

**NPN-Silizium-Fototransistor**  
**Silicon NPN Phototransistor**  
**Lead (Pb) Free Product - RoHS Compliant**

**SFH 3010**

**Nicht für Neuentwicklungen /  
not for new designs**



**Wesentliche Merkmale**

- Sehr kleines SMT-Gehäuse:  
(LxBxH) 1,7 mm x 0,8 mm x 0,65 mm
- Speziell geeignet für Anwendungen im Bereich von 420 nm bis 1100 nm
- großer Empfangswinkel  $\pm 80^\circ$
- Nur gegurtet lieferbar

**Anwendungen**

- Miniaturlichtschranken
- Sensorik (z.B. Handy)
- „Messen/Steuern/Regeln“

**Features**

- Very small SMT package:  
(LxWxH) 1.7 mm x 0.8 mm x 0.65 mm
- Especially suitable for applications from 420 nm to 1100 nm
- large viewing angle  $\pm 80^\circ$
- Available only on tape and reel

**Applications**

- Miniature photointerrupters
- Sensor technology (eg mobile phone)
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code	Fotostrom , ( $E_e=0,5\text{mW/cm}^2, \lambda=950\text{nm } V_{CE} = 5 \text{ V}$ ) Photocurrent $I_{pce} (\mu\text{A})$
SFH 3010	Q65110A2652	> 25.0

**Grenzwerte**  
**Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operating and storage temperature range	$T_{op}; T_{stg}$	- 40 ... + 100	°C
Kollektor-Emitterspannung Collector-emitter voltage	$V_{CE}$ $V_{CE} (t < 2 \text{ min})$	15 30	V
Kollektorstrom Collector current	$I_C$	15	mA
Kollektorspitzenstrom, $\tau < 10 \mu\text{s}$ Collector surge current	$I_{CS}$	75	mA
Emitter-Kollektorspannung Emitter-collector voltage	$V_{EC}$	7	V
Verlustleistung, $T_A = 25 \text{ °C}$ Total power dissipation	$P_{tot}$	130	mW
Wärmewiderstand Sperrschicht - Umgebung bei Montage auf FR4 Platine, Padgröße je $5 \text{ mm}^2$ Thermal resistance junction - ambient mounted on PC-board (FR4), padsizes $5 \text{ mm}^2$ each	$R_{thJA}$	450	K/W
Wärmewiderstand Sperrschicht - Lötstelle bei Montage auf Metall-Block Thermal resistance junction - soldering point, mounted on metal block	$R_{thJS}$	250	K/W

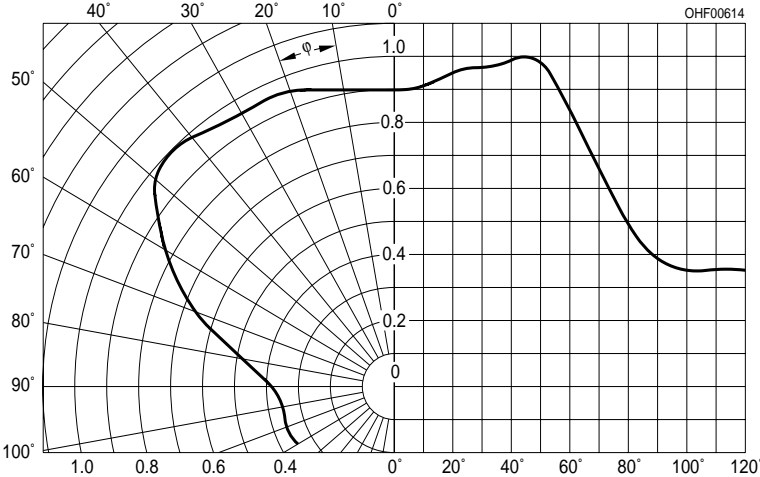
Kennwerte ( $T_A = 25\text{ °C}$ ,  $\lambda = 950\text{ nm}$ )

## Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	860	nm
Spektraler Bereich der Fotoempfindlichkeit $S = 10\%$ von $S_{\text{max}}$ Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	420 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	$A$	0.04	mm <sup>2</sup>
Abmessungen der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	$0.35 \times 0.35$	mm $\times$ mm
Halbwinkel Half angle	$\varphi$	$\pm 80$	Grad deg.
Kapazität Capacitance $V_{\text{CE}} = 5\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_{\text{CE}}$	1.3	pF
Dunkelstrom Dark current $V_{\text{CE}} = 20\text{ V}$ , $E = 0$	$I_{\text{CEO}}$	2 ( $\leq 50$ )	nA
Fotostrom Photocurrent $E_e = 0.5\text{ mW/cm}^2$ , $V_{\text{CE}} = 5\text{ V}$	$I_{\text{PCE}}$	>25.0	$\mu\text{A}$
Anstiegszeit/Abfallzeit Rise and fall time $I_C = 1\text{ mA}$ , $V_{\text{CC}} = 5\text{ V}$ , $R_L = 1\text{ k}\Omega$	$t_r, t_f$	7	$\mu\text{s}$
Kollektrr-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_C = 10\mu\text{A}$ $E_e = 0.5\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$	$V_{\text{CEsat}}$	140	mV

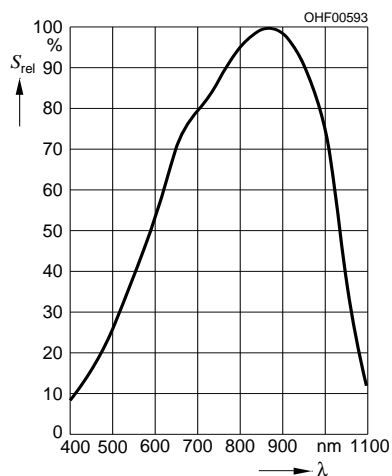
**Directional Characteristics**

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



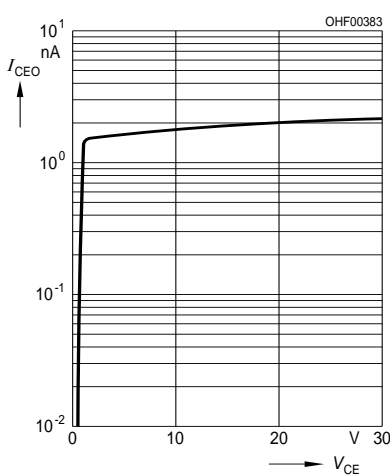
**Rel. Spectral Sensitivity,**

$S_{rel} = f(\lambda)$ , axial direction



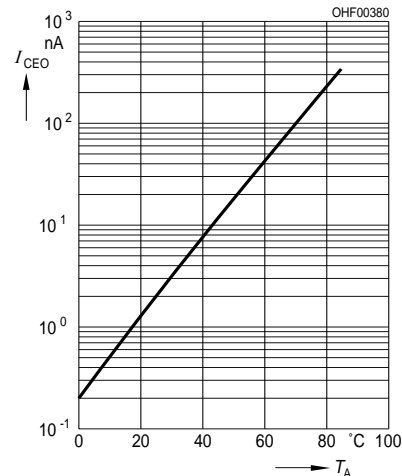
**Dark Current**

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



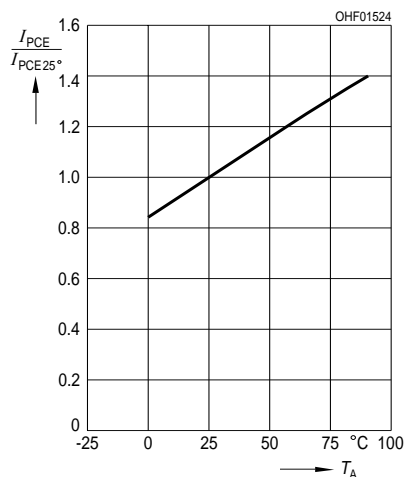
**Dark Current**

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



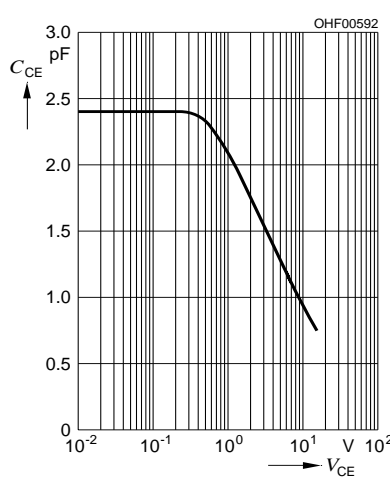
**Photocurrent  $I_{PCE} = f(T_A)$ ,**

$V_{CE} = 5 V$ , normalized to 25 °C



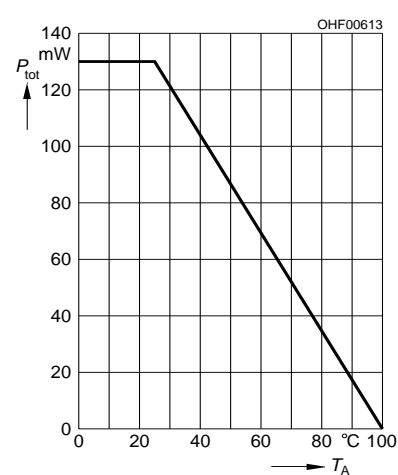
**Collector-Emitter Capacitance**

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



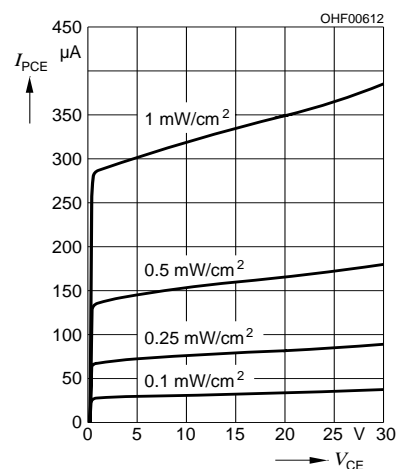
**Total Power Dissipation**

$P_{tot} = f(T_A)$

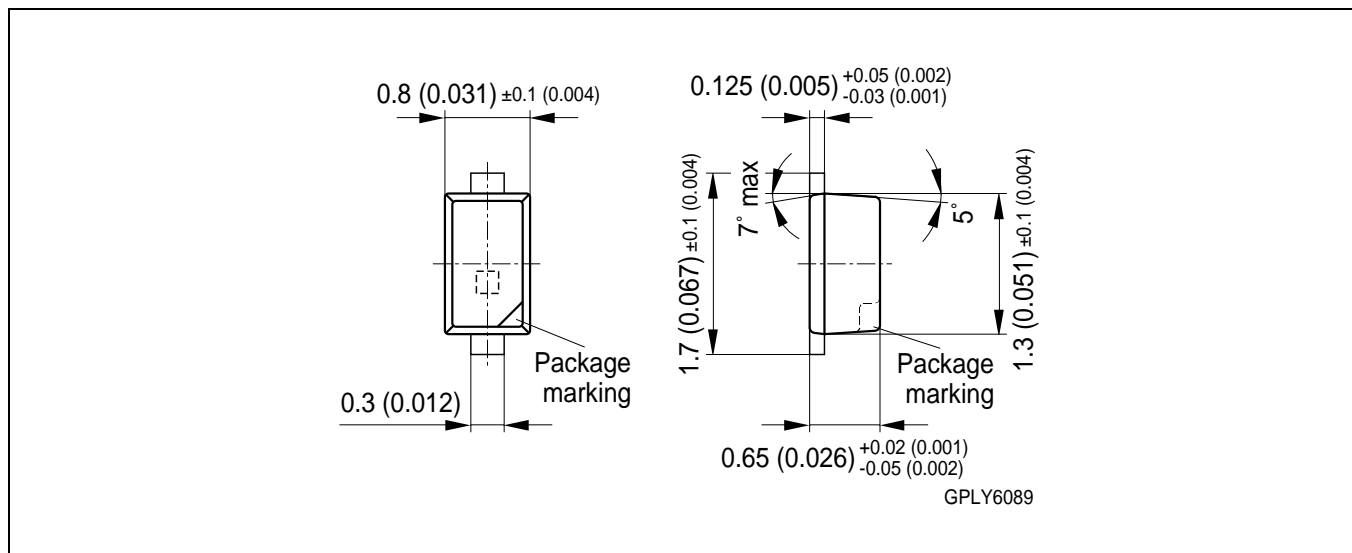


**Photocurrent**

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



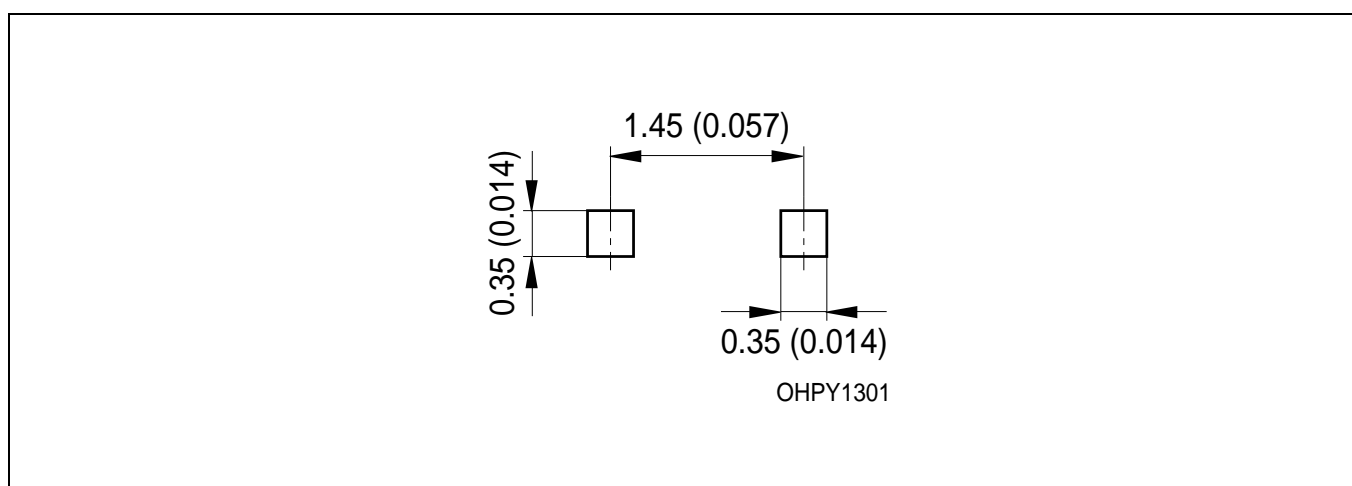
## Maßzeichnung Package Outlines



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

Gehäuse / Package	Epoxydharz, diffus / Epoxy, diffuse
Farbe / Colour	Farblos / colourless
Gehäusemarkierung/ Package marking	Kathode / Cathode

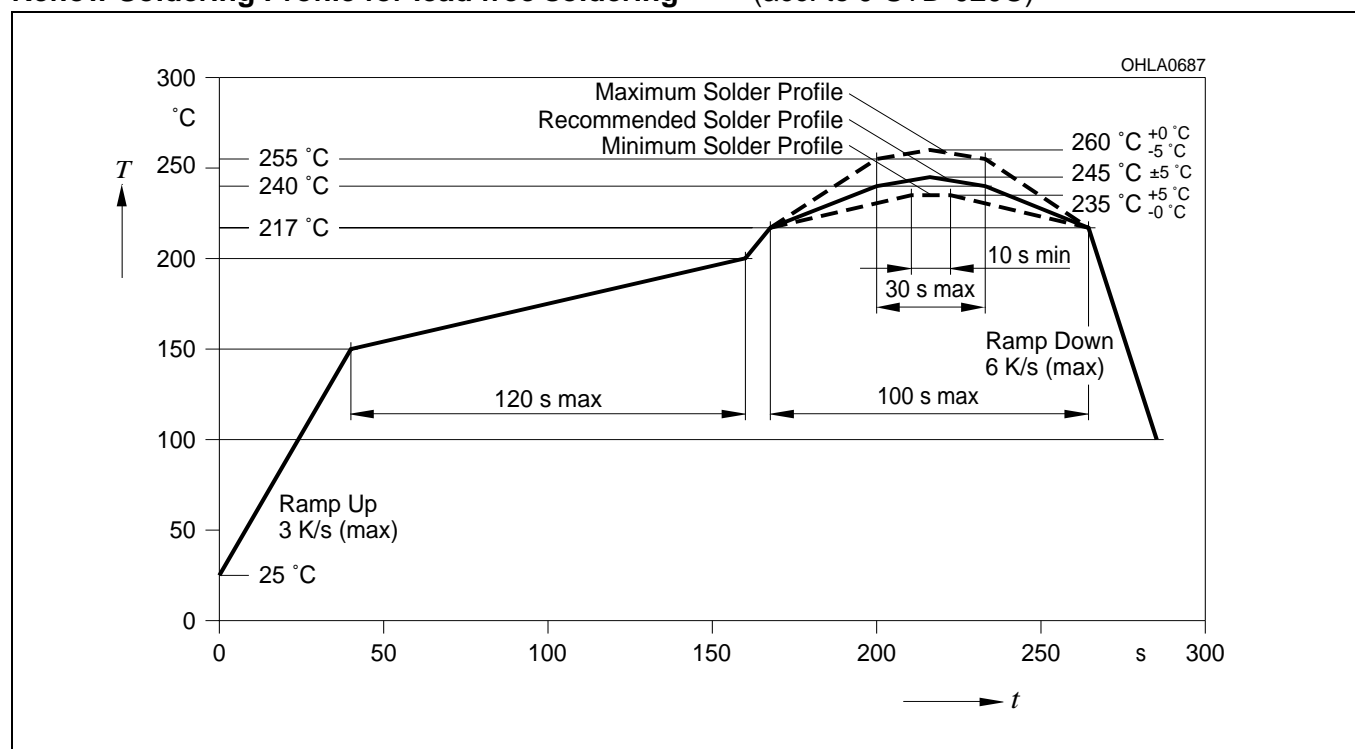
## Empfohlenes Lötpaddesign Recommended Solderpad Design



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

**Lötbedingungen**  
**Soldering Conditions**  
**Reflow Lötprofil für bleifreies Löten**  
**Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 4  
 Preconditioning acc. to JEDEC Level 4  
 (nach J-STD-020C)  
 (acc. to J-STD-020C)



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