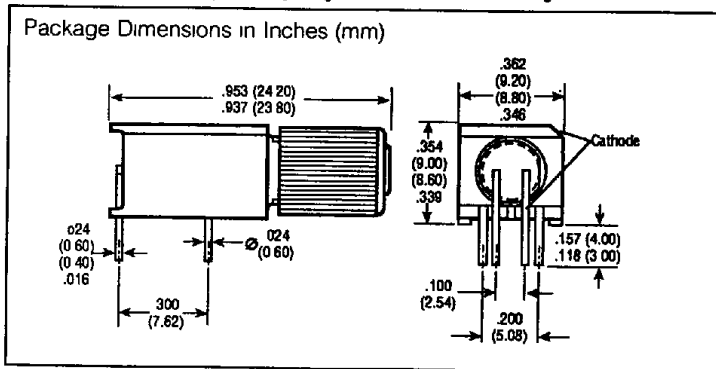
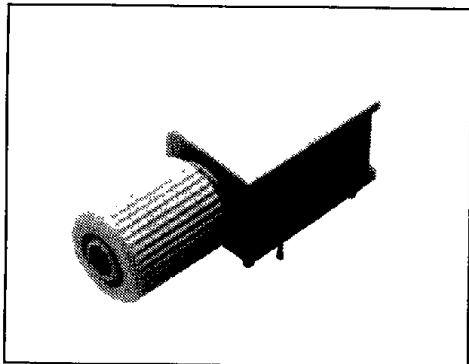


**SIEMENS**

**SFH450V/451V/452V  
SFH750V/752V  
PLASTIC FIBER OPTIC  
TRANSMITTER DIODE**

*T-41-07* Preliminary Data Sheet



**FEATURES**

- **2.3 mm Aperture Holds 1000 Micron Plastic Fiber**
- **No Fiber Stripping Required**
- **Connect Fiber without Twisting**
- **Plastic Connector Housing**
- **Mounting Screw Attached to Connector**
- **Interference-Free Transmission because of Light-Tight Housing**
- **No Cross Talk**
- **Auto Insertable and Wave Solderable**
- **Supplied in Tubes**
- **Molded Microlens for Efficient Coupling**

**DESCRIPTION**

The SFH450V, SFH451V, and SFH452V are infrared emitters, the SFH450V is a gallium arsenide (GaAs) emitter, the SFH451V, a gallium aluminum arsenide (GaAlAs) emitter, and the SFH452V, a very fast infrared emitter. The SFH750V is a gallium arsenide phosphide (GaAsP), visible red emitter and the SFH752V, hyper-red emitter. These devices are part of a family of low cost fiber optic components designed for short distance data transmission using 1000 micron core plastic fiber. The devices are housed in a plastic connector with a mounting screw permanently attached to the thread and a tubular aperture wide enough to accommodate fiber and cladding. A microlens on the bottom of the aperture improves the light coupling efficiency into an inserted plastic fiber.

Typical applications include Remote photo-interrupter/sensing, Fast optocoupler with extremely high isolation voltage, Transmission of analog/digital signals, data buses, Feedback loop in switch mode power supplies, Isolation in test/measurement/medical instruments, Noise immune data transmission in electrically noisy environments (motors, relays, solenoids, etc.)

**Maximum Ratings**

Operating and Storage Temperature (T)	-55 to +100°C
Junction Temperature (T <sub>j</sub> )	100°C
Soldering Temperature (Distance from solder to package = 2 mm)	260°C
Dip Soldering Time t <sub>s</sub> ≤ 5 sec (T <sub>s</sub> )	5 V
Reverse Voltage (V <sub>R</sub> )	5 V

		SFH450V SFH451V SFH452V	SFH750V	SFH752V	
Forward Current (DC)	I <sub>F</sub>	130	75	45	mA
Surge Current (t ≤ 10 μs, D = 0)	I <sub>FS</sub>	3.5	1.5	1.5	A
Power Dissipation	P <sub>TOT</sub>	210	150	150	mW
Thermal Resistance Junction/Air	R <sub>THJA</sub>	350	500	500	K/W

**Electrical Characteristics (T<sub>amb</sub> = 25°C)**

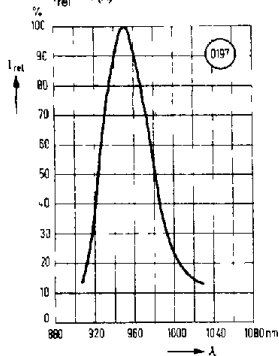
		SFH450V	SFH451V	SFH452V	SFH750V	SFH752V	
Wavelength	λ	950	830	770	660	665	nm
Spectral Bandwidth	Δλ	55	80	80	35	35	nm
Switching Times							
t <sub>ON</sub> (10-90%)	t <sub>r</sub>	1	0.1	0.05	0.12	0.07	μsec
t <sub>OFF</sub> (90-10%)	t <sub>f</sub>	1	0.1	0.05	0.05	0.01	μsec
Capacitance	C <sub>0</sub>	40	40	40	40	40	pF
Forward Voltage	V <sub>F</sub>						
I <sub>F</sub> = 100 mA		1.3 (≤1.5)	1.4 (≤1.6)	1.4 (≤1.6)	1.6 (≤2.0)	1.6 (≤2.0)	V
Coupling Characteristics into a 1000 Micron Core Plastic Fiber (ESKA EH4001) Distance Fiber to Lens ≤ 0.1 mm, polished ends (I <sub>F</sub> = 10 mA)	P <sub>IN</sub>	90	40	40	5	40	μW

For application information see Appnotes 40, 41, 42, 43  
See SFH450/451/750/751 for components without plastic housing.

T.41-07

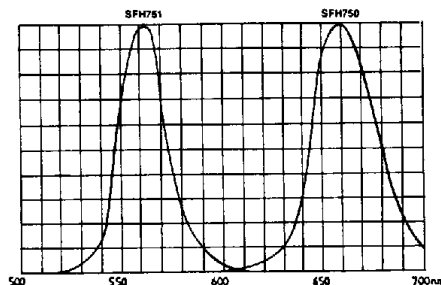
**SFH450V**

Relative spectral emission  
 $I_{rel} = f(\lambda)$



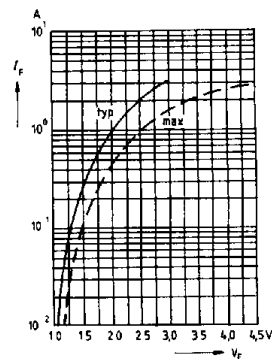
**SFH750V**

Relative spectral emission  
 $I_{rel} = f(\lambda)$



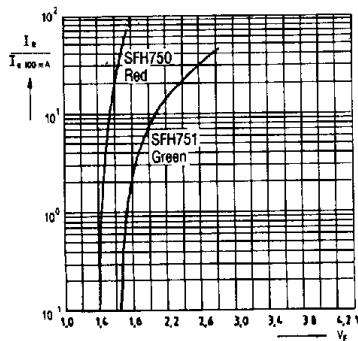
**SFH450V**

Forward current  $I_F = f(V_F)$



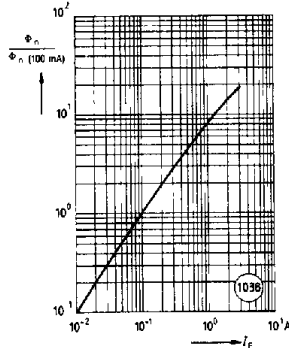
**SFH750V**

Forward current  $I_F = f(V_F)$



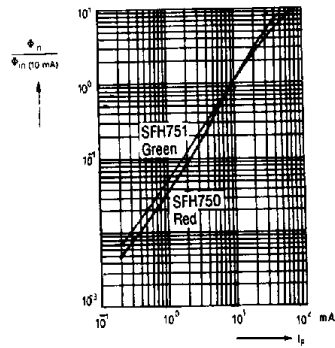
**SFH450V**

Radiant intensity  
 $I_{e,rel} = f(I_F) (\tau = 5 \mu s, T = 5 ms)$



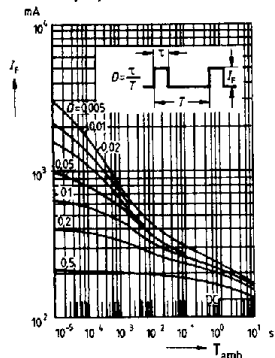
**SFH750V**

Radiant intensity  
 $I_{e,rel} = f(I_F) (\tau = 5 \mu s, T = 5 ms)$



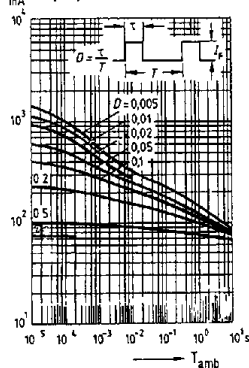
**SFH450V**

Permissible pulse load  
 $I_F = f(\tau), T_{amb} = 25^\circ C$   
Duty Cycle D = Parameter



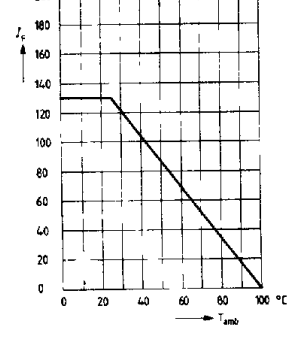
**SFH750V**

Permissible pulse load  
 $I_F = f(\tau), T_{amb} = 25^\circ C$   
Duty Cycle D = Parameter



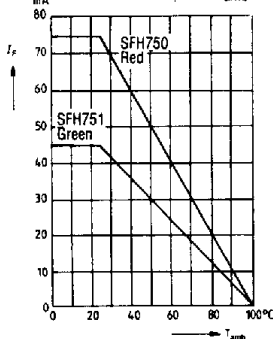
**SFH450V/451V**

Maximum permissible forward current  $I_F = f(T_{amb})$

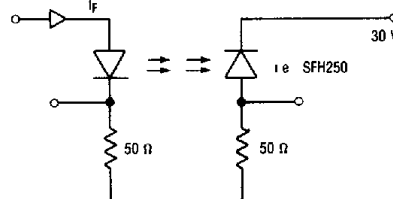


**SFH750V**

Maximum permissible forward current  $I_F = f(T_{amb})$



**SFH450V/451V/750V**  
Test Circuit for Switching Times



Fiber Optic Devices