

## 产 品 规 格 书

### SPECIFICATIONS FOR PRODUCT

产品类型 TYPE : Quartz Crystal

产品规格 SPEC : 32.768KHz/1610/7PF/20PPM

产品型号 P/N : CJK09-327680720B20

日期 DATE : 2021/05/06

<b>核准及签名</b>			<b>部门</b>
R&D APPR. SIGNATURED			DEPT.
<b>拟制</b>	<b>审核</b>	<b>批准</b>	频率器件事业部
ISSUE	CHECK	APPROVAL	
Ivan 2021/05/06	Abbey 2021/05/06	Ken 2021/05/06	

SMD1610 Quartz Crystal**CJK09-327680720B20****[1] The maximum rating**

	Item	Symbol	Rating	Note
1	Storage temperature range	T_stg	-55 ~ +125	
2	Maximum drive level	DL max.	0.5 $\mu$ W max.	

**[2] Recommended Operating Condition**

	Item	Symbol	Rating	Note
1	Operating temperature range	T_use	-40 ~ +85	
2	Drive level	DL	0.1 $\mu$ W typ.	

**[3] Electrical-Characteristics**Measurement temperature :25  $\pm$  2

	Item	Symbol	Specifications	Conditions
1	Nominal frequency	f_nom	32.768 kHz	
2	Frequency tolerance	f_tol	$\pm 20 \times 10^{-6}$	
3	Load capacitance	C <sub>L</sub>	7pF	
4	Motional resistance	R <sub>1</sub>	90 k max.	Measured with ATI 4192A Impedance analyzer OSC LEVEL = 0.1V
5	Motional capacitance	C <sub>1</sub>	2.3 fF typ.	
6	Shunt capacitance	C <sub>0</sub>	1.3 pF typ.	Measured with ATI 4192A Impedance analyzer OSC LEVEL = 0.1V
7	Turnover temperature	T <sub>i</sub>	25 $\pm$ 5	Measure this coefficient at 3 points of 10 , 25 , 40 using
8	Parabolic coefficient	B	$(-3 \pm 1) \times 10^{-8} / ^2$	C-MOS circuit
9	Frequency aging	f_age	$\pm 3 \times 10^{-6}$ /year	25 $\pm$ 3 , First year
10	Insulation resistance	IR	500 M min.	Measured with ATI 4329A Insulation Resistance Meter Apply DC100V

#### [4] Environment and Mechanical characteristics

	Item	Specifications	Conditions	
1	High temperature storage 1	$f/f_0 = \pm 10 \times 10^{-6}$	After storage under 85 for 1000 hours, measure at room temperature.	*1 *3
	High temperature storage 2	$f/f_0 = \pm 15 \times 10^{-6}$	After storage under 125 for 1000 hours, measure at room temperature.	*1 *3
2	Low temperature storage	$f/f_0 = \pm 10 \times 10^{-6}$	After storage under -55 for 1000 hours, measure at room temperature.	*1 *3
3	High temperature and high humidity storage	$f/f_0 = \pm 10 \times 10^{-6}$	After storage under $+85 \pm 2$ , 85 % RH for 1000h, measure at room temperature.	*1 *3
4	Thermal shock resistance	$f/f_0 = \pm 10 \times 10^{-6}$	Measure at room temperature after 100 cycles. -55 +125 for 30 minutes.	*1 *3
5	Mechanical shock resistance	$f/f_0 = \pm 10 \times 10^{-6}$	Measure after 100g-dummy(SII Standard) drop from 1500mm height on the concrete 3directions 10times.	*2
6	Vibration resistance	$f/f_0 = \pm 10 \times 10^{-6}$	Amplitude 1.5mm and 10 ~ 500Hz with cycle time 15 minutes in 3 direction (X,Y,and Z axis) each for 2 h.	*2
7	IR Reflow	$f/f_0 = \pm 10 \times 10^{-6}$	Measure after 2 time reflow under reflow profile specified in page 10	*1
8	Shear strength	No peeling-off	Pressuring force $10N \times 10 \pm 1sec.$ according to IEC60068-2-21	*2
9	Peel strength	No peeling-off	Pressuring force $10N \times 10 \pm 1sec.$ according to IEC60068-2-21	*2
10	Bending test	No peeling-off	Bending: $3mm \times 5 \pm 1sec.$ Thickness of the testing board: 1mm	*2

Note:

1. Each test shall be done independently. (not in series tests)
2. \*1: Measure after 24 hours left at room temperature.
3. \*2: Measure after 2 hours left at room temperature.
4. \*3: Pre conditions
  - (1) IR Reflow : 2 times
  - (2) Initial values shall be measured after 24 hours at room temperature.
5. Shift in series resistance after the above tests shall be less than  $\pm 20\%$  or less than  $\pm 15k$  .  
 In case of resistance to IR reflow, shift in series resistance after the above tests shall be less than  $\pm 30\%$  or  $\pm 20k$  .  
 In case of resistance to high temperature storage( $\pm 125$  for 1000 hours), shift in series resistance after the above tests shall be less than  $\pm 40\%$  or  $\pm 30k$  .

## [5] Precautions

(1) Recommended mounting conditions

Reflow profile       As per reflow profile shown in page 10.  
Manual soldering     350 max. for 4 sec. Max.

(2) Cleaning

The crystal resonator may be destroyed by ultrasonic cleaning.  
We don't guarantee the quality of the product with that cleaning method because such conditions as type of the washing machine, power, time, position in the bath, etc. can not be specified.

Please confirm ultrasonic cleaning is not giving any damage to the product before use when that cleaning method must be used.

## [6] Outgoing inspection standard

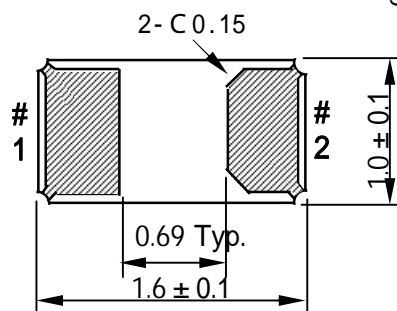
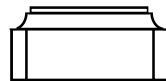
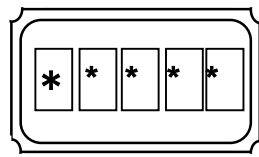
· The outgoing inspection shall be conducted as per the following standard.

· The sampling shall be performed according to the ANSI/ASQC Z1.4-1996.

NO	Item	Sampling level	AQL(%)
1	Frequency tolerance		1.0
2	Equivalent series resistance		1.0
3	Outer appearance		1.5
4	Others characteristics	Periodical quality inspection	

# [7] Dimensions and marking layout

## 1. Out Line Drawing



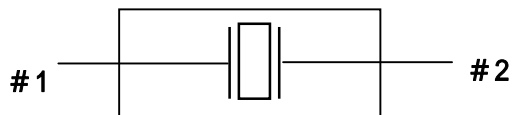
Unit = mm

## 2. Marking

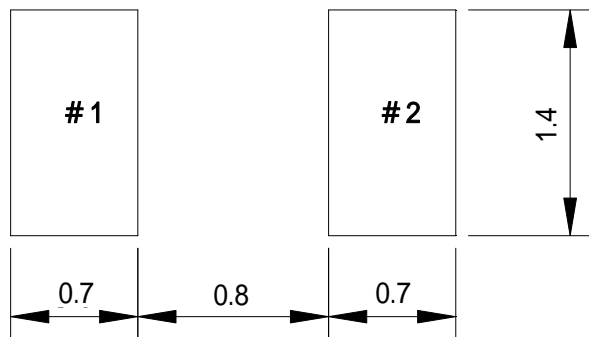
A  
\* 1 \* 2 \* 3 \* 4 \* 5

- \*1 Specification
- \*2 CL
- \*3 Year of Production
- \*4,5 Week of Production

## 3. Lead Connection



## 4. Recommended PAD lay-out



Unit = mm

## Materials :

Case: Alumina ceramics, Ni-plated, Au-plated

Lead : Kovar material, Ni-plated

## [8] Taping specification

### 1 . Drawing of tape dimensions

Carrier tape : Refer to page 8.  
Taping reel : Refer to page 9.

### 2 . Material

Carrier tape : PC black conductive  
Taping reel : PS conductive

### 3 . Taping method

- (1) Taping shall be placed in tapes in such manner as to assure that marking of the components is visible as per Fig.1

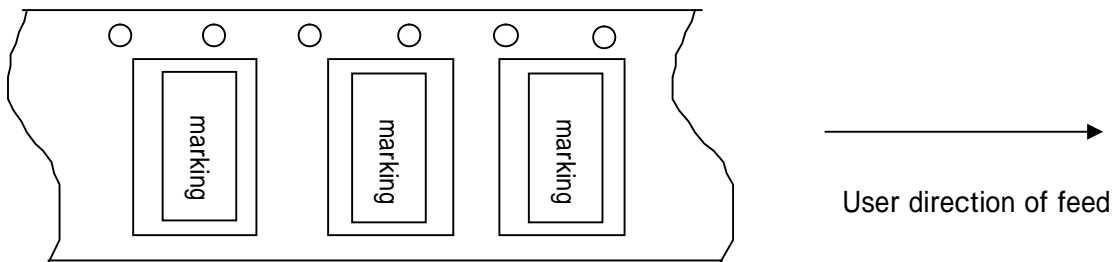


Fig. 1

### (2) Reel

On the side of reel there shall be more than 40 blocks of "No components".  
The beginning of Carrier Tape shall be bent vertically and hooked on groove of reel.

### (3) Leader

On the side of leader, there shall be more than 40 blocks of "No components".  
The length of Leader shall be over 400 mm.  
The Length of Stick Tape for Cover Tape shall be about 100 mm and  
Stick Tape shall never be detached.

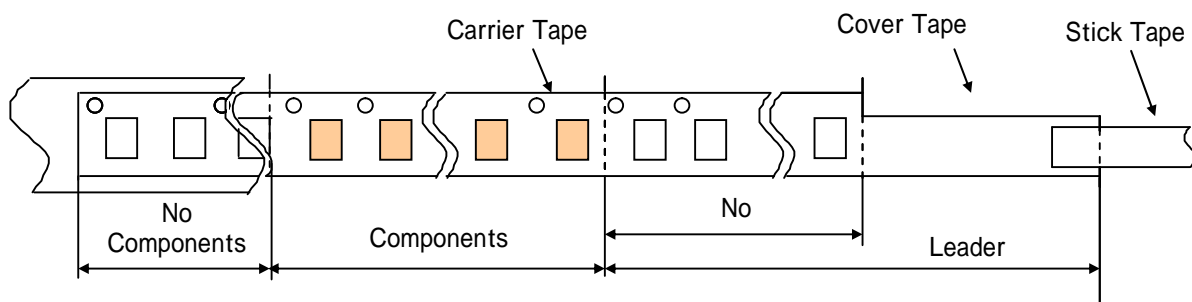
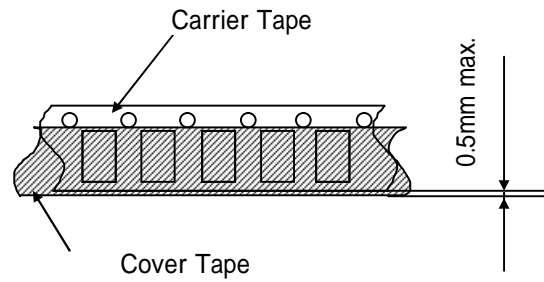


Fig. 2

User direction of feed

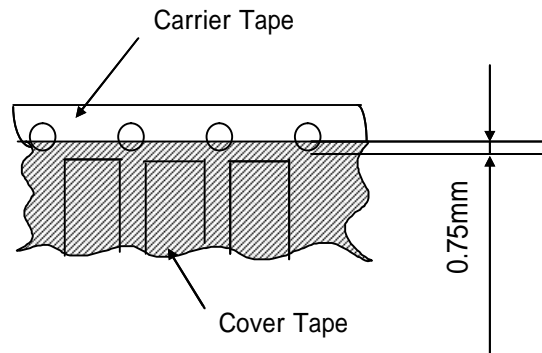
- (4) Gap between Carrier Tape and Cover Tape  
 Cover Tape protrudes from Carrier Tape by 0.5mm max.

Fig. 3



Holes of Carrier Tape are covered with Cover Tape by 0.75mm max.

Fig. 4



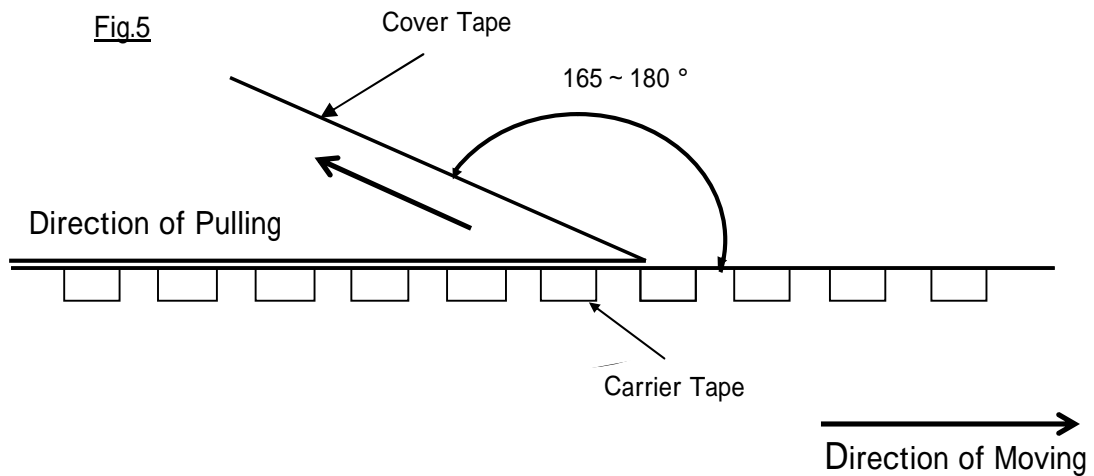
- (5) Peel strength

The method of testing is done as shown below.

The value of force is at the beginning of desealing.

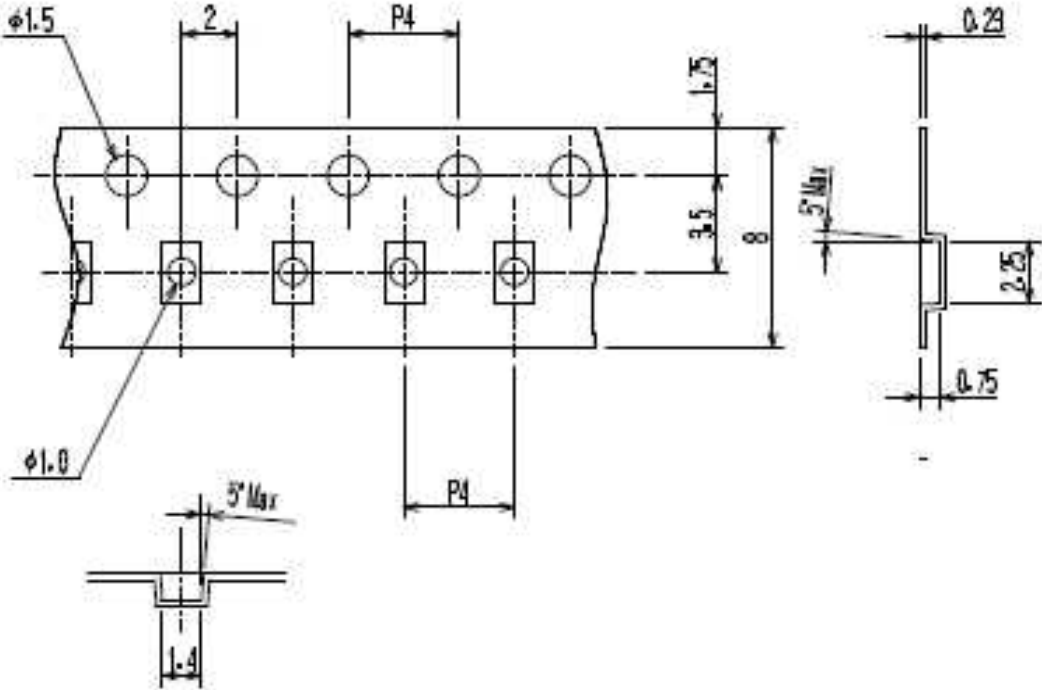
The Cover Tape peel forth shall be 0.1 ~ 1.3N at a peel speed of  $300 \pm 10$ mm/min.

Fig.5



# Carrier tape

- (1) Conforms with EIA-481
- (2) Tolerance :  $\pm 0.2$



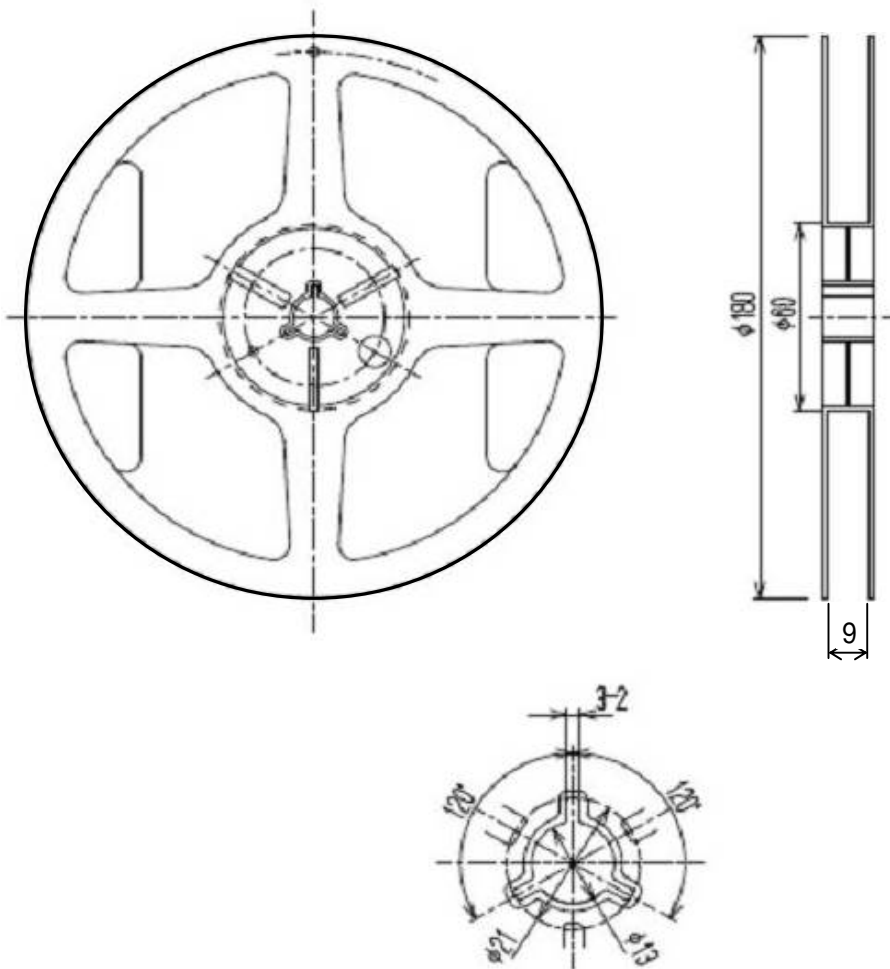
Unit=mm



## Taping reel

(1) Conforms with EIAJ ET-7200B

(2) Quantity per reel : 5,000pcs./for a reel



Tolerance:  $\pm 0.2$  mm

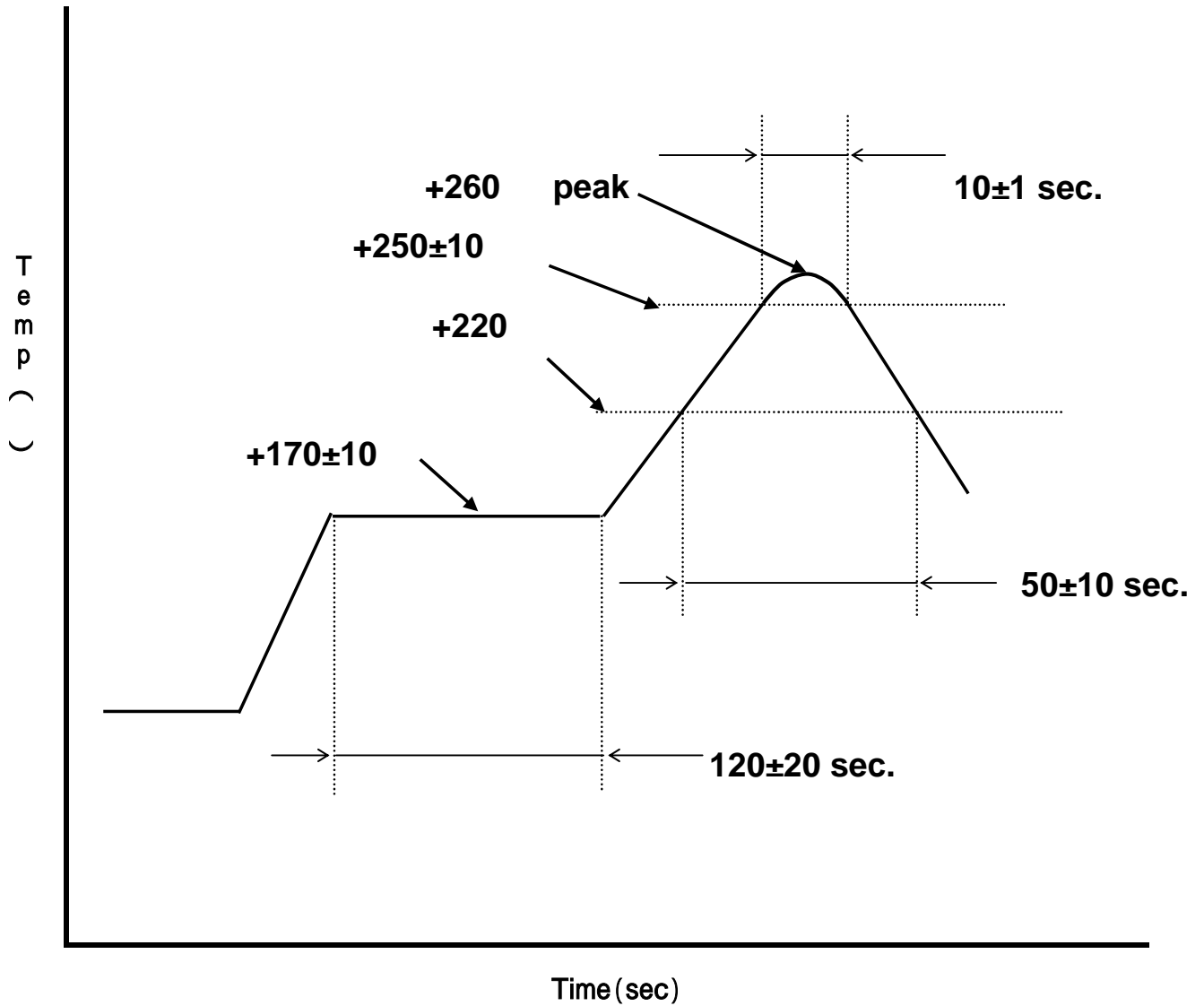
Item	Specification	Unit
Materials	PS(anti statics)	-
inside reel wise W1	9.0+1.0/-0	mm
outside reel wise W2	11.4 $\pm$ 1.0	mm

Unit = mm

## [9] Reflow Profile

Pre-Heating temperature : +170  
Heating temperature : +220

Pre-Heating time : 120sec  
Heating time : 50sec

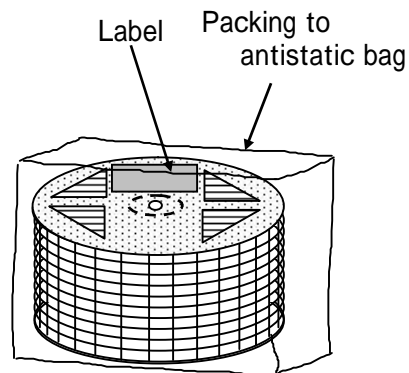
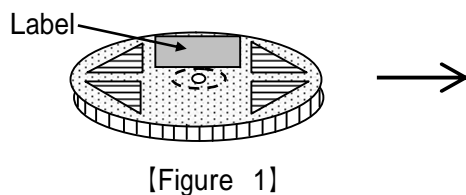


### Note:

- (1) The temperature used herein means the temperature on the circuit board.
- (2) Reflow is permitted 2 times.

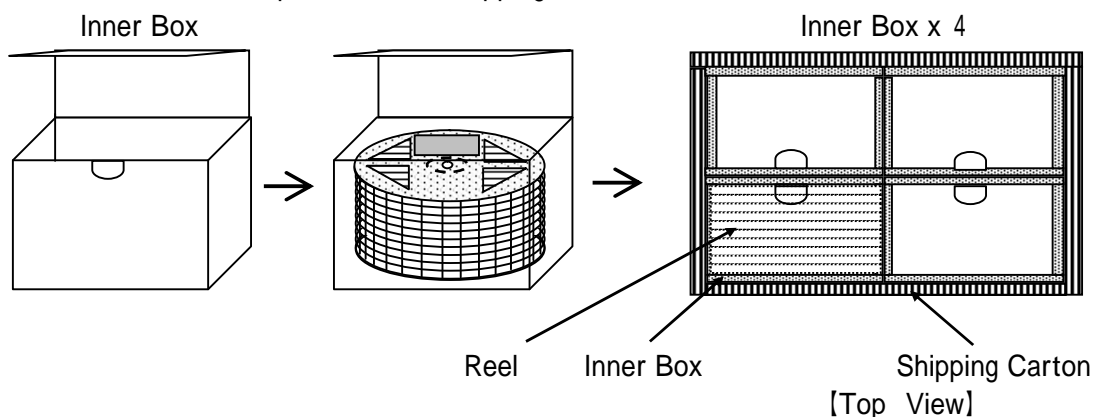
## [10] Outside box packing specification

- 1) The label is attached on each reel.
- 2) 10 reels are put into each antistatic polyethylene bag.



### 3) Packing

- 10 reels are put into each inner box.
- 4 inner boxes are put into each shipping carton.



### 4) Storage quantity

It makes N = 5,000 pcs/Lot

### 5) Sample of the label display (Please refer to [ Figure 1 ] [ Figure 2 ] )

Product bar code	Part	SMD1610	: Our company product name
	Lot No.	000001	: Lot No.
	Quantity	3,000 pcs	: Quantity
Item bar code *	Spec.	32.768kHz 12.5pF/ $\pm 20 \times 10^{-6}$	: Frequency, CL value, F0 deviation
	Quantity Lot.No.bar code 5,000 XXXX	Remarks RoHS Compliant Pb Free	:Remarks

### 6) Storage environment

Please keep the product under the following condition

- \* No direct rays
- \* Temperature condition : 5 ~ 30
- \* Humidity condition : below 80%