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 840 nm bis 1080 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 840 nm to 1080 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**	I_{PCE} **(mA)** (λ = 950 nm, E_e = 0.5 mW/cm^2, V_{CE} = 5 V)
SFH 3100 F SFH 3100 F-2/3/4	Q62702P5073 Q62702P5475	>0.4 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} V_{CE} (t < 2 min)	30 70	V
Kollektorstrom Collector current	I_C	50	mA
Kollektorspitzenstrom, t < 10 µs Collector surge current	I_{CS}	100	mA
Emitter-Kollektorspannung Emitter-collector voltage	V_{EC}	7	V
Verlustleistung, T_A = 25 °C Total power dissipation	P_{tot}	150	mW
Wärmewiderstand Sperrschicht - Umgebung Thermal resistance junction - ambient	R_{thJA}	280	K/W

Kennwerte (T_A = 25 °C, λ = 950 nm)
Characteristics

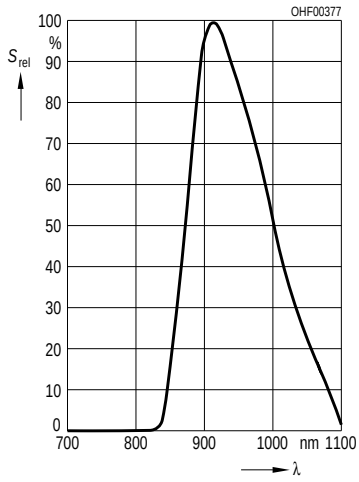
Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	920	nm
Spektraler Bereich der Fotoempfindlichkeit S = 10% von S_{max} Spectral range of sensitivity S = 10% of S_{max}	λ	840 … 1080	nm
Abmessungen der Chip-Fläche Dimension of chip area	$L \times B$ $L \times W$	0.55 × 0.55	mm × mm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	0.11	mm^2
Halbwinkel Half angle	φ	± 14	Grad deg.
Kapazität Capacitance V_{CE} = 0 V, f = 1 MHz, E = 0 V_{CE} = 5 V, f = 1 MHz, E = 0	C_{CE}	6.5 3.0	pF
Dunkelstrom, V_{CE} = 20 V Dark current	I_{CEO}	2 (≤ 50)	nA
Fotostrom Photocurrent E_e = 0.5 mW/cm², V_{CE} = 5 V	I_{PCE}	>0.4	mA

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		-2	-3	-4	
Fotostrom, $\lambda = 950$ nm Photocurrent E_e = 0.5 mW/cm^2, V_{CE} = 5 V	I_{PCE}	0.63 … 1.25	1 … 2	1.6 … 3.2	mA
Anstiegszeit/Abfallzeit Rise and fall time I_C = 1 mA, V_{CC} = 5 V, R_L = 1 kΩ	t_r, t_f	7 9			µs
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = I_{PCEmin}$ [1] × 0.3, E_e = 0.5 mW/cm^2, $\lambda = 950$ nm	V_{CEsat}	110 (≤ 400)			mV

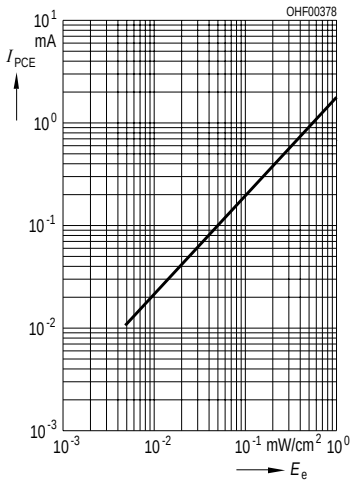
[1] I_{PCEmin} ist der minimale Fotostrom der jeweiligen Gruppe.

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

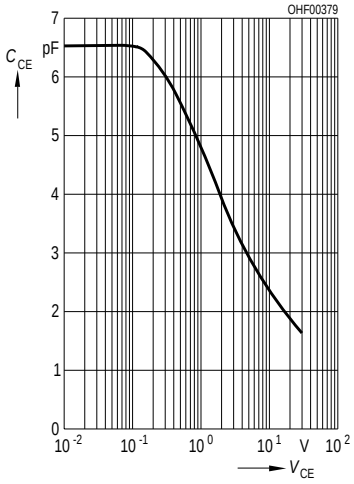
Relative Spectral Sensitivity
$S_{rel} = f(\lambda)$



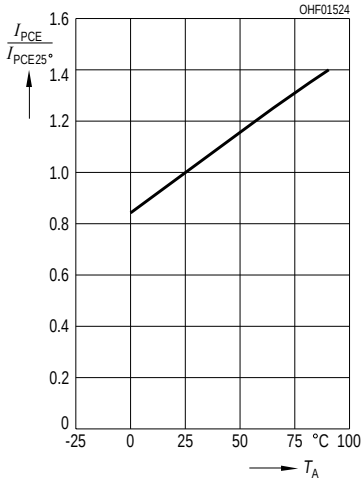
Photocurrent
$I_{PCE} = f(E_e)$, V_{CE} = 5 V



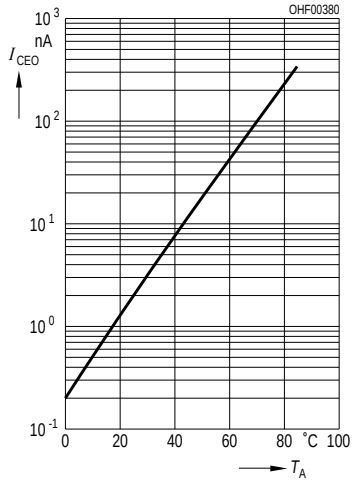
Collector-Emitter Capacitance
$C_{CE} = f(V_{CE})$, f = 1 MHz, E = 0



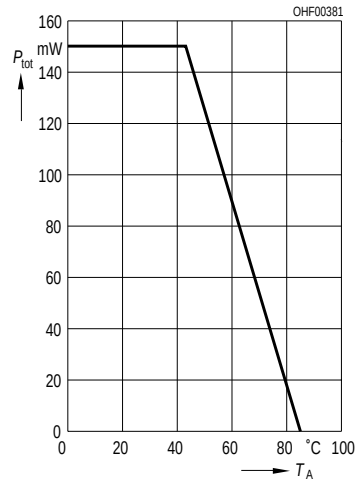
Photocurrent $I_{PCE} = f(T_A)$,
V_{CE} = 5 V, normalized to 25 °C



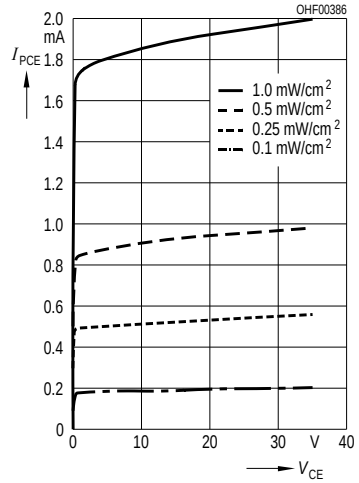
Dark Current
$I_{CEO} = f(T_A)$, V_{CE} = 20 V, E = 0



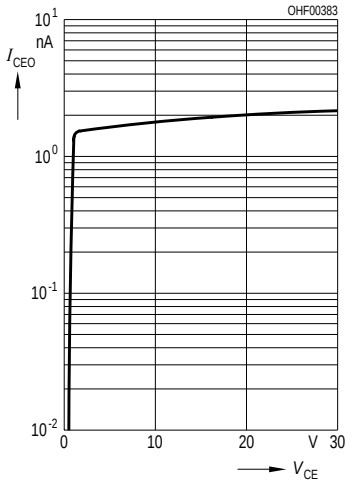
Total Power Dissipation
$P_{tot} = f(T_A)$



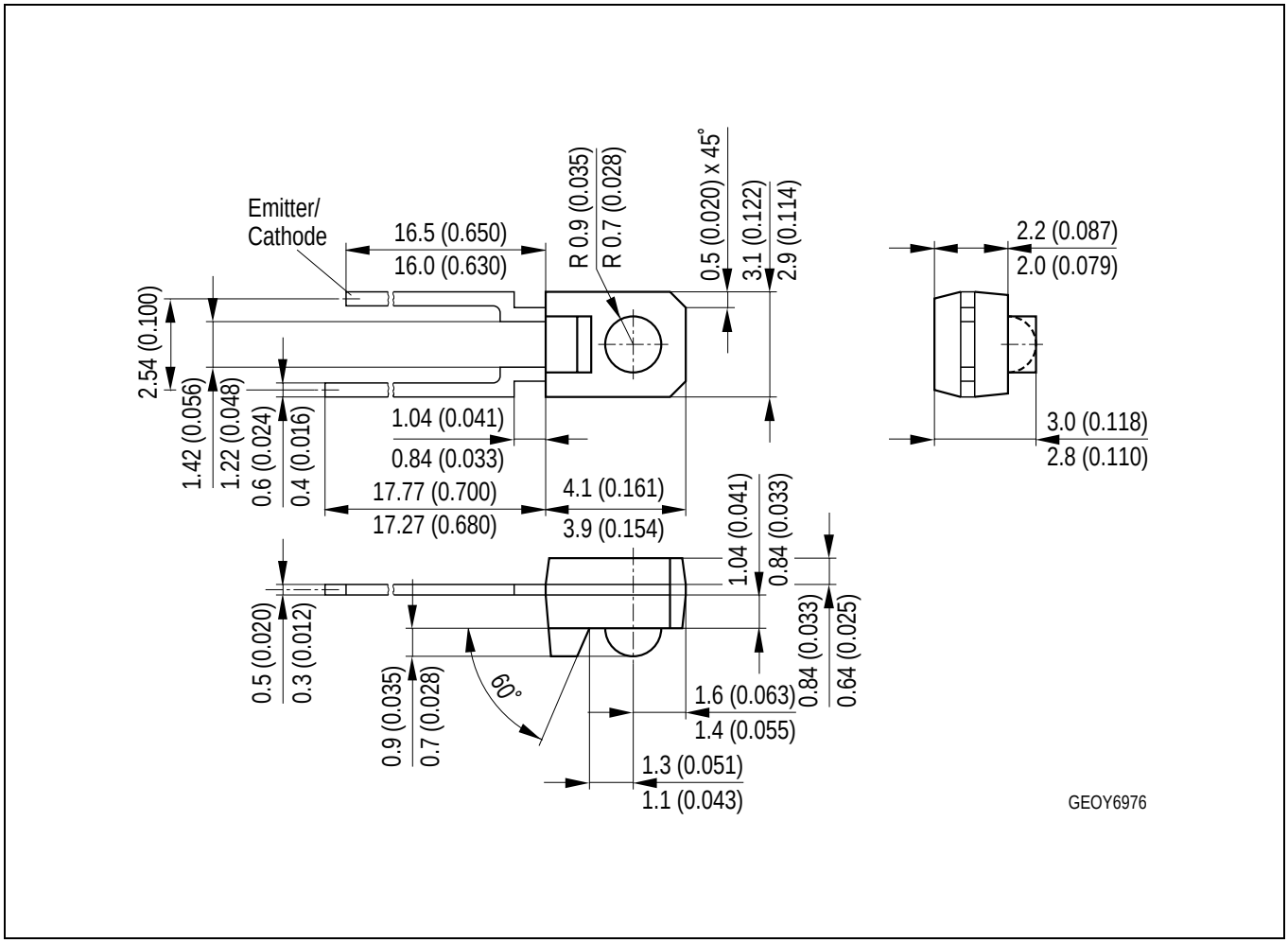
Photocurrent SFH 3100 F
$I_{PCE} = f(V_{CE})$



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



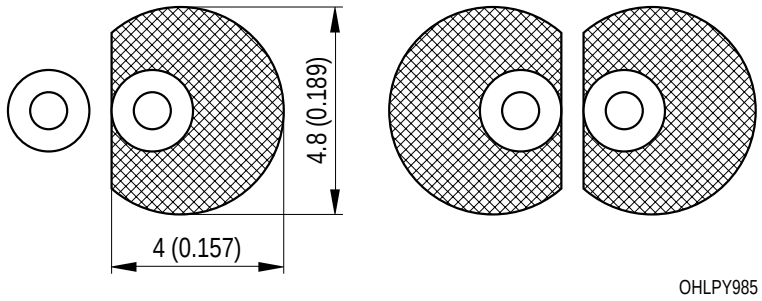
Maßzeichnung
Package Outlines



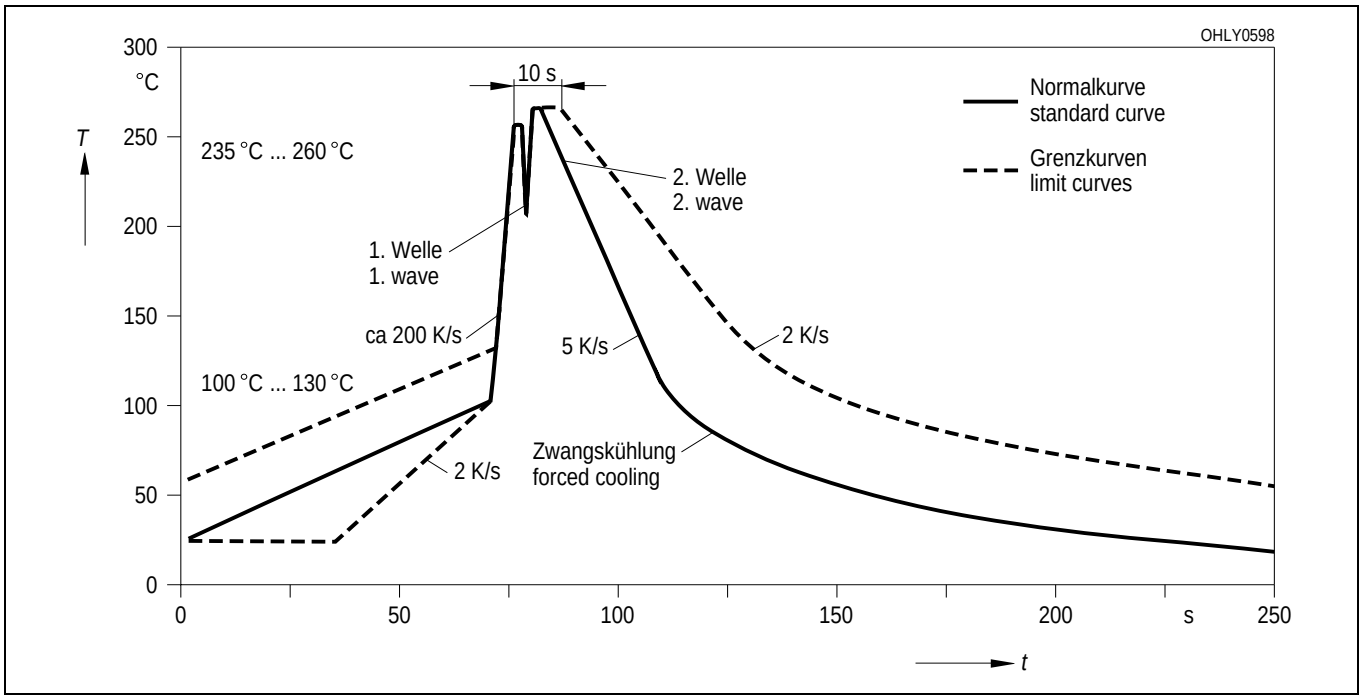
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

Empfohlenes Lötpaddesign
Recommended Solder Pad

Wellenlöten (TTW)
TTW Soldering



Lötbedingungen
Soldering Conditions
Wellenlöten (TTW) (nach CECC 00802)
TTW Soldering (acc. to CECC 00802)



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