

SMD VCXO SPECIFICATIONS

Customer	
Customer P/N	
Product	5032 VCXO
Nominal Frequency	24.000000MHz
HOSONIC P/N	D5SV24E000000E
Version	10C0
Issue Date	2026/9/24

HOSONIC		
Drawn	Checked	Approved
LUCY	Richard	JOHN

Approved By Customer : _____

✓ **MSL: Level 1**✓ **Halogen Free**

I ELECTRICAL PARAMETERS

No.	Item	Symb.	Electrical Specification				Remark
			Min.	Typ.	Max.	Units	
1	Nominal Frequency	F0	24.000000				MHz
2	Frequency Calibration		-15		15	ppm	At 25℃
3	Temperature Stability		-25		25	ppm	Over T _{OPR} , Ref. to 25℃
4	Stability vs. power change		-5		5	ppm	V _{DD} ±5%
5	Stability vs. load change		-3		3	ppm	Cload±10%
6	Pullability		-180 ~ -100		100 ~ 180	ppm	Over Control Voltage range
7	Control Voltage range		0		3.3	V	
8	Operating Temperature Range	T _{OPR}	-40		85	℃	
9	Storage Temperature	T _{STG}	-55		125	℃	
10	Power supply Voltage	V _{DD}	3.3±5%				V
11	Aging Per Year	Fa	-3		3	ppm	First Year
12	Supply current	I _{DD}			30	mA	
13	Output symmetry	Sym	45		55	%	
14	Rise time	Tr			5	nS	20%~80%V _{DD}
	Fall time	Tf			5	nS	80%~20%V _{DD}
15	Output voltage	V _{OH}	90%			V _{DD}	
		V _{OL}			10%	V _{DD}	
16	Output load HCMOS load	CL			15	pF	
17	Linearity	Lin			10	%	
18	Start-up time				10	mS	
19	Pin 2, tri-state function	pin 2="High"or "open".....output active at pin 4 pin 2="Low".....high impedance at pin 4 pin 2="Low"&Floating.....unstable at pin4,disallowed for this status					

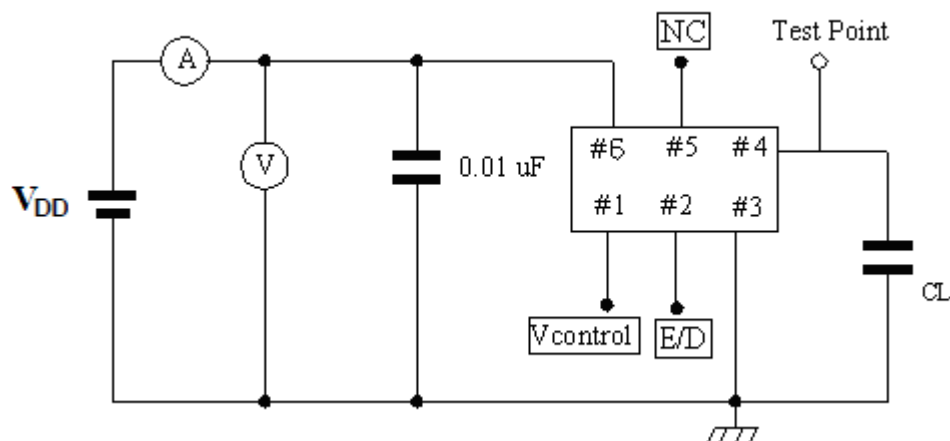
NOTE: Storage Temperature is only for the product itself,the temperature for the packing material is -4~40℃ .

I STORAGE REQUIREMENT

Storage environmental conditions: -4~40℃, 70%RH max.

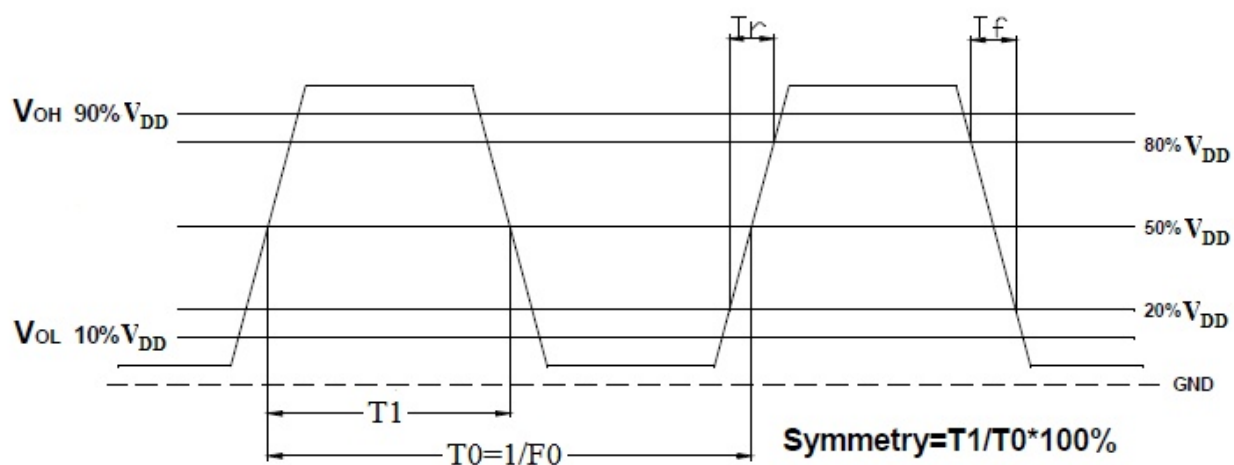
Maximum storage time: 24 Months from date of manufacture.

I HCMOS TEST CIRCUIT

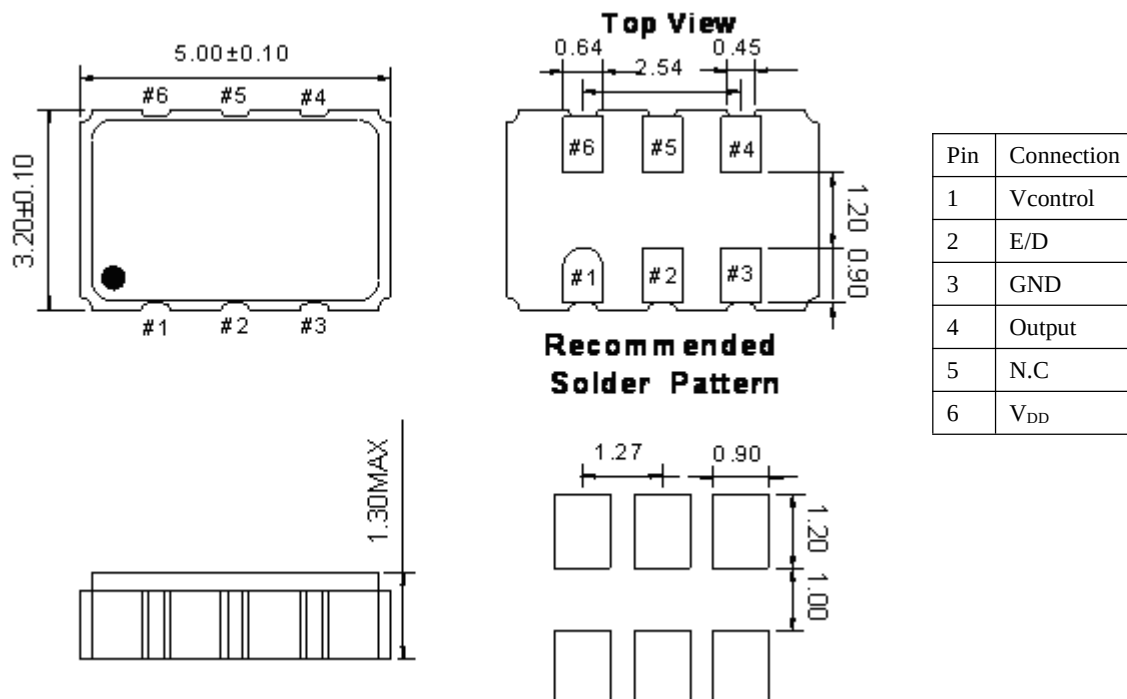


Enable/Disable Function		
Input (pin 2)	Output (pin 4)	Oscillator
Open	Enable	Normal operation
$V_{IH}: 0.7 \cdot V_{DD} \sim V_{DD}$	Enable	Normal operation
$V_{IL}: 0V \sim 0.3 \cdot V_{DD}$	Disable	Stop oscillation

I HCMOS OUTPUT WAVEFORM

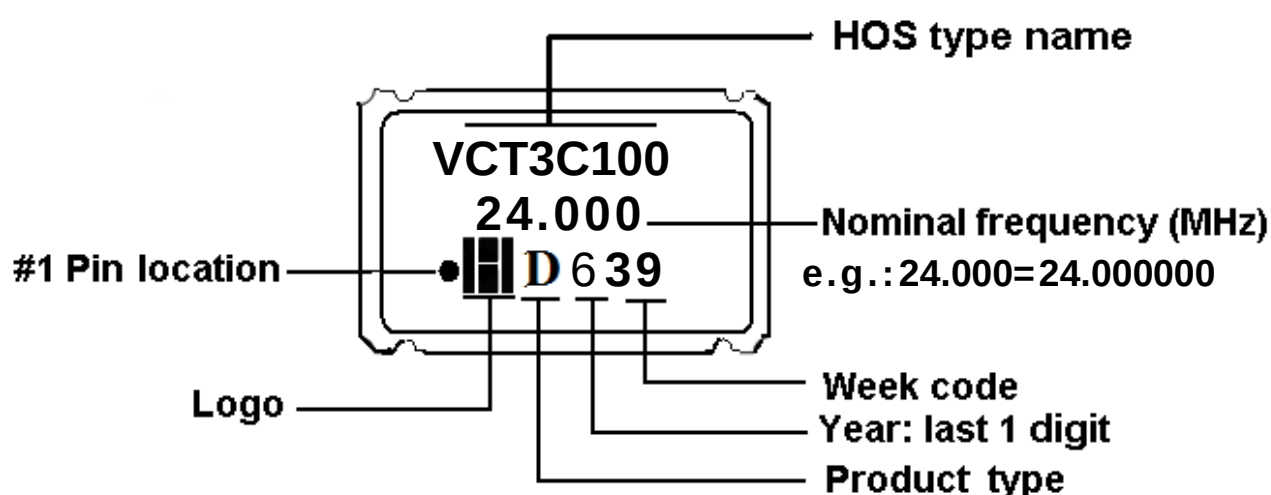


I OUTLINE DIMENSIONS (unit: mm)

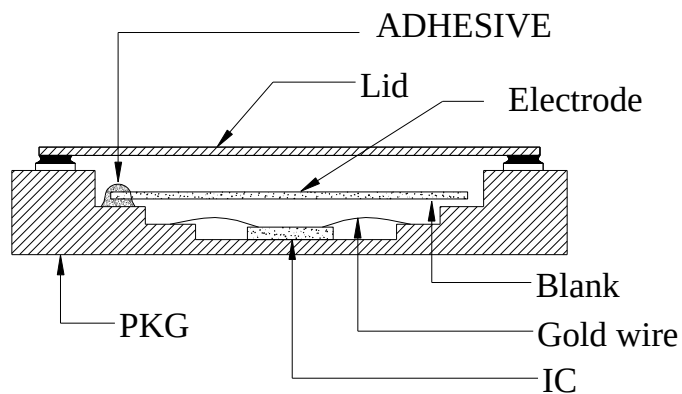


- Note:
- 0.01uF bypass capacitor should be placed between V_{DD} (pin 6) and GND (pin 3) to minimize power supply line noise;
 - Line shouldn't be layed under the oscillator in the PCB to minimize signal interference.
 - The Load we advise is only 15pF (that means drive only 1 CMOS/TTL gate).

I MARKING



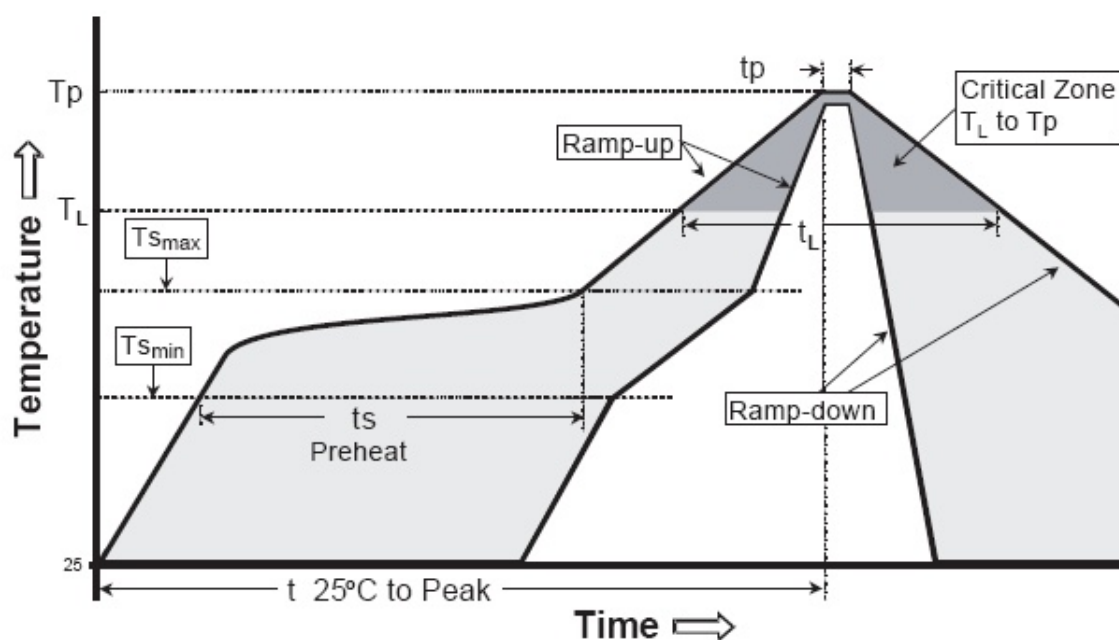
I PRODUCT LAYOUT



NO.	PART	MATERIAL	REMARK
1	LID	KOVAR(Fe+Co+Ni alloy)	
2	PKG	Al ₂ O ₃	Base
3	BLANK	SiO ₂	Quartz
4	ADHESIVE	Ag/SILICON	Support
5	Electrode	Noble metal	
6	IC	Si	
7	Gold wire	Au	Connect

REFLOW PROFILES

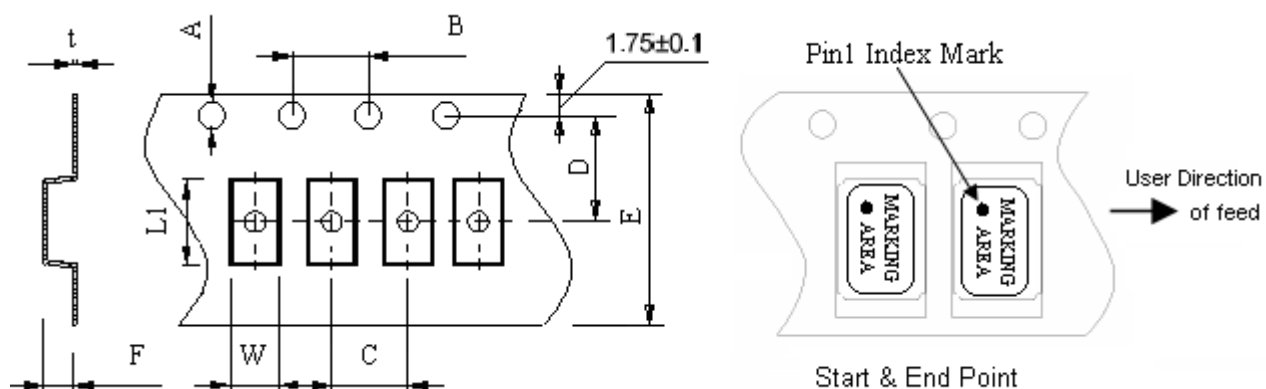
Profiles Feature	Pb-Free Assembly
Average Ramp-up Rate (T_s max to T_p)	3°C/second max.
Preheat ■ Temperature Min (T_s min) ■ Temperature Max (T_s max) ■ Time (t_s min to t_s max)	125°C 200°C 60~180 seconds
Time maintained above ■ Temperature (T_L) ■ Time (t_L)	217°C 60~150 seconds
Peak/Classification Temperature (T_p)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20~40 seconds
Ramp-down rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.
Suggest reflow times	3 Times max



Remark: To reference JEDEC J-STD-020

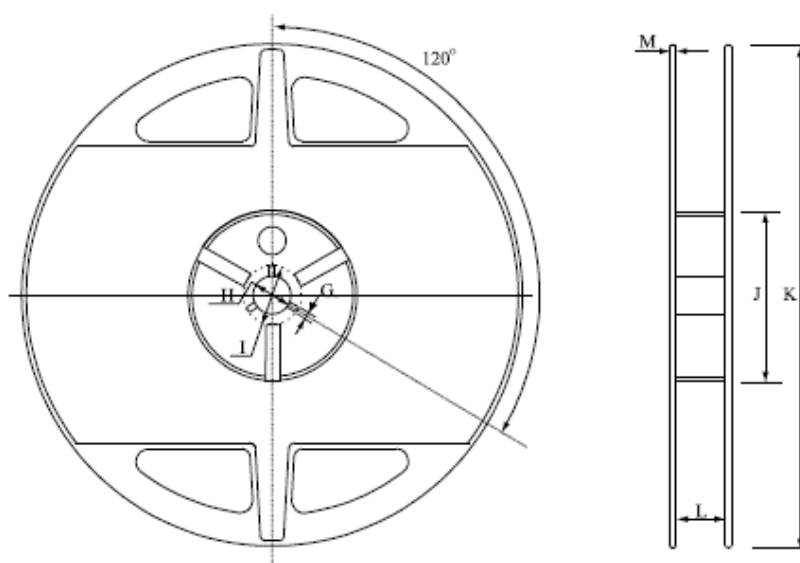
I PACKAGE

Tape Dimensions(unit : mm)



A	B	C	D	E	F	L1	W	t
1.5±0.1	4.0±0.1	8.0±0.1	5.5±0.1	12±0.3	1.5±0.1	5.4±0.1	3.6±0.1	0.30±0.05

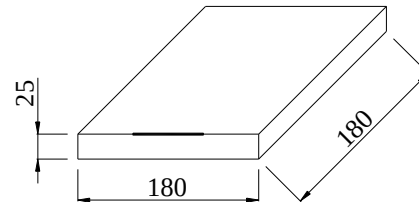
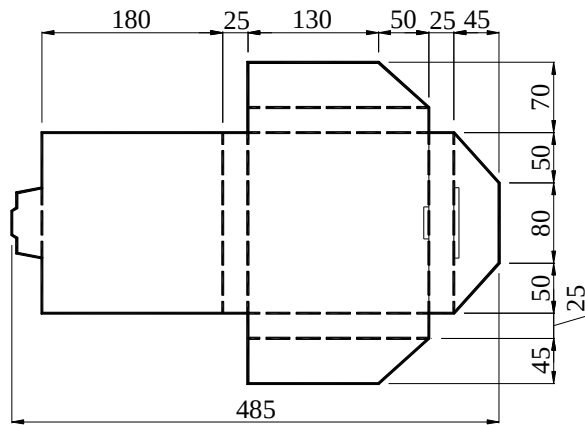
Reel Dimensions(unit: mm)



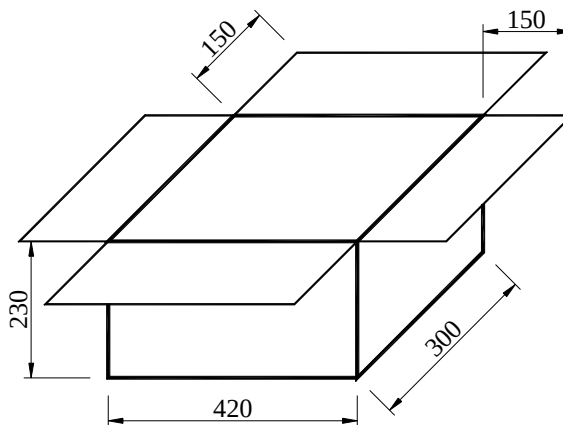
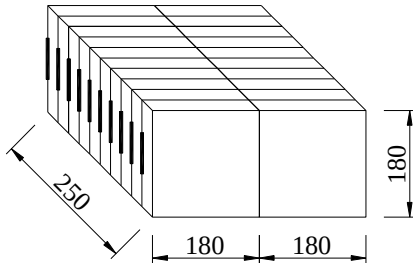
G	H	I	J	K	L	M
2.2±0.5	13.5±0.5	18.2±0.5	60.0±1.0	178.0±1.0	13.5±1.0	1.6±0.2

*1000pcs/Reel

Carton Dimension (unit : mm)



1 reel = 1 Inner box



20 Inner boxes = 1 Carton

20kpcs = 1 Carton

I RELIABILITY SPECIFICATIONS

No.	Test Item	Test Conditions	Reference
1	High Temperature Storage	Temperature: $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Time: 1000 ± 12 Hours	MIL-STD-202 Method 108
2	Low Temperature Storage	Temperature: $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Time: 1000 ± 12 Hours	JIS-C7021 B-12
3	Temperature Cycle	Temperature 1: $-55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Temperature 2: $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Temperature change between T1 and T2 at soonest Run 1000 cycles, maintain T1 and T2 15minutes each in one cycle	JESD22 Method JA-104
4	Solder Heat Resistance	Pre-heat: 125°C 60~120 Seconds Solder Temperature: $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Time: 30 Seconds	MIL-STD-202 Method 210
5	Drop Test	3 Times Free Fall from 75cm height to concrete floor.	IEC 60068-2-32
6	High Temperature, High Humidity Storage	Temperature: $85^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Relative Humidity: 80%~85% Time: 250Hours ± 12 Hours	MIL-STD-202 Method 103
7	Solderability	Dip in flux 5~10 seconds Temperature: $245^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Time: 10 Seconds	J-STD-002
8	Aging	Temperature: $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Time: 250 ± 12 Hours	MIL-STD-202 Method 108
9	Thermal Shock	Temperature 1: $-55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Temperature 2: $125^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Temperature change between T1 and T2: 5 seconds 100 cycles, maintain T1 and T2 for 30 minutes each in one cycle	MIL-STD-202 Method 107
10	Vibration	Frequency Range: 10Hz~2000Hz Amplitude: 1.5mm or 20G 4Hours in each direction, total 12Hours	MIL-STD-202 Method 204

I 应用注意事项 APPLICATION NOTES:**1. 焊接 soldering**

石英晶振产品如果焊接温度过高过长，则可能导致频率发生较大的变化，请使用标准温度曲线来焊接，参考第 7 页 reflow 曲线。Please adhere to the standard temperature curve for soldering. The soldering temperature for quartz crystal products must be carefully controlled, as excessive temperature or prolonged exposure can result in significant frequency drift. For guidance, please refer to the reflow curve provided on page 7.

2. 清洗/涂层 Cleaning/Coating

2.1 对于一般清洗液（PH 中性）的使用以及超声波清洗没有问题，但这仅是对单个晶振产品进行试验所得的结果，因此请根据实际使用状态进行确认。The use of a general cleaning solution (pH neutral) and ultrasonic cleaning is acceptable; however, this applies only to single products. The results obtained from testing should be verified in accordance with the actual usage conditions.

2.2 当在晶振周边或本体上使用保护涂层时请谨慎评估，不能使用有腐蚀性的材料，如聚氨酯胶，它可能会破坏晶振密封性。 Please evaluate before apply a protective coating on or around the crystal oscillator. Do not use corrosive materials, such as polyurethane glue, which may destroy the seal of the crystal oscillator.

3. PCB 组装 PCB Assembly

3.1 分板工序中请注意分板过程中板子的弯曲度，弯曲度过大会可能导致晶振失效或焊接不良，请事先试验确认。尤其是使用玻璃胶封装的 GLASS 产品。During the de-boarding process, care must be taken to prevent excessive bending of the board, as this may lead to oscillator failure or poor soldering quality. It is advisable to conduct tests and confirm results beforehand, particularly for GLASS products encapsulated with glass adhesive.

3.2 超声波封装的制程，会对晶振内部线路（振动过大）产生破坏，进而影响晶振的老化特性或导致晶振失效，故晶振 PCB 组装不推荐采用超声波封装制程。 The ultrasonic packaging process can inflict damage on the internal circuits of the crystal oscillator due to excessive vibration, potentially affecting its aging characteristics or leading to failure. Therefore, we do not recommend using ultrasonic packaging for crystal PCB assembly.

3.3 注塑封装的制程，会因压力原因使晶振表面受压过大，进而影响晶振的外形变化，导致晶振失效或破裂，故晶振在 PCB 组装过程中采用注塑封装时，请和供应商说明，并先试样。The injection molding packaging process exerts significant pressure on the surface of the crystal oscillator, which may alter its shape and result in failure or breakage. Consequently, when utilizing injection molding during PCB assembly involving crystals, please communicate this requirement clearly with your supplier and conduct preliminary sample testing first.

4. 其他 Others

4.1 晶振的内部电路使用 CMOS。静电防护请和一般的 CMOS IC 一样考虑。The internal circuit of the crystal oscillator uses CMOS. Please consider electrostatic protection like a typical CMOS IC.

4.2 晶振设计装配时，请在 V_{DD} -GND 之间用 $0.01\mu F$ 左右的高频特性较好的电容器（陶瓷电容等）以最短距离连接。When designing and assembling crystal oscillators, please connect capacitors (such as ceramic capacitors) with high frequency characteristics of around $0.01\mu F$ between V_{DD} -GND at the shortest distance.

4.3 未尽事宜，请联系我们。For any matters not covered, please contact us.