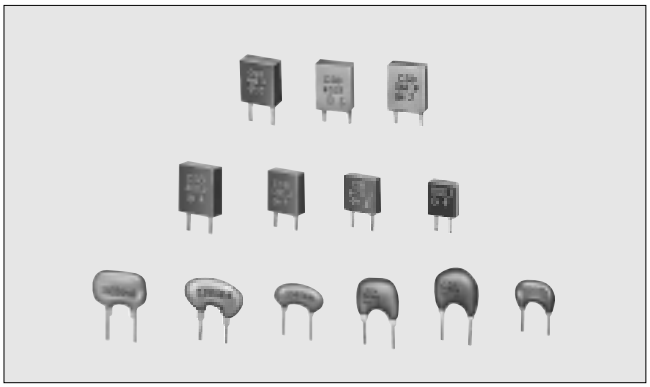
CERAMIC RESONATOR

Ceramic Resonator **CSA/CSB** Series

CERALOCK® with two leaded terminals.



The CSA and CSB series ceramic resonator owe their development to MURATA's innovative expert technologies and the application of mass production techniques typically utilized in the manufacture of piezoelectric ceramic components. Because of their high mechanical Q and consistent high quality, both the CSA and CSB series are ideally suited to microprocessor and remote control unit applications.
The CSB series includes the thin and compact J type which is ideal in high-speed 4-bit microprocessor applications.
In addition, MURATA offers a special CERALOCK® version suitable for automatic insertion utilizing tape and reel and other packaging forms. For further information, please contact your local MURATA representative office or authorized distributor.

■FEATURES

1. The series is stable over a wide temperature range and with respect to long-term aging.
2. The series comprises fixed, tuned, solid-state devices.
3. The resonators are miniature and light weight.
4. They exhibit excellent shock resistance performance.
5. Oscillating circuits requiring no adjustment can be designed by utilizing these resonators in conjunction with transistors or appropriate ICs.

■APPLICATIONS

1. Square-wave and sine-wave oscillator.
2. Clock generator for microprocessors.
3. Tone Dialers and Pulse Dialers for telephone.
4. Remote control systems.
5. Automotive electronics (engine control, digital speed meters, etc.)

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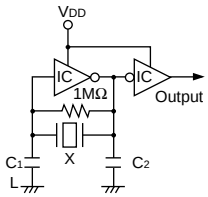
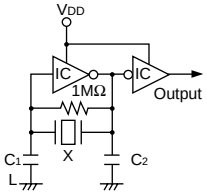
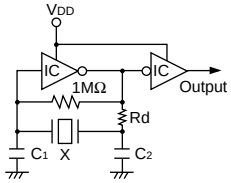
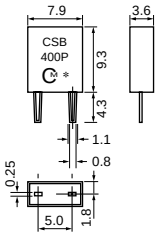
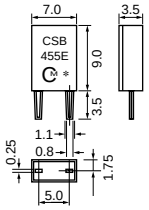
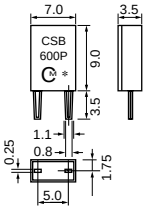
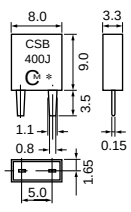
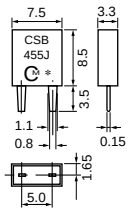
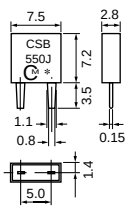
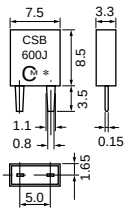
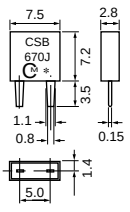
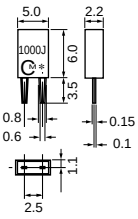
■SPECIFICATIONS

Item \ Type	CSA Series				CSB Series	
	CSA□MK	CSA□MG	CSA□MTZ	CSA□MXZ040	No Washable	Washable*6
Frequency Range	1.26–1.79MHz	1.80–6.30MHz	6.31–13.00MHz	13.01–60.00MHz	375–699kHz	375–1250kHz
Oscillation Frequency Initial Tolerance	±0.5%				±2kHz	±0.5kHz
Oscillation Frequency Temperature Stability*1	±0.3%		±0.5%	±0.3%	±0.3%	
Aging*2	±0.3%		±0.5%	±0.3%	±0.5%	
Oscillation Frequency Measuring Circuit	 IC :1/6CD4069UBEX2 V_{DD} :5V (MTZ series:12V) X :CERALOCK® C_1,C_2 :30pF			 IC :1/6TC74HCU04X2 V_{DD} :5V X :CERALOCK® C_1,C_2 :30pF*5	 IC :1/6CD4069UBEX2 V_{DD} :5V X :CERALOCK® C_1,C_2 :Load Capacitors*3 Rd :5.6kΩ*4	

∗1 At -20 to +80℃
∗2 For 10 years at room temperature.
∗3 Values vary according to frequency. Please contact us for details.
∗4 700–1250kHz (J Type) only.
∗5 For the MXZ040 series, the value changes according to frequency.
∗6 Washing the resonator is allowed. However, temperature, time and other washing conditions should be evaluated to confirm that stable electrical characteristics are maintained.

■DIMENSIONS

Standard Products	Not Washable	Frequency	375–429kHz	430–509kHz	510–699kHz		–
		Part Number	CSB□P	CSB□E	CSB□P		–
		Dimensions (in mm)					
	Washable	Frequency	375–429kHz	430–519kHz	520–589kHz	590–655kHz	656–699kHz	700–1250kHz
		Part Number	CSB□J*	CSB□J*	CSB□J*	CSB□JR*	CSB□J*	CSB□J*
		Ultrasonic Cleaning*	ALLOWED	ALLOWED	ALLOWED	ALLOWED	ALLOWED	ALLOWED
		Dimensions (in mm)						

∗ Please consult MURATA regarding ultrasonic cleaning conditions to avoid possible damage during ultrasonic cleaning.

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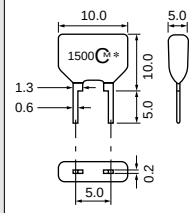
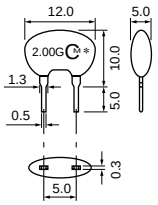
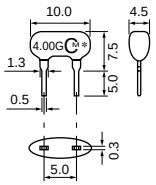
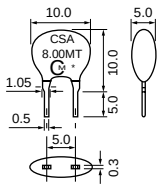
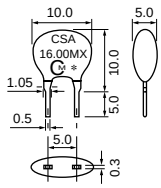
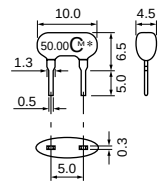
Frequency	1.26–1.79MHz	1.80–2.44MHz	2.45–6.30MHz	6.31–13.00MHz	13.01–32.99MHz	33.00–60.00MHz
Part Number	CSA□MK*	CSA□MG	CSA□MG	CSA□MTZ	CSA□MXZ	CSA□MXZ
Oscillation Mode*	Shear Vibration	Thickness Shear Vibration	Thickness Shear Vibration	Thickness Longitudinal Vibration	Thickness Longitudinal Vibration (3rd OVERTONE)	Thickness Longitudinal Vibration (3rd OVERTONE)
Dimensions (in mm)						

* The CSA□MK type is not washable.

■THE STABILITY OF OSCILLATION FREQUENCY WITH TEMPERATURE VARIATION