

Shoulder 好达

SHOULDER ELECTRONICS LIMITED

CRYSTAL RESONATOR Data Sheet

PRODUCT 产 品: CRYSTAL RESONATOR

MODEL NO 型 号: 49S 49S2

PREPARED 编 制: Fengyu

CHECKED 审 核: York

APPROVED 批 准: Lijiating

DATE 日 期: 2008-01-25

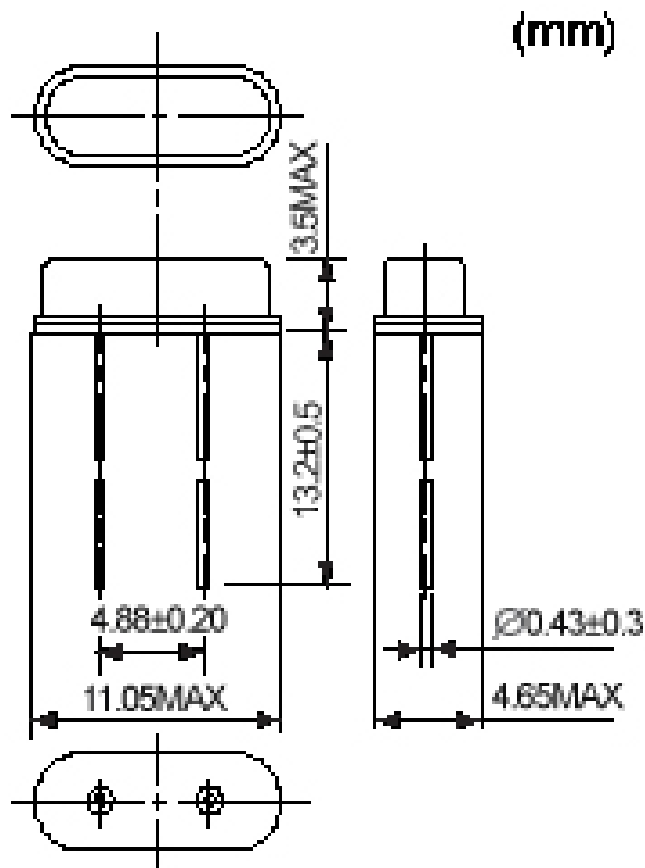
1. SPECIFICATION

FREQUENCY RANGE	3.579545-80.000MHz
LOAD CAPACITANCE	10PF TO SERIES
FREQUENCY TOLERANCE AT 25°C	-/+30PPM MAXIMUM
FREQUENCY STABILITY AT -10 TO +60°C	-/+30PPM MAXIMUM
OPERATING TEMPERATURE RANGE	-10 TO +60°C
STORAGE TEMPERATURE RANGE	-40 TO +85°C
EQUIVALENT SERIES RESISTANCE (ESR)	SEE ESR TABLE
DRIVE LEVEL	100 μ W MAXIMUM
SHUNT CAPACITANCE	7PF MAXIMUM
AGING	-/+5PPM PER YEAR
INSULATION RESISTANCE	500 MOhm MINIMUM

2. ESR TABLE (Ohm)

Overtone	Frequency Range (MHz)	Equivalent Series Resistance (Ω)
Fundamental	3.5 ~ 4.0	150 max
	4.0 ~ 8.0	120 max
	8.0 ~ 12.0	60 max
	12.0 ~ 27.0	40 max
3rd overtone	26.0 ~ 35.0	140 max
	35.0 ~ 50.0	100 max

3. DIMENSIONS



49S	49S2
3.5max	2.5max

4. MECHANICAL SPECIFICATION

1) Terminal Strength

Lead pulling test

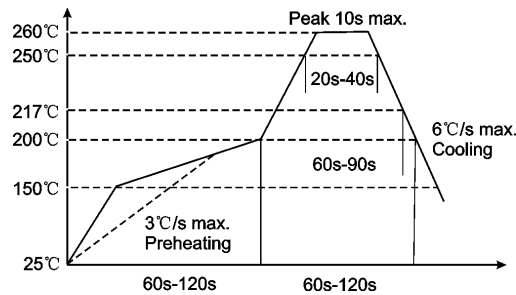
Conditions:	Load	907.2 gram
	Direction	To the downward
	Duration of applied force	5 seconds
Results:	There should be no distortion in appearance.	

Lead bending test

Conditions:	Load	453.6 gram
	Bending angle	90° to normal position
	Rate of bending	3 seconds in each cycle
	Number of bending	3
Results:	There should be no distortion in appearance.	

2) Lead solderability test

Conditions:	Dipping in solder (+260°C±5°C) for 10 seconds
Results:	More than 95% of surface being tested should be coated uniformly with solder.



3) Vibration test

Conditions: Frequency 10 – 55Hz
 Amplitude 0.762mm
 Sweep 1.0 minute
 Duration 2 hours

Results: Frequency and wave form of tested products must remain within specifications.

4) Drop test

Conditions: Method of drop Natural drop
 Dropping floor Hard wood board
 Height 30cm
 Number of drops 3 times

Results: Frequency and wave form of tested products must remain within specifications.

5. ENVIRONMENTAL SPECIFICATION

1) Temperature test

Temperature cycling test

Conditions: Steps of cycle 1) At -55°C, 30 minutes
 2) At +25°C, 10 - 15 minutes
 3) At +85°C, 30 minutes
 4) At +25°C, 10 - 15 minutes

Number of cycles 3 times

Results: Frequency and wave form of tested products must remain within specifications.

Low Temperature test

Conditions: Temperature -20°C±2°C
 Length of test 96 hours

Results: There should be no stain on surface of products.
 Frequency and wave form of tested products must remain within specifications.

2) Aging test

Conditions: Temperature +85°C±20°C
 Length of test 96 hours

Results: Deviation of frequency must be less than ±3ppm

3) Salt spray test

Conditions: Temperature $+35^{\circ}\text{C}\pm 2^{\circ}\text{C}$
 Length of test 48 hours
 NaCl % 5%

Results: There should be no stain on surface of products.

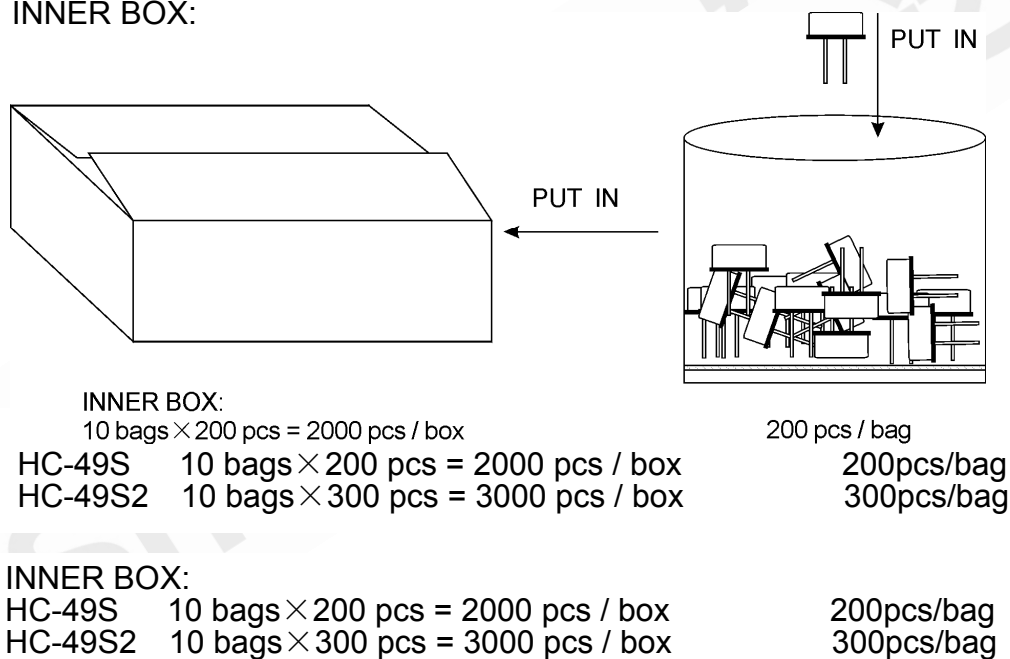
4) Humidity test

Conditions: Temperature $+40^{\circ}\text{C}\pm 2^{\circ}\text{C}$
 Relative humidity 90 - 95%
 Length of test 96 hours

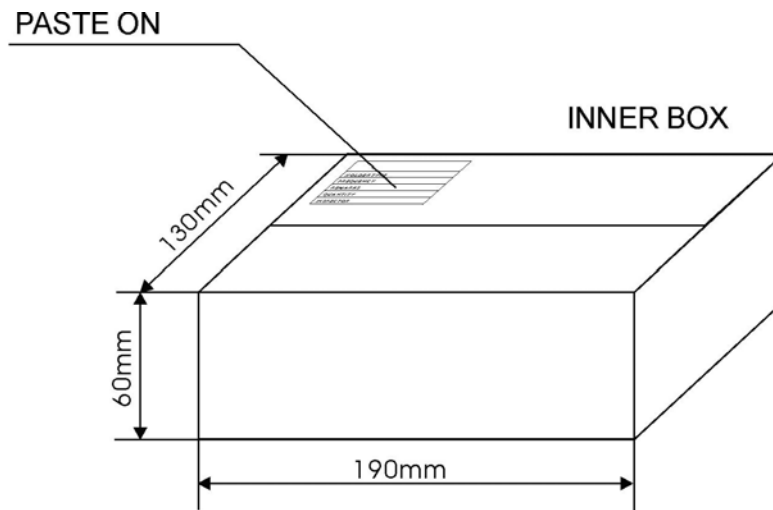
Results: a. Insulation resistance must be 500 M Ω /100 Vac. minimum
 b. Resistance and wave form must remain within specifications.

6. PACKAGE

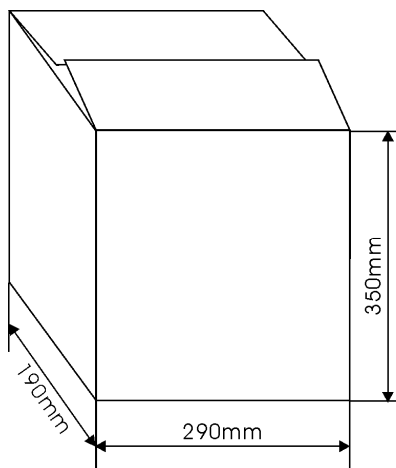
1) INNER BOX:



2) LOGO STICKER(CARTON AND INNER BOX):



3) OUTER BOX:



PUT IN

OUTER BOX:

HC-49S

10 INNER BOX $\times$ 2000 pcs = 20000 pcs / box

HC-49S2

10 INNER BOX $\times$ 3000 pcs = 30000 pcs / box

Packing method may be changed. Please according to the delivered goods.