● Part Numbering

CERALOCK® (MHz)

(Global Part Number) **CS** ❶ **T** ❷ **CV** ❸ **16M0** ❹ **X53** ❺ ******* ❻ **-R0** ❼

❶Product ID

Product ID	
CS	Ceramic Resonators

❷Frequency/Capacitance

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

❸Structure/Size

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

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (MHz). Decimal point is expressed by capital letter "**M**".

❺Design

Code	Design
G□□	Thickness Shear mode
T/V□□	Thickness Expander mode
X□□	Thickness Expander mode (3rd overtone)

□□ indicates initial frequency tolerance and load capacity.

❻Individual Specification

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

With standard products, "❻Individual Specification" is omitted, and "❼Package Specification Code" is carried up.

❼Packaging

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.

CERALOCK® (kHz)

(Global Part Number) **CS** ❶ **B** ❷ **FB** ❸ **1M00** ❹ **J58** ❺ ******* ❻ **-R1** ❼

❶Product ID

Product ID	
CS	Ceramic Resonators

❷Frequency/Capacitance

Code	Frequency/Capacitance
B	kHz No capacitance built-in

❸Structure/Size

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

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Capital letter "**K**" following three figures expresses the unit of "kHz".

❺Design

Code	Design
E□□	Area Expansion mode
J□□	Area Expansion mode (Closed Type)

□□ indicates initial frequency tolerance and load capacitance.

❻Individual Specification

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

With standard products, "❻Individual Specification" is omitted, and "❼Package Specification Code" is carried up.

❼Packaging

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

Ceramic Resonators (CERALOCK®)

Chip Type Two-Terminals CSBFB Series

Can be reflow soldered and mounted by automatic placers. MURATA's original package technologies have enabled the development of the kHz band "CERALOCK". The series is perfect in miniature remote control units and AV modules.

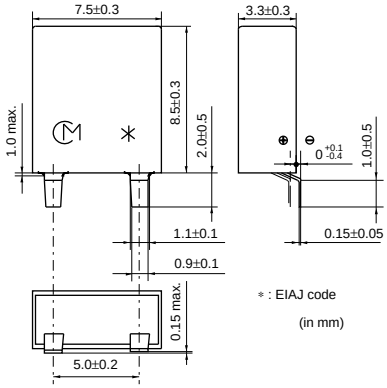
■ Features

1. The series withstands reflow soldering.
2. The series is mountable by automatic placers.
3. No adjustment is necessary for oscillation circuits.

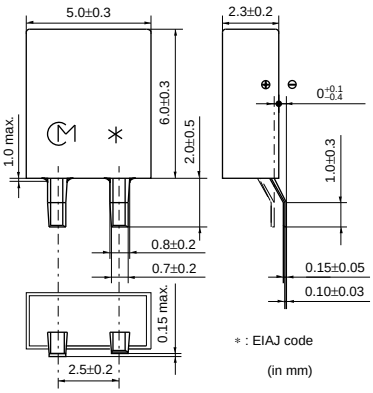
■ Applications

- Clock oscillators for microprocessors.
- OA equipment.
- AV modules.

CSBFB_J
430-519kHz



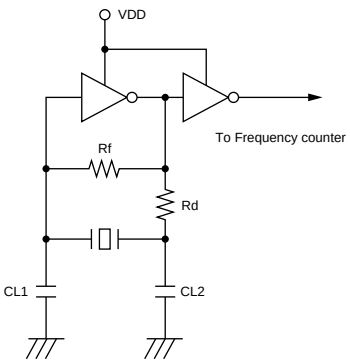
CSBFB_J
700-1250kHz



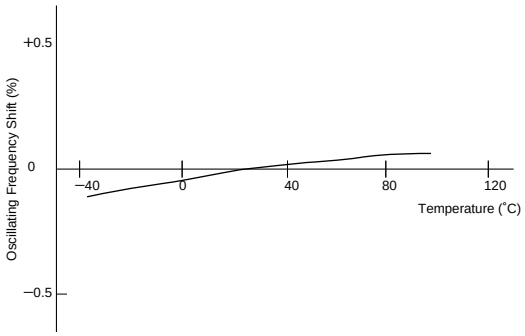
Part Number	Oscillating Frequency (kHz)	Initial Tolerance (%)	Temp.Stability (%)	Temperature Range (°C)	Aging (10 years) (%)	Use
CSBFB_J	430 to 519, 700 to 1250	±0.5	±0.3	-20 to 80	±0.3	-

Irregular or stop oscillation may occur under unmatched circuit conditions. Please check the actual conditions prior to use.

■ Oscillation Frequency Measuring Circuit



■ Oscillation Frequency Temperature Stability



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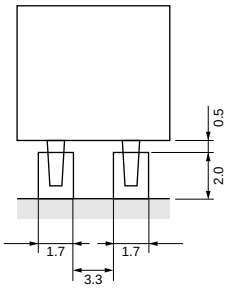
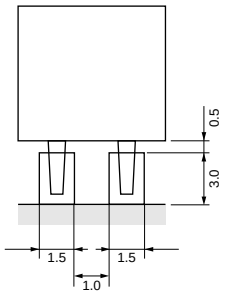
■ Standard Land Pattern Dimensions

CSBFB_J (430-519kHz)



(in mm)

CSBFB_J (700-1250kHz)



(in mm)

5

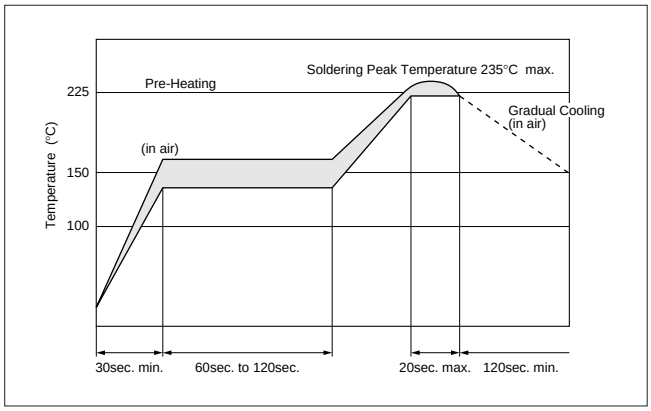
kHz Chip Type CSBFB_J 430-519kHz Notice (Soldering and Mounting)

1. Soldering Condition

(1) Reflow

Right profile of heat stress is applied to resonator, then being place in natural condition for 1 hour, resonator shall be measured.

1. Pre-heating conditions shall be +140 to +160°C for 60 to 120 seconds. Ascending time up to +150°C shall be longer than 30 second.
2. Heating conditions shall be within 20 seconds at +225°C min., but peak temperature shall be lower than +235°C.



(2) Soldering Iron

Soldering iron of +270±5°C shall be placed 0.5mm above from electrode of resonator. Melting solder through soldering iron shall be applied to electrode for 3±1 seconds, then being place in natural condition for 24 hour, resonator shall be measured.

2. Wash

(1) Cleaning Solvent

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

(2) Temperature Difference : dT *1

dT<=60°C (dT=Component-solvent)

*1 ex. In case the component at +90°C immerses into cleaning solvent at +60°C, then dT=30°C.

(3) 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.

(4) Drying

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

(5) Others

1. Total washing time should be within 10 minutes.
2. Please insure the component is thoroughly evaluated in your application circuit.
3. The component may be damaged if it is washed with chlorine, petroleum, or alkali cleaning solvent.

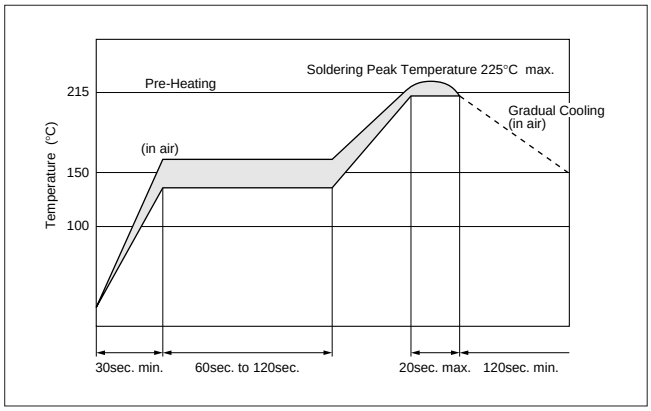
kHz Chip Type CSBFB_J 700-1250kHz Notice (Soldering and Mounting)

1. Soldering Condition

(1) Reflow

Right profile of heat stress is applied to resonator, then being place in natural condition for 1 hour, resonator shall be measured.

1. Pre-heating conditions shall be +140 to +160°C for 60 to 120 seconds. Ascending time up to +150°C shall be longer than 30 second.
2. Heating conditions shall be within 20 seconds at +215°C min., but peak temperature shall be lower than +225°C.



(2) Soldering Iron

Soldering iron of +270±5°C shall be placed 0.5mm above from electrode of resonator. Melting solder through soldering iron shall be applied to electrode for 3±1 seconds, then being place in natural condition for 24 hour, resonator shall be measured.

2. Wash

(1) Cleaning Solvent

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

(2) Temperature Difference : dT *1

dT<=60°C (dT=Component-solvent)

*1 ex. In case the component at +90°C immerses into cleaning solvent at +60°C, then dT=30°C.

(3) 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.

(4) Drying

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

(5) Others

1. Total washing time should be within 10 minutes.
2. Please insure the component is thoroughly evaluated in your application circuit.
3. The component may be damaged if it is washed with chlorine, petroleum, or alkali cleaning solvent.

Ceramic Resonators (CERALOCK®)

Lead Type Two-Terminals CSBLA Series

"CERALOCK" with two leaded terminals.
The 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, the CSBLA series are ideally suited to microprocessor and remote control unit applications.

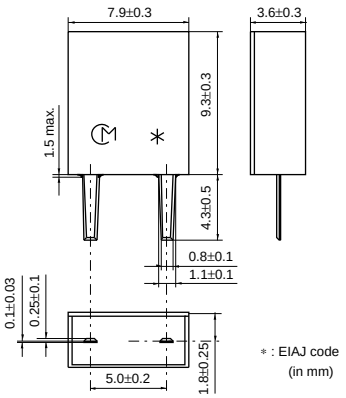
■ Features

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.

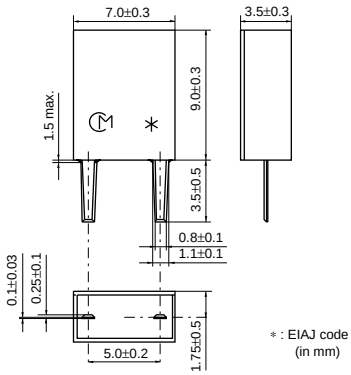
■ Applications

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

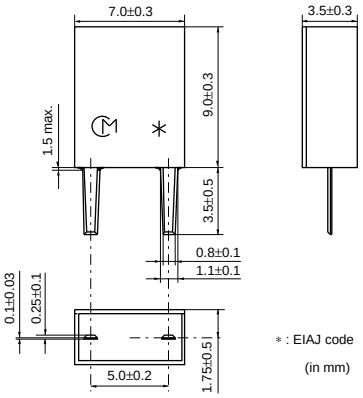
CSBLA_E
375-429kHz



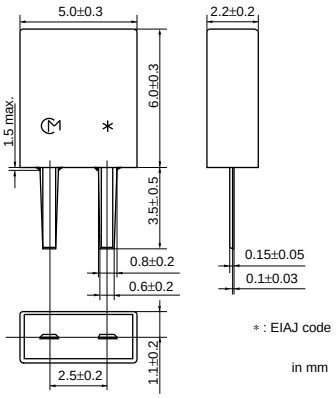
CSBLA_E
430-509kHz



CSBLA_E
510-699kHz



CSBLA_J
700-1250kHz

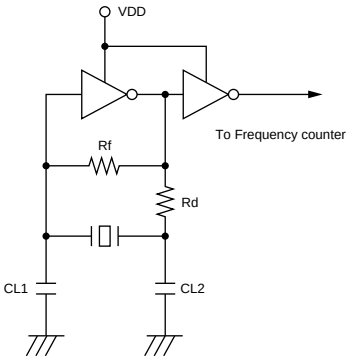


6

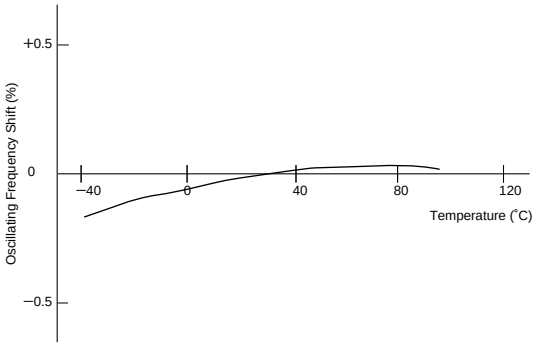
Part Number	Oscillating Frequency (kHz)	Initial Tolerance	Temp.Stability (%)	Temperature Range (°C)	Aging (10 years) (%)	Use
CSBLA_E	375 to 699	±2kHz	±0.3	-20 to 80	±0.3	-
CSBLA_J	700 to 1250	±0.5%	±0.3	-20 to 80	±0.3	-

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



6

kHz Lead Type Notice

■ Notice (Soldering and Mounting)

CSBLA_E

The component cannot be withstand washing.

■ Notice (Soldering and Mounting)

CSBLA_J

(1) Cleaning Solvent

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

(2) Temperature Difference:dT *1

dT<=30 C. (dT=Component-solvent)

*1 ex. In case the component at +90 C. immerses into cleaning solvent at +60 C., then dT=30 C.

(3) 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.

(4) Drying

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

(5) Others

1. Total washing time should be within 10 minutes.
2. Please insure the component is thoroughly evaluated in your application circuit.
3. The component may be damaged if it is washed with alkali cleaning solvent.

kHz Type Notice

■ Notice (Storage and Operating Condition)

CSBFB_J

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.
Ultrasonic cleaning of the component is acceptable. However, the size of bath, size and thickness of PBC should be evaluated to confirm stable electrical characteristics are maintained.
In case of the bulk component, dry heating treatment (130 C. for 5 hours min.) is requiredbefore reflow soldering. Then, the component should be soldering within 48 hours after dry heating treatment.

■ Notice (Storage and Operating Condition)

CSBLA_E

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 (Storage and Operating Condition)

CSBLA_J

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.
Ultrasonic cleaning of the component is acceptable. However, the size of bath, size and thickness of PBC should be evaluated to confirm stable electrical characteristics are maintained.

■ Notice (Rating)

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

■ Notice (Handling)

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

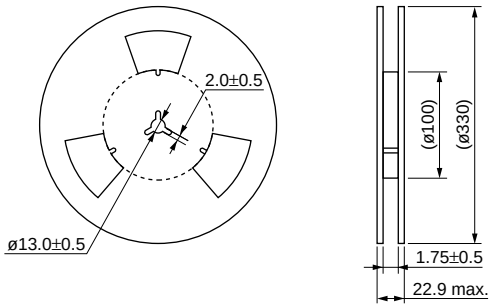
kHz Type Packaging

■ CSBFB Series Minimum Quantity

Part Number	Plastic Tape ø330mm	Bulk
CSBFB_J (430 to 519kHz)	1,500	500
CSBFB_J (700 to 1250kHz)	3,000	1,000

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

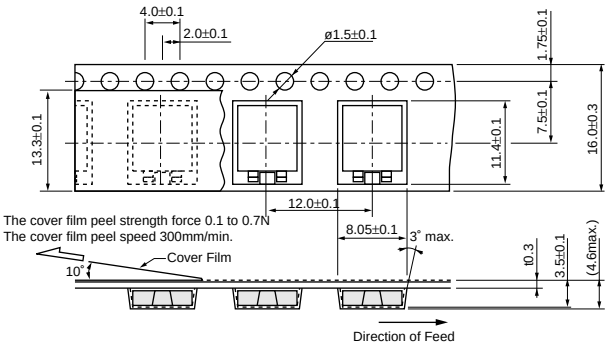
■Dimensions of Reel



(in mm)

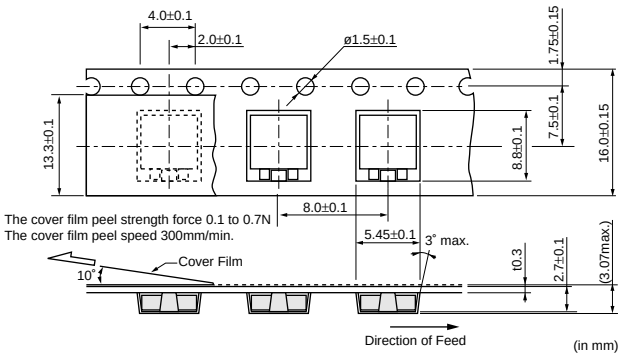
■ Dimensions of Taping

CSBFB_J 430-519kHz



(in mm)

CSBFB_J 700-1250kHz



(in mm)

■ CSBLA Series Minimum Quantity

Part Number	Magazine	Bulk
CSBLA_E	50	500
CSBLA_J	100	1,000

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