Mitsubishi International PolymerTrade Corporation

Transmitters for use with ESKA™ Products: MIC-L92

Description and Features

The MIC-L92A and MIC-L92B are blue LEDs housed in a connector-less style plastic fiber optic package. The MIC-L92A contains a silicon carbide die with a spectral output which peaks at 430 nm; the MIC-L92B is made from gallium nitride and peaks at 470 nm. The device package features an internal micro-lens and a precision-molded PBT housing, ensuring efficient optical coupling with standard 1000 µm core plastic fiber cable.

Easily adjusted and modified blue optical output	Fast transition times
Mates with standard 1000 µm core jacketed plastic fiber optic cable	Requires no optical design
Uses inexpensive plastic connector housing	Internal micro-lens makes for efficient optical coupling
Connector-free fiber termination	

Applications

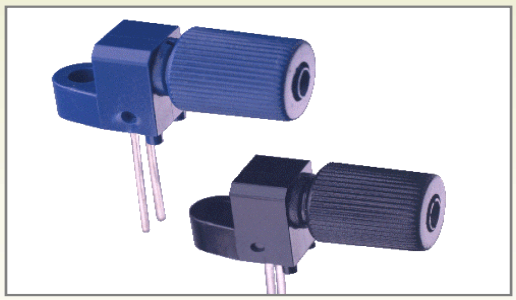
Highlights

These LEDs are low-cost alternatives for producing a narrowband blue light output that can be efficiently coupled into a fiber cable. They are usable in a variety of sensor and display applications that require that the intensity of the narrowband optical light source be adjusted or modulated easily without changing the optical spectrum. Combined with red and green LEDs, these devices provide an RGB source for generating white or multicolored light. The MIC-L92A is capable of digital data rates of 1 Mbps, the MIC-L92B of 800 kbps. Because they use the same electrical drive circuit design as other LEDs, they are a cost-effective light source for a variety of analog, digital sensor and lighting applications.

Optical sensors	Robotics communications
Analog and digital data links	Color separation for process control
RGB light sources	Electronic games
Fluorescent instruments	Wavelength multiplexing
Medical instruments	Display indicators

Maximum Ratings (T_A = 25˚C)

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



Characteristics (T_A = 25°C)

Parameters	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 of 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=47Ω, I_F=10 mA	t_r, t_f	.5	.6	µs
Capacitance V_F=0, F=1 MHz	C_O	100	100	pF
Forward Voltage **I_F=20mA**	V_f	4.5 max.	4.0 max.	V
Temperature coefficient λ_{PEAK}	TC_λ	.16	.16	nm/K

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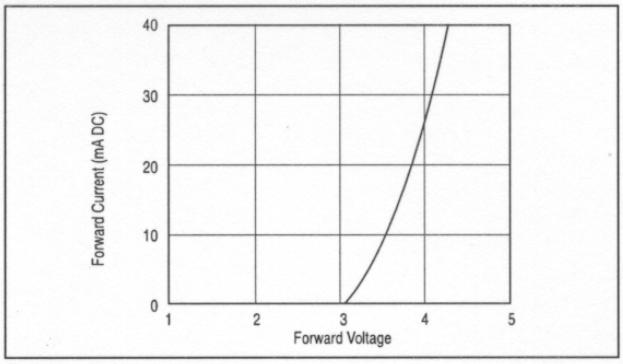


FIGURE 1. Forward current versus forward voltage.

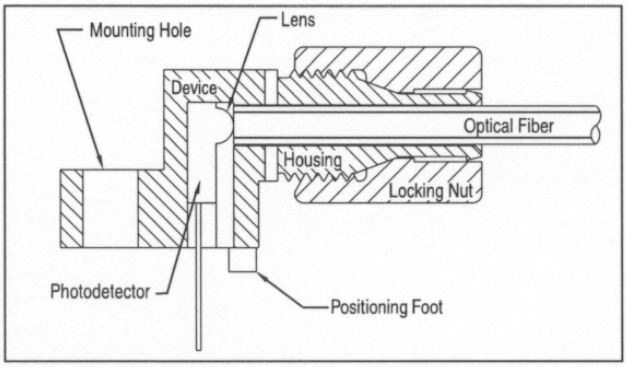


FIGURE 3. Cross-section of fiber optic device.

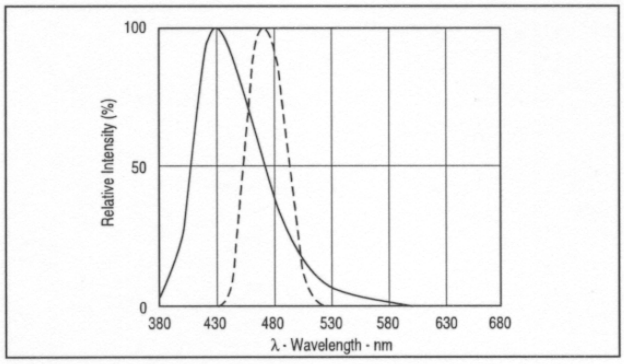
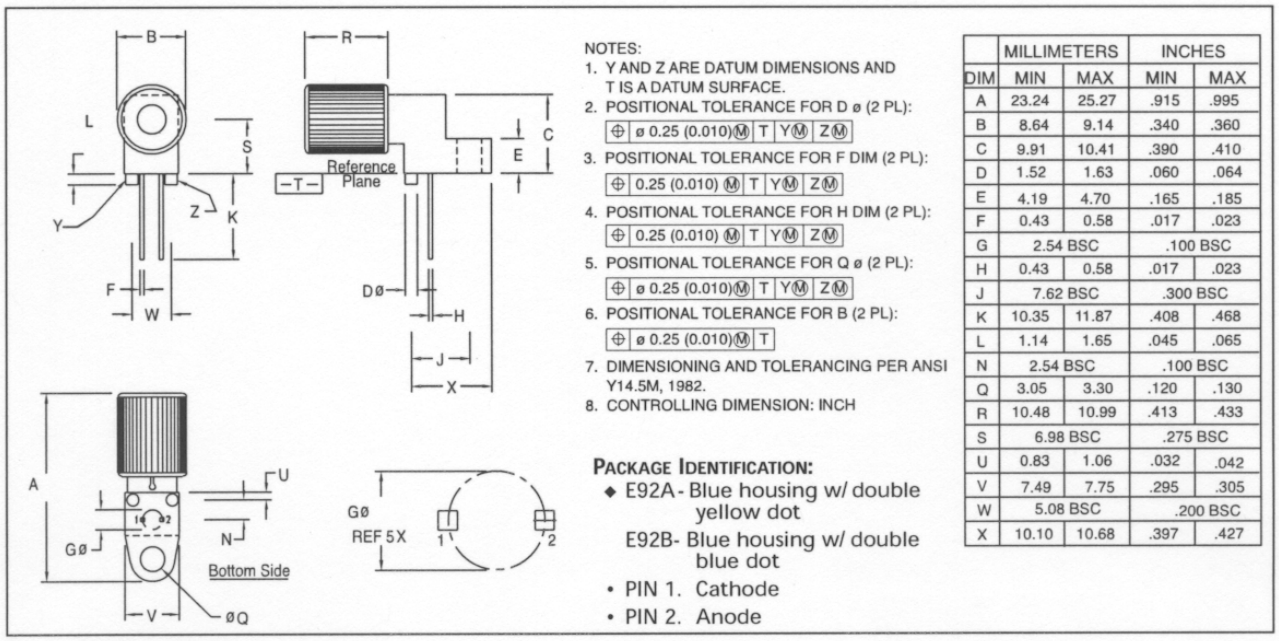


FIGURE 2. Typical spectral output vs. wavelength.

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 ø (2 PL): ⊕ ø 0.25 (0.010) Ⓜ T YⓂ ZⓂ
3. POSITIONAL TOLERANCE FOR F DIM (2 PL): ⊕ 0.25 (0.010) Ⓜ T YⓂ ZⓂ
4. POSITIONAL TOLERANCE FOR H DIM (2 PL): ⊕ 0.25 (0.010) Ⓜ T YⓂ ZⓂ
5. POSITIONAL TOLERANCE FOR Q ø (2 PL): ⊕ ø 0.25 (0.010) Ⓜ T YⓂ ZⓂ
6. POSITIONAL TOLERANCE FOR B (2 PL): ⊕ ø 0.25 (0.010) Ⓜ 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

	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	0.43	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	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.

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