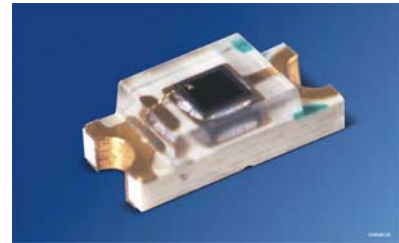


Schnelle PIN-Fotodiode
High Speed PIN-Photodiode
Lead (Pb) Free Product - RoHS Compliant

SFH 2701



Wesentliche Merkmale

- Speziell geeignet für Anwendungen von 400nm bis 1050nm
- Sehr kurze Schaltzeit im spezifizierten Wellenlängenbereich
- Sehr kurze Schaltzeiten bei geringer Sperrspannung (<5V)
- Extrem kurze Abklingzeit („slow tail“)
- IEC Standard 3216 Chipled Bauform

Anwendungen

- Optische Laufwerke (CD, DVD)
- Lichtschranken für Gleich- und Wechselbetrieb
- Industrieelektronik
- „Messen/Steuern/Regeln“

Features

- Especially suitable for applications from 400nm to 1050nm
- Fast switching time within the specified wavelength
- Fast switching time at low reverse voltage (<5V)
- Ultra short decay time („slow tail“)
- IEC Standard 3216 Chipled package

Applications

- Optical Disc Drives (CD, DVD)
- Photointerrupters
- Industrial electronics
- For control and drive circuits

Typ Type	Bestellnummer Ordering Code
SFH 2701	Q65110A2960

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
Sperrspannung Reverse voltage	V_R	15	V
Sperrspannung, $t < 120$ s Reverse voltage	V_R	20	V
Elektrostatische Entladung Electrostatic Discharge Human Body Model according to EOS/ESD-5.1-1993	ESD	2	kV

Kennwerte ($T_A = 25$ °C)
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min	typ	max	
Spektrale Fotoempfindlichkeit des Chips Spectral sensitivity of the chip $\lambda = 650\text{nm}$ $\lambda = 780\text{nm}$	S_λ		0.45 0.5		A/W
Fotostrom, $V_R = 5$ V, $E_e = 0.5$ mW/cm ² Photocurrent $\lambda = 650\text{nm}$ $\lambda = 780\text{nm}$	I_P		1.2 1.4		μA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S \max}$		820		nm
Spektraler Bereich der Fotoempfindlichkeit Spectral range of sensitivity $S = 10\%$ of $S_{\max}$	λ		400...1050		nm
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$		0.6×0.6		mm × mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	H		0.3		mm
Halbwinkel Half angle	φ		± 60		Grad deg.

Kennwerte ($T_A = 25\text{ °C}$)

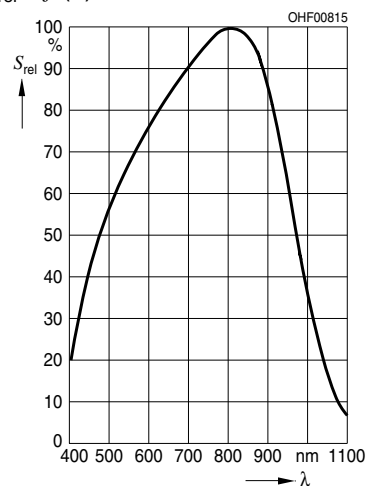
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min	typ	max	
Dunkelstrom, $V_R = 5\text{ V}$ Dark current	I_R		0.05	5	nA
Anstiegs- und Abfallzeit des Fotostromes Rise and fall time of the photocurrent, 10% - 90%					
$V_R = 5\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 650\text{ nm}$, $I_p = 1\text{ mA}$	t_r , t_f		1.8		ns
$V_R = 5\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 780\text{ nm}$, $I_p = 1\text{ mA}$	t_r , t_f		2.0		ns
Kapazität, $f = 1\text{ MHz}$, $E = 0$, $V_R = 0\text{ V}$ Capacitance	C_0		3	5	pF
Temperaturkoeffizient von S_λ Temperature coefficient of S_λ					
$\lambda = 650\text{ nm}$	TC_I		-0.03		%/K
$\lambda = 780\text{ nm}$			-0.01		%/K
Rauschäquivalente Strahlungsleistung ¹⁾ Noise equivalent power, $V_R = 5\text{ V}$, $\lambda = 650\text{ nm}$	NEP		6.3×10^{-15}		$\frac{\text{W}}{\sqrt{\text{Hz}}}$

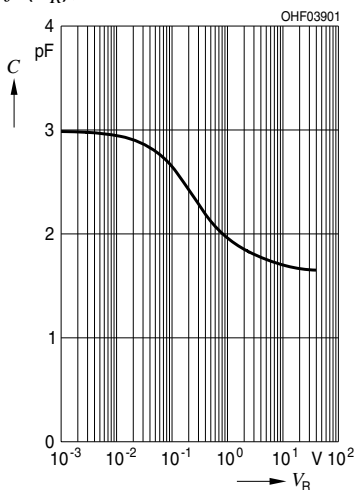
$$^1) \text{ NEP} = 17,9 \times 10^{-15} \times \frac{\sqrt{I_R}}{S_\lambda}$$

Relative Spectral Sensitivity

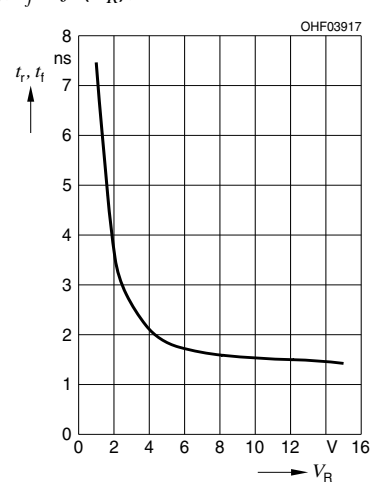
$$S_{\text{rel}} = f(\lambda)$$

**Capacitance**

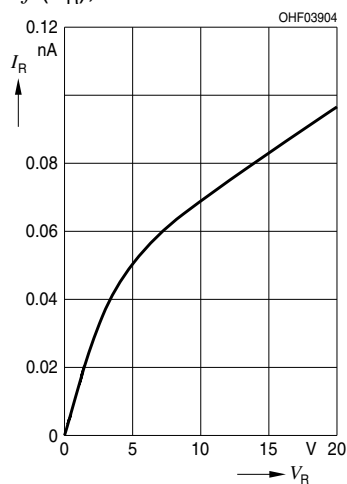
$$C_0 = f(V_R), E = 0$$

**Switching time**

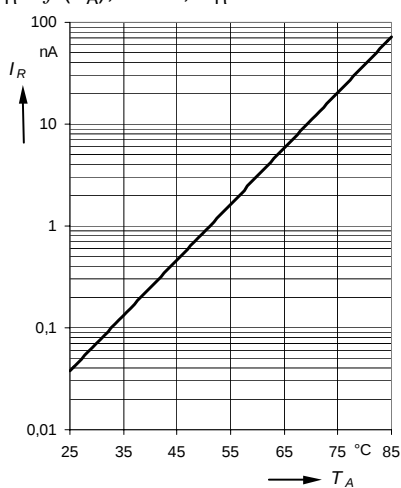
$$t_r, t_f = f(V_R)$$

**Dark Current**

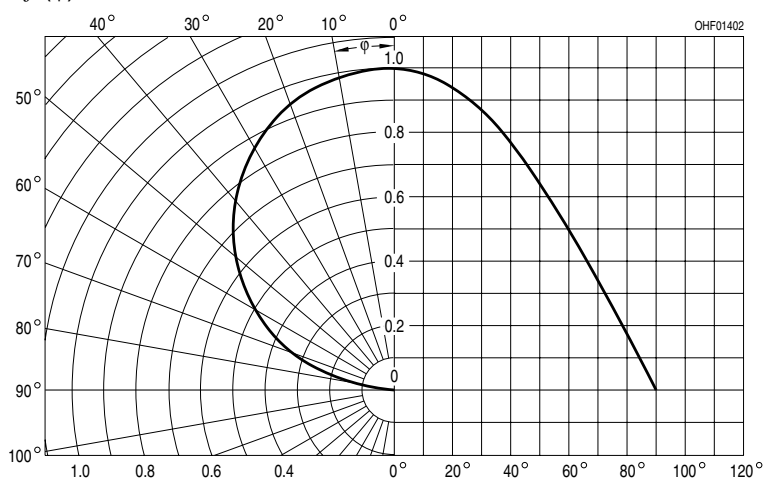
$$I_R = f(V_R), E = 0$$

**Dark Current**

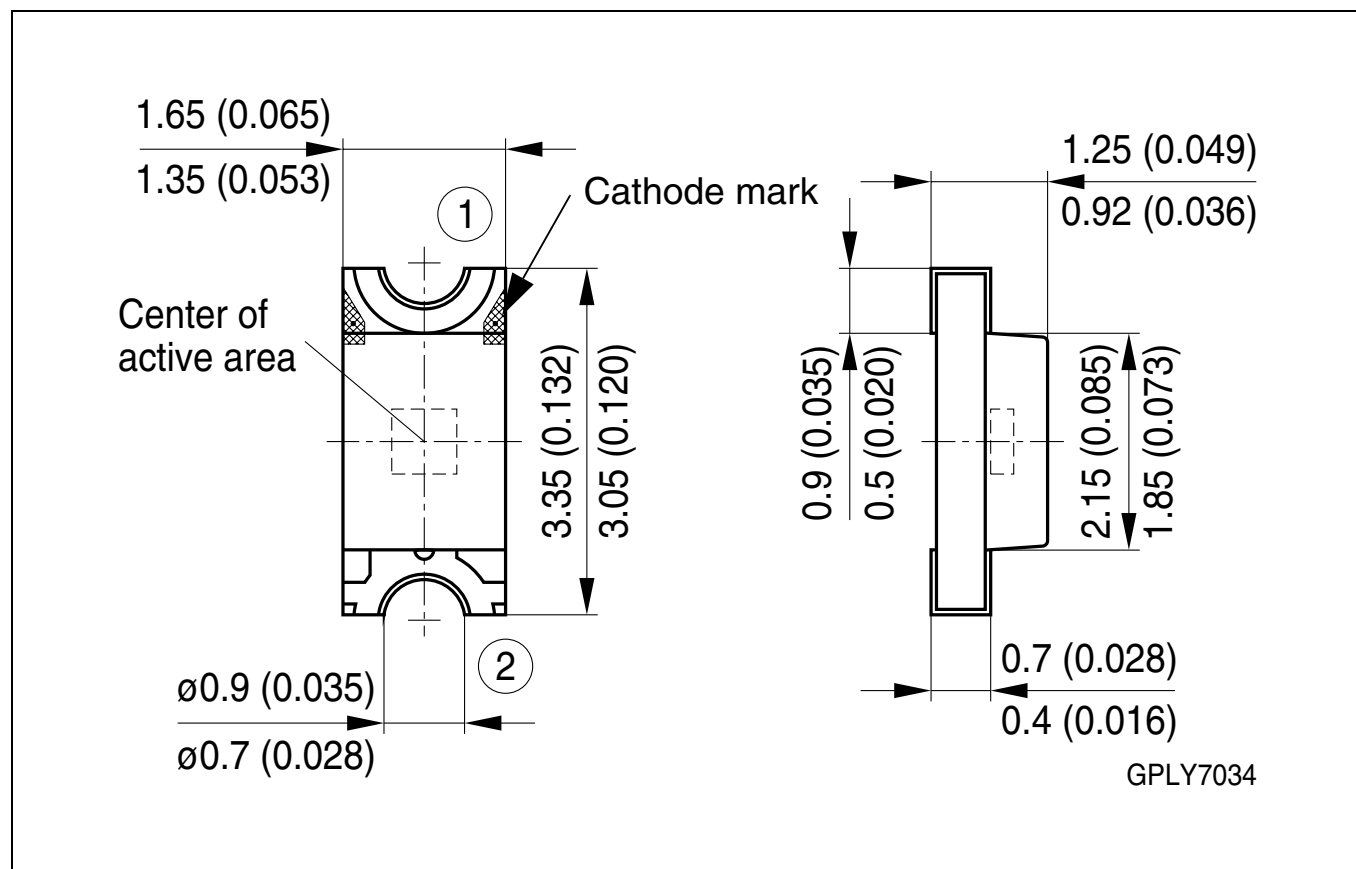
$$I_R = f(T_A), E = 0, V_R = 5V$$

**Directional Characteristics**

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



Maßzeichnung Package Outlines

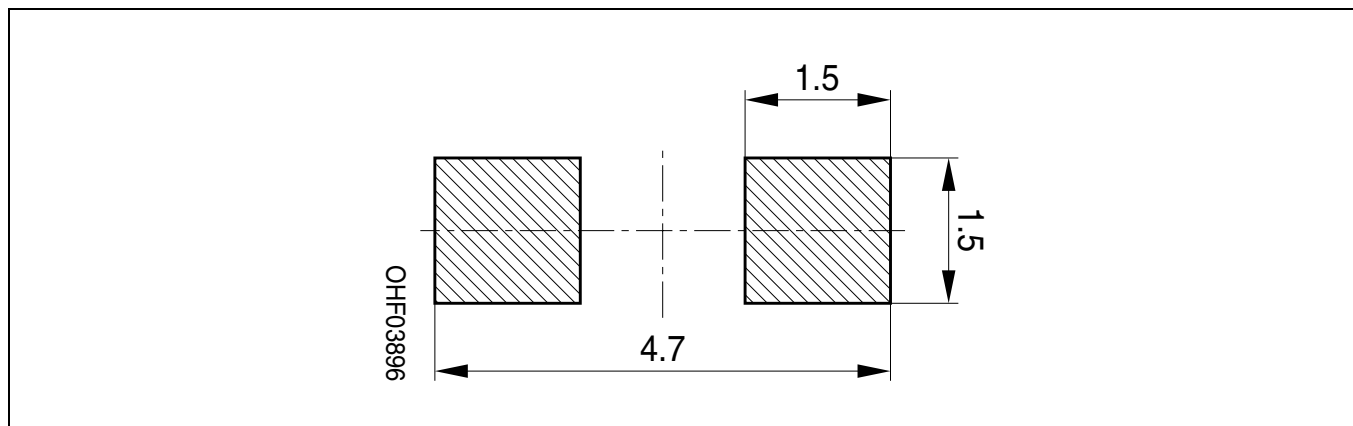


Maße in mm (inch) / Dimensions in mm (inch)

Gehäuse / Package	PCB mit klarem Epoxid / PCB with clear epoxy
Anschlussbelegung Pin configuration	Pad 1 = Kathode / cathode Pad 2 = Anode / anode

Kathoden Markierung (grün) kann von der in der Zeichnung angegeben Form abweichen.
Cathode mark (green) can differ from the form shown in drawing.

Empfohlenes Lötpaddesign
Recommended Solderpad Design



Maße in mm / Dimensions in mm

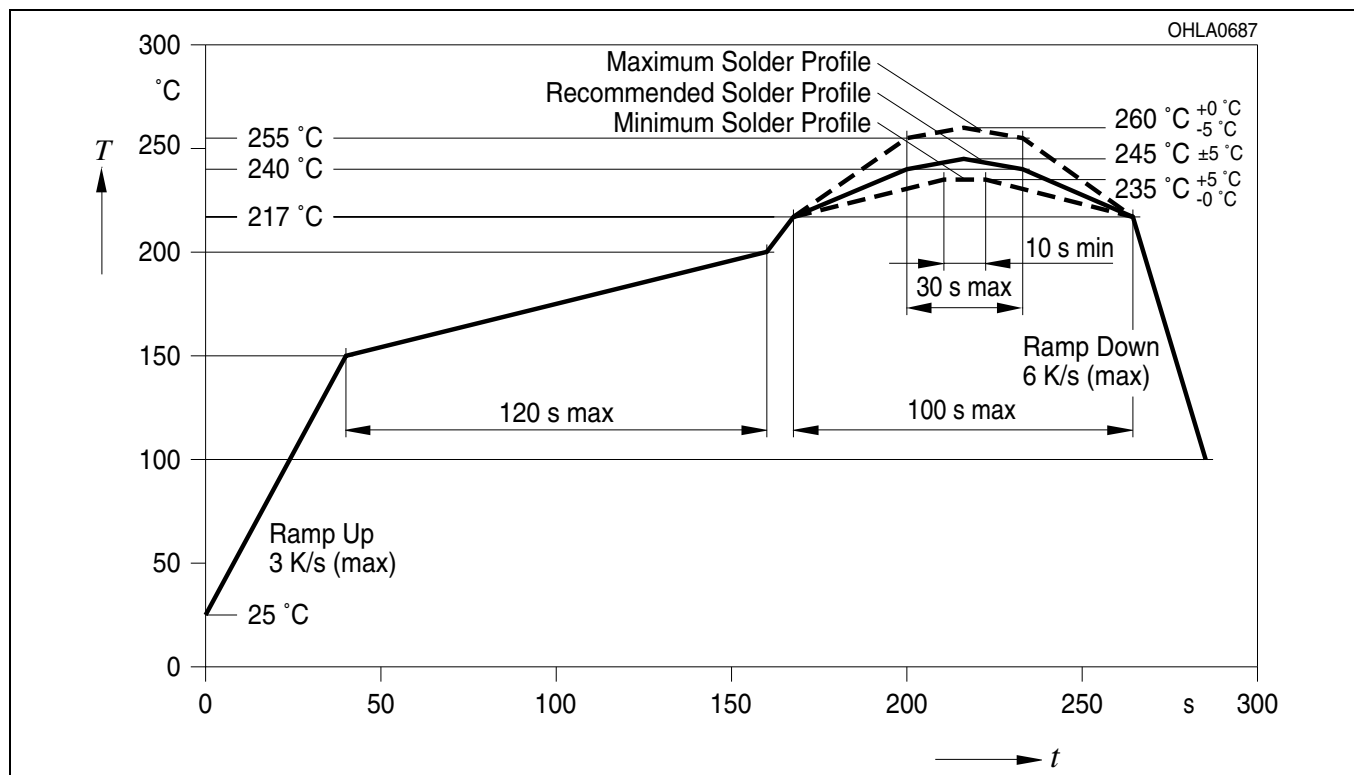
Lötbedingungen**Soldering Conditions****IR-Reflow Lötprofil für bleifreies Löten****IR Reflow Soldering Profile for lead free soldering**

Vorbehandlung nach JEDEC Level 3

Preconditioning acc. to JEDEC Level 3

(nach J-STD-020B)

(acc. to J-STD-020B)



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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.

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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.