

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 mm^2 Thermal resistance junction - ambient mounted on PC-board (FR4), padsizes 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 |

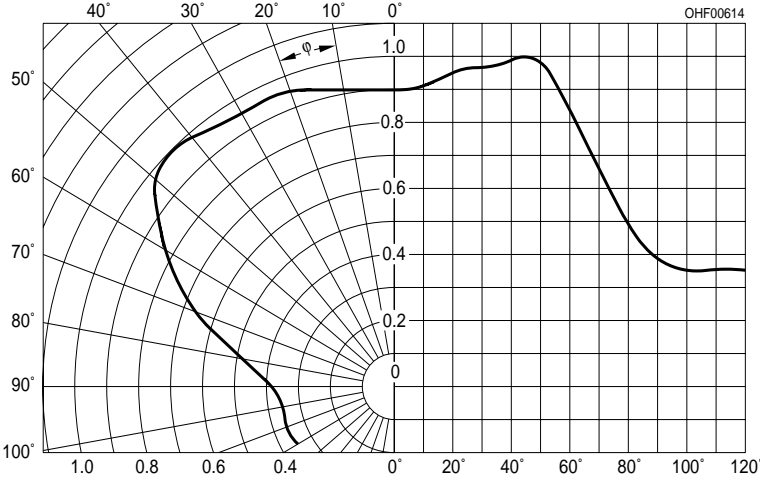
Kennwerte ($T_A = 25\text{ °C}$, $\lambda = 950\text{ nm}$)

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 $I_C = 1\text{ mA}$, $V_{\text{CC}} = 5\text{ V}$, $R_L = 1\text{ k}\Omega$ | t_r, t_f | 7 | μs |
| 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_{CEsat} | 140 | mV |

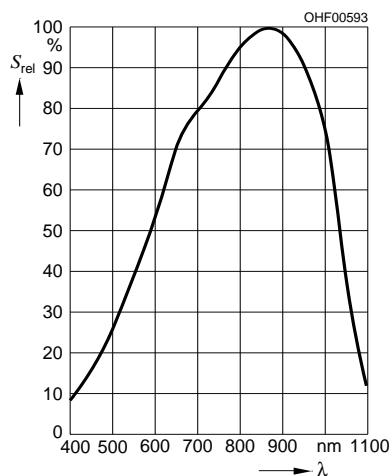
Directional Characteristics

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



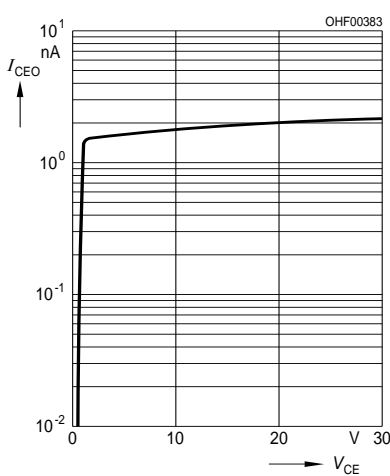
Rel. Spectral Sensitivity,

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



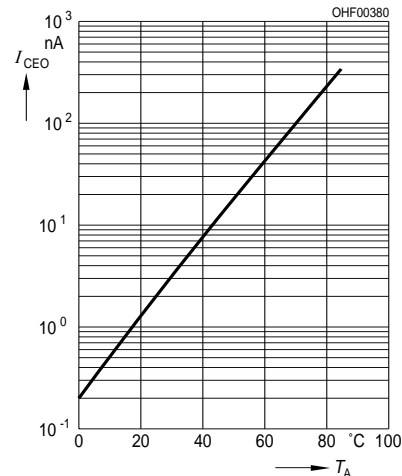
Dark Current

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



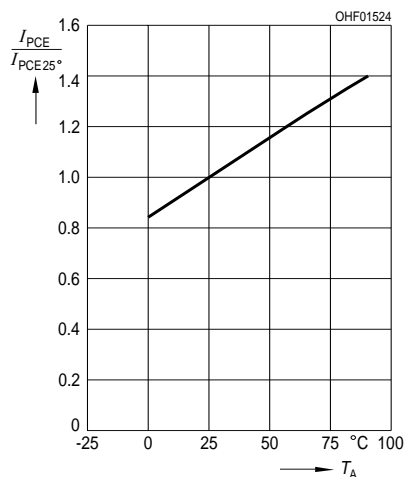
Dark Current

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



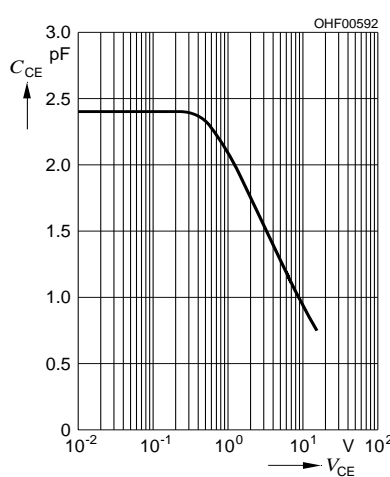
Photocurrent $I_{PCE} = f(T_A)$,

$V_{CE} = 5 V$, normalized to 25 °C



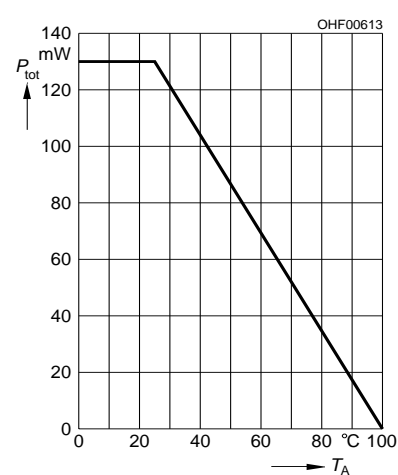
Collector-Emitter Capacitance

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



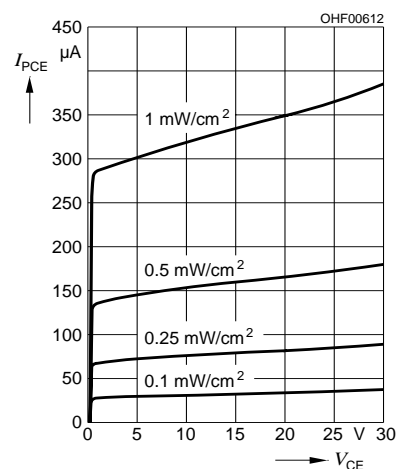
Total Power Dissipation

$P_{tot} = f(T_A)$

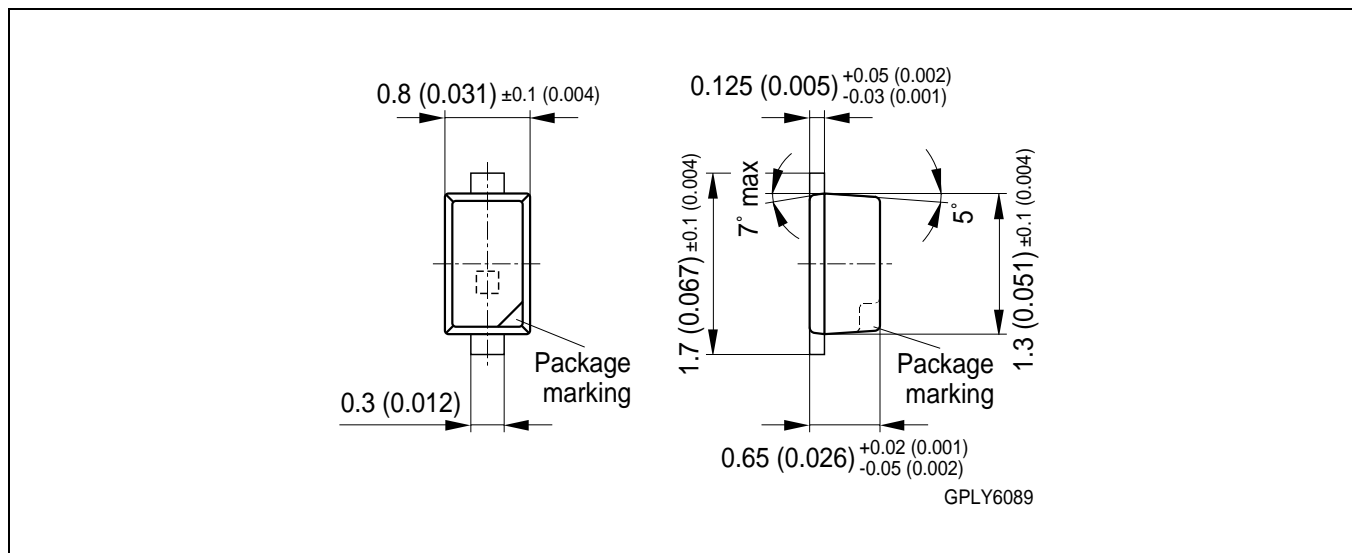


Photocurrent

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



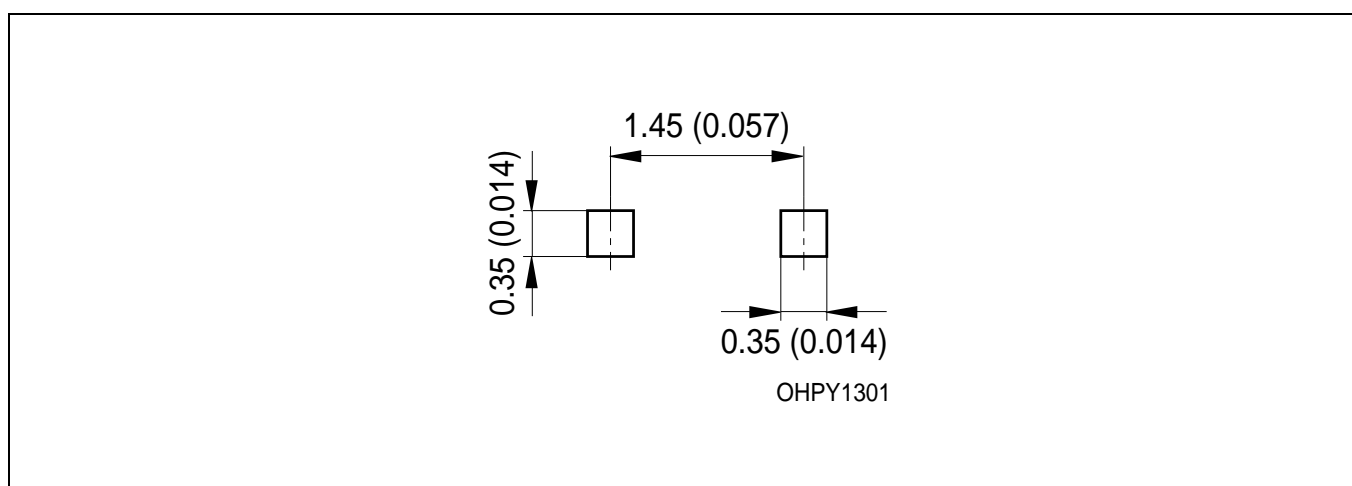
Maßzeichnung Package Outlines



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

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

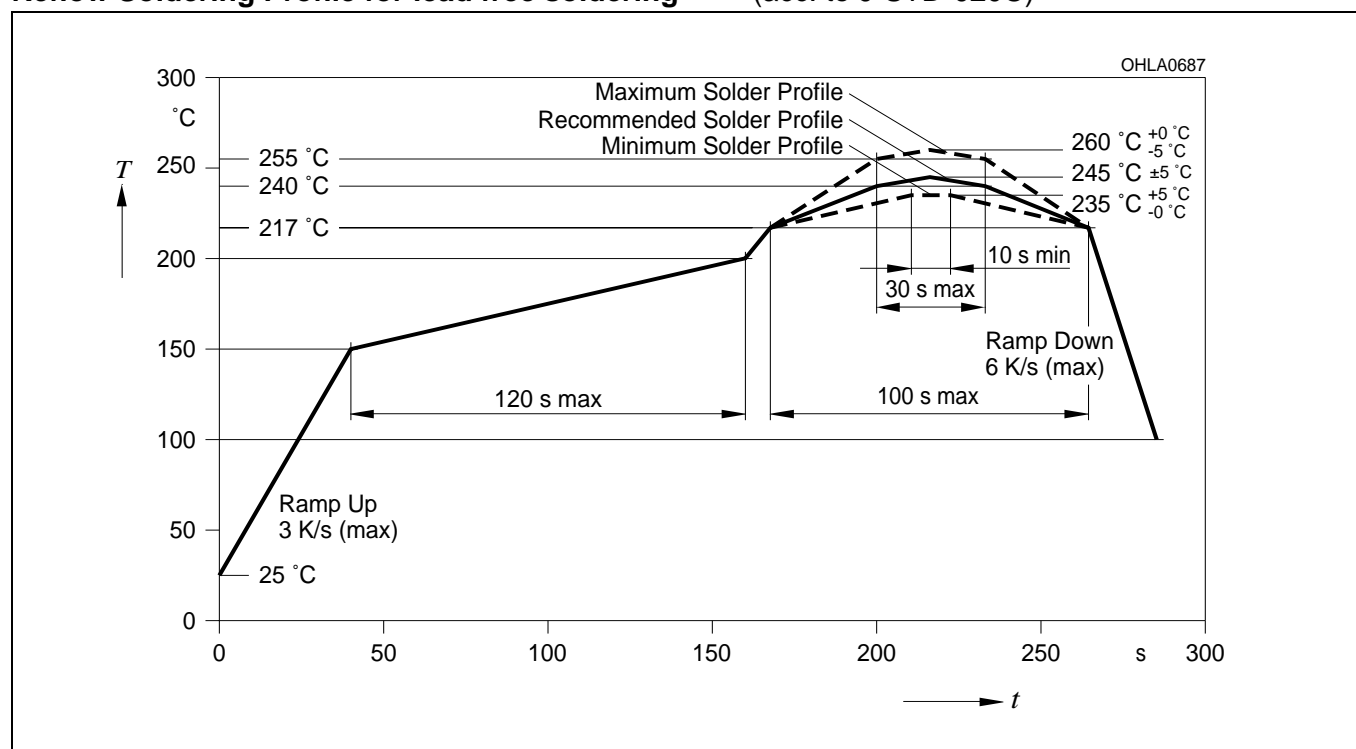
Empfohlenes Lötpaddesign Recommended Solderpad Design



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)



Published by
OSRAM Opto Semiconductors GmbH
 Wernerwerkstrasse 2, D-93049 Regensburg
www.osram-os.com
 © All Rights Reserved.

EU RoHS and China RoHS compliant product



此产品符合欧盟 RoHS 指令的要求；
 按照中国的相关法规和标准，不含有毒有害物质或元素。

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose! Critical components ¹, may only be used in life-support devices or systems ² with the express written approval of OSRAM OS.

¹ A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

² Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health of the user may be endangered.