



**BRIGHTTEK**  
**BRIGHTTEK (EUROPE) LIMITED**

*Brighten Up The World With LED!*



ISO/TS 16949:2009



BS EN ISO 14001:2004



QC 080000 IECQ HSPM

## PRODUCT DATASHEET

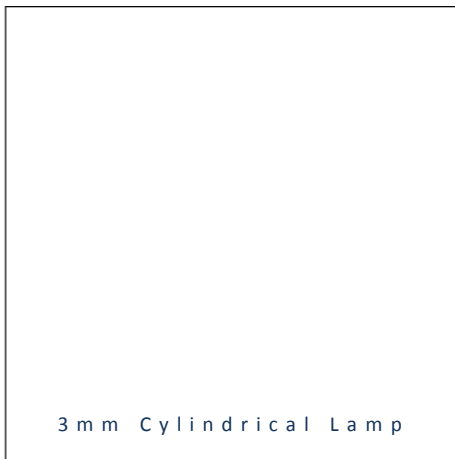


- ▶ PTH Lamp
- ▶ 3mm Cylindrical 3.8t
- ▶ Warm White (3400K)

NOW16L96ZR (Bulk)  
 NOW16L96ZRT (Taping)



Release Date: 23 October 2015 Version: A1.2



3 m m C y l i n d r i c a l L a m p

### 3mm Cylindrical Lamp



**RoHS**  
Compliant

#### FEATURES:

- **Package:** PTH Lamp 3mm Cylindrical 3.8t
- **Forward Current:** 20mA
- **Forward Voltage (typ.):** 3.2V
- **Luminous Intensity (typ.):** 500mcd @20mA
- **Colour:** Warm White
- **Colour Temperature:** 2800-4400K
- **Viewing angle:** 150°
- **Electrostatics Discharge (ESD):** 200V
- **Materials:**
  - Die: InGaN
  - Resin: Epoxy (Water Clear)
- **Operating Temperature:** -40~+85°C
- **Storage Temperature:** -40~+100°C
- **Grouping parameters:**
  - Forward voltage
  - Luminous intensity
  - CIE Chromaticity
- **Soldering methods:** Hand; Wave Soldering (DIP)
- **Preconditioning:** acc. to JEDEC Level 3
- **Packing:** 500pcs/Bulk; 2000pcs/Taping

#### APPLICATIONS:

- Indicator
- Switch
- Signal Light

**CHARACTERISTICS:**

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

| Parameter                           | Symbol    | Ratings  | Unit    |
|-------------------------------------|-----------|----------|---------|
| Forward Current                     | $I_F$     | 30       | mA      |
| Peak Forward Current Duty 1/10@1KHz | $I_{FP}$  | 100      | mA      |
| Reverse Current @5V                 | $I_R$     | 10       | $\mu$ A |
| Power Dissipation                   | $P_D$     | 85       | mW      |
| Electrostatics Discharge            | ESD       | 2000     | V       |
| Operating Temperature               | $T_{OPR}$ | -40~+85  | °C      |
| Storage Temperature                 | $T_{STG}$ | -40~+100 | °C      |

## Electrical &amp; Optical Characteristics (Ta=25°C)

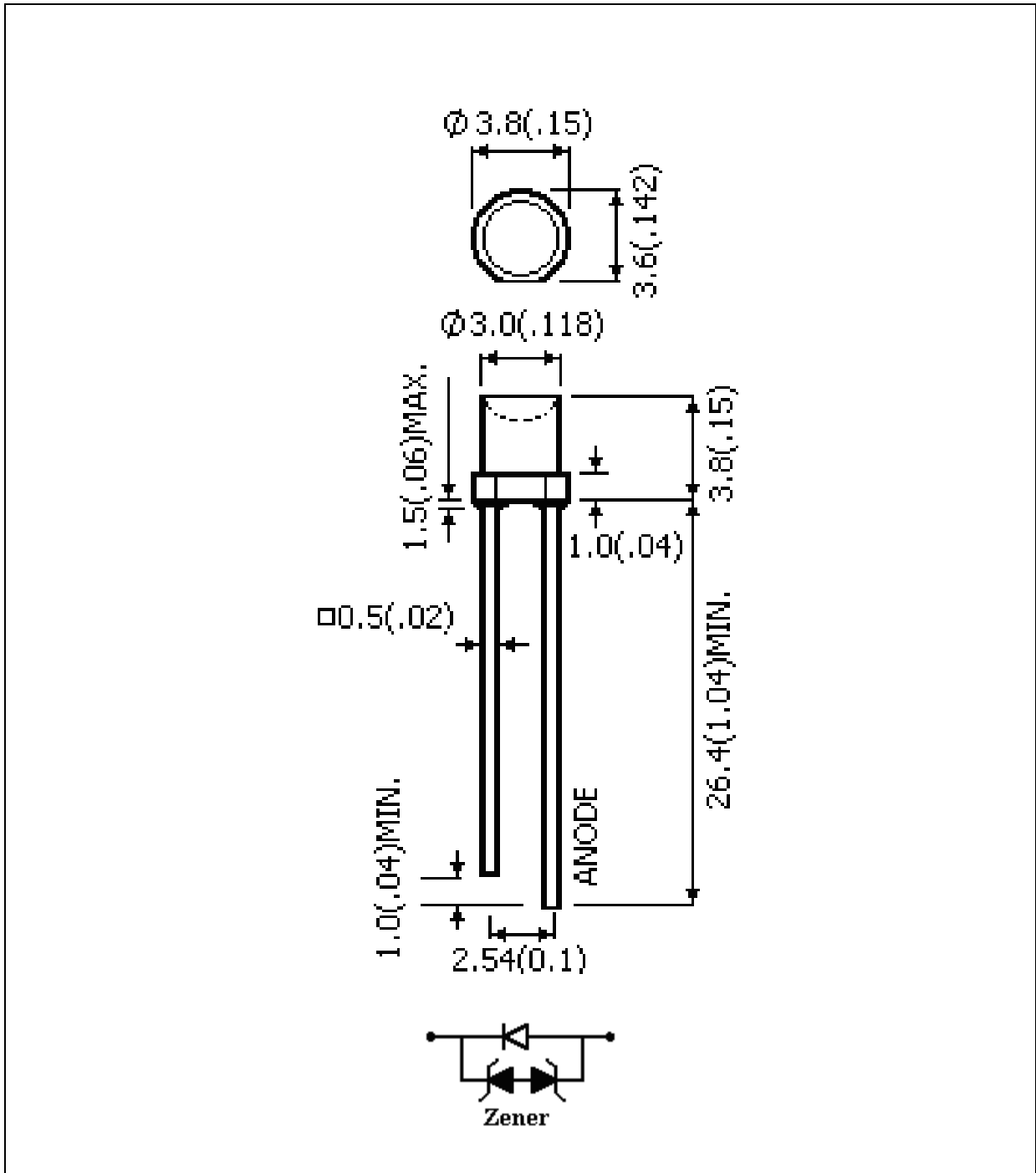
| Parameter                | Symbol          | Values |        |      | Unit | Test Condition |
|--------------------------|-----------------|--------|--------|------|------|----------------|
|                          |                 | Min.   | Typ.   | Max. |      |                |
| Forward Voltage          | $V_F$           | 2.9    | 3.2    | 3.5  | V    | $I_F=20mA$     |
| Luminous Intensity       | $I_V$           | 310    | 500    | 1000 | mcd  | $I_F=20mA$     |
| Chromaticity Coordinates | X               | ---    | 0.4200 | ---  | ---  | $I_F=20mA$     |
|                          | Y               | ---    | 0.4200 | ---  |      |                |
| Colour Temperature       | CCT             | 2800   | 3400   | 4400 | K    | $I_F=20mA$     |
| Viewing Angle            | $2\theta_{1/2}$ | ---    | 150    | ---  | deg  | $I_F=20mA$     |

1. Luminous intensity ( $I_V$ )  $\pm 15\%$ , Forward Voltage ( $V_F$ )  $\pm 0.1V$
- 2.



**OUTLINE DIMENSION:**

Package Dimension:



1. All dimensions are in millimetre (mm).
2. Tolerance  $\pm 0.25$ mm, unless otherwise noted.

**BINNING GROUPS:**

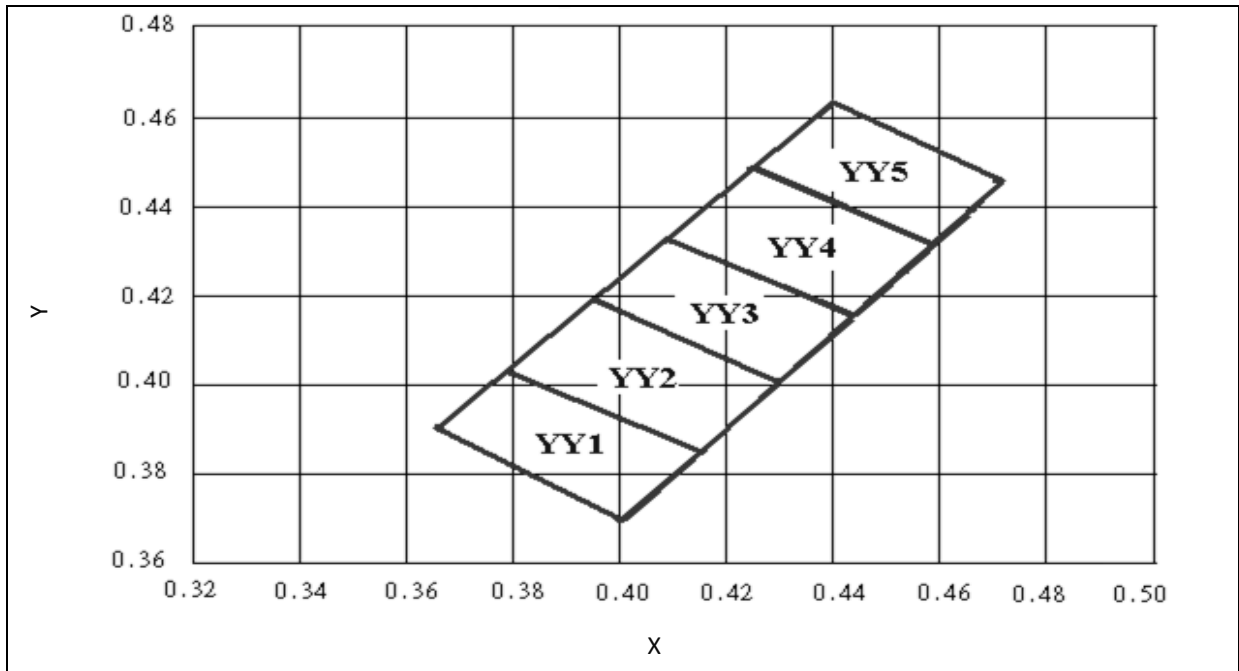

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 Forward Voltage Classifications ( $I_F = 20\text{mA}$ ):

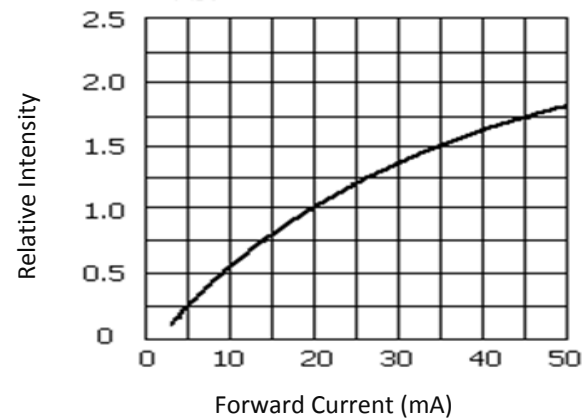
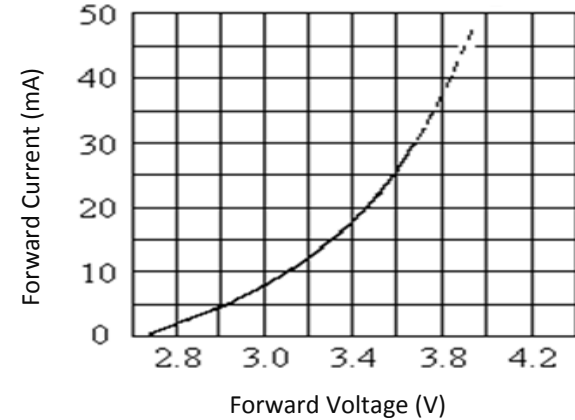
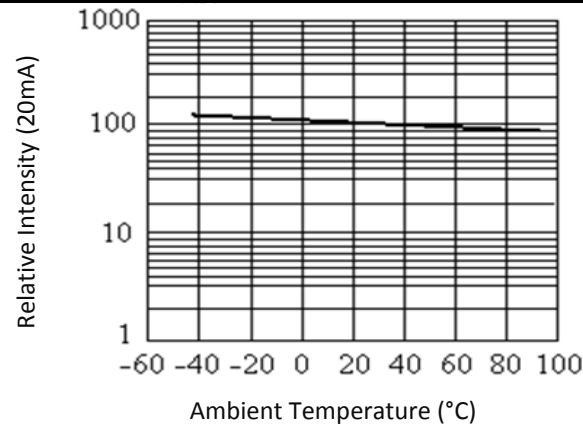
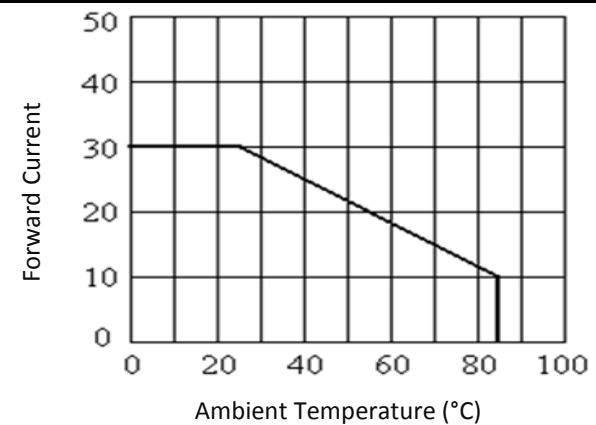
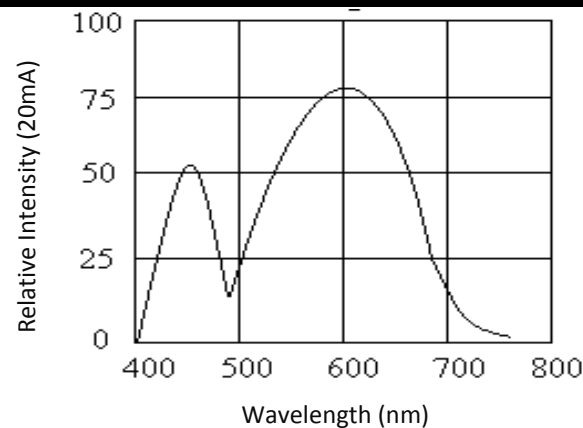
| Code | Min. | Max. | Unit |
|------|------|------|------|
| J    | 2.8  | 3.0  | V    |
| K    | 3.0  | 3.2  |      |
| L    | 3.2  | 3.4  |      |
| M    | 3.4  | 3.6  |      |

 Luminous Intensity Classifications ( $I_F = 20\text{mA}$ ):

| Code | Min. | Max. | Unit |
|------|------|------|------|
| 13   | 310  | 460  | mcd  |
| 14   | 460  | 690  |      |
| 15   | 690  | 1000 |      |

**CIE CHROMATICITY DIAGRAM:**

 Chromaticity Coordinates Classifications ( $I_F = 20\text{mA}$ ):

|     | 1      |        | 2      |        | 3      |        | 4      |        |
|-----|--------|--------|--------|--------|--------|--------|--------|--------|
|     | X      | Y      | X      | Y      | X      | Y      | X      | Y      |
| YY1 | 0.3650 | 0.3900 | 0.3800 | 0.4050 | 0.4180 | 0.3850 | 0.4000 | 0.3700 |
| YY2 | 0.3800 | 0.4050 | 0.3950 | 0.4200 | 0.4310 | 0.4010 | 0.4180 | 0.3850 |
| YY3 | 0.3950 | 0.4200 | 0.4100 | 0.4350 | 0.4440 | 0.4160 | 0.4310 | 0.4010 |
| YY4 | 0.4100 | 0.4350 | 0.4250 | 0.4500 | 0.4600 | 0.4300 | 0.4440 | 0.4160 |
| YY5 | 0.4250 | 0.4500 | 0.4400 | 0.4650 | 0.4730 | 0.4460 | 0.4600 | 0.4300 |

**ELECTRO-OPTICAL CHARACTERISTICS:**
**Relative Intensity v.s. Forward Current**

**Forward Current v.s. Forward Voltage**

**Relative Intensity v.s. Temperature**

**Forward Current v.s. Temperature**

**Relative Intensity v.s. Wavelength**


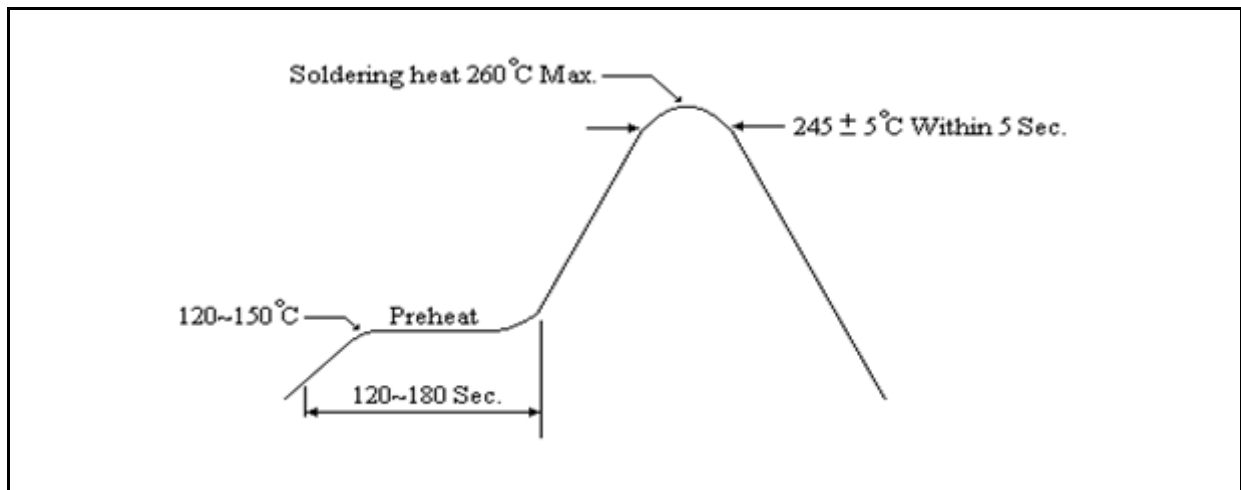
## RECOMMENDED SOLDERING PROFILE:

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Hand Solder (Solder Iron):

- Temperature at tip of iron: 300°C Max. (25W Max.).
- Soldering Time: 3 seconds  $\pm$  1 sec.
- Maximum reflow soldering: 1 time.

Wave / Soldering Heat (DIP):



Note:

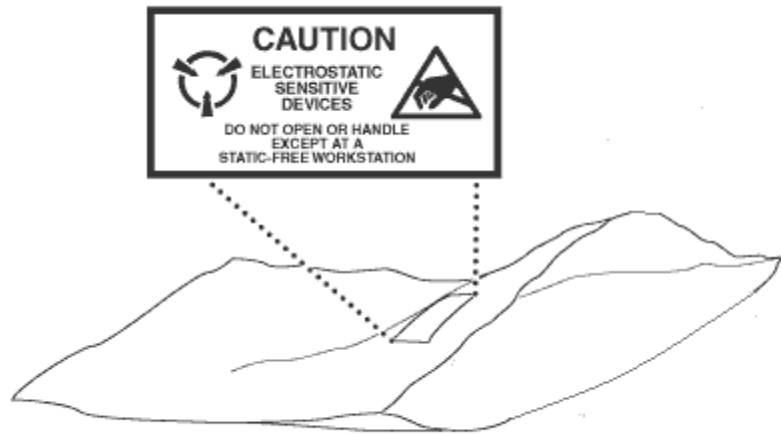
1. Maximum reflow soldering: 1 time.
2. Before, during, and after soldering, should not apply stress on the components and PCB board.

**PACKING SPECIFICATION:**

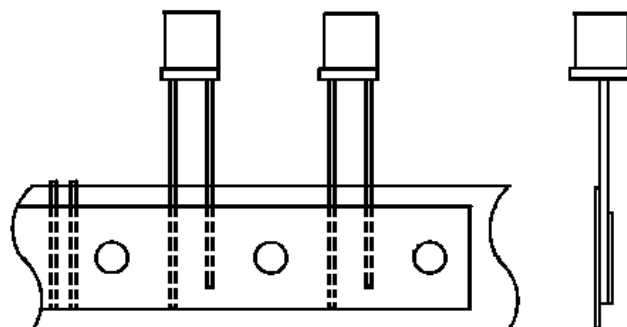
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Reel Dimension:

500pcs/Bulk



2000pcs/Taping





## PRECAUTIONS OF USE:

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### Storage:

It is recommended to store the products in the following conditions:

- Humidity: 60% R.H. Max.
- Temperature: 5°C~30°C (41°F ~86°F).

Shelf life in sealed bag: 12 month at 5°C~30°C and <60% R.H.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp-proof box with desiccating agent and apply baking at 60°C±5°C for 15hrs before use.

### Baking:

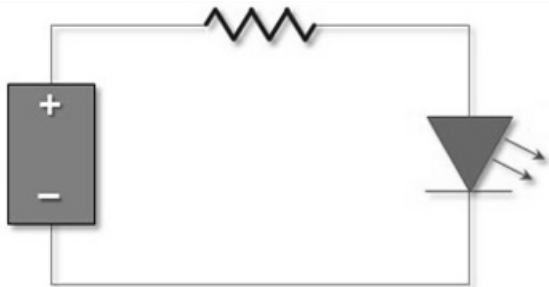
It is recommended to bake the LED before soldering if the pack has been unsealed for longer than 24hrs.

The suggested baking conditions are as followings:

- 70±3°C x 24hrs and <5%RH, taped / reel package.
- 100±3°C x 2hrs, bulk (loose) package.
- 130±3°C x 30min, bulk (loose) package.

It's normal to see slight color fading of carrier (light yellow) after baking in process.

### Testing Circuit:



Must apply resistor(s) for protection (over current proof).

### Cleaning:

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED carrier / package. Avoid putting any stress force directly on to the LED lens.

### ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling the LED all time. All devices, equipment, machinery, work tables, and storage racks must be properly grounded.

In the events of manual working in process, make sure the devices are well protected from ESD at any time.

**REVISION RECORD:**

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| Version | Date       | Summary of Revision             |
|---------|------------|---------------------------------|
| A1.0    | 04/08/2015 | Datasheet set-up.               |
| A1.1    | 21/09/2015 | Update solder profile.          |
| A1.2    | 23/10/2015 | Revise diode drawing direction. |