

## BZ-HZD39C-C-TRB

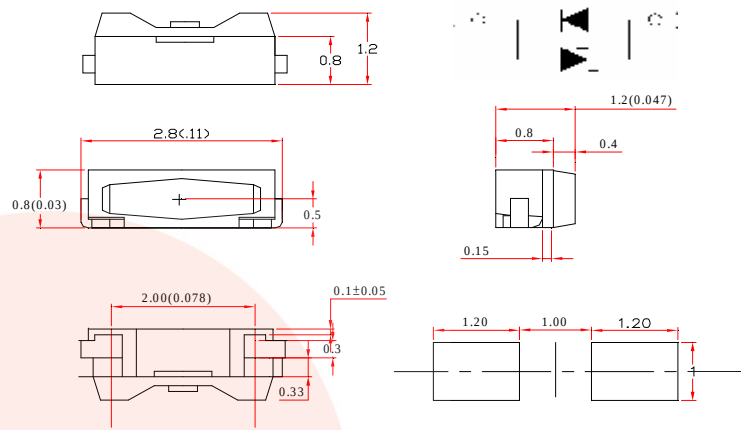
### ● Features:

1. Emitted Color : Cool White
2. Lens Appearance: Yellow diffuse.
3. (2.8\*0.8\*1.2mm) 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 : Dashboards, stop lamps, turn signals.
2. Backlighting : LCDs.
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(Ta=25°C)

| Parameter                | Symbol          | Rating       | Unit |
|--------------------------|-----------------|--------------|------|
| Power Dissipation        | Pd              | 102          | mW   |
| Forward Current          | I <sub>F</sub>  | 30           | mA   |
| Peak Forward Current * 1 | I <sub>FP</sub> | 100          | mA   |
| Operating Temperature    | Topr            | -40°C ~ 85°C | °C - |
| Storage Temperature      | Tstg            | -40°C ~ 85°C | -    |
| Soldering Temperature    | Tsol            | See Page7    | -    |

\* 1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 30 msec width.

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

| Parameter          | Symbol            | Condition            | Min. | Typ. | Max. | Unit |
|--------------------|-------------------|----------------------|------|------|------|------|
| Forward Voltage    | V <sub>F</sub>    | I <sub>F</sub> =20mA | 2.6  | -    | 3.2  | V    |
| Luminous Intensity | I <sub>v</sub>    | I <sub>F</sub> =20mA | 1500 | 2200 | 2700 | mcd  |
| Chromaticity       | x                 | I <sub>F</sub> =20mA | 0.26 | 0.27 | 0.28 | -    |
| Coordinates        | y                 | I <sub>F</sub> =20mA | 0.24 | 0.26 | 0.27 |      |
| Reverse Current    | I <sub>R</sub>    | V <sub>R</sub> =5V   | -    | -    | 10   | μA   |
| Viewing Angle      | 2θ <sub>1/2</sub> | I <sub>F</sub> =20mA | -    | 105  | -    | deg  |

### ● Typical Electro-Optical Characteristics Curves

Fig.1 Relative intensity vs. wavelength

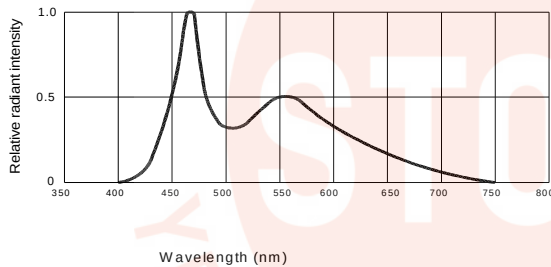


Fig.2 Forward current derating curve vs. ambient temperature

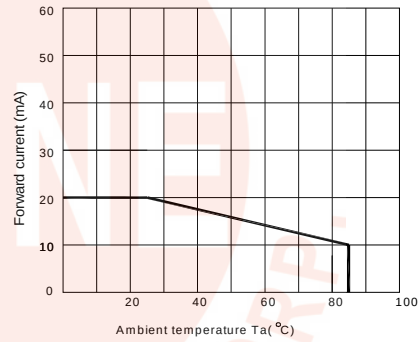


Fig.3 Forward current vs. forward voltage

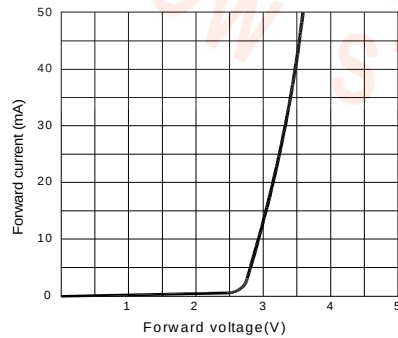


Fig.4 Relative luminous intensity vs. ambient temperature

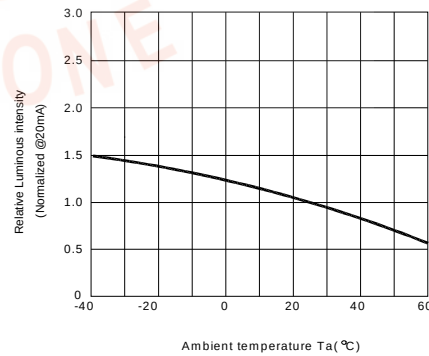


Fig.5 Relative luminous intensity vs. forward current

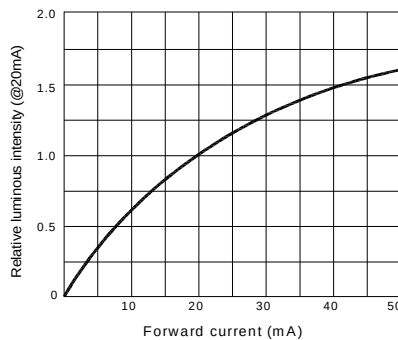
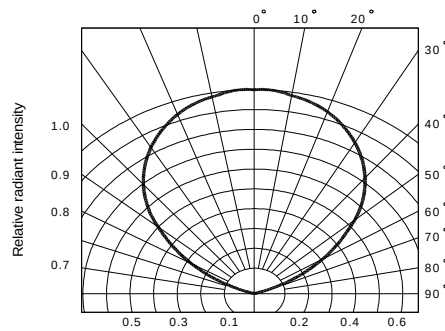
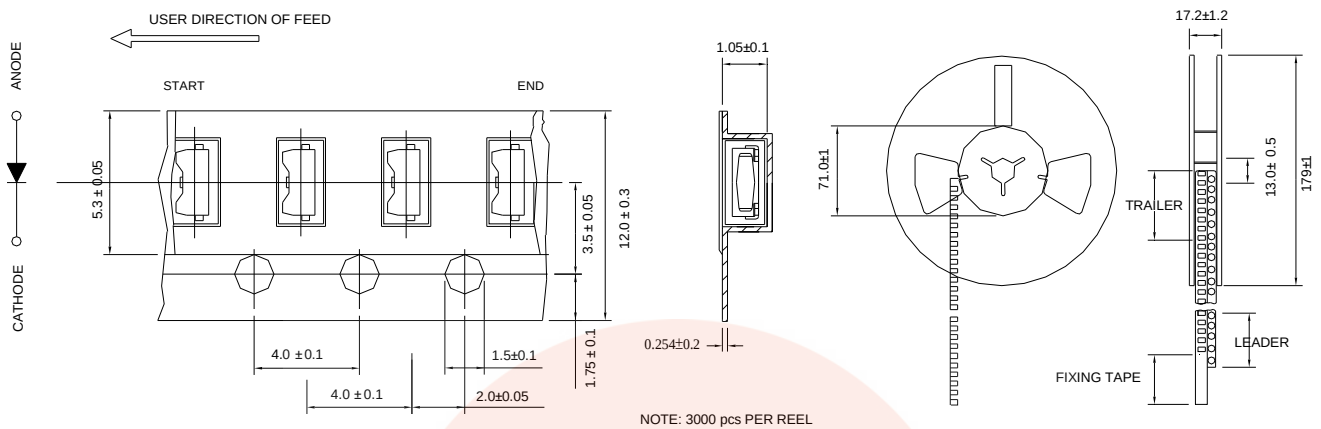


Fig.6 Radiation diagram

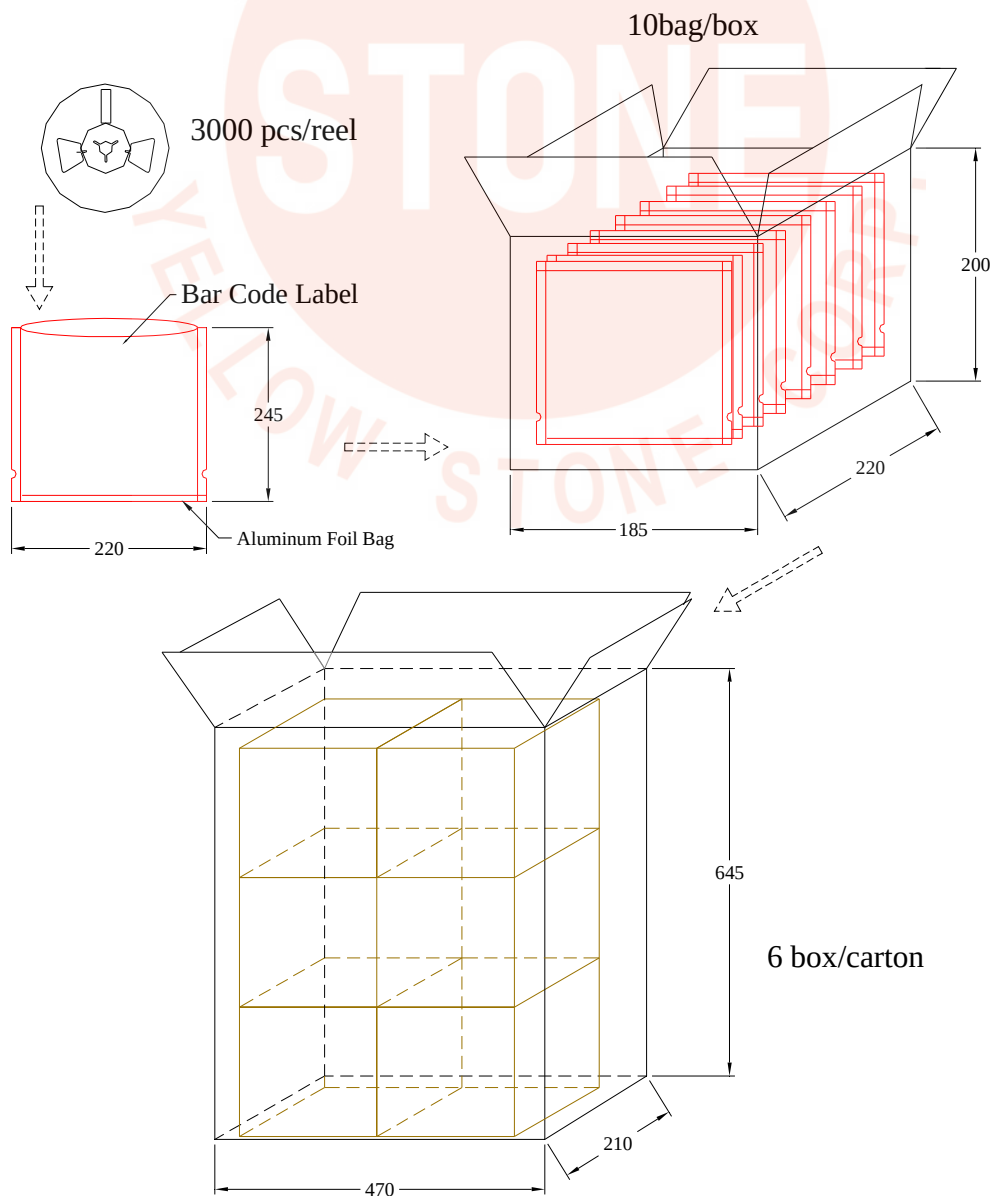


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● Tapping and packaging specifications(Units: mm)



● Package Method:(unit:mm)





● Bin Limits

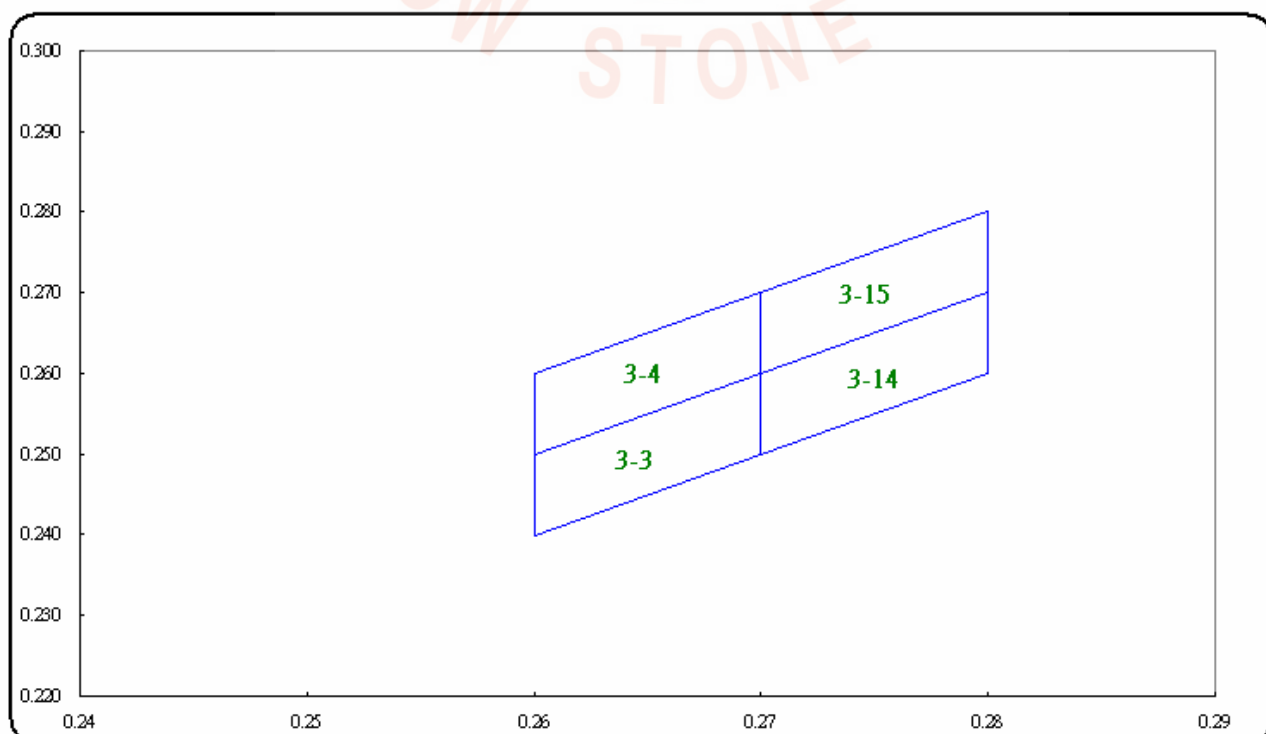
Intensity Bin Limits (@20mA):

| BIN CODE | Min. (mcd) | Max. (mcd) |
|----------|------------|------------|
| S        | 1500       | 1700       |
| T        | 1700       | 1900       |
| U        | 1900       | 2100       |
| V        | 2100       | 2300       |
| W        | 2300       | 2500       |
| X        | 2500       | 2700       |

VF Bin Limits (@20mA):

| BIN CODE | Min.(V) | Max.(V) |
|----------|---------|---------|
| F1       | 2.6     | 2.7     |
| F2       | 2.7     | 2.8     |
| G1       | 2.8     | 2.9     |
| G2       | 2.9     | 3.0     |
| H1       | 3.0     | 3.1     |
| H2       | 3.1     | 3.2     |

Color Bin Limits (At 20mA)

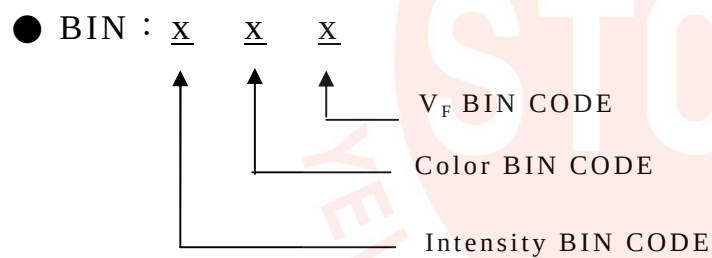




Color Bin Limits(@20mA):

| CCT          | BIN  | Chromaticity Coordinates |      |      |      |      |
|--------------|------|--------------------------|------|------|------|------|
| 14000-18000K | 3-3  | x                        | 0.27 | 0.26 | 0.26 | 0.27 |
|              |      | y                        | 0.25 | 0.24 | 0.25 | 0.26 |
|              | 3-4  | x                        | 0.27 | 0.26 | 0.26 | 0.27 |
|              |      | y                        | 0.26 | 0.25 | 0.26 | 0.27 |
| 10000-14000K | 3-14 | x                        | 0.28 | 0.27 | 0.27 | 0.28 |
|              |      | y                        | 0.26 | 0.25 | 0.26 | 0.27 |
|              | 3-15 | x                        | 0.28 | 0.27 | 0.27 | 0.28 |
|              |      | y                        | 0.27 | 0.26 | 0.27 | 0.28 |

CCT : Tolerance for each Bin limit is  $\pm 100K$



Notes:

1.  $I_v$  : 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                     | Connect with a power $I_f=20\text{mA}$<br>$T_a$ =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                                        | $T_a=+65^{\circ}\text{C}\pm 5^{\circ}\text{C}$<br>RH=90%-95%<br>Test time=240hrs                                                                               | 0/20   |
|                    | High Temperature Storage               | MIL-STD-883:1008<br>JIS-C-7021 :B-10                                        | High $T_a=+85^{\circ}\text{C}\pm 5^{\circ}\text{C}$<br>Test time=1,000hrs                                                                                      | 0/20   |
|                    | Low Temperature Storage                | JIS-C-7021 :B-12                                                            | Low $T_a=-35^{\circ}\text{C}\pm 5^{\circ}\text{C}$<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 | $-35^{\circ}\text{C} \sim +25^{\circ}\text{C} \sim +85^{\circ}\text{C} \sim +25^{\circ}\text{C}$<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                    | $-35^{\circ}\text{C}\pm 5^{\circ}\text{C} \sim +85^{\circ}\text{C}\pm 5^{\circ}\text{C}$<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>$140^{\circ}\text{C}-160^{\circ}\text{C}$ , within 2 minutes.<br>Operation heating :<br>$260^{\circ}\text{C}$ (Max.), within 10seconds. (Max.) | 0/20   |

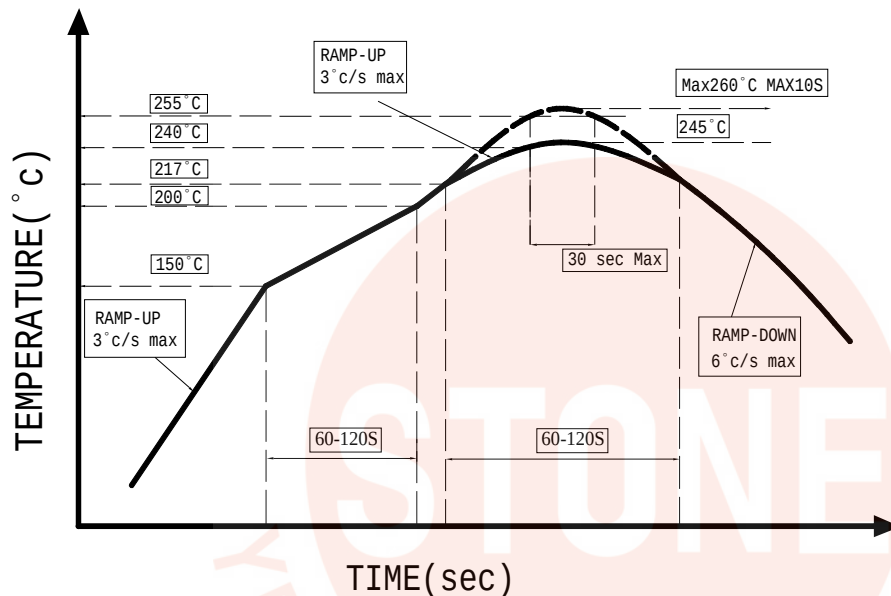
● Judgment criteria of failure for the reliability

| Measuring items    | Symbol        | Measuring conditions | Judgement criteria for failure |
|--------------------|---------------|----------------------|--------------------------------|
| Forward voltage    | $V_F$ ( V )   | $I_F=20\text{mA}$    | Over $U \times 1.2$            |
| Reverse current    | $I_R$ (uA)    | $V_R=5\text{V}$      | Over $U \times 2$              |
| Luminous intensity | $I_v$ ( mcd ) | $I_F=20\text{mA}$    | Below $S \times 0.5$           |

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

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.

### ● IR-Reflow Soldering



1. Avoid any external stress applied to the resin while the LEDs are at high temperature, especially during soldering .
2. Avoid rapid cooling or any excess vibration during temperature ramp-down process
3. Although the soldering condition is recommended above, soldering at the lowest possible temperature is feasible for the LEDs

### ● IRON Soldering

**350°C Within 3 sec,one time only.**

### ● Handling :

Care must be taken not to cause to the epoxy resin portion of LEDs while it is exposed to high temperature.

Care must be taken not rub the epoxy resin portion of LEDs with hard or sharp article such as the sand blast and the metal hook.

### ● Notes for designing:

Care must be taken to provide the current limiting resistor in the circuit so as to drive the LEDs within the rated figures. Also, caution should be taken not to overload LEDs with instantaneous voltage at the turning ON and OFF of the circuit.  
When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as to be subjected to reverse voltage when turning off the LEDs.

### ● Storage:

In order to avoid the absorption of moisture, it is recommended to solder 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 24hours.
  - b. Stored at less than 20% 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±5°C.

### ● Package and Label of Products:

- (1) Package: Products are packed in one bag of 3000 pcs (one taping reel) and a label is attached on each bag.
- (2) Label:

