

SPEC NO.: D100-181119

## Specification

TO:STE508

Model Name: Crystal Unit

**PART NO: TA6CS-24.000M-20-20-20**

CUSTOMER PART NO.:

### Approval sheet:

Approved	Yes
	No.
Customer's comments are welcomed here.	
Pls return this copy as a certificate of your approval by Email.	
Approved By	Date: _____

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**STRONG ELECTRONICS&TECHNOLOGY LIMITED**

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1. RANGE:

This specification shall cover the characteristics of the SMD quartz crystal unit with the type TA6CS-24.000M-20-20-20.

2. PART NO.

PART NUMBER	PREVIOUS PART NUMBER
TA6CS-24.000M-20-20-20	
CUSTOMER PART NO	SPECIFICATION NO

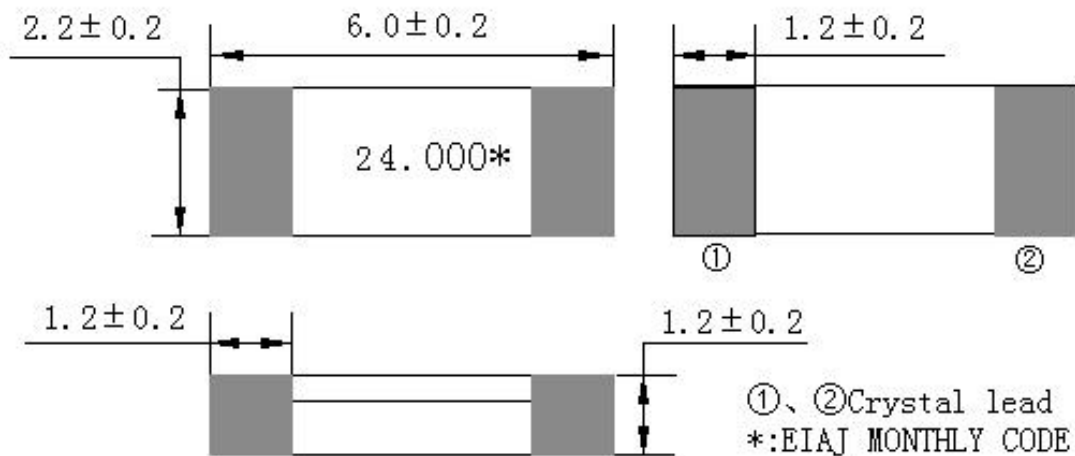
3. OUTLINE DIMENSIONS AND MARK

3.1 Appearance: No visible damage and dirt.

3.2 Construction: SMD ceramic packaged.

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
Insulation Resistance ( $M \Omega$ ) min.	500 (at DC 100V)
Operating Temperature Range ( $^{\circ}C$ )	-20 ~ 70
Storage Temperature Range ( $^{\circ}C$ )	-40 ~ 85

##### 4.2 ELECTRICAL SPECIFICATIONS

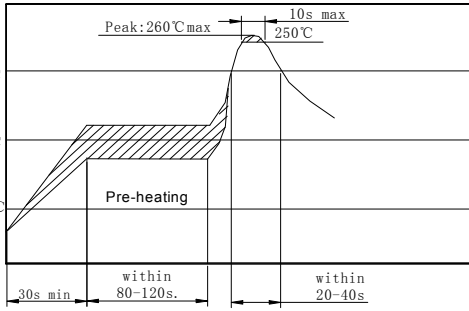
Items	Requirement
Nominal Frequency (MHz)	24.000
Frequency Tolerance (ppm)	$\pm 20$ (at $25^{\circ}C$ )
Temperature Stability (Ref. To $25^{\circ}C$ ) (PPM)	$\pm 20$ ( $-20^{\circ}C \sim 70^{\circ}C$ )
Mode of Oscillation	Fundamental
Shunt Capacitance $C_0$ (pF) max.	7
Load Capacitance $C_L$ (pF)	20
Equivalent Series Resistance ( $\Omega$ ) max.	40
Drive Level ( $\mu W$ ) max.	100
Aging (PPM/year) max.	$\pm 10$ (at $25^{\circ}C$ )

#### 5. TEST

##### 5.1 Test Conditions

Parts shall be tested under the condition ( Temp.:  $20 \pm 15^{\circ}C$ , Humidity :  $65 \pm 20\%$  R.H.) unless the standard condition (Temp.:  $25 \pm 2^{\circ}C$ , Humidity :  $65 \pm 5\%$  R.H.) is regulated to measure.

6 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

No	Item	Condition of Test	Performance Requirements
6.1	Humidity Test	Stored in 90% ~ 95% R.H. at 40 °C ± 2 °C for 500h, and left at room temperature for 1h before measurement.	It shall fulfill the specifications in Table 1.
6.2	High Temp. Storage	Stored in 85 ± 2 °C for 500h, and left at room temperature for 1h before measurement. .	It shall fulfill the specifications in Table 1.
6.3	Low Temp. Storage	Stored in -40 ± 2 °C for 500h, and left at room temperature for 1h before measurement.	It shall fulfill the specifications in Table 1.
6.4	Temperature Cycling	Subject the Crystal Unit to - 25 °C for 30 min. followed by a high temperature of 85°C for 30 min. Cycling shall be repeated 5 times, and left at room temperature for 1h before measurement.	It shall fulfill the specifications in Table 1.
6.5	Vibration Test	Apply the vibration of sweep frequency (10 ~ 55)Hz/min, amplitude 0.75mm, duration 30 min in each direction of 3 planes	It shall fulfill the specifications in Table 1.
6.6	Drop Test	Free drop to the wooden plate from 0.75m height for 2 times.	No visible damage and it shall fulfill Table 1.
6.7	Resistance to Soldering Heat	<p>Passed through the reflow oven under the following condition, and left at room temperature for 1 hour before measurement.</p>  <p>The graph shows a temperature profile for a reflow oven. The y-axis represents temperature in degrees Celsius, with markers at 100, 150, and 230. The x-axis represents time. The profile starts at 100°C, rises to a peak of 260°C (labeled 'Peak: 260°C max'), and then cools. A 'Pre-heating' phase is indicated with a hatched area. Time constraints are shown: '30s min' for the initial rise, 'within 80-120s.' for the pre-heating phase, and 'within 10s max' for the cooling phase. A '250°C' marker is also present on the cooling curve, with a 'within 20-40s' constraint for the time to reach this temperature.</p>	It shall fulfill the specifications in Table 1.

6 PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS(To be continued)

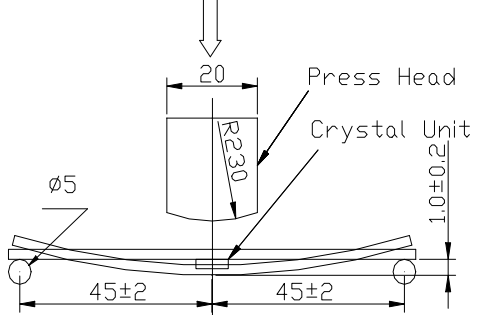
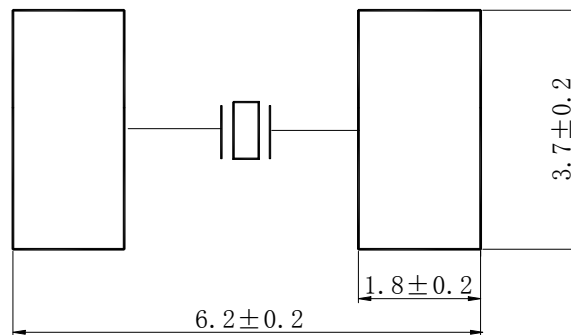
6.8	Solder ability	Dipped in $235^{\circ}\text{C} \pm 5^{\circ}\text{C}$ solder bath for $3\text{s} \pm 0.5\text{s}$ with rosin flux (25wt% ethanol solution).	The terminals shall be at least 95% covered by solder
6.9	Terminal Strength And Bending board	<p>Mount on a glass-epoxy board (100mm×50mm ×1.6mm),then bend it to 1mm diaplacement and keep it for 5s.(See the following figure)</p> 	No visible damage and it shall fulfill the specifications in Table 1.

Table 1

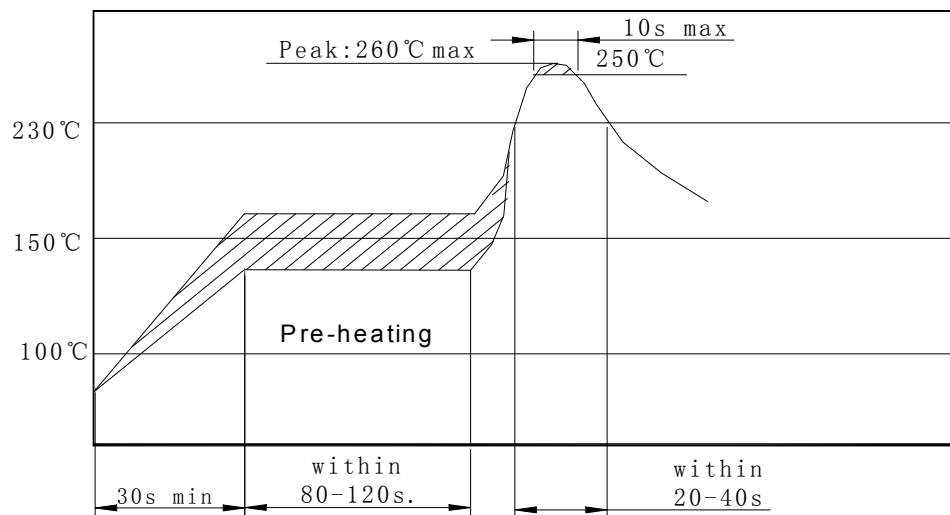
Item	Specification after test
Frequency Tolerance at $25^{\circ}\text{C}$ (ppm)	$\pm 50$
Equivalent Series Resistance( $\Omega$ )max	120

## 7 RECOMMENDED LAND PATTERN AND REFLOW SOLDERING STANDARD CONDITIONS

### 7.1 Recommended land pattern



### 7.2 Recommended reflow soldering standard conditions

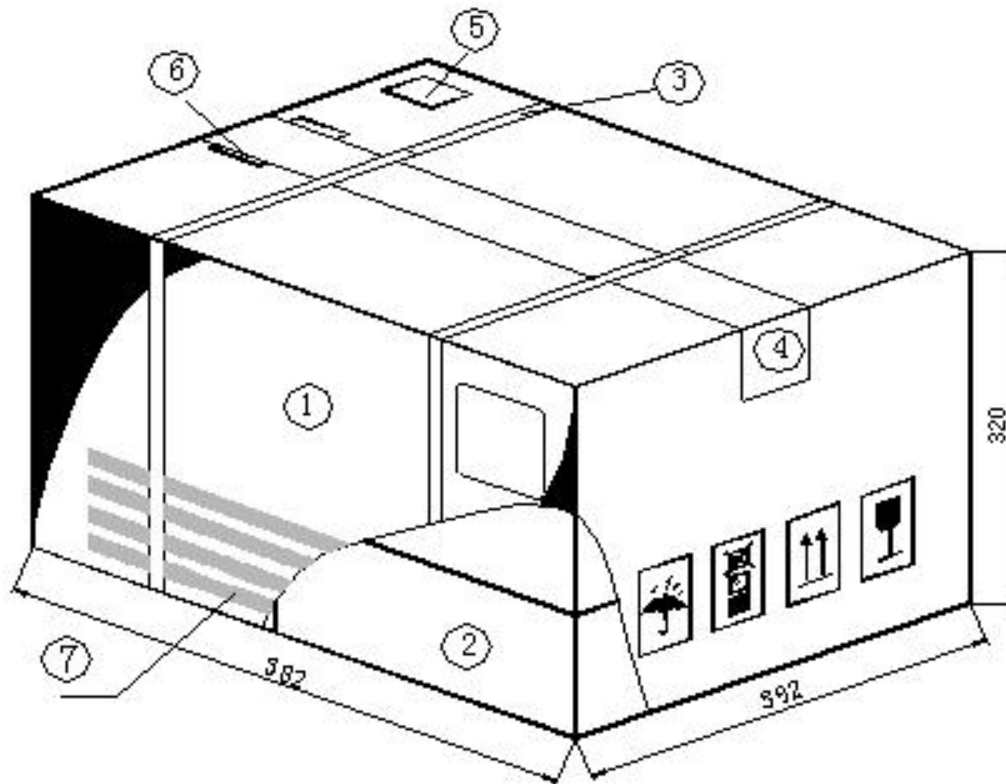


**8. PACKAGE**

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

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

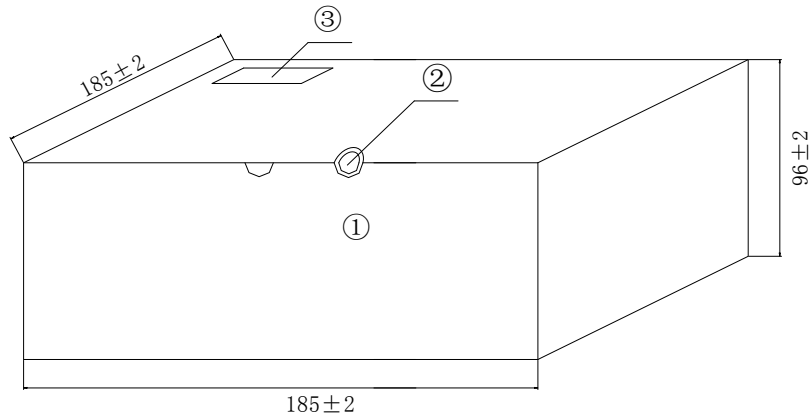
Package is made of corrugated paper with thickness of 0.8cm.Package has 12 inner boxes, each box has 4 reels (each reel for plastic bag).



8.1.3 Quantity of package

Per plastic reel                    1000 pieces of SMD part  
 Per inner box                    4 reels  
 Per package                    12 inner boxes  
 (48000 pieces of SMD quartz crystal unit)

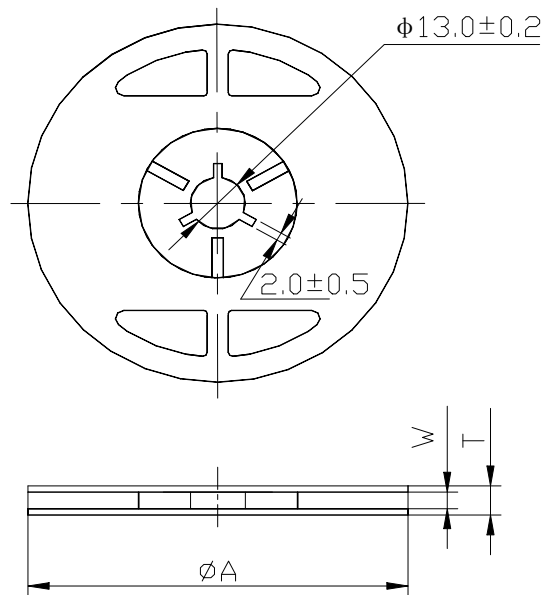
8.1.4 Inner Box Dimensions



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

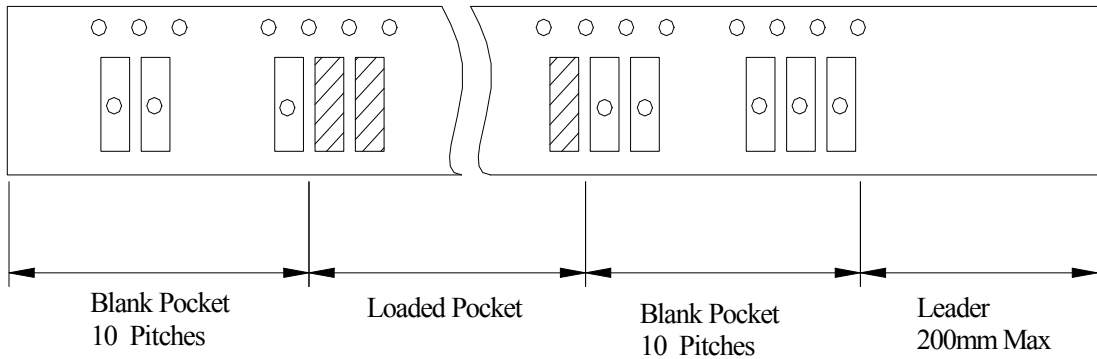
8.2 On reel pack, the following requirements are requested.

8.2.1 Reel

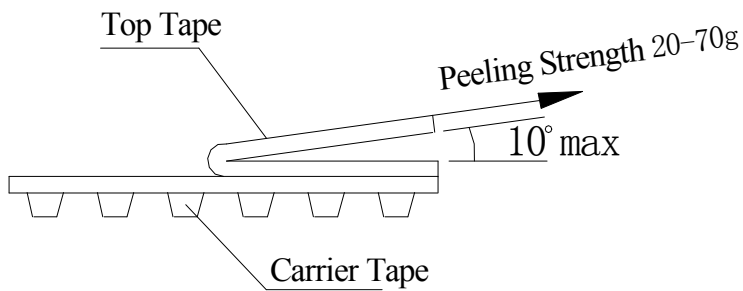


$\phi A$	W	T	Pieces per reel	Carrier tape size
180±3	16.4min	22.4max	1000typ.	16

8.2.3 Packing Method Sketch Map



8.2.4 Test Condition Of Peeling Strength



9. EIAJ Monthly Code

2011/2013/2015/2017		2010/2012/2014/2016	
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 use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.

10.1.3 Don't be close to fire.

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

10.1.5 Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six 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.

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

### 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.

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