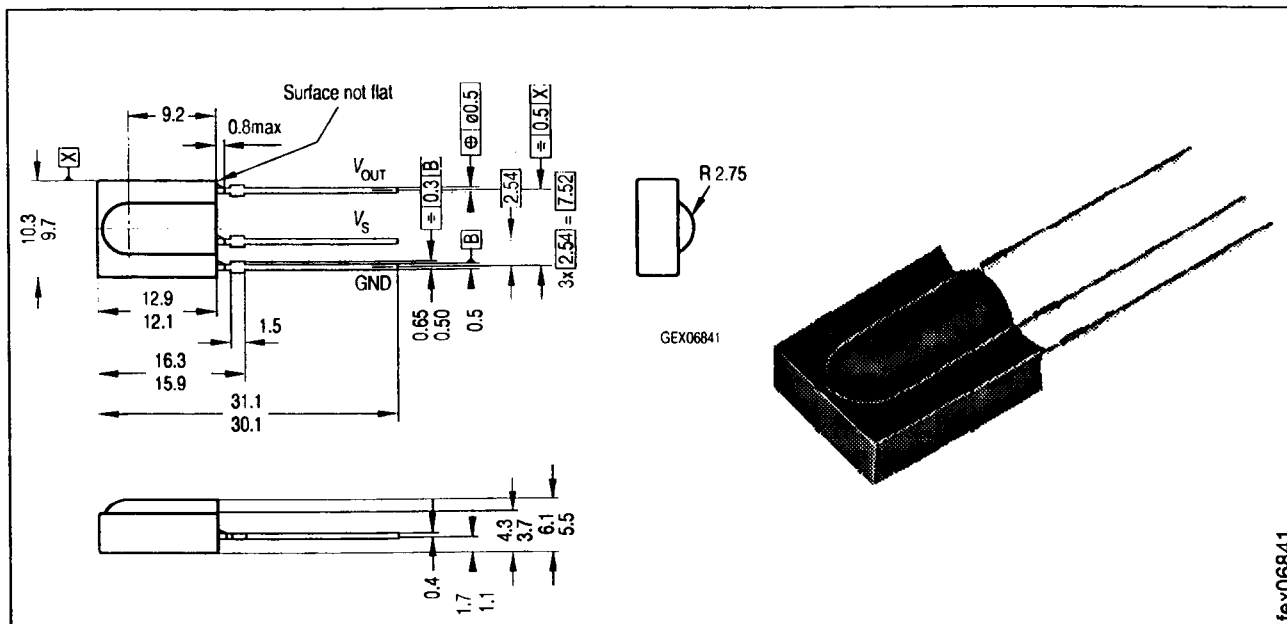


## IR-Empfänger/Demodulator-Baustein IR-Receiver/Demodulator Device



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

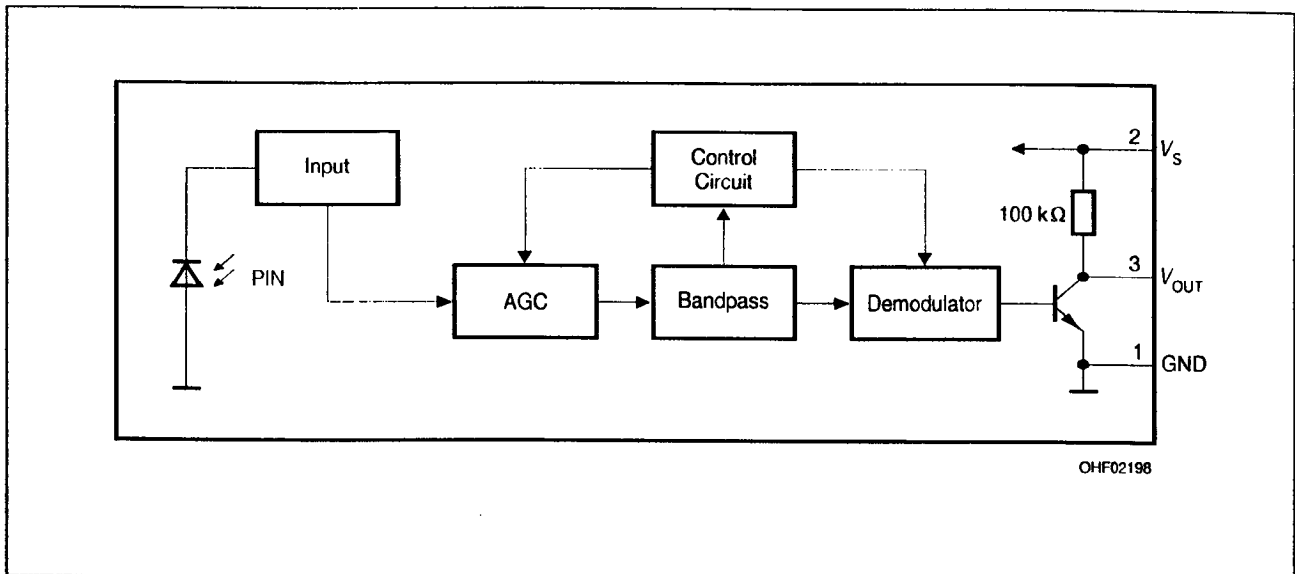
### Features

- 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 $\geq 2$ 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

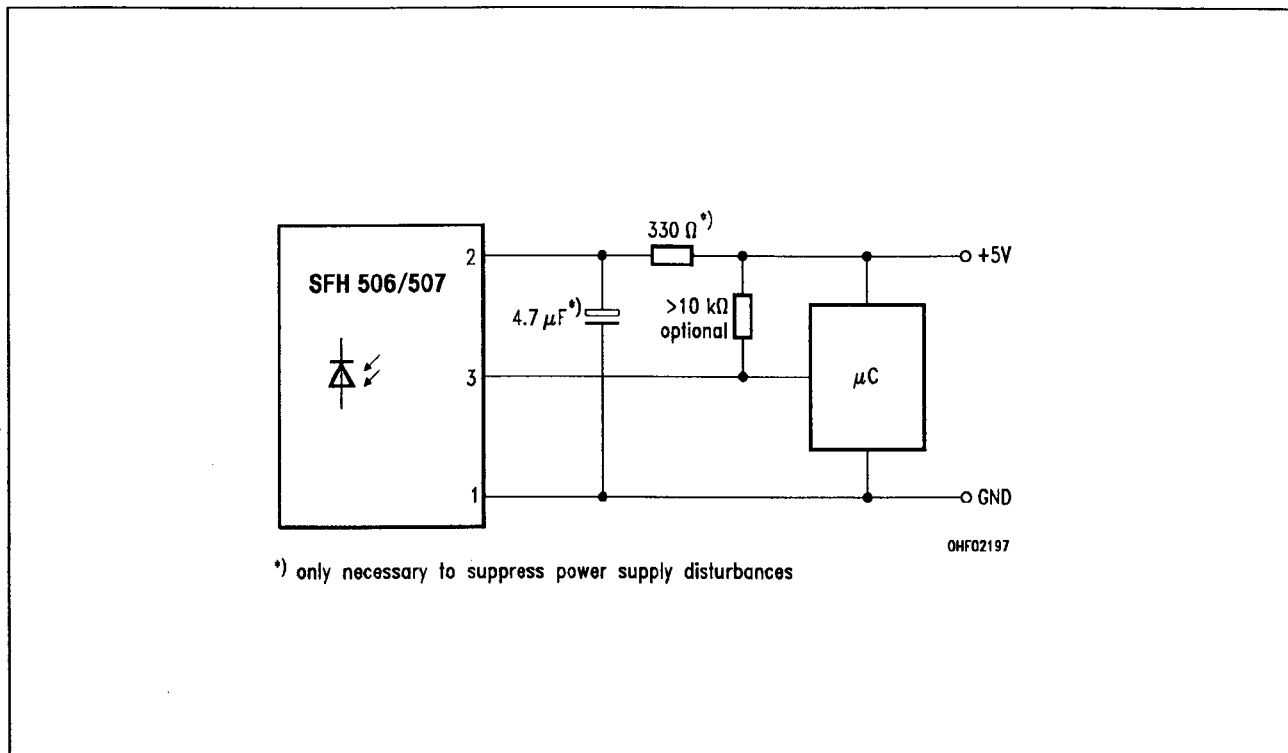
Kennwerte ( $T_A = 25\text{ °C}$ )

Characteristics

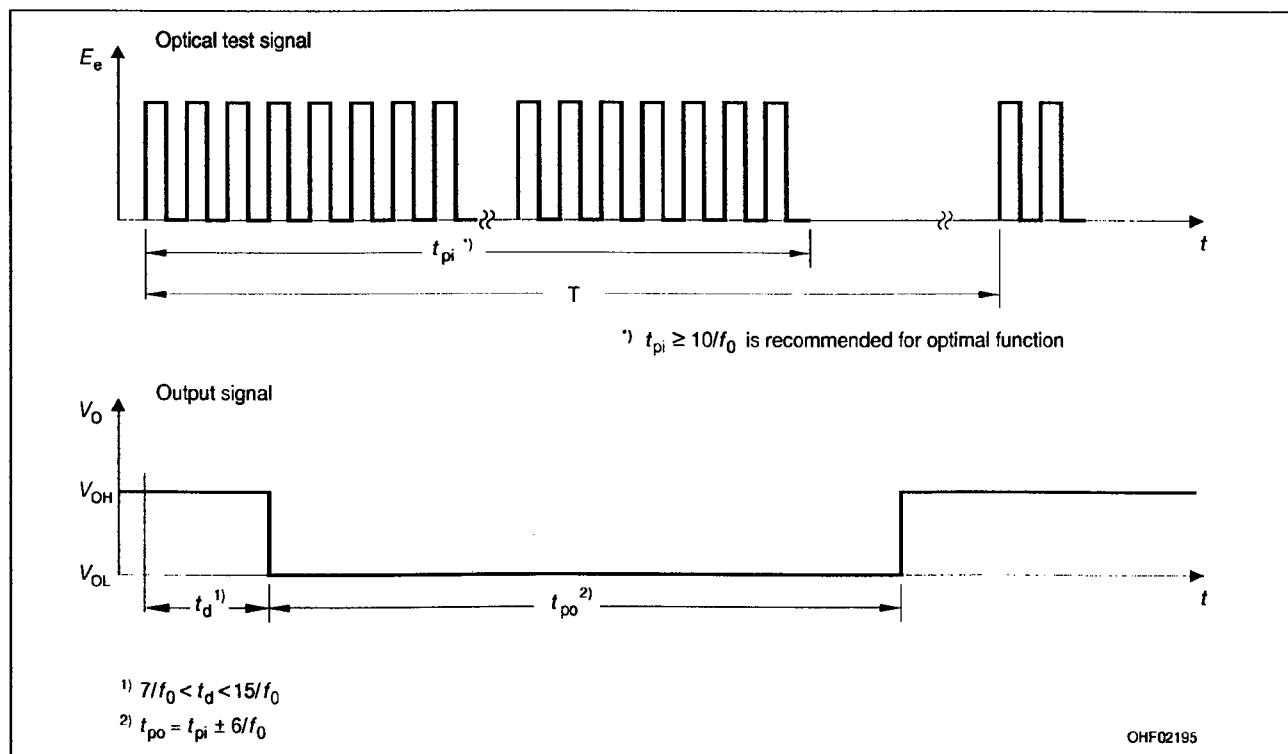
Bezeichnung Description	Symbol Symbol	Wert Value	Einheit Unit
Betriebsspannung Supply voltage	$V_s$	typ. 5.0 (4.5 ... 5.5)	V
Bestrahlungsstärke (Testsignal, s. Figure 2) Threshold irradiance (test signal, see Fig. 2)	$E_{e\ min(30-40\ kHz)}^{1)}$ $E_{e\ min(56\ kHz)}^{1)}$ $E_{e\ max}^{1)}$	typ. 0.35 (< 0.5) typ. 0.4 (< 0.6) 30	mW/m <sup>2</sup>  W/m <sup>2</sup>
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	$\varphi$	$\pm 45$	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.



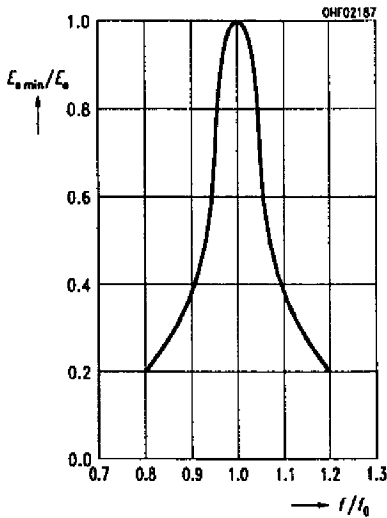
**Figure 1 Externe Beschaltung**  
External circuit



**Figure 2 Testsignal**  
Test signal

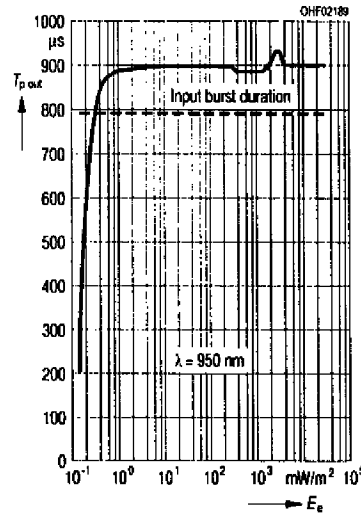
### Relative sensitivity

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



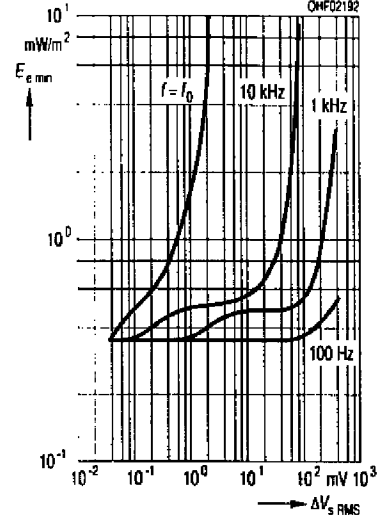
### Sensitivity vs. dark ambient $T_{p \text{ out}} = f(E_e)$

$\lambda = 950 \text{ nm}$ , optical test signal



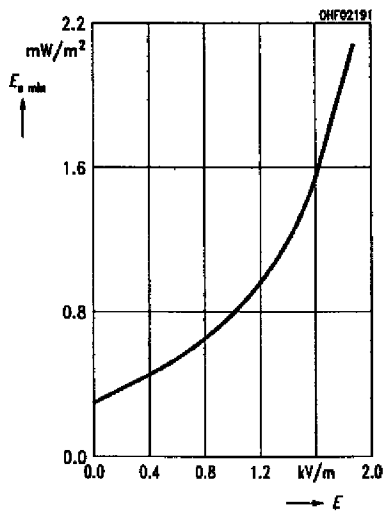
### Sensitivity vs. supply voltage

disturbances,  $E_{e \min} = f(\Delta V_{S \text{ RMS}})$



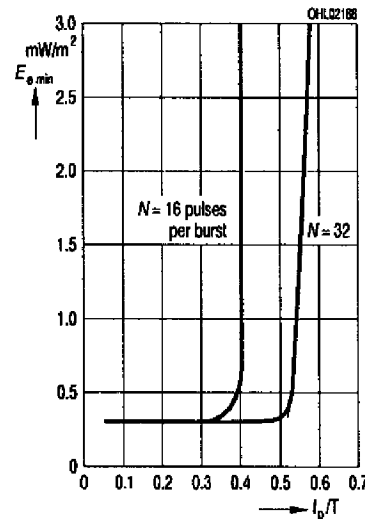
### Sensitivity vs. electric field disturbance

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

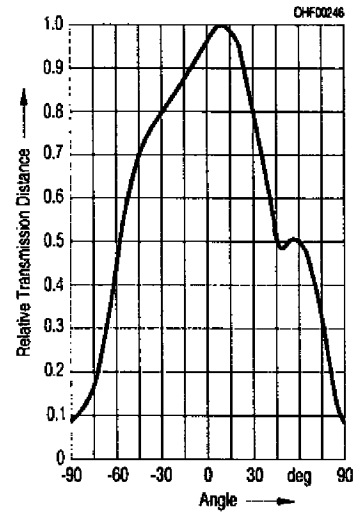


### Sensitivity vs. duty cycle

$$E_{e \min} = f(t_p / T)$$

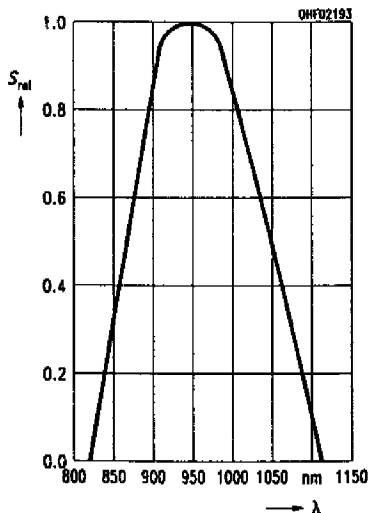


### Vertical directivity $\phi_y$



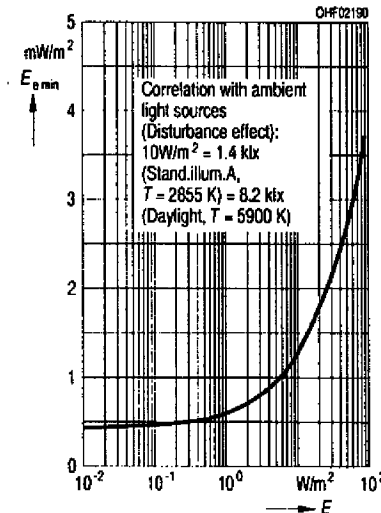
### Relative luminous intensity

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

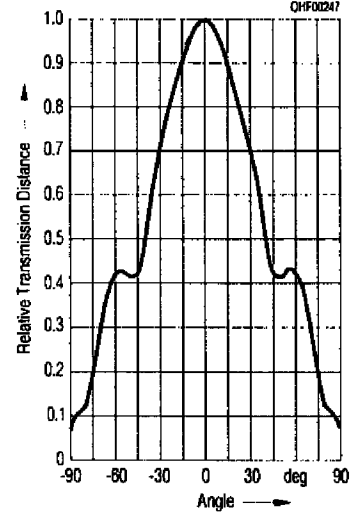


### Sensitivity vs. bright ambient

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

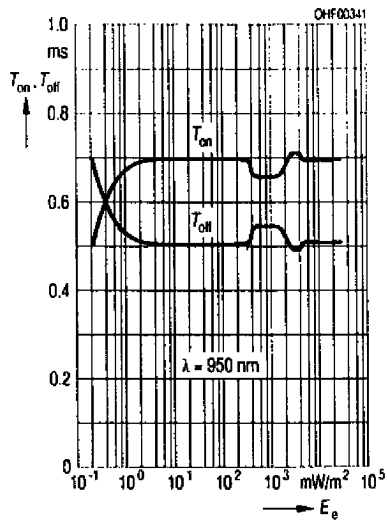


### Horizontal directivity $\phi_x$



## Output pulse

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



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[www.datasheetcatalog.com](http://www.datasheetcatalog.com)

Datasheets for electronics components.