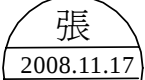
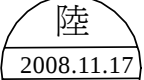




**DEVICE NUMBER : BL-H3ZD32L-A-LWB-TRB (正白)**

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[www.brtled.com](http://www.brtled.com).

| APPROVED                                                                             | DRAWER                                                                                |
|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |

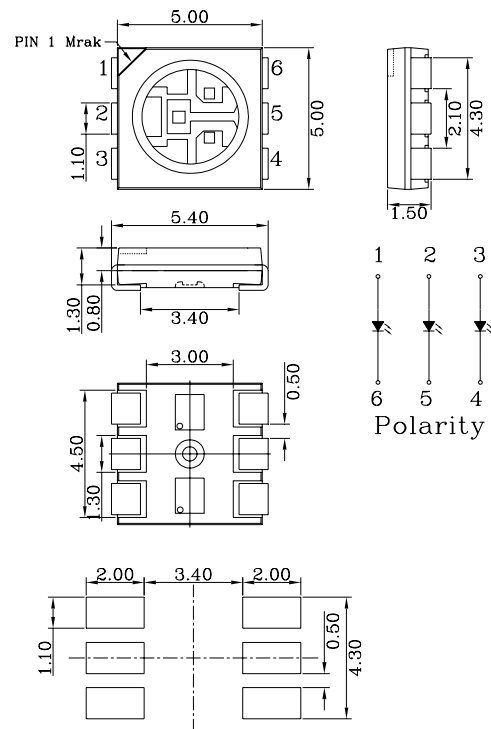
### ● Features:

1. Emitted Color: White
2. Lens Appearance: Yellow diffuse.
3. 5.4x5.0x1.5mm standard package.
4. Suitable for all SMT assembly methods.
5. Compatible with infrared and vapor phase reflow solder process.
6. Compatible with automatic placement equipment.
7. This product doesn't contain restriction Substance, comply ROHS standard.

### ● Applications:

1. Automotive lighting.
2. Backlighting: LCDs, Key pads advertising.
3. Status indicators: Consumer & industrial electronics.
4. General use.

### ● Package Dimensions:



#### NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.10\text{mm}$  (0.004") unless otherwise specified.
3. Specifications are subject to change without notice.

### ● Absolute Maximum Ratings( $T_a=25^\circ\text{C}$ )

| Parameter                          | Symbol    | Rating                                     | Unit |
|------------------------------------|-----------|--------------------------------------------|------|
| Power Dissipation <sup>*1</sup>    | $P_D$     | 360                                        | mW   |
| Forward Current <sup>*2</sup>      | $I_F$     | 90                                         | mA   |
| Peak Forward Current <sup>*3</sup> | $I_{FP}$  | 100                                        | mA   |
| Reverse Voltage                    | $V_R$     | 5                                          | V    |
| Operating Temperature              | $T_{opr}$ | $-40^\circ\text{C} \sim 100^\circ\text{C}$ | -    |
| Storage Temperature                | $T_{stg}$ | $-40^\circ\text{C} \sim 100^\circ\text{C}$ | -    |
| Soldering Temperature              | $T_{sol}$ | See Page 7                                 | -    |

<sup>\*1</sup> The values are based on 3-circuit performance

<sup>\*2</sup> The values are based on 3-circuit performance

<sup>\*3</sup> Condition for IFP is pulse of 1/10 duty and 3 msec width.

### ● Electrical and optical characteristics(Ta=25°C)

| Parameter                        | Symbol            | Condition            | Min. | Typ.  | Max. | Unit |
|----------------------------------|-------------------|----------------------|------|-------|------|------|
| Forward Voltage* <sup>1</sup>    | V <sub>f</sub>    | I <sub>F</sub> =50mA | 3.0  | 3.3   | 3.6  | V    |
| Luminous Intensity* <sup>2</sup> | I <sub>v</sub>    | I <sub>F</sub> =50mA | -    | 4500  | -    | mcd  |
| Chromaticity Coordinates         | x                 | I <sub>F</sub> =50mA | -    | 0.340 | -    | -    |
|                                  | y                 |                      | -    | 0.380 | -    |      |
| Viewing Angle                    | 2θ <sub>1/2</sub> | I <sub>F</sub> =50mA | -    | 120   | -    | deg  |

\*<sup>1</sup> The values are based on 1-circuit performance

\*<sup>2</sup> The values are based on 3-circuit performance

### ● Typical Electro-Optical Characteristics Curves.

Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

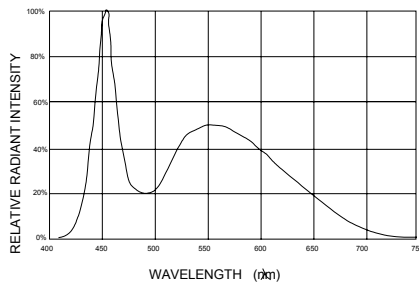


Fig.2 FORWARD CURRENT VS. AMBIENT TEMPERATURE

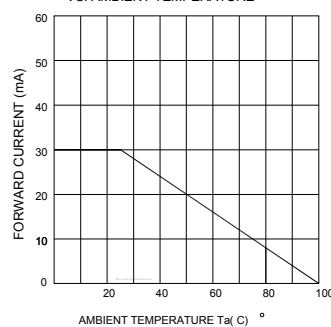


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

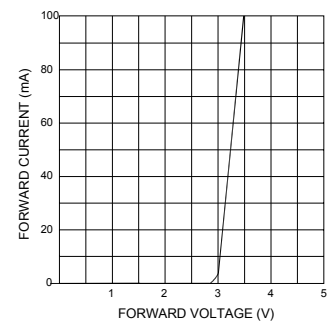


Fig.4 RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

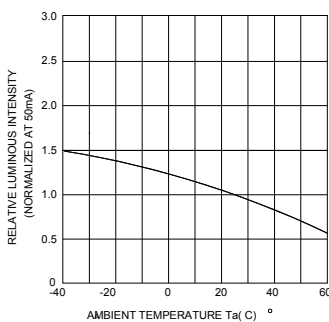


Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

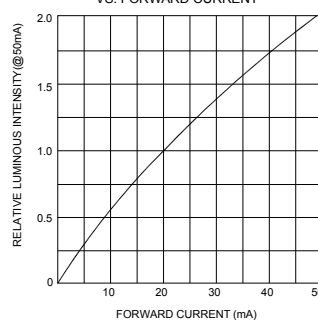


Fig.6 RADIATION DIAGRAM

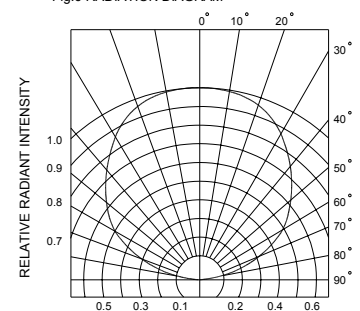


Fig.7 FORWARD CURRENT VS. CHROMATICITY COORDINATE

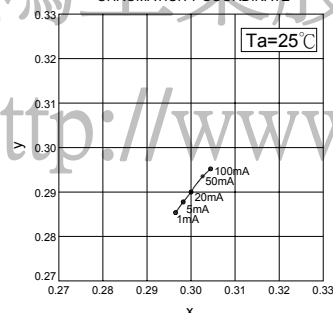
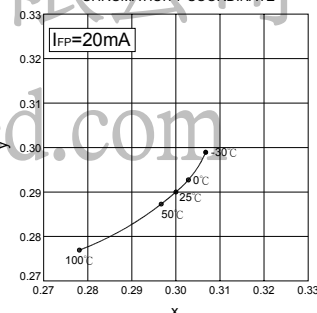


Fig.8 AMBIENT TEMPERATURE VS. CHROMATICITY COORDINATE



Technical drawing of the product packaging showing dimensions and layout:

- Top View:** Shows a circular component with a central pin and two side tabs. Dimensions: 1000 pcs/reel.
- Side View (Aluminum Foil Bag):** Shows a rectangular bag with a "Bar Code Label" on the front. Dimensions: 245 (height), 220 (width).
- Box View (12 bag/box):** Shows a box containing 12 bags. Dimensions: 185 (width), 220 (depth), 200 (height).
- Carton View (6 box/carton):** Shows a carton containing 6 boxes. Dimensions: 470 (width), 210 (depth), 645 (height).

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● IV Bin Limits (At 50 mA ,The values are based on 3-circuit performance)

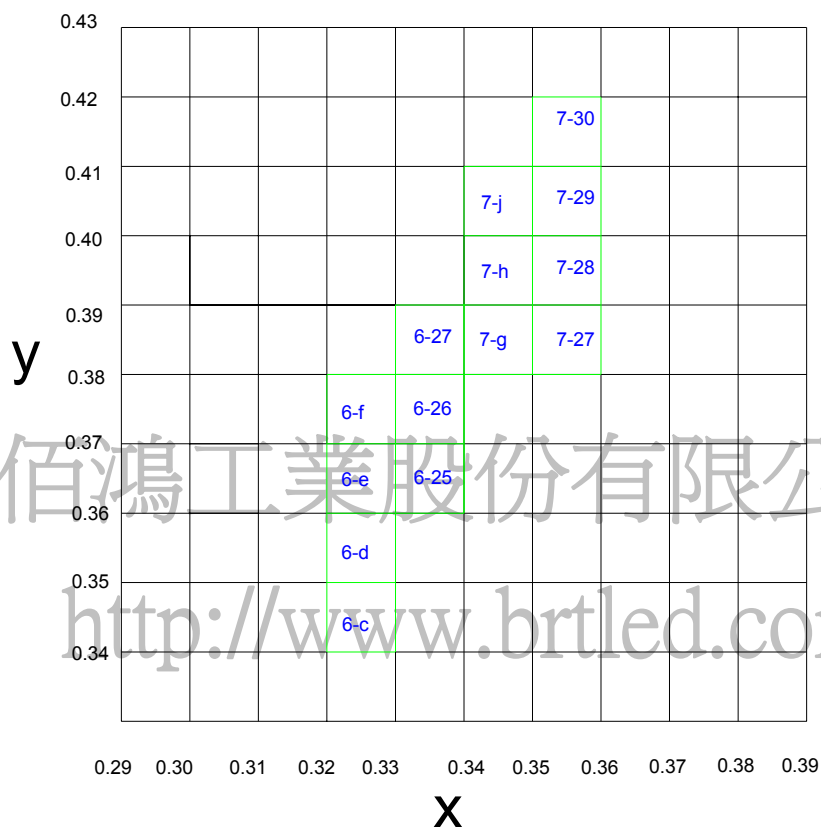
| BIN CODE | Min. (mcd) | Max. (mcd) |
|----------|------------|------------|
| Z3       | 4050       | 4250       |
| Z4       | 4250       | 4450       |
| Z5       | 4450       | 4650       |
| Z6       | 4650       | 4850       |
| Z7       | 4850       | 5050       |
| ZA1      | 5050       | 5300       |
| ZA2      | 5300       | 5550       |
| ZA3      | 5550       | 5800       |
| ZA4      | 5800       | 6050       |

● Forward Voltage Bin Limits (At 50 mA, The values are based on 3-circuit performance)

| BIN CODE | Min. (v) | Max. (v) |
|----------|----------|----------|
| H1       | 3.0      | 3.1      |
| H2       | 3.1      | 3.2      |
| J1       | 3.2      | 3.3      |
| J2       | 3.3      | 3.4      |
| K1       | 3.4      | 3.5      |
| K2       | 3.5      | 3.6      |

● Color Bin Limits (At 50 mA)

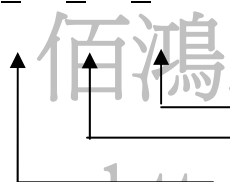
CIE CHROMATICITY DIAGRAM



### Color Bin Limits (At 50mA)

| BIN  | Chromaticity Coordinates |      |      |      |      |
|------|--------------------------|------|------|------|------|
| 6-c  | x                        | 0.33 | 0.32 | 0.32 | 0.33 |
|      | y                        | 0.34 | 0.34 | 0.35 | 0.35 |
| 6-d  | x                        | 0.33 | 0.32 | 0.32 | 0.33 |
|      | y                        | 0.35 | 0.35 | 0.36 | 0.36 |
| 6-e  | x                        | 0.33 | 0.32 | 0.32 | 0.33 |
|      | y                        | 0.36 | 0.36 | 0.37 | 0.37 |
| 6-f  | x                        | 0.33 | 0.32 | 0.32 | 0.33 |
|      | y                        | 0.37 | 0.37 | 0.38 | 0.38 |
| 6-25 | x                        | 0.34 | 0.33 | 0.33 | 0.34 |
|      | y                        | 0.36 | 0.36 | 0.37 | 0.37 |
| 6-26 | x                        | 0.34 | 0.33 | 0.33 | 0.34 |
|      | y                        | 0.37 | 0.37 | 0.38 | 0.38 |
| 6-27 | x                        | 0.34 | 0.33 | 0.33 | 0.34 |
|      | y                        | 0.38 | 0.38 | 0.39 | 0.39 |
| 7-g  | x                        | 0.35 | 0.34 | 0.34 | 0.35 |
|      | y                        | 0.38 | 0.38 | 0.39 | 0.39 |
| 7-h  | x                        | 0.35 | 0.34 | 0.34 | 0.35 |
|      | y                        | 0.39 | 0.39 | 0.40 | 0.40 |
| 7-j  | x                        | 0.35 | 0.34 | 0.34 | 0.35 |
|      | y                        | 0.40 | 0.40 | 0.41 | 0.41 |
| 7-27 | x                        | 0.36 | 0.35 | 0.35 | 0.36 |
|      | y                        | 0.38 | 0.38 | 0.39 | 0.39 |
| 7-28 | x                        | 0.36 | 0.35 | 0.35 | 0.36 |
|      | y                        | 0.39 | 0.39 | 0.40 | 0.40 |
| 7-29 | x                        | 0.36 | 0.35 | 0.35 | 0.36 |
|      | y                        | 0.40 | 0.40 | 0.41 | 0.41 |
| 7-30 | x                        | 0.36 | 0.35 | 0.35 | 0.36 |
|      | y                        | 0.41 | 0.41 | 0.42 | 0.42 |

● BIN :         

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 V<sub>F</sub> BIN CODE  
 Color BIN CODE  
 Intensity BIN CODE  
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### Notes:

1. Iv : Tolerance for each Bin limit is  $\pm 10 \%$
2. Color : Tolerance for each Bin limit is  $\pm 0.005$
3. Bin categories are established for classification of products.  
Products may not be available in all bin categories

### ● Reliability Test

| Classification     | Test Item                              | Reference Standard                                                          | Test Conditions                                                                                                 | Result |
|--------------------|----------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--------|
| Endurance Test     | Operation Life                         | MIL-STD-750:1026<br>MIL-STD-883:1005<br>JIS-C-7021 :B-1                     | I <sub>F</sub> =20mA<br>Ta=Under room temperature<br>Test time=1,000hrs                                         | 0/20   |
|                    | High Temperature High Humidity Storage | MIL-STD-202:103B<br>JIS-C-7021 :B-11                                        | Ta=+65°C±5°C<br>RH=90%-95%<br>Test time=240hrs                                                                  | 0/20   |
|                    | High Temperature Storage               | MIL-STD-883:1008<br>JIS-C-7021 :B-10                                        | High Ta=+85°C±5°C<br>Test time=1,000hrs                                                                         | 0/20   |
|                    | Low Temperature Storage                | JIS-C-7021 :B-12                                                            | Low Ta=-35°C±5°C<br>Test time=1,000hrs                                                                          | 0/20   |
| Environmental Test | Temperature Cycling                    | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1010<br>JIS-C-7021 :A-4 | -35°C ~ +25°C ~ +85°C ~ +25°C<br>60min 20min 60min 20min<br>Test Time=5cycle                                    | 0/20   |
|                    | Thermal Shock                          | MIL-STD-202:107D<br>MIL-STD-750:1051<br>MIL-STD-883:1011                    | -35°C±5°C ~ +85°C±5°C<br>20min 20min<br>Test Time=10cycle                                                       | 0/20   |
|                    | Solder Resistance                      | MIL-STD-202:201A<br>MIL-STD-750:2031<br>JIS-C-7021 :A-1                     | Preheating :<br>140°C-160°C ,within 2 minutes.<br>Operation heating :<br>260°C (Max.), within 10seconds. (Max.) | 0/20   |

### ● Judgment criteria of failure for the reliability

| Measuring items    | Symbol               | Measuring conditions | Judgment criteria for failure |
|--------------------|----------------------|----------------------|-------------------------------|
| Forward voltage    | V <sub>F</sub> (V)   | I <sub>F</sub> =20mA | Over U <sup>1</sup> x1.2      |
| Reverse current    | I <sub>R</sub> (uA)  | V <sub>R</sub> =5V   | Over U <sup>1</sup> x2        |
| Luminous intensity | I <sub>v</sub> (mcd) | I <sub>F</sub> =20mA | Below S <sup>1</sup> X0.5     |

Note: 1. U means the upper limit of specified characteristics. S means initial value.

2. After each test, remove test pieces, wait for 2 hours and test pieces have returned to ambient temperature, then take next measurement.

### ● Soldering :

#### 1. Manual Soldering

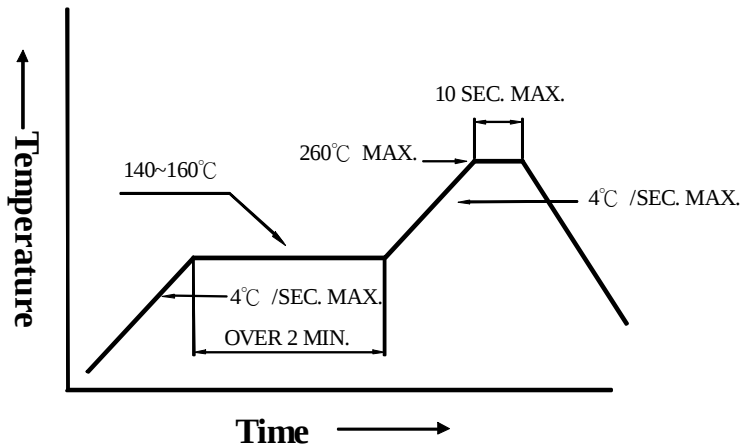
The temperature of the iron tip should not be higher than 350°C and Soldering time to be within 3 seconds per solder-pad.

#### 2. Reflow Soldering

Preheating : 140°C~160°C ±5°C ,within 2 minutes.

Operation heating : 260°C (Max.) within 10 seconds.(Max)

Gradual Cooling (Avoid quenching).

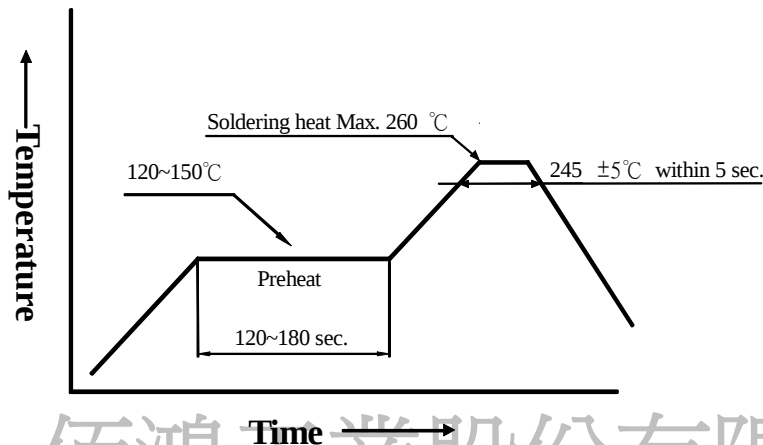


#### 3. DIP soldering (Wave Soldering) :

Preheating : 120°C~150°C ,within 120~180 sec.

Operation heating : 245°C±5°C within 5 sec. 260°C (Max)

Gradual Cooling (Avoid quenching).



### ● Handling :

Care must be taken not to damage LED's epoxy resin while exposing to high temperature or contact LED's epoxy resin with hard or sharp objects, such as metal hook, tweezer or sand blasting.

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### ● Notes for designing:

Current limiting resistor must be used in the circuit to drive BRIGHT LEDs within the rated figures and not to overload BRIGHT LEDs with instantaneous voltage at the turning ON and OFF cycles. When using pulse driving, the average current must be within the rated figures. And the circuit should be designed to avoid reverse voltage when turning off the BRIGHT LEDs.

### ● Storage:

In order to avoid the absorption of moisture, it is recommended to solder BRIGHT LEDs as soon as possible after unpacking the sealed envelope.

If the envelope is still packed, to store it in the environment as following:

- (1) Temperature : 5°C -30°C (41°F) Humidity : RH 60% Max.
- (2) After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
  - a. Completed within 168 hours.
  - b. Stored at less than 30% RH.
- (3) Devices require baking before mounting, if:
  - (2) a or (2) b is not met.
- (4) If baking is required, devices must be baked under below conditions:
  - 48 hours at 60°C±3°C.

### ● Package and Label of Products:

- (1) Package: Products are packed in one bag of 1000 pcs (one taping reel) and a label is attached to each bag.
- (2) Label:



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**BRT BRIGHT LED ELECTRONICS CORP.**

**Part No.:BL-Hxxxxx-TRB**

**Quantity:xxxx PCS**

**BIN:x**

**Sealing date: X X X X X**

← **BRIGHT LED LOGO**

← **Part No.**

← **Quantity**

← **BIN.**

← **Sealing Date**

← **Year**   **Month**   **Day**

← **Manufacture Location**

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