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)

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)

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

Grenzwerte
Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Sender (GaAs-Diode) **Emitter** (GaAs Diode)			
Sperrspannung Reverse voltage	V_R	5	V
Durchlaßstrom , $T_A \leq$ 25 °C Forward current	$I_{F\ (DC)}$	60	mA
Verlustleistung, $T_A \leq$ 25 °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 min) Collector-emitter voltage	V_{CE}	70	
Emitter-Kollektor-Spannung Emitter-collector voltage	V_{EC}	7	
Kollektorstrom Collector current, $T_A \leq$ 25 °C	I_C	50	mA
Verlustleistung, $T_A \leq$ 25 °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
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

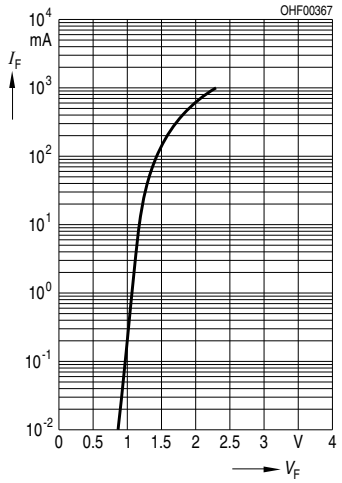
Kennwerte T_A = 25 °C
Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Sender (GaAs-Diode) **Emitter** (GaAs Diode)			
Wellenlänge der Strahlung Wavelength of peak emission	λ_{peak}	940	nm
Durchlaβspannung Forward voltage I_F = 20 m, 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, V_{CE} = 20 V Dark current	I_{CEO}	2 (≤ 50)	nA

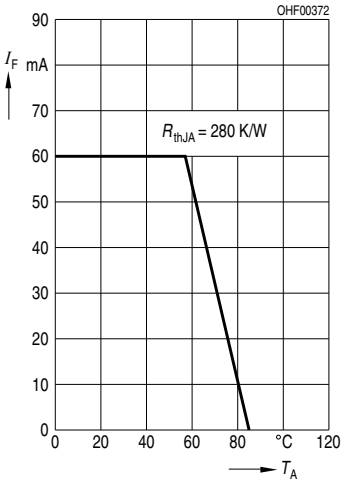
Kennwerte T_A = 25 °C (cont'd)
Characteristics

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_{CEmin}	1	mA
Kollektor-Emitter-Sättigungsspannung Collector-emitter-saturation voltage I_F = 20 mA; I_C = 0.3 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

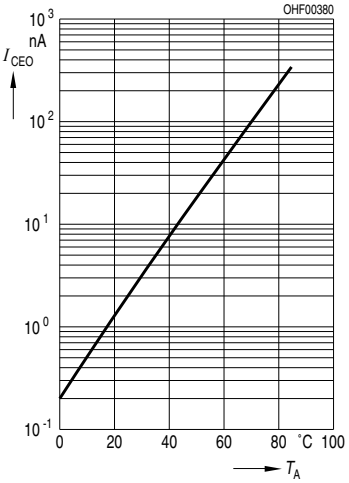
Forward Current $I_F = f(V_F)$
Single pulse, t_p = 20 µs



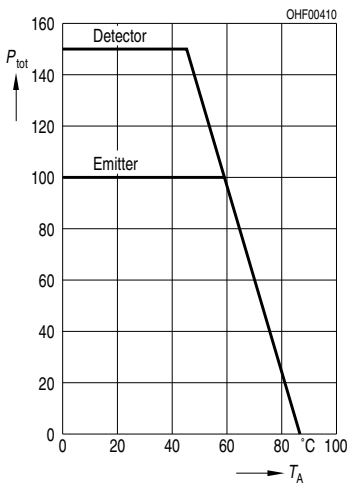
Max. Permissible Forward Current
$I_F = f(T_A)$



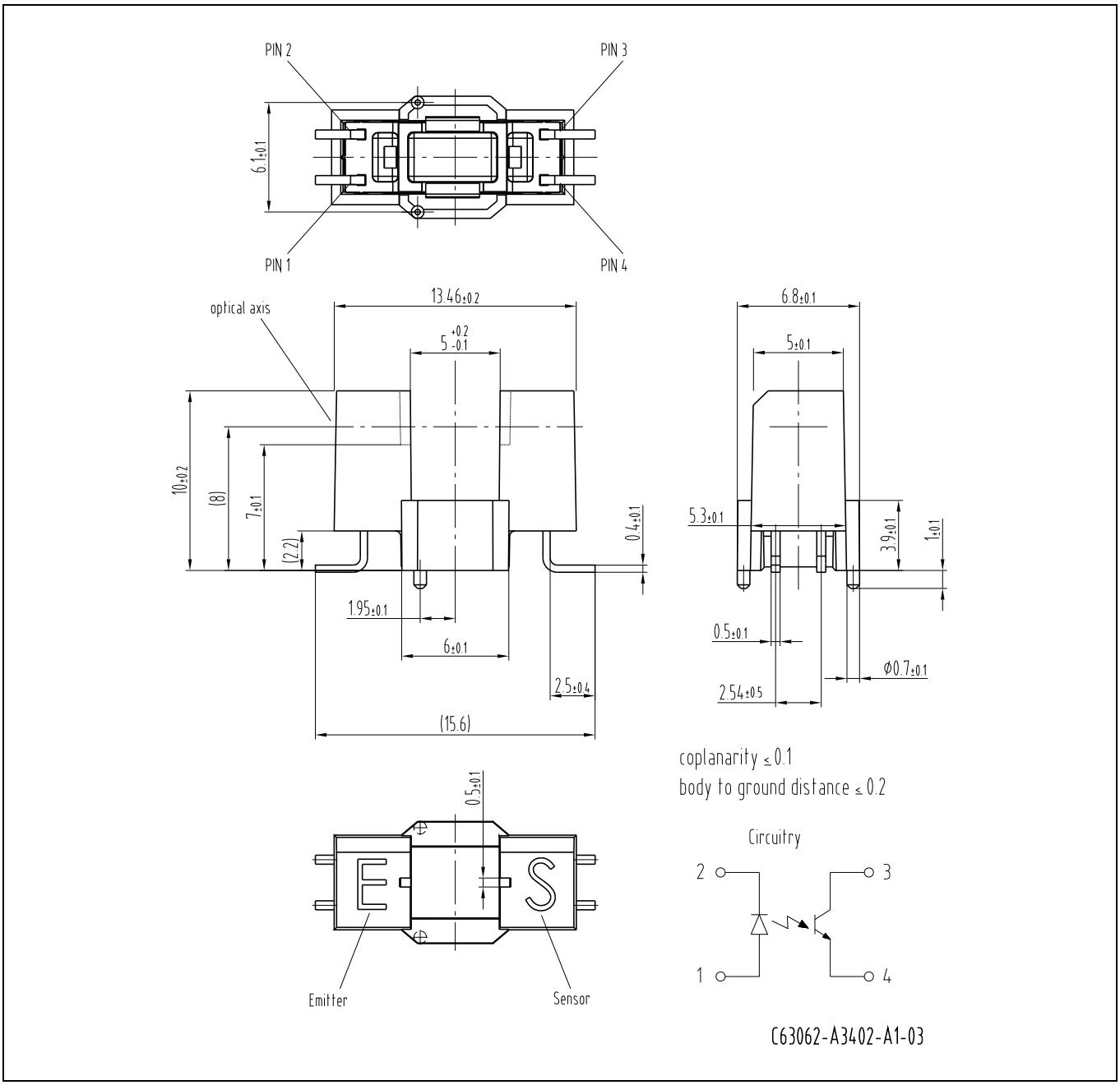
Dark Current $I_{CEO} = f(T_A)$
V_{CE} = 20 V, E = 0



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



Maßzeichnung
Package Outlines

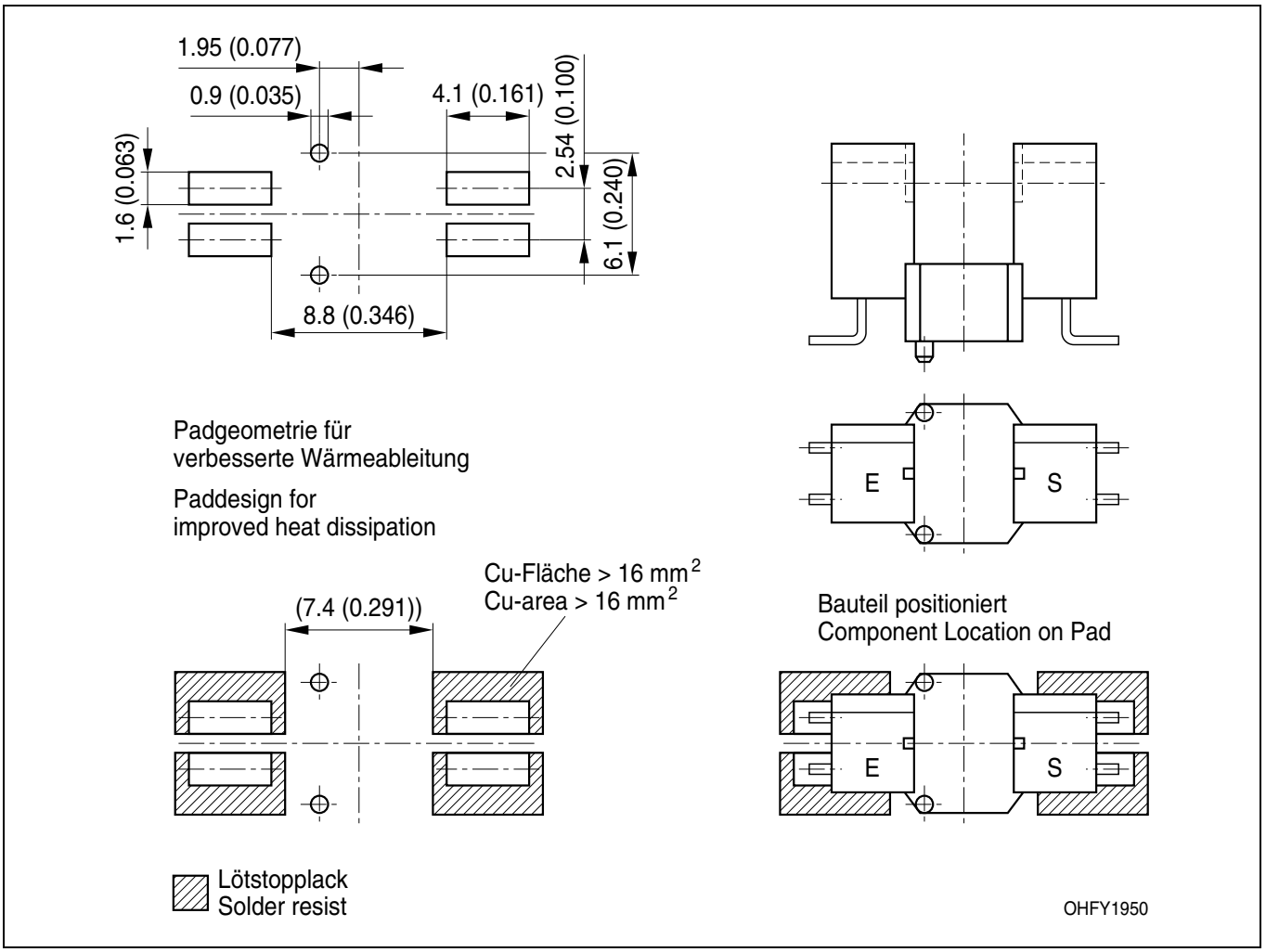


Maße in mm (inch) / Dimensions in mm (inch).

General Tolerance: +/-0.1mm

Empfohlenes Lötpaddesign
Recommended Solder Pad

Reflow Löten
Reflow Soldering

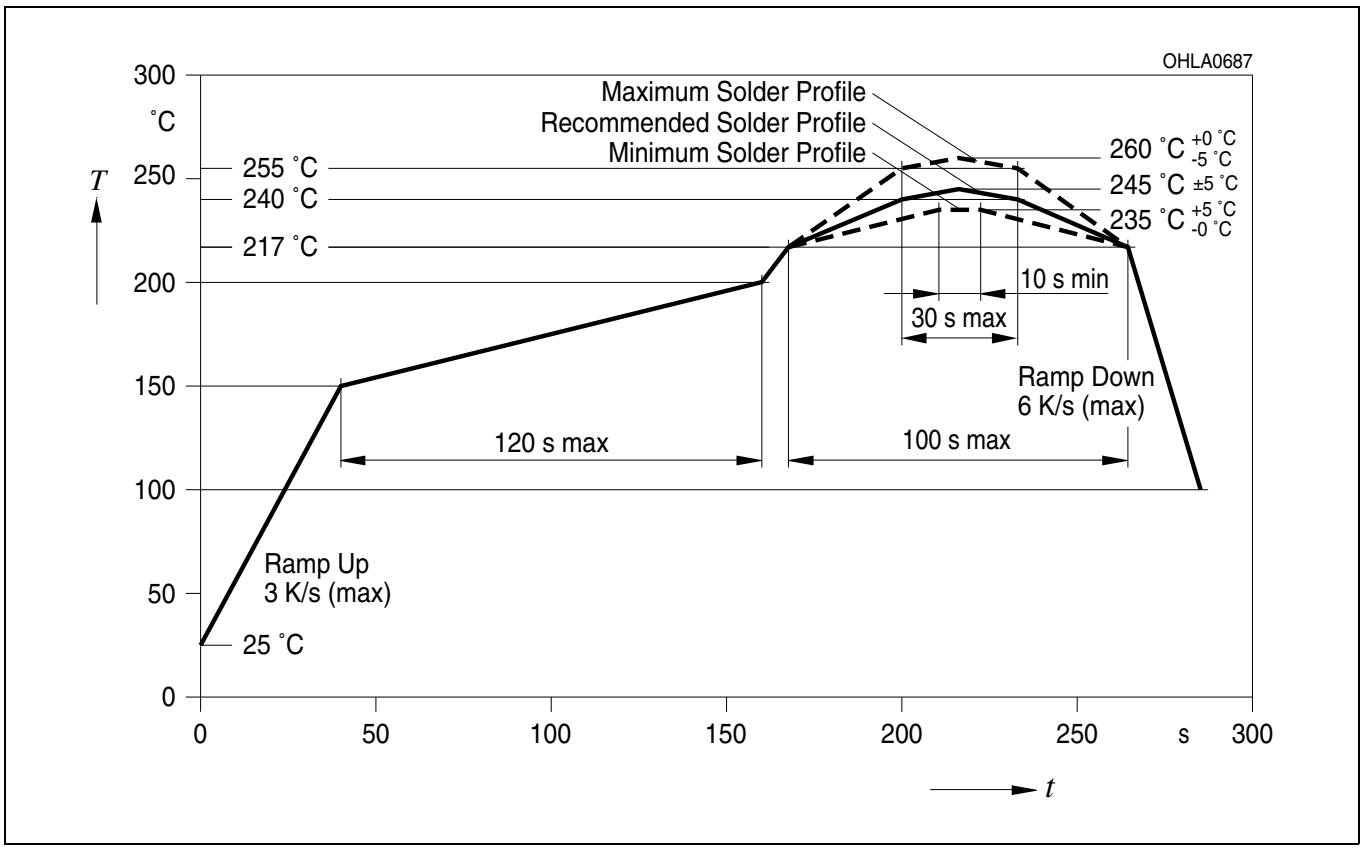


Maße in mm (inch) / Dimensions in mm (inch).

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 Löten (nach J-STD-020C)
Reflow Soldering Profile for lead free soldering (acc. to J-STD-020C)



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