

Ceramic Resonators(CERALOCK®)



Lead Type Two-Terminals CSALA/CSALS Series

"CERALOCK" with two leaded terminals.

The CSALA and CSBLA 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 CSALA and CSBLA series are ideally suited to microprocessor and remote control unit applications. The CSBLA series includes the thin and compact J type which is ideal in high-speed 4-bit microprocessor applications.

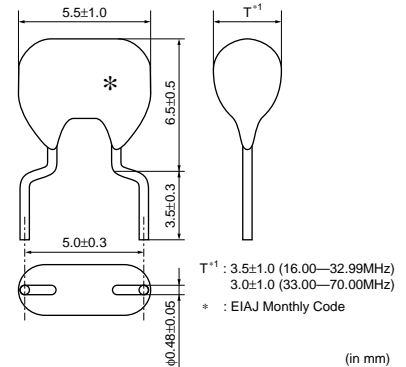
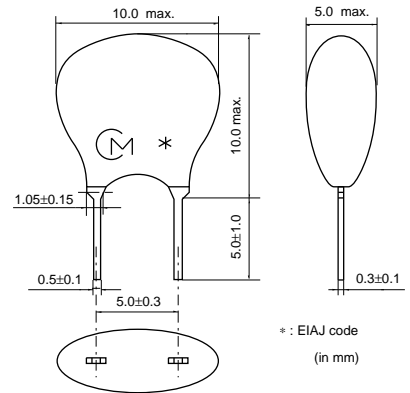
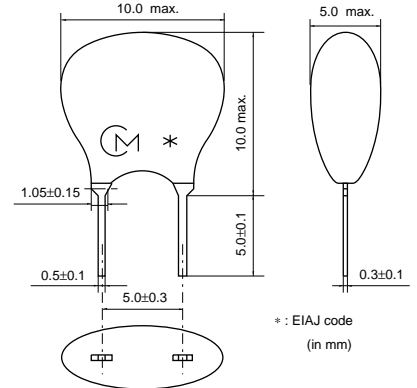
In addition, MURATA offers a special "CERALOCK" version suitable for automatic insertion utilizing tape and reel and other packaging forms. For further information, please contact your local MURATA representative office or authorized distributor.

■ 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

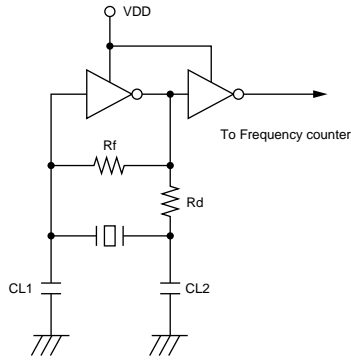
- Square-wave and sine-wave oscillator.
- Clock generator for microprocessors.
- Remote control systems.



Part Number	Oscillating Frequency (MHz)	Initial Tolerance (%)	Temp.Stability (%)	Temperature Range (°C)	Aging (10 years) (%)	Use
CSALA_T	10.01 to 13.00	±0.5	±0.5	-20 to 80	±0.5	-
CSALA_X	13.01 to 15.99	±0.5	±0.3	-20 to 80	±0.3	-
CSALS_X	16.00 to 70.00	±0.5	±0.2	-20 to 80	±0.2	-

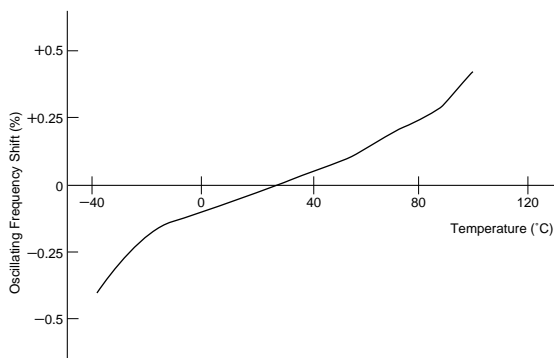
Irregular or stop oscillation may occur under unmatched circuit conditions. Please check the actual conditions prior to use. The order quantity should be an integral multiple of the Minimum Quantity shown in the packaging page.

■ Oscillation Frequency Measuring Circuit

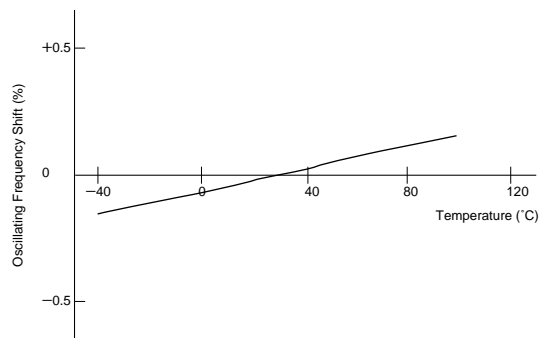


■ Oscillation Frequency Temperature Stability

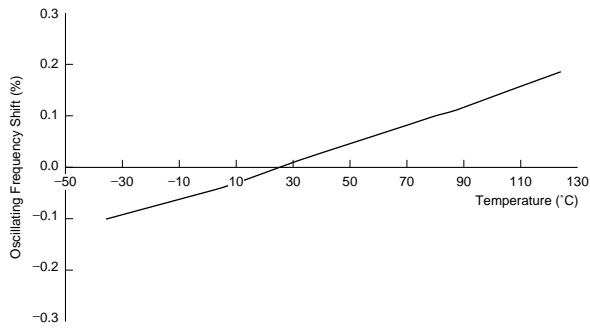
CSALA_T



CSALA_X



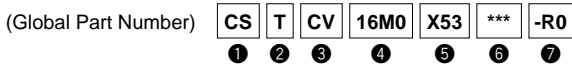
CSALS_X



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● **Part Numbering** (The structure of the "Global Part Numbers" that have been adopted since June 2001 and the meaning of each code are described herein.)
 (If you have any questions about details, inquire at your usual Murata sales office or distributor.)

CERALOCK® (MHz)



① Product ID

Product ID	
CS	Ceramic Resonators

② Frequency/Capacitance

Code	Frequency/Capacitance
A	MHz No capacitance built-in
T	MHz Built-in Capacitance

③ Structure/Size

Code	Structure/Size
LA	Lead Type
LS	Round Lead Type
CC	Cap Chip Type
CR	Small-cap Chip Type
CV	Monolithic Chip Type
CW	Small Monolithic Chip Type

④ Nominal Center Frequency

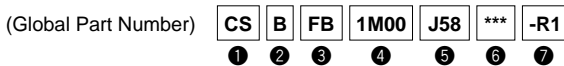
Expressed by four-digit alphanumerics. The unit is in hertz (Hz). A decimal point is expressed by the capital letter "M".

⑤ Design

Code	Design
G□□	Thickness Shear Vibration
T□□	Thickness Longitudinal Vibration
X□□	Thickness Longitudinal Vibration(3rd overtone)

□□ indicates initial frequency tolerance and load capacity.

CERALOCK® (kHz)



① Product ID

Product ID	
CS	Ceramic Resonators

② Frequency/Capacitance

Code	Frequency/Capacitance
B	kHz No capacitance built-in

③ Structure/Size

Code	Structure/Size
LA	Two-Terminal Lead Type
FB	SMD Type

④ Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). If the unit is "kHz", it is expressed by three figures plus "K". If the unit is "MHz", a decimal point is expressed by the capital letter "M".

⑥ Individual Specification

Code	Individual Specification
***	Three-digit alphanumerics express "Individual Specification".

With standard products, "⑥ Individual Specification" is omitted, and "⑦ Package Specification Code" is carried up.

⑦ Packaging

Code	Packaging
-B0	Bulk
-A0	Radial Taping H ₀ =18mm
-A1	Radial Taping H ₀ =16mm
-R0	Plastic Taping ø=180mm
-R1	Plastic Taping ø=330mm

Radial taping is applied to lead type and plastic taping to chip type.

⑤ Design

Code	Design
E□□	Area Shear Vibration
J□□	Area Shear Vibration (Closed Type)

□□ indicates initial frequency tolerance and load capacity.

⑥ Individual Specification

Code	Individual Specification
***	Three-digit alphanumerics express "Individual Specification".

With standard products, "⑥ Individual Specification" is omitted, and "⑦ Package Specification Code" is carried up.

⑦ Packaging

Code	Packaging
-B0	Bulk
-R1	Plastic Taping ø=330mm

MHz Lead type Notice

■ Notice (Soldering and Mounting)

CSTLA_T/CSTLA_X/CSALA_T/CSALA_X

(1)Cleaning Solvent

HCFC, Isopropanol, Tap water, Demineralized water,
Cleanthrough750H, Pine alpha 100S, Techno care FRW

(2)Condition

1. Ultrasonic Wash

1 minute max. in above solvent at +60°C max.

(Frequency:28kHz, Output:20W/L)

2. Immersion Wash

5 minutes max. in above solvent at +60°C max.

3. Shower or Rinse Wash

5 minutes max. in above solvent at +60°C max.

(3)Drying

5 minutes max. by air blow at +80°C max.

(4)Others

1. In case of immersing in cleaning solvent, the temperature of component must be returned to room temperature after soldering
2. Total washing time should be within 10 minutes.
3. Please insure the component is thoroughly evaluated in your application circuit.
4. The component may be damaged if it is washed with chlorine, petroleum or alkali cleaning solvent.

■ Notice (Soldering and Mounting)

CSTLS_G/CSTLS_X/CSALS_X

The component cannot be withstand washing.

■ Notice (Storage and Operating Conditions)

CSTLA_T/CSTLA_X/CSALA_T/CSALA_X

Please do not apply excess mechanical stress to the component and lead terminals at soldering.

Conformal coating of the component is acceptable.

However, the resin material, curing temperature, and other process conditions should be evaluated to confirm stable electrical characteristics are maintained.

■ Notice (Storage and Operating Conditions)

CSTLS_G/CSTLS_X/CSALS_X

Please do not apply excess mechanical stress to the component and lead terminals at soldering.

Conformal coating or washing to the component is not acceptable. Because it is not hermetically sealed.

■ Notice (Rating)

The component may be damaged if excess mechanical stress is applied.

■ Notice (Handling)

"CERLOCK" may stop oscillating or oscillate irregularly under improper circuit conditions.

MHz Lead Type CSALA/CSALS Series Packaging

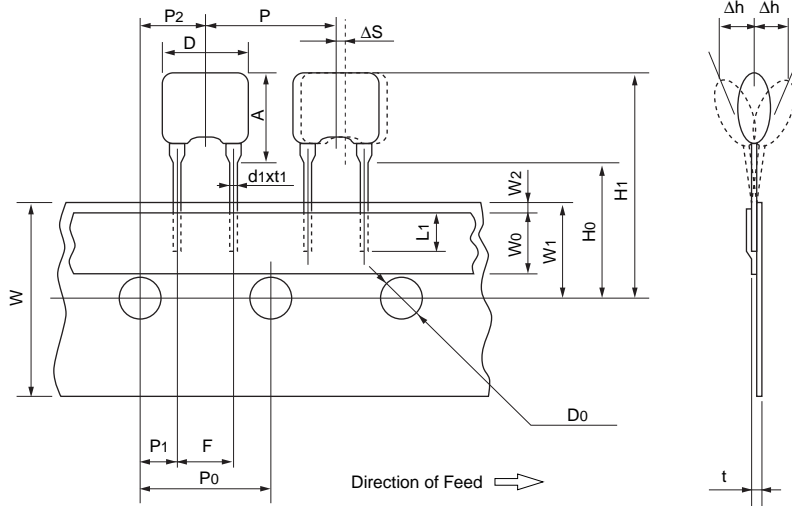
CSALA/CSALS Series Minimum Quantity

Part Number	Ammo Pack	Bulk
CSALA_T (10.01 to 13.00MHz)	1,500	500
CSALA_X (13.01 to 15.99MHz)	1,500	500
CSALS_X (16.00 to 70.00MHz)	2,000	500

The order quantity should be an integral multiple of the "Minimum Quantity" shown above.

(pcs.)

Tape Dimensions of CSALA



Item	Code	Dimensions	Tolerance	Remarks
Width of diameter	D	10.0 max.		
Height of resonator	A	10.0 max.		
Dimensions of terminal	d1 x t1	0.5 x 0.3	±0.1	
Lead length under the hole down tape	L1	3.0 min.		
Pitch of component	P	12.7	±0.5	Tolerance for pitches 10 x P0=127±1
Pitch of sprocket	P0	12.7	±0.2	
Length from hole center to lead	P1	3.85	±0.5	
Length from hole center to component center	P2	6.35	±0.5	
Lead spacing	F	5.0	+0.5 -0.2	
Slant to the forward or backward	Δh	0	±1.0	1mm max.
Width of carrier tape	W	18.0	±0.5	
Width of hold down tape	W0	6.0 min.		Hold down tape does not exceed the carrier tape
Position of sprocket hole	W1	9.0	±0.5	
Gap of hold down tape and carrier tape	W2	0	+0.5 -0	
Distance between the center of sprocket hole and lead stopper	H0	18.0	±0.5	
Total height of resonator	H1	28.5 max.		
Diameter of sprocket hole	D0	ø4.0	±0.2	
Total thickness of tape	t	0.6	±0.2	
Body tilt	DS	0	±1.0	

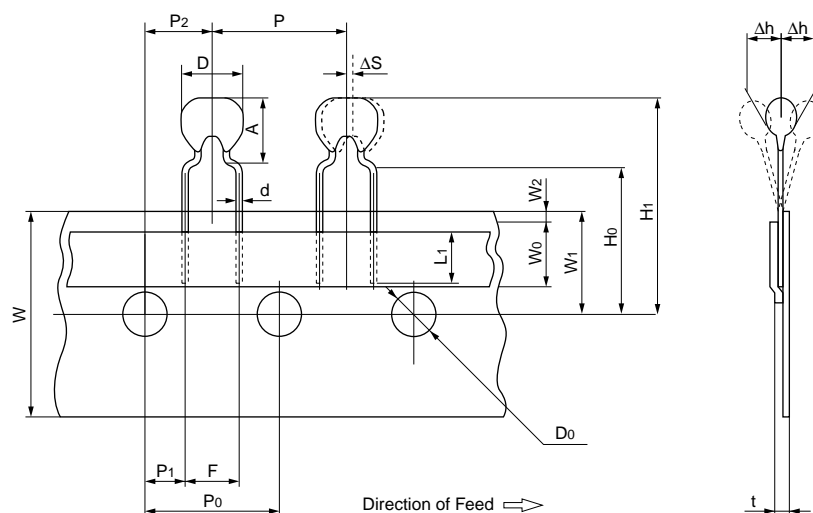
(in mm)

Continued on the following page.

MHz Lead Type CSALA/CSALS Series Packaging

Continued from the preceding page.

■ Tape Dimensions of CSALS



Item	Code	Dimensions	Tolerance	Remarks
Width of diameter	D	5.5	±1.0	
Height of resonator	A	6.5	±0.5	
Dimensions of terminal	d	ø0.48	±0.05	
Lead length under the hold down tape	L1	5.0 min.		
Pitch of component	P	12.7	±0.5	
Pitch of sprocket hole	P0	12.7	±0.2	Tolerance for Pitches 10xP0=127±1
Length from sprocket hole center to lead	P1	3.85	±0.5	
Length from sprocket hole center to component center	P2	6.35	±0.5	
Lead spacing	F	5.0	±0.3	
Slant to the forward or backward	Δh	0	±1.0	1mm max.
Width of carrier tape	W	18.0	±0.5	
Width of hold down tape	W0	6.0 min.		Hold down tape doesn't exceed the carrier tape.
Position of sprocket hole	W1	9.0	±0.5	
Gap of hold down tape and carrier tape	W2	0	+0.5 -0.0	
Distance between the center of sprocket hole and lead stopper	H0	18.0	±0.5	
Total height of resonator	H1	24.5	±1.0	
Diameter of sprocket hole	Do	ø4.0	±0.2	
Total tape thickness	t	0.6	±0.2	
Body tilt	ΔS	0	±1.0	

(in mm)