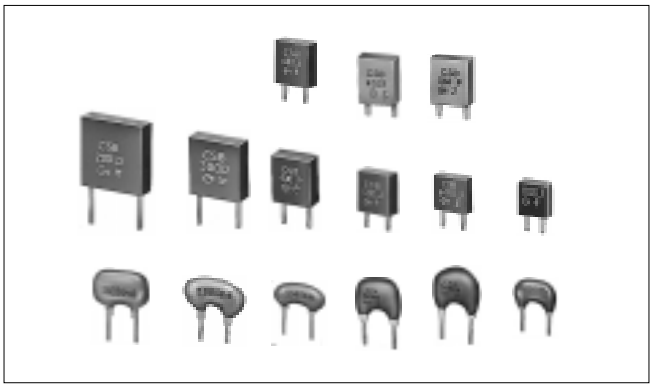
CERAMIC RESONATOR (CERALOCK®)

Ceramic Resonator **CSA/CSB** Series (CERALOCK®)

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 mechnical Q and consistent high quality, both the CSA and CSB series are ideally suited to microprocessor and remote control unit applications.
The CSA series is available in two types: one for MOS technology and the other for LS-TTL technology. 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 utilizzing 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.)

CERAMIC RESONATOR (CERALOCK®)

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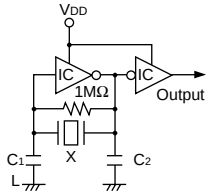
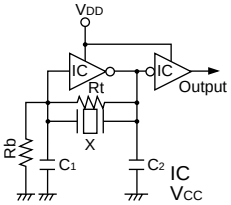
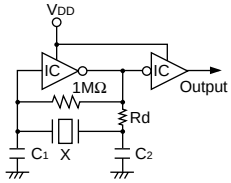
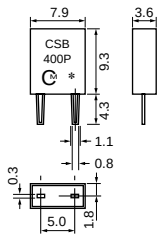
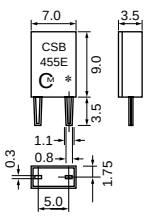
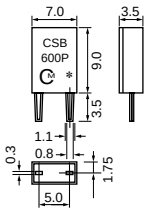
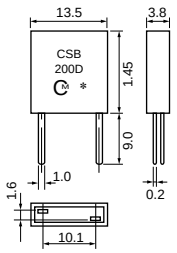
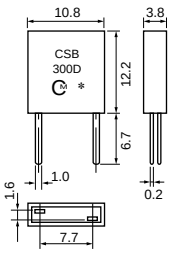
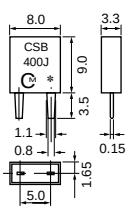
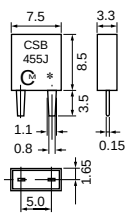
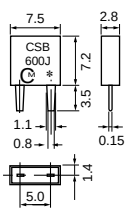
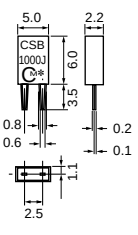
■SPECIFICATIONS

Item \ Type	CSA Series (for MOS)				CSA Series (for LS-TTL)				CSB Series		
	CSA□MK	CSA□MG	CSA□MTZ	CSA□MXZ040	CSA□MK011	CSA□MG011	CSA□MTZ011	CSA□MXZ011	Not Washable	Washable※7	
Frequency Range	1.26—1.79MHz	1.80—6.30MHz	6.31—13.0MHz	13.01—60.0MHz	1.26—1.79MHz	1.80—6.30MHz	6.31—11.9MHz	12.0—30MHz	375—699kHz	190—374kHz	375—1250kHz
Oscillation Frequency Initial Tolerance	±0.5%				±0.5%				±2KHz	±1KHz	±0.5%
Oscillation Frequency Temperature Stability※1	±0.3%		±0.5%	±0.3%	±0.3%		±0.5%	±0.3%	±0.3%		
Aging※2	±0.3%		±0.5%	±0.3%	±0.3%		±0.5%	±0.3%	±0.5%		
Oscillation Frequency Measuring Circuit	 IC :1/6CD4069UBE×2※5 VDD :5V (MTZ Series:12V) X :CERALOCK® C1,C2 :30pF※6				 IC :1/6SN74LS04×2 VCC :5V X :CERALOCK® C1,C2 :Load Capacitors※3 Rt :2.2—4.7Ω Rb :2.2—22kΩ				 IC :1/6CD4069UBE×2 VDD :5V X :CERALOCK® C1,C2 :Load Capacitors※3 Rd :5.6KΩ※4		

※1 At −20˚C to +80˚C
※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 TC74HCU04 is used as the standard circuit for the MXZ040 series. Please contact us for details.
※6 For the MXZ040 series, the value changes according to frequency.
※7 Washing the resonator is allowed. However, temperature, time and other washing conditions should be evaluated to confirm that stable electrical characteristics are maintained.

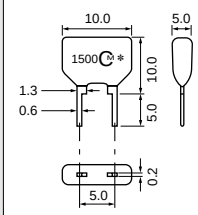
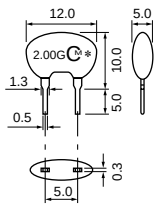
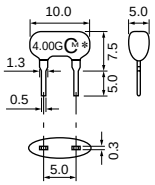
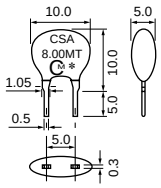
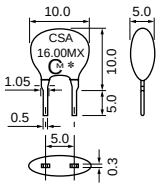
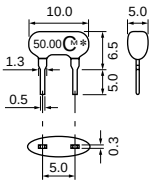
■DIMENSIONS

Standard Products	Not Washable	Frequency	—	—	375—429kHz	430—509kHz	510—699kHz	—
		Part Number	—	—	CSB□P	CSB□E	CSB□P	—
		Dimensions (in mm)						
	Washable	Frequency	190—249kHz	250—374kHz	375—429kHz	430—519kHz	520—699kHz	700—1250kHz
		Part Number	CSB□D	CSB□D	CSB□J※	CSB□J※	CSB□J※	CSB□J※
		Ultrasonic Cleaning※	NOT ALLOWED	NOT ALLOWED	ALLOWED	ALLOWED	ALLOWED	ALLOWED
		Dimensions (in mm)						

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

CERAMIC RESONATOR (CERALOCK®)

Ceramic Resonator CSA/CSB Series (CERALOCK®)

Frequency	1.26—1.79MHz	1.80—2.44MHz	2.45—6.30kHz	6.31—13.00MHz	12.00—32.00kHz	32.01—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