

*Part No. 08IFD97*

**Plastic Fiber Optic 50 Mbps Photologic Detector**

**IF-D97**

2/16/04



**DESCRIPTION**

The IF-D97 is a high-speed photologic detector housed in a “connector-less” style plastic fiber optic package. The detector contains an IC with a photodiode, linear amplifier and Schmitt trigger featuring an ACT logic compatible totem pole output. Optical response of the IF-D97 extends from 400 to 1050 nm, making it compatible with a wide range of visible and IR 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  $\mu\text{m}$  core plastic fiber cable.

**APPLICATION HIGHLIGHTS**

The fast transition times of the IF-D97 make it suitable for medium-speed digital data links. Link distances in excess of 75 meters at data rates of 50 Mbps are possible using standard 1000  $\mu\text{m}$  core plastic fiber and an IF-E98 LED. The integrated design of the IF-D97 provides simple, cost-effective implementation in a wide variety of digital applications.

**APPLICATIONS**

- PC-to-Peripheral Data Links
- Motor Controller Triggering
- Local Area Networks
- Medical Instruments
- Automotive Electronics
- Digitized Video
- Electronic Games
- Robotics Communications
- Reduction of Lightning and Voltage Transient Susceptibility

**FEATURES**

- ◆ No Optical Design Required
- ◆ Mates with Standard 1000  $\mu\text{m}$  Core Jacketed Plastic Fiber Cable
- ◆ Internal Micro-Lens for Efficient Coupling
- ◆ Inexpensive Plastic Connector Housing
- ◆ Connector-Less Fiber Termination and Connection
- ◆ Interference-Free Transmission from Light-Tight Housing
- ◆ Totem-Pole Output
- ◆ Totally Integrated Solution
- ◆ *Low Current Stand-by Model Available as Special Order*

**MAXIMUM RATINGS**

( $T_A=25^\circ\text{C}$ )

Operating Temperature Range ( $T_{OP}$ ) .....	$-10^\circ$ to $70^\circ\text{C}$
Storage Temperature Range ( $T_{STG}$ ) .....	$-40^\circ$ to $85^\circ\text{C}$
Soldering Temperature (2 mm from case bottom) ( $T_S$ ) $t \leq 5s$ .....	$240^\circ\text{C}$
Supply Voltage, ( $V_S$ ) .....	$-5$ to $7\text{ V}$
Power Dissipation ( $P_{TOT}$ ) $T_A=25^\circ\text{C}$ .....	$100\text{ mW}$
De-rate Above $25^\circ\text{C}$ .....	$1.7\text{ mW}/^\circ\text{C}$

**CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ )

Parameter	Symbol	Min	Typ	Max	Unit
Peak Sensitivity	$\lambda_{PEAK}$	–	800	–	nm
Spectral Sensitivity ( $S=10\%$ of $S_{MAX}$ )	$\Delta\lambda$	400	–	1050	nm
Operating Voltage	$V_{CC}$	4.75	5	5.25	V
Supply Current	$I_{CC}$	–	–	40	mA
Light Required to Trigger <sup>1</sup> ( $V_{CC}=5\text{ V}$ , $\lambda=660\text{ nm}$ )	$E_r (+)$	17 -17	– –	– –	$\mu\text{W}$ dBm
High Level Output Voltage ( $I_{OH}= -2.0\ \mu\text{A}$ )	$V_{OH}$	2	–	–	V
Low Level Output Voltage ( $I_{OL}= .6\text{ mA}$ )	$V_{OL}$	–	–	1	V
Output Rise and Fall Times ( $f= 10.0\text{ kHz}$ , $R_L= 10\text{ TTL Loads}$ )	$t_r, t_f$	–	–	7	ns
Propagation delay time	$t_p$	–	12	–	ns

**NOTES:**

1. Output is the "L" level (inverted logic) when light is input.

# IF-D97

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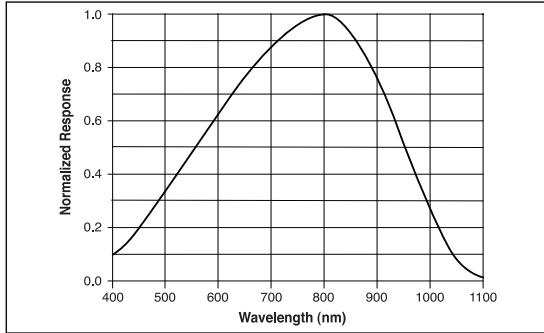


FIGURE 1. Typical detector response versus wavelength.

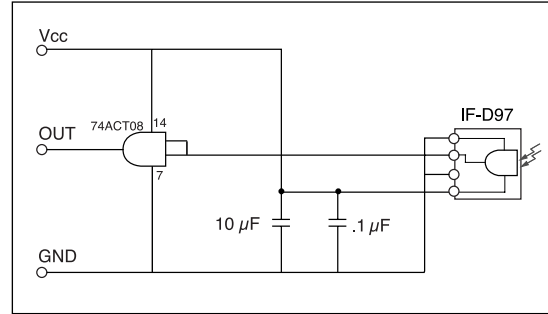


FIGURE 3. Typical interface circuit.



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.

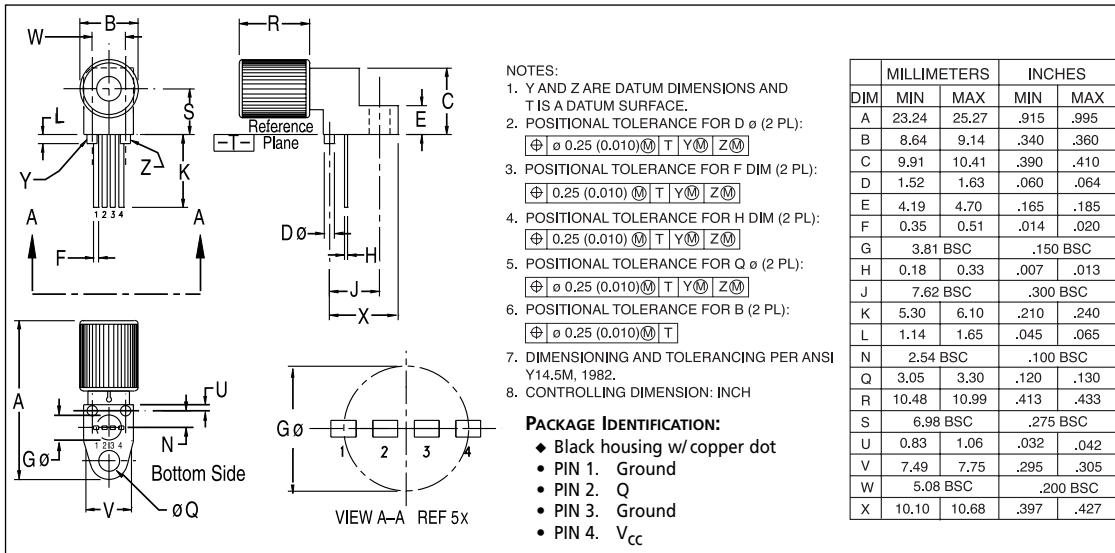


FIGURE 4. Case outline.