

# 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

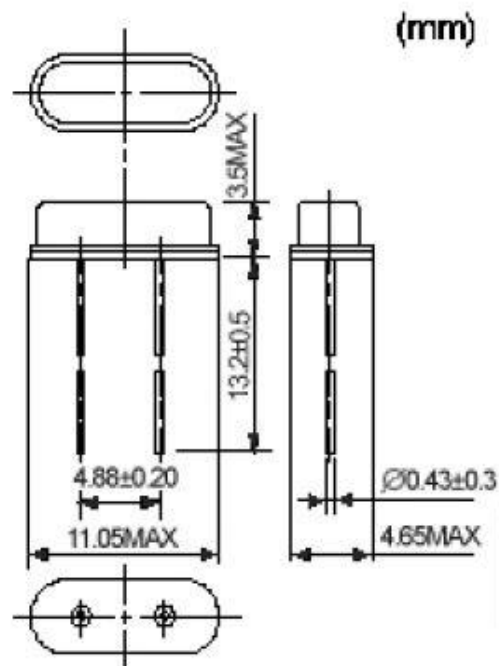
## 1. SPECIFICATION

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 $\mu$ 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 ( $\Omega$ )
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) Salt spray test

Conditions: Temperature +35°C±2°C  
Length of test 48 hours  
NaCl % 5%

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

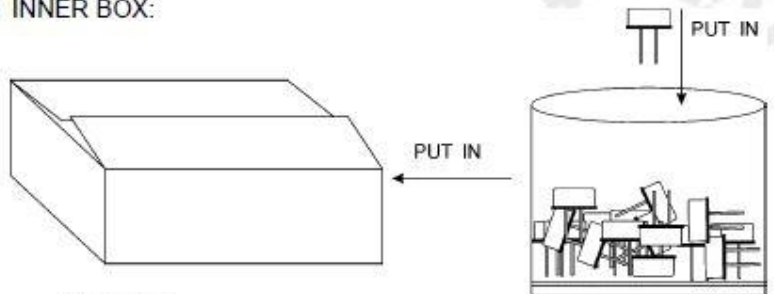
4) Humidity test

Conditions: Temperature +40°C±2°C  
Relative humidity 90 - 95%  
Length of test 96 hours

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

6. PACKAGE

1) INNER BOX:



INNER BOX:	10 bags × 200 pcs = 2000 pcs / box	200 pcs / bag
HC-49S	10 bags × 200 pcs = 2000 pcs / box	200pcs/bag
HC-49S2	10 bags × 300 pcs = 3000 pcs / box	300pcs/bag

INNER BOX:	10 bags × 200 pcs = 2000 pcs / box	200pcs/bag
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2) LOGO STICKER(CARTON AND INNER BOX):

3) Salt spray test

Conditions: Temperature +35°C±2°C  
Length of test 48 hours  
NaCl % 5%

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

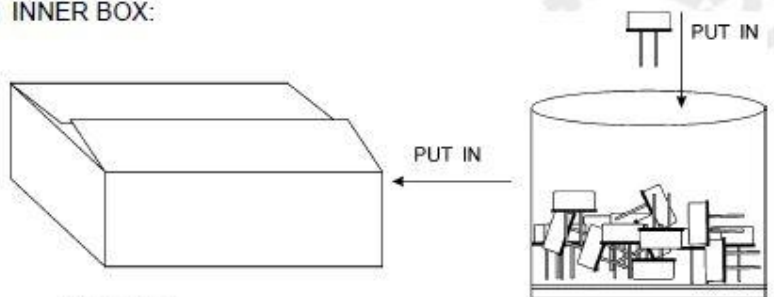
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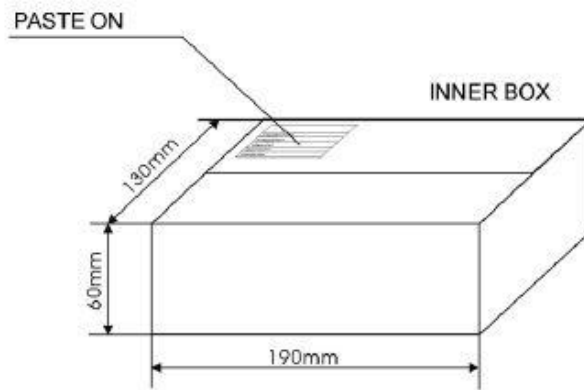
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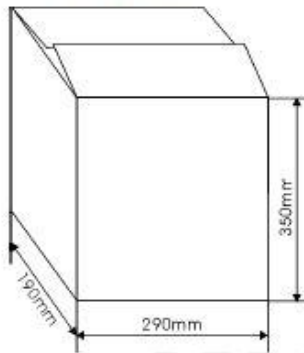
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2) LOGO STICKER(CARTON AND INNER BOX):



3) OUTER BOX:



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.