

SMD Crystal Resonator 贴片石英晶体谐振器

2016 38.400MHz 10PF 40 Ω ±10PPM

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 | 38.400000 | | | MHz | |
| Oscillation Mode 振荡模式 | | ■ Fundamental □ 3rd | | | | |
| Load Capacitance 负载电容 | CL | | 10 | | 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 | - | - | 40 | 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.

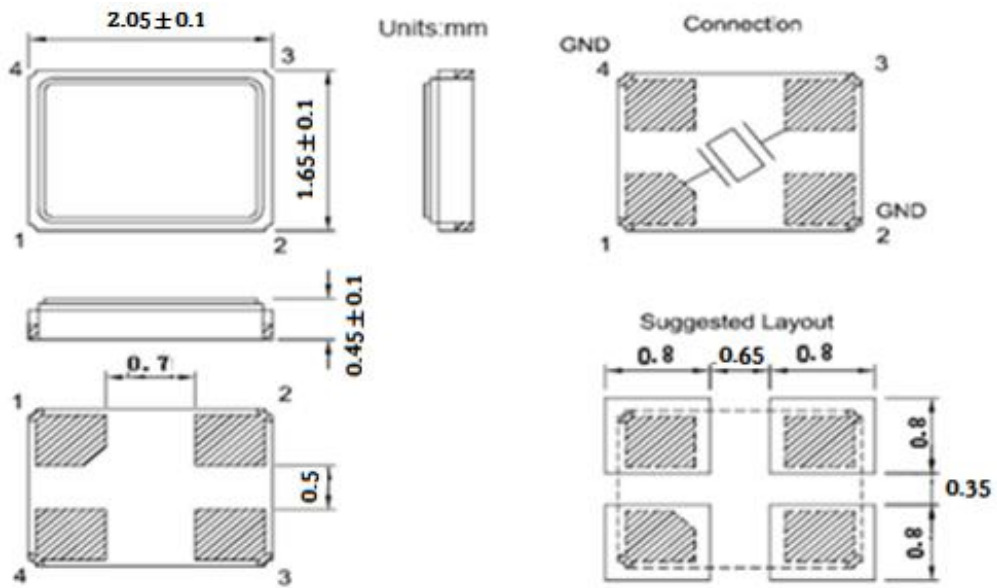
电气性能测量为S&A 250B或相当设备。

Hermetically 密封性 :

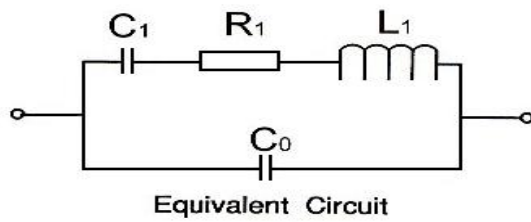
Fine Leak 细漏: Helium Bombing 4kg/cm² for 1 Hour, Leak ate Less Than 1×10⁻⁸ atm. cc/sec
 氦气加压4kg/cm² 1小时, 氦质谱检漏仪检测泄漏小于 1×10⁻⁸ atm. cc/sec

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

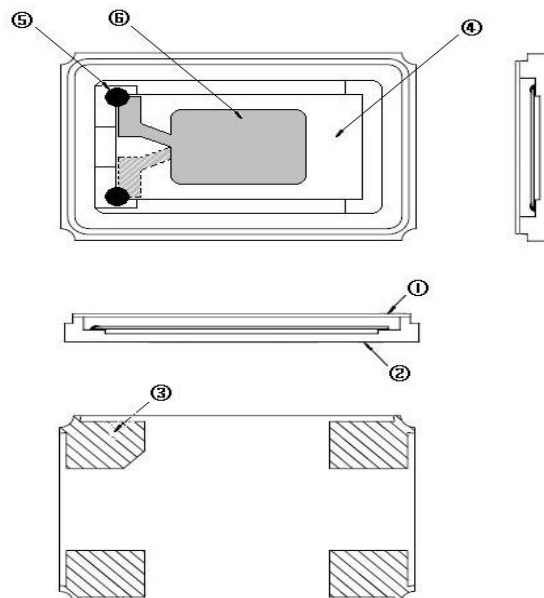
2. Solder Dimension And Pattern 焊接模型尺寸图:



3. Equivalent Circuit 等效电路图:

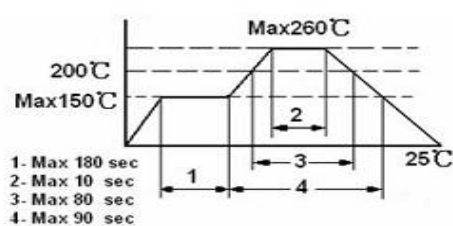


4. Structure drawing 结构图:

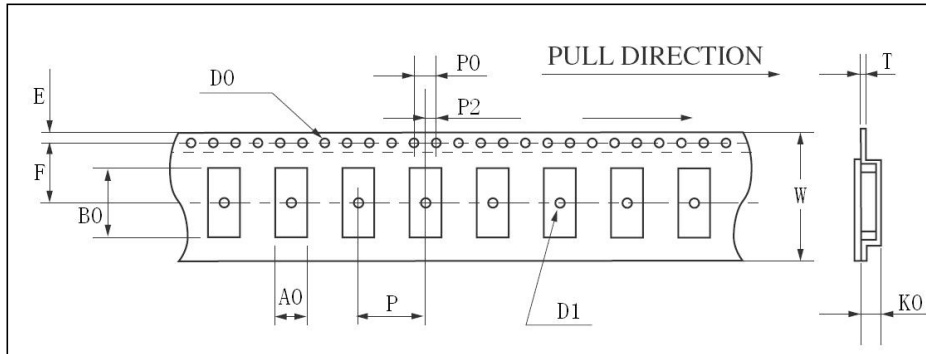


| NO | COMPONENTS 构成 | MATERIALS 原料 | QTY 数量 | FINISH / SPECIFICATIONS 结束/说明 |
|----|------------------------------|-----------------------|-----------|--|
| 1 | Cap上盖 | Metal (Fe)金属 | 1 | - |
| 2 | Base基座 | Ceramic陶瓷制品 | 1 | Color black炭黑色 |
| 3 | PAD焊盘 | Au金 | 4 | Tungsten metalize钨合金 + Ni plating镍电镀 + Au plating金电镀 |
| 4 | Crystal Blank石英晶片 | SiO ₂ 二氧化硅 | 1 | - |
| 5 | Conductive Adhesive 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 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: $\leq \pm 5$ ppm Rr as specification |
| 2. Mechanical shock 机械冲击 | Device are shocked to half sine wave (1000g) three mutually perpendicular axes each 3 times | Frequency change: $\leq \pm 5$ ppm Rr as specification |
| 3. Shake characteristics 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: $\leq \pm 5$ ppm Rr as specification |
| 4. Humidity characteristics 湿度特性 | +40 \pm 2 $^{\circ}$ C & 90%~95% R.H. 250 hours | Frequency change: $\leq \pm 5$ ppm Rr as specification |
| 5. Low temperature characteristics 低温特性 | -40 \pm 2 $^{\circ}$ C , 250 hours, put in room temperature, test after 1 hours. | Frequency change: $\leq \pm 5$ ppm Rr as specification |
| 6. High temperature characteristics 高温特性 | +85 \pm 2 $^{\circ}$ C , 250 hours, put in room temperature, test after 1 hours. | Frequency change: $\leq \pm 5$ ppm Rr as specification |
| 7. Temperature cycling 温度循环 | -30 \pm 3 $^{\circ}$ C/30 \pm 3 min~+85 \pm 2 $^{\circ}$ C/30 \pm 3min, 5 cycles | Frequency change: $\leq \pm 5$ ppm Rr as specification |
| 8. Refluence examination 回流焊特性 |  <p>1- Max 180 sec 2- Max 10 sec 3- Max 80 sec 4- Max 90 sec</p> | Frequency change: $\leq \pm 5$ ppm Rr as specification |

6. 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 |