



深圳市晶友嘉电子有限公司

SHENZHEN JINGYOUJIA ELECTRONIC CO., LTD



# CRYSTAL RESONATOR SPECIFICATIONS

## 石英晶体谐振器承认书

|                     |               |
|---------------------|---------------|
| 客户 Customer:        | 立创商城          |
| 型号 Product:         | 3TO4          |
| 客户料号 Code No:       |               |
| 我司料号 Code No:       | 3TO424000AWBD |
| 频率 Frequency:       | 24.000MHz     |
| 数量 Sample Quantity: |               |
| 日期 Date:            | 2022-3-28     |

深圳市晶友嘉电子有限公司

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供应商确认栏:

|            |            |             |
|------------|------------|-------------|
| 制作 Handler | 确认 Checked | 核审 Approved |
| 戴晓嘉        | 陈斌         | 李晨          |

客户承认栏:

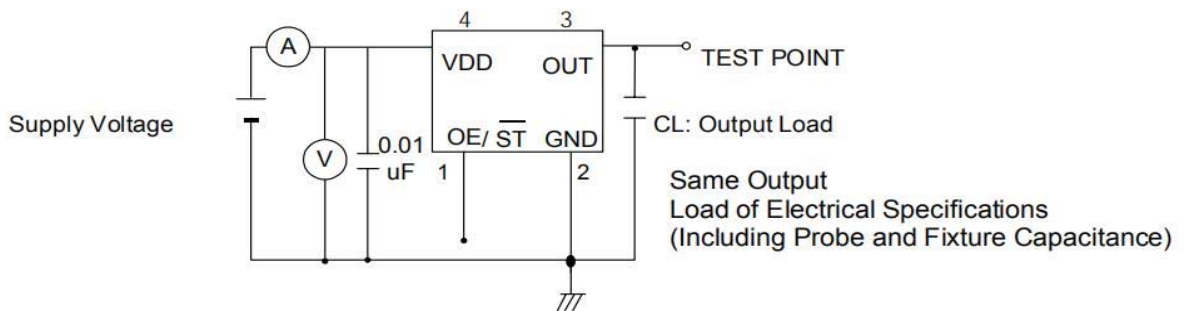
|            |             |
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| 承认 Checked | 核审 Approved |
|            |             |



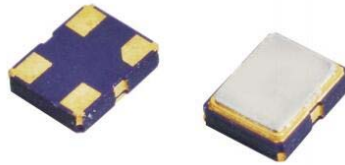
**1. Electrical Parameters**

| No. | Parameters                    | Symbol | Condition        | Electrical Specification |      |            |       |
|-----|-------------------------------|--------|------------------|--------------------------|------|------------|-------|
|     |                               |        |                  | Min.                     | Type | Max.       | Units |
| 1   | Nominal Frequency             | -      |                  | 24.000                   |      |            | MHz   |
| 2   | Operating Temperature         | Topr   |                  | -40                      | -    | 85         | °C    |
| 3   | Storage Temperature           | Tstg   |                  | -55                      | -    | 105        | °C    |
| 4   | Frequency Stability           | -      | Note 1           | ±20                      |      |            | ppm   |
| 5   | Supply Voltage                | VDD    |                  |                          | 1.8  |            | V     |
| 6   | Current Consumption           | Icc    |                  |                          |      | 15         | mA    |
| 7   | Output Type                   | -      |                  | CMOS                     |      |            |       |
| 8   | Output Load                   | CL     |                  | 15                       |      |            | pF    |
| 9   | Output Voltage High           | VoH    |                  | 90%VDD                   | -    | -          | V     |
| 10  | Output Voltage Low            | VoL    |                  | -                        | -    | 10%VD      | V     |
| 11  | Rise Time                     | Tr     | 10%→90%VDD Level | -                        | -    | 8          | nS    |
| 12  | Fall Time                     | Tf     | 90%→10%VDD Level | -                        | -    | 8          | nS    |
| 13  | Symmetry or Duty Cycle        | TH/T   |                  | 40                       | 50   | 60         | %     |
| 14  | Start-up Time                 | Tosc   |                  | -                        | -    | 10         | mS    |
| 15  | Enable Voltage High (Logic 1) | Vh     | Note 2           | 70%VDD                   | -    | -          | V     |
| 16  | Disable Voltage Low (Logic 0) | Vlo    | Note 2           | -                        | -    | 30%VD<br>D | V     |
| 17  | Aging                         | -      | 1st.Year at 25°C | ±3                       |      |            | ppm   |
| 18  | Output Disable Time           | T off  |                  | -                        | -    | 150        | μS    |
| 19  | Output Enable Time            | T on   |                  | -                        | -    | 150        | μS    |

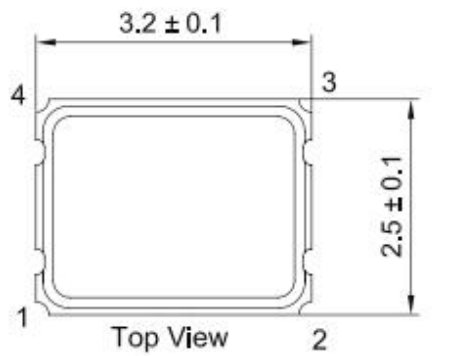
**■ TESTING CIRCUIT**



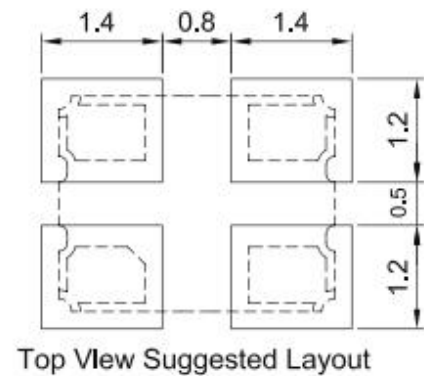
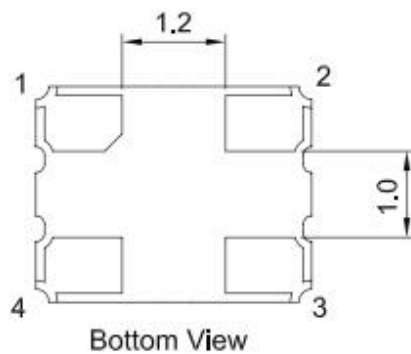
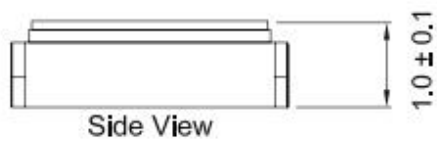
### 3.实物 Product



### 4.外型尺寸 Outline Dimensions (unit:mm)

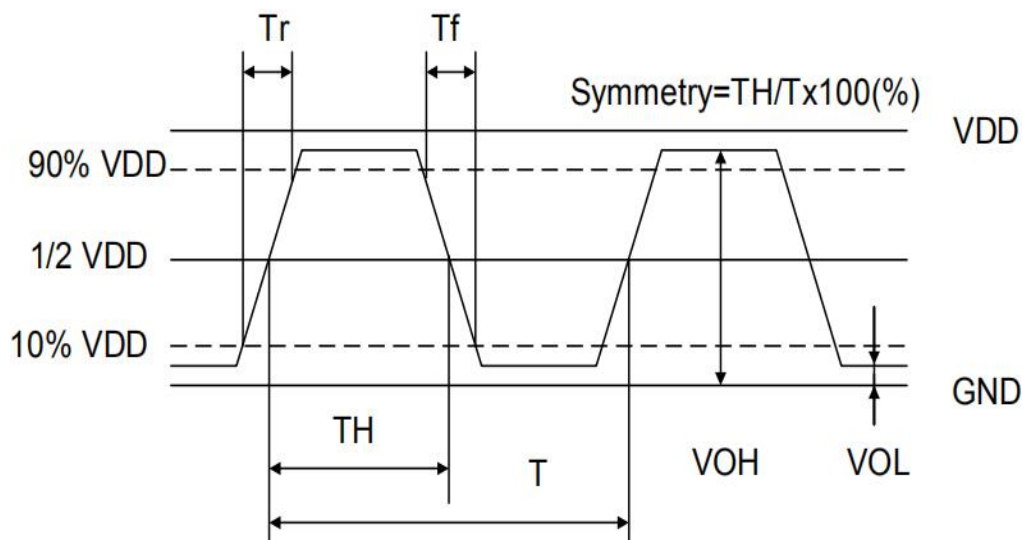


PAD FUNCTION:  
1: ENABLE CONTROL  
2: GND  
3: OUT  
4: VDD

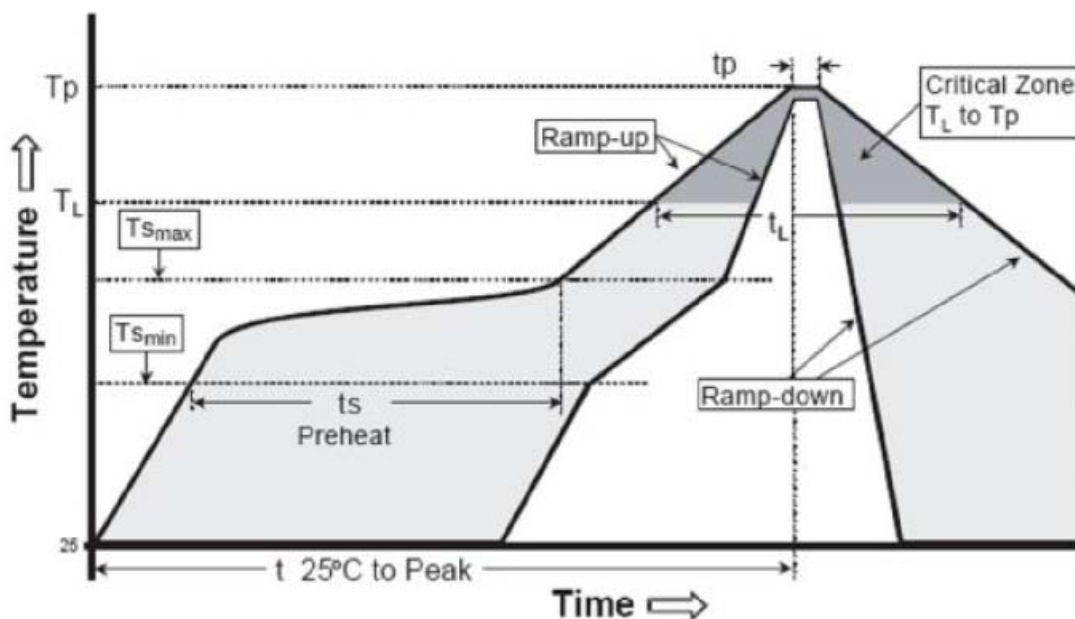


## 5. 波型条件 WAVEFORM CONDITIONS

Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.



## 6. 回流焊曲线 Reflow Profiles



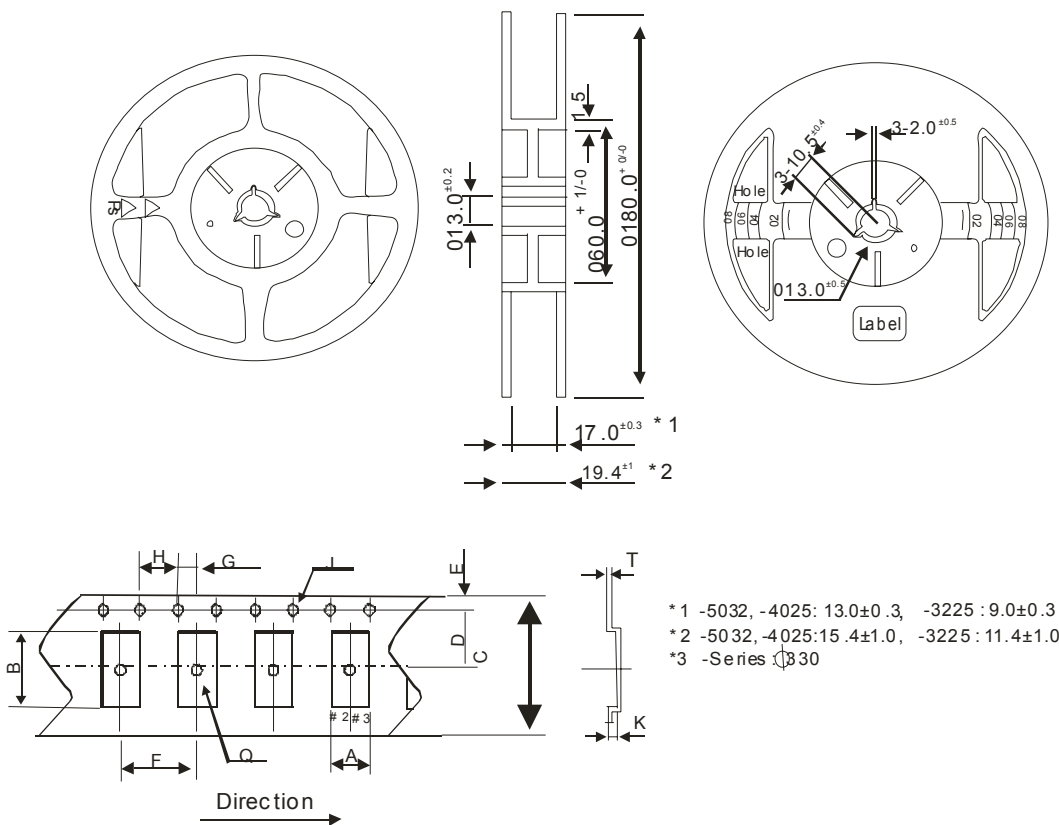


### 7.机械可靠/信赖性 Mechanical Performance

|     | Item                             | Condition                                                                                                                   | Standard                                                       |
|-----|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| 1.  | Drop characteristics             | Free drop from 50cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.)                        | Frequency change:<br>$\leq 5\text{ppm}$<br>Rr as specification |
| 2.. | Shake characteristics            | Shake frequency 10~55Hz, cyc1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours.                  | Frequency change:<br>$\leq 5\text{ppm}$<br>Rr as specification |
| 3.  | Airproof characteristics         | Put crystal into the pressure cabin with alcohol, keep pressure 0.4~0.5mpa 10 minutes, then take out and blow for 5 minutes | $IR \geq 500M\Omega$                                           |
| 4.  | Weld characteristics             | 260°C Max, 10 seconds                                                                                                       | 90% exhibit tin ok                                             |
| 5.  | Humidity characteristics         | +40±2°C & 90%~95% R.H. 250 hours                                                                                            | Frequency change:<br>$\leq 5\text{ppm}$<br>Rr as specification |
| 6.  | Low temperature characteristics  | -30±2°C, 250 hours, put in room temperature, test after 1 hours.                                                            | Frequency change:<br>$\leq 5\text{ppm}$<br>Rr as specification |
| 7.  | High temperature characteristics | +85±2°C, 250 hours, put in room temperature, test after 1 hours.                                                            | Frequency change:<br>$\leq 5\text{ppm}$<br>Rr as specification |
| 8.  | Temperature cycling              | -30±3°C/30±3 min~+85±2°C/30±3min, 5 cycles                                                                                  | Frequency change:<br>$\leq 5\text{ppm}$<br>Rr as specification |

## 8.Dimension of Inside Package

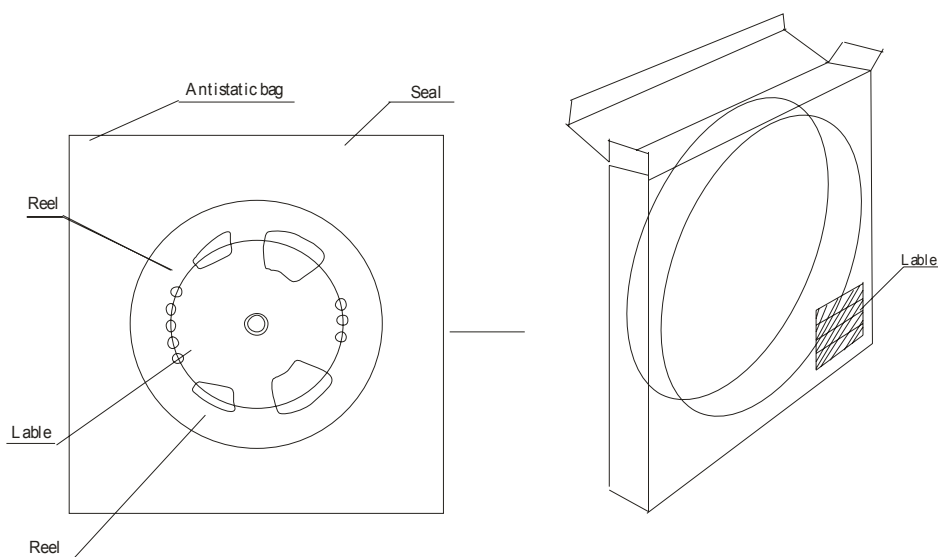
内包装尺寸图



- Standard quantity of 3225 : 3.000 pcs/reel
- Standard quantity of others : 1.000 pcs/reel
- Carrier tape : Antistatic material (PS)
- Each reel can be recycled

|   | 7050                  | 6035                  | 5032                  | 3225                   |
|---|-----------------------|-----------------------|-----------------------|------------------------|
| A | 5.4 <sup>±0.1</sup>   | 3.9 <sup>±0.1</sup>   | 3.5 <sup>±0.1</sup>   | 2.9 <sup>±0.1</sup>    |
| B | 7.4 <sup>±0.1</sup>   | 6.4 <sup>±0.1</sup>   | 5.4 <sup>±0.1</sup>   | 3.6 <sup>±0.1</sup>    |
| C | 16.0 <sup>±0.2</sup>  | 16.0 <sup>±0.2</sup>  | 12.0 <sup>±0.2</sup>  | 10.0 <sup>±0.2</sup>   |
| D | 7.5 <sup>±0.1</sup>   | 7.5 <sup>±0.1</sup>   | 5.5 <sup>±0.1</sup>   | 5.5 <sup>±0.1</sup>    |
| E | 1.75 <sup>±0.1</sup>  | 1.75 <sup>±0.1</sup>  | 1.75 <sup>±0.1</sup>  | 1.75 <sup>±0.1</sup>   |
| F | 8.0 <sup>±0.1</sup>   | 8.0 <sup>±0.1</sup>   | 8.0 <sup>±0.1</sup>   | 4.0 <sup>±0.1</sup>    |
| G | 2.0 <sup>±0.1</sup>   | 2.0 <sup>±0.1</sup>   | 2.0 <sup>±0.1</sup>   | 2.0 <sup>±0.1</sup>    |
| H | 4.0 <sup>±0.1</sup>   | 4.0 <sup>±0.1</sup>   | 4.0 <sup>±0.1</sup>   | 4.0 <sup>±0.1</sup>    |
| J | 1.55 <sup>±0.05</sup> | 1.55 <sup>±0.05</sup> | 1.5 <sup>±0.1/0</sup> | 1.5 <sup>±0.1/0</sup>  |
| K | 1.4 <sup>±0.1</sup>   | 1.5 <sup>±0.1</sup>   | 1.0 <sup>±0.1</sup>   | 0.9 <sup>±0.1</sup>    |
| Q | 1.6 <sup>±0.1/0</sup> | 1.55 <sup>±0.05</sup> | 1.6 <sup>±0.1</sup>   | 1.5 <sup>±0.1/0</sup>  |
| T | 0.3 <sup>±0.05</sup>  | 0.3 <sup>±0.05</sup>  | 0.25 <sup>±0.05</sup> | 0.25 <sup>±0.05s</sup> |

## 9. Inner carton



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