

Silicon NPN Phototransistor with V_λ Characteristics

Version 1.3

SFH 3310



Features:

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

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} [μA] $\lambda = 560 \text{ nm}$, $E_e = 10 \mu W/cm^2$, $V_{CE} = 5 \text{ V}$	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 ²
Dimensions of chip area	(typ)	L x W	(typ) 0.75 x 0.75	mm x mm
Half angle	(typ)	φ	± 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

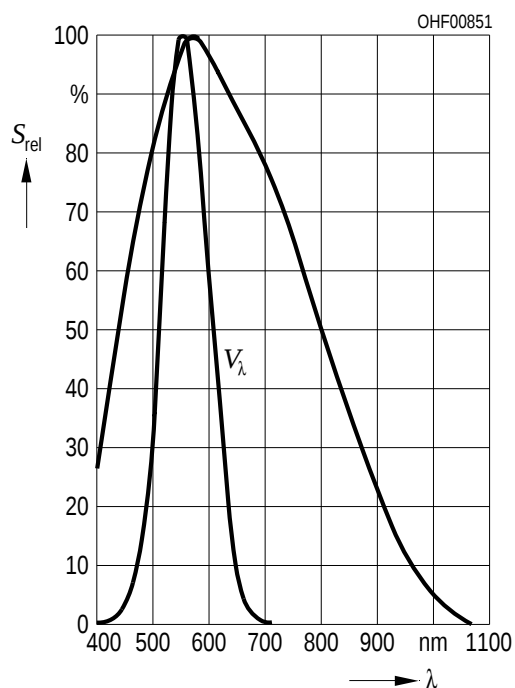
Grouping ($T_A = 25\text{ °C}$, $\lambda = 560\text{ nm}$)

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

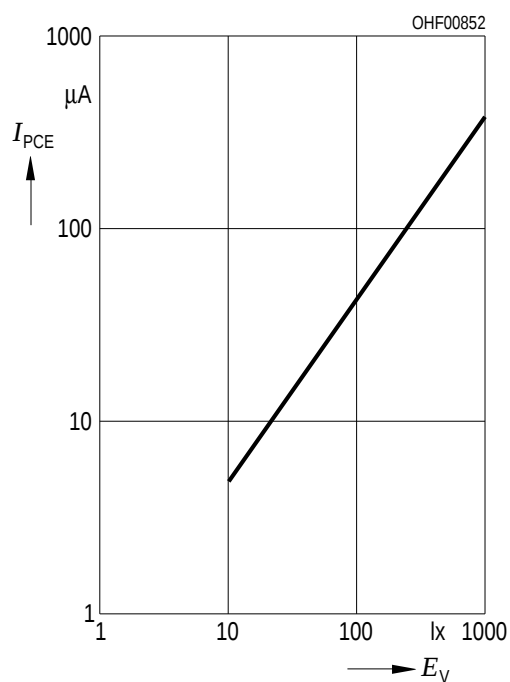
Relative Spectral Sensitivity ^{1) page 8}

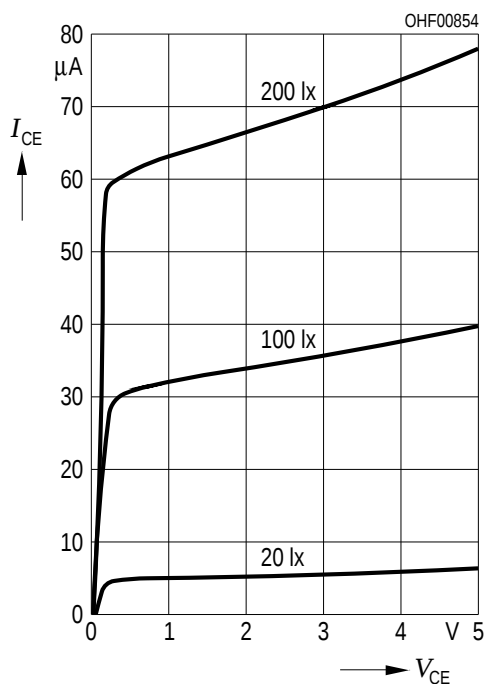
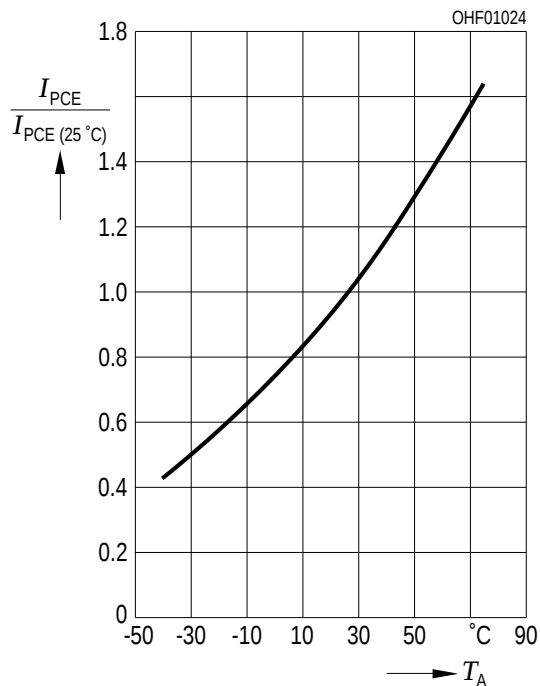
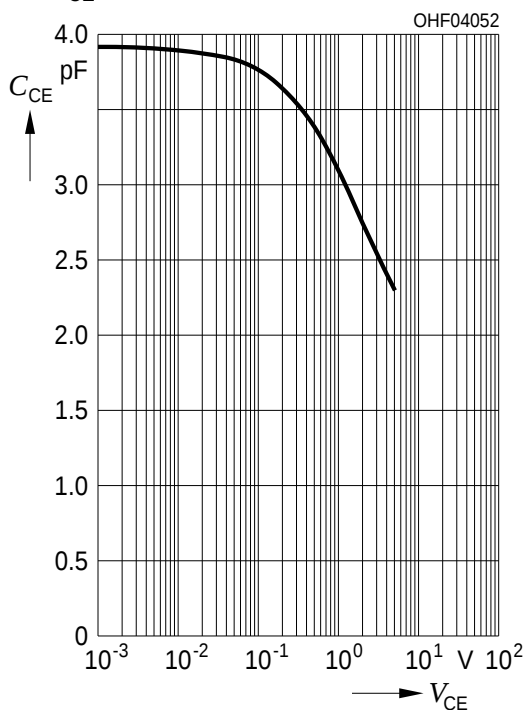
$$S_{rel} = f(\lambda)$$



Photocurrent ^{1) page 8}

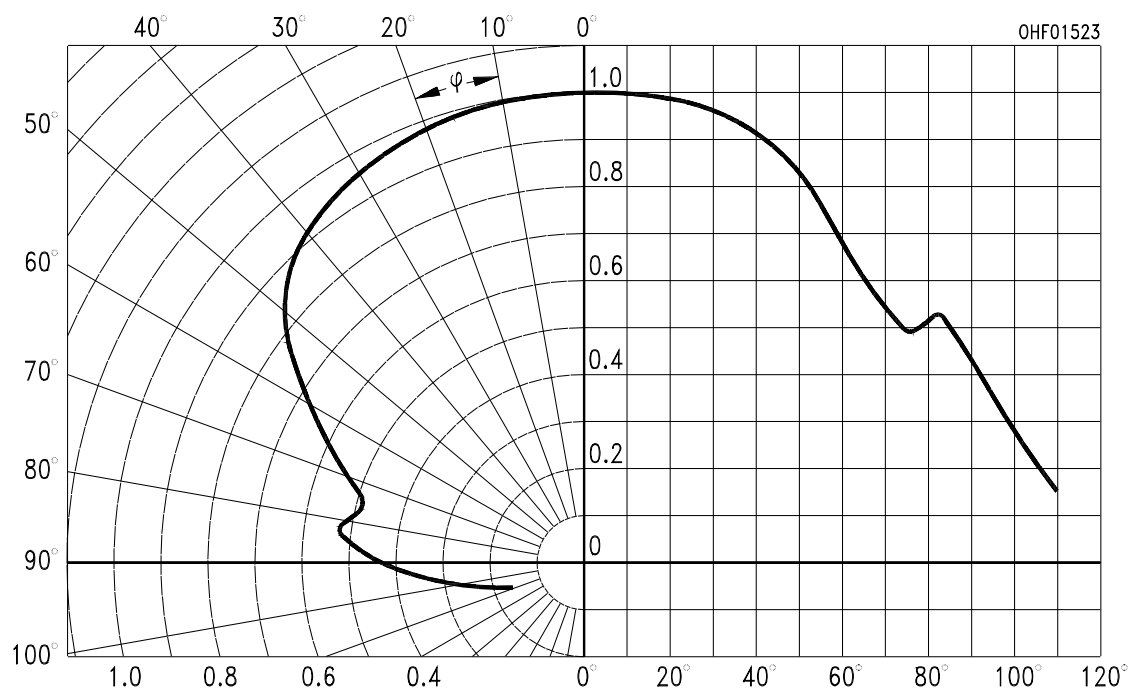
$$I_{PCE} = f(E_e), V_{CE} = 5\text{ V}$$



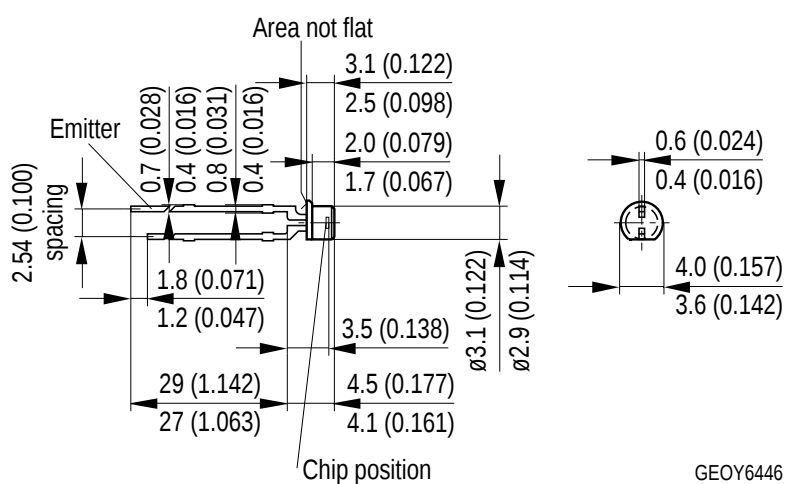
Collector Current ^{1) page 8} $I_C = f(V_{CE}), I_B = \text{Parameter}$ **Photocurrent** ^{1) page 8} $I_{PCE} / I_{PCE}(25^\circ C) = f(T_A), V_{CE} = 5 V$ **Collector-Emitter Capacitance** ^{1) page 8} $C_{CE} = f(V_{CE}), f = 1 \text{ MHz}, E = 0$ 

Directional Characteristics ^{1) page 8}

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



Package Outline



Dimensions in mm (inch).

Package

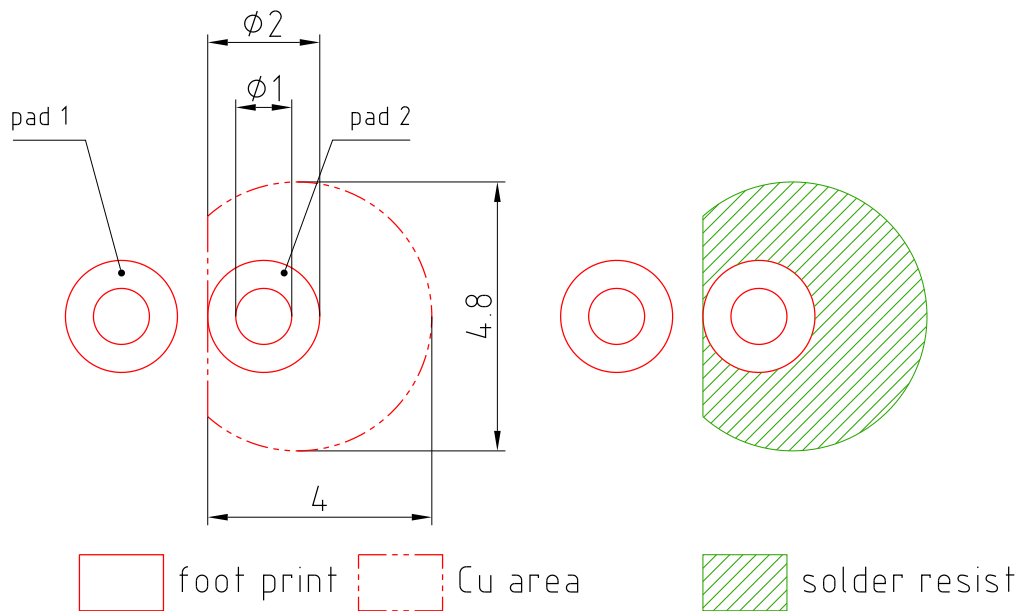
3mm Radial (T 1), Epoxy

Approximate Weight:

0.2 g

Note

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

Recommended Solder Pad

Dimensions in mm.

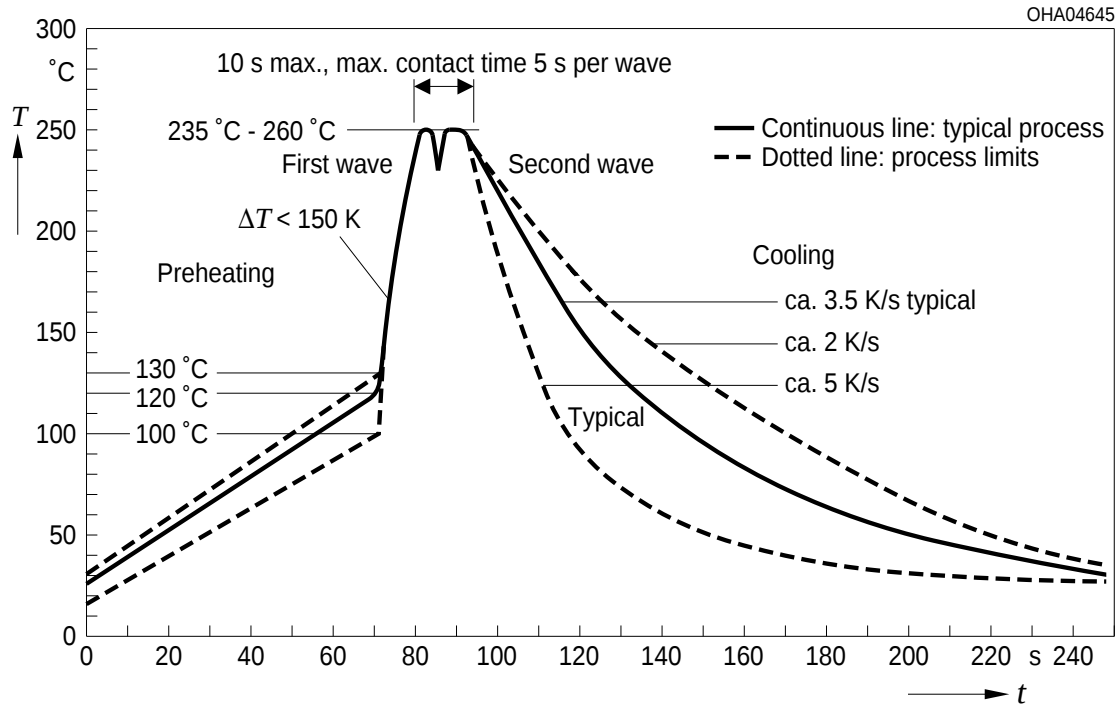
E062.3010.188-01

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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Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components* may only be used in life-support devices** or systems with the express written approval of OSRAM OS.

*) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

**) 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.

Published by OSRAM Opto Semiconductors GmbH
Leibnizstraße 4, D-93055 Regensburg
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