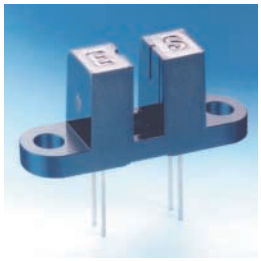
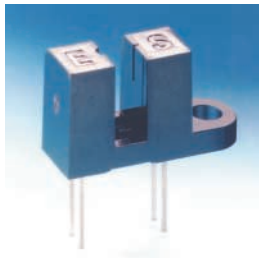
Gabellichtschranken
Slotted Interrupters

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

SFH 9301

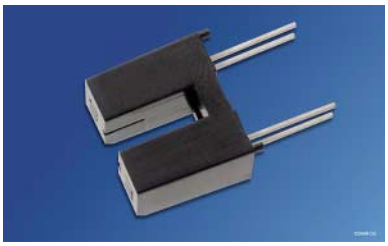


SFH 9302



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 automatical 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 / Transistoremitter durch schräge Kante gekennzeichnet. 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.
SFH 9302	Q62702-P5084	
SFH 9303	Q62702-P5085	
SFH 9304	Q62702-P5086	
SFH 9306	Q62702-P5130	

Grenzwerte T_A = 25 °C
Maximum Ratings

Bezeichnung **Parameter**	**Symbol** **Symbol**	**Wert** **Value**	**Einheit** **Unit**
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, ($t \leq 2$ 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
Gabellichtschranke **Slotted Interrupter**			
Lagertemperatur Storage temperature range	T_{stg}	– 40 … + 85	°C
Betriebstemperatur Operating temperature range	T_{op}	– 40 … + 85	
Elektrostatische Entladung Electrostatic discharge	ESD	2	kV

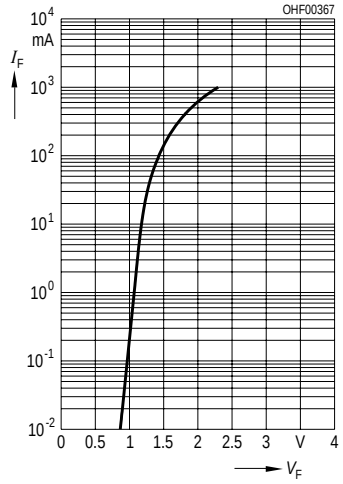
Kennwerte T_A = 25 °C
Characteristics

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
Durchlaβspannung Forward voltage I_F = 20 mA, t_p = 20 ms	V_F	1.2 (≤ 1.4)	V
Sperrstrom Reverse current V_R = 5 V	I_R	0.01 (≤ 1)	µA
Kapazität Capacitance V_R = 0 V, f = 1 MHz	C_0	16	pF
Empfänger (Si-Fototransistor) **Detector** (Silicon Phototransistor)			
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\ max}$	920	nm
Spectr. Bereich der Fotoempfindlichkeit Spectral range of sensitivity S = 10% of S_{max}	λ	840 … 1080	nm
Kapazität Capacitance V_{CE} = 0 V, f = 1 MHz, E = 0	C_{CE}	6.5	pF
Dunkelstrom Dark current V_{CE} = 20 V	I_{CEO}	2 (≤ 50)	nA

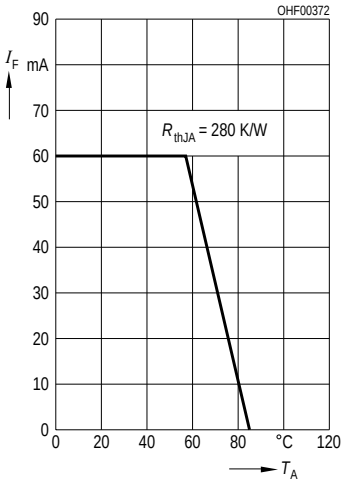
Kennwerte T_A = 25 °C
Characteristics (cont'd)

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

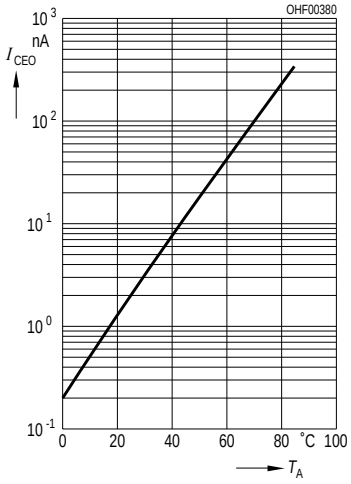
Forward Current $I_F = f(V_F)$
Single pulse, t_p = 20 µs



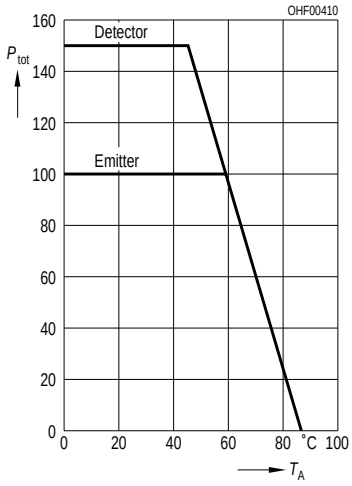
Max. Permissible Forward Current
$I_F = f(T_A)$



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

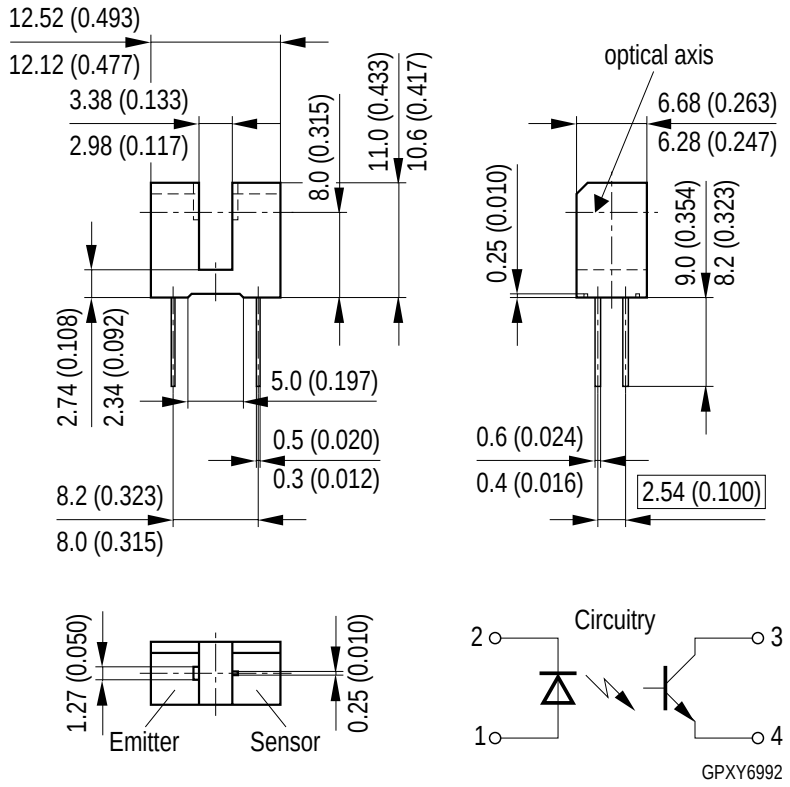


Total Power Dissipation for Emitter and Detector $P_{tot} = f(T_A)$



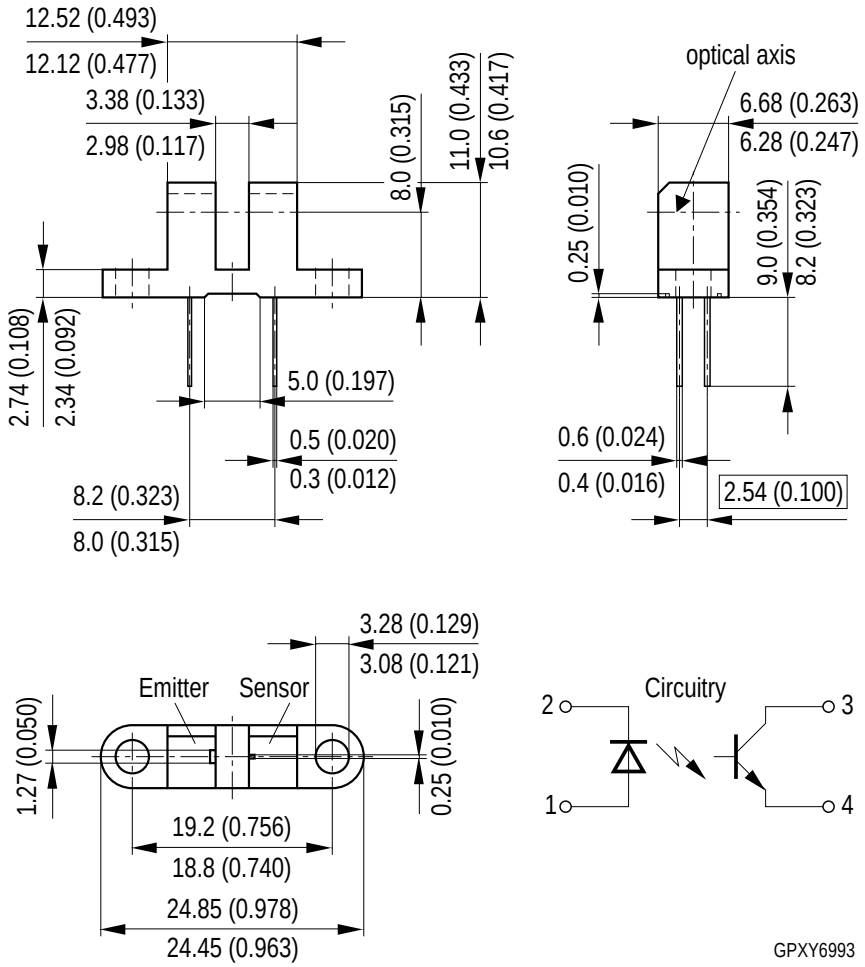
Maßzeichnung
Package Outlines

SFH 9301



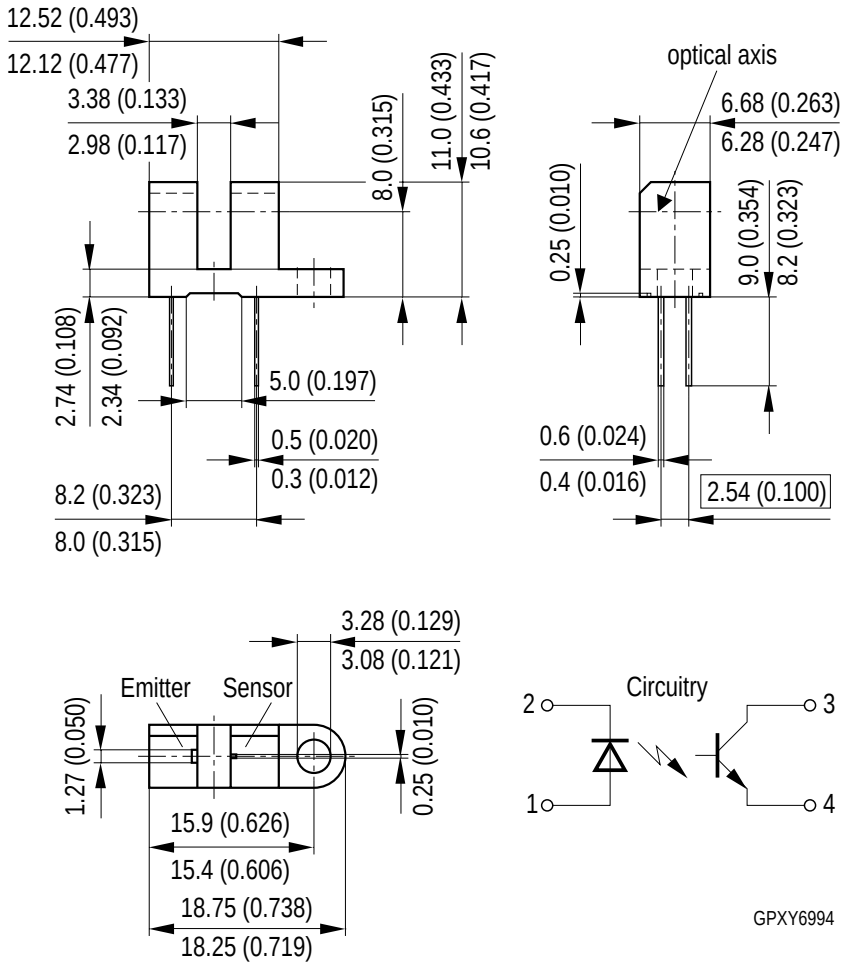
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

SFH 9302



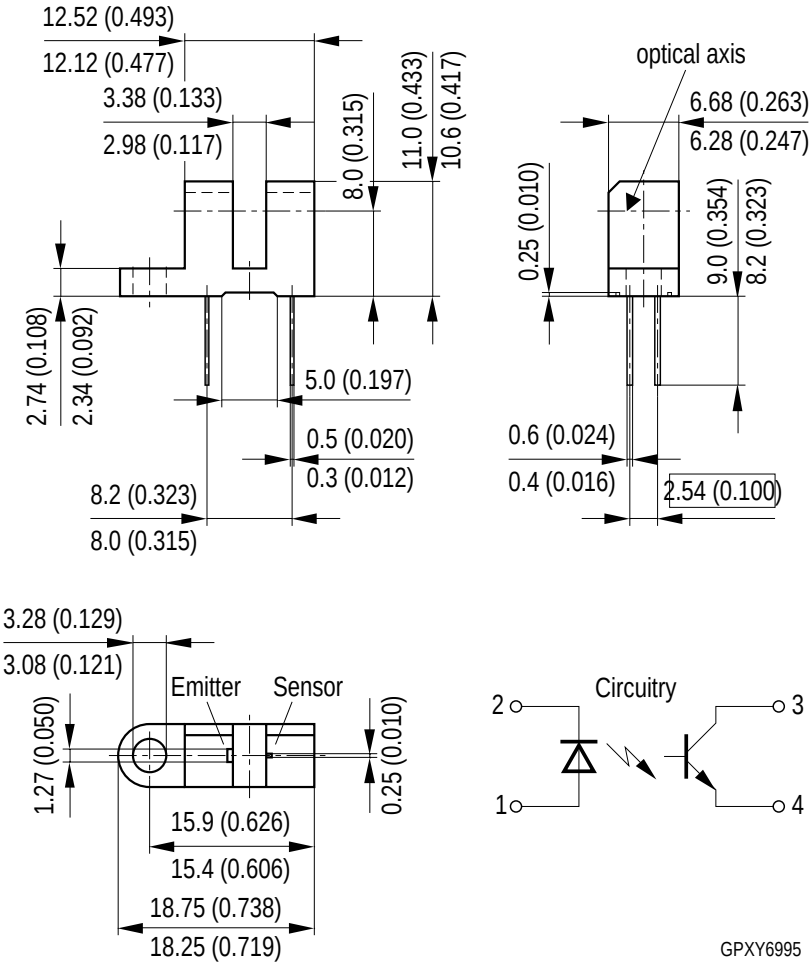
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

SFH 9303



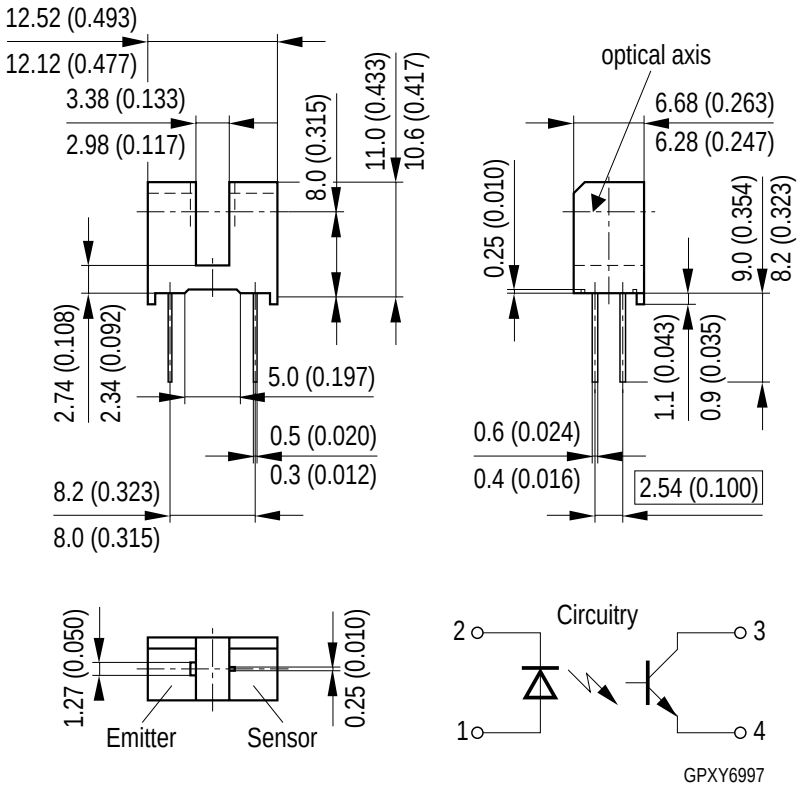
Maße werden wie folgt angegeben: mm (inch) / Dimensions are specified as follows: mm (inch).

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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