承　认　书

SPECIFICATION FOR APPROVAL

客户名称：Customer _____

货　　名：Description Touning Fork(SMD 贴片表晶） PMX-145

客户料号：Part No _____

物料编号：Code No AM13276812503E6

频　　率：Frequency 32.768KHZ

日　　期：Date 2021-03-23

备　　注：RoHS 豁免条款 7（a）

制作(Prepare by)	检查(Check by)	批准（Approve by）
江丹娜	甘瑛	张刚

客户批准 Approve by customer	
批准日期 Approval date	

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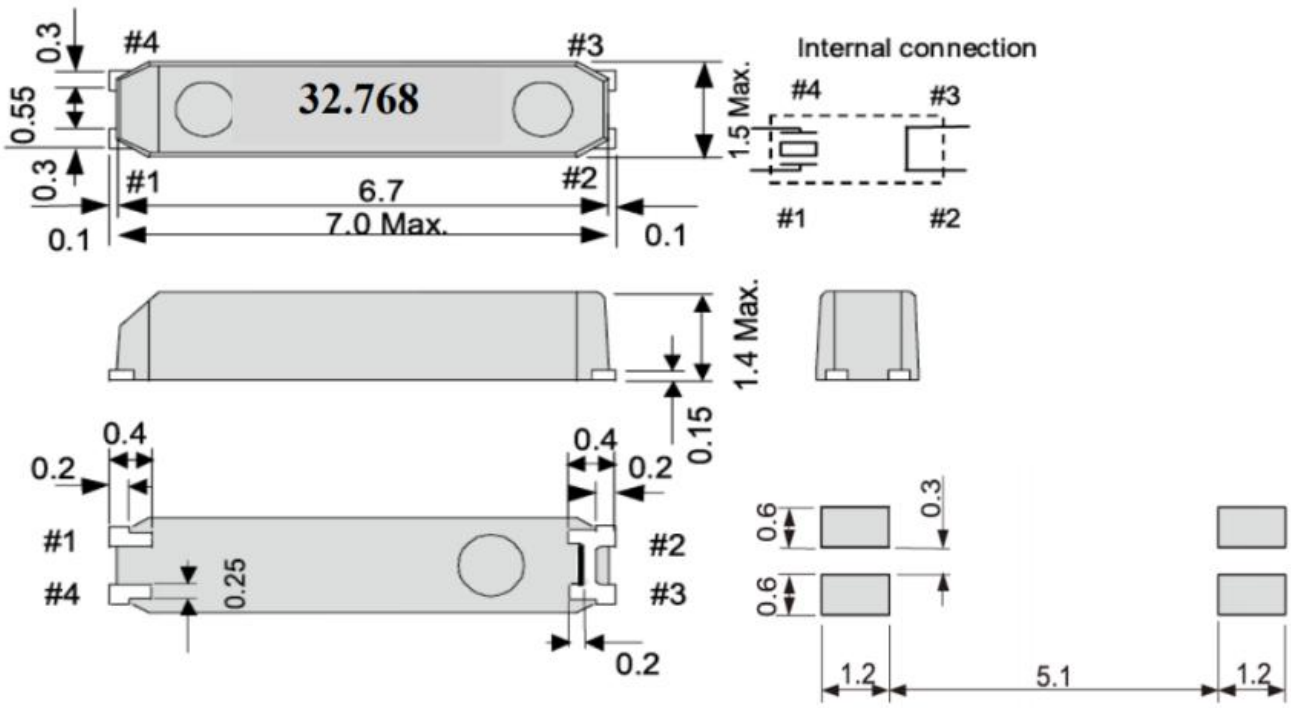
1、 Specifications

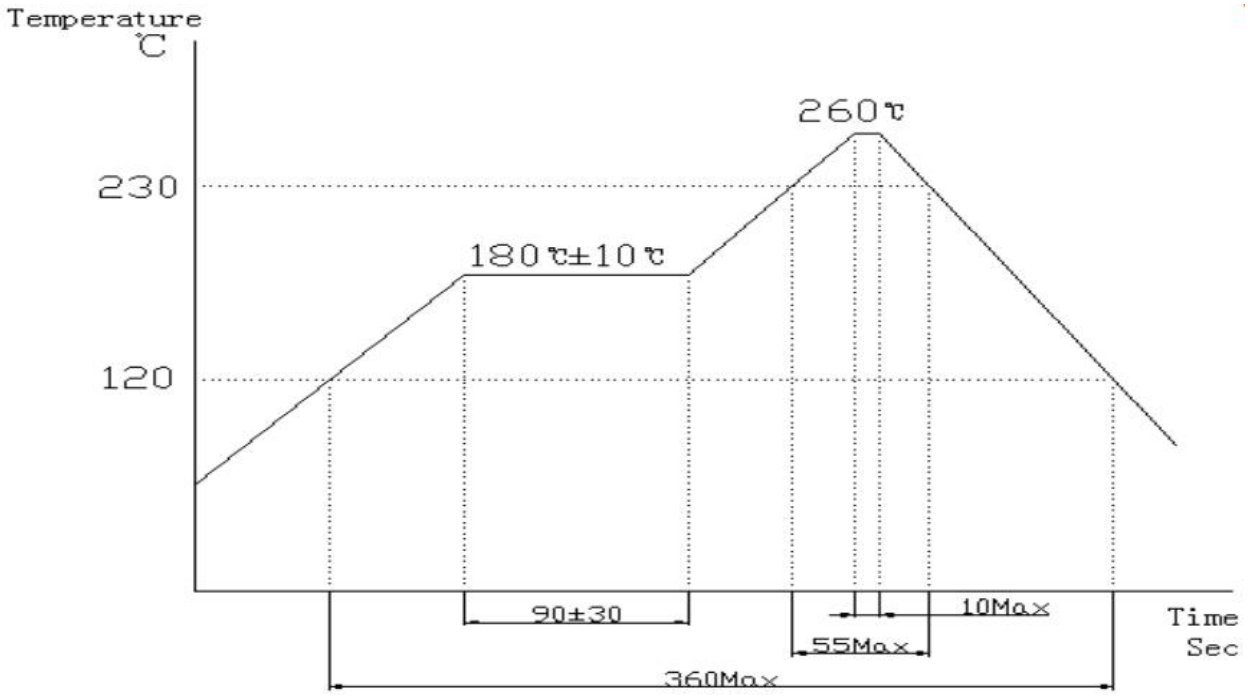
1	规格型号 Holder Type	
2	标称频率 Nominal Frequency	32.768KHZ
3	振动模式 Mode of Oscillation	Touning Fork
4	调整频差 Frequency Tolerance at 25℃	±20ppm
5	温度频差 Temperature Frequency Stability	-0.034±0.006 ppm/(℃)2
6	工作温度 Operating Temperature Range	-40~85℃
7	贮存温度 Storage Temperature Range	-40~90℃
8	负载电容 Load Capacitance（CL）	12.5 pF
9	静电容 Shunt capacitance(C0)	1.8PF Typ
10	动电容 Motional Capacitance(C1)	1.9fFTyp
11	等效电阻 Equivalent Series Resistance	65 KΩ
12	品质因素 Quality Factor（Q）	60,000Typ
13	激励功率 Drive Level	1 uW
14	绝缘阻抗 Insulation Resistance	500MΩ/100V±15V_{DC}
15	年老化率 Aging	±3ppm/First year

2.Dimension (Unit: mm)



Do not connect #2 and #3 to external device.
Metal may be exposed on the top or bottom of this product.
This will not affect any quality, reliability or electrical spec.

3.Reflow solder



4.TEST STANDARD（测试标准）

4.1 GENERAL ELECTRICAL CHARACTERISTICS AND VISUALTESTING（电性能和外观检测）

4.1.1 LOT CLASSIFICATION : If the quantity is 1000 PCS or more, 1000 PCS is one lot;

4.1.2 SAMPLING TEST METHOD : MIL-STD-105E G-II ；

4.1.3 TEST LEVEL（测试水平）

4.1.3.1 HIGH LEVEL DEFECT : AQL 0.065% [200 pcs] ；

4.1.3.2 MEDIUM LEVEL DEFECT : AQL 0.25% [50 pcs] ；

4.1.3.3 LOW LEVEL DEFECT :AQL 0.4% [32 pcs]

4.1.4 DEFECT CLASSIFICATION （失效分类）

4.1.4.1 HIGH LEVEL

4.1.4.1.1 NO FREQUENCY (无频率）；

4.1.4.1.2 MIXING （混频）；

4.1.4.1.3 LEAK DEFECT（气密性不良）

4.1.4.2 MEDIUM LEVEL - ELECTRICAL CHARACTERISTIC DEFECT

4.1.4.2.1 FREQUENCY（频率）；

4.1.4.2.2 OSCILLATION（振荡）；

4.1.4.2.3 ELECTRICAL CURRENT （电流）；

4.1.4.2.4 OTHER ELECTRICAL CHARACTERISTICS DEFECT（其他电气特性缺陷）；

4.1.4.3 VISUAL（外观）

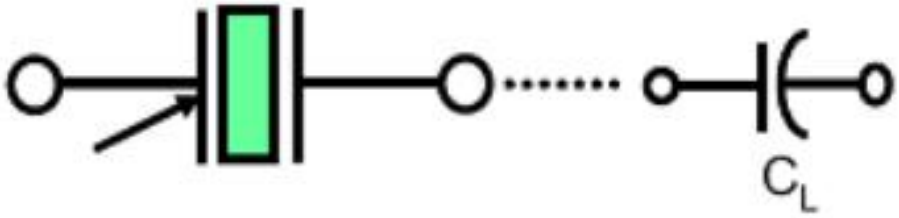
4.1.4.3.1 MARKING （丝印）；

4.1.4.3.2 WELDING （焊纹）；

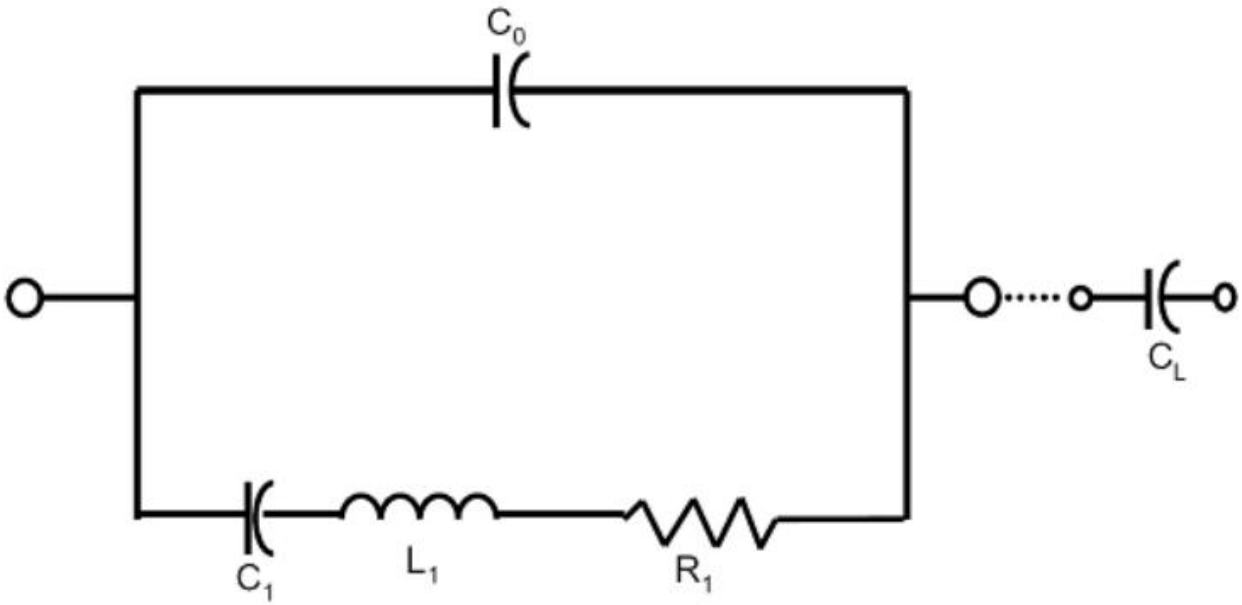
4.1.4.3.3 LEADS （引线）；

4.1.4.3.4 OTHER VISUAL DEFECT （其它外观不良）

4.2 Equivalent Circuits（等效电路）



Symbol for crystal unit



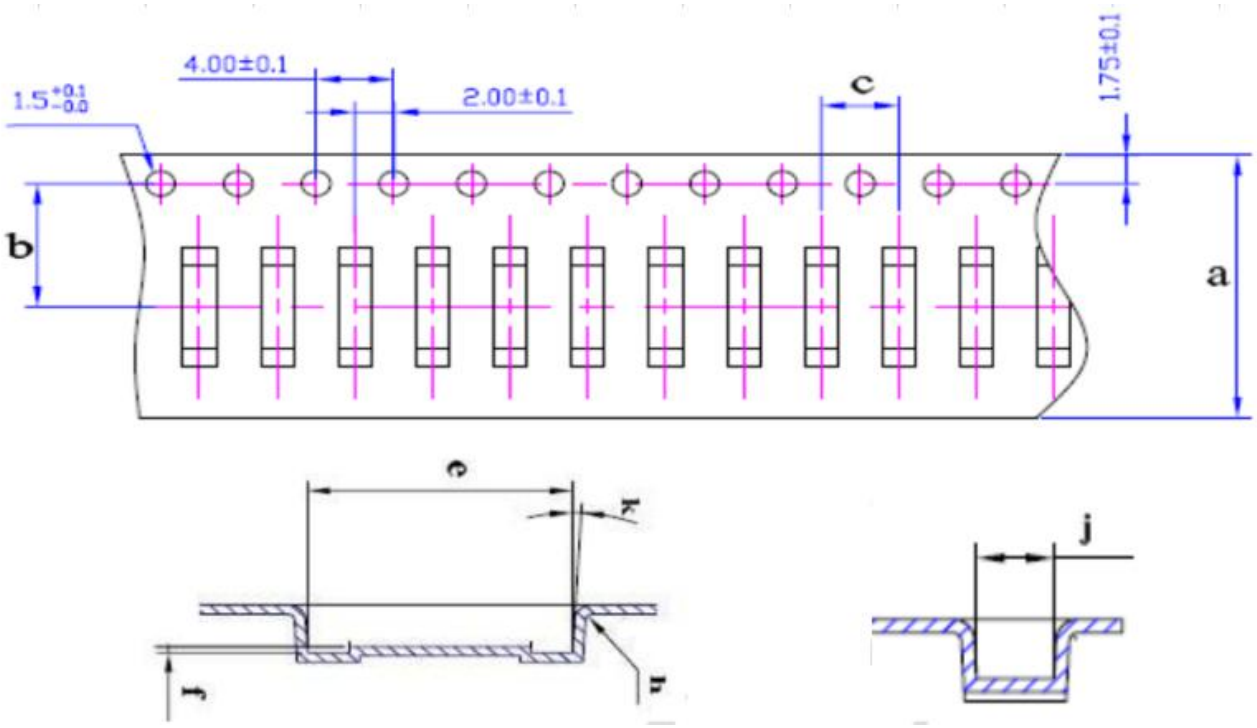
5 RELIABILITY(MECHANICAL AND ENVIRONMENTAL ENDURANCE)

NO.	TEST	TEST METHOD AND CONDITION	REQUIREMENTS
1	VIBRATION	(1)VIBRATION FREQUENCY：10 TO 55HZ (2)VIBRATION AMPLITUDE：1.5MM (3)CYCLE TIME：1~2MIN(10-55-10HZ) (4)DIRECTION：X.Y.Z (5)DURATION：2H/EACH DIRECTION (6)G-FORCE：≥5G	FREQUENCY CHANGE: ±10ppm Max RESISTANCE CHANGE: ± 15%Rr Max
2	SHOCK	3 TIMES FREE DROP FROM 75CM HEIGHT TO HARD WOODEN BOARD OF THICKNESS MORE THAN 30MM.	FREQUENCY CHANGE: ±10ppm Max RESISTANCE CHANGE: ± 15%Rr Max
3	LEAKAGE	PUT CRYSTAL UNITS INTO A HERMETIC CONTAINER AND HELIUM FOR 0.5-0.6. MPA,AND KEEP IT FOR 1H;CHECK THE LEAKAGE BY A HELIUM LEAK DETECTOR.	LEAKAGE:1X10¯8MBAR.L/S Max
4	SOLDERABILITY	(1)DIP THE LEADS INTO FLUX(ROJIN METHANOL) FOR 3~5S. (2)DIP THE LEADS INTO 245±5℃ 99% SN DIPPING SOLUTION FOR 5S.	THE DIPPED PART OF THE LEADS SHOULD HAVE 95% SN COATING.
5	SOLDERING HEAT RESISISTANCE TEST	(1)PERFORM ELECTRICAL CHARACTERISTICS TEST BEFORE STARTING THIS PROCEDURE. (2)DIP THE LEADS INTO FLUX(ROJIN METHANOL) 5±0.5S. (3)DIP THE LEADS INTO 260±5℃ 99% SN DIPPING SOLUTION FOR 5S. (4)TAKE THE UNIT OUT ,STORE AT ROOM TEMPERATURE FOR 30S THEN MEASURE THE ELCTRICAL CHARACTERISTICS.	SHOULD PASS SEALINGAND VISUAL TEST.FREQUENCY CHANGE:±10ppm Max
6	LEAK TEST	USE HELIUM LEAK DETECTOR. BOMBING PRESSURE:5KG/CM² BOMBING TIME: 2 HOURS LEAK SHOULD BE LESS THAN 1E-8 ATM.CC/SEC.	GAS OR AIR SHOULD NOT BE DETECTED.
7	HIGH TEMPERATURE ENDURANCE	THE CRYSTAL UNITS SHALL BE PUT IN SOMEWHERE FOR 500 HOURS AT TEMPERATURE OF 125℃±5℃,THEN KEEP IT FOR 1 TO 2 HOURS UNDER ROOM TEMPERATURE. FREQUENCY CHANGE: ±10PPM MAX. RESISTANCE CHANGE: ± 15%	FREQUENCY CHANGE: ±10ppm Max RESISTANCE CHANGE: ± 15%Rr Max
9	LOW TEMPERATURE ENDURANCE	THE CRYSTAL UNITS SHALL BE PUT IN SOMEWHERE FOR 500 HOURS AT TEMPERATURE OF -40℃,THEN KEEP IT FOR 1 TO 2 HOURS UNDER ROOM.	FREQUENCY CHANGE: ±10ppm Max RESISTANCE CHANGE: ± 15%Rr Max
10	HUMIDITYENDURANCE	TEMPERATURE SHIFT FROM LOW(-40℃) TO HIGH(100℃,KEEP 30 MINUTES),SATISFY HIGH(100℃) TO LOW(-40℃,KEEP 30 MINUTES),THEN GO UP TO ROOM TEMPERATURE FOR 10 CYCLES.	FREQUENCY CHANGE: ±10ppm Max RESISTANCE CHANGE: ± 15%Rr Max
11	LEAD TENSILTY	(1)FIX THE UNIT. (2)APPLY 2LB OF WEIGHT AXIS TO THE LESDS. (3)TIME:5S	SHOULD PASS SEALING AND VISUAL TEST.

NO.	TEST	TEST METHOD AND CONDITION	REQUIREMENTS
12	LEAD BENDING	(1) ATTACH 1LB OF WEIGHT TO EACH OF THE LEADS. (2) BENDING ANGLE:90°(FROM THE NOMAL POSITION TO 45°OPPOSTTE DIRECTION) (3) BENDING TIME:3S(EACH DIRECTION) NUMBER OF BENDING:2TIMES (4) NUMBER OF BENDING:2TIMES	SHOULD PASS SEALING AND VISUAL TEST.
13	MARKING ERASE	SUBMERGE THE UNIT INTO IPA[ISOPROPYL ALCOHOL] SOLUTION FOR 10MINUTES AND BRUSH THE MARKING 10 TIMES WITH A TOOTH BRUSH.	MARKING SHOULD NOT BE ERASED.

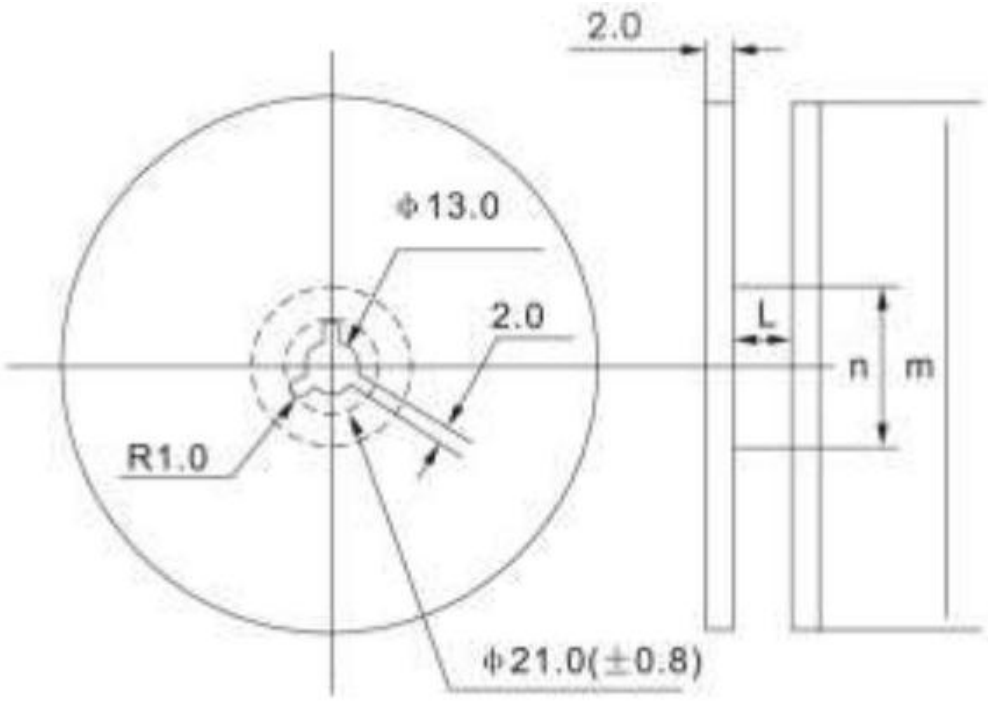
6 PACKING

6.1 Packing Method Sketch Map (Unit: mm)



Quantity Pcs/reel	a	b	c	e	f	h	j	k
3k/reel & 9k/reel	16.0	7.5	4.0	7.2	0.15	0.5	1.65	3

6.2 Reel Dimensions (Unit: mm)



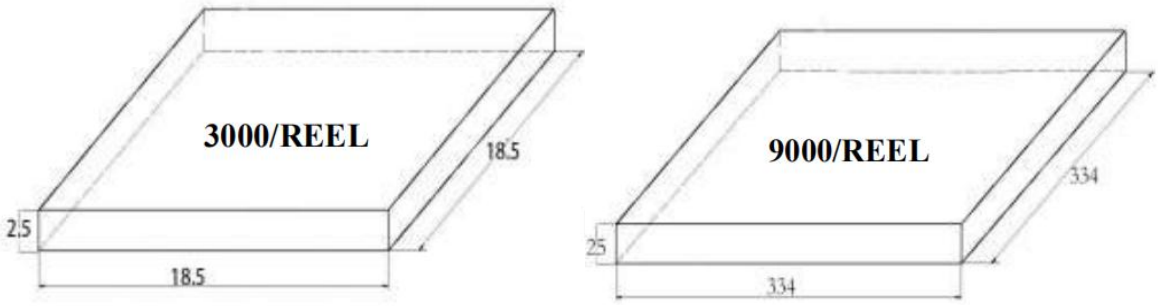
Pieces per reel	Φ m	Φ n	L	Carrier tape size
3000/reel	180±3	60min	17.5	16
9000/reel	330±3	80min	17.5	16

6.3 Section of package

6.3.1 Quantity of package

Per plastic reel 3000 pieces of Crystal Resonators ;
Per inner box 3k/reel & 9k/reel

6.3.2 Inner Box Dimensions (Unit: mm)



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