



**LUCKI CM ELECTRONICS Co.,Ltd**



# 承认书

## APPROVAL SHEET

客户代码 Customer : \_\_\_\_\_

产品名称 Part Number : 石英晶体谐振器  
\_\_\_\_\_

LK 料号 LK Part No. : L327S13DL11L  
\_\_\_\_\_

产品型号 Holder : SMD 3225  
\_\_\_\_\_

标称频率 Frequency : 13.5531MHZ 12PF ±10PPM  
\_\_\_\_\_

制造商 Manufacturer : 浙江蓝晶芯微电子有限公司  
\_\_\_\_\_

提交时间 Date : 2023-08-04  
\_\_\_\_\_

|                |               |                |
|----------------|---------------|----------------|
| 制作<br>DESIGNER | 审核<br>Checked | 批准<br>Approved |
| 赵倩             | 林本锦           | 孙娟             |

客户批准 Customer Approval :

|               |                |
|---------------|----------------|
| 审核<br>Checked | 批准<br>Approved |
|               |                |

(请批准后回签一份 PLEASE RETURN A COPY WITH APPROVAL)



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修改记录  
Revision History

| 修改号<br>No. | 修订日期<br>Revised Date | 修改内容<br>Change Content | 修改人<br>modifier | 批准人<br>Approved |
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规格内容  
Specification content

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## 1. 电性能 Electrical characteristics

| Items                             | Symbol        | Specification      |        |     | Unit   | Notes       |
|-----------------------------------|---------------|--------------------|--------|-----|--------|-------------|
|                                   |               | Min                | Typ    | Max |        |             |
| 型号名称<br>Model No                  |               | Seam Seal 3225     |        |     |        |             |
| 晶片切型<br>Blank Cutting Mode        |               | AT FUND.           |        |     |        |             |
| 标称频率<br>Nominal Frequency         | F0            | 13.553100          |        |     | MHz    |             |
| 振动模式<br>Oscillation Mode          |               | ■ Fundamental □3rd |        |     |        |             |
| 频差公差<br>Frequency Tolerance       | $\Delta F/F0$ | -10                |        | 10  | ppm    | 25°C ± 3°C  |
| 负载电容 (CL)<br>Load Capacitance     | CL            |                    | 12     |     | pF     |             |
| 工作温度条件下的频差<br>Frequency Stability | TC            | -20                |        | 20  | ppm    |             |
| 工作温度<br>Operating Temperature     | Topr          | -40                |        | 85  | °C     |             |
| 存储温度范围<br>Storage Temperature     | Tstg          | -55                | ~      | 125 | °C     |             |
| 驱动功率<br>Drive Level               | DL            | 10                 | 100    | 300 | uW     |             |
| 等效串联电阻<br>Effective Resistance RR | Rr            | -                  | -      | 50  | Ω      |             |
| 静态电容(C0)<br>Shunt Capacitance C0  | C0            | -                  | -      | 2   | pF     |             |
| 频率牵引灵敏度<br>Trim Sensitivity TS    | TS            | -                  | -      | -   | ppm/PF |             |
| 绝缘阻抗<br>Insulation Resistance     | IR            | 500                | -      | -   | MΩ     | at DC 100 V |
| 年老化率<br>Aging                     | Fa            | -2                 |        | 2   | ppm    | Per year    |
| 重量<br>Weight                      |               |                    | 0.0163 |     | g      |             |

测量设备 Measure equipment: S&A 250B

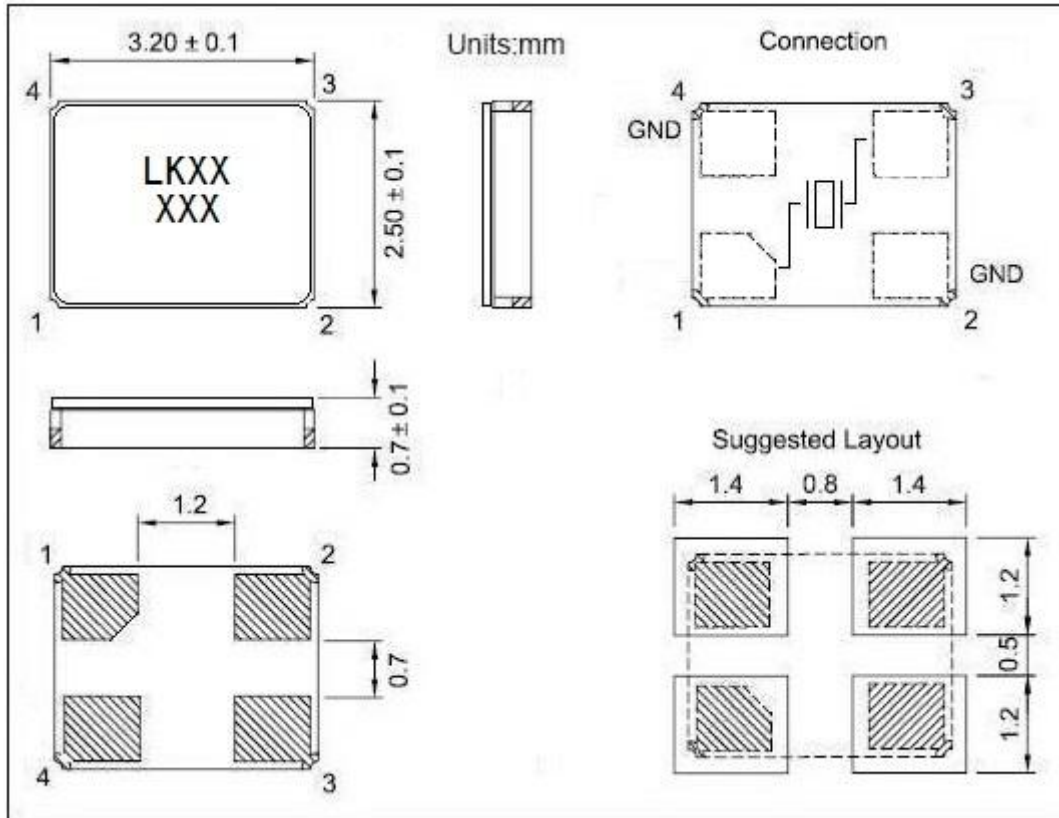
测量条件 Measurement conditions: 温度 23°C±3°C  
湿度 30%RH -60%RH



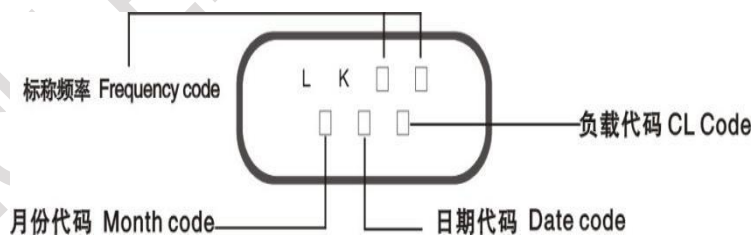
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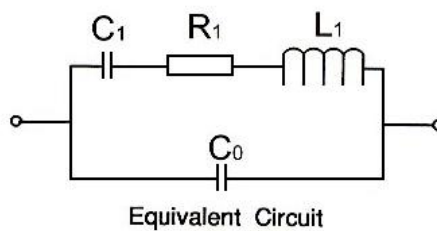
## 2.外形尺寸 Overall dimensions

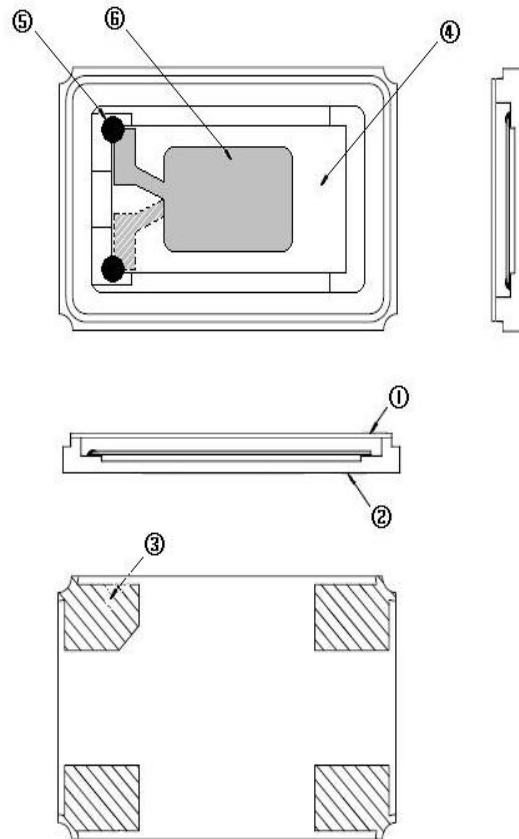


## 3. 印字标准 Marking specification



## 4. 等效电路图 Equivalent Circuit



**5. 内部结构图 Structure drawing**


| NO. | 组件<br>COMPONENTS           | 材料成份<br>MATERIALS       | 数量<br>QTY |
|-----|----------------------------|-------------------------|-----------|
| 1   | 上盖<br>LID                  | KV 合金<br>KV(Fe/Co/Ni)   | 1         |
| 2   | 基座<br>Package              | 陶瓷<br>Ceramic           | 1         |
| 3   | 引脚<br>PAD                  | 金<br>Au                 | 4         |
| 4   | 晶片<br>Crystal Blank        | 贵金属银<br>Noble Metal(Ag) | 1         |
| 5   | 导电胶<br>Conductive Adhesive | 树脂、银粉<br>Resin、Ag       | 4         |
| 6   | 电极<br>Electrode            | 贵金属银<br>Noble Metal(Ag) | 2         |



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### 6. 可靠性规范 Reliability Specification

| NO. | 试验项目<br>Test item              | 试验方法<br>Test Methods   | 判定标准<br>Judgment criteria   |
|-----|--------------------------------|--|---|
| 1   | 跌落试验<br>Shock                  | 高度: 100cm,硬质木版: 3cm,自然落下 3 回<br>Height:100cm,Wooden block:3cm, Dropping times:3 times  | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 2   | 耐振动性<br>Vibration              | 振幅: 1.5mm,周波数: 10Hz-55Hz,方向: X,Y,Z, 周期: 2h<br>Amplitude:1.5mm,Frequency:10~55Hz,Direction:X.Y.Z,P eriod:2hours   | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 3   | 回流焊<br>Reflow                  |  | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 4   | 耐湿试验<br>Humidity               | 温度: $65^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ,湿度: 90%~95% 时间: 48 h<br>Temperature: $65^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ,Humidity:90%~95%,Period:48h                   | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 5   | 低温保存试验<br>Low Temperature      | 温度: $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 时间: 2h<br>Temperature: $-40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Period:2h   | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 6   | 高温保存试验 High<br>Temperature     | 温度: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 时间: 16h<br>Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Period:16h   | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 7   | 热冲击试验<br>Temperature Cycle     | 1 个循环: $-40^{\circ}\text{C}$ (30min) $\rightarrow 85^{\circ}\text{C}$ (30min) 30 个循环<br>1cycle: $-40^{\circ}\text{C}$ (30min) $\rightarrow 85^{\circ}\text{C}$ (30min) 30cycle | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 8   | 折弯测试<br>Substrate Bending Test | 弯曲量 : 3mm , 受力: 10 秒, 速度 0.5mm/s.<br>Bend Amount : 3 mm Force:10 second by 0.5mm/s speed.  | $\Delta F/F \leq 5.0\text{ppm}$<br>$\Delta CI \leq 5\Omega$ or 20%  |
| 9   | 密封性<br>Sealing Test            | 氦气压力标准: 5.0~5.5Kg/cm <sup>2</sup> , 加压时间: 2 小时<br>HELIUM BOMBING 5.0~5.5 Kg / cm <sup>2</sup> ,FOR 2 HOURS.  | Leak rate less than:<br>$< 1 \cdot 0\text{E}-9 \text{ Pa} \cdot \text{m}^3/\text{sec}$<br>泄漏率: $< 1 \cdot 0\text{E}-9 \text{ Pa} \cdot \text{m}^3/\text{sec}$ |
| 10  | 焊锡试验<br>Soldering Dip          | 温度: $+260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 时间: 3 sec<br>Temperature: $+260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Period: 3 second                                       | 浸入端至少 95%面积覆盖着新的焊接材料.   |

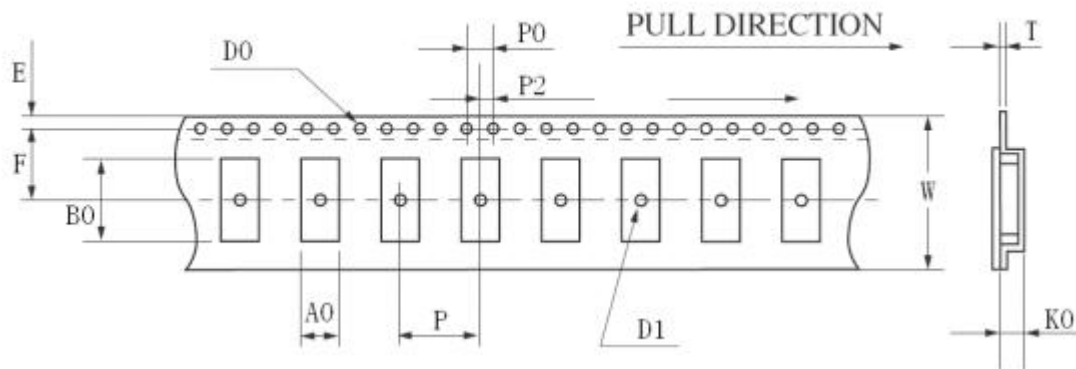


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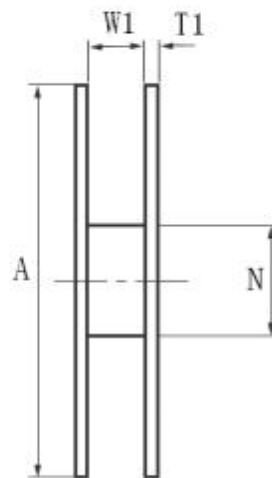
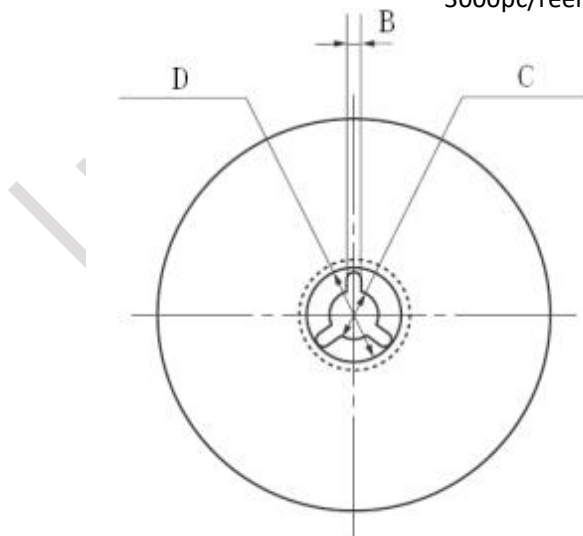


## 7. 编带类型与卷盘 Type & Reel

|    | HC-49SMD   | 7050       | 6035       | 5032       | 3225       | 2520       | 2016       |
|----|------------|------------|------------|------------|------------|------------|------------|
| W  | 24.00±0.30 | 16.00±0.05 | 12.00±0.05 | 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±0.10  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  |
| F  | 11.5±0.10  | 7.5±0.10   | 5.5±0.10   | 5.5±0.10   | 3.5±0.05   | 3.5±0.05   | 3.5±0.05   |
| T  | 0.40±0.05  | 0.35±0.05  | 0.35±0.05  | 0.30±0.05  | 0.25±0.03  | 0.25±0.03  | 0.25±0.03  |
| P  | 12.00±0.10 | 8.00±0.10  | 8.00±0.10  | 8.00±0.10  | 4.00±0.05  | 4.00±0.05  | 4.00±0.05  |
| P0 | 4.00±0.10  | 4.00±0.10  | 4.00±0.10  | 4.00±0.10  | 4.00±0.05  | 4.00±0.05  | 4.00±0.05  |
| P2 | 2.00±0.10  | 2.00±0.10  | 2.00±0.10  | 2.00±0.10  | 2.00±0.05  | 2.00±0.05  | 2.00±0.05  |
| D0 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 |
| D1 | φ1.50MIN   | φ1.50MIN   | φ1.50MIN   | φ1.50MIN   | φ1.00MIN   | φ1.00MIN   | φ1.00MIN   |
| A0 | 4.60±0.10  | 5.40±0.10  | 3.90±0.10  | 3.50±0.10  | 2.70±0.10  | 2.4±0.10   | 2.00±0.10  |
| K0 | 4.40±0.10  | 1.80±0.10  | 1.50±0.10  | 1.60±0.10  | 1.50±0.10  | 1.10±0.10  | 1.10±0.10  |
| B0 | 14.20±0.15 | 7.40±0.10  | 6.40±0.10  | 5.20±0.10  | 3.50±0.05  | 2.90±0.05  | 2.4±0.05   |



3000pc/reel







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|    | HC-49SMD             | 7050                 | 6035                 | 5032                 | 3225                 | 2520                 | 2016                 |
|----|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| A  | $\phi 330 \pm 1.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   |
| B  | $2.30 \pm 0.20$      | $2.00 \pm 0.50$      | $2.00 \pm 0.50$      | $2.00 \pm 0.50$      | $2.50 \pm 0.50$      | $2.50 \pm 0.50$      | $2.50 \pm 0.50$      |
| C  | $\phi 13.5 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.5 \pm 0.20$ | $\phi 13.5 \pm 0.20$ | $\phi 13.5 \pm 0.20$ |
| D  | $\phi 21.5 \pm 0.20$ | $\phi 20.0 \pm 0.50$ | $\phi 20.0 \pm 0.50$ | $\phi 20.0 \pm 0.50$ | $\phi 56.8 \pm 0.50$ | $\phi 56.8 \pm 0.50$ | $\phi 56.8 \pm 0.50$ |
| N  | $\phi 100.0 \pm 0.5$ | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  |
| W1 | $24.5 \pm 0.20$      | $16.5 \pm 0.20$      | $12.5 \pm 0.20$      | $12.5 \pm 0.20$      | $9.4 \pm 0.30$       | $8.0 \pm 0.30$       | $8.0 \pm 0.30$       |
| T1 | $2.30 \pm 0.20$      | $1.80 \pm 0.20$      | $1.80 \pm 0.20$      | $1.80 \pm 0.20$      | $1.40 \pm 0.20$      | $1.40 \pm 0.20$      | $1.40 \pm 0.20$      |

### 8. 包装说明 Packing Specification

