

## DESCRIPTION

The IF-D96F 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, voltage comparator, and Schmitt trigger logic circuit. The IF-D96F features an inverted open-collector Schottky transistor output (active low). The device can drive up to 5 TTL loads over output (pull-up) voltages ranging from 4.5 to 15 Volts. Optimized for visible wavelengths of 600 to 780 nm. The detector package features an internal micro-lens and a precision-molded PBT housing to ensure efficient optical coupling with standard 1000  $\mu\text{m}$  core plastic fiber cable.

## APPLICATION HIGHLIGHTS

The IF-D96F 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. An enhanced internal electrical architecture ensures stable operation and wide dynamic range. The integrated design of the IF-D96F provides simple, cost-effective implementation in a variety of digital applications.

## 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

## FEATURES

- ◆ High Optical Sensitivity
- ◆ Mates with Standard 1000  $\mu\text{m}$  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
- ◆ RoHS Compliant

## MAXIMUM RATINGS

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

Operating and Storage Temperature Range ( $T_{OP}$ , $T_{STG}$ ).....	-40° to 85°C
Soldering Temperature (2 mm from case bottom) ( $T_S$ ) $t \leq 5s$ .....	240°C
Supply Voltage, ( $V_S$ ) .....	.5 to 15 V
Voltage at Output lead .....	.5 to 15 V
Sinking Current, DC ( $I_C$ ) .....	25 mA
Open Collector Power Dissipation ( $P_O$ ) $T_A = 25^\circ\text{C}$ .....	80 mW
De-rate Above 25°C .....	1.33 mW/°C

\* Load = 620 Ohms

## CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ ) $V_{CC} = 4.75$ to $5.25$ V unless otherwise specified

Parameter	Symbol	Min	Typ	Max	Unit
Peak Sensitivity	$\lambda_{PEAK}$	-	700	-	nm
Spectral Sensitivity ( $S=80\%$ of $S_{MAX}$ )	$\Delta\lambda$	600	-	780	nm
Recommended Operating Voltage	$V_{CC}$	4.25	-	15.0	V
High Level Supply Current $V_{CC}=5.25$ V *	$I_{CCH}$	-	3.5	6	mA
Low Level Supply Current $V_{CC}=5.25$ V *	$I_{CCL}$	-	12	14.5	mA
Light Level to Trigger ( $R_L=1$ k $\Omega$ $\lambda=660$ nm)	$E_r (+)$	-	7	-	$\mu\text{W}$ dBm
Light Level to Not Trigger ( $\lambda=660$ nm)	$E_r (-)$	-	0.1	-	$\mu\text{W}$ dBm
High Level Output Current $V_{OH}= 15$ V	$I_{OH}$	-	5	100	$\mu\text{A}$
Low Level Output Voltage ( $I_{OL}= 8$ mA)	$V_{OL}$	-	0.1	0.5	V
Propagation Delay, Low-High ( $f= 100.0$ kHz, $R_L= 5$ TTL Loads)	$t_{PLH}$	-	<250	-	ns
Propagation Delay, High-Low ( $f= 100.0$ kHz, $R= 5$ TTL Loads)	$t_{PHL}$	-	<100	-	ns

# IF-D96F

# Plastic Fiber Optic Photologic Detector

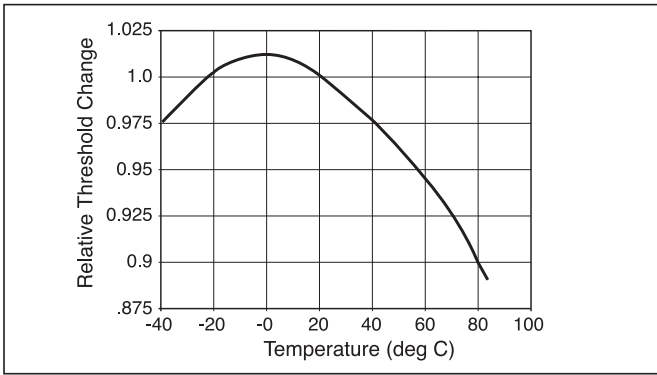


FIGURE 1. Normalized threshold irradiance vs. amb. temp.

## 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.

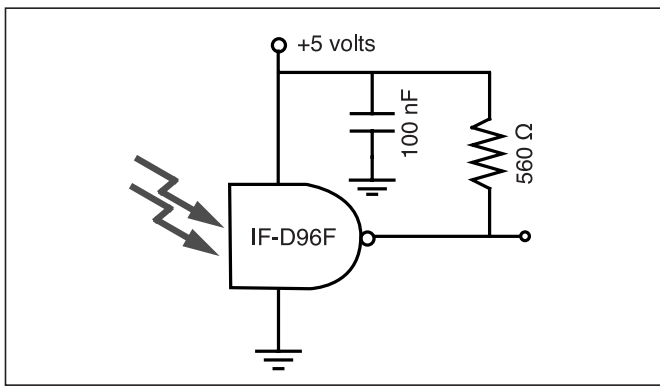


FIGURE 2. Typical operating circuit.

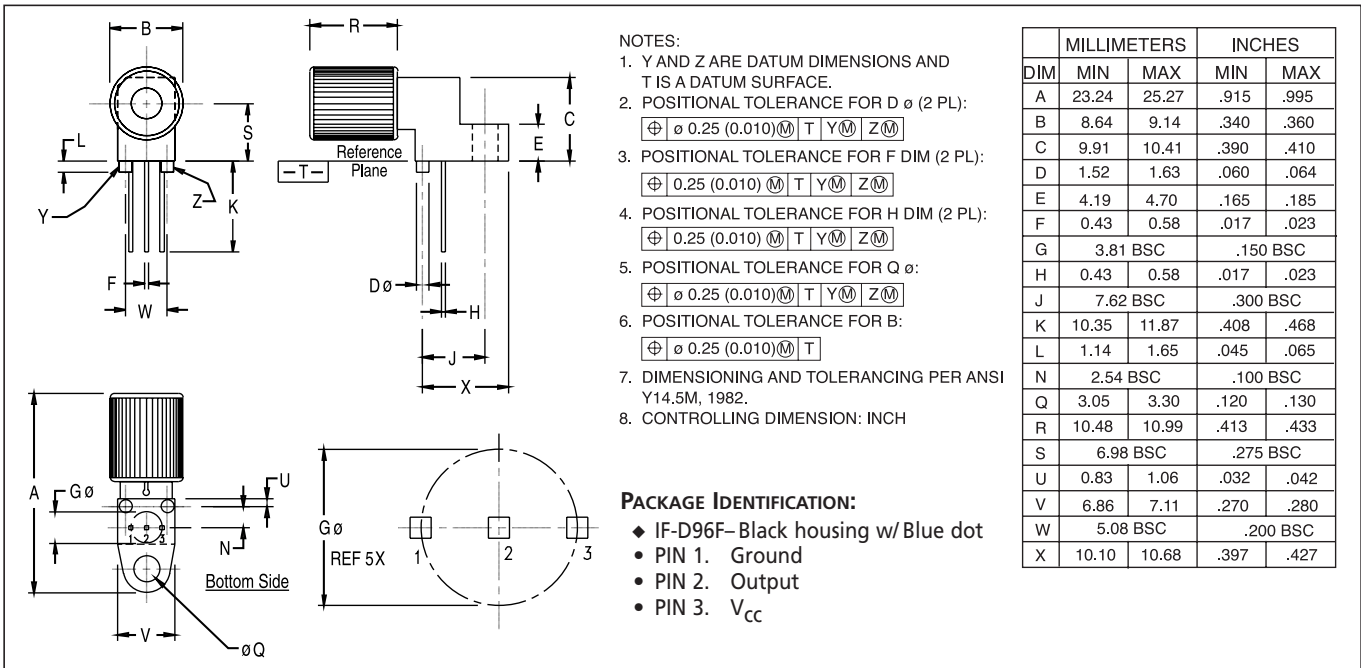


FIGURE 3. Case outline.