

Product Specification

Original Date 10/04/2019  
PN: ZTTCP12MG



AEC Electronics Company Limited.  
**PRODUCT SPECIFICATION**

**CERAMIC RESONATOR**

**AEC PART NUMBER / SPEC. NO:** ZTTCP12MG

**CUSTOMER:**



Peak soldering temperature 260°C<sup>10</sup> sec  
Ceramic component is exempted (According to ROHS directive  
2005/95/EC ANNEX point 7)

Customer's Name	
Production Name	Ceramic Resonator
Frequency	12.00MHz
Model No	ZTTCP12MG
Issue Date	23 <sup>rd</sup> April, 2020

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128 Java Road,  
North Point, Hong Kong  
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Prepared	Inspection	Approved
	Andy	Henkie

### 1. SCOPE

This specification shall cover the characteristics of the ceramic resonator with the type ZTTCP12MG.

### 2. PART NO.

PART NUMBER
ZTTCP12MG

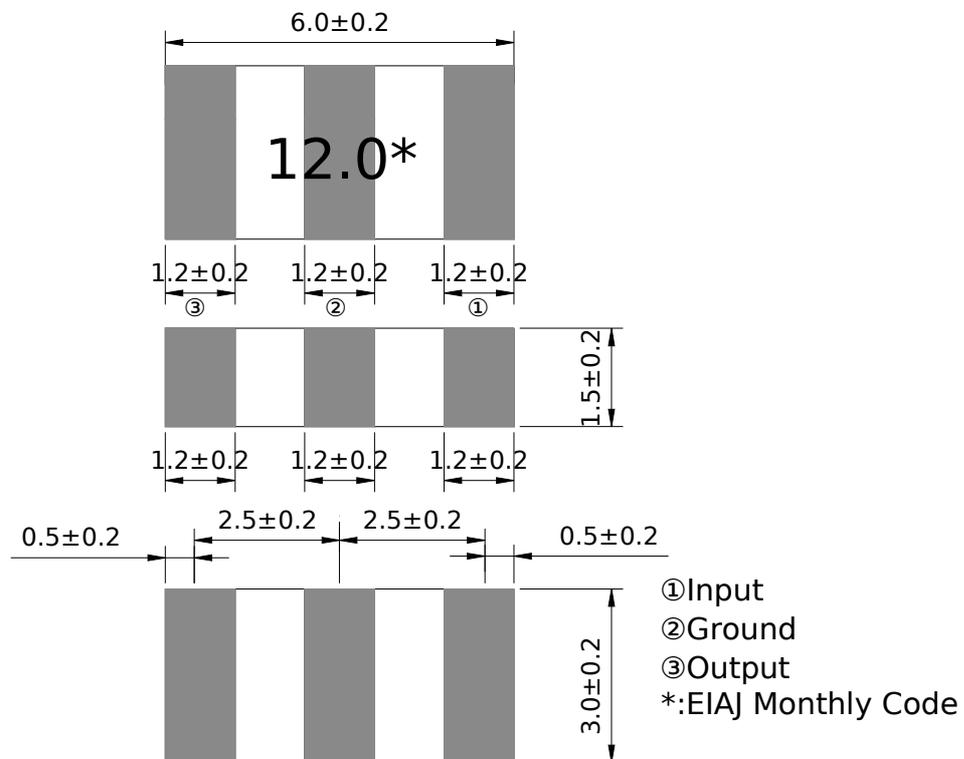
### 3. OUTLINE DIMENSIONS AND MARK

3.1 Appearance: No visible damage and dirt.

3.2 Construction: SMD ceramic packaging.

3.3 The products conform to the RoHS directive and national environment protection law.

3.4 Dimensions and mark



#### 4. ELECTRICAL SPECIFICATIONS

##### 4.1 RATING

Items	Requirement
Withstanding Voltage (V)	100 (DC, 5s max)
Insulation Resistance Ri, (MΩ) min.	500 (10V, 1min)
Operating temperature	-25°C ~ +85°C
Storage temperature	-55°C ~ +85°C
Rating Voltage UR (V)	6V DC
	15V p-p AC

##### 4.2 ELECTRICAL SPECIFICATIONS

Items	Requirement
Oscillation Frequency Fosc (MHz)	12.000
Frequency Accuracy (%)	±0.5
Resonant Impedance Ro (Ω) max.	30
Temperature Coefficient of Oscillation Frequency (%) max.	±0.3 (Oscillation Frequency drift, -25°C ~+85°C)
Oscillation Frequency Aging Rate (%) max *1	±0.1(From initial value)

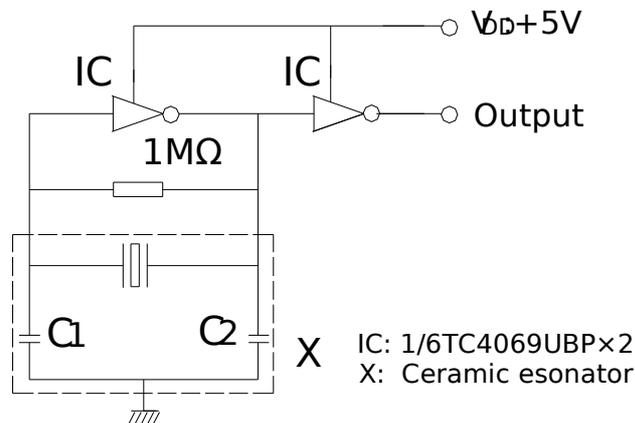
\* Components shall be left in a chamber of +85±2°C for 1000 hours, then measured after leaving in natural condition for 1 hours.

#### 5. TEST

##### 5.1 Test Conditions

Parts shall be tested under the condition (Temp.: 20±15°C, Humidity : 65±20% R.H.) unless the standard condition (Temp.: 25±3°C, Humidity : 65±10% R.H.) is regulated to measure.

##### 5.2 Test Circuit



C1 = C2 = 15pF

**6 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS**

No	Item	Condition of Test	Performance Requirements	
6.1	Humidity	Keep the resonator at 60°C±2°C and 90%-95% RH for 1000h. Then Release the resonator into the room Condition for 1h prior to the Measurement.	It shall fulfill the specifications in Table 1.	
6.2	High Temperature Exposure	Subject the resonator to 85°C±2°C for 1000h, then release the resonator into the room conditions for 1h prior to the measurement.	It shall fulfill the specifications in Table 1.	
6.3	Low Temperature Exposure	Subject the resonator to -55°C±2°C for 1000h, then release the resonator into the room conditions for 1h prior to the measurement.	It shall fulfill the specifications in Table 1.	
6.4	Temperature Cycling	After temperature cycling of blow table was performed 5 times, resonator shall be measured after being placed in natural conditions for 1h.	It shall fulfill the specifications in Table 1.	
		Temperature		Time
		-55±3°C		30±3 min
		85±3°C		30±3 min
6.5	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 10 Hz—55Hz.	It shall fulfill the specifications in Table 1.	
6.6	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.	
6.7	Soldering Test	Components shall be measured after applying twice of the re-flow soldering with following temperature profile and leaving in natural condition for 1 hour.	It shall fulfill the specifications in Table 1.	

(To be continued)

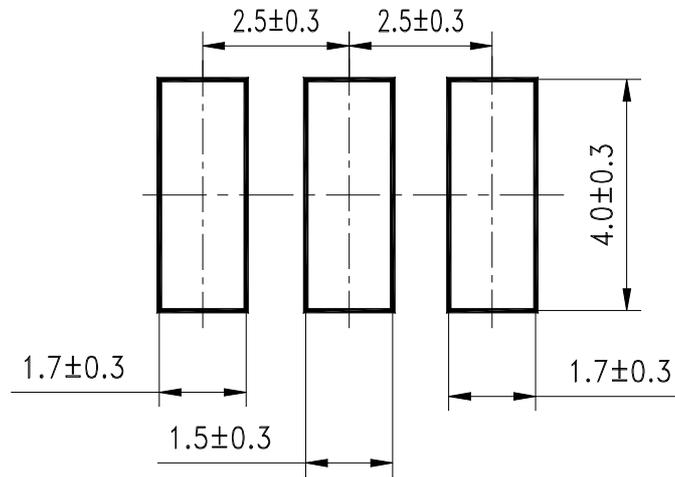
**6 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS**

No	Item	Condition of Test	Performance Requirements
6.8	Solder Ability	Dipped in 245°C±5°C solder bath for 3s±0.5 s with rosin flux (25wt% ethanol solution.)	The terminals shall be at least 95% covered by solder.
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.

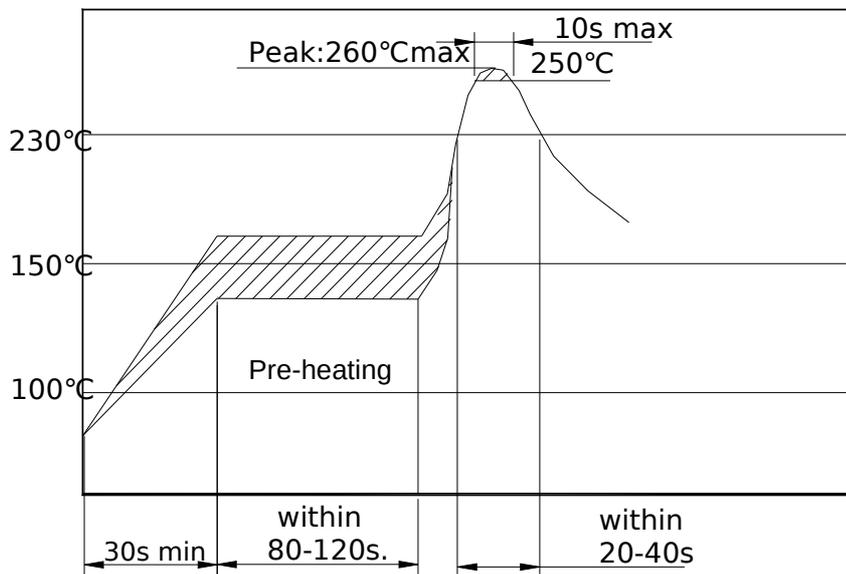
Table 1

Item	Specification after test
Oscillation Frequency Change $\Delta F_{osc}/F_{osc}$ (%) max	±0.2
Resonant Impedance $R_o$ ( $\Omega$ ) max.	35
The limits in the above table are referenced to the initial measurements.	

### 7 RECOMMENDED LAND PATTERN AND REFLOW SOLDERING STANDARD



#### 7.2 Recommended Reflow soldering standard conditions

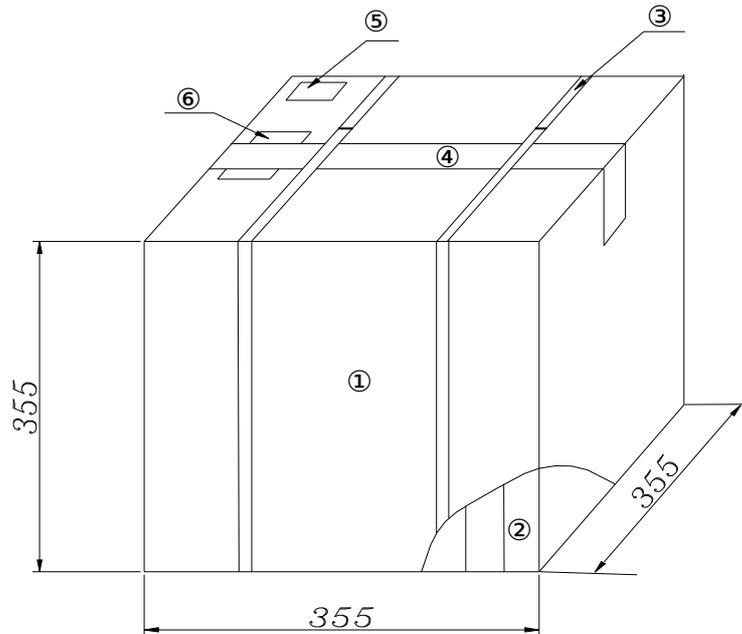


**8. PACKAGE**

To protect the products in storage and transportation, it is necessary to pack them (outer and inner package) .

8.1 On paper pack, the following requirements are requested.

8.1.1 Dimensions and Mark



NO.	Name	Quantity
	Package	1
	Inner Box	12
	Belt	2.9 m
	Adhesive tape	1.2 m
	Label	1
	Certificate of approval	1
	Company name ,Address etc.	

8.1.2 Section of package

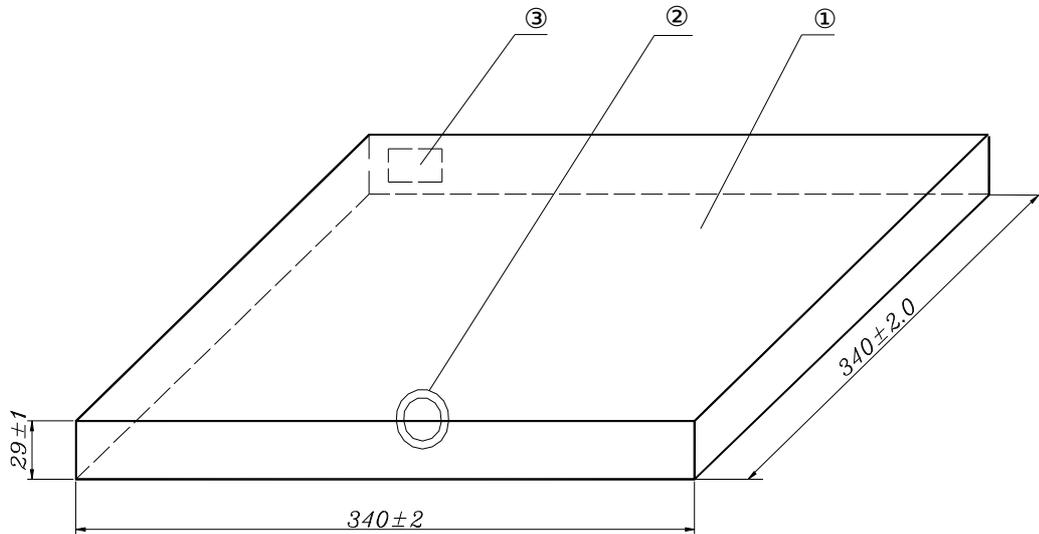
Package is made of corrugated paper with thickness of 0.8cm. Package has 10 inner boxes, each box has 1 reel(each reel for plastic bag)

8.1.3 Quantity of package

- Per plastic reel                      4000 pieces of piezoelectric ceramic part
- Per inner box                            1 reel
- Per package                              10 inner boxes

(40000 pieces of piezoelectric ceramic part )

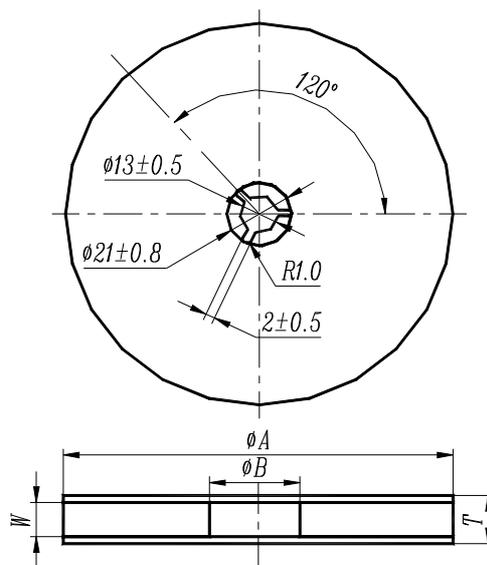
8.1.4 Inner Box Dimensions



NO.	Name	Quantity
	Inner Box	1
	QC Label	1
	Label	1

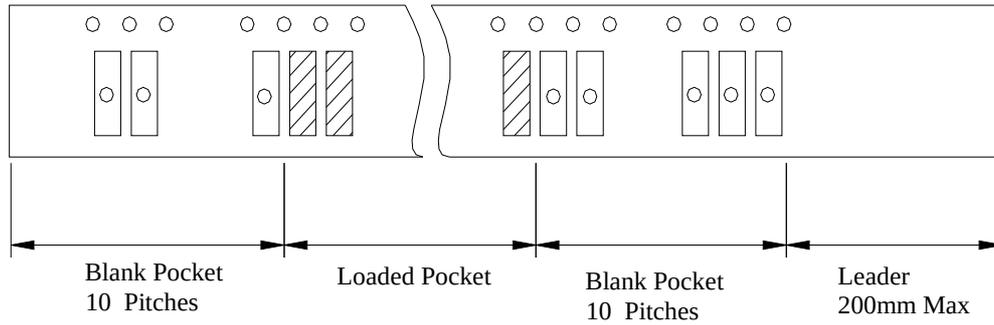
8.2 On reel pack, the following requirements are requested.

8.2.1 Reel Dimensions

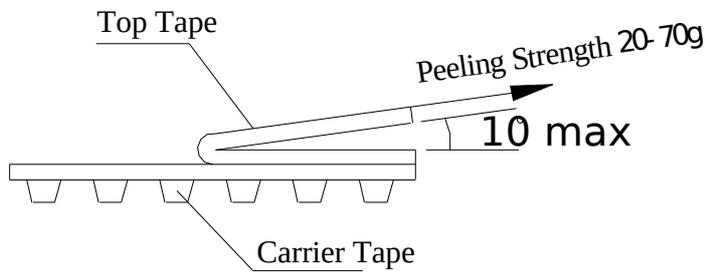


$\phi A$	$\phi B$	W	T	Pieces per reel	Carrier tape size
330±3	80min	16.4min	22.4max	4000typ.	16

**8.2.3 Packing Method Sketch Map**



**8.2.4 Test Condition Of Peeling Strength**



**9. EIAJ Monthly Code**

2019/2021/2023/2025		2018/2020/2022/2024	
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

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

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

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

10.1.4 Don't be close to fire.

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

10.1.6 Expire date (Shelf life) of the products is 12 months 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 solderability or rusty. Please confirm solderability and characteristics for the products regularly.

## 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.