

APPLICATIONS

- ➤ Digital Data Links
- ➤ PC-to-Peripheral Links
- ➤ Process Control
- ➤ Digitized Audio
- ➤ Motor Controller Triggering
- ➤ Intra-System Links: Board-to-Board, Rack-to-Rack
- ➤ Medical Instruments
- ➤ Automotive Electronics
- ➤ Robotics Communications
- ➤ EMC/EMI Signal Isolation

DESCRIPTION

The IF-D96 is a medium-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 logic circuit. The IF-D96 features an inverted open-collector Schottky transistor (active low). The device can drive up to 5 TTL loads over output (pull-up) voltages ranging from 4.5 to 18 Volts. Optical response extends from 400 to 1100 nm, making it compatible with a wide range of 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 $1000 \, \mu m$ core plastic fiber cable.

APPLICATION HIGHLIGHTS

The IF-D96 is suitable for digital data links at rates up to 5 Mbps. A Schmitt trigger improves noise immunity and TTL/CMOS logic compatibility greatly simplifies interfacing with existing digital circuits. The integrated design of the IF-D96 provides simple, cost-effective implementation in a variety of digital applications.

FEATURES

- ◆ High Optical Sensitivity
- 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
- ◆ Open Collector Output

MAXIMUM RATINGS

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

Operating and Storage Temperature Range (T_{OP}, T_{STG}) 40° to 85°C
Soldering Temperature (2 mm from case bottom) (T_S) t \leq 5s240°C
Supply Voltage, (V_S) 5 to 7 V
Voltage at Output lead5 to 18 V
Sinking Current, DC (I_C) 25 mA
Open Collector Power Dissipation (P _{TOT}) T _A =25°C40 mW

De-rate Above 25°C1.33 mW/°C

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

Parameter	Symbol	Min	Тур	Max	Unit
Peak Sensitivity	$\lambda_{ ext{PEAK}}$	_	850	_	nm
Spectral Sensitivity (S=10% of S _{MAX})	Δλ	400	-	1100	nm
Operating Voltage	V_{CC}	_	-	5.5	V
High Level Supply Current V _{CC} =5.25 V	I _{CCL}	_	3.5	6.3	mA
Low Level Supply Current V _{CC} =5.25 V	I _{CCL}	_	6.2	10	mA
Light Required to Trigger (V _{CC} =5 V,	Er (+)	_	3.5	_	μW
$R_L=1 \text{ k}\Omega \lambda=660 \text{ nm}$		-	-24.5		dBm
High Level Output Current V _{OH} = 18 V)	I _{OH}	ı	5	250	μΑ
Low Level Output Voltage (I _{OL} = 8 mA)	V _{OL}	-	0.4	.5	V
Propagation Delay, Low-High					
(f= 100.0 kHz, R_L = 5 TTL Loads)	t _{PLH}	_	65	_	ns
Propagation Delay, High-Low					
(f=100.0 kHz, R=5 TTL Loads)	t _{PHL}	-	49	_	ns

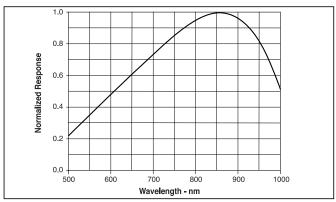


FIGURE 1. Typical detector response versus wavelength.

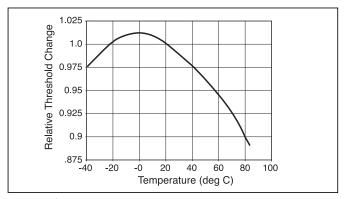


FIGURE 2. Normalized threshold irradiance vs. amb. temp.

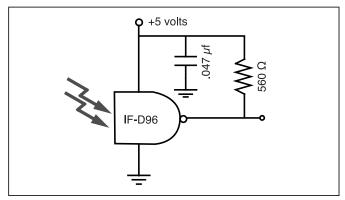
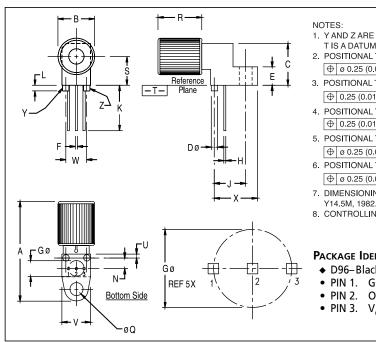


FIGURE 3. Typical operating circuit.

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
- 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:
- ⊕ ø 0.25 (0.010)M T YM ZM 6. POSITIONAL TOLERANCE FOR B:
- ⊕ ø 0.25 (0.010)M T 7. DIMENSIONING AND TOLERANCING PER ANSI
- 8. CONTROLLING DIMENSION: INCH

PACKAGE IDENTIFICATION:

- ◆ D96-Black housing w/ Silver dot
- PIN 1. Ground
- PIN 2. Output
- PIN 3. 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	0.43	0.58	.017	.023	
G	3.81 BSC		.150 BSC		
Н	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	
٧	6.86	7.11	.270	.280	
W	5.08 BSC		.200 BSC		
Х	10.10	10.68	.397	.427	

FIGURE 4. Case outline.