



Piezoceramics component - Ceramic Resonator

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Notice: Specification Changed or Version Updated will be posted at irregular intervals.
All Updated and Final Specifications, Please Confirm with TOKEN ELECTRONICS REPRESENTATIVES.



<http://www.token.com.tw>



rfq@tokenonline.net

Taiwan: No. 137, Sec. 1, Chung Shin Rd., Wu Ku Hsiang, Taipei Hsien, Taiwan, R.O.C
TEL: 886-2-2981 0109; FAX: 886-2-2988 7487

China: 12F, Zhongxing Industry Bld., Chuangye Rd., Nanshan District, Shenzhen, Guangdong
TEL: 86-755-2605 5363, 2605 5364; FAX: 86-755-2605 5365



Resonators

Ceramic Resonators - ZTA Series

ZTA (MHz) Resonator cover the frequency range of 1.79 MHz to 60.00 MHz with an initial frequency tolerance $f_0 \pm 0.5\%$. Since the ZTA series utilizes the thickness mode of vibration of the piezoelectric element, there is little dimensional change with frequency. All ZTA are epoxy coated and completely washable. Tape and reel package are both available.

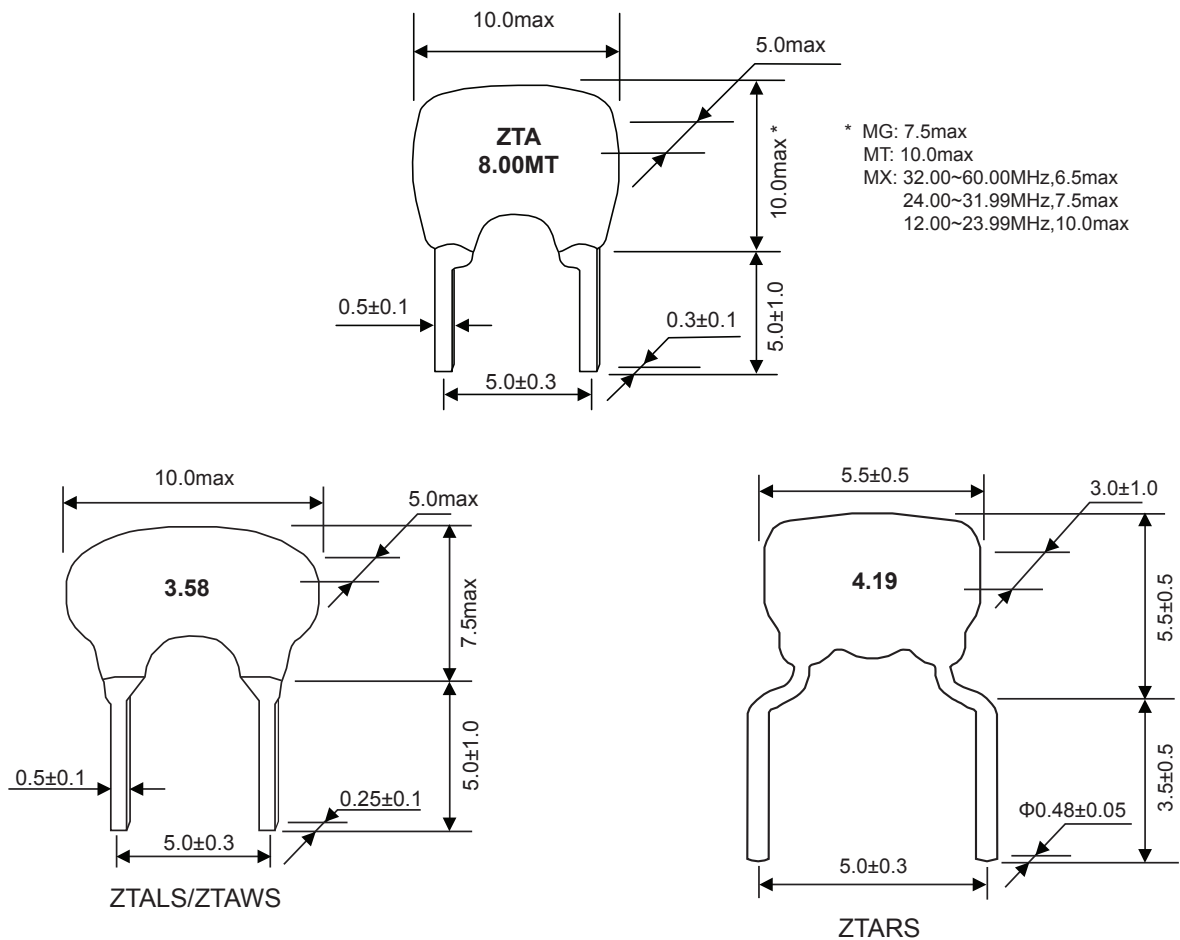
► ZTA (MHz) Compatible to Murata CSA

1.79 - 60.00 MHz

Ceramic ZTA (MHz) Resonators Technical Characteristics

Part Number	Frequency Range(MHz)	Frequency Accuracy(at 25°C) (%)	Stability in Temperature (-20°C ~ +80°C) (%)	Operating Temperature(°C)	Aging For Ten Years (%)
ZTA***MG	1.79 ~ 6.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTAWs***MG	1.79 ~ 6.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTALS***MG	3.00 ~ 8.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTARS***MG	3.00 ~ 10.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTA***MT	6.00 ~ 13.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTA***MX	12.00 ~ 60.00	± 0.5	± 0.3	-20 ~ +80	± 0.3

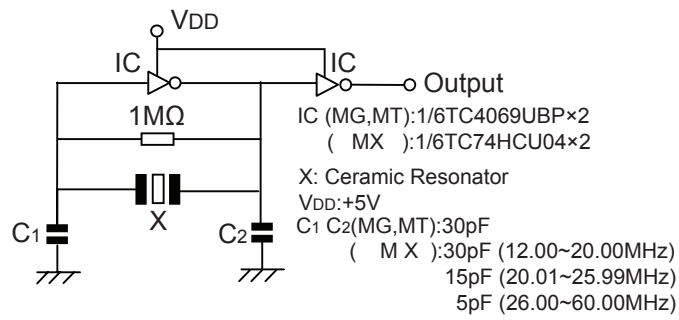
► Ceramic ZTA (MHz) Resonator Dimensions





Ceramic Resonators

► Ceramic ZTA (MHz) Resonator Test Circuit for MOS IC



► How to Order

ZTA8.00MT

❶

P

❷

❶ Part Number

❷ Packaging

Code	Packaging
T	Taping Reel
P	Bulk





Resonators

Ceramic Resonators - ZTB Series

Token ZTB (kHz) Series Resonator is designed to provide the design engineer with a rugged, relatively low frequency device in the frequency range of 190 kHz to 1,250 kHz. Initial frequency tolerance is $\pm 0.5\%$ which compares very favorably to the nominal $\pm 2\% \sim \pm 3\%$ requirements of one chip microprocessors. Token ZTB series utilizes the area vibration mode of the piezoelectric element.

► ZTB (kHz) Compatible to Murata CSB

190 - 1250 kHz

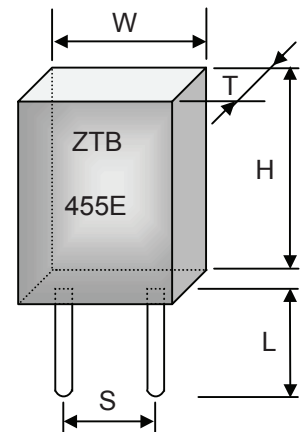
Ceramic Resonator ZTB (kHz) Technical Characteristics

Part Number	Frequency Accuracy (at 25°C)	Resonant Impedance (Ω)	Stability in Temperature (-20°C~+80°C)(%)	Aging For 10 Years (%)	Load Capacitance (pF)	
					C1	C2
ZTB82 ~ ZTB189 *	$\pm 2\text{kHz}$	≤ 20	± 0.3	± 0.3	/	/
ZTB190D ~ ZTB249D	$\pm 1\text{kHz}$	≤ 20	± 0.3	± 0.3	330	470
ZTB250D ~ ZTB374D	$\pm 1\text{kHz}$	≤ 20	± 0.3	± 0.3	220	470
ZTB375P ~ ZTB429P	$\pm 2\text{kHz}$	≤ 20	± 0.3	± 0.3	120	470
ZTB430E ~ ZTB509E	$\pm 2\text{kHz}$	≤ 20	± 0.3	± 0.3	100	100
ZTB510P ~ ZTB699P	$\pm 2\text{kHz}$	≤ 30	± 0.3	± 0.3	100	100
ZTB700J ~ ZTB999J	$\pm 0.5\%$	≤ 70	± 0.3	± 0.3	100	100
ZTB1000J ~ ZTB1250J	$\pm 0.5\%$	≤ 100	± 0.3	± 0.3	100	100

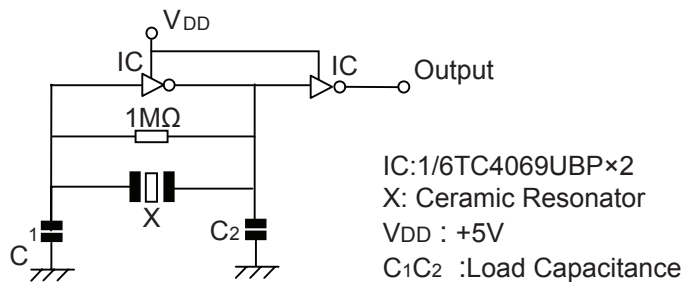
* ZTB82 ~ ZTB189 series is new products of custom design.

► Ceramic Resonator ZTB (kHz) Dimensions (Unit: mm Tolerance: $\pm 0.3\text{mm}$)

Frequency Range (kHz)	W width	T thickness	H height	S lead space	L lead length
190~249	13.5	3.6	14.7	10.0	8.0
250~374	11.0	3.6	12.2	7.7	7.0
375~429	7.9	3.6	9.3	5.0	6.0
430~699	7.0	3.5	9.0	5.0	4.0(6.0)
700~1250	5.1	2.2	6.3	2.5	4.0



► Ceramic Resonator ZTB (kHz) Test Circuit



► Ceramic Resonator How to Order

ZTB455E	P
①	②

① Part Number

② Packaging

Code	Packaging
T	Taping Reel
P	Bulk



Resonators

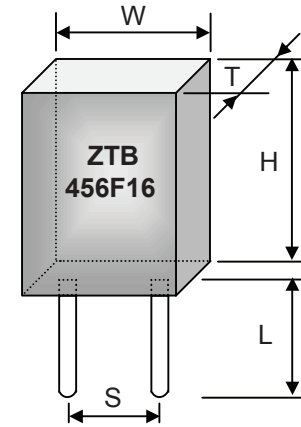
Piezoceramics Resonators - ZTB 456 / 500 / 503 / 912F

▶ ZTB 456 / 500 / 503 / 912F (Murata CSB456/503/912F Compatible) 456 / 500 / 503 / 912kHz

ZTB 456F Multiplexers Series Piezoceramics Resonators is designed to provide frequency modulation for HI-FI stereo application. These units are offered in the frequency accuracy $19\text{kHz} \pm 38\text{Hz}$ and $456\text{kHz} \pm 2\text{kHz}$ with different applicable IC. ZTB912F Multiplexers Series is specially designed to provide frequency modulation for HI-FI automobile stereo application. Resonators ZTB 500/503F Series is designed for TV horizontal synthesizer circuits. These units are offered in the following frequency accuracy with different applicable IC.

▶ Piezoceramics Resonator Dimensions (Unit: mm Tolerance: $\pm 0.3\text{mm}$)

	ZTB 456 / 500 / 503F	ZTB 912F
W (width)	7.0	5.0
T (thickness)	3.5	2.2
H (height)	9.0	6.0
S (lead space)	5.0	2.5
L (lead length)	4.0	4.0



▶ Piezoceramics Resonator Technical Characteristics

Part Number	Frequency Accuracy	Applicable IC	
ZTB456F11	$19.000\text{ kHz} \pm 38\text{ Hz}$	LA3430	SANYO
ZTB456F15	$19.000\text{ kHz} \pm 38\text{ Hz}$	LA1832	SANYO
ZTB456F16	$19.000\text{ kHz} \pm 38\text{ Hz}$	TA8122AN	TOSHIBA
ZTB456F18	$19.000\text{ kHz} \pm 38\text{ Hz}$	TA8132N	TOSHIBA
ZTB456F33	$456\text{ kHz} \pm 2\text{ Hz}$	LA2232	SANYO
ZTB480E14	$480+0.2\%, -0.4\%$	TC31018P	TOSHIBA
ZTB500F2	$500.0\text{ kHz} \pm 2\text{ kHz}$	$\mu\text{PC1401C}$	NEC
ZTB500F9	$500.0\text{ kHz} \pm 2\text{ kHz}$	M51308SP	MITSUBISHI
ZTB500F25	$15.680\text{ kHz} \pm 0.4\%$	LA7680	SANYO
ZTB500F40	$15.680\text{ kHz} \pm 0.4\%$	TA8691N	TOSHIBA
ZTB503F2	$503.5\text{ kHz} \pm 2\text{ kHz}$	$\mu\text{PC1401C}$	NEC
ZTB503F5	$504.5\text{ kHz} \pm 2\text{ kHz}$	LA7620	SANYO
ZTB503F10	$15.734\text{ kHz} \pm 0.5\%$	TA7777P	TOSHIBA
ZTB503F12	$503.5\text{ kHz} \pm 2\text{ kHz}$	LDA3586N	THOMSON
ZTB503F15	$505.1\text{ kHz} \pm 2\text{ kHz}$	LA7650	SANYO
ZTB503F30	$503.5\text{ kHz} \pm 1.5\text{ kHz}$	TA8654AN	TOSHIBA
ZTB503F38	$15.734\text{ kHz} \pm 62\text{ kHz}$	AN5302	MATSUSHITA
ZTB912F	$923.0\text{ kHz} \pm 0.3\%$	LA1780	SANYO
ZTB912F101	$918.5\text{ kHz} \pm 0.3\%$	AN7291	MATSUSHITA
ZTB912F104	$925.0\text{ kHz} \pm 0.3\%$	LA1867NM	SANYO

▶ Piezoceramics Resonator How to Order

ZTB456F16

①

① Part Number

P

②

② Packaging

Code	Packaging
T	Taping Reel
P	Bulk





Ceramic Resonators

Ceramic Resonator - ZTBY Series

Token ZTBY Series Ceramic Resonator is a surface mountable device unit of ZTB with the frequency range of 375 kHz to 1,250 kHz. Initial frequency tolerance is $\pm 0.5\%$ which compares very favorably to the nominal $\pm 2\% \sim \pm 3\%$ requirements of one chip microprocessors. Token ZTBY series utilizes the area vibration mode of the piezoelectric element.

► ZTBY (Murata CSBF Compatible)

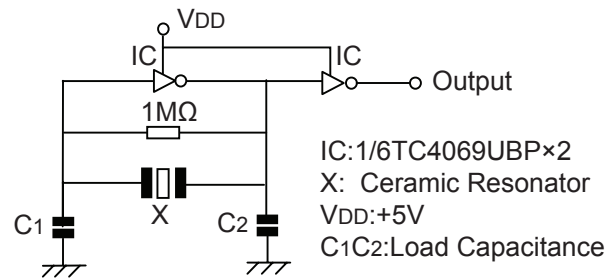
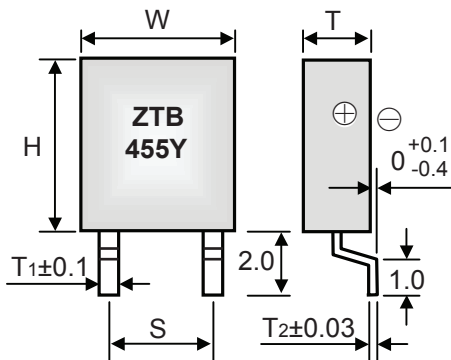
375 - 1250 kHz

Ceramic Resonator ZTBY Technical Characteristics

Part Number	Frequency Accuracy (at 25°C)	Resonant Impedance (Ω)	Stability in Temperature (-20°C ~ +80°C) (%)	Aging For 10 Years(%)	Load Capacitance (pF)	
					C1	C2
ZTB375 ~ 429Y	$\pm 2\text{kHz}$	≤ 20	± 0.3	± 0.3	120	470
ZTB430 ~ 509Y	$\pm 2\text{kHz}$	≤ 20	± 0.3	± 0.3	100	100
ZTB510 ~ 699Y	$\pm 2\text{kHz}$	≤ 30	± 0.3	± 0.3	100	100
ZTB700 ~ 999Y	$\pm 0.5\%$	≤ 70	± 0.3	± 0.3	100	100
ZTB1000 ~ 1250Y	$\pm 0.5\%$	≤ 100	± 0.3	± 0.3	100	100

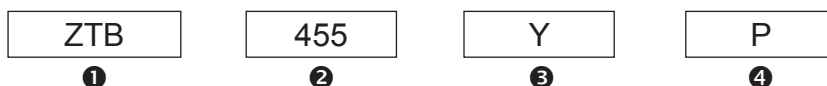
► ZTBY Dimensions (Unit: mm Tolerance: $\pm 0.3\text{mm}$)

ZTBY Test Circuit



Frequency Range(kHz)	W width	T thickness	H height	S lead space	T1	T2
375~429	8.0	3.5	9.0	5.0	1.0	0.15
430~509	7.5	3.3	8.5	5.0	1.1	0.15
510~699	7.0	3.0	8.5	5.0	1.1	0.15
700~1250	5.0	2.2	6.0	2.5	0.8	0.12

► Ceramic Resonator How to Order



- ① Part Number
- ② Center Frequency (KHz)
- ③ SMD type
- ④ Packaging

Code	Packaging
T	Taping Reel
P	Bulk



Ceramic Resonators

Ceramic Resonator with Built-in Capacitor - ZTT Series

ZTT series features a built-in load capacitance. This feature eliminates any need for external loading capacitors and reduces component count, increases reliability and reduces size. These unit are offered in the frequency range from 1.79 MHz to 60.00 MHz with an initial frequency tolerance of $\pm 0.5\%$.

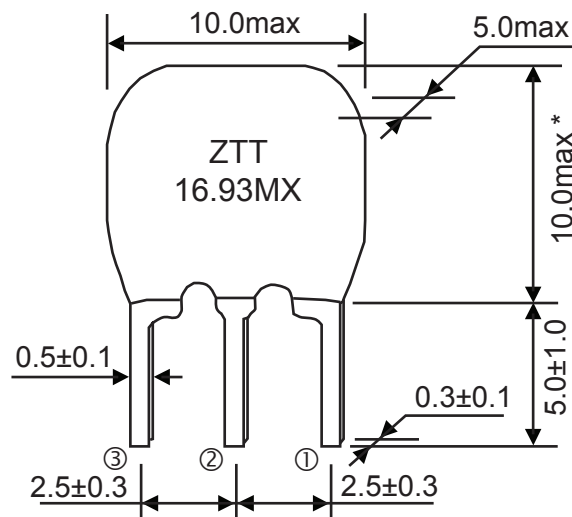
► ZTT With Built-in Capacitor (Compatible to Murata CST)

1.79 - 60.00MHz

Ceramic ZTT (MHz) Resonators Technical Characteristics

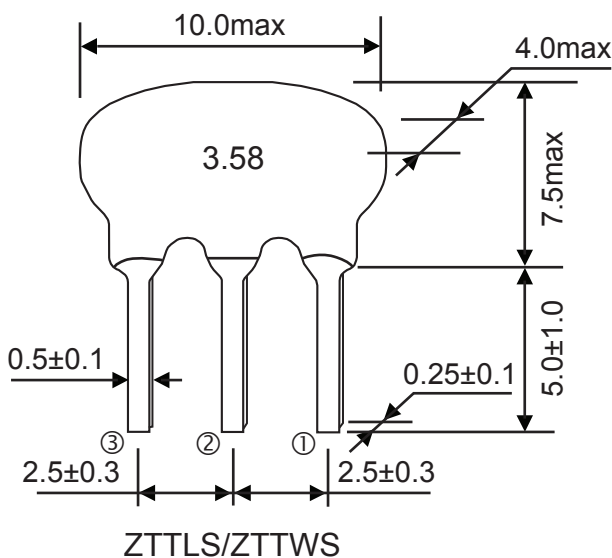
Part Number	Frequency Range (MHz)	Frequency Accuracy (at 25°C) (%)	Stability in Temperature (-20°C ~ +80°C) (%)	Operating Temperature (°C)	Aging For Ten Years (%)
ZTT***MG	1.79 ~ 6.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTTWS***MG	1.79 ~ 6.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTTLS***MG	3.00 ~ 8.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTTRS***MG	3.00 ~ 10.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTT***MT	6.00 ~ 13.00	± 0.5	± 0.3	-20 ~ +80	± 0.3
ZTT***MX	12.00 ~ 60.00	± 0.5	± 0.3	-20 ~ +80	± 0.3

► Ceramic ZTT Resonator Dimensions (Unit:mm)

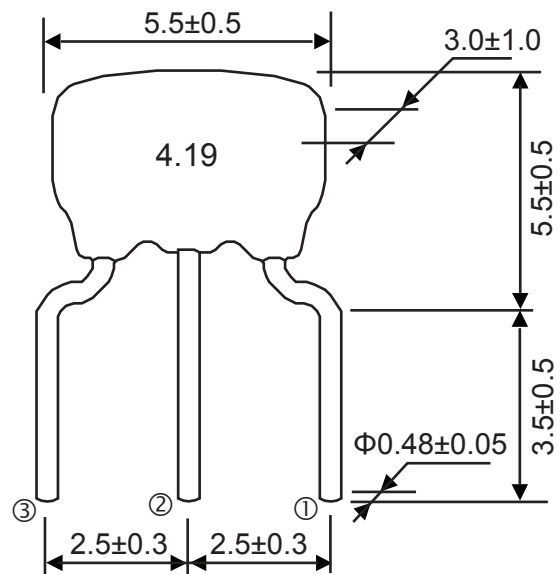


* MG: 8.0max
 MT: 10.0max
 MX: 13.01~60.00MHz, 10.0max
 12.00~13.00MHz, 12.0max

- ① Input
- ② Ground
- ③ Output



ZTTLS/ZTTWS

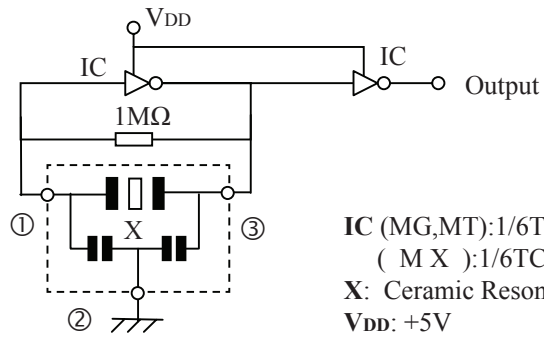


ZTTRS



Ceramic Resonators

► Ceramic ZTT Resonator Test Circuit for MOS IC



► How to Order

ZTT16.93MX

①

P

②

① Part Number

② Packaging

Code	Packaging
T	Taping Reel
P	Bulk





Ceramic Resonators

Chip Ceramic Resonator - ZTAC/ZTTC SMD Series

ZTTC series features a built-in load capacitance. This feature eliminates any need for external loading capacitors and reduces component count, increases reliability and reduces size.

ZTAC series functions same as the ZTA series with two terminals without capacitor. These unit are offered in the frequency range from 1.79 MHz to 50.00 MHz with an initial frequency tolerance of $\pm 0.5\%$.

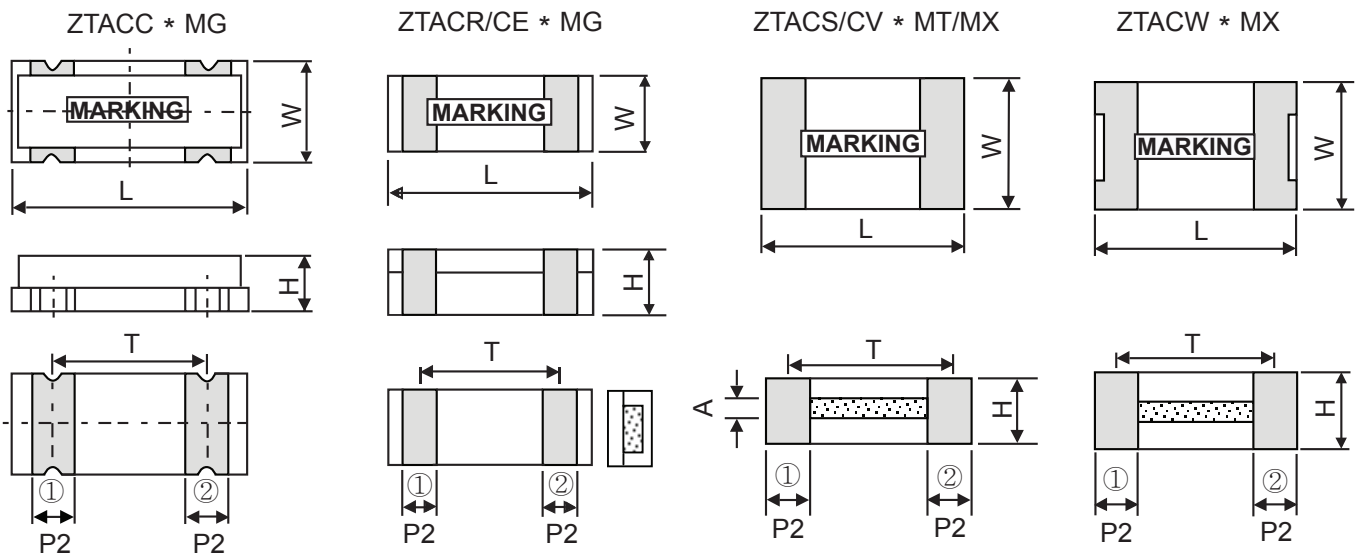
► ZTAC / ZTTC (Compatible to Murata CSAC/CSTC)

1.79 - 50.00 MHz

ZTAC/ZTTC Resonator Technical Characteristics

Part Number	Frequency Range (MHz)	Frequency Accuracy (%)	Stability in Temperature (-20°C ~ +80°C) (%)	Aging for Ten Years(%)
ZTACC*MG / ZTTC*MG	1.79 ~ 8.00	± 0.5	± 0.3	± 0.3
ZTACR*MG / ZTTCR*MG	4.00 ~ 8.00	± 0.5	± 0.3	± 0.3
ZTACS*MT / ZTTC*MT	6.00 ~ 13.00	± 0.5	± 0.4	± 0.3
ZTACV*MT / ZTTCV*MT	8.00 ~ 13.00	± 0.5	± 0.4	± 0.3
ZTACE*MG / ZTTC*MG	8.00 ~ 13.00	± 0.5	± 0.4	± 0.3
ZTACS*MX / ZTTC*MX	13.01 ~ 50.00	± 0.5	± 0.3	± 0.3
ZTACV*MX / ZTTCV*MX	16.00 ~ 50.00	± 0.5	± 0.3	± 0.3
ZTACW*MX / ZTTCW*MX	20.00 ~ 45.00	± 0.5	± 0.3	± 0.3

► Ceramic Resonator ZTAC Dimensions



① Input ② Output

Part Number	Dimensions (Unit: mm)				
	L	W	H	P2	T
ZTACC*MG	7.4 \pm 0.2	3.4 \pm 0.2	1.8 \pm 0.2	1.2 \pm 0.2	5.0 \pm 0.3
ZTACR*MG	4.5 \pm 0.2	2.0 \pm 0.2	1.2max	0.8 \pm 0.2	3.0 \pm 0.2
ZTACE*MG	3.2 \pm 0.1	1.3 \pm 0.1	1.0max	0.4 \pm 0.1	2.4 \pm 0.1
ZTACS*MT/MX	4.7 \pm 0.2	4.1 \pm 0.2	(1.2+A) \pm 0.2	0.8 \pm 0.2	3.9 \pm 0.2
ZTACV*MT/MX	3.7 \pm 0.2	3.1 \pm 0.2	(1.0+A) \pm 0.2	0.7 \pm 0.2	3.0 \pm 0.2
ZTACW*MX	2.5 \pm 0.2	2.0 \pm 0.2	1.5max	0.4 \pm 0.2	2.0 \pm 0.2

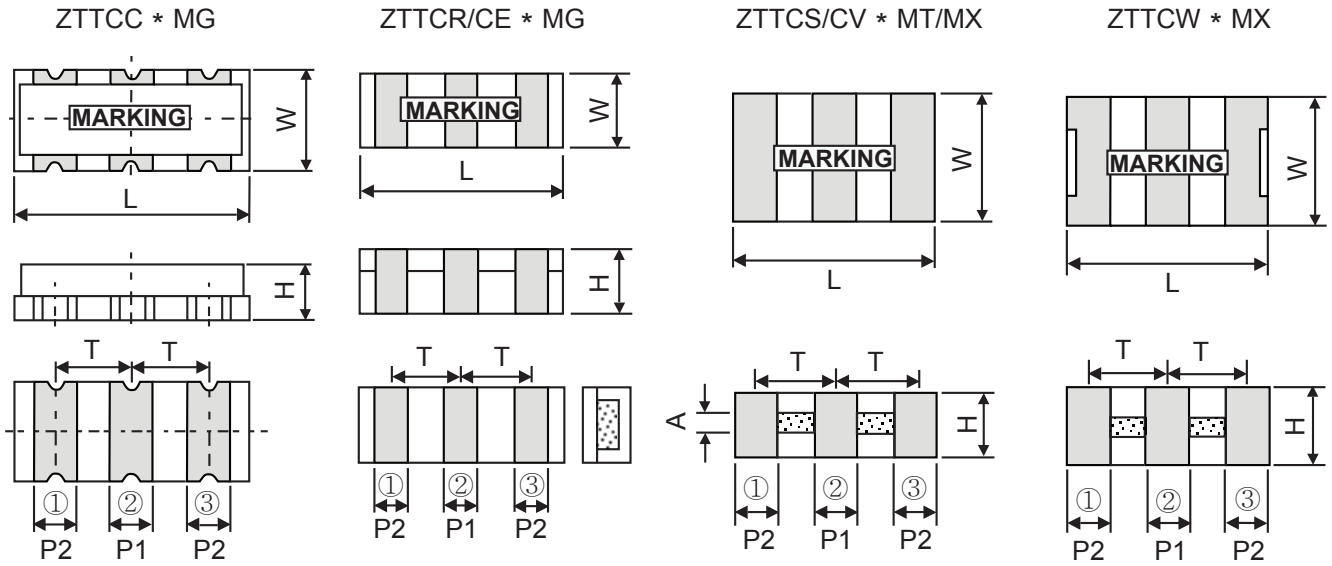
Note: A stands for thickness of the ceramic element, which varies with the frequency.

The range of the thickness is 0.1 to 0.7mm.



Ceramic Resonators

ZTTC Dimensions



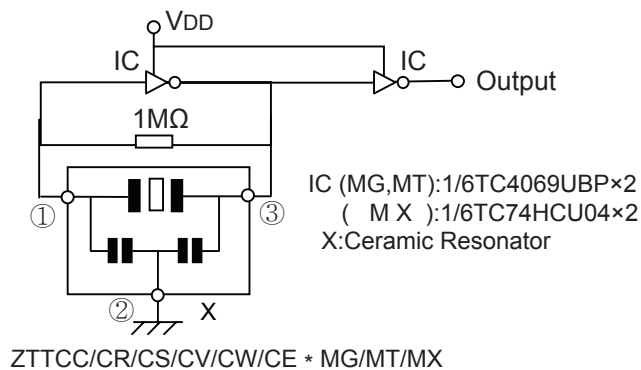
① Input ② Ground ③ Output

Part Number	Dimensions (Unit: mm)					
	L	W	H	P1	P2	T
ZTCC*MG	7.4±0.2	3.4±0.2	1.8±0.2	1.2±0.2	1.2±0.2	2.5±0.3
ZTTCR*MG	4.5±0.2	2.0±0.2	1.2max	0.8±0.2	0.8±0.2	1.5±0.2
ZTTCV*MT	3.2±0.1	1.3±0.1	1.0max	0.4±0.1	0.4±0.1	1.2±0.1
ZTTCV*MT/MX	4.7±0.2	4.1±0.2	(1.2+A)±0.2	1.0±0.2	0.8±0.2	1.95±0.2
ZTTCV*MT/MX	3.7±0.2	3.1±0.2	(1.0+A)±0.2	0.9±0.2	0.7±0.2	1.5±0.2
ZTTCW*MX	2.5±0.2	2.0±0.2	1.5max	0.5±0.2	0.4±0.2	1.0±0.2

Note: A stands for thickness of the ceramic element, which varies with the frequency.

The range of the thickness is 0.1 to 0.7mm.

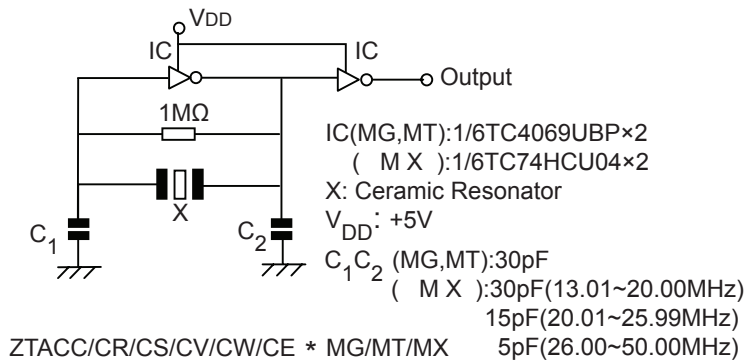
ZTTC Test Circuit for MOS IC



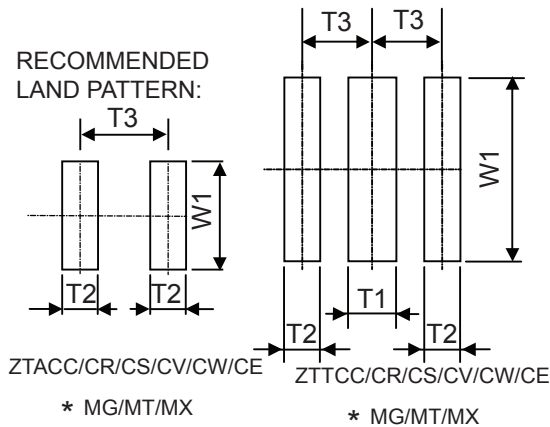


Ceramic Resonators

▶ ZTAC Test Circuit for MOS IC



▶ Recommended Land Pattern



Part Number	Dimensions (Unit: mm)			
	T1	T2	T3	W1
ZTACC*MG		1.7±0.3	5.0±0.3	4.0±0.3
ZTACR*MG		0.8±0.2	3.0±0.2	2.6±0.2
ZTACS*MT/MX		0.8±0.2	3.9±0.2	5.0±0.2
ZTACV*MT/MX		0.7±0.2	3.0±0.2	4.1±0.2
ZTACW*MX		0.5±0.2	2.0±0.2	2.6±0.2
ZTTCC*MG	1.5±0.3	1.7±0.3	2.5±0.3	4.0±0.3
ZTTCR*MG	0.8±0.2	0.8±0.2	1.5±0.2	2.6±0.2
ZTTCS*MT/MX	1.3±0.2	0.8±0.2	1.95±0.2	5.0±0.2
ZTTCV*MT/MX	1.0±0.2	0.7±0.2	1.5±0.2	4.1±0.2
ZTTCW*MX	0.5±0.2	0.5±0.2	1.0±0.2	2.6±0.2

▶ How to Order



① Part Number

② Packaging (T: Taping Reel)