



2 Lead Plastic Package



ZTB Series

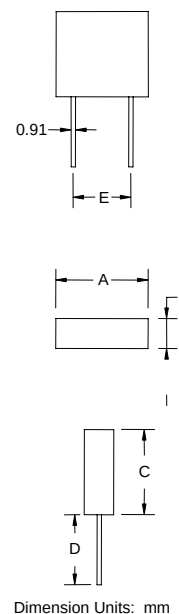
Product Features:

Low Cost
Compatible with Leadfree Processing

Applications:

Storage Media
Home Appliance
Microprocessors
Office Automation

Frequency	190 kHz to 1600 kHz
ESR (Equivalent Series Resistance)	See Table Below
Frequency Tolerance @ 25° C	±0.3%
Frequency Stability over Temperature	±0.3%
Aging	±0.3% Max. for 10 Years
Temperature	
Operating	-40° C to +85° C
Storage	-40° C to +85° C Standard



Part Code	Frequency (KHz)	Tolerance	ESR (Ω Max.)	C1 (pF)	C2 (pF)	"A" * (mm)	"B" * (mm)	"C" * (mm)	"D" * (mm)	"E" * (mm)
ZTB-A	190 to 249	±1 kHz	20	330*	470*	13.5	3.8	14.7	8.0	10.0
ZTB-B	250 to 374	±1 kHz	20	220*	470*	11.0	3.8	9.3	7.0	7.7
ZTB-C	375 to 429	±2 kHz	20	120*	470*	7.9	3.6	9.3	7.0	5.0
ZTB-D	430 to 519	±2 kHz	20	100*	100*	7.0	3.5	9.0	**	5.0
ZTB-E	520 to 699	±2 kHz	30	100*	100*	7.0	3.5	9.0	**	5.0
ZTB-F	700 to 999	±0.5%	30	100*	100*	5.2	2.8	6.8	3.5	2.5
ZTB-G	1000 to 1600	±0.5%	50	100*	100*	5.2	2.8	6.8	3.5	2.5

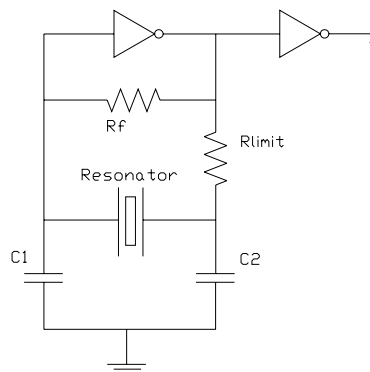
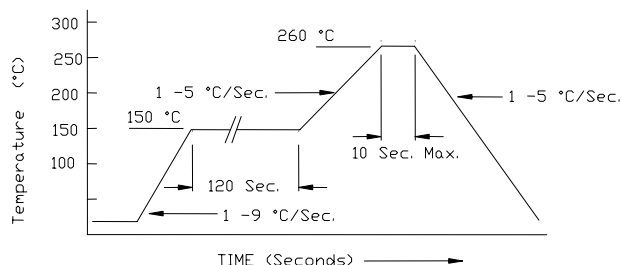
* Recommended external C1 and C2 values. ** 4.0 mm or 6.0 mm, contact ILSI America.

The terminations of the ZTB 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:	ZTB - G - 1000
Part Series	Part Code	Frequency
ZTB -	A B C D E F G	- 1000 kHz

Pb Free Solder Reflow Profile:

Typical Circuit:



*Units are backward compatible with 240C reflow processes

Package Information:

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

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, $R_1=2 \times 10^{-8}$ atm cc/s
Solvent Resistance	MIL-STD-202, Method 215

Marking

Line 1: ILSI
Line 2: Frequency