

## Gabellichtschranke Slotted Interrupter

### SFH 9300



#### Wesentliche Merkmale

- Kompaktes Gehäuse
- GaAs-IR-Sendediode (950 nm)
- Si-Fototransistor mit Tageslichtsperrfilter
- Einfache Unterscheidbarkeit von Sender (transparentes Gehäuse) und Empfänger (schwarzes Gehäuse)

#### Anwendungen

- Geschwindigkeitsüberwachung
- Motorsteuerung
- Überwachung des Papiervorschubs in Druckern, Kopier- und Faxgeräten
- Speicherlaufwerke
- Steuerung des Druckkopfes in Druckern
- Münzdetektion
- Optoelektronische Schalter

#### Features

- Compact type
- GaAs infrared emitter (950 nm)
- Silicon phototransistor detector with daylight-cutoff filter
- Easy identification of emitter (clear component package) and transistor (black component package)

#### Applications

- Speed control
- Motor control
- Monitoring of paper feed in printers, copiers, facsimiles
- Disk drives
- Control of print head in printers
- Coin detection
- Optoelectronic switches

Typ Type	Bestellnummer Ordering Code	Gehäuse Package
SFH 9300	Q62702-P5019	Schwarzes Polykarbonat Plastikgehäuse, Anschlüsse im 2,54-mm Raster Polycarbonate plastic material housing, solder tabs 2.54-mm (1/10") spacing

Grenzwerte  $T_A = 25\text{ °C}$ **Maximum Ratings**

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
<b>Sender (GaAs-Diode)</b> <b>Emitter (GaAs Diode)</b>			
Sperrspannung Reverse voltage	$V_R$	5	V
Durchlaßstrom Forward current	$I_F$ (DC)	60	mA
Verlustleistung Power dissipation	$P_{tot}$	100	mW
Wärmewiderstand Thermal resistance	$R_{thJA}$	280	K/W

**Empfänger (Si-Fototransistor)****Detector (Silicon Phototransistor)**

Kollektor-Emitter-Spannung Collector-emitter voltage	$V_{CE}$	30	V
Kollektor-Emitter-Spannung, ( $t \leq 2$ min) Collector-emitter voltage, ( $t \leq 2$ min)	$V_{CE}$	70	
Emitter-Kollektor-Spannung Emitter-collector voltage	$V_{EC}$	7	
Kollektorstrom Collector current	$I_C$	50	mA
Verlustleistung Total power dissipation	$P_{tot}$	150	mW
Wärmewiderstand Thermal resistance	$R_{thJA}$	280	K/W

**Grenzwerte**  $T_A = 25\text{ °C}$   
**Maximum Ratings** (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
<b>Gabellichtschranke</b> <b>Slotted Interrupter</b>			
Lagertemperatur Storage temperature range	$T_{\text{stg}}$	- 40 ... + 85	°C
Betriebstemperatur Operating temperature range	$T_{\text{op}}$	- 40 ... + 85	
Elektrostatische Entladung Electrostatic discharge	ESD	2	kV

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
<b>Sender</b> (GaAs-Diode) <b>Emitter</b> (GaAs Diode)			
Wellenlänge der Strahlung Wavelength of peak emission	$\lambda_{\text{peak}}$	950	nm
Durchlaßspannung Forward voltage $I_F = 20\text{ mA}$ , $t_p = 20\text{ ms}$	$V_F$	1.2 ( $\leq 1.4$ )	V
Sperrstrom Reverse current $V_R = 5\text{ V}$	$I_R$	0.01 ( $\leq 1$ )	$\mu\text{A}$
Kapazität Capacitance $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$	$C_0$	16	pF

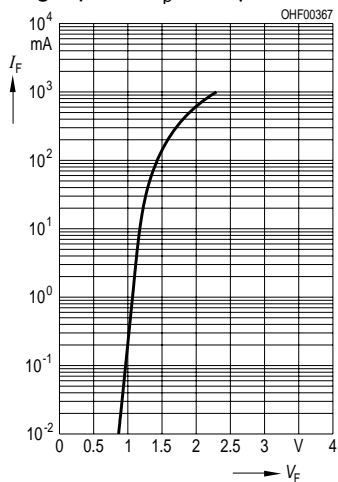
**Kennwerte**  $T_A = 25\text{ °C}$   
**Characteristics** (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
<b>Empfänger (Si-Fototransistor)</b> <b>Detector (Silicon Phototransistor)</b>			
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	920	nm
Spectr. Bereich der Fotoempfindlichkeit Spectral range of sensitivity $S = 10\%$ of $S_{\text{max}}$	$\lambda$	840 ... 1080	nm
Kapazität Capacitance $V_{\text{CE}} = 0\text{ V}, f = 1\text{ MHz}, E = 0$	$C_{\text{CE}}$	6.5	pF
Dunkelstrom Dark current $V_{\text{CE}} = 20\text{ V}$	$I_{\text{CEO}}$	2 ( $\leq 50$ )	nA

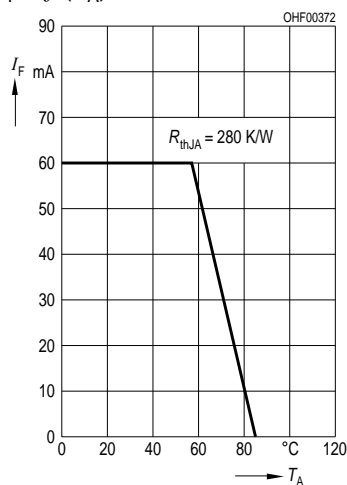
**Gabellichtschanke**  
**Slotted Interrupter**

Kollektor-Emitterstrom Collector-emitter current $I_F = 20\text{ mA}; V_{\text{CE}} = 5\text{ V}$	$I_{\text{CE min.}}$ $I_{\text{CE typ.}}$	> 1	mA
Kollektor-Emitter-Sättigungsspannung Collector-emitter-saturation voltage $I_F = 20\text{ mA}; I_C = 0.3\text{ mA}$	$V_{\text{CE sat}}$	$\leq 0.4$	V
Anstiegs- und Abfallzeit Rise and fall time $V_{\text{CC}} = 5\text{ V}, I_C = 1\text{ mA}, R_L = 1\text{ k}\Omega$	$t_r$ $t_f$	13 17	$\mu\text{s}$ $\mu\text{s}$

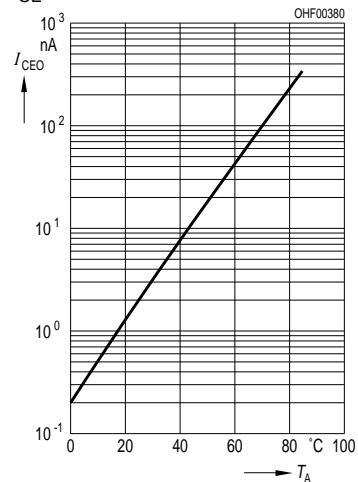
**Forward Current  $I_F = f(V_F)$**   
 Single pulse,  $t_p = 20 \mu s$



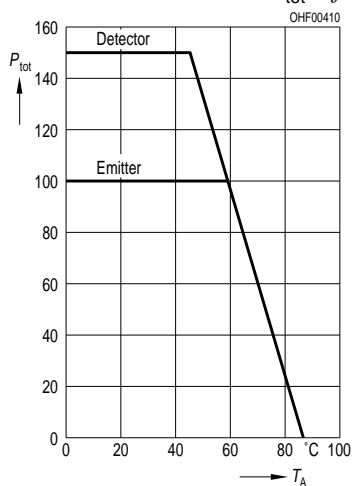
**Max. Permissible Forward Current  $I_F = f(T_A)$**



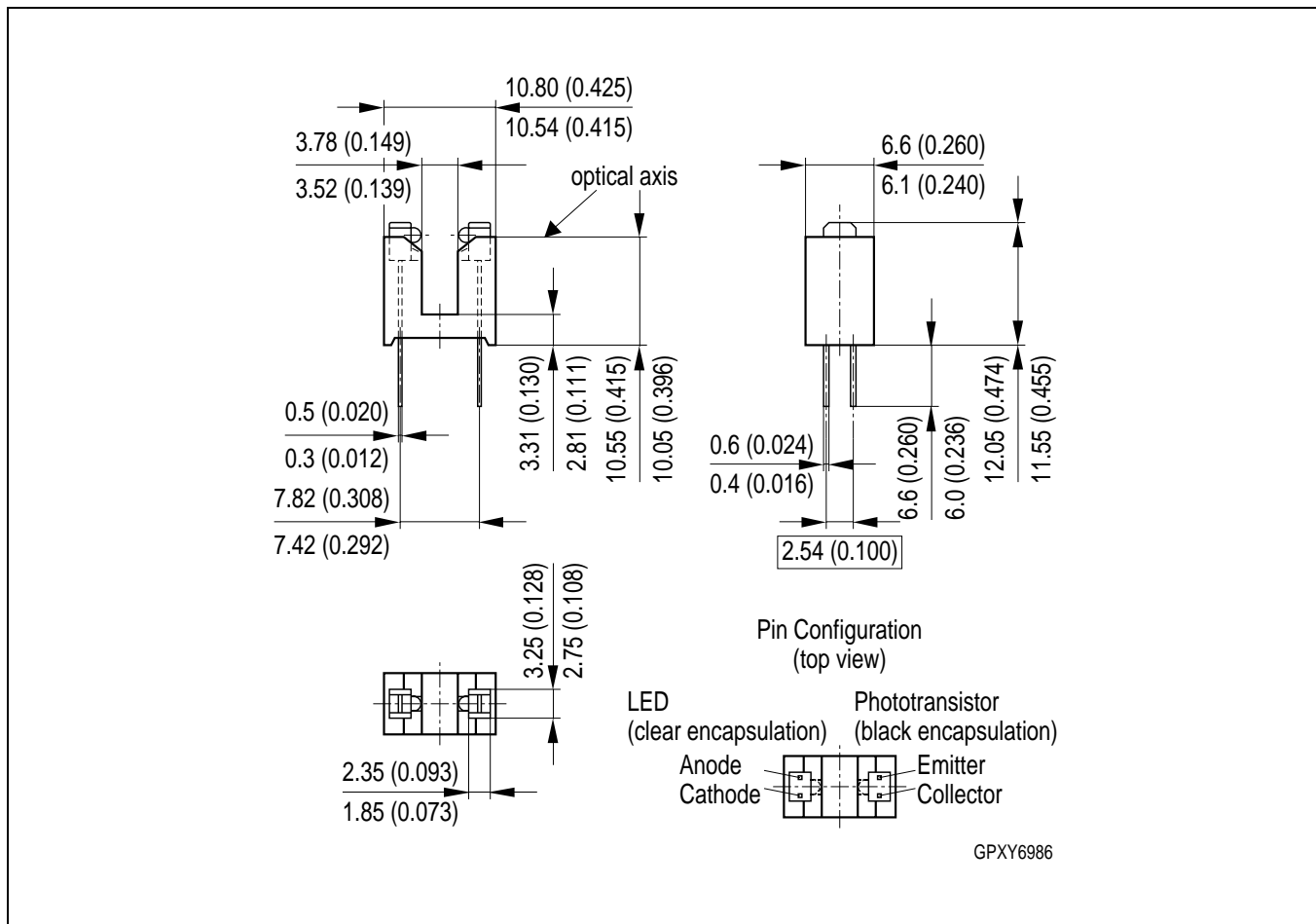
**Dark Current  $I_{CEO} = f(T_A)$**   
 $V_{CE} = 20 V, E = 0$



**Total Power Dissipation for Emitter and Detector  $P_{tot} = f(T_A)$**



Maßzeichnung  
Package Outlines



Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

**Löthinweise**  
**Soldering Conditions**

Bauform Type	Tauch-, Schwalllötung Dip, Wave Soldering		Reflowlötung Reflow Soldering		Kolbenlötung Iron Soldering (Iron temp.)
	Peak Temp. (solderbath)	Max. Time in Peak Zone	Peak Temp. (package temp.)	Max. Time in peak zone	
SFH 9300	260 °C	10 s	n. a.	–	300 °C < 5 s

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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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