

## Data Sheet

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Customer: \_\_\_\_\_

Part No: \_\_\_\_\_ CL-SFC506IRUVR-850,415,660-01 \_\_\_\_\_

Sample No: \_\_\_\_\_

Description: \_\_\_\_\_ 5050 Red/Purple/IR850 SMD \_\_\_\_\_

Item No: \_\_\_\_\_

| Customer |            |          |      |
|----------|------------|----------|------|
| Check    | Inspection | Approval | Date |
|          |            |          |      |

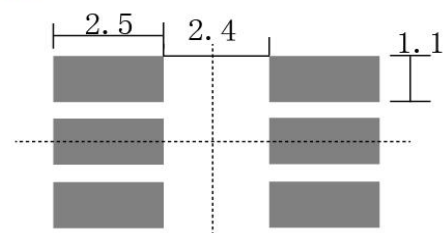
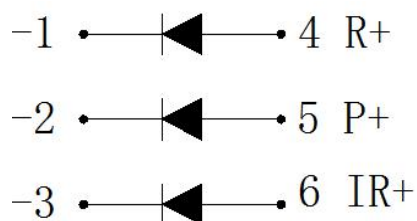
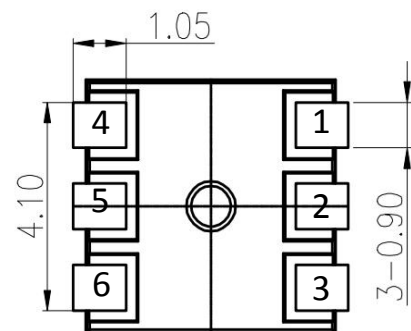
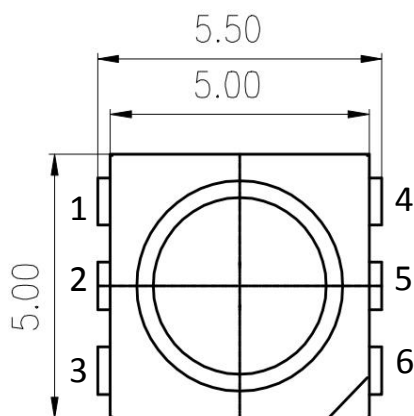
## Features:

- . Reflow Solderable
- . High Luminous Intensity and Low Power Dissipation
- . Good Reliability and Long Life
- . Complied With RoHS Directive



## Applications

- Optical indicator
- Indoor display
- Backlighting in dashboard and switch
- Flat backlighting for LCD, symbol and display
- General use



### Notes:

- 1 . All dimension units are millimeters.
2. All dimension tolerance is  $\pm 0.2\text{mm}$  unless otherwise noted.

## Selection Guide

| Part No.                          | Chip Materials | Lens Type   | Luminous intensity(mcd) @ 1mA  |     |     | Viewing Angle |
|-----------------------------------|----------------|-------------|--------------------------------|-----|-----|---------------|
|                                   |                |             | Min                            | Typ | Max | 201/2         |
| CL-SFC506IRUVR<br>-850,415,660-01 | (R)AlGaInP     | Water Clear | 10                             | 70  | --  | 120           |
|                                   |                |             | Luminous intensity(mcd) @ 20mA |     |     |               |
|                                   | (P)InGaN       |             | 90                             | 100 | --  |               |

Note:

1.1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value.

2.the above luminous intensity measurement allowance tolerance  $\pm 10\%$

## Electrical / Optical Characteristics at Ta=25°C

| Parameter           | Symbol | Min. | Typ. | Max. | Units | test conditions |
|---------------------|--------|------|------|------|-------|-----------------|
| Forward Voltage     | R      | 1.4  | --   | 2    | V     | IF=1mA          |
|                     | P      | 2.8  |      | 3.4  |       | IF=20mA         |
| Reverse Current     | IR     | --   | --   | 10   | uA    | VR = 5V         |
| Dominate Wavelength | R      | --   | 660  | --   | nm    | IF=1mA          |
|                     | P      | 420  | --   | 430  |       | IF=20mA         |

## Absolute Maximum Ratings at Ta=25°C

| Parameter                     | Symbol | Rating   | Units |
|-------------------------------|--------|----------|-------|
| Power Dissipation             | R      | 40       | mW    |
|                               | P      | 68       |       |
| DC Forward Current            | IF     | 20       | mA    |
| Peak Forward Current [1]      | R      | 75       | mA    |
|                               | P      | 100      |       |
| Reverse Voltage               | VR     | 5        | V     |
| Electrostatic Discharge (HBM) | ESD    | 2000     | V     |
| Operating Temperature         | Topr   | -40~+85  | °C    |
| Storage Temperature           | Tstg   | -40~+100 | °C    |

Note:

1. 1/10 Dut cycle,0.1ms pulse width.

2. The above forward voltage measurement allowance tolerance  $\pm 0.1V$ .

3. The tolerance of wave length: $\pm 1nm$ .

**Selection Guide**

| Part No.                      | Chip Materials | Lens Type   |
|-------------------------------|----------------|-------------|
| CL-SFC506IRUVR-850,415,660-01 | AlGaAs/GaAs    | Water clear |

**Electrical And Optical Characteristics (Ta=25°C)**

| Parameter         | Symbol            | Min | Typ. | Max | Units | Condition            |
|-------------------|-------------------|-----|------|-----|-------|----------------------|
| Radiant Intensity | I <sub>e</sub>    | 3   | 6    | -   | mW/sr | I <sub>F</sub> =20mA |
| Forward Voltage   | V <sub>F</sub>    | -   | 1.5  | -   | V     | I <sub>F</sub> =20mA |
| Reverse Current   | I <sub>R</sub>    | -   | -    | 10  | uA    | V <sub>R</sub> =5V   |
| Peak Wavelength   | λ <sub>p</sub>    | -   | 850  | -   | nm    | I <sub>F</sub> =20mA |
| Controlled Angle  | 2θ <sub>1/2</sub> | -   | 120  | -   | deg   | I <sub>F</sub> =20mA |

Note:

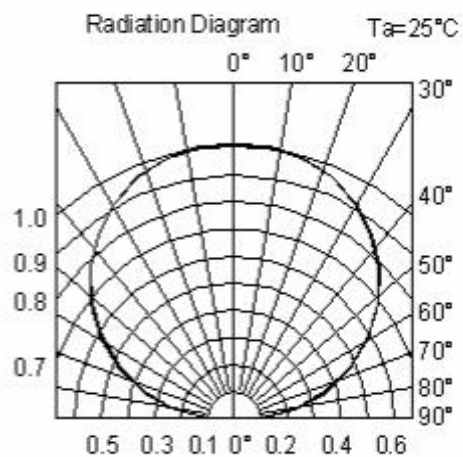
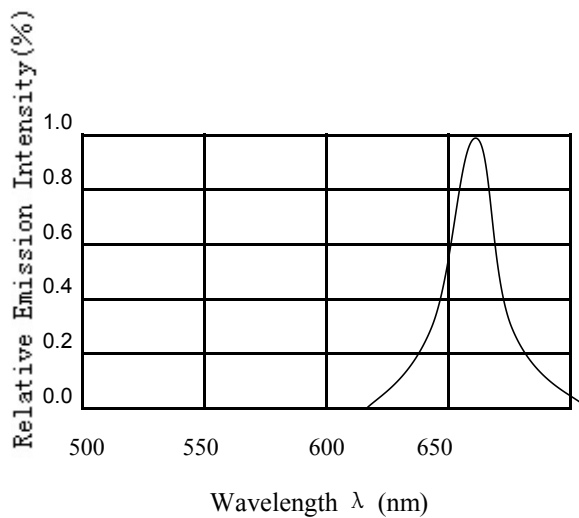
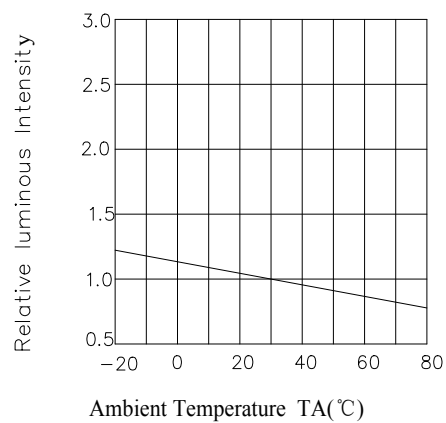
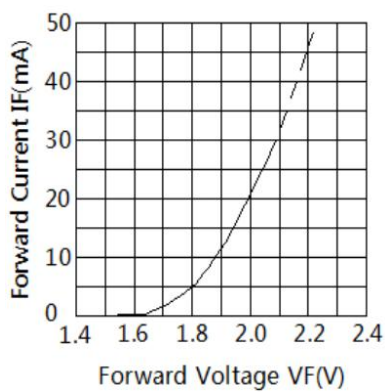
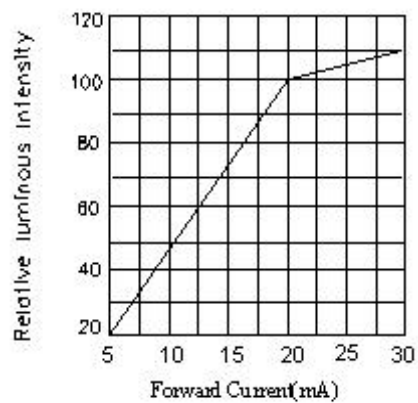
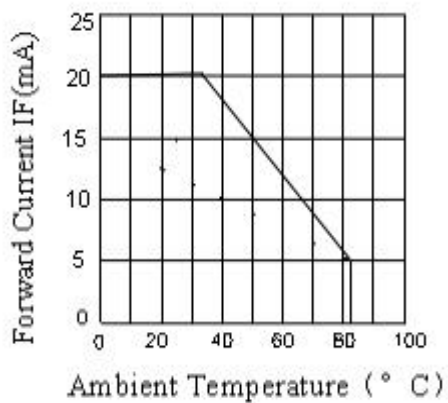
1. 2θ<sub>1/2</sub> is the angle from optical centerline where the luminous intensity is 2θ<sub>1/2</sub> the optical centerline value.
2. the above luminous intensity measurement allowance tolerance ±10%

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

| Parameter                  | Symbol           | Ratings      | Units | Notice |
|----------------------------|------------------|--------------|-------|--------|
| Continuous Forward Current | I <sub>F</sub>   | 50           | mA    | --     |
| Power Dissipation          | P <sub>D</sub>   | 90           | mw    | --     |
| Reverse Voltage            | V <sub>R</sub>   | 5            | V     | --     |
| Operating Temperature      | T <sub>opr</sub> | -20~+80      | °C    | --     |
| Storage Temperature        | T <sub>stg</sub> | -40~+100     | °C    | --     |
| Soldering Temperature      | T <sub>sd</sub>  | 260 (<10sec) | °C    | --     |

## Typical optical characteristics curves

Ambient Temperature VS. Forward Current



## Typical Optical-Electrical Characteristic Curves

Fig.1 Forward Current Vs Forward Voltage

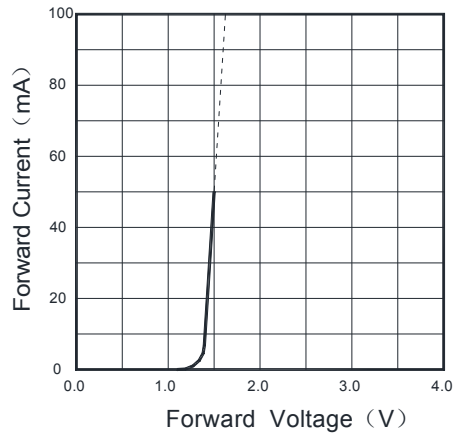


Fig.2 Relative Radiant Intensity Vs Forward Current

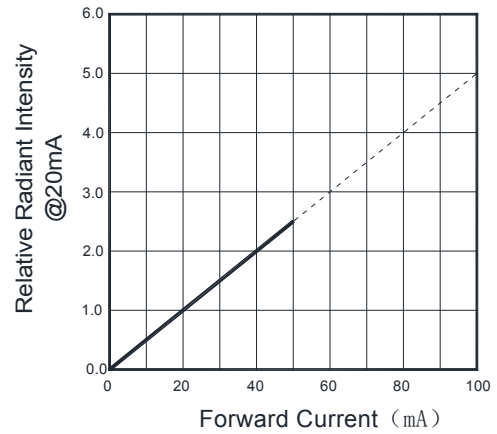


Fig.3 Relative Forward Voltage Vs Ambient Temperature

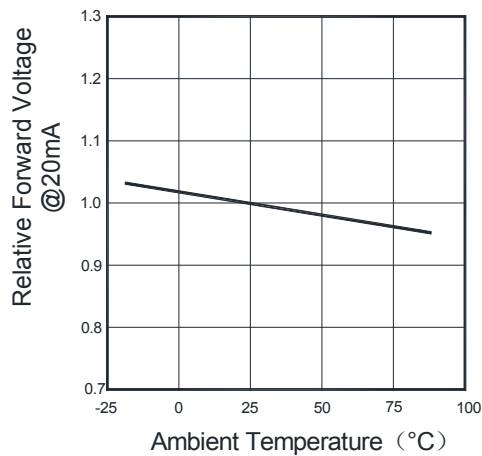


Fig.4 Relative Radiant Intensity Vs Ambient Temperature

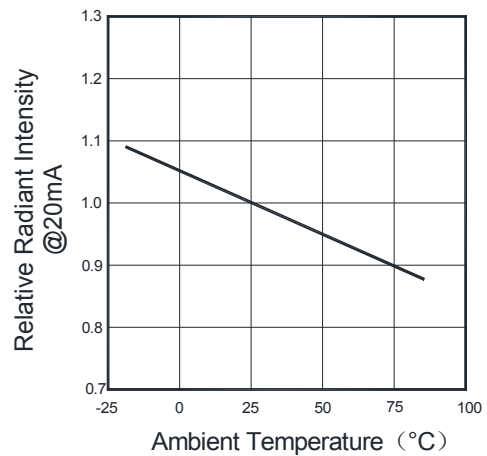


Fig.5 Spectral Distribution

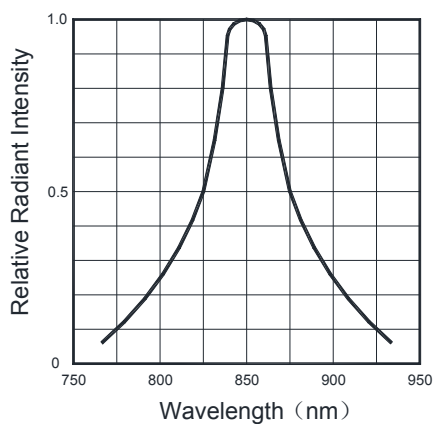
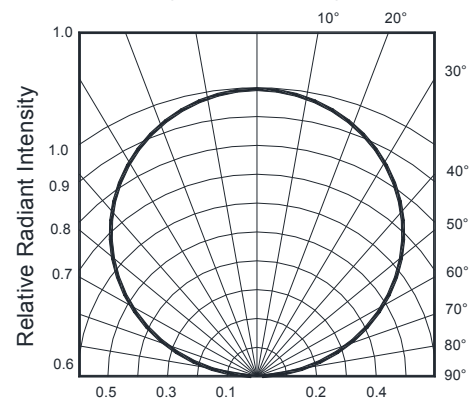


Fig.6 Radiant Diagram



## Reliability Test Items And Conditions

| Test Items                                  | Ref.Standard | Test conditions                                   | Time       | Quantity | Ac/Re |
|---------------------------------------------|--------------|---------------------------------------------------|------------|----------|-------|
| Reflow                                      | JESD22-B106  | Temp:260°C max T=10 sec                           | 3 times.   | 22Pcs.   | 0/1   |
| Temperature Cycle                           | JESD22-A104  | 100°C±5°C 30 min.<br>↑↓5 min<br>-40°C±5°C 30 min. | 100 Cycles | 22Pcs.   | 0/1   |
| High Temperature Storage                    | JESD22-A103  | Temp:100°C±5°C                                    | 1000Hrs    | 22Pcs.   | 0/1   |
| Low Temperature Storage                     | JESD22-A119  | Temp:-40°C±5°C                                    | 1000Hrs    | 22Pcs.   | 0/1   |
| Life Test                                   | JESD22-A108  | Ta=25°C±5°C IF=20mA                               | 1000Hrs    | 22Pcs.   | 0/1   |
| High Temperature<br>High Humidity Life Test | JESD22-A101  | 85°C±5°C/ 85%RH                                   | 1000Hrs    | 22Pcs.   | 0/1   |

## Criteria For Judging Damage

| Test Items         | Symbol | Test conditions | Criteria For Judgement |             |
|--------------------|--------|-----------------|------------------------|-------------|
|                    |        |                 | Min.                   | Max.        |
| Forward Voltage    | VF     | IF=20mA         |                        | U.S.L*)x1.1 |
| Reverse Current    | IR     | VR = 5V         |                        | U.S.L*)x2.0 |
| Luminous intensity | IV     | IF=20mA         | L.S.L*)x0.7            |             |

U.S.L: Upper standard level

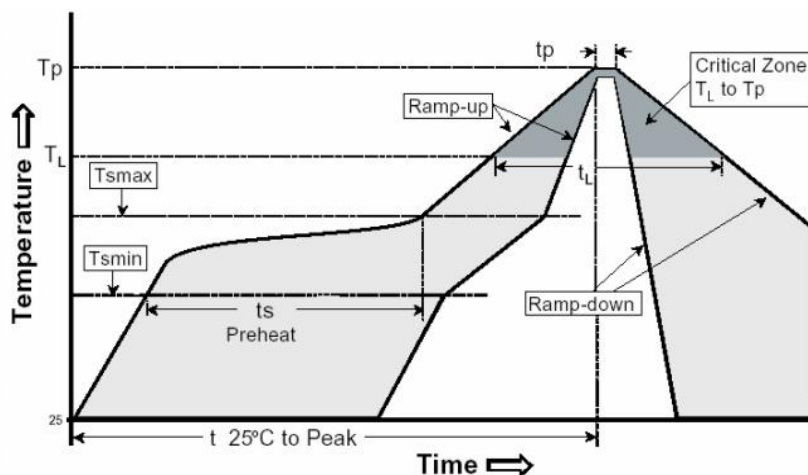
L.S.L: Lower standard level

The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

## SMT Reflow Soldering Instructions

- 1.High temperature welding recommended no more than 2 times.
2. When soldering , do not put stress on the LEDs during heating .
- 3.Reflow temperature distribution (Acc.to J-STD-020D)

| Profile Feature                                 | Sn-Pb Eutectic Assembly |               | Pb-Free Assembly |               |
|-------------------------------------------------|-------------------------|---------------|------------------|---------------|
|                                                 | Large Body              | Small Body    | Large Body       | Small Body    |
| Average ramp-up rate<br>(TL to Tp)              | 3 °C/second max.        |               | 3 °C/second max. |               |
| Preheat                                         | 100°C                   |               | 150°C            |               |
| -Temperature Min(TSmin)                         | 150°C                   |               | 200°C            |               |
| -Temperature Max(TSmax)                         | 60-120 seconds          |               | 60-180 seconds   |               |
| -Time(min to max)(ts)                           |                         |               |                  |               |
| Tsmax to TL                                     |                         |               | 3 °C/second max. |               |
| -Ramp-up Rate                                   |                         |               |                  |               |
| Time maintained above:                          | 183°C                   |               | 217°C            |               |
| -Temperature(TL)                                | 60-150 seconds          |               | 60-150 seconds   |               |
| -Time(tL)                                       |                         |               |                  |               |
| Peak Temperature(Tp)                            | 225+0/-5 °C             | 240+0/-5 °C   | 245+0/-5 °C      | 260+0/-5 °C   |
| Time within 5 °C of actual Peak Temperature(tp) | 10-30 seconds           | 10-30 seconds | 10-30 seconds    | 20-40 seconds |
| Ramp-down Rate                                  | 6 °C/second max.        |               | 6 °C/second max. |               |
| Time 25 °C to Peak Temperatur                   | 6 minutes max.          |               | 8 minutes max.   |               |

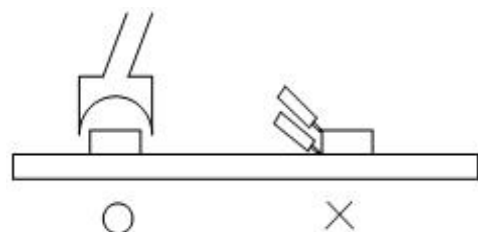


## Soldering iron

- 1.When hand soldering, the temperature of the iron must less than 350°C for 3 seconds
- 2.The hand solder should be done only one times

## 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 in advance whether the characteristics of LEDs will or will not be damaged by repairing.





## Storage

Before the package is opened:

The storage environment shall be between 5 °C and 30 °C and the relative humidity shall be within 60 % RH. When the storage time of the product exceeds 1 year, the product must be re-baked before it can be used.

After opening the package:

1、 The ambient temperature should be kept between  $\leq 30^{\circ}\text{C}$  and relative humidity The lower 60 % RH should be maintained.

2、 If the material is not produced after more than 168 hours of exposure in the workshop, the product must be put back in the oven and dehumidified by 12H at 65 °C before it can be reused. If exposed in the workshop for more than 672 hours without production, return the material to the SMD plant for high temperature dehumidification.

3、 When the material is dehumidified, please do not open the oven in the middle, so that the oven temperature will not drop to the dehumidification effect.

## ESD

Static Electricity will damage the LED.

The following procedures may decrease the possibility of ESD damage.

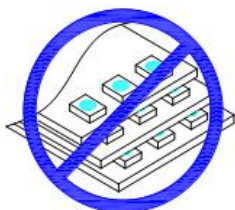
- 1.All productive machinery and test instruments must be electrically grounded.
- 2.Use a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- 3.Maintain a humidity level of 50%RH or higher in production areas.
- 4.Use anti-static packaging for transport and storage.

## Handling Precautions

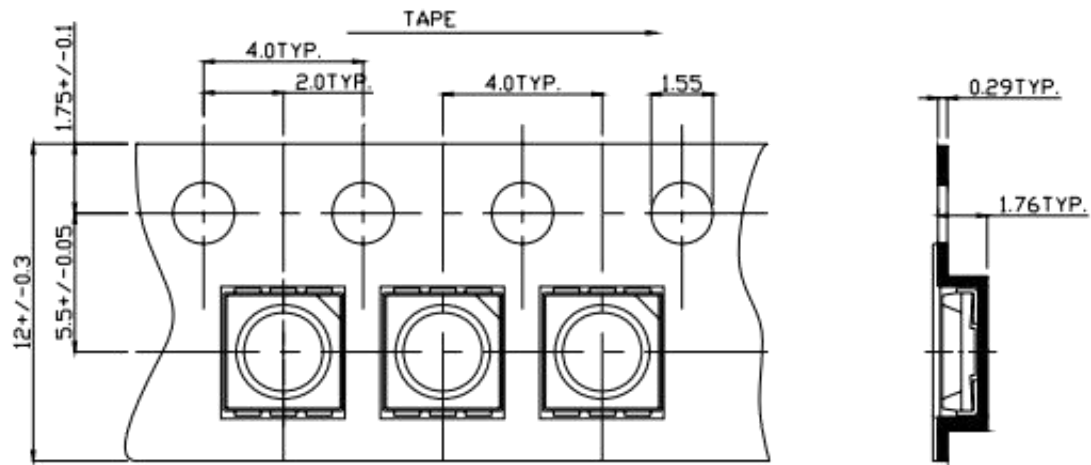
1.Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage.

2.Not available in the situation of acidity for PH.

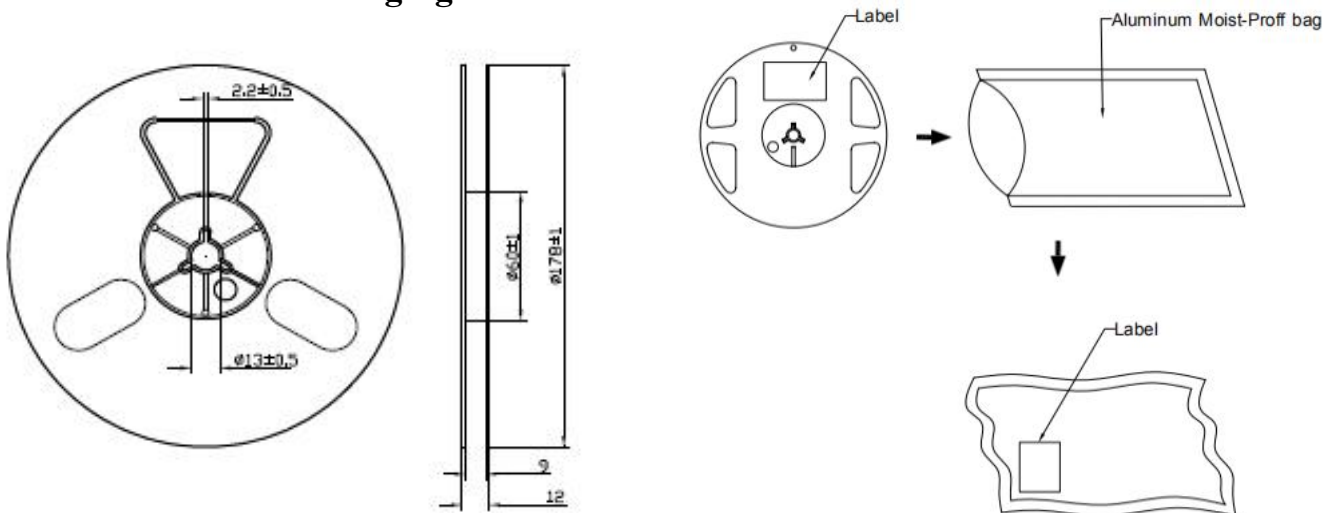
3.Electrostatic sensitive device



**Carrier tape: 1000PCS/reel**

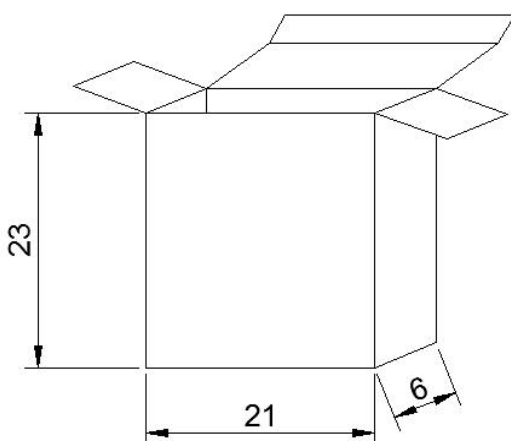


## Moisture Resistant Packaging



## Cardboard Box

Maximum packing quantity (5 packs of material)



Maximum packing quantity (27 bags of material or 5 small boxes)

