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Part No. 08MFOD71

Plastic Fiber Optic Photodiode — IF-D91

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

Maximum Ratings

(T_A = 25°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 ≤ 5 s .....240°C

Power Dissipation (P_{TOT}) T_A = 25°C .....100 mW

De-rate Above 25°C .....1.33 mW/°C

Characteristics (T_A=25°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 Ω, V_R=20 V, 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	– –	µA/µW µA/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

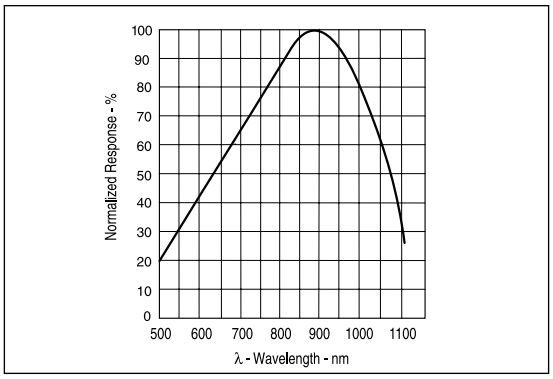


FIGURE 1. Typical detector response versus wavelength.

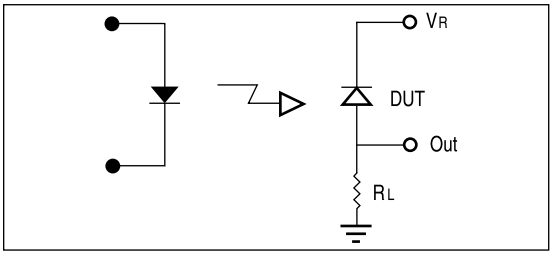


FIGURE 2. Circuit diagram for measuring rise and fall times.

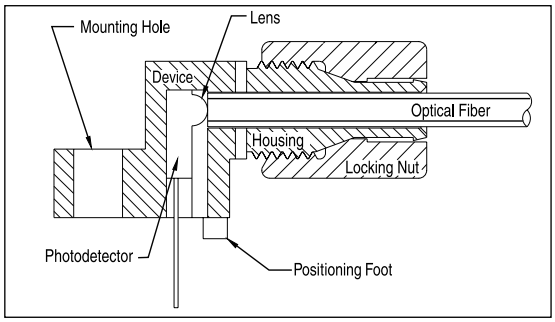
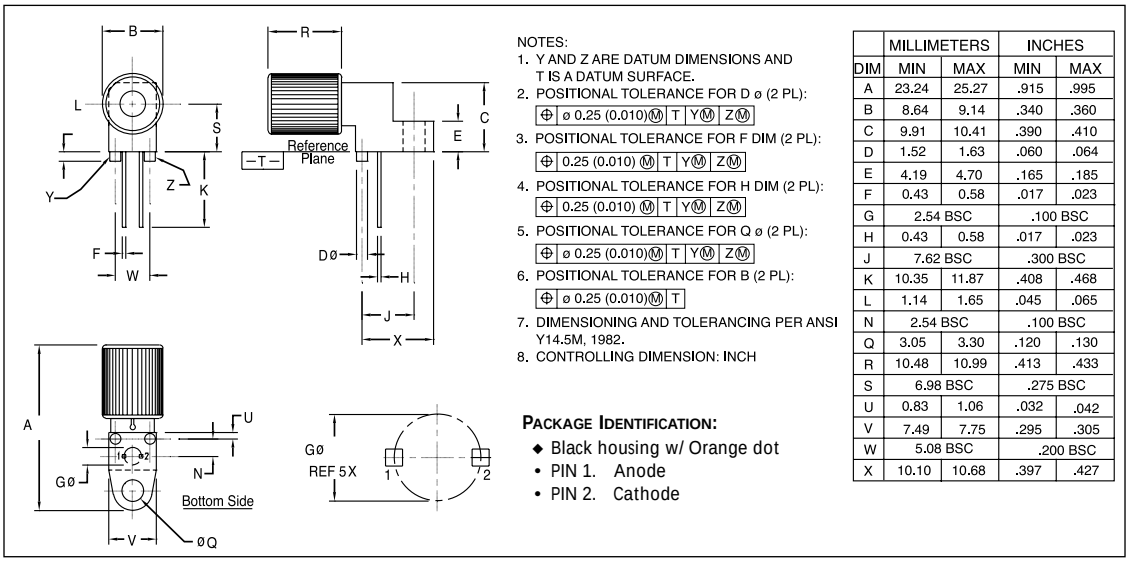


FIGURE 3. Cross-section of fiber optic device.

FIBER TERMINATION INSTRUCTIONS

1. Cut off the ends of the optical fiber with a 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 ø (2 PL): ⌖ | ø 0.25 (0.010)Ⓜ | T | YⓂ | ZⓂ
3. POSITIONAL TOLERANCE FOR F DIM (2 PL): ⌖ | 0.25 (0.010) Ⓜ | T | YⓂ | ZⓂ
4. POSITIONAL TOLERANCE FOR H DIM (2 PL): ⌖ | 0.25 (0.010) Ⓜ | T | YⓂ | ZⓂ
5. POSITIONAL TOLERANCE FOR Q ø (2 PL): ⌖ | ø 0.25 (0.010)Ⓜ | T | YⓂ | ZⓂ
6. POSITIONAL TOLERANCE FOR B (2 PL): ⌖ | ø 0.25 (0.010)Ⓜ | 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
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	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.