
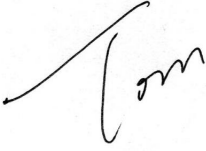
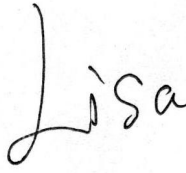




TROQ Electronic Co.,Ltd.
CRYSTAL UNIT SPECIFICATIONS

| | |
|------------------------|---------------------------------|
| Customer | |
| Production Name | SMD CRYSTAL SEAM 5.0*3.2 |
| Customer P/N | N/A |
| TROQ P/N | RH48000386 |
| Revision | A |
| Print Date | 2023/5/11 |

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



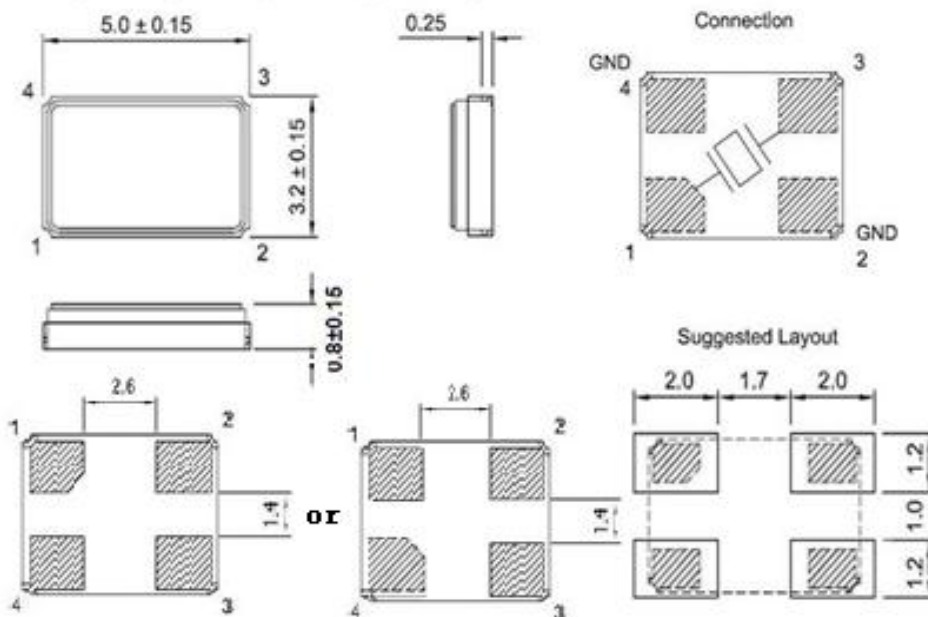
RoHS Compliant

Pb used in sealing glass material is exempt from EU directive

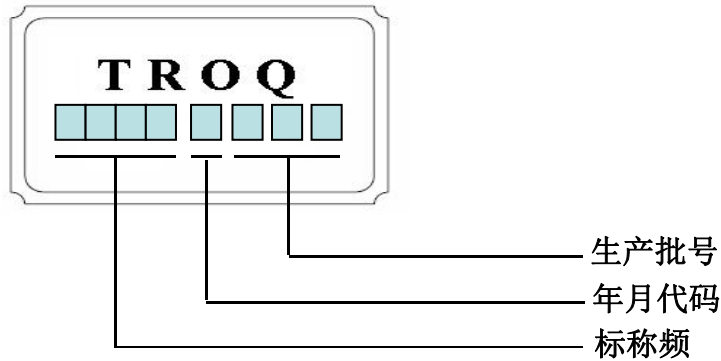
● ELECTRICAL PARAMETERS

| 谐振器产品技术指标 | Min | Max | Units |
|--|--------------|-----|--------------------|
| 1.Holder Type(型号规格) | SEAM 5.0*3.2 | | |
| 2.Mode of Oscillation (振动模式) | Fundamental | | |
| 3.Frequency (标称频率) | 48.000000 | | MHz |
| 4.Load Capacitance (CL) (负载电容) | 20 | | pF |
| 5.Shunt Capacitance (Co) (静态电容) | 0 | 5 | 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 temperance (温度频差) | ± 50 | | 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(其它) | N/A | | |

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



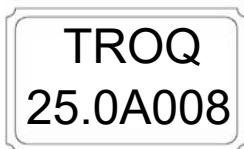
● Marking (标记)



● 年月代码

| | | | | | | | | | | | | |
|---------|---|---|---|---|---|---|---|---|---|----|----|----|
| 2020月份 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2020年月码 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2021月份 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2021年月码 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2022月份 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2022年月码 | a | b | c | d | e | f | g | h | j | k | l | m |
| 2023月份 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 2023年月码 | n | p | q | r | s | t | u | v | w | x | y | z |

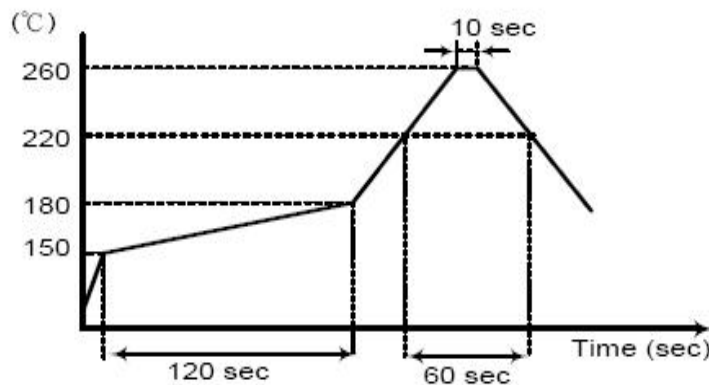
注:以上年月代码每四年一个循环。



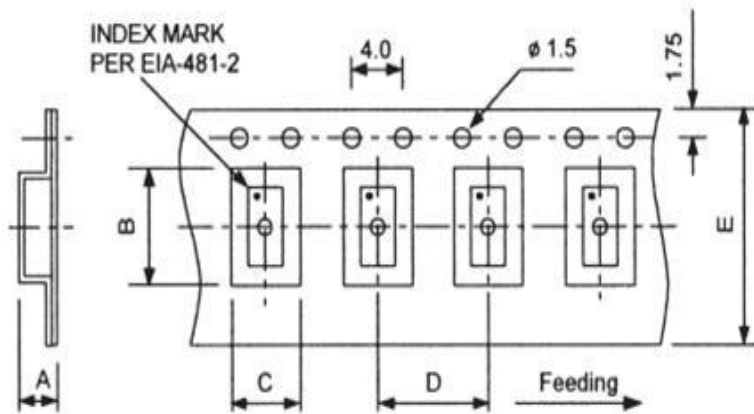
→ 说明: 标称频率 25.000MHZ
2020年1月份制造, 生产批号为008
上述产品标志从2012年7月1日正式执

- **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℃)

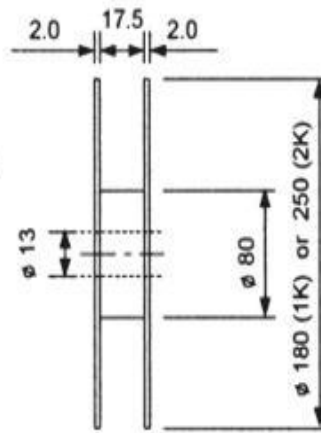
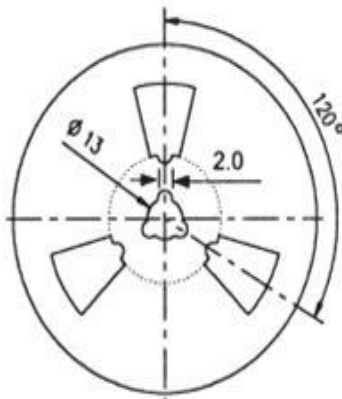
| Profiles Feature (特性) | | Pb-Free Assembly |
|--|--|------------------|
| Average Ramp-up Rate(Ts max to Tp)平均升温速度 | | 3℃/second Max |
| Preheat 预热 | | |
| ■ Temperature Min (Ts min) 最低温度 | | 125℃ |
| ■ Temperature Max (Ts max) 最高温度 | | 200℃ |
| ■ Time (ts min to ts max) 从最低到最高时间 | | (60~180) seconds |
| 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) 1Kpcs/REEL



| SIZE | |
|------|------|
| A | 1.7 |
| B | 5.45 |
| C | 3.65 |
| D | 8.0 |
| E | 12.0 |
| IK | |



- REMARK :
- 230 mm (9.05) minimum leader which consist of carrier and/or cover tape followed by a minimum of 160 mm (6.3) of empty carrier tape sealed with cover tape.
 - 160 mm (6.3) minimum trailer of empty carrier tape sealed with cover tape.

● 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 mon 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 tim 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 |