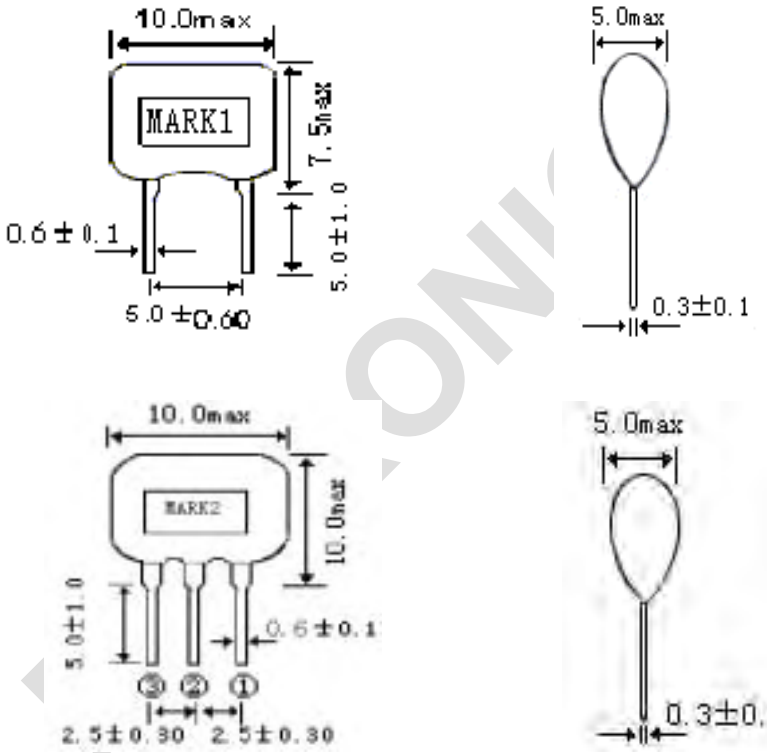
1. **SCOPE**

This specification is applied to the ceramics resonator used for the clock Oscillation of Microprocessor.

2. **MODEL NAME**

Part Name	Customer′ s Part number	Drawing No.
ZTA13.00--19.99MX		
ZTT13.00--19.99MX		

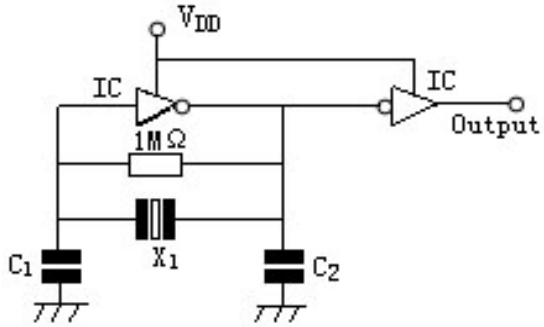
3. **DIMENSIONS**

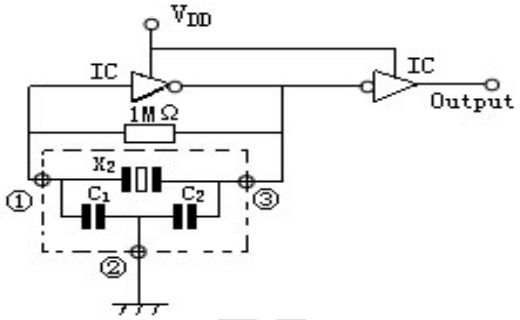


MARK 1：ZTA13.00--19.99MX MARK 2：ZTT13.00--19.99MX

4. TEST CIRCUIT

Parts shall be measured under a condition（Temp.:3～35℃.Hum.:45～85％）unless any Necessity to measure under a standard condition （Temp.:20±2℃.Humi.:65±5％）is occurred.





X1：ZTA13.00--19.99MX X2：ZTT13.00--19.99MX
C1=C2=30PF
IC: 1/674HCU04
VDD=+5V

5. ELECTRICAL CHARACTERISTICS

	Item	Requirements
5-1	Frequency Accuracy	13.00--19.99M±0.5%
5-2	Resonant Impedance	30Ω max
5-3	Operating Temperature Range Storage Temperature Range	-20 to +80 -30 to +85
5-4	Stability Temperature	±0.3% max.（－20－+80℃）
5-5	Withstanding Voltage	DC 100V.（less than 5 sec）
5-6	Insulation Resistance	100 MΩ min （DC 10V）
5-7	Aging for 10 Years	±0.5±％ max

6.PHYSICAL AND ENVIRONMENTAL CHARCTERISTICS

	Test Item	Condition of Test	Requirements
6-1	Lead strength Lead Bending	Force of 1 Kg is applied for 10 second to each lead in axial direction. Firmed the terminal up to 2mm. Resonator lead shall be subjected to withstand against 90° bending its stem. His operation shall be done toward both directions.	No mechanical damage and the measured values shall meet Item 5.
6-2	Solder ability	The terminals of the Resonator shall be immersion in a soldering bath（230±5℃）for 3±0.5sec.（refer to Mil-STD-202E-208C）	The solder shall for coat at least 95% of the terminal.
6-3	Vibration	Resonator shall be measured after being Applied vibration as below. Vibration Freq: 10-55Hz Amplitude: 1.5mm Directions: 3axial directions Time: 2hour/each direction	The measured values Shall meet table l
6-4	Random Drop	Resonator shall be measured after 3 times Random dropping from the height of 1m. Concrete floor	
6-5	Resistance to Soldering Heat	Dipped in （350±10℃）measured solder to a point 1.5mm from Resonator body for 3±0.5 sec or dipped in（260±5℃）melted solder for 10±1 sec. Resonator shall be measured after being placed in natural condition for 1 hour.	

6. PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS

	Test Item	Condition of Test	Requirements
6-6	Humidity	After being placed in a chamber (Humi: 90-95%RH Temp:40±2℃) for 96 hours Resonator shall be measured after placed in natural condition for 1 hour.	The measured values Shall meet table l
6-7	Life Test (High temperature)	After being placed in a chamber 85±2℃ for 96 hours, Resonator shall be measured after being placed in natural condition for 1 hour.	
6-8	Life Test（Low temperature）	Stored in a chamber（Temp:-20±2℃）for 1000 hours, Resonator shall be measured after being placed in natural condition for 1 hour.	
6-9	Thermal shock	After temperature cycling of -20℃（30min）to +80℃（30min）was performed 5 times the Resonator shall be measured after being placed in natural condition for 1 hour.	

Table 1

Item	Limit Value
Frequency shift	F/FO≤±0.3%
Resonant Impedance	Zr≤5Ω

Note: The limits in the above table are referenced to the initial Measurements.

7. NOTICE

7.1 Ceramic Resonator should be stored in storeroom. And the surrounding atmosphere is acid less, alkali-free and no other harmful impurity.

7.2 The package for ceramic damage.

7.3 This specification limits the quality of the component as a single unit. Please make sure that the component is evaluated and confirmed the drawing When it is mounted to your product.