

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 with 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
- ◆ RoHS Compliant

MAXIMUM RATINGS

(T_A=25°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
(2 mm from case bottom)
(T_S) t ≤ 5 s260°C

Power Dissipation
(P_{TOT}) T_A=25°C100 mW

De-rate Above 25°C1.8 mW/°C

CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Min	Typ	Max	Unit
Wavelength for Maximum Photosensitivity	λ _{PEAK}	-	920	-	nm
Spectral Bandwidth (S=10% of S _{MAX})	Δλ	450	-	1050	nm
Rise and Fall Times (10% to 90% and 90% to 10%) (R _L =50 Ω, V _R =20 V, λ=850 nm)	t _r , t _f	-	5	-	ns
Total Capacitance (V _R =20 V, E _F =0, f=1.0MHz)	C _T	-	4	-	pF
Responsivity min. @ 880 nm	R	-	0.5	-	μA/μW
@ 632 nm		-	0.4	-	μA/μW
Reverse Dark Current (V _R =10 volts, E _F =0)	I _D	-	-	10	nA
Reverse Breakdown Voltage	V _{(BR)R}	40	-	-	V
Forward Voltage	V _f	-	0.7	-	V

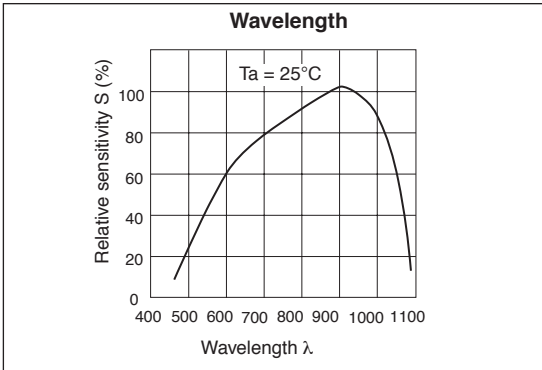


FIGURE 1. Typical detector response versus wavelength.

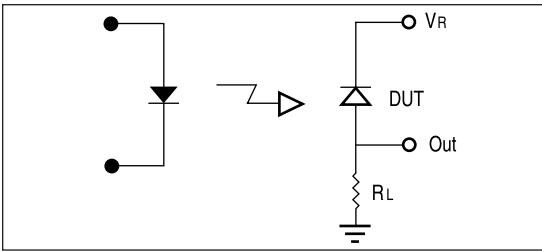


FIGURE 2. Circuit diagram for measuring rise and fall times.

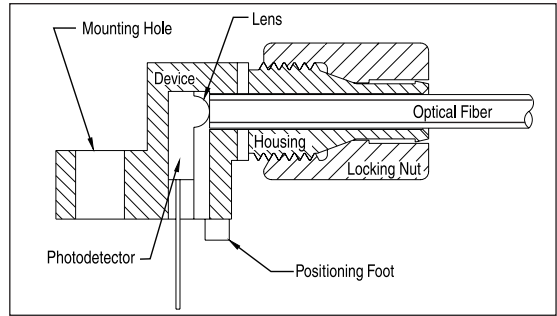
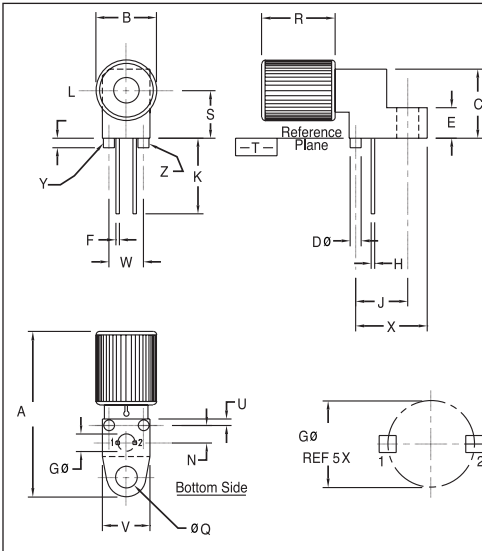


FIGURE 3. Cross-section of fiber optic device.

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

PACKAGE IDENTIFICATION:

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

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	0.35	0.50	.014	.020
J	7.62 BSC		.300 BSC	
K	7.00	11.87	.276	.468
L	1.14	1.65	.045	.065
N	2.54 BSC		.100 BSC	
Q	3.05	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	7.49	7.75	.295	.305
W	5.08 BSC		.200 BSC	
X	10.10	10.68	.397	.427

FIGURE 4. Case outline.