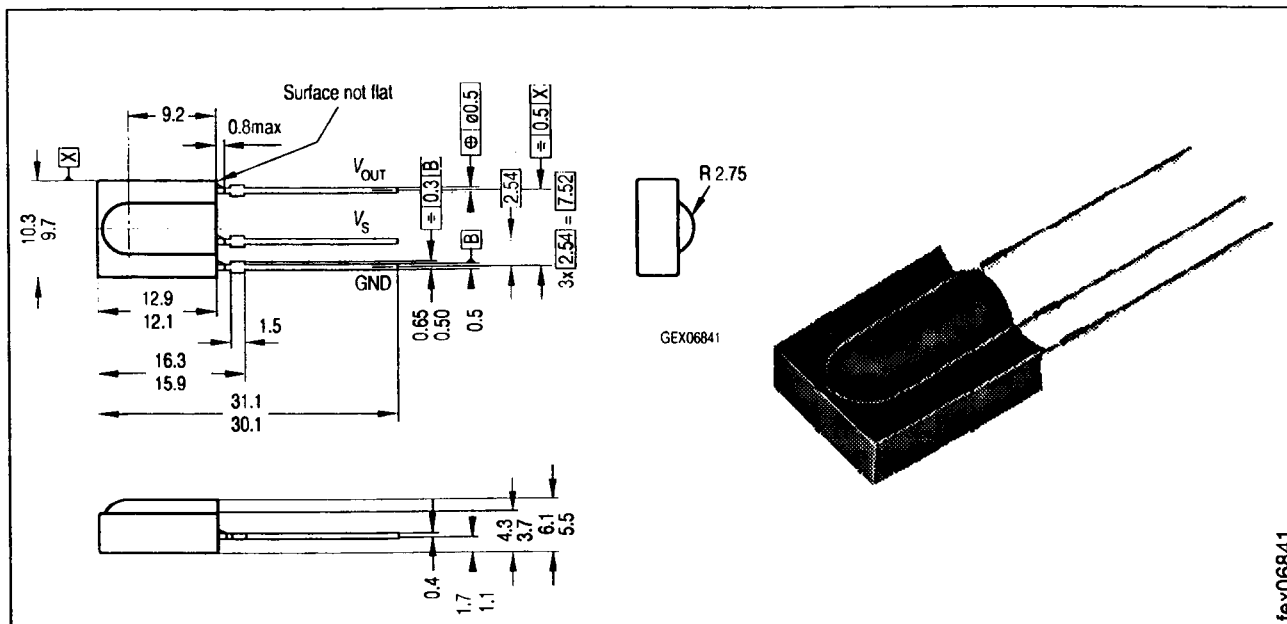


IR-Empfänger/Demodulator-Baustein IR-Receiver/Demodulator Device



Maße in mm, wenn nicht anders angegeben/Dimensions in mm, unless otherwise specified.

Wesentliche Merkmale

- Fotodiode mit integriertem Verstärker
- Angepaßt an verschiedene Trägerfrequenzen
- Gehäuse schwarz eingefärbt: Verguß optimiert für eine Wellenlänge von 950 nm
- Hohe Störsicherheit
- Geringe Stromaufnahme
- 5 V Betriebsspannung
- Hohe Empfindlichkeit
- TTL und CMOS kompatibel
- Verwendbar bis zu einem Tastverhältnis $\leq 40\%$

Anwendungen

- Empfänger für IR-Fernsteuerungen

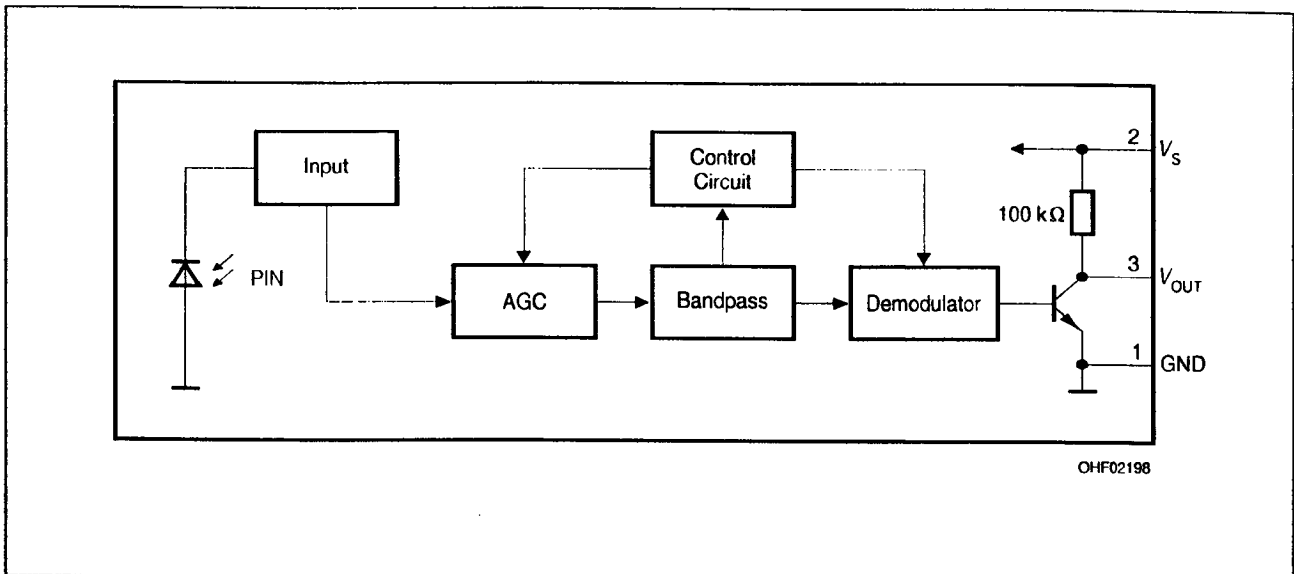
Features

- Photodiode with hybride integrated circuit
- Available for several carrier frequencies
- Black epoxy resin, daylight filter optimized for 950 nm
- High immunity against ambient light
- Low power consumption
- 5 V supply voltage
- High sensitivity (internal shield case)
- TTL and CMOS compatibility
- Continuous transmission possible ($t_{pl}/T \leq 0.4$)

Applications

- IR-remote control preamplifier modules

| Typ | Trägerfrequ. | Bestellnr. | Typ | Trägerfrequ. | Bestellnr. |
|------------|-----------------------|---------------|------------|-----------------------|---------------|
| Type | Carrier Frequency kHz | Ordering Code | Type | Carrier Frequency kHz | Ordering Code |
| SFH 506-30 | 30 | Q62702-P1196 | SFH 506-38 | 38 | Q62702-P1199 |
| SFH 506-33 | 33 | Q62702-P1197 | SFH 506-40 | 40 | Q62702-P1200 |
| SFH 506-36 | 36 | Q62702-P1198 | SFH 506-56 | 56 | Q62702-P1201 |



Blockschaltbild
Block Diagram

Grenzwerte
Maximum Ratings

| Bezeichnung Description | Symbol Symbol | Wert Value | Einheit Unit |
|---|--------------------|-----------------|-----------------|
| Betriebs- und Lagertemperatur Operation and storage temperature range | T_A, T_{stg} | - 25 ... + 85 | °C |
| Sperrschichttemperatur Junction temperature range | T_j | 100 | °C |
| Löttemperatur Lötstelle 2 mm vom Gehäuse; Lötzeit $t \leq 5$ s Soldering temperature soldering joint ≥ 2 mm distance from package, soldering time $t \leq 5$ s | T_s | 260 | °C |
| Betriebsspannung Supply voltage | Pin 2 V_S | - 0.3 ... + 6.0 | V |
| Betriebsstrom Supply current | Pin 2 I_{CC} | 5 | mA |
| Ausgangsspannung Output voltage | Pin 3 V_{OUT} | - 0.3 ... + 6.0 | V |
| Ausgangsstrom Output current | Pin 3 I_{OUT} | 5 | mA |
| Verlustleistung Total power dissipation $T_A \leq 85$ °C | P_{tot} | 50 | mW |

Kennwerte ($T_A = 25\text{ °C}$)

Characteristics

| Bezeichnung Description | Symbol Symbol | Wert Value | Einheit Unit |
|--|--|---|---------------------------------------|
| Betriebsspannung Supply voltage | V_s | typ. 5.0 (4.5 ... 5.5) | V |
| Bestrahlungsstärke (Testsignal, s. Figure 2) Threshold irradiance (test signal, see Fig. 2) | $E_{e\ min(30-40\ kHz)}^{1)}$ $E_{e\ min(56\ kHz)}^{1)}$ $E_{e\ max}^{1)}$ | typ. 0.35 (< 0.5) typ. 0.4 (< 0.6) 30 | mW/m ² W/m ² |
| Wellenlänge der max. Fotoempfindlichkeit Wavelength of max. sensitivity | $\lambda_{s\ max}$ | 950 | nm |
| Spektraler Bereich der Fotoempfindlichkeit Range of spectral sensitivity $S = 10\ %$ of S_{max} | $\Delta\lambda$ | 830 ... 1100 | nm |
| Halbwinkel Half angle | φ | ± 45 | deg. |
| Stromaufnahme Current consumption $V_s = 5\ V, E_v = 0$ $V_s = 5\ V, E_v = 40\ 000\ lx, sunlight$ | Pin 2 I_{CC} I_{CC} | 0.6 (< 0.8) 1.0 | mA mA |
| Ausgangsspannung Output voltage $I_{OUT} = 0.5\ mA, E_e = 0.7\ mW/m^2, f = f_0, T_p/T = 0.4$ | Pin 3 $V_{OUT\ low}$ | < 250 | mV |

1) In Verbindung mit einer typ. SFH 415 bei Betrieb mit $I_F = 0.5\ A$ wird eine Reichweite von ca. 35 m erreicht.

1) Together with an IRED SFH 415 under operation conditions of $I_F = 0.5\ A$ a distance of 35 m is possible.

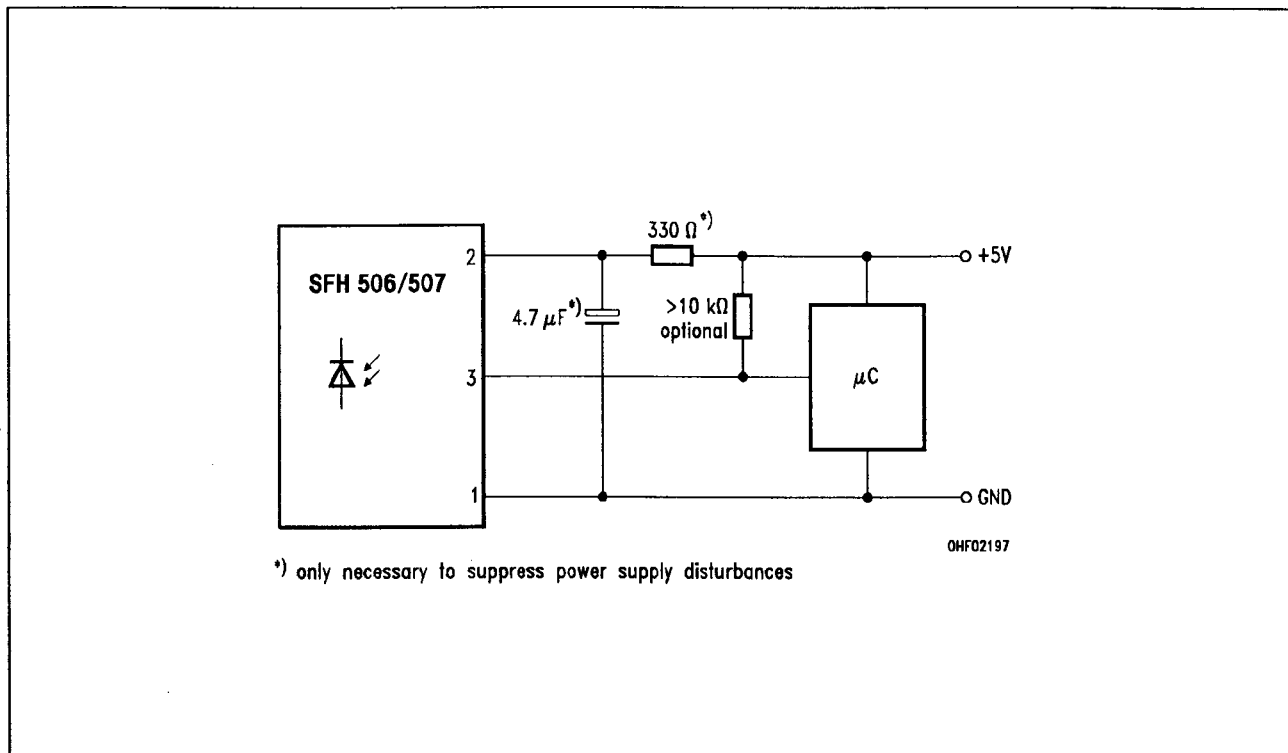


Figure 1 Externe Beschaltung
External circuit

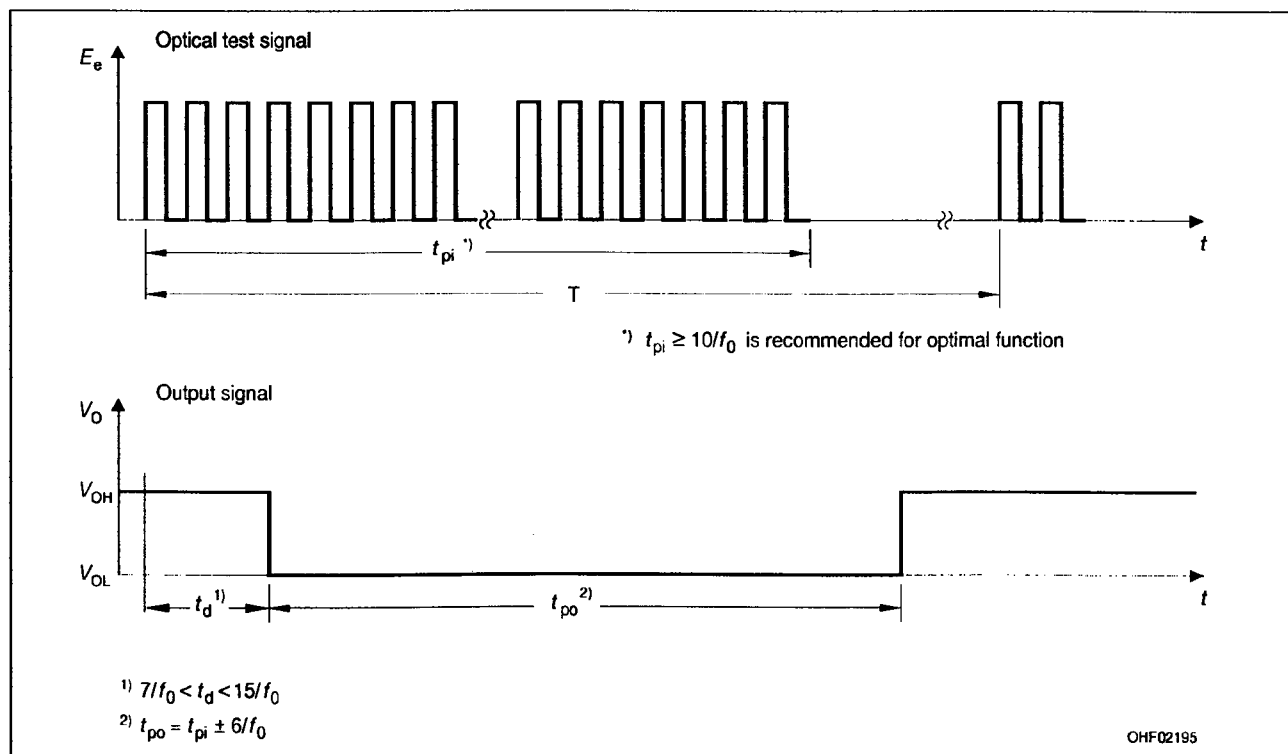
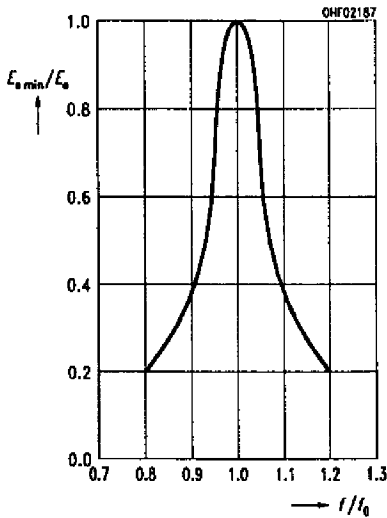


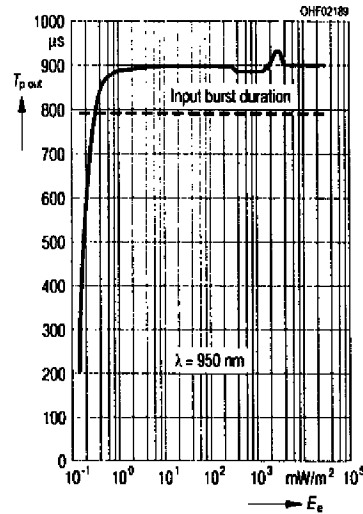
Figure 2 Testsignal
Test signal

Relative sensitivity

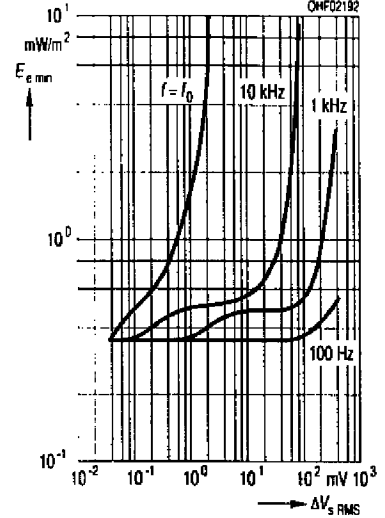
$$E_{e \min} / E_e = f(f / f_0)$$



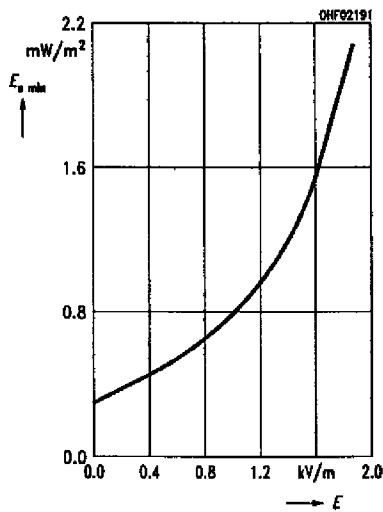
Sensitivity vs. dark ambient $T_{p \text{ out}} = f(E_e)$ $\lambda = 950 \text{ nm}$, optical test signal



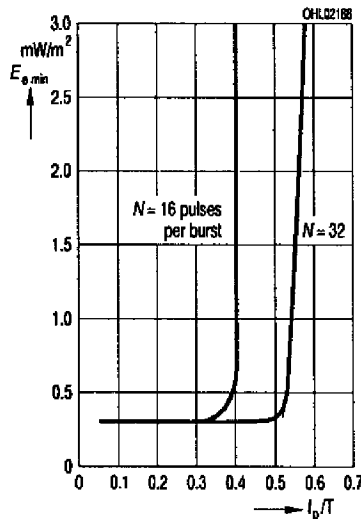
Sensitivity vs. supply voltage disturbances, $E_{e \min} = f(\Delta V_{S \text{ RMS}})$



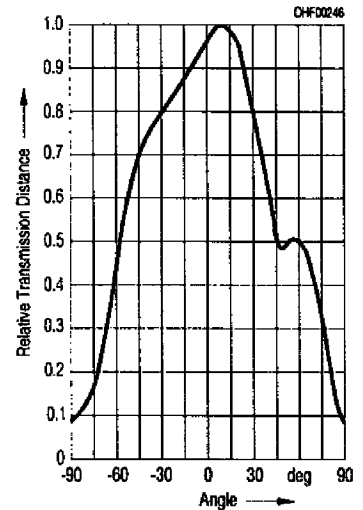
Sensitivity vs. electric field disturbance $E_{e \min} = f(E)$, field strength of disturbance, $f = f_0$



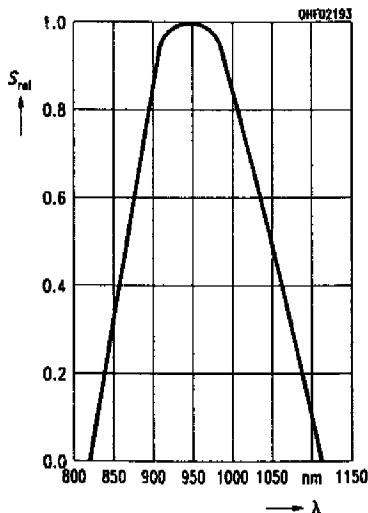
Sensitivity vs. duty cycle $E_e = f(t_p / T)$



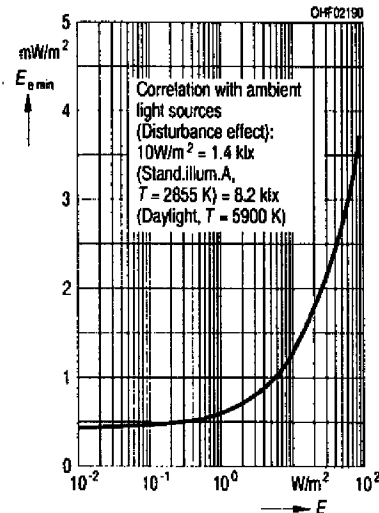
Vertical directivity ϕ_y



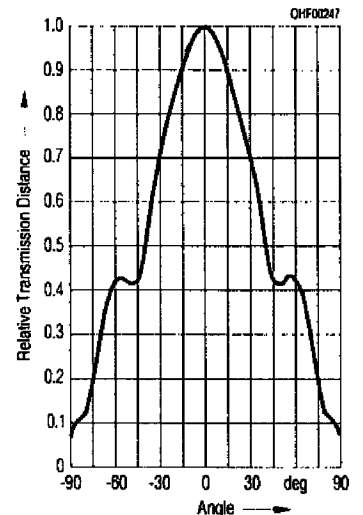
Relative luminous intensity $S_{\text{rel}} = f(\lambda)$, $T_A = 25 \text{ }^\circ\text{C}$



Sensitivity vs. bright ambient $E_{e \min} = f(E)$, $\lambda = 950 \text{ nm}$, ambient



Horizontal directivity ϕ_x



Output pulse

$$T_{\text{on}}, T_{\text{off}} = f(E_{\theta})$$

