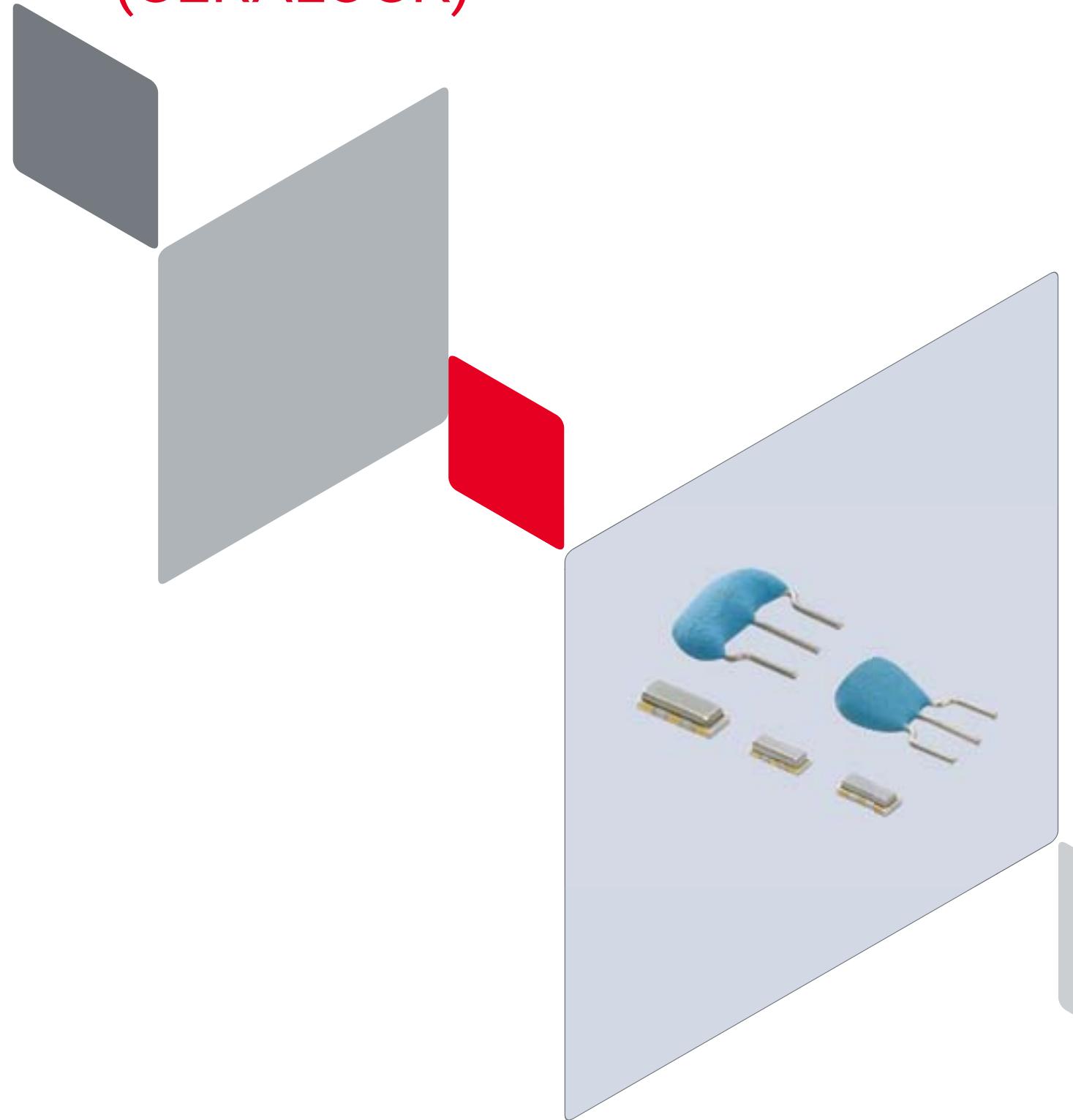


Ceramic Resonators (CERALOCK)



Ceramic Resonators (CERALOCK)

MHz Lead Type -Standard Frequency Tolerance for Consumer/Industrial Usage

MURATA's ceramic resonator, CERALOCK with built-in load capacitors, has been widely applied as the most suitable component for clock oscillators in a broad range of microprocessors.

The CSTLS series can be used in the design of oscillation circuits not requiring external load capacitors, enabling both high-density mounting and cost reduction.

Features

1. Oscillation circuits do not require external load capacitors.
 There is some variation in built-in capacitance values applicable to various IC.
2. Stable over a wide temperature range.
3. Compact, lightweight and exhibit superior shock resistance performance.
4. Enable the design of oscillator circuits requiring no adjustment.
5. Cost-effective and reliable availability

Applications

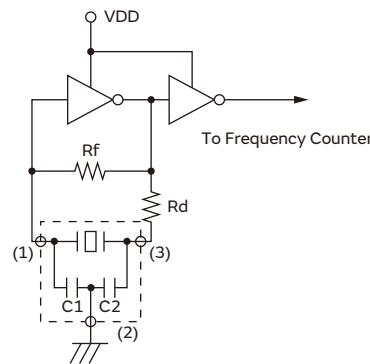
1. DTMF generators
2. Clock oscillators for microcomputers
3. Remote control units
4. Automated office equipment

Part Number	Frequency (MHz)	Initial Frequency Tolerance (%)	Frequency Shift by Temperature (%)	Operating Temperature Range (°C)
CSTLS_G	3.40 to 10.00	±0.5	±0.2 [-0.4% to +0.2%:Built-in Capacitance 47pF type]	-20 to 80
CSTLS_X	16.00 to 70.00	±0.5	±0.2	-20 to 80

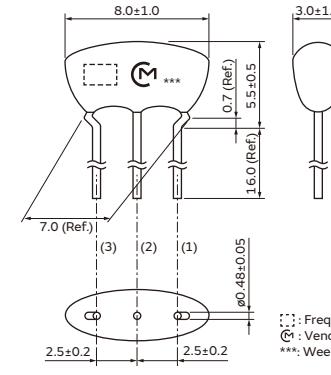
Irregular or stopped oscillation may occur under unmatched circuit conditions. Please check the actual conditions prior to use.
 The order quantity should be an integral multiple of the "Minimum Quantity" shown on the packaging page.

Measuring Circuit of Oscillating Frequency

32-bit Microcomputer



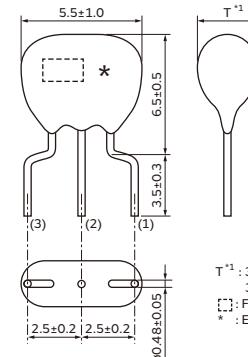
CSTLS_G
3.40-10.00MHz



Frequency Marking
 M : Vendor's Code
 ***: Weekly Date Code
 (in mm)

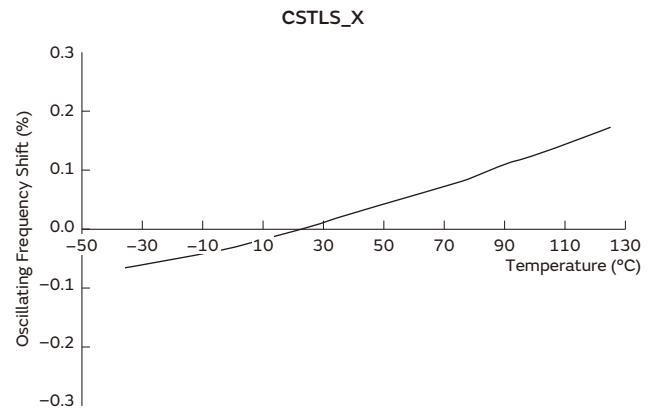
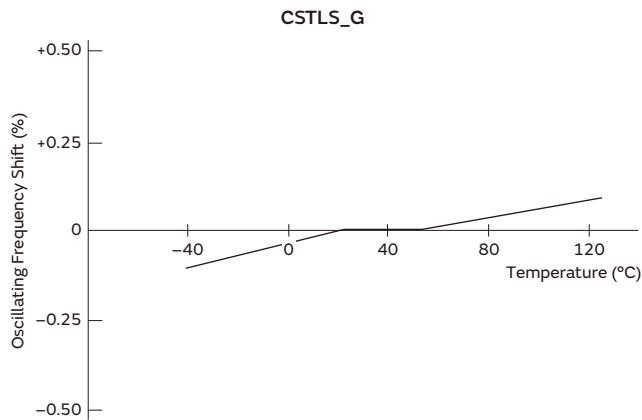


CSTLS_X
16.00-70.00MHz



T*1 : 3.5±1.0 (16.00-32.99MHz)
 3.0±1.0 (33.00-70.00MHz)
 Frequency Marking
 * : EIAJ Monthly Code
 (in mm)

Frequency Temperature Characteristics



Notice for Consumer/Industrial Usage -MHz Lead Type

Soldering and Mounting (CSTLS_G, CSTLS_X Series)

The component cannot withstand washing.

Please do not apply excessive mechanical stress to the component and lead terminals during soldering.

Storage and Operating Conditions

1. Product Storage Conditions

Please store the products in a room where the temperature/humidity is stable, and avoid places where there are large temperature changes. Please store the products under the following conditions:

Temperature: -10 to +40°C

Humidity: 15 to 85% R.H.

2. Expiration Date on Storage

Expiration date (shelf life) of the products is six months after delivery under the conditions of a sealed and unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability and/or rusty.

Please confirm solderability and characteristics for the products regularly.

3. Notice on Product Storage

(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage in a chemical atmosphere.

(2) Please do not put the products directly on the floor without anything under them to avoid damp and/or dusty places.

(3) Please do not store the products in places such as: in a damp heated place, in a place where direct sunlight comes in, in a place applying vibrations.

(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under poor conditions.

(5) Please do not drop the products to avoid cracking of ceramic elements.

4. Other

Conformal coating or washing of the component is not acceptable because it is not hermetically sealed. Please be sure to consult with our sales representatives or engineers whenever and prior to using the products.

Rating

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

Handling

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

Packaging for Consumer/Industrial Usage -MHz Lead Type

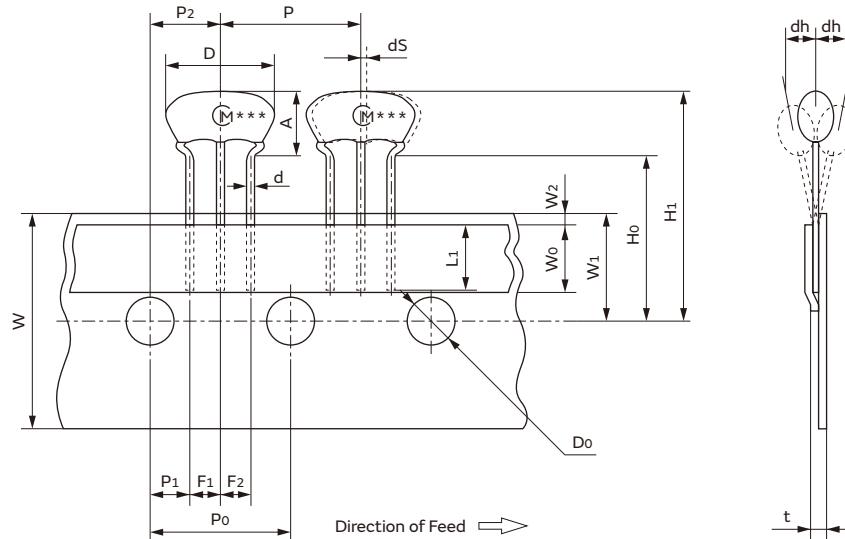
Minimum Quantity

Part Number	Ammo Pack	Bulk
CSTLS_G (3.40 to 10.0MHz)	2,000	500
CSTLS_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 CSTLS_G



Item	Code	Dimensions	Tolerance	Remarks
Width of diameter	D	8.0	± 1.0	
Height of resonator	A	5.5	± 0.5	
Dimensions of terminal	d	$\varnothing 0.48$	± 0.05	
Lead length under the hold down tape	L1	5.0 min.	—	
Pitch of component	P	12.7	± 0.5	Tolerance for Pitches $10 \times P_0 = 127 \pm 1$
Pitch of sprocket hole	P0	12.7	± 0.2	
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 (I)	F1	2.5	± 0.2	
Lead spacing (II)	F2	2.5	± 0.2	
Slant forward or backward	dh	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	
Distance between the center of sprocket hole and lead stopper	H0	18.0	± 0.5	
Total height of resonator	H1	23.5	± 1.0	
Diameter of sprocket hole	D0	$\varnothing 4.0$	± 0.2	
Total tape thickness	t	0.6	± 0.2	
Body tilt	dS	0	± 1.0	

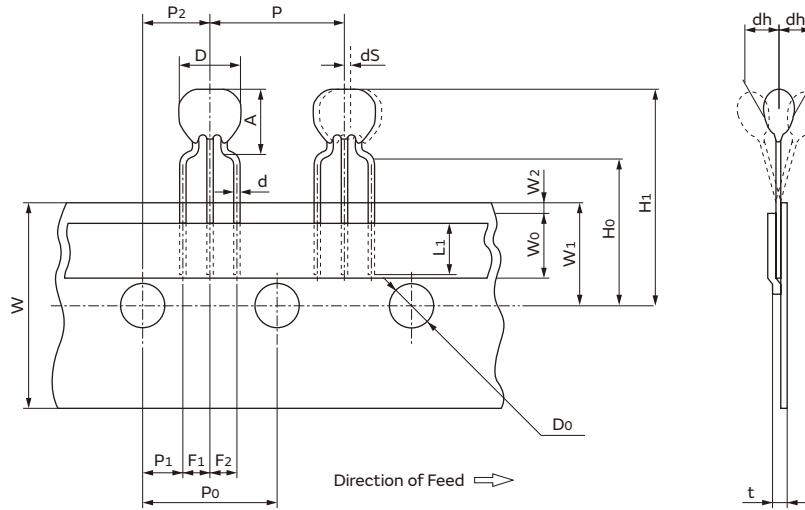
(in mm)

Continued on the following page. ↗

Packaging for Consumer/Industrial Usage -MHz Lead Type

Continued from the preceding page. ↴

Tape Dimensions of CSTLS_X



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	$\phi 0.48$	± 0.05	
Lead length under the hold down tape	L1	5.0 min.	—	
Pitch of component	P	12.7	± 0.5	Tolerance for Pitches $10 \times P_0 = 127 \pm 1$
Pitch of sprocket hole	P0	12.7	± 0.2	
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 (I)	F1	2.5	± 0.2	
Lead spacing (II)	F2	2.5	± 0.2	
Slant forward or backward	dh	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	$^{+0.5}_{-0.0}$	
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	$\phi 4.0$	± 0.2	
Total tape thickness	t	0.6	± 0.2	
Body tilt	ds	0	± 1.0	

(in mm)

Global Locations

For details please visit www.murata.com



⚠ Note

1 Export Control

For customers outside Japan:

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

For customers in Japan:

For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.

2 Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- ① Aircraft equipment
- ② Aerospace equipment
- ③ Undersea equipment
- ④ Power plant equipment
- ⑤ Medical equipment
- ⑥ Transportation equipment (vehicles, trains, ships, etc.)
- ⑦ Traffic signal equipment
- ⑧ Disaster prevention / crime prevention equipment
- ⑨ Data-processing equipment
- ⑩ Application of similar complexity and/or reliability requirements to the applications listed above

3 Product specifications in this catalog are as of March 2021. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.

4 Please read rating and ⚠ CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5 This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

6 Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or a third party's intellectual property rights and other related rights in consideration of your use of our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.

7 No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.

Murata Manufacturing Co., Ltd.

www.murata.com

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INNOVATOR IN ELECTRONICS