

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 450 to 1100 nm, making it compatible with a wide range of visible and nearinfrared 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
- ◆ RoHS Compliant

MAXIMUM RATINGS

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

Operating Temperature Range
(T_{OP}).....-30°to 80°C

Storage Temperature Range
(T_{STG}).....-40°to 80°C

Junction Temperature (T_J).....80°C

Soldering Temperature
(2mm from case bottom)
(T_S) $t \leq 5$ s.....260°C

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

De-rate Above 25°C.....1.8 mW/°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
Wavelength for Maximum Photosensitivity	λ_{PEAK}	-	920	-	nm
Spectral Bandwidth ($S=10\%$ of S_{MAX})	$\Delta\lambda$	450	-	1050	nm
Rise and Fall Times (10% to 90% and 90% to 10%) ($R_L=50\ \Omega$, $V_R=20\text{V}$, $\lambda=850\text{ nm}$)	t_r, t_f	-	5	-	ns
Total Capacitance ($V_R=20\text{ V}$, $E_E=0$, $f=1.0\text{MHz}$)	C_T	-	4	-	pF
Responsivity min. @ 880 nm @ 632 nm	R	- -	0.5 0.4	- -	$\mu\text{A}/\mu\text{W}$ $\mu\text{A}/\mu\text{W}$
Reverse Dark Current ($V_R=30\text{ volts}$, $E_E=0$)	I_D	-	-	10	nA
Reverse Breakdown Voltage	$V_{(BR)R}$	40	-	-	V
Forward Voltage	V_f	-	0.7	-	V

CAUTION: The IF D91 is ESD sensitive. To minimize risk of damage observe appropriate precautions during handling and processing.

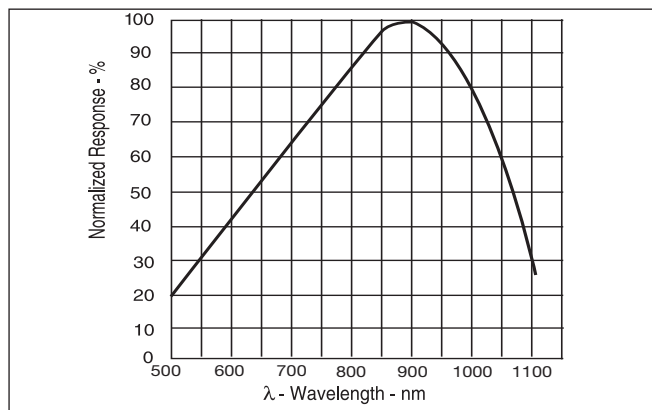


FIGURE 1. Typical detector response versus wavelength.

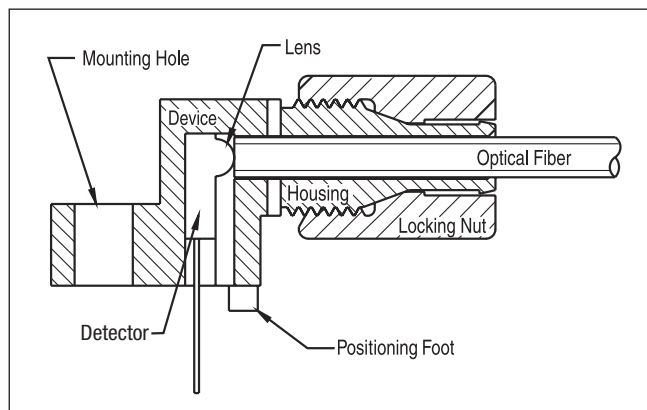


FIGURE 3. Cross-section of fiber optic device.

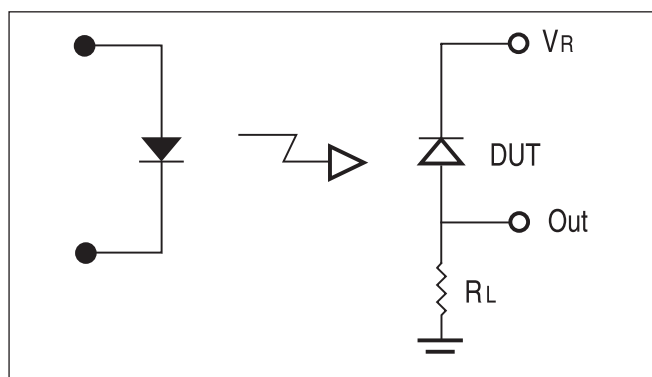


FIGURE 2. Circuit diagram for measuring rise and fall times.

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.

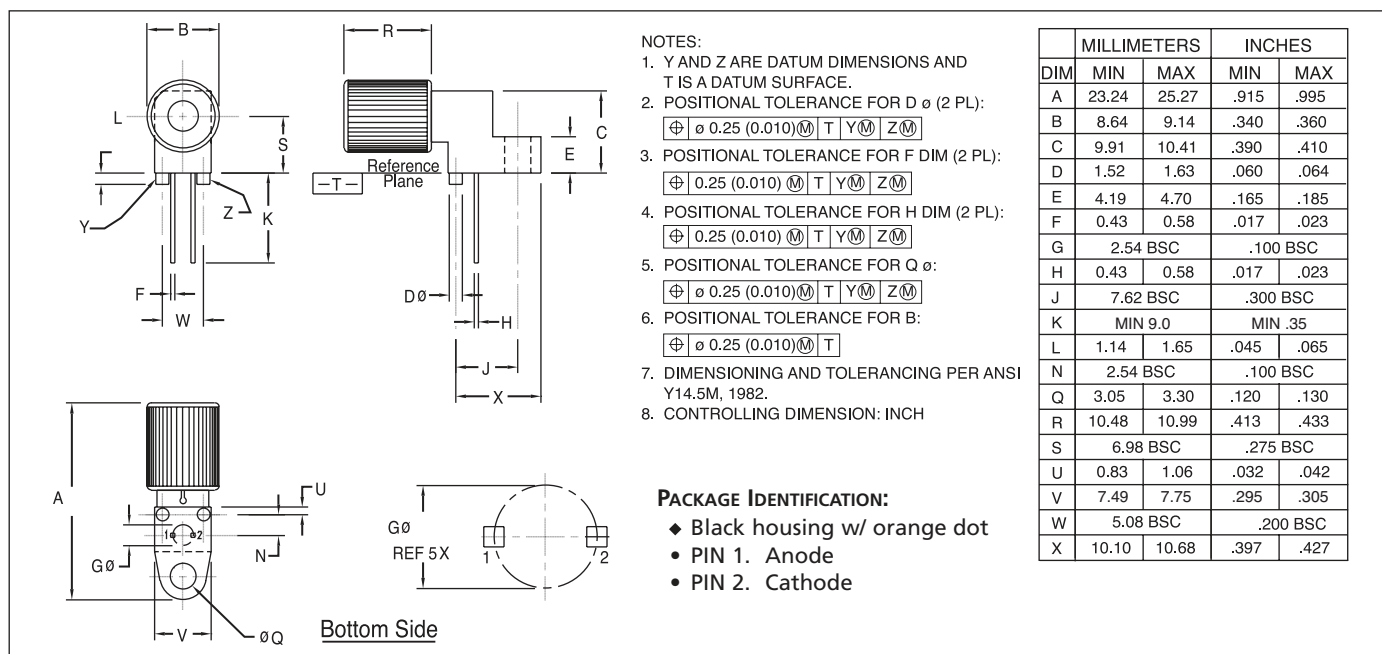


FIGURE 4. Case outline. Specifications are believed to be accurate but are subject to change. Industrial Fiber Optics assumes no responsibility for the consequences of using the information provided beyond replacement warranty for products not meeting stated specifications. Industrial Fiber Optics products are not authorized for use in life support applications without written approval from the President of Industrial Fiber Optics Corporation.

CAUTION:

- To avoid degraded device life due to package stress, do not bend or form leads outside the orientation shown on drawing.
- Ensure that solder flux does not migrate into the device and block the optical path, degrading the performance.
- If washing the device, liquid may become trapped in the part cavity. Ensure that all potentially corrosive materials are flushed out of the device.