

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

Typ Type	Bestellnummer Ordering Code
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 ($T_A = 25$ °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, $V_R = 5$ V, $E_e = 0.5$ mW/cm ² Photocurrent $\lambda = 650\text{nm}$ $\lambda = 780\text{nm}$	I_P		10 11		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		2.4 ... 2.8		mm

Kennwerte ($T_A = 25\text{ °C}$)

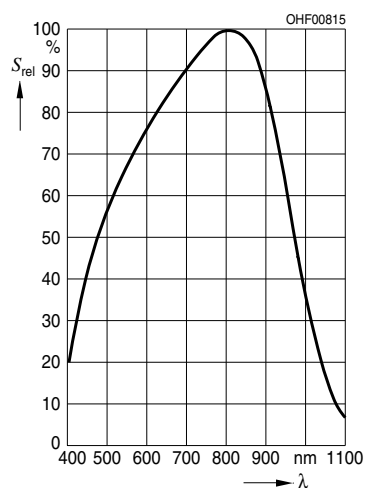
Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min	typ	max	
Halbwinkel Half angle	φ		± 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% $V_R = 5\text{ V}$, $R_L = 50\text{ }\Omega$; $\lambda = 650\text{ nm}$; $I_p = 1\text{ mA}$ $V_R = 5\text{ V}$, $R_L = 50\text{ }\Omega$; $\lambda = 780\text{ nm}$; $I_p = 1\text{ mA}$	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_I		-0.03 -0.01		%/K %/K
Rauschäquivalente Strahlungsleistung ¹⁾ Noise equivalent power, $V_R = 5\text{ V}$, $\lambda = 650\text{ nm}$			8.9×10^{-15}		$\frac{W}{\sqrt{Hz}}$

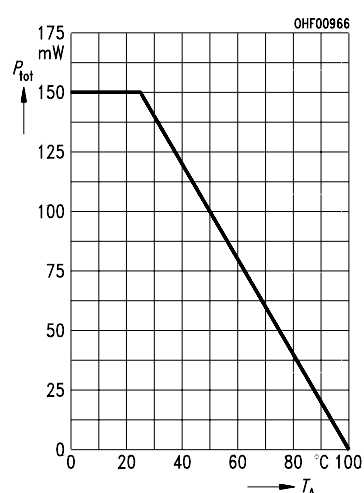
$$^1) \text{ NEP} = 17,9 \times 10^{-15} \times \frac{\sqrt{I_R}}{S_\lambda}$$

Relative Spectral Sensitivity

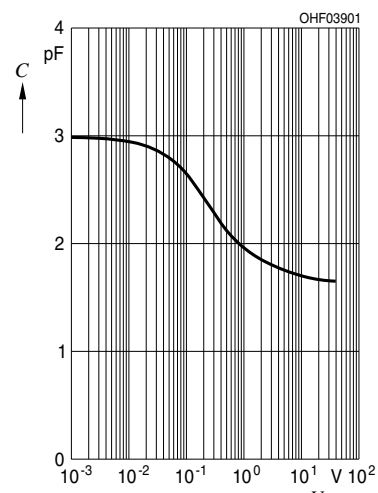
$$S_{\text{rel}} = f(\lambda)$$

**Total Power Dissipation**

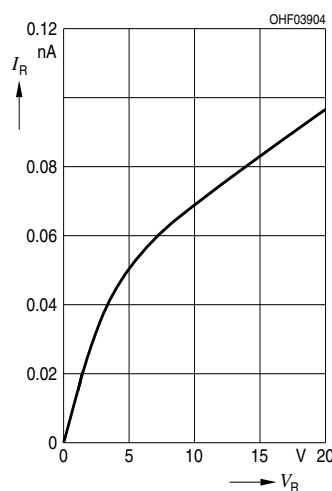
$$P_{\text{tot}} = f(T_A)$$

**Capacitance**

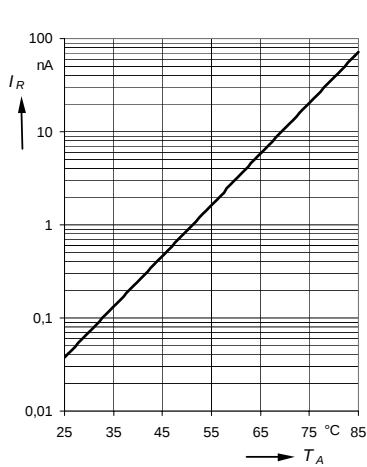
$$C_0 = f(V_R), E = 0$$

**Dark Current**

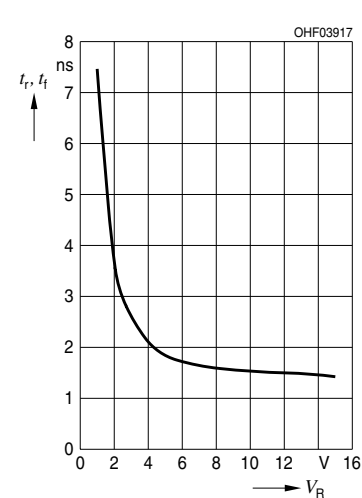
$$I_R = f(V_R), E = 0$$

**Dark Current**

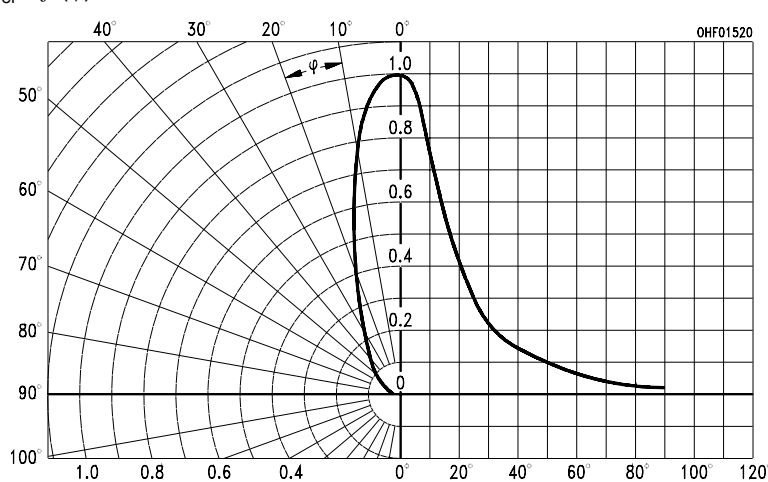
$$I_R = f(T_A), E = 0, V_R = 5 \text{ V}$$

**Switching Time**

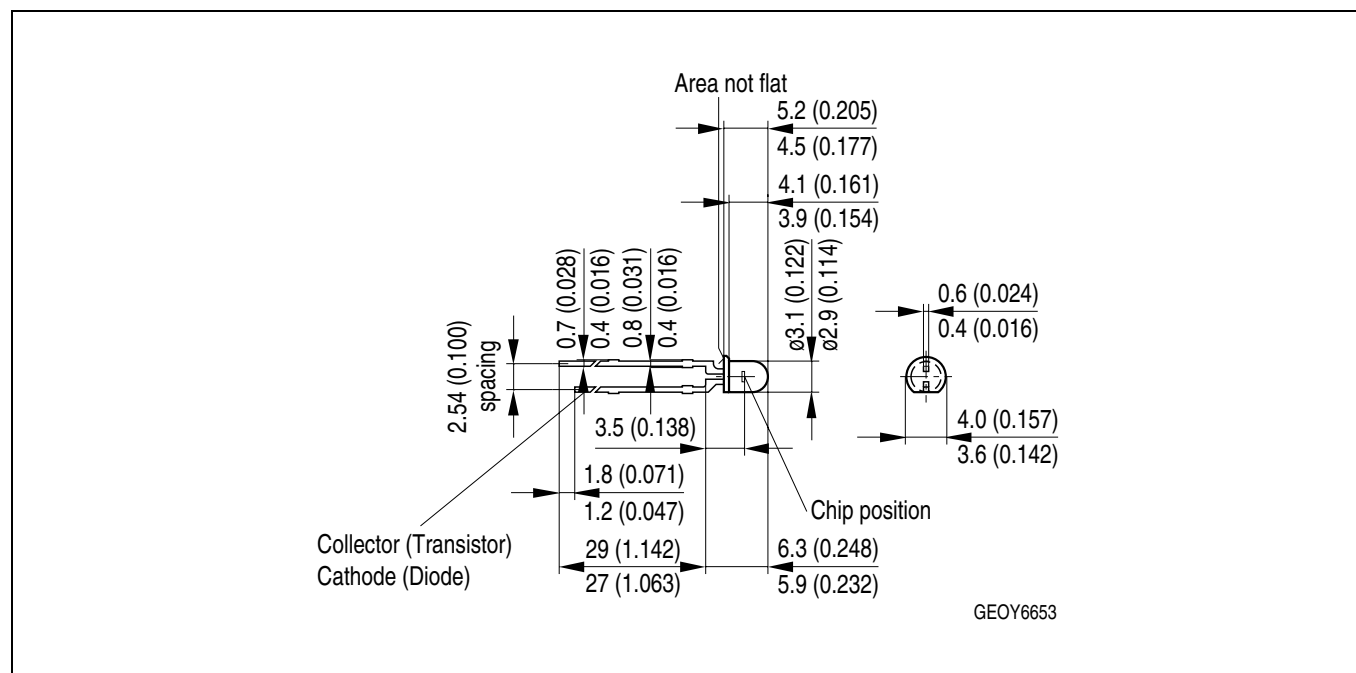
$$t_r, t_f = f(V_R)$$

**Directional Characteristics**

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

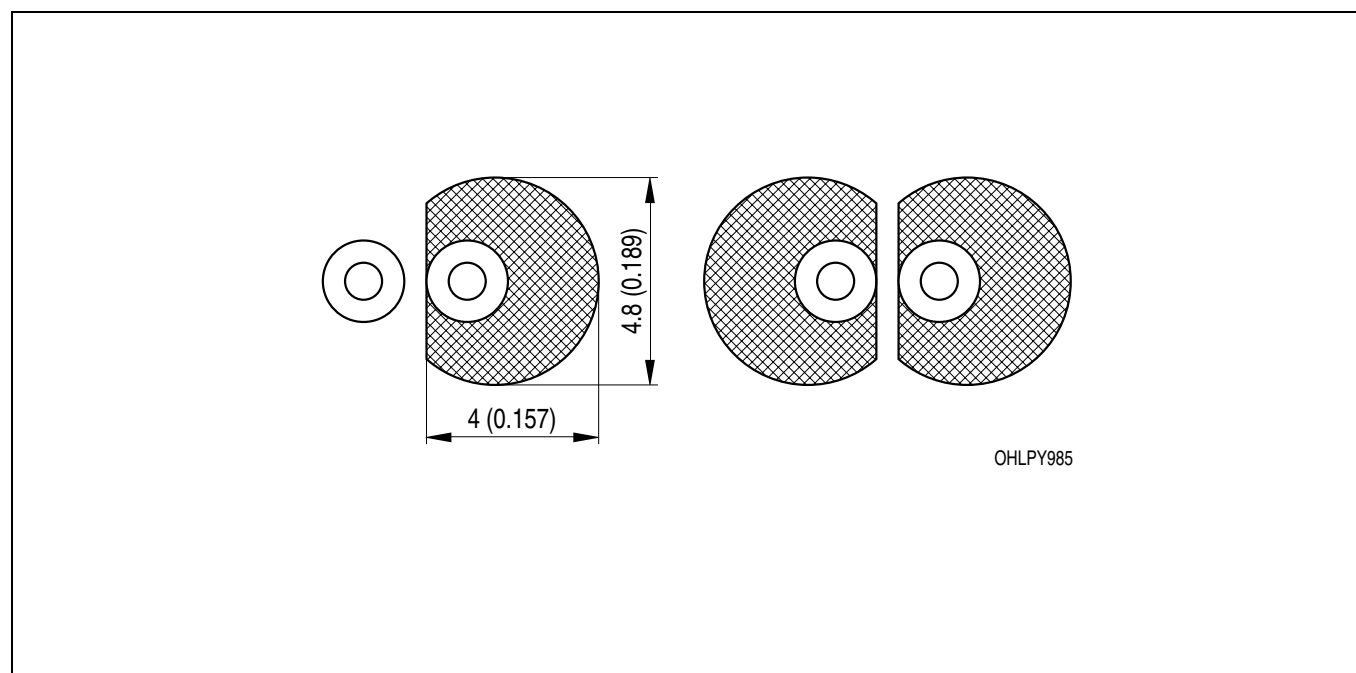


Maßzeichnung Package Outlines



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

Empfohlenes Lötpaddesign Wellenlöten (TTW) Recommended Solder Pad TTW Soldering

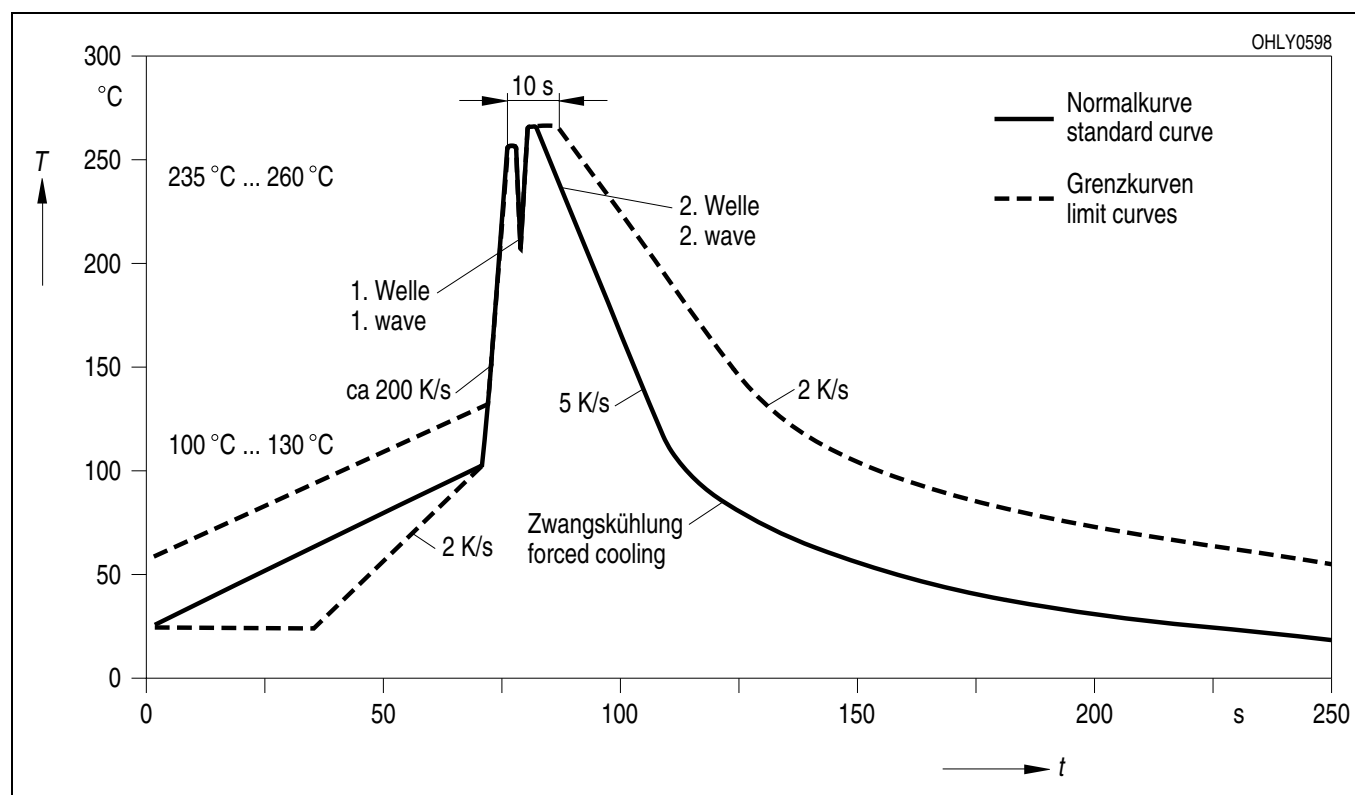


Maße in mm (inch) / Dimensions in mm (inch)

Lötbedingungen Soldering Conditions

Wellenlöten TTW (nach CECC 00802)

TTW Soldering (acc. to CECC 00802)



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EU RoHS and China RoHS compliant product



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