



DESCRIPTION

The IF-D95T and IF-D95OC are high-sensitivity photologic detectors housed in “connector-less” style plastic fiber optic packages. The detector contains an IC with a photodiode, linear amplifier, and Schmitt trigger logic circuit. The IF-D95T features a TTL/CMOS compatible totem-pole output, while the IF-D95OC has an open-collector output. The devices can drive up to 5 TTL loads over supply voltages ranging from 4.5 to 16 Volts. Optical response extends from 400 to 1100 nm, making them compatible with a wide range of visible and near infrared 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 IF-D95T and IF-D95OC are suitable for digital data links at rates up to 125 kbps. A Schmitt trigger improves noise immunity and TTL/CMOS logic compatibility greatly simplifies interfacing with existing digital circuits. The integrated design of the IF-D95 provides a total, cost-effective solution in a variety of digital applications.

APPLICATIONS

- ▶ Digital Data Links
- ▶ PC-to-Peripheral Links
- ▶ Process Control
- ▶ Household Appliances
- ▶ Motor Controller Triggering
- ▶ Electronic Games
- ▶ Medical Instruments
- ▶ Automotive Electronics
- ▶ Robotics Communications
- ▶ EMC/EMI Signal Isolation

FEATURES

- ◆ Integrated Photodetector, Amplifier and Schmitt Trigger
- ◆ Mates with Standard 1000 μm Core Jacketed Plastic Fiber Optic Cable
- ◆ No Optical Design Required
- ◆ Inexpensive But Rugged Plastic Connector Housing
- ◆ Internal Micro-Lens for Efficient Optical Coupling
- ◆ Connector-Less Fiber Termination
- ◆ Light-Tight Housing Provides Interference-Free Transmission
- ◆ High Optical Sensitivity
- ◆ “Active Low” Output Options Available as Special Order
- ◆ The IF-D95OC is 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) $t_s \leq 5s$	240°C
Supply Voltage, (V_S)	18 V
Voltage at Output lead (IF-95OC only)	35 V
Sinking Current, DC (I_C)	50 mA
Source Current (I_O) (IF-95T only)	10 mA
Power Dissipation (P_{TOT}) $T_A=25^\circ\text{C}$	100 mW
De-rate Above 25°C	1.33 mW/°C

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

Parameter	Symbol	Min	Typ	Max	Unit
Peak Sensitivity	λ_{PEAK}	–	800	–	nm
Spectral Sensitivity ($S=10\%$ of S_{MAX})	$\Delta\lambda$	400	–	1100	nm
Operating Voltage	V_{CC}	4.5	–	16	V
Supply Current	I_{CC}	–	–	12	mA
Light Required to Trigger $V_{CC}=5\text{ V}$, $R_L=1\text{ k}$, $\lambda=660\text{ nm}$	$E_r (+)$	–	1.0 (-30)	–	$\mu\text{W}(\text{dBm})$
IF-D95T					
High Level Output Voltage ($I_{OH}=-1.0\ \mu\text{A}$)	V_{OH}	$V_{CC}-2.1$	–	–	V
Low Level Output Voltage ($I_{OH}=16\ \text{mA}$)	V_{OL}	–	–	0.34	V
Output Rise and Fall Times ($f=10.0\ \text{kHz}$, $R_L=10\ \text{TTL Loads}$)	t_r , t_f	–	–	70	ns
Propagation Delay, Low-High, High-Low ($f=10.0\ \text{kHz}$, $R_L=10\ \text{TTL Loads}$)	t_{PLH} , t_{PHL}	–	8.0	–	μs
IF-D95OC					
High Level Output Current ($V_{OH}=30\ \text{V}$)	I_{OH}	100	–	–	μA
Low Level Output Voltage ($I_{OL}=16\ \text{mA}$)	V_{OL}	–	–	0.4	V
Output Rise and Fall Times ($f=10.0\ \text{kHz}$, $R_L=300\ \Omega$)	t_r , t_f	–	–	100	ns
Propagation Delay, Low-High, High-Low ($f=10.0\ \text{kHz}$, $R_L=300\ \Omega$)	t_{PLH} , t_{PHL}	–	8.0	–	μs

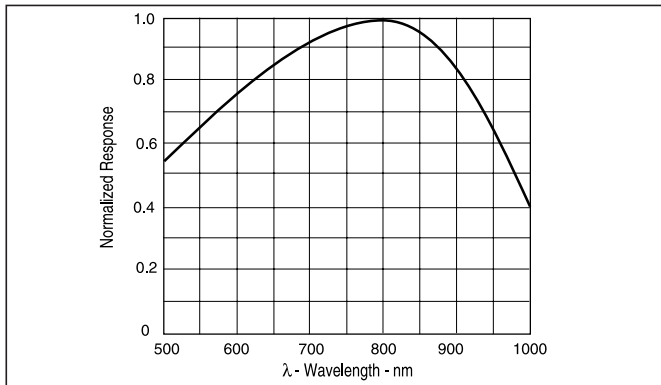


FIGURE 1. Typical detector response versus wavelength.

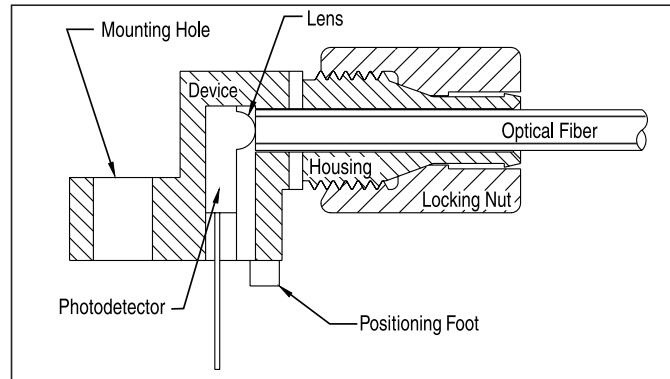


FIGURE 3. Cross-section of fiber optic device.

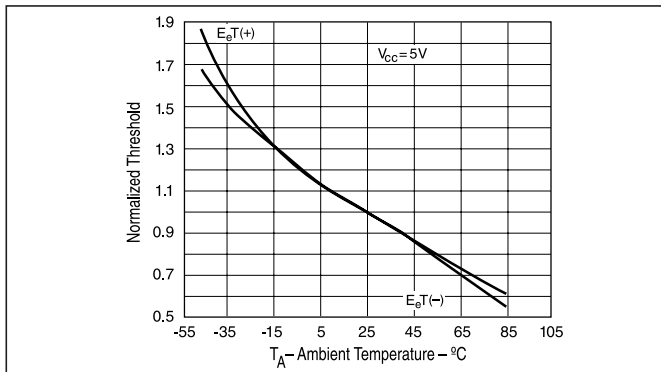


FIGURE 2. Normalized threshold irradiance vs. amb. temp.

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.

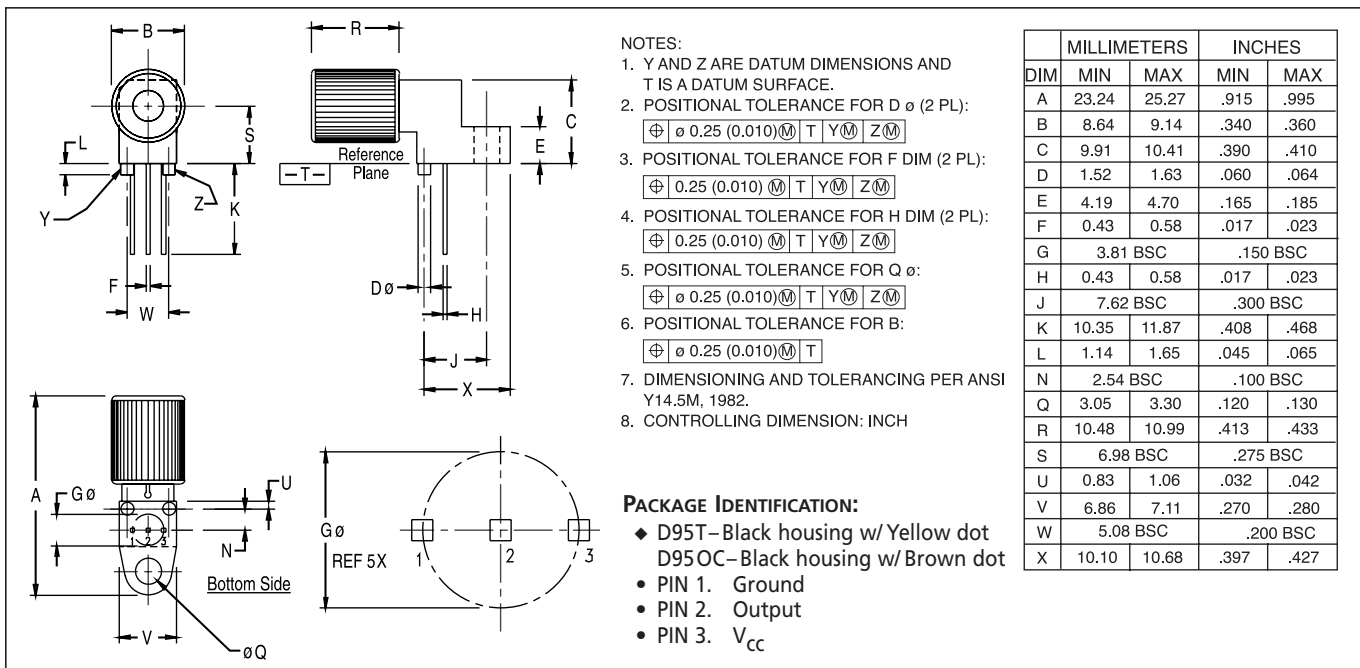


FIGURE 4. Case outline.