

DESCRIPTION

The IF-E99 is a very high-speed red LED housed in a “connector-less” style plastic fiber optic package. The output spectrum of the IF-E99 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 μm core plastic fiber cable.

APPLICATION HIGHLIGHTS

The fast transition times of the IF-E99 make it suitable for high-speed digital data links. Link distances in excess of 75 meters at data rates of 155 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 100 MHz. Drive circuit design for the IF-E99 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.

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

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 Connection
- ◆ 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)	85°C
Soldering Temperature (2 mm from case bottom) (T_S) $t \leq 5\text{s}$	240°C
Reverse Voltage (V_R)	5 V
Power Dissipation (P_{TOT}) $T_A=25^\circ\text{C}$	100 mW
De-rate Above 25°C	1.33 mW/ $^\circ\text{C}$
Forward Current, DC (I_F)	40 mA
Surge Current (I_{FSM}) $t \leq 10 \mu\text{sec}$	100 mA

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_{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, $I_F=20$ mA	Φ	875	950	1050	μW
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	–	10	–	pF
Forward Voltage ($I_F=30$ mA)	V_F	–	2.05	2.3	V
Cut off frequency	f_c	–	100	–	MHz

NOTES:

1. A bypass capacitor (0.1 μF) is connected to the lead at a position within 2 mm from the lead end, and a 4.7 μF capacitor is also connected nearby the power supply line.

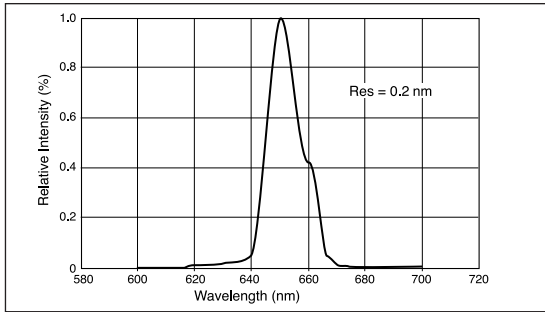


FIGURE 1. Relative intensity versus wavelength.

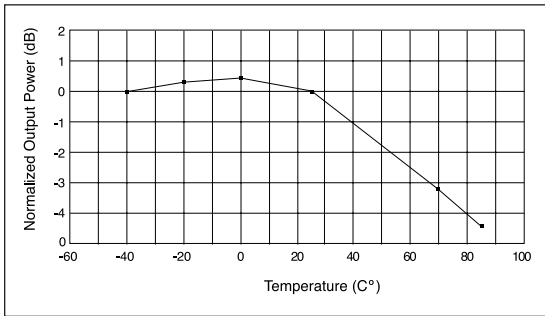


FIGURE 2. Optical Power output versus temperature ($I_F=20mA$)

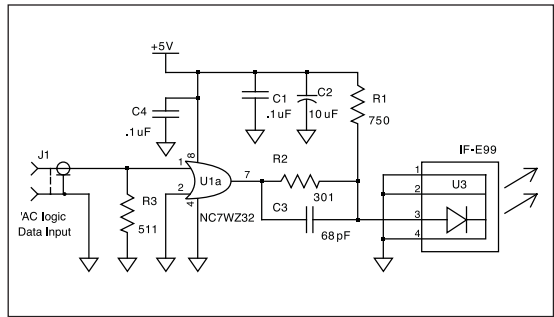
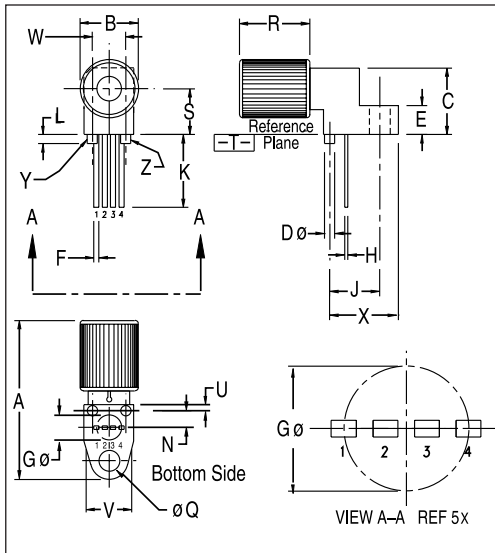


FIGURE 3. Typical interface circuit.

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.



NOTES:

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

PACKAGE IDENTIFICATION:

- ◆ Blue housing w/ gold dot
- PIN 1. Cathode
- PIN 2. Cathode
- PIN 3. Anode
- PIN 4. Cathode

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	0.35	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

FIGURE 4. Case outline.