



# 珠海鑫汇电子科技有限公司

**ZHUHAI MONEC ELECTRONIC TECHNOLOGY CO., LTD.**

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## 承认书 Approval Sheet

承认书编号/ID: M19-01-09-05

物料描述/

Product Description: 晶振 49SA 16.000MHz 12pF 20ppm

料号/

Part Number: ESA16.0000F12M25F

制作人/



Approved by: \_\_\_\_\_

审核人/



Checked by: \_\_\_\_\_

日期/

盖章/

Date: 2019-01-09



**客户签署/**  
**Customer signature required**

公司名称/  
Company: \_\_\_\_\_

客户料号/  
Customer Part Number: \_\_\_\_\_

承认人/  
Approved by: \_\_\_\_\_

批准人/  
Confirmed by: \_\_\_\_\_

日期/  
Date: \_\_\_\_\_

盖章/  
Stamp: \_\_\_\_\_



一、电性能参数 ELECTRICAL PARAMETERS:

| No. | 特性 Characteristic                     | 范围 Limits               | 备注 Remark                    |
|-----|---------------------------------------|-------------------------|------------------------------|
| 1   | 产品型号<br>Ackage Type                   | HC-49SA                 |                              |
| 2   | 标称频率<br>Nominal Frequency             | 16.000000MHz            |                              |
| 3   | 振动模式<br>Mode of Vibration             | AT-Fund(基频)             |                              |
| 4   | 常温频差<br>Frequency Tolerance           | ±20ppm                  | 25±3℃测试<br>Measure at 25℃±3℃ |
| 5   | 使用温度范围<br>Operating Temperature Range | -40℃~+85℃               |                              |
| 6   | 温度稳定性<br>Frequency Stability          | ±50ppm                  |                              |
| 7   | 储存温度范围<br>Storage Temperature Range   | -40℃~+85℃               |                              |
| 8   | 负载电容<br>Load capacitance              | 12pF                    |                              |
| 9   | 谐振电阻<br>Equivalent Series Resistance  | 40 Ω max                |                              |
| 10  | 激励功率<br>Drive Level                   | 50 μ W ( 1000 μ W max ) |                              |
| 11  | 绝缘电阻<br>Insulation Resistance         | 500M Ω                  | At 250V <sub>DC</sub>        |
| 12  | 静电容量<br>Shunt Capacitance             | 5pF max                 |                              |
| 13  | 老化率<br>Aging Per Year                 | ±5ppm                   |                              |
| 14  |                                       |                         |                              |
| 15  |                                       |                         |                              |
| 16  |                                       |                         |                              |
| 17  |                                       |                         |                              |
| 18  |                                       |                         |                              |

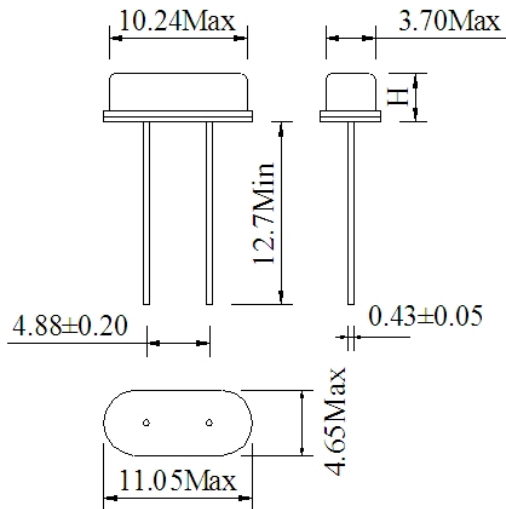


## 二、可靠性试验 Reliability test

| No. | 测试项目<br>Item                        | 测试条件<br>Test Conditions  | 判定标准<br>Basis of Verdict  |
|-----|-------------------------------------|--|---|
| 1   | 跌落冲击<br>Drop                        | 75cm 高度自由下落到 3cm 厚度的硬质木板 3 次<br>3 Times Free Fall from 75cm height table to<br>3cm thickness hard wood board   | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 2   | 模拟回流焊<br>Reflow                     | $240^{\circ}\text{C} \leq T \leq 265^{\circ}\text{C}$ $T=60 \pm 30\text{s}$<br>$T=260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ $T=40 \pm 10\text{s}$<br>$T(\text{max})=265^{\circ}\text{C}$  | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 3   | 可焊性<br>Solder                       | $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 焊锡槽浸润 $3 \pm 0.5$ 秒<br>Temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$<br>Time: $3 \pm 0.5$ Seconds   | 新锡覆盖率 $\geq 90\%$<br>the solder immersion<br>surface $\geq 90\%$                |
| 4   | 耐焊接热<br>Solder Heating              | $280^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 焊锡槽浸润 $10 \pm 1$ 秒<br>Temperature: $280^{\circ}\text{C} \pm 5^{\circ}\text{C}$<br>Time: $10 \pm 1$ Seconds   | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 5   | 气密性<br>Leakage                      | $4 \sim 5\text{Kg/cm}^2$ 压力之氦气罐中加压 $10 \pm 1$ 分钟<br>He Pressure: $4 \sim 5\text{Kg/cm}^2$<br>Time: $10 \pm 1$ min  | $\leq 3 \times 10^{-9} \text{Pa} \cdot \text{m}^3/\text{s}$                     |
| 6   | 高温储存<br>High temperature<br>storage | $100^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 烘箱中烘烤 $96 \pm 1$ 小时<br>Temperature: $100^{\circ}\text{C} \pm 5^{\circ}\text{C}$<br>Time: $96 \pm 1$ Hours  | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 7   | 高温老化<br>High temperature<br>ageing  | $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 之烘箱中烘烤 30 天<br>Temperature: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$<br>Time: 30 days   | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 8   | 低温储存<br>Low temperature<br>storage  | $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 环境中保持 $96 \pm 1$ 小时<br>Temperature: $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$<br>Time: $96 \pm 1$ Hours  | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 9   | 恒温恒湿<br>Humidity                    | 在湿度为 $90 \sim 95\%$ , 温度为 $40 \pm 2^{\circ}\text{C}$ 环境中保持<br>96 小时<br>Temp: $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$<br>Humidity: $90 \sim 95\%$<br>Times: 96 Hours   | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 10  | 热冲击<br>Thermal Shock                | $-40^{\circ}\text{C}$ 和 $+85^{\circ}\text{C}$ , 各 $30 \pm 1$ 分钟, 循环 10 次<br>Temperature: $-40^{\circ}\text{C} \pm 2^{\circ}\text{C} \leftrightarrow 85^{\circ}\text{C} \pm 2^{\circ}\text{C}$<br>Time: $30 \pm 1$ min<br>For 10 cycles | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |

| No. | 测试项目<br>Item               | 测试条件<br>Test Conditions  | 判定标准<br>Basis of Verdict  |
|-----|----------------------------|--|---|
| 11  | 振动<br>Vibration            | 频率: 10~50Hz, 幅度: 0.75mm<br>频率: 50Hz~500Hz, 加速度幅度: 98m/s <sup>2</sup><br>周期: 10-500-10Hz, 15min<br>振动方向: X、Y、Z<br>振动时间: 每个方向 2 小时<br>Frequency: 10~50Hz, Amplitude: 0.75mm<br>Frequency: 50~500Hz, Amplitude: 98m/s <sup>2</sup><br>Cycle time: 10-500-10H, 15min<br>Direction: X、Y、Z<br>Duration: 2 Hours /direction | $\Delta FL \leq \pm 5\text{ppm}$ ,<br>$\Delta R \leq 5\text{ohm or } \leq 10\%$ |
| 12  | 端子拉力强度<br>Tensile Strength | 在每个端子上, 沿端子轴方向施力 900g 的<br>拉力 30±5 秒<br>Apply a 900g tensile load to each terminal<br>and sustain it for 30s±5s  | 晶体无损伤<br>without distinct damage  |

### 三、外形尺寸 Outline Dimensions (unit: mm)



| Part    | H         |
|---------|-----------|
| HC-49SA | 3.5mm Max |
| HC-49SB | 2.5mm Max |

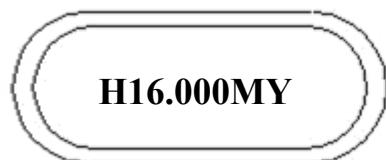
### 四、印字 Marking

由 7 位组成, 前 6 位: 频率 Mhz/7 Digital, First 6 Digital: Frequency in Mhz

最后 1 位: 公司代码/End 1 Digital: company ID

H=固定代码 Y=年份 (2018=8, 2019=9) M=月份 (A=1 月份, B=2 月份.....M=12 月份)

当前字样:





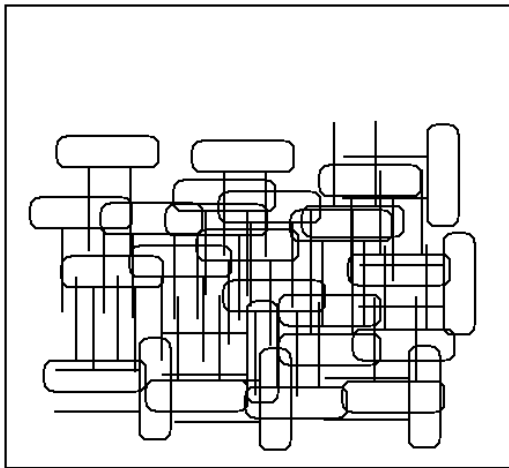
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ZHUHAI MONEC ELECTRONIC TECHNOLOGY CO., LTD.  
石英晶体规格书 CRYSTAL UNIT SPECIFICATIONS

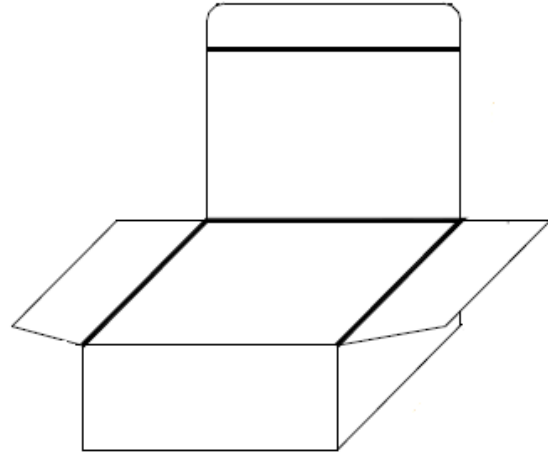


五、包装方式 Packing

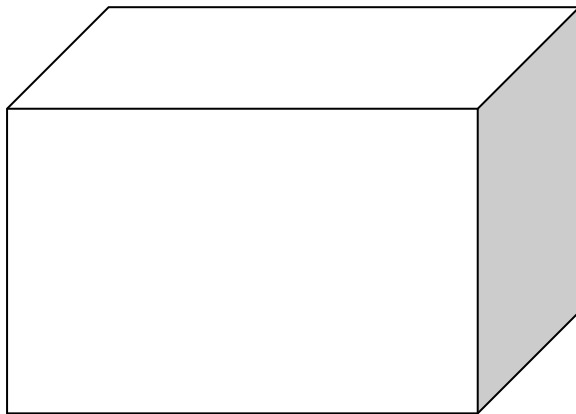
HC-49SA &HC-49SB: 2000pcs/Box



200pcs/Bag (200 只/袋)



10Bag(2000pcs)/Box (10 袋/小盒)



10Box(20000pcs)/Outer Box (10 盒/箱)

| CRYSTAL UNIT |       |         |     |
|--------------|-------|---------|-----|
| P/N:         |       |         |     |
| YR P/N:      |       |         |     |
| FREQ:        | MHz   | CL:     | PF  |
| TOL: ±       | PPM ( | AT 25°C | )   |
| STAB: ±      | PPM ( | °C TO   | °C) |
| L/N:         | QTY:  | PCS     |     |

Lable (标签)



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