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|----|---------------|
| 编号 | SCTF202304538 |
| 日期 | 2023/4/19     |
| 版本 | B01           |



# 承认书

## SPECIFICATION FOR APPROVAL

|                       |                              |
|-----------------------|------------------------------|
| 客户名称 Customer Name:   | Customer                     |
| 供应商物料名称 Part Name:    | 石英晶体振荡器                      |
| 产品描述 Description:     | SMD2016 20.000MHz/1.62~3.63V |
| 供应商物料料号 Part NO.:     | SX1M20.000M10F30TNN          |
| 供应商名称 Supplier Name : | 深圳市星通时频电子有限公司                |

PLEASE CONFIRM OUR SPECIFICATION. 敬请确认规格书之内容。

| CUSTOMER APPROVAL 客户审批     |     |     |
|----------------------------|-----|-----|
| 物料代号 PART NO. _____        |     |     |
| 使用于机型 USED IN MODEL: _____ |     |     |
| 工程部                        | 品质部 | 采购部 |
|                            |     |     |

(敬请承认后返回一份, 谢谢!)

| SUPPLIER APPROVAL 供应商审批 |         |             |
|-------------------------|---------|-------------|
| DGN.制表人                 | CKD. 校对 | APPD. 审核、签章 |
| 吴丽红                     | 李良      | 胡华才         |

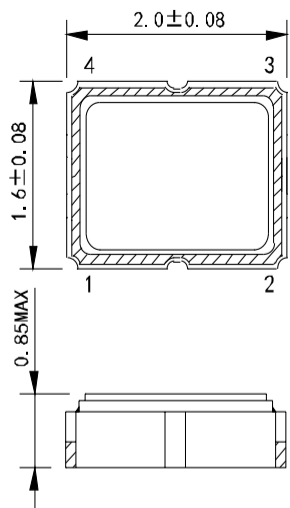


## ■ Electrical Specification 电气参数

| N0. | Item                                   | Electrical Spec. | Notes  |
|-----|--|------------------|--|
| 1   | Holder Type<br>封装                      | SMD2016          |  |
| 2   | Nominal Frequency<br>标称频率              | 20.000000 MHz    |  |
| 3   | Frequency stability<br>常温频差            | ±10ppm           | at 25°C±2°C  |
| 4   | Temperature Drift<br>温度频差              | ±30ppm           | at -40~85°C  |
| 5   | Operating voltage<br>工作电压              | 1.62~3.63V       |  |
| 6   | Output Type<br>输出模式                    | CMOS             |  |
| 7   | Output load condition<br>负载            | 15pF             |  |
| 8   | Current consumption<br>消耗电流            | 10 mA max.       |  |
| 9   | Operating temperature range<br>工作温度范围  | -40~85°C         |  |
| 10  | Storage Temperature Range<br>存储温度范围    | -55~125°C        |  |
| 11  | Duty Cycle<br>占空比                      | 45%-55%          |  |
| 12  | Rise / Fall Time<br>上升/下降沿时间           | 5 nS max.        |  |
| 13  | High output voltage<br>输出高电平           | 0.9Vdd min.      |  |
| 14  | Low output voltage<br>输出低电平            | 0.1Vdd max.      |  |
| 15  | Start-up Time<br>起振时间                  | 5mS max.         | To 90% of Final Amplitude  |
| 16  | Enable Voltage High (Logic 1)<br>使能高电平 | 70%Vdd min.      | Output will be enable if OE is Logic 1 or open ;<br>Output will be disable if OE is Logic 0.<br>输出使能OE是高电平1或者悬空，频率输出；输出使能OE是低电平0，则无频率输出。 |
| 17  | Enable Voltage Low (Logic 0)<br>使能低电平  | 30%Vdd max.      |  |
| 18  | Enable Delay Time<br>使能延迟              | 150 uS MAX.      |  |
| 19  | Aging<br>老化                            | ±3ppm            | 1st. Year at 25°C  |

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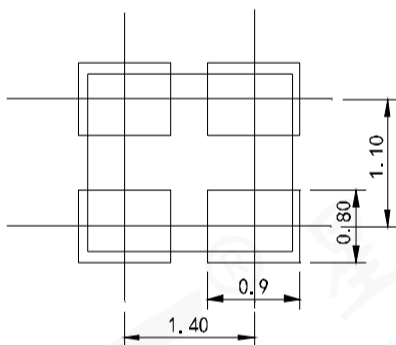
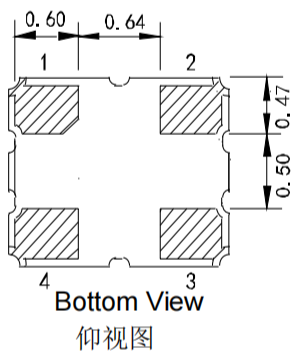
**■ DIMENSIONS 产品尺寸**



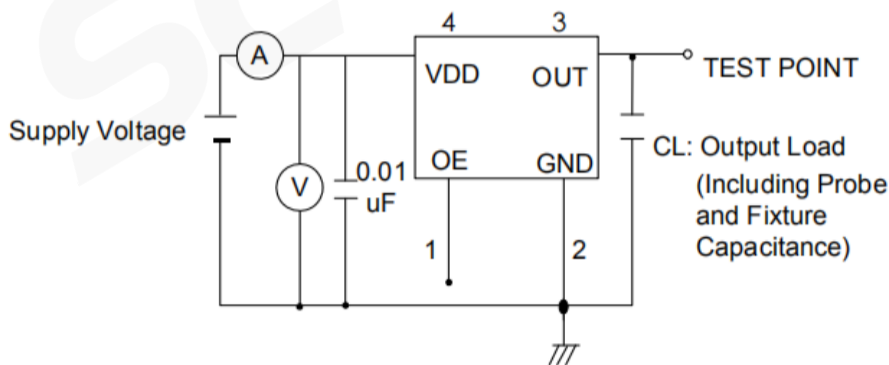
Units (单位): mm(毫米)

Pad Functions:

- 1. ENABLE CONTROL
- 2. GND
- 3. OUT PUT
- 4. VDD



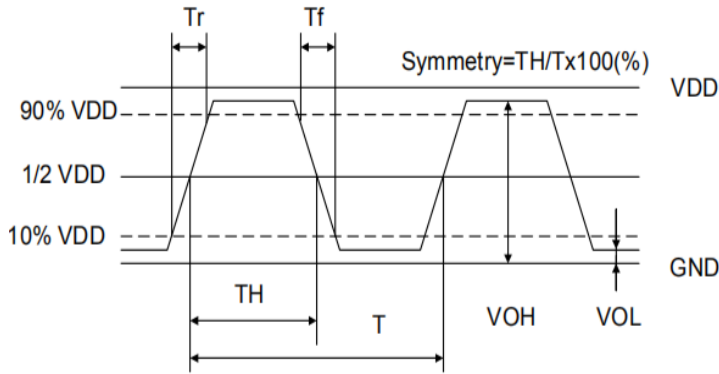
**■ TESTING CIRCUIT 测试电路**



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

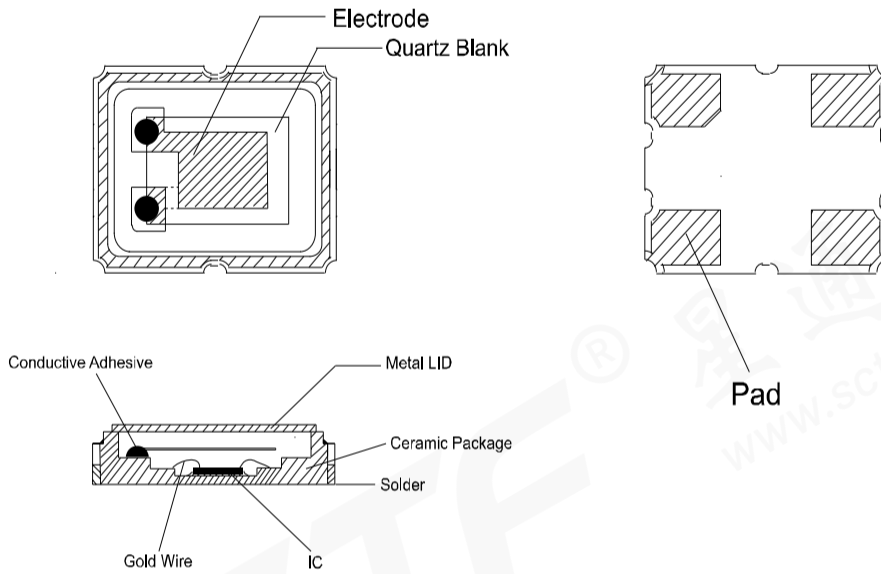
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■ **WAVEFORM CONDITIONS** 输出波形

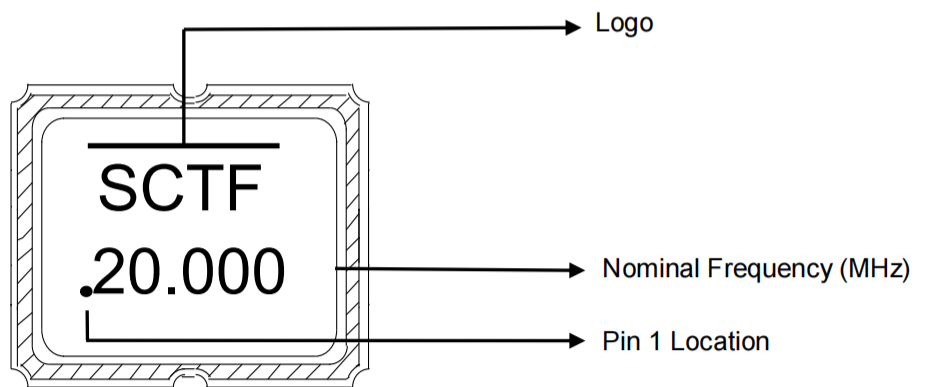


Waveform measurement system should have a min. bandwidth of 5 times the frequency being tested.

■ **Product Structure** 产品结构



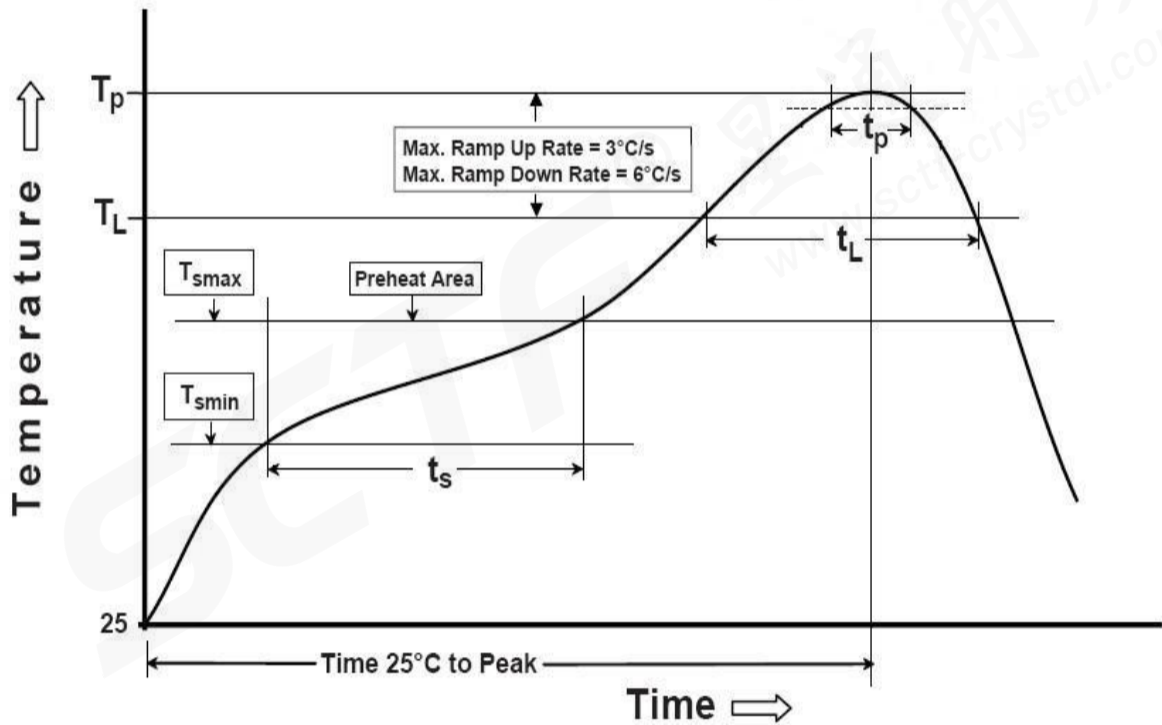
■ **Marking** 印字



|                                     |  |       |
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◆ REFLOW PROFILES 回流焊条件

| Profile Feature   | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|---|-------------------------|------------------|
| Preheat/Soak  |                         |                  |
| ● Temperature Min (Ts min)  | 100 °C                  | 150 °C           |
| ● Temperature Max (Ts max)  | 150 °C                  | 200 °C           |
| ● Time (Ts min to Ts max)   | 60-120 seconds          | 60-120 seconds   |
| Ramp-up rate (TL to Tp)   | 3 °C/second max.        | 3 °C/second max. |
| Time maintained above   |                         |                  |
| ● Liquidous temperature (TL)                                      | 183 °C                  | 217 °C           |
| ● Time (tL) maintained above TL                                   | 60-150 seconds          | 60-150 seconds   |
| Peak package body temperature (Tp)                                | 235 °C                  | 260 °C           |
| Time within 5 °C of the specified classification temperature (Tp) | 20 seconds              | 30 seconds       |
| Ramp-down rate (Tp to TL)   | 6 °C/second max.        | 6 °C/second max. |
| Time 25 °C to peak temperature                                    | 6 minutes max.          | 8 minutes max.   |
| <b>Suggest reflow times</b>                                       | <b>3 Times max.</b>     |                  |



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◆ RELIABILITY SPECIFICATION 可靠性参数

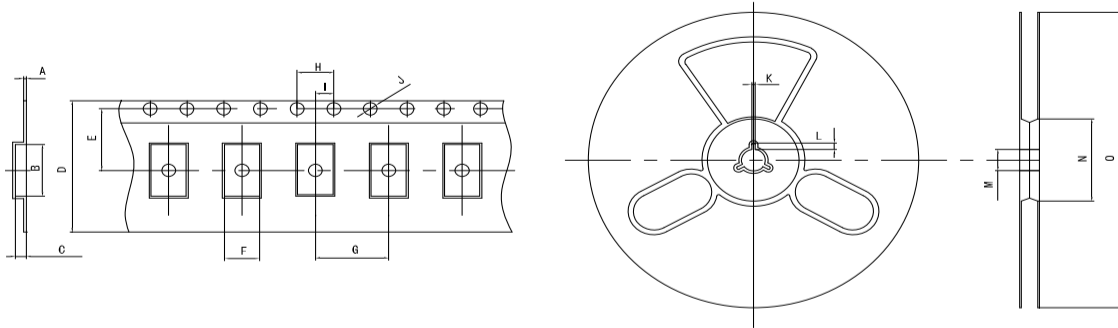
| 序号<br>NO. | 项目<br>ITEM                   | 条件<br>CONDITIONS   | 合格标准<br>BASIS OF VERDICT                                    |
|-----------|------------------------------|--|---|
| 1         | 跌落<br>DROP                   | 100cm高处自由跌落到3cm厚木板上,3次<br>High:100cm;Thickness:3cm;3 times.  | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 2         | 振动<br>VIBRATION              | 频率 Frequency:10~57.7Hz;幅度 Amplitude: $\pm 0.75 \text{mm}$<br>频率Frequency:57.7Hz~500Hz;加速度幅度acceleration<br>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°C $\pm 2^\circ\text{C}$ (30min) $\leftrightarrow$ 85°C $\pm 2^\circ\text{C}$ (30min);循环10次<br>-40°C $\pm 2^\circ\text{C}$ (30min) $\leftrightarrow$ 85°C $\pm 2^\circ\text{C}$ (30min);For 10<br>cycles  | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 4         | 湿热<br>HUMIDITY               | 温度:40°C $\pm 2^\circ\text{C}$ ;湿度90-95%;时间:96小时<br>Temp:40°C $\pm 2^\circ\text{C}$ ;Humidity:90-95%;Times:96h  | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 5         | 低温<br>COLD RESISTANCE        | 温度:-40°C $\pm 2^\circ\text{C}$ ;时间:96小时<br>Temp:-40°C $\pm 2^\circ\text{C}$ ;Times:96h   | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 6         | 高温1<br>HEAT RESISTANCE 1     | 温度:100°C $\pm 2^\circ\text{C}$ ;时间:96小时<br>Temp:100°C $\pm 2^\circ\text{C}$ ;Times:96h   | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 7         | 高温2<br>HEAT RESISTANCE 2     | 温度:155°C $\pm 2^\circ\text{C}$ ;时间:2小时<br>Temp:155°C $\pm 2^\circ\text{C}$ ;Times:2h   | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 8         | 高温3<br>HEAT RESISTANCE 3     | 温度:85°C $\pm 2^\circ\text{C}$ ;电压:3.3V/5.0V;时间:96小时<br>Temp:85°C $\pm 2^\circ\text{C}$ ;Voltage:3.3V/5.0V;Times:96h  | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 9         | 回流焊<br>REFLOW                | 150°C $\pm 5^\circ\text{C}$ 保持120s后升到270°C $\pm 5^\circ\text{C}$ 保持10s, 升温和保<br>温时间小于200s, 常温放置1~2h后测定<br>Keep 150 °C $\pm$ 5 °C 120s and then rose to 270 °C $\pm$ 5 °C<br>for 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°C;时间:24小时<br>Salt density:5%;Temp:35°C;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°C;时间:30天<br>Temp:85°C;Times:30days   | $\Delta FL \leq \pm 5 \text{ppm}$                           |
| 12        | 气密性<br>LEAKAGE               | 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°C $\pm 5^\circ\text{C}$<br>Temp:260°C $\pm 5^\circ\text{C}$   | 浸锡率大于90%<br>Soldering tin rate<br>greater than 90%          |

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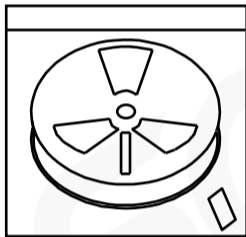
◆ Taping Specifications 编带规格

UNIT (单位) : mm (毫米)

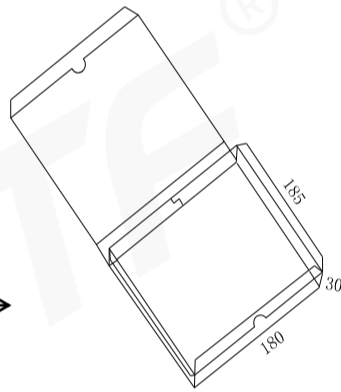


| TEYE        | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | L    | M     | N     | O      |
|-------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|--------|
| 2.0×1.6 SMD | 0.25 | 2.30 | 0.90 | 8.00 | 3.50 | 1.90 | 4.00 | 4.00 | 2.00 | 1.50 | 2.00 | 4.00 | 13.00 | 60.00 | 180.00 |

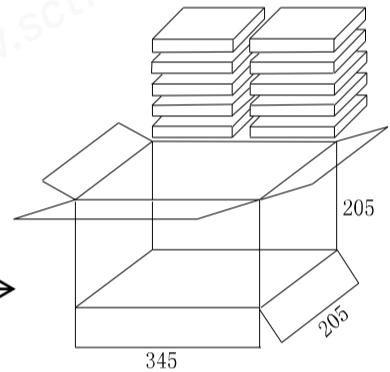
◆ Packaging specifications 包装规格



自封袋 (Bag)  
3000只 = 1 轮  
3000pcs = 1 Reel



内包装 (Inside package)  
1 轮 = 1 盒  
1 Reel = 1 box



外包装 (Outside Package )  
10 盒 = 1 箱  
10 box = 1 carton

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单击下面可查看定价，库存，交付和生命周期等信息

[>>SCTF\(星通时频\)](#)