

SIEMENS

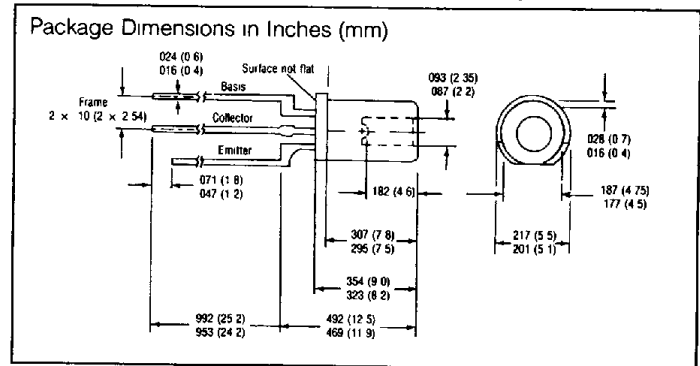
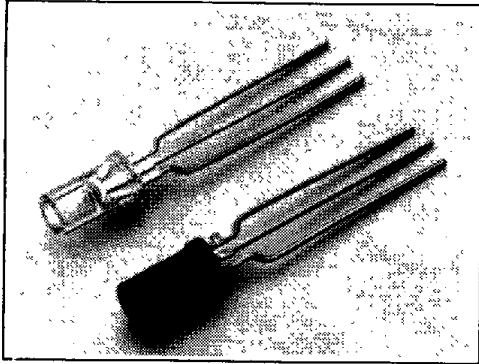
SFH350

WITH IR FILTER SFH350F

PLASTIC FIBER OPTIC PHOTOTRANSISTOR DETECTOR

T-41-50

Preliminary Data Sheet

**FEATURES**

- 2.3 mm Aperture Holds Standard 1000 Micron Plastic Fiber
- No Fiber Stripping Required
- Daylight Rejection Filter (SFH350F)
- High Reliability
- Good Linearity
- Sensitive in the Visible (SFH350) and Near IR Range (SFH350 & 350F)
- Three Lead Phototransistor
- Molded Microlens for Efficient Coupling

DESCRIPTION

The SFH350/350F are NPN silicon phototransistors in a low cost plastic package for use in short distance data transmission using 1000 micron plastic fibers. Both come in a 5 mm (T1 $\frac{3}{4}$) plastic package featuring a tubular aperture. It is wide enough to accommodate fiber and cladding. A microlens on the bottom improves the light coupling efficiency—fiber output to PTX.

The SFH350 has a clear plastic housing, the SFH350F has a black plastic housing.

Typical applications include: automotive wiring, isolation interconnects, medical applications, robotics, electronic games, etc.

For application information see Appnote 40

Maximum Ratings

Operating and Storage Temperature Range (T)	-55 to +100°C
Soldering Temperature (Distance from solder to package = 2 mm)	
Dip Soldering Time, $t \leq 5$ sec (T _s)	260°C
Collector-Emitter Voltage (V _{CE})	50 V
Collector Current (I _C)	50 mA
Collector Peak Current, $t \leq 10$ sec (I _{CP})	100 mA
Emitter Base Voltage (V _{EB})	7 V
Power Dissipation (T _{amb} = 25°C) (P _{TOT})	200 mW
Thermal Resistance (R _{THJA})	375 K/W

Characteristics (T_{amb} = 25°C)

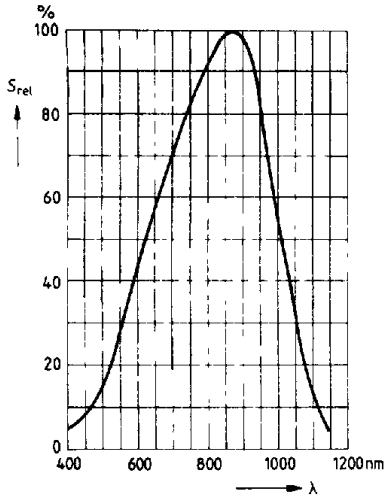
Wavelength of Max. Photosensitivity			
SFH350	λ_{MAX}	850	nm
SFH350F	λ_{MAX}	900	nm
Spectral Range of Photosensitivity (S = 10% of S _{MAX})			
SFH350	λ	400 to 1100	nm
SFH350F	λ	800 to 1100	nm
Capacitance			
(V _{CE} = 0 V, f = 1 MHz, E = 0 lx)	C _{CE}	9	pF
(V _{CB} = 0 V, f = 1 MHz, E = 0 lx)	C _{CB}	22	pF
(V _{EB} = 0 V, f = 1 MHz, E = 0 lx)	C _{EB}	20	pF
Rise and Fall Time			
(I _C = 1.0 mA, V _{CE} = 5 V, R _L = 1 k Ω)	t _R , t _F	15	μ s
Current Gain			
(V _{CE} = 5 V, I _{CE} = 2 mA)	β	500	Typ
Photocurrent (V _{CE} = 5 V) (Note 1)			
SFH350F $\lambda = 950$ nm	I _{CE}	1.0	mA
SFH350 $\lambda = 660$ nm	I _{CE}	0.8	mA

¹ Photocurrent generated at 10 μ W light incidence through plastic 1000 micron fiber (distance lens fiber ≤ 0.1 mm, fiber type ESKA EH4001, fiber face polished)

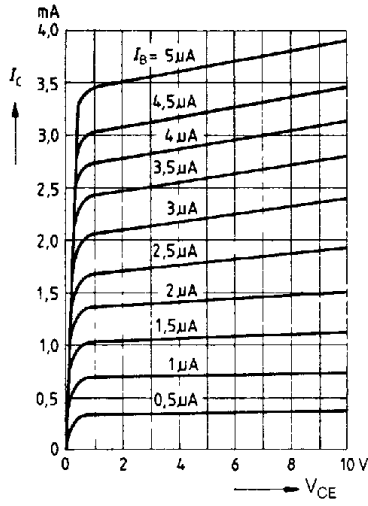
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SFH350

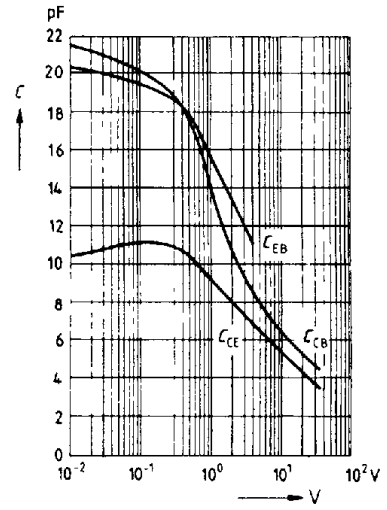
Relative spectral sensitivity
 $S_{rel} = f(\lambda)$



Output characteristics
 $I_C = f(V_{CE}), I_B = \text{Parameter}$



Capacitance $C = f(V)$



Fiber Optic
 Devices