

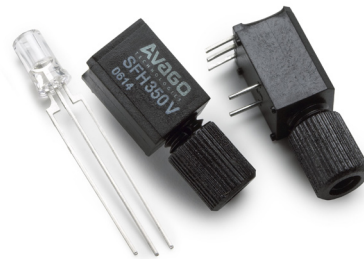
# SFH350 / SFH350V

## 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		

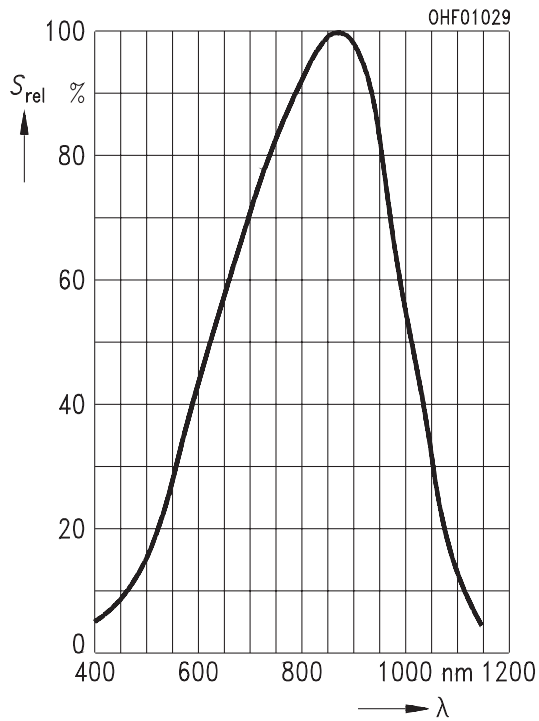


Figure 1. Relative Spectral Sensitivity  $S_{rel} = f(\lambda)$

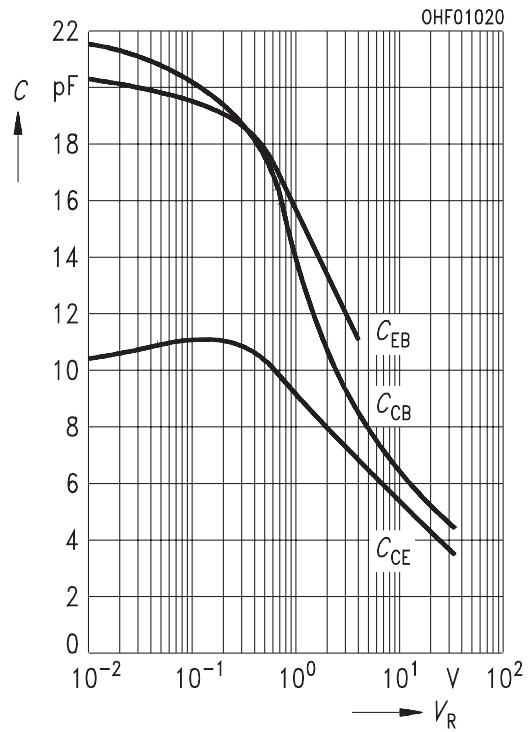


Figure 2. Capacitance  $C = f(V_R)$ ,  $f = 1$  MHz,  $E_V = 0$

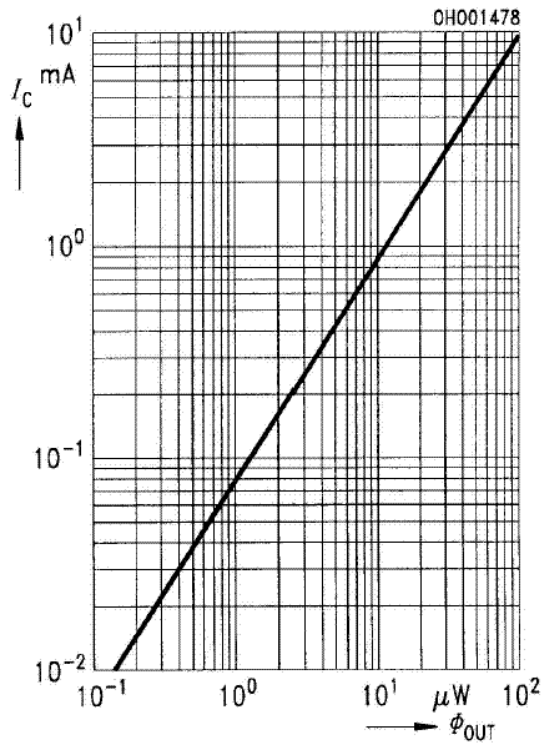


Figure 3. Photocurrent  $I_C = f(\Phi_{OUT})$ ,  $V_{CE} = 5$  V,  $\lambda = 560 \dots 950$  nm

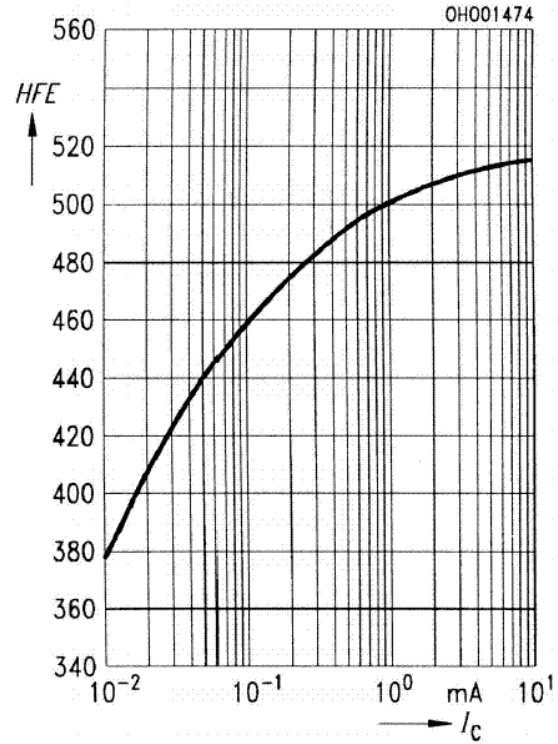


Figure 4. Current Gain  $HFE = f(I_C)$ ,  $V_{CE} = 5$  V,  $T_A = 25^\circ C$

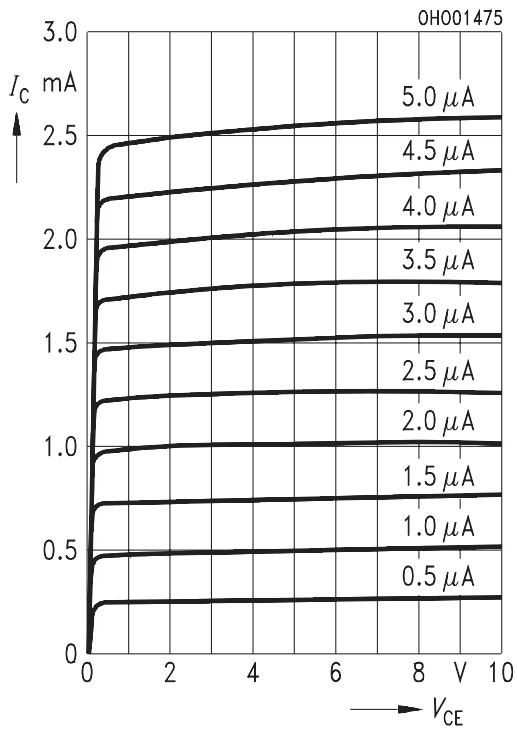


Figure 5. Output Characteristics  $I_C = f(V_{CE})$ ,  $I_B = \text{parameter}$

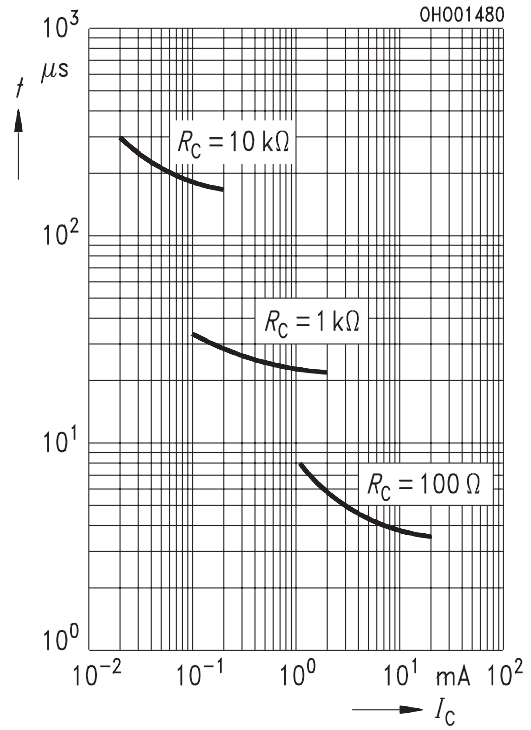


Figure 6. Response Time  $t = f(I_C)$ ,  $V_{CE} = 5$  V,  $\lambda = 950$  nm

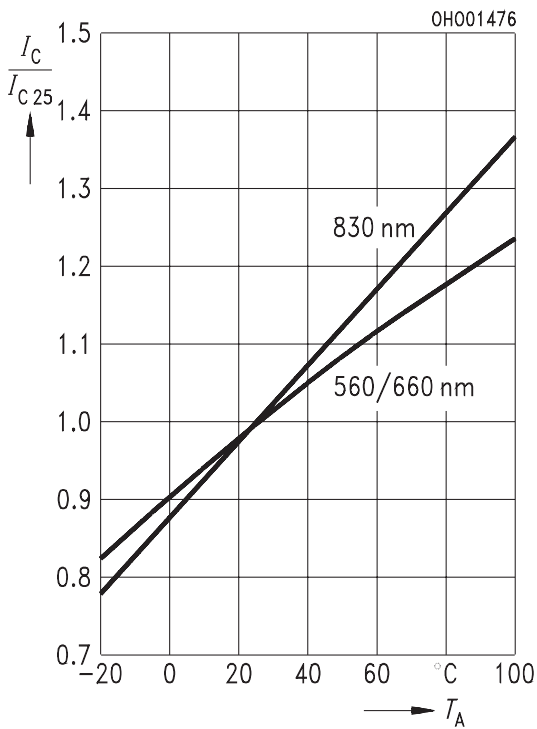


Figure 7. Photocurrent  $I_C/I_{C25} = f(T_A)$ ,  $V_{CE} = 5$  V,  $\lambda = \text{parameter}$

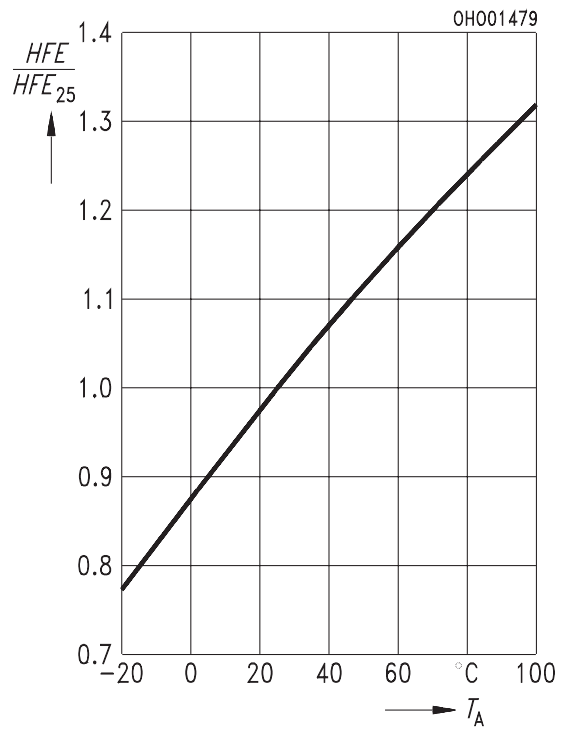
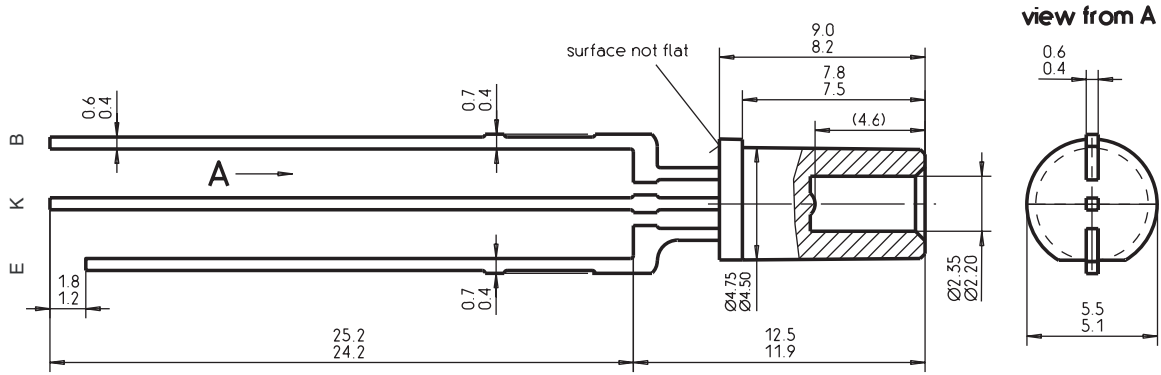


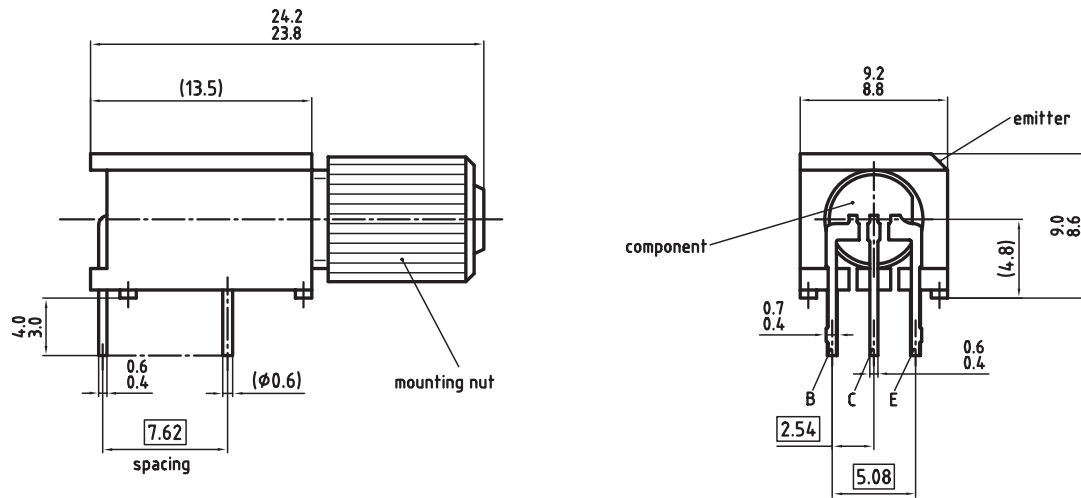
Figure 8. Current Gain  $HFE/HFE_{25} = f(T_A)$ ,  $V_{CE} = 5$  V,  $I_C = 1$  mA

# Package Outlines



Dimensions in mm

Figure 9. SFH350



Dimensions in mm

Figure 10. SFH350V

## **Disclaimer**

The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.

Terms of delivery and rights to technical change reserved. We hereby disclaim any and all warranties, including but not limited to warranties of non-infringement, regarding circuits, descriptions and charts stated herein.

## **Warnings**

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Avago Technologies Office.

Avago Technologies Components may only be used in life-support devices or systems with the express written approval of Avago Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons maybe endangered.

## **Information**

For further information on technology, delivery terms and conditions and prices please contact your nearest Avago Technologies Office ([www.avagotech.com](http://www.avagotech.com)).

For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

Avago, Avago Technologies, and the A logo are trademarks of Avago Technologies, Limited in the United States and other countries.  
Data subject to change. Copyright © 2007 Avago Technologies Limited. All rights reserved.  
AV01-0712EN - July 18, 2007

**Avago**  
TECHNOLOGIES