



2 Pad and 3 Pad Ceramic Package, 3.4 mm x 7.4 mm and 4.1 mm x 4.7 mm



ZTTS and ZTAS Series

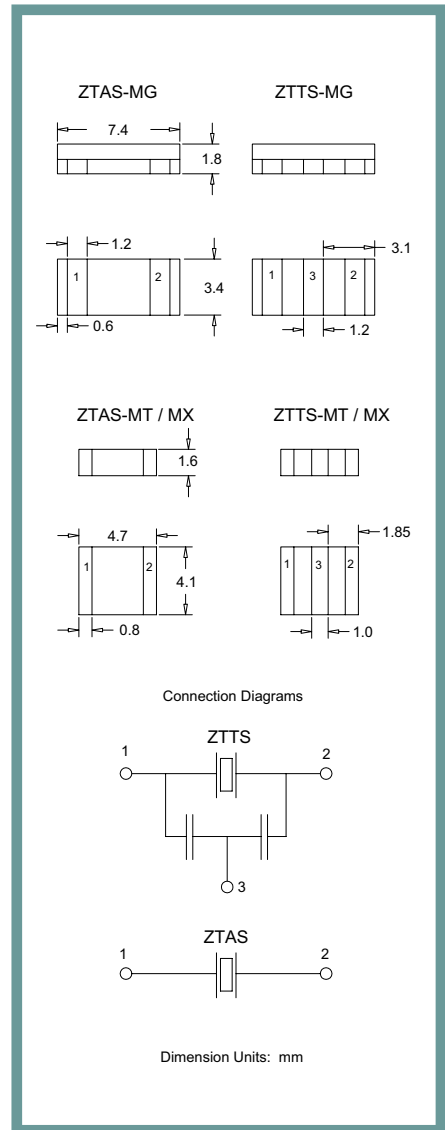
**Product Features:**

- Low Cost
- Compatible with Leadfree Processing

**Applications:**

- Storage Media
- Home Appliance
- Microprocessors
- Office Automation

<b>Frequency</b>	1.8 MHz to 50 MHz
<b>ESR (Equivalent Series Resistance)</b>	See Table Below
<b>Frequency Tolerance @ 25° C</b>	±0.5%
<b>Frequency Stability over Temperature</b>	±0.3%
<b>Aging</b>	±0.3% Max. for 10 Years
<b>Temperature</b>	
<b>Operating</b>	-40° C to +85° C
<b>Storage</b>	-40° C to +85° C Standard

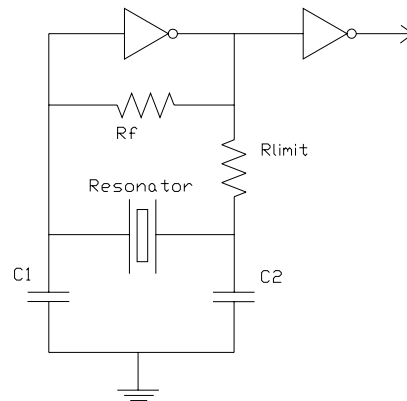
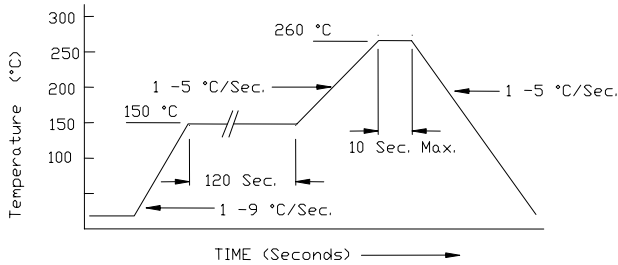


Part	Frequency (MHz)	ESR (Ω Max.)	C1 (pF)	C2 (pF)
ZTTS-MG	1.8 to 8	100	30	30
ZTTS-MT	6 to 13	30	30	30
ZTTS-MX	13 to 19.9	40	30	30
ZTTS-MX	20 to 25.9	40	15	15
ZTTS-MX	26 to 50	40	5	5
ZTAS-MG	1.8 to 8	100	30*	30*
ZTAS-MT	6 to 13	30	30*	30*
ZTAS-MX	13 to 19.9	40	30*	30*
ZTAS-MX	20 to 25.9	40	15*	15*
ZTAS-MX	26 to 50	40	5*	5*

\* Recommended external capacitance, not internal to the device.

The terminations of the ZTAS and ZTTS series ceramic resonator are Pb free. Pb may be contained in the ceramic resonator element of this device and is exempted via item 7 of the RoHS annex. This ceramic resonator series is considered RoHS compliant.

Part Number Guide		Sample Part Number:	ZTTS - MX - 20.000
Part Series	Package Code	Frequency	
ZTTS - (internal capacitors)	MG MT	- 20.000 MHz	
ZTAS - (must supply external capacitance for proper circuit operation)	MX		



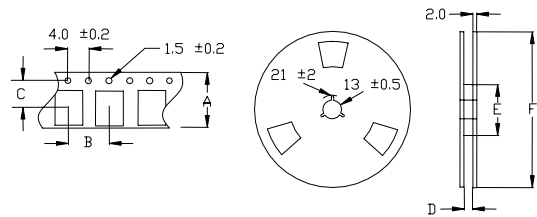
\*Units are backward compatible with 240C reflow processes

C1 and C2 are external for ZTAS

**Package Information:**

MSL = 1  
 Termination = e1 (Sn / Cu / Ag).

**Tape and Reel Information:**



Quantity per Reel	1000
A	12 +/- .3
B	8 +/- .2
C	5.5 +/- .2
D	13 +/- .1 or 12 +/- .3
E	60 / 80
F	180 / 250

**Environmental Specifications**

Thermal Shock	MIL-STD-883, Method 1011, Condition A
Moisture Resistance	MIL-STD-883, Method 1004
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Mechanical Vibration	MIL-STD-883, Method 2007, Condition A
Resistance to Soldering Heat	J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max)
Hazardous Substance	Pb-Free / RoHS / Green Compliant
Solderability	JESD22-B102-D Method 2 (Preconditioning E)
Terminal Strength	MIL-STD-883, Method 2004, Test Condition D
Gross Leak	MIL-STD-883, Method 1014, Condition C
Fine Leak	MIL-STD-883, Method 1014, Condition A2, R1=2x10 <sup>-8</sup> atm cc/s
Solvent Resistance	MIL-STD-202, Method 215

**Marking**

Line 1: Frequency