

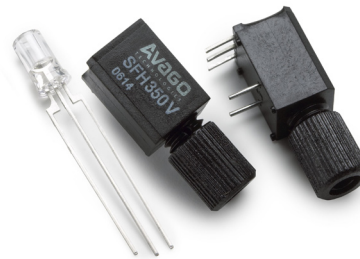
# SFH350 / SFH350V

## Plastic Fiber Optic Phototransistor Detector

### Plastic Connector Housing



## Data Sheet



### Description

The SFH350 is a low-cost 650nm receiver for simple optical data transmission with polymer optical fiber. The phototransistor yields a high output current even at low optical input power and can be used for speeds up to 15kBd.

The transparent plastic package has an aperture where the 2.2mm fiber-end can be inserted and fixed with glue. This easy coupling method is extremely cost-effective.

The V-housing allows easy coupling of unconnectorized 2.2mm plastic optical fiber by means of an axial locking screw.

### Ordering Information

Type	Ordering Code
SFH350	SP000063861
SFH350V	SP000063853

### Features

- 2.2 mm Aperture holds Standard 1000 Micron Plastic Fiber
- No Fiber Stripping Required
- Good Linearity
- Sensitive in visible and near IR Range
- Molded Microlens for Efficient Coupling

### Plastic Connector Housing

- Mounting Screw Attached to the Connector
- Interference Free Transmission from light-Tight Housing
- Transmitter and Receiver can be flexibly positioned
- No Cross Talk
- Auto insertable and Wave solderable
- Supplied in Tubes

### Applications

- Household Electronics
- Power Electronics
- Optical Network

## Technical Data

### Absolute Maximum Ratings

Parameter	Symbol	Limit Values		Unit
		min.	max.	
Operating Temperature Range	$T_{OP}$	-40	+85	°C
Storage Temperature Range	$T_{STG}$	-40	+100	°C
Soldering Temperature (2mm from case bottom, $t \leq 5$ s)	$T_S$		260	°C
Collector-Emitter Voltage	$V_{CE}$		50	V
Collector Current	$I_C$		50	mA
Collector Peak Current ( $t \leq 10$ s)	$I_{CP}$		100	mA
Emitter-Bias Voltage	$V_{EB}$		7	V
Reverse Voltage	$V_R$		30	V
Power Dissipation $T_A = 25^\circ\text{C}$	$P_{TOT}$		200	mW
Thermal Resistance, Junction/Air	$R_{thJA}$		375	K/W

### Characteristics ( $T_A = 25^\circ\text{C}$ )

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Maximum Photosensitivity Wavelength	$\lambda_{Smax}$		850		nm
Photosensitivity Spectral Range ( $S = 10\% S_{max}$ )	$\lambda$	400		1100	nm
Dark Current ( $V_R = 20$ V)	$I_R$		1 ( $\leq 10$ )		nA
Capacitance ( $f = 1$ MHz, without light)					pF
( $V_{CE} = 0$ V)	$C_{CE}$		10.5		
( $V_{CB} = 0$ V)	$C_{CB}$		21.5		
( $V_{EB} = 0$ V)	$C_{EB}$		20.5		
Rise and Fall Times of Photo Current ( $R_L = 1$ k $\Omega$ , $V_{CE} = 5$ V, $I_C = 1.0$ mA, $\lambda = 959$ nm)					ms
10% to 90%	$t_R$		20		
90% to 10%	$t_F$		20		
Current Gain	HFE		500		
Collector Dark Current ( $V_{CE} = 5$ V)	$I_{CEO}$		2 ( $\leq 50$ )		nA
Photo Current ( $V_{CE} = 5$ V, $\Phi_{IN} = 10$ $\mu\text{W}$ coupled from the end of a plastic fiber, $\lambda = 660$ nm)	$I_{CE}$		0.8 ( $\geq 0.16$ )		mA
Temperature Coefficient HFE	$TC_{HFE}$		0.55		%/K
Temperature Coefficient $I_{CE}$ $\lambda = 560$ to $660$ nm	$TC_I$		0.34		%/K
Temperature Coefficient $I_{CE}$ $\lambda = 830$ nm			0.49		
Temperature Coefficient $I_{CE}$ $\lambda = 950$ nm			0.66		

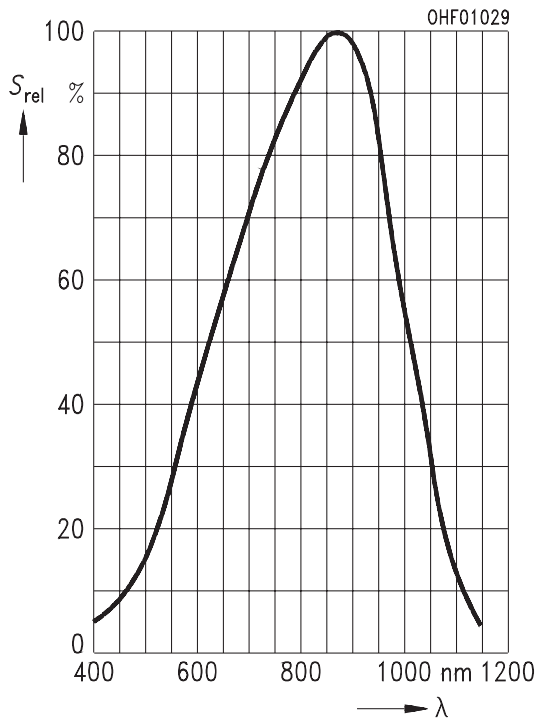


Figure 1. Relative Spectral Sensitivity  $S_{rel} = f(\lambda)$

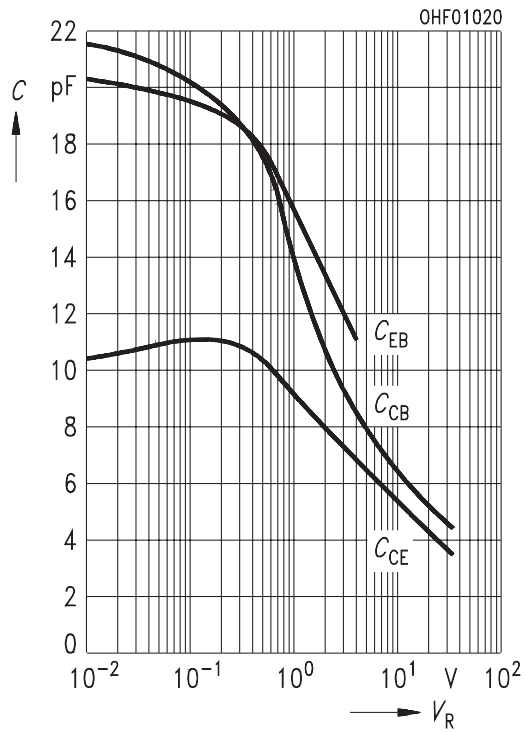


Figure 2. Capacitance  $C = f(V_R)$ ,  $f = 1 \text{ MHz}$ ,  $E_V = 0$

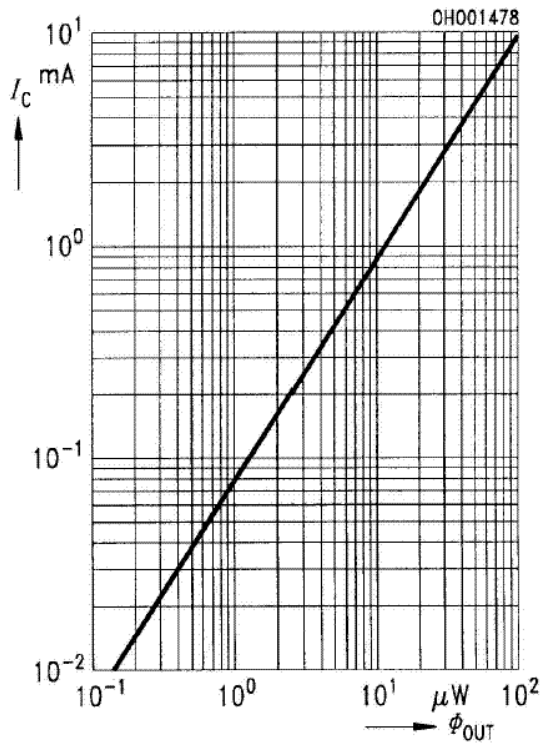


Figure 3. Photocurrent  $I_C = f(\Phi_{OUT})$ ,  $V_{CE} = 5 \text{ V}$ ,  $\lambda = 560 \dots 950 \text{ nm}$

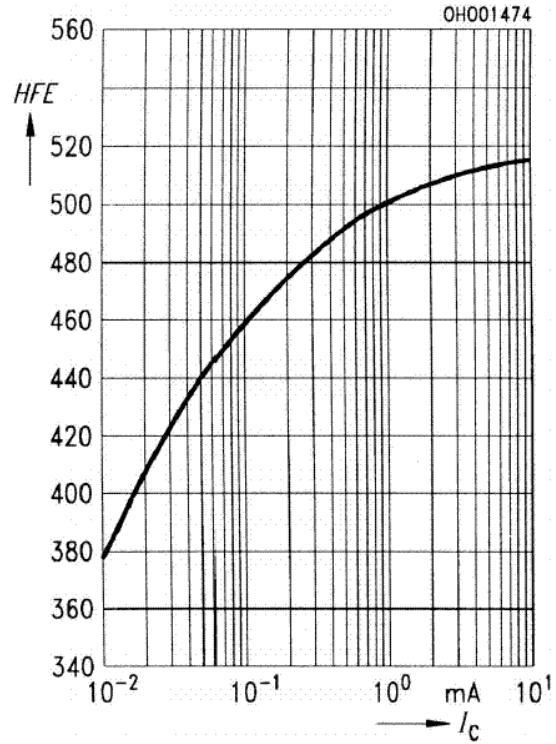


Figure 4. Current Gain  $HFE = f(I_C)$ ,  $V_{CE} = 5 \text{ V}$ ,  $T_A = 25^\circ\text{C}$

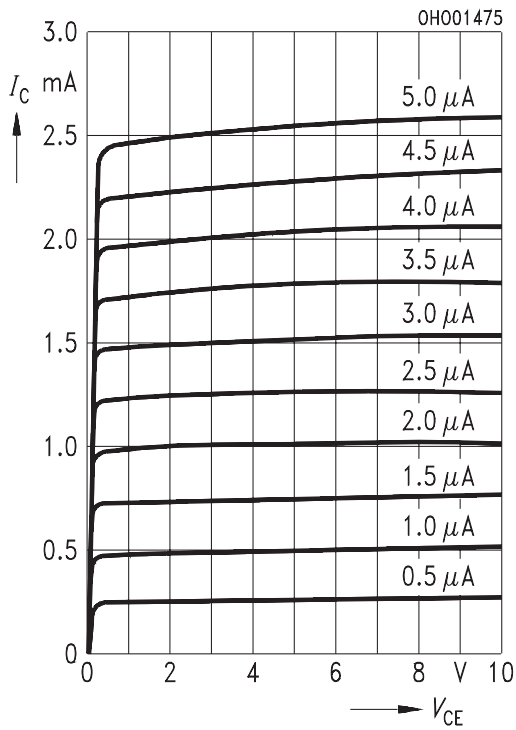


Figure 5. Output Characteristics  $I_C = f(V_{CE})$ ,  $I_B = \text{parameter}$

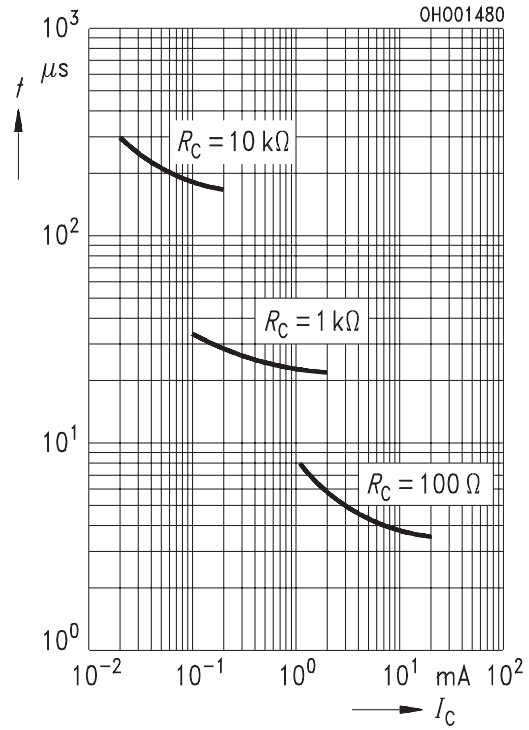


Figure 6. Response Time  $t = f(I_C)$ ,  $V_{CE} = 5\text{ V}$ ,  $\lambda = 950\text{ nm}$

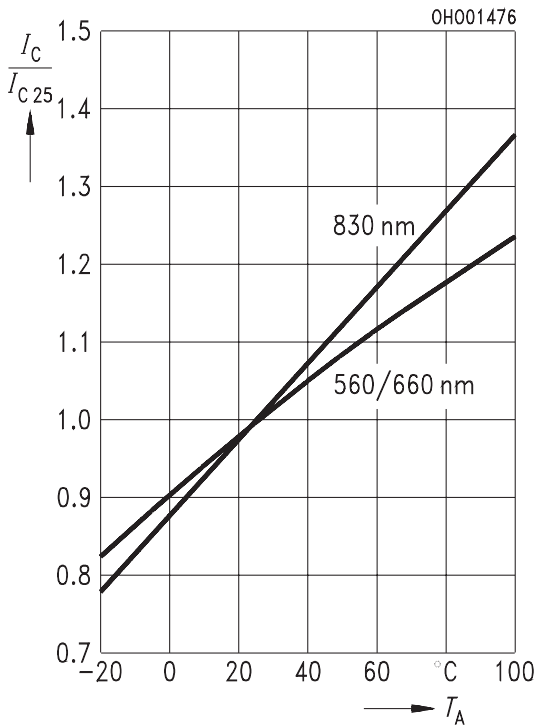


Figure 7. Photocurrent  $I_C/I_{C25} = f(T_A)$ ,  $V_{CE} = 5\text{ V}$ ,  $\lambda = \text{parameter}$

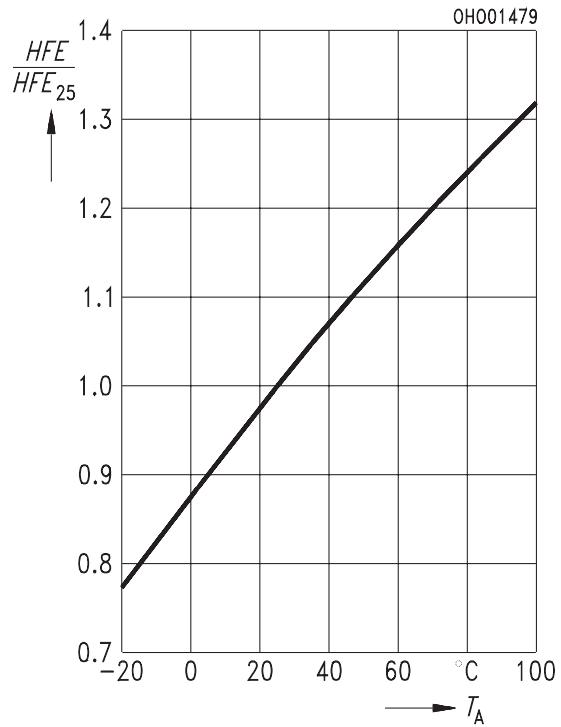
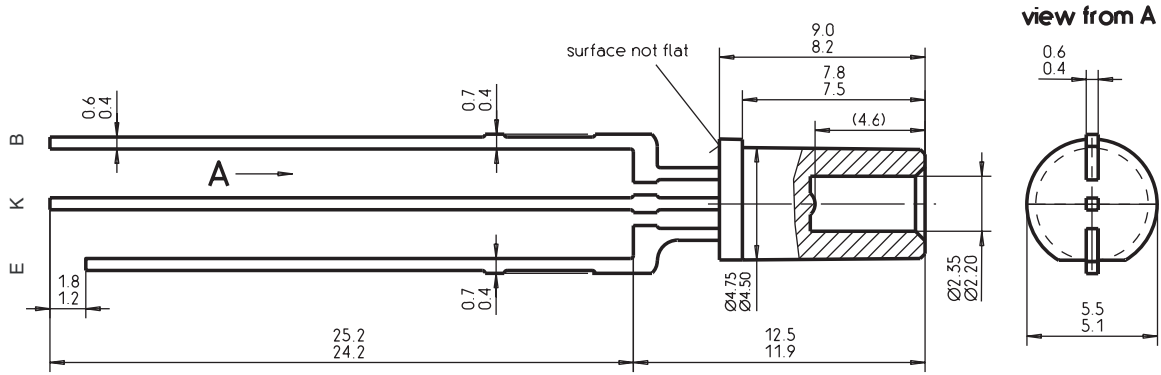


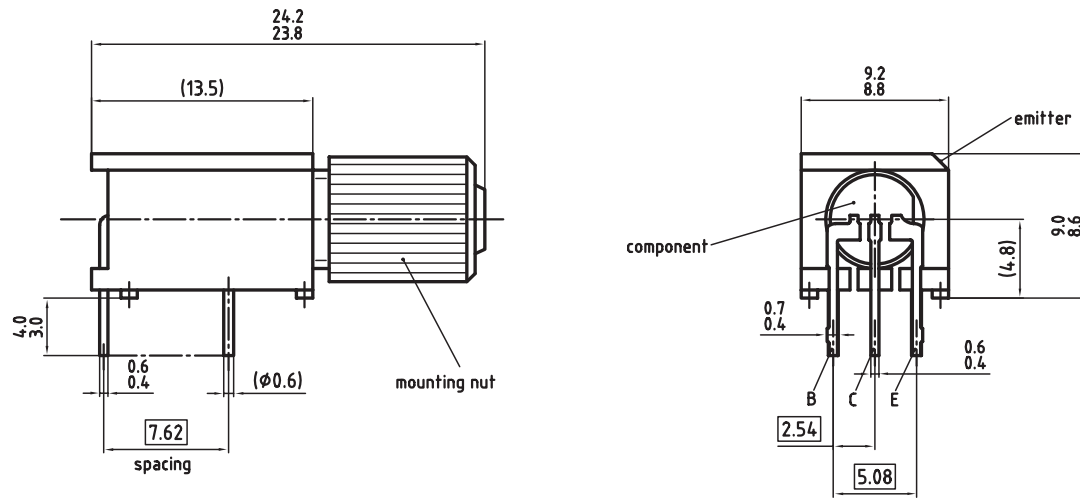
Figure 8. Current Gain  $HFE/HFE_{25} = f(T_A)$ ,  $V_{CE} = 5\text{ V}$ ,  $I_C = 1\text{ mA}$

## Package Outlines



Dimensions in mm

Figure 9. SFH350



Dimensions in mm

Figure 10. SFH350V

## **Disclaimer**

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