

## SMD CERAMIC RESONATORS

### FEATURES

RoHS-2 2011/65/EU  
compliant

- High reliability for low cost
- Small dimensions and low profile
- Wide frequency range
- Excellent clock signal generator

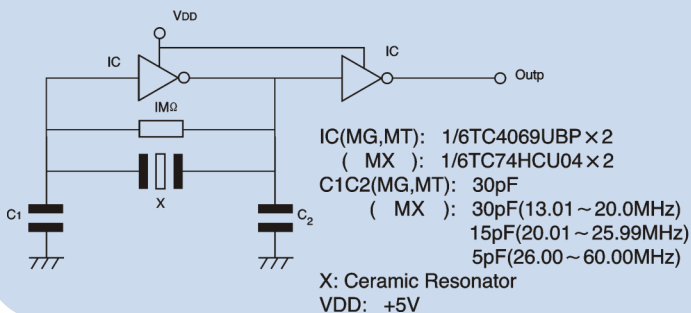
### GENERAL DATA

Part Number	Bild-in Capacitor	Frequency Range	Frequency Accuracy	Stability over Temperature	Operating Temperature	Aging For 10 Years
ZTACC-MG	no	2.00 - 8.00 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCC-MG	yes					
ZTACR-MG	no	4.00 - 8.00 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCR-MG	yes					
ZTACE-MG	no	8.00 - 12.00 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCE-MG	yes					
ZTACS-MT	no	6.00 - 13.00 MHz	±0.5% at 25°C	±0.4% over -25/+85°C	-25/+85°C	±0.3%
ZTTCS-MT	yes					
ZTACV-MT	no	8.00 - 13.0 MHz	±0.5% at 25°C	±0.4% over -25/+85°C	-25/+85°C	±0.3%
ZTTCV-MT	yes					
ZTACS-MX	no	13.01 - 60.0 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCS-MX	yes					
ZTACW-MX	no	16.00 - 60.0 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCV-MX	yes					
ZTACW-MX	no	20.00 - 60.0 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCW-MX	yes					
ZTACZ-MX	no	24.00 - 60.0 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTT CZ-MX	yes					
ZTACP-MG	no	2.00 - 12.0 MHz	±0.5% at 25°C	±0.3% over -25/+85°C	-25/+85°C	±0.3%
ZTTCP-MG	yes					

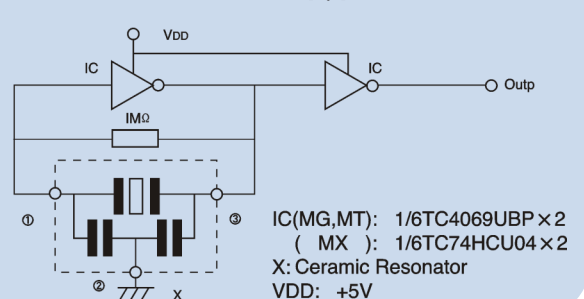
**OTHER PARAMETERS ARE AVAILABLE ON REQUEST / CREATE HERE YOUR SPECIFICATION**

### TEST CIRCUIT FOR MOS IC

ZTACC/CR/CS/CV/CW/CZ/CP/CE - MG/MT/MX



ZTTCC/CR/CE/CS/CV/CW/CZ/CP - MG/MT/MX



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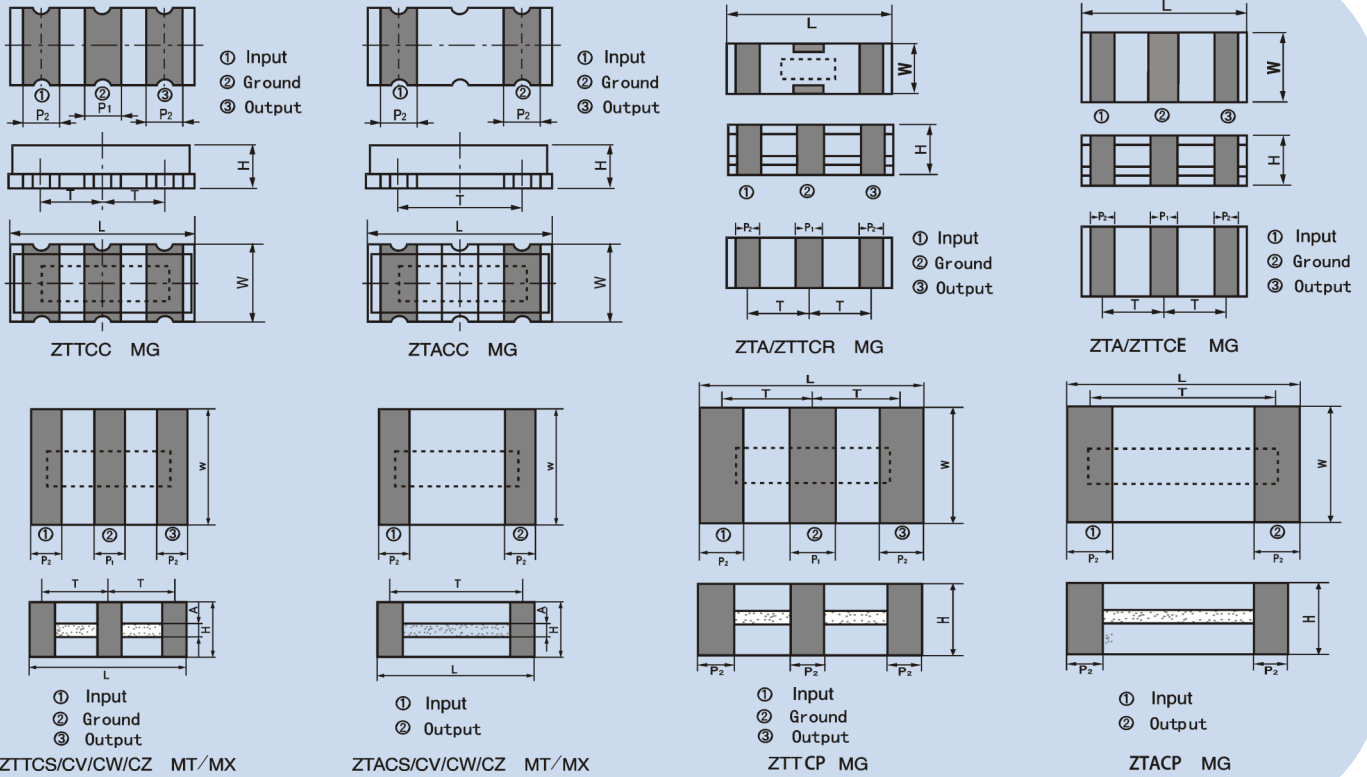
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## DIMENSIONS



Part Number	L	W	H	P1	P2	T
ZTACC-MG	7.4±0.2	3.4±0.2	1.8±0.2	1.2±0.2	1.2±0.2	5.0±0.2
ZTTCC-MG						2.5±0.2
ZTACR-MG	4.5±0.2	2.0±0.2	1.2max	0.8±0.2	0.8±0.2	1.5±0.2
ZTTCR-MG						
ZTACE-MG	3.2±0.2	1.3±0.2	1.0max	0.4±0.2	0.4±0.2	1.2±0.2
ZTTCE-MG						
ZTACS-MT/MX	4.7±0.2	4.1±0.2	(1.2+A)±0.2	1.0±0.2	0.8±0.2	3.9±0.2
ZTTCS-MT/MX						1.95±0.2
ZTACV-MT/MX	3.7±0.2	3.1±0.2	(1.0+A)±0.2	0.9±0.2	0.7±0.2	3.0±0.2
ZTTCV-MT/MX						1.5±0.2
ZTACW-MX	2.5±0.2	2.0±0.2	1.2max	0.5±0.2	0.4±0.2	2.0±0.2
ZTTCW-MX						1.0±0.2
ZTACZ-MX	2.2±0.2	1.8±0.2	1.2max	0.4±0.2	0.5±0.2	1.7±0.2
ZTT CZ-MX						0.85±0.2
ZTACP-MG	6.0±0.2	3.0±0.2	1.8±0.2 1.5±0.2 1.7±0.2	1.2±0.2	1.2±0.2	5.0±0.2
ZTTCP-MG						2.5±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 0.7 mm.  
 No middle terminal for ZTA series.

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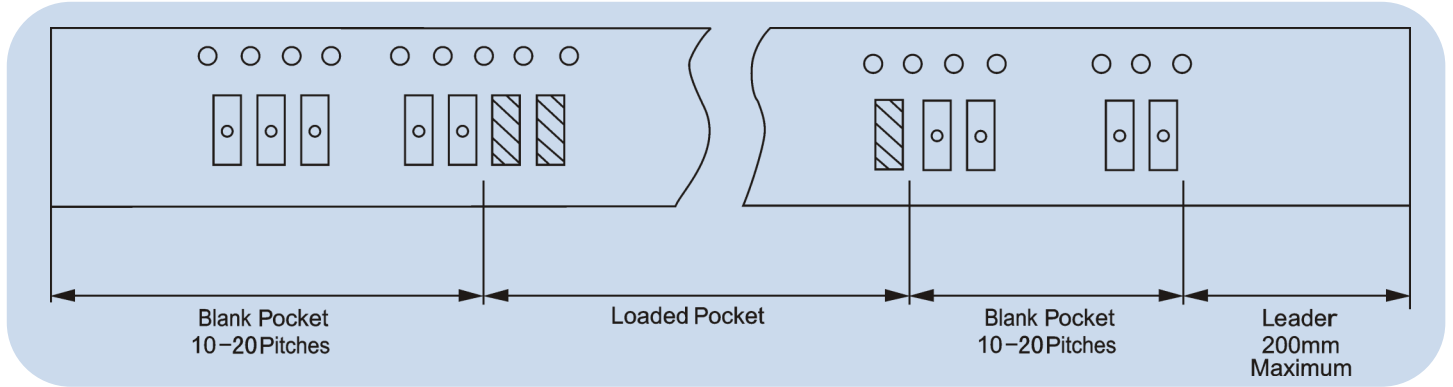


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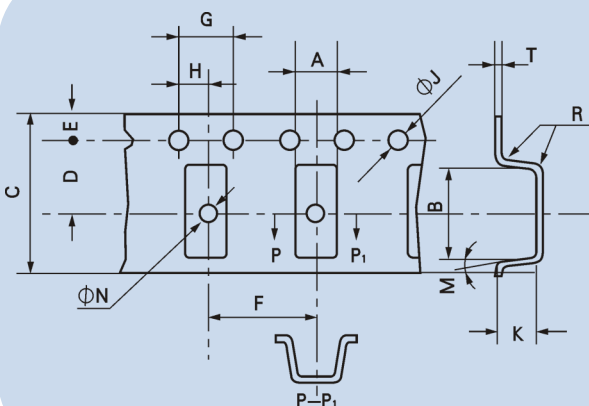
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## PACKING APPROACH

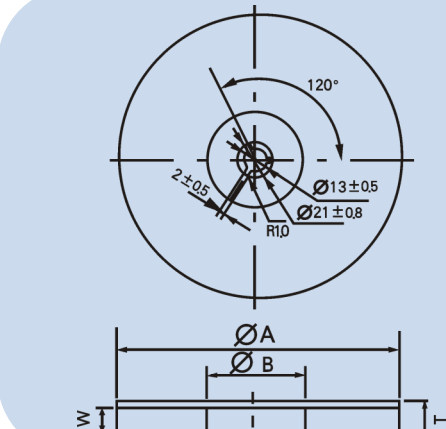


## TAPE SIZE



Part Number	Size Code		A	B	C	D	E	F	G	H	∅J	∅N	M	R	K	T
	Tolerance		±0.2	±0.2	±0.3	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	max	max	±0.2	±0.1
ZTACC ZITCC	MG	MG	3.8	7.8	16.0	7.5	1.75	8.0	4.0	2.0	1.5	1.6	10°	0.3	2.1	0.3
ZTACR ZITCR	MG	MG	2.2	4.7	12.0	5.5	1.75	4.0	4.0	2.0	1.6	1.6	3°	0.3	1.3	0.3
ZTACE ZITCE	MG	MG	1.5	3.4	8.0	3.5	1.75	4.0	4.0	2.0	1.6	1.1	3°	0.3	1.3	0.25
ZTACS ZITCS	MT/MX	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
ZTACV ZITCV	MT/MX	MT/MX	3.4	4.0	12.0	5.5	1.75	8.0	4.0	2.0	1.5	1.6	10°	0.3	1.3	0.3
ZTACW ZITCW	MX	MX	2.3	2.8	8.0	3.5	1.75	4.0	4.0	2.0	1.6	1.1	3°	0.3	1.3	0.25
ZTACZ ZITCZ	MX	MX	2.1	2.5	8.0	3.5	1.75	4.0	4.0	2.0	1.6	1.1	3°	0.3	1.3	0.25
ZTACP ZITCP	MG	MG	3.4	6.4	16.0	7.5	1.75	8.0	4.0	2.0	1.5	1.6	10°	0.3	1.8	0.3

## REEL SPECIFICATION



∅A	∅B	W	T	Pieces per reel	Carrier tape size
179 ± 2	60 typ	8.4min	14.0max	3000 typ	8
179 ± 2	60 typ	12.4min	19.4max	3000 typ	12
179 ± 2	60 typ	12.4min	19.4max	1000 typ	12
179 ± 2	60 typ	16.4min	22.4max	1000 typ	16
330 ± 3	80 min	12.4min	19.4max	4000 typ	12
330 ± 3	80 min	16.4min	22.4max	4000 typ	16

typ -- (Typical Value)

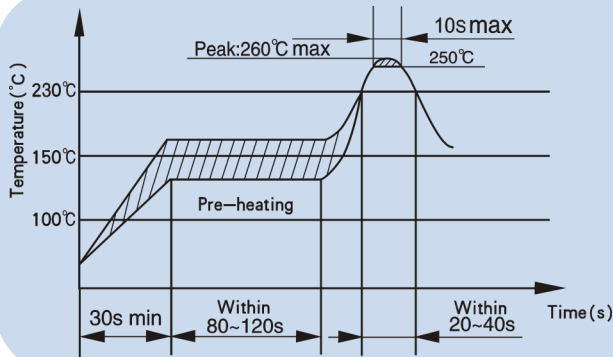
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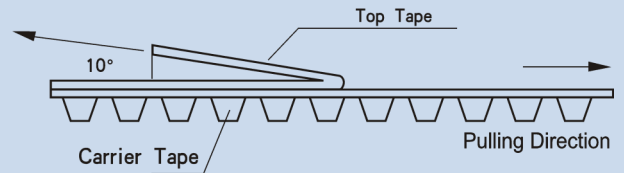
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## RECOMMENDED REFLOW SOLDERING CONDITIONS

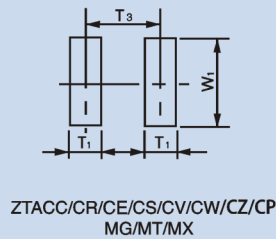
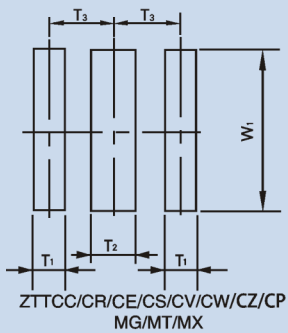
## TEST CONDITIONS OF PEELING STRENGTH



0.196~0.686N  
 Peeling Strength



## RECOMMENDED LAND PATTERN



Part Number	Size Code	Size (mm)			
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	W <sub>1</sub>
ZTACC/CP ZTTCC/CP	MG MG	1.5±0.3	1.7±0.3	5.0±0.3 2.5±0.3	4.0±0.3
ZTACR ZTTCR	MG MG	0.8±0.2	0.8±0.2	3.0±0.2 1.5±0.2	2.6±0.2
ZTACE ZTTCE	MG MG	0.4±0.2	0.4±0.2	1.2±0.2	2.0±0.2
ZTACS ZTTCS	MT/MX MT/MX	0.8±0.2	1.3±0.2	3.9±0.2 1.95±0.2	5.1±0.2
ZTACV ZTTCV	MT/MX MT/MX	0.7±0.2	1.0±0.2	3.0±0.2 1.5±0.2	4.1±0.2
ZTACW ZTTCW	MX MX	0.5±0.2	0.5±0.2	2.0±0.2 1.0±0.2	2.6±0.2
ZTACZ ZTT CZ	MX MX	0.5±0.2	0.5±0.2	1.7±0.2 0.85±0.2	2.4±0.2

**CRYSTALS**

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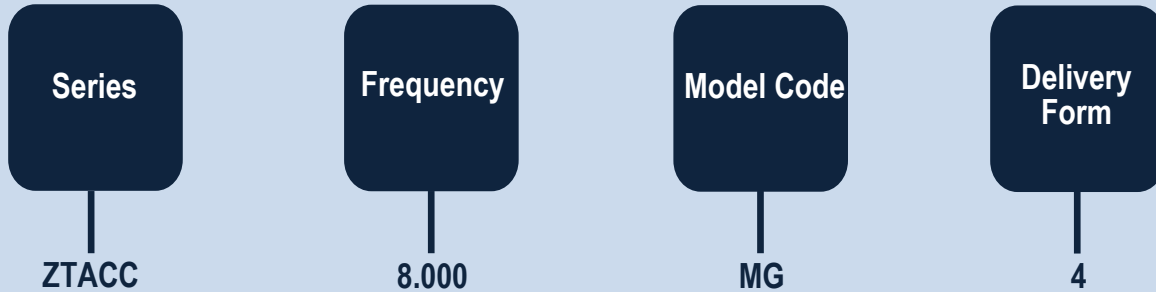
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## ORDERING INFORMATION



Example: ZTACC-8.000MG 4  
 PLEASE INDICATE YOUR REQUIRED SERIES

## DELIVERY FORM

### OPTIONS:

ZTA/ZTTCC	=4.000 pcs per reel
ZTA/ZTTCR	=3.000 pcs per reel
ZTA/ZTTCE	=3.000 pcs per reel
ZTA/ZTTCS	=1.000 pcs per reel
ZTA/ZTTCV	=1.000 pcs per reel
ZTA/ZTTCW	=3.000 pcs per reel
ZTA/ZTTCP	=4.000 pcs per reel
ZTA/ZTT CZ	=3.000 pcs per reel

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