



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:        |               |
| 型号 Product:         | S4T           |
| 客户料号 Code No:       |               |
| 我司料号 Code No:       | S4T13521UYFAC |
| 频率 Frequency:       | 13.52127MHz   |
| 数量 Sample Quantity: |               |
| 日期 Date:            | 2021-7-15     |

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SHENZHEN JINGYOUJIA ELECTRONIC CO., LTD  
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TEL: 86-755-32840201 32850080  
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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          |

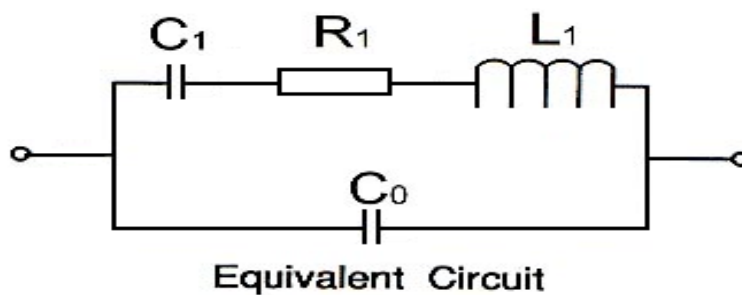
客户承认栏:

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

## 1. Electrical Parameters

| No. | Item                         | Symb          | Electrical Specification |      |      |            | Remark        |
|-----|------------------------------|---------------|--------------------------|------|------|------------|---------------|
|     |                              |               | Min.                     | Type | Max. | Units      |               |
| 1   | Nominal Frequency            | F0            | 13.52127                 |      |      | MHz        |               |
| 2   | Mode of Vibration            |               | Fundamental              |      |      |            |               |
| 3   | Frequency Tolerance          | $\Delta F/F0$ | -10                      |      | 10   | ppm        | At 25°C ± 3°C |
| 4   | Operating Temperature Range  | TOPR          | -20                      |      | 70   | °C         |               |
| 5   | Frequency Stability          | TC            | -20                      |      | 20   | ppm        |               |
| 6   | Storage Temperature          | TSTG          | -40                      |      | 85   | °C         |               |
| 7   | Load Capacitance             | CL            |                          | 15   |      | PF         |               |
| 8   | Equivalent Series Resistance | ESR           |                          |      | 60   | $\Omega$   |               |
| 9   | Drive Level                  | DL            |                          |      | 100  | $\mu W$    |               |
| 10  | Insulation Resistance        | IR            | 500                      |      |      | M $\Omega$ | At 100VDC     |
| 11  | Shunt Capacitance            | C0            |                          |      |      | PF         | 1.36+-10%     |
| 12  | Motional Capacitance         | C1            |                          |      |      | PF         | 5.14+-10%     |
| 13  | Aging Per Year               | Fa            | -3                       |      | 3    | ppm        | First Year    |
|     |                              |               |                          |      |      |            |               |

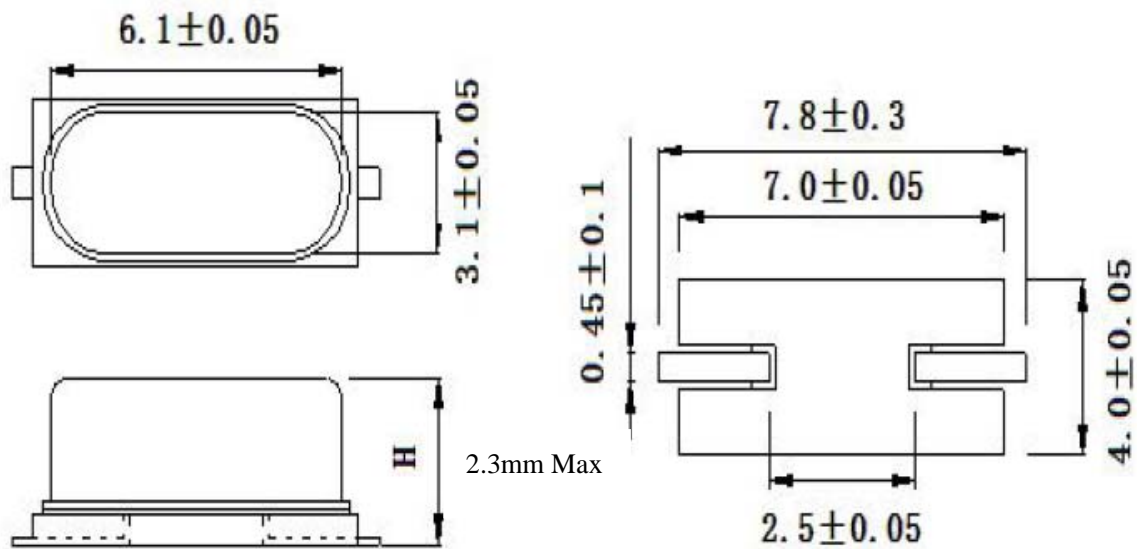
## 2. Equivalent Circuit:



### 3.实物 Product

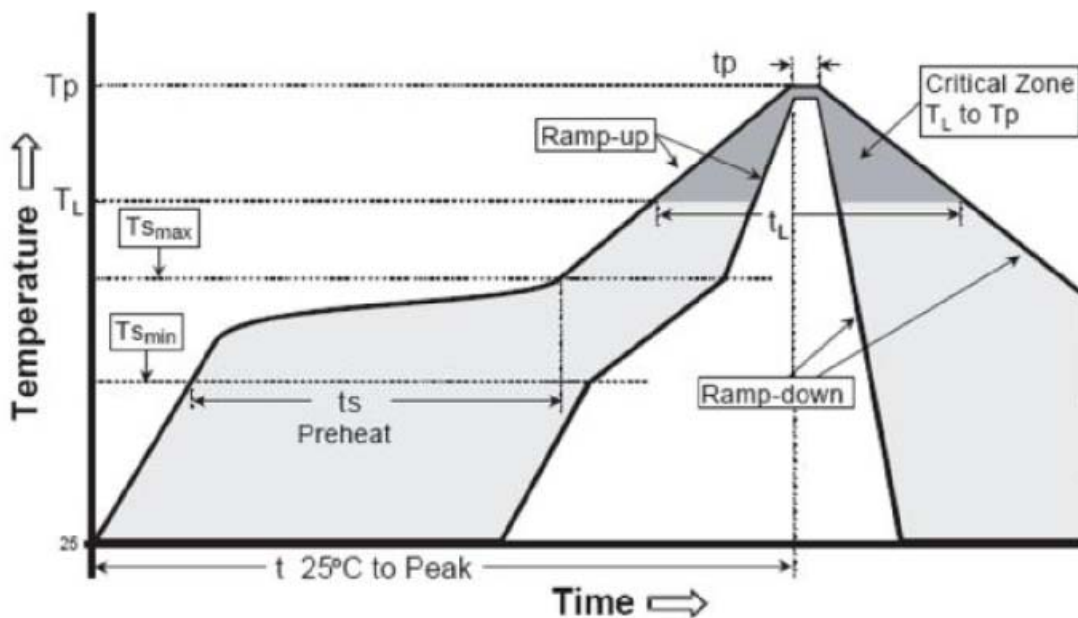


### 4.外型尺寸 Outline Dimensions (unit:mm)



## 5.回流焊曲线 Reflow Profiles

| Profiles Feature                               | Pb-Free Assembly |
|--|------------------|
| Average Ramp-up Rate (Ts max to Tp)            | 3°C/second max.  |
| Preheat  |                  |
| Temperature Min (Ts min)                       | 125°C            |
| Temperature Max(Ts max)                        | 200°C            |
| Time (ts min to ts max)                        | 60~180 seconds   |
| Time maintained above                          |                  |
| Temperature (TL)                               | 217°C            |
| Time (tL)                                      | 60~150 seconds   |
| Peak/Classification Temperature (Tp)           |                  |
| Time within 5°C of actual Peak Temperature(tp) | 20~40 second     |
| Ramp-down rate                                 | 6°C/second max.  |
| Time 25°C to Peak Temperature                  | 8 minutes max.   |
| Suggest reflow times                           | 3 times max.     |





### 6.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>≤5ppm<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>≤5ppm<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≥500MΩ  |
| 4.  | Weld characteristics             | 260℃ Max, 10 seconds  | 90% exhibit tin ok                                |
| 5.  | Humidity characteristics         | +40±2℃ & 90%~95% R.H. 250 hours   | Frequency change:<br>≤5ppm<br>Rr as specification |
| 6.  | Low temperature characteristics  | -30±2℃, 250 hours, put in room temperature, test after 1 hours.   | Frequency change:<br>≤5ppm<br>Rr as specification |
| 7.  | High temperature characteristics | +85±2℃, 250 hours, put in room temperature, test after 1 hours.   | Frequency change:<br>≤5ppm<br>Rr as specification |
| 8.  | Temperature cycling              | -30±3℃/30±3 min~+85±2℃/30±3min, 5 cycles  | Frequency change:<br>≤5ppm<br>Rr as specification |

## 7.包装 PACKING

1. 每盘数量 Capacity of a plastic reel : 3000 PCS ;
2. 每内箱数量 Capacity per inner box : 3000 PCS (A reel inner) ;
3. 每大箱数量 Capacity per outer carton : 10000 PCS (10×inner box) .

