AEC®

AEC Electronics Company Limited.

PRODUCT SPECIFICATION

CERAMIC RESONATOR

AEC PART NUMBER / SPEC. NO: ZTTCP12MG

CUSTOMER: Schukat electronic Vertriebs GmbH

RoHS Compliant

Peak soldering temperature 260℃/10 sec

Ceramic component is exempted (According to ROHS directive 2005/95/EC ANNEX point 7)

Customer's Name	**Schukat electronic Vertriebs GmbH**
Production Name	**Ceramic Resonator**
Frequency	**12.00MHz**
Model No	**ZTTCP12MG**
Issue Date	**23rd April, 2020**

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Prepared	Inspection	Approved
Nathan	Andy	Henkie

1 · SCOPE

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

2 · PART NO.

PART NUMBER
ZTTCP12MG

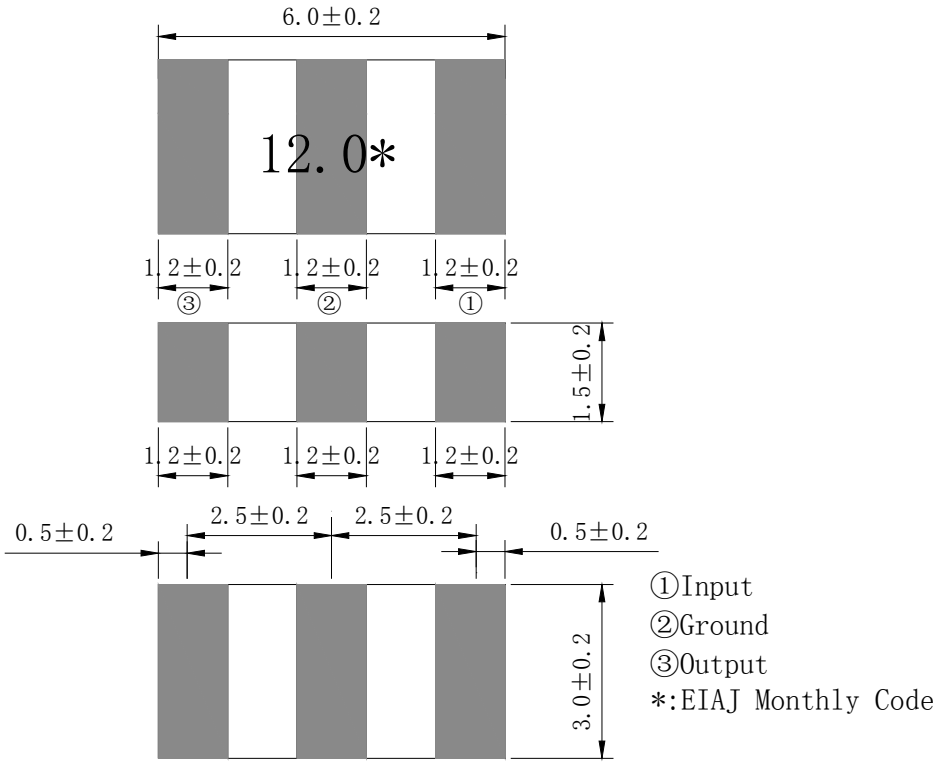
3 · OUTLINE DIMENSIONS AND MARK

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℃～＋85℃
Storage temperature	-55℃～＋85℃
Rating Voltage U_R（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℃～+85℃）
Oscillation Frequency Aging Rate (%) max *[1]	±0.1(From initial value)

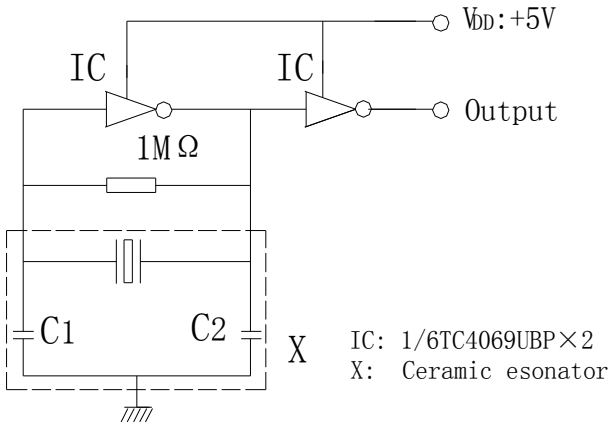
* Components shall be left in a chamber of +85±2℃ for 1000 hours, then measured after leaving in natural condition for 1 hours.

5 · TEST

5.1 Test Conditions

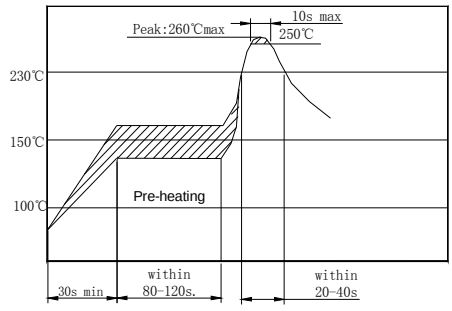
Parts shall be tested under the condition (Temp.：20±15℃,Humidity ：65±20% R.H.) unless the standard condition(Temp.：25±3℃,Humidity ：65±10% R.H.) is regulated to measure.

5.2 Test Circuit



C1 = C2 = 15pF

6 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

<table>
<tr><th>No</th><th>Item</th><th>Condition of Test</th><th>Performance Requirements</th></tr>
<tr><td>6.1</td><td>Humidity</td><td>Keep the resonator at 60℃±2℃ and 90%-95% RH for 1000h. Then Release the resonator into the room Condition for 1h prior to the Measurement.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>6.2</td><td>High Temperature Exposure</td><td>Subject the resonator to 85℃±2℃ for 1000h, then release the resonator into the room conditions for 1h prior to the measurement.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>6.3</td><td>Low Temperature Exposure</td><td>Subject the resonator to -55℃±2℃ for 1000h, then release the resonator into the room conditions for 1h prior to the measurement.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>6.4</td><td>Temperature Cycling</td><td>After temperature cycling of blow table was performed 5 times, resonator shall be measured after being placed in natural conditions for 1h.<table><tr><th>Temperature</th><th>Time</th></tr><tr><td>–55±3℃</td><td>30±3 min</td></tr><tr><td>85±3℃</td><td>30±3 min</td></tr></table></td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>6.5</td><td>Vibration</td><td>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.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>6.6</td><td>Mechanical Shock</td><td>Drop the resonator randomly onto a wooden floor from the height of 100cm 3 times.</td><td>It shall fulfill the specifications in Table 1.</td></tr>
<tr><td>6.7</td><td>Soldering Test</td><td>Components shall be measured after applying twice of the re-flow soldering with following temperature profile and leaving in natural condition for 1 hour. 
</td><td>It shall fulfill the specifications in Table 1.</td></tr>
</table>

（To be continued）

6 PHYSICAL AND ENVIRONMENAL CHARACTERISICS

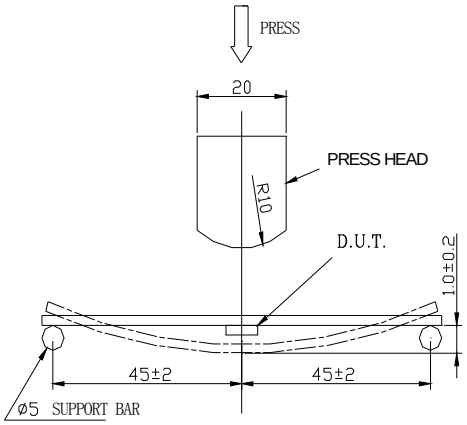
No	Item	Condition of Test	Performance Requirements
6.8	Solder Ability	Dipped in 245℃±5℃ solder bath for 3s±0.5 s with rosin flux (25wt% ethanol solution.)	The terminals shall be at least 95% covered by solder.
6.9	Board Bending	Mount a glass-epoxy board (Width=40mm,thickness=1.6mm),then bend it to 1mm displacement and keep it for 5s. (See the following figure) 	Mechanical damage such as breaks shall not occur.

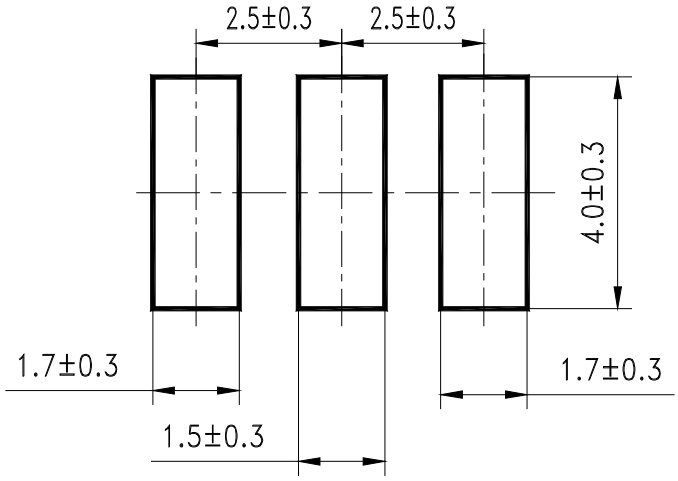
Table 1

Item	Specification after test
Oscillation Frequency Change △Fosc/Fosc (%) max	±0.2
Resonant Impedance Ro（Ω）max.	35
The limits in the above table are referenced to the initial measurements.	

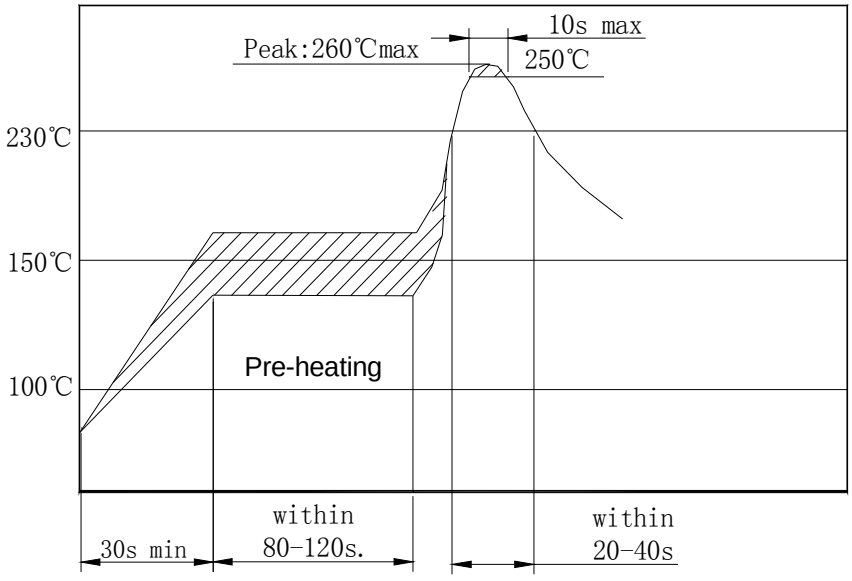
7 RECOMMENDED LAND PATTERN AND REFLOW SOLDERING STANDARD

CONDITIONS

7.1Recommended land pattern



7.2Recommended Reflow soldering standard conditions

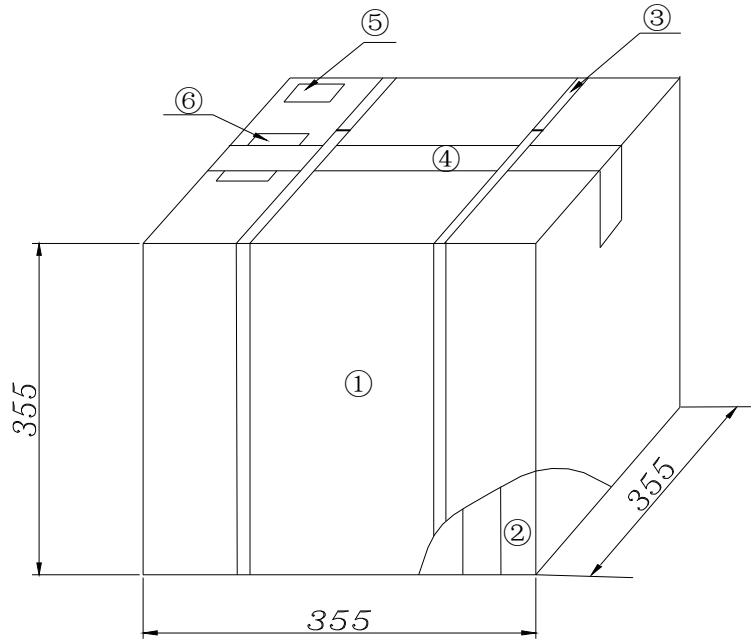


8 · PACKAGE

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
①	Package	1
②	Inner Box	12
③	Belt	2.9 m
④	Adhesive tape	1.2 m
⑤	Label	1
⑥	Certificate of approval	1
⑦	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

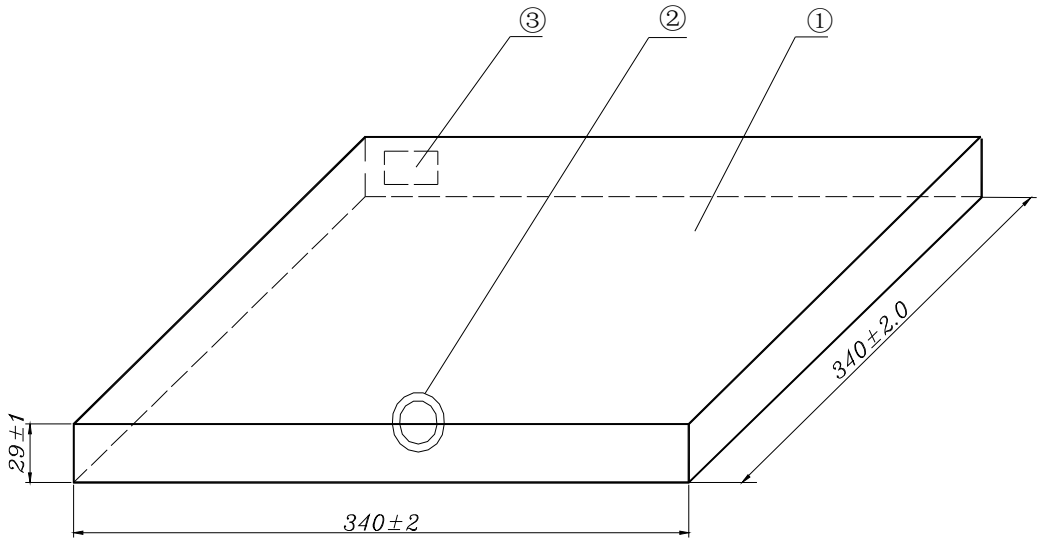
Per plastic reel 4000 pieces of piezoelectric ceramic part

Per inner box 1 reel

Per package 10 inner boxes

（40000 pieces of piezoelectric ceramic part ）

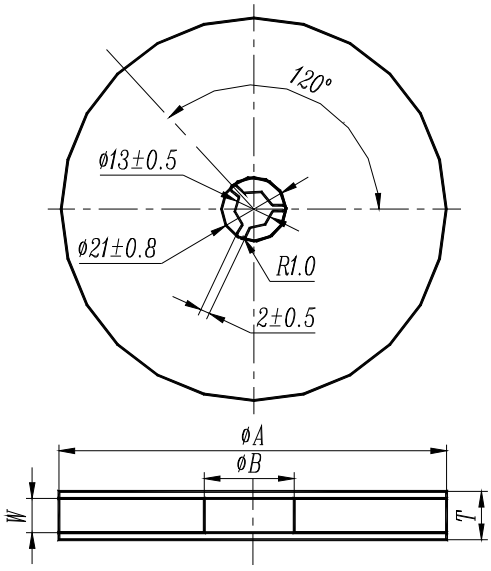
8.1.4 Inner Box Dimensions



NO.	Name	Quantity
①	Inner Box	1
②	QC Label	1
③	Label	1

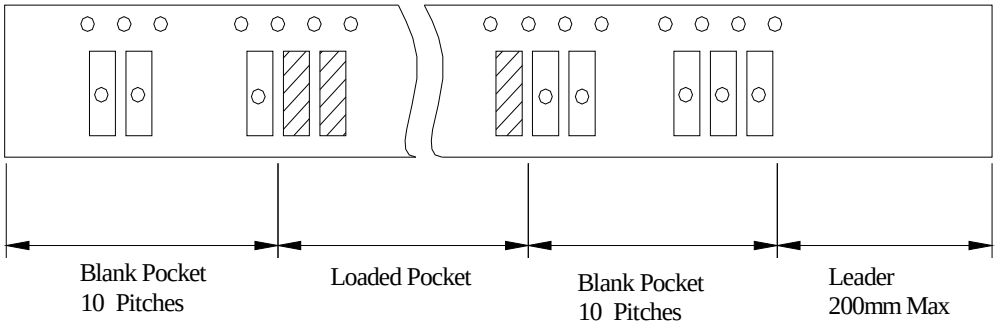
8.2 On reel pack, the following requirements are requested.

8.2.1 Reel Dimensions

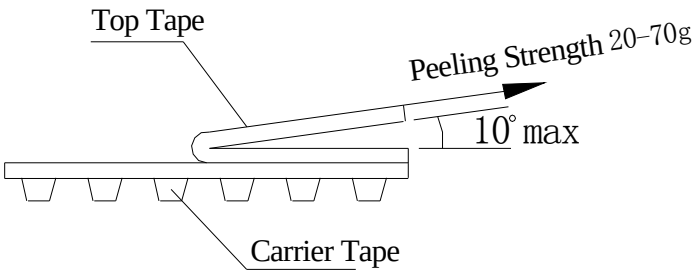


φ A	φ B	W	T	Pieces per reel	Carrier tape size
330±3	80min	16.4min	22.4max	4000typ.	16

8.2.3 Packing Method Sketch Map



8.2.4Test 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.