

(RoHS)

# 产 品 规 格 书

## SPECIFICATION FOR APPROVAL

客户名称:  
Customer Name: \_\_\_\_\_

产品名称:  
Product Name: 石英晶体谐振器

产品型号:  
Product Type: HC-49SMD

标称频率:  
Nominal Freq: 12.000000MHz

产品编号:  
Part Coding 5M0-1200A2020-01

规格书编号:  
Specification P/N: XTY0292-5013

客户料号:  
Customer P/N: C389692

日期:  
Date: 2019-06-12

客户承认  
Approved By Customer:

签章  
Signature:

日期  
Date:



**深圳市新天源电子有限公司**

SHENZHEN XINTIANYUAN ELECTRONICS CO., LTD.

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陈梅东

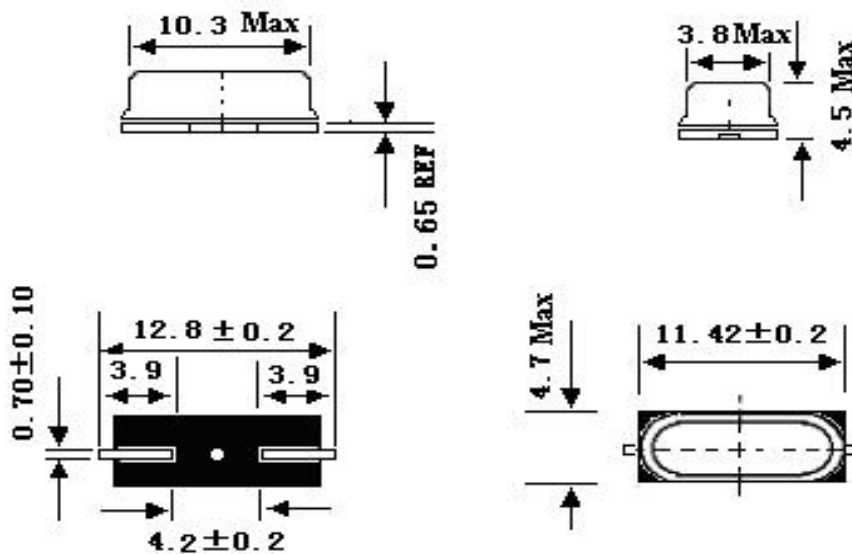


|  |   |                         |
|--|---|-------------------------|
| <p>深圳市新天源电子有限公司<br/>Shenzhen Xintianyuan<br/>Electronics Co., Ltd.</p> | <p>石英晶体谐振器规格书<br/>Specification of Quartz Crystal</p> | <p>NO: XTY0292-5013</p> |
| <p>HC-49SMD</p>  |   | <p>Date: 2019/06/12</p> |
| <p>一、石英晶体规格参数<br/>Quartz Crystal Specification Parameters</p>          |   |                         |
| <p>1、产品型号<br/>Holder Type</p>  | <p>HC-49SMD</p>                                       |                         |
| <p>2、标称频率<br/>Nominal Frequency</p>                                    | <p>12.000000MHz</p>                                   |                         |
| <p>3、振动模式：<br/>Mode of Oscillation</p>                                 | <p>Fundamental</p>                                    |                         |
| <p>4、调整频差<br/>Frequency Tolerance at 25°C ± 2°C</p>                    | <p>± 20ppm at 25°C ± 2°C</p>                          |                         |
| <p>5、等效电阻<br/>Equivalent Resistance (ESR)</p>                          | <p>≤ 40 Ω</p>   |                         |
| <p>6、负载电容<br/>Load Capacitance (CL)</p>                                | <p>20pF</p>   |                         |
| <p>7、温度频差<br/>Temperature Characteristics</p>                          | <p>± 20ppm</p>  |                         |
| <p>8、工作温度范围<br/>Operating Temperature range</p>                        | <p>-20~+70°C</p>                                      |                         |
| <p>9、储存温度范围<br/>Storage Temperature range</p>                          | <p>-40~+85°C</p>                                      |                         |
| <p>10、激励功率<br/>Drive Level</p>   | <p>100uW</p>  |                         |
| <p>11、静态电容<br/>Shunt Capacitance (C0)</p>                              | <p>&lt; 4.0pF</p>                                     |                         |
| <p>12、绝缘电阻<br/>Insulation Resistance</p>                               | <p>≥ 500M Ω (DC100V ± 15V)</p>                        |                         |
| <p>13、测试仪器<br/>Measure Instrument</p>                                  | <p>KH1240</p>   |                         |
| <p>14、年老化率<br/>Aging Rate a Year</p>                                   | <p>≤ ± 3ppm/年</p>                                     |                         |

|   |   |                  |
|---|---|------------------|
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|   | HC-49SMD                                      | Date: 2019/06/12 |

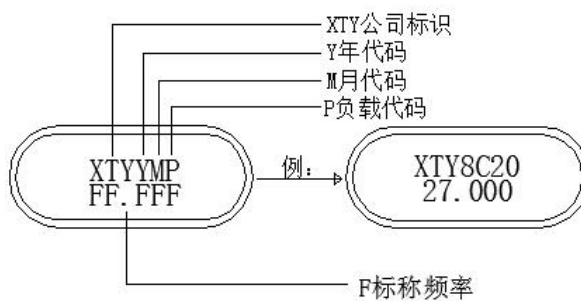
### 二、石英晶体尺寸、结构

#### Quartz Crystal Dimensions And Structure



### 三、石英晶体印字

#### Quartz Crystal Marking



#### 印字: Marking

XTY: 新天源

Y为年 (year): 8:2018; 9:2019...

M为月 (Month): A:1; B:2...

P为负载 CL:20: 20pF

FF.FFFM为频率Frequency: 27.000M

例8C20: 8为2018年, C为3月, 20为20pF;

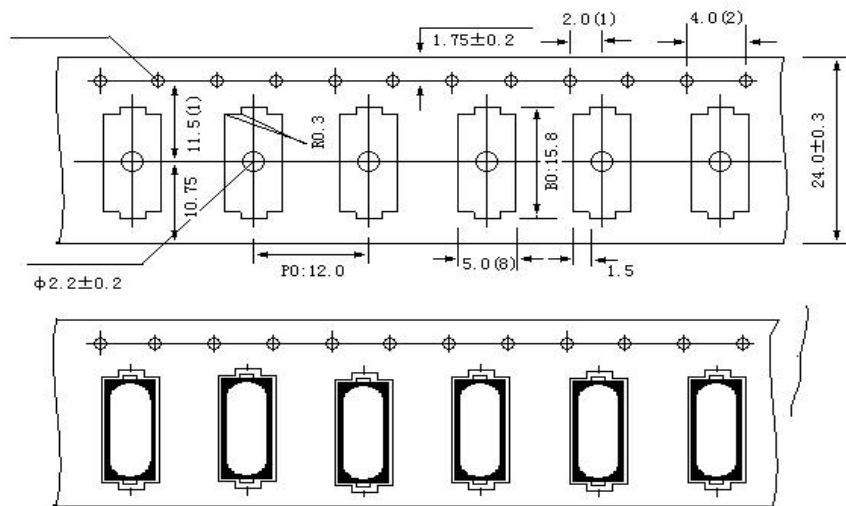
年、月、负载代码:

|    |      |      |      |      |      |      |      |      |      |      |      |        |
|----|------|------|------|------|------|------|------|------|------|------|------|--------|
| 年  | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026   |
| 代码 | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6      |
| 月  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12     |
| 代码 | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L      |
| 负载 | 9pF  | 10pF | 11pF | 12pF | 13pF | 14pF | 15pF | 16pF | 17pF | 18pF | 19pF | SERIES |
| 代码 | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | S      |

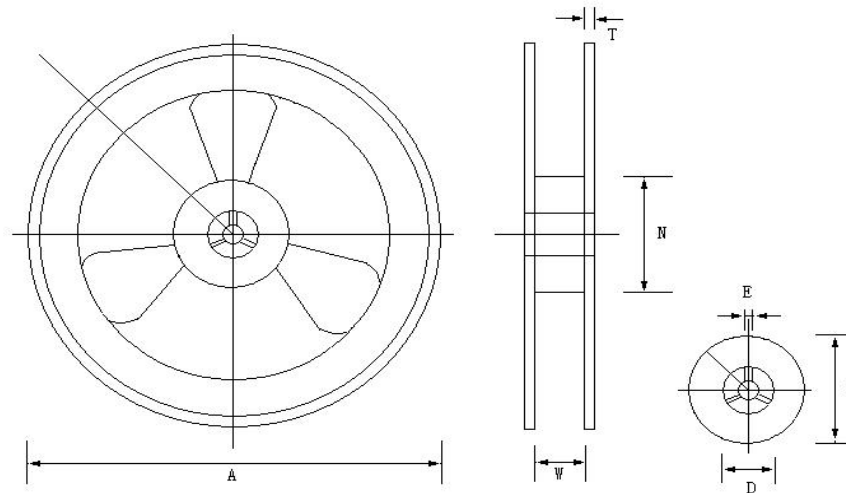
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|   | HC-49SMD                                      | Date: 2019/06/12 |

四、包装要求  
Packaging

1. 编带  
Tape



2. 轮  
Reel

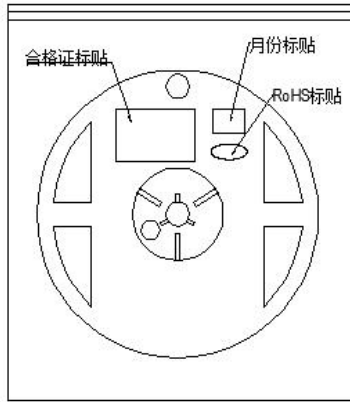


| Symbol     | A         | W    | N         | C         | D         | E         | T         |
|------------|-----------|------|-----------|-----------|-----------|-----------|-----------|
| Dimensions | 330       | 24   | 99        | 20.2      | 13.5      | 2.5       | 2.3       |
| Tolerances | $\pm 2.0$ | +1/0 | $\pm 1.0$ | $\pm 1.0$ | $\pm 0.5$ | $\pm 0.5$ | $\pm 0.5$ |

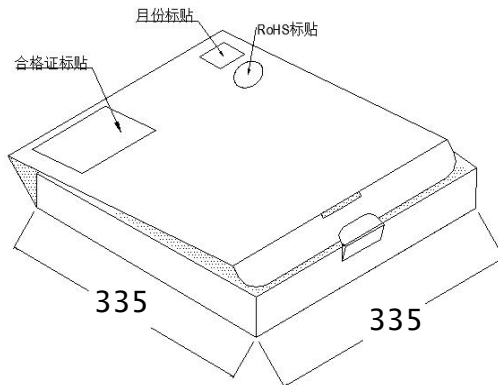
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3. 包装  
Package

1000只/1卷  
1000pcs/Reel

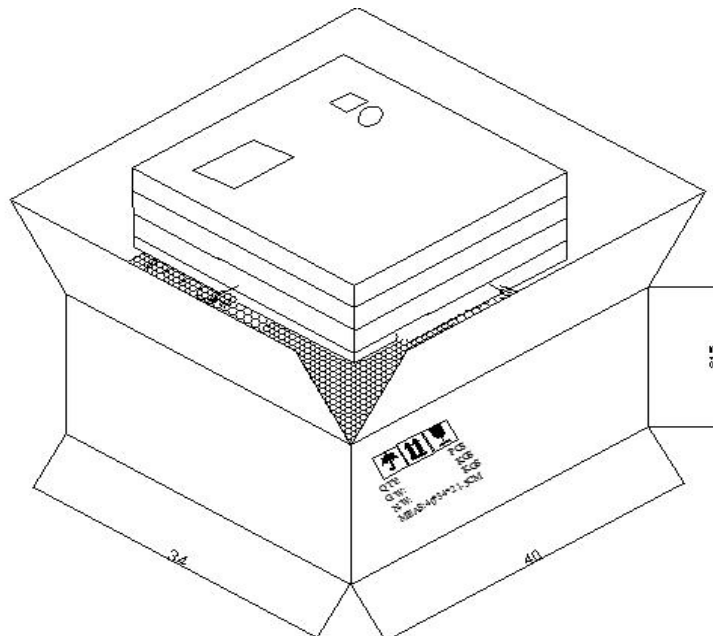


1轮=1盒  
1Reel=1Box  
Unit: mm



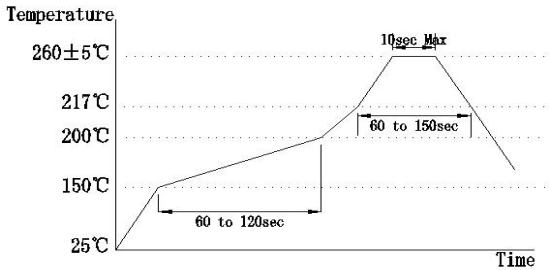
| 合格证  |      |
|------|------|
| 频率:  | 型号:  |
| 负载:  | 电阻:  |
| 频差:  | 数量:  |
| 日期:  | 供应商: |
| 批号:  | 编号:  |
| 订单号: | 料号:  |

包装箱  
Shipping Carton  
40\*34\*21.5 (5 Box)  
Unit: cm



|   |   |                  |
|---|---|------------------|
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|   | HC-49SMD                                      | Date: 2019/06/12 |

**五、石英晶体可靠性**  
**Reliability Test**

| NO. | 测试项目<br>Test Item                         | 可靠性条件<br>Testing Condition   | 判定标准<br>Determinant Criteria   |
|-----|---|--|--|
| 1.  | 跌落<br>Dropping Test                       | 从75cm高度跌落到30mm厚硬木板上，跌落三次 Drop the resonators from 75cm height to 30mm thick hardwood board, 3times.  | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |
| 2.  | 振动<br>Vibration                           | 频率 Frequency:10~60Hz; 幅度 Amplitude:0.75mm; 周期 Cycle time:10-55-10Hz: 1min; 振动方向 Direction:X, Y, Z; 振动时间 Duration: 每个方向2小时 2 h/direction.   | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |
| 3.  | 高温<br>Heat Resistance                     | 温度Temperature: $125^{\circ}\text{C} \pm 10^{\circ}\text{C}$<br>时间Time: $720 \pm 24$ Hours  | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |
| 4.  | 低温<br>Cold Resistance                     | 温度Temperature: $-40^{\circ}\text{C} \pm 10^{\circ}\text{C}$<br>时间Time: $720 \pm 24$ Hours  | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |
| 5.  | 回流焊 (2次)<br>Reflow (2times)               |  <p>回流焊Reflow <math>260^{\circ}\text{C} \pm 5^{\circ}\text{C} \leq 10\text{s}</math></p>   | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |
| 6.  | 耐焊接热<br>Resistance To Soldering Heat      | 焊接温度Soldering Heat: $320^{\circ}\text{C} \pm 10^{\circ}\text{C}$<br>测试时间Test Time: $3.5\text{s} \pm 0.5\text{s}$ ;   | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |
| 7.  | 气密性<br>Leakage                            | 用氦质谱仪进行检测，试验气体: He; 真空度: $1 \times 10^{-3}\text{Pa}$ ; Helium mass-mass-spectrometer detector, and vacuum and reach $1 \times 10^{-3}\text{Pa}$ ;  | $\leq 1 \times 10^{-8}\text{atm} \cdot \text{cc/S}$  |
| 8.  | 高温高湿<br>Constant Temperature and Humidity | 在温度 $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ，湿度90%~99%，储存720小时，取出2小时后测试; Stored at $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , Humidity 90%~99% For a period of minimum 720hours. Then $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and 2 hours before testing | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)<br>Appearance OK |
| 9.  | 温度冲击<br>Temperature Shock                 | 低温Low $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ (120min) $\leftrightarrow$ 高温High $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ (120min); 循环10次; For 10 cycles  | $\Delta FL \leq \pm 5\text{ppm}$<br>$\Delta RS \leq \pm 10\%$ or $5\ \Omega$<br>(whichever is larger)                  |

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