

HIGH TEMPERATURE SMD CERAMIC RESONATORS**ZTACC/CS/CV_H series without built-in capacitors****ZTTCC/CS/CV_H series with built-in capacitors****Temperature Range : -40°C ~ 125°C****U.S.Electronics Inc.****Ph: (314)423 7550****Fax: (314) 423 0585****FEATURES**

- High temperature withstanding ceramic case,available in wide frequency range
- Rectangular shape allows easy pick and placement
- Small & low profile less than 2.0mm height max
- Reflow Solderable

**TECHNICAL CHARACTERISTICS:****ZTACC/CS/CV_H series without built-in capacitors****ZTTCC/CS/CV_H series with built-in capacitors**

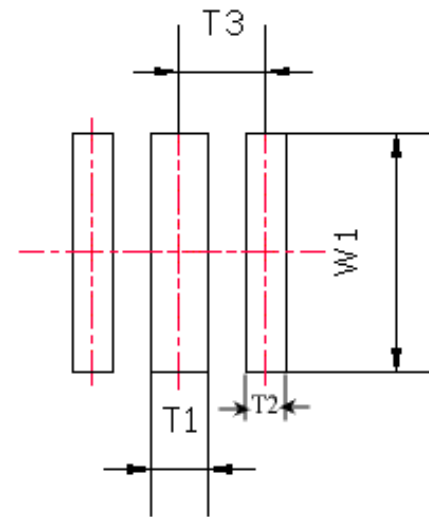
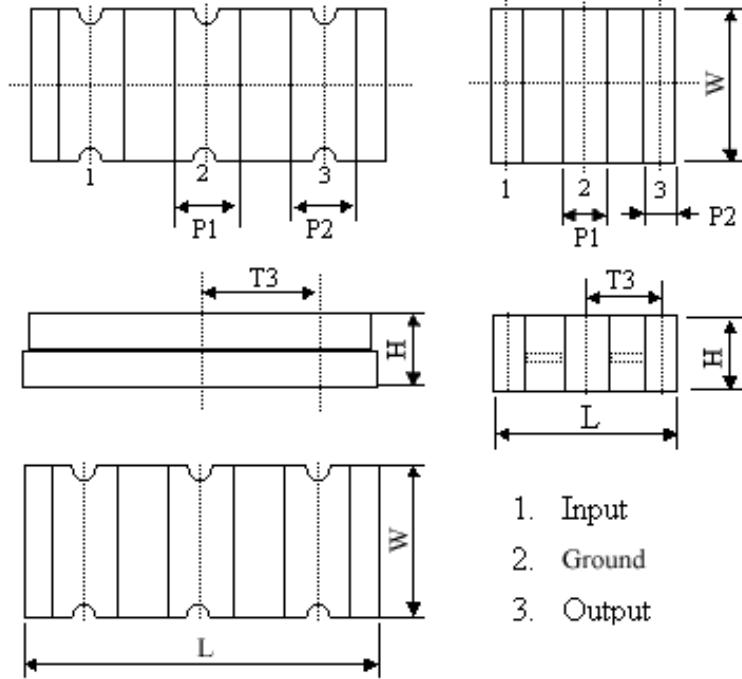
Part Number	Freq. Range (MHz)	Freq. Accuracy at 25°C (%)	Stability In Temp. -40°C~+125°C	Aging For Ten Yrs(%)	Equivalent Murata Series
ZTACC MGH	2.00 ~ 8.00	± 0.5	± 0.3%	± 0.3	CSACC MG
ZTACS/CV MTH	9.00 ~13.00	± 0.5	± 0.4%	± 0.3	CSACV MT
ZTACS/CV MXH	13.01~50.00	± 0.5	± 0.3%	± 0.3	CSACV MX

Part Number	Freq. Range (MHz)	Freq. Accuracy at 25°C (%)	Stability In Temp. -40°C~ +125°C	Aging For Ten Yrs(%)	Equivalent Murata Series
ZTTCC MGH	2.00 ~ 8.00	± 0.5	± 0.3%	± 0.3	CSTCC MG
ZTTCS/CV MTH	9.00~13.00	± 0.5	± 0.4%	± 0.3	CSTCV MT
ZTTCS/CV MXH	13.01~50.00	± 0.5	± 0.3%	± 0.3	CSTCV MX

DIMENSIONS:(No middle terminal for ZTACC series.)

ZTCC MGH/ZTACC MGH ZTCS/CV MTH/MXH / ZTACS/CV MTH/MXH

LAND PATTERN:



1. Input
2. Ground
3. Output

ZTACC/CV/CS_H DIMENSIONS (Unit: mm)

Part Number	Dimensions							
	L	W	H	P2	T1	T2	T3	W1
ZTACC MGH	7.4 ± 0.3	3.4 ± 0.3	1.8 ± 0.3	1.2 ± 0.3	1.5 ± 0.3	1.3 ± 0.3	2.5 ± 0.3	4.0 ± 0.3
ZTACS MTH/MXH	4.7 ± 0.2	4.1 ± 0.2	1.6 ± 0.3	0.8 ± 0.4	1.3 ± 0.2	0.8 ± 0.2	1.95 ± 0.2	5.1 ± 0.2
ZTACV MTH/MXH	3.7 ± 0.2	3.1 ± 0.2	1.2 ± 0.3	0.7 ± 0.3	1.0 ± 0.2	0.7 ± 0.2	1.5 ± 0.2	4.1 ± 0.2

ZTCC/CV/CS_H DIMENSIONS (Unit: mm)

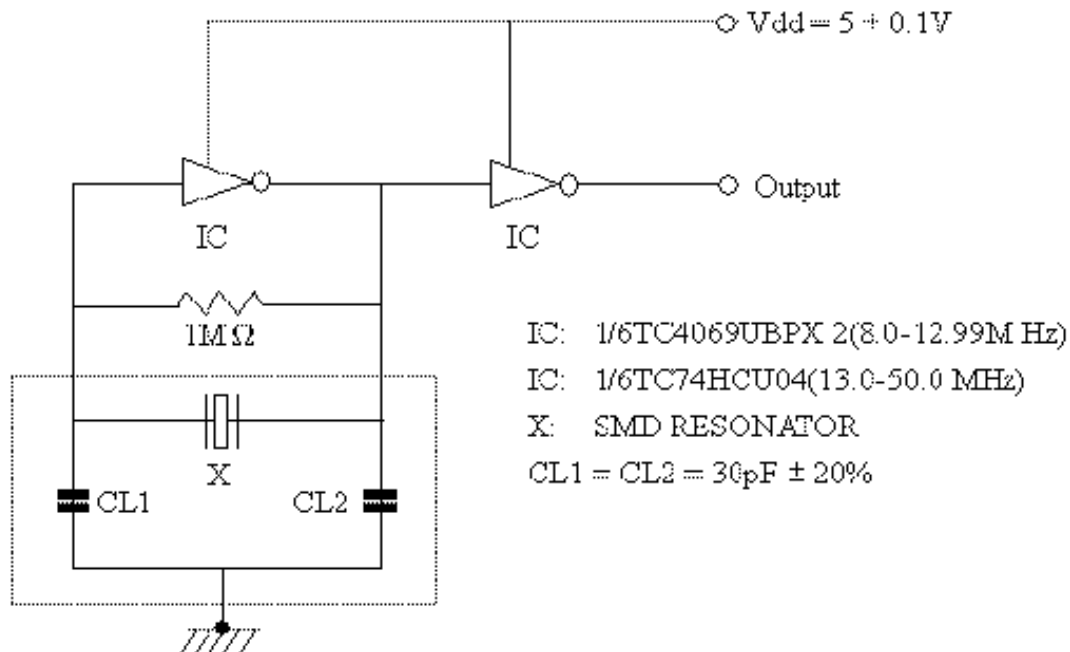
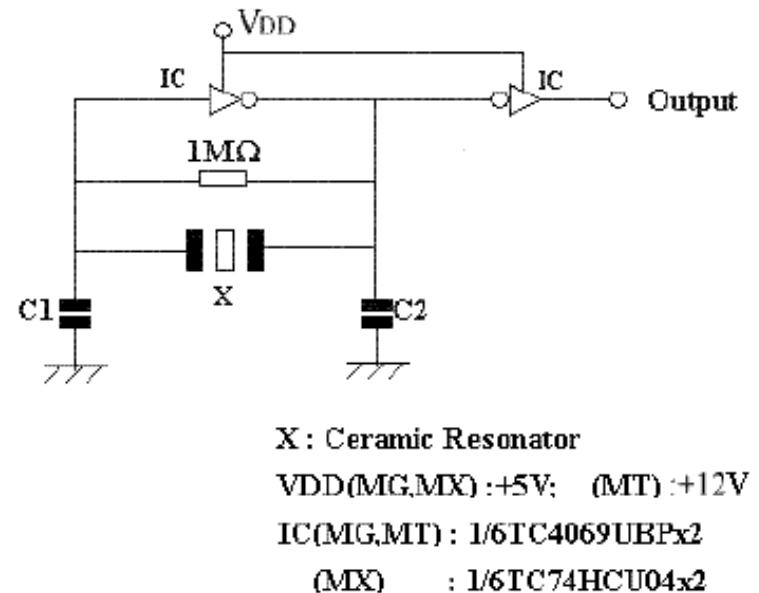
Part Number	Dimensions								
	L	W	H	P1	P2	T1	T2	T3	W1
ZTCC MGH	7.4 ± 0.3	3.4 ± 0.3	1.8 ± 0.3	1.2 ± 0.3	1.2 ± 0.3	1.5 ± 0.3	1.3 ± 0.3	2.5 ± 0.3	4.0 ± 0.3
ZTCS MTH/MXH	4.7 ± 0.2	4.1 ± 0.2	1.6 ± 0.3	1.0 ± 0.4	0.8 ± 0.4	1.3 ± 0.2	0.8 ± 0.2	1.95 ± 0.2	5.1 ± 0.2
ZTCCV MTH/MXH	3.7 ± 0.2	3.1 ± 0.2	1.2 ± 0.3	0.9 ± 0.3	0.7 ± 0.3	1.0 ± 0.2	0.7 ± 0.2	1.5 ± 0.2	4.1 ± 0.2

ZTACC/CS/CV_H Series:

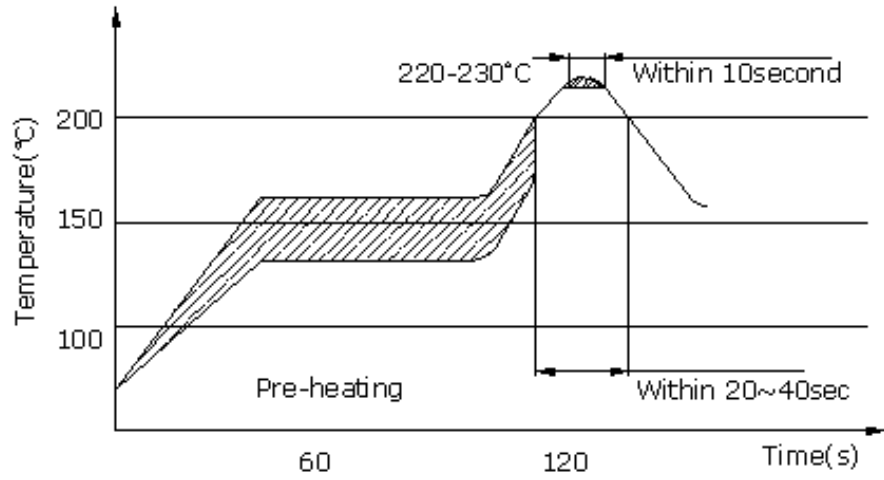
Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Aging for Ten Years
	(MHz)	25 °C	(-40 ~ +125 °C)	
ZTACC2.00MGH	2.00	±0.5%	±0.3%	±0.3%
ZTACC3.58MGH	3.58	±0.5%	±0.3%	±0.3%
ZTACC4.00MGH	4.00	±0.5%	±0.3%	±0.3%
ZTACC4.19MGH	4.19	±0.5%	±0.3%	±0.3%
ZTACC6.00MGH	6.00	±0.5%	±0.3%	±0.3%
ZTACC8.00MGH	8.00	±0.5%	±0.4%	±0.3%
ZTACV10.00MTH	10.00	±0.5%	±0.4%	±0.3%
ZTACS10.00MTH	10.00	±0.5%	±0.4%	±0.3%
ZTACV12.00MTH	12.00	±0.5%	±0.4%	±0.3%
ZTACS12.00MTH	12.00	±0.5%	±0.4%	±0.3%
ZTACV16.00MXH	16.00	±0.5%	±0.4%	±0.3%
ZTACS16.00MXH	16.00	±0.5%	±0.4%	±0.3%
ZTACV20.00MXH	20.00	±0.5%	±0.3%	±0.3%
ZTACS20.00MXH	20.00	±0.5%	±0.3%	±0.3%

ZTTCC/CS/CV_H Series:

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Aging for Ten Years
	(MHz)	25 °C	(-40 ~ +125 °C)	
ZTTCC2.00MGH	2.00	±0.5%	±0.3%	±0.3%
ZTTCC3.58MGH	3.58	±0.5%	±0.3%	±0.3%
ZTTCC4.00MGH	4.00	±0.5%	±0.3%	±0.3%
ZTTCC4.19MGH	4.19	±0.5%	±0.3%	±0.3%
ZTTCC6.00MGH	6.00	±0.5%	±0.3%	±0.3%
ZTTCC8.00MGH	8.00	±0.5%	±0.4%	±0.3%
ZTTCV10.00MTH	10.00	±0.5%	±0.4%	±0.3%
ZTTCS10.00MTH	10.00	±0.5%	±0.4%	±0.3%
ZTTCV12.00MTH	12.00	±0.5%	±0.4%	±0.3%
ZTTCS12.00MTH	12.00	±0.5%	±0.4%	±0.3%
ZTTCV16.00MXH	16.00	±0.5%	±0.4%	±0.3%
ZTTCS16.00MXH	16.00	±0.5%	±0.4%	±0.3%
ZTTCV20.00MXH	20.00	±0.5%	±0.3%	±0.3%
ZTTCS20.00MXH	20.00	±0.5%	±0.3%	±0.3%

ZTTCC/CS/CV_H TEST CIRCUIT**ZTACC/CS/CV_H TEST CIRCUIT**

RECOMMENDED REFLOW SOLDERING: [Tape & Reel Dimensions](#)(click here)



Reel Dimensions(mm)

A	B	W	T	Pieces per reel	Carrier tape size
179±2	60 typ	12.4 min	19.4max	1000typ.	12
179±2	60 typ	16.4 min	22.4max	1000typ.	16
330±3	80 min	12.4 min	19.4max	4000typ.	12
330±3	80 min	16.4 min	22.4max	4000typ.	16

Tape Dimensions(mm)

Code / Tolerance	A±0.2	B±0.2	C±0.3	D±0.1	E±0.1	F±0.1	G±0.1	H±0.1	J±0.1	N±0.1	Mmax	Rmax	K±0.2	T±0.1
Series Number														
ZTACC MGH ZTTCC MGH	3.8	7.8	16.0	7.5									2.1	
ZTACS MTH/MXH ZTTCS MTH/MXH	5.0	4.4	12.0	5.5	1.75	8.0	4.0	2.0	1.5	1.6	10°	0.3	1.8	0.3
ZTACV MTH/MXH ZTTCV MTH/MXH	3.4	4.0	12.0	5.5									1.3	

SMD CERAMIC RESONATORS

ZTACC/CS/CV series without built-in capacitors

ZTTCC/CS/CV series with built-in capacitors

U.S.Electronics Inc.

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FEATURES

- High temperature withstanding ceramic case,available in wide frequency range
- Rectangular shape allows easy pick and placement
- Small & low profile less than 2.0mm height max
- Reflow Solderable



TECHNICAL CHARACTERISTICS:

ZTACC/CS/CV series without built-in capacitors

Part Number	Freq. Range (MHz)	Freq. Accuracy at 25°C (%)	Stability In Temp. -20°C~+80°C	Aging For Ten Yrs(%)	Equivalent Murata Series
ZTACC MG	2.00 ~ 8.00	± 0.5	± 0.3%	± 0.3	CSACC MG
ZTACS/CV MT	9.00 ~13.00	± 0.5	± 0.4%	± 0.3	CSACV MT
ZTACS/CV MX	13.01~50.00	± 0.5	± 0.3%	± 0.3	CSACV MX

ZTTCC/CS/CV series with built-in capacitors

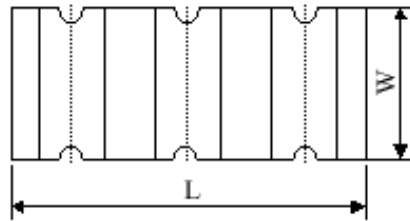
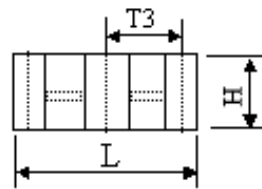
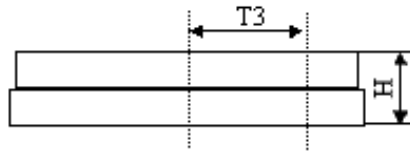
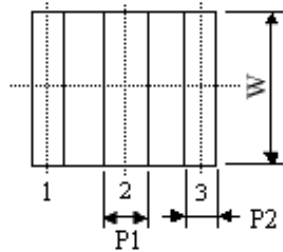
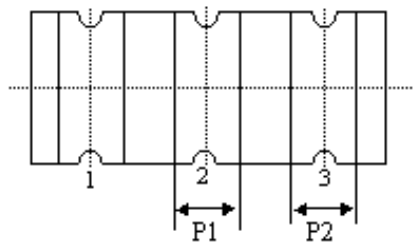
Part Number	Freq. Range (MHz)	Freq. Accuracy at 25°C (%)	Stability In Temp. -20°C~ +80°C	Aging For Ten Yrs(%)	Equivalent Murata Series
ZTTCC MG	2.00 ~ 8.00	± 0.5	± 0.3%	± 0.3	CSTCC MG
ZTTCS/CV MT	9.00~13.00	± 0.5	± 0.4%	± 0.3	CSTCV MT
ZTTCS/CV MX	13.01~50.00	± 0.5	± 0.3%	± 0.3	CSTCV MX

DIMENSIONS:(No middle terminal for ZTACC series.)

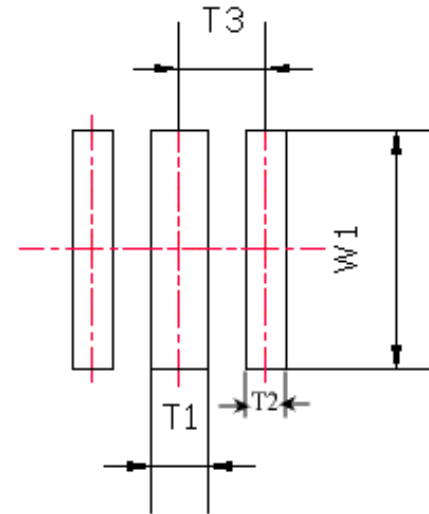
ZTCC MG/ZTACC MG

ZTCS/CV MT/MX / ZTACS/CV MT/MX

LAND PATTERN:



1. Input
2. Ground
3. Output



ZTACC/CV/CS DIMENSIONS (Unit: mm)

Part Number	Dimensions							
	L	W	H	P2	T1	T2	T3	W1
ZTACC MG	7.4 ± 0.3	3.4 ± 0.3	1.8 ± 0.3	1.2 ± 0.3	1.5 ± 0.3	1.3 ± 0.3	2.5 ± 0.3	4.0 ± 0.3
ZTACS MT/MX	4.7 ± 0.2	4.1 ± 0.2	1.6 ± 0.3	0.8 ± 0.4	1.3 ± 0.2	0.8 ± 0.2	1.95 ± 0.2	5.1 ± 0.2
ZTACV MT/MX	3.7 ± 0.2	3.1 ± 0.2	1.2 ± 0.3	0.7 ± 0.3	1.0 ± 0.2	0.7 ± 0.2	1.5 ± 0.2	4.1 ± 0.2

ZTCC/CV/CS DIMENSIONS (Unit: mm)

Part Number	Dimensions								
	L	W	H	P1	P2	T1	T2	T3	W1
ZTCC MG	7.4 ± 0.3	3.4 ± 0.3	1.8 ± 0.3	1.2 ± 0.3	1.2 ± 0.3	1.5 ± 0.3	1.3 ± 0.3	2.5 ± 0.3	4.0 ± 0.3
ZTCS MT/MX	4.7 ± 0.2	4.1 ± 0.2	1.6 ± 0.3	1.0 ± 0.4	0.8 ± 0.4	1.3 ± 0.2	0.8 ± 0.2	1.95 ± 0.2	5.1 ± 0.2
ZTCCV MT/MX	3.7 ± 0.2	3.1 ± 0.2	1.2 ± 0.3	0.9 ± 0.3	0.7 ± 0.3	1.0 ± 0.2	0.7 ± 0.2	1.5 ± 0.2	4.1 ± 0.2

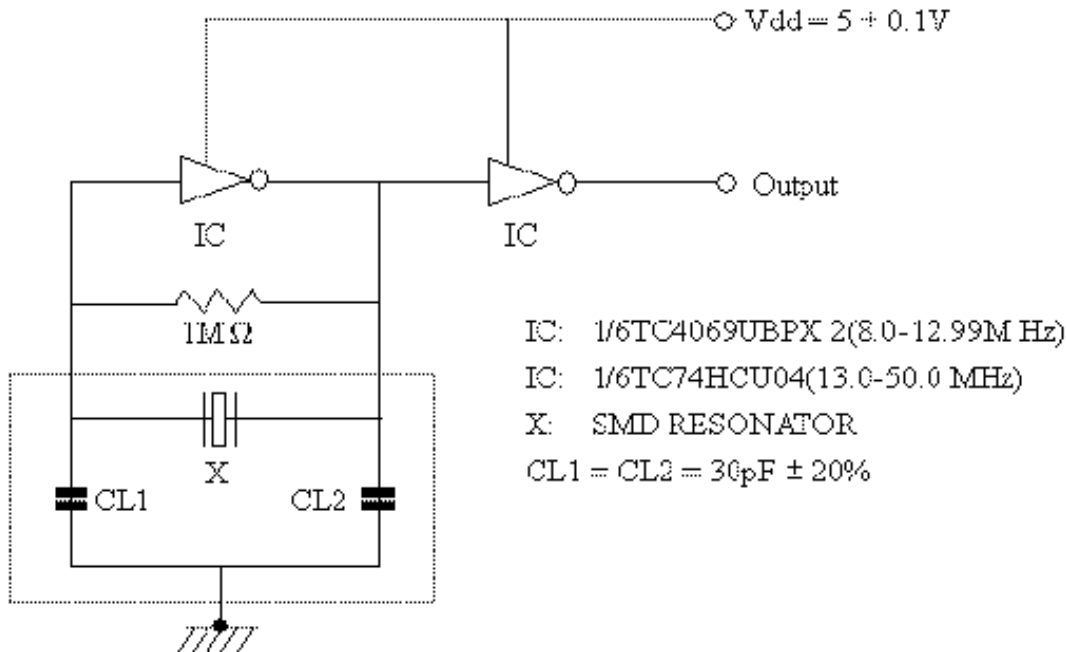
ZTACC/CS/CV Series:

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Aging for Ten Years
	(MHz)	25 °C	(-20 ~ +80 °C)	
ZTACC2.00MG	2.00	±0.5%	±0.3%	±0.3%
ZTACC3.58MG	3.58	±0.5%	±0.3%	±0.3%
ZTACC4.00MG	4.00	±0.5%	±0.3%	±0.3%
ZTACC4.19MG	4.19	±0.5%	±0.3%	±0.3%
ZTACC6.00MG	6.00	±0.5%	±0.3%	±0.3%
ZTACC8.00MG	8.00	±0.5%	±0.4%	±0.3%
ZTACV10.00MT	10.00	±0.5%	±0.4%	±0.3%
ZTACS10.00MT	10.00	±0.5%	±0.4%	±0.3%
ZTACV12.00MT	12.00	±0.5%	±0.4%	±0.3%
ZTACS12.00MT	12.00	±0.5%	±0.4%	±0.3%
ZTACV16.00MX	16.00	±0.5%	±0.4%	±0.3%
ZTACS16.00MX	16.00	±0.5%	±0.4%	±0.3%
ZTACV20.00MX	20.00	±0.5%	±0.3%	±0.3%
ZTACS20.00MX	20.00	±0.5%	±0.3%	±0.3%

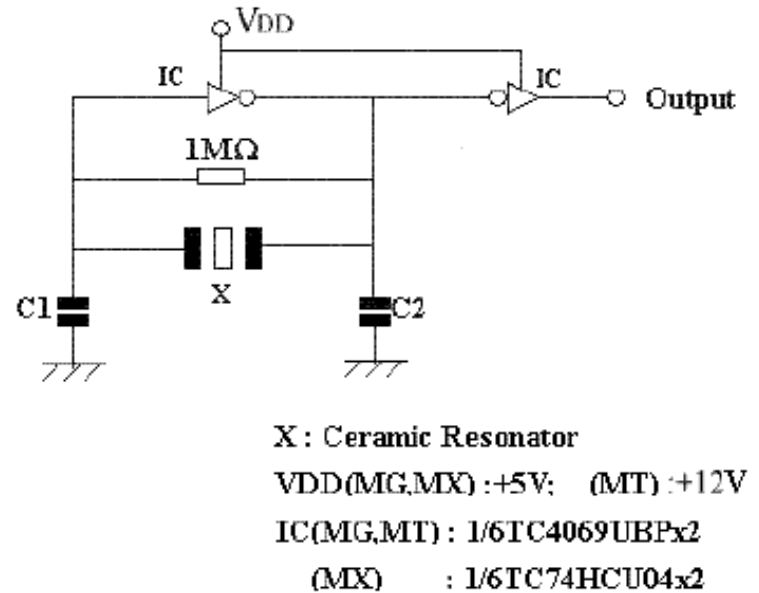
ZTTCC/CS/CV Series:

Part Number	Frequency	Frequency Accuracy	Stability in Temperature	Aging for Ten Years
	(MHz)	25 °C	(-20 ~ +80 °C)	
ZTTCC2.00MG	2.00	±0.5%	±0.3%	±0.3%
ZTTCC3.58MG	3.58	±0.5%	±0.3%	±0.3%
ZTTCC4.00MG	4.00	±0.5%	±0.3%	±0.3%
ZTTCC4.19MG	4.19	±0.5%	±0.3%	±0.3%
ZTTCC6.00MG	6.00	±0.5%	±0.3%	±0.3%
ZTTCC8.00MG	8.00	±0.5%	±0.4%	±0.3%
ZTTCV10.00MT	10.00	±0.5%	±0.4%	±0.3%
ZTTCS10.00MT	10.00	±0.5%	±0.4%	±0.3%
ZTTCV12.00MT	12.00	±0.5%	±0.4%	±0.3%
ZTTCS12.00MT	12.00	±0.5%	±0.4%	±0.3%
ZTTCV16.00MX	16.00	±0.5%	±0.4%	±0.3%
ZTTCS16.00MX	16.00	±0.5%	±0.4%	±0.3%
ZTTCV20.00MX	20.00	±0.5%	±0.3%	±0.3%
ZTTCS20.00MX	20.00	±0.5%	±0.3%	±0.3%

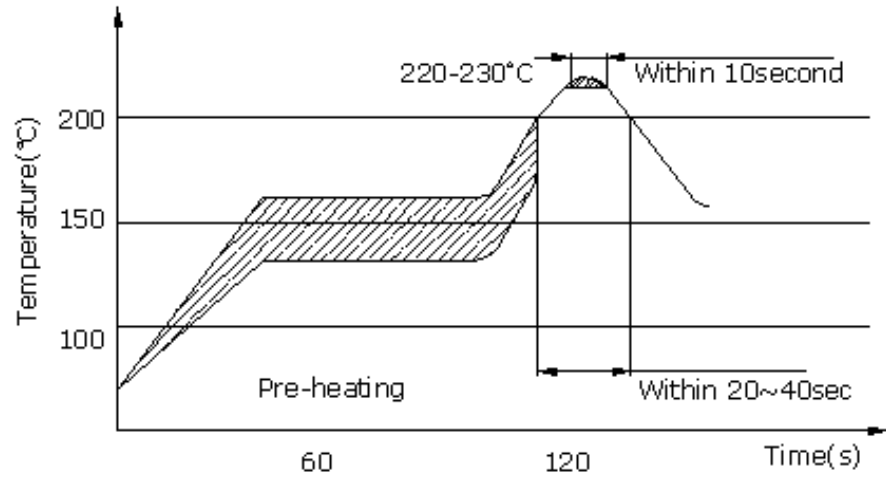
ZTTCC/CS/CV TEST CIRCUIT



ZTACC/CS/CV TEST CIRCUIT



RECOMMENDED REFLOW SOLDERING: [Tape & Reel Dimensions](#)(click here)



SMD CERAMIC RESONATORS

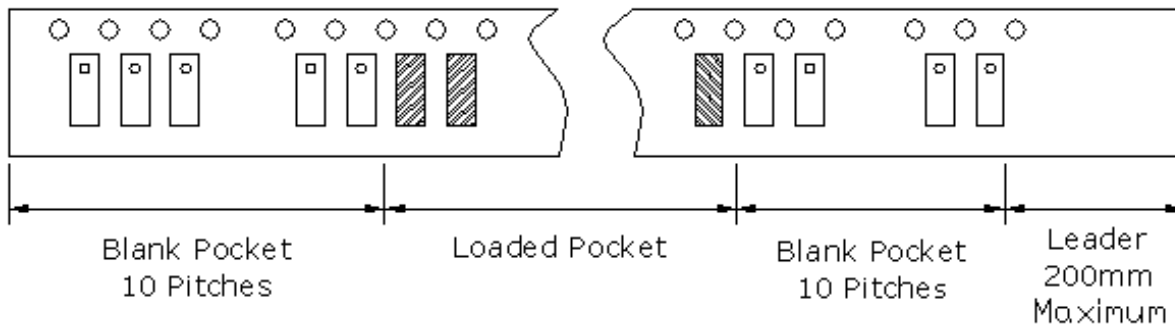
U.S. Electronics Inc.
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ZTTCC/CS/CV series with built-in capacitors
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FEATURES

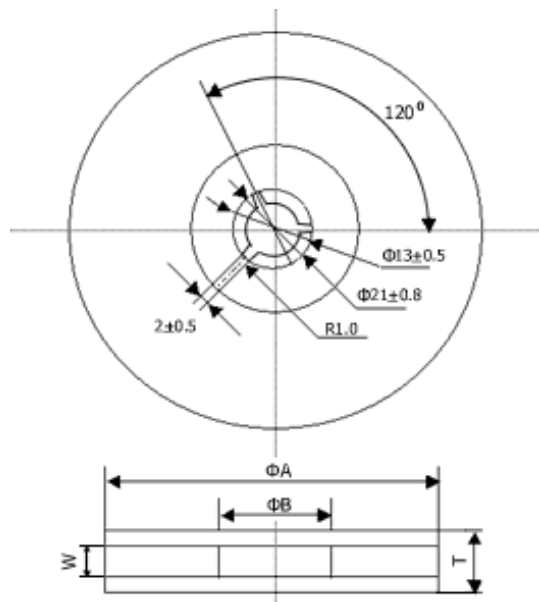
- Highly reliability, high temperature withstanding ceramic case, available in wide frequency range
- Rectangular shape allows easy pick and placement
- Small & low profile less than 2.0mm height max
- Reflow Solderable



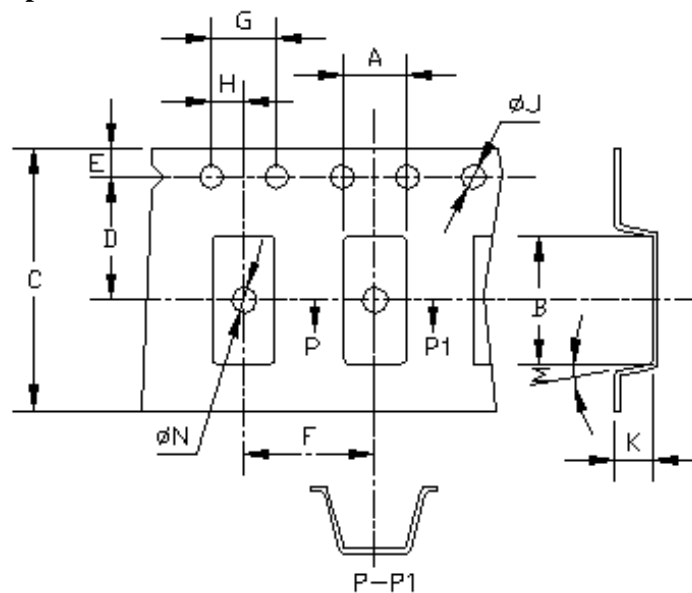
Packaging Method:



Reel



Tape



Reel Dimensions(mm)

A	B	W	T	Pieces per reel	Carrier tape size
179±2	60 typ	12.4 min	19.4max	1000typ.	12
179±2	60 typ	16.4 min	22.4max	1000typ.	16
330±3	80 min	12.4 min	19.4max	4000typ.	12
330±3	80 min	16.4 min	22.4max	4000typ.	16

Tape Dimensions(mm)

Code / Tolerance	A±0.2	B±0.2	C±0.3	D±0.1	E±0.1	F±0.1	G±0.1	H±0.1	J±0.1	N±0.1	Mmax	Rmax	K±0.2	T±0.1
Series Number														
ZTACC MG	3.8	7.8	16.0	7.5									2.1	
ZTTCC MG														
ZTACS MT/MX	5.0	4.4	12.0	5.5	1.75	8.0	4.0	2.0	1.5	1.6	10°	0.3	1.8	0.3
ZTTCS MT/MX														
ZTACV MT/MX	3.4	4.0	12.0	5.5									1.3	
ZTTCV MT/MX														