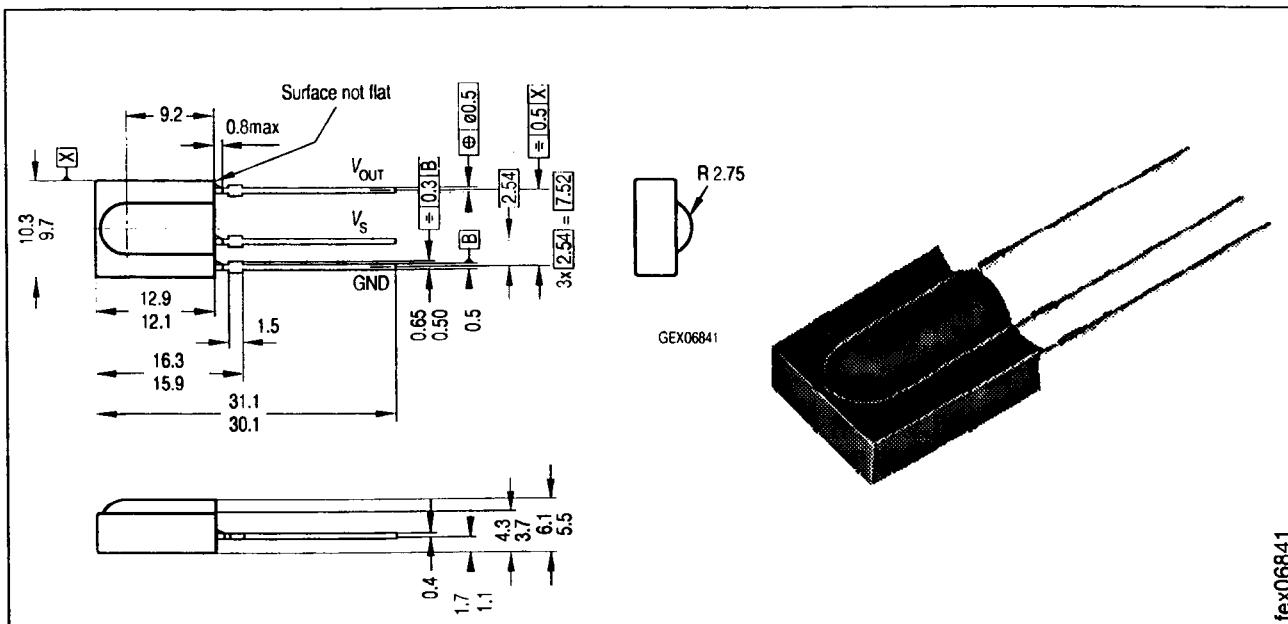


IR-Empfänger/Demodulator-Baustein IR-Receiver/Demodulator Device



fe06841

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 $\leq 40\%$

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 ($t_{pi}/T \leq 0.4$)

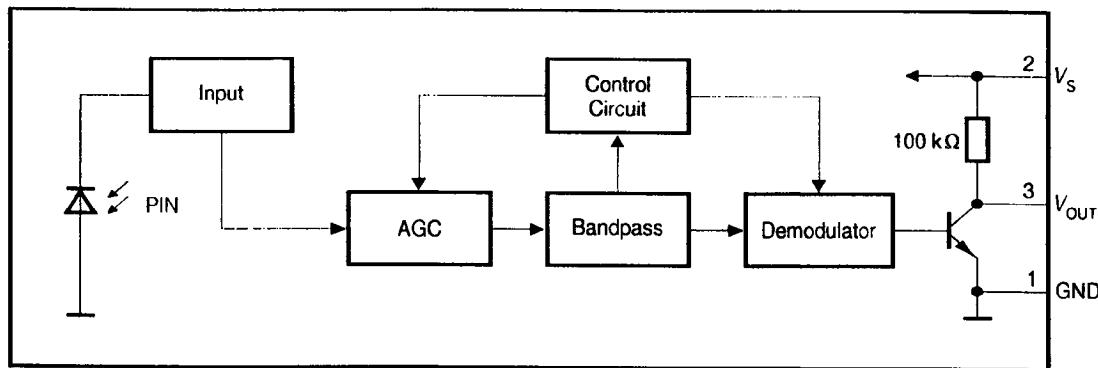
Anwendungen

- Empfänger für IR-Fernsteuerungen

Applications

- IR-remote control preamplifier modules

| Typ | Trägerfrequ. Carrier Frequency kHz | Bestellnr. Ordering Code | Typ | Trägerfrequ. Carrier Frequency kHz | Bestellnr. 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 |



OHF02198

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 |
| Sperrsichttemperatur 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 ($T_A = 25^\circ\text{C}$)

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) | $E_e \text{ min}(30-40 \text{ kHz})^1)$ $E_e \text{ min}(56 \text{ kHz})^1)$ $E_e \text{ max}^1)$ | 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 | $\lambda_{s \text{ max}}$ | 950 | nm |
| Spektraler Bereich der Fotoempfindlichkeit Range of spectral sensitivity $S = 10\% \text{ of } S_{\text{max}}$ | $\Delta\lambda$ | 830 ... 1100 | nm |
| Halbwinkel Half angle | φ | ± 45 | deg. |
| Stromaufnahme Current consumption $V_s = 5 \text{ V}, E_v = 0$ $V_s = 5 \text{ V}, E_v = 40\,000 \text{ lx, sunlight}$ | Pin 2 I_{cc} I_{cc} | 0.6 (< 0.8) 1.0 | mA mA |
| Ausgangsspannung Output voltage $I_{\text{OUT}} = 0.5 \text{ mA}, E_e = 0.7 \text{ mW/m}^2, f = f_0, T_p/T = 0.4$ | Pin 3 $V_{\text{OUT low}}$ | < 250 | mV |

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

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

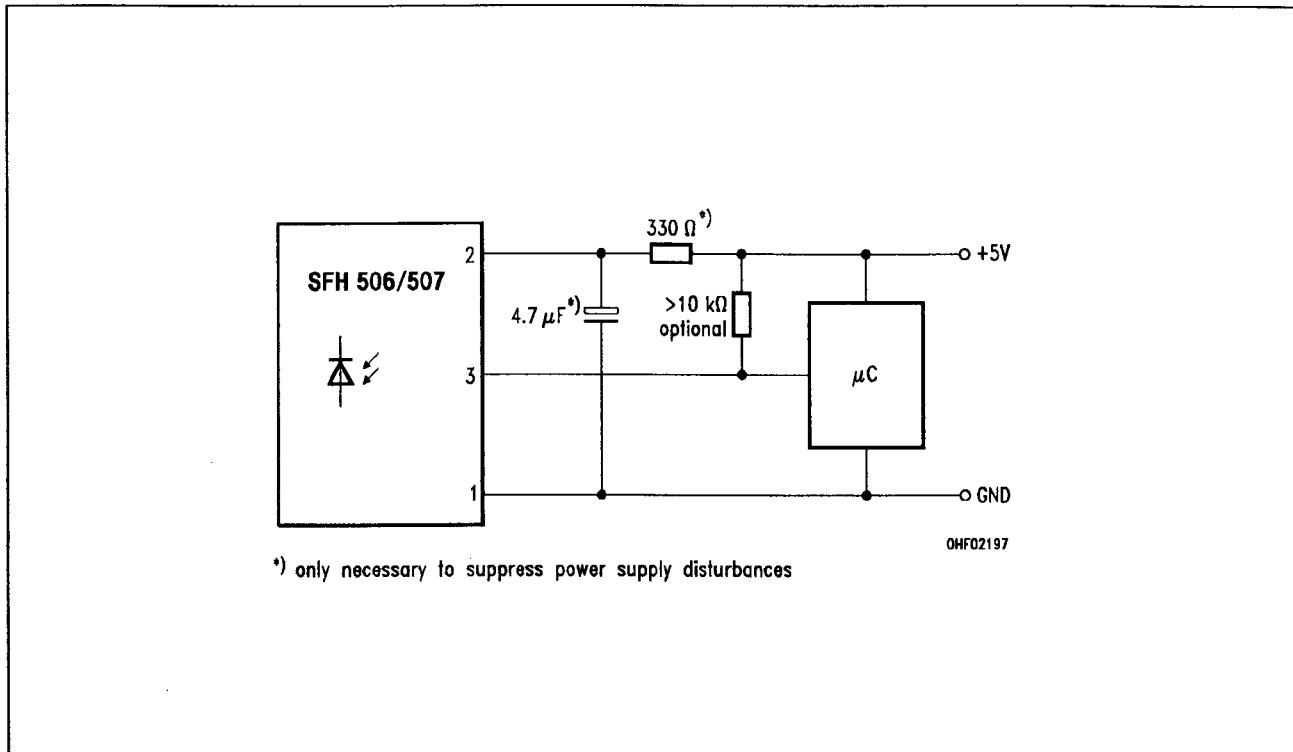


Figure 1 Externe Beschaltung
External circuit

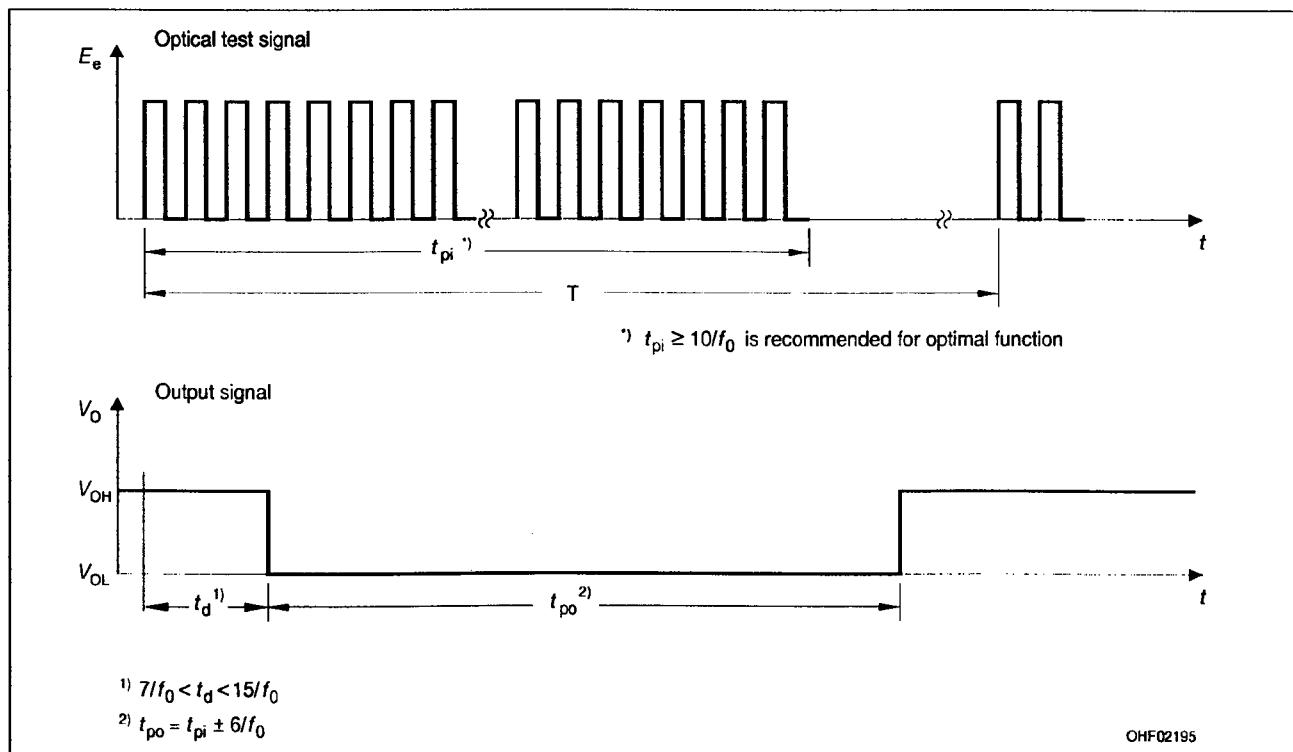
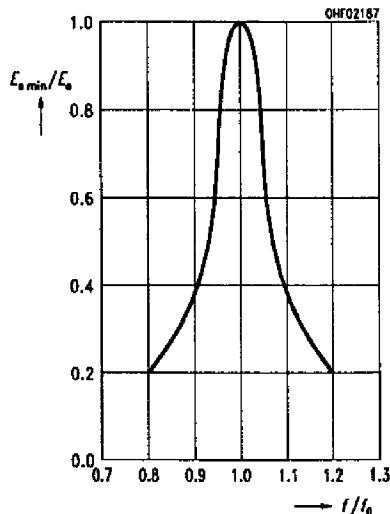
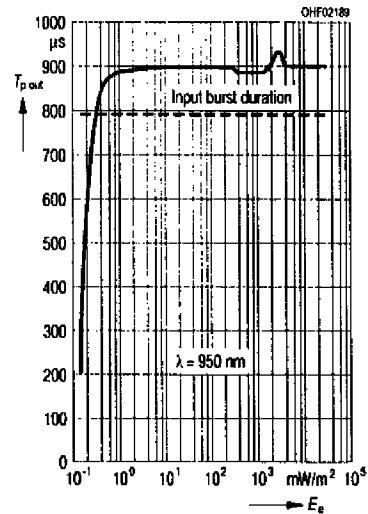


Figure 2 Testsignal
Test signal

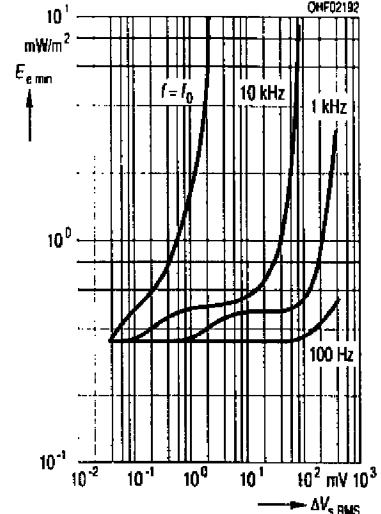
Relative sensitivity
 $E_{e \min}/E_e = f'(f/f_0)$



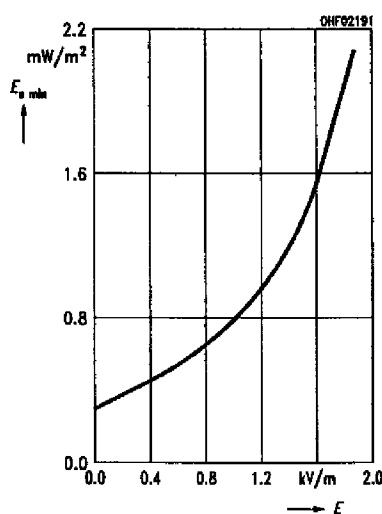
Sensitivity vs. dark ambient $T_{p \text{ out}} = f(E_e)$
 $\lambda = 950 \text{ nm}$, optical test signal



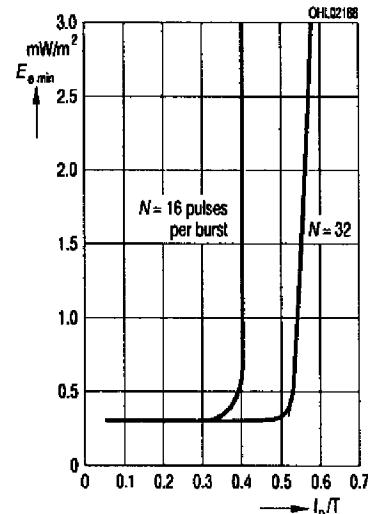
Sensitivity vs. supply voltage disturbances, $E_{e \min} = f(\Delta V_s \text{ RMS})$



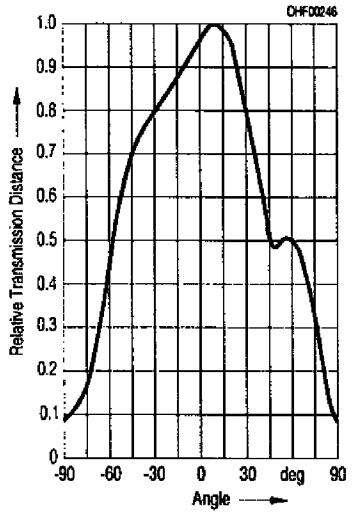
Sensitivity vs. electric field disturbance
 $E_{e \min} = f(E)$, field strength of disturbance,
 $f = f_0$



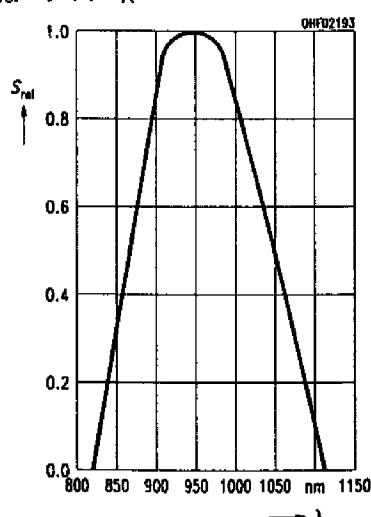
Sensitivity vs. duty cycle
 $E_{e \min} = f(t_p/T)$



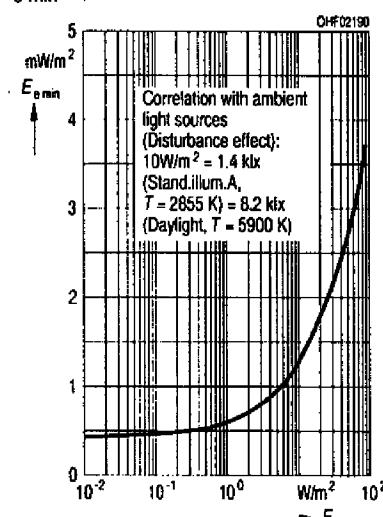
Vertical directivity ϕ_y



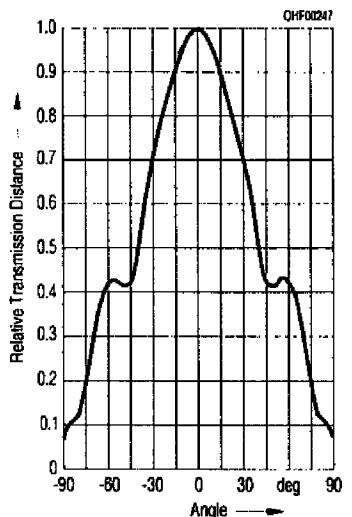
Relative luminous intensity
 $S_{\text{rel}} = f(\lambda)$, $T_A = 25^\circ \text{C}$



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



Horizontal directivity ϕ_x



Output pulse

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

