

Part No. 08IFD95

Plastic Fiber Optic Photologic Detectors

IF-D95



**DESCRIPTION**

The IF-D95T and IF-D95OC are high-sensitivity photologic detectors housed in “connector-less” style plastic fiber optic packages. The detector contains an IC with a photodiode, linear amplifier, and Schmitt trigger logic circuit. The IF-D95T features a TTL/CMOS compatible totem-pole output, while the IF-D95OC has an open-collector output. The devices can drive up to 5 TTL loads over supply voltages ranging from 4.5 to 16 Volts. Optical response extends from 400 to 1100 nm, making them compatible with a wide range of visible and near infrared LED and laser diode sources. The detector package features an internal micro-lens and a precision-molded PBT housing to ensure efficient optical coupling with standard 1000 μm core plastic fiber cable.

**APPLICATION HIGHLIGHTS**

The IF-D95T and IF-D95OC are suitable for digital data links at rates up to 125 kbps. A Schmitt trigger improves noise immunity and TTL/CMOS logic compatibility greatly simplifies interfacing with existing digital circuits. The integrated design of the IF-D95 provides a total, cost-effective solution in a variety of digital applications.

**APPLICATIONS**

- ▶ Digital Data Links
- ▶ PC-to-Peripheral Links
- ▶ Process Control
- ▶ Household Appliances
- ▶ Motor Controller Triggering
- ▶ Electronic Games
- ▶ Medical Instruments
- ▶ Automotive Electronics
- ▶ Robotics Communications
- ▶ EMC/EMI Signal Isolation

**FEATURES**

- ◆ Integrated Photodetector, Amplifier and Schmitt Trigger
- ◆ Mates with Standard 1000 μm Core Jacketed Plastic Fiber Optic Cable
- ◆ No Optical Design Required
- ◆ Inexpensive But Rugged Plastic Connector Housing
- ◆ Internal Micro-Lens for Efficient Optical Coupling
- ◆ Connector-Less Fiber Termination
- ◆ Light-Tight Housing Provides Interference-Free Transmission
- ◆ High Optical Sensitivity
- ◆ “Active Low” Output Options Available as Special Order

**MAXIMUM RATINGS**

(T<sub>A</sub> = 25°C)

Operating and Storage Temperature Range (T <sub>OP</sub> , T <sub>STG</sub> )	.....-40° to 85°C
Soldering Temperature (2 mm from case bottom) (T <sub>S</sub> ) t <sub>s</sub> ≤ 5s	.....240°C
Supply Voltage, (V <sub>S</sub> )	.....18 V
Voltage at Output lead (IF-95OC only)	.....35 V
Sinking Current, DC (I <sub>C</sub> )	.....50 mA
Source Current (I <sub>O</sub> ) (IF-95T only)	.....10 mA
Power Dissipation (P <sub>TOT</sub> ) T <sub>A</sub> = 25°C	.....100 mW
De-rate Above 25°C	.....1.33 mW/°C

**CHARACTERISTICS** (T<sub>A</sub> = 25°C)

Parameter	Symbol	Min	Typ	Max	Unit
Peak Sensitivity	λ <sub>PEAK</sub>	-	800	-	nm
Spectral Sensitivity (S=10% of S <sub>MAX</sub> )	Δλ	400	-	1100	nm
Operating Voltage	V <sub>CC</sub>	4.5	-	16	V
Supply Current	I <sub>CC</sub>	-	-	12	mA
Light Required to Trigger V <sub>CC</sub> =5 V, R <sub>L</sub> =1k, λ=660 nm	E <sub>r</sub> (+)	-	1.0 (-30)	-	μW(dBm)
<b>IF-D95T</b>					
High Level Output Voltage (I <sub>OH</sub> = -1.0 μA)	V <sub>OH</sub>	V <sub>CC</sub> -2.1	-	-	V
Low Level Output Voltage (I <sub>OL</sub> = 16 mA)	V <sub>OL</sub>	-	-	0.34	V
Output Rise and Fall Times (f= 10.0 kHz, R <sub>L</sub> = 10 TTL Loads)	t <sub>r</sub> , t <sub>f</sub>	-	-	70	ns
Propagation Delay, Low-High, High-Low (f= 10.0 kHz, R <sub>L</sub> = 10 TTL Loads)	t <sub>PLH</sub> , t <sub>PHL</sub>	-	8.0	-	μs
<b>IF-D95OC</b>					
High Level Output Current (V <sub>OH</sub> =30 V)	I <sub>OH</sub>	100	-	-	μA
Low Level Output Voltage (I <sub>OL</sub> =16 mA)	V <sub>OL</sub>	-	-	0.4	V
Output Rise and Fall Times (f= 10.0 kHz, R <sub>L</sub> =300Ω)	t <sub>r</sub> , t <sub>f</sub>	-	-	100	ns
Propagation Delay, Low-High, High-Low (f= 10.0 kHz, R <sub>L</sub> =300Ω)	t <sub>PLH</sub> , t <sub>PHL</sub>	-	8.0	-	μs

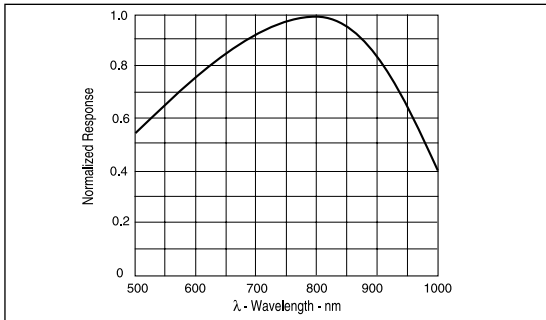


FIGURE 1. Typical detector response versus wavelength.

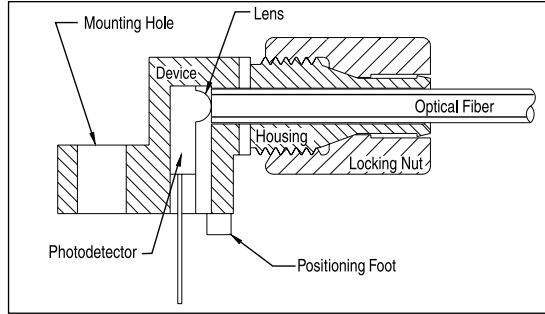


FIGURE 3. Cross-section of fiber optic device.

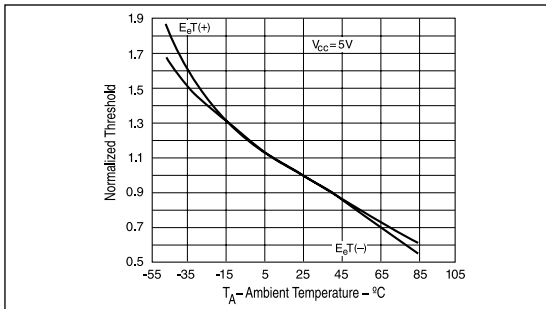


FIGURE 2. Normalized threshold irradiance vs. amb. temp.

**FIBER TERMINATION INSTRUCTIONS**

1. Cut off the ends of the optical fiber with a single-edge razor blade or sharp knife. Try to obtain a precise 90-degree angle (square).
2. Insert the fiber through the locking nut and into the connector until the core tip seats against the internal micro-lens.
3. Screw the connector locking nut down to a snug fit, locking the fiber in place.

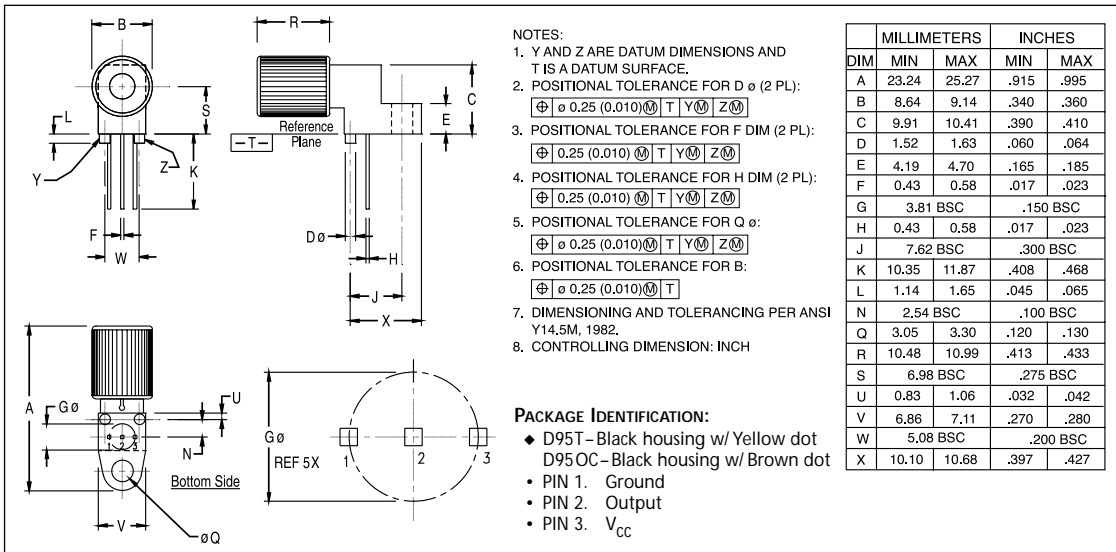


FIGURE 4. Case outline.