CRYSTAL SPECIFICATION

客户： _____

客户料号： _____

泰晶料号： CS12K032768ADE

产品类别： M6-32.768-12.5-20

日期： 2019.1.7

CUSTOMER'S APPROVAL

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REV.	Description of Revision History	Date	Designer	Checked By
A	New revision	2019 年 1 月 7 日	HE JIN LING	DAI WEI

CRYSTAL SPECIFICATION

1. Description: Tuning Fork Quartz Crystal
2. Nominal Frequency: 32.768KHz
3. Oscillation Mode: Fundamental
4. Cutting Mode: x-2° cut
5. Measurement Instrument: S&A 250B(Calculated FL)
6. Electrical Characteristics:

[1]Operation Conditions:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Operating Temperature Range	Topt	-40		85	℃	
Storage Temperature Range	Tstg	-55		125	℃	
Load Capacitance	CL		12.5		pF	
Drive Level	DL		0.1		uW	

[2]Frequency Stability:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Tolerance	dF/Fo	-20		20	ppm	Refer to Center Frequency@25±3℃
Stability Over Temperature	dF/F25		-0.036		ppm/℃²	Refer to Operating Temperature
Aging	dF/F25	-5		5	ppm	Per Year

dF/Fo:Frequency Deviation Refer to Center Frequency
dF/F25:Frequency Deviation Refer to 25℃ Frequency

[3]Electrical Performance:

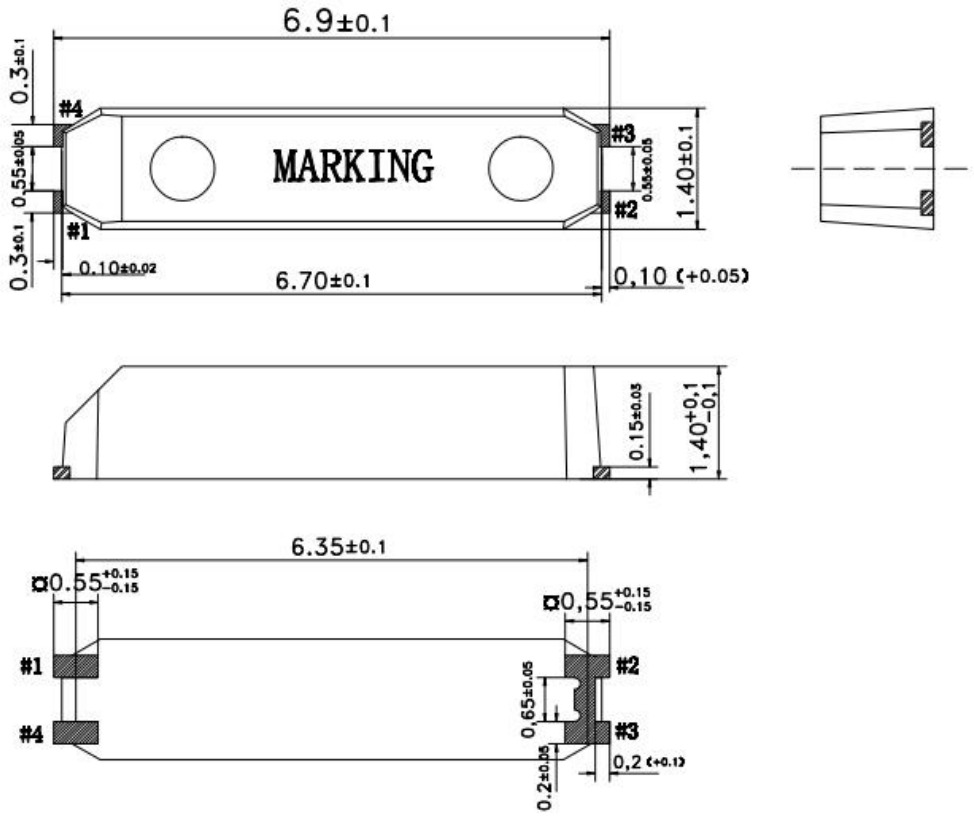
Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Equivalent Series Resistance	ESR			65	KΩ	@Series
Shunt Capacitance	C0			3	pF	
Insulation Resistance	IR	500			MΩ	@DC 100 Volt

7. Marking:Laser

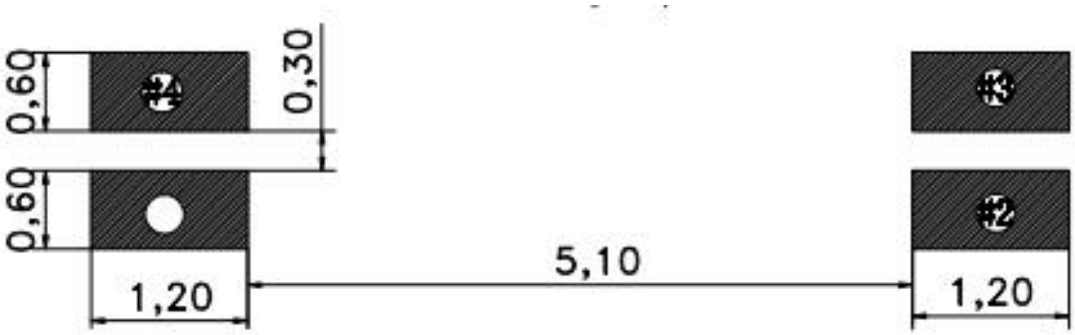
Marking Generally：32.768. Refer to with Customer's requirement.

32.768

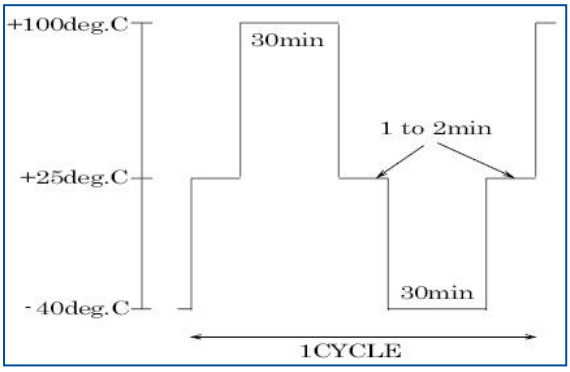
8. Outline drawing (unit：mm)

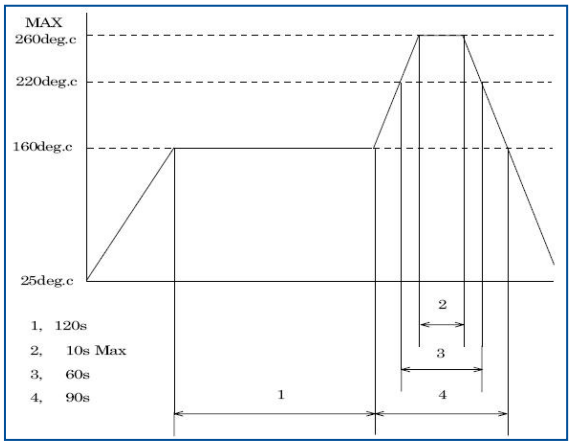


Recommended soldering pattern



9. Reliability Specification

Test Items	Test Method and Condition	Requirements
Vibration	(1)Vibration Frequency 10 to 55Hz (2)Vibration Amplitude 1.5mm (3) Cycle Time 1-2min(10-55-10Hz) (4)Direction X.Y.Z (5)Duration 2h/each direction	Frequency Change:±10ppm Max. Resistance Change:±15% or 5kohm Max.
Shock	3 Times free drop from 75cm height to hard wooden board of thickness more than 30mm	Frequency Change:±10ppm Max. Resistance Change:±15% or 5kohm Max.
Hermetic seal	Helium leak detector Checked:before the molded crystal uints	less than 1 × 10 EXP(–7) mbar.l/sec.
Solder ability	Dip the leads of crystal units into the solution (7-10%) of rosin 3±0.5s,then dip it into the tank 5-10s. Temperature of solder melted tank is 245℃±5℃	The dipped surface of the leads should be at least 95% covered with continuous new solder coating
High temperature	240 hours at +85℃±2℃ After 1-2hours past at room temperature from following	Frequency Change:±10ppm Max. Resistance Change:±25% or 10kohm Max.
Low temperature	240 hours at -40℃±2℃ After 1-2hours past at room temperature from following test.	Frequency Change:±10ppm Max. Resistance Change:±15% or 5kohm Max.
Humidity	240 hours at +40℃±2℃,relative humidity 90-95% After 1-2hours past at room temperature from following	Frequency Change:±10ppm Max. Resistance Change:±25% or 10kohm Max.
Temperature cycle	After supplying the following temperature cycle (50cycles) 	Frequency Change:±10ppm Max. Resistance Change:±25% or 10kohm Max.

Reflow soldering		After 24h past from frequency test, Frequency Change:±10ppm Max. Resistance Change:±25% or 10kohm Max. Notice: 1、Using the infrared lamp at soldering process may cause uneven temperature rise on plastic surface of the parts,so that please keep the package temperature within left conditions. 2、DO NOT dip the plastic part into solder

10. Handling Notice for Standard Tuning Fork Crystal (Cylindrical Type)

10.1. Shock resistance

It may deteriorate the characteristics or cause of no oscillation if excess physical shock given. Please be careful not to drop. Please use under condition to minimize the shocks as much as possible.

Please review the conditions if it is used by auto mounting or after the conditions are changed.

10.2. Heat and humidity resistance in storage

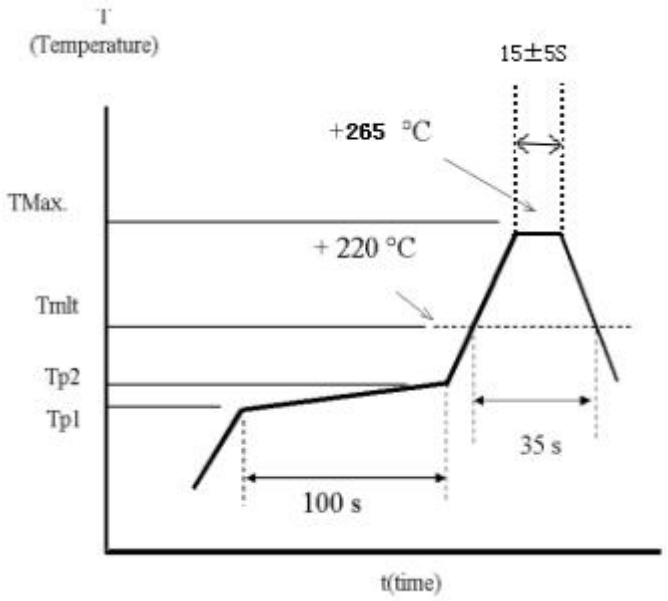
Storing the crystal products under higher or lower temperature or high humidity for a long period may deteriorate the characteristics of crystal units.

Please store and use the crystal products at the normal temperature and humidity.

10.3 Solder heat resistance

Please review the condition or consult us about flow solder process.

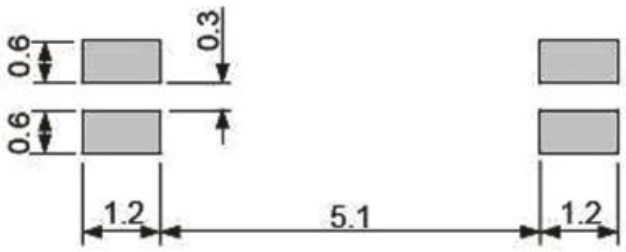
Our soldering condition is under 260ºC within 10sec .



10.4. Mounting method to PCB

When the crystal products need to be lay down please fix to PCB securely.

If the crystal is used with mechanical vibration location, please put cushion in between PCB or fix with elasticity glue (Silicon etc) as shown in below figure. Please don't gluing hermetic seal grass.



10.5. Lead process

When the lead needs to be cut please maintenance the cutter.

When the lead needs to be bent or repaired please be careful not to giving excess pressure at the root of the lead to avoid crack of the hermetic seal glass. Also please be careful not to giving excess pressure at sealing to avoid sealing tightness deteriorate.

10.6.Ultrasonic cleaning and ultrasonic soldering

Soldered by ultrasonic cannot be guaranteed, because crystal may be sympathetic vibrated and may damage.Please study at your side about ultrasonic cleaning.

10.7. Drive level

Applying excessive drive level to the crystal units may cause deterioration of characteristics or damage. Less then 1.0 μW is recommended to this products.

10.8.Solder paste should be more than 150μm thickness.

10.9.Storage environment

10.9.1 To storage the reel at +15℃ to +35℃,25%RH to 65%RH of Humidity.

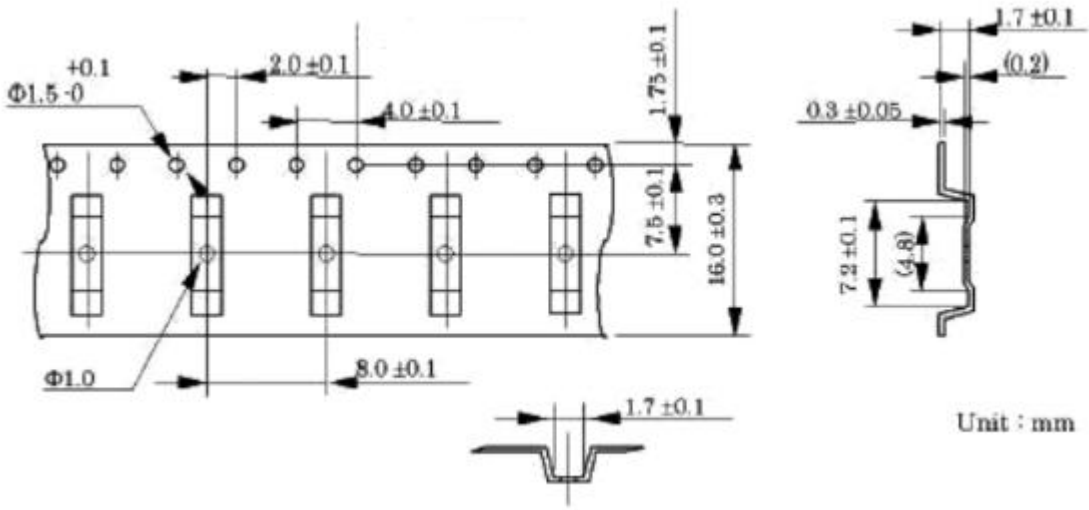
10.9.2 To open the packing just before using.

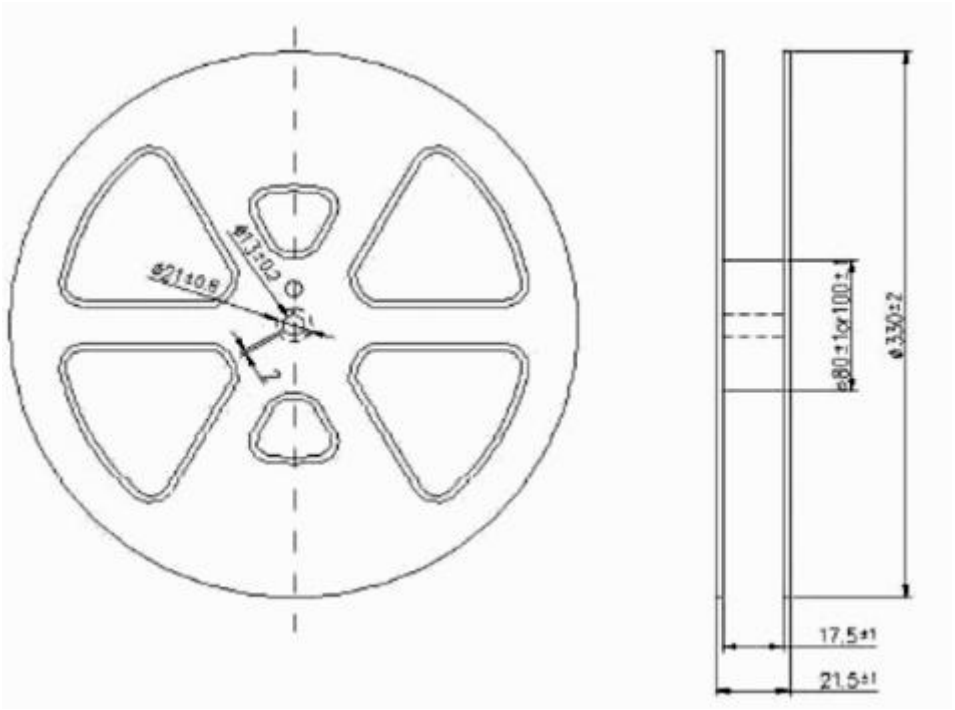
10.9.3 Not to expose the sun.

10.9.4 Not to storage with some erosive chemicals.

10.9.5 Nothing is allowed to put on the reel or carton to prevent mechanical damage.

11.PACKING


Φ1.5 +0.1 -0
2.0 ±0.1
4.0 ±0.1
1.75 ±0.1
7.5 ±0.1
16.0 ±0.3
Φ1.0
8.0 ±0.1
1.7 ±0.1
1.7 ±0.1
(0.2)
0.3 ±0.05
7.2 ±0.1
(4.8)
Unit : mm


φ13±0.2
φ21±0.8
φ80±1or100±1
φ330±2
17.5±1
21.5±1