TROQ Electronic Co.,Ltd.
CRYSTAL UNIT SPECIFICATIONS

Customer	
Production Name	**Tuning Fork 2.0*1.2**
TROQ P/N	RN32768B40
Revision	A
Print Date	**2023/5/10**

Drawn	**Checked**	**Approved**
Reg	Tom	Lisa

HF RoHS Compliant

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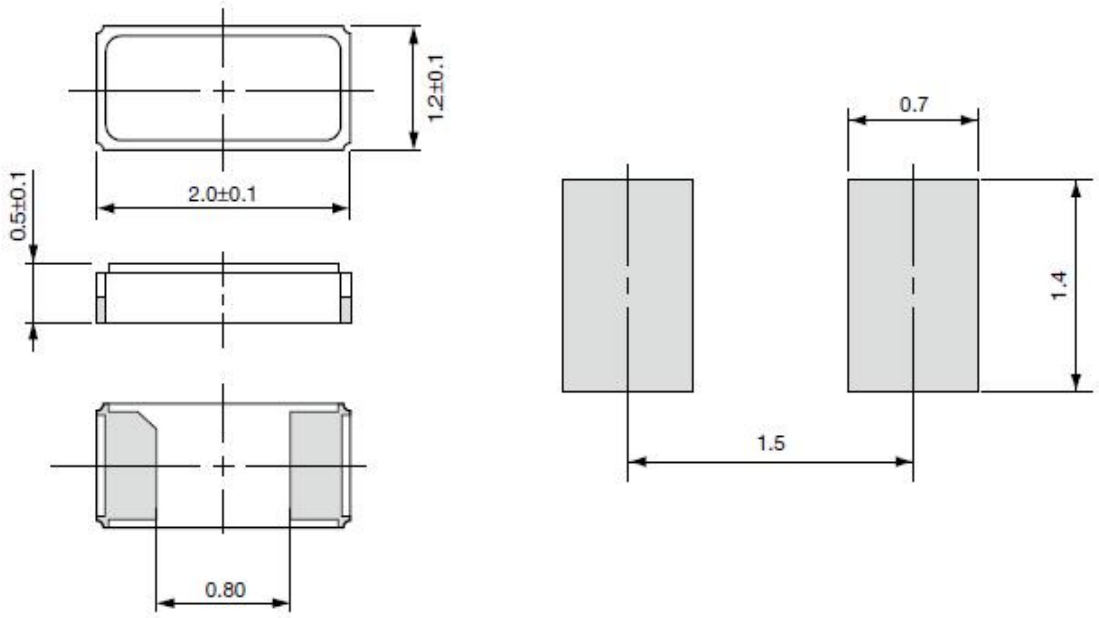
TROQ P/N: RN32768B40 REV: A

● **ELECTRICAL PARAMETERS**

谐振器产品技术指标	Min	Max	Units
1.Holder Type(型号规格)	Tuning Fork 2.0*1.2		
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	TYP. 1.3	pF
6. Equivalent Resistance（谐振电阻）		70	kΩ
7.Frequency Tolerance at 25℃（调整频差）	-20	20	ppm
8.Temperature Coefficient （K）（温度系数）	-0.04		ppm/(△℃)^2
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	℃
12. Storage Temperature Range（储存温度范围）	-55	125	℃
13. Aging（老化率）	± 3		ppm/year
14. Other(其他)	*Note 1: F（T）= K*（T-t0）*（T-t0）；t0=25℃		

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

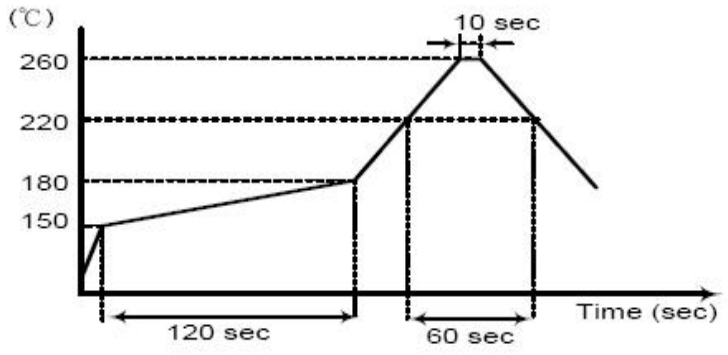


● SUGGESTED REFLOW PROFILE （回流焊曲线图）

Total time:200sec.Max. （总时间：200秒 最大）

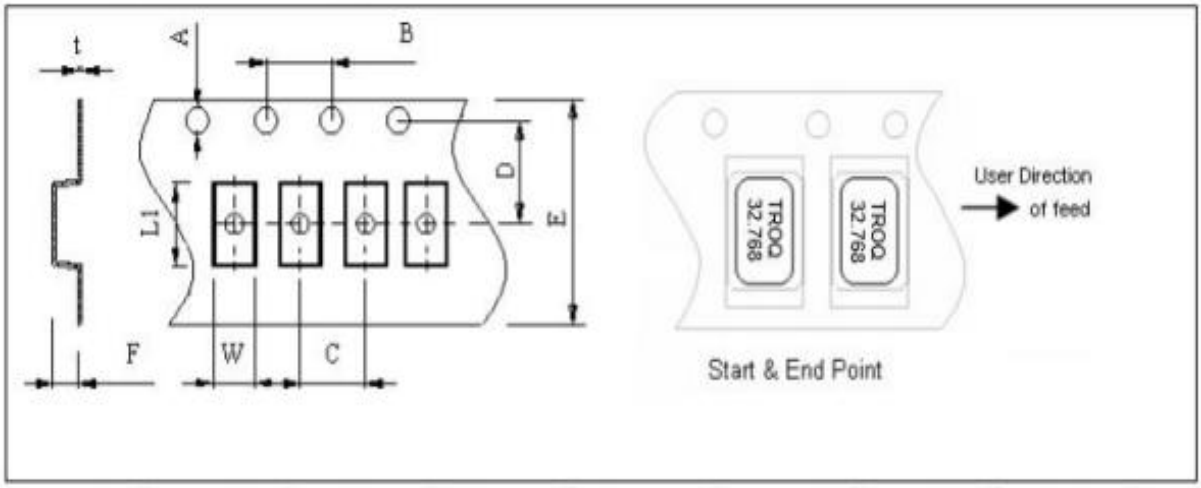
Solder melting point:220℃（熔点220 ℃ ）

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



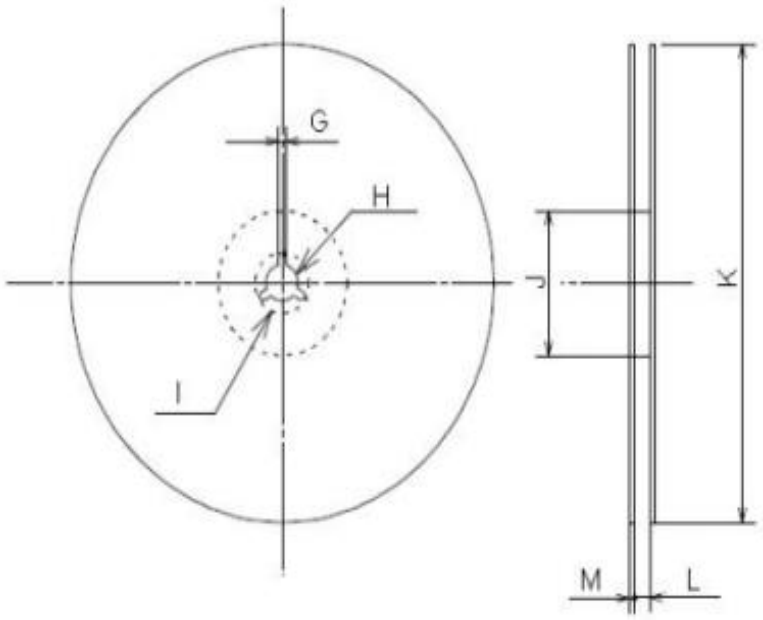
- PACKING（包装） 3Kpcs/REEL

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.50	4.0	4.0	5.5	12.0	1.0	3.6	1.9	0.3

Reel Dimensions(unit: mm)



G	H	I	J	K	L	M
2.0	13.0	21.0	60.0	180	13.0	1.2

● 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℃±3℃ 温度: 85℃±3℃ 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℃±3℃ 温度:125℃±3℃ Time: 96 Hours 时间:96 小时	MIL-STD-883E Method 1005.8
3	Low Temperature Storage (低温储存)	Temperature: -40℃±3℃ 温度：-40℃±3℃ Time: 96Hours 时间：96小时	MIL-STD-883E Method 1013
4	Thermal Shock (温度冲击)	Temperature1:-55℃±5℃ 温度1:-55℃±5℃ Temperature2:85℃±5 ℃ 温度2: 85℃±5 ℃ 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 c 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℃±5℃ 焊槽温度:265℃±5℃ 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℃ , dwell time 5±0.5sec 245±5℃焊锡槽浸润5±0.5秒	J-STD-002B
7	Drop Test (落下试验)	3 Times Free Fall from 50cm height table to 3cm thickness hard wood board 从50cm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≤1×10-3Pa cm3/s 漏率≤1×10^{-3}Pa cm^3/s	MIL-STD-883E

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