

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 Type	Trägerfrequ. Carrier Frequency kHz	Bestellnr. Ordering Code
SFH 5110-30 ¹⁾	30	Q62702P5088
SFH 5110-33 ¹⁾	33	Q62702P5089
SFH 5110-36 ¹⁾	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}	$-10 \dots +75$ $-30 \dots +100$	$^{\circ}\text{C}$
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	$^{\circ}\text{C}$
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

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" - ($I_{out} = 10\text{ }\mu\text{A}$) Output "Low" - ($I_{out} = 500\text{ }\mu\text{A}$)	$V_{OUT\ high}$ $V_{OUT\ low}$	$V_{CC}-0.5$ —	— —	— 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) $f = f_0$, $t_{p,l} = 600\text{ }\mu\text{s}$	$E_{e\ min}$	—	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⁾	$t_{p,l}$	$6/f_0$	—	—	μs
Ausgangspulsbreite „ON“ (Testsignal, s. Fig. 3) Output pulse width "ON" (test signal, see Fig. 3 , $E_e = 1\text{ mW/m}^2$)	$t_{p,o}$	$t_{p,l}$ $- 6/f_0$	—	$t_{p,l}$ $+ 6/f_0$	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.

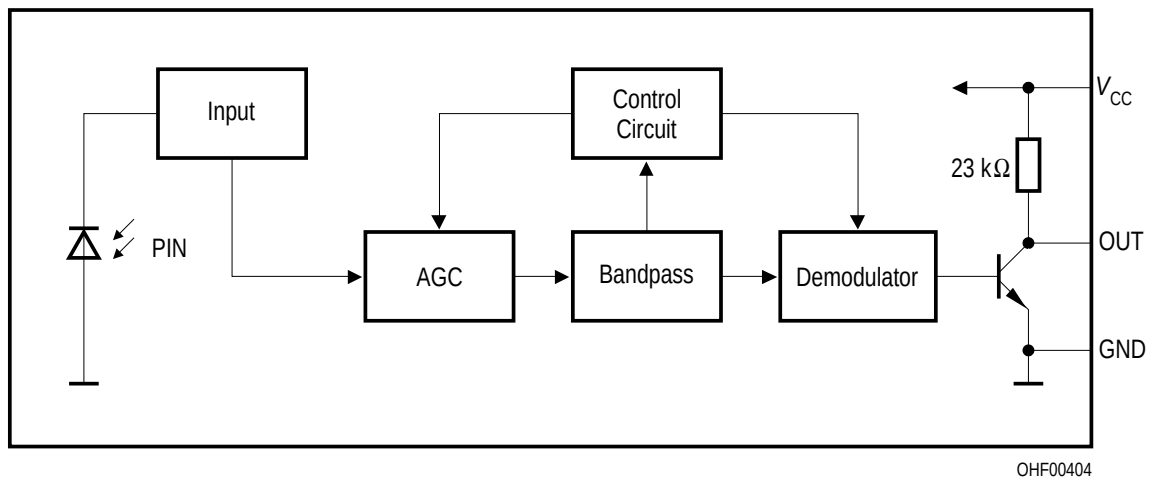
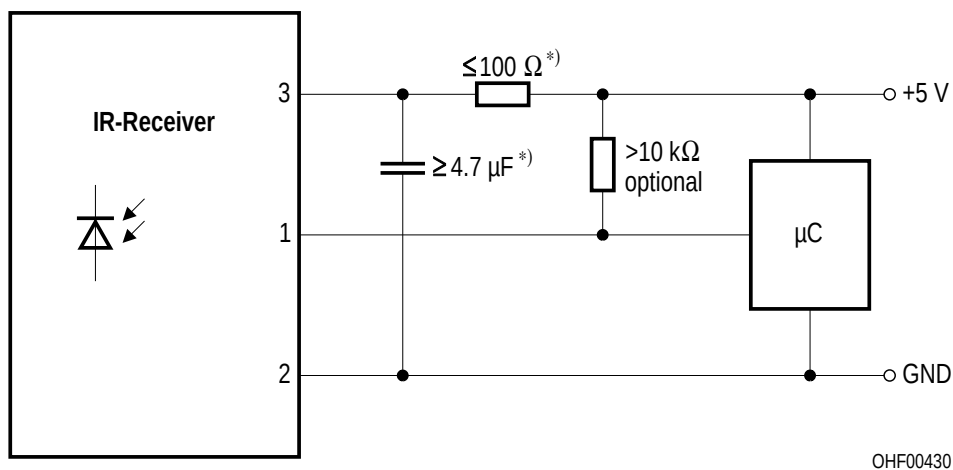


Figure 1 **Blockschaltbild**
Block Diagram



^{*)} only necessary to suppress power supply disturbances

Figure 2 **Externe Beschaltung**
External Circuit

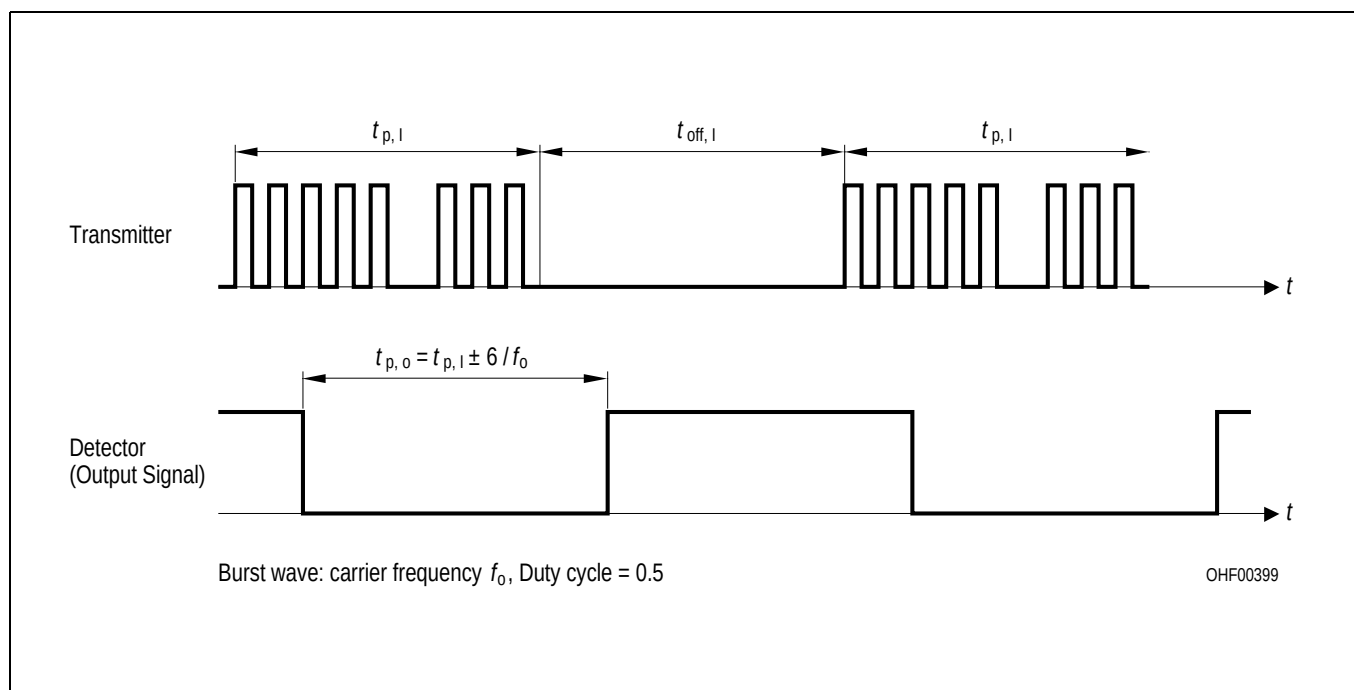
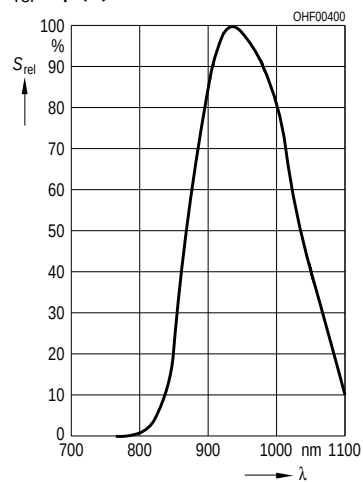
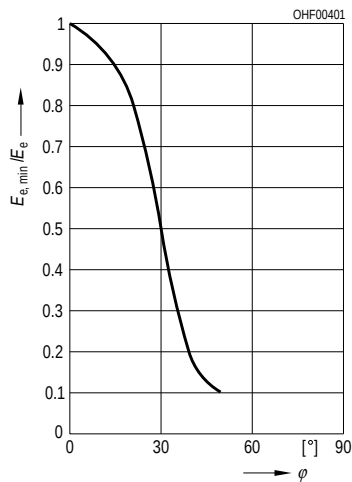
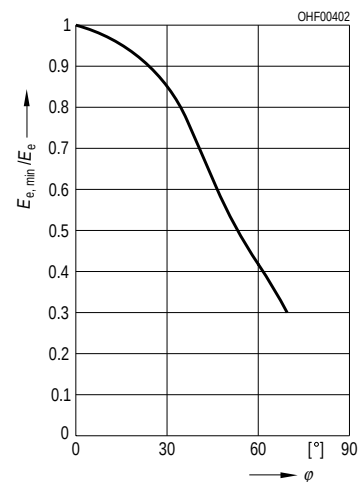
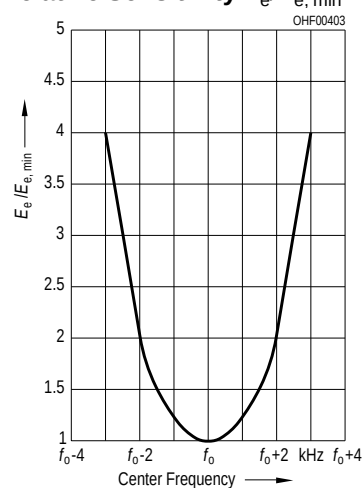


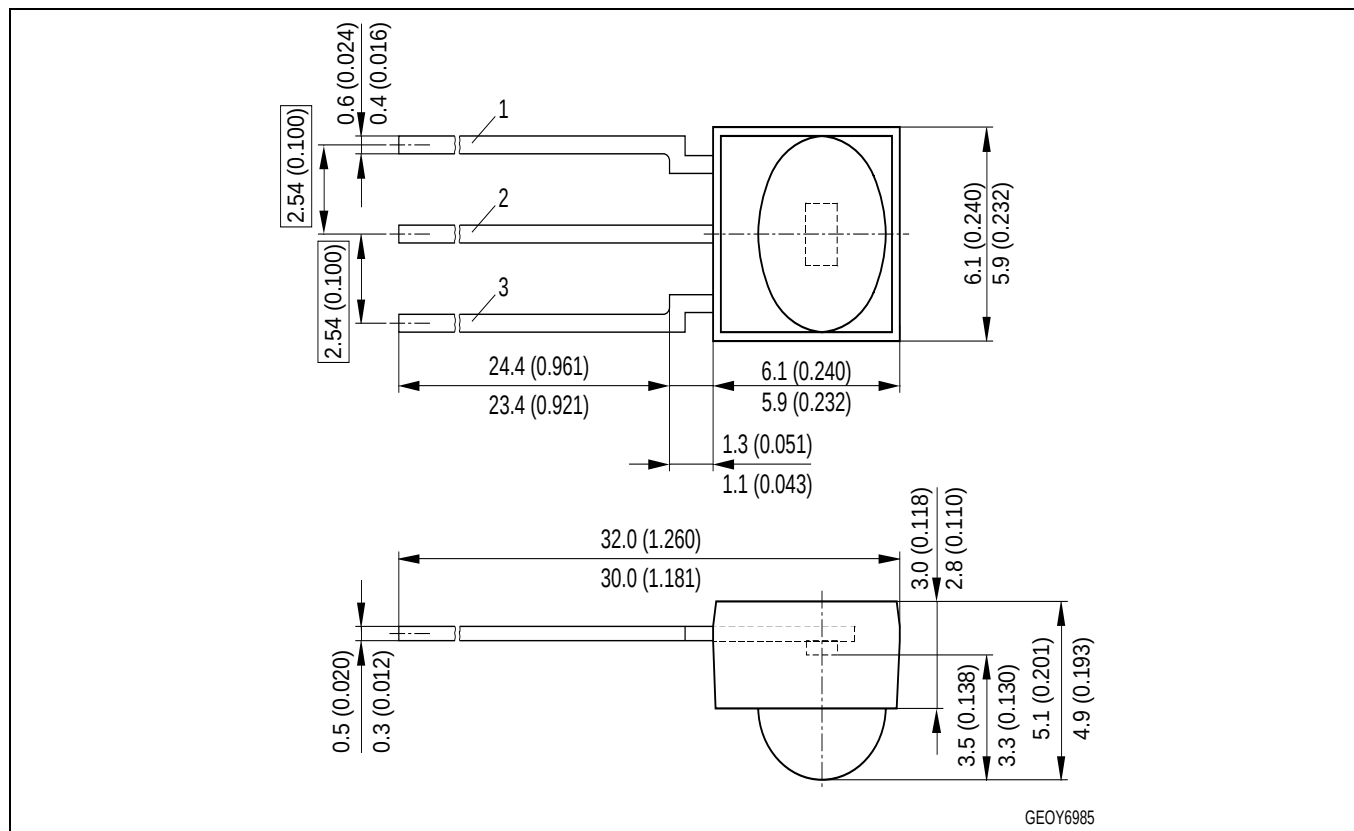
Figure 3 **Optisches Testsignal**
Optical Test Signal

Relative Spectral Sensitivity

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

**Vertical Directivity φ_y** **Horizontal Directivity φ_x** **Relative Sensitivity $E_{\text{e}}/E_{\text{e, min}} = f(f_0)$** 

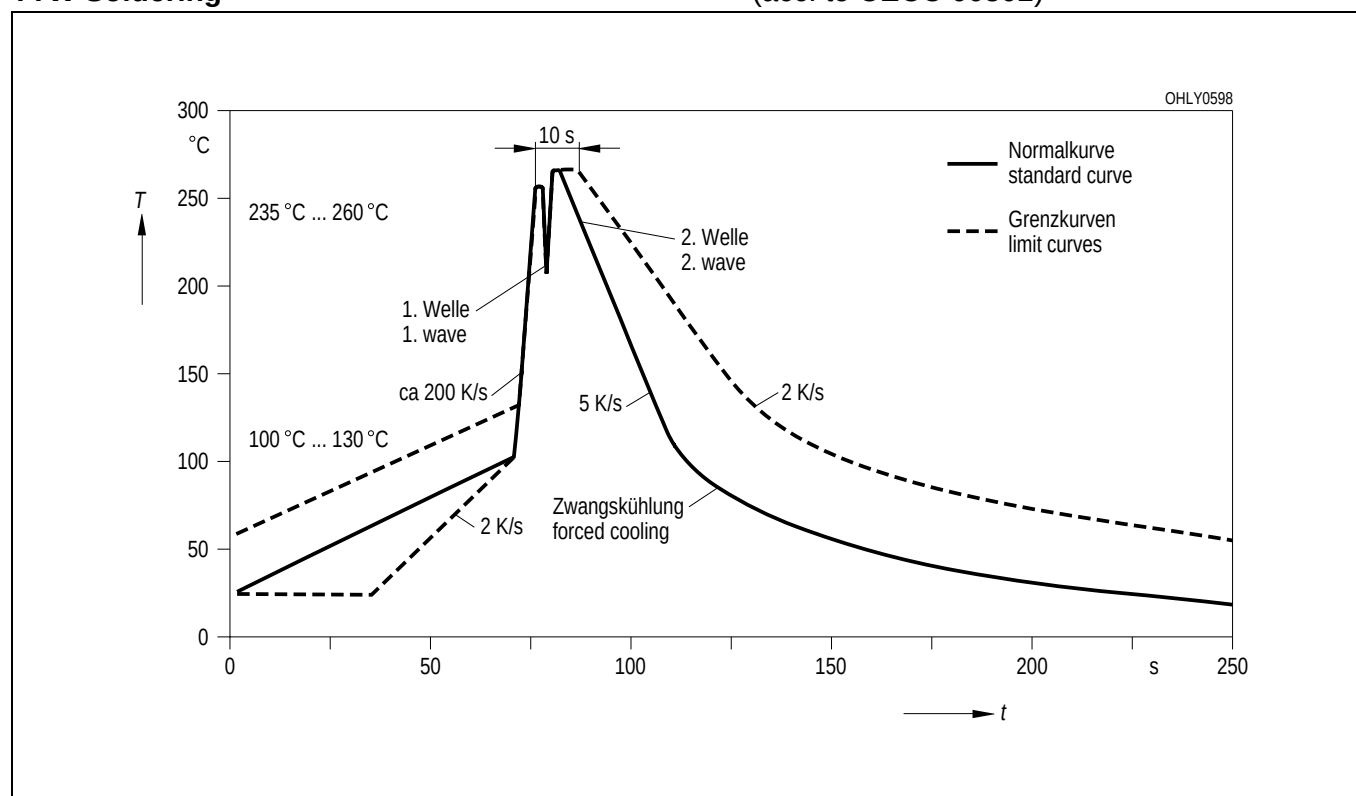
Maßzeichnung Package Outlines



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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