

# Shoulder 好达

SHOULDER ELECTRONICS CO., LTD.

## CRYSTAL RESONATOR Data Sheet

PRODUCT 产品: CRYSTAL RESONATOR

MODEL NO 型号: ZM309

PREPARED 编制: Fengyu

CHECKED 审核: York

APPROVED 批准:

DATE 日期: 2007-01-25

## 1. SCOPE

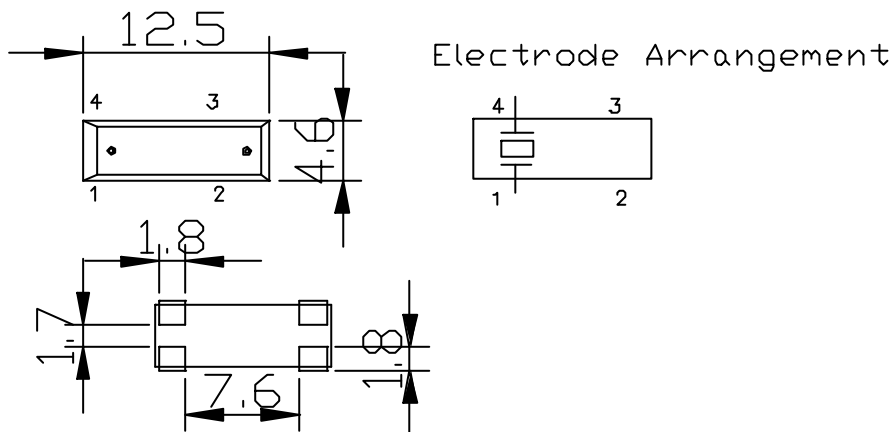
This specification shall cover the characteristics of crystal unit with

P/N: ZM309-

## 2. ELECTRICAL SPECIFICATION

ITEM	SPECIFICATION
HOLDER TYPE	12.5X4.6x3.7mm
NOMINAL FREQUENCY	3.579545-27.000MHZ
LOAD CAPACITANCE	12PF
FREQUENCY TOLERANCE (25 ± 2 )	± 50PPM
EQUIVALENT SERIES RESISTANCE	70 max
DRIVE LEVEL	50 μ W
OPERATING TEMPERATURE RANGE	-10 ~+60
STORAGE TEMPERATURE	-40 ~+85
AGING	± 5PPM/YEAR
INSULATION RESISTANCE	>500M

## 3. DIMENSION (Unit: mm)



## 4. MECHANICAL SPECIFICATION

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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(+230 ± 5 )for 5 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.

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## 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  
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  
Length of test 96 hours

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

### 3) Salt spray test

Conditions: Temperature +35 °C ± 2  
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  
Relative humidity 90 - 95%  
Length of test 96 hours

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