

# Technical Data Sheet

## 3 mm Round LED (T-1)

### **264-15/T2C4-1NRB**

#### Features

- Popular T-1 colorless 3mm package.
- High luminous power.
- Typical chromaticity coordinates  $x=0.29$ ,  $y=0.28$  according to CIE1931.
- Bulk, available taped on reel.
- ESD-withstand voltage: up to 4KV
- The product itself will remain within RoHS compliant version.



#### Descriptions

- The series is designed for application required high luminous intensity.
- The phosphor filled in the reflector converts the blue emission of InGaN chip to ideal white.

#### Applications

- Outdoor Displays
- Optical Indicators
- Backlighting
- Marker Lights

#### Device Selection Guide

| PART NO.         | Chip     |               | Lens Color  |
|------------------|----------|---------------|-------------|
|                  | Material | Emitted Color |             |
| 264-15/T2C4-1NRB | InGaN    | White         | Water Clear |

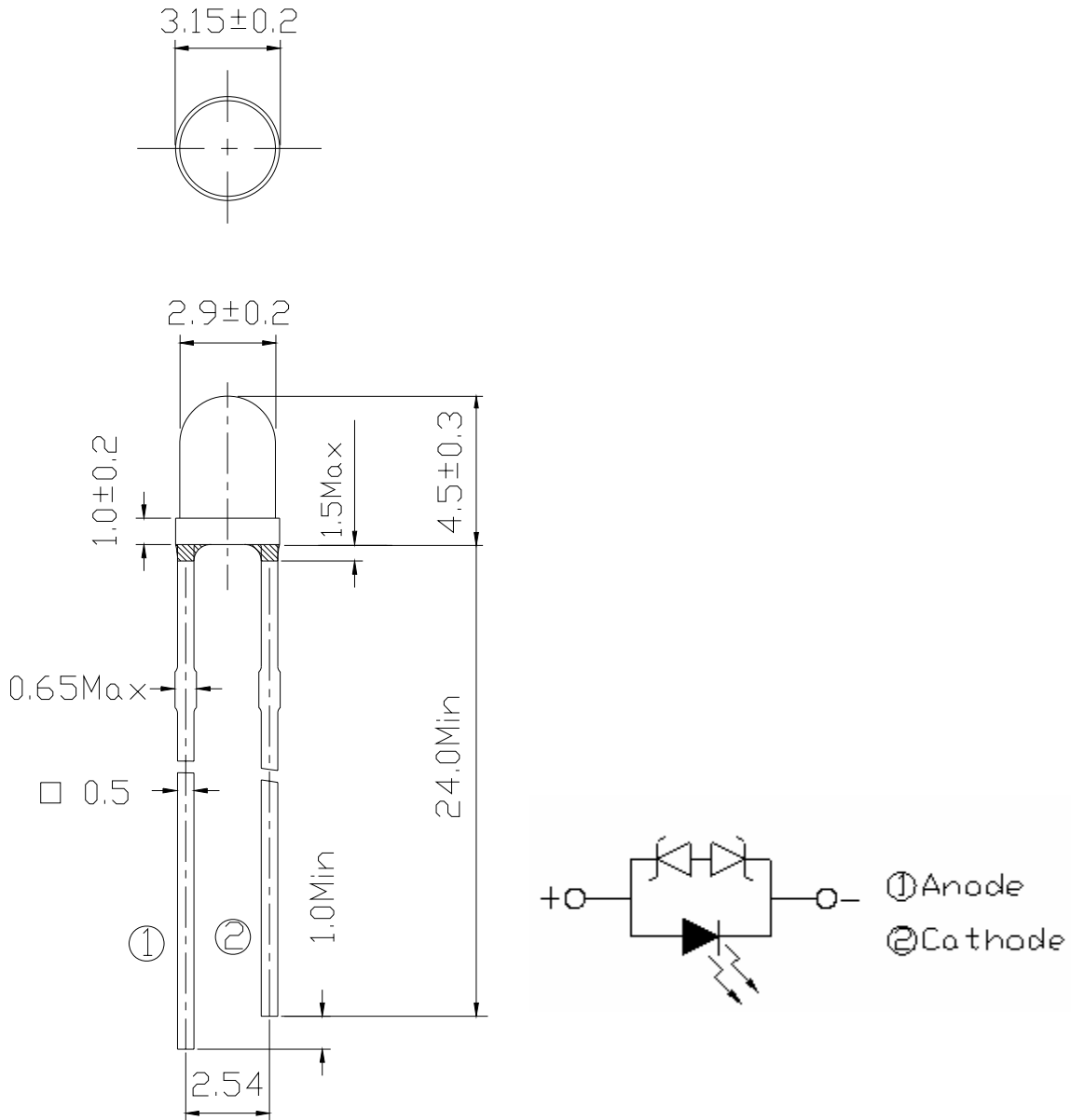


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### Package Dimensions



### Notes:

1. All dimensions are in millimeters, and tolerance is 0.25mm except being specified.
2. Lead spacing is measured where the lead emerges from the package.
3. Protruded resin under flange is 1.5mm Max. LED.

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#### Absolute Maximum Ratings (Ta=25°C)

| Parameter                             | Symbol           | Rating     | Unit |
|---------------------------------------|------------------|------------|------|
| Continuous Forward Current            | I <sub>F</sub>   | 30         | mA   |
| Peak Forward Current(Duty /10 @ 1KHZ) | I <sub>FP</sub>  | 100        | mA   |
| Reverse Voltage                       | V <sub>R</sub>   | 5          | V    |
| Operating Temperature                 | T <sub>opr</sub> | -40 ~ +85  | °C   |
| Storage Temperature                   | T <sub>stg</sub> | -40 ~ +100 | °C   |
| Soldering Temperature (T=5 sec)       | T <sub>sol</sub> | 260 ± 5    | °C   |
| Power Dissipation                     | P <sub>d</sub>   | 100        | mW   |
| Zener Reverse Current                 | I <sub>z</sub>   | 100        | mA   |
| Electrostatic Discharge               | ESD              | 4K         | V    |

#### Electro-Optical Characteristics (Ta=25°C)

| Parameter                | Symbol         | Condition            | Min. | Typ. | Max. | Units |
|--------------------------|----------------|----------------------|------|------|------|-------|
| Forward Voltage          | V <sub>F</sub> | I <sub>F</sub> =20mA | 3.0  | --   | 4.0  | V     |
| Reverse Current          | I <sub>R</sub> | V <sub>R</sub> =5V   | --   | --   | 50   | uA    |
| Zener Reverse Voltage    | V <sub>Z</sub> | I <sub>z</sub> =5mA  | 5.2  | --   | --   | V     |
| Luminous Intensity       | I <sub>v</sub> | I <sub>F</sub> =20mA | 2250 | --   | 5650 | mcd   |
| Viewing Angle            | 2 θ 1/2        | I <sub>F</sub> =20mA | --   | 40   | --   | deg   |
| Chromaticity Coordinates | x              | I <sub>F</sub> =20mA | --   | 0.29 | --   |       |
|                          | y              | -----                | --   | 0.28 | --   |       |



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#### Luminous Intensity Combination (mcd at 20mA)

| Rank | Min  | Max  |
|------|------|------|
| N    | 2250 | 2850 |
| P    | 2850 | 3600 |
| Q    | 3600 | 4500 |
| R    | 4500 | 5650 |

\*Measurement Uncertainty of Luminous Intensity:  $\pm 15\%$

#### Forward Voltage Combination (V at 20mA)

| Group | B    |     |     |     |     |
|-------|------|-----|-----|-----|-----|
| Rank  | 1    | 2   | 3   | 4   | 5   |
| Min.  | 3.00 | 3.2 | 3.4 | 3.6 | 3.8 |
| Max.  | 3.20 | 3.4 | 3.6 | 3.8 | 4.0 |

\*Measurement Uncertainty of Forward Voltage :  $\pm 0.1V$

#### Color Combination ( at 20mA)

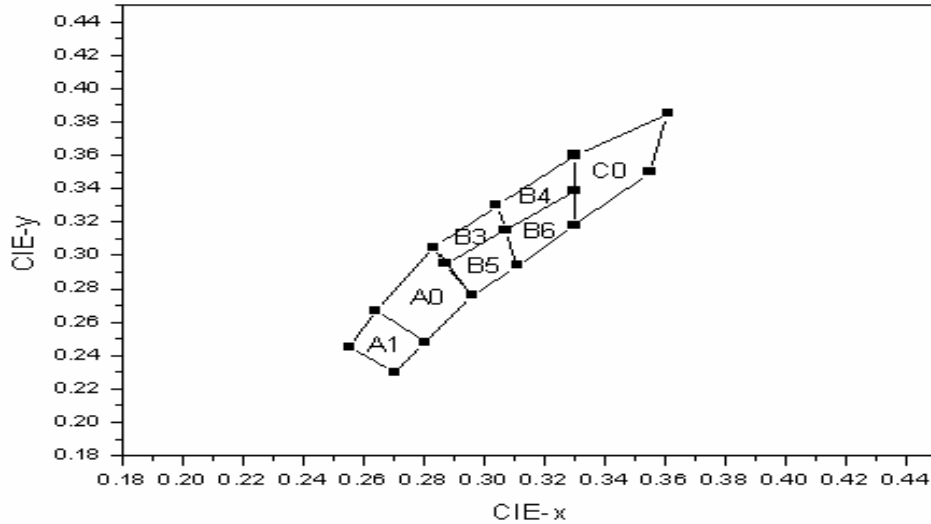
| Group | Bins                             |
|-------|----------------------------------|
| 1     | A1 . A0 . B3 . B4 . B5 . B6 . C0 |

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### CIE Chromaticity Diagram



### Color Ranks (IF=20mA , Ta=25°C)

| Color Ranks |   | CIE   |       |       |       |
|-------------|---|-------|-------|-------|-------|
| A1          | X | 0.255 | 0.264 | 0.28  | 0.27  |
|             | Y | 0.245 | 0.267 | 0.248 | 0.23  |
| A0          | X | 0.264 | 0.283 | 0.296 | 0.28  |
|             | Y | 0.267 | 0.305 | 0.267 | 0.248 |
| B3          | X | 0.283 | 0.304 | 0.307 | 0.287 |
|             | Y | 0.305 | 0.33  | 0.315 | 0.295 |
| B4          | X | 0.304 | 0.33  | 0.33  | 0.307 |
|             | Y | 0.33  | 0.36  | 0.339 | 0.315 |
| B5          | X | 0.287 | 0.307 | 0.311 | 0.296 |
|             | Y | 0.295 | 0.315 | 0.294 | 0.276 |
| B6          | X | 0.307 | 0.33  | 0.33  | 0.311 |
|             | Y | 0.315 | 0.339 | 0.318 | 0.294 |
| C0          | X | 0.33  | 0.361 | 0.355 | 0.33  |
|             | Y | 0.36  | 0.385 | 0.35  | 0.318 |

\*Measurement uncertainty of the color coordinates :  $\pm 0.01$

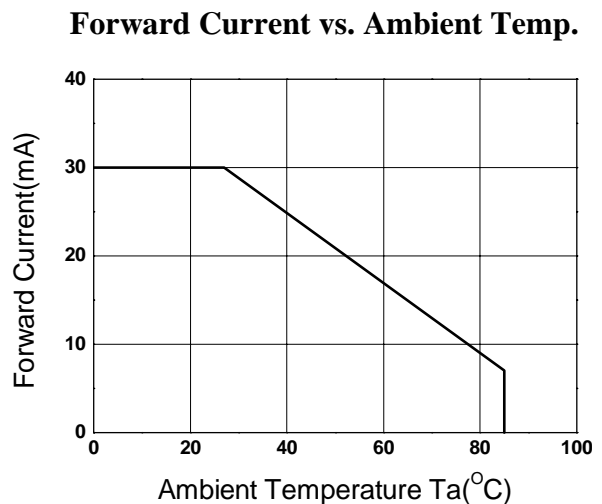
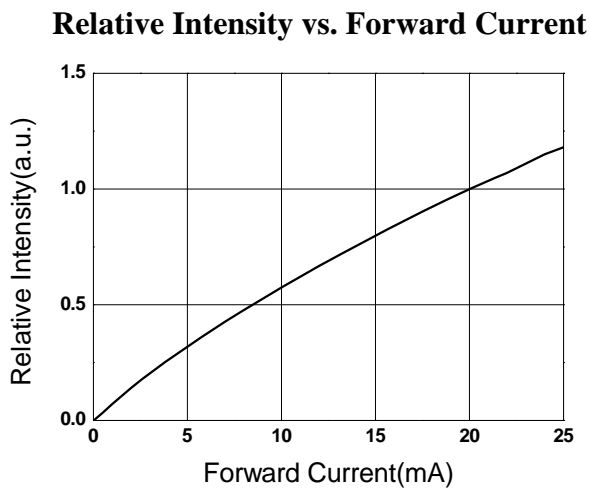
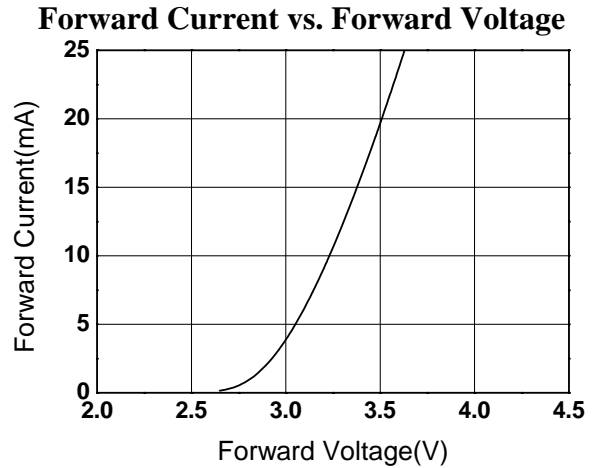
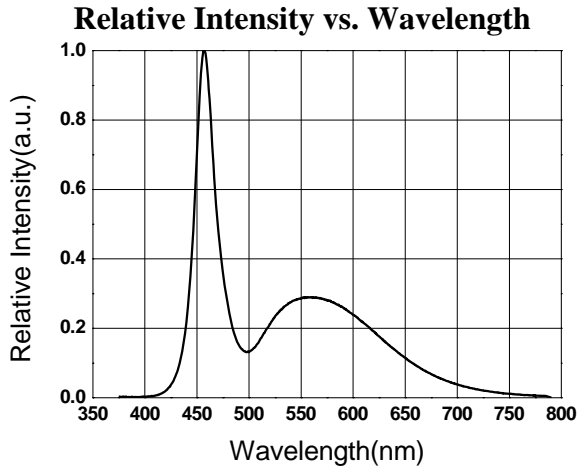


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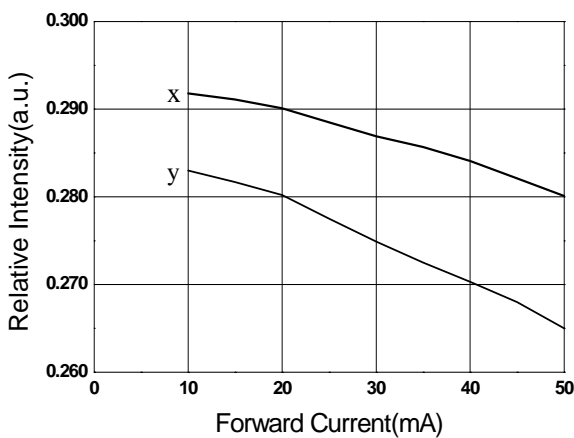
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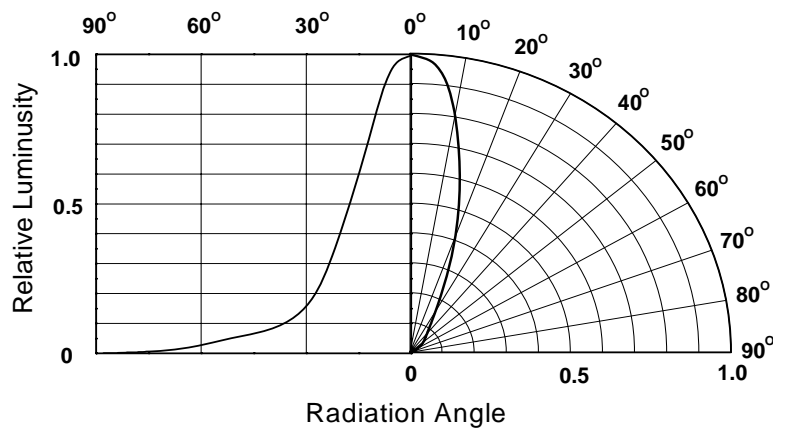
#### Typical Electro-Optical Characteristics Curves



#### Chromaticity Coordinate vs. Forward Current



#### Relative Intensity vs. Angle Displacement





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### Packing Quantity Specification

- 1.1000PCS/1Bag , 5Bags/1Box
- 2.10Boxes/1Carton

### Label Form Specification

|                  |             |
|------------------|-------------|
| <b>EVERLIGHT</b> |             |
| CPN:             |             |
| P/N:             |             |
|                  | <b>RoHS</b> |
| 264-15/T2C4-1NRB |             |
| QTY :            | CAT:        |
|                  | HUE:        |
| LOT NO :         | REF:        |
|                  |             |
| MADE IN TAIWAN   |             |

- CPN: Customer's Production Number
- P/N : Production Number
- QTY: Packing Quantity
- CAT: Ranks of Luminous Intensity and Forward Voltage
- HUE: Color Rank
- REF: Reference
- LOT No: Lot Number
- MADE IN TAIWAN: Production Place



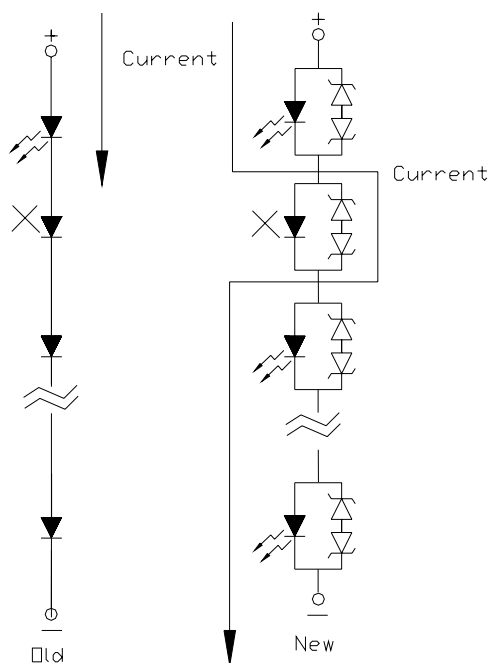
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#### Notes

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
4. Below the zener reference voltage  $V_z$ , all the current flows through LED and as the voltage rises to  $V_z$ , the zener diode "breakdown." If the voltage tries to rise above  $V_z$  current flows through the zener branch to keep the voltage at exactly  $V_z$ .
5. When the LED is connected using serial circuit, if either piece of LED is no light up but current can't flow through causing others to light down. In new design, the LED is parallel with zener diode. if either piece of LED is no light up but current can flow through causing others to light up







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#### 6. Soldering Condition

Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to case, and soldering beyond the base of the tie bar is recommended.

Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.

Recommended soldering conditions:

| Hand Soldering       |                                     | DIP Soldering |                          |
|----------------------|-------------------------------------|---------------|--------------------------|
| Temp. at tip of iron | 400°C Max. (30W Max.)               | Preheat temp. | 100°C Max. (60 sec Max.) |
| Soldering time       | 3 sec Max.                          | Bath temp.    | 265 Max.                 |
| Distance             | 3mm Min.(From solder joint to case) | Bath time.    | 5 sec Max.               |
|                      |                                     | Distance      | 3mm Min.                 |

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