

**R E L M**

# SHOULDER

## SPECIFICATION

<b>Item:</b>	Ceramic Resonator
<b>Type:</b>	ZTH

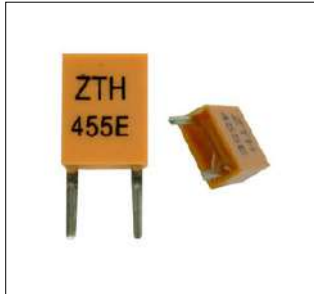




## ZTH Ceramic Resonator

### Scope

This specification shall cover the characteristics of the ceramic resonator with 190 to 1250 KHz for the clock oscillation.



The ZTH ceramic resonator is the miniature low profile frequency control products of low frequency 190 to 1250 KHz. It is of very competitive price than quartz crystal parts and of high stability that make of substitute the quartz crystal when need lower price.

Electrical Specification		
Resonant Frequency	190 to 1250 KHz	
Resonant Impedance (Ro)	190 to 699	20 Ω Máx
	700 to 1250	50 Ω Máx
Frequency Tolerance (at 25°C)	190 to 249	± 1 KHz
	250 to 374	± 1 KHz
	375 to 400	± 2 KHz
	401 to 509	± 2 KHz
	510 to 699	± 2 KHz
	700 to 1250	± 0.5 %
Temperature Coefficient of Oscillation Frequency	±0,3% Maximum (-20°C to +80°C)	
With Voltage	D.C. Voltage	50V DC
	AC Voltage	15Vpp
Insulation Resistance	100 MΩ minimum (at 100V DC)	
Operating Temperature Range	-20°C to +80°C	
Storage Temperature Range	-20°C to +80°C	
Aging Rate (F <sub>osc</sub> ) (at 25°C)	±0,3% Maximum (10 year)	



**ZTH Ceramic Resonator**

Mechanical Dimensions (All in mm) ZTH					
Frequency Range (KHz)	W Width	T Thickness	H Height	L Lead Length	S Lead Space
190 to 249	13.5	3.8	14.7	8.0	10.0
250 to 374	11.0	3.8	12.2	5.0	7.7
375 to 400	7.9	3.6	9.3	7.0	5.0
401 to 509	7.0	3.5	9.0	4.0	5.0
510 to 699	7.0	3.5	9.0	4.0	5.0
700 to 1250	5.2	2.8	6.8	3.5	2.5

Physical and Environmental Characteristics		
	Conditions	Results
Humidity		
	Keep the resonator at 40±2°C and 90 to 95% RH for 96 hours. Then release the resonator into the room condition for 1 hour prior to the measurement	It shall fulfill the specifications in Table-1
Temperature Cycling		
	Subject the resonator to -20±5°C for 30 min. followed by a high temperature of 80°C for 30 min. Cycling shall be repeated 5 times with a transfer time of 15 min. at the room condition. Then release the resonator into the room temperature for 1 hour prior to the measurement.	It shall fulfill the specifications in Table-1
Vibration		
	Subject the resonator to vibration for 2 hours each in x, y and z axis with the amplitude of 1.5mm, the frequency shall be varied uniformly between the limits of 10 to 55Hz.	It shall fulfill the specifications in Table-1
Mechanical Shock		
	Drop the resonator randomly onto a concrete floor from the height of 70cm, 3 times	It shall fulfill the specifications in Table-1
Resistance to Solder Heat		
	Dip the resonator terminals no closer than 2mm into the solder bath at 260±10°C for 3±0.5sec.	It shall fulfill the specifications in Table-1
Solderability		
	Dip the resonator terminals no closer than 2mm into the solder bath at 235±5°C for 3±0.5sec.	More than 95% of the terminal surface of the resonator shall be covered with fresh solder
Lead Fatigue		
Pulling Test	Weight along with the direction of terminals without any shock 1kg for 10sec.	The resonator shall show no evidence of damage and shall fulfill all the initial electric characteristics.
Bending Test	Lead shall be subject to withstand against 90 degree bending at its stem. This operation shall be done towards both direction.	

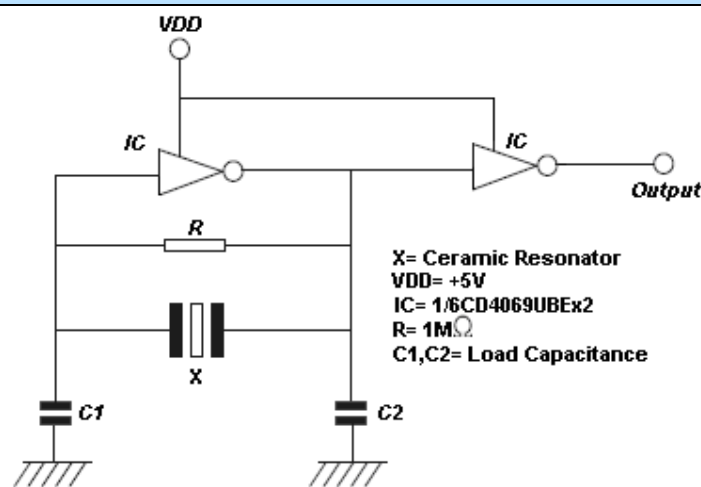


**ZTH Ceramic Resonator**

Table-1	
Item	Specification
Oscillation Frequency Change	$\Delta F/F_{osc} \leq 0.5\%$

Measurement	
Measurement Condition	The reference temperature shall be $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ . The measurement shall be performed at the temperature range of $5^{\circ}\text{C}$ to $35^{\circ}\text{C}$ unless otherwise the result is doubtful.
Measurement Circuit and Equipment	Oscillating frequency shall be measured by the standard test circuit as shown in Fig 1.

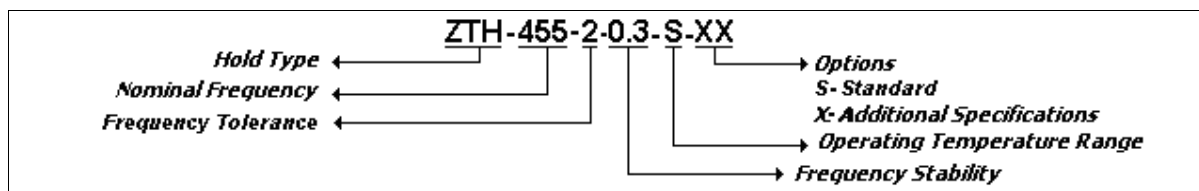
**Test Circuit ( Fig 1)**



X= Ceramic Resonator  
 VDD= +5V  
 IC= 1/6CD4069UBEx2  
 R= 1M $\Omega$   
 C1,C2= Load Capacitance

Frequency Range (MHz)	Load Capacitance (pF)	
	C1	C2
ZTH 190 to 249	330	470
ZTH 250 to 374	220	470
ZTH 375 to 400	120	470
ZTH 401 to 509	100	100
ZTH 510 to 699	100	100
ZTH 700 to 1250	100	100

**Through Hole ZTH Ceramic Resonator Part Numbering System (Example)**





**ZTH Ceramic Resonator**

ZTH	455	2	0.3	S	S
↕	↕	↕	↕	↕	↕
Type	Nominal Frequency (in KHz)	Frequency Tolerance	Frequency Stability	Operating Temperature Range	Option (can be blank)
ZTH	Enter the nominal frequency (3 digits after dot) or up to last significant digit (different than zero)	1= ±1KHz 2= ±2KHz 0.5= 0.5%	0.3= 0.3%	S= Standard	S = Standard X = Additional Specifications

- \* **Operating Temperature Range: -20 to 80°C (Standard)**
- \* **Specific Operating Temperature Range under request.**