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SIEMENS

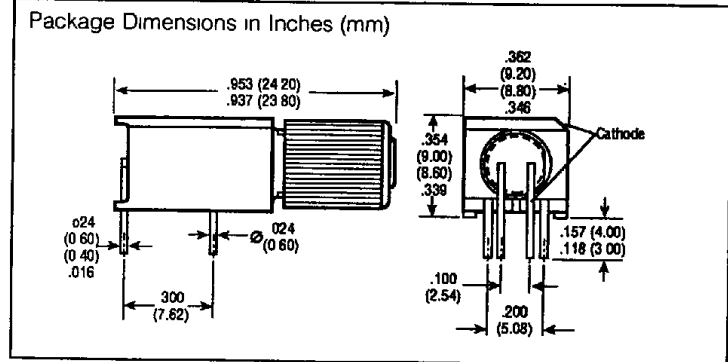
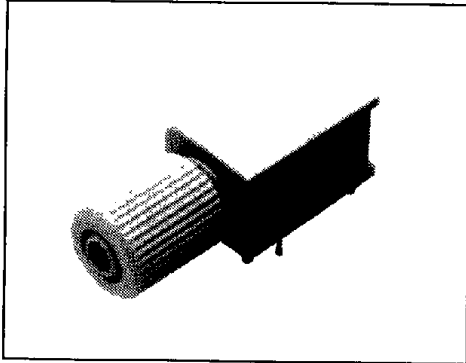
SFH450V/451V/452V

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 _j)	100°C
Soldering Temperature (Distance from solder to package = 2 mm)	
Dip Soldering Time t _s ≤ 5 sec (T _s)	260°C
Reverse Voltage (V _R)	5 V

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

Electrical Characteristics (T_{amb} = 25°C)

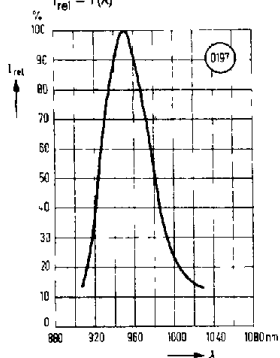
	SFH450V	SFH451V	SFH452V	SFH750V	SFH752V	
Wavelength	λ	950	830	770	660	665 nm
Spectral Bandwidth	Δλ	55	80	80	35	35 nm
Switching Times						
t _{ON} (10–90%)	t _r	1	0.1	0.05	0.12	0.07 μsec
t _{OFF} (90–10%)	t _f	1	0.1	0.05	0.05	0.01 μsec
Capacitance	C ₀	40	40	40	40	40 pF
Forward Voltage	V _F	1.3 (≤1.5)	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 _F = 10 mA)	P _{IN}	90	40	40	5	40 μW

For application information see Appnotes 40, 41, 42, 43

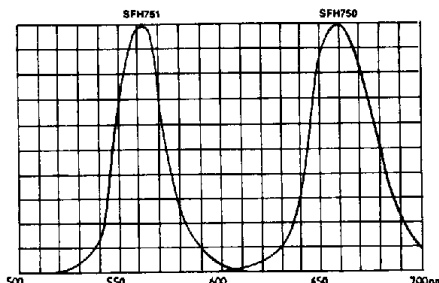
See SFH450/451/750/751 for components without plastic housing.

T-41-07

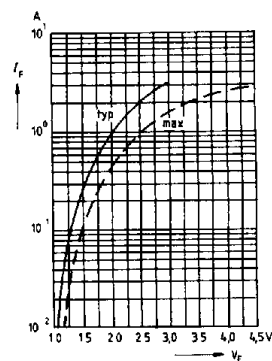
SFH450V
Relative spectral emission
 $I_{rel} = f(\lambda)$



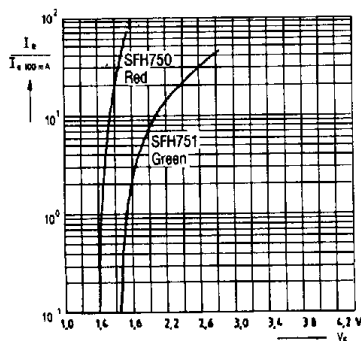
SFH750V
Relative spectral emission
 $I_{rel} = f(\lambda)$



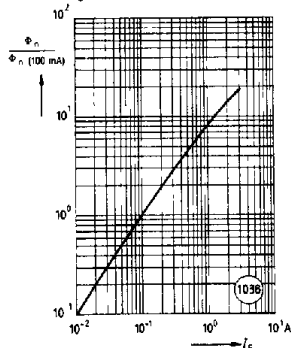
SFH450V
Forward current $I_F = f(V_F)$



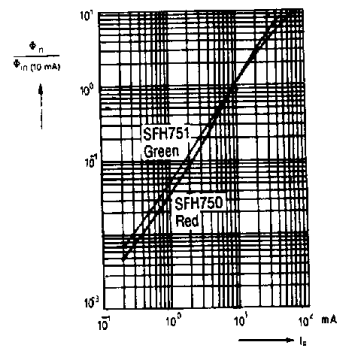
SFH750V
Forward current $I_F = f(V_F)$



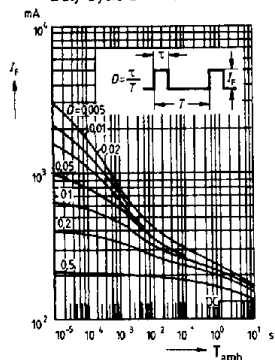
SFH450V
Radiant intensity
 $I_{a,rel} = f(I_F) (\tau = 5 \mu s, T = 5 ms)$



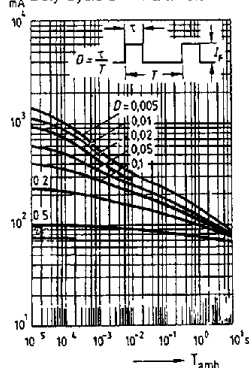
SFH750V
Radiant intensity
 $I_{a,rel} = f(I_F) (\tau = 5 \mu s, T = 5 ms)$



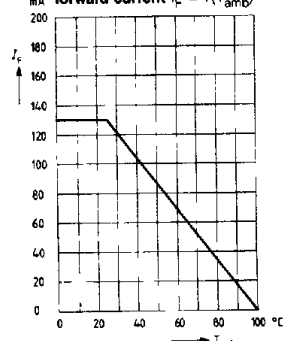
SFH450V
Permissible pulse load
 $I_F = f(t)$, $T_{amb} = 25^\circ C$
Duty Cycle $D = \text{Parameter}$



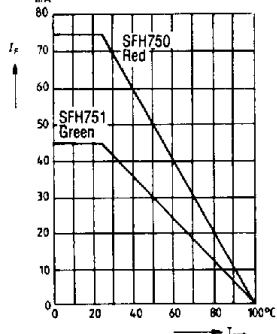
SFH750V
Permissible pulse load
 $I_F = f(t)$, $T_{amb} = 25^\circ C$
Duty Cycle $D = \text{Parameter}$



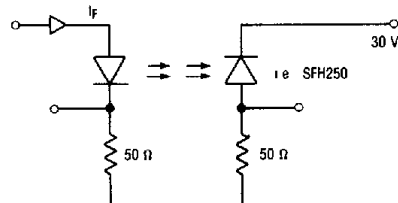
SFH450V/451V
Maximum permissible
forward current $I_F = f(T_{amb})$



SFH750V
Maximum permissible
forward current $I_F = f(T_{amb})$



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



Fiber Optic
Devices