

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 μm 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 μm 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 μm 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*
- ◆ RoHS Compliant

MAXIMUM RATINGS

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

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

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

| Parameter | Symbol | Min | Typ | Max | Unit |
|---|------------------|------|-----|------|----------------------|
| Peak Sensitivity | λ_{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 ($V_{CC}=5\text{ V}$, $\lambda=660\text{ nm}$) | $E_r (+)$ | 17 | - | - | μW dBm |
| | | -17 | - | - | |
| High Level Output Voltage ($I_{OH}= -2.0\ \mu\text{A}$) | V_{OH} | 2 | - | - | V |
| Low Level Output Voltage ($I_{OH}= .6\ \text{mA}$) | 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 |

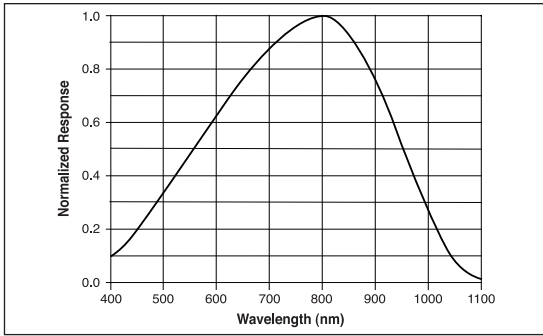


FIGURE 1. Typical detector response versus wavelength.



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

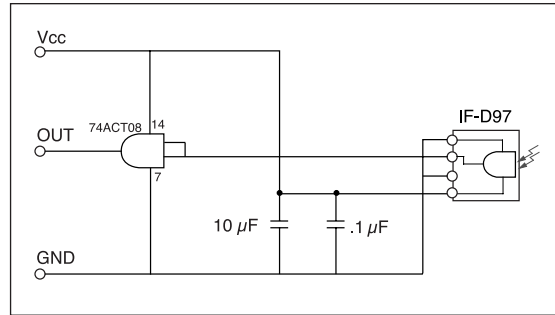


FIGURE 3. Typical interface circuit.

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.

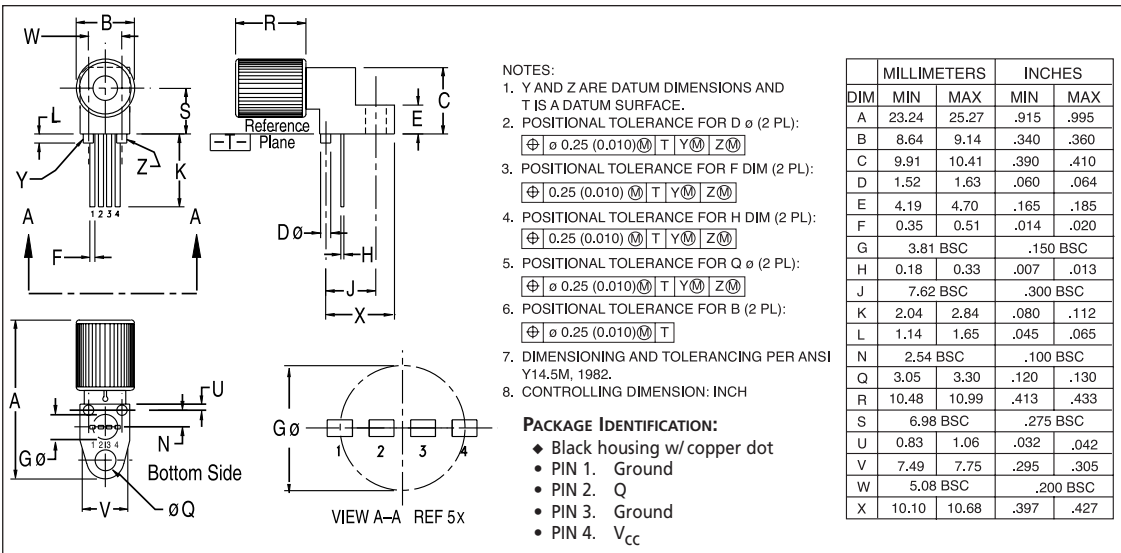


FIGURE 4. Case outline.