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156 Mbps Plastic Fiber Optic Red LED IF E99B

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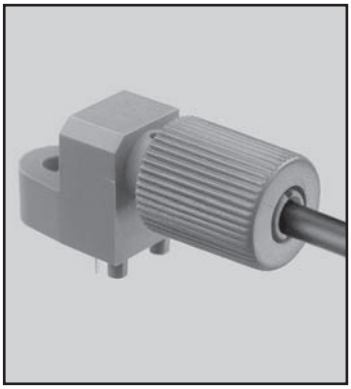


Applications

- 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 GaAIAs 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 µm 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 µm 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 µm 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°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 ≤ 5 s.....240°C

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

Power Dissipation (P_{TOT}) T_A =25°C.....130 mW

De-rate Above 25°C.....1.7 mW/°C

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

De-rate Above 25°C.....0.57 mA/°C

Characteristics (T_A =25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	PEAK	640	650	660	nm
Spectral Bandwidth (50% of I_{MAX})	Δλ	–	10	–	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Lens to Fiber distance ≤ .1 mm, 1m SH4001 fiber, I_F =per circuit (50% Duty Cycle)	Φ	355 -4.5	630 -2.0	1120 +0.5	µW dBm
I_F=20 mA DC		449	796	1415	µW
Switching Times (10% to 90% and 90% to 10%) (R_L =47Ω, 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.

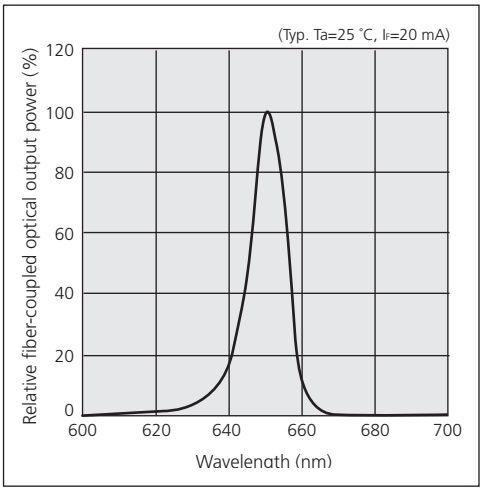


FIGURE 1. Relative intensity versus wavelength.

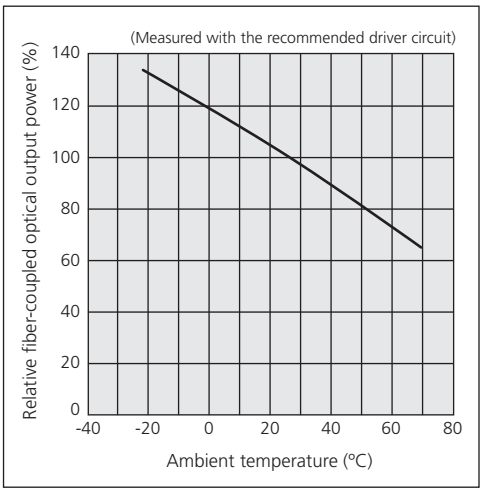


FIGURE 2. Optical power output versus temperature (I_F=20mA)

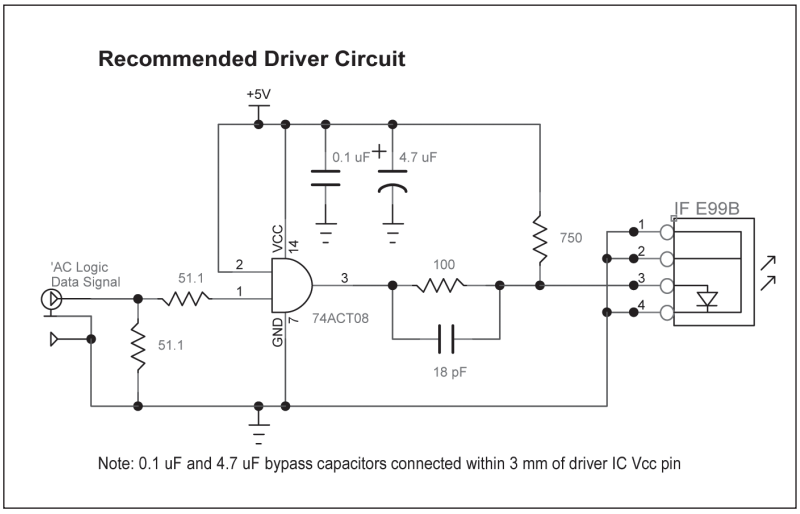
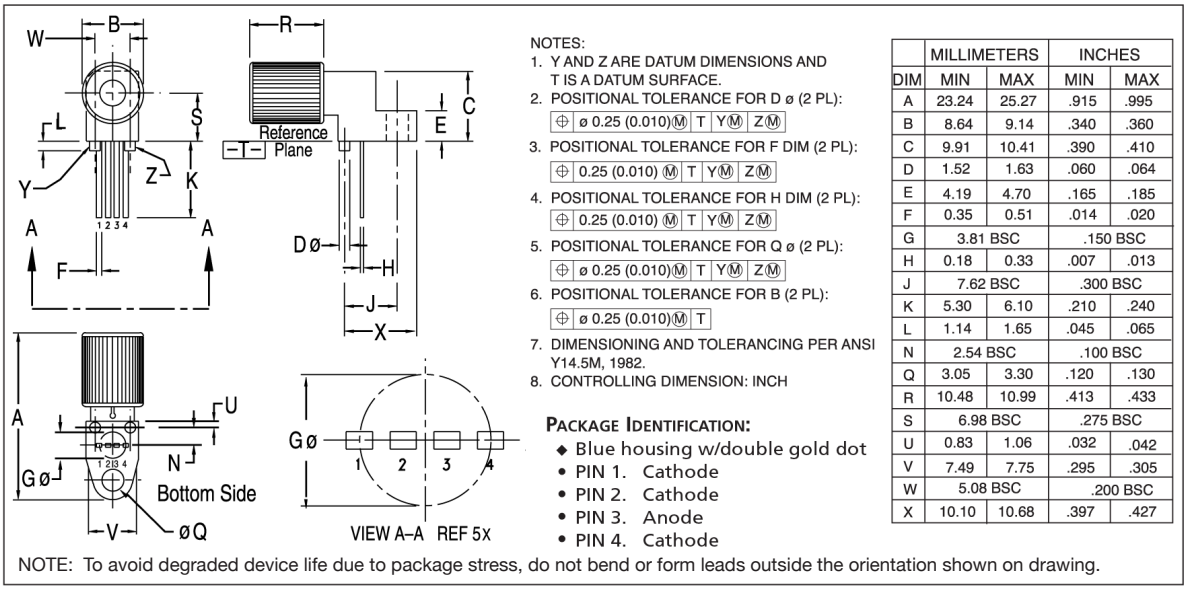


FIGURE 3. Typical interface circuit.

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.



	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	0.35	0.51	.014	.020
G	3.81 BSC		.150 BSC	
H	0.18	0.33	.007	.013
J	7.62 BSC		.300 BSC	
K	5.30	6.10	.210	.240
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	7.49	7.75	.295	.305
W	5.08 BSC		.200 BSC	
X	10.10	10.68	.397	.427

NOTE: To avoid degraded device life due to package stress, do not bend or form leads outside the orientation shown on drawing.

FIGURE 4. Case outline.