AUTOMOTIVE RESONATOR PACKAGES

Murata offers a full line of resonators which meet the performance requirements of today's automotive and industrial applications. Murata's consumer grade products are rated from –20 to +80°C; however, our automotive and industrial resonators offer stable performance with an operating temperature range of –40 to +125°C. The temperature variation and aging characteristics of the automotive grade resonators serve the market well, providing reliable start up and stable oscillation in microprocessor circuits across a wide variety of applications. It should be noted that automotive and industrial application circuits, especially in critical applications, should be evaluated (characterized) by Murata for stability. Please contact our piezo products engineering group to pursue IC characterization at the beginning of your design process. There is no charge for engineering evaluation and we highly recommend all companies to pursue the characterization process which will eliminate potential design issues and liability with regard to stability.

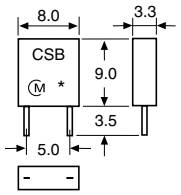
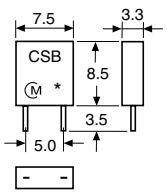
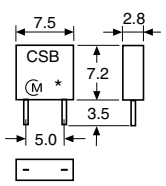
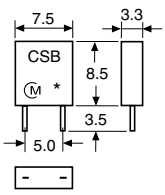
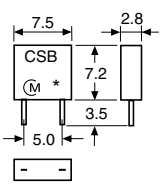
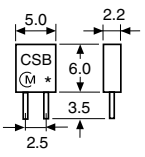
SPECIFICATIONS

Series	Frequency (MHZ)	Initial Tol. +25°C	Tc (–40 to +125°C)	Aging (10 years)	Total (–40 to +125°C)	Series	Frequency (MHZ)	Initial Tol. +25°C	Tc (–40 to +125°C)	Aging (10 years)	Total (–40 to +125°C)
Leaded Types						**SMD Types**					
CSB-JA/JRA	0.375 – 1.250	±0.5%	±0.4%	±0.3%	±1.2%	**CSBF-JA**	0.430 – 0.519 0.7 – 1.250	±0.5%	±0.4%	±0.3%	±1.3%
CSA-MGA	1.80 – 6.30	±0.5%	±0.4%	±0.3%	±1.2%						
CSA-MTZA	6.31 – 13.0	±0.5%	±1.0%	±0.5%	±2.0%	**CSAC-MGCA**	1.8 – 6.0	±0.5%	±0.4%	±0.3%	±1.2%
CSA-MXZA	12.00 – 60.0	±0.5%	±0.4%	±0.3%	±1.2%	**CSAC-MGCMA**	1.8 – 6.0	±0.5%	±0.4%	±0.3%	±1.2%
CSTLS-G-A	2.00 – 3.39	±0.5%	+0.2%/–0.4%	±0.2%	+0.9/–1.1%	**CSACV-MXA-Q**	14.74 – 70.00	±0.5%	±0.3%	±0.1%	±0.9%
CSTS-MGA	3.40 – 10.00	±0.5%	±0.4%	±0.2%	±1.1%	**CSACS-MTA**	6.01 – 13.0	±0.5%	±1.0%	±0.5%	±2.0%
CST-MTWA	10.01 – 13.00	±0.5%	±0.9%	±0.3%	±1.7%	**CSTCC-MGA**	2.00 – 10.0	±0.5%	±0.4%	±0.3%	±1.2%
CST-MXWA	13.01 – 15.99	±0.5%	±0.4%	±0.3%	±1.2%	**CSTCS-MTA**	10.01– 13.0	±0.5%	±0.9%	±0.3%	±1.7%
CSTLS-X-A	16.00 – 70.00	±0.5%	±0.3%	±0.2%	±1.0%	**CSTCV-MXA-Q**	14.74 – 70.00	±0.5%	±0.3%	±0.1%	±0.9%

Note: 1) All CSA ( ) types are 2 terminal w/o internal capacitors. All CST ( ) types contain internal capacitors. Contact Murata for advice regarding determination of the correct value of internal/external load capacitance for your application/microprocessor and formal part number. 2)Initial tolerances of ±0.3 or ±0.2% are also available.

CSB-JA/JRA SERIES – 375 to 1250kHz

DIMENSIONS: mm

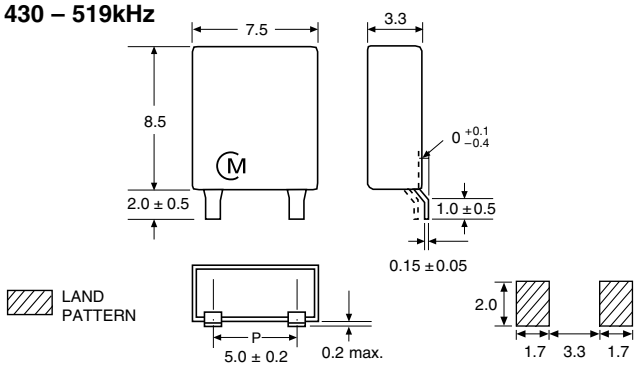
Frequency	375 – 429kHz	430 – 519kHz	520 – 589kHz	590 – 655kHz	656 – 699kHz	700 – 1250kHz
Series	CSB□□□JA	CSB□□□JA	CSB□□□JA	CSB□□□JRA	CSB□□□JA	CSB□□□JA
Washability	Washable[1]	Washable[1]	Washable[1]	Washable[1]	Washable[1]	Washable[1]
Dimensions						

[1]The resonators are washable. However, temperature, time and other processing conditions should be checked to ensure that suitable electrical characteristics are maintained.

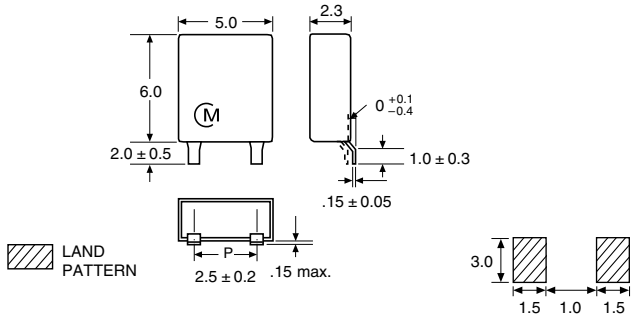
CSBF-JA SERIES

DIMENSIONS: mm

430 – 519kHz



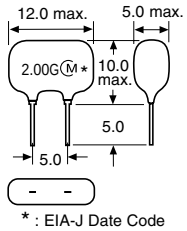
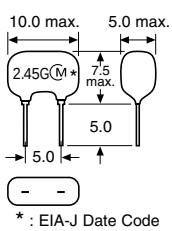
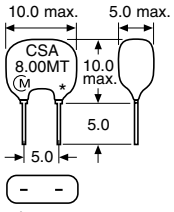
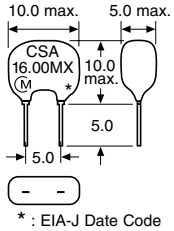
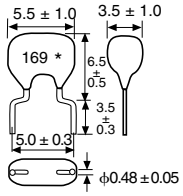
700 – 1250kHz



The CSA series has been de-emphasized in favor of the CST series.

CSA SERIES: 1.26MHz – 70.00MHz

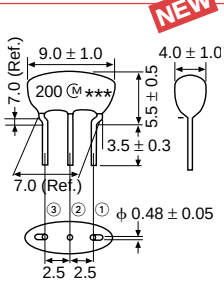
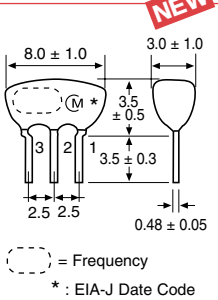
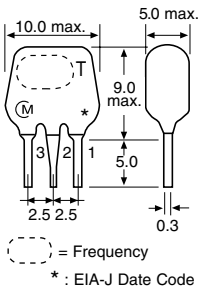
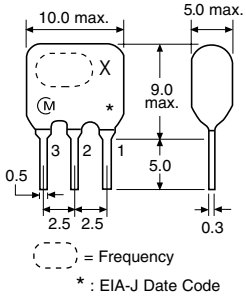
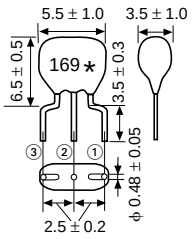
DIMENSIONS: mm

Frequency	1.80 – 2.44MHz	2.45 – 6.30MHz	6.31 – 13.0MHz	12.00 – 15.99MHz	16.00 – 70.00MHz
Series	**CSA□□□MGA**	**CSA□□□MGA**	**CSA□□□MTZA**	**CSA□□□MXZA040**	**CSALS□M□□X-A**
Washability	Washable	Washable	Washable	Washable	Washable
Dimensions	 * : EIA-J Date Code	 * : EIA-J Date Code	 * : EIA-J Date Code	 * : EIA-J Date Code	 * : EIA-J Date Code

The resonators are washable. However, temperature, time and other processing conditions should be checked to ensure that suitable electrical characteristics are maintained.

CST SERIES: 2.00MHz – 70.00MHz

DIMENSIONS: mm

Frequency	2.00 to 3.39MHz	3.40 to 10.00MHz	10.01 to 13.00MHz	13.01 to 15.99MHz	16.00 to 70.00MHz
Part Number	**CSTLS□M□□G-A**	**CSTS□□□MGA**	**CST□□·□MTWA**	**CST□□·□□MXWA**	**CSTLS□M□□X-A**
Washability	Washable	Washable	Washable	Washable	Washable
Dimensions	NEW 	NEW  = Frequency * : EIA-J Date Code	 = Frequency * : EIA-J Date Code	 = Frequency * : EIA-J Date Code	NEW  * : EIA-J Date Code

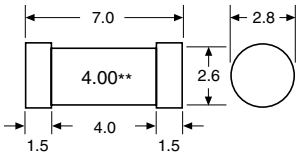
*Terminals have directionality. ① Input ② Ground ③ Output

The CSA series has been de-emphasized in favor of the CST series.

CSAC/CSACS SERIES – 1.80 to 60.00MHz (AUTOMOTIVE)

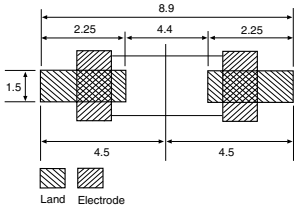
DIMENSIONS: mm

CSAC□MGCA-TC
1.80 to 6.00MHz

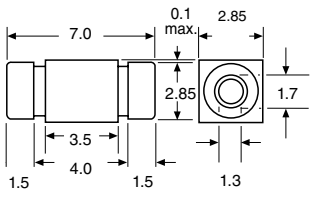


** : EIA-J Date Code

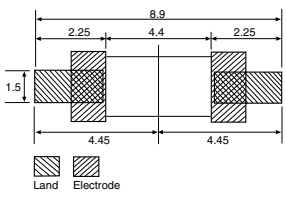
Recommended Land Pattern



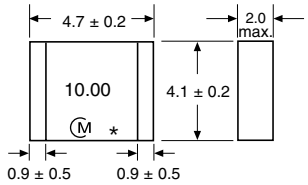
CSAC□MGCMA-TC
1.80 to 6.00MHz



Recommended Land Pattern

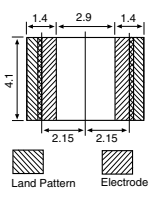


CSACS□MTA-TC
6.01 to 13.00MHz

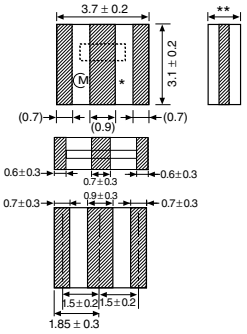


** : EIA-J Date Code

Recommended Land Pattern

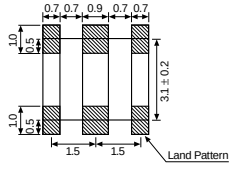


CSACV□MTJA/MXJA-TC20
14.74 to 70.00MHz



* : EIA-J Date Code
** : Thickness varies by frequency

Recommended Land Pattern

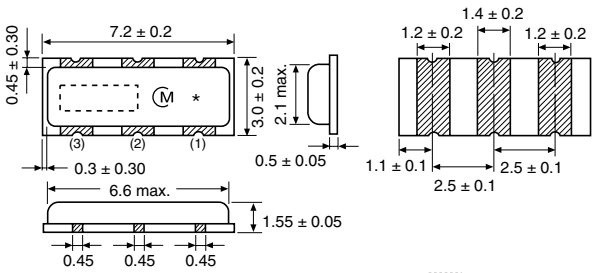


CERAMIC RESONATORS

CSTCC/CSTCV SERIES – 2.00 to 60.00MHz

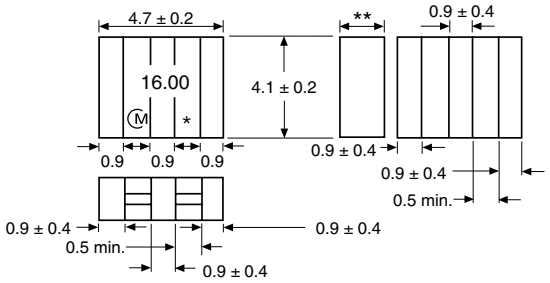
DIMENSIONS: mm

CSTCC□.□□MGA-TC – 2.00 to 10.0MHz



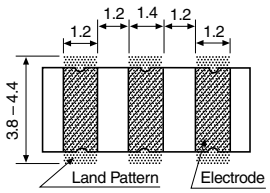
: Frequency Value
* : EIA-J Date Code

CSTCS□□.□□MTA/MXA040Q-TC – 10.01 to 13.00MHz

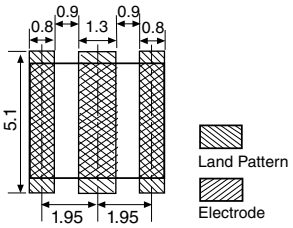


* : EIA-J Date Code
** : Thickness varies by frequencies.

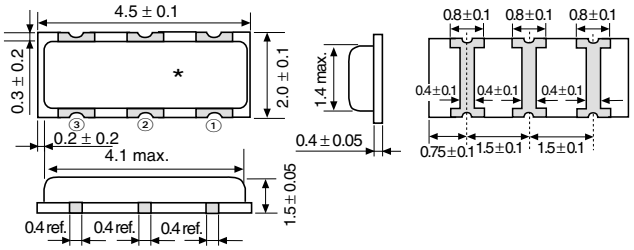
Recommended Land Pattern



Recommended Land Pattern

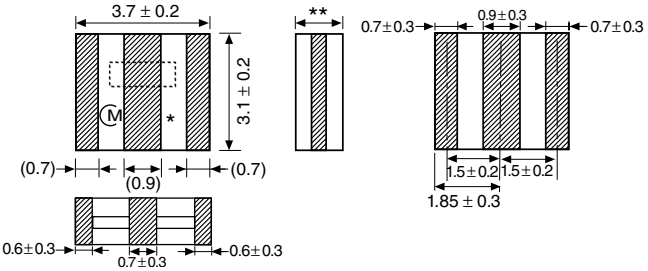


CSTCR□M□□G-A-RO – 4.00 to 7.99MHz



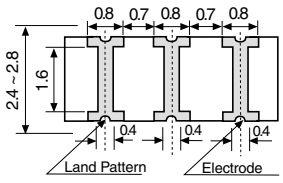
* : EIA-J Code

CSTCV□□.□□MXA-Q-TC20 – 14.74 to 70.0MHz

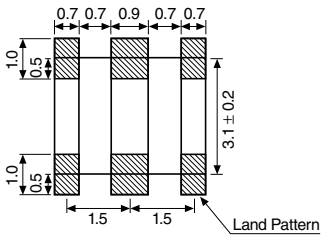


: Frequency Value
* : EIA-J Code
** :Thickness varies by frequency.

Recommended Land Pattern

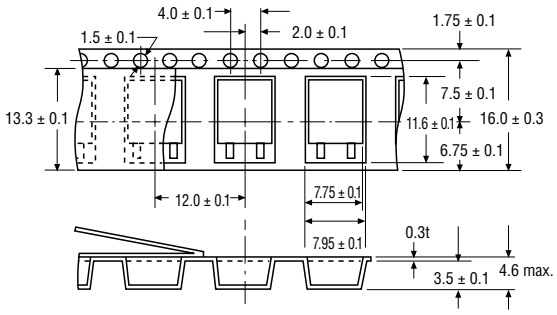


Recommended Land Pattern

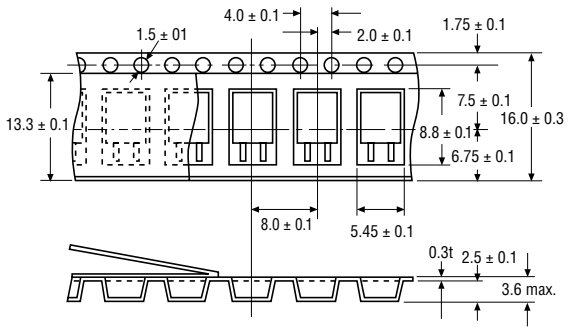


PLASTIC TAPE DIMENSIONS: mm

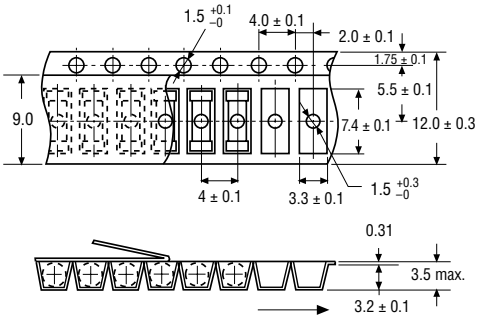
CSBF-JA 430 – 519kHz



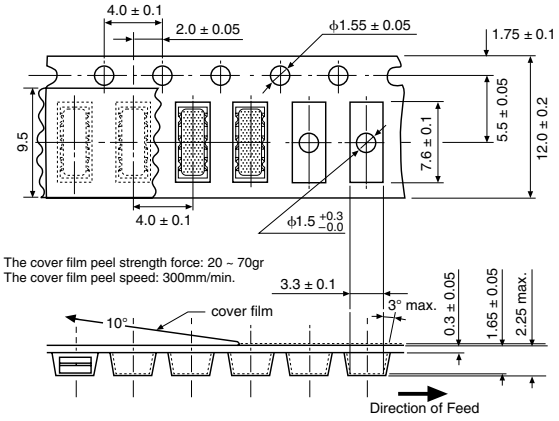
CSBF-JA 700 – 1250kHz



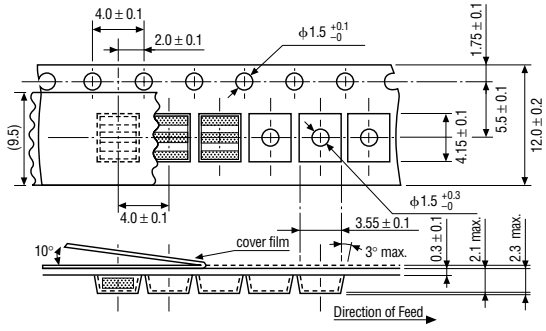
CSAC MGCA/MGCMA



CSTCC□□.□□MGA-TC



CSACV□MTJA/MXJAQ-TC20

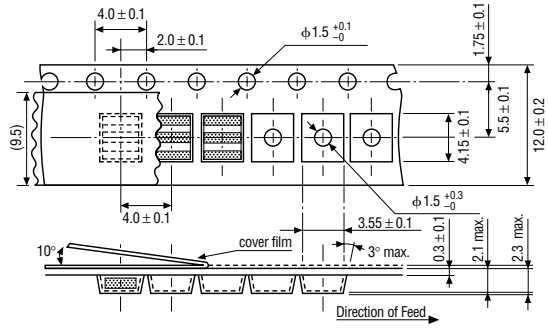


The cover film peel strength force: 20 ~ 70gr.

The cover film peel speed: 300mm/min.

Unit: mm

CSTCV□MTJA/MXJAQ-TC20



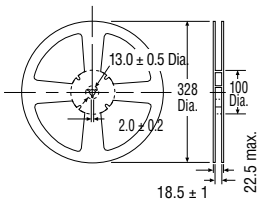
The cover film peel strength force: 20 ~ 70gr.

The cover film peel speed: 300mm/min.

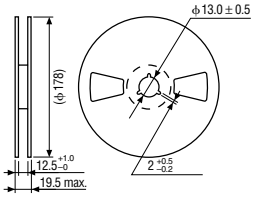
Unit: mm

PLASTIC REEL DIMENSIONS: mm

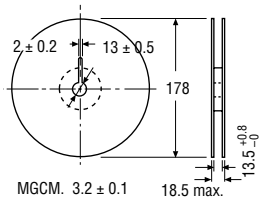
CSBF 328mm Dia.



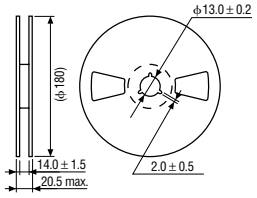
CSTCC□MGA-TC



CSAC MGCA/MGCMA



CSACV□MTJA/MXJAQ-TC20



CSTCV□MTJA/MXJAQ-TC20