

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 , ($E_e=0,5\text{mW}/\text{cm}^2$, $\lambda=950\text{nm}$ $V_{CE} = 5\text{ V}$) Photocurrent I_{pce} (μA)
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 mm^2 Thermal resistance junction - ambient mounted on PC-board (FR4), pads size 5 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

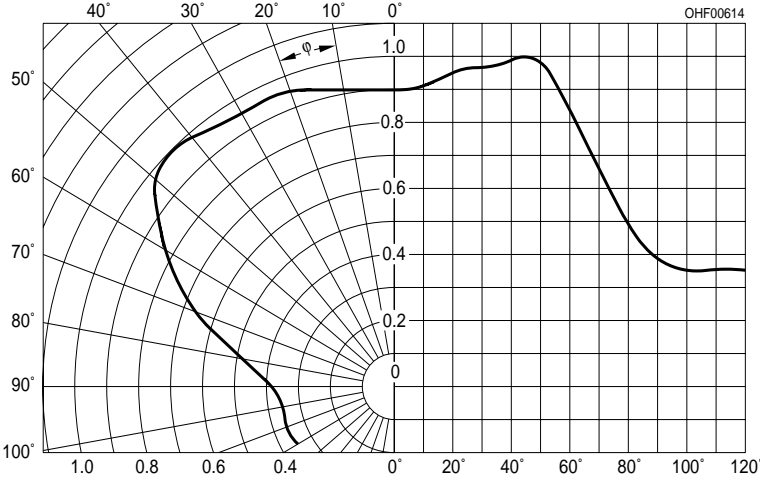
Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)

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_{max} Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	420 ... 1100	nm
Bestrahlungsempfindliche Fläche Radiant sensitive area	A	0.04	mm ²
Abmessungen der Chipfläche Dimensions of chip area	$L \times B$ $L \times W$	0.35×0.35	mm \times mm
Halbwinkel Half angle	φ	± 80	Grad deg.
Kapazität Capacitance $V_{\text{CE}} = 5\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_{CE}	1.3	pF
Dunkelstrom Dark current $V_{\text{CE}} = 20\text{ V}$, $E = 0$	I_{CEO}	2 (≤ 50)	nA
Fotostrom Photocurrent $E_e = 0.5\text{ mW/cm}^2$, $V_{\text{CE}} = 5\text{ V}$	I_{PCE}	>25.0	μA
Anstiegszeit/Abfallzeit Rise and fall time $I_{\text{C}} = 1\text{ mA}$, $V_{\text{CC}} = 5\text{ V}$, $R_{\text{L}} = 1\text{ k}\Omega$	t_r, t_f	7	μs
Kollektrr-Emitter-Sättigungsspannung Collector-emitter saturation voltage $I_{\text{C}} = 10\mu\text{A}$ $E_e = 0.5\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$	V_{CEsat}	140	mV

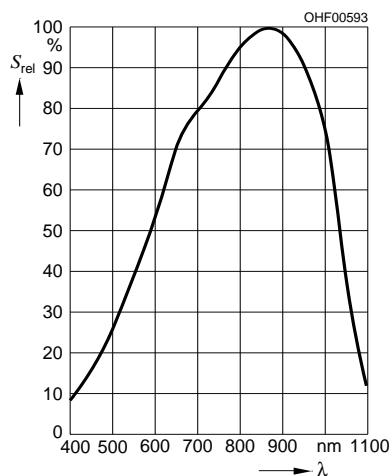
Directional Characteristics

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



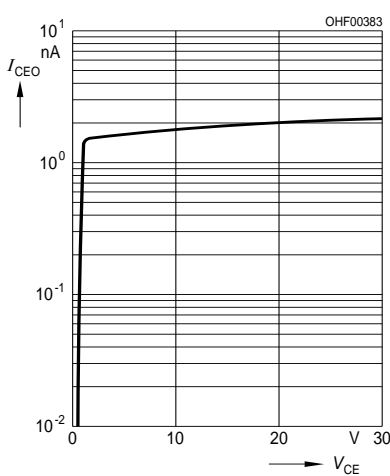
Rel. Spectral Sensitivity,

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



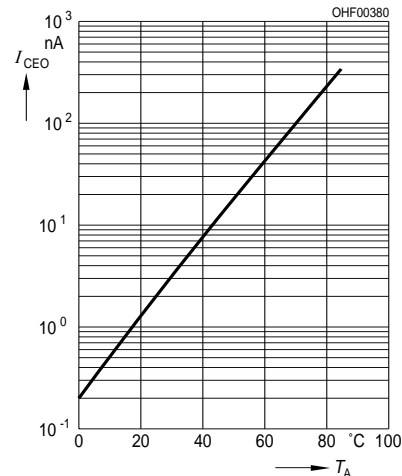
Dark Current

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



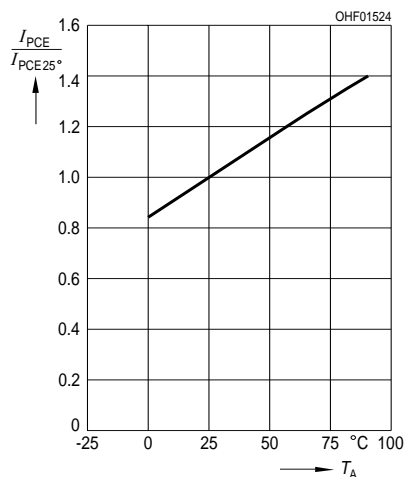
Dark Current

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



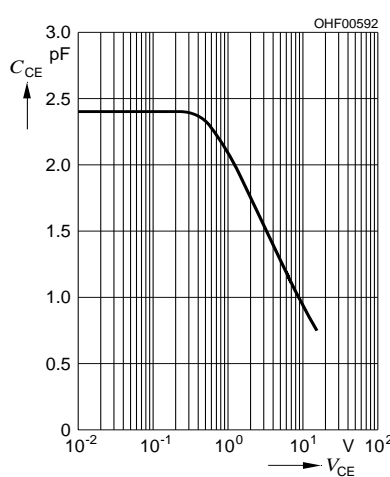
Photocurrent $I_{PCE} = f(T_A)$,

$V_{CE} = 5 V$, normalized to 25 °C



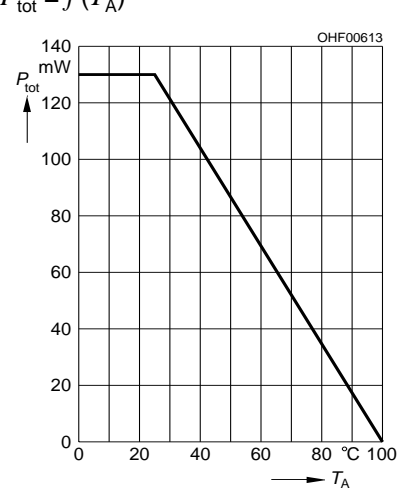
Collector-Emitter Capacitance

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



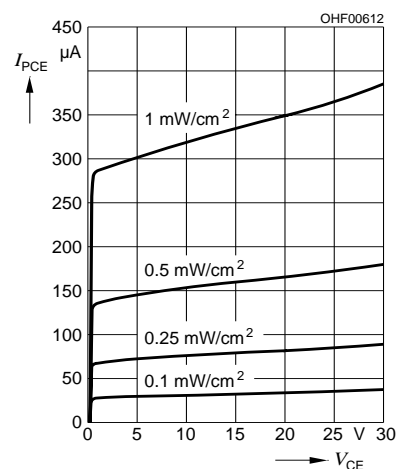
Total Power Dissipation

$P_{tot} = f(T_A)$

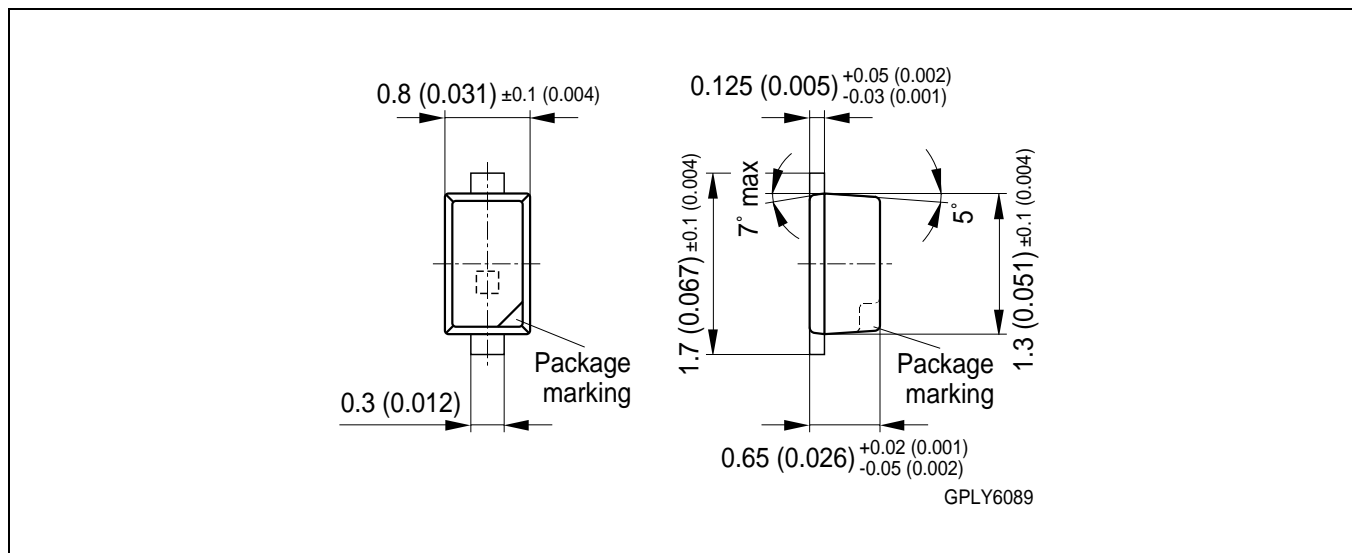


Photocurrent

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



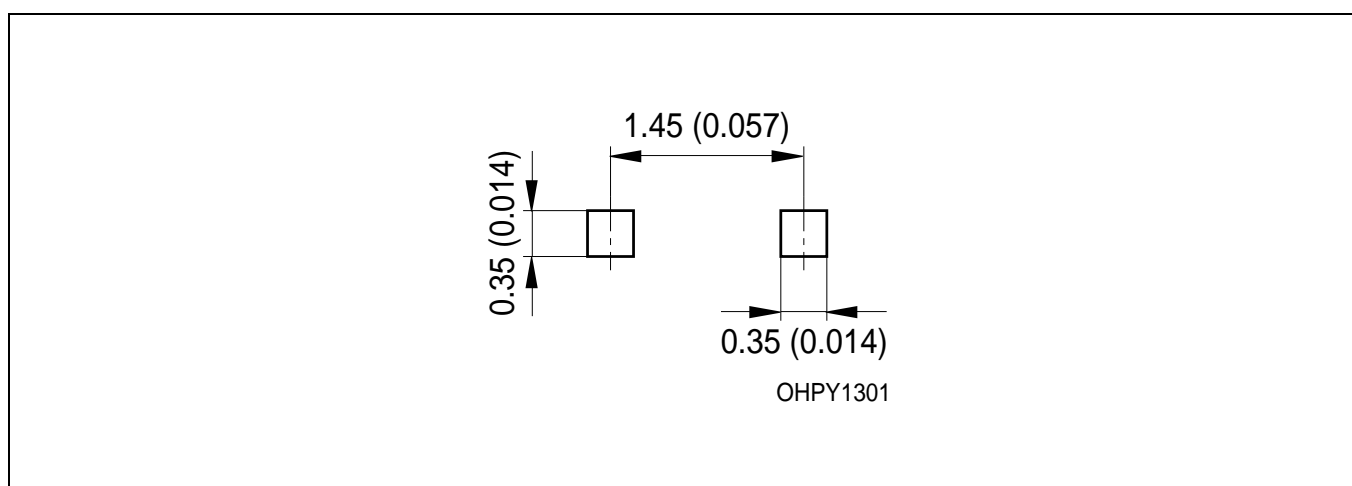
Maßzeichnung Package Outlines



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

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

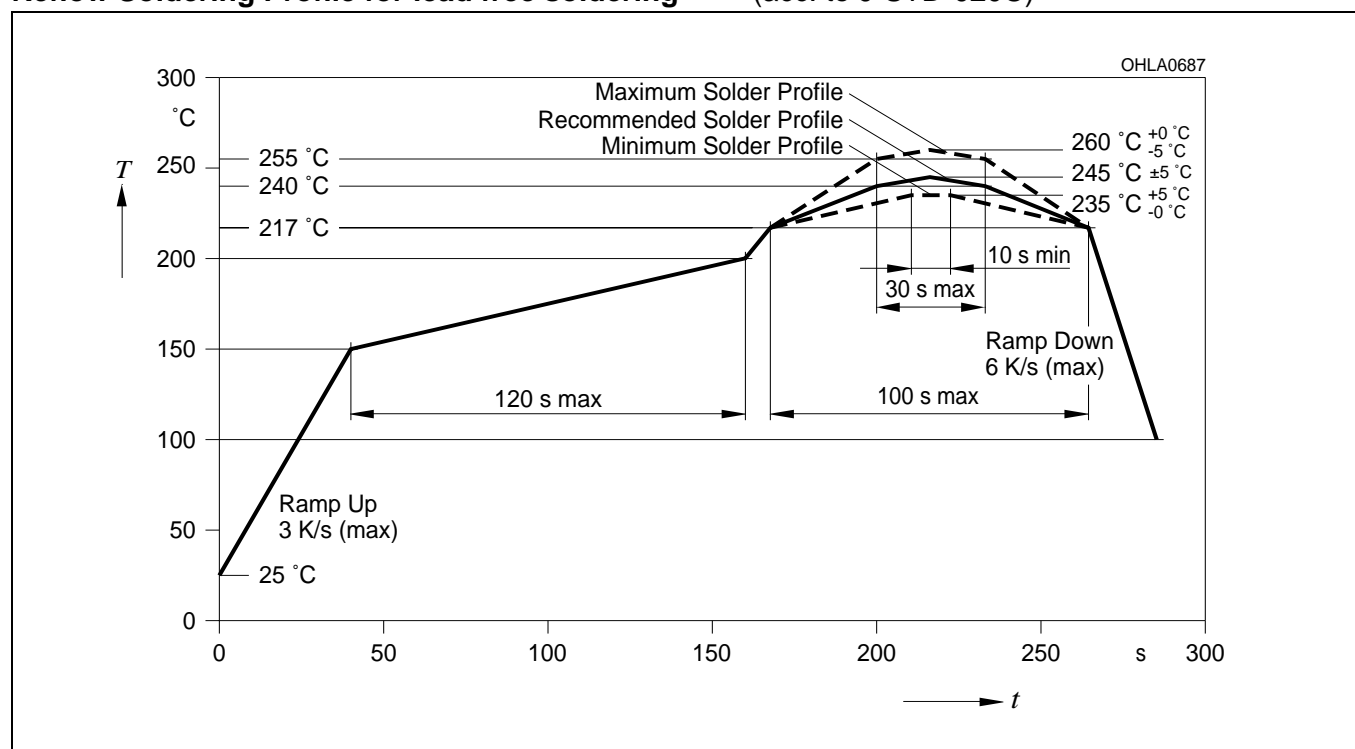
Empfohlenes Lötpaddesign Recommended Solderpad Design



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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