

**NPN-Silizium-Fototransistor mit Tageslichtsperrfilter**  
**Silicon NPN Phototransistor with Daylight-Cutoff Filter**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 3100 F**



**Wesentliche Merkmale**

- Speziell geeignet für Anwendungen im Bereich von 850 nm bis 1100 nm
- Enge Empfangscharakteristik
- Geringe Außenabmessungen
- Gleiche Bauform wie IRED SFH 4110
- Hoher Koppelfaktor in Lichtschranken mit SFH 4110
- IR-Filter
- Leichte Unterscheidbarkeit zwischen SFH 3100 F (schwarzes Gehäuse) und SFH 4110 (klares Gehäuse)

**Features**

- Especially suitable for applications from 850 nm to 1100 nm
- Narrow half angle
- Small outline dimensions
- Same package as IRED SFH 4110
- High coupling factor in light barriers with SFH 4110
- IR filter
- Easy identification of SFH 3100 F (black package) and SFH 4110 (clear package)

**Anwendungen**

- Empfänger in Lichtschranken
- Bandende-Erkennung (z.B. Videorecorder)
- Datenübertragung
- Positionsüberwachung
- Barcode-Leser
- „Messen/Steuern/Regeln“
- Münzzähler

**Applications**

- Detector in photointerrupters
- Tape end detection
- Data transmission
- Position sensing
- Barcode reader
- For control and drive circuits
- Coin counters

Typ Type	Bestellnummer Ordering Code	Fotostrom , $E_e = 0.5\text{mW/cm}^2$ , $\lambda = 950\text{nm}$ , $V_{CE} = 5\text{ V}$ Photocurrent $I_{pce}$ (mA)
SFH 3100 F	Q62702-P5073	> 0,4
SFH 3100 F-2/3/4	Q62702-P5475	0.63...3.2

**Grenzwerte**  
**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 85	°C
Kollektor-Emitterspannung Collector-emitter voltage	$V_{CE}$	35	V
Kollektorstrom Collector current	$I_C$	50	mA
Kollektorspitzenstrom, $t < 10 \mu s$ Collector surge current	$I_{CS}$	100	mA
Emitter-Kollektorspannung Emitter-collector voltage	$V_{EC}$	7	V
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	$P_{tot}$	150	mW
Wärmewiderstand Sperrschicht - Umgebung Thermal resistance junction - ambient	$R_{thJA}$	280	K/W

Kennwerte ( $T_A = 25\text{ °C}$ ,  $\lambda = 950\text{ nm}$ )

## Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	920	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\text{max}}$ Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	850 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	0.11	mm <sup>2</sup>
Abmessungen der Chip-Fläche Dimension of chip area	$L \times B$ $L \times W$	0.5 × 0.5	mm × mm
Halbwinkel Half angle	$\varphi$	± 14	Grad deg.
Kapazität Capacitance $V_{\text{CE}} = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$ $V_{\text{CE}} = 5\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_{\text{CE}}$	7.5 4.0	pF
Dunkelstrom, $V_{\text{CE}} = 20\text{ V}$ Dark current	$I_{\text{CEO}}$	1 ( $\leq 50$ )	nA
Fotostrom Photocurrent $E_e = 0.5\text{ mW/cm}^2$ , $V_{\text{CE}} = 5\text{ V}$	$I_{\text{PCE}}$	>0.4	mA

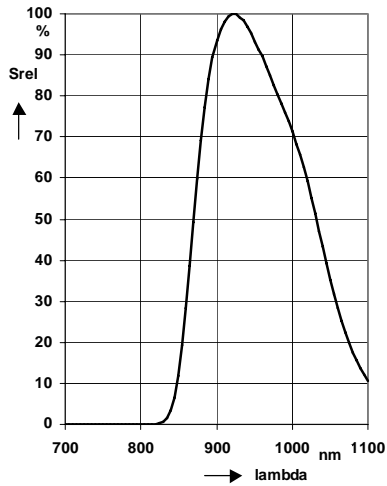
Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		-2	-3	-4	
Fotostrom Photocurrent $E_e = 0.5 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, V_{CE} = 5 \text{ V}$	$I_{PCE}$	0.63...1.25	1.0...2.0	1.6...3.2	mA
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 1 \text{ k}\Omega$	$t_r,$ $t_f$	7 9			$\mu\text{s}$
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}^{1)} \times 0.3,$ $E_e = 0.5 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$V_{CEsat}$	140 ( $\leq 400$ )			mV

<sup>1)</sup>  $I_{PCEmin}$  ist der minimale Fotostrom der jeweiligen Gruppe.

<sup>1)</sup>  $I_{PCEmin}$  is the min. photocurrent of the specified group.

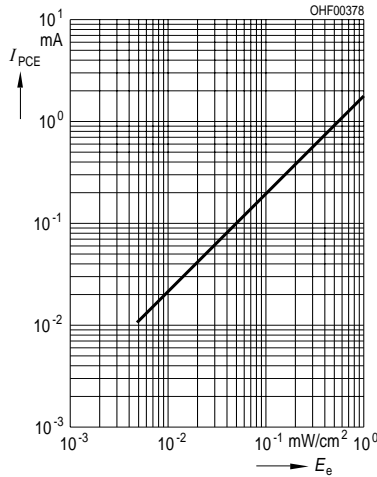
**Relative Spectral Sensitivity**

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



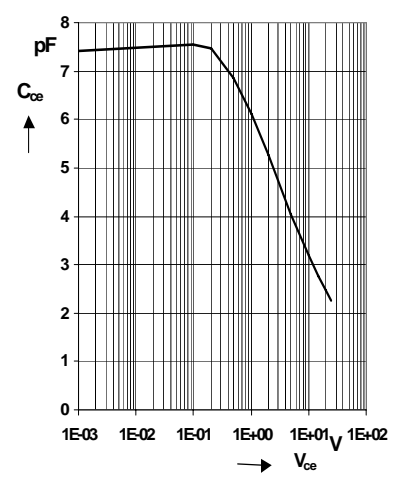
**Photocurrent**

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

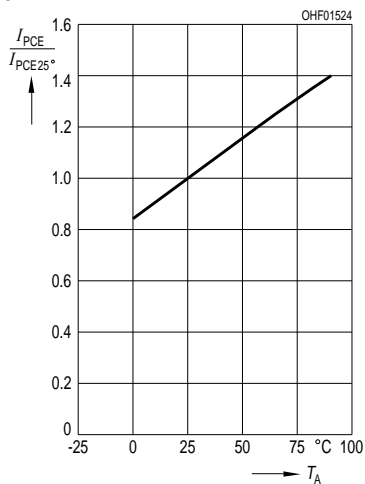


**Collector-Emitter Capacitance**

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

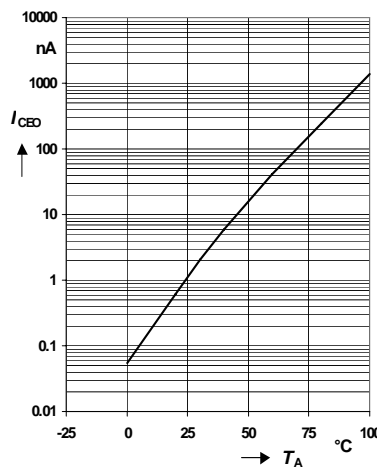


**Photocurrent  $I_{PCE} = f(T_A)$ ,  $V_{CE} = 5 V$ , normalized to 25 °C**



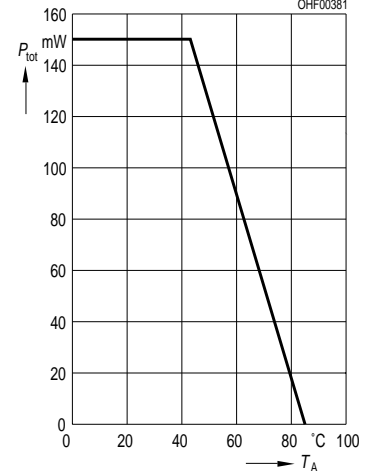
**Dark Current**

$I_{CEO} = f(T_A), V_{CE} = 20 V, E = 0$



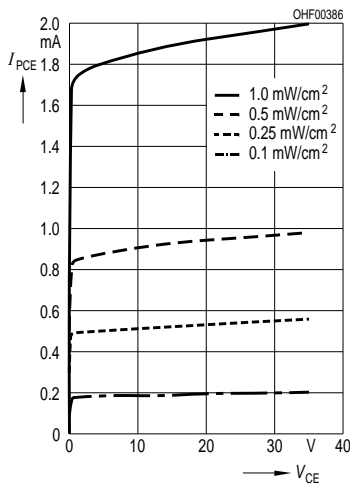
**Total Power Dissipation**

$P_{tot} = f(T_A)$



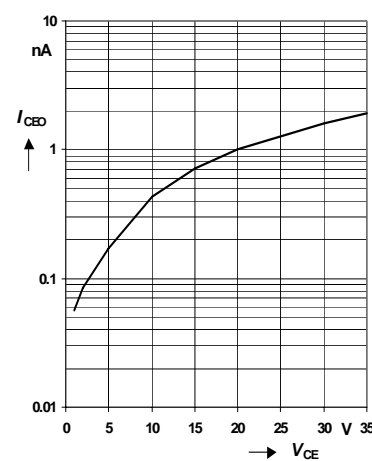
**Photocurrent SFH 3100 F**

$I_{PCE} = f(V_{CE})$

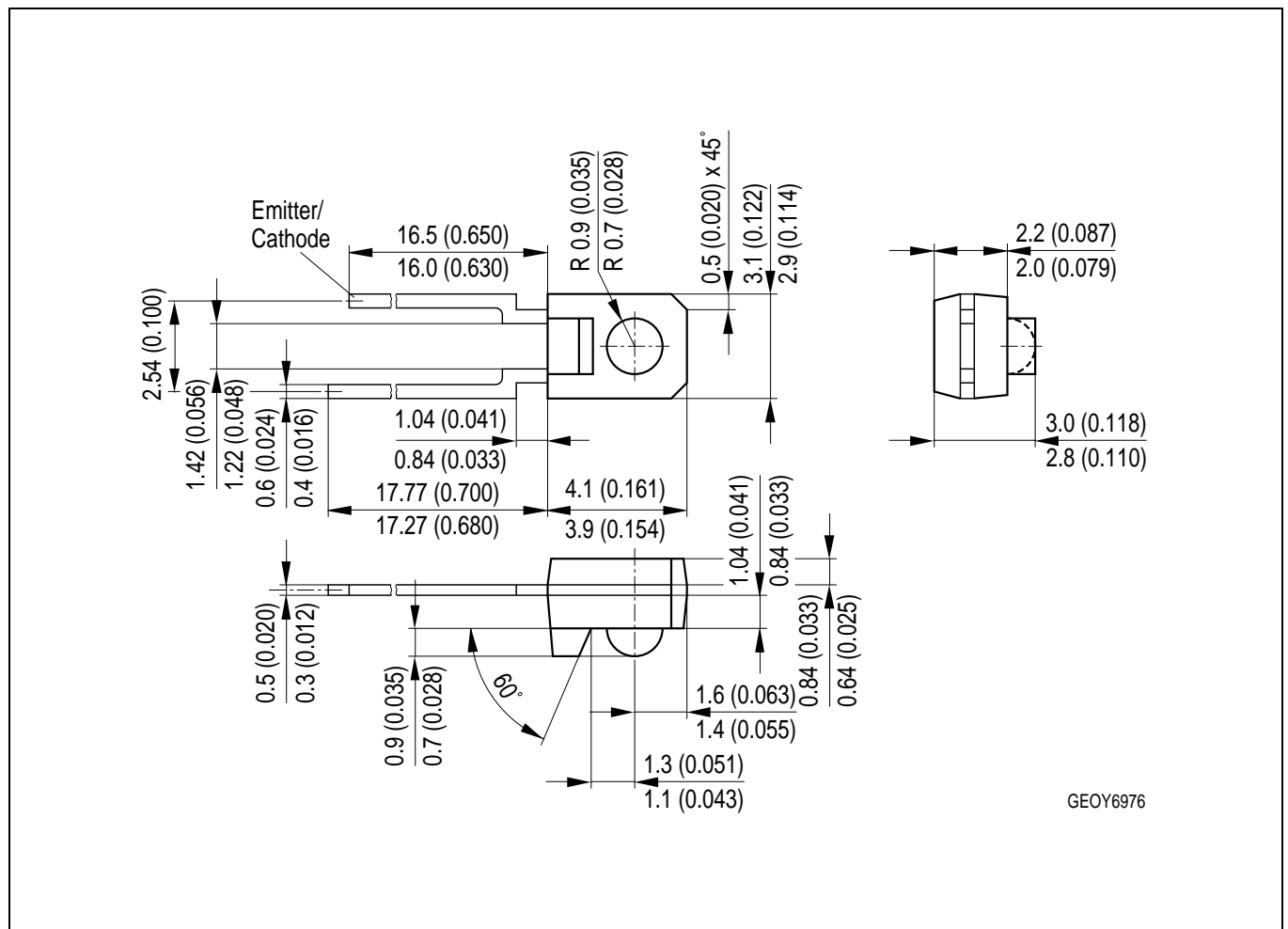


**Dark Current**

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



## Maßzeichnung Package Outlines



Maße in mm (inch) / Dimensions in mm (inch).

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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.

### Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

**Components used in life-support devices or systems must be expressly authorized for such purpose!** Critical components <sup>1</sup>, may only be used in life-support devices or systems <sup>2</sup> with the express written approval of OSRAM OS.

<sup>1</sup> 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 effectiveness of that device or system.

<sup>2</sup> 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 of the user may be endangered.

EU RoHS and China RoHS compliant product



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