

# 产品规格书

## SPECIFICATION

产品名称 石英晶体谐振器

Description Crystal Unit

型号 · 标称频率

Type · Nominal Frequency 3215 32.768KHz

规格书号

Specification . JFZSN32K07A204C

制作

DESIGNED BY 杨 阳

审核

CHECKED BY 何 珍

批准

APPROBED BY 肖 琳

## **Delivery Specifications**

### **1. Scope**

These specifications apply to QUARTZ CRYSTAL RESONATORS ( hereinafter referred to as RESONATORS )

### **2. Designation**

RESONATORS are designated "3215" ( 32.768 kHz ).

### **3. Shape and dimensions**

As per the 3215 drawing shown on page 5 .

### **4. Electrical characteristics**

Specified on page 2 through 3 .

### **5. Shipment and packaging**

5.1 ( 3,000 ) pcs are the standard lot size to which the lot number shall be allotted

5.2 The packaging shall conform to the resonator packaging standards.

### **6. Outgoing inspection**

6.1 When mutually agreed, the outgoing inspection shall be conducted as per the standard on page 4.

6.2 The outgoing inspection slip is not basically affixed to each packaging.

### **7. Warranty**

In the event that any defective RESONATORS or defective lot is found at incoming inspection at and that any defect resulting from failures in process-control at SII after incoming inspection is found, good RESONATORS shall be supplied to

\_\_\_\_\_ free of charge as a replacement.

In the event that any trouble or problems rising directly from RESONATORS occurs, it will be amicably settled between both parties, provided that

warranty shall be done within the score of replacement of good RESONATORS.

### **8. Amendment or abolition of the specifications**

Amendment or abolition of the specifications shall be made upon mutual consent between and SII. If any problem arises, it shall be amicably settled between both parties.

### **9. Effectiveness of the specifications**

These specifications are effective after receipt of returned copies with your approved sign.

### **10. Others**

This product is completely Pb-free and Halogen-free

(1) The maximum rating

	Item	Symbol	Rating	Note
1	Storage temperature range	T_stg	-55~+125°C	
2	Maximum drive level	DL max	0.5 μ W max.	

(2) Recommended Operating Condition

	Item	Symbol	Rating	Note
1	Operating temperature range	T_use	-40~+85°C	
2	Drive level	DL	0.1 μ W typ.	

(3) Electrical-Characteristics

Measurement temperature: 25 ± 2°C

	Item	Symbol	Specifications	Conditions
1	Nominal frequency	f_nom	32.768 kHz	
2	Frequency tolerance	f_tol	± 20 × 10 <sup>-6</sup>	
3	Load capacitance	C <sub>L</sub>	7 pF	
4	Motional resistance	R <sub>1</sub>	70 kΩ max.	Measured with ATI 4192A Impedance analyzer OSC LEVEL = 0.1V
5	Motional capacitance	C <sub>1</sub>	3 fF typ.	
6	Shunt capacitance	C <sub>0</sub>	1 pF typ	Measured with ATI 4192A Impedance analyzer OSC LEVEL = 0.1V
7	Turnover temperature	T <sub>i</sub>	25 ± 5°C	Measure this coefficient at 3 points of 10°C 、 25°C 、 40°C using C-MOS circuit
8	Parabolic coefficient	B	(-3±1) × 10 <sup>-8</sup> /°C <sup>2</sup>	
9	Frequency aging	f_age	±3×10 <sup>-6</sup> /year	25±3°C First year
10	Insulation resistance	IR	500 MΩ min.	Measured with ATI 4329A Insulation Resistance Meter Apply DC100V

**(4) Environment and Mechanical characteristics**

	Item	Specifications	Conditions	
1	High temperature storage	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	After storage under 125°C for 1000 hours, measure at room temperature.	*1 *3
2	Low temperature storage	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	After storage under -40°C for 1000 hours, measure at room temperature.	*1 *3
3	High temperature and high humidity storage	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	After storage under +85±2°C 85 % RH for 1000h, measure at room temperature.	*1 *3
4	Thermal shock resistance	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	Measure at room temperature after 100 cycles. -55°C ⇔ +125°C for 30 minutes.	*1 *3
5	Mechanical shock resistance	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	Measure after 100g-dummy drop from 1500mm height on the concrete 3 directions 10 times.	*2
6	Vibration resistance	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	Amplitude 1.5mm and 10 ~ 60Hz with cycle time 2 ~ 3 minutes in 3 direction (X, Y, and Z axis) each for 2 h.	*2
7	IR Reflow	$\Delta f/f_0 = \pm 10 \times 10^{-6}$	Measure after 2 time reflow under reflow profile specified in page 10	*1
8	Shear strength	No peeling-off	Pressuring force 10N×10±1sec. according to IEC60068-2-21	*2
9	Peel strength	No peeling-off	Pressuring force 10N×10±1sec. according to IEC60068-2-21	*2
10	Bending test	No peeling-off	Bending: 3mm×5±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 ±20% or less than ±15kΩ. In case of resistance to IR reflow and high temperature storage(±125°C for 1000 hours), shift in series resistance after the above tests shall be less than ±30% or ±20kΩ.

**(5)Precautions**

(1) Recommended mounting conditions

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

%5)        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.

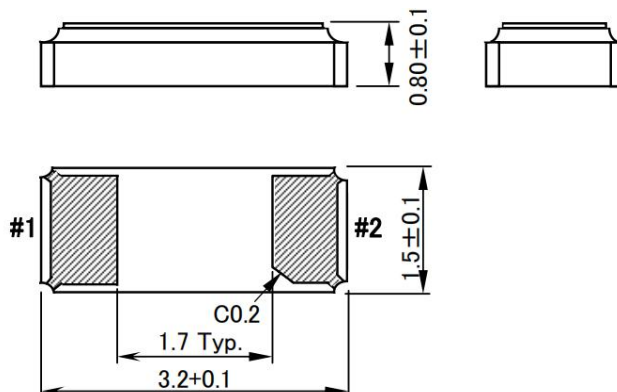
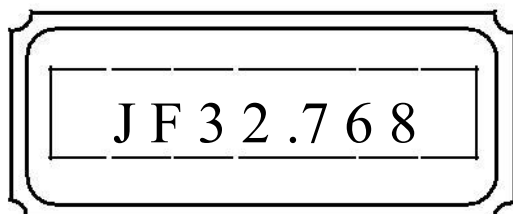
**(6)Outgoing inspection standard**

- 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	I	1.0
2	Equivalent series resistance	I	1.0
3	Outer appearance	I	1.5
4	Others characteristics	Periodical quality inspection	

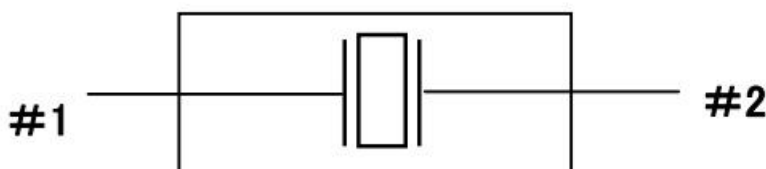
**(7) Dimensions and marking layout**

1. Out Line Drawing

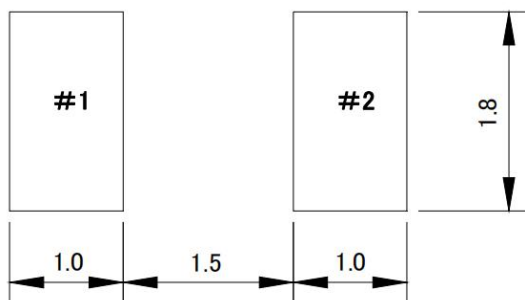


Unit = mm

Lead Connection



Recommended PAD lay-out



Unit = mm

Materials:

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

Lead : Kovar material、Ni-plated

### Taping specification

#### 1. Drawing of tape dimensions

- ① Carrier tape : Refer to page 8.
- ② Taping reel : Refer to page 9.

#### 2. Material

- ① Carrier tape : PC black conductive
- ② 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

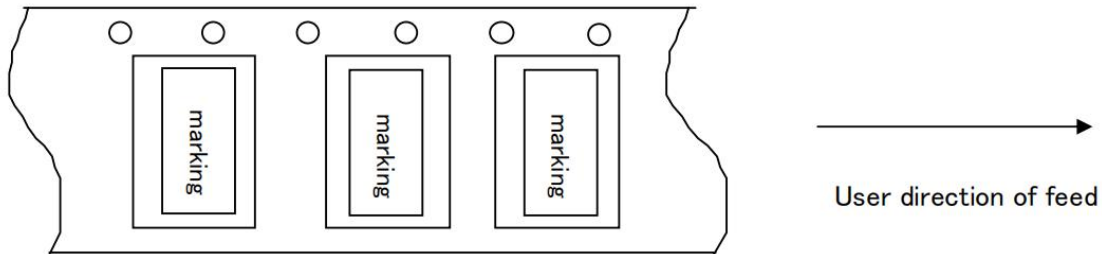


Fig. 1

#### (2) Reel

- ① On the side of reel there shall be more than 40 blocks of "No components".
- ② The beginning of Carrier Tape shall be bent vertically and hooked on groove of reel.

#### (3) Leader

- ① On the side of leader, there shall be more than 40 blocks of "No components"
- ② The length of Leader shall be over 400 mm.
- ③ The Length of Stick Tape for Cover Tape shall be about 100 mm and Stick Tape shall never be detached.

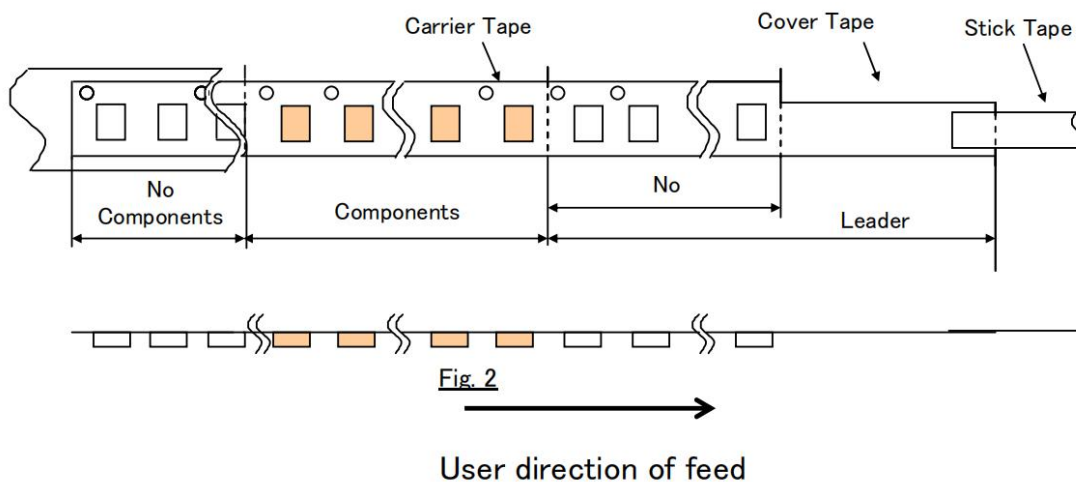
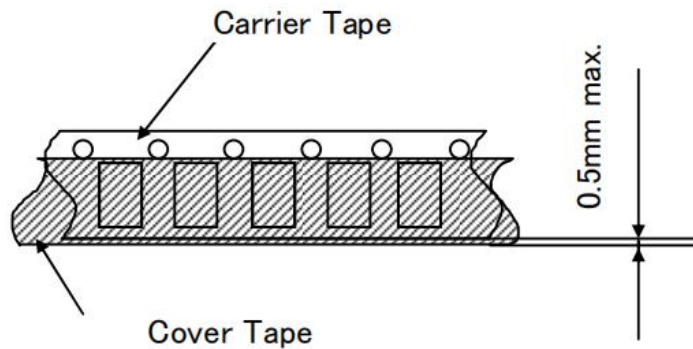


Fig. 2

Gap between Carrier Tape and Cover Tape

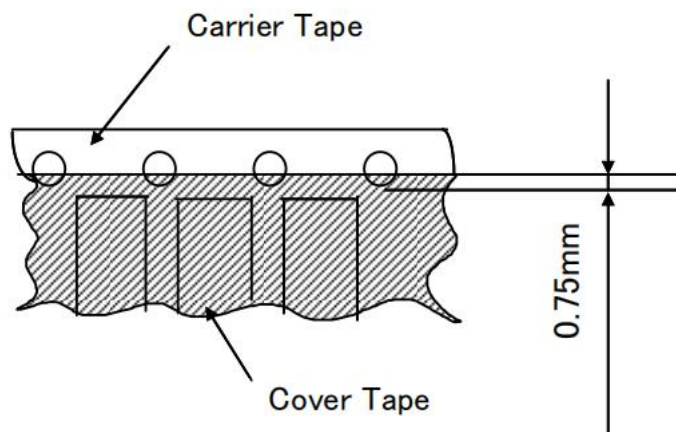
Cover Tape protrudes from Carrier Tape by 0.5mm max.

**Fig. 3**



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

**Fig. 4**



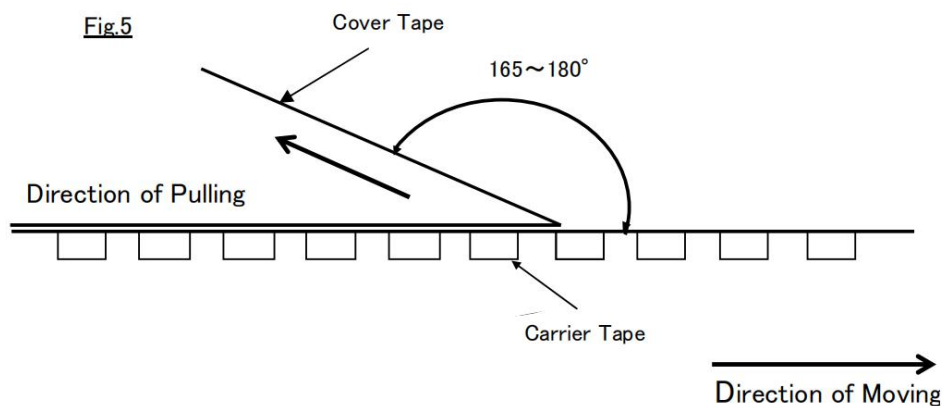
(5) Peel strength  
 %7.

The method of testing is done as shown below.

② The value of force is at the beginning of descaling.

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

**Fig.5**

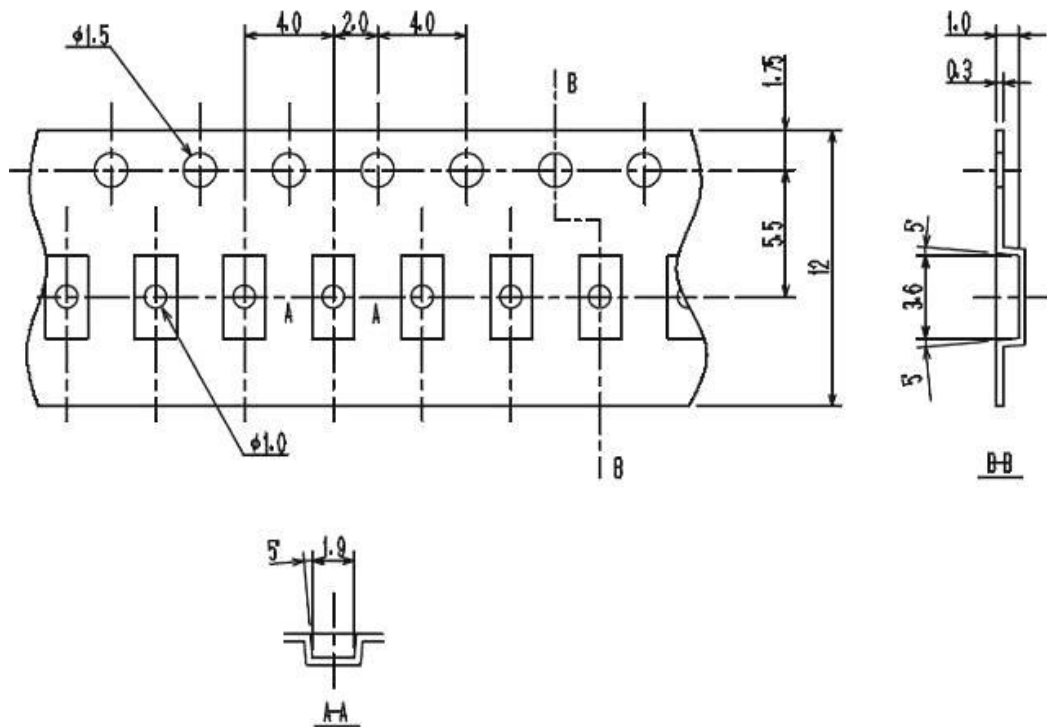




## Carrier tape

%6. Conforms with EIA-481

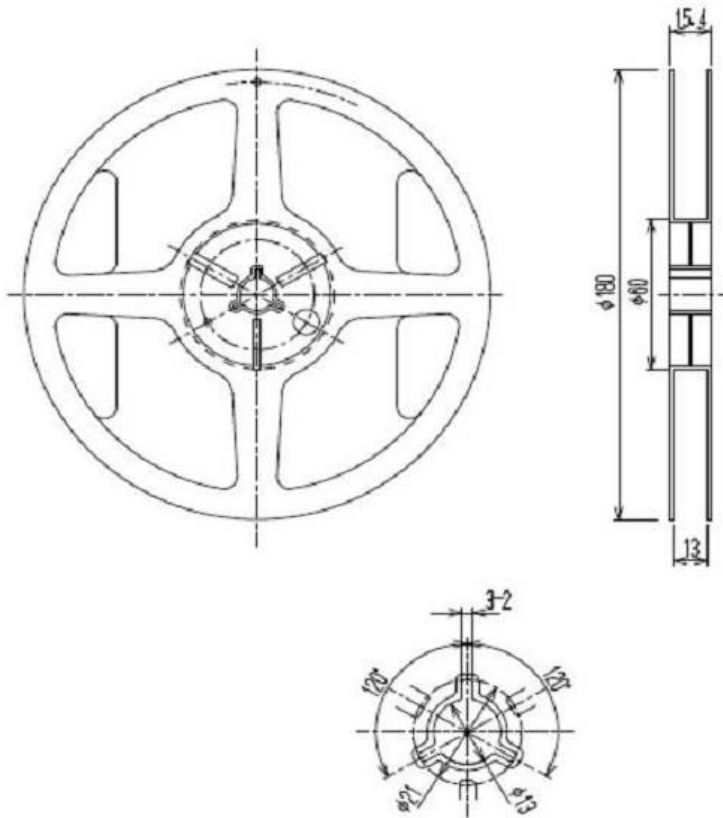
%6. Tolerance :  $\pm 0.2$



Unit=mm

**Taping reel**

- (1) Conforms with EIAJ ET-7200B
- (2) Quantity per reel : 3,000pcs./for a reel



Tolerance: ±0.2mm

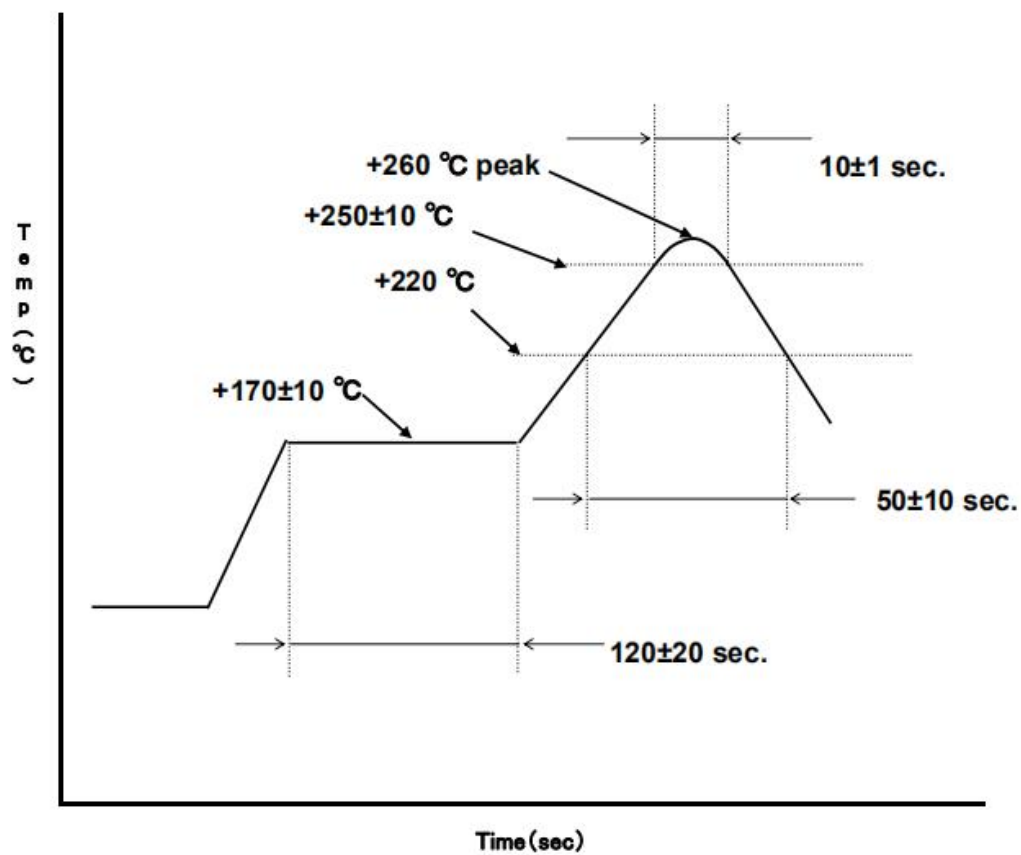
Item	Specification	Unit
Materials	PS(anti statics)	-
inside reel wise W1	13.0+0.3/-0	mm
outside reel wise W2	15.4±1.0	mm

Unit=mm

## Reflow Profile

Pre-Heating temperature : +170°C Pre-Heating time : 120sec

Heating temperature : +220°C Heating time : 50sec



### Note:

The temperature used herein means the temperature on the circuit board.

(2) Reflow is permitted 2 times.