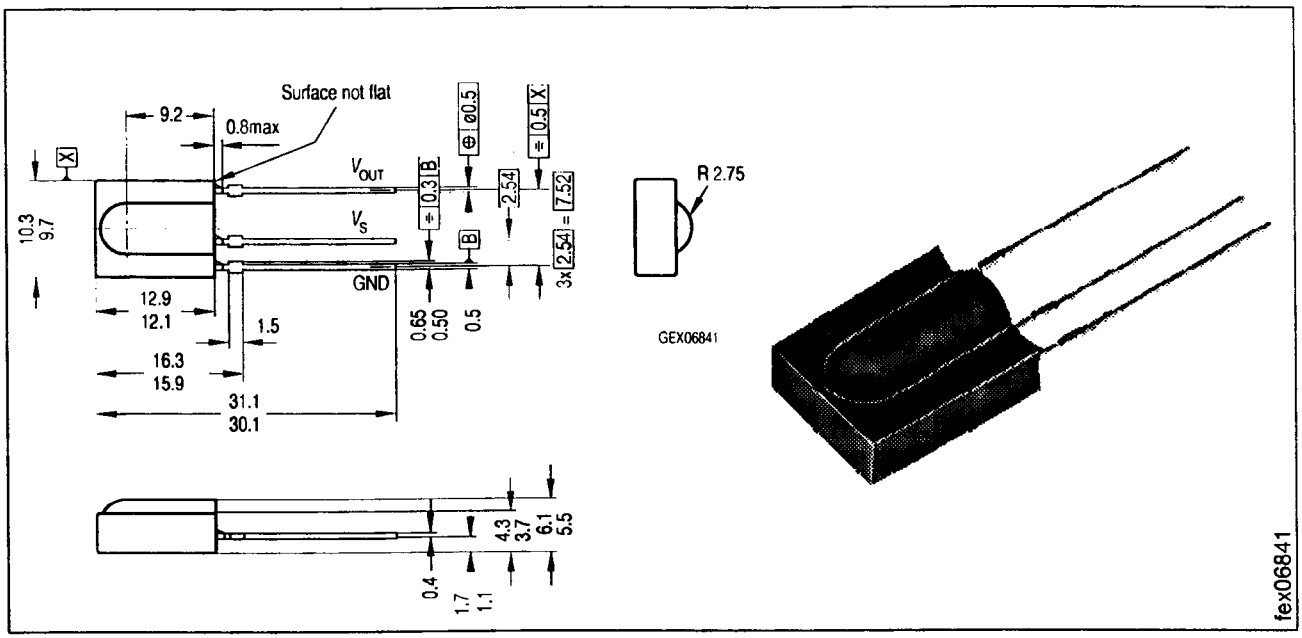
IR-Empfänger/Demodulator-Baustein
IR-Receiver/Demodulator Device



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 ≤ 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 ($t_{pi}/T \leq 0.4$)

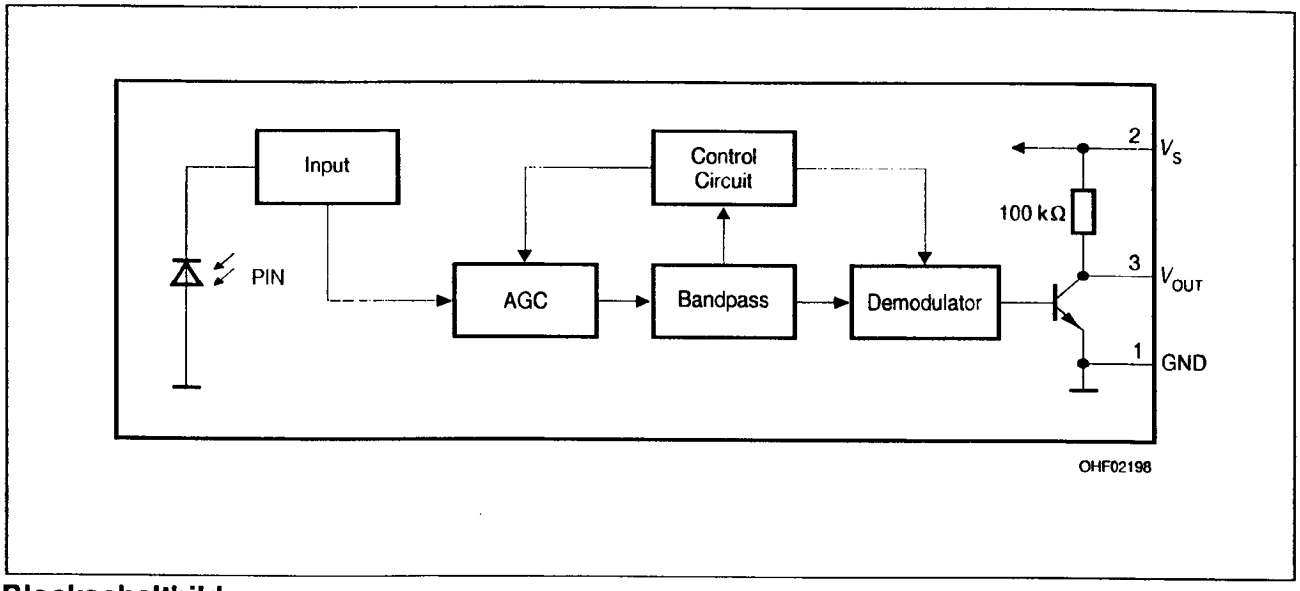
Anwendungen

- Empfänger für IR-Fernsteuerungen

Applications

- IR-remote control preamplifier modules

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



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 Pin 2 Supply voltage	V_S	– 0.3 ... + 6.0	V
Betriebsstrom Pin 2 Supply current	I_{CC}	5	mA
Ausgangsspannung Pin 3 Output voltage	V_{OUT}	– 0.3 ... + 6.0	V
Ausgangsstrom Pin 3 Output current	I_{OUT}	5	mA
Verlustleistung Total power dissipation $T_A \leq 85$ °C	P_{tot}	50	mW

Kennwerte (T_A = 25 °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)	$E_{e\,min(30\text{-}40\,kHz)}$ [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 Pin 2 Current consumption V_s = 5 V, E_v = 0 V_s = 5 V, E_v = 40 000 lx, sunlight	 I_{CC} I_{CC}	 0.6 (< 0.8) 1.0	 mA mA
Ausgangsspannung Pin 3 Output voltage I_{OUT} = 0.5 mA, E_e = 0.7 mW/m^2, $f = f_0$, T_p/T = 0.4	$V_{OUT\,low}$	< 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.

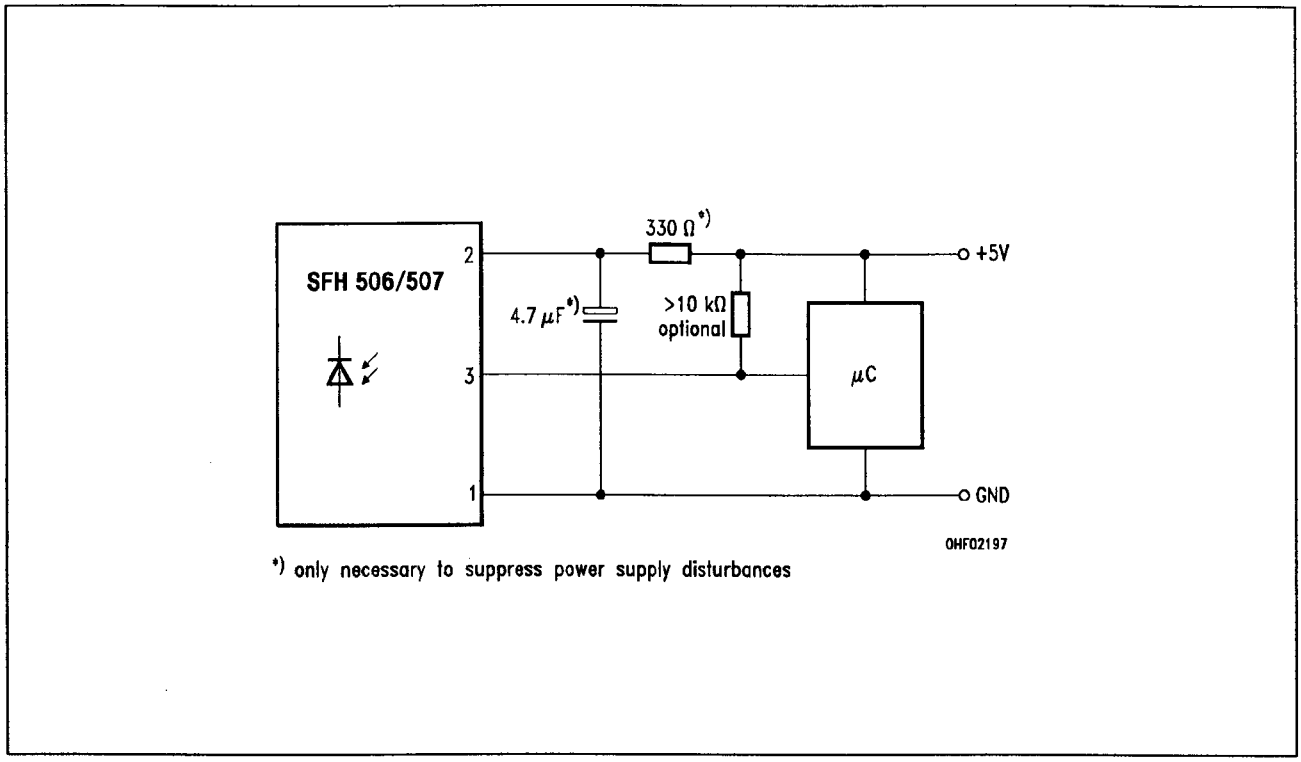


Figure 1 Externe Beschaltung
External circuit

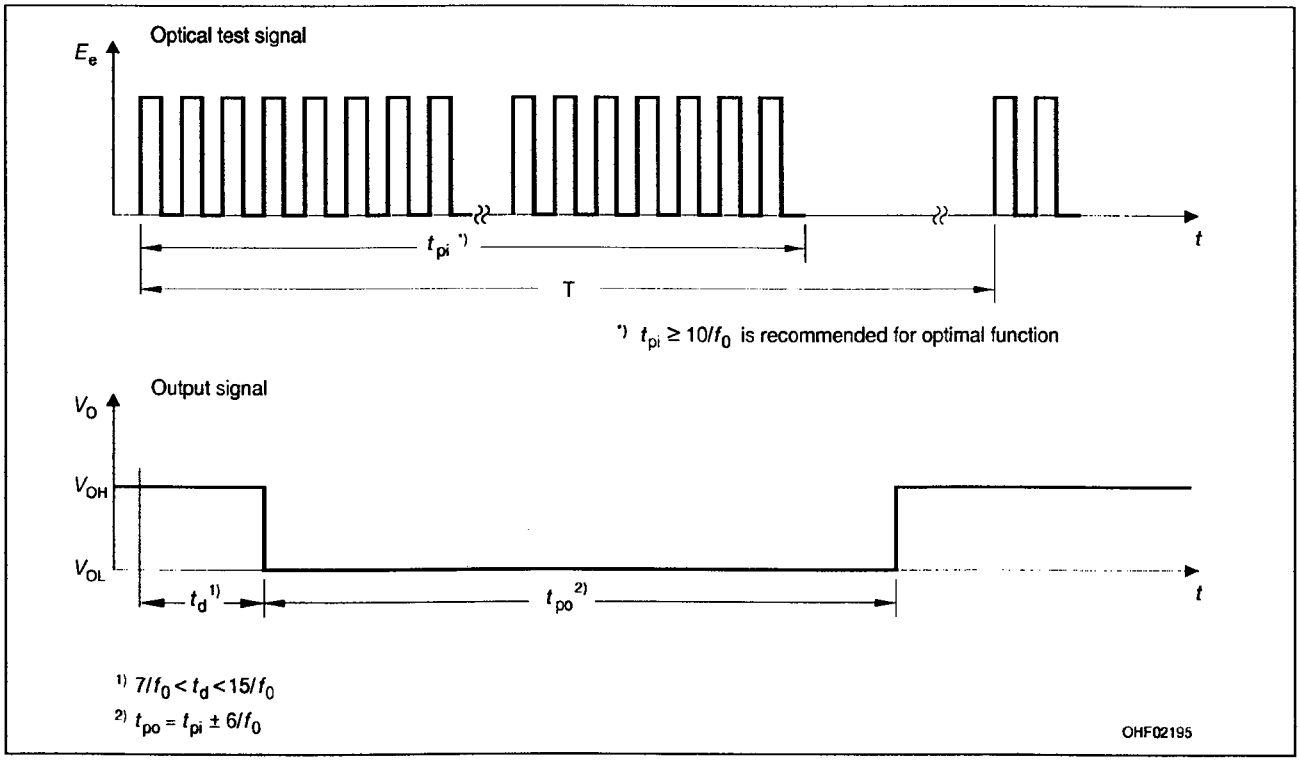
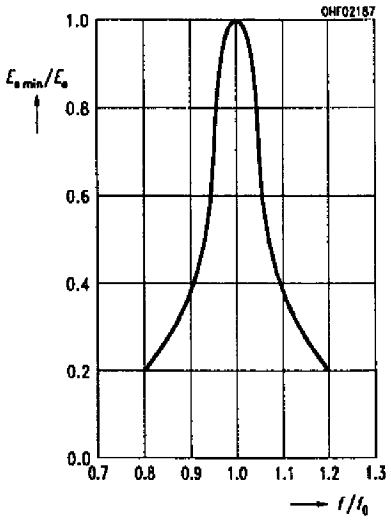
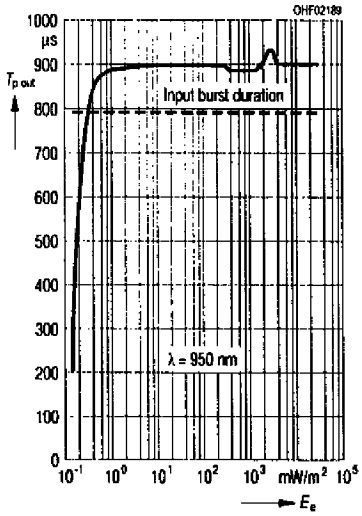


Figure 2 Testsignal
Test signal

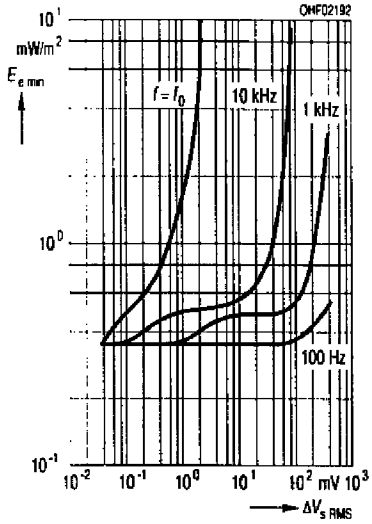
Relative sensitivity
$E_{e\,min}/E_e = f\,(f/f_0)$



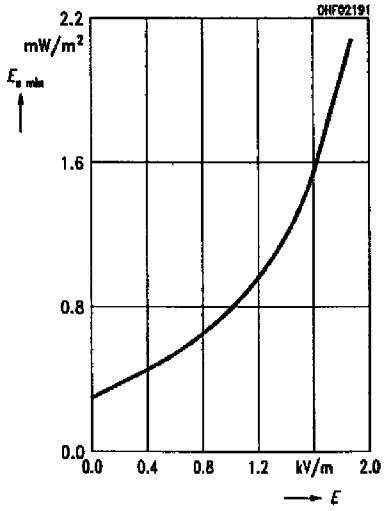
Sensitivity vs. dark ambient $T_{p\,out} = f\,(E_e)$
λ = 950 nm, optical test signal



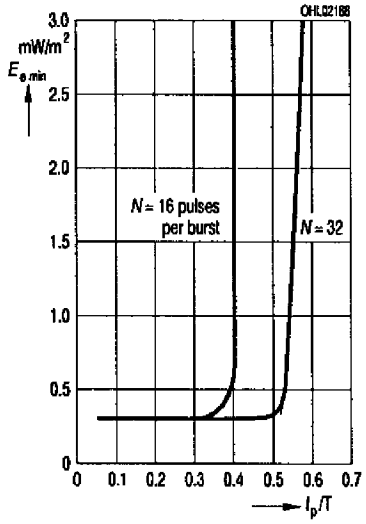
Sensitivity vs. supply voltage disturbances, $E_{e\,min} = f\,(\Delta V_{S\,RMS})$



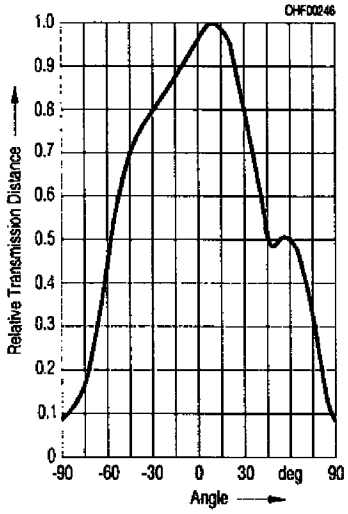
Sensitivity vs. electric field disturbance
$E_{e\,min} = f\,(E)$, field strength of disturbance, $f = f_0$



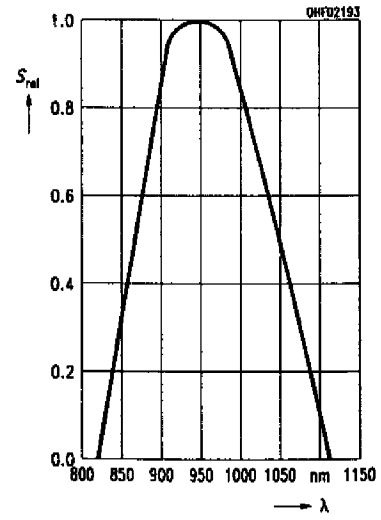
Sensitivity vs. duty cycle
$E_e = f\,(t_p/T)$



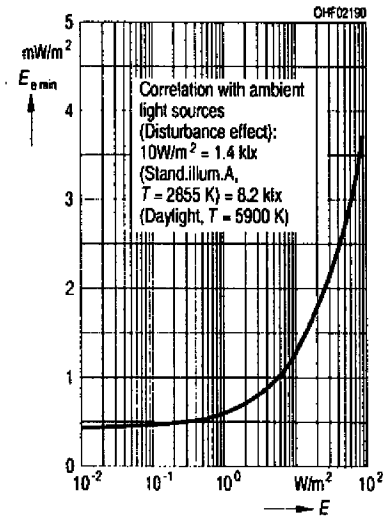
Vertical directivity φ_y



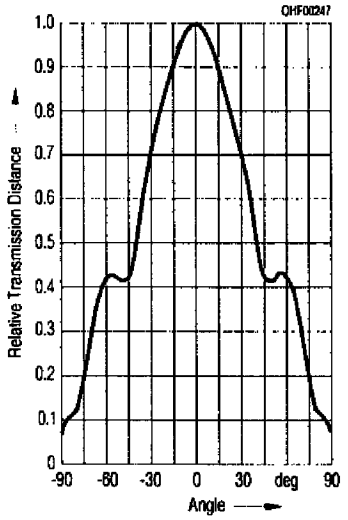
Relative luminous intensity
$S_{rel} = f\,(\lambda)$, T_A = 25 °C

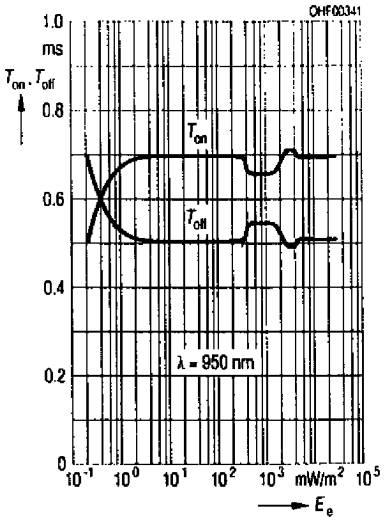


Sensitivity vs. bright ambient
$E_{e\,min} = f\,(E)$, λ = 950 nm, ambient



Horizontal directivity φ_x



Output pulse

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