

## STANDARD SPECIFICATION

### 产品规格书

客户 Customer: \_\_\_\_\_

客户料号 Customer P/N NO.: \_\_\_\_\_

产品描述 Product Description: OSC-3225 27.120MHZ 1.8~3.3V ±10PPM

H X - C 料号 P/N NO.: 3Y027120VP

### 客户批准 Customer Approval :

| 审 核     | 批 准      |
|---------|----------|
| Checked | APPROVED |
|         |          |

(请批准后回签一份 PLEASE RETURN A COPY WITH APPROVAL)

| 拟 制<br>DESIGNER | 审 核<br>CHECK | 批 准<br>APPROVED |
|-----------------|--------------|-----------------|
| 万力阳             | 蔡 勤          | 柯建平             |

地址: 深圳市龙华区龙胜路融创智汇大厦C座1401-1402室

Office add: Room 1401-1402, Building C, Rongchuang, Longhua District, shenzhen

TEL: 0755-21044642



## REVISION RECORD

[illegible]

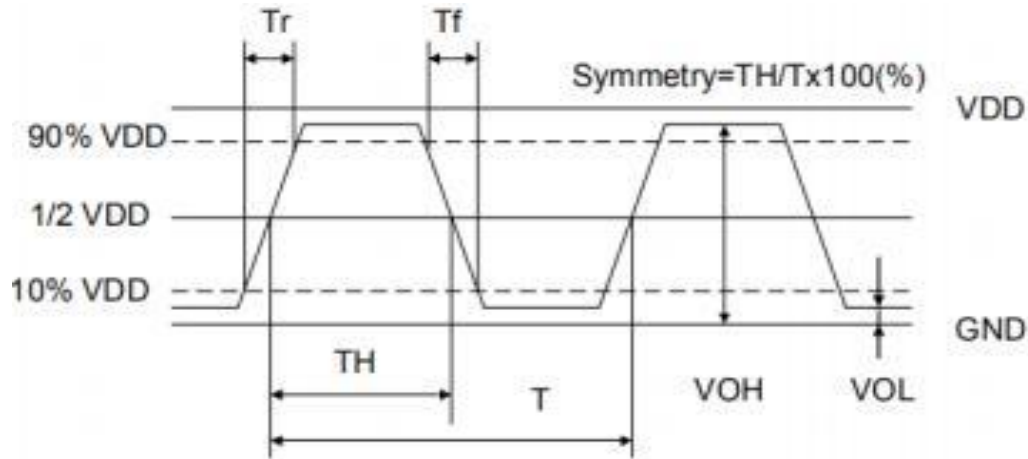
**Spec Sheet Contents**

| NO. | Content                                    | Page |
|-----|--------------------------------------------|------|
| 1   | 石英晶体参数规格 QUARTZ CRYSTAL UNIT SPECIFICATION | 4    |
| 2   | CMOS负载输出波形 LOAD OUTPUT WAVEFORM            | 5    |
| 3   | CMOS负载电路测试 LOAD CIRCUIT TEST               | 5    |
| 4   | 外形尺寸 BOUNDARY DIMENSION                    | 6    |
| 5   | 印字内容 MARKING                               | 6    |
| 6   | 内部结构 INSIDE STRUCTURE                      | 7    |
| 7   | 包装 PACKING                                 | 7    |
| 8   | 回流焊温度曲线 REFLOW PROFILES                    | 8    |
| 9   | 可靠性试验 RELIABILITY SPECIFICATIOND           | 9    |
| 10  | 包装数量 NUMBER OF PACKAGES                    | 11   |
|     |                                            |      |
|     |                                            |      |
|     |                                            |      |
|     |                                            |      |
|     |                                            |      |

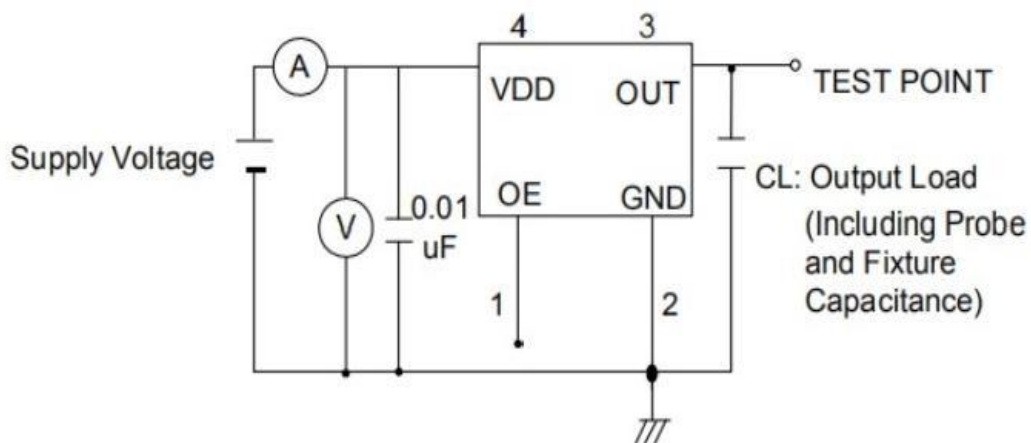
## 1. 石英晶体参数规格 QUARTZ CRYSTAL UNIT SPECIFICATION

| NO. | 项目<br>Item                                | 符号<br>Symbol | 电气特性规格<br>Electrical Specification |            |            |             | 备注<br>Notes                                                                                                                                    |
|-----|-------------------------------------------|--------------|------------------------------------|------------|------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                           |              | 下限<br>Min.                         | 中心<br>Typ. | 上限<br>Max. | 单位<br>Units |                                                                                                                                                |
| 1   | 标准频率<br>Nominal Frequency                 | FL           | 27.12                              |            |            | MHz         |                                                                                                                                                |
| 2   | 震荡模式<br>Oscillation Mode                  | -            | Fundamental                        |            |            | -           |                                                                                                                                                |
| 3   | 频率偏差<br>Frequency Tolerance               | FT           | -10                                | -          | 10         | ppm         | At 25°C±°C                                                                                                                                     |
| 4   | 温度频差<br>Frequency Stability               | TC           | -30                                | -          | 30         | ppm         |                                                                                                                                                |
| 5   | 工作温度<br>Operating Temperature             |              | -40                                | -          | 85         | °C          |                                                                                                                                                |
| 6   | 储存温度<br>Storage temperature               | T_stg        | -55                                | -          | 125        | °C          |                                                                                                                                                |
| 7   | 老化率<br>Aging rate                         | F_age        |                                    | ±2         |            | ppm         | First year                                                                                                                                     |
| 8   | 供电电压<br>For the pressure                  | Vdd          | 1.8-3.3                            |            |            | V           | ±10%                                                                                                                                           |
| 9   | 电流<br>current                             | Icc          |                                    |            | 10.0       | mA          |                                                                                                                                                |
| 10  | 上升, 下降时间<br>Rise, fall time               |              | 5                                  |            |            | Ns          | 10%~90% Level                                                                                                                                  |
| 11  | 输出波形<br>Output waveform                   |              | CMOS                               |            |            |             |                                                                                                                                                |
| 12  | 占空比<br>Duty ratio                         | TH/T         | 45                                 |            | 55         | %           |                                                                                                                                                |
| 13  | 输出负载<br>The output load                   | CL           |                                    | 15         |            | pF          |                                                                                                                                                |
| 14  | 起振时间<br>Start-up Time                     |              |                                    | -          | 5          | mS          | To 90% of Final Amplitude                                                                                                                      |
| 15  | 使能延迟<br>Enable Delay Time                 |              |                                    | -          | 150        | uS          |                                                                                                                                                |
| 16  | 使能高电平<br>Enable Voltage High<br>(Logic 1) |              | 70%Vdd                             |            |            | V           | 输出使能OE是高电平1或者悬空, 频率输出;<br>输出使能OE是低电平0, 则无频率输出。<br>Output will be enable if OE is Logic 1 or open ;<br>Output will be disable if OE is Logic 0. |
| 17  | 使能低电平<br>Enable Voltage Low<br>(Logic 0)  |              |                                    |            | 30%Vdd     | V           |                                                                                                                                                |

## 2. CMOS 负载输出波形 LOAD OUTPUT WAVEFORM

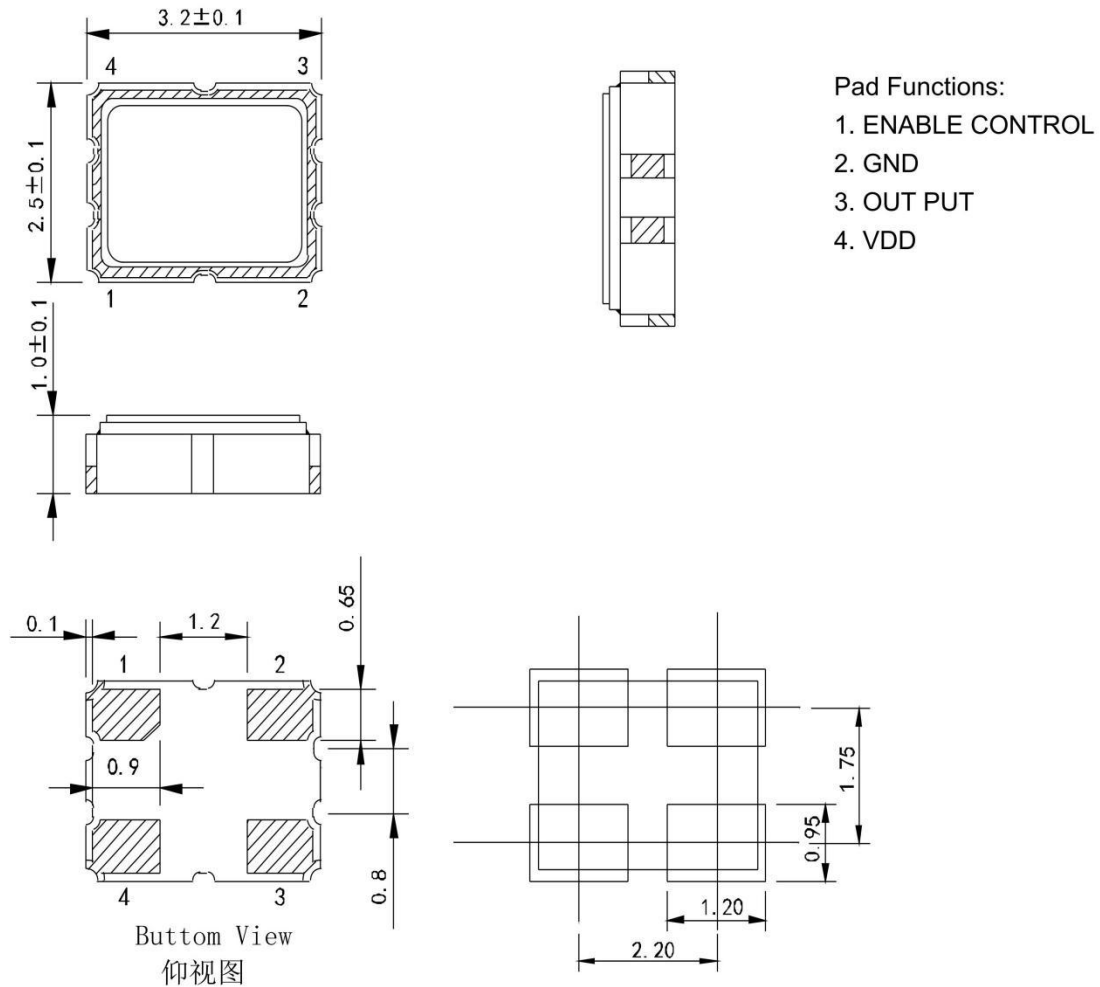


## 3. CMOS 负载电路测试 LOAD CIRCUIT TEST



#### 4. 外形尺寸 BOUNDARY DIMENSION

(单位 unit : mm)



Notes: PIN 1 connected to Vdd or floating, the product is working properly; connected to GND, stops working.

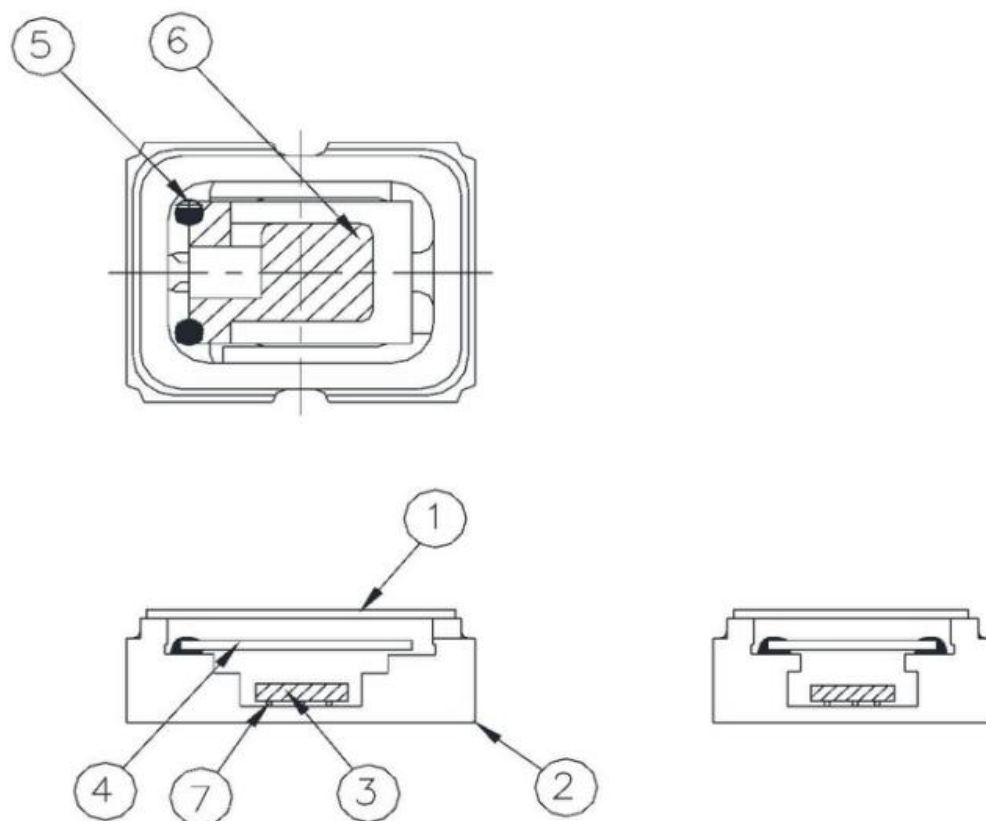
#### 5. 印字



HX-C ----- LOGO  
 . ----- Pin1  
 27.12 ----- FL  
 V ----- VDD  
 YM ----- Cycle

27.120  
MHZ

## 6. 内部结构图 INSIDE STRUCTURE

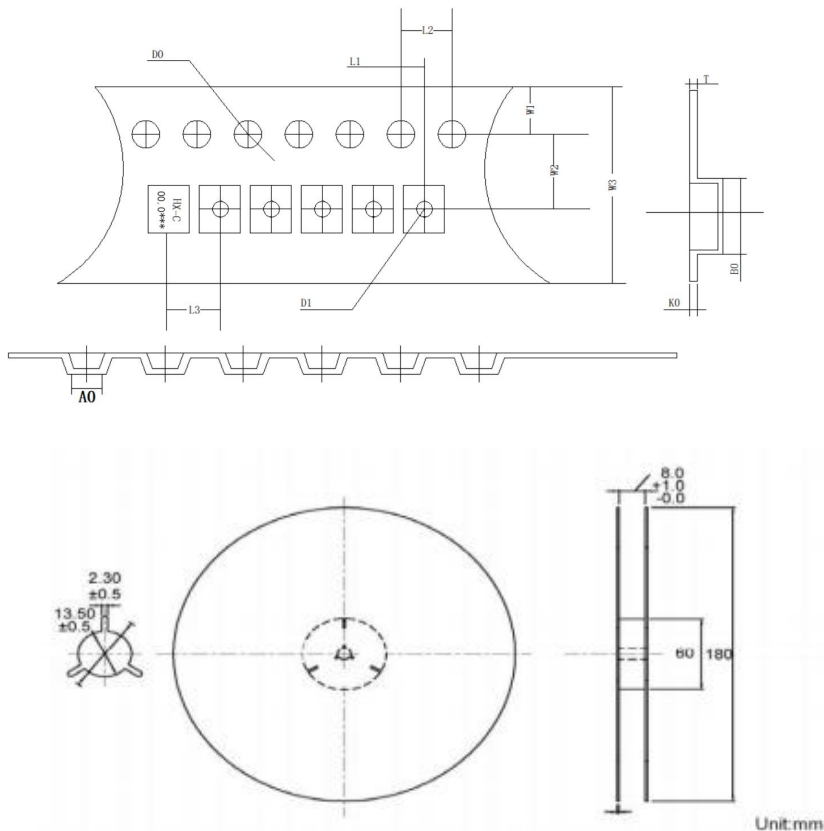


| NO. | COMPONENTS          | MATERIALS                                  | FINISH/SPECIFICATIONS                        |
|-----|---------------------|--------------------------------------------|----------------------------------------------|
| 1   | Lid                 | Kovar                                      | -                                            |
| 2   | Base(Package)       | Ceramic( $\text{Al}_2\text{O}_3$ )+Pad(Au) | Alumina ceramics                             |
| 3   | IC chip             | Si                                         | -                                            |
| 4   | Crystal blank       | $\text{SiO}_2$                             | -                                            |
| 5   | Conductive adhesive | Ag                                         | Silicon resin                                |
| 6   | Electrode           | Noble Metal                                | -                                            |
| 7   | Die Bonding         | Au(gold ball,Flip Chip)                    | Pad 1 options:NC is 5 balls ,EN is 6 balls . |

## 7. 编带包装 BRAID PACKAGING

(单位: mm)

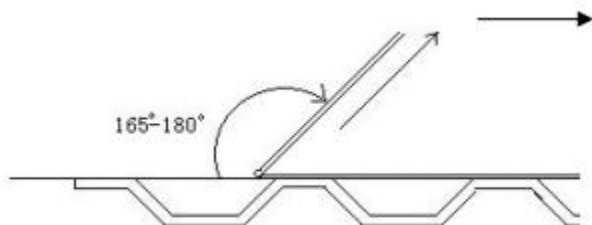
### 1. 载带与编带盘尺寸



|    |           |
|----|-----------|
| L1 | 2.00±0.1  |
| L2 | 4.00±0.1  |
| L3 | 4.00±0.1  |
| D0 | 1.50±0.1  |
| D1 | 1.00±0.1  |
| W0 | 8.30±0.2  |
| W1 | 1.75±0.1  |
| W2 | 3.50±0.1  |
| W3 | 8.00±0.1  |
| A0 | 2.72±0.1  |
| B0 | 3.46±0.1  |
| K0 | 1.00±0.1  |
| T  | 0.22±0.05 |

### 2. 剥离方式见下图, 强度: 20g-100g

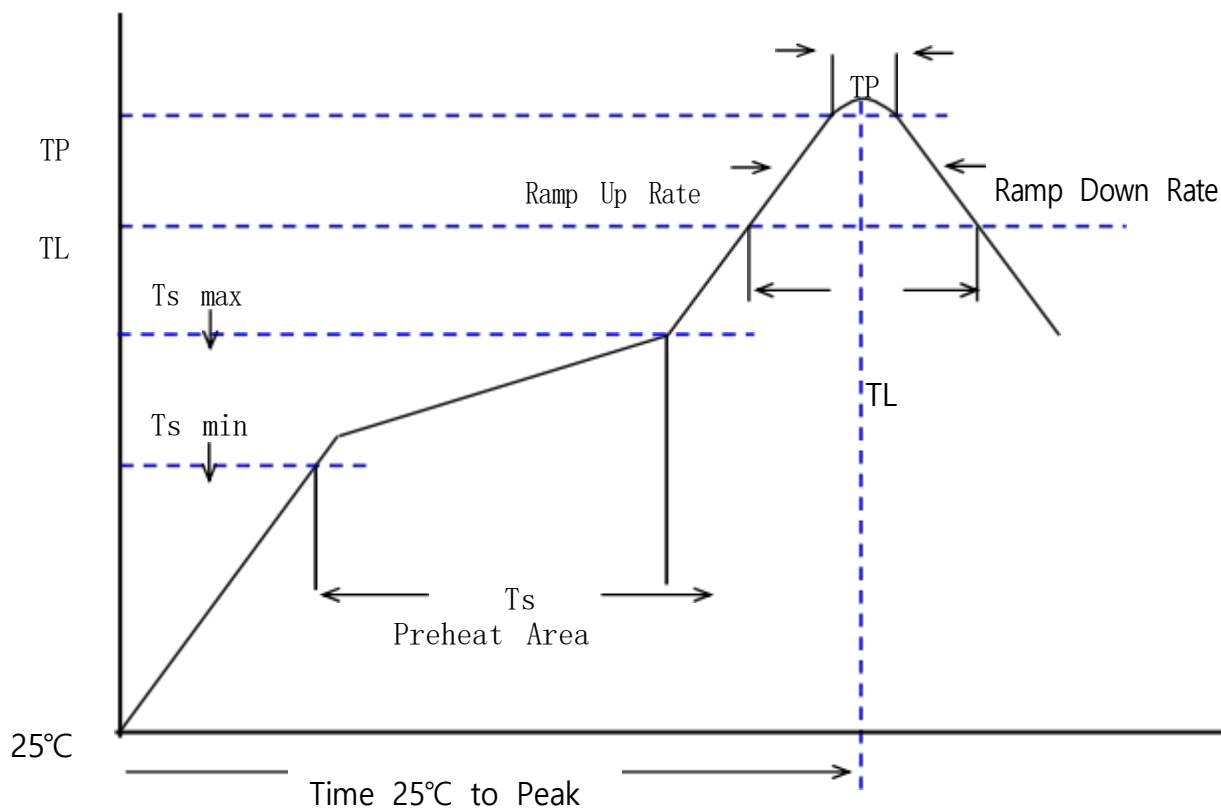
牵引方向



## 8. 回流焊温度曲线 REFLOW PROFILES

参考标准 REFER: JEDEC J-STD-020D

| Profiles Feature                                                                                          | Pb-Free Assembly                 |
|-----------------------------------------------------------------------------------------------------------|----------------------------------|
| Preheat/Soak<br>Temperature Min (Ts min)<br>Temperature Max (Ts max)<br>Time (Ts) from (Ts min to Ts max) | 150°C<br>200°C<br>60-120 seconds |
| Ramp-up rate (TL to TP)                                                                                   | 3°C/second max.                  |
| Liquidous temperature (TL)<br>Time (TL) maintained above TL                                               | 217°C<br>60-150 seconds          |
| Peak/Classification Temperature (TP)                                                                      | 260±5°C                          |
| Time within 5°C of actual Peak Temperature (TP)                                                           | 20~40 seconds                    |
| Ramp-down rate (TP to TL)                                                                                 | 6°C/second max.                  |
| Time 25 °C to peak temperature                                                                            | 8 minutes max.                   |
| Suggest reflow times                                                                                      | 3 Times max                      |



## 9. 可靠性试验 RELIABILITY SPECIFICATION

| 参考标准REFER |                              | JIS C 6701                                                                                                                                                                                                                                                                                                    |                                                             |
|-----------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| NO.       | 项目<br>ITEM                   | 测试条件<br>CONDITIONS                                                                                                                                                                                                                                                                                            | 合格标准<br>BASIS OF VERDICT                                    |
| 1         | 跌落<br>DROP                   | 100cm高处自由跌落到3cm厚木板上, 3次<br>High:100cm; Thickness:3cm; 3 times.                                                                                                                                                                                                                                                | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 2         | 振动<br>VIBRATION              | 频率 Frequency:10~57.7Hz:幅度 Amplitude: $\pm 0.75\text{mm}$ 频率<br>Frequency:57.7Hz~500Hz:加速度幅度acceleration rate:98m/s <sup>2</sup><br>周期 Cycle time:10~500-10Hz: 15min<br>振动方向 Direction:X, Y, Z<br>振动时间 Duration: 每个方向2小时 2 h/direction.                                                                        | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 3         | 温度变化<br>TEMPERATURE<br>SHOCK | -40℃ $\pm 2^\circ\text{C}$ (30min) $\leftarrow \rightarrow$ 85℃ $\pm 2^\circ\text{C}$ (30min); 循环10次 -40℃ $\pm 2^\circ\text{C}$<br>℃ (30min) $\leftarrow \rightarrow$ 85℃ $\pm 2^\circ\text{C}$ (30min); For 10<br>cycles                                                                                     | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 4         | 湿热<br>HUMIDITY               | 温度:40℃ $\pm 2^\circ\text{C}$ ; 湿度90~95%; 时间:96小时<br>Temp:40℃ $\pm 2^\circ\text{C}$ ; Humidity:90~95%; Times:96h                                                                                                                                                                                               | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 5         | 低温<br>COLD<br>RESISTANCE     | 温度:-40℃ $\pm 2^\circ\text{C}$ ; 时间:96小时 Temp:-<br>40℃ $\pm 2^\circ\text{C}$ ; Times:96h                                                                                                                                                                                                                       | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 6         | 高温1<br>HEAT<br>RESISTANCE 1  | 温度:100℃ $\pm 2^\circ\text{C}$ ; 时间:96小时<br>Temp:100℃ $\pm 2^\circ\text{C}$ ; Times:96h                                                                                                                                                                                                                        | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 7         | 高温2<br>HEAT<br>RESISTANCE 2  | 温度:155℃ $\pm 2^\circ\text{C}$ ; 时间:2小时<br>Temp:155℃ $\pm 2^\circ\text{C}$ ; Times:2h                                                                                                                                                                                                                          | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 8         | 高温3<br>HEAT<br>RESISTANCE 3  | 温度:85℃ $\pm 2^\circ\text{C}$ ; 电压:3.3V/5.0V; 时间:96小时<br>Temp:85℃ $\pm 2^\circ\text{C}$ ; Voltage:3.3V/5.0V; Times:96h                                                                                                                                                                                         | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 9         | 回流焊<br>REFLO<br>W            | 150℃ $\pm 5^\circ\text{C}$ 保持120s后升到270℃ $\pm 5^\circ\text{C}$ 保持10s, 升温 and 保温 时间小于<br>200s, 常温放置1~2h后测定<br>Keep 150 °C $\pm 5^\circ\text{C}$ 120s and then rose to 270 °C $\pm 5^\circ\text{C}$ for<br>10s, warming and holding time is less than the 200s,<br>placed at room temperature 1 ~ 2h after test | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 10        | 盐雾<br>SALT SPRAY             | 盐雾浓度:5%; 温度:35℃; 时间:24小时<br>Salt density:5%; Temp:35℃; Times:24h                                                                                                                                                                                                                                              | 目测无明显腐蚀现象<br>Visual no significant<br>corrosion.            |
| 11        | 老化<br>AGING                  | 温度:85℃; 时间:30天<br>Temp:85℃; Times:30days                                                                                                                                                                                                                                                                      | $\Delta FL \leq \pm 5\text{ppm}$                            |
| 12        | 气密性<br>LEAKAG<br>E           | 氦气 (0.6~0.65MPa):10分钟<br>He (0.6~0.65MPa):10min                                                                                                                                                                                                                                                               | $\leq 3 \times 10^{-9} \text{Pa} \cdot \text{m}^3/\text{s}$ |
| 13        | 焊接<br>SOLDER                 | 温度:260℃ $\pm 5^\circ\text{C}$<br>Temp:260℃ $\pm 5^\circ\text{C}$                                                                                                                                                                                                                                              | 浸锡率大于90%<br>Soldering tin rate<br>greater than 90%          |

## 10. 包装数量 NUMBER OF PACKAGES

| 类型<br>TYPE           | 尺寸<br>SIZE  | 数量<br>NUMBER |
|----------------------|-------------|--------------|
| 包装盒<br>Packaging     | 180*20*180  | 3000pcs      |
| 包装箱<br>Packing cases | 240*200*200 | 30000pcs     |

### ★ 备注:

1. 以上可靠性项目为我司常规测试项目，若客户对产品有跌落，冲击，碰撞以及涉及到超声 波焊接工艺的需求，请将贵司的需求反馈给我司，我司会对该产品的可靠性项目进行更新。 2. 客户端在对晶体加热后，为了保证频率的准确性，建议将晶体充分冷却后再进行相关测试。 3. 该产品符合公司环保标准要求。

1. The above reliability items are routine test items of our company. If the customer has requirements on the products including drop, impact, collision and ultrasonic wave welding process, please feedback your requirements to our company, and we will update the reliability items of this product. 2. In order to ensure the accuracy of frequency, it is recommended to fully cool the crystal after heating it on the client. 3. The product meets the company's environmental standards.