

Specification

Client Name : _____

Client P/N : _____

Factory P/N : OF-SMD3528WN

Sending Date : _____

Features

- PLCC-2 Package.
- Extremely wide viewing angle
- Suitable for all SMT assembly and solder process
- Available on tape and reel
- Moisture sensitivity level: Level 4
- Package:2000pcs/reel
- RoHS compliant



Description

The White LED which was fabricated using a blue chip and the phosphor

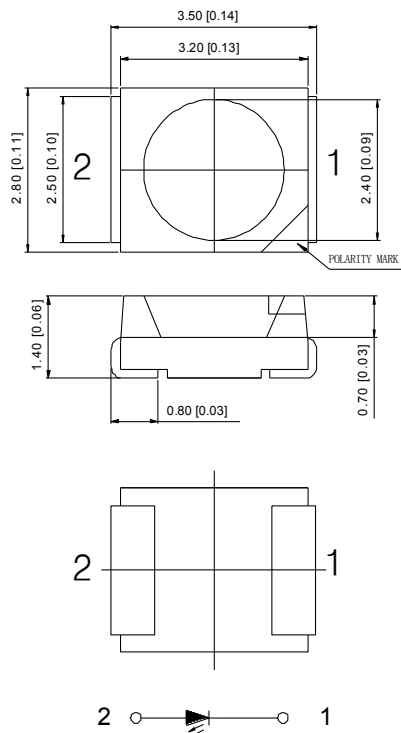
Applications

- Optical indicator
- Indoor display
- Interior automotive lighting
- Backlight for LCD, switch and Symbol, display
- Light pipe application
- General use

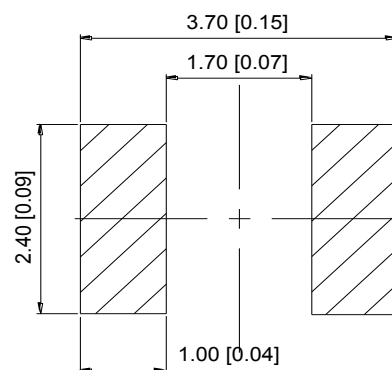


ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES

Package Dimensions



Recommended Soldering



Notes:

1. All dimension units are millimeters.
2. All dimension tolerance is ± 0.15 mm unless otherwise noted.

Selection Guide

| Part No. | Dice | Lens Type | Luminous intensity (mcd) @ 20mA | | Luminous flux(lm) @ 20mA | | Viewing Angle |
|--------------|----------------|-----------------|---------------------------------|------|--------------------------|-----|---------------|
| | | | Min. | Typ. | Min | Typ | 2θ1/2 |
| OF-SMD3528WN | WHITE (InGaN) | Yellow Diffused | 2050 | 2400 | 6.8 | 7.3 | 120° |

Note:

1. θ1/2 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 ±10%.

Electrical / Optical Characteristics at Ta=25°C

| Parameter | Symbol | Min. | Typ. | Max. | Units | Test Conditions |
|-----------------------|----------------|------|------|------|-------|----------------------|
| Forward Voltage | V _F | 2.8 | -- | 3.4 | V | I _F =20mA |
| Reverse Current | I _R | -- | -- | 10 | μA | V _R = 5V |
| Color Coordinates | X | -- | 0.32 | -- | -- | I _F =20mA |
| | Y | -- | 0.33 | -- | -- | I _F =20mA |
| Color Temperature | T _c | -- | 6000 | -- | K | I _F =20mA |
| Color Rendering Index | CRI | 65 | -- | -- | Ra | I _F =20mA |

Absolute Maximum Ratings at Ta=25°C

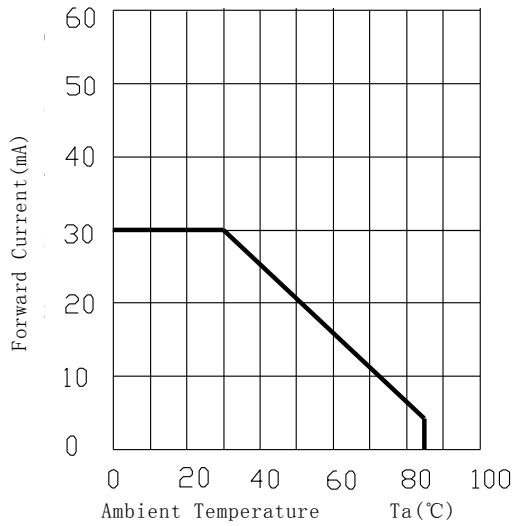
| Parameter | Symbol | Rating | Units |
|-------------------------------|------------------|------------|-------|
| Power Dissipation | P _d | 105 | mW |
| DC Forward Current | I _F | 30 | mA |
| Peak Forward Current [1] | I _{FP} | 100 | mA |
| Reverse Voltage | V _R | 5 | V |
| Electrostatic Discharge (HBM) | ESD | 1000 | V |
| Operating Temperature | T _{opr} | -40 ~ +85 | °C |
| Storage Temperature | T _{stg} | -40 ~ +100 | °C |

Note:

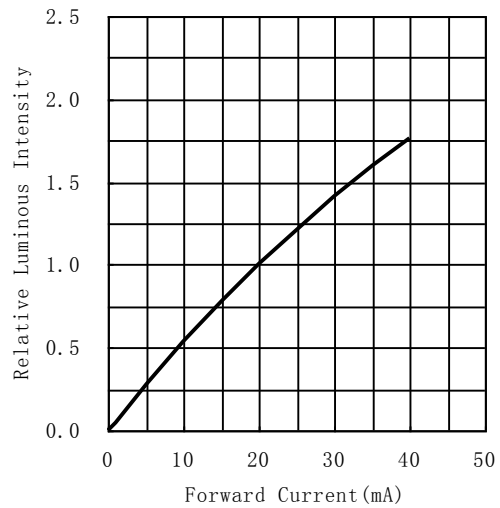
- 1.1/10 Duty Cycle, 0.1ms Pulse Width.
- 2.The above forward voltage measurement allowance tolerance ±0.1V
- 3.The above color temperature measurement allowance tolerance ±0.003

Typical optical characteristics curves

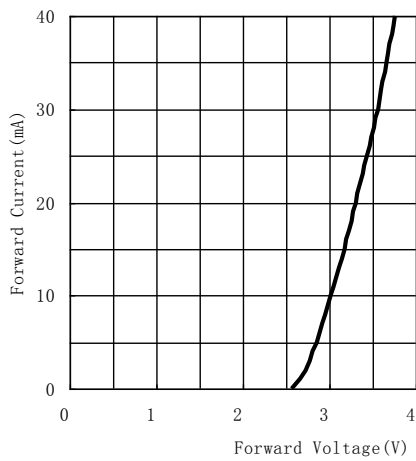
Ambient Temperature VS. Forward Current



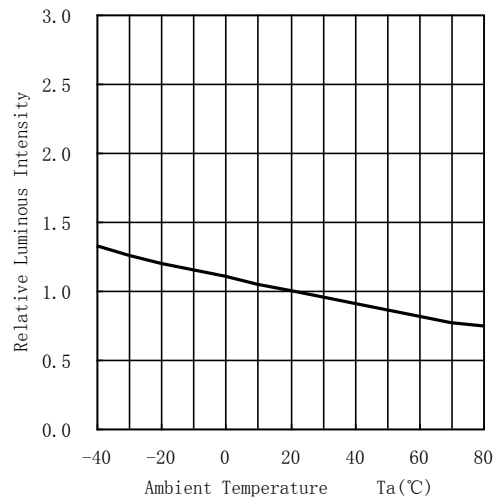
Forward Current VS. Relative Intensity



Forward Voltage VS. Forward Current



Ambient Temperature VS. Relative Intensity



Relative spectral emission

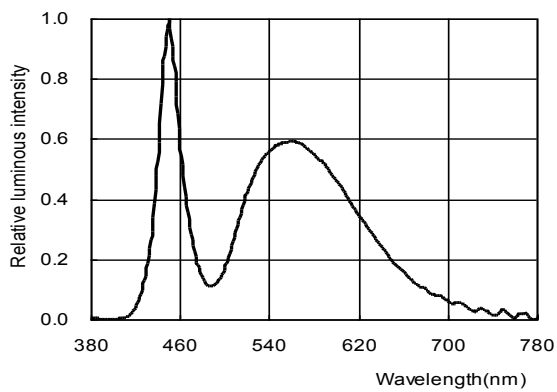
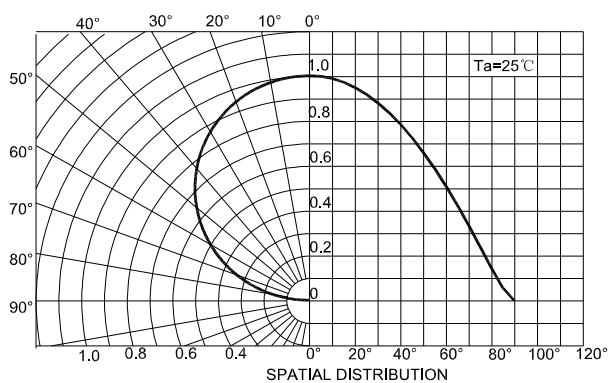
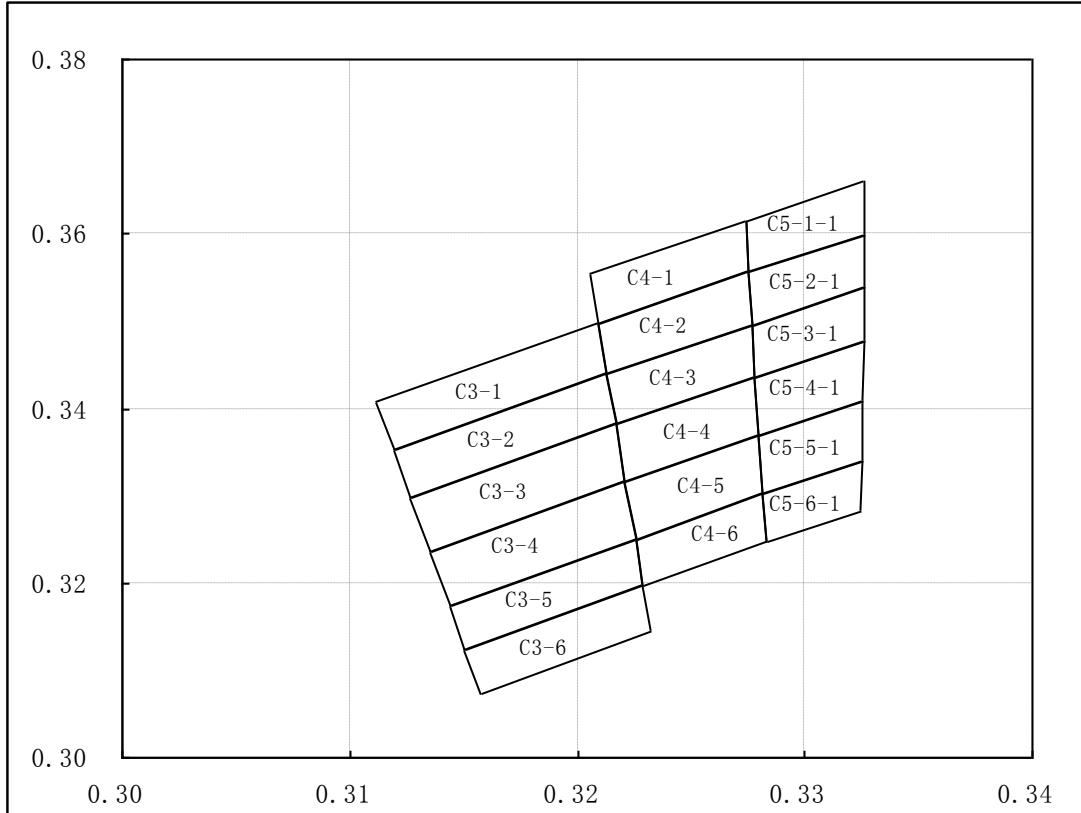


Diagram characteristics of radiation



CIE Chromaticity Diagram



| C3-1 6000-6500K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3112 | 0.3209 | 0.3213 | 0.3120 |
| Y | 0.3408 | 0.3498 | 0.3440 | 0.3354 |

| C3-2 6000-6500K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3120 | 0.3213 | 0.3217 | 0.3127 |
| Y | 0.3354 | 0.3440 | 0.3382 | 0.3299 |

| C3-3 6000-6500K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3127 | 0.3217 | 0.3221 | 0.3136 |
| Y | 0.3299 | 0.3382 | 0.3317 | 0.3237 |

| C3-4 6000-6500K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3136 | 0.3221 | 0.3226 | 0.3144 |
| Y | 0.3237 | 0.3317 | 0.3251 | 0.3174 |

| C3-5 6000-6500K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3144 | 0.3226 | 0.3229 | 0.3151 |
| Y | 0.3174 | 0.3251 | 0.3198 | 0.3124 |

| C3-6 6000-6500K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3151 | 0.3229 | 0.3232 | 0.3157 |
| Y | 0.3124 | 0.3198 | 0.3145 | 0.3074 |

| C4-1 5700-6000K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3206 | 0.3274 | 0.3275 | 0.3209 |
| Y | 0.3554 | 0.3615 | 0.3556 | 0.3498 |

| C4-2 5700-6000K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3209 | 0.3275 | 0.3277 | 0.3213 |
| Y | 0.3498 | 0.3556 | 0.3496 | 0.3440 |

| C4-3 5700-6000K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3213 | 0.3277 | 0.3278 | 0.3217 |
| Y | 0.3440 | 0.3496 | 0.3436 | 0.3382 |

| C4-4 5700-6000K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3217 | 0.3278 | 0.3280 | 0.3221 |
| Y | 0.3382 | 0.3436 | 0.3369 | 0.3317 |

| C4-5 5700-6000K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3221 | 0.3280 | 0.3281 | 0.3226 |
| Y | 0.3317 | 0.3369 | 0.3302 | 0.3251 |

| C4-6 5700-6000K | | | | |
|-----------------|--------|--------|--------|--------|
| X | 0.3226 | 0.3281 | 0.3283 | 0.3229 |
| Y | 0.3251 | 0.3302 | 0.3247 | 0.3198 |

| C5-1-1 5500-5700K | | | | |
|-------------------|--------|--------|--------|--------|
| X | 0.3274 | 0.3326 | 0.3326 | 0.3275 |
| Y | 0.3615 | 0.3660 | 0.3599 | 0.3556 |

| C5-2-1 5500-5700K | | | | |
|-------------------|--------|--------|--------|--------|
| X | 0.3275 | 0.3326 | 0.3326 | 0.3277 |
| Y | 0.3556 | 0.3599 | 0.3538 | 0.3496 |

| C5-3-1 5500-5700K | | | | |
|-------------------|--------|--------|--------|--------|
| X | 0.3277 | 0.3326 | 0.3326 | 0.3278 |
| Y | 0.3496 | 0.3538 | 0.3477 | 0.3436 |

| C5-4-1 5500-5700K | | | | |
|-------------------|--------|--------|--------|--------|
| X | 0.3278 | 0.3326 | 0.3325 | 0.3280 |
| Y | 0.3436 | 0.3477 | 0.3409 | 0.3369 |

| C5-5-1 5500-5700K | | | | |
|-------------------|--------|--------|--------|--------|
| X | 0.3280 | 0.3325 | 0.3325 | 0.3281 |
| Y | 0.3369 | 0.3409 | 0.3340 | 0.3302 |

| C5-6-1 5500-5700K | | | | |
|-------------------|--------|--------|--------|--------|
| X | 0.3281 | 0.3325 | 0.3324 | 0.3283 |
| Y | 0.3302 | 0.3340 | 0.3283 | 0.3247 |

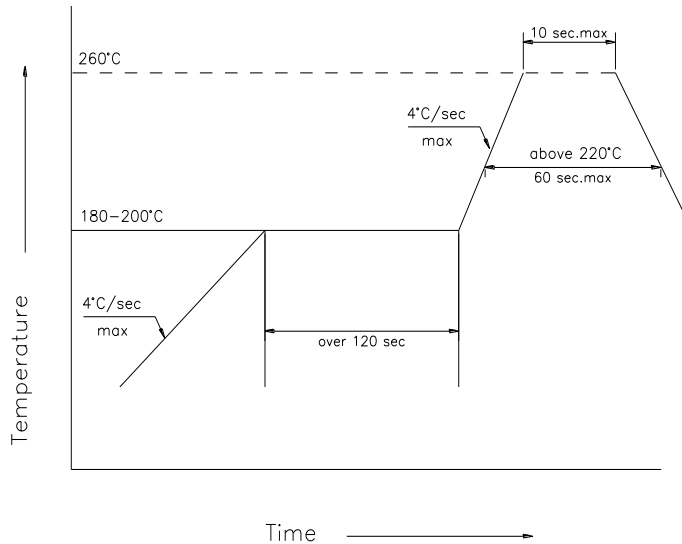
Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below.
 Confidence level :90%
 LTPD :10%

| No. | Items | Ref.Standard | Test Condition | Test Hours/ Cycles | Sample Size | Ac/Re |
|-----|-----------------------------------|--------------|---|-----------------------|-------------|-------|
| 1 | Reflow | JESD22-B106 | Temp:260°Cmax T=10 sec | 3 times. | 22Pcs. | 0/1 |
| 2 | Temperature Cycle | JESD22-A104 | 100°C±5°C 30 min. ↑↓5 min -40°C±5°C 30 min. | 100 Cycles | 22Pcs. | 0/1 |
| 3 | Thermal Shock | JESD22-A106 | 100°C±5°C 5 min. ↑↓ -40°C±5°C 5 min. | 100 Cycles | 22Pcs. | 0/1 |
| 4 | High Temperature Storage | JESD22-A103 | Temp:100°C±5°C | 1000Hrs. | 22Pcs. | 0/1 |
| 5 | Low Temperature Storage | JESD22-A119 | Temp:-40°C±5°C | 1000Hrs. | 22Pcs. | 0/1 |
| 6 | DC Operating Life | JESD22-A108 | Ta=25°C±5°C IF=20mA | 1000Hrs. | 22Pcs. | 0/1 |
| 7 | High Temperature High Humidity | JESD22-A101 | 85°C±5°C/ 85%RH IF=5mA | 1000Hrs. | 22Pcs. | 0/1 |

*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



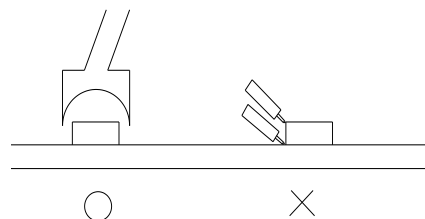
1. Reflow soldering should not be done more than two times
2. When soldering, do not put stress on the LEDs during heating

Soldering iron

1. When hand soldering, the temperature of the iron must less than 300°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 beforehand whether the characteristics of LEDs will or will not be damaged by repairing.



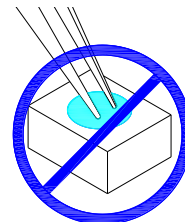
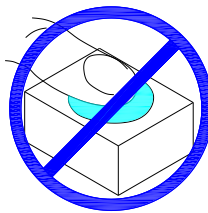
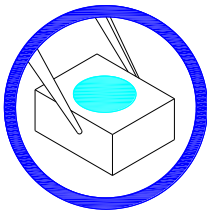
Cautions

The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be influence to the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be proper.

Handling Precautions

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, Special handling precautions need to be observed during assemble using silicone encapsulated LED products, Failure to comply might leads to damage and premature failure of the LED.

1.Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

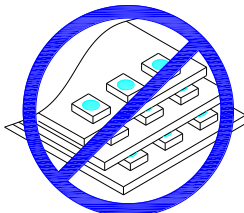


2.The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



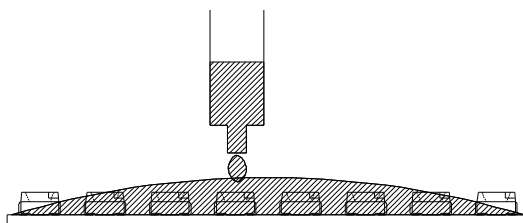
3.Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage the internal circuitry

4.Not available in the situation of acidity for PH



5.LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating

6.When we need to use external glue for LED application products, please make sure that the external glue matches the LED packaging glue. Additionally ,as most of LED packaging glue is silica gel, and it has strong Oxygen permeability as well as strong moisture permeability; in order to prevent external material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine element is required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM




7.Other points for attention, please refer to our LED user manual.

Label

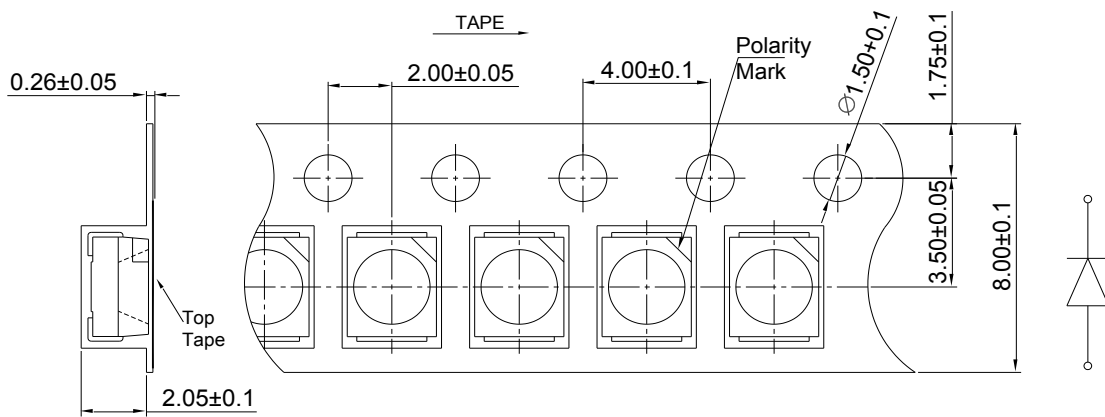
IV: Luminous intensity rank
 VF: Forward voltage rank
 X/Y: Coordinate rank
 TC: Color temperature

RoHS

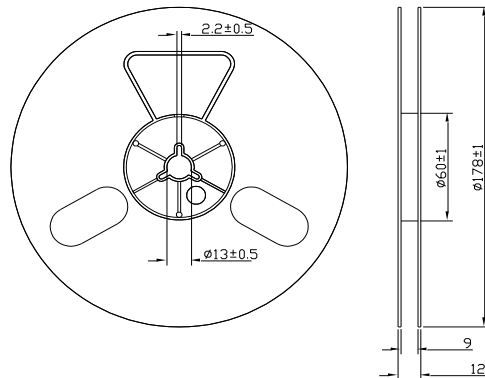
Part No: XXXXXXXXXXXXXXXXXXXXXXXX
 IV: VF: X/Y:
 Quantity: TC:
 Sealing date: XXXXXXXXXXXXXXXXXXXX



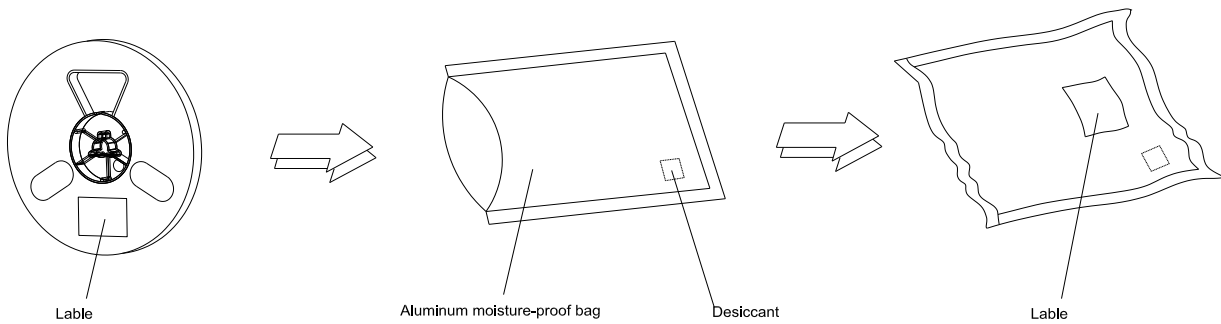
Tape Specifications (Units : mm)



Reel Dimensions



Moisture Resistant Packaging



Note: The tolerances unless mentioned is ± 0.1 mm , Unit: mm