

Gabellichtschranke
Slotted Interrupter
Lead (Pb) Free Product - RoHS Compliant

SFH 9500



Vorläufige Daten/ Preliminary Data

Wesentliche Merkmale

- Geeignet für Oberflächenmontage (SMT)
- Kompaktes Gehäuse aus schwarzem LCP
- GaAs-IR-Sendediode (940 nm)
- Si-Fototransistor mit Tageslichtsperrfilter
- Mit Positionspin
- Geeignet für „pick and place“ Montage
- Hohe Genauigkeit (Schlitzbreite 0,5 mm)
- Große Spaltbreite zwischen Sender und Empfänger (5 mm)
- Hohe Stabilität auf PCB durch große Bauelementabmessung (6,8 mm)

Anwendungen

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

Features

- Suitable for surface mounting (SMT)
- Compact housing out of black LCP
- GaAs infrared emitter (940 nm)
- Silicon phototransistor detector with daylight-cutoff filter
- With positioning pin
- Suitable for pick and place
- High sensing accuracy (slit width: 0.5 mm)
- Wide gap between emitter and detector (5 mm)
- High stability on pcb due to large width of device (6.8 mm)

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

Type	Bestellnummer	$I_{CE \text{ min. [mA]}}$
Type	Ordering Code	($I_F = 20 \text{ mA}$; $V_{CE} = 5 \text{ V}$)
SFH 9500	Q65110A3108	1

Grenzwerte
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, $T_A \leq 25\text{ °C}$ Forward current	$I_F (DC)$	60	mA
Verlustleistung, $T_A \leq 25\text{ °C}$ 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	V_{CE}	70	
Emitter-Kollektor-Spannung Emitter-collector voltage	V_{EC}	7	
Kollektorstrom Collector current, $T_A \leq 25\text{ °C}$	I_C	50	mA
Verlustleistung, $T_A \leq 25\text{ °C}$ Total power dissipation	P_{tot}	150	mW
Wärmewiderstand Thermal resistance	R_{thJA}	280	K/W

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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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 $T_A = 25\text{ °C}$ **Characteristics**

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

Wellenlänge der Strahlung Wavelength of peak emission	λ_{peak}	940	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)

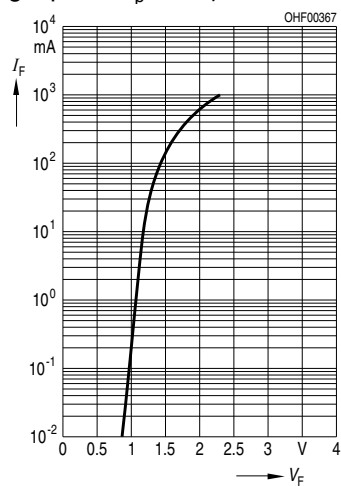
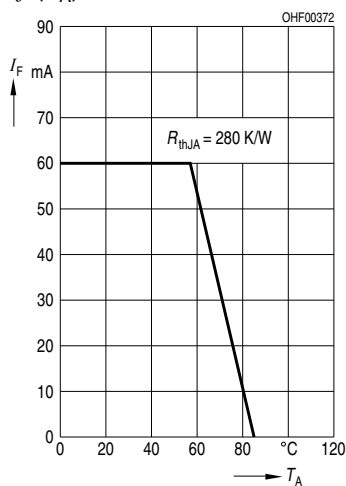
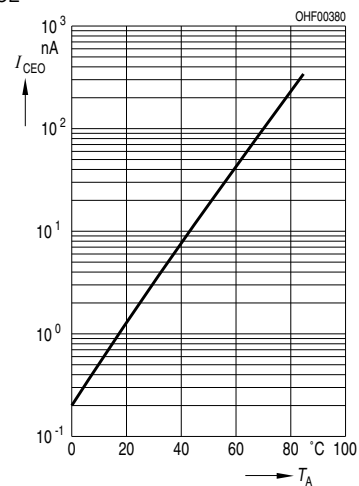
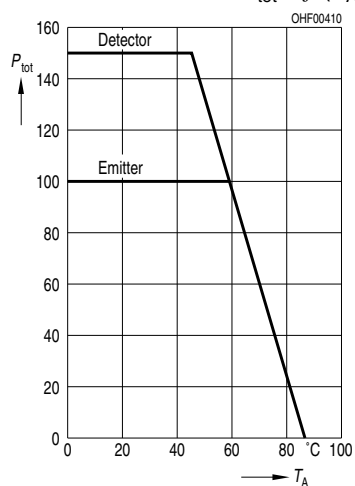
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{S\text{ max}}$	920	nm
Spectr. Bereich der Fotoempfindlichkeit Spectral range of sensitivity $S = 10\%$ of S_{max}	λ	840 ... 1080	nm
Kapazität Capacitance $V_{CE} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$	C_{CE}	6.5	pF
Dunkelstrom, $V_{CE} = 20\text{ V}$ Dark current	I_{CEO}	2 (≤ 50)	nA

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

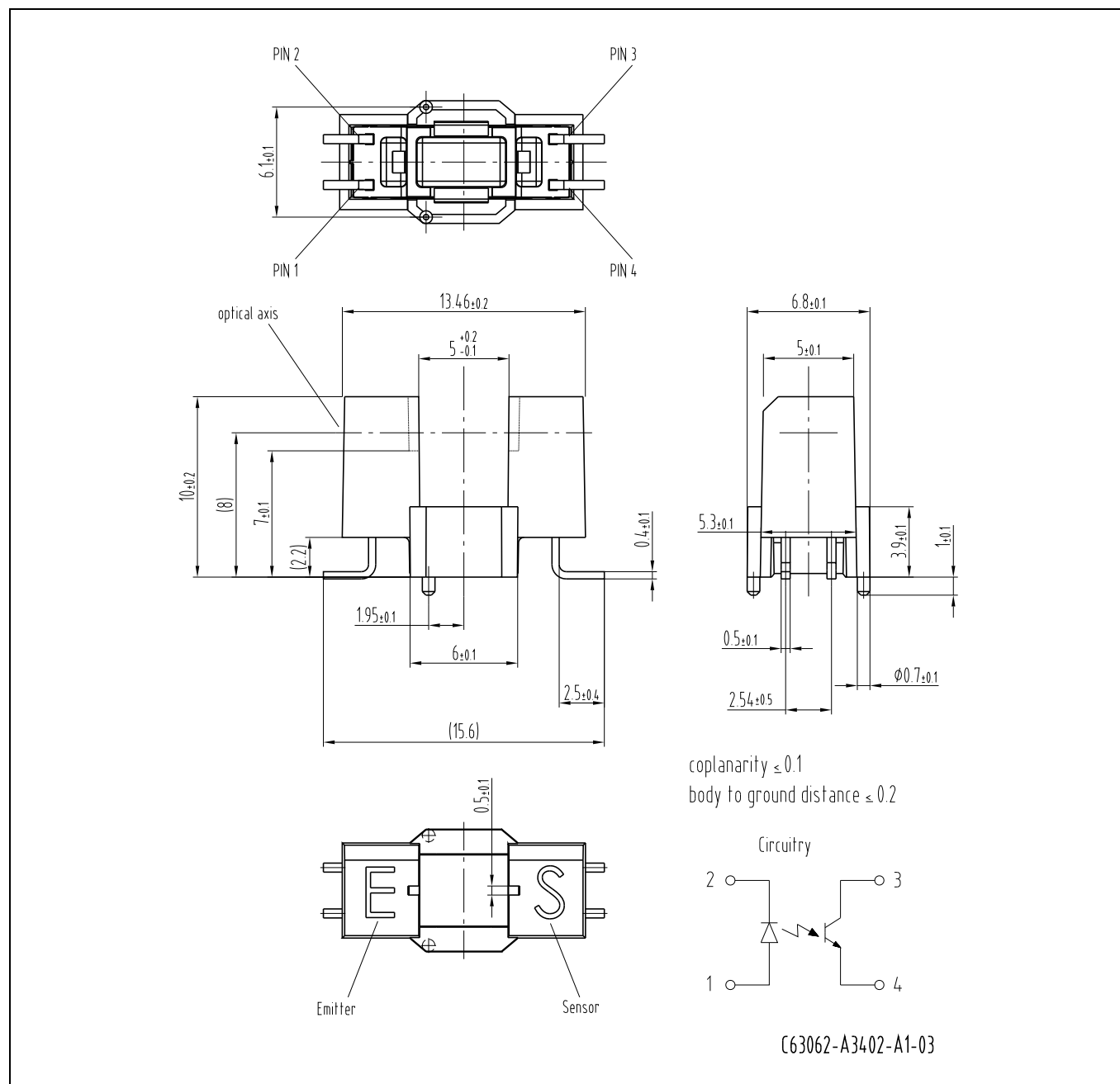
Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
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Gabellichtschranke**Slotted interrupter**

Kollektor-Emitterstrom Collector-emitter current $I_F = 20\text{ mA}$; $V_{CE} = 5\text{ V}$	I_{CEmin}	1	mA
Kollektor-Emitter-Sättigungsspannung Collector-emitter-saturation voltage $I_F = 20\text{ mA}$; $I_C = 0.3\text{ mA}$	$V_{CE\text{ sat}}$	≤ 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 $I_F = f(T_A)$** $I_F = f(T_A)$ **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

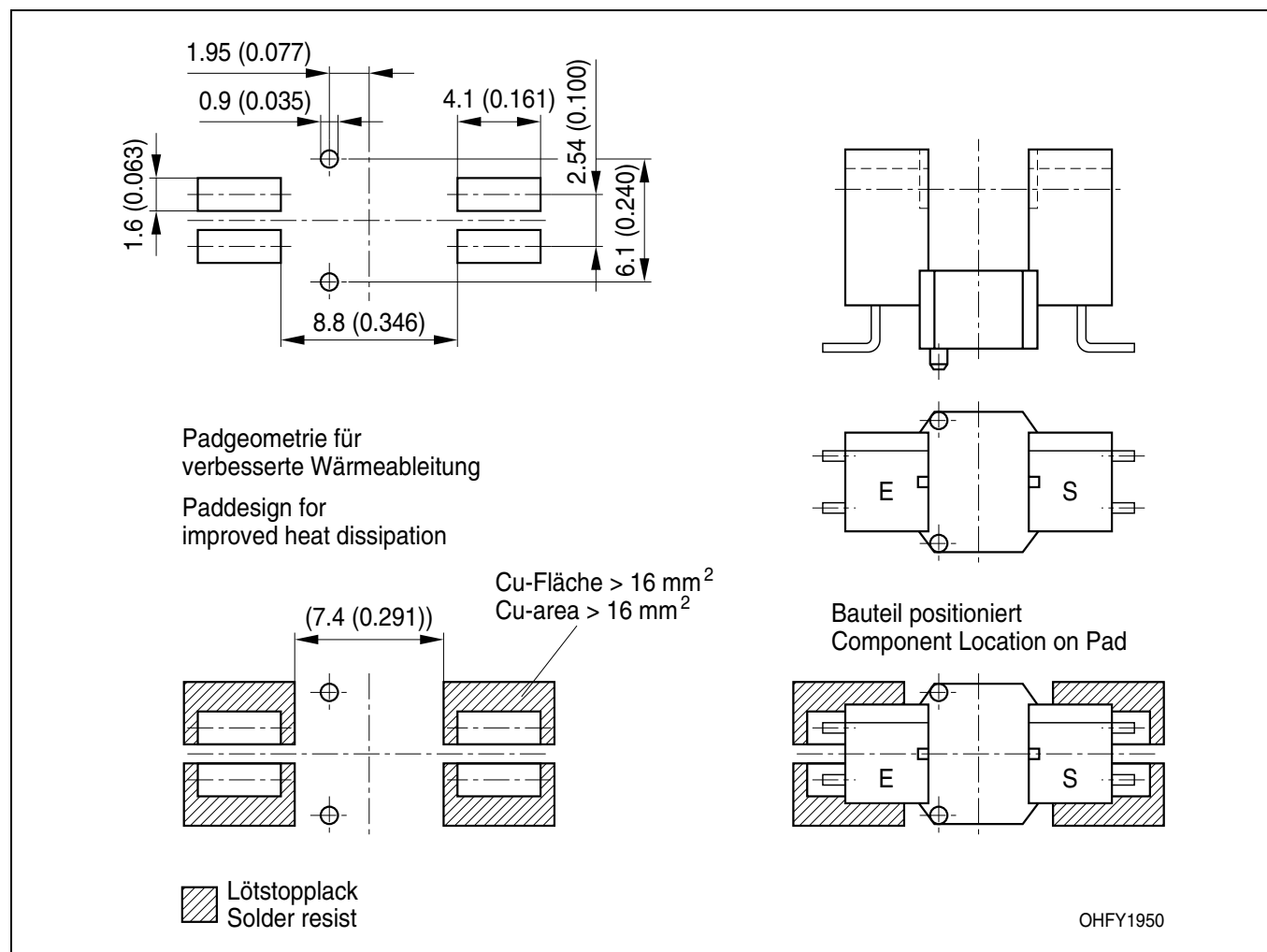


Maße in mm (inch) / Dimensions in mm (inch).

General Tolerance: ± 0.1 mm

Empfohlenes Lötpaddesign Recommended Solder Pad

Reflow Löten
Reflow Soldering



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

Löthinweise Soldering Conditions

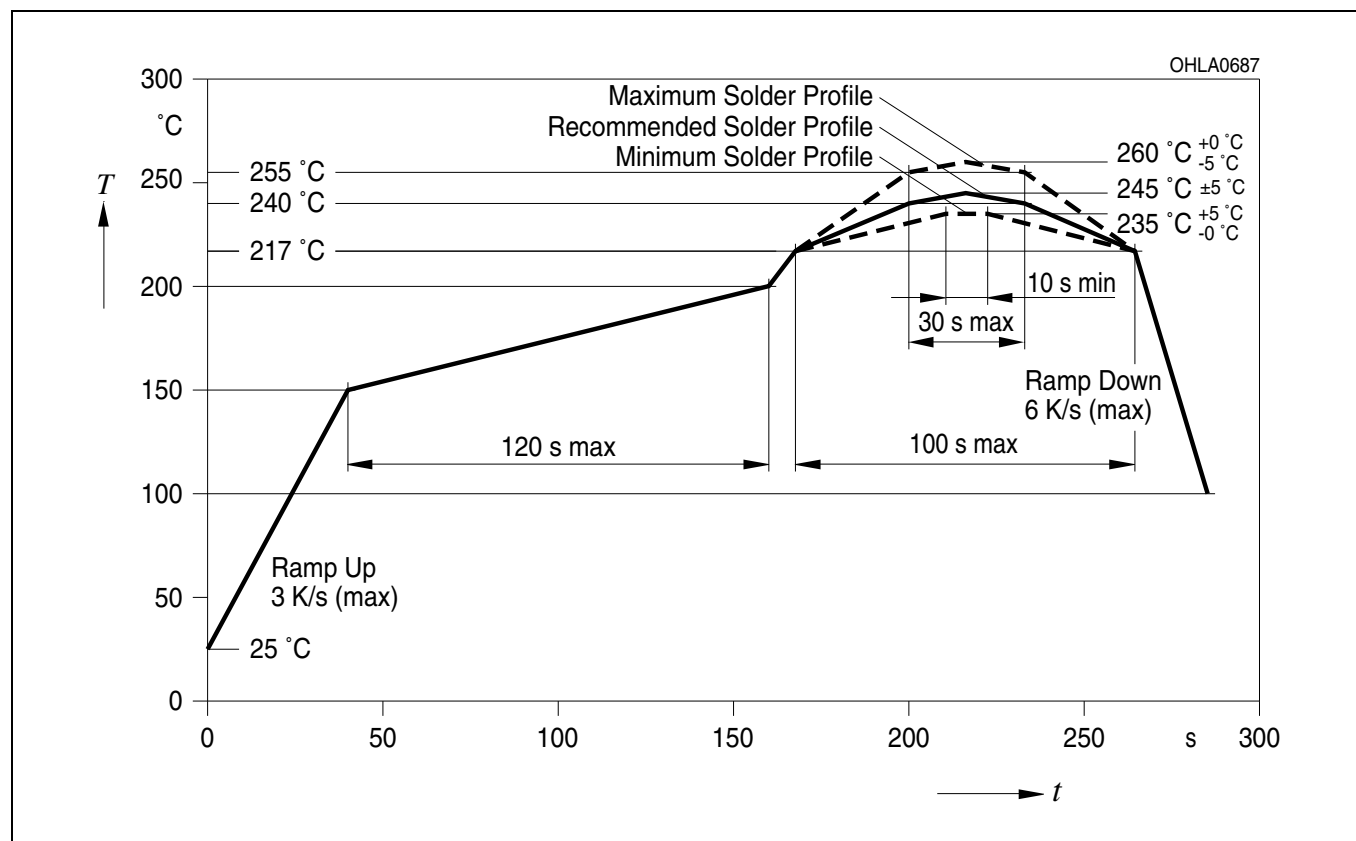
Bauform Type	Reflowlötung Reflow Soldering		Tauch-, Schwalllötung Dip, Wave Soldering	
	Peak Temp. of Soldering Zone	Max. Time in Peak Zone		
SFH 9500	260 °C	10 s ... 30 s	—	

Lötbedingungen**Soldering Conditions****Reflow Lötprofil für bleifreies Löt**

(nach J-STD-020C)

Reflow Soldering Profile for lead free soldering

(acc. to J-STD-020C)



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