## 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**

	Liı		
Symbol	min.	max.	Unit
T <sub>OP</sub>	-40	+85	°C
T <sub>STG</sub>	-40	+100	°C
T <sub>S</sub>		260	°C
V <sub>CE</sub>		50	٧
lc		50	mA
I <sub>CP</sub>		100	mA
V <sub>EB</sub>		7	٧
$V_{R}$		30	V
P <sub>TOT</sub>		200	mW
R <sub>thJA</sub>		375	K/W
	T <sub>OP</sub> T <sub>STG</sub> T <sub>S</sub> VCE I <sub>C</sub> I <sub>CP</sub> V <sub>EB</sub> V <sub>R</sub> P <sub>TOT</sub>	Symbol         min.           TOP         -40           TSTG         -40           TS         VCE           IC         ICP           VEB         VR           PTOT         PTOT	T <sub>OP</sub> -40 +85 T <sub>STG</sub> -40 +100 T <sub>S</sub> 260  V <sub>CE</sub> 50 I <sub>C</sub> 50 I <sub>CP</sub> 100 V <sub>EB</sub> 7 V <sub>R</sub> 30 P <sub>TOT</sub> 200

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

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

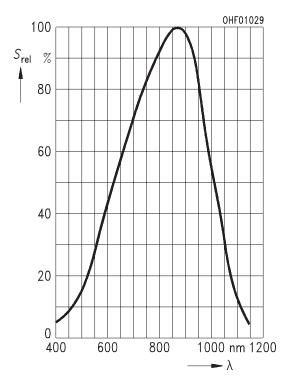


Figure 1. Relative Spectral Sensitivity  $S_{rel} = f(\lambda)$ 

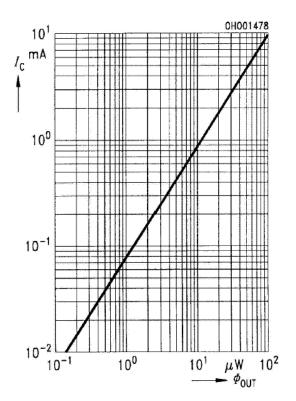


Figure 3. Photocurrent I<sub>C</sub> = f( $\Phi_{OUT}$ ), V<sub>CE</sub> = 5 V,  $\lambda$  = 560...950 nm

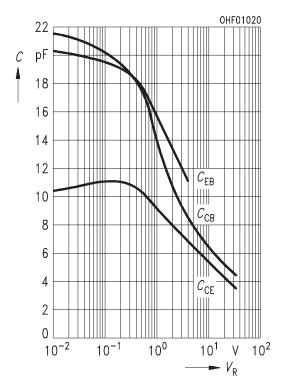


Figure 2. Capacitance  $C = f(V_R)$ , f = 1 MHz,  $E_V = 0$ 

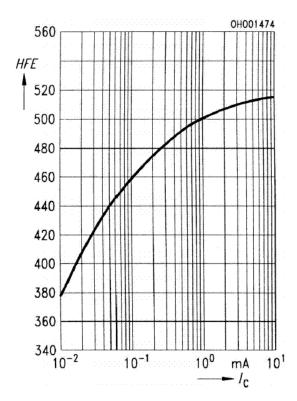


Figure 4. Current Gain HFE =  $f(I_C)$ ,  $V_{CE} = 5 \text{ V}$ ,  $T_A = 25^{\circ}\text{C}$ 

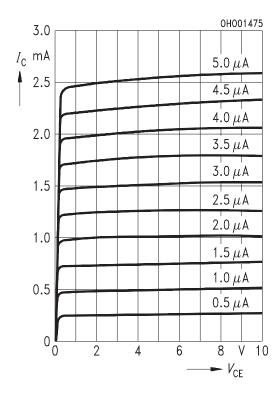


Figure 5. Output Characteristics  $I_C = f(V_{CE})$ ,  $I_B = parameter$ 

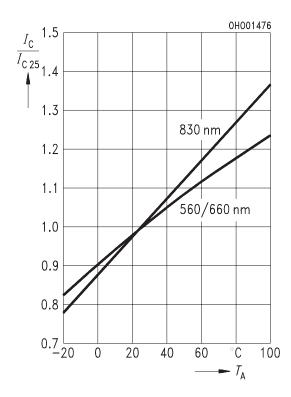


Figure 7. Photocurrent  $I_C/I_{C25} = f(T_A),\, V_{CE} = 5$  V,  $\lambda = parameter$ 

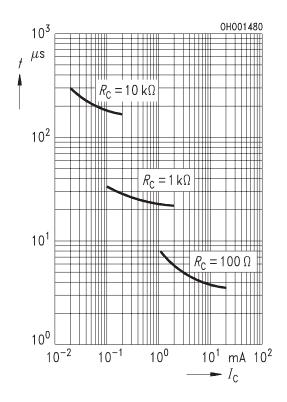


Figure 6. Response Time  $t = f(I_C)$ ,  $V_{CC} = 5 \text{ V}$ ,  $\lambda = 950 \text{ nm}$ 

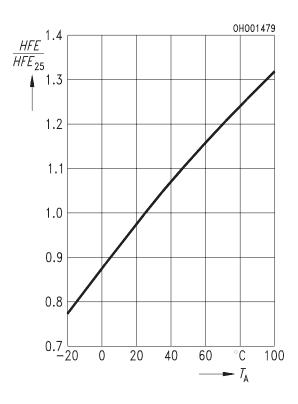
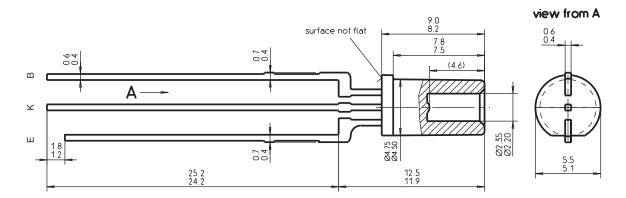


Figure 8. Current Gain HFE/HFE<sub>25</sub> =  $f(T_A)$ ,  $V_{CE} = 5$  V,  $I_C = 1$  mA

# **Package Outlines**



Dimensions in mm

Figure 9. SFH350

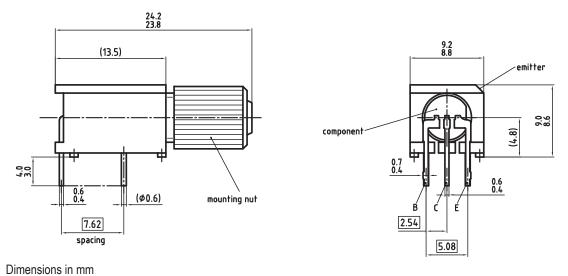


Figure 10. SFH350V

### Disclaimer

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

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#### Information

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