

# Subminiature Solid State Lamp

LTL-93BUBK1 Blue

## Features

- Subminiature package style.
- Low package profile.
- Axial leads.
- Wide viewing angle.
- Long life solid state reliability.

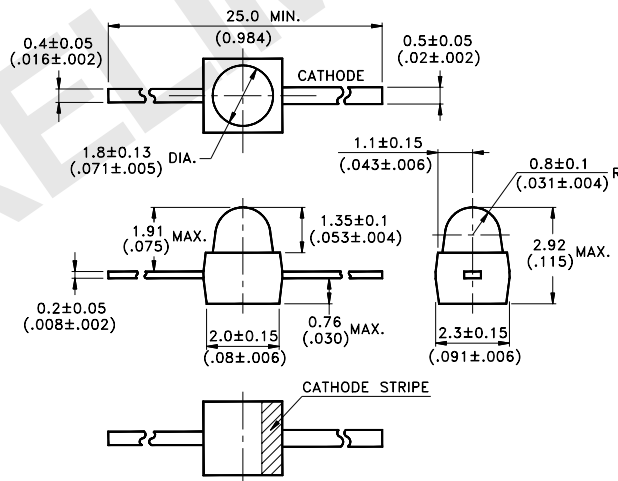
## Description

The blue source color devices is made with Gallium Nitride on Silicon Carbide Light Emitting Diode. Lamp in this series of solid states indicators are molded in an axial lead subminiature package of molded epoxy. Size makes this lamp suitable for PC board mounting in space sensitive application.

## Devices

Part No. LTL-	Lens	Source Color
93BUBK1	Water Clear	Blue

## Package Dimensions



### Note:

1. All dimensions are in millimeters (inches).
  2. Tolerance is  $\pm 0.25$ mm ( $.010$ " ) unless otherwise noted.
  3. Specifications are subject to change without notice.
- \* Lead forming options, please refer page 5-23.

## Absolute Maximum Ratings at Ta=25°C

Parameter	LTL-93BUBK1	Unit
Power Dissipation	135	mW
Peak Forward Current(1/10 Duty Cycle, 0.1ms Pulse Width)	70	mA
Continuous Forward Current	30	mA
Derating Linear From 30°C	0.5	mA/°C
Reverse Voltage	5	V
Electrostatic Discharge Threshold(HBM) <sup>Note A</sup>	1000	V
Operating Temperature Range	-20°C to + 80°C	
Storage Temperature Range	-40°C to + 100°C	
Wave Soldering Condition	260°C for 5 seconds	
Infrared Soldering Condition	260°C for 5 seconds	
Vapor Phase Soldering Condition	215°C for 3 minutes	

Note A :

HBM : Human Body Model. Seller gives no other assurances regarding the ability of Products to withstand ESD.

## Electrical / Optical Characteristics and Curves at Ta= 25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	I <sub>v</sub>	93BUBK1	16	50		mcd	I <sub>F</sub> = 20mA Note 1
Viewing Angle	2θ <sub>1/2</sub>	93BUBK1		20		deg	Note 2 (FIG.6)
Peak Emission Wavelength	λ <sub>P</sub>	93BUBK1		428		nm	Measurement @ peak (FIG.1)
Dominant Wavelength	λ <sub>d</sub>	93BUBK1		466		nm	Note 3
Spectral Line Half-Width	Δλ	93BUBK1		65		nm	
Forward Voltage	V <sub>F</sub>	93BUBK1		3.8	4.5	V	I <sub>F</sub> = 20mA
Reverse Current	I <sub>R</sub>	93BUBK1			100	μA	V <sub>R</sub> = 5V

Notes:

- Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
- 2θ<sub>1/2</sub> is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
- The dominant wavelength, λ<sub>d</sub> is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
- Caution in ESD
  - Static Electricity and surge damages the LED. It is recommend to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.

# Typical Electrical/Optical Characteristic Curve (25°C Ambient Temperature Unless Otherwise Noted)

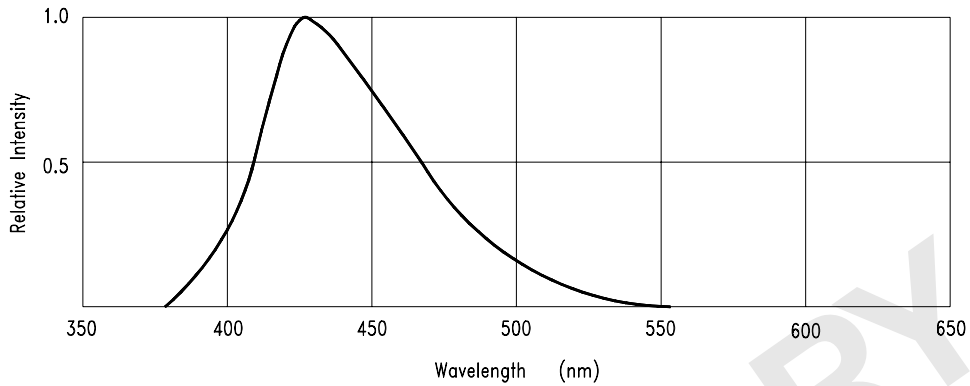


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

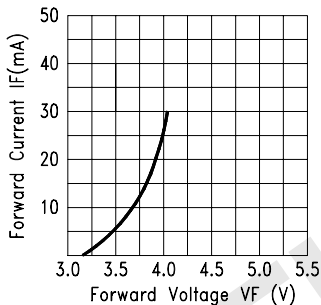


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

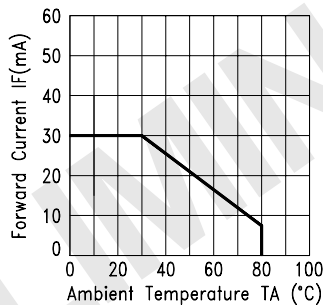


Fig.3 FORWARD CURRENT DERATING CURVE

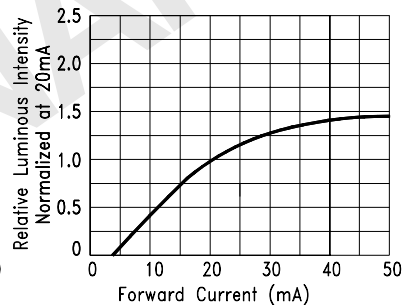


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

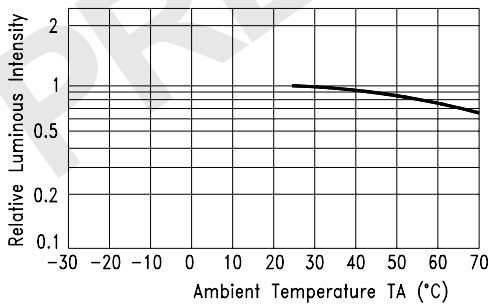


Fig.5 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

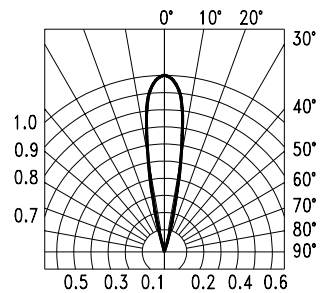


Fig.6 SPATIAL DISTRIBUTION