

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 optical fiber. The detector package features an internal micro-lens and a precision-molded PBT housing to ensure efficient optical coupling into standard 1000 μm 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 μm 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/°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%) ($R_L=50 \Omega$, $V_R=20\text{V}$, $\lambda=850\text{nm}$)	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	R	-	.4	-	$\mu\text{A}/\mu\text{W}$
@ 632 nm		-	.2	-	$\mu\text{A}/\mu\text{W}$
Reverse Dark Current ($V_R=30\text{volts}$, $E_E=0$)	I_D	-	-	60	nA
Reverse Breakdown Voltage	$V_{(BR)R}$	60	-	-	V
Forward Voltage	V_f	-	1.2	-	V

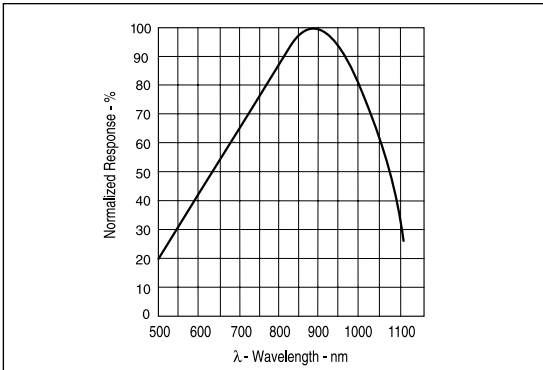


FIGURE 1. Typical detector response versus wavelength.

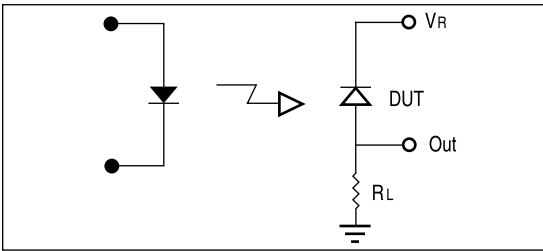


FIGURE 2. Circuit diagram for measuring rise and fall times.

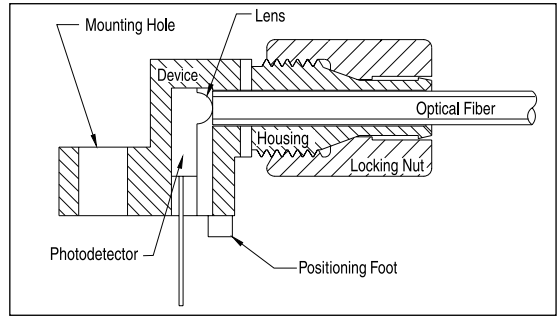
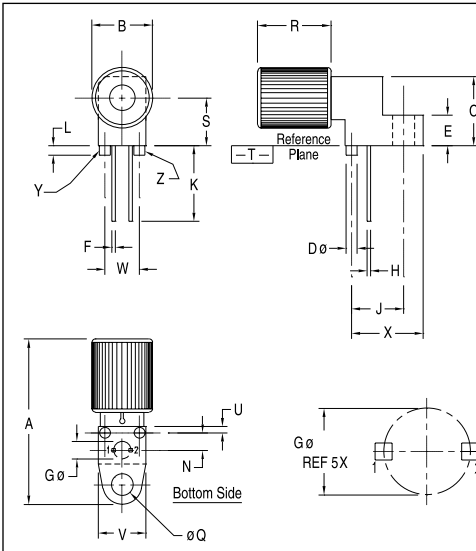


FIGURE 3. Cross-section of fiber optic device.

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.



- Notes:
1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
 2. POSITIONAL TOLERANCE FOR D ϕ (2 PL):
 $\phi 0.25(0.010) \text{ (M) | T | Y } \text{ (M) | Z } \text{ (M)}$
 3. POSITIONAL TOLERANCE FOR F DIM (2 PL):
 $\phi 0.25(0.010) \text{ (M) | T | Y } \text{ (M) | Z } \text{ (M)}$
 4. POSITIONAL TOLERANCE FOR H DIM (2 PL):
 $\phi 0.25(0.010) \text{ (M) | T | Y } \text{ (M) | Z } \text{ (M)}$
 5. POSITIONAL TOLERANCE FOR Q ϕ :
 $\phi 0.25(0.010) \text{ (M) | T | Y } \text{ (M) | Z } \text{ (M)}$
 6. POSITIONAL TOLERANCE FOR B:
 $\phi 0.25(0.010) \text{ (M) | T}$
 7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 8. CONTROLLING DIMENSION: INCH

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	23.24	25.27	.915	.995
B	8.64	9.14	.340	.360
C	9.91	10.41	.390	.410
D	1.52	1.63	.060	.064
E	4.19	4.70	.165	.185
F	0.43	0.58	.017	.023
G	2.54	BSC	.100	BSC
H	0.43	0.58	.017	.023
J	7.62	BSC	.300	BSC
K	10.35	11.87	.408	.468
L	1.14	1.65	.045	.065
N	2.54	BSC	.100	BSC
Q	.305	3.30	.120	.130
R	10.48	10.99	.413	.433
S	6.98	BSC	.275	BSC
U	0.83	1.06	.032	.042
V	6.86	7.11	.270	.280
W	5.08	BSC	.200	BSC
X	10.10	10.68	.397	.427

PACKAGE IDENTIFICATION:

- ◆ Black housing w/ Orange dot
- PIN 1. Anode
- PIN 2. Cathode

FIGURE 4. Case outline.