Silicon NPN Phototransistor
Version 1.3

SFH 310 FA

Features:

- **Spectral range of sensitivity:** (typ) 740 ... 1100 nm
- **Package:** 3mm Radial (T 1), Epoxy
- **Special:** high photosensitivity

Applications

- Photointerrupters
- Industrial electronics
- For control and drive circuits

Ordering Information

Type:	**Photocurrent** I_{PCE} [µA] **λ = 950 nm, E_e = 0.5 mW/cm^2, V_{CE} = 5 V**	**Ordering Code**
SFH 310 FA	400 ... 3200	Q62702P1673
SFH 310 FA-2/3	630 ... 2000	Q62702P3596

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	I_{CS}	100	mA
Total Power dissipation	P_{tot}	165	mW
Thermal resistance	R_{thJA}	450	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)	$\lambda_{S\ max}$	890	nm
Spectral range of sensitivity	(typ)	$\lambda_{10\%}$	(typ) 740 ... 1100	nm
Radiant sensitive area	(typ)	A	0.11	mm^2
Dimensions of chip area	(typ)	L x W	(typ) 0.5 x 0.5	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

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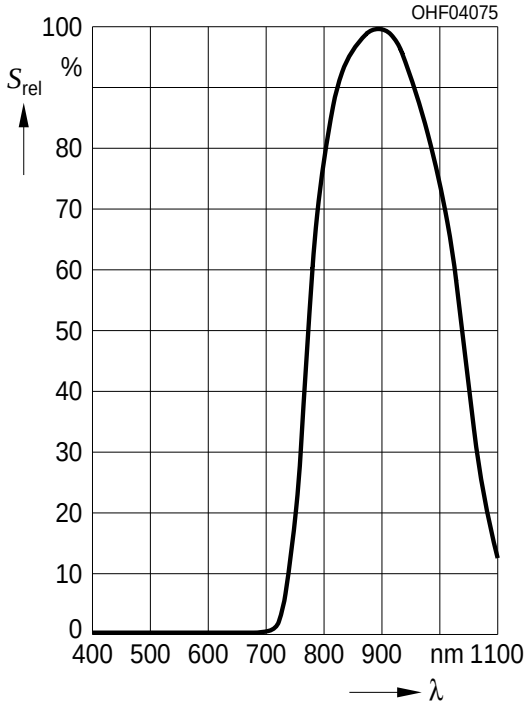
Grouping (T_A = 25 °C, λ = 950 nm)

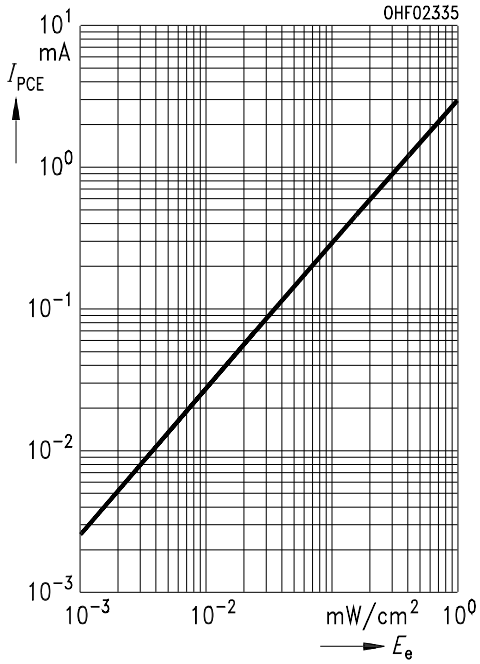
Group	Min Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V $I_{PCE, min}$ [µA]	Max Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V $I_{PCE, max}$ [µA]	Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ t_r, t_f [µs]	Collector-emitter saturation voltage $I_C = I_{PCEmin} \times 0.3$, E_e = 0.5 mW/cm² V_{CEsat} [mV]
-2	630	1250	5	150
-3	1000	2000	8	150
-4	1600	3200	12	150

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

Relative Spectral Sensitivity [1) page 9]
S_{rel} = f(λ)



Photocurrent [1) page 9]
I_{PCE} = f(E_e), V_{CE} = 5 V



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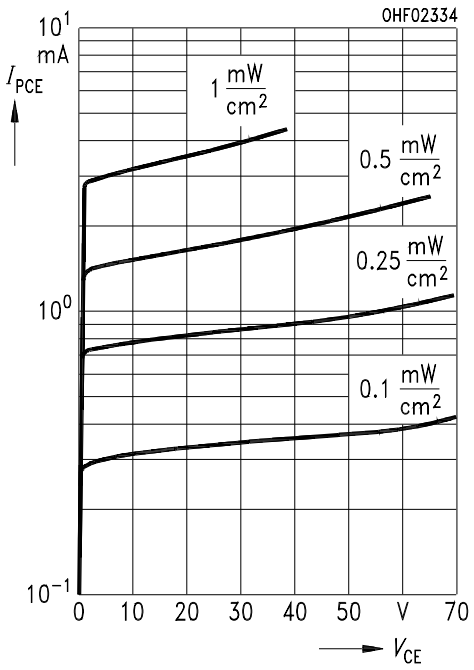
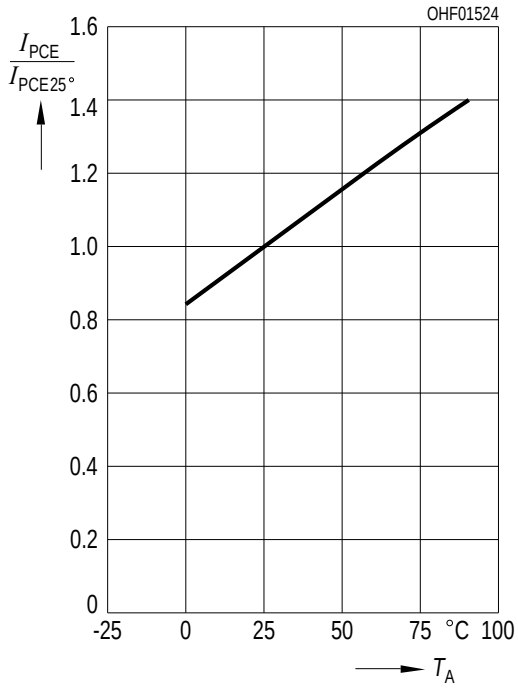
Photocurrent [1] *page 9*

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



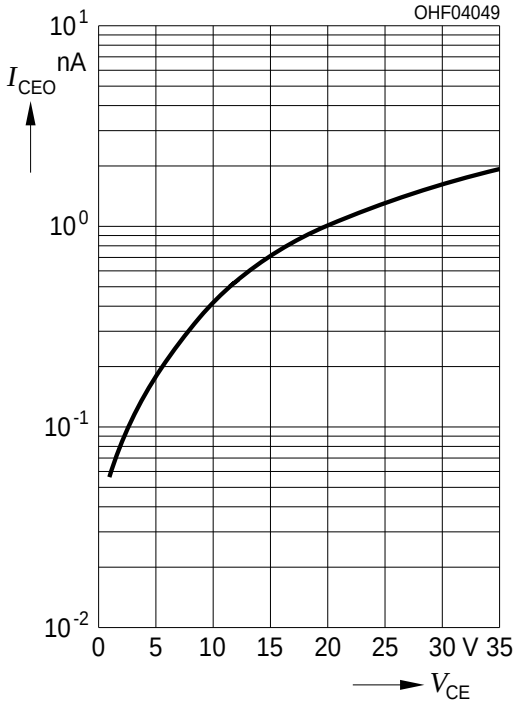
Photocurrent [1] *page 9*

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



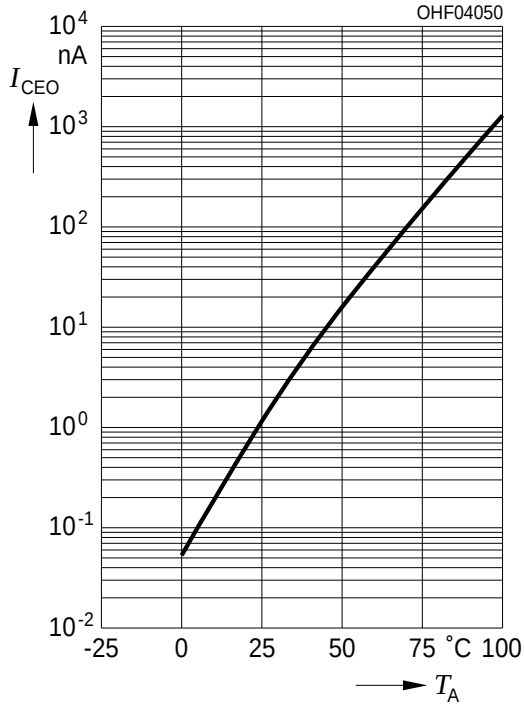
Dark Current [1] *page 9*

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



Dark Current [1] *page 9*

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



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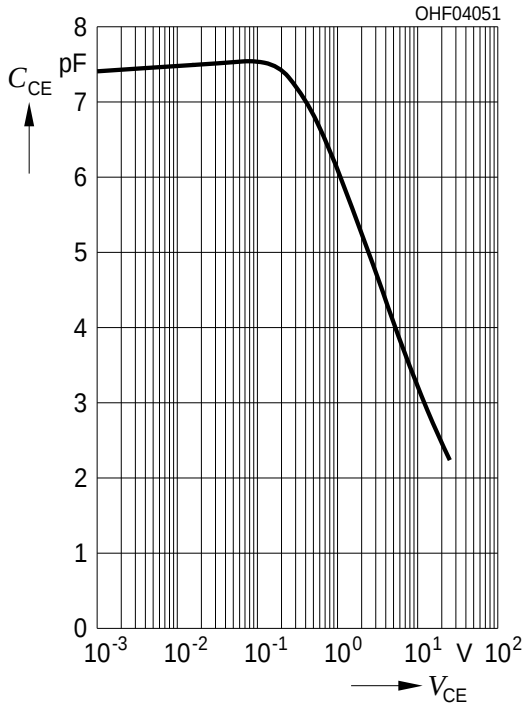
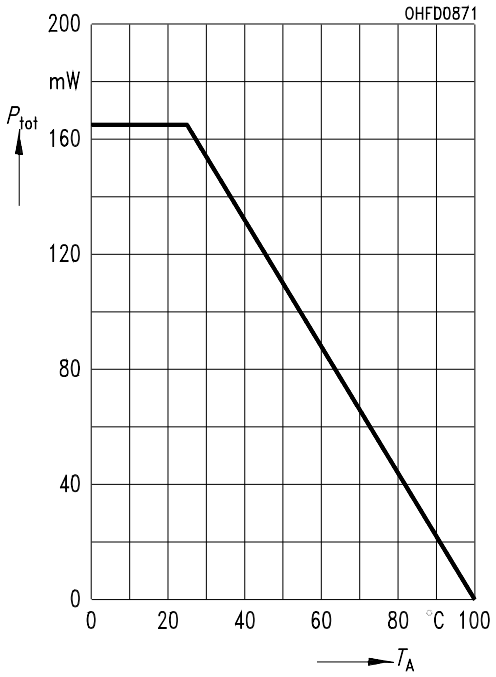
Collector-Emitter Capacitance [1] *page 9*

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



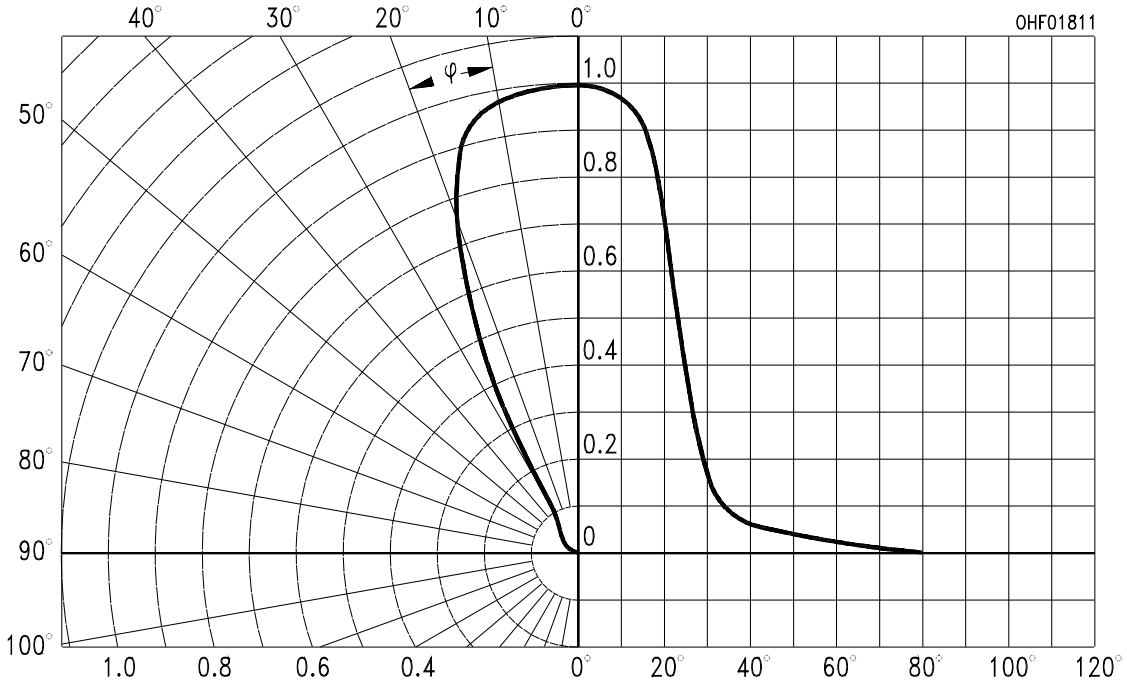
Power Consumption

$P_{tot} = f(T_A)$



Directional Characteristics [1] *page 9*

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



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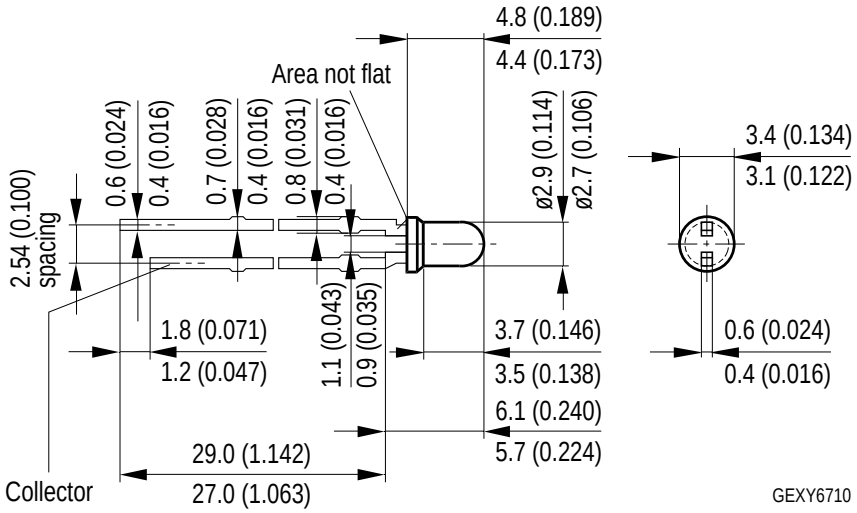
Package Outline



Dimensions in mm (inch).

Package

3mm Radial (T 1), Epoxy

Approximate Weight:

0.2 g

Note

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

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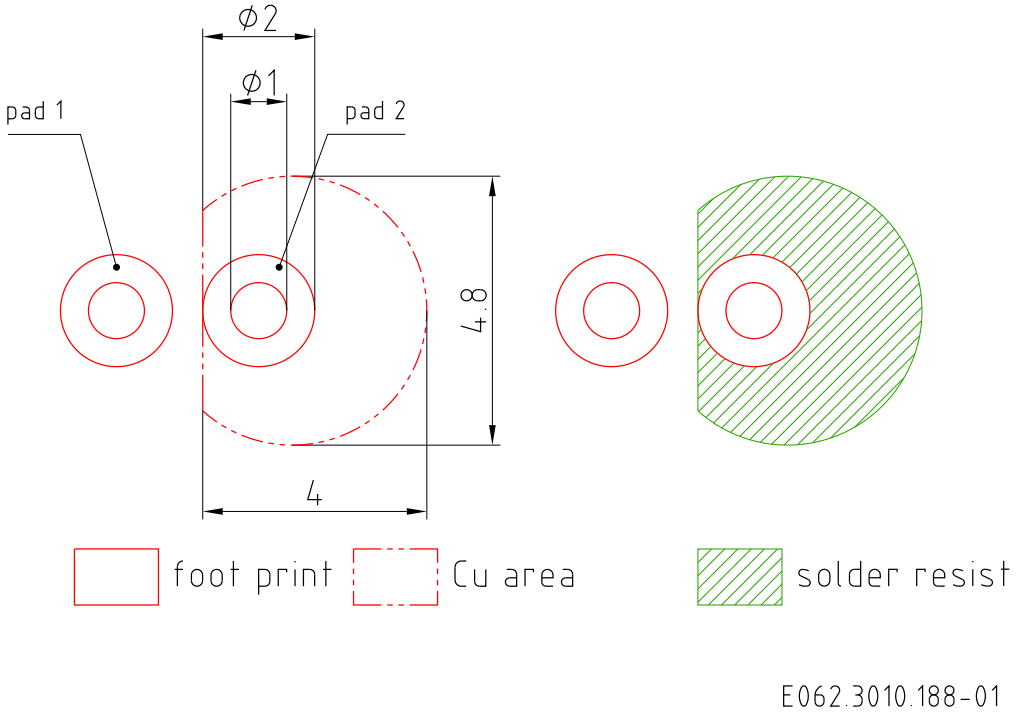
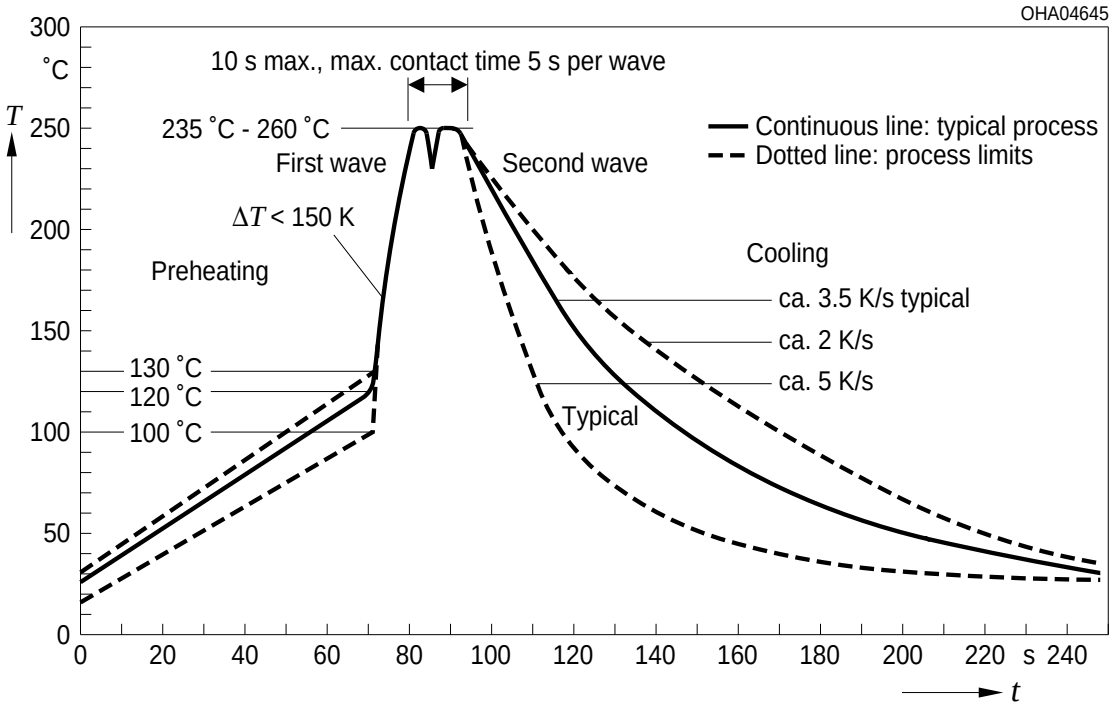
Recommended Solder Pad



Dimensions in mm.

Note:
pad 1: emitter

TTW Soldering
IEC-61760-1 TTW



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Disclaimer

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

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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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