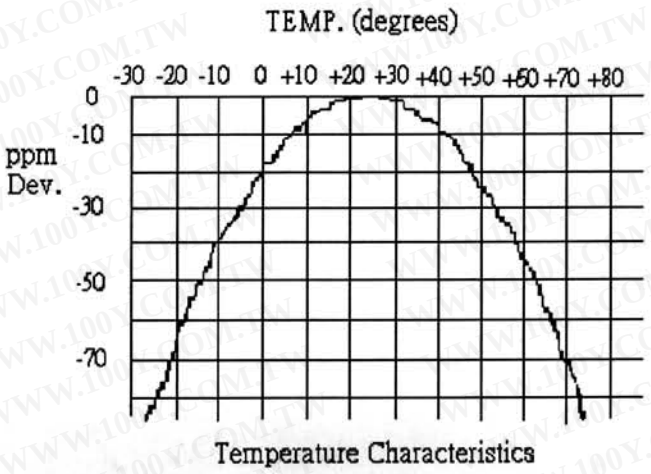
SPECIFICATION OF CRYSTAL UNITS

SPEC NO : AT3808-032768-12-20-CA
DATE : 4-Mar-08
(Lead Free Parts)

SPECIFICATION OF CRYSTAL UNITS

1	Nominal frequency	32.768 KHz
2	Frequency tolerance	+-20ppm at 25-+2 degrees
3	Temperature characteristics	
	-Turnover temperature	25+-5 ℃
	-Parabolic curvature constant	-0.034 -+ 0.006 ppm/ $℃^2$
4	Operating temperature	-30 to 80 degrees
5	Equiverent series resistance	50k ohms max.
6	Load capacitance	12.5pF
7	Shunt capacitance	5.0pF max.
8	Drive level	1.0uW max.
9	Insulation resistance	500M ohms/100 -+15VDC
10	Aging	-+5ppm/Year
11	Frequency VS Temperature	



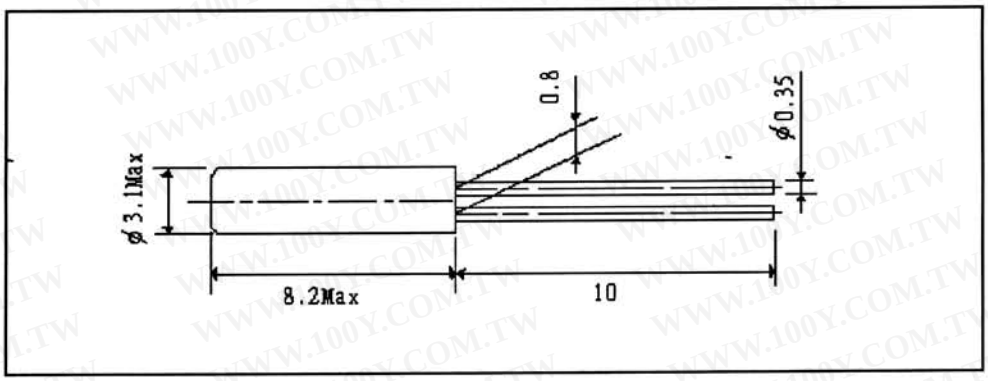
Temperature Characteristics

12 Marking

32768

SPECIFICATION OF CRYSTAL UNITS

13 Dimension (unit : mm)



Note:

1. Heating up the package must be less than 150 degrees/5sec.
2. The crystal characteristics may be affected and destroyed at worst by bending the crystal.
3. The crystal characteristics may be affected and destroyed at worst by additional production process as ultrasonic welding or molding encapsulation. Please be sure to check if this process affects any damage to crystal products prior to use.

SPECIFICATION OF CRYSTAL UNITS

Reliability Test (applicable to 49(50) type .U type and Tuning Fork X'tal)

Test Items	Test Condition	Specification	
		Dip	SMD
1. Gross Leak Test	FC-40 125℃/30sec	No continuous bubble	
2. Fine Leak Test	Bombing of He 4kg/cm^2 for 2 hours	Less than 5*10^-8atm.c.c./sec, Helium	
3. Drop Test	a ~19.999MHz(Fund.) →100 cm height b. 20~29.999MHz(Fund.) →50 cm height c. 30~ MHz(Fund.) →20 cm height on hard wooden surface / 3 times (thickness more than 30 mm)	△F≦± 10PPM , C.I within spec.	△F≦±10PPM , C.I within spec.
4. Vibration Test	- Freq. range: 10~55Hz Peak to peak amplitude:1.5mm 3 direction(X.Y.Z) , each 60min.	△F≦± 10PPM , C.I within spec.	△F≦±10PPM , C.I within spec.
5. Resistance to Soldering Test	a. IR Reflow furnace with the condition 2 times. Peak temp.260±3℃ , 10sec(Min.)	NA	△F≦±10PPM , C.I within spec. For SMD type only.
	b. Dip terminals in a 260±5℃ solder bath for 5±1 sec.	At least 90% of each dipped area shall be covered by fresh solder. For DIP type only.	NA
6. Bending Test	Bending cycle : 1 cycle 0° -> 45° -> 0° -> 45° -> 0°	△F≦±5PPM , C.I within spec. For DIP type only.	NA
7. Shearing Test	Weight : 5N, Test duration : 10±1 sec	NA	△F≦±10PPM , C.I within spec. For SMD type only.
8. Low Temp. Exposure Test	-40±3℃, 240±12 hrs	△F≦± 10PPM , C.I within spec.	△F≦±10PPM , C.I within spec.
9. Aging Test	85±3℃, 240±12hrs	△F≦± 10PPM , C.I within spec.	△F≦±10PPM , C.I within spec.
10. High Temp. & Humidity Test	+85℃±5℃& 85%±5% R.H. , 240±12 hrs	△F≦± 10PPM , C.I within spec.	△F≦±10PPM , C.I within spec.
11. Temperature Cycling Test	-25±3℃/15±3min ~ +85±3℃/15±3min 15cycles	△F≦± 10PPM , C.I within spec.	△F≦±10PPM , C.I within spec.