Silicon NPN Phototransistor
Version 1.3

SFH 300

Features:

- **Spectral range of sensitivity:** (typ) 450 ... 1100 nm
- **Package:** 5mm Radial (T 1 ¾), Epoxy
- **Special:** High linearity
- Available in groups

Applications

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

Ordering Information

Type:	**Photocurrent** I_{PCE} [µA] **λ = 950 nm, E_e = 0.5 mW/cm², V_{CE} = 5 V**	**Ordering Code**
SFH 300	≥ 630	Q62702P1189
SFH 300-3/4	≥ 1000	Q62702P3586

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}	35	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)	$\lambda_{S\ max}$	880	nm
Spectral range of sensitivity	(typ)	$\lambda_{10\%}$	(typ) 450 ... 1100	nm
Radiant sensitive area	(typ)	A	0.11	mm^2
Dimensions of chip area	(typ)	L x W	(typ) 0.55 x 0.55	mm x mm
Half angle	(typ)	φ	± 25	°
Capacitance (V_{CE} = 0 V, f = 1 MHz, E = 0)	(typ)	C_{CE}	7.5	pF
Dark current (V_{CE} = 20 V, E = 0)	(typ (max))	I_{CE0}	1 (≤ 50)	nA
Rise and fall time (I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ)	(typ)	t_r, t_f	10	µs

Grouping (T_A = 25 °C, λ = 950 nm)

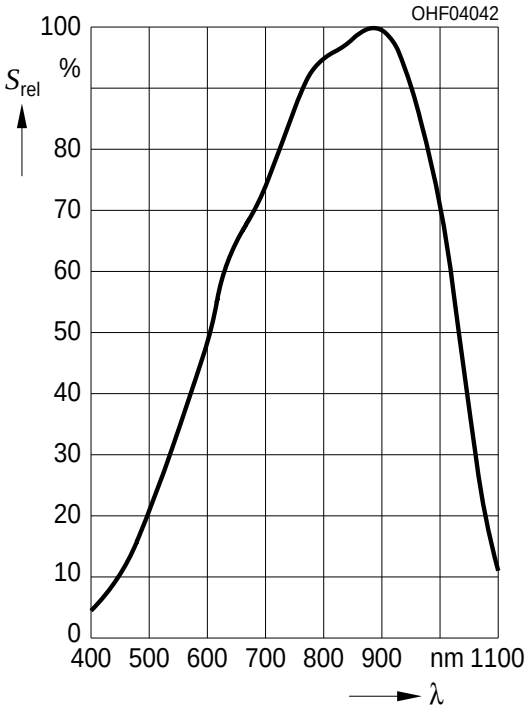
Group	Min Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V $I_{PCE, min}$ [µA]	Max Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V $I_{PCE, max}$ [µA]	Typ Photocurrent SFH 300: E_V = 1000 lx, Std. Light A, V_{CE} = 5 V I_{PCE} [µA]	Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ t_r, t_f [µs]
-2	630	1250	3000	7.5
-3	1000	2000	4800	10
-4	1600		7700	10

Group	Collector-emitter saturation voltage $I_C = I_{PCEmin}$ x 0.3, E_e = 0.5 mW/cm² V_{CEsat} [mV]
-2	130
-3	140
-4	150

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

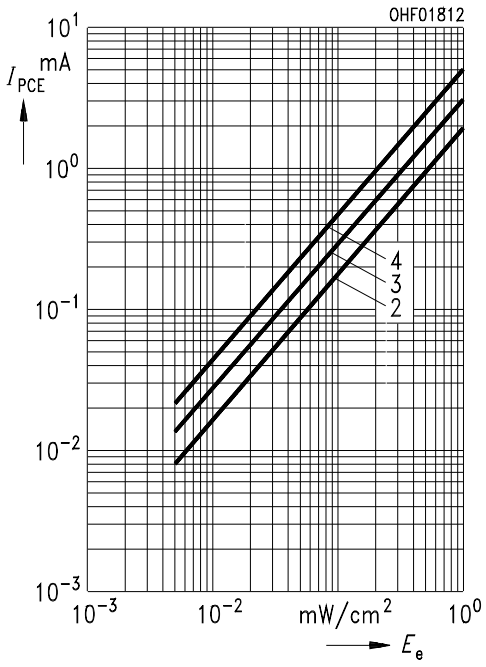
Relative Spectral Sensitivity [1] *page 8*

S_{rel} = f(λ)



Photocurrent [1] *page 8*

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



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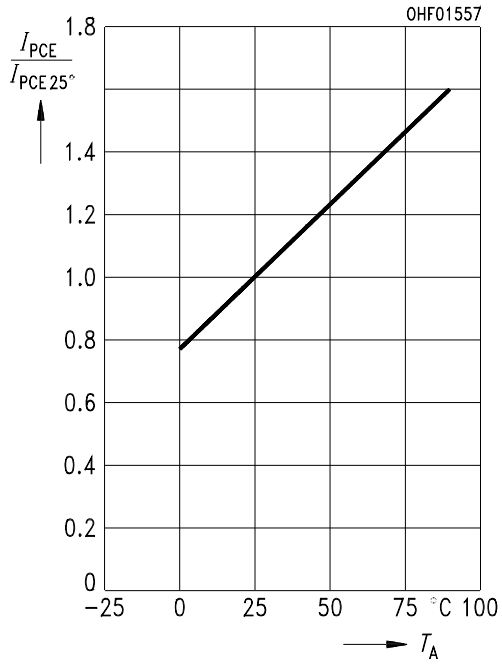
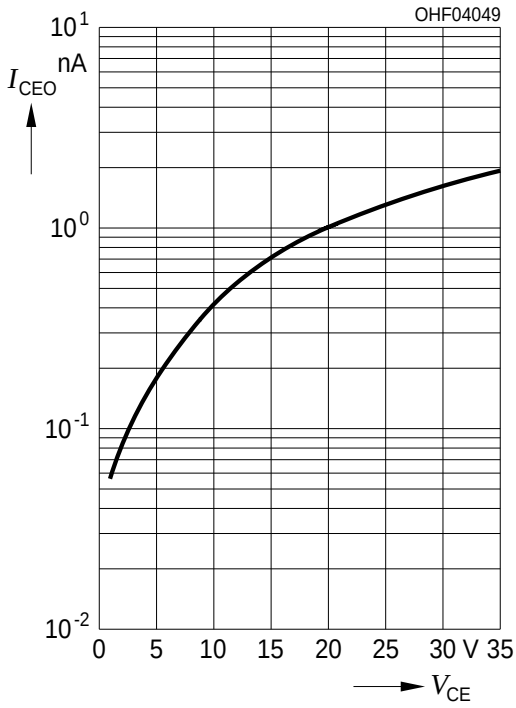
Photocurrent [1] *page 8*

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



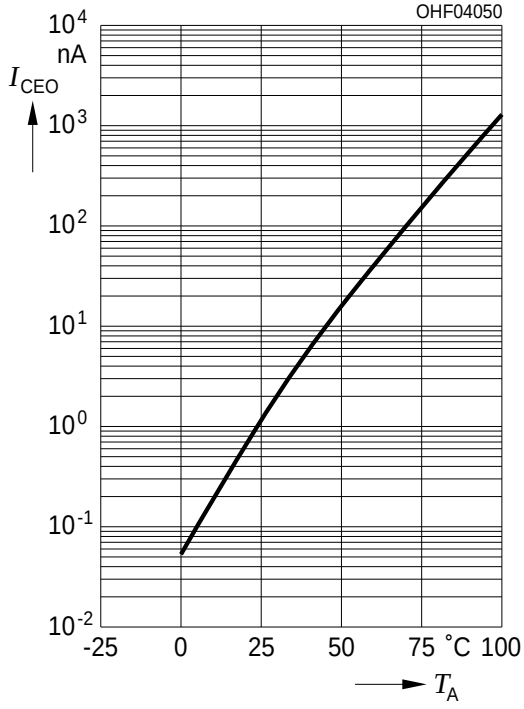
Dark Current [1] *page 8*

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



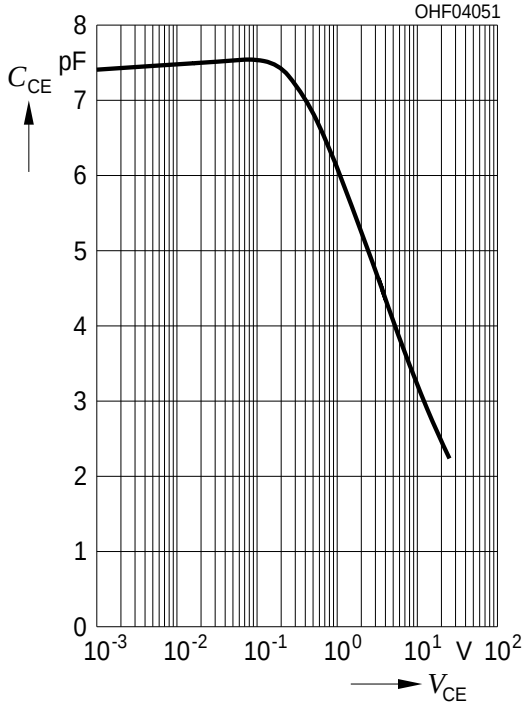
Dark Current [1] *page 8*

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



Collector-Emitter Capacitance [1] *page 8*

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



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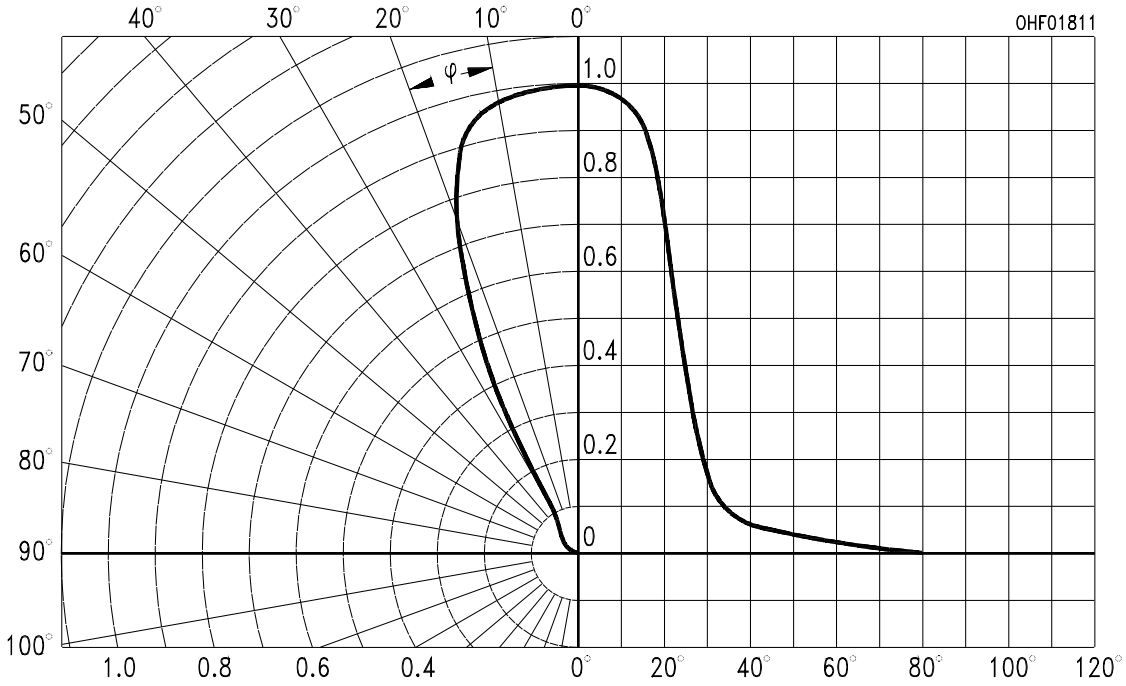
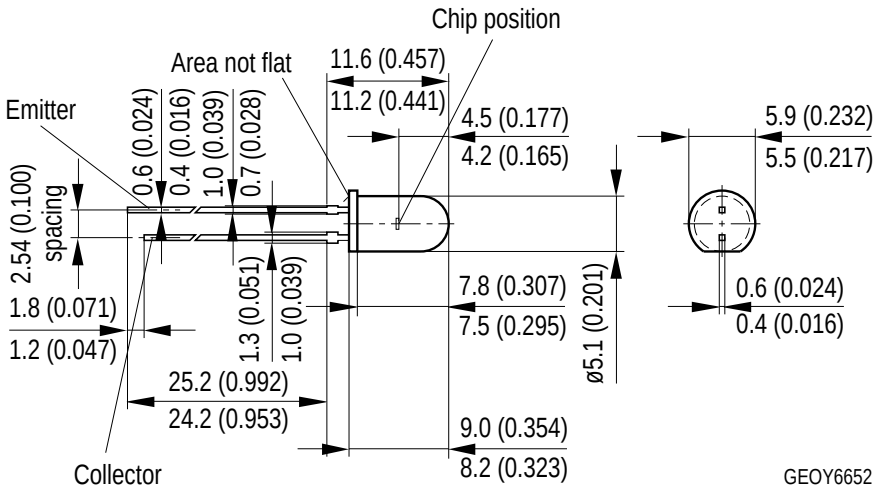
Directional Characteristics [1] *page 8*

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



Package Outline



Dimensions in mm (inch).

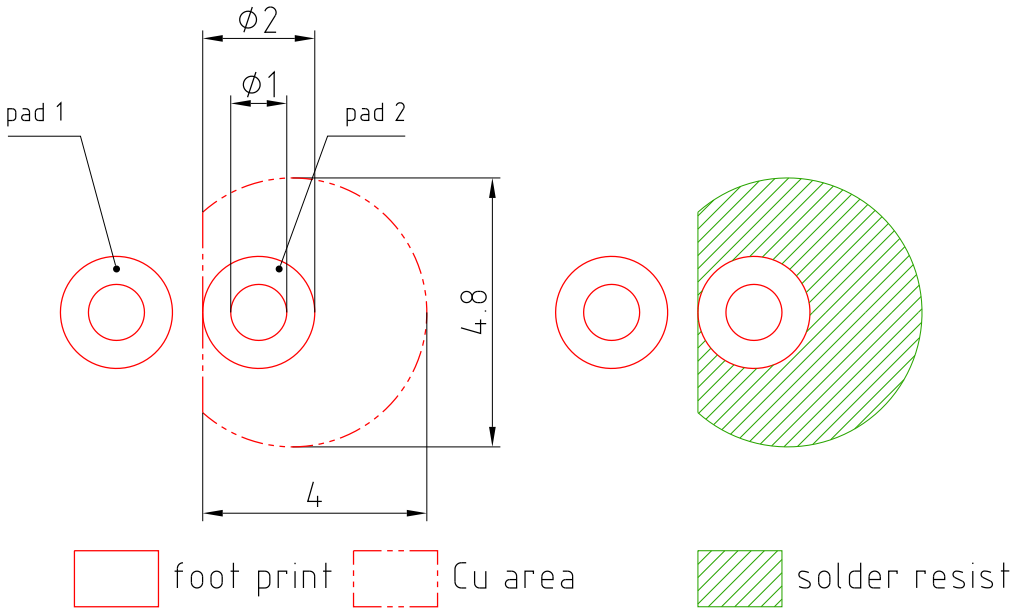
Package

5mm Radial (T 1 ¾), Epoxy

Approximate Weight:
0.3 g

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

Recommended Solder Pad

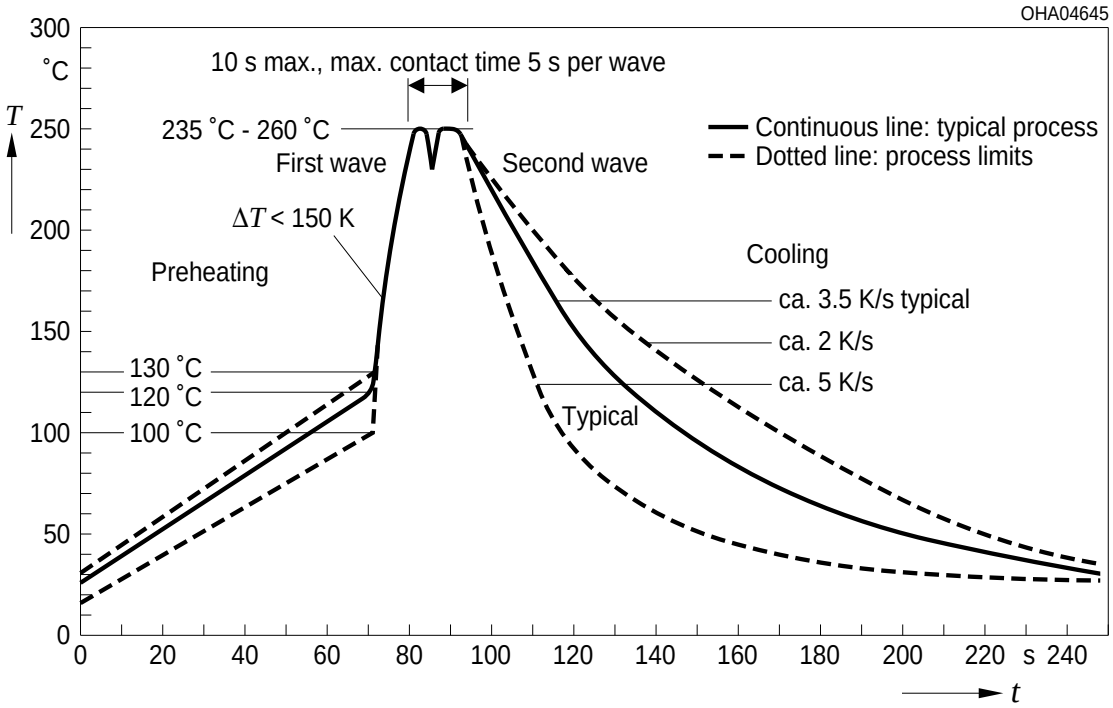


E062.3010.188-01

Dimensions in mm.

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!

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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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