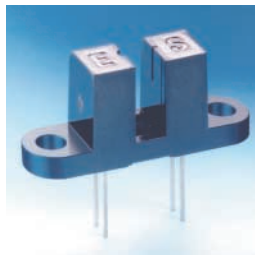


Gabellichtschranken Slotted Interrupters

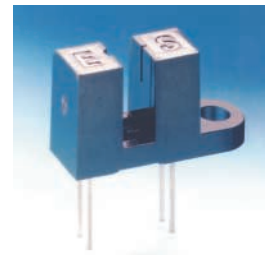
SFH 9301, SFH 9302, SFH 9303, SFH 9304, SFH 9306



SFH 9301



SFH 9302



SFH 9303



SFH 9304



SFH 9306

Wesentliche Merkmale

- Kompaktes Gehäuse
- GaAs-IR-Sendediode (950 nm)
- Si-Fototransistor mit Tageslichtsperrfilter
- Verschiedene Gehäuse mit SFH 4110 und SFH 3100 F als Basiskomponenten
 - SFH 9301: ohne Befestigungslasche, auf Anfrage als automatisch bestückbare Version erhältlich
 - SFH 9302: Befestigungslasche auf Emitter- und Detektorseite
 - SFH 9303: Befestigungslasche auf der Detektorseite
 - SFH 9304: Befestigungslasche auf der Emitterseite
 - SFH 9306: ohne Befestigungslasche, mit Positionierstiften

Features

- Compact type
- GaAs infrared emitter (950 nm)
- Silicon phototransistor detector with daylight-cutoff filter
- Different packages using SFH 4110 and SFH 3100 F as basic components
 - SFH 9301: without mounting tab, version for automatic assembly available on request
 - SFH 9302: mounting tab on emitter and sensor side
 - SFH 9303: mounting tab on sensor side
 - SFH 9304: mounting tab on emitter side
 - SFH 9306: without mounting tab, with positioning pins

Anwendungen

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

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 9301	Q62702-P5083	Schwarzes Polykarbonat Plastikgehäuse, Anschlüsse im 2.54-mm Raster, Senderseite durch Buchstaben „E“, Empfängerseite durch Buchstaben „S“ gekennzeichnet, Kathode / Transistoremmitter durch schräge Kante gekennzeichnet.
SFH 9302	Q62702-P5084	
SFH 9303	Q62702-P5085	
SFH 9304	Q62702-P5086	
SFH 9306	Q62702-P5130	Black polycarbonate plastic material housing, solder tabs 2.54-mm (1/10") spacing, emitter side marked with letter "E", sensor side marked with letter "S", cathode / emitter of transistor marked with edge at an angle.

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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Sender (GaAs-Diode)**Emitter** (GaAs Diode)

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, ($t \leq 2\text{ min}$) Collector-emitter voltage, ($t \leq 2\text{ min}$)	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

Gabellichtschranke**Slotted Interrupter**

Lagertemperatur Storage temperature range	T_{stg}	- 40 ... + 85	°C
Betriebstemperatur Operating temperature range	T_{op}	- 40 ... + 85	
Elektrostatistische Entladung Electrostatic discharge	ESD	2	kV

Kennwerte $T_A = 25\text{ °C}$

Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
--------------------------	------------------	---------------	-----------------

Sender (GaAs-Diode)**Emitter** (GaAs Diode)

Wellenlänge der Strahlung Wavelength of peak emission	λ_{peak}	950	nm
Durchlaßspannung Forward voltage $I_F = 20\text{ mA}$, $t_p = 20\text{ ms}$	V_F	1.2 (≤ 1.4)	V
Sperrstrom Reverse current $V_R = 5\text{ V}$	I_R	0.01 (≤ 1)	μA
Kapazität Capacitance $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	C_0	16	pF

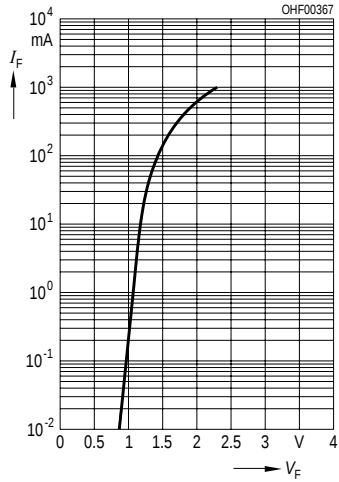
Empfänger (Si-Fototransistor)**Detector** (Silicon Phototransistor)

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_{max}	λ	840 ... 1080	nm
Kapazität Capacitance $V_{CE} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_{CE}	6.5	pF
Dunkelstrom Dark current $V_{CE} = 20\text{ V}$	I_{CEO}	2 (≤ 50)	nA

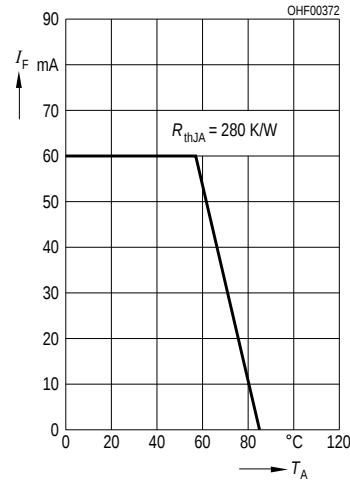
Kennwerte $T_A = 25\text{ °C}$
 Characteristics (cont'd)

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Gabellichtschranke Slotted Interrupter			
Kollektor-Emitterstrom Collector-emitter current $I_F = 20\text{ mA}$; $V_{CE} = 5\text{ V}$	$I_{CE\text{ min.}}$ $I_{CE\text{ typ.}}$	> 0.7	mA
Kollektor-Emitter-Sättigungsspannung Collector-emitter-saturation voltage $I_F = 20\text{ mA}$; $I_C = 0.2\text{ mA}$	$V_{CE\text{ sat}}$	≤ 0.4	V
Anstiegs- und Abfallzeit Rise and fall time $V_{CC} = 5\text{ V}$, $I_C = 1\text{ mA}$, $R_L = 1\text{ k}\Omega$	t_r t_f	13 17	μs μs

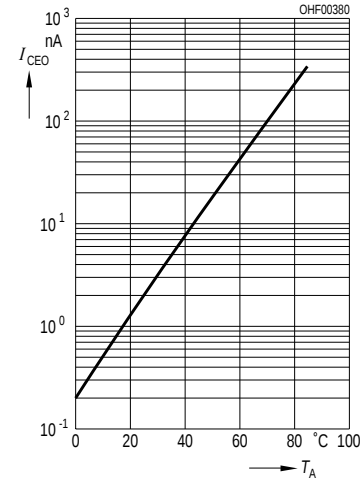
Forward Current $I_F = f(V_F)$
Single pulse, $t_p = 20 \mu s$



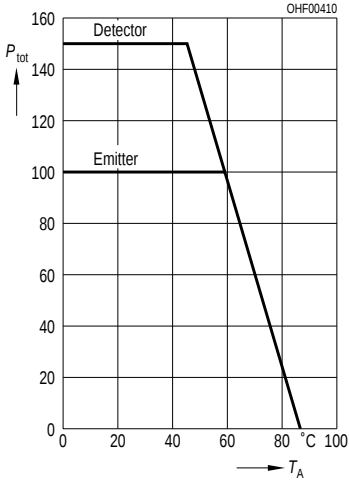
Max. Permissible Forward Current $I_F = f(T_A)$



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

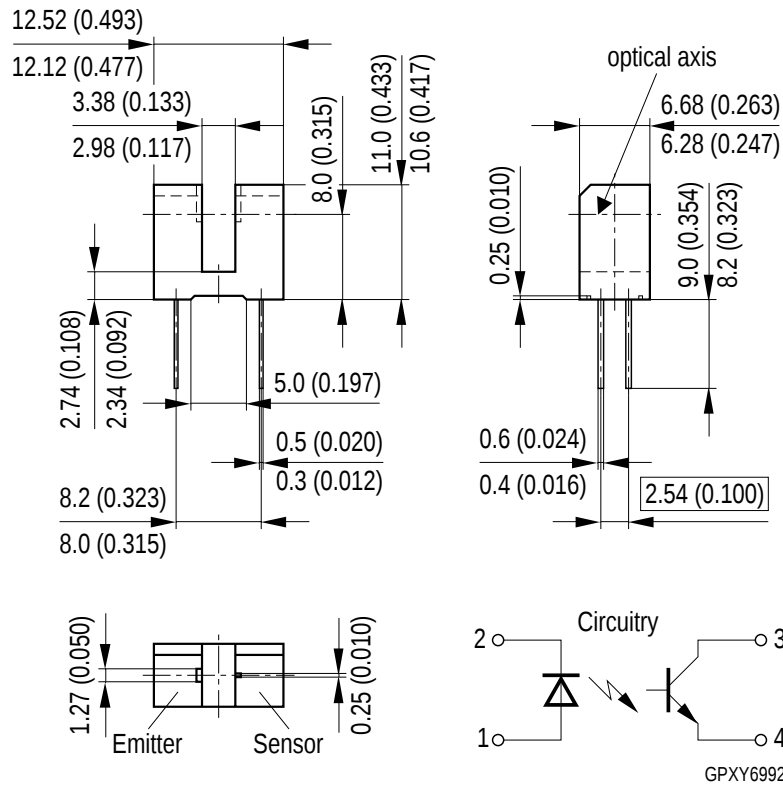


Total Power Dissipation for Emitter and Detector $P_{tot} = f(T_A)$



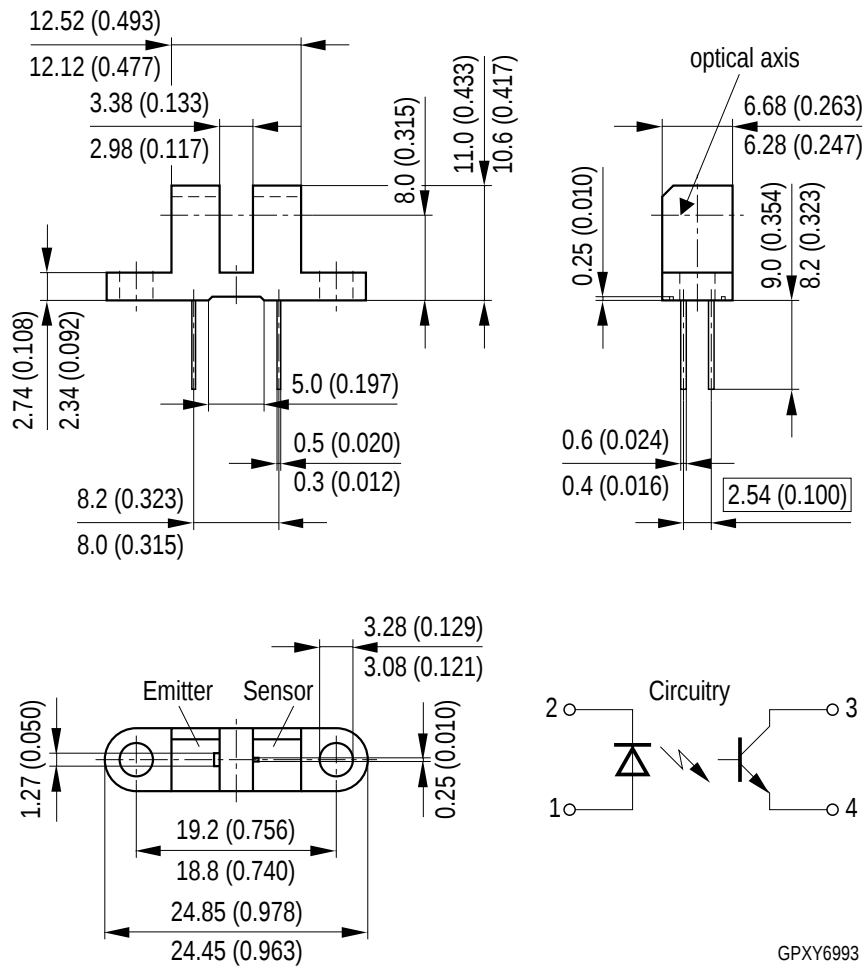
Maßzeichnung
Package Outlines

SFH 9301



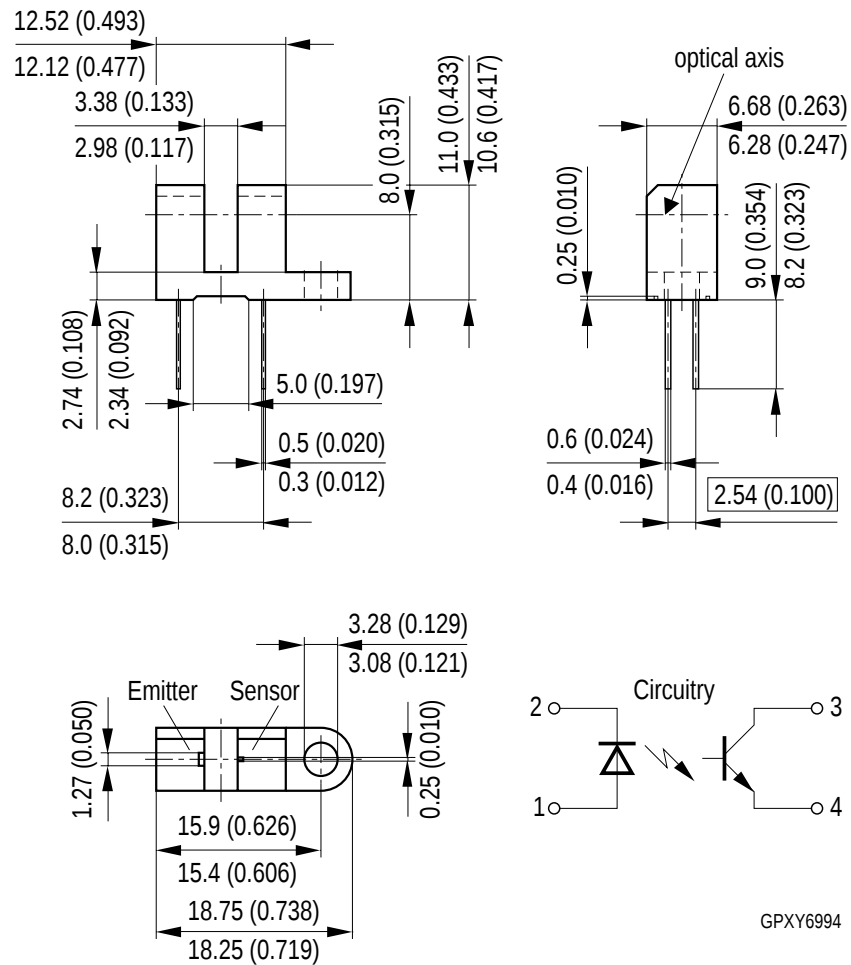
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

SFH 9302



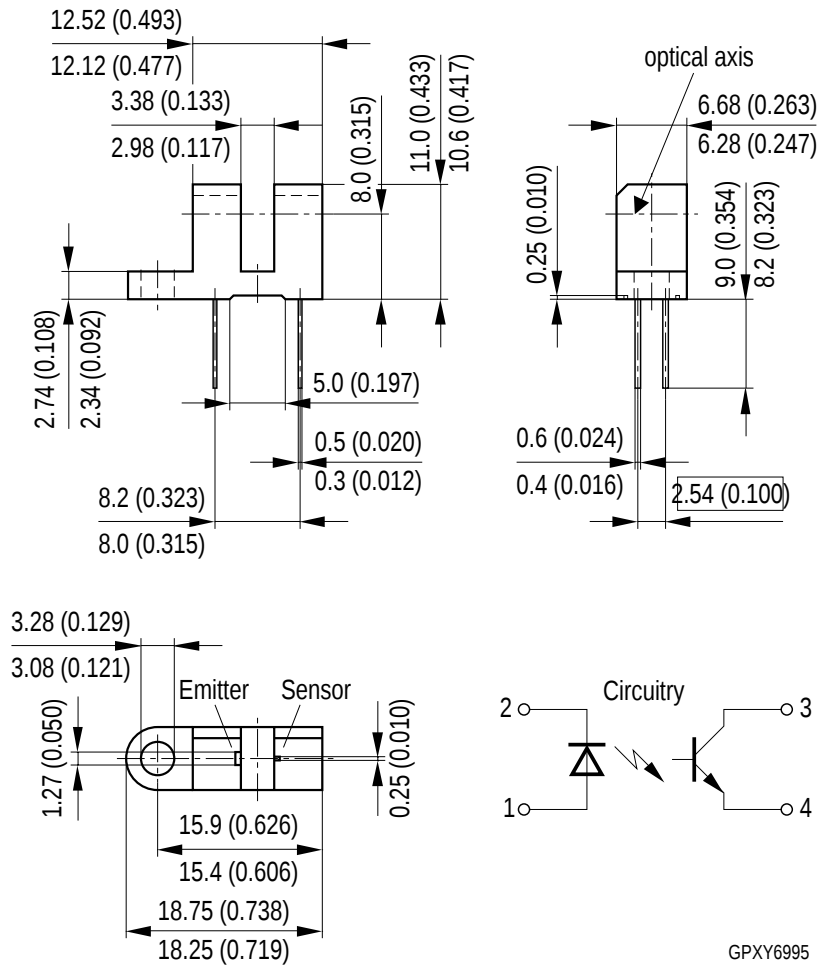
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

SFH 9303



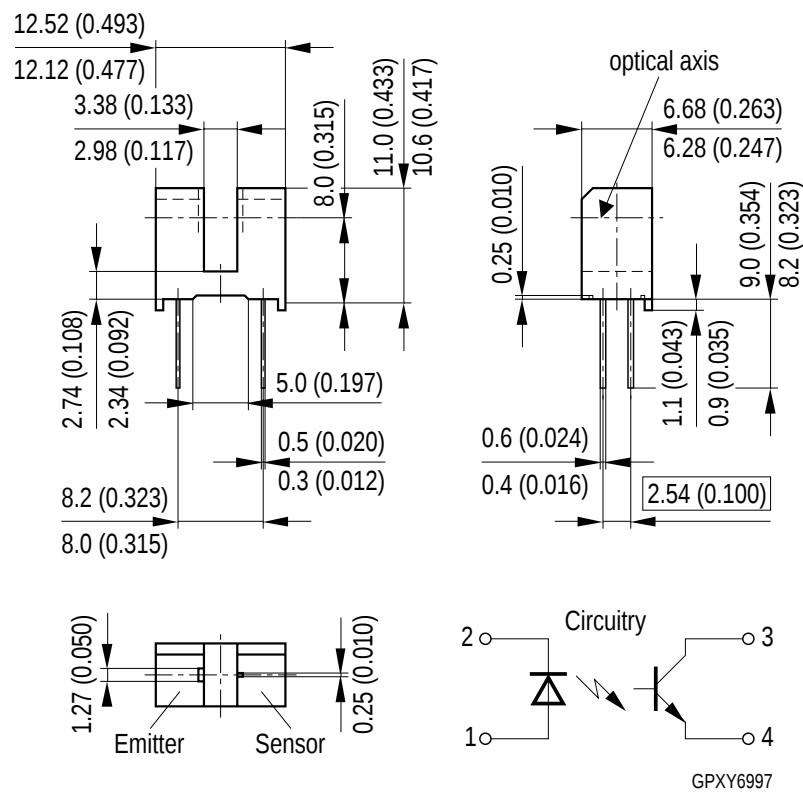
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

SFH 9304



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

SFH 9306



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
	Peak Temp. (solderbath)	Max. Time in peak zone	Peak Temp. (package temp.)	Max. Time in Peak Zone	(Iron temp.)
SFH 930x	260 °C	10 s	n. a.	–	300 °C < 5 s

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Attention please!

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 components¹ may only be used in life-support devices or systems² 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.