



# 承 认 书

## SPECIFICATIONS FOR APPROVAL

客户名称:  
Customer: \_\_\_\_\_

产品名称: 石英晶体谐振器  
Description: \_\_\_\_\_  
CRYSTAL RESONATOR

产品型号: 2016 32M 9PF 10PPM  
SPECIES \_\_\_\_\_

标称频率: 32.000MHz  
FREQUENC \_\_\_\_\_

料 号:  
MATERIAL CODE \_\_\_\_\_  
SST-2016/32.000M-9PF

| 供应商确认          |                         |                      |  | 客户确认           |                         |                         |                                     |
|----------------|-------------------------|----------------------|--|----------------|-------------------------|-------------------------|-------------------------------------|
| 品管部<br>QC Dept | 工程部<br>Engineer<br>Dept | 业务部<br>Trade<br>Dept | <input checked="" type="checkbox"/><br>合格 PASS | 品管部<br>QC Dept | 工程部<br>Engineer<br>Dept | 采购部<br>Purchase<br>Dept | <input type="checkbox"/><br>合格 PASS |
| 莫<br>平<br>会    | 梁<br>雄                  | 陈<br>晓<br>群          | <input type="checkbox"/><br>不合格 NG             |                |                         |                         | <input type="checkbox"/><br>不合格 NG  |

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电话: 0830-8106299、8172777 传真: 0830-8106266



1. Electrical characteristics 电气性能

| Items 项目                     | Symbol 符号 | Specification 规格说明  |        |        | Unit 单位 | Notes      |
|------------------------------|-----------|---------------------|--------|--------|---------|------------|
|                              |           | Min 最小              | Typ 标准 | Max 最大 |         |            |
| Model No 型号                  |           | Seam Seal 2016      |        |        |         |            |
| Blank Cutting Mode 晶片切型      |           | AT FUND.            |        |        |         |            |
| Nominal Frequency 标称频率       | FL        | 32.000000           |        |        | MHz     |            |
| Oscillation Mode 振荡模式        |           | ■ Fundamental □ 3rd |        |        |         |            |
| Load Capacitance 负载电容        | CL        |                     | 9      |        | pF      |            |
| Frequency Stability 频率公差     |           | -10                 |        | 10     | ppm     |            |
| Operating Temperature 工作温度   | Topr      | -20                 |        | 70     | °C      |            |
| Storage Temperature 储存温度     | Tstg      | -40                 | ~      | 85     | °C      |            |
| Drive Level 驱动功率             | DL        |                     | 100    |        | uW      |            |
| Effective Resistance RR 等效电阻 | Rr        | -                   | -      | ≤45    | Ω       | -          |
| Shunt Capacitance C0 并联电容    | C0        | -                   | -      | 7      | pF      | -          |
| Motional Capacitance C1 动态电容 | C1        | -                   | -      | NA     | fF      | -          |
| Insulation Resistance 绝缘电阻   | Rins      | 500                 | -      | -      | MΩ      | at DC 100V |
| Aging: 老化率                   |           | -3                  |        | +3     | ppm     | Per year   |
| Weight 重量                    |           |                     | 0.006  |        | g       |            |

**Remark备注:** Sample Data See Attachment 抽样资料见附件

**Measure equipment 测量设备 :**

Electrical characteristics measured by S&A 250B or equivalent.

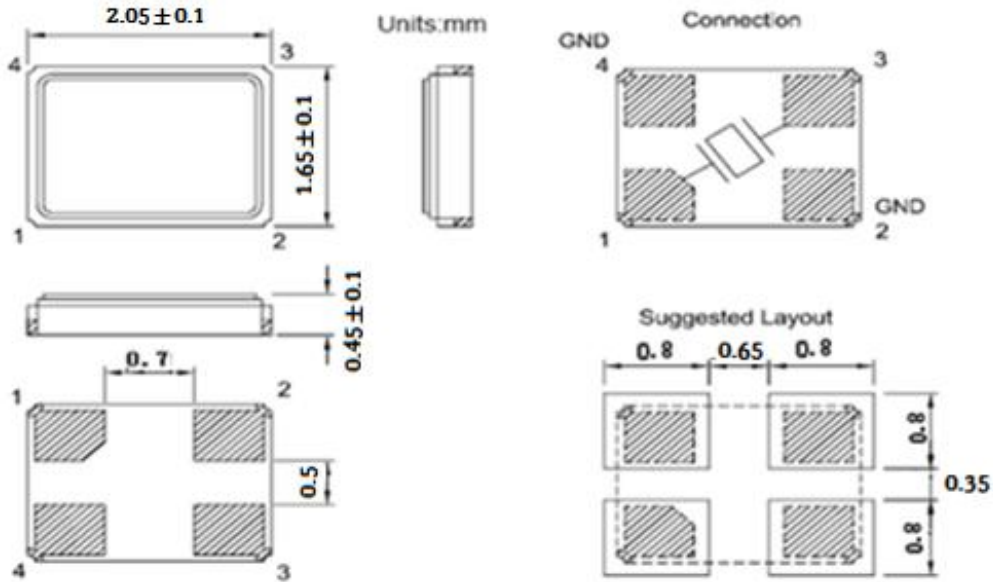
电气性能测量为S&A 250B或相当设备。

**Hermetically 密封性 :**

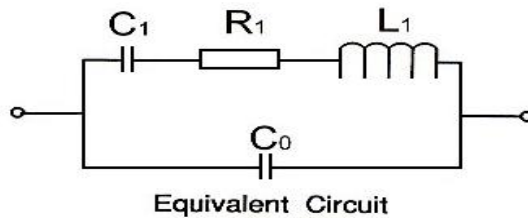
**Fine Leak 细漏:** Helium Bombing 4kg/cm<sup>2</sup> for 1 Hour, Leak ate Less Than 1×10<sup>-8</sup> atm. cc/sec  
氦气加压4kg/cm<sup>2</sup> 1小时, 氦质谱检漏仪检测泄漏小于 1×10<sup>-8</sup> atm. cc/sec

**Gross Leak 精漏:** 125°C FC#40 , 120 Seconds, No Bubble  
放入125度氟油120秒不起泡

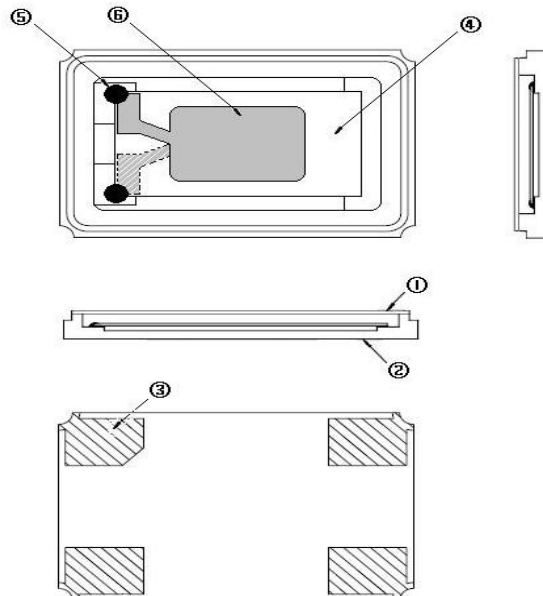
2. Solder Dimension And Pattern 焊接模型尺寸图:



3. Equivalent Circuit 等效电路图:

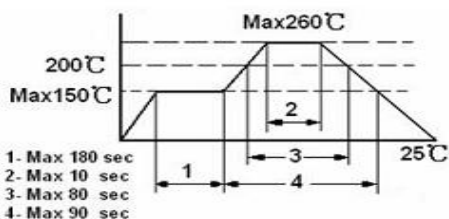


4. Structure drawing 结构图:

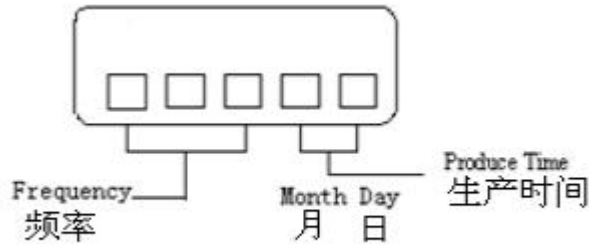


| NO | COMPONENTS<br>构成             | MATERIALS<br>原料       | QTY<br>数量 | FINISH / SPECIFICATIONS<br>结束/说明                           |
|----|------------------------------|-----------------------|-----------|--|
| 1  | Cap上盖                        | Metal ( Fe ) 金属       | 1         | -  |
| 2  | Base基座                       | Ceramic陶瓷制品           | 1         | Color black炭黑色   |
| 3  | PAD焊盘                        | Au金                   | 4         | Tungsten metalize钨合金<br>+ Ni plating镍电镀<br>+ Au plating金电镀 |
| 4  | Crystal Blank石英晶片            | SiO <sub>2</sub> 二氧化硅 | 1         | -  |
| 5  | Conductive Adhesive<br>导电粘合剂 | Ag银                   | 4         | Silicone硅树脂  |
| 6  | Electrode电极                  | Ag银 + Cr铬             | 2         | -  |

#### 5. Reliability Specification 可靠性说明

| Item 项目                                     | Condition 条件  | Standard 标准   |
|---|---|---|
| 1. Drop characteristics<br>跌落特性             | Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.)  | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 2. Mechanical shock<br>机械冲击                 | Device are shocked to half sine wave (1000g) three mutually perpendicular axes each 3 times   | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 3. Shake characteristics<br>震动特性            | Shake frequency 10~55Hz, cyc1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours.  | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 4. Humidity characteristics<br>湿度特性         | +40 $\pm$ 2 $^{\circ}\text{C}$ & 90%~95% R.H. 250 hours   | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 5. Low temperature characteristics<br>低温特性  | -40 $\pm$ 2 $^{\circ}\text{C}$ , 250 hours, put in room temperature, test after 1 hours.  | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 6. High temperature characteristics<br>高温特性 | +85 $\pm$ 2 $^{\circ}\text{C}$ , 250 hours, put in room temperature, test after 1 hours.  | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 7. Temperature cycling<br>温度循环              | -30 $\pm$ 3 $^{\circ}\text{C}$ /30 $\pm$ 3 min~+85 $\pm$ 2 $^{\circ}\text{C}$ /30 $\pm$ 3min, 5 cycles  | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 8. Refluence examination<br>回流焊特性           |  <p>1- Max 180 sec<br/>2- Max 10 sec<br/>3- Max 80 sec<br/>4- Max 90 sec</p> | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |

6. Marking specification 标识说明

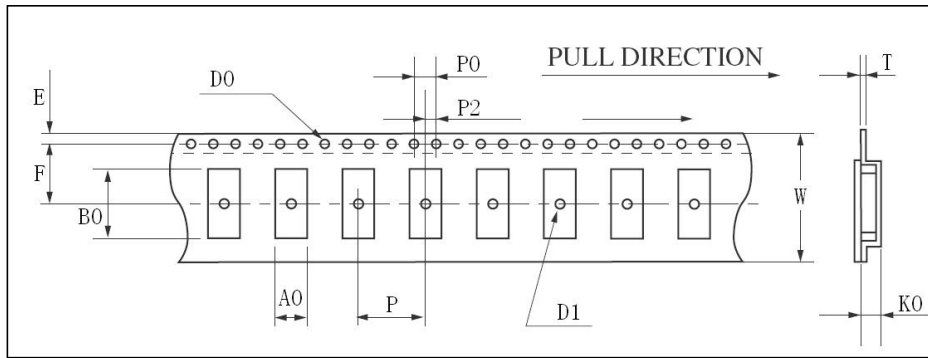


Produce Time Code 生产时间代码:

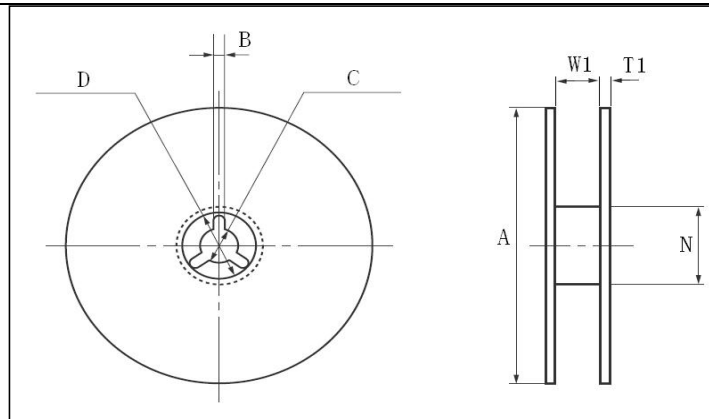
|         |   |   |   |   |   |   |   |   |   |    |    |    |
|---------|---|---|---|---|---|---|---|---|---|----|----|----|
| Month 月 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Code 代码 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O  | N  | D  |

|         |    |    |    |    |    |    |    |    |    |    |    |    |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|
| Day 日   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| Code 代码 | A  | B  | C  | D  | E  | F  | G  | H  | I  | J  | K  | L  |
| Day 日   | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Code 代码 | M  | N  | O  | P  | Q  | R  | S  | T  | U  | V  | W  | X  |
| Day 日   | 25 | 26 | 27 | 28 | 29 | 30 | 31 |    |    |    |    |    |
| Code 代码 | Y  | Z  | 1  | 2  | 3  | 4  | 5  |    |    |    |    |    |

7. Type & Reel 编带类型及卷盘

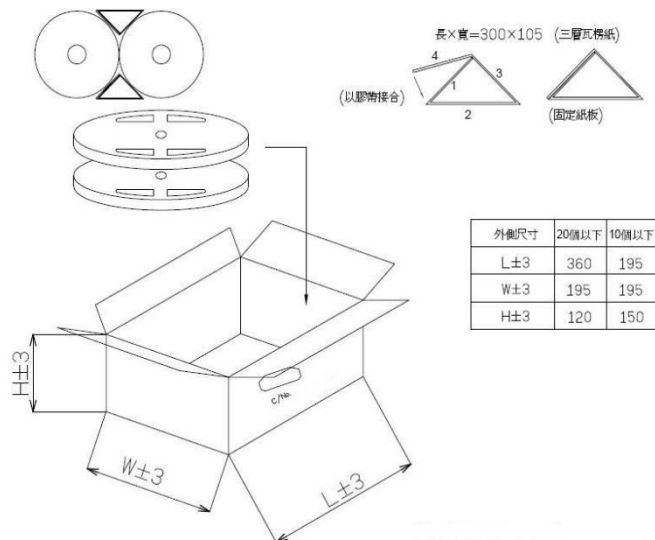


|    | HC-49SMD    | 5032        | 3225        | 2520        | 2016      |
|----|-------------|-------------|-------------|-------------|-----------|
| W  | 24.00±0.30  | 12.00±0.05  | 8.00±0.05   | 8.00±0.05   | 8.00±0.05 |
| E  | 1.75±0.10   | 1.75±0.10   | 1.75±0.05   | 1.75±0.05   | 1.75±0.05 |
| F  | 11.5±0.10   | 5.5±0.10    | 3.5±0.05    | 3.5±0.05    | 3.5±0.10  |
| T  | 0.40±0.05   | 0.30±0.05   | 0.25±0.03   | 0.25±0.03   | 0.20±0.05 |
| P  | 12.00±0.10  | 8.00±0.10   | 4.00±0.05   | 4.00±0.05   | 4.00±0.10 |
| P0 | 4.00±0.10   | 4.00±0.10   | 4.00±0.05   | 4.00±0.05   | 4.00±0.10 |
| P2 | 2.00±0.10   | 2.00±0.10   | 2.00±0.05   | 2.00±0.05   | 2.00±0.10 |
| D0 | φ 1.50+0.10 | φ 1.50+0.10 | φ 1.50+0.10 | φ 1.50+0.10 | 1.00±0.10 |
| D1 | φ 1.50MIN   | φ 1.50MIN   | φ 1.00MIN   | φ 1.00MIN   | 1.10±0.10 |
| A0 | 4.60±0.10   | 3.50±0.10   | 2.70±0.05   | 2.25±0.05   | 1.80±0.05 |
| K0 | 4.40±0.10   | 1.60±0.10   | 1.50±0.10   | 0.70±0.10   | 0.65±0.10 |
| B0 | 14.20±0.15  | 5.20±0.10   | 3.50±0.05   | 2.75±0.05   | 2.20±0.10 |



|    | HC-49SMD             | 5032                 | 3225                 | 2520                 | 2016                 |
|----|----------------------|----------------------|----------------------|----------------------|----------------------|
| A  | $\phi 330 \pm 1.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   |
| B  | $2.30 \pm 0.20$      | $2.00 \pm 0.50$      | $2.50 \pm 0.50$      | $2.50 \pm 0.50$      | $2.50 \pm 0.50$      |
| C  | $\phi 13.5 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.5 \pm 0.20$ | $\phi 13.5 \pm 0.20$ | $\phi 13.5 \pm 0.20$ |
| D  | $\phi 21.5 \pm 0.20$ | $\phi 20.0 \pm 0.50$ | $\phi 56.8 \pm 0.50$ | $\phi 56.8 \pm 0.50$ | $\phi 56.8 \pm 0.50$ |
| N  | $\phi 100.0 \pm 0.5$ | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  |
| W1 | $24.5 \pm 0.20$      | $12.5 \pm 0.20$      | $9.4 \pm 0.30$       | $9.4 \pm 0.30$       | $9.4 \pm 0.30$       |
| T1 | $2.30 \pm 0.20$      | $1.80 \pm 0.20$      | $1.40 \pm 0.20$      | $1.40 \pm 0.20$      | $1.40 \pm 0.20$      |

### 8. Packing Specification 包装说明



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