5/2/06



APPLICATIONS

- ➤ PC-to-Peripheral Data Links
- ➤ Motor Controller Triggering
- ➤ Local Area Networks
- ➤ Medical Instruments
- ➤ Automotive Electronics
- ➤ Digitized Video
- ➤ Electronic Games
- ➤ Robotics Communications
- ➤ Reduction of Lightning and Voltage Transient Susceptibility

DESCRIPTION

The IF-D97 is a high-speed photologic detector housed in a "connector-less" style plastic fiber optic package. The detector contains an IC with a photodiode, linear amplifier and Schmitt trigger featuring an ACT logic compatible totem pole output. Optical response of the IF-D97 extends from 400 to 1050 nm, making it compatible with a wide range of visible and IR LED and laser diode sources. 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 transition times of the IF-D97 make it suitable for medium-speed digital data links. Link distances in excess of 75 meters at data rates of 50 Mbps are possible using standard 1000 μ m core plastic fiber and an IF-E98 LED. The integrated design of the IF-D97 provides simple, cost-effective implementation in a wide variety of digital applications.

FEATURES

- ◆ No Optical Design Required
- ♦ Mates with Standard 1000 µm Core Jacketed Plastic Fiber Cable
- ◆ Internal Micro-Lens for Efficient Coupling
- ◆ Inexpensive Plastic Connector Housing
- ◆ Connector-Less Fiber Termination and Connection
- ◆ Interference-Free Transmission from Light-Tight Housing
- ◆ Totem-Pole Output
- ◆ Totally Integrated Solution
- ◆ Low Current Stand-by Model Available as Special Order
- ◆ RoHS Compliant

MAXIMUM RATINGS

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

* **
Operating Temperature Range $(T_{\mbox{\scriptsize OP}})$ 10° to 70°C
Storage Temperature Range $(T_{\mbox{STG}})$ 40° to $85^{\circ}\mbox{C}$
$ \begin{array}{ll} \mbox{Soldering Temperature} \\ \mbox{(2 mm from case bottom)} \\ \mbox{(T_S) $t{\le}5s$} &240 ^{\circ} \mbox{C} \\ \end{array} $
Supply Voltage, (V $_{S})$ 5 to 7 V
Power Dissipation (PTOT) $T_A=25$ °C100 mW
De-rate Above 25°C1.7 mW/°C

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

Parameter	Symbol	Min	Тур	Max	Unit
Peak Sensitivity	$\lambda_{ ext{PEAK}}$	_	800	-	nm
Spectral Sensitivity (S=10% of S _{MAX})	Δλ	400	-	1050	nm
Operating Voltage	V_{CC}	4.75	5	5.25	V
Supply Current	I _{CC}	-	-	40	mA
Light Required to Trigger (V _{CC} =5 V,	Er (+)	17	-	-	μW
λ=660 nm)		-17	-		dBm
High Level Output Voltage (I_{OH} = -2.0 μ A)	V_{OH}	2	-	-	V
Low Level Output Voltage (I _{OH} = .6 mA)	V_{OL}	-	-	1	V
Output Rise and Fall Times					
(f= 10.0 kHz, R _L = 10 TTL Loads)	t _r , t _f	_	_	7	ns
Propagation delay time	t _p	-	12	-	ns

Plastic Fiber Optic 50 Mbps Photologic Detector

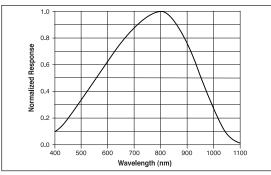


FIGURE 1. Typical detector response versus wavelength.

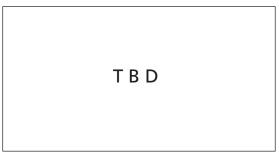


FIGURE 2. Normalized threshold irradiance vs. amb. temp.

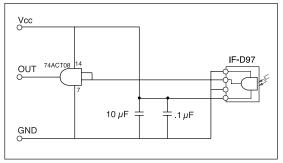
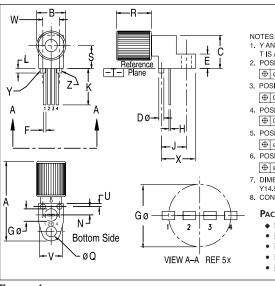


FIGURE 3. Typical interface circuit.

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.



- 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/copper dot
- PIN 1. Ground
- PIN 2. Q
- PIN 3. Ground
- PIN 4. V_{CC}

	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	0.35	0.51	.014	.020	
G	3.81 BSC		.150 BSC		
Н	0.18	0.33	.007	.013	
J	7.62 BSC		.300 BSC		
K	2.04	2.84	.080	.112	
L	1.14	1.65	.045	.065	
Ν	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	
٧	7.49	7.75	.295	.305	
W	5.08 BSC		.200 BSC		
Х	10.10	10.68	.397	.427	

FIGURE 4. Case outline.