

#### DESCRIPTION

The IF-E98 is a high-speed red LED housed in a "connector-less" style plastic fiber optic package. The output spectrum of the IF-E98 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 to ensure efficient optical coupling with standard 1000  $\mu m$  core plastic fiber cable.

## APPLICATION HIGHLIGHTS

The fast transition times of the IF-E98 make it suitable for medium-speed analog and digital data links. Link distances in excess of 75 meters at data rates of 50 Mbps are possible using standard 1000  $\mu$ m core plastic fiber when matched to an IF-D97 photologic detector. The drive circuit is simpler than required for laser diodes, making the IF-E98 a good low-cost alternative in a variety of analog and digital applications.

## **APPLICATIONS**

- ➤ PC-to-Peripheral Data Links
- ➤ Motor Controller Triggering
- ➤ Local Area Networks
- ➤ Medical Instruments
- ➤ Automotive Electronics
- ➤ Digitized Video
- ➤ Electronic Games
- ➤ 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

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

Operating and Storage Temperature Range $(T_{OP}, T_{STG})$ 40° to 85°C
Junction Temperature $(T_J)$ 85°C
Soldering Temperature (2 mm from case bottom) $(T_S) t \le 5s$ 240°C
Reverse Voltage $(V_R)$
Power Dissipation (PTOT) $T_A=25^{\circ}C$ 100 mW
De-rate Above 25°C1.75 mW/°C
Forward Current, DC $(I_F)$ 40 mA
Surge Current ( $I_{FSM}$ ) t $\leq$ 10 µsec100 mA

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

Parameter	Symbol	Min.	Тур.	Max.	Unit
Peak Wavelength	$\lambda_{ ext{PEAK}}$	640	650	660	nm
Spectral Bandwidth (50% of I <sub>MAX</sub> )	Δλ	_	20	_	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Lens to Fiber Distance ≤0.1 mm, 1 m SH4001 fiber, I <sub>F</sub> =20 mA	$\Phi_{ ext{min}}$	275 -5.6	350 -4.6	425 -3.7	μW dBm
Switching Times (10% to 90% and 90% to 10%) (RL=47 $\Omega,$ $I_F{=}30$ mA)	t <sub>r</sub> , t <sub>f</sub>	-	-	8	ns
Forward Voltage (I <sub>F</sub> =20 mA)	V <sub>f</sub>	-	1.9	2.3	V

# 50 MHz Plastic Fiber Optic Red LED

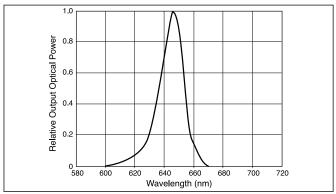


FIGURE 1. Typical spectral output versus wavelength.

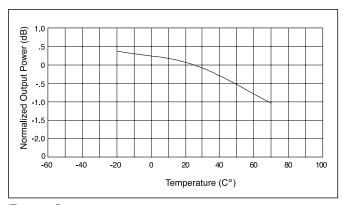


FIGURE 2. Output power versus temperature.

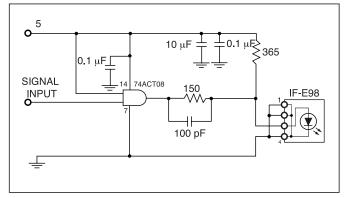
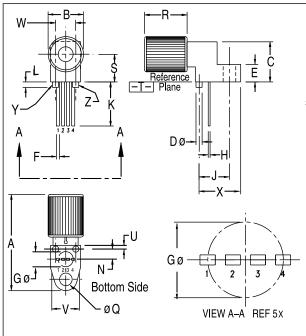


FIGURE 3. Typical interface circuit. ( $I_F = 30 \text{ mA}$ )

### FIBER TERMINATION INSTRUCTIONS

- 1. Cut off the ends of the optical fiber with a singleedge 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)M T YM ZM
- 3. POSITIONAL TOLERANCE FOR F DIM (2 PL): ⊕ 0.25 (0.010) M T YM ZM
- 4. POSITIONAL TOLERANCE FOR H DIM (2 PL): ⊕ 0.25 (0.010) M T YM ZM
- 5. POSITIONAL TOLERANCE FOR Q Ø (2 PL): ⊕ ø 0.25 (0.010)M T YM ZM
- 6. POSITIONAL TOLERANCE FOR B (2 PL): ⊕ ø 0.25 (0.010)M T
- 7. DIMENSIONING AND TOLERANCING PER ANSI
- 8. CONTROLLING DIMENSION: INCH

#### PACKAGE IDENTIFICATION:

- ♦ Blue housing w/ silver dot
- PIN 1. Cathode
- PIN 2. Cathode
- PIN 3. Anode
- PIN 4. Cathode

	MILLIM	ETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	23.24	25.27	.915	.995	
В	8.64	9.14	.340	.360	
С	9.91	10.41	.390	.410	
D	1.52	1.63	.060	.064	
Е	4.19	4.70	.165	.185	
F	0.35	0.51	.014	.020	
G	3.81 BSC		.150 BSC		
Н	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	
٧	7.49	7.75	.295	.305	
W	5.08 BSC		200 BSC		
Х	10.10	10.68	.397	.427	
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FIGURE 4. Case outline.