

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

**SFH 2302**



**Wesentliche Merkmale**

- Speziell geeignet für Anwendungen von 400nm bis 1050nm
- Sehr kurze Schaltzeit im spezifizierten Wellenlängenbereich
- Sehr kurze Schaltzeit bei geringer Sperrspannung (<5V)
- Extrem kurze Abklingzeit („slow tail“)
- 3 mm-Plastikbauform im LED-Gehäuse

**Anwendungen**

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

**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“)
- 3 mm LED plastic package

**Applications**

- Optical Disc Drives (CD, DVD)
- Photointerrupters
- Industrial electronics
- For control and drive circuits
- Fibre optic transmission systems
- Range Finders

<b>Typ</b> <b>Type</b>	<b>Bestellnummer</b> <b>Ordering Code</b>
SFH 2302	Q65110A6343

**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
Sperrspannung Reverse voltage	$V_R$	15	V
Sperrspannung, t < 120 s Reverse voltage	$V_R$	20	V
Verlustleistung Total power dissipation	$P_{tot}$	150	mW
Elektrostatische Entladung Electrostatic Discharge Human Body Model according to EOS/ESD-5.1-1993	ESD	2	kV

**Kennwerte** ( $T_A = 25\text{ °C}$ )  
**Characteristics**

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min	typ	max	
Spektrale Fotoempfindlichkeit des Chips Spectral sensitivity of the chip $\lambda = 650\text{nm}$ $\lambda = 780\text{nm}$	$\lambda_{S\ max}$		0.45 0.5		A/W
Fotostrom, $V_R = 5\text{ V}$ , $E_e = 0.5\text{ mW/cm}^2$ Photocurrent $\lambda = 650\text{nm}$ $\lambda = 780\text{nm}$	$I_P$		10 11		$\mu\text{A}$
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$		820		nm
Spektraler Bereich der Fotoempfindlichkeit Spectral range of sensitivity $S = 10\%$ of $S_{max}$	$\lambda$		400..1050		nm
Abmessung der bestrahlungsempfindlichen Fläche Dimensions of radiant sensitive area	$L \times B$ $L \times W$		$0.6 \times 0.6$		mm $\times$ mm
Abstand Chipoberfläche zu Gehäuseoberfläche Distance chip front to case surface	$H$		2.4 ... 2.8		mm

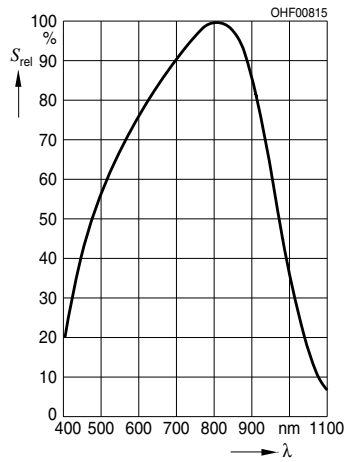
**Kennwerte** ( $T_A = 25\text{ °C}$ )  
**Characteristics** (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min	typ	max	
Halbwinkel Half angle	$\varphi$		$\pm 17$		Grad deg.
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% $V_R = 5\text{ V}$ , $R_L = 50\ \Omega$ ; $\lambda = 650\text{ nm}$ ; $I_p = 1\text{ mA}$ $V_R = 5\text{ V}$ , $R_L = 50\ \Omega$ ; $\lambda = 780\text{ nm}$ ; $I_p = 1\text{ mA}$	$t_r, t_f$ $t_r, t_f$		1.8 2.0		ns ns
Kapazität, $f = 1\text{ MHz}$ , $E = 0$ , $V_R = 0\text{ V}$ Capacitance	$C_0$		3	5	pF
Temperaturkoeffizient von $I_p$ Temperature coefficient of $I_p$ $\lambda = 650\text{ nm}$ $\lambda = 780\text{ nm}$	$TC_1$		-0.03 -0.01		%/K %/K
Rauschäquivalente Strahlungsleistung <sup>1)</sup> Noise equivalent power, $V_R = 5\text{ V}$ , $\lambda = 650\text{ nm}$			$8.9 \times 10^{-15}$		$\frac{W}{\sqrt{Hz}}$

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

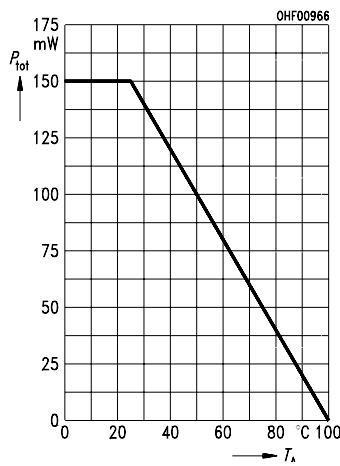
**Relative Spectral Sensitivity**

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



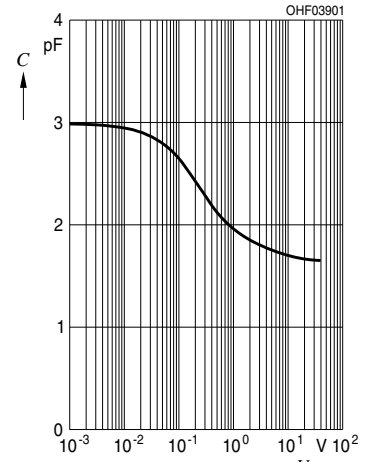
**Total Power Dissipation**

$P_{tot} = f(T_A)$



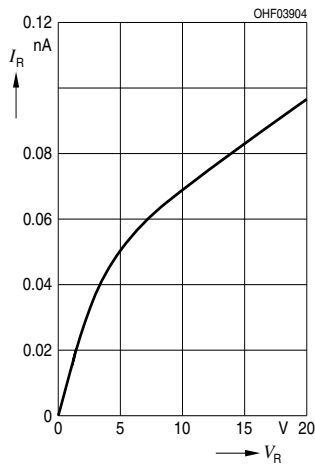
**Capacitance**

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



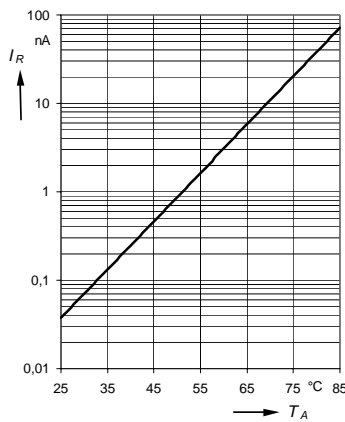
**Dark Current**

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



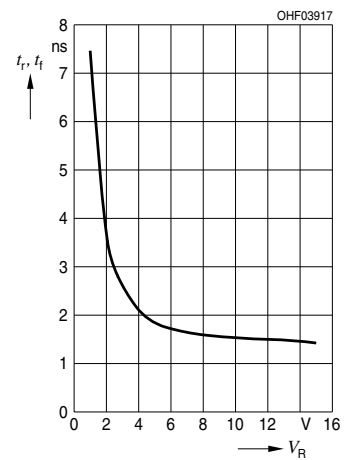
**Dark Current**

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



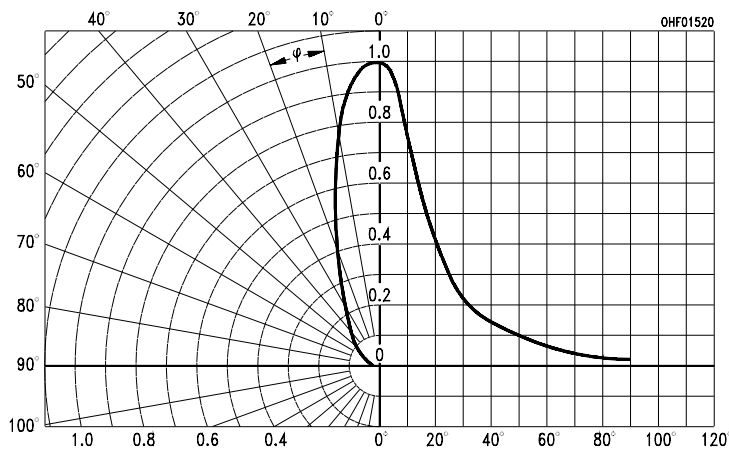
**Switching Time**

$t_r, t_f = f(V_R)$

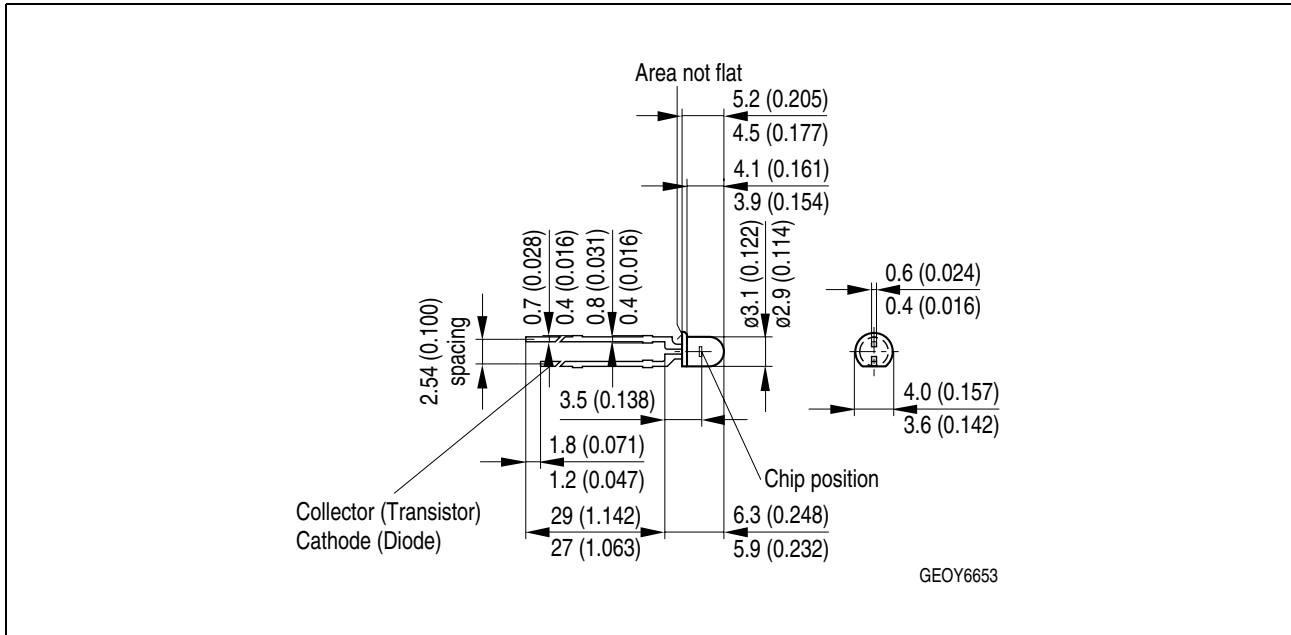


**Directional Characteristics**

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

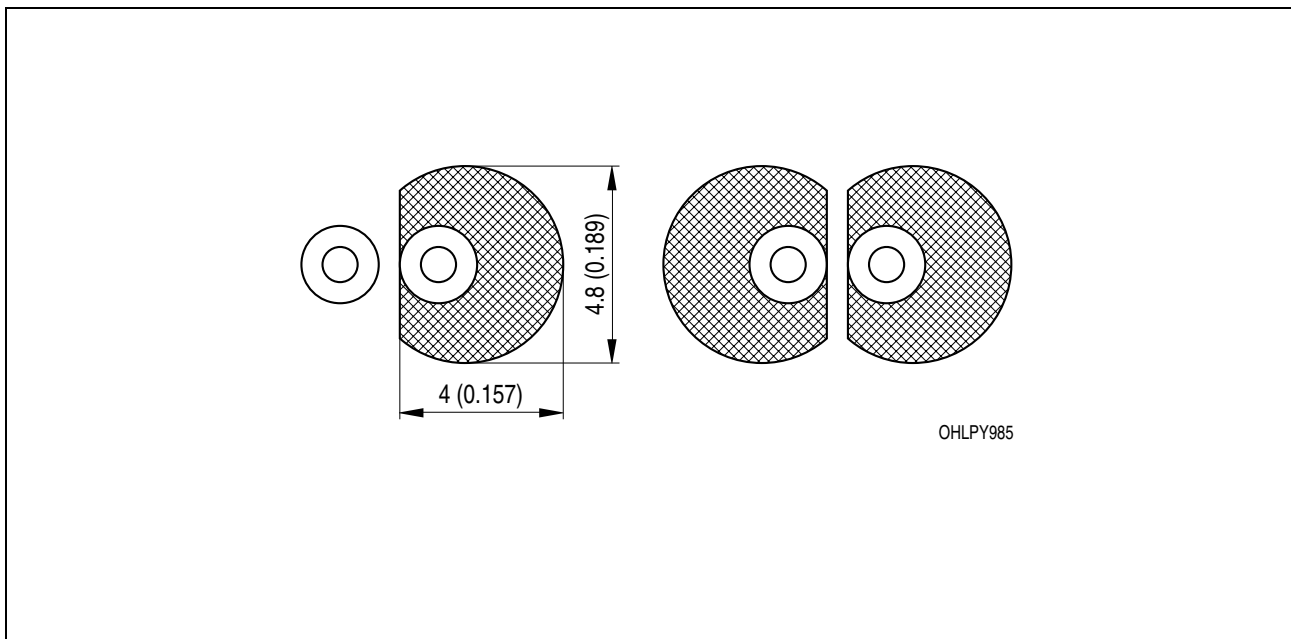


**Maßzeichnung  
Package Outlines**



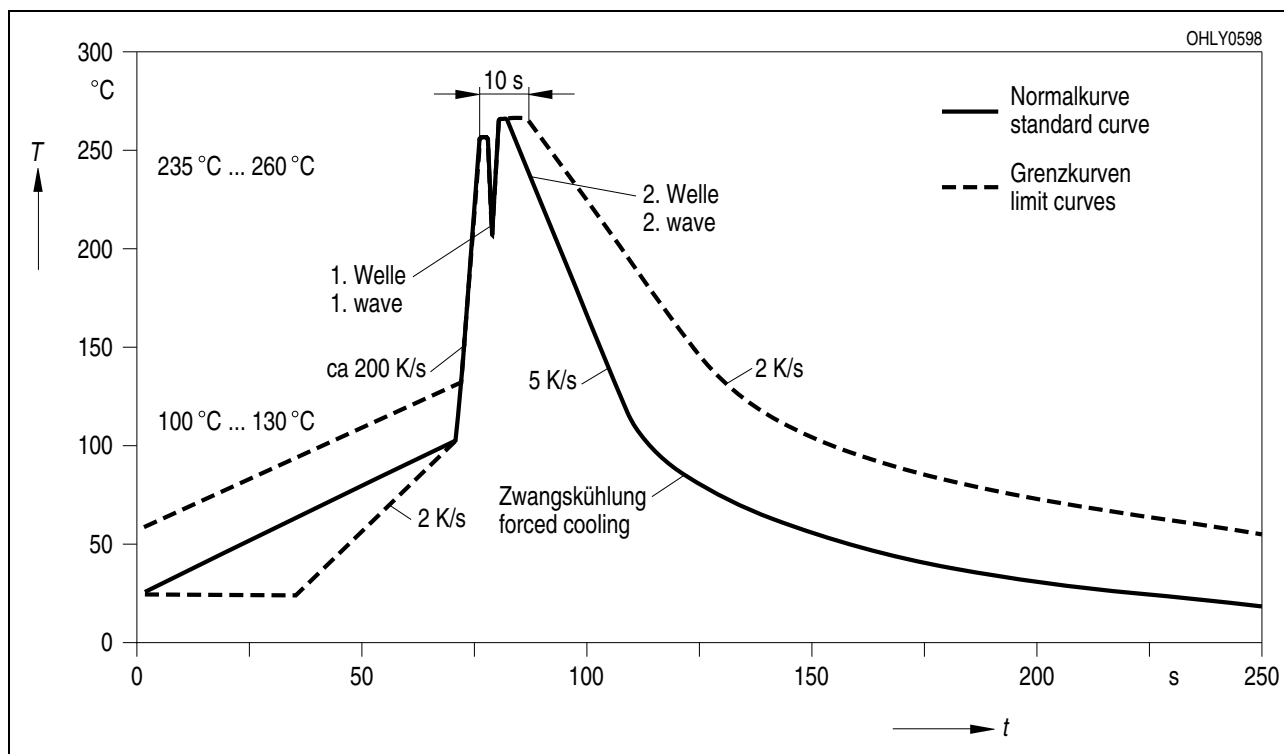
Maße in mm (inch) / Dimensions in mm (inch)

**Empfohlenes Lötpaddesign Wellenlöten (TTW)  
Recommended Solder Pad TTW Soldering**



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

**Lötbedingungen**  
**Soldering Conditions**  
**Wellenlöten TTW (nach CECC 00802)**  
**TTW Soldering (acc. to CECC 00802)**



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