



<b>Issue</b>	<b>May 27, 2021</b>
<b>Rev.</b>	<b>1.0</b>
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## CRYSTAL UNIT SPECIFICATIONS

<b>Customer</b>	
<b>Customer P/N</b>	
<b>Product</b>	<b>SAW RESONATOR</b>
<b>Spec</b>	<b>ACSR-B13R/212.000~927.000M</b>
<b>A-Crystal P/N</b>	<b>AXB Series</b>

Drawn	Checked	Approved



**ZHEJIANG A-CRYSTAL**  
**ELECTRONIC TECHNOLOGY CO., LTD.**



Revised Record

Rev.	Rev. Date	Item	Content	Remar
1.0			Initial released	

A-CRYSTAL



## 1. Scope

This specification shall cover the characteristics of 1-port SAW resonator with ####M used for remote-control security.

## 2. Electrical Specification

### 2.1 Maximum Rating

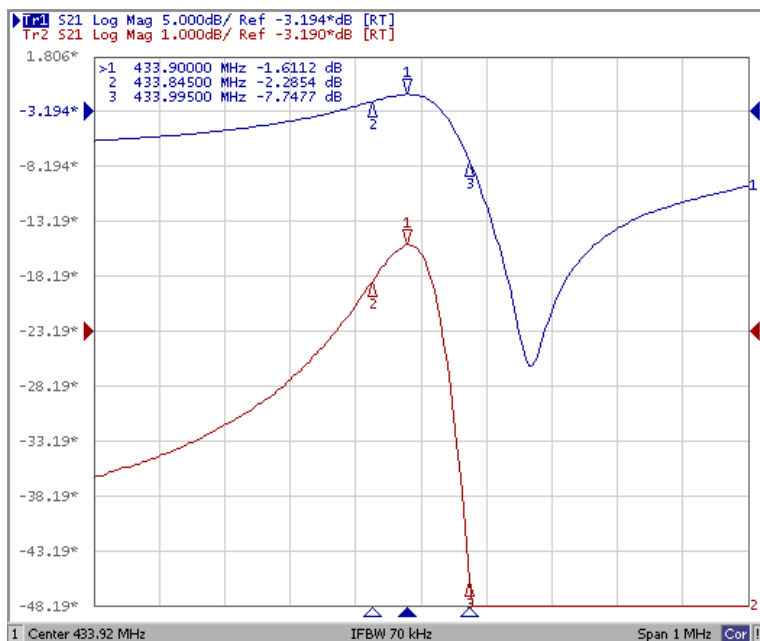
DC Voltage VDC	10V
AC Voltage Vpp	10V 50Hz/60Hz
Operation temperature	-40°C to +85°C
Storage temperature	-45°C to +85°C
Source Power	10dBm

### 2.2 Electronic Characteristics

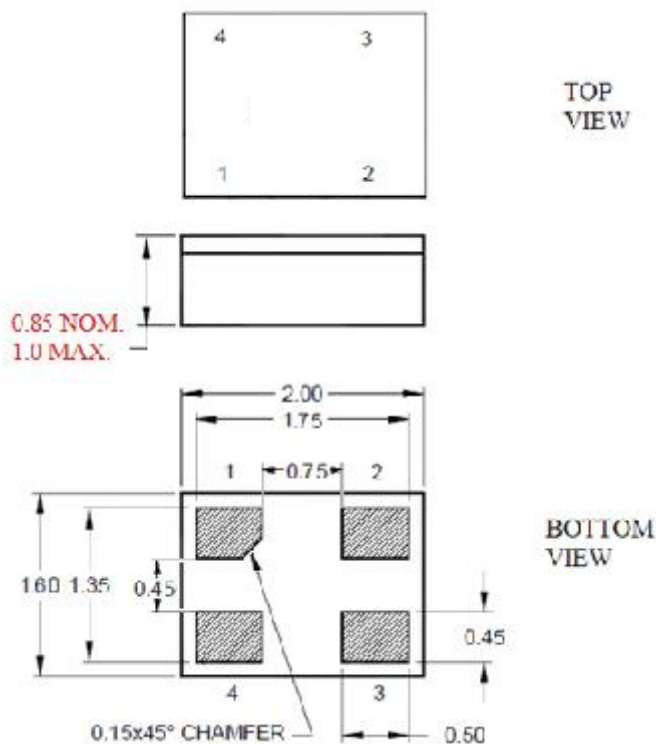
Item		Unites	Minimum	Typical	Maximu
Center Frequency		MHz	212.000	433.92	927.000
Insertion Loss		dB		1.8	2.2
Quality Factor	Unload Q		8300	12000	
	50Ω Loaded Q		80	1500	
Temperature Stability	Turnover Temperature	°C	10	25	40
	Freq.temp.Coefficient	ppm/°C		0.032	
Frequency Aging		ppm/yr		<±10	
DC. Insulation Resistance		MΩ	1.0		
RF Equivalent RLC Model	Motional Resistance R1	Ω		18	26
	Motional Inductance L1	μH		79.82	
	Motional Capacitance C1	fF		1.685	
Transducer Static Capacitance C0		pF		2.3	



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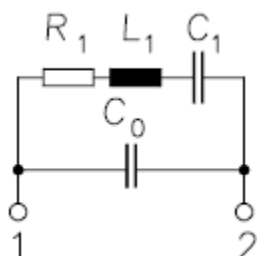


**3. Dimension**

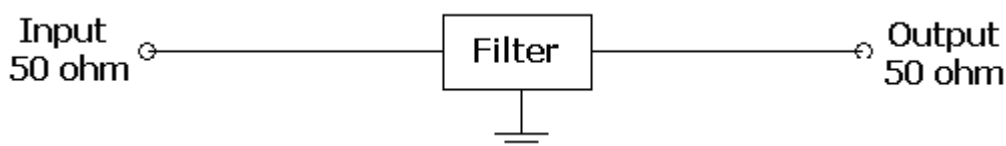




#### 4. Equivalent LC Model



#### 5. Test Circuit



### 6. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

No	Item	Condition of Test	Performan Requ rements
6.1	High temperature exposure	Subject the device to +85°C for 16 hours. Then release the filter into the room conditions for 24 hours prior to the measurement	It shall fulfill the specifications in 2-2.
6.2	Low temperature exposure	Subject the device to -40°C for 16 hours. Then release the device into the room conditions for 24 hours prior to the measurement	It shall fulfill the specifications in 2-2.
6.3	Temperature cycling	Subject the device to a low temperature of -40°C for 30 minutes. Following by a high temperature of +85°C for 30 Minutes. Then release the device into the room conditions for 24 hours prior to the measurement	It shall meet the specifications in 2-2.

No	Item	Condition of Test	Performan Requ rements
6.4	Resistance to solder heat	Dip the device terminals no closer than 1.5mm into the solder bath at 260°C ±10°C for 10±1 sec. Then release the device into the room conditions for 4 hours.	The device shall meet the specifications in 2-2.
6.5	Solder ability	Subject the device terminals into the solder bath at 245°C ±5°C for 5s, More than 95% area of the terminals must be covered with new solder	It shall meet the specifications in 2-2.
6.6	Mechanical shock	Drop the device randomly onto the concrete floor from the height of 1m 3 times	the device shall fulfill the specifications in 2-2
6.7	Vibration	Subject the device to the vibration for 1 hour each in x,y and z axes with the amplitude of 1.5 mm at 10 to 55 Hz	The device shall fulfill the specifications in 2-2

## 7. Packing

### 7.1 Dimensions

(1) Carrier Tape: Figure 1

(2) Reel: Figure 2

(3) The product shall be packed properly not to be damaged during transportation and storage.

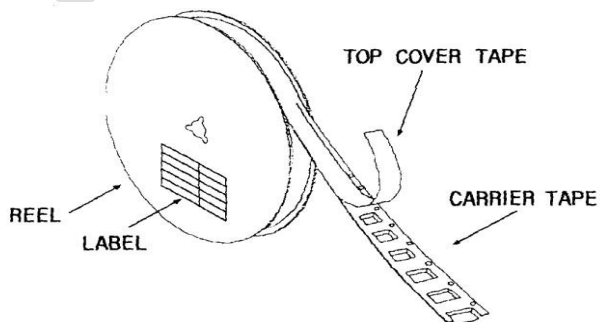
### 7.2 Reeling Quantity

1000 pcs/reel 7"

3000 pcs/reel 13"

### 7.3 Taping Structure

(1) The tape shall be wound around the reel in the direction shown below.

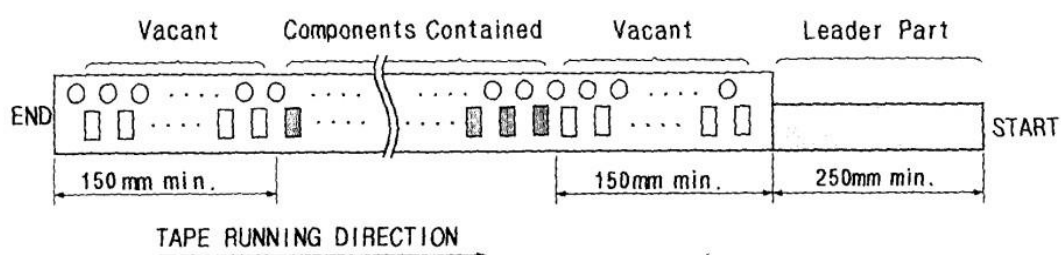




(2) Label

Device Name	
User Product Name	
Quantity	
Lot No.	

(3) Leader part and vacant position specifications.



## 8. Tape Specifications

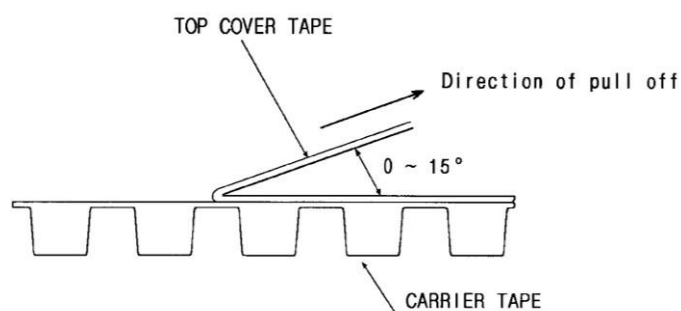
(1) Tensile Strength of Carrier Tape: 4.4N/mm width

(2) Top Cover Tape Adhesion (See the below figure)

(1) pull off angle: 0~15°

(2) speed: 300mm/min.

(3) force: 20~70g

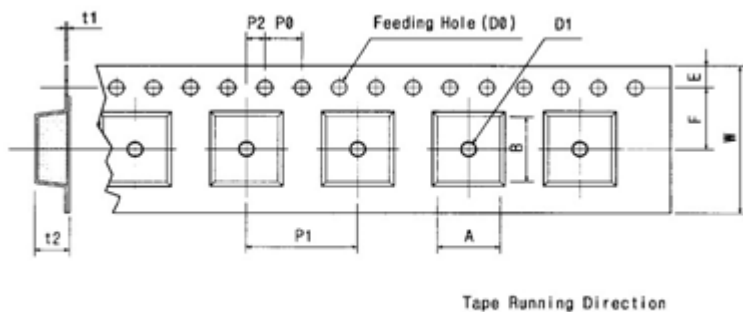




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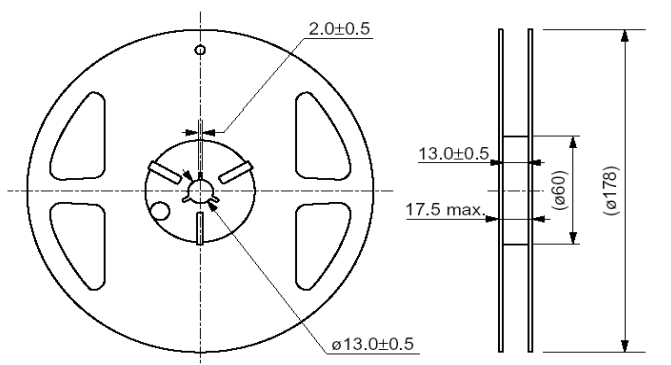


(3) Carrier Tape Dimensions



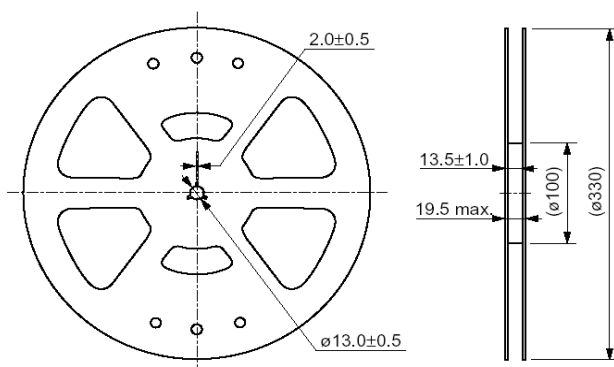
W	F	E	P0	P1	P2	D0	D1	t1	t2	A	B
12.0	5.5	1.75	4.0	4.0	2.0	Ø 1.5	Ø 1.0	0.3	1.25	2.2±	1.8±
±0.3	±0.05	±0.1	±0.1	±0.1	±0.05	±0.1	±0.25	±0.05	±0.1	0.1	0.1

(4) Reel Dimensions



ø178 Reel Dimension

(in mm)



ø330 Reel Dimension

(in mm)

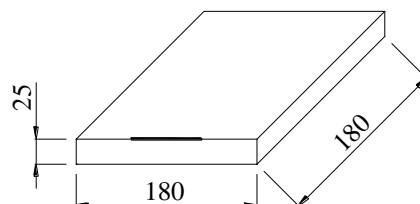
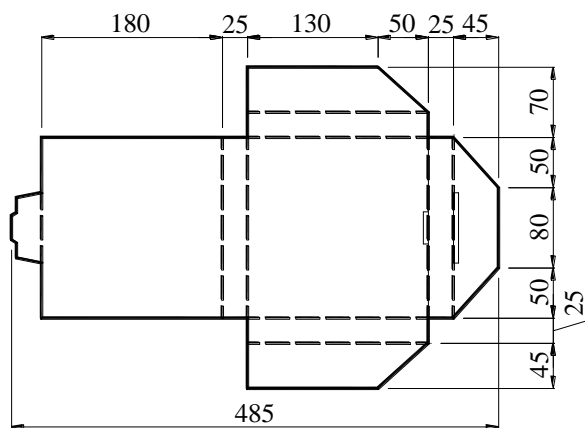




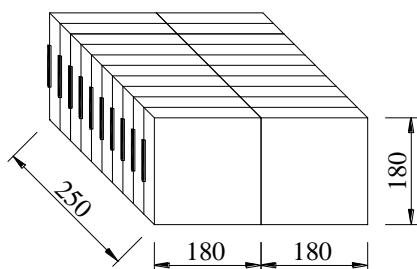
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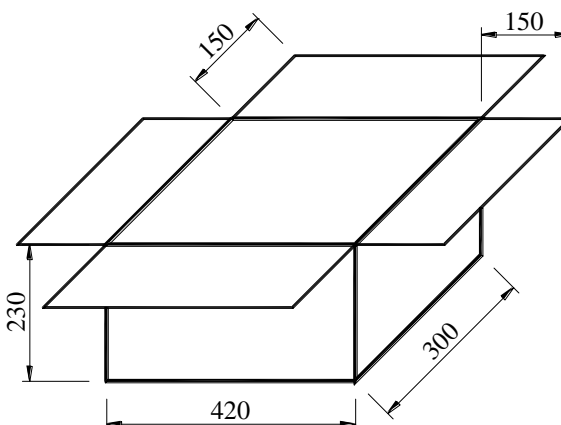
(5) Carton Dimension (Unit: mm)



**1 reel = 1 Inner box**



**20 Inner boxes = 1 Carton**



**20kpcs = 1 Carton**

A



## **9. OTHER**

### 9.1 Caution

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

9.1.2 Do not clean or wash the component for it is not hermetically sealed.

9.1.3 Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.

9.1.4 Don't be close to fire.

9.1.5 All kinds of re-flow soldering must not be applied on the component.

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

9.1.7 Expire date (Shelf life) of the products is one year after delivery under the conditions of a sealed and an unopened package. Please use the products within 12 months after delivery. If you store the products for a long time (more than 12 months), use carefully because the products may be degraded in the solder ability or rusty. Please confirm solder ability and characteristics for the products regularly.

9.1.8 Please contact us before using the product as automobile electronic component.

### 9.2 Notice

9.2.1 Please return one of this specifications after your signature of acceptance.

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

9.2.3 The specifications of this device are subject to change or obsolescence without notice.

9.2.4 Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.

9.2.5 Our liability is only assumed for the Surface Acoustic Wave (SAW) component(s) per se, not for applications, processes and circuits implemented within components or assemblies