

CRYSTAL SPECIFICATION

客户 : _____ 华强聚丰 _____

客户料号 : _____

泰晶料号 : _____ CD02K032768ADE _____

产品类别 : _____ TF308-32.768-12.5-20 _____

日期 : _____ 2018.12.28 _____

CUSTOMER'S APPROVAL

(PLEASE RETURN A COPY WITH APPROVAL)

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湖北泰晶电子科技股份有限公司

APPROVED	DESIGNER
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REV.	Description of Revision History		Designer	Checked By
A	New revision	2018年12月28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	-20		70	°C	
Storage Temperature Range	Tstg	-40		85	°C	
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°C
Stability Over Temperature	dF/F25		-0.034		ppm/°C 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°C Frequency

[3]Electrical Performance:

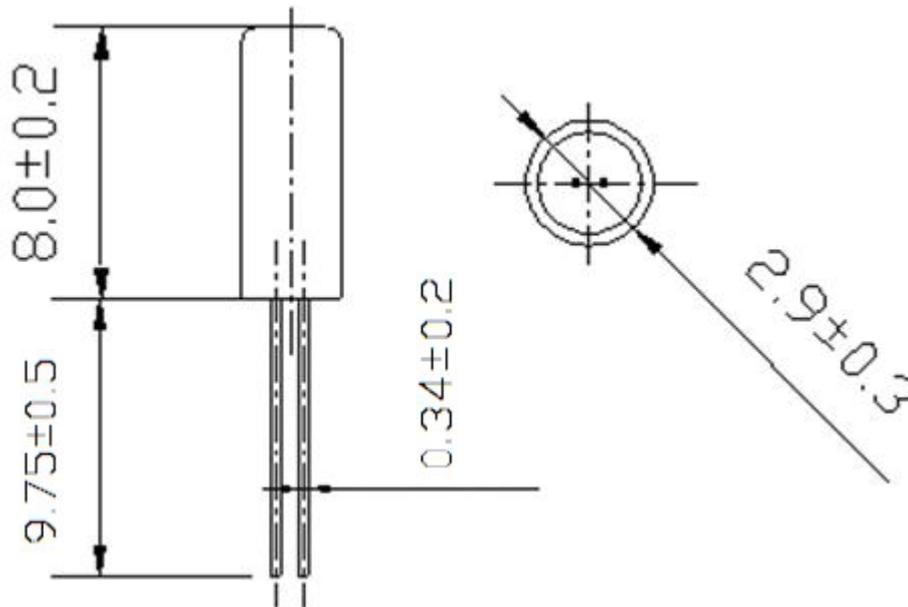
Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Equivalent Series Resistance	ESR			30	KΩ	@Series
Shunt Capacitance	C0		1.8	3	pF	
Insulation Resistance	IR	500			MΩ	@DC 100 Volt

7. Marking:Laser

Marking Generally for empty. Refer to with Customer's requirement.



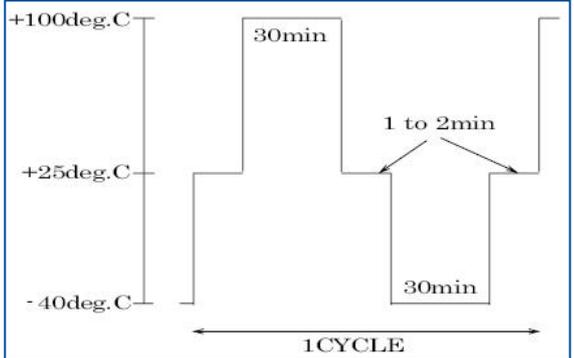
8. Outline drawing (unit: mm)



8.1 Attention

8.2 Not recommended reflow furnace welding, If it is to be used, the maximum temperature shall not exceed 230°C .

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:±5ppm Max. Resistance Change: 5kohm Max.
Shock	3 Times free drop from 75cm height to hard wooden board of thickness more than 30mm	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.
Hermetic seal	Helium leak detector Checked:before the molded crystal units	less than 1×10^{-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 $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$	The dipped surface of the leads should be at least 95% covered with continuous new solder coating
High temperature	96 hours at $+100^{\circ}\text{C} \pm 2^{\circ}\text{C}$ After 1-2hours past at room temperature from following	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.
Low temperature	72 hours at $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ After 1-2hours past at room temperature from following test.	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.
Humidity	96 hours at $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$,relative humidity 90-95% After 1-2hours past at room temperature from following	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.
Temperature cycle	After supplying the following temperature cycle (50cycles) 	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.x.
salt spray test	On the basis of GB/T10125-1997	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.
Lead strength	In the lead 2.00 Kg tensile force was applied at the end to keep more than 5 seconds	Frequency Change:±5ppm Max. Resistance Change: 5kohm Max.

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

Standard type crystal products use Material have a 230°C melting point.

Heating up the package more than 230°C may deteriorate the characteristics or cause of no oscillation the products. If the crystal products need to be soldered at temperature of more than +230°C, please study heat-resistance products or SMD products.

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

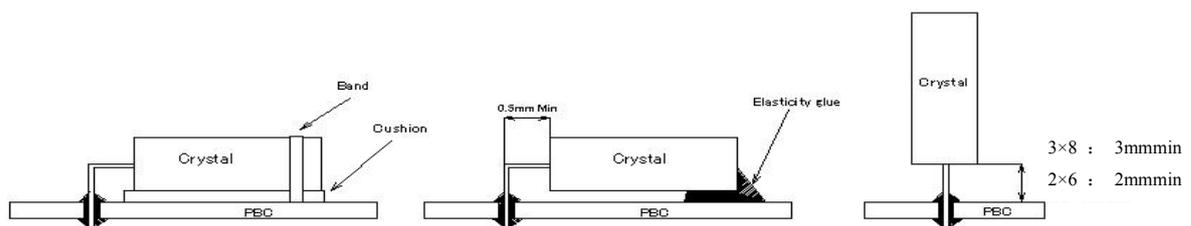
Our soldering condition is under 280°C within 3sec or 320°C within 2sec for lead parts use the soldering iron . Please don't solder the crystal unit (case) directly. It may cause of deteriorate the characteristics.

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.

When the crystal products need to be mounted vertically, gap between crystal units and PCB more than 3mm for 3×8 type , more than 2mm for 2×6 type is recommended.



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.

Leave more than 0.5 mm of lead from the case.

10.6 Ultrasonic cleaning and ultrasonic soldering

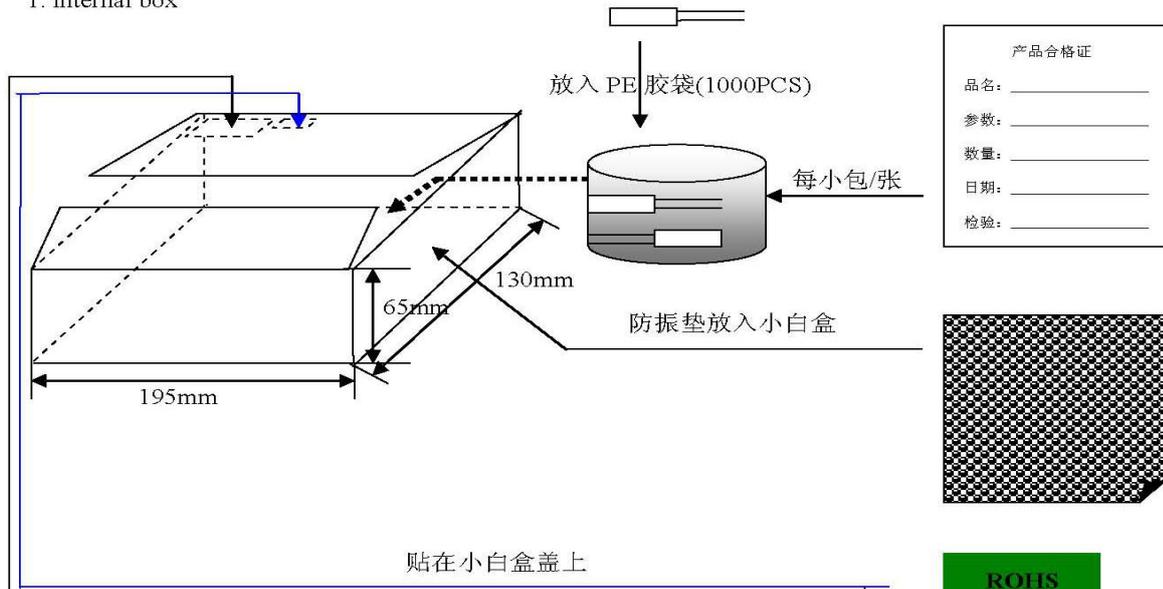
Soldered by ultrasonic cannot be guaranteed, because crystal may be sympathetic vibrated and may damage. Please study at your side about ultrasonic cleaning.

10.7 Drive level

Applying excessive drive level to the crystal units may cause deterioration of characteristics or damage. Less than 1.0μW is recommended to this products. More than 2.0μW cannot be guaranteed.

11. Packing Description

1. internal box



2. outer box

