

IR-Empfänger für Fernbedienungen

IR-Receiver for Remote Control Systems

Lead (Pb) Free Product - RoHS Compliant

SFH 5110



Beschreibung

SFH 5110 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 von 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

SFH 5110 is a IR receiver 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	Trägerfrequ.	Bestellnr.
Type	Carrier Frequency kHz	Ordering Code
SFH 5110-30 ¹⁾	30	Q62702P5088
SFH 5110-33 ¹⁾	33	Q62702P5089
SFH 5110-36	36	Q62702P5090
SFH 5110-38	38	Q62702P5091
SFH 5110-40 ¹⁾	40	Q62702P5092

¹⁾ Mindestbestellmenge 80000 Stück / Minimum order quantity 80000 pieces

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

Bezeichnung Parameter	Symbol Symbol	Wert Value	Einheit Unit
Betriebs- und Lagertemperatur Operation and storage temperature range	T_{op} T_{stg}	- 10 ... + 75 - 30 ... + 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}	- 10	-	75	°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	$\lambda_{s\ max}$	-	940	-	nm
Spektraler Bereich der Fotoempfindlichkeit Spectral range of sensitivity	λ	830	-	1100	nm

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

Bezeichnung Parameter	Symbol Symbol	Wert Value			Einheit Unit
		min.	typ.	max.	
Ausgangsspannung Output voltage Output "High" - ($I_{out} = 10\ \mu\text{A}$) Output "Low" - ($I_{out} = 500\ \mu\text{A}$)	$V_{OUT\ high}$ $V_{OUT\ low}$	$V_{CC}-0.5$ -	- -	- 0.5	V
Trägerfrequenz Carrier frequency SFH 5110-30 SFH 5110-33 SFH 5110-36 SFH 5110-38 SFH 5110-40	f_0	-	30 33 36 38 40	-	kHz
Min. Bestrahlungsstärke (Testsignal, s. Fig. 3) Min. Threshold irradiance (test signal, see Fig. 3) $f = f_0$, $t_{p,I} = 600\ \mu\text{s}$	$E_{e\ min}$	-	0.35	0.5	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 , $E_e = 1\ \text{mW/m}^2$)	$t_{p,O}$	$t_{p,I}$ $- 6/f_0$	-	$t_{p,I}$ $+ 6/f_0$	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 30 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 30 m.

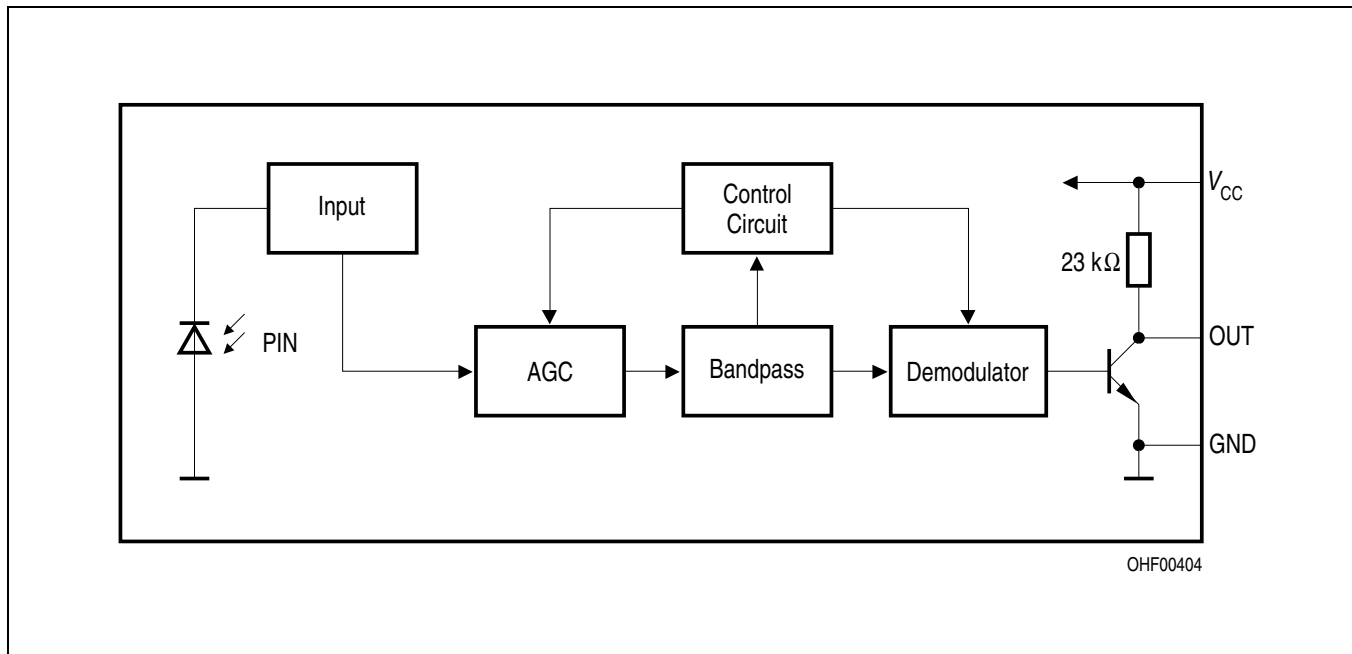


Figure 1 **Blockschaltbild**
Block Diagram

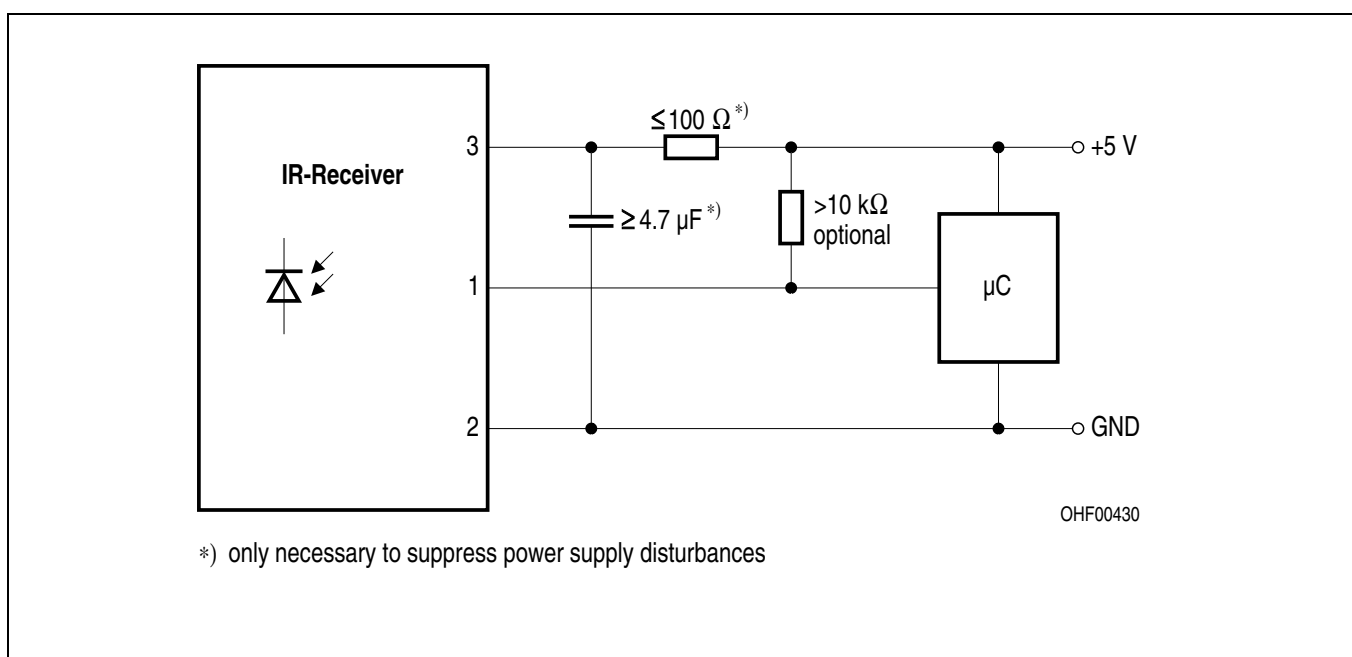


Figure 2 **Externe Beschaltung**
External Circuit

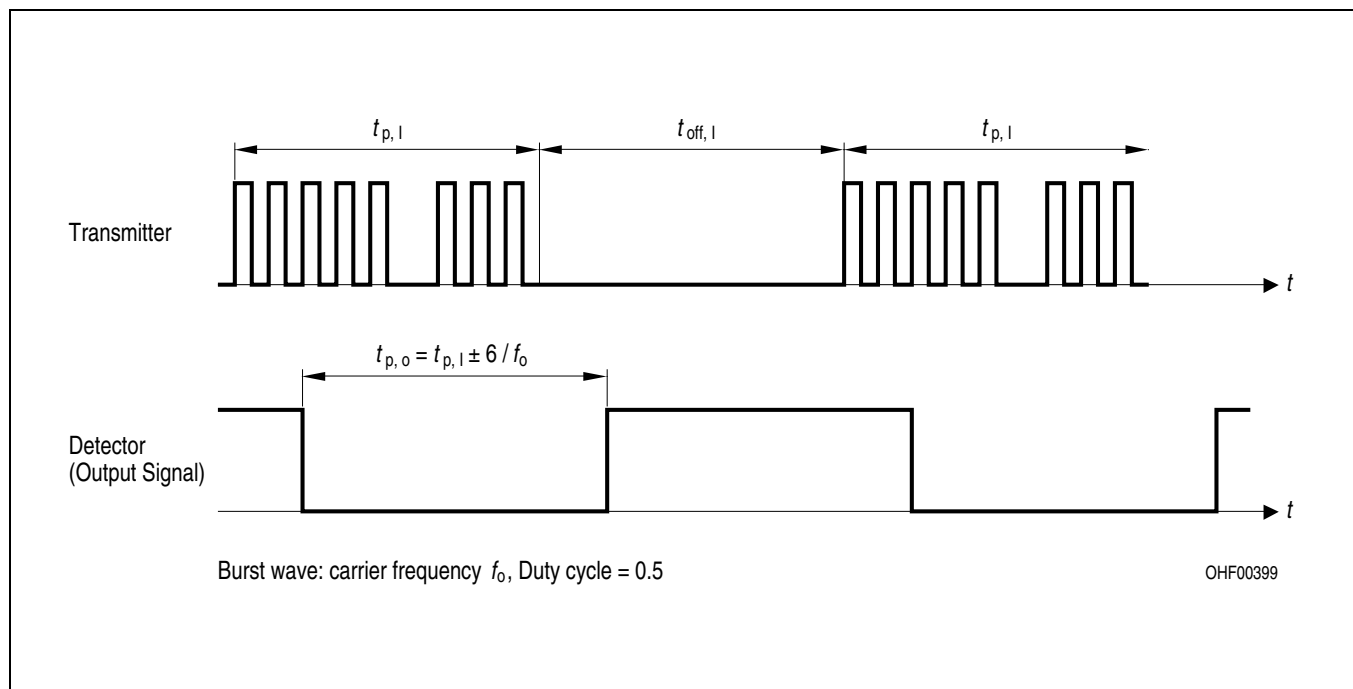
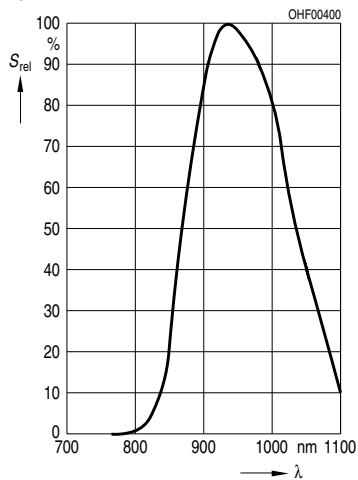


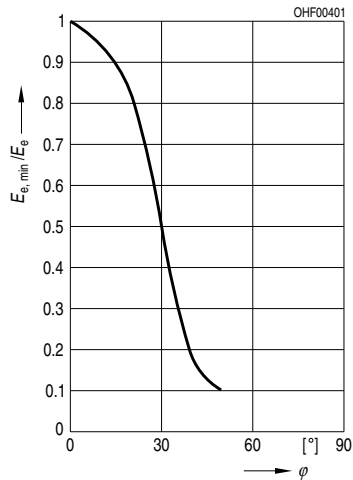
Figure 3 **Optisches Testsignal**
Optical Test Signal

Relative Spectral Sensitivity

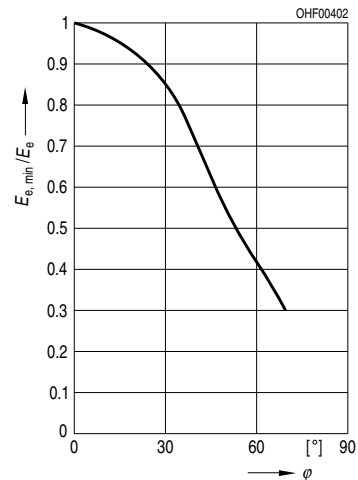
$S_{rel} = f(\lambda)$



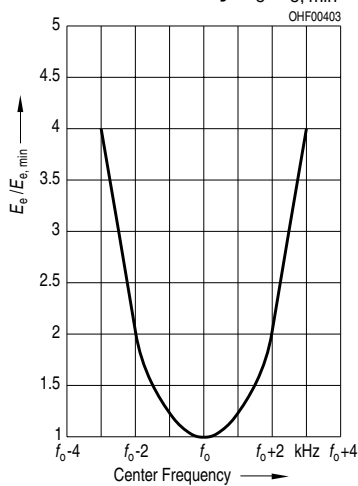
Vertical Directivity φ_y



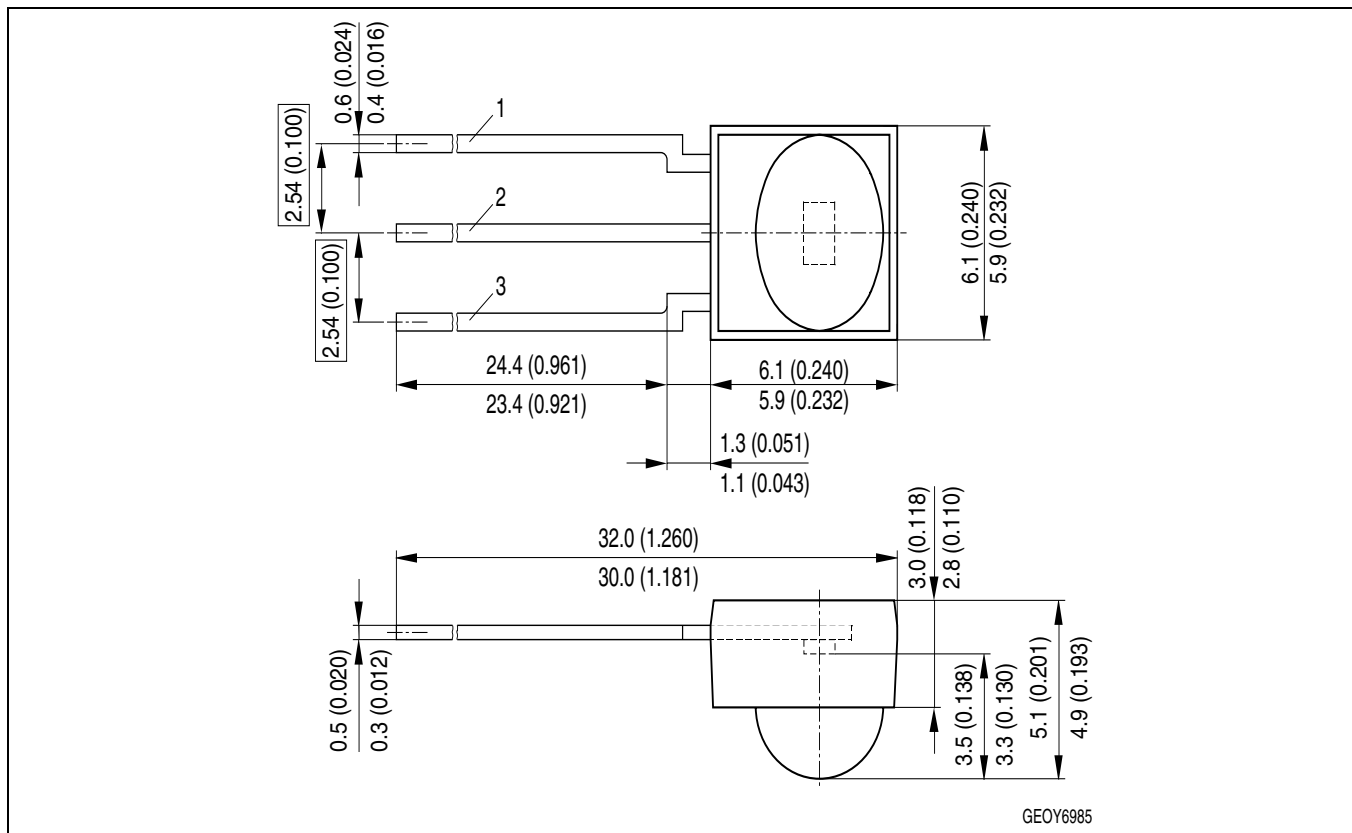
Horizontal Directivity φ_x



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



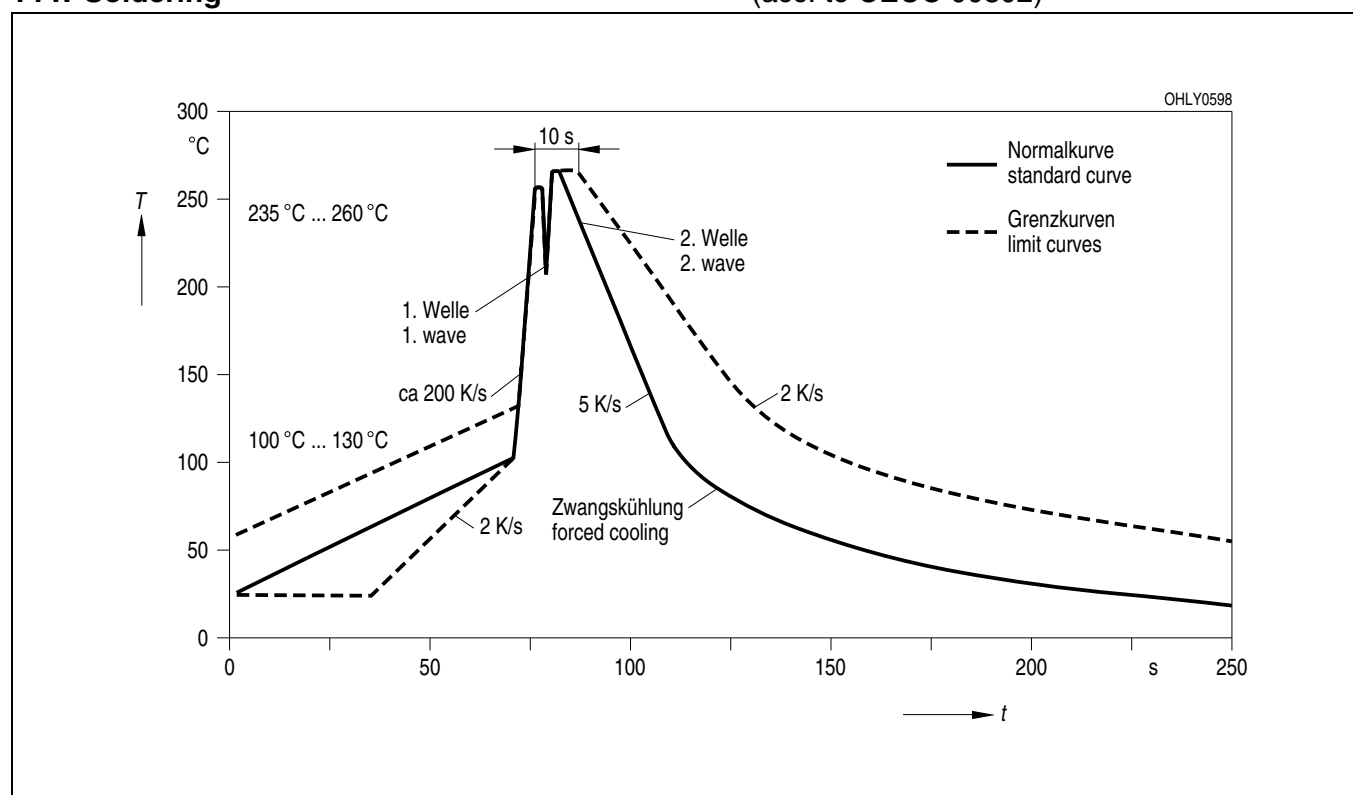
Maßzeichnung
Package Outlines



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

Lötbedingungen
Soldering Conditions
Wellenlöten (TTW)
TTW Soldering

(nach CECC 00802)
(acc. to CECC 00802)



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