

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

**SFH 3162 F**



**Wesentliche Merkmale**

- Tageslichtsperrfilter
- Doppel-Fototransistor nebeneinander positioniert
- Doppel-Fototransistor mit gemeinsamem Kollektor
- Optimale Kombination mit SFH4113 (horizontaler Encoder)

**Features**

- Daylight Filter
- Dual Phototransistor positioned side by side
- Dual Phototransistor with common Collector
- Ideal combination with SFH4113 (horizontal encoder)

**Anwendungen**

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

**Applications**

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

Typ Type	Bestellnummer Ordering Code	$I_{ce(on)}$ [ $\mu A$ ] ( $V_{ce}=3.5V$ , $950nm$ , $E_e=0.34mW/cm^2$ )
SFH 3162 F	Q62702P5297	185 ... 585

**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
Löttemperatur bei Tauchlötung Lötstelle $\geq 2$ mm vom Gehäuse, Lötzeit $t \leq 5$ s Dip soldering temperature $\geq 2$ mm distance from case bottom, soldering time $t \leq 5$ s	$T_S$	260	°C
Löttemperatur bei Kolbenlötung Lötstelle $\geq 2$ mm vom Gehäuse, Lötzeit $t \leq 3$ s Iron soldering temperature $\geq 2$ mm distance from case bottom, soldering time $t \leq 3$ s	$T_S$	300	°C
Kollektor-Emitterspannung Collector-emitter voltage	$V_{CE}$	30	V
Kollektorstrom Collector current	$I_C$	10	mA
Kollektorspitzenstrom, $t < 10 \mu s$ Collector surge current	$I_{CS}$	20	mA
Emitter-Kollektorspannung Emitter-collector voltage	$V_{EC}$	7	V
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	$P_{tot}$	100	mW
Wärmewiderstand Sperrschicht - Umgebung Thermal resistance junction - ambient	$R_{thJA}$	450	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 $S_{\text{max}}$	$\lambda$	780 ... 1100	nm
Abmessungen der Chip-Fläche Dimension of chip area	$L \times B$ $L \times W$	$1.23 \times 0.66$	mm × mm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	$2 \times 0.15$	mm <sup>2</sup>
Halbwinkel Half angle	$\varphi$	$\pm 75$	Grad deg.
Kapazität Capacitance $V_{CE} = 3\text{V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_{CE}$	3.2	pF
Dunkelstrom Dark current $V_{CE} = 10\text{ V}$	$I_{CEO}$	0.1 ( $\leq 100$ )	nA
Fotostrom Photocurrent $E_e = 0.34\text{ mW/cm}^2$ , $V_{CE} = 3.5\text{ V}$	$I_{e(\text{on})}^{1)}$	185 .... 585	$\mu\text{A}$
Temperaturkoeffizient von $I_{e(\text{on})}$ Temperature coefficient of $I_{e(\text{on})}$ $V_{ce} = 5\text{ V}$	$TC$	+ 0.9	%/K

1)  $I_{e(\text{on})}$  ist der Mittelwert der Emitterströme der beiden Fototransistoren.

$I_{e(\text{on})}$  is the mean value of the emitter currents of the two phototransistors.

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Emitterstrom-Verhältnis der 2 Fototransistoren Emitter current ratio of the 2 phototransistors $V_{eco} = 3.5V, E_e = 0.34mW/cm^2$	$R^{1)}$	1 ... 1.1	
Übersprechen zwischen T1 und T2 Crosstalk between T1 and T2 $E_e = 0.34 mW/cm^2, \lambda = 950nm, V_{CE} = 3.5 V$	$(I_{e1} - I_{e1}') / I_{e1}^{2)}$	3	%
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1 mA, V_{CC} = 5 V, R_L = 1 k\Omega$	$t_r$ $t_f$	11 11	$\mu s$
Kollektor-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = 50\mu A,$ $E_e = 0.5 mW/cm^2, \lambda = 950 nm$	$V_{CEsat}$	0.1 ( $\leq 0.4$ )	V

1)  $I_{e(max)} / I_{e(min)}$

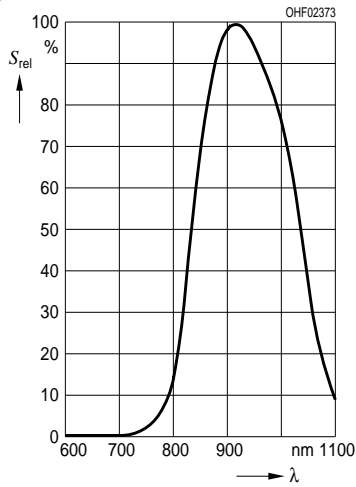
2) Testing condition

a)  $I_{e1}$  measured while the emitter of T2 is grounded

b)  $I_{e1}'$  is the  $I_{e1}$  reading while the emitter of T2 is not connected

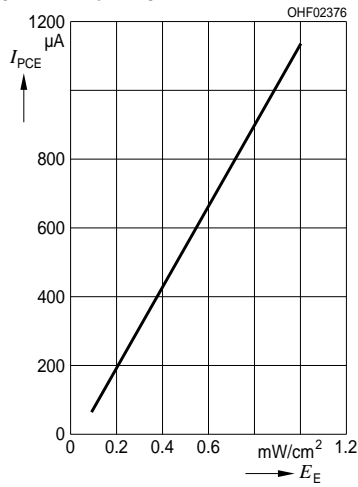
**Relative Spectral Sensitivity**

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



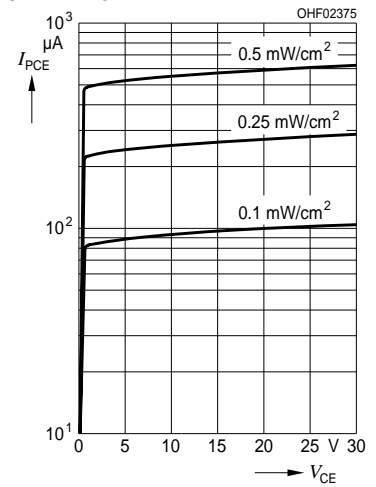
**Photocurrent**

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



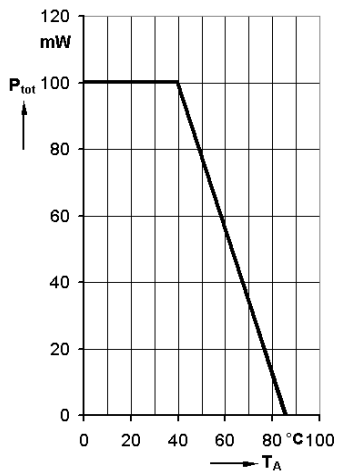
**Photocurrent**

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



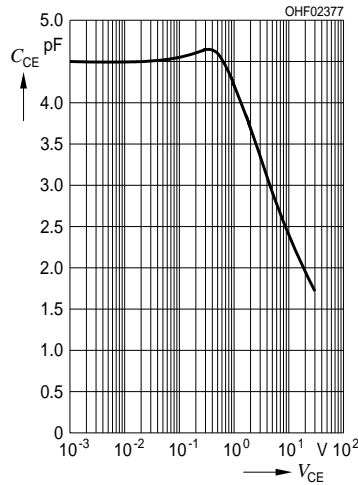
**Total Power Dissipation**

$P_{tot} = f(T_A)$



**Collector-Emitter Capacitance**

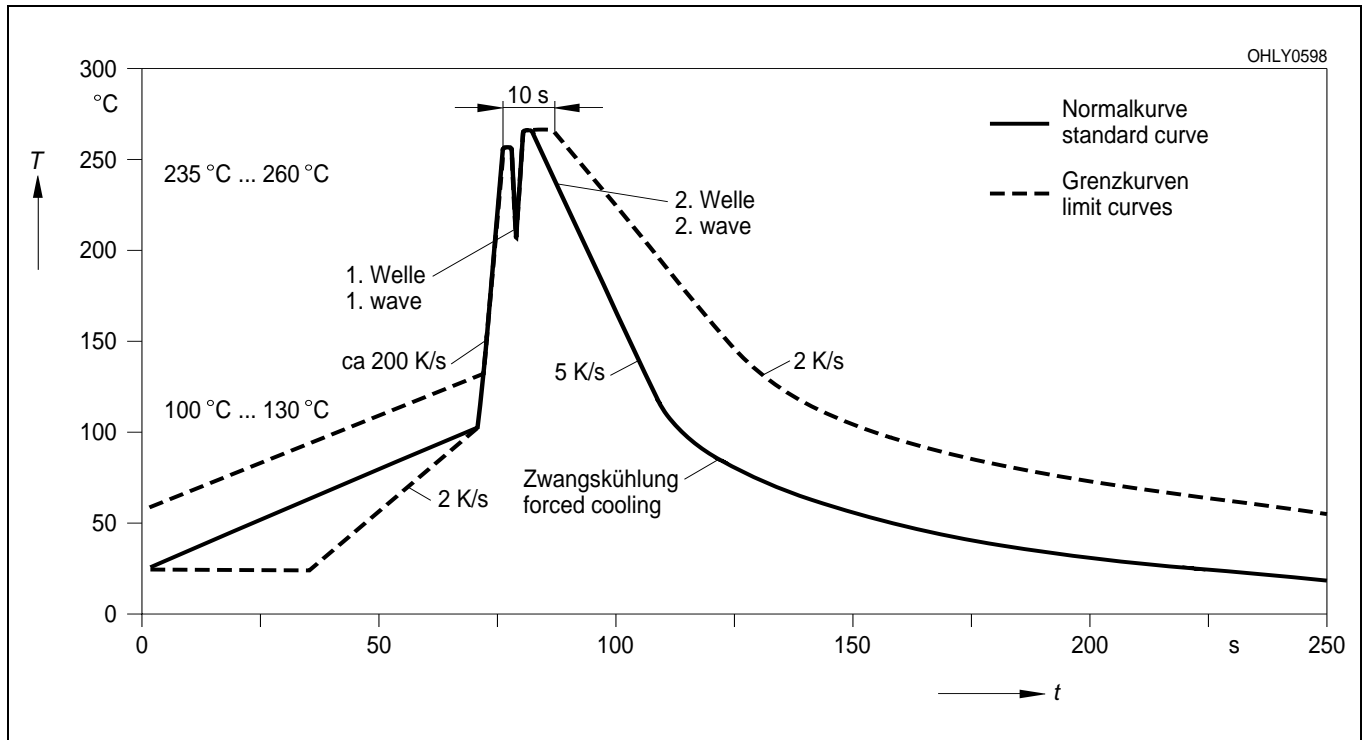
$C_{CE} = f(V_{CE}), f = 1 MHz, E = 0$





**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten (TTW)**  
**TTW Soldering**

(nach CECC 00802)  
(acc. to CECC 00802)



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