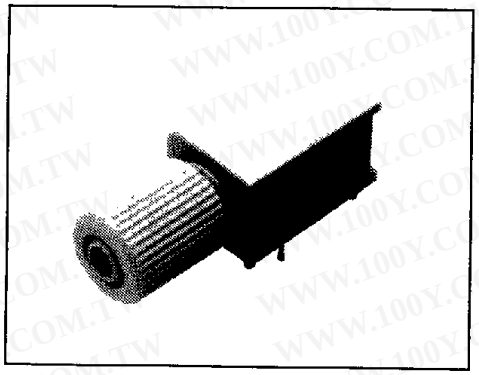
SIEMENS

SFH450V/451V/452V
SFH750V/752V

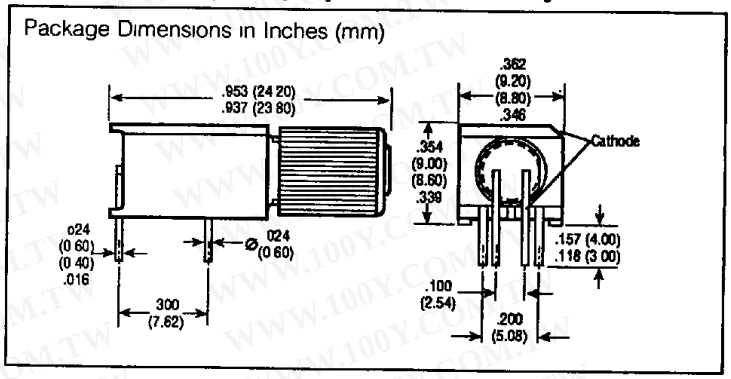
PLASTIC FIBER OPTIC TRANSMITTER DIODE

T-41-07

Preliminary Data Sheet



Package Dimensions in Inches (mm)



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 Temperture (Distance from solder to package = 2 mm)	
Dip Soldering Time $t \leq 5$ 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 ($t \leq 10\ \mu s$, $D = 0$)	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 ($T_{amb} = 25°C$)

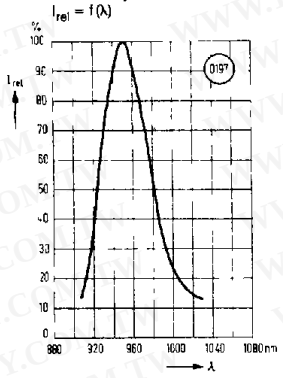
		SFH450V	SFH451V	SFH452V	SFH750V	SFH752V	
Wavelength	λ	950	830	770	660	665	nm
Spectral Bandwidth	$\Delta\lambda$	55	80	80	35	35	nm
Switching Times							
t_{ON} (10–90%)	t_r	1	0.1	0.05	0.12	0.07	µsec
t_{OFF} (90–10%)	t_f	1	0.1	0.05	0.05	0.01	µsec
Capacitance	C_0	40	40	40	40	40	pF
Forward Voltage $I_F = 100$ mA	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

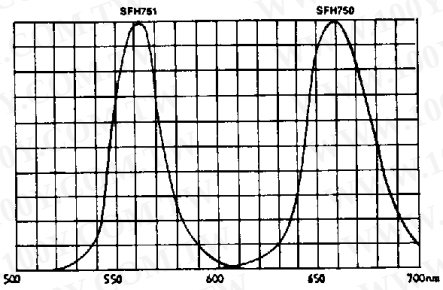
See SFH450/451/750/751 for components without plastic housing.

T-41-07

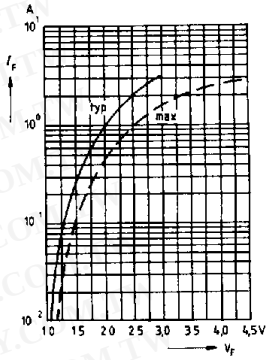
SFH450V
Relative spectral emission
$I_{rel} = f(\lambda)$



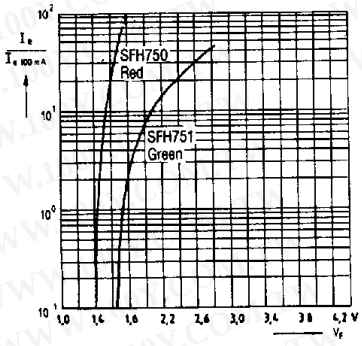
SFH750V
Relative spectral emission
$I_{rel} = f(\lambda)$



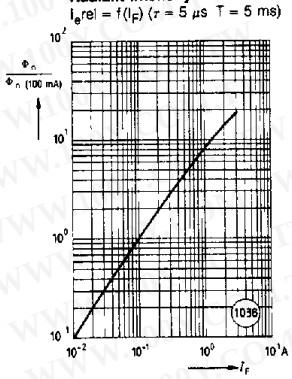
SFH450V
Forward current $I_F = f(V_F)$



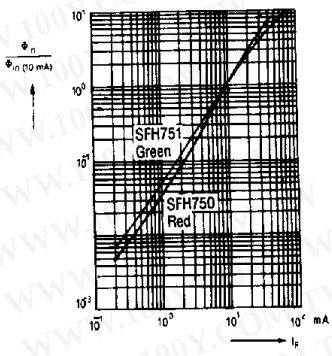
SFH750V
Forward current $I_F = f(V_F)$



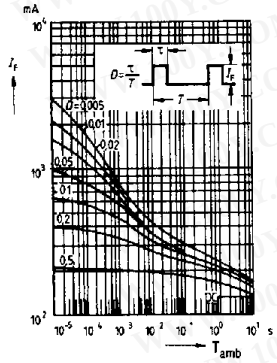
SFH450V
Radiant intensity
$I_e rel = f(I_F)$ (τ = 5 µs T = 5 ms)



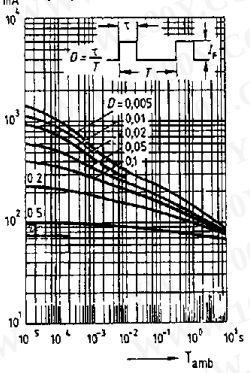
SFH750V
Radiant intensity
$I_e rel = f(I_F)$ (τ = 5 µs, T = 5 ms)



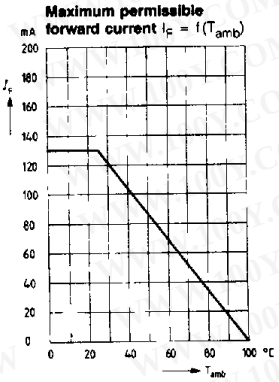
SFH450V
Permissible pulse load
$I_F = f(\tau)$, T_{amb} = 25°C
Duty Cycle D = Parameter



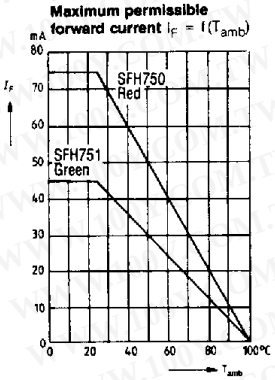
SFH750V
Permissible pulse load
$I_F = f(\tau)$, T_{amb} = 25°C
Duty Cycle D = Parameter



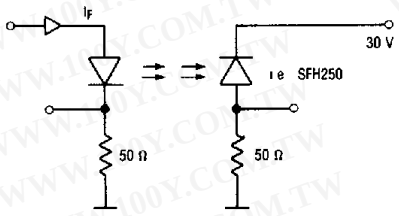
SFH450V/451V
Maximum permissible forward current $I_F = f(T_{amb})$



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



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



Fiber Optic Devices