

# Ultra Brightness White LED Lamp



T-1 3/4 (5mm) Through-Hole Package

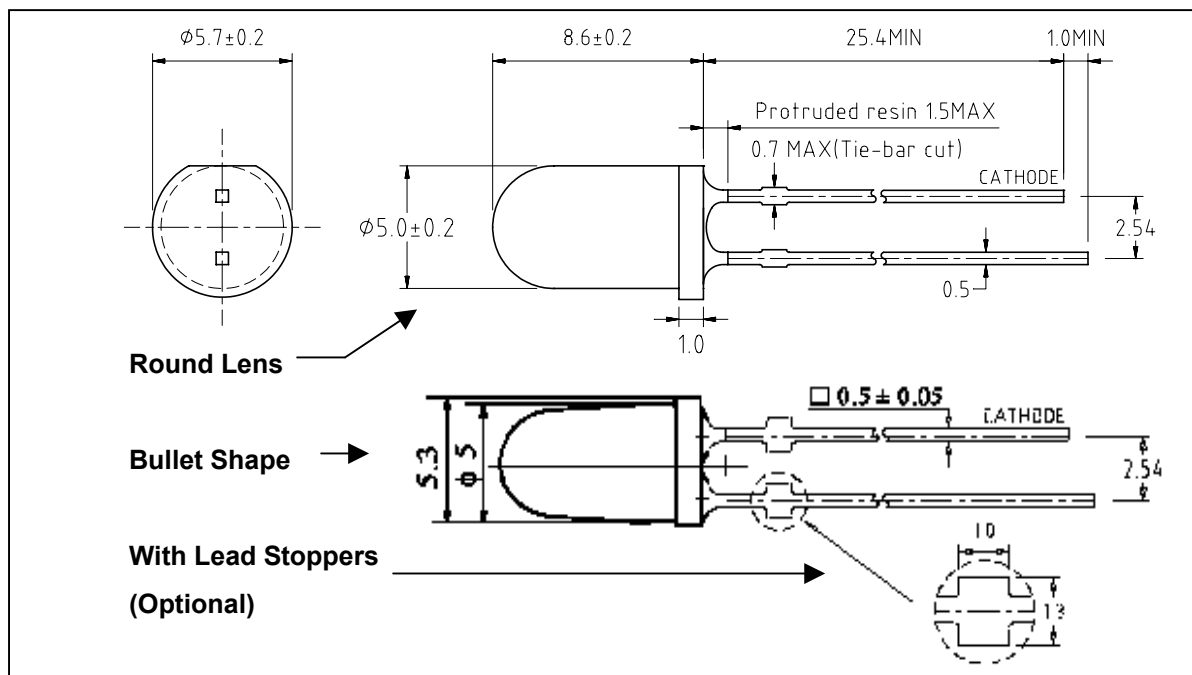
## BL-LBUW5 series

| FEATURES  | APPLICATIONS  |
|---|---|
| <ul style="list-style-type: none"> <li>Extremely uniform white LED.</li> <li>Super luminosity white LED (GaN die).</li> <li>Narrow and wide viewing angles.</li> <li>Water clear package or diffused.</li> <li>T-1 3/4 (5mm) all resin mold.</li> <li>Class 1 ESD rating</li> </ul> | <ul style="list-style-type: none"> <li>Flash Lights.</li> <li>Traffic signals.</li> <li>Desk Lamps.</li> <li>Lanterns.</li> <li>Garden Lights.</li> <li>Backlighting.</li> <li>Solar Lighting.</li> </ul> |

### VIEWING ANGLE OPTIONS:

| Product Code | Viewing Angle (2θ <sup>1/2</sup> ) (Degrees) |
|--------------|--|
| BL-LBUW5B20C | 20°±3°                                       |
| BL-LBUW5N40C | 40°±3°                                       |
| BL-LBUW5N60M | 60°±5°                                       |

### PACKAGE OUTLINE DIMENSIONS:



### NOTES:

- All dimensions are in millimeters (inches).
- Tolerance is  $\pm 0.25$  (0.01") mm unless otherwise noted.
- Lead spacing is measured where the leads emerge from the package.
- Specifications are subject to change without notice.

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### ABSOLUTE MAXIMUM RATING (at $T_A = 25^\circ\text{C}$ )

| Parameter  | Symbol                             | Value       | Unit                  |
|--|------------------------------------|-------------|-----------------------|
| Continuous Forward Current                                     | $I_F$                              | 30 *        | mA                    |
| Peak Forward Current<br>(1/16 Duty Cycle, 0.1msec Pulse width) | $I_{Fp}$                           | 150         | mA                    |
| Power Dissipation  | $P_d$                              | 120         | mW                    |
| Forward Voltage  | $V_f$                              | 3.6         | V                     |
| Derating Factor  | $D_F$                              | 0.4         | mA / $^\circ\text{C}$ |
| Reverse Voltage  | $V_R$                              | 5.0         | V                     |
| Operating Temperature  | $T_{opr}$                          | -25 to +85  | $^\circ\text{C}$      |
| Storage Temperature  | $T_{stg}$                          | -35 to +100 | $^\circ\text{C}$      |
| Lead Soldering Temperature<br>(1.6mm (0.063") from body)       | 260 $^\circ\text{C}$ for 5 seconds |             |                       |

\* If LEDs will be continuously ON (24/7), it is highly recommended to drive them at 20 mA or below to reduce lumen/brightness decay rate.

### LUMINOUS INTENSITY (at 20 mA DC / $T_A = 25^\circ\text{C}$ )

| Product Code | Luminous Intensity (mcd) |      |         |        |         |        |       |
|--------------|--------------------------|------|---------|--------|---------|--------|-------|
|              | Rank R                   |      |         | Rank S |         | Rank T |       |
|              | Min.                     | Typ. | Max/Min | Typ.   | Max/Min | Typ.   | Max.  |
| BL-LBUW5B20C | 5500                     | 7200 | 7800    | 9200   | 11000   | 12600  | 15500 |
| BL-LBUW5N40C | 1500                     | 1800 | 2100    | 2600   | 3000    | 3600   | 4300  |
| BL-LBUW5N60M | 500                      | 700  | 900     | 1100   | 1300    | 1500   | 1800  |

Note: Typical forward voltage ( $V_F$ ) at forward current ( $I_F$ ) 20 mA is  $3.2 \pm 0.1$  V

### LUMINOUS FLUX (at 20 mA DC / $T_A = 25^\circ\text{C}$ )

| Product Code | Luminous Flux (lm) |      |         |        |         |        |      |
|--------------|--------------------|------|---------|--------|---------|--------|------|
|              | Rank R             |      |         | Rank S |         | Rank T |      |
|              | Min.               | Typ. | Max/Min | Typ.   | Max/Min | Typ.   | Max. |
| BL-LBUW5B20C | 1.6                | 1.8  | 2.0     | 2.2    | 2.4     | 2.6    | 2.8  |
| BL-LBUW5N40C | 1.6                | 1.8  | 2.0     | 2.2    | 2.4     | 2.6    | 2.8  |
| BL-LBUW5N60M | 1.4                | 1.6  | 1.8     | 2.0    | 2.2     | 2.4    | 2.6  |

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## BL-LBUW5 series



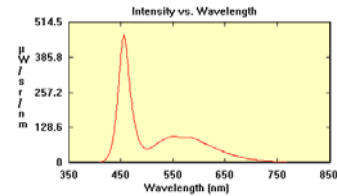
### COLOR RANK LIMITS (at 20 mA DC / T<sub>A</sub> = 25°C)

| BIN | Color Rendering Index | Approximate Color Temperature (K) |
|-----|-----------------------|-----------------------------------|
| A   | 50 - 65               | 9,500 - 15,000                    |
| B   | 70 - 90               | 5,500 - 9,500                     |
| C   | 75 - 95               | 4,500 - 5,500                     |
| D   | 70 - 85               | 2,800 - 3,200                     |

### COLOR RANKS CIE CHROMATICITY COORDINATES

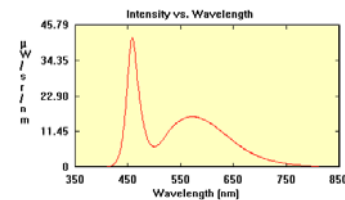
#### A-Rank (Approximate Color Temperature: 9,500-15,000K)

|   | Rank A |       |       |       |
|---|--------|-------|-------|-------|
| X | 0.280  | 0.264 | 0.283 | 0.296 |
| Y | 0.248  | 0.267 | 0.305 | 0.276 |



#### B-Rank (Approximate Color Temperature: 5,500-9,500K)

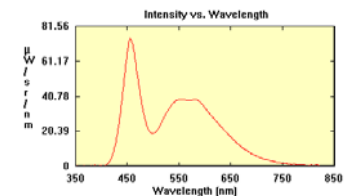
|   | Rank B1 |       |       |       |
|---|---------|-------|-------|-------|
| X | 0.287   | 0.283 | 0.330 | 0.330 |
| Y | 0.295   | 0.305 | 0.360 | 0.339 |



|   | Rank B2 |       |       |       |
|---|---------|-------|-------|-------|
| X | 0.296   | 0.287 | 0.330 | 0.330 |
| Y | 0.276   | 0.295 | 0.339 | 0.318 |

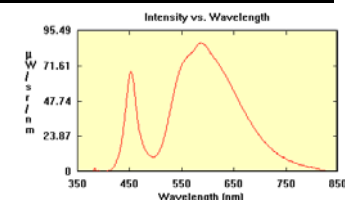
#### C-Rank (Approximate Color Temperature: 4,500-5,500K)

|   | Rank C |       |       |       |
|---|--------|-------|-------|-------|
| X | 0.330  | 0.330 | 0.361 | 0.356 |
| Y | 0.318  | 0.360 | 0.385 | 0.351 |



#### D-Rank (Approximate Color Temperature: 2,800-3,200K)

|   | Rank D |       |       |       |
|---|--------|-------|-------|-------|
| X | 0.440  | 0.440 | 0.500 | 0.500 |
| Y | 0.400  | 0.500 | 0.500 | 0.400 |



Note: Rank D yields an 8% to 12% reduction in photometric intensity (mcd)

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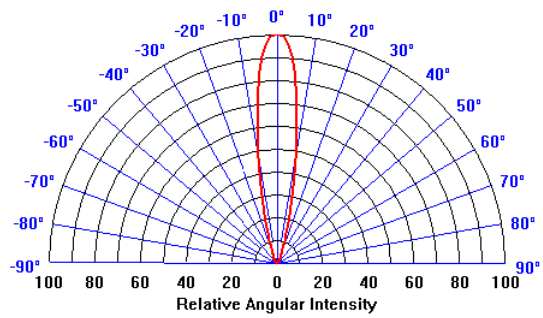
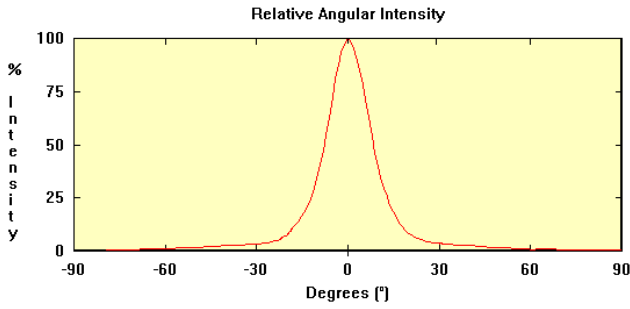
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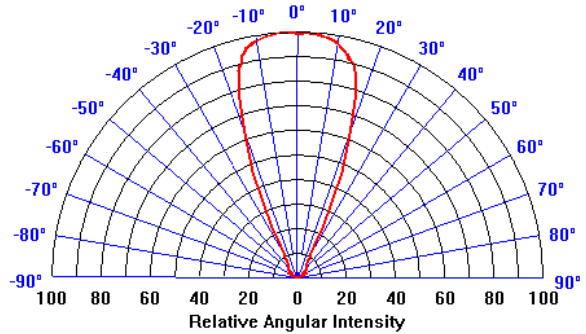
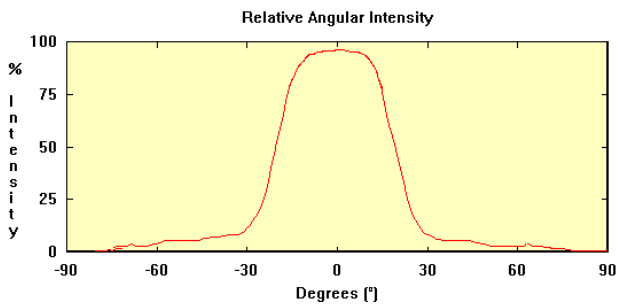


### BEAM RADIATION PATTERNS

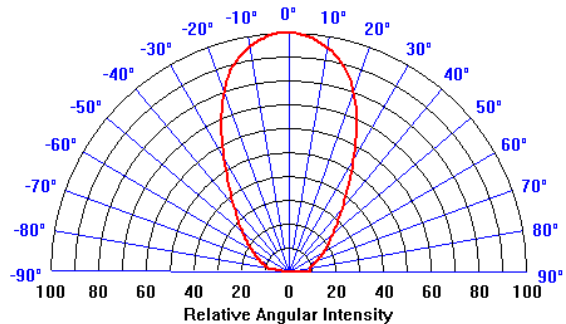
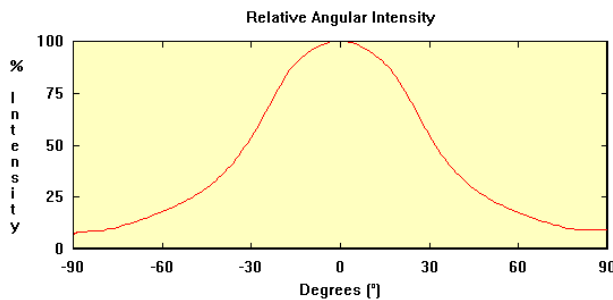
#### 5B20C Series



#### 5N40C Series



#### 5N60M Series



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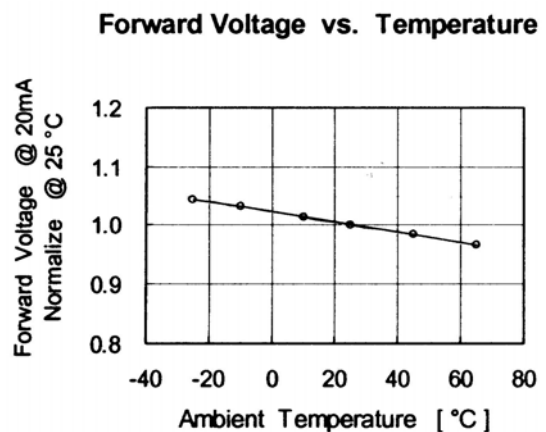
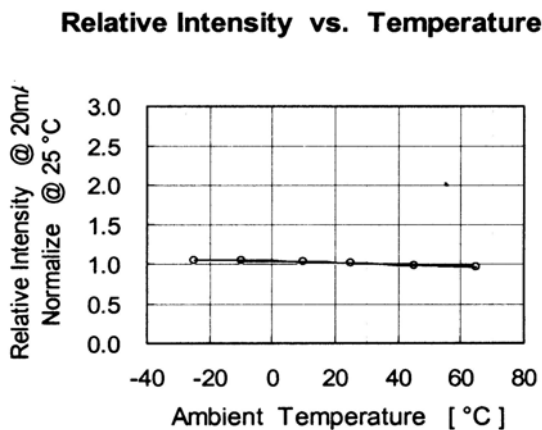
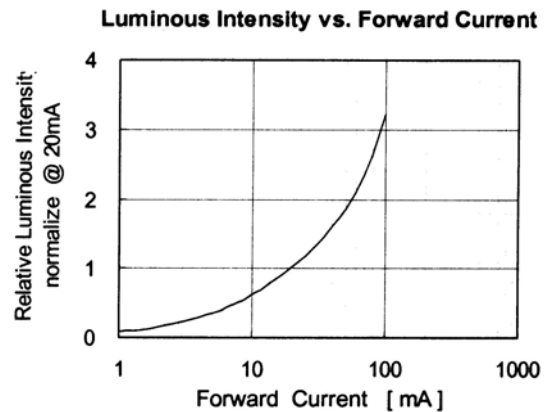
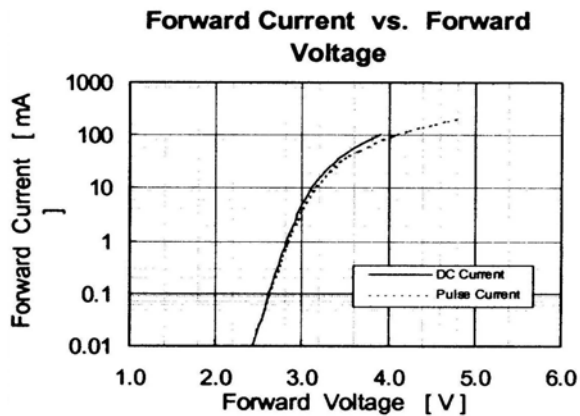
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### TYPICAL ELECTRICAL CHARACTERISTICS CURVES

(at 20 mA DC /  $T_A = 25^\circ\text{C}$ )



#### GENERAL NOTES:

1. Luminous Intensity (Iv) is measured with a light sensor and filter combination (goniospectroradiometer) and is the Luminous Flux per unit solid angle (steradian) emitted by the LED lamp in the direction of the mechanical axis of the lamp and then weighed by the eye response curve (1931 CIE 2° Observer Chromaticity Diagram).
2. Luminous Intensity measurement uncertainty is +/- 15% due to test procedures and equipment variations.
3.  $\theta_{1/2}$  is the off-axis angle at which the luminous intensity is half the axial luminous intensity. Tolerance +/- 3°.
4. The Chromaticity Coordinates (x,y), are derived from the 1931 CIE 2° Observer Chromaticity Diagram.
5. Chromaticity Coordinate measurement uncertainty is +/- 0.05 due to variations.
6. Color Temperature derived from black body curve on 1964 u-v CIE chromaticity diagram.
7. **Caution for ESD:** Static Electricity and surges can damage the LED. It is recommended using a wristband or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.
8. Do not apply excess mechanical stress to the leads, especially when heated or while soldering.

