

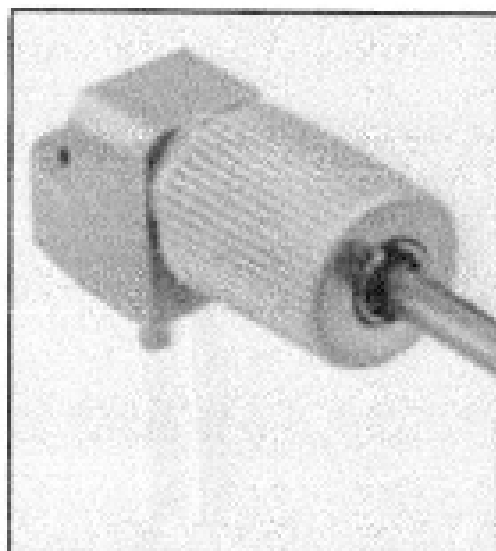
Orange

5.0V to 1.6V with
IF-E91A (blue)

5.2V to 2.2V with
? (silver)

Plastic Fiber Optic Photodiode

IF-D91



DESCRIPTION

The IF-D91 is a high-speed photodiode detector housed in a "connector-less" style plastic fiber optic package. Optical response of the IF-D91 extends from 400 to 1100 nm, making it compatible with a wide range of visible and near-infrared LED and laser diode sources. This includes 650 nm visible red LEDs used for optimum transmission in PMMA plastic optic fiber. The detector package features an internal micro-lens and a precision-molded PBT housing to ensure efficient optical coupling with standard 1000 μ m core plastic fiber cable.

APPLICATION HIGHLIGHTS

The fast response times of the IF-D91 make it suitable for high-speed digital data links. When used with an appropriate LED or laser diode source the IF-D91 is capable of 100 Mbps data rates. The IF-D91 also can be used in analog video links with bandwidths up to 70 MHz. The integrated design of the IF-D91 provides simple, cost-effective implementation in a variety of analog and digital applications.

APPLICATIONS

- ▶ High-Speed Digital Data Links
- ▶ Local Area Networks
- ▶ Motor Controller Triggering
- ▶ Video Links
- ▶ Medical Instruments
- ▶ Automotive Electronics
- ▶ Robotics Communications
- ▶ EMC/EMI Signal Isolation
- ▶ Fiber Optic Modems

FEATURES

- ◆ Fast Rise and Fall Times
- ◆ Mates with Standard 1000 μ m Core Jacketed Plastic Fiber Optic Cable
- ◆ No Optical Design Required
- ◆ Inexpensive Plastic Connector Housing
- ◆ Internal Micro-Lens for Efficient Optical Coupling
- ◆ Connector-Less Fiber Termination
- ◆ Light-Tight Housing provides Interference Free Transmission

MAXIMUM RATINGS

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

Operating and Storage

Temperature Range

(T_{OP} , T_{STG}) -40° to 85°C

Junction Temperature (T_J) 85°C

Soldering Temperature

(2 mm from case bottom)

(T_S) $t \leq 5$ s 240°C

Power Dissipation

(P_{TOT}) $T_A = 25^\circ\text{C}$ 100 mW

De-rate Above 25°C 1.33 mW/ $^\circ\text{C}$

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

Parameter	Symbol	Min	Typ	Max	Unit
Wavelength for Maximum Photosensitivity	λ_{PEAK}	-	880	-	nm
Spectral Bandwidth ($S = 10\%$ of S_{MAX})	$\Delta\lambda$	400	-	1100	nm
Rise and Fall Times (10% to 90% and 90% to 10%) ($R_L = 50 \Omega$, $V_R = 20$ V, $\lambda = 850$ nm)	t_r , t_f	-	5	-	ns
Total Capacitance ($V_R = 20$ V, $E_C = 0$, $f = 1.0$ MHz)	C_T	-	4	-	μF
Responsivity min. @ 880 nm	R	-	.4	-	$\mu\text{A}/\mu\text{W}$
@ 632 nm		-	.2	-	$\mu\text{A}/\mu\text{W}$
Reverse Dark Current ($V_R = 30$ volts, $E_C = 0$)	I_D	-	-	60	nA
Reverse Breakdown Voltage	V_{RBR}	60	-	-	V
Forward Voltage	V_F	-	1.2	-	V

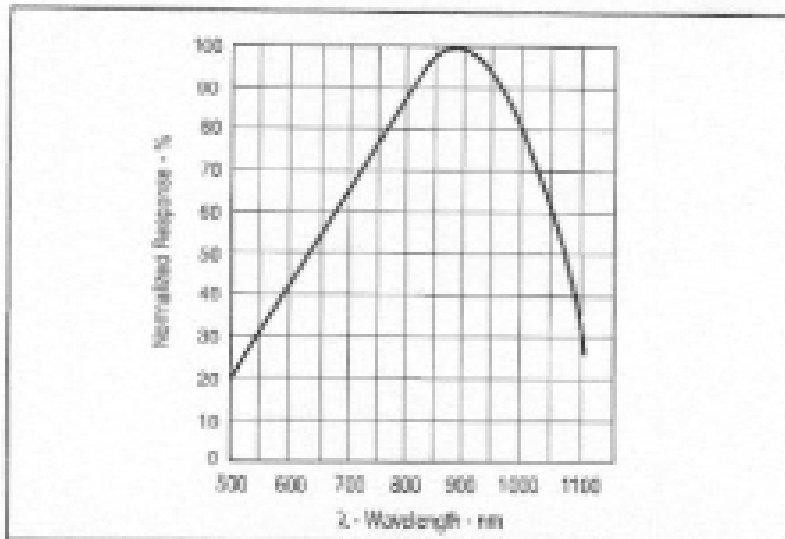


FIGURE 1. Typical detector response versus wavelength.

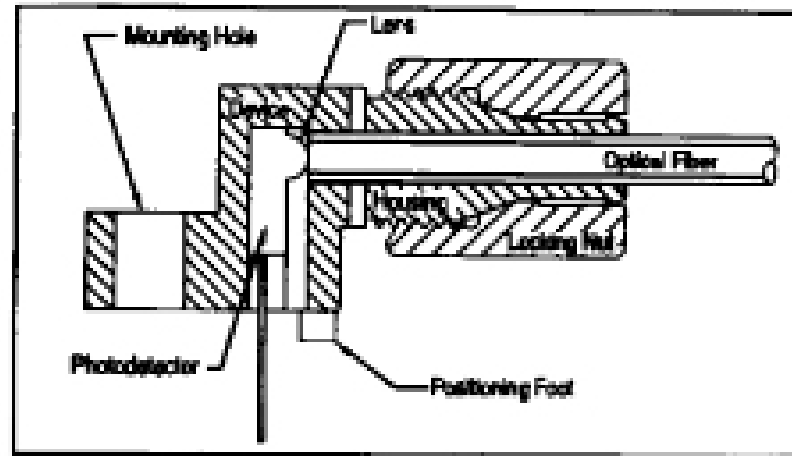


FIGURE 3. Cross-section of fiber optic device.

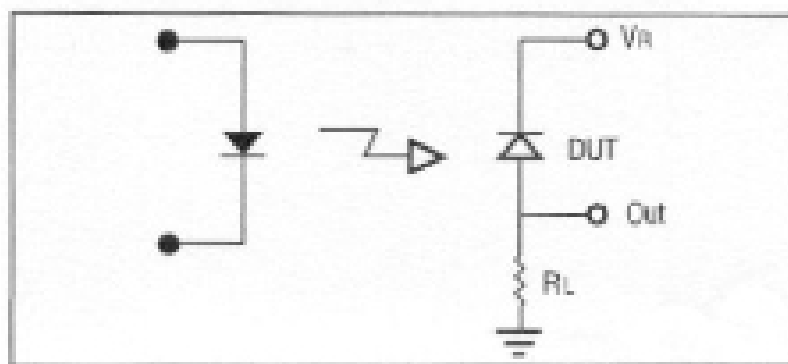


FIGURE 2. Circuit diagram for measuring rise and fall times.

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.

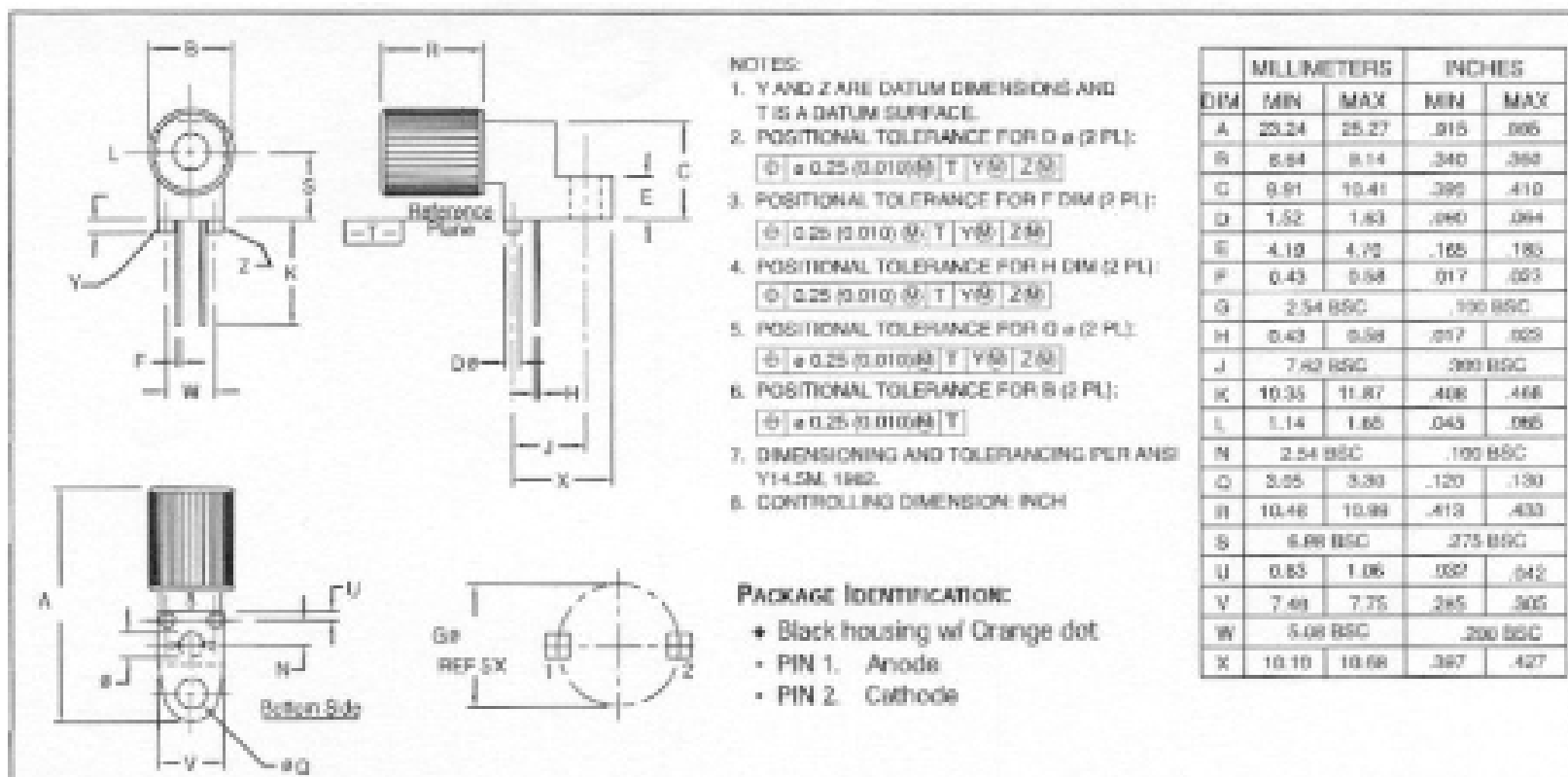


FIGURE 4. Case outline.