



## Features

1.6mm x 0.6mm SMD LED, 1.2mm thickness

Low power consumption

Wide view angle

Package: 4000pcs/reel

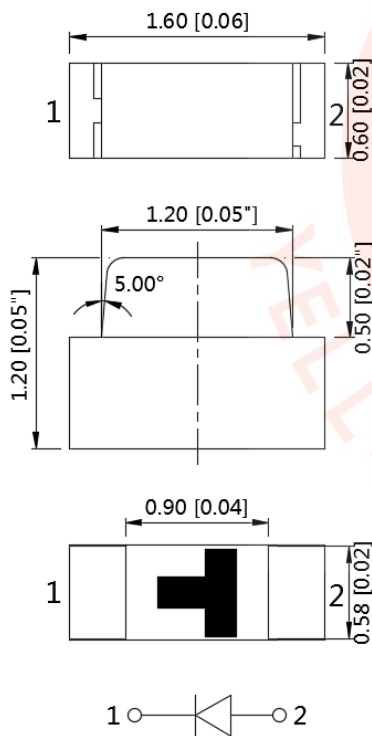
RoHS Compliant

## Applications

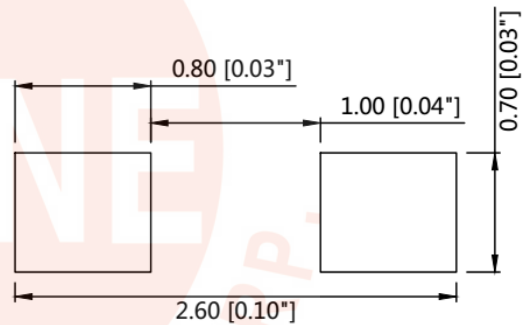
Ideal for back light and indicator

Various colors and lens types available

## Package outlines



## Recommend Pad Layout



| Part No.          | Emitted color | Dice      | Lens color        |
|-------------------|---------------|-----------|-------------------|
| YS-060312BCP007-E | Blue          | InGaN/GaN | Water transparent |

## Notes:

- All dimensions are in millimeters (inches);
- Tolerances are  $\pm 0.1\text{mm}$  (0.004inch) unless otherwise noted.



**Absolute Maximum Ratings (Ta=25℃)**

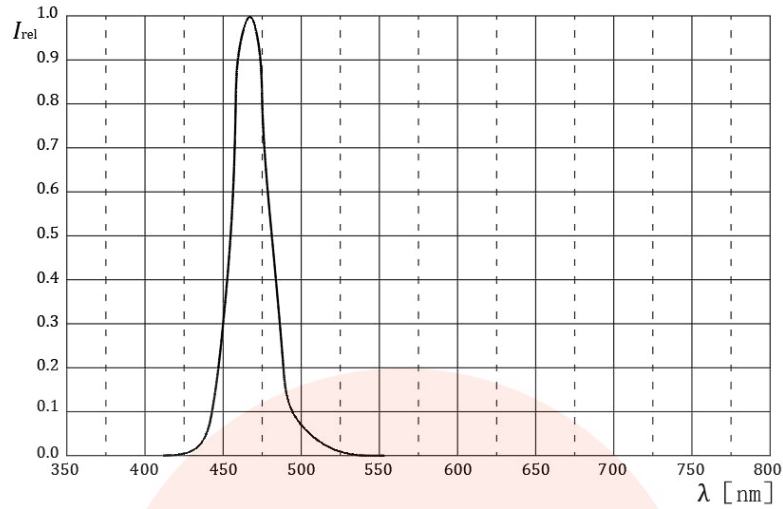
| Parameter                              | Symbol | Value    | Unit |
|--|--------|----------|------|
| Forward current                        | If     | 30       | mA   |
| Reverse voltage                        | Vr     | 5        | V    |
| Power dissipation                      | Pd     | 108      | mW   |
| Operating temperature                  | Top    | -40 ~+85 | ℃    |
| ESD(Human-body mode)                   | --     | 2        | KV   |
| Storage temperature                    | Tstg   | -40 ~+85 | ℃    |
| Peak pulsing current (1/8 duty f=1kHz) | Ifp    | 125      | mA   |

**Electro-Optical Characteristics (Ta=25℃)**

| Parameter                   | Test Condition | Symbol           | Value |     |     | Unit    |
|-----------------------------|----------------|------------------|-------|-----|-----|---------|
|                             |                |                  | Min   | Typ | Max |         |
| Wavelength at peak emission | If=20mA        | $\lambda_p$      | --    | 465 | --  | nm      |
| Spectral half bandwidth     | If=20mA        | $\Delta\lambda$  | --    | 25  | --  | nm      |
| Dominant wavelength         | If=20mA        | $\lambda_d$      | 464   | --  | 474 | nm      |
| Forward voltage             | If=20mA        | Vf               | 2.8   | --  | 3.6 | V       |
| Luminous intensity          | If=20mA        | Iv               | 80    | 120 | 200 | mcd     |
| Viewing angle at 50% Iv     | If=10mA        | 2 $\theta_{1/2}$ | --    | 120 | --  | Deg     |
| Reverse current             | Vr=5V          | Ir               | --    | --  | 10  | $\mu$ A |

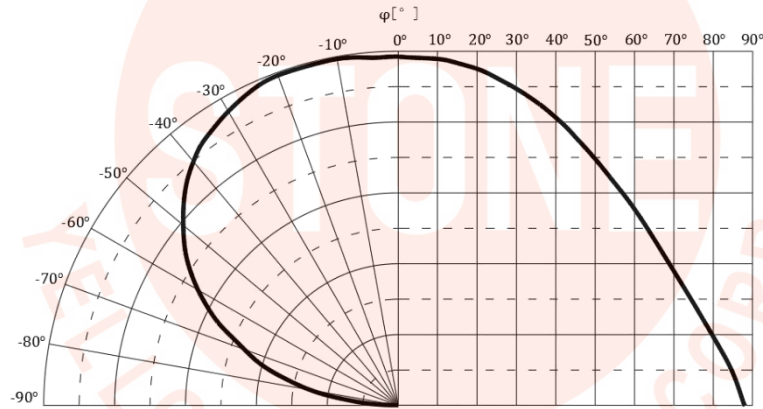
### Relative Spectral Emission

IF=20mA, Ta=25°C



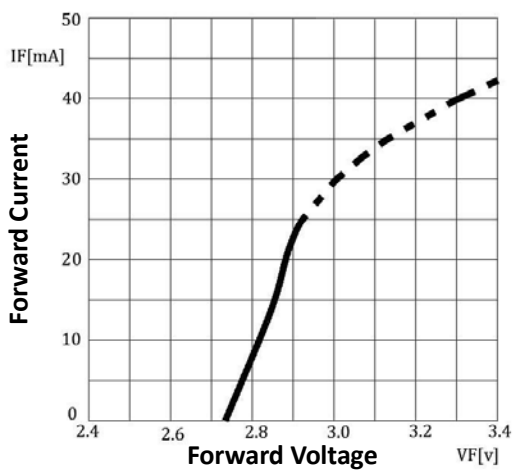
### Radiation Characteristics

IF=10mA, Ta=25°C

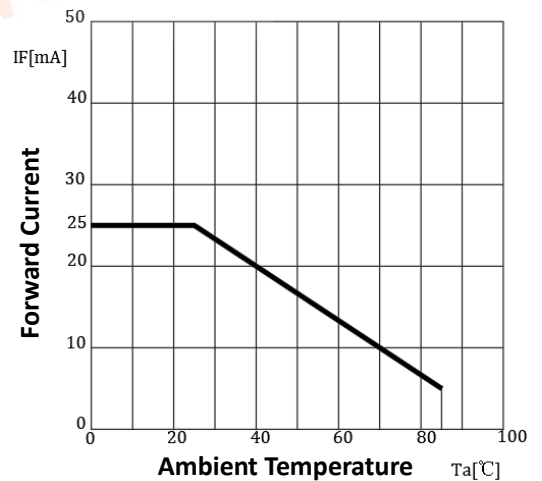


### Forward Current vs Forward Voltage

Ta=25°C

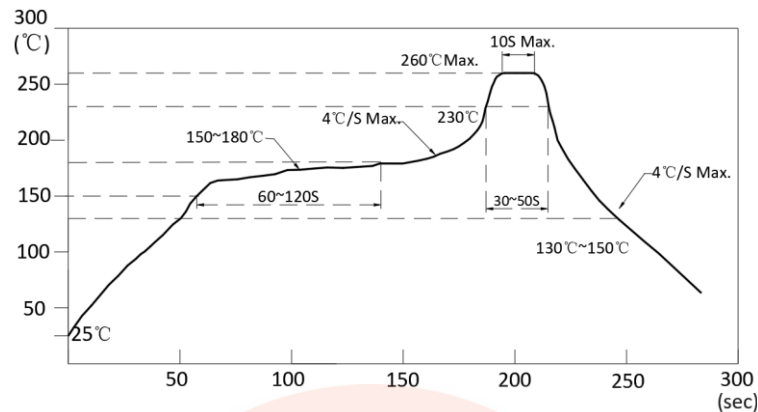


### Forward Current Derating Curve



## Reflow Profile

### ■ Reflow Temp/Time



### Notes:

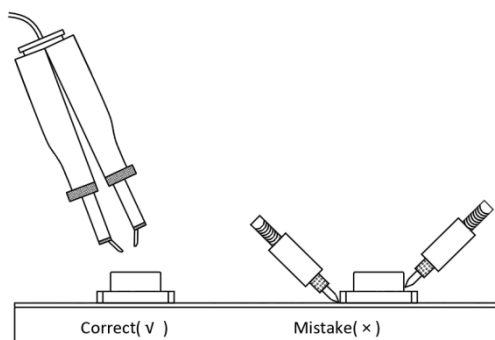
1. We recommend the reflow temperature 245°C ( $\pm 5^\circ\text{C}$ ). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

### ■ Soldering iron

Basic spec is  $\leq 5\text{sec}$  when  $320^\circ\text{C}$  ( $\pm 20^\circ\text{C}$ ). If temperature is higher, time should be shorter ( $+10^\circ\text{C} \rightarrow -1\text{sec}$ ). Power dissipation of iron should be smaller than 20W, and temperatures should be controllable. Surface temperature of the device should be under  $350^\circ\text{C}$ .

### ■ Rework

1. Customer must finish rework within 5 sec under  $340^\circ\text{C}$ .
2. The head of iron cannot touch copper foil
3. Twin-head type is preferred.

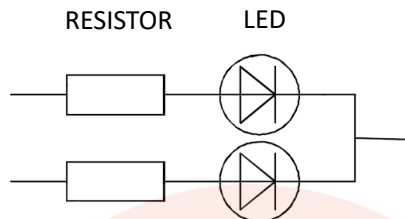


- Avoid rubbing or scraping the resin by any object, during high temperature, for example reflow solder etc.

## Handling precautions

### 1. Drive Method

A LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit below.



### 2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package: The LEDs should be kept at 30°C or less and 60% RH or less.

2.3 After the package is opened, the products should be used within a week or they should be keeping to store at  $\leq 20$  R.H. with zip-lock sealed.

### 3. Baking

It is recommended to baking before soldering when the pack is unsealed after 72hrs. The Conditions are as followings:

3.1  $60 \pm 3^\circ\text{C}$  x (12~24hrs) and  $< 5\%$  RH, taped reel type

3.2  $100 \pm 3^\circ\text{C}$  x (45min~1hr), bulk type

3.3  $130 \pm 3^\circ\text{C}$  x (15~30min), bulk type



Test Items and Results of Reliability

| Test Item                                  | Test Conditions                                     | Standard Test Method | Note      | Number of Test |
|--|---|----------------------|-----------|----------------|
| Reflow Soldering                           | Ta=260±5℃,Time=10±2S                                | JB/T 10845-2008      | 3times    | 0/22           |
| Salt Atmosphere                            | Ta=35±3℃,PH=6.5~7.2                                 | GB/T 2423.17-2008    | 24hrs     | 0/22           |
| Temperature Cycling                        | -40±5℃ 30±1min<br>↑→(25℃/5±1min)↓<br>100±5℃ 30±1min | GB/T 2423.22-2012    | 100cycles | 0/22           |
| Thermal Shock                              | Ta=-40±5℃~100±5℃,<br>15±1min dwell                  | GB/T 2423.22-2012    | 100cycles | 0/22           |
| High Humidity High Temp.<br>Cycling        | Ta=30±5℃~65±5℃,<br>90±5%RH,24hrs/1cycle             | GB/T 2423.4-2008     | 10cycles  | 0/22           |
| High Humidity High Temp.<br>Storage Life   | Ta=85±5℃,ψ(%)=85±5%RH                               | GB/T 2423.3-2006     | 1000hrs   | 0/22           |
| High Temperature<br>Storage Life           | Ta=100±5℃,non-operating                             | GB/T 2423.2-2008     | 1000hrs   | 0/22           |
| Low Temperature<br>Storage Life            | Ta=-40±5℃,non-operating                             | GB/T 2423.1-2008     | 1000hrs   | 0/22           |
| Life Test                                  | Ta=26±5℃,@20mA,<br>ψ(%)=25%RH~55%RH                 | --                   | 1000hrs   | 0/22           |
| High Humidity High Temp.<br>Operating Life | Ta=85±5℃,@20mA,<br>ψ(%)=85%RH                       | GB/T 2423.3-2006     | 500hrs    | 0/22           |
| Low Temperature<br>Operating Life          | Ta=-20±5℃,@20mA                                     | GB/T 2423.1-2008     | 1000hrs   | 0/22           |



Forward Voltage Rank Combination (IF=20mA)

| Rank | Min. | Max. | Unit |
|------|------|------|------|
| H    | 2.8  | 2.9  | V    |
| I    | 2.9  | 3.0  |      |
| J    | 3.0  | 3.1  |      |
| K    | 3.1  | 3.2  |      |
| L    | 3.2  | 3.3  |      |
| M    | 3.3  | 3.4  |      |
| N    | 3.4  | 3.5  |      |
| O    | 3.5  | 3.6  |      |

Luminous Intensity Rank Combination (IF=20mA)

| Rank | Min. | Max. | Unit |
|------|------|------|------|
| I    | 80   | 100  | mcd  |
| J    | 100  | 125  |      |
| K    | 125  | 160  |      |
| L    | 160  | 200  |      |

Dominant wavelength Rank Combination (IF=20mA)

| Rank | Min. | Max. | Unit |
|------|------|------|------|
| Bh   | 464  | 466  | nm   |
| Bi   | 466  | 468  |      |
| Bj   | 468  | 470  |      |
| Bk   | 470  | 472  |      |
| Bl   | 472  | 474  |      |

Group Name on Label ( Example DATA: KKBi 20 )

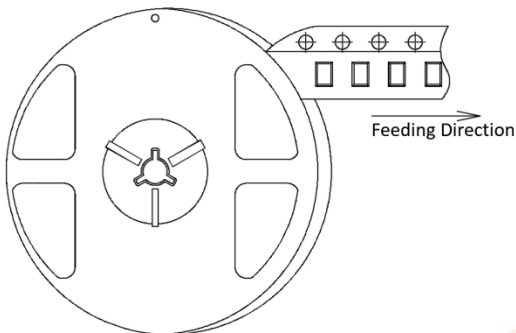
| DATA: KKBi 20 | Vf(V)   | Iv (mcd) | $\lambda_d$ (nm) | Test Condition |
|---------------|---------|----------|------------------|----------------|
| K→K→Bi→20     | 3.1~3.2 | 125~160  | 466~468          | IF=20mA        |

Notes:

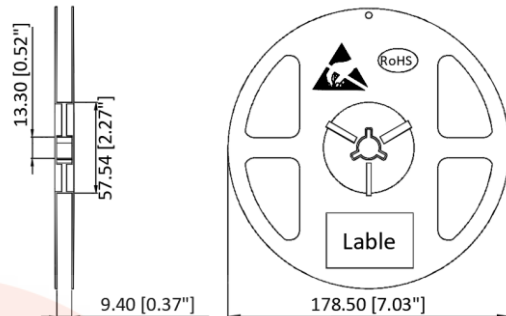
1. The tolerance of luminous intensity (Iv) is  $\pm 15\%$ .
2. The tolerance of dominant wavelength is  $\pm 1\text{nm}$ .
3. This specification is preliminary.
4. This specification is a standard specification of our factory, can make in accordance with customer's special requirement.

## 1606 Series SMD Chip LED Lamps Packaging Specifications

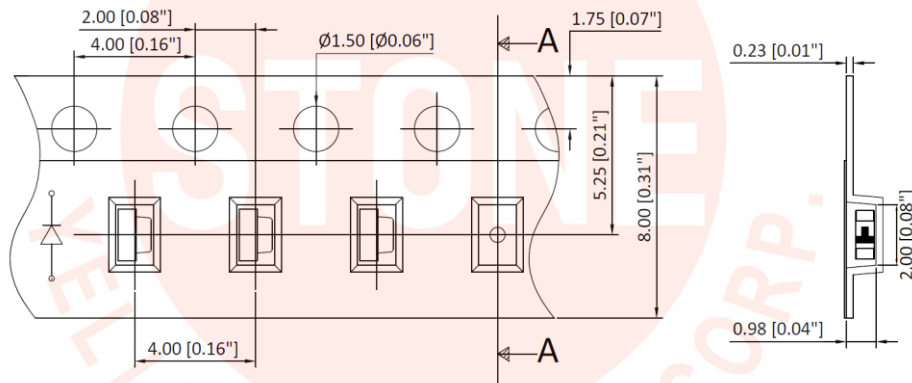
### ● Feeding Direction



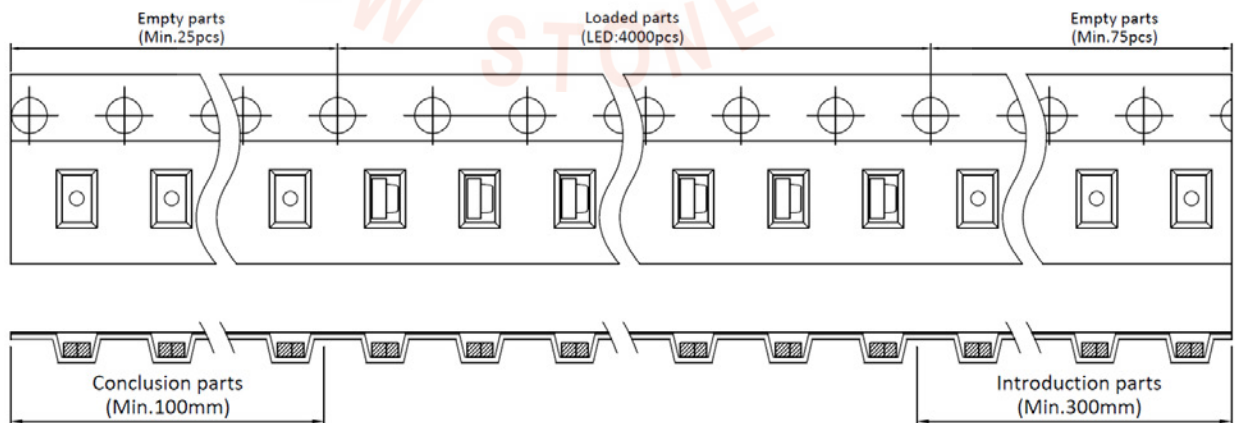
### ● Dimensions of Reel (Unit: mm)



### ● Dimensions of Tape (Unit: mm)



### ● Arrangement of Tape



#### Notes:

1. Empty component pockets are sealed with top cover tape;
2. The maximum number of missing lamps is two;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.
4. 4,000pcs/Reel.

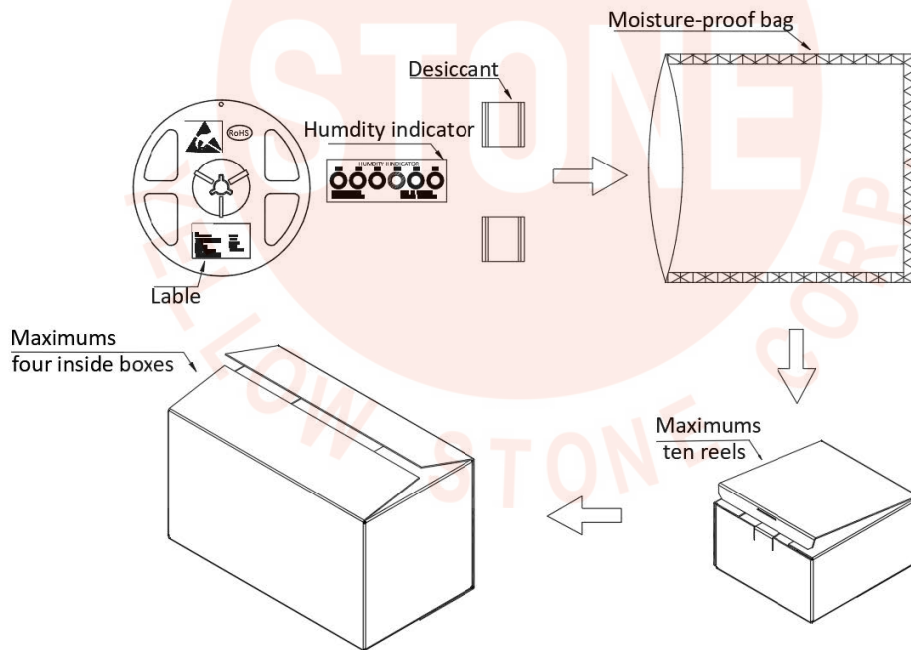
## 1606 Series SMD Chip LED Lamps Packaging Specifications

### ● Label Explanation



CPN: Customer's Product Number  
P/N: Product Number  
QTY: Packing Quantity  
LOT NO: Lot Number  
VF: Forward Voltage Rank  
IV: Luminous Intensity Rank  
CIE: Chromaticity coordinates Rank  
BIN: BIN Code  
DATE: Date Of Dispatch

### ● Transportation Packing



#### Notes:

Reeled products (numbers of products are 4,000pcs) packed in a seal off moisture-proof bag along with two desiccant one by one, ten moisture-proof bag of maximums packed in an inside box (about size: 240x 220x 120mm) and four inside boxes of maximums are put in the outside box (about size: 460mm x 246mm x 250mm) Together with buffer material, and it is packed. The number of the loading steps of outside box (cardboard box) has it to three steps.