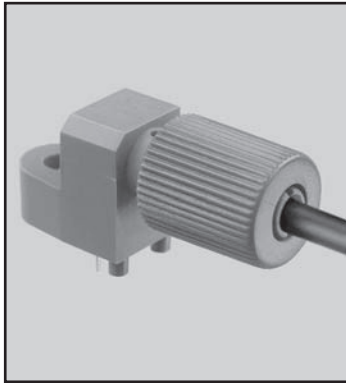


156 Mbps Plastic Fiber Optic Red LED IF E99B

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APPLICATIONS

- PC-to-Peripheral Data Links
- Motor Controller Triggering
- Ethernet LANs
- Medical Instruments
- Automotive Electronics
- Digitized Video and HDTV
- Sonet/SDH Transmitters
- Robotics Communications
- Isolation from Lightning and Voltage Transients

DESCRIPTION

The IF-E99B is a very high-speed red LED housed in a “connector-less” style plastic fiber optic package. The output spectrum of the IF-E99B is produced by a GaAlAs die that peaks at a wavelength of 650 nm, one of the optimal transmission windows of PMMA plastic optical fiber. The device package features an internal micro-lens, and a precision-molded PBT housing ensures efficient optical coupling with standard 1000 μ m core plastic fiber cable.

APPLICATION HIGHLIGHTS

The fast transition times of the IF-E99B make it suitable for high-speed digital data links. Link distances in excess of 75 meters at data rates of 156 Mbps are possible using standard 1000 μ m core plastic fiber and an IF-D98 photologic detector. The wide analog bandwidth permits direct modulation at RF frequencies exceeding 70MHz. Drive circuit design for the IF-E99B requires good RF and digital design techniques, but is much simpler than required for laser diodes, making it a good low-cost solution in a variety of high frequency POF analog and digital applications.

FEATURES

- ◆ No Optical Design Required
- ◆ Mates with Standard 1000 μ m Core Jacketed Plastic Fiber Cable
- ◆ Internal Micro-lens for Efficient Coupling
- ◆ Inexpensive Plastic Connector Housing
- ◆ Connector-Less Fiber Termination and Insertion
- ◆ Interference-Free Transmission from Light-Tight Housing
- ◆ Excellent Linearity
- ◆ Visible Light Output
- ◆ RoHS compliant

MAXIMUM RATINGS

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

Operating Temperature Range
(T_{OP})..... -0° to 60°C

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

Junction Temperature (T_J)..... 75°C

Soldering Temperature
(2mm from case bottom)
(T_S) $t \leq 5$ s..... 240°C

Reverse Voltage (V_R).....3 V

Power Dissipation
(P_{TOT}) $T_A = 25^\circ\text{C}$130 mW

De-rate Above 25°C1.7 mW/ $^\circ\text{C}$

Forward Current, DC (I_F).....50 mA

De-rate Above 25°C0.57 mA/ $^\circ\text{C}$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	PEAK	640	650	660	nm
Spectral Bandwidth (50% of I_{MAX})	$\Delta\lambda$	—	10	—	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Lens to Fiber distance $\leq .1$ mm, 1m SH4001 fiber, I_F =per circuit (50% Duty Cycle) $I_F=20$ mA DC	Φ	355 -4.5	630 -2.0	1120 +0.5	μ W dBm
Switching Times (10% to 90% and 90% to 10%) ($R_L=47\Omega$, $I_F=10$ mA)	t_r, t_f	—	3	—	ns
Capacitance ($V_F=0$, $F=1$ MHz)	C_0	—	6.5	—	pF
Forward Voltage ($I_F=30$ mA)	V_f	—	1.9	2.4	V
Cut off frequency	f_c	60	70	—	MHz

CAUTION: The IF E99B is Class 1B ESD sensitive per testing using the HBM: 1.5k Ohm; 100 pF; +/- 1000V. To minimize risk of damage observe appropriate precautions during handling and processing.

IF E99B 156 Mbps Plastic Fiber Optic Red LED

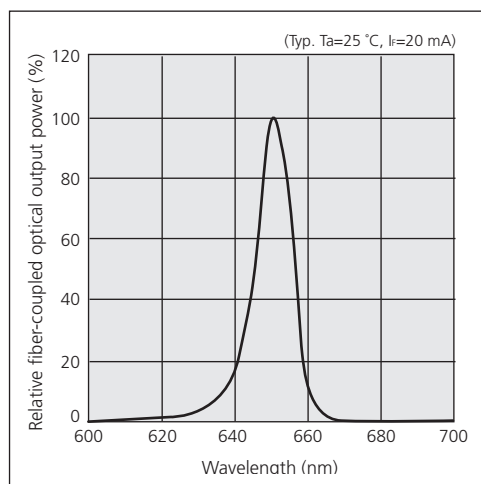


FIGURE 1. Relative intensity versus wavelength.

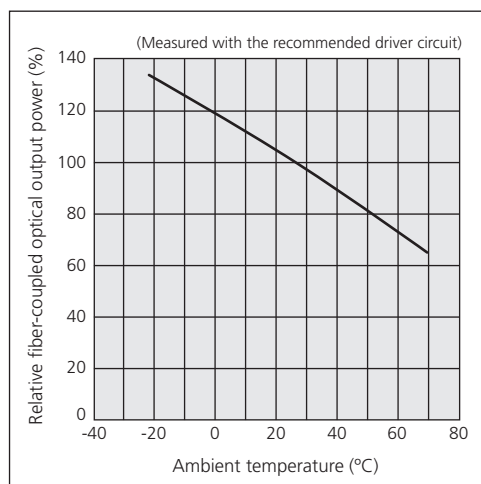


FIGURE 2. Optical power output versus temperature ($I_F=20\text{mA}$)

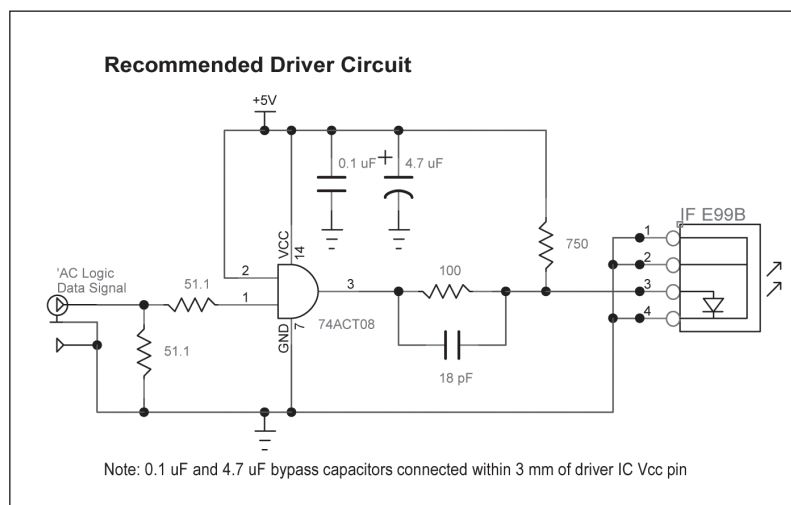


FIGURE 3. Typical interface circuit.

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.

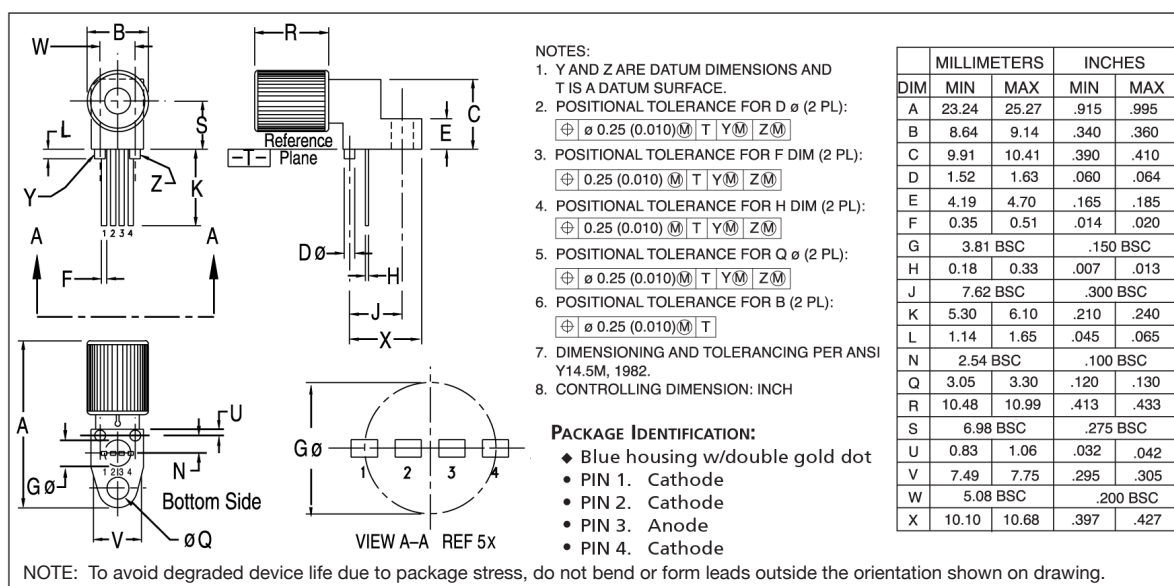


FIGURE 4. Case outline.

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