CHEQUERS ELECTRONIC (CHINA) LIMITED

捷 嘉 電 子 (中 國) 有 限 公 司

SURFACE-MOUNT (SMD)
CERAMIC RESONATOR SPECIFICATION

PART NO.: ZTTCV8.00MT

Part no.	:	ZTTCV8.00MT
Printed on	:	15-Sep-05
Prepared	:	Eugenia
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1. Scope

This specification shall cover the characteristics of the ceramic resonator with ZTTCV8.00MT for clock oscillation circuit such as microprocessors.

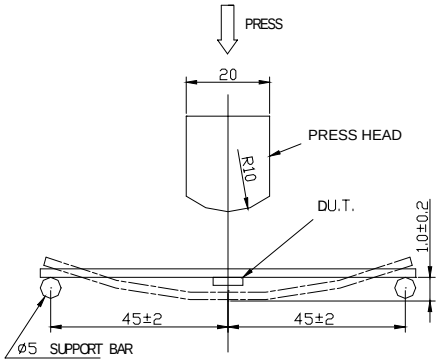
2. Specification no.: CQ2.882.800

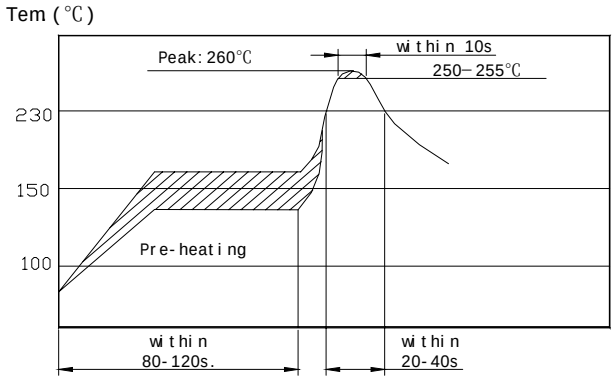
3. Part no.: ZTTCV8.00MT

4. Electrical specification

4-1	Nominal oscillating frequency	8.00MHz
4-2	Initial tolerance	±0.50% Max.
4-3	Resonant resistance	25Ω Max.
4-4	Insulation resistance	5 x 10^8Ω Min. (at 10V DC)
4-5	Withstanding voltage	DC 50V Max. (1 minute)
4-6	Rating voltage - DC voltage - AC voltage	 6V DC 15V p-p
4-7	Temperature stability (-20°C to +80°C) Operating temperature Storage temperature	±0.3% Max. (from initial value) -20°C to +80°C -55°C to +85°C
4-8	Aging (for 10 years)	±0.3% Max. (from initial value)

5. Physical characteristics

	Test item	Condition of test	Performance requirement
5-1	Random drop	Resonator shall be measured after 3 random drops from the height of 1.0m on wooden floor.	No visible damage and the measured values shall meet Table 1.
5-2	Vibration	Resonator shall be measured after being applied with vibration (amplitude: 1.5mm, frequency: 10Hz to 55Hz) to each of the 3 perpendicular directions i.e. X, Y and Z for 2 hours.	The measured values shall meet Table 1.
5-3	PCB bending strength	With a glass-epoxy board (width=40mm, thickness=1.6mm. Then the board is bent to 1.0mm displacement and kept in this condition for 5 seconds (see below for details). 	No visible damage and the measured values shall meet Table 1.

	Test item	Condition of test	Performance requirement
5-4	Soldering heat resistance	**Temperature profile of reflow soldering** The resonator shall be measured after being placed in room temperature for 1 hour.  	The measured values shall meet Table 1.
5-5	Soldering test	Passed through the reflow oven under the following condition and left at room temperature for 1 hour before measurement.	
		Surface temperature of the substrate: Duration	
		Preheat: 150°C±5°C: 60secs ± 10secs	
		Peak: 260°C±5°C: 5secs ± 3secs	
5-6	Solderability	Dipped in 235°C±5°C solder bath for 3secs ± 0.5secs with rosin flux (25wt% ethanol solution).	Terminals should be at least 95% covered by solder.

6. Environmental characteristics

	Test item	Condition of test	Performance requirement
6-1	High temperature	After being placed in a chamber (+80°C±2°C) for 96 hours ± 4 hours, the resonator is measured after being placed in room temperature for 1 hour.	The measured values shall meet Table 1.
6-2	Low temperature	After being placed in a chamber (-20°C±2°C) for 96 hours ± 4 hours, the resonator is measured after being placed in room temperature for 1 hour.	The measured values shall meet Table 1.
6-3	Humidity	After being placed in a chamber with a humidity of 90% to 95% RH and a temperature of +40°C±2°C for 96 hours ± 4 hours, the resonator is measured after being placed in room temperature for 1 hour.	The measured values shall meet Table 1.
6-4	Heat shock	After being kept at room temperature, resonator shall be placed at a temperature of –40°C. After 30 minutes at this temperature, the resonator is placed at a temperature of 85°C. After another 30 minutes at this temperature, the resonator is placed under -30°C again. The above processes are counted as 1 cycle. There is a transfer time of 15 seconds between different temperatures. After 5 cycles, the resonator shall be measured after being placed in room temperature for 1 hour.	The measured values shall meet Table 1.

Table 1

Measurements	Requirements
Oscillating frequency change	$\Delta F/Fosc \leq 0.3\%$ Max.
Resonant resistance	Within $\pm 10\Omega$

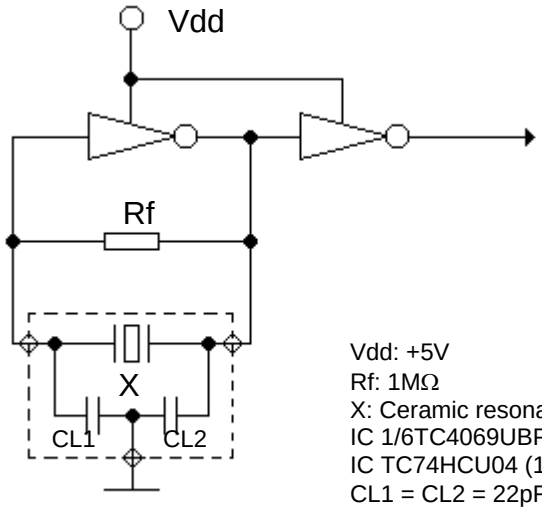
7. Test circuit

7-1 Oscillating frequency : See Figure 2. Please note that the ZTTCV Series can oscillate normally even terminal (1) and (3) is connected reversibly but this might cause a little frequency lag.

7-2 Equivalent circuit constants : Network Analyzer HP8751A or equivalent

7-3 Measuring condition : Temperature: +5°C to +35°C
Humidity: 45% to 85% RH

If require : Temperature: +25°C ± 3°C
Humidity: 60% ± 10% RH

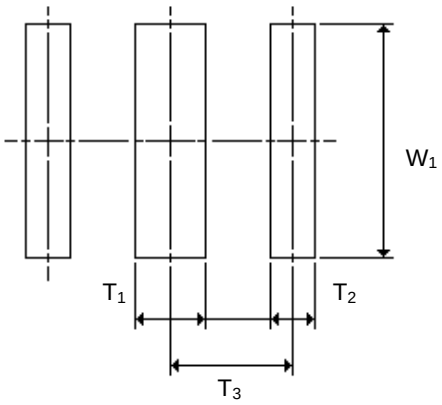


Vdd: +5V
Rf: 1MΩ
X: Ceramic resonator
IC 1/6TC4069UBP X 2 (8.00MHz~12.99MHz)
IC TC74HCU04 (13.00MHz~50.00MHz)
CL1 = CL2 = 22pF±20%

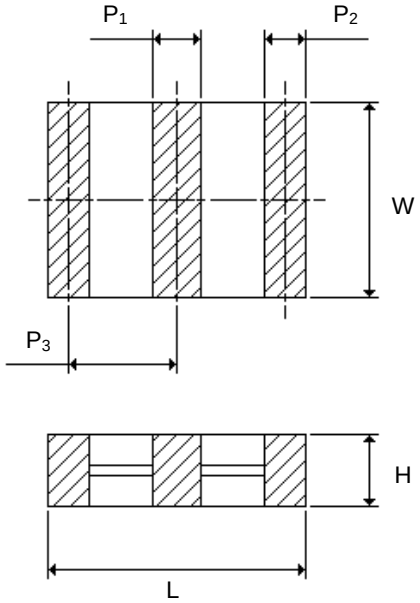
8. Dimensions and recommended soldering pattern

8-1 Recommended soldering pattern

Type \ Code	Dimensions (mm)			
	T_1	T_2	T_2	W_1
ZTTCS (MT/MX)	1.3±0.3	0.8±0.2	1.95±0.2	5.1±0.2
ZTTCV (MT/MX)	1.0±0.2	0.7±0.2	1.5±0.2	4.1±0.2



8-2 Dimensions



Type \ Code	Dimensions (mm)					
	L	W	H	P_1	P_2	P_3
ZTTCS (MT/MX)	4.7±0.2	4.1±0.2	1.6±0.3	1.0±0.4	0.8±0.4	1.85±0.2
ZTTCV (MT/MX)	3.7±0.2	3.1±0.2	1.2±0.3	0.9±0.3	0.7±0.3	1.5±0.2

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