

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

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 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.

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

 $(T_{\Delta} = 25^{\circ}C)$

Operating and Storage
Temperature Range
(T_{OP},T_{STG}).....-40° to 85°C
Junction Temperature (T_I).....85°C

Soldering Temperature (2 mm from case bottom) (Ts) $t \le 5s$240°C

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

De-rate Above 25°C1.33 mW/°C

CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Min	Тур	Max	Unit
Wavelength for Maximum Photosensitivity	$\lambda_{ ext{PEAK}}$	_	880	-	nm
Spectral Bandwidth (S=10% of S_{MAX})	Δλ	400	-	1100	nm
Rise and Fall Times (10% to 90% and 90% to 10%) (RL=50 Ω , VR=20V, λ =850 nm)	t _r , t _f	_	5	_	ns
Total Capacitance (V_R =20 V, E_E =0, f=1.0MHz)	C_{T}	_	4	_	pF
Responsivity min. @ 880 nm @ 632 nm	R	-	.4 .2	-	μΑ/μW μΑ/μW
Reverse Dark Current (V_R =30 volts, E_E =0)	I_{D}	-	-	60	nA
Reverse Breakdown Voltage	V _(BR) R	60	-	-	V
Forward Voltage	V _f	-	1.2	-	V

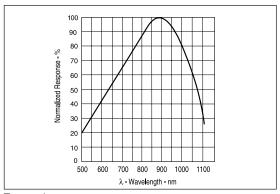


FIGURE 1. Typical detector response versus wavelength.

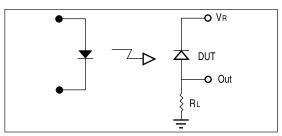


FIGURE 2. Circuit diagram for measuring rise and fall times.

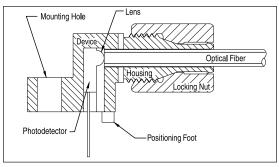
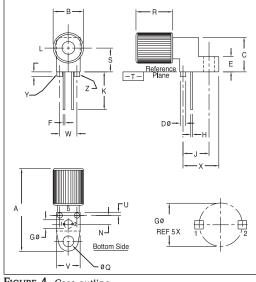


FIGURE 3. Cross-section of fiber optic device.

FIBER TERMINATION INSTRUCTIONS

- 1. Cut off the ends of the optical fiber with a singleedge 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 ø (2 PL): ⊕ ø 0.25 (0.010)M T YM ZM
- 3. POSITIONAL TOLERANCE FOR F DIM (2 PL): ⊕ 0.25 (0.010) M T YM ZM
- 4. POSITIONAL TOLERANCE FOR H DIM (2 PL): ⊕ 0.25 (0.010) M T YM ZM
- 5. POSITIONAL TOLERANCE FOR Q Ø (2 PL): ⊕ ø 0.25 (0.010)M T YM ZM
- 6. POSITIONAL TOLERANCE FOR B (2 PL): ⊕ ø 0.25 (0.010)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

	MILLIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	23.24	25.27	.915	.995	
В	8.64	9.14	.340	.360	
С	9.91	10.41	.390	.410	
D	1.52	1.63	.060	.064	
Е	4.19	4.70	.165	.185	
F	0.43	0.58	.017	.023	
G	2.54 BSC		.100 BSC		
Η	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		
α	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	
٧	7.49	7.75	.295	.305	
W	5.08 BSC		.200 BSC		
Х	10.10	10.68	.397	.427	

FIGURE 4. Case outline.