
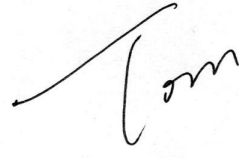
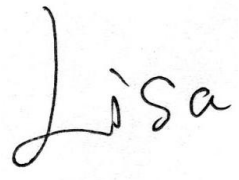




TROQ Electronic Co.,Ltd.
CRYSTAL UNIT SPECIFICATIONS

| | |
|------------------------|---------------------------------|
| Customer | |
| Production Name | SMD CRYSTAL SEAM 3.2*2.5 |
| Customer P/N | N/A |
| TROQ P/N | RL240001165 |
| Revision | A |
| Print Date | 2023/5/11 |

| Drawn | Checked | Approved |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |



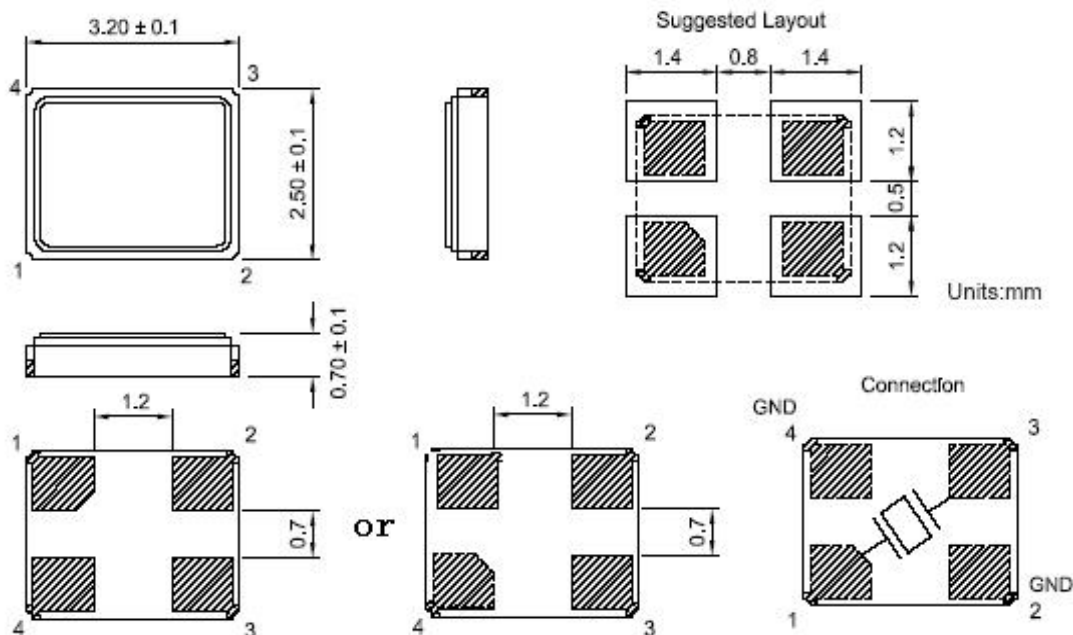
RoHS Compliant

Pb used in sealing glass material is exempt from EU directive

● ELECTRICAL PARAMETERS

| 谐振器产品技术指标 | Min | Max | Units |
|-----------------------------------------------|--------------|-----|--------------------|
| 1.Holder Type(型号规格) | SEAM 3.2*2.5 | | |
| 2.Mode of Oscillation (振动模式) | Fundamental | | |
| 3.Frequency (标称频率) | 24.000000 | | MHz |
| 4.Load Capacitance (CL) (负载电容) | 12 | | pF |
| 5.Shunt Capacitance (Co) (静态电容) | 0 | 7 | pF |
| 6.Equivalent Resistance (谐振电阻) | | 30 | Ω |
| 7.Frequency Tolerance at 25°C (调整频差) | -10 | 10 | ppm |
| 8.Stability over operation Temperature (温度频差) | ± 20 | | ppm |
| 9.Insulation Resistance (at DC 100V) (绝缘电阻) | 500 | | M Ω |
| 10.Drive Level (激励功率) | 100 | | uw |
| 11.Operating Temperature Range (工作温度范围) | -40 | 85 | $^{\circ}\text{C}$ |
| 12.Storage Temperature Range (储存温度范围) | -40 | 85 | $^{\circ}\text{C}$ |
| 13.Aging (老化率) | ± 5 | | ppm/year |
| 14.Other(其他) | 0 | | |

OUTLINE DIMENSIONS(UNIT:mm) 外形尺寸 (单位: mm)



● Marking (标记)



● 负载电容

| | | | | | | | |
|-----------|-----|----|----|------|----|----|----|
| 负载电容 (CL) | 5.7 | 10 | 12 | 12.5 | 15 | 16 | 18 |
| 代码 | A | B | C | D | E | F | G |
| 负载电容 (CL) | 20 | 22 | 27 | 30 | 32 | ∞ | 8 |
| 代码 | H | J | K | M | N | S | R |
| 负载电容 (CL) | 7 | 9 | 13 | 7.5 | | | 其他 |
| 代码 | T | V | W | X | Y | Z | P |

● 生产年月 (年份为12年一循环)

| | | | | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|---|----|----|----|
| 月份 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 代码 | A | B | C | D | E | F | G | H | K | M | N | P |

| | | | | | | | | | | | | |
|----|------|------|------|------|------|------|------|------|------|------|------|------|
| 年份 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
| 代码 | a | b | c | d | e | f | g | h | k | m | n | p |

| | | | | | | |
|-------------------|-----|-----|-----|-----|-----|-----|
| | 周数 | 第一周 | 第二周 | 第三周 | 第四周 | 第五周 |
| 同订单 不同批 次代码 | 第一批 | 1 | 2 | 3 | 4 | 5 |
| | 第二批 | A | B | C | D | E |
| | 第三批 | F | G | H | J | K |
| | 第四批 | L | M | N | P | Q |
| | 第五批 | R | S | W | X | Y |



说明: 标称频率 25.000MHZ
负载电容20PF
2020年1月份第一周 TROQ制造

● **SUGGESTED REFLOW PROFILE** (回流焊曲线图)

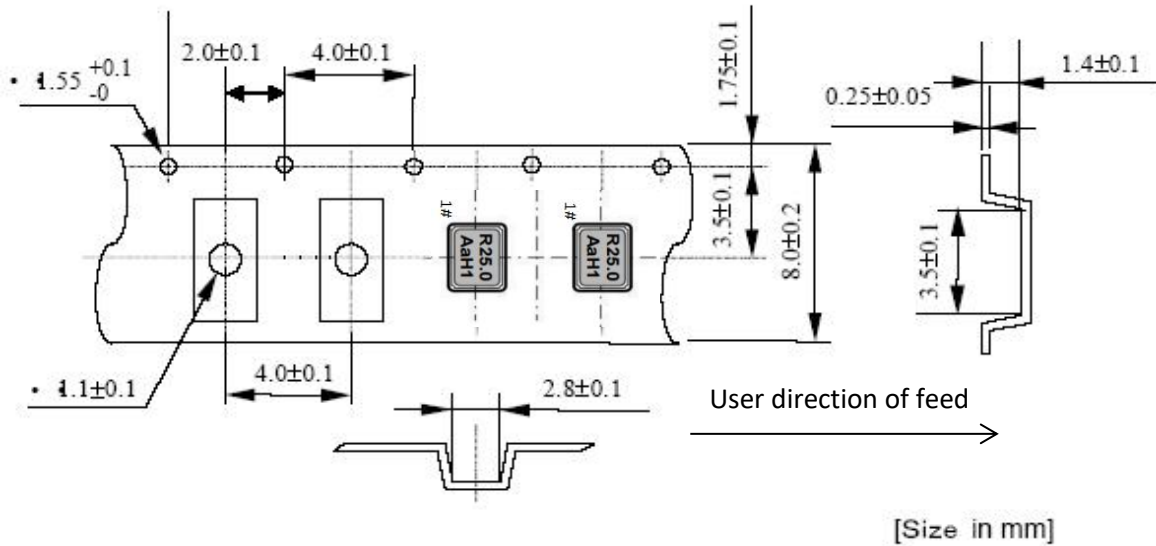
Total time:200sec.Max. (总时间: 200秒 最大)

Solder melting point:220℃ (熔点220℃)

| Profiles Feature (特性) | | Pb-Free Assembly |
|-----------------------------------------------|--------------|------------------|
| Average Ramp-up Rate(Ts max to Tp) | 平均升温速度 | 3℃/second Max |
| Preheat | 预热 | |
| ■ Temperature Min (Ts min) | 最低温度 | 125℃ |
| ■ Temperature Max (Ts max) | 最高温度 | 200℃ |
| ■ Time (ts min to ts max) | 从最低到最高时间 | (60~180) seconds |
| Time maintained above | 维持上述时间 | |
| ■ Temperature(T1) | 温度 | 217℃ |
| ■ Time(tp) | 时间 | (60~150) seconds |
| Peak/Classification Temperature(Tp) | 最高点温度 | 260℃ |
| Time within 5℃ of actual Peak Temperature(tp) | 高温维持时间 | (20~40) seconds |
| Ramp-down rate | 降温速度 | 6℃/second max |
| Time 25℃ to Peak Temperature | 从25℃到最高温度的时间 | 8 minutes max |
| Suggest reflow times | 建议 reflow次数 | 3 Times max |

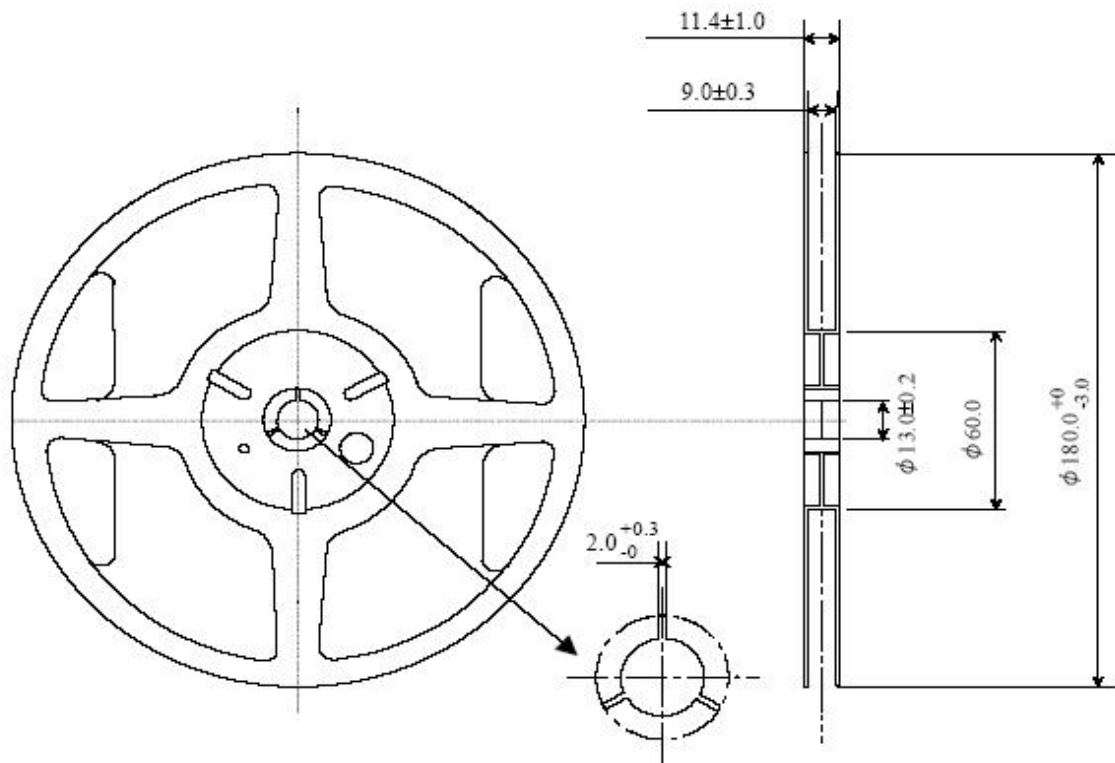


● PACKING (包装) 3Kpcs/REEL



8.3. Reel dimension & Outline drawing

Material of the Reel : PS



● RELIABILITY SPECIFICATIONS (信赖度试验)

| No | Test Item (测试项目) | Test Conditions (测试条件) | Reference (参考) |
|----|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 1 | High Temperature High Humidity Storage (高温、高湿、储存) | Temperature: 85°C±3°C 温度: 85°C±3°C Relative Humidity:85%RH 相对湿度: 85%RH Time: 96 Hours 时间: 96小时 | JIS C5023 |
| 2 | High Temperature Storage (高温储存) | Temperature: 125°C±3°C 温度:125°C ± 3°C Time: 96 Hours 时间:96 小时 | MIL-STD-883E Method 1005.8 |
| 3 | Low Temperature Storage (低温储存) | Temperature: -40°C ± 3°C 温度: -40°C ± 3°C Time: 96Hours 时间: 96小时 | MIL-STD-883E Method 1013 |
| 4 | Thermal Shock (温度冲击) | Temperature1:-55°C ± 5°C 温度1:-55°C ± 5°C Temperature2:85°C ± 5 °C 温度2: 85°C ± 5 °C Temperature change between T1 and T2 5 min T1和T2温度在5分钟内改变 10cycles maintain T1 and T2 for 30 minutes each mone cycle 每次循环30分钟共10次 | MIL-STD-202F Method 107 Condition A |
| 5 | RESISTANCE TO SOLDER HEAT (耐焊接热) | Solder Temperature: 260°C ± 5°C 焊槽温度:260°C ± 5°C Time: 10±1 Seconds 时间: 10±1秒 | MIL-STD-202F Method 210E |
| 6 | Solderability(可焊性) | The solder pot temperature is 245±5°C , dwell time 5±0.5s 245±5°C焊锡槽浸润5±0.5秒 | J-STD-002B |
| 7 | Drop Test (落下试验) | 3 Times Free Fall from 75cm height table to 3cm thickness hard wood board 从75cm高度3次跌落到3cm厚硬质木板上 | JIS C6701 |
| 8 | MECHANICAL SHOCK (机械冲击) | Half sine wave,1000 G 半正弦波,加速度1000G 3 Times for all 3 directions X、Y、Z 三个相互垂直方向各三次 | MIL-STD-202F Method 213B |
| 9 | Vibration (机械振动) | Frequency Range: 10Hz~55Hz 频率范围: 10Hz~55Hz Amplitude: 0.75mm 振幅: 0.75mm 2 Hours in each direction, total 6 Hours X、Y、Z 三个相互垂直方向各振动2小时 | MIL-STD-883E Method 2007.3 |
| 10 | Leakage Test (气密性) | Take measurements with a helium Leakage detector 氦质检漏 Leakage Rate ≤ 1×10 ⁻³ Pa cm ³ /s 漏率 ≤ 1×10 ⁻³ Pa cm ³ /s | MIL-STD-883E |