

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, $T_A = 25 \text{ }^\circ\text{C}$ 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_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	850 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	0.11	mm ²
Abmessungen der Chip-Fläche Dimension of chip area	$L \times B$ $L \times W$	0.5×0.5	mm \times mm
Halbwinkel Half angle	φ	± 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_{CE}	7.5 4.0	pF
Dunkelstrom, $V_{\text{CE}} = 20\text{ V}$ Dark current	I_{CEO}	1 (≤ 50)	nA
Fotostrom Photocurrent $E_e = 0.5\text{ mW/cm}^2, V_{\text{CE}} = 5\text{ V}$	I_{PCE}	>0.4	mA

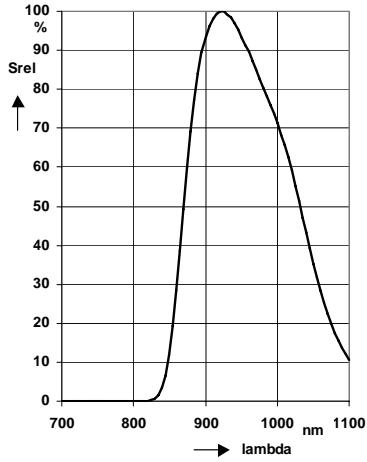
Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		-2	-3	-4	
Fotostrom Photocurrent $E_e = 0.5 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, V_{CE} = 5 \text{ V}$	I_{PCE}	0.63...1.25	1.0...2.0	1.6...3.2	mA
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 \text{ mA}, V_{CC} = 5 \text{ V}, R_L = 1 \text{ k}\Omega$	$t_r,$ t_f	7 9			μs
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 (≤ 400)			mV

¹⁾ I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

¹⁾ I_{PCEmin} is the min. photocurrent of the specified group.

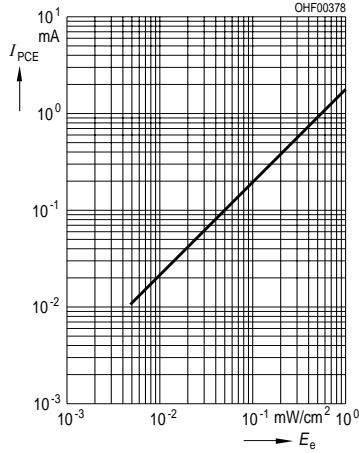
Relative Spectral Sensitivity

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



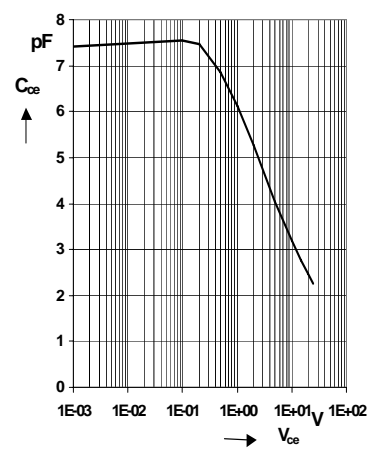
Photocurrent

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

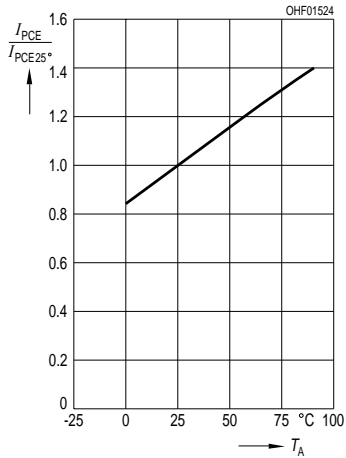


Collector-Emitter Capacitance

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

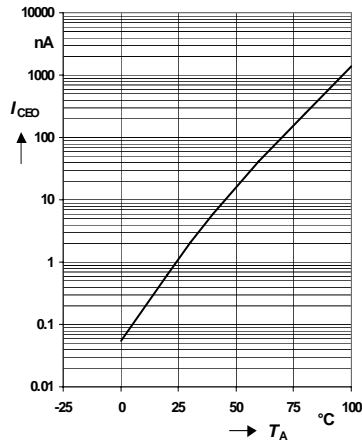


Photocurrent $I_{PCE} = f(T_A)$, $V_{CE} = 5 V$, normalized to 25 °C



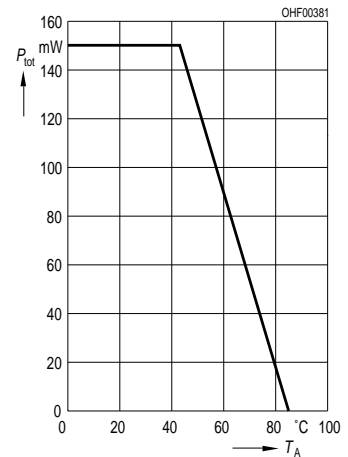
Dark Current

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



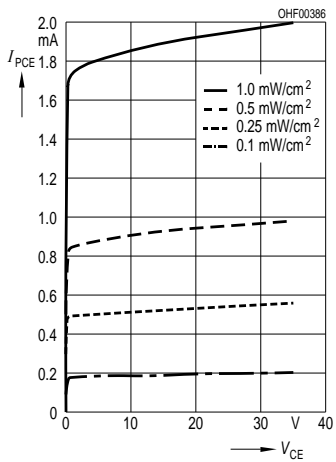
Total Power Dissipation

$P_{tot} = f(T_A)$



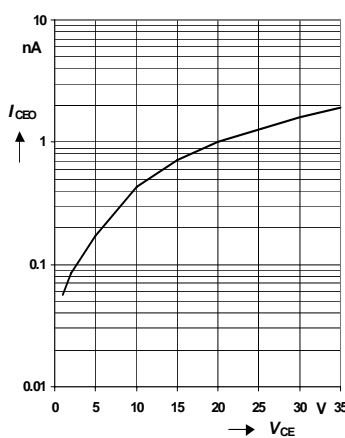
Photocurrent SFH 3100 F

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

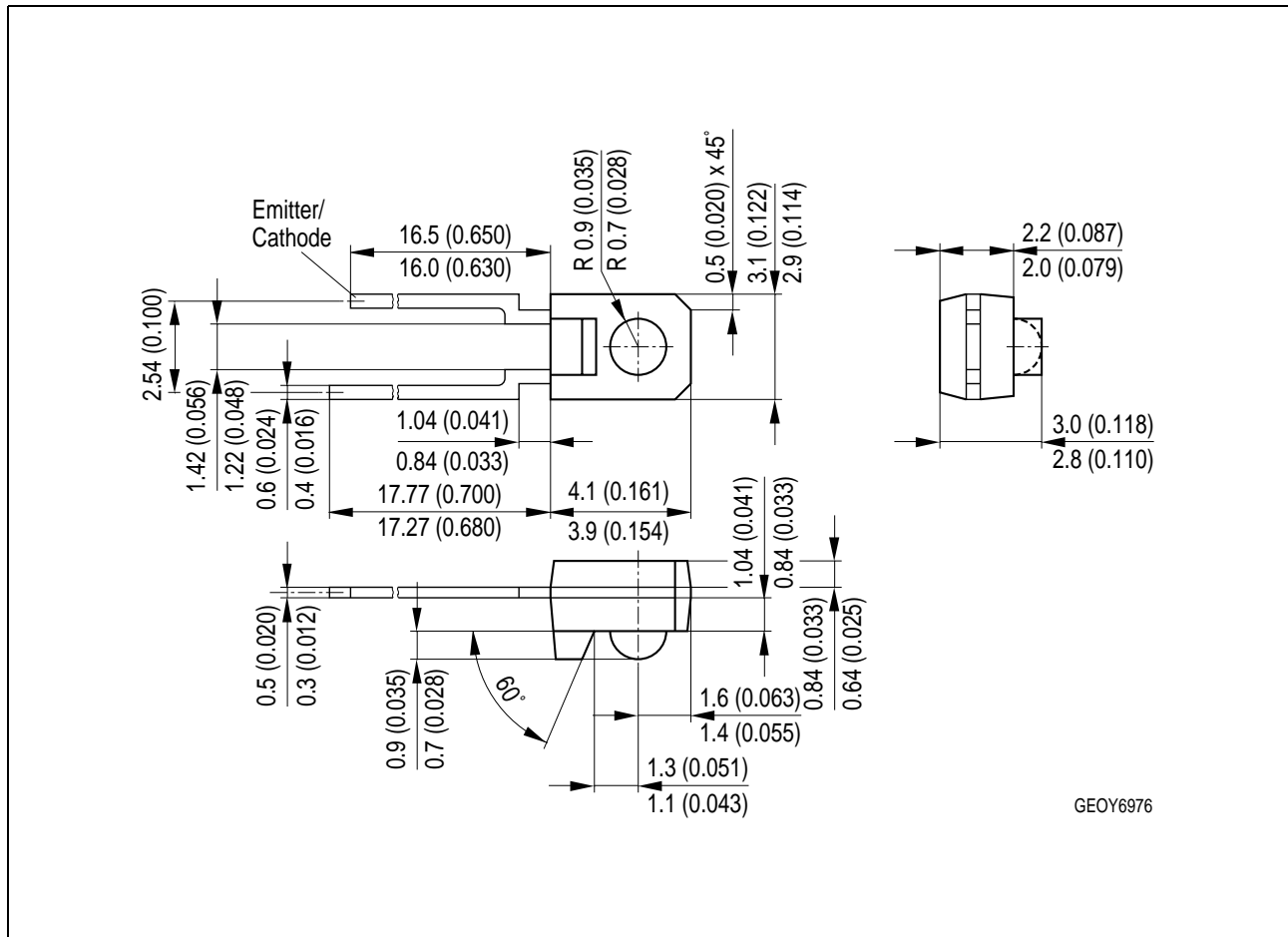


Dark Current

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



Maßzeichnung Package Outlines



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

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EU RoHS and China RoHS compliant product



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