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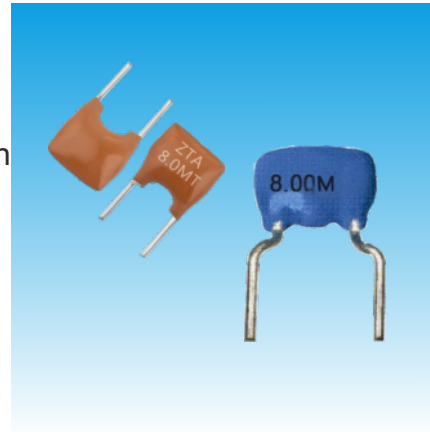
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Ceramic Resonator

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Features

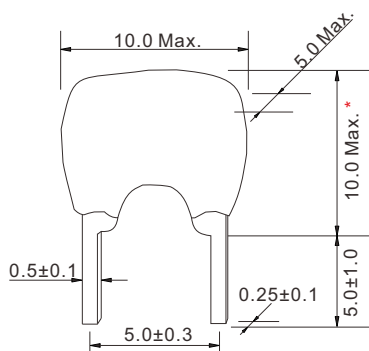
- All (ZTA) are epoxy coated and completely washable
- Resistant to damage from impact and vibration
- Low cost
- Excellent temperature stability ($\pm 0.3\%$)
- DIP type package.
- Applications: Security, Consumer device, TV, Radio, Receiver, etc.



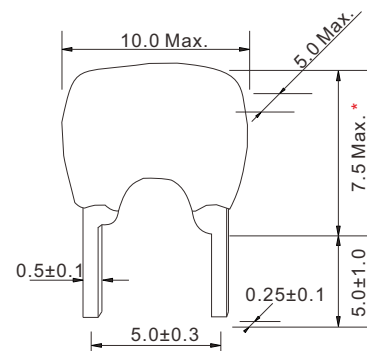
Standard Specification

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

Dimensions [mm]

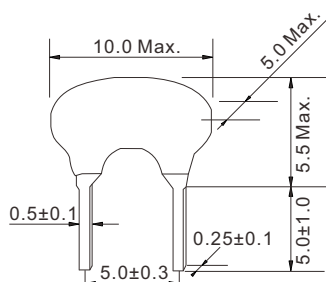


ZTA...MT

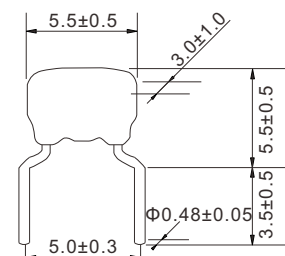


ZTALS...MG

* MG: 7.5 Max.
 MT: 10.0 Max.
 MX: 32~60MHz 6.5Max.
 24~32MHz 7.5Max.
 12~24MHz 10.0Max.



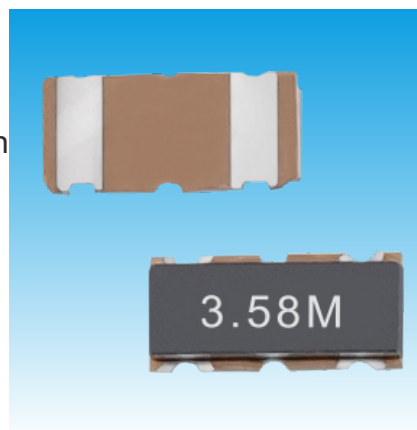
ZTAWs



ZTARS

Features

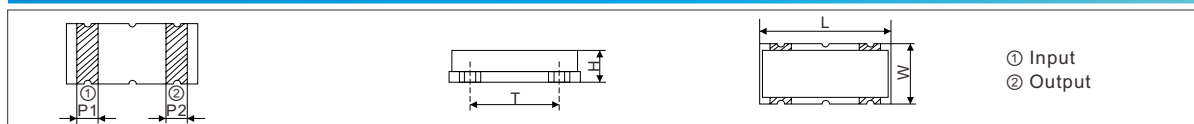
- Surface mount package ceramic resonator
- Resistant to damage from impact and vibration
- Low cost
- Excellent temperature stability ($\pm 0.3\%$)
- Automatic mounting and reflow soldering
- Applications: Security, Consumer device, TV, Radio, Receiver, etc.



Standard Specification

Part Number	Frequency Range (MHz)	Frequency Accuracy (at 25°C)	Frequency Stability	Operating Temperature	Aging for Ten Years (%)
ZTACC...MG	2.0~8.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACR...MG	4.0~8.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACE...MG	8.00~12.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACS...MT	6.00~13.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACV...MT	8.00~13.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACS...MX	13.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACV...MX	16.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACW...MX	20.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACZ...MX	24.00~45.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTACP...MG	2.00~12.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3

Dimensions [mm]



Part Number	Size (mm)					
	L	W	H	P1	P2	T
ZTACC..MG	7.4 \pm 0.2	3.4 \pm 0.2	1.8 \pm 0.2	1.2 \pm 0.2	1.2 \pm 0.2	5.0 \pm 0.2
ZTACR..MG	4.5 \pm 0.2	2.0 \pm 0.2	1.2 Max.	0.8 \pm 0.2	0.8 \pm 0.2	1.5 \pm 0.2
ZTACE..MG	3.2 \pm 0.2	1.3 \pm 0.2	1.0 Max.	0.4 \pm 0.2	0.4 \pm 0.2	1.2 \pm 0.2
ZTACS..MT/MX	4.7 \pm 0.2	4.1 \pm 0.2	(1.2+A) \pm 0.2	1.0 \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	0.9 \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	1.2 Max.	0.5 \pm 0.2	0.4 \pm 0.2	2.0 \pm 0.2
ZTACZ..MX	2.2 \pm 0.2	1.8 \pm 0.2	1.2 Max.	0.4 \pm 0.2	0.5 \pm 0.2	1.7 \pm 0.2
ZTACP..MG	6.0 \pm 0.2	3.0 \pm 0.2	1.8 \pm 0.2 1.5 \pm 0.2 1.7 \pm 0.2	1.2 \pm 0.2	1.2 \pm 0.2	5.0 \pm 0.2

Note: A stands for thickness of the ceramic element, which varies with the frequency. The range of the thickness difference is 0.1 to 0.7mm
No middle terminal for ZTA series

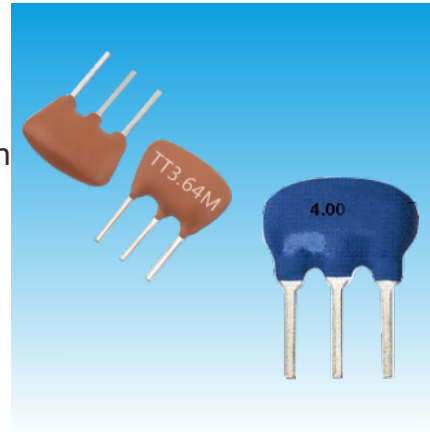
Ceramic Resonators



ZTT Series, With Built-in Capacitor, DIP Type Ceramic Resonators

Features

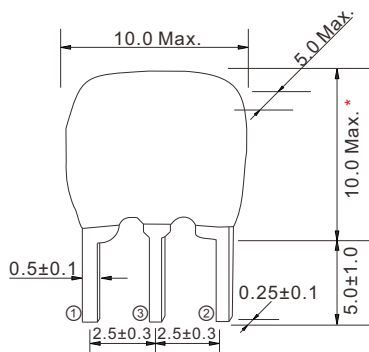
- All (ZTT) are epoxy coated and completely washable
- Resistant to damage from impact and vibration
- Low cost
- Excellent temperature stability ($\pm 0.3\%$)
- DIP type package.
- Applications: Security, Consumer device, TV, Radio, Receiver, etc.



Standard Specification

Part Number	Frequency Range (MHz)	Frequency Accuracy (at 25°C)	Frequency Stability	Operating Temperature	Aging for Ten Years (%)
ZTT...MG	1.79~6.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTWS...MG	1.79~6.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTRS...MG	3.00~12.50	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTT...MT	6.00~13.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTT...MX	12.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTRS...MX	16.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3

Dimensions [mm]

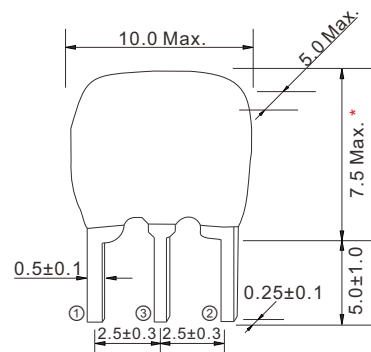


ZTT...MX

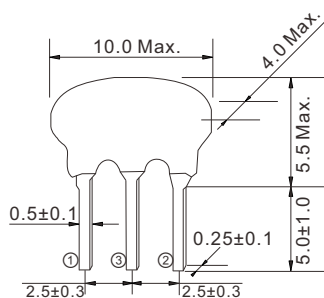
Pin Connections

Pin No.	Connection
①	Input
②	Output
③	GND

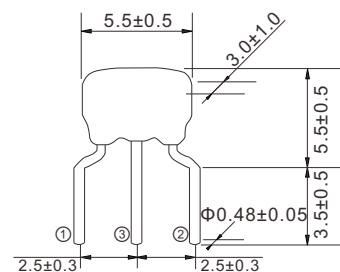
* MG: 7.5 Max.
 MT: 10.0 Max.
 MX: 32~60MHz 6.5Max.
 24~32MHz 7.5Max.
 12~24MHz 10.0Max.



ZTTLS...MG



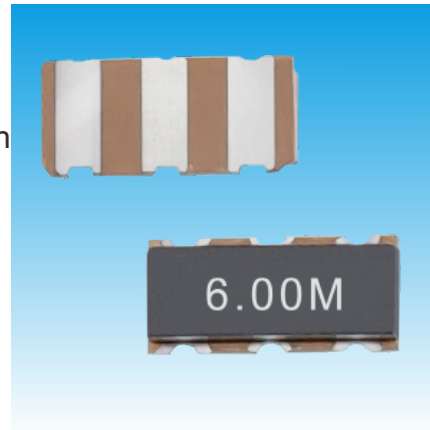
ZTTWS



ZTTRS

Features

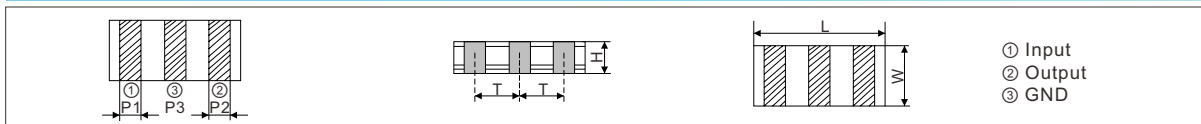
- Surface mount package ceramic resonator
- Resistant to damage from impact and vibration
- Low cost
- Excellent temperature stability ($\pm 0.3\%$)
- Automatic mounting and reflow soldering
- Applications: Security, Consumer device, TV, Radio, Receiver, etc.



Standard Specification

Part Number	Frequency Range (MHz)	Frequency Accuracy (at 25°C)	Frequency Stability	Operating Temperature	Aging for Ten Years (%)
ZTTCC...MG	2.0~8.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCR...MG	4.0~8.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCE...MG	8.00~12.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCS...MT	6.00~13.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCV...MT	8.00~13.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCS...MX	13.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCV...MX	16.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCW...MX	20.00~60.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCZ...MX	24.00~45.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3
ZTTCP...MG	2.00~12.00	$\pm 0.5\%$	$\pm 0.3\%$	-25~+80°C	± 0.3

Dimensions [mm]

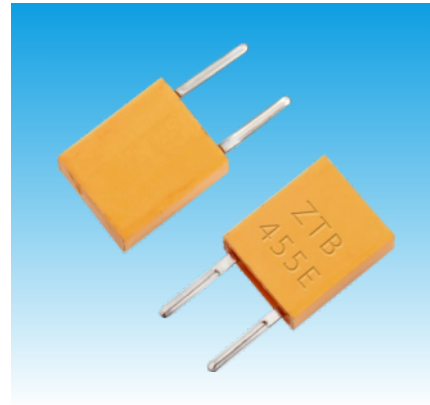


Part Number	Size Code	Size (mm)					
		L	W	H	P1	P2	T
ZTTCC..MG		7.4 \pm 0.2	3.4 \pm 0.2	1.8 \pm 0.2	1.2 \pm 0.2	1.2 \pm 0.2	2.5 \pm 0.2
ZTTCR..MG		4.5 \pm 0.2	2.0 \pm 0.2	1.2 Max.	0.8 \pm 0.2	0.8 \pm 0.2	1.5 \pm 0.2
ZTTCE..MG		3.2 \pm 0.2	1.3 \pm 0.2	1.0 Max.	0.4 \pm 0.2	0.4 \pm 0.2	1.2 \pm 0.2
ZTTCS..MT/MX		4.7 \pm 0.2	4.1 \pm 0.2	(1.2+A) \pm 0.2	1.0 \pm 0.2	0.8 \pm 0.2	1.95 \pm 0.2
ZTTCV..MT/MX		3.7 \pm 0.2	3.1 \pm 0.2	(1.0+A) \pm 0.2	0.9 \pm 0.2	0.7 \pm 0.2	1.0 \pm 0.2
ZTTCW..MX		2.5 \pm 0.2	2.0 \pm 0.2	1.2 Max.	0.5 \pm 0.2	0.4 \pm 0.2	1.0 \pm 0.2
ZTTCZ..MX		2.2 \pm 0.2	1.8 \pm 0.2	1.2 Max.	0.4 \pm 0.2	0.5 \pm 0.2	0.85 \pm 0.2
ZTTCP..MG		6.0 \pm 0.2	3.0 \pm 0.2	1.8 \pm 0.2 1.5 \pm 0.2 1.7 \pm 0.2	1.2 \pm 0.2	1.2 \pm 0.2	2.5 \pm 0.2

Note: A stands for thickness of the ceramic element, which varies with the frequency. The range of the thickness difference is 0.1 to 0.7mm
No middle terminal for ZTA series

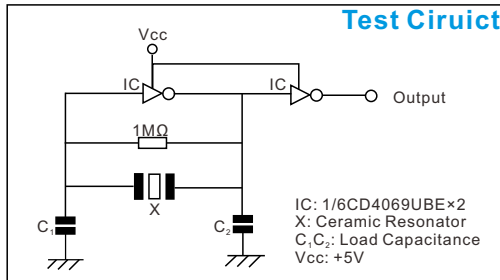
Features

- Highly reliable design with excellent environmental resistance
- Standardized for use in low profile devices
- Low cost
- Applications: Security, Consumer device, TV, Radio, Receiver, etc.



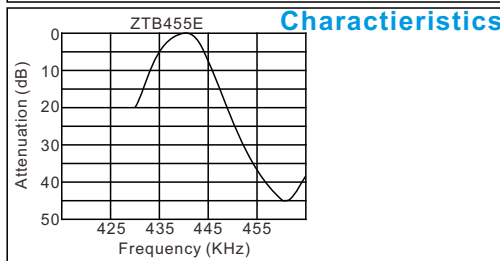
Standard Specification

Part Number		Frequency Accuracy (at 25°C)	Resonator Impedance	Frequency Stability	Aging for Ten Years	Load Capacitance C ₁ (pF)	Load Capacitance C ₂ (pF)
DIP Type	SMD Type						
ZTB190-249E		±1KHz	≤20	±0.3%	±0.3%	330	470
ZTB250-374E		±1KHz	≤20	±0.3%	±0.3%	220	470
ZTB375-429E	ZTB375-429Y	±1KHz	≤20	±0.3%	±0.3%	120	470
ZTB430-509E	ZTB430-509Y	±2KHz	≤20	±0.3%	±0.3%	100	100
ZTB510-699E	ZTB510-699Y	±2KHz	≤20	±0.3%	±0.3%	100	100
ZTB700-1250E	ZTB700-1250Y	±0.5%	≤70	±0.3%	±0.3%	100	100



DIP Type Dimensions

Frequency Range (KHz)	Width W (mm)	Thickness T (mm)	Height H (mm)	Lead Space S (mm)	Lead Length L (mm)
190~249	13.5	3.8	14.7	10.0	8.0
250~374	11.0	3.8	12.2	10.0	1.0
375~400	7.9	3.6	9.3	7.7	7.0
401~699	7.0	3.5	9.0	5.0	4.0 (6.0)
700~1250	5.2	2.8	6.8	2.5	3.5



Dimensions For SMD Type [mm]

