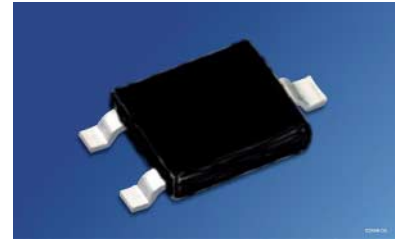


IR-Empfänger für Fernbedienungen
IR-Receiver for Remote Control Systems
Lead (Pb) Free Product - RoHS Compliant
SFH 5410



Beschreibung

Der SFH 5410 ist ein Infrarot-Empfänger für die Erkennung von Signalen aus Infrarot-Fernbedienungssystemen und bestehen aus Fotodiode, Vorverstärker, automatischer Verstärkungsregelung, Bandpaß-Filter und Demodulator. Das Gehäuse ist zur Unterdrückung des Tageslichteinflusses schwarz eingefärbt.

Wesentliche Merkmale

- IC mit monolithisch integrierter Fotodiode (Ein-Chip Lösung)
- Speziell geeignet für Anwendungen bei 940 nm
- Hohe Empfindlichkeit
- Verschiedene Trägerfrequenzen erhältlich
- TTL und CMOS kompatibel
- Ausgang: aktiv „Low“

Anwendungen

- Empfänger in Fernbedienungen für TV, Videorecorder, HiFi, Satellitenempfänger und CD-Spieler
- Um hohe Sicherheit bei der Datenübertragung zu erreichen, sind fehlerkorrigierende Codes einzusetzen

Description

The SFH 5410 is a IR receivers to detect light from infrared remote control systems. The IC includes photodiode, preamplifier, automatic gain control, bandpass and demodulator. The black-colored package is designed as daylight-cutoff filter.

Features

- IC with monolithic integrated photodiode (single chip solution)
- Especially suitable for applications of 940 nm
- High sensitivity
- Various carrier frequencies available
- TTL and CMOS compatibility
- Output: active Low

Applications

- Remote control module for TV sets, VCRs, hi-fi audio receivers, SAT receivers and compact disk players
- For safe data transmission error tolerant codes have to be used

Typ Type	Trägerfrequ. Carrier Frequency kHz	Bestellnr. Ordering Code
SFH 5410-36	36	Q65110A1727
SFH 5410-38	38	Q65110A3909

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Lagertemperatur Storage temperature range	T_{stg}	- 40 ... + 100	°C
Betriebsspannung Supply voltage	V_{CC}	6.3	V
Ausgangsspannung Output voltage	V_{OUT}	6.3	V
Ausgangsstrom Output current	I_{OUT}	3	mA
Verlustleistung Total power dissipation, $T_A \leq 85\text{ °C}$	P_{tot}	50	mW

Empfohlener Arbeitsbereich**Recommended Operating Conditions**

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min.	typ.	max.	
Betriebstemperatur Operating temperature	T_{op}	- 40	-	85	°C
Betriebsspannung Supply Voltage	V_{cc}	4.5	5.0	5.5	V

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min.	typ.	max.	
Stromaufnahme, $V_{CC} = 5\text{ V}$, $E = 0$ Current consumption	I_{CC}	–	1.3	–	mA
Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity	$\lambda_{s\text{ max}}$	–	940	–	nm
Spektraler Bereich der Fotoempfindlichkeit Spectral range of sensitivity	λ	830	–	1100	nm
Ausgangsspannung Output voltage Output "High" - ($I_{out} = 10\text{ }\mu\text{A}$) Output "Low" - ($I_{out} = 500\text{ }\mu\text{A}$)	$V_{OUT\text{ high}}$ $V_{OUT\text{ low}}$	$V_{CC}-0.5$ –	– –	– 0.5	V
Trägerfrequenz Carrier frequency SFH 5410-36 SFH 5410-38	f_0	–	36 38	–	kHz
Min. Bestrahlungsstärke (Testsignal, s. Fig. 3) Min. Threshold irradiance (test signal, see Fig. 3) $f = f_0$, $t_{p,I} = 600\text{ }\mu\text{s}$	$E_{e\text{ min}}$	–	1.4	–	mW/m ²
Min. Eingangspulsbreite „ON“ (Testsignal, s. Fig. 3) ¹⁾ Min. Input pulse width "ON" (test signal, see Fig. 3) ¹⁾	$t_{p,I}$	$6/f_0$	–	–	μs
Ausgangspulsbreite „ON“ (Testsignal, s. Fig. 3) Output pulse width "ON" (test signal, see Fig. 3 , $E_e = 4\text{ mW/m}^2$)	$t_{p,O}$	$t_{p,I}$ $- 6/f_0$	–	$t_{p,I}$ $+ 6/f_0$	μs
50%-Filterbandbreite, $f = f_0$, $E_V = 0$, $V_{CC} = 5\text{ V}$ 50%-Filter bandwidth	$\Delta f_{50\%}$	3	–	6	kHz

¹⁾ Die volle Empfindlichkeit wird bei einer Burstlänge von mindestens 6 Pulsen erreicht. Die Reichweite bei Verwendung eines typischen Senders (SFH 4510/SFH 4515, $I_F = 500\text{ mA}$) beträgt etwa 15 m.

¹⁾ A minimum burst length of 6 pulses is necessary for full sensitivity. The transmission distance with a typical transmitter (SFH 4510/SFH 4515, $I_F = 500\text{ mA}$) is about 15 m.

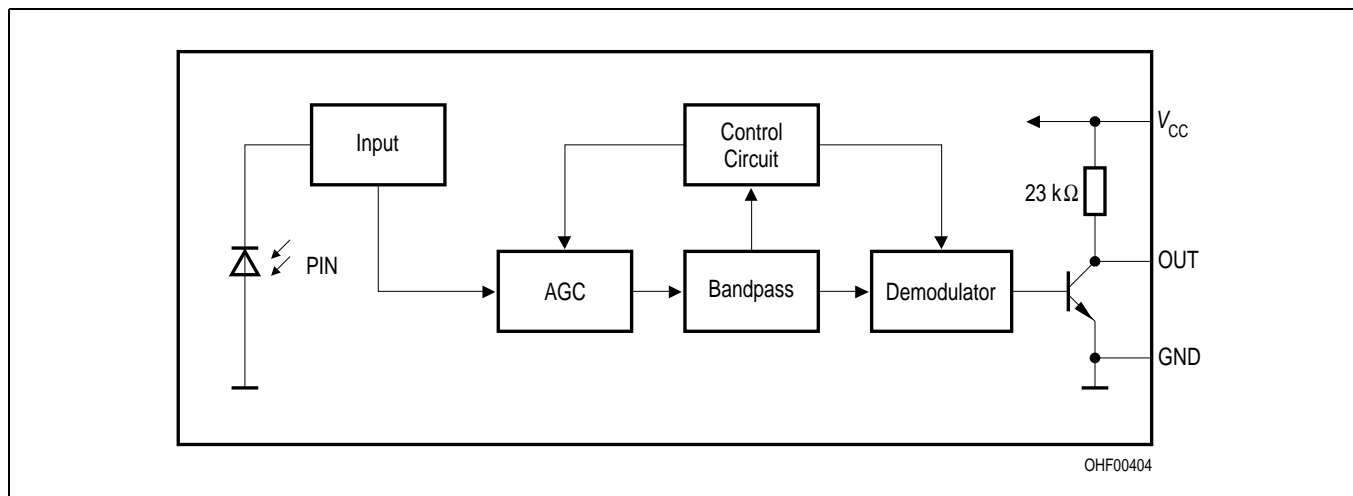


Figure 1 Blockschaltbild / Block Diagram

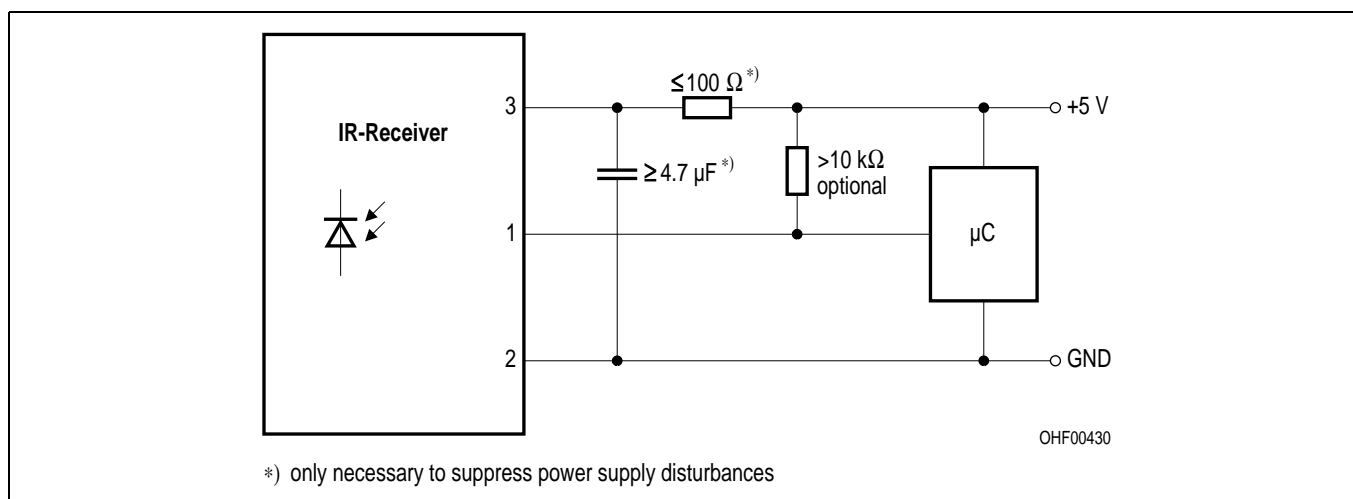


Figure 2 Externe Beschaltung / External Circuit

Anschlußbelegung
Pin configuration

Pin	Beschreibung
Pin	Description
1	OUT
2	GND
3	V _{CC}

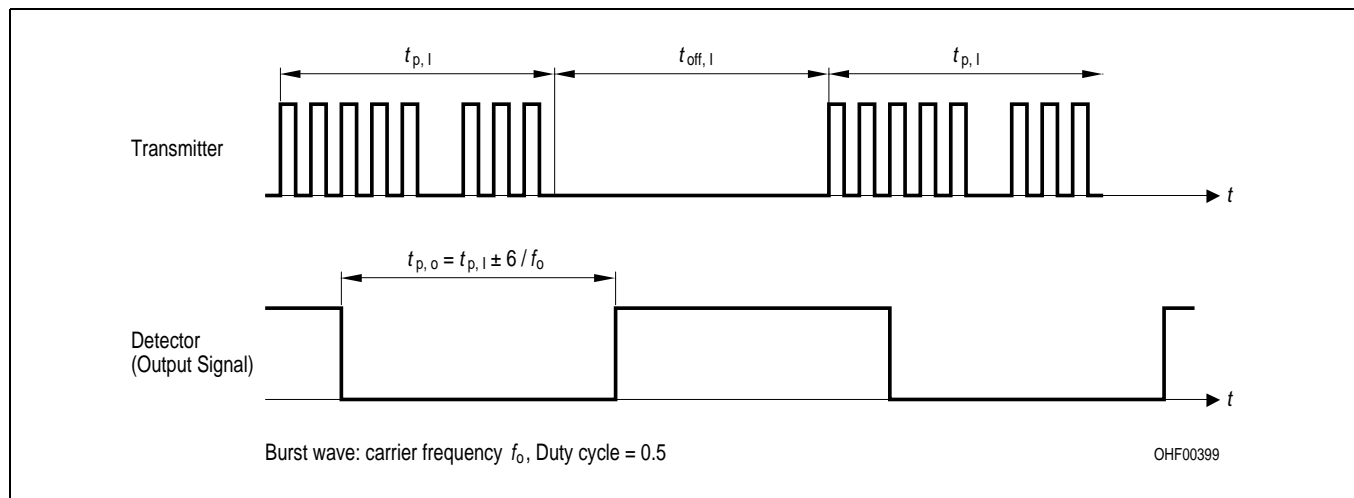
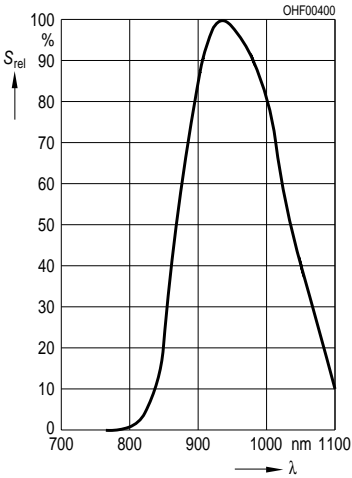


Figure 3 Optisches Testsignal / Optical Test Signal

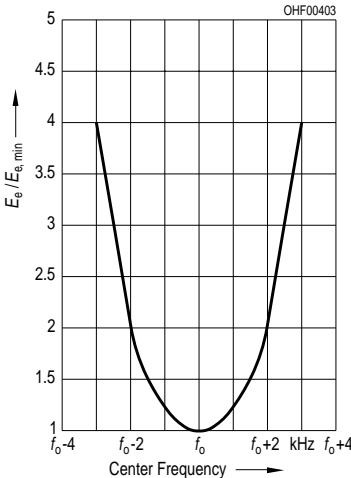
Relative Spectral Sensitivity

$S_{rel} = f(\lambda)$



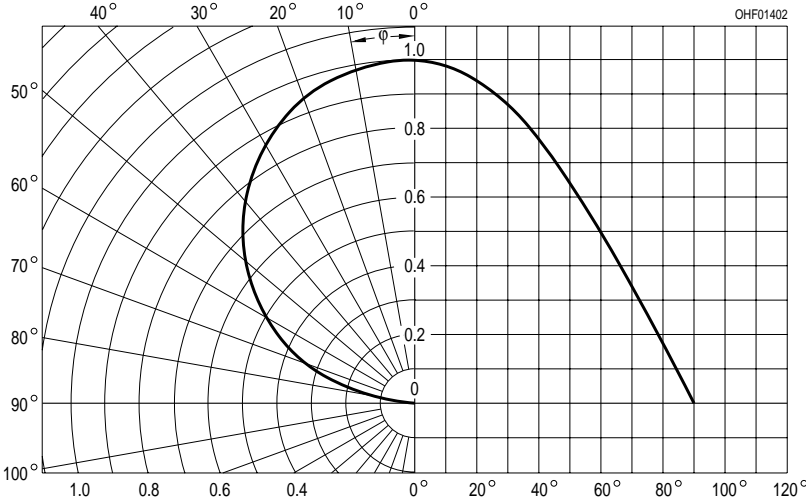
Relative Sensitivity

$E_e/E_{e, min} = f(f_0)$

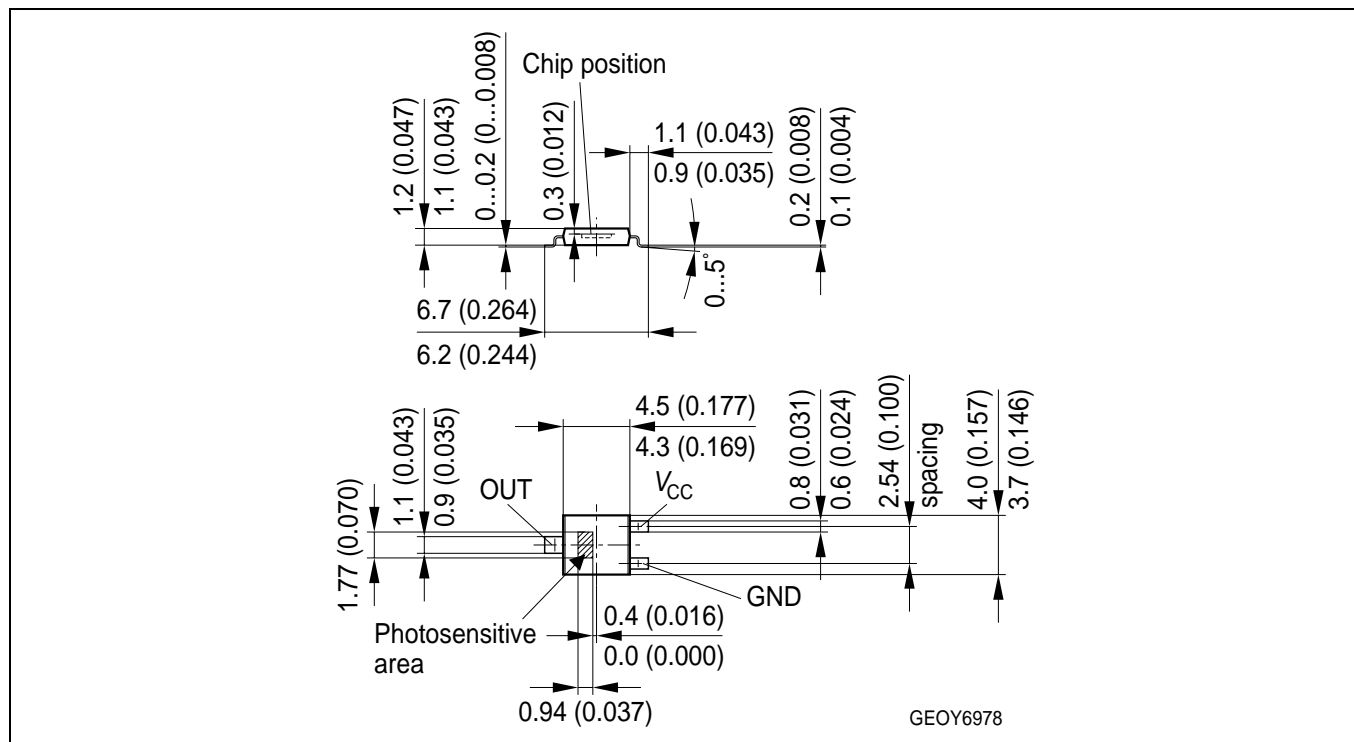


Directional Characteristics

$S_{rel} = f(\varphi)$

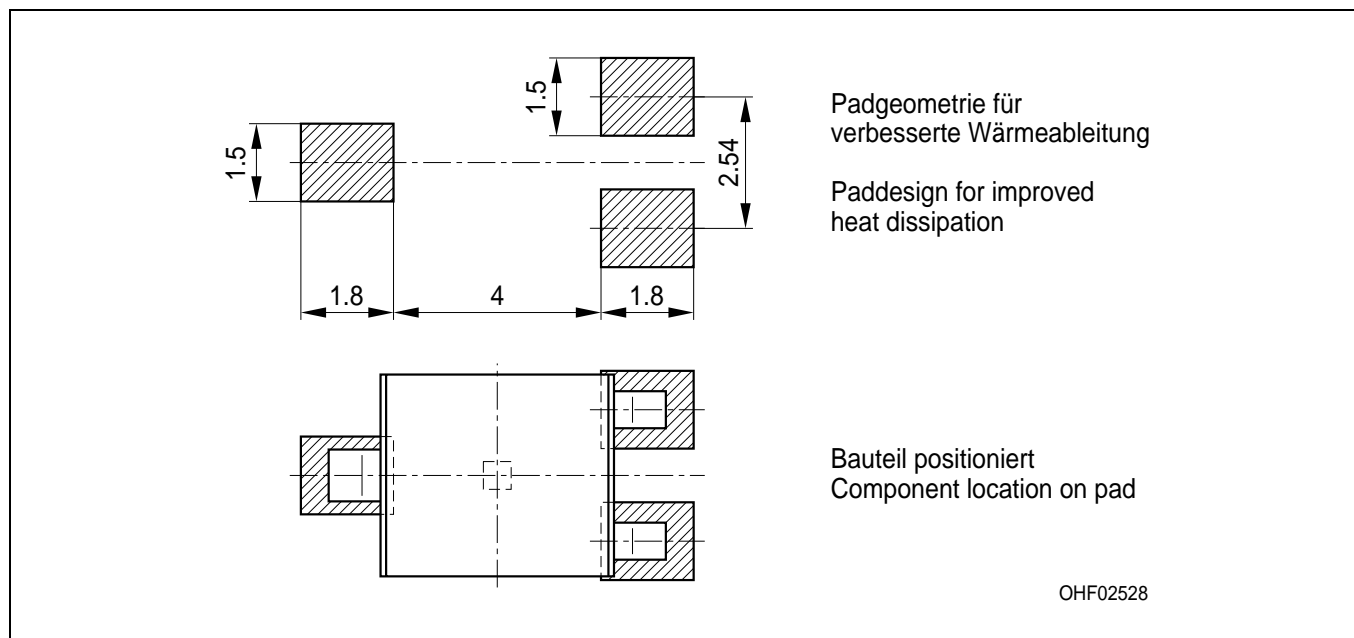


Maßzeichnung
Package Outlines



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

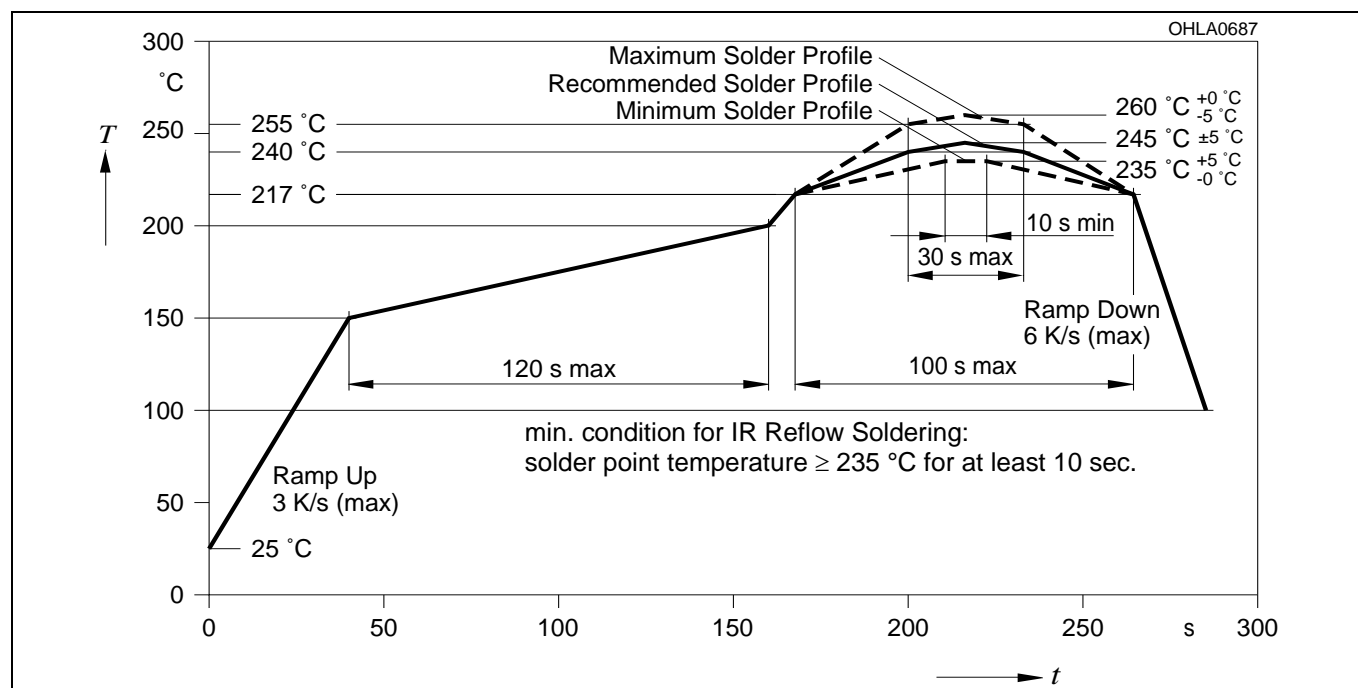
Empfohlenes Lötpad-Design
Recommended Solderpad Design



Maße in mm / Dimensions in mm.

Lötbedingungen
Soldering Conditions
Reflow Lötprofil für bleifreies Löt
Reflow Soldering Profile for lead free soldering

Vorbehandlung nach JEDEC Level 4
 Preconditioning acc. to JEDEC Level 4
 (nach J-STD-020C)
 (acc. to J-STD-020C)



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