## 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 crurrent even at low optical input power and can be used for speeds up to 15kBd.

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

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

#### **Ordering Information**

Туре	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		Lii		
	Symbol	min.	max.	Unit
Operating Temperature Range	T <sub>OP</sub>	-40	+85	°C
Storage Temperature Range	T <sub>STG</sub>	-40	+100	°C
Soldering Temperature (2mm from case bottom, $t \le 5$ s)	Ts		260	°C
Collector-Emitter Voltage	V <sub>CE</sub>		50	V
Collector Current	ار		50	mA
Collector Peak Current (t $\leq$ 10 s)	I <sub>CP</sub>		100	mA
Emitter-Bias Voltage	V <sub>EB</sub>		7	V
Reverse Voltage	V <sub>R</sub>		30	V
Power Dissipation $T_A = 25^{\circ}C$	P <sub>TOT</sub>		200	mW
Thermal Resistance, Junction/Air	R <sub>thJA</sub>		375	K/W

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

	Symbol		Values		
Parameter			min. typ.		Unit
Maximum Photosensitivity Wavelength	$\lambda_{Smax}$		850		nm
Photosensitivity Spectral Range (S = $10\%$ S <sub>max</sub> )	λ	400		1100	nm
Dark Current ( $V_R = 20 V$ )	I <sub>R</sub>		1 (≤ 10)		nA
Capacitance (f = 1 MHz, without light)					pF
$(V_{CE} = 0 V)$	C <sub>CE</sub>		10.5		
$(V_{CB} = 0 V)$	C <sub>CB</sub>		21.5		
$(V_{EB} = 0 V)$	C <sub>EB</sub>		20.5		
Rise and Fall Times ofPhoto Current ( $R_L = 1 \text{ k} \Omega$ , $V_{CE} = 5 \text{ V}$ , $I_C = 1.0 \text{ mA}$ , $\lambda = 959 \text{ nm}$ )					ms
10% to 90%	t <sub>R</sub>		20		
90% to 10%	t <sub>F</sub>		20		
Current Gain	HFE		500		
Collector Dark Current(V <sub>CE</sub> = 5 V)	I <sub>CE0</sub>		2 (≤ 50)		nA
Photo Current	I <sub>CE</sub>		0.8(≥0.16)		mA
(VCE = 5 V, $\Phi_{IN}$ = 10 $\mu W$ coupled from the end of a plastic fiber, $\lambda$ = 660nm)					
Temperature Coefficient HFE	TC <sub>HFE</sub>		0.55		%/K
Temperature Coefficient I <sub>CE</sub> $\lambda =$ 560 to 660 nm	TCI		0.34		%/K
Temperature Coefficient I <sub>CE</sub> $\lambda =$ 830 nm			0.49		
Temperature Coefficient I <sub>CE</sub> $\lambda$ = 950 nm			0.66		

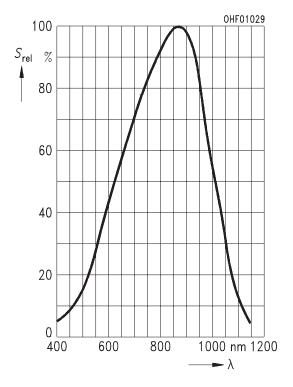


Figure 1. Relative Spectral Sensitivity  $S_{rel} = f(\lambda)$ 

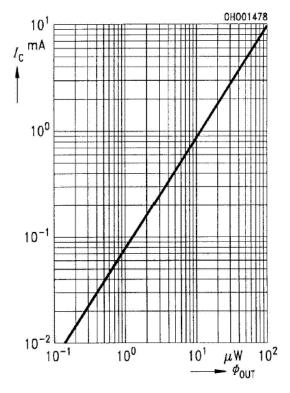
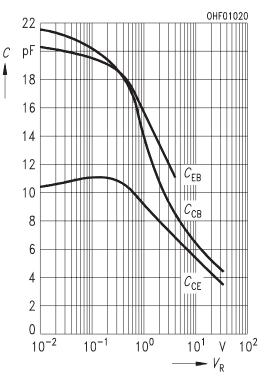
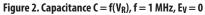
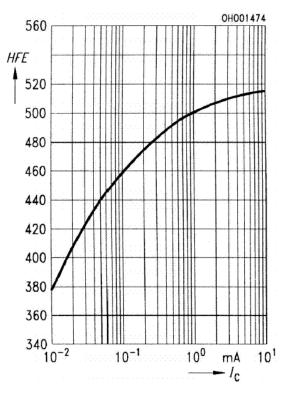
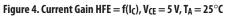


Figure 3. Photocurrent I\_C = f( $\Phi_{\text{OUT}}$ ), V<sub>CE</sub> = 5 V,  $\lambda$  = 560...950 nm









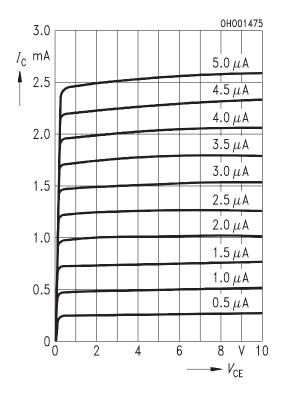


Figure 5. Output Characteristics  $I_C = f(V_{CE})$ ,  $I_B = parameter$ 

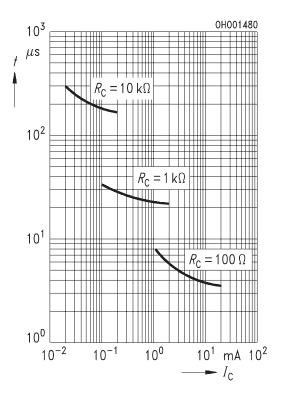


Figure 6. Response Time t = f(I<sub>C</sub>), V<sub>CC</sub> = 5 V,  $\lambda$  = 950 nm

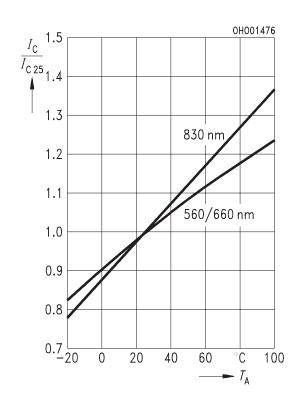


Figure 7. Photocurrent  $I_C/I_{C25} = f(T_A)$ ,  $V_{CE} = 5 V$ ,  $\lambda =$  parameter

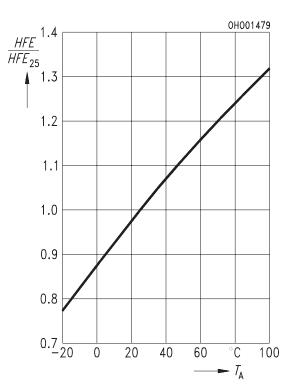
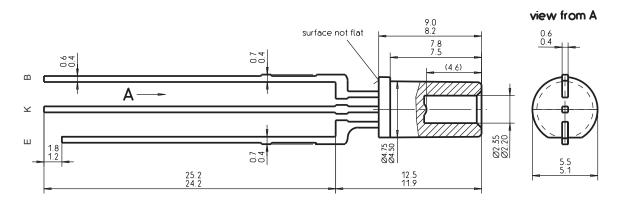


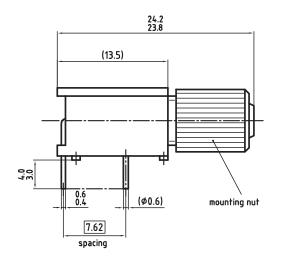
Figure 8. Current Gain HFE/HFE<sub>25</sub> =  $f(T_A)$ ,  $V_{CE} = 5$  V,  $I_C = 1$  mA

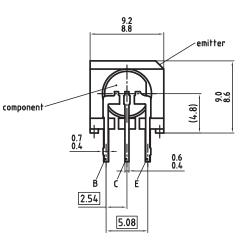
## Package Outlines



Dimensions in mm

### Figure 9. SFH350





Dimensions in mm

Figure 10. SFH350V

### Disclaimer

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