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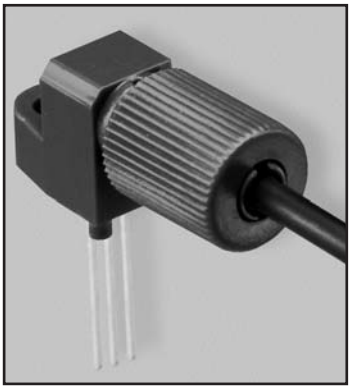


Applications

- 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-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.

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°C)

Operating and Storage Temperature Range (T_{OP}, T_{STG}) .....-40° to 85°C

Soldering Temperature (2 mm from case bottom) (T_S) t≤ 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°C .....80 mW

De-rate Above 25°C .....1.33 mW/°C

* Load = 620 Ohms

Characteristics

(T_A=25°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 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	Er (+)	–	7	–	µW
(R_L=1 kΩ λ=660 nm)		–	-21.6		dBm
Light Level to Not Trigger	Er (–)	–	0.1	–	µW
(λ=660 nm)			-40		dBm
High Level Output Current V_{OH}= 15 V	I_{OH}	–	5	100	µA
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

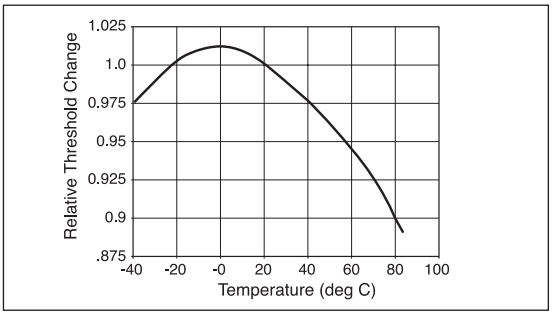


FIGURE 1. Normalized threshold irradiance vs. amb. temp.

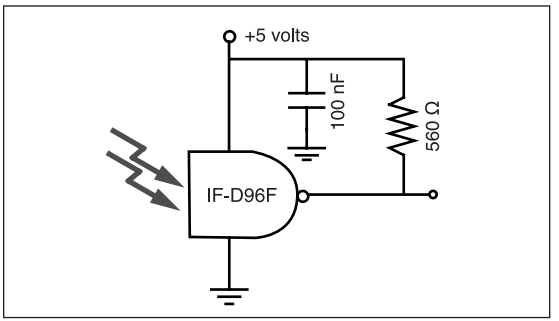
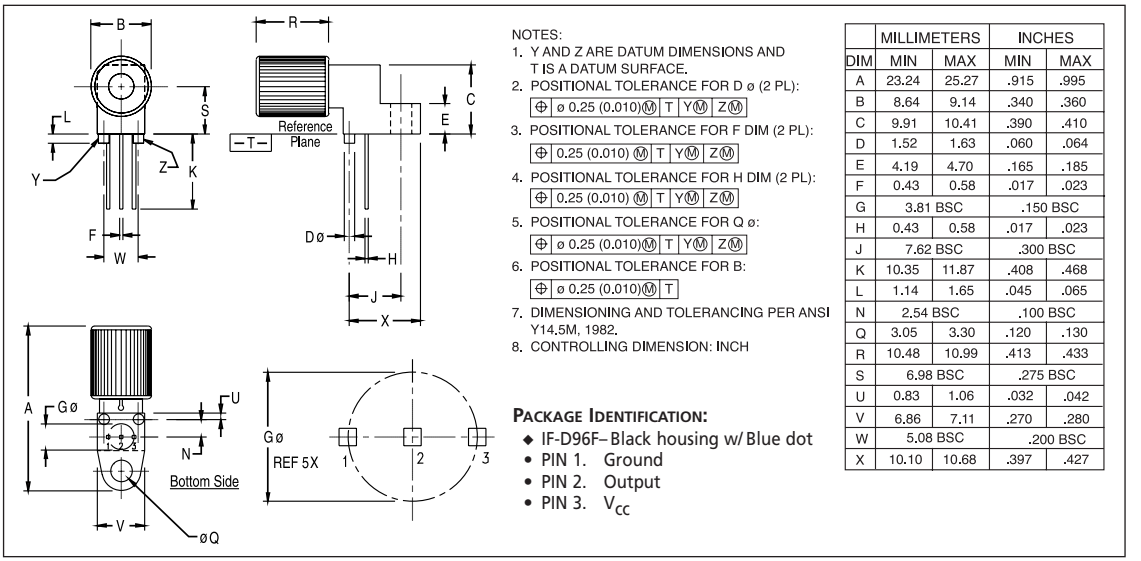


FIGURE 2. Typical operating circuit.

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: ⊕ | ø 0.25 (0.010)Ⓜ | T | YⓂ | ZⓂ
6. POSITIONAL TOLERANCE FOR B: ⊕ | ø 0.25 (0.010)Ⓜ | 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}

	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	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.