

1. SCOPE

This specification shall cover the characteristics of the ceramic resonator with the type ZTTCR4.19MG.

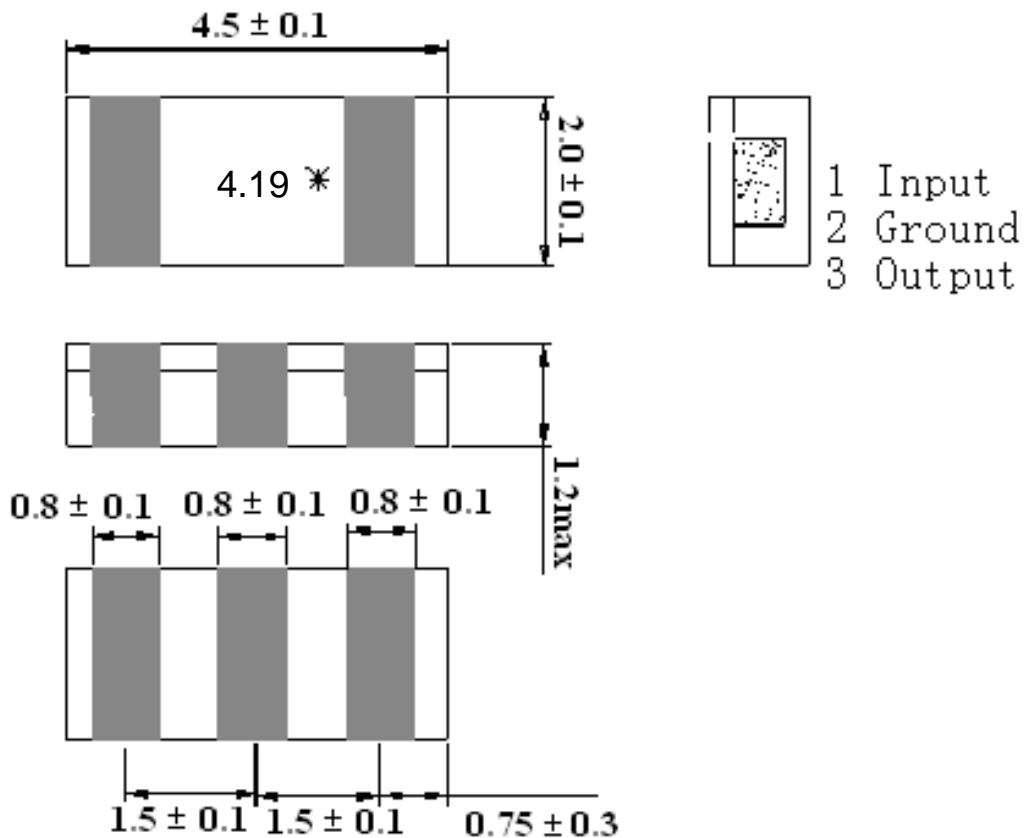
2. PART NO.:

PART NUMBER	CUSTOMER PART NO	SPECIFICATION NO
ZTTCR4.19MG		

3. OUTLINE DRAWING AND DIMENSIONS:

Appearance: No visible damage and dirt.

Dimensions:



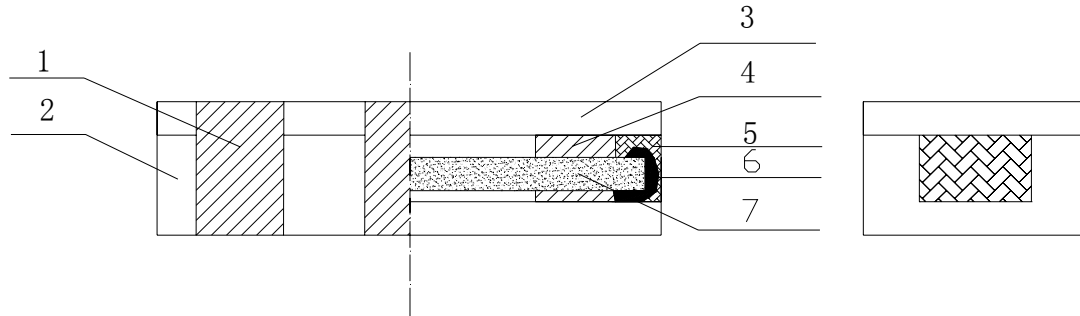
UNIT: mm

NOTES:

1. All dimensions are in millimeters.
2. *: EIAJ Monthly Code.

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3.4 STRUCTURE



NO:	Components	Materials
1	Outer Electrodes	Top and Bottom Electrodes Ag+Ni(under plating)+Sn(over plating) Side Electrodes Ni+Cu+Ag(under plating)+Sn(over plating)
2	Ceramic Box	Insulation Box
3	Cover	Dielectric Material
4	Inner Electrodes	Ag
5	Glue	Epoxy Resin
6	Conductive Adhesive	Ag+Epoxy Resin
7	Ceramic Element	Piezoelectric Ceramics (PZT)

4 RATING AND ELECTRICAL SPECIFICATIONS:

4.1 RATING

Items	Content
Withstanding Voltage (V)	50 (DC, 1min)
Insulation Resistance Ri, (MΩ) min.	500 (100V, 1min)
Operating Temperature Range (°C)	-25~+85
Storage Temperature Range (°C)	-55~+85

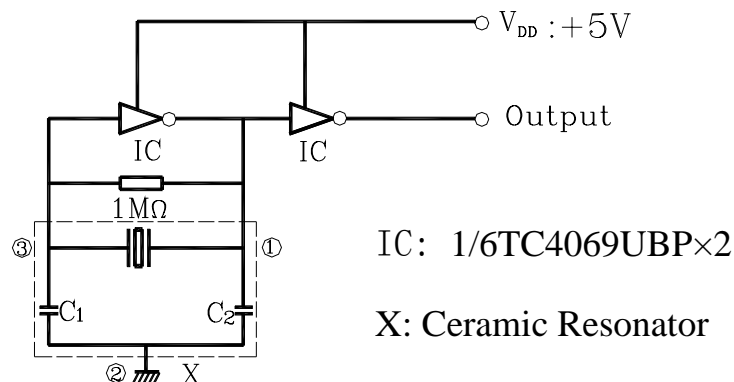
4.2 ELECTRICAL SPECIFICATIONS

Oscillation Frequency Fosc (MHz)	4.19
Frequency Accuracy (%)	±0.5
Resonant Impedance Ro (Ω) max.	40
Temperature Coefficient of Oscillation Frequency (%) max.	±0.3 (Oscillation Frequency drift, -25°C~+85°C)
Loop Gain (dB) min	10.0
Rating Voltage UR (V) max.	6V DC
	15V p-p
Aging Rate (%) max.	±0.2 (For Ten Years)

5 MEASUREMENT:

5.1 Measurement Conditions: Parts shall be measured under a condition (Temp.: 20±15°C, Humidity: 65±20% R.H.) unless the standard condition (Temp.: 25±3°C, Humidity: 65±5% R.H.) is regulated to measure.

5.2 Test Circuit:



6 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

No	Item	Condition of Test	Performance Requirements	
6.1	Humidity	Keep the resonator at $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and 90-95% RH for $96\text{h} \pm 4\text{h}$. Then release the resonator into the room condition for 1h prior to the measurement.	It shall fulfill The specifications In Table 1.	
6.2	Vibration	Subject the resonator to vibration for 2h each in x、 y and z axis with the amplitude of 1.5mm, the frequency shall be varied uniformly between the limits of 10Hz—55Hz.	It shall fulfill The specifications In Table 1.	
6.3	Mechanical Shock	Drop the resonator randomly onto a wooden floor from the height of 100cm 3 times.	It shall fulfill The specifications In Table 1.	
6.4	Soldering Test	Passed through the re-flow oven under the following condition and left at room temperature for 1h before measurement.	It shall fulfill The specifications In Table 1.	
		Temperature at the surface of the substrate		Time
		Preheat $150^{\circ}\text{C} \pm 5^{\circ}\text{C}$		$60\text{s} \pm 10\text{s}$
		Peak $240^{\circ}\text{C} \pm 5^{\circ}\text{C}$		$10\text{s} \pm 3\text{s}$
6.5	Solder Ability	Dipped in $230^{\circ}\text{C} \pm 5^{\circ}\text{C}$ solder bath for $3\text{s} \pm 0.5\text{s}$ with rosin flux 25wt% ethanol solution.	The terminals shall be at least 95% covered by solder.	
6.6	High Temperature Exposure	Subject the resonator to $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for $96\text{h} \pm 4\text{h}$. Then release the resonator into the room conditions for 1h prior to the measurement.	It shall fulfill The specifications In Table 1.	
6.7	Low Temperature Exposure	Subject the resonator to $-25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for $96\text{h} \pm 4\text{h}$. Then release the resonator into the room conditions for 1h prior to the measurement.	It shall fulfill The specifications In Table 1.	

7. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

(Continued from the preceding page)

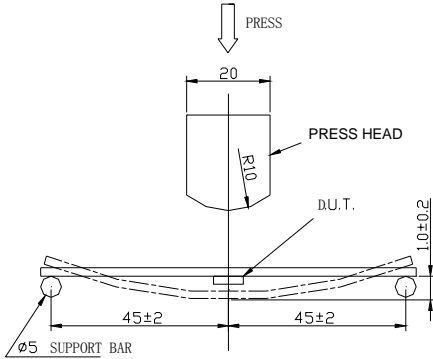
No	Item	Condition of Test	Performance Requirements
6.8	Temperature Cycling	Subject the resonator to -40°C for 30 min. followed by a high temperature of 85°C for 30 min. cycling shall be repeated 5 times with a transfer time of 15s. At the room temperature for 1h prior to the measurement.	It shall fulfill The specifications In Table 1.
6.9	Board Bending	<p>Mount a glass-epoxy board (Width=40mm,thickness=1.6mm), then bend it to 1mm displacement and keep It for 5s. (See the following Figure)</p> 	Mechanical damage such as breaks shall not occur.

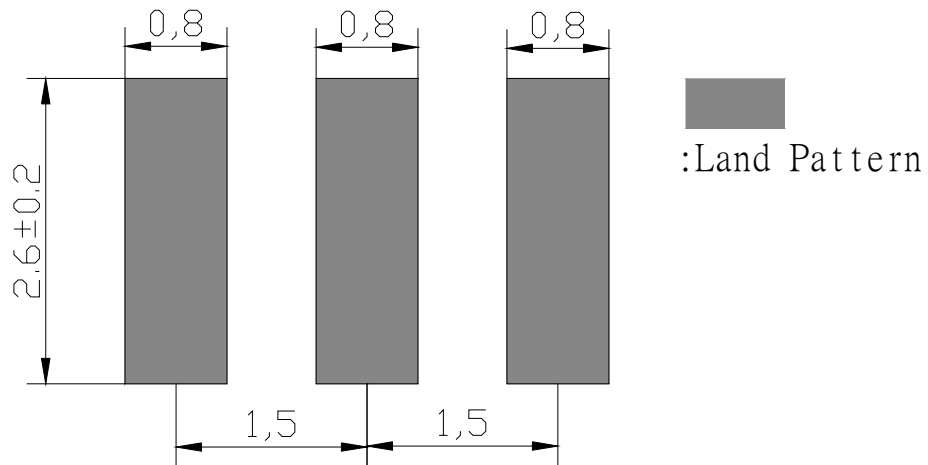
TABLE 1

Item	Specification
Oscillation Frequency Change $\Delta F_{osc}/F_{osc}$ (%) max	±0.3
Resonant Impedance (Ω) max	40

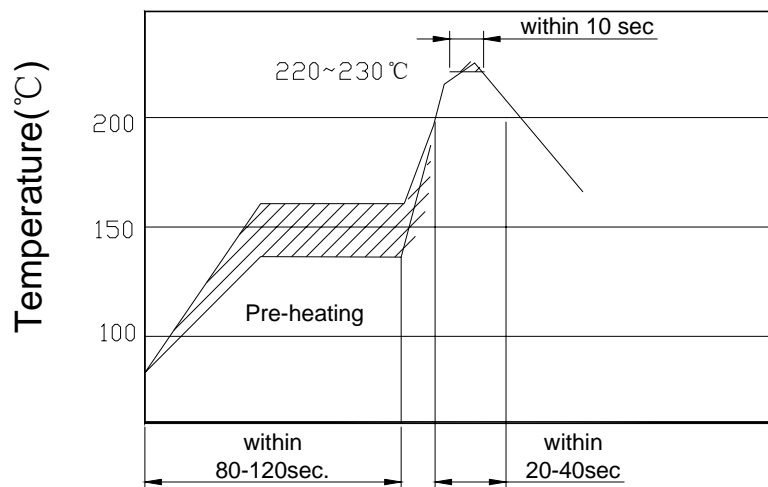
7 RECOMMENDED LAND PATTERN AND REFLOW SOLDERING

STANDARD CONDITIONS

7.1 Recommended land pattern



7.2 Recommended reflow soldering standard conditions



8 PACKAGE

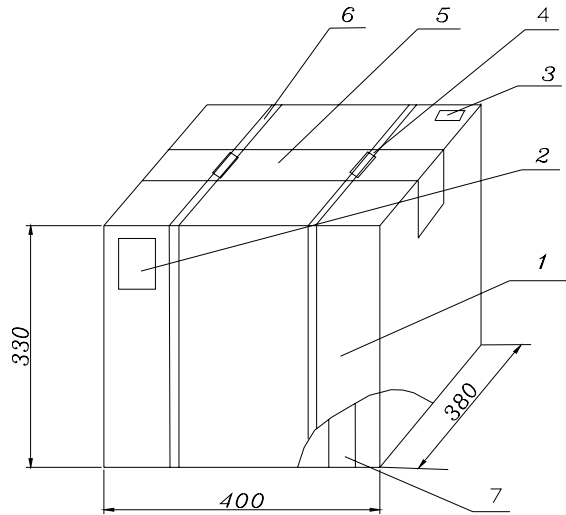
To protect the products in storage and transportation, it is necessary to pack them (outer and inner package). On paper pack, the following requirements are requested.

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8.1 Dimensions and Mark

At the end of package, the warning (moisture proof, upward put) should be stick to it.

Dimensions and Mark (see below)



NO.	Name	Quantity	Notes
1	Package	1	
2	Certificate of approval	1	
3	Label	1	
4	Tying	2	
5	Adhesive tape	1.2m	
6	Belt	2.9m	
7	Inner Box	12	

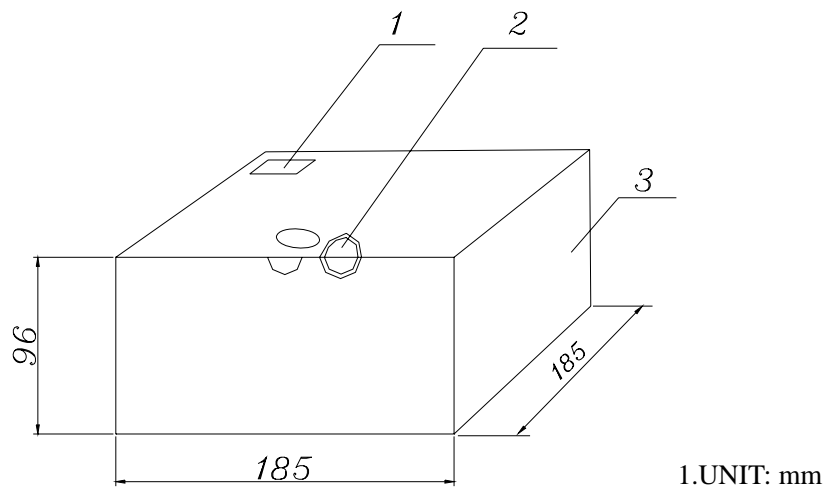
8.2 Section of package

Package is made of corrugated paper with thickness of 0.8cm. Package has 12 inner boxes, each box has 5 reels (each reel for plastic bag).

8.3 Quantity of package

Per plastic reel	3000 pieces of piezoelectric ceramic part
Per inner box	5 reels
Per package	12 inner boxes (180000 pieces of piezoelectric ceramic part)

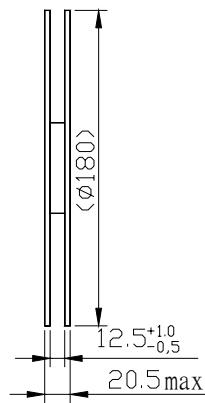
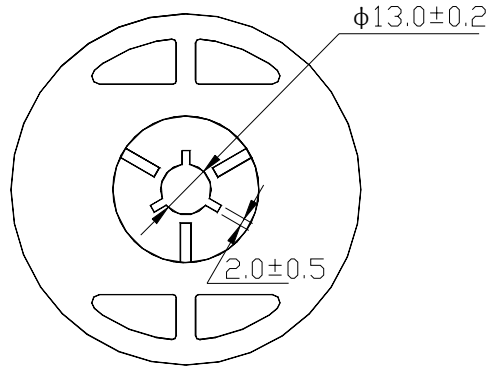
8.4 Inner Packing Dimensions



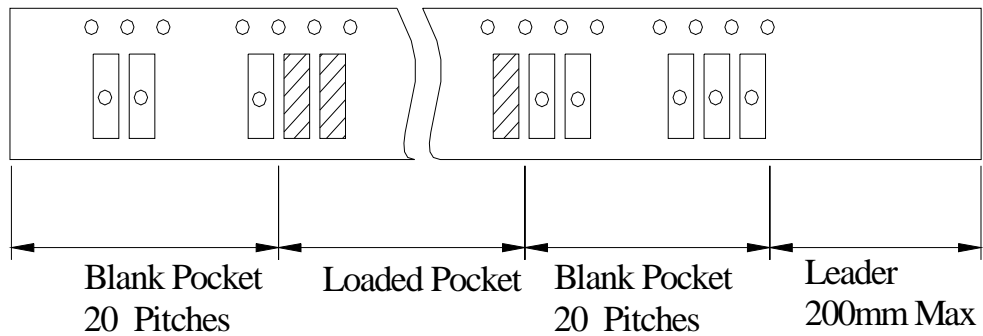
1	Label
2	QC Label
3	Inner Box

Pars shall be packaged in box with hold down tape upside. Part No., quantity and lot No.

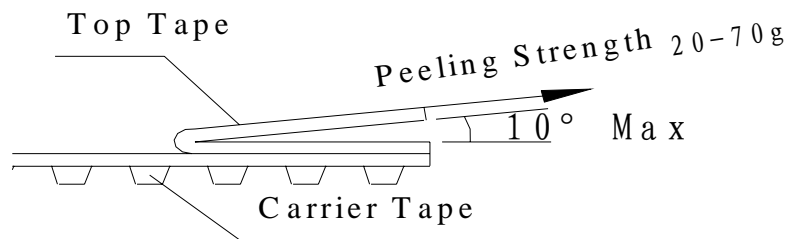
8.5 Reel



8.6 Packing Method Sketch Map



8.7 Test Condition Of Peeling Strength



9 EIAJ Monthly Code

2003 / 2005 / 2007 / 2009		2004 / 2006 / 2008 / 2010	
MONTH	CODE	MONTH	CODE
JAN	A	JAN	N
FEB	B	FEB	P
MAR	C	MAR	Q
APR	D	APR	R
MAY	E	MAY	S
JUN	F	JUN	T
JUL	G	JUL	U
AUG	H	AUG	V
SEP	J	SEP	W
OCT	K	OCT	X
NOV	L	NOV	Y
DEC	M	DEC	Z

10 OTHER

10.1 Caution of use

10.1.1 Do not use this product with bend. Please don't apply excess mechanical stress to the component and terminals at soldering.

10.1.2 The component may be damaged when an excess stress will be applied.

10.1.3 This specification mentions the quality of the component as a single unit. Please insure the component is thoroughly evaluated in your application circuit.

10.2 Notice

10.2.1 Please return one of this specification after your signature of acceptance.

10.2.2 When something gets doubtful with this specifications, we shall jointly work to get an agreement.