

# Silicon NPN Phototransistor with $V_\lambda$ Characteristics

## Version 1.3

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### SFH 3310



#### Features:

- **Spectral range of sensitivity:** (typ) 350 ... 970 nm
- **Package:** 3mm Radial (T 1), Epoxy
- **Special:** Adapted to human eye sensitivity ( $V_\lambda$ )

#### Applications

- For control and drive circuits
- Ambient light detector
- Exposure meter for daylight and artificial light
- Sensor for backlight-dimming

#### Ordering Information

Type:	Photocurrent $I_{PCE}$ [ $\mu A$ ] $\lambda = 560 \text{ nm}$ , $E_e = 10 \mu W/cm^2$ , $V_{CE} = 5 \text{ V}$	Ordering Code
SFH 3310	2.5 ... 8	Q65110A5343

**Maximum Ratings** ( $T_A = 25\text{ °C}$ )

Parameter	Symbol	Values	Unit
Operating and storage temperature range	$T_{op}; T_{stg}$	-40 ... 100	°C
Collector-emitter voltage	$V_{CE}$	5.5	V
Collector current	$I_C$	20	mA
Emitter-collector voltage	$V_{EC}$	0.5	V
ESD withstand voltage (acc. to ANSI/ ESDA/ JEDEC JS-001 - HBM)	$V_{ESD}$	2000	V

**Characteristics** ( $T_A = 25\text{ °C}$ )

Parameter		Symbol	Values	Unit
Wavelength of max. sensitivity	(typ)	$\lambda_{S\ max}$	570	nm
Spectral range of sensitivity	(typ)	$\lambda_{10\%}$	(typ) 350 ... 970	nm
Radiant sensitive area	(typ)	A	0.29	mm <sup>2</sup>
Dimensions of chip area	(typ)	L x W	(typ) 0.75 x 0.75	mm x mm
Half angle	(typ)	$\varphi$	± 75	°
Capacitance ( $V_{CE} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ )	(typ)	$C_{CE}$	16	pF
Dark current ( $V_{CE} = 5\text{ V}$ , $E = 0$ )	(typ (max))	$I_{CE0}$	3 (≤ 50)	nA

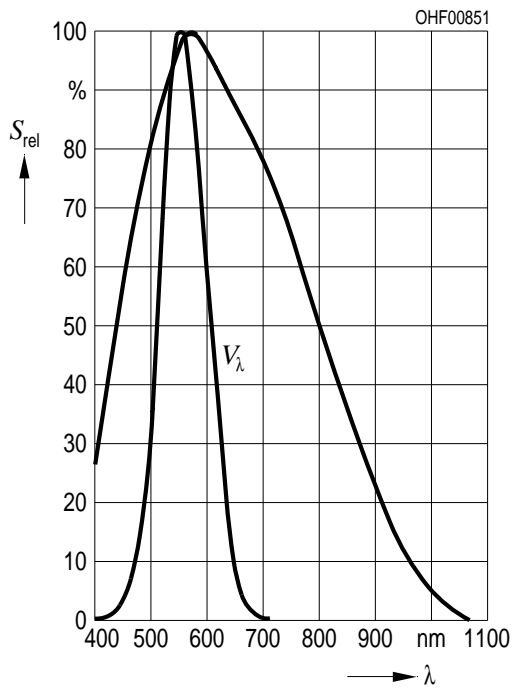
Grouping ( $T_A = 25\text{ °C}$ ,  $\lambda = 560\text{ nm}$ )

Group	Min Photocurrent $E_e = 10\text{ }\mu\text{W/cm}^2$ , $V_{CE} = 5\text{ V}$ $I_{PCE, min}\text{ }[\mu\text{A}]$	Max Photocurrent $E_e = 10\text{ }\mu\text{W/cm}^2$ , $V_{CE} = 5\text{ V}$ $I_{PCE, max}\text{ }[\mu\text{A}]$	Typ Photocurrent $E_V = 1000\text{ lx, Std. Light A, } V_{CE} = 5\text{ V}$ $I_{PCE}\text{ }[\mu\text{A}]$	Collector-emitter saturation voltage $I_C = I_{PCEmin} \times 0.3, E_e = 10\text{ }\mu\text{W/cm}^2$ $V_{CEsat}\text{ }[\text{mV}]$
SFH 3310-2	2.5	5	290	100
SFH 3310-3	4	8	460	100

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

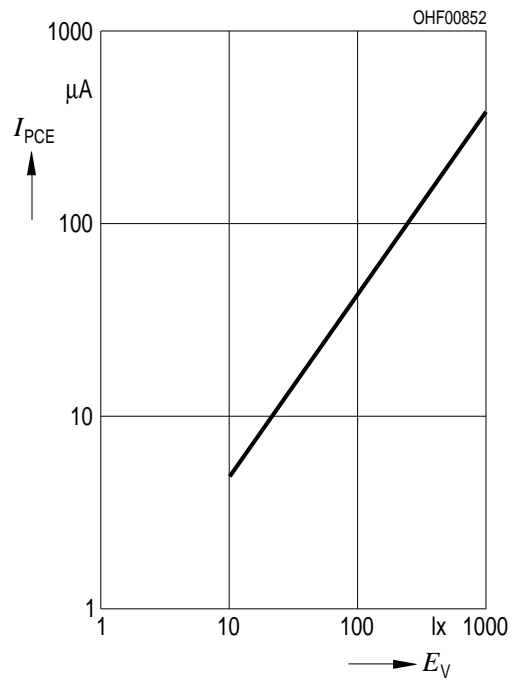
**Relative Spectral Sensitivity** <sup>1) page 8</sup>

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



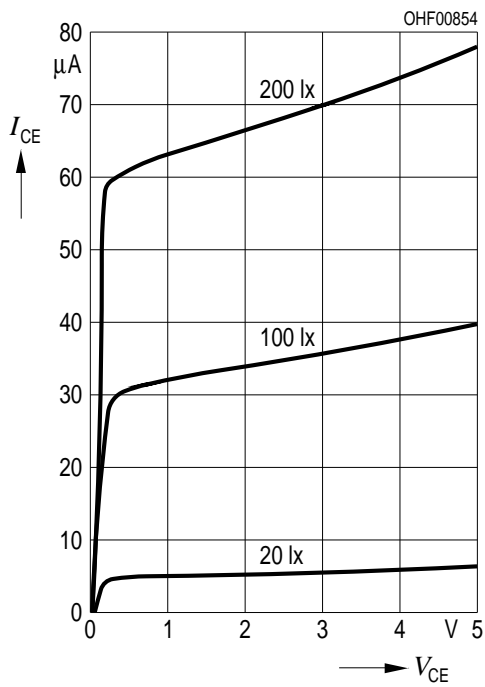
**Photocurrent** <sup>1) page 8</sup>

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



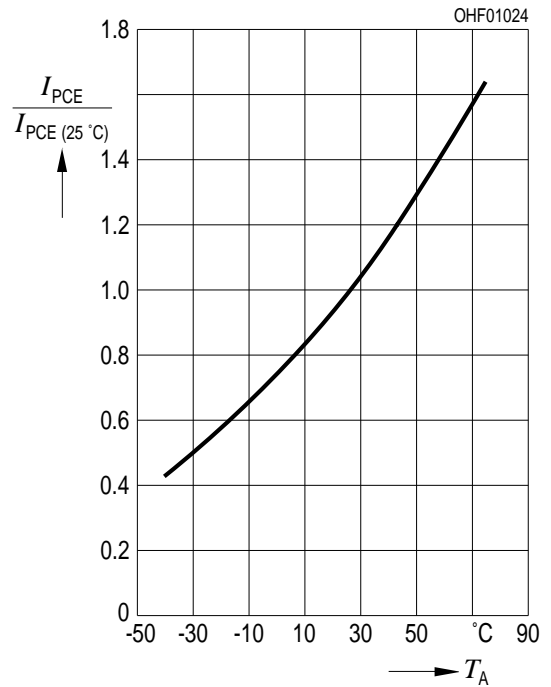
**Collector Current** <sup>1) page 8</sup>

$I_C = f(V_{CE}), I_B = \text{Parameter}$



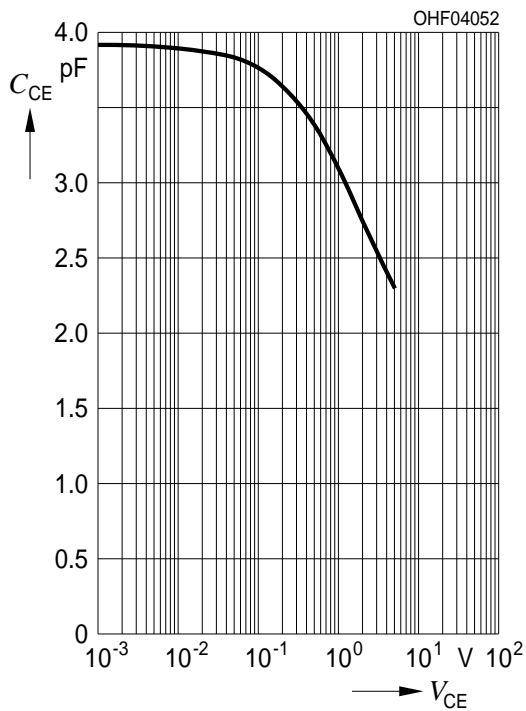
**Photocurrent** <sup>1) page 8</sup>

$I_{PCE} / I_{PCE}(25^\circ\text{C}) = f(T_A), V_{CE} = 5 \text{ V}$



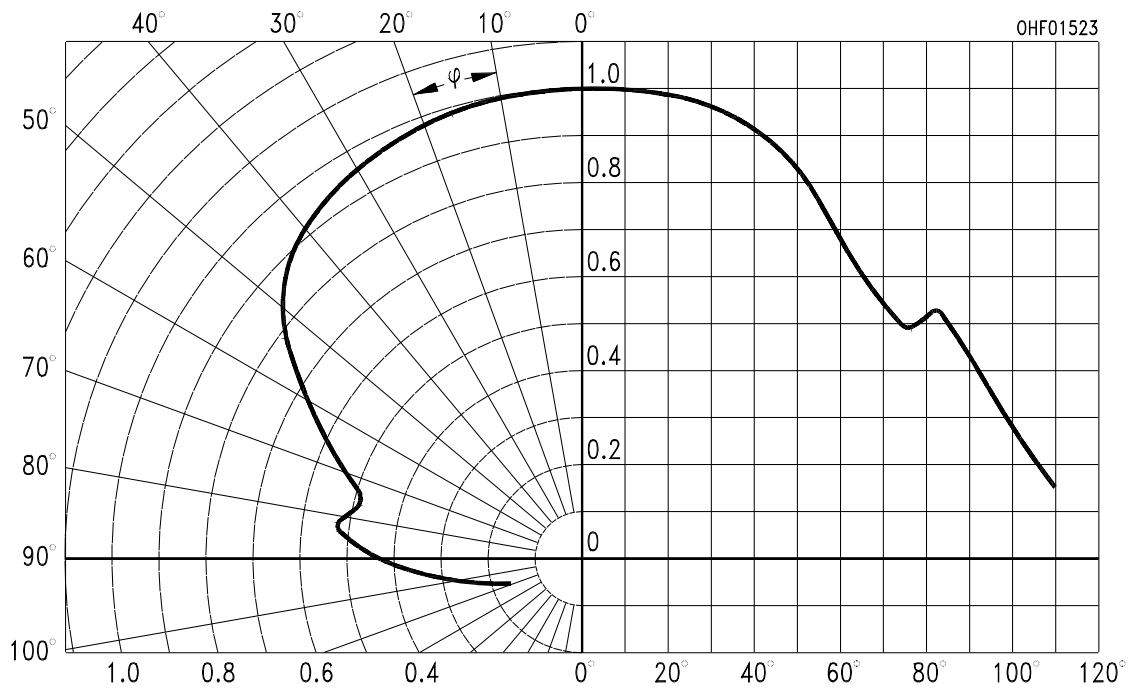
**Collector-Emitter Capacitance** <sup>1) page 8</sup>

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

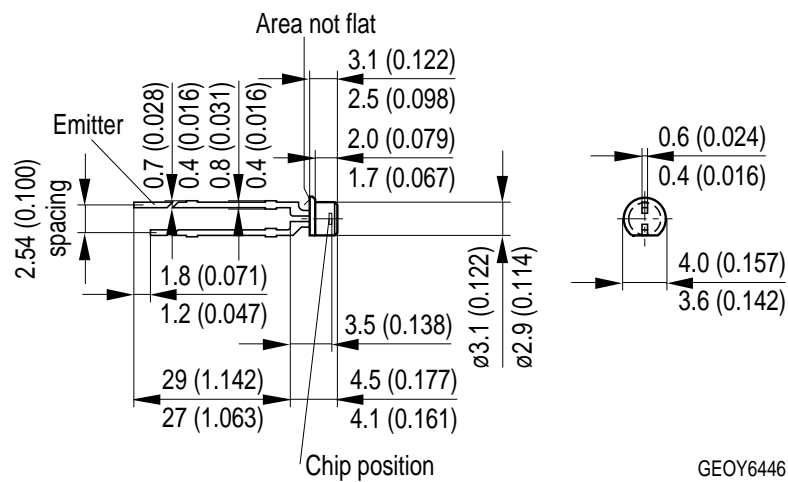


**Directional Characteristics** <sup>1) page 8</sup>

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



**Package Outline**



*Dimensions in mm (inch).*

**Package**

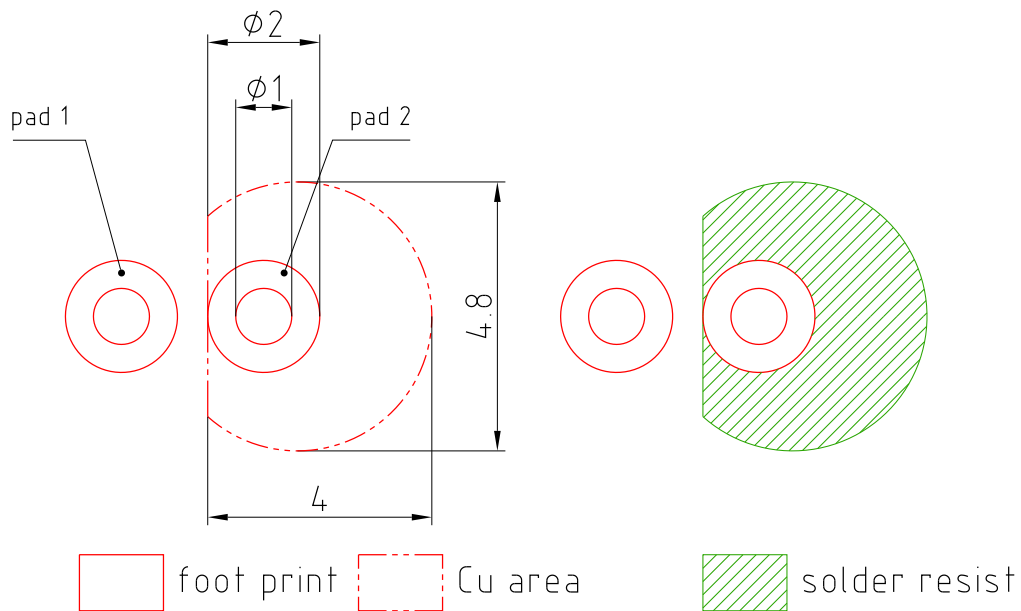
3mm Radial (T 1), Epoxy

**Approximate Weight:**

0.2 g

**Note**

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

**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.

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 in the Internet.

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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**

- <sup>1)</sup> **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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