



DESCRIPTION

The IF-E92A and IF-E92B are blue LEDs in Industrial Fiber Optics' family of low-cost, medium-frequency, short-distance fiber optic LEDs and detectors. Each LED and detector consists of a polycarbonate (PC) housing, an internal active element such as an LED or photodetector subcomponent, and a cinch nut to hold the fiber in place. The PC housing retains the active element and the cinch nut while optimizing coupling between the active element and the jacketed 1000 μm plastic fiber.

The IF-E92A fiber optic LED contains a Silicon Carbide LED die, while the IF-E92B contains a Gallium Nitride LED, the two LEDs producing a blue light output center spectral wavelength of 430 and 470 nm, respectively. The blue LED is a special purpose, low-cost device for producing blue light output without the size, complexity and cost of a laser. The blue light is easily coupled with the standard 1000 μm jacketed plastic fiber for many sensing applications.

Working with this family of fiber optics is simple: no special tools or training required. Only a sharp knife or razor blade is needed to terminate the plastic fiber although Industrial Fiber Optics makes an easy-to-use cutter. When the fiber is inserted in the LED or detector housing, tighten the cinch nut. Thereafter, the fiber can be removed simply by loosening the nut.

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
- ◆ Visible Light Output

APPLICATIONS

- Optical Sensors
- Medical Instruments
- Automotive Displays
- Audio Systems
- Electronic Games
- Robotics Communications
- Water Turbidity Measurements
- Fluorescent Instruments
- Wavelength Multiplexing

MAXIMUM RATINGS

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

Operating and Storage Temperature Range (T_{OP}, T_{STG})	-40° to 60°C
Junction Temperature (T_J)	85°C
Soldering Temperature (2 mm from case bottom) (T_S) $t \leq 5$ s	240°C
Reverse Voltage (V_R)	5 V
Power Dissipation (P_{TOT}) $T_A = 25^\circ\text{C}$	60 mW
De-rate Above 25°C	1.1 mW/°C
Forward Current, DC (I_F)	35 mA
Surge Current (I_{FSM}) $t \leq 10$ μs	75 mA

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

Parameter	Symbol	IF-E92A	IF-E92B	Unit
Peak Wavelength	λ_{PEAK}	430	470	nm
Spectral Bandwidth (50% of I_{MAX})	$\Delta\lambda$	65	25	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Distance Lens to Fiber ≤ 0.1 mm, 10 cm polished fiber, $I_F = 10$ mA	Φ_{min}	25 -16	75 -11	μW dBm
Switching Times (10% to 90% and 90% to 10%) ($R_L = 47 \Omega$, $I_F = 10$ mA)	t_r, t_f	.5	.6	μs
Capacitance ($V_F = 0$, $F = 1$ MHz)	C_0	100	100	pF
Forward Voltage ($I_F = 20$ mA)	V_f	4.5 max	4.0 max	V
Temperature Coefficient, λ_{PEAK}	TC_λ	.16	.16	nm/K

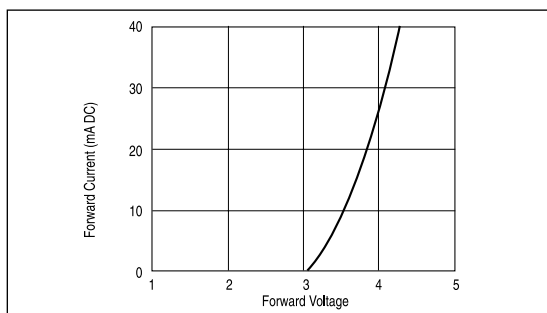


FIGURE 1. Forward current versus forward voltage.

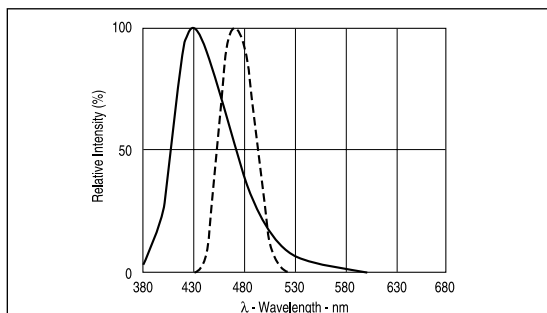


FIGURE 2. Typical spectral output vs. wavelength.

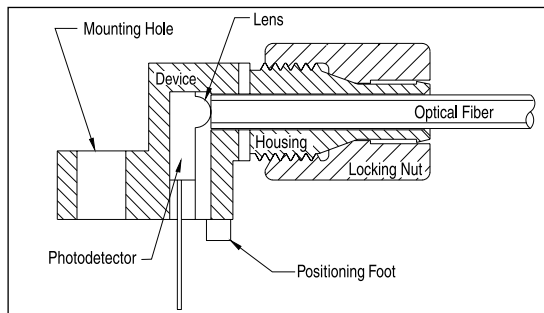
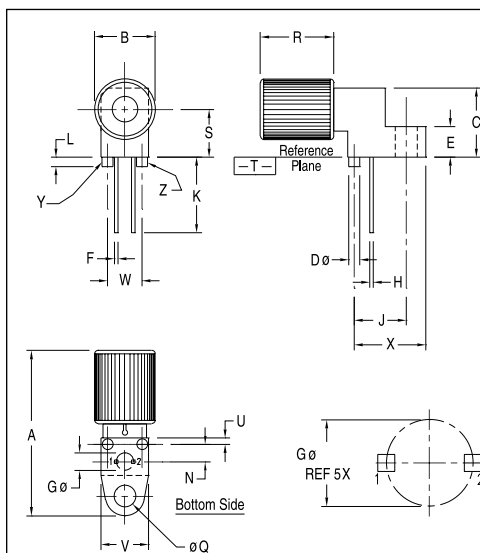


FIGURE 3. Cross-section of fiber optic device.

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 ϕ (2 PL):
 $\phi 0.25(0.010) \text{ M } | T | Y \text{ M } | Z \text{ M}$
3. POSITIONAL TOLERANCE FOR F DIM (2 PL):
 $\phi 0.25(0.010) \text{ M } | T | Y \text{ M } | Z \text{ M}$
4. POSITIONAL TOLERANCE FOR H DIM (2 PL):
 $\phi 0.25(0.010) \text{ M } | T | Y \text{ M } | Z \text{ M}$
5. POSITIONAL TOLERANCE FOR Q ϕ :
 $\phi 0.25(0.010) \text{ M } | T | Y \text{ M } | Z \text{ M}$
6. POSITIONAL TOLERANCE FOR B:
 $\phi 0.25(0.010) \text{ M } | T |$
7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
8. CONTROLLING DIMENSION: INCH

PACKAGE IDENTIFICATION:

- ◆ E92A- Blue housing w/ double yellow dot
- E92B- Blue housing w/ double blue dot

- PIN 1. Cathode
- PIN 2. Anode

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	0.43	0.58	.017	.023
G	2.54	BSC	.100	BSC
H	0.43	0.58	.017	.023
J	7.62	BSC	.300	BSC
K	10.35	11.87	.408	.468
L	1.14	1.65	.045	.065
N	2.54	BSC	.100	BSC
Q	.305	.330	.120	.130
R	10.48	10.99	.413	.433
S	6.98	BSC	.275	BSC
U	0.83	1.06	.032	.042
V	6.86	7.11	.270	.280
W	5.08	BSC	.200	BSC
X	10.10	10.68	.397	.427

FIGURE 4. Case outline.