
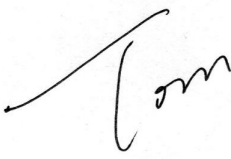
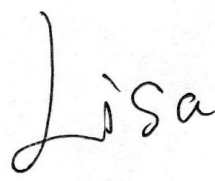




**TROQ Electronic Co.,Ltd.**  
**CRYSTAL UNIT SPECIFICATIONS**

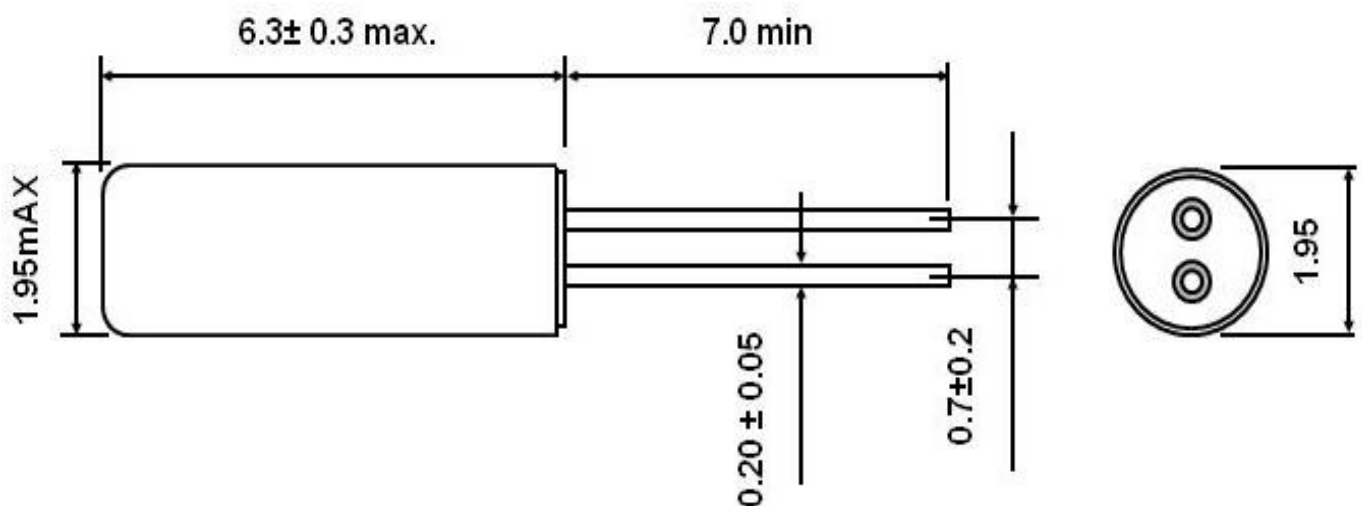
<b>Customer</b>	
<b>Production Name</b>	<b>Tuning Fork <math>\Phi 2*6</math></b>
<b>TROQ P/N</b>	RN32768114
<b>Revision</b>	A
<b>Print Date</b>	2023/5/11

<b>Drawn</b>	<b>Checked</b>	<b>Approved</b>
		

● ELECTRICAL PARAMETERS

谐振器产品技术指标	Min	Max	Units
1. Holder Type(型号规格)	Tuning Fork		Φ2*6
2. Mode of Oscillation (振动模式)	Fundamental		
3. Frequency (标称频率)	32.768000		KHz
4. Load Capacitance (CL) (负载电容)	12.5		pF
5. Shunt Capacitance (Co) (静态电容)	0	2	pF
6. Equivalent Resistance (谐振电阻)		30	kΩ
7. Frequency Tolerance at 25°C (调整频差)	-20	20	ppm
8. Temperature Coefficient (K) (温度系数)	-0.04		ppm/(Δ°C)
9. Insulation Resistance (at DC 100V) (绝缘电阻)	500		MΩ
10. Drive Level (激励功率)	1		uw
11. Operating Temperature Range (工作温度范围)	-40	85	°C
12. Storage Temperature Range (储存温度范围)	-55	125	°C
13. Aging (老化率)	± 3		ppm/year
14. Other(其他)	*Note 1: $F(T) = K * (T-t_0) * (T-t_0)$ ; $t_0=25°C$		

OUTLINE DIMENSIONS(UNIT:mm) 外形尺寸

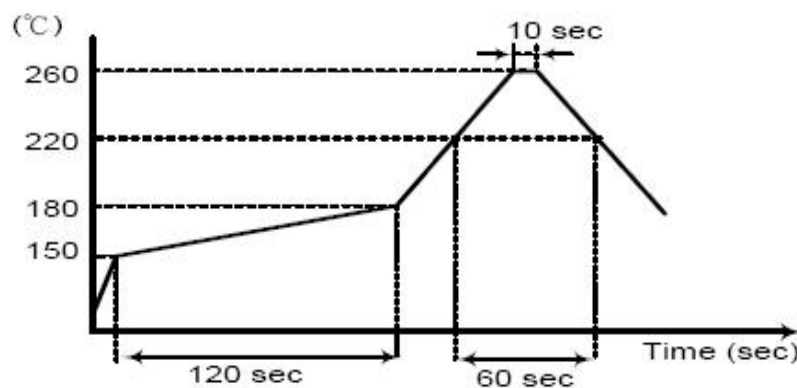


● **SUGGESTED REFLOW PROFILE** (回流焊曲线图)

Total time:200sec.Max. (总时间: 200秒 最大)

Solder melting point:220°C (熔点220 °C)

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

1. AS SHOWN IN PICTURE 1, INSERT 1000PCS OR 500PCS INTO A VYNYL BAG WITH A SILICA GEL AND THEN SEAL IT.

2. INSERT SHOCK ABSORBANT PAD ON THE BOTTOM OF THE INNER-BOX AND THEN INSERT THE CRYSTAL UNIT FILLED VYNYL BAGS CAREFULLY INTO THE BOX. INNER-BOX CAN ACCOMODATE 5000PCS OR 10000PCS.[PICTURE2]

3 .AFTER CRYSTAL UNIT FILLED VYNYL BAGS ARE INSERTED INTO A BOX, INSERT SHOCK-ABSORBANT PAD ON TOP OF THEM. CLOSE THE LID/COVER. [PICTURE3]

4 .ON THE INNER-BOX COVER, PASTE LABEL WHICH INDICATE CONTENTS OF THE BOX(FREQUENCY, LOAD CAPACITANCE, AND QUANTITY).

5. TO PREVENT INNER-BOX COVER OPENING DUE TO SHOCK, FASTEN THE COVER WITH A CLEAR TAPE AS SHOWN IN PICTURE4.

6 .INSERT SHOCK ABSORBANT PAD ON THE BOTTOM OF THE OUT-BOX AND THEN INSERT THE INNER BOXES INTO THE OUTER BOX.OUT-BOX CAN ACCOMMODATE 50,000PCS OR 100,000PCS. [PICTURE5]

7. ON THE OUT-BOX SIDE, AS SHOWN IN PICTURE6, PASTE PRODUCT LABEL.

8 .SEAL THE OUT-BOX TO PREVENT OPENING DUE TO EXTERNAL SHOCK. [PICTURE7]



PICTURE1



PICTURE2



PICTURE3



PICTURE4



PICTURE5



PICTURE6



PICTURE7

● 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: 40°C±3°C 温度: 40°C±3°C Relative Humidity:85%RH 相对湿度: 85%RH Time: 48 Hours 时间: 48小时	JIS C5023
2	High Temperature Storage (高温储存)	Temperature: 85°C±3°C 温度:85°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: 2 Hours 时间: 2小时	MIL-STD-883E Method 1013
4	Thermal Shock (温度冲击)	Temperature1:-40°C ±5°C 温度1:-40°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: 265°C ±5°C 焊槽温度:265°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±0.5sec 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 <sup>-3</sup> Pa cm <sup>3</sup> /s 漏率 ≤1×10 <sup>-3</sup> Pa cm <sup>3</sup> /s	MIL-STD-883E