

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 μm 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 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
- ◆ 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 $1.33\text{ mW}/^\circ\text{C}$

* 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	λ_{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 $V_{CC}=5.25\text{ V}^*$	I_{CCH}	–	3.5	6	mA
Low Level Supply Current $V_{CC}=5.25\text{ V}^*$	I_{CCL}	–	12	14.5	mA
Light Level to Trigger ($R_L=1\text{ k}\Omega$ $\lambda=660\text{ nm}$)	$E_r (+)$	–	7	–	μW
		–	-21.6	–	dBm
Light Level to Not Trigger ($\lambda=660\text{ nm}$)	$E_r (-)$	–	0.1	–	μW
		–	-40	–	dBm
High Level Output Current $V_{OH}=15\text{ V}$	I_{OH}	–	5	100	μA
Low Level Output Voltage ($I_{OL}=8\text{ mA}$)	V_{OL}	–	0.1	0.5	V
Propagation Delay, Low-High ($f=100.0\text{ kHz}$, $R_L=5\text{ TTL Loads}$)	t_{PLH}	–	<250	–	ns
Propagation Delay, High-Low ($f=100.0\text{ kHz}$, $R=5\text{ TTL Loads}$)	t_{PHL}	–	<100	–	ns

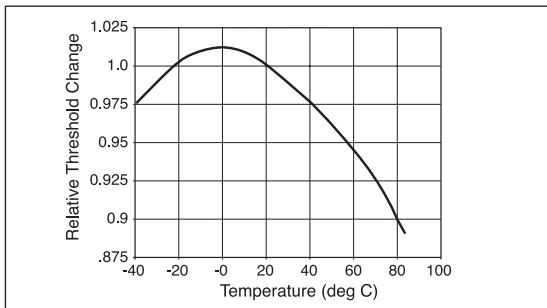


FIGURE 1. Normalized threshold irradiance vs. amb. temp.

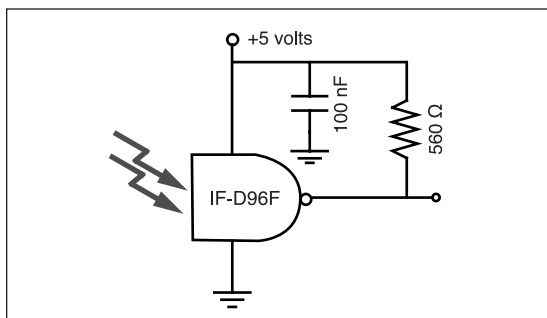
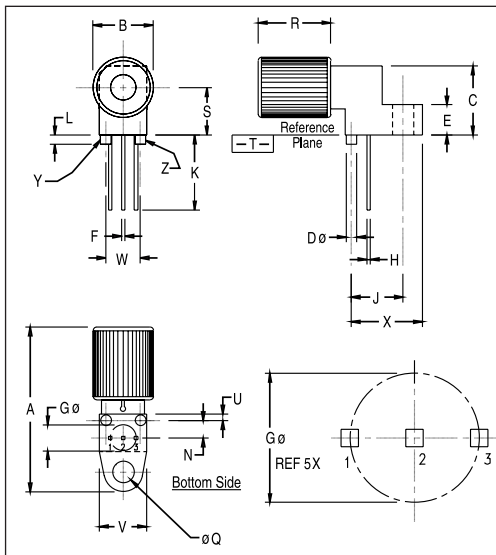


FIGURE 2. Typical operating circuit.



- NOTES:
1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
 2. POSITIONAL TOLERANCE FOR D ϕ (2 PL):
 $\phi 0.25 (0.010) \text{ (M) } | \text{ T } | \text{ Y (M) } | \text{ Z (M) }$
 3. POSITIONAL TOLERANCE FOR F DIM (2 PL):
 $\phi 0.25 (0.010) \text{ (M) } | \text{ T } | \text{ Y (M) } | \text{ Z (M) }$
 4. POSITIONAL TOLERANCE FOR H DIM (2 PL):
 $\phi 0.25 (0.010) \text{ (M) } | \text{ T } | \text{ Y (M) } | \text{ Z (M) }$
 5. POSITIONAL TOLERANCE FOR Q ϕ :
 $\phi 0.25 (0.010) \text{ (M) } | \text{ T } | \text{ Y (M) } | \text{ Z (M) }$
 6. POSITIONAL TOLERANCE FOR B:
 $\phi 0.25 (0.010) \text{ (M) } | \text{ T }$
 7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 8. CONTROLLING DIMENSION: INCH

- PACKAGE IDENTIFICATION:**
- ◆ IF-D96F—Black housing w/ Blue dot
 - PIN 1. Ground
 - PIN 2. Output
 - PIN 3. V_{CC}

DIM	MILLIMETERS		INCHES	
	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	3.81 BSC		.150 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	6.86	7.11	.270	.280
W	5.08 BSC		.200 BSC	
X	10.10	10.68	.397	.427

FIGURE 3. Case outline.