

客户 (Customer) : \_\_\_\_\_

承认书

Approval Sheet

谨致执事者：兹提供敝公司之有关详细规格及图面数据，敬请给予办理试认定手续。  
同时敬请送返一份附有贵公司签认之测试认定后之样品承认书。

We are pleased in sending you herewith on specification and drawings for your approval.  
Please return to us one copy "Approval sheet" with your approved signature.

型号 (Model No.) : A-SP158IR3C-A01-2D

发文日期 (Issue Date) : 2022/12/12 承认日期 (Approved Date) : \_\_\_\_\_

Checking signature of Amicc

| Designer | Checker | Approver |
|----------|---------|----------|
|          |         |          |

Approval signature of customer

| Designer | Checker | Approver |
|----------|---------|----------|
|          |         |          |

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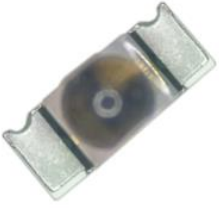
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Infrared LED ■ Side view

## A-SP158IR3C-A01-2D



### Features

- Small double-end package
- Side view LED
- Compatible with infrared and vapor phase reflow solder process.
- Narrow viewing angle
- Pb-free
- RoHS compliant
- IPC / JEDEC J-STD-020C: Level 2

### Description

The Amicc 158 package has high efficacy, high power consumption, wide viewing angle and a compact form factor. These features make this package an ideal LED for all lighting applications.

### Applications

- Free air transmission system
- Infrared remote control units with high power requirement
- Smoke detector
- Infrared applied system

### Device Selection Guide

| Chip Materials | Emitted Color | Resin Color |
|----------------|---------------|-------------|
| AlGaAs/GaAs    | Infrared      | Water Clear |

**Absolute Maximum Ratings (T<sub>Soldering</sub>=25°C)**

| Parameter   | Symbol           | Rating     | Unit |
|---|------------------|------------|------|
| Reverse Voltage   | V <sub>R</sub>   | 5          | V    |
| Forward Current   | I <sub>F</sub>   | 65         | mA   |
| Peak Forward Current<br>Pulse Width ≤ 100μs , Duty ≤ 1%.    | I <sub>FP</sub>  | 1          | A    |
| Operating Temperature                                       | T <sub>opr</sub> | -40 ~ +85  | °C   |
| Storage Temperature   | T <sub>stg</sub> | -40 ~ +100 | °C   |
| Power Dissipation at(or below)<br>25°C Free Air Temperature | P <sub>d</sub>   | 80         | mW   |
| Soldering Temperature                                       | T <sub>sol</sub> | 260°C      | °C   |

Note: \*1: I<sub>FP</sub> Conditions--Pulse Width ≤ 100μs and Duty ≤ 1%.

\*2: Soldering time ≤ 5 seconds.

**Electro-Optical Characteristics (T<sub>Soldering</sub>=25°C)**

| Parameter         | Symbol            | Min.  | Typ.  | Max.  | Unit  | Condition  |
|-------------------|-------------------|-------|-------|-------|-------|--|
| Radiant Intensity | E <sub>e</sub>    | 16    | ----- | 32    | mW/sr | I <sub>F</sub> =20mA                                     |
|                   |                   | ----- | 100   | ----- |       | I <sub>F</sub> =100mA<br>Pulse Width ≤ 100μs , Duty ≤ 1% |
| Forward Voltage   | V <sub>F</sub>    | 1.2   | ----- | 1.6   | V     | I <sub>F</sub> =20mA                                     |
|                   |                   | ----- | 1.8   | 2.2   |       | I <sub>F</sub> =100mA<br>Pulse Width ≤ 100μs , Duty ≤ 1% |
| Peak Wavelength   | λ <sub>p</sub>    | ----- | 850   | ----- | nm    | I <sub>F</sub> =20mA                                     |
| Viewing Angle     | 2θ <sub>1/2</sub> | ----- | 30    | ----- | deg   | I <sub>F</sub> =20mA                                     |
| Reverse Current   | I <sub>R</sub>    | ----- | ----- | 10    | μA    | V <sub>R</sub> =5V                                       |

Notes:

1.Tolerance of L Radiant Intensity: ±10%

2.Tolerance of Forward Voltage: ± 0.05V.

### Bin Range of Radiant Intensity

| Bin Code | Min. | Max. | Unit  | Condition            |
|----------|------|------|-------|----------------------|
| A13      | 16   | 20   | mW/sr | I <sub>F</sub> =20mA |
| A14      | 20   | 24   |       |                      |
| A15      | 24   | 32   |       |                      |

Note:  
Tolerance of Radiant Intensity: ±10%.

### Bin Range of Forward Voltage

| Bin Code | Min. | Max. | Unit | Condition            |
|----------|------|------|------|----------------------|
| 19       | 1.2  | 1.3  | V    | I <sub>F</sub> =20mA |
| 20       | 1.3  | 1.4  |      |                      |
| 21       | 1.4  | 1.5  |      |                      |
| 22       | 1.5  | 1.6  |      |                      |

Note:  
Tolerance of Forward Voltage: ± 0.05V.

**Typical Electro-Optical Characteristics Curves**

Fig.1-Forward Current vs. Ambient Temperature

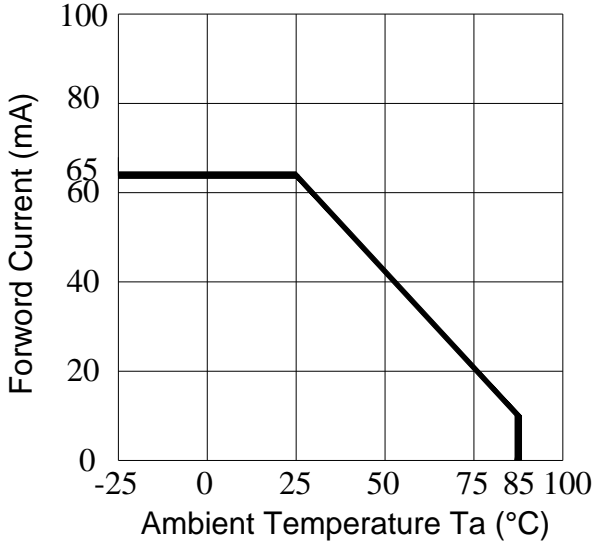


Fig.2-Spectral Sensitivity  $T_a=25^\circ\text{C}$

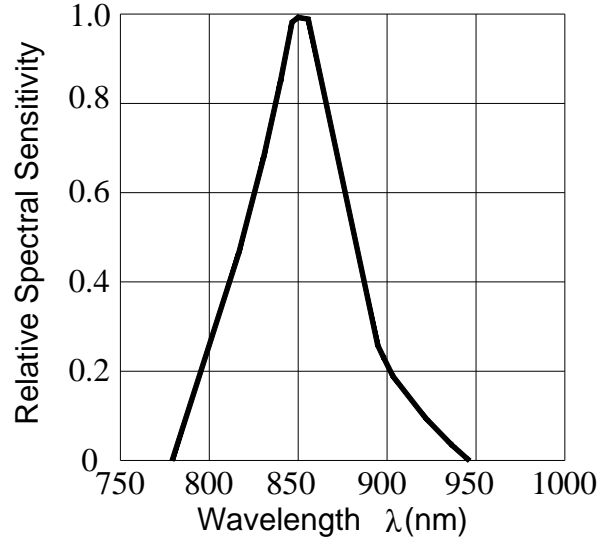


Fig.3-Forward Current vs. Forward Voltage  $T_a=25^\circ\text{C}$

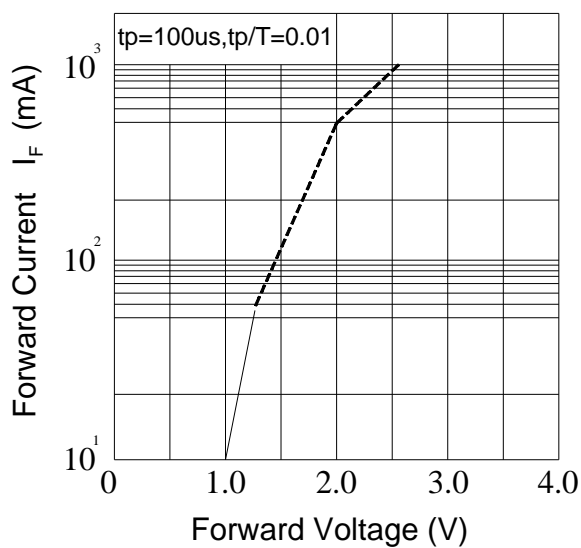
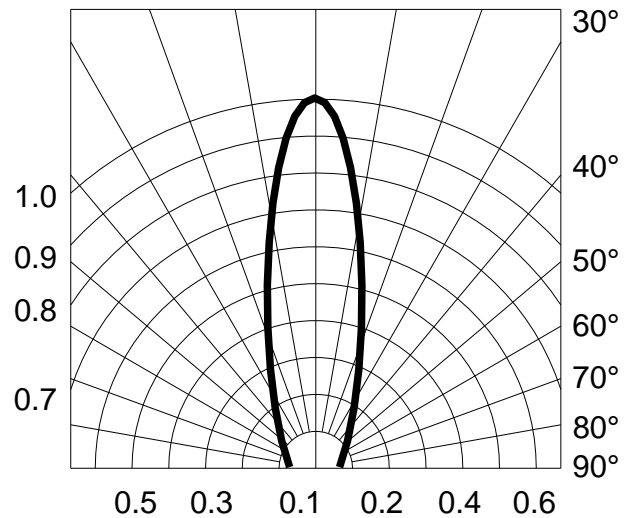


Fig.6-Radiation Diagram  $T_a=25^\circ\text{C}$



**Typical Electro-Optical Characteristics Curves**

Fig.5-Peak Emission Wavelength vs. Ambient Temperature

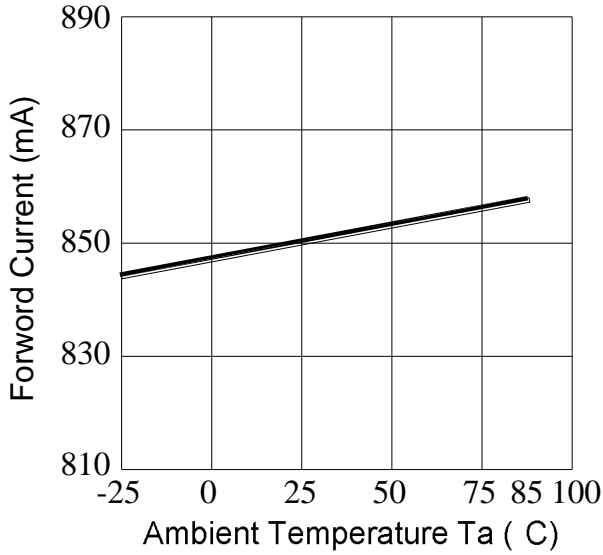


Fig.6-Relative Intensity vs. Forward Current

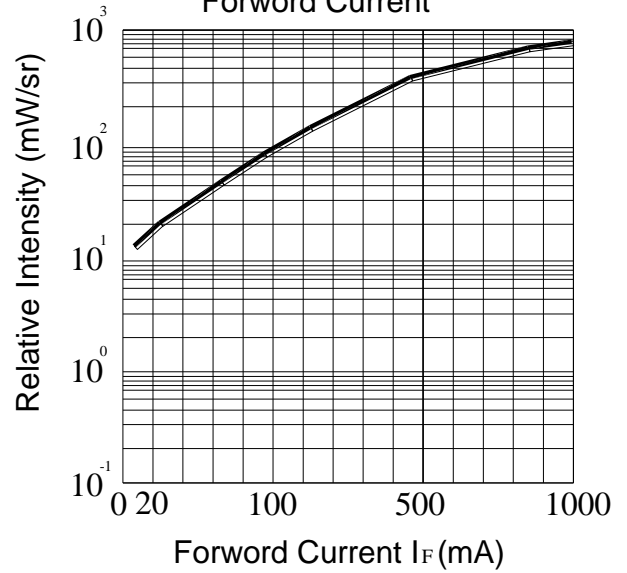


Fig.7-Relative Intensity vs. Ambient Temperature  $T_a=25$  C

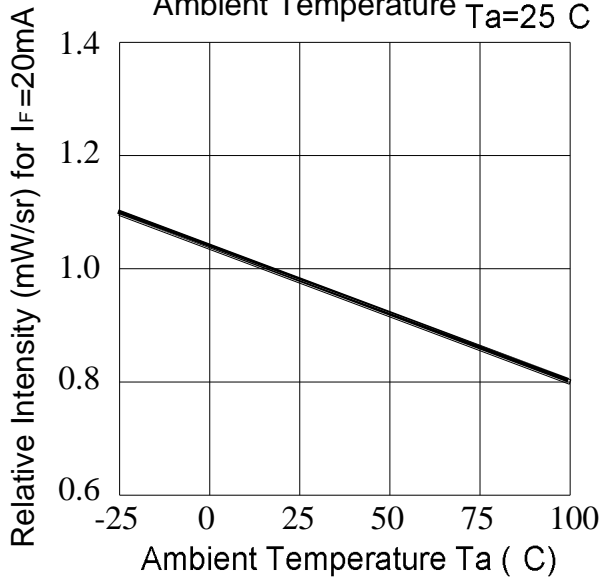
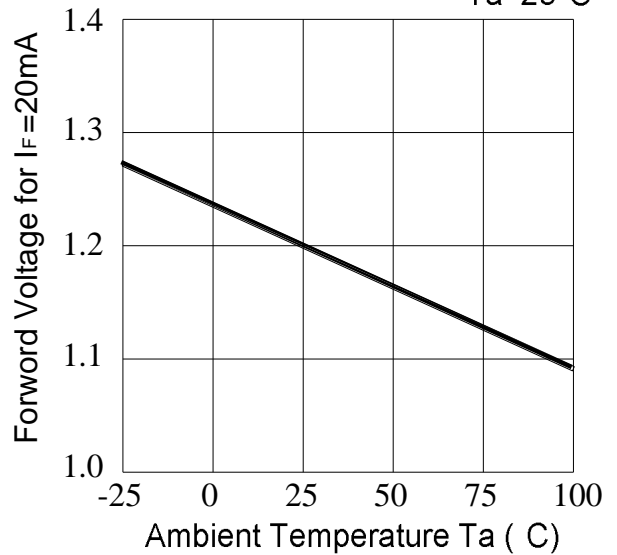
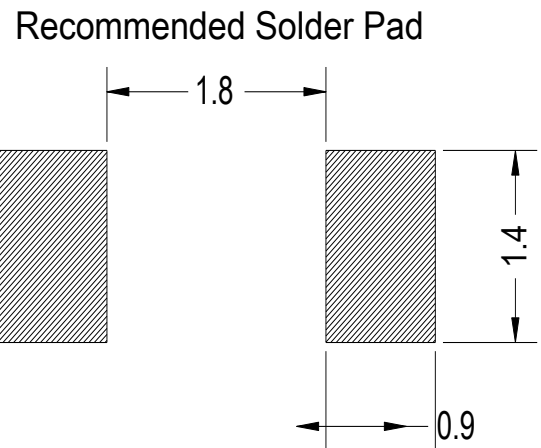
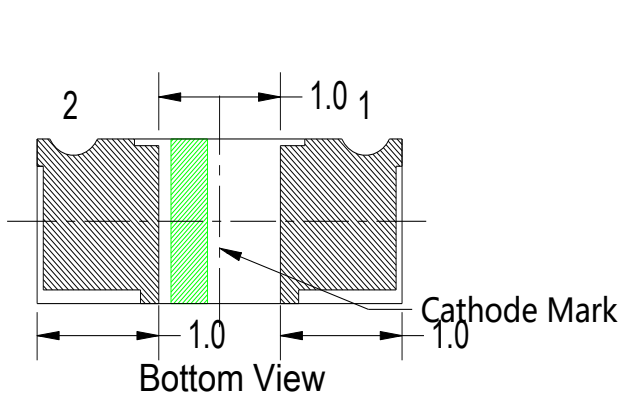
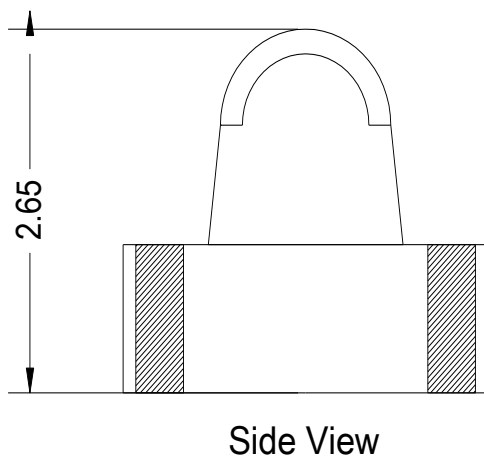
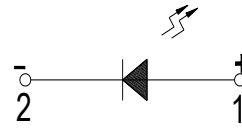
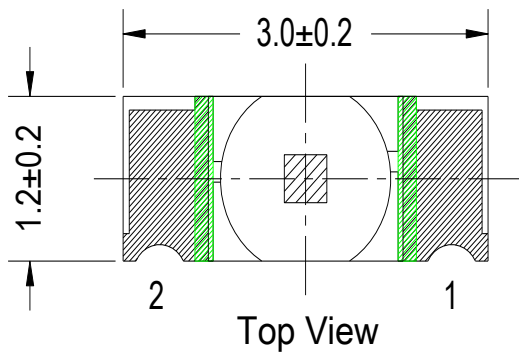


Fig.8-Forward Voltage vs. Ambient Temperature  $T_a=25$  C

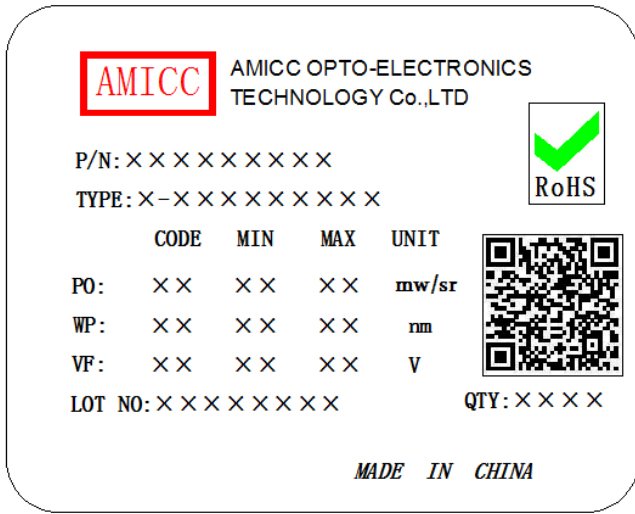


**Package Dimension**



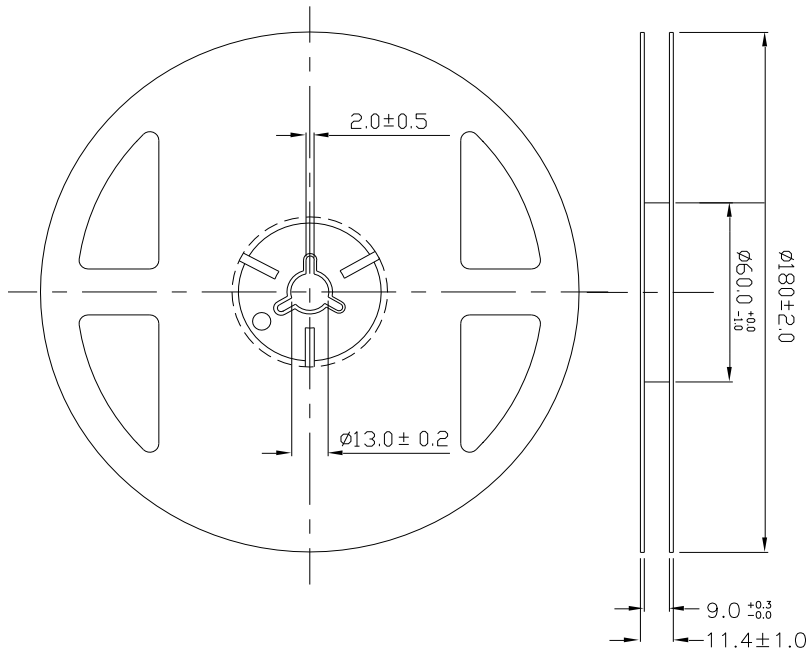
Note:  
Tolerance unless mentioned is  $\pm 0.1$  mm, Unit = mm.

**Moisture Resistant Packing Materials**  
**Label Explanation**



- CPN: Customer's Product Number
- P/N: Product Number
- TYPE :Part NO.
- IV: Radiant Intensity Rank
- WD: Dom. Wavelength Rank
- VF: Forward Voltage Rank
- LOT NO.: Lot Number
- QTY: Packing Quantity

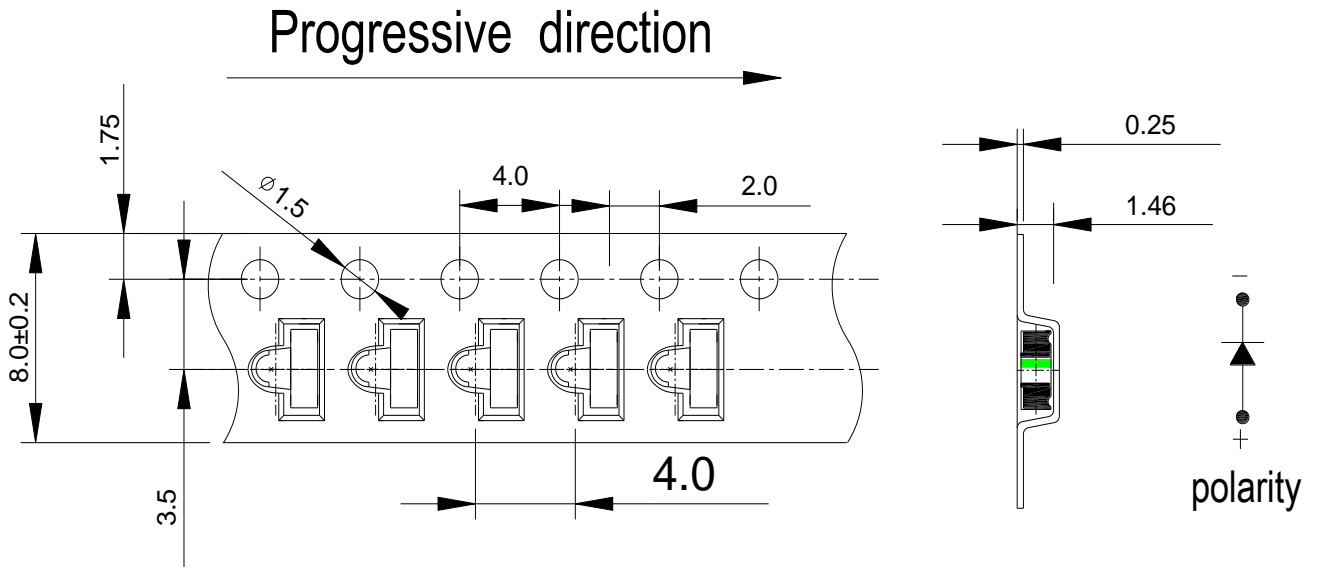
**Reel Dimensions**



Note:  
 Tolerances unless mentioned ±0.1mm,Unit = mm.



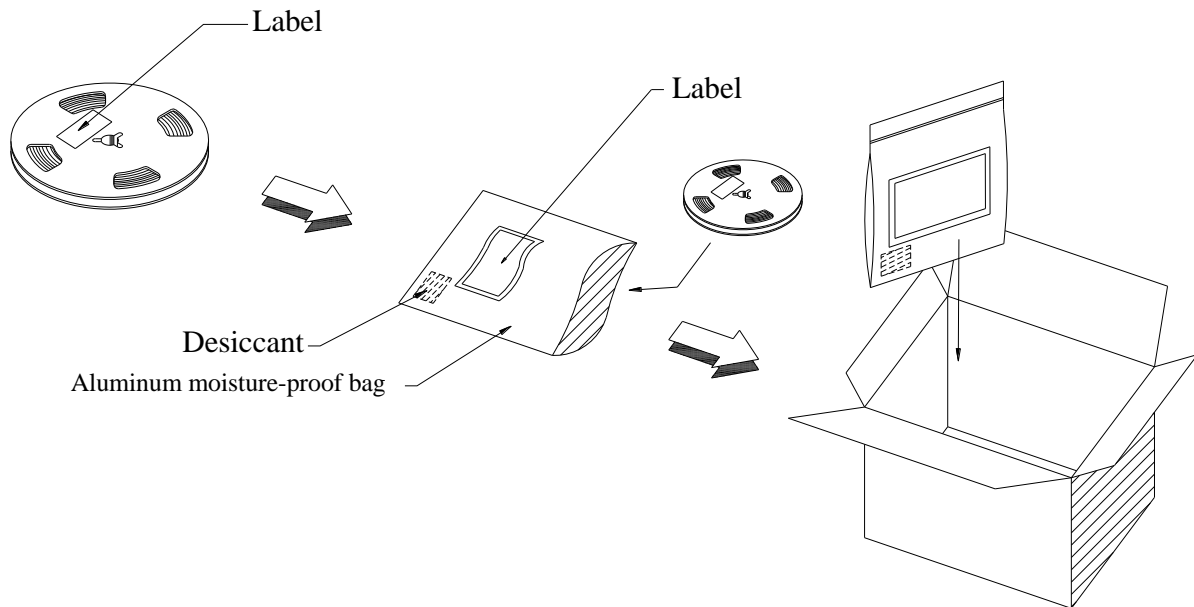
**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel**



**Notes:**

1. Tolerance unless mentioned is  $\pm 0.1$  mm, Unit = mm.
2. Minimum packing amount is 1000 pcs per reel.

**Moisture Resistant Packing Process**



### Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

| No. | Items                     | Test Condition                                 | Test Hours/Cycles | Sample Size | Ac/Re |
|-----|---------------------------|--|-------------------|-------------|-------|
| 1   | Reflow Soldering          | Temp. : 260°C/10sec.                           | 6 Min.            | 22 PCS.     | 0/1   |
| 2   | Thermal Shock             | H : +100°C 5min<br>∫ 10 sec<br>L : -10°C 5min  | 300 Cycles        | 22 PCS.     | 0/1   |
| 3   | Temperature Cycle         | H : +100°C 15min<br>∫ 5 min<br>L : -40°C 15min | 300 Cycles        | 22 PCS.     | 0/1   |
| 4   | High Temperature/Humidity | Ta=85°C,85%RH                                  | 1000 Hrs.         | 22 PCS.     | 0/1   |
| 5   | Low Temperature Storage   | Ta=-40°C                                       | 1000 Hrs.         | 22 PCS.     | 0/1   |
| 6   | High Temperature Storage  | Ta=100°C                                       | 1000 Hrs.         | 22 PCS.     | 0/1   |
| 7   | DC Operation Life         | Ta=25°C,<br>I <sub>F</sub> = 20 mA             | 1000 Hrs.         | 22 PCS.     | 0/1   |

## Precautions for Use

### 1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

### 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 90%RH or less.

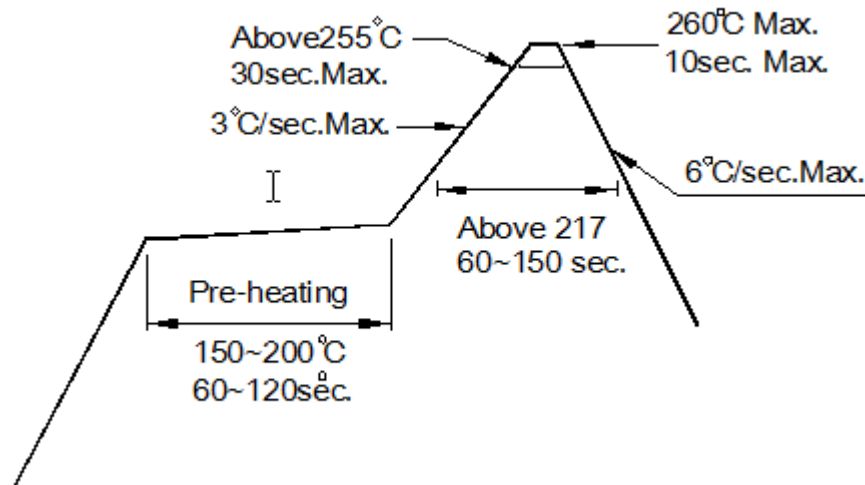
2.3 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment: 60±5°C for 24 hours.

### 3. Soldering Condition

#### 3.1 Pb-free solder temperature profile



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

3.4 After soldering, do not warp the circuit board.

### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

### 5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.

