



APPROVAL SHEET

Approval Specification	Customer' s Approval Certificate
TO: Part No.: Customer' s Part No.:	Checked & Approved by: Date: Please return this copy as a certification of your approval

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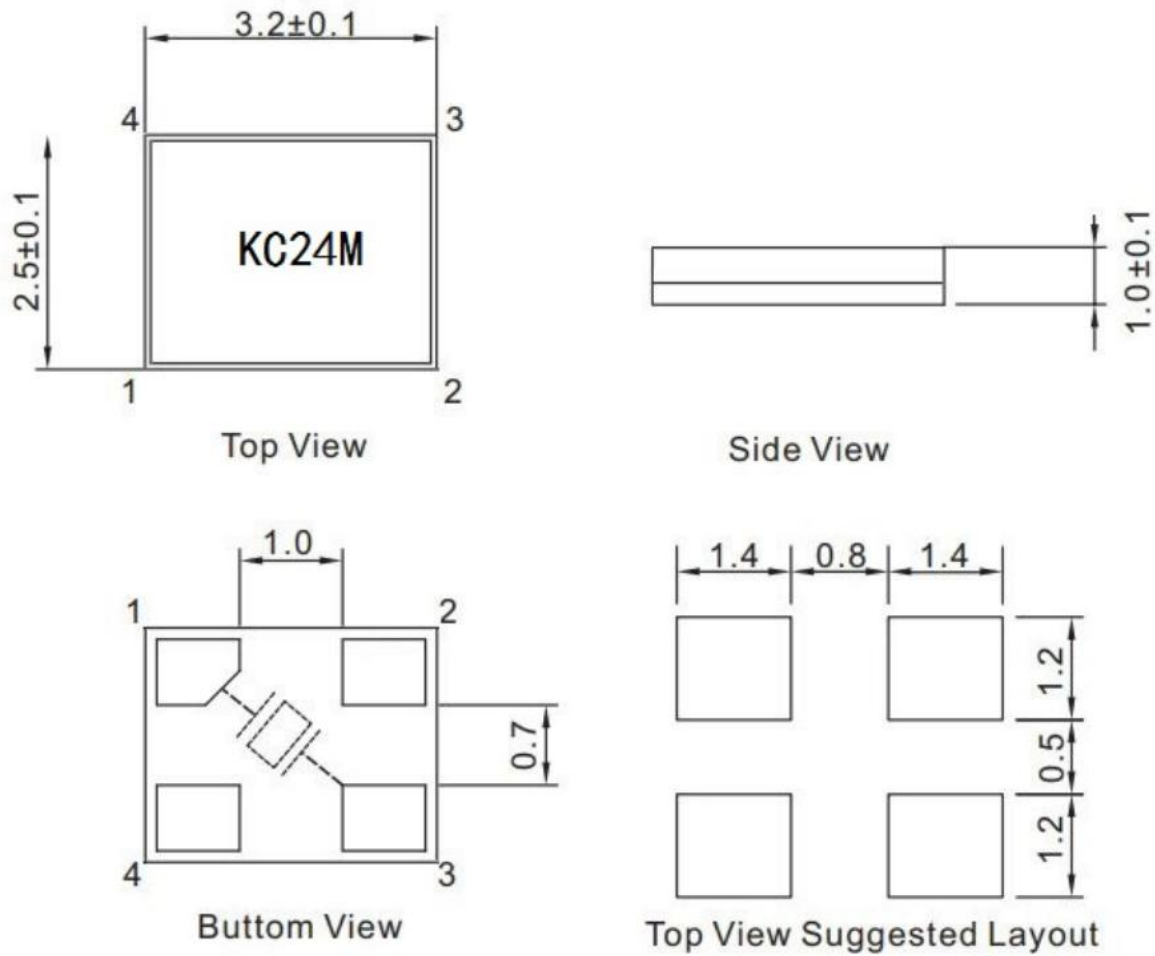
Part No.	:	KC24M
Pages	:	7
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Revision	:	1.0

Repared by:	<i>liule</i>
Checked by:	<i>liule</i>
Approved by:	<i>liule</i>

History Record

Date	Part No.	Version No.	Modify Content	Remark

1. Product outline dimension (mm)



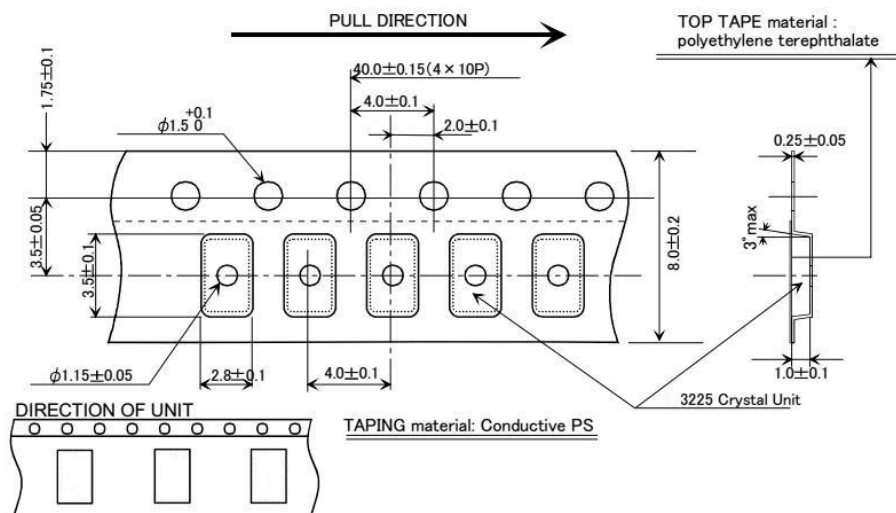
2. General characteristics

Nominal frequency	24.000000 MHz
Overtone order	Fundamental
Type	MEMS3225
Operating temperature	-20~70 °C
Storage temperature	-40~85 °C

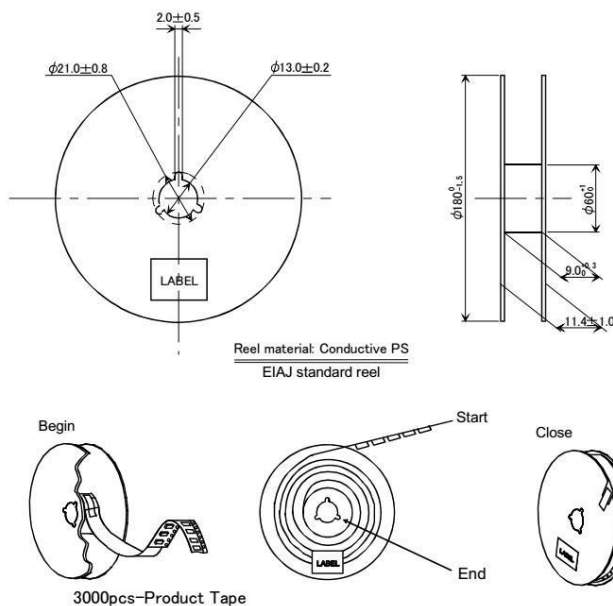
3. Electric characteristics

Adjustment tolerance: (at +25°C)	±10 ppm
Load capacitance	12.0 pF
Drive level	100.0 μW
Equivalent resistance	60.0Ω Max
Shut capacitance	3.0pF Max
Aging	±3ppm/Year

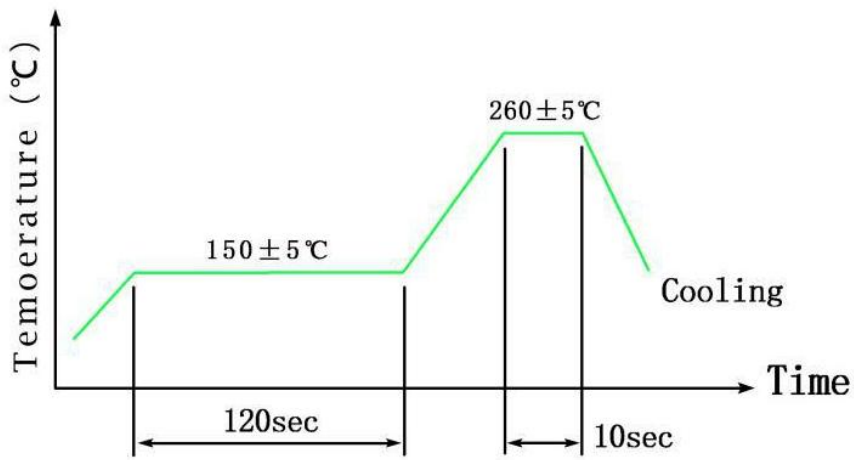
4. Carrier Dimensional Drawing (mm)



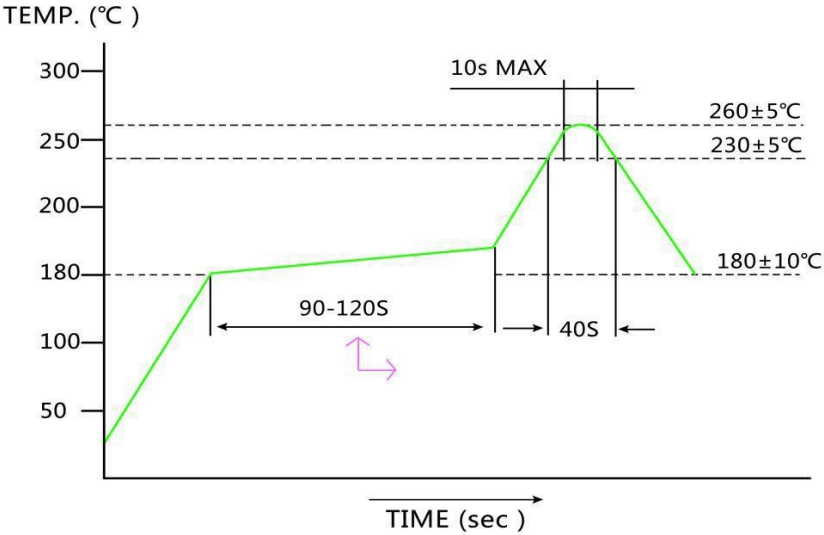
5. Reel Dimensional Drawing (mm)



6.Product reliability

Item	Condition	Result
1	Cold resistance Stored at $-40\pm 2^{\circ}\text{C}$ for 1000 ± 2 hrs then $25\pm 2^{\circ}\text{C}$ 1~2 hrs before testing	(I)
2	Heat resistance Stored at $85\pm 2^{\circ}\text{C}$ for 1000 ± 2 hrs then $25\pm 2^{\circ}\text{C}$ 1~2 hrs before testing	(I)
3	Salt Mist Test Spray the $35^{\circ}\text{C}\pm 2^{\circ}\text{C}$ salt water (salt density 5%) to crystal for 48 ± 2 hrs,then clean by water	(I)
4	Humidity Resistance Result Steady temperature: $60\pm 2^{\circ}\text{C}$;humidity: 90 ~ 95 % RH; time:500h	(I)
5	Mechanical Shock 14700m/S2 0.5sec 5times in each of 6 direction	(I)
6	Aging Stored at $85\pm 3^{\circ}\text{C}$ for 720 ± 12 Hrs then $25\pm 2^{\circ}\text{C}$ 1~2 Hrs before testing Stored at $25\pm 2^{\circ}\text{C}$ for 1 ± 0.03 year	(I)
7	Leakage Fine leak: Helium leak test *JIS C 6701 10.6	(V)
8	Temperature Cycle -40°C ~ 85°C , Dewell 30Min , 100 cycles 	(I)

7.Mechanism characteristics

1	Drop Test Device are dropped from a height of 100 cm onto 20mm thickness stainless plate executing 3 times of random drops	(I)
2	Resistance of Vibration Frequency : 10~55Hz , amplitude(total excursion) : 1.5mm ± 15%,3 direction (X,Y,Z) each 2 hr	(I)
3	Resistance to soldering heat (Hand soldering method) Temperature : 370~400°C ; Time : 3~4sec ; Frequency : 2 times ; Soldering iron : 60W/Min	(I)
4	Solderability 240±2°C , 3±0.5sec	(II)
5	Reflow)Resistance to soldering heat(Reflow) 260± 5°C ;10S ;2Times Reflow 	(I)

Item Result NO. Specification Requirements

1. Frequency variation $< \pm 10\text{ppm}$; Resistance variation $< 5\Omega$ or 15% of RR spec. ; select the bigger value.
2. The covering rate of Tin-plating is more than 95%.
3. There is no bubbles after the Crystal is dipped in the water Insulation Resistance: 500 M Ω Min 100VDC/ $\pm 15\text{VDC}$.
4. The Crystal is no crackle under the observation of 10 times Magnifier.
5. $1 \times 10^{-9}\text{Pa}\cdot\text{m}^3/\text{s}$ Max

NOTES

1. As a result of the particularity of inner structure of Crystal products, it easy to be breakdown by electrostatic, so we should pay attention to **ESD protect** in the test.
2. **Static voltage** between signal load and ground may cause deterioration and destruction of the component. Please avoid static voltage.
3. **Ultrasonic cleaning** may cause deterioration and destruction of the component. Please avoid ultrasonic cleaning.
4. Only leads of component may **be soldered**. Please avoid soldering another part of component.
5. There is a close relationship between the device's performance and **matching network**. The specifications of this device are based on the test circuit shown above. L and C values may change depending on board layout. Values shown are intended as a guide only.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Kaituo Crystal\(开拓晶体\)](#)