

High Temperature Through Hole Ceramic Resonators

U.S.Electronics Inc.

Ph: (314) 423) 7550

ZTB_H/ZTA_H/ZTT_H Series (-40°C ~ 125°C)

Fax : (314) 423 0585

[Ceramic Resonator \(KHz\) ZTB_H Series](#) Compatible to Murata CSB : 190-1250KHz

Part Number	Frequency	Frequency Accuracy	Resonant Impedance	Stability in Temperature	Aging for Ten Years	Load Capacitance (PF)	
	(KHz)			(-40°C~125°C)		C1	C2
ZTB200DH	200	±1kHz	<=20	±0.3%	±0.3%	330	470
ZTB400DH	400	±1kHz	<=20	±0.3%	±0.3%	220	470
ZTB455EH	455	±2kHz	<=20	±0.3%	±0.3%	100	100
ZTB500EH	500	±2kHz	<=20	±0.3%	±0.3%	100	100
ZTB540PH	540	±2kHz	<=20	±0.3%	±0.3%	100	100
ZTB640PH	640	±2kHz	<=30	±0.3%	±0.3%	100	100
ZTB800JH	800	±0.5%	<=50	±0.3%	±0.3%	100	100
ZTB1000JH	1000	±0.5%	<=50	±0.3%	±0.3%	100	100

[Ceramic Resonators \(MHz\) - ZTA_H Series](#) Compatible to Murata CSA : 1.80-50.00MHz

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Operating Temperature	Aging for Ten Years
	(MHz)	at 25 °C	(-40°C~125°C)	°C	
ZTA2.00MGH	2.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA3.58MGH	3.58	±0.5%	±0.3%	-40~+125	±0.3%
ZTA4.00MGH	4.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA4.19MGH	4.19	±0.5%	±0.3%	-40~+125	±0.3%
ZTA6.00MTH	6.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA8.00MTH	8.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA10.00MTH	10.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA12.00MTH	12.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA16.00MXH	16.00	±0.5%	±0.3%	-40~+125	±0.3%
ZTA20.00MXH	20.00	±0.5%	±0.3%	-40~+125	±0.3%

Ceramic Resonators (MHz) - ZTT_H Series

Compatible to Murata CST : 1.80-50.00MHz

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Aging for Ten Years
	(MHz)	at 25 °C	(-40°C~125°C)	
ZTT2.00MGH	2.00	±0.5%	±0.3%	±0.3%
ZTT3.58MGH	3.58	±0.5%	±0.3%	±0.3%
ZTT4.00MGH	4.00	±0.5%	±0.3%	±0.3%
ZTT4.19MGH	4.19	±0.5%	±0.3%	±0.3%
ZTT6.00MTH	6.00	±0.5%	±0.3%	±0.3%
ZTT8.00MTH	8.00	±0.5%	±0.3%	±0.3%
ZTT10.00MTH	10.00	±0.5%	±0.3%	±0.3%
ZTT12.00MTH	12.00	±0.5%	±0.3%	±0.3%
ZTT16.00MXH	16.00	±0.5%	±0.3%	±0.3%
ZTT20.00MXH	20.00	±0.5%	±0.3%	±0.3%

High Temperature Through Hole Ceramic Resonators

U.S.Electronics Inc.

ZTB_H Series (-40°C ~ 125°C)

Ph:(314) 423 7550

Compatible to Murata CSB: 190 - 1250 KHz

Fax: (314) 423 0585

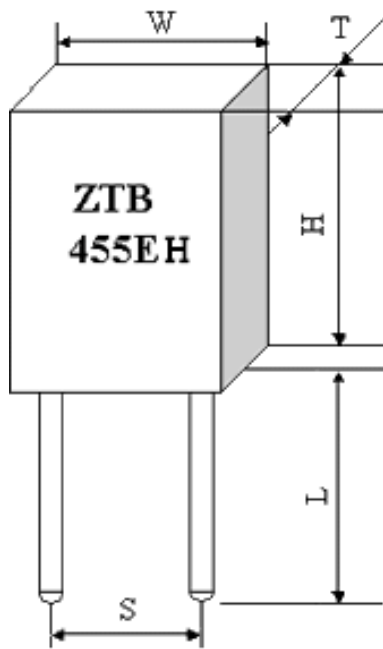
ZTB_H (KHz) Series is designed to provide the design engineer with a rugged, relatively low frequency device in the frequency range of 190 KHz to 1,250 KHz. Initial frequency tolerance is $\pm 0.5\%$ which compares very favorably to the nominal $\pm 2\% \sim \pm 3\%$ requirements of one chip microprocessors.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

TECHNICAL CHARACTERISTICS:

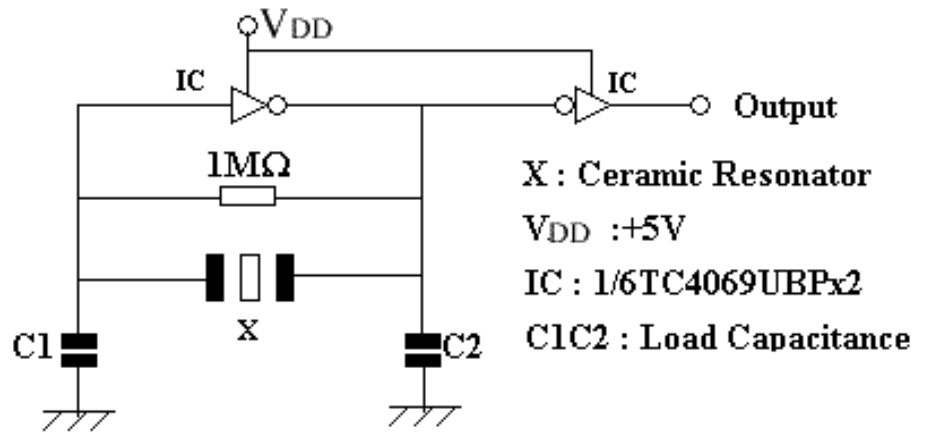
Part Number	Frequency Accuracy (at 25°C)	Resonant Impedance (Ohms) max.	Stability in Temperature (-40°C ~ 125°C)	Aging For 10 Years (%)	Load Capacitance (pF)	
					C1	C2
ZTB190DH ~ ZTB 249DH	± 1 kHz	≤ 20	± 0.3	± 0.3	330	470
ZTB250DH ~ ZTB 374DH	± 1 kHz	≤ 20	± 0.3	± 0.3	220	470
ZTB375PH ~ ZTB 429PH	± 2 kHz	≤ 20	± 0.3	± 0.3	120	470
ZTB430EH ~ ZTB 509EH	± 2 kHz	≤ 20	± 0.3	± 0.3	100	100
ZTB510PH ~ ZTB 699PH	± 2 kHz	≤ 30	± 0.3	± 0.3	100	100
ZTB700JH ~ ZTB 999JH	$\pm 0.5\%$	≤ 70	± 0.3	± 0.3	100	100
ZTB1000JH ~ ZTB1250JH	$\pm 0.5\%$	≤ 100	± 0.3	± 0.3	100	100

Frequency Range (kHz)	W(mm) width	T(mm) Thickness	H(mm) Height	S(mm) Lead Space	L(mm) Lead Length
190~249	13.5	3.8	14.7	10.0	8.0
250~374	11.0	3.8	12.2	7.7	7.0
375~400	7.9	3.6	9.3	5.0	7.7
401~699	7.0	3.5	9.0	5.0	4.0
700~1250	5.2	2.8	6.8	2.5	4.0
1000J	5.1	2.3	6.3	2.5	4.0

ZTB_H (kHz) DIMENSION
(Unit: mm Tolerance :±0.3mm)



ZTB_H (kHz) TEST CIRCUIT



High Temperature Through Hole Ceramic Resonators

U.S.Electronics Inc.

ZTA_H Series (-40°C ~ 125°C)

Ph:(314) 423 7550

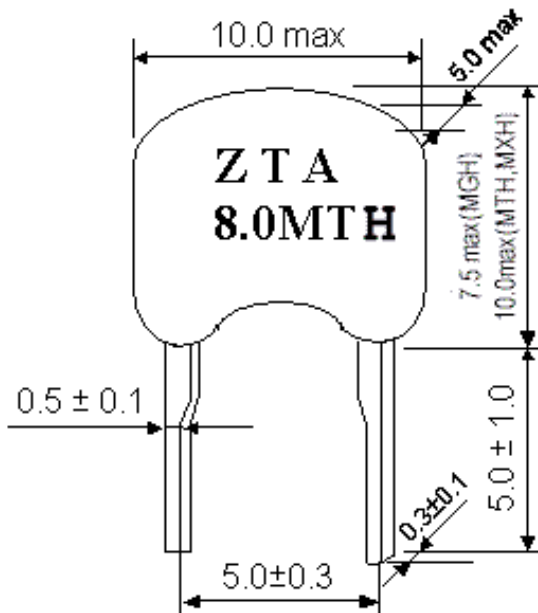
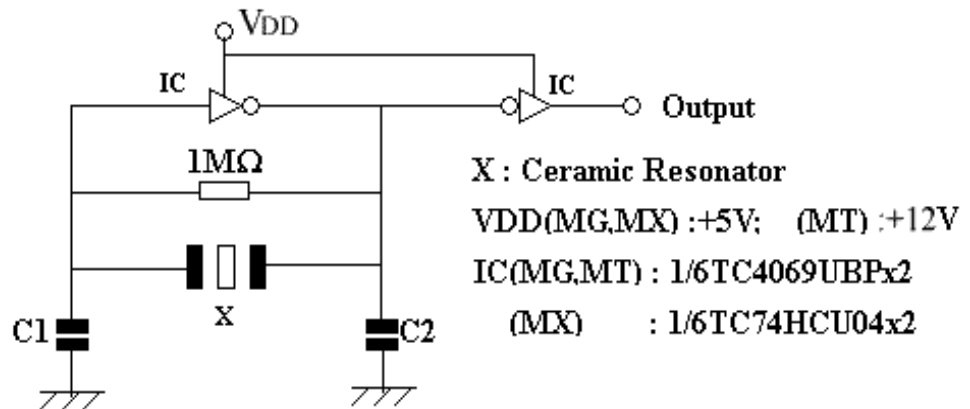
Compatible to Murata CSA : 1.80-50.00MHz

Fax: (314) 423 0585

ZTA_H (MHz) Series cover the frequency range of 1.80 MHz to 50.00 MHz with an initial frequency tolerance of $\pm 0.5\%$. Since the ZTA_H Series utilizes the thickness mode of vibration of the piezoelectric element, there is little dimensional change with frequency. All ZTA_H resonators are epoxy coated and completely washable. [Tape and Ammo](#) packaging is available.

TECHNICAL CHARACTERISTICS:

Part Number	Frequency Range (MHz)	Frequency Accuracy (at 25°C)	Stability in Temperature (-40°C ~ +125°C)	Operating Temperature (°C)	Aging For Ten Years(%)
ZTA__ MGH	1.80 ~ 6.00	$\pm 0.5\%$	$\pm 0.3\%$	-40°C ~ 125°C	$\pm 0.3\%$
ZTA__ MTH	6.01 ~ 13.00	$\pm 0.5\%$	$\pm 0.3\%$	-40°C ~ 125°C	$\pm 0.3\%$
ZTA__ MXH	13.01 ~ 50.00	$\pm 0.5\%$	$\pm 0.3\%$	-40°C ~ 125°C	$\pm 0.3\%$

ZTA_H (MHz) DIMENSIONS**ZTA_H (MHz) TEST CIRCUIT**

C1C2 (MG,MT) : 30pF

C1C2 (MX) : 30pF (13.01 ~ 20.00 MHz)

C1C2 (MX) : 15pF (20.01 ~ 25.99 MHz)

C1C2 (MX) : 5 pF (26.00 ~ 50.00 MHz)

High Temperature Through Hole Ceramic Resonators

ZTA_H/ZTT_H Series (-40°C ~ 125°C)

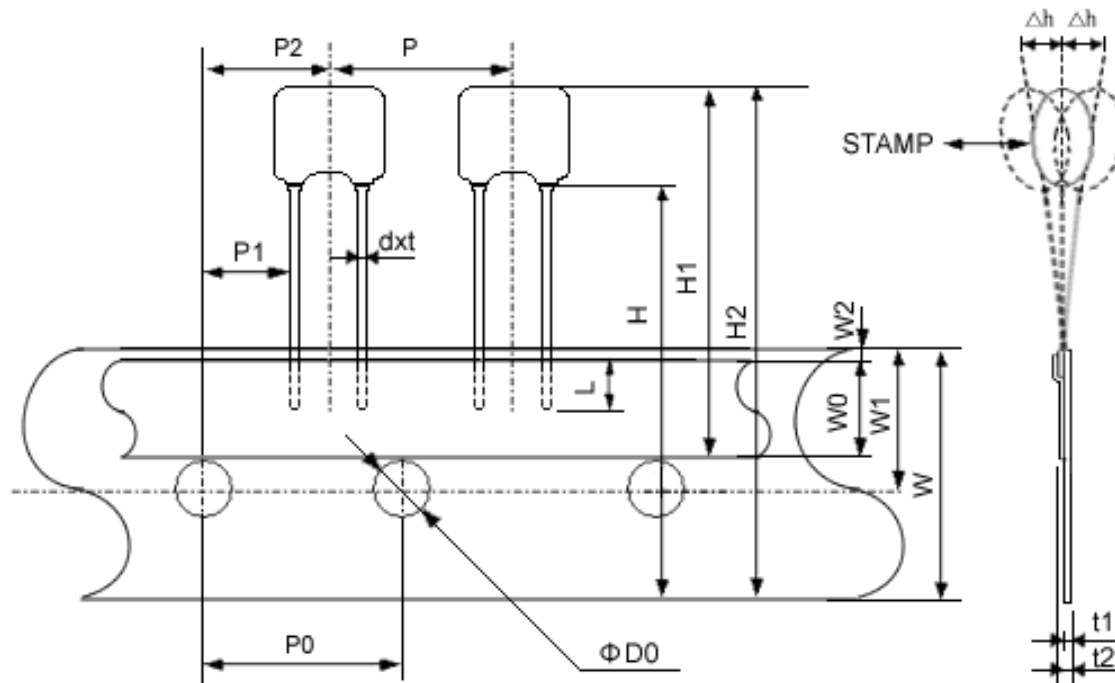
Tape And Ammo Package Dimensions

U.S.Electronics Inc.

Ph:(314) 423 7550

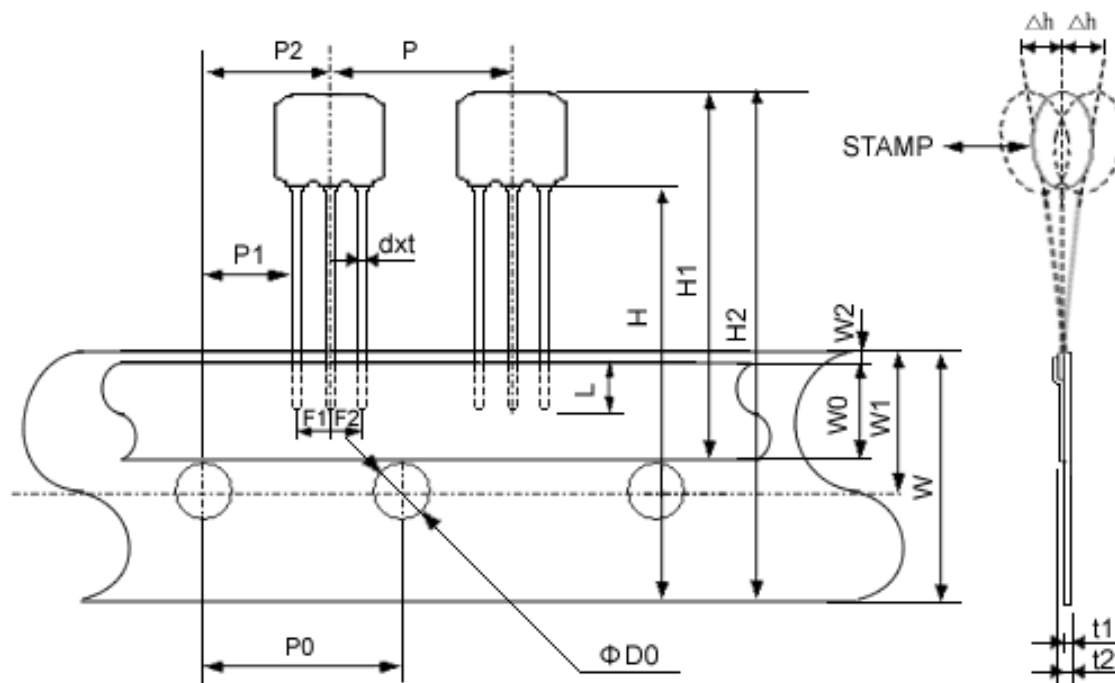
Fax: (314) 423 0585

ZTA_H Series TAPE and AMMO Dimensions



Mark	Size(mm)
P	12.7± 0.5
P0	12.7± 0.2
P1	3.85± 0.5
P2	6.35± 1.3*
F	0.5
dxt	0.5x0.3(±0.1)
W	18.0±0.5
W0	5.5±0.5
W1	9.0±0.5
W2	1.0max
H	18.0
H1	27.0max**
H2	36.0max**
L	3.0main
ØD0	4.0±0.2
t1	0.6±0.2
t2	1.5max
h	1.0max

ZTT_H Series TAPE and AMMO Dimensions



Mark	Size(mm)
P	12.7± 0.5
P0	12.7± 0.2
P1	3.85± 0.5
P2	6.35± 1.3*
F	0.5
dxt	0.5x0.3(±0.1)
W	18.0±0.5
W0	5.5±0.5
W1	9.0±0.5
W2	1.0max
H	18.0
H1	27.0max**
H2	36.0max**
L	3.0main
ØD0	4.0±0.2
t1	0.6±0.2
t2	1.5max
h	1.0max

High Temperature Through Hole Ceramic Resonators

ZTT_H Series (-40°C ~ 125°C)

Compatible to Murata CST : 1.80-50.00MHz

U.S.Electronics Inc.

Ph:(314) 423 7550

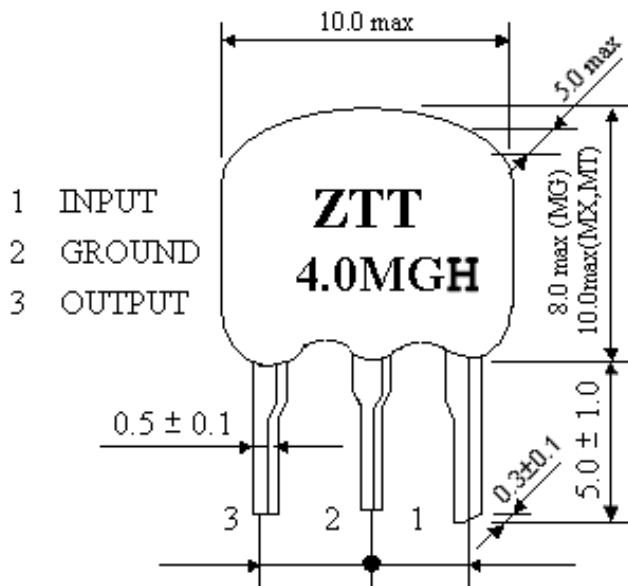
Fax: (314) 423 0585

ZTT_H (MHz) Series of ceramic resonators 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 1.80 MHz to 50.00 MHz with an initial frequency tolerance of $\pm 0.5\%$. [Tape](#) and [Ammo](#) packaging is available.

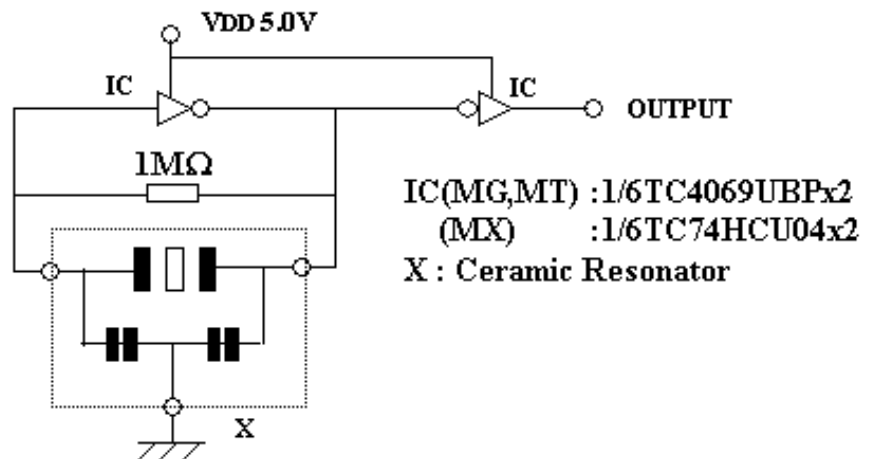
ZTT_H TECHNICAL CHARACTERISTICS TABLE

Part Number	Frequency Accuracy at 25°C	Stability In Temperature (-40°C~ 125°C)	Aging For Ten Years
ZTT1.80 ~ 6.00MGH	$\pm 0.5\%$	$\pm 0.3\%$	$\pm 0.3\%$
ZTT6.01 ~ 13.00MTH	$\pm 0.5\%$	$\pm 0.3\%$	$\pm 0.3\%$
ZTT13.01 ~ 50.00MXH	$\pm 0.5\%$	$\pm 0.3\%$	$\pm 0.3\%$

ZTT_H DIMENSION (Unit: mm)



ZTT_H TEST CIRCUIT



Through Hole Ceramic Resonators

U.S.Electronics Inc.

Ph: (314) 423) 7550

Fax : (314) 423 0585

ZTB/ZTA/ZTT Series

[Ceramic Resonator \(KHz\) ZTB Series](#) Compatible to Murata CSB : 190-1250KHz

Part Number	Frequency	Frequency Accuracy	Resonant Impedance	Stability in Temperature	Aging for Ten Years	Load Capacitance (PF)	
	(KHz)			(20~80 °C)		C1	C2
ZTB200D	200	±1kHz	≤20	±0.3%	±0.3%	330	470
ZTB400D	400	±1kHz	≤20	±0.3%	±0.3%	220	470
ZTB455E	455	±2kHz	≤20	±0.3%	±0.3%	100	100
ZTB500E	500	±2kHz	≤20	±0.3%	±0.3%	100	100
ZTB540P	540	±2kHz	≤20	±0.3%	±0.3%	100	100
ZTB640P	640	±2kHz	≤30	±0.3%	±0.3%	100	100
ZTB800J	800	±0.5%	≤50	±0.3%	±0.3%	100	100
ZTB1000J	1000	±0.5%	≤50	±0.3%	±0.3%	100	100

[Ceramic Resonators \(MHz\) - ZTA Series](#) Compatible to Murata CSA : 1.80-50.00MHz

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Operating Temperature	Aging for Ten Years
	MHz		25 °C	(-20 ~ +80 °C)	
ZTA2.00MG	2.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA3.58MG	3.58	±0.5%	±0.3%	-20~+80	±0.3%
ZTA4.00MG	4.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA4.19MG	4.19	±0.5%	±0.3%	-20~+80	±0.3%
ZTA6.00MT	6.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA8.00MT	8.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA10.00MT	10.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA12.00MT	12.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA16.00MX	16.00	±0.5%	±0.3%	-20~+80	±0.3%
ZTA20.00MX	20.00	±0.5%	±0.3%	-20~+80	±0.3%

Ceramic Resonators (MHz) - ZTT Series

Compatible to Murata CST : 1.80-50.00MHz

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Aging for Ten Years
	(MHz)	25 °C	(-20 ~ +80 °C)	
ZTT2.00MG	2.00	±0.5%	±0.3%	±0.3%
ZTT3.58MG	3.58	±0.5%	±0.3%	±0.3%
ZTT4.00MG	4.00	±0.5%	±0.3%	±0.3%
ZTT4.19MG	4.19	±0.5%	±0.3%	±0.3%
ZTT6.00MT	6.00	±0.5%	±0.3%	±0.3%
ZTT8.00MT	8.00	±0.5%	±0.3%	±0.3%
ZTT10.00MT	10.00	±0.5%	±0.3%	±0.3%
ZTT12.00MT	12.00	±0.5%	±0.3%	±0.3%
ZTT16.00MX	16.00	±0.5%	±0.3%	±0.3%
ZTT20.00MX	20.00	±0.5%	±0.3%	±0.3%

Through Hole Ceramic Resonators

U.S.Electronics Inc.

ZTB Series

Ph:(314) 423 7550

Compatible to Murata CSB: 190 - 1250 KHz

Fax: (314) 423 0585

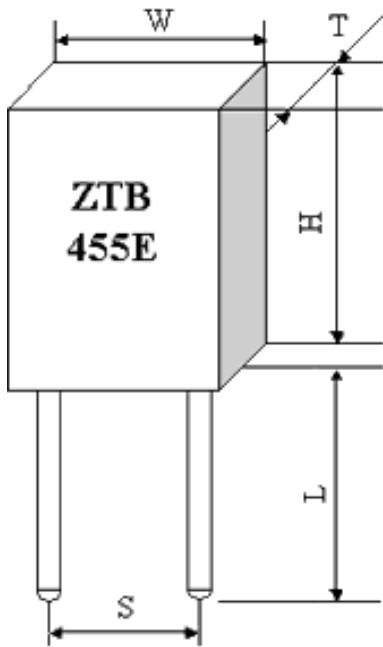
ZTB (KHz) Series is designed to provide the design engineer with a rugged, relatively low frequency device in the frequency range of 190 KHz to 1,250 KHz. Initial frequency tolerance is $\pm 0.5\%$ which compares very favorably to the nominal $\pm 2\% \sim \pm 3\%$ requirements of one chip microprocessors.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

TECHNICAL CHARACTERISTICS:

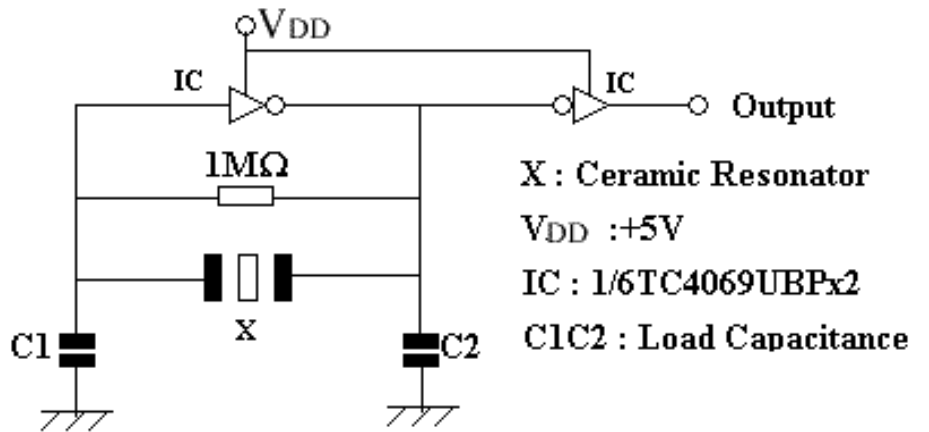
Part Number	Frequency Accuracy (at 25°C)	Resonant Impedance (Ohm) max.	Stability in Temperature (-20°C ~ +80°C)	Aging For 10 Years (%)	Load Capacitance (pF)	
					C1	C2
ZTB190D ~ ZTB 249D	± 1 kHz	≤ 20	± 0.3	± 0.3	330	470
ZTB250D ~ ZTB 374D	± 1 kHz	≤ 20	± 0.3	± 0.3	220	470
ZTB375P ~ ZTB 429P	± 2 kHz	≤ 20	± 0.3	± 0.3	120	470
ZTB430E ~ ZTB 509E	± 2 kHz	≤ 20	± 0.3	± 0.3	100	100
ZTB510P ~ ZTB 699P	± 2 kHz	≤ 30	± 0.3	± 0.3	100	100
ZTB700J ~ ZTB 999J	$\pm 0.5\%$	≤ 70	± 0.3	± 0.3	100	100
ZTB1000J ~ ZTB1250J	$\pm 0.5\%$	≤ 100	± 0.3	± 0.3	100	100

Frequency Range (kHz)	W(mm) width	T(mm) Thickness	H(mm) Height	S(mm) Lead Space	L(mm) Lead Length
190~249	13.5	3.8	14.7	10.0	8.0
250~374	11.0	3.8	12.2	7.7	7.0
375~400	7.9	3.6	9.3	5.0	7.7
401~699	7.0	3.5	9.0	5.0	4.0
700~1250	5.2	2.8	6.8	2.5	4.0
1000J	5.1	2.3	6.3	2.5	4.0

ZTB (kHz) DIMENSION (Unit: mm Tolerance :±0.3mm)



ZTB (kHz) TEST CIRCUIT



Through Hole Ceramic Resonators

U.S.Electronics Inc.

ZTA Series

Ph:(314) 423 7550

Compatible to Murata CSA : 1.80-50.00MHz

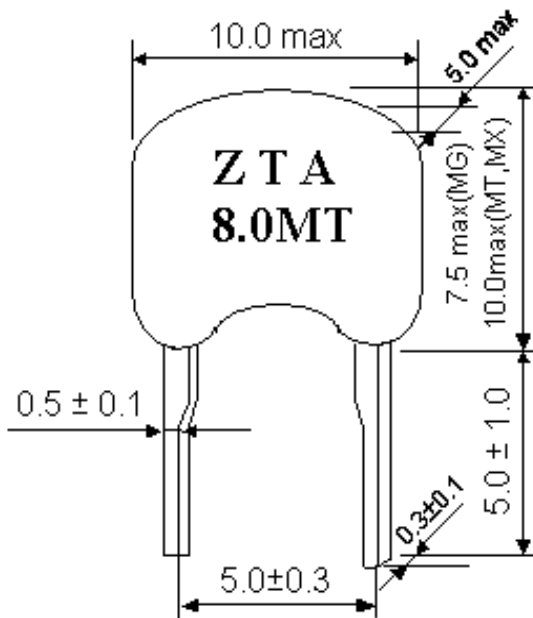
Fax: (314) 423 0585

ZTA (MHz) Series cover the frequency range of 1.80 MHz to 50.00 MHz with an initial frequency tolerance of $\pm 0.5\%$. Since the ZTA Series utilizes the thickness mode of vibration of the piezoelectric element, there is little dimensional change with frequency. All ZTA resonators are epoxy coated and completely washable. [Tape and Ammo](#) packaging is available.

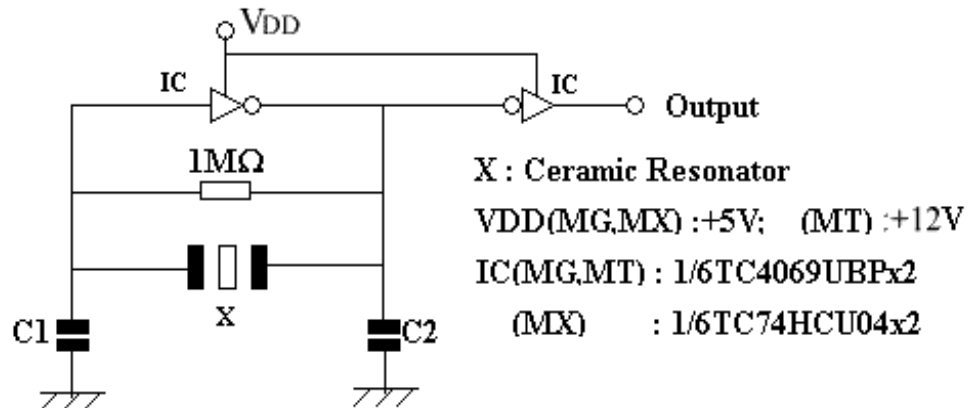
TECHNICAL CHARACTERISTICS:

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	1.80 ~ 6.00	$\pm 0.5\%$	$\pm 0.3\%$	-20 ~ +80	$\pm 0.3\%$
ZTA__ MT	6.01 ~ 13.00	$\pm 0.5\%$	$\pm 0.3\%$	-20 ~ +80	$\pm 0.3\%$
ZTA__ MX	13.01 ~ 50.00	$\pm 0.5\%$	$\pm 0.3\%$	-20 ~ +80	$\pm 0.3\%$

ZTA (MHz) DIMENSIONS



ZTA (MHz) TEST CIRCUIT



C1C2 (MG,MT) : 30pF
C1C2 (MX) : 30pF (13.01 ~ 20.00 MHz)
C1C2 (MX) : 15pF (20.01 ~ 25.99 MHz)
C1C2 (MX) : 5 pF (26.00 ~ 50.00 MHz)

Through Hole Ceramic Resonators

U.S.Electronics Inc.

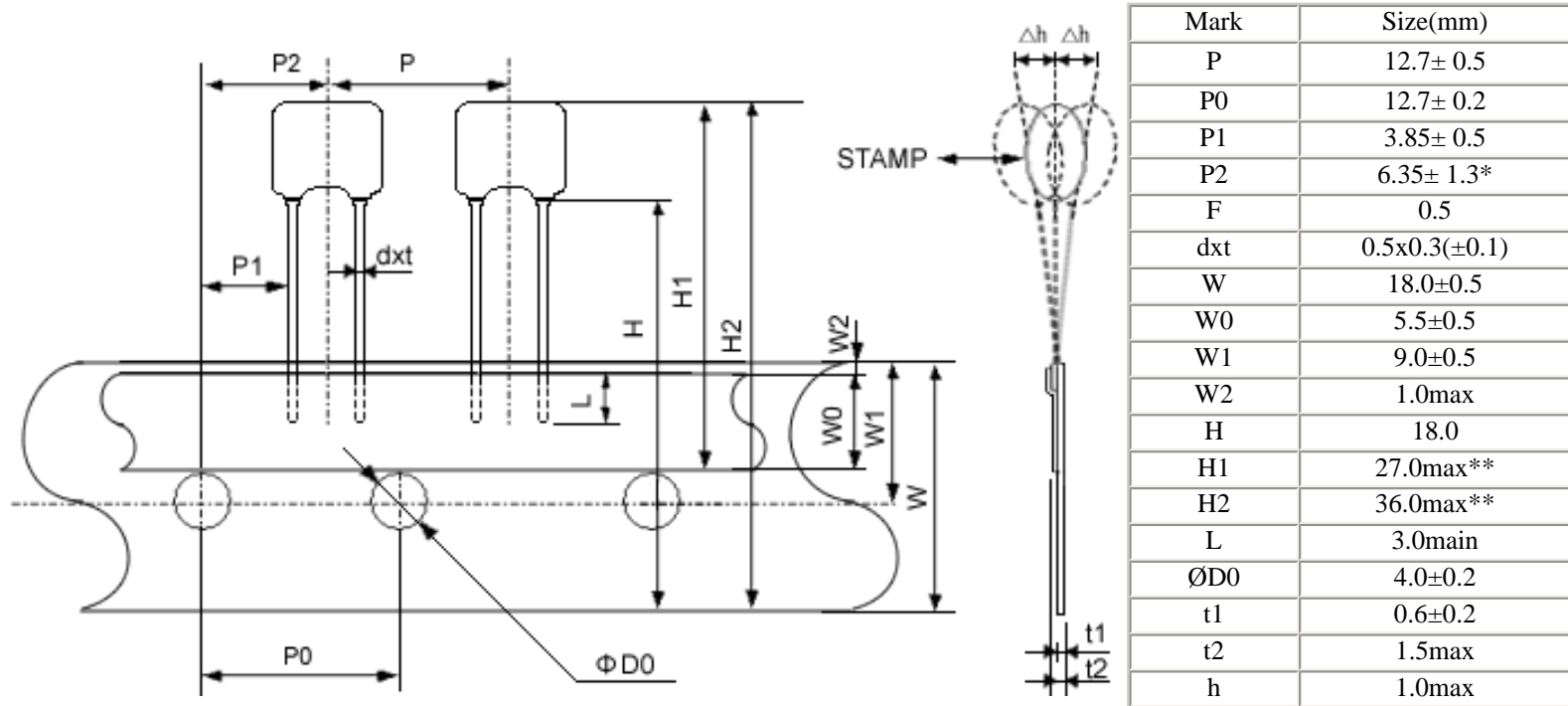
ZTA/ZTT Series

Ph:(314) 423 7550

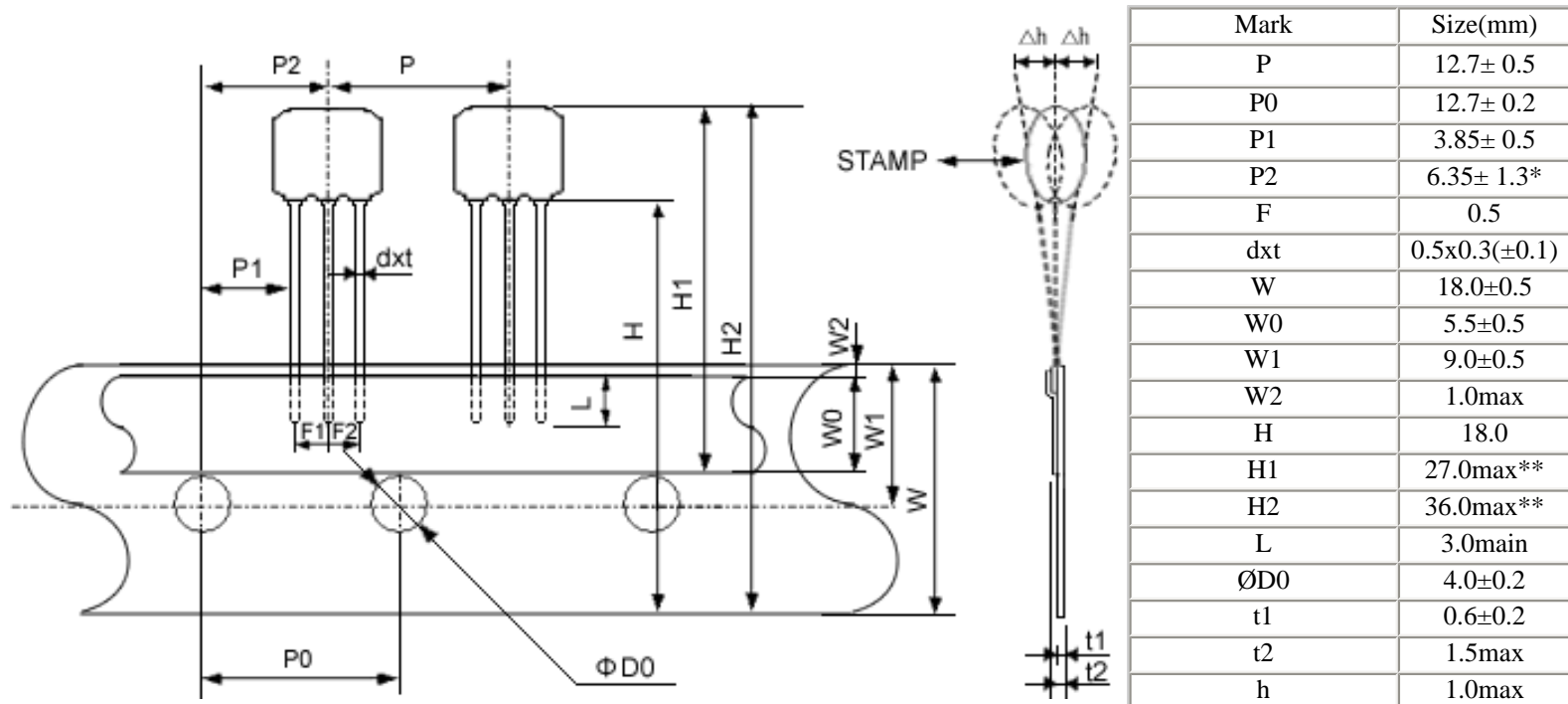
Tape And Ammo Package Dimensions

Fax: (314) 423 0585

ZTA Series TAPE and AMMO Dimensions



ZTT Series TAPE and AMMO Dimensions



Through Hole Ceramic Resonators

U.S.Electronics Inc.

ZTT Series

Ph:(314) 423 7550

Compatible to Murata CST : 1.80-50.00MHz

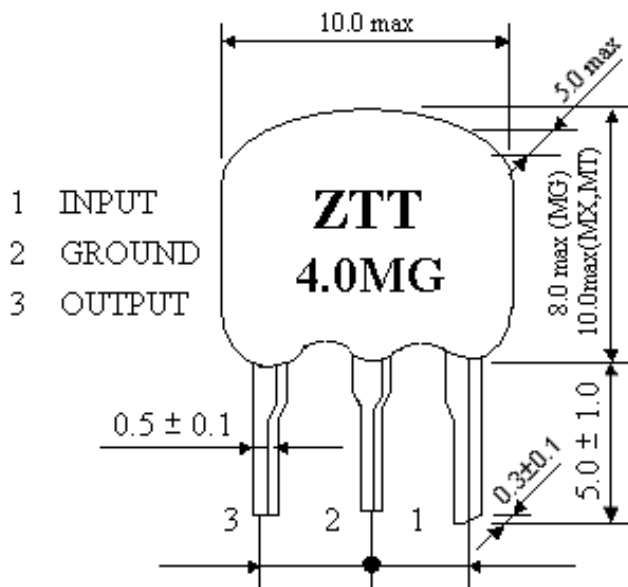
Fax: (314) 423 0585

ZTT (MHz) Series of ceramic resonators 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 1.80 MHz to 50.00 MHz with an initial frequency tolerance of $\pm 0.5\%$. [Tape and Ammo](#) packaging is available.

ZTT TECHNICAL CHARACTERISTICS TABLE

Part Number	Frequency Accuracy at 25°C (%)	Stability In Temperature -20°C~ +80°C (%)	Aging For Ten Years (%)
ZTT1.80 ~ 6.00MG	± 0.5	± 0.3	± 0.3
ZTT6.01 ~ 13.00MT	± 0.5	± 0.3	± 0.3
ZTT13.01 ~ 50.00MX	± 0.5	± 0.3	± 0.3

ZTT DIMENSION (Unit: mm)



ZTT TEST CIRCUIT

