**International Components Corporation**

# Approval Sheet

**Model Number: BSP1808SM-18**

Reference Number: 6-002
Date: 20 Apr 2018
Prepared by: Nelson Lee
Approved by: Joey Lin

Approval by

_____

Company Name:
Sign by:
Title:
Date:

## 1. Purpose and the scope

This document contains the specific specifications (electrical and mechanical), inspection standard and the reliability standard for the purpose of the customer's approval.

## 2. Description

Miniature electro-piezo transducer

## 3. Applications

Clock, Telephone, Toys, Household appliance, Office equipment Automotive, etc.

## 4. Product origin

China

## 5. Test conditions

Test should be made under the conditions of room temperature (20 ± 10 ºC) normal humidity ( 60 ± 20% ) and normal atmospheric pressure. In the case that the judgment is questionable the test conditions are to be changed to room temperature 20 ± 2 ºC, relative humidity 60 ~ 70 % and normal atmospheric pressure.

## 6. Ozone guarantee

Certificate on the elimination of ozone layer destroying substances such as Freon

## 7. Quality protection

The specifications of the mentioned model are based on this document. Using the product outside these parameters is not guaranteed.

## 8. Warranty.

The warranty period will commence upon the date of the shipment. The warranty period is 6 months.

## 9. Soldering conditions

The miniature external drive piezo transducer should not be exposed to extremely high temperatures for prolonged period of time. As excessive heat will degrade the internal structure of the unit, soldering should be conducted as quickly as possible.

Recommended temperature and time for soldering

Hand soldering (for ABS, Hi-Temp abs, FR ABS, Nylon)

300 º C thermal iron

The SPL output level of the mentioned model is based on this specification without any assembly process. It is normal to have some deviation of the sound output after the assembly process such as hand soldering, wave soldering and IR reflow.

## 10. Washing conditions

The products labeled with “remove after washing“ may be washed by our recommended solvent.

## 11. Flux removing solvents

In the view of the recent requirement for total elimination of ozone-depleting chemicals, we have decided to recommend our customers to use deionized water for their cleaning process at the condition given below, instead of “CFC” that was conventionally used.

| | |
|---|---|
| Cleaning solvent | : deionized water |
| Solvent temperature | : 55 ± 5 º C |
| Immersion time | : 5 ± 0.5 minutes |

## 12. Mounting method

To avoid unwanted vibration, the mounting must be securely affixed with no gap.

## 13. Resonant frequency

We guarantee the sound output on the specific resonant frequency on this mentioned approval document.

## 14. Input voltage

The input voltage must be within the operating range. Operating the model outside this range may cause damage and is not guaranteed.

## 15. Driving circuit

A simple driving circuit without the amplification function is acceptable because it has no winding core inside to create back voltage.

## 16. Input waveform

Our specifications are based on either the square wave or sine wave. We will apply the peak to peak value in the square wave value and root means square rms for the sine wave.

## 17. Sound emission hole

When designing your application, we recommend there be no barrier within 5mm distance to the sound emission hole. Otherwise there may be shifting of the resonant frequency.

## 18. Mounting precaution

For flange mounted buzzers, when affixing to the pc board, take care not to affix too tightly which may deform the buzzer housing and cause low sound output, no sound and/or shifting frequency.

## 19. Specification

| Items | Specifications | Conditions |
|---|---|---|
| - Operating Voltage | 1.0 ~ 18.0 V p-p | Square Wave |
| - Capacitance | 25000.0 pF ± 30.0 % | At 100.0 Hz , 1.0 V |
| - Rated Voltage | 12.0 V p-p | Square Wave |
| - Minimum Sound Output | More Than 90.0 dBA at Measuring Distance | (A Range ) from a microphone with applying the input signal with the testing set up Fig 1. |
| - Measuring Distance | 10.0 cm | |
| - Resonant Frequency | 2000.0 Hz | |
| Dimension | See drawing attached | |
| Appearance | | There should be no remarkable stains, rusts or flaws. |
| - Housing Material | PPS | |
| -Color | Black | |
| -Weight | 3.0 g | |
| -Operating Temperature | -40.0 ~ +105.0 ºC | |
| -Storage Temperature | -40.0 ~ +105.0 ºC | |

## 20. Inspection Standard

| Item Tested | Sym | Standard | AQL | Level | Inspection by means of | Remarks |
|---|---|---|---|---|---|---|
| No Sounding | | Within the operating voltage | 0.25 | II | Ear | At each: lowest, rated, highest operating voltage, there should be no sounding, harsh sound and remarkable sound decrease at rated frequency square wave. |
| - Sound Output | | More than minimum sound output 90.0 dBA mentioned in specifications when applying at input signal | 1.00 | II | Sound Pressure Level | Distance at measuring distance with mounting to inspection device in a standard manner. ( A range ) |
| - Current | | Less than 5.0 mA when applying at input signal | 0.65 | I | Multimeter | (0.5 or 1.0 class ) input signal. |
| - Capacitance | | 25000.0 pF ± 30.0 % | 0.65 | I | Multimeter | At 100.0 Hz , 1.0 V |
| - Outer Diameter | A | 18.0 x 18.0 ± 0.3 (mm) | 1.50 | S-3 | Electronic Calipers | To be measured at the maximum dia. |
| - Overall Height | B | 8.0 ± 0.3 (mm) | 1.50 | S-3 | Electronic Calipers | |
| Terminal Strength | | More than 1.0 kg | 0.65 | S-3 | Tension Gauge | By pulling each terminal |
| State of Solder | | | 1.00 | II | Magnifying Glass | Soldered points and/or coil disposition should be proper. (Crossed coil wires should not be accepted. ) |
| Rust | | | 1.00 | II | Eye | Any rust should not be accepted. |
| Stain | | | 1.50 | II | Eye | There should be no remarkable stains. |
| Adhesion | | | 1.50 | II | Eye | Adhesion should be made sufficiently and there should be no outflow of adhesive agent. |
| Other appearance | | | 1.50 | II | Eye | |

## 21. Reliability Test

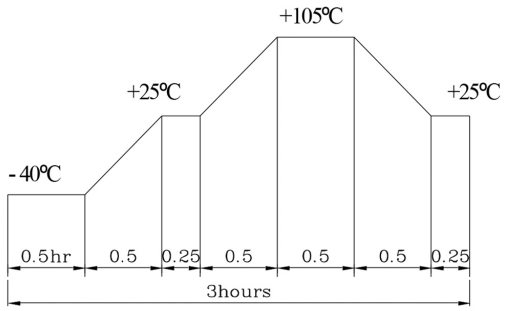
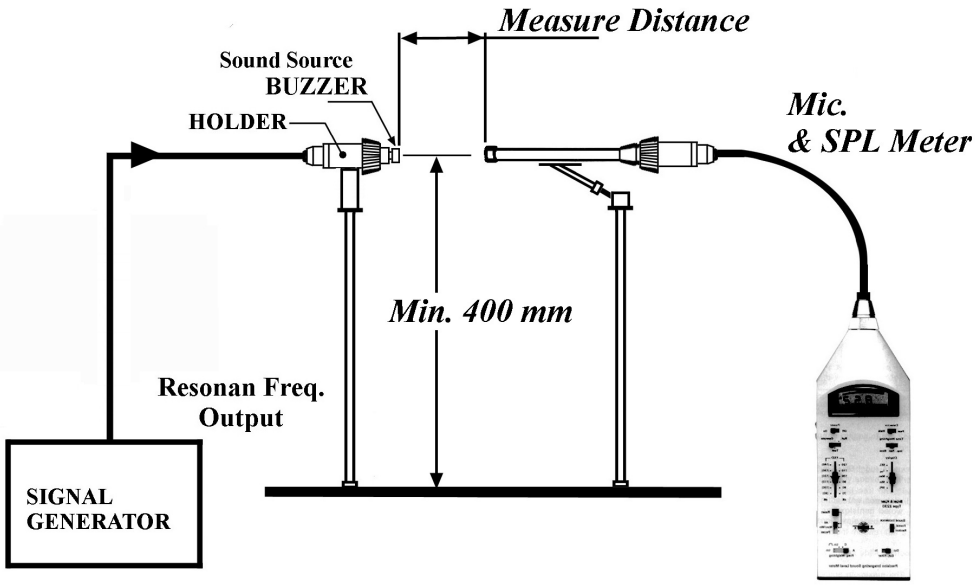
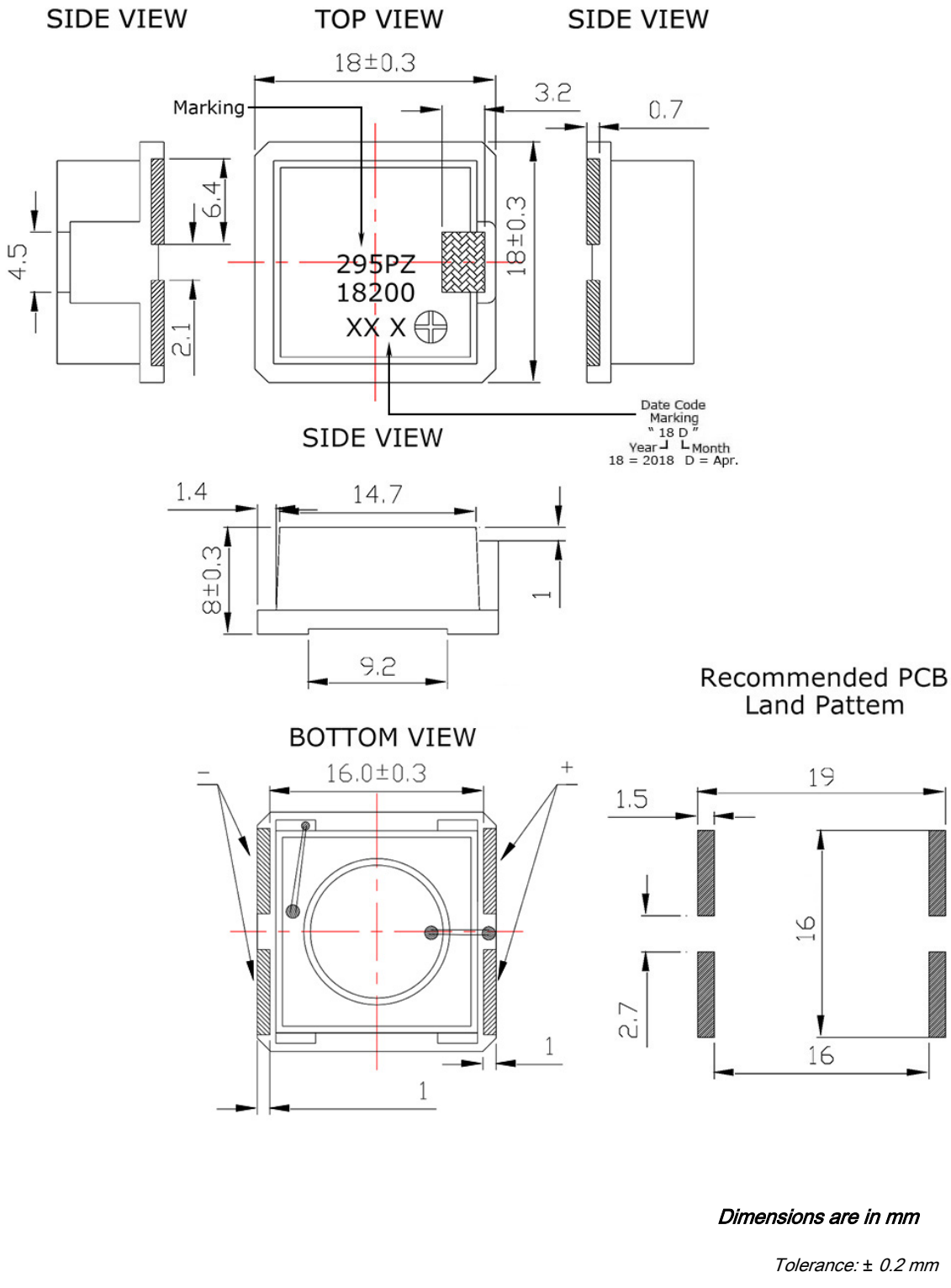
| Item | Test Condition and Requirement |
|---|---|
| High Temperature Test (Storage) | After being placed in a chamber with 105.0 ± 2.0 ºC for 96.0 hours and then being placed in normal condition for 2.0 hours.<br>Allowable variation of SPL after test: ± 10.0 dB. |
| Low Temperature Test (Storage) | After being placed in a chamber with -40.0 ± 2.0 ºC for 96.0 hours and then being placed in normal condition for 2.0 hours.<br>Allowable variation of SPL after test: ± 10.0 dB. |
| Humidity Test | After being Placed in a chamber with 90-95% R.H. at 40.0 ± 2.0 ºC for 96.0 hours and then being placed in normal condition for 2.0 hours.<br>Allowable variation of SPL after test: ± 10.0 dB. |
| Temperature Cycle Test | The part shall be subjected to 5.0 cycles. One cycle shall be consist of :<br>  <br>Allowable variation of SPL after test: ± 10.0 dB. |
| Drop Test | Drop on a hard wood board of 4.0 cm thick, any directions,6 times, at the height of 75.0 cm.<br>Allowable variation of SPL after test: ± 10.0 dB. |
| Vibration Test | After being applied vibration of amplitude of 1.5 mm with 10.0 to 55.0 Hz band of vibration frequency to each of 3.0 perpendicular directions for 2.0 hours.<br>Allowable variation of SPL after test: ± 10.0 dB. |
| Solderability Test | Lead terminals are immersed in rosin for 5.0 seconds and then immersed in solder bath of +300.0 ± 5.0 ºC for 3.0 ± 1.0 seconds. 90.0 % min. lead terminals shall be wet with solder (Except the edge of terminals). |
| Terminal Strength Pulling Test | The force of 9.8 N (1.0 kg) is applied to each terminal in axial direction for 10.0 seconds.<br>No visible damage and cutting off. |

Fig.1 Measuring Method



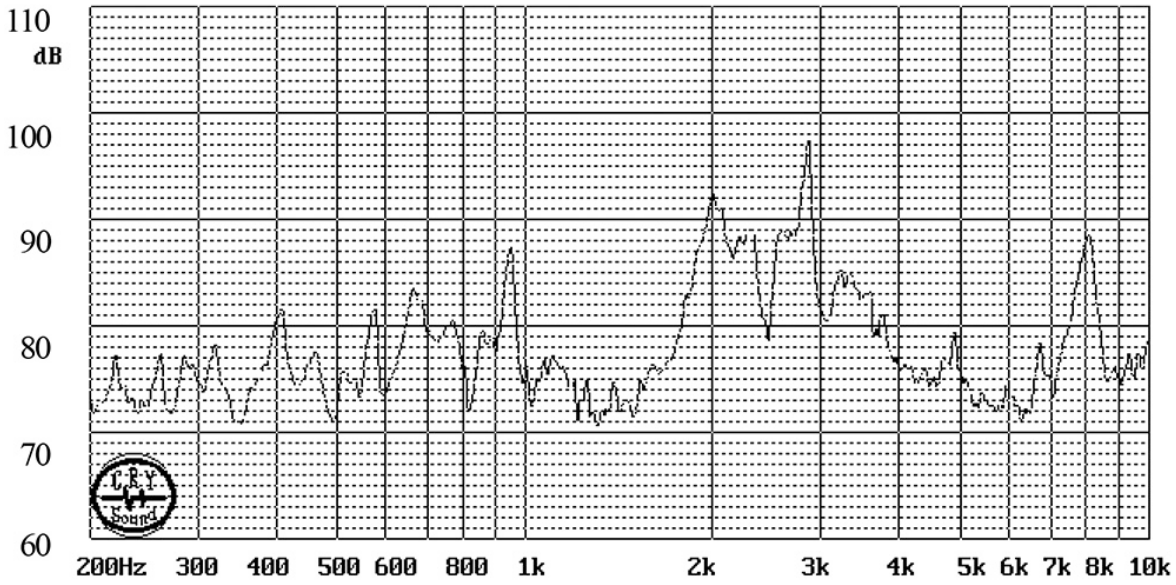
## 22. Mechanical Draw




*Dimensions are in mm*

*Tolerance: ± 0.2 mm*

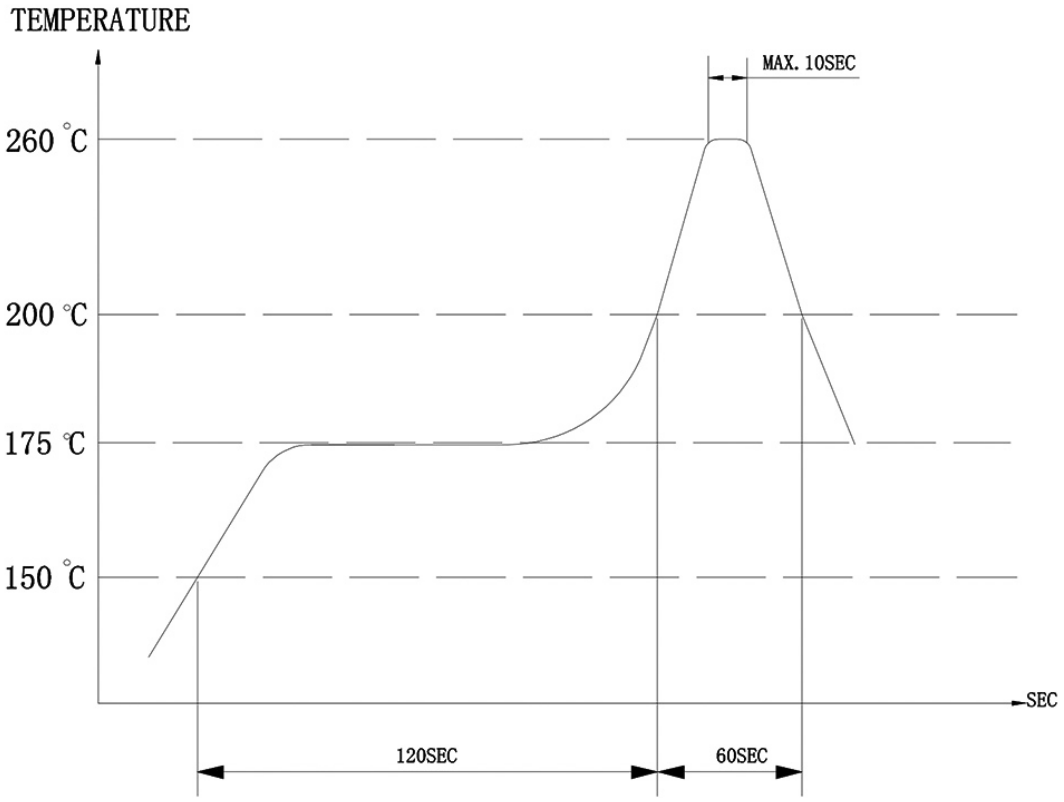
## 23. Frequency Response



## 24. Reflow Soldering Chart

(1) Recommendable reflow soldering condition is as follows (Reflow soldering is twice )

Note: It is requested that reflow soldering should be executed after heat of product goes down to normal.

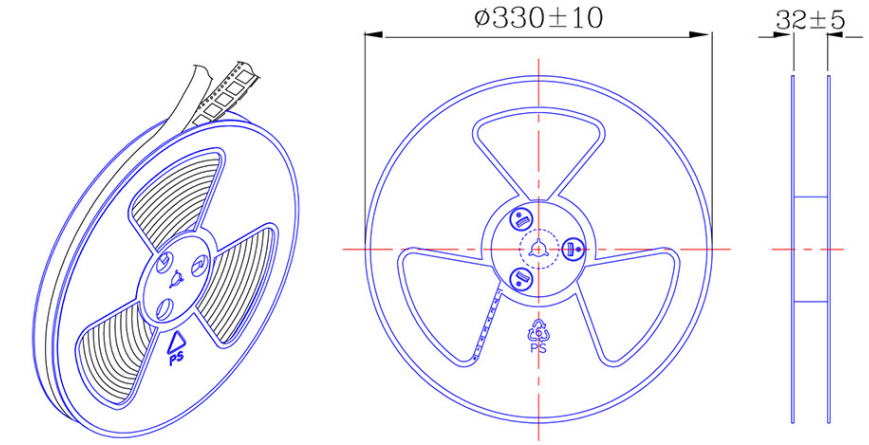


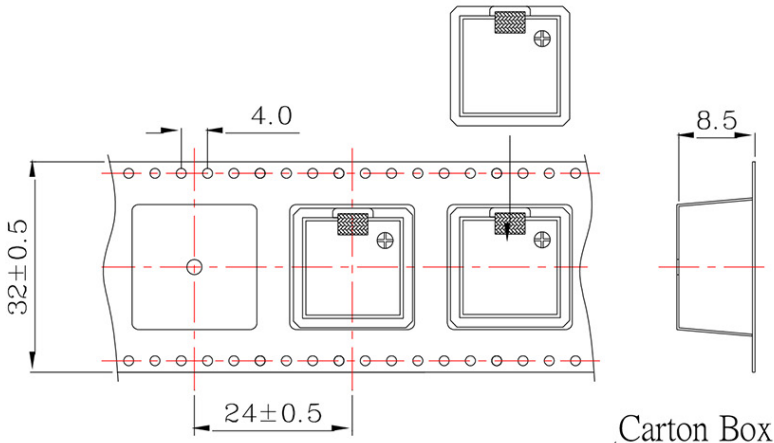

Heat resistant line (Used when heat resistant reliability test is performed)

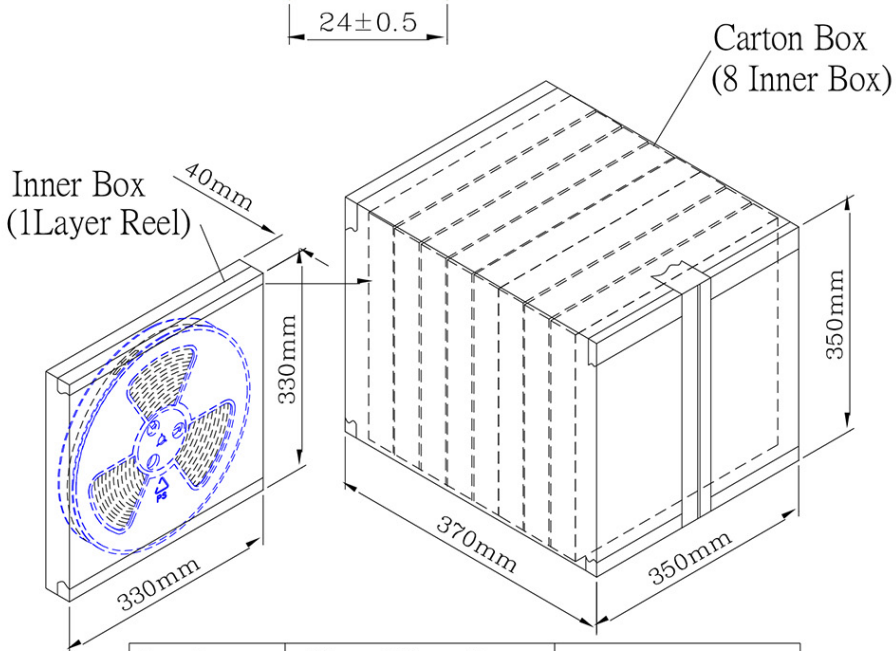
(2) Manual soldering

Manual soldering temperature 350.0 ºC within 5.0 sec.

## 25. Packing Information




| | | |
|---|---|---|
| Inner Box | 330mmx330mmx40mm | 1x200PCS=200PCS |
| Carton Box | 350mmx350mmx370mm | 8x200PCS=1600PCS |

## 26. Change History

| Version | Date | Description | Approved |
|---|---|---|---|
| 6-001 | 03 Apr 2018 | New | JL |
| 6-002 | 20 Apr 2018 | 1) Overall Height: Max. 8 mm change to 8 ± 0.3 mm.<br>2) Modify “22. Mechanical Draw “. | JL |