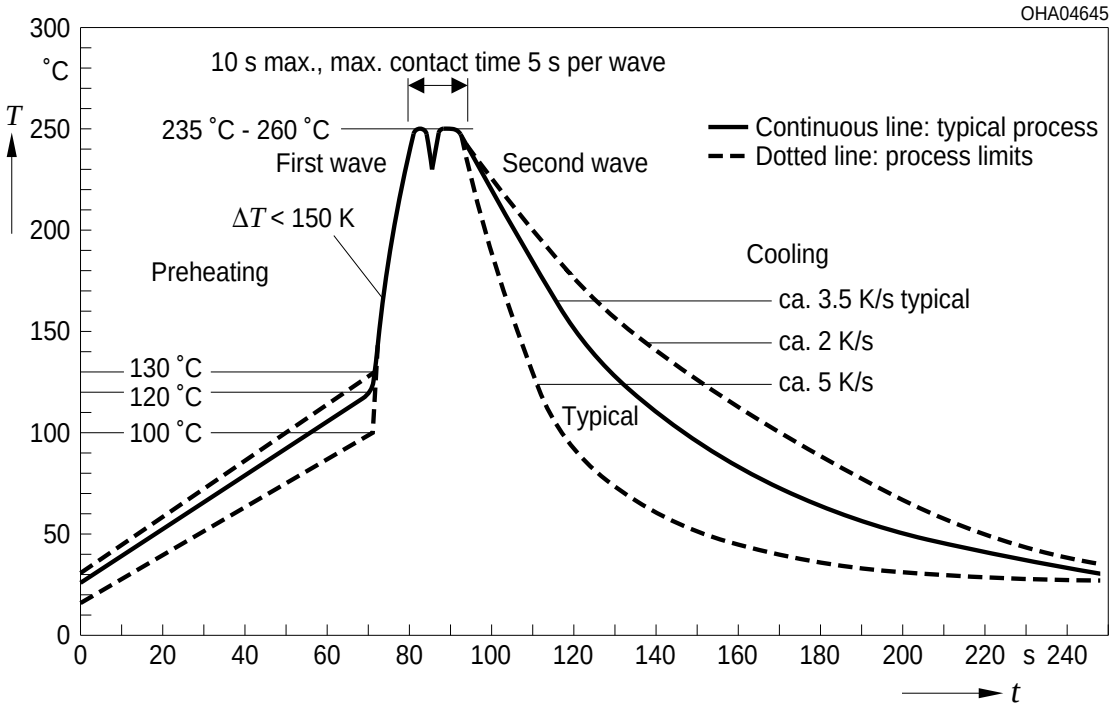


E062.3010.188-01

Dimensions in mm.

Note:
pad 1: emitter

TTW Soldering
IEC-61760-1 TTW



Disclaimer

Language english will prevail in case of any discrepancies or deviations between the two language wordings.

Attention please!
The information describes the type of component and shall not be considered as assured characteristics.
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**) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.

Glossary

[1] **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.

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